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OFFICIAL GAZETTE

UNITED STATES PATENT OFFICE

VOL 100

NO 1 THRU 14

JUL- SEP-1902

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ERRATA.

703,915, page 198, in heading, name of patentee, for "James G. Halapiens" read *James G. Halapiens.*

704,110, page 294, fourth claim, line 4, strike out the word "draft" and the hyphen following.

704,194, page 327, nineteenth claim, line 5, for the word "prevent" read *permit.*

704,490, page 442, in heading, title of invention, for "Composition for the Production of Vapors of Formaldehyde" read *Composition for the Production of Vapors of Formic Aldehyde.*

704,706, page 535, first claim, line 1, for the word "main" read *name.*

705,442, page 873, in heading, name of patentee, for "Isaac Rallston" read *Isaac Rallston.*

706,102, page 1154, in heading, assignment, name of assignee, for "Pendleton-Topscott Company" read *Pendleton-Tapscott Company.*

707,498, page 1736, claim, line 7, for the compound word "pawl-plate" read *awl-plate.*

708,166, page 2045, in heading, assignment, name of assignee, for "The American Automatic Photographic Company" read *The American Automatic Photograph Company.*

708,167, page 2046, in heading, assignment, name of assignee, for "The American Automatic Photographic Company" read *The American Automatic Photograph Company.*

708,168, page 2046, in heading, assignment, name of assignee, for "American Automatic Photographic Company" read *The American Automatic Photograph Company.*

708,197, page 2060, in heading, assignment, name of assignee, for "Compagny Albert Masifat and Co." read *Albert Matifat and Co.*

708,236, page 2072, ninth claim, lines 10–11, for the word "cylinder" read *chamber.*

708,493, page 2162, in heading, assignment, name of assignee, for "American Automatic Photographic Company" read *The American Automatic Photograph Company.*

709,446, page 2584, fifth claim, lines 5–6, for the compound word "weft-works" read *weft-forks.*

709,808, page 2746, third claim, lines 1–2, strike out the words "containing non-crystalline" and insert *of,* and same claim, line 3, strike out the word "of" and insert *containing non-crystalline.*

709,867, page 2784, first claim, line 2, after the word "arc" insert the words *of minimum volume,* and same claim, line 4, strike out the words "of minimum volume."

710,286, page 2957, in heading, after residence of patentee, insert *assignor to Charles T. Schoen, Philadelphia, Pa.*

710,305, page 2964, in heading, second-mentioned patentee, for Emil Krvaysser" read *Emil Kwaysser.*

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THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 1. TUESDAY, JULY 1, 1902. PRICE—$5 per year.

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TO CITIZENS OF THE UNITED STATES

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	2	1	Nebraska	2	----
Alaska Territory	----	----	Nevada	----	----
Arizona Territory	----	1	New Hampshire	----	----
Arkansas	2	----	New Jersey	25	----
California	23	2	New Mexico Territ'y	----	----
Colorado	11	----	New York	84	19
Connecticut	10	1	North Carolina	1	----
Delaware	2	----	North Dakota	3	----
District of Columbia	6	----	Ohio	35	4
Florida	2	2	Oklahoma Territ'y	1	----
Georgia	7	----	Oregon	1	1
Hawaii Territory	----	----	Pennsylvania	59	7
Idaho	----	----	Rhode Island	3	2
Illinois	56	7	South Carolina	----	----
Indian Territory	1	----	South Dakota	3	----
Indiana	10	----	Tennessee	4	2
Iowa	10	----	Texas	14	----
Kansas	4	----	Utah	----	1
Kentucky	7	2	Vermont	4	1
Louisiana	1	----	Virginia	4	1
Maine	1	1	Washington	3	----
Maryland	13	----	West Virginia	2	----
Massachusetts	42	3	Wisconsin	10	2
Michigan	11	1	U. S. Navy	----	----
Minnesota	11	1	U. S. Rev. Marine	----	----
Mississippi	2	----			
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Montana	6	----			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Austria-Hungary	9	1	Netherlands	1	----
Barbadoes	----	----	Newfoundland	----	----
Belgium	1	----	New South Wales	----	----
Bermuda	----	----	New Zealand	----	----
Brazil	----	----	Norway	----	----
Canada	6	1	Peru	----	----
Cape Colony	----	----	Portugal	----	----
Chile	----	----	Roumania	----	----
China	----	----	Russia	1	----
Cocos Island	----	----	Scotland	5	----
Colombia	----	----	South African Republic	----	----
Cuba	----	----	South Australia	----	----
Denmark	1	----	Spain	----	1
Egypt	----	----	Sweden	----	----
England	23	----	Switzerland	1	----
France	8	----	Uruguay	----	----
Germany	23	2	Victoria	2	----
Haiti	----	----	Western Australia	----	----
India	----	----			
Ireland	----	----	Total to citizens of foreign countries	91	5
Italy	----	----			
Mexico	----	----			

Disclaimer.

604,125.—*William Rogers*, Leechburg, Pa. PROCESS OF AND APPARATUS FOR MANUFACTURING TIN-PLATE. Patent dated May 17, 1898. Disclaimer filed June 23, 1902, by the executor of said WILLIAM ROGERS and the present assignees.

Enter their disclaimer—

"To those parts of the specification which are in the following words:

On line 102 of the first page of the said specification the words "or other coating metal."

Page 4, the 6th, 7th, 8th, 9th, 10th, 11th, 12th, and 13th lines, as follows:

"In the above description I have spoken of my invention as applied to the purpose of making tin-plate; but it is also applicable to the manufacture of terne-plate or sheet-iron covered with a mixture in various proportions of tin and lead or of zinc or other metal which is capable of being coated onto the surface of sheet metal."

Claim 1, lines 2 and 3, the words "or other coating metal or alloy."

Claim 2, line 2, the words "or other metal or alloy."

Claim 4, lines 2 and 3, the words "or other metal-coated sheets."

Claim 5, lines 1 and 2, the words "or other metal-coated sheet-iron."

Claim 5, line 10, the words "or other coating metal."

Claim 6, line 2, the words "or other metal or alloy."

Hearings.

Notice is hereby given that there will be no cases placed upon the docket to be heard by either the Commissioner or the Assistant Commissioner during the months of July and August, 1902.

F. I. ALLEN,
Commissioner.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business June 24, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	In arrears—Under one month.			
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	June 9	June 4	88
106	II. Farm Stock, Products, etc., Lubricators, Presses, Stationery, etc.	June 4	June 9	262
253	X. Carriages and Wagons	May 31	June 14	82
265	I. Tillage, etc., and Fences	May 26	June 12	235
259	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	May 26	June 7	272
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	May 26	June 4	208
80	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	May 26	May 29	310
108	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	May 24	June 3	244
	Between one and two months.			
213	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	May 22	June 3	230
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock, Signals, and Store-Service.	May 22	May 8	231
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	May 20	June 10	184
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	May 20	June 6	199
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	May 20	June 6	212
222	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	May 20	June 4	177
225	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	May 19	June 10	203
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	May 19	June 10	261
250	VIII. Furniture, Store Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	May 19	June 6	295
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Fishing and Trapping.	May 19	June 5	240
127	XXX. Paper Manufactures, Lamps and Gas-Fittings.	May 19	June 9	202
128	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	May 17	June 11	209
44	XXIV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Educational Appliances, Fluid-Pressure Regulators, Packing and Storing Vessels, etc.	May 16	June 10	314
87	XXVI. Electricity, Generation, Conductors, Motive Power, Medical and Surgical, and Electric Railways.	May 15	June 3	175
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	May 15	May 28	242
198	XXXII. Bottles and Jars, Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	May 10	June 7	345

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	May 9	May 28	225
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	Apr. 30	May 13	301
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	Apr. 28	May 14	411
243	XXV. Artesian and Oil Wells, Butchering, Mills, Stone-Working, Threshing, and Vegetable Cutters and Crushers.	Apr. 26	Apr. 28	490
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	Apr. 25	Apr. 14	468
	Between two and three months.			
122	XXIX. Wood-Working Machines, Coopering and Hooding.	Apr. 23	May 12	248
246	XVIII. Steam-Engineering, etc	Apr. 17	Apr. 26	481
109	XXII. Fire-Arms, Ordnance, Projectiles, Navigation.	Apr. 12	May 11	230
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	Apr. 8	May 7	418
89	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	Apr. 5	Apr. 5	491
91	XVI. Telegraphy, Telephony, Electric Lighting, and Special Applications.	Apr. 3	Apr. 3	697
	Between three and four months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 7	Mar. 14	475

Total number of applications awaiting action.....10,689

Under one month.			
*Designs	June 18	June 12	58
†Trade-Marks	June 5	June 14	100
‡Labels and Prints	June 20	June 21	7

NEW DIVISIONS.

Changes in Classification.

(ORDER No. 1,484.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 26, 1902.

On July 1, 1902, two new divisions will be established in this Office, containing the following classes, respectively:

Division XXXVII:

173. Electricity. Conductors.
175. Electricity. Special Applications.
176. Electric Lighting.
177. Electric Signaling.
219. Electric Heaters.

Division XXXVIII:

166. Artesian and Oil Wells.
215. Bottles and Jars.
35. Educational Appliances.
116. Signals.
125. Stone-Working.
211. Store Furniture.
119. Care of Live Stock.
120. Stationery.
43. Fishing and Trapping.

F. I. ALLEN,
Commissioner.

Classification Bulletin.

CLASSIFICATION BULLETIN No. 6, containing the revision made during the months of March and April, 1902, is now out. Price, ten cents.

PATENTS

GRANTED JULY 1, 1902.

703,862. STEAM-BOILER. CHARLES P. ALTHAUS, Lyons-Vaise, France. Filed Sept. 7, 1901. Serial No. 74,600. (No model.)

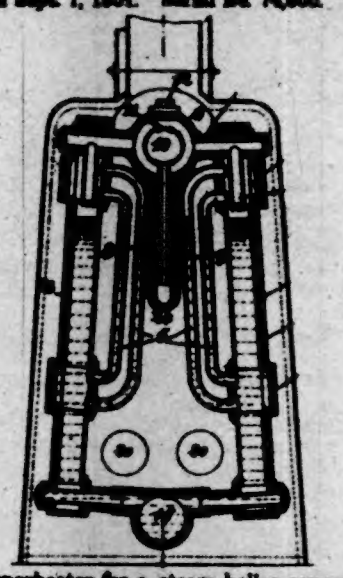

Claim.—A superheater for a steam-boiler comprising a cylindrical reservoir, a cylindrical drum located in said reservoir, a series of vertical tubes depending from the reservoir, tubes concentrically located within the said vertical tubes and depending from the inner drum, and a layer of refractory material protecting the parts of the superheater directly subject to the action of the heat, the parts being arranged and combined substantially as and for the purposes described.

703,863. BLANK FOR LIFE-PRESERVERS. HACHIB A. AYVAD Hoboken, N. J. Filed Dec. 2, 1901. Serial No. 84,620. (No model.)

Claim.—1. A blank for life-preservers, such blank consisting of a main portion and a narrow extension in line with one edge of the same, substantially as described.

2. A blank for life-preservers, such blank consisting of a main portion and a narrow extension in line with one edge, the edge of the main portion, which is joined with the inner edge of the extension, having two similar curves, one being convex and the other concave, substantially as described.

703,864. SHAFT-SHACKLE FOR VEHICLES. SAMUEL R. BAILEY, Amesbury, Mass. Filed Jan. 25, 1902. Serial No. 91,292. (No model.)

Claim.—1. In a shaft-shackle, the combination with the thill-iron terminating at its extremity in a jaw *b*, and provided on its inner face with a threaded stud *b''*, of the interiorly-threaded sleeve H, engaging said stud and provided with an adjuster, and the jaw C, journaled on said sleeve and provided with an extremity adapted to encompass the bolt D, or its elastic cushion *d*, as set forth.

2. In a shaft-shackle, the combination with the thill-iron terminating at its extremity in a jaw and recessed on its inner face, at *b'*, of a threaded stud *b''*, projecting from said recessed face, the interiorly-threaded sleeve H, engaging said stud and provided with an adjuster, and the jaw C, journaled on said sleeve, and provided with an extremity adapted to encompass the bolt D, or its elastic cushion *d*, as set forth.

3. In a shaft-shackle, the combination with the thill-iron terminating at its extremity in a jaw *b*, and recessed on its inner face at *b'*, of a threaded stud *b''*, projecting from said recessed face, the interiorly-threaded sleeve H, engaging said stud and provided with an adjuster H', and means for connecting the latter to the shaft or thill-coupling and the jaw C, journaled on the sleeve H, adapted to encompass the bolt D, or its cushion *d*, as set forth.

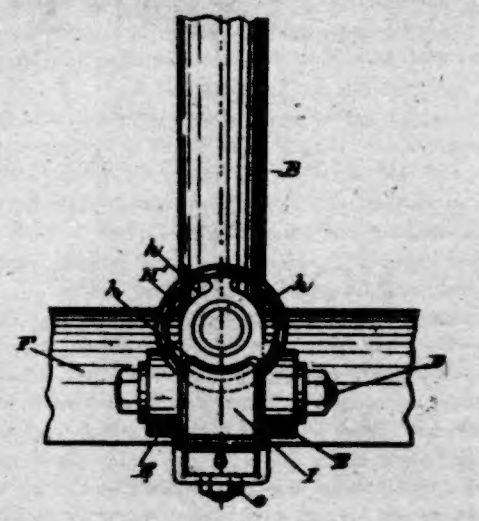

703,865. SHAFT-SHACKLE FOR VEHICLES. SAMUEL R. BAILEY, Amesbury, Mass. Filed Jan. 25, 1902. Serial No. 91,293. (No model.)

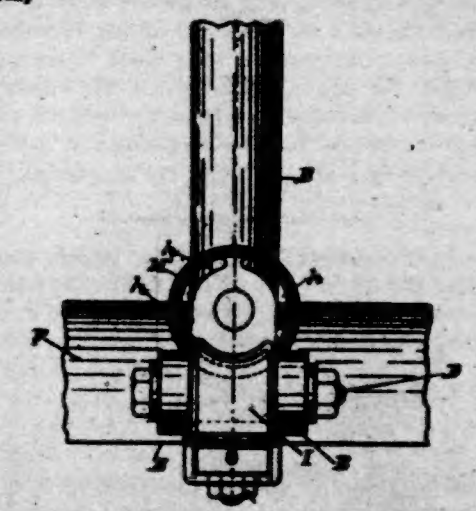

Claim.—1. In a shaft-shackle, the combination with the thill-iron terminating at its extremity in a jaw *b*, and provided on its inner flap with an internally-screw-threaded cylindrical sleeve or nut *b''*, of the screw-threaded bolt H, engaging said nut and provided with an adjuster, and the jaw C journaled on said bolt and adapted to encompass the bolt D, or cushion *d*, as set forth.

2. In a shaft-shackle, the combination with the thill-iron terminating at its extremity in a jaw and recessed at *b'* of an internally-screw-threaded cylindrical nut or sleeve *b''*, projecting from said recessed face, the screw-threaded bolt H engaging said nut and provided with an adjuster, and the jaw C journaled on said bolt and adapted to encompass the bolt D, or cushion *d*, as set forth.

3. In a shaft-shackle, the combination with the thill-iron terminating at its extremity in a jaw *b*, and recessed on its inner face at *b'*, of an internally-screw-threaded cylindrical sleeve or nut *b''* projecting from said recessed face, the screw-threaded bolt H, engaging said nut and provided with an adjuster H', and means for connecting the latter to the shaft or thill-coupling and the jaw C journaled on said bolt H, and adapted to encompass the bolt D, or cushion *d*, as set forth.

708,366. SLEEVE-HOLDER. ARTHUR J. BARBER, Rochester, N. Y. Filed Aug. 15, 1901. Serial No. 72,095. (No model.)

Claim.—1. A device for temporarily shortening and holding sleeves on the person comprising members pivotally connected whereby they may be closed and opened, a fabric-engaging pin situated in one of said members to engage the fabric when the member is rotated in contact therewith, and means for holding the members when closed in approximate parallelism, one within the folds of the sleeve and one without, whereby a sleeve in use may be shortened by rotating the device in contact therewith and may then be held in shortened condition by closing the members.

2. A device for temporarily shortening and holding sleeves on the person comprising members pivotally connected whereby they may be closed and opened, a fabric-engaging pin situated in one of said members to engage the fabric when the member is rotated in contact therewith, and means for holding the members when closed in approximate parallelism, one within the folds of the sleeve and one without, whereby a sleeve in use may be shortened by rotating the device in contact therewith and may then be held in shortened condition by closing the members, one of said members having an offset 10.

3. A holder for sleeves and like purposes comprising two members pivotally connected and adapted to be opened and closed, a fabric-engaging pin in one of said members, and means for holding the members in approximate parallelism when closed, said means comprising a spring surrounding one member, and a pin sliding in a fork on said member and having a head extending outside thereof and situated immediately between the spring and the other member of the holder.

4. A device for temporarily shortening and holding sleeves on the person comprising members pivotally connected whereby they may be closed and opened, fabric-engaging pins situated in one member on opposite sides thereof to engage the fabric when the member is rotated in contact therewith, and means for holding the members when closed in approximate parallelism, one within the folds of the sleeve and one without, whereby a sleeve in use may be shortened by rotating the device in contact therewith and may then be held in shortened condition by closing the members.

5. A device for temporarily shortening and holding sleeves on the person comprising members pivotally connected whereby they may be closed and opened, a fabric-engaging pin situated in one of said members to engage the fabric when the member is rotated in contact therewith, and means for holding the members when closed in approximate parallelism, one within the folds of the sleeve and one without, whereby a sleeve in use may be shortened by rotating the device in contact therewith and may then be held in shortened condition by closing the members, said members being of substantially the same length.

708,367. ANIMAL-POKE. JOHN I. BARNES, Blooming Grove, Tex. Filed Nov. 28, 1900. Serial No. 38,080. (No model.)

Claim.—An animal-poke comprising a face-bar having opposite terminal longitudinal grooves formed in the outer surface thereof and extending outward through the respective ends of the bar, an upstanding forwardly-curved fixed guard seated in the upper groove flush with the outer surface of the bar, the inner end of the guard being passed through the bar and rebent into a socket in the back thereof and flush with its inner surface, a rigid cross-bar disposed near the upper terminal of the face-bar and secured thereto at opposite sides of the said guard serving thereby to clamp the same in place, the terminals of the bar being bent rearward to lie against the head of the animal, horn-embracing loops connected to the outer ends of the cross-bar, a swinging spring-pressed guard hinged within the lower groove and provided with a rearwardly-projecting prod working in an opening in the face-bar and with an outward-curved extremity, the two guards being braced by the opposite side walls of the respective grooves, and a jaw-embracing strap secured to the face-bar near its lower end, substantially as and for the purpose specified.

708,368. SELF-LOCKING SPRINGLESS HOOK. DELBERT R. BARTON, Racine, Wis. Filed July 27, 1901. Serial No. 69,912. (No model.)

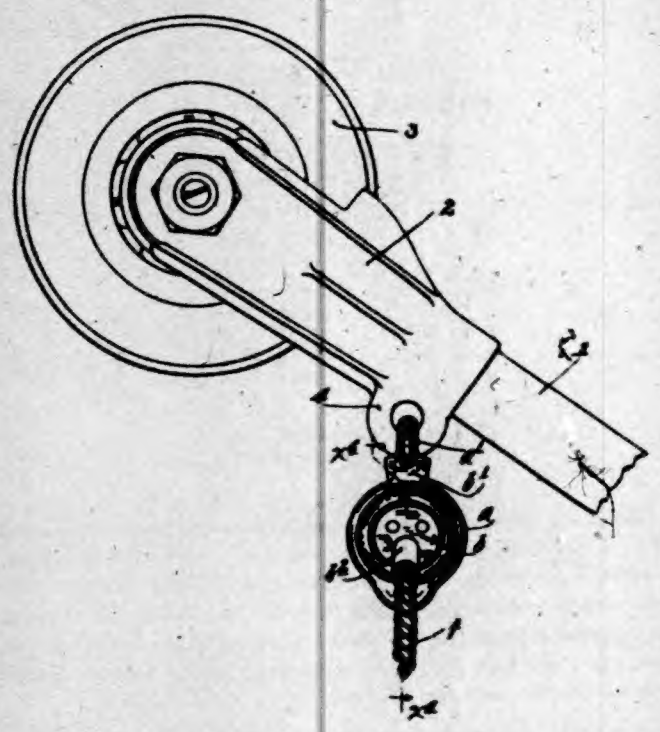

Claim.—1. The combination with a pair of pivotally-connected members having coöperating lock-notches and the one having a hook and the other having a coöperating lock-flange, of a draft connection having interlocking engagement with the lock-notches of said members when said locking-notches are registered and normally serving to positively lock said members against rotation, the one with respect to the other, substantially as described.

2. The combination with the external member *a* having the hook *a'*, of the internal member working pivotally within said member *a* and provided with the lock-flange *b'* and notch b^2, and a draft connection applied within said notch b^2 and normally holding said lock-flange *b'* and hook *a'* in locking relations, substantially as described.

3. A pair of pivotally-connected members having coöperating locking parts, said members having coöperating relatively shallow and deep lock-notches, adapted to register when said locking parts are in locking positions, and a draft connection applied to said members and working in said lock-notches, which draft connection is normally held in said shallow lock-notch, to lock said members against rotation and is movable into said deep lock-notch to unlock said members, substantially as described.

4. The combination with an annular exterior member, of disk-like interior members rotatively mounted therein, one member having a hook and the other a coöperating lock-flange, and a draft connection applied to said interior member and normally serving to hold said hook and lock-flange in locking relations, substantially as described.

708,369. ELECTRIC INSTRUMENT FOR CAUTERY. WALTER B. BATCHELLER, Chicago, Ill., assignor to George G. Hunter, Des Moines, Iowa. Filed Mar. 8, 1902. Serial No. 97,326. (No model.)

Claim.—1. In an instrument for cauterizing, an elbow-shaped handle straight on the top of one end portion and the inner end and under side of the straight portion having a chamber and the ends of two pieces of a wire conductor extended into said chamber and over each other a trigger pivoted to the handle to extend into the chamber for pressing one of the ends of the wire into contact with the end of the other wire, in the manner set forth for the purposes stated.

2. An electric centering instrument comprising an elbow-shaped handle having a straight top surface at one end portion, provided with a cavity in the under side and inner end of the straight portion, a trigger pivoted in the cavity, two pieces of a wire conductor embedded in the handle and extended into the cavity, a third piece of wire conductor embedded in the handle to extend from one end to the other and binding-screws seated at the upper end of the handle for connecting the ends of a centering-wire with the wires embedded in the handle and binding-screws at the lower end of the handle for connecting wires extending from a battery, arranged and combined to operate in the manner set forth, for the purposes stated.

708,870. PAINTING APPARATUS. CHARLES L. SAGER, Springfield, Ohio, assignor to the Warder, Bushnell & Glessner Co., Springfield, Ohio, a Corporation of Ohio. Filed May, 16, 1901. Serial No. 61,477. (No model.)

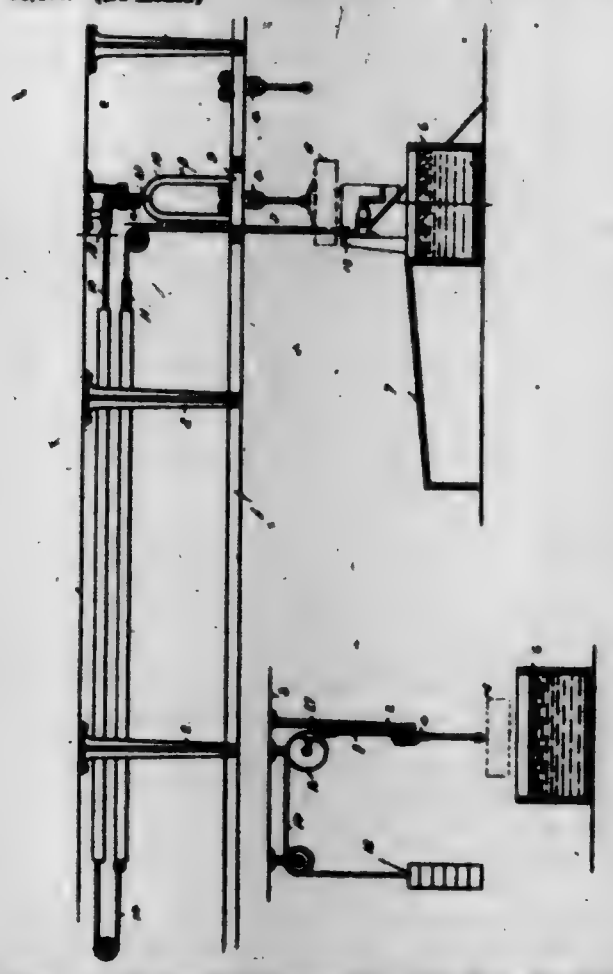

Claim.—1. In a painting apparatus, the combination, with a dipping-tank, of an elevator above the same to support the article to be treated, a counterpoise, and a compensating device interposed between the counterpoise and elevator for regulating the action of the counterpoise relatively to the elevator and the article supported thereby, substantially as described.

2. In a painting apparatus, the combination, with a dipping-tank, an overhead track or way, and carriers traveling thereon and adapted to have the articles to be painted suspended therefrom, of an elevator comprising a separable section of the track or way, adapted to receive a carrier when in alinement with the remainder of the track and support said carrier during the vertical travel of the elevator, a counterpoise, and a compensating device interposed between said counterpoise and elevator and adapted to regulate the resistance of said counterpoise to the depression of the elevator, substantially as described.

3. In a painting apparatus, the combination, with a dipping-tank, of an elevator located above the same and adapted to receive and support the articles to be treated, a counterpoise, and a compensating device comprising two members, one flexibly connected with the elevator and the other flexibly connected with the counterpoise, and adapted to regulate the resistance of the counterpoise to the movement of the elevator, substantially as described.

4. In a painting apparatus, the combination, with the dipping-tank and an elevator located above the same and adapted to receive and support the articles to be treated, of a counterpoise, and a compensating device comprising two members moving in unison, one of said members being circular in form, a flexible connection between said circular member and the elevator, and the other member having a cam-periphery and a flexible connection between the same and the counterpoise, substantially as described.

5. In a painting apparatus, the combination, with a dipping-tank and an elevator located above the same and adapted to receive and support the articles to be treated, of a counterpoise comprising a spring of increasing resistance, and a compensating device consisting of two members moving in unison, one of said members being a wheel or drum circular in form and having a flexible connection with the elevator, and the other of said members having a spiral periphery of decreasing radius and an interposed straight or flat portion and flexibly connected with the counterpoise-spring, substantially as described.

708,871. DOOR CHECK AND SPRING. VICTOR BEATTIEBARD, Boston, Mass., assignor of one-half to Charles E. Gooding, Boston, Mass. Filed Sept. 18, 1901. Serial No. 75,433. (No model.)

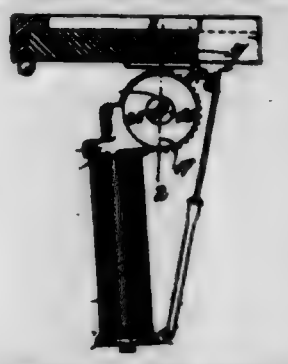

Claim.—1. In a door-check a bracket adapted to be attached to a door-casing or door and an angle-piece detachably connected to said bracket.

2. In a door-check, a bracket adapted to be attached to a door-casing or door, said bracket provided with a recess opening from one face thereof, and a hole extending from said recess to the opposite face of said bracket for the purpose specified.

3. In a door-check, a bracket adapted to be attached to a door-casing or door, in combination with an angle-piece said bracket provided with a recess opening from one face thereof, and a hole extending from said recess to the opposite face of said bracket, whereby said angle-piece may be reversibly connected to said bracket for the purpose specified.

4. In a door-check a bracket adapted to be attached to a door-casing or door and an angle-piece adjustably connected to said bracket.

5. In a door-check a spring-casing, a bracket adapted to be attached to a door-casing or a door and an angle-piece detachably connected to said spring-casing and bracket.

6. In a door-check, a spring-casing, a bracket adapted to be attached to a door-casing or door, and an angle-piece adjustably connected to said bracket and detachably connected to said spring-casing.

7. In a door-check, a bracket adapted to be fastened to a door or door-casing, a link provided with a right-angle projection at one end thereof, and a swivel-block connecting said link and bracket rotatably mounted upon said right-angle projection and rotatably mounted upon said bracket.

8. In a door-check a spring-casing consisting of a stationary member and a rotary member, in combination with a spring, one end of said spring connected to said rotary member, the other to said stationary member, and a link interposed between the outer end of said spring and said stationary member.

708,872. DOOR-OPERATING DEVICE. PETER J. BRUHL, Allentown, Pa., assignor of one-half to Harry F. Smith, Allentown, Pa. Filed Nov. 4, 1901. Serial No. 81,134. (No model.)

Claim.—1. The combination with a series of spring-opening doors, of a series of locking-bolts adapted to hold said doors in closed position, a main operating-rod, a series of rods and bell-crank levers connecting said main operating-rod to the series of bolts, a vertical rod, a bell-crank lever connecting the same to the main operating-rod, an actuating-weight secured to said vertical rod, a pivoted lever supporting said weight, a pivoted trip-lever adapted to engage with the weight-supporting lever, an armature carried by said trip-lever, and an electromagnet arranged in a closed electric circuit and normally acting to hold the trip-lever in engaging position, substantially as specified.

2. The combination with a door provided with a latch-bar, of a bolt

for securing the latch-bar, a bell-crank lever for operating said bolt, a rod operatively connected to said bell-crank lever, a vertical bar, a bell-crank lever connected to said rod and to the vertical bar, a weight on said vertical rod, a pivoted weight-supporting lever, a trip-lever in locking engagement therewith, an electromagnet disposed in a normally closed circuit and adapted to hold said trip-lever in engaging position, and a spring for disengaging said lever when the magnet is deënergized.

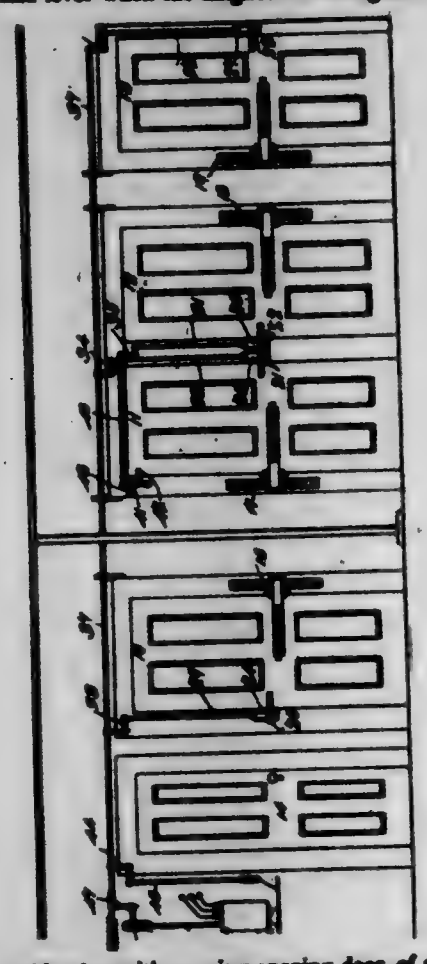

3. The combination with a spring-opening door, of a bolt, an operating-rod operatively connected to said bolt, a spring acting on said rod and normally tending to hold the bolt in locked position, a bell-crank lever having one end connected to the operating-rod, a weighted vertical rod having a slotted connection with the opposite end of said bell-crank lever, means for normally sustaining the weighted vertical rod in elevated position, an electrical alarm system, and means actuated by the alarm system for releasing said weighted bar, substantially as specified.

4. The combination with a plurality of doors, latches arranged on each door, bolts for engagement with said latches, a main operating-rod, bell-crank levers and connecting-rods extending between the main operating-rod and the several bolts, a spring acting on said main operating-rod and tending to normally maintain the bolts in locking position, a bell-crank lever having its vertical arm connected to said main operating-rod, a hand-operating rod or cord connected to the horizontal arm of said bell-crank lever, a weighted vertical rod having an elongated slot in its upper end, a bell-crank lever connecting the slotted end of the vertical rod to the main operating-rod, means for supporting the weighted rod in an elevated position, an electrical alarm system and means actuated by the alarm system for releasing said weighted bar, substantially as specified.

5. The combination with a door provided with a latch-bar, of a bolt for securing the latch-bar, a bell-crank lever for operating the bolt, means for operating said bell-crank lever to effect the release of the latch, a second door provided with a latch-bar, a locking-bolt therefor, a pivoted arm arranged in the path of the first door in opening, and mechanism operatively connecting said pivot-arm to said locking-bolt, substantially as specified.

6. The combination with a door provided with a latch-bar, of a bolt for securing the latch-bar, a bell-crank lever for operating the bolt, a rod for operating the bell-crank lever, an electrical alarm-circuit, means actuated by the alarm-circuit for operating the rod to release the door, a second door provided with a latch, a bolt, a vertical rod and bell-crank levers, a second horizontal rod connected to the vertical arm of the last-mentioned bell-crank lever, a bar pivoted to the second door-frame and connected to the opposite end of said second horizontal rod, and an arm on said pivoted bar in the path of the first door in opening, substantially as specified.

703,378. SPRING-MOTOR. ANDREW BUSSER, Washington, D. C. Filed Oct. 12, 1901. Serial No. 78,456. (No model.)

Claim.—1. In a spring-motor, the combination with a driven wheel, of two springs, a clutch connecting the driven wheel with each spring, levers, each of which is adapted to be struck by a corresponding spring when unwound to a predetermined extent, and means actuated by each lever to throw that spring out of clutch with the wheel and the other spring into clutch therewith, whereby the springs are alternately disengaged from the driving-wheel, and means whereby the spring may be wound when so disengaged, substantially as described.

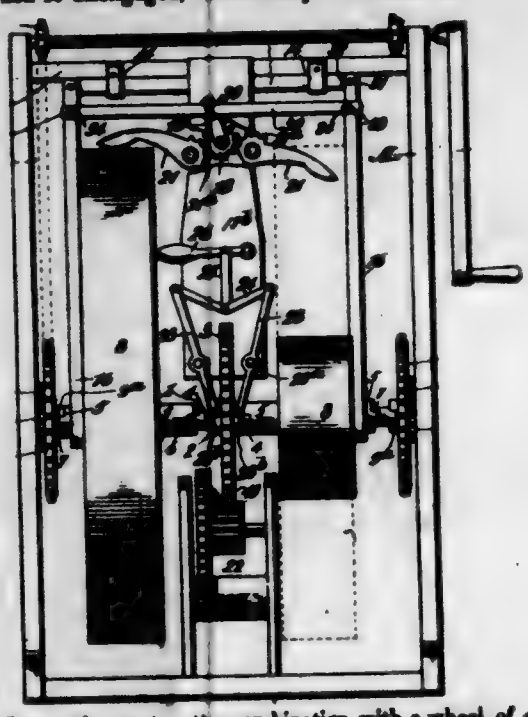

2. In a spring-motor, the combination with a wheel, of a collar and a longitudinally-movable sleeve on each side of the wheel, the sleeves being interposed between the wheel and collars and being adapted to be clutched to either, a driving-spring secured to each sleeve, a common axle upon which the wheel is mounted and the collars and sleeves rotate, and means whereby each sleeve is automatically longitudinally moved upon the axle, and the springs are alternately thrown into clutch with the wheel and released from the corresponding collar, and released from the wheel and clutched with corresponding collar, substantially as described.

3. In a spring-motor, the combination with a wheel, having each of the ends of its hubs shouldered to form one member of a clutch, of a collar having its one end shouldered to form one member of a clutch and a longitudinally-movable sleeve, each end of each of the sleeves being slotted to form one member of a clutch on each side of the wheel, the sleeves being interposed between the wheel and collars and being adapted to be clutched to either, a driving-spring secured to each sleeve, means for rotating the said collars to wind up the springs, a common axle upon which the wheel is mounted and the collars and sleeves rotate, and means whereby each sleeve is automatically longitudinally moved upon the axle, whereby it is successively thrown into clutch with the wheel and released from the corresponding collar, and released from the wheel and clutched with the corresponding collar, substantially as described.

4. In a spring-motor, the combination with a wheel, of a collar and a longitudinally-movable sleeve on each side of the wheel, the sleeves being interposed between the wheel and collars, and being adapted to be clutched to either, a driving-spring secured to each sleeve, and means for rotating the said collars to wind up the springs, a common axle upon which the wheel is mounted and the collars and sleeves rotate, a sliding rod connected to the said sleeves, a pinion provided with an arm connected to the rod, and pivoted levers having circular rack-teeth upon their one ends engaging the said pinion, the opposite ends of the said levers being adapted to be struck by the spring when unwound to a predetermined extent and thus to shift the rod and the sleeves, substantially as described.

5. In a spring-motor, the combination with a driven wheel, a longitudinally-movable sleeve on each side thereof, adapted to be secured thereto, a spring secured to each sleeve, a sliding rod, having pivoted pendent arms, connecting the said sleeves, a link adapted to be thrown in one direction or the other by the unwinding of the several springs, and a slot-and-pin connection between the link and pendent arms, whereby the engagement of said springs with the driven wheel may be shifted and rectified, the one spring engaging therewith before the other spring is released therefrom, substantially as described.

6. In a spring-motor the combination with a driven wheel, a longitudinally-movable sleeve on each side thereof adapted to be secured thereto, a spring secured to each sleeve, pendent arms connected to the said sleeves, a lever adapted to be thrown in one direction or the other by the unwinding of the several springs, and a loose connection between the le-

ver and pendent arms, whereby the engagement of said springs with the driven wheel may be shifted and reshifted, the one spring engaging therewith before the other spring is released therefrom, substantially as described.

708,874. MECHANISM FOR ELECTRIC PROPULSION OF ROAD-VEHICLES. DANIEL S. DUNCAN, Chicago, Ill. Filed Sept. 23, 1901. Serial No. 76,208. (No model.)

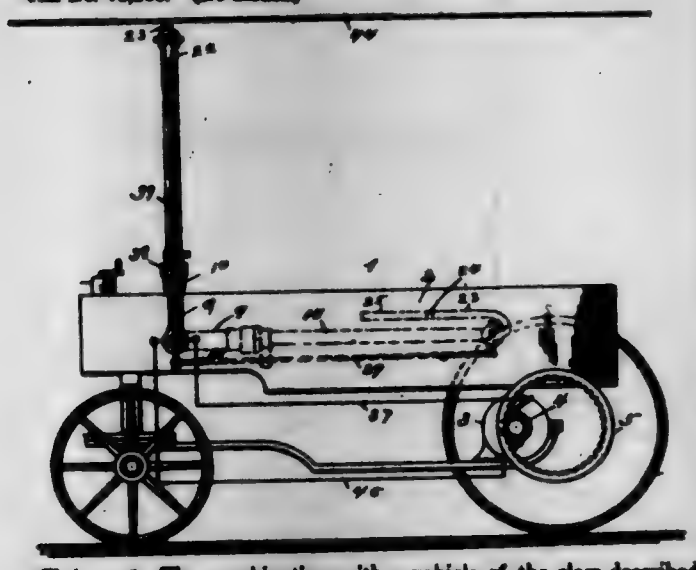

Claim.—1. The combination with a vehicle of the class described of positive and negative line conductors, a motor and a jointed trolley-pole having a contact-section arranged to extend horizontally and laterally from the main or supporting pole, beneath said conductors, said horizontal section consisting of two contact portions each adapted to be brought into sliding contact with one of said conductors, said portions being insulated from each other, and means for electrically connecting one of said portions with one terminal and the other with the other terminal of said motor, whereby said contact portions may be removed from said conductors at will and again brought into contact therewith while permitting a considerable lateral variation in the relative position of the vehicle with respect to that of said line conductors.

2. The combination with a vehicle of the class described of positive and negative line conductors, a motor and a folding or jointed trolley-pole having insulated contact-sections, one being electrically connected with one and the other with the other terminal of said motor, and means for bringing said sections into sliding contact with said line conductors respectively.

3. The combination with a vehicle of the class described, of a motor, a double-jointed tubular trolley-pole the portion constituting the outer joint being divided into two contact-sections insulated from but rigid with each other, means for electrically connecting said sections with the respective terminals of said motor, and means controllable from the seat of the operator for manipulating said pole, whereby said contact-sections may respectively be brought into sliding contact with outward and return electrical conductors.

4. The combination with a vehicle of the class described, of a motor, a trolley-pole pivotally mounted at its lower end upon a horizontal axis, a two-part section jointed to the upper or free end of the main pole, the two parts of said section being rigid with but insulated from each other, means for electrically connecting said parts respectively with the terminals of said motor, an arm rigidly connected with said two-part section at its pivotal point, and a pivoted rod arranged parallel with said main pole and connecting the free end of said arm with a stationary point upon said vehicle.

5. The combination with a vehicle of the class described, of a motor, a trolley-pole pivotally mounted at its lower end upon a horizontal axis, a two-part section jointed to the upper or free end of the main pole, the two parts of said section being rigid with but insulated from each other, means for electrically connecting said parts respectively with the terminals of said motor, an arm rigidly connected with said two-part section at its pivotal point, a pivoted rod arranged parallel with said main pole and connecting the free end of said arm with a stationary point upon said vehicle, and means for moving said two-part section laterally when the same is elevated.

708,875. SEMI-AUTOMATIC BREECH-LOADING ORDNANCE. WILLIAM H. BOVARD, Washington, D. C. Filed Jan. 8, 1900. Serial No. 947. (No model.)

Claim.—1. The combination with a breech-loading gun, a recoil-mount, and a breech-block, of an arm pivoted to the gun, an arm carried by a non-recoiling part of the mount and having an operative connection with said first-mentioned arm, means for operatively connecting said first-mentioned arm with the block on counter-recoil of the gun, and means for disconnecting said arm from said block, substantially as described.

2. The combination with a breech-loading gun, a recoil-mount, and a breech-block, of an arm pivoted to the gun, an arm pivoted to a non-recoiling part of the mount and having an operative connection with said pivoted arm, means for operatively connecting said first-mentioned arm with the block on counter-recoil of the gun, and means for disconnecting said arm from said block, substantially as described.

3. The combination with a breech-loading gun, a recoil-mount, and a breech-block, of an arm pivoted to the gun, an arm pivoted to a non-recoiling part of the mount and having an operative connection with said first-mentioned arm, means for operatively connecting said first-mentioned arm with the block on counter-recoil of the gun, a spring placed under tension by said arm, and means for disconnecting said arm from said block to permit the latter to be closed by the spring, substantially as shown and described.

4. The combination with a breech-loading gun, a recoil-mount, a breech-block, and a rock-shaft for actuating said block, an arm loose on said shaft, an arm pivoted to a non-recoiling part of the mount and having an operative connection with said first-mentioned arm, and means for automatically locking said first-mentioned arm to the shaft on counter-recoil of the gun, substantially as described.

5. The combination with a breech-loading gun, a recoil-mount, a breech-block, and a rock-shaft for actuating said block, an arm loose on said shaft, an arm pivoted to a non-recoiling part of the mount and having an operative connection with said first-mentioned arm, means for automatically locking said first-mentioned arm to the shaft on counter-recoil of the gun, and means for releasing said arm from said shaft, substantially as described.

6. The combination with a breech-loading gun, a recoil-mount, and a breech-block, of an arm pivoted to the gun, an arm pivoted to the mount and having an operative connection with said first-mentioned arm, means for operatively connecting said first-mentioned arm with the block on counter-recoil of the gun, a spring placed under tension by said arm, and means for automatically releasing said first-mentioned arm from the block when a fresh cartridge is inserted in the gun, substantially as described.

7. The combination with a breech-loading gun, a recoil-mount, and a breech-block, of an arm pivoted to the gun and movable relatively to the block, means for preventing such relative movement of the arm on counter-recoil of the gun, and an arm carried by a non-recoiling part of the mount and operatively connected with said pivoted arm, substantially as described.

8. The combination with a breech-loading gun, a recoil-mount, and a breech-block, of an arm pivoted to the gun and movable relatively to the block, means for preventing such relative movement of the arm on counter-recoil of the gun, means for releasing said arm, an arm carried by a non-recoiling part of the mount and operatively connected with said pivoted arm, and means for moving the block to its closed position, substantially as described.

9. The combination with a breech-loading gun, a recoil-mount, a breech-block, and a rock-shaft actuating the block, of an arm fixed on said shaft, an arm loose on said shaft, locking means for locking said arms together on counter-recoil of the gun, an arm carried by a non-recoiling part of the mount and pivoted to said loose arm, a spring connected to the gun and to said fixed arm, and a tripping device for operating said locking means to release the fixed arm from the loose arm, substantially as described.

10. The combination with a breech-loading gun, a recoil-mount, a breech-block, and a rock-shaft actuating the block, of an arm fixed on said shaft, an arm loose on said shaft, locking means for locking said arms together on counter-recoil of the gun, an arm carried by a non-recoiling part of the mount and pivoted to said loose arm, a spring connected to the gun and to said fixed arm, and a sliding extractor adapted to operate

said locking device to release the fixed arm from the loose arm, substantially as described.

708,876. VISE. CHARLES D. SUNERAM, Watertown, N. Y., assignor to Prentice Vise Company, New York, N. Y. Filed Feb. 7, 1902. Serial No. 93,062. (No model.)

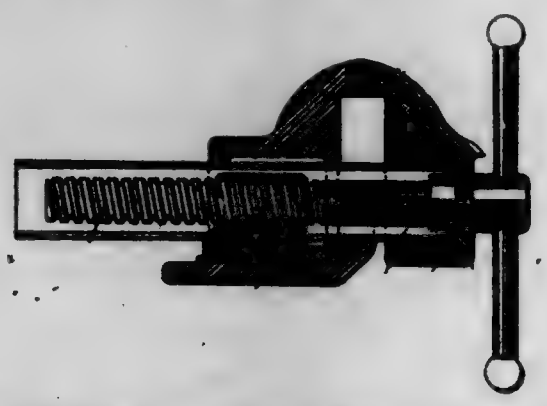

Claim.—In a vise a sliding jaw composed of a cast-iron head a wrought-metal pipe-shank united with the cast-iron head by cast during the casting operation, and longitudinally slotted for the passage of the neck of the fixed nut on the stationary jaw or vise-body, and a screw to engage said nut swiveled in the front wall of the cast-metal head and housed in the wrought-metal pipe-shank, as and for the purposes hereinbefore set forth.

708,877. WRENCH. ABRAHAM RIVER, Denver, Colo. Filed Apr. 22, 1902. Serial No. 104,150. (No model.)

Claim.—1. In a wrench, a hollow handle, a fixed jaw, a shank secured to said fixed jaw and pivoted at a point between its two ends to the upper end of the handle, a spring interposed between the handle and the front face of the shank, a movable jaw slidably mounted upon the shank, a screw-threaded extension extending downward from the movable jaw, a nut threaded upon said screw-threaded extension, means whereby said nut and movable jaw can be slid downward upon the shank when said shank is rocked upon its pivot, and a spring for returning said nut and movable jaw to their original position, substantially as and for the purpose specified.

2. In a wrench of the character described, a hollow handle, a fixed jaw, a shank secured to said fixed jaw and pivoted between its two ends to the lower end of the handle, a movable jaw slidably mounted upon said shank, a screw-threaded extension extending downward from said jaw, two slide-bars, one arranged upon each side of the shank and provided with slots through which the pivot of the shank extends, a nut surrounding the upper end of the slide-bars, shank, and threaded upon the screw-threaded extension of the movable jaw, flanges formed upon the slide-bars above and below the nut, a spring interposed between the lower flanges and the upper end of the handle, means for allowing the nut, slide-bars and movable jaw to be pressed away from the fixed jaw when the shank is rocked upon its pivot, and a spring for returning the shank to its normal position, substantially as described and for the purpose specified.

3. In a wrench of the character described, a hollow handle, a fixed jaw, a shank secured to the fixed jaw and pivoted at a point between its ends to the upper end of the handle into which the shank extends, a movable jaw slidably mounted upon the shank, a screw-threaded extension extending downward from the movable jaw, two slide-bars, one arranged upon each side of the shank and extending into the handle, said slide-bars provided with slots through which passes the pivot securing the shank to the handle, an interiorly-threaded nut surrounding the upper end of the slide-bars also surrounding the shank and threaded upon the screw-threaded extension of the movable jaw, flanges upon each of the slide-bars arranged above and below the nut, a spring interposed between the lower flanges and the upper end of the handle, a spring interposed between one of the walls of the handle and the forward edge of the shank below the pivotal point of said shank, two cross-pieces secured upon the interior of the handle and extending across the same, one upon each side of the shank, a step formed in each cross-piece in which the lower end of the slide-bars rest when the parts are in their normal position, a cut-away portion formed in each cross-piece for the reception of the slide-bars when the shank is rocked and the said slide-bars are pressed downward, and means for locking the shank in its straight or normal position, substantially as described and for the purpose specified.

708,878. WINDOW-SHADE HANGER. SOLOMON BLANKEMA, Baltimore, Md. Filed Dec. 18, 1901. Serial No. 86,626. (No model.)

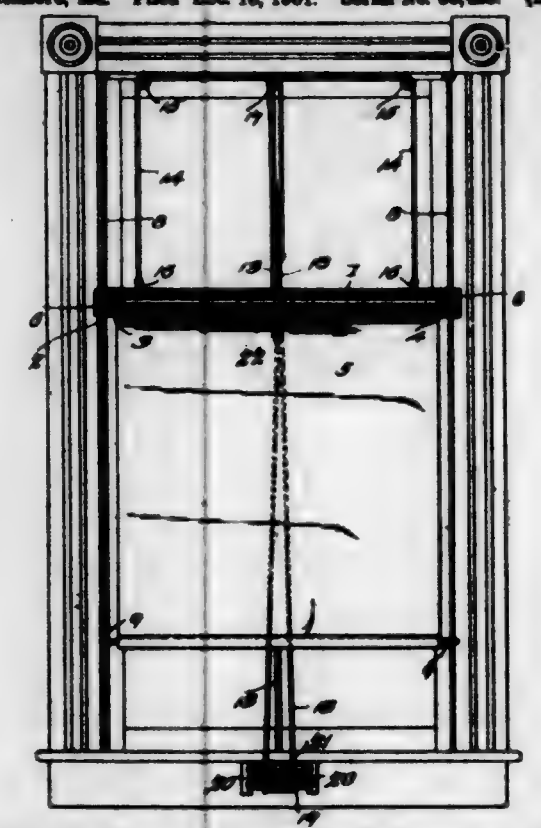

Claim.—1. A device of the class described comprising central and side guides, a bracket or bar provided with central and side casings having top and bottom apertures receiving the guides, rollers or wheels mounted within the casings and arranged to run on the guides, means for raising and lowering the bracket or bar, and a window-shade mounted on the bracket or bar, substantially as described.

2. A device of the class described comprising a bracket or bar, side pulleys, central pulleys, a central branch or cord and the side branches or cords arranged on the said pulleys and connected at their outer ends with the bracket or bar and at their inner ends with the central cord or branch, the inner ends forming a crotch arranged to engage the central pulleys, substantially as described.

3. A device of the class described comprising the central and side pulleys designed to be arranged at the top of a window, a bottom roller, a transverse bar or bracket, the side cords or branches arranged on the pulleys and forming a crotch for engaging the central pulleys and connected at their outer ends to the bracket or bar, and the central branch or cord wound around the bottom roller and connected with the bracket or bar and with the inner ends of the side cords or branches, substantially as described.

4. A device of the class described comprising the central and side pulleys designed to be mounted at the top of a window, the bottom rollers 19 and 21 designed to be mounted at the bottom of the window, a transverse bar or bracket, the side cords arranged on the central and side pulleys and forming a crotch and connected with the bracket or bar, and the central cord or branch wound around the roller 19 and connected with the bracket or bar and with the inner ends of the side cords or branches, substantially as described.

708,879. CAR-BOLSTER. HARRY C. BUSHOP, Chicago, Ill. Filed Mar. 14, 1902. Serial No. 98,318. (No model.)

Claim.—1. The combination of a body-bolster and a truck-bolster having a central connection comprising counterpart members fixed with relation to the respective bolsters, said members having spherical bearing-surfaces, the entering member having a depth substantially equal to the radius of curvature of the lowest part of said bearing-surfaces, substantially as and for the purposes specified.

2. The combination of a body-bolster and a truck-bolster having a central connection comprising counterpart members the bearing-surfaces of which are composed of segments of concentric hemispheres, substantially as and for the purposes specified.

3. The combination of a body-bolster and a truck-bolster having a central connection comprising members having corresponding concentric bearing-surfaces, the included member having an extension which intersects the including member, substantially as and for the purposes specified.

4. A cast-metal bolster having a centrally-disposed projection provided with spherical bearing-surfaces, said central projection having a depth substantially equal to the radius of curvature of the lowest part of said bearing-surfaces, substantially as and for the purposes specified.

5. A cast-metal bolster having a centrally-disposed bearing projection compounded of concentric spherical surfaces of depth substantially equal to the radius of curvature of the greater sphere, as and for the purpose specified.

6. A cast-metal bolster having a centrally-disposed spherical bearing projection and a radial extension therefrom substantially as and for the purpose specified.

7. A cast-metal bolster having parallel sides, interposed webs, and a centrally-disposed projection provided with spherical bearing-surfaces the depth of said projection being substantially equal to the radius of curvature of the lowest part of said bearing-surfaces, substantially as and for the purpose specified.

708,880. **NUT-LOCK.** JAMES BUTLER, St. Louis, Mo. Filed Nov. 8, 1901. Serial No. 81,715. (No model.)

Claim.—In a nut-lock, the combination with an axle (bolt or the like) having a reduced screw-threaded end portion and shoulder thereon, of a washer, non-revolubly on the said end portion and bearing against the said shoulder, a nut adapted to engage the said end portion and formed with a surrounding circular flange having a circumferential notch, the said nut bearing against the washer, a spring fixed at one end to the washer, opposite to the periphery of the said flange, a pawl or tooth projecting from the spring and adapted to engage the said notch, a pin projecting from the pawl and adapted to engage in a hole in the washer, and means for disengaging the pawl and pin from the said notch and hole respectively, and for holding the pawl and spring in the unlocked and retracted position, substantially as described.

708,881. **TIMING DEVICE FOR CARRIER-PIGEONS.** EDWARD BYRNE, South Bend, Ind. Filed Jan. 2, 1902. Serial No. 88,181. (No model.)

Claim.—1. In a timing device for carrier-pigeons, the combination with a box having compartments formed therein and an opening through the wall of the box into each compartment, of a pivoted shutter to close said opening and provided with a notch, a timing device mounted in the box, a pivoted pawl to engage the notch in the shutter when the shutter is operated, a post, a lever fulcrumed on the post having one end in engagement with the pawl and the other end adapted to be thrown into engagement with the balance-wheel of the timing device when the shutter is turned to close the opening.

2. In a timing device for carrier-pigeons, the combination with a box having compartments therein and an opening through the wall into each compartment, of a pivoted shutter having a notch therein, a pivoted pawl, means to throw the pawl into engagement with the notch in the shutter when the shutter is operated, a timing device, a lever in engagement with the pawl and having an extension for engagement with the balance-wheel of the timing device, and means to normally hold the lever out of engagement with the said wheel.

3. The combination of the box, compartments formed therein having openings communicating therewith, timing devices in the box, a shutter to close the opening and provided with a notch, a pawl, one end of which engages the shutter, a lever having one end in engagement with the other end of the pawl and its other end provided with a pin to engage the balance-wheel of the timing device when the shutter is turned to close the opening, and a push-rod mounted in the box to engage the lever to reset the pawl, substantially as shown and described.

708,882. **GATE.** WILLIAM A. BYRELY, Bridgewater, Va. Filed Dec. 14, 1901. Serial No. 85,962. (No model.)

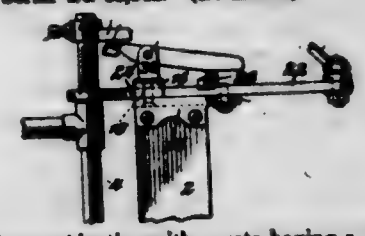

Claim.—1. The combination with a gate having a shiftable hinge-pintle, of a shifting device connected thereto, means for moving the shifting device in opposite directions from an intermediate direction to open the gate in opposite directions, means for locking the shifting device at its opposite limits and also in its intermediate position during swinging movements of the gate, and means carried by the gate for holding the locking means out of engagement with the shifting means when the gate is stationary.

2. The combination with a gate having a shiftable hinge-pintle, of a shifting device connected thereto, means for moving the shifting device in opposite directions from an intermediate point to shift the hinge-pintle in opposite directions for opening the gate, means for locking the shifting device at its opposite limits and at its intermediate position during swinging movements of the gate and means carried by the gate for normally holding the locking means out of engagement with the shifting device, and capable of disengagement from the locking device when the gate is moved by hand to permit the locking device to engage with the shifting means to lock the same during the swinging movement of the gate.

3. The combination with a hinge-post and a gate having an upper shiftable pintle, of a swinging device fulcrumed intermediately upon the top of the post and having its inner end connected to the shiftable pintle, said shifting means being movable in opposite directions from an intermediate position to move the hinge-pintle in opposite directions for opening the gate, oppositely-disposed controlling devices connected to the outer end of the shifting device, locking means mounted upon the top of the post for engagement with the shifting device to lock the same at its opposite limits and at its intermediate position, and means carried by the gate for engagement with the locking means to normally hold said locking means out of engagement with the shifting device when the gate is stationary, and also capable of disengagement from the locking means when the gate is opened by hand to permit the locking means to engage with the shifting device to lock it in its intermediate position.

4. The combination with a hinge-post, and a gate having a shiftable hinge-pintle, of a shifting-lever fulcrumed upon the post and con-

nected to the pintle, a latch pivoted intermediately upon the post, one end of the latch having a locking engagement with the shifting-lever and a trip carried by the gate and normally bearing upon the opposite end of the latch to hold the first-mentioned end thereof out of engagement with the shifting-lever.

5. The combination with a gate having a shifting pintle, of a shifting-lever connected to the pintle, a locking cross-head carried by the lever and having opposite locking-shoulders, a latch having one end constructed for alternate engagement with the locking-shoulders, and a trip device carried by the gate and lying in engagement with the opposite end of the latch to hold the first-mentioned end out of engagement with the locking cross-head when the gate is stationary only.

6. The combination with a gate having a shiftable pintle, of a shifting-lever connected thereto, a locking cross-head carried by the lever and having opposite and intermediate locking-shoulders, a pivoted latch having one end constructed for alternate engagement with the opposite locking-shoulders, and a trip carried by the gate and normally lying in engagement with the other end of the latch to hold the first-mentioned end out of engagement with the locking-head when the gate is stationary, and also capable of disengagement from the latch during swinging movements of the gate, whereby the latch may lock the shifting-lever.

7. The combination with a hinge-post, and a gate having an upper shiftable hinge-pintle, of a lever fulcrumed intermediately on top of the post and connected to the pintle, a bridge supported upon the post and spanning the lever, a vertically-swinging latch pivoted intermediately upon the bridge, opposite transversely-alined locking-shoulders carried by the shifting-lever and capable of traveling transversely beneath the rear end of the latch for alternate engagement therewith at opposite limits of the lever, and a lateral trip projection carried by the upper pintle and lying in engagement with the adjacent upper end of the latch when the gate is open and closed only to hold the latch out of engagement with the locking-shoulders of the lever.

8. The combination with a hinge-post, and a gate having an upper shiftable hinge-pintle projected above the post, of a plate secured to the top of the post and provided with opposite upstanding studs or pins alined transversely of the normal position of the gate, and also provided with intersecting arcuate slots struck from the studs or pins as centers, an arched support rising from the plate and disposed in front of the slot, a shifting-lever lying between the pins or studs and beneath the arched support, the inner end of the lever having an eye loosely receiving the upper hinge-pintle, and the intermediate portion of the lever being provided with opposite transversely-alined hooked fingers or projections embracing the respective studs or pins to form alternate fulcrums for the lever, a pin carried by the lever and working in the intersecting slots, a gravity-latch pivoted intermediately upon the arched support and having its rear end weighted, a locking cross-head carried by the lever and working transversely beneath the rear end portion of the latch, the opposite ends of the cross-head being formed into abrupt locking-shoulders for alternate engagement with the latch, the upper edge of the cross-head being inclined upwardly and inwardly in opposite directions and provided at its center with a notch or socket for the reception of the latch, and a trip device comprising a collar carried by the shiftable pintle and having a lateral projection normally lying upon the upper end of the latch to depress the same and raise the rear end out of engagement with the locking cross-head.

9. The combination with a hinge-post, and a gate having an upper shiftable hinge-pintle, of a shifting device mounted upon the top of the post and connected to the pintle, means for locking the shifting device during swinging movements of the gate and mounted upon top of the post independently of said shifting device, and means carried by the gate for normally holding the locking means out of engagement with the shifting device.

10. The combination with a hinge-post, and a gate having a shiftable hinge-pintle, of a shifting-lever fulcrumed upon the post and connected to the hinge-pintle, means for limiting the movement of the lever, a latch mounted intermediately upon the post and having one end in locking relation with the shifting-lever, and a trip carried by the hinge-pintle and normally bearing upon the opposite end of the latch to hold the first-mentioned end thereof out of engagement with the shifting-lever.

708,888. MAKING HATS. JOSEPH A. DYER, Milwaukee, Wis. Filed Dec. 16, 1901. Serial No. 86,144. (No model.)

Claim.—That improvement in the art of blocking millinery hats which comprises the following steps: first, securing the brim portion of the hat in a rigid position; second, applying an adhesive substance to the body or crown portion, to maintain its position on the block, and subjecting the said crown or body portion to the operation of heat and pressure, for the purpose of shrinking the same, as a preliminary step to the pouncing operation, as set forth.

708,888.

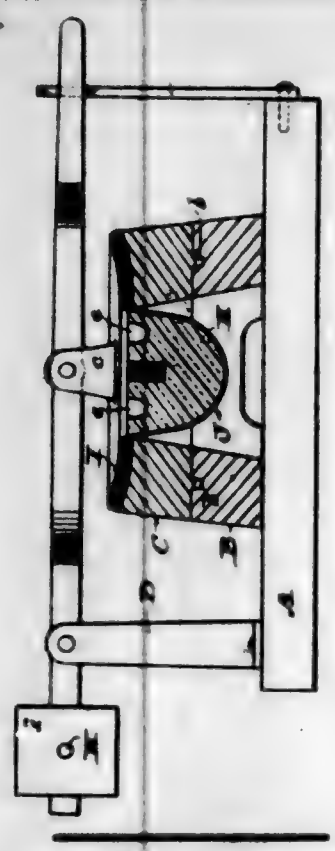

708,884. HYDROCARBON-LAMP. JOHN BYRNES, Chicago, Ill. Filed Apr. 5, 1901. Serial No. 54,899. (No model.)

Claim.—1. A needle-valve for hydrocarbon-lamps, having a valve-stem and a needle-point, said needle-point consisting of a wire fixed centrally of said valve-stem and at the forward end thereof, one-half of said point being cut away along its axial diameter, and said valve-stem being flattened at its end to coincide with the flat side of the needle-point, in order to permit the escape of a small quantity of gas when the needle-valve is nominally closed.

2. The combination with a valve-casing having a tube with a stop-shoulder in said tube and a discharge-orifice, of a valve-stem adapted to lie within said tube and having a shoulder adapted to engage the stop-shoulder, said valve-stem having a needle-point adapted to enter said orifice, which needle-point consists of a wire fixed centrally of said valve-stem at the forward end thereof, and being cut away at one side, said valve-stem also being flattened at its end to permit the escape of a small quantity of gas when the shoulder of the valve-stem is in contact with the stop-shoulder of the tube.

708,885. PAINTING APPARATUS. HENRY B. CARRYL, New York, N. Y., assignor to James B. Hay, Nutley, N. J. Filed Aug. 9, 1901. Serial No. 71,422. (No model.)

Claim.—1. In a portable apparatus for painting or cleaning surfaces, the combination of a chamber and a suitable base or stand, a supplemental chamber connected therewith, a receptacle for containing the painting or cleaning material, a pump connected with the principal chamber and arranged to be connected with the receptacle for introducing the material into the chamber in convenient quantities, an independent air-compressor connected with said supplemental chamber by a suitable pipe for causing the air in the chamber to be compressed and the material to flow automatically therefrom, a portable hand-tool arranged to paint or cleanse, a flexible conducting-hose connecting the chamber with the tool, whereby the painting or cleaning material can be introduced into the tool, and a valve in the handle of the tool for controlling the supply of the material to it through the hose.

2. In a portable apparatus for painting or cleansing surfaces, the combination of a chamber and a suitable base or stand, a receptacle for containing the cleansing or painting material, a pump connected with the chamber and arranged to be connected with the receptacle for introducing the material from the receptacle into the chamber in convenient quantities, an independent air-compressor connected with the chamber by a suitable pipe for causing the air in the chamber to be compressed and the material to automatically flow therefrom, a portable hand-tool arranged to paint or cleanse, a flexible hose of convenient length connecting the chamber with the tool, whereby the painting or cleansing material can be introduced into the tool, a valve in the handle of the tool for controlling the supply of the material to it, a pump for forcing liquid into the chamber and a direct connection between the pump and the tool provided with appropriate valves, whereby the pump, hose and tool may be washed out by means of a liquid introduced by the force-pump without passing through the chamber.

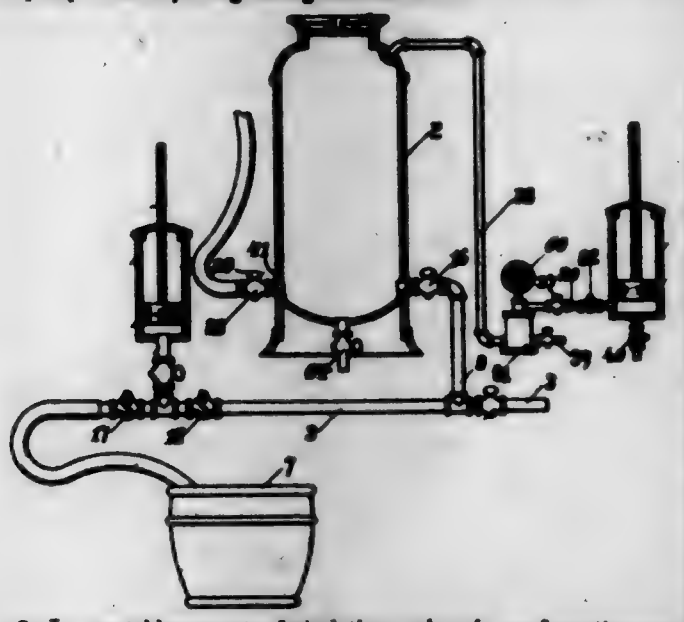

3. In a portable apparatus for painting or cleansing surfaces, the combination of a chamber, and a suitable base or stand, a supplemental chamber connected therewith, for catching any overflow, an independent air-compressor connected with the supplemental chamber for causing the air in both chambers to be compressed and the material to automatically flow from the chamber, a portable hand-tool arranged to paint or cleanse, a flexible conducting-hose connecting the chamber with the tool, whereby the painting or cleansing material can be introduced into the tool, a valve in the handle of the tool for controlling the supply of the material to it, a pump for forcing liquid into the chamber and a direct connection between the pump and the tool provided with appropriate valves whereby the pump, hose and tool may be washed out by means of a liquid introduced by the pump without passing through the chamber.

4. In a portable apparatus for painting or cleansing surfaces, the combination of a closed chamber; a receptacle for containing the cleansing or painting material; a pump connected with the chamber and arranged to be connected with the receptacle by a flexible tube or hose for introducing the material from the receptacle into the chamber in convenient quantities; an air-compressor connected with chamber by a suitable pipe for causing the air in the chamber to be compressed and the material to automatically flow therefrom; a gage for indicating the pressure in the chamber; a portable hand-tool arranged to paint or cleanse; a flexible hose of convenient length connecting the closed chamber with the tool, whereby the paint or cleansing material can be introduced into the same; a valve in the handle of the tool for controlling the supply of the material to it; a pipe connecting the pump and the tool; appropriate valves placed therein by opening and closing which, the pump, hose and tool may be washed out by a liquid introduced by the pump without passing through the chamber.

708,886. SUSPENDERS AND TROUSERS CONNECTION. REUBEN T. CLARKE, Columbus, Ohio. Filed Aug. 26, 1901. Serial No. 73,522. (No model.)

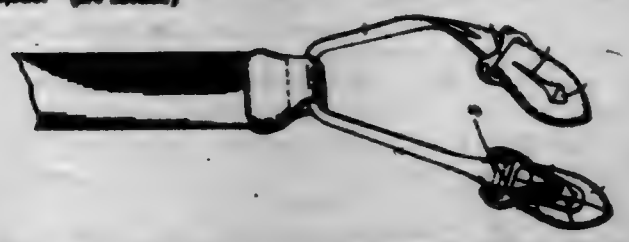

Claim.—In a suspender and trousers connection, the combination with a suspender-end having a buttonhole or similar opening therein, of a button-engaging attachment therefor comprising a doubled clip-body, the inner member thereof having an opening in its upper portion adapted to receive a suspender-end and having an opening in its lower portion and the outer member thereof being in the nature of an open frame having an enlarged upper or mouth portion terminating in a tapering socket or neck and an end tongue 4 adapted to be inserted through the lower end opening of the inner member of the clip and through the opening in a suspender-end, substantially as specified.

708,887. KEYLESS LOCK. ALBERT W. CRAIG, Chicago, Ill., assignor to Craig Keyless Lock Company, Chicago, Ill., a Corporation of Illinois. Filed Aug. 21, 1901. Serial No. 72,811. (No model.)

Claim.—1. In a keyless lock, the combination with a bolt having recesses therein, of a plate having projections adapted to successively engage said recesses, tumblers having notches therein, and a pawl pivoted to said plate and adapted to be received by the notches in said tumblers when in register, substantially as described.

2. In a keyless lock, the combination with a bolt having an extension provided with a plurality of recesses, of a cam-plate having a plurality of projections adapted to successively engage said recesses, a pawl pivotally supported on said cam-plate, tumblers having notches adapted to be brought into register to receive said pawl, and a guide engaging said pawl when the latter is rotated with the cam-plate and disengaged from said pawl when the tumblers are disconcerted, substantially as described.

3. In a lock, the combination with a bolt, of a rotary plate operatively engaging said bolt, means for rotating said plate and thereby reciprocating said bolt, a projection on said plate, and a coöperating projection on said bolt, the first projection adapted to engage the second to throw the bolt outwardly and the second projection adapted to engage the first to lock the bolt and plate against retrograde movement when pressure is applied to the bolt, substantially as described.

4. In a lock, the combination with a bolt having recesses and projections, of a plate having recesses and projections engaging the recesses in and projections on the bolt, means for actuating said plate and thereby reciprocating said bolt, and means whereby any pressure exerted on the bolt when shot is prevented from being communicated through said plate to said actuating means, substantially as described.

5. In a keyless lock, the combination with a bolt, of a plate engaging and adapted to reciprocate said bolt, a pawl pivotally mounted on said plate having a flange projecting therefrom, tumblers having notches to receive said flange, a guide engaging said flange and retaining the same in the notches in the tumblers when the bolt is actuated, and means for preventing any pressure exerted on the bolt from being transmitted to said flange, substantially as described.

6. In a keyless lock, the combination with a bolt, of a rotary plate operatively engaging said bolt, a spindle adapted to be operatively connected with said plate by means of tumblers and a pawl, a projection on said plate, and a coöperating projection on said bolt, the first projection adapted to engage the second and throw the bolt outwardly and the second projection adapted to engage the first and lock the bolt and plate against retrograde movement when pressure is applied to the bolt, substantially as described.

7. In a keyless lock, the combination with a bolt, of a plate operatively engaging said bolt, a pawl pivoted to said plate, tumblers having notches adapted to be brought into register to receive said pawl, a guide retaining said pawl in engagement with the notches in the tumblers to insure the reciprocation of the bolt, said guide terminating at a point to permit the pawl to be swung out of engagement with said notches to disconnect the lock when the bolt is shot, and interlocking means between said bolt and plate for locking the bolt in its shot position and thereby preventing any pressure exerted on the bolt from being transmitted to said pawl, substantially as described.

8. In a keyless lock, the combination with a bolt having a deep recess and a shallow recess and a projection between said recesses, of a rotary plate having an elongated projection and an extended low projection adapted to engage with the deep and shallow recesses respectively in said bolt to reciprocate the latter, the projection on said bolt being adapted to engage the low projection on said plate to lock the bolt when shot and prevent any pressure exerted thereon from rotating the plate, a pawl pivoted to said plate, tumblers having notches adapted to be brought into register to receive said pawl, and a guide retaining said pawl in engagement with the notches in the tumblers when the bolt is reciprocated,

said guide terminating below the position of the pawl when the bolt is shot thereby permitting the pawl to be swung out of engagement with the notches in the tumblers, substantially as described.

708,888. STENCIL-PRINTING MACHINE. GEORGE H. DAVIS, Brooklyn, N. Y. Filed Apr. 17, 1901. Serial No. 56,267. (No model.)

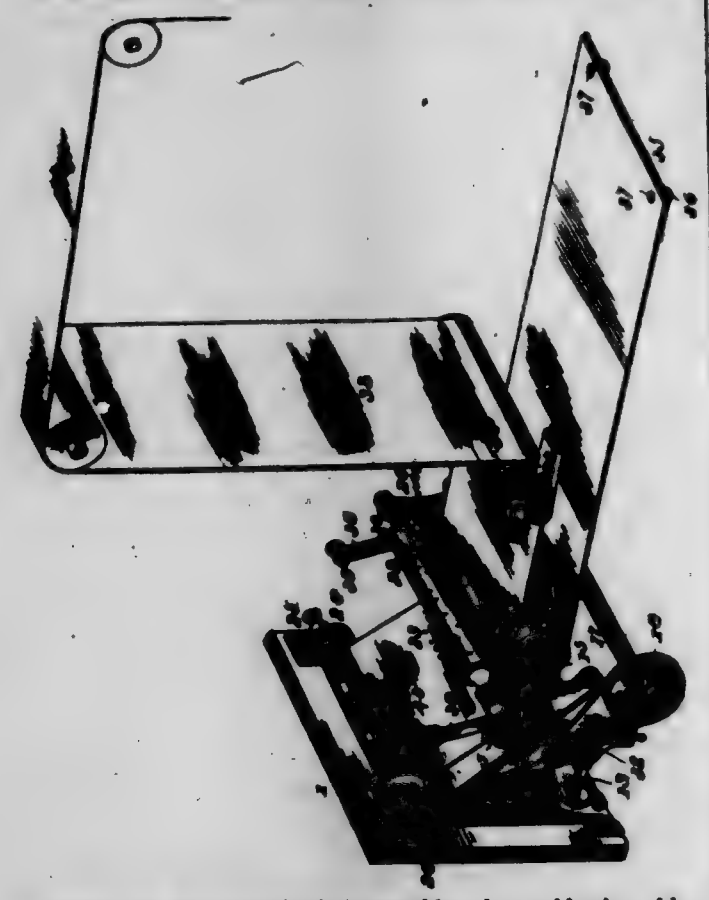

Claim.—1. In a stencil-printing machine, the combination with an inking-roller and an impression-roller, of a stencil-sheet adapted to be passed between said rollers, a conveyer belt or web, and means for attaching the stencil-sheet to said belt or web, for the purpose specified.

2. In a sheet-stencil-printing machine, the combination with an inking-roller and an impression-roller, of a pair of supply-rolls, a stencil-sheet mounted upon one of said rolls and adapted to travel between the inking and impression rollers, and an endless conveyer belt or web to which said stencil-sheet may be attached and by which it is conveyed.

3. In a sheet-stencil-printing machine, the combination with an inking-roller and an impression-roller, of a pair of supply-rolls adapted to receive a stencil-sheet and a sheet to be printed, an endless conveyer belt or web arranged in front of said rolls and to which one end of the said sheets may be attached and by which they will be conveyed, and means for driving said belt or web.

4. In a sheet-stencil-printing machine, the combination with a suitable frame, of ink-supplying rollers journaled in said frame, an impression-roller journaled above the inking-rollers, a pair of sheet-supply rolls, an endless conveyer-belt for the purpose specified, means carried by the belt for attaching a stencil-sheet thereto, means for driving said belt, and gearing operated by the belt-driving means for imparting motion to the inking-rollers and delivery-roll.

5. In a sheet-stencil-printing machine, the combination with an inking-roller and an impression-roller, of a pair of sheet-supply rolls carrying the stencil-sheet and sheet to be printed respectively, an endless conveyer belt or web arranged in front of said rollers and to which one end of the said sheets is attached and by which they are conveyed, means for moving said belt or web, and a pair of arms 38, carrying bearings for a sheet-receiving roller.

6. In a sheet-stencil-printing machine, the combination with a suitable frame, of ink-supplying rollers and an impression-roller journaled in said frame, a pair of supply-rolls journaled in the frame above the impression-roller, a main drive-shaft 15 journaled in front of said last-named roller, a driven shaft 17, arranged below the main drive-shaft, intermeshing gears mounted on said shafts, a pulley on the driven shaft, and separate belts passing from said pulley to pulleys on one of the inking-rollers and supply-rolls respectively.

7. In a sheet-stencil-printing machine, the combination with a suitable frame, of ink-supplying rollers and an impression-roller journaled in said frame, a pair of supply-rolls journaled in the frame above the impression-roller, a main drive-shaft journaled in front of said last-named roller, a driven shaft 17, intermeshing gears mounted on said shafts, a pulley on the driven shaft, belts passing from said pulley, to pulleys on one of the inking-rollers and supply-rolls respectively, arms 38, secured to the machine-frame intermediate the said delivery-rolls, said arms carrying rotary bearings for a sheet-receiving roller, and a pulley on one of said bearings, substantially as described.

8. In a stencil-printing machine, the combination with suitable printing mechanism, of an endless conveyer belt or web mounted adjacent to said printing mechanism, and provided with a clamping device by which the stencil-sheet and printed sheet are clamped to said belt or web, substantially as described.

708,889. MACHINE FOR FORMING STENCILS FROM WHICH MUSIC-SHEETS ARE PRINTED. GEORGE H. DAVIS, Brooklyn, N. Y. Filed Apr. 17, 1901. Serial No. 56,268. (No model.)

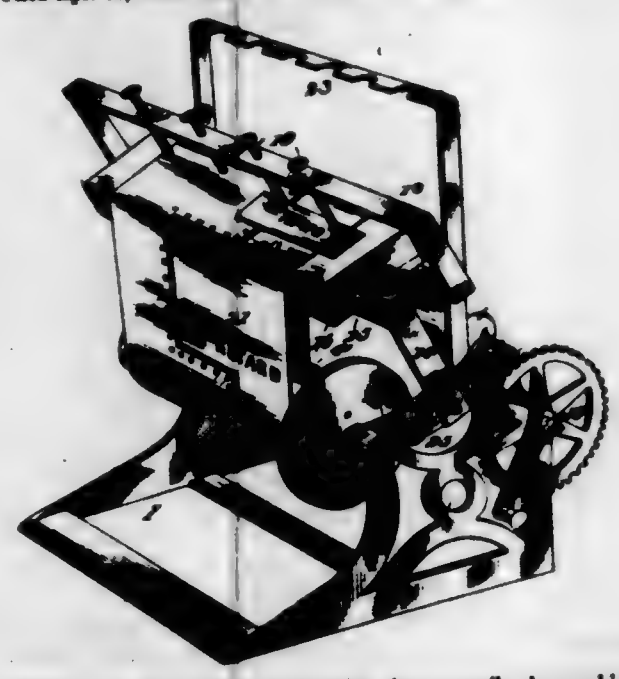

Claim.—1. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery-roll and a receiving-roll journaled in said frame, a cutting block or platen arranged above the said rolls and over which the sheet-stencil is moved during its passage from one roll to the other and means for clamping a stencil-plate upon said block or platen.

2. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery-roll and a receiving-roll journaled in the said frame, a cutting block or platen arranged above the plane of said rolls and over which the stencil-sheet is moved during its passage from one roll to the other, clamping devices for holding a stencil-plate to the face of the platen and means for operating said rolls.

3. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery and a receiving roll journaled in said frame, a cutting block or platen arranged above the plane of said rolls and over which the stencil-sheet is passed during its movement to and from the rolls, and suitable clamping means adapted to bind the stencil-sheet to the face of the cutting-block, for the purpose specified.

4. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery and a receiving roll journaled in said frame, a cutting block or platen arranged intermediate and above the plane of said rolls and over which the stencil-sheet passes, means for clamping a stencil-plate to the face of the platen and a friction device acting upon the said receiving-roll, substantially as described.

5. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery and a receiving roll journaled in said frame, a cutting block or platen arranged intermediate and above the plane of said rolls, and a tool-holder mounted upon the frame adjacent to the said cutting-block.

6. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery and a receiving roll journaled in said frame, a milled head secured to one end of said receiving-roll, and a cutting block or platen mounted upon the frame and arranged intermediate the two rolls for the purpose specified.

7. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery and a receiving roll journaled in said frame, a cutting block or platen arranged intermediate said rolls, a friction-plate having one end free to rest upon one end of the receiving-roll, a thumb-screw for regulating the pressure of said friction-plate, and means for operating the said rolls.

8. In a machine for forming sheet-stencils, the combination with a suitable base-frame, of a delivery and a receiving roll journaled in said frame, a cutting block or platen mounted upon the frame intermediate the

said rolls, a pinion upon one end of the delivery-roll, a gear-wheel meshing with said pinion, means for operating the gear-wheel, a milled head upon one end of the receiving-roll, and a clamping device arranged above the cutting-block, for the purpose specified.

9. In a machine of the class described, the combination with a suitable frame, of a delivery-roll and a receiving-roll journaled in said frame, an inclined cutting block or platen fixed to the frame and over which the sheet-stencil is caused to move during its passage from one roll to the other and means for clamping a stencil-plate to the face of said block or platen.

10. In a machine of the class described, the combination with a suitable base-frame, of a sheet delivery roll and a receiving roll journaled in said frame, an inclined cutting block or platen arranged above the plane of said rolls and over which the sheet-stencil is caused to move during its passage from one roll to the other and means for clamping the stencil-sheet to said block or platen.

11. In a machine of the class described, the combination with a suitable base-frame, of a sheet delivery roll and a receiving roll journaled in said frame, an inclined cutting block or platen arranged intermediate and above the plane of said rolls, clamping devices arranged above the cutting-block and means for imparting a rotary movement to said rolls.

12. In a machine of the class described, the combination with a suitable base-frame, of a delivery-roll and a receiving-roll journaled in said frame, a cutting block or platen arranged intermediate said rolls and over which the sheet-stencil to be cut is caused to move during its passage from one roll to the other, and independent means for rotating said rolls.

13. In a machine of the class described, the combination with a suitable base-frame, of a delivery-roll and a take-up roll journaled in said frame, a block-support secured to the frame intermediate the rolls, a cutting block or platen removably attached to said support, and means for rotating the rolls to cause a sheet-stencil to move from one roll over the cutting block or platen and to be wound upon the other roll.

14. In a machine of the class described, the combination with a suitable frame, of a delivery-roll and a take-up roll journaled in said frame, an inclined block-support carried by the frame and extending above the plane of the rolls, a cutting block or platen carried by said support, means for clamping a stencil-sheet to the face of the cutting-block and means for rotating said rolls.

15. In a machine of the class described, the combination with a suitable frame, of a delivery-roll and a take-up roll journaled in said frame, a block-support fixed to the frame intermediate the rolls, a cutting block or platen carried by said support, a bar disposed above the cutting block or platen, and clamping-screws tapped through said bar and adapted to clamp a stencil-plate to the face of the cutting block or platen.

16. In a machine of the class described, the combination with a sheet delivery roll and a take-up roll, of a cutting block or platen arranged above and overhanging one of said rolls, and means for clamping a stencil-plate to the face of the cutting block or platen.

708,890. **SLIDING-DOOR LATCH.** GRANT S. DEUTSBACH, Madisonburg, Ohio. Filed July 31, 1901. Serial No. 70,332. (No model.)

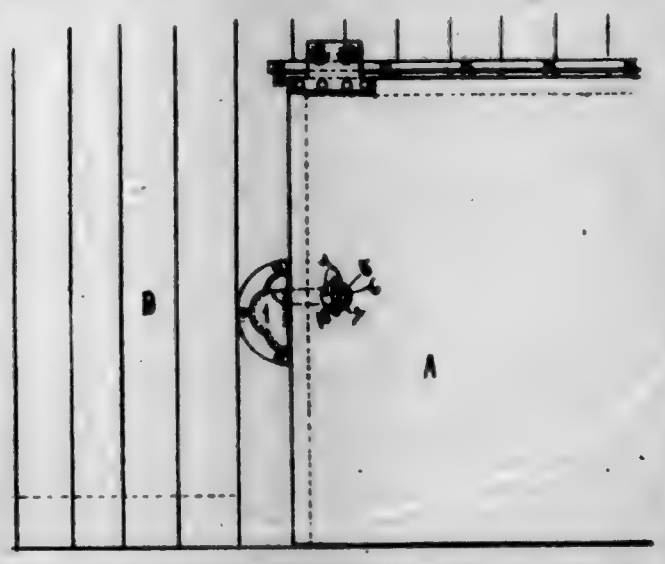

Claim.—1. In a latch for sliding doors, the combination with a pivotally-mounted latch-bar provided with an enlarged head forming laterally-projecting hooks; of a keeper provided with an opening in its strike-plate for the reception of the laterally-extending hooks of a latch-bar, a recess extending from said opening to form a seat for the stem of the latch-bar, and a rearwardly and downwardly extending chute, opposite and to the rear of said opening and recess, whereby the head of said latch-bar is forced downwardly into the said recess and said laterally-extending hooks are brought into engagement with said strike-plate.

2. A keeper for sliding doors, the same consisting of a strike-plate provided with the oppositely-disposed openings for the reception of the laterally-extending hooks of a latch-bar, recesses extending from said openings toward its center to form a seat for the stem of the latch-bar, and oppositely-disposed rearwardly-extending chutes formed in the rear wall opposite the said openings and recesses whereby the head of said latch-bar is brought into contact therewith and is forced downwardly into engagement with said strike-plate.

3. In a latch for sliding doors, the combination with a pivotally-mounted latch-bar provided with an enlarged head forming laterally-projecting hooks; of a keeper provided with a strike-plate formed with the oppositely-disposed openings for the reception of the latch-bar, recesses extending from said openings toward its center to form a seat for the stem of the latch-bar, and oppositely-disposed rearwardly-extending chutes formed in the rear wall opposite the said openings and recesses whereby the head of said latch-bar is brought into contact therewith and is forced downwardly into engagement with said strike-plate.

708,891. **TELEGRAPHIC CODE.** JAMES R. DUNPHY, Chicago, Ill. Filed Apr. 19, 1900. Serial No. 713,673. (No model.)

a ..... *about*
b ..... = *grass and lace weight*
c ..... = *grass weight*
d ..... = *cord weight*
e ..... = *lace weight*
f ..... = *weight*
g ..... *that so recognized for*
h ..... *any quantity*
i ..... *division*
m ..... = *of cross*
n ..... = *lacing*
o ..... *Barrel-cake*
p ..... *Box cover*
q ..... *Basket*
r ..... *Cardage*

Claim.—1. In a cipher-code, a code-book having words, phrases and sentences arranged in columns therein, the pages of the book being numbered and the words, phrases and sentences on each page being also numbered, a code-book key comprising within its range all the numbers employed to designate pages of the book or words, phrases, and sentences therein, the numbers of the key having associated therewith arbitrarily-selected syllables, whereby such syllables may be combined to represent words of the code-book, as set forth.

2. In a cipher-code, a code-book having words, phrases and sentences arranged in columns therein, the pages of the book and the words, phrases and sentences on each page being numbered consecutively, a code-book key comprising within its range all the numbers employed to designate pages of the book or words, phrases and sentences therein, the numbers of the key having associated therewith arbitrarily-selected syllables, whereby such syllables may be combined to represent words of the code-book, as set forth.

3. In a cipher-code, a code-book having words, phrases and sentences arranged in columns therein, the pages of the book and the words phrases and sentences on each page being numbered, a changeable code-book key comprising within its range all the numbers employed to designate pages of the book or words, phrases and sentences therein, the numbers of the key having associated therewith arbitrarily-selected syllables whereby such syllables may be combined to represent words of the code-book, as set forth.

4. In a cipher-code, a code-book having words, phrases and sentences arranged in columns therein, the pages of the book being numbered and the words, phrases and sentences on each page being also numbered, an independent code-book key comprising within its range all the numbers employed to designate pages of the book or words, phrases and sentences therein, the numbers of the key having associated therewith arbitrarily-selected syllables, whereby such syllables may be combined to represent words of the code-book, as set forth.

5. A code-book key comprising within its range all the numbers employed to designate pages, words, phrases and sentences in a code-book, the numbers of the key having associated therewith arbitrarily-selected syllables, whereby such syllables may be combined to represent words of the code-book, as set forth.

6. A cipher-code, comprising a code-book containing a part of the message or information it is intended to transmit, and an independent, changeable code-book key, prepared separately from the code-book, and having associated therewith certain characters and symbols whereby it is possible to change a code-word having one expression or meaning into another expression by affixing thereto a character or symbol provided for in the code-book key, as set forth.

7. In a cipher-code, a permanent code-book, having words, phrases and sentences arranged in columns therein, the pages of the book being numbered and the words, phrases and sentences being also numbered, but containing no code-words or parts thereof, a changeable auxiliary code and code-book key, prepared separate from the code-book and containing syllables, characters and symbols arranged in column order and used jointly in ciphering and deciphering, whereby it is possible to provide a new code as often as necessary by forwarding a new auxiliary code and code-book key, the permanent code-book being retained indefinitely, as set forth.

708,892. PLATFORM-SCALE. ANDREW BRENNEN, Burt, Iowa, assignor of three-fourths to Wm. E. Ferguson, E. J. Hartsuyth, and Winfield P. Jones, Algona, Iowa. Filed Oct. 7, 1901. Serial No. 77,988. (No model.)

Claim.—In platform-scales, platform-levers having their inner ends overlapped and each comprising outwardly-diverged arms having their outer end portions widened and chambered upon their lower sides, two knife-edged bearings arranged within the chamber of each of the said arms, bearing-steels coöperating with a set of the said knife-edged bearings, a platform-support comprising transverse bars having knife-edged bearings at their lower sides, links connecting said bars with the other set of knife-edged bearings of the platform-levers, a third lever arranged transversely of the platform-levers and having its inner end portion chambered on its lower side, bearings for the said lever protected by the chamber thereof, and a shackle connecting the third lever with the platform-levers, the pivot-bearings between the shackle and the several levers being protected by the chambered portion of said third lever, substantially as set forth.

708,893. DRYING OIL-YIELDABLE OR OIL-CONTAINING MATERIAL. EDWARD R. ESTEN, Cleveland, Ohio. Filed Oct. 8, 1901. Serial No. 78,093. (No specimens.)

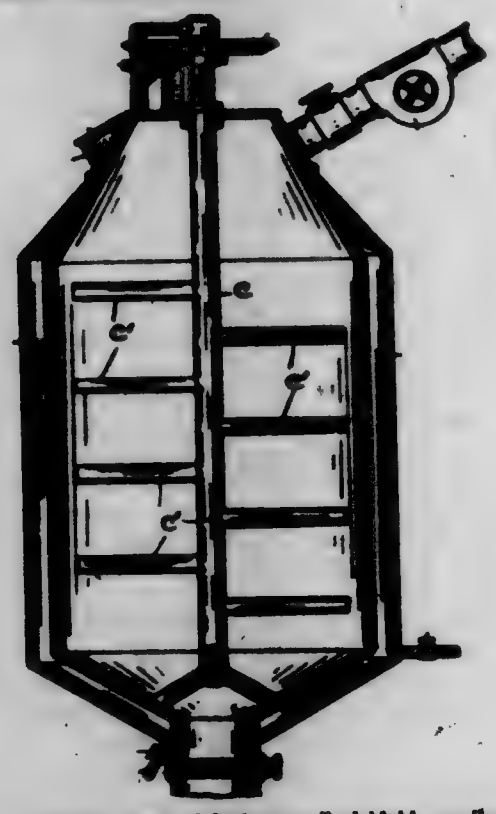

Claim.—1. The process of drying an oil-yieldable or oil-containing mass of material consisting in partially drying the material, then adding an oil-absorbing material to the reduced mass, and then drying the enlarged mass, substantially as and for the purpose set forth.

2. An improved process of drying an oil-yieldable or oil-containing mass of material, consisting in drying the material at a temperature low enough to avoid injury to or deterioration of the oil until a large portion of the oiliess moisture has been eliminated from the mass, then adding oil-absorbing material to and mixing the same with the reduced mass, and then drying the enlarged mass at a temperature not detrimental to the oil.

3. An improvement in drying a mass of material which contains more oil than the solid particles or portion of the mass can absorb or carry, consisting in adding, to the mass, oil-absorbing material capable of absorbing and carrying free oil not already absorbed, substantially as and for the purpose set forth.

4. An improved process of drying a mass of material which contains more oil than the solid particles or portion of the mass can absorb or carry, consisting in vaporizing a portion of the oiliess moisture contained in the mass, then adding oil-absorbing material and mixing the same with the reduced mass, and then drying the enlarged mass.

5. The improved process of drying an oil-yieldable or oil-containing mass of material herein described, consisting in partially drying the material at a temperature below 300° Fahrenheit, and in vacuo, until enough oiliess moisture has been eliminated to reduce the mass to the consistency of a sludge, then adding oil-absorbing material to and mixing the same with the reduced mass, and then drying the enlarged mass at a temperature below 300° Fahrenheit, and in vacuo, substantially as and for the purpose set forth.

708,894. REVERSIBLY-SUSPENDED FLEXIBLE SHEET. WILLIAM R. BLAIR, Atlanta, Ga. Filed Jan. 6, 1902. Serial No. 88,454. (No model.)

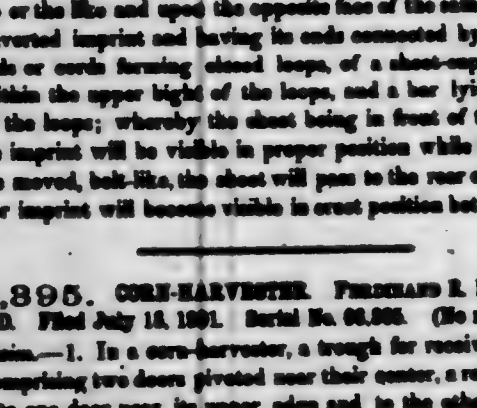

Claim.—1. The combination with a flexible sheet bearing upon opposite faces of the same portion relatively inverted imprints, of means whereby the sheet is bent back upon itself or reversed when moved endwise, whereby either imprint may be brought to view in proper position for inspection from the same side of the apparatus.

2. The combination with a suitable bar, of a flexible sheet adapted and arranged to pass belt-like around the bar and bearing upon one face an imprint and upon the opposite face of the same portion a relatively inverted imprint; whereby one imprint being in position for inspection, passing the sheet around the bar reverses the sheet and brings the other imprint into like position.

3. The combination with a suitable bar, of a flexible sheet arranged to pass, belt-like, around the bar and bearing relatively inverted imprints upon its opposite faces, respectively, and wires or the like extended across that face of the sheet next said bar protecting the sheet's surface from abrasion.

4. The combination with a suitable bar, of a flexible sheet arranged to pass belt-like around the bar and bearing relatively inverted maps upon its two faces, respectively, and a series of wires extended across that face of the sheet next the bar and occupying the places of meridian-lines of the map upon that face.

5. The combination with a suitable bar, of a flexible sheet arranged to pass belt-like around the bar, bearing upon opposite faces of the same portion relatively inverted imprints, and means for preventing the sheet from passing in either direction the proper limit of its movement.

6. The combination with a sheet having upon one face an imprint of a map or the like and upon the opposite face of the same portion a relatively inverted imprint and having its ends connected by narrow marginal bands or cords forming closed loops, of a sheet-supporting bar located within the upper bight of the loops, and a bar lying in the lower bight of the loops; whereby the sheet being in front of the plane of the bars one imprint will be visible in proper position while if the sheet and bands be moved, belt-like, the sheet will pass to the rear of said plane and the other imprint will become visible in erect position between the bands.

708,895. CORN-HARVESTER. FERDINAND E. EVERS, Ripstone, S. D. Filed July 15, 1901. Serial No. 68,205. (No model.)

Claim.—1. In a corn-harvester, a trough for receiving the severed stalks comprising two doors pivoted near their center, a rod pivotally connected to one door near its upper edge and to the other near its lower edge, and means for positively opening and closing the doors, substantially as shown and described.

2. In a corn-harvester, doors pivoted near their center and forming a rectangular trough, a rod pivotally connected to one door near its upper edge and to the other near its lower edge, and a suitably-mounted lever connected to one of said doors for operating same, substantially as shown and described.

3. In a corn-harvester, a platform having shootingly-disposed edges, cutting edges mounted thereon, standards at the rear of said platform,

doors mounted on said standards and pivoted near their center to form a rectangular trough, a rod pivotally connected to one door near its upper edge and to the other near its lower edge, and means for positively opening and closing the doors, substantially as shown and described.

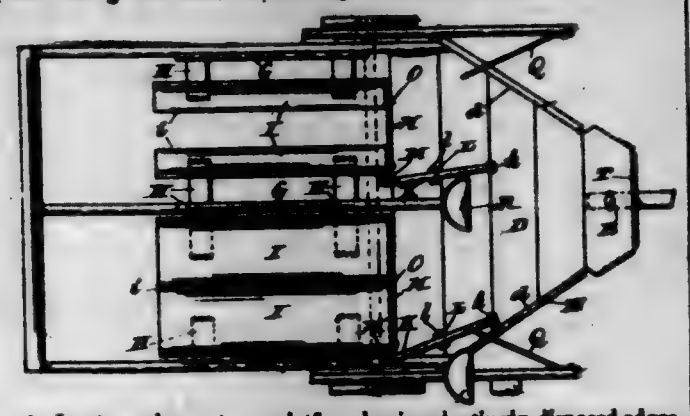

4. In a corn-harvester, a platform having slantingly-disposed edges, cutting edges mounted thereon, standards at the rear of said platform, doors mounted on said standards and pivoted near their center to form a rectangular trough, a rod pivotally connected to one door near its upper edge and to the other near its lower edge, and a suitably-mounted lever connected to one of said doors for operating them simultaneously, substantially as shown and described.

708,896. MECHANICAL MOVEMENT. HENRY H. PEIRCE, New York, N. Y., assignor, by mesne assignments, to New York-Pittsburgh Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Oct. 30, 1901. Serial No. 80,515. (No model.)

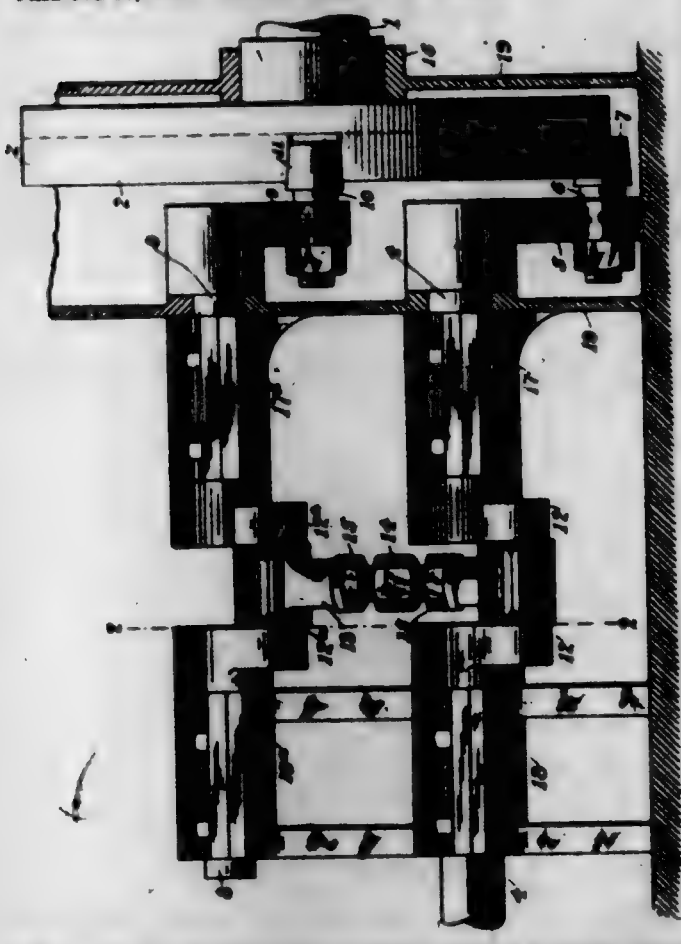

Claim.—1. The combination of a driving-shaft, a radially-grooved trammel-disk carried thereby; a pair of crank-shafts each having a driving-crank engaging by its wrist-pin in one of the radial grooves of the trammel-disk; coupling-cranks on said crank-shafts; and a connecting-rod mounted at its ends on the coupling-cranks of the respective crank-shafts, whereby one of said crank-shafts through which power may be transmitted is driven directly by the trammel-disk and the second crank-shaft acts as an intermediary driving device between the trammel-disk and the primary driven shaft.

2. The combination of a driving-shaft; a radially-grooved trammel-disk carried thereby; a pair of crank-shafts having driving-cranks whose wrist-pins engage in grooves of different diameters of the trammel-disk; parallel cranks on the respective crank-shafts; and a rod connecting said parallel cranks, whereby the coupled crank-shafts are driven continuously from the trammel-disk and dead-centers avoided, as explained.

3. The combination of the driving-shaft 1; a radially-grooved trammel-disk 2 mounted thereon; a shaft 4, through which power may be transmitted, having a crank 5 engaging in a groove 2 of the trammel-disk so that said shaft will be driven directly from the trammel-disk; a second crank-shaft 8, having a crank 9 engaging with a groove 2ª of the trammel-disk on a different diameter from that by which the first crank-shaft is driven; parallel cranks 12, 12ª on the shafts 4 and 8; and a connecting-rod 13 between said cranks; whereby the second crank-shaft 8 serves as an intermediary and supplementary driving device between the trammel-disk 2 and crank-shaft 4, as explained.

4. The combination of the driving-shaft 1; a radially-grooved trammel-disk 2, mounted thereon; a shaft 4, through which power may be transmitted, having a crank 5 driven by engagement in a groove 2 of the trammel-disk; a second crank-shaft 8 also having a crank 9, driven by engagement in a groove of the trammel-disk; and two pairs of coupling-cranks 12, 12ª and 20, 20ª, mounted respectively at different angles on the shafts 4 and 8, and connected by rods 13 and 21; whereby the second crank-shaft 8 acts as an intermediary and supplementary driving device between the trammel-disk and the primary driven shaft 4 and operates thereon with uniform rotative force, as described.

708,897. WHIP. BENJAMIN O. PEIRCE, Chicora, Pa. Filed July 1, 1901. Serial No. 66,677. (No model.)

Claim.—A whip comprising a body portion of reed, rattan, or the like, a tube of sheet metal swaged or bent around the butt or handle portion of the body and held in place thereon by frictional contact, a wrapping of flexible material, such as cloth or paper, inclosing said tube, and an outer covering, substantially as described.

708,898. NON-REFILLABLE BOTTLE. BENJAMIN PEIRCE, Paterson, N. J. Filed Mar. 20, 1902. Serial No. 100,514. (No model.)

Claim.—A guard for non-refillable bottles consisting of two split rings disposed the one above the other in combination with a divided perforated disk-like body secured between said rings with its sections overlapping each other, substantially as described.

708,899. CAR-COUPLING. JEAN B. QUEEN, New York, N. Y. Filed Apr. 29, 1902. Serial No. 105,163. (No model.)

Claim.—1. In a car-coupling, the combination with a coupling-head having a vertical pivot-bearing at one side of its face, a knuckle pivoted in said bearing, one curved end thereof projecting forward and laterally

across the center line of the draw-bar and shaped to engage and interlock with its counterpart on an opposite head and the tail end of reduced depth projecting within the cavity of the head, a latch placed longitudinally within the cavity of the coupler-head and having a vertical movement therein bearing against abutments forming sideways and held in suitable guides and forming in its normal position a block between said abutment and the tail end of the knuckle but clearing it when raised, a latch-key placed transversely to said latch on the bottom of the head and having a wedge-shaped nose engaging a beveled notch in said latch and lifting the latter when drawn toward it, and provided with a lug projecting through a slot in the bottom of the head and a rod coupled to said latch-key lug and held in guides secured to the car-sill, by which said latch-key may be moved forward and backward, substantially as set forth.

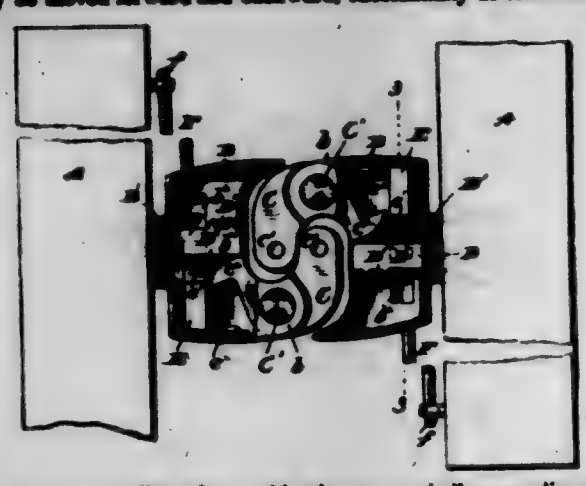

2. In a car-coupling, the combination with a hollow coupling-head closed at one side and having a bearing for a vertical pivot-joint at the other, a knuckle pivoted in said bearing to have a limited horizontal swing and having one part projecting beyond the face of the head and adapted to engage and interlock its counterpart on an opposite head, and the tail end projecting into the cavity of the head and being of reduced depth, a latch normally interposed between said tail end and an abutment on which it may slide vertically, guide-lugs on said latch, a vertical guide-bar engaged by said lugs, and a beveled notch in one of the lower edges of said latch, a latch-key placed transversely to said latch in a groove at the bottom of the head and having a wedge-nose engaging said bevel-notch, and a spur adapted to engage the nose of the tail end of the knuckle and provided with a lug projecting below the bottom of the head, and a rod coupled to said lug and held slidingly in guides on the car-sill and adapted to move said latch-key, substantially as set forth.

708,400. FOG-HORN. HARVEY A. HILL, Gloucester, Mass. Filed May 24, 1901. Serial No. 61,518. (No model.)

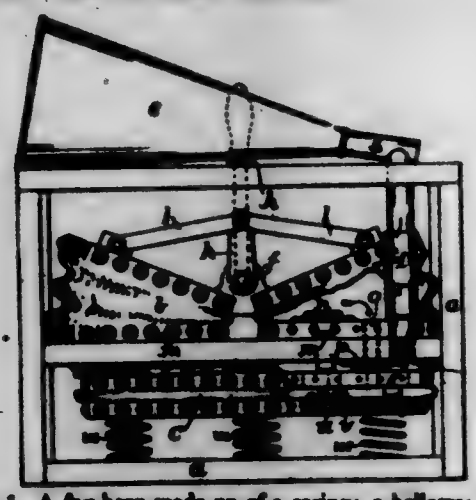

Claim.—1. A fog-horn made up of a casing; a bellows; means to operate said bellows; an air-compressor below said bellows; a horn above said casing; a reed; and an air-conduit connecting the horn with the air-compressor.

2. In combination in a fog-horn, a bellows; an air-compressor below said bellows, said compressor being formed with apertures in its bottom; valves controlling said apertures; a horn; and a pipe connecting said horn with said compressor.

3. In combination in a fog-horn, a bellows formed with inlets in its bottom piece; a valve controlling said inlet; and an air-compressor below and connected with said bellows, and a valve controlling the passage between the air-compressor and the bellows.

4. In combination in a fog-horn, a bellows formed with inlets in its bottom piece, the area of said inlets being small and designed to admit air slowly into the bellows; a valve controlling said inlet; an air-compressor below and connected by a passage with said air-compressor; and a valve controlling the passage between the air-compressor and the bellows.

5. In combination a fog-horn; a bellows; an air-compressor below said bellows and connected therewith; a horn; an air-pipe connecting said horn with said air-compressor; said air-compressor being formed with apertures in its bottom; and valves controlling said apertures in the bottom of the compressors; each of said valves being provided with projections on its outer edge, and formed with a flexible central portion.

6. In combination a fog-horn; a bellows; an air-compressor below said bellows and connected therewith; springs interposed between the bottom of said air-compressor and the bottom of the casing; and said casing.

708,401. SUPPORT FOR CASEMENT-WINDOWS. ANTON GUSSMA and FERDINAND HLAVKA, Agram, Austria-Hungary. Filed Dec. 9, 1901. Serial No. 85,292. (No model.)

Claim.—1. The combination with a swinging sash, as described, of a window-frame having a recess or socket, a lever having one end arranged within the socket and adapted to swing therein when the lever is swung in vertical and horizontal planes, a roller on the swinging sash having a bearing on the upper edge of the lever, and a brace-rod arranged to support the lever when in a horizontal position.

2. The combination with a swinging sash as described, of a window-frame having a recess or socket, a lever having one end arranged within the socket and having a pin *c* also within the socket and upon which the lever turns in its horizontal swinging movements, a roller on the swinging sash having a bearing on the lever, and a brace-rod pivoted at one end to the lever and provided at the other end with a pin *g* pivotally mounted on the frame, the said pin *g* serving as a pivot for the brace-rod in the horizontal movements of the latter.

708,402. ANTIFRICTION-BEARING. JOHN GOTTBERT, Fort Scott, Kans. Filed May 23, 1901. Serial No. 61,561. (No model.)

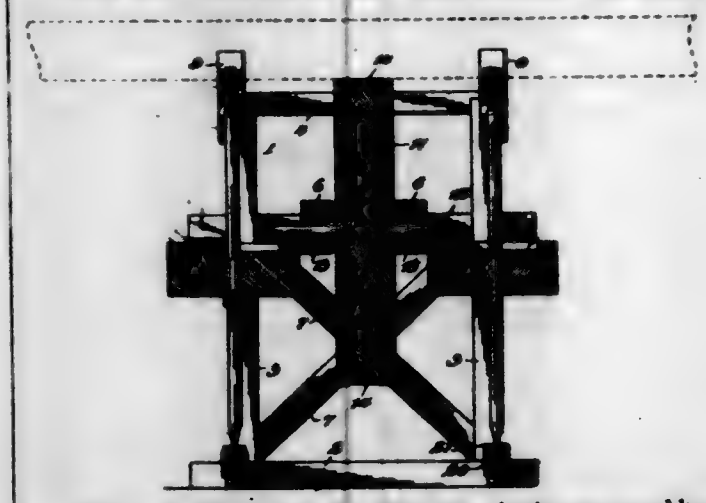

Claim.—1. The combination with a frame having upper and lower sets of guard-bearings in vertical alinement, of a rotatable shaft seated in the upper set of bearings, a circular vertically-disposed rotatable bearing element in frictional supporting engagement with the under side of the shaft, and having opposite journals carried by and rotatable with the circular element and seated in the lower set of bearings, upstanding rotatable shafts located at opposite sides of the vertically-disposed bearing element and in alinement with the upper and lower sets of bearings, and opposite horizontal bearing elements carried by and rotatable with the respective upstanding shafts, the journals of the vertical bearing element resting in frictional engagement with the upper surfaces of the respective horizontal bearing elements.

2. In a shaft-bearing, the combination with a horizontal rotatable shaft, of a vertically-disposed rotatable wheel bearing against the under side of the shaft to support the same and provided with a journal, and a vertically-adjustable horizontal rotatable wheel bearing against the under side of the journal to form a bearing therefor, whereby the vertical wheel may be adjusted into supporting engagement with the shaft.

3. In a shaft-bearing, the combination of a vertically-disposed rotatable bearing-wheel having a journal rotatable therewith, the top portion of the periphery of the wheel forming a bearing to engage the under side of the shaft to be supported, an endwise-adjustable vertical shaft located at one side of the vertical bearing-wheel, and a horizontal bearing-wheel carried by the shaft and bearing against the under side of the journal to support the same and the vertical wheel.

4. In a shaft-bearing, the combination with a frame having a guard-bearing for the shaft to be supported, of a vertically-disposed rotatable wheel having opposite journals loosely mounted in guard-bearings carried by the frame and below the bearing for the shaft, the top portion of the periphery of the wheel being projected above the bottom of the shaft guard-bearing to form a roller-bearing support for the shaft, vertically-disposed endwise-adjustable shafts mounted in the frame at opposite sides of the vertical wheel, and horizontal bearing-wheels carried by the respective shafts and in frictional supporting engagement with the under sides of the respective journals, whereby the vertical bearing-wheel may be adjusted into engagement with the shaft to be supported.

5. An antifriction-bearing comprising a frame carrying bearings, a shaft supported therein, a wheel arranged below the shaft and bearing thereagainst, a shaft passing through the latter wheel and supported by suitable bearings on the frame, two vertically-disposed shafts, one arranged on each side of the vertically-disposed wheel, horizontally-disposed wheels carried by the said shafts, the upper faces of the wheels being inset to present a rim or flange upon which the ends of the shaft of the vertically-disposed wheel bear, and means for adjusting the vertical shafts whereby to keep the horizontally-disposed wheels in engagement with the shaft ends of the vertically-disposed wheel.

6. An antifriction-bearing comprising a frame carrying bearings, a shaft supported therein, a wheel arranged below the shaft and bearing thereagainst, a shaft passing through the latter wheel and supported by suitable bearings on the frame, two vertically-disposed shafts, one arranged on each side of the vertically-disposed wheel, horizontally-disposed wheels carried by the said shafts, the upper faces of the wheels being inset to present a rim or flange upon which the ends of the shaft of the vertically-disposed wheel bear, the lower ends of the vertical shafts being tapered to present pivot-bearings, and adjustable pivot-bearings supported by the base of the frame with which the tapered ends of the shafts engage, thereby to adjust the shafts to keep the wheels carried in operative relation to the shaft ends of the vertically-disposed wheel.

703,403. LUBRICATOR. JOHN GOTTSHALL, Montrose, Kans. Filed Dec. 16, 1901. Serial No. 86,154. (No model.)

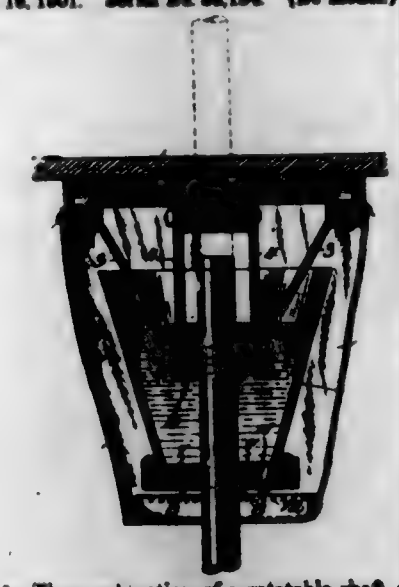

Claim.—1. The combination of a rotatable shaft, a stationary bearing therefor, a sectional lubricant-containing cup or casing carried by the shaft and embracing the bearing to normally submerge the latter in a lubricant, and means for drawing the sections of the cup into engagement with the shaft to adjust the cup endwise thereon.

2. The combination of an upright rotatable shaft, a stationary bearing therefor, a sectional open-topped lubricant-containing cup or casing carried by the shaft and normally embracing the bearing to submerge the latter in a lubricant, and fastenings connecting the sections of the cup to bind the same upon the shaft.

3. A lubricator, comprising an open-topped cup or casing formed in longitudinal half-sections, the inner edges of the bottoms of the sections having corresponding shaft-openings, and fastenings connecting the sections to clamp the same upon a shaft.

4. A lubricator, comprising an open-topped cup or casing formed in vertical half-sections, the inner edges of the bottom of the sections having corresponding shaft-openings, corresponding ears located at the opposite ends of the inner edges of the cup-bottom, and clamping-fastenings piercing the corresponding ears to clamp the cup upon a shaft.

5. The combination with a frame, of a hanger pendent therefrom, a bearing carried by the hanger, an upright shaft journaled in the bearing, a lubricating-cup carried by the shaft and embracing the bearing, and a hood pendent from the frame and embracing the cup to exclude foreign matter therefrom.

6. The combination with a support, of a bearing, a shaft journaled in the bearing, a lubricating-cup carried by the shaft and embracing the bearing, and a collapsible hood pendent from the support and embracing the cup to exclude foreign matter therefrom.

7. The combination with a support, of a bearing, an upright shaft journaled in the bearing, a lubricating-cup carried by the shaft and embracing the bearing, and a flexible hood hung from the support and embracing the cup to exclude foreign matter therefrom, the lower end of the hood being provided with a weighted band to hold the hood distended.

708,404. ACETYLENE-GAS BURNER. JOHN J. GRAF, Cincinnati, Ohio, assignor, by direct and mesne assignments, to Union Light & Heat Company, Cincinnati, Ohio. Filed Apr. 19, 1899. Serial No. 713,689. (No model.)

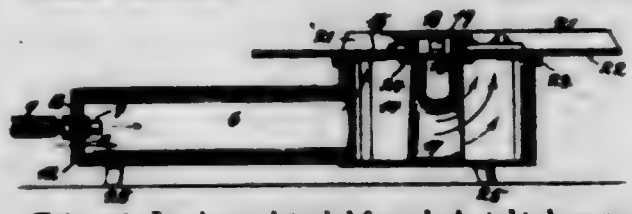

Claim.—1. In a burner intended for and adapted to burn gases under low pressure, such like for instance acetylene gas, the combination of a mixing-chamber adapted to receive gas and air, an expansion-chamber of about double capacity communicating therewith and the open top of which is closed by wire-gauze, which forms also the burner-surface upon which the flame rests.

2. In a burner intended for and adapted to burn gases under low pressure, such like for instance acetylene gas, the combination of an expansion-chamber the top of which is closed by wire-gauze which forms also the support upon which the base of the flame rests, inlets to admit gas and air thereto, and an additional inlet for air only, entering through the wire-gauze, the discharging capacity of said chamber being about double of its receiving capacity.

3. In a device to burn gas for heating purposes, the combination of a perforated surface upon which the base of the flame rests, a chamber below this surface from which a mixture of gas and air is supplied to the perforations in this latter, a central air-supply opening in this surface to add an additional supply of unmixed air to the flame above the burner and a spreader closed on top and having lateral outlets to cause this added air to become divided and distributed laterally across the burner-surface as soon as it arrives thereat.

4. In a burner intended for and adapted to burn gases under low pressure, such like for instance acetylene gas, the combination of a mixing-chamber adapted to receive gas and air, and an expansion-chamber of about double capacity communicating therewith, the former entering it through the side thereof, the otherwise open top of the expansion-chamber being closed by wire-cloth, which forms also the burner-surface upon which the flame rests.

5. In a device to burn gas for heating purposes, the combination of a mixing-chamber adapted to receive gas and air, an expansion-chamber communicating therewith, wire-cloth closing the top of the latter and forming the burner-surface upon which the base of the flame rests, a central air-inlet opening in this wire-cloth communicating with an air-conduit from below and flanges projecting over the edges of this wire-cloth to hold the same in position and close part of the open meshes thereof.

6. In a device to burn gas for heating purposes, the combination of a mixing-chamber 6, adapted to receive air and gas, a bridge 8, across the mouth of the same, the air entering at each side thereof through the open parts 11, a nipple 7, adapted to receive a gas-supply pipe and seated in this bridge and projecting therefrom, a rotary cut-off 12 mounted on nipple 7 to regulate within certain limits the admission of air, being incapable however of cutting it off altogether, for which purpose the open parts 13 therein are smaller than the open parts 11, but larger than the area otherwise closed by bridge 8, an expansion-chamber communicating with the mixing-chamber and a perforated burner-surface forming the top of the former.

7. In a device to burn gas for heating purposes, the combination of a mixing-chamber 6, adapted to receive gas and air, an expansion-chamber 14, open at the top, receiving the mixture from chamber 6, wire-cloth closing this open top and forming the burner-surface, a central air-conduit having projecting flange 24, below this wire-cloth, which latter

is cut out to admit the air from this conduit, a spreader 18, resting on flange 24, to hold the wire-cloth in position thereon and provided with lateral air-discharge openings through which the air is diffused over the burner-surface, a ring 22, having a downwardly-projecting flange 23, fitted around the top of the burner and projecting inwardly to hold the wire-cloth in place, and bars 21, connecting the spreader and ring 22, whereby these parts aid each other to retain their respective positions.

8. In a device to burn gas for heating purposes, the combination of a mixing-chamber 6, adapted to receive gas and air, an expansion-chamber 14, having a perforated top through which the mixture received from chamber 6, is discharged, a central air-inlet opening 16, in this perforated top and two air-conduits 17, starting from the bottom of chamber 14, near the edge thereof, and converging upwardly, merging into one and communicating with opening 16, mentioned, these conduits being so located that the space between them is opposite the inner end of chamber 6, and where the same discharges into chamber 14.

9. In a burner intended for and adapted to burn gas under low pressure, such like for instance acetylene gas, the combination of a mixing-chamber adapted to receive gas and air, an expansion-chamber of about double capacity communicating therewith and open at the top and a burner-surface formed by wire-gauze of fine mesh which closes this open top of the expansion-chamber.

10. In a burner, the combination of an expansion or mixing chamber, a screen covering said chamber, and an air-distributing chamber situated above said screen and adapted to discharge air laterally across the upper surface of the screen.

11. In a burner, the combination of an expansion or mixing chamber, a screen covering said chamber, an air-distributing chamber situated above said screen and adapted to discharge air laterally across the upper surface of the screen, and tubes passing through said expansion or mixing chamber and discharging into the distributing-chamber.

708,405. ROLLER-BEARING. WILLIAM G. GRIFFIN, Washington, D. C. Filed Oct. 5, 1901. Serial No. 77,601. (No model.)

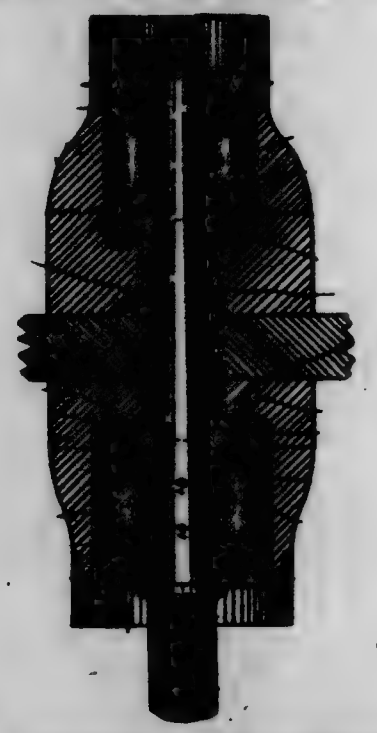

Claim.—1. A roller-bearing comprising antifriction-rollers, a revolving cage, bearing-pins adjustably secured in opposite ends of the cage and forming bearings for the rollers, and means for preventing the removal of said pins from engagement with said rollers.

2. A roller-bearing comprising antifriction-rollers, a revolving cage formed in a single piece, a sleeve inclosed by said cage and forming a race for the rollers, bearing-pins adjustably secured in opposite ends of the cage and forming bearings for the rollers, and means for preventing the removal of the pins from the cage, whereby said rollers are locked in position within the cage.

3. A roller-bearing comprising antifriction-rollers, a revolving cage, bearing-pins adjustably secured in opposite ends of the cage, and having tapered ends projecting into recesses in the ends of the rollers and forming bearings therefor, and means for locking said pins against removal from engagement with the rollers.

4. The combination with cups having inclined inner surfaces; of a barrel adjustably connected to said cups and a bearing in each cup, said bearing comprising a sleeve, a cage formed in one piece and rovolubly mounted on the sleeve, antifriction-rollers bearing upon the sleeve and cup, bearing-pins adjustably secured in opposite ends of the cage and forming bearings for the rollers, and means for locking said pins against removal from engagement with the rollers.

708,406. FLANGING-PRESS. WILLIAM J. HAGMAN, Philadelphia, Pa., assignor to Niles-Bement-Pond Company, Jersey City, N. J. Filed Mar. 24, 1902. Serial No. 99,547. (No model.)

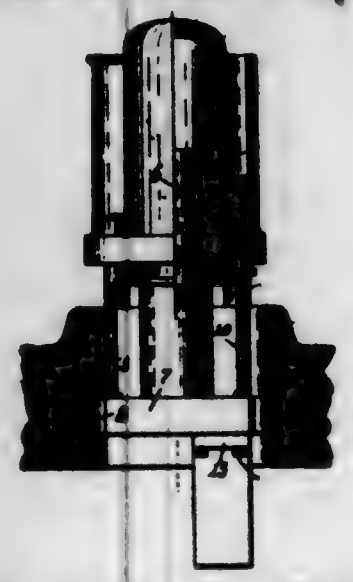

Claim.—1. In a flanging-press, the combination, substantially as set forth, of a head-plate provided with an opening through it, an rotating-cylinder fixedly secured over said opening, a ram projecting from the cylinder into the opening, a cross-head disposed at the lower end of the ram and reciprocating within said opening, and a flanging-tool secured within said opening to the lower face of the cross-head and arranged for horizontal adjustment thereon.

2. In a flanging-press, the combination, substantially as set forth, of a head-plate provided with an opening through it having guideways supported by its walls, an rotating-cylinder fixedly secured over said opening, a ram projecting from the cylinder into the opening, a cross-head at the lower end of the ram and engaging said guideways in the opening of the head-plate, and a flanging-tool secured within said opening to the lower face of the cross-head and arranged for horizontal adjustment thereon.

3. In a flanging-press, the combination, substantially as set forth, of a fixedly-supported rotating-cylinder, a ram projecting axially therefrom, a cross-head at the end of the ram provided with a pair of parallel T-slots in its face, a flanging-tool provided with a flange at its end to rest against the cross-head, and bolts engaging said flange and T-slots.

708,407. ANIMAL-POKE. ASA B. HALE, Ragsville, Mo. Filed Oct. 18, 1901. Serial No. 79,208. (No model.)

Claim.—An animal-poke comprising two members bowed to conform to the shape of the animal's neck, one of the members having its terminals curved forward to present fence-engaging means, prods constructed each of a flat piece of metal having one end bifurcated to pro-

sent prongs and twisted at right angles midway of its length to cause the prongs to be transversely disposed with relation to the fence-engaging means and its other end arranged between the poke members, and fastening devices for rigidly clamping the poke members and the prods together, said devices passing through the terminals of the prods, substantially as and for the purpose specified.

708,408. RUBBER TIRE. WILLIAM B. HARRIS, Akron, Ohio. Filed Dec. 30, 1901. Serial No. 87,703. (No model.)

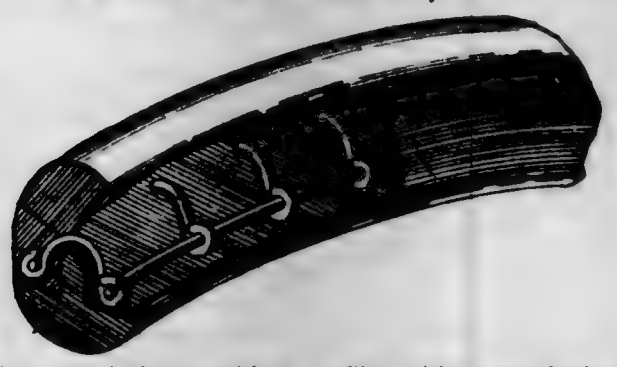

Claim.—1. A tire comprising a resilient body portion having a groove throughout its inner face and also provided upon each side with circumferential reinforcing-bands, said body portion also having a plurality of transversely-disposed wires, each wire section being bent upon itself near its middle portion to provide a U-shaped loop portion adapted to compensate for said groove, in combination with a rim having a rib fitting said groove, all combined substantially as specified and for the purpose set forth.

2. The combination with a rim having a centrally-disposed rib, of a resilient tire provided with a groove in its inner face fitting said rib, and also having upon each side a circumferential band and a plurality of reinforcing transversely-disposed wires embedded in the tire-body, each transverse wire having near its middle section a U-shaped member fitting around said groove, each end of said stay-wires being directed outward into engagement with the circumferential band, whereby when the base of the tire-body is spread said U-shaped portion will yield and again draw the tire back into a normal position, all substantially as specified and for the purpose set forth.

708,409. REGISTER, VENTILATOR, OR THE LIKE. EDWARD S. HART, New Britain, Conn., assignor to the Hart & Cooley Company, New Britain, Conn., a Corporation of Connecticut. Filed Aug. 15, 1901. Serial No. 72,033. (No model.)

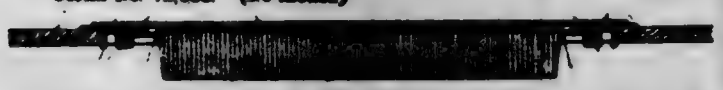

Claim.—1. A border-plate for registers, ventilators and the like comprising a frame having an opening adapted to receive a register-box, the inner edge of said border-plate being depressed to provide a supporting-shoulder for said box, a device carried by said depressed portion, said device projecting downwardly to center the border with respect to the floor-opening, said device being extended so as to center the box with respect to said border.

2. A border-plate for registers, ventilators, and the like, comprising an angular frame having an opening therein adapted to receive a register-box, said opening being substantially larger than the body portion of said box, a depression at the inner edge of said border to form a supporting-ledge for the top of said box, downwardly-projecting lugs at the lower side of said border-frame to center the same relatively to the floor-opening, and inwardly-projecting lugs at two or more angles of said opening adapted to engage with the register-box and center it with respect to the border-frame.

3. A border-plate for registers, ventilators, and the like, comprising a rectangular frame, lugs carried thereby and extending downwardly therefrom and adapted to center said frame relatively to the opening in which it is to be placed, inwardly-directed lugs carried by said frame and adjacent the inner angles thereof and adapted to engage with and center the register-box of smaller external proportions than said opening.

708,410. FLUID-REGULATING DEVICE. JAMES HASTINGS, Springfield, Vt. Filed Jan. 21, 1901. Serial No. 44,073. (No model.)

Claim.—1. A fluid regulating or measuring device comprising an expanding chamber having a loose movable element, valve mechanism exterior to said chamber and independent of said movable element, for permitting the ingress and egress of liquid under pressure into and from the chamber, on both sides of the movable element, and a spring bearing against said movable element to eject the liquid under pressure.

2. A fluid regulating or measuring device comprising a chamber, a loose liquid-measuring member moved in one direction by fluid, a spring for moving said member in the other direction, and valve mechanism independent of said member, said parts being combined whereby fluid is measured and discharged under a continuous yielding pressure.

3. A fluid regulating or measuring device comprising a cylinder having a loose piston, valve mechanism operable independently of said piston for conveying fluid alternately to and from said cylinder on both sides of said piston, a spring bearing against said piston for ejecting the fluid from said cylinder and a separate exhaust for the fluid on the spring side of the cylinder.

4. A fluid regulating or measuring device comprising an expanding chamber having a movable element, valve mechanism independent of said element for admitting fluid alternately to the opposite sides of said element, mechanical means for augmenting the pressure against one side of said element to increase the pressure of the fluid discharged from the other side of said element, and separate exhaust-ducts for the fluid from the opposite sides of said element.

5. A fluid regulating or measuring device comprising a cylinder having a loose piston, valve mechanism operable independently of said piston for conveying fluid alternately to and from said cylinder on both sides of said loose piston, a spring bearing against said piston for ejecting the fluid from said cylinder, and adjustable non-yielding means for checking the movement of said piston at any point in its travel.

6. A fluid regulating or measuring device comprising a casing having a plurality of cylinders with loose independent pistons therein, ducts leading to the opposite ends of said cylinders, a common fluid-inlet, fluid-outlets, and a single valve mechanism operable independently of said pistons for supplying fluid to and exhausting it from said ducts in succession.

7. A fluid regulating or measuring device comprising a casing having a plurality of cylinders with loose independent pistons therein, ducts leading to the opposite ends of said cylinders, a common fluid-inlet, outlets, and a valve mechanism operable independently of said pistons for alternately supplying fluid to and exhausting it from said ducts in succession.

8. A fluid regulating or measuring device comprising a casing having a plurality of cylinders with loose pistons therein, ducts leading to the opposite ends of said cylinders, a common fluid-outlet, a common waste-outlet, and a valve mechanism governing the passage of fluid through said outlets.

9. A fluid regulating or measuring device comprising a casing having a plurality of cylinders with loose independent pistons therein, a single valve operable independently of said pistons for permitting the ingress and egress of fluid to and from the cylinders on both sides of the loose pistons, pins projecting through the ends of said cylinders to limit the play of the pistons, and an adjustable member having a threaded connection with the casing for adjusting said pins simultaneously.

10. A fluid regulating or measuring device comprising a casing having a plurality of cylinders with loose independent pistons therein, a single valve operable independently of said pistons for permitting the ingress and egress of fluid to and from the cylinders on both sides of the loose pistons, pins projecting through the ends of said cylinders to limit the play of the pistons, a threaded stud on the casing and a nut on said stud and adjustable relatively thereto, for adjusting said pins simultaneously.

708,411. BACK GEARING FOR LATHES. JAMES HASTINGS, Springfield, Vt. Filed Mar. 20, 1901. Serial No. 52,053. (No model.)

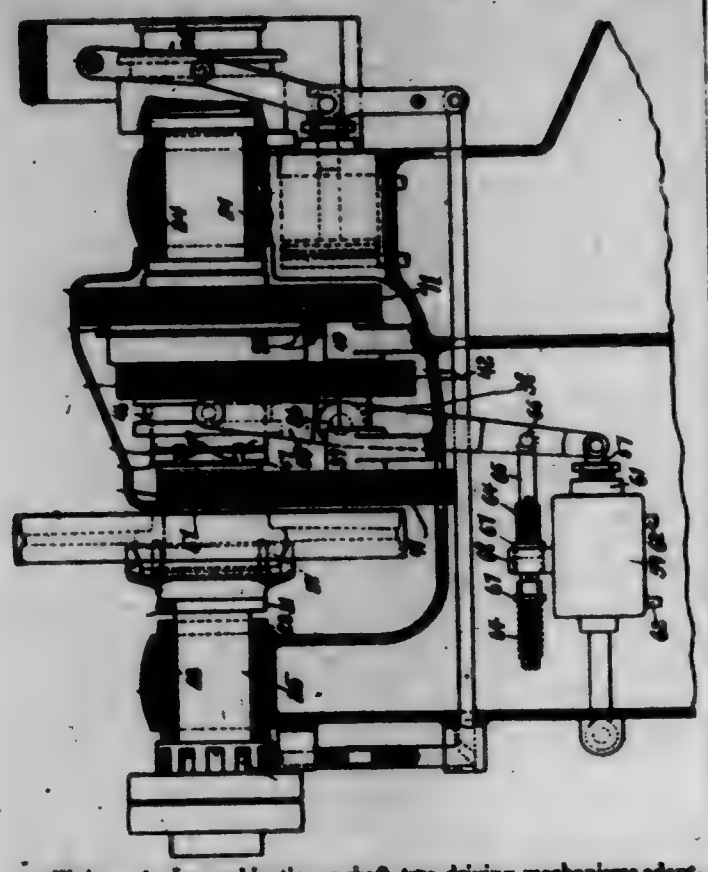

Claim.—1. In combination, a shaft, two driving mechanisms adapted to be driven in either direction, a friction-clutch for connecting one of said driving mechanisms to the shaft, a reversible ratchet-clutch in constant potential relation to the other said driving mechanism, for connecting it to the shaft, and provisions for throwing the friction-clutch into and out of operation.

2. In combination, a shaft, two driving mechanisms adapted to be driven in either direction, a friction-clutch for connecting one driving mechanism with said shaft, a reversible ratchet-and-pawl clutch for connecting the other driving mechanism with said shaft, means for throwing said friction-clutch into and out of operation, and provisions for holding the pawl out of engagement from the ratchet when the friction-clutch is in operation.

3. In combination, a shaft, two driving mechanisms adapted to be driven in either direction, a clutch for connecting one driving mechanism with the shaft, means for throwing said clutch into and out of operation, and a positive clutch operable when the first-mentioned clutch is out of operation, said positive clutch having a ratchet and automatically-reversible pawls for engaging said ratchet.

4. In combination, a rotary shaft, three differently-speeded driving mechanisms, clutch mechanism located between two of said driving mechanisms and having a member movable in opposite directions to clutch said last-mentioned driving mechanisms to the shaft, and a third clutch mechanism thrown automatically into operative relation to the third driving mechanism when said movable member occupies a middle or neutral position.

5. In combination, a rotary-shaft, three differently-speeded driving mechanisms adapted to be driven in either direction, friction clutch mechanism located between two of said driving mechanisms and having a member movable in opposite directions to clutch said last-mentioned driving mechanisms to the shaft, and a third clutch mechanism thrown automatically into operative relation to the third driving mechanism, irrespective of the direction of rotation of said driving mechanisms, when said movable member occupies a middle or neutral position.

6. In combination, a rotary shaft, three differently-speeded driving mechanisms, clutch mechanism located between two of said driving mechanisms and having a member movable in opposite directions to clutch said last-mentioned driving mechanisms to the shaft, and a positive clutch mechanism thrown automatically into operative relation to the third driving mechanism when said movable member occupies a middle or neutral position.

7. In combination, a rotary shaft, three differently-speeded driving mechanisms, friction clutch mechanism located between two of said driving mechanisms and having a member movable in opposite directions to frictionally clutch said last-mentioned driving mechanisms to the shaft, and a positive clutch mechanism thrown automatically into operative relation to the third driving mechanism, when said movable member occupies a middle or neutral position.

8. In combination, a shaft having two differently-speeded driving-wheels thereon, adapted to be driven in either direction, independent clutches for rotating said driving-wheels in either direction, means for operating one of said clutches, and devices disconnected from said operating means whereby when said last-mentioned clutch is inoperative, the other clutch is operated, and vice versa.

9. In combination, a shaft, a driving mechanism for rotating said shaft in either direction, and automatic mechanism whereby when the speed of the shaft exceeds the speed of the driving mechanism in either direction the latter is unclutched therefrom, and when the speed of the shaft is less than that of the driving mechanism the latter is clutched thereto.

10. In combination, a shaft, two differently-speeded driving mechanisms rotatable in either direction, a clutch for the high-speed driving mechanism, and automatic mechanism whereby when the shaft is clutched to the high-speed mechanism, the low-speed driving mechanism is unclutched, and when the speed of the shaft is less than that of the low-speed mechanism, the latter is clutched thereto.

11. In combination, a shaft having a member, a positive-clutch member, said members being respectively fast and loose on said shaft and rotating in the same direction, and one or more independently-movable pawls carried by one of said members and moved into operative position by the other of said members to positively clutch said members together when the speed of said members differs.

12. In combination, a reversibly-rotatable shaft having a fast member and a loose member rotating in the same direction, one of said members having ratchet-teeth, and one or more pawls carried by the other member to coöperate with said teeth for connecting said members, said pawl or pawls being automatically reversible by a change in the speed of movement of the loose member.

13. In combination, a driving member, a driven member, a pawl carried on one member, ratchet-teeth on the other member, automatic provisions by which the pawl is moved to inoperative position when the speed of the driven member exceeds that of the driving member and is moved to operative position when the speed of the driven member is less than that of the driving member, and a guard for preventing the pawl from engaging the ratchet-teeth when it is in inoperative position.

14. In combination, a driving member adapted to move in either direction, a driven member, an oscillatory reversible pawl carried by one member, ratchet-teeth on the other member, provisions for automatically oscillating said pawl to inoperative position when the speed of the driven member in either direction exceeds that of the driving member and to operative position when the speed of the driven member is less than that of the driving member, and an automatic guard which automatically prevents the engagement of the pawl with the ratchet-teeth when said pawl is in inoperative position.

15. In combination, a driving member, a driven member, an oscillating pawl on one member having a single operative end, ratchet-teeth on the other member, a friction-surface on the last-mentioned member, and a rotatable disk on said pawl to engage said friction-surface, substantially as described.

708,412. HAIR-PIN. ELLA O. HASSEN, Jersey City, N. J. Filed Aug. 11, 1900. Serial No. 26,633. (No model.)

Claim.—In a hair-pin the combination with a substantially U-shaped pin, the head of which is provided with a transverse recess and is cut off at an angle on the rear side, and each leg is bent or cranked and provided with a recess in its inner side, the portion of the leg between the head and the recess being provided with a hole extending diagonally therethrough from the outer or rear side of the head to the wall of the recess in the leg near one end, the leg being curved or bent outward at a point opposite said recess of a substantially U-shaped locking member, the legs of which fit within the holes in the legs of the pin, and when in position to retain the pin the head will bear against the cut-off portion of the head of the pin and the tips will each engage with the wall of its respective recess opposite the entrance to the hole in the other side of the recess.

708,418. CONSTRUCTION OF COMPOSITE VESSELS. EDWARD HAYES, Wolverton, England. Filed Nov. 26, 1901. Serial No. 83,794. (No model.)

Claim.—Improvements in the construction of composite vessels, comprising independent metallic bow and stern portions having extending external and internal plates forming grooves at the aft and forward ends respectively of said portions, said grooves adapted to receive and rigidly connect the ends of the planks forming the body of the vessel, substantially as described.

708,418.

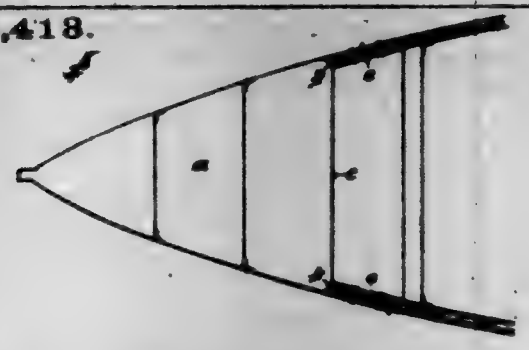

708,414. STRAW-STACKER. CHARLES E. HAGER, Xenia, Ohio. Filed Apr. 18, 1901. Serial No. 56,057. (No model.)

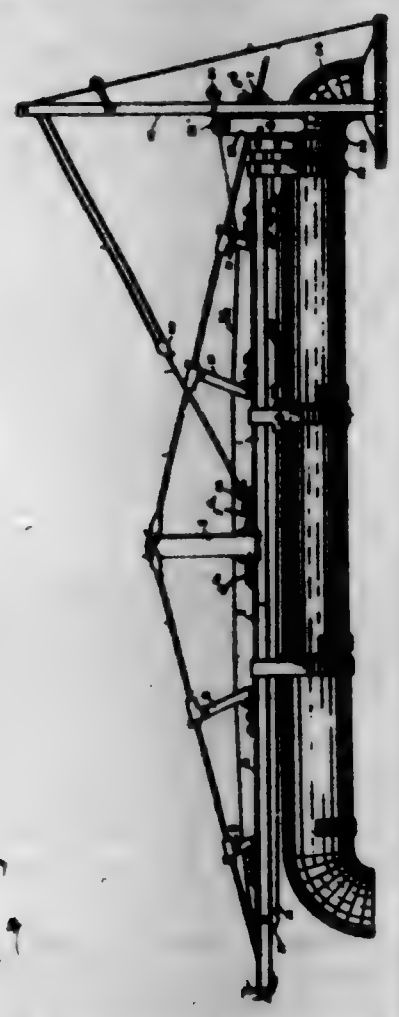

Claim.—1. In a straw-stacker, the combination with the telescoping cylindrical tubes or sections, of a hinged and folding beam supporting the same, substantially as described.

2. In a straw-stacker, the combination with the telescoping cylindrical tubes or sections, of a hinged and folding beam supporting the same and folding braces for said beam, substantially as described.

3. In a straw-stacker, the combination with the telescoping stacker-sections, of a supporting-beam therefor comprising hinged sections, sliding connections between said beam and telescoping sections, an upright hinged to said beam, and folding truss-rods connecting said upright and beam-sections, substantially as described.

4. In a stacker, the combination with the telescoping stacker-sections, of a sectional supporting-beam therefor, sliding connections between said beam and telescoping sections, an upright hinged to said beam, truss-rods extending from the top of said upright to opposite ends of the beam, and folding braces between said rods and the sections of the beam, substantially as described.

5. In a stacker, the combination with the telescoping sections, of a sectional supporting-beam therefor, sliding connections between said beam and said telescoping sections, an upright hinged to said beam, and truss-rods pivotally connected to the upper end of said upright and having their opposite ends slidingly connected with opposite ends of the beam, substantially as described.

6. In a stacker, the combination with the telescoping stacker-sections, of a folding supporting-beam therefor, sliding connections between the beam and said stacker-sections, an upright hinged to said beam, truss-rods pivotally connected to the upper end of said upright, and extending through eyes at opposite ends of the beam, and nuts threaded on said rods and coöperating with said eyes, substantially as described.

7. In a stacker, the combination with the telescoping stacker-sections, of a supporting-beam comprising two members, an upright at the junction of said members having a hinged connection to each, and truss-rods pivotally connected to the upper end of said upright and slidingly connected to opposite ends of said beam and sliding connections between said beam and stacker sections, substantially as described.

8. In a stacker, a supporting-beam, a plurality of telescoping sections having sliding connections therewith, an operating-cord permanently connected to one of said sections for moving it in both directions, an automatically-detachable connection between said cord and the adjoining section, substantially as described.

9. In a stacker, a supporting-beam, a plurality of telescoping stacker-sections slidingly supported thereby, an operating cord or rope having a permanent connection with an outer section, a stop member on said cord, an engaging device on the next inner section for engaging said stop member, and stationary means for releasing said engaging means at the limit of their inward movement, substantially as described.

10. In a stacker, a supporting-beam, a plurality of telescoping stacker-sections slidingly supported thereby, an operating cord or rope having a permanent connection with an outer section, a stop member on said cord, pawls for engaging said stop device, spring-pressed arms carrying said pawls, and stationary inclines in the path of said arms for operating them to release the pawls, substantially as described.

703,415. BOTTLE-WASHING MACHINE. JOHN G. HESS, Pittsburg, Pa., assignor of two-thirds to Edward J. Vilsack and John J. O'Reilly. Filed Oct. 22, 1900. Renewed Dec. 6, 1901. Serial No. 84,945. (No model.)

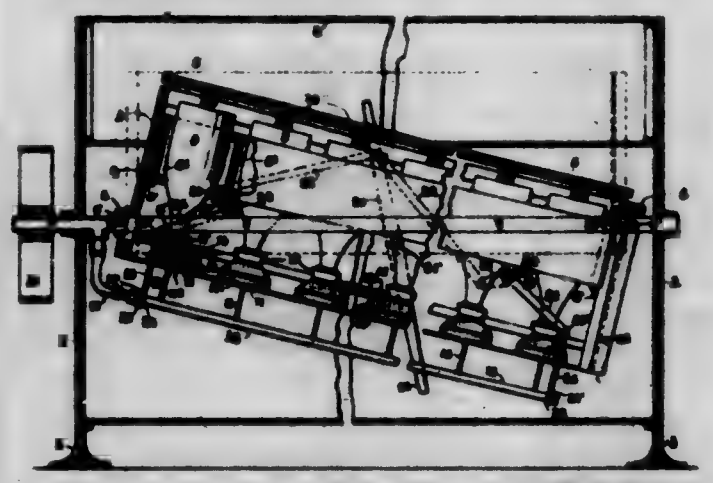

Claim.—1. In a bottle-washing machine, the combination of a revolving shaft, a frame mounted on said shaft obliquely to the vertical, transverse and longitudinal planes intersecting said shaft, means for securing bottles in said frame, and means for cleaning said bottles.

2. In a bottle-washing machine, the combination of a revolving shaft, a frame attached to said shaft, means for lowering and raising one end of said frame, means for securing bottles in said frame and means for cleaning said bottles.

3. In a bottle-washing machine, the combination of a tank, a rotating shaft secured in said tank, a frame mounted on said shaft obliquely to the vertical, transverse and longitudinal planes intersecting said shaft, means for securing bottles in said frame and means for cleaning said bottles.

4. In a bottle-washing machine, the combination of a tank, a rotating shaft secured in said tank, a frame mounted on said shaft at an obtuse angle to the line of said shaft, a lid secured to the top of said frame, packers secured to said lid and adapted to press on the bottom of bottles, said bottles resting in racks, said racks secured in said frame and means for cleaning said bottles.

708,416. SHADOWGRAPH. JOHN G. HIXSON, Milwaukee, Wis. Filed Feb. 1, 1902. Serial No. 92,158. (No model.)

Claim.—1. A shadowgraph, comprising a translucent shadow-board, a figure secured thereto at one or more points, one at least of which points

is medially of the figure or at a distance from its termination other parts of the figure extending a distance from the board whereby light can pass obliquely under the part or parts of the figure thus separated from the board and cast a shadow thereon.

2. A shadowgraph, comprising a board or sheet of light-transmitting material, a figure in light-obstructing material secured medially to the light-transmitting material, other parts of the figure being at a distance from but opposite to the light-transmitting material.

3. An article of manufacture, consisting of a sheet or board of light-transmitting material, a figure of light-obstructing material secured at a point or points one at least of which points is medially of the figure or at a distance from its termination to the surface of the light-transmitting material and having other parts opposite to but at a distance from the light-transmitting material.

708,417. CANE-STRIPPER. ENOCH W. HOLDENBECK, Lawley, Ala. Filed Apr. 12, 1901. Serial No. 55,727. (No model.)

Claim.—1. In a cane-stripper the combination of a handle-section, diverging spring-arms fixedly held in said handle, strengthening-plates securely fastened to the said handle, handles secured to the said arms at their outer ends, the said arms having bowed sections arranged between the handles and opposite each other which form tubular sections when the arms are pressed together, substantially as shown and described.

2. In a cane-stripper comprising a handle portion, spring-arms diverging therefrom, said arms being formed of one piece of metal bent in the middle to form the said arms, handle portions held upon the free ends of the arms, spring portions formed integral with said arms, and bowed sections arranged on the arms between the handles, substantially as shown and described.

3. In a cane-stripper, the combination of a handle-section composed of two semicircular portions having their inner faces recessed, arms securely held within the said recesses, spring portions formed in the arms adjacent the handle-section, handles secured to the outer or free ends of the arms, bowed portions formed in the said arms and arranged between the said handles, substantially as shown and described.

708,418. FOUNTAIN-PEN. JOHN HOLLAND, Cincinnati, Ohio. Filed Mar. 17, 1902. Serial No. 98,581. (No model.)

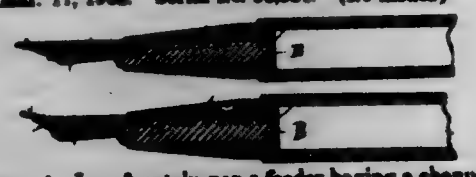

Claim.—1. In a fountain-pen a feeder having a channel beneath the pen and having its end elastic and curved upward to follow the pen when the nibs are bent, substantially as shown and described.

2. In a fountain-pen a feeder having a channel beneath the pen, a longitudinal slit beneath the channel forming an elastic end upon the feeder which is bent upward to contact the pen at all times, substantially as shown and described.

3. In a fountain-pen a feeder having a channel with a central partition beneath the pen and being curved upward at the end to contact the pen at all times, substantially as shown and described.

708,419. MEANS FOR DRIVING SHUTTLES OF LOOMS. JOHN HOGGETT, Sunderland, England. Filed Oct. 12, 1900. Serial No. 33,376 (No model.)

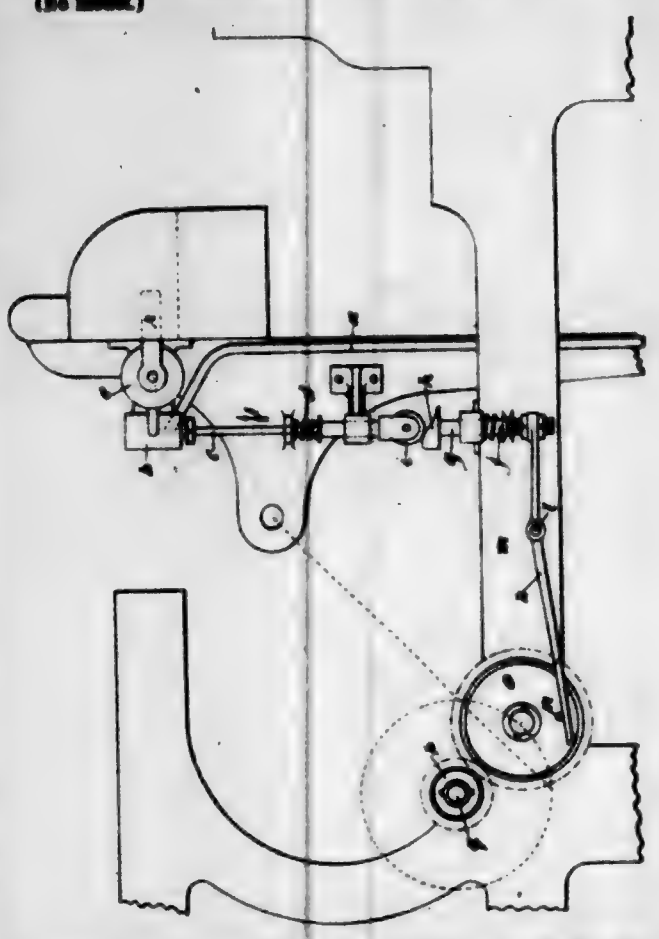

Claim.—In looms and other textile machinery, a cylinder piston and piston-rod attached to the desired part of the machine and adapted to be operated by compressed air, said piston-rod having a projection for throwing the shuttle, a valve controlling the admission of compressed air to the cylinder aforesaid, a valve-rod carrying said valve and having a roller or wheel attached thereto, a cam carried by an intermediate rod and engaging with the roller or wheel aforesaid, a pivoted lever engaging with the end of said intermediate rod, a projection carried by one of a train of gear-wheels driven from the main shaft and adapted to periodically engage with and operate the pivoted lever aforesaid, substantially as described and illustrated herein and for the purpose set forth.

708,420. PROCESS OF MAKING ELECTRIC ACCUMULATOR-PLATES. RUDOLPH M. HUNTER, Philadelphia, Pa. Filed Aug. 1, 1899. Serial No. 726,748. (No model.)

Claim.—1. The process of making an accumulator-plate which consists in first forming a series of elementary parts with a large number of thin lead walls, in then placing said elementary parts in a mold and clamping their outer edges tightly, in then passing a cooling medium through the central or interior portions of the elementary parts, in then forcing molten lead into the mold so as to cast it around the segments under pressure, and in finally transforming the surfaces of the thin walls of the segments into peroxid of lead.

2. The process for making a positive plate for an electrical accumulator which consists in forming an elementary part of lead in light porous condition, then placing said elementary part in a mold and clamping the outer edges near the periphery tightly, then passing a cooling medium through the central or interior portion of the elementary part, and while thus cooled casting a lead body-plate about said elementary part.

3. The herein-described method of making a positive plate for an electrical accumulator, which consists in forming a series of elementary parts of lead with highly-fusible peripheries formed by wrapping or folding a lead strip upon itself, placing a series of said elementary parts in a mold and shielding all but their peripheries, positively cooling the central portions of all of the elementary parts, casting a body of lead or lead alloy entirely around and between the exposed peripheries of said elementary parts and by its heat fusing the peripheries alone of the elementary parts into an integral structure with the body metal to make a close clean electrical connection, and finally transforming those portions of the surfaces of the segments not fused to the body into peroxid of lead.

4. The herein-described process of making a positive plate for an electrical accumulator, which consists in forming a series of elementary parts each presenting a large number of thin lead walls wrapped upon each other, placing said segments in a mold, retaining their central portions only in a cool condition, casting a lead body-plate entirely around their peripheral edges, fusing their outer peripheral edges to said plate to constitute an integral structure, condensing the interior layers of the elementary parts upon each other by the cooling of the body-plate, and finally subjecting the plate to an electrolytic action to convert the outer surfaces of the thin lead walls of the elementary parts into peroxid of lead.

5. The herein-described method of making a positive plate for an electrical accumulator, which consists in wrapping or folding a long strip of lead into elementary parts each having a series of thin layers resting one upon the other, in placing said elementary parts between the side walls of a mold of greater cubic capacity than the mass of the elementary parts and making tight joints between the exterior side circumferential edges of the elementary parts and the inside walls of the mold, and in finally filling the space within the mold entirely around and between the circumferential peripheries of the elementary parts with molten lead or its alloy and solidifying the same before removal from the mold, whereby the shrinking of the body metal condenses the layers of the elementary parts one upon the other to greatly strengthen the finished plate and reduce the internal electrical resistance when the plate is formed.

708,421. CAMERA ATTACHMENT. JAMES L. JACKSON, Williamsport, Pa. Filed Oct. 26, 1901. Serial No. 79,968. (No model.)

Claim.—1. As a new article of manufacture, a collapsible frusto-helical wire frame, and a flexible cover carried by and embracing the periphery of the frame, the opposite ends of the article being open.

2. A device for excluding reflected light from the lenses of cameras, comprising a tapered and collapsible tube formed of light-excluding material, the opposite ends of the device being open.

3. A device for excluding reflected light from the lenses of cameras, comprising a tube formed by a collapsible frusto-helical frame, and a flexible light-excluding cover therefor, the opposite ends of the device being open.

4. A device for excluding reflected light from the lenses of cameras, comprising a tube formed by a collapsible frusto-helical frame, a flexible light-excluding cover therefor, and attaching means carried by the smaller end of the device, the opposite ends of the device being open.

5. As a new article of manufacture, a flexible frusto-helical wire frame, a flexible cover carried by and embracing the periphery of the frame, the opposite ends of the article being open, and means carried by the smaller end of the article for mounting the same upon a support without obstructing the open end thereof.

708,422. TOY. JOHN JACKSON, Alnwick, England. Filed Nov. 7, 1901. Serial No. 81,500. (No model.)

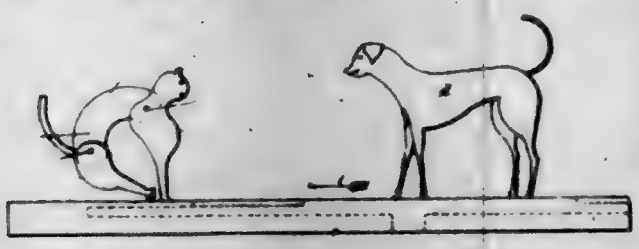

Claim.—In toys of the class herein described, two or more animal figures secured to a base, one or more of which have their hind legs pivotally connected to a sliding portion of said base, and their legs and body pivotally attached together, so that when one figure approaches another, the second is caused to change its position, substantially as described and illustrated herein.

708,428. GATE. CLAUS B. JAGER, Roland, Iowa. Filed May 8, 1901. Serial No. 59,260. (No model.)

Claim.—1. The combination with a supporting structure having a gateway, of a vertically-swinging gate pivoted in the gateway and leaving an open space therein, locking means movably mounted upon the gate for holding it against opening, and operating means for the lock located in the open space of the gateway and movable transversely of the gate.

2. The combination with a fence having a gateway, of a gate pivoted in the gateway and leaving an open space therein, said gate having a free swinging movement in both directions, locking means for holding the gate against opening in either direction, and operating means for the lock, said means being located in the open space of the gateway.

3. The combination with a fence having a gateway, of a vertically-swinging gate pivoted at its upper end in the gateway and having its lower edge spaced from the ground or floor leaving an open space, locking means movably mounted upon the gate to hold it against opening, and an operating device for the lock located in the open space below the gate and movable transversely thereof.

4. The combination with a fence having a gateway, of a vertically-swinging gate pivoted at its upper end in the gateway and having its lower edge spaced from the ground or floor leaving an open space, locking means movably mounted upon the gate to hold it against opening, and an operating device for the lock located in the open space below the gate and movable transversely thereof.

5. The combination with a swinging gate, of a lock pivoted to the gate to hold the same against opening, and operating means suspended from the lock and depending below the lower edge of the gate.

6. The combination with spaced supporting-standards, of a vertically-swinging gate pivoted to the standards, a transverse locking-bar pivoted to the gate to engage means located upon the standards to hold the gate against opening, and an operating-plate secured to the locking-bar and depending beneath and movable transversely of the gate.

7. The combination with spaced supporting-standards, of a vertically-swinging gate pivoted at its upper end to the upper ends of the standards, keeper-plates secured to the standards, and having notches in their upper edges, a transverse locking-bar pivoted to the gate and normally engaging in the notches of the keeper-plates, and an operating-plate secured to the locking-bar and depending beneath and movable transversely of the gate.

8. The combination with a vertically-swinging gate, of a lock movably mounted upon the gate, and operating means for the lock carried by and depending below the lower edge of the gate, said operating means being movable transversely of the gate.

9. The combination with a swinging gate, of spaced steps located adjacent to the gate, a lock carried by the gate and arranged to have a movable engagement between the steps to permit of a limited movement of the gate, and operating means for the lock.

10. The combination with a swinging gate suspended from its upper end, of locking means for the gate mounted upon the lower end thereof, and a keeper arranged contiguous to the lower end of the gate and having spaced steps between which a portion of the lock movably engages to permit of a limited movement of the gate without unlocking the same.

708,424. ROTARY MIXER FOR CONCRETE &c. WILLIAM J. JUDD, New York, N. Y., assignor to Frederick C. Austin, Chicago, Ill. Filed Aug. 8, 1901. Serial No. 71,333. (No model.)

Claim.—1. A mixer for concrete and the like, comprising a rotary, tilting mixing-drum having charging and discharge openings respectively at opposite ends and tapered toward its discharge-opening; and a series of straight, longitudinally-disposed flat blades projecting radially inward from the inner wall of the drum and arranged parallel or substantially parallel with the axis of said drum and extending substantially from end to end thereof, whereby the mixing of the material is effected when the drum is rotated, and the material permitted to slide freely toward the contracted discharge-opening when the drum is both rotated and tilted.

2. A mixer for concrete and the like, comprising a rotary mixing-drum having oppositely-arranged charging and discharge openings; a tilting support for the drum; mechanism for rotating the drum; and

mechanism for applying the power employed to rotate the drum, to tilt the support for the same.

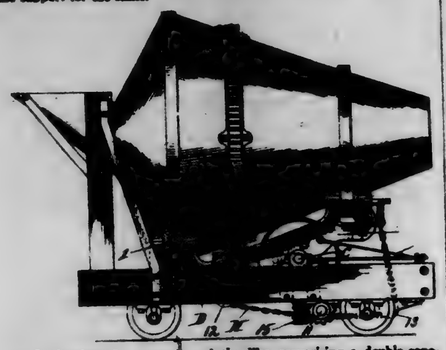

3. A mixer for concrete and the like, comprising a double-cone-shaped, rotary mixing-drum containing mixing devices; a tilting support for the drum; mechanism for rotating the drum; and mechanism for applying the power employed to rotate the drum to tilt the support for the same.

4. A mixer for concrete and the like, comprising a rotary, tilting mixing-drum having oppositely-arranged charging and discharge openings; power-actuated mechanism for both rotating and tilting the drum; and mechanism for automatically arresting the tilting movement of the drum.

5. A mixer for concrete and other substances, comprising a rotary mixing-drum; a tilting support for the rotary mixing-drum; a rotary driving-shaft; power-transmitting means carried by the tilting support and arranged for driving the drum from the rotary driving-shaft; means for operating the tilting support from the rotary driving-shaft; and means for connecting and disconnecting the power with and from such tilting support.

6. A mixer for concrete and other substances, comprising a rotary mixing-drum; a tilting support for the rotary mixing-drum; power-actuated means for rotating the mixing-drum; power-transmitting means for applying the power to operate the tilting support for the drum; and a clutch mechanism connected with and operated by the tilting support and arranged for disconnecting the power from the tilting support.

7. A concrete-mixer comprising a rotary mixing-drum having oppositely-arranged charging and discharge openings, said drum being provided between its said openings with an external ring-gear; a rotary driving-shaft arranged under the drum and transverse to the axis about which the drum revolves; a tilting drum-support forming a double-armed lever which is fulcrumed to tilt about the axis of the rotary driving-shaft, gear connection between the rotary driving-shaft and the gear-ring on the drum; and antifriction-rolls arranged upon the arms of said lever and engaging and supporting opposite end portions of the rotary mixing-drum.

8. A mixer for concrete and the like, comprising a rotary mixing-drum having oppositely-arranged charging and discharge openings, said drum being provided between its said openings with an external ring-gear; a tilting drum-support forming a double-armed lever having long and short arms and fulcrumed between such arms to swing about an axis transverse to the axis about which the drum revolves and located between the middle portion and discharge-opening of the drum; gearing for rotating the drum; and antifriction-rolls arranged upon the arms of said lever and supporting the drum at opposite end portions thereof; the discharge-end portion of the rotary mixing-drum being supported by the short arm of said lever, whereby when the drum is tilted as in dumping, the extent of travel on the part of its discharge end will be less than the extent of travel on the part of its charging end.

9. A mixer for concrete and the like, comprising a rotary mixing-drum having oppositely-arranged charging and discharge openings; a tilting support for the rotary mixing-drum consisting of a double-armed lever pivotally supported to tilt about an axis between its arms; a flexible connection such as a chain or cable connected with the lever-arm at opposite sides of said axis; a winding device for operating the chain or cable; and mechanism for rotating the drum regardless of its position.

10. A mixer for concrete and the like, comprising a rotary drum having oppositely-arranged charging and discharge openings and provided with a ring-gear; a tilting support for the rotary drum; a transversely-arranged driving-shaft arranged under the drum; a counter-shaft 5; and power-transmitting connections between said counter-shaft and the driving-shaft and the ring-gear.

11. A mixer for concrete and the like, comprising a rotary mixing-drum; a base; a tilting support for the rotary mixing-drum fulcrumed between its ends upon the base and arranged to tilt about an axis transverse to the axis about which the drum revolves; a reversibly-operating device for tilting the drum in opposite directions; and connections between such reversibly-operating device and portions of the tilting drum-support at opposite sides of the axis about which said support is arranged to tilt.

708,425. ELECTRIC ALARM-CLOCK. ISAIAH H. KIVOKIAN, Philadelphia, Pa. Filed Feb. 12, 1901. Serial No. 46,977. (No model.)

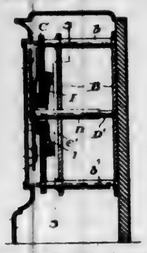

Claim.—1. In an alarm-clock of the character described, the combination of the hour-hand, the dial, the arm in the path of said hand, the central spur-wheel carrying said arm, the key provided with teeth adapted to engage those of the spur-wheel, a contact-spring bearing against said wheel, the electric alarm, and the normally broken circuit therefor connected with said contact-spring and with the clock-movement, substantially as described.

2. In an alarm-clock of the character described, the combination of the hour-hand, the apertured dial, the arm in the path of said hand, the central spur-wheel carrying said arm, the separate key adapted to be fitted to the aperture of the dial and provided with teeth to engage those of the spur-wheel, a contact-spring bearing against said wheel, the electric alarm, and the normally broken circuit therefor connected with said contact-spring and with the clock-movement, substantially as described.

3. In an alarm-clock of the character described, the combination of the hour-hand, a flat spring one end of which is secured to said hand, an antifriction-roller journaled in the free end of said spring, and a set-screw fitted to the hand and bearing against the spring, the electric alarm, the normally broken circuit therefor, a setting-arm in said circuit, a spur-wheel carrying said arm, and a toothed key for engaging and turning said spur-wheel, substantially as described.

4. In an alarm-clock of the character described, the combination with the hour-hand, the dial of non-conducting material, the arm in the path of said hand, the central wheel or support for said arm, a contact-spring affixed to the dial and bearing against said wheel or support, the electric alarm, and the normally broken circuit therefor connected with said contact-spring and with the clock-movement, substantially as described.

708,426. MOTOR. CHARLES H. KILBE, Indianapolis, Ind., assignor of two-thirds to Sylvester F. Barhart, Indianapolis, Ind. Filed Feb. 17, 1902. Serial No. 94,446. (No model.)

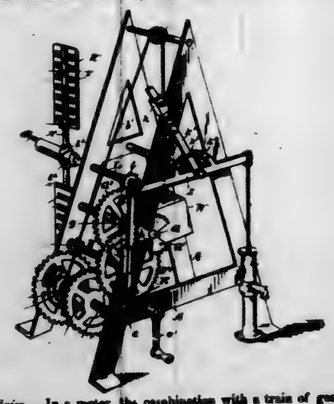

Claim.—In a motor, the combination with a train of gears, means for actuating a gear at one end of the series, a governor-shaft connected with said train of gears, lateral arms connected by said shaft and blades secured to said arms, said blades having a series of openings and slides to cover more or less of said openings.

708,427. DOG-CART. FRANZ KNECHT and WILHELM KNECHT, Wiedenbrück, Germany. Filed Nov. 1, 1901. Serial No. 80,731. (No model.)

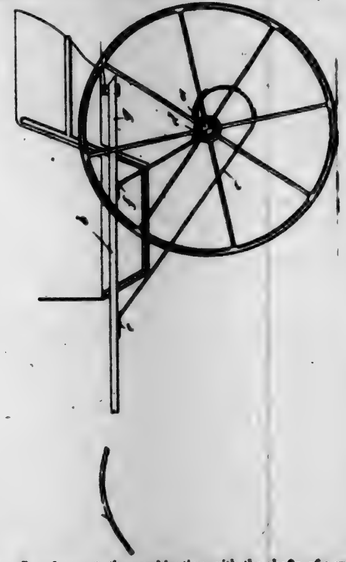

Claim.—In a dog-cart, the combination with the shafts, of a spring one end of which is rigidly secured to said shaft, at an acute angle to the rear end thereof, said end of the spring extending to a point beneath the axle in the same plane throughout, said end encircling the axle and being rigidly secured thereto, the other end of said spring being pivotally connected to the shaft with its rear end at an angle to the rear end of the shaft, and a spring connected to the rear extremities of said shafts and engaging the lower face of the body of the cart, substantially as described.

708,428. WASHING-MACHINE. JOHN KNOCH, Cincinnati, Ohio. Filed May 5, 1900. Serial No. 15,892. (No model.)

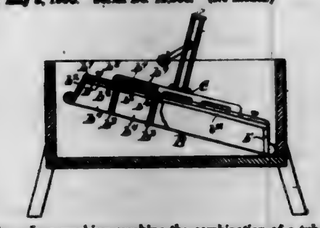

Claim.—In a washing-machine the combination of a tub, a rocker therein with its ends abutting against the ends of the tub and carrying a pair of parallel upwardly-projecting rods, and a shaft journaled in the sides of the tub and having a U-shaped curve to fit between the rods, substantially as shown and described.

708,429. LOCK. CARL KNEBELSAMP, Steinagen, Germany. Filed Aug. 20, 1900. Serial No. 827,092. (No model.)

Claim.—1. In a lock, the combination of a sliding bolt, a spring-plate located adjacent thereto, a hollow key-guide, a pin carried by said spring-plate and projecting into said hollow key-guide, a pin or detent carried by said bolt, and holes or recesses in said spring-plate adapted to receive said detent and hold said bolt at one or the other of its extreme positions.

2. In a lock, the combination of a sliding bolt, having a projection thereon, a movable tumbler plate or plates having notches therein, the said projection being normally adapted to engage one or another of said notches and hold said bolt against movement, a detent engaging with said tumbler plate or plates, whereby said plate or plates may be held against movement, and means, adapted to be controlled by a suitable key, for removing said detent from said tumbler plate or plates, thus disengaging the latter from the bolt whereby said bolt may be moved.

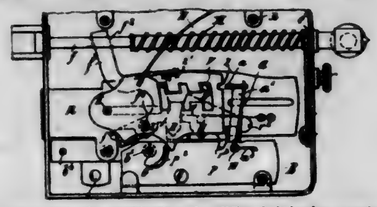

3. In a lock, the combination of a sliding bolt having a projection thereon, a movable tumbler plate or plates having notches therein, the said projection being normally adapted to engage one or the other of said notches and so hold said bolt against movement, a rocking lever adapted to engage and disengage said tumbler plate or plates and permit or prevent movement of the same, a projection carried by said lever and a spring-plate adapted to engage said projection when said lever is disengaged from the tumbler plate or plates.

4. In a lock, the combination of a sliding bolt, a projection thereon, a pivoted tumbler plate or plates, notches therein, the said projection being adapted to engage one or the other of said notches, a bell-crank lever having a detent adapted to normally engage with said tumbler plate or plates and prevent movement of the latter, and means controlled by a suitable key whereby the said bell-crank lever may be moved and held in disengaged relation to said tumbler plate or plates so that the latter may be moved to release the bolt.

5. A locking device for doors and the like, comprising a key having a bit and a moving pin guided obliquely therein, intermediate securing devices between the bolt and the key, and a safety device with means for arresting it to prevent the movement of said intermediate securing devices when locked, said pin being adapted to engage the safety device; substantially as described.

6. A locking device for doors and the like, comprising a key having a bit, a moving pin guided obliquely therein, intermediate securing devices between the bolt and the key, and a safety device swinging in a recess of the bolt, and an arresting mechanism having a plate provided with a projection protruding into the path of the safety device, said plate being fixed elastically to the back of the bolt, so that it can be pressed back by means of the pin, substantially as described.

708,430. RAIL-CLAMP. WILLIS C. LEE and HILES F. MOORE, Chicago, Ill. Filed Nov. 30, 1901. Serial No. 84,266. (No model.)

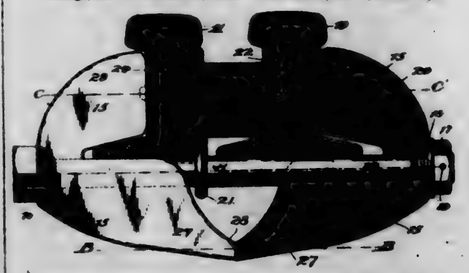

Claim.—1. In a rail-clamp, in combination with the rails to be clamped, one or more spacing-blocks between or adjacent to the webs of said rails, a pair of clamp-jaws each bearing against said combined rail-webs and spacing block or blocks, passing around the outside of the rail and meeting the other jaw below the rail, and means connecting said jaws between the said bearing-points and below the rails for tightening said jaws, for the purposes set forth.

2. In a rail-clamp, in combination with the rails to be clamped, one or more spacing-blocks between the webs of the rails, a bolt below the rails, a pair of clamp-jaws on said bolt, having upper arms bearing against the combined spacing block or blocks and rail-webs, and lower arms bearing against each other at a point below said bolt, the total length of the upper arms, spacing block or blocks and rail-webs being approximately the sum of the length of the two lower arms, for the purposes set forth.

3. In a rail-clamp, in combination with the rails to be clamped, a series of transferable spacing-blocks adjacent to the webs of said rails, a bolt passing below said rails, and a pair of clamp-jaws on said bolts, having upper arms bearing against said combined spacing-blocks and rail-webs and lower arms bearing against each other at a point below said bolt, the total length of the upper arms, spacing-blocks and rail-webs being approximately the sum of the length of the lower arms, for the purposes set forth.

4. In a rail-clamp, in combination with the rails to be clamped, a series of transferable spacing-blocks between and adjacent to the webs of said rails, a bolt passing below said rails and a pair of clamp-jaws on said bolts, having upper arms bearing against said combined spacing-blocks and rail-webs, and lower arms bearing against each other at a point below the center line of the bolt, approximately equal to the distance the center of the spacing-blocks and rails is above the center of the bolt, for the purposes set forth.

5. In a rail-clamp, in combination with the rails to be clamped, a series of transferable spacing-blocks between and adjacent to the webs of said rails, the total thickness of the webs of the rails and the spacing-blocks being substantially the same in all positions of the spacing-blocks, a bolt passing below the flanges of said rails, a pair of clamp-jaws on said bolts, having upper arms bearing against said combined spacing-blocks and rail-webs, and lower arms bearing against each other at a point below the center of the bolt, substantially equal to the distance of the center of the spacing-block from the center of the bolt, for the purposes set forth.

6. In a rail-clamp, in combination with the rails to be clamped, the spacing-blocks 20, 22, 23, and 24, the bolt 14 below the rails, the clamp-jaws 15, having the upper arms 29 bearing against the combined spacing-blocks and rail-webs and the lower arms 27 bearing against each other, all of the parts being arranged and disposed substantially as shown and described, for the purposes set forth.

708,481. ARTIFICIAL LIMB. EDWARD F. LESTER, Columbus, Ohio. Filed Mar. 24, 1902. Serial No. 99,508. (No model.)

Claim.—In an artificial limb, the combination with an artificial foot-body, and a fixed plate on its upper side having a transverse rounded recess, of a foot-body having a fixed under side plate 11 provided with a rounded depressed portion 12, a T-bolt having its head portion loosely mounted in the plate depression 12 and having its stem portion passing loosely through opposite openings in said plates 11 and 3 and through the foot-body, and a hinge-bolt 17 independent of the bolt 23 having its upper end hinged in connection with the foot-body at a point in the forward portion thereof, said bolt extending downward loosely through openings in said plates and within a socket of the foot and being provided within said socket with a yielding bushing, substantially as specified.

708,482. PAN-LIFTER. FRED LEONARD, Cripplecreek, Colo. Filed Jan. 28, 1902. Serial No. 93,577. (No model.)

Claim.—1. A device of the class described comprising a pair of shanks, a spring connecting the shanks, sides connected with the shanks and provided with jaws, and a narrow supporting and guiding loop extending from one side of the device and receiving the opposite side, and provided with a depending extension forming an inner jaw, substantially as described.

2. A device of the class described consisting of a single piece of resilient material coiled between its ends to provide a spring and extending therefrom to form shanks, one of the sides of the wire being extended internally and bent backward to form a narrow transverse loop arranged to guide, support and limit the other shank in its movement and extended downward to form an inner jaw, said wire being also extended from both shanks to form pan-engaging sides, substantially as described.

3. A device of the class described comprising a pair of shanks, a spring connecting the shanks, the pan-engaging sides provided at their outer ends with depending jaws, and a narrow transverse loop extending from one side of the device and receiving the opposite side of the same and provided with an inner jaw extending downward from the bottom of the loop and consisting of a looped portion of the wire, substantially as described.

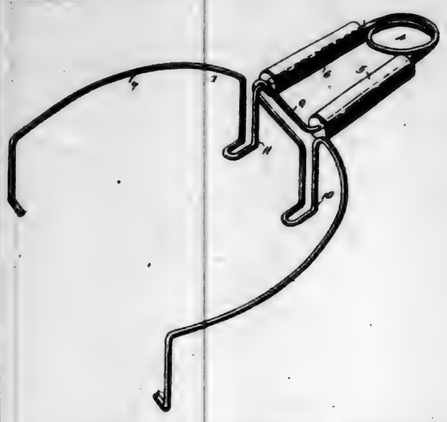

4. A device of the class described comprising the shanks, a spring connecting the shanks, the sides provided at their outer ends with depending L-shaped jaws and a narrow transverse loop extending from one side of the device and receiving and supporting the other side and provided with the inner L-shaped jaw extending downward from the lower portion of the transverse loop, substantially as described.

5. A device of the class described comprising the shanks, a spring connecting the shanks, the sides provided at their outer ends with depending L-shaped jaws, and the narrow transverse loop extending from one side of the device and receiving and supporting the other side of the device and forming a guide for the same and limiting the movement thereof, and provided with an inner depending jaw consisting of an L-shaped loop and formed by extending the wire at the lower side of the transverse loop, substantially as described.

708,488. MEANS FOR OPERATING DOORS. FRANK MAGNY, Grand Rapids, Mich. Filed Dec. 24, 1900. Serial No. 40,886. (No model.)

Claim.—1. In combination with a case and a front adapted to run into the case, a roll, a spring to rotate the roll, cords attached to the front and wound upon the roll by the action of the spring and operating to pull the front into the case, and cords attached to the front and oppositely wound upon the rolls and acting to restrain the inward movement of the front, substantially as described.

2. The combination of a case, a front adapted to turn from vertical to horizontal position and run back into the case, a roll journaled in the case, a spring to rotate the roll, cords attached to the roll and front and wound on the roll by the spring, and cords wound on the roll oppositely to the first named cords, and attached to the front, and guide-rolls at the front of the case engaging the last-named cords, substantially as described.

3. The combination of a case, a front adapted to turn to a horizontal position and run into the case, a roll journaled in the case, a spring to operate the roll, cords attached to the roll and front and wound on the roll by the action of the spring, cords wound on the roll oppositely to the first-named cords, and attached to the front, and guide-rolls near the front and rear of the case, and engaging the last-named cords, substantially as described.

4. The combination of a case, a front adapted to turn from vertical to horizontal and to run back into the case, hooks on the front, a support at the front of the case pivotally and detachably engaged by the hooks, a spring to constantly pull inward on the front, means for connecting the spring to the front at a point shifting from below the supports when the front is vertical, to above the supports when the front is horizontal, whereby the bottom of the front is held closed when the front is vertical, and the front pulled into the case when the front is horizontal, substantially as described.

5. The combination of a case, a front, adapted to turn from vertical to horizontal position, a hook, on the front, a support at the front of the case pivotally engaged by the hook, a roll journaled in the case, a spring to rotate the roll, and a cord attached to the roll, and wound on the same, and also attached to the front, below the support, whereby the spring pulls the lower part of the front inward, holds the front closed when the front is vertical and pulls the front into the case when the front is horizontal, substantially as described.

6. The combination of a case, a front, a roll journaled in the case, cords connecting the roll and front, supports near the front of the case, plates attached to the front having openings to receive the cords, and hooks on the plates engaging the supports, substantially as described.

7. The combination of a case, a front, a roll journaled in the case, a spring to operate the roll, cords wound on the roll by the spring and connected to the front, guide-rolls near the front of the case, cords attached to the spring-actuated roll and engaging the guide-rolls, plates having openings to receive the cords and attached to the front, hooks on said plates to engage the supports of the guide-rolls, and screws to adjustably secure the plates and clamp the cords between the plates and the front, substantially as described.

8. The combination of a case having upwardly-open slots, a roll detachably journaled in the slots, guide-rolls below said roll, a front, cords connecting the roll and front and engaging said guide-rolls, guide-rolls near the front of the case engaged by said cords, and cords extending directly from the roll to the front, substantially as described.

9. The combination of a case, a front adapted to turn from vertical to horizontal position, hooks on the front, supports at the front of the case pivotally engaged by the hooks, guide-rolls on the supports, a roll journaled in the case, a spring to rotate the roll, cords wound on the roll by the spring and connected to the front below the supports, when the front is closed, and adapted to pass above the rolls and supports when the front is opened, and cords wound on the rolls oppositely to the first-named cords, and passing under the guide-rolls and thence upward and attached to the front above the guide-rolls, substantially as described.

10. The combination of a case, a front adapted to turn from vertical to horizontal position and run back into the case, a roll journaled in the case, cords wound on the roll and attached to the front, and cords wound on the roll oppositely to the first-named cords and also attached to the front, and guide-rolls at the front of the case engaging the last-named cords, whereby the front is prevented from binding in the case, substantially as described.

11. The combination of a case, a front adapted to turn from vertical to horizontal position and to run back into the case, a roll, cords oppositely wound on the roll, and operating to limit the movement of the front and prevent binding of the same in the case, a spring to rotate the roll, substantially as described.

708,434. ENGINE-INDICATOR. HUGO A. C. A. W. MAIBAK, Hamburg, Germany. Filed July 5, 1901. Serial No. 67,447. (No model.)

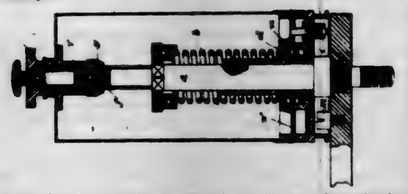

Claim.—1. In an engine-indicator, the combination of a spring-influenced pulley having a conical hub, with a vertically-movable paper-receiving drum having a coned seat adapted to engage said hub, substantially as specified.

2. In an engine-indicator, the combination of a spring-influenced pulley having a conical hub, with a paper-receiving drum having a coned seat adapted to engage said hub, a spring-pin coupling between pulley and drum, a vertically-movable adjusting-nut supporting the drum, and a fixed bolt engaged by the nut, substantially as specified.

708,485. BALL-BEARING JOURNAL-BOX. FRANK E. MANAHAN, East St. Louis, Ill. Filed Sept. 21, 1901. Serial No. 76,105. (No model.)

Claim.—1. In a journal-box, the combination with a threaded axle-spindle, of a box-shell, an outer bearing-ring seated in said shell, an inner bearing-ring having threaded connection with said spindle, bearing-balls located between said bearing-rings, a spline by which said inner ring is held from rotation on said spindle, and means for retaining said spline, substantially as described.

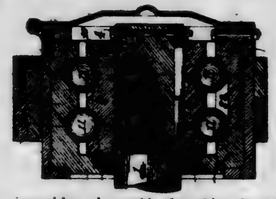

2. In a journal-box, the combination with a threaded axle-spindle, of a box-shell, an outer bearing-ring seated in said shell, an inner bearing-ring having threaded connection with said spindle, bearing-balls located between said bearing-rings, a spline by which said inner ring is held from rotation on said spindle, and a retaining-bolt passing through said spindle and spline to hold said spline from displacement.

3. In a journal-box, the combination with an axle-spindle, of a shell, an outer bearing-ring seated in said shell, an inner bearing-ring fixed to the axle-spindle, bearing-balls located between said bearing-rings, a key seated in said outer bearing-ring, and a block adapted to hold said key from displacement, substantially as described.

708,486. MOTOR-VEHICLE. WILHELM MAYBACH, Cannstadt, Germany. Filed Mar. 31, 1902. Serial No. 100,746. (No model.)

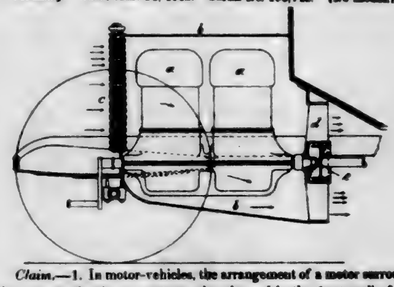

Claim.—1. In motor-vehicles, the arrangement of a motor surrounded by a protecting-box, a water-cooler situated in the front wall of this box, and a ventilator situated underneath the chest of the carriage in the back wall of the protecting-box, substantially as described and for the purpose set forth.

2. In motor-vehicles, the arrangement of a motor surrounded by a protecting-box, a water-cooler situated in the front wall of this box, a fly-wheel for the motor situated underneath the chest of the carriage in the back wall of the protecting-box, said fly-wheel being provided with ventilator-vanes on its circumference, substantially as described and for the purpose set forth.

708,487. SLIDE-SCALE. JAMES S. MERRITT, Philadelphia, Pa. Filed Mar. 5, 1901. Serial No. 49,695. (No model.)

Claim.—1. A scale for calculating load, section, spacing, span and manner of supporting and loading beams, consisting of two members movable with respect to one another, one of said members having at one end a scale indicating the loads in pounds per square foot laid off in distances proportional to the logarithms of the factors and a scale indicating the span laid off in distances proportional to twice the logarithms of the numbers and in the opposite direction to the scale of loads, and at the other end a logarithmic scale indicating the total loads in net tons and a scale indicating the span laid off in distances proportional to the logarithms of the numbers and in the opposite direction to said scale of loads in tons, and the other member having a scale indicating the beam-sections laid off in distances proportional to the logarithms of the coefficient of said beams and common to both the scales of loads and also having at one end a logarithmic scale indicating the spacing of the beams and at the other end a logarithmic scale indicating the ratio of the bending moments of the beams for the different methods of supporting and loading.

2. A scale for calculating loads, &c., of beams, consisting of two independent series of scales indicating the different factors laid off in distances proportional to the logarithms of said factors and a scale movable with reference to one or more of the other scales in each series and common to both series of scales laid off in distances proportional to the coefficients of beams of given sections.

708,487

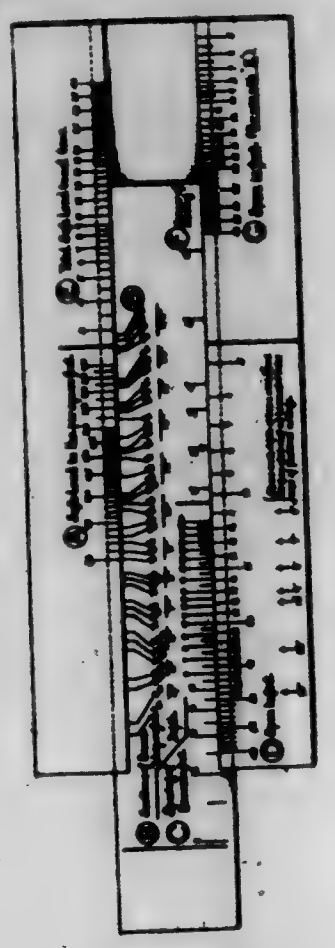

708,488. PRINTING-PRESS. ROBERT HOBBS, Chicago, Ill. Filed Aug. 12, 1901. Serial No. 71,726. (No model.)

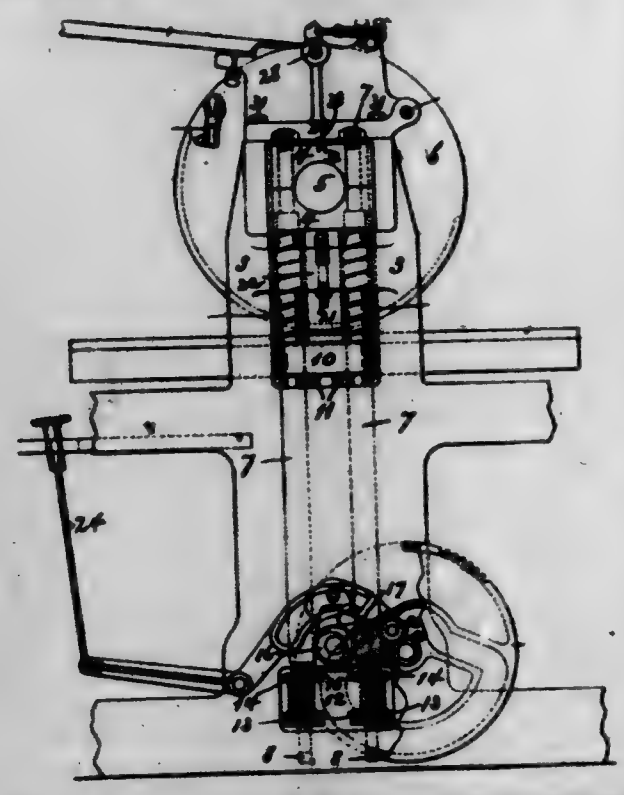

Claim.—1. The combination with a two-revolution impression-cylinder, its lifting-springs and depressing-eccentrics, of positive stop devices other than the eccentrics limiting the upward throw of the springs and relieving the spring tension, substantially as specified.

2. The combination with a two-revolution impression-cylinder and its lifting-springs and depressing-eccentrics, of rigid cross-bars attached to the frame of the machine above the cylinder-bearings and acting to limit the upward movements of the cylinder received from the springs, substantially as specified.

3. The combination with a vertically-moving impression-cylinder receiving its upward movements from springs and its downward movement from eccentrics, of stationary stop devices coming in contact with the cylinder-bearings and limiting the action of the springs and relieving the eccentrics, substantially as specified.

708,489. APPARATUS FOR THE MANUFACTURE OF SUGAR. JAMES A. MONRELL, Lansdale, Pa., assignor of two-thirds to Henry C. Stuart, Denver, Colo., and Samuel R. Allison, New Orleans, La.; C. A. Dorrestein administrator of said Allison, deceased. Filed Jan. 20, 1896. Serial No. 577,202. (No model.)

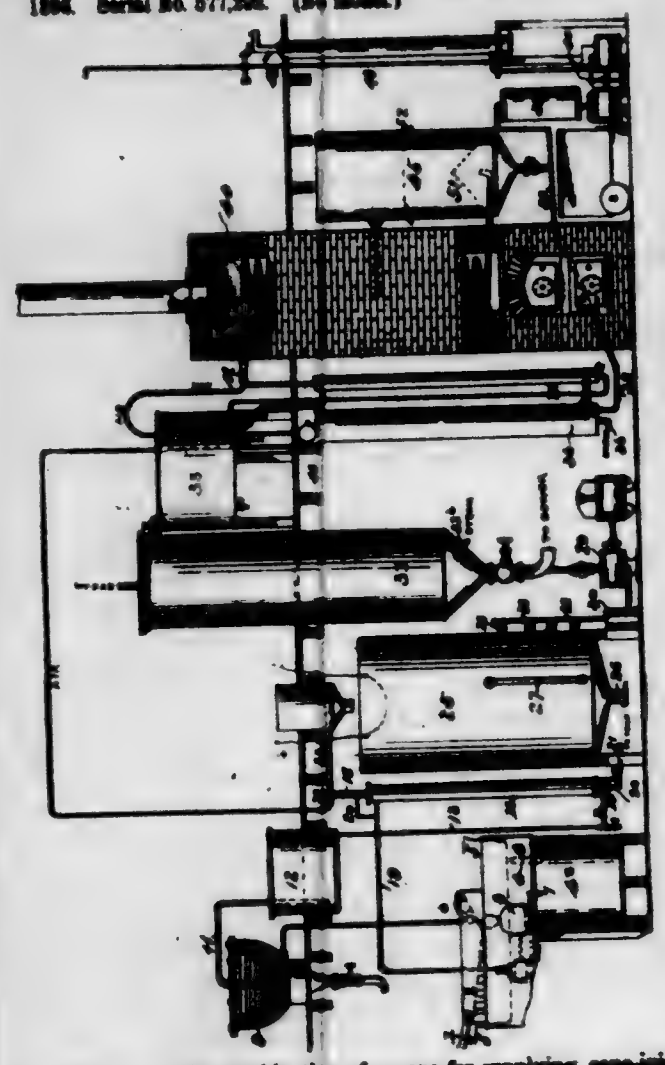

Claim.—1. The combination of means for supplying cane-juice, a sieve for separating the coarser solid matter from said juice, a wire-cloth basket, and electric-circuit wires attached to the basket whereby cane-juice may be screened and an electric current passed conjointly through the liquid and wire-cloth to precipitate solid matter preparatory to filtering, substantially as described.

2. The combination of means for supplying cane-juice, a sieve for separating the coarser solid matter from said juice, a wire-cloth basket, and electric-circuit wires attached to the basket whereby cane-juice may be screened and an electric current passed conjointly through the liquid and wire-cloth to precipitate solid matter preparatory to filtering, and a closed filter having a porous wall and a siphon-pipe to discharge the filtered liquid, substantially as described.

3. The combination of means for supplying cane-juice, a sieve for separating the coarser solid matter from said juice, a wire-cloth basket, and electric-circuit wires attached to the basket whereby cane-juice may be screened and an electric current passed conjointly through the liquid and wire-cloth to precipitate solid matter preparatory to filtering, and a closed filter having a porous wall and a siphon-pipe to discharge the filtered liquid, and a settling-tank 12 having draw-off cocks all substantially as described whereby the filtered juice may be electrically treated and bleached and glucose precipitated, and whereby the latter may be deposited and the juice decanted, substantially as described.

4. In combination, means for partially separating glucose and other matters from cane-juice, a heater for heating the juice, a discharge-pipe to convey the juice from the heater, a hot-air induction-pipe communicating with said discharge-pipe, a receiver for the heated liquid injected by the air and a wire-cloth basket situated in an electric circuit and adapted to finely divide liquid falling from the said receiver, all substantially as described.

5. In combination means for producing a heated aqueous solution of pure refined white sugar, a liquid heater comprising a coil situated in a furnace for superheating the hot solution, means for delivering hot defecated and purified juice to said coil, an air-heater, an air-pump to force air through said heater, an air-pipe leading from the heater and communicating with the liquid-heating coil of the furnace to induce liquid and inject it into said coil and a pyrometer, substantially as described.

6. In combination means for producing a heated aqueous solution of pure refined white sugar, a liquid-heater comprising a coil situated in a

furnace, for superheating the hot solution, means for delivering hot defecated juice to said coil, an air-heater, an air-pump to force air through said heater, an air-pipe leading from the heater and communicating with the liquid-heating coil of the furnace to induce liquid and inject it into said coil, said coil having a relatively short spiral conduit near the air-injector to whirl the fluids, substantially as described.

7. In combination means for producing a heated aqueous solution of pure refined white sugar, a coil for superheating such solution, a pipe for supplying the same, and an air-pipe communicating with said pipe to inject the solution in spray into said coil, a spiral conduit in the coil near the injector, and an open tank, all substantially as described whereby the fluids can be whirled through the heating-coil and the water then evaporated to produce refined crystal sugar, substantially as described.

8. In combination means for producing a heated aqueous solution of pure refined white sugar, a coil for heating the refined liquid sugar, a pipe for supplying said liquid, an air-pipe communicating with said pipe to inject the liquid in spray into said coil, a spiral conduit in the coil near the injector, and an open tank whereby the fluids can be whirled through the heating-coil and the water then evaporated, said tank having a deflector 51 and a distinct exit 52 for condensed vapor, substantially as described.

708,440. SAW-SET. SARAH C. MERRILL, New York, N. Y., executrix of Charles Merrill, deceased. Filed Nov. 26, 1901. Serial No. 83,057. (No model.)

Claim.—1. In a saw-set a rotary concentric anvil having an eccentric bearing-surface and a beveled anvil-face, and a movable setting device having its operative face slightly inclined to the anvil-face, the inclination being toward the perimeter of the anvil as described.

2. In a saw-set a rotary concentrically-pivoted anvil having an eccentric bearing-surface and a beveled anvil-face, and a plunger having its axis of movement perpendicular to the opposed portions of the beveled anvil-face, and its operative face arranged at an angle therewith, the inclination being toward the perimeter of the anvil as described.

708,441. MAIL-CARRIER. ABRAHAM L. HUMMEL, Mechanicsburg, Ohio. Filed June 3, 1901. Serial No. 62,845. (No model.)

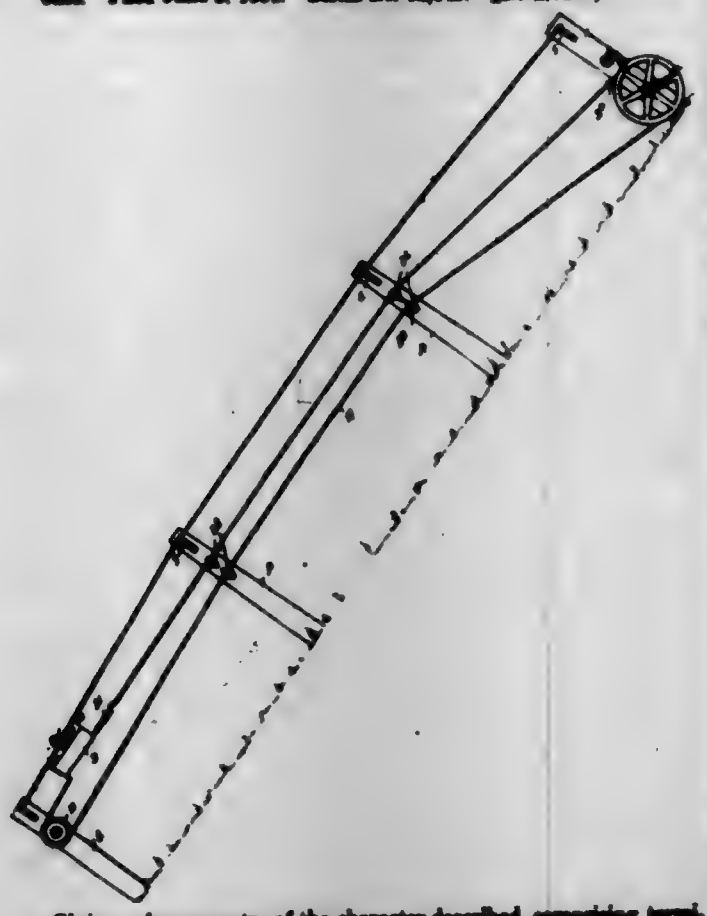

Claim.—An apparatus of the character described, comprising terminal and intermediate supporting-posts, a trunk-wire supported on said posts, a letter-box provided with a trolley-wheel to travel on said trunk-wire, a grooved idle wheel supported on one terminal post, a grooved actuating-wheel supported on the other terminal post and provided with a crank-handle, grooved supporting-wheels mounted on the intermediate posts and forming an upper and a lower series, the upper series of supporting-wheels being mounted in upwardly-diverging arms or fingers having at their lower edges lips extending over the peripheries of the wheels, a traction-wire passing around the idle and actuating wheels and over the intermediate supporting-wheels and having its ends connected to the letter-box, and a spring interposed between said traction-wire and the letter-box, said supporting-wheels, idle wheel, actuating-wheel, trunk-wire and traction-wire being located in vertical alinement, substantially as described.

708,442. COMBINATION HAT CONFORMATOR, STRETCHER, &c. SAMUEL MANN, St. Joseph, Mo., assignor to Minnie E. Mann. Filed Oct. 29, 1901. Serial No. 79,966. (No model.)

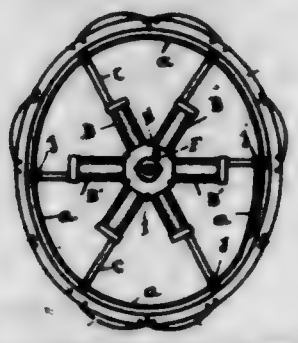

Claim.—1. A hat-stretching device comprising a ring composed of a plurality of independent sections, means for adjusting the sections radially, and convex pads secured to the outer periphery of said sections, substantially as described.

2. A hat-stretching device comprising a ring composed of a plurality of independent sections, a rack-bar connected to each section, said rack-bars being arranged in pairs extending across the center of the ring with the members of each pair slidably connected together, a gear-wheel between each pair of rack-bars engaging the teeth of both members, and means for operating said gears, substantially as described.

708,448. SPIKE-PULLER. NICHOLAS F. MURPHY, Bakersfield, Cal. Filed Jan. 6, 1902. Serial No. 88,994. (No model.)

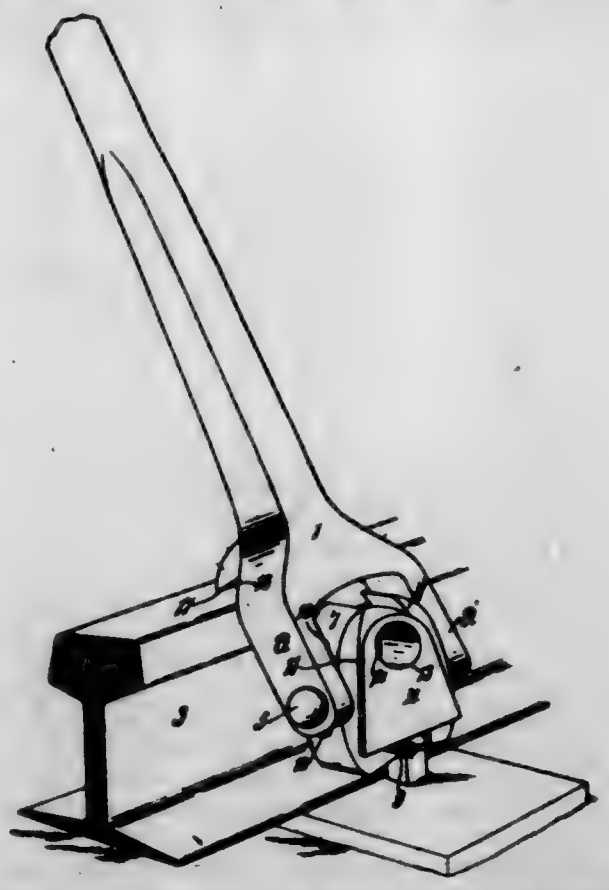

Claim.—1. A spike-puller comprising a forked lever; a key-block pivoted between the forks; and two slotted curved clamping-jaws pivoted between the forks on the opposite sides of the block with their concave faces in contact with the block: the pivot extending through the slots and key-block.

2. A spike-puller comprising a lever; a key-block carried by the lever; and two clamping-jaws constructed to slide between the block and parts of the lever; said block being constructed to force the gripping portions of the jaws toward each other as the block moves therefrom.

708,444. LOADING DEVICE. WILLIAM F. MURPHY, Iowa City, Iowa. Filed Aug. 31, 1901. Serial No. 73,936. (No model.)

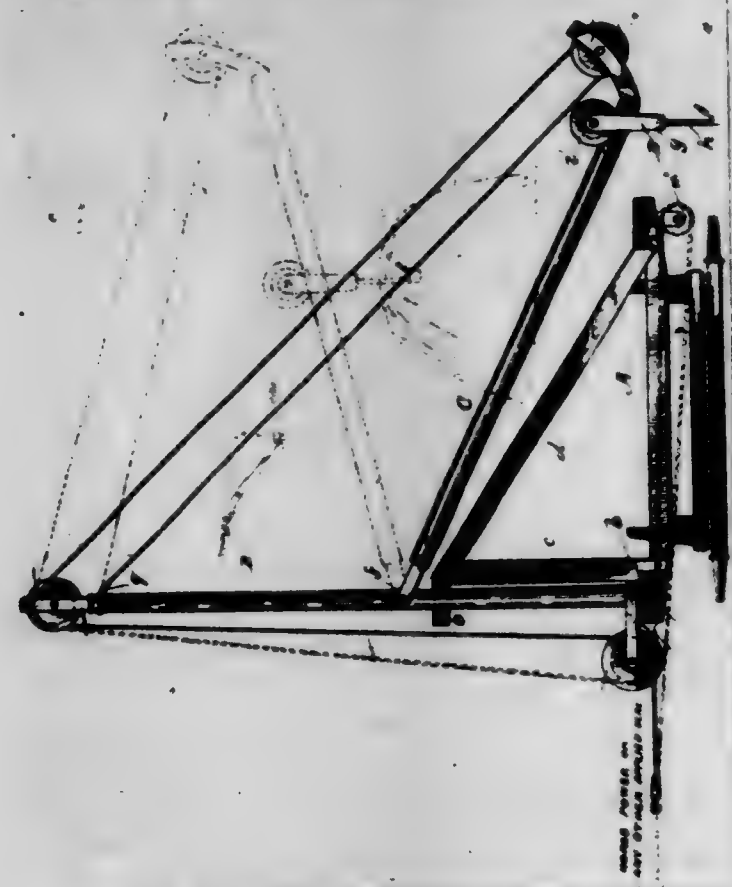

Claim.—1. In a loading apparatus a mast mounted so as to turn on its axis, upper and lower pulleys thereon, a boom pivotally connected to the mast and arranged to swing in a vertical plane and having a pulley on its outer portion, a carrier mounted and adapted to gravitate in opposite directions on the boom, and a cable connected at one end to the upper portion of the mast and passed around the pulley on the boom, the upper pulley on the mast and the lower pulley on the mast in the order named.

2. The combination of a wagon-body provided at one of its sides with an upright having a vertically-disposed bearing, a diagonal transversely-disposed brace interposed between said upright and the body, a mast journaled in the bearing on the upright and stepped at its lower end in a bearing in the body, and having vertically-disposed pulleys at its upper and lower ends, a vertically-movable boom pivotally connected at its inner end to the mast and having the combined bearing and step *j* at its outer end, and the pulley therein, a carrier arranged to travel on the boom, and a cable attached at one end to the mast and passed around the pulleys on the boom and mast.

3. The combination of a wagon body or rack, the rotary mast mounted in the bearings at one side of the body or rack and having vertically-disposed pulleys at its upper and lower ends, the boom pivoted at its inner end to the mast and carrying a vertically-disposed pulley at its outer end, a carrier arranged to travel on the boom, a pulley located at the opposite side of the rack with reference to the lower pulley on the mast, and the rope or cable attached at one end to the mast and carried around the said pulleys and carried to a suitable point for the attachment of power.

708,445. METAL CAN. FRANCIS P. MCCOLL, Chicago, Ill., assignor to the American Key Can Company, Chicago, Ill., a Corporation of New Jersey. Filed Oct. 12, 1901. Serial No. 78,493. (No model.)

Claim.—1. In a metal can, the combination with a body portion having an inwardly-extending integral shoulder and a downwardly-projecting flange, of a cover having a raised peripheral flange and a shoulder formed between the raised flange and the cover whereby extended engaging surfaces between the body portion and the cover are provided, said cover engaged to said downwardly-extending flange by solder, substantially as described.

2. In a metal can, the combination with a body portion having an inwardly-extending horizontal integral shoulder and a downwardly-projecting vertical flange, of a cover having a raised horizontal peripheral flange corresponding substantially in width to the shoulder on the body portion and a vertical depending shoulder corresponding substantially in depth to the flange on the body portion, whereby extended engaging surfaces between the body portion and cover are provided, said cover engaged to said downwardly-projecting vertical flange by solder, substantially as described.

3. In a metal can, the combination with a body portion having an inwardly-extending integral shoulder and a downwardly-projecting flange, of a cover having a raised peripheral flange and a shoulder formed between the raised flange and the cover whereby extended engaging surfaces between the body portion and the cover are provided, solder interposed between both of said extended engaging surfaces and thereby securely fastening the cover to the body portion of the can, and means projecting from the cover adapted to be engaged by a key, substantially as described.

708,446. CONDUIT. WILLIAM L. MCGOWAN, Philadelphia, Pa. Filed Oct. 22, 1901. Serial No. 79,678. (No model.)

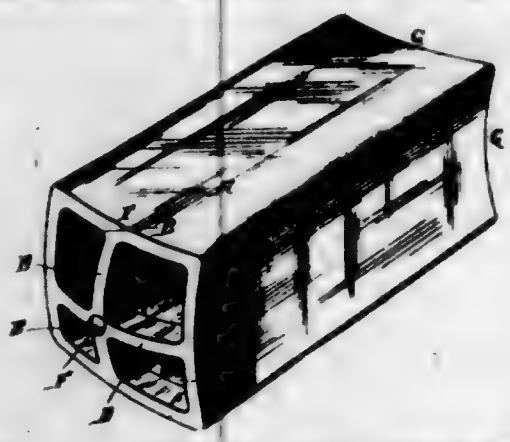

Claim.—1. A conduit-section consisting of a body having a series of longitudinal ducts and division-walls separating them, one end of the section having the ends of the division-walls projecting to form a convex structure extending beyond the ends of all the side walls and the other end having the ends of the division-walls made recessed to form a concave structure of shape inversely corresponding to the convex structure and depressed beyond the ends of all the side walls.

2. A conduit-section consisting of a body having a series of longitudinal ducts and division-walls separating them, one end of the section having the ends of the division-walls projecting to form a convex structure and the other end having the ends of the division-walls made recessed to form a concave structure of shape inversely corresponding to the convex structure and further formed with a knob or button in the center of one of the ends and a recess in the center of the other end.

3. A conduit-section having its body formed rectangular in cross-section and divided by longitudinal walls into a series of parallel ducts and having the ends of its four side walls formed with convex-curved outside edges F and convex-curved ends D to the ends of the divisional walls projecting beyond the edges F.

4. A conduit-section having its body formed rectangular in cross-section and divided by longitudinal walls into a series of parallel ducts and having its end formed with convex-curved outside edges F and convex-curved ends D to the ends of the divisional walls and with a knob or button E at the apex of the convex end.

5. A conduit-section having its body formed rectangular in cross-section and divided by longitudinal walls into a series of parallel ducts and having the ends of its four side walls formed with concave-curved outside edges G and concave-curved ends H to the ends of the divisional walls depressed below the edges G.

6. A conduit-section having its body formed rectangular in cross-section and divided by longitudinal walls into a series of parallel ducts

and having its end formed with concavo-curved outside edges G and concave ends H to the ends of the divisional walls and with a recess *e* at the center of the concave end.

7. A conduit-section having outside walls and longitudinal division-walls forming a series of ducts, and in which the ends of the walls at one end of the section are projecting and shaped to conform to the curvature of a sphere and at the other end of the section are receding and also shaped to conform to the curvature of a sphere.

8. In a conduit structure the combination of two sections having longitudinal divisional walls and ducts butted together end to end and in which the ends of the division-walls of one section project to form a convex structure extending beyond the ends of all the sides of the conduit and the ends of the division-walls of the other section are recessed to form a corresponding concave structure.

9. In a conduit structure the combination of two sections having longitudinal divisional walls and ducts butted together end to end and in which the ends of the division-walls of one section project to form a convex structure and the ends of the division-walls of the other section are recessed to form a corresponding concave structure, and in which these ends of the sections are further coupled by a small knob and socket at the center one of which parts is upon the division-walls of one section and the other upon the division-walls of the other section.

10. In a conduit structure the combination of two sections having longitudinal divisional walls and ducts butted together end to end and in which the ends of the division-walls of one section project to form a convex structure highest at a point within the bounding sides, and the ends of the division-walls of the other section are recessed to form a corresponding concave structure recessed below the edges of the bounding sides, in combination with a cement or concrete bond encircling the conduit at the line of union.

708,447. CONDUIT. WILLIAM L. MCGOWAN, Philadelphia, Pa. Filed Feb. 8, 1902. Serial No. 93,121. (No model.)

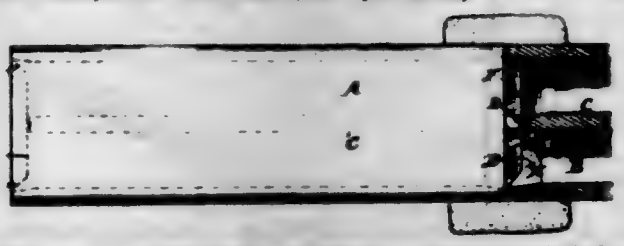

Claim.—1. A conduit-section consisting of a tubular outer body having longitudinal partitions or walls dividing it internally into a series of longitudinal ducts, said dividing or partition walls at one end being extended beyond the ends of the walls of the outer body to form a projection composed of said partitions, and at the other end being abbreviated to terminate within the end walls of the outer body to form a recess or socket complementary to the projection of the partition-walls at the other end.

2. A conduit-section consisting of a tubular outer body having longitudinal partitions or walls dividing it internally into a series of longitudinal ducts, said dividing or partition walls at one end being extended beyond the ends of the walls of the outer body to form a projection composed of said partitions, and at the other end being abbreviated to terminate within the end walls of the outer body to form a recess or socket complementary to the projection of the partition-walls at the other end, the faces of said projecting and abbreviated ends of the partition-walls being tapered or inclined.

3. A conduit-section consisting of a tubular outer body having longitudinal partitions or walls dividing it internally into a series of longitudinal ducts, said partition-walls at one end being extended beyond the ends of the walls of the outer body to form a projection composed of said partitions.

4. A conduit-section consisting of a tubular outer body having longitudinal partitions or walls dividing it internally into a series of longitudinal ducts, said partition-walls at one end being abbreviated or terminated within the bounding edges of the outer body and at a distance therefrom, to form a recess or socket between the ends of the partitions and the end of the outer body.

5. A conduit having two hollow sections of polygonal cross-section provided with dividing-walls of which the extremities of the dividing-walls of the end of one section are provided with projections beyond the end of the section and the extremities of the dividing-walls of the end of the other section are provided with recessed portions within the end of the section and complementary to the projections on the end of the first section.

708,448. NUT-LOCK. ANDREW MCKINLEY, New York, N. Y. Filed Sept. 7, 1901. Serial No. 74,656. (No model.)

Claim.—1. The combination of a nut, and a spring-washer adapted to be detachably fastened to the nut so as to turn therewith, the said washer being formed with a transverse cut extending through the same and having one of the transverse edges adjacent to said cut formed with an inwardly-projecting tooth adapted to bite into the flat surface of the member against which the nut jams the washer to hold the nut fast, and fixed projections or flanges arranged between the nut and washer by means of which the two may be detachably fastened together for holding them in fixed rotary relation, substantially as and for the purpose set forth.

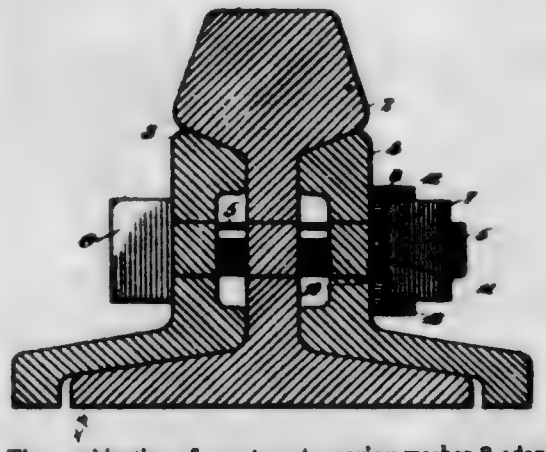

2. The combination of a nut, and a spring-washer S adapted to be detachably fastened to the nut so as to turn therewith, the said washer being formed with a transverse cut 10 extending through the same and having one of the transverse edges adjacent to said cut formed with an inwardly-projecting tooth 11 adapted to bite into the flat surface of the member against which the nut jams the washer to hold the nut fast, and fixed projections or flanges 12 and 13 formed upon opposite edges of the washer for engaging two opposite sides of the nut, substantially as and for the purpose set forth.

3. The combination of a nut, and a bowed or arched spring-washer adapted to be detachably fastened to the nut so as to turn therewith, the said washer being provided with a tooth for engaging and biting into the flat surface of the member against which the nut jams to hold the nut against backward rotation, substantially as and for the purpose set forth.

708,449. SUPPORTING DEVICE FOR LENGTHS OF HOOP-IRON. JAMES MCGINNESS, Pittsburg, Pa. Filed Apr. 14, 1902. Serial No. 102,862. (No model.)

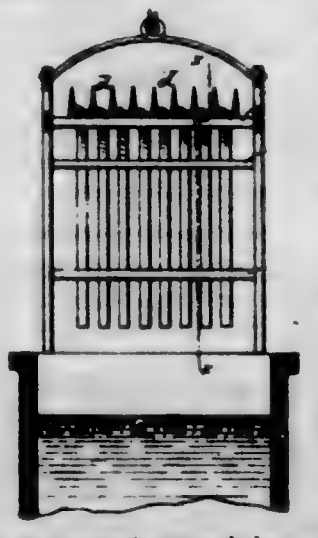

Claim.—1. Means for supporting curved pieces or lengths of metal comprising a skeleton frame of curved form and a cross-bar thereon having fixed spaced projections between adjacent side walls of which the middle portions of the pieces or lengths are seated.

2. A supporting device for pieces or lengths of curved metal said device including end bands and connecting cross members, and a bar at the upper portion of the device extending between said end bands and provided with fixed spaced projections between adjacent side walls of which the middle portions of the pieces or lengths are seated.

3. A supporting device for pieces of curved and flared hoop-iron said device including end bands and connecting cross-bars, and a horizontal bar at the upper portion of the device, extending between the end bands and having spaced projections between adjacent side walls of which the central portions of the curved and flared pieces or lengths of hoop-iron are seated whereby the separated end members of hoop-iron engage said connecting cross-bars, substantially as and for the purpose described.

708,450. MECHANICAL STOKER. AUGUSTUS F. HALE, Montclair, N. J., assignor to Haris H. Sewing, Reading, Mass. Filed July 6, 1901. Serial No. 67,242. (No model.)

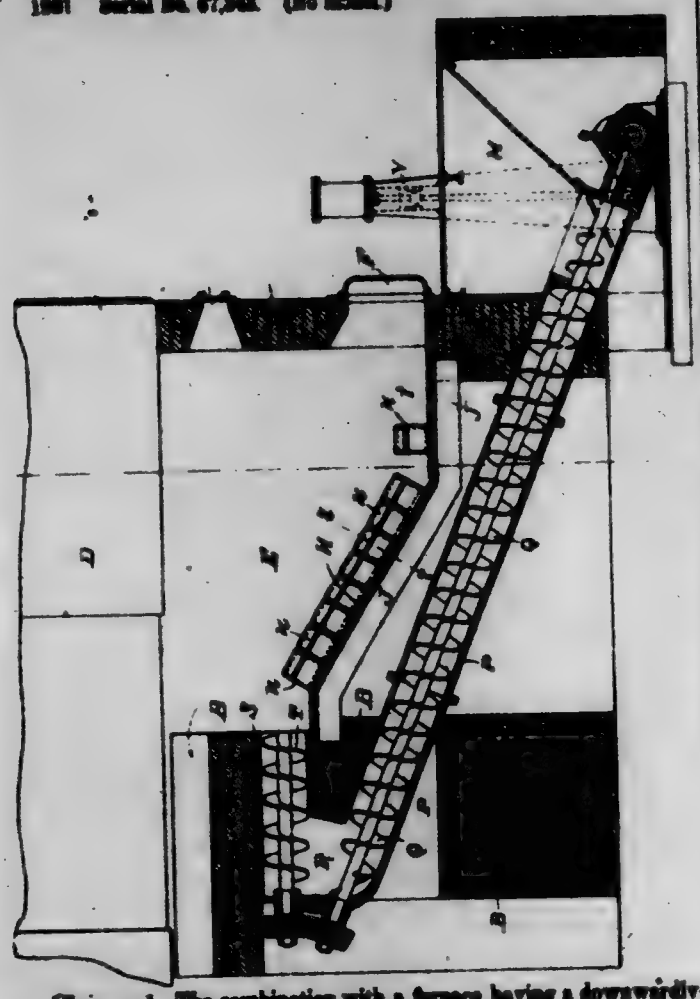

Claim.—1. The combination with a furnace having a downwardly-inclined combustion-surface and an ash-door opposite the lower end thereof, said combustion-surface being constructed to retain the unconsumed material for removal through said door, of a furnace-stoking apparatus adapted to supply fuel to the combustion-chamber through the rear wall thereof and to project such fuel upon said inclined surface.

2. The combination with a furnace having in its rear portion forwardly-inclined combustion-plates and a door opposite the lower end thereof, the entire floor of the combustion-chamber being constructed to retain unconsumed material for removal through said door, of a conveying-screw and tube opening through the rear wall above said plates and cooperating with gravitation to carry fuel toward said door.

3. The combination with a furnace having forwardly-inclined combustion-plates and interposed elevated tuyers, of a plurality of screw conveyers introducing fuel through the rear wall and depositing it on said inclined plates between adjacent rows of tuyers.

708,451. HYDRAULIC MOTOR. JOHN I. HEWSON, Vicksburg, Miss. Filed Nov. 5, 1901. Serial No. 81,940. (No model.)

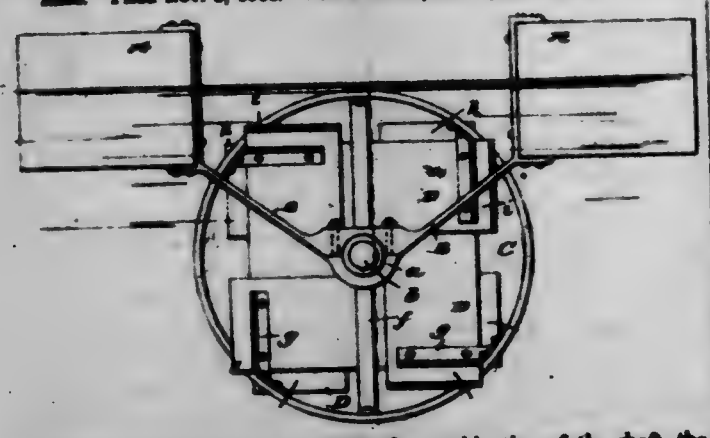

Claim.—In the motor described, the combination of the shaft, the circular rims arranged one in advance of the other around the shaft, connecting means interposed between the shaft and rims, and the four blades located at equal intervals about the shaft with their edges in planes parallel with that of the axis of the wheel although said edges themselves are oblique as to the axis, and each attached to both of the rims at its ends, whereby the forward or upstream portion of each blade is disposed in advance of the rear portion of the blade which precedes it with reference to the direction in which the wheel is designed to turn.

708,452. MACHINE FOR MOLDING ARTIFICIAL STONE. EDWIN F. PALMER, Brooklyn, N. Y. Filed Apr. 22, 1902. Serial No. 104,144. (No model.)

Claim.—1. In a machine for molding artificial stone, the combination of a mold with a slotted supporting-plate, an adjustable core, and a bolt extending through the core and engaging the slotted plate, substantially as specified.

2. In a machine for molding artificial stone, the combination of a mold with a supporting-plate having a longitudinal slot, an adjustable core, a headed bolt extending through the core and engaging the slotted plate, and a nut engaging the upper end of the bolt, substantially as specified.

3. In a machine for molding artificial stone, the combination of a mold with an adjustable grooved core, and with a partition engaging the core-groove, substantially as specified.

4. In a machine for molding artificial stone, the combination of a mold with a slotted supporting-plate, an adjustable grooved core, a bolt extending through the core and engaging the slotted plate, and a partition engaging the core-groove, substantially as specified.

708,453. PROCESS OF MAKING MATCHES. WILLIAM H. PARKER, Melrosville, N. Y., assignor, by mesne assignments, to Parker Match Company, a Corporation of New Jersey. Filed Mar. 1, 1900. Serial No. 96,267. (No specimens.)

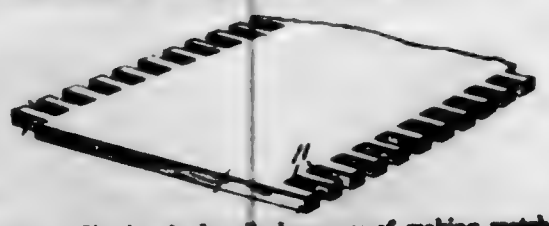

Claim.—The herein-described process of making matches, which consists in notching opposite edges of a strip of stock so as to produce projections of essentially the cross-sectional size of a match-splint, the said notches being made so that the projection on one edge of the strip comes opposite the notch on the opposing edge, dipping both said edges in a firing composition, permitting the heads to set, and then cutting off the strip on lines forming essentially continuations of said projections thereby making complete matches.

708,454. REMOVABLE PIPE-BRACKET. FRANCIS F. PARSONS, Paterson, N. J., assignor of one-half to Alfred Schiffer and Herman Schiffer, Paterson, N. J. Filed Sept. 30, 1899. Serial No. 732,564. (No model.)

Claim.—1. In a pipe-hanger, the combination of a holder, consisting of a plate provided on one side with a boss and on the other with a recess extending into the boss, said boss being apertured for the reception of fastening means, with a bracket consisting of a plate provided with a hook, the structure of the holder and bracket being such that the latter is adapted to be held removably in place against the holder so as to cover the recess therein.

2. In a pipe-hanger, the combination of a holder, consisting of a plate provided at one side with one or more bosses and on the other with recesses extending into said bosses, said bosses being apertured for the reception of fastening means, legs on the side and bottom of said holder and cast integral therewith to receive and support the bracket, with a bracket consisting of a plate provided with hooks, the structure of the holder and bracket being such that the latter is adapted to be held removably in place against the holder so as to cover the recesses therein.

708,455. STOVE-GRATE. THOMAS PARTRIDGE, Jr., Hamilton, Canada. Filed Jan. 9, 1901. Serial No. 42,601. (No model.)

Claim.—1. In a grate, a frame constructed with oval-shaped grate-journal-bearing openings on one side, and a series of vertical notches open

at the top on the opposite side, for bearings for the grate-bars, the frame also constructed with a circular socket at one end and a longitudinal bearing on the opposite side to receive a cam-rod to operate the grate-bars, and a hold-bar provided with half-circular openings at its lower edge and projections on its rear side in contact with the said journals, the said bar being detachably secured to one side of the frame to hold the bearings of the grate-bars in their normal or horizontal position, substantially as specified.

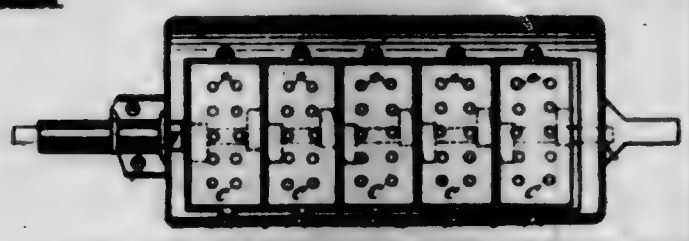

2. A series of journaled double grate-bars, each consisting of an upper bar and a lower bar made integral and provided with openings, in combination with a frame having bearings for the journals of said grate-bars, means for holding them therein and a rock-shaft journaled in said frame and having cams arranged to act on said bars substantially as set forth.

3. In a grate, the combination of a frame constructed with grate-journal openings on its opposite sides, and a series of grate-bars having their journals pivoted therein, a cam-rod journaled in the frame under the grate-bars having a series of double cams made to impinge alternately against and oscillate the grate-bars, and a side bar provided with notches to fit over the journals of the grates to hold them in position, attached to the frame, substantially as and for the purpose specified.

4. In a grate, a grate-frame provided with a notch, a circular opening in one end and a projecting lug on the other end recessed to form a bearing, grate-bars, a cam-shaft adapted to oscillate the grate-bars one end of which rests in the said opening and the other end in the said bearing, a bar similarly recessed and adapted to form the upper half of said bearing, one end of said bar extending inwardly and engaging the notch in said grate-frame, the other end of said bar carrying a projecting lug, a crank for oscillating the cam-shaft and having a lug in its socket adapted to engage the projecting lug on the said bar whereby the grate-frame may be damped.

708,456. BAG-HOLDING DEVICE. FREDERICK B. PAYNE, Powers, Mich. Filed Aug. 5, 1901. Serial No. 70,530. (No model.)

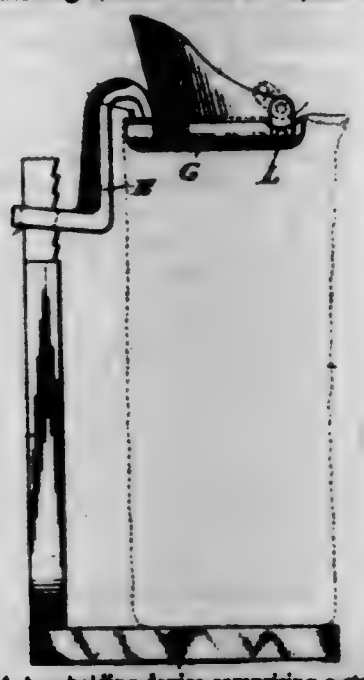

Claim.—1. A bag-holding device comprising a standard, a semicircular frame mounted thereon and provided with seats or depressions in the upper surface thereof, the edge of the open mouth of a bag adapted to be telescoped over said frame and over the seats or depressions therein, and means arranged to be projected into said seats or depressions to crowd the edge of the bag into said seats or depressions and clamp the same to said frame, as and for the purpose set forth.

2. In a bag-holding device, a standard, a frame supported thereon and having a pin or projection and locking seats or depressions in the upper surface thereof, the open mouth of a bag adapted to be telescoped over and around said frame to be engaged by said pin or projection, clamps arranged to project into said seats or depressions to force or crowd the edges of the bag into the same, and a deflector-plate arranged to direct the material into the open mouth of the bag, as and for the purpose set forth.

3. In a bag-holding device, the combination with a standard, of an open-sided frame supported thereon and provided with seats or depressions adjacent to the ends thereof, the open mouth of the bag adapted to be telescoped over and upon said frame, and clamp-arms journaled in said frame and provided with tongues or projections arranged to be projected into said seats or depressions to force the edge of the bag into said seats or depressions, as and for the purpose set forth.

708,457. FERRULE. CARL PFEIFFER, Berlin, Germany. Filed Nov. 3, 1900. Serial No. 35,555. (No model.)

Claim.—1. In combination, with a cane or umbrella made of metal tube, a ferrule, comprising an elastic stopper *a*, pressed into the said cane or umbrella, an elastic casing or ring *f*, a bolt *c*, consisting of hard or highly-resistant metal and a metal ring *g*, substantially for the purpose as described.

2. In combination with a cane or umbrella stick of wood, a ferrule, comprising an elastic stopper *a*, an elastic casing or ring *f*, a bolt *c*, consisting of hard or highly-resistant metal and a metal ring *g*, substantially for the purpose as described.

708,458. COLLAPSIBLE BABY-JUMPER. ALFRED P. PERCIER, New York, N. Y. Filed Nov. 27, 1901. Serial No. 83,822. (No model.)

Claim.—1. In a chair of the character described, a seat-frame, hollow standards on the front of the side bars of the seat-frame, arms on the standards, a guard-rail on the arms, a back hinged to the side of the seat, shoulders on the back-frame for supporting the arms, and combined binding and suspending cords run through the guard, arms, standards and the side bars of the seat at the front and through the arms, shoulders and side bars of the seat at the rear, as and for the purpose described.

2. In a chair, a seat-frame, hollow standards, side arms and a guard, a back hinged to the seat-frame and a flexible connection run through holes of the guard, arms, hollow standards and seat-frame and comprising the means for binding the parts together and for suspending the chair as and for the purpose described.

708,459. AUTOMOBILE ATTACHMENT FOR VEHICLES. JOHN F. PETERSEN, Indianapolis, Ind. Filed Sept. 3, 1901. Serial No. 74,105. (No model.)

Claim.—1. The combination with a four-wheeled vehicle of the kind commonly drawn by horses having wheels rotatably mounted on fixed axles, a fifth-wheel, a head-block and a reach connecting the head-block with the rear axle, of a motor attachment comprising a frame removably secured to the head-block and rear axle, an engine mounted on said frame, a shaft driven by said engine, a cogged ring adjustably attached to the rear wheels of the vehicle by means of U-shaped bolts taking into openings in a flange clamped to the hubs of said wheels and into radial slots in the web of the ring, toothed wheels on the ends of the said

shaft meshing with the teeth of the rings on the vehicle-wheels and means connected with the front axle of the vehicle for disconnecting the shaft from its toothed wheel on the inner side of the vehicle when the vehicle is traveling in a curve.

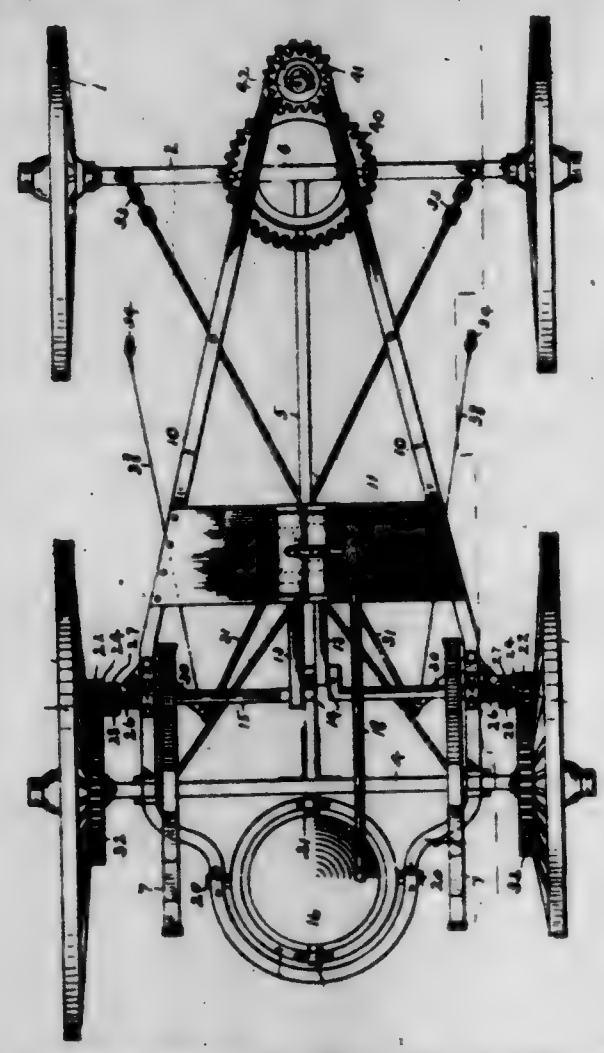

2. In a motor attachment for vehicles, a frame adapted to rest on the head-block of the vehicle in front and on the rear axle of the vehicle, a motor supported by the frame, a shaft driven by the motor having cogged wheels loosely mounted on either side thereof, said wheels having conical sockets in their hubs, cones rotating with the shaft and mounted thereon, springs to press the cones into the sockets of the cog-wheels, a bell-crank connected with the cones, a rod connecting the bell-crank with the front axle of the vehicle, flexible links in said rod and cogged rings adjustably secured to the rear driving-wheels meshing with the cogged wheels on the said shaft.

708,460. DISH-WASHER. JOHN PETTENGILL, Jefferson, Mo. Filed Feb. 7, 1902. Serial No. 93,621. (No model.)

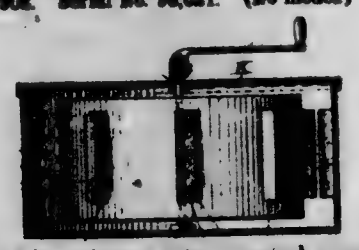

Claim.—In a dish-washer an outer receptacl eprovided on its inner sides with vertical flanges extending at an angle therefrom, a socket mounted centrally in the receptacle, a bridge across the top of said receptacle provided with a bearing, in combination with a dish-holding receptacle having a perforated bottom and provided with vertical slots in its side wall, lips or flanges extending outwardly from the slots at an acute angle and in opposite directions from the flanges upon the inner wall of the outer receptacle, said inner receptacle being mounted on a shaft, said shaft being provided with a handle, substantially as set forth.

708,461. ORE CRUSHER AND PULVERIZER. ADOLPH J. PERTIER, San Francisco, Cal. Filed Aug. 22, 1900. Serial No. 27,718. (No model.)

Claim.—1. In an ore crusher and pulverizer, the combination with the cone-shaped crushing-head, of means for securing the same to the base or platform of the machine, a spheroidal shell secured to and depending from the crushing-head, an inclined hopper surrounding the crushing-head, means by which a gyratory motion is imparted to said hopper, a spheroidal shell depending from the hopper, which shell surrounds and works upon the shell of the crushing-head, a die-ring having a smooth periphery secured to the inner face of the outer shell at its lower edge, and of devices for adjusting the die-ring.

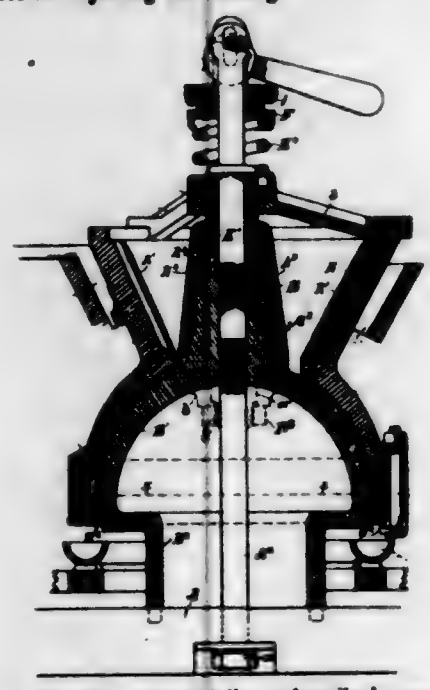

2. In combination substantially as described, superposed crushing-shells one of the same having an offset portion adjacent its lower end, a wear-ring inserted in said offset portion from the lower end of the shell having a smooth surface disposed toward said offset portion, and means for adjusting the ring.

3. In combination, substantially as described, superposed crushers, one of the same having an offset portion having an inclined upper wall, a split wear-ring inserted in said offset portion having a correspondingly-inclined upper edge, and means for causing the inclines of the ring and offset portion to engage and adjust the ring relative to the grinding-surfaces.

4. In combination, substantially as described, a head; a shell depending from the head; a second shell mounted on the outside of said first-mentioned shell; and means for regulating the pressure of one shell upon the other comprising a stem on the head, a spider slidable on the stem engaging the edges of said outer shell, a spring bearing upon the spider, and a cam-lever at the end of the stem bearing upon the spring.

5. In combination, substantially as described, a head; a shell depending from the head; a second shell on the outside of said first-mentioned shell; and means for regulating the pressure of one shell upon the other comprising a stem on the head, a spider slidable on the stem engaging the edge of said outer shell, a spring seated upon the spider, a swivel-bearing for the upper end of the spring, and means at the end of the stem adapted to press upon the swivel-bearing.

6. In combination, substantially as described, a head; a shell depending from the head; a second shell on the outside of said first-mentioned shell; and means for regulating the pressure of one shell upon the other comprising a stem on the head, a spider slidable on the stem engaging the edge of said outer shell, a spring seated on the spider, a bearing for the upper end of the spring, slotted ears on the bearing, and a cam-lever at the end of the stem working in the slotted ears adapted to press upon the spring-bearing to tension the spring.

708,462. HAY-RACK. PAUL PLOTNIK, Delano, Minn. Filed Feb. 27, 1902. Serial No. 96,909. (No model.)

Claim.—1. The combination with crossed beams, of tie-rods located upon opposite sides of and in the angles formed by the said beams, clamping connections between the tie-rods extending across the outer faces of the beams, and means for clamping the connections against the beams.

2. The combination with crossed beams, of tie-rods located upon opposite sides of and in the angles formed by said beams, clamping connections between the tie-rods extending across the outer faces of the beams, an intermediate connection movable upon the rods and located between the beams, and means for clamping the connections against the beams.

3. In a binder of the class described, the combination with spaced tie-rods, of an intermediate clamp-plate mounted upon the rods and having recessed seats in its opposite faces.

4. In a binder of the class described, the combination with spaced tie-rods, of an intermediate clamp-plate mounted upon the rods and having recessed seats in its opposite faces, said seats being disposed in angular relation to each other and between the tie-rods.

5. In a binder of the class described, the combination with spaced tie-rods, of an intermediate clamp-plate movably mounted upon the rods and having recessed seats in its opposite faces, said seats being arranged in angular relation to the side edges of the plate between the rods and at right angles to each other.

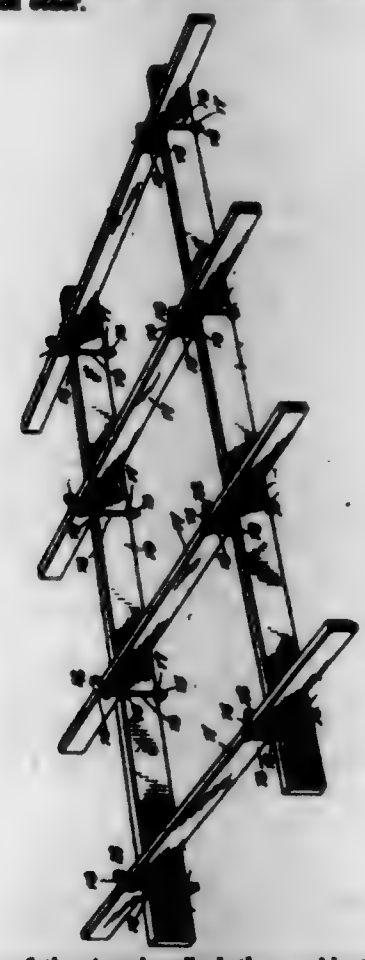

6. In a binder of the class described, the combination with spaced tie-rods, of end clamp-plates mounted upon the rods and having recessed timber seats in their opposing faces, said seats being located between the rods and in angular relation to each other.

7. In a binder of the class described, the combination with tie-rods, of end clamp-plates mounted upon the tie-rods, and an intermediate clamp-plate also mounted upon the rods between the two end plates, said plates having similarly-disposed seats in their opposing or adjacent faces, the seats in one end plate and one side of the intermediate plate being disposed in angular relation to the seats in the other end plate and other side of the intermediate plate.

8. In a binder of the class described, the combination with an intermediate and end clamping plates having openings in their opposite ends, of tie-rods passing through the openings, said plates having similarly-disposed seats in their opposing faces between the openings, the seats in one end plate and one side of the intermediate plate being disposed in angular relation to the seats in the other end plate and other side of the intermediate plate.

708,468. STARTING GEARS FOR EXPLOSIVE-ENGINES. SAMUEL R. POOLE, Randolph, Ohio. Filed Jan. 25, 1902. Serial No. 91,211. (No model.)

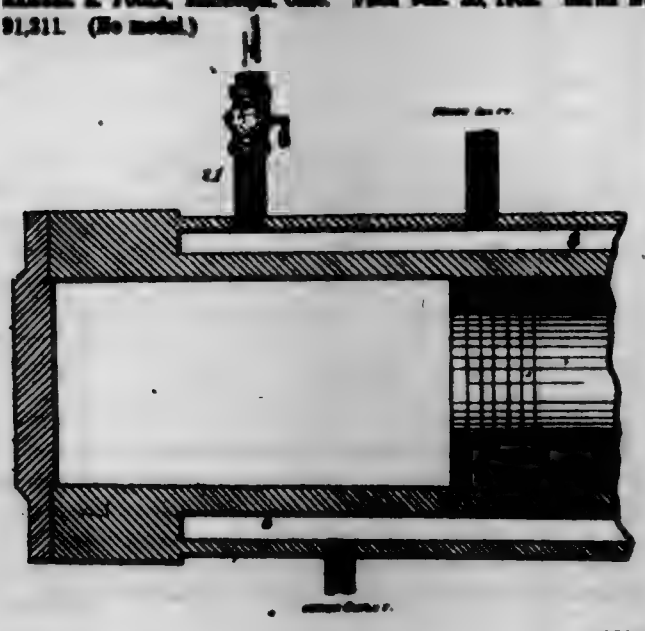

Claim.—In a gas or gasoline engine, in combination, a cylinder and its jacket, a pipe for introducing a cooling medium into the jacket, and a pipe for introducing a heating medium into the jacket.

708,464. BUCKLE. ROBERT PORTER, Ottumwa, Iowa. Filed Dec. 27, 1897. Serial No. 663,454. (No model.)

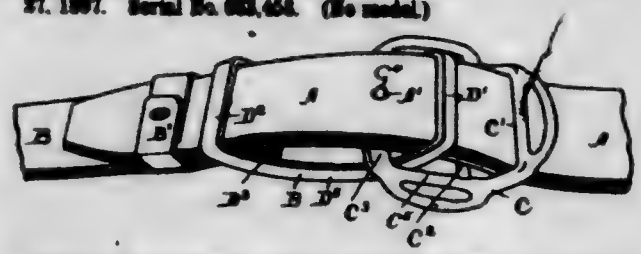

Claim.—The buckle consisting of a frame C having outer cross-bar C', and inner cross-bars C^3 and C^4, the latter carrying a tongue, and a bail adapted to be entered between said cross-bars C^3 and C^4 and having outer cross-bars D' and D^2 at its ends, both adapted to bear on the outside of the frame, and the bar D' being located between the planes of cross-bars C^3 and C^4, said bail also having an inside cross-bar D^3 for the attachment of the hame-tug, substantially as specified.

708,465. SASH LOCK AND LIFT. RICHARD H. PERRY, Somerville, Miss. Filed Feb. 10, 1902. Serial No. 93,396. (No model.)

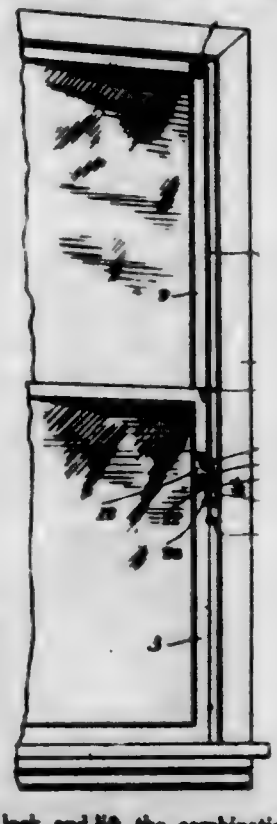

Claim.—In a sash lock and lift, the combination with a window-frame and the upper and lower sashes, of a supporting-rod connected at one end to the upper sash, grips, one secured to the window-frame and the other to the lower sash and each provided with spring-actuated grip-levers having holes through which said rod passes and is free to slide, each of said grips having a fixed part projecting into the path of movement of one of the opposing grip-levers whereby the innermost or adjacent grip-levers are automatically unlocked from engagement with the rod when the sashes are in closed position, substantially as set forth.

708,466. BROOM-MILL. JOHN A. PRENTICE, New York, N. Y. Filed Dec. 21, 1901. Serial No. 86,754. (No model.)

Claim.—1. A broom-mill provided with a feather-roller, a sleeve embracing the roller-shaft, a cam-lever pivotally connected to the sleeve, a cam engaged by the cam-lever, and means for rotating the cam, substantially as specified.

2. A broom-mill provided with a feather-roller, a sleeve having a hub and embracing the roller-shaft, a pin embraced by the hub, a forked cam-lever carrying the pin, a cam engaged by the cam-lever, and means for rotating the cam, substantially as specified.

3. A broom-mill provided with rollers for removing the loose powder from the sheet, and a vacuum-chest having a screened side and extending below said rollers, substantially as specified.

4. A broom-mill provided with a pair of rollers for removing the loose powder from the sheet, and a vacuum-chest arranged intermediate

said rollers and having a pair of screened sides facing in opposite directions, substantially as specified.

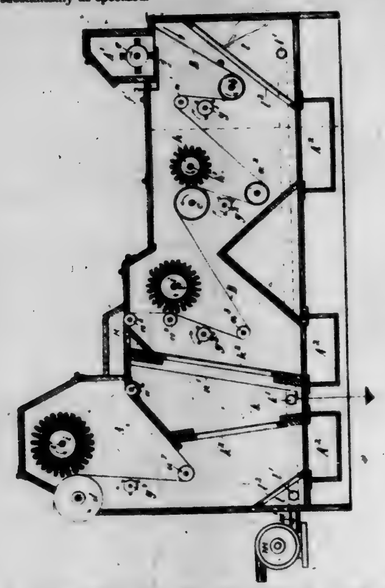

5. A bronze-mill provided with a series of rollers for removing the loose powder from the bronzed paper, and with a metal bar and ground connection for drawing the electricity out of the paper, substantially as specified.

708,467. ELECTRIC-INCANDESCENT-LAMP SOCKET. GUY H. PROCTOR, Somerville, Mass., assignor to New England Electric Manufacturing Company, Boston, Mass., a Corporation of Massachusetts. Filed Feb. 23, 1902. Serial No. 96,083. (No model.)

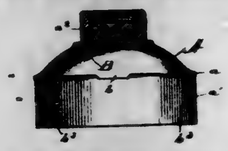

Claim.—1. An insulating cap-lining for the cap of incandescent-lamp sockets, formed to follow the concavity of the cap, and with retaining-catches adapted to fit a bead in the cap, and with depending holding-ears having their thickened extensions perforated to receive the holding-screws which connect the cap, shell, and base.

2. In an electric-incandescent-lamp socket, in combination with the cap A having the circumferential bead *a*, an insulating-lining B, formed to follow the concavity of the cap, and having catches or extensions *b* and holding-ears b^2 perforated at b'.

3. In an incandescent-lamp socket, in combination with the ordinary cap having a circumferential bead, an insulating-lining formed to follow the concavity of the cap, and with projections adapted to fit into said circumferential bead, depending metallic ears attached to said lining and perforated at their extremities; substantially as described and shown.

708,468. BRAKE FOR ADMINISTERING PRESCRIBED RESISTANCE TO THE STARTING MOVEMENTS OF HAND-OPERATED CONTROLLERS. WILLIAM H. QUIMBY, New York, N. Y. Filed Dec. 7, 1900. Renewed Dec. 12, 1901. Serial No. 85,844. (No model.)

Claim.—1. In electric starting mechanism the combination of the controller-operating shaft with a vacuum-cylinder; a piston traversing said cylinder and connections between said operating-shaft and said piston, whereby the starting movements of the controller are opposed by atmospheric pressure acting upon said piston.

2. In electric starting mechanism, a vacuum-cylinder provided with an outwardly-yielding check-valve; a piston adapted to traverse said cylinder, in combination with the controller-operating shaft and connections between said piston and said controller-operating shaft, whereby the starting movement of the controller-operating shaft is opposed by atmospheric pressure acting upon said piston and its opposite movement is unopposed by such pressure.

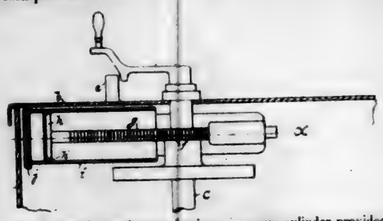

3. In electric starting mechanism, a vacuum-cylinder provided with an adjustable leak-inlet; a piston traversing said cylinder; in combination with the controller-operating shaft and connections between said controller-operating shaft and said piston, whereby the starting movement of the controller-operating shaft is opposed by a prearranged amount of unbalanced atmospheric pressure acting upon said piston.

4. In electric starting mechanism, a vacuum-cylinder provided with an outwardly-yielding check-valve and with an adjustable leak-inlet; a piston traversing said cylinder; in combination with the controller-operating shaft and connections between said controller-operating shaft and said piston, as and for the purpose set forth.

708,469. PACKING FOR STUFFING-BOXES. WILHELM REINHOLD, Berlin, Germany. Filed Nov. 1, 1900. Serial No. 35,161. (No model.)

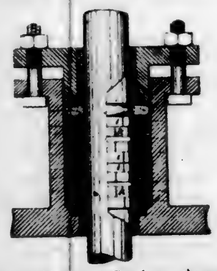

Claim.—1. In a packing for stuffing-boxes, the combination of two external conically-shaped rings, completing each other to a truncated cone of respectively-increased heights, each ring consisting of a plurality of radially-movable segmental members, with longitudinally-directed pins, engaging with both ends into holes in each two of the members, partly covering each other, such pins being adapted to connect both multidivided rings together in the manner of a chain, and means for pressing the rings against the rod to be tightened, substantially as set forth.

2. In a packing for stuffing-boxes, the combination of two external conically-shaped rings, completing each other to a truncated cone of increased height, each ring consisting of a plurality of radially-movable segmental members, with longitudinally-directed pins, one end of which engages by a thread the threaded hole of one of two segmental members, partly covering each other, the other end of each pin being provided with a head resting within a suitable recess of the other member, and means for pressing both rings against the rod to be tightened, substantially as set forth.

3. In a packing for stuffing-boxes, the combination of two external conically-shaped rings, completing each other to a truncated cone of respectively-increased height, each ring consisting of a plurality of radially-movable segmental members, with longitudinally-directed pins, one end of which engages by a thread the threaded hole of one of two segmental members, partly covering each other, the other end of each pin being provided with a head, resting within a suitable recess in the other member, each recess and the corresponding hole leaving a play around the head and the pin sufficient for widening the rings beyond the diameter of the rod to be tightened, substantially as set forth.

4. In a packing for stuffing-boxes the combination of two external conically-shaped rings, with their bottom faces resting against each other, each such ring being built up of two rows of segmental members, those of one row covering the joints between the members of the other row, both such rows being connected together by longitudinally-directed pins, with means for pressing the whole system of segmental members against

the rod to be tightened, and longitudinally against each other substantially as set forth.

708,470. METHOD OF MAKING COTTON-BALES. HENRY REHMET, Houston, Tex. Filed Mar. 10, 1901. Serial No. 51,323. (No model.)

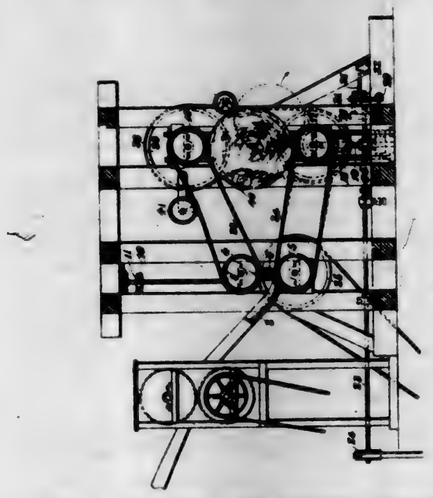

Claim.—1. The method of making cylindrical bales which consists in first forming the bale from a bat without compression in detail, and next applying pressure to the periphery of the bale at two or more separated points, said bale being rotated to present the various portions thereof in the line of compression successively, whereby a compressed bale of cylindrical form is produced.

2. The method of making cylindrical bales which consists in first forming a bale from a bat wound layer upon layer without compression in detail, and in thereafter applying pressure to the bale at two or more separated points, between which the bale rotates in the direction of its winding during the application of pressure thereto, whereby various portions of the bale are successively presented in the line of compression to produce a compressed bale of cylindrical form.

3. The method of making cylindrical bales which consists in first forming a hollow-center bale from a bat wound layer upon layer, without compression in detail, and in thereafter applying pressure to the periphery of the bale at two or more separated points and directed toward the axis thereof, said bale being constantly rotated during the application of pressure whereby various portions of the bale are successively presented in the line of compression to produce a solid compressed bale of cylindrical form, of standard size and weight and having a soft center.

708,471. WARPER STOP-MOTION MECHANISM. ALONZO B. REGARDS, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., and Portland, Me. Filed Oct. 7, 1901. Serial No. 77,890. (No model.)

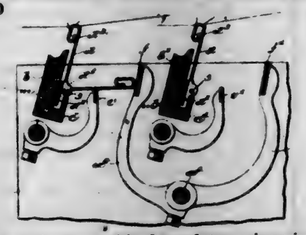

Claim.—1. As a new article of manufacture, a drop-wire comprising a straight shank having a fulcrum-eye at one end and at its opposite end bent to form a broadened warp-eye having a flattened top, to present a broad and flat bearing for the thread.

2. As a new article of manufacture, a drop-wire having a straight shank oppositely bent at its ends to constitute warp and fulcrum eyes, the plane of the warp-eye being oblique to the plane of the fulcrum-eye, the top of the warp-eye being flattened to present a broad bearing for the thread.

708,472. ELECTRIC LOW-WATER ALARM. REUBEN W. RIDER, Detroit, Mich. Filed July 24, 1901. Serial No. 69,493. (No model.)

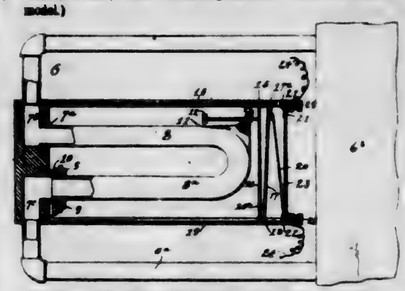

Claim.—1. In an electric low-water alarm, in combination, an expansible tube through which the boiler contents can flow having a plurality of connections with the boiler at different levels thereof, and means operated by the expansion of the tube to actuate an electric signal.

2. In an electric low-water alarm, in combination, a horizontal U-shaped expansible tube, each arm of which communicates with the boiler at a different level, and means operated by the expansion of the tube to actuate an electric signal.

3. In an electric low-water alarm, in combination, a bent expansible tube, the upper end of which communicates with an upper level of the boiler, a pipe communicating with the lower end of the tube from a lower level of the boiler, an expansion-joint between the pipe and said lower end, a lever connected to the tube, a contact device operated by the lever and adapted to close an electric circuit, and a signal device in said circuit.

4. In an electric low-water alarm, in combination, a pipe communicating with the boiler at an upper level, a U-shaped expansible tube, a connection between the said pipe and the upper arm of the tube, a lower pipe communicating with the boiler at a lower level, an expansion-joint between the lower pipe and the lower arm of the tube, a compound lever, an adjustable connection between the lever and the tube, contact-pieces adapted to be actuated by the lever to close an electric circuit, and a signal device in the circuit.

708,473. CAR-LOADER. JAMES L. ROBERTS, Pontiac, Ill. Filed Sept. 20, 1901. Serial No. 75,886. (No model.)

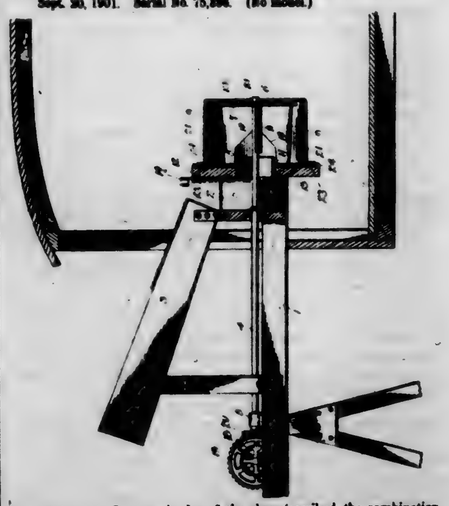

Claim.—1. In a car-loader of the class described, the combination of a hopper having a discharge-opening in one side, a revolubly-adjustable hood on said side of the hopper, opposite said discharge-opening, said

head having a circular flange bearing against the side of the hopper and provided further with a discharge-spout, an annular flange on the side of the hopper and engaging the flange of the head, thereby adjustably connecting the latter to the hopper, and a revolvable shovel in said head, substantially as described.

2. In a car-loader, of the class described, the combination of a revolvable shovel having blades provided with openings 10 at their inner corners and discharging means having a spout projecting into the said openings in said blades, substantially as described.

3. In a car-loader of the class described the combination of a hopper or the like grain-discharging means having a projecting spout, and a revolvable shovel comprising a pair of heads and blades connecting the said heads, one of said heads having an opening through which said spout extends and revolving around the said spout, substantially as described.

708,474. FURNACE. WILLIAM L. REES, Omaha, Nebr. Filed Apr. 30, 1902. Serial No. 104,978. (No model.)

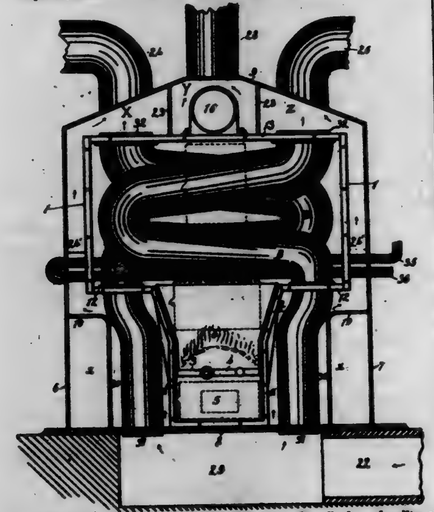

Claim.—1. In a furnace of the character described, a plurality of open-ended sterilizing-tubes passing through the combustion-chamber, a return air-supply duct communicating with the intake-openings of said tubes, a hot-air chamber receiving the exit ends of said sterilizing-tubes, said hot-air chamber communicating with said return air-supply duct, a draft-flue extending into said return air-supply duct and emptying into the smoke-flue of the furnace, and an evaporating-tank placed adjacent to the intake-opening of said return air-supply duct.

2. The combination in a furnace, of a lower fresh-air pit, a fire-pot, an auxiliary combustion-chamber above said fire-pot, a plurality of hot-air chambers above said auxiliary combustion-chamber, openings leading from said auxiliary combustion-chamber into a smoke-flue, supply-pipes leading from aforesaid hot-air chambers, and a plurality of sterilizing-tubes extending from aforesaid fresh-air-supply pipes and crossing and recrossing within said auxiliary combustion-chamber and finally emptying into aforesaid hot-air chamber.

3. In a furnace, the combination of the lower side air-chambers, of the fire-pot 6, the auxiliary combustion-chamber above said fire-pot 6, the upper hot-air compartments extending from the upper to the lower part of the furnace, the top 12 provided with suitable openings emptying into the dust 16, the fresh-air-supply pit 20 below the furnace, and the sterilizing-tubes B B extending from said pit 20 through the hot-air chambers crossing through the auxiliary combustion-chamber and emptying above into the compartments X and Z as shown.

4. In a furnace of the character described, a plurality of open-ended sterilizing-tubes passing through the combustion-chamber, a return air-supply tube communicating with the intake-openings of said tubes, a plurality of hot-air chambers, each chamber being adapted to receive the exit end of one of said sterilizing-tubes, said hot-air chamber communicating with said return air-supply tube, a draft-flue extending into said return air-supply tube and emptying into the smoke-flue of the furnace, and an evaporating-tank placed adjacent to the intake-opening of said return air-supply tube.

708,475. TURTLE-TRAP. ELAH J. ESSE, Kleinwood, La. Filed Oct. 19, 1901. Serial No. 79,267. (No model.)

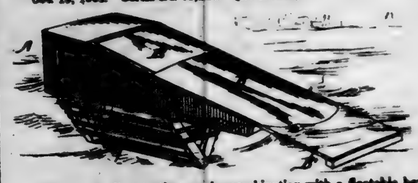

Claim.—1. In a turtle-trap the combination with a floatable box or case having a sloping top provided with the pivoted trap-door and a cage arranged beneath the said box or case, said sloping top projecting beyond the end of the box or case and adapted to extend below the water-line for the purpose described.

2. A turtle-trap comprising in combination a floatable box or case, the top or cover of which is inclined and provided with a pivoted trap-door; said trap-door having a weighted frame connected thereto adapted to normally hold it in a position flush with the top of the box or case and a cage arranged beneath the box or case and adapted to receive the turtle after falling through the trap-door, substantially as shown and described.

3. A turtle-trap comprising in combination a box or case having an inclined top, the forward end of which projects beyond the end of the box or case, the pivoted trap-door arranged in the inclined top and provided with a weighted arm, the cage arranged beneath the box or case and the buoyant cylinders attached to the box or case at its lower end, substantially as shown and described.

708,476. OVERHEAD TROLLEY. SUMNER H. RUSSELL, Pittsfield, Mass. Filed Jan. 27, 1902. Serial No. 91,631. (No model.)

Claim.—1. In a trolley-wheel support, the combination of the harp, plates slidably held thereon, an axle journaled in the plates and having a wheel held thereon, and means carried by the plates for locking them to the harp, substantially as shown and described.

2. In a trolley-wheel support, a harp having grooves arranged upon its inner faces and openings arranged therein, plates slidably arranged in the said grooves, an axle carried by the plates and having a trolley-wheel mounted thereon, and spring locking members carried by the plates and adapted to engage the said harp, substantially as shown and described.

3. In a trolley-wheel support, the combination of the harp having openings arranged in the bifurcated portions, and dovetailed grooves arranged in the inner surfaces thereof, plates arranged in the said grooves, one of which being provided with a non-circular aperture, and the opposite plate with a circular aperture, an axle held in the said apertures, one end thereof having a non-circular head arranged thereon that is adapted to fit the non-circular aperture in the said plate, a wheel revolubly mounted on the said axle, and spring locking members carried by the said plates, the free ends of which being adapted for engagement with the bifurcated portions of the harp, substantially as shown and described.

4. In a trolley-wheel support, the combination of the harp having openings arranged in the bifurcated sections and dovetailed grooves arranged in the inner faces thereof, plates arranged in the said grooves, and having their lower outer faces beveled and also provided with recesses, spring locking members held to the beveled portion of the plates at one end and having their free ends terminating in inwardly-bent portions, an axle carried by the plates and having a wheel mounted thereon, substantially as and for the purpose specified.

5. In a trolley-wheel support, the combination of the harp having dovetailed grooves arranged in the inner faces thereof, plates operating in the said grooves, an axle carried by the said plates and having a wheel mounted thereon, the said plates having recesses formed in their outer faces, the lower outer edge of the plates being beveled, a spring locking member secured at one end to the beveled portion of each plate, the free end of each locking member engaging the said harp, the said ends being adapted to be forcibly projected into the recesses of the said plates, as and for the purpose set forth.

708,477. BODY-BRACE. HARRISON W. RUSSELL, Jacquin, Tex. Filed Apr. 14, 1902. Serial No. 102,998. (No model.)

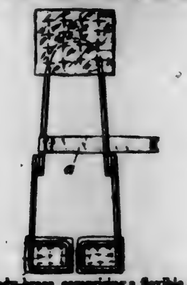

Claim.—1. A body-brace, comprising a flexible wire which is bent at its center forming two portions, each of which is turned into a coil, a pad held above the coiled portion of the wire and adapted to be held by the wire against the chest of the wearer, a strap for holding the device to the body of the wearer, and leg-pads at the ends of said wire, as set forth.

2. A body-brace, comprising a flexible wire or rod bent at its longitudinal center forming two arms, each arm being bent to form a coil, a pad above the middle portion of the wire, a strap for holding the device to the body of the wearer, portions of each arm adjacent to its end being bent in semicircular form, and pads fastened between said semicircular portions, as set forth.

708,478. DEVICE FOR HOLDING CHALK OR OTHER MATERIAL. FRANK A. C. RUTH, Rochester, N. Y. Filed Dec. 5, 1900. Serial No. 38,888. (No model.)

Claim.—1. A holder for chalk or similar consumable material embodying a support having the spring-arms adapted to extend in opposite directions into the material to be held, the prominent ends of said arms having the opposed inclined faces and the shoulders in rear thereof, whereby they will become automatically interlocked when brought together, said arms being incapable of detachment by a relative longitudinal movement.

2. In a holder for chalk or similar material, the combination with the shell or ring 2 having apertures upon its opposite sides, of a support having the oppositely-extending arms 6 provided with beveled faces 7 upon their proximate ends, and interlocking projections 8.

3. A holder for chalk or similar consumable material embodying a band or shell confining the material to be held having the apertures on opposite sides and securing-arms passing through said apertures and adapted to most within the body of material said arms having the positively-engaging interlocking devices on their proximate ends automatically and positively engaged by a longitudinal movement toward each other to prevent their withdrawal.

4. A holder for chalk or similar consumable material embodying a band or shell confining the material to be held having the apertures and the loop having the inwardly-extending arms passing loosely through the apertures in the band and the interlocking projections on their ends adapted to automatically interlock within the material when thrust inwardly from opposite sides and prevent the withdrawal of the arms.

708,479. FOUNTAIN-PEN. WILLIAM W. SANFORD, Newark, N. J., assignor of one-half to Frederick D. Bennett, Freehold, N. J. Filed Apr. 22, 1902. Serial No. 104,200. (No model.)

Claim.—1. The combination in a pen, of a barrel provided with an ink-feed, a collapsible expansible reservoir in said barrel, and an air-valve on said barrel, substantially as described.

2. The combination in a pen of a barrel provided with an ink-feed, an elastic collapsible sack in said barrel having its mouth communicating with said ink-feed, and a valve on said barrel adapted to admit air into the barrel to collapse said sack, and also adapted to be closed after said sack is full and to exclude external air-pressure thereafter from the filled sack, substantially as described.

3. The combination in a pen, of a barrel, a pen-section provided with an ink-feed and with a neck projecting into the barrel, an elastic expansible sack in the barrel attached at one end to said neck, and an air-valve on said barrel adapted to admit air into the barrel to collapse the sack, and to exclude external air-pressure from the barrel when the sack is filled, substantially as described.

4. The combination in a pen, of a barrel provided with an ink-feed, a collapsible expansible ink-reservoir in said barrel communicating with said ink-feed at one end, and having the other end narrowed to permit air to flow between the side of the reservoir and the barrel, and an air-valve on said barrel, substantially as described.

708,480. AIR-BRAKE MECHANISM. WILLIAM H. SAVAGE, Denver, Colo., assignor, by direct and mesne assignments, to the Savage Duplex Air Brake Company, Denver, Colo. Filed Feb. 6, 1901. Serial No. 46,573. (No model.)

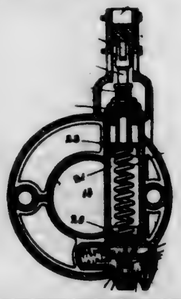

Claim.—1. In air-brake mechanism the combination of a valve interposed between the pressure source and the brake-cylinder, a spring normally holding said valve open, a rod connected with said spring and protruding from the valve-casing, a wedge-shaped device arranged to engage said rod, a spring connected with said device and having a tendency to cause it to act on the rod to increase the tension of the spring which holds the valve open, and a connection between the wedge-shaped device and the spring-supported body of the car, whereby the said device is held inactive against the tension of its spring when the car is empty, and allowed to act in response to the spring as the gravity of the load increases.

2. In brake mechanism the combination of a valve interposed between the pressure source and the brake-cylinder, a spring normally holding said valve open, a rod arranged within actuated, to increase the tension of the said spring, a wedge-shaped device arranged to engage said rod, a spring connected with the wedge-shaped device and having a tendency to cause it to act on the rod and increase the tension of the spring which holds the valve open, and a flexible connection between the wedge-shaped device and the body of the car, and arranged to be held taut by the car-body when the car is empty, and also arranged to slacken and allow the spring connected with the wedge-shaped device to cause the latter to actuate its engaging rod, as the spring-supported car-body descends in response to the weight of the load.

3. In air-brake mechanism, the combination of a valve interposed between the pressure source and the brake-cylinder, a spring normally holding said valve open, spring-actuated means having a normal tendency to increase the tension of the valve-opening spring, and two ropes connected with said tension-increasing means and extending in opposite directions toward the respective ends of the car, guides mounted on the body of the car and engaged by said ropes which extend downwardly and are attached to stationary supports below the springs, whereby as the car rocks and either rope is slackened, the other rope will remain taut and obviate vibration of the tension-increasing means.

708,481. ATTACHMENT FOR BEER-COOLERS. OTTO SCHELL, New Ulm, Minn. Filed Dec. 30, 1901. Serial No. 87,720. (No model.)

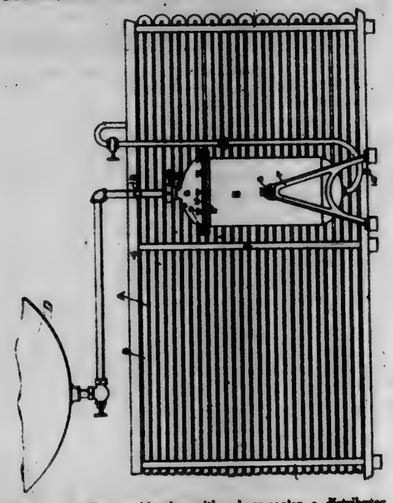

Claim.—1. The combination with a beer-cooler, a distributer extending along the entire length and above the top thereof, and a kettle arranged above the level of said distributer, of an upright closed receptacle for hops standing alongside said cooler and below said kettle and distributer, a perforated portion within said receptacle and adjacent to the lower end thereof, an inlet-pipe leading from the kettle into the upper end of said receptacle, an outlet-pipe leading from the space between said perforated portion and the adjacent wall of the receptacle upward to the distributer, the arrangement being such that all of the wort is passed from said kettle through said receptacle under pressure to said cooler.

2. The combination with a beer-cooler, a distributer along the top thereof, and a kettle, of a closed receptacle for hops standing alongside said cooler below said kettle, an open-work inner chamber arranged within said receptacle, a conduit leading from said kettle to the top of said receptacle and opening into the receptacle within said open-work chamber, and a conduit leading from the receptacle outside said open-work chamber to said distributer.

3. The combination with a beer-cooler, a distributer extending along the top thereof, and a boiling-kettle, of an upright closed receptacle for hops standing alongside said cooler and below said kettle, an open-work chamber arranged within said receptacle and interspaced from the bottom thereof, a conduit connecting said kettle with said receptacle, said conduit opening into the upper end of said open-work chamber, and a conduit leading from the lower end of said receptacle outside said open-work chamber to said distributer, whereby all of the wort is passed from said kettle to said receptacle under pressure to said cooler.

4. The combination with a beer-cooler and brewing-kettle, of a closed receptacle for hops arranged alongside said cooler and below said kettle, an open-work chamber arranged within said receptacle, a conduit connecting the kettle with the interior of said open-work chamber, a pipe opening into said conduit for the purpose of admitting air thereto, and a conduit leading from the lower end of said receptacle outside said open-work chamber to the cooler.

5. The combination with a beer-cooler, and a kettle arranged above the same, of a closed receptacle for hops arranged alongside said cooler below said kettle, an open-work hop-retainer within said receptacle, said retainer being interspaced from the bottom of the receptacle, a detachable cover for the upper ends of said receptacle and retainer, a conduit connecting said kettle and cover and opening into said retainer, a conduit leading from the bottom of said receptacle outside said retainer upward to the upper portion of the beer-cooler, and a pivotal support for said receptacle.

708,482. SUPERHEATING DEVICE IN TUBULAR STEAM-BOILERS. WILHELM SCHMIDT and PETER TREMMEL, Wilhelmshöhe, near Cassel, Germany, assignors to Schmidt'sche Steam Power Patent Co., Ltd., London, England, a Firm. Filed Jan. 26, 1901. Serial No. 44,914. (No model.)

Claim.—1. In locomotive and other steam-boilers, the combination with a steam-collector of a superheater consisting of superheating-pipes arranged in the boiler-tubes and having their ends bent to the steam-collector, substantially as described and for the purpose set forth.

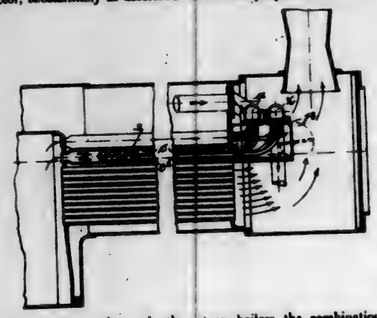

2. In locomotive and other steam-boilers, the combination with a steam-collector of a superheater consisting of superheating-pipes arranged in the boiler-tubes and having their ends bent to the steam-collector, a regulating-damper behind the bends of the superheating-pipes, substantially as and for the purpose set forth.

3. In locomotive and other steam-boilers, the combination with a steam-collector of a superheater consisting of superheating-pipes arranged in the boiler-tubes and having their ends bent to the steam-collector, plates which are detachably fixed to the chambers and in which the superheating-pipe bends are fixed, a regulating-damper behind the bends of the superheating-pipe, substantially as described and for the purpose set forth.

708,488. SAFETY-HARNESS FOR CHILDREN. CONRAD J. SCHLICK, Gallipolis, Ohio. Filed Apr. 23, 1902. Serial No. 104,370. (No model.)

Claim.—1. As a new article of manufacture, a child's safety-harness comprising a girth-strap having means for adjustably and detachably connecting its ends, and a shoulder-strap reversely and intermediately engaging said girth-straps at opposite points and with depending ends, and means carried by said depending ends for connection to the support for the child, substantially as described.

2. As a new article of manufacture, a child's safety-harness, comprising a girth-strap having means for adjustably and detachably connecting its ends, and a shoulder-strap reversely and intermediately engaging said girth-straps at opposite points, and with depending ends, and buckles and straps upon said depending ends, substantially as described.

708,484. TWINE-CUTTER. IRA SHAFER, Afton, Iowa. Filed Apr. 23, 1902. Serial No. 105,101. (No model.)

Claim.—1. In a twine-cutter, the combination with a suitable base and a twine-tension device, of an angular arm hinged to the base and provided with a tubular portion through which the twine is adapted to pass, a knife pivoted to the outer end of the arm, a connection between the knife and the base-plate whereby when said arm is swung downwardly the knife will be actuated to sever the twine, and an expansible and compressible guide extending from the tension device to the tubular portion of the arm and adapted to bridge the space between said arm and the base when the arm is swung downwardly, substantially as set forth.

2. In a twine-cutter, the combination with a suitable base and a twine-tension device, of an angular spring-actuated arm hinged to the base and provided with a tubular portion through which the twine is adapted to pass, a knife pivoted to the outer end of the arm, a connection between the knife and the base-plate whereby when said arm is swung downwardly the knife will be actuated to sever the twine, and an expansible and compressible guide extending from the tension device to the tubular portion of the arm and adapted to bridge the space between said arm and the base when the arm is swung downwardly, substantially as set forth.

4. In a twine-cutter, the combination with a suitable base having an opening, of a tension device consisting of an apertured plate hinged to the base and having a lip projecting from the base of the opening, a spring for exerting pressure upon the plate to hold the lip against the base of the opening, an angular spring-actuated arm hinged to the base and provided with a tubular portion through which the twine is adapted to pass and with a cutter-head having an opening through which the end of the twine is adapted to project, a spring-actuated knife pivoted to said head, and a connection between said knife and the base whereby when said arm is swung downwardly the knife will traverse the opening in said head, substantially as set forth.

708,485. PAPER CLIP OR FASTENER. ALFRED SHERLOCK, Jersey City, N. J., assignor to Joseph W. Cushman, trading as Cushman and Denison, New York, N. Y. Filed Dec. 21, 1901. Serial No. 86,794. (No model.)

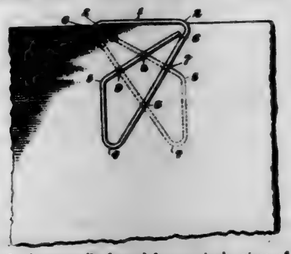

Claim.—1. A paper-clip formed from a single piece of wire and having a central part or head and convergent side parts crossing at and extending beyond the point 3, then extending upwardly and then inwardly and again crossing at 7 and 9, the ends of said parts again crossing at 8 in the space between the head and convergent sides, and each finally terminating adjacent the upper part of the convergent side part of which it forms a portion.

2. A paper-clip formed from a single piece of wire and having a central part or head and convergent side part crossing at and extending beyond the point 3, then extending upwardly in lines transverse to the central part or head and then inwardly, and again crossing at 7 and 9, the ends of said parts again crossing at 8 in the space between the head and convergent sides, and each finally terminating adjacent the upper part of the convergent side part of which it forms a portion.

708,486. GRINDING ATTACHMENT FOR POWER-MACHINES. ERASMUS W. SNOWALTER, Claypool, Ind. Filed Feb. 19, 1902. Serial No. 94,838. (No model.)

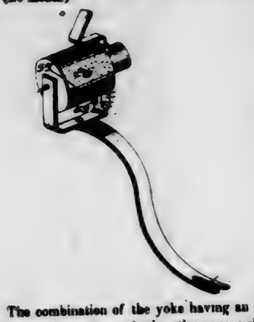

Claim.—1. The combination of the yoke having an oblique open slot in one of its arms and an aperture in the other arm, a shaft journaled in said aperture and slot and carrying a grinding-roller and a friction-wheel, and a guard having bent edges slidingly engaging one arm of the yoke.

2. The combination of the yoke the arms of which are provided respectively with an aperture and with an oblique open slot, the shaft journaled in said yoke, and the guard having bent edges slidingly engaging one arm of the yoke and provided with a vertical slot to receive the shaft.

3. A grinding attachment for power-machines comprising a supporting-standard having oppositely-disposed vertical arms at its upper end, a grinding-roller mounted detachably in said arms, said roller having a friction-wheel connected therewith for engaging a driving-wheel, and a detachable guard slidably mounted on one of said arms.

4. A grinding attachment for power-machines comprising a supporting-standard having vertical arms at its upper end, a grinding-roller mounted in said arms and provided with means for engaging a driving-wheel, and a detachable guard slidably mounted on one of said arms and having a member extending horizontally over said grinding-roller and provided with an upwardly-extending arm at its free end.

5. A grinding attachment for power-machines comprising a supporting-standard having upwardly-extending flat arms, a grinding-roller mounted in said arms, and a detachable guard provided with guideways for engaging one of said arms.

6. A grinding attachment for power-machines, comprising a supporting standard having an open slot at one end thereof and an inverted yoke disposed at the other end, the arms of said yoke being flat and provided with means for detachably receiving a shaft, a shaft carrying a grinding-roller mounted in said means, and a detachable guard provided with inwardly-bent edges forming guideways for engaging the edges of one of said arms.

7. A detachable guard for a grinding attachment comprising a vertical member having means for engaging a supporting-standard and a horizontally-disposed member attached to said vertical member at its upper end, said horizontal member having an upwardly-extending arm at its free end.

708,487. MARINE BRAKE. HENRY SIMPSON, Liverpool, England. Filed Apr. 15, 1902. Serial No. 102,903. (No model.)

Claim.—1. In combination; a ship in the hull of which is formed a series of cavities symmetrically disposed in pairs on opposite sides of the center line; a series of arresters pivotally located in the said cavities and leaving, when in arresting position, passage-ways for the water to flow through the cavities and around the arresters; a series of hinged doors; means for articulating the doors to the arresters so that they open and close therewith and are held open thereby; and means for operating the arresters; substantially as described and illustrated.

2. In combination; a ship in the hull of which is formed a series of cavities symmetrically disposed in pairs on opposite sides of the center line, each cavity being divided longitudinally into two parts by one of the ship's decks and strengthened by bars and junction-plates; a series of twin arresters pivotally located in the said cavities and leaving, when in arresting position, passage-ways for the water to flow through the cavities and around the arresters; a series of hinged double doors; means for articulating the doors to the arresters so that they open and close there-

with and are held upon thereby; and means for operating the arresters; substantially as described and illustrated.

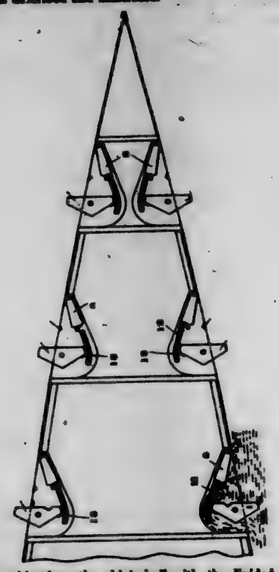

2. In combination; the ship's hull with the divided cavities; the twin arresters; the hinged doors; the means for operating the arresters; and the double spindle for the twin arresters, consisting of two parts jointed together so as to prevent relative rotary movement while permitting departure from absolute alinement; substantially as described and illustrated.

4. In combination; the ship's hull with the cavities and bars; the doors having projections adapted to abut against the said bars; the arresters having projections adapted to abut against the projections on the doors; means for articulating the doors to the arresters; and means for operating the arresters; substantially as described and illustrated.

5. In combination; the ship's hull with the cavities; the arresters; the doors; the means for operating the arresters; and the means for articulating the arresters to the doors, consisting of slotted bars attached to the doors and pins attached to the arresters and working in the said slots; substantially as described and illustrated.

703,488. VEHICLE-AXLE LUBRICATOR. DANIEL W. SHIRKEY, Wilmot, Ohio, assignor of one-half to Albert F. Kemper, Wilmot, Ohio. Filed Mar. 13, 1902. Serial No. 98,031. (No model.)

Claim.—In a vehicle-axle lubricator, an axle provided with a groove having located therein oil-conveying pipes, said pipes being covered with metal, and leading to and communicating with open slots, and the axle provided with a reduced portion between the bearing-points of the hub-lugging, and an oil-cup provided with a passage leading to the oil-conveying tubes, and means for forcing the oil through the conveying-tubes from the cup, substantially as and for the purpose specified.

703,489. GAR-COUPLING. JOHN W. SMITH, Ottawa, Canada. Filed Mar. 20, 1902. Serial No. 100,003. (No model.)

Claim.—1. In a coupler of the class described, the combination with a head having the central or axial portion of its working end a solid or non-recessed mass of metal, of a pivoted knuckle having the face which meets the coacting knuckle an unbroken surface extending from top to bottom of the knuckle, substantially as set forth.

2. The combination with a head having a suitable lateral shoulder upon its knuckle-bearing side, of a knuckle pivoted upon the head and having upon that portion of its rear end which is most distant from the coupler's axis a face in position to approach said shoulder as the knuckle opens, and a block normally filling the space between said face and shoulder and arranged to be moved out of said space for unlocking the knuckle.

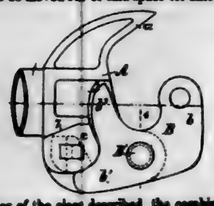

3. In a coupler of the class described, the combination with a head having a solid outer and recessed above and below to form a parallel-faced hub, a forked knuckle embracing, and pivoted to, said hub with its branches normally at some distance from the corresponding walls of the recesses, and locking devices arranged to pass into and out of the spaces between said branches and walls, substantially as set forth.

4. The combination with the head having the non-recessed central portion and the integrally-formed hub, of the forked knuckle embracing the hub and having the tails and arms, the pivotal pin passing vertically through the branches of the knuckle and the intermediate hub, and the vertically-sliding pin having parts adapted to pass into and out of the paths of said tails as the pin falls and rises.

5. The combination with the head of approximately the outline of the ordinary coupler, having the non-recessed end portion, and cut away above and below, on the knuckle side, leaving the medial hub with the shoulders, of the forked knuckle having the tails and arms, the vertically-sliding non-revolvable pin having portions adapted to fit and fill the spaces between said tails and the corresponding shoulders when the pin is in normal position, to pass out of the paths of the tails when raised, and to be held up by the tails when the knuckle is open.

703,490. STORAGE BATTERY. MALONE O. SMITH, Depew, N. Y., assignor of one-half to Thomas J. Carter, Depew, N. Y. Filed July 13, 1901. Serial No. 68,146. (No model.)

Claim.—1. An element for storage battery, composed of a metallic plate forming a tray with outwardly-sloping sides and ends, deepest in the center along a central longitudinal line, said plate provided upon its upper and lower sides with electrodes of opposing polarity, in conductive connection with the plate by means of a retaining-grid of vertically-disposed thin lamines, formed from the body of the plate on opposite sides of its central core to which said lamines remain united, the outer or marginal portion of the tray being formed by latent portions of the plate and bent upwardly to form a standing rim around the edge of the tray.

2. A storage battery, composed of an alternating series of conducting and non-conducting tray-shaped plates, nested together in a vertical pile, the conducting-plates adapted to contain an electrolyte and provided with electrodes in conductive connection with the plates, and the non-conducting plates of porous material retaining the electrodes out of contact with each other, and an electrolyte in which the non-conducting plates are immersed for electrically connecting the electrodes, a supporting-rack of non-conducting material having a tray-shaped depression in which the bottom tray fits and upon which the pile is supported, and a follower formed of the top tray by means of a stiffening-frame, said top tray formed upon its under side only with an electrode and constituting one pole of the battery, and the bottom tray formed upon its upper side only with an electrode constituting the other pole of the battery.

3. A storage battery, composed of an alternating series of conducting and non-conducting tray-shaped plates nested together in a vertical pile, the conducting-plates being cold-tight and provided with electrodes formed in conductive connection with the plates, and the non-conducting plates of porous material, interposed between the electrodes of the conducting-plates, and an electrolyte in which the non-conducting plates are immersed for electrically connecting the electrodes, a supporting-rack of non-conducting material formed with a tray-shaped depression in which the bottom tray is supported, a gutered flange around said bottom tray and supported upon the walls of the supporting-rack, an overflow vessel contained within the supporting-rack and communicating with the gutter, and a follower or cover formed of the top tray by means of a stiffening-frame within the tray, the edges of said top tray extending over the top of said frame and forming one terminal of the battery, and the gutered flange of the bottom tray forming the other terminal.

4. A storage battery, composed of conducting and non-conducting tray-shaped plates nested in the form of a vertical pile, and a supporting-base formed with a tray-shaped depression in which the pile is supported, the non-conducting plates of porous material interposed between the conducting-plates, and the conducting-plates adapted to contain an electrolyte and provided with electrodes in conductive connection therewith, the intermediate plates having electrodes upon both their upper and lower sides, and the top and bottom plates upon their lower and upper sides only, and forming the terminals of the battery.

5. A storage battery, composed of conducting and non-conducting tray-shaped plates nested in the form of a vertical pile, a supporting-rack having a like tray-shaped depression upon which the pile is supported as a base, and a cover on top of the pile, the non-conducting plates of porous material interposed between the conducting-plates and containing the electrolyte, and the conducting-plates provided with electrodes in conductive connection with the plates, the intermediate plates provided with electrodes upon their upper and lower sides, and the bottom and top plates upon one side only and constituting the terminals of the battery, said top plate formed into a rigid follower or cover by means of a stiffening-frame inclosed within the plate.

6. A storage battery, constructed in the form of a pile and composed of nested tray-shaped conducting-plates adapted to contain the electrolyte and provided with electrodes in direct conductive connection therewith, non-conducting tray-shaped porous plates interposed between the conducting-plates immersed in the electrolyte therein, an insulating-base supporting the pile and having a tray-shaped depression to receive the bottom tray of the pile, a gutered flange on said bottom tray extending around the top of the base in position to receive the overflow from the trays, an overflow vessel contained within the base and communicating with said gutter, and a follower or cover composed of the conducting plate or tray on top of the pile and a stiffening-frame inside said tray.

703,491. CYLINDER-MACHINE FOR PRINTING ON SHEETS. WILLIAM SPAIGHTAVER, New York, N. Y., assignor to Robert Hoe, New York, N. Y. Filed Apr. 12, 1901. Serial No. 55,561. (No model.)

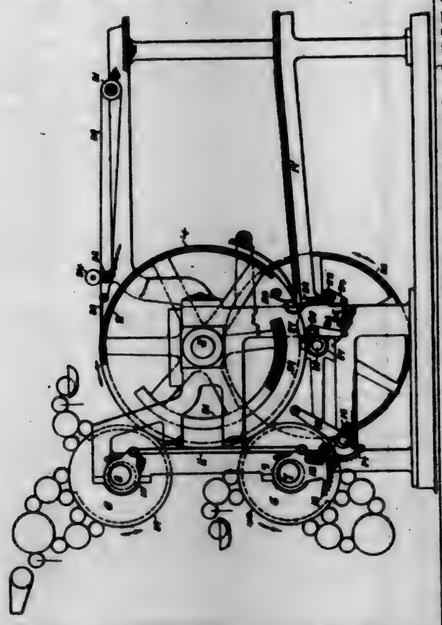

Claim.—1. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, substantially as described.

2. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, and a delivery mechanism arranged over the feed-board, substantially as described.

3. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface and having a counterweighting-segment which is nearer the center of the cylinder than the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, substantially as described.

4. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface and having a counterweighting-segment which is nearer the center of the cylinder than the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, and a delivery mechanism arranged over the feed-board, substantially as described.

5. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface, of a feed-board, a front step coöperating with the feed-board, means for moving the front step below the plane of the board, and a delivery mechanism arranged over the feed-board, substantially as described.

6. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface and having a counterweighting-segment arranged nearer the center of the cylinder than the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, a front step coöperating with the board, and means for moving the step below the plane of the board, substantially as described.

7. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface and having a counterweighting-segment arranged nearer the center of the cylinder than the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, a front step, a rock-shaft on which the step is mounted located beneath the feed-board, and means for rocking the shaft to throw the step below the feed-board, substantially as described.

9. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface and having a counterweighting-segment arranged nearer the center of the cylinder than the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, a front step, a rock-shaft on which the step is mounted located beneath the feed-board, and means for rocking the shaft to throw the step below the feed-board, substantially as described.

10. In a printing-machine, the combination with the rotating sheet-carrying cylinder of a printing-couple, said cylinder being cut away opposite the sheet-supporting surface and having a counterweighting-segment arranged nearer the center of the cylinder than the sheet-supporting surface, of a feed-board arranged to present a sheet beneath the cylinder, a front step, a rock-shaft on which the step is mounted located beneath the feed-board, means for rocking the shaft to throw the step below the feed-board, and a delivery mechanism arranged over the feed-board, substantially as described.

11. In a printing-machine, the combination with a rotating impression-cylinder, said cylinder being cut away on the side opposite the impression-surface, a counterweighting-segment arranged nearer the center of the cylinder than the impression-surface, of a feed-board arranged to present a sheet beneath the cylinder, a rock-shaft mounted below the board, a front step on the rock-shaft, a cam on the cylinder, and means whereby said cam rocks the shaft to throw the front step below the board, substantially as described.

12. In a printing-machine, the combination with a rotating impression-cylinder, said cylinder being cut away on the side opposite the impression-surface, a counterweighting-segment arranged nearer the center of the cylinder than the impression-surface, of a feed-board arranged to present a sheet beneath the cylinder, a rock-shaft mounted below the board, a front step on the rock-shaft, a cam on the cylinder, means whereby said cam rocks the shaft to throw the front step below the board, and a delivery mechanism arranged over the feed-board, substantially as described.

708,492. SHAFT-HANGER. WILLIAM B. SPENCER, Chicago, Ill. Filed Oct. 12, 1899. Serial No. 733,502. (No model.)

Claim.—The combination of a crank-hanger having enlarged end portions 7 and 8 provided with exterior screw-threads, the interiorly-threaded sleeves 9 arranged on the exterior of the end portions of the crank-hanger and extending outward beyond the same and provided with inwardly-extending annular flanges 10 located between the ends of the sleeves 9 at points beyond the ends of the hanger and having their inner edges arranged substantially in alinement with the body portion of the hanger and forming ball-races with the outer portions of the sleeves 9, a crank-shaft extending through the hanger, cranks provided with hubs secured to the crank-shaft and provided with ball-race grooves 18, the inner portions of the hubs extending into the sleeves 9 beyond the intermediate flanges 10 and the outer portions of the hubs extending over the said sleeves 9 and arranged on the exterior of the same, balls located within the ball-races of the sleeves 9 and in the grooves 18 of the hubs, the jam-nuts 11 arranged on the threaded end portions of the hanger adjacent to the inner ends of the sleeves 9, and washers interposed between the jam-nuts and the sleeves, substantially as described.

708,493. RING. FRANK B. STAFFORD, Providence, R. I., assignor to Stafford & Randall Manufacturing Company, Saco, Me., a Corporation of Maine. Filed Oct. 7, 1901. Serial No. 77,998. (No model.)

Claim.—1. The improved jeweler's finding for ring manufacture herein described, consisting of a tube of base metal having an annular groove or channel in each of its ends, an outer tube of precious metal united to said base-metal tube on the outer surface of the base-metal tube, and having beveled edges and an inner tube of precious metal united to the base-metal tube on the inner surface of the base-metal tube and having beveled edges, substantially as set forth.

2. The improved jeweler's finding for ring manufacture herein described, consisting of a tube of base metal having an annular groove or channel in each of its ends, an outer tube of precious metal united to said base-metal tube on the outer surface of the base-metal tube, an inner tube of precious metal united to said base-metal tube on the inner surface of the base-metal tube each of said tubes of precious metal exceeding the base-metal tube in length, substantially as specified.

3. The improved jeweler's finding for ring manufacture herein described, consisting of a tube of base metal having an annular groove or channel in each of its ends, an outer tube of precious metal united to the base-metal tube on the outer surface of the base-metal tube and having a convexed outer surface and beveled ends and an inner tube of precious metal united to the base-metal tube on the inner surface of the base-metal tube and having beveled ends, substantially as specified.

708,494. WAGON-SEAT SUPPORT. HARVEY STARKS, Rhine Corners, Wis. Filed Apr. 26, 1902. Serial No. 104,720. (No model.)

Claim.—1. The combination of a shouldered guide attachable to a side-board of a wagon-body, a rack-standard vertically adjustable in the guide, the upper end of this standard being made to serve as a bolster for a wagon-seat spring, a bail having offset ends extended through lugs of said guide into clearance-recesses provided in the wagon-body side-board, and means in connection with the bail ends for preventing their withdrawal through said lugs, the bail being adjustable to engage said standard and rest on the guide-shoulders.

2. The combination of a flat plate-casting having a pair of outer parallel longitudinal flanges, flange-abutting bars having their ends provided with apertures in register with apertures in lugs of the casting, bolts engageable with a wagon-body side-board, said lugs and bars; nuts on the bolts, a rack-standard vertically adjustable in the guide comprising said casting and bars, the upper end of this standard being made to serve as a bolster for a wagon-seat spring, a bail having offset screw-threaded ends extended through lugs of the aforesaid casting, and nuts on the bail ends having clearance in recesses provided in the wagon-body side-board, the bail being adjustable to engage the said standard and rest on shoulders of said casting-flanges.

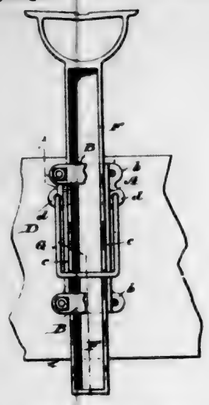

708,495. BOOKBINDER'S CLAMP. LOUIS J. A. STANIEWSKI, Chatham, Canada. Filed Dec. 11, 1901. Serial No. 85,453. (No model.)

Claim.—1. The combination with the stationary base provided with a curved or arc-shaped top, of the rocking base provided with a curved or arc-shaped bottom designed to rest upon the arc-shaped top, the clamping-bars secured on the rocking base and designed to receive between them the book to be embossed, means for holding such bars together to grip the book and means for connecting the bases together, so as to permit of a rocking lateral movement as and for the purpose specified.

2. The combination with the stationary base provided with a curved or arc-shaped top, of the rocking base provided with a curved or arc-shaped bottom designed to rest upon the arc-shaped top, the clamping-bars secured on the rocking base and designed to receive between them the book to be embossed, the hand-screw extending through the ends of the bars and means for connecting the bases together, so as to permit of a rocking lateral movement as and for the purpose specified.

3. The combination with the stationary base provided with a curved or arc-shaped top, of the rocking base provided with a curved or arc-shaped bottom designed to rest upon the arc-shaped top, the clamping-bars secured on the rocking base and designed to receive between them the book to be embossed, the hand-screw extending through the ends of the bars, the said rocking bar being provided with a cross-groove, a hand-screw extending through the clamping-bar into and against the bottom of such groove and means for connecting the bases together so as to permit of a rocking lateral movement as and for the purpose specified.

4. The combination with the stationary base provided with a curved or arc-shaped top, of the rocking base provided with a curved or arc-shaped bottom designed to rest upon the arc-shaped top, the clamping-bars secured on the rocking base and designed to receive between them the book to be embossed, means for holding such bars together to grip the book, a cord extending through holes in the bases and spring means located intermediate of the length of the cord for allowing it to give and a suitable fastening for the bottom end of the cord as and for the purpose specified.

5. The combination with the stationary base provided with a curved or arc-shaped top, of the rocking base provided with a curved or arc-shaped bottom designed to rest upon the arc-shaped top, the clamping-bars secured on the rocking base and designed to receive between them the book to be embossed, means for holding such bars together to grip the book, a flexible cord extending through the central holes in the bases, the spring located at the lower end, the triangle connected to the lower end of the spring, a bracket and hook connected to the floor and a thumb-screw extending through the upper end of the bracket and into the triangle as and for the purpose specified.

6. The combination with the top rocking base and the clamps carried thereby for holding the book in place, of the bottom base and bottom base-board, said top and bottom bases having central holes, the cord extending through the central holes in both bases and the central bearing between the bottom base and base-board and a spring-plunger designed to extend through the base-board into a hole in the bottom base as and for the purpose specified.

7. The combination with the curved rocking base, of the curved stationary base of the clamps carried by the rocking base, the cord extending through the center holes of said bases, and the ball-bearings in which the top of the cord is fastened and which permits of the horizontal rotation of the bases without twisting as and for the purpose specified.

708,496. PROCESS OF SUGAR-BOILING. CARL STEFFEN, Vienna, Austria-Hungary. Filed Aug. 8, 1900. Serial No. 626,062. (No specimens.)

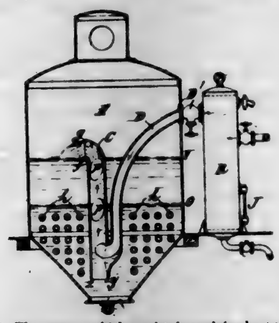

Claim.—1. The process, which consists in applying heat to the lower portion of a column of saccharine solution in presence of a vacuum and lifting successive portions of the solution from said lower to the upper portion of said column through an open-ended conduit, by introducing into the latter near its lower end series of bubbles of a gaseous fluid of a pressure but slightly greater than the pressure within the conduit at the point of introduction of the bubbles, for the purpose set forth.

2. The process, which consists in applying heat to the lower portion of a column of saccharine solution in presence of a vacuum and lifting successive portions of the solution from said lower to the upper portion of said column through an open-ended conduit, by introducing into the latter near its lower end series of bubbles of a gaseous fluid of a pressure but slightly greater than the pressure within the conduit at the point of introduction of the bubbles, each of said bubbles containing sufficient of the fluid to cause them to expand approximately to the full internal diameter of said conduit, substantially as and for the purpose set forth.

708,497. GRAIN-DIVIDER FOR HARVESTERS. JOHN F. STEWARD, Chicago, Ill. Filed Apr. 21, 1902. Serial No. 104,099. (No model.)

Claim.—In combination with a grain-receiving platform, the forward extension pivoted at its rear end to said platform, the divider-board I pivoted to the forward end of said forward extension, the post H, means for securing the board to the said post, and means for securing the forward extension to the said post, substantially as described.

708,498. SHUTTLE-BINDER FOR LOOMS. EDWARD S. STEVENS, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Jan. 2, 1902. Serial No. 87,999. (No model.)

Claim.—In a loom, the lay, a shuttle-box thereon, a spring-controlled binder, and an upturned finger secured to the outer face of the binder and offset therefrom, said finger projecting above the shuttle-box and behind the cover-plate thereof, to permit ready manual retraction of the binder.

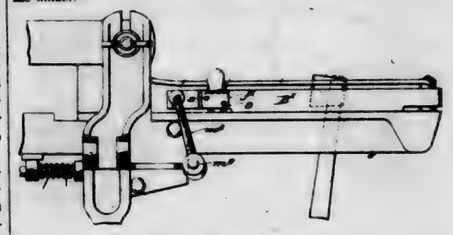

708,499. HINGE-JOINT. JOHN J. H. SYDENHAM, Coventry, England. Filed Sept. 4, 1900. Serial No. 29,977. (No model.)

Claim.—1. In a hinge-joint, the combination with the two parts to be connected together, of a projection on the first part having a flat thereon, a pair of jaws on the second part having a hole therein, adapted to contain the said projection and having also a slot therein, adapted to admit the projection to its seat in said hole when the two parts are approached at an abnormal angle, substantially as specified.

2. In a hinge-joint, the combination with the two parts to be connected together, of a projection on the first part having a flat thereon and an axial hole therein, a pair of jaws on the second part having a hole therein, adapted to contain the said projection and having also a slot therein, adapted to admit the projection to its seat in said hole when the two parts are approached at an abnormal angle, a pin passing through the holes in the projection and jaws, and means for retaining the said pin in position, substantially as specified.

3. In a hinge-joint, the combination with the two parts to be connected together, of a projection on the first part having a flat thereon and an axial hole therein, a pair of jaws on the second part of greater depth than the projection and having a hole adapted to contain the said projection and of greater diameter than the said projection except at the bottom, and a slot therein adapted to admit the said projection to its seat in the said hole when the parts are approached at an abnormal angle, a pin having a head with portions of two diameters, the larger portion being adapted to lie on the top of one jaw and the portion of smaller diameter being adapted to fit into the hole in the said jaw, while the body of the pin is adapted to fit into the axial hole in the projection and the lower end of the pin is adapted to be screwed into the bottom of the hole in the other jaw, substantially as specified.

4. In a hinge-joint, the combination with the two parts to be connected together, of a projection on the first part having a flat thereon and an axial hole therein, a pair of jaws on the second part of greater depth than the projection and having a hole adapted to contain the said projection and of greater diameter than the said projection except at the bottom, and a slot therein adapted to admit the said projection to its seat in the said hole when the parts are approached at an abnormal angle, a pin having a head with portions of two diameters, the larger portion being adapted to lie on the top of one jaw and the portion of smaller diameter being adapted to fit into the hole in the said jaw, while the body of the pin is adapted to fit into the axial hole in the projection and the lower end of the pin is adapted to engage in the bottom of the hole, and means for locking the pin, substantially as specified.

708,500. ARTIST'S SKETCH-BOOK. WILLIAM T. SHALVAR, Cincinnati, Ohio. Filed Apr. 7, 1902. Serial No. 101,955. (No model.)

Claim.—1. An artist paint-book having a folding sheet containing a series of colors, secured to the outer marginal edge of one of its covers adapted to be folded in against the inner face of said cover-leaf, substantially as specified.

2. An artist paint-book having a folding sheet carrying a series of colors, each color being separated from its adjacent color by marginal spaces, said folding sheet being secured to the outer marginal edge of one of the book-covers adapted to be folded in against the inner face of said cover-leaf, substantially as specified.

3. An artist paint-book having a folding sheet carrying a series of

colors, each color being separated from its adjacent color by marginal spaces, said folding leaf being secured to the outer marginal edge of one of the covers adapted to be folded in against the inner face of said cover-leaf, and figures in outline printed upon the book-pages, substantially as specified.

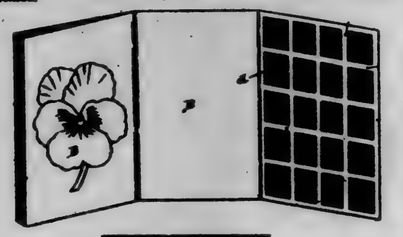

708,501. SELF-LUBRICATING HUB-BEARING. THEODORE TUNELWOOD, Harrington, Del. Filed Sept. 7, 1901. Serial No. 74,650. (No model.)

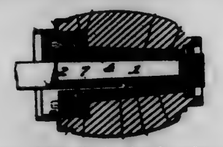

Claim.—1. In a lubricating-bearing for axles and in combination with the axle and the hub-box, a wear-sleeve fixed to the axle-arm, having an enlarged rimmed end telescoping with the inner end of the hub-box, and having a slot or channel extending through its enlarged rimmed end, and pockets on each side of the channel, and a plunger-key adapted for insertion into the channel to displace the oil therefrom into the pockets and means for locking the key.

2. A self-lubricating hub-bearing comprising a sleeve interposed between the hub-chain and axle-arm, to receive the wear, said sleeve having a reduced enlargement engaging annular shoulders on the chain and having a longitudinally-disposed channel and staggered pockets at intervals about its circumference, a plunger-key adapted to be inserted in the channel to displace the introduced oil and force it into the pockets, said key having at its outer end a head provided with a depression, and a shoulder spring on the sleeve enlargement engaging at one end the depression to lock the inserted key.

3. In a self-lubricating hub-bearing, a wear-sleeve interposed between the axle-arm and hub chain or box and provided with a longitudinal slot for receiving a supply charge of oil, and oil-distributing pockets, the slot and the pockets opening on the axle-arm and on the inner wall of the hub chain or box, and means for displacing the oil from the charging-slot into the distributing-pockets.

708,502. ROTARY ENGINE. CHARLES TUCKFIELD, Hist Holmey, England, assignor of two-thirds to Dyson Weston, London, England. Filed Nov. 15, 1901. Serial No. 82,333. (No model.)

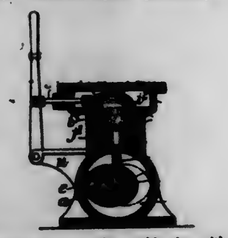

Claim.—1. In a rotary motor, the combination with a cylinder, of a drum having one or more eccentric tapered peripheral grooves formed therein, each groove being stopped at one point and of one or more sliding abutments engaging the said groove or grooves, substantially as described.

2. In a rotary motor, the combination of a cylinder, of a drum keyed upon a shaft journaled in the cylinder, of a number of eccentric peripheral grooves formed in the drum the said grooves being stopped or closed at one point, of sliding abutments engaging each groove and of a compound-passage slide distributing-valve and ports whereby the motor can be operated as a high-pressure or as a compound motor, substantially as described.

708,503. BOLSTER GUIDE-BLOCK. HELEN H. TUBBS, Toledo, Ohio, assignor to Frank B. Harrison, Toledo, Ohio. Filed Oct. 24, 1901. Serial No. 79,894. (No model.)

Claim.—1. The combination with a truck-bolster and a truck guide-bar, of a guide-piece, movable relative to the bolster.

2. The combination with a truck bolster and guide-bar, of a rotary guide-piece.

3. The combination with a truck bolster and guide-bar, of a guide-piece having an endwise motion.

4. The combination with a truck bolster and guide-bar, of a guide-piece having a rotary and an endwise motion.

5. The combination with a truck bolster and guide-bar, of a movable guide-piece having a trunnion.

6. The combination with a truck bolster and guide-bar, of a guide-piece having flanges, and movable relative to the bolster.

7. The combination with a truck bolster and guide-bar, of a base-piece and a guide-piece, movable relative to the base-piece.

8. The combination with a truck bolster and guide-bar, of a base-piece having a hole, and a guide-piece provided with a trunnion.

9. The combination with a truck bolster and a guide-bar, of a base-piece having a seat, and a movable guide-piece located within the seat.

10. A bolster guide-block consisting of a base-piece, and a guide-piece, movable relative to the base-piece.

11. A bolster guide-block consisting of a base-piece having flanges and a movable guide-piece.

12. A bolster guide-block consisting of a base-piece having a seat, and a flanged and movable guide-piece.

13. A bolster guide-block consisting of a base-piece having a hole and a movable guide-piece provided with a trunnion.

14. A guide for a truck-bolster having flanges and a trunnion; the said guide being adapted to rotate when applied to said bolster.

15. A movable guide for a truck-bolster provided with flanges to embrace the edges of a guide-bar; and also having means for uniting the same to the end of a bolster in such a manner that the said guide can move relative to the bolster.

708,504. NUT-LOCK. JAMES W. S. TUBB, Potosi, Ind. Ter. Filed Oct. 30, 1900. Serial No. 34,944. (No model.)

Claim.—1. A nut-lock comprising a bolt having a portion beyond its threaded section tapered and devoid of threads and shaft, the shaft extending some distance into the threaded portion, and a nut to engage the bolt, the tapered terminal permitting application thereto of a socket-tool of less external diameter than the internal diameter of the bolt-opening when the said terminal is within the bolt-opening.

2. A nut-lock comprising a bolt having a portion beyond its threaded section tapered and devoid of threads and shaft, the shaft extending some distance into the threaded portion, and a nut having its outer face countersunk or concaved from the bolt-opening outward to its perimeter, substantially as and for the purpose specified.

708,505. BUGGY-TOP ADJUSTER. JOSHUA R. VILES, Detroit, Mich., assignor of one-half to Charles H. Reuhan, Detroit, Mich. Filed May 2, 1902. Serial No. 105,691. (No model.)

Claim.—1. In a buggy-top adjuster, a prop-iron provided with an enlarged bearing-surface, separable bearing-plates adapted to embrace the same, said bearing-plates provided with engaging flanges formed on one side of the bearing and adapted to rest one within the other, the construction being such that the plates forming the bearing may be engaged to one side of the bow, substantially as described.

2. In a buggy-top adjuster, a prop-iron provided with an enlarged bearing-surface, separable bearing-plates adapted to embrace the same, each provided with engaging flanges formed on one side of the bearing-plates, the construction being such that the flanges of the bearing-plates are adapted to be engaged to one side of the bow, substantially as described.

708,506. LOCK. ANDREW F. WALLBERG, Brooklyn, N. Y. Filed Apr. 13, 1901. Serial No. 55,694. (No model.)

Claim.—1. In a lock of the class described, a bolt, an operating member, and means for operatively connecting said bolt with said operating member and for disconnecting said bolt from said operating member; said means comprising a pivoted dog provided with a projection arranged for engagement with said operating member and a tumbler which operates in connection with said dog to lock said dog against movement when said projection is in position of engagement or disengagement, said tumbler and said dog being arranged for simultaneous actuation by a suitable key.

2. In a lock of the class described, a bolt, an operating member, and means for operatively connecting said bolt with said operating member, and for disconnecting said bolt from said operating member; said means comprising a pivoted dog connected with said bolt and provided with a projection arranged for engagement with said operating member and with a shoulder arranged to prevent independent movement of the bolt when said projection is disconnected from said operating member, and a tumbler which is operatively connected with said dog and whereby said dog may be locked against movement when said projection is in position of engagement and disengagement.

3. In a lock of the class described, the combination with a bolt, a bolt-carrying member and knob-operated means, of a dog pivotally mounted on said bolt-carrying member and provided at one end with a hooked finger on one side adapted to engage said knob-operated means, and a laterally-projecting shoulder on the other side adapted to enter a recess in the lock-casing when said finger is disengaged, and at the other end with two spaced projections adapted to receive the operative end of the key between them, said dog having on one face an angular lateral projection, and a tumbler provided with an elongated opening to receive the pivot carrying the dog and with a projection adapted to bear against the inside of the bolt-carrying member, said tumbler having its end adjacent to said enlargement provided with a curved shoulder and having a cut-out portion provided with spaced extensions adapted to receive the angular projection on the dog when in or out of engagement, and a spring normally retaining said angular projection in one or the other of said extensions.

708,507. HAT-FASTENER. MARGARET E. WAFLER, Ann Arbor, Mich. Filed July 12, 1902. Serial No. 54,302. (No model.)

Claim.—1. A plate, having a central aperture, radial guides combined therewith, a rubber against the back of said plate, and means adapted to hold the rubber in place at the back of said plate, the rubber compressed between such plate and said rear holding means, and extending through the said aperture, substantially as and for the purposes specified.

2. A hat-pin, guide, shield and fastener composed of two pieces A and A^1 having a central aperture, and an elastic medium located between them, covering these apertures, and extending beyond their edges, and confined between these pieces so as to extend through the apertures, thus presenting a raised surface, adapted to catch the point of the pin, substantially as and for the purposes specified.

3. A hat-pin, guide, shield and fastener composed of two pieces A and A^1 having a central aperture, and an elastic medium located between them, covering these apertures, and extending beyond their edges, and confined between these pieces so as to extend through the apertures, thus presenting a raised surface, adapted to catch the point of the pin, and the piece having the radial ribs, substantially as and for the purposes specified.

4. As an article of manufacture, two flat discal plates, of metal or the like, each having a central aperture, and so located with reference to each other that these apertures are concentric, a discal diaphragmic piece of rubber located between these two plates, and across the apertures of the plates, and in connection with the inner plate, radial ribs leading from the outer or circumferential edge of the plate to the central aperture, substantially as and for the purposes specified.

708,508. COFFEE-ROASTER. THEODORE H. WARD, Newark, N. J. Filed Nov. 30, 1901. Serial No. 84,174. (No model.)

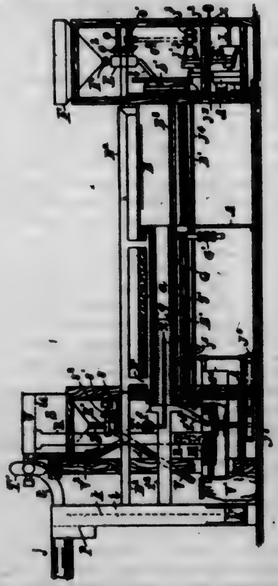

Claim.—1. In a coffee-roaster, a roasting-cylinder, means for heating the same, means for feeding the coffee to the cylinder, a cooling-table having a progressively-moving surface, means for discharging the roasted coffee from the cylinder to the table, means for regulating the heat, and means connected with the cylinder, the feeding device and the movable surface of the cooling-table to move them all in unison at a regulated speed.

2. In a coffee-roaster, a roasting-cylinder, means for heating the same, means for feeding the coffee to the cylinder, means, as the flue connection f^3, for drawing the steam from the cylinder, a perforated cooling-

table having a progressively-moving surface, means for discharging the roasted coffee from the cylinder to the surface of the cooling-table, mechanism for removing the coffee from the cooling-table, means for regulating the heat of the cylinder, and means connected with the feeding device, the roasting-cylinder, the surface of the cooling-table and the mechanism for removing the coffee from the cooler to move them all in unison at a regulated speed.

3. In a coffee-roaster, a roasting-cylinder, means for heating the same, a coffee-feeder to supply the cylinder, a perforated cooling-table having a progressively-moving surface, means for discharging the roasted coffee from the cylinder to the table, means for regulating the speed of the cylinder, means connected with the cooling-table to move its surface in unison with the cylinder, and means connected with the cylinder for varying the speed of the feeding device.

4. In a coffee-roaster, the combination, with the roasting-cylinder *a* having supporting-rings *a'* at its opposite ends and antifriction-rolls *b* to carry the same, of the driving-shaft J and counter-shaft I connected by the tapering speed-cones J' and a driving-belt applied to the same, the annular gear *b'* upon the roasting-cylinder connected with the driving-shaft J, the coffee-feeder connected with the cylinder by pipe *l* and having its shaft *o* connected with shaft *o'* by belt and speed-cones o^2, and the shaft *o'* connected with the shaft J, the whole arranged and operated substantially as set forth to vary the speeds of the roasting-cylinder and the feeding device independently.

5. An automatic coffee-roaster comprising a roasting-cylinder with a smoke pipe or flue connection for withdrawing the vapors, means for heating the cylinder, means for continuously feeding the coffee into the cylinder, a movable cooling-table, means for discharging the roasted coffee continuously from the cylinder upon the moving table in a thin layer, means for removing the cooled coffee from the table, and means for regulating the heat of the cylinder, and for varying the speed of the cylinder, the feeding device and the cooling-table.

6. An automatic coffee-roaster comprising a roasting-cylinder with a smoke pipe or flue connection for withdrawing the vapors, means for heating the cylinder, means for continuously feeding the coffee into the cylinder, a movable cooling-table, means for discharging the roasted coffee continuously from the cylinder upon the moving table in a thin layer, a pneumatic lifter applied to the table to remove the coffee when cooled, and means for regulating the heat of the cylinder, and for varying the speed of the cylinder, the feeding device and the cooling-table.

7. An automatic coffee-roaster comprising a roasting-cylinder with a smoke pipe or flue connection for withdrawing the vapors, means for heating the cylinder, means for continuously feeding the coffee into the cylinder, a movable cooling-table, means for discharging the roasted coffee continuously from the cylinder upon the moving table in a thin layer, an exhaust-receiver to store the coffee, a pneumatic lifter to lift the coffee from the table to the receiver, a discharger connected with the receiver and adapted to discharge the coffee from the receiver and prevent the access of air thereto, and means for regulating the heat of the cylinder and for varying the speed of the cylinder, the feeding device, and the cooling-table.

8. An automatic coffee-roaster comprising a roasting-cylinder with a smoke pipe or flue connection for withdrawing the vapors, means for heating the cylinder, means for continuously feeding the coffee into the cylinder, a movable cooling-table, means for discharging the roasted coffee continuously from the cylinder upon the moving table in a thin layer, an exhaust-receiver to store the coffee, a pneumatic lifter to lift the coffee from the table to the receiver, means for discharging the coffee from the receiver to a discharge-pipe V, and an exhaust connection from the upper part of such discharge-pipe to remove the light beans and chaff therefrom.

9. An automatic coffee-roaster comprising a roasting-cylinder with a smoke pipe or flue connection for withdrawing the vapors, means for heating the cylinder, means for continuously feeding the coffee into the cylinder, a movable cooling-table, means for discharging the roasted coffee continuously from the cylinder upon the moving table in a thin layer, an exhaust-receiver to store the coffee, a pneumatic lifter to lift the coffee from the table to the receiver, a discharger to draw the coffee from the receiver, and a feed-pipe extended downward from the receiver to the discharger to remove the coffee from the influence of the vacuum.

10. In a coffee-roaster, the combination, with the roasting-cylinder and spiral blades for propelling the coffee through the same, of a hopper connected with the receiver by feed-pipe *l*, and the coffee-feeder interposed in such pipe and having the casing E with inlet at the top, the wall *n* inclined below the inlet as set forth, and the drum *m* pivoted horizontally adjacent to such wall and provided with one or more chambers *m'*.

11. In a coffee-roaster, the combination, with the roasting-cylinder and spiral blades for propelling the coffee through the same, of a hopper connected with the receiver by feed-pipe *l*, and the coffee-feeder interposed in such pipe and having the casing E with inlet at the top, and funnel m^3 at the bottom, with the wall *n* inclined below the inlet, the drum *m* pivoted horizontally adjacent to such wall and provided with one or more chambers *m'* as set forth, and a check-valve fitted to the outlet of the funnel to exclude the cylinder-vapors from the drum.

12. In a coffee-roaster, a feeding device for the roasting-cylinder, comprising the casing E with inlet at the top, and funnel m^3 at the bottom, with a wall extended downward from the inlet, the drum *m* pivoted horizontally adjacent to such wall and provided with one or more chambers *m'* as set forth, a removable cover upon the casing over the drum, the check-valve fitted to the outlet of the funnel, and the chamber below each outlet having glass panel upon the front and pipe connection at the bottom, the whole arranged and operated substantially as herein set forth.

13. In a coffee-roaster, the combination, with the roasting-cylinder and spiral blades for propelling the coffee through the same, of a hopper connected with the receiver by feed-pipe *l*, and the coffee-feeder interposed in such pipe and having the casing E with inlet at the top, a wall extended downward from the inlet, and the drum *m* pivoted horizontally adjacent to such wall and having one or more chambers *m'*, and a bottom m^3 movable in each chamber, and a screw and spring to adjust the same, as and for the purpose set forth.

14. In a coffee-roaster, the combination, with standards A having bearings provided with antifriction-rolls *b* and lugs C and C' to support a jacket, of a roasting-cylinder *a* supported upon such antifriction-rolls, means for continuously feeding the coffee to and discharging it from the cylinder, a non-conducting jacket forming a chamber about the cylinder and made in detachable sections B and B' supported upon the lugs C and C', and the chamber being provided with smoke-outlets and a flue connection, as and for the purpose set forth.

15. A coffee-roaster having a roasting-cylinder divided longitudinally and provided with carrying-rings and antifriction-rolls to support the same, means for continuously feeding the coffee to and discharging it from the cylinder, standards supporting the antifriction-rolls, with a jacket in sections supported upon the standards, whereby the sections of the jacket may be removed and the cylinder divided to inspect its interior as and for the purpose set forth.

16. In a coffee-roaster, the combination, with the roasting-cylinder and means for propelling the coffee through the same, of the discharger for removing the cooled coffee continuously and preventing the free passage of air with the coffee, said device having a circular casing E' with opposite heads E^2 and E^3 having, respectively, the inlet *u* and outlet *s'*, and the rotary drum *e* with one or more chambers *e'* adapted to carry the coffee from the inlet to the outlet, and the top of the drum being eccentric, as by channel e^2, from the head E^2 of the casing by sufficient space to admit a layer of coffee-berries, to avoid obstruction from the berries in the rotation of the drum.

17. In a coffee-roaster, the combination, with the roasting-cylinder, means for continuously feeding the coffee into the cylinder and discharging it continuously from the same, of a rotary cooling-table M with perforations around its margin, means, as the walls or flanges M', to form the channel N' upon such perforated surface, means for drawing air downwardly through the perforations to cool the coffee, and means for removing the coffee from the channel in its rotations, as and for the purpose set forth.

18. In a coffee-roaster, the combination, with the roasting-cylinder, means for continuously feeding the coffee into the cylinder and discharging it continuously from the same, of the curb N, the rotary cooling-table with perforations around its margin, walls forming an annular channel along such perforations, and a pneumatic lifter applied to the channel to remove the coffee at a given point in its circuit, and operating to draw air through the perforations into the curb to cool the coffee.

19. In a coffee-roaster, the combination, with the roasting-cylinder, means for continuously feeding the coffee into the cylinder and discharging it continuously from the same, of a rotary cooling-table with annular channel upon its margin, a receiver supported above the level of the table with closed top having a screened chamber and exhaust-fan connected thereto, a pneumatic lifter-tube connected with the receiver and extended to the channel to remove the coffee, and means for discharging the coffee from the receiver and cutting off the inlet of air to the receiver during such discharge.

20. In a coffee-roaster, the combination, with the roasting-cylinder, of a hopper for supplying coffee thereto, a feeding device for delivering coffee from the hopper to the cylinder, and cutting off the inlet of air to the hopper during such delivery, means for continuously discharging the coffee from the roasting-cylinder, a movable cooling-table receiving the coffee from such cylinder, a receiver with closed top supported above the level of the table, and means for exhausting the air from the same, a pneumatic lifting-tube connected with the upper part of the receiver and extended to the cooling-table to remove the coffee, and means for discharging the coffee from the receiver and cutting off the inlet of air to the receiver during such discharge.

21. In a coffee-roaster, the combination, with the roasting-cylinder and continuous feeding device, of spiral conveyer-blades secured inside its shell with central opening in each blade to form a smoke-passage, a stationary head for the cylinder with outlet at the bottom for continuous discharge, a nozzle upon such head connected with a chaff-box, a vertical partition in the chaff-box directing the smoke to the end of the box, and a flue connection from the box upon the side opposite to the partition, whereby the chaff is separated from the smoke, substantially as herein set forth.

22. In a coffee-roaster, the combination, with the roasting-cylinder and continuous feeding devices, of spiral conveyer-blades secured inside the shell of the cylinder and provided in their convolutions with aligned notches g^2, continuous ribs *g'* extended through a series of the aligned notches in contact with the interior of the cylinder, a stationary head for the cylinder fitted to the exterior of the same and having outlet at the bottom for continuous discharge, and means for exhausting the smoke and steam from the cylinder, substantially as herein set forth.

23. In a coffee-roaster, the combination, with a roasting-cylinder, means for rotating the same, and means for feeding the coffee continuously to and discharging it from the cylinder, of a non-conducting jacket forming a chamber about the cylinder and made in detachable sections, the chamber having gas-pipe G supported in its lower part and provided with burners, and the sections being shaped to form the lateral division B^2 inclined toward the burners to permit inspection of the flames.

703,509. TYPE-WRITING MACHINE. MAX W. WEIL, Newark, N. J., assignor, by direct and mesne assignments, to Densmore Typewriter Company, Syracuse, N. Y., a Corporation of New York. Filed Dec. 10, 1900. Serial No. 39,311. (No model.)

Claim.—1. In a type-writer, the combination, with the carriage, a platen-roll, adapted to receive and feed a sheet of paper, and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, and means on said carriage held in its inactive position by contact with said sheet of paper, but adapted to engage with said stop and prevent the return of said carriage to its initial starting-point, when released by disengagement with the sheet of paper, substantially as and for the purpose set forth.

2. In a type-writer, the combination, with the carriage, a platen-roll, adapted to receive and feed a sheet of paper, and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, and means on said carriage held in its inactive position by contact with said sheet of paper, but adapted to engage with said stop and prevent the return of said carriage to its initial starting-point, consisting, essentially, of a stylus or tongue, and means for actuating said stylus or tongue and causing the same to engage with said stop, when said stylus or tongue is disengaged from contact with the sheet of paper, substantially as and for the purposes set forth.

3. In a type-writer, the combination, with the carriage, a platen-roll, and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, a cam-disk in rotative engagement with said platen-roll, and means operated from said cam-disk, adapted to be brought into engagement with said stop and to prevent the return of said carriage to its initial starting-point, substantially as and for the purposes set forth.

4. In a type-writer, the combination, with the carriage, a platen-roll, and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, a cam-disk in rotative engagement with said platen-roll, and a stylus or tongue operated from said cam-disk, adapted to be brought into holding engagement with said stop and to prevent the return of said carriage to its initial starting-point, substantially as and for the purposes set forth

5. In a type-writer, the combination, with the carriage, a platen-roll and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, a rod on said carriage, an arm extending from said rod, a cam-disk on said arm in rotative engagement with said platen-roll, and means on said rod adapted to be actuated by said cam-disk and brought into engagement with said stop to prevent the return of said carriage to its initial starting-point, substantially as and for the purposes set forth.

6. In a type-writer, the combination, with the carriage, a platen-roll and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, a rod on said carriage, an arm extending from said rod, a cam-disk on said arm in rotative engagement with said platen-roll, and a stylus or tongue on said rod adapted to be actuated by said cam-disk and brought into holding engagement with said stop and to prevent the return of said carriage to its initial starting-point, substantially as and for the purposes set forth.

7. In a type-writer, the combination, with the carriage, a platen-roll and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, a rod 10 in said carriage, a pair of upwardly-extending arms on said rod 10, a second rod 20 supported by said arms, a cam-disk supported from said rod 20 and in rotative engagement with said platen-roll, and means operated from said cam-disk, adapted to be brought into engagement with said stop and to prevent the return of said carriage to its initial starting-point, substantially as and for the purposes set forth.

8. In a type-writer, the combination, with the carriage, a platen-roll and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, a rod 10 in said carriage, a pair of upwardly-extending arms on said rod 10, a second rod 20 supported by said arms, an arm 22 on said rod 20 provided with a stud or pin, a cam-disk on said stud or pin in rotative engagement with said platen-roll, and means on said rod 20 adapted to be actuated by said cam-disk and brought into engagement with said stop to prevent the return of said carriage to its initial starting-point, substantially as and for the purposes set forth.

9. In a type-writer, the combination, with the carriage, a platen-roll and means for rotating said platen-roll and causing a lateral movement of said carriage and platen-roll, of a stop, a rod 10 in said carriage, a pair of upwardly-extending arms on said rod 10, a second rod 20 supported by said arms, an arm 22 on said rod 20 provided with a stud or pin, a cam-disk on said stud or pin in rotative engagement with said platen-roll, and a stylus or tongue on said rod 20 adapted to be actuated by said cam-disk and brought into holding engagement with said stop and to prevent the return of said carriage to its initial starting-point, substantially as and for the purposes set forth.

10. In a type-writer, the combination, with the frame thereof, and a platen-roll, adapted to receive a sheet of paper, of a cam-disk in rotative engagement with said platen-roll, and means adapted to be actuated by said cam-disk and to lock the parts when the sheet has been typewritten to prevent further use of the type-writer until a new sheet of paper is inserted, substantially as and for the purposes set forth.

11. In a type-writer, the combination, with the frame thereof, and a platen-roll, adapted to receive a sheet of paper, of a cam-disk in rotative engagement with said platen-roll, and a stylus or tongue adapted to be actuated by said cam-disk and to engage a part of the machine-frame when the sheet has been type-written to prevent further use of the type-writer until a new sheet of paper is introduced, substantially as and for the purposes set forth.

12. In a type-writer, the combination, with a movable carriage, the platen-roll, adapted to receive and feed a sheet of paper, and a paper table or guard having a slot or opening, of a stop, and means on said carriage held in its inactive position by contact with said sheet of paper, but adapted to engage with said stop and prevent the return of said carriage to its initial starting-point, consisting, essentially, of a stylus or tongue movably arranged in front of the slot or opening in the paper table or guard, and means for actuating said stylus or tongue for moving said stylus or tongue into and through the said slot or opening and causing said stylus to engage with said stop, when said stylus or tongue is disengaged from contact with the sheet of paper, substantially as and for the purposes set forth.

13. In a type-writer, the combination, with a movable carriage, the platen-roll, and a paper table or guard having a slot or opening, of a stop, and means on said carriage adapted to engage with said stop and prevent the return of said carriage to its initial starting-point, consisting, of a stylus or tongue movably arranged in front of the slot or opening in the paper table or guard, and a cam-disk in rotative engagement with said platen-roll for actuating said stylus or tongue for moving said stylus or tongue into and through the said slot or opening and causing said stylus or tongue to engage with said stop, substantially as and for the purposes set forth.

14. In a type-writer, the combination, with a movable carriage, the platen-roll, and a paper table or guard having a slot or opening, of a stop, a cam-disk in rotative engagement with said platen-roll, a stylus or tongue, and a spring-actuated rod on which said stylus or tongue is placed, so as to move in front of said slot or opening in the paper table or guard, and a means of connection between said cam-disk and said rod for moving said stylus or tongue into and through the said slot or opening and causing the stylus or tongue to engage with said stop, substantially as and for the purposes set forth.

703,510. SLEIGH-RUNNER. WILLIAM H. WILLIAMS, Wetonka, Minn. Filed Dec. 13, 1901. Serial No. 86,068. (No model.)

Claim.—The combination with a sled-runner, of a bow-spring having its opposite ends secured to the inner surface of the runner and having its body portion curved outwardly with one portion thereof projecting downwardly below the lower surface of the runner, whereby said downwardly-projecting portion is capable of being sprung inwardly toward the said runner when the sled to which it is attached is in the act of turning a curve, substantially as specified.

708,511. OIL-VAPOR ENGINE. GEORGE WEBB, Newark, N. J. Filed Feb. 16, 1901. Serial No. 47,089. (No model.)

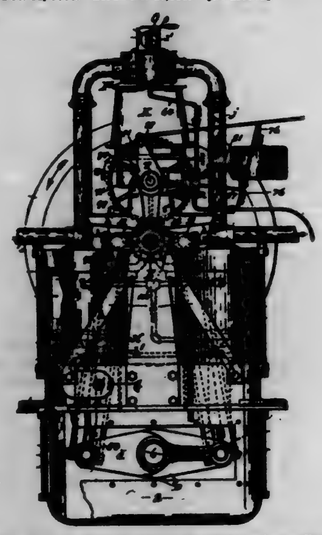

Claim.—1. In a vapor-engine, a pair of independent cylinders each provided with an explosion-chamber and a piston, a rotary crank-shaft at the closed ends of the cylinders, means for supplying explosive gases to the chambers, electric means controlled by the engine for igniting said gases, a walking-beam journaled at the open ends of the chambers and composed of independently-movable sections each having an arm connected to one of the pistons and an additional oppositely-projecting arm connected to the crank-shaft.

2. A vapor-engine comprising a cylinder having an explosion-chamber and a piston, a walking-beam at the open end of the chamber and connected to the piston, a crank-shaft at the closed end of the chamber and connected to the walking-beam, inlet and exhaust valves in the closed end of the chamber, means for introducing vapor in the explosion-chamber, a second shaft at the closed end of the chamber rotated by the crank-shaft, sparking-terminals of an electric circuit in the explosion-chamber, a circuit-closer connected in the electric circuit and means provided on the second shaft for controlling the operation of the circuit-closer.

3. In a vapor-engine, in combination, a cylinder having an explosion-chamber and a piston, a walking-beam at the open end of the chamber and connected to the piston, a crank-shaft at the closed end of the chamber and connected to the walking-beam, means for introducing vapor into the explosion-chamber, inlet and exhaust valves in the closed end of the explosion-chamber, a second shaft rotated by the crank-shaft, sparking-terminals in the electric circuit in the explosion-chamber, means provided on the second shaft for closing the circuit through the sparking-terminals and additional means actuated by the second shaft for opening the exhaust-valves.

4. A vapor-engine comprising a cylinder having an explosion-chamber and inlet and exhaust valves, a piston movable in the chamber, a walking-beam at the open end of the chamber and connected to the piston, a crank-shaft at the closed end of the chamber and connected to the walking-beam, a second shaft at the closed end of the chamber rotated by the crank-shaft, an oil-vaporizing device connected to the explosion-chamber, a pump connected to an oil-supply conduit and to the vaporizing device for the purpose described and means provided on the second shaft for actuating the pump.

5. A vapor-engine comprising a cylinder having an explosion-chamber and inlet and exhaust ports, sparking-terminals of an electric circuit within the explosion-chamber, a piston movable in the chamber, a walking-beam at the open end of the chamber, and connecting to the piston, a crank-shaft at the closed end of the chamber and connected to the walking-beam, a vaporizing device connected to the inlet-port, a valve for the exhaust-port, a second shaft rotated by the crank-shaft, a lever for opening the exhaust-valve, means provided on the second shaft for operating the lever, a pump for supplying oil to the vaporizing device, and means provided on the second shaft for operating the pump.

6. In a vapor-engine, in combination, a cylinder having an explosion-chamber and inlet and exhaust ports, valves for the ports, sparking-terminals of an electric circuit in the explosion-chamber, a crank-shaft at the closed end of the chamber, connections between the piston and the crank-shaft for rotating the crank-shaft, a second shaft actuated by the crank-shaft, a circuit-closer connected in the electric circuit, means provided on the second shaft for operating the circuit-closer, a lever for opening the exhaust-valve, additional means provided on the second shaft for operating the lever and an oil-vaporizing device connected to the inlet-opening for the purpose set forth.

7. A vapor-engine comprising a cylinder having an explosion-chamber and inlet and exhaust ports, valves for the ports, a piston movable in the chamber, a crank-shaft at the closed end of the chamber, connections between the piston and the crank-shaft for rotating the latter, a second shaft rotated by the crank-shaft, an oil-vaporizing device connected to the inlet-opening, a pump for supplying oil to the vaporizing device, means provided on the second shaft for operating the pump, sparking-terminals of an electric circuit in the explosion-chamber, a circuit-closer connected in said circuit means provided on the second shaft for operating the circuit-closer, a lever for opening the exhaust-valve and additional means provided on the second shaft for operating the lever.

708,512. COMPOSITION FOR RUBY GLASS. RICHARD ERNSDUTZ, Jena, Germany. Filed Dec. 26, 1901. Serial No. 87,208. (No specimens.)

Claim.—1. A composition for ruby glass consisting of a barytiferous glass composition to which from 0.25 to 1.7 parts of gold are added for every ten thousand parts of quartzy sand, substantially as described.

2. A composition for ruby glass consisting of a barytiferous glass composition which contains as substantial metallic oxide soda and baryta and to which from 0.25 to 1.7 parts of gold are added for every ten thousand parts of quartzy sand, substantially as described.

3. A composition for ruby glass consisting of a barytiferous glass composition which contains as substantial metallic oxide soda and baryta, this baryta being added as nitrate, and to which from 0.25 to 1.7 parts of gold are added for every ten thousand parts of quartzy sand, substantially as described.

708,513. MOWER. JOHN G. ADAMS and SAMUEL HOBBS, Alton, Ill. Filed July 31, 1900. Serial No. 24,955. (No model.)

Claim.—1. The combination of a pair of drive-wheels, a horizontal shaft, ratchet mechanisms connecting said wheels to said shaft, disks revolving in a horizontal plane, knives secured to the upper side of the said disks and having their cutting edges inclined outwardly and in the direction of the disks' rotation, a driving mechanism between said disks and the said shaft, a straight cutter-bar located with its cutting edge substantially tangential to said disks, and extending transversely of the machine; substantially as described.

2. The combination of a pair of drive-wheels, a horizontal shaft, ratchet mechanisms connecting said wheels to said shaft, disks revolving in a horizontal plane, knives secured to the upper surface of said disks and having a cutting edge inclined outwardly and in the direction of the disks' rotation, connecting mechanism between said disks, sprocket-wheels on said connecting mechanism, and on said shaft, a drive-chain connecting said sprocket-wheels, and a straight cutter-bar with its cutter edge substantially tangential to the disks and extending across the machine substantially as described.

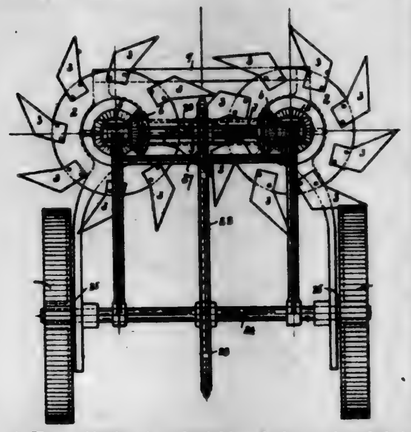

3. The combination of a pair of drive-wheels, a horizontal shaft, ratchet mechanisms connecting said wheels to said shaft, disks revolving in horizontal planes knives secured to the upper side of said disks and a portion of said knives lying in a plane parallel with but below the plane of revolution of said disks, and a straight cutter-bar located with its cutter edge substantially tangential to said disks and extending transversely of the machine; substantially as described.

708,514. LOCK. JOHN F. ALLEN, Portsmouth, Ohio, assignor of one-half to Frank B. Finney, Portsmouth, Ohio. Filed May 5, 1902. Serial No. 106,012. (No model.)

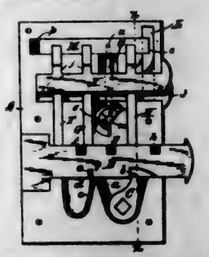

Claim.—1. In a lock, the combination of a spring-retracted bolt, means for projecting said bolt, a series of locking-tumblers adapted to engage said bolt and lock it when projected, a main key for positively actuating one of said tumblers, and a supplemental removable key which, when inserted, engages all of said tumblers, whereby the actuation of one of said tumblers through the main key is transmitted to the other tumblers through the supplemental key to release the bolt, substantially as described.

2. In a lock, the combination of a spring-retracted bolt, means for projecting said bolt, a series of locking-tumblers adapted to engage said bolt and lock it when projected, a main key for positively actuating one of said tumblers, a supplemental removable key which, when inserted, engages all of said tumblers, a ward-slide above said tumblers and means for actuating said ward-slide through the main key to lock said tumblers against action, substantially as described.

3. In a lock, the combination of a spring-retracted bolt, means for projecting said bolt, a series of locking-tumblers adapted to engage said bolt and lock it when projected, a main key for positively actuating one of said tumblers, a supplemental removable key which, when inserted, engages all of said tumblers, a ward-slide above said tumblers, means for actuating said ward-slide through the main key, a supplemental tumbler adapted to be engaged by said ward-slide and a second supplemental key for actuating said supplemental tumbler, substantially as described.

4. The herein-described lock comprising the bolt B, with its tumbler-notches *f g* A, the spring *c* and knob-crank C for said bolt, the tumblers F, G, H, the main key for actuating one of said tumblers, the supplemental keys J K, the ward-slide M, the lever O, and the supplemental tumbler L, the parts being constructed and arranged in the manner and for the purpose substantially as described.

708,515. ELECTRIC SWITCH. ANDREW P. ANDERSEN, New York, N. Y., assignor of one-half to John Dahlgren, New York, N. Y. Filed June 6, 1901. Serial No. 63,261. (No model.)

Claim.—1. In an electric switch, in combination, a contact-knife, a standard upon which said knife is pivotally mounted upon a bolt passing through said standard, an inwardly-extending flange upon the head of said bolt, a spring located in the recess formed by said flange and adapted to hold the knife yieldingly to its standard and a nut for said bolt.

2. In an electric switch, in combination, the supporting-standards 1, 1, the bolt 2 having its head flanged at 6, spring 7 located in the recess formed by said flange and adapted to bear against one of said standards, nut 3 for said bolt, a contact-knife pivoted upon said bolt between said standards, and an anvil C, or other contact means, substantially as described.

3. In an electric switch, in combination, the supporting-standards 1 1, the bolt 2 having its head flanged at 6 and having a shoulder 5, a nut 3 adapted to bear against the shoulder 5 upon said bolt, spring 7 located in the recess formed by said flange 6 and adapted to bear against one of said standards, a contact-knife pivoted upon said bolt between said standards, and an anvil C or other contact means, substantially as described.

708,516. MINERAL COMPOUND. MCKENZIE AZEE, Bristol, Va. Filed Oct. 7, 1901. Serial No. 77,911. (No specimens.)

Claim.—The herein-described method of treating slag from furnaces, consisting of the addition to molten slag, of salt, lime, sulfuric acid, hydrochloric acid, coal-tar, pulverized mica, talc, kaolin, clay and water, the said ingredients being combined with slag substantially in the proportions and in the manner set forth, the separating out of the lighter portion of the mass and the subsequent pulverizing of the compound thus formed after the same has become cold and the mixing with each one hundred pounds of the pulverized mass thus produced, of five pounds of coal-tar, one pound of sulfuric acid and five ounces of hydrochloric acid and the mixing of the same with ordinary cement in the proportion of twenty per cent. of said product with eighty per cent. of ordinary cement as and for the purpose set forth.

708,517. LEMON-SQUEEZER. ALBERT RAMBAKETH, Prospect, Ill. Filed Mar. 3, 1899. Renewed July 13, 1901. Serial No. 68,261. (No model.)

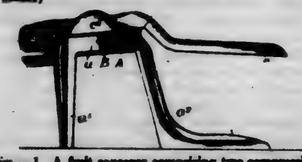

Claim.—1. A fruit-squeezer comprising two compressing members movable relatively toward and from each other, and provided respectively with cup and cone, and connections between said compressing members for allowing longitudinal and lateral relative self-adjustment of said cup and cone during the squeezing operation in a plane substantially perpendicular to the direction of application of the compressing force.

2. A fruit-squeezer comprising two compressing members movable relatively toward and from each other, and provided respectively with a cup and cone, and pivotal connections between said compressing members for allowing longitudinal and lateral relative self-adjustment of said cup and cone during the squeezing operation in a plane substantially perpendicular in the direction of application of the compressing force.

3. A fruit-squeezer comprising two compressing members movable relatively toward and from each other, and provided respectively with a cup and cone, and pivotal connections comprising a pin and an elongated bearing between said compressing members for allowing longitudinally and laterally relative self-adjustment of said cup and cone during the squeezing operation in a plane substantially perpendicular to the direction of application of the compressing force.

4. A fruit-squeezer comprising two compressing members movable relatively toward and from each other, and provided respectively with a cup and cone, and pivotal connections comprising a pin and an elongated bearing between said compressing members for allowing longitudinally and laterally relative self-adjustment of said cup and cone during the squeezing operation in a plane substantially perpendicular to the direction of application of the compressing force, said bearing being substantially parallel with the compressing members when in closed position.

5. A fruit-squeezer comprising two compressing members movable relatively toward and from each other and provided respectively with a cup and cone, and pivotal connections between said compressing members for allowing free relative self-adjustment of said cup and cone during the squeezing operation in a plane substantially perpendicular to the direction of application of the compressing force, said connections comprising a pin and an elongated bearing, said pin having limited lateral play in said bearing.

6. In a squeezer, the combination of two pivotally-connecting members and a lemon-supporting dish sustained in one of said members, the latter member being provided with a circular ring to receive said dish and a pair of lugs extending longitudinally therefrom upon the side opposite the handle, the metal of the ring being covered to permit them to spring apart, and the other member being provided with a pivot-stud extending laterally from each side thereof, and fitted to said ears, whereby said pivot may be sprung between and into the ears by reason of the elasticity of said ring.

7. A squeezer, comprising a supporting-dish, a supporting member therefor, having a dish-supporting ring, lugs upon one side of said ring, the material of the ring being separated between the lugs and a second member having pivot-studs fitted in said ears whereby the elasticity of the ring is utilized in springing the members into pivotal connection.

708,518. SQUEEZER. ALBERT BAUMGARTEN, Prospect, Ill. Filed July 13, 1901. Serial No. 66,182. (No model.)

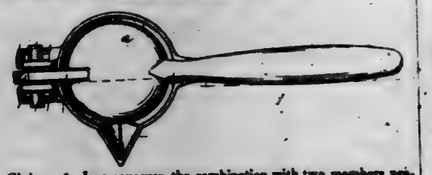

Claim.—1. In a squeezer, the combination with two members provided respectively with a cup and a cone, of a pivotal connection between said members, comprising a pivot and apertured bearing-lugs with which said pivot engages, said bearing-lugs and pivot being integrally formed respectively with said members, said pivot and bearings being constructed and formed so the members can be connected together, or disconnected only when the members are shifted to an angle greater than forty-five degrees with respect to each other.

2. In a squeezer, the combination with two members, provided respectively with a cup and a cone, of a pivotal connection between said members, comprising a pivot and apertured bearing-lugs with which said pivot engages, said bearing-lugs and pivot being integrally formed respectively with the said members, said pivot and bearings being constructed and formed so the members can be connected together or disconnected by turning the parts laterally only when said members are shifted to an angle greater than forty-five degrees with respect to each other.

3. In a squeezer, the combination with two members, provided respectively with a cup and a cone, of a pivotal connection between said members, comprising a pivot and bearing-lugs having elongated apertures therein, said bearing-lugs and pivot being integrally formed respectively with the said members, said pivot and bearings being constructed and formed so the members can be connected or disconnected by turning the parts laterally only when said members are shifted to an angle greater than forty-five degrees with respect to each other.

4. In a squeezer, the combination with two members provided respectively with a cup and a cone, of a pivotal connection between said members, comprising a pivot and apertured bearing-lugs in which said pivot has a lateral play, said bearing-lugs and pivot being integrally formed respectively with the said members, said pivot and bearings being constructed and formed so the members can be connected or disconnected when the members are shifted to an angle greater than forty-five degrees with respect to each other.

5. In a squeezer, the combination with two members, provided respectively with a cup and a cone, of a pivotal connection between said members and comprising an arm, a pivot-stud on said arm, and bearing-lugs between which said arm will be held, said lugs having elongated apertured bearings therein, and being formed at an angle to permit sufficient lateral play of the arm and pivot, to permit the members to be connected or disconnected when the members are swung out of working position.

708,519. RACKET. ARNOLD BECKER, Seattle, Wash. Filed Apr. 17, 1902. Serial No. 103,262. (No model.)

Claim.—1. A racket whereon is applied a granular substance whereby the blade-surface thereof is roughened, for the purpose described.

2. In a racket, the combination with the stock, of a sheet or sheets of paper, or the like, having a coating of granular substance applied thereto, and said coating, substantially as and for the purpose described.

708,520. MAGAZINE-FIREARM. ERICK P. BERGMAN and ARTHUR R. RICHARD, Concordia, Kans. Filed Dec. 9, 1901. Serial No. 85,255. (No model.)

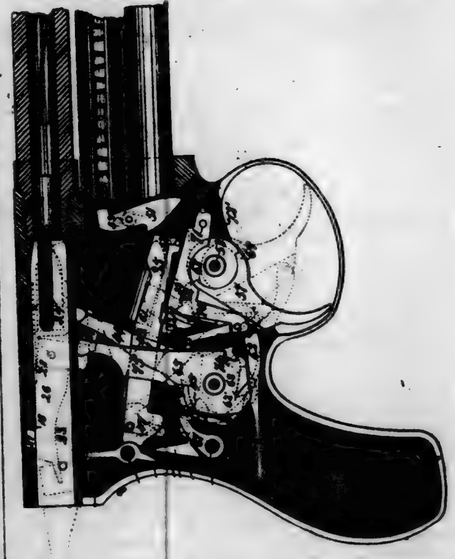

Claim.—1. In a magazine-firearm, the combination with a frame having a recess above the breech-block, of a longitudinally-sliding breech-block, a breech-block-locking latch pivoted to the breech-block and entering the recess, a spring attached to the breech-block engaging the latch to move the same out of the recess, and a breech-block lever which moves the latch which enters the recess against the action of the spring.

2. In a magazine-firearm, a frame in which is mounted a sliding breech-block, a recess in the frame above the breech-block, a latch pivoted to the breech-block and entering the recess, a spring rigidly attached to the breech-block its free end engaging the latch above and to the rear of the pivot upon which the latch swings, a breech-block lever which engages the latch to move it against the action of the spring, mechanism

for oscillating the lever to reciprocate the breech-block and move the latch into engagement with the recess at the limit of its forward movement.

3. In an action for firearms, the combination of a longitudinally-sliding breech-block, an operating-lever having spurs, a trigger, pawls pivoted to the trigger to successively engage the spurs on the lever on opposite sides of its pivot, one of the pawls moving the lever rearward and the other forward as the trigger is swung on its pivot.

4. In an action for firearms, the combination of a longitudinally-sliding breech-block, a breech-block lever, a trigger, pawls pivoted to the trigger to successively engage the breech-block lever, one pawl moving the lever and the breech-block rearward, the other pawl moving the lever and the breech-block forward, the breech-block being engaged and locked by the lever at the limit of its forward movement, the movements being effected by a direct pull upon the trigger.

5. In an action for firearms, the combination of a sliding breech-block, a latch pivoted to the breech-block, projections on the latch which extend on opposite sides of the pivot of the latch above and below the breech-block, a lever which engages the forward and lower projection of the latch, spurs on the lever, a trigger, pawls pivoted to the trigger for successive engagement with the spurs on the lever as the trigger is moved rearward, means for disengaging one of the pawls from a spur on the lever, and a spring which engages one of the pawls to move the trigger forward.

6. In an action for firearms, the combination of a longitudinally-sliding breech-block, a latch pivoted to the breech-block, the latch having an integral portion which depends below the breech-block, a breech-block lever in engagement with said depending portion of the latch, spurs and an eccentric shoulder on the lever, a trigger, pawls pivotally attached to the trigger to successively engage the spurs, a hammer, a locking-lever raised by the trigger to cock the hammer, and a sear engaged by the shoulder of the breech-block lever when the lever reaches the limit of its forward movement to release the hammer.

7. In an action for firearms, a trigger having an offset or projecting portion, a cocking-lever having a shoulder which is engaged by said offset, a pawl carried by the cocking-lever, a hammer having a notch with which the pawl engages to cock the hammer, a sear, and a breech-block lever which engages the sear and disengages it from the hammer at the limit of the forward movement of the breech-block lever.

8. The combination, with a concealed hammer, a breech-block, and a breech-block lever which is mounted on the same stud as the hammer, the breech-block lever in its oscillating movement reciprocating the breech-block and locking the same at the limit of its forward movement, a sear which engages the hammer and is engaged by the breech-block lever, of a trigger, pawls attached to the trigger to oscillate the breech-block lever by engaging the spurs thereon, and a cocking-lever raised by the trigger to cock the hammer, substantially as shown.

9. In an action for firearms, a frame having studs or bearings for the oscillating parts of the action, a stud which projects from one side of the frame, a reciprocating breech-block, a breech-block lever, and a hammer mounted on the same stud or bearing that carries the breech-block lever, a trigger having pawls for oscillating the breech-block lever, the stud which projects from the side of the frame being in the path of the upper pawl on the trigger, a spring engaging the lower pawl of the trigger, a cocking-lever in line with the hammer which is engaged by the trigger to cock the hammer, and a sear which is disengaged from the hammer by the breech-block lever, substantially as set forth.

10. In an action for firearms, a frame having studs or bearings for the oscillating parts of the action and a projection or stud 21, a reciprocating breech-block, a breech-block lever and a hammer mounted on the same stud one alongside of the other, a sear for holding the hammer cocked, a projecting portion on the sear which is engaged by the breech-block lever to release the sear from the hammer, a trigger, two pawls on the trigger in the same plane as the breech-block lever, the upper pawl being in the path of the stud 21, a cocking-lever mounted in line with the hammer, the trigger raising the cocking-lever to cock the hammer, substantially as shown.

11. In an action for firearms, the combination of a trigger, a pawl pivoted to the upper portion of the trigger, a stud which projects from the frame in the path of the upper pawl, a reciprocating breech-block, a lever having a spur which is engaged by the pawl to oscillate or move rearward the upper end of the lever and thereby move rearward the breech-block, a second pawl pivoted to the trigger below the pawl which engages the stud, spurs on the lever and lower pawl which engage to effect a forward movement of the lever and breech-block, a spring engaging the lower pawl to move the trigger forward, a hammer mounted on the same stud as the lever, a cocking-lever which is raised to cock the hammer as the trigger is moved rearward, a sear with a laterally-projecting portion in the path of the lever to be engaged thereby when the lever reaches the limit of its forward movement, the parts being organized substantially as shown.

12. In an action for firearms, a longitudinally-movable breech-block, a latch, cartridge-extractor and firing-pin carried by the breech-block, a breech-block lever and a hammer both mounted on the same stud one alongside of the other, a cocking-lever having a self-releasing pawl which cocks the hammer, a spring in direct engagement with the hammer, a sear for holding the hammer cocked, a shoulder on the breech-block lever which raises the sear when the breech-block is locked, pawls pivoted to the trigger one below the other for oscillating the breech-block lever, a spring seated in the trigger to bear against the upper pawl, a stud on the frame for moving the upper pawl against the action of its spring, and a spring which engages the lower pawl to move the same and the trigger forward, substantially as shown.

13. In a magazine-firearm, the combination with two magazines positioned one below the other beneath the barrel, of a cartridge-carrier fulcrumed so that its forward end may be positioned below either of the magazines, and means actuated by a follower in the upper magazine to arrest the downward movement of the carrier.

14. In a magazine-firearm, the combination with magazines positioned one below the other and beneath the barrel, of an oscillating cartridge-carrier, a stud on the end of said carrier, a hook which is spring-actuated in the path of the stud, and a lug on the follower of the upper magazine which engages the hook to move the same out of the path of the stud on the carrier, substantially as shown.

15. In a magazine-firearm, the combination with magazines positioned one below the other beneath the barrel, a longitudinally-sliding breech-block having a portion which depends below the same, of a cartridge-carrier having a part in the path of the depending portion of the breech-block and a depending part below the fulcrum of the cartridge-carrier, a spring which engages the depending part of the cartridge-carrier, a cartridge-lifter pivoted to the cartridge-carrier, a breech-block lever, and a tang which is swung on its pivot by the lever to raise the cartridge-lifter when the cartridge-carrier has been raised by the breech-block.

16. In a magazine-firearm having two magazines one below the other beneath the barrel, a breech-block movable in line with the barrel, a latch pivoted to the breech-block and provided with a portion which extends below the breech-block, a breech-block lever operatively connected to the breech-block, a cartridge-carrier fulcrumed to be movable over each of the magazines, projecting portions on the cartridge-carrier adjacent to its fulcrum one of the projecting portions being in the path of the depending portion of the latch, a spring engaging the other projecting portion of the cartridge-carrier, and a hook movable in the path of the end of the cartridge-carrier to be engaged thereby when the upper magazine contains a cartridge, the hook being moved out of line with the carrier when engaged by the follower in the upper magazine.

17. In a magazine-firearm, having two magazines beneath the barrel, a spring-actuated follower having a laterally-projecting lug, a spring-actuated hook which is engaged by the follower to move the hook against the action imparted thereto by its spring, a cartridge-carrier operatively connected to the action and movable past the ends of the magazines, a stud on the carrier which engages the hook when moved by its spring, a projection on one side of the carrier, cartridge-restraining bars which are moved beyond the magazines by the carrier, substantially as set forth.

18. In a firearm, a hammer having notches with which a spring and a sear engage, a notch on its opposite side with which a pawl on a cocking-lever engages, a reciprocating breech-block, a breech-block lever on the same stud as the hammer, a shoulder on the lever for disengaging the sear from the hammer, a cocking-lever engaged by the trigger to move the hammer against the action of its spring, a stud on the frame, a knockoff-pawl carried by the trigger so that it will engage the stud and be released from the lever, a push-bar pivoted on the trigger, and a spring which engages the push-bar, for the purpose set forth.

19. In a firearm having magazines beneath the barrel, the combination of a longitudinally-reciprocating breech-block maintained in line with the barrel, a breech-block lever and a hammer both fulcrumed on the same stud, a cartridge-carrier fulcrumed so that its front end can be positioned opposite either of the magazines, a trigger, pawls actuated by the rearward movement of the trigger to oscillate the breech-block lever, a cocking-lever, and means carried by the breech-block to engage the cartridge-carrier and raise its forward end when the breech-block is moved rearward, substantially as set forth.

20. In a firearm having magazines one below the other, a frame having a spring-actuated hook one end of which is in line with the upper magazine, a lug on the follower in the upper magazine, a cartridge-carrier which is engaged by the hook to limit its downward movement when the lug on the follower is held away from the hook by a cartridge in the upper magazine, a pair of cartridge-restraining bars which converge from the ends of the magazines toward the stud upon which is pivoted the cartridge-carrier, and means on the cartridge-carrier for moving the ends of the bars beyond one side of the ends of the magazines.

21. In a firearm, two magazines maintained beneath a barrel one below the other, a breech-block slidable to and from the barrel in line with its axis, an oscillatory lever which engages the breech-block, an oscilla-

tery cartridge-carrier fulcrumed to have a range of movement from the lower magazine to the barrel, an oscillatory hammer mounted on the same stud as the breech-block lever, a cocking-lever fulcrumed forward of the trigger and provided with a pawl, a trigger pivoted below the cocking-lever, pawls on the trigger to oscillate the breech-block lever, and a sear positioned to be disengaged from the hammer by the breech-block lever, the parts being organized substantially as shown and for the purpose set forth.

22. In a magazine-firearm provided with magazines one below the other parallel with the barrel, a longitudinally-movable breech-block having a depending portion, a breech-block lever for reciprocating the breech-block, a concealed action therefor operated solely by the trigger, a cartridge-carrier engaged by the depending portion of the breech-block, the breech-block to effect an upward movement of the cartridge-carrier, a spring for moving the cartridge-carrier downward, a pivoted stop for the carrier which is moved out of its path by the follower in the upper magazine, and a fixed stop or projection on the frame which incloses the action with which the carrier engages to limit its downward movement when receiving cartridges from the lower magazine, substantially as shown.

708,521. BALL-COCK. CORNELIUS BERKEY, Hartford, Conn. Filed Feb. 15, 1902. Serial No. 94,198. (No model.)

Claim.—1. A ball-cock having a valve-spindle, a spindle-lever engaging the valve-spindle, a float-lever pivoted to the spindle-lever, and an incline on the casing with the short arm of the float-lever engaging the incline, substantially as specified.

2. A ball-cock having a valve-spindle, a spindle-lever engaging the valve-spindle, a float-lever pivoted to the spindle-lever, a roller carried by the short arm of the float-lever, and an incline on the casing against which the roller runs when the float rises and drops, substantially as specified.

3. A ball-cock having a valve-spindle, a spindle-lever engaging the valve-spindle, a float pivoted to the spindle-lever, and a surface inclining away from the inner end of the spindle-lever and engaged by the short arm of the float-lever so that the lifting of the float causes the outer end of the float-lever to be forced away from the inclined surface, substantially as specified.

4. A ball-cock having a valve-spindle, a spindle-lever pivoted to the casing and having the inner arm on one side of the pivot engaging the valve-spindle, a pivoted float-lever engaging the casing also the outer arm on the other side of the pivot of the spindle-lever, an incline and a roller, the said roller and incline so engaged that when the level of the float changes the outer end of the spindle-lever is moved powerfully by the float-lever and the inner end of the spindle-lever caused to engage the spindle for moving the valve against the water-pressure, substantially as specified.

708,522. APPARATUS FOR IMPREGNATING WOOD. JOHN BOZZUTO, Rahway, N. J. Filed Jan. 17, 1902. Serial No. 90,140. (No model.)

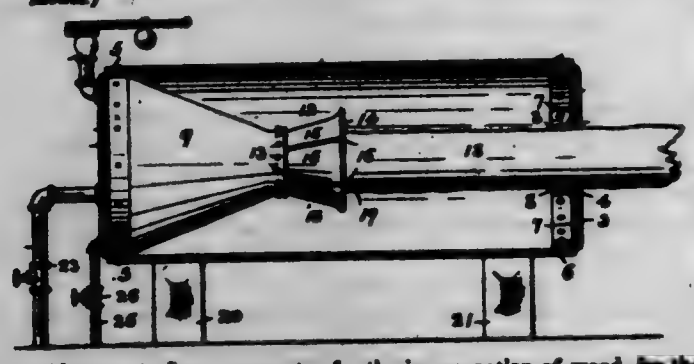

Claim.—1. In an apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, the combination, with means for supporting a log or beam which is to be impregnated, of means for forcing the impregnating mixture longitudinally through the said log or beam, consisting, essentially, of a funnel-shaped mixture-receiving device, having an outwardly-flaring and expansible delivery-throat into which a portion of the logs of different thicknesses may be placed, so that said throat encompasses said portion of the log and helps support the same, substantially as and for the purposes set forth.

2. In an apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, the combination, with means for supporting a log or beam which is to be impregnated, of means for forcing the impregnating mixture into one end of the log or beam, consisting, essentially, of a funnel-shaped mixture-receiving device, having a mixture-chamber provided with a delivery-throat, and a perforated thimble having an expansible holding portion in which the one end of the log or beam is placed and held, the perforated portion of said thimble forming a part of the mixture-chamber and being arranged directly within the said delivery-throat, substantially as and for the purposes set forth.

3. In an apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, the combination, with means for supporting a log or beam which is to be impregnated, of means for forcing the impregnating mixture into one end of the log or beam and distributing said mixture longitudinally through said log or beam, consisting, essentially, of a funnel-shaped mixture-receiving device, having a delivery-throat, a perforated thimble in which the one end of the log or beam is placed, and spring-plates forming a part of said thimble for holding the end of the log or beam in place, substantially as and for the purposes set forth.

4. In an apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, the combination, with means for supporting a log or beam which is to be impregnated, of means for forcing the impregnating mixture into one end of the log or beam and distributing said mixture longitudinally through the said log or beam, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log or beam, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

5. In an apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, the combination, with means for supporting a log or beam which is to be impregnated, of means for forcing the impregnating mixture into one end of the log or beam and distributing said mixture longitudinally through the said log or beam, consisting, essentially, of a funnel-shaped mixture-receiving device, having a delivery-throat in front of which the one end of the log or beam is placed, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log or beam, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

6. In an apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, the combination, with means for supporting a log or beam which is to be impregnated, of means for forcing the impregnating mixture into one end of the log or beam and distributing said mixture longitudinally through said log or beam, consisting, essentially, of a funnel-shaped mixture-receiving device, having a delivery-throat, and a perforated thimble in which the one end of the log or beam is placed and held, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log or beam, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

7. In an apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, the combination, with means for supporting a log or beam which is to be impregnated, of means for forcing the impregnating mixture into one end of the log or beam and distributing said mixture longitudinally through said log or beam, consisting, essentially, of a funnel-shaped mixture-receiving device, having a delivery-throat, a perforated thimble in which the one end of the log or beam is placed, and spring-plates forming a part of said thimble for holding the end of the log or beam in place, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log or beam, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

8. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, substantially as and for the purposes set forth.

9. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and

distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device, having a delivery-throat in front of which the one end of the log is placed, substantially as and for the purposes set forth.

10. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device having a delivery-throat, and a perforated thimble in which the one end of the log is placed, substantially as and for the purposes set forth.

11. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device having a delivery-throat, a perforated thimble in which the one end of the log is placed, and spring-plates forming a part of said thimble for holding the end of the log in place, substantially as and for the purposes set forth.

12. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

13. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially of a funnel-shaped mixture-receiving device, having a delivery-throat in front of which the one end of the log is placed, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

14. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device having a delivery-throat, and a perforated thimble in which the one end of the log is placed, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

15. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device, having a delivery-throat in front of which the one end of the log is placed, a car, a centering or holding device connected with said car, adapted to be brought against the opposite end of said log, and means for locking said car in a fixed position, substantially as and for the purposes set forth.

16. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, a flexible gasket-like device provided with a central opening arranged against the inner surface of said open end plate, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, substantially as and for the purposes set forth.

17. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, a flexible gasket-like device provided with a central opening arranged against the inner surface of said open end plate, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device, having a delivery-throat in front of which the one end of the log is placed, substantially as and for the purposes set forth.

18. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, a flexible gasket-like device provided with a central opening arranged against the inner surface of said open end plate, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device having a delivery-throat, and a perforated thimble in which the one end of the log is placed, substantially as and for the purposes set forth.

19. An apparatus for the impregnation of wood, for the purpose of rendering it tenacious and resistible to pressure, or for fireproofing or waterproofing the same, comprising, a tank or boiler having a closed end plate and an end plate provided with a log-receiving opening, a flexible gasket-like device provided with a central opening arranged against the inner surface of said open end plate, and means within said tank or boiler for supporting the one end of said log and forcing a fluid impregnating mixture into said supported end of the log and distributing said mixture longitudinally through the said log, consisting, essentially, of a funnel-shaped mixture-receiving device having a delivery-throat, a perforated thimble in which the one end of the log is placed, and spring-plates forming a part of said thimble for holding the end of the log in place, substantially as and for the purposes set forth.

708,523. BOTTLE-STOPPER. HENRY S. BRYWINGTON, Baltimore, Md. Filed Aug. 27, 1901. Serial No. 73,451. (No model.)

Claim.—1. The combination with a bottle-neck formed with an internal annular rib adjacent to its upper end, said rib having a rounded surface, of a wooden stopper comprising a cap resting on the top edge of the bottle-neck, and a depending hollow plug formed at its juncture with the cap with an annular groove conforming to the rounded surface of the rib, and forming an annular shoulder to engage below said rib.

2. The combination with a bottle-neck formed with an annular rib adjacent to its upper end, said rib having a rounded surface, of a wooden stopper comprising a cap resting on the top edge of the bottle-neck, and a depending hollow plug formed at its juncture with the cap with an annular groove conforming to the rounded surface of the rib, and forming an annular shoulder to engage below said rib, said cap having a protecting-coating of some material impervious to liquids, the coating covering the top, the edge, and the under surface of the cap which rests on the bottle-neck.

3. The combination with a bottle-neck, provided with an internal annular rib adjacent to its upper end, of a wooden stopper comprising a cap adapted to rest on the top edge of the bottle-neck, and a depending hollow plug formed below the cap with an annular groove forming an annular shoulder engaging below the rib, said plug having a filling or packing of cork or other yielding material.

708,524. BOTTLE-STOPPER. HENRY S. BRYWINGTON, Baltimore, Md., assignor of one-half to William Sohn, Baltimore, Md. Filed Aug. 27, 1901. Serial No. 73,452. (No model.)

Claim.—The combination with a bottle-neck having an internal annular groove of a plug inserted into said neck and having upwardly-di-

verging sides, a rounded shoulder at its upper end, a head connected to the plug by a restricted portion to form a groove, and a resilient fastening-disk carried by the plug and adapted to be spread along the sides of the plug and into the groove of the bottle-neck, the superfluous material of said disk entering the groove in the plug above the rounded shoulder.

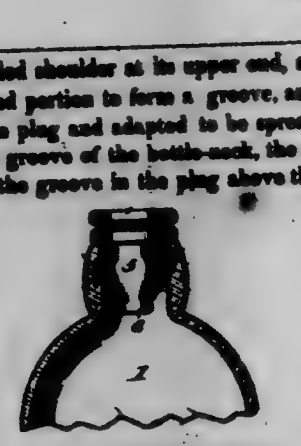

708,525. BOTTLE-STOPPER. HENRY S. BREWINGTON, Baltimore, Md. Filed Sept. 13, 1901. Serial No. 75,226. (No model.)

Claim.—The combination with a bottle-neck formed with an internal annular groove, of a stopper comprising a cork, and a fastener consisting of a resilient wire spanning the top of the cork, and having its ends bent to form prongs to enter the stopper, and shoulders to enter the groove of the bottle-neck, and having its central portion raised above the upper end of the cork to serve as an extracting-loop.

708,526. GARMENT-CLASP. HENRY S. BREWINGTON, Baltimore, Md. Filed Oct. 31, 1901. Serial No. 80,685. (No model.)

Claim.—1. A garment-clasp comprising a hook member consisting of a metallic plate bent upon itself to form a hook and slotted to form an outwardly-projecting central prong and inwardly-projecting prongs one on either side of the central prong, and a bar or loop member provided with oppositely-disposed struck-up tongues, and perforated ears.

2. A garment-clasp comprising a metallic plate bent upon itself to form a hook, and slotted to form an outwardly-projecting central prong, and inwardly-projecting prongs one on either side of the central prong, and having laterally-projecting perforated ears.

3. A bar or loop for a garment-clasp comprising a metallic plate bent transversely adjacent to its ends to form shoulders extending across the width of the bar, and said plate having attaching-ears and tongues struck up from the metal and lying in the plane of said ears, the said tongues being attached at their outer ends to said ears and extending therefrom toward each other.

708,527. BOTTLE-STOPPER. HENRY S. BREWINGTON, Baltimore, Md. Filed Nov. 8, 1901. Serial No. 81,762. (No model.)

Claim.—1. The combination with a bottle-neck formed with an external annular shoulder, of a seal comprising a disk of sheet metal, and a depending flange formed with a series of slots to provide a continuous row of pendent fingers, said fingers and the portion of the flange between the fingers being compressed below the shoulder of the bottle-neck.

2. The combination with a bottle-neck formed with an external annular shoulder, of a seal comprising a disk of sheet metal and a depending flange formed with a series of slots to provide a continuous row of pendent fingers, said fingers being compressed below the shoulder of the bottle-neck, the portion of the flange between said fingers being projected downward and also compressed below the shoulder.

708,528. BOTTLE-STOPPER. HENRY S. BREWINGTON, Baltimore, Md. Filed Dec. 2, 1901. Serial No. 85,157. (No model.)

Claim.—1. The combination with a bottle-neck formed with an external annular shoulder, of a seal comprising a disk and a depending flange the lower edge of which is compressed below the shoulder while its upper portion is annularly enlarged to project beyond the mouth of the bottle to present a projecting head above the bottle-mouth adapted to be engaged by an opener, and a packing below the disk, the peripheral edge of which fits within the annular head and projects over the bottle-mouth.

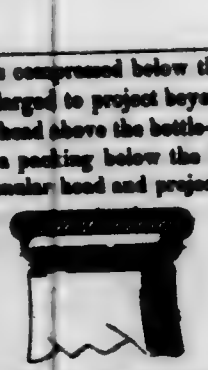

2. The combination with a bottle-neck formed with an external annular shoulder, of a seal comprising a disk and a depending flange bent to form an annular head which is corrugated and projects beyond the bottle-mouth to present a surface adapted to be engaged by an opener, and a packing below the disk the peripheral edge of which is engaged and secured by the corrugations of the projecting head.

3. The combination with a bottle-neck formed with an external annular shoulder, of a seal comprising a disk, and a flange bent to form an annular corrugated head, and a depending portion adapted to be compressed under said shoulder to secure the seal in place, and a packing having its periphery fitted within the head of the cap and extending beyond the outer edge of the bottle-mouth, said annular head projecting above the bottle-mouth and beyond the outer edge thereof, and adapted to be engaged by an opener.

4. A bottle-cap comprising a disk, and a depending flange annularly enlarged to provide a projecting head, formed with vertical corrugations, and a packing within the cap having its peripheral edge engaging said corrugations, the lower portion of the flange being plain to adapt it to engage an annular shoulder on a bottle-neck by spinning or compressing said lower portion of the flange.

708,529. CORN-CRIB. JOSEPH M. BROLAW, Battlecreek, Mich. Filed Aug. 10, 1901. Serial No. 71,502. (No model.)

Claim.—A corn-crib comprising the upper and lower frames, and the side studding-timbers, and the legs supporting the lower frame above the ground, the perforated metallic bottom and inner side walls, the imperforate outer side walls, the imperforate roof provided with ventilators, and a door by which access is had to the crib substantially as shown and described.

708,530. SEALING DEVICE FOR BOTTLES. GUS A. BROCK, Covington, Ky. Filed Nov. 20, 1901. Serial No. 84,073. (No model.)

Claim.—1. In combination with a receptacle, a strip divided into sections by means of lines adapted to promote the severing of the sec-

tions, said strip being sealed at alternate sections to the plain exterior of the receptacle, the intermediate unattached sections being adapted to be severed or detached by the consumer to indicate the extent to which the original contents have been removed.

2. In combination with a receptacle, a strip of waterproof material divided into a series of sections by means of lines adapted to promote the severing of the sections and secured to the receptacle at alternate sections, the intermediate sections not being attached to the receptacle but adapted to be successively detached by the consumers to indicate the extent to which the original contents have been removed.

3. In combination with a receptacle, a sealed strip for the purpose specified divided into sections and having perforations in the alternate sections for the passage of the sealing material.

4. In combination with a receptacle, a sealed strip for the purpose specified divided into sections and having indentations at the edges, and perforations in the alternate sections for the passage of the sealing material.

5. In combination with a receptacle, a sealed strip for the purpose specified divided into sections and having perforations in the alternate sections for the passage of the sealing material, the detachable sections of said strip being consecutively numbered.

6. In combination with a receptacle, a sealing-strip sealed in a vertical position to the exterior of said receptacle at short intervals, and adapted to be severed between the points at which it is sealed; and means for protecting said sealing-strip against damage in handling or shipment.

708,581. EYE-GUARD. HENRY W. BROWN, Baltimore, Md., assignor to James W. Strobel and Henry W. Brown, trading as Strobel & Brown, Baltimore, Md. Filed Oct. 31, 1901. Serial No. 80,651. (No model.)

Claim.—An eye-guard comprising a thin strip of sheet metal, having an integral central clip, an absorbent pad secured to the strip by said clip, a supplemental pad covering the inner surface of the clip, and cords serving the double purpose of securing the ends of the absorbent pad to the strip and attaching the guard to the head of the wearer.

708,582. CHECK-ROW CORN-PLANTER. WESLEY R. BUCHTELA, Marion, Iowa. Filed Apr. 17, 1902. Serial No. 103,444. (No model.)

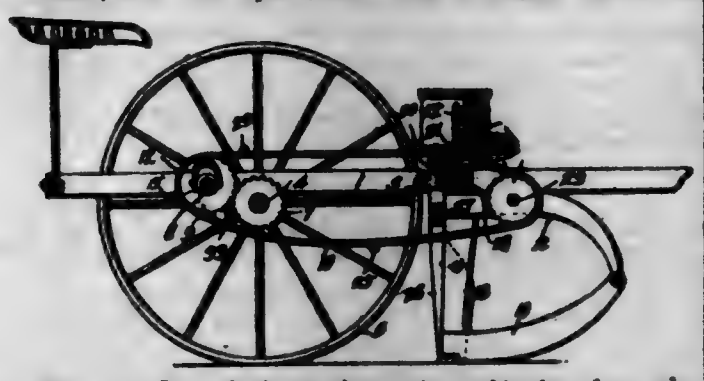

Claim.—1. In a check-row planter, the combination of an axle-shaft, having ground-wheels and a gear-wheel, a shiftable gear mounted for engagement with said axle-gear, means to shift said shiftable gear into and out of engagement with the axle-gear, a guide and carrier, an endless sprocket-chain connecting the shiftable gear and guide and carrier and having a tappet, a rock-shaft to actuate the seed-dropping mechanism and having a rock-arm adapted to be engaged by the tappet, to turn the rock-shaft in one direction, a spring to turn the rock-shaft in the reverse direction, a marker, and connections between the latter and the rock-shaft whereby said marker is operated by the rock-shaft, substantially as described.

2. In a check-row planter, the combination of an axle-shaft, having ground-wheels and a gear-wheel, a shiftable gear mounted for engagement with said axle-gear, means to shift said shiftable gear into and out of engagement with the axle-gear, a guide and carrier, an endless sprocket-chain connecting the shiftable gear and guide and carrier and having a tappet, a rock-shaft to actuate the seed-dropping mechanism, and having a rock-arm adapted to be engaged by the tappet, to turn the rock-shaft in one direction, a spring-retracted marker, and a flexible connection between the latter and the rock-arm whereby said rock-shaft and marker are simultaneously operated, substantially as described.

708,588. CONTINUOUS KILN. WILLIAM A. BUTLER and ADOLPH KNOBE, San Francisco, Cal. Filed Sept. 30, 1901. Serial No. 76,994. (No model.)

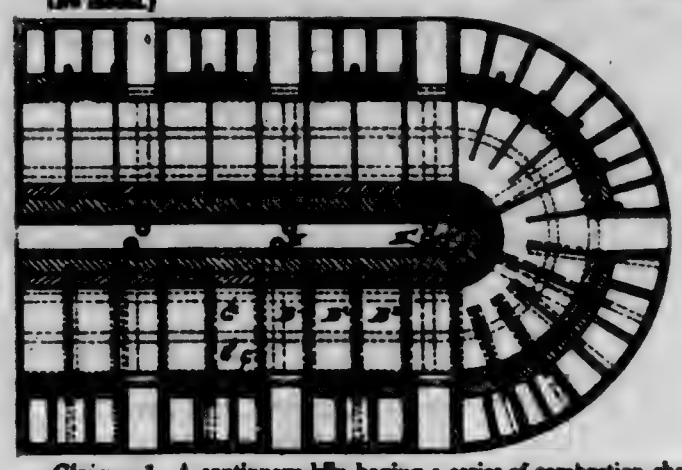

Claim.—1. A continuous kiln having a series of combustion-chambers extending crosswise below kiln-floor in which liquid or powdered fuel is burned in suspension, communicating directly with the kiln by means of openings in kiln-floor and combined with longitudinal flues or pipes below kiln-floor and between the longitudinal walls of the kiln, connecting said combustion-chambers, substantially as described.

2. A continuous kiln comprising combustion-chambers extending crosswise and below kiln-floor, in which fuel is burned in suspension, connected with the kiln by means of openings across said floor and joined by flues or pipes running horizontally underneath said floor, connecting said combustion-chambers, and joining damper-controlled draft-flues, substantially as described.

3. A continuous kiln having a series of combustion-chambers extending transversely and below kiln-floor connected with the kiln by means of openings across said floor and joined by passages below said floor connecting said combustion-chambers and communicating with damper-controlled draft-flues; combined with fuel pipes or flues leading to the top and to the outside of the kiln, for the purpose of supplying fuel to the combustion-chambers, substantially as described.

4. A continuous kiln comprising combustion-chambers extending crosswise and below kiln-floor, in which fuel is burned in suspension; with a series of openings across kiln-floor connecting said combustion-chambers with the kiln, joined by flues or pipes below kiln-floor connecting combustion-chambers and communicating with damper-controlled draft-flues; combined with pipes flues and burners for the introduction of fuel, said pipes and flues running to the top and outside of the kiln through and between the kiln-walls substantially as described.

5. A continuous kiln having a series of combustion-chambers running across and below kiln-floor in which fuel is burned in suspension, joining one another by means of horizontal pipes or flues below said floor, said pipes or flues communicating with damper-controlled draft-flues; said combustion-chambers connected with the kiln by means of openings across kiln-floor combined with pipes and flues running to the top and outside of the kiln, for the introduction of fuel; means of controlling the supply of fuel from the top and outside of the kiln substantially as described.

708,584. APPARATUS FOR FORGING CAR-WHEELS. ALEXANDER H. GARTSHORE, Perth, Canada. Filed Apr. 10, 1901. Serial No. 55,262. (No model.)

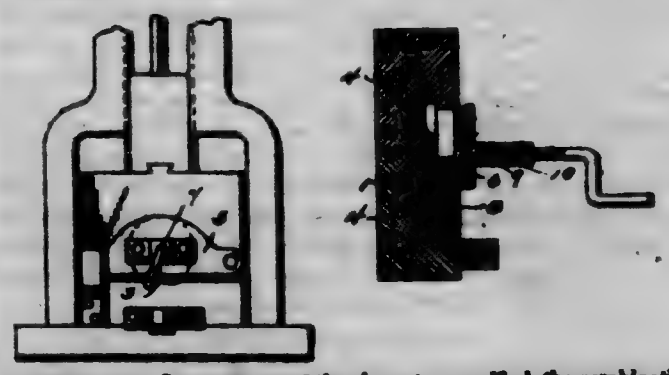

Claim.—1. In apparatus of the character specified, the combination with a hammer-die and an anvil-die, of a combined support carried by said anvil-die, adapted to support the ingot against lateral movement.

2. In apparatus of the character specified, the combination with a

hammer-die and an anvil-die, of a plate pivotally mounted on said anvil die and adapted to extend across the face of the ingot, and a cushioned pressure device carried by said plate adapted to retain said ingot against lateral movement.

3. In apparatus of the character specified, the combination with a hammer-die and an anvil-die, of a plate pivotally mounted on said anvil-die and adapted to extend across the face of the ingot, and a rod extending through said plate, said rod having cushioning means, the inner end of said rod abutting against the face of the ingot and preventing lateral movement thereof.

4. In apparatus of the character specified, the combination with a hammer-die and an anvil-die, of a plate pivotally mounted on said anvil-die and adapted to extend across the face of the ingot, a screw-threaded rod extending through said plate, a bracket for supporting said rod, a nut carried by said rod and positioned by said bracket, and a spring carried by said rod and adapted to form a pressure device when the inner end of said rod is brought into contact with the face of the ingot, to prevent lateral movement of the latter.

708,585. INVALID-BEDSTEAD. JAMES B. CANFIELD, Hillsville, Ky. Filed June 27, 1901. Serial No. 65,277. (No model.)

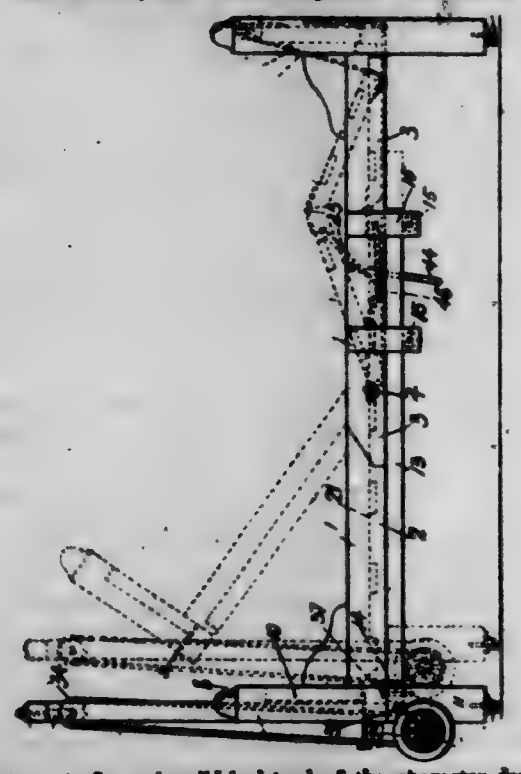

Claim.—1. In an invalid-bedstead of the character described, the combination with the hinged side rails and the headboard connected to the free upper ends of the side rails, and means for supporting the lower ends of said side rails, of bars slidably connected with the lower sections of the side rails, posts connected to the upper ends of said bars, and means for elevating the headboard and the side-rail sections to which it is secured, substantially as set forth.

2. In an invalid-bedstead of the character described, the combination with the side rails, each of which consists of a foot and head member pivoted together at their inner ends, a footboard secured to the free end of the foot member, and a headboard secured to the free end of the head member, of bars slidably connected to the foot members and underlying and parallel with both the foot and head members, and posts secured to the outer ends of said bars and adapted to support the headboard and outer ends of the head members of the side rails, and means for elevating the headboard and head members of the side rails, substantially as set forth.

3. In an invalid-bedstead of the character described, the combination with the foldable side rails comprising head members and foot members, the head members of the side rails being provided with a headboard and the foot members of the side rails being provided with a footboard, of bars underlying and engaging the lower edges of the members constituting the side rails, brackets secured to the foot members of the side rails and provided with frictional rollers upon which said bars are supported to slide, posts secured to the opposite ends of the bars and adapted to support the headboard when in its normal position, and means for elevating the headboard, substantially as set forth.

708,586. STREET-CAR FENDER. EDWIN F. CARRIER, Chicago Ill. Filed Sept. 21, 1901. Serial No. 76,081. (No model.)

Claim.—1. The fender-frame D; consisting of a series of parallel bars *d*, united at their front ends by the cross-plate E, and provided at their rear ends with eyes to receive the shaft C on which said bars are made to turn; the cross-plate K provided with hooks on its front edge for connection with the front portion of the fender-frame, and with the vertical plate *i*, for connection with the lever L, said lever and its pivotal supports on the platform B; all combined substantially as described.

2. The combination of the platform B'; the gudgeon-blocks F, secured to the top thereof; the elbow-supporting arms J, secured to the bottom thereof and carrying at their forward ends the shaft *j*; on which is pivotally supported the locking-plate L, with its locking-fingers 1, 2; lever I, means for connecting the lower end of said lever with the locking-plate L, and its fingers by which said locking-plate and its fingers may be lifted by the inward movement of the lower end of the lever, substantially as set forth.

3. The combination of the platform; the gudgeon-blocks, the shafts carried thereby; the pawl and its footpiece; the lever provided with a ratchet-surface for engagement with said pawl, and also a hook on its front side for engagement both with the locking-plate and the fender-frame; the cross-plate K; connecting-chains *m* the fender D, and the shaft C, all substantially as described.

708,587. DETECTOR-BAR FOR RAILROAD-SWITCHES. LYMAN GARRIER, Joliet, Ill. Filed Apr. 24, 1902. Serial No. 104,522. (No model.)

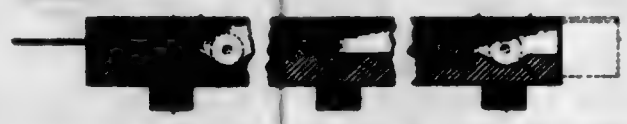

Claim.—1. The combination with a rail; of a bar fixed at the side of the rail, a channeled bar movably mounted and inclosing the top and sides of the fixed bar, one of said bars having an undulating surface and the other rollers to traverse said fixed bar whereby the second bar is adapted to rise and fall when adjusted lengthwise of the fixed bar, and means for imparting an endwise movement to the upper bar, substantially as specified.

2. The combination with a rail, of a bar fixed at the side of the rail and having an undulating surface, a second bar movably mounted above the fixed bar and having rollers supporting it on said fixed bar, said second bar being channeled to inclose the rollers and top and sides of the fixed bar, and means for imparting an endwise movement to the upper bar, substantially as and for the purpose set forth.

708,588. DEVICE FOR CUTTING CIRCLES. ROBERT O. CARTWRIGHT, Augusta, Ark. Filed Mar. 12, 1902. Serial No. 98,098. (No model.)

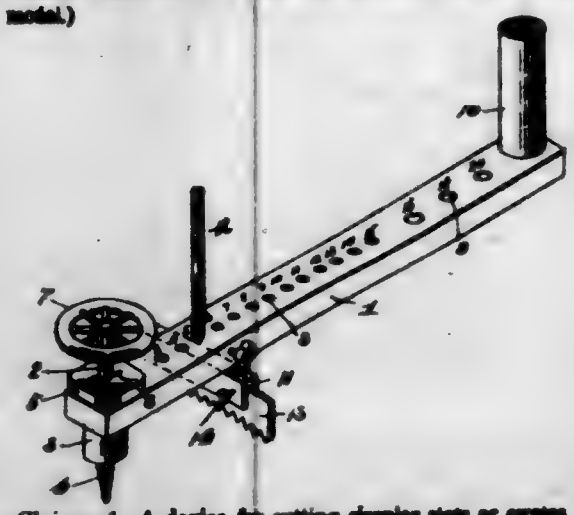

Claim.—1. A device for cutting circular slots or curves, consisting of a swinging arm, having secured in one end an axle 2, passing vertically through said arm, its lower end terminating in a gimlet-point; a spool 3, secured on the lower end of said axle, and against the lower face

of the arm; a hand-wheel 7, rigidly secured to the upper end of the said axle; said axle held in place by a nut 5, and a pin 6; a handle 10, secured on the swinging end of said arm; a cylindrical arm passing up through said swinging arm, and adjustably secured in said arm, by means of a nut; a clamping device secured to the lower end of said cylindrical arm, and a saw 13, adjustably secured in said clamping device, by means of thumb-nuts 14, substantially as shown and described and for the purpose set forth.

2. A device for cutting circular slats or circles, consisting of a swinging arm, having secured in one end, an axle, terminating in a gimlet-point; a hand-wheel rigidly secured to the upper end of said axle; a handle secured to the swinging end of said swinging arm; a threaded cylindrical arm passing down through said swinging arm; a clamping device secured to the lower end of said threaded circular arm; a saw secured in said clamping device; nuts passing through the walls of said clamping device, and adapted to curve said saw; a clamping-plate fitting against the upper edge of said clamping device, and the lower face of the swinging arm; a clamping-plate fitting against the upper face of said swinging arm, each plate provided with flanges grasping the edges of said swinging arm; a thumb-nut turning down on said cylindrical threaded arm, and adapted to clamp said clamping device and said plates to said swinging arm, substantially as shown and described and for the purposes set forth.

708,589. FORCED-DRAFT APPARATUS. JOHN S. CRAPHAM, Albany, N. Y. Filed Mar. 3, 1902. Serial No. 96,620. (No model.)

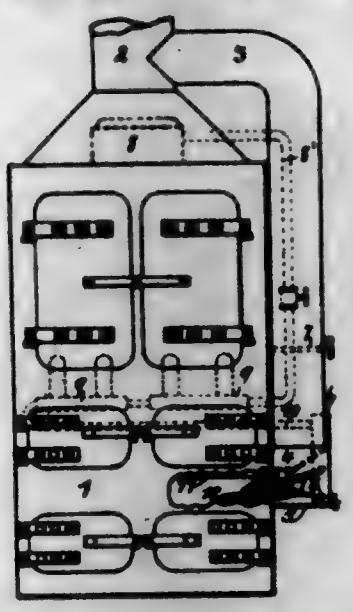

Claim.—1. In a steam-boiler a conduit leading from the smoke-stack into a receptacle in connection with the space under the grate-bars; a baffle-plate in proximity to the lower end of the said conduit; a steam-pipe in connection with the boiler discharging in the said receptacle and practically across the discharge-mouth of the conduit so as to converge the steam at a predetermined point and means for admitting air to said receptacle in predetermined quantities, in order that a portion of the hot gases from the smoke-stack and a portion of the steam from the boiler and some air may be forced into and through the fire on the grates substantially as described.

2. A superheated-steam-draft-forcing device consisting of a conduit leading from the smoke-stack of a boiler to and discharging into a receptacle; a steam-pipe leading from the boiler to and discharging into said receptacle and practically across the mouth of the conduit; said steam-pipe being connected with a superheater arranged to receive the heat from the furnace-fire and superheat the steam as it passes through the same; means whereby the steam is caused to make a circuitous path through the superheater and means for admitting air to the said receptacle and mix it with the steam from the boiler and the heated gases from the smoke-stack and discharge them under the fire-grate substantially as described.

3. In an apparatus for producing draft by superheated steam, heated gases and air, consisting of a conduit leading from the smoke-stack to a receptacle; a steam-pipe leading from the boiler to said receptacle through a superheater located at the fire-bridge and arranged to receive the heat of the furnace as it passes the fire-bridge; means for introducing air to the receptacle and means for producing a downdraft in the conduit and for forcing the contents of the receptacle under the grate-bars under pressure substantially as described.

708,540. HEAT-GENERATOR. GEORGE S. CRANE, Springfield, Mass. Filed Mar. 22, 1902. Serial No. 99,416. (No model.)

Claim.—1. A heater of the character described, consisting of upper and lower separated chambers having vertical connecting-flues, the upper chamber having an upwardly-leading opening, and the lower chamber having a downwardly-leading opening, and a support comprising an upright and a laterally-extending part on which the heater is sustained.

2. A heating apparatus of the character described, consisting of a heating-chamber, having upper and lower openings and having its top and bottom walls provided with the straps *a a* and a^2 a^2, combined with the support consisting of an upright member and a part G horizontally sustained thereby, comprising the two separated parallel horizontal members *f f*, to engagement with which either the upper or the lower pairs of said straps may be brought, for the purpose set forth.

3. In a heating apparatus of the character described, the combination with a base, an upright, and a part vertically adjustable on the upright, of a part G comprising separated members *f f*, hinge-connected to the part *g*, and a heater supported by the members *f f*, and having a heating-chamber provided with the bottom opening leading therefrom, and one or more openings leading upwardly therefrom.

4. In a heating apparatus of the character described, a heater comprising upper and lower separated heating-chambers *a* and *b*, the former having an upwardly-leading opening at its top, and the latter having a central opening at its bottom, said chambers being connected by the vertical flues A A, and the lower chamber having therewithin and supported slightly below, its top wall, with a space intervening, a depending cup-shaped part having therewithin a plurality of partitions to separate downwardly-opening spaces, and means for supporting the so-constructed heater in an elevated position.

5. In a heating apparatus of the character described, the heater comprising the upper and lower separated chambers *a* and *b*, and the connecting vertical flues, the upper chamber having a top opening *g*, and the lower chamber having the depending annular wall with the opposite angular slots *y*, the contracting appliance consisting of an annular part having the radial studs w^2, and having the internal flange portion w^3, and means for supporting the heater in an elevated position.

6. In a heating apparatus of the character described, in combination, the base D, the uprights C which are screw-threaded, the nut *s* thereon, the above part *g*, having the lateral projection *r*, the part G comprising the portion f^2 hinge-connected to the part *r*, said the pair of separated parallel arms *f f*, the upper and lower heating-chambers *a* and *b*, the connecting-flues A and said chambers having the openings *g* and *d*, and provided with the loop-straps *a a*, and a^2 a^2, and the lower heater-chamber having therewithin the inverted-cup-shaped heat-arresting device, substantially as described.

708,541. WATER-PURIFIER. CHARNEY C. CLARK, Philadelphia, Pa., assignor of one-half to James S. Carson, Philadelphia, Pa. Filed Jan. 22, 1901. Serial No. 44,274. (No model.)

Claim.—1. In a liquid-purifier a horizontal cylindrical and inclosing receptacle, a vertical cylindrical inlet-chamber inserted within the receptacle, a series of perforated disk electrodes inserted therein, heads forming inclosed chambers at the ends of the receptacle, inlet and outlet passages to and from the chambers, and tubes extending from chamber to chamber through the receptacle.

2. In a liquid-purifier, a closed receptacle, chambers thereof at each end, tubes from chamber to chamber through the receptacle, an inlet-chamber inserted in the receptacle, an insulated lining for the chamber, and a series of perforated intercepting-electrodes fixed therein.

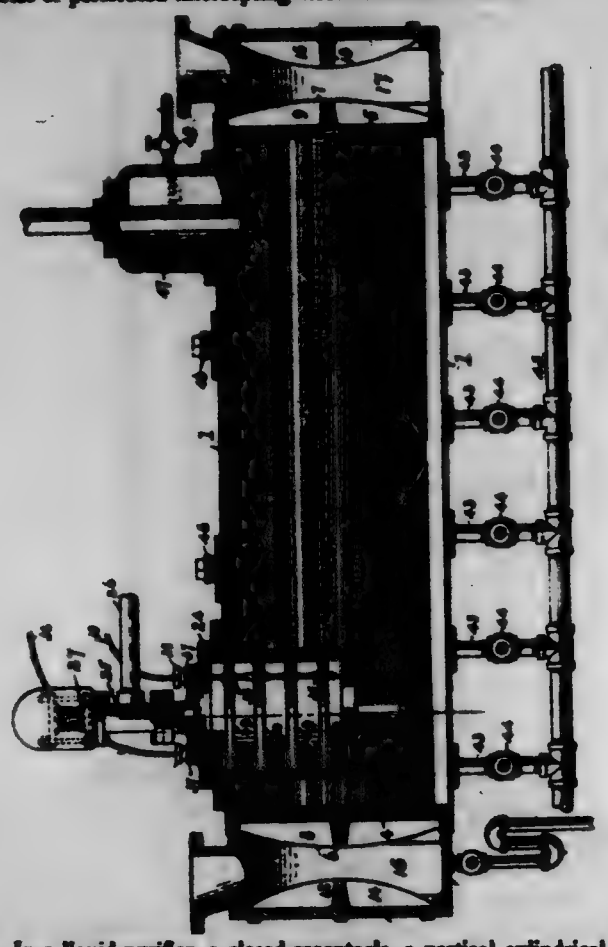

3. In a liquid-purifier, a closed receptacle, a vertical cylindrical insulated inlet-chamber partly within and partly without the receptacle, a series of perforated disk electrodes arranged across and within the chamber, insulated and liquid-retaining stuffing-boxes for the inlet-chamber, and means therethrough for positive and negative electric connection to alternate electrodes.

4. In a liquid-purifier, a closed receptacle, an inlet-chamber projecting from the exterior to the interior of the receptacle, an insulating-lining for the chamber, a series of electrodes in the chamber, means for electric connection from the exterior of the receptacle and the inlet-chamber, to the electrodes, through stuffing-boxes, followers for the stuffing-boxes, insulation for the stuffing-boxes and the followers, and liquid-retaining packing within the stuffing-boxes.

5. In a liquid-purifier, a receptacle, a chamber inserted into the receptacle from its exterior, and means thereto connected for conveying liquid, a series of perforated electrodes in the chamber, a closed bottom for the chamber, a delivery-pipe leading therefrom toward the bottom of the receptacle, a chamber at each end of the receptacle, inlets and outlets for the chambers, and a series of tubes connecting the end chambers, through the receptacle, and passing the sides and bottom of the inserted chamber.

6. In a liquid-purifier, a closed cylindrical receptacle, an inlet-chamber mounted upon one end of and entering the receptacle, an inlet thereto, a series of electrodes therein, electrical conductors thereto from a source of electrical energy exterior to the receptacle, a passage to pass the products of decomposition from the inlet-chamber to the bottom of the receptacle, a dome mounted on the end of the receptacle opposite the inlet-chamber, wherein the lighter impurities may arise above the purified liquid, and a pipe and valve for their withdrawal.

7. In a liquid-purifier, a closed horizontal cylindrical receptacle, a chamber supported upon and entering the receptacle near one end, an inlet thereto, a series of electrodes in the chamber, conductors from the electrodes to a source of electrical energy exterior to the receptacle, a passage from the chamber to the bottom of the receptacle, a dome located at the top of the receptacle at the opposite end from the chamber, for collecting the lighter impurities, and means to withdraw these impurities from the receptacle, through its dome, and at a point above the body of purified liquid in the receptacle.

8. In a liquid-purifier, an inclosing horizontal cylindrical receptacle, a chamber inserted within the receptacle near one end, a series of electrodes within the chamber, electrical conductors for the electrodes, a passage leading from the chamber toward the bottom of the receptacle, a dome near one end of the receptacle, and above the receptacle, and means entering the dome whereby to withdraw the purified liquid below the impurities arising within the dome.

9. In a liquid-purifier, an inclosing horizontal cylindrical receptacle, a cylindrical inlet-chamber inserted therein through the top, near one end, a series of perforated disk electrodes therein, electrical conductors therefor leading out of the receptacle and the chamber, a pipe extending from the chamber to the receptacle at its lower part, and a series of pipes and valves for the withdrawal of the products of decomposition from within the receptacle, at its lower part.

10. In a mechanism of the character described, a horizontal cylindrical fluid-receptacle, an inserted inlet-chamber, a series of electrodes therein, adapted to intercept the inflow, chambers at the ends of the receptacle, inlets and outlets for the chambers, a series of tubes from chamber to chamber through the receptacle, and from one of the chambers means to withdraw the products of condensation.

708,542. PULVERIZER. JOHN C. CLARK, Atlanta, Ga. Filed June 18, 1897. Serial No. 641,228. (No model.)

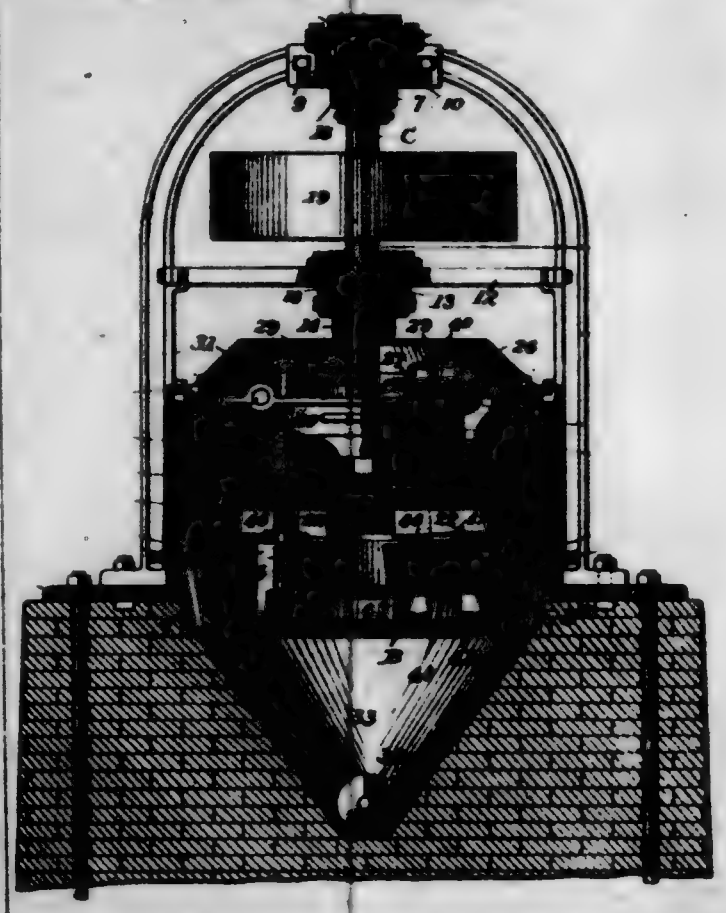

Claim.—1. In a pulverizing-machine, the combination with a radially-swinging shaft having a threaded end and a transverse slot and means for moving the shaft in a circular path, of a grinding-roll provided with a central conical opening and a slot transverse the upper end of the opening, a sectional conical sleeve within the opening of the grinding-roll provided with a central threaded bore for the reception of the threaded end of the shaft, a key extending through the slots in the shaft and roll, and an annular grinding-ring with which the roll coöperates, substantially as set forth.

2. In a pulverizing-machine, the combination with a radially-swinging shaft, having a threaded end and a transverse slot, means for revolving the shaft, of a grinding-roll provided with a central conical opening and upon its face with a channeled flange, a conical ring within the opening of the grinding-roll provided with a central threaded bore for reception of the threaded end of the shaft, a key passing through the slot of the shaft and channel of the flange and an annular grinding-ring with which the grinding-roll coöperates substantially as described.

3. The combination in a pulverizing-machine, of a rotatable shaft having an enlarged head, a journal-box for the shaft having an oil-chamber in its upper end, a shoulder upon which the head of the shaft bears, a cap for the upper end of the journal-box, and a bearing adjustable in said cap and projecting upwardly to maintain the head in engagement with the shoulder, an interior annular channel containing a series of rollers which bear upon the shaft, and a packing-gland at the lower end of the box, substantially as described.

708,548. MANUFACTURE OF CRUCIBLE-STEEL. HENRY B. CLARKE, Pittsburg, Pa., assignor to Firth Sterling Steel Company, a Corporation of Pennsylvania. Filed Mar. 20, 1901. Serial No. 52,021. (No specimens.)

Claim.—1. The improved process of making crucible-steel, which consists in first introducing the materials for making crucible-steel in the required predetermined proportions into a receptacle and melting them in contradistinction to treating the materials with oxidizing or metallurgical agents, whereby changes in the proportions may be avoided, and then introducing the melted mass into a previously-heated crucible with carbon or other modifying substances and covering the crucible, and subjecting it to further heating for a limited time, substantially for the purposes described.

2. The improved process of making crucible-steel, which consists in first introducing the raw materials of steel or iron, or the like, in the cold state and in predetermined proportions into a suitable heating-receptacle and melting them without Bessemer or open-hearth reactions, and then immediately without other metallurgical treatment and before the formation of the finished crucible-steel takes place, introducing the melted mass into a crucible and closing the same, and subjecting the crucible and its contents to a continued heating while the crucible-steel is being produced therein, substantially for the purposes described.

3. The improvement in crucible-steel processes which consists in melting together the greater portions, at least, of the crucible-steel ingredients in predetermined proportions and without causing substantial change of proportions by chemical or metallurgical treatment, and thereafter introducing said ingredients into a crucible, covering them to protect them from oxidation, and thereafter subjecting them to heat during a limited time, substantially for the purposes described.

708,544. ROTARY WEIGHING-MACHINE. PERRY B. CLARKE, New York, N. Y. Filed Apr. 27, 1901. Serial No. 57,808. (No model.)

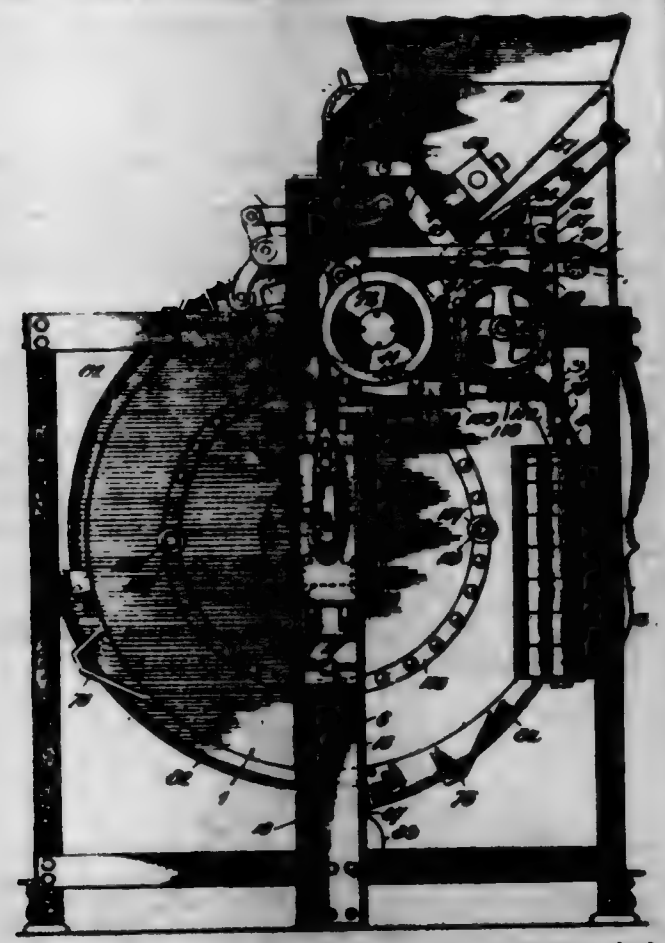

Claim.—1. The combination of a frame having vertical standards, a vertically-movable rotary load-receiver, the carriages arranged at opposite sides of the load-receiver and consisting of blocks, and upper and lower wheels arranged in pairs at opposite sides of the standards and located above and below the center of the load-receiver, and weights connected with the load-receiver, substantially as described.

2. The combination of a frame having opposite standards, a vertically-movable transverse shaft, a rotary load-receiver mounted on the shaft, the opposite carriages fixed to the shaft and consisting of blocks having openings to receive the shaft, and wheels arranged in pairs above and below the said shaft at the tops and bottoms of the blocks and located at the sides of the standards and adapted to run on the same, and weights connected with the load-receiver, substantially as described.

3. The combination of a frame provided at opposite sides with standards, a transverse shaft extending through the standards, a vertically-movable rotary load-receiver mounted on the shaft, scale-weights, flexible connections connected with the scale-weights and provided with hangers receiving the ends of the shaft and located beyond and spaced from the standards, the wheels 20 mounted on the hangers and projecting inwardly therefrom and located in the spaces between the same and the standards, the supplemental weights provided with projecting lugs, and the catches arranged to engage the lugs and provided with projecting portions to be engaged by the said wheels, substantially as described.

4. The combination with a frame provided with vertical standards, a transverse shaft extending through the standards, scale-weights connected with the shaft, the supplemental weights arranged on the exterior of the standards, the wheels projecting from the inner faces of the supplemental weights and arranged to run on the standards, the antifriction devices mounted on the standards and engaging the supplemental weights and holding the same in position, and means for supporting and tripping the supplemental weights, substantially as described.

5. The combination of a frame having standards, a transverse shaft, a vertically-movable rotary load-receiver mounted on the shaft, pulleys, flexible connections having hangers supporting the shaft, scale-weights attached to the flexible connections, the supplemental weights, the catches mounted on the frame and arranged to support the supplemental weights and provided with arms extending laterally beyond the standards, coiled springs connected with the arms for holding the catches in position for engaging the supplemental weights, and means for engaging the catches to release the supplemental weights, substantially as described.

6. The combination of a frame, a vertically-movable rotary load-receiver provided with partitions or divisions forming buckets and having slots at their outer edges, a supply-chute having sides extending into the load-receiver and arranged in the paths of the slots, an oscillating cut-off arranged at the bottom of the supply-chute and provided with means for actuating it to close it, a catch for holding the cut-off open, means operated by the load-receiver for opening the cut-off, and tripping mechanism for releasing the latter, substantially as described.

7. The combination of a frame, a vertically-movable rotary load-receiver provided with partitions or divisions forming buckets and having slots at their outer edges, a supply-chute having sides extending into the load-receiver and arranged in the paths of the slots, a movable cut-off arranged at the bottom of the supply-chute and adapted to close automatically when released, a catch for holding the cut-off open, means for opening the cut-off, and tripping mechanism for releasing the latter, substantially as described.

8. The combination of a load-receiver, a movable cut-off, a catch for holding the cut-off open, a shaft having an arm and provided with means for engaging the catch, a horizontally-disposed reciprocating bar engaging the arm of the shaft and adapted to partially rotate the same, a support receiving one end of the bar, a lever pivoted to and supporting the other end of the bar, and means for actuating the lever and for automatically disengaging the bar from the arm of the shaft, substantially as described.

9. The combination of a load-receiver, a movable cut-off, a catch for holding the cut-off open, a shaft having an arm and provided with means for engaging the catch, a reciprocating bar engaging the arm of the shaft and arranged on a suitable support and having an inclined edge for engaging the same, whereby the said bar will be automatically lifted out of engagement with the arm, and means for actuating the bar, substantially as described.

10. The combination of a frame, a load-receiver, a supply-chute, a movable cut-off, a catch arranged in the path of the cut-off and adapted to hold the same in its open position, a shaft having inner and outer arms, the inner arm being arranged to engage the catch, a bar arranged to engage the outer arm and arranged on a suitable support and having an inclined edge for engaging the same, whereby the said bar will be automatically lifted out of engagement with the outer arm, after the cut-off has been tripped, and means for actuating the said bar, substantially as described.

11. The combination of a frame, a vertically-movable load-receiver, scale-weights connected therewith, a supplemental weight, means for supporting and tripping the supplemental weight, a movable cut-off, a catch arranged in the path of the cut-off and adapted to hold the same open, a shaft having inner and outer arms, the inner arm being arranged to engage the catch to release the cut-off, a longitudinally-movable bar arranged to engage the outer arm, and connections between the bar and the supplemental weight, substantially as described.

12. The combination of a frame, a vertically-movable load-receiver, the supplemental and scale weights, a cut-off, a catch arranged to hold the cut-off open, a shaft having inner and outer arms, the inner arm being arranged to engage the catch to release the cut-off, the bar arranged to engage the outer arm and provided with an inclined edge arranged on a suitable support, whereby the bar is lifted out of engagement with the said outer arm, and a bell-crank connected with the bar and with the supplemental weight, substantially as described.

13. The combination of a frame, a vertically-movable load-receiver, supplemental and scale weights, a movable cut-off, a catch arranged to hold the cut-off open, a shaft having inner and outer arms, the inner arm

being arranged to engage the catch, and the outer arm being provided with a shoulder, a bar having a shoulder for engaging that of the outer arm and provided with an inclined edge, a wheel receiving the bar at the inclined edge thereof, and a loft-catch connecting the bar with the supplemental weight, substantially as described.

14. The combination of a frame, a vertically-movable lead-receiver, supplemental and scale weights, a cut-off, a bracket having an arm at the bottom, a catch movably mounted on the bracket at the top thereof and depending downward therefrom and supported by the arm in position for engaging the cut-off to hold the same open, and means for swinging the catch away from the arm to release the cut-off, substantially as described.

15. The combination of a frame, a movable cut-off provided with means for closing it, a rotary lead-receiver, a lever arranged in the path of the lead-receiver and adapted to be actuated by the same, and a bar connected with the lever and with the cut-off and adapted to close the latter and having a limited movement independently thereof to permit the cut-off to close quickly without actuating either the bar or the lever, substantially as and for the purpose described.

16. The combination of a frame, a movable cut-off provided with means for closing it, a rotary lead-receiver provided at intervals with lugs or projections, a lever arranged in the path of the lugs or projections, and means for connecting the lever with the cut-off, whereby the latter will be opened when the lever is actuated by the said lugs or projections, said means permitting the cut-off to have a limited movement independently of the lever to close quickly without actuating the said lever, substantially as described.

17. The combination of a frame, a rotary lead-receiver, a movable cut-off having means for closing it and provided with a projection, a bar having a slot or opening receiving the projection to permit the cut-off to close quickly without actuating the said bar, and a lever connected with the bar and arranged to be actuated by the lead-receiver to open the cut-off, substantially as described.

18. The combination of a rotary lead-receiver having beveled lugs or projections, a movable cut-off having a projection, a bar provided with a slot or opening receiving the projection of the cut-off to permit the latter to close quickly without actuating the bar, and a lever connected with the bar and arranged to be engaged by the beveled lugs or projections of the lead-receiver, substantially as described.

19. The combination of a frame, a rotary lead-receiver having a vertical movement, supplemental and scale weights, a movable cut-off, a catch arranged to hold the cut-off in its open position, a lever arranged to be engaged by the lead-receiver and connected with the cut-off and adapted to open the same, and tripping mechanism actuated by the supplemental weight for releasing the cut-off, substantially as described.

20. The combination of a frame, a rotary lead-receiver, supplemental and scale weights, an oscillatory cut-off provided with a weighted arm and having a pin or projection, a lever arranged to be engaged by the rotary lead-receiver, a bar connected with the lever, and having a slot or opening receiving the pin or projection of the cut-off, a catch arranged for holding the cut-off open, and tripping mechanism for disengaging the catch from the cut-off, substantially as described.

21. The combination of a frame, a rotary lead-receiver provided with peripheral cams forming shoulders, scale-weights, and the spring-actuated brake arranged to engage the cams to check the rotation of the lead-receiver, and provided with a cushioned buffer for engaging the shoulders to prevent backward movement and to throw the lead-receiver forward, substantially as described.

22. The combination of a frame, a rotary lead-receiver provided with cams, a bracket having a pivot, a brake detachably mounted on the pivot, an adjusting device for limiting the movement of the brake, and a spring engaging the brake and bracket and with the cams to retain the brake on the pivot of the bracket, substantially as described.

23. The combination of a frame, a rotary lead-receiver having cams, a pivoted brake provided with a casket and having a cushioned buffer mounted thereto, and a spring engaging the brake, substantially as described.

24. The combination of a frame, a rotary lead-receiver having cams, a brake pivotally connected at one end to the frame, a spring secured to the frame and engaging the other end of the brake to force the same against the cams, and an adjusting device extending from the inner side of the brake and engaging the frame for limiting the movement of the brake, substantially as described.

25. The combination of a frame, a rotary lead-receiver having cams, scale-weights, a bracket having a pivot, a brake detachably arranged on the pivot and having a head provided with opposite recesses, a wear-plate mounted in one of the recesses, and a spring secured to the frame and engaging the brake at the other recess, substantially as described.

26. The combination of a frame, a rotary lead-receiver having projections, scale-weights, and the combined stop and buffer having a cushioning-spring and provided with a pivoted portion arranged to engage the projections of the lead-receiver substantially as described.

27. The combination of a frame, a rotary lead-receiver having projections having the combined stop and buffer comprising the pivoted member arranged to engage the stops, the slidingly-mounted rod, the spring connected with the rod and forming the cushion, and a spring-actuated link connected with the pivoted bar, substantially as described.

28. The combination of a frame, a rotary lead-receiver having projections, and the combined stop and buffer comprising the substantially hook-shaped bar adapted to move upward and downward, a rod slidingly mounted and having the hook-shaped bar pivoted to it, a spring connected with the rod, a link or bar pivoted to the hook-shaped bar and having an opening, a pin or projection mounted on the frame and arranged in the said opening, and a spring connected with the pin or projection and with the link or bar, substantially as described.

708,545. FOLDING BED. PETER GLAY, Sheboygan, Wis. Filed Feb. 6, 1902. Serial No. 92,504. (No model.)

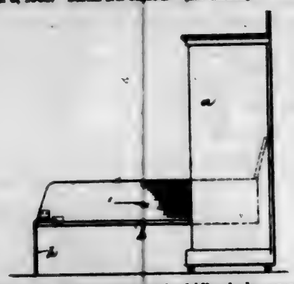

Claim.—1. A leg or support for folding beds, comprising a rod having an intermediate portion, with one end bent at a right angle thereto and the other end bent at a right angle to both the intermediate portion and first-named end, in combination with stops secured to the inner surface of the bed for limiting the movement of said leg or support in opposite directions.

2. In a folding bed, the combination with the base or front piece and side rail of the bed, having a grooved step, and an adjacent shouldered block secured to the inner surface thereof, of a supporting device comprising a rod having an intermediate portion longitudinally movable in said groove, an outer bent end adapted to drop down and form a supporting-leg, when said part is pulled outward and an inner bent end adapted for engagement with said shouldered block, when said part is pushed inward, and the whole supporting device being adapted to be pushed inward out of sight, when the bed is to be folded.

708,546. FOLDING-MACHINE. BERTHE GILLET, CANNES, France. Filed Feb. 5, 1901. Serial No. 46,102. (No model.)

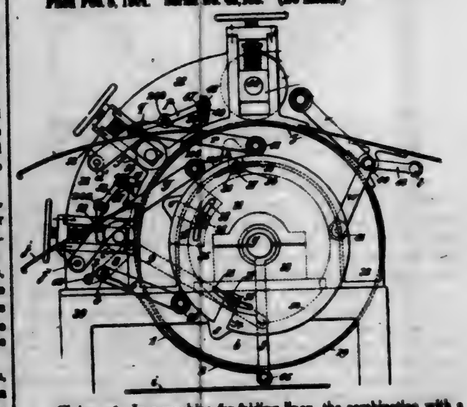

Claim.—1. In a machine for folding linen, the combination with a rotating cylinder, guide-plates, folding-knives, and levers to actuate said plates and knives; of a cam-wheel rotating with said cylinder to actuate said levers, and means timed to move the piece to be folded into engagement with the cylinder, substantially as and for the purpose set forth.

2. In a machine for folding linen, the combination with a shaft, a cylinder secured thereto, guide-plates, folding-knives, and levers to actuate said plates and knives; of a cam-wheel secured to said shaft to actuate the levers, and adjustable cam-surfaces on the wheel, substantially as and for the purposes set forth.

3. In a machine for folding linen, the combination with a shaft, a cylinder secured thereto, guide-plates, folding-knives, and levers to actuate said plates and knives; of a cam-wheel secured on the shaft to actuate said levers, a fixed table, a roller normally out of engagement with the cylinder, and a cam on said shaft to cause said roller to move in front of the table to feed the piece to be folded to the cylinder, substantially as and for the purposes set forth.

4. In a machine for folding linen, the combination with a shaft, a cylinder secured thereto, guide-plates, folding-knives, and levers to actuate said plates and knives; of a cam-wheel secured to said shaft, cam-surfaces adjustably secured thereto to actuate the levers, a plate, 1, a stripping-plate, 2, mounted to rotate around said shaft and cylinder, cam-operated lever mechanism to simultaneously actuate both of said plates 1 and 2, and cam-operated means to positively move the piece to be folded into engagement with the cylinder, substantially as and for the purpose set forth.

5. In a machine for folding linen, a shaft, a bevel-wheel, a cylinder thereon, guide-plates, folding-knives, and levers to actuate said plates and knives; of a cam-wheel on said shaft, adjustable cam-surfaces thereon to actuate the levers, a counter-shaft, a bevel-wheel to mesh with the aforementioned one, an endless carrier-apron driven from the counter-shaft beneath said cylinder, and similar means to fold linen at its end, substantially as and for the purposes set forth.

708,547. WEIGHING-MACHINE. DAVID S. COOK, Gallesburg, Ind. Filed Apr. 30, 1901. Serial No. 57,075. (No model.)

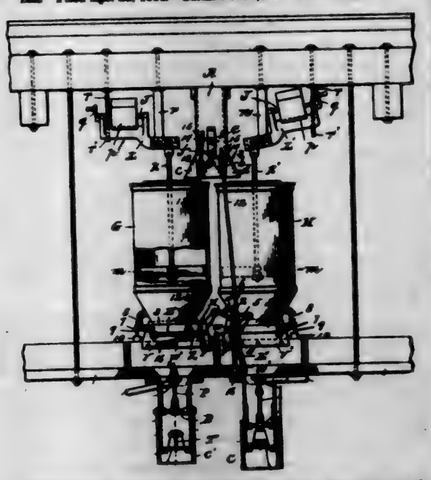

Claim.—1. In a weighing-machine, the weigh-beam, having the pivoted gates, the crank-arms of the gate-pivots, the rod connecting said arms, the double-mouthed spout having the valve, and means operating in connection with said gates for moving the spout-valve, substantially as specified.

2. In a weighing-machine, the weigh-beam, having the pivoted gates, the crank-arms of the gate-pivots, the rods connecting said arms, the double-mouthed spout, having the valve provided with the cross-arm upon its pivot, and the reciprocatory rods engaging said cross-arm, and operating in connection with said gates for moving the spout-valve, substantially as specified.

3. In a weighing-machine, the weigh-beam, the pivoted gates of said beam, the parallel crank-arms of the gate-pivots, and the rod connecting said crank-arms, and providing for a parallel movement thereof, whereby the gates open and close alternately, substantially as specified.

4. In a weighing-machine, the weigh-beam, the pivoted gates of said beam, the crank-arms of the gate-pivots, the rod connecting said arms, the pivoted catches for said gates, having the crank-arms, and the bearing-screws engaging said arms, substantially as specified.

5. In a weighing-machine, the weigh-beam, having the pivoted gates, the crank-arms upon the gate-pivots, the rod connecting said arms, the pivoted catches for said gates, having the crank-arms, the adjustable bearings carried by said arms, and the springs for maintaining said catches in engagement with said gates, substantially as specified.

6. In a weighing-machine, having the gates, the catches for said gates having the crank-arms, the adjustable bearings carried by said crank-arms, and springs for maintaining said catches in engagement with said gates, substantially as specified.

7. In a weighing-machine, the weigh-beam, having the pivoted gates, the double cranks upon the pivot of each said gate, the rod connecting one pair of each cranks, the double-mouthed spout having the valve, and means connected with the other pair of said cranks for moving the spout-valve, substantially as specified.

8. In an automatic weighing-machine, the combination with the weigh-beam, and the lever device common thereto, of the gates, the automatic catches therefor, the double spout and its valve and cross-arm, the adjustable catches, and the rods connecting each catches to said lever device, substantially as specified.

9. In an automatic weighing-machine, the combination with the weighing-gates, and the automatic catches, of the elbow-levers or lever-arms rigidly connected to said gates, the right and left screws connected to said lever-arms, and the right and left threaded nut connecting said screws, substantially as specified.

708,548. SAFETY-STOP FOR ELEVATORS. ALLAN GOTTSCHALK, Brooklyn, N. Y., assignor to Walter L. Tyler, Brooklyn, N. Y., and Alonzo B. See, New York, N. Y. Filed Apr. 18, 1900. Serial No. 13,282. (No model.)

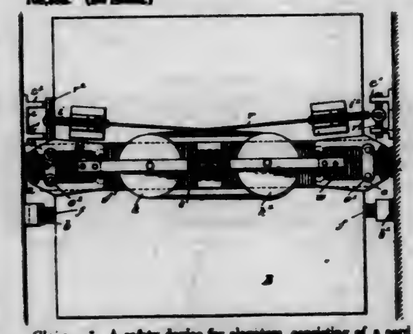

Claim.—1. A safety device for elevators, consisting of a cord carried by the car, means for automatically engaging said cord with the shaft when the speed of the car becomes abnormally great, stopping devices for the car and means whereby the tension then created on the cord by the moving car will operate the stopping devices for the car, substantially as described.

2. A safety appliance for elevators, consisting of a cord carried by the car, devices fixed in the shaft for engaging with the cord, automatic means for causing said engagement when the speed of the car becomes excessive, a gripping device actuated by the cord when it is thus engaged, said gripping device adapted to act upon the guide-rails of the car, for the purpose of stopping the car.

3. In a safety device for elevators, the combination of a pair of clamps adapted to engage with the guide-rails of the car, a pair of movable blocks adapted to actuate said clamps, a cord looped around said blocks and carried by the car, and means for attaching said cord to the side of the elevator-shaft when the speed of the car becomes abnormally high, substantially as described.

4. In a safety device for elevators, the combination of a pair of clamps adapted to engage with the guide-rails of the car, a pair of movable blocks adapted to actuate said clamps, a cord looped around said blocks and carried by the car, said cord being normally fixed at each end to the car and means whereby one end of the rope will be detached from the car and fixed to the side of the elevator-shaft when the speed of the car becomes abnormally high.

5. In a safety device for elevators, the combination of a car, a cord carried thereby and having its ends normally fixed thereto, stopping devices for the car operated by said cord when put under tension, stationary hooks fixed at intervals in the elevator-shaft, means carried at the extremities of the cord for engaging with said hooks and means whereby the overspeeding of the car will cause said engagement, substantially as described.

6. The combination of an elevator car and shaft, stopping devices for the car, a rope carried by the car and adapted when under tension to operate said stopping devices, a cam on the car for the end of the rope, a series of stationary cams fixed in the shaft and means for shifting the

end of the rope from its seat on the car to one of the seats in the shaft, for the purpose set forth.

708,549. PEN. SAMUEL H. GOODWIN, London, England. Filed Mar. 5, 1902. Renewed Feb. 5, 1902. Serial No. 93,743. (No model.)

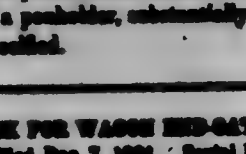

Claim.—1. A pen stamped from one piece of metal, having a portion of its stem extended at the side in such a manner that it can be clipped sidewise onto the outer surface of the penholder, substantially as described.

2. A pen, stamped from one piece of metal, having at the upper end of its stem two projecting wing-pieces continuing the curve of the stem through the greater part of a circle, and adapted to be clipped sidewise onto the outside of a penholder, substantially as described and shown and for the purposes specified.

708,550. LOCK FOR WAGON REAR-GATES. CHARLES S. CROW, Franklin, Iowa. Filed Dec. 7, 1901. Serial No. 85,603. (No model.)

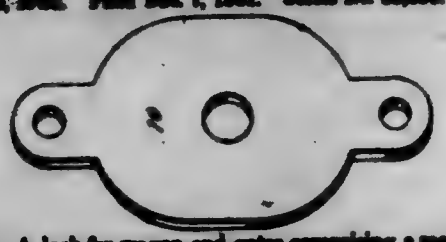

Claim.—A lock for wagon end-gates comprising a metal plate fixed to the outside of the end-gate, a metal disk having an integral handle and integral studs, rods pivotally connected with the studs and terminating in hooks at their free ends and eyebolts fixed in the side-boards of a wagon-box, as shown and described to operate in the manner set forth for the purposes stated.

708,551. BOTTOM FOR MILK-PAILS. CHARLES S. CROW, Franklin, Iowa. Filed Dec. 7, 1901. Serial No. 85,602. (No model.)

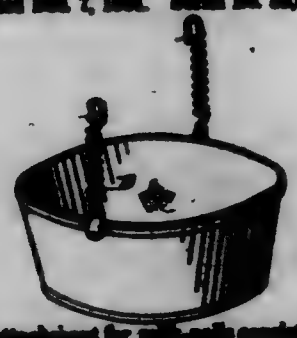

Claim.—An attachment for milk-pails consisting of an open-topped vessel adapted to inclose the bottom portion of a milk-pail and provided with extensible coil-springs fixed to its top-edge portion, and terminating in hooks adapted to engage the top edge of a milk-pail, in the manner set forth, for the purposes stated.

708,552. STEERING-GEAR. WALTER A. CROWTHER, Chicago, Ill. Filed July 10, 1901. Serial No. 67,091. (No model.)

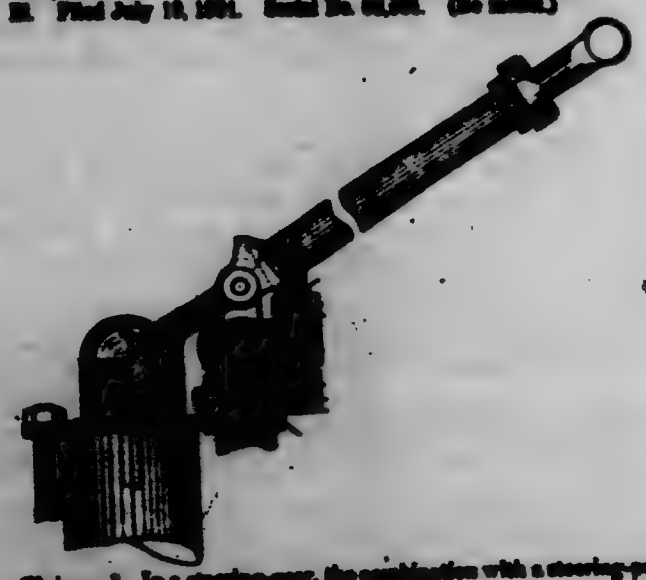

Claim.—1. In a steering-gear, the combination with a steering-post, of a lock-bolt carried thereby, a fixed support, a groove therein adapted to be engaged by said lock-bolt and means to advance said lock-bolt into engagement with said groove, substantially as described.

2. In a steering-gear, the combination with a steering-post, of a lock-bolt carried thereby, a fixed support, a groove therein adapted to be engaged by said lock-bolt, said groove and lock-bolt being correspondingly tapered, and means to advance said lock-bolt into engagement with said groove, substantially as described.

3. In a steering-gear, the combination with a steering-post, of a lock-bolt carried thereby, a fixed support, a groove formed therein adapted to be engaged by said lock-bolt, a spring applied to said lock-bolt adapted to maintain the same normally retracted and means to advance said lock-bolt into engagement with said groove, substantially as described.

4. In a steering-gear, the combination with a steering-post, of a lock-bolt carried thereby, a fixed support, a groove formed therein adapted to be engaged by said lock-bolt, said lock-bolt and groove being correspondingly tapered, a spring applied to said lock-bolt adapted to maintain the same normally retracted and means to advance said lock-bolt into engagement with said groove, substantially as described.

5. In a steering-gear, the combination with a steering-post and a steering-lever pivoted thereto, of a lock-bolt carried by said steering-post beneath said steering-lever so as to be depressed thereby, a fixed support and a groove formed therein adapted to be engaged by said lock-bolt, substantially as described.

6. In a steering-gear, the combination with a steering-post and a steering-lever pivoted thereto, of a lock-bolt carried by said steering-post beneath said steering-lever so as to be depressed thereby, a fixed support and a groove formed therein adapted to be engaged by said lock-bolt, said lock-bolt and groove being correspondingly tapered, substantially as described.

7. In a steering-gear, the combination with a steering-post and a steering-lever pivoted thereto, of a lock-bolt carried by said steering-post beneath said steering-lever and adapted to be depressed thereby, a fixed support, a groove therein adapted to be engaged by said lock-bolt and a spring applied to said lock-bolt adapted to maintain the same normally retracted, substantially as described.

8. In a steering-gear, the combination with a steering-post and a steering-lever pivoted thereto, of a lock-bolt carried by said steering-post beneath said steering-lever and adapted to be depressed thereby, a fixed support, a groove therein adapted to be engaged by said lock-bolt, said lock-bolt and groove being correspondingly tapered, and a spring applied to said lock-bolt adapted to maintain the same normally retracted, substantially as described.

9. In a steering-gear, the combination of a fixed support, a steering-post rovolubly mounted therein, a head on said steering-post, a steering-lever pivoted to said head, a lock-bolt mounted in said head beneath said steering-lever and adapted to be depressed thereby, and a groove in the fixed support in which said steering-post is mounted adapted to be engaged by said lock-bolt, said lock-bolt and groove being correspondingly tapered, substantially as described.

10. In a steering-gear, the combination of a fixed support, a steering-post rovolubly mounted therein, a head on said steering-post, a steering-lever pivoted to said head, a lock-bolt mounted in said head beneath said steering-lever and adapted to be depressed thereby, a groove in the fixed support in which said steering-post is mounted adapted to be engaged by said lock-bolt, said lock-bolt and groove being correspondingly tapered, and a spring applied to said lock-bolt and adapted to maintain the same normally retracted, substantially as described.

708,558. BRAKE. WALTER A. CROWTHER, Chicago, Ill. Filed Sept. 16, 1901. Serial No. 75,405. (No model.)

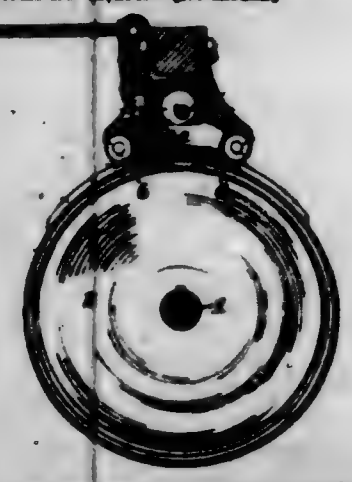

Claim.—1. A band-brake comprising a drum, a brake-band applied thereto, means relatively to which said brake-band is movable to throw the ends of said brake-band into frictional engagement with said brake-

drum and stops which limit the movement of said brake-band circumferentially of said drum, substantially as described.

2. The combination with a revolvable shaft, of a drum secured thereto, a brake-band applied to said drum, a support adjacent to said drum to which the ends of the brake-band are anchored by means of a movable connection, a shoe supported so as to be movable toward and from the brake-drum which overlaps the ends of the brake-band and means to impart movement to said shoe toward said brake-drum, substantially as described.

3. The combination with a revolvable shaft, of a drum secured thereto, a brake-band applied to said drum, a support adjacent to said drum to which the ends of the brake-band are anchored by means of a movable connection, a shoe supported so as to be movable toward and from the brake-drum, rollers mounted therein adapted to bear upon the ends of the brake-band and means to impart movement to said shoe toward the brake-drum, substantially as described.

4. The combination with a revolvable shaft, of a drum secured thereto, a brake-band applied to said drum, plates secured to the ends of said brake-band, a support adjacent to said drum to which the ends of the brake-band are anchored by means of a movable connection, a shoe supported so as to be movable toward and from the brake-drum, rollers mounted in said shoe adapted to bear upon the plates secured to the brake-band and means to impart movement to said shoe toward the brake-drum, substantially as described.

5. The combination with a revolvable shaft, of a brake-drum secured thereto, a brake-band applied to said drum, a support to which the ends of the brake-band are anchored by means of a movable connection, a shoe supported thereon so as to be movable toward and from the brake-drum, rollers mounted in said shoe and adapted to bear upon the ends of the brake-band and means to impart movement to said shoe toward the brake-drum, substantially as described.

6. The combination with a revolvable shaft, of a drum secured thereto, a brake-band applied to said drum, a support to which the ends of the brake-band are anchored by means of a movable connection, said support comprising webs or flanges which closely embrace the sides of the band, a shoe supported therein so as to be movable toward and from the brake-drum, rollers mounted in said shoe adapted to bear upon the ends of said brake-band and means to impart movement to said shoe toward said brake-drum, substantially as described.

7. The combination with a revolvable shaft, of a drum secured thereto, a brake-band applied to said drum, a support, stops thereon adapted to limit the movement of said brake-band, a shoe, rollers therein adapted to bear upon the ends of said brake-band, an eccentric mounted in said support and adapted to depress said shoe and means to throw said eccentric, substantially as described.

8. The combination with a revolvable shaft, of a drum secured thereto, a brake-band applied to said drum, a support, plates secured to said brake-band, stops on said plates adapted to engage rigid portions of said support, a shoe, rollers therein adapted to bear upon the plates on said brake-band, an eccentric mounted in said support adapted to depress said shoe and means to throw said eccentric, substantially as described.

9. The combination with a revolvable shaft, of a drum secured thereto, a brake-band applied to said brake-drum, a support, shoulders or ledges thereon, plates secured to said brake-band, projections on said plates adapted to engage the shoulders or ledges on said plates, a shoe, rollers therein adapted to bear upon the plates on said brake-band, an eccentric mounted in said support adapted to depress said shoe, a strap on said shoe which passes over said eccentric and means to throw said eccentric, substantially as described.

10. A band-brake comprising a drum, a brake-band applied thereto, rollers revolubly mounted above the ends of said brake-band so as to be movable toward and from the brake-drum, means to depress said rollers upon the ends of said brake-band, and stops which limit the movement of said brake-band circumferentially of said drum, substantially as described.

11. A band-brake comprising a drum, a brake-band applied thereto, plates secured to the ends of said brake-band, rollers revolubly mounted above said plates so as to be movable toward and from the brake-drum, means to depress said rollers upon the plates on said brake-band and stops adapted to limit the movement of said brake-band circumferentially of said drum, substantially as described.

708,554. CHRISTMAS-TREE HOLDER. PETER H. CRAIG, Yonkers-ville, N. Y., assignor of one-half to Conrad G. Siebelmann, New York borough of Brooklyn, N. Y. Filed Oct. 22, 1901. Serial No. 79,201. (No model.)

Claim.—1. A Christmas-tree holder, consisting of two sections arranged at right angles to each other, each section being composed of two legs and flat connecting-springs between the inner ends of said legs, said springs being provided with center holes for attaching the article to be supported, substantially as set forth.

2. A Christmas-tree holder, consisting of two sections arranged at right angles to each other, each section being composed of two legs and flat springs connecting the inner ends of the legs, and inclined holes in the upper ends of the legs for fastening nails or screws, substantially as set forth.

3. A Christmas-tree holder, consisting of two sections arranged at right angles to each other, each section being composed of two concaved legs and flat springs connecting said legs at their inner and lower ends, said legs being provided with concaved faces forming sharp upper edges, and inclined holes through the upper parts of the legs below the sharp edges, substantially as set forth.

4. A section of the Christmas-tree holder, consisting of two curved legs, said legs being provided with concaved faces at their inner ends, and flat metallic springs connecting the inner ends of said legs, said metallic springs having their ends upturned, to fit in grooves provided in the under surface of said curved legs, substantially as set forth.

708,555. METHOD OF MAKING BALE-TIES. FRED H. DANIELS, Worcester, Mass. Filed May 13, 1901. Serial No. 60,032. (No model.)

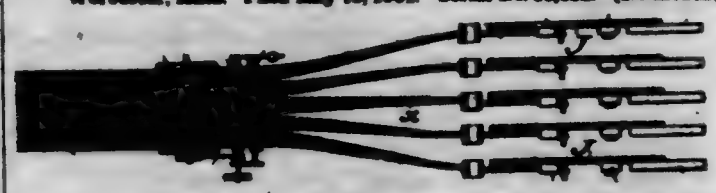

Claim.—1. In the art of making wire ties for bales of hay, cotton, and the like, the herein-described improvement consisting in continuously passing the wire through an annealing-furnace as it is unwound from the coils, drawing it under tension through said furnace so as to stretch and straighten it while hot, maintaining it in straightened condition and allowing it to set and cool in transit thence to a cutting-machine, cutting it into lengths appropriate to the particular kind of tie required, and delivering it without handling to the end-fastenings machine.

2. In the art of making wire ties for bales of hay, cotton, and the like, the herein-described improvement consisting in continuously passing a series of wires concurrently and simultaneously through an annealing-furnace as they are unwound from their coils, drawing the wires under tension through said furnace so as to stretch and straighten them while hot, maintaining them in straightened condition and allowing them to set and cool in transit thence to a cutting-machine, simultaneously cutting a plurality of the wires into a bunch or bunches of the appropriate length for the particular kind of tie required, delivering the bunch or bunches to a machine or machines for forming the end fastenings, and forming said fastenings on the ties one at a time.

3. In the art of making wire ties for bales of hay, cotton, and the like, the herein-described improvement consisting in simultaneously and continuously passing a series of wires through an annealing-furnace as they are unwound from their coils, drawing the wires under tension through said furnace so as to stretch and straighten them while hot, maintaining said wires in straightened condition and allowing them to set and cool in transit, dividing the series into bunches and conducting each bunch to a separate cutting-machine, simultaneously cutting the wires of each bunch into lengths appropriate to the particular kind of tie required, and delivering said bunches without handling to separate end-fastenings machines.

4. In the art of making wire ties for bales of hay, cotton, and the like, the herein-described improvement consisting in continuously passing the wire through an annealing-furnace, drawing it under tension through said furnace so as to stretch and straighten it while hot, galvanizing the wire while passing between the furnace and the drawing apparatus, allowing it to set and cool in transit thence to a cutting-machine, cutting it into lengths appropriate to the particular kind of tie required, and delivering it without handling to the end-fastenings machine.

5. In the art of making wire ties for bales of hay, cotton, and the like, the herein-described improvement consisting in continuously passing the wire through an annealing-furnace as it is unwound from the coils.

drawing it under tension through said furnace-area to stretch and straighten it while hot, maintaining it in straightened condition and allowing it to cut and cool in transit thereto to a machine for making a fastening on the front end, cutting the wire at a point sufficiently removed from the machine to make ties of the desired length, passing the cut lengths endwise from said machine to and past another end-fastenings machine, and forming a fastening on the rear end of the wire to cooperate with the one previously formed on the front end.

708,556. TRAP FOR POCKET-GOPHERS. JOHN J. DANIELS, New London, Minn. Filed Sept. 21, 1901. Serial No. 76,060. (No model.)

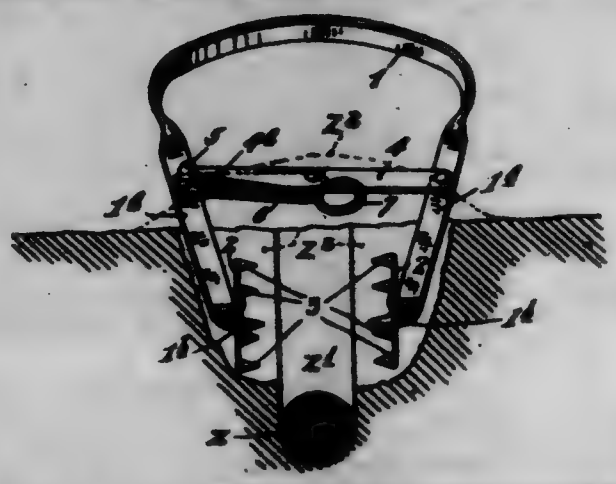

Claim.—1. A trap comprising the spring 1 with arms 1^a and jaws 2 secured to the free ends of said arms 1^a, the toggle 4 for holding said jaws separated, one of said toggle members having the extended arm 4^a, and a device applicable to the arm 4^a for holding the trap set and releasing the same.

2. A trap comprising the spring 1 with arms 1^a, the toothed jaws 2 secured to the free ends of said arms 1^a and extending transversely thereof, the toggle 4 for holding said jaws separated, one of the toggle members having an arm 4^a, and the pivoted trigger 6 having the detent 5, which latter engages said arm 4^a and is adapted to be released therefrom by pressure on said trigger, substantially as described.

708,557. ENGINE. GEORGE DE GAMP and OTHO A. HAAS, St. Louis, Mo., assignors to De Gamp Engine Company, St. Louis, Mo., a Corporation of Missouri. Filed Mar. 20, 1901. Serial No. 52,703. (No model.)

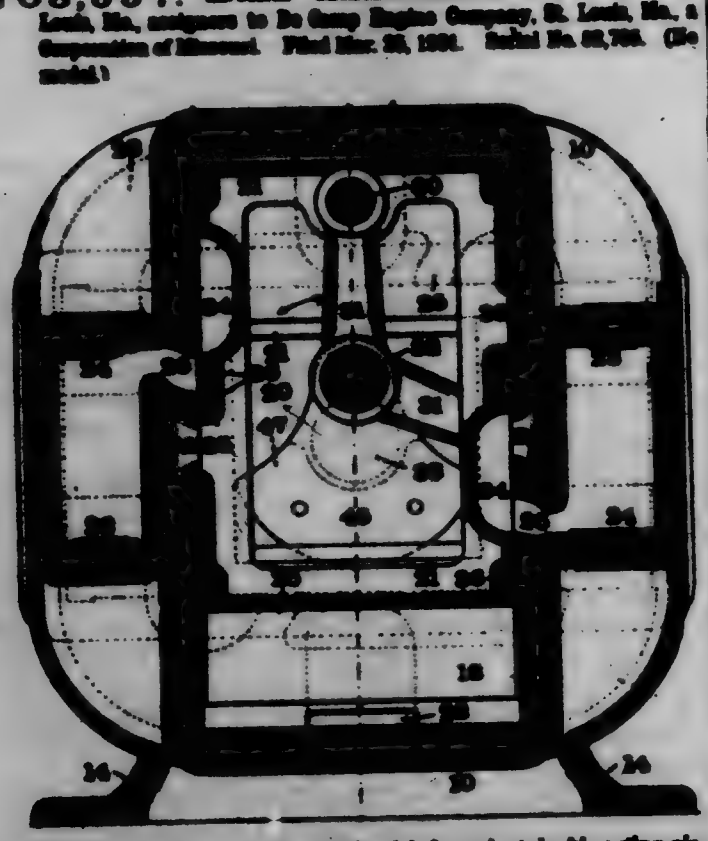

Claim.—1. In an engine, a pair of independent double-acting pistons, opposite chambers in which said pistons move, and suitable passages connecting said chambers, each of said pistons being provided with supply and exhaust ports and acting as a valve to control the supply of motive fluid to and exhaust it from both ends of the chamber containing the other piston.

2. In an engine, a pair of chambers, a piston in each chamber, a passage leading from each side of each chamber to one end of the other chamber, a passage communicating with each side of both chambers, and supply and exhaust ports in said pistons controlling the supply and exhaust of the motive fluid through said passages.

3. In an engine, a pair of chambers arranged at right angles and adjacent to each other, a piston in each of said chambers, a passage leading from each side of each chamber to the adjacent end of the other chamber, a passage communicating with both sides of each chamber, and supply and exhaust ports in said pistons controlling the supply and exhaust of the motive fluid from said passages.

4. In an engine, a pair of chambers, a piston in each of said chambers, a passage leading from each side of each chamber to one end of the other chamber, a passage communicating with each side of both chambers, a port in each side of each piston adapted to place one of said first-named passages in communication with said second passage, and an exhaust-port in each side of said piston adapted to be put in communication with one of said first-named passages.

5. In an engine, a pair of chambers, a piston in each of said chambers, a passage leading from each side of each chamber to one end of the other chamber, two passages each in communication with each side of both chambers, and supply and exhaust ports in said pistons controlling the supply and exhaust of the motive fluid through said passages.

6. In an engine, a casing, a pair of chambers formed in said casing, a passage leading from each side of each chamber to one end of the other chamber, said passages being formed in said casing, a passage formed in said casing and communicating with each side of both chambers, and a pair of pistons in said chambers provided with supply and exhaust ports controlling the said passages.

7. In an engine, a casing, a pair of chambers formed in said casing at right angles to each other, a passage leading from each side of each chamber to one end of the other chamber, an annular passage formed in said casing and communicating with each side of both chambers, and a pair of pistons working in said chambers and provided with ports controlling the supply and exhaust through said passages.

8. In an engine, a casing, a pair of chambers formed in said casing at right angles to each other, a passage leading from each end of each chamber to one side of the other chamber, two annular passages formed in said casing and each communicating with each side of both chambers, and a pair of pistons working in said chambers and provided with ports controlling the supply and exhaust through said passages.

708,558. PUZZLE DEVICE. PAUL F. DE PENN, Pasadena, Cal. Filed Sept. 20, 1901. Serial No. 75,901. (No model.)

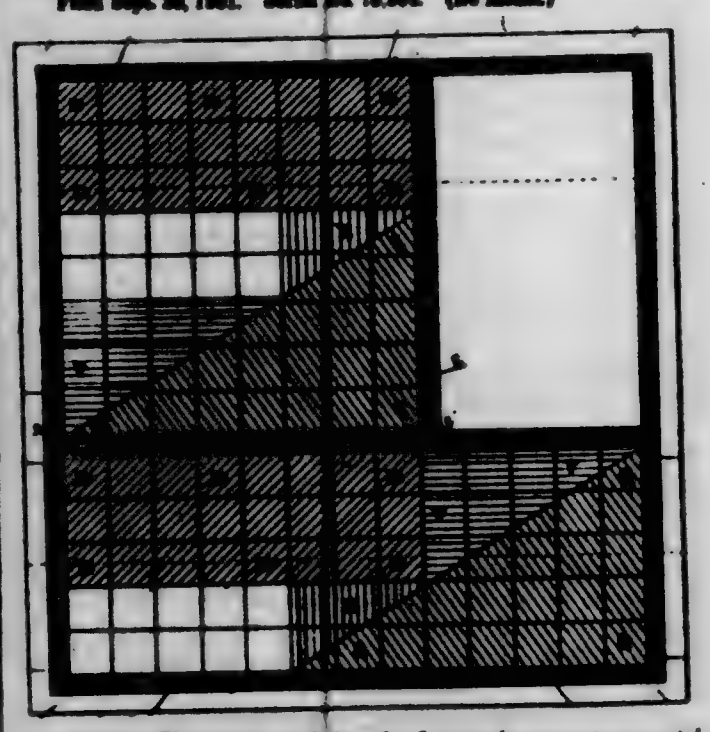

Claim.—The device consisting of a flat, nearly square tray, containing within it two receptacles, one of which receptacles has its length to its breadth in the ratio of thirteen to five equal parts and the other of which receptacles has its length to its width in the ratio of eight and one-eighth to eight of the same equal parts, which device also has sixty-five equal-sided square blocks of hard material, the sixty-five equal-sided square blocks twelve of which blocks are divided in a vertical plane by diagonally-drawn straight vertical cuts through the blocks, extending from the left lower angle of the eighth square, counting from right to left of the bottom row of squares upon either long side of the thirteen by five rectangular figure, to the right upper angle of the same side of the said rectangular figure, in the manner and for the purposes substantially as set forth.

708,559. **FILTERING APPARATUS.** EMILE DE MEULEMEESTER, Brussels, Belgium, assignor to Bernhard Möller-Ras, Frankfort-on-the-Main, Germany. Filed Nov. 9, 1901. Serial No. 81,962. (No model.)

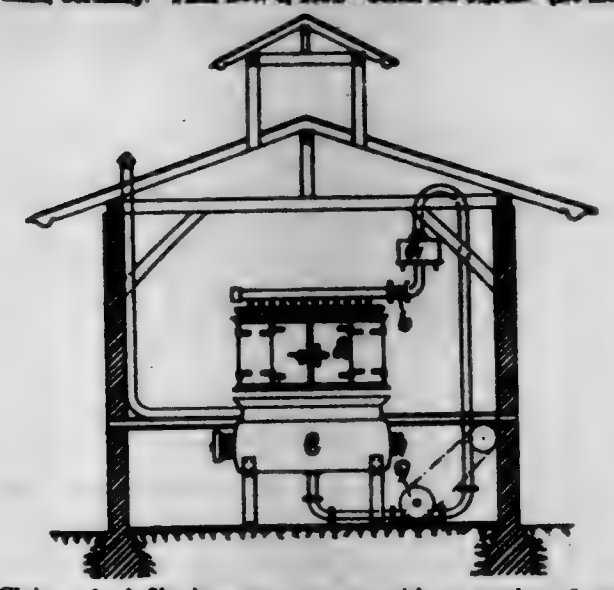

Claim.—1. A filtering apparatus, comprising a number of porous filter-cells arranged adjacent to each other, a vat or tank containing said cells, and movable clamping-bars located in the tank and arranged to engage the lower ends of the cells between them, to open or close said ends as the bars are moved apart or together.

2. A filtering apparatus comprising a frame, a tubular filter carried thereby and open at the bottom, said filter being made of flexible or compressible material at said open end, and a clamping device carried by the frame and arranged to engage the compressible material of the filter and thus close the lower end thereof.

3. A filtering apparatus comprising a frame, a tubular filter carried thereby and open at the bottom, said filter being made of flexible or compressible material at said open end, clamping-bars supported on said frame and located on opposite sides of said filter to engage the compressible material, and means for clamping the filter between said bars, or releasing it therefrom.

4. A filtering apparatus comprising a plurality of upright filters open at the bottom and made of flexible or compressible material, clamping mechanism comprising two sets of clamping members, the members of one set being connected to move in unison, and means for bringing the members of the two sets together to clamp the filters between them, thus closing the lower ends of the filters.

5. A filtering apparatus comprising a plurality of upright filters open at the bottom and made of flexible or compressible material, clamping mechanism comprising parallel clamping-bars arranged in two sets, at each side of the respective filters, rods each connected with the bars of the same set, and mechanism for moving said bars toward and from each other.

6. A filtering apparatus comprising a frame, a plurality of filters carried thereby and open at the bottom, a clamping mechanism carried by the frame, for closing the lower ends of the filters, a tray located beneath the filters and arranged to receive the liquid matter passing therethrough, said tray being movable, so that it may be taken away from under the filters, and a vessel located beneath the tray and arranged to receive the dregs or residue from the filters when the tray has been removed and the lower ends of the filters have been opened.

708,560. **VESTIBULE-DIRECTORY.** FRANK DE SILVA, Boston, Mass. Filed Apr. 8, 1902. Serial No. 101,948. (No model.)

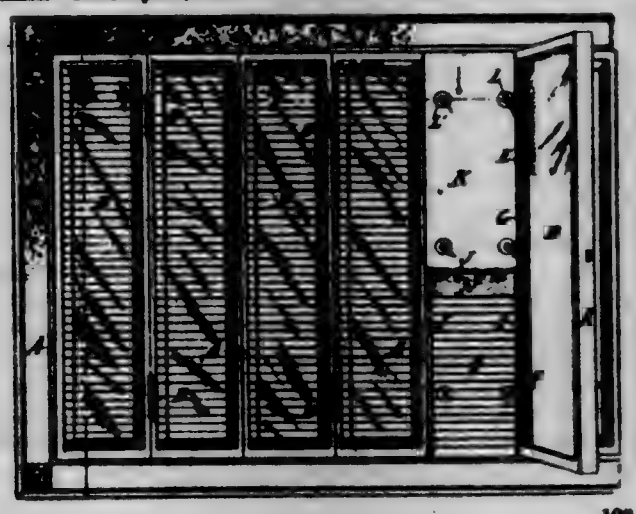

Claim.—1. In a vestibule or hall directory, the glass panel having a bevel formed on each of its longitudinal rearward edges, the adjustable back board provided with reflexed retaining-strips on their longest edges adjacent to said bevels adapted to support the flexible tablets, and means to regulate the distance of the back boards to or from said glass panels substantially in the manner specified.

2. A vestibule or hall directory, comprising individual glass panels provided with bevels on their rearward longest edges, the adjustable back boards having their longitudinal edges provided with means for retaining temporarily curtain name-plates, the fixed backing coacting with said adjustable back boards, and means as hereinbefore described to frontally adjust and secure said back boards with their assembled name-tablets with gentle pressure against the glass frontage substantially in the manner and for the purpose set forth.

3. In combination, the glass panels provided with bevels on their rear longitudinal edges, the reflexed retaining-strips lying contiguous to said bevels in a manner to collectively or singly sustain the name-tablets, the adjustable back boards adapted to support said reflexed strips and means to restrain sliding of said tablets, the fixed backing coacting with the back boards and the adjusting-screws having a circular bearing to regulate the distance intervening between said back boards and the rear faces of the glass panels forming the front of the organized bulletin substantially as specified.

708,561. **AUTOMATIC SWITCH.** NORMAN E. DELL and MERRELL E. BOSTIAN, Camden, N. J. Filed Mar. 27, 1901. Serial No. 53,146. (No model.)

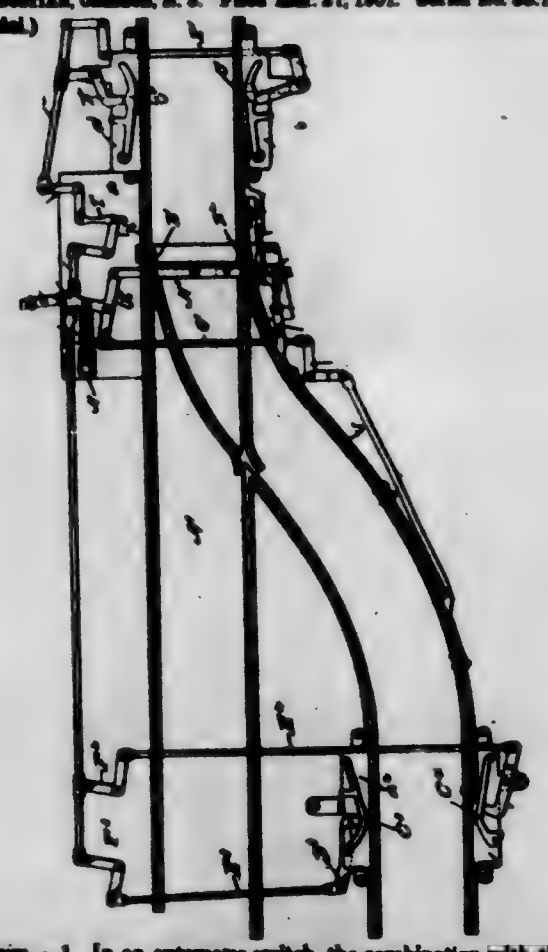

Claim.—1. In an automatic switch, the combination with the main and siding rails, and a movable locking-rail on one of said siding-rails, of a lever, a switch-bar pivotally connected thereto, and spring-actuated pins arranged on opposite sides of the switch-bar, the pins being also pivoted to the said locking-bar to permit of a longitudinal movement of the same and to lock said bar, and means for actuating said lever whereby the switch may be shifted and locked in its shifted position, substantially as specified.

2. In an automatic switch, the combination with the main and siding rails, of a lever, a switch-bar pivotally connected to said lever, and actuated thereby, locking-apertures in said bar, a locking-rail mounted upon one of the siding-rails and having an operating connection with said spring-actuated lever, locking-pins pivotally connected with said locking-rail and located upon opposite sides of the switch-bar, said pins designed to enter the locking-apertures of said bar to lock the same and means for operating said lever whereby the switch may be shifted and locked in its shifted position, substantially as described.

708,562. **APPARATUS FOR REDUCING PULVERIZED MATERIAL.** THOMAS A. EDISON, Llewellyn Park, N. J. Filed May 20, 1898. Serial No. 681,679. (No model.)

Claim.—1. An improved apparatus for bricking pulverized material, comprising a heater for heating the pulverized material, a mixer in which the heated pulverized material is admixed with a binding agent, a cooling device for reducing the temperature of such mixture, a bricking-machine for bricking the mixture, an oven for baking the finished briquets, and means connecting such devices for automatically progressing the material continuously through the apparatus, substantially as set forth.

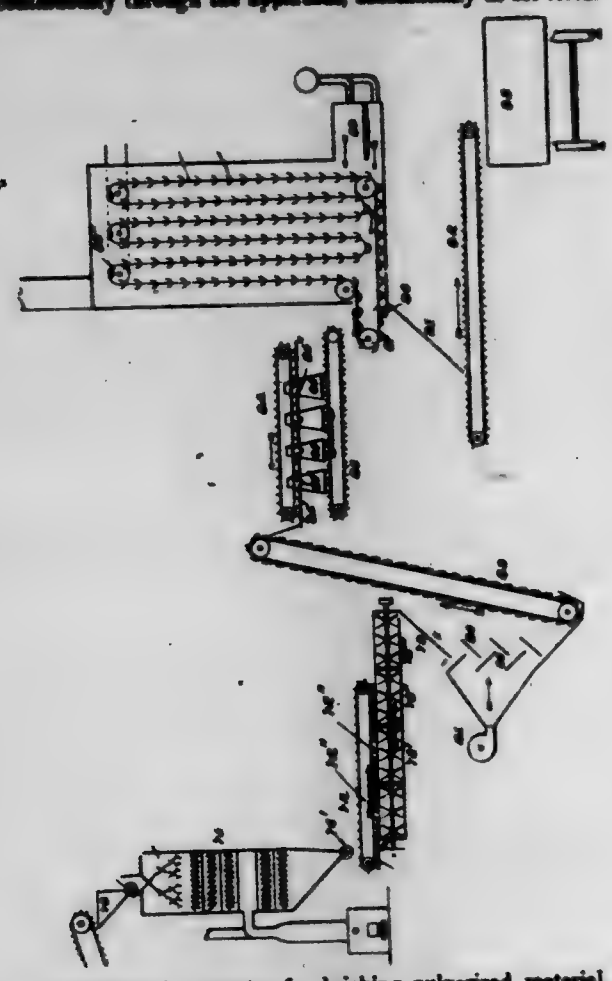

2. An improved apparatus for bricking pulverized material, comprising a heater for heating the pulverized material, a series of mixers arranged in line, means for feeding a binding agent to the first of said mixers, means for distributing the pulverized material to a plurality of said mixers, a bricking-machine for bricking the pulverized material, an oven for baking the finished briquets, and means connecting such devices for automatically progressing the material continuously through the apparatus, substantially as set forth.

708,563. GUARD FOR THIRD-RAIL SYSTEMS. STERLING ELLIOTT, Boston, Mass. Filed Apr. 3, 1902. Serial No. 101,214. (No model.)

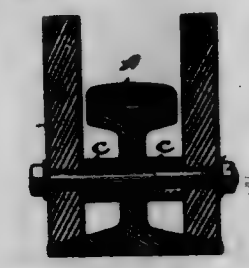

Claim.—1. In combination with the third or electrically-charged rail of an elevated railway, guards resting on the rail-flanges, and extending above the said rail and means for holding said guards in place, substantially as described.

2. In combination with the third or electrically-charged rail of an elevated railway, guards resting on the flanges of said rail and extending above the said rail, bolts, and distance-pieces securing said guards in place, all substantially as described.

708,564. STOP-VALVE. JAMES A. ELLISON, Wilmington, Del. Filed Nov. 26, 1901. Serial No. 83,722. (No model.)

Claim.—1. The combination, with a valve-casing, and a plug journaled therein and provided with a single hole formed transversely through its upper part, of a spring-actuated bolt carried by the said casing and engaging with one end portion of the said hole, and a keyhole-plug in the other end of the said hole, substantially as set forth.

2. The combination, with a valve-casing provided with a keyhole-shield at its top, and a plug journaled in the said casing and provided with a hole in its upper part, of a spring-actuated bolt carried by the said casing and engaging with one end portion of the said hole, and a keyhole-plug closing the other end of the said hole and working against the said shield and the end of the bolt, substantially as set forth.

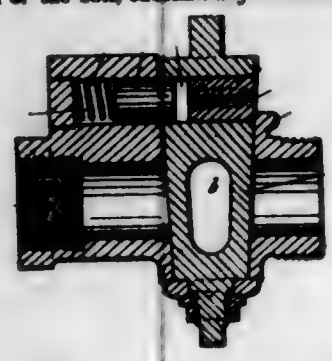

708,565. CAR-WHEEL. GEORGE B. FARRELL, Wilkesbarre, Pa. Filed Jan. 20, 1902. Serial No. 90,493. (No model.)

Claim.—1. A wheel comprising a rim having integral spokes, and a hub having integral sockets adapted to receive spokes and means for securing said spokes within the sockets, as set forth.

2. A wheel consisting of a rim having integral spokes, and the hub having integral sockets adapted to receive the said spokes, the ends of the spokes bearing upon the exterior of the hub, substantially as shown and described.

3. A wheel comprising a rim having the integral spokes, the inner ends of which are curved upon the arc of a circle and a cylindrical hub having integral sockets adapted to receive the said spokes, the curved ends of said spokes resting upon the cylindrical surface of the hub, and means for securing the spokes within the sockets, substantially as shown and described.

708,566. OIL-BURNER. ADAM H. FOX, Wissahickon, Pa. Filed Sept. 11, 1900. Serial No. 29,701. (No model.)

Claim.—1. A burner comprising a nozzle containing a mixing-chamber, a diaphragm constituting one end of the mixing-chamber and having a conical face and peripheral perforations, a controlled inlet-pipe closing the other end of the mixing-chamber, for admitting air or steam into the mixing-chamber, and a controlled inlet-pipe connected to a port of the nozzle in front of the air or steam port for admitting oil to the mixing-chamber, substantially as and for the purposes set forth.

2. A burner comprising a nozzle containing a mixing-chamber, an integral diaphragm constituting one end of the mixing-chamber and having a conical face and outwardly-divergent peripheral perforations, an integral, open chamber exterior to the diaphragm, a controlled inlet-pipe closing the other end of the mixing-chamber, for admitting air or steam into the mixing-chamber, and a controlled inlet-pipe connected to a port of the nozzle in front of the air or steam port for admitting oil to the mixing-chamber, substantially as and for the purposes set forth.

3. A burner comprising a nozzle containing a mixing-chamber, a diaphragm constituting one end of the mixing-chamber and having a conical face and peripheral perforations, a controlled inlet-pipe closing the other end of the mixing-chamber, for admitting air or steam into the mixing-chamber, and a controlled inlet-pipe connected to a port of the nozzle in front of the air or steam port for admitting oil to the mixing-chamber, in combination with a brick having a tapering aperture, substantially as and for the purposes set forth.

708,567. BRANDING-IRON. FRANK FRAHM, Fargo, N. D. Filed Aug. 26, 1901. Serial No. 73,243. (No model.)

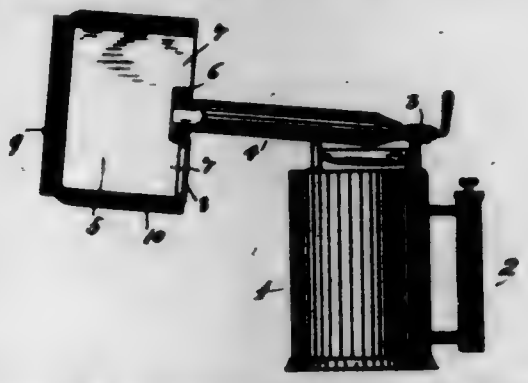

Claim.—1. The combination with a burner of the character described, having a suitable headpiece and provided with a projecting flame-tube 4, of the branding-head 5 having the centrally-located hub 6 and backturned flame-passage 7 located above said tube 4, the side walls of said head 5 being imperforate, substantially as described.

2. The combination with the burner of the character described having a suitable headpiece and horizontally-projecting flame-tube 4, of the branding-head 5 having a centrally-located hub 6 and backturned flame-passages 7 on opposite sides of said hub, and the removable cap or stopper 8 fitting both of the said passages 7 to close one or the other thereof, at will, said head 5 having imperforate side walls, substantially as described.

708,568. WAIST-BELT. HENRY J. GARRIAN and JOSEPH ROSS, New York, N. Y.; said Ross assignor to said Garrian and Ferdinand S. H. Rau, New York, N. Y. Filed Sept. 7, 1901. Serial No. 74,661. (No model.)

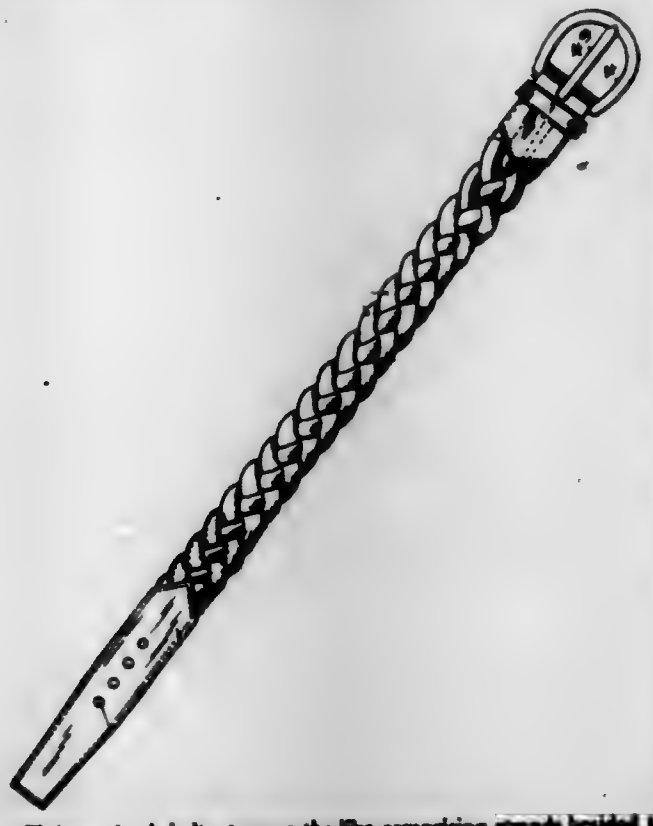

Claim.—1. A belt, strap or the like comprising strands braided together, the material of the strands being folded upon itself in a longitudinal direction so that the edges face each other, and portions secured to said strands, and means for attaching the end portions together, substantially as described.

2. A belt, strap or the like comprising strands braided together, the material of the strands being folded upon itself in a longitudinal direction and the longitudinal edges secured together, and portions comprising material forming a space in which the ends of the strands are located and secured, and means for attaching the end portions together, substantially as described.

3. A belt, strap or the like comprising strands braided together, the material of the strands being folded in a longitudinal direction upon itself providing rounded edges, the abutting edges of the material being secured together, and portions composed of material folded in a longitudinal direction and its edges secured together forming bores in which the ends of the strands are located and secured, and a buckle secured to one of the end portions, substantially as described.

708,569. VALVE-GEAR. KASIMIRO C. GEBLE, Finley, N. D. Filed June 12, 1901. Serial No. 64,332. (No model.)

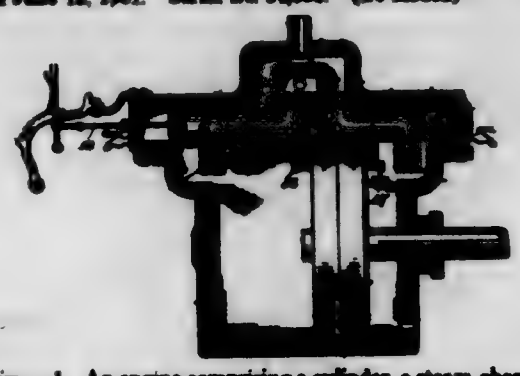

Claim.—1. An engine comprising a cylinder, a steam-chest, a valve-chamber between the cylinder and chest and communicating with the ends of the cylinder, a valve in the chamber and having studs projecting into the cylinder, inlet and outlet ports for the chest, said valve having passages for registration with the ports to communicate the chest with the ends of the cylinder alternately, a piston in the cylinder having strikers for engagement with the studs to shift the valve, and a stem for the valve passed outwardly through the chamber for shifting the valve manually, the stem having a degree of lost motion with respect to the valve.

2. An engine comprising a steam-chest, a valve-chamber between the cylinder and chest and communicating with the ends of the cylinder, a valve in the chamber and having studs projecting into the cylinder, passages formed through the valve for communicating the ends of the cylinder alternately with the chest, a piston in the cylinder, strikers carried by the piston for engagement with the studs to shift the valve, and means for manually shifting the valve initially.

3. An engine comprising a cylinder, a steam-chest, a valve-chamber between the cylinder and chest and communicating with the ends of the cylinder, a valve in the chamber and having studs projecting into the cylinder, inlet and outlet ports for the chest, said valve having passages for registration with the ports to communicate the chest with the ends of the cylinder alternately, a piston in the cylinder having strikers for engagement with the studs to shift the valve, a stem for the valve passed outwardly through the chamber for shifting the valve manually, the stem having a degree of lost motion with respect to the valve, and means for manually shifting the valve initially.

708,570. CASH-REGISTER. ADOLF GERDES, Berlin, Germany. Filed Oct. 22, 1901. Serial No. 79,573. (No model.)

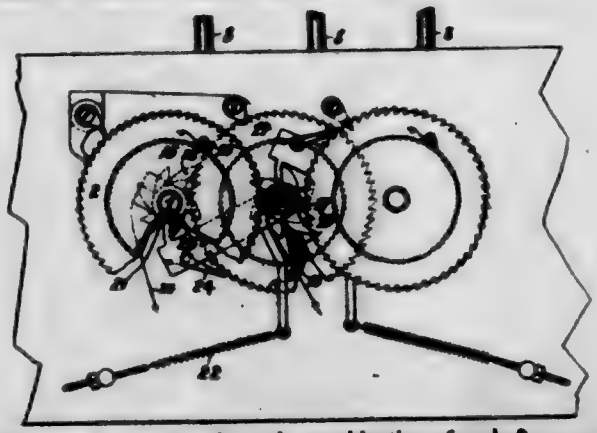

Claim.—In a cash-register the combination of a shaft, a cross-rod parallel therete and connected therewith and adapted to partially rotate therewith, key-plungers, arms on said plungers adapted to engage said rod and rotate said shaft by pressing down said key-plungers, a spring on each of said plungers, a ratchet rigidly mounted on said shaft, a train-wheel loosely mounted on said shaft and adjacent to said ratchet, a pawl on said wheel, a second ratchet on said wheel, a spring-actuated arm engaging said second ratchet, a pawl on said arm, a tens-wheel adapted to be operated by said arm and pawl, a second shaft carrying said tens-wheel, a ratchet rigidly mounted on said second shaft and a pawl on said tens-wheel engaging said latter ratchet, substantially as described.

708,571. PLOW. ALFRED K. GOODNOW, San Francisco, Cal., assignor to George H. Bahrs, San Francisco, Cal. Filed Aug. 7, 1901. Serial No. 71,139. (No model.)

Claim.—In a plow, the combination with a gooseneched beam A' and standard A continuous from end to end, a subsoil-share B' secured to the lower end of the standard, a wing B² carried by said share, a surface-share C secured to said standard near the upper portion thereof so as to leave a space between the same and said first-mentioned share, a moldboard C'

carried by said surface-shave, separated operating-handles projecting rearwardly from said shaves, and braces B, B, one between each handle and the rear portion of the beam A'; substantially as described.

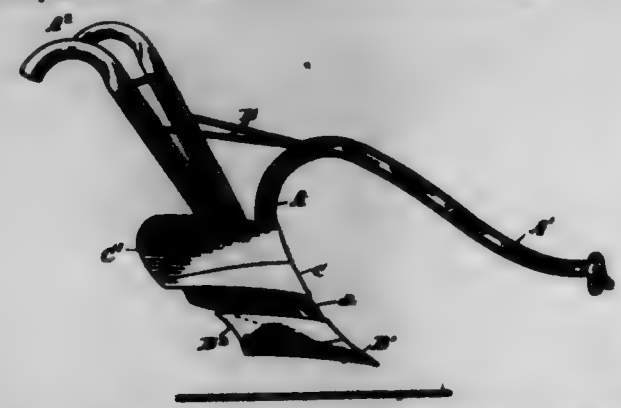

708,572. STRINGED MUSICAL INSTRUMENT. KARL GRIENAUER, New York, N. Y. Filed Mar. 22, 1902. Serial No. 100,590. (No model.)

Claim.—1. A stringed musical instrument provided with a resonating-chamber, transversely-arranged threaded braces traversing said chamber, and adjusting-nuts on the outer side of the chamber that engage said braces, substantially as specified.

2. A stringed musical instrument provided with a resonating-chamber, a slotted head extending along one edge of said chamber, a pair of transverse diagonal braces, and oblong nuts engaging said braces and fitted within the head-slots, substantially as specified.

708,573. STITCH-SEPARATING MACHINE. JOHN B. HADAWAY, Brockton, Mass. Filed Sept. 30, 1901. Renewed May 24, 1902. Serial No. 108,797. (No model.)

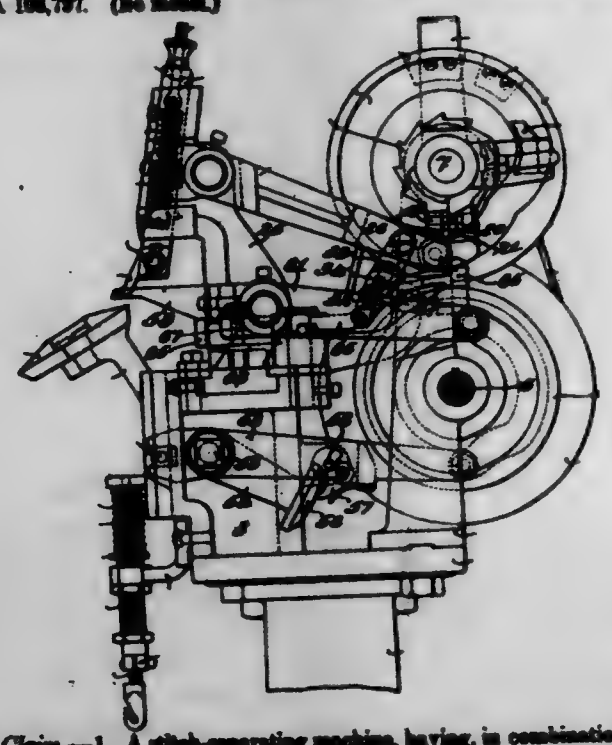

Claim.—1. A stitch-separating machine, having, in combination, an indenting-tool, and means controlled by the stitch intervals for actuating the indenting-tool to indent the stitch intervals, substantially as described.

2. A stitch-separating machine, having, in combination, an indenting-tool, means for relatively moving the work and tool to locate the tool in the stitch intervals, and means controlled by the stitch intervals for actuating the indenting-tool when so located to indent the stitch intervals, substantially as described.

3. A stitch-separating machine, having, in combination, an indenting-tool, means for feeding the work, and means controlled by the stitch intervals for actuating the indenting-tool to indent the stitch intervals when brought into position to be acted upon by the tool, substantially as described.

4. A stitch-separating machine, having, in combination, an indenting-tool, means for feeding the work, means for holding the tool in contact with the work and causing it to enter the stitch intervals, and means thrown into operation by the movement of the tool into a stitch interval for actuating the tool to indent the stitch intervals, substantially as described.

5. A stitch-separating machine, having, in combination, an indenting-tool, means for holding the tool in contact with the work and causing it to enter the stitch intervals, and means thrown into operation by the movement of the tool into a stitch interval for actuating the tool to indent the stitch intervals, substantially as described.

6. A stitch-separating machine, having, in combination, an indenting-tool, a spring for holding the tool in contact with the work and causing it to enter the stitch intervals, and means thrown into operation by the spring when the tool enters a stitch interval for actuating the tool to indent the stitch intervals, substantially as described.

7. A stitch-separating machine, having, in combination, an indenting-tool, a cam for actuating the tool, driving mechanism for the cam, means controlled by the stitch intervals for connecting the cam to its driving mechanism, and means to disconnect the cam from its driving mechanism, substantially as described.

8. A stitch-separating machine, having, in combination, an indenting-tool, a cam for actuating the tool, driving mechanism for the cam, means for holding the cam in position, means controlled by the stitch intervals for releasing the cam and connecting it to its driving mechanism, and means to disconnect the cam from its driving mechanism, substantially as described.

9. A stitch-separating machine, having, in combination, an indenting-tool, a cam for actuating the indenting-tool, driving mechanism for the cam, means for holding the cam in position, means controlled by the stitch intervals for releasing the cam and connecting it to its driving mechanism, means to disconnect the cam from its driving mechanism, and a brake for retarding the motion of the cam when disconnected, substantially as described.

10. A stitch-separating machine, having, in combination, an indenting-tool, an actuating-lever therefor, a cam for actuating the lever, driving mechanism for the cam, a clutch for connecting the cam to its driving mechanism, means for holding the indenting-tool in contact with the work and for moving its actuating-lever to actuate the clutch to connect the cam to its driving mechanism when a stitch interval has been brought beneath the indenting-tool, and means acting automatically to actuate the clutch to disconnect the cam from its driving mechanism, substantially as described.

11. A stitch-separating machine, having, in combination, an indenting-tool, an actuating-lever therefor, a cam for actuating the lever, driving mechanism for the cam, a clutch for connecting the cam to its driving mechanism, a step for holding the cam in position, means for holding the indenting-tool in contact with the work and for moving its actuating-lever to actuate the step to release the cam and to actuate the clutch to connect the cam to its driving mechanism when a stitch interval has been brought beneath the indenting-tool, and means acting automatically to actuate the clutch to disconnect the cam from its driving mechanism, substantially as described.

12. A stitch-separating machine, having, in combination, an indenting-tool, actuating mechanism therefor and two four-motion feed devices acting alternately to feed the work past the indenting-tool, substantially as described.

708,574. STITCH-SEPARATING MACHINE. JOHN B. HADAWAY, Brockton, Mass. Filed Sept. 30, 1901. Renewed May 24, 1902. Serial No. 108,798. (No model.)

Claim.—1. A stitch-separating machine, having, in combination, an indenting-tool, a finder arranged to enter the stitch intervals, and means controlled by the finder for actuating the indenting-tool to indent the stitch intervals, substantially as described.

2. A stitch-separating machine, having, in combination, an indenting-tool, mechanism for actuating the tool, a finder arranged to enter the stitch intervals, and connections between the finder and the mechanism for actuating the tool acting to throw said mechanism into operation when the finder enters a stitch interval, substantially as described.

3. A stitch-separating machine, having, in combination, an indenting-tool, a finder, means for holding the finder in contact with the work and causing it to enter the stitch intervals, and means thrown into operation by the movement of the finder into a stitch interval for actuating the indenting-tool to indent the stitch intervals, substantially as described.

4. A stitch-separating machine, having, in combination, an indenting-tool, a finder, means for holding the finder in contact with the work and causing it to enter the stitch intervals, means for feeding the work, and means thrown into operation by the movement of the finder into a stitch interval for actuating the indenting-tool to indent the stitch intervals, substantially as described.

5. A stitch-separating machine, having, in combination, an indent-

ing-tool, a finder, a spring for holding the finder in contact with the work and causing it to enter the stitch intervals, and means thrown into operation by the spring when the finder enters a stitch interval for actuating the indenting-tool to indent the stitch intervals, substantially as described.

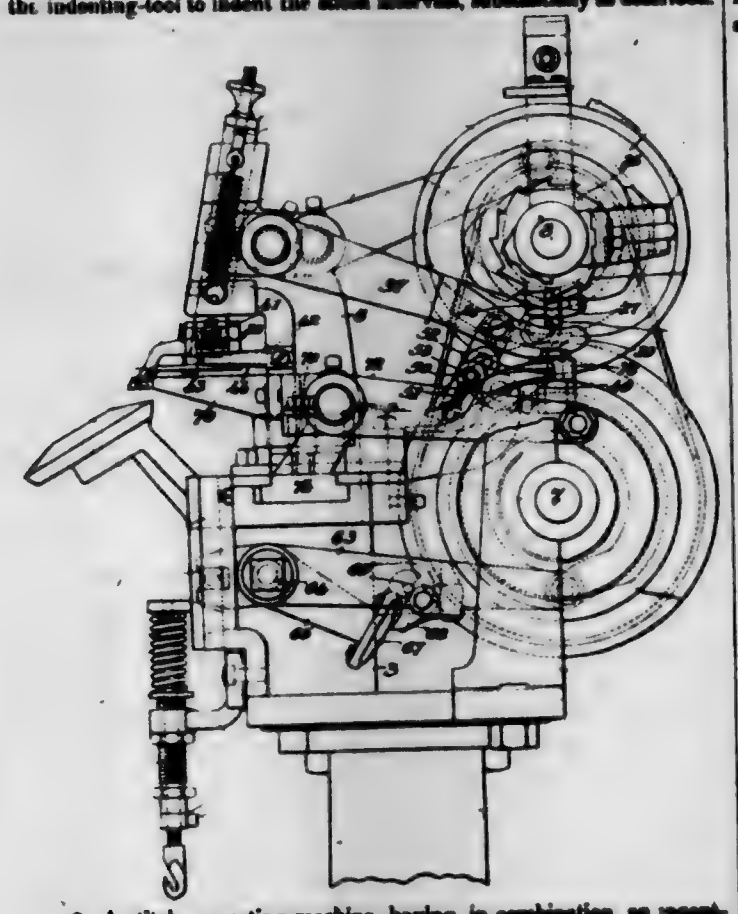

6. A stitch-operating machine, having, in combination, an indenting-tool, a finder arranged to enter the stitch intervals, and means controlled by the finder for withdrawing the finder from the stitch intervals and for actuating the indenting-tool to indent the stitch intervals, substantially as described.

7. A stitch-operating machine, having, in combination, an indenting-tool, a finder, means for holding the finder in contact with the work and causing it to enter the stitch intervals, and means thrown into operation by the movement of the finder into a stitch interval for withdrawing the finder from the stitch intervals and for actuating the indenting-tool to indent the stitch intervals, substantially as described.

8. A stitch-operating machine, having, in combination, an indenting-tool, a finder, means for holding the finder in contact with the work and causing it to enter the stitch intervals, means for feeding the work, and means thrown into operation by the movement of the finder into a stitch interval for withdrawing the finder from the stitch intervals and for actuating the indenting-tool to indent the stitch intervals, substantially as described.

9. A stitch-operating machine, having, in combination, an indenting-tool, a finder, cams for actuating the finder to withdraw from the stitch intervals and for actuating the indenting-tool to indent the stitch intervals, driving mechanism for the cams, a clutch for connecting the cams to their driving mechanism, means for holding the finder in contact with the work and for causing it to enter the stitch intervals, and connections between the finder and the clutch for actuating the clutch to connect the cams to their driving mechanism when the finder enters a stitch interval, substantially as described.

708,575. STITCH-SEPARATING MACHINE. JOHN B. HARAWAY, Brockton, Mass. Filed Nov. 4, 1901. Serial No. 81,971. (No model.)

Claim.—1. A stitch-operating machine, having, in combination, an indenting-tool and electromechanical means controlled by the stitch intervals for actuating the indenting-tool to indent the stitch intervals, substantially as described.

2. A stitch-operating machine, having, in combination, an indenting-tool, electromechanical means for actuating the indenting-tool to indent the stitch intervals, and a circuit-controller for said means controlled by the stitch intervals, substantially as described.

3. A stitch-operating machine, having, in combination, an indenting-tool, electromechanical means for actuating the indenting-tool to indent the stitch intervals including a pressure-magnet and a retracting-magnet, means controlled by the stitch intervals for closing a circuit through the pressure-magnet, and means for breaking said circuit and for closing a circuit through the retracting-magnet, substantially as described.

4. A stitch-operating machine, having, in combination, an indenting-tool, means for holding the tool in contact with the work and causing it to enter the stitch intervals, electromechanical means for actuating the indenting-tool to indent the stitch intervals, and a circuit-controller for said means thrown into operation by the movement of the tool into a stitch interval, substantially as described.

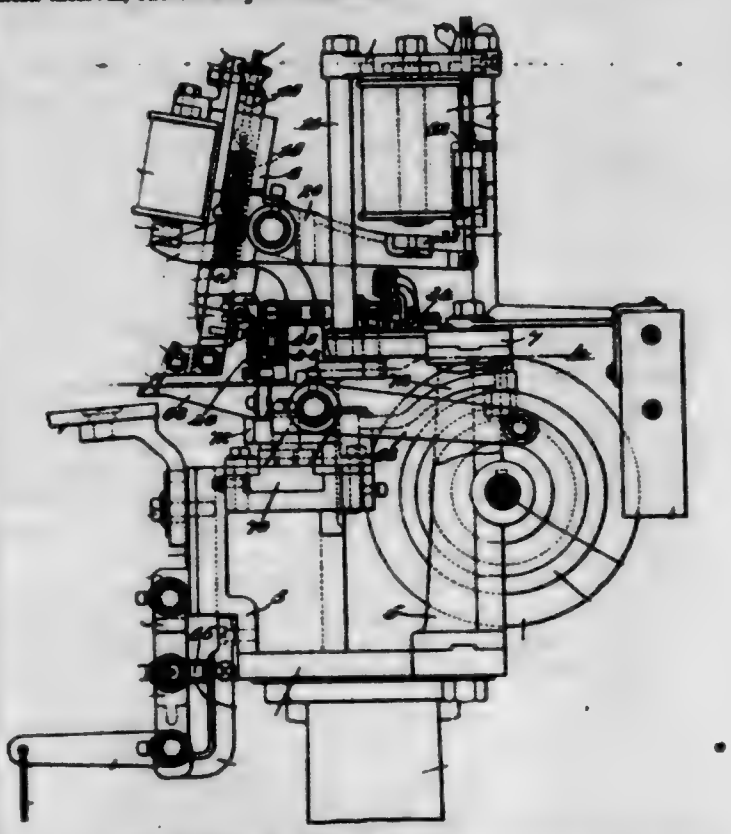

5. A stitch-operating machine, having, in combination, an indenting-tool, electromechanical means for actuating the indenting-tool to indent the stitch intervals including a pressure-magnet, and means controlled by the stitch intervals for closing the circuit of said magnet, substantially as described.

6. A stitch-operating machine, having, in combination, an indenting-tool, electromechanical means for actuating the indenting-tool to indent the stitch intervals including a pressure-magnet and a retracting-magnet, means controlled by the stitch intervals for closing a circuit through the pressure-magnet, means for breaking said circuit and for closing a circuit through the retracting-magnet, and means for retarding the retracting movement of the tool, substantially as described.

7. A stitch-operating machine, having, in combination, an indenting-tool, means for holding the indenting-tool in contact with the work and causing it to enter the stitch intervals, electromechanical means for actuating the indenting-tool to indent the stitch intervals including a pressure-magnet, and means thrown into operation by the movement of the tool into a stitch interval for closing the circuit of said magnet, substantially as described.

8. A stitch-operating machine, having, in combination, an indenting-tool, means for holding the indenting-tool in contact with the work and causing it to enter the stitch intervals, electromechanical means for actuating the indenting-tool to indent the stitch intervals including a pressure-magnet and a retracting-magnet, means thrown into operation by the movement of the tool into a stitch interval for closing the circuit of the pressure-magnet, and means thrown into operation by the indenting movement of the tool for breaking said circuit and for closing the circuit of the retracting-magnet, substantially as described.

9. A stitch-operating machine, having, in combination, an indenting-tool, means for relatively moving the work and tool to locate the tool in the stitch intervals, electromechanical means for actuating the indenting-tool to indent the stitch intervals and a circuit-controller for said means thrown into operation when the tool has been located in a stitch interval, substantially as described.

10. A stitch-operating machine, having, in combination, an indenting-tool, means for feeding the work, electromechanical means for actuating the indenting-tool to indent the stitch intervals, and a circuit-controller for said means controlled by the stitch intervals acting to throw said means into operation when a stitch interval is brought into a position to be acted upon by the indenting-tool, substantially as described.

708,576. TWISTED AUGER. GUSTAV HALLERMEIER, Remscheid, Germany. Filed Aug. 8, 1901. Serial No. 71,307. (No model.)

Claim.—A twisted auger with screw-thread disposed eccentrically to the cutting edge and characterized by having the edge *e* of the worm

b run out into a screw *d*, the edge *f* into a cutter *g*, between which the worm *b* is extended into a cutting edge *c*, formed at any desired angle to the axis of the screw *d*, substantially as described.

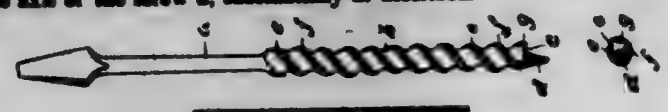

708,577. MILLING-CUTTER. ROBERT H. W. HASSER, Hartford, Conn., assignor to Pratt & Whitney Company, Hartford, Conn., a Corporation of New Jersey. Filed July 5, 1901. Serial No. 67,110. (No model.)

Claim.—1. A contour-milling cutter having one or more teeth of the full contour to be cut, and having some of the remaining teeth relieved below the contour at different portions of succeeding teeth.

2. A thread-milling cutter, provided with closely-adjacent integral teeth, having the contour of a truncated V, the succeeding teeth being relieved slightly below the cutting contour on alternately opposite sides, whereby the chips are cleared out of the cut by each tooth while providing for the flow of oil directly to the cutting edges of the succeeding teeth.

708,578. GEAR-TUMBLER. ROBERT H. W. HASSER and FREDERICK W. SOMMER, Hartford, Conn., assignors to Pratt & Whitney Company, Hartford, Conn. Filed Mar. 24, 1902. Serial No. 99,590. (No model.)

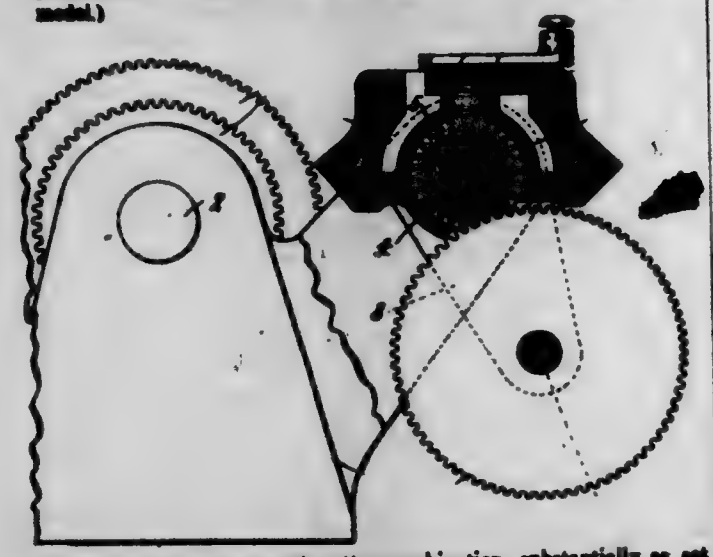

Claim.—In a gear-tumbler, the combination, substantially as set forth, of a shaft, a long pinion carried thereby, a slotted guideway disposed parallel with said shaft and partly inclosing said pinion, journal-bearings at the ends of the guideway and supporting same on an axis coincident with that of said shaft, a tube encircling said long pinion and having wings engaging the guideway, arms projecting from said tube, a gear journaled in said arms and engaging said long pinion, and means for locking the tube and guideway in adjusted positions.

708,579. TROUSERS-GUARD. JAMES H. HARDY, Waco, Tex. Filed Aug. 28, 1901. Serial No. 73,737. (No model.)

Claim.—1. In a device of the character described, a strip of spring metal bent to form the body portion, as shown and described, a V-shaped front portion, each prong of the V-shaped portion adapted to be adjusted longitudinally of the guard upon the ends of the body portion, and pins secured to the outside of the guard for the purpose of securing the trousers-leg to the same, substantially as and for the purpose specified.

2. In a device of the character described, an interior circular portion adapted to embrace the foot above the ankle, a throat extending outward from the interior of the circular portion to the exterior of the guard, parallel portions forming the sides of said throat and adapted to connect the circular portion with the exterior rim, the front portion of the exterior rim adapted to be formed independent of the rear portion, means for adjusting the front portion longitudinally relative to the rear portion, both the front and rear portions adapted to be formed of spring metal, and means secured to the exterior rim for securing the trousers-leg to the guard, substantially as and for the purpose set forth.

708,580. LOOM FOR WEAVING VELVETS. WILLIAM S. HARTLEY, Lowell, Mass. Filed Mar. 9, 1901. Serial No. 50,413. (No model.)

Claim.—In a loom for weaving loop or pile fabrics the combination of a reed, one or more wires held at their back ends and extending through between the dents of the reed parallel with the warp-threads with their front ends resting on the woven cloth, one or more deep-heddles, and an auxiliary heddle to control a pile-warp, substantially as described.

708,581. METALLIC SHOE-HEEL. HENRY HELLWIG, Milwaukee, Wis. Filed Oct. 28, 1901. Serial No. 80,176. (No model.)

Claim.—1. As a new manufacture, a shoe-heel comprising a cast-metal shell, provided with a plurality of transverse strengthening-trusses cast integral with, and connecting, the opposing walls of said shell; malleable fastening-plates, provided with a plurality of fastening-barbs, formed integral therewith, embedded at their ends in said walls, and throughout their lengths in said trusses, as set forth.

2. As a new manufacture, a shoe-heel comprising a cast-metal shell, provided with a plurality of transverse strengthening-trusses cast integral with, and connecting, the opposing walls of said shell; malleable fastening-plates, provided with a plurality of fastening-barbs, formed integral therewith, embedded at their ends in said walls, and throughout their lengths in said trusses; horizontal fastening-pieces cast integral with the lower end of said shell, provided with a plurality of screw-threaded apertures; a plurality of double-pointed fastening-screws, located in said apertures; and a non-metallic tread-piece secured to the heel by said screws, all substantially as and for the purpose specified.

708,582. FLEXIBLE SHAFT-COUPLING. GEORGE C. HIGHT, Jr., Connersville, Ind., assignor to the P. H. & F. M. Roots Company, Connersville, Ind. Filed Feb. 26, 1902. Serial No. 96,051. (No model.)

Claim.—1. In a shaft-coupling, the combination, substantially as set forth, of a pair of flanges adapted to be secured to the shafts to be coupled, circumferentially-grooved studs projecting from the face of each flange toward the face of the other flange, the studs being arranged in a circular series upon each flange and the two series being concentric with each other, and a rope engaging grooves of all of the studs, zigzagging from within the smaller circle of studs to without the larger circle of studs and free of the faces of the flanges.

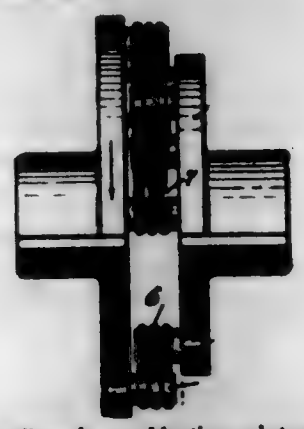

2. In a shaft-coupling, the combination, substantially as set forth, of a pair of flanges adapted to be secured to the shafts to be coupled, studs provided with a plurality of circumferential grooves and projecting in circular series from one of the flanges toward the other, a similar series of studs arranged in a smaller circle upon the second flange and projecting toward the first flange, and an endless rope arranged in zigzag course and engaging all of the grooves of all of the studs and free of the faces of the flanges.

3. In a shaft-coupling, the combination, substantially as set forth, of a pair of flanges adapted to be secured to the shafts to be coupled, studs provided with a plurality of circumferential grooves and projecting in circular series from one of the flanges toward the other, a similar series of studs arranged in a smaller circle upon the second flange and projecting toward the first flange, an endless rope arranged in zigzag course and engaging all of the grooves of all of the studs, and double-eyed links applied to the crossings in said rope where it diverges from one set of stud-grooves to the other.

4. In a shaft-coupling, the combination, substantially as set forth, of a pair of flanges adapted to be secured to the shafts to be coupled, studs projecting from the face of each flange toward the face of the other flange, the studs being arranged in a circular series upon each flange and the two series being concentric with each other, a rope engaging all of the studs, zigzagging from within the smaller circle of studs to without the larger circle of studs and free of the faces of the flanges, and means carried by said studs and engaging the rope and serving to prevent its sidewise displacement upon the studs.

708,588. DEVICE FOR PACKING SLIDING GATE-VALVES. LEOPOLD HIRT, Grevenbrück, Germany, assignor to Maschinenfabrik Grevenbrück, vormals Langen & Hundhausen, Grevenbrück, Germany. Filed Jan. 4, 1902. Serial No. 88,272. (No model.)

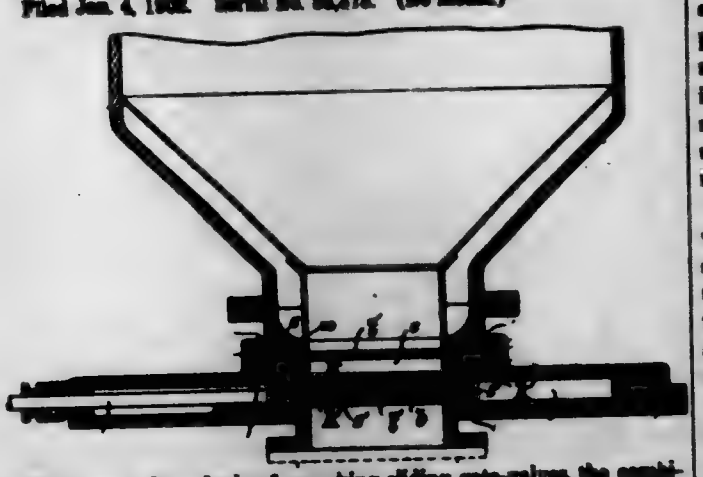

Claim.—1. In a device for packing sliding gate-valves, the combination with a slide situated in a casing, of an insertion-piece provided with packing-diaphragms and removably arranged in the slide-casing, with the object set forth.

2. In a device for packing sliding gate-valves, the combination with a slide situated in a casing, of an insertion-piece removably arranged in the slide-casing, which insertion-piece has two rings connected with one another by means of bars, which rings form a channel or passage adapted to be filled with a pressure medium, and closed above and below by packing-diaphragms.

708,584. ADJUSTABLE CLASP-BUCKLE AND COMBINATION. FREDERICK F. HOSKIN, Battlecreek, Mich. Filed Feb. 10, 1902. Serial No. 93,463. (No model.)

Claim.—1. The combination of a suitable strap with a transverse loop secured thereto; a clasp-plate with a transverse aperture to receive the loop on the said strap; and a tuck-strap connected with the clasp-plate adapted to extend through the projecting loop of the main strap and retain the clasp in position, as specified.

2. The combination of a clasp-plate C containing a transverse aperture; a tuck-strap connected thereto and extending beyond the said transverse aperture to extend through a suitable loop and retain the clasp in position thereon, as specified.

3. The combination of a clasp-plate C having a transverse slot in the end thereof; means of suitably securing the same to the tuck-strap, the end of which projects beyond the transverse aperture for use in connection with a loop adapted to extend through the transverse slot and be engaged by the tuck-strap as specified.

4. The combination of a clasp-plate containing an aperture; a part adapted to be secured to a strap and project through said aperture; and a tuck-strap connected with a clasp-plate to retain the clasp part in position, as specified.

708,585. FISHING-REEL. JULIUS VON HOFE, Brooklyn, N. Y. Filed Dec. 4, 1901. Serial No. 84,681. (No model.)

Claim.—1. In a fishing-reel, the combination with the spool of a click-plate bearing a pawl and its spring and movable edgewise, a drag movable with said plate, means for moving said plate and therewith said pawl and said drag into effective position, and means for retracting the same; the whole being so organized that when and while the line is withdrawn from the spool both the pawl and the drag simultaneously oppose such withdrawal, whereas when and while the line is reeled in the pawl and drag are simultaneously and automatically withdrawn from action.

2. In a fishing-reel, the combination with the spool of a pivoted click-plate, bearing a pawl and its spring and movable edgewise, a drag attached to said plate and movable therewith, a spring for moving said plate and therewith said pawl and said drag into effective position and means for automatically retracting the same; the whole being so organized that both the pawl and the drag simultaneously and automatically resist the withdrawal of the line, yet automatically and simultaneously move out of action and offer practically no resistance when the line is reeled in.

3. In a fishing-reel, a click-plate pivoted near one side and provided with a pawl and its spring, in combination with a drag attached thereto and superimposed thereon; a spring bearing upon said click-plate and tending to move its pawl toward the center of the reel; and a movable finger acting upon said click-plate; the whole so combined that the click and drag may simultaneously be put and retained in action, or withdrawn from action and so retained, at the will of the user.

4. In a fishing-reel, the combination with the spool having a concave frictional surface of a drag movable edgewise on a pivot eccentric to the spool's axis and having a frictional free end, and means for moving said drag into frictional contact with the spool to resist the withdrawal of the line; the organization being such that the drag is automatically retracted to free the spool when the line is reeled in.

5. In a fishing-reel, the combination with the spool having a concave frictional surface of a drag movable edgewise on a pivot eccentric to the spool's axis and having a frictional free end, and a spring for moving said drag into frictional contact with the spool to resist the withdrawal of the line; the organization being such that the drag is automatically retracted to free the spool when the line is reeled in.

708,586. STOCK-RACK FOR PLATFORM-SCALES. CHARLES B. EDMAN, Chillicothe, Ohio. Filed Mar. 28, 1902. Serial No. 99,454. (No model.)

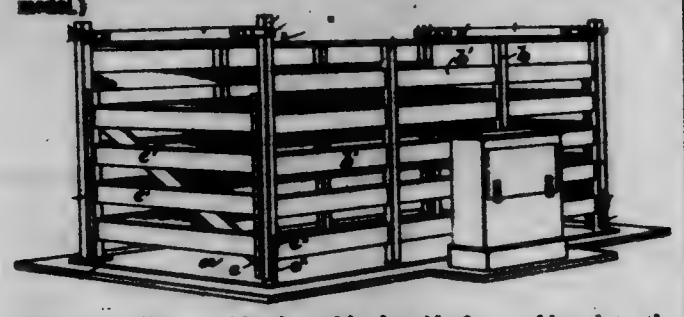

Claim.—1. The combination with the side frames hinged to the scale-platform, cross-bars connecting said frames, of means connecting said frames and platform adapted to incline and tighten said frames to said cross-bars, substantially as specified.

2. The combination with the side frames hinged to the scale-platform and cross-bars connecting said frames, of means engaging said frames and platform adapted to incline and tighten said frames to said cross-bars in their closed position and to form an adjustable stop for said frames when said cross-bars are released, substantially as specified.

3. The combination with the side frames hinged to the scale-platform, the cross-bars connecting the side frames and the end gates hinged to said side frames, of means engaging said side frames and platform adapted to spread and incline the side frames outwardly, thereby tightening them to the cross-bars and lifting the outer ends of the gates, substantially as specified.

4. The combination with the side frames hinged to the scale-platform, legs on said side frames, and cross-bars connecting said side frames, of hasps, one end of said hasps being secured to said platform and the other end adapted to engage said legs to form stops to hold said side frames when the cross-bars are released.

5. The combination with the side frames hinged to said platform, legs on said side frames and cross-bars connecting said side frames, of hasps, one end of said hasps being secured to said platform, and means on the other end to engage said legs to tighten said side frames and cross-bars in their closed position, substantially as specified.

6. The combination with the side frames hinged to the scale-platform, legs on said side frames, cross-bars connecting said side frames, and end gates hinged to said side frames, of hasps, one end of said hasps being secured to said platform, and means on the other end to engage said legs and spread and incline the side frames outwardly, thereby tightening them to the cross-bars and lifting the outer ends of the gates, substantially as specified.

7. The combination of the side frames hinged to the scale-platform, cross-bars connecting said frames, and means, including a screw-threaded connection, between said frames and platform, to form an adjustable stop for said frames, substantially as specified.

8. The combination with the side frames hinged to the platform, an adjustable connection between said frames and platform, the cross-bars, and means to tighten and lock said cross-bars in their closed position against the tension of said adjustable connection, substantially as specified.

708,587. HORSE-DETACHER. ELIJAH D. IRWIN, Purcell, I. T. Filed Dec. 12, 1901. Serial No. 85,994. (No model.)

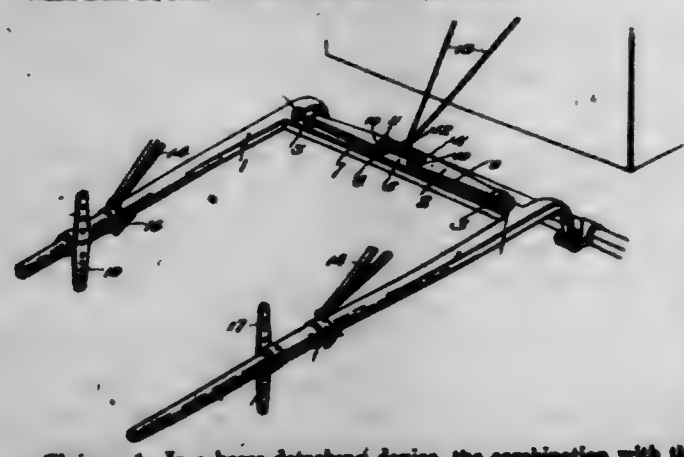

Claim.—1. In a horse-detaching device, the combination with the singletree formed with grooves in its forward side, sleeves secured to the ends of the singletree and provided with stop-lips, a spring-casing secured to the forward side of the singletree and a coiled spring located within said casing, of plunger-rods mounted to slide in said grooves and through the sleeves at the ends of the singletree and having their inner ends doubled upon themselves and projecting into the ends of the coiled spring and terminating in vertical posts against which the ends of the coiled spring abut and by means of which the outer ends of said plunger-rods are adapted normally to engage the stop-lips aforesaid, and means for moving the posts toward each other, substantially as set forth.

2. In a horse-detaching device the combination with the singletree formed with grooves in its forward side, sleeves secured to the ends of the singletree and provided with stop-lips, a spring-casing secured to the forward side of the singletree, and a coil-spring located within said casing, plunger-rods mounted to slide in said grooves and through the sleeves at the ends of the singletree and having their inner ends doubled upon themselves and projecting into the ends of the coil-spring and terminating in vertical posts against which the ends of the coil-spring abut and by means of which the outer ends of said plunger-rods are adapted normally to engage the stop-lips aforesaid, and means for moving the posts toward each other; of shafts provided with stops, and sleeves having a sliding removable engagement with said shafts and adapted to contact with said stops.

708,588. VEGETABLE-CUTTER. JOEL C. IVEY, Sr., Augusta, Ga., assignor of one-third to Curtis Ivey, Augusta, Ga. Filed Jan. 16, 1902. Serial No. 90,087. (No model.)

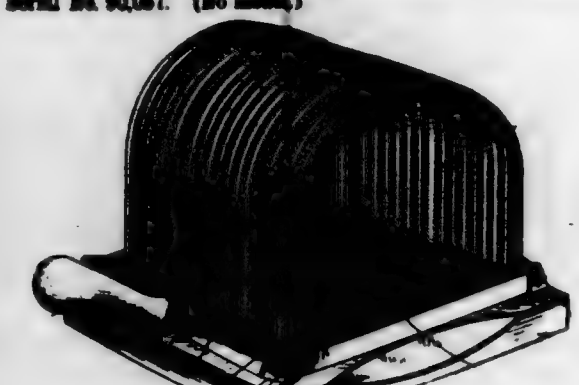

Claim.—In a vegetable cutter or slicer, the combination with a base formed at its opposite ends with longitudinal parallel recesses, of a gang of bow-shaped comb-strips arranged in parallel order and having their lower ends extending horizontally and seating in said recesses and secured thereto, standards consisting of angle-plates, the lower ends of which are seated in the recesses at the rear end of the base, a shaft mounted in said standards, a gang of knives mounted upon said shafts, washers interposed in series between said knives, shafts extending through the forward ends of said knives, washers mounted on said shafts in series between said knives, a handle-bail connected to the outer ends of said shafts and projecting upwardly from the knives at an angle thereto, and a handle secured to said bail, substantially as set forth.

708,589. TROLLEY FOR ELECTRIC CARS. CHARLES J. JOHNSON and CHARLES W. BEHRENDT, St. Louis, Mo. Filed Sept. 23, 1901. Serial No. 76,256. (No model.)

Claim.—1. In a trolley, the combination with a support, of a swinging spring-controlled member mounted in said support, a pole-carrying lever pivotally carried by said swinging member, a detent carried by said swinging member and adapted to engage said lever, a stop mounted on said support adapted to receive the impingement of said detent, and a rope connected at one end to said swinging member and loosely positioned on said lever and having its opposite end suitably held, substantially as described.

2. In a trolley, the combination with a support, of a swinging spring-controlled member mounted in said support, a pole-carrying lever pivot-

ally carried by said swinging member, a detent carried by said swinging member and adapted to engage said lever, an adjustable stop mounted on said support and adapted to receive the impingement of said detent, and a rope connected at one end to said swinging member and loosely positioned on said lever and having its opposite end suitably held, substantially as described.

3. In a trolley, the combination with a support, of a swinging spring-controlled member mounted in said support, a pole-carrying lever pivotally carried by said swinging member, a detent carried by said swinging member and adapted to engage said lever, a stop carried by said support adapted to receive the impingement of said detent, sheaves carried by said swinging member, a pulley carried by said lever, and a rope connected at one end to said swinging member and mounted on the pulley carried by lever and having its opposite end suitably held, substantially as described.

708,590. EXTENSIBLE PISTON-RING. Otto Johnson, Brooklyn, N. Y. Filed May 25, 1901. Serial No. 61,827. (No model.)

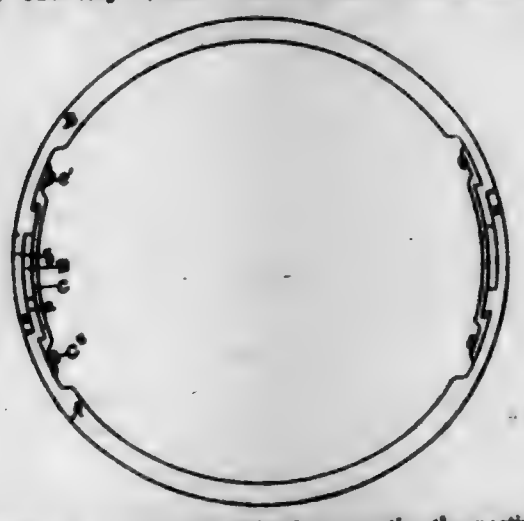

Claim.—1. A rabbeted slip-joint for connecting the meeting ends of a circumferentially-extensible piston-ring, the said joint composed of a relatively long overlapping member provided with an inwardly-projecting boss; and an inward offset forming a relatively shorter underlapping member; an expanding-spring system interposed between said boss and the opposed end of the said inward offset forming said underlapping member; a locking-bar provided upon its radially-outward face with a recess for receiving said boss and said inward offset; a system of liners appropriately introduced into said recess for limiting to a prescribed extent the circumferentially-expanding influence of said spring system upon the members of said joint.

2. In a circumferentially-extensible piston-ring, a rabbeted slip-joint; an expanding-spring system tending to separate the members of said rabbeted joint in such direction as to circumferentially extend said piston-ring; a locking-bar provided upon its radially-outward side with a recess having oppositely-undercut ends, presenting bearing-faces parallel with correspondingly undercut faces formed respectively upon the inwardly-offset underlapping member of said joint and upon a boss projecting inwardly from the overlapping member of said joint, and a prescribed number of liners introduced into one or both ends of said recess for the purpose of taking up the elastic pressure of said expanding-spring system and thereby relieving the piston-ring therefrom.

3. In a piston-packing, the combination of a divided and circumferentially-expansible piston-ring, means for exerting elastic pressure on said ring to expand the same to fit a surrounding surface, a locking-bar joining the ends of the divided ring, and means adapted to be interposed between the locking-bar and an end of the expansible piston-ring to limit the action of the elastic expanding means and relieve the surface of further expanding pressure when the fit between the ring and surface has been secured.

4. In a piston-packing, the combination of a divided and circumferentially-expansible piston-ring, means for exerting elastic pressure on said ring to expand the same to fit a surrounding surface, a locking-bar joining the ends of the divided ring, and removable liners adapted to be interposed between the locking-bar and an end of the expansible piston-ring to limit the action of the elastic expanding means and relieve the surface of further expanding pressure when the fit between the ring and surface has been secured.

5. A piston-packing comprising a circumferentially-expansible piston-ring having a slip-joint, an expanding-spring system interposed between the abutments of said joint to circumferentially expand the ring to fit a surrounding surface, a locking-bar secured to both members of the slip-joint, and removable liners coacting with said locking-bar to limit the expanding action of the spring system and lock the ring against further expansion when the fit between the ring and the surrounding surface is secured.

708,591. HYDROCARBON-VAPOR BURNER. John Johnson, London, England, assignor to Archibald Edward Dobbs, London, England. Filed Feb. 18, 1902. Serial No. 94,503. (No model.)

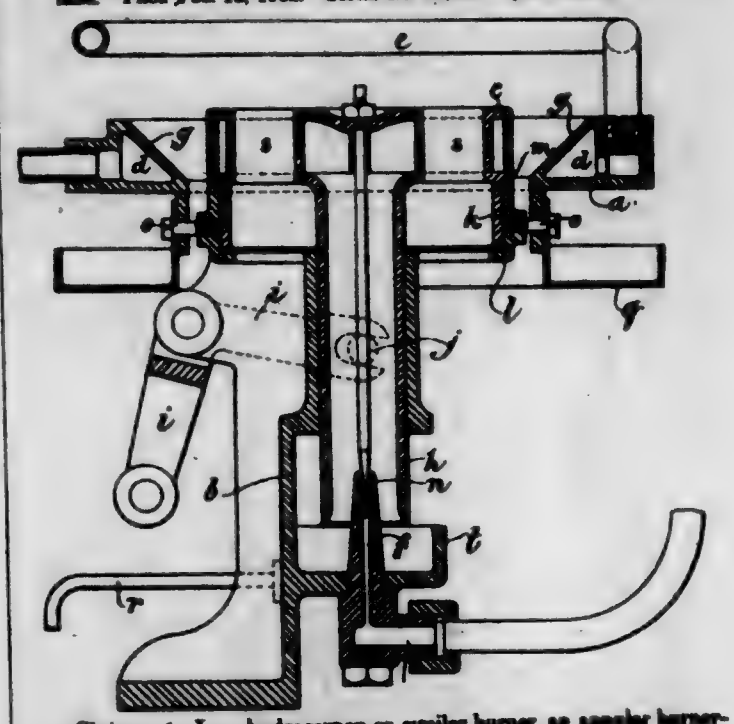

Claim.—1. In a hydrocarbon or similar burner, an annular burner-head, a stationary annular vaporizing-chamber surrounding the burner-head, the face of said chamber adjacent to the burner-head being arranged to deflect the flame from said burner-head, a vapor-nozzle located below the burner-head, a needle-cone carried by said burner-head and entering the vapor-nozzle, and means for elevating the burner-head to simultaneously lift the burner-surface above the deflecting-face of the vaporizer and to elevate the needle-cone from the vapor-nozzle.

2. In a hydrocarbon or similar burner, a vapor-nozzle, a needle-valve controlling said nozzle, a burner-head carrying said needle-valve, an inclined deflector-plate surrounding the burner-head, and means for elevating the burner-head to thereby simultaneously elevate the needle-valve and cause the burner-head to clear the deflector-plate.

3. A hydrocarbon or similar burner, comprising a movable annular burner-head, a stationary annular vaporizing-chamber surrounding said head and having a flame-deflecting surface on that side adjacent to the burner-head, a vaporizing-coil passing from the chamber in a convolution above the burner-head, a vapor-supply nozzle located below the burner-head and connected with said coil, a hollow stem supporting the burner-head and surrounding the vapor-nozzle, a stationary guide for said stem, a needle-regulator carried by the burner-head and entering and engaging the opening in the vapor-nozzle, and means for imparting vertical movement to the hollow stem, burner-head and needle-regulator.

4. A hydrocarbon or similar burner, comprising a movable annular burner-head, a stationary annular vaporizing-chamber surrounding said head and having a flame-deflecting surface adjacent to the burner-head, a vaporizing-coil passing from the chamber in a convolution above the burner-head, a vapor-supply nozzle located below the burner-head and connected with said coil, a hollow stem supporting the burner-head and surrounding the vapor-nozzle, a stationary guide for said stem, a needle-regulator carried by the burner-head and entering and engaging the opening in the vapor-nozzle, means for imparting vertical movement to the hollow stem, burner-head and needle-regulator, and a drip-trough surrounding the base of the vapor-nozzle.

708,592. SNAPPING-ROLLS FOR SHREDDERS. Edward E. Joseph, Malvern, Ill. Filed Apr. 8, 1901. Serial No. 54,893. (No model.)

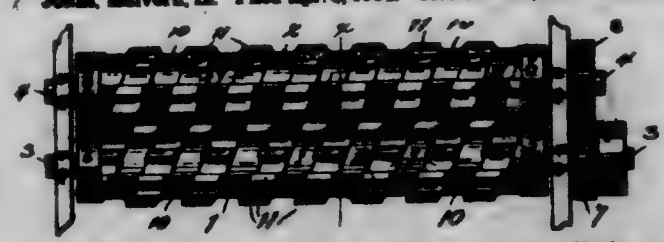

Claim.—1. A pair of snapping-rolls, having longitudinal corrugations, the corrugations of one roll being adapted to mesh with those of the other roll; said rolls being further provided with spiral grooves, which,

in operation, appear to travel from end to end of such rolls; the arrangement of such spirals being such that the groove on one roll moves in a direction opposite to that of the groove on the other roll; and means for operating said rolls; substantially as set forth.

2. The combination of the roll 1, provided with the heads 5, and having longitudinal grooves 9, and a spiral groove 10; the roll 2, provided with a head 6, and having similar longitudinal grooves 9, and a spiral groove 10; means of support for such rolls; and means of operation thereof; substantially as described.

3. In a device of the character described, a pair of rolls each being provided with longitudinal grooves and spiral grooves forming spiral series of teeth, the teeth of each roll meshing with the teeth of the other roll and the direction of the spiral arrangement of teeth being the same on both rolls, and means for rotating the rolls in opposite directions.

708,593. GEARING. LEWIS JESSE, JR., Philadelphia, Pa. Filed Apr. 12, 1902. Serial No. 102,596. (No model.)

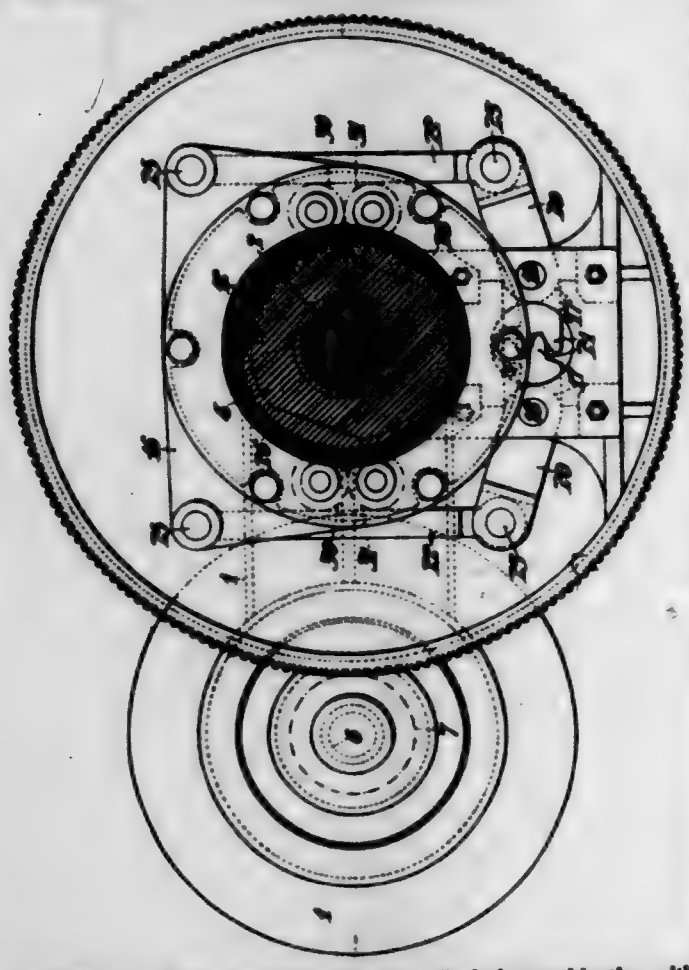

Claim.—1. In gearing of the class described, the combination with a driving element; of a driven element; a link intermediate of said elements; a lever pivotally connected to said link; and, pivotal joints respectively connecting said link and said lever with said elements, whereby; continuous rotary motion may be transmitted from one to the other of said elements, irrespective of the relative gyration of their axes, substantially as set forth.

2. In gearing of the class described, the combination with a driving element; of a driven element; a pair of levers fulcrumed upon one of said elements and intengaged; and, links respectively connecting said levers with the other of said elements, whereby; continuous rotary motion may be transmitted from one to the other of said elements, irrespective of the relative gyration of their axes, substantially as set forth.

3. In gearing of the class described, the combination with a driving element provided with a central opening; of an axle extending through said opening and arranged to gyrate therein; a driven element mounted upon said axle in concentric relation therewith; a link intermediate of said driving and driven elements; a pivotal connection between said link and one of said elements; and, a lever pivotally connecting the other extremity of said link with the other of said elements; whereby, rotary motion may be transmitted from one to the other of said elements, irrespective of the relative gyration of their axes, substantially as set forth.

4. In gearing of the class described, the combination with a driving-gear provided with a central opening; of a vehicle-supporting-wheel axle extending through said opening and arranged to gyrate therein; a gear-casing mounted to rotate independently of said axle in concentric relation therewith; a link and lever connected to each other and respectively connected to said driving and driven elements; two vehicle-supporting wheels mounted on said axle; two gears respectively connected with said vehicle-supporting wheels in concentric relation with said gear-casing; two planetary gears mounted in said gear-casing in engagement with each other and respectively in engagement with said gears connected to said vehicle-supporting wheels; whereby, said vehicle-supporting wheels, may be rotated contemporaneously and independently, substantially as set forth.

5. In gearing of the class described, the combination with a driving-gear provided with a central opening; of a vehicle-supporting-wheel axle extending through said opening and arranged to gyrate therein; a gear-casing mounted to rotate independently of said axle in concentric relation therewith; a pair of intengaged levers fulcrumed upon said driving-gear; a pair of links respectively pivoted to said levers and pivoted to said gear-casing; and means operatively connecting said gear-casing and said axle; whereby, rotary motion may be transmitted from said driving-gear to said gear-casing, irrespective of the relative gyration of their axes, substantially as set forth.

6. In gearing of the class described, the combination with a driving-gear provided with a central opening; of a vehicle-supporting-wheel axle extending through said opening and arranged to gyrate therein; a vehicle-supporting wheel fixed to said axle; a vehicle-supporting wheel loose on said axle; a gear-casing mounted to rotate independently of said axle in concentric relation therewith; a pair of connected levers fulcrumed upon said driving-gear; a pair of links respectively pivoted to said levers and pivoted to said gear-casing; whereby, continuous rotary motion may be transmitted from said driving-gear to said gear-casing, irrespective of the relative gyration of their axes; two gears respectively fixed to said axle and to said loose wheel; and, a pair of planetary gears mounted in said casing in engagement with each other and in respective engagement with said two gears connected to said vehicle-supporting wheels; whereby, said vehicle-wheels may be rotated contemporaneously and independently, substantially as set forth.

708,594. HAND-MOTOR. PAUL J. KAHPER, Sioux City, Iowa. Filed Apr. 19, 1901. Serial No. 56,000. (No model.)

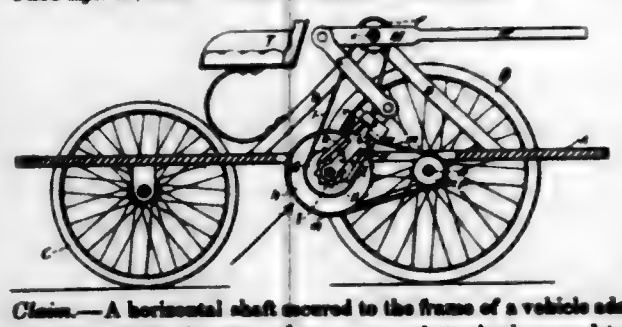

Claim.—A horizontal shaft secured to the frame of a vehicle adapted to revolve in suitable bearings thereon, a ratchet-wheel secured to said shaft, pawls abutting against the teeth of said ratchet-wheel, an operating-lever pivotally secured in bearings supported by the frame of the vehicle, levers connecting said operating-lever with said horizontal shaft, said pawls being pivotally secured to the lever connected to said shaft, the end of said connecting-lever freely encircling said shaft, in combination with chain-wheels firmly secured to said operating-lever, chain-wheels freely encircling said horizontal shaft, said last chain-wheels having ratchet-clutches adapted to engage with ratchet-clutches secured to said horizontal shaft and adapted to slide thereon, springs for pressing said ratchets into engagement with each other, chains connecting the wheels on said horizontal shaft with the wheels secured to said operating-lever, and means for imparting the motion of said horizontal shaft to the axle of the vehicle when the shaft is turned, substantially as described.

708,595. PIPE-JOINT. WILLIAM KENNEALLY, New York, N. Y. Filed Feb. 13, 1902. Serial No. 93,978. (No model.)

Claim.—1. A pipe-joint comprising in combination a pair of tailpieces adapted for attachment to the ends of pipes, and one of said tailpieces adapted to enter the other, and a follower adapted for attachment to said tailpieces and limited in its movement on each of said tailpieces so as to substantially avoid longitudinal movement of said pipes, and said follower being of a diameter sufficient to slide over the body of one of said tailpieces.

2. A pipe-joint comprising in combination a pair of tailpieces adapted for attachment to the ends of pipes, and one of said tailpieces adapted to enter the other, and a follower, said follower and tailpieces being provided with tapered screw-threads whereby said follower is adapted for screwing on said tailpieces, but is limited in its movement toward the free end of one and the pipe end of the other of said tailpieces to substantially avoid longitudinal movement of said pipes, and said follower being of a diameter sufficient to slide over the body of one of said tailpieces.

3. A pipe-joint comprising in combination a pair of tailpieces adapted for attachment to the ends of pipes and limited in their movement

thereon, and one of said tailpieces adapted to enter the other, and a follower adapted for attachment to said tailpieces and limited in its movement on each of said tailpieces so as to substantially avoid longitudinal movement of said pipes, and said follower being of a diameter sufficient to slide over the body of one of said tailpieces.

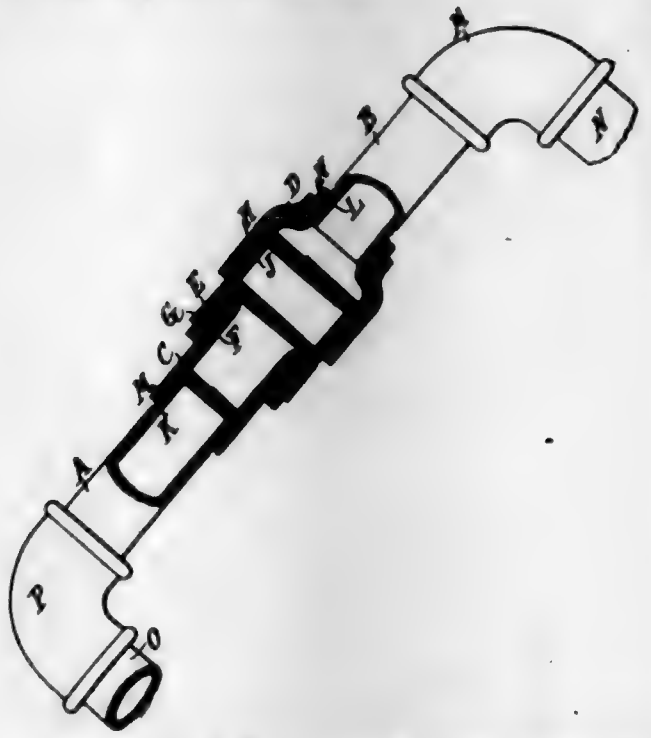

4. A pipe-joint comprising in combination a pair of tailpieces adapted for attachment to the ends of pipes and limited in their movement thereon, and one of said tailpieces adapted to enter the other, and a follower, said follower and tailpieces being provided with tapered screw-threads whereby said follower is adapted for screwing on said tailpieces but is limited in its movement toward the free end of one and the pipe end of the other of said tailpieces to substantially avoid longitudinal movement of said pipes, and said follower being of a diameter sufficient to slide over the body of one of said tailpieces.

5. A pipe-joint comprising in combination a pair of tailpieces adapted for attachment to the ends of pipes and having tapered screw-threads whereby to limit their movement thereon, and one of said tailpieces adapted to enter the other, and a follower, said follower and tailpieces being provided with tapered screw-threads whereby said follower is adapted for screwing on said tailpieces, but is limited in its movement toward the free end of one and the pipe end of the other of said tailpieces to substantially avoid longitudinal movement of said pipes, and said follower being of a diameter sufficient to slide over the body of one of said tailpieces.

6. A pipe-joint comprising in combination male and female tailpieces C and D adapted for attachment to the ends of pipes, and the free end of the tailpiece C adapted to enter the free end of the tailpiece D, and a follower E adapted for attachment to said tailpieces and limited in its movement on each of said tailpieces so as to substantially avoid longitudinal movement of said pipes, and said follower E being of a diameter sufficient to slide over the body of said tailpiece C.

7. A pipe-joint comprising in combination a pair of tailpieces adapted for attachment to the ends of pipes and one of said tailpieces adapted to enter the other, and a follower, said follower and tailpieces being provided with tapered screw-threads whereby said follower is adapted for screwing on said tailpieces, but is limited in its movement toward the free end of one and the pipe end of the other of said tailpieces to substantially avoid longitudinal movement of said pipes, the screw-threads of said follower coming into engagement with the screw-threads on one of said tailpieces before they come into engagement with the threads on the other of said tailpieces.

708,596. APPARATUS FOR PURIFYING WATER. CARL L. KEMMOTT, Chicago, Ill. Filed Aug. 20, 1901. Serial No. 72,665. (No model.)

Claim.—1. In water-purifying apparatus, the combination of an annular soft-water tank, intercommunicating precipitating and chemical-solution tanks inclosed by said annular tank, said precipitating-tank having communication at its upper portion with said annular tank, a vertically-disposed stirrer in said chemical-solution tank, a water-wheel geared to said stirrer and having a discharge leading to the upper portion of said precipitating-tank, and a hard-water-supply source for said water-wheel, substantially as described.

2. In water-purifying apparatus, the combination of a precipitating-tank, a chemical-solution tank within said precipitating-tank, a source of hard-water supply above said precipitating-tank, a stirrer in said chemical-solution tank, a water-wheel geared to said stirrer and operated by the hard water and having a discharge leading to said precipitating-tank, and an overflow for supplying liquid from said chemical-solution tank to said precipitating-tank.

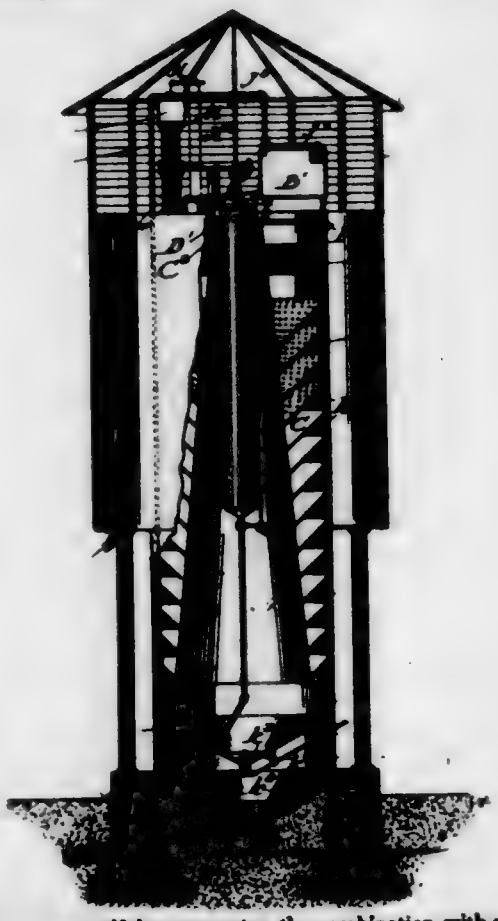

3. In water-purifying apparatus, the combination with a precipitating-tank having a downtake-conduit located therein, of a chemical-solution tank within said conduit, said last-named tank having communication near its upper end with the upper portion of said conduit.

4. In water-purifying apparatus, the combination of a precipitating-tank provided at its bottom with a valved discharge-opening, a chemical-solution tank within said first-named tank, a discharge-passage leading from said last-named tank through a wall of said first-named tank, and a valve controlling the discharge from the lower end of said chemical-solution tank.

5. In water-purifying apparatus, the combination of a precipitating-tank provided with a downtake-conduit, a chemical-solution tank located in the upper portion of said conduit and provided near its upper end with an overflow-port, a stirrer within said last-named tank, a stirrer-shaft, a water-wheel, a discharge-passage leading therefrom to the upper portion of said conduit adjacent to said overflow-port, a hard-water-supply source communicating with said water-wheel, and gear connections between said water-wheel and stirrer-shaft.

6. In water-purifying apparatus, the combination of a precipitating-tank provided with a downtake-conduit, a chemical-solution tank within said conduit and provided at its upper end with an overflow-port, a water-supply source for said last-named tank, a water-wheel, a discharge-passage leading therefrom and communicating with the upper portion of said conduit adjacent to said overflow-port, a chemical-solution tank provided with a discharge-passage communicating with the passage leading from said water-wheel, and a hard-water tank communicating with said water-wheel.

7. In water-purifying apparatus, the combination of a precipitating-tank provided with a downtake-conduit, a lime-water tank located in the upper portion of said conduit and provided with a lime-basket having a discharge-passage leading to the lower portion of said lime-water tank, a soft-water tank located above said precipitating-tank, a water-lift for supplying water thereto from the upper portion of said precipitating-tank, a pipe connecting said soft-water tank with said lime-basket, means for automatically controlling the discharge of water through said pipe, an overflow-port for said lime-water tank opening into the upper portion of said conduit, a soda-solution tank, a supply source therefor, means for automatically regulating the height of liquid in said soda-solution tank, a discharge-pipe for said soda-solution tank, means for automatically regulating the discharge therethrough, a water-wheel, a discharge-passage leading therefrom and communicating with the upper portion of said con-

duit adjacent to said overflow-port, the discharge from said soda-solution tank passing to the same point, and a hard-water-supply source for said water-wheel.

8. In water-purifying apparatus, the combination with a precipitating-tank, of a lime-water tank within said precipitating-tank provided at its lower end with a discharge-pipe passing through a wall of said precipitating-tank, a valve extending transversely of said pipe, an actuating-rod for said valve having its upper end located at the upper portion of the apparatus, and connections between said rod and valve through the medium of which said valve is operated.

9. In apparatus of the character described, the combination with a precipitating-tank having a downtake-conduit, and provided beneath the lower end of said conduit with a conical bottom, of an inclosed chemical-solution tank having a conical bottom and a pipe leading therefrom and extending through the bottom of said precipitating-tank, a centrally-located valve at the bottom of said precipitating-tank, a valve at the lower end of said chemical-solution tank, and inclosed operating means for said last-named valve extending to the upper portion of the apparatus.

10. In water-purifying apparatus, the combination with a precipitating-tank having a downtake-conduit, of a lime-water tank located in said conduit, a stirrer in said last-named tank, a vertical stirrer-shaft, a water-wheel having a transverse shaft geared to said stirrer-shaft, a water-lift wheel having an axis parallel to said water-wheel shaft geared thereto, a soft-water tank supplied by said water-lift wheel and provided with an overflow, a lime-basket in the upper portion of said lime-water tank, a pipe leading from said soft-water tank to said lime-basket, an overflow-port for said lime-water tank communicating with the upper portion of said conduit, a passage leading from said water-wheel to the upper portion of said conduit adjacent to said overflow-port, a soda-solution tank, a discharge-pipe therefor communicating with said last-named passage, a source of supply for said soda-solution tank, means for automatically regulating the admission therefrom into said soda-solution tank, a hard-water tank at the upper portion of said water-wheel, a supply source therefor, means for maintaining the water in said last-named tank at a given height, a float in said last-named tank, and means connected with said float for automatically controlling the passage of liquid from said soft-water tank and said soda-solution tank.

703,597. COMB-CLEANER. SAMUEL L. KEITLER, Los Angeles, Cal. Filed Mar. 13, 1902. Serial No. 98,696. (No model.)

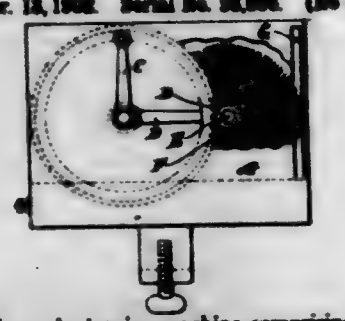

Claim.—1. A comb-cleaning machine comprising a closed receptacle; a driving and a smaller driven gear mounted on said receptacle the shaft of the driven gear passing into the interview of the receptacle; a brush within said receptacle mounted upon the shaft of the driven gear; a slot in said receptacle adapted for the passage of a comb therethrough to bring the teeth thereof in contact with the periphery of the brush; and means to impart motion to the driving-gear.

2. A comb-cleaning machine comprising a closed receptacle; a driving and a smaller driven gear mounted within said receptacle the shaft of the driving-gear projecting through the side of the receptacle and being provided with an operating-lever; a cleaning-brush within the receptacle mounted on the shaft of the driven gear; slots in the side of the receptacle adapted for the passage of the comb therethrough in contact with the brush.

3. A comb-cleaning machine comprising a closed receptacle; a driving and a smaller driven gear mounted on shafts within said receptacle; a brush within the receptacle mounted upon the shaft of the driven gear; oppositely-disposed slots in the sides of the receptacle adapted to permit the passage therethrough of a comb in contact with the periphery of the brush; means to impart motion to the driving-gear; a removable drawer in the bottom of the receptacle adapted to receive the dirt removed from the comb.

703,598. COMPOUND TOOL. JOSEPH F. KOELSER, Crookston, Minn. Filed Mar. 8, 1902. Serial No. 98,977. (No model.)

Claim.—The combination with a spring-bow, one end of which is formed with a ball, against one of the sides of which the opposite end of said bow has a spring contact or engagement, of a tool pivoted between the sides of said ball, and a shield covering the sides and top of said ball and serving to prevent the expansion of the same, substantially as set forth.

708,599. GLASS-BLOWING MACHINE. CHRISTIAN J. KOSING, Alton, Ill. Filed May 17, 1901. Serial No. 60,737. (No model.)

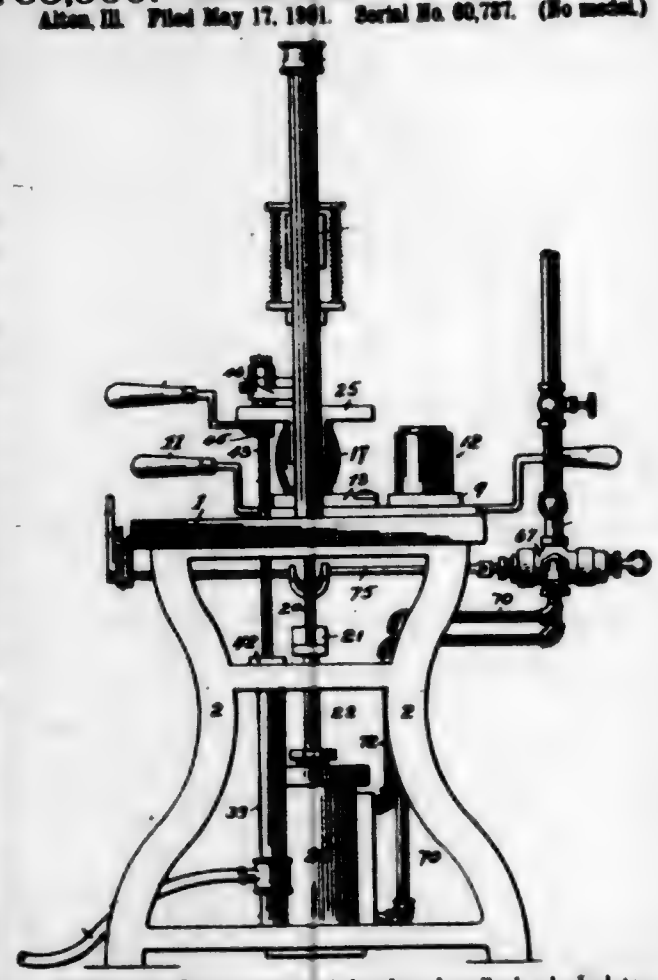

Claim.—1. In a machine of the class described, a bed-plate; mold-bases arranged to slide upon said bed-plate; a press-mold, carried by one of said bases; mating sections forming a blow-mold, carried by the opposite base; means whereby said mating sections are automatically swung apart when the mold-bases are moved backwardly upon the bed-plate; blow-valves operating above the blow-molds, cylinders, pistons and piston-rods beneath the bed-plate; means carried by the piston-rods of the cylinders for operating the blow-valves; tubular connections to the cylinders for conveying compressed air to the ends thereof; and controlling-valves located in said tubular connections; substantially as specified.

2. In a machine of the class described, a bed-plate; blow-molds upon said bed-plate; blow-valves operating above said blow-molds; cylinders beneath the bed-plate; pistons operating in said cylinders; means carried by said pistons for actuating the blow-valves; tubular connections for conveying compressed air to the tops and bottoms of the cylinders; operating-valves located in said tubular connections for controlling the flow of the compressed air above and below the pistons in the cylinders; and operating-handles for said valves; substantially as specified.

3. In a machine of the class described, a bed-plate; blow-molds upon said bed-plate; blow-valves operating above said blow-molds; cylinders beneath the bed-plate pistons operating in said cylinders; means carried by said pistons for actuating the blow-valves; tubular connections for conveying compressed air to the top and bottom of the cylinders; operating-valves located in said tubular connections for controlling the flow of the compressed air above and below the pistons in the cylinders; operating-handles for said valves; exhaust-valves located at different heights in the cylinders; and means carried by the piston-rods for actuating these exhaust-valves; substantially as specified.

4. In a machine of the class described, a bed-plate; in which is formed a plurality of slideways; mold-bases arranged to slide in said slideways; a press-mold carried by one of said bases; mating sections forming a blow-mold; carried by the opposite base; means whereby said mating sections are automatically swung apart when moved with the bases backwardly through the slideway; a blow-valve operating above the blow-mold; mechanism for actuating the blow-valve, and means operated by said last-mentioned mechanism for automatically moving the mold-bases through

the slideway whenever said mechanism is operated, substantially as specified.

5. In a machine of the class described, a bed-plate; blow-molds sliding thereon; tubes beneath the bed-plate to which compressed air is supplied; second tubes telescoping in the first-mentioned tubes; blow-valves carried by said second tubes, and operating above the blow-molds, cylinders beneath the bed-plate; pistons and piston-rods operating in said cylinders; means carried by the piston-rods for operating the blow-valves; tubular connections for conveying compressed air to the tops and bottoms of the cylinders, and operating-valves located in said tubular connections for controlling the flow of compressed air to the cylinders above and below the piston, substantially as specified.

6. In a machine of the class described a bed-plate having a slideway, mold-bases arranged to slide in said slideway, a press-mold carried by one of said bases, mating sections forming a blow-mold carried by the opposite base; means whereby said mating sections are automatically swung apart when moved backwardly with the bases through the slideway; a blow-valve operating above the blow-mold; bed-plate arms extending downwardly from the press-mold base through a slot in the front part of the bed-plate; a curved and slotted blow-valve arm connected to said blow-valve and a blow-valve connecting-rod connecting said bed-plate arm to said blow-valve arm so that the blow-valve is moved into and out of operative position by sliding the mold-bases back and forth.

7. In a machine of the class described a bed-plate, a press-mold and a blow-mold mounted to slide upon the bed-plate, a blow-valve mounted to swing above blow-mold; a bed-plate arm extending downwardly from the mold through a slot in the bed-plate; a curved and slotted blow-valve arm connected to the blow-valve and a blow-valve connecting-rod connecting the bed-plate arm to the blow-valve arm so that the blow-valve is moved into and out of operative position by sliding the mold back and forth.

708,600. **WINDOW.** EDWARD KRAFT, Hudson, Pa. Filed Oct. 24, 1901. Serial No. 79,868. (No model.)

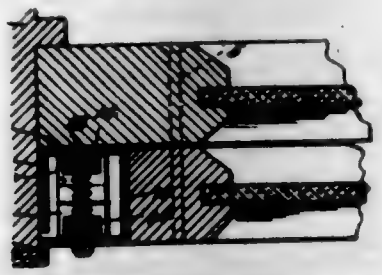

Claim.—1. In a window, the combination of a frame having a parting-strip, the upper and lower sashes arranged in pairs, the outer member of each pair being narrower than the inner member, and the outer member of the upper pair being provided with lateral extensions or flanges, and the window-strips interposed between the side edges of the narrow sashes and the window-frame and composed of fixed sections secured to the window-frame, and movable sections yieldingly engaging the other members of the sashes, substantially as described.

2. In a window, the combination of a frame, a sash, and a window-strip composed of fixed and movable sections provided with sockets, coiled springs disposed horizontally and fitted in the sockets and interposed between the sections, and an adjustable device for limiting the separation of the sections for varying the pressure on the sash, substantially as described.

3. In a window, the combination of a frame, a sash, a window-strip composed of fixed and movable sections angular in cross-section provided with tubular sockets and having overlapping supporting-arms, springs fitted in the sockets, and means for limiting the movement of the movable section, substantially as described.

4. In a window, the combination of a window-frame provided with parting-strips, expansible window-strips located at opposite sides of the parting-strips, and the upper and lower sashes arranged in pairs, the outer sash of the upper pair being provided with laterally-extending flanges arranged on the outer faces of the adjacent window-strips, substantially as described.

708,601. **VEHICLE.** JACOB KRAMM, Lexington, Ky. Filed Nov. 6, 1900. Serial No. 35,567. (No model.)

Claim.—In a vehicle, the combination with a body having guides in the sides of its rear portion, a door and a jump-seat mounted on pivoted supports and normally projecting partially across the door-space, of a rear seat mounted to slide on the guides in the body, clamps secured to the bottom of the rear seat and engaging said guides, a back for the rear seat and having an exposed lower edge, rigid brackets securing said back to the rear seat, and a prop hinged at its lower edge to the rear end of the body and engaging at its upper edge, the exposed lower edge of the back of the rear seat, said back and prop being in the same vertical plane.

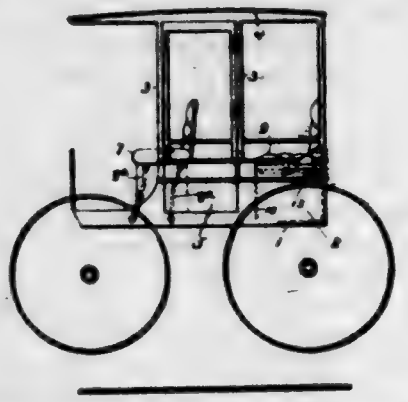

708,602. **RAILWAY-RAIL STAY.** EDWARD LAAS, Elgin, and HIRAM H. SPOONEMORE, Wadsworth, Ill. Filed Oct. 21, 1901. Serial No. 79,416. (No model.)

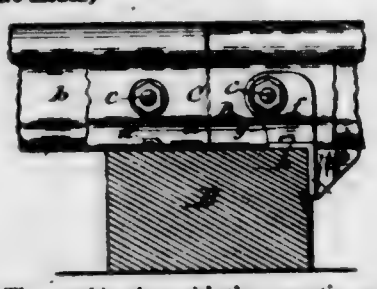

Claim.—1. The combination with the cross-tie and rail seated directly thereon, of a clamping-plate rigidly secured to the web of the rail and formed with an outwardly-extending base-plate, and a flange depending from said base-plate and bearing against the side of the cross-tie and formed with an extension bearing with its top edge on the under side of the rail as set forth.

2. The combination with a railway-rail and cross-tie, of a rail-stay formed in one piece and comprising a clamping-plate rigidly secured to the web of the rail by a bolt passing transversely through said parts, and a brace extending lengthwise the rail and bearing with one end against the cross-tie and its upper edge against the under side of the rail substantially as described.

3. The combination with the railway-rail and cross-tie, of a rail-stay formed in one piece and comprising a clamping-plate bolted to the web of the rail, a depending flange bearing flatwise against the side of the cross-tie and extending under the rail-base, a projection on the flange entering into the side of the cross-tie, and a brace projecting from said flange lengthwise of the rail and bearing against the under side of said rail substantially as described.

4. The combination with the rail and cross-tie, of a rail-stay formed in one piece and comprising a clamping-plate bolted to the web of the rail, a base-plate bearing on top of the cross-tie, a flange depending from the base-plate and bearing against the side of the tie, and a brace projecting at right angles from said flange and bearing against the under side of the rail substantially as described.

708,603. **CINDER-HOPPER.** MATHIAS LAUX, Little Rock, Ark. assignor of two-thirds to Thomas R. Glynn and John E. Coates, Little Rock, Ark. Filed Apr. 7, 1902. Serial No. 101,702. (No model.)

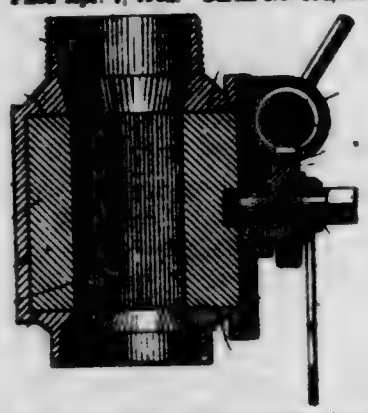

Claim.—1. The combination of a locomotive-barrel, a cinder-hopper secured thereto and comprising a casing having a cylindrical portion, a cylindrical plug or valve rotatably mounted within and entirely inclosed by said cylindrical portion of the casing and provided with a passage-way, the exterior walls of the plug and interior cylindrical and end walls of the casing forming an air-tight bearing on which said plug or valve may turn and a stem connected to the plug or valve and projecting to the

exterior of the casing, and means connected to said stem for operating the plug.

2. The combination of a locomotive-barrel, a cinder-hopper secured thereto and comprising a casing having a cylindrical portion, a cylindrical plug or valve rotatably mounted within said cylindrical portion of the casing and provided with a passage-way, said plug or valve being entirely inclosed by the cylindrical and end walls of the casing, the exterior walls of the plug forming an air-tight joint with the interior walls of the casing, a stem connected to the plug or valve and projecting to the exterior of the casing, operating means mounted on said stem, a cylinder and piston disposed transversely to said stem and connections between the said means and piston for operating the plug.

3. The combination of a locomotive-barrel, a cinder-hopper secured thereto and comprising a casing having a cylindrical portion, a cylindrical plug or valve rotatably mounted within said cylindrical portion of the casing and provided with a passage-way, the exterior walls of the plug forming an air-tight joint with the interior walls of the said cylindrical portion of the casing, a stem connected to the plug or valve and projecting to the exterior of the casing, operating means for said plug or valve mounted on said stem, a cylinder having a slot in the cylindrical wall thereof through which the said operating means projects, a piston movably mounted within the cylinder and connections between the said operating means and the said piston for operating the plug from said piston.

4. The combination of a locomotive-barrel, a cinder-hopper secured thereto and comprising a casing having a cylindrical portion, a cylindrical plug or valve rotatably mounted within said cylindrical portion of the casing and provided with a passage-way, the exterior walls of the plug forming an air-tight joint with the interior walls of the said cylindrical portion of the casing, a stem connected to the plug or valve and projecting to the exterior of the casing, a pinion mounted on said stem, a cylinder disposed transversely of said stem and having a slot in the cylindrical wall thereof through which the pinion projects, a piston movably mounted within the cylinder and provided with a series of circular rings or projections in engagement with the teeth of the pinion for operating the plug from said piston.

5. In combination, a casing having a cylindrical central portion and end extensions, a cylindrical plug fitted to have bearing in the said cylindrical portion of the casing, a stem projecting from one side of the cylindrical plug and provided with a pinion, a cylinder disposed transversely to the said stem and provided with an elongated slot in the cylindrical wall thereof through which the pinion projects, a double-ended piston movable within said cylinder and having a series of rings or circular projections disposed between the two heads and in engagement with the said pinion and means for introducing air or other fluid pressure to either end of the piston as desired.

6. In a locomotive, the combination of the locomotive-barrel, a casing having a cylindrical portion and end extensions, a cylindrical plug provided with a central opening and having its exterior surface fitted air-tight to the interior walls of said central portion of the casing, a stem projecting from one side of the cylinder-plug and provided with a pinion, a cylinder disposed transversely to said stem and having a piston movable therein, said piston being in operative engagement with said pinion, means operative from the locomotive-cab for moving the piston lengthwise of the cylinder, a marker movable with the plug to indicate the open or closed position thereof.

7. In a locomotive, the combination of the locomotive-barrel, a casing having a cylindrical central portion and end extensions, one of the side walls of said cylindrical central portion being removable, a cylindrical plug provided with a central passage-way and having its exterior surface bearing air-tight upon the interior walls of the cylindrical central portion of the casing, a stem secured to said plug and provided with an operating means for said plug, a cylinder disposed transversely of said stem and carried by said removable side wall of the casing, a piston within said cylinder and connection between the piston and operating means.

8. In a locomotive, the combination with the barrel, a cinder-hopper secured thereto and comprising a casing having a cylindrical central portion, a cylindrical plug provided with a passage-way and having an air-tight bearing between the exterior of the plug and the interior of the cylindrical central portion of the casing, an operating-cylinder mounted on said casing, gearing connections between the cylinder and plug, and a series of pipes disposed within the locomotive-barrel to inject steam or compressed air into the accumulation of cinders to dislodge the same while the cylindrical plug is closed and enable the cinders to be discharged without dust when the plug is moved to open position.

708,604. SPIRIT-LAMP. WILLIAM J. D. HAAS, Buffalo, N. Y., assignor to the Buffalo Manufacturing Company, Buffalo, N. Y. Filed Aug. 17, 1901. Serial No. 72,374. (No model.)

Claim.—1. The combination of a lamp provided with a flame-opening and with an air-supply, of a flame-regulator for more or less obstructing said flame-opening, means for regulating the air-supply, and connections whereby one of said regulating means is operated upon the operation of the other, substantially as set forth.

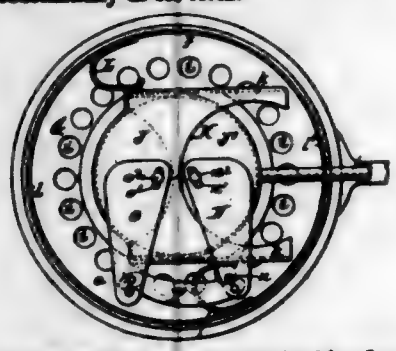

2. The combination with a lamp provided with a flame-opening and an air-supply opening, of a flame-regulator for more or less obstructing said flame-opening, and means operated by the flame-regulator for controlling said air-supply opening, substantially as set forth.

3. The combination with a lamp provided with a flame-opening and an air-supply opening, of a flame-regulator for more or less obstructing said flame-opening, and means carried by said flame-regulator for more or less obstructing said air-supply opening, substantially as set forth.

4. The combination with a lamp provided with a flame-opening and air-supply opening, of a sectional flame-regulator for more or less obstructing said flame-opening, and parts carried by said regulator-sections and controlling said air-openings, substantially as set forth.

5. The combination with a lamp provided with a flame-opening surrounded by a wall provided with air-supply openings, of a sectional flame-regulator provided with flanges for controlling said air-supply opening, substantially as set forth.

6. The combination with a lamp having a flame-opening and a wall surrounding the same and provided with air-openings, of an annular plate surrounding said wall below said air-supply openings and provided with air-openings, and a sectional flame-regulator provided with flanges adapted to be moved to a position between said air-supply openings in the wall and said air-openings in the annular plate to regulate the air-supply, substantially as set forth.

7. The combination with a lamp having a flame-opening, and a wall surrounding the same and provided with air-supply openings, of an annular plate located below said air-supply openings in the wall and having air-openings, and a sectional flame-regulator provided with vertical flanges adapted to be moved to a position between said air-supply openings and the openings in the annular plate, and horizontal flanges extending outwardly from the lower ends of said vertical flanges, substantially as set forth.

8. The combination with a lamp having a flame-opening, of a sectional regulator-cap the sections of which are slidable toward and from each other, an operating-rod for said regulator arranged radially relative to said lamp and connected to one of said cap-sections and movable lengthwise to operate the same, means for guiding said rod, and connections between said regulator-cap sections for causing the operation of both regulator-cap sections when said operating-rod is actuated, substantially as set forth.

708,605. GRIPPER MECHANISM FOR PRINTING-PRESSES. ROBERT MIEHLE, Chicago, Ill. Filed June 15, 1901. Serial No. 64,651. (No model.)

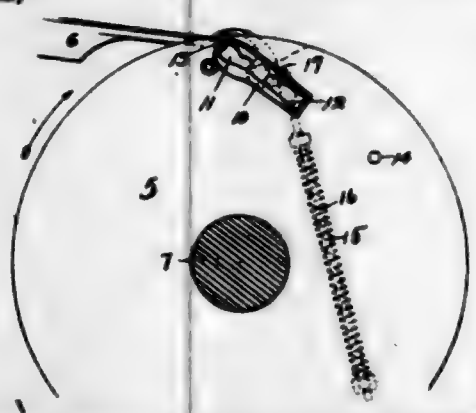

Claim.—1. The herein-described tumbler for gripper mechanisms, having a pin-engaging slot, provided with a concavity in its side adapted to cause the grippers to dwell momentarily in closing just prior to nipping the sheet, substantially as and for the purpose described.

2. In a gripper mechanism for printing-presses, the combination of the cylinder, gripper-shaft and tumbler-engaging pin, with a tumbler on the gripper-shaft having a slot adapted to engage the pin in closing the

grippers, and said slot having its side so shaped or concaved at the point traversed by the pin in closing that the motion of the grippers is arrested or retarded just prior to nipping the sheet and the grippers closed thereon without rebound, substantially as described.

708,606. CAP. JOHN E. McLOUGHLIN, Utica, N. Y. Filed Mar. 17, 1902. Serial No. 98,542. (No model.)

Claim.—1. A cap, comprising a body portion, a visor connected to said body portion, and a sliding yielding band with its normally lower edge extending entirely around, and connected to, the outer lower edge of said body portion, and arranged independently of, and above, said visor, the free longitudinal edge of said band, itself, practically being continuous and, when pulled down, extending below said visor, substantially as described.

2. A cap, comprising a body portion, a visor connected to said body portion, and a sliding band, with its normally lower edge extending entirely around, and connected to, the outer lower edge of said body portion and arranged independently of, and above, said visor, the free longitudinal edge of said band, itself, practically being continuous and, when pulled down, extending below said visor, said band having a transverse slit, with its edges normally in contact and an elastic or yielding gore secured at said slit to said band, substantially as described.

3. As a new article of manufacture, a cap comprising a body portion, a visor fixed to the latter, and a sliding band, with its normally lower edge extending entirely around, and connected to, the outer lower edge of said body portion and arranged independently of, and above, said visor, the free longitudinal edge of said band, itself, practically being continuous, and, when pulled down, extending below said visor, said band having a transverse slit, its edges normally in contact and with an elastic gore secured at said slits to said band, and adapted to fold upon itself when out of use, as around said body portion, substantially as described.

708,607. DRAFT-RIGGING. HERMAN C. PRIESS, Bradford, Ill., assignor of one-half to Frank J. Reichmann, Chicago, Ill. Filed Dec. 12, 1901. Serial No. 85,632. (No model.)

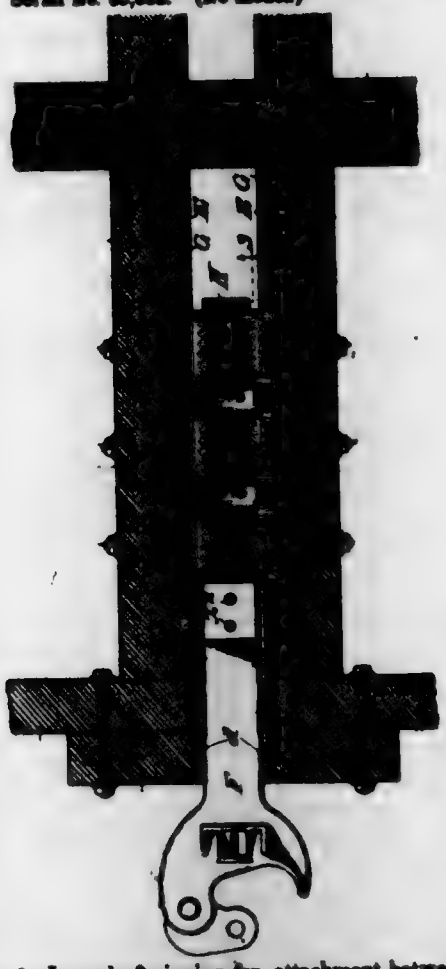

Claim.—1. In a draft-rigging for attachment between the center sills of a freight-car, comprising, in combination, draw-bars extended through openings in the front sills and dead-woods, flanged draft-plates secured to the inner sides of the center sills said draft-plates extending the full length of the car and having reduced ends passed through the openings in the front sills and dead-woods to reinforce the latter, and yielding connections between the draw-bars and draft-plates.

2. In a draft-rigging, the combination with a draw-bar of a stirrup-frame thereon having a series of pockets formed by cross-plates having socket connection with the stirrup-frame, two follower-plates and a separating buffer-spring between the said plates in each pocket, draft-plates secured to the inner sides of the center sills on opposite sides of the stirrup-frame and having coincident sockets, registering with said pockets, into which the follower-plates extend at opposite sides, the sockets presenting stops to limit movement of the follower-plates, substantially as described.

3. In a draft-rigging, the combination of the draft-plates secured to the inner sides of the center sills and having sockets, the draw-bar, stirrup-frame on the draw-bar, pockets in the stirrup-frame formed by cross-plates having socket connection with the stirrup-frame, follower-plates in the pockets extending at opposite sides into said sockets, simultaneously-acting buffer-springs in the pocket between the follower-plates and operating normally to press the follower-plates against the ends of the pockets and sockets, the said sockets presenting shoulders which limit the movements of the follower-plates in each direction and relieve the pressure against the springs when compressed, substantially as described.

708,608. PROTRACTOR. WILLIAM GRATER, Denver, Colo., assignor to Joseph H. Harrison and Meyer Harrison, Denver, Colo. Filed Sept. 9, 1901. Serial No. 74,861. (No model.)

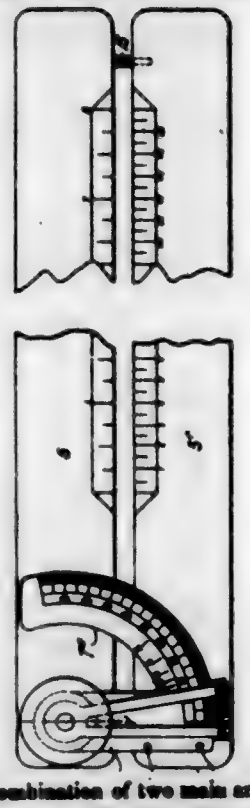

Claim.—1. The combination of two main arms or members, a plate made fast to one arm and extending therefrom, the opposite extremity of the plate being provided with an opening registering with an opening formed in the other member, a screw-stud having an enlarged base inserted in the registering openings, the base of the screw-stud having a bottom flange engaging a recess formed in the member through which it passes, the plate being provided with a quadrant which extends toward the member connected with the screw-stud, a vernier-arm through which the shank of the screw-stud passes, the vernier-arm being made fast to the base of said stud, the vernier being arranged in suitable proximity to the graduated edge of the quadrant, and a nut applied to the threaded shank of the stud, whereby the stud and the member through which its base passes, are clamped together for the purpose set forth.

2. The combination of two arms or members, a plate made fast to one arm and extending therefrom, the opposite extremity of the plate being provided with an opening registering with an opening formed in the other member, a screw-stud inserted in the registering openings, a vernier-arm made fast to said screw-stud, a quadrant connected with the plate, the quadrant and vernier being arranged in suitable proximity to each other; the vernier-arm, the screw-stud and the arm through which it passes being arranged to move together when the other member or arm is relatively stationary, and suitable means for locking the parts in any desired position of adjustment.

3. The combination of two arms or members, a plate made fast to

one arm and extending therefrom, the opposite extremity of the plate being provided with an opening registering with an opening formed in the other member, a screw-stud having an enlarged base inserted in the registering openings, the plate being provided with a quadrant which extends toward the member connected with the screw-stud, the base of the screw-stud having a bottom flange engaging a recess formed in the member through which it passes, a vernier-arm through which the shank of the screw-stud passes, the said arm being made fast to the base of the stud, the vernier being arranged to move around a center common to the arc of the quadrant, and arranged to travel in the plane of and in suitable proximity to the quadrant, and a nut applied to the threaded shank of the stud whereby the stud and the member through which the base passes, are clamped together for the purpose set forth.

4. In an instrument of the class described, the combination of two main arms 5 and 5^a, a plate made fast to the arm 5^a and provided with an opening registering with the opening in the arm 5, a screw-stud inserted in the said registering openings, a vernier-arm applied to said stud and made fast thereto, a vernier attached to said arm, a quadrant connected with the plate adjacent the vernier, a washer applied to the stud above the vernier-arm, and recessed to receive the same, and a nut applied to the stud above the washer, substantially as described.

5. In an instrument of the class described, the combination of two main arms or members, a plate made fast to one arm and extending therefrom, the opposite extremity of the plate being provided with an opening registering with an opening formed in the other member, a screw-stud having an enlarged base inserted in the registering openings, the base of the stud having a bottom flange engaging a circular recess or groove formed in the member through which it passes, the plate being provided with a quadrant which extends toward the member connected with the screw-stud, a vernier-arm through which the shank of the screw-stud passes, the said arm being made fast to the base of the stud, the vernier being arranged to travel in suitable proximity to the graduated edge of the quadrant, a washer applied to the stud above the vernier-arm, and recessed to receive the latter, and a nut applied to the stud above the washer, substantially as described.

708,609. CAR-BOLSTER. GILBERT P. RITTER, Chicago, Ill. Filed Apr. 24, 1902. Serial No. 104,516. (No model.)

Claim.—1. A trussed car-bolster, provided with spanners for the support of the car-sills, substantially as and for the purposes specified.

2. A trussed car-bolster, provided with spanners for the support of the car-sills, said spanners interposed between the tension members, substantially as and for the purposes specified.

3. A trussed car-bolster, provided with spanners interposed between the tension members and in alinement with the compression members of the bolster, substantially as and for the purposes specified.

4. A trussed car-bolster, comprising in combination, a strut, tension and compression members, spanners, and end caps, the end caps having vertically-alined sockets for the compression members and spanners, substantially as and for the purposes specified.

5. A trussed car-bolster, comprising in combination, a strut, tension and compression members, spanners, end caps, and side bearings, the end caps having inward extensions for the reception of the side bearings, and the side bearings arranged to straddle the compression members, substantially as and for the purposes specified.

6. In a trussed bolster, the combination with the tension and compression members thereof, of an end cap having an inward extension, a spanner which engages the inward extension of the end cap, and a side bearing which straddles the compression members and is secured to the inward extension of the end cap, substantially as and for the purposes specified.

703,610. TRAP OR SEPARATOR. GEORGE I. ROBERTS, New Rochelle, N. Y. Filed Feb. 7, 1902. Serial No. 93,088. (No model.)

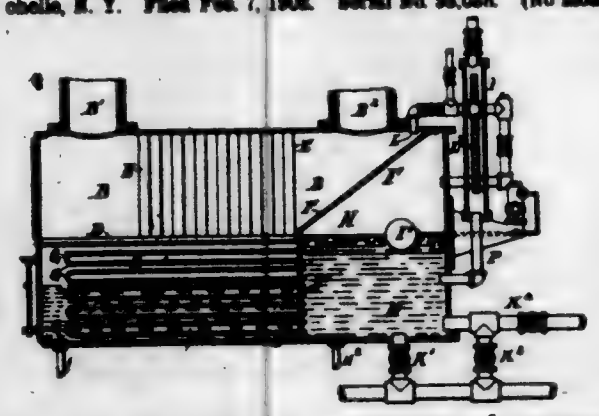

Claim.—1. The combination, in a steam-trap, of a grease-extracting compartment provided with steam inlet and outlet openings, a drip-receiving compartment, and a return-water compartment provided with a plurality of branch bent tubes extending from the walls of said return-water compartment into said drip-receiving compartment, substantially as and for the purposes set forth.

2. The combination, in a steam-trap, of a grease-extracting compartment provided with steam inlet and outlet openings; a drip-receiving compartment; a return-water compartment, and controlled means for admitting steam from said grease-extracting compartment into said return-water compartment, substantially as and for the purposes set forth.

3. The combination, in a steam-trap, of a grease-extracting compartment, provided with steam inlet and outlet openings; a drip-receiving compartment; a return-water compartment provided with branch water-heating compartments extending into said drip-receiving compartment; means for admitting steam from the grease-extracting compartment, and controlled means for admitting reinforce live steam and reinforce-water, substantially as and for the purposes set forth.

4. The combination, in a steam-trap, of a grease-extracting compartment, provided with steam inlet and outlet openings; a drip-receiving compartment; a return-water compartment; a reinforce-admission pipe connecting with said return-water compartment, a perforated steam-jet inclosed within said reinforce-admission pipe, for heating the reinforce water as it passes through substantially as set forth.

5. The combination, in a steam-trap, of a grease-extracting compartment, provided with steam inlet and outlet openings; a drip-receiving compartment; a return-water compartment, means for admitting reinforce-water to the said return-water compartment, and a steam-jet connection between the grease-extracting compartment and an enlarged portion of the reinforce-water connection, substantially as and for the purposes set forth.

708,611. ATOMIZING APPARATUS. JOHN ROBERTSON, Cincinnati, Ohio. Filed Apr. 11, 1898. Serial No. 677,191. (No model.)

Claim.—1. A vaporizing or atomizing apparatus, comprising a tank or reservoir for holding air under pressure, a standard extending up from

said tank or reservoir and provided with an air duct or passage communicating with the tank or reservoir and vaporizing or atomizing devices supported on said standard above the air tank or reservoir by the air and vapor pipes radiating from the standard communicating with the respective atomizing devices and supplied from the air duct or passage of the standard with air for the formation of vapor, substantially as set forth.

2. A vaporizing or atomizing apparatus comprising a standard having an air duct or passage adapted for communication with an air tank or reservoir and mounted thereon, a series of pipes radiating from said standard, atomizing-flasks arranged in annular series about said standard, and having vaporizing-tubes supplied from said pipes, means to carry the vapor from said flasks and valves controlling the flow of air and vapor through said pipes, substantially as set forth.

3. A vaporizing or atomizing apparatus comprising a series of flasks each having a vaporizing-tube, a pipe to supply air to each tube, a valve to control the passage of air to each flask independent of the other flasks in the series, a pipe to carry the vapor from each flask and a valve to control the passage of vapor from each flask independent of the other flasks, substantially as set forth.

4. A vaporizing or atomizing apparatus comprising a series of atomizing-flasks each having a vaporizing-tube and means to supply air to said tube, a valve to control the passage of air to each flask, a mixing flask or chamber to receive the vapors from the several flasks, means to administer the vapors from the mixing flask or chamber, a pipe to carry the vapor from each atomizing flask or chamber, and a valve, to control the passage of the vapor, interposed between the mixing-flask and each atomizing-flask, substantially as set forth.

5. A vaporizing or atomizing apparatus comprising a standard having an air duct or passage, adapted for communication with an air tank or reservoir, a series of atomizing-flasks having vaporizing-tubes connected to the air duct or passage of the standard, said standard having a vapor-passage surrounding said air duct or passage, pipes to carry the vapor from the atomizing-flasks to said vapor-passage, valves in said pipes, and means to administer the vapor, substantially as set forth.

6. A vaporizing or atomizing apparatus comprising a standard having an air duct or passage adapted for communication with an air tank or reservoir, a series of atomizing-flasks each having a vaporizing-tube, a pipe connecting the vaporizing-tube of each flask with the air duct or passage of the standard, said standard having a vapor-passage surrounding its air duct or passage, a pipe to carry the vapor from each flask to said vapor-passage, a valve in each of said pipes and means to administer the vapor, substantially as set forth.

7. A vaporizing or atomizing apparatus, comprising a series of atomizing-flasks having vaporizing-tubes and means to supply air to said tubes, a mixing flask or chamber to receive the vapors from said atomizing-flasks, means to administer the vapor from said mixing flask or chamber, and means to supply air under pressure to said mixing flask or chamber independent of the atomizing-flasks and tubes, for the purposes specified, substantially as set forth.

8. A vaporizing or atomizing apparatus comprising a support having an air duct or passage, adapted for communication with an air tank or reservoir, a series of atomizing-flasks each having a vaporizing-tube, a pipe connecting each vaporizing-tube to the air duct or passage of the support, a mixing flask or chamber, pipes connecting the several atomizing-flasks with said mixing flask or chamber, valves in said pipes, means to administer the vapor from the mixing flask or chamber, and a valved pipe leading from the air duct or passage of the support to the mixing flask or chamber, substantially as set forth.

9. A vaporizing or atomizing apparatus comprising a standard having an air duct or passage adapted for communication with an air tank or reservoir, and provided with a vapor-passage surrounding said air duct or passage, a plurality of atomizing-flasks, pipes radiating from the standard and supporting at their outer ends said flasks, vaporizing-tubes in the flasks and supplied with air through said pipes from the air duct or passage in the standard, vapor-pipes radiating from the vapor-passage and communicating between said passage and the atomizing-flasks, valves in said vapor-pipes, a mixing-flask having a pipe connecting it to the vapor-passage and means to administer the vapor from said mixing-flask, the said flasks being arranged in annular series around said standard, substantially as set forth.

10. In a vaporizing or atomizing apparatus, the combination of a series of atomizing-flasks, a mixing flask or chamber to receive the vapors from said atomizing-flasks, a hose or the like through which to administer the vapor from the mixing flask or chamber, and a rotative valve controlling the flow of vapor through said hose, said valve being provided with a plurality of transverse openings and acting when rotated to produce a pulsating flow of vapor through said hose, substantially as set forth.

11. In an atomizing or vaporizing apparatus, the combination of a plurality of atomizing-flasks, a mixing flask or chamber to receive the vapors from said atomizing-flasks, a hose or the like through which to administer the vapor from the mixing flask or chamber, a rotative valve controlling the flow of vapor through said hose and provided with a plurality of openings adapted to register with the opening in the hose and acting, when rotated, to produce a pulsating flow of vapor through said hose, and means to limit the rotatory movement of the valve, substantially as set forth.

12. In an atomizing or vaporizing apparatus, the combination of a plurality of atomizing-flasks, a mixing flask or chamber to receive the vapors from said atomizing-flasks, a hose or the like through which to administer the vapor from the mixing flask or chamber, a rotative valve for controlling the flow of vapor through said hose and provided with a plurality of openings adapted to register with the openings in the outlet, and acting when rotated, to produce a pulsating flow of vapor through said hose, means to limit the rotatory movement of the valve, and a pressure-gage to indicate the tension of the vapor in the mixing flask or chamber, substantially as set forth.

13. In a nebulizer, the combination with an air-tube receiving air under pressure, of a nebula-tube, a flask connected to said nebula-tube, a stop-cock between the flask and nebula-tube, a connecting-pipe between the flask and air-tube, and an independent stop-cock controlling said pipe, substantially as described.

14. In a nebulizer, the combination with an air-tube receiving air under pressure, of a nebula-tube, a plurality of flasks independently connected to the nebula-tube each having an independent cock controlling the passage from the flask to the nebula-tube, and a plurality of connecting-pipes each connecting a flask with the air-tube and each pipe being provided with an independent cock, substantially as described.

708,612. NUT-LOCK. JAMES F. ROBINSON, WACO, TEX. Filed Dec. 31, 1901. Serial No. 87,904. (No model.)

Claim.—In a nut-locking device, longitudinal grooves formed in the threaded portion of the bolt, an opening formed through from the outside of the nut to the interiorly-threaded opening, a locking-pin adapted to reciprocate within said opening and engage the grooves formed in the bolt when the nut is in certain positions, a flat spring, one end of which is secured to the nut and the other secured to the locking-pin so as to be raised and lowered with the same and hooked against the pin so to hold it in its locked position, a turn-button pivoted to the nut and adapted to be turned underneath the spring so as to hold the locking-pin out of engagement with the grooves, an enlargement formed upon the upper end of the pin for the purpose of withdrawing the same, substantially as and for the purpose set forth.

708,618. BICYCLE DRIVING MECHANISM. THOMAS C. ROBINSON, Boston, Mass., assignor of one-half to E. Baker Welch and H. Augusta Welch, Cambridge, Mass. Filed Dec. 26, 1899. Serial No. 741,587. (No model.)

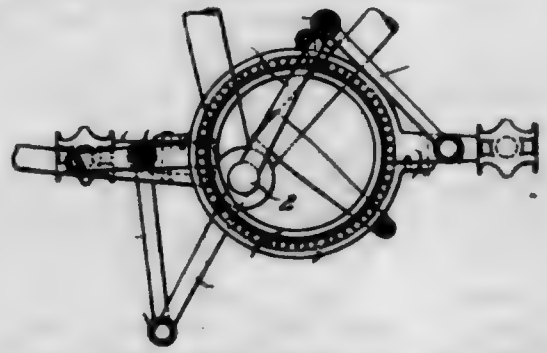

Claim.—1. In a bicycle driving mechanism, the combination of a driving-shaft, a crank attached thereto, a pedal, and means for guiding said pedal in a path eccentric to the driving-shaft, and a compensating connection between the pedal and the crank, said connection being located on the opposite side of the center of the pedal-path from the said pedal and adapted to diminish the upstroke velocity of the pedal relatively to its downstroke velocity.

2. In a bicycle driving mechanism, the combination of a frame, a driving-shaft journaled thereon, a crank attached to said shaft, an eccentric affixed to said frame and having a strap, a pedal attached to said strap, and a link pivotally attached to the crank, and to the eccentric-strap at a point on the opposite side of the center of the eccentric from said pedal, whereby the upstroke velocity of the pedal is diminished.

703,614. CAR-BRAKE. FREDERICK W. BOST, Detroit, Mich., assignor of three-fourths to Rollin C. Sprague, Edward H. Patterson, and James A. H. Hewton, Detroit, Mich. Filed Oct. 19, 1901. Serial No. 79,358. (No model.)

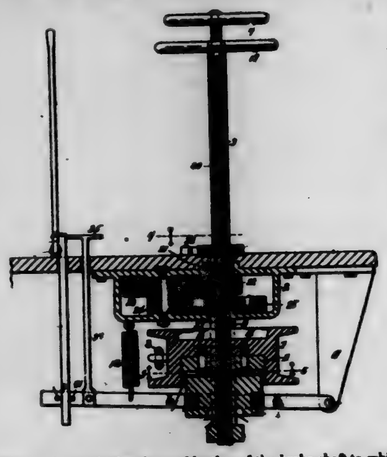

Claim.—1. In a brake, the combination of the brake-shaft to which the brake-chain is connected, means for rotating said shaft to make a direct application of power to the brake-chain and a train of gear-wheels continuously in gear connected to the brake-shaft whereby the power may be indirectly applied to the brake-shaft in a manner to obtain an increased leverage thereon independently of the direct means for rotating said shaft.

2. In a brake, the combination of a brake-shaft upon which the brake-chain is adapted to wind, said shaft carrying a hand-wheel, or other means of rotating it, to wind up the brake-chain, a train of gears connected with the brake-shaft and means for operating said gears to rotate the brake-shaft independently of the operating means connected directly thereto.

3. In a brake, the combination of a shaft adapted to wind up the brake-chain, means for rotating said shaft by a direct application of power thereto, a train of gears connected with said shaft whereby the power which is applied to the shaft may be compounded, a hollow shaft connected with said gears embracing the brake-shaft and means for rotating said hollow shaft.

4. In a brake, the combination of a brake-shaft adapted to wind the brake-chain thereon, means directly connected with said shaft for rotating it, a ratchet-wheel on said shaft, a gear-wheel loosely mounted on the shaft and carrying a pawl which engages said ratchet, a gear and pinion engaging said ratchet-carrying gear-wheel and means for operating said gears to impart a rotation to said shaft through said ratchet.

5. In a brake, the combination of a brake-shaft, means connected directly with said shaft for rotating it, a hollow shaft embracing the brake-shaft, a ratchet-wheel fixed on the brake-shaft, a series of gear-wheels connecting said hollow shaft with said ratchet and means for rotating said hollow shaft.

6. In a brake, the combination of a brake-shaft, a ratchet fixed on said brake-shaft, an independent shaft carrying a pinion, gears interposed between said pinion and said ratchet and means for rotating said independent shaft to apply movement to the brake-shaft through said ratchet and gears.

7. In a brake, the combination of a brake-shaft, a spool loose upon said shaft adapted to be connected with the brake-chain, a clutch splined upon said shaft and normally engaging said spool, means for rotating the shaft directly to wind the brake-chain upon the spool, a series of gear-wheels connected with said shaft whereby it may be rotated indirectly to obtain an increase of power, means for rotating said gears and means for releasing said clutch.

8. In a brake, the combination of a brake-shaft, means for rotating the shaft directly to wind the brake-chain thereon, a ratchet-wheel fixed on the brake-shaft, a gear-wheel loose on the shaft and connected by a spring-pawl with said ratchet, a hollow shaft embracing the brake-shaft, a pinion on said hollow shaft, gears connecting said pinion with the gear carrying the pawl, and means for rotating said hollow shaft.

9. In a brake, the combination of the brake-shaft, a spool loosely mounted thereon adapted to wind up the brake-chain, a clutch-collar splined on said shaft normally in engagement with said spool, means for rotating said spool directly and indirectly a vertically-movable lever connected with said clutch and means for depressing said lever to disengage the clutch from the spool.

703,615. VAGINAL SYRINGE. NICOLAUS C. H. SCHWARTZ, New York, N. Y. Filed Feb. 23, 1901. Serial No. 48,304. (No model.)

Claim.—The herein-described vaginal syringe, comprising a hollow pear-shaped body portion having a contracted portion intermediate its ends and a series of perforations adjacent to the line of contraction, the smaller end of said body portion terminating in a perforated bulbous nozzle portion and the larger end in a neck, said body portion being provided in the plane of its substantially greatest diameter with a groove, a packing-ring seated in said groove and adapted to close the valve, a detachable inlet-tube adapted for insertion through said body portion and provided at its outer end with a groove and a packing-ring seated in the last-named groove and adapted to form a tight joint between the tube and the contracted portion between the nozzle portion and the body portion.

703,616. VAGINAL SYRINGE. NICOLAUS C. H. SCHWARTZ, New York, N. Y. Filed Feb. 23, 1901. Serial No. 48,305. (No model.)

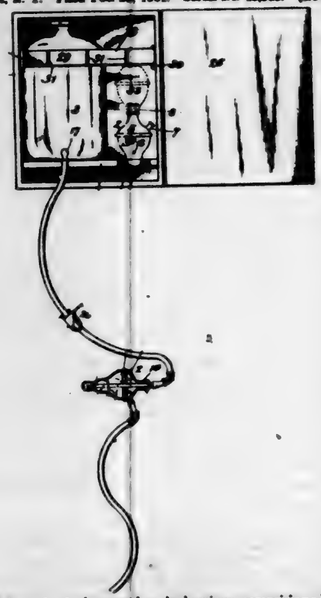

Claim.—1. An improved vaginal syringe, comprising a hollow bulbous body portion having a contracted portion intermediate its ends and a series of perforations adjacent to the line of contraction and provided at its smaller end with a perforated bulbous nozzle portion and at its larger end with a projecting neck, said body portion being provided in its upper rear part with an air-vent and in its lower rear part with a discharge-opening, and an injection-tube adapted to be inserted in the body portion and provided with means for forming a tight joint with the nozzle portion and with the projecting neck.

2. An improved vaginal syringe, comprising a hollow, bulbous portion having a contracted portion intermediate its ends and a series of perforations adjacent to the line of contraction and provided at its smaller end with a perforated bulbous nozzle portion and at its larger end with a projecting neck, said body portion being provided in its upper rear part with an air-vent and in its lower rear part with a discharge-opening, an injection-tube adapted to be inserted in the body portion and provided with means for forming a tight joint with the nozzle portion and with the projecting neck, a water-reservoir, a flexible connection-tube extending between the reservoir and the injection-tube, a flexible tube connected with the discharge-opening, rigid tubular elbows interposed between the connection-tube and the water-reservoir and the injection-tube respectively and between the discharge-opening and the discharge-tube.

3. An improved vaginal syringe, comprising a hollow, bulbous body portion having a contracted portion intermediate its ends and a series of perforations adjacent to the line of contraction and provided at its smaller end with a perforated bulbous nozzle portion and at its larger end with a projecting neck, said body portion being provided in its upper rear part with an air-vent and in its lower rear part with a discharge-opening, an injection-tube adapted to be inserted in the body portion and provided with means for forming a tight joint with the nozzle portion and with the projecting neck, a water-reservoir, a flexible connection-tube extending between the reservoir and the injection-tube, a flexible tube connected with the discharge-opening, rigid tubular elbows interposed between the connection-tube and the water-reservoir and the injection-tube respectively and between the discharge-opening and the discharge-tube, and means for regulating the inflow and outflow.

4. An improved vaginal syringe, comprising a hollow, bulbous body portion having a contracted portion intermediate its ends and a series of perforations adjacent to the line of contraction and provided at its smaller end with a perforated bulbous nozzle portion and at its larger end with a projecting neck, said body portion being provided in its upper rear part with an air-vent and in its lower rear part with a discharge-opening, an injection-tube adapted to be inserted in the body portion and provided with means for forming a tight joint with the nozzle portion and with the projecting neck, a water-reservoir, a flexible connection-tube extending between the reservoir and the injection-tube, a flexible tube connected with the discharge-opening, rigid tubular elbows interposed between the connection-tube and the water-reservoir and the injection-tube respectively and between the discharge-opening and the discharge-tube, and means of regulating the inflow and outflow, the formation and organization of the parts being such that the water-reservoir may be supported at a point above the point of operation and a supply of water may be uninterruptedly passed to and discharged from the vagina during the operation.

5. An improved vaginal syringe, comprising a hollow, bulbous body portion having a contracted portion intermediate its ends and a series of perforations adjacent to the line of contraction and provided at its smaller end with a perforated bulbous nozzle portion and at its larger end with a projecting neck, said body portion being provided in its upper rear part with an air-vent and in its lower rear part with a discharge-opening, an injection-tube adapted to be inserted in the body portion and provided with means for forming a tight joint with the nozzle portion and with the projecting neck, a water-reservoir, a flexible connection-tube extending between the reservoir and the injection-tube, a flexible tube connected with the discharge-opening, rigid tubular elbows interposed between the connection-tube and the water-reservoir and the injection-tube respectively and between the discharge-opening and the discharge-tube, and a cabinet secured above the point of operation and adapted to contain the water-reservoir and, when not in use, the other parts.

703,617. COUNTER-SKIVING MACHINE. JAMES R. SCOTT, Boston, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., a Corporation of New Jersey. Filed Sept. 21, 1900. Renewed Oct. 5, 1901. Serial No. 77,736. (No model.)

Claim.—1. A counter-skiving machine, having, in combination, a die-roller provided with a die-cavity whose greatest length extends longitudinally of the roller, a pressure device, and mechanism for feeding a counter-blank sidewise to the die-roller and pressure device, substantially as described.

2. A counter-skiving machine, having, in combination, a die-roller provided with a die-cavity whose greatest length extends longitudinally of the roller, and a pressure device, substantially as described.

3. A counter-skiving machine, having, in combination, a die-roller provided with a die-cavity whose greatest length extends longitudinally of the roller, a pressure device, and mechanism for feeding a counter-blank sidewise to the die-roller and pressure device comprising a feed-slide provided with a blank-carrier engaging one side and both ends of the blank and forming a guide for the blank in passing to the roller and means for actuating the slide to move the carrier in proximity to the roller, substantially as described.

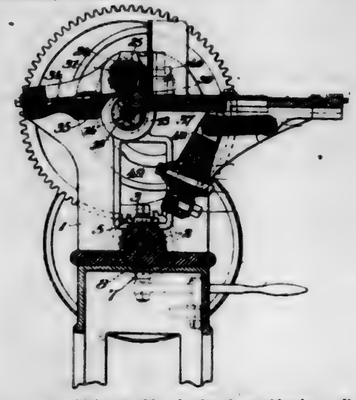

4. A counter-skiving machine, having, in combination, a die-roller provided with a die-cavity whose greatest length extends longitudinally of the roller, a pressure device, a feed-slide engaging one side of the blank, guides engaging the ends of the blank, and means for actuating the feed-slide, substantially as described.

5. A counter-skiving machine, having, in combination a die-roller, a pressure device, a feed-table extending in close proximity to the line of contact of the die-roller and pressure device, a hopper above said table provided with a flange also extending in close proximity to the line of contact of the die-roller and pressure device, a feed-slide movable over said table beneath the hopper arranged to feed a blank over the table and beneath the flange of the hopper to the die-roller and pressure device, and means for actuating the feed-slide, substantially as described.

6. A counter-skiving machine, having, in combination, a die-roller, a pressure device, a feed-table extending in close proximity to the line of contact of the die-roller and pressure device, a hopper above said table provided with a flange also extending in close proximity to the line of contact of the die-roller and pressure device, a feed-slide movable over said table beneath the hopper provided with a blank-carrier engaging one side and both ends of the blank and forming a guide for the blank in passing to the die-roller, and means for actuating the slide to feed a blank over the table and beneath the flange of the hopper to the die-roller and pressure device, substantially as described.

7. A counter-skiving machine having, in combination, a die-roller, a pressure device, a hopper provided with an open rear side, a guard-plate at the rear of the hopper, a feed-slide movable beneath the hopper and guard-plate, and means for actuating the feed-slide, substantially as described.

8. A counter-skiving machine, having, in combination, a die-roller provided with a die-cavity whose greatest length extends longitudinally of the roller, a pressure device, mechanism for feeding a counter-blank sidewise to the die-roller and pressure device, and guides above and below and at each end of the blank for guiding the blank in its passage to the die-roller and pressure device, substantially as described.

703,618. METHOD OF PRODUCING HOLLOW GLASS BODIES. PAUL T. RIEVERT, Dresden, Germany. Filed Mar. 21, 1902. Serial No. 98,833. (No specimens.)

Claim.—1. The herein-described improvement in the process of producing hollow glass bodies, which consists in first obtaining a partly-formed hollow body from a mass of liquid glass and afterward while said body remains plastic distributing an undesirable accumulation of glass which may occur in any part of said partly-formed body by producing an indentation therefrom the exterior thereof, and finally allowing the indentation to bulge outward.

2. The herein-described improvement in the process of producing hollow glass bodies, which consists in first obtaining a partly-formed hol-

low body from a mass of liquid glass, next for the purpose of distributing such undesirable accumulation of glass as may occur in any part of said partly-formed body, producing an indentation into such part thereof from its exterior and allowing the glass while still plastic to sag at the sides of such indentation, and finally allowing the said indentation to bulge outward.

3. The herein-described improvement in the process of producing hollow glass bodies, which consists in first obtaining a partly-formed hollow body from a mass of liquid glass, next for the purpose of distributing such undesirable accumulation of glass as may occur in any part of said partly-formed body, producing an indentation into such part thereof from its exterior and at the same time blowing said body from its interior, and finally bulging out the so-indented part by continued blowing.

708,619. APPARATUS FOR GENERATING WATER-GAS. Hugo Strache, Vienna, Austria-Hungary. Filed Oct. 31, 1900. Serial No. 35,008. (No model.)

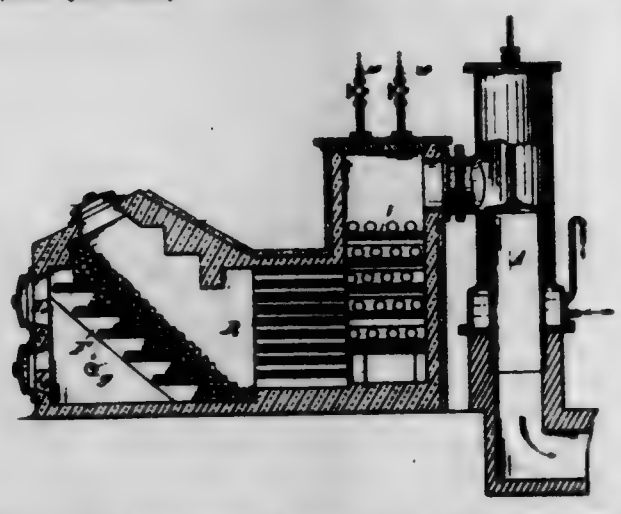

Claim.—In a gas-generating apparatus, the combination, with a horizontally-attenuated inclosure having a fuel-supply inlet and an outlet for the generated gas, of an inclined fuel-support and an evaporator, means for introducing into the inclosure the fluid to be evaporated, and a reticulated heat-storing medium comprising a series of horizontally-extending tubes disposed longitudinally of said inclosure, said fuel-support having a relatively large supporting area and the heat-storing medium being disposed in close proximity to the top or fuel side thereof, said fuel-support, the heat-storing medium and the evaporator being arranged relatively horizontal in said inclosure, substantially as described.

708,620. APPARATUS FOR ROLLING SHEET METAL. Peter O. Stevenson, Braddock, Pa. Filed Nov. 13, 1901. Serial No. 82,137. (No model.)

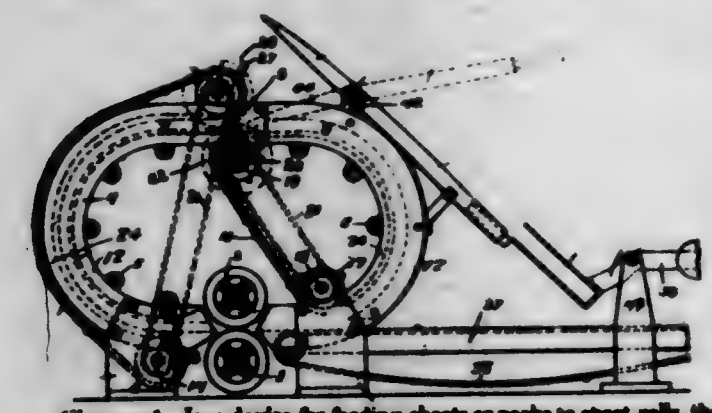

Claim.—1. In a device for feeding sheets or packs to sheet-rolls, the combination of the rolls, and a conveyer extending from the rear of the rolls around to the front thereof and out of contact therewith, said conveyer having its ends in line with the same pass of the rolls and in position to receive the sheet or pack from, and feed the same to, said pass.

2. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in line with the same pass of the rolls and in position to receive the sheet or pack from, and feed the same to, said pass, and positively-driven feeding mechanism in said conveyer, said feeding mechanism being out of contact with the rolls.

3. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof and out of contact therewith, said conveyer having its ends in line with the same pass of the rolls and in position to receive the sheet or pack from, and feed the same to, said pass, and positively-driven feeding-chains in said conveyer.

4. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in line with the same pass of the rolls and in position to receive the sheet or pack from, and feed the same to, said pass, positively-driven feeding-chains in said conveyer, said chains being out of contact with the rolls, and projections or fingers on said chains for engaging the sheet or pack.

5. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in line with the same pass of the rolls and in position to receive the sheet or pack from, and feed the same to, said pass, positively-driven feeding-chains in said conveyer and out of contact with the rolls, guides on the conveyer and means on the chains engaging said guides.

6. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in line with the same pass of the rolls and in position to receive the sheet or pack from, and feed the same to, said pass, positively-driven feeding-chains forming one side of said conveyer, and guide-bars forming the opposite side of said conveyer.

7. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in position to receive the sheet or pack from, and feed the same to, said rolls, and mechanism for extracting the sheets or packs from said conveyer and reversing the same endwise.

8. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in position to receive the sheet or pack from, and feed the same to, said rolls, positively-driven feeding means in said conveyer, and mechanism for extracting the sheets or packs from the conveyer, reversing the same endwise and returning the same to the rolls.

9. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in position to receive the sheet or pack from, and feed the same to, said rolls, a frame adjacent to said conveyer, and means for moving said frame to project one end thereof into the conveyer.

10. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in position to receive the sheet or pack from, and feed the same to, said rolls, a frame in proximity to the conveyer in position to have one end enter said conveyer, and mechanism operating in connection with said pivoted frame adapted to receive the pack therefrom and present the same to the rolls rear end first.

11. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls over the same to the front thereof, positively-driven means in said conveyer, a frame pivoted adjacent the conveyer in position to have one end enter the conveyer and receive the pack or sheet therefrom, a pivoted fork adapted to receive the pack from the frame and to return the same to the rolls rear end first.

12. In a device for feeding plates or packs to sheet-rolls, the combination with the rolls, of a conveyer extending from the rear of the rolls around to the front thereof, said conveyer being out of contact with the rolls and having its ends in position to receive the sheet or pack from, and feed the same to, said rolls, and a feed-table in front of the rolls below the front end of the conveyer in position to feed a sheet or bar to said rolls.

13. In a device for feeding sheets or packs to sheet-rolls, the combination with the rolls, of a positively-driven conveyer extending from the rear of the rolls around to the front thereof, said conveyer having its ends in position to receive the sheet or pack from, and feed the same to, said pass, a feed-table in front of the rolls below the front end of the conveyer in position for feeding sheets or bars to the rolls, a frame pivoted in proximity to the conveyer and adapted to enter the conveyer and receive the sheet or pack therefrom, and a pivoted fork adapted to receive the pack therefrom from the pivoted frame and to be then rocked to deliver the sheet or pack to the feed-table.

708,621. COIN-CONTROLLED DEVICE. Henry G. Sweeney, Chicago, Ill., assignor to Frank G. Kammerer, Chicago, Ill. Filed July 8, 1901. Serial No. 67,446. (No model.)

Claim.—1. A coin-controlled mechanism comprising two manually-operable actuating members, a tilting detent-lever adapted to be moved

from the weight of a coin, means operated by the detent-lever for holding both actuating members from movement, a coin-holder having two coin-receiving slots and a coin-chute, said coin-holder and coin-chute being movable one with respect to the other and means actuated by the movement of either of said manually-operable members for shifting the position of the coin holder and chute with respect to each other, so as to bring either slot of the coin-holder beneath the chute.

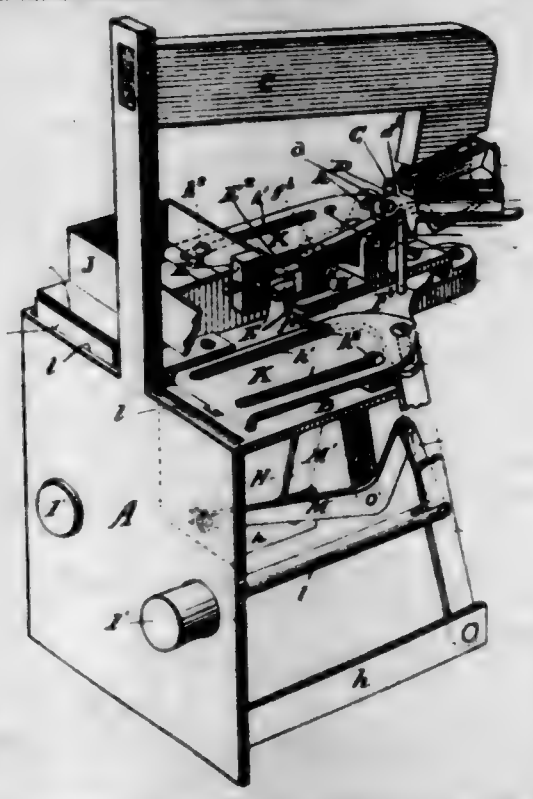

2. A coin-controlled mechanism comprising two manually-operable actuating members, a tilting detent-lever adapted to be moved by the weight of a coin, means operated by the detent-lever for holding the actuating members from movement, a coin-holder having two coin-receiving slots and a coin-chute, said coin-holder and coin-chute being movable one with respect to the other, means actuated by the movement of either one of said manually-operable members for shifting the position of the coin holder and chute so as to bring either slot of the coin-holder beneath the chute, and a stop-plate for confining a coin in the slot of the coin-holder which is beneath the chute.

3. A coin-controlled mechanism comprising two manually-operable members, a locking-plate, a tilting detent-lever adapted to engage said locking-plate, a coin-chute and a coin-holder which is connected with and gives movement to the detent-lever and is provided with two coin-slots, said coin-chute and coin-holder being movable one with respect to the other, so that either of the slots of the coin-receptacle may be brought into position beneath the chute.

4. A coin-controlled mechanism comprising two manually-operable actuating members, a locking-plate, a tilting detent-lever adapted to engage said locking-plate to hold said manually-operable members from movement, a coin-chute, and a coin-holder which is connected with and gives movement to the detent-lever and is provided with two coin-slots, said coin-holder and coin-chute being movable one with respect to the other, so that either slot of the coin-holder may be brought beneath the chute, and means operated through said manually-operable members for producing such relative movement of the coin-holder with respect to the coin-chute.

5. A coin-controlled mechanism comprising two manually-operable members, a locking-plate, a tilting detent-lever constructed to engage said locking-plate for holding the manually-operable parts from movement, and adapted to be actuated by the weight of the coin, a coin-chute and a coin-holder which is connected with and gives movement to the detent-lever and is provided with two coin-receiving slots, said chute and stop-plate being movable one with respect to the other, so that either slot of the coin-holder may be brought beneath the chute, and a stop-plate adapted to hold a coin in that one of the two coin-receiving slots which is at any time beneath the chute, and means operated by the said manually-operable parts constructed to effect such relative movement of the coin holder and chute.

6. A coin-controlled mechanism comprising two manually-operable actuating members, a locking-plate connected and movable with both members, a tilting detent-lever adapted to be moved by the weight of a coin and which is constructed to engage the locking-plate to hold the actuating members from movement, a coin-holder which is connected with and gives movement to the detent-lever and is provided with two coin-receiving slots and a coin-chute, said coin-holder and coin-chute being movable one with respect to the other and means actuated through the movement of either one of said manually-operable members for shifting the position of the coin holder and chute with respect to each other.

7. A coin-controlled mechanism comprising two manually-operable actuating members, a locking-plate connected and moving with both members, a tilting detent-lever adapted to be moved by the weight of the coin and which is constructed to hold the actuating members from movement, a coin-holder mounted on said tilting lever and movable laterally with respect thereto, said coin-holder having two coin-receiving slots, a coin-chute, and means operated through the movement of said locking-plate for shifting the position of the coin-holder with respect to the chute.

8. A coin-controlled mechanism, comprising two manually-operable actuating members, a locking-plate connected and moving with both members, a tilting detent-lever adapted to be moved by the weight of the coin and which is constructed to hold the actuating members from movement, a coin-holder mounted on said tilting lever and movable laterally with respect thereto, said coin-holder having two coin-receiving slots, a coin-chute and means operated through the movement of said locking-plate for shifting the position of the coin-holder with respect to the chute and a stop-plate carried by said detent-lever.

9. A coin-controlled mechanism comprising two manually-operable actuating members, a locking-plate connected with both of said members, a tilting detent-lever adapted to be moved by the weight of a coin and which is constructed to hold the actuating members from movement, a coin-holder pivoted on the detent-lever and provided with two coin-receiving slots, a coin-chute, an actuating-arm on said locking-plate adapted to engage the coin-holder for shifting it laterally upon the detent-lever.

10. A coin-controlled mechanism comprising an oscillatory plate provided with two actuating-arms, two push-buttons connected with the actuating-arms of said locking-plate, a tilting detent-lever adapted to be moved by the weight of a coin and constructed to hold the locking member from movement, a coin-holder which is connected with and gives movement to the detent-lever and is provided with two coin-receiving slots and a coin-chute, said coin-holder and coin-chute being movable one with respect to the other and means actuated by the movement of the locking-plate for shifting the position of the coin holder and chute with respect to each other.

11. A coin-controlled vending device comprising two manually-operable actuating members, a tilting detent-lever adapted to be moved by the weight of the coin and which is constructed to hold both actuating members from movement, a coin-holder which is connected with and gives movement to the detent-lever and is provided with two coin-receiving slots and a coin-chute, said coin-holder and coin-chute being movable one with respect to the other, means actuated by the movement of either of said manually-operable actuated members for shifting the position of the coin holder and chute with respect to each other to bring either slot of the coin-holder beneath the chute, two receptacles to contain the articles to be vended, and two ejecting-slides working in said receptacles, said slides being connected and moving with said manually-operable members.

708,622. STIFFENING-BAND. HENRY H. TAYLOR, Bridgeport, Conn. Filed Apr. 17, 1902. Serial No. 103,390. (No model.)

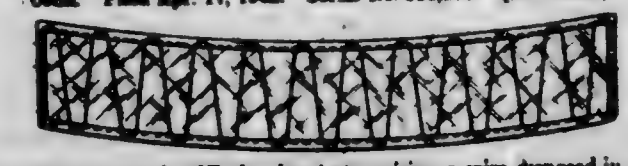

Claim.—1. A stiffening-band comprising a wire disposed in zigzag fashion to form alternate loops and openings at the top and bottom, said band being bound with tapes along the top and bottom and at the ends, substantially as set forth.

2. A stiffening-band comprising a wire disposed in zigzag fashion to form alternate loops and openings at the top and bottom, and a cloth facing secured to said band by tapes, substantially as set forth.

708,623. ELECTROPLATING APPARATUS. THEODORE F. TAYLOR, Camden, N. J. Filed June 26, 1901. Serial No. 66,065. (No model.)

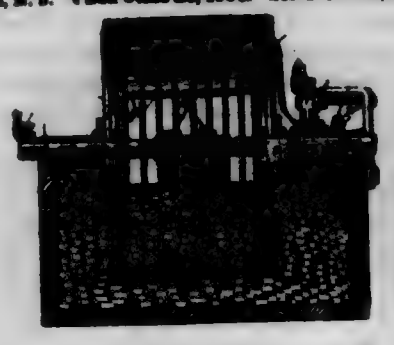

Claim.—1. In an electroplating apparatus, a tank, an axle suitably supported over the tank, a receptacle on the axle; said receptacle having openings in its ends, wire rings on the interior surface of the receptacle, said rings being electrically connected with the negative pole of a generator; an anode secured within the receptacle, a binding-post secured to the axle, electrically connected with the anode through said axle.

2. In an electroplating apparatus, a tank for containing an electrolyte, a stationary axle supported by the tank, a receptacle mounted upon the axle, means for rotating the receptacle on the axle, said receptacle having openings in its ends to admit the electrolyte, a fibrous lining on the inner surface of the receptacle, metallic rings on the lining, a contact-ring carried by and insulated from the receptacle, all of the rings in the receptacle being electrically connected to the contact-ring, a brush in contact with the contact-ring, said brush being in electrical connection with the negative poles of a generator, an anode on the axle depending into the electrolyte, and a binding-post on the axle, electrically connected with the anode through said axle, substantially as described.

708,624. SULKY HAY-RAKE. JOHN J. THOMPSON, Louistown, Mont. Filed Feb. 14, 1902. Serial No. 94,535. (No model.)

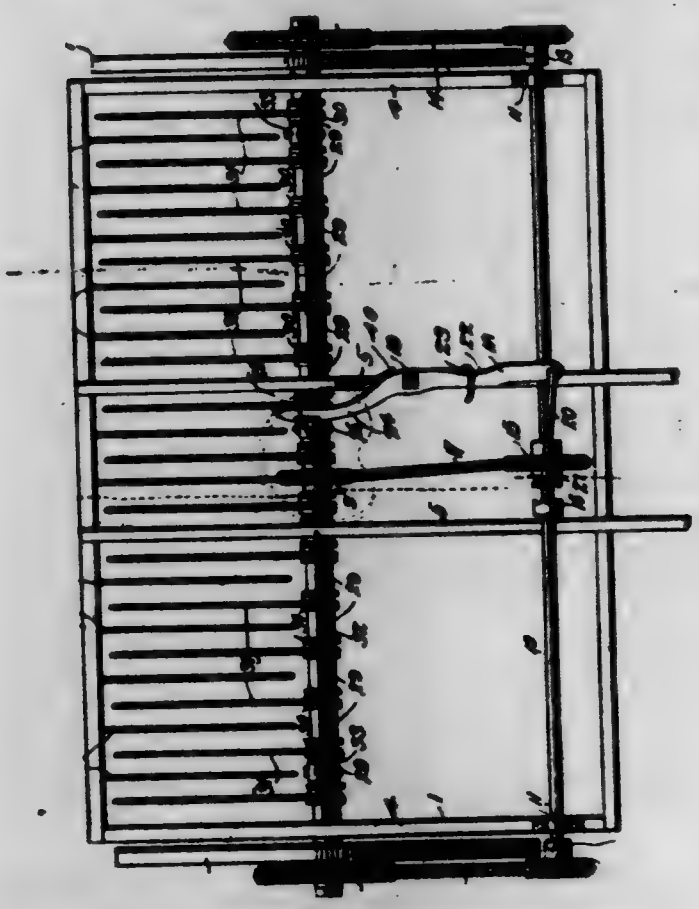

Claim.—1. In a horse hay-rake, the combination of a frame, a revolvable axle-shaft having rake-teeth, supporting-wheels revolvable on and independently of the axle-shaft, a counter-shaft, power connections between the same and one of the supporting-wheels, whereby the counter-shaft is rotated, and power connections including a clutch, between the counter-shaft and the axle-shaft, whereby the latter and the rake-teeth carried thereby may be rotated at will by power from the counter-shaft, substantially as described.

2. In a horse hay-rake, the combination of a frame, a revolvable axle-shaft having rake-teeth, supporting-wheels revolvable on and independently of the axle-shaft, a counter-shaft, power connections between the same and one of the supporting-wheels, whereby the counter-shaft is rotated, power connections, including a clutch, between the counter-shaft and the axle-shaft and a lever to operate the clutch, the lever and the axle-shaft having coacting stops to lock the axle-shaft against rotation when the power connections are unclutched from the counter-shaft, substantially as described.

3. In a horse hay-rake, the combination of a frame, a revolvable axle-shaft having rake-teeth, supporting-wheels revolvable on and independently of the axle-shaft, a counter-shaft, power connections between the same and one of the supporting-wheels, whereby the counter-shaft is rotated, power connections, including a clutch, between the counter-shaft and the axle-shaft and a lever to operate the clutch, said lever having a notched arm, and a lock-arm, carried by the axle-shaft and engaged with the notched arm, to lock the axle-shaft against rotation when the power connections are unclutched from the counter-shaft, substantially as described.

4. In a horse hay-rake, the combination of a frame, a revolvable axle-shaft having rake-teeth, supporting-wheels revolvable on and independently of the axle-shaft, a counter-shaft, power connections between the same and one of the supporting-wheels, whereby the counter-shaft is rotated, power connections, including a clutch, between the counter-shaft and the axle-shaft and a lever to operate the clutch, and a stop element carried by the axle-shaft, coacting with the lever to lock the axle-shaft against rotation when the power connections are unclutched from the counter-shaft, substantially as described.

5. In a horse hay-rake, the combination of a frame, a revolvable axle-shaft having rake-teeth, supporting-wheels revolvable on and independently of the axle-shaft, a counter-shaft, power connections between the same and one of the supporting-wheels, whereby the counter-shaft is rotated, power connections, including a clutch, between the counter-shaft and the axle-shaft and a lever to operate the clutch, a stop element carried by the axle-shaft, coacting with the lever to lock the axle-shaft against rotation when the power connections are unclutched from the counter-shaft, and a foot-lever to operate the first-mentioned lever, substantially as described.

6. In a horse hay-rake, the combination of a shaft, a lock-bar in fixed relation thereto, a rake-tooth pivotally connected to the shaft and having its upper end extended above the shaft, and a connection, including a spring, between the lock-bar and the said extended upper end of the tooth, whereby the latter is adapted to turn on the shaft against the tension of the spring, for the purpose set forth, substantially as described.

708,625. GAS-BURNER. SIDNEY R. TERRY, Chicago, Ill. Filed Dec. 4, 1901. Serial No. 84,617. (No model.)

Claim.—In a gas-burner, the combination of a gas-discharge tip placed in an open space, with a short inlet-pipe in front of the tip and a short distance therefrom, a series of large but gradually-contracting mixing-chambers at the end of the short inlet-pipe, a series of secondary air-inlets immediately around the short inlet-pipe and opening into the first and largest of said mixing-chambers, a contracted passage beyond the mixing-chambers, and an enlarged discharge end.

708,626. STOP FOR WINDOW-BLINDS. THOMAS A. URQUHART, Brooklyn, N. Y. Filed May 9, 1901. Serial No. 59,457. (No model.)

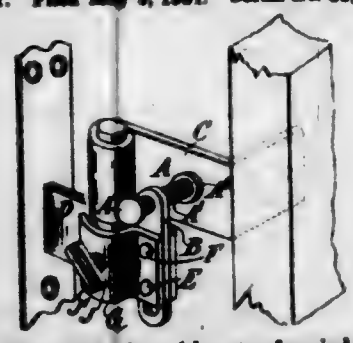

Claim.—1. The combination with a stop for window-blinds of means for attaching the same to one member of the hinge, a swinging and reciprocating arm B carrying said stop and adapted to swing said stop into and out of the path of the other member of the hinge, said arm being provided with a slot B', and a pin F in position to be engaged by said slot to lock said stop in each path.

2. The combination with a stop for window-blinds, of a pair of plates G^2 carried by the fixed member of the hinge, a pin E between said plates, and a swinging arm carried by said pin and carrying said stop.

3. The combination with a stop for window-blinds, of a pair of plates G^2 carried by the fixed member of the hinge, pins E and F between said plates, and a swinging and reciprocating arm B carried by said pin E and provided with a slot B' in position to engage said pin F to lock said arm.

4. The combination with a stop for window-blinds, of a sleeve for attaching the same to the hub of the fixed portion of the hinge, said sleeve comprising a pair of members adapted to surround said hub and being extended to form plates G^1, and said stop being carried between said plates.

5. The combination with a stop for window-blinds, of a sleeve carrying said stop and adapted to surround the hub of the fixed member of the hinge, a fillet K adapted to bear at its edge K' against such fixed member, and a screw passing through the sleeve and having a flat end

adapted to bear against the flat face K³ of said fillet, whereby the sleeve may be prevented from turning on the hub.

6. The combination with a stop for window-blinds of means for attaching the same to a window-frame, means for swinging said stop into and out of the path of the blind, and means for adjusting said stop laterally.

7. The combination with a stop for window-blinds of means for attaching the same to one member of the hinge, means for swinging said stop into and out of the path of the other member of the hinge, means for locking said swinging means in position, and means for adjusting said stop laterally.

708,627. **ANTISEPTIC BANDAGE.** CARL F. UTERMÖHLEN, Amsterdam, Netherlands. Filed Nov. 13, 1901. Serial No. 82,720. (Specimens.)

Claim.—1. The herein-described surgical package, consisting of a bandage folded upon itself to completely cover and protect the surface adapted to be applied to a wound, a binder attached to said bandage, for the purpose of securing the bandage in place when in use, being exposed and providing means for unfolding and applying the bandage, and a retainer holding the bandage in its folded position.

2. The herein-described surgical package consisting of a bandage folded upon itself to completely cover and protect the surface adapted to be applied to a wound, a binder secured to and having its free ends coiled upon the bandage, and a retaining means extending around the folded bandage and over said coils, whereby when said retaining means are removed the bandage can be unfolded and applied by means of said binder.

708,628. **ANIMAL-TRAP.** THOMAS D. VARATA, Washington, D. C., assignor of one-half to William W. Grant, Washington, D. C. Filed Mar. 7, 1902. Serial No. 97,602. (No model.)

Claim.—1. An animal-trap having a baiting-compartment provided with a pivotally-supported door, a prison-compartment provided with a vertically-movable hood, a transverse partition between said compartments, a vertically-movable rod and an oscillatory rod forming connections between said door and said hood for releasing the door and resetting the trap, and means connected to the pivoted support of the door for opening and closing said door.

2. An animal-trap having vertical door-jambs, a vertical and revolvable door supported between said jambs and provided with notches in the edges thereof, an oscillatory rod supported in one of said jambs and having a latch thereon engaging said door, and the rod provided with a curved and slotted lever, a movable hood having a rod thereon engaging said slotted lever, and a spring connected to rod extending from the hood.

3. An animal-trap provided with a door, a latch engaging said door outside the trap, a vertically-movable hood having a vertically-movable rod attached thereto and connected to said latch to lock the door on one side and release the door and reset the trap, a spring engaging said rod, and means for opening and closing the door.

4. An animal-trap provided with a revolvable door, a stud projecting through the bottom of the trap for locking the door in open position, a movable section in the bottom of the trap to which said stud is connected to release the door by the weight of an animal, a movable hood, and a latch engaging the door outside the trap and operated by the animal to release the door and reset the trap.

5. An animal-trap having a revolvable door, a latch on one side of the center thereof operated by an animal, a spring-catch in the bottom of the trap and on the opposite side of the center, a stop in the bottom of the trap to hold the door open, a movable section in the bottom of the trap to which said stop is connected to release the door by the weight of an animal, a runway formed by a movable hood, and connections with said hood to reset the trap.

6. An animal-trap provided with a movable hood forming a runway and having barbs at the outer end thereof, barbs secured to the floor of the trap at the outer end of the runway, and flanges secured to the bottom of the trap on the outer sides of the hood to prevent raising or lateral displacement thereof.

708,629. **VARIABLE-SPEED GEARING.** LOUIS T. WEISS, Flatbush, N. Y. Filed Apr. 6, 1901. Serial No. 54,761. (No model.)

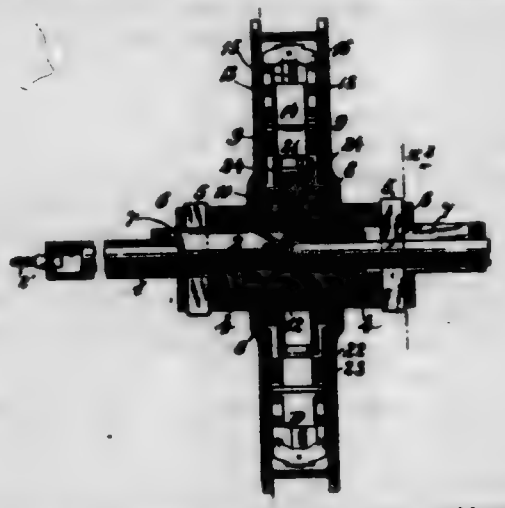

Claim.—1. In a variable-speed gearing, the combination with a driving-shaft, an inner eccentric sleeve 2 slidable longitudinally but non-rotative thereon, said sleeve having a spiral groove in its face, an outer eccentric sleeve 4, mounted on the sleeve 2, keyed to the driving-shaft and having an outer surface concentric therewith, wheels or parts, to be driven, mounted rotatively on the sleeve 4 as a journal, said wheels or parts having gripping flanges, an operating-eccentric 10, mounted rotatively on the sleeve 2 and having a stud or key 11 engaging the spiral groove in said sleeve 2, and a yoke 12, on said eccentric, of a dog, adapted to grip on the flanges of the driven wheels and rotate the same, and means operatively coupling together the said yoke and dog.

2. In a variable-speed gearing, the combination with a rotating driving-shaft, an inner eccentric sleeve 2, slidable longitudinally along said shaft but rotatable therewith, said sleeve having in it a spiral groove, two like outer eccentric sleeves 4 keyed to the shaft and embracing the inner eccentric sleeve, the outer surfaces of the said outer sleeves being concentric with the driving-shaft, two wheels 9, mounted rotatively on the respective sleeves 4 and provided on their inner faces each with a gripping-flange 13, an operating-eccentric 10, mounted rotatively on the inner sleeve 2 between the sleeves 4, and having a stud or key 11 engaging the spiral groove in the sleeve 2, and a yoke 12 on the said eccentric, of two or more dogs D, having jaws which grip the flanges on the wheels 9 for rotating the latter in opposite directions, and means operatively coupling said dogs with the yoke 12.

3. In a variable-speed gearing, the combination with a rotatable driving-shaft, a longitudinally-slidable inner eccentric sleeve 2, mounted on and rotatable with said shaft, said sleeve having in it a spiral groove, an operating-eccentric mounted rotatively on said sleeve 2 and having a stud or key engaging the spiral groove therein, a yoke embracing said eccentric, and two wheels 9 to be driven, mounted rotatively and provided with gripping-flanges 13 on their adjacent faces, of a dog D between said wheels, with jaws to grip the flanges thereon, and means operatively coupling the eccentric-yoke with said dog, the latter comprising a body, two

outer jaws, and two inner jaws, the pair of jaws at one side being set to bite when the dog is moved in one direction, and the pair at the other side to bite when the dog is moved in the opposite direction.

4. In a variable-speed gearing, the combination with a rotatable driving-shaft, an operating-eccentric and its yoke, and means for gradually varying the throw of said eccentric without varying the speed of the driving-shaft, of a flanged wheel or part to be rotated, a dog adapted to grip on the opposite faces of the flange of said wheel and impart intermittent rotative impulses thereto, means operatively coupling together said eccentric-yoke and dog, and means for shifting the jaws of the dog for reversing the driving motion.

5. In a variable-speed gearing, the combination with a rotatable driving-shaft, an operating-eccentric and its yoke, and means for gradually varying the throw of said eccentric without varying the speed of the driving-shaft, of a wheel or part to be rotated, a dog adapted to grip on some part of said wheel and impart intermittent rotative impulses thereto, means operatively coupling together said eccentric-yoke and dog, and means for automatically shifting the jaw of said dog for reversing the driving motion when the operating-eccentric is rotated to a position concentric with the driving-shaft.

6. In a variable-speed gearing, the combination with rotative parts 9, having each a flange 13, the driving-shaft, an operating-eccentric 10, its yoke, and means between said shaft and eccentric for varying the throw of the latter, of a dog D, said dog comprising a body 14, a spindle 15, rotative therein and provided with a crank-arm 21 on its inner end and a head 16 on its outer end, inner jaws 17, mounted on the said body and adapted to bear on the inner faces of the respective flanges 13, and outer jaws 18, mounted on said head and adapted to bear on the outer faces of the respective gripping-flanges, means for automatically rocking the shaft 15, so as to shift the outer jaws, at the moment the throw of the operating-eccentric is neutralized, and means operatively coupling the eccentric-yoke with the said dog, whereby the driving movement may be reversed.

7. In a variable-speed gearing, the combination with a rotatable driving-shaft, an inner eccentric sleeve 2, slidable thereon, sleeves 4 keyed to and rotating with the shaft and each provided with a flange 8, having ribs 27 on its inner face, an operating-eccentric 10, rotatable on the sleeve 2, and having a stud or key 11 engaging a spiral groove in the said sleeve, said eccentric being situated between the sleeves 4, and having lateral movement between the same, the disks 24, embracing the eccentric 10 laterally and rotatable therewith, said disks having ribs 26 on their outer faces adapted to be moved into and out of register with the ribs 27, by rotation of said disks, the yoke 12 of the operating-eccentric, and the driven wheels 9, rotatable concentrically with the driving-shaft, of the dogs D, between the wheels 9, and means operatively coupling the said dogs with the yoke of the eccentric, each of said dogs having a body 14, inner jaws 17 to bear on the inner faces of gripping-flanges on the respective wheels 9, a rocking spindle 15, provided with a crank-arm 21, embraced between the disks 24, whereby lateral movement of the said disks serves to rock the spindle 15, a head 16 on said spindle, and outer jaws 18, carried by said head and bearing on the outer faces of the said gripping-flanges, substantially as and for the purpose set forth.

703,680. CENTRIFUGAL SEPARATOR. ARTHUR TEE WERKE, Denver, Colo. Filed May 21, 1901. Serial No. 61 283. (No model.)

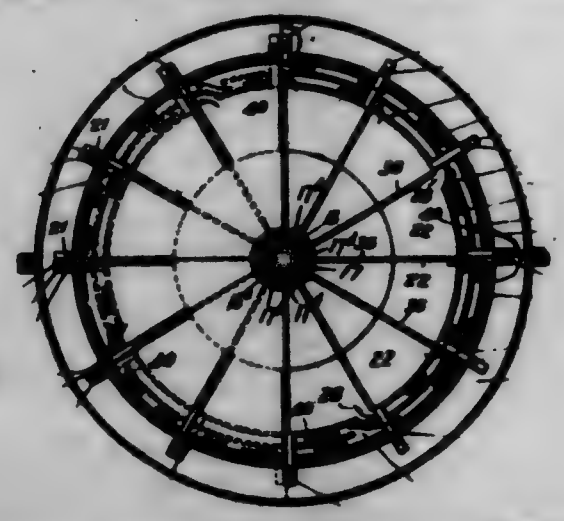

Claim.—1. In a centrifugal ore-separator, the combination of a revolvable tank, radial partitions located therein and forming sector-shaped compartments, circular partitions surrounding the radial partitions and forming a concentric compartment, the outer extremities of the radial partition engaging the inner circular partition, whereby the sector-shaped compartments have no communication with each other, outlets from the sector-shaped compartments to the concentric compartment, for the mineral, and mineral-outlets from the concentric compartment but not in line with the corresponding outlets from the sector-shaped compartments.

2. In a centrifugal separator, the combination of a revolvable tank having a number of sector-shaped compartments having no communication with each other, a feed-pipe arranged to discharge simultaneously into all of said compartments the feed-pipe having a distinct outlet to each sector-shaped compartment, circular partitions surrounding the sector-shaped compartments, and forming a concentric compartment, outlets from the sector-shaped compartments to the concentric compartment, and an outlet from the concentric compartment but remote from the corresponding outlets from the sector-shaped compartments.

3. In a centrifugal separator, the combination of a revolvable tank, a central sleeve attached to the tank, a feed-pipe projecting downwardly into said sleeve, radial partitions extending outwardly from the sleeve and dividing the tank into a number of sector-shaped compartments into which the material issuing from the feed-pipe passes, circular partitions surrounding the radial partitions and forming a concentric compartment in communication with the sector-shaped compartments, the radial partitions extending to the inner circular partition, whereby the sector-shaped compartments have no communication with each other and outlets from the concentric compartments for the mineral passing thereto from the sector-shaped compartments.

4. In a centrifugal separator, the combination of a revolvable tank, a feed-pipe located at the center of the tank, a sleeve secured to the tank and into which the feed-pipe projects, radial partitions arranged around the said sleeve and dividing the tank into sector-shaped compartments, into which the feed-pipe discharges, and a mineral-outlet from each sector-shaped compartment, the said compartments having no communication with each other.

5. The combination of a revolvable tank, a central sleeve attached thereto, a feed-pipe projecting into said sleeve, radial partitions arranged around the sleeve and dividing the space within the tank into a number of sector-shaped compartments having no communication with each other, each compartment being provided with an outlet for the mineral, said outlet being located remote from the feed-pipe and a circular compartment surrounding the sector-shaped compartments, and into which the mineral-outlets from the sector-shaped compartments discharge.

6. The combination of a revolvable tank, a central sleeve attached to the tank, a feed-pipe projecting into the sleeve, radial partitions surrounding the sleeve and dividing the tank into sector-shaped compartments having no communication with each other, provided with two outlets, one being for the mineral and the other for the gangue, the mineral-outlet being located below the gangue-outlet, and a circular compartment surrounding the sector-shaped compartments, and into which the mineral-outlets from the sector-shaped compartments discharge.

7. The combination of a revolvable tank, a central feed-pipe, radial partitions surrounding the feed-pipe and dividing the tank into sector-shaped compartments provided with two outlets, one being for the mineral and the other for the gangue, the mineral-outlet being located below and in the rear of the gangue-outlets, the sector-shaped compartments having no communication with each other, and a circular compartment surrounding the sector-shaped compartments, and into which the mineral-outlets from the sector-shaped compartments discharge.

8. The combination of a revolvable tank, a central feed-pipe, a sleeve attached to the tank and into which the feed-pipe projects, partitions dividing the tank into sector-shaped compartments having no communication with each other, a horizontal partition closing said compartments at the top except for a short distance around the sleeve, a top for the tank said top being located above the horizontal partition and closing the tank above, and a water-outlet between the top of the tank and the horizontal partition, the sector-shaped compartments being provided with outlets for the mineral and separate outlets for the gangue.

9. The combination with a suitable frame, of a vertical shaft journaled therein, a tank mounted to rotate with said shaft and closed at the top, radial partitions dividing the tank into a number of sector-shaped compartments having no communication with each other, a central feed-pipe communicating with all the said compartments, circular partitions dividing the space around the radial partitions into two concentric compartments, outlets from the sector-shaped compartments to the inner concentric compartment, outlets from the inner concentric compartment to the outer circular compartment, cut-offs located at said last-named outlets, and outlets for the mineral, leading from the outer concentric compartment.

10. In a centrifugal separator, the combination of a revolvable tank, a vertical shaft to which said tank is secured, a sleeve attached to the tank and surrounding the shaft, another sleeve attached to the tank outside of the first-named sleeve, a feed-pipe projecting into the tank between the two sleeves, a plate attached to the bottom of the outer sleeve, and projecting below the feed-pipe to the inner sleeve to which it is at-

tached, said plate having openings below the feed-pipe, and nozzles leading from said openings into the tank.

11. In a centrifugal separator, the combination of a revoluble tank, radial partitions dividing the tank into sector-shaped compartments, a vertical shaft to which said tank is secured, a sleeve attached to the tank and surrounding the shaft, another sleeve attached to a tank above and outside of the first-named sleeve, a feed-pipe projecting into the tank between the two sleeves, a plate attached to the bottom of the outer sleeve and extending below the feed-pipe, to the inner sleeve to which it is attached, said plate having openings below the feed-pipe, and nozzles or discharge-pipes directed outwardly from said openings into the tank, there being a nozzle for each sector-shaped compartment.

708,681. TRAP. JOHN W. ZIMMERMAN, Boston, Mass. Filed Mar. 24, 1902. Serial No. 99,599. (No model.)

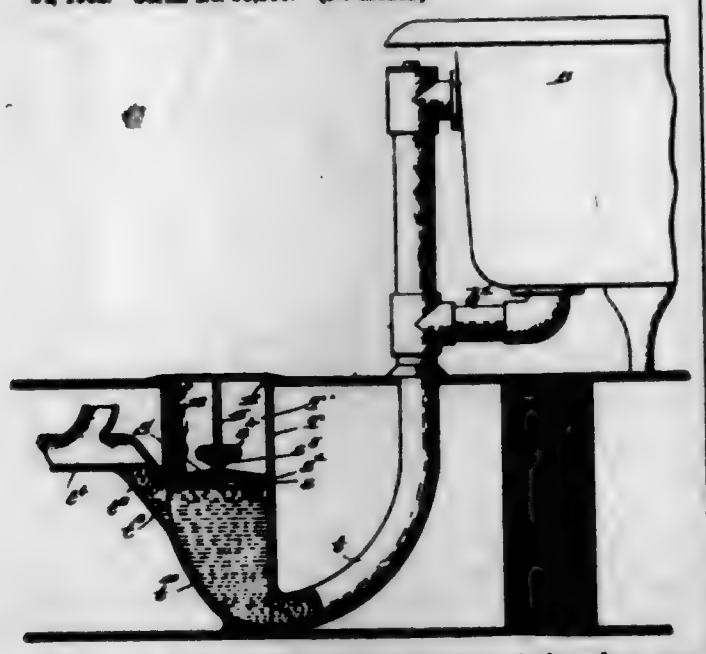

Claim.—1. A trap comprising an upright tubular body or drum open at its upper end and having an inlet-port in its side wall adjacent its permanently-closed bottom, a discharge-port located above and opposite the inlet-port, a removable cover for the upper end of said body and a clean-out closure independent of the cover and detachably secured wholly within the upright body below the water-line of the trap and between the inlet and discharge ports thereof.

2. A trap comprising an upright tubular body or drum open at its upper end and having an inlet-port in its side wall adjacent its bottom, a discharge-port located above and opposite the inlet-port, an annular, interiorly-threaded seat in the body below the water-line of the trap and between the ports, a removable cover for the upper end of said body, a clean-out closure wholly within the body and independent of the cover, said closure having an external thread to engage the thread of the seat, and a device on the upper side of the closure to turn it.

3. A trap comprising an upright tubular body having inlet and discharge branches at different heights above its bottom, an annular seat in the body below the discharge and above the inlet, and below the water-line of the trap, a clean-out closure detachably connected with the seat, to close the body thereat, a removable cover for the upper, open end of the body, and means to detachably connect the cover with the closure, to retain the former in place.

4. A trap comprising an upright tubular body having an inlet-port in its side wall adjacent the bottom and having its bottom and side wall opposite the inlet-port upwardly curved, a discharge-port at the upper end of the curved portion, and a clean-out closure detachably mounted in the body below the water-line of the trap and below the discharge-port.

5. A trap comprising an upright tubular body or drum having diametrically opposite inlet and discharge branches, one above the other, the wall of the body opposite to the inlet branch being upwardly curved to the discharge branch, to provide for an uninterrupted sweep of the water through the lower part of and to scour the body, and a clean-out closure detachably mounted in the body below the water-line of the trap and between the inlet and discharge branches.

708,682. CUSHIONED BICYCLE-FRAME. ROSHAM B. ZIMMERMAN, North Tonawanda, N. Y. Filed Dec. 14, 1901. Serial No. 86,267. (No model.)

Claim.—1. The combination of a wheel-fork and a hollow stem, each carrying a hinge leaf or plate, a pintle connecting said leaves on the rear side of the fork, a tie-bolt passing centrally through said leaves on the front side of said pintle and extending into the stem, a cushioning and return spring applied to said bolt within the stem, and main cushioning-springs arranged between said hinge-leaves on opposite sides of said tie-bolt, substantially as set forth.

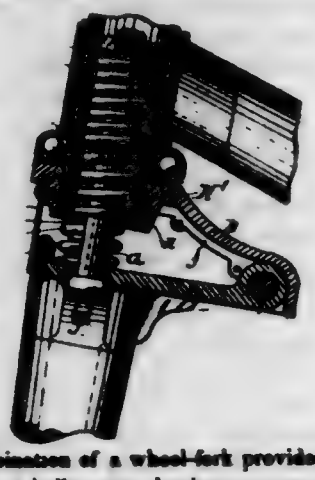

2. The combination of a wheel-fork provided at its crown with a hinge leaf or plate, a hollow stem having a corresponding hinge-leaf provided centrally with a socket which is depressed below the under side thereof, a pintle connecting said hinge-leaves on the rear side of the fork, a tie-bolt loosely connecting said leaves on the front side of said pintle and extending into said hollow stem, a main cushioning-spring interposed between said hinge-leaves, and a cushioning and return spring applied to said tie-bolt within the stem and resting upon the bottom of said depressed socket, substantially as set forth.

3. The combination of a hollow stem provided with a hinge leaf or plate, a fork having at its crown a corresponding hinge-leaf provided with sockets which are located on opposite sides of its center and depressed below its upper surface, main cushioning-springs interposed between said hinge-leaves and having their lower ends seated in said sockets, a tie-bolt loosely connecting said hinge-leaves and extending into said hollow stem, and a cushioning and return spring applied to said bolt, substantially as set forth.

4. The combination of a wheel-fork and a stem each carrying a hinge leaf or plate, a pintle connecting said leaves, a main cushion interposed between said leaves, and a return-cushion arranged to act upon said hinge-leaves and having sections of differential tension constructed to come into action successively, substantially as set forth.

5. The combination of a wheel-fork and a stem each carrying a hinge leaf or plate, a pintle connecting said leaves, a main cushion interposed between said leaves, a tie-bolt loosely connecting said hinge-leaves and extending into said stem and provided within the stem with a step, and heavy and light return-springs applied one above the other to the tie-bolt, the lower return-spring resting upon an abutment at the lower end of the stem and the step of the tie-bolt bearing against the top of the upper return-spring, substantially as set forth.

6. The combination of a wheel-fork and a stem, each carrying a hinge leaf or plate, a pintle connecting said leaves, a cushioning-spring interposed between the leaves, and a dust-shield depending from the hinge-leaf of the stem and overlapping the leaf of the fork, substantially as set forth.

7. The combination of a wheel-fork and a stem, each carrying a hinge leaf or plate, a pintle connecting said leaves, a cushioning-spring interposed between the leaves, and a dust-shield depending from the leaf of the stem and overlapping the edge of the fork-leaf, and extending around the front and sides of said leaves and over the ends of said pintle, substantially as set forth.

708,683. COMBINED LADDER AND SETTEE. FLETCHER D. ALLISON, Chicago, Ill. Filed Sept. 26, 1901. Serial No. 76,594. (No model.)

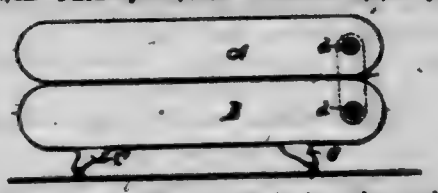

Claim.—1. In a device of the described class, the combination of a ladder formed in sections; a link connecting the meeting ends of said sections, and a seat secured to one of the sections in the rear of the steps or rungs of the ladder, said connecting-link being adapted to permit the sections to be folded in a position with the seat uppermost.

2. In a device of the described class, the combination of a ladder formed in sections; legs secured to one of said sections in the rear of the steps or rungs; a seat secured to the other of said sections in the rear of the steps or rungs, and a link connection between adjacent ends of said

sections adapted to permit one of said sections to swing freely around the end of the other section.

3. In a device of the described class, the combination of a ladder formed in sections, and having channels in the side bars of said sections; a seat-frame slidably mounted in said channels and adapted to be adjusted to cross the meeting ends of said sections and engage in the channels of both sections; a link connecting the meeting ends of said sections and adapted to permit one of said sections to be swung around the end of the other section.

4. In a device of the described class, the combination of a ladder formed in sections; a link connecting the meeting ends of said sections, and a seat secured to one of the sections in the rear of the steps or rungs of the ladder, said connecting-link being adapted to permit the sections to be folded in a position with the seats uppermost, and a step or platform pivotally connected with both sections by pivots common to said platform and link.

5. In a device of the described class, the combination of a ladder formed in sections; a link connecting the sections and adapted to permit one section to be rotated, end to end, around the other section; legs formed on the rear side of one of said sections and a seat formed on the rear side of the other of said sections, together with a catch adapted to hold said sections in a divergent position of adjustment with the rear surfaces of the two sections opposed to each other.

708,684. SASH-LOCK. HOWARD A. BAKER, Clarksville, Tex. Filed Oct. 25, 1901. Serial No. 79,503. (No model.)

Claim.—1. In a device of the class described, the combination with a ratchet-strip having apertures and provided with an enlarged opening, of means for engaging the apertures for supporting a sash in an elevated position, and the automatically-operated locking-pawl normally resting against the ratchet-strip and arranged to ride over the apertures without engaging the same and adapted to be dropped into the enlarged opening, whereby the sash is locked against upward movement, substantially as described.

2. In a device of the class described, the combination of a ratchet-strip provided with apertures and having a slot, a sash-supporting dog or pawl arranged at an inclination and extending downward and having a weighted arm adapted to throw it into engagement with the apertures, and the upwardly-extending inclined locking pawl or dog adapted to fit in the slot of the ratchet-strip and provided with a convex face forming a bulging portion arranged to ride over the apertures, substantially as described.

3. In a device of the class described, the combination with a ratchet-strip having apertures and provided with an enlarged slot or opening, of a sash-supporting pawl or device arranged to engage the apertures to hold the sash in an elevated position, and the sash-locking dog or pawl extending upward at an inclination and adapted to fit in the said slot and provided adjacent to its engaging end with an enlarged or projecting portion arranged to ride over the apertures to prevent the sash-locking pawl or dog from catching therein when the sash is raised, substantially as described.

708,685. PAPER-BAG MACHINE. WILLIAM I. BALDWIN and SYDNEY A. KLEIN, Glenville Falls, Ohio. Filed Jan. 15, 1900. Serial No. 1,492. (No model.)

Claim.—1. In a paper-bag machine, the combination with the cylinder B, pulleys at opposite ends thereof, and two carrying-belts running one above the other on each of said pulleys, a driving-roll for the belts, and means for tensioning said belts.

2. In a paper-bag machine, the combination with the cylinder B and pulleys at opposite ends thereof, of a driving-roll, carrying-belts running on said pulleys and passing around said driving-roll, and a spring-actuated pressure-roll adjacent to said driving-roll and actuating against the same, substantially as described.

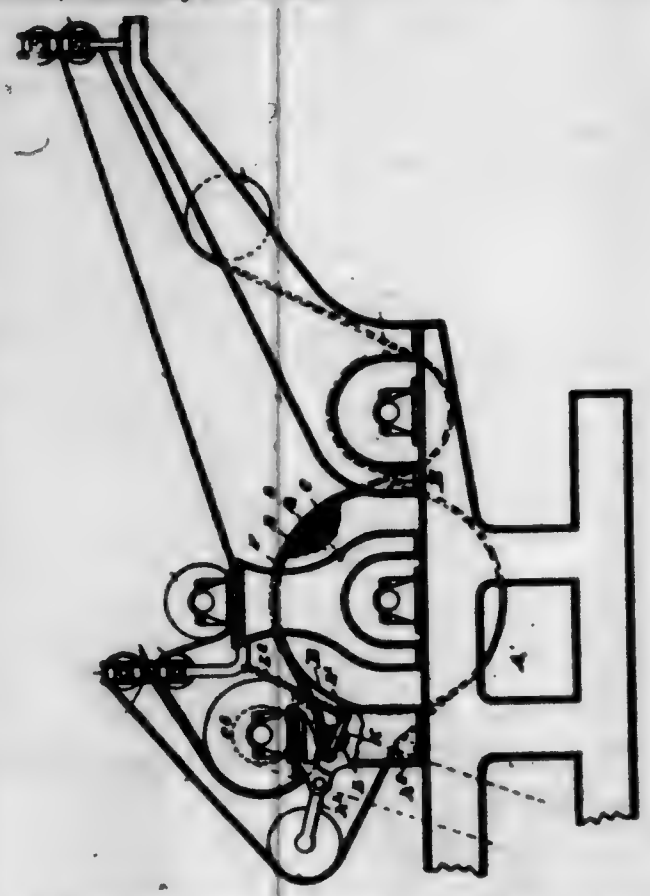

3. In a bag-machine, the combination with the cylinder, of pulleys at opposite ends thereof of less diameter than the cylinder, two carrying-belts running one above the other on each of said pulleys, the outer face of the inner belt being substantially flush with the periphery of the cylinder, and means to drive the belts.

708,686. WRENCH. GEORGE W. BOZEMAN, San Antonio, Tex. Filed Nov. 11, 1901. Serial No. 81,806. (No model.)

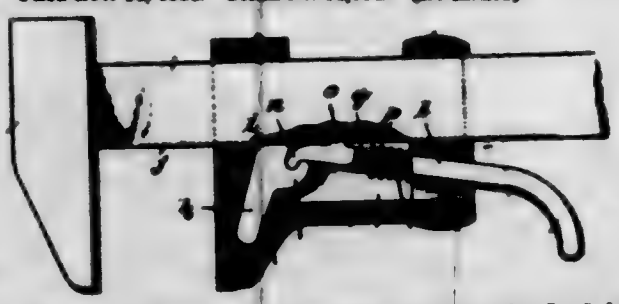

Claim.—1. In a wrench, the combination with the fixed jaw and shank, of a hollow movable jaw having an enlarged recess in the upper portion thereof extending into the projecting lip of said movable jaw, a locking-plate loosely mounted in said movable jaw engaging at one end said enlarged recess and at its other end said shank, and a lever engaging said locking-plate and movable transversely of said movable jaw for disengaging said locking-plate and shank.

2. In a wrench, the combination with the fixed jaw and milled shank, of a hollow movable jaw provided with an enlarged recess in the upper portion thereof, a locking-plate, loosely carried in said hollow movable jaw, engaging at one end the wall of said enlarged recess and at its other end provided with a milled angular surface engaging said milled shank, and a lever engaging said locking-plate and movable transversely of said hollow jaw for disengaging said locking-plate and shank.

3. In a wrench, the combination with the shank and fixed and movable jaws, of a locking-plate carried by said movable jaw and engaging said shank, a curved lug formed on said locking-plate, and a spring-controlled lever provided with a curved shoulder engaging said curved lug and movable transversely of said movable jaw for releasing said locking-plate.

4. In a wrench, the combination with the fixed jaw and shank, a shallow groove disposed longitudinally of said shank, a hollow movable jaw provided with an enlarged recess, a locking-plate mounted in said enlarged recess and engaging said shank, a lever engaging said locking-plate and a lug on said lever engaging said shallow groove and adapted to act as the fulcrum of said lever when the lever is moved transversely of the hollow jaw for releasing the locking-plate.

5. In a wrench the combination with the fixed jaw and milled shank, of a hollow jaw provided with an enlarged recess at the upper portion thereof, a locking-plate loosely mounted in said enlarged recess and engaging said milled shank, a curved lug formed on said locking-plate, a lever carried by said movable jaw, provided at one end with a curved finger or handle portion and at its other end with a curved shoulder adapted to engage said curved lug on the locking-plate, lugs formed transversely of said lever, and a spring engaging said transverse lugs and said movable jaw for retaining said lever in position.

708,687. PNEUMATIC SIGNALING APPARATUS. JAMES H. BRADY, Kansas City, Mo. Filed Dec. 28, 1901. Serial No. 87,349. (No model.)

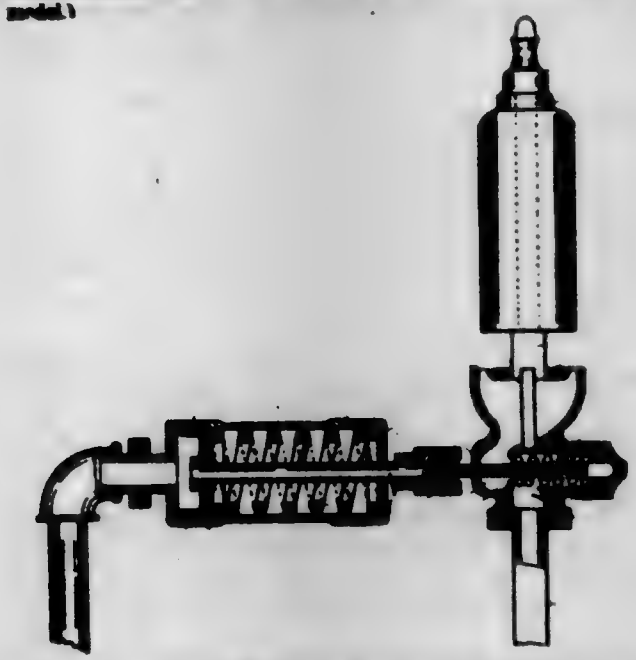

Claim.—1. A pneumatic signaling apparatus comprising an air-storage receiver, separate outgoing distributing-pipes for the compressed air, a detonating fluid signaling device connected with one of said pipes, and a fluid-cylinder upon the end of the other outgoing pipe, a piston and a piston-rod and coacting with the detonating fluid signaling device, and a combined back-pressure relief and cut-off valve in the pipe leading to the cylinder, and a spring extending around the piston-rod, within said cylinder and bearing upon the opposite side of the piston subject to the pressure of the fluid.

2. A pneumatic signaling apparatus comprising an air-compressor and an air-storing receiver for the compressed air, outgoing air-distributing pipes for the compressed air in pairs, a combined cut-off and back-pressure relief-valve in one of said pipes and a detonating air-whistle, receiver connected with the other pipe having an opening for the escape of the air, a valve-chamber in said receiver, a spring-actuated valve, and a valve-rod extending through the side of said receiver, a cylinder connected with the other pipe, a piston in said cylinder operated in the direction of the said receiver by the compressed air, a piston-rod extending through said cylinder and contacting with the valve-rod in the said receiver, and a spring in said cylinder operating upon the other side of the piston and against the air admitted through the combined cut-off and back-pressure relief-valve.

708,688. SCREW-DRIVER. JOHN D. CAMPBELL and JUNIUS K. GUNN, Newton, N. J. Filed May 2, 1901. Serial No. 58,426. (No model.)

Claim.—1. An improved screw-driver, comprising a shank provided with an elongated longitudinal slot and with a stop positioned below the slot, clamping-levers provided at one end with jaws adapted to engage the head of the screw and pivoted intermediate their ends through the slot, and a spring coiled around the shank and bearing at one end against the pivot and at the other end against the stop, the organization being such that the spring normally holds the jaws in a retracted position on the shank.

2. An improved screw-driver, comprising a shank provided with an elongated longitudinal slot and with a stop positioned below the slot, clamping-levers provided at one end with jaws adapted to engage the head of the screw and pivoted intermediate their ends through the slot, a spring coiled around the shank and bearing at one end against the pivot and at the other end against the stop the organization being such that the spring normally holds the jaws in a retracted position on the shank, and a spring slidably mounted on the shank above the slot and normally pressing the jaws toward each other.

3. An improved screw-driver, comprising a shank provided with an elongated longitudinal slot and with a stop positioned below the slot, clamping-levers provided at their outer ends with opposing jaws and at their inner ends with handle portions and pivoted intermediate their ends through the slot, and a spring coiled around the shank and bearing at one end against the pivot and at the other end against the stop the organization being such that the spring normally holds the jaws in a retracted position on the shank, and a collar provided with two spring-arms normally forcing the handle portions apart and slidably mounted on the shank above the slot.

4. An improved screw-driver, comprising a shank member, a clamping member embodying pivoted levers carried by the shank and provided at one end with jaws for engaging the head of the screw and at the other end with handle portions, a pin carried by one of said members and working in an elongated slot in the other of said members, a spring coiled around said shank member and bearing at one end against said pin and at the other end against a stop carried by one of said members, and a spring embodying two arms secured to the handle portions and normally pressing them apart and a body portion connecting said arms and provided with a central opening to receive the shank member.

708,689. CASH-REGISTER. THOMAS CARROLL, Dayton, Ohio, assignor to the National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Sept. 23, 1899. Serial No. 731,462. (No model.)

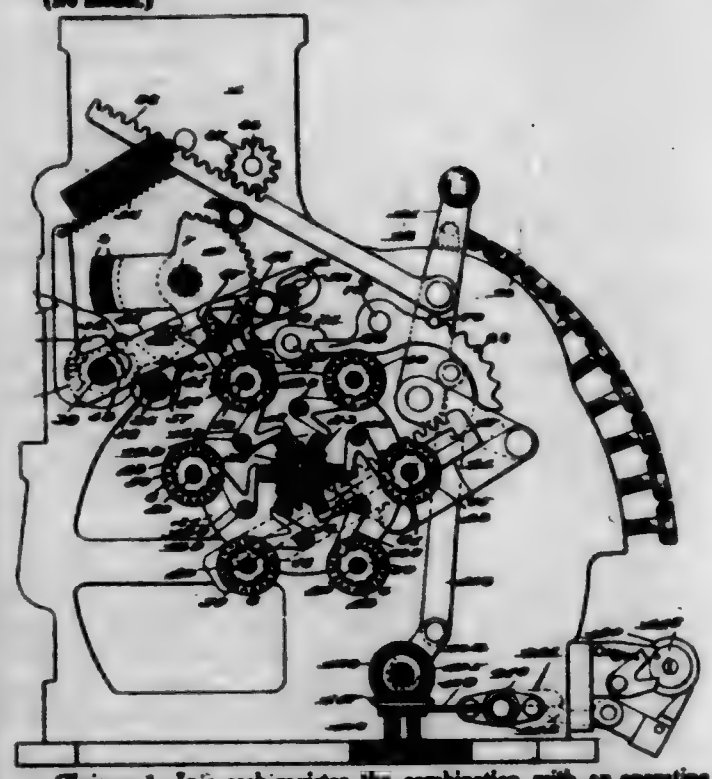

Claim.—1. In a cash-register the combination with an operating mechanism of counter-operating devices, a movable frame carrying a series of independent counters any one of which may be brought into connection with the counter-operating devices, means for moving the frame and a single series of transfer-pawls for actuating the counters independently of the counter-operating devices and arranged to coact with any one of said counters.

2. In a cash-register, the combination with an operating mechanism of counter-operating devices, a movable frame carrying a series of independent counters each of which comprises a series of counter-wheels which may be brought to position to be actuated by the counter-operating devices, and a single series of transfer-pawls mounted independently of the movable frame and arranged to be operated independently of the counter-operating devices and to actuate the counter-wheels of any one of the counters which is brought to operative position by the movement of the frame.

3. In a cash-register, the combination with an adjusting-lever, a special indicator, arranged to be set thereby, a flash for said indicator, a movable member carrying a latch for the flash and means connected to the lever for tripping the latch.

4. In a cash-register, the combination with an adjusting-lever, of an indicator arranged to be set thereby, a spring-drawn flash for said indicator, a movable member carrying a latch for said flash and means connected to the lever for tripping the latch.

5. In a cash-register, the combination with a lever, a special indicator arranged to be set by said lever, a spring-drawn flash for said indicator, a movable member carrying a pivoted latch for the flash and means operated by the lever for rocking the latch to release the flash.

6. In a cash-register the combination with an operating mechanism of a movable frame carrying a series of independent counters, a series of slides mounted independently of the frame and transfer-pawls mounted on said slides so as to move therewith and arranged to coact with any one of the counters which may be brought to operative position.

7. In a cash-register, the combination with an operating mechanism, of a series of independent counters, means for moving a desired counter into and out of connection with the operating mechanism, transfer devices mounted independently of the counters and adapted to coöperate with the counter in operative position and means for moving the transfer devices to cause them to follow the movements of a counter toward and away from the actuating mechanism.

8. In a cash-register the combination with an operating mechanism of a series of independent counters, a series of transfer-slides, mounted independently of the counters, transfer-pawls mounted on said slides and arranged to coact with the counter which is in operative position and trip-pawls mounted on the slides and controlling the positions of the transfer-pawls.

9. In a cash-register the combination with an operating mechanism, of a movable frame carrying a series of independent counters, means for moving the frame toward and away from the actuating mechanism, transfer devices mounted independently of the frame, and adapted to coöperate with the counter in operative position, and mechanism for moving the transfer devices to cause them to follow the movements of the frame toward and away from the actuating mechanism.

10. In a cash-register the combination with an operating mechanism, of a movable frame carrying a series of independent counters, means for moving said frame toward and away from the operating mechanism, devices for moving the frame to bring any desired counter to operative position, and transfer means mounted independently of the movable frame but arranged to move with said frame as the latter is adjusted to bring any counter out of operative connection with the operating mechanism.

11. In a cash-register the combination with an operating mechanism, of a movable frame carrying a series of independent counters, means for moving the frame toward and away from the operating mechanism, and a movable aligning device arranged to correct any misalignment of the frame in moving toward the operating mechanism.

12. In a cash-register the combination with an operating mechanism, of a movable frame carrying a series of independent counters, and arranged to be moved toward and away from the operating mechanism, devices mounted independently of the frame for moving the same, and movable aligning devices for the frame arranged to be brought into connection therewith when the frame is disengaged from the devices for adjusting the same.

13. In a cash-register the combination with a register-operating mechanism, of a movable frame carrying a series of independent counters, a manually-operated adjusting-lever for moving said frame to bring the desired one of said counters into position for operative connection with the operating mechanism, actuating means for bringing said counter into operative engagement with the operating mechanism and locking means controlled by said adjusting-lever for preventing movement of the said operating mechanism until said lever has been moved.

14. In a cash-register the combination with a register-operating mechanism, of a movable frame carrying a series of independent counters, a setting or adjusting lever for moving said frame, a pivoted lever arranged to be operated every time the setting-lever is moved, and a lock for the machine operated by the pivoted lever.

15. In a cash-register the combination with a register-operating mechanism, of a movable frame carrying a series of independent counters, a setting-lever for moving said frame and a lock arranged to lock the machine until the setting-lever is operated.

16. In a cash-register the combination with an operating mechanism, of a movable frame carrying a series of independent counters, a series of transfer-bars mounted independently of the frame, transfer-pawls mounted on said bars, a pivoted frame for supporting said bars, and means connected to the movable parts of the machine for operating the pivoted frame.

17. In a cash-register the combination with register-operating mechanism, of a movable frame carrying a series of independent counters, a series of slidable transfer-bars capable of being raised or lowered, transfer-pawls mounted on said bars and means for successively sliding the transfer-bars to effect the transfer.

18. In a cash-register the combination with a register-operating mechanism, of a rotary drum carrying a series of independent counters, a lever for moving said drum to bring the desired counter to operative position, an index-plate and a pointer on said lever arranged to travel over said plate.

19. In a cash-register the combination with a register-operating mechanism, of a movable frame carrying a series of independent counters, a lever for moving said frame, a series of special counters, operating means for said latter counters and devices connecting said lever and operating means to adjust the latter to operate a special counter corresponding to the position indicated by the lever.

20. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, a single lever for bringing the proper counter to operative position, a series of special counters, and operating means for said latter counters arranged to be set by said lever.

21. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, a single lever for moving the desired counter to operative position, a series of special counters, a rock-shaft carrying arms for operating said special counters and means connected to the lever for moving said shaft longitudinally to bring the proper arm into position to operate its counter.

22. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, a lever for bringing said counters into operative relation with the aforesaid mechanism, a series of special counters, a rock-shaft having arms arranged to operate the special counters and provided with a rack, and gearing connected to said lever and arranged to coöperate with the rack to move the rock-shaft longitudinally.

23. In a cash-register the combination with a register-operating mechanism, of a movable frame carrying a series of independent counters, an adjusting-lever for moving said frame to bring the desired counter to operative position, a series of special counters, a rock-shaft carrying a number of arms for operating the special counters, and means connected to the lever for moving said shaft.

24. In a cash-register the combination with a register-operating mechanism, of a movable frame carrying a series of independent counters, a single lever for moving said frame to bring the desired counter to operative position, an indicator, and means connecting said lever to the indicator.

25. In a cash-register the combination with a register-operating mechanism of a series of nested sleeves operated by the same, a series of yokes connected to said sleeves, a series of gears carried by said yokes, a movable frame carrying a series of independent counters, and a single lever for adjusting said frame to bring the desired counter into operative position in relation to the gears.

26. In a cash-register the combination with a register-operating mechanism, of a series of nested sleeves connecting therewith, a series of yokes connected to said sleeves, a series of gears connected to said yokes, and a movable frame carrying a plurality of independent counters arranged to be brought into connection with said gears.

27. In a cash-register the combination with a register-operating mechanism, of a series of nested sleeves connecting therewith, a series of yokes connected to the said sleeves, operating-gears connected to said yokes, and a counter arranged to be brought into mesh with and disengaged from said gears.

28. In a cash-register the combination with a register-operating mechanism, of a rotary drum, a series of independent registers, a pivoted hand-lever for moving said drum to bring the desired register to operative position, an index-plate over which said lever operates, a special indicator for the respective registers, gearing for operating said indicator, and means for connecting said lever to said gearing

29. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, an adjusting-lever for moving any one of said counters to operative position at will, a second lever arranged to be actuated upon a movement of said adjusting-lever, and a latch for the machine adapted to be actuated by said second lever.

30. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, a setting-lever for moving any one of said counters to operative position, a stud or projection mounted on said lever, an aligning-lever engaging said stud, and a latch arranged to be operated by said aligning-lever.

31. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, a single lever for bringing any one of said counters to operative position, and means for locking said lever against movement after the operation of the machine has commenced.

32. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, an adjusting-lever for moving any one of said counters to operative position, a second lever arranged to be actuated by the setting-lever, a latching-arm connected to the second lever and a notched disk coöperating with said arm to prevent movement of the adjusting-lever after the operation of the machine has commenced.

33. In a cash-register the combination with a register-operating

mechanism, of a series of independent counters, a lever for bringing any one of said counters to operative position, a special indicator connected to said lever, a shutter or flash for said indicator, a latch for said shutter, and means connected to the lever for operating said latch.

34. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, an adjusting-lever for bringing any one of said counters to operative position, a second lever arranged to be moved upon the movement of the setting-lever, a special indicator, a flash for the same, a latch for the flash and means connected to said second lever for tripping the latch.

35. In a cash-register the combination with a register-operating mechanism, of a main or totalizing counter, a series of independent counters, a lever for moving any one of said independent counters to operative position, a slide arranged to be set by said lever, throw-out devices for the main counter and means connecting said slide and throw-out devices.

36. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, a special indicator for said counters, a shutter or flash for said indicator, a latch for said shutter, an adjusting-lever for moving the desired counter to operative position, and means coöperating with said lever for tripping said latch.

37. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, an adjusting-lever for moving any one of said counters to operative position, a stud mounted on said lever, a serrated lever arranged to engage said stud, a rock-shaft adapted to be operated by said latter lever, a latch-lever on said shaft and a latching member carrying a spring-pressed plunger which coöperates with said latch-lever.

38. In a cash-register the combination with an operating mechanism, of a movable frame carrying a series of independent counters all of which are normally disconnected from the operating mechanism, means for connecting at will any one of the said counters with the operating mechanism, a single series of transfer devices arranged to coöperate with any counter that may be brought into operative connection with the operating mechanism, and means whereby said transfer devices coöperate with said counter whether the latter is in operative or inoperative connection with said operating mechanism.

39. In a cash-register the combination with a register-operating mechanism, of a series of independent counters mounted in a movable frame, a lever for adjusting the frame to bring any desired one of said counters into engagement with the register-operating mechanism and an aligning-lever coöperating with a stud or projection carried or moved by said adjusting-lever.

40. In a cash-register the combination with a register-operating mechanism, of a series of independent counters mounted in a movable frame, a lever for adjusting the frame to bring any desired one of said counters into engagement with the register-operating mechanism, an aligning-lever coöperating with a stud or projection carried or moved by said adjusting-lever and locking means for the register-operating mechanism which is controlled by said adjusting-lever.

41. In a cash-register the combination with a register-operating mechanism, of a main or totalizing counter, a series of independent counters, an adjusting-lever for bringing any one of said independent counters into operative relation with the register-operating means, means for disestablishing operative relation between said totalizing-counter and said operating mechanism, and a slide operated by said adjusting-lever to set said last-mentioned means so as to be operated when the register-operating mechanism is actuated.

42. In a cash-register the combination with a register-operating mechanism, of a plurality of counters, of a plurality of special counters one for each of the first-mentioned counters, and an adjusting-lever for simultaneously establishing an operative relation between one of the first-mentioned counters, its corresponding special counter and the register-operating mechanism substantially as described.

43. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, an adjusting-lever for bringing any one of said counters into operative relation with the operating mechanism, actuating means, devices for locking said actuating means until after the adjusting-lever has been moved, and mechanism for locking said adjusting-lever after movement of the actuating means has commenced.

44. In a cash-register the combination with a register-operating mechanism, of a series of independent counters, an adjusting-lever for establishing an operative relation between one of said independent counters and the operating mechanism, the totalizing-counter and means controlled by the adjusting-lever to disestablish an operative relation between said totalizing-counter and the operating mechanism.

45. In a cash-register the combination with the register-operating mechanism, of a totalizing-counter, a series of independent counters, an adjusting-lever for bringing any one of the independent counters into operative relation with the operating mechanism, means for disestablishing operative relation between the operating mechanism and said totalizing-register, devices for setting said means by the movement of said adjusting-lever and means for operating said devices when so set, upon the movement of the machine.

46. In a cash-register the combination with a register-operating mechanism, of a totalizing-counter, a series of independent counters, an adjusting-lever for bringing any one of said independent counters into operative relation with the register-operating means, means for disestablishing operative relation between said totalizing-register and said operating mechanism and a slide operated by said adjusting-lever for actuating said means.

47. In a cash-register the combination with a register-operating mechanism, of a totalizing-counter, a series of independent counters, an adjusting-lever for moving any of said independent counters into operative relation with the register-operating mechanism, means for disestablishing operative relation between the main or totalizing counter and the register-operating mechanism, a rock-shaft, a cam rocking with said shaft, and devices connected to the lever for moving said means into operative relation with the cam.

48. In a cash-register the combination with the operating mechanism, of a frame carrying a series of independent registers, of a pinion carried by the frame; a rack-bar engaging the pinion, an adjusting-lever and a link pivoted at one end to the rack-bar and at the other to the adjusting-lever.

49. In a cash-register the combination with the operating mechanism, of the special counters, a shiftable shaft 110 carrying counter-actuating arms 111, the adjusting-lever arranged to shift the shaft and means for rocking the said shaft when the operated mechanism is actuated.

50. In a cash-register the combination with a register-operating mechanism, of the frame carrying a series of independent counters, a series of special counters, an adjusting-lever and means controlled thereby for simultaneously bringing one of said independent counters and one of the special counters into operative relation with the operating mechanism.

51. In a cash-register the combination with the operating mechanism, of a frame carrying a series of independent counters, an indicator corresponding to said independent counters and an adjusting-lever having connections with both said frame and the said indicator for simultaneously adjusting them.

52. In a cash-register, the combination with a counter-operating mechanism, of a totalizing-counter, a series of independent counters, a lever for moving any one of said independent counters to operative position and throw-out devices for the main counter arranged to be operated by said lever when moved to certain positions.

53. In a cash-register, the combination with an indicator, of a lever for setting the same, a flash for said indicator, a handle for operating said flash, and a lock arranged to lock the handle until the lever has been operated to set the indicator.

54. In a cash-register, the combination with a registering mechanism, of an indicator, a lever for adjusting said indicator, an operating-handle, and a lock arranged to lock the handle when the lever is in any of its adjusted positions and only unlock said handle when the lever is moved.

55. In a cash-register, the combination with a register-operating mechanism, of a series of independent counters, a setting-lever for bringing any one of the counters into coöperative relation with the operating mechanism, and a lock arranged to lock the machine when the lever is in any of its adjusted positions and only unlock the same when the lever is moved.

56. In a cash-register, the combination with a counter-operating mechanism, of a totalizing-counter, a series of independent counters, a hand device for moving all of the independent counters simultaneously to bring the desired one to operative position, and a throw-out device for the main totalizing-counter arranged to be operated by said hand device when the latter is moved to bring certain counters into operative position.

57. In a cash-register, the combination with a counter-operating mechanism, of a lock for the same, a totalizing-counter, a series of independent counters, a hand-lever for simultaneously moving all of the independent counters to bring one of the same to operative position, means operated by the lever for actuating the said lock, and throw-out devices for the main counter arranged to be operated by said lever when the same is moved to bring certain of the counters into operative position.

58. In a cash-register, the combination with the counter-operating mechanism, of a totalizing-counter, a series of independent counters, means for simultaneously moving all of the independent counters to bring a desired one of the same to operative position, and throw-out devices for the main counter arranged to be set by said counter-adjusting means so as to be subsequently operated by the regular movement of the machine.

59. In a cash-register, the combination with a counter-operating mechanism, of a totalizing-counter, a series of independent counters, a lever for moving any one of said independent counters to operative posi-

tion, and throw-out devices arranged to be set by said lever for operation during the regular movement of the machine.

60. In a cash-register, the combination with a counter-operating mechanism, of a totalizing-counter, a series of independent counters, a pivoted lever for bringing any one of the independent counters to operative position, a throw-out device for the totalizing-counter arranged to be set by said lever, and cam means connected to the operating mechanism for actuating the throw-out devices during the regular movement of the machine.

61. In a cash-register, the combination with a counter-operating mechanism, of a series of independent counters any one of which may be brought into connection with said operating mechanism, and a single series of transfer-pawls for actuating the counter which is brought to operative position independently of its actuation in connection with the counter-operating mechanism.

62. In a cash-register, the combination with an operating mechanism, of a series of independent counters, any one of which may be brought into connection with said operating mechanism, a series of slides mounted independently of the counter, and transfer-pawls mounted on said slides so as to move therewith and arranged to coact with any one of the counters which may be brought to operative position.

63. In a cash-register, the combination with an operating mechanism, of a counter, means for moving the counter into and out of connection with the operating mechanism, transfer devices mounted independently of the counter, means for moving the transfer devices to cause them to follow the movement of the counter toward and away from the actuating mechanism, and means for actuating the transfer devices to effect a transfer when the counter is moved out of engagement with its operating mechanism.

708,640. PROCESS OF MAKING ARTIFICIAL STONE AND FORMING ARTICLES THEREFROM. GEORGE P. CHAPPELL, New York, N. Y. Filed Feb. 23, 1901. Serial No. 48,420. (No specimens.)

Claim.—1. The herein-described process of producing cement, which consists in forming a mixture of oxid and chlorid of magnesium, water and a filling material, and mixing such ingredients thoroughly and continuing the working of the pasty mass thereby formed until it acquires a putty-like consistency.

2. The herein-described process of producing cement, which consists in producing a pasty mass by the union of oxid and chlorid of magnesium and water, adding to such mass a filling material and thoroughly mixing the same therewith and continuing the working of the pasty mass thereby formed until it has acquired a putty-like consistency.

3. The herein-described process of producing cement, which consists in forming a pasty mass by the union of oxid and chlorid of magnesium, and water, in the proportion of about one part of chlorid of magnesium and of water, each, to two parts of oxid of magnesium, adding to such mass a filling material, and mixing the same thoroughly therewith and continuing the working of the mass so formed until it has acquired a putty-like consistency.

4. The herein-described process of producing molded cement articles, which consists in producing a pasty mass by mixing and working oxid and chlorid of magnesium, water, and a filling material, and continuing the working of the pasty mass thereby formed until it has acquired a putty-like consistency, and then placing such a mass in molds and subjecting it to pressure in the molds.

708,641. PENHOLDER. SAMUEL H. CROCKER, London, England. Filed July 6, 1900. Serial No. 22,710. (No model.)

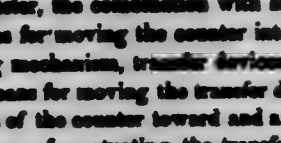

Claim.—1. A penholder consisting of a barrel provided with spring pen retaining and ejecting pieces, substantially as specified.

2. A penholder having two spring wings or clips stamped up from the barrel adapted to secure the pen on the outside of the holder by engaging with and bearing upon the pen and allowing it to be detached by an upward pressure, substantially as herein described.

708,642. LATCH. JOHN W. CRENSHAW and JOHN TROXLER, Fort Chester, N. Y. Filed Sept. 14, 1901. Serial No. 75,458. (No model.)

Claim.—An improved latch-releasing device, comprising, in combination, a door-frame, a door, keepers secured to the lintel and the threshold of said frame, bell-cranks pivoted near the top and bottom of the door and provided with a shoulder adapted to automatically engage the keepers, springs adapted to hold said bell-cranks in operative position, a shaft formed in sections connected to each other and to one arm of the bell-crank for movement in a plane at right angles to the plane of the door, the end sections being telescopic and slidably mounted in sleeves and means for operating the shaft from a single point.

708,643. HUB-ATTACHING DEVICE. CHARLES R. DAVIDSON, Greenville, Ill. Filed Aug. 28, 1901. Serial No. 73,234. (No model.)

Claim.—In a device of the class described, the combination with an axle having a reduced portion at the outer end of the spindle, provided with screw-threads and forming a shoulder, and a hub having an axle-box, of an axle-nut closed at its outer end and provided with interior screw-threads to engage those of the axle and abutting at its inner end against the shoulder of the said axle and being of greater diameter than the adjacent bearing portion of the spindle, said axle-nut consisting of an outer polygonal wrench-receiving portion, an exteriorly-threaded cylindrical portion and an intermediate flange 6, the interiorly-threaded sleeve arranged on the cylindrical extension of the nut and provided with an enlarged end extending beyond the shoulder of the axle and arranged on the bearing portion of the latter and projecting inward beyond the exterior screw-threads of the axle-nut to form a flange and provided with an annular recess of a width substantially equal to the thickness of the axle-box of the hub, the washer 13 located within the recess beyond the shoulder against which the nut abuts and supported by the bearing portion of the axle and fitting against the outer end of the axle-box, and an intermediate washer interposed between the flange 6 and the sleeve, substantially as described.

708,644. METHOD OF MAKING CEMENT FENCE-POSTS. EDWARD DAVIES, Reading, Mich. Filed May 29, 1901. Serial No. 62,385. (No specimens.)

Claim.—The herein-described method of making fence-posts, consisting in placing plastic material in a mold, permitting the same to remain therein until it has become hard enough to handle without breaking, then

removing the molded material from the mold before it has become entirely set, and finally dipping the article one or more times in a bath of liquid hydraulic cement.

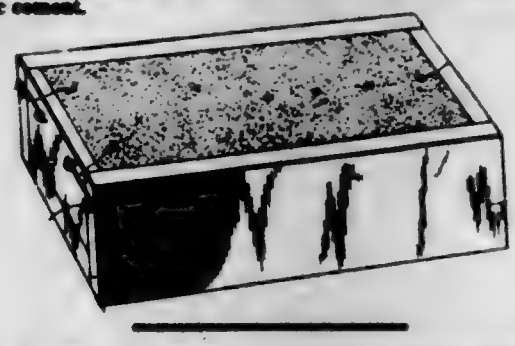

708,645. MECHANISM FOR GRINDING FLATS IN CARDING-ENGINES. JAMES FERRIS, Boston, Mass. Filed Nov. 6, 1900. Serial No. 735,959. (No model.)

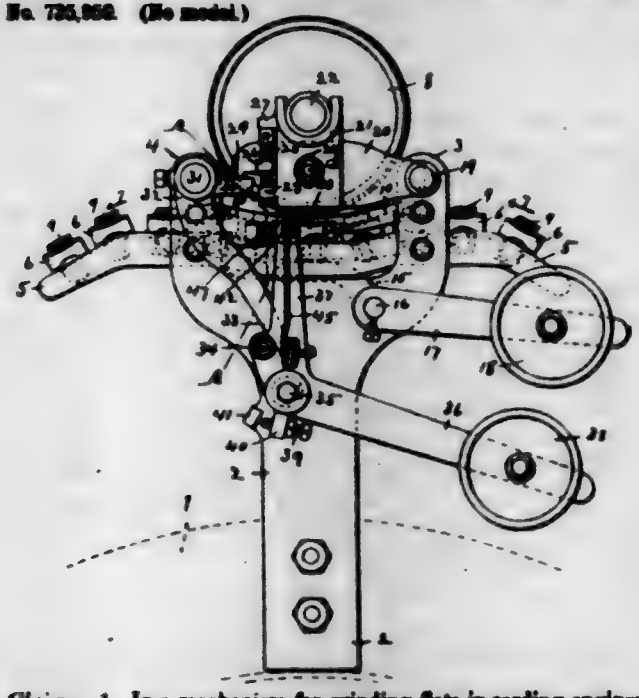

Claim.—1. In a mechanism for grinding flats in carding-engines, a grinding-roll, fixed guide-bars, tracks having central, depressed sections opposite said guide-bars and horizontal supporting-sections beyond the ends of said guide-bars, projecting flanges on said guide-bars arranged to bear against the working seats of the flats, said flanges being depressed corresponding to said central depressed sections of the tracks, whereby the flats, as they are drawn from one of said horizontal supporting-sections to the other of said horizontal supporting-sections, are slightly deflected and brought into close contact with said flanges, substantially as described.

2. In mechanism for grinding flats in carding-engines, a track over which the flats to be ground are moved, a guide-bar by which the position of a flat is controlled during the operation of grinding, a swinging bell-crank, a sliding bolt carried by said bell-crank and arranged to engage the flats as they are moved beneath the grinding-roll, whereby said bell-crank lever is rocked, a stud carried by said bell-crank lever, a pair of pivoted levers, a grinding-roll supported by said pivoted levers, a rocking shaft, arms carried by said shaft and supporting the free ends of said pivoted levers, a lever carried by said rocking shaft and having its free end bearing on said stud, whereby the working of said bell-crank will carry the grinding-roll toward the flat, and means for reversing said bell-crank during the operation of grinding, substantially as described.

3. In mechanism for grinding flats in carding-engines, the combination of a grinding-roll and means for controlling the position of the flats during the operation of grinding, consisting of a bent track and a flange guide-bar, said bent track having a depressed section and said guide-bar having a flange parallel with the depressed section of the track, whereby a series of flats moved over said track are slightly deflected and turned against the flange of the guide-bar as they pass beneath the grinding-roll, substantially as described.

4. In mechanism for grinding flats in carding-engines, the combination of a grinding-roll, means for controlling the flats as they pass in contact with said grinding-roll, a pivoted bell-crank carrying a sliding bolt 42 arranged to engage the flats as they are moved beneath the grinding-roll and having a bevel surface 46, a fixed bevel surface 47 arranged in the path of the bevel surface of the bolt 42, whereby said bolt is pushed out of engagement with the flats, a stud carried by said bell-crank, a rocking shaft having a lever bearing against said stud and having a pair of arms 30, a pair of levers pivoted at one end to the framework and having their free ends resting on said arms 30, a journal-bearing for said grinding-roll supported on said pivoted levers, substantially as described.

708,646. REFRIGERATING APPARATUS. JOHN C. FOX, Colorado Springs, Colo., assignor of two-thirds to Edgar J. Ulbrich and Charles F. Paige, Colorado Springs, Colo. Filed Nov. 6, 1901. Serial No. 81,280. (No model.)

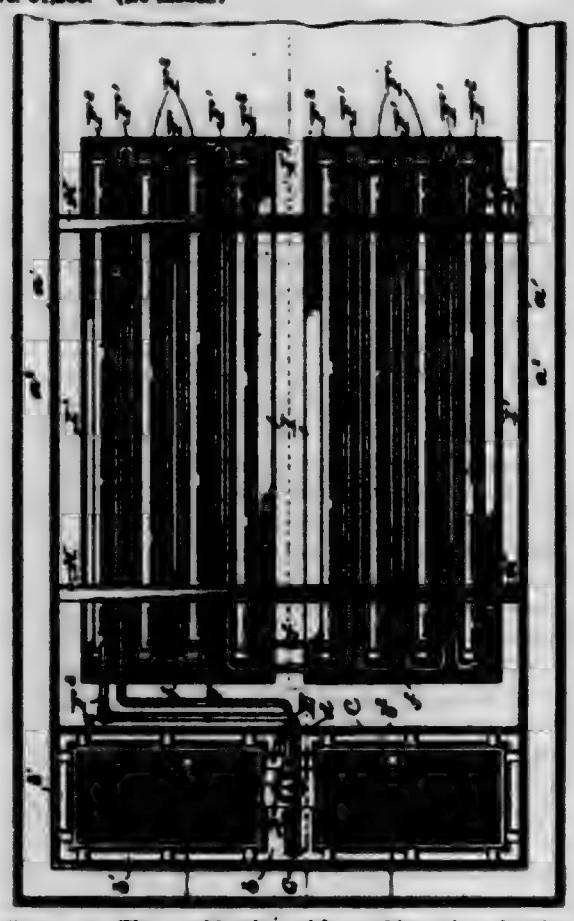

Claim.—1. The combination with a refrigerating-chamber, of a receptacle for refrigerating liquid, a discharge-conduit for the liquid leading from said receptacle and extended through an elongated course in the upper part of said chamber, siphoning means for circulating said liquid throughout said conduit, a controlling-valve for the liquid in said conduit, and means for opening and closing said valve actuated by the rise and fall of the liquid in said receptacle.

2. The combination with a refrigerating-chamber, of a receptacle for refrigerating liquid, a discharge-conduit for said liquid, leading from said receptacle, and comprising a pipe extended through an elongated course in the upper part of said chamber, a pipe of larger diameter in the upper part of said chamber to which the first said pipe leads, the pipes being exposed to the atmosphere in said chamber, means for circulating said liquid through said conduit, and a valve in said conduit governing the flow of liquid therethrough.

3. The combination with a refrigerating-chamber, of an ice-holding receptacle exposed to the atmosphere in said chamber, a discharge-conduit for the waste water produced by the ice in melting leading from said receptacle and extended through an elongated course in said chamber, means for circulating said water through said conduit, an outlet-valve toward the discharge end of said conduit, and means for opening and closing said valve actuated by float mechanism at the inlet end of said conduit, substantially as and for the purpose set forth.

4. The combination with a refrigerating-chamber, of an ice-holding bunker exposed to the atmosphere in said chamber, a receptacle communicating with said bunker for the water produced by the ice in melting, a conduit leading from said receptacle and extended through an elongated course in said chamber, siphoning means for circulating said water through said conduit, an outlet-valve toward the discharge end of said conduit, and means for opening and closing said valve actuated by float mechanism in said receptacle, substantially as and for the purpose set forth.

708,647. MOLDING-MACHINE. BENJAMIN A. FRANKLIN, Philadelphia, Pa. Filed Mar. 6, 1901. Serial No. 50,937. (No model.)

Claim.—1. In a molding-machine, the combination with a pattern, of a rammer, means for effecting a relative movement between the rammer and the pattern, and devices for connecting the rammer and the pattern when the rammer is moved toward said pattern.

2. In a molding-machine, the combination with a pattern, of a rammer, means for effecting a relative movement between the rammer and the pattern, and devices carried by the rammer for engaging the pattern.

3. In a molding-machine, the combination with a pattern, of a rammer having a former complementary with the shape of the pattern, means for effecting a relative movement between the rammer and the pattern,

and devices for connecting the rammer and the pattern when the rammer is moved toward said pattern.

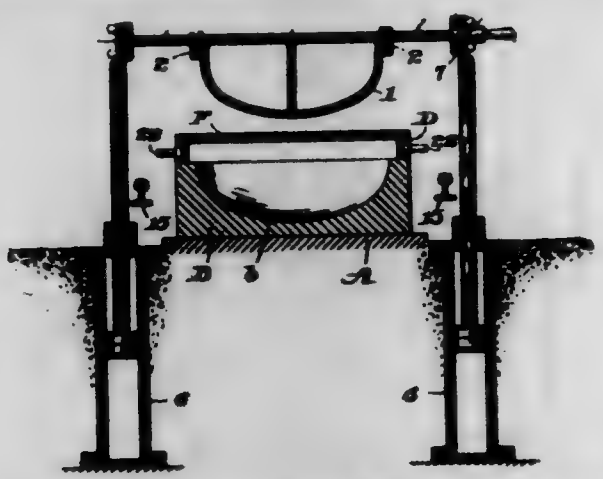

4. In a molding-machine, the combination with a pattern, of a rammer having a former complementary with the shape of the pattern, means for effecting a relative movement between the rammer and the pattern, and connecting devices carried by the rammer for engaging the pattern.

5. In a molding-machine, the combination with a pattern, of a rammer comprising a plate having a former projecting from one of its faces, means for effecting a relative movement between the rammer and the pattern, and devices carried by said plate for engaging the pattern.

6. In a molding-machine, the combination with a pattern, of a rammer comprising a plate having a former projecting from one of its faces, means for effecting a relative movement between the rammer and the pattern, and devices hinged to said plate for engaging the pattern.

7. In a molding-machine, the combination with a rotatable pattern, of a rammer comprising a plate having a former projecting from one of its faces, means for effecting a relative movement between the rammer and the pattern, means carried by said plate and forming bearings for said pattern, and means for rotating said plate to permit rotation of the pattern.

8. In a molding-machine, the combination with the pattern-support, of a rotatable rammer, and means for effecting a relative movement between the rammer and the pattern-support.

9. In a molding-machine, the combination with the pattern-support, of a rotatable rammer, means for effecting a relative movement between the rammer and the pattern-support, and movable means whereby the pattern may be pivotally suspended from the rammer.

10. In a molding-machine, the combination with the pattern-support, of a rammer, means for effecting a relative movement between the rammer and the pattern-support, and suspension devices carried by said rammer whereby the pattern may be pivotally suspended from the rammer.

11. In a molding-machine, the combination with the pattern-support, of a rotatable rammer, means for effecting a relative movement between the rammer and the pattern-support, and means whereby the pattern may be connected with and disconnected from the rammer.

12. In a molding-machine, the combination with the pattern and the flask thereon, of a rammer, means for effecting a relative movement between the rammer and the pattern, means whereby the pattern may be pivotally suspended from the rammer, and means whereby the flask and pattern may be connected with and disconnected from the rammer.

13. In combination a pattern, a flask adapted to be mounted thereon, and a rammer comprising a plate and former, means depending from the side of the plate providing turning supports for said pattern, and devices depending from the corners of the plate for supporting either said flask or said pattern.

14. In a molding-machine, the combination with a pattern, of a rammer comprising a plate having a former projecting from one of its faces, said plate being provided with a series of filling-openings arranged around the former and discharging into the pattern when the rammer is positioned relatively thereto.

15. In a molding-machine, the combination with a pattern, a rammer, and means for effecting a relative movement between said pattern and rammer, of a trackway arranged adjacent to the pattern and rammer, carriers mounted thereon and provided with vertically-adjustable supports, and a flask adapted to be engaged by said supports and transported by the carriers to and from the pattern.

16. In a molding-machine, the combination with a pattern, a rammer, and means for effecting a relative movement between said pattern and rammer, of a trackway arranged adjacent to the pattern and rammer and provided with laterally-movable rail-sections adjacent to the pattern, carriers mounted on said trackway and provided with vertically-adjustable supports, and a flask adapted to be engaged by said supports and transported by the carriers to and from the pattern.

703,648. PUMP. WILLIAM F. GARRISON, Brooklyn, N. Y., assignor to Guild & Garrison, Brooklyn, N. Y., a Firm. Filed Feb. 23, 1901. Serial No. 48,201. (No model.)

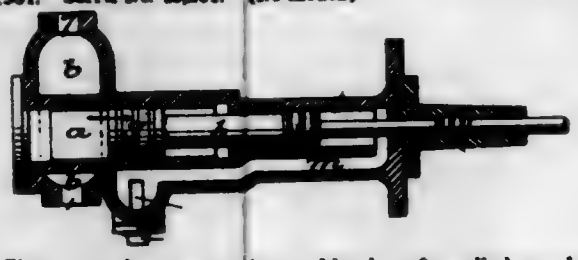

Claim.—1. In a pump, the combination of a cylinder and a piston and piston-rod working therein, a cylindrical extension at one end of the cylinder, a second piston on said rod working in said extension, a packing for said piston-rod beyond said second piston, a suction-chamber and a discharge-chamber and a suction-valve and a discharge-valve at the other end of the cylinder, an intermediate chamber in free communication with said other end of the cylinder between the suction and discharge chambers and valves, a leakage-passage leading from the space within said cylindrical extension between said second piston and said packing to said intermediate chamber, and a self-opening and self-closing discharge-valve between said passage and said intermediate chamber, substantially as herein described.

2. In a pump, the combination of a cylinder and a piston and piston-rod working therein, a cylindrical extension at one end of the cylinder, a second piston on said rod working in said extension, a packing for said piston-rod beyond said second piston, a suction-chamber and a discharge-chamber and a suction-valve and a discharge-valve at the other end of the cylinder, an intermediate chamber in free communication with said other end of the cylinder between the suction and discharge chambers and valves, a leakage-passage leading from the space within said cylindrical extension between said second piston and said packing to said intermediate chamber and having a branch leading to the suction-chamber, a self-opening and self-closing valve between said passage and said intermediate chamber, and a hand-controlled stop-valve in said branch, substantially as herein described.

703,649. SELF-PROPELLED VEHICLE. EDWIN R. GILL, Englewood, N. J. Filed Nov. 11, 1899. Renewed Nov. 15, 1901. Serial No. 82,411. (No model.)

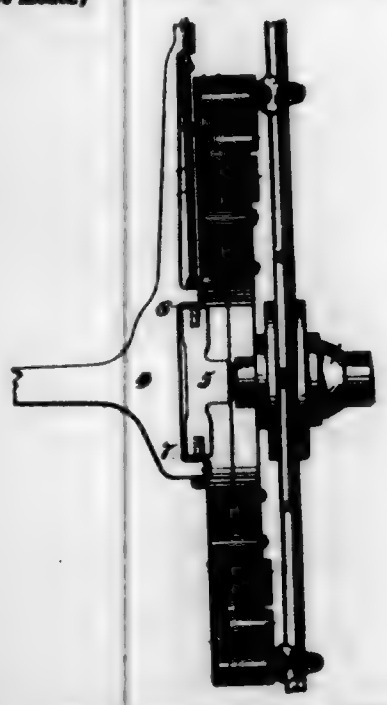

Claim.—1. As an article of manufacture, a vehicle-wheel and a rotary motor having its rotating part carried on said wheel and its fixed part supported on said wheel in fixed rotary relation to said rotating part.

2. As an article of manufacture, a vehicle-wheel and a rotary motor having its rotating part fixed to said wheel and its fixed part supported in ball-bearings by said rotating part.

3. As an article of manufacture, a vehicle-wheel, a ring-shaped armature fastened thereto, a bearing-ring on the face of said armature-ring, a ring-shaped field-magnet adapted to rotate within said armature-ring, a bearing-ring fixed to the face of said field-magnet ring, and ball-bearings between said bearing-rings for supporting said field-magnet.

4. As an article of manufacture, a common spoke-wheel adapted to turn upon a journal, a rotary driving-motor having its two members supported upon said wheel and clamps for fastening said motor to the spokes thereof.

5. In a vehicle, a wheel, a ring-shaped armature fixed thereto, a ring-shaped field-magnet adapted to rotate within said armature, a bearing-ring on said armature, and a bearing-ring on said field-magnet, said rings being concentric and one of said rings overlapping the circle separating said armature and field-magnet.

6. In a self-propelled vehicle, a wheel adapted to turn normally out of the median plane of traction, a rotary motor attached to said wheel, means adapted to restrain rotary movement of one member of said motor and a device for attaching said restraining means permitting of vertical play.

7. In a self-propelled vehicle, a wheel adapted to turn normally out of the median plane of traction, a rotary motor attached to said wheel, a vertically-pivoted body carrying said wheel, restraining means for one member of said motor and a device for fixing said restraining means while permitting vertical play and pivotal movement thereof.

8. In a self-propelled vehicle, a wheel and axle on a vertical pivot, a rotary motor fixed on said wheel, bars pivoted to the opposite sides of the fixed member of said motor, a pin pivoted at a common point to said bars, and a socket immovable with relation to the vehicle-body and substantially in line with said vertical pivot of the wheel, for receiving said pin.

708,650. LAWN-MOWER ATTACHMENT. WILLIAM J. GLEASON, Philadelphia, Pa., assignor of one-half to James Magonigal, Philadelphia, Pa. Filed May 14, 1901. Serial No. 60,980. (No model.)

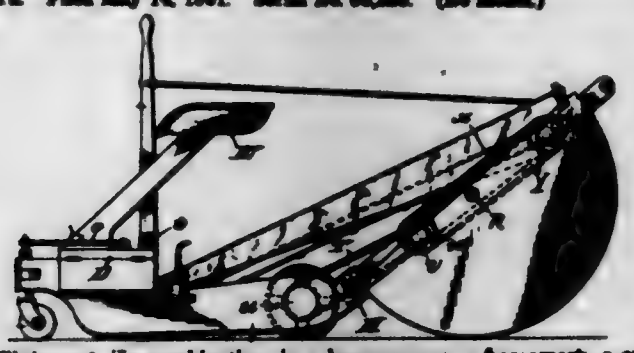

Claim.—1. In combination, in a lawn-mower, a framework, a cylindrical cutter journaled in said framework, a stationary cutter-blade also secured in said framework, two caster-wheels journaled in the forward end of the machine and adapted to support said forward end, a roller journaled in the rear end of the framework and adapted to support the rear of the machine, side bars extending upward and rearward at an angle from the main frame, a grass-receiving receptacle pivoted to said side bars and depending therefrom, a roll journaled in the framework of the machine at a point near and in the rear of the cylindrical cutter, a roll journaled between the side bars near their upper ends, means for communicating power from the traction-roller to the last-named roll for the purpose of revolving the same, an endless apron adapted to pass around the two rolls, a link connected to the rearward end of the receptacle, a lever pivoted at the forward end of the machine to which the forward end of the link is connected for the purpose of inverting the receptacle, a small roller journaled in the framework of the machine between the cylindrical cutter and the rear traction-roller, and means adapted to be operated by the foot of the rider for turning the caster-wheels to steer the machine, substantially as described and for the purpose specified.

2. In combination with a lawn-mower, side bars secured to the framework of the lawn-mower and extending upwardly and rearwardly at an angle therefrom, a semicircular grass-receiving receptacle pivoted to and depending from said side bars, means extending to the forward end of the machine for the purpose of inverting the grass-receiving receptacle for the purpose of emptying the same, a roller journaled in the upper end of the side bars, a sprocket-wheel journaled loosely upon the same shaft as the said roller, a chain adapted to pass around said sprocket-wheel and communicate motion to the same from a suitable source of power, a ratchet-wheel secured upon the same shaft as the roller, a pawl pivoted upon the sprocket-wheel and adapted to engage the teeth of the ratchet-wheel when the sprocket-wheel is revolved in one direction, a spring adapted to hold the pawl in engagement with the ratchet-teeth and allow the pawl to slip over the ratchet-teeth when the sprocket-wheel is revolved in the opposite direction, a roller journaled in the framework of the machine at a point near to and in the rear of the rotary cutters of the mower, an endless apron adapted to pass around these two rollers and be driven by friction with the upper rearward roller, side guards arranged upon each side of the endless apron and supported by the framework of the machine, substantially as described and for the purpose specified.

708,651. SPRAY-NOZZLE FOR URINALS. WILLIAM U. GUTTERSON, Philadelphia, Pa. Filed Oct. 4, 1901. Serial No. 77,502. (No model.)

Claim.—1. A spray nozzle for urinals, &c., consisting of a body or wall having an inclined lower portion terminating in a lip adapted to form, with a wall or fixture on which the structure may be mounted, a narrow delivery mouth, and means for supplying water to the space between said lip and said wall or fixture, said means having a water discharge opening of diameter in excess of the breadth of the delivery mouth beneath it, substantially as set forth.

2. A spray pipe nozzle including a body having an inclined lower portion terminating in a lip adapted to form, with a wall on which the structure may be located, a narrow delivery mouth, a rear wall connected with the body above said lip to form with said body a receiving chamber, the structure including an aperture of breadth or diameter in excess of that of the delivery mouth referred to, opening from said receiving chamber to discharge water from the receiving chamber upon said inclined lower portion, substantially as set forth.

3. A spray pipe nozzle including a body having an inclined lower portion terminating in a lip adapted to form with a wall on which the structure may be located a narrow delivery mouth, a rear wall connected with the body above said lip to form with said body a receiving chamber, the structure including a discharge opening in the base of said receiving chamber, and apertures adapted to discharge water from the respective sides of the receiving chamber, substantially as set forth.

4. A spray pipe nozzle including a front wall having an inclined lower portion terminating in a lip adapted to form with a wall on which the structure may be located a narrow delivery mouth, a rear wall the lower edge of which is of arched form and is connected to the front wall above the lower edge of the latter to form a receiving chamber, a discharge aperture, of breadth in excess of the mouth referred to, formed in the central portion of the bottom of said chamber, and discharge apertures opening through the lower portions of the respective sides of the structure, substantially as set forth.

5. A spray nozzle including the front plate having the sides, the inclined lower portion, and the lip, said sides terminating above the lower edge of said lip, a rear plate, an arched bottom plate connected to the lower edge of the rear plate, and the inner face of the front plate, respectively, and embodying an aperture in its central portion, substantially as set forth.

6. A spray nozzle including the front plate having the sides, the inclined lower portion, and the lip, said sides terminating above the lower edge of said lip, a rear plate, an arched bottom plate connected to the lower edge of the rear plate, and the inner face of the front plate respectively, and embodying an aperture in its longitudinal central portion, the respective ends of said bottom plate extending beyond the respective lower edges of the rear plate below the lower ends of the side walls, substantially as set forth.

708,652. EXPANSION-BOLT. WILLIAM U. GUTTERSON, Philadelphia, Pa. Filed Feb. 17, 1902. Serial No. 94,437. (No model.)

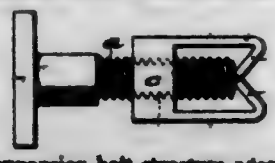

Claim.—1. An expansion bolt structure adapted to be self secured in a hole or recess, comprising a head, embodying an opening, a longitudinally movable member adapted to extend through said opening, a structure formed of plate or sheet metal, carried by said head, having portions adapted to present against the opposing walls of a hole or recess in which it may be entered, and a transversely extending portion adapted, in the travel of the longitudinally movable member, to be moved by said member and thereby occasion the radial thrust or expansion of a portion which presents against a wall of the hole or recess.

2. An expansion bolt member adapted to be inserted in and secured against withdrawal from a hole or recess, and comprising a head embodying an opening, a forwardly extending wing carried by said head, and a bearing plate carried on said wing and extending transversely into position to be encountered by a longitudinally movable member introduced through the opening in the head, said plate and wing being formed of plate or sheet metal, substantially as set forth.

3. An expansion bolt member comprising a head embodying an opening, a forwardly extending wing carried by said head, a bearing plate carried on said wing and extending inwardly and rearwardly into position to be encountered by a longitudinally movable member introduced through the opening in the head, substantially as set forth.

4. An expansion bolt device consisting of a head embodying an

opening, a plurality of wings permanently affixed to said head and extending forward from it, and an approximately V-shaped structure carried on said wings, said structure being arranged transversely with respect to the axis of said opening and with its apex facing said opening so as to be encountered by a longitudinally movable member introduced through said opening, substantially as set forth.

5. An expansion bolt member consisting of a head having an opening, and a pair of wings, each provided with an inwardly and rearwardly extending bearing device adapted to be encountered by a member extending through said opening.

6. An expansion bolt member consisting of a head having a tapped opening, and a pair of wings each provided at its extremity with an inwardly and rearwardly extending bearing plate, said wings and plates being formed of sheet or plate metal.

7. In an expansion bolt member, in combination, a threaded bolt, an expansion member embodying a head having a tapped opening through which said bolt extends, a plurality of wings extending forward from said head, and bearing plates carried on the ends of said wings and extending toward the axis of the structure into position to be encountered by the end of the bolt, said wings and plate being formed of sheet or plate metal.

708,653. VENTILATED CLOTHES-DRIER. LOUIS F. H. GUNDLACH, Mariner Harbor, N. Y., assignor of one-half to John R. Evans, New York, N. Y. Filed Oct. 17, 1901. Serial No. 78,907. (No model.)

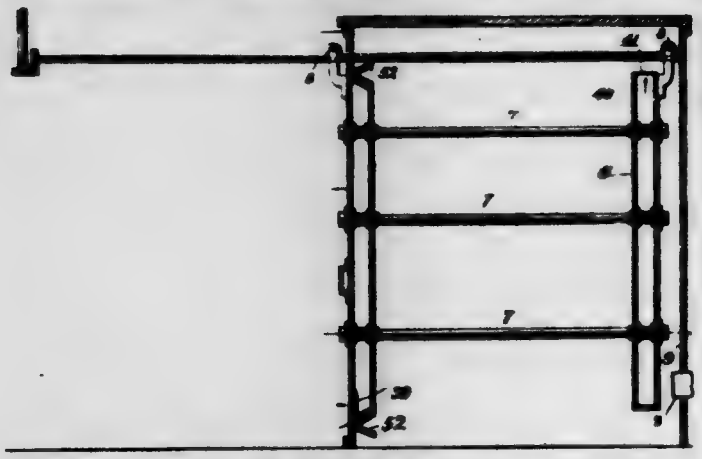

Claim.—1. The combination of a drying-compartment, a suitable opening in the side of said compartment, a sliding rack adapted to be moved in and out of said compartment through said opening, the said rack comprising a closed hollow front upright having an air-inlet at or near its base, a back upright, and one or more tubular suspending-bars connecting said uprights and communicating with the interior of said front upright and being provided at their inner ends with means for discharging therefrom the air received through the bars from the front upright, substantially as and for the purpose set forth.

2. The combination of a drying-compartment, a suitable opening in the side of said compartment, a sliding rack adapted to be moved in and out of said compartment through said opening, the said rack comprising a closed hollow front upright having an air-inlet at or near its base, a back upright, and one or more tubular suspending-bars connecting said uprights and communicating with the interior of said front upright and being provided at their inner ends with means for discharging therefrom the air received through the bars from the front upright, each suspending-bar being provided with a tubular member having lateral perforations and fixed across the interior of the said hollow front upright and provided near each end with a flange for bearing against the interior wall of the opposite sides of said upright, and having the inner end thereof threaded for receiving the thread on the corresponding suspending-bar, substantially as and for the purpose set forth.

3. The combination of a drying-compartment, a suitable opening in the side of said compartment, a sliding rack adapted to be slid in and out of said compartment through said opening, the said rack comprising two hollow uprights and one or more horizontal tubular suspending-bars placed between the uprights and having the interior thereof communicating with the interior of the hollow uprights, the upright at the inner end of the rack being open at its upper end for the exit of the air and the upright at the outer end of the rack being open at its lower end for the admission of the exterior air, the said upright at the outer end of the rack serving also as a door for closing the opening at the side of the compartment through which the rack is operated, substantially as and for the purpose set forth.

4. The combination of a drying-compartment, a suitable opening in the side of said compartment, a sliding rack adapted to be slid in and out of said compartment through said opening, the said rack comprising two hollow uprights, the inner one of which is open at its upper end for the exit of the air and the outer one of which is open at its lower end to admit thereto the exterior air and serving as a door to close the opening through which the rack is operated, a tubular member provided with lateral openings and secured across the interior of each of said hollow uprights, and a tubular suspending-bar connected at one end with one of said tubular members and at the other end with the other to permit the air to circulate from the interior of one of said hollow uprights through the tubular suspending-bar into the other hollow upright, substantially as and for the purpose set forth.

5. The combination of a drying-compartment, a suitable opening in the side of said compartment, a sliding rack adapted to be slid in and out of said compartment through said opening, the said rack comprising two hollow uprights, the inner one of which is open at the upper end for the exit of the air while the other one is open at its lower end for the admission of the exterior air, a tubular member having lateral perforations and fixed horizontally across the interior of each of said hollow uprights and in alinement with each other, each of said tubular members being provided near each end with a flange for taking against the interior wall of the opposite sides of the upright and having the inner end of each threaded, and a tubular suspending-bar threaded at each end and connected by such ends with the threaded ends of the said tubular members respectively, whereby the outer air taken in at the lower end of said outer upright may be circulated through the interior of the same, thence through the tubular suspending-bar into the upright at the rear end of the rack and discharged from the upper end of said latter upright, substantially as and for the purpose set forth.

6. The combination of a drying-compartment made of comparatively light material and provided with one or more doorways through which the racks are operated, angle-irons 52 fixed around the doorway and constituting the door-frame and acting as strengthening members for bracing the structure, the said angle-irons being arranged with the apices pointing outwardly so as to provide a beveled surface against which the door closes, and one or more sliding racks each having at its outer end an upright constituting a door for closing the doorway through which the rack is operated, said door having its edges beveled at 53 to fit against the beveled surface of the door-jamb for sealing the joints around the door, substantially as and for the purpose set forth.

708,654. CANTEEN. ALSON HALL, Toledo, Ohio. Filed Aug. 30, 1900. Serial No. 28,597. (No model.)

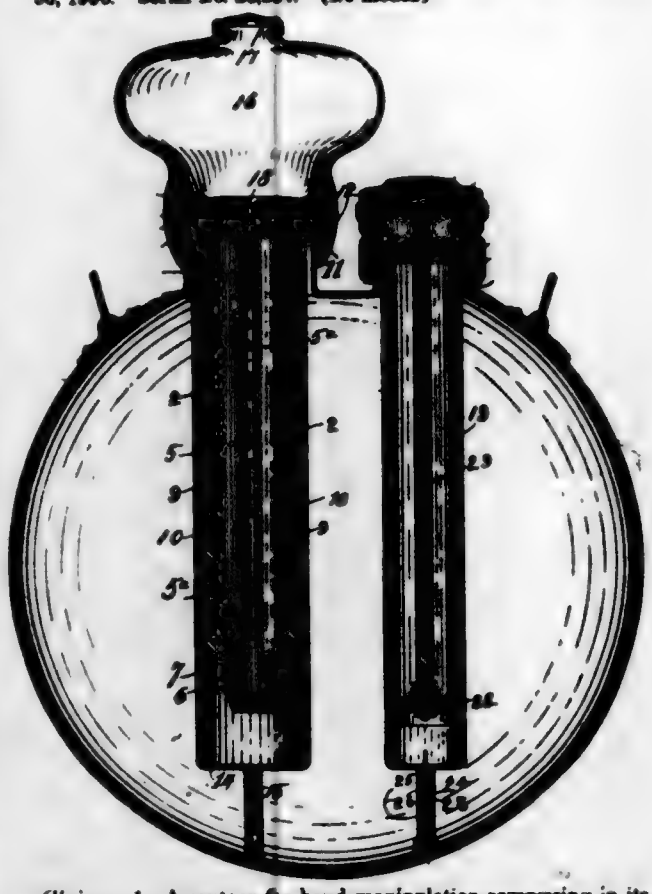

Claim.—1. A canteen for hand manipulation comprising in its construction a body portion, two chambers inclosed within the cavity of the body portion, one of said chambers being for unfiltered water and the other chamber being for filtered water, a filtering-body interposed between and in communication with said two chambers, and an air-pump connected to the chamber for unfiltered water.

2. In a canteen, a filtering-body, a casing inclosing the filtering-body, a chamber for unfiltered water, a chamber for filtered water, connections between the interior of said casing and the lower part of the chamber for

unfiltered water, and an air-pump adapted to compress air in said latter chamber.

3. A canteen having a body portion provided with a cavity for holding water and an air-pump having its discharge-outlet extended into the cavity of said canteen to a point near the bottom thereof to force air into the cavity of the canteen below the water-level therein to thereby purify the water by the upward passage of air through the water.

4. A canteen provided with a body portion having a cavity, a nozzle or neck and an air-pump extended through said nozzle or neck and supported thereby within the cavity of the canteen to force air into the cavity of the canteen below the water-level therein to thereby purify the water by the passage of air through the water.

5. A canteen provided with a body portion having a cavity, a nozzle or neck secured to the body portion, and an air-pump supported by said nozzle or neck and extended into the cavity of the canteen, the discharge-outlet of said air-pump being extended to near the bottom of the cavity of the canteen to force air into and through the water contained in the cavity.

6. In a canteen two nozzles or necks, a filter supported in one of said nozzles or necks, and an air-pump supported in the other of said nozzles or necks.

7. In a canteen, a filter, a screw-cap, a cup or chamber in the screw-cap, connections between the filter and said cup or chamber combined with an air-pump connected with the cavity of the canteen outside the filter.

8. In a canteen, a nozzle or neck, an air-pump supported therein, a separable screw-cap for the nozzle, having in its interior a chamber, a plunger for the air-pump, and a handle for the plunger inclosed in said separable screw-cap.

9. A canteen provided with a body portion having a cavity, a nozzle or neck secured to the body portion, an air-pump extended through the nozzle or neck and extended within the cavity, and means for detachably connecting said air-pump with the nozzle or neck.

708,655. FOCUSING-HOOD FOR PHOTOGRAPHIC CAMERAS. HENRY C. HAFFOLD, New York, N. Y. Filed Apr. 16, 1902. Serial No. 103,084. (No model.)

Claim.—1. A focusing-hood composed of a flexible cover, a bail, a slide having an abutment and movable upon the bail, and a spring-influenced hook movable upon the slide, substantially as specified.

2. A focusing-hood composed of a flexible cover, a bail, a two-armed slide, means for guiding one arm of said slide along the bail, a spring-influenced hook movable upon the other arm of the slide, and a perforated abutment on the slide engaging the hook, substantially as specified.

708,656. CULTIVATOR PLOW ATTACHMENT. ROBERT W. HAZLEBROOK, Maysville, Ga. Filed Apr. 5, 1902. Serial No. 101,560. (No model.)

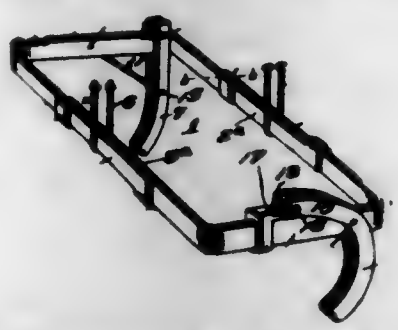

Claim.—1. A plow attachment of the class described, comprising a standard-carrying frame having a pair of U-shaped sections with the arms thereof overlapping each other, slidably related and provided with mutually-engaging connecting and guide devices, whereby said sections are permanently connected together and said frame is adapted to be lengthened and shortened, substantially as described.

2. A plow attachment of the class described, comprising a standard-carrying frame having a pair of U-shaped sections with the arms thereof overlapping each other, slidably related, and provided with mutually-engaging lugs bent respectively on the lower and upper edges of the free and rear arms of said sections, substantially as described.

3. A plow attachment of the class described comprising a standard-carrying frame having a pair of U-shaped sections with the arms thereof overlapping each other, slidably related, and provided with mutually-engaging connecting devices, in combination with clip-bolts to engage said overlapping arms and clamp said frame to the under side of a plow-beam, substantially as described.

708,657. ATTACHMENT FOR PLUMBERS' PUMPS. JOSEPH HOEH, Philadelphia, Pa. Filed Aug. 31, 1901. Serial No. 73,906. (No model.)

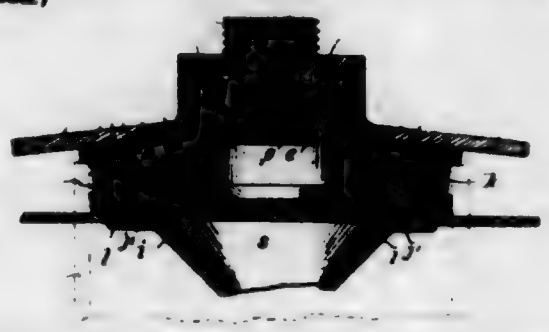

Claim.—1. In combination, a metallic holder furnished with a flange and perforated wings and with a central passage threaded to receive a pipe or coupling and a flexible rubber cup adapted to be cast upon said holder, the lower end of said cup being bifurcated.

2. In combination, a metallic holder furnished with a central passage threaded to receive a pipe or coupling, a flexible rubber cup adapted to be held by said holder, and detachable rubber rings concentric with said cup, adapted to be carried upon the outer side thereof to increase its diameter.

3. In combination, a metallic holder furnished with a threaded central passage adapted to receive a pipe or coupling at either end and with a flange and perforated wing, a flexible rubber cup, the upper end of which is cast upon said holder and the lower end of which is bifurcated and which is furnished upon its outside with a ring or shoulder A', detachable concentric rubber rings carried by said cup, means for locking said rings one to the other, and a detachable flat washer adapted to bear upon the tops of said rings.

708,658. MATTRESS-STUFFING MACHINE. CLEMENT W. JOHANSEN, Everett, Pa. Filed Aug. 23, 1901. Serial No. 73,063. (No model.)

Claim.—1. The combination of the belt forming a feed-table, a compressing-roll provided under the belt at the delivery end thereof, a delivery-chute extending from the end of the belt, a feed and compression roll situated above the first roll and adapted to act upon the stuffing material in advance of its entrance to the chute, and mechanism operatively connecting the upper portion of the chute to the upper roll and for effecting the simultaneous adjustment of both, substantially as specified.

2. The combination with the feed-belt and its lower compressing-roll, of a chute having an upper adjustable portion, a second compressing-

roll situated above the first roll, means for vertically adjusting said second roll, and mechanism connecting the upper portion of the chute to the shaft of said second roll, whereby both the roll and chute may be simultaneously adjusted.

3. The combination with the feed-belt and its lower compressing-roll, of a chute having an upper adjustable portion, a pair of bars extending transversely of the machine and carrying the upper portion of the chute, one of said bars being guided by the frame and the opposite bar having rearwardly-extending perforated portions, a second compressing-roll mounted above the first roll, a shaft carrying said roll and passing through the perforated rearwardly-extending portions of the chute-carrying bar, guided blocks forming journals for said shaft, and means for vertically adjusting said blocks.

4. In a mattress-stuffing machine, the combination of the feed-belt, a delivery-chute arranged at one end thereof, side boards for governing the width of the mattress to be made, guides carried at the front and rear ends of said boards, pivoted levers adapted to said guides, and means for simultaneously operating said levers, substantially as specified.

5. In a mattress-stuffing machine, the combination of the feed-belt, a delivery-chute arranged at one end thereof, side boards for governing the width of the mattress to be made, guides arranged on the exterior and at each end of said side boards, levers fulcrumed to the fixed frame of the machine and adapted to said guides, connecting-rods extending between said levers, a rock-shaft, an operating-lever thereon, and mechanism connecting said rock-lever to said connecting-rods.

6. In a mattress-stuffing machine, the combination of the feed-belt, a delivery-chute at one end thereof, side boards for governing the width of the mattress to be made, guides arranged on the exterior and at each end of said side boards, levers 38 and 40 fulcrumed to the fixed frame of the machine and connected to the front and rear guides respectively, connecting-rods 45 extending between said levers, a rock-shaft 42 extending transversely of the frame of the machine and adapted to suitable bearings thereon, an operating-lever on said rock-shaft, arms 47 secured to the rock-shaft near the opposite ends thereof, and rods 46 extending between said arms and the connecting-rod 45, substantially as specified.

7. In a mattress-stuffing machine, the combination of the feed-belt, adjustable side sections forming part of a delivery-chute, adjustable side boards carrying said side sections, an upper compression-roll, means for adjusting the same and for adjusting the side boards, and mechanism connecting the shaft of said roll to the upper portion of the delivery-chute.

8. In a mattress-stuffing machine, the combination of the feed-belt, and lower compression-roll, of a delivery-chute having or comprising a series of vertically and laterally adjustable sections, an upper compression-roll, a shaft carrying the same, means for connecting the shaft to the vertical adjustable sections of the chute, side boards connected to the laterally-adjustable sections of the chute, and means for adjusting said side boards.

9. In a mattress-stuffing machine, the combination of a feed-belt and lower compression-roll, of a delivery-chute having laterally-adjustable lower corner-sections, and upper corner-sections adjustable both laterally and vertically, an upper compression-roll, a shaft carrying the same, means for connecting said shaft to the upper corner-sections, means for vertically adjusting said shaft, adjustable side boards connected to both the upper and lower corner-sections of the chute, and means for adjusting said side boards.

10. In a mattress-stuffing machine, the combination with a feed-belt and lower compression-roll, of a delivery-chute, having a fixed section 50 and a series of adjustable sections 55, 57 and 61, lower transverse bars carrying the fixed section and supporting the sections 55, upper transverse bars carrying the sections 57 and supporting the sections 61, an upper compression-roll, a shaft carrying said roll, said shaft being connected to the upper supporting-bar, means for vertically adjusting said shaft, side boards for governing the width of the mattress to be formed, said side boards being rigidly connected to the chute-sections 55 and slidably connected to the sections 61, with means for adjusting said side boards, substantially as specified.

11. In a mattress-stuffing machine, having a feed-belt and compression and delivery devices, an end plate formed in two sections for longitudinal adjustment, each of said sections having a rearwardly-extending supporting-wing and rearwardly-extending toothed bars, 77, adapted to engage in the material of which the belt is formed, substantially as specified.

708,659. FREIGHT-CAR. HERBERT R. KEITHLEY, Buffalo, N. Y. Filed Mar. 14, 1902. Serial No. 98,239. (No model.)

Claim.—1. In a car, a side-supporting structure composed of a plate-girder having a compression-flange, and a truss having a compression-chord independent of said compression-flange of the plate-girder, substantially as set forth.

2. In a car, a side-supporting structure composed of a plate-girder having a tension-flange, and a truss having a tension-chord independent of said tension-flange of the plate-girder, substantially as set forth.

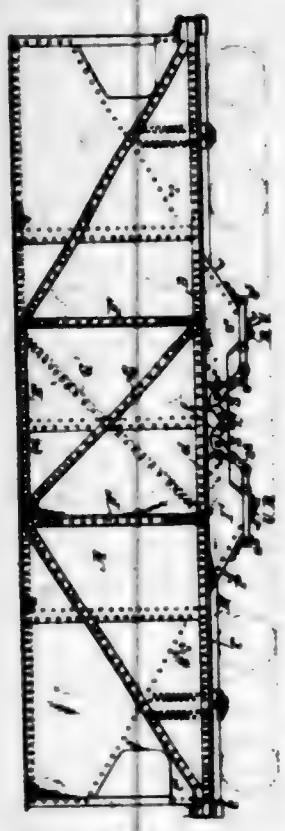

3. In a car, a side-supporting structure composed of a plate-girder having tension and compression flanges, and a truss having chords independent of the flanges of said plate-girder, substantially as set forth.

4. In a car, a side composed of a plate-girder having tension and compression flanges, and a truss having chords independent of the flanges of said plate-girder, substantially as set forth.

5. In a car, a side-supporting structure composed of a plate-girder having tension and compression flanges, and a truss having a chord independent of the flanges of said plate-girder, said truss-cord having inclined portions, substantially as set forth.

6. In a car, a side-supporting structure composed of a plate-girder having tension and compression flanges, and a truss having chords independent of the flanges of said plate-girder, the upper chord of said truss having inclined portions, substantially as set forth.

7. In a car, a side-supporting structure composed of a plate-girder, the flanges of which project to one side of the web, and a truss which is complete in its formation independently of said plate-girder and is arranged between the flanges of said girder, substantially as set forth.

8. In a car, a side-supporting structure composed of a plate-girder having outwardly-projecting flanges, and a truss which is complete in its formation independently of said plate-girder and is arranged on the outer side of said plate-girder between the flanges thereof, substantially as set forth.

9. In a car, a side composed of a plate-girder having upper and lower flanges projecting to one side of its web, and a truss which is complete in its formation independently of said plate-girder and is arranged between the flanges thereof, substantially as set forth.

10. In a car, a side composed of a plate-girder having tension and compression flanges, and a truss having chords independent of the flanges of said plate-girder and which is arranged on one side of and riveted to said plate-girder, substantially as set forth.

11. In a car, a side in the form of a plate-girder composed of a web and flanged bars, and a truss which is complete in its formation independently of said plate-girder, the chords of said truss being arranged opposite to said flanged bars of the plate-girder and riveted thereto, substantially as set forth.

12. In a car, a side in the form of a plate-girder composed of a web and flanged bars, the horizontal flanges of which project outwardly, and a truss which is complete in its formation independently of said plate-girder and which is arranged on the outer side of said plate-girder web, the chords of said truss being arranged opposite and riveted to the flanged bars of said plate-girder, substantially as set forth.

13. In a car, a side composed of a plate-girder formed of a web and top and bottom flanged bars, and a truss which is complete in its formation independently of said plate-girder, one chord of said truss extending throughout its length parallel with one flanged bar of said plate-girder and secured thereto, and another chord of which is parallel with the other flanged bar of said plate-girder at its central portion and is secured thereto, substantially as set forth.

14. In a car, a side composed of a plate-girder formed of a web and upper and lower angle-bars, the vertical flanges of which are riveted to the inner side of said web and the horizontal flanges of which extend outwardly, and a truss which is complete in its formation independently of said plate-girder and is arranged on the opposite side of said web, the chords of said truss being riveted to said angle-bars of said plate-girder, substantially as set forth.

15. In a hopper-bottom car, the combination of continuous draft-beams extending through the bottom, a longitudinal draft-plate arranged above and secured to said draft-beams and provided with an end body portion having an extended bearing on and secured to the hopper-bottom, substantially as set forth.

16. In a hopper-bottom car, the combination of continuous draft-beams extending through the hopper-bottom, a longitudinal draft-plate arranged above and secured to the tops of said beams intermediate of its ends, and its end body portions having extended bearings on and secured to the opposite inclined portions of said hopper-bottom, substantially as set forth.

17. In a hopper-bottom car, the combination of continuous draft-beams extending through the bottom, a longitudinally-arranged plate secured to the tops of said draft-beams intermediate of its ends and having its end portions extending through openings in the opposite inclined portions of the hopper-bottom and secured to the under side of the latter, substantially as set forth.

18. In a hopper-bottom car, the combination of continuous draft-beams extending through the hopper-bottom, a longitudinal flat draft-plate arranged above and secured to the tops of said beams intermediate of its ends, and its end body portions having extended bearings on and secured to the opposite inclined portions of said hopper-bottom, substantially as set forth.

19. In a car, the combination with side members and draft-beams, of an end sill composed of a Z-bar having its web arranged horizontally and riveted at its ends to said side members, a vertical plate riveted to one flange of said Z-bar and an angle-bar secured to said vertical plate, and extending beneath the ends of said draft-beams and riveted to the flanges of the latter, substantially as set forth.

20. In a car, the combination with side members each composed of a complete truss and a complete plate-girder, an end sill, the ends of which are arranged in front of said side plate-girders and are riveted to said trusses, substantially as set forth.

21. In a car, the combination with side members each composed of a plate-girder, and a truss which projects beyond the end of the plate-girder, an end sill the ends of which are arranged in front of said girders and are carried by the portions of said trusses which project beyond said plate-girders, substantially as set forth.

22. In a car, the combination with side members each composed of a plate-girder, and a truss the end of which projects beyond the end of the plate-girder, and an end sill the ends of which inclose and are supported by the portions of said trusses which project beyond the ends of said plate-girders, substantially as set forth.

23. The combination of a draft-beam, and an abutment for a draft-rigging composed of two oppositely-arranged Z members having vertical flanges riveted to said draft-beam, and vertical flanges extending in opposite directions and overlapping each other, substantially as set forth.

24. The combination with a hinged door, of an operating rock-shaft, a toggle-joint at each end of said door one link of which is fixed to said rock-shaft, a link connecting the other link of each toggle to said door, and a second link pivoted to a fixed part and to the second link of each toggle, substantially as set forth.

25. The combination with a hinged door, of an operating rock-shaft, a toggle-joint at each end of said door one link of which is fixed to said rock-shaft, a link connecting the other link of each toggle to said door, a second link pivoted to a fixed part and to the second link of each toggle, and stops for said last-mentioned links, substantially as set forth.

703,660. BORING-MACHINE. GEORGE DE LAVAL, Cambridge, and CHARLES W. CHENOWLH, Somerville, Mass., assignors to the George F. Blake Manufacturing Company, New York, N. Y., a Corporation of New York. Filed May 9, 1901. Serial No. 59,249. (No model.)

Claim.—1. In a boring-machine the combination with a front boring-spindle, of a work-carrying carriage, mechanism for automatically advancing said carriage to feed the work to the cutters carried by said front spindle, a rear boring-spindle, and mechanism for automatically advancing said rear spindle to feed the cutters carried by said spindle through the work as it is being fed, substantially as described.

2. In a boring-machine the combination with a front boring-spindle, of a work-carrying carriage, mechanism for automatically advancing said carriage to feed the work to the cutters carried by said front spindle, a sliding carriage mounted upon said work-carriage, a boring-spindle mounted in said sliding carriage, and mechanism for automatically advancing said sliding carriage on said work-carriage to feed the cutters carried by the rear spindle through the work as it is being fed, substantially as described.

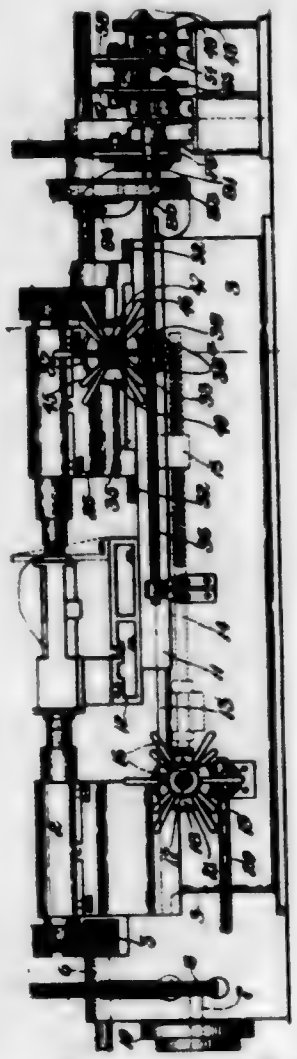

3. In a boring-machine, the combination with a front boring-spindle, of a work-carrying carriage, feeding mechanism therefor, a carriage mounted to slide on the work-carriage, a boring-spindle mounted in said sliding carriage, mechanism for automatically moving said sliding carriage with relation to the work during the feed of the work-carriage, substantially as described.

4. In a boring-machine, the combination with a front boring-spindle, of a work-carrying carriage, feed mechanism therefor, a carriage mounted to slide on the work-carriage, a boring-spindle mounted in said sliding carriage, mechanism for automatically moving said sliding carriage with relation to the work during the feed of the work-carriage, and means for disconnecting said automatic feed mechanism, substantially as described.

5. In a boring-machine, the combination with a front boring-spindle, of a work-carrying carriage, feed mechanism therefor, a rear boring-spindle, automatic feed mechanism therefor and means for varying the speed of said latter feed mechanism, substantially as described.

6. In a boring-machine, the combination with a front boring-spindle, of a work-carrying carriage, feed mechanism therefor, a rear boring-spindle, automatic feed mechanism therefor, and means for reversing said latter feed mechanism, substantially as described.

703,631. VAPOR-BURNER. ADOLPHE LACOUTRE, Paris, France. Filed Aug. 23, 1900. Serial No. 27,791. (No model.)

Claim.—1. A vaporizing-tube arranged for attachment to a supply-pipe at its lowest end and provided with a vapor-jet orifice at its upper end, a screw-threaded plug in such tube extending from its lower end to adjacent the jet-orifice, a metallic heat-retaining head surrounding the upper end of such tube, a Bunsen or mixing tube mounted on such head and provided with a cap at its upper end forming a burner, and a metallic heat-conductor secured to said head and extending axially of the mixing-tube and having its upper end projected through said cap to be heated by the burner-flame.

2. The combination of the cock for admitting liquid, the vaporizing-tube leading up therefrom to the mixing-point, a screw-threaded plug in said tube, extending practically from the cock to said vapor-jet orifice, a cup for the reception of fluid for the generating-flame, surrounding said tube adjacent to the cock, a metallic heat-retaining head surrounding the upper end of said tube, a Bunsen tube for mixing purposes, a burner above said mixing-tube, a mantle, and a metallic heat-conductor rising

centrally in said mantle and having forked depending arms through said burner which are directly attached to the metallic heat-retaining head to conduct heat thereto and continue the process of vaporization in the liquid-passage passing therethrough.

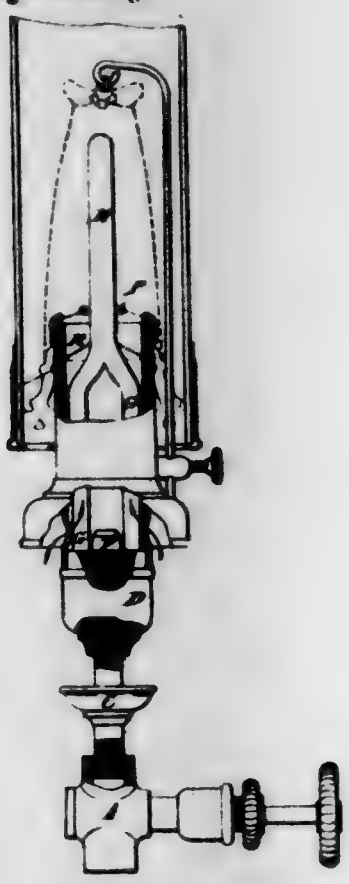

703,662. FIRE-EXTINGUISHING APPARATUS. JEREMIAH S. LEITH, Gladstone, N. D. Filed Aug. 12, 1901. Serial No. 71,794. (No model.)

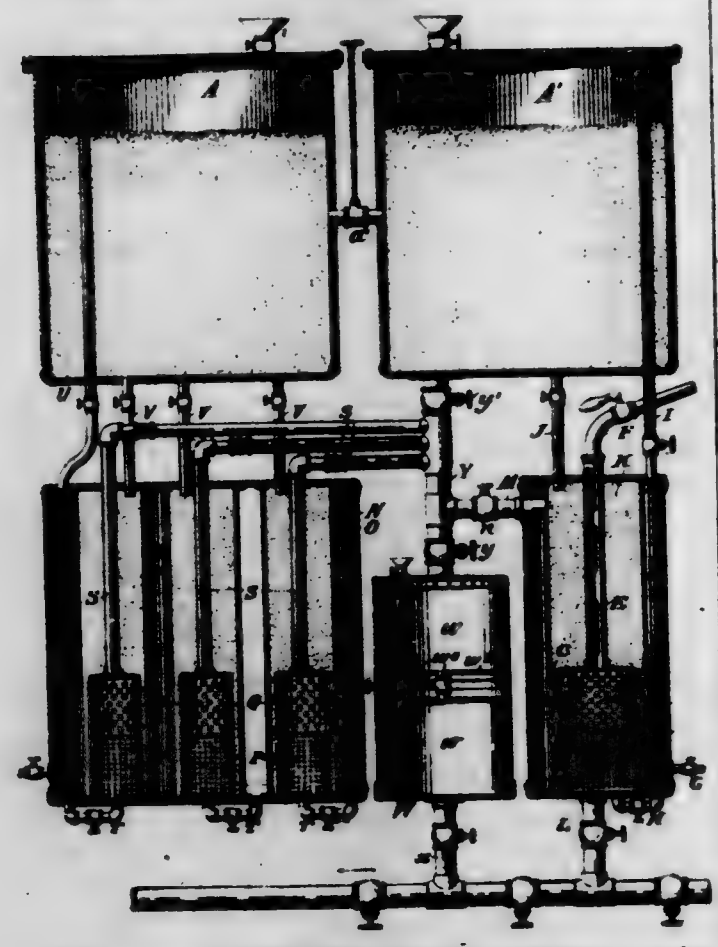

Claim.—1. A fire-extinguishing apparatus comprising a powder-chamber; an air-supply chamber within the powder-chamber, a commingling-chamber communicating with the powder-chamber; means for forcing air through the air-supply chamber and into the powder-chamber, and a discharge-pipe communicating with the commingling-chamber and having a flexible valved end, substantially as described.

2. A fire-extinguishing apparatus comprising a powder-chamber; a perforated air-receiving chamber within the powder-chamber; a perforated commingling-chamber also within the powder-chamber, and a discharge-pipe connected with the commingling-chamber.

3. The combination of a powder-magazine; an air-supply chamber; a powder-receiving chamber surrounding the air-supply chamber; a perforated commingling-chamber within the powder-chamber, and a discharge-pipe connected with the commingling-chamber.

4. The combination of a powder-magazine, a powder-receiving chamber, a valved pipe connecting the powder-magazine with the powder-receiving chamber, an air-chamber surrounding the powder-receiving chamber, a pipe connecting the air-chamber with the powder-magazine, a perforated air-receiving chamber within the powder-chamber, a commingling-chamber, also within the powder-receiving chamber, and a discharge-pipe connected with the commingling-chamber.

5. The combination of a service-pipe; a powder-magazine; a powder-chamber; an air-chamber surrounding the powder-chamber; a perforated receiving-chamber connected with said first-mentioned air-chamber; a perforated commingling-chamber within the powder-chamber, and a discharge-pipe connected with the service-pipe.

6. The combination of a service-pipe; a powder-receiving chamber; a powder-magazine connected therewith; an air-receiving chamber surrounding the powder-receiving chamber; a pipe connecting said air-chamber with the powder-magazine; a perforated commingling-chamber within the powder-magazine, means for supplying air and powder thereto, and a discharge-pipe connecting the commingling-chamber with the service-pipe.

7. The combination of a powder-receiving chamber, an air-supply, a commingling-chamber, a discharge-pipe, the receiving-chamber, W, other powder-receiving chambers, air-supplies and commingling-chambers, and discharge-pipes connected with the receiving-chamber, W.

8. The combination of two powder-magazines, a powder-receiving chamber connected with one of said magazines, an air-chamber surrounding the powder-receiving chamber, an air-receiving chamber within the powder-receiving chamber and connected with the first-mentioned air-chamber, a commingling-chamber also within the powder-receiving chamber, a discharge-pipe connected with the commingling-chamber, a casing of large dimensions containing a series of powder-receiving chambers connected with one of the powder-magazines, and each containing an air-receiving chamber and a commingling-chamber, a storing-chamber, W, connected with one of the magazines, discharge-pipes connecting the commingling-chambers last mentioned with the storage-chamber, W, connections between this chamber and the powder-chamber of the first-mentioned apparatus, a service-pipe, and connections between the service-pipe and the storage-chamber, and between the service-pipe and the air-receiving chamber of the first-mentioned apparatus.

9. The combination of an inclosing casing, a series of powder-receiving chambers therein, each containing an air-receiving chamber and a commingling-chamber, which latter are each provided with a discharge-pipe, and a discharge-pipe of large dimensions to which said first-mentioned discharge-pipes are all connected.

10. The combination of a powder-receiving chamber, an air-receiving chamber within the powder-receiving chamber, a commingling-chamber also within the powder-receiving chamber, means for supplying air to the air-receiving chamber, a discharge-pipe, a cylinder connected therewith, a discharge-pipe or barrel, and a valve interposed between the cylinder and the discharge-pipe or barrel.

708,663. AUTOMATIC FIRE-EXTINGUISHER. ROBERT W. NEWTON, Providence, R. I. Filed Apr. 25, 1902. Serial No. 430,493. (No model.)

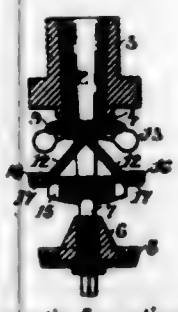

Claim.—1. In an automatic fire-extinguisher, in combination, the nozzle 2, the valve-seat 4, a valve for closing the outlet, a spring bearing on the valve, the thrust-arms 12 bearing on the spring and holding the same in the normal condition, metal to metal, to form a rigid thrust, the thrust-block 15, the thrust-plates 16 secured to the thrust-block by solder, means, substantially as described, for strengthening the solder-joint, the yoke 5, and the screw-threaded thrust-pin 7; the whole adapted to hold the valve to its seat rigidly and permit the solder-joint to yield while the valve is held to its seat, as described.

2. In an automatic fire-extinguisher, the combination with the nos-

zle 2, the valve-seat 4, the yoke 5, the valve, and the valve-support including the thrust-arms 12 and thrust-plates 16, of the perforated and screw-threaded cone 6, the screw-threaded thrust-pin 7, and the deflector 8 screw-threaded and adapted to lock the thrust-pin in the required position, as described.

3. In an automatic sprinkler, a valve-support for holding the valve closed comprising a thrust-block, a thrust-plate secured thereto by solder and adapted to move laterally when the solder is fused, an inclined arm bearing against said thrust-plate and tending to move the same laterally, and means whereby a lateral movement of the thrust-plate will cause said thrust-plate to be moved transversely away from the thrust-block to rupture the solder-joint, substantially as described.

4. In an automatic sprinkler, a valve-support for holding the valve closed comprising a thrust-block, a thrust-plate secured thereto by solder and adapted to move laterally when the solder is fused, an inclined arm bearing against said thrust-plate and tending to move the same laterally, and means for strengthening the solder-joint and causing the thrust-plate to be moved transversely away from the thrust-block when a lateral movement is given to the thrust-plate, substantially as described.

708,664. BOAT-LASHING DEVICE. SWEN NILSEN, Boston, Mass. Filed Nov. 6, 1901. Serial No. 81,203. (No model.)

Claim.—1. The herein-described boat-lashing device, consisting in combination, of a hooked screw-threaded rod *d*, *d'*, D, an adjustable internally-screw-threaded sleeve E, a hooked rod F, rotatably connected to said sleeve, and provided with a pivoted latch F", a sleeve H, secured to the upper end of the rod F, and a longitudinally-adjustable spring-pressed latch-holding sleeve K, substantially as and for the purpose set forth.

2. The herein-described boat-lashing device, consisting in combination of a hooked screw-threaded rod, an adjustable internally-screw-threaded sleeve E, a rod F, rotatably connected to said sleeve, a hook F', made integral with said rod F, a latch F", pivotally connected to said hook and means substantially as described for locking said latch in closed position as and for the purpose set forth.

708,665. PRINTING-PRESS. THOMAS M. NORTH, Brooklyn, N. Y., assignor, by direct and mesne assignments, to Robt. Hoe and Charles W. Carpenter, New York, N. Y., under the firm-name of R. Hoe & Company. Filed Dec. 22, 1897. Serial No. 663,008. (No model.)

Claim.—1. The combination with a cylinder, of means for supplying an offset-web thereto, and means for separating a sheet from said web, substantially as described.

2. The combination with a cylinder, of means for intermittently supplying an offset-web thereto, and means for separating from said web a sufficient length to form an offset-sheet, substantially as described.

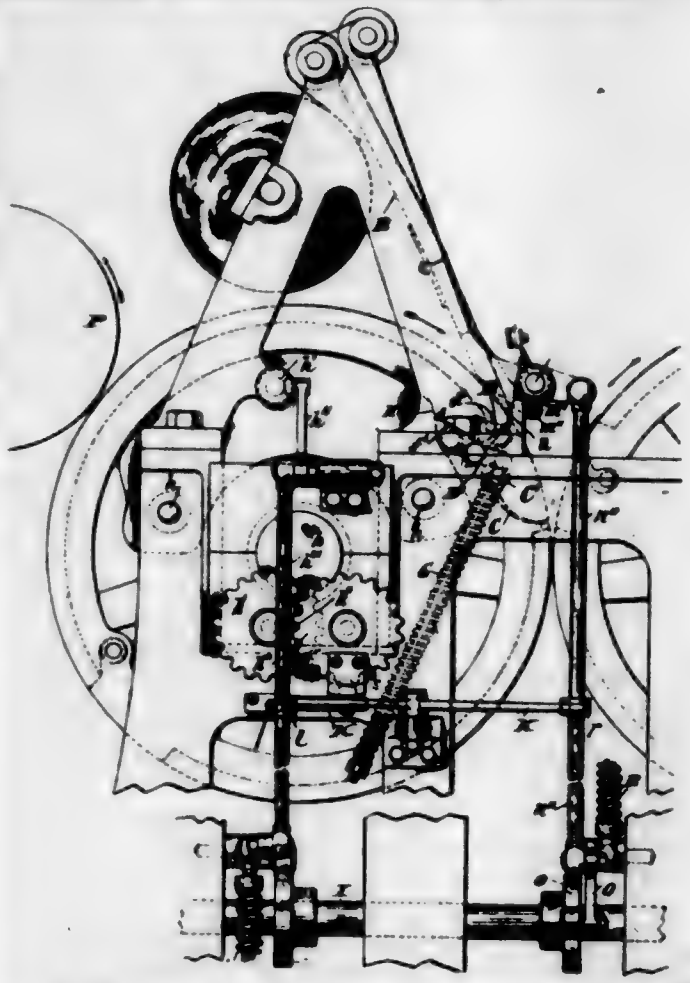

3. The combination with a cylinder, of means for intermittently supplying a perforated offset-web thereto, and means for separating from said web a sufficient length to form an offset-sheet, substantially as described.

4. The combination with a cylinder, of means for supplying an offset-web thereto, means for causing the cylinder to seize the end of the web, and means acting to clamp the web in opposition to the pull of the cylinder and thus cause an offset-sheet to be separated therefrom, substantially as described.

5. The combination with a cylinder, of means for intermittently supplying an offset-web thereto, means for causing the cylinder to seize the end of the web, and means acting to clamp the web in opposition to the pull of the cylinder and thus cause an offset-sheet to be separated therefrom, substantially as described.

6. The combination with a cylinder, of means for supplying an offset-web thereto, means for causing said cylinder to seize the web once in a predetermined number of revolutions, and a clamping device acting to hold the web against the pull of the cylinder whereby an offset-sheet is separated therefrom, substantially as described.

7. The combination with a cylinder having grippers, of means for intermittently supplying an offset-web thereto, and an intermittently-operated clamping device acting to hold the web against the pull of the cylinder whereby an offset-sheet is separated therefrom, substantially as described.

8. The combination with a cylinder having means for seizing the end of a web, of a table, means whereby an offset-web is fed over said table, and a clamping device acting to hold the web to the table after it has been seized by the cylinder and operating in connection with the web-seizing means on the cylinder to separate an offset-sheet from the web, substantially as described.

9. The combination with a cylinder having means for seizing the end of a web, of a movable table, means whereby an offset-web is fed over said table, and a clamping device acting to hold the web to the table after it has been seized by the cylinder and operating in connection with the web-seizing means on the cylinder to separate an offset-sheet from the web, substantially as described.

10. The combination with a cylinder, of means for supplying an offset-web thereto, means for releasing and removing from the cylinder an offset-sheet which has been used sufficiently, means for seizing the end of the offset-web, and means for separating an offset-sheet from the web, substantially as described.

11. The combination with a cylinder, of means for supplying an offset-web thereto, means for releasing and removing from the cylinder an offset-sheet which has been used sufficiently, means for seizing the end of

the offset-web, means for separating an offset-sheet from the web, and means for bringing said releasing, seizing and separating mechanism into operation once in a predetermined number of revolutions of the cylinder, substantially as described.

12. The combination with a movable table, of a movable paper-guide located over one end of the table, and means for causing said guide to depress the end of the paper which extends beyond the table beneath the level of the table, substantially as described.

13. The combination with a cylinder having grippers, of a movable paper-feeding table, means for depressing the end of the paper which extends beyond the table into the path of the grippers on the cylinder, substantially as described.

14. The combinaton with a cylinder having grippers, of a movable paper-feeding table, a shaft supported over one end of the table, means carried by the shaft for raising and lowering the table, and means also carried by the shaft for depressing the end of the paper which extends beyond the table into the path of the grippers on the cylinder, substantially as described.

15. The combination with a cylinder having grippers, of a movable paper-feeding table, a shaft located on one end of the table, means carried by the shaft for raising and lowering the table, a paper-guide also carried by the shaft and operating to depress the end of the paper which extends beyond the table into the path of the grippers on the cylinder, and a paper-clamping device, substantially as described.

16. The combination with a cylinder having grippers, of a movable paper-feeding table, a shaft located on one end of the table, means carried by the shaft for raising and lowering the table, a paper-guide also carried by the shaft and operating to depress the end of the paper which extends beyond the table into the path of the grippers on the cylinder, and a paper-clamping device carried by the shaft, substantially as described.

17. The combination of the regular printed-sheet grippers, offset-sheet grippers bearing on an incline of the edge of the cylinder-shell, and pins for lifting the edge of the offset-sheet, substantially as described.

18. The combination with a cylinder, of a set of sheet-holding grippers, a second set of grippers, and lifting devices connected to and operated by the second set of grippers, substantially as described.

19. The combination with a cylinder, of a set of grippers, a set of sheet-lifting pins, levers by which the pins are operated, and a loose connection between said pin-operating levers and the grippers, whereby movement of the grippers in each direction will operate the pins, substantially as described.

20. The combination with a cylinder, of a gripper-shaft, a set of grippers mounted thereon, lugs on the grippers, a set of sheet-lifting pins, levers by which the pins are operated, and a pin extending from said levers and lying between the lugs on the grippers, substantially as described.

21. The combination with a cylinder, of devices for intermittently supplying an offset-web thereto, means for separating from said web a sufficient length to form an offset-sheet, and intermittently-operated means for removing from the cylinder the used offset-sheet, substantially as described.

22. The combination with a cylinder, of devices for supplying an offset-web thereto, means for separating from said web a sufficient length to form an offset-sheet, and means for delivering said offset-sheet together with the printed sheet, substantially as described.

23. The combination with a cylinder, of devices for intermittently supplying an offset-web thereto, means for separating from said web a sufficient length to form an offset-sheet, and means operating once in a predetermined number of revolutions of the cylinder to deliver the offset-sheet together with the printed sheet, substantially as described.

24. The combination with a cylinder having grippers, of a movable cam for operating said grippers, mechanism for moving the cam, means for bringing said mechanism into operation once in a predetermined number of revolutions of the cylinder, means for feeding an offset-web to the grippers, and a clamping device operating in connection with the grippers to separate an offset-sheet from the web, substantially as described.

25. The combination with a cylinder having grippers, means for feeding an offset-web to the grippers, a clamping device operating on the web in opposition to the pull of the grippers, mechanism for operating the clamping device and a common locking device operating to simultaneously release the gripper-operating mechanism and the clamp-operating mechanism, substantially as described.

708,666. WARP STOP-MOTION FOR LOOMS. HENRY A. OWEN, Whitinsville, Mass. Filed Mar. 11, 1901. Serial No. 50,666. (No model.)

Claim.—1. In a warp stop-motion having detector-plates provided with stops and supported on the warp-threads, a tube having a slot, a rocking member in the tube, means for operating the rocking member, and means connected with the tube for stopping the loom upon the breaking of a warp-thread and the entering of the stop on a detector-plate into the slotted tube, as described.

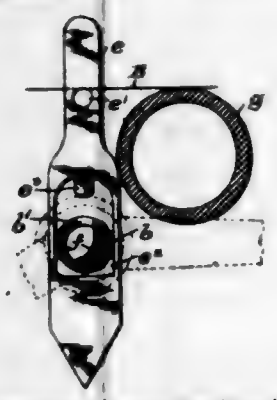

2. In a warp stop-motion, the combination with a series of detector-plates provided with stops and individually supported on warp-threads, of a longitudinally-slotted tube, journal-bearings supporting the ends of the tube, a rocking member in the tube, means for operating the rocking member across the slot in the tube, a stop-rod provided with a knock-off shoulder, and mechanism connected with the knock-off rod and the tube, whereby upon the breaking of a warp-thread and the dropping of the detector-plate the rocking member and the tube are caused to move together and the loom stopped, as described.

3. A detector-plate for a warp stop-motion for looms having an oblong opening with parallel sides, one end of which opening is curved inward to a central stop projecting into the opening, and an eye or opening for the passage of a warp-thread, as described.

4. In a warp stop-motion for looms, the combination with the tube *b* having the slot *b'*, the lever b^3, the connecting-rod b^3, the stop-rod b^4 provided with a knock-off shoulder and connected with the knock-off lever, and the shaft *f* having the crescent portion, of the detector-plate *e* having the projection e^3 extending into the opening of the detector-plate and adapted to enter the slot *b'*, whereby the crescent-shaped section may be locked to the tube upon the breaking of the warp-thread, as and for the purpose described.

5. In a warp stop-motion for looms, the combination of the following instrumentalities: a longitudinally-slotted tube, a vibrating member in the tube, mechanism for operating the vibrating member, a series of detector-plates supported on the warp-threads, an oblong opening in each detector-plate, a stop projecting into the opening at one end and adapted to enter the slot in the tube upon the breaking of the warp-thread, and mechanism connecting the tube with the stop-lever of the loom, as described.

708,667. BEAM-LOCK FOR LOOMS. OSCAR L. OWEN, Whitinsville, Mass. Filed Nov. 14, 1901. Serial No. 82,237. (No model.)

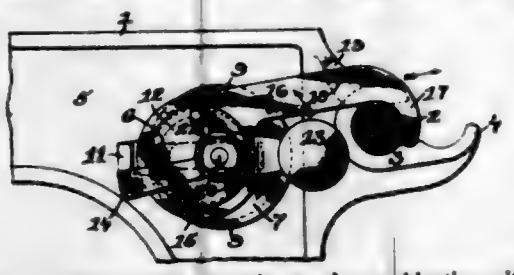

Claim.—1. In a beam-lock for looms, the combination with an arm provided with a hook at one end and a ring inclosing an eccentrically-mounted disk, of an actuating-handle and a bracket on the disk, said bracket engaging with the hooked arm, a cam-surface on the hooked arm and a shoulder on the end frame, whereby by the turning of the eccentrically-mounted disk the hooked arm may be drawn against the journal of the beam and under the shoulder on the end frame, as described.

2. In a beam-lock for looms, the combination with the end frame 1, the journal-bearing 3, the shoulder 19 on the end frame, and the slot 6, of the base 7, the journal-bearing 10 and stop 11 on the base, the eccentric 12, the actuating-handle 13 and bracket 14 on the eccentric, the arm 16, the ring 15 on one end of the arm, the hooked end 17 on the other end of the arm, and the cam-surface 18 on the end 17 of the arm 16, whereby the arm 16 may be operated to retain the journal of the warp-beam and locked as described.

708,668. MACHINE FOR BOXING MATCHES. HIRAM PARSONS, Barberton, Ohio. Filed Mar. 12, 1902. Serial No. 97,969. (No model.)

Claim.—1. In a machine for boxing matches, the combination of a table, two traveling belts moving toward the upper face of said table, the

one to bring forward filled cases of matches and the other empty shucks onto said table in alinement with one another, reciprocating plungers moving toward the center of said table to cause said cases to enter said shucks, and to cause such insertion to take place, substantially equidistant between said belts, substantially as shown and described.

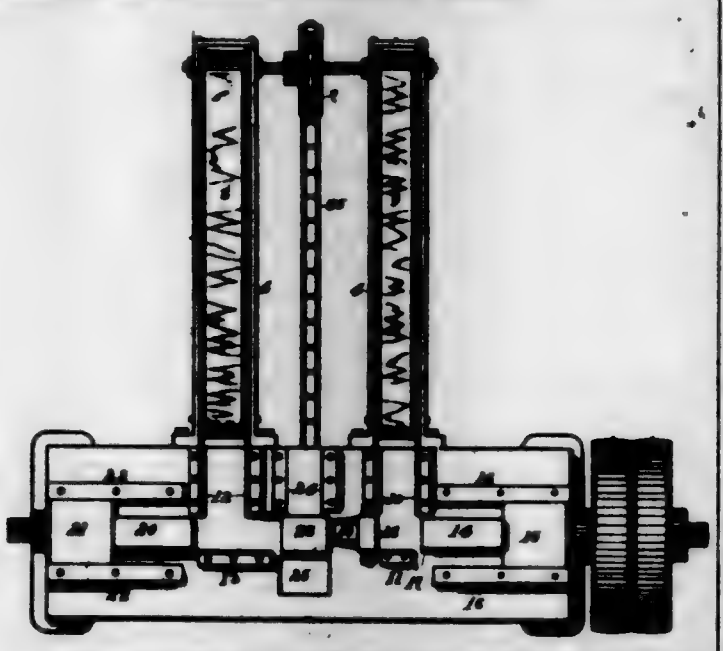

2. The combination in a machine for boxing matches, of a table, belts to bring forward into alinement on said table the filled drawers of matches and shucks, a spreader to open the ends of said shucks and to guide said filled drawers, situated on said table, reciprocating plungers to drive both drawers and shucks simultaneously together, substantially as shown and described.

3. The combination in a machine for boxing matches, of a table, means to feed filled drawers and shucks onto said table in alinement with one another, a shaft mounted in said table, cams mounted on said shaft, plungers mounted on the face of said table provided with depending rollers to engage said cams, and means to cause said cams to revolve and reciprocate said plungers to and from the center of the table, substantially as shown and described.

4. The combination in a machine for boxing matches, of a table, belts to convey drawers filled with matches and shucks in parallel lines onto said table, a spreader to direct the entrance of said drawers into said shucks, and reciprocating plungers on said table to cause the insertion of said drawers, and an ejector working transversely to the line of motion of the reciprocating plungers to force said cases from said table when the said drawers have been placed therein, substantially as shown and described.

703,669. WINDOW-OPERATING MECHANISM FOR GREENHOUSES. MATTHEW PRIOR, Watertown, Mass. Filed Mar. 14, 1902. Serial No. 98,338. (No model.)

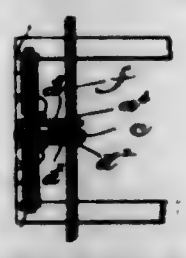

Claim.—1. A device of the kind described, comprising fixed supporting means containing two pinions, a rack engaging said pinions at its opposite sides and secured at one end to the object to be moved thereby, an operating-shaft for operating one of said pinions, a short shaft secured to the other pinion, and a counterbalance-spring mounted on said shaft.

2. A device of the kind described, comprising a bracket, a rack-bar secured at one end to a movable object and its other end guided by said bracket, a pinion mounted in said rack to engage one edge of said rack-bar, a counterbalance-spring adapted to be wound and unwound by the rotation of said pinion, a second pinion mounted in said bracket for engaging the opposite edge of said rack-bar, an operating-shaft for driving said second pinion, said bracket having a hooked outer end, and said shaft being removably mounted in said hooked end.

3. In a device of the kind described, supporting means containing two fixed arms, having hooks at their outer ends, two pinions carried between said arms, one of said pinions being removably mounted in said hooks and the other pinion being at the opposite end of said arms, a rack-bar guided between said arms and in engagement with said two pinions, a counterbalance-spring adapted to be wound and unwound by the rotation of one of said pinions, and means for positively rotating the other pinion for raising the rack and object connected therewith.

4. In a device of the kind described, supporting means containing two fixed arms, having hooks at their outer ends, two pinions carried between said arms, one of said pinions being removably mounted in said hooks and the other pinion being at the opposite end of said arms, a rack-bar guided between said arms and in engagement with said two pinions, a short shaft passed through said arms and one of said pinions, and a counterbalance-spring secured at one end to a fixed object and at its other end to said short shaft, and adapted to be placed under tension by the rotation of said shaft, and means for rotating the other pinion.

5. In a device of the kind described, a support, two pinions carried thereby, a rack-bar between said pinions and in driving engagement with one pinion and driven engagement with the other pinion, means for driving the latter pinion, a shaft for the former pinion extending at opposite sides thereof, and two counterbalance-springs, one at each end of said shaft.

6. A device of the kind described, including a rack-bar for lifting a window, and a driving-pinion and counterbalance-spring for coöperating therewith, combined with fixed supporting means supporting said rack beneath said driving-pinion, the thrust of the rack being in line with and borne by said supporting means.

7. A device of the kind described, comprising a series of window-lifting mechanisms, and a single operating-shaft for all of them, said several window-lifting mechanisms including hooked supports provided with fastening means for permanently and immovably fastening them to a fixed part of a building, and a bar for each window, said bars being retained and guided by the fixed hooked supports, said hooked supports receiving said shaft and supporting the same, said shaft having means for engaging and moving said bars longitudinally for lifting and lowering the windows, the said shaft being movable at will from engagement with said hooked supports and with said bars without interfering with or disturbing the hooked supports and bars.

703,670. COUPLING FOR RAILWAY-WAGONS, &c. ERNEST F. C. RAMBAUD, Parthenay, France. Filed Oct. 11, 1901. Serial No. 78,378. (No model.)

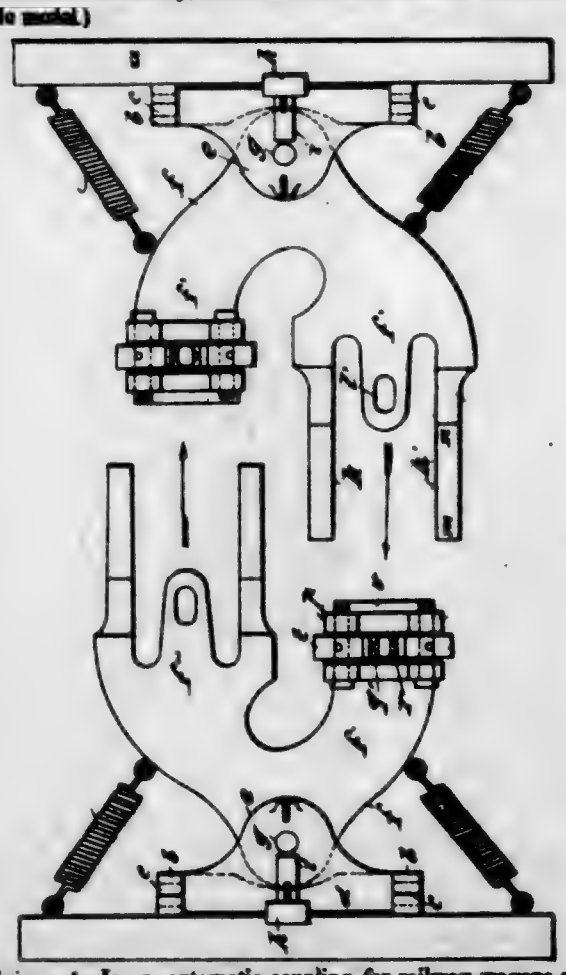

Claim.—1. In an automatic coupling for railway-wagons and the like, the combination with a plate fixed to the frame of each wagon and provided, by means of two bearings, with a shaft connecting two superposed flanges, of a vertical bar fixed to the before-mentioned plate, a spring fixed, on the one hand, to the said vertical bar and on the other to the upper flange, and a part placed between the two said flanges and connected thereto by a vertical pin around which the said part may oscillate horizontally, the said part being divided into two branches as described and as shown.

2. In an automatic coupling for railway-wagons and the like, the

combination with a plate fixed to the frame of each wagon and provided, by means of two bearings, with a shaft connecting two superposed flanges, of a vertical bar fixed to the before-mentioned plate, a spring fixed on the one hand to the said vertical bar and on the other to the upper flange, and a part placed between the two said flanges and connected thereto by a vertical pin, around which the said part may oscillate horizontally, the said part being divided into two branches, one of the said branches forming a trident the middle tooth thereof being provided with an oval hole and the two side teeth with raised edges and a groove engaged by a fastening-bolt, the said trident being provided with vertical parts between which move double racks integral with the fastening-bolt, two toothed sectors movably attached to the frame and meshing with the said double racks, a central chamber into which enters the central tooth of the said part, the outer teeth sliding upon the outside of the chamber and arranged so as to be lifted by the raised edge of the teeth of the trident of the device fixed to the neighboring wagon and falling into the slot of the central tooth of the coupling on the following wagon, substantially as described and as shown.

3. In an automatic coupling for railway-wagons and the like, the combination with a plate fixed to the frame of each wagon and provided, by means of two bearings with a shaft connecting two superposed flanges, of a vertical bar fixed to the before-mentioned plate, a spring fixed, on the one hand, to the said vertical bar and on the other to the upper flange, and a part placed between the two said flanges and connected thereto by a vertical pin, around which the said part may oscillate horizontally, the said part being divided into two branches, one of the said branches forming a trident, the middle tooth thereof being provided with an oval hole and the two side teeth with raised edges and a groove engaged by a fastening-bolt, the said trident being provided with vertical parts between which move double racks integral with the fastening-bolt, two toothed sectors movably attached to the frame and meshing with the said double racks, a central chamber into which enters the central tooth of the said part, the outer teeth sliding upon the outside of the chamber, means for raising said racks and feeding the central tooth and springs causing the coupling to return into its original position when a curve has been passed, substantially as described and as shown.

708,671. APPARATUS FOR TONING PHOTOGRAPHS. ARTHUR SCHWARZ, Berlin-Schöneberg, Germany. Filed May 10, 1897. Serial No. 635,864. (No model.)

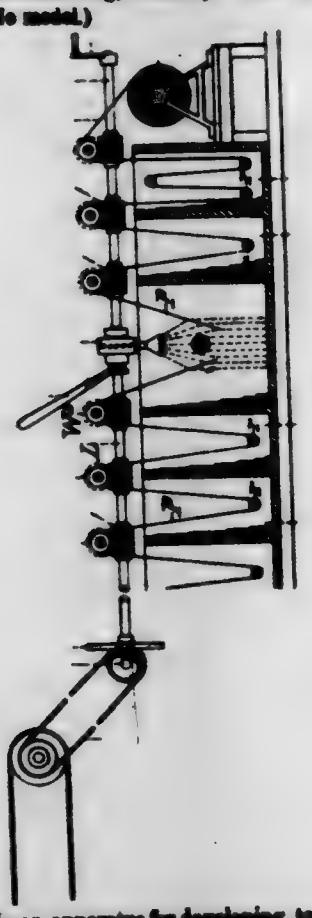

Claim.—1. In an apparatus for developing, toning and fixing a long band of photographic paper, the combination of a bath containing the necessary solution, means for moving the long band of paper through the bath, means for regulating the time of treatment of the paper in the bath to obtain the desired shade of toning, and means for reversing the direction of travel of a part of the paper through the bath in the event of the band of paper becoming severed in its travel through the bath, substantially as described.

2. In an apparatus for developing, toning and fixing a long band of photographic paper, the combination of a series of baths containing the necessary solutions, means for moving the paper through the series of baths at a uniform speed, means for varying the period of time for movement of the paper through the baths, and means for reversing the direction of travel of a part of the paper through the bath in the event of the band of paper becoming severed in its travel through the bath, substantially as described.

3. In an apparatus for developing, toning and fixing a long band of photographic paper, the combination of a series of tanks, feed-rolls arranged to conduct the paper from one tank to another, a shaft common to all the rolls for driving the same and carrying a disk, a shiftable rotatable roll in frictional contact with said disk for varying the speed of the shaft by changing the point of contact between the disk and roll, and means for reversing the direction of travel of a part of the paper through the bath in the event of the band of paper becoming severed in its travel through the bath, substantially as and for the purposes described.

4. In an apparatus for developing, toning and fixing a long band of photographic paper, the combination of a series of tanks, feed-rolls arranged to conduct the paper from one tank to another, a divided shaft for driving said rolls having its members connected together by a clutching device adapted to disconnect the members to permit one member to rotate independent of the other member, and means for independently operating the disconnected members for withdrawing the band of paper in the event of the same breaking apart, substantially as and for the purposes described.

5. In an apparatus for developing, toning and fixing a long band of photographic paper, the combination of a series of tanks, feed-rolls arranged to conduct the paper from one tank to another, a divided shaft for driving said rolls common to all of said rolls and having its members connected together by a clutching device adapted to disconnect the members in the event of accident to permit one member to rotate independently of the other member, means for independently operating the disconnected members for withdrawing the band of paper in the event of the same breaking apart, a disk carried by one of said shaft members, and a shiftable rotatable roll in frictional contact with said disk for varying the speed of the feed-rolls through the shaft common to them all when the members of said shaft are connected, substantially as described.

708,672. PRINTING-FRAME. JAMES M. SMITH, Montreal, Canada, assignor of one-half to Alfred William Beltry, Montreal, Canada. Filed Mar. 3, 1902. Serial No. 97,375. (No model.)

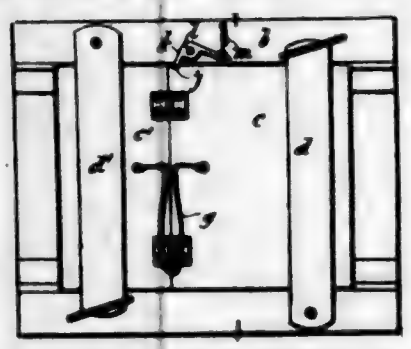

Claim.—1. In a photographic-printing frame comprising a negative-holder and a removable back for retaining the sensitized paper upon the negative in said holder, the combination with said removable back of means for automatically lifting the sensitized paper from said negative upon the removal of the back, for the purpose set forth.

2. In a photographic-printing frame comprising a negative-holder and a removable back for retaining the sensitized paper upon the negative in said holder, the combination with said removable back of means for automatically lifting the sensitized paper from said negative upon the removal of the back; and means for retaining said paper in said position, for the purpose set forth.

3. In a photographic-printing frame comprising a negative-holder, a removable back consisting of a pair of leaves, and means for retaining said leaves in contact with said negative, of a retractile spring connected at its opposite ends to said leaves, substantially as described and for the purpose set forth.

4. In a photographic-printing frame comprising a negative-holder, a removable back consisting of a pair of leaves, and means for retaining said leaves in contact with said negative, of a retractile spring connected at its opposite ends to said leaves; an angular trip device pivotally connected to one side of said negative-holder, and a spring retaining one arm of said trip device across one of the leaves of said back and in the path thereof as it is lifted from the negative, substantially as described and for the purpose set forth.

5. In a photographic-printing frame comprising a negative-holder, a removable back consisting of a pair of leaves, and means for retaining

said leaves in contact with said negative, of a retractile spring connected at its opposite ends to said leaves, and a sucker mounted upon the inner face of one of said leaves, substantially as described and for the purpose set forth.

6. In a photographic-printing frame, comprising a negative-holder, a removable back consisting of a pair of leaves, and means for retaining said leaves in contact with said negative, of a retractile spring connected at its opposite ends to said leaves; a sucker in the form of a soft-rubber saucer on the inner side of one of said leaves; an angular trip device pivotally connected to one side of said negative-holder, and a spring retaining one arm of said angular device across the said leaf and in the path thereof as it is lifted from the negative, substantially as described and for the purpose set forth.

7. In a photographic-printing frame comprising a negative-holder, a removable back consisting of a pair of leaves, and means for retaining said leaves in contact with said negative, of a retractile spring connected at its opposite ends to said lever; an angular trip device pivotally connected to one side of said negative-holder and having the end of one arm offset; and a spring retaining said offset arm across one of the leaves of said back and in the path thereof as it is lifted from the negative, substantially as described and for the purpose set forth.

708,673. ELECTRIC BATTERY AND MOUNTING SAME. ELMER A. SPERRY, Cleveland, Ohio, assignor, by mesne assignments, to National Battery Company, a Corporation of New Jersey. Filed Sept. 13, 1899. Serial No. 730,290. (No model.)

Claim.—1. In a receptacle for a battery, free electrolyte within the receptacle, the walls of the case extending above the electrolyte and being provided with an inwardly and downwardly overhanging lip at or near the upper edge of the case with a free space between the lip and the wall.

2. A metallic case for a battery, forming part of an electric circuit, active material forming the negative electrode applied directly to the wall of the case, and an electrolyte within the case, in combination with an electrode, or electrodes, introduced into such case and made integral therewith at a plurality of points on the perimeter of the electrode or electrodes for affording better electrical distribution as between the electrode and the case.

3. A case for a battery, having sides consisting of a bent metallic conducting-plate, having a face supplied with active material placed in contact therewith, in combination with an additional plate attached to the active walls for better support of such material, the edges of the bent plate being joined to form a case for the electrolyte.

4. A case for a battery, having sides consisting of a bent metallic conducting-plate, having a face supplied with active material placed in contact therewith, in combination with a perforated plate attached to the active walls for better support of such material, the edges of the bent plate being joined to form a case for the electrolyte.

5. A case for a battery, having sides consisting of a bent metallic conducting-plate, having a face supplied with active material placed in contact therewith, in combination with an additional plate supplied with perforations and projections attached to the active walls for better support of such material, the edges of the bent plate being joined to form a case for the electrolyte.

6. A case for a battery, having sides consisting of a bent metallic conducting-plate, having a plurality of faces, supplied with active material placed in contact therewith, in combination with an additional plate or plates attached to the active walls for better support of such material, the edges of the bent plate being joined to form a case for the electrolyte.

7. In a receptacle for a battery, a case for containing the electrolyte, an electrode within the case, the walls of the case extending above the electrode, and an inwardly and downwardly overhanging lip at or near the upper edge of the case with a free space between the lip and the wall.

8. A case for a battery having sides consisting of a bent metallic conducting-plate with active material placed in contact therewith, in combination with an additional electrode or electrodes attached to the bent plate, a welded joint between the bent plate and the electrodes, the same being applied along the edge of the electrode at the junction with the plate, the bent plate being joined at its edges to form the sides of the case for the electrolyte.

9. A thin metallic case for the battery, forming in part the negative electrode, containing electrolyte, in combination with an electrode or electrodes within such case and made integral therewith at a plurality of points for affording added support to the thin walls.

10. In a receptacle for a battery, a case for containing the electrolyte, electrodes within the case the walls of which extend above the electrodes, and an inwardly-projecting overhanging lip of flexible material at or near the upper edge of the case with a free space between the lip and the wall.

11. In a receptacle for a battery, a lead case for retaining the electrolyte, electrodes within the case, the walls of which extend above the top of the electrodes, and an inwardly-projecting overhanging lip of sheet-lead at or near the upper edge of the case with a free space between the lip and the wall.

12. A thin metallic case for a battery, containing an electrolyte, in combination with an electrode or electrodes, introduced into such case and fused into electric contact therewith at several points, but at less than the entire perimeter of three edges of the electrodes to leave communicating space from side to side of such electrodes, the electrode thus performing the function of a supporting-partition.

708,674. CONNECTION FOR BATTERIES. ELMER A. SPERRY, Cleveland, Ohio, assignor, by mesne assignments, to National Battery Company, a Corporation of New Jersey. Original application filed Sept. 13, 1899, Serial No. 730,290. Divided and this application filed Nov. 6, 1899. Serial No. 735,971. (No model.)

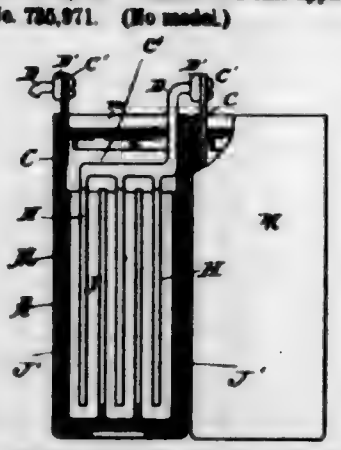

Claim.—1. In a battery, a case having its walls formed of thin conducting material, an electrolyte within the case, said case being provided with an extension projecting above the electrolyte, said extension being thicker than the walls of the case and being provided with a terminal having a broad contacting surface, and an insulating-support for the walls of said case.

2. In a battery, a case having its walls formed of thin conducting material, an electrolyte within the case, said case being extended upward above the level of the electrolyte, a terminal for an electric conductor carried by said extended portion of the case, said case being provided with an internal lip or flange arranged between the upper surface of the electrolyte and the top of the case, substantially as set forth.

3. In a battery, a case having its walls formed of thin conducting material, an electrolyte within the case, said case being provided with an extension thicker than the walls of the case and having a terminal substantially coextensive with one of the walls of the case formed integral therewith, and an insulating-support for the walls of said case, substantially as described.

4. In a battery, a case having its walls formed of thin conducting material, an electrolyte within the case, said case being provided with an extension thicker than the walls of the case and having a terminal with a broad contacting surface formed integral therewith, an insulating-support for said case comprising an envelop of flexible material, said envelop having its ends folded or bent under the bottom of the case, and a stiffening-plate interposed between the bottom of the case and said folded portion of insulating material, substantially as set forth.

5. In a battery, a case having its walls formed of thin conducting material, an electrolyte in said case, said walls being extended beyond the top of the electrolyte and provided with an inwardly-projecting flange or lip arranged between the surface of the electrolyte and the top of the case, and an insulating-support for said case comprising an envelop of flexible material having its ends folded or bent under the bottom of the case, substantially as set forth.

6. In a battery, a case having its walls formed of thin conducting material, an electrolyte within the case, the walls of said case being extended beyond the surface of the electrolyte, one of said walls being further extended to form a terminal for an electric conductor having a broad contacting surface, and an insulating-support for said case comprising a plurality of layers of insulating material, substantially as described.

7. In a battery, a case for containing an electrolyte having its walls formed of thin conducting material, the said walls being extended as a tubular section C^1 beyond the surface of the electrolyte and the said tubular section being relatively thick, and one of the sides of the said tubular extension being continued to form a terminal C for an electric conductor, and the said tubular extension being provided upon its inner surface with a flange or projection *a* situated between the upper edge of the tubular extension and the upper surface of the electrolyte, substantially as set forth.

708,675. THILL-COUPLING. LEWIS G. STRAGER, Henderson, N. Y., assignor of one-third to Leonard F. Bradford, Syracuse, N. Y., and John Carpenter, Henderson, N. Y. Filed May 21, 1902. Serial No. 108,426. (No model.)

Claim.—1. In a thill-coupling, in combination with an axle and a pivotal bar, a thill-iron having a fixed jaw and a movable jaw, a spring secured to the fixed jaw and movable independently of the movable jaw and a cam-lever pivotally connected to the fixed jaw and engaging the intermediate portion of the spring, the free end of said spring acting upon the movable jaw.

2. In a thill-coupling, an axle having a pivotal bar connected thereto, a shaft provided with a fixed jaw, a spring having one end secured to the fixed jaw and its other end tensioned to move away from the movable jaw independently of said movable jaw, a cam-lever pivotally connected to the fixed jaw and provided with a cam-shoulder engaging the intermediate portion of the spring to move the same against its own tension, the free end of the spring acting upon the movable jaw to force the same into engagement with the bar.

3. In combination with an axle having a pivotal bar, a shaft having a fixed jaw engaged with the bar, a second jaw pivotally mounted upon the fixed jaw and provided with a bearing-face for engaging said bar, said pivoted jaw moving by its own gravity away from the bar, a spring fixed at one end at one side of the pivot of the movable jaw and its other end extended beyond the opposite side of the pivot and tensioned to move away from the movable jaw independently thereof, and a cam-lever pivotally connected to the fixed jaw and engaged with the intermediate portion of the spring for operating said spring against its own tension, the free end of said spring operating upon the movable jaw to close the same upon the bar.

4. In combination with an axle having a pivotal bar connected thereto, a shaft having a fixed jaw engaged detachably with the bar, a spring having one end secured to the shaft and its other end movable toward and away from the bar, said spring being normally tensioned to move away from the bar, a second jaw pivotally connected to the shaft and extending between the free end of the spring and the bar and movable independently of the spring, adjusting means between the free ends of the pivoted jaw and spring for varying the tension of the spring upon the jaw, and means engaged with the spring for operating the same against its own tension for forcing the movable jaw into engagement with the bar.

5. In combination with an axle having a pivotal bar connected thereto, a shaft having a fixed jaw engaged with the bar, a second jaw pivoted to the shaft at one end and having its other end movable toward and away from the bar and provided with an adjusting-screw, a spring engaged with said screw, and a cam-lever engaged with said spring for compressing the same and forcing the movable jaw into engagement with the bar.

6. In combination with an axle having a pivotal bar, and a slotted spring connected to the axle, a shaft having a fixed jaw engaged with the bar and provided with a shoulder interlocking with said slotted spring when the shaft is elevated for holding said shaft in its elevated position, a spring having one end secured to the shaft and its other end extended rearwardly beneath the bar and movable toward and away from said bar, said spring being normally tensioned to move away from the bar, a second jaw having one end pivoted to the shaft and its other end movable between the free end of the spring and the bar and provided with an adjusting-screw engaged with the free end of the spring, and a cam-lever operating upon the spring to force the movable jaw into engagement with the bar.

708,676. PRINTING-PLATE HOLDER. EDWIN R. STOKE, New York, N. Y. Filed Jan. 2, 1902. Serial No. 88,126. (No model.)

Claim.—1. In a holder for printing-plates the combination of a block having grooves adapted to receive and hold one or more plate-clamps, and plate-clamps held in the grooves each of said clamps consisting of a face-piece having a wedge-shaped portion adapted to enter and partly fill the said groove, a nut adapted to be inserted at any point of the groove and set in conjunction with the said portion in the groove to hold the face-piece to the block and a screw connecting said nut and face-piece.

2. In a holder for printing-plates the combination of a block having grooves adapted to receive and hold one or more plate-clamps and plate-clamps held in the grooves each of said clamps consisting of a face-piece having a portion adapted to enter and partly fill the groove, a face on the said portion adapted to fit against the side of the groove, a nut adapted to be inserted at any point of the groove while connected to the face-piece and set in conjunction with the said portion in the groove to hold the face-piece to the block, and a screw connecting said nut and face-piece.

3. In a holder for printing-plates the combination of a block having grooves adapted to receive and hold one or more plate-clamps, and plate-clamps held in the grooves each of said clamps consisting of a face-piece having a portion adapted to enter and partly fill the groove, a nut narrower than the top of the said groove adapted to be inserted in the groove and set in conjunction with the said portion in the groove to hold the face-piece to the block and a screw connecting said nut and face-piece.

4. In a holder for printing-plates the combination of a block having grooves adapted to receive and hold one or more plate-clamps, and plate-clamps held in the grooves, each of said clamps consisting of a face-piece having a portion adapted to enter and partly fill the groove, a nut of a width to permit it to be inserted at any point of the groove and adapted to set in conjunction with the said portion in the groove to hold the face-piece to the block, and a screw having the bearing-surface of the head formed as a portion of the surface of a sphere, connecting said nut and face-piece.

5. In a holder for printing-plates the combination of a block having grooves of greater width at the bottom than at the top and plate-clamps adapted to be held in the grooves, each of said clamps consisting of a face-piece having a portion adapted to enter and fit against one side of the groove, a nut adapted to bear against the other side of the groove and the portion in the groove and act as a wedge in conjunction with the said portion to hold the face-piece to the block and a screw connecting said nut and face-piece.

6. In a holder for printing-plates the combination of a block having grooves of greater width at the bottom than at the top and plate-clamps consisting of a face-piece having a countersunk hole therein, a screw passing through the countersunk hole in the face-piece and working in a threaded hole in a nut, and a nut adapted to pass into the groove at its upper part without withdrawing the screw from the said threaded hole, and a projecting portion on the face-piece adapted to be inserted in the groove and prevent the withdrawal of the nut.

7. In a holder for printing-plates the combination of a block having grooves of greater width at the bottom than at the top and plate-clamps having a nut formed to partly fill the groove and adapted to pass into the said groove at its upper part, a face-piece having a portion adapted to enter the groove, force the nut to one side and act in conjunction with the nut to hold the face-piece to the block, and a screw connecting said nut and face-piece.

8. In a holder for printing-plates the combination of a block having grooves of greater width at the bottom than at the top and plate-clamps having a nut formed to partly fill, and fit against one side of, the groove

and adapted to pass into the groove at its upper part, an inclined plane forming one face of the said nut, a face-piece with a portion adapted to enter and fit against one side of the groove, a face on the said portion adapted to fit against the said inclined plane and means as a screw adapted to cause the inclined plane to slide on its corresponding face and force the portion against one side of the groove and the nut against the other side of the groove.

9. In a holder for printing-plates the combination of a block having grooves of greater width at the bottom than at the top and plate-clamps having a face-piece with a holding edge thereon, a portion extending from the face-piece formed to enter and fit against one side of the groove, a nut formed to pass into the groove at its upper part and partly fill the said groove, a face on the said extended portion formed to force the nut to one side in entering the groove, a face on the said nut formed to fit against and slide on the face formed on the said extended portion and a screw connecting the nut and face-piece adapted to bring the nut in co-operation with the extended portion and hold the face-piece to the block.

10. In a holder for printing-plates the combination of a block having grooves adapted to receive and hold one or more plate-clamps, and plate-clamps held in the grooves, each of said clamps consisting of a nut formed narrower than the top of the groove, a face-piece having a portion formed to enter the groove supplement the nut and prevent its withdrawal from the groove and means, as a screw, adapted to work in the nut to draw and hold the face-piece to the block.

11. In a holder for printing-plates the combination of a block having grooves adapted to receive and hold one or more plate-clamps, and plate-clamps held in the grooves each of said clamps consisting of a nut narrower than the top of the said grooves and adapted to be inserted at any point of the groove, a face-piece having a portion adapted to enter and hold the nut within the groove, and a screw connecting the nut and face-piece.

703,677. ENGINEER'S BRAKE-VALVE. PAUL SYNNESTVEDT, Glenview, Ill., assignor to the Westinghouse Air Brake Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Nov. 25, 1901. Serial No. 83,681. (No model.)

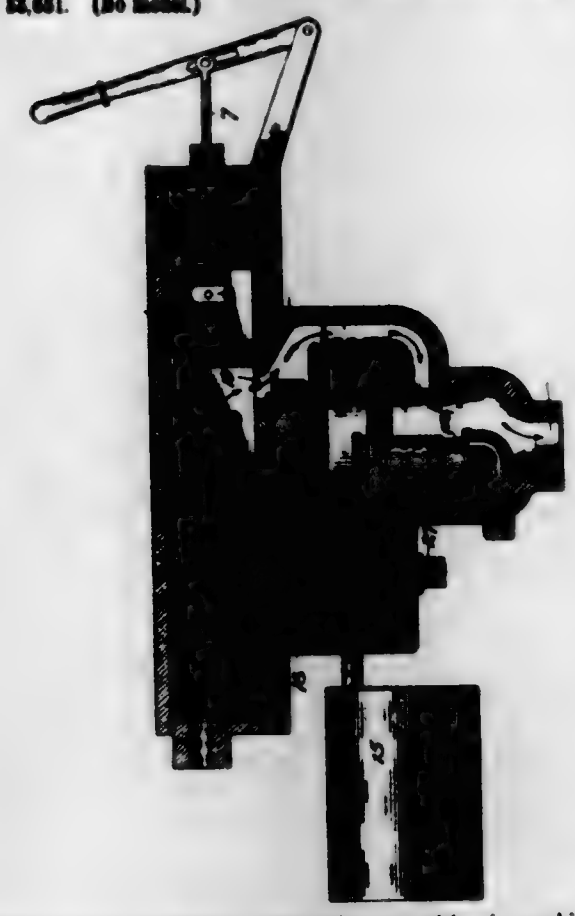

Claim.—1. An engineer's brake-valve comprising in combination a train-pipe-service discharge-port, a valve controlling said port, a piston arranged to produce gradual closure of said valve in service applications of the brakes, a passage establishing communication of pressures on opposite sides of said piston, a check-valve in said passage, a direct supply-port, and a main controlling-valve controlling said direct supply-port, said direct supply-port being arranged to establish direct communication between the main-reservoir and train-pipe pressures, without causing said pressure flowing through said direct supply-port to pass said check-valve, substantially as described.

2. An engineer's brake-valve comprising in combination, a train-pipe connection, a main-reservoir connection, a train-pipe-service discharge-port, a train-pipe-service discharge-valve controlling said service discharge-port, a piston for producing slow or gradual closing of said valve, a pressure-chamber on the side of said piston opposite the train-pipe side thereof, a direct supply-passage for establishing communication between the main-reservoir and train-pipe pressures, said direct supply-passage leading around said chamber, a main controlling-valve controlling the said direct supply-passage, a passage for establishing communication between said chamber and the train-pipe, and a check-valve in said last-named passage, substantially as described.

3. An engineer's brake-valve comprising in combination, a train-pipe-service discharge-valve, a piston for producing slow closure of said valve, exposed on one side to train-pipe pressure, and on the other side to pressure of a chamber, a direct supply-port for establishing communication between a main reservoir and a train-pipe, and a secondary supply-port provided with means for maintaining a higher pressure in the reservoir than in the train-pipe, said last-mentioned port passing through the chamber and thence to the train-pipe past a check-valve, substantially as described.

4. An engineer's brake-valve comprising in combination, connections from a main reservoir and to a train-pipe, a train-pipe-service discharge-port, a valve controlling said port, a piston arranged to produce gradual closure of said valve in service applications of the brakes, a passage for establishing communication between the fluid-pressures on opposite sides of said piston, means for automatically controlling the opening and closing of said passage, a passage for establishing direct communication between said main-reservoir and train-pipe connections, and means for controlling the opening and closure of said direct connecting-passage, substantially as described.

703,678. SPIRIT-LEVEL. JUSTUS A. TRAUT, New Britain, Conn. Filed Jan. 28, 1902. Serial No. 91,547. (No model.)

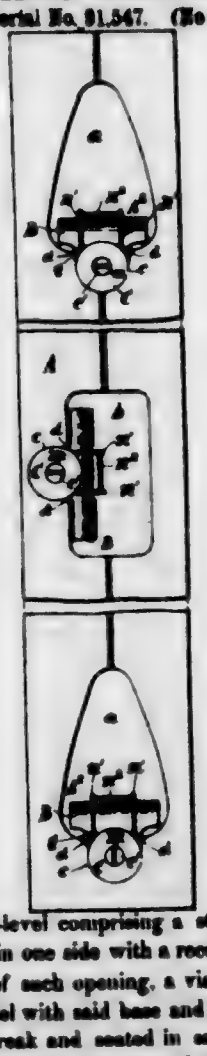

Claim.—1. A spirit-level comprising a stock having an opening therethrough and formed in one side with a recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with said base and having a pendent portion extending through said break and seated in said recess, and means for clamping said pendent portion to the base of the recess, said means including a guard extending over said vial-tube.

2. A spirit-level comprising a stock having an opening therethrough and formed in one side with a recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with said base and having a pendent portion extending through said break and adjustable in the recess on an invariable axis, and means for clamping said pendent portion to the base of said recess, said means including a guard extending over said vial-tube.

3. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with said base and having a pendent portion approximating the greater part of a circle in shape extending

through said break and adjustable in the recess on an invariable axis, and means for clamping said pendent portion in place, said means including a guard extending over said vial-tube.

4. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with the base thereof and having a pendent portion approximating the greater part of a circle in shape extending through said break and adjustable in the recess on an invariable axis, and a clamping device for said pendent portion having the same axis, said device including a guard extending over said vial-tube.

5. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with the base thereof and having a pendent portion approximating the greater part of a circle in shape extending through said break and adjustable in the recess on an invariable axis, a plate or washer also seated in the recess flush with the surface of the stock, and means for clamping said plate or washer against the pendent portion to hold the leveling device in place, said plate or washer being provided with a guard extending over said vial-tube.

6. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with the base thereof and having a pendent portion approximating the greater part of a circle in shape extending through said break and adjustable in the recess on an invariable axis, a removable axial member on which the pendent portion is adjustable, and means clamping said pendent portion in place, said means including a guard extending over said vial-tube.

7. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with said base and having a pendent portion approximating the greater part of a circle in shape extending through said break and seated in the recess, and a clamping device for said pendent portion including a washer, a screw, and a nut, said washer being provided with a guard extending over said vial-tube.

8. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with said base and having a pendent portion approximating the greater part of a circle in shape extending through said break and seated in the recess, said pendent portion having a central opening registering with a corresponding opening formed in the stock centrally of the recess, an axial member for the support of the pendent portion, and a plate and a nut on such member at opposite sides of the stock for securing said pendent portion in position, said plate being provided with a guard extending over said vial-tube.

9. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess less in diameter than the distance between adjacent parts of the sides of said opening, and having a break in the wall thereof at the base of the opening, a vial-tube located within the sides of said opening parallel with said base and having a pendent portion approximating the greater part of a circle in shape extending through said break and adjustably secured in the recess, the ends of said tube projecting beyond the edges of said pendent portion, and means for securing said pendent portion in place including a guard extending over the vial-tube.

10. A spirit-level comprising a stock, a leveling device, and a clamp for the leveling device including a washer and a guard integral therewith, said guard being formed of an upright frame and connecting-bars, and said frame being bent to bring the bars directly above said leveling device.

11. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with the base thereof and having a pendent portion approximating the greater part of a circle in shape passing through said break and seated in the recess, said pendent portion being adjustable on an invariable axis and formed with concentric arc-slots on opposite sides of said axis, screws entering the base of the recess through said slots, and a washer, a screw, and a nut for clamping said pendent portion in place.

12. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with said base and having a pendent portion approximating the greater part of a circle in shape extending through said break and seated in the recess, and a clamp for said pendent portion including a washer having a guard integral therewith formed of an upright frame and connecting-bars, said frame being bent to bring the bars directly above said vial-tube.

13. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with said base and having a pendent portion approximating the greater part of a circle in shape extending through said break and seated in the recess, and a clamp for said pendent portion including a washer, a screw, and a nut, said washer having a guard integral therewith formed of an upright frame and connecting-bars, and said frame being curved to bring the bars directly over said vial-tube.

14. A spirit-level comprising a stock having an opening therethrough and formed in one side with an approximately circular recess having a break in the wall thereof at the base of such opening, a vial-tube located within the sides of the opening parallel with the base thereof and having a pendent portion approximating the greater part of a circle in shape passing through said break and seated in the recess, said pendent portion being adjustable on an invariable axis and formed with concentric arc-slots on opposite sides of said axis, screws entering the base of the recess through said slots, and a washer, a screw, and a nut, for clamping said pendent portion in place, said washer being provided with a guard extending over the said vial-tube.

703,679. ROTARY ENGINE. CHARLES TUCKFIELD, East Molesey, England, assignor of two-thirds to Dyson Weston, London, England. Filed Nov. 15, 1901. Serial No. 82,399. (No model.)

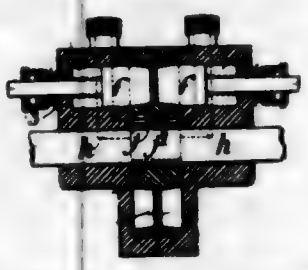

Claim.—1. In a rotary engine, the combination with a casing provided with a circular recess, of a disk located in said recess, a shaft secured to said disk, said disk being provided on a lateral face, with an annular groove, decreasing gradually in radial diameter from the face of the disk, and a stop in said groove, having an inclined face extending from the face of the disk to the bottom of said groove, and a sliding abutment mounted in the casing and fitting said groove, substantially as described.

2. In a rotary engine, the combination with the casing provided with a circular recess and inlet and exhaust ports, of a rotary disk mounted therein and having a lateral face provided with an annular groove, a stop located in said groove, a cut-off recess communicating with said groove, and constructed to communicate with the inlet-port and a sliding abutment mounted in said casing and fitting said groove, substantially as described.

3. In a rotary engine, the combination with the casing provided with a circular recess and inlet and exhaust ports, of a rotary disk mounted therein and having a lateral face provided with an annular groove, a stop located in said groove, a cut-off recess located in the hub of said disk, communicating with the said groove, and constructed to communicate with the inlet-port, and a sliding abutment mounted in said casing and fitting said groove, substantially as described.

4. In a rotary engine, the combination with the casing provided with a circular recess and inlet and exhaust ports, of a rotary disk mounted therein and having its lateral faces provided each with an annular groove tapering gradually from the face of the disk to the bottom of the recess, a stop located in each groove and provided on each side with an inclined face extending from the lateral face of the disk to the bottom of the recess, and sliding abutments mounted in the casing and fitting said grooves, substantially as described.

703,680. TAPPET FOR STAMP-MILLS. JAMES C. H. VAUGHT, Phillipsburg, Mont. Filed Aug. 15, 1899. Renewed Nov. 16, 1901. Serial No. 82,591. (No model.)

Claim.—1. In a device of the class described, the combination with a stamp-stem, and a tappet having a flaring opening, of a compressible conical or wedge-shaped sleeve provided with oppositely-disposed longitudinally-inclined ribs arranged to embed themselves in the stamp-stem and adapted when the sleeve is compressed, to feed the same inward to tighten the parts, substantially as described.

2. In a device of the class described, the combination with a stamp-stem, and a tappet having a tapering opening, of a conical or wedge-shaped sleeve composed of two sections having oppositely-inclined corrugations forming longitudinally-inclined ribs arranged to embed themselves

in the stamp-stem, whereby the sections will be fed inward to tighten the parts when they are compressed, substantially as described.

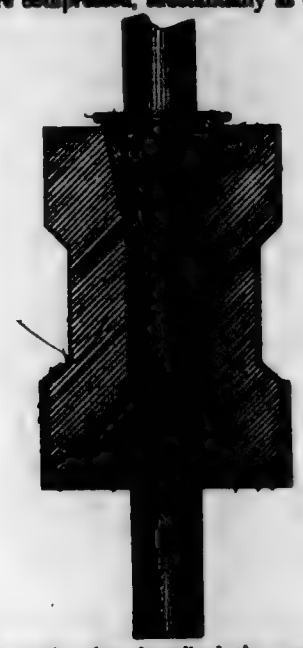

3. In a device of the class described, the combination with a stamp-stem and a tappet having a tapering opening, of a sleeve composed of two sections and provided with a longitudinal opening, said sections being provided with ribs inclining downward or inward from opposite sides of the said opening and adapted to embed themselves in the stamp-stem to feed the sections downward or inward, and means for engaging the sections at the said opening, substantially as described.

4. A device of the class described comprising a tappet, a lower tapering or wedge-shaped sleeve fitting within the lower end of the tappet and provided with horizontal corrugations or ribs adapted to engage a stamp-stem, and an upper tapering or wedged-shaped sleeve provided with longitudinally-inclined ribs or corrugations adapted to engage the stamp-stem whereby the upper sleeve is fed downward, substantially as and for the purpose described.

5. A device of the class described comprising a tappet, and upper and lower resilient wedge-shaped sleeves split longitudinally, the lower sleeve being provided with horizontal threads or ribs, and the upper sleeve being provided with two sets of oppositely-inclined threads or ribs, substantially as described.

6. In a device of the class described, the combination with a stamp-stem, and a tappet having a tapering opening, of an upper tapering sleeve provided with a longitudinal opening and having oppositely-disposed longitudinally-inclined ribs arranged to embed themselves in the stamp-stem, and a longitudinal wedge arranged in the longitudinal opening, substantially as described.

7. A device of the class described comprising a tappet having a tapering opening, an upper tapering sleeve arranged in the tapering opening and having an outwardly-extending flange and provided with an opening, and a wedge having a flange and fitting in the opening of the sleeve, substantially as described.

8. A device of the class described comprising a tappet, having an exterior shoulder, and a cap fitting on the tappet and provided at its edges with a series of lugs bent inward and engaging the shoulder of the tappet, substantially as described.

9. A device of the class described comprising a tappet, a cap, and a series of keys detachably interlocked with the cap and projecting therefrom and forming lugs bent inward and engaging the exterior of the tappet, substantially as described.

10. A device of the class described comprising a tappet, a cap provided at its upper edges with a series of dovetailed recesses, and a series of keys having enlarged lower portions detachably interlocked with the dovetailed recesses said keys forming lugs bent inward and engaging the exterior of the tappet, substantially as described.

708,681. LIQUID DOOR-CHECK. HENRY O. VOSSEY, New Britain, Conn., assignor to the Russell & Erwin Manufacturing Company New Britain, Conn. Filed Feb. 28, 1902. Serial No. 96,663. (No model.)

Claim.—1. In a liquid door-check, the combination of the case having the liquid-chamber and the spring-chamber eccentrically arranged, with the diaphragm screwed into the lower end of the spring-chamber to divide it from the liquid-chamber, the said diaphragm having the two annular seats on its under face with a groove between, and the annular plate seated on the shoulder at the junction of the liquid and spring chambers between the said shoulder and the annular seats of the said diaphragm, substantially as described.

2. In a liquid door-check, the combination of the case having the liquid-chamber and spring-chamber, with a diaphragm dividing the said chambers, and the cam-shaft and cam, the confronting faces of the said cam and diaphragm being formed with the annular groove and cylindrical portion fitted thereto of less length than the depth of the said groove for forming a collecting-chamber, and with endwise-bearing abutments outside of the said cylindrical portion, the said cam being also perforated from the said collecting-chamber downwardly to its under side, substantially as described.

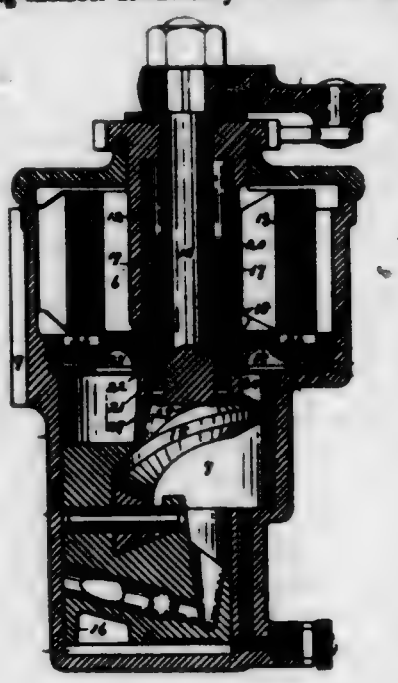

708,682. PAPER-PULP STRAINER. NATHANIEL L. VEDDER and ROBERT R. KIRKLAND, Watertown, N. Y. Filed Feb. 18, 1902. Serial No. 94,704. (No model.)

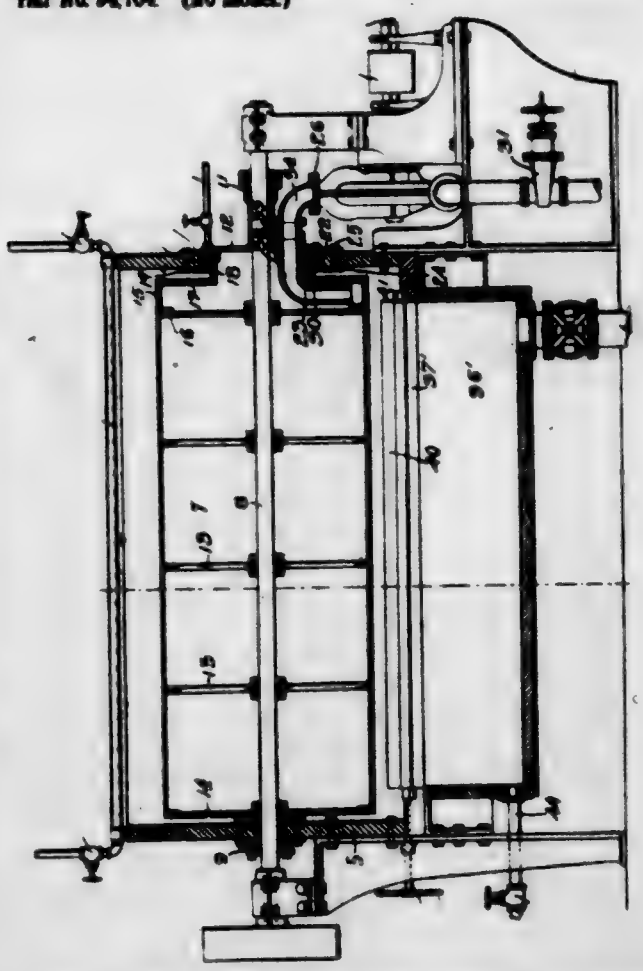

Claim.—1. The combination in a pulp-strainer, of a tank, a screening-cylinder disposed within the tank and having at one end a flanged suction-box at a point beyond the screening-surface, and a pump having a suction inlet-pipe in communication with the lower portion of said suction-box.

2. The combination in a pulp-strainer, of the tank, having an opening at one end, a screening-cylinder arranged within the tank and having at one end an annular flange, a grooved bearing-ring arranged within the opening in the tank and supporting said flange, a water-pipe communicating with the groove in said ring, a plate having an annular flange ex-

tending within the flange of the cylinder, an auxiliary plate forming a closure for the tank-opening, and a pump having a suction-pipe passing through an opening in said plate into the interior of the cylinder.

3. The combination in a pulp-strainer, of the tank, a screening-cylinder disposed within the tank and having a suction-box at one end, an annular flange carried by the suction-box, a grooved bearing-ring supporting said annular flange and forming a water-packing box, and a pump having a suction inlet-pipe extending through the tank and in communication with the lower portion of the cylinder suction-box.

4. The combination in a pulp-strainer, of the tank, a screening device therein, a flow-box disposed below the tank and in communication therewith, a valve for controlling communication between the flow-box and the tank, and a discharge-pipe leading from said flow-box.

5. The combination in a pulp-strainer, of the tank, a screening device therein, a flow-box disposed below the tank, a valve for controlling communication between the flow-box and the tank, a discharge leading from the flow-box, and a water-supply in communication with said flow-box.

6. The combination in a pulp-strainer, of the tank, a screening device therein, a flow-box arranged below the tank, a false bottom hinged at one of its edges to the bottom of the tank and controlling communication between the tank and flow-box, an operating device located outside the tank and connected to said false bottom, a valved discharge-pipe leading from the flow-box, and a valve water-supply pipe in communication with said flow-box.

7. The combination with a screening-cylinder, of a series of intermediate and end supporting-bars, the end supporting-bars being arranged in spaced pairs, spacing-blocks secured at intervals to the pairs of end bars, the intermediate bars being arranged in a plane above the plane of the end bars, removable screening-bars adapted to notches or grooves in the supporting-bars, and clamping-bars adapted to fit within the spaces between the end supporting-bars and having flanges for holding the screening-bars in position.

8. The combination with the polygonal end pieces, of longitudinally-disposed supporting-bars carried by said pieces, intermediate supports between the end pieces, and a screening-surface formed of a plurality of screening-bars supported and clamped in slightly-arched position by said longitudinal bars.

708,688. SCREEN-PLATE FOR PULP-STRAINERS. NATHANIEL I. VROOMAN and ROBERT B. KIRKLAND, Watertown, N. Y. Filed Feb. 21, 1902. Serial No. 95,026. (No model.)

Claim.—1. A screening device comprising a series of bars, and means for holding and supporting said bars in bowed position under a constant bending strain.

2. A screening device comprising a series of interchangeable screening-bars, devices for supporting the same, and means for clamping said bars in position and for slightly bending or bowing said bars

3. A screening device comprising a frame and a series of interchangeable screening-bars held in said frame under a constant bending strain.

4. A screening device comprising a frame having a series of parallel-supporting-bars having alining notches, the intermediate supporting-bars being arranged in a plane above that in which the outer supporting-bars are situated, and removable screen-bars carried by said supporting-bars.

5. The combination with a series of interchangeable screening-bars, of a frame comprising a series of notched supporting-bars adapted to receive the ends and intermediate portions of said screen-bars, the notches of the intermediate supporting-bars being arranged in the plane above the plane of the notches of the outer supporting-bars.

6. A screening device comprising a rectangular plate or frame having alining notches, a series of screen-bars disposed in said notches, the opposite ends of said screen-bars having reduced portions, and clamping-bars having flanges for engagement with said reduced portions.

7. A screening device comprising a frame having parallel side and intermediate bars each provided with notches or grooves, the bottoms of the notches or grooves of the intermediate bar being in a plane above the plane of the bottoms of the notches or grooves in the side bars, a series of screen-bars adapted to said notches, and means for confining the ends of said bars.

8. A screening device comprising a frame having parallel side and intermediate bars each provided with substantially V-shaped notches or grooves, those of the intermediate bars being arranged in a plane above the notches of the side bars, a series of screen-bars adapted to said notches, said screen-bars having reduced end portions, and a flanged clamping-bar adapted for engagement with the reduced end portions of the screening-bars.

708,684. WAISTCOAT. ELI G. D. WARE, Malta, Ohio, assignor of two-thirds to George S. Corner and John F. Davis, Malta, Ohio. Filed Feb. 28, 1902. Serial No. 95,723. (No model.)

Claim.—1. A garment provided at its front portion with pockets two upon each side, with one above another and extending toward each other and occupying the area of said sides and having entrance-openings thereto respectively at the central and side-seam portions of the garment said entrance-openings being arranged at relatively opposite sides of the pockets in each side or half of the front portion of said garment; substantially as specified.

2. A garment provided with a vertical closure at its front, hand-pockets at the opposite sides of said closure and extending from an opening at the sides of said garment to occupy the lower portion of the front of the garment, and breast-pockets in the upper portion of the garment having openings nearest said closure and extending from said openings toward the sides of the garment to occupy the space above said hand-pockets; substantially as specified.

708,685. HEATER OR BOILER. NATHANIEL R. WALES, Braintree, Mass. Filed Apr. 3, 1902. Serial No. 101,078. (No model.)

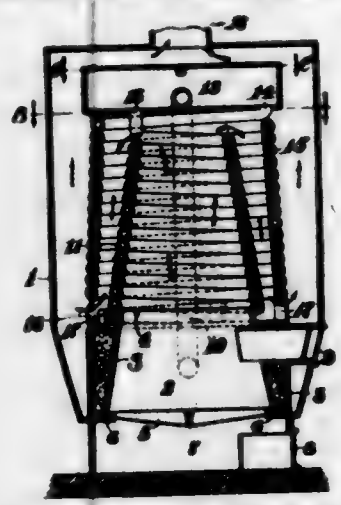

Claim.—1. In a water-heater, the combination of a fire-box the wall of which is frusto-conical; a water-chamber surrounding said fire-box; a second water-chamber located near the top of the inclosing casing; a frusto-conical tubular coil, the larger end of which rests upon, and communicates with the interior of the chamber surrounding said fire-box, and extends upward to within a short distance of the under side of said upper water-chamber, and communicates with the interior thereof; a second frusto-conical tubular coil surrounding said first-mentioned coil at a distance therefrom, with its upper and smaller end in contact with, and in communication with the interior of said upper chamber, and extending downward therefrom to within a short distance of, and communicating with the interior of the water-chamber surrounding the fire-box; means for admitting water to said fire-box water-chamber; and means for the discharge of water from said upper water-chamber.

2. The combination of a frusto-conical fire-box; a water-chamber inclosing said fire-box; the water-chamber 12; the frusto-conical tubular coils 11 and 15, the convolutions of each coil being wound in close contact with each other, said coils being arranged one within the other, and at a greater distance apart at their upper ends than at their lower ends, said coil 11 resting upon and communicating at its lower end with the interior of said fire-box water-chamber and extending upward to within a short distance of the under side of the chamber 12, and communicating

at its upper end with the interior of said chamber 12, and said coil 15 being in contact with the under side of, and communicating with the interior of said chamber 12, and at its lower end with the interior of the chamber surrounding the fire-box; and a series of standards interposed between the upper surface of the water-chamber 3 and the lower end of the coil 15, as and for the purposes described.

3. In a water-heater, the combination of a frusto-conical fire-box; the water-chamber 3, surrounding said fire-box, but having a height less than the wall of the fire-box; the closely-wound frusto-conical tubular coils 11 and 15, arranged one within the other, at a diverging distance apart, the lower convolution of the coil 11 fitting closely around the upwardly-projecting portion of the fire-box wall, and said coils being arranged relative to each other and to the water-chambers 3 and 12 as set forth; the feed-pipe 19; the discharge-pipe 20; the inclosing casing 1; and the chimney 18.

708,686. SHOE FORM OR LAST. HARRY B. WALKER, Brockton, Mass. Filed Sept. 20, 1901. Serial No. 75,693. (No model.)

Claim.—1. A shoe form or last having a continuous contour-line, consisting of a heel part and a fore part, made of a single integral piece of material, said fore part consisting of two independent, separated, laterally-resilient wings extending from the heel part and adapted to be brought toward each other to reduce the transverse dimension of the form or last, to facilitate insertion into and withdrawal from the shoe, and to draw away from each other within the shoe to fill out the fore part of the upper thereof, substantially as described.

2. A shoe form or last having a continuous contour-line, consisting of a heel part and a fore part made of a single integral piece of material, said fore part consisting of two independent, laterally-resilient wings extending from the heel part, separated by a space having an enlargement at its crotch, and adapted to be brought toward each other in the intervening space to reduce the transverse dimension of the form or last, to facilitate insertion into and withdrawal from the shoe, and to draw away from each other within the shoe to fill out the fore part of the upper thereof, substantially as described.

708,687. RELIEF-VALVE FOR RESERVOIRS CONTAINING FLUID UNDER PRESSURE. HENRY R. WARREN, Newton, Mass., assignor to the Leonard Governor Company, Boston, Mass., a Corporation of New Jersey. Filed Mar. 1, 1902. Serial No. 96,349. (No model.)

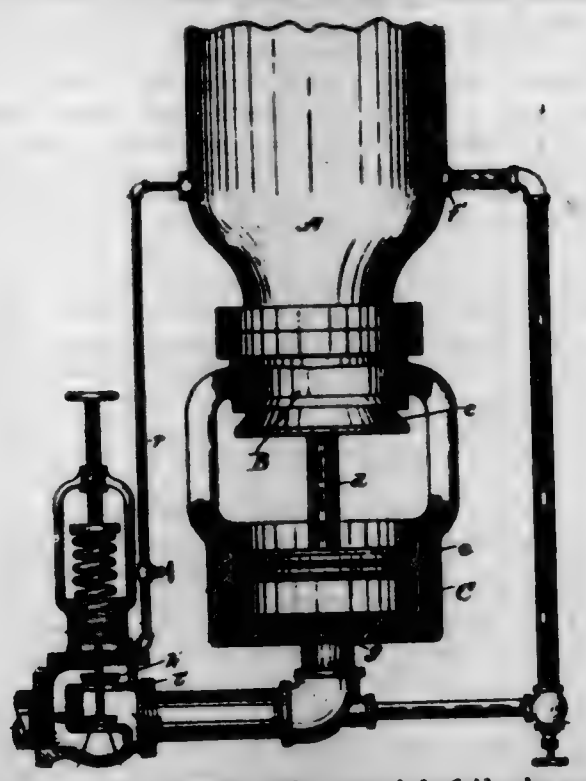

Claim.—1. In combination with a reservoir for fluid under pressure, a relief-valve which is connected with a piston operating within a cylinder, a fluid-conduit between this cylinder and said reservoir, and a waste-valve which communicates with the outlet of said piston-cylinder, and is operated by fluid-pressure directly from the reservoir and communicated thereto independently of the conduit to the piston-cylinder.

2. In combination with a reservoir for fluid under pressure, a relief-valve which is connected with a piston operating within a cylinder, a conduit between this cylinder and said reservoir which is adapted to regulate the flow of fluid to the cylinder, and a waste-valve which communicates with the outlet of said piston-cylinder, and is operated by direct fluid-pressure from the reservoir communicated independently of the conduit to said cylinder.

3. In combination with a reservoir containing fluid under pressure, a relief-valve controlled by a piston operating within a cylinder, a fluid-conduit between this cylinder and the said reservoir, means to regulate and maintain a resistance to the flow of fluid through said conduit which will reduce the fluid-pressure at its discharge, and a waste-valve which communicates with the outlet of said piston-cylinder and is operated by direct fluid-pressure from the reservoir communicated independently of the conduit to said cylinder.

4. In combination with a reservoir for fluid under pressure, a relief-valve adapted to be partially balanced by the fluid-pressure within itself, which valve is controlled by a piston operating within a cylinder, a fluid-conduit between this cylinder and said reservoir, means to regulate and maintain a resistance to the flow of fluid through said conduit which will reduce the fluid-pressure at its discharge, and a waste-valve in communication with the outlet of said piston-cylinder, which valve is independently operated by direct fluid-pressure from the reservoir independently communicated thereto.

5. In combination with a reservoir for fluid under pressure, a relief-valve constructed to be partially balanced by the fluid-pressure within itself, a cylinder containing a piston connected with said valve, the area of which piston is a minimum in excess of the area of the unbalanced portion of said valve, and a conduit from the cylinder to said reservoir to communicate the fluid-pressure therein to the piston in the cylinder, for the purpose described.

708,688. BALING-PRESS. THURMAN C. WEST, Hattiesburg, Miss. Filed July 28, 1901. Serial No. 69,434. (No model.)

Claim.—1. A baling-press comprising a box having plungers disposed for movement toward each other, a discharge-opening in the side of the box, a gate for said opening, a frame carried by the gate to lie against the bottom of the box when the gate is closed to receive the bale, said frame being movable with the gate when opened to discharge the bale, and means for operating the plungers.

2. A baling-press comprising a box having plungers disposed therein for operative movement toward the center of the box, a discharge-opening in the side of the box, a gate for said opening, a frame carried by the gate to receive the bale and movable with the gate to discharge the bale, a cover for the box, and means for operating the plungers.

3. A press comprising a box having plungers slidably mounted therein, a discharge-opening for the box, a slotted gate for the opening, a frame carried by the gate to lie against the bottom of the box when the gate

is in closed position, and to discharge the hole when the gate is opened, plungers mounted at the ends of the box for movement toward the gate, the box having slots aligning with the slots of the gate when the latter is in closed position, and means for moving the plungers simultaneously.

4. A boiling-press comprising a box, a plunger slidably mounted at each end of the box for operative movement toward each other, said plungers comprising rills, heads at the inner ends of the rills, and braces from the rills to the heads, and cables engaged with the braces through perforations in and having means for winding them to operate the plunger.

5. A boiling-press comprising a box having plungers mounted in its ends for operative movement toward each other, a discharge-opening midway of the ends of the box, a hinged gate for said opening provided with a frame disposed to receive and discharge the hole, a drum mounted upon the box, pulleys at the ends of the box, cables engaged with the drum and having their ends taken around the corresponding pulleys and then crossed and attached to the plungers for moving the latter in one direction, additional pulleys mounted in the box, and an additional cable engaged with the drum and having its ends taken around the last-named pulleys and attached to the plungers without crossing, to move the plungers in the opposite direction.

6. A boiling-press comprising a box having plungers mounted in its ends for operative movement toward each other, a cable-operating drum mounted upon the box midway of its length and provided with three double-cone-shaped oppositely-grooved winding-spools, pulleys at each end of the box, plunger-operating cables secured to the intermediate portions of the two end spools and having their ends taken around corresponding pulleys and then crossed and attached to the plungers for moving the latter in one direction, pulleys mounted in the end of the box intermediate of its width, and a divided plunger-returning cable having two of its ends secured to the extremities of the intermediate spool and its other two ends passed around the last-named pulleys and attached to the plungers without crossing, to move the plungers in the opposite direction, substantially as and for the purpose specified.

703,689. TYPE-WRITER. WILLIAM H. YOUNG, Athens, Ga. Filed Sept. 20, 1899. Serial No. 732,245. (No model.)

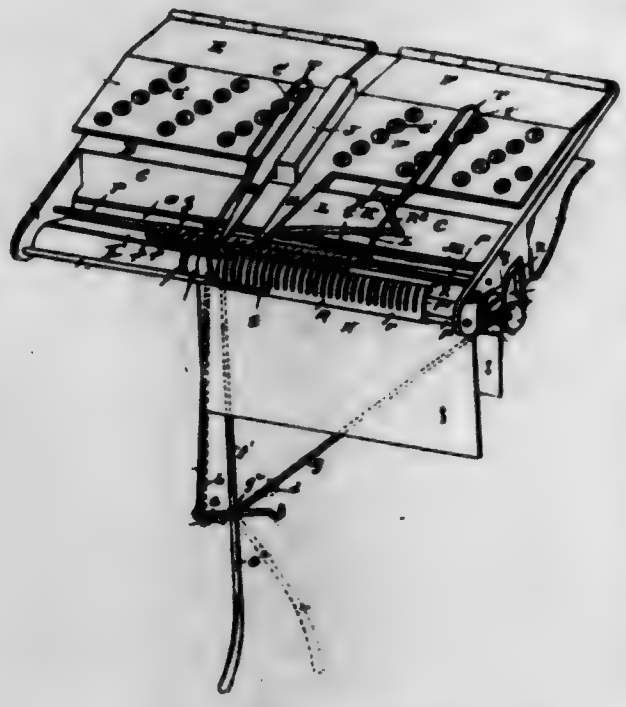

Claim.—1. In a type-writer, the combination of a paper-holding mechanism, a type-bar having a plurality of arms, a type on the free end of each arm, a type-impressing mechanism comprising a movable indicator-plate having thereon in different positions indicating characters corresponding with the type, and a finger-guide connected with the type-bar and situated over or along said plate, substantially as set forth.

2. In a type-actuating mechanism for type-writers, a type-bar having a plurality of arms, types on the free ends of the arms, a movable plate or keyboard having characters corresponding with the type of said bar, means carried by said plate for actuating the type individually, and means for shifting the type-bar, substantially as set forth.

3. In a type-actuating mechanism for type-writers, the combination of a sliding type-bar having a series of individually-movable type-arms, a type on the free end of each arm, means for shifting said bar, and devices for individually impressing the type, substantially as set forth.

4. The combination of a movable type-bar having a series of individually-movable type, arms extending therefrom, a type on the free end of each arm, devices for individually impressing the type, and a guide connected with said bar to shift the same and adapted to guide the finger in directions across the lines of movement of said guide, substantially as set forth.

5. The combination with paper holding and shifting devices, of a keyboard consisting of two independently-movable plates, each provided with indicating characters, two movable bars provided respectively with individually-movable projecting arms carrying on their free ends type corresponding with said characters, finger-guides attached to the type-bars and each extending over or along the plate corresponding with its type-bar, type-impressing devices actuated by said plates, and an inking device, substantially as set forth.

6. A type-bar for type-writers of thin sheet metal, having one edge bent toward the body of the bar to form a longitudinal sliding bearing-sleeve and partially divided to form partially-separated resilient arms, and a series of type fixed on said arms.

7. In a type-writer, the combination with a bed-plate or frame adapted to be held on any suitable support, type-actuating means and printing devices, of a paper-holding cylinder or roller situated at the front end of said frame between the operator and the type-actuating means, forward of the front edge of the bed-plate and adapted to hold the paper suspended in front of said support, substantially as set forth.

8. In a type-writer, the combination with a bed-plate or frame, and printing devices comprising a type-operating indicating-plate or keyboard at the upper rear part of said frame, of a paper-holding cylinder or roller mounted at the front of said frame forward of the front edge of the indicating-plate or keyboard, whereby the paper is situated below the wrists of the operator and the space above the keyboard left free for copy, substantially as set forth.

9. In a type-writer, the combination with paper holding and shifting devices and movable type-bars, of a keyboard comprising a movable plate having depressions therein for the finger of the operator, said depressions having indicating characters corresponding with the type, a finger-guide connecting with the type-bar and extending along or over said plate for the space occupied by said depressions and arms attached to the plate to contact the type, substantially as set forth.

10. In a type-writer, the combination of paper holding and shifting mechanism, printing devices, a bed-plate or frame therefor, means on the under side of said frame for supporting the machine in the hand, and a connection extending from said shifting mechanism to the under side of said frame for effecting the spacing operation by the supporting-hand, substantially as set forth.

11. In a type-writer, the combination of paper holding and shifting mechanism, printing devices comprising two movable indicator-plates, type-bars corresponding each with one of said plates, means for actuating said bars, means carried by the indicator-plates to impress the type and a spacing device or bar situated between said plates and connected with said shifting mechanism, substantially as set forth.

12. In a type-writer, the combination of paper holding and shifting mechanism, printing devices comprising two indicator-plates, type-bars corresponding with each of said plates, means for actuating said bars, means carried by the indicator-plates to impress the type, a spacing device or bar situated between said plates and extending in directions toward and from the operator, and adapted to be operated by the thumbs while the hands are respectively over said plates, and connections between the spacing-bar and said shifting mechanism, substantially as set forth.

13. In a type-writer, the combination with printing devices, of a paper-holding roller, carried by the same, and means for moving said roller, extending within reach of the knee of the operator, comprising rods secured to the carriage and united at their lower ends, a lever having a depending arm and an arm at right angles thereto fulcrumed at the union of said bars, a stop to limit the movement of the lever, and a rod having a pawl to engage the ratchet on the roller substantially as set forth.

14. In a type-writer the combination with paper-carrying means, of two supporting-bars, two type-bars slidingly disposed on said bars and arranged at opposite sides of the line of impression, arms on said bars provided with type for carrying the latter to said line of impression, means for actuating said arms individually, and actuating devices for sliding said type-bars bodily to bring the desired type into operative position.

15. The combination, with paper-carrying means, of two sliding type-bars arranged at opposite sides of the line of impression, spring-arms on said bars provided with type, supports on which said bars reciprocate, means for actuating the arms individually, and actuating devices for moving the bars bodily.

16. In a type-writer, the combination of a movable set of type supported to slide transversely of the machine, and pivoted, and oscillatory for the purpose of impression, means for turning said set of type on its

pivot and shifting said set of type, impression devices for actuating said type individually, an inking device extending across the machine parallel with the path of said set of type and having an opening at the printing-center, and means for supporting the inking device at its ends at the sides of the machine.

17. In a type-writer, the combination of a paper holding and shifting mechanism, a movable set of type, a guide for the same, a movable indicating-plate having characters corresponding with the type, adapted to be operated by the finger and having means for impressing the type individually, and a type-shifting device extending along said plate and adapted to be engaged laterally by the finger of the operator.

18. A type-bar-shifting device consisting of the combination, with a type-bar, of a movable indicator-plate, having characters corresponding with the type, and adapted to be operated by the finger, and a bar or arm for actuating the type-bar, extending along said plate and having a space or aperture for the passage of the finger of the operator.

19. In a type-writer, the combination of a paper-holding mechanism, a type-bar having a plurality of type, a type-impressing mechanism comprising a movable indicator-plate having thereon indicating characters corresponding with the type, and a shifting means for said bar situated along said plate and having an aperture for the finger of the operator.

20. The combination of a shifting type-bar, a movable indicator-plate adapted to be operated by the finger, and having indicating characters corresponding with the type of said bar, and a type-bar shifter adapted to be engaged laterally by said finger.

21. The combination of a rectilinearly-moving type-bar, a movable indicating-plate adapted to be operated by the finger and having characters corresponding with the type of said bar, and a type-bar shifter adapted to be engaged laterally by the finger and situated along said plate.

22. In a type-writer, an impression mechanism, consisting of the combination of a rectilinearly-sliding type-bar, an indicating-plate having means for impressing the type of said bar, and having a number of type-indicating marks at different distances from the path of said bar, and an actuating-arm connected with the bar, extending over said plate and having an elongated opening for the passage of the operator's finger.

23. In a type-writer, the combination of a movable type-bar, a movable indicating-plate situated at the rear of the machine and having a type-impressing arm stiffly connected with the plate and extending forward to said bar, a paper-holding means at the front of the machine in line with the type of said bar, and means for shifting the bar, consisting of a finger-arm connected with the bar and extending rearwardly over said plate.

24. A type-writing machine, adapted to rest at its rear upon a table with its front part overhanging the same and having a downward-extending shoulder for engaging the front edge of the table, and holding means for securing the machine in such position, the said machine having a paper-holding device on said overhanging part adapted to suspend the paper in front of such table.

25. A type-writing machine adapted to rest at its rear upon a table with its front portion overhanging the same, and having a downward-extending shoulder for engaging the front edge of the table and holding means for securing the machine in such position, said machine having a paper-holding roller mounted at the front part of the machine and adapted to suspend the paper on front of such table, and having a type-operating keyboard at the rear part of the machine which is over the table.

26. A type-writing machine adapted to rest at its rear part upon a table with its front portion overhanging the same, and having a paper-holding device on said overhanging part, below the bottom of the rear part of the machine and adapted to suspend the paper in front of such table.

708,690. COMMODE-STOOL. WILLIAM H. YOUNG, Athens, Ga. Filed Jan. 3, 1902. Serial No. 88,511. (No model.)

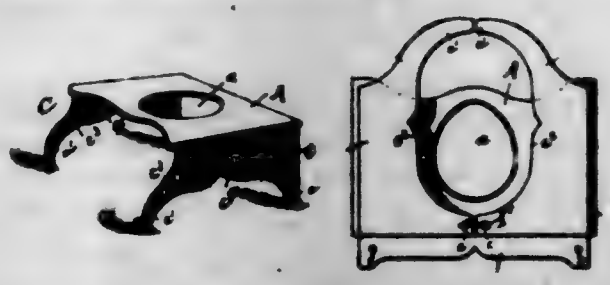

Claim.—1. In a child's commode-stool, the combination, of the seat-board A provided with the aperture *a*, the legs C hinged to the seat-board and adapted to fold under the same, and the rear board G hinged to the seat-board and folding outwardly, said parts being adapted to inclose the commode except at the front, and to fold together and form but two thicknesses of material, substantially as set forth.

2. In a child's commode-stool, the combination, of the seat-board A formed with the aperture *a*, the end legs C hinged to and terminating at the seat-board, and arranged to provide a relatively wide base of support and the rear board or bar G pivoted to and terminating at the seat-board and adapted to drop between and brace the side legs when the parts of the stool are in open position, the side legs and back bar being arranged to lie in the same planes when folded, and all of said parts being relatively arranged as described, whereby when folded they present but two thicknesses of material, substantially as set forth.

3. In a child's commode-stool, the combination of the seat-board A, with the aperture *a*, the end legs C hinged to the seat-board and adapted to fold under the same, and having the leg portions c^3 serving as a handle when the stool is folded, substantially as set forth.

4. In a child's commode-stool, the combination of the seat-board A provided with the aperture *a*, the end legs C hinged to the seat-board, and adapted to fold against the face of the seat, and shaped to have leg portions which when the parts are folded come into proximity to each other at their ends and provide a handle as at E remote from the edge of the seat-board, substantially as set forth.

5. In a child's commode-stool, the combination of the seat-board A provided with the aperture *a*, the end legs C hinged to and terminating at the seat-board and to fold against the face thereof, said legs being shaped substantially as set forth, and arranged to have their ends approach each other when folded to provide a handle remote from the seat-board, and a back board G hinged to the seat-board, and arranged to drop between the legs C, when the latter are opened and to lie in the planes of the seat-board or the legs when the latter are folded, substantially as described.

6. In a commode-stool, the combination with the seat and the legs, of the folding back having the uprights hinged to the stool, and arranged to bear inwardly against stops, and the cross connecting device for the uprights as at J′ detachable from one or both thereof, substantially as set forth.

7. In a commode-stool, the combination, with the legs the seat having stops as at j^7, and the hinged back piece, of the uprights J, J pivoted to the hinged back piece and adapted to swing upward and abut against said stop, and means for connecting together the uprights when in their opened positions, substantially as set forth.

8. In a child's nursery-stool, the combination of the seat-board having a relatively small aperture *a*, the side bars c^2 hinged directly to the said seat-board and adapted to fold against the same to form a seat of two thicknesses of material, and front and rear legs carried by said side bars and arranged out of line with the aperture *a* when the parts are folded.

708,691. ELECTRIC-LOG REGISTER. WILLIAM R. ARMSTRONG, San Francisco, Cal. Filed Sept. 15, 1900. Serial No. 30,188. (No model.)

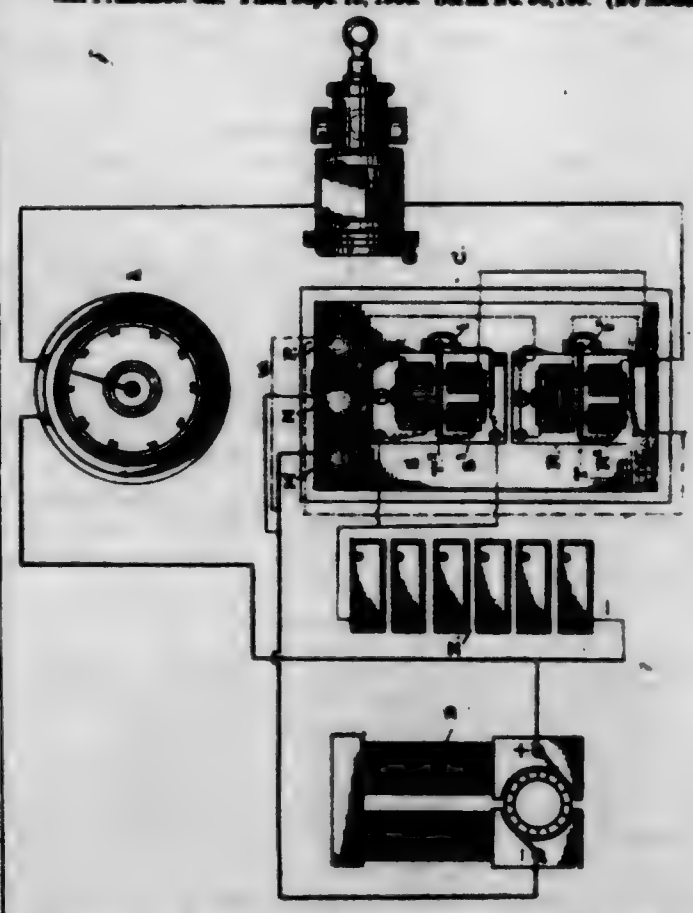

Claim.—1. In an electrical log, a source of electrical energy, two circuits, a register and a log therein, an indicator in each circuit, means

for passing a current through either of said circuits, and means for operating the indicator intermittently through said circuit.

2. In an electrical log, a source of electrical energy, two circuits, a register and a log therein, an indicator in each circuit, electrically-operated means for rendering either of said circuits operative by closing the same, the log being provided with means for intermittently opening and closing the operative circuit.

3. In an electrical log, a source of electrical energy, two circuits, a register, a log, and two sets of electromagnets therein, an armature between the sets of magnets, one of the circuits being provided with a contact in position to be engaged by said armature, whereby said circuit is closed when the other circuit is opened, and an indicator in each of said circuits.

4. In an electrical log, a primary source of electrical energy and a secondary source connected therewith, two circuits from said sources of electrical energy containing a log and a register, and means for automatically passing a current of electricity from either source through either of said circuits.

5. In an electrical log, a primary source of electrical energy and a secondary source connected therewith, electrical circuits connected with said sources, one of which is provided with an indicator and the other with a log and a register, and means for automatically passing a current from either source through the second-mentioned circuit.

6. In an electrical log, a primary source of electrical energy and a secondary source connected therewith, electrical circuits connected with said sources, one of which is provided with an indicator and the other with a log and a register, and electrically-controlled means for automatically passing a current from either source through said second-mentioned circuit.

7. In an electrical log, a primary source of electrical energy, and a secondary source connected therewith, electrical circuits connected with said sources of energy, one of which is provided with an electromagnet and the other is normally open and provided with a log, a register and a contact in position to be engaged by the armature of the magnet, whereby the second circuit may be closed when the first-mentioned circuit is opened.

8. In an electrical log, a primary source of electrical energy and a secondary source connected therewith, circuits connected with said sources of energy, the circuit connected with the primary source being provided with a log, a register, an indicator, a shunt-circuit and two electromagnets, the shunt being provided with an indicator and including an armature located between the magnets; one of the circuits from the secondary source of energy being provided with an indicator and an electromagnet, and the other circuit therefrom being normally open and including the armature of the last-mentioned electromagnet.

708,692. MANUFACTURE OF CARBONS FOR ARC-LAMPS.

CONRAD R. BOEHM, Charlottenburg, near Berlin, Germany. Filed Apr. 12, 1902. Serial No. 102,589. (No specimens.)

Claim.—1. Process for manufacturing carbons for arc-lamps which consists in incorporating into the carbon besides other metallic salts an addition of magnesium fluorid not less in proportion to said salts than is defined by equal or equivalent molecular weights.

2. Process for manufacturing carbons for arc-lamps which consists in incorporating into the carbon besides other metallic salts an addition of magnesium fluorid equal or equivalent to the proportion defined by the molecular weights.

3. As an article of manufacture a carbon for arc-lamps composed of carbon containing a mixture of magnesium fluorid with other metallic salts in which the proportion of the magnesium fluorid, to the other salts is not less than that defined by their respective molecular weights.

4. As an article of manufacture a carbon for arc-lamps composed of carbon containing a mixture of magnesium fluorid with other metallic salts in which the proportion of the magnesium fluorid to the other salts is defined by their respective molecular weights.

708,698. MEANS FOR OPERATING AWNINGS.

WESLEY S. BOWER, St. Louis, Mo. Filed Jan. 20, 1902. Serial No. 90,439. (No model.)

Claim.—In a device of the class described, the combination of a roller, a shaft on which said roller is mounted, a bevel-gear fixed to said shaft, a vertical shaft, means for rotating said vertical shaft, a bevel-pinion adjustably fixed to said vertical shaft and arranged for engagement with said bevel-gear, a swing-casket loosely mounted on said roller-shaft and in which the upper end of said vertical shaft is loosely seated to rotate freely therein, and a collar secured to said roller-shaft to hold said casket from endwise movement, substantially as described.

708,693.

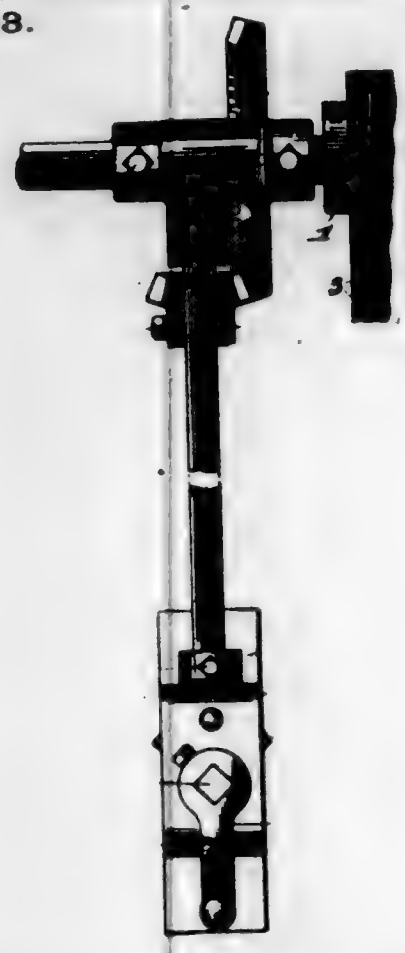

708,694. AMALGAMATOR.

JAMES V. COLEMAN, San Francisco, Cal. Filed Aug. 22, 1901. Serial No. 72,654. (No model.)

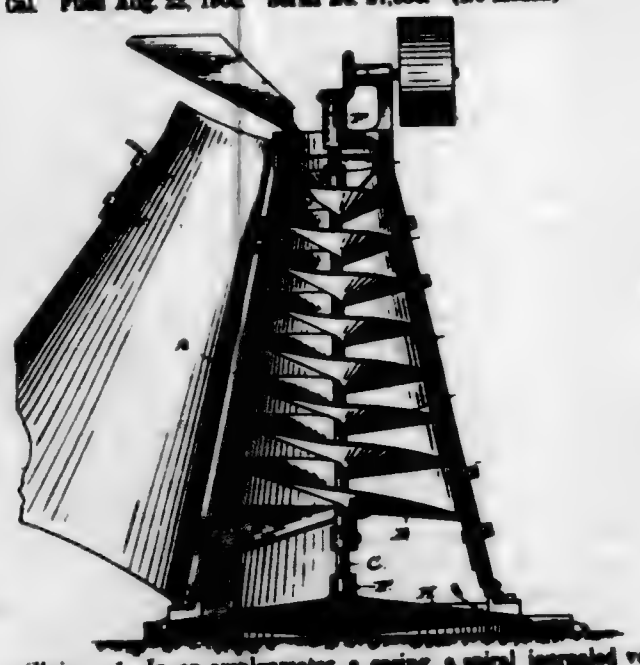

Claim.—1. In an amalgamator, a casing, a spiral journaled vertically therein, the upper surface of which is formed into an amalgamating-surface, each portion of the periphery of the spiral being located interiorly of a vertical plane through the corresponding portion of the spiral below it said spiral having an unobstructed outer edge, and means for rotating the spiral.

2. In an amalgamator, a conical casing, a conical spiral journaled vertically therein, the inner surface of the casing and the upper surface of the spiral being formed with amalgamating-surfaces, each portion of the periphery of the spiral being located interiorly of a vertical plane through the corresponding portion of the spiral below it and exteriorly of a vertical plane through the portion of the casing above it, said spiral having an unobstructed outer edge, and means for rotating the spiral upward toward the smaller end of the casing.

3. In an amalgamator, a conical casing, a conical spiral journaled vertically therein with its periphery in close proximity to the casing, the inner surface of the casing and the upper surface of the spiral being formed into amalgamating-surfaces, the upper surface of each portion of the spiral being inclined or substantially dish-shaped from its axis to its periphery, said spiral having an unobstructed outer edge and means for rotating the spiral upward, or, toward the smaller end of the casing.

4. In an amalgamator, a base provided with a standing rim, a conical casing therein, the lower edge of which is within the rim, a shaft journaled in the base and concentrically within the casing, a conical spiral around the shaft, having an unobstructed outer edge adjacent to the casing the upper surface of the spiral and the interior surface of the casing being formed into amalgamating-surfaces, and means for rotating the spiral toward the top of the casing.

708,695. GAS-ENGINE. EVERETT B. CUSHMAN and LESLIE S. CUSHMAN, Lincoln, Nebr. Filed Oct. 26, 1901. Serial No. 79,971. (No model.)

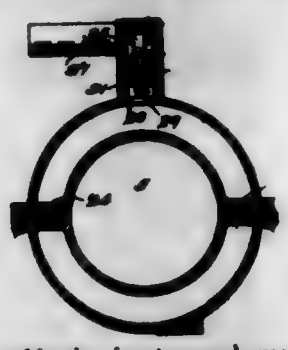

Claim.—1. The combination, in a two-cycle gas-engine, of a ported cylinder having outwardly-extending flanges at points above and below the cylinder-ports, a removable ring carried by said flanges, partitions dividing the space between the flanges and ring into a plurality of chambers, and gas inlet and escape ports for said chambers, substantially as specified.

2. The combination, in a two-cycle gas-engine, of a cylinder having ports and provided with upper and lower flanges, a ring adapted to said flanges, radial ribs formed on the cylinder between said flanges and serving to divide the annular space within the ring into a plurality of chambers, and gas inlet and escape ports for said chambers, substantially as described.

3. The combination, in a two-cycle gas-engine, of a cylinder having ports, upper and lower ribs formed on the cylinder and having peripheral rabbets, a two-part ring mounted in said rabbets, ribs for dividing the space within the ring and flanges into a plurality of chambers, and gas inlet and escape ports for said chambers, substantially as specified.

4. The combination, in a two-cycle gas-engine, of a ported cylinder, a crank-casing, annular flanges formed on the periphery of said cylinder at points above and below the cylinder-ports, one of said flanges being provided with an opening or port for communication with a gas-passage leading between the crank-casing and the cylinder-ports, a sectional ring mounted on said flanges, and gas entrance and escape ports formed in said ring, substantially as specified.

5. The combination in a gas-engine of a cylinder, a crank-casing forming a compression-chamber for the explosive mixture, annular flanges formed on the periphery of the cylinder, a ring mounted on said flanges, ribs for dividing the space within the flanges and ring into a plurality of chambers, piston-controlled ports extending between such chambers and the cylinder, an auxiliary port formed in the wall of the cylinder and leading between the crank-casing and one of said chambers, and a valved supply-port in communication with the chamber to which said auxiliary port is connected.

708,696. PROCESS OF UTILIZING CARBONIFEROUS COLLIERY WASTE. CLEMENS DÖRR, Cologne, Germany. Filed Aug. 26, 1900. Serial No. 28,018. (No specimens.)

Claim.—The method of utilizing carboniferous colliery waste consisting in finely granulating such material, and adding thereto coal-slime, coal-dust, small coke and the like, as herein set forth.

708,697. METAL WHEEL. BERT. REIFELDT, Davenport, Iowa, assignor to the Bettendorf Metal Wheel Company, a Corporation of Iowa. Filed Dec. 3, 1901. Serial No. 84,548. (No model.)

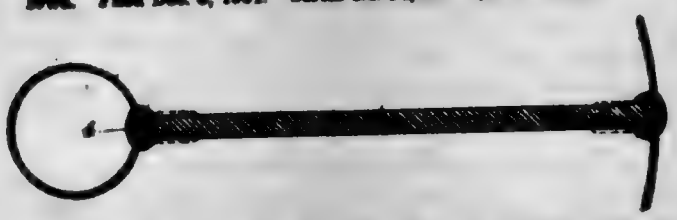

Claim.—1. In a metal wheel a spoke having at a point between the hub and rim, a shoulder in forcible engagement with the adjacent member of the wheel, which shoulder consists of a piled-up accumulation of the outer material only of the spoke.

2. In a metal wheel the combination with the rim and hub, of a spoke having its ends provided with heads at the outer side of the rim and inner side of the hub respectively, and having at the outer side of the hub a shoulder in forcible engagement with the hub, which shoulder consists of a piled-up accumulation of the outer material only of the spoke, and a shoulder on the spoke at the inner side of the rim.

708,698. TAG. CHARLES E. FAIRCHILD, New York, N. Y. Filed Sept. 16, 1901. Serial No. 75,468. (No model.)

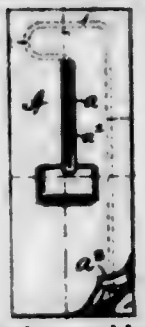

Claim.—1. A tag or check comprising separate layers of suitable material secured together, a slot in said tag, a wire inserted between the layers of said tag, said wire comprising a section which extends longitudinally of said tag and a needle formed continuous with each other, said needle extending longitudinally of the slot formed in said tag, the point of said needle being normally disposed inside of the lateral surfaces of said tag or check, substantially as described.

2. A tag or check comprising separate layers of suitable material secured together, a slot in said tag, a wire inserted between the layers of said tag, said wire comprising a section which extends longitudinally of said tag, a section which extends transversely of said tag and a needle all continuous with each other, said needle extending longitudinally of the slot formed in said tag, the point of said needle being disposed inside of the lateral surfaces of said tag or check, substantially as described.

3. A tag or check comprising separate layers of suitable material secured together, a slot in said tag, a wire inserted between the layers of said tag, said wire comprising a section which extends longitudinally practically the entire length of said tag or check, a section which extends transversely of said tag and a needle all continuous with each other, said needle extending longitudinally of the slot formed in said tag, the point of said needle being disposed normally inside of the lateral surfaces of said tag or check, substantially as described.

4. A tag or check comprising separate layers of suitable material secured together, a slot in said tag, a wire inserted between the layers of said tag, said wire comprising a section which extends longitudinally of said tag or check and a needle formed continuous with each other, said needle extending longitudinally of the slot in said tag and being disposed inside of the lateral surfaces of said tag or check, and said tag or check being relatively thick adjacent to the point of said needle, substantially as described.

5. A tag or check comprising separate layers secured together, a slot in said tag, a wire inserted between the layers forming said tag, said wire comprising a section which extends longitudinally of said tag and a needle formed continuous with each other, said needle extending longitudinally of the slot formed in said tag or check and pieces of relatively strong, tough fabric, as muslin or cheese-cloth, secured between the layers of the tag or check on opposite sides of the wire, substantially as described.

708,699. FLAT-IRON HANDLE ATTACHMENT. HARRY GREENWOOD, Barnesboro, Pa. Filed June 13, 1901. Serial No. 64,443. (No model.)

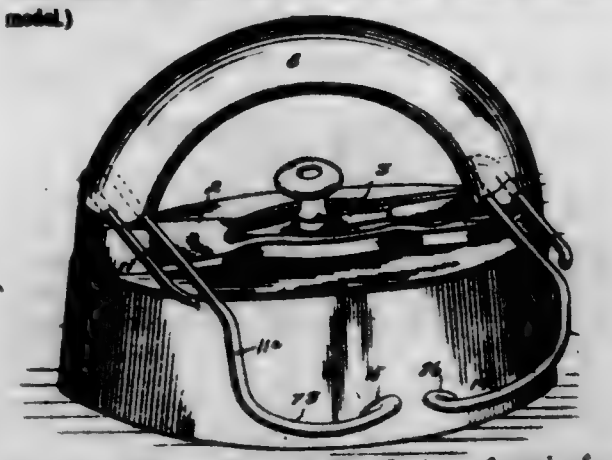

Claim.—1. The combination with a flat-iron, of a pair of supporters therefor independently adjustable in relation thereto, each supporter

having an upper elongated looped extremity, the members of said extremities being parallel and forming two opposite independent bearing portions adapted to be adjustably inserted between the handle ends and the body of said iron for preventing rotative movement of the supporters, one member of the looped extremity being continued into an outwardly-projecting straight extension merging into an angularly-bent portion which lies normally parallel with the side of the iron, said bent portion being continued into an inwardly-curved extension in the same plane as the bent portion for providing an extended rest for the iron.

2. The combination of a flat-iron having elevated portions at opposite extremities for attachment of a handle, a handle having a pair of transverse grooves in each end which are closed when the handle ends are secured to said elevated portions, and a pair of supports having elongated loops engaging said grooves, the members of said loops being parallel and forming opposite bearing portions for preventing rotation thereof, one member of each loop being projected in the form of a straight extension having an angularly-bent outer end extending normally parallel with the side of the iron, said extension having inwardly-curved extremities.

3. Means for supporting a flat-iron comprising two members, each member being independently adjustable in relation to the iron and provided with an upper elongated looped extremity forming two opposite independent bearing portions adapted to be inserted between the handle ends and body of an iron, each member having an outwardly-projecting straight extension merging into an angularly-bent portion which normally lies parallel with the side of the iron, said bent portion having an inwardly-curved extension in the same plane as the bent portion and forming an extended rest for the iron.

708,700. TROLLEY-WHEEL. WILLIAM F. HALL, Boston, Mass.
Filed Apr. 26, 1902. Serial No. 105,205. (No model.)

Claim.—1. In a separable trolley-wheel, the combination with the central portion and the disks arranged on opposite sides of the same, of a central sleeve or hub having at its end an annular groove, and a fastening device consisting of a divided ring or key inserted within said annular groove and bearing against the outer face of the adjacent side disk.

2. A separable trolley-wheel comprising a central portion, disks arranged on opposite sides of the same, a central longitudinally-split sleeve or hub inserted within the bore of the wheel and provided at its opposite ends outside said disks with annular grooves, a bushing inserted within said split hub and adapted to spread and force the same against the walls of the bore or central opening of the wheel within which it is placed, and divided rings or keys fitting within said annular grooves and overlapping and bearing against the outer faces of the adjacent side disks to clamp the same against the central portion and hold together the several parts of the wheel.

3. In a trolley-wheel, the combination with the central portion and removable disks or flanges arranged upon opposite sides of the same, said central portion and disks having their central openings each provided with an inwardly-projecting lug, of a central sleeve or hub split longitudinally and having a narrow opening between its opposite edges for the reception of said lugs and an annular groove at each end, a central bushing inserted within said split hub and adapted to spread and force the same against the walls of the bore or central opening of the wheel, and divided rings or keys fitting within the annular end grooves of the hub and bearing against the adjacent outer faces of the side disks or flanges to clamp the same against the central portion and hold together the several parts of the wheel.

708,701. TROLLEY-WHEEL. WILLIAM F. HALL, Boston, Mass.
Filed Apr. 26, 1902. Serial No. 105,205. (No model.)

Claim.—1. In a separable trolley-wheel, the combination with the central portion and side disks arranged upon opposite sides of the same, of a sectional hub composed of a series of concavo-convex keys provided at their opposite ends with outwardly-extending flanges adapted to overlap and bear against the side disks to hold the latter in place against the central portion, and a central sleeve or bushing driven into said sectional hub to hold its members in place within the central bore of the wheel.

2. A separable trolley-wheel comprising a central portion, side disks or flanges arranged on opposite sides of the same, said central portion and disks having their central openings provided with inwardly-projecting lugs, a sectional hub composed of a series of concavo-convex keys lying in the grooves or spaces between said lugs, said keys being provided at their opposite ends with outwardly-projecting flanges adapted to overlap and bear against the side disks to hold the latter in place against the central portion, and a central sleeve or bushing driven into said sectional hub and acting to hold its members in place within the central bore of the wheel.

708,702. STOVEPIPE. CHARLES C. HALSTEAD, Blodgett, Mo.
Filed Feb. 17, 1902. Serial No. 94,809. (No model.)

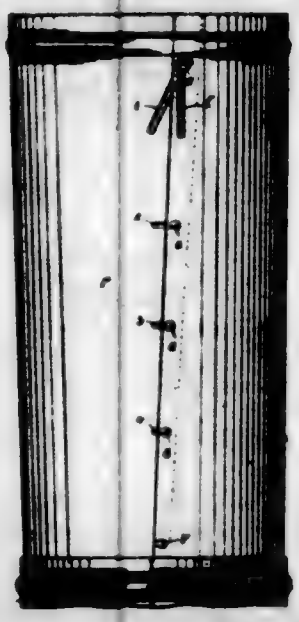

Claim.—A stovepipe comprising a section having overlapping edges, the inner edge having at one end an inclined slot located adjacent thereto, and the outer edge having a slot parallel therewith, a sliding bolt operating in said slots, a series of rivets carried by the outer lap of the pipe, the inner lap having disposed a series of transverse closed slots of progressively-diminishing dimensions for the reception of the rivets, the inner ends of said transverse slots and the adjacent end of the inclined slot being disposed in a line substantially parallel to the edge of the inner lap, and a fixed rivet securing the overlapping edges at the opposite end, substantially as set forth.

708,703. HARVESTER-FRAME. CHARLES S. HEDGE, Chinook, Mont. Filed Jan. 24, 1902. Serial No. 91,052. (No model.)

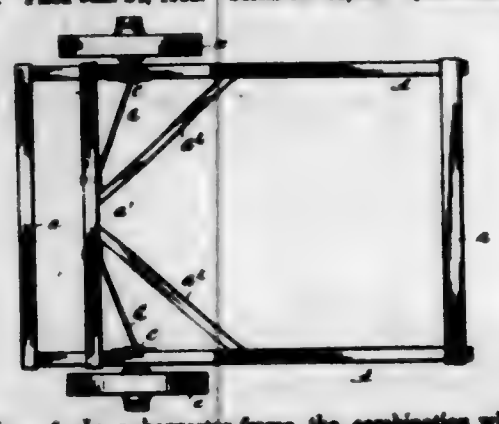

Claim.—1. In a harvester-frame, the combination with the side pieces, of hangers pivoted thereto, lugs on said hangers, plates against which said lugs abut, brace-rods extending from the lower ends of the hangers to a cross-piece of the harvester-frame, and stub-axles projecting from said hangers, substantially as shown and described.

2. In a harvester-frame, the combination with the side pieces, of castings *b b* secured thereto, a plate *b'* located between said castings, hangers having bifurcated ends by which they are pivotally connected to the castings, lugs on said hangers adapted to abut against the plate, brace-rods extending from the lower ends of the hangers to the harvester-frame, and stub axles or spindles projecting outwardly from the lower part of the hangers, substantially as shown and described.

708,704. WALL-NAIL. ADAM HOFMANN, Munich, Germany, assignor to Ignaz Friedinger, Obertinal, near Linz, Austria-Hungary
Filed Mar. 14, 1902. Serial No. 98,088. (No model.)

Claim.—A wall nail, peg or pin consisting of a plurality of sections, each having a reduced screw-threaded spindle at one end, one of said

sections having its other end pointed, the other section having an internally-threaded sleeve at the end opposite its spindle and arranged to engage the screw-threaded spindle of the pointed section, in combination with a threaded button arranged to engage the spindle of either section.

708,705. SUMMER-HOUSE. Geneve R. Learwood, St. Louis, Mo. Filed Nov. 8, 1901. Serial No. 81,543. (No model.)

Claim.—The combination with an unwalled summer-house having a platform and roof, of inner and outer circular tracks, on said platform, and a pair of guards adapted to travel horizontally and separately on said tracks to partially close the structure, substantially as described.

708,706. CRUDE-OIL BURNER. JOHN A. HEYER, San Francisco, Cal. Filed Nov. 28, 1901. Serial No. 83,468. (No model.)

Claim.—An oil-burner comprising the following parts, to wit: a barrel terminating in a discharge-tip, a pipe having numerous perforations and of appreciably smaller size than said barrel and located therein, perforated collars located at intervals on the perforated pipe and extending between the pipe and the barrel, means for supplying oil to the interior of the barrel and around the perforated pipe, and means for supplying steam to the interior of said perforated pipe.

708,707. POTATO-DIGGER. JOHN MORAN, Bradley, Ill. Filed July 5, 1901. Serial No. 67,192. (No model.)

Claim.—1. In a potato-harvester, a front truck having an axle and supporting-wheels thereon, a frame 3 on the axle and extending rearwardly therefrom, an upper rearwardly-extending frame 8, having the front portions of its side bars downturned and secured to the frame 3, braces connecting said frames together, and an elevator carried by said frames, in combination with a rear truck coupled to the frame 3, substantially as described.

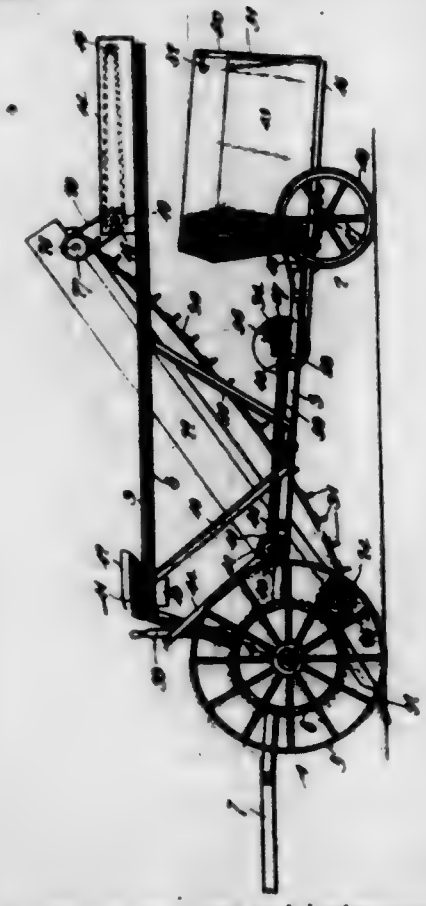

2. In a potato-harvester, a front truck having rearwardly-extending frames 3, 8, the latter above the former, said frame 8 carrying the upper portion of an elevator and also carrying a separater, the latter being disposed in rear of the elevator, in combination with a rear truck to which the frame 3 is coupled, said rear truck carrying a receptacle for the potatoes, substantially as described.

3. In a potato-harvester a front truck having rearwardly-extending frames 3, 8, the latter above and extending in rear of the former, said frames carrying an elevator, in combination with a rear truck having an axle, supporting-wheels thereon, a frame extending in front of the axle, under the rear end of the frame, 3, and being overlapped thereby, and coupled thereto and a counterbalancing potato-receptacle carried by said rear truck and extending rearwardly from the axle thereof, substantially as described.

708,708. BEARING FOR PIANO-STRINGS. HERMAN MCCLELLAN, Cincinnati, Ohio. Filed Nov. 6, 1900. Serial No. 735,588. (No model.)

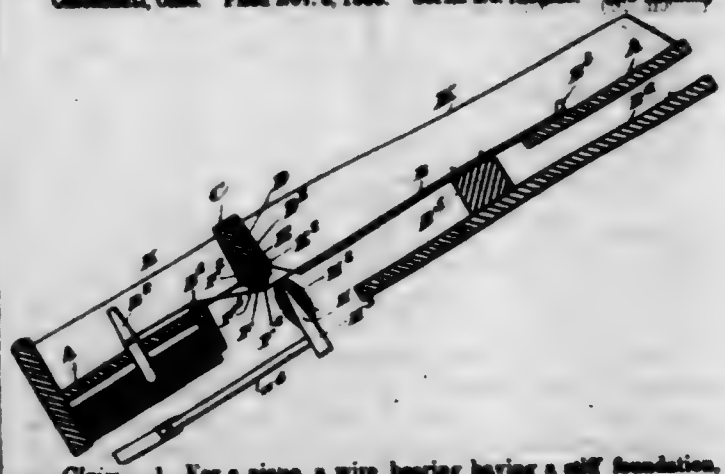

Claim.—1. For a piano, a wire bearing having a stiff foundation, provided with recess D^3, a bearing of material that does not yield or becomes grooved by the wires, and in so far as it vibrates, gives out a pure, soft tone, differentiated from the metallic ring of iron or steel, said wire bearing has a ridge F^1, and a rib or extension F^2, shoulders F^3, piece E adapted to resist the transmission of sound, and having recess E^2 into which the rib F^2 is received, and the said piece E being received into the recess D^3 of the foundation, substantially as and for the purposes specified.

2. For a piano, a wire bearing having an iron foundation provided with a recess D^3, a wooden bar E received therein and having a recess E^2, and an aluminium bearing, having a narrow bottom ridge F^1, and a rib F^2 received into the recess E^2, substantially as and for the purposes specified.

708,709. ADJUSTABLE HANGER. CLARENCE L. CLEMETSEN, New Haven, Conn. Filed Apr. 10, 1902. Serial No. 102,261. (Model.)

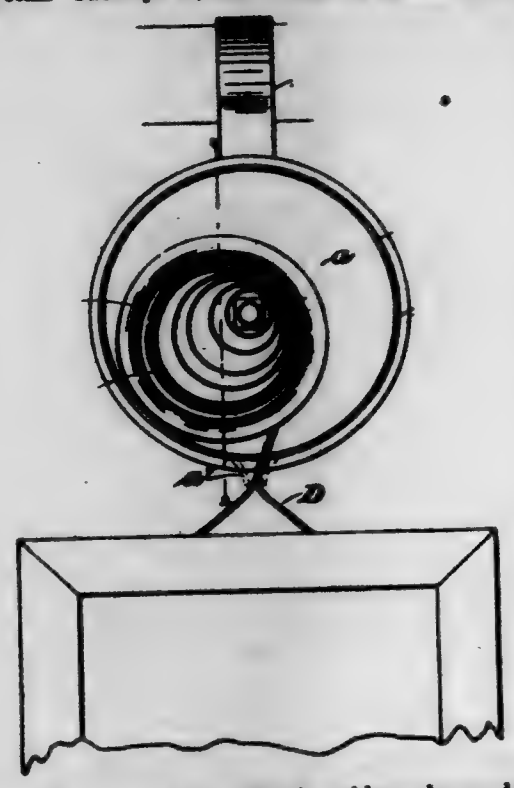

Claim.—1. In a casing the combination with a rod secured therein; of a flat coiled spring, one end of which is adapted to be rigidly attached to said rod; a loose drum, the periphery of which is adapted to bear on the inner side of said casing and be rigidly secured to the other end of said flat coiled spring; and a cord adapted to be wound on said drum, substantially as described.

2. In a casing having a removable cap, the combination with a rod, one end of which is rigidly secured to the back of said casing, and the other end passes through a perforation in the front of said casing; a nut screwed on said rod to hold the cap of said casing in position; a flat coiled spring, one end of which is rigidly attached to said rod; a loose channeled drum, the periphery of which is adapted to bear on the inner side of said casing and be rigidly secured to the other end of said flat coiled spring; a cord adapted to be wound on the channeled part of said drum; said casing having a perforation through which said cord passes, and a hanger secured to the outer side of said casing, substantially as described.

708,710. BOILER-FURNACE. HENRY R. SCOTT, Kansas City, Mo. Filed Apr. 16, 1901. Serial No. 56,142. (No model.)

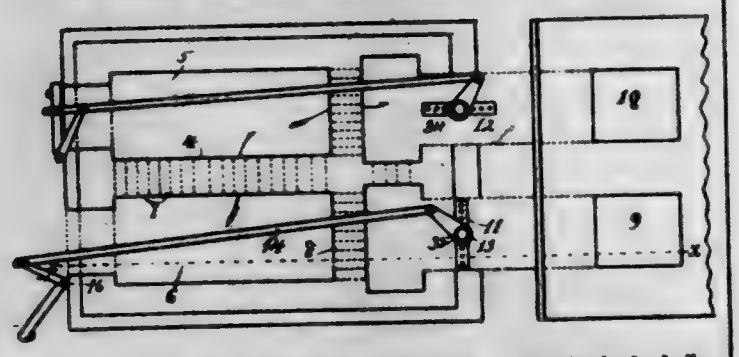

Claim.—1. The combination substantially as described of a boiler-furnace, an auxiliary furnace independent of said boiler-furnace and comprising a plurality of communicating compartments, independent combustion-passages between each of said compartments and the boiler-furnace, and draft-regulators arranged to control the draft through said passages.

2. The combination substantially as described of a boiler-furnace, an auxiliary furnace independent of said boiler-furnace and comprising a plurality of communicating compartments, independent combustion-passages between each of said compartments and the boiler-furnace, draft-regulators controlling the draft through said passages with the boiler-furnace, and means operated by the latch of the feed-doors for operating said draft-regulators.

3. In a furnace having draft-regulators, the combination with said regulators, of a fluid-pressure cylinder, a piston operating in said cylinder and having its piston-rod connected to the stem of said regulator, valves controlling the supply to and exhaust from said cylinder, cocks controlling the exhaust from said cylinder, a connecting-rod engaging and arranged to be operated by the latch of the feed-door and links directly connecting said rod with the valve-stems, whereby the valves are operated by lifting the latch of the feed-doors.

4. In a furnace having a draft-passage, a draft-regulator consisting of a casing forming a liquid-chamber, a tubular stem connected with said casing and communicating with said chamber, means for maintaining liquid circulation through said chamber, and means connected with said stem and arranged to be operated by the latch of the feed-doors for operating said draft-regulator.

708,711. GARBAGE OR REFUSE CAN. ELIZABETH C. BRAHAM, New York, N. Y., assignor to the Iron Clad Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Jan. 22, 1901. Serial No. 44,233. (No model.)

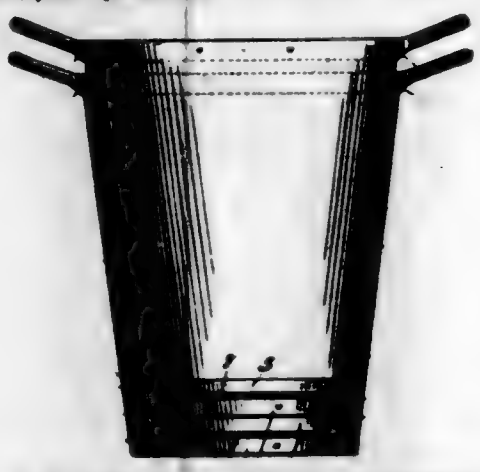

Claim.—1. A nesting garbage or refuse can comprising a tapered body portion, a separate bottom portion reinforcing said body portion, and means secured within the body of the can at the bottom thereof, deriving part of its support from the bottom thereof and forming a supporting means in the inside of said can for permitting a series of cans of equal size to be loosely nested.

2. A nesting garbage or refuse can having a tapering body portion, a bottom reinforcing the body portion and a ring secured between the body portion and the bottom and serving as a step upon which another can of the same size and shape may rest whereby a series of such cans may be loosely nested.

708,712. WIRELESS TELEGRAPHY. HARRY SHOEMAKER, Philadelphia, Pa., assignor to Marie V. Gehring, Philadelphia, Pa. Filed Feb. 12, 1901. Serial No. 46,900. (No model.)

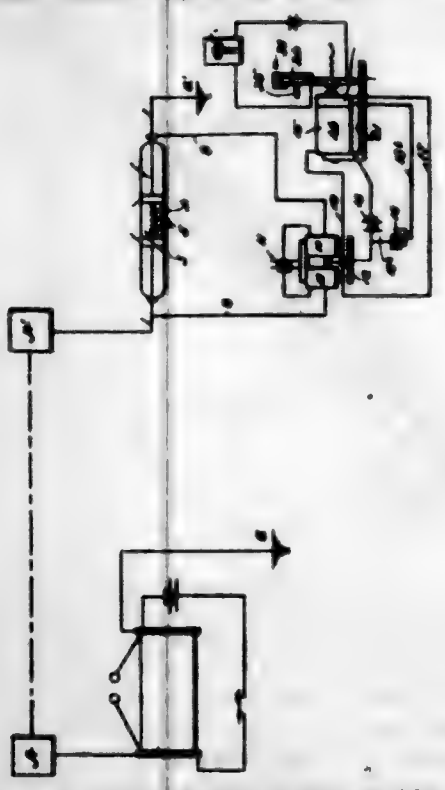

Claim.—1. A wireless-telegraph system comprising a transmitting apparatus and receiving apparatus; said receiving apparatus consisting of air and ground plates, a wave-responsive device connected therewith, a choking-relay in circuit with said wave-responsive device, another relay having two windings and circuit-controlled by said choking-relay, a condenser-circuit connected with one of the windings of said relay, a permanent magnet connected with the cores of said relay, an independent circuit operated by said relay and a sounder in said circuit.

2. A wireless-telegraph system comprising a transmitting-station and a receiving-station; said receiving-station consisting of a wave-responsive device and a choking-relay in circuit together; batteries, and a relay in circuit together adapted to be operated by the choking-relay, said last-mentioned relay consisting of two cores and their windings and a permanent magnet connected with said cores; a condenser-circuit connected with one of the windings of the relay; and a sounder-circuit operated by said last-mentioned relay.

3. In a receiver for electrical oscillations, the combination of a wave-responsive device, a choking-relay in circuit with said device, a relay having two cores and two separate windings controlled by said choking-relay, a holdover-circuit connected to one of the windings of the relay having a condenser therein to be charged so as to energize one of the relay's cores, and a recording instrument controlled by the energization of the relay's cores.

708,718. SAFETY RELEASING DEVICE FOR THE SHEETS OF BOATS, TOW-LINES, &c. CHARLES SMITH, South Croydon, and GEORGE J. HOUR, Romford, England. Filed Mar. 24, 1902. Serial No. 99,582. (No model.)

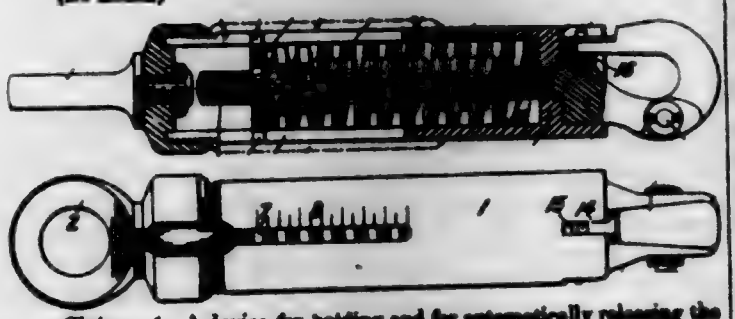

Claim.—1. A device for holding and for automatically releasing the sheets of boat-sails, tow-lines, and other connections, upon the application of a predetermined amount of force; consisting in the combination with a cylinder, having a diaphragm near one open end, and a loop near the other end by which it is fixed to any required part; of a plunger entering the cylinder, and passing through the diaphragm, a piston on the inner end of the plunger, springs acting between the diaphragm and the piston, a head to the plunger exterior of the diaphragm, a boat arm for receiving the connection to be automatically released, a pivot connecting one end of the arm to the plunger-head, the free end of the arm normally entering within the open end of the cylinder, and being there retained, until upon its withdrawal from the cylinder by the application of the predetermined force, it is permitted to open by turning about its pivot, substantially as described.

2. A device for holding, and for automatically releasing the sheets of boat-sails, tow-lines, and other connections, upon the application of a predetermined amount of force; consisting in the combination with a cylinder, means for connecting one end of the cylinder to a part by which it is to be held, and an interior diaphragm near the opposite end of the cylinder, the open end of the cylinder projecting beyond the said diaphragm; of a plunger passing through and guided by the diaphragm, a piston on the inner end of the plunger, helical springs located around the plunger between the piston and the diaphragm, means for adjusting the piston longitudinally upon the plunger for tensionally adjusting the springs, a boat attachment-arm pivoted to the outer end of the plunger for receiving the connection to be released, the free end of the said attachment-arm being normally located within the open end of the cylinder to prevent it releasing the connection by turning about its pivot upon the plunger end, until sufficient force is applied to pull out the plunger against the action of the aforesaid springs, and thereby withdraw the said free end of the attachment part from within the cylinder end, substantially as set forth.

3. In devices for holding, and for automatically releasing the sheets of boat-sails, tow-lines, and other connections, upon the application of a predetermined amount of force; the combination with a cylinder, means for connecting one end of the cylinder to a part by which it is to be held, an interior diaphragm near the opposite end of the cylinder, an open-ended portion of the cylinder projecting beyond the diaphragm, a longitudinal release-slot in the open end of the cylinder, and longitudinal guiding-slots near the opposite end of the cylinder, of a plunger entering the cylinder, and passing through the diaphragm and capable of longitudinal and rotary motion relatively to the cylinder, a screw-thread on the inner end of the plunger, a piston carried by the plunger, and engaging its screw-thread, means for preventing revolution of the piston, while permitting of its longitudinal motion within the cylinder, a helical spring located between the piston and the diaphragm of the cylinder, and tensionally adjustable by rotating the plunger, a head on the plunger exterior of the diaphragm, a pivot carried by the plunger-head, a boat attachment-arm hinging about the pivot, the free end of the said arm normally entering within the open end of the cylinder to prevent motion of the arm about its pivot, the free end of the said arm being capable of release, by revolving the plunger until the free end of the arm coincides with the release-slot of the cylinder, or automatically by the application of sufficient force to draw out the plunger and with it the end of the said boat arm clear of the end of the cylinder, substantially as set forth.

4. In devices for holding, and for automatically releasing the sheets of boat-sails, tow-lines, and other connections, upon the application of a predetermined amount of force; the combination of a cylinder, a loop on one end thereof for connection to a part by which the cylinder is to be held, a diaphragm within the opposite end of the cylinder, and an open-ended portion thereof projecting beyond the diaphragm, a plunger entering the cylinder, passing through the diaphragm, and adapted to be slid and revolved relatively to the cylinder, a piston adjustably connected to the plunger within the cylinder, a helical spring surrounding the plunger, and located between the piston and the diaphragm, a second helical spring of larger diameter than the first, surrounding the first spring, a head on the plunger exterior of the diaphragm, a pivot carried by the head, a boat attachment-arm movable about the pivot, the free end of the said arm normally entering within the projecting open end of the cylinder to prevent the motion of the arm about its pivot, until by the application of the predetermined force, the plunger is drawn out sufficiently to free the arm and release any connection held thereby, a stud on the free end of the arm, and a longitudinal slot in the end of the cylinder with which the stud engages to prevent accidental rotation of the plunger and arm relatively to the cylinder, and a spring on the plunger-head to hold the arm-stud in engagement with the slot, a release-slot in the wall of the cylinder at the open end thereof calculated to allow the exit thereby of the free end of the arm when the latter is released from its stud-carrying slot and is revolved to coincide with the release-slot, substantially as described.

5. In devices for holding, and for automatically releasing the sheets of boat-sails, tow-lines, and other connections, upon the application of a predetermined amount of force; the combination with a cylinder, a loop on the end thereof for attaching it to the part by which it is to be held, an interior diaphragm near the opposite end of the cylinder, the open end of the latter projecting beyond the diaphragm, a plunger passing into the cylinder through the diaphragm, a piston adjustably fixed to the plunger within the cylinder, helical springs located between the piston and the diaphragm, a head to the plunger, a pivot carried by the head, a hook-shaped arm carried by the pivot, the free end of the arm entering within the open end of the cylinder to normally prevent the arm turning about its pivot until sufficient force has been applied to the hook-shaped arm to draw its end, against the action of the springs, from out of the cylinder; of longitudinal slots in the cylinder, studs on the periphery of the piston entering the said slots, means for adjusting the piston longitudinally upon the plunger for tensioning the springs, and a graduated index upon the exterior of the cylinder, adjacent to one of the said slots for determining the degree of initial tension of the springs by the relative normal position of the piston-studs to the said index, substantially as described.

708,714. PAPER-MAKING MACHINE. CHARLES H. WARREN, Beloit, Wis. Filed June 22, 1901. Serial No. 66,570. (No model.)

Claim.—1. In a machine of the class described, the combination with the table-rolls, of a pair of rails supporting them, means pivotally supporting said rails at one end, a breast-roll frame supporting said rails at the other end, said rails being without any intermediate support, save-alls arranged beneath the table-rolls, rails parallel with the rails aforesaid, supporting said save-alls, and posts supporting the rails last aforesaid, substantially as described.

2. In a machine of the class described, the combination of a shake-frame comprising a pair of rails and the vertically-adjustable breast-roll frame, said rails being supported at one end by said breast-roll frame, means pivotally supporting said rails at the other end, said rails being without any intermediate support, means for vertically adjusting the breast-roll frame, and table-rolls located above said rails and suitably supported thereby, substantially as described.

3. In a machine of the class described, the combination with the shake-frame, including the breast-roll frame, of a beam crossing the machine from side to side and arranged beneath the breast-roll frame, means interposed between said beam and breast-roll frame for supporting the latter and permitting the shake-frame to move from side to side, a pair of vertical screws, worm-wheels on said screws supporting the beam, worms meshing with said worm-wheels, and a shaft extending from side to side of the machine and carrying said worms, substantially as described.

4. In a machine of the class described, the combination with the shake-frame, of the beam J crossing the machine from side to side, means interposed between said beam and the shake-frame for supporting the latter and permitting it to move sidewise, a pair of vertical screws, worm-wheels on said screws, worms meshing with said worm-wheels, and a shaft carrying said worms, the beam having at its ends boxes in which the worm-wheels and worms are contained, substantially as described.

703,714.

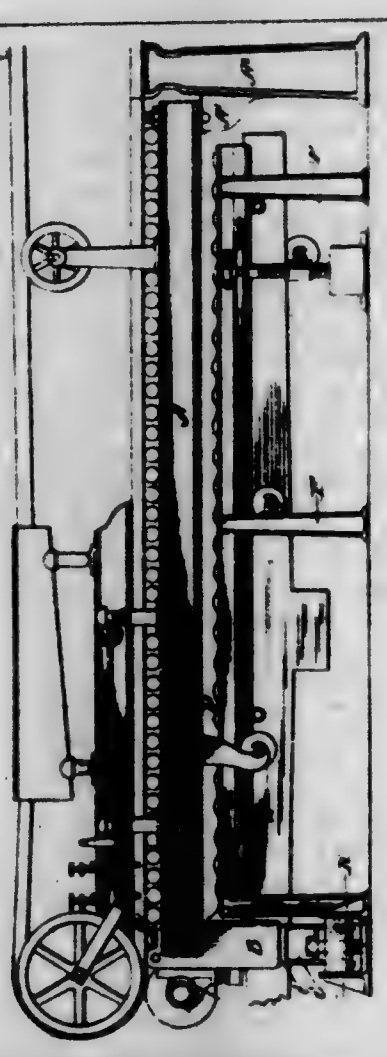

708,715. SAFETY DEVICE FOR PIN-TONGUES. OTTO WESTPHAL, Jersey City, N. J., assignor of one-half to Emil Kohler, Newark, N. J. Filed Jan. 25, 1902. Serial No. 91,271. (No model.)

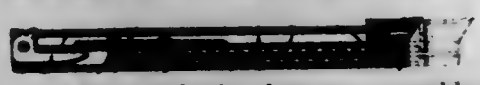

Claim.—1. A safety device for pin-tongues, comprising a tubular body having a perforated end, a bifurcated rest provided at said end, a rod housed in said tubular body and projecting from the perforated end thereof, a longitudinally-movable socket mounted on the projecting end of said rod, a spring engaging said rod, and a pin-tongue pivoted to said tubular body, substantially as set forth.

2. A safety device for pin-tongues, comprising a tubular body having a longitudinal slot at one end thereof, a pin-tongue pivoted to said end, a spring-actuated socket at the opposite end of said tubular body, a rod in said tubular body carrying said spring-actuated socket, a finger connected with said pin-tongue adjacent its pivotal point, and means at the inner end of said rod for engaging said finger, substantially as set forth.

3. A safety device for pin-tongues, comprising a tubular body having a longitudinal slot at one end thereof, a mounting pivoted to said slotted end, a pin-tongue secured in said mounting, a finger provided on said mounting and extending parallel to said pin-tongue, a rod housed in said tubular body, a spring-actuated socket mounted on the outer end of said rod, a stud secured to the inner end of said rod, and a plate mounted on said stud, substantially as set forth.

708,716. WATER-METER. HARRY F. BROWN, Chicago, Ill. Filed Nov. 11, 1901. Serial No. 81,572. (No model.)

Claim.—1. In a water-meter, the combination with a fitting having inlet and outlet ports said adapted to be permanently connected in the waterway, of a valve for controlling the inlet-port, a removable piston-casing, means for detachably connecting said piston-casing and fitting, and means interposed between the piston-casing and valve whereby when said piston-casing is being put in place its movement is transmitted to the valve and the valve thereby unseated, the piston-casing being provided with inlet and outlet ports, communicating with the inlet and outlet ports, respectively, of the fitting, substantially as described.

2. In a water-meter, the combination with a fitting adapted to be permanently connected in the waterway, said fitting having a seat for a piston-casing and having inlet and outlet ports one end of each of which terminates at said seat, of a removable piston-casing adapted to occupy said seat and having inlet and outlet ports communicating with the inlet and outlet ports, respectively, of the fitting, a valve for controlling the inlet-port of the fitting, and means interposed between said valve and the piston-casing whereby when the piston-casing is being put in place its movement is transmitted to the valve and the valve thereby unseated, substantially as described.

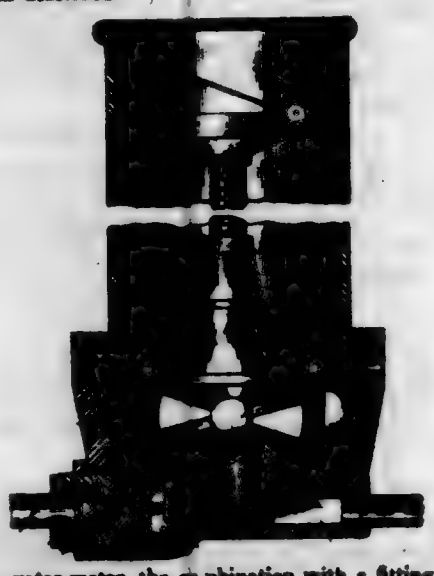

3. In a water-meter, the combination with a fitting adapted to be permanently connected in the waterway and having inlet and outlet ports, a removable piston-casing having inlet and outlet ports communicating with the inlet and outlet ports, respectively, of the fitting, a valve located in the waterway, on the street-main side of the meter, and adapted to control the inlet-port of the fitting, and means interposed between the valve and the piston-casing for transmitting movement from the piston-casing to the valve, substantially as described.

4. In a meter the combination with a base adapted to be permanently connected in the waterway and having a socket, of a piston-casing removably seated in said socket, a valve located in the waterway, on the street-main side of the meter, and adapted to seat with the water-pressure, a movable part contacting with the piston-casing, and means for transmitting the movement of said part to the valve, substantially as set forth.

5. In a water-meter, the combination of a base adapted to be permanently connected in the waterway, a piston-casing removably seated upon the base, a valve-casing located in the waterway, said base being provided with a socket in which said valve-casing fits, a valve, in said casing, adapted to seat with the water-pressure, a stem carrying the valve, and a lever, one arm of which engages the valve-stem and the other arm of which is engaged by the piston-casing, substantially as described.

708,717. INCANDESCENT ELECTRIC LAMP AND SOCKET. JESSE C. H. BROWN, Philadelphia, Pa. Filed Feb. 28, 1902. Serial No. 96,088. (No model.)

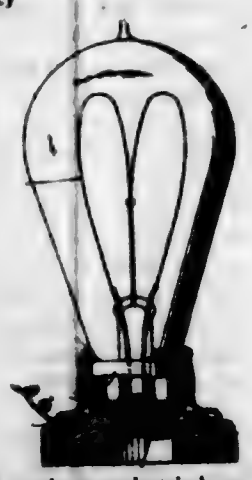

Claim.—1. An incandescent-electric-lamp socket, comprising a flat ring-shaped base of insulating material, a series of independent spring-fingers supported at their base upon and insulated from each other by the upper face of the insulating-base and projecting upward therefrom to form in series a tubular socket to receive the lamp-neck, a terminal for the current connected directly to one of said spring-fingers, a flat spring finger supported upon the face of the insulating-base and projecting inward parallel to said face and over the opening in said base, and a second terminal for the current connected directly with the flat spring-finger.

2. In an incandescent electric lamp and socket, a socket comprising a flat ring-shaped insulating-base, a series of independent spring-fingers supported upon and insulated from each other by said base and projecting upward therefrom to form in series a tubular socket, a terminal for the current connected directly to one of said fingers, a flat spring-finger sup-

portal upon the insulating-base and projecting inward over the opening in said base, a second terminal connected with said flat spring-finger, a solid collar or sleeve supported upon the insulating-base and projecting upward therefrom, said collar or sleeve surrounding the vertical fingers and having an inner insulating-face adjacent to said fingers, in combination with a lamp having a neck and an inclosed incandescent body, a plain metallic sleeve surrounding the neck and connected directly with one end of the incandescent body, said neck and sleeve adapted to enter the vertical fingers of the socket, and a terminal plate formed on the base of the lamp-neck and adapted to enter the opening in the ring-shaped insulating-base of the socket to contact with the flat finger of said socket.

708,718. PLACKET-FASTENER. FREDERICK A. CANNADY, St. Louis, Mo. Filed Apr. 25, 1902. Serial No. 104,720. (No model.)

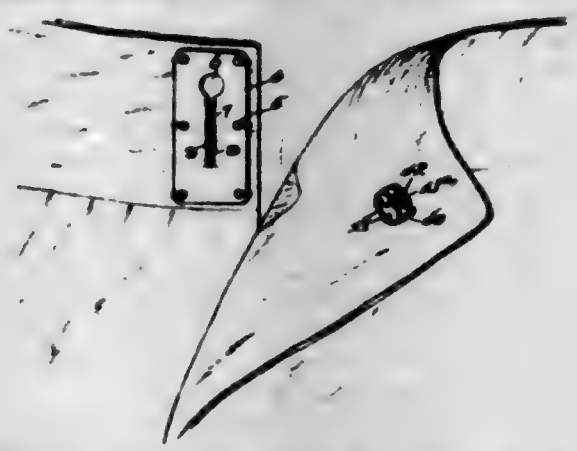

Claim.—A placket-fastener comprising an eye-plate having openings for stitching to the garment, and having an eye-opening to receive the hook, and having a narrow slit extending downwardly from the eye-opening, the metal being bent inwardly on each side of the slit to form spring-lips; in combination with a hook comprising an elongated sheet-metal plate having its ends bent to meet yieldingly at its center and form a spring-neck and then curved outwardly to form a head to pass through the eye-opening, so that the spring-neck may pass downwardly between the spring-lips and make a tight sliding connection; substantially as specified.

708,719. ENGRAVING-MACHINE. WALTER R. CRAFT, El Paso, Tex., assignor to the Pollard-Alling Manufacturing Company, New York, N. Y., a Corporation of New Jersey. Filed Oct. 27, 1900. Serial No. 34,580. (No model.)

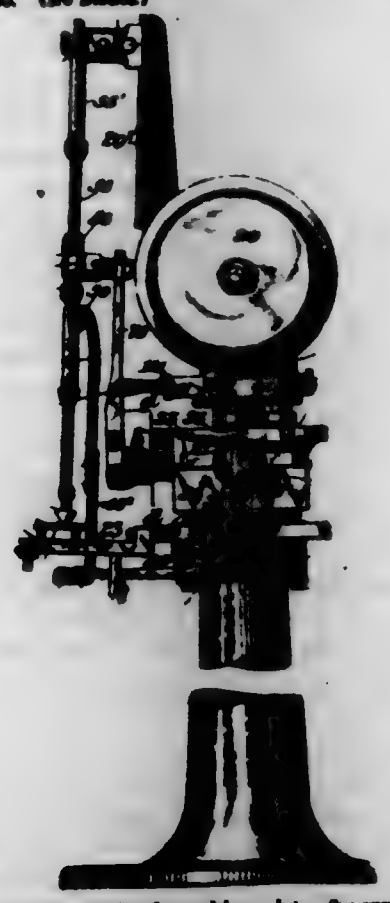

Claim.—1. The combination, with a platen for supporting the work and a tool for forming a design on said work, of a two-part member adapted to follow a pattern, both of said parts swinging about a point in the axis of one of them, and separate connections between both parts of the following member and one of the elements coöperating with the work.

2. The combination, with a platen for supporting the work, and a tool for forming a design on said work, of a two-part member adapted to follow a pattern, one part of said member being held in position to swing about a point in its axis, and separate connections between both parts of the following member and one of the elements coöperating with the work.

3. The combination, with a platen for supporting the work, and a tool for forming a design on said work, of a two-part member adapted to follow a pattern, one of said parts being held in position to swing, and the other of said parts being freely slidable relatively thereto, separate connections between both parts of the following member and one of the elements coöperating with the work.

4. The combination, with a platen for supporting the work, and a tool for forming a design on said work, of a two-part member adapted to follow a pattern, one of said parts sliding within the other, and separate connections between both parts of the following member and one of the elements coöperating with the work.

5. The combination with a platen for supporting the work and a tool for forming a design on said work, of a two-part member adapted to follow a pattern: and independent connections between both parts of the following member and one of the elements coöperating with the work, one of which connections is adjustable and the adjustment of which is effective upon one of the parts only of the following member.

6. The combination, with a platen for supporting the work, and a tool for forming a design on said work, of a two-part member adapted to follow a pattern, and separate connections between both parts of the following member and one of the elements coöperating with the work, one of which connections is adjustable as to length.

7. The combination, with a platen for supporting the work, and a tool for forming a design on said work, of a two-part member swinging about a point in its axis and adapted to follow a pattern, and separate connections between both parts of the following member and the platen.

8. The combination, with a tool and a pattern-follower, of a platen, devices connecting therewith for imparting by the pattern-follower rectilinear universal movements through the platen to the work it carries, and means for yieldingly holding the platen on said devices.

9. The combination, with a tool and a pattern-follower, of a platen, a device for supporting the platen and imparting to it movements in a plane, and a device connecting with the platen for changing said plane.

10. The combination, with a tool and a pattern-follower, of a platen, a shaft for supporting the platen and imparting to it movements in a plane, and a rod connecting with the platen for changing said plane.

11. The combination, with a tool and a pattern-follower, of a platen, a longitudinally-movable shaft actuated by the pattern-follower and geared to the platen for imparting to it movements in a plane.

12. The combination, with a tool and a pattern-follower, of a platen, a longitudinally-movable shaft geared thereto for imparting to it movements in a plane, and a device for changing said plane.

13. The combination, with a platen, of a pattern; a sliding and swinging follower having a socket; a connecter having a ball at one end, fitted into said socket and at its opposite end provided with a corresponding socket; a lever having a ball fitted into the socket of said connecter; and means for universally connecting said lever with the platen.

14. The combination, with a platen, of a pattern; a follower; a lever connecting the follower and platen; and a normally stationary but yielding fulcrum for said lever.

15. The combination, with a platen, of a pattern; a follower mounted for universal movement and having a tip to trace the outline of the pattern; said tip being freely movable in all directions; a connecter attached to said follower by a universal joint or connection; a pivoted lever actuated by the connecter; and means actuated by said lever for controlling the movements of the platen.

16. The combination, with a platen, of a swinging follower mounted for rising and falling movements; a connecter coöperating with said follower; a pivoted lever actuated by said connecter and having a socket at one end; and a rod having a rounded end fitted into said socket, said rod connecting the platen to actuate the same.

17. The combination, with a platen having gear-surfaces, of a follower; gears meeting with said gear-surfaces; a shaft on which the gears are mounted; a lever pivoted to the shaft and connected with the follower and a pattern with which said follower coöperates.

18. The combination, with a platen having gear-surfaces, of gearing for engaging said surfaces and supporting the platen; a pattern; a follower; and means intermediate the follower and the gearing for actuating said gearing to move the platen.

19. The combination, with a platen, of a lever; a yielding fulcrum therefor normally held in one position; a pattern; a follower; and means connecting said follower and lever and adapted to actuate said platen.

20. The combination, with a platen having racks, of a shaft having

gluring in engagement with said racks and serving as a support for the platen; a pattern; a follower; and means intermediate the shaft and follower and connected with each for rocking the shaft.

21. The combination, with a platen, of a pattern; a two-part follower mounted for universal movements and having a tip movable independently of the other portion adapted to trace the outline of said pattern; a connector attached to the tip portion; devices intermediate the connector and platen for raising the platen; and means independent of the raising device and connected with the follower for reciprocating said platen.

22. The combination, with a platen chambered on its under side, of a rod having ball-shaped ends, one of said ends being received in the chamber of the platen; a lever having a socket to receive the other end of said rod; a follower; and intermediate connections between said follower and said lever.

23. The combination, with a platen chambered on its under side, of a rod one end of which enters the chamber of said platen; a pivoted reciprocatory lever having a socket in which the other end of said rod is received; an adjustable connector having a socket to receive the rounded end of said lever; a follower universally connected with said connector; and a pattern with which said follower coöperates.

24. The combination, with framework, of a platen having racks; a device carrying gears for engaging said racks; a pattern; a follower coöperating with said pattern; and means intermediate the follower and device for moving the gear-carrying device longitudinally and thereby causing a movement of the platen.

25. The combination, with a platen having racks on its under surface, of a horizontal shaft journaled in a bearing of the frame, said shaft carrying gear-teeth; a collar connected to one end of said shaft; a pattern; a follower; and a lever intermediate the follower and the collar for rocking the shaft.

26. The combination, with a platen, of a shaft geared thereto; a pattern; a follower; and universal connections between the follower and shaft for rocking the shaft and reciprocating it longitudinally.

27. The combination, with a platen having gear-surfaces, of a shaft geared with the platen; means connecting said shaft and said platen for reciprocatory movement and adapted to constrain said shaft and platen to reciprocate together; a pattern; a follower; and means intermediate the follower and the shaft for rocking the shaft and reciprocating it longitudinally.

28. The combination, with a platen having racks on its under surface, of a shaft mounted in a bearing of the framework and geared with said racks; means for connecting the platen and shaft for united reciprocatory movements; a follower; and universal connections between the follower and shaft for rocking and reciprocating said shaft.

29. The combination, with a platen having gear-surfaces, of a shaft geared with said platen; means connecting the shaft and platen; means for rocking and reciprocating the shaft; a follower coöperating with said last-mentioned means; and a pattern the outline of which is traced by the follower.

30. The combination, with a platen, of means for supporting the work thereon, a tool for operating on the same; a pattern; a follower for tracing the outline of said pattern; an adjustable connector operated by said follower; a lever to which said connector is universally connected; means controlled by said lever for raising the platen; and means controlled by the follower for reciprocating said platen.

31. The combination, with a platen, of a cutting-tool; means for actuating said tool; a follower-rod having a ball-shaped portion near its upper end; a socket on the framework, for receiving said ball-shaped portion; a follower; and universal connections from both rod and follower to said platen.

32. The combination, with a platen having gear-surfaces, of a device mounted for rocking movements in the frame and geared with and furnishing support for said platen; a follower-rod; a follower thereon; and connections between said follower-rod and the device for rocking said device and thereby actuating the platen.

33. The combination with framework, of platen-supporting means on the framework; a platen supported by said means to rock and move laterally; a pattern; a follower; and means intermediate the follower and the platen-supporting means for rocking and laterally moving said platen.

34. The combination, with framework, of a platen loosely fitted thereto; means contacting with said platen at three points for normally retaining it in one position, one of said supporting means being movable to raise the platen to another position; a follower; a pattern; and a device intermediate the follower and the last-named supporting means for actuating said platen.

35. The combination with a platen supported to rock and move laterally, of a cutter-head carrying a tool; a pattern; a follower; and means controlled by the movement of the follower for rocking and laterally moving the platen relatively to the tool, and thereby causing the tool to form a design, conforming to that of the pattern, upon the work carried by the platen.

36. The combination, with framework, of a platen having an opening and fitted thereon; a work-support adjustably connected to said platen; a rod mounted for universal movements on the framework; a follower slidingly connected to said rod; a pattern with which said follower coöperates; and separate intermediate devices connecting both the rod and follower with the platen, whereby said platen is made to conform to the movements of the follower.

37. The combination, with framework having a standard, of a platen having an opening in which said standard is loosely received; a shoe carrying a socket adjustably connected to an extension of said standard; a rod having a ball-shaped portion yieldingly secured in said socket; a follower slidingly mounted on said rod; a pattern with which said follower coöperates; and universal connections between the follower and the platen.

38. The combination, with framework having an upright portion, of a platen loosely fitted on said portion; a socket carried by the upper portion of the framework; a rod carrying a ball-shaped portion fitted into said socket; a spring coöperating with the socket and ball-shaped portion; a follower mounted for sliding movements on said rod; an adjustable connector universally connected with the follower and carrying a socket at one end; a lever having a universal connection with said socket; and means controlled by said lever for actuating the platen.

39. The combination, with framework, of a platen mounted for universal movements thereon; a pattern; a reciprocatory follower carrying a socket; a connector universally mounted in said socket; a lever having a ball-shaped end universally connected with said connector; and universal connections between said lever and said platen.

40. The combination, with framework, of a platen; means for elevating one side of said platen; means for longitudinally and laterally reciprocating the platen which also furnishes support therefor; a pattern; and adjustable connections intermediate the pattern and the reciprocating means for actuating the latter.

41. The combination, with framework having an extension, of an adjustable shoe carrying a socket on said extension; a two-part pattern-follower, a member of which carries a ball for coöperating with said socket; a spring for retaining said ball in the socket; a follower-tip carried by said member; a platen movably mounted upon the framework and connections between the follower and the platen.

42. The combination, with framework having an extension, and a platen mounted on said framework, of a two-part pattern-follower, a member of which is universally connected with said extension; a follower-tip mounted for reciprocation on said member; and separate means connecting both parts of the pattern-follower with the platen.

43. The combination, with framework, of a platen having racks on its under surface; a rod; a swivel in which said rod is mounted; a shaft having gear-segments for engaging with said racks; and means connecting said swivel and said shaft.

44. The combination, with a platen having racks, of a shaft geared with said racks and connected with the platen to reciprocate the same; a rod; a swivel in which said rod is mounted; a follower-tip in connection with said rod; and a connector between the swivel and the shaft.

45. The combination, with a platen having gear-surfaces, of a hollow shaft having gear-surfaces coöperating with said surfaces on the platen; a connection between said shaft and platen; a follower; a pattern; and means intermediate said follower and shaft for actuating said platen.

46. The combination, with a platen, of a lever carrying a swivel; a two-part pattern-follower, a member of which is carried by said swivel; a follower-tip movable upon said member; and separate connections between both parts of the follower and platen.

47. The combination, with a platen, of a lever carrying an adjustable swivel; a connection between the lever and platen; a follower-rod mounted in an eye of the swivel; and a follower-tip movable upon said rod; and an adjustable connection between the follower and platen.

48. The combination, with a platen, of a slotted lever; means intermediate the lever and platen; a swivel adjustably mounted in the slot of said lever; a follower-rod carried by said swivel; a follower-tip movable upon the rod; and a pattern coöperating with the follower.

49. The combination, with a platen, of a device geared thereto; a lever carried by said device; a swivel attached to the lever; and a rod carried by the swivel.

50. The combination, with a platen having a gear-surface, of a shaft having a gear-surface, said shaft being grooved near one end; a device carried by the platen and fitting into the groove of the shaft; and means for rocking and for reciprocating the shaft and thereby actuating the platen.

51. The combination, with a platen having gear-teeth, of a hollow shaft connected with the platen and also having gear-teeth; a collar connected to one end of the shaft; a lever pivoted to said collar; and means supported within the shaft to furnish a fulcrum for said lever.

52. The combination, with a platen, of a shaft for controlling the operation of said platen; a lever attached to one side of the shaft for rotating and longitudinally reciprocating it.

53. The combination, with a platen, of a hollow shaft for controlling the operation of said platen, and means for actuating said shaft connected to a yielding member extending within the shaft.

54. The combination, with a platen, of a hollow shaft geared with the platen and connected therewith, and means for actuating the shaft to impart reciprocatory movements to the platen connected by a universal joint to a member extending within the shaft.

55. The combination, with a platen, of a hollow shaft geared therewith and connected thereto; yielding devices located within the shaft; and means for actuating the platen connected to said devices.

56. The combination, with a platen, of a hollow shaft connected thereto; a stud carried by the frame and projecting into said shaft; a rod passing through said stud; a sleeve surrounding said rod; a spring bearing against one end of said rod; and means connected to the rod to reciprocate the shaft and its connected platen.

57. The combination, with a platen, of a hollow shaft connected therewith; a stud on the frame, projecting into said shaft; a rod passing through said stud; a coiled spring bearing at one end against a stop on said rod and at its other end against said stud; a sleeve surrounding the rod and received at one extremity in a socket of the stud; and means connected to said rod for actuating the platen.

58. The combination, with a platen, of a hollow shaft geared therein and connected therewith; a stud on the frame, projecting into said shaft; a rod located in said shaft; a coiled spring bearing against one end of the rod and said stud; a sleeve surrounding the rod and having a rounded end adapted to be received in a socket of the stud; a collar secured to the end of the shaft; a lever pivoted to said collar; and a device connecting said lever and said rod.

59. The combination, with a platen, of a hollow shaft mounted in a bearing of the framework and adapted for rocking and reciprocatory movements in said bearing; a gib projecting from the platen and entering a groove in the shaft; a stud projecting from the frame into said shaft, said stud having a socket; a rod passing through said stud and spring-actuated in one direction; a sleeve surrounding the rod and having a rounded end to fit the socket of said stud; a collar mounted at one end of the shaft; a lever pivoted to said collar; and a device carried by said lever and universally connected with said rod.

60. The combination, with framework, of a platen loosely mounted thereon; a shaft mounted in a bearing of the framework; a gib projecting from the platen and entering a groove in the shaft gearing between said shaft and platen; a stud projecting from the frame and entering the shaft; a rod passing through said stud; a coiled spring surrounding said rod and bearing at one end against the stud and at its opposite end against a nut on the rod; a sleeve also surrounding said rod and fitted at one end into a socket of said stud; a collar attached to the end of the shaft; a lever pivoted to said collar; and an adjustable device carried by said lever and having a socket to receive a ball on the end of said rod.

61. The combination, with a platen, of a head mounted for swinging movement on the framework; tools carried by said head; a device for latching said head when a tool is in position for operation upon the work; means for releasing the latching device; and means for swinging said head, when the latch is released to bring another tool toward a position for operation.

62. The combination, with a platen, of a head pivoted to the framework; a geared spindle carrying a roughing-cut tool, journaled in said head; a geared spindle carrying a finishing-tool, journaled in said head; means for latching the head in either of its extreme positions; means for releasing the latching devices; and a spring for swinging said head when a latch is released.

63. The combination, with framework, of a pivoted head; chuck-spindles mounted in said head; a friction-gear carried by each of said spindles; a friction-driver carried by a shaft, journaled in bearings of the framework; catches carried by the head; latches coöperating with said catches; and a spring for swinging the head when one of said latches is released.

64. The combination, with framework, of a tool-carrying head mounted for swinging movement thereon and carrying a pair of catches; a pair of latches for engaging said catches; a lever for releasing said latches; and means for swinging the head when one of the latches is released.

65. The combination, with framework, of a head movably mounted thereon; chuck-spindles journaled in said head and carrying friction-gears; a friction-driver journaled on a shaft, mounted in bearings of the head; means for latching the head to hold one of the gears on a spindle thereof into engagement with said friction-driver; means for releasing the head; and means for swinging said head to throw said friction-gear out of engagement with said driver.

66. The combination, with framework, of a tool-carrying head mounted for swinging movement thereon; a catch projecting from each side of said head; latches pivoted to the framework on each side thereof and adapted to coöperate with the catches of the head; a pivoted lever for actuating said latches; and means for swinging the head when one of the latches is released.

67. The combination, with framework, of a head mounted for swinging movement thereon and carrying at each side a catch; tool-spindles mounted for rotation in said head; latches for engaging the catches of the head and securing said head in either one or another position; means for releasing said latches as desired; and means for swinging the head after the latch engaging the same has been released.

68. The combination, with framework, of a tool-carrying head pivoted thereto; a catch secured to each side of said head; pivoted latches mounted on the framework and coöperating with said catches; and a lever for releasing said latches.

69. The combination, with framework, of a head mounted for swinging movement thereon and carrying catches; tool-carrying spindles journaled in said head and movable therewith; means for driving said spindles; means for latching and releasing the head; and means for swinging the head when a latch is released.

70. The combination, with framework, of a head pivoted thereto; chuck-spindles mounted in bearings of the head; a gear carried by each of said chuck-spindles; a driving-gear; a shaft mounted in bearings of the framework and carrying said driving-gear; means for actuating said shaft; latches for holding the head in either of its extreme positions; means for releasing said latches; and means for swinging the head when one of the latches is released.

71. A platen having an offset portion with a chambered extension, combined with a table for supporting the work; and means entering the chambered extension and adapted to raise the platen and having a universal connection therewith to permit lateral movement.

72. The combination, with a platen mounted for universal movements on the frame, of a device passing through the frame and geared with said platen; a lever for rocking and reciprocating said device; a swivel secured to said lever; a sleeve having ball-bearings carried by the swivel; a pattern; a follower; and intermediate devices connecting the swivel and follower.

73. The combination, with a work-support, of a pattern-follower including a rod for actuating the work-support, said pattern-follower rod being carried by a swivel having ball-bearings, and connections between the swivel and work-support.

74. The combination, with a work-support, of a pattern-follower including a rod for actuating the work-support, said pattern-follower rod being carried by an adjustably-mounted swivel, a sleeve having ball-bearings pivoted to said swivel; and connections between the sleeve and work-support.

75. The combination, with a platen, of a rotary tool-spindle; a rocking and longitudinally-movable device in engagement with the platen; and connections for actuating said device; a swivel carried by the lever; a sleeve having ball-bearings pivoted to the swivel; a bolt passing through said sleeve and secured to the lever; a follower comprising a rod and a follower-tip, said rod being fitted to the swivel; said follower-tip adapted to be freely movable on said rod; and a pattern coöperating with the follower.

76. The combination, with a platen having a central opening and equipped with gear-surfaces on its under side, of a hollow shaft having gear-surfaces intermeshing with those of the platen; means for locking said shaft and the platen together for longitudinal movement; a collar secured to the shaft; a lever pivoted to said collar and carrying at one end a bolt; a sleeve having ball-bearings fitted between flanges on said bolt; a swivel having conical surfaces in contact with other ball-bearings on said sleeve; a follower comprising a rod and a follower-tip, said rod being secured to the swivel; a chuck-sleeve mounted for sliding movement on said rod and carrying the follower-tip; a pattern with which said follower coöperates; a connector having a ball-and-socket connection with said chuck-sleeve; a lever having a ball-and-socket connection with said connector; and means actuated by the lever for raising the platen.

77. The combination, with a bed-plate having ways, of interchangeable patterns carried by slides adapted to be received in said ways; a platen mounted for universal movements on the frame and having a chambered extension; a work-support carried by the platen; a follower having a socket; a connector carrying a ball adapted to be received in said socket; a lever pivoted to the under side of the frame and having universal connection at one end with said connector; and a rod having ball-shaped ends one of which is received in a socket in said lever and the other in the chambered extension of the platen.

78. The combination, with a platen mounted for universal movements, of a pattern, and a follower comprising a rod and a follower-tip sleeved upon said rod; a sleeve at the upper part of said rod and having a ball-shaped end; a socket adjustably connected with the frame and with which the ball-shaped end of said sleeve engages; and a bowed leaf-spring for holding the ball on said sleeve in place in said socket.

79. The combination, with a frame having an upright extension provided with ways, of a shoe adjustably mounted on said ways and having a socket; a follower comprising a follower-tip and a rod carrying a sleeve having a ball-shaped end fitted into said socket; a spring operating against the ball-shaped end of said sleeve; said follower-tip slidingly mounted on the rod; a platen; means for connecting the follower with said platen; and a pattern with which the follower coöperates.

80. The combination, with a platen, of a follower comprising a rod having a universal connection at its upper end with a shoe on the frame and a follower-tip slidingly mounted on said rod; checks secured to the rod at an intermediate point in its length; a swivel having an eye through which the sleeve connecting said checks passes; means for connecting said swivel with the platen; and means for connecting the follower-tip with said platen.

81. The combination, with framework, of a platen having a series of racks on its under side; a gib secured to said platen; a hollow shaft mounted in a bearing of the framework and having a groove in which said gib is received; a collar secured to the end of said shaft; a lever pivoted to said collar; an adjustable plate having a ball-socket attached to said lever; a rod having a ball on its end adapted to fit the socket in said plate; a spring on said rod; a stud fitted on the frame and projecting within the shaft; a sleeve surrounding the rod and having one end rounded to fit a socket in the stud; a swivel having a bolt fitted in a longitudinal slot of the lever, attached to said sleeve; a sleeve mounted on said bolt and having ball-bearings; a follower-rod secured in an eye of the swivel; a check-sleeve carrying a follower-tip mounted for sliding movements on said rod; a socket at one end of said check-sleeve; a connector having a ball adapted to be received in said socket; a lever pivoted to the framework and having a long arm with a ball-shaped end received into a socket at one end of said connector; a universal connection between the short end of said lever and the platen; and a pattern coöperating with the follower.

82. The combination, with a platen mounted for rising-and-falling movements, of rods secured to said platen and projecting through openings in the frame; springs surrounding said rods and pressing at one end against the frame and at the other end against nuts on said rods; a pivoted lever mounted for reciprocatory movement on the frame and having a socket at one end; means for actuating said lever; and a rod having ball-shaped ends connecting said lever with the platen.

83. The combination, with a platen, of means for actuating said platen; a follower for operating said actuating means; a pattern; a swinging head mounted in the framework and carrying a pair of separated chuck-spindles; roughing-out and finishing tools respectively mounted in said chuck-spindles; gearing on the chuck-spindles; and a driving-wheel journaled on a shaft mounted in bearings of the frame; so located that the gearing on either chuck-spindle may be brought opposite and in contact with its side face by swinging the head.

84. The combination, with a platen carrying a work-support, of a pivoted head; chuck-spindles carrying, respectively, roughing-out and finishing tools journaled in said head; means for latching the head in either of its extreme positions; friction gear-wheels carried by the chuck-spindles; a large friction-gear in engagement with the gear-wheels on said chuck-spindles; and a pair of springs coöperating with the head.

85. The combination, with a platen, of a pivoted lever; connections between said platen and said lever for raising said platen; stops for limiting the movement of said lever; a connector, formed of adjustable sections, in engagement with one end of said lever; a follower universally jointed to said connector; and a pattern coöperating with said follower.

86. The combination, with a vertical frame having an extension, of a platen fitted over said frame; racks mounted on the under surface of the platen; a geared shaft in engagement with said racks; a connection between the platen and shaft, whereby when the shaft is moved endwise the platen will be carried with it; a device for moving the shaft longitudinally and for rocking it; a pattern; a follower; and means connecting said follower with the shaft-operating devices.

87. The combination with a follower-tip adapted to be moved in an axial direction and transversely to its axis, of a platen adapted to be reciprocated and to be rocked; means actuated on the transverse movement of the follower-tip to reciprocate said platen; and means actuated on the axial movement of the follower-tip to rock said platen.

708,720. ARTIFICIAL DENTURE. JAMES E. DOHR, Chicago, Ill. Filed Mar. 18, 1902. Serial No. 98,536. (No model.)

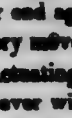

Claim.—1. In a denture, in combination, an elastic plate conforming to the contour of the gum with which it is to be used, and having fixed thereto the teeth to be supplied, and an extension or projection on one of the natural teeth at each side of the jaw for engaging the plate when sprung into place.

2. In a denture, in combination, an elastic plate conforming to the contour of the gum with which it is to be used, and having fixed thereto the teeth to be supplied, a crown secured to a natural tooth at each side of the jaw and having an inward extension, and a shoulder at each side of the plate and adapted to fit against each extension when the plate is sprung into place.

708,721. PENCIL-TIP. LOTHAR W. FABER, New York, N. Y. Filed Dec. 13, 1901. Serial No. 85,795. (No model.)

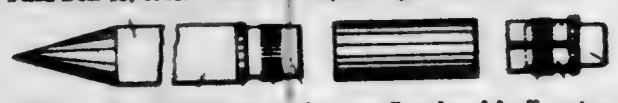

Claim.—The combination with a pencil, reduced in diameter at one end, of a tubular metal part fitting and secured upon the reduced end thereof and having a circumferential rib and a partially raised or roughened surface, a split thimble having a circumferential rib and a partially raised or roughened surface, a rubber eraser frictionally held by the said thimble, and a sleeve the ends of which are adapted to receive the said thimble and the said tubular metal part and pencil, substantially as specified.

708,722. PILLOW-BRUSHER. FREDERICK FRANKE, Louisville, Ky., assignor to S. D. Cruse, Louisville, Ky. Filed Nov. 28, 1901. Serial No. 83,536. (No model.)

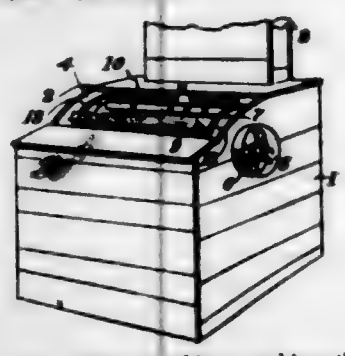

Claim.—1. In a pillow-brushing machine, the combination of a case, provided with a table-top and a longitudinal opening in said table-top over which the pillow or other object to be brushed is moved and exposed to the action of a brush, a shaft journaled longitudinally in said case, a revoluble, combined brush and fan, having renewable and adjustable brush material, secured on said shaft, and a driving-pulley secured on said shaft outside of said case, substantially as specified.

2. In a machine for brushing pillows, the combination of a case, provided with a table-top and a longitudinal opening in said table-top over which the pillow or other object to be brushed is moved and exposed to the action of a brush, a shaft journaled longitudinally in said case, a revoluble, combined brush and fan, having renewable and adjustable brush material, secured on said shaft, a semicylindrical bottom in said case under said brush, the axis of which is to the rear relative to the aforesaid shaft, and a flue or conveyer communicating with said semicylindrical bottom, for carrying away the refuse, substantially as specified.

3. In a pillow-brushing machine, the combination of a case provided with an opening for exposing a brush, and a revoluble brush comprising a shaft, disks firmly secured to said shaft, bars joining said disks at their periphery and having their ends secured in the disks, bolts passing transversely through said bars, separable cleats pierced with apertures for, and secured to said bars with said bolts, and brush material adjustably and renewably secured between and by said bars and cleats, substantially as specified.

4. In a brushing-machine, the combination of a case 1, provided with an opening 4 for exposing the article to be brushed to the action of a brush, a brush 2, journaled in said case, and a semicylindrical bottom 11 in said case, the surface of which is near the brush in front and recedes from the brush in the direction of its motion, and a flue or conveyer 3, communicating with the part of said semicylindrical bottom 11 which is more distant from the brush, 2, all so connecting as to start removable matter from a pillow or other article, and, by the centrifugal action of the brush and the expanding bottom, create suction at the opening 4 and draw aforesaid removable matter into the case 1 and expel it through the flue 3, substantially as specified.

708,723. FEATHER-QUILLER. FERDINAND FRANKE, Louisville, Ky., assignor to S. D. Cruse, Louisville, Ky. Filed Jan. 20, 1902. Serial No. 90,282. (No model.)

Claim.—In a machine for quilling feathers, the combination of a drum-shaped casing, a shaft journaled axially in said casing, radial arms

secured on said shaft, fan-vanes secured on the outer ends of said radial arms, a door at the top of the periphery of said casing for charging, a discharging-door at the bottom of the periphery of said casing, and hoods in said casing, the upper half of which is perforated near the center with holes for admitting air, and near the circumference with holes for the emission of air and dust suspended therein, substantially as specified.

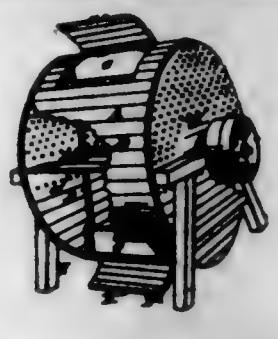

708,724. EXPLOSIVE-ENGINE. Spencer Scott, Canon City, Colo., assignor to Spencer H. St. John and J. Vernon St. John, Canon City, Colo. Filed Aug. 1, 1901. Serial No. 70,562. (No model.)

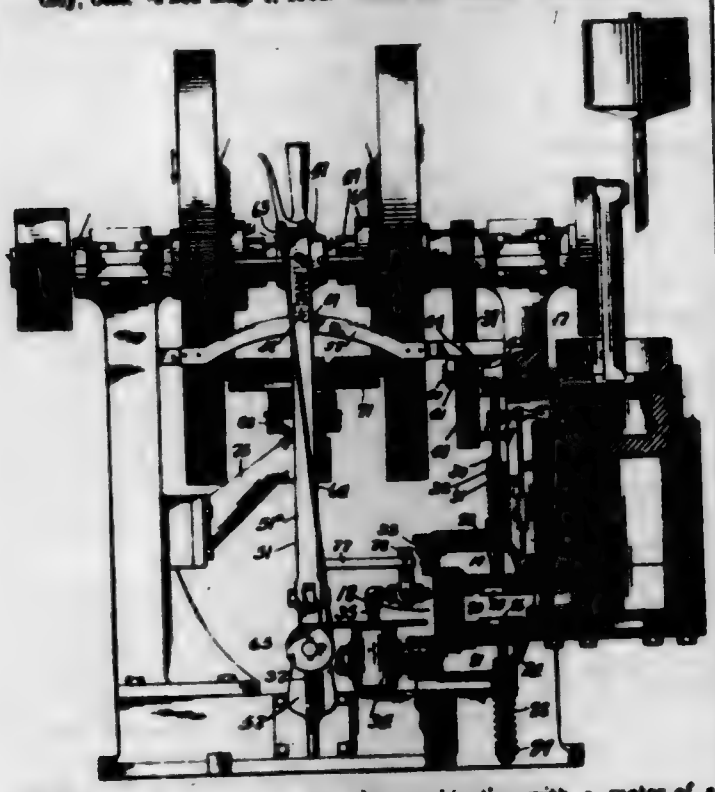

Claim.—1. In a gas-engine, the combination with a motor of a pair of operatively-connected reversely-rotating momentum-wheels, and means for connecting the two wheels in alternation with the motor.

2. In combination with an explosive-engine, a shaft driven by the engine, a pair of oppositely-rotating momentum-wheels loosely mounted upon the shaft, and means for connecting the momentum-wheels with the shaft in alternation.

3. In combination with an explosive-engine, a shaft driven by the engine, a pair of oppositely-rotating momentum-wheels loosely mounted upon the shaft, and coupling mechanism for connecting the momentum-wheels with the shaft in alternation.

4. In combination with an explosive-engine, a shaft driven by the engine, a pair of oppositely-rotating momentum-wheels loosely mounted upon the shaft, and clutch mechanism for connecting the momentum-wheels with the shaft in alternation.

5. In combination, an explosive-engine, a shaft, a connection from the engine for driving the shaft, a pair of reversely-rotating members, and means for coupling said members to the shaft in alternation

6. In an explosive-engine, in combination, a cylinder, a piston and a shaft connected with the piston, a momentum-wheel, indirect connection between the shaft and said wheel whereby the wheel is driven from the shaft but in the reverse direction, and means for breaking said indirect connection and for connecting the wheel directly with the shaft.

7. In an explosive-engine, in combination, a cylinder, a piston and a shaft connected with the piston, a momentum-wheel, operative connection between the shaft and wheel, and means for changing the relative direction of rotation of the shaft and wheel.

8. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft for driving the latter, fly-wheels loosely mounted on the shaft, and means for coupling the fly-wheels to the shaft in alternation to reverse the engine.

9. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft for driving the latter, fly-wheels loosely mounted on the shaft, a clutch splined on the shaft, and means for clutching the fly-wheels to the shaft in alternation.

10. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft for driving the latter, fly-wheels loosely mounted on the shaft, a clutch for coupling the fly-wheels to the shaft in alternation, and means for driving the fly-wheels in opposite directions.

11. In an explosive-engine, in combination, a cylinder, a piston therefor, a connection between the piston and the shaft for driving the latter, fly-wheels loosely mounted on the shaft, gears fixed to the fly-wheels, a gear meshing with the gears of the fly-wheels for driving the said fly-wheels in opposite directions, and a clutch carried by the shaft for coupling the fly-wheels to the shaft in alternation.

12. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft, an exhaust-valve for the cylinder, means for reversing the movement of the shaft, a lever for controlling the reversing means, and connection between said lever and the exhaust-valve.

13. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft, an exhaust-valve for the cylinder, means for reversing the movement of the shaft, means for controlling the reversing means, and connection between said last-named means and the exhaust-valve.

14. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft, an exhaust-valve for the cylinder, means for reversing the movement of the shaft, a lever for controlling the reversing means, a bell-crank handpiece pivoted to the lever, and connection between the bell-crank handpiece and the exhaust-valve.

15. In a gas-engine, in combination, a motor having a shaft, a pair of operatively-connected reversely-rotating momentum-wheels, means for connecting such wheels in alternation with the shaft, an exhaust-valve for the motor, and a cam operatively connected with the shaft for opening the valve.

16. In a gas-engine, in combination, a motor having a shaft, a pair of operatively-connected reversely-rotating momentum-wheels, means for connecting such wheels in alternation with the shaft, an exhaust-valve for the motor, a cam operatively connected with the shaft for opening the valve, and means for manually controlling the exhaust-valve.

17. In a gas-engine, in combination, a cylinder, a piston therefor, a shaft, a connection between the piston and the shaft, means for reversing the movement of the shaft to reverse the engine, a gear driven from the shaft, a cam loosely mounted on the shaft of the gear, projections on the gear for engaging the cam to turn the same, and an exhaust-valve for the cylinder and which is opened by the cam.

18. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft, means for reversing the shaft to reverse the engine; a lever for controlling the reversing means, an exhaust-valve, connection between the lever and the exhaust-valve for opening the latter, a gear driven from the shaft, a cam loosely mounted on the gear-shaft, projections on the gear for engaging the cam to turn the same in either direction, and the exhaust-valve having a stem which is moved by the cam to open the valve.

19. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft, fly-wheels loosely mounted on the shaft, gears fixed to the fly-wheels, means for coupling the fly-wheels to the shaft in alternation, a gear meshing with the gears of the fly-wheels for driving the same in opposite directions, and means for imparting motion to the gear for starting the engine.

20. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft, fly-wheels loosely mounted on the shaft, gears fixed to the fly-wheels, means for coupling the fly-wheels to the shaft in alternation, a gear meshing with the gears of the fly-wheels for driving the same in opposite directions, a drum, pawl-and-ratchet connection between the drum and the gear, a lever, a cord attached to the lever and to the drum, and a spring for winding the cord upon the drum.

21. In an explosive-engine, in combination, a cylinder, a piston therefor, a shaft, connection between the piston and the shaft, fly-wheels loosely mounted on the shaft, a clutch for coupling the fly-wheels to the shaft in alternation, gears fixed to the fly-wheels, a gear meshing with the fly-wheel gears for driving the latter in opposite directions, an exhaust-valve for the cylinder, a lever for moving the clutch, a handpiece pivoted to the lever, a connection between the handpiece and the exhaust-valve, a drum, pawl-and-ratchet connection between the drum and the gear meshing with the fly-wheel gears, a second lever pivoted to the lever for controlling the clutch, a cord attached to the second lever and to the drum, and a spring for winding the cord upon the drum.

22. In an explosive-engine, in combination, a shaft, a momentum-wheel loose on the shaft, means for securing the wheel to the shaft, a drum rotatable independently of the shaft, a pull-cord wound upon the drum, and means for connecting the drum with the wheel.

23. In an explosive-engine, in combination, a shaft, a momentum-wheel loose on the shaft, means for securing the wheel to the shaft, a drum rotatable independently of the shaft and normally disconnected from the wheel, a pull-cord wound upon the drum, a spring acting in opposition to the cord, and automatic means for connecting the drum with the wheel when the former is turned by means of the cord.

24. In an explosive-engine, in combination, a shaft, a momentum-wheel loose on the shaft, means for securing the wheel to the shaft, a second wheel rotatable independently of the shaft, means for turning this second wheel, means for connecting the second wheel with the first wheel.

708,725. LENS-MEASURING INSTRUMENT. FRANKLIN HARDING, Chicago, Ill., assignor to Geneva Optical Company, Chicago, Ill., a Corporation. Filed July 12, 1900. Serial No. 23,288. (No model.)

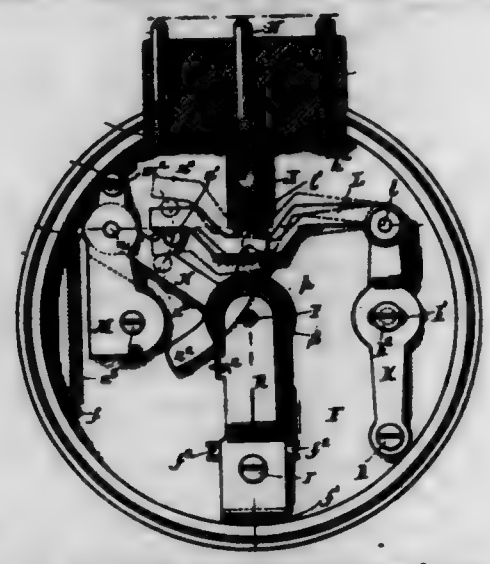

Claim.—1. The combination in a lens-measure, of a pair of normally fixed contact-pieces, an intermediate movable contact-piece located in the plane of said fixed contact-pieces, each of said contact-pieces being independently and longitudinally adjustable in indicating mechanism operated by said movable contact-piece.

2. The combination in a lens-measure, of an inclosing casing, fixed contact-pieces projecting exteriorly of said casing and a movable contact-piece extending therethrough, indicating devices within the casing by which the relative positions of said contact-pieces are shown, comprising a pointer, an adjustable mechanism arranged to actuate said pointer and a part loosely contacting with said adjustable mechanism to which part said movable contact-piece is adjustably connected.

3. The combination in a lens-measure, of an inclosing casing, fixed contact-pieces projecting exteriorly of said casing, and a movable contact-piece extending therethrough, indicating devices within the casing by which the relative positions of said contact-pieces are shown, comprising a pointer, pivoted lever mechanism arranged to actuate said pointer and having its fulcrum adjustable and a part loosely contacting with said lever mechanism into which said movable contact-piece is adjustably threaded.

4. The combination in a lens-measure, of fixed and movable contact-pieces, indicating devices by which their relative positions are shown, said indicating devices comprising a pointer movable over a suitably-graduated scale and two independently-pivoted levers successively interposed between the contact-pieces and said pointer, one of said levers being operatively engaged by said movable contact-piece and having its fulcrum adjustable and its free end engaging the other of said levers.

5. The combination in a lens-measure, of fixed and movable contact-pieces, indicating devices by which their relative positions are shown, said indicating devices comprising two independently-pivoted levers movable in the same plane successively interposed between the contact-pieces, and a pointer movable over a suitably-graduated scale, one of which levers is operatively engaged by a movable contact-piece and whose free end engages the other of said levers, the engaging point between said contact-piece and said lever, the engaging point between said levers and the pivots of said levers normally lying in the same straight line.

6. In a lens-measure, the combination of fixed and movable contact-pieces, indicating mechanism by which their relative positions are shown, comprising a pair of coacting arms or levers successively interposed between said contact-pieces and a pointer movable over a suitably-graduated scale, and a movable part engaging one of said arms or levers to which part a movable contact-piece is adjustably secured.

7. The combination in a lens-measure, of contact-points, indicating devices by which their relative positions are shown, said indicating devices comprising a lever interposed between the contact-points and means for operating a pointer movable over a suitably-graduated scale, the fulcrum of said lever being adjustable, and the free end thereof engaging a second lever which in turn operatively engages said means.

8. The combination in a lens-measure, of contact-points, indicating devices by which their relative positions are shown, said indicating devices comprising a lever interposed between the contact-points and means for operating a pointer movable over a suitably-graduated scale, the fulcrum of said lever being mounted on a normally stationary adjustable part, and the free end thereof engaging a second lever which in turn operatively engages said means.

9. The combination in a lens-measure, of contact-points, indicating devices by which their relative positions are shown, said indicating devices comprising a lever interposed between one contact-point and means for operating a pointer movable over a suitably-graduated scale, the fulcrum of said lever being mounted on a normally stationary, adjustable, pivoted arm, and the free end thereof operatively engaging a second lever which in turn operatively engages said means.

10. The combination in a lens-measure, of contact-points, indicating mechanism by which their relative positions are shown, comprising a pointer movable over a suitably-graduated scale, a movable member arranged to actuate said pointer and a pivoted lever interposed between one contact-point and said movable member said lever having its fulcrum adjustable and its free end loosely engaging said movable member, so that the adjustment of said lever will not affect said member.

11. The combination in a lens-measure, of fixed and movable contact-pieces, indicating mechanism by which their relative positions are shown, comprising a pointer movable over a suitably-graduated scale, a movable member operatively geared to said pointer, and a pivoted lever interposed between said movable contact-piece and said movable member, said movable contact-piece loosely contacting with said lever and said lever having its fulcrum adjustable and its free end loosely engaging said movable member.

12. The combination in a lens-measure, of fixed and movable contact-pieces, indicating mechanism by which their relative positions are shown, comprising a pointer movable over a suitably-graduated scale, a movable member operatively geared to said pointer, a pivoted lever interposed between said movable contact-piece and said movable member, said lever having its fulcrum adjustable and its free end loosely engaging said movable member, and a part loosely engaging said pivoted lever to which said movable contact-piece is adjustably connected.

13. The combination in a lens-measure, of fixed and movable contact-pieces, indicating mechanism by which their relative positions are shown, comprising a pointer movable over a suitably-graduated scale, a pivoted lever operatively geared to said pointer, a second pivoted lever having its fulcrum adjustable and its free end loosely engaging said first-mentioned lever, and a part loosely contacting with said second lever into which said movable contact-piece is adjustably threaded.

14. The combination in a lens-measure, of contact-pieces, indicating devices by which their relative positions are shown, said indicating devices comprising a pair of independently-pivoted levers successively interposed between the contact-pieces and gearing moving a pointer over a suitably-graduated scale, the free end of one of said levers operatively engaging the other of said levers and the fulcrum of the first of said levers being adjustably mounted to vary the operation of the instrument, and that of the second being adjustably mounted to vary the meshing of the gearing.

15. The combination in a lens-measure, of contact-points, indicating devices by which their relative positions are shown, said indicating devices comprising a pivoted lever interposed between said contact-points and mechanism for operating a pointer movable over a suitably-graduated scale, the free end of said lever operatively abutting against a contact-surface secured to said mechanism, the parts being so related that the distance between the point of contact of said lever and said surface and the pivot of the lever will vary as said lever oscillates.

16. The combination in a lens-measure, of contact-points, indicating devices by which their relative positions are shown, said indicating devices comprising a pair of independently-pivoted levers successively interposed between the contact-points and a pointer movable over a suitably-graduated scale, one of said levers operatively engaging a cylindrical pin mounted upon the other of said levers whereby the leverage of the first of said levers varies as said lever oscillates.

17. A lens-measure comprising a casing, a metal plate fitted within said casing upon which the operative parts are mounted, a pointer movable over a suitably-graduated scale, a shaft upon which said pointer is mounted, the inner end of said shaft journaled in said plate and the outer end journaled in a bent strip, the end of which strip is bent to engage a notch in said plate and projections stamped from the body of said plate and abutting against either side of said strip.

708,726. METALLIC FENCE-POST. OLIVER A. HARKER, Jr., Carbondale, Ill. Filed Nov. 8, 1901. Serial No. 81,561. (No model.)

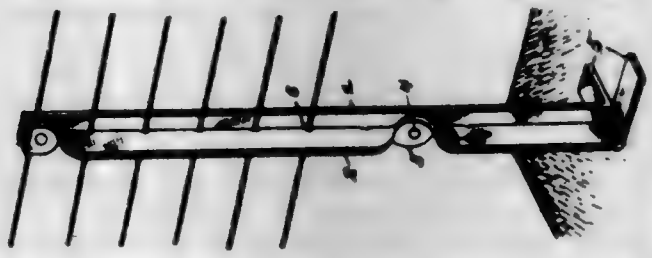

Claim.—A metallic fence-post comprising a rectangular metallic bar having its lower end bent at right angles to the upper part; a second rectangular metallic bar placed against the face of the first bar along its center and at right angles thereto, said second bar having notches in its inner edge to receive the wires; the upper end of said second bar being twisted to lie parallel with and against the upper end of the first bar; and a portion of said second bar near its lower end being twisted to lie parallel with and against the lower part of the first bar; and the lower end of said second bar being bent at right angles to the upper part of the second bar, and at right angles to the lower end of the first bar; and bolts securing said bars together; said bolts being inserted through said twisted portions of the second bar and through the first bar; and said bars being of equal length, and the lower ends of said bars which are bent at right angles to the upper parts of the bars forming anchors; and said bars being removably connected by means of said bolts, substantially as specified.

708,727. POTATO-DIGGER. PETER HAMILTON, Chicago, Ill. Filed May 23, 1901. Serial No. 61,547. (No model.)

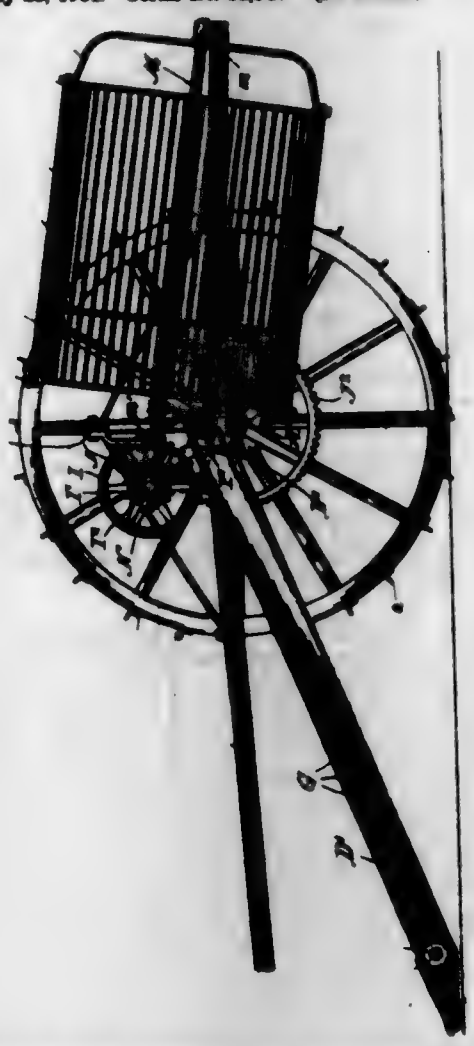

Claim.—1. In a potato-digger, the combination of the ground-wheels, the axle thereof, a frame supported by the axle, a rod parallel with the axle and supported by the frame, beams pivotally supported by said rod, a plow carried by the forward ends of the beams, a shaft carried by the forward ends of the beams, sprocket-wheels carried by the shaft, an endless conveyer embracing the sprocket-wheel, a second shaft supported by the frame of the machine independently of the beams, sprocket-wheels carried by said shaft and embraced by the conveyer, and gearing between said second shaft and the ground-wheels, substantially as described.

2. In a potato-digger, the combination of the ground-wheels, the axle thereof, a frame supported by the axle, a shaft journaled in bearings and supported by the frame, gearing connecting said shaft with the ground-wheels, sprocket-wheels carried by said shaft, an endless conveyer passing over said sprocket-wheels, beams pivotally supported independently of said shaft, a plow carried by the beams, and sprocket-wheels carried by said beams in the vicinity of the plow over which the endless conveyer passes, substantially as described.

3. In a potato-digger, the combination of the ground-wheels, the axle thereof, a frame supported by the axle, beams pivotally supported at their rear ends by the frame, a plow carried by the forward ends of the beams, sprocket-wheels supported by the forward ends of the beams, an endless conveyer passing over said sprocket-wheels, means for supporting and driving the rear end of said conveyer, said supporting means being independent of the beams, a rock-shaft supported by the frame, and means for raising and lowering the forward ends of the beams, substantially as described.

708,728. CENTRIFUGAL MACHINE. ADOLF HOLLAND, Magdeburg, Germany. Filed Sept. 24, 1901. Serial No. 76,353. (No model.)

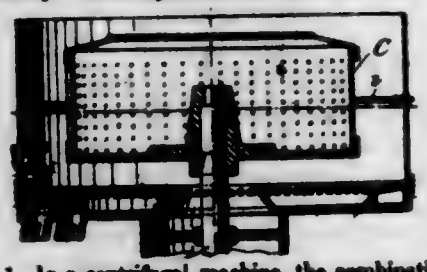

Claim.—1. In a centrifugal machine, the combination of a casing having a cylindrical body portion seated in a suitably-supported base-plate, said base-plate being provided with discharge-openings, a rotatable drum mounted in said casing, and an adjustable collecting-plate disposed below the bottom of said drum for directing the flow of liquid to either discharge-opening, substantially as set forth.

2. In a centrifugal machine, the combination of a casing having a suitably-supported base-plate, said base-plate being provided with discharge-openings, a rotatably-mounted drum in said casing, a partition-flange provided on said base-plate, and an adjustable collecting-plate arranged in contact with the interior surface of said casing and disposed below the bottom of said drum for directing the flow of liquid to either side of said partition-flange, substantially as set forth.

3. In a centrifugal machine, the combination, with a rotatably-mounted drum, of a casing provided with a cylindrical body portion, a base-plate having a circumferential flange and a concentric partition-flange, said cylindrical body portion being provided with an inwardly-flaring rim extending from said circumferential flange to said partition-flange, said inwardly-flaring rim having a plurality of openings, and an adjustable collecting-plate having openings to register with said openings in the rim, said base-plate having suitably-arranged discharge-openings, substantially as set forth.

4. In a centrifugal machine, the combination of a casing having a cylindrical body, a base-plate having a circumferential flange provided with a shoulder for receiving the cylindrical body portion, a concentric flange adjacent said circumferential flange forming two compartments of said base-plate, each compartment having a discharge-opening, an inwardly-flaring rim provided at the lower edge of said cylindrical body portion and disposed upon said flanges, said rim being provided with a plurality of elongated slots alternately arranged in concentric lines, an adjustable collecting-plate supported on said rim and having similarly-arranged slots, a handpiece connected with said collecting-plate and projecting through an opening in said cylindrical body portion, a cover-plate arranged over said opening for the handpiece, and a steam-pipe arranged in said casing with a plurality of perforations disposed toward the interior surface of said casing, substantially as set forth.

708,729. DENTAL MOUTH-MIRROR. JULIUS KUPPER, Bamberg, Germany. Filed Jan. 4, 1901. Serial No. 42,050. (No model.)

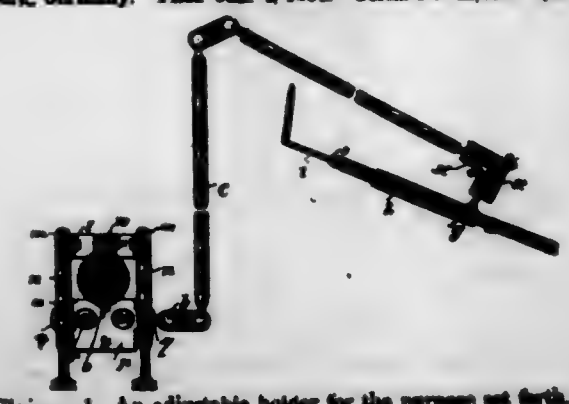

Claim.—1. An adjustable holder for the purpose set forth, consisting of the reversible clamping-plate 1, adapted to seat on one side against

a round support and on the other side against a rectangular support, the arms *n*, *n*, pivoted thereto, the reversible plate *p* and the clamping-screws *o*, *o*, carried by the arms and adapted to bear against the plate *p*, in combination with a jointed tool-carrying arm, substantially as described.

2. In an adjustable holder, the combination of arm-sections, and a ball-and-socket joint connecting them together, the latter consisting of two parallel angle-plates having sockets formed between them at their extremities and a screw adapted to clamp the plates against the ends of the arm-sections.

708,780. TEMPORARY BINDER. PAUL LADEWIG, Bremen, Germany. Filed Oct. 6, 1900. Serial No. 32,268. (No model.)

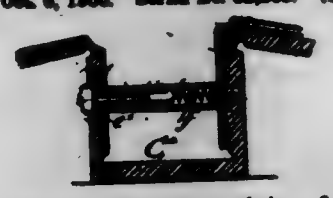

Claim.—1. A temporary binder, consisting of two covers, a back with hinged connection therewith, and having openings, posts attached to a portion of the back, one of said posts being hollow and provided with an L-shaped recess at its open end, a headed locking-post passing through one of said openings in another portion of the back, and provided with a lateral pin for interlocking with the L-shaped recess of the hollow post, and an eyelet provided in said opening and having a recess therein for the passage of said lateral pin, substantially as set forth.

2. A temporary binder, consisting of two covers, a back hinged to the covers, and composed of a middle and two side strips hinged together, a tubular post projecting from one of said side strips, and having an interiorly-threaded lower end, a headed screw for attaching said post to said strip, an L-shaped recess in the opposite end of the post, locking-post passing through the other side strip of the back and provided with a projecting pin interlocking with the L-shaped recess of the tubular post, and a tension-spring interposed between the fastening-screw of the tubular post and the inner end of the locking-post, substantially as set forth.

3. A temporary binder, composed of covers, a three-part back to which they are hinged, openings in one of said parts, posts, one of which connects the front and rear strips of said back, the other of said parts guided in one of said openings, and connecting-pieces adapted to be placed on said posts and provided with hinged wire staples for connection of newspapers, periodicals, &c., substantially as set forth.

708,781. SHIRT. MILTON P. MARLY, Cincinnati, Ohio. Filed Mar. 13, 1902. Serial No. 98,010. (No model.)

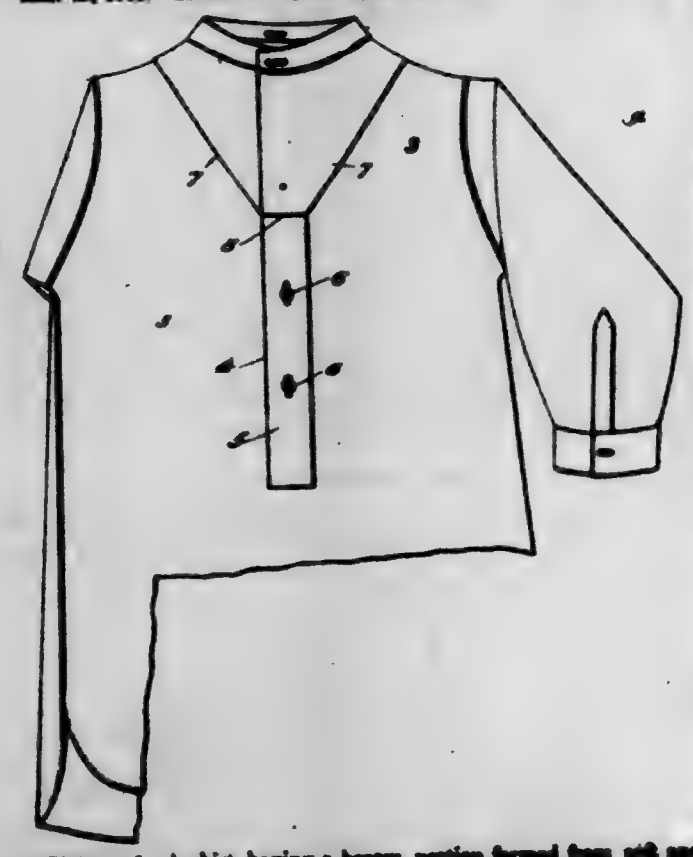

Claim.—1. A shirt having a bosom portion formed from soft and thin material and provided with a front slit or opening extended down said bosom portion and provided with fastening devices, the upper part of said bosom portion being provided upon its outer side with stiffened or thickened parts extended around the neck of the shirt and upon the shoulder portions thereof and having their sides extended from said shoulder portions of the shirt downward to the edges of said front slit or opening with their lower ends above the fastening devices for said slit or opening, substantially as set forth.

2. A shirt having a bosom portion formed from soft and thin material and provided with a front slit or opening extended down said bosom portion and provided with fastening devices, one edge of said slit or opening being provided with a facing-strip or reinforce, and the upper part of said bosom portion being provided upon its outer side with stiffened or thickened parts extended around the neck of the shirt and upon the shoulder portions thereof and having their sides extended from said shoulder portions downward and diagonally toward each other and to the edges of said front slit or opening with their lower ends above the fastening devices for said slit or opening, substantially as set forth.

708,782. STEAM AND AIR FEEDING APPARATUS FOR BOILER-FURNACES. JAMES MARSHALL, Dunfermline, Scotland. Filed Dec. 21, 1901. Serial No. 86,512. (No model.)

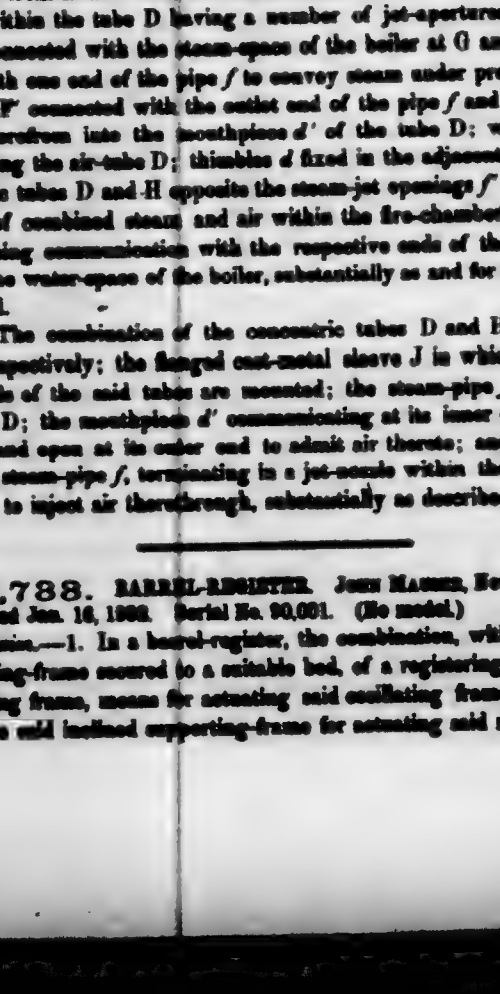

Claim.—1. The combination of the fire-chamber B; grate C C; bridge E; air-tube D having a projecting inlet-mouthpiece *d'* near one end and extending from front to rear on the interior of the fire-chamber; steam-pipe *f* within the tube D having a number of jet-apertures *f'*; steam-pipe F connected with the steam-space of the boiler at G and communicating with one end of the pipe *f* to convey steam under pressure thereto; pipe F' connected with the outlet end of the pipe *f* and discharging steam therefrom into the mouthpiece *d'* of the tube D; water-tube H surrounding the air-tube D; thimbles *d* fixed in the adjacent walls of the concentric tubes D and H opposite the steam-jet openings *f'* and delivering jets of combined steam and air within the fire-chamber; and pipes *h h'* forming communication with the respective ends of the water-tube H and the water-space of the boiler, substantially as and for the purposes described.

2. The combination of the concentric tubes D and H for air and water respectively; the flanged cast-metal sleeve J in which the united front ends of the said tubes are mounted; the steam-pipe *f*, within the air-tube D; the mouthpiece *d'* communicating at its inner end with the tube D and open at its outer end to admit air thereto; and outlet-pipe F' from steam-pipe *f*, terminating in a jet-nozzle within the mouthpiece *d'* so as to inject air therethrough, substantially as described.

708,788. BARREL-REGISTER. JOHN MAURER, New York, N. Y. Filed Jan. 16, 1902. Serial No. 90,091. (No model.)

Claim.—1. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, means for actuating said oscillating frame, means provided on said inclined supporting-frame for actuating said registering-in-

dicator, and means on said oscillating frame for operating said registering-indicator-actuating means, substantially as set forth.

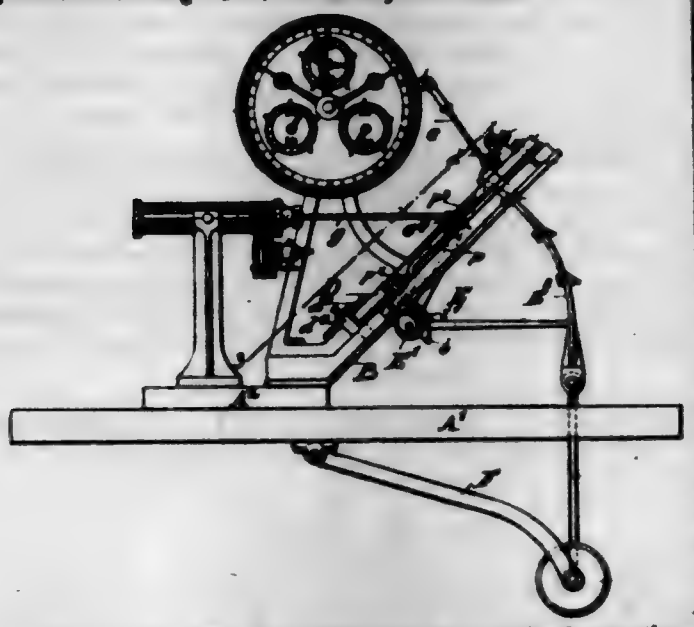

2. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, a swinging lever connected at its free end with said oscillating frame, means provided on said inclined supporting-frame for actuating said registering-indicator, and means on said oscillating frame for operating said actuating means, substantially as set forth.

3. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, a swinging lever pivotally secured to said bed and having an antifriction-roller mounted at its free end, means connecting said free end thereof with said oscillating frame, means provided on said inclined supporting-frame for actuating said registering-indicator, and means on said oscillating frame for operating said actuating means, substantially as set forth.

4. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, a swinging lever having its free end connected with said oscillating frame, spring-latches provided on said inclined supporting-frame, means connecting said latches with said registering-indicator, and means provided on said oscillating frame for operating said spring-latches, substantially as set forth.

5. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, a swinging lever connected at its free end with said oscillating frame, latches pivotally mounted on said inclined supporting-frame, means connecting said latches with said registering-indicator, and projections provided on said oscillating frame to engage said latches, substantially as set forth.

6. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, a swinging lever connected at its free end with said oscillating frame, latches pivotally mounted on said inclined supporting-frame and arranged suitably spaced apart, means connecting said latches with said registering-indicator, and projections provided on said oscillating frame, being arranged in separate planes corresponding with said latches, substantially as set forth.

7. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, a lever pivoted to said bed and being connected with said oscillating frame, a slide-frame guided on said inclined supporting-frame, latches mounted on said slide-frame, means for sliding said slide-frame, and projections on said oscillating frame arranged in corresponding planes with said latches, substantially as set forth.

8. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of a registering-indicator, an oscillating frame, a lever for actuating said oscillating frame, a slide-frame guided on said inclined supporting-frame, latches pivotally mounted on said slide-frame and being arranged horizontally spaced apart, means for sliding said slide-frame on said inclined supporting-frame, and adjustable projections of different lengths arranged on said oscillating frame in corresponding vertical planes with said latches, substantially as set forth.

9. In a barrel-register, the combination, with an inclined supporting-frame secured to a suitable bed, of an oscillating frame having an arc-plate, a pivotal shaft provided on the under side of said inclined supporting-frame, said oscillating frame rigidly mounted thereon, a registering-indicator secured to said inclined supporting-frame, an air-cushion device supported on said bed and being connected with said oscillating frame, a swinging lever for actuating said oscillating frame, a slide-frame guided on said inclined supporting-frame, a pivotal shaft provided at the upper end of said slide-frame, latches mounted and spaced apart on said pivotal shaft of the slide-frame, means for operating said slide-frame, means connecting said latches with said registering-indicator, and adjustable projections of different lengths secured on said arc-plate of the oscillating frame, being arranged in vertical planes of said latches, substantially as set forth.

10. In a barrel-register, the combination, with an inclined supporting-frame, secured to a suitable bed, of an oscillating frame, a pivoted shaft for said oscillating frame, a slide-frame guided on said inclined supporting-frame, a depending finger on said slide-frame, and a cam provided on said pivoted shaft adapted to coöperate with said depending finger simultaneously with the motion of the oscillating frame, substantially as set forth.

11. In a barrel-register, the combination, with an inclined supporting-frame, of an oscillating frame, a pivotal shaft journaled at the under side of said inclined supporting-frame, said oscillating frame mounted thereon, a slide-frame guided on said inclined supporting-frame, a finger depending from one side thereof, a cam on said pivotal shaft adapted to engage the same, a spring-actuated pawl mounted adjacent one side of the slide-frame, a notched plate on said slide-frame, and means for actuating said pawl, substantially as set forth.

12. In a barrel-register, the combination, with an inclined supporting-frame, of an oscillating frame, a pivotal shaft journaled at the under side of said inclined supporting-frame, said oscillating frame mounted thereon, a slide-frame guided on said inclined supporting-frame, a finger depending from one side thereof, a cam on said pivotal shaft adapted to engage the same, a spring-actuated pawl having a curved end and being mounted on said inclined supporting-frame adjacent said slide-frame, a notched plate provided on said slide-frame for said pawl, and a pin on said pivotal shaft adapted to engage said curved end of the spring-actuated pawl, substantially as set forth.

708,784. FEED-GAGE FOR PRINTING-PRESSES. EDWARD L. MEEHAN, Brooklyn, N. Y. Filed Apr. 12, 1902. Serial No. 102,504. (No model.)

Claim.—1. A feed-gage for platen printing-presses formed of thin sheet metal, having a gage-head with rearwardly-bent wings, and laterally-projecting guards in their rear, whereby the said wings are shielded and braced, substantially as set forth.

2. In a feed-gage for platen printing-presses formed from thin sheet metal, a gage-head having rearwardly-bent wings, and a rearwardly-extended supporting-shank, said shank being provided with lateral guards, whereby the said wings are braced and shielded, substantially as set forth.

708,785. STOPPER FOR BOTTLES. ANTON MOLINARI, Woodridge, N. J. Filed Dec. 31, 1901. Serial No. 87,884. (No model.)

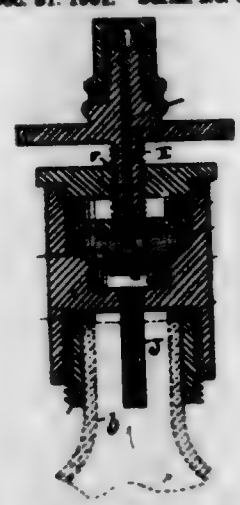

Claim.—The combination with a bottle, of a threaded sleeve applied on the outside of the neck of the bottle, a packing-ring on the upper end of the bottle-neck, a block provided in its bottom with an internally-threaded recess into which the sleeve on the bottle-neck can be screwed, said block also having in its upper part a recess provided with a bottom opening, a cap on said block, a screw-stem mounted to turn in said cap, a head on the lower end of said screw, and provided on its under side with a recess, a yielding packing secured in said recess in the under side of the head, which yielding packing is adapted to close the

bottom opening in the top recess formed in the block, the screw-stem having a duct extending from the side of the valve-head to the upper end of the screw-stem, substantially as set forth.

708,786. JOURNAL-BOX LID. HARRY C. MCCARTY, Williamsport, Pa. Filed Aug. 30, 1901. Serial No. 73,771. (No model.)

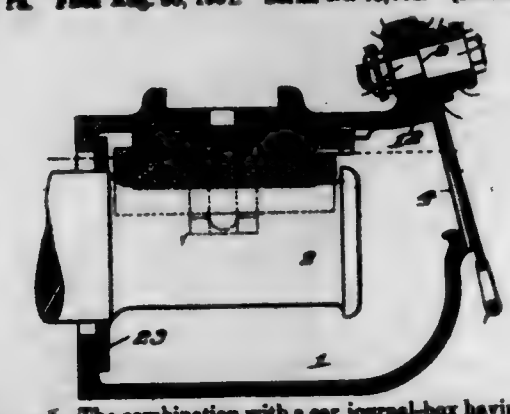

Claim.—1. The combination with a car journal-box having an opening in its forward end, ribs at the sides of said opening, and a projecting bolt above said opening, there being an annular recess or socket surrounding said bolt, of a lid pivotally mounted upon the bolt and adapted to fit between said ribs, said lid having a projection fitting into said recess, and a spring surrounding the bolt and bearing against the lid.

2. The combination with a car journal-box having an opening in its forward end, ribs at the sides of said opening, and a projecting bolt above said opening, there being an annular recess or socket surrounding said bolt, of a lid pivotally mounted upon the bolt and adapted to fit between said ribs, said lid having an annular projection fitting into said recess, and a spring surrounding the bolt and bearing against the lid.

3. The combination with a car journal-box having an opening in its forward end, ribs at the sides of said opening, and a projecting bolt above said opening, there being an annular recess or socket surrounding the bolt, of a lid pivotally mounted upon said bolt and adapted to fit between the ribs, and having an annular projection fitting into said recess, a flanged sleeve upon the bolt, and a spring interposed between the lid and the flange upon the sleeve.

708,787. POWER-HAMMER. JARED B. MCLANE, North Reading, Mass. Filed Oct. 18, 1901. Serial No. 79,079. (No model.)

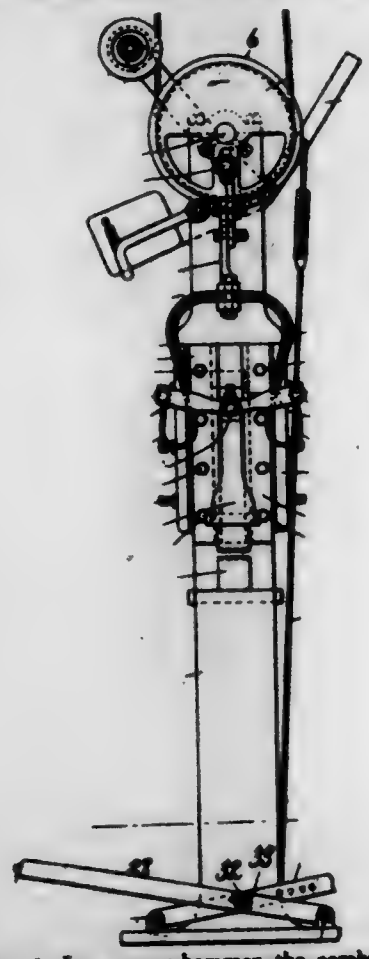

Claim.—1. In a power-hammer, the combination of a hammer, a hammer-operating member, and a connection between the two including a pair of links suspending the hammer at their outer ends, and a lyre-shaped spring device connected with the hammer-operating member and having two depending spring-arms formed with outwardly and upwardly recurved terminal portions connected to the outer ends of the links.

2. In a power-hammer, the combination of a frame having a seat for a guide, hammer-operating means mounted on said frame, a hammer, a guide therefor, having an unplaned back, bolts detachably securing the guide to said seat on the frame, and a soft packing interposed between the guide and said seat.

3. In a power-hammer, the combination of a frame having a seat for a guide, hammer-operating means mounted on said frame, a hammer having a dovetailed guide-engaging portion, a guide for said hammer comprising a gib-holder engaging the back of said dovetailed portion of the hammer, gibs mounted in said holder and engaging the edges of said dovetailed portion, and bolts passing through said gibs and gib-holder and detachably securing the same together and to said seat on the frame.

708,788. WATER-HEATER. HENRY W. O'DOWD, New York, N. Y. Filed Oct. 26, 1901. Serial No. 80,138. (No model.)

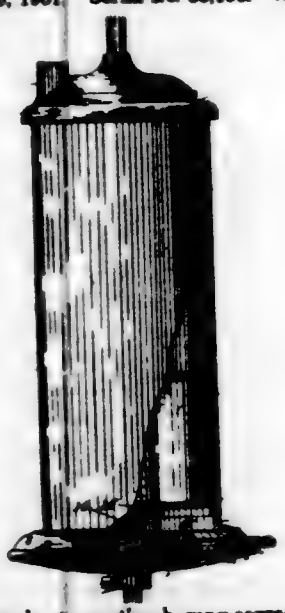

Claim.—1. A water-heater section having corrugated sides as shown, tubes uniting the top and bottom corresponding in number with the corrugations and located concentrically therewith, a deflecting-plate midway between the bottom and top surfaces and united with the tubes in the manner shown, and a central waterway in the top and bottom with means for connecting one section with another, substantially as herein shown and described.

2. The combination in a water-heater of cast sections, central threaded parts for connecting the sections said parts being provided with water-passages, the sections having corrugated sides and tubes corresponding in number to the corrugations and placed concentrically therewith, a deflecting-plate centrally of the sections and uniting with the tubes, and the sections mounted to alternate the tubes and corrugations so that the tubes and corrugations of one section will have a staggered relation to those of the adjacent sections, substantially as herein set forth.

708,789. ANCHOR. JACOB H. REED, Philadelphia, Pa. Filed Mar. 6, 1902. Serial No. 96,982. (No model.)

Claim.—An anchor having a shank, a fluke rigidly connected thereto, said shank being of non-circular section and embodying a spiral conformation, a stock, having an eye extending vertically clear through it and adapted to said shank, said stock being free for longitudinal movement with respect to said shank to a position in close proximity to the fluke, and arranged to be rotated, in sliding downward over said spiral conformation, to a position in the plane of the fluke, and in sliding upward, to a position approximately perpendicular to the plane of the fluke, and being maintained in all adjustments in perpendicular relation to said shank, and a clevis adapted to be engaged by a cable, the respective side members of which clevis are engaged with the stock on opposite sides of the shank, the arrangement being such that said clevis has lateral swing

or movement with respect to the stock with the result that said clevis when the stock is at the upper end of the shank may extend in line above the shank, and may, when the stock is to be moved down the shank, be thrown to one side to clear the shank.

708,740. APPARATUS FOR MOLDING. JOHN C. REED, Allegheny, Pa. Filed Aug. 23, 1899. Serial No. 728,571. (No model.)

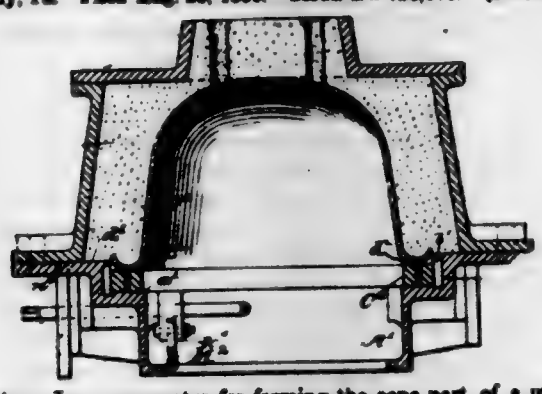

Claim.—In an apparatus for forming the cope part of a mold, the combination of a pattern, a frame to which said pattern is secured, vibrating arms or bars attached to said frame, a base upon which said frame rests, formed with a depression to receive said frame, and with openings for the passage of said vibrating arms, a cope part, and mechanism for separating the cope from the base, comprising transverse shafts coupled together for conjoint action, cams upon said shafts, yokes in which said cams work, and pins projecting from said yokes and bearing on the cope, substantially as described.

708,741. COMBINATION-WRENCH. GEORGE H. R. LUTHERBOCHER, Brooklyn, N. Y. Filed Dec. 17, 1900. Serial No. 40,145. (No model.)

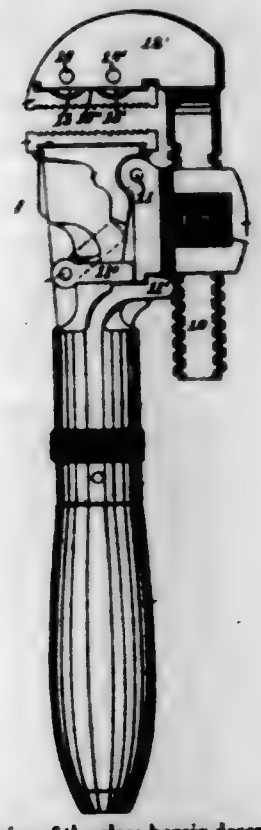

Claim.—1. A device of the class herein described comprising a body provided with a reduced portion having an engaging lip, and with a spindle-socket, a spindle within said socket and having a boss, and a keeper on said spindle at the outer side of said boss, the said keeper having a flange at one face thereof adapted to engage said lip and lock said spindle against displacement from said socket.

2. A device of the class herein described comprising a hollow body; a cutter-carrier within said body, and therein movable longitudinally; means for holding said carrier against a rotary movement; a spindle having a threaded engagement with said carrier; and a rotatable keeper capable, when in its locked position, of normally holding said spindle against movement independent of said body, and of permitting a rotary movement of said spindle though loosely holding said spindle against displacement from said body, when the said keeper is eased out of its locked position.

3. A device of the class herein described comprising a body, a cradle having a swinging movement with respect to said body, means for limiting the movement of said cradle away from said body, and a suitably-fulcrumed lever for locking said cradle at the limit of its movement away from said body.

4. A device of the class herein described comprising a hollow body, a carrier within and longitudinally movable with respect to said body, a rotary disk-cutter on said carrier, means for imparting a longitudinal movement to said carrier, means for locking said carrier when moved to any desired position, a cradle having a swinging movement with respect to said body, means for limiting the movement of said cradle away from said body, a suitably-fulcrumed lever for locking said cradle at the limit of its movement away from said body, an adjustable shank in said cradle, the said shank having a recessed head lying opposite to said cutter, and a pair of rollers in the recess of said head, the said rollers being located one on each side of the center line of said cutter, substantially as herein described.

708,742. CLOTHES-HOOK. COLIN SALMOND, San Francisco, Cal. Filed Sept. 12, 1900. Serial No. 29,848. (No model.)

Claim.—1. In a device of the nature indicated, a base, a casing thereon and having a slot therein, and a hook having swinging connection with said casing and lying in said slot when in closed position but adapted to be swung outwardly therefrom, the point of swinging connection between the said hook and casing being suitably removed from the said base, said casing inclining backwardly to said base from said point of swinging connection, and said hook also so inclining when in closed position; substantially as described.

2. In a device of the nature indicated, a casing having a slot therein, a hook member having a part thereon movable in said slot, and a weighted portion within said casing upon said part and forming a shoulder therewith, said hook and weighted member having free play in said casing; substantially as described.

3. In a device of the nature indicated, a casing having a slot therein, a hook member, an inwardly-extending arm thereon resting upon the lower wall of said slot, said arm having its lower face so formed that when the hook is in open position said face inclines upwardly and outwardly with relation to said wall, and a weighted member within said casing and upon said arm, a shoulder being formed extending laterally from said arm to prevent passage of said weighted member through said casing-slot, said parts having free play in said casing whereby the said hook can be thrown into open or closed position; substantially as described.

4. In a device of the nature indicated, a base, a hook, means for supporting said hook upon said base and permitting said hook to swing with relation to said base, and a weighted member upon said hook and lying against said base, the face of said weighted member adjacent said base being inclined away from said base and the hook, whereby as said weighted member is pressed toward said base the hook is rocked outwardly; substantially as described.

5. In a device of the nature indicated, a base, a hook, means for supporting said hook upon said base and permitting said hook to swing with relation to said base, and a weighted member upon said hook and lying against said base, the face of said weighted member adjacent said base being curved away from said base and the hook, whereby as said weighted member is pressed toward said base the hook is rocked outwardly; substantially as described.

708,748. PLAYING ATTACHMENT FOR KEY MUSICAL INSTRUMENTS. HARRY M. SALYER, New York, N. Y., assignor to Ludwig & Company, New York, N. Y., a Firm. Filed Jan. 10, 1901. Renewed May 5, 1902. Serial No. 105,975. (No model.)

Claim.—1. In a self-playing attachment for musical instruments, the combination with pneumatic playing mechanisms, a duct-bridge and means for moving a music-sheet over the same, of a pneumatic mechanism for reversing the music-sheet-moving gear and at the same time controlling the admission of air to the pneumatic playing mechanisms, substantially as herein shown and described.

2. In a self-playing attachment for musical instruments, the combination with pneumatic playing mechanisms, a duct-bridge and means for moving a music-sheet over the same, of a pneumatic mechanism for re-

vering the music-sheet-moving gear and at the same time controlling the admission of air to the pneumatic playing mechanisms, and a motor for operating the music-sheet-moving gear, substantially as herein shown and described.

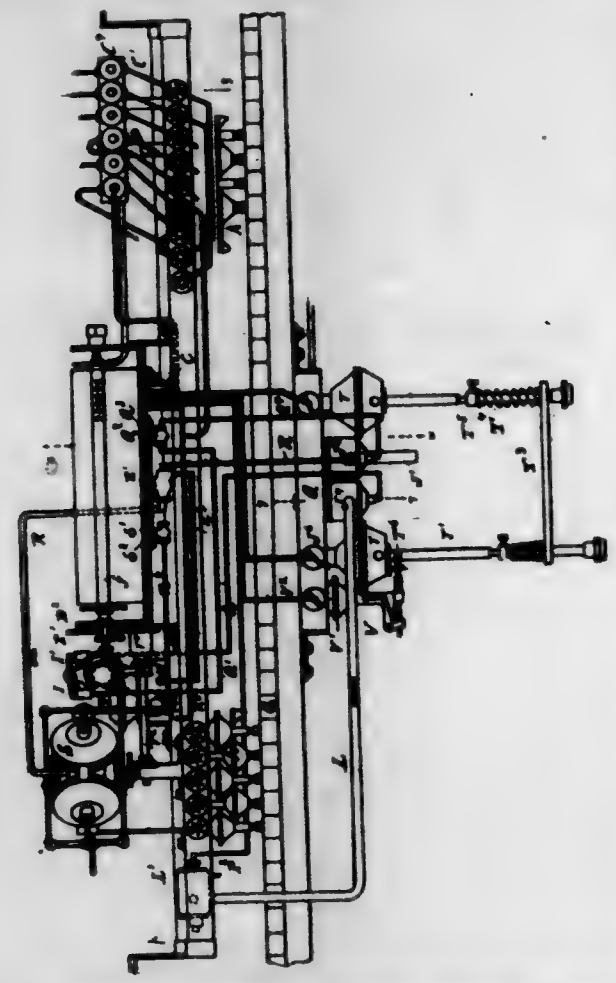

3. In a self-playing attachment for musical instruments, the combination with pneumatic playing mechanisms, a duct-bridge and means for moving a music-sheet over the bridge, of two valve-casings, a valve in each for controlling the admission of compressed air to the pneumatic mechanisms, a tube connected with each casing, a controlling-valve connected with each tube, means for operating said valves so as to keep one open while the other is closed and a pneumatic mechanism for operating said means, substantially as herein shown and described.

4. In a self-playing attachment for musical instruments, the combination with pneumatic playing mechanisms, a duct-bridge and means for moving a music-sheet over the bridge, of two valve-casings, a valve in each for controlling the admission of compressed air to the pneumatic mechanisms, a tube connected with each casing, a controlling-valve connected with each tube, means for operating said valves so as to keep one open while the other is closed and a pneumatic mechanism for operating said means and a hand-cock in the tube connected with one of said casings, substantially as herein shown and described.

5. In a self-playing attachment for musical instruments, the combination with pneumatic playing mechanisms, a duct-bridge and means for moving a music-sheet over the same, of a valve-casing connected with a compressed-air-supply tube, a valve in said casing, pneumatic means for controlling said valve and a pneumatic mechanism for actuating said pneumatic valve-controlling means and the music-sheet-moving means, substantially as herein set forth.

6. In a self-playing attachment for musical instruments, the combination with pneumatic playing mechanisms, a duct-bridge and means for moving a music-sheet over the same, of a valve-casing connected with a compressed-air-supply tube, a valve in said casing, a second valve-casing, connected with the first-mentioned valve-casing, a valve in said second casing, a pneumatic means in each casing for controlling the valve therein, a pneumatic mechanism for controlling the sheet-moving means and the pneumatic valve-controlling means at the same time, substantially as herein shown and described.

7. In a self-playing attachment for musical instruments, the combination with pneumatic playing mechanisms, a duct-bridge and means for moving a music-sheet over the same, of a valve-casing connected with a compressed-air-supply tube, a valve in said casing, a compressed-air motor, a tube connecting the motor with said valve-casing, a second valve-casing connected with the first-mentioned valve-casing, compressed-air chambers connected with said second valve-casing, a valve in said second casing, a pneumatic means for each casing for controlling the valve therein, and a pneumatic mechanism for controlling the sheet-moving means and the pneumatic valve-controlling means aforesaid, at the same time, substantially as herein shown and described.

8. In a self-playing attachment for musical instruments, the combination with a duct-bridge, and means for moving a music-sheet over the same, of compressed-air chambers, a valve for controlling the admission of compressed air into said chambers, a tube connected with the casing of said valve, a valve at the end of said tube, a cock in said tube and a pneumatic mechanism for controlling the sheet-moving mechanism and the valve at the end of the above-mentioned tube, substantially as herein shown and described.

9. In a self-playing attachment for musical instruments, the combination with a duct-bridge and a means for moving a music-sheet over said bridge, of a pneumatic mechanism for controlling said sheet-moving means, compressed-air chambers, a valve controlling the admission of compressed air into said chambers, means for controlling the said admission-valve by hand, and additional means for controlling the said admission-valve automatically, which automatic means are operated by the pneumatic mechanism controlling the sheet-moving means, substantially as herein shown and described.

10. In a self-playing attachment for musical instruments, the combination with two music-sheet-roller shafts, of gearing for rotating them, a means for throwing either shaft in gear, a pneumatic mechanism for operating the gear-shifting means and means for controlling the supply of motive power to the key-actuating mechanism, by the same pneumatic mechanism that operates the gear-shifting means, substantially as herein shown and described.

11. In a self-playing attachment for musical instruments, the combination with two music-sheet-roller shafts, of gearing for rotating them, a sleeve for throwing either shaft in gear with the driving mechanism, a lever for operating the sleeve, a pneumatic mechanism for operating the lever step by step and a valve for controlling the music-producing mechanism, which valve is also controlled by said lever, substantially as herein shown and described.

12. In a self-playing attachment for musical instruments, the combination with a duct-bridge, of a means for moving a music-sheet over the bridge, a sleeve for throwing said means in gear, a lever for shifting the sleeve, two arms on said lever, a pneumatic mechanism for operating the lever, two valves for controlling the admission of compressed air to various pneumatic mechanisms, a valve for controlling each admission-valve, said controlling-valve having stems in the paths of the arms of the aforesaid lever, substantially as herein shown and described.

13. In a self-playing attachment for musical instruments, the combination with a duct-bridge said means for moving a music-sheet over the same, of compressed-air mechanisms for operating the sound-producing devices and rarefied-air mechanisms for controlling said compressed-air mechanisms from the music-sheet, substantially as herein shown and described.

14. In a self-playing attachment for musical instruments, the combination with a duct-bridge said means for moving a music-sheet over the same, of compressed-air mechanisms for operating the music-producing and other devices, a rarefied-air mechanism, connected with each compressed-air mechanism and ducts extending from said rarefied-air mechanisms to the duct-bridge, substantially as herein shown and described.

15. In a self-playing attachment for musical instruments the combination with a duct-bridge having ducts and a chamber connected with all the ducts, of means for adjusting the connection between each duct and said chamber and means for rarefying the air in said chamber substantially as herein shown and described.

16. In a self-playing attachment for musical instruments the combination with a duct-bridge having ducts, a chamber formed in said bridge and an aperture extending from each duct to said chamber, of a screw at each duct for adjusting the size of the aperture extending from the duct to said chamber and means for rarefying the air in said chamber, substantially as herein shown and described.

703,744. ELEVATING-TRUCK. ALEXANDER A. SCOTT, Knoxville, Tenn. Filed Nov. 14, 1901. Serial No. 82,370. (No model.)

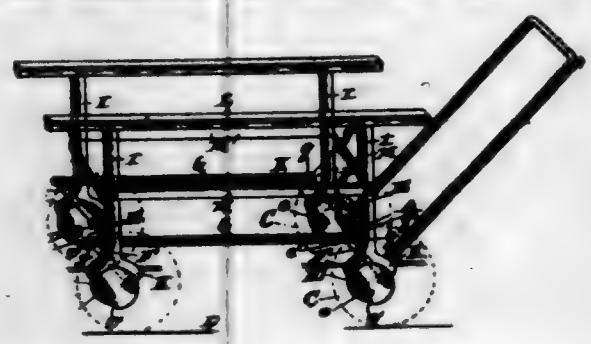

Claim.—1. In an elevating-truck, wheels journaled on the axles, cams keyed to the axles between said wheels, means to cause the operation of said cams simultaneously, and a platform having legs constructed to ride on said cams, substantially as shown and described.

2. In an elevating-truck, cams keyed to the front and rear axles having a flange and shoulder, means to cause a simultaneous oscillation of said cams, and a separable platform having legs constructed to ride on said cams, substantially as shown and described.

3. In an elevating-truck, the platform consisting of parallel horizontal beams, legs attached to said beams, segmental bases fixed to said legs, and means attached to the axles of the truck for raising and lowering said platform, substantially as shown and described.

4. In an elevating-truck, flanged cams keyed to the front and rear axles, arms keyed to said front and rear axles and pivotally connected to horizontal rods, and a platform having legs adapted to ride said cam, substantially as shown and described.

5. In an elevating-truck, cams keyed to the axles, a lever-handle fixed to the front axle, rocking arms fixed to the axles and connected by rods pivoted thereto, a platform having vertical legs, and segmental bases on said legs to ride on said cams, substantially as shown and described.

6. In an elevating-truck, a platform having parallel horizontal beams, legs fixed to said platform having segmental bases, cams keyed to the axles to receive said segmental bases, a shoulder on each cam to strike against the segmental base and limit the movement of the cam in raising the platform, a rocking frame secured to said axle, a lever-handle secured to one axle, and wheels journaled on said axles, substantially as described.

708,745. GARBAGE OR REFUSE CAN. ELIZABETH C. SHAHAN, New York, N. Y. Filed Mar. 5, 1901. Serial No. 49,936. (No model.)

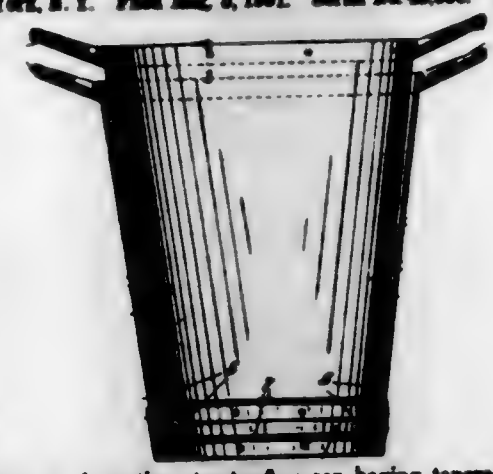

Claim.—1. A nesting street-refuse can having tapered side walls and provided with a plurality of interiorly-located, separated, integral stops each formed from and by the inward projection of the metal forming such side walls, such stops being disposed at intervals around the can and in position to have their upper surfaces form bearing-surfaces to engage the lower part of another can and thereby permit the cans to be assembled without the jamming or wedging thereof.

2. A nesting street-refuse can having tapered side walls and provided with a plurality of interiorly-located, separated, integral stops each having a curved bearing-surface and formed from and by the inward projection of the metal of such side walls, such stops being disposed at intervals around the can and in position to have their curved surfaces engage the lower part of another can and thereby permit cans to be assembled without the jamming or wedging thereof.

3. A nesting street-refuse can having tapered side walls and provided with a plurality of interiorly-located, separated, integral stops each formed from and by the inward projection of the metal of such side walls, such stops being disposed at intervals around the can and in position to have their upper surfaces form bearing-surfaces to engage the lower part of another can and thereby permit the cans to be assembled without the jamming or wedging thereof, and a bottom disposed interiorly of said can with a part thereof located at the point of flexure of the metal of the stops with the can-wall, whereby such bottom supports and reinforces such stops.

4. A nesting can having tapered side walls and provided with interiorly-located stops or supporting-faces disposed at intervals around the can and in position to engage a part of another can and thereby permit the cans to be assembled without the jamming or wedging thereof, and a hoop located on the exterior of said can and in position to reinforce that part thereof carrying the stops, and to externally enlarge that part of the walls below such stops and in position to be engaged by the stops on another can.

5. A nesting can having tapered side walls and provided with an interiorly-located integral stop in position to engage a part of another can and thereby permit the cans to be assembled without the wedging or jamming thereof, and a reinforcing-hoop exteriorly located and in position to reinforce that part of the can carrying said stop, and to externally enlarge that part of the walls below such stop and in position to be engaged by the stop on another can.

6. A nesting can having tapered side walls, a bottom having a flange lapping said walls, a plurality of integral stops located adjacent to such bottom and at intervals around such walls to engage a part of another can and thereby permit the cans to be assembled without the wedging or jamming thereof, and a reinforcing and enlarging hoop located on the exterior of said can at that part thereof provided with said stops, and extending to the lower end of the side walls.

708,746. APPARATUS FOR DRYING. CYRUS J. SALTZER, Philadelphia, Pa. Filed Sept. 26, 1901. Serial No. 76,447. (No model.)

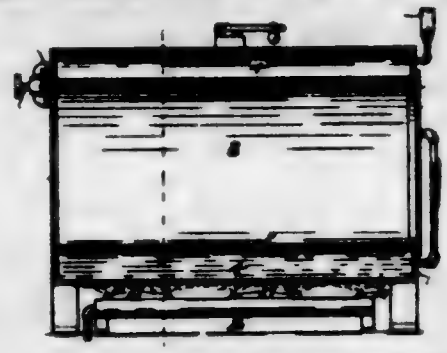

Claim.—1. In an apparatus of the class described, the combination with a boiler, of a hollow cylinder arranged therein and of smaller diameter than the boiler, whereby an annular chamber is formed between the boiler and the cylinder, one of the heads of the boiler being provided with an opening through which access may be had to the interior of the cylinder, a door for closing said opening, and a pipe arranged at the exterior of said boiler and leading from the annular chamber to and discharging within the interior of the cylinder, said pipe being provided with a valve for controlling communication between said annular chamber and the interior of said cylinder.

2. In an apparatus of the class described, the combination with a boiler, of a hollow cylinder arranged therein and of smaller diameter than the boiler, whereby an annular chamber is formed between the boiler and the cylinder, said cylinder being secured to and supported by the heads of the boiler, one of the heads of the latter being provided with an opening through which access may be had to the interior of the cylinder, a door for closing said opening, and a pipe arranged at the exterior of said boiler and leading from the annular chamber to and discharging within the interior of the cylinder, said pipe being provided with a valve for controlling communication between said annular chamber and the interior of said cylinder.

708,747. LOCKING DEVICE FOR USE IN PUNCHING-MACHINES OR THE LIKE. EDWIN R. SIMPSON, Brooklyn, N. Y. Filed Jan. 14, 1902. Serial No. 89,734. (No model.)

Claim.—1. In a machine of the character described having a support for the same, a movable part or element to be secured in place on said support, said element having mounted in it a locking device to secure it in place on the machine, said locking device comprising a jaw having a stem provided with a bearing in the element, and a screw driven into said element in a direction transversely to the axis of said stem, the said stem having on it a shoulder in position to be impinged upon by the conical tip of said screw for moving the stem longitudinally, the clamping-face of the jaw being on the side of the same opposite to the stem thereof, substantially as set forth.

2. In a machine of the character described having a support for the same, a movable part or element to be secured in place on said support, said element having mounted in it a locking device to secure it in place on the machine, such locking device comprising a jaw in the nature of a plate which normally occupies a recess in the surface of the element, a stem on said jaw which extends into the body of the element, and which is provided with an inclined shoulder, and a cone-pointed screw which screws into said element in position to apply the conical surface of its point to the inclined shoulder on the stem to drive the jaw out from its recess, substantially as and for the purpose set forth.

3. The combination with a machine-bed having in it a slot and suitable supporting-shoulders, and a die-block supported on said shoulders and movable along said slot between the walls of the same, of a locking device carried by said block for locking it in position in the slot when adjusted, said locking device comprising a clamping-jaw 17, occupying a recess in the end of the die-block adjacent to the side wall of the slot in the bed, the shank 18, of said jaw, which shank extends into the block and has on it a shoulder, and the cone-pointed screw 20, driven in the

block transversely to the axis of said stem and in position to bear on the shoulder on the latter and thus drive the jaw forcibly outward and against the side wall of the containing-slot in the machine-bed, substantially as set forth.

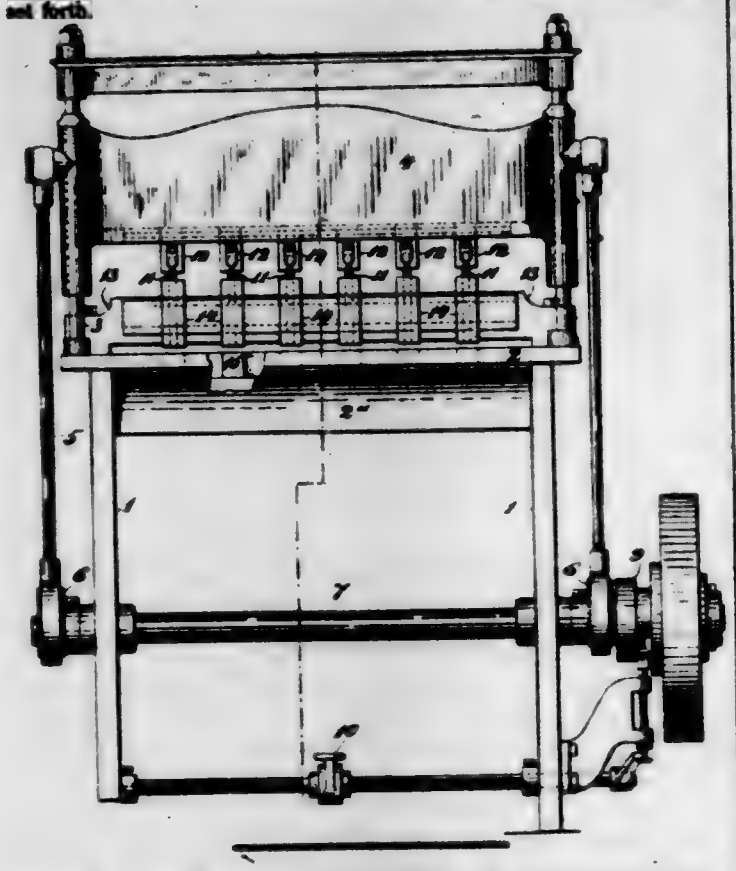

708,748. TAB-CUTTING MACHINE. EDWIN B. STIMPSON, Brooklyn, N. Y. Filed Apr. 12, 1902. Serial No. 102,509. (No model.)

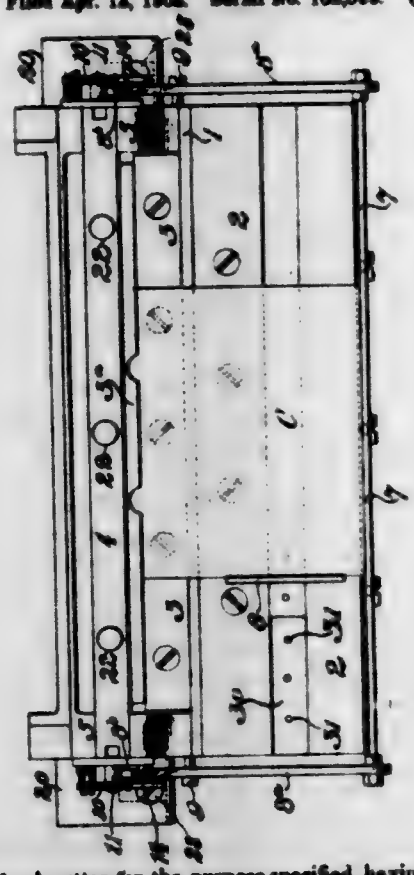

Claim.—1. A cutter for the purpose specified, having a bed to support the sheet to be cut, a movable cutting-blade, a movable back stop or gage for the sheet, means for operating the said cutting-blade, and means between the cutting-blade and back-stop which wholly displaces the latter when said blade makes its cutting movement, whereby the operator may remove the sheet by sliding it back off from the bed.

2. A cutter for the purpose specified, having a bed to support the sheet to be cut, a movable cutting-blade, a movable back stop or gage for the sheet, means for operating the said cutting-blade and back-stop substantially simultaneously, whereby the back-stop is wholly displaced when the blade makes its operative movement so that the sheet may be slipped back off the bed, means for detaining the displaced stop during a part of the retreating movement of the blade, and means for returning the stop to its normal position when released.

3. A cutter for the purpose specified, having a bed to support the sheet to be cut, a slide and its guides, a cutting-blade carried by said slide, a fixed blade on the bed, a movable back-stop for the sheet, mechanism between the said stop and slide whereby the former is actuated by the latter, said mechanism comprising the elbow-levers carrying the back-stop and studs on the slide adapted to actuate or rock said levers when the slide makes an operative movement, the retracting-springs of the levers, the locking-latches adapted to be upheld normally by said studs, and the studs in the levers for said latches to engage.

4. The combination with a slotted bed to receive the cutter, of the said cutter having a block 20 on and extending below its base to engage said slot, the locking-plate 24, provided with a stem 25 guided in a bore in the block, and a cone-pointed screw 28 driven in the block at an angle to the said stem and adapted to bear on a shoulder on the latter for moving out the clamping-plate into forcible contact with the wall of said slot, whereby the cutter may be moved along the slot in the bed and clamped at any desired point by means carried with the cutter.

5. The combination with the machine having a sliding head 18, a slotted bed 16, and holders 23 adjustably mounted on said head 18, of a cutter having a blade-carrying slide 4, provided with headed stems 22 to engage the holders 23, and means for locking the base of the cutter in the slotted bed 16, substantially as set forth.

6. A tab-cutter having a displaceable back-stop, a movable cutting-blade, and means between said blade and stop whereby the former wholly displaces the latter in its cutting movement, whereby space is provided for sliding the cut sheet back off from the bed.

708,749. ADJUSTABLE GUIDE. EDWIN B. STIMPSON, Brooklyn, N. Y. Filed Apr. 22, 1902. Serial No. 104,342. (No model.)

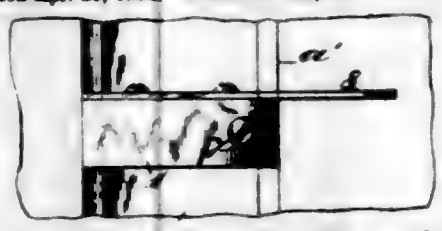

Claim.—1. A guide comprising a block with squared ends, a clamping-plate occupying a recess in one end of the block and provided with a shouldered stem slidable in the block, a screw with a conical tip set in the block and adapted to engage the shoulder on said stem, and a guide-plate secured to said block and extending out therefrom parallel with the side of the block, substantially as set forth.

2. A guide comprising a block having squared ends parallel with each other, a screw clamping device mounted in said block for securing it in position, and a guide-plate secured to one side or lateral face of said block, the said plate extending out beyond the end of said block and having the lower edge of said extended portion parallel with the upper and lower faces of the block, substantially as set forth.

3. The combination with a bed having a guideway with parallel sides formed therein, of a guide comprising a block with squared, parallel end faces mounted in said guideway, a clamping device carried by said block for securing it fast in the guideway when adjusted, and a guide-plate carried by said block and extending transversely of the guideway, said plate extending out beyond the block and having its lower edge coincident with the surface of said bed, substantially as set forth.

708,750. PLACKET-FASTENER. NELSON B. TAYLOR and WILLIAM C. ATWATER, Chicago, Ill. Filed Nov. 8, 1899. Serial No. 736,342. (No model.)

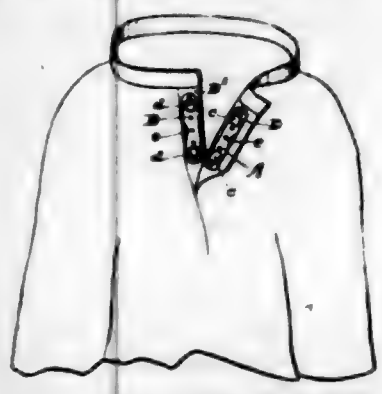

Claim.—1. As an article of manufacture, a fastener for plackets and similar openings in articles of wear comprising two separate thin flat strips of flexible material adapted to be secured to the opposite sides of the opening, one of said strips being provided with a pair of inwardly-extending tongues, one on each end, and the other strip having a corresponding pair of outwardly-extending tongues, said tongues extending above and at an

acute angle to the meeting faces of the strips, whereby said strips may be interlocked by bending the latter strip over the former until its tongues pass below the corresponding tongues of the former strip, and then allowing it to straighten itself by its own endwise expansive tendency, substantially as described.

2. As an article of manufacture, a fastener for plackets and similar openings in articles of wear comprising two separate thin flat strips of flexible material adapted to be secured to the opposite sides of the opening, one of said strips having a pair of inwardly-extending tongues, one on each end, cut and raised from the material of the strip, and the other strip having a corresponding pair of outwardly-extending tongues similarly cut and raised from the material of the strip, said tongues extending at an acute angle to the meeting faces of the strips, whereby said strips may be interlocked by bending the latter strip over the former until its tongues pass below the corresponding tongues of the former strip, and then allowing it to straighten itself by its own endwise expansive tendency, substantially as described.

3. As an article of manufacture, a fastener for plackets and other openings comprising two separate thin flat strips of flexible material adapted to be secured to the opposite sides of the opening, one of said strips being provided with a plurality of inwardly-extending tongues, and the other strip having a corresponding plurality of outwardly-extending tongues, said tongues extending above and at an acute angle to the meeting faces of the strips, whereby said strips may be interlocked by bending the latter strip over the former until its tongues pass below the corresponding tongues of the former strip, and then allowing it to straighten itself by its own endwise expansive tendency, substantially as described.

708,751. GARMENT. WILLIAM P. C. ADAMS, Olympia, Wash., assignor of one-half to Robert J. Priekman, Olympia, Wash. Filed Nov. 13, 1901. Serial No. 82,108. (No model.)

Claim.—1. A body-garment, having a waistband or belt permanently attached to the exterior thereof along its upper edge only and adapted to receive thereunder the waistband of the trousers, said garment having a series of slits or apertures therein located beneath said attached waistband or belt to permit the passage therethrough of the ends of an underlying suspender and their attachment to the suspender-buttons on the trousers-waistband.

2. A body-garment, having a waistband or belt permanently attached thereto along its upper edge only and adapted to receive thereunder the waistband of the trousers, said belt separated at its back and provided with an elastic coupler uniting its ends.

3. A body-garment, having a waistband or belt permanently attached thereto along its upper edge only and adapted to receive thereunder the waistband of the trousers, said belt separated at its back and provided with a detachable elastic coupler uniting its ends.

4. A body-garment, having a waistband or belt permanently attached thereto along its upper edge only and adapted to receive thereunder the waistband of the trousers, said belt separated at its back and provided with a detachable and adjustable elastic coupler uniting its ends.

708,752. ATTACHMENT FOR MOUTH-HARMONICAS. ARTHUR S. ALEXANDER and ALFRED VIEHER, New York, N. Y. Filed Jan. 18, 1902. Serial No. 90,295. (No model.)

Claim.—1. A mouth-harmonica attachment, comprising a bell having in its side an opening extending lengthwise of the side, and terminating a distance from each end of the bell, the opening being arranged to receive the mouth-harmonica from within the bell, and fastening devices within the bell for holding the mouth-harmonica in position, as set forth.

2. The combination with a mouth-harmonica, of an attachment comprising a bell having in its side an opening into which the said mouth-harmonica is inserted from within the bell, and fastening devices in the bell for holding the mouth-harmonica in position thereon, the discharge edge of the harmonica extending a distance within the bell, as set forth.

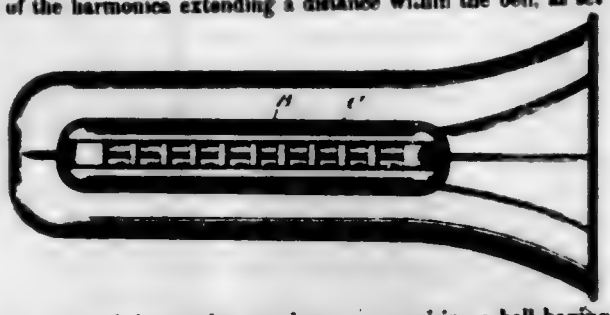

3. A mouth-harmonica attachment, comprising a bell having in its side an opening for the reception of the mouth-harmonica, and fastening devices in the bell for holding the mouth-harmonica in position, one of the said fastening devices being fixed at the closed end of the bell and the other fastening device being movable at the mouth of the bell, as set forth.

4. The combination with a mouth-harmonica having longitudinal ribs on its cover, of a bell having in its side an opening for the insertion of the mouth-harmonica, the said ribs abutting against the wall of the bell at the inside thereof, and fastening devices for holding the mouth-harmonica in position on the bell, as set forth.

5. The combination with a mouth-harmonica having tapering sides, of a bell provided in its side with an opening having a width somewhat less than the width of the mouth-harmonica at the discharge edge thereof for the side walls of the opening to limit the outward movement of the mouth-harmonica on inserting the latter into the said opening from the inside of the bell, the said discharge edge extending a distance within the bell, and fastening devices for holding the mouth-harmonica in position on the bell, as set forth.

708,753. INSTRUMENT FOR INDICATING THE PRESSURE OF GAS. MAX ARNDT, Aix-la-Chapelle, Germany. Filed Jan. 17, 1898. Serial No. 666,085. (No model.)

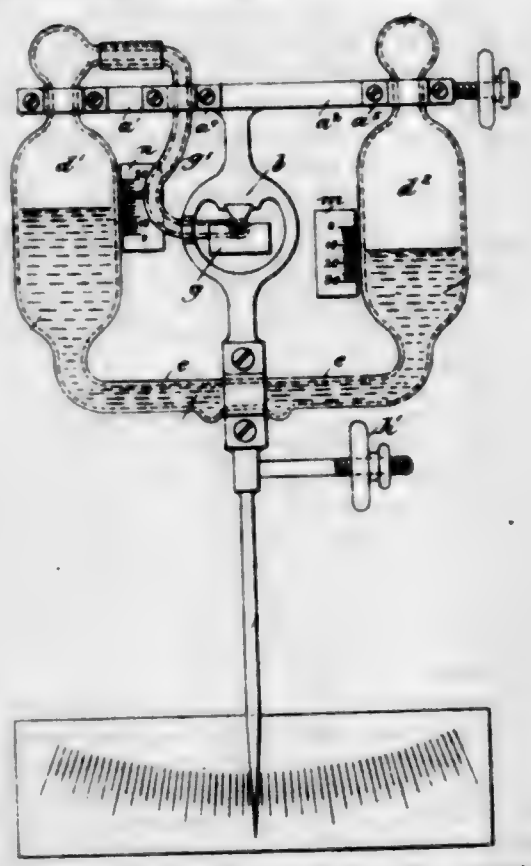

Claim.—Apparatus such as described, comprising a scale-beam, knife-edge and support, a vessel open to the atmosphere held in one end of the scale-beam, a closed vessel held in the other end thereof, a rigid tube e connecting the bottoms of the vessels, a flexible inlet-tube for gas leading from the support near the knife-edge to the upper end of the closed vessel, fixed scales proximate the liquid-levels in the vessels, whereby the reading on said scales will equal the difference between the elevation or depression of the liquid-level due to the swing of the apparatus and that due to the displacement of the liquid from one vessel to the other, and adjustable weights above and below the knife-edge to set the connected parts to a predetermined scale-point, and a pointer secured to the beam and arranged to travel over a suitable scale to indicate the amount of swing of the entire instrument, substantially as and for the purpose set forth.

708,754. CROSSING-GATE. MARK C. BARRY, Atlanta, Ga., assignor of one-half to Andrew L. Barry, Atlanta, Ga. Filed Mar. 10, 1902. Serial No. 97,469. (No model.)

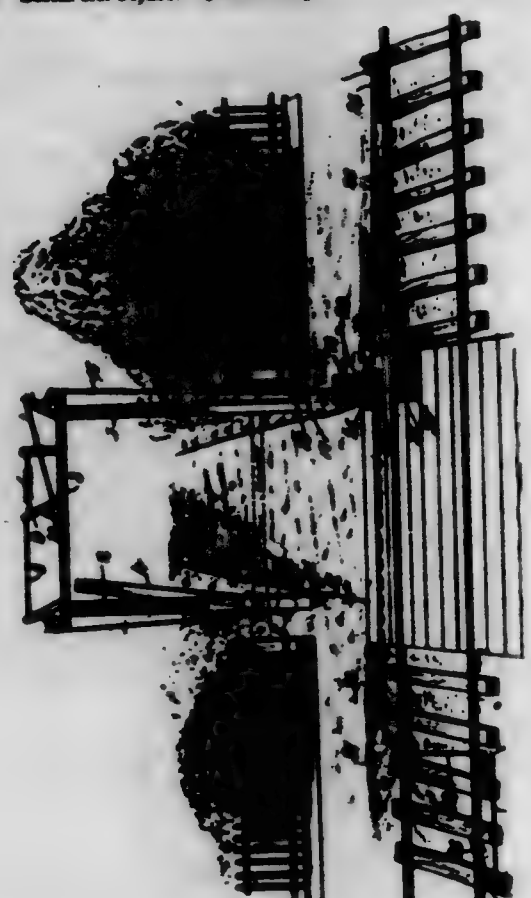

Claim.—1. A crossing-gate comprising a frame, a gate-bar mounted to swing in said frame, a spring for moving said gate-bar to closing position, a sliding bar arranged at one side of the track and operating to release the spring tension, a locking device for said bar, and devices actuated by a train for moving the locking device out of engagement with the sliding bar, substantially as specified.

2. A crossing-gate comprising a frame, a gate-bar mounted to swing in the frame, a spring for moving said gate-bar to closing position, a sliding bar arranged at one side of the track and having connections for releasing the tension of the spring, a locking-block for the bar, means operated by a train for moving the locking-block out of engagement with the bar, and means operated by a train for resetting the sliding bar, substantially as specified.

3. A crossing-gate comprising a frame, a gate-bar mounted to swing in the frame and weighted rearward of its pivot, a spring for moving the gate-bar to closing position, a frame arranged at one side of the track, a sliding bar movable transversely through said frame and having connections for releasing the tension of the spring, a locking-block guided vertically in said frame, angle-levers mounted on opposite sides of the frame and having pivotal connection with the block, rock-shafts arranged at opposite sides of the track and at opposite sides of the crossing, connections between said rock-shafts and the angle-levers, and levers mounted on said rock-shafts and adapted to be engaged by a part carried by a train, substantially as specified.

4. A crossing-gate comprising a frame, a gate-bar mounted to swing in the frame, a spring for moving said gate to closing position, a frame arranged at one side of the track, a sliding bar movable transversely through said frame and operating to release the spring, releasing-levers arranged at opposite sides of the track and at opposite sides of the crossing, connections between said levers and the sliding bar for releasing the same, a resetting-lever mounted to swing horizontally between the rails, and a connection between said resetting-lever and the sliding bar, substantially as specified.

5. A crossing-gate comprising a frame having uprights and a cross-timber at the top, a gate-bar mounted to swing on one of the uprights, an angle-lever having connection with the gate-bar rearward of its pivotal point, a lever-mounted on the cross-bar, a connection between the upper end of said lever and the upwardly-disposed member of the angle-lever, a fixed standard on the cross-bar, a spring connection between said standard and the upper portion of the lever, an angle-lever at the opposite end of the cross-bar, a connection between the upwardly-disposed member of said angle-lever and the lower end of the spring-holding lever, an angle-lever arranged at the base of the frame and having connection with a member of the last-named angle-lever, a frame arranged between the track and the angle-lever at the base of the frame, a sliding bar movable transversely through said frame, a yielding connection between said lever and the sliding bar, a locking-block guided vertically in the frame, angle-levers mounted on the frame at opposite sides and connecting with the block, rock-shafts arranged at opposite sides of the track and at opposite sides of the crossing, connections between said rock-shafts and the angle-levers on the frame, levers on said rock-shafts, a horizontally-swinging curved lever between the track-rails, and a connection between said horizontally-swinging lever and the sliding bar, substantially as specified.

708,755. TIE-PLATING MACHINE. GEORGE L. BENDER, San Francisco, Cal., assignor of one-half to W. A. Bender, San Francisco, Cal. Filed Oct. 26, 1901. Serial No. 79,856. (No model.)

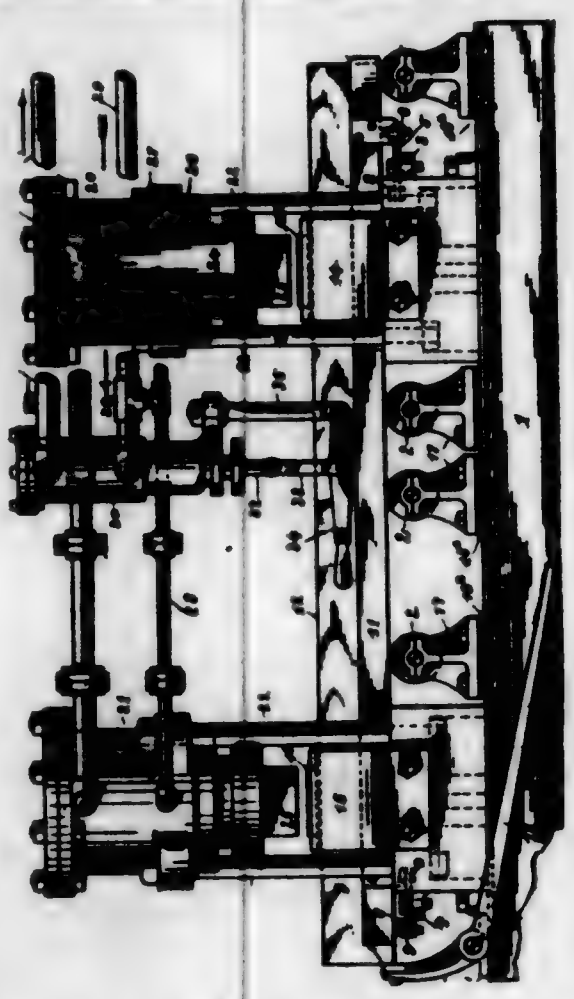

Claim.—1. A tie-plating apparatus comprising means for receiving and centering a tie, devices for holding tie-plates gaged to the tie, and means for exerting pressure upon the tie-plates and driving same into the tie.

2. A tie-plating apparatus comprising means whereby the tie is received and centered, spaced devices for receiving the tie-plates and holding same gaged to the tie, devices for limiting the inward movement of the tie and means for forcing the tie-plates into the tie.

3. A tie-plating machine comprising means for receiving the tie to be plated, adjustable gage-plates for the tie-plates, mechanism whereby the tie is centered and held during the operation of plating, and adjustable means for exerting pressure upon the tie-plates and forcing same into the tie.

4. In a tie-plating machine, the combination with the supporting-rails for the tie, of means for centering and locking the tie to be plated.

5. In a tie-plating machine, the combination with the bed, of means for centering the tie placed thereon and holding same locked during the operation of applying tie-plates to the tie, gage-plates for the tie-plates, vertically-movable pistons for forcing the tie-plates into the tie, and of means for imparting vertical movement to the said pistons.

6. In a machine of the described character, the combination with the bed, of tie-rails arranged above the bed, cushions interposed between the bed and rails, and means whereby the tie is centered and held centered.

7. In a tie-plating machine, the combination with the bed, of gage-plates for the tie-plates adjustably secured thereto, of means whereby the tie is centered and held centered during the operation of applying tie-plates to the tie, and mechanism whereby the tie-plates are forced into the tie.

8. In a machine of the described character, the combination with the bed, of the gage-plates attached thereto, means for centering and hold-

ing the tie centered to the work, of vertically-movable pistons, and mechanism for imparting movement to said pistons.

9. The combination with the bed, of the gage-plates attached thereto, a lever for limiting the inward movement of the tie, said lever being adjustably attached to the bed, and means for centering the tie and holding same centered to the work.

10. In a machine of the described character, the combination with the bed, of means for centering and holding the tie centered to the work, of the vertically-movable pistons, a die-plate attached to the stems thereof, and means for imparting movement to said pistons to force the dies carried thereby into the tie whereby an impression of the tie-plate is formed in the tie at proper points.

11. In a machine for applying tie-plates to a railroad-tie, the combination with movable pressure devices located at a predetermined distance apart, of tie-supporter toward which said movable pressure devices approach, and means for actuating said movable devices whereby the interposed tie-plates and tie are subjected to compression at the points of engagement between the tie-plates and tie.

12. In a machine for applying tie-plates to ties, the combination with movable pressure devices located at a predetermined distance apart, of tie-supporter toward which said movable pressure devices approach, and means for actuating said movable pressure devices whereby the interposed tie-plates and tie are subjected to compression, and means adapted to engage one end of the tie to properly position the same with respect to the tie-plates.

13. In a machine for applying tie-plates to a railroad-tie, the combination with movable pressure devices located at a predetermined distance apart, of tie-supporter toward which said movable pressure devices approach whereby the interposed tie-plates and tie are subjected to compression, and means for retaining the tie in proper position with respect to the tie-plates while the latter are being inserted.

14. In a machine for applying tie-plates to a railroad-tie, the combination with movable pressure devices adjustably located at a predetermined distance apart, of tie-supporter toward which said movable pressure devices approach, means for actuating said movable pressure devices whereby the interposed tie-plates and tie are subjected to compression, means adapted to engage an end of the tie to properly position the same with respect to the tie-plates, and means for retaining the tie in the desired position relative to the plates while the latter are being applied.

15. In a machine for applying tie-plates to a railroad-tie, the combination with cylinders located at a predetermined distance apart, of pistons therein, of tie-supporter toward which such pistons are adapted to move and means for controlling the admission of fluid-pressure to said cylinders whereby the interposed tie-plates and tie are subjected to compression at the points of engagement between said plates and tie.

708,756. FENCE-WIRE FASTENER. REMUS M. RENFRO, Gettysburg, S. D. Filed Aug. 5, 1901. Serial No. 70,908. (No model.)

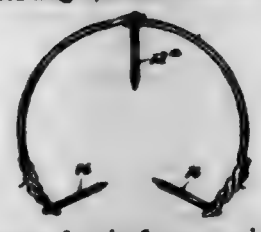

Claim.—1. A fastener for wire fences, consisting of a strand or band designed to be bent around a fence-post to secure a line-wire thereto, and having a nail at each end thereof, and a nail carried by the strand or band and located between the end nails.

2. A fastener for wire fences, consisting of a strand of wire designed to be bent around a fence-post to secure a line-wire thereto and having a nail loosely connected to each end thereof, and a nail loosely connected to the strand and located between the end nails.

3. In a wire-fastener, in combination, a fence-post, a line-wire, and a fastener comprising a strand of wire bent around the post and having an intermediate pin and a pin flexibly connected to each end of the strand, the line-wire passing between the post and the strand and resting upon the intermediate pin of the latter.

4. In a wire-fastener, in combination, a fence-post, a line-wire, and a fastener comprising a strand of wire or band having a pin flexibly connected to each end, a pin intermediate of the ends of the strand, the strand being designed to be passed over the line-wire and the ends bent around the post and secured by the pins, and the strand being of sufficient length to partially or entirely encircle the post.

5. A fastener for wire fences, consisting of a strand designed to be bent around a fence-post to secure a line-wire thereto and having an eye at each end thereof and an intermediate eye, and a nail engaging each of said eyes.

6. In a wire-fastener, in combination, a fence-post, a line-wire, and a strand passing over the line-wire and about the post and having its ends secured to the side of the post opposite to the line-wire, and a nail loosely connected to each of the said ends for securing the same.

708,757. AUTOMATIC FEED-REGULATOR FOR STEAM-BOILERS. JOHN R. V. BENFORD, Camberne, England. Filed Mar. 7, 1902. Serial No. 97,694. (No model.)

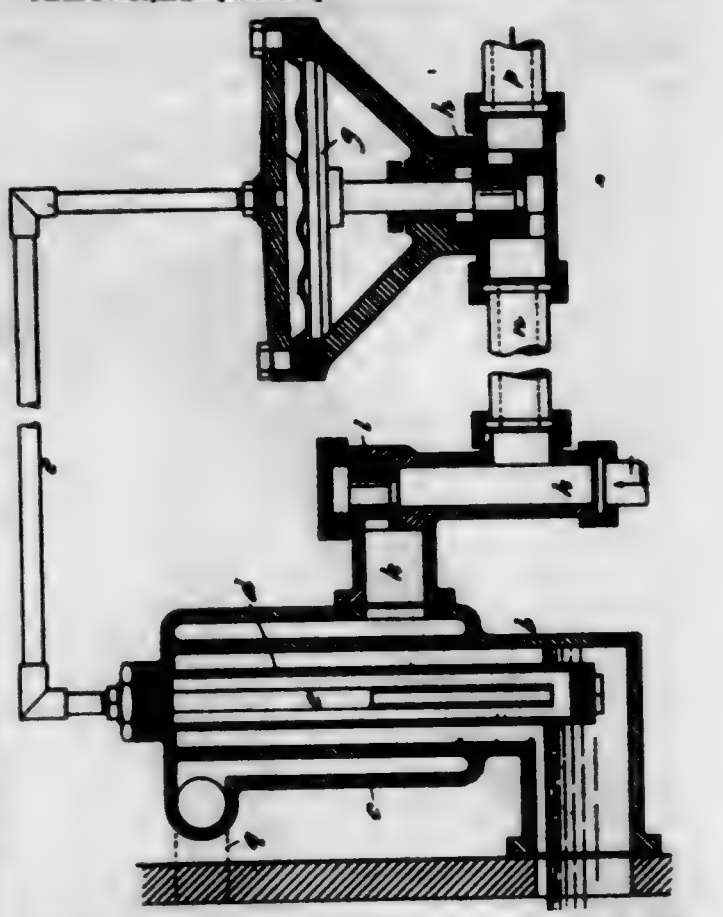

Claim.—An automatic feed-regulator for a steam-boiler comprising a vessel communicating at its bottom with the boiler at the normal water-level, and having a jacket communicating with the boiler and through a check-valve with the feed-pipe, within the said vessel an inner vessel communicating with a space covered by a flexible diaphragm bearing upon the stem of a valve situated in a by-pass to the suction of the feed, arranged and operating substantially as described.

708,758. PNEUMATIC RIVETING-TOOL. JOHN W. BERNSTROM and RICHARD W. FUNK, New York, N. Y., assignors to the Empire Pneumatic Tool Company, New York, N. Y., a Corporation of New York. Filed Dec. 14, 1901. Serial No. 86,011. (No model.)

Claim.—1. The combination, with a casing provided with supply channels and ports, of a handle at one end of the same, a tool guided in the opposite end of the casing, a piston-valve located at the interior of the casing, said piston-valve being hollow and provided with circumferential grooves and an opening in one of said grooves, a return-channel connecting the rear end of the casing with the front end of the same, a sliding hammer in the casing, a cushioning-spring located between the piston-valve and handle, a channel connecting the interior of the casing with the space behind the valve, and shoulders at the rear end of the casing for arresting the spring and the piston-valve in their forward motion, substantially as set forth.

2. The combination, with a casing, of a bow-shaped handle attached to the rear end of the same, an inlet-valve in the handle, a supply-channel in the handle communicating with the supply-tube, a supply-channel in the rear portion of the casing, provided with ports, a hollow piston-valve in the rear portion of the casing provided with two circumferential grooves and an opening in one of said grooves, a sliding hammer in the casing, a sliding block closing the front end of the casing, a channel in the casing for supplying compressed air for the return of the hammer, a channel connecting the interior of the casing with the space between the piston-valve and the handle, and exhaust-ports for permitting escape of air from the interior of the casing between the slide-block and hammer, and between the hammer and piston-valve, respectively on the forward and return strokes of the hammer, substantially as set forth.

3. The combination, with a casing, of a handle attached to the rear end of the same, an inlet-valve in the handle, a supply-channel in the handle, a supply-channel in the rear portion of the casing provided with ports opening into the interior of the same, a return-channel in the cas-

ing provided with ports at the rear portion of the casing, a hollow piston-valve in the rear portion of the casing between the ports of the supply and return channels and provided with two annular grooves and an opening in one of said grooves to the interior of the valve, shoulders at the rear portion of the casing, a spring between the rear shoulder and the handle, a rim on the piston-valve adapted to abut against the other shoulder, the area of the rear end of said valve being slightly larger than that of its front end, a sliding hammer in the casing, a channel connecting the interior of the casing with the space behind the piston-valve, and exhaust-ports communicating with the interior of the casing, substantially as set forth.

708,759. ELECTRICAL SPARKING DEVICE. ALFRED C. BROWN, London, England. Filed Dec. 21, 1901. Serial No. 86,762. (No model.)

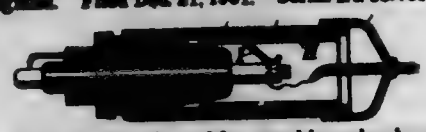

Claim.—1. The combination with a sparking-plug having a metallic body through which one of the electrodes passes, of a tubular condenser comprising two metallic tubes one of which is in immediate metallic union with the body of the plug while the other is contained within the first and is in direct connection with the wire or conductor terminating in the other electrodes of the device.

2. The combination with a sparking device for an internal-combustion engine comprising a metallic plug, an electrode connected therewith, and a second electrode passing through the plug but insulated therefrom, of a condenser, the capacity plates of which consist of two tubes insulated from one another one of which is connected with the plug and has its axis substantially coincident with the axis thereof, while the other is metallically connected with the conductor which terminates in the opposite electrode of the plug.

3. The combination with a sparking-plug, of a condenser whose two opposite plates are both in immediate direct and uninterrupted electrical connection with the two opposite sides or poles of said plug respectively, as and for the purpose set forth.

708,760. BRICK OR BLOCK. LEWIS A. BROWN, St. Louis, Mo. Filed Aug. 21, 1901. Serial No. 72,603. (No model.)

Claim.—1. The combination with a brick or block, of a metallic plate having projections rigid with its edges which extend into the body of the brick in different directions, substantially as specified.

2. The combination with a brick or block, of a metallic plate having its edges turned inwardly and inclosed within the brick or block, the exposed surface of the plate being of equal width with the body of the brick or block and forming the outer surface thereof, substantially as specified.

3. A brick, having one or more of its surfaces protected by metallic plates, the inner edges of which are turned into and molded within the brick, substantially as specified.

4. The combination with a brick, of a metallic plate having its edges turned inwardly and inclosed within the brick, the said plate forming the outer surface of the brick, substantially as specified

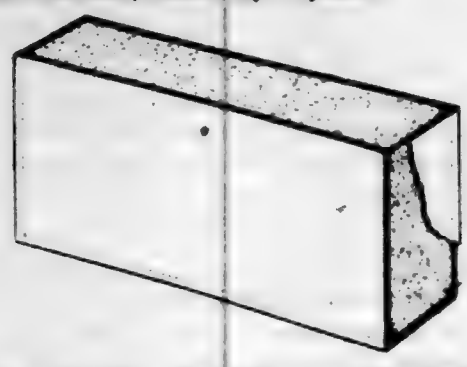

5. The combination with a brick, of a plate 1 having its edges 2 turned inwardly at an incline and inclosed within the brick, the said plate being connected thereto while the brick is being molded, substantially as specified.

6. The combination with a brick or block composed of sand, cement and sulfur, of a metallic plate having its edges turned inwardly and inclosed within the brick, the said plate forming the outer surface of the brick or block, substantially as specified.

7. The combination with a brick or block, of a metallic plate having projections extending into the body of the brick in different directions to prevent detachment of the said plate, substantially as specified.

708,761. MERRY-GO-ROUND. GEORGE D. BULLER, Duquesne, Pa. Filed Jan. 14, 1902. Serial No. 89,736. (No model.)

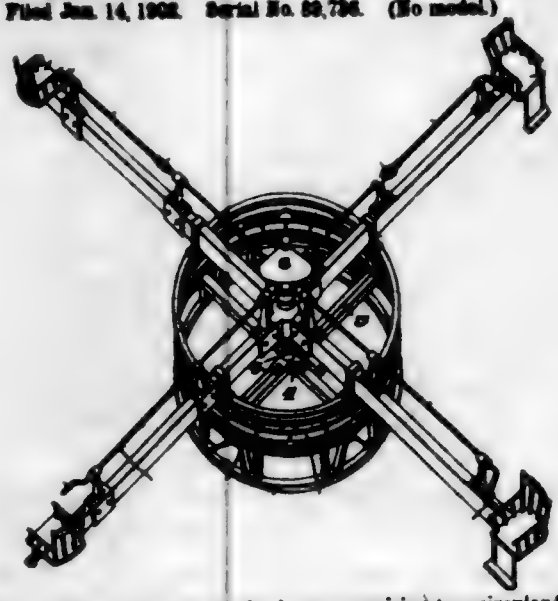

Claim.—In a merry-go-round, a base comprising two circular frames, suitably spaced apart with braces secured to the upper frame extending inwardly to the center thereof and carrying integrally-formed arms with a central boss carried by the arms, a track secured upon the upper of said frames, a frame carrying grooved wheels mounted on said track, a turn-table comprising a circular frame carrying a track on its under side engaging in said grooves of the wheels, a stationary shaft secured in said central boss, a series of cross-beams carrying a cross-head at their one end mounted on said shaft, yokes straddling the cross-beams and secured to the frame of the turn-table, means for operating the turn-table, chairs carrying U-shaped brackets seated on the upper face of the cross-beams with screw-threaded rods carried by the chair and passing through the cross-beams, U-shaped brackets secured to the under face of the cross-beams and means on the lower ends of the rods for engagement with the lower bracket whereby the seat may be retained in its predetermined position, substantially as described.

708,762. VENTILATOR. THEODORE M. CARPENTER and FRED L. BAKER, Los Angeles, Cal. Filed Oct. 18, 1901. Serial No. 79,168. (No model.)

Claim.—1. In a ventilator of the character described, a casing having an upper and lower compartment, the lower compartment having an inlet in its bottom and an outlet in its side, and the upper compartment having a conical bottom and provided with a water-supply pipe leading into the same above the bottom and a discharge-pipe leading from the bottom thereof, a vertical shaft mounted in the casing and having its ends extending into the compartments, a water-wheel mounted upon the upper end of the shaft in the upper compartment and into which the apex of the conical bottom of the upper compartment extends, said wheel being

provided with peripheral buckets, and a fan mounted upon the lower end of the shaft in the lower compartment, as set forth.

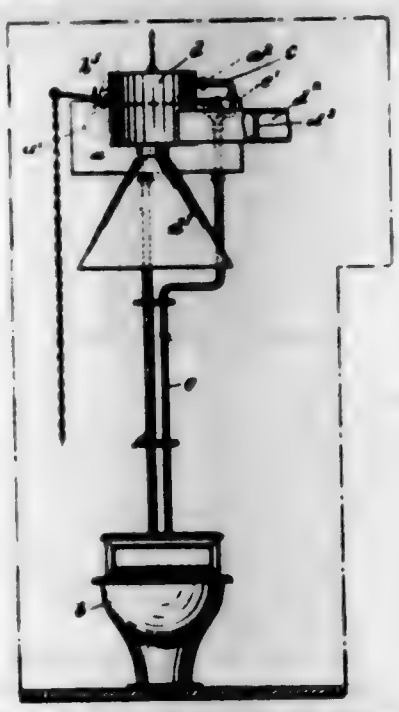

2. The combination of a casing, a partition therein, a cone on the top of the partition, an outlet-pipe leading from the casing at the base of the cone, a tube passing from the apex of the cone down to the partition, a shaft mounted in the tube, an annular flange arranged on top of the cone adjacent to its apex, a fan attached to the lower end of the shaft, a disk attached to the upper end of the shaft above the said annular flange, and buckets carried by the disk at the periphery thereof, the casing having inlet and outlet openings at each side of the partition, for the purpose specified.

3. The combination with a flushing-tank, of a casing arranged adjacent to the flushing-tank and formed with an upper and lower chamber, the upper chamber having a conical bottom and the lower chamber having an inlet in its bottom and an outlet in its side, a horizontal water-wheel mounted in the upper chamber and into which the apex of the conical bottom of the upper chamber extends, said wheel being provided with peripheral buckets, a fan in the lower chamber, the fan and wheel being mounted on a common shaft, a supply-pipe leading into the upper chamber and discharging onto the buckets of the wheel, a valve in said pipe, a float in the flushing-tank and controlling the valve, and a pipe leading from the upper chamber into the flushing-tank to convey the overflow of the wheel to said tank, as set forth.

4. The combination with a flushing-tank, of a casing arranged adjacent to the flushing-tank and having two chambers one above the other, the upper chamber having a conical bottom, and the lower chamber having an inlet in its bottom and a valved outlet in its side, a head projecting from the bottom of the lower chamber, a horizontal water-wheel mounted in the upper chamber and into which the apex of the conical bottom of the chamber extends, said wheel having peripheral buckets, a fan mounted in the lower chamber, a vertical shaft mounted in the casing and carrying the fan and wheel, a water-supply pipe leading into the upper chamber of the casing, and discharging onto the water-wheel, a valve in the said pipe, a float in the flushing-tank and controlling the valve and a pipe leading from the bottom of the upper chamber into the flushing-tank to convey the overflow from the wheel to the said tank, as set forth.

5. The combination with a chamber having a conical bottom, of a water-wheel mounted in the chamber and comprising a disk having a downwardly-projecting peripheral flange carrying buckets, and an annular flange arranged on the conical bottom of the chamber and extending upward to within a short distance of the body of the wheel, as and for the purpose set forth.

6. The combination with a flushing-tank, of a casing arranged adjacent to the flushing-tank and having two chambers one above the other, the upper chamber having a conical bottom and an outlet leading from the bottom into the flushing-tank, and the lower chamber having an inlet on its bottom and a lateral outlet, a fan in the lower chamber, a water-wheel in the upper chamber and comprising a disk having a downwardly-projecting peripheral flange carrying buckets, the wheel and fan being mounted on a common vertical shaft, an annular flange arranged on the conical bottom and projecting to within a short distance of the body of the wheel, a water-supply pipe leading into the upper chamber of the casing and discharging onto the water-wheel, a valve in said pipe, and a float in the flushing-tank and controlling the valve, as set forth.

7. In a ventilator of the character described, the combination with a chamber provided with a conical bottom having a central opening, a tube fitting in the opening of the conical bottom and having a conical head at its upper end fitting upon the conical bottom of said chamber, a packing between the tube and the wall of the opening of the bottom, a shaft projecting through the tube and a water-wheel mounted on the upper end of the shaft, said wheel comprising a disk having a downwardly-projecting peripheral flange carrying buckets, as set forth.

708,768. THEATRICAL SCENERY. LINCOLN J. CARTER, Chicago, Ill. Filed Dec. 21, 1901. Serial No. 86,917. (No model.)

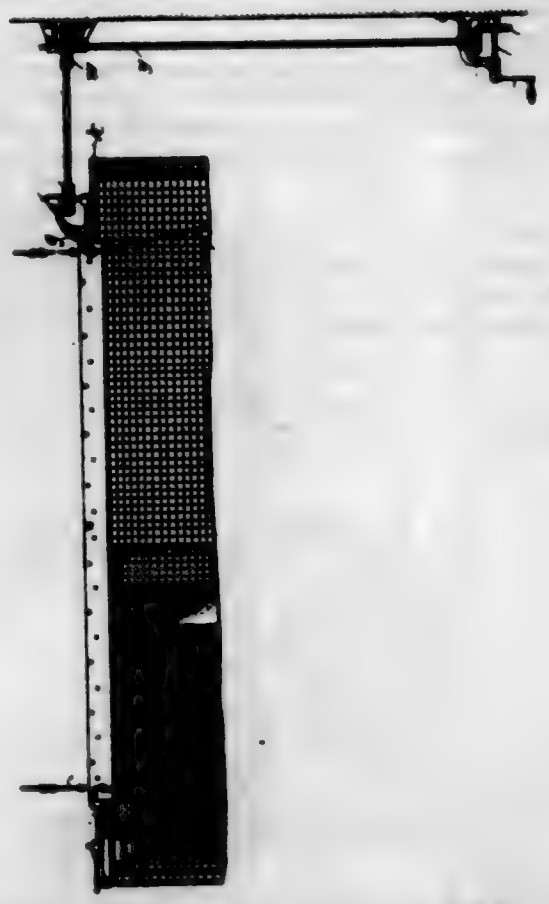

Claim.—1. In an apparatus of the class described, the combination of a removable suspensible frame, two sets of pulley-wheels each consisting of a plurality of integral belt-wheels of different diameters rotatably mounted upon and suspended with such frame, a plurality of endless belts extending from one set of wheels to the other and mounted thereon, and an endless curtain having web and open-work portions suspended from each belt and means for suspending the frame, substantially as described.

2. In an apparatus of the class described, the combination of a removable suspensible frame, two sets of pulley-wheels each consisting of a plurality of integral belt-wheels of different diameters rotatably mounted upon and suspended with such frame, a plurality of endless belts extending from one set of wheels to the other and mounted thereon, an endless curtain having open-work portions suspended from each belt, and means for rotating the pulley-wheels, substantially as described.

3. In an apparatus of the class described, the combination of two sets of pulley-wheels each consisting of a plurality of integral belt-wheels of different diameters, an annular flange at the bottom of each belt-wheel, a plurality of endless belts extending from one set of wheels to the other and mounted thereon, an endless curtain suspended from the inner belt, and an endless curtain suspended from each belt outside of the inner belt and its curtain and provided with open-work netting portions for permitting the inner portions to be seen therethrough, substantially as described.

4. In an apparatus of the class described, the combination of a removable suspensible frame, two sets of pulley-wheels each consisting of a plurality of integral belt-wheels of different diameters rotatably mounted upon and suspended with such frame, an annular flange at the bottom of each belt-wheel, a plurality of endless belts extending from one set of wheels to the other and mounted thereon, an endless curtain for the inner belt, and an endless curtain suspended from each belt outside of the inner belt and its curtain and provided with open-work netting portions for permitting the inner curtains to be seen therethrough, substantially as described.

5. In an apparatus of the class described, the combination of a movable main frame, brackets upon each end of such frame, two sets of pulley-wheels mounted in such brackets and a plurality of endless curtains extending from one set of wheels to the other suspended therefrom and provided with open-work netting portions for permitting the inner curtains to be seen therethrough, substantially as described.

6. In an apparatus of the class described, the combination of a removable suspensible main frame, brackets upon each end of such frame, two sets of pulley-wheels mounted in such brackets and a plurality of endless curtains extending from one set of wheels to the other and provided with open-work netting portions for permitting the inner curtains to be seen therethrough, means for suspending the frame, and means for rotating the pulley-wheels, substantially as described.

7. In an apparatus of the class described, the combination of two sets of pulley-wheels, each consisting of a plurality of wheels of different diameters, and a plurality of endless flexible curtains, having transparent portions, extending from one set of wheels to the other, and mounted thereon, substantially as described.

8. In an apparatus of the class described, the combination of two sets of pulley-wheels, each consisting of a plurality of wheels of different diameters and a plurality of endless flexible curtains, having web and open-work portions, extending from one set of wheels to the other, and mounted thereon, and means for rotating the pulley-wheels, substantially as described.

9. In mechanisms of the class described, the combination of a suspensible frame, a plurality of endless concentric flexible curtains having web and open-work portions movably mounted on such frame, means for moving the curtains at different rates of speed, and means for suspending the frame, substantially as described.

708,764. GRAPHOPHONE ATTACHMENT. LOUIS H. CHAPMAN, Littlehills, N. Y. Filed Feb. 20, 1901. Serial No. 48,128. (No model.)

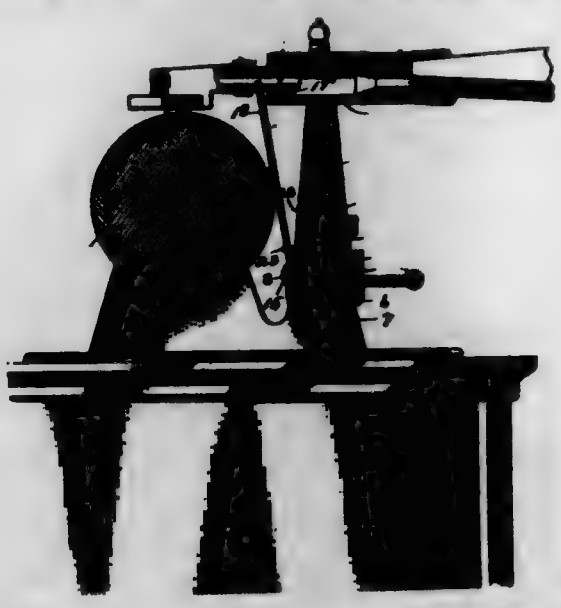

Claim.—1. A sound-box bracket comprising a base adapted for connection to the feed-nut of a graphophone and having a slot to receive the collar thereof, a tubular head having a stem connected to the base adapted for attachment of a sound-funnel at one end, a tube-section pivotally connected with the opposite end of the head, an eye carried by the base and a rod exterior to the stem and base, and passed through the eye, said rod having a yoke at its upper end in which the pivoted tube-section rests and having its lower end disposed in the slot of the base for engagement by the lug or lifting-finger of the collar.

2. A sound-box bracket comprising a base adapted for connection to the feed-nut of a graphophone and having a slot to receive the collar thereof, a tubular head having a stem connected to the base and adapted for attachment of a sound-funnel at one end, a tube-section pivotally connected with the opposite end of the head, an eye carried by the base and a rod exterior to the stem and base, and passed through the eye, said rod having a yoke at its upper end in which the pivoted tube-section rests and having its lower end disposed in the slot of the base for engagement by the lug or lifting-finger of the collar, the head and base being adjustable toward and away from each other.

708,765. RAPID-ACTING VISE. HORACE D. CHIPMAN, Cincinnati, Ohio. Filed Mar. 3, 1902. Serial No. 97,216. (No model.)

Claim.—1. In a vise employing a movable jaw journaled in the frame supporting the stationary jaw, a screw-rod, half-nuts in normal engagement with the screw-rod, a nut-frame normally engaging the said half-nuts, lifting mechanism composed of a cam, the combination of a sector and a key operated by the screw-rod adapted to lift the nut-frame and free the nut engagement by the backward turn of the screw-rod, substantially as specified.

2. In a vise employing a stationary jaw, a sliding jaw supported in the vise-frame, a power-nut composed of segmental half-nuts pivoted to the frame of the vise, in combination with a nut-frame having limbs normally engaging the half-nuts and locking them in position, and swinging said half-nuts by the lifting of the nut-frame, substantially as specified.

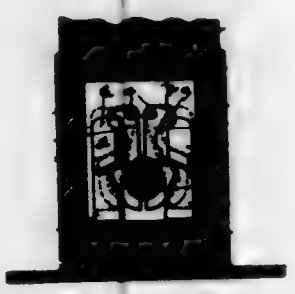

3. In combination with the screw-rod of a vise secured to a movable jaw and half-nuts pivotally attached to the vise-frame, a nut-frame adapted to engage the half-nuts and hold them in the closed or open position, a lifting mechanism composed of a sector pivoted to the nut-frame, a cam having a key feathered engagement with the screw-rod, the sector and cam being so disposed that the sector will be swung laterally by the cam engagement during the forward revolution of the screw-rod and will engage and lift the sector during a part of the backward revolution of said screw-rod, substantially as specified.

4. In a vise, a nut-releasing mechanism composed of a cam having a slotted sleeve encompassing a screw-rod, a sector pivoted to a nut-releasing frame, a feather-key adapted to connect the screw-rod with the cam-sleeve, the parts being so disposed that the sector will swing idly during the forward turn of the screw-rod and come into slipping engagement with the cam by the backward turn of the screw-rod, substantially as specified.

5. In a vise employing a lifting-sector, a cam for operating the same provided with means for periodical engagement with a screw-rod, the said sector being pivoted in the path of the traveling cam, the peripheries of said sector and cam being arcs of a circle adapted to engage each other, substantially as herein specified.

6. In a vise, the combination of a fixed and a sliding jaw, an operating-screw, a housing within the sliding jaw containing two half-nuts pivoted from above so as to normally fall together by gravity upon the contained operating-screw, a vertically-movable frame engaging the opposite sides of the half-nuts exteriorly, said frame being normally seated by gravity, to clamp said half-nuts on the screw, and when lifted to separate said half-nuts therefrom, a cam-sleeve on said screw adapted to turn therewith, and connections between said sleeve and frame adapted to be actuated by the reverse rotation of the screw to lift said frame, whereby the sliding jaw may be adjusted without the screw, substantially as specified.

7. In a vise the combination of a fixed and sliding jaw, an operating-screw, a housing in the sliding jaw containing movable half-nuts for engaging the screw, a sliding frame straddling the half-nuts adapted to clamp the nuts to the screw and release the nuts therefrom, a cam-sleeve on the screw, tripping devices between said frame and cam-sleeve whereby the said frame is raised at a point in one direction of rotation of the screw, a peripheral keyway in the cam-sleeve and a key on the screw engaging said way, whereby the operating-screw may be given a part rotation within said cam-sleeve before the cam-sleeve is caused to rotate therewith, substantially as specified.

8. In a vise, a screw-rod, a cam-sleeve on the screw-rod, a key on the said screw-rod, a peripheral slotted keyway in the said sleeve allowing the said screw-rod when its direction of rotation is reversed to travel a part of one revolution independent of said sleeve, and half-nuts adapted to engage said screw-rod and to be actuated by the said cam, substantially as described.

708,766. WIND-MOTOR. JAMES M. COCHRAN, Gober, Tex. Filed Oct. 16, 1901. Serial No. 78,815. (No model.)

Claim.—1. The combination of a vane provided with a shaft-bearing, a spindle carried by the vane and disposed in a concentric relation to said bearing and extending forwardly beyond the latter, a hollow wheel-shaft sleeved on said spindle and journaled in said bearing, a wheel, and a driven shaft geared to said wheel-shaft.

2. The combination of a vane provided with a vertical hollow bearing and with a bar which extends across the hollow bearing and terminates in a spindle, a hollow wheel-shaft sleeved on said spindle, and driven shafts geared to the wheel-shaft, one of the driven shafts being journaled in said bar.

3. A wind-motor having a vane provided with a vertical hub mounted to turn, a brace for the vane-body, and an extension on the brace for forming a bearing for the wind-wheel shaft, as set forth.

708,766.

and a chamber I in such supply-pipe having the screw-threaded portion i^3 matching the threads D^2, the portion D^3 of the burner being open-work so as to constitute a strong extension of the burner across the chamber I, but so liberally apertured as to freely admit the gas and air, such apparatus being adapted to allow the burner to be adjusted outward and inward and to be removed and replaced when required without disturbing the other parts, all substantially as herein specified

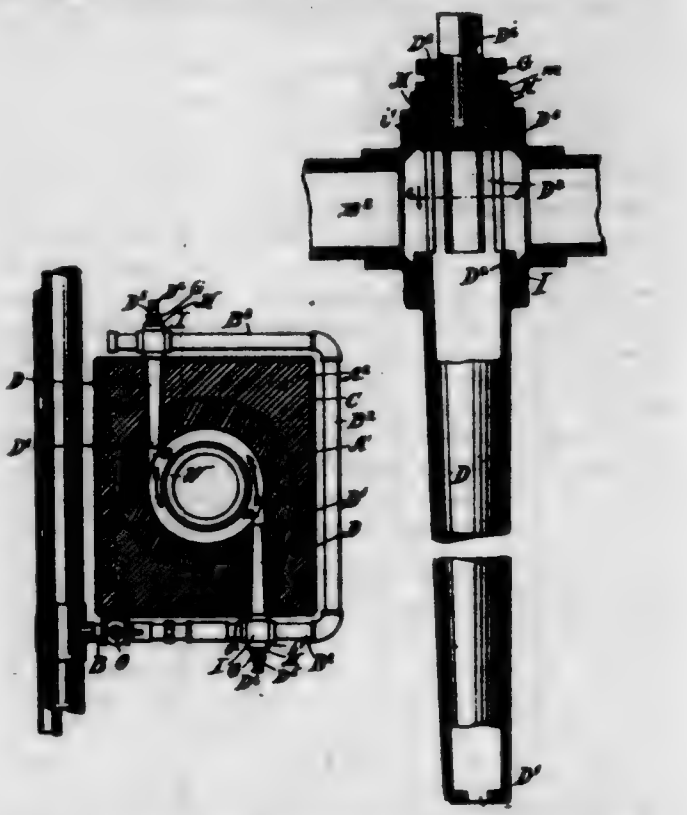

2. In a metallurgical apparatus having a furnace-lining A' with a passage *a* leading from the outside to the inside of the furnace-wall, and a supply-pipe B^3 arranged to bring gases under pressure, a chamber I in said supply-pipe having the internally-screw-threaded part i' and also having the internally-screw-threaded part i^3 for holding the burner and a burner *D* extending longitudinally of such passage and having the screw-threaded part D^3 thereon, in combination with each other and with the screw-threaded ring M as matched in the screw-threaded orifice i' on the outer side of said chamber, adapted to serve the double function of a stuffing-box and a jam-nut, all substantially as herein specified.

708,767. TRANSFER-FRAME FOR LETTER-FILES AND BINDERS. JOHN F. CORDER, Chicago, Ill. Filed Feb. 2, 1901. Serial No. 45,750. (No model.)

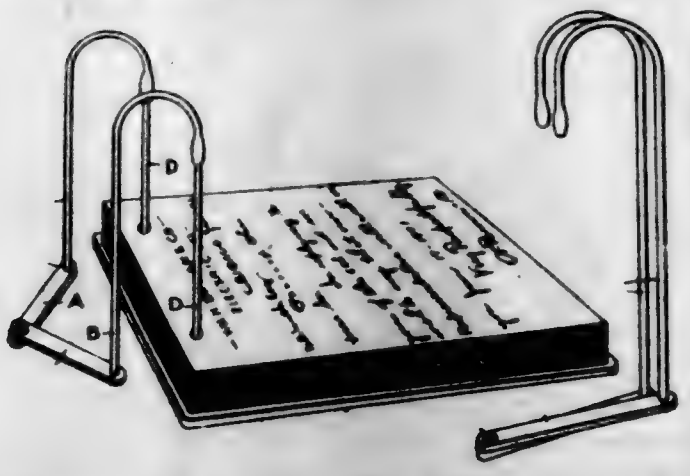

Claim.—1. The combination with a jointed base, of posts adjustably secured thereon and socketed ends on said posts.

2. In a device of the class described, the combination with hinged base-bars of a post adjustably secured on each, curved ends on said posts and means for engaging the same on the posts of a loose-leaf binder.

3. The combination with a plurality of curved posts, of means on each for engaging the posts of a loose-leaf binder and jointed base-sections adjustably engaging said posts and adapted to permit the same to be adjusted to varying distances apart.

4. A transfer-frame comprising a plurality of articulated base-bars, posts adjustably and rotatably supported on each, the free end of each post being curved downwardly and provided at its extremity with a socket adapted to engage over a post of a loose-leaf binder.

708,768. FURNACE. PHILIP GERSHMAN, Wakefield, N. Y. Filed Mar. 30, 1901. Serial No. 53,722. (No model.)

Claim.—1. In a metallurgical apparatus, a furnace A having a tangential passage *a* leading from the outside of the furnace-wall to the interior space of the furnace and a supply-pipe B^3 arranged to bring gases under pressure, a burner D adapted for being inserted and removed longitudinally of such passage, a screw-threaded portion D^2 on such burner, a stuffing-box on the exterior of the chamber, a further extension of the burner outward beyond the stuffing-box equipped to receive a wrench,

2. In a metallurgical apparatus having a furnace-lining A' with a passage *a* leading from the outside to the inside of the furnace-wall, and a supply-pipe B^3 arranged to bring gases under pressure, a chamber I in said supply-pipe having the internally-screw-threaded part i' and also having the internally-screw-threaded part i^3 for holding the burner and a burner *D* extending longitudinally of such passage and having the screw-threaded part D^3 thereon, in combination with each other and with the screw-threaded ring M as matched in the screw-threaded orifice i' on the outer side of said chamber, adapted to serve the double function of a stuffing-box and a jam-nut, all substantially as herein specified.

708,769. MOTOR-VEHICLE. GEORGE E. DE LONG, New York, N. Y., assignor to the Industrial Machine Company, Phoenix, N. Y., a Corporation. Filed Feb. 20, 1901. Serial No. 48,650. (No model.)

Claim.—1. In a motor-cycle the combination with a suitable motor, of a frame having two or more hollow sections, a receptacle for the fuel-supply of the motor formed in one of said hollow sections, and a carbureter and igniting devices for the motor located in another of said hollow sections of the frame, substantially as described.

2. In a motor-cycle the combination with a suitable motor and a fuel-supply for the same, of a frame having two or more hollow sections, igniting devices for the motor located in one of said hollow sections, and a carbureter for the motor located in another of said hollow sections of the frame, substantially as described.

3. In a motor-cycle the combination with a suitable motor and a fuel-supply for the same, of a frame having a hollow section, and igniting devices for the motor comprising one or more battery-cells and a sparking coil located in said hollow section of the frame, substantially as described.

4. In a motor-cycle the combination with a suitable motor and a fuel-supply for the same, of a frame having two or more hollow sections, igniting devices for the motor comprising one or more battery-cells and a sparking coil located in one of said hollow sections, and a carbureter for the motor formed in another of said hollow sections of the frame, substantially as described.

5. In a motor-cycle the combination with a suitable motor, of a hollow frame, a receptacle for the fuel-supply and a carbureter for the motor formed in and constituting a part of said hollow frame, and igniting devices for the motor comprising one or more battery-cells and a sparking coil located in said hollow frame, substantially as described.

6. In a motor-cycle the combination with a suitable motor, of a tubular frame of the diamond pattern, a receptacle for the fuel-supply formed in the upper forward brace of said frame, igniting devices for the motor located in the lower forward brace of said frame, and a carbureter for the motor located in the upright brace of said frame, substantially as described.

7. In a motor-cycle the combination with a suitable motor and a fuel-supply for the same, of a tubular frame of the diamond pattern, igniting devices for the motor comprising one or more battery-cells and a sparking coil located in the lower forward brace of the frame, and a carbureter for the motor formed in the upright brace of the frame, substantially as described.

8. In a motor-cycle the combination with a suitable motor and a fuel-supply for the same, of a tubular frame of the diamond pattern, and igniting devices for the motor comprising one or more battery-cells and a sparking coil located in the lower forward brace of the frame, substantially as described.

9. In a motor-bicycle the combination with a tubular frame of the diamond pattern, a receptacle for the fuel-supply formed in the upper forward brace of the same, a suitable motor located near the lower part of the frame, and a carbureter for the motor formed in and constituting a part of the upright brace of the frame, substantially as described.

10. In a motor-cycle the combination with a suitable motor and a fuel-supply for the same, of a tubular frame of the diamond pattern, igniting devices for the motor comprising one or more battery-cells and a sparking coil removably mounted in the lower forward brace of the frame, substantially as described.

11. In a motor-cycle the combination with a suitable motor, of a tubular frame of the diamond pattern, a receptacle for the fuel-supply formed in the upper forward brace of the frame, igniting devices for the motor comprising one or more battery-cells and a sparking coil removably mounted in the lower forward brace of the frame, and a carbureter for the motor formed in the upright brace of the frame, substantially as described.

12. In a motor-cycle the combination with a tubular frame of the diamond pattern having an upright brace divided at its lower portion, of a suitable motor located within the divided portion of the upright brace of the frame, a receptacle for the fuel-supply of the motor formed in the upper forward brace of the frame, igniting devices for the motor comprising one or more battery-cells and a sparking coil removably mounted in the lower forward brace of the frame, and a carbureter for the motor formed in the undivided portion of the upright brace of the frame, substantially as described.

13. A frame for a motor-cycle comprising two or more hollow sections, one of said sections being constructed to form a receptacle for the fuel-supply for the motor and another of said sections being constructed to form a receptacle for the igniting devices of the motor, substantially as described.

14. A frame for a motor-cycle comprising two or more hollow sections, one of said sections being constructed to form a receptacle for the fuel-supply for the motor, and other of said sections being constructed to form receptacles for the carbureter and the igniting devices of the motor, substantially as described.

15. A frame for a motor-cycle having a divided lower rear brace and an upright brace divided at its lower portion, two of the members of the divided portion of the upright brace being connected at their lower ends to the members of the lower rear brace, substantially as described.

16. A frame for a motor-cycle having a lower forward brace, a divided lower rear brace, and an upright brace divided at its lower portion, two of the members of the divided portion of the upright brace being connected at their lower ends to the members of the lower rear brace and another member of the divided portion of the upright brace being connected to the lower forward brace, substantially as described.

708,770. FRUIT-PICKING DEVICE. ISAAC DUNKER, McKees Rocks, Pa. Filed Feb. 24, 1902. Serial No. 95,177. (No model.)

Claim.—In a fruit-picker, the combination of a receptacle formed of strengthening-ribs, a band carried by said ribs extending in a transverse direction thereto, a movable section comprising ribs pivoted to the ends of said band with springs secured to said ribs and the band, a cutter carried by the movable ribs, one of said strengthening-ribs having a guideway formed therein adapted to receive said cutter, said movable section adapted to operate downwardly into the receptacle and carrying a loop at its front portion, and a cord engaging in said loop and over said movable section whereby the said section is actuated downwardly when the cord is operated, substantially as described.

708,771. MOISTENER. LEWIS S. DUNCAN, New York, N. Y. Filed Nov. 12, 1901. Serial No. 81,994. (No model.)

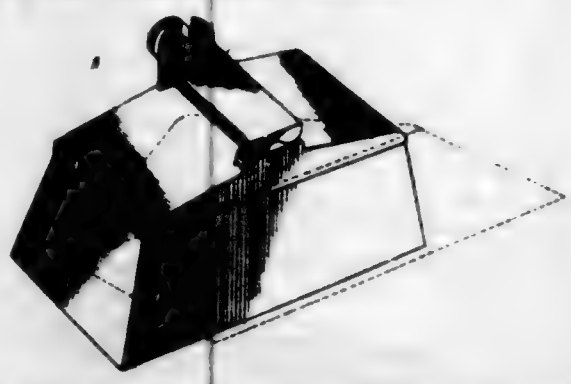

Claim.—1. A moistener, comprising a tank for water, a cover therefor having transverse openings, a wick looped through said openings, and a presser or guide plate vertically adjustable over the wick, substantially as specified.

2. A moistener, comprising a tank, a cover therefor having its upper surface inclined downward from about its center in both directions, the said cover at its central portion being provided with openings, a wick material looped through said openings, and a vertically-adjustable presser-plate concaved on its under side and arranged above the wick, substantially as specified.

3. A moistener, comprising a tank, a cover therefor provided with openings, a wick looped through said openings, and a vertically-adjustable presser or guide plate above the exposed portion of the wick, the said presser or guide plate being longitudinally channeled on its under side, substantially as specified.

4. A moistener, comprising a tank, a cover therefor having its upper surface inclined downward from about its center in both directions, the said cover being provided at its center with transverse openings, a wick looped through said openings, a slotted plate attached to one side of the cover, a presser-plate arranged above the exposed portion of the wick, a threaded shank on said plate extended through the slot in the plate attached to the cover, and a clamping-nut on said shank, substantially as specified.

708,772. RAILWAY-SWITCH. STEPHEN A. DUVALL, Penrith, W. Va. Filed Apr. 17, 1901. Serial No. 56,223. (No model.)

Claim.—In a railway-switch, the combination with the pivoted switch-tongue and the movable rail member, of a switch-bar connected to said tongue and rail member, a bell-crank 4 to which said switch-bar is pivotally connected, a lever 7 extending underneath the rails of the track, a bell-crank 17 located at the opposite side of the track to the bell-crank 4 and to which the lever 7 is pivotally connected, a lever 6 connecting the bell-crank 4 with the lever 7, a link connecting said lever 7 with a rotatable sleeve mounted at the side of the track, an arm carried by said sleeve, and means carried by the locomotive for engagement with said arm to actuate the switch-tongue and movable rail member, substantially as described.

708,778. WINDOW SHADE AND FIXTURE. JOSEPH BOKERT, New York, N. Y. Filed June 26, 1901. Serial No. 66,114. (No model.)

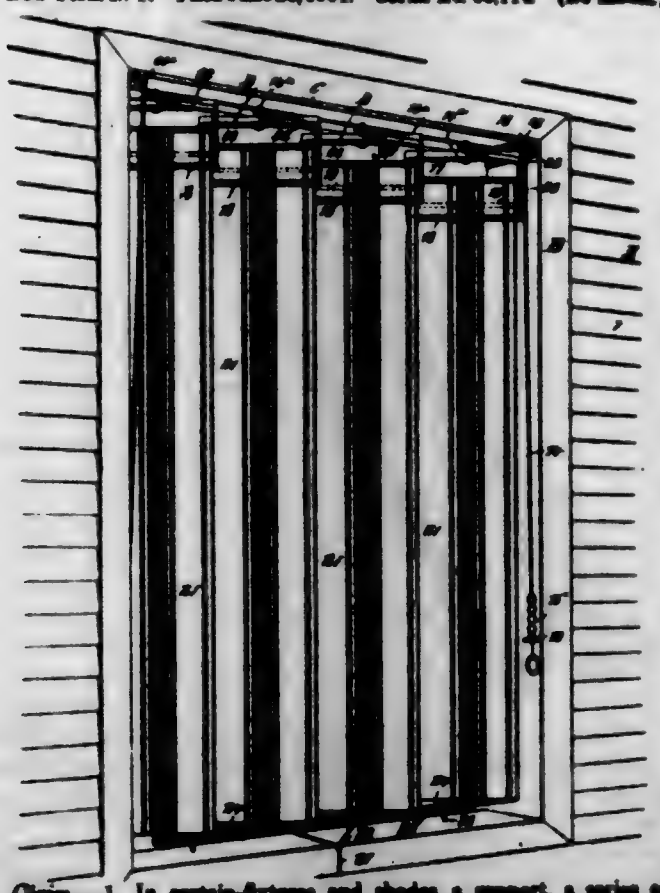

Claim.—1. In curtain-fixtures and shades, a support, a series of hangers pivotally connected with the said support, sundry of the hangers being spring-controlled, a bar pivotally connecting the hangers, shade-rollers carried by the hangers, a shade constructed in sections, the sections being attached to the shade-rollers, a latch-bar pivotally attached to the bottom portions of the sections of the shade, a connecting-bar pivotally connecting the lower portions of the shade-sections, means for turning the hangers upon their pivots, and guide-rollers carried by the hangers below the shade-rollers, between which guide-rollers the sections of the shade are passed, as set forth.

2. In a window-shade, the combination, with a top support and a bottom latch-bar, of hangers sundry of which are spring-controlled intermediately pivoted on the top support, sticks pivotally connected intermediate of their ends to the bottom latch-bar, curtain-sections extending vertically and connected to the hangers and sticks, a connection between the hangers whereby to throw them on their pivots, keepers for the latch-bar, and a device for operating the latch-bar, as described.

3. In a window-shade, the combination with a top support and a sill provided with keepers, of hangers intermediately pivoted on the top support, a latch-bar arranged for engagement with the keepers, sticks pivotally connected intermediate of their ends to the latch-bar, spring shade-rollers mounted on the hangers, curtain-sections mounted on the rollers and fastened to the sticks, trip devices substantially as described for releasing the curtain-rollers, a pivoted bar movable to actuate the trip devices, and a connection between the hangers to throw them upon their pivots, for the purpose specified.

708,774. REPRODUCER FOR PHONOGRAPHS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Mar. 24, 1898. Serial No. 675,000. (No model.)

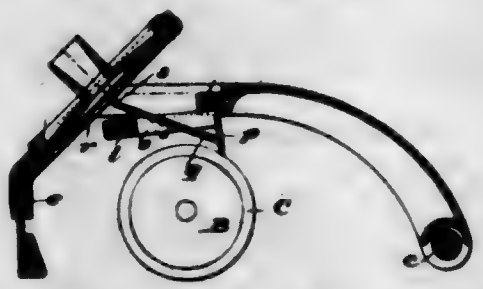

Claim.—1. In a phonograph, the combination with a phonograph-record, of a reproducing-lever carrying a reproducing device coöperating with said record, a weighted retarding device connected with said lever at its end, a diaphragm, and a link connecting said diaphragm with said lever between the reproducing device and said weight, whereby the friction between the reproducing device and the rotating record will impose stress on the diaphragm, substantially as and for the purposes set forth.

2. In a phonograph, the combination with a phonograph-record, of a reproducing-lever carrying a reproducing device which coöperates with the record, said lever being arranged at an angle to the diameter of the record, a weighted retarding device connected to said lever at its end, a diaphragm, and a link connecting said diaphragm with there producing-lever between the reproducing device and said weight, whereby the effort of the weight tends to increase the inclination of said lever to impose tension on the diaphragm, substantially as and for the purposes set forth.

3. In a phonograph, the combination with a phonograph-record, of a reproducing-lever carrying a reproducing device coöperating with said record, a pivoted retarding-weight to which the lever is pivoted at its end, a diaphragm, and a link connecting the diaphragm with said lever between the reproducing device and said weight, substantially as and for the purposes set forth.

4. In a phonograph, the combination with a phonograph-record, of a reproducing-lever carrying a reproducing device coöperating with said record, a pivoted retarding-weight to which the lever is pivoted at its end, a diaphragm, and a link connecting the diaphragm with said lever between the reproducing device and said weight, said link passing through a slot in the weight, substantially as and for the purposes set forth.

5. In a phonograph, the combination with the record, of a reproducing-point, a diaphragm connected to the reproducing-point, a stationary casing with respect to which said diaphragm vibrates, the diaphragm being located sufficiently close to the casing as to allow for a thin film of air between the two, whereby the vibrations of the diaphragm will be retarded, and radial ribs secured to said diaphragm for stiffening said diaphragm so as to produce bodily movements thereof, substantially as set forth.

6. In a phonograph, the combination with the record, of a reproducing-point, a diaphragm connected to the reproducing-point, a stationary casing with respect to which said diaphragm vibrates, the diaphragm being located sufficiently close to the casing as to allow for a thin film of air between the two, whereby the vibrations of the diaphragm will be retarded, and radial ribs of gradually-decreasing thickness secured to said

diaphragm for stiffening said diaphragm so as to produce bodily movements thereof, substantially as set forth.

7. An improved diaphragm for phonographs comprising a plate, and radial ribs secured to the same on one side thereof, substantially as set forth.

8. An improved diaphragm comprising a plate, and radial ribs of gradually-decreasing thickness secured to the same on one side thereof, substantially as set forth.

708,775. PAPER-MAKING MACHINE. GEORGE HERBART, Fulton, N. Y. Filed Dec. 19, 1901. Serial No. 86,504. (No model.)

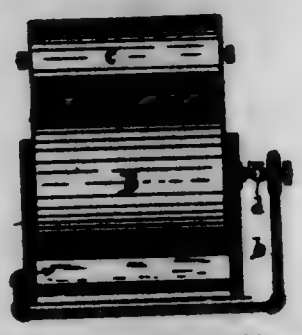

Claim.—In a cylinder paper-making machine organized to form single-ply paper, the combination with the vat and making-cylinder, of means for drawing pulp from the vat at one corner thereof and introducing said pulp into the vat at the diagonally opposite corner substantially as and for the purpose set forth.

708,776. SPRING-SUPPORT FOR FURNITURE. FRANK E. EWER, Medina, N. Y. Filed Jan. 23, 1902. Serial No. 90,262. (No model.)

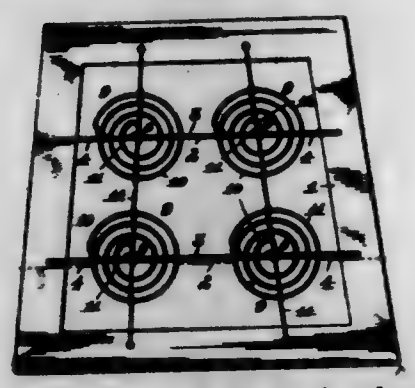

Claim.—1. In a spring-seat, the combination of a support having an eye extending above and an eye extending below the same on a vertical plane, and a spring having its lower end bent upon itself and arranged to enter the upper eye from one side of the support and the lower eye from the other side of the same, substantially as set forth.

2. In a spring-seat, the combination of a wire support having two eyes formed on opposite sides thereof, and a spring having its connecting end bent upon itself and arranged to enter one eye from one side of said support and the other eye from the opposite side of the same, substantially as set forth.

3. In a spring-seat, the combination of a wire support having an eye above and an eye below its longitudinal axis, and a spring having its lower end terminating in a hook which enters the upper eye from one side and the lower eye from the opposite side of said support, substantially as set forth.

4. In a spring-seat, the combination of a support composed of wire bent upon itself to form an eye above and an eye below its longitudinal axis and a spring having a hook at its lower end disposed diametrically to cross the axis of the same, said hook passing through the upper eye from one side of the support and through the lower eye from the opposite side thereof, substantially as set forth.

708,777. CABLE-TESTING APPARATUS. HENRY W. FISHER, Pittsburg, Pa. Filed July 15, 1901. Serial No. 68,340. (No model.)

Claim.—1. The combination with a plurality of instruments of a cable-testing set, a series of different circuits leading to and from said instruments and adapted to be connected up in different ways with said instruments for making various tests, contacts arranged in pairs in said circuits, of a switch comprising a rotary shaft carrying a plurality of contact-arms arranged to bridge the circuits between the different pairs of contacts in such manner that when said switch is in one position all the proper connections will be made with said instruments through some of said contacts for one test and when in another position all the proper connections will be made with said instruments through other contacts for another test.

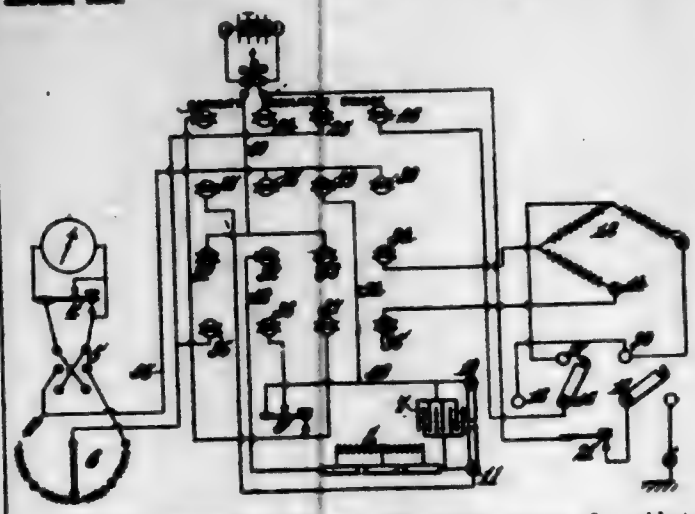

2. The combination with a plurality of instruments of a cable-testing set and a series of different circuits leading to and from said instruments and adapted to be connected up in different ways for making different tests, of contacts in said circuits arranged in horizontal and vertical rows, the contacts being so arranged that when the circuit is closed between all the horizontal contacts in two adjacent vertical rows the apparatus will be set for one test and when closed between all the horizontal contacts in two of the other adjacent vertical rows the apparatus will be set for another test, and a rotary switch having a series of contact-arms thereon equal in number to the contacts in each of the vertical rows, the said arms being located one above the other in the same planes, respectively, as the horizontal rows of contacts and having segmental projections thereon adapted to bridge the circuit between the horizontal contacts in two adjacent rows, whereby when said switch is in one position all the proper connections with said instruments will be made for one test, and when in another position all the proper connections will be made with said instruments for another test.

708,778. WIRE-ROPE MACHINE. EDWARD P. FERGUSON, St. Louis, Mo. Filed Feb. 27, 1900. Serial No. 6,770. (No model.)

Claim.—1. The combination, in a wire-rope machine, of a continuous shaft, standards by which the shaft is supported, bushings interposed between the shaft and the standards, and spool-carriers mounted on said shaft, one in front of the other, and separated by said standards; each of said bushings being secured to the shaft so as to revolve therewith and having journal-bearing in its standard to prevent vertical and lateral vibrations of the shaft when the machine is in motion, and said bushings

having apertures through which the wires from the rear carriers pass, substantially as shown and described.

2. The combination, in a wire-rope machine, of a continuous shaft, standards by which the shaft is supported, bushings interposed between the shaft and the standards, and three spool-carriers mounted on said shaft one in front of another, two of said standards being located between said carriers and one at each end of the shaft, and said bushings being secured to the shaft and having journal-bearing in the standards to prevent vertical and lateral vibration of the shaft when the machine is in motion, the bushings that are located between the spool-carriers having apertures for the passage of the wires from the rear carriers, substantially as set forth.

3. In a wire-rope machine, the combination of a continuous shaft, a series of spool-carriers, fixed to the shaft, bushings keyed to the shaft between each spool-carrier and provided with a series of apertures, and standards on which the bushings are journaled.

4. In a wire-rope machine, the combination of a continuous shaft, a series of spool-carriers fixed to the shaft, and comprising a series of rings, each ring having a series of apertures, and a plurality of spool-frames journaled in the rings, bushings keyed to the shaft between each spool-carrier, and provided with a series of apertures, and standards on which the bushings are journaled.

708,779. ELECTRIC-RAILWAY RAIL-BOND. EDWARD P. FRIEDRICH, St. Louis, Mo., assignor of one-half to James D. Houseman, St. Louis, Mo. Filed Mar. 20, 1902. Serial No. 99,105. (No model.)

Claim.—1. In a railway-rail bond, the combination of a conductor, and chambered terminal couplings having pockets in the wall thereof adapted to receive a filling introduced to fill the chambers of the couplings, substantially in the manner and for the purpose set forth.

2. In a railway-rail bond, the combination of a conductor, terminal couplings provided with pockets and having chambers therein in communication with said pockets, and a soft metal filling in said terminal couplings in which said conductors are embedded, substantially as and for the purpose set forth.

3. In a railway-rail bond, the combination of a conductor, terminal couplings in which said conductor is seated and held, bushings adapted for introduction into the webs of the railway-rails at the rear of said terminal couplings, and bosses located between said terminal couplings and the webs of the rails, substantially as described.

4. In a railway-rail bond, the combination of a conductor, terminal couplings in which said conductor is seated and held, arms carried by said terminal couplings, bushings positioned in said arms and adapted to enter the webs of the railway-rails, and means for attaching said terminal couplings and bushings to said rail-webs, substantially as described.

5. In a railway-rail bond, the combination of a conductor, terminal couplings in which said conductor is seated and held, arms carried by said terminal couplings, bushings having tapered ends adapted to seat in said arms and in said rail-webs, and bosses carried by said bushings positioned between said coupling-arms and said rail-webs, substantially as described.

708,780. TIE-PLUG OR DOWEL. WILLIAM H. FRIEDERSEN, Copenhagen, Denmark. Filed Nov. 12, 1901. Serial No. 82,072. (No model.)

Claim.—1. A wooden tie-plug or dowel comprising a straight body circularly shaped or rounding in cross-section, a similarly-shaped enlarged head concentric with the body and a taper or incline around the plug at the juncture of its head and body; substantially as described.

2. A wooden tie-plug or dowel comprising a straight circular or rounded body, a similarly-shaped enlarged head concentric with the body and a taper or incline around the plug at the juncture of its head and body, the said plug having a bore to receive the spike; substantially as described.

708,781. MANIFOLDING SALES DEVICE. CHARLES R. FISHER, Oakland, Cal. Filed Nov. 11, 1901. Serial No. 81,796. (No model.)

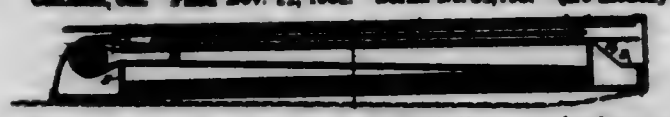

Claim.—1. A sales-registering device including a case having a top portion integral with the sides said case closed except for an opening near one end, a hinged bottom through which paper is inserted, means upon the top of the case for retaining the carbon and sheets in place and normally out of contact with each other, means for cutting the sheets, and a flexible cover for the case.

2. In a sales-registering device, a case closed except for a transverse opening near one end through which the sheets are withdrawn, means upon the top of the case for retaining the carbon and sheets in place and normally out of contact with each other.

3. In a sales-registering device, a case adapted to receive and retain one or more continuous sheets of paper, a transverse slot in the case through which the sheets may be withdrawn, a carbon-sheet interposed between the sheets of paper and clamps whereby the carbon and sheets are held in place and out of contact with each other.

4. In a sales-registering device, a case adapted to contain one or more continuous sheets of paper, a slot in the case through which the paper passes, a carbon-sheet interposed between the sheets of paper, means holding the carbon-sheet normally out of contact with the other sheets, and a cover having a flexible hinge portion secured to the bottom of the case at one end thereof, said cover adapted to fold over the top of the case to protect the paper and carbon when the case device is not in use.

5. In a sales-registering device, a case having a top and sides and having a slot near one end through which the paper may pass, and a bottom for the case, in combination with arms hinged at the side of the case and normally extending transversely across the top of the case, and holding the lowermost sheet of paper upon said top, and other arms engaging the carbon-sheet and coacting with the first-named arms for holding it normally out of contact with the first-named sheet.

6. In a sales-registering device, a case adapted to contain one or more continuous sheets of paper, arms pivoted upon the side of the case and adapted to hold one of said sheets in place upon the top of the case, and other arms between which and the first-mentioned arms the carbon-sheet is held, said second arms serving to support a second sheet of paper above and out of contact with said carbon-sheet.

7. In a sales-register device, a case having a transverse slot near one end, arms pivoted upon one side of the case and movable over the top of the case, other arms pivoted on the first-mentioned arms and movable independently thereof, said sets of arms forming clamps between which the carbon-sheets are retained, and means for detachably securing the outer ends of the arms to the case.

8. In a sales-registering device, a casing having a closed top, a hinged bottom, a transverse partition within the box and near one end, a space between the top of said partition and the top of the box, a roller between said partition and the adjacent end of the box or casing, a resiliently-supported plate adapted to bear against said roller, a projection upon the other end and exterior of the casing, a cutter on said projection and means upon the casing whereby sheets of paper and carbon may be held in place but normally out of contact with each other.

9. A sales-check book consisting of a case adapted to contain one or more continuous sheets of paper, said case closed at the top except for a transverse opening through which the paper passes, independently-movable clamp members upon the top between which a carbon-sheet may be held, one of said sheets of paper adapted to pass beneath the clamps and rest upon the top of the case, the other of said sheets adapted to pass above said clamps and guides by which the second sheet of paper is held

in position, a cutter and a cover hinged to the rear of the case and adapted to be folded over the top of the case to protect the sheets when the book is not in use.

708,782. TROLLEY-FORK. HENRY L. GRIFFIN, Newport News, Va. Filed Feb. 21, 1902. Serial No. 95,022. (No model.)

Claim.—1. In a trolley-fork, circular ends being provided upon the members or prongs of the fork, said ends being provided with circular openings, plates fitted within the openings so as to have a certain amount of rotary movement in the same, each of said plates being curved outward on a radius struck at a point midway between the prongs of the fork, said plates being provided with slots or guideways, bearing-blocks fitted within said slots or guideways, a trolley-wheel, an axle secured to said trolley-wheel, the ends of said axle being journaled within the bearing-blocks, springs so arranged as to normally center the wheel and also act as a conductor for the electric current, and caps secured to the outside of the ends of the two members of the fork, substantially as described and for the purpose specified.

2. In a device of the character described, a trolley-fork composed of two prongs or members, each prong or member being provided with a circular opening in their ends, a guide-plate D held within said circular opening but adapted to revolve to a certain extent within the same, said plates being each curved outward upon the radius of a circle struck from a point midway between the forked members, said plates being provided with slots or guideways, bearing-blocks held within said slots or guideways, a trolley-wheel, an axle secured to said trolley-wheel, the ends of said axle being journaled within the bearing-blocks, two flat springs one arranged upon each side of the trolley-wheel, said springs being secured to the fork and their free ends bearing against the sides of the trolley-wheel to hold the same in alinement, substantially as and for the purpose specified.

3. In a device of the character described, a fork composed of two members, said members being provided with a circular opening through their ends, a channel formed in the ends of the members surrounding the circular opening, guide-plates D having their ends so curved and shouldered as to fit within the channel, said plates being each curved outward upon a radius of a circle struck from a point midway between the forked members, said plates provided with a slot or guideway, bearing-blocks lying within the slots or guideways, said bearing-blocks being shouldered upon the inside, said shoulders coming in contact with the concaved surface of the guide-plates, a trolley-wheel, an axle secured rigidly to said trolley-wheel, shouldered ends formed upon the axle, said ends protruding through openings formed through the bearing-blocks, caps F secured upon the outside of the forked members so as to overlap the ends of the guide-plates and hold them in position against lateral motion, springs so arranged as to normally hold the trolley-wheel in alinement, and also to act as a conductor for conveying the electric current, substantially as described and for the purpose specified.

708,783. CULINARY DEVICE. LAURA E. GREEN, New York, N. Y. Filed Feb. 21, 1902. Serial No. 95,016. (No model.)

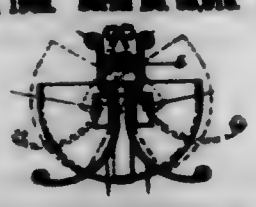

Claim.—1. A culinary device comprising two similar cup-shaped receptacles divided centrally and vertically into two similar parts, the edges of one of which are adapted to fit within the corresponding edges of the other, the parts of said receptacles being also pivoted together at the top portion thereof, and at the opposite sides, transverse and horizontally arranged members which connect the said receptacles at the top portion thereof, and legs connected with said members, and provided with upwardly-directed handles, and a spring placed between said handles, substantially as shown and described.

2. A device of the class described comprising two similar cup-shaped receptacles composed of two similar parts, the edges of one of which fit within the edges of the other, said parts being pivotally connected at the opposite sides at the top thereof, transversely-arranged members which connect the opposite parts of said receptacles near the top thereof, and legs connected with said members and projecting above the same to form handles, substantially as shown and described.

3. A culinary device comprising a cup-shaped receptacle divided centrally and vertically into two similar parts, the edges of one of which are adapted to fit within the corresponding edges of the other, the parts of the receptacle being also pivoted together at the top portion thereof, means for holding the separate parts of the receptacle together and handles whereby the receptacle may be manipulated and the separate parts separated at the bottom, substantially as shown and described.

4. A device of the class described comprising a plurality of cup-shaped receptacles divided vertically into corresponding parts which are pivotally connected and the edges of which are adapted to fit one within the other, means for holding the separate parts of said receptacles together and means whereby the said receptacles may be manipulated and the separate parts thereof separated at the bottom, substantially as shown and described.

708,784. CLOTH-CUTTING MACHINE. JOHN G. GROSSER and HARRY H. GROSSER, Cincinnati, Ohio. Filed Aug. 10, 1901. Serial No. 71,573. (No model.)

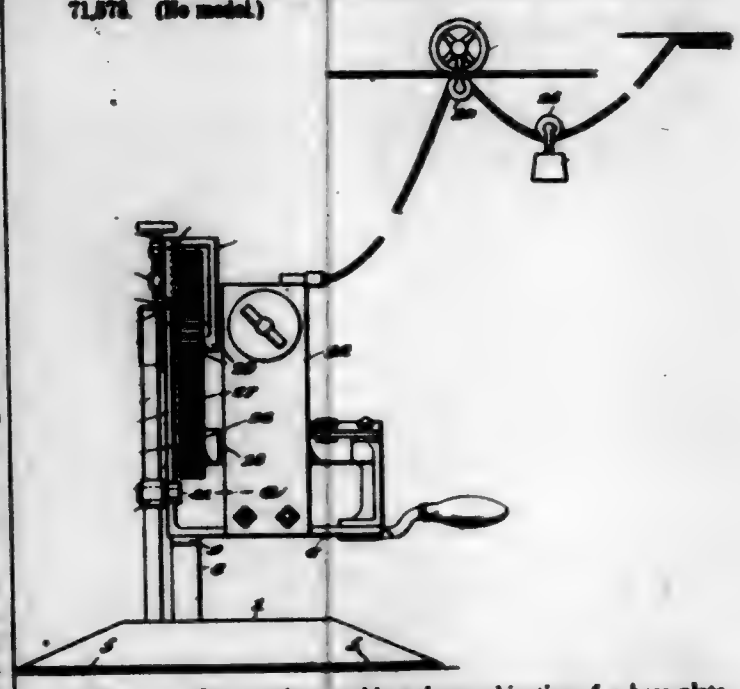

Claim.—1. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band having its runs extended between the frame and base-plate, a device at the base-plate and around which the lower bight of said endless cutting-band is passed, a motor, a shaft held to turn on the frame and driven from the motor and having one end extended in front of the frame, a driving-wheel held on the extended end of said shaft and adapted to receive and removably hold the upper bight of said endless cutting-band, and means for tightening said endless cutting-band, substantially as set forth.

2. In a cutting-machine, the combination of a base-plate over which materials to be cut are adapted to be passed, an endless cutting-band passed through the base-plate and extended above and below the same, a plurality of rollers or wheels beneath the base-plate for carrying the lower bight of the cutting-band, means to move one of said wheels or rollers for tightening the endless cutting-band, a wheel above the base-plate for carrying the upper bight of the base-plate, and driving means for imparting endwise movement to the cutting-band, substantially as set forth.

3. In a cutting-machine, the combination of a base-plate having an opening, a frame above the base-plate, a cutting device extended from the frame and having a lower bight passed through the opening in the base-plate and having actuating mechanism carried by the frame, a pedestal for supporting the frame above the base-plate and a part movable on the base-plate for closing the opening therein after the lower bight of the cutting device has been passed therethrough, substantially as set forth.

4. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band extended between the base-plate and frame, and means, located beneath the base-plate, for tightening said cutting-band, substantially as set forth.

5. In a cutting-machine, the combination of a base-plate, an endless cutting-band having a bight below the base-plate, two sheaves below the base-plate and around which the bight of the cutting-band is passed and two idler-sheaves arranged between the first-named sheaves and arranged to bear on the two runs of the cutting-band for pressing said runs toward each other, substantially as set forth.

6. In a cutting-machine, the combination of a base-plate, an endless cutting-band having a bight formed in it, two sheaves held to turn and around which said bight of the cutting-band is passed and means for mov-

ing one of said sheaves relatively to the other for tightening and loosening said cutting-band, substantially as set forth.

7. In a cutting-machine, the combination of a base-plate, an endless cutting-band having a bight below the base-plate, sheaves around which said bight is passed, a part mounted for sliding movement and on which one of the said sheaves is carried, and a screw collared on the base-plate and having threaded engagement with said sliding part for moving the sheave carried thereon to tighten or loosen the cutting-band, substantially as set forth.

8. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band extended between the frame and base-plate, a motor, a shaft held to turn on the frame and having one end extended in front of said frame, gearing for driving said shaft from the motor, a driving-wheel on the extended end of said shaft and adapted to receive and removably hold the upper bight of said endless cutting-band, a plurality of shafts at the base-plate, each shaft being held to turn in bearings and having one end extended beyond its bearings and wheels or rollers on the extended ends of said shafts and adapted to receive and removably hold the lower bight of said endless cutting-band, substantially as set forth.

9. In a cutting-machine, the combination of a base-plate, a frame above the base-plate, an endless cutting-band extended between the frame and base-plate, a motor, a shaft held to turn on the frame and driven from said motor and having one end extended in front of the frame and provided with a driving-wheel on which the upper bight of said endless cutting-band is removably held, a plurality of shafts at the base-plate, each shaft being held to turn in bearings and having one end extended beyond its bearings, wheels or rollers on the extended ends of said shafts and adapted to receive and removably hold the lower bight of said endless cutting-band, and means for moving one of said lower shafts toward and away from the other, substantially as set forth.

708,785. CALCULATING-MACHINE. CHRISTIAN HAMANN, Berlin, Germany, assignor to Paul Hamann, Berlin, Germany. Filed July 2, 1900. Serial No. 22,251. (No model.)

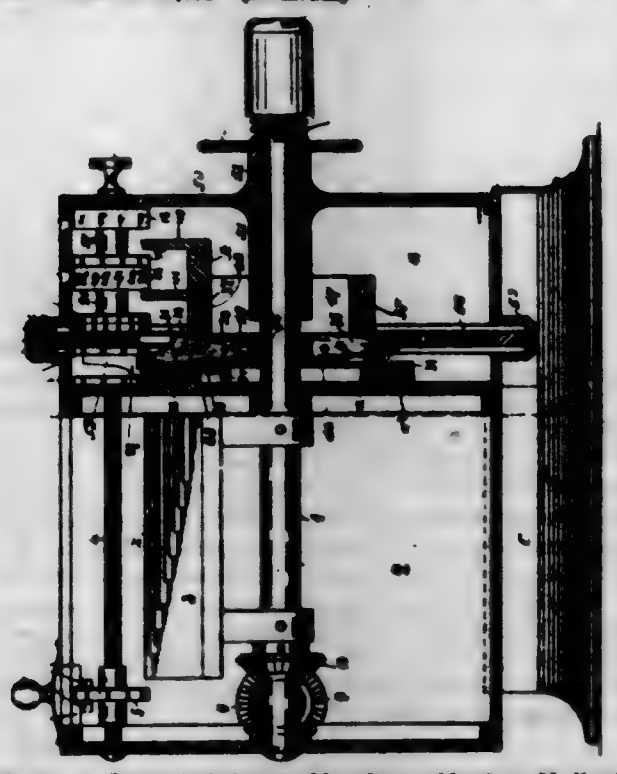

Claim.—1. In a calculating-machine the combination of indicating mechanism for showing the results of the calculations, actuators therefor, and a stopped driver, the teeth of which are fixed relatively to each other and which is adapted to engage with and operate one or more of the actuators or all of them.

2. In a calculating-machine the combination of indicating mechanism for showing the results of the calculations, actuators therefor, a stopped driver the teeth of which are fixed relatively to each other and which is adapted to engage with and operate one or more of the actuators or all of them, and means for adjusting the actuators relatively to the driver.

3. In a calculating-machine the combination of indicating mechanism for showing the results of the calculations, actuators therefor, a stopped driver, the teeth of which are fixed relatively to each other and which is adapted to engage with and operate one or more of the actuators, or all of them, and means for adjusting the indicating mechanism relatively to the actuators.

4. In a calculating-machine the combination of a driving-shaft, indicating mechanism, actuators therefor arranged in different radial positions in an arc around the driving-shaft, and a stopped driver revolving about the axis of the driving-shaft, and which is adapted to engage with and operate one or more of the actuators, or all of them during one revolution.

5. In a calculating-machine the combination of a driving-shaft, indicating mechanism, the members of which are arranged in different radial positions in an arc around the axis of the driving-shaft, actuators detachably connected with the indicating mechanism, and a stopped driver revolving about the axis of the driving-shaft, and which is adapted to operate one or more of the actuators or all of them during one revolution.

6. In a calculating-machine the combination of a driving-shaft, indicating mechanism, the members of which are arranged in an arc around the driving-shaft, actuators, the shafts of which are arranged in an arc around the driving-shaft and which are placed end to end with the shafts of the indicating mechanism, connections between the actuators and the indicating mechanism, and a stopped driver for operating the actuators.

7. In a calculating-machine the combination of indicating mechanism for showing the results of the calculations, actuators therefor, and a single stopped driver, all the teeth of which traverse a fixed path, and which are adapted to engage with and operate one or more of the actuators or all of them.

8. In a calculating-machine the combination of indicating mechanism for showing the results of the calculations, actuators therefor, a stopped driver, the teeth of which are fixed relatively to each other and which is adapted to operate one or more of the actuators or all of them, and means for bringing any one or all of the actuators into the path of the driver or to move them out of the path thereof.

9. In a calculating-machine the combination of indicating mechanism, a single stopped driver, a series of actuator-shafts arranged transversely to the line of movement of the driver, and connected with the indicating mechanism, pinions on the actuator-shafts and means for moving the pinions on the shafts into and out of the path of the driver.

10. In a calculating-machine the combination of indicating mechanism, a driving-shaft, a single stopped driver attached to the driving-shaft, and the teeth of which are arranged in an arc around said shaft, a series of actuator-shafts detachably connected with the indicating mechanism and arranged in an arc around the driving-shaft, pinions on the actuator-shafts, and means for bringing one or more or all of said pinions into operative connection with the driver.

11. In a calculating-machine the combination of indicating mechanism, actuators therefor, a single stopped driver, the teeth of which are fixed, and which is adapted to engage with and operate one or more or all of the actuators at one revolution, and means for connecting any one of said actuators with different parts of the indicating mechanism.

12. In a calculating-machine the combination of a driving-shaft, a single stopped driver secured to the driving-shaft and revolving around the axis thereof, a series of actuator-shafts arranged in an arc around the driving-shaft, adjustable pinions on said actuator-shafts adapted to gear with the driver, a cylindrical casing inclosing the driver, actuator-shafts and pinions, a series of indicator-shafts arranged in an arc around the driving-shaft, and detachably connected with the actuator-shafts, a cylindrical casing inclosing the indicator-shafts and supporting them, means for turning the casing of the indicating mechanism relatively to the casing of the driving mechanism, and devices for locking the two casings together when adjusted.

13. In a calculating-machine the combination with the driving, indicating, and actuating mechanism, of transfer mechanism comprising a pawl adapted to engage with and operate any one of the members of the indicating mechanism, and a series of dogs actuated by the indicating mechanism, and adapted to engage with and set said pawl.

14. In a calculating-machine the combination with the driving, indicating and actuating mechanism, of a series of pawls each of which is adapted to engage with and operate any one of the members of the indicating mechanism, and a series of dogs actuated by the indicating mechanism, and adapted to engage with and set said pawls.

15. In a calculating-machine the combination of a driving-shaft, indicating mechanism, the members of which are arranged in an arc around the driving-shaft, actuating mechanism, connected with the indicating mechanism, and the members of which are arranged in an arc around the driving-shaft, a pawl revolving about the axis of the driving-shaft and adapted to engage with and operate any one of the members of the indicating mechanism, and a series of dogs actuated by the indicating mechanism and adapted to engage with and set said pawl.

16. In a calculating-machine the combination of a driving-shaft, indicating mechanism, the members of which are arranged in an arc around the driving-shaft, actuating mechanism, the members of which are connected with the indicating mechanism, and which are arranged in an arc around the driving-shaft, a driver engaging the actuating mechanism, a series of pawls revolving about the axis of the driving-shaft, and dogs op-

erated by the indicating mechanism and adapted to engage with and set said pawls.

17. In a calculating-machine the combination with the driving, indicating and actuating mechanism, of a recessed, pivoted pawl adapted to engage with and operate the indicating mechanism, and a series of sliding dogs actuated by the indicating mechanism, and provided with laterally-projecting overlapping arms carrying cams adapted to engage with and set said pawl.

18. In a calculating-machine the combination with the driving, indicating and actuating mechanism, of a series of pawls any one of which is adapted to engage with and operate each member of the indicating mechanism, a series of dogs actuated by the indicating mechanism in one direction to engage with and set said pawls, and projections operated by the driver which move the dogs in an opposite direction to disengage them from the pawls.

19. In a calculating-machine the combination of the driving-shaft, the indicating and actuating mechanism, the members of which are arranged in an arc around the driving-shaft, a driver revolving with the driving-shaft, a pawl adapted to engage with each member of the indicating mechanism and revolving about the axis of the driving-shaft, and devices for moving said pawl into and out of engagement with the indicating mechanism.

20. In a calculating-machine the combination with the driving, indicating and actuating mechanism, of coupling devices for connecting the indicating mechanism with the actuating mechanism, sliding dogs moved in one direction by said coupling devices, and a pawl adapted to engage with the indicating mechanism and which engages with and is set by said dogs.

21. In a calculating-machine the combination with the driving and actuating mechanism, of indicating mechanism, each member of which comprises two numbered wheels adapted to turn independently of each other, and each of which is connected with a separate mutilated gear-wheel, an actuator having two racks for operating said mutilated wheels, and devices for moving the actuator to cause it to engage either one of said mutilated gears, or both of them.

22. In a calculating-machine the combination of a driving-shaft, a driver secured thereto and revolving about the axis thereof, actuators arranged in an arc around the driving-shaft, indicating mechanism comprising a series of members arranged around the driving-shaft, and each comprising two numbered wheels movable independently of each other, a mutilated gear-wheel connected with each of said numbered wheels, an actuator attached to the driving-shaft and provided with two racks arranged in an arc about the driving-shaft and adapted to gear with the mutilated wheels of the indicating mechanism, and means for moving said actuator to cause it to engage either one of said mutilated wheels, or both of them.

23. In a calculating-machine the combination of a stepped driver, actuators adapted to gear with the driver, indicating mechanism connected with the actuators, an actuator for returning the indicating mechanism to zero, said driver, actuators, indicating mechanism and actuator for bringing the indicating mechanism to zero being arranged concentrically about the same axis.

24. In a calculating-machine the combination of a single stepped rotary driver, indicating and actuating mechanism arranged to move about the axis of the driving-shaft, mutilated gear-wheels connected with the indicating mechanism, a toothed segment adapted to engage with said mutilated gear-wheels, but normally out of engagement therewith, and means for engaging said actuator with said mutilated wheels.

703,786. APPARATUS FOR PREVENTING TROLLEY-WHEELS FROM LEAVING THE FEED-WIRE. GEORGE W. HANSCOM, Philadelphia, Pa., assignor of one-half to Samuel S. Wiener, Philadelphia, Pa. Filed Mar. 3, 1902. Serial No. 96,395. (No model.)

Claim.—1. In a device of the character named, a trolley-pole, forwardly-projecting members attached thereto, rearwardly-projecting members on said pole, collars journaled upon said pole, arms pivotally mounted upon said collars adapted to contact with said rearwardly-projecting members, inwardly-projecting members upon said arms, and means for holding the latter in position with respect to each other.

2. In a device of the character named, a trolley-pole, forwardly-projecting members attached thereto, rearwardly-projecting members on said pole, collars journaled upon said pole, arms pivotally mounted upon said collars adapted to contact with said rearwardly-projecting members, inwardly-projecting members upon said arms, means for holding said inwardly-projecting members in juxtaposition, and means for permitting said arms and members to have a yielding rotary movement.

3. In a device of the character named, a trolley-pole, forwardly-projecting members attached thereto, rearwardly-projecting members on said pole and having inclined forward portions and upwardly-flaring rear portions, collars journaled upon said pole, arms pivotally mounted upon said collars adapted to contact with said rearwardly-projecting members, inwardly-projecting members upon said arms, springs for holding said members in juxtaposition, and means for permitting said arms and members to rotate with respect to said trolley-pole.

4. In a device of the character named, a trolley-pole, forwardly-projecting members attached thereto, rearwardly-projecting members on said pole, collars rotatably mounted upon said pole, arms pivotally mounted upon said collars adapted to contact with said rearwardly-projecting members, inwardly-projecting members on said arms, and means for holding said members in position relative to each other and to the pole.

5. In a device of the character named, a trolley-pole, forwardly-projecting members attached thereto, rearwardly-projecting members on said pole, and having inclined forward portions and outwardly-flaring rear portions, collars journaled upon said pole, arms pivotally mounted upon said collars adapted to contact with said rearwardly-projecting members, inwardly-projecting members on said arms, and springs for holding the latter in position.

703,787. VOTING-MACHINE. CHARLES F. HARRISON, Lyndhurst, N. J. Filed Mar. 10, 1902. Serial No. 97,262. (No model.)

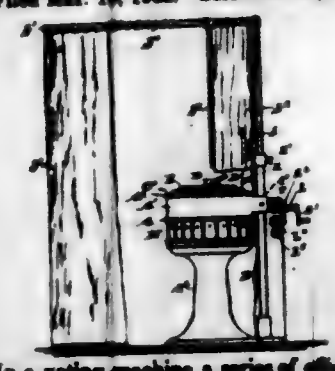

Claim.—1. In a voting-machine, a series of office-dials each mounted on an independent shaft, means for turning them in unison, and registering mechanisms and actuating means therefor adapted to be brought into operable relation by such movement.

2. In a voting-machine, a series of office-dials each mounted on an independent shaft, each bearing names or other identifying symbols of several candidates for that office, and registering mechanisms and their actuating means adapted to be brought into operable relation by the movement of said dials to properly present the names desired to be voted.

3. In a voting-machine, a series of office-dials each mounted on an independent shaft, means for turning them in unison, a single lever for inducing such movement, and registering mechanisms for each dial and actuating means therefor adapted to be brought into operable relation by the movement of said lever.

4. In a voting-machine, a series of office-dials each bearing names or other identifying symbols of the several candidates for that office, a single lever and mechanism operated thereby for turning said dials in unison, locking devices operated by said lever, the latter serving to unlock said dials, turn them to the desired position and lock them in such position.

5. In a voting-machine, a series of office-dials each mounted on an independent shaft, each bearing the names or other identifying symbols of the several candidates for that office, means for turning said dials in unison, locking mechanism for said dials by which they may be held in the desired positions, and registering mechanisms and actuating means therefor adapted to register votes for candidates selected by such movement of said dials.

6. In a voting-machine, a series of office-dials each mounted on an independent shaft, each bearing the names or other identifying symbols of the several candidates for the office represented by such dial, means for moving such dials in unison, and means whereby each dial may be moved independently of the others, and registering mechanisms and actuating means therefor adapted to be brought into operable relation by such movements.

7. In a voting-machine, a series of office-dials each mounted on an independent shaft, each bearing the names or other identifying symbols of the several candidates for the office represented by such dial, registering mechanism and actuating means therefor for each of said names or symbols, and means carried by said dial for receiving ballots for independent candidates.

8. In a voting-machine, a series of office-dials each bearing the names or other identifying symbols of the several candidates for the office represented by such dial, a party-dial bearing the names or symbols of the several parties presenting candidates, a registering mechanism for each candidate and actuating means therefor, a pointer for said party-dial, and mechanism connected with said pointer for moving the office-dials of said series in unison, whereby the registering mechanisms of all the candidates of any party will be brought into operable relation with their actuating means when said pointer indicates such party.

9. In a voting-machine, a series of office-dials each bearing the names or other identifying symbols of the several candidates for the office represented by such dial, a party-dial bearing the names or symbols of the several parties presenting candidates, a registering mechanism for each candidate and actuating means therefor, a pointer for said party-dial, and mechanism connected with said pointer for moving the office-dials of said series in unison, whereby the registering mechanisms of all the candidates of any party will be brought into operable relation with their actuating means, and means for moving said office-dials independently of each other whereby votes may be registered for candidates of other parties or moved into such relation with the actuating means of said registering mechanisms as to omit registering.

10. In a voting-machine, a series of office-dials each bearing the names or other symbols of the several candidates for the office represented by such dial, means for moving said dials in unison or independently, registering devices moving with said dials, one for each candidate thereon, a striking-plate arranged to actuate said registering devices when the latter are properly presented thereto, and means for operating said striking-plate.

11. In a voting-machine, a series of office-dials each bearing the names or other identifying symbols of the several candidates for the office represented by such dial, means carried by the latter for receiving a ballot for an independent candidate for each office, means for moving said office-dials in unison or independently, registering devices moving with said dials, one for each candidate thereon, means for depositing said ballot in a receptacle, a striking-plate arranged to actuate said registering devices and depositing means when properly presented thereto, and means for operating said striking-plate.

12. In a voting-machine, a series of office-dials each bearing the names or other identifying symbols of the several candidates for the office represented by such dial, means for moving said dials in unison or independently, locking means for holding said dials against such movement, means for unlocking all the dials of said series simultaneously, means for unlocking any of said dials independently, registering devices for the several candidates and actuating means for said registering devices.

13. In a voting-machine, a series of office-dials, and means for moving them, registering devices moving with said dials, a striking-plate actuating said registering devices when the latter are properly presented thereto, locking means for holding said dials and registering devices in position to be acted upon by said striking-plate, and means for automatically releasing said dials by the operation of returning said dials to their original positions.

14. In a voting-machine, a series of office-dials, means for moving said dials in unison, registering devices moving with said dials, actuating means for said devices, locking means for holding said dials and registering devices in the desired positions, and a single lever operating said locking means and moving said dials, whereby the operations of unlocking said dials, moving them to the desired positions and locking them therein are performed by said single lever.

15. In a voting-machine, a series of office-dials, means for moving said dials in unison, registering devices moving with said dials, actuating means for said devices, locking means for holding said dials and registering devices in the desired positions, and a single lever operating said locking means and moving said dials, whereby the operations of unlocking said dials, moving them to the desired positions and locking them therein are performed by said single lever, and mechanism for operating said actuating means for said registering devices, adapted to automatically unlock said dials and return them to their original positions.

16. In a voting-machine, the combination with a gear-wheel and a series of pinions meshing therewith, of one or more registering devices arranged to move with each pinion, means for actuating said registering devices, and means for turning said wheel and thereby presenting the desired registering devices to said actuating means.

17. In a voting-machine, the combination of a party-dial bearing the names or symbols of the parties presenting candidates, a series of office-dials each bearing the names or symbols of the candidates for each office, a shaft carrying a gear-wheel, a pointer moving with said shaft and adjacent to said party-dial, a series of pinions meshing with said gear-wheel each carrying one of said office-dials, registering devices carried by the latter, one for each candidate thereon, and actuating means for operating such registering devices as are properly presented thereto, whereby a movement of said shaft in bringing said pointer to one of said party names or symbols correspondingly turns said dials and their registering devices into operable relation with said actuating means.

18. In a voting-machine, the combination of a party-dial bearing the names or symbols of the parties presenting candidates, a series of office-dials each bearing the names or symbols of the candidates for each office, a shaft carrying a gear-wheel, a pointer moving with said shaft and adjacent to said party-dial, a lever for imparting motion to said shaft, a series of locking-bars engaging said office-dials and adapted to lock and unlock the latter through connections from said lever, a series of pinions meshing with said gear-wheel and each carrying one of said office-dials, registering devices carried by the latter, one for each candidate thereon, and an actuating means for operating such registering devices as are properly presented thereto, whereby the movements of said lever unlock said office-dials, turn said pointer to the desired party and correspondingly turn said office-dials and their registering devices into operable relation with said actuating means, and lock the whole in such position.

19. In a voting-machine, a party-dial bearing the names or symbols of the parties presenting candidates, a series of office-dials each bearing the names or symbols of the candidates for each office, a shaft carrying a gear-wheel, a pointer moving with said shaft and adjacent to said party-dial, a lever for imparting motion to said shaft, a series of locking-bars engaging said office-dials and adapted to lock and unlock the latter through connections from said lever, a series of pinions meshing with said gear-wheel and each carrying one of said office-dials, registering devices carried by the latter, one for each candidate thereon, and an actuating means for operating such registering devices as are properly presented thereto, whereby the movements of said lever unlock said office-dials, turn said pointer to the desired party and correspondingly turn said office-dials and their registering devices into operable relation with said actuating means, and lock the whole in such position, in combination with each other and with independent mechanism for operating said actuating means and automatically unlocking said office-dials and returning the whole to the original position.

20. In a voting-machine, the combination of the shaft B, gear-wheel B' and pinions C' meshing therewith, office-dial C⁵ and platform C⁶ carried by each of said pinions, registering devices J J on said platforms, the striking-plate F⁵ and its arms F⁶ F⁶ adapted to operate each of said registering devices as are presented thereto by the turning of said gear-wheel and pinions.

21. A pinion C' having a pin C⁷, a sleeve C⁸ carried by said pinion and having the finger C⁹ adapted to be struck by said pin to cause said sleeve to turn with said pinion, the spring C¹⁰ serving to hold said finger in contact with said pin, the dial C⁴ and button C⁵ on said sleeve, whereby the said dial will turn with said pinion and also be free to turn independently of the latter in one direction, all combined and arranged to serve with a voting-machine.

22. A pinion C⁴ and platform C⁶ and dial C⁴ carried thereon, registering devices J J on said platform and having arms J' J', the trap K on said dial, and the arm K' and connections therefrom to said trap whereby the latter is tripped and means as the striking-plate F⁵ and its arms F⁶ for engaging the arms of said registering devices and trap when properly presented thereto, all combined and arranged to serve in a voting-machine.

23. In a voting-machine the combination of the shaft B, gear-wheel B' thereon, and sleeve F and locking-bars G, with a series of pinions C' each carrying a dial C⁴ having the flange C⁵ and notches therein receiving said bars.

24. In a voting-machine, the combination of the shaft B, gear-wheel B' thereon, and sleeve F and locking-bars G, with a series of pinions C' each carrying a dial C⁴ having the flange C⁵ and notches therein receiving said bars, the cap D connected to said sleeve, and the lever D' mounted in said cap and adapted to lift said bars from said notches when required.

25. In a voting-machine, the combination of the shaft B, gear-wheel B' thereon, and sleeve F and locking-bars G, with a series of pinions C' each carrying a dial C⁴ having the flange C⁵ and notches therein receiving said bars, the cap D connected to said sleeve, and the lever D' mounted in said cap and engaged with said shaft, adapted to lift said bars from said notches and also to turn said shaft when thus liberated.

26. In a voting-machine, the combination of the shaft B, gear-wheel B' thereon, the sleeve F and slip-joint F⁷ therein, the striking-plate F⁵ and its arms F⁶ on one portion of said sleeve, and the locking-plate F' and its locking-bars G on the other portion, means for raising said lev-

ering said locking-plate, and independent means for raising and lowering said striking-plate.

27. In a voting-machine, the combination of a shaft B and gear-wheel B' thereon, a series of pinions C' meshing with said wheel and carrying each a dial, a pin B^2 on said wheel, a swinging lever P having the leg P', and a shaft L having the offset L^1 adapted to receive said leg and permit said lever to swing idly in one direction by the turning of said gear-wheel and to contact with said leg to return said gear-wheel and pinions to an inoperative or normal position.

28. In a voting-machine, the combination of a shaft B and gear-wheel B' thereon, the sleeve F and striking-plate F^1 thereon having the arms F^2, a series of pinions C' meshing with said gear-wheel and carrying each a series of registering devices, and a shaft L having the crank L' connected to said striking-plate and adapted when turned to draw down said plate and actuate such of the registering devices as are presented to said arms.

29. In a voting-machine, the combination of a shaft B and gear-wheel B' thereon, the sleeve F and striking-plate F^1 thereon having the arms F^2, a series of pinions C' meshing with said gear-wheel and carrying each a series of registering devices, a pin B^2 set in said gear-wheel, a swinging lever P having the leg P', and a transverse shaft L having the crank L' connected to said striking-plate and having the offset L^1 adapted to coöperate with said leg, whereby the turning of said transverse shaft draws down the said striking-plate and actuates such of said registering devices as are presented to said arms, and also serves through said swinging lever to return said gear-wheel and its connections to an inoperative or normal position.

30. In a voting-machine, the combination of a shaft B and gear-wheel B' thereon, a series of pinions C' each carrying a dial C^4 having a flange C^5 and notches c^9 c^{10}, the bed-plate A, casing A' and ring A^3 having openings receiving said dials, the lip A^5 on said ring having notches a^3, and the locking-plate F' and bars G thereon adapted to be received in said notches a^3 and to engage in said notches c^9 c^{10} in said dials.

31. In a voting-machine, the shaft B, sleeve F and locking-plate F' having the locking-bars G, in combination with the bed-plate A, casing A', ring A^3 and lip A^5 on the latter having the notches a^3 serving to receive said bars, the flange A^6 on said ring and glass plate H supported thereon, the dial E separably secured to said lip, and a series of registering devices within said casing, all arranged to allow the removal of said dial and connected parts to permit said registering devices to be inspected through said glass plate.

32. A voting-machine having a casing A' containing registering mechanism adapted to be set by a voter to indicate a choice of candidates, in combination with a booth inclosing such machine and comprising the upright R, rod S supported therein, hoop S' on said rod, hanging rod S^2 arranged to slide on said loop, the curtain S^3 attached to said loop and having a portion secured to said hanging rod, and a spring S^4 serving to draw the margins of said curtain together.

708,788. PULSOMETER. PAUL HASSENAER, Burg, near Magdeburg, Germany. Filed Jan. 13, 1902. Serial No. 89,491. (No model.)

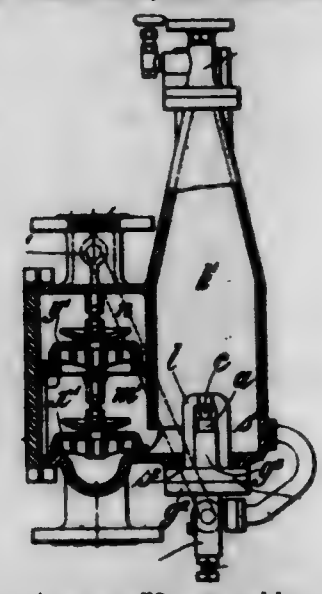

Claim.—1. A steam water-lifter, comprising a working chamber, a spraying device therein and an injector adjustable with relation to the spraying device.

2. In a steam water-lifter, a pressure-chamber, a working chamber, an injector-pipe extended into the working chamber, a spraying-cone above the pipe, and means for adjusting the pipe toward and from the cone.

3. In a steam water-lifter, two pressure-chambers, two working chambers, injector-pipes leading into the working chambers, spraying-cones supported rigidly at the inner ends of the pipes and outside thereof, means for adjusting the pipes with relation to the cones, and flexible tubes for connecting the injectors with chambers.

708,789. HARNESS. ARCHIBALD L. HAWKINS, Georgetown, Tex., assignor of one-half to Joseph M. Page, Georgetown, Tex. Filed July 28, 1901. Serial No. 70,080. (No model.)

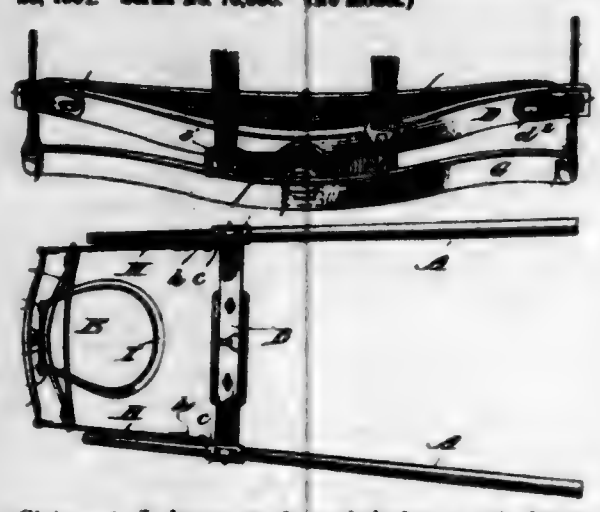

Claim.—1. In harness, a forward draft-bar, a singletree mounted upon the forward side of the draft-bar, and a rocking shoulder-strap bar carried by the draft-bar, as set forth.

2. In harness, a forward draft-bar, a singletree mounted on the forward side of the draft-bar, and a rocking shoulder-strap bar mounted between the said draft-bar and singletree, as set forth.

3. In harness, a singletree, a forward draft-bar upon the front sides of which the singletree is mounted, said bar being provided with an opening at each end through which the traces attached to the singletree are adapted to pass, and a shoulder-strap bar carried by the draft-bar, as set forth.

4. In harness, a singletree, a forward draft-bar upon the front side of which the singletree is pivotally mounted, said bar being provided with an opening at each end through which the traces attached to the singletree are adapted to pass, and a pivotally-mounted shoulder-strap bar between the singletree and draft-bar, as set forth.

5. In harness, a draft-bar having an opening at each end, and provided with a central forwardly-projecting stud, a singletree pivotally mounted on the end of the stud, and a shoulder-strap bar pivotally mounted on the stud between the singletree and draft-bar, as set forth.

6. In harness, a curved draft-bar having an opening at each end and provided with a central forwardly-projecting stud, a draft-strap having its ends passed through the openings of the draft-bar and secured to said bar, a singletree mounted on the outer end of the stud, and a shoulder-strap bar mounted on the stud between the said bar and singletree, as set forth.

708,790. GLAZIER'S HAMMER. DAWSON M. HUMERTON, Tonica, Ill. Filed Sept. 26, 1901. Serial No. 76,714. (No model.)

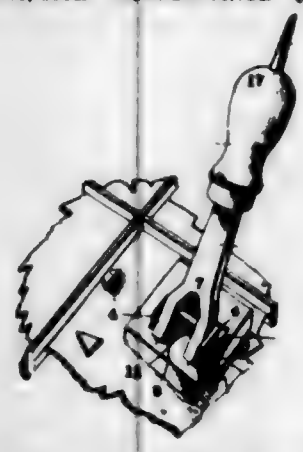

Claim.—1. A glazier's hammer having a head with straight sides, and a handle pivoted to said head, the pivotal movement of the head relatively to the handle being limited in both directions by engagement of the parts.

2. A glazier's hammer having a handle and a head with a straight side, the side having a groove parallel with and near to the face.

3. A glazier's hammer having a handle and a head with a rim in a plane around its face, and a recess or air-cushion inside said rim, substantially as described.

4. A glazier's hammer having a head polygonal in outline, a handle

pivotally connected to the back of said head, means for limiting the pivotal movement of the head relatively to the handle, and grooves in the sides of said head

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708,791. INCANDESCENT LAMP. HERMAN J. JAEGER, New York, N. Y. Filed Aug. 13, 1901. Serial No. 71,894. (No model.)

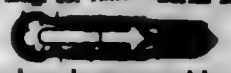

Claim.—1. A telephone-lamp comprising a tubular glass vacuum-chamber, a thick half-globular translucent top joined thereto by the fusion of the glass and integral therewith.

2. A telephone-lamp comprising a tubular glass vacuum-chamber, a thick half-globular translucent top integral therewith and decreasing gradually in thickness from its top center toward the walls of the tubular chamber.

3. A telephone-lamp comprising a tubular glass vacuum-chamber, a thick half-globular translucent top joined thereto by the fusion of the glass and decreasing gradually in thickness from the top toward the walls of the tubular chamber, and a bottom vacuum-seal.

708,792. ADJUSTABLE SEAT AND DESK. JAMES W. JOHNSTON, Chicago, Ill. Filed June 27, 1901. Serial No. 66,304. (No model.)

Claim.—1. The combination in an adjustable desk and seat of a desk-supporting bracket, a bearing-surface on said bracket arranged at a vertical angle of about sixty degrees, a central vertical tongue, two vertical grooves, one on each side, and parallel with said tongue, said tongue and grooves forming the said bearing-surface of said bracket; an aperture transversely through the said tongue and bearing-surface, a threaded bolt adapted to pass through and fit said aperture, and a nut adapted to fit said bolt, with a base comprising two vertical parts, each of said parts having corrugated projections arranged to fit into each other and to form the head of said base, an aperture passing transversely through the head of said base, a threaded bolt adapted to pass through said aperture, and a nut adapted to fit said bolt and to fasten the two vertical parts of said base together, the feet of said base being similarly joined; a vertical bearing-surface arranged at an angle of about sixty degrees, a central vertical slot formed by the joining together of the said parts extending from the foot to the head of said base adapted to receive and to engage the vertical tongue of said bracket, and the said bearing-surface of said base being adapted to enter and to be engaged by the vertical grooves in said bracket, the bracket being adjustable vertically on said base and arranged to be affixed thereon in the position desired by the bolt and nut, substantially as described.

2. The combination in an adjustable desk and seat of a seat-supporting bracket, a bearing-surface on said bracket arranged at a vertical angle of about sixty degrees, a central vertical tongue and two vertical grooves, one on each side and parallel with said tongue, the said tongue and grooves forming the said bearing-surface of said bracket, an aperture transversely through said tongue and bearing-surface, a threaded bolt adapted to pass through and fit said aperture, and a nut adapted to fit said bolt, with a base comprising two vertical parts, each of said parts having corrugated projections arranged to fit each other and to form the head of said base; an aperture passing transversely through the head of said base, a threaded bolt adapted to pass through and fit the said aperture, and a nut adapted to fit said bolt and to fasten the two vertical parts of said base together, the feet of said base being similarly joined, a bearing-surface arranged at a vertical angle of about sixty degrees, a central vertical slot formed by the joining together of said parts extending from the foot to the head of said base, adapted to receive and to engage the vertical tongue of said bracket, and the said bearing-surface of the said base being adapted to enter and to be engaged by the vertical grooves in said bracket, the bracket being adjustable vertically on said base and arranged to be affixed thereon in the position desired by the bolt and nut H, substantially as described.

3. The combination with a seat and a desk, of supporting-brackets having bearing-surfaces constructed with a vertical angle of about sixty degrees, the bearing-surfaces of each of said brackets having a tongue and grooves, and having an aperture passing transversely through each of said tongues and bearing-surfaces, and a base constructed to stand upon and to be affixed to the floor, and having bearing-surfaces forming a vertical angle of about sixty degrees, said bearing-surfaces in the said base having each a vertical slot extending from the foot to the head of said base, the said bearing-surfaces and slots being adapted to receive and fit the tongues and grooves of the said brackets, so as to allow of the vertical and horizontal adjustment of the said brackets, desk and seat, and a bolt and nut adapted to pass through the said slots in the base and through the transverse aperture in the bearing-surfaces of said brackets for the purpose of holding each of said brackets in the position desired on each of said bases, substantially as and for the purposes specified.

708,798. CONDENSER. EMIL JOSSE, Wilmersdorf, Germany. Filed May 17, 1901. Serial No. 60,644. (No model.)

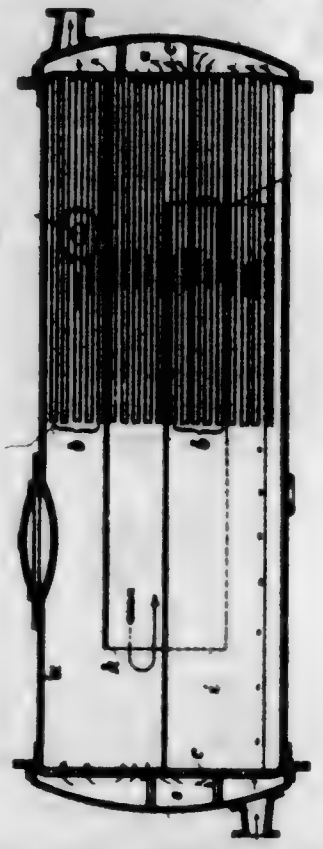

Claim.—1. A condenser comprising a drum or casing with interior heads forming chambers at the ends, pipes connecting said chambers, and inclined partitions arranged in the casing between said heads.

2. A condenser comprising a drum or casing with interior heads forming chambers at the ends, pipes connecting said chambers, and inclined partitions arranged in the casing between said heads, said partitions extending from opposite heads to within a distance from the other heads.

3. A condenser comprising a drum or casing with interior heads forming chambers at the ends, pipes connecting said chambers, and inclined partitions arranged in the casing between said heads, said partitions being provided with discharge-apertures at their lowest points.

708,794. CARBURETER. JOSEPH W. KITTEL, Chicago, Ill., assignor to Safety Gaslight Co., Chicago, Ill., a Corporation of Illinois. Filed Sept. 9, 1901. Serial No. 74,782. (No model.)

Claim.—1. In a carbureter, a reservoir, a generator-burner, a distributing-pipe, a gas-eduction tube leading to said distributing-pipe, a screw-controlled needle-valve in said gas-eduction tube, a back-flow conduit connecting the generator-burner with the distributing-pipe, in combination with the valve 32 interposed in said conduit, said valve being mounted upon a rock-shaft, and a lever-arm upon said rock-shaft in operative connection with said needle-valve.

2. The combination in a carbureter, of a reservoir, a generator extension connected therewith, a generator-burner adjacent to said extension, a distributing-pipe, a gas-eduction tube leading to said distributing-pipe, a screw needle-valve in said gas-eduction tube, a back-flow conduit connecting the generator-burner with the distributing-pipe, a poppet-valve interposed in said conduit, said valve being mounted upon a rock-shaft, a lever-arm upon said rock-shaft in operative connection with said needle-valve, a sliding gate in the gas-chamber of said burner, and a lever for actuating said gate.

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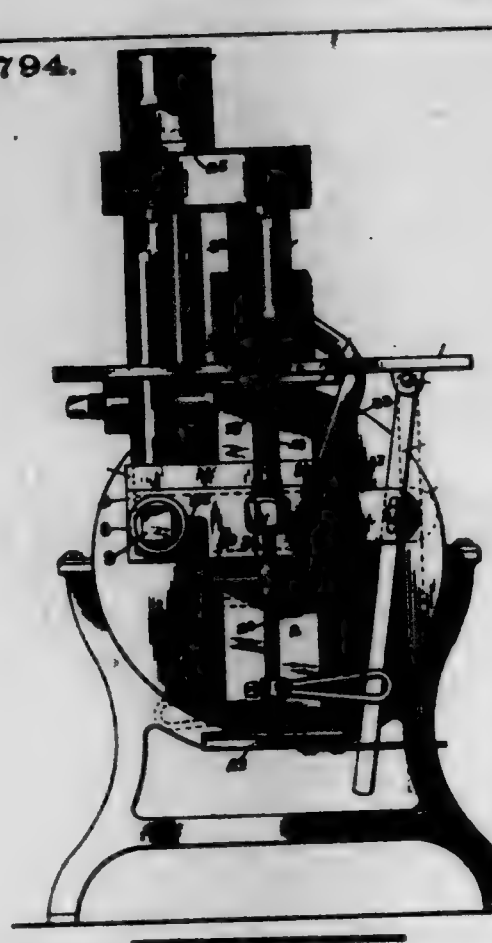

708,795. HAT-PIN RETAINER. EDWARD KRAMMER, Brooklyn, N. Y. Filed Oct. 16, 1901. Serial No. 78,831. (No model.)

Claim.—As an article of manufacture, a hat-protecting device comprising a composite button made of open-ended members provided with screw-threads and detachably secured together, and a resilient filling mounted in one of said members, and detachably secured independently of the other member, for the purpose of receiving the shaft of a hat-pin.

708,796. BOLT-RETAINER. GEORGES LAKHOVSKY, Paris, France. Filed July 24, 1901. Serial No. 69,515. (No model.)

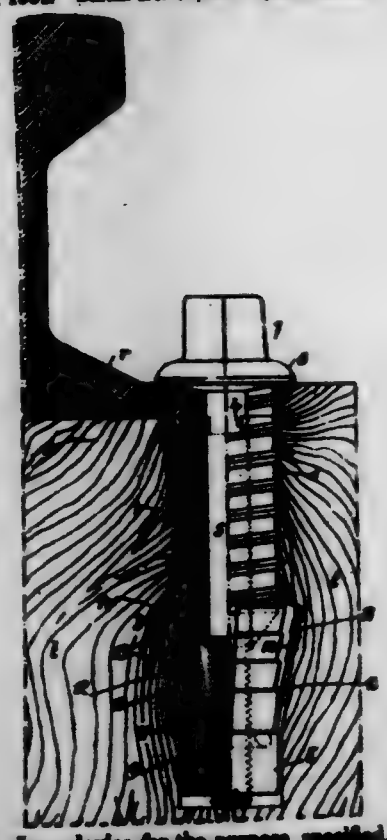

Claim.—1. In a device for the purpose specified, the combination with the tubular bushing and guide for the bolt, said guide being smooth on the inside, screw-threaded exteriorly, and closed at its inner end, and the bolt, the body of which fits said guide and which has an enlarged and channeled step at its inner end to receive and form bearings for the expanding segments, of the said segments, forming a cylinder when closed, having teeth on their outer faces and flared or beveled at their upper ends to receive the conical end of the fixed bushing and guide.

2. In a device for the purpose specified, the combination with the tubular bushing and guide for the bolt, said guide being smooth on the inside, screw-threaded exteriorly, and closed at its inner end, and the bolt, the body of which fits said guide and which has an enlarged and channeled step at its inner end, the said channel being divided into sections by studs 10, and the segments 12, having tenons 11, which fit into the channel between the studs, and teeth 13 on their outer faces.

708,797. RAILWAY-TIE. JOHN P. LANCASTER, Chicago, Ill., assignor to Joseph Nicholas Vasey, Chicago, Ill. Filed Dec. 4, 1901. Serial No. 84,668. (No model.)

Claim.—1. In a railway-tie, the combination of a main tie-body apertured at each side of the rail-seat thereon, lever-clamps arranged to extend through said apertures and fulcrumed upon the under side of the tie-body between their ends, and a tension member united with the tie-body and cooperating with said clamp-levers, for the purpose set forth.

2. In a railway-tie, the combination of a main tie-body, provided at each side of its rail-seat portions with apertures, clamp-levers mounted in said apertures to extend through the tie-body, a tension member consisting of a bar-like body of resilient metal having parts arranged to rest in direct bearing with the under surface of the tie-body, and other parts supported free from the tie-body, said clamp-levers being fulcrumed between their ends and having their lower ends in engagement with the tension member, and their upper ends engaging the rail-body, and tension-bolts holding said tension member adjustably to the tie-body, for the purpose set forth.

3. In a railway-tie, the combination with a main tie-body provided with longitudinally-extending slots located adjacent to, and at each side of the rail-supporting portions thereof, a tension member arranged beneath said tie-body having their portions arranged to rest directly in bearing with the under surface of the rail-seat portions of the tie, an intermediate portion immovably secured to the tie-body, and resilient portions between said intermediate and their portions, and between the latter and ends of the tie respectively, arranged at a distance from the under surface of the tie, clamp-levers arranged to extend through said slots, and fulcrumed between their ends upon the under surface of the tie-body and engaging at their opposite ends the rail-body and resilient portions of the tension member respectively, and adjusting-bolts extending through said tension member and the tie-body, substantially as described.

4. In a railway-tie, the combination with a main tie-body provided with longitudinally-extending slots located adjacent to, and at each side of the rail-supporting portions thereof, a tension member arranged beneath said tie-body having their portions arranged to rest directly in bearing with the under surface of the rail-seat portions of the tie, an intermediate

portion immovably secured to the tie-body, and resilient portions between said intermediate and chair portions, and between the latter and ends of the tie respectively, arranged at a distance from the under surface of the tie, clamp-levers arranged to extend through said slots, and fulcrumed between their ends upon the under surface of the tie-body and engaging at their opposite ends the rail-body and resilient portions of the tension member respectively, and adjusting-bolts extending through said tension member and the tie-body, said clamp-levers being arranged to extend obliquely downwardly and divergingly from the rail-body and their lower ends being arranged to engage inclined portions of the tension member, whereby endwise movement of the clamp-levers is prevented, substantially as described.

8. In a railway-tie, the combination with a main tie-body provided with longitudinally-extending slots located adjacent to, and at each side of the rail-supporting portions thereof, a tension member arranged beneath said tie-body having chair portions arranged to rest directly in bearing with the under surface of the rail-seat portions of the tie, an intermediate portion immovably secured to the tie-body, and resilient portions between said intermediate and chair portions, and between the latter and ends of the tie respectively, arranged at a distance from the under surface of the tie, clamp-levers arranged to extend through said slots, and fulcrumed between their ends upon the under surface of the tie-body and engaging at their opposite ends the rail-body and resilient portions of the tension member respectively, and adjusting-bolts extending through said tension member and the tie-body, the slots in the tie-body being made of greater length than those portions of the clamp members which rest therein when the latter are in operative positions, whereby said clamp-levers may be shifted longitudinally of the tie-body in assembling the structure.

6. The combination with a tie having a slot therein, of a fastener mounted in said slot and comprising a head portion, a body portion and a neck connecting said head to said body portion intermediate their extremes, and a block seated in said slot and located intermediate said head and said body portion and abutting said neck, substantially as described.

708,798. LATHE FOR TURNING IRREGULAR FORMS. FRANK J. LELAND, Knoxville, Tenn. Filed June 18, 1901. Serial No. 65,002. (No model.)

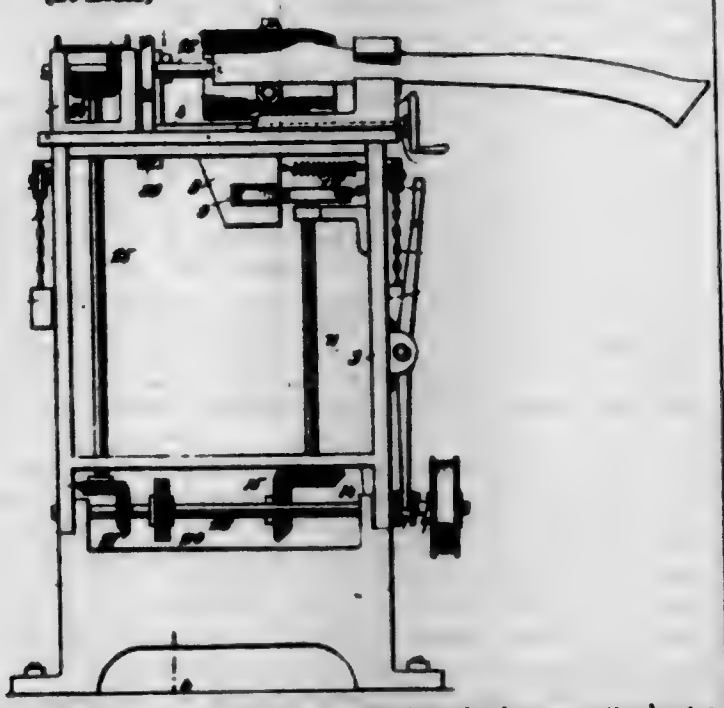

Claim.—1. In a lathe for turning irregular forms, a cutter-head, a work-holder comprising a spindle and a gripper consisting of a block having an opening to receive the work and a slot extended outward from the opening through which the work may pass, means for rotating the work, and means for causing a relative longitudinal movement between the work-holder and the cutter-head, substantially as specified.

2. In a lathe for turning irregular forms, a cutter-head, a work-holder comprising a spindle and a gripper consisting of a block having an opening to receive the work, opposite walls of said opening being angular, and a slot extended outward from the opening through which the work may pass, means for rotating the work, and means for causing a relative longitudinal movement between the work-holder and the head, substantially as specified.

3. A lathe for turning irregular forms, comprising a fixed frame, a frame mounted to swing on the fixed frame, a carriage movable on the fixed frame, a cutter-head mounted to rotate in said carriage, a vertical shaft, a cam on said shaft, a part depending from the carriage with which said cam engages, means for rotating the shaft, a centering-spindle mounted on the swinging frame, means for rotating said centering-spindle, a gripping device adjustable on the swinging frame, means for moving the swinging frame outward relatively to the cutter-head, and means for moving the swinging frame toward the cutter-head, substantially as specified.

4. A lathe for turning irregular shapes, comprising a fixed frame, a frame mounted to swing on the fixed frame, a cutter-head mounted to rotate on the fixed frame, a centering-spindle on the swinging frame, means for rotating said spindle, a cam removably placed on the spindle, an adjustable abutment for engaging with said cam, means for moving the swinging frame toward the cutter-head, and a rotating gripping-block for the work and carried on the swinging frame, substantially as specified.

5. A lathe for turning irregular shapes, comprising a fixed frame, a frame mounted to swing on the fixed frame, a shaft on which the swinging frame is fulcrumed, a driving-shaft having gear connections with the first-named shaft, a cutter-head-supporting carriage movable on the fixed frame, means operated from the driving-shaft to move said carriage in one direction, a centering-spindle mounted on the swinging frame, means operated from the first-named shaft for rotating said spindle, and a work-gripping device mounted to rotate and adjustable on the swinging frame, the said gripping device being adapted for engaging around the work operated on and having a lateral opening through which the work may pass, substantially as specified.

708,799. KINDERGARTEN-LOOM. BRAYTON E. LITCHFIELD, Faribault, Minn. Filed Apr. 4, 1902. Serial No. 101,336. (No model.)

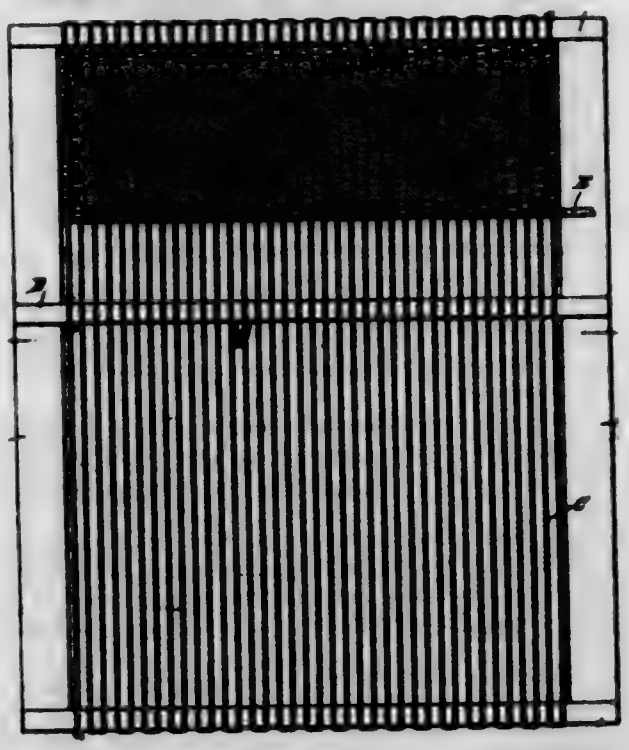

Claim.—1. A school-loom having a frame provided with means for supporting the warp, and a lay manually slidable on the sides of the loom-frame and having spaced slots for the passage of the warp-strands, to hold the latter properly spaced apart, the said lay having shoulders for engaging the top and inner sides of the side bars of the loom-frame, the lay extending further above the top faces of the side bars of the loom-frame than the ends thereof, as set forth.

2. A loom, comprising a frame having parallel side bars, and end bars projecting above the top faces of the side bars, the end bars being formed in the top with notches for the passage of the warp, and a lay comprising a bar manually slidable on the sides of the frame and extending further above the top faces of the side bars than the ends of the frame, the lay having spaced slots in the top for the passage of the warp-threads to hold the latter properly spaced apart, the lay also serving to beat in the weft, as set forth.

708,800. WHEELED SCRAPER. WHITFIELD S. LIVINGSTON, Kansas City, Mo., assignor to the Smith & Sons Manufacturing Company, Kansas City, Mo., a Corporation of Missouri. Filed Nov. 20, 1901. Serial No. 84,131. (No model.)

Claim.—1. In a wheeled scraper of the character described, a bail pivotally mounted in advance of the axle, a scraper-pan pivotally hung on said bail to the rear of its point of suspension, a brace-bar connected with the axle and supporting the rear of said pan, and the draft appliances connected directly to said pan whereby as the draft is applied the leverage of the bail tends to thrust said pan into the soil; substantially as set forth.

2. In a wheeled scraper having its scraper-pan carried by a fur-

wardly-extending bail suspended from the axle, and provided with a brace-bar supporting the rear of said pan, draft-bars connected with said pan, and arranged in such manner that as the draft is applied the bail will act to thrust said pan into the soil, substantially as set forth.

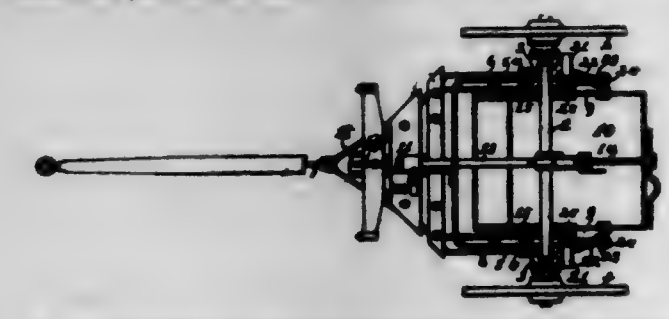

3. In a wheeled scraper having its scraper-pan carried by a bail suspended from the axle and provided with a brace-bar supporting the rear of said pan, draft-bars connected with said pan, and links connected with said draft-bars for the application of the draft directly to the pan; substantially as set forth.

4. A wheeled scraper comprising the wheels and axle, side bars connected with the axle and carrying the tongue, a platform mounted on said side bars, a brace-bar supporting the axle, a bail provided with a hand-lever suspended from the axle, a scraper-pan hung on said bail, a brace-bar connected with the axle for supporting the rear of said pan, a latch arranged to engage said hand-lever when the scraper is raised up, and the draft appliances connected with said pan whereby as the draft is applied said bail will act to thrust said pan into the soil, substantially as set forth.

5. In a wheeled scraper having its pan carried by a bail suspended from the axle and provided with a brace-bar connected with the axle for supporting the rear of said pan, draft-bars connected with said pan, links connected with said draft-bars, and a draft-rod connected with said links for the application of a "snatch-team;" substantially as set forth.

6. In a wheeled scraper having its pan carried by a bail suspended from the axle, and a platform carried by side bars connected with the axle, draft-bars connected with said pan, links connected with said draft-bars for the application of the draft, and drop bars pivotally mounted in brackets secured upon said platform for supporting said draft-bars; substantially as set forth.

7. In a wheeled scraper having its pan carried by a bail suspended from the axle, a rigid support stationarily mounted on said axle, and a resilient connection between said support and the scraper-pan, substantially as set forth.

8. In a wheeled scraper having its pan carried by a bail suspended from the axle, a rigid support stationarily mounted on said axle and extending rearwardly therefrom, and a resilient connection extending from said support to said scraper-pan at the rear of the axle; substantially as set forth.

9. In a wheeled scraper having its pan carried by a bail suspended from the axle, and provided with a brace-bar supporting the rear of said pan, a resilient connection between the axle and said pan; substantially as set forth.

10. In a wheeled scraper having its pan carried by a bail suspended from the axle, standards mounted upon the axle and springs connected with said standards and with said pan; substantially as and for the purpose set forth.

11. In a wheeled scraper having its pan carried by a bail suspended from the axle, standards mounted upon the axle and springs connected with said standards and with said pan, to the rear of the axle, substantially as and for the purpose set forth.

12. In a wheeled scraper having its pan carried by a bail suspended from the axle, standards mounted upon the axle, springs connected with said standards and with said pan, and means for regulating and adjusting the tension of said springs; substantially as and for the purpose set forth.

708,801. MERRY-GO-ROUND. CHARLES LOWY, Jr., Brooklyn, N. Y. Filed Oct. 28, 1901. Serial No. 79,642. (No model.)

Claim.—1. A merry-go-round having a revolvable frame, a rock-shaft journaled on the said frame and provided at one end with a cam-arm and at the other end with an arm for supporting a seat, a fixed cam engaged by the said cam-arm to cause a rocking motion of the rock-shaft on revolving the said frame, short auxiliary rock-shafts also journaled on the frame and provided with arms connected by a link with an arm on the first-named shaft, and arms for supporting seats carried by the auxiliary rock-shafts, as set forth.

2. A merry-go-round having a revolvable frame, rock-shafts journaled on the said frame and extending in a radial direction, supporting-arms on the outer end of the rock-shafts, seat-rods carried by the said supporting-arms, guide-links pivoted to the said seat-rods and extending rearwardly under the seat, the said guide-link being fulcrumed on the platform of the revolvable frame, a cam-arm on the inner end of each rock-shaft, and a fixed cam engaged by the said cam-arm, as set forth

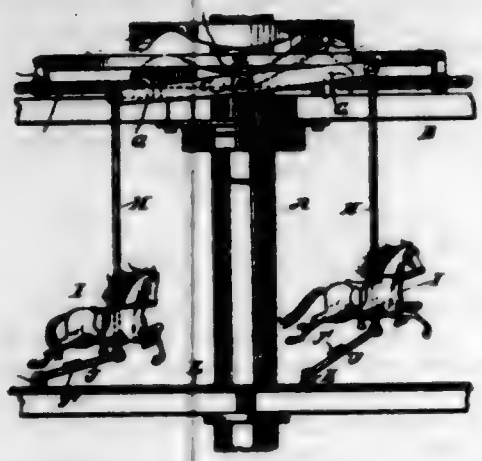

3. A merry-go-round comprising a center post, a frame mounted to turn on the said post, radially-arranged rock-shafts journaled on the said frame, transversely-extending double supporting-arms secured on the outer portions of the said rock-shafts, seat-supporting rods held on the said supporting-arms, guide-links pivotally connected with the seat-supporting rods and fulcrumed on the frame, cam-arms secured on the inner ends of the said rock-shafts and each carrying a friction-roller at its free end, and a cam secured on the said center post and provided with a groove engaged by the said friction-rollers, as set forth.

4. A merry-go-round having a revolvable frame, rock-shafts journaled on the said frame and extending in a radial direction, supporting-arms on the outer ends of the rock-shafts, seat-rods carried by the said supporting-arms at the free ends thereof, guide-links pivoted to the said seat-rods and pivotally connected with the revolvable frame, the said guide-links being each provided with a step, a cam-arm on the inner end of each rock-shaft, a fixed cam engaged by the said cam-arm, short auxiliary rock-shafts connected with and rocked from the said first-named rock-shafts, supporting-arms on the said auxiliary rock-shafts, and seat-rods held on the last-mentioned supporting-arms, as set forth.

5. A merry-go-round having a revolvable frame provided with a platform, rock-shafts journaled on the said frame and extending in a radial direction, supporting-arms on the outer ends of the rock-shafts, seat-rods carried by the said supporting-arms, seats supported by said rods, guide-links pivoted to the lower ends of said seat-rods and pivotally connected with bearings on the platform of the revolvable frame, the said guide-links being each provided with a step, a cam-arm on the inner end of each rock-shaft, a fixed cam engaged by the said cam-arm, short auxiliary rock-shafts connected with and rocked from the said first-named rock-shafts, supporting-arms on the said auxiliary rock-shafts, and seat-rods held on the last-mentioned supporting-arms, the last-mentioned seat-rods and their seats being in alinement with the seat-rods and seats first mentioned, as set forth.

6. A merry-go-round, comprising a revolvable frame, rock-shafts journaled on the frame and extending in a radial direction, supporting-arms on the outer ends of the rock-shafts, seat-rods carried by the said supporting-arms, seats supported thereby, means for imparting a rocking motion to the rock-shafts on revolving the said frame, short auxiliary rock-shafts alternating with the main rock-shafts, supporting-arms on the said auxiliary rock-shafts, seat-rods held on the last-mentioned supporting-arms, seats carried thereby, and links connecting arms on the main rock-shafts with arms on the auxiliary rock-shafts, each seat connected with the auxiliary rock-shafts extending between a pair of seats connected with the main rock-shafts and moving in an opposite direction to the seats between which it is located, as set forth.

708,802. BOTTLE-HOLDER. EUGENE C. LEECH, New York, N. Y. Filed Feb. 26, 1901. Serial No. 48,878. (No model.)

Claim.—1. A bottle-holder, comprising a base, arms resting on the base and crossing each other at their middle portions, and a cap covering the crossed middle portions of the arms, the side portions of said arms rising from the base and cap.

2. A bottle-holder, comprising a base having a hollow neck, arms crossing each other at their middle portions in said hollow neck, a cap for closing the neck and middle portions of the arms, and metal filling said neck and cap and surrounding the crossed portions of the arms, as set forth.

3. A bottle-holder, comprising a base having a hollow neck, U-shaped arms crossing each other at their middle portions in said hollow neck, a

cap for closing the neck, and metal filling said neck and cap and surrounding the crossed portions of said arms, as set forth.

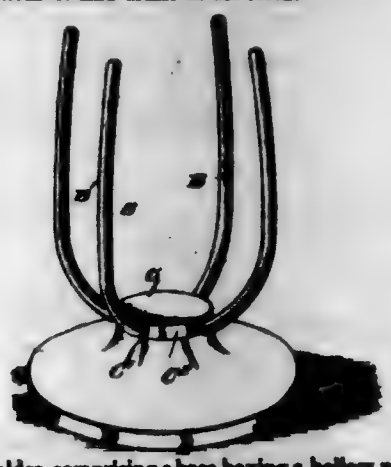

4. A bottle-holder, comprising a base having a hollow neck, U-shaped arms crossing and interlocking each other at their middle portions in said hollow neck, a cap for closing the neck, and metal filling said neck and cap and surrounding the crossed and interlocked portions, as set forth.

5. A bottle-holder, comprising a base having a hollow neck, arms crossing each other at their middle portions in said hollow neck, a cap for closing the neck and middle portions of the arms, and metal filling said neck and cap and surrounding the crossed portions of the arms, the arms extending through registering openings in the neck and the depending flange of the cap, as set forth.

708,808. PLOW. JOSEPH KUBALKA, Comerve, Tex. Filed Apr. 7, 1902. Serial No. 101,708. (No model.)

Claim.—1. In a plow, a beam, a shoe-bar secured to the beam, a standard adjustably connected with the beam, an adjusting-brace carried by the shoe-bar and in adjustable engagement with the standard, and means for locking the brace to the standard, for the purpose described.

2. In a plow, a shoe-bar rigidly secured to the beam, handles carried by the shoe-bar and adjustably connected with the beam, a standard located in front of the shoe-bar, a brace carried by the shoe-bar, extending through the standard and having a toothed connection therewith, means for locking the brace to the standard, and auxiliary braces adjustably connecting the standard with the beam, for the purpose described.

3. In a plow, the combination with a beam and a shoe-bar secured to the beam, of a standard consisting of spaced members connected at their bottom portions by a spacing-block, the members of the standard having teeth formed at their rear edges, a main brace for the standard, pivotally attached to the shoe-bar and extending diagonally upward between the members of the standard, terminating at its upper end in a ribbed cap-disk arranged for engagement with the forward edges of the standard members, the rib of the cap-disk fitting in the space between the standard members, teeth formed upon the standard-brace at the sides thereof, adapted to mesh with the teeth on the standard members, whereby said standard may be adjusted vertically, and strap-braces adjustably connected with the beam and having connection with the standard, whereby the said standard may be given any desired inclination, as described.

4. In a plow, the combination with the beam and the shoe-bar secured to the beam, of a standard consisting of opposing members separated by a spacing-block located at their lower ends, a brace for the standard, comprising an upwardly and forwardly curved body having a reduced section which passes diagonally upward between the members of the standard, and a head-section consisting of a cap-plate arranged for engagement with the forward edge of the standard, and a rib at the back of the cap-plate, which fits in the space between the standard members, teeth at the side portions of the standard-brace, adapted for interlocking engagement with the teeth on the standard members, a bolt passed through the cap-plate of the standard-brace and its rib and rearwardly through the space between the standard members, a washer fitted to the rear end of the said bolt, having a rib adapted to fit in the space between the standard members, and a lock-nut for the bolt engaging with the said washer, for the purpose specified.

708,804. WIRE-FENCE MACHINE. PHARES M. MEMLER, Hagerstown, Md. Filed Mar. 8, 1902. Serial No. 96,891. (No model.)

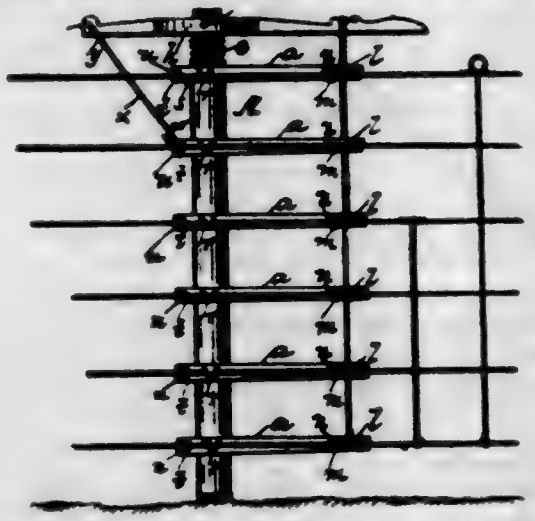

Claim.—1. The combination with the support A, of the tension-lever having the central opening and side perforations or bearings, the collar provided with the lateral lugs or bearings, and an eye at one end and a hook and perforation at the opposite end, the coiled spring and arms, having the hooks and pins, said coiled spring interposed between the collar and one of the arms, all substantially as shown and described.

2. In a device of the character described, the tension-lever, having a central opening, the sides provided with the perforations, one end having the perforation, and the opposite end the hook and opening, the collar arranged within the central opening of the lever and provided with the bearing-lugs, the coiled spring, and the arms, said arms having the clamping end and hook adjacent thereto, and a hook and pins at the opposite end and the bar having at one end a hook and pin and means at the opposite end for attachment to the tension-lever, the whole adapted to operate substantially as described.

3. The combination with the support, of the rocking lever, the spring therefor, the arms provided with the hooks and pins, the brace-hook, one end attached to the end of the lever and the other end to the support and the adjustable bars, having the hooks and pins, substantially as described.

708,805. BALL-COCK. ALEXANDER W. MURRAY, Chicago, Ill. Filed Feb. 14, 1901. Serial No. 47,360. (No model.)

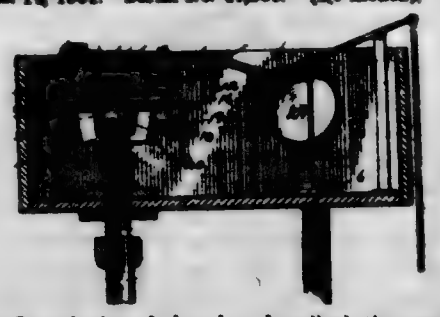

Claim.—In a device of the class described, the combination of an inlet-pipe having a threaded upper end, the cylindrical cap having a central threaded perforation into which the pipe is screwed, said pipe having an annular series of perforations surrounding the central perforation and having its outer face threaded, the hollow cylindrical body screwed

upon the cap, said body being reduced in interior diameter to form shoulders, the disk-shaped valve disposed between the shoulders and the cap and covering the annular series of perforations, said valve having a central perforation communicating with and of lesser diameter than the pipe, the ring disposed between the top of the cylindrical body and the washer and resting loosely upon the latter, the reduced tubular extension over the top of the body portion and communicating with the interior thereof, and the float-lever pivoted upon the upper end of the body and having a valve disposed to rest upon the upper end of the tubular extension to close it.

708,806. CUTTER-BAR FOR MOWING-MACHINES. JOHN T. MYERS, Gainesville, Fla. Filed Mar. 3, 1902. Serial No. 96,450. (No model.)

Claim.—1. The combination of a knife-bar having one of its ends provided on its upper face with an extension having a beveled under face, a series of vertically-arranged lugs carried by the said knife-bar, a series of removable cutter-blades arranged on said cutter-bar, a locking-bar provided with a series of slots to receive the upper ends of the said lugs, and having one of its ends beveled and arranged under the said extension, and means whereby said knife-bar and locking-bar are locked together.

2. The combination with a knife-bar and a series of lugs arranged thereon, said lugs having elongated upper ends provided with beveled under surfaces of a series of cutter-blades arranged between the said lugs, a locking-bar provided with a series of openings to receive the upper ends of the said lugs, a locking-bolt arranged between the said knife-bar and locking-bar, said locking-bolt provided with an angular head seated in an opening in the knife-bar, and a nut on the outer end of the said bolt.

3. The combination with a knife-bar having one of its ends provided on its upper face with an inwardly-projecting extension, said extension having a beveled under face, and a series of lugs arranged on said knife-bar, and provided with elongated upper ends having beveled under faces, of a series of cutter-blades arranged between the said lugs, a locking-bar provided with a series of slots to receive the upper ends of the said lugs, and having one of its ends beveled and arranged under the said extension, a locking-bolt arranged between the said knife-bar and locking-bar and provided with an angular head seated in an opening in the knife-bar, a nut on the outer end of the said bolt, and means for preventing the rotation of the said nut, substantially as described.

708,807. PLOW-POINT. SAMUEL C. MYERS, Mifflintown, Pa. Filed Apr. 24, 1902. Serial No. 104,525. (No model.)

Claim.—1. A plowshare having cast integral therewith a plate which throughout a portion of its surface is separated from the body of the plowshare and which may be removed when the nose or point has become dull, in order to leave a new sharp nose or point, substantially as set forth.

2. A cast-metal plow-point having an integral plate cast lengthwise of the point, forming one surface of the same and capable of being removed to leave a new sharp point, substantially as set forth.

3. As a new article of manufacture, a plowshare having a cast-metal point integral therewith, and a plate cast integral with the point and capable of being removed, substantially as set forth.

4. A plowshare cast hollow at a point in the rear of its original point or nose whereby when the said original point or nose wears back to the hollow portion, the upper wall thereof may be removed to present a new point or nose, substantially as set forth.

708,808. VEHICLE-FASTENING FOR HARNESS. MINERAL MCHALLEY, St. Louis, Mo. Filed Mar. 5, 1902. Serial No. 96,732. (No model.)

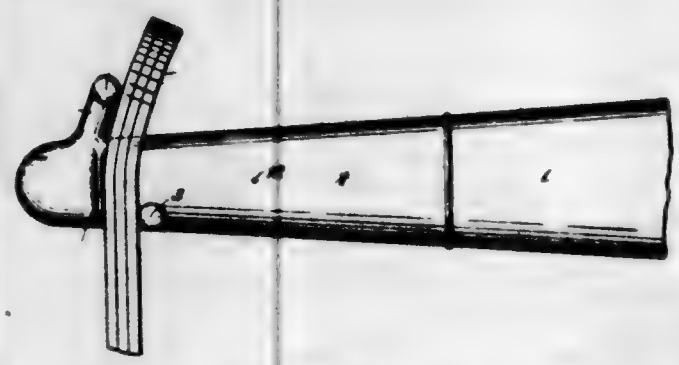

Claim.—1. A vehicle-fastening for harness, comprising a longitudinal head of substantially conical shape, said head being provided with oppositely-disposed grooves, cylindrical bosses mounted upon said head adjacent to said grooves, and an ancillary member mounted upon said head and projecting therefrom in a plane substantially at right angles to the general axial direction of said bosses.

2. A vehicle-fastening for harness, comprising a longitudinal head of substantially conical shape, said head being provided with oppositely-disposed grooves, cylindrical bosses mounted upon said head adjacent to said grooves, and an ancillary member mounted upon said head and projecting laterally therefrom in a plane substantially at right angles to the general direction of said bosses, said ancillary member being provided with cylindrical bosses parallel with the bosses upon said longitudinal head.

3. A vehicle-fastening for harness, comprising a longitudinal head of substantially conical form, a pair of grooves disposed upon opposite sides of said head, beads disposed adjacent to said grooves, a pair of cylindrical bosses disposed upon opposite sides of said head and immediately adjacent to said grooves, a T-shaped member projecting laterally from one of the edges of said head and provided with bosses, said bosses being substantially in alinement with said beads for the purpose of bending the end of a strap.

708,809. SHIELD AND DRIP-CATCHER FOR CANDLES. HENRY S. HAGENBAST, Gardenville, Md. Filed Feb. 27, 1902. Serial No. 96,870. (No model.)

Claim.—1. A device for the purpose described, comprising a sleeve or holder adapted to be slipped over a candle and provided with a spring-pressed clamping-finger to secure it to the candle; a flame-shield carried by said holder; and a drip-catcher also carried by said holder, as set forth.

2. A device for the purpose described, comprising a holder adapted to be secured on a candle; a shield-supporting arm attached to said holder at one side thereof; a shield secured to said arm; and a drip-catcher secured to said holder substantially diametrically opposite said arm, as set forth.

3. A device for the purpose described, comprising a holder adapted to be secured to a candle; a shield carried by said holder; and a drip-catcher also carried by said holder in diametric relation to said shield and extending upwardly and outwardly therefrom in an oblique direction, as set forth.

4. A device for the purpose described, comprising a sleeve adapted to be slipped over a candle and provided with a clamping-finger to secure it to the candle; a supporting-arm attached to said holder and extending upwardly therefrom; a shield secured to the upper end of said arm; and a drip-catcher also attached to said sleeve, as set forth.

708,810. TELEGRAPHICALLY-OPERATED SIGNAL SYSTEM. Joseph E. Hewson, St. Louis, Mo. Filed Mar. 11, 1901. Renewed May 22, 1902. Serial No. 108,202. (No model.)

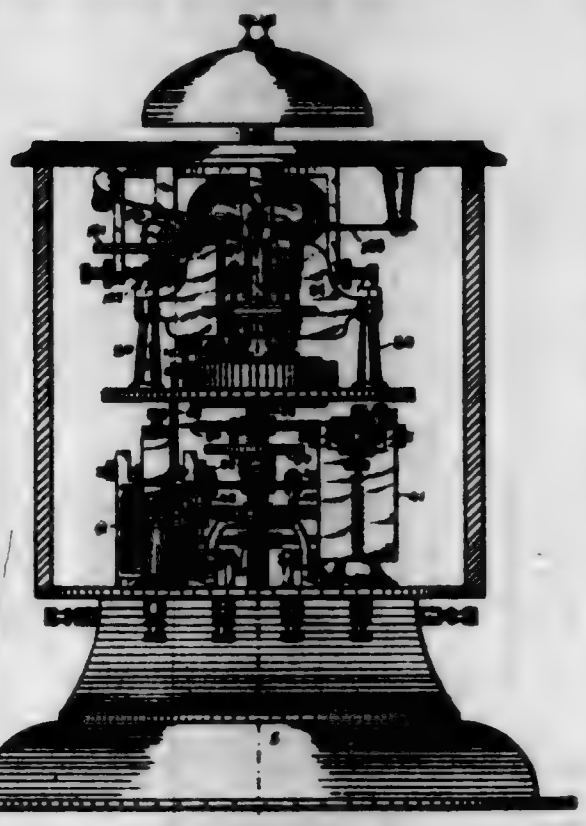

Claim.—1. A telegraphically-operated signal system, comprising a main wire, a key, a relay and a local-circuit sounder at the train-despatcher's office and also at a signal-station, a semaphore-controlled repeat-back mechanism and a relay in series at the signal-station, a local magnet on the station relay-circuit, a double-pointed contact on the local-magnet armature, actuating mechanism for a semaphore, a semaphore, and electrical connections for said semaphore by which said local-magnet armature controls said semaphore.

2. A telegraphically-operated signal system, comprising a main wire, a key, a relay and local-circuit sounder at the train-despatcher's office, and also at a signal-station, a semaphore-controlled repeat-back mechanism and a relay in series on said wire at the signal-station, a semaphore at said station, a local magnet on the local relay-circuit, a double-pointed contact on the local-magnet armature, actuating mechanism for the semaphore controlled by said local magnet, comprising a register having sliding bars operated by a space-circuit and a dot-and-dash circuit connected respectively to said double-pointed contact, and a semaphore electrically controlled through said register mechanism by said local magnet and its armature.

3. In a telegraphically-operated signal system, the combination with a semaphore-arm and an electric switch adjacent thereto, a pair of contacts, and their connections, of a link-detent pivoted to said arm adapted to support it and to throw said switch when disengaged, a trigger to hold said link, and an electromagnet controlling said trigger, substantially as described.

4. In a telegraphically-operated signal system, the combination with a semaphore-arm and an electric switch, of a slotted link pivoted to the said arm and having a notch at one side, and adapted to throw said switch, a guide-pin in said slot, a trigger pivoted near said pin and one end adapted to engage said notch, a spring-catch for the other end of said trigger, and an armature and electromagnet suitably connected to influence said spring and free said trigger.

5. In a telegraphically-operated signal system, the combination with a semaphore-arm, its horizontal shaft, and its weighted end on the opposite side of said shaft, of a slotted link pivoted to the weighted end, and having a notch and hook near its lower end, a guide-pin in said slot, a horizontal trigger pivoted near said pin with one end engaging said notch to support said link when the latter is raised, and engaged by the side of said link to raise the free end of said trigger when the link is down, a spring-supported armature vertically disposed, to engage the free end of the trigger, an electromagnet to attract said armature, and an actuating mechanism for said magnet, controlled telegraphically.

6. In a telegraphically-operated signal system, the combination with a counterbalanced semaphore-arm, a link-and-trigger mechanism for said arm, a spring-mounted armature and its electromagnet, controlling said trigger, of a call-box, having a spring winding-lever and repeating wheel, a pin on said link adapted to release said lever when the trigger is free, a relay in the train-despatcher's office, a sounder on the local circuit actuated by said relay, a telegraph-line from said relay to said call-box and means to free said trigger telegraphically.

7. In a signal system, the combination with a semaphore-arm, electrically-operated mechanism for said arm, actuating mechanism, a call-bell, a battery, a switch connected to the battery and shifted by the operated semaphore-arm, a pair of terminals for the switch connected to the actuating mechanism and the battery, respectively.

8. In a signal system, the combination with a semaphore-arm, and operative mechanism for said arm consisting of a link, a trigger and an electromagnet controlling said trigger, of actuating mechanism for said semaphore, telegraphically controlled, a call-bell, a battery, a switch connected to said battery through said actuating mechanism, and two terminals connected respectively to the electromagnet and the call-bell, and adapted to be cut in by the operation of said arm, substantially as described.

9. In a signal system, the combination with two semaphore-arms, a link, a trigger and electromagnet controlling said trigger for each arm, two switch-terminals, and a switch in the path of said link for each arm, of actuating mechanism electrically controlling the action of said arms, a battery, and a call-bell connected by a common conductor, to one terminal of each switch, the other terminal of each switch being connected to its respective electromagnet, substantially as described.

10. In a signal system, the combination with a semaphore, and its call-bell having a vibratory armature and an electromagnet suitably connected, of a ratchet-wheel and driven mechanism for stopping said call-bell, a hook-pawl for said ratchet-wheel and mounted on said armature, and a check for said wheel, substantially as described.

11. In a signal system, the combination with semaphore-arms, and operative mechanism for each arm, of actuating mechanism consisting of a winding mechanism, an escapement mechanism, telegraphically controlled and driven by the winding mechanism, a registering mechanism for the escapement mechanism, and a Morse-character form controlling each arm, and controlled by said registering mechanism, substantially as described.

12. A telegraphically-operated signal system, comprising a series of semaphore-arms, operative mechanism for each arm, actuating mechanism consisting of a winding mechanism, an escapement mechanism telegraphically controlled, an equalizing driving connection between said winding and escapement mechanisms, a registering mechanism for said escapement mechanism, a Morse-character form for each semaphore-arm and controlled by said registering mechanism, substantially as described.

13. In a telegraphically-operated signal system, the combination with the driving-wheel of the escapement mechanism, of a winding mechanism consisting of a motor having suitable battery connections, intergearing between said driving-wheel and the armature-shaft of said motor, a pair of rings concentric with the shaft and insulatingly mounted, conductors respectively connecting said rings and motor-commutator, a pair of brushes for said rings supporting said driving-wheel, and electrical conductors for said brushes completing the circuit.

14. In a telegraphically-operated signal system, the combination with the equalizing mechanism and the escapement mechanism driven thereby, of a winding mechanism, consisting of a motor and battery therefor, a pair of concentric rings insulatingly mounted and in series with said motor and battery, a pair of brushes for said rings, a driving-gear mounted on said brushes, intergearing between the armature-shaft and said gear, and contact-points on the equalizing mechanism and driving-gear respectively, having conductors completing the circuit to said brushes.

15. In a telegraphically-operated signal system, the combination with an escapement-wheel and a motor-driven winding mechanism having a driving-gear, of an equalizing mechanism consisting of an arm loosely mounted on the same axis as the said winding-gear and escapement-wheel, springs connecting said arm with said gear and wheel respectively, and contact-points carried by said arm and gear respectively, and in series with the motor and battery of the motor-circuit.

16. A telegraphically-operated signal system, comprising an escapement mechanism, a motor-driven winding mechanism, intermediate spring connections between said escapement mechanism and said winding mechanism, and electrical connections in series with the motor, whereby the escapement mechanism is driven with a yielding impulse and the motor is regulated, substantially as described.

17. A telegraphically-operated signal system, comprising an escapement mechanism consisting of a motor-driven escapement-wheel with ratchet-teeth, an armature having a check-tooth, an escapement pivoted to said armature and having a contact-arm insulatingly mounted, a contact insulatingly mounted on said armature for said escapement-arm, an electromagnet for said armature, and electrical connections for the said contact and escapement-arm for operating said escapement, substantially as described.

18. A telegraphically-operated signal system, comprising an escapement mechanism consisting of an escapement ratchet-wheel, means to drive it, an armature having a check-tooth, an escapement pivoted to said armature and having a spring-arm insulatingly mounted thereon, a contact-point insulatingly mounted on said armature adjacent to said arm, an electromagnet for said escapement, a local magnet and its armature having a common contact, and respective upper and lower contacts for said common contact and electrical connections, substantially as described.

19. In a telegraphically-operated signal system, an electromagnet in the local circuit, its armature having a common contact, upper and lower insulated contacts for said armature-contact, a driving escapement-wheel, an escapement-armature and its electromagnet, and electrical conductors from said upper and lower contacts respectively, for regulating the rotation of said escapement-wheel, substantially as described.

20. A telegraphically-operated signal system, comprising a signal, a ratchet-wheel for register-bars and means to rotate it, operative connections between said signal and ratchet-wheel, bars slidingly mounted in said wheel for indicating Morse characters, an encircling casing having a dividing-flange for separating the space-bars from dot-and-dash bars, a bar-switch in said casing to effect such separation, and means to operate said switch telegraphically, substantially as described.

21. In a telegraphically-operated signal system, the herein-described slidable bar having a T-head and stem to indicate a Morse character by its position, in combination with an encircling casing having a dividing-flange for said stems to support them when adjusted, and means to raise said bars, to register spaces in Morse characters, substantially as described.

22. In a telegraphically-operated signal system, the herein-described slidable bar for registering telegraphic characters, consisting of a shank 59 for slidingly mounting, a T-head with a sharpened stem 60 at one side for lifting it, and a downward projection on the other to steady it, substantially as shown and described.

23. In a telegraphically-operated signal system, the combination with a ratchet-wheel, means to rotate it, and slidable bars mounted in the ratchet-rim of said wheel, of a casing having a dividing-flange adjacent to said rim, a bar-switch, means to operate it, and a yielding point in line with said flange near said switch, substantially as described.

24. In a telegraphically-operated signal system, the combination with a ratchet-wheel and means to rotate it, of bars slidingly mounted in said wheel having stems projecting beyond its rim, a casing opposite said rim and having a dividing-flange, a bar-switch in said casing, means to operate it, and a yielding point for said flange formed by a rocker-arm adapted to yield circumferentially under engagement by a switched bar-stem, substantially as described.

25. In a telegraphically-operated signal system, the combination with the bar-wheel and slidable bars, of forms riding above said bars having Morse characters adapted to match with same characters when registered by the said bars, guides connected to said forms, a bridging-plate forming a support for said guides, opening arms mounted on said support and having insulating-stops, contacts carried by said guides, and electrical connections for said contacts, substantially as described.

26. In a telegraphically-operated signal system, the combination with the form-guides, bars and rotary bar-wheel, of a rotary disk mounted above said wheel, and cam-props pivoted to said guides and acted on by said disk, substantially as and for the purpose described.

27. In a telegraphically-operated signal system, the combination with a signal, and its connections; movable pieces designating Morse characters by their adjusted positions, an adjuster, and actuating mechanism for said adjuster telegraphically operated, of a cut-out shoe having a contact and determining the dash-bars, an opening arm normally closed on said shoe-contact except in dash characters, and in series with said actuating mechanism, substantially as described.

28. In a telegraphically-operated signal system, the combination with a ratchet-wheel, a wheel-casing, slidable bars corresponding to spaces and dots in the Morse code, and means to shift said bars, of a shoe mounted above said bars and normally riding on the space-bars, and adapted to drop down between the space-bars, substantially as and for the purpose described.

29. In a telegraphically-operated signal system, the combination with movable pieces and means to support them, of the herein-described shoe, consisting of a horizontally-pivoted arm mounted above said movable pieces, and having a block on the end substantially the width of three of the movable pieces as mounted, and normally riding on the tops of said pieces till a space is left for it to drop between, and electrical connections opened by the dropping of said shoe, substantially as described.

30. In a signal system, the combination with a motor connected to a source of electricity, and an escapement mechanism, and a driving mechanism for said escapement mechanism of variable-pressure contacts, in series with said motor and interposed between said escapement and driving mechanisms, for a current-regulator, substantially as described.

708,811. FEEDING MECHANISM FOR SEWING-MACHINES.

LAMBERT GOODNOUGH, Boston, Mass., assignor to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 2, 1896. Serial No. 574,539. (No model.)

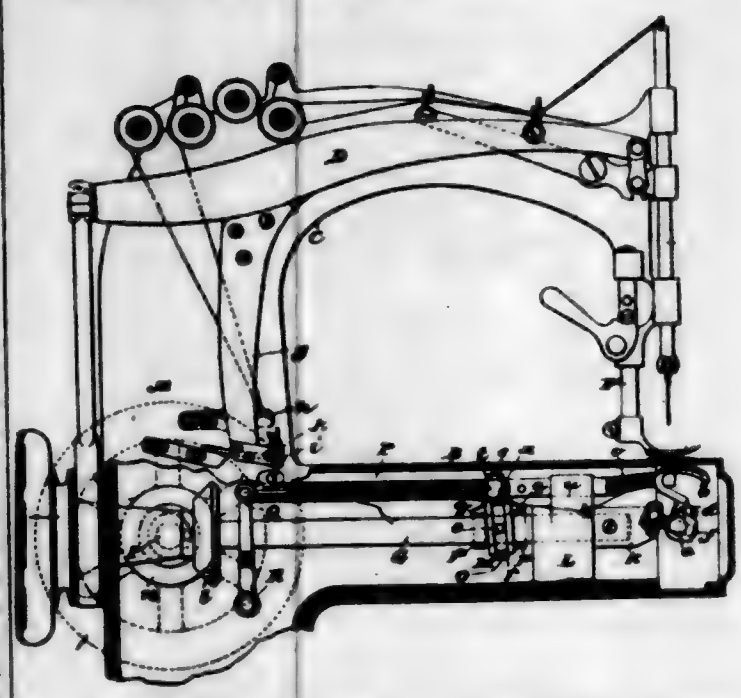

Claim.—1. A feeding mechanism for sewing-machines, comprising a driving-shaft and a feed-dog-carrying bar, and an inclined eccentric pivoted upon the driving-shaft and operatively connected with the feed-dog-carrying bar, with means for adjusting said eccentric; substantially as described.

2. A feeding mechanism for sewing-machines, comprising a feed-dog-carrying bar pivoted at one end to a rocking support, a driving-shaft, an inclined eccentric pivoted on said shaft, and means for adjusting the inclination thereof, and connections between said inclined eccentric, and the feed-dog-carrying bar; substantially as described.

3. A feeding mechanism for sewing-machines, including a feed-dog-carrying bar, and means for operating the same, including an inclined eccentric with means for swinging it to vary the inclination, and means for rotating said eccentric, substantially as described.

4. A sewing-machine comprising a driving-shaft, a feed-dog-carrying bar parallel therewith, connections between the driving-shaft and said feed-dog-carrying bar, for giving the latter rising-and-falling, as well as forward-and-backward movements, said connections including an eccentric, pivotally mounted on the driving-shaft and operated by the latter to give the rise and fall and having a universal-joint connection with the feed-dog-carrying bar, with means for adjusting said eccentric on its pivot.

5. A feeding mechanism for sewing-machines comprising a driving-shaft, an eccentric pivoted thereon, a feed-dog-carrying bar, a universal-joint connection between said eccentric and the feed-dog-carrying bar, said connection being applied to the latter intermediate its ends, and means for securing the eccentric in any position to which it may be tilted; substantially as described.

6. A feeding mechanism for sewing-machines and the like comprising a driving-shaft, an eccentric, a pivotal pin for securing the eccentric to the shaft, lugs extending laterally from either side of said eccentric, screws passing through the driving-shaft and adapted to bear against the lugs to vary the angle of inclination of the eccentric with respect to the axis of the driving-shaft and operative connections between the eccentric and the feed-dog-carrying bar whereby the latter is reciprocated both vertically and longitudinally; substantially as described.

7. A feeding mechanism for sewing-machines and the like comprising a driving-shaft, an eccentric thereon set with its vertical axis at an oblique angle to the driving-shaft and having a circumferential groove, a strap embracing the eccentric and bearing in the groove and having an upwardly-extending lug or post provided with a ball, a feed-dog-carrying bar or rod having a socket for the reception of the said ball, and means for adjusting the inclination of the eccentric to the axis of the driving-shaft; substantially as described.

8. A feeding mechanism for sewing-machines and the like comprising a driving-shaft, an eccentric, a pivotal pin for securing the eccentric to the shaft, lugs extending laterally from either side of said eccentric, screws passing through the driving-shaft and adapted to bear against the lugs to vary the angle of inclination of the eccentric with respect to the axis of the driving-shaft, said eccentric having a circumferential groove, a strap embracing the eccentric and bearing in the groove, and a ball-and-socket connection between the strap and the feed-dog-carrying bar; substantially as described.

9. A sewing-machine feeding mechanism comprising a rocking frame, a feed-dog-carrying bar pivoted thereto and having a support at its forward end, a driving-shaft, an eccentric thereon, arranged with its axis inclined adjustably to the axis of the shaft, a strap embracing the eccentric and a ball-and-socket connection between the strap and the feed-dog-carrying bar; substantially as described.

10. In the herein-described mechanism the combination with the driving-shaft, inclined eccentric mounted thereon, of the feed-dog-carrying bar having at its forward end branches, a feed-dog secured thereto between the branches, said bar having secured to it a piece formed with the body, a socket, and a connecting member between the bar and eccentric having a ball fitting within said socket; substantially as described.

708,812. STITCH-FORMING MECHANISM FOR SEWING-MACHINES. LAMBERT OUDEKIRK, Boston, Mass., assignor to The Union Special Sewing Machine Company, a Corporation of Illinois. Filed Sept. 11, 1897. Serial No. 651,292. (No model.)

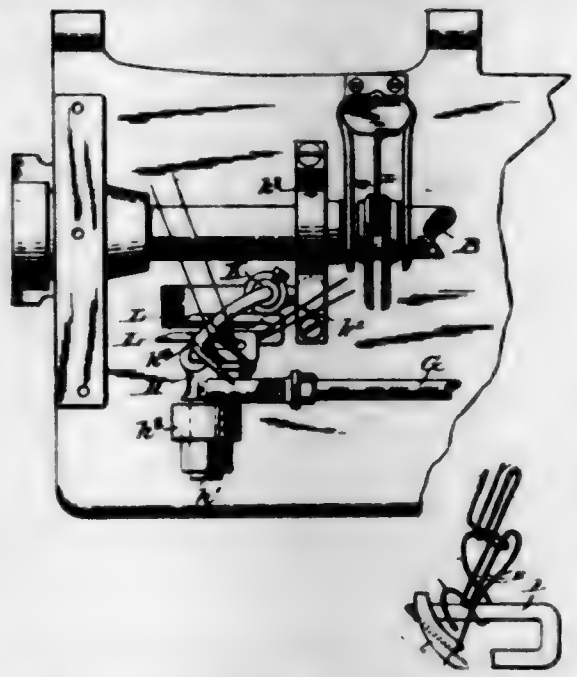

Claim.—1. A sewing-machine comprising a vibrating looper having a loop-taking and loop-shedding movement in the direction of its length, a spreader having movement across the line traversed by said looper in the direction of the length of said looper and arranged to seize and convey the looper-thread, and means for imparting to said spreader an amount of movement to cause it to pull through the looper a greater quantity of thread than the looper will take up in its backward movement; substantially as described.

2. A stitch-forming mechanism for sewing-machines, comprising a reciprocating thread-carrying needle, a coöperating thread-carrying looper, means for actuating the needle and looper, and a spreader with means for oscillating it to engage the looper-thread loop, and spread it for the passage of the needle, said looper and spreader being both adjustable whereby proper coöperation of the parts may be had; substantially as described.

3. A stitch-forming mechanism for sewing-machines, comprising a reciprocating thread-carrying needle, a coöperating thread-carrying looper, means for actuating said needle and looper, a spreader for the looper-thread, a vertical shaft supporting the same, and means for oscillating said vertical shaft consisting of an eccentric, its strap, and a universal-joint and link connection between the strap and the spreader-support; substantially as described.

708,813. STITCH-FORMING MECHANISM FOR SEWING-MACHINES. LAMBERT OUDEKIRK, Boston, Mass., assignor to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Dec. 31, 1897. Serial No. 668,126. (No model.)

Claim.—1. In a sewing-machine, a looper, a support therefor upon which the looper is arranged, with its longitudinal axis diagonal to the direction of length of the support with means for oscillating said support, a loop-spreader support, and a spreader arranged thereon with its longitudinal axis at an angle to the longitudinal axis of the looper and means for reciprocating said latter support both in the direction of the length of the spreader, and transversely thereto; substantially as described.

2. In a sewing-machine, a driving-shaft, a bar or frame, having a pivotal sliding connection with a fixed part of the machine-frame, a crank for sliding and oscillating said bar or frame on its pivot, and a spreader-support pivoted to said bar or frame; a spreader thereon, and a looper and support therefor, with means for operating it substantially as described.

708,818.

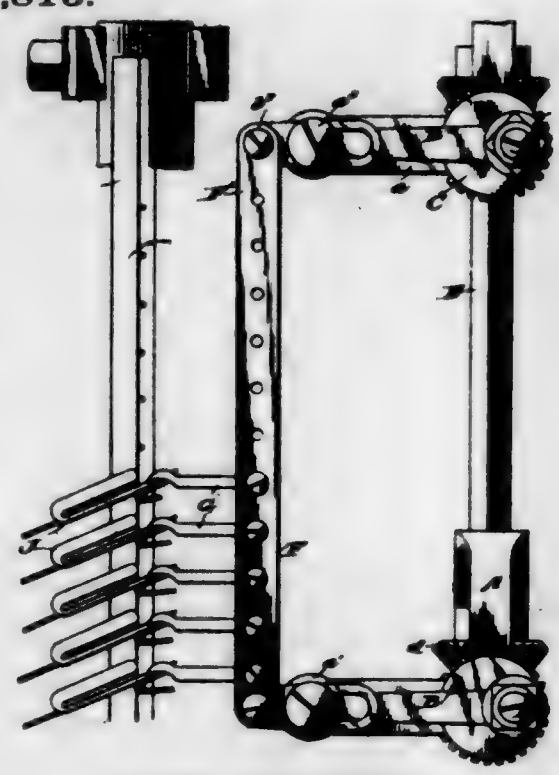

708,814. PROCESS OF PRODUCING LONG AND SHORT FIBERS FROM REEDS, RUSHES, OR SIMILAR PLANTS. LUDWIG V. ORDODY, Budapest, Austria-Hungary. Filed Mar. 3, 1902. Serial No. 96,557. (No specimens.)

Claim.—The process of producing long and short fibers from reeds, rushes and similar stalky fibrous materials by macerating, draining, cutting into thin longitudinal strips, boiling in a mixture of two to three per cent. lye of potash or soda with an emulsion of petroleum and hydrate of lime, washing, separating into long and short fibers and purifying these two kinds of fibers in diluted solution of acid of vinegar, substantially as described.

708,815. KINDERGARTEN-LOOM. JONATHAN E. PAINTER, Minneapolis, Minn. Filed Feb. 21, 1902. Serial No. 95,034. (No model.)

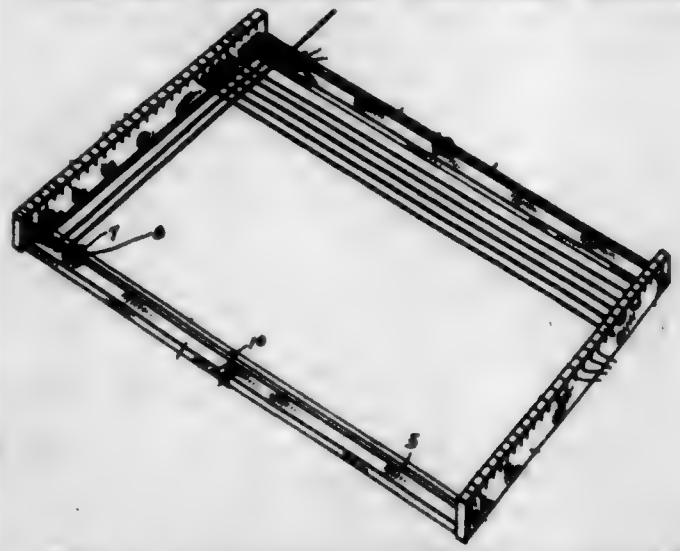

Claim.—1. In a loom-frame, flexible side wires around which the weft-threads are passed, and clips carried by said frame and adapted to brace said wires against inward bending.

2. In a loom-frame, flexible side wires around which the weft-threads are passed, and adjustable clips provided on said frame and adapted to engage said wires and brace the same against inward bending.

3. A loom-frame, comprising head or end pieces adapted to support the warp-threads, side bars connecting said end pieces, flexible wires secured at one end, the opposite ends of said wires being free to be raised above the adjacent end piece, and slotted clips provided on said side bars and adapted to receive the free ends of said wires and prevent lateral movement thereof.

4. A loom-frame, comprising head or end pieces having saw-slits at intervals to receive the warp-threads, side bars connecting said end pieces, flexible wires around which the weft-threads are passed secured at one end, the opposite ends of said wires being free to be raised to permit the removal of the work therefrom, slotted clips provided on said bars and adapted to receive the free ends of said wires and prevent lateral move-

ment thereof, and bracing-clips provided on said bars to prevent inward bending of said wires.

5. A loom-frame, comprising end pieces having slits to receive the warp-threads, side bars connecting said end pieces, flexible wires or rods secured at one end and free to be raised at the other end, and a spool provided on said frame near the fixed end of said wires and having a series of annular spaces or grooves opposite the slits in the adjacent head and whereon the warp-threads are wound.

6. A loom-frame, comprising heads having a series of slits at intervals adapted to receive the warp-threads, bars connecting said heads, wires or rods secured at one end in one of said heads and free to be raised at the other end, bracing-clips adapted to prevent inward bending of said wires or rods, and a spool provided on said frame near the fixed ends of said wires and whereon the warp-threads are wound.

7. A loom-frame, comprising head or end pieces adapted to support the warp-threads, side bars connecting said end pieces, spring-wires secured at one end, the opposite ends of said wires being free to be raised above the adjacent end piece to permit the removal of the work, and clips carried by said side bars and adapted to brace said wires against inward bending.

8. A loom-frame, comprising head or end pieces to support the warp-threads, side bars connecting said end pieces, spring-wires secured at one end, the opposite ends of said wires being free to be raised above the adjacent end piece to permit the removal of the work, and adjustable clips provided on said side bars and adapted to engage said wires and brace the same against inward bending.

9. A loom-frame, comprising head or end pieces to support the warp-threads, side bars connecting said end pieces, flexible rods or wires secured at one end, and means preventing lateral movement of the opposite ends of said wires but permitting them to be raised above the adjacent end piece to permit the convenient removal of the work from the wires.

708,816. ADJUSTABLE SOCKET-WRENCH. JOHN L. PAXSON, Mobile, Ala. Filed Jan. 14, 1902. Serial No. 89,777. (No model.)

Claim.—1. A socket-wrench comprising opposite members having abutting centers, said abutments being flattened, half-sockets in the inner faces of each member at the ends thereof, and a sleeve surrounding said members, operatively engaging the same on both sides of the abutting centers, and capable of longitudinal movement thereon, whereby the ends of the members may be forced together to grip a nut or other object.

2. A socket-wrench comprising opposite members abutting at their centers, the inner faces of each member having bevels extending to each end, half-sockets at the ends of each member, tapering half-sockets in the rear of said end sockets, and a sleeve surrounding the said members capable of longitudinal movement toward each end, to cause said ends to approach each other and grip a nut or other object.

3. A socket-wrench comprising opposite members having a rocking engagement at their abutting centers, screw-threads on the exterior surface of each member, half-sockets in the inner face of each member at each end, a threaded sleeve or nut adapted to screw on the exteriorly-threaded members, and cause the ends of the opposite members to approach each other.

4. A socket-wrench comprising opposite members, projecting abutting centers, one or more pins projecting from the projecting center of one member, the opposite member being provided with one or more openings adapted to receive the said projecting pin or pins, half-sockets in the ends of each member, screw-threads on the exterior surface of each member extending on each side of the center thereof, and a nut surrounding the members and adapted to coact with the exterior threads on each member whereby longitudinal movement of said nut is permitted in either direction to cause the opposing socketed ends of the members to approach each other.

5. A socket-wrench comprising opposite members having flat abutting centers, bevels extending from said flat abutting centers toward the ends of each member, a swell or enlargement at one end of each member, half-sockets in said swells or enlargements, screw-threads on the exterior surface of each member extending from the said swells or enlargements, beyond the longitudinal center of the members, a pin projecting from the abutting center of one member, the opposite member being provided with an opening at its abutting center adapted to receive the said projecting pin, and a threaded sleeve or nut surrounding and engaging the threaded portion of the opposite members, whereby longitudinal movement of the said sleeve or nut toward each end is permitted to cause the opposing socketed ends of each member to approach each other.

6. A socket-wrench comprising opposite externally centrally threaded members provided with half-sockets in their inner faces at each end, and having a rocking engagement at their center, coinciding holes through each member near its end adapted to receive a pin whereby the turning leverage may be increased, and an internally-threaded sleeve surrounding said members, said sleeve being adapted to move longitudinally on said members and cause the ends to approach each other.

708,817. DREDGER. RAYMOND A. PERRY, San Francisco, Cal., assignor of one-half to Atlantic Gulf and Pacific Company, New York, N. Y., and San Francisco, Cal., a Corporation of West Virginia. Filed Nov. 6, 1900. Serial No. 35,630. (No model.)

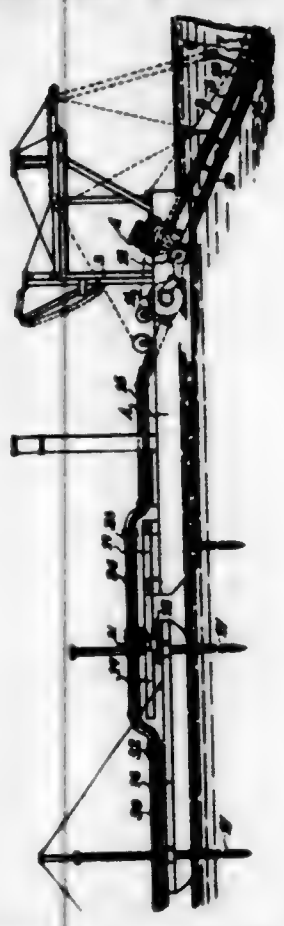

Claim.—1. In a dredger, a means for making a succession of forward cuts centering from a fixed point at the rear of said dredge.

2. In a dredger, an excavator, suction and conducting pipes and a supporting-float, a fixed point behind the float around which the dredger swings, slidable joints in the conducting-pipes, and means for advancing the excavator and float in any direction with relation to said point while cutting.

3. In a dredger, an excavator, suction and conducting pipes and a support therefor, a fixed point in rear of said support around which the dredger swings, a slidably-extensible joint in the conductor, means by which the excavator and its support may be advanced to cut in different radial lines outwardly from the fixed point, and means for retracting these parts after each cut.

4. In a dredger, an excavator, a float and a ladder projecting forward of the float and upon which the excavator is carried, a suction-pipe having its mouth opening contiguous to the excavator, a discharge-pipe connecting therewith and leading rearwardly toward a fixed point, a fixed structure at the rear of the float, a turnable guide mounted thereon, and means for moving the float and the excavator in a forward direction away from and in line with the said fixed point during the cutting operation.

5. In a dredger and excavator, a float, a ladder hinged to the front thereof upon which the excavator is adjustably carried, a suction-pipe carried upon the ladder having its mouth contiguous to the excavator, a discharge-pipe leading rearwardly across the float having a telescopic slidable section thereon, a turnable guide mounted upon a fixed support axially in rear of the float, a ball-and-socket joint in the discharge-pipe having its axis coincident with that of the guide, and a means for advancing the float and excavator in radial lines from the guide and coincidently extending the discharge-pipe.

6. In a dredger, an excavator, a float having a ladder hinged to the front upon which said excavator is carried, a second float fixed at the rear of the first-named float having a turnable guide mounted thereon, a slidable beam fixed to the front float and movable through the turnable guides and means whereby said beam and the front float and excavator are advanced with relation to the guide.

7. In a dredger, a float having a ladder hinged to the front, an excavator carried upon the front of the ladder, and means for removing the excavated material, a second float fixed in line at the rear of the first float, and having a turnable guide mounted thereon, a beam slidable through said guide having its front end fixed to the forward float, a cable or the like connecting with the rear end of said beam and a winding-drum upon one of the floats to coil said cable, whereby said beam and the forward float are advanced with relation to the fixed float and the guide.

8. In a dredger, a float having a ladder hinged to the front, an excavator carried upon the front of the ladder, and means for removing the excavated material, a second float fixed in line at the rear of the first float and having a turnable guide mounted thereon, a beam slidable through said guide having its front end fixed to the forward float, a winding-drum and cables connected with the beam whereby the ladder, and the forward float may be advanced and retracted with relation to the fixed float.

9. In a dredger, a float having a ladder hinged to the front, an excavator carried upon the front of said ladder, suction and discharge pipes by which the excavated material is transferredrearwardly from the excavator and float, a second float fixed at the rear of the first-named float having a turnable guide mounted thereon, a ball-and-socket joint in the discharge-pipe axially in line with said guide, and a beam or the like slidable through said guide having its forward end fixed to the excavator-float, cables and winding-drums whereby the beam and excavator-float are moved forward and back with relation to the guide, a slidable telescopic joint in the discharge-pipe anterior to the telescopic joint, whereby said pipe is lengthened in unison with the forward movements of the excavator.

10. In a dredger, a float having a ladder hinged to the front, an excavator carried thereon, suction and discharge pipes by which the excavated material is conveyed rearwardly from the float, a second float having a turnable guide mounted thereon, a ball-and-socket joint in the discharge-pipe axially in line with the guide, a telescopic section in the discharge-pipe anterior to said joint, cables and winding-drums whereby the excavator and its float are advanced or retracted with relation to the guide-carrying float, spuds or anchors by which said float is fixed during the advance or retraction of the excavator, spuds or anchors by which the excavator-float may be anchored while the guide-float is released and moved up to the rear of the excavator-float after a cut has been completed, and a guided telescopic section of the discharge-pipe carried upon the rear float, whereby the advance of said float is permitted without breaking the continuity of the pipe.

11. In a dredger, a float having a ladder hinged to the front, one or more excavators mounted upon a shaft journaled transversely across the front of the ladder, means for moving the float and the excavator in a forward direction away from and in line with a fixed point during the cutting operation, and toward said point after the completion of each cut, and a suction-pipe carried upon the ladder and having a mouth made divergent horizontally and coincident with and contiguous to the excavators.

12. In a dredger, a float having a ladder hinged to the front, one or more excavators mounted upon a shaft journaled transversely across the front of the ladder, mechanism by which power is transmitted to rotate said shaft and excavators, and means for advancing the float and excavators in the longitudinal line of the dredge so as to make a direct forward cut at each advance, a suction-pipe carried upon the ladder having divergent branches at the lower end, said branches having mouths in the form of flattened cones or hoppers divergent from the branches toward the front and contiguous to the excavator.

708,818. CAR-BRAKE. JOSEPH PLATTENBURG, McKeesport, Pa. Filed Feb. 21, 1902. Serial No. 95,087. (No model.)

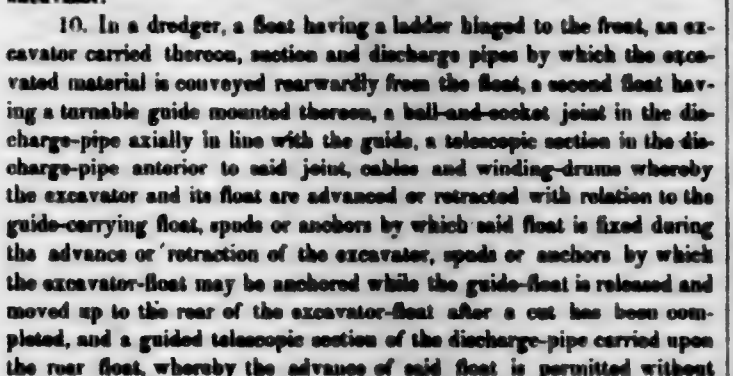

Claim.—1. The combination with a longitudinal integral member provided with inclined faces, of an integral vertically-adjustable shoe adapted to be lowered into longitudinal alinement with and slide along said member and to engage said faces.

2. The combination with a longitudinal integral member provided with inclined faces, of an integral sliding shoe provided with similarly-inclined faces adapted to be lowered into longitudinal alinement with and slide along said member and to engage said faces, and means for raising and lowering the shoe.

3. The combination with a longitudinal member provided with inclined wedge-faces, of a shoe adapted to engage said faces, means for lowering and raising the shoe and flexible connections between the shoe and said raising means.

4. The combination with a longitudinal member provided with inclined wedge-faces, of a sliding shoe adapted to engage and bind upon said faces, a rack-bar, and intervening link connections, with means for raising and lowering the rack-bar.

5. The combination with a longitudinal member provided with inclined wedge-faces; of a sliding shoe adapted to engage and bind upon said faces, a rack-bar, and intervening link connections, a toothed pinion adapted to engage the rack-bar, and means for actuating the pinion.

6. The combination with a longitudinal member provided with inclined wedge-faces; of a sliding shoe adapted to engage and bind upon said faces, a rack-bar and intervening link connections; a shaft provided with a toothed pinion in engagement with the rack-bar, and worm-gearing for rotating the shaft.

7. The combination with a longitudinal member provided with inclined wedge-faces; of a sliding shoe adapted to engage and bind upon said faces, a rack-bar and intervening link connections, a shaft provided with a toothed pinion in engagement with the rack-bar, and worm-gearing for rotating the shaft, with a case surrounding the worm-gearing adapted to contain a lubricant.

8. The combination with a longitudinal member provided with inclined wedge-faces; of a sliding shoe adapted to engage and bind upon said faces, a rack-bar and intervening link connections, a shaft provided with a pinion in engagement with the rack-bar, a worm-wheel mounted on the shaft, and a vertical shaft provided with a crank-handle and a worm in engagement with the worm-wheel.

9. The combination with a longitudinal member provided with inclined wedge-faces; of a sliding shoe adapted to engage and bind upon said faces, a rack-bar and intervening link connections, a shaft provided with a pinion in engagement with the worm-wheel, and a surrounding casing inclosing the worm-wheel and worm and adapted to contain a lubricant.

10. Apparatus for braking cars consisting of a longitudinal member mounted on the road-bed provided with inclined wedge-faces, a shoe provided with similarly-inclined wedge-faces, adapted to engage the faces of said member, a vertical rack-bar, flexible connections with the shoe, shaft provided with a toothed pinion in engagement with the rack-bar, and a worm-wheel, and a vertical turning shaft provided with a worm in engagement with said worm-wheel.

708,819. GAS, OIL, AND WATER SEPARATOR. JOSEPH M. POWELL, Orestes, Ind. Filed Jan. 24, 1902. Serial No. 91,104. (No model.)

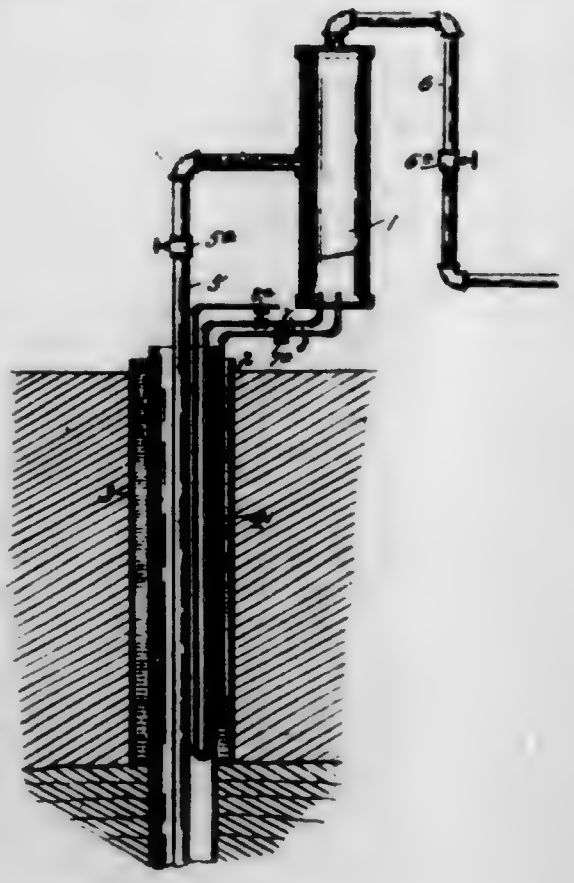

Claim.—1. The combination with a well, of a well-pipe mounted to conduct gas and oil out of said well, a separating-tank connected to said well-pipe, a gas-pipe connected to said separating-tank, a liquid-pipe connected to said separating-tank with its mouth below said gas-pipe, said liquid-pipe extending down into said well and back to the surface so that the liquid retained therein will form a water seal to prevent the passage of gas therethrough, substantially as described.

2. The combination with a separating-tank, of a pipe connected to said separating-tank to conduct oil, gas and water thereinto, a gas-pipe connected to said separating-tank, and a liquid-pipe connected to said separating-tank below said gas-pipe, said liquid-pipe being U-shaped and arranged to hold liquid enough to form a seal to prevent the escape of gas from said separating-tank therethrough, substantially as described.

708,820. CHATELAINE-HOOK. LOUIS B. PRAHAR, Brooklyn, N. Y. Filed Nov. 28, 1901. Serial No. 84,015. (No model.)

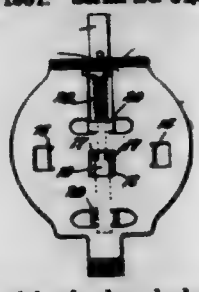

Claim.—1. In a chatelaine-hook, a body-section having opposing members, a tongue pivotally mounted on one member of the body, having an upward inclination and being normally in clamping engagement at its free end with the opposing body member, an actuating-bar mounted to slide on one of the members, a working connection between the actuating-bar and tongue at a point removed from the clamping edge of the tongue, whereby the tongue through its connection with the actuating-bar is carried to and from the member of the body of the hook with which it is adapted for clamping engagement, as specified.

2. In a chatelaine-hook, a body-section having opposing members, a clamping-tongue pivoted to one member of the body, which tongue extends in an upward direction normally to an engagement with the opposing member of the body of the hook, the said tongue having an extension from its pivoted portion, a spring-controlled actuating-bar mounted to slide upon one body member of the hook, being operatively connected with the said extension from the tongue to raise and lower the tongue, and means for operating the actuating-bar from the exterior of the body, as described.

3. In a chatelaine-hook, the combination with a body-section comprising a front, a rear and an upper connecting member, a tongue pivotally attached to the front member, which tongue extends in an upward direction, normally bridging the space between the front and rear members of the body to an engagement with the rear member, the said tongue being provided at its pivot portion with lugs which extend through an opening in the front member of the body-section, of a spring-controlled bar mounted to slide upon the front member of the body-section, the said bar being provided with surfaces for engagement with the lugs of the tongue, and means substantially as described, for operating the said bar from the exterior of the body-section, as described.

708,821. CHATELAINE-HOOK. LOUIS B. PRAHAR, Brooklyn, N. Y. Filed Dec. 26, 1901. Serial No. 87,287. (No model.)

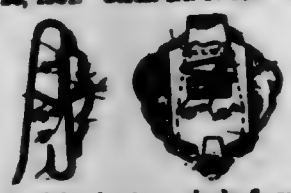

Claim.—1. In chatelaine-hooks, a body-frame having connected front and back members, an angular tongue pivotally connected with one member of the frame, both sections of the tongue having an upward inclination, one section of the tongue being normally in engagement with the inner face of the rear member of the frame, a handle member in operative connection with the tongue, which handle member extends out through an opening in the front of the frame and is adapted to be raised and lowered, having suitable movement in the said opening, and a spring carried by the frame, acting to hold the rear section of the tongue in position to engage with the rear member of the frame, as described.

2. In a chatelaine-hook, the combination with a body-frame consisting of a back member and a front member, the front member terminating at its lower end in a hook, and an ornamental plate at the outer face of the front member of the frame, which plate and which front member are provided with registering openings, of a locking-tongue mounted in the said frame and provided with a handle-lever which extends out through the openings in the front member of the frame and the ornamental plate, the tongue having an upward and rearward inclination, normally engaging at its rear edge with the inner face of the rear member of the frame, and a spring mounted to normally hold the said tongue in contact with the said rear member of the frame, as and for the purpose set forth.

708,822. CHATELAINE-HOOK. LOUIS B. PRAHAR, New York, N. Y. Filed Mar. 5, 1902. Serial No. 96,799. (No model.)

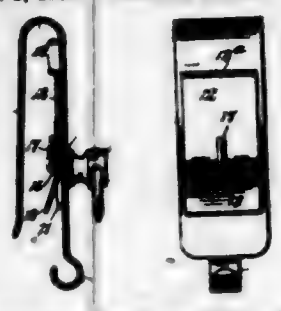

Claim.—1. A chatelaine-hook, consisting of front and rear frame members, an angular clamping member independent of the frame members and having rocking contact with one of them, and a manipulating member having movement in the frame and provided with a section arranged for depressing engagement with one or the other section of the clamping member, substantially as described.

2. A chatelaine-hook, consisting of front and rear frame members, an angular clamping member independent of the frame members and having rocking contact with one of them, and a manipulating member mounted to turn in the frame member and provided with a section, arranged to travel over and to have depressing engagement with one or the other section of the clamping member, substantially as described.

3. A chatelaine-hook, comprising front and rear connected frame members, a clamping member consisting of a head and a foot section at angles to each other, and a fulcrum-section in engagement with the frame member, and a manipulating member consisting of a pin loosely passed through a frame member and through the fulcrum-section of the clamping member, which pin is provided with an extension at angles to its main portion, which extension as the pin is turned has depressing engagement with one or the other section of the clamping member, for the purpose set forth.

4. A chatelaine-hook, consisting of front and rear members, an angular clamping member independent of the frame members and having rocking contact with the inner face of one of said frame members and means exteriorly operated over the rocking point of the clamping member to press one or the other of the sections of the angular clamping member against the frame member on which the clamping member is mounted, as and for the purpose described.

708,823. UMBRELLA DRIP-CUP. PHILANDER W. PRAY, San Francisco, Cal. Filed Feb. 6, 1902. Serial No. 92,807. (No model.)

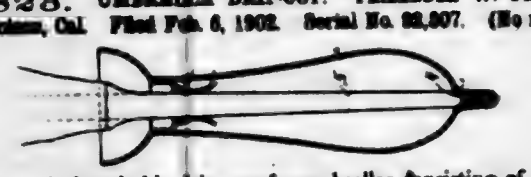

Claim.—A detachable drip-cup for umbrellas consisting of a metal receptacle adapted to slip on over the end of an umbrella-rod, an exterior projection of reduced diameter on the lower end of the cup, an enlarged, outwardly-flared, funnel-like flange on the upper portion of said cup, a recess in the bottom of said cup in which the umbrella-rod is adapted to rest and an annular series of curved springs having one end secured to the interior of the cup, the middle portion adapted to bear upon the umbrella-rod and their other ends unsecured and extending below their point of attachment.

708,824. WATER-PRESSURE SAFETY OIL-FEEDER. JOHN C. QUIRK, Port Costa, Cal. Filed Feb. 11, 1902. Serial No. 93,626. (No model.)

Claim.—1. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle and an inner collapsible receptacle for oil, and a water-supply pipe to the interior of the outer receptacle exterior to the inner one, and an oil-discharge pipe from the inner receptacle and a valve common to and controlling both of the pipes.

2. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle provided with a valved waste-pipe and an inner collapsible receptacle for oil having a valved supply-pipe, and a water-supply pipe to the interior of the outer receptacle, exterior to the inner one, and oil-discharge pipe from the inner receptacle and a valve common to and controlling the water-supply and oil-discharge pipes.

3. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle provided with a valve-controlled air-inlet and an inner collapsible receptacle for oil and a water-supply pipe to the interior of the outer receptacle, exterior to the inner one, and an oil-discharge pipe from the inner receptacle and a valve common to and controlling both of the pipes.

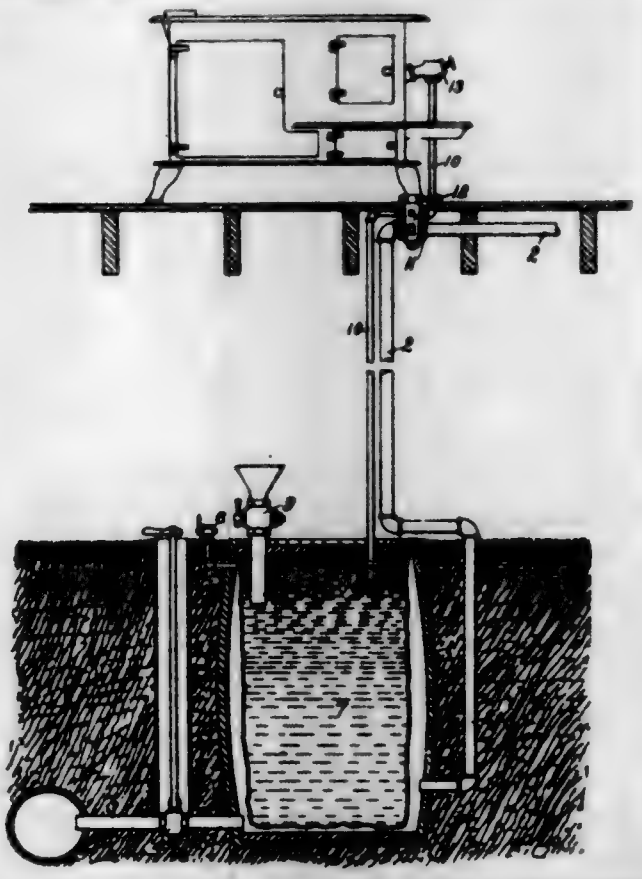

4. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle provided with a valved waste-pipe and a valve-controlled air-inlet, and an inner collapsible receptacle for oil having a valved supply-pipe, and a water-supply pipe to the interior of the outer receptacle, exterior to the inner one, and an oil-discharge pipe from the inner receptacle and a valve common to and controlling the water-supply and oil-discharge pipes.

5. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle inclosed within an incombustible envelop and an inner collapsible receptacle for oil and a water-supply pipe to the interior of the outer receptacle, exterior to the inner one and an oil-discharge pipe from the inner receptacle and a valve common to and controlling both of said pipes.

6. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle inclosed within an incombustible envelop and provided with a valved waste-pipe and an inner collapsible receptacle for oil having a valved supply-pipe and a water-supply pipe to the interior of the outer receptacle, exterior to the inner one, and an oil-discharge pipe from the inner receptacle and a valve common to and controlling the water-supply and oil-discharge pipes.

7. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle inclosed within an incombustible envelop and provided with valve-controlled air-inlet and an inner collapsible receptacle for oil and a water-supply pipe to the interior of the outer receptacle, exterior to the inner one, and an oil-discharge pipe from the inner receptacle and a valve common to and controlling both of the pipes.

8. A device for containing and supplying fuel-oil and like materials comprising an outer receptacle inclosed within an incombustible envelop and provided with a valved waste-pipe and a valve-controlled air-inlet and an inner collapsible receptacle for oil having a valved supply-pipe, and a water-supply pipe to the interior of the outer receptacle, exterior to the inner one, and an oil-discharge pipe from the inner receptacle and a valve common to and controlling the water-supply and oil-discharge pipes.

708,825. MECHANICAL MOVEMENT. JOHN QUIST and CHARLES QUIST, Mystic, Iowa, assignors of one-half to O. P. Pearson and Charles L. Berry, Mystic, Iowa. Filed Nov. 18, 1901. Serial No. 82,782. (No model.)

Claim.—1. A mechanical movement embodying an oscillatory shaft, a rotating shaft, the axes of the shafts being arranged at right angles to each other, a swinging yoke connected to the oscillatory shaft, a ball or spherical head connected to the rotating shaft and having a substantially S-shaped groove, and a shoe upon the yoke to traverse said groove, whereby oscillatory motion is imparted to the said oscillatory shaft and yoke, substantially as described.

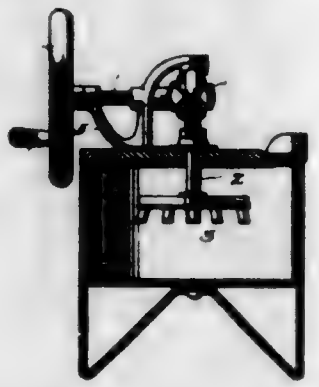

2. The combination with a suitable bearing, an oscillatory shaft, and a rotating shaft journaled in said shaft being disposed at right angles to each other, of a yoke fixed to the oscillating shaft and mounted to swing upon said bearing, a ball or spherical head carried by the rotating shaft and having a substantially S-shaped groove, and a swiveled shoe upon the yoke traversing said groove, substantially as described.

708,826. ELECTRIC BATH APPARATUS. JAMES D. RANDALL, Memphis, Tenn., assignor of one-half to Joseph W. Buchanan, Memphis, Tenn.; Josephine E. Randall administratrix of said James Dennison Randall, deceased. Filed Feb. 5, 1901. Serial No. 46,062. (No model.)

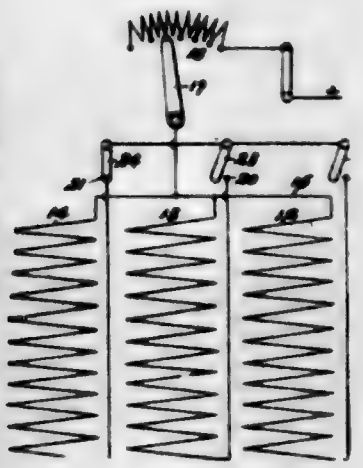

Claim.—1. An electric bath apparatus, comprising a cabinet open at the bottom and having a top closure provided with an opening, a plurality of electroheating helices arranged around the cabinet concentrically and insulated one from another, the several conductors having each one terminal connected to a wire adapted for connection with an electric line-wire, and switches for closing the other line-wire with the other terminals of the conductors.

2. An electric bath apparatus, comprising a rigid barrel-like body which is open at the bottom, to allow it to be placed over a patient, and having a top provided with an opening for the head of the patient, a plurality of electroheating helices arranged around such body concentrically and insulated one from another in the body of the same and having each one terminal connected to a wire adapted for connection with an electric line-wire, and a switch for closing the other line-wire with the other terminal, the conductors being slack as shown and described.

708,827. HEATING AND VENTILATING SYSTEM. JESSE O. RANDALL, Silversprings, N. Y. Filed Mar. 3, 1902. Serial No. 96,422. (No model.)

Claim.—The combination with the cylinder having double walls, spaced apart and a pipe *j* arranged within said space, and having its upper end extending into the space inclosed by said cylinder, of the inclined head at the lower end of said cylinder and provided with grooves *h* in its upper surface and perforations *g, g*, in its periphery, the outer head *e* spaced from said inner head, a drip-pipe attached to said outer head and in communication with the space between the heads, and a pipe *d'* connected to said drip-pipe and adapted to supply air thereto, substantially as described.

708,827.

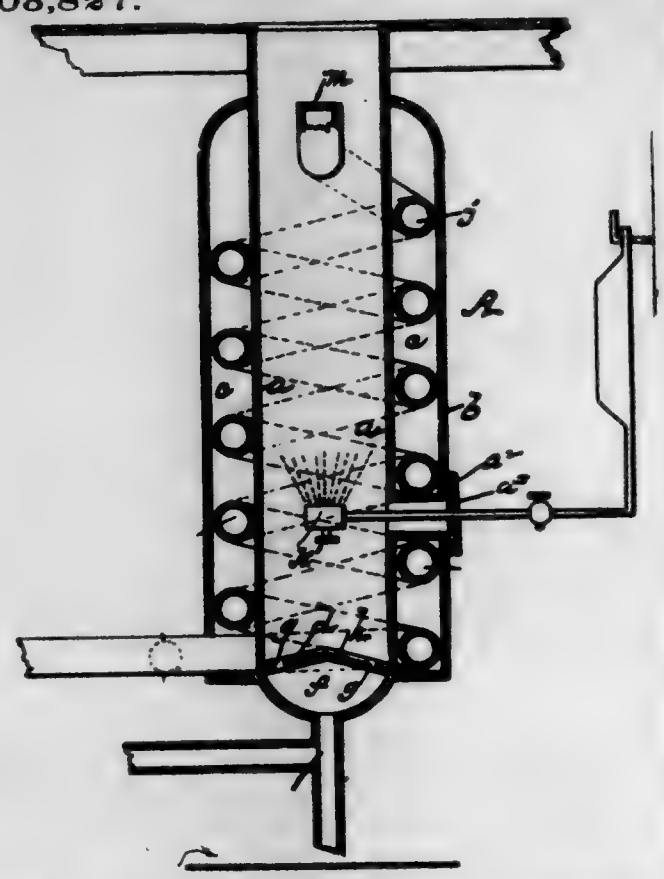

of attachment of the spring-plate to the jamb-plate, and having an opening opposite the head of the screw-bolt whereby the tension of the spring-plate may be regulated, a friction-shoe secured to the lower end of the jamb-plate projecting upwardly in front of the spring-plate, and adapted to be pressed thereby against the edge of a sash, substantially as shown and described.

3. In a sash-holder the combination with a curved plate-spring secured at one end, of an oppositely-disposed and similarly-curved shoe of frictional material secured at one end, against which the said spring-plate is adapted to bear in parallel relation, substantially as shown and described.

4. A sash-holder consisting of a jamb-plate having a central box-like depression, a lug formed on the inner face of the depressed portion of said jamb-plate, a curved plate-spring secured at its upper end within the depression of the jamb-plate and bearing against said lug, an adjusting screw-bolt securing said spring to the jamb-plate, an upper cover-plate secured to the upper end of the jamb-plate, and having a downwardly-projecting portion extending below the point of attachment of the said spring-plate to the jamb-plate, said upper cover-plate having in its downwardly-projecting portion, a hole in line with and opposite the head of the screw-bolt, whereby a screw-driver may be inserted to turn the screw-bolt and regulate the tension of the curved spring-plate, substantially as shown and described.

5. A sash-holder comprising a plate provided with a lug or projection on its face, a curved metal plate-spring adjustably secured at one end to said plate and fulcrumed on said lug or projection, an oppositely-arranged and correspondingly-curved friction-shoe, secured at one end against the free end of which the said plate-spring is adapted to bear in parallel relation, substantially as shown and described.

708,828. ANKLE-SUPPORT. FREDERICK H. READ, Providence, R. I. Filed Feb. 24, 1902. Serial No. 96,291. (No model.)

Claim.—1. An ankle-support, comprising an instep-strap having at one end a buckle with which the other end of the strap engages for securing the strap around the instep, said strap being provided with a loop or eye, and an ankle-strap having one end fixedly secured to the instep-strap to stand at right angles thereto and provided at its other end with a hook for engaging the loop of the instep-strap, as set forth.

2. An ankle-support comprising an instep-strap provided at one end with a buckle, adapted to be engaged by the other end of the strap, the buckle having a loop at one side, and an ankle-strap of a width greater than the instep-strap and secured at one end to the instep-strap to stand at right angles thereto, the free end of the ankle-strap having a hook for engagement with the loop of the buckle, as set forth.

3. An ankle-support comprising an instep-strap provided at one end with a buckle, adapted to be engaged by the other end of the strap, the buckle having a loop at one side, and an ankle-strap of a width greater than the instep-strap and secured at one end to the instep-strap to stand at right angles thereto, the free end of the ankle-strap having a hook for engagement with the loop of the buckle, the said hook being adjustably held on the free end of the said ankle-strap, as set forth.

708,829. SASH-HOLDER. WILLIAM M. REELY, Spokane, Wash. Filed Oct. 3, 1901. Serial No. 77,449. (No model.)

Claim.—1. A sash-holder comprising a plate having a central depression provided with a lug or projection on its inner face, a plate-spring secured at one end to the jamb-plate and having a fulcrum bearing against said lug below the point of attachment of said spring, a friction-shoe secured to the jamb-plate in front of said plate-spring and adapted to be pressed thereby against a sash, an upper cover-plate extending below the upper wall of the central depression of the jamb-plate and provided with means whereby the tension of the plate-spring may be regulated, substantially as shown and described.

2. A sash-holder comprising a jamb-plate, having a central box-like depression, provided with a lug on its inner face and having a screw-hole near its upper wall, a plate-spring secured to said jamb-plate by a screw-bolt secured in said threaded opening and having a fulcrum bearing against the lug or projection of the jamb-plate, an upper cover-plate secured to upper end of the jamb-plate and projecting downwardly beyond the point

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708,830. SPUR-SHORE SCREW. WILLIAM S. REBBLE, East Boston, Mass. Filed Dec. 26, 1901. Serial No. 87,167. (No model.)

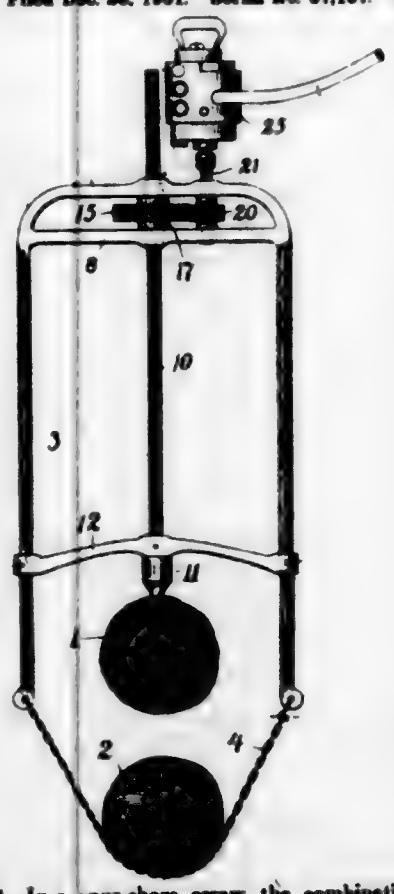

Claim.—1. In a spur-shore screw, the combination of the frame-work comprising the side bars and two closely parallel bars uniting the

same, the internally-threaded sleeve or nut rotatable in said parallel bars, the spur-gear rigid with said nut, the pinion meshing with said gear, a motor for turning said pinion, a power-screw fitted in said nut, the cross-bar rigid with said screw and sliding on said side bars, and a flexible means attached to the ends of said side bars for securing said frame to one of two piles while the power-screw engages the other pile, substantially as described.

2. In a spur-shore screw, the combination of the framework comprising the side bars and the two closely-located parallel bars uniting the same, the internally-threaded sleeve or nut rotatable in bearings in said parallel bars and having the shoulders keeping it from end play, the spur-gear rigid with said nut, the pinion meshing with said gear and having the outwardly-extended shaft, a motor secured to said shaft, a power-screw fitted in said nut and having a pointed head to engage a pile, a cross-bar having eyes slidable along said side bars and rigid with said screw, and a chain attached to the ends of said side bars to pass about the second of two piles designed to be pressed together, substantially as described.

708,831. MINE-VENTILATOR. PETER T. REYNOLDS, Butte, Mont. Filed Apr. 17, 1901. Serial No. 56,205. (No model.)

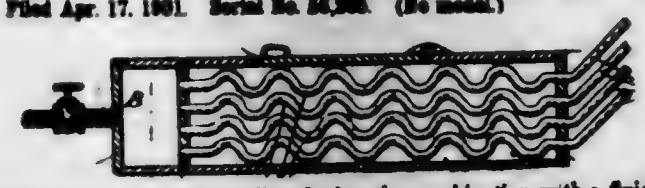

Claim.—1. In a fluid-cooling device, the combination with a fluid-supply pipe and a cooling-mixture tank, of a rotatable tube passing through the interior of and passing through and journaled in the walls of said cooling-mixture tank, said tube within the interior of said tank provided with a series of sinuous bends in the same plane, one end of said tube communicating with said supply-pipe and the other end of said tube communicating with the atmosphere, substantially as described.

2. In a fluid-cooling device, the combination with a fluid-supply pipe and a cooling-mixture tank of a plurality of rotatable tubes arranged in vertical series passing through the interior of and passing through and journaled in the walls of said cooling-mixture tank, each of said tubes within the interior of said tank provided with a series of sinuous bends in the same plane, one end of each of said tubes communicating with said supply-pipe and the other ends of said tubes communicating with the atmosphere, substantially as described.

708,832. CASING-HEAD. CLARK F. RIDDY, New Martinsville, W. Va. Filed Oct. 31, 1901. Serial No. 79,251. (No model.)

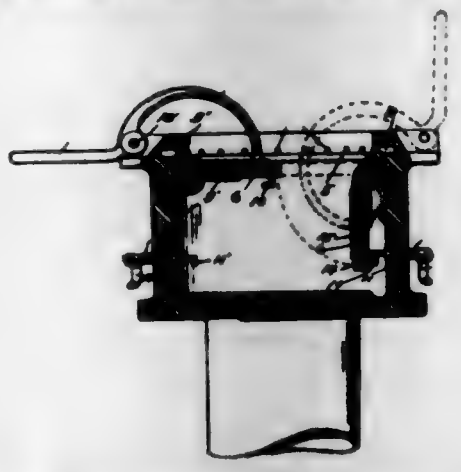

Claim.—1. The combination of a casing-head, a valve-seat surrounding its upper open end, a vertically-swinging spring-actuated valve within the head and closing upwardly against the seat, and latch mechanism for holding the valve normally open.

2. The combination of a casing-head, and vertically-swinging cooperating valve-sections at opposite sides of the upper open end of the head and adapted to close the same.

3. The combination of a casing-head, a vertically-swinging spring-actuated valve for closing the upper open end thereof, and a lever fulcrumed to the upper portion of the casing-head, the lever being constructed with an arm adapted to engage the upper surface of the valve, whereby when the lever is oscillated the valve is opened.

4. The combination of a casing-head, a horizontal valve-seat below the upper end of the head, a vertically-swinging valve below the seat and adapted to close upwardly thereagainst, the wall of the head above the valve being cored to form a steam-channel, a steam-supply connection for said channel, the wall being formed with openings extending from the channel to the inner face of the head.

5. A casing-head having a through-and-through vertical passage of sufficient size to pass drilling-tools and permit of the free operation of a drilling-cable, the casing-head being formed with lateral outlets and at its lower end adapted to unite with a well-casing, in combination with valve mechanism operatively mounted within the head and adapted to close over and seal the upper portion of the through-and-through passage above the lateral outlets, said valve mechanism when open being entirely out of the path of the tools and cable.

708,833. FILTERING APPARATUS. DAVID ROJAT, Rimos, France. Filed July 24, 1901. Serial No. 69,542. (No model.)

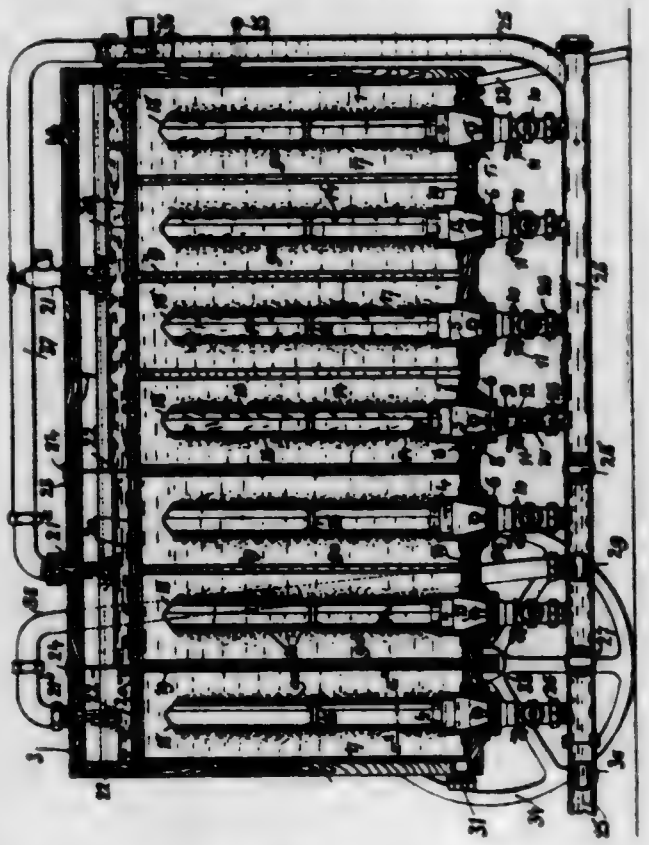

Claim.—1. In a filtering apparatus, the combination with the outer line casing or box and its cover, the slidable partitions 22 in said box for dividing the chamber therein into compartments, and the perforated plates 20, of a plurality of filtering elements mounted in said chambers and separated by said partitions, and pipes and cocks for conducting the liquid to be filtered from one compartment to another and controlling its flow, substantially as set forth.

2. In a filtering apparatus, the combination to form a filtering element, of the inner wall of perforated metal 14, forming a chamber, the spirally-disposed distancing-grid 16, about the outside of the metal 14, the gauze covering 17 over said grid, the fibrous filtering coating 90 of cellulose and asbestos, and the roof 18, said element having at its bottom an outlet for the filtered liquid, substantially as set forth.

708,834. STEAM-GENERATOR. WASILY ROCHASSEV, Moscow, Russia. Filed May 18, 1900. Serial No. 17,248. (No model.)

Claim.—1. A combined water-tube and smoke-flue steam-generator, comprising a furnace and a boiler composed of independent members arranged on opposite sides of the furnace and separated therefrom by a poor heat-conductor, each member consisting of vertical double tubes consisting of an outer water-tube and an inner smoke-flue combined with upper and lower collecting members or drums, and means for causing the hot gases from the furnace to first flow around the outer surface of the water-tubes and then through the interior smoke-flues, all in combination with mud-collectors communicating with the lower drums or collectors, a steam-collector communicating with the upper drums and circulating-pipes for connecting the steam-collector with the mud-collectors.

2. The combination of a series of tubular boiler-sections, each section comprising a pair of drums connected by a plurality of tubes, a steam-collecting vessel and pipes connecting the same with said series of boiler-sections, a lower vessel located in proximity to the lower drums of said sections, a pipe connecting the end of each of said lower vessels with the lower part of said steam-collecting vessel, another set of sections and pipes connecting the drums of the said sections and the upper portions of the steam-collecting vessel, means for bringing the gases from said furnace in contact with the tubes of all said sections.

3. The combination of a series of boiler-sections, each section com-

prising a pair of drums connected by a plurality of tubes and flues passing through said tubes and drums, a steam-collecting vessel and pipes connecting the same with said series of boiler-sections, a lower vessel located in proximity to the lower drums of said sections, a pipe connecting the end of each of said lower vessels with the lower part of said steam-collecting vessel, another set of sections and pipes connecting the drums of said sections with the upper portions of the steam-collecting vessel, means for bringing the gases from said furnace into contact with the tubes of all said sections, and means for passing the gases through the flues passing through said tubes.

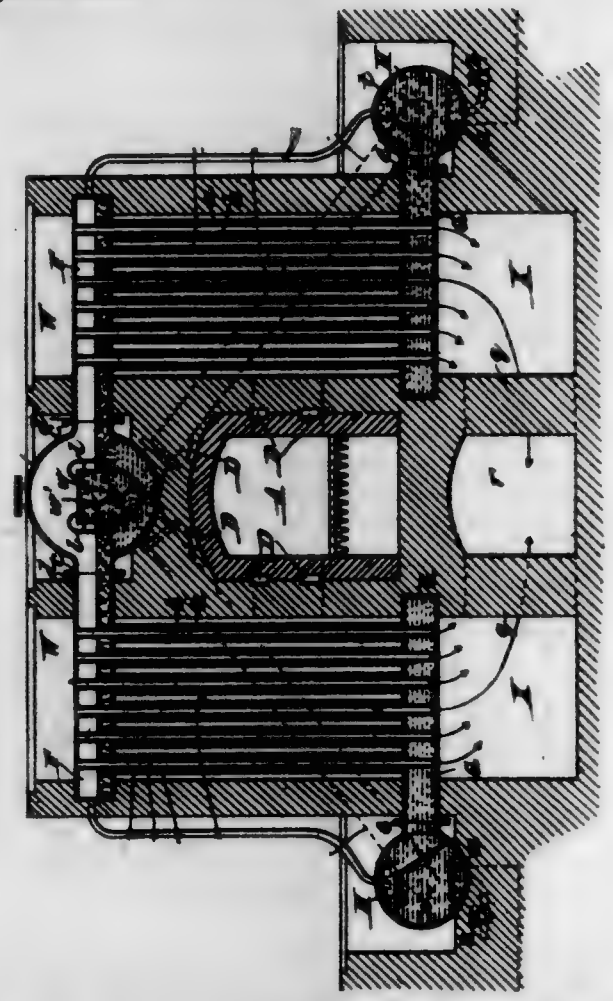

4. The combination of a series of boiler-sections, each section comprising a pair of drums connected by a plurality of tubes and interior flues passing through said tubes and drums, an upper steam-collecting vessel and pipes connecting said steam-collecting vessel at an intermediate portion with the upper drums of a part of said sections, a lower mud-collecting vessel and pipes connecting said mud-collecting vessel with the lower part of said steam-collecting vessel, pipes connecting the drums of another part of said sections with the upper portion of the steam-collecting vessel, means for bringing the gases from said furnace in contact with the tubes of all said sections, and means for passing the gases through said interior flues.

5. The combination of a series of boiler-sections, arranged in two sets, each section comprising a pair of drums connected by a plurality of tubes and flues passing through said tubes and drums, a furnace located between said sets of boiler-sections, a steam-collecting vessel and pipes connecting said steam-collecting vessel with a part of said sections, a lower vessel located in proximity to the lower drums of the sections that are connected with steam-collecting vessel, a pipe connecting the end of each of said lower vessels with the lower part of said steam-collecting vessel, pipes connecting the drums of another part of the sections, with the upper portions of the steam-collecting vessel, means for bringing the gases from said furnace into contact with the tubes of all said sections, and means for passing the gases through all said interior flues.

6. The combination of a series of boiler-sections, each section comprising a pair of drums connected by a plurality of tubes, flues passing through said tubes and drums, said sections being arranged in two sets, a furnace located between said sets, a steam-collecting vessel located over said furnace and between said sets of sections, pipes connecting said steam-collecting vessel at an intermediate portion with the upper drums of a part of said sections, a mud-collecting vessel located in proximity to the lower drums of each of said sets of sections that are connected with said steam-collecting vessel, a pipe connecting the end of each of said mud-collecting vessels with the lower part of said steam-collecting vessel, pipes connecting the drums of the sections not connected with said steam-collecting vessel and the upper portions of this vessel, means for bringing the gases from said furnace in contact with the tubes of all said sections, and means for passing the gases through all said interior flues.

708,885. BRAKE. VERNON ROYLE, Paterson, N. J. Filed Nov. 13, 1899. Serial No. 736,535. (No model.)

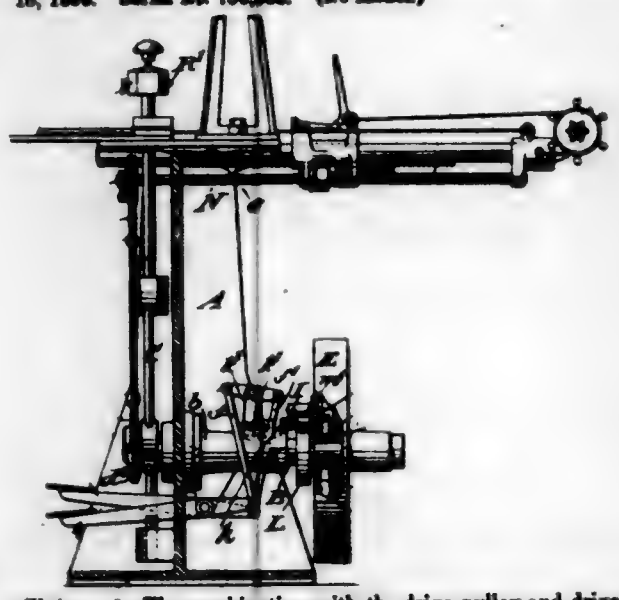

Claim.—1. The combination with the drive-pulley and drive-shaft, the former being free to rotate relatively to the latter, of clutch-shoes arranged to engage the drive-pulley, a spring-actuated hub mounted on the drive-shaft for locking and releasing the clutch-shoes, a brake under the control of said rocking hub to be set and released and means under the control of the operator for causing the said hub to rock in a direction to release the brake-shoes and set the brake, substantially as set forth.

2. The combination with the drive-pulley and drive-shaft, the former being free to rotate relatively to the latter, of a clutch arranged to engage the drive-pulley, a spring-actuated hub mounted on the drive-shaft for locking and releasing the clutch, a brake under the control of said hub to be set and released, hub-controlling means and a pair of pedals for positively operating the hub-controlling means to set the clutch and release the brake and to release the clutch and set the brake, substantially as set forth.

708,886. EXTENSION-LADDER. CHARLES H. SCHAEBERE, Warren, Pa. Filed Mar. 22, 1902. Serial No. 99,526. (No model.)

Claim.—1. In a device of the class described, the combination of the ladder-sections 1 and 2, the section 2 being capable of movement lon-

gitudinally of the section 1, the arms mounted on the section 1 and extending beyond the other section and provided with eyes, the locking-bars provided with eyes at their ends, the eyes at one side of the ladder being hinged to the eyes of the adjacent arms, and removable fastening devices engaging the eyes of the locking-bars and the arms at the other side of the ladder, substantially as described.

2. In a device of the class described, the combination of a ladder-section, an adjustable bracket slidably mounted on the ladder-section and projecting therefrom at one side thereof, a support depending from the bracket at the opposite side of the ladder, and hoisting mechanism connected with the bracket and with the ladder-section and having operating mechanism mounted on the bracket and located within reach from the support, substantially as described.

3. In a device of the class described, the combination of a ladder-section, an adjustable bracket slidably mounted thereon and projecting at one side of the ladder-section, a support mounted on the bracket at the opposite side of the ladder-section and composed of depending sides and a connecting-rung offset from the ladder-section, and a handle or grip mounted on the adjustable bracket and located above the support, substantially as described.

4. In a device of the class described, the combination of a ladder-section, a bracket adjustably mounted thereon and provided with arms having projections, a pivoted support composed of approximately L-shaped sides supported by the projections, and a rung connecting the sides, and a transverse bar located above the support and forming a grip or handle, substantially as described.

5. In a device of the class described, the combination of a ladder-section, a vertically-movable support mounted on the ladder-section and provided with an adjustable supporting portion having a roller for engaging a building, hoisting mechanism connected with the ladder-section and with the bracket and having shafts or windlasses mounted on both of such parts, and a support carried by the bracket, substantially as described.

6. In a device of the class described, the combination of the ladder-sections 1 and 2 detachably connected, an adjustable bracket mounted on the ladder-section 2, a lower hoisting mechanism connecting the ladder-sections, an upper hoisting mechanism connecting the bracket with the ladder-section 2 and provided at each end with means for operating it, and a support carried by the bracket, substantially as described.

708,837. MANUFACTURE OF BRAIDED CORDS OR CABLES FOR ELECTRIC LIGHTING OR LIKE PURPOSES. CARL SCHÜRHAMM, Dusseldorf, Germany. Filed Dec. 24, 1900. Serial No. 40,946. (No model.)

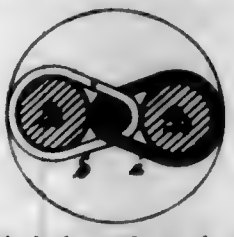

Claim.—1. A method of covering a plurality of conductors and a central core for electric-light cords, consisting in braiding a system of covering-threads around each conductor and the central core, and simultaneously interlooping the threads of the several systems, substantially as described.

2. A method of covering a plurality of conductors and a central core for electric-light cords, consisting in arranging the conductors in groups, braiding a system of covering-threads around each group and the central core, and simultaneously interlooping the threads of the several systems, substantially as described.

3. A plurality of conductors, a core, systems of threads, each system braided around a conductor and the core and interlooped with the other systems between said conductors, substantially as described.

4. A plurality of conductors arranged in groups, a core, and systems of threads, each system braided around a conductor and the core and interlooped with the other systems between said conductors, substantially as described.

708,888. LUBRICATOR FOR LOOSE PULLEYS. CLAUDE S. SOMERS, Winchester, Ky. Filed Sept. 30, 1901. Serial No. 77,116. (No model.)

Claim.—In a lubricator of the class described, a sleeve having a longitudinal groove in its periphery and also having perforations certain of the perforations being in the groove and the remainder being in the plain or non-grooved portion of the sleeve, a collar separate from the sleeve and fitted thereon, means for holding the collar on the sleeve, and an oil-cup having a straight depending tube the lower end of which is fitted into an opening in the collar, and said opening being located over one end of the groove.

708,888.

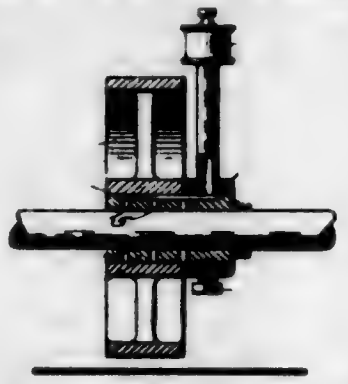

708,889. CARTRIDGE. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed Oct. 14, 1899. Serial No. 733,741. (No model.)

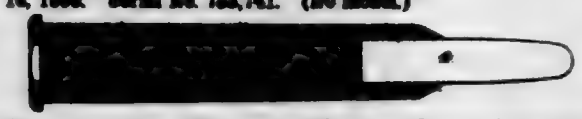

Claim.—1. A cartridge comprising two drawn sheet-metal tubes one having the head and the other the reduced and projectile-receiving neck, the two shells being fitted together and locked by engagement of one with the other, substantially as specified.

2. A cartridge comprising two drawn sheet-metal tubes, one having the head and the other having a thickened neck for receiving the projectile, said shells being fitted together and locked by engagement of one with the other, substantially as specified.

3. A cartridge having two shells, one with the head and the other with the projectile-receiving neck, said shells being fitted together so that one forms a lining for the other and being locked together so as to prevent their separation, substantially as specified.

4. A cartridge composed of two shells, one having a head and the other a projectile contracted receiving-neck, said shells being fitted together so that one forms a lining for the other, the inner end of said lining-shell abutting against the head of the shell at the base of the explosive-receiving chamber, substantially as specified.

5. A cartridge consisting of two shells, one having the head and the other the projectile contracted receiving-neck, said shells being fitted together so that one constitutes a lining for the other, the inner end of the lining-shell being contracted in diameter so as to serve also as a lining for the inner face of the head of the cartridge, substantially as specified.

6. A cartridge consisting of inner and outer shells, the inner shell having a projectile-receiving neck, a flaring shoulder, and a body portion which serves as a lining for the outer shell, and said outer shell having the head at one end and being bent in over the flaring shoulder of the inner shell at the other end, substantially as specified.

7. A cartridge having at one end a head and at the opposite end a contracted projectile-receiving neck, and, between the two, a body and a flaring shoulder portion both of which are double-walled throughout, substantially as specified.

8. A cartridge-shell having a shoulder for bearing against a shoulder in the cartridge-chamber of the gun, and a projectile-receiving portion contracted so as to fit the projectile and extending both forwardly and rearwardly beyond said shoulder.

9. A cartridge-shell having a double-walled explosive-chamber, an external shoulder, and a projectile-receiving portion extending both forwardly and rearwardly beyond said shoulder.

10. A cartridge having an external shoulder, a projectile-receiving portion contracted so as to fit the projectiles and extending both forwardly and rearwardly beyond said shoulder, and a series of projectiles disposed one in advance of another therein.

11. A cartridge having a double-walled explosive-chamber, an external shoulder, a projectile-receiving portion extending both forwardly and rearwardly beyond said shoulder and a series of projectiles disposed one in advance of another therein.

708,840. GUN-CARTRIDGE. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed Nov. 13, 1899. Serial No. 737,510. (No model.)

Claim.—1. A cartridge-shell having a chamber for receiving explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun, and a projectile-receiving portion of contracted diameter extending both forwardly and rearwardly beyond said external shoulder.

2. A cartridge-shell having a double-walled chamber for receiving

explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun and a projectile-receiving portion of contracted diameter extending both forwardly and rearwardly beyond said external shoulder.

3. A cartridge-shell having a chamber for receiving explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun and a projectile-receiving neck of contracted diameter extending both forwardly and rearwardly beyond said external shoulder, that portion of said neck between the external shoulder and the chamber for the explosive having thickened walls.

4. A cartridge-shell having a double-walled chamber for receiving explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun and a projectile-receiving neck of contracted diameter extending both forwardly and rearwardly beyond said external shoulder, that portion of said neck between the external shoulder and the chamber for the explosive also having thickened walls.

5. A cartridge having a chamber containing explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun, a projectile-receiving portion of contracted diameter extending both forwardly and rearwardly beyond said external shoulder, and a series of projectiles disposed one in advance of another therein.

6. A cartridge having a double-walled chamber containing explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun, a projectile-receiving portion of contracted diameter extending both forwardly and rearwardly beyond said external shoulder, and a series of projectiles disposed one in advance of another therein.

7. A cartridge having a chamber containing explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun, a projectile-receiving neck of contracted diameter extending both forwardly and rearwardly beyond said external shoulder and having thickened walls in that portion between the external shoulder and the chamber for the explosive, and a series of projectiles disposed one in advance of another in said neck.

8. A cartridge having a double-walled chamber containing explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun, a projectile-receiving neck of contracted diameter extending both forwardly and rearwardly beyond said external shoulder and also having thickened walls in that portion between the external shoulder and the chamber for the explosive, and a series of projectiles disposed one in advance of another in said neck.

9. A cartridge-shell having a casing for receiving explosive material, said casing being reduced in diameter to form a projectile-receiving neck, and an external ring fitted to said reduced neck so as to form in advance of the rear end of the contracted neck an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun.

10. A cartridge-shell having a double-walled chamber for receiving explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun and a contracted projectile-receiving neck extending both forwardly and rearwardly beyond said external shoulder, one of the elements of said shell being a ring applied to the same in advance of the chamber for containing explosive material and having a rearwardly-extending tube which constitutes one element of the double wall of said chamber.

11. A cartridge-shell having a casing for receiving explosive material, said casing being reduced in diameter to form a projectile-receiving neck and having an external ring fitted to said reduced neck so as to form in advance of the rear end of the contracted neck an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun, said ring having a rearwardly-extending tube which incloses the casing of the chamber for receiving explosive material and is confined thereto.

12. A cartridge having a casing containing explosive material and reduced in diameter to form a contracted projectile-receiving neck, a series of projectiles disposed one in advance of another in said neck, and an external ring fitted to said reduced neck and forming in advance of the rear end of the contracted neck an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun.

13. A cartridge having a double-walled casing containing explosive material, an external shoulder for bearing against the shoulder in the cartridge-chamber of the gun, a contracted projectile-receiving neck extending both forwardly and rearwardly beyond said external shoulder, and a series of projectiles disposed one in advance of another in said neck, one of the elements of the cartridge-shell being a ring disposed in advance of the chamber containing the explosive material and having a rearwardly-extending tube which constitutes one of the elements of the double wall of said chamber.

14. A cartridge having a casing containing explosive material and reduced in diameter to form a projectile-receiving neck, a series of projectiles disposed one in advance of another in said neck, and an external ring applied to the neck and serving to carry forwardly beyond the rear end of the same the external shoulder of the cartridge, said ring having a rearwardly-extending tube which incloses the casing containing the explosive material and is confined thereto.

703,841. AUTOMATIC FIRE-LIGHTER. ALBERT R. SHAHAN, Connellsville township, Pa. Filed Jan. 8, 1901. Serial No. 42,507. (No model.)

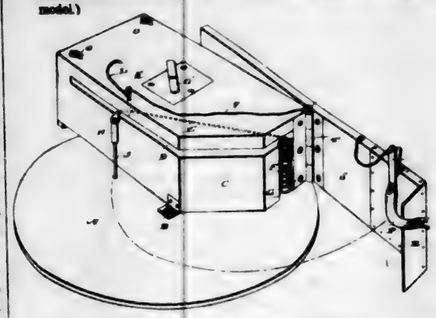

Claim.—1. An automatic fire-lighter, composed of a base-plate, a body adjustably connected thereto, a spring match-carrier mounted in the body, a lever connected to the body and carrying a lighter, and devices for retaining and releasing the match-carrier at the proper time to apply the match to the said lighter.

2. An automatic fire-lighter, composed of a base-plate, a body thereon, a lever hinged to the body, a spring-cushion at one end of said lever, a metal feeder at the other end, a lighter secured to the feeder, a spring-operated match-carrier in the body, a pin for holding the carrier with match, a clock connected with the pin to release the same at the set time to allow the carrier to apply the match to the lighter.

3. An automatic fire-lighter, composed of a base-plate, a body thereon, devices carried by the body for securing the clock, a spring match-carrier in the body, a cushioned lever hinged to the body and carrying a torch or lighter, devices for retaining the match-carrier, and devices connected with the clock mechanism for releasing the pin and allowing the carrier to strike the match and light the lighter or torch.

703,842. WIRELESS TELEGRAPHY. HARRY SHOEMAKER, Philadelphia, Pa., assignor to Marie V. Gehring, Philadelphia, Pa. Filed Feb. 1, 1901. Serial No. 46,587. (No model.)

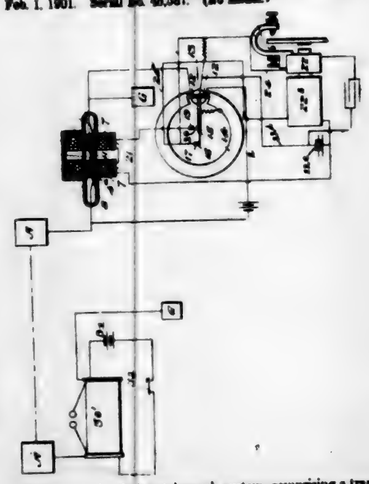

Claim.—1. A wireless-telegraph system, comprising a transmitting apparatus and a receiving apparatus, said receiving apparatus, consisting of air and ground plates, a coherer connected therewith, decohering means surrounding the coherer, a circuit connected with said decohering means, a sounder having two windings, another circuit operated before the decohering-circuit is made to energize both windings, and a condenser-circuit energized when said last-mentioned circuit is made and adapted to discharge when the decohering-circuit is made, to energize one winding of the sounder.

2. A receiving apparatus, comprising an imperfect electrical contact, decohering means surrounding the contact, a circuit connected with said decohering means, another circuit energized before the decohering-circuit, a condenser in said last-mentioned circuit, a sounder in said last-mentioned circuit, and a separate circuit, formed when the condenser discharges, to form a hold-over circuit for the sounder.

3. A receiving apparatus for wireless telegraphy comprising a coherer, solenoids surrounding said coherer, a circuit connected to said solenoids, a sounder having a main and an auxiliary winding, another circuit connected with the windings adapted to be made before the circuit with the solenoids is made, and a condenser-circuit adapted to hold the magnetism over in the auxiliary winding after the decohering operation.

4. A receiving apparatus for a wireless-telegraph system, comprising a coherer-tube having located therein plugs, a pocket formed between the plugs, solenoids surrounding said tube, a decohering-circuit connected with said solenoids, a sounder composed of a main and an auxiliary winding, two circuits formed simultaneously to energize said windings, means for making said circuits and for making the decohering-circuit shortly after, and a condenser in circuit with the auxiliary winding to energize the same after the main circuit is opened.

5. In combination with solenoids, of a coherer comprising a non-conducting tube surrounded by said solenoids, a pair of silver plates, a pair of magnet-cores, and insulation between said cores and plates forming a pocket in said tube, said metallic particles located in said pocket.

6. In a wireless-telegraph system, a transmitting and a receiving station; said receiving-station consisting of a coherer and a decoherer, comprising a tube, solenoids surrounding the tube, and a pocket formed in said tube to receive magnetic particles; a circuit formed before the solenoids are energized, a sounder operated by said circuit, and a condenser in said circuit adapted to operate the sounder after the main circuit is open.

703,843. TEMPORARY COUPLING FOR CHAINS, &c. STEPHEN SCOTT, Edinburgh, Scotland. Filed Jan. 8, 1902. Serial No. 89,010 (No model.)

Claim.—1. In a safety-coupling for the connection of chains, ropes and the like, the hook-link B formed with a doubled-back end portion *b*, substantially as and for the purposes set forth.

2. The combination of the S-formed hook-link B and a chain A′ to be coupled therewith having an end link C adapted to pass over the end *b* of said hook and a second link adapted to be inserted between the sides of the hook-link in parallel position in order to permit the end passage of the link C over and around the S-formed hook-link, as set forth.

703,844. RUNNING-GEAR FOR MOTOR-VEHICLES. FRANCIS J. STALLINGS, Effingham, Ill. Filed Aug. 31, 1901. Serial No. 73,982. (No model.)

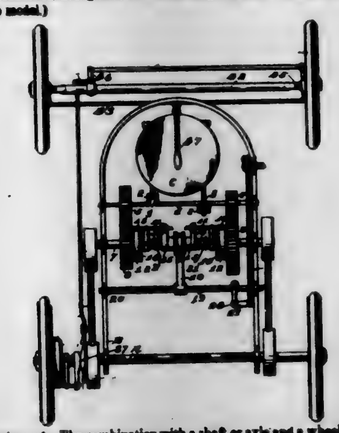

Claim.—1. The combination with a shaft or axle and a wheel mounted loosely thereon, the wheel provided with a rim on one of its faces, of an individual clutch-band surrounding and continually supported by the rim, movable means located on the shaft or axle, a pair of jaws engaging the clutch-band, the jaws pivotally supported on a bracket, the bracket being independent of the clutch-band, the movable means adapted to engage the jaws whereby the clutch-band is tightened upon the rim.

2. The combination with a shaft or axle and a wheel loosely mounted thereon, the wheel provided upon one of its faces with a circular rim, of a clutch-band borne upon and entirely supported by the rim, a movable member mounted on the shaft or axle, an upstanding wedge-faced lug on the movable means, a bracket independently secured to the shaft or axle, jaws pivotally secured to the bracket, the forward ends of the jaws engaging the ends of the clutch-band, the wedge-faced lug received between and adapted to spread the rear ends of the jaws whereby to cause the forward ends to clamp the clutch-band to the rim and automatic means for returning the movable member to its normal position when it is desired to release the clutch-band from the rim.

3. The combination with a shaft or axle, and wheels loosely mounted thereon, the wheels each provided on its inner face with a circular rim, of clutch-bands held yieldingly thereon, a sleeve keyed to slide on the shaft or axle, the sleeve having arms on its ends provided with wedge-shaped faces, pivoted jaws likewise mounted on the shaft the jaws engaging loops on the clutch-bands, and adapted to be engaged in turn by the arms carried on the sleeve to force the clutch-bands to grip the rim when the sleeve is shifted toward the wheel to be clutched to the shaft or axle, and means for shifting said sleeve on the shaft or axle.

4. The combination with a shaft or axle, gear-wheels mounted loosely thereon, one of the gears being larger than the other, and circumferentially-grooved rims secured to the gear-wheels, of clutch-bands received in the grooves, the free ends of the bands projecting outward from the peripheries thereof, the free ends having loops formed therein, pivoted jaws supported on the shaft, the ends of the jaws entering the loops, a sliding sleeve keyed to the shaft and provided with arms having inclined faces, the arms adapted to engage the opposite ends of the jaws whereby to grip the clutch-bands on the rims and lock the gear-wheel to the shaft or axle.

5. The combination with a shaft or axle, a plurality of wheels loosely mounted thereon, and clutch mechanism whereby the wheels may be locked to the shaft or axle, of a sleeve keyed to slide on the shaft, means on the sleeve adapted to actuate the clutch mechanism, a spanner for operating the sleeve, a movable shaft to which the spanner is secured, and means for operating the movable shaft whereby the sleeve may engage either one of the wheels or may be assumed an intermediate position.

6. The combination with a shaft or axle, a plurality of wheels loosely mounted thereon, and clutch mechanism whereby the wheels may be locked to the shaft or axle, of a sleeve keyed to slide on the shaft means on the sleeve adapted to actuate the clutch mechanism, a spanner for operating the sleeve, a movable shaft to which the spanner is secured, guides for retaining the movable shaft, a lever secured to the shaft, a rod secured to the free end of the lever, the rod operated by suitable means whereby the sleeve is caused to engage or disengage the clutch mechanism from the wheels.

7. The combination with a shaft or axle, a plurality of wheels loosely mounted thereon, and clutch mechanism whereby the wheels may be locked to the shaft or axle, of a sleeve keyed to slide on the shaft means on the sleeve adapted to actuate the clutch mechanism, a spanner for operating the sleeve, a sliding movable shaft to which the spanner is secured, guides in which to retain the sliding movable shaft, a lever pivoted to the frame, one arm of the lever secured to the sliding shaft and the other arm attached to a rod secured to the free end of the lever, the rod operated by a lever whereby the sleeve is caused to engage or disengage the clutch mechanism from the wheels.

8. The combination with a shaft or axle and a wheel loosely mounted thereon, of clutch-rims secured to the wheel, clutch-bands surrounding and operating on the rims, pivoted jaws engaging the clutch-bands, an arm for actuating the jaws, a sliding sleeve to which the arm is connected, a movable spanner which bears against the sliding sleeve when forcing the arm into engagement with the pivoted jaws, and tension devices against which the arm is moved.

9. The combination with a shaft or axle and a wheel loosely mounted thereon, of clutch-rims secured to the wheels, clutch-bands surrounding and operating on the rims, pivoted jaws engaging and operating the clutch-bands, an arm for actuating the jaws, the arm mounted upon a sliding sleeve, a spanner located on and actuating the sliding sleeve to force the arm into engagement with the pivoted jaws, and actuating means for operating the spanner whereby the sliding sleeve is reciprocated.

703,845. SAFETY-RAZOR. MILES H. STANDISH, Biddeford, Maine. Filed Apr. 3, 1901. Serial No. 54,260. (No model.)

Claim.—1. A device of the class described comprising a rotatable drum having blades disposed longitudinally thereof and removably en-

gaged therewith, a spring-actuated shaft operatively connected with the drum for rotating it, means for controlling the shaft, and a casing inclosing the drum and having a slot through which the blades are adapted to successively project.

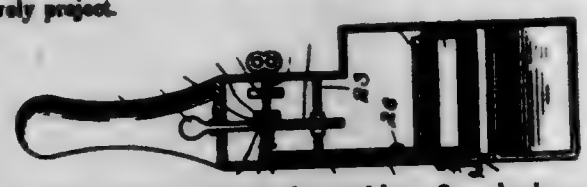

3. A device of the class described comprising a frame having a handle, a drum mounted in the frame at the opposite end from the handle and having blades disposed longitudinally thereof and removably mounted therein, said drum being removably mounted in the frame, a spring-operated drive-shaft operatively connected with the drum for rotating the latter, and a stopping device disposed adjacent to the handle and in operative relation to the drive-shaft to engage and release it.

3. A device of the class described comprising a frame having a handle, a drum mounted in the handle, blades removably engaged with the drum and extending longitudinally thereof, a casing for the drum and having a slot through which the blades are adapted to successively project, guides at the sides of the slot, a portion of the casing being removable to expose the drum, a drive-shaft in operative relation to the drum, and a stopping device adapted for movement into and out of operative relation to the drive-shaft.

4. In a device of the class described, a drum having an axle projecting from the ends thereof for supporting the drum rotatably, the axle at one end of the drum having a threaded portion, dovetail slots formed longitudinally of the drum and tapered away from the threaded end of the shaft, blades tapered to fit the slots, and a disk engaged with the threads of the shaft and adapted to impinge the ends of the blades and hold them in engagement with the slots.

708,846. APPARATUS FOR SEPARATING LIQUIDS FROM SOLIDS. DUNCAN STEWART, Glasgow, Scotland. Filed May 27, 1901. Serial No. 62,124. (No model.)

Claim.—1. Apparatus for separating liquids from solids comprising an endless apron or carrier consisting of chain-links having brackets to which wire-gauze is attached and permeable fabric held down on the gauze by suitable devices and arranged to travel around drums mounted at each end of a framing, vacuum-boxes and vacuum-pumps, washing-pipes and rakes arranged over the vacuum-boxes, steam drying boxes or coils, a scraper and revolving brush and appliances for cleansing and washing the apron, all arranged and operating substantially as and for the purposes set forth.

2. In apparatus of the character described, an apron consisting of chain-links having brackets to which wire-gauze is attached and of permeable fabric held down on the gauze by flanged clips connected by bent-leather filling-pieces which with the clips form sides to the apron, substantially as described.

708,847. HERNIAL TRUSS. LORENZO A. STEWART, Waukegan, Ill. Filed Aug. 17, 1900. Serial No. 27,201. (No model.)

Claim.—1. As a new article of manufacture, a truss-pad formed with a flat bearing-surface substantially circular in outline and an inflexible horn projecting therefrom, the horn being curved toward the body of the wearer and away from the supporting-strap, substantially as described.

2. A truss-pad comprising a body portion substantially circular in outline, a horn formed integral with the body portion and extending therefrom, the body portion adapted to be centrally pivoted to a securing-strap, thus enabling the horn to be brought to bear upon different portions of the anatomy about the body portion as a center, without altering the application of the body portion, substantially as described.

3. As a new article of manufacture, a truss-pad formed wholly of non-corrosive metal, and having a flat body portion, and a horn or finger, the pad being provided upon its back with projecting ribs, the said horn being curved and adapted to extend inward into contact with the body of the wearer, when the pad is in position, substantially as described.

4. In a truss, the combination with a securing-strap, of a pad, the body portion thereof presenting a flat bearing-surface substantially circular in outline, an inflexible horn integral with the body portion and projecting therefrom, said horn being curved inward toward the body of the wearer and away from the securing-strap and terminating beyond the plane of the bearing-surface of the body portion, the body portion centrally pivoted to the securing-strap, thus adapting the curved horn to be brought to bear upon different portions of the anatomy without altering the application of the body portion, substantially as described.

5. A truss comprising a pad formed with a flat body portion and a curved horn or finger hollowed out to form ribs extending therefrom, the said horn being curved and adapted to extend inward into contact with the body of the wearer, when the pad is in position, means for securing the pad to the body of the wearer, and yielding material interposed between the securing means and the ribs of the horn, substantially as described.

6. A truss comprising a waist-strap carrying a plate, a center strap also carrying a plate, a pad carried by the waist-strap, the pad having a flat body portion, and a curved horn or finger, the horn or finger having its back formed with one or more ribs and yielding material interposed between the waist-strap and the ribs, substantially as described.

708,848. CONTINUOUS KILN. FRANK E. SWIFT, Washington, Iowa. Filed Sept. 10, 1901. Serial No. 74,944. (No model.)

Claim.—1. A continuous kiln comprising a series of kiln-chambers, each chamber having a furnace, a smoke-stack, and a flue having a controlling-damper and leading to the smoke-stack, combined with upper and lower passages between chambers, dampers controlling the upper passages, and means for introducing a combustible element for closing the lower passages, substantially as described.

2. In a continuous kiln, and in combination with adjoining chambers, upper and lower flues connecting the top and bottom portions of the chambers, a damper controlling the upper flue, and means for introducing a combustible element for closing the lower flue or flues, substantially as described.

3. In a continuous kiln, and in combination with adjoining chambers, upper and lower flues connecting the top and bottom portions of the chambers, a damper controlling the upper flue, and vertical chutes or passages leading to the lower flues, whereby a combustible substance, such as coal, may be introduced to close said flues, substantially as described.

708,849. METHOD OF PRODUCING WEAVING-DIAGRAMS. JAN SZCZEPANIK, Vienna, Austria-Hungary, assignor, by direct and mesne assignments, to the Barmer Bank-Verein, Hinsberg, Fischer & Comp., Barmen, Rhenish Prussia, Germany, a Corporation of Germany. Filed Dec. 20, 1898. Serial No. 699,304. (No specimens.)

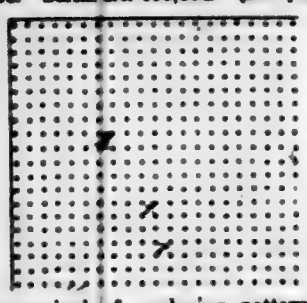

Claim.—1. The method of producing patterns, which consists in focusing the object on a suitable focusing-plate, replacing the same by a sensitized medium, breaking up the image into a suitable number of divi-

sions and giving a different shape to groups of these divisions, substantially as set forth.

2. The method of producing patterns, which consists in focusing the object on a suitable focusing-screen, replacing the same by a sensitized medium, breaking up the image into a suitable number of divisions and giving a different shape to groups of these divisions by suitable diaphragms, substantially as set forth.

3. The method of producing patterns, which consists in focusing the object or figure on a screen, breaking up the image into a predetermined number of divisions by a perforated plate in the path of the light from the focused image, determining the form of these divisions on the sensitive medium by the form of the light-apertures, and intensifying certain sets of divisions by blocking out perforations in the screen, substantially as described.

4. The method of producing patterns, which consists in focusing the object or figure on a suitable screen, breaking up the image into a suitable number of divisions by a perforated plate in the path of light, determining the form of these divisions by the form of the light-apertures and varying the intensity of certain sets of divisions, substantially as set forth.

5. The method of producing patterns, which consists in focusing the object on a suitable screen, replacing the latter by a sensitive medium, breaking up the image into a suitable number of divisions by a perforated plate, determining the form of the divisions by the form of the light-aperture, and blocking out certain of them and varying the intensity of others by varying the intensity of light admitted through color-screens, substantially as set forth.

6. The method of producing patterns, which consists in focusing the object on a suitable screen and photographing the image thus produced by a series of pin-hole cameras, substantially as set forth.

7. The method of producing patterns, which consists in focusing the object on a suitable screen and photographing the image by a series of pin-hole cameras arranged in the order of a weaving-crossing, substantially as set forth.

8. The method of producing patterns, which consists in focusing an object on a screen and photographing the image by more than one series of pin-hole cameras arranged in the order of a weaving-crossing, each series of pin-hole cameras organized to produce images of different intensity from those of the other series, substantially as set forth.

9. The method of producing patterns, which consists in focusing an object and photographing the image formed, by a series of pin-hole cameras arranged substantially in the focal plane, substantially as set forth.

10. The method of producing patterns, which consists in focusing an object, photographing the image formed, by pin-hole cameras arranged substantially in the focal plane whereby the image is broken up into a number of parts corresponding to the number of pin-hole cameras, and determining the outline of the images formed by each pin-hole camera by the form of the bundle of rays of light to form the image, substantially as set forth.

11. The method of producing patterns, which consists in focusing an object, photographing the image formed, by one or more series of pin-hole cameras arranged substantially in the focal plane, thereby producing a subdivided image, varying the intensity of certain divisions of said image by varying sizes of the apertures of the pin-hole cameras, determining the form of the image produced by each pin-hole camera by the form of the bundle of rays of light admitted, and subdividing the images of the pin-hole cameras by subdividing the stop at the objective, substantially as set forth.

12. The method of producing patterns, which consists in focusing an object, subdividing the image by a perforated plate, producing an image subdivided into squares by means of a suitable diaphragm, and indicating binding-stitches by closing certain of the apertures in said perforated plate and subdividing each image behind the perforated plate and indicating thereon the particular stitch by a suitable diaphragm, substantially as set forth.

13. The method of producing patterns, which consists in forming on a sensitized medium an actinic impression to represent diagram-paper, transmitting light from a suitable object through a lens and a perforated plate to indicate said object on the representation of the diagram-paper on the sensitized medium, and also indicating binding-stitches thereon by suitable actinic impressions, substantially as set forth.

14. The method of producing patterns, which consists in forming on a sensitized medium an actinic impression to represent diagram-paper, transmitting light from a suitable object through a lens, a screen and perforated plate to indicate said object on the representation of the diagram-paper on the sensitized medium, and also indicating binding-stitches thereon, substantially as set forth.

15. The method of producing patterns, which consists in forming on a sensitized medium an actinic impression to represent diagram-paper, transmitting light from a suitable object through a diaphragm, lens and a screen whose transparent portions are of different sizes, all those of the same size arranged in the order of a weaving-crossing and a perforated plate whose perforations register with the divisions of the representation of the diagram-paper, whereby actinic impressions are made in said divisions differing in intensity, those of the same intensity arranged in the order of a weaving-crossing, substantially as set forth.

16. The method of producing patterns, which consists in forming on a sensitized medium an actinic impression to represent diagram-paper, transmitting light from a suitable object, through a diaphragm and a lens, and a screen whose transparent portions are of different sizes, all those of the same size arranged in the order of a weaving-crossing, and a perforated plate whose perforations register with the divisions of the representation of said diagram-paper, the said diaphragm capable of subdividing each division of the representation of the diagram-paper and indicating in said division different weaving-crossings, substantially as set forth.

708,850. METHOD OF PRODUCING WEAVING-DIAGRAMS.

JAN SZCZEPANIK, Vienna, Austria-Hungary, assignor to Société des Inventions Jan Szczepanik & Co., Vienna, Austria-Hungary, a Firm

Filed Mar. 19, 1900. Serial No. 9,230. (No specimens.)

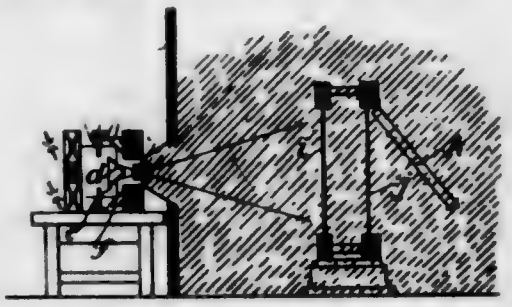

Claim.—1. The method of producing an image to indicate weaving crossings or stitches, which consists in transmitting light from separate portions of an object, each modified to indicate a weaving-crossing, through a lens common to all the images onto a sensitized medium, substantially as described.

2. The method of producing an image to indicate weaving crossings or stitches, which consists in simultaneously transmitting light from separate portions of an object each modified to indicate a weaving-crossing, through a lens common to all the images onto a sensitized medium, substantially as described.

3. The method of producing an image to indicate weaving crossings or stitches, which consists in forming a slide of each part of the object, modifying each slide to indicate a weaving-stitch and reflecting light therefrom through a lens common to all the parts onto a sensitized medium, substantially as described.

4. The method of producing an image modified in its parts to indicate weaving-crossings, which consists in forming a slide of each part, and projecting each part through ruled screens, then reflecting the light therefrom through a lens common to all the parts onto a sensitized medium, substantially as described.

5. The method of producing a composite modified image, which consists in reflecting the light from separate parts of the object through a screen indicating a weaving-crossing for each part and a lens common to all the parts onto a sensitized medium, substantially as described.

6. The method of producing weaving-patterns, which consists in reflecting light from separate parts of the object, each modified to indicate a weaving-crossing through a lens common to all the parts and then through a screen onto a sensitized medium, substantially as described.

7. The method of producing weaving-patterns, which consists in reflecting separate parts of the object modified to indicate weaving-crossings through a lens common to all the parts and a perforated plate, whereby each part of the image is broken up into a number of light parts corresponding to the number of holes of the perforated plate illuminated and projected onto a sensitized medium and thereby indicating a weaving-crossing in each part of the image and varying the outline of the light parts of the image by a suitably-shaped diaphragm, substantially as described.

8. The method of producing an image modified in its parts to represent weaving-crossings, which consists in reflecting light from separate portions of the object, each modified to indicate a weaving-crossing from a reflector, through a lens arranged to receive the reflected light from each portion and project it onto a sensitized medium, substantially as described.

9. The method of producing an image modified in its parts, each part broken up into points and the points in each differently grouped, which consists in reflecting light from suitable slides of the object to separate reflectors, thence through a lens arranged to combine all the images onto a sensitized medium, substantially as described.

10. The method of producing an image modified in its parts, which

consists in forming transparencies of the corresponding parts of the object, passing light through said transparencies and screens, reflecting the light thus modified from a reflector, thence through a lens arranged to combine all the images, and a perforated plate onto a sensitized medium, substantially as described.

11. The method of producing weaving-diagrams, which consists in forming a transparency of parts of the object, combining said transparencies with loom-stitch or crossing-indicating devices, reflecting the light passed through the combination, through a lens arranged to combine the images and then through a perforated plate onto a sensitized medium and varying the outline of the separate images of the crossing-indicating parts of the image thus formed, by suitable diaphragms, substantially as described.

12. The method of producing weaving-diagrams, which consists in forming a transparency of parts of the object, combining said transparencies with loom-stitch-indicating gratings, reflecting light passed through the combination, through a lens arranged to combine the images and then through a perforated plate onto a sensitized medium, thereby producing the design-indicating thread-crossing and determining the outline of the thread-crossing indications by a suitably-shaped diaphragm, substantially as described.

13. The method of producing weaving-diagrams, which consists in forming a transparency of parts of the design to be woven, combining each transparency with a suitable screen, passing light through the combinations, reflecting light through them on reflectors, thence through a lens arranged to combine all of the images and then through a perforated plate onto a sensitized medium, whereby each image of the transparencies is disintegrated to indicate weaving-crossing and determining the outlines indicating the weaving-crossings by suitable diaphragms, substantially as described.

14. The method of producing weaving-diagrams, which consists in forming photographic transparencies of the object to be represented in the design, each transparency consisting of those parts to be indicated by the same thread-crossing, combining with each transparency a suitable screen to indicate the respective thread-crossing, passing light through the combinations thus formed, through a lens arranged to combine images thereof and a screen or perforated plate beyond said lens onto a sensitized medium, the first-mentioned screens arranged to cause their opaque portions to render certain perforations in the perforated plate unillumined and varying the outline of the projections through the illumined apertures by the form of diaphragm-opening used, substantially as described.

15. The method of producing weaving-diagrams, which consists in forming transparencies of the object to be represented in the design, each transparency consisting of those parts to be indicated by the same thread-crossing, combining with each transparency a suitable screen to indicate the required thread-crossing, simultaneously passing light through the combinations thus formed and a lens arranged to combine images thereof, and a screen or perforated plate beyond said lens onto a sensitized medium, the screens and perforated plate being in fixed relation and proportion to each other, whereby the opaque portions of the screens will render certain perforations in the plate unillumined, substantially as described.

16. The method of producing weaving-diagrams, which consists in forming transparencies of the object to be represented in the design, each transparency consisting of those parts to be indicated by the same thread-crossing, combining with each transparency means to indicate the required thread-crossing, simultaneously passing light through the combinations thus formed to reflectors, and passing the reflected images through a lens common to all of them and a perforated plate onto a sensitized medium, the said screens and perforated plate being in fixed relation and proportion to each other, whereby the opaque portions of the screens will render certain perforations in the plate unillumined and varying the outline of the projections through the illumined perforations by the form of the diaphragm-opening, substantially as described.

708,851. METHOD OF PRODUCING WEAVING-DIAGRAMS. JAN SZCZEPANIK, Vienna, Austria-Hungary, assignor to Société des Inventions Jan Szczepanik & Cie., Vienna, Austria-Hungary, a Firm. Filed May 22, 1900. Serial No. 17,602. (No specimens.)

Claim.—1. The method of producing weaving-patterns, which consists in passing the light from the object through a diaphragm and perforated plate to a sensitized medium, the plate provided with perforations arranged to form a loom-stitch pattern, and varying the exposure to light at the diaphragm-opening, substantially as set forth.

2. The method of producing weaving-diagrams, which consists in passing the light from an object through a lens, a diaphragm, only a portion of the diaphragm being exposed, and a perforated plate to a sensitized medium, said plate provided with perforations arranged to form a loom-stitch pattern, said portion of the diaphragm-opening being proportional to the image formed, substantially as set forth.

3. The method of producing weaving-diagrams, which consists in passing the light from an object through a lens, diaphragm and perforated plate to a sensitized medium, the perforations in said plate arranged to form a loom-stitch pattern, and the opening in the diaphragm divided into fields varying in degree of transparency, substantially as and for the purpose set forth.

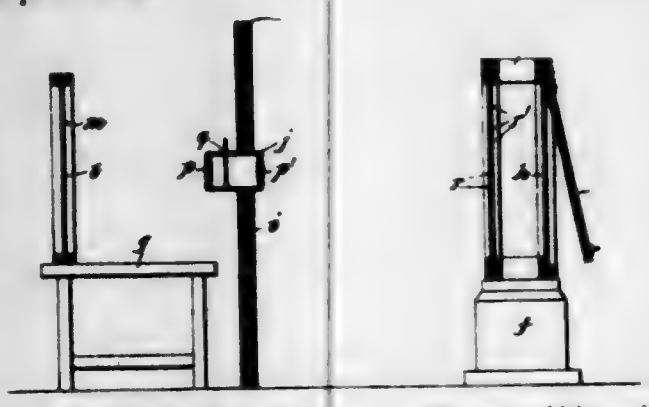

4. The method of producing weaving-diagrams, which consists in passing light from a suitable object through a lens, a diaphragm and a suitable perforated plate to a sensitized medium, the opening in said diaphragm divided into fields of varying transparency and overexposing the sensitized medium by the light through one or more of said fields, substantially as set forth.

5. The method of producing weaving-diagrams, which consists in passing light from a suitable object through a lens, a diaphragm and a perforated plate, the perforations in said plate arranged to form a loom-stitch pattern and the opening in said diaphragm divided in fields of different intensity, and overexposing the sensitized medium to the light passing through one or more of said fields, substantially as set forth.

6. The method of producing weaving-diagrams, which consists in passing light from an object through a diaphragm-opening, and a plate having light-transmitting openings arranged to form a weaving-pattern onto a sensitized medium, said diaphragm-opening divided into as many fields of different transparency as there are points between adjacent light-transmitting openings in said plate, substantially as set forth.

7. The method of producing weaving-diagrams, which consists in passing light from an object through a diaphragm-opening, and a plate having light-transmitting openings arranged in the order of a satin weaving-crossing, onto a sensitized medium, said diaphragm-opening divided into as many fields of different transparency as there are points between adjacent threads in the same row, substantially as set forth.

8. The method of producing weaving-diagrams, which consists in passing light from a suitable object through a diaphragm-opening, and a plate having light-transmitting openings arranged in the order of a five-point satin-crossing, onto a sensitized medium, said diaphragm-opening divided into five fields of different transparency, whereby a weaving design can be produced in which all of the five points are differently indicated, substantially as set forth.

9. The method of producing weaving-diagrams, which consists in passing light from a suitable object through a lens, a diaphragm-opening and a plate provided with light-transmitting openings arranged in the order of a five-point satin-crossing, onto a sensitized medium, said diaphragm-opening divided into five fields of different transparency, and overexposing the sensitized medium to the light from two or more of said fields, whereby a weaving-diagram indicating five different thread-crossings can be produced, substantially as set forth.

10. The method of producing weaving-diagrams, which consists in passing light from a suitable object through a diaphragm-opening, and a plate provided with light-transmitting openings arranged in the order of weaving-crossings, onto a sensitized medium, the diaphragm-opening being divided into as many fields of different transparency as there are points between adjacent warp-threads of a row, and varying the exposure of the sensitized medium to overexpose the impression of one or more of the fields on said medium to vary the weaving-crossing, as many weaving-crossings being capable of being indicated as there are points between the light-transmitting openings of said plate, substantially as set forth.

708,852. CORSET. HETTIE TEMPLE, Stockton, Cal. Filed Feb. 15, 1902. Serial No. 94,594. (No model.)

Claim.—The herein-described corset comprising sections A, the lower rear corners of which are arranged a suitable distance apart and are free to move toward and from each other, short lacing-tabs extending laterally from the rear edges of the sections at the waist-line of the corset, a lace connecting the said tabs, lacing-tabs extending laterally from the rear edges of the sections at a point intermediate of the waist-line tabs and the upper end of the corset, and separated from the waist-line tabs by a space

of greater length than said waist-line tabs, and a lace connecting the said upper tabs.

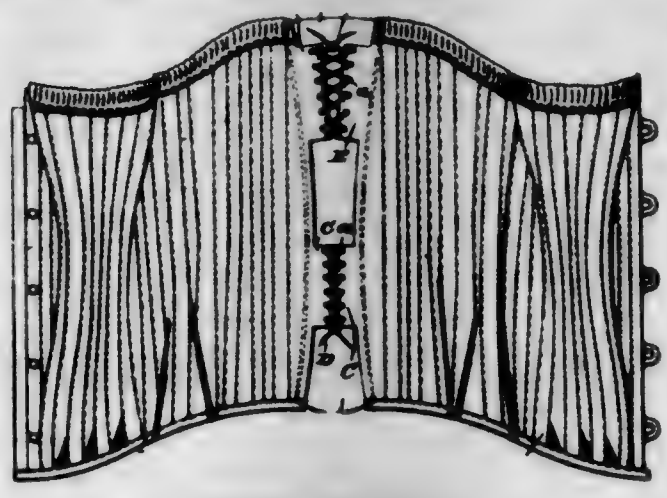

708,858. MECHANICAL BILL-CARRYING APPARATUS. ANTHONY W. THIERKOFF, Redding, Cal. Filed Mar. 7, 1902. Serial No. 97,047. (No model.)

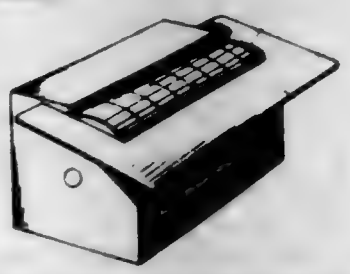

Claim.—1. An apparatus for mechanically carrying bills and accounts comprising a surface having offsets, clamping-plates hinged to the edges of the offsets having their free edges adapted to rest upon the surface below, each plate forming a practical continuation of the surface above, and springs by which the free edges of said plates are drawn so as to clamp bills upon the surfaces.

2. An apparatus for mechanically carrying bills and accounts comprising a revoluble drum having its periphery formed with a series of tabular surfaces with intermediate connecting-offsets, clamping-plates having hinges by which they are turnably attached to the edges of the offsets, and forming a smooth continuation with the surfaces above, springs located interior to the drums and connections between said springs and the plates whereby the edges of the latter are drawn down to clamp bills or slips upon the drum-surfaces.

3. The combination of a revolubly-mounted drum having tabular surfaces extending from end to end of its periphery and offsets intermediate between said surfaces, of spring-pressed plates hinged to the edges of the offsets forming a continuation of the tabular surfaces, said plates having their free edges pressing upon the surfaces adjacent to their hinge-points and adapted to clamp bills or slips thereon.

4. In a bill or document carrying device, a series of surfaces with intermediate offsets, clamping-plates hinged to the edges of the offsets and forming continuations of the surfaces, springs located interior to the plates and means connecting the springs with the plates at one side of the hinged points of the latter whereby the springs hold the plates open or closed.

708,854. ELECTRIC ALARM-CLOCK. WILLIAM B. TERRY and WILLIAM S. INGRAHAM, Bristol, Conn., assignors to the E. Ingraham Company, Bristol, Conn., a Corporation of Connecticut. Filed Feb. 26, 1902. Serial No. 95,582. (No model.)

Claim.—1. In an alarm-clock, the combination, with a clock-casing, of a resilient arm projecting laterally from the interior of said clock-casing and carrying a rider at its free end; clock mechanism; a setting-dial; a cam-disk of insulating material carried by the arbor of the setting-dial and with which the rider of said resilient arm is in engagement; an electric battery; a bolt connecting said arm to the clock-casing; a pair of electromagnets; an electric circuit, of which the clock-frame constitutes a part, controlling said magnets; and a switch connected to said bolt for establishing the circuit through the clock-frame when the rider of the resilient arm enters the notch of the cam-disk and engages the arbor of the clock.

2. In an alarm-clock, the combination, with clock mechanism, of a recessed cam composed of insulating material carried by an arbor of said clock mechanism; a resilient, metallic arm having a rider in engagement with the cam and adapted to engage said arbor when it enters the recess of the cam; a clock-casing; a bolt for securing the resilient metallic arm to said clock-casing; a switch in engagement with said bolt; a contact device secured to the clock-casing, and with which said switch is adapted to engage; a wire leading from said contact device to the battery; a battery; an electromagnetic device; a wire connecting said electromagnetic device and battery; an alarm controlled by the electromagnetic device; and a wire connecting the electromagnetic device with the clock-frame.

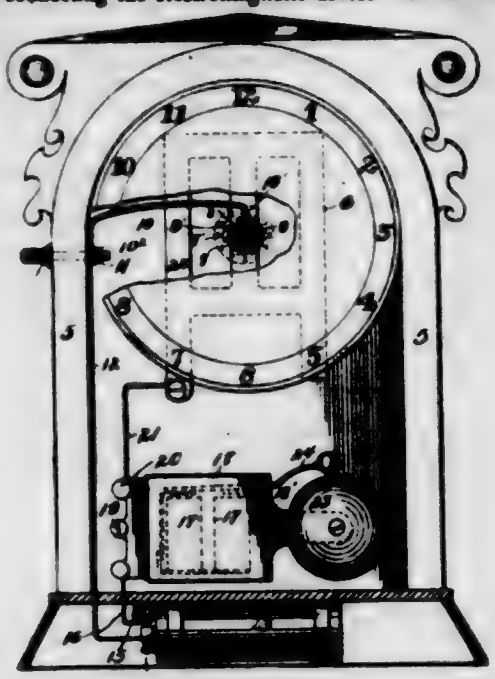

708,855. AIR-VALVE ATTACHMENT FOR TRAPS. CHARLES A. TILLY, Brooklyn, N. Y. Filed Apr. 2, 1901. Serial No. 54,084. (No model.)

Claim.—1. An air-valve attachment for water seals comprising a tube adapted to be connected therewith, a plug or block detachably mounted upon the upper end of the said tube and ranging above the same, and having downwardly-directed inlets in the sides thereof, and a central bore with which they communicate, a shield detachably mounted upon the upper end of the said plug or block and projecting downwardly to inclose the said plug or block, a cylinder detachably mounted in the end portion of said plug or block and provided in its upper end with a bore communicating with the bore of the said plug or block and a laterally-enlarged suction-chamber in the lower or main portion thereof, a vertically-grooved valve-stem mounted in the said cylinder and having its upper portion slidable in the bore thereof, and formed intermediate of its ends with a valve operating against the roof of the suction-chamber, an expansible spring mounted in the said suction-chamber and surrounding the valve-stem beneath the valve and normally holding it in contact with its seat, and a screw-cap adjustably mounted upon and inclosing the lower end of the cylinder to form a closure for the suction-chamber and adapted to adjust the tension of the spring and formed centrally with an aperture corresponding to the bore of the upper portion of the cylinder and forming a guide or bearing for the vertically-grooved valve-stem.

2. An air-valve attachment for water seals comprising a vertical tube *f* adapted to be connected therewith and exteriorly screw-threaded upon its upper edge an interiorly-threaded coupling *g* adjustably mounted upon the said screw-threaded edge, a plug or block *h* screwed into the upper end of the said coupling *g* and approximately conical in form to be contracted above the same and having downwardly-directed inlets *k* in its

contracted portion and a central bore *i* with which they communicate, said bore extending but partially through the said plug or block, a shield *p* detachably mounted upon the top of the said plug or block and projecting downwardly to inclose the same and protect the inlets, a cylinder *m* screw-threaded in the lower portion of the plug or block A and provided in its upper end with a central bore communicating with the bore of the said plug or block A and formed with a laterally-enlarged suction-chamber m^2 in the lower or main portion thereof, a vertically-grooved valve-stem mounted in said cylinder and having its upper portion slidable in the bore thereof and formed intermediate of its ends with a valve *o* operating against the roof of the suction-chamber, an expansible spring o^2 mounted in the suction-chamber and surrounding the valve-stem beneath the valve and normally holding it in contact with its seat, and a screw-cap *n* adjustably mounted upon and housing the lower end of the cylinder to form a closure for the suction-chamber and adapted to adjust the tension of the spring and formed centrally with an aperture corresponding to the bore of the upper portion of the cylinder and forming a guide or bearing for the vertically-grooved valve-stem.

708,856. DETACHABLE SLEIGH-RUNNER. WILLIS W. TOPLIFF, Dewey, Mont. Filed Feb. 5, 1902. Serial No. 92,637. (No model.)

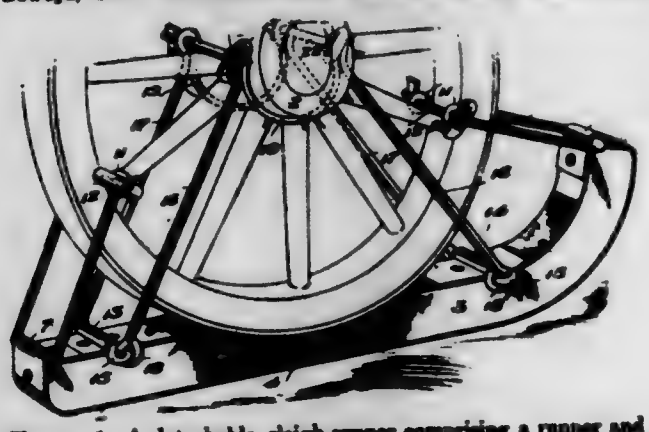

Claim.—1. A detachable sleigh-runner comprising a runner and a side brace hinged at one end to the runner and adapted for connection at its other end to the wheel of the vehicle and arranged to swing downwardly and outwardly on its hinged connection aforesaid from the plane of the wheel.

2. A detachable sleigh-runner comprising a runner and side braces hinged at one end to the runner and adapted for connection at their other ends to the wheel of the vehicle, said side braces being arranged to swing downwardly on their hinged connections aforesaid in opposite directions from each other on opposite sides of the runner and outwardly from the plane of the wheel.

3. A detachable sleigh-runner comprising a runner, side braces hinged at one end to the runner and located on opposite sides of the vehicle-wheel and adapted to swing downwardly on their hinged connections aforesaid and in opposite directions from each other and outwardly from the plane of the wheel, detachable connections between said braces which extend over the spokes of the wheel, and braces hinged to the runner and adapted to straddle the wheel-felly, and detachable fasteners extending over the spokes of the wheel and connecting the portions of the end braces together.

4. A detachable sleigh-runner comprising a runner, side braces located on opposite sides of the vehicle-wheel and consisting of rods having their end portions hinged to the runner and provided with intermediate bent portions which embrace the hub of the vehicle-wheel, said side braces being adapted to swing downwardly on their hinged connections aforesaid in opposite directions from each other and outwardly from the plane of the wheel, and detachable fastenings connecting the bent portions of the braces over the spoke of the wheels.

708,857. ELECTROMETALLURGICAL TREATMENT OF ZINC ORES AND ESPECIALLY BLENDE. CONSTANTIN J. TEISSIER, Paris, France. Filed Aug. 6, 1901. Serial No. 71,105. (No specimens.)

Claim.—1. For the electrolysis of the sulfate and other salts of zinc, the process whereby a practical reduction of the voltage below two and three-tenths volts is obtained by the aid of sulfurous acid as a depolarizer, the said process being divided into two parts to avoid the decomposition of said sulfurous acid and consisting as to one part in the electrolysis of the zinc salt with corresponding solution of copper anodes and formation of copper salt, and as to the second part in the electrolytic reconstitution of the said copper anodes by decomposition of the so-formed copper salt in a solution preliminarily charged with sulfurous acid, substantially as described.

2. For the electrolysis of metals, to wit, nickel, cobalt, cadmium, and the like, as well as zinc, which can be electrolytically deposited in metallic form at the cathode and whose salts have a voltage of decomposition too high to avoid the decomposition of sulfurous acid in the medium of the electrolyte, the process whereby said electrolysis is practically effected with a voltage effectively lowered by the employment of sulfurous acid as a depolarizer, the said process being divided into two parts to avoid the decomposition of said sulfurous acid and consisting as to one part in the electrolysis of the salt of such a metal with corresponding solution of copper anodes and formation of copper salt, and as to the second part in the electrolytic reconstitution of the said copper anodes by decomposition of the so-formed copper salt in a solution preliminarily charged with sulfurous acid, substantially as described.

708,858. PHOTOGRAPHIC CAMERA. AUGUSTE VAUTIER, Grandson, Switzerland. Filed Mar. 19, 1902. Serial No. 98,872. (No model.)

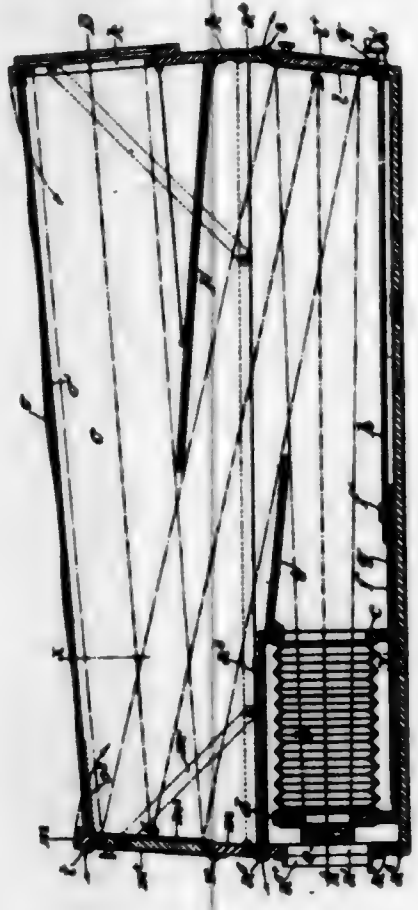

Claim.—1. In a photographic apparatus, the combination with a lens, a bellows, a box and means for adjusting the position of said lens, of a mirror set in the said box at an inclination to the axis of said lens, a mirror set parallel to the aforesaid mirror, and means secured in said frame for holding a photographic film, substantially as specified.

2. In a photographic apparatus, the combination with a lens, a bellows, a box and means for adjusting the position of said lens, of a mirror set in the said box at an inclination to the axis of said lens, a mirror set parallel to the afore said mirror, means secured in said frame for holding a photographic film, and means for preventing the light passing through the lens from directly striking the said photographic film, substantially as set forth.

3. In a photographic apparatus, the combination with a lens, a bellows, a box and means for adjusting the position of said lens, of a mirror set in the said box at an inclination to the axis of said lens, a mirror set parallel to the aforesaid mirror, means for adjusting the relative positions of said mirrors, means secured in said frame for holding a photographic film, and means for preventing the light passing through the lens from directly striking the said photographic film, substantially as specified.

4. In a photographic apparatus, the combination with a box *a*, bellows *b*, lens *c* and means for adjusting the position of said lens, of a mirror *l* set in said box at an inclination to the axis of the lens *c*, a frame *m* hinged to the box *a*, a mirror m^2 in said frame *m*, means for adjusting the positions of said mirrors *l* and m^2 so that they are parallel to each other, a frame *k* hinged to said box *a*, means in said frame *k* for holding a photographic film, screens *i* and *p* to prevent the rays of light passing through the lens from falling directly on the photographic film, and a flexible covering for the top of the instrument, the said frames and screens being adapted to fold in against the box when the instrument is not in use, substantially as specified.

708,859. **FEEDING MECHANISM FOR AUTOMATIC GUNS.** ALBERT VICKERS, Westminster, England, assignor to Vickers Sons & Maxim, Limited, Westminster, London county, England. Filed Nov. 1, 1901. Serial No. 80,818. (No model.)

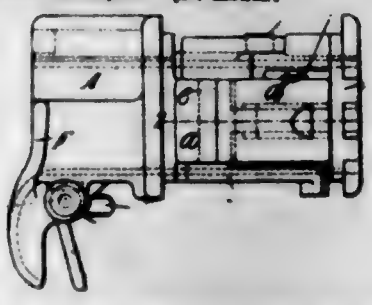

Claim.—1. In a feed-block, the combination with the body portion, the slide carrying the feed-pawls, and the retaining-pawls; of slide-actuating levers formed in one piece with their stem and of a gapped bearing for said stem, substantially as herein shown and described.

2. In a feed-block, the combination with the body portion, the slide carrying the feed-pawls, and the retaining-pawls; of slide-actuating levers formed in one piece with their stem, of a gapped bearing for said stem and of a sliding piece for closing the gap in the bearing substantially as described.

3. In a feed-block, the combination with the body portion, the slide carrying the feed-pawls, and the retaining-pawls; of slide-actuating levers formed in one piece with their stem, of a gapped bearing for said stem, of a sliding piece for closing the gap in the bearing and of means for retaining said sliding piece in place substantially as described.

4. In a feed-block, the combination with the body portion, the slide carrying the feed-pawls, and the retaining-pawls; of slide-actuating levers formed in one piece with their stem, of a gapped bearing for said stem, of a sliding piece for closing the gap in the bearing and of a detachable flexible finger for retaining said sliding piece in place substantially as described.

5. In a feed-block, the combination with the body portion, the slide carrying the feed-pawls, the slide-actuating levers, and the retaining-pawls; of detachable springs for the feed-pawls, comprising flexible members adapted to bear on the pawls and a transverse piece connecting the said flexible members and adapted to fit into a groove in the slide and to be maintained in such position by bearing-surfaces on the pawls substantially as described.

708,860. **EXPANSIBLE PULLEY FOR MOTOR-VEHICLES.** PAUL I. VIEL, Paris, France. Filed Apr. 10, 1901. Serial No. 55,167. (No model.)

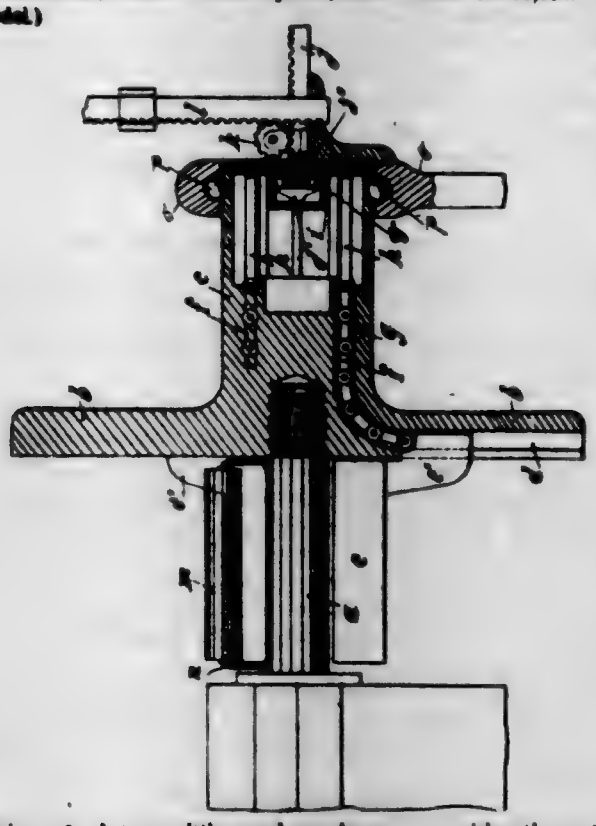

Claim.—1. A transmitting and speed gear, comprising the motor-shaft *a*, the disk *b* carried by said shaft, and having grooves *d* formed therein, the sectors *e* adapted to slide within the said grooves, said sectors being arranged to receive a transmission-belt coupling the driving-shaft to the driven one in order to vary the speed of the latter, chains *f* connected with said sectors, rods *h* connected with the chains, supports *n* carried by the shaft, rollers *m* mounted to revolve on said supports between the sectors and adapted to receive the belt when the sectors are retracted, and a shifting device for the sectors connected with the said rods.

2. An expanding pulley, comprising a rotatable body, belt-engaging portions slidable in and out on said body, means for adjusting said belt-engaging portions, and rollers carried by said body between the belt-engaging portions and adapted to hold the belt out of driving engagement with the pulley when said slidable belt-engaging portions are retracted.

3. An expanding pulley, comprising a rotatable body, belt-engaging slides movable in and out on said body, the latter being provided with curved channels, a follower or piston movable lengthwise of the pulley's axis of rotation, means for adjusting said follower, and chains each connected at one end with said follower, and at the other end with one of the belt-engaging slides, said chains moving in said curved channels.

4. In an expansible pulley, the combination with the rotatable body, of the belt-engaging slides, movable in and out on said body, means for holding the belt out of driving engagement with the body when said slides are retracted, the follower or piston, connections between said follower and the belt-engaging slides, a rack connected with the piston, a pinion for moving the rack, and a second rack for rotating the pinion.

5. In an expansible pulley, the combination with the rotatable body, of the belt-engaging portions, movable in and out on said body, chains connected with the belt-engaging portions and extending in channels formed in the body, rods connected with the said chains, and means connected with the said rods for adjusting the belt-engaging portions.

708,861. **ELECTROLYTIC CELL AND ELECTRODE THEREFOR.** ADOLF A. VOSMAER, Dresden, Germany, assignor, by mesne assignments, to William Lobin, Nottingham, England. Filed Mar. 5, 1901. Serial No. 49,578. (No model.)

Claim.—1. In an electrode, the combination of a series of supporting-bars, electrode-strips covering the sides thereof, and conducting-strips integral with such electrode-strips and passing through said electrode between said bars, substantially as described.

2. In an electrode, the combination of a supporting-body composed of superposed bars of suitable material, conducting-strips on the faces of certain of said bars at opposite sides of the electrode, and means for electrically connecting said strips, substantially as described.

3. In an electrode, the combination of superposed bars of insulating material, electrode-strips held in position against the face of the electrode by said bars and conducting portions situated between said bars, substantially as described.

4. In an electrolytic cell, the combination of electrodes at each end thereof, electrode-strips on the face of said electrodes, means for connecting said strips with the external circuit, intermediate electrodes having corresponding electrode-strips on their opposite faces unconnected with the external circuit, means for connecting the electrode-strips upon such opposite faces, and means for holding said electrodes in place at different levels, substantially as described.

5. In an electrode for the purposes mentioned, the combination of superposed bars of suitable material and of approximately square section, conducting-sheaths around certain of said bars, and means for holding said bars together, substantially as described.

6. In an electrolytic cell, the combination of terminal electrodes built up of alternate insulating and conducting bars, the latter being sheathed in platinum-foil, intermediate electrodes formed of superposed insulating-bars only some of which are sheathed in platinum-foil, means for holding said bars together, and means for connecting the sheathings of the terminal electrodes with the external circuit, substantially as described.

7. In an electrolytic cell, the combination of an outer cell, distance-strips cemented to the sides of said cell, electrodes consisting of superposed bars fitted between said strips, platinum strips secured against opposite sides of said electrodes, and integral connecting portions extending between opposite strips and passing through the electrodes, substantially as described.

8. In an electrolytic cell, the combination of terminal electrodes each consisting of alternate insulating and leaden bars superposed on each other, the latter being sheathed in platinum, a lead backing forming an electrical connection between said leaden bars and the external circuit, intermediate electrodes each consisting of insulating-bars superposed on each other and alternately sheathed in platinum-foil, an outer cell containing said electrodes, distance-strips cemented inside said cell between said electrodes, and fillings of Portland cement in the grooves between said strips, substantially as described.

9. In an electrode, the combination of a series of bars sheathed with inert metal, a series of unsheathed bars alternating therewith, and means for securing said bars together, substantially as described.

10. In an electrolytic cell, the combination of ... outer cell, distance-strips at the sides of said cell, and electrodes between said strips, each of said electrodes consisting of plain or unsheathed bars alternating with bars sheathed in metal, substantially as described.

703,862. OIL-CAN. THOMAS VOITA, Mound City, S. D. Filed Nov. 14, 1901. Serial No. 82,219. (No model.)

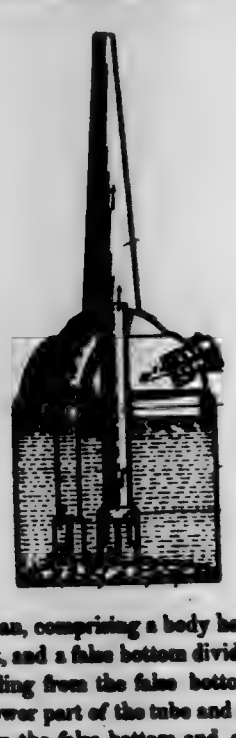

Claim.—1. An oil-can, comprising a body having a flexible bottom and provided with a spout, and a false bottom dividing the body into two compartments, a tube leading from the false bottom and projecting into the spout, a valve in the lower part of the tube and opening into the same, a second tube leading from the false bottom and opening into the lower compartment, said tube having its upper end extending into the upper portion of the body, and a downwardly-opening valve in the second tube, as set forth.

2. An oil-can, comprising a body having a flexible bottom and provided with a spout and a false bottom dividing the body into two compartments, a tube leading from the false bottom and projecting into the spout, a spring-pressed valve in the lower portion of the tube and opening into the same, a second tube leading from the false bottom and having its open upper end extending into the upper portion of the body and adjacent to the first-named tube, and a spring-pressed valve in the lower end of the said second tube and opening into the compartment below the false bottom, as set forth.

3. An oil-can consisting of a body having a flexible bottom and provided with a spout and a false bottom dividing the body into two compartments, a tube leading from the false bottom and projecting a short distance into the spout of the body, a spring-pressed valve in the lower portion of the tube and opening into the tube, a second tube leading from the false bottom to the upper portion of the body, a spring-pressed valve in the lower portion of the tube and opening into bottom compartment of the body, and an inwardly-opening valve in the upper portion of the body for the admission of air, as set forth.

703,868. EMBOSSED WALL-COVERING. RICHARD VÖLKER, Budapest, Austria-Hungary. Filed Apr. 3, 1902. Serial No. 101,132. (No model.)

Claim.—1. A wall-covering consisting of a suitable backing carrying a compound consisting of magnesite, asbestos, gypsum, dextrine and magnesium chlorid.

2. A wall-covering consisting of a backing of woven fabric, and a plastic composition secured thereto consisting of magnesite, asbestos, gypsum, dextrine and magnesium chlorid.

3. A wall-covering consisting of a backing of suitable material and a plastic composition secured thereto, consisting of twenty parts of magnesite, ten parts of asbestos, thirty parts gypsum, twenty parts of dextrine and twenty parts of magnesium chlorid.

703,864. NAPKIN-SUPPORT. WILLIAM R. WALKER, Sabula, Iowa. Filed Mar. 25 1902. Serial No. 99,937. (No model.)

Claim.—A napkin holder and support consisting of a spring-band formed of two sections, one of said sections having an intermediate slot and connected at one end to the intermediate portion of the other section, the latter having an end overlapping the first-named section and forming a spring-clasp, and a stud carried by the free end of said clasp and sliding in said slot, substantially as set forth.

703,864.

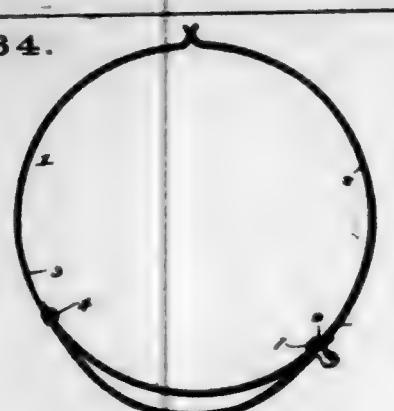

703,865. GRATE. THOMAS J. WALTON, Corsicana, Tex. Filed Jan. 28, 1902. Serial No. 91,796. (No model.)

Claim.—1. A grate having a body, ribs connected to the body and converging toward the top of the grate, a crown-piece connected with the upper ends of the ribs and rings surrounding the ribs and located in superposed order and being of progressively-decreasing diameter from the bottom toward the top, combined with a spindle for rotatively supporting said grate.

2. A grate having a body, ribs connected to the body and converging toward the top of the grate a crown-piece connected with the upper ends of the ribs and rings surrounding the ribs and located in superposed order and being of progressively-decreasing diameter from the bottom toward the top, combined with a spindle for rotatively supporting said grate, and a base-piece having a perforation to receive the spindle and the latter being keyed in place.

3. A grate having a body, ribs connected to the body and converging toward the top of the grate, a crown-piece connected with the upper ends of the ribs, rings surrounding the ribs and located in superposed order and being of progressively-decreasing diameters from the bottom toward the top, and a squared extension upon the crown-piece for receiving a poker.

4. A grate having a body, ribs connected to the body and converging toward the top of the grate a crown-piece connected with the upper ends of the ribs, rings surrounding the ribs and located in superposed order and being of progressively-decreasing diameters from the bottom toward the top, and a squared extension upon the crown-piece for receiving a poker and its upper end being shouldered and the crown-piece having holes for the insertion of a poker.

5. A spindle having weakened portions at its upper end combined with a grate having a socket to receive said upper end, and means adjustably carried by the spindle to support the grate.

6. A base-piece having a vertical spindle provided with deep annular grooves at its upper end combined with a grate having a socket to receive said upper end, and a collar adjustable on the spindle for supporting the grate.

703,866. TYPE-WRITING MACHINE. GEORGE B. WEBB, Westfield, N. J., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y., a Corporation of New York. Original application filed Mar. 2, 1897, Serial No. 625,724. Divided and this application filed Feb. 21, 1902. Serial No. 671,026. (No model.)

Claim.—1. In a type-writing machine, the combination of the roller-bearing carriage 2, the platen-carrier 3 hinged or pivotally connected there-

to, roller-bearings for supporting the vertical component of the weight of the same, and additional rollers for supporting the turning moment of said weight and without adding to the pressure on the first-named supporting-rollers.

2. In a type-writing machine, the combination of the roller-bearing carriage 2, a platen-carrier hinged or pivotally connected thereto, roller-bearings for supporting the vertical component of the weight of the same, and additional means for supporting the turning moment of said weight and without adding to the pressure on said roller-bearings.

3. In a type-writing machine, the combination of a roller-bearing carriage, a shifting platen-carrier pivotally connected or hinged thereto, roller-bearings for supporting the vertical component of the weight of the same, and additional means for supporting the turning moment of said weight without adding to the pressure on said roller-bearings, and means for holding the carriage in position when the carriage is shifted violently.

4. In a type-writing machine, the combination of a roller-bearing carriage, a shifting platen-carrier pivotally connected or hinged thereto, roller-bearings for preventing lateral vibration of said carriage and for supporting the weight of the same, and additional means for preventing said carriage from being lifted from its roller-bearings.

5. In a type-writing machine, the combination of a roller-bearing carriage, a shifting platen-carrier pivotally connected or hinged thereto, roller-bearings for sustaining the weight of the carriage, additional means for preventing said carriage from being lifted from its roller-bearings and additional means for preventing said carriage from turning when the platen-carrier is shifted violently.

6. In a type-writing machine, the combination of a roller-bearing carriage having a horizontal top and two depending vertical sides, a fixed track or way having a horizontal bearing and a vertical bearing, rolls or balls within the rectangular space formed by said top and one of said sides and by the horizontal and vertical bearings of the fixed rail, a ball or roller for the other depending side of said carriage, and a fixed bearing therefor.

7. In a type-writing machine, the combination of a roller-bearing carriage having a horizontal top and two depending sides, a platen-carrier hinged or pivotally connected to said carriage, a fixed rail having adjacent bearings arranged at right angles to each other and opposing the bearings formed by the under side of the said top and the inner face of one of said depending sides, rolls or balls arranged to contact with said bearings, a ball or roller for the other depending side of said carriage, and a fixed bearing therefor.

8. In a type-writing machine, the combination of a roller-bearing carriage having a horizontal top and two depending sides one of which is longer than the other, a platen-carrier hinged or pivotally connected to said carriage, a fixed rail having two bearing-faces opposing the bearing-faces formed by the under side of the top and the inner side of the shorter depending side of the carriage, rolls or balls interposed between said bearings, and a ball or roller bearing for the longer depending side of said carriage.

9. In a type-writing machine, the combination of a roller-bearing carriage comprising a horizontal top and two depending sides, a fixed rail having a horizontal bearing and a vertical bearing, rolls or balls for said bearings and for the bearings formed by the said top and one of said sides, a roller attached to the other one of said depending sides, and a fixed bearing for said roller.

10. In a type-writing machine, the combination of a roller-bearing carriage comprising a horizontal top and two depending sides, a fixed rail having a horizontal bearing and a vertical bearing, rolls or balls for said bearings and for the bearings formed by said top and one of said sides, a roller attached to the other one of said depending sides, a fixed bearing for said roller, and a platen-carrier hinged or pivotally connected to said carriage.

11. In a type-writing machine, the combination of a roller-bearing carriage comprising the top 13, the two depending sides 14 and 15, the fixed rail having the bearings 17 and 18, the interposed rolls or balls, the bearings 29, the roll 26, the hook 25, and the groove in the fixed rail.

12. In a type-writing machine, the combination of a roller-bearing carriage comprising a horizontal top and two depending sides, a shifting platen-carrier hinged or pivotally attached thereto, a fixed rail having bearings 17, 18 and 29 and the groove 27, the interposed pairs of rolls 20 22 arranged crosswise of each other, the roll 26, and the hook 25.

13. In a type-writing machine, the combination of a carriage, a set of roller-tracks or bearing-surfaces, a set of rollers for sustaining the vertical component of the weight of the carriage, and another set of crosswise rollers, as 22, 26 for preventing vibration of the carriage in a horizontal plane.

14. In a type-writing machine, the combination of a carriage, a set of roller tracks or bearings, a set of rollers for sustaining the vertical component of the weight of the carriage, and a set of crosswise rollers, as 22, 26, for preventing the carriage from either vibrating in a horizontal plane or swinging upon the first-mentioned set of rollers.

15. In a type-writing machine, the combination of a set of roller-tracks, a carriage overhanging forwardly of said tracks, a set of rollers for sustaining said carriage, and a set of crosswise rollers for preventing either lateral vibration or tipping of said carriage.

16. In a type-writing machine, the combination of a set of tracks or bearing-surfaces, a carriage, rollers for sustaining said carriage, and crosswise rollers for preventing lateral vibration of said carriage, each of said rollers being held in contact with its coacting track or bearing-surface by the weight of said carriage.

703,867. VETERINARY SURGEON'S FLOAT. PAUL J. WEBER, Chicago, Ill., assignor to Sharp & Smith, Chicago, Ill., a Firm. Filed Dec. 28, 1901. Serial No. 87,500. (No model.)

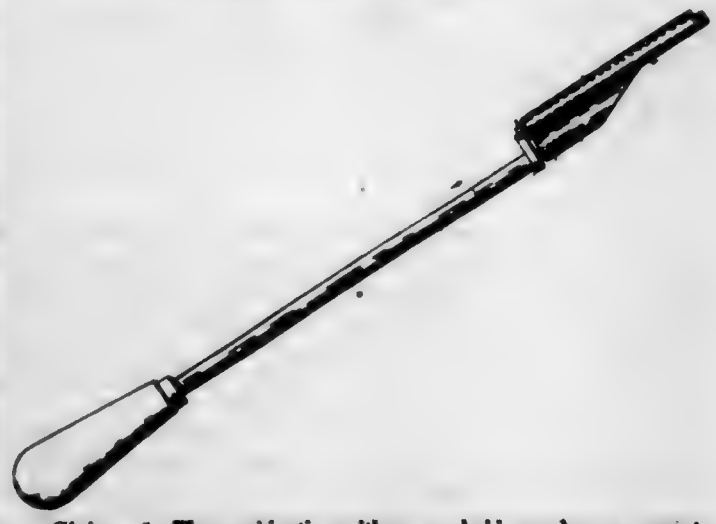

Claim.—1. The combination with a rasp-holder, and a rasp mounted thereon, of means for engaging the upper surface of the rasp, a handle bar or rod rotatably secured to one end of said holder, and a device integral with said bar or rod and adapted upon the rotation thereof to contact the under face of the rasp and force it upward into binding engagement with the said means for engaging the upper surface of the rasp, substantially as specified.

2. The combination with a rasp-holder consisting of a plate provided with grooved side flanges, and a rasp slidingly mounted thereon, of a handle bar or rod rotatably secured to one end of said holder and provided with an integral lug adapted to be forced against the under face of the rasp, substantially as specified.

3. The combination with a rasp-holder consisting of a plate provided with grooved side flanges, and a rasp slidingly mounted thereon, of a handle bar or rod rotatably secured to one end of said holder and provided with an integral lug having a cam-face, said rod or bar being adapted to be moved to force said cam-face against the under face of the rasp, substantially as specified.

4. The combination with a rasp-holder consisting of a plate provided with grooved side flanges, and a rasp mounted thereon with its edges within the grooves in said flanges and its rear edge projecting beyond the rear end of the holder, said grooves being unobstructed at each end, of a handle bar or rod rotatably secured to the rear end of said holder, and a lug carried by said handle bar or rod and adapted upon the rotation of said bar or rod to contact the under surface of the projecting lower end of the rasp and force said rasp up into binding engagement with the upper faces of the grooves in the side flanges, substantially as specified.

708,868. VETERINARY SURGEON'S FLOAT. PAUL J. WEBER, Chicago, Ill., assignor to Sharp & Smith, Chicago, Ill., a Firm. Filed Jan. 16, 1902. Serial No. 89,993. (No model.)

Claim.—1. The combination with a holder adapted to receive a rasp and provided with a socket, of a sliding pressure device within the socket adapted to exert pressure upon the face of the rasp, a handle bar or rod adjustably connected with said sliding pressure device, and means for com-

pelling a movement of said pressure device in an opposite direction to the movement of the handle bar or rod when said handle bar or rod is being adjusted to an operative position, substantially as specified.

2. The combination with a holder adapted to receive a rasp, of a handle bar or rod adapted to be attached at one end of said holder, movable means carried by said holder and adapted to be pressed against one face of the rasp to cause the opposite face of said rasp to engage said holder, means for adjustably connecting said handle bar or rod with said movable means, whereby, upon the adjustment of said handle bar or rod, said movable means will be forced into position to secure said rasp in place, substantially as specified.

3. The combination with a holder, and a rasp mounted thereon, said holder being provided with a socket, of a pressure device within said socket, a screw-threaded shank connected with said pressure device, a handle bar or rod adapted to be screwed upon said shank, and means for causing the device within the socket to move and exert a pressure upon the face of the rasp carried by the holder when the handle bar or rod is screwed up on said shank, substantially as specified.

4. The combination with a holder, and a rasp mounted thereon, said holder being provided with a socket, of a pressure device within said socket, a screw-threaded shank connected with said pressure device, a handle bar or rod adapted to be screwed upon said shank, means for preventing rotation of said shank, and means for causing the device within the socket to exert a pressure upon the face of the rasp carried by the holder when the handle bar or rod is screwed up on said shank, substantially as specified.

5. The combination with a holder adapted to receive a rasp, said holder having a socket near one end and a slot in its end wall, and provided also with a plurality of bearing-faces, of a pressure device within said socket, a screw-threaded shank attached at one end to said pressure device and projecting through said slot, and a handle bar or rod screw-threaded onto the other end of said shank and adapted to be screwed up against one of said bearing-faces, substantially as specified.

6. The combination with a holder having grooved side flanges 8 adapted to receive the side edges of a rasp, and having a socket near one end and a slot in the rear wall communicating with said socket, of a head located in said socket, a screw-threaded shank connected with said head and extending through said slot, a handle adapted to be screwed upon said shank, and means for causing said head to move and exert a pressure upon the under face of the rasp to bind it in the grooves of said side flanges, substantially as specified.

7. The combination with a holder adapted to receive a rasp, said holder being provided on one end with a plurality of bearing-faces, of a handle bar or rod adapted to be forced and held against any of said bearing-faces, and means for locking said rasp in the holder, said locking means being connected with said handle bar or rod and caused to move and lock the rasp upon said handle bar or rod being forced against any of said bearing-faces, substantially as specified.

8. The combination with a holder adapted to receive a rasp, said holder being provided on one end with a plurality of bearing-faces, of a handle bar or rod adapted to be forced and held against any of said bearing-faces, locking means carried by the holder and located below the seat for the rasp, and a connection between said locking means and handle bar or holder, said locking means being adapted to move and exert a pressure against the face of the rasp upon said handle bar or rod being forced against any of said bearing-faces, substantially as described.

9. The combination with a holder adapted to receive a rasp, said holder having a socket near one end, of a movable plate located above said socket, a pressure device within said socket adapted to be forced against said plate, a screw-threaded shank connected with said pressure device, a handle bar or rod adapted to be screwed upon said shank, and means for causing the pressure device within the socket to move against the plate and force it upward when the handle bar or rod is screwed up on said shank, substantially as specified.

10. The combination with a holder adapted to receive a rasp, said holder having a socket near one end, of a plate located above said socket and provided with an inclined face, a pressure device within said socket adapted to be forced against said plate, a screw-threaded shank connected with said pressure device, a handle bar or rod adapted to be screwed upon said shank, and means for causing the pressure device within the socket to move against the inclined face of the plate and force it upward when the handle bar or rod is screwed up on said shank, substantially as specified.

11. The combination with a holder adapted to receive a rasp, the said holder having a socket near one end and a slot in its end wall, of a movable plate, a pressure device within said socket adapted to be forced against said plate, a screw-threaded shank connected with said pressure device, a handle bar or rod adapted to screw upon said shank, and means for causing the pressure device within the socket to move against the plate and force it upward when the handle bar or rod is screwed up on said shank, substantially as specified.

708,869. VETERINARY SURGEON'S FLOAT. PAUL J. WEBER, Chicago, Ill., assignor to Firm of Sharp & Smith, Chicago, Ill. Filed Feb. 19, 1902. Serial No. 94,752. (No model.)

Claim.—1. In a handle, the combination with a tubular portion having its outer end slit to form lips, and a block secured on the inner face of one of said lips, of a stem or shank in said tubular portion adapted to be moved longitudinally thereof, said stem or shank having a longitudinal channel or groove and said block being slidable in said channel or groove whereby considerable adjustment of said tubular portion and stem or shank is obtained, a movable sleeve surrounding said tubular portion and provided with an inclined slot, and a projection on said tubular portion that enters said slot, substantially as specified.

2. In a handle, the combination with a tubular portion having at its outer end a lip, and a block on the under face of said lip, said combined lip and block being thicker at the outer end than at the inner end, of a stem or shank in said tubular portion adapted to be moved longitudinally thereof, said stem or shank having a longitudinal channel or groove and said block being slidable in said channel or groove whereby considerable adjustment of said tubular portion and stem or shank is obtained, and a movable sleeve surrounding said tubular portion and adapted to force said block tightly into said channel or groove, substantially as specified.

3. In a handle, the combination with a tubular portion having its outer end slit to form lips, and a block thicker at its outer end than at its inner end secured to the inner face of one of the lips, of a stem or shank in said tubular portion and adapted to be moved longitudinally thereof, said stem or shank having a longitudinal channel or groove adapted to receive said block, a removable stop in said channel or groove near the rear end thereof, and a movable sleeve surrounding said tubular portion and adapted to force said block tightly into said channel and serving also as a cover for an opening in the tubular portion through which the said stop is adapted to be entered and removed, substantially as specified.

708,870. **BOTTLE-FILLING MACHINE.** JACOB E. WEBB, Philadelphia, Pa., assignor of one-half to S. Tyrtchell Company, Camden, N. J., and Philadelphia, Pa., a Corporation of New Jersey. Filed Mar. 6, 1902. Serial No. 96,579. (No model.)

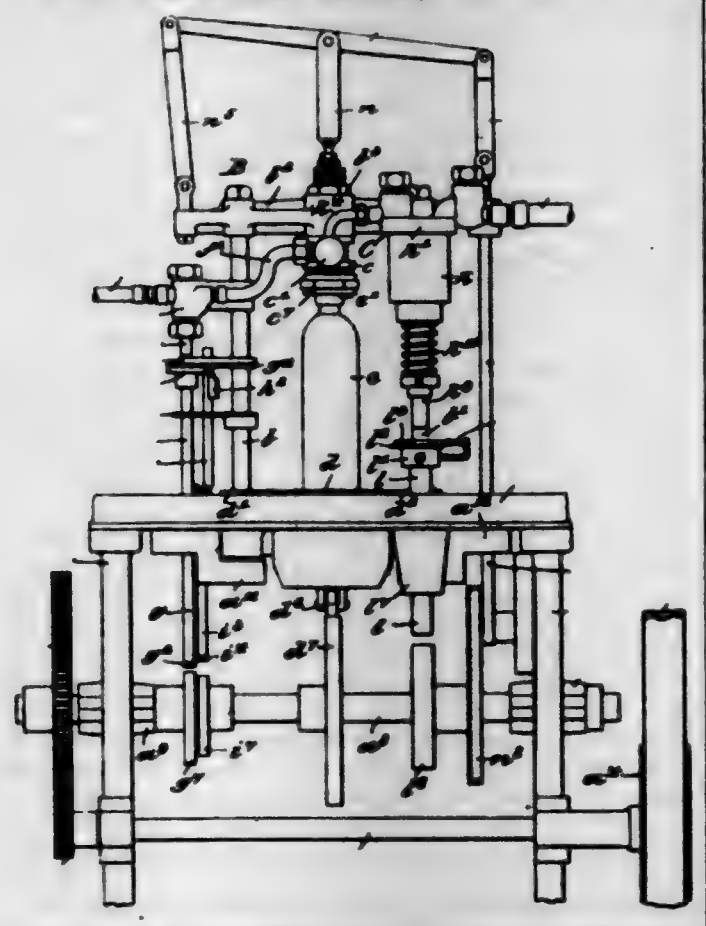

Claim.—1. In a bottle-filling machine, in combination with a filling head, a yielding support upon which the bottle is placed and located below the filling-head, an inlet for the liquid to the filling-head, a valve controlling said inlet, a stem projecting from said valve, a plate arranged to oscillate beneath said stem, a shaft, a cam located on said shaft and arranged normally to operate the valve-stem through said plate to control said valve, a cam arranged on said shaft and adapted to elevate and depress the yielding support, said support having a movement independent of the movement imparted to it by said cam and shaft, and means controlled by the independent movement of said support and arranged to oscillate said plate to disconnect the valve-stem from its operating-cam.

2. In a bottle-filling machine, a filling-head and means for supplying the same with a liquid, a cooling-plunger traversing the filling-head, in combination with a support, a yielding table for the bottle arranged within the support and having a movement independent of said support, means controlled by the operation of the machine and arranged to elevate and depress the support and to reciprocate the cooling-plunger, mechanism actuated by the operation of the machine and arranged to control the liquid-supply to the filling-head and means actuated by the independent movement of the table and arranged to control said mechanism.

3. In a bottle-filling machine, a filling-head and means for supplying the same with a liquid, in combination with a support, a yielding table for the bottle arranged within the support and having a movement independent of said support, means controlled by the operation of the machine and arranged to elevate and depress the support, mechanism actuated by the operation of the machine and arranged to control the liquid-supply to the filling-head, and means actuated by the independent movement of the table and arranged to control said mechanism.

4. In a bottle-filling machine, a filling-head, an inlet for liquid to said head and an inlet for syrup to said head, in combination with a support, means controlled by the operation of the machine and arranged to elevate and depress said support, a yielding table for the bottle having a movement in the support independent of the elevation and depression of said support, mechanism actuated by the operation of the machine and arranged to control the liquid and syrup inlets, and means actuated by the independent movement of the yielding table and arranged to control said mechanism.

5. In a bottle-filling machine, a filling-head, an inlet for liquid to said head, a valve controlling said inlet, a plunger controlling said valve, a shaft, and intermediate mechanism adapted normally to elevate and depress said plunger, an oscillating plate interposed normally between the plunger and said intermediate mechanism, a yielding support for the bottle adapted to be elevated and depressed by said shaft, and intermediate means controlled by the support arranged to withdraw said oscillating plate when the support is elevated, whereby operation of said inlet-valve is prevented.

6. In a bottle-filling machine, a filling-head, an inlet for liquid to said head, an inlet for syrup to said head, a valve controlling each inlet, a plunger controlling each valve, a shaft and intermediate mechanism adapted normally to elevate and depress said plungers, an oscillating plate normally interposed between each plunger and its intermediate operating mechanism, a yielding support for the bottle, means controlled by said shaft for elevating and depressing said support, and intermediate means controlled by the upward movement of the support arranged to withdraw both oscillating plates to thereby prevent the operation of both inlet-valves.

708,871. **CURRENT-WHEEL.** JAMES A. WELLS and JESSE D. SEGRAVE, Knight, Tex. Filed Aug. 7, 1901. Serial No. 71,188. (No model.)

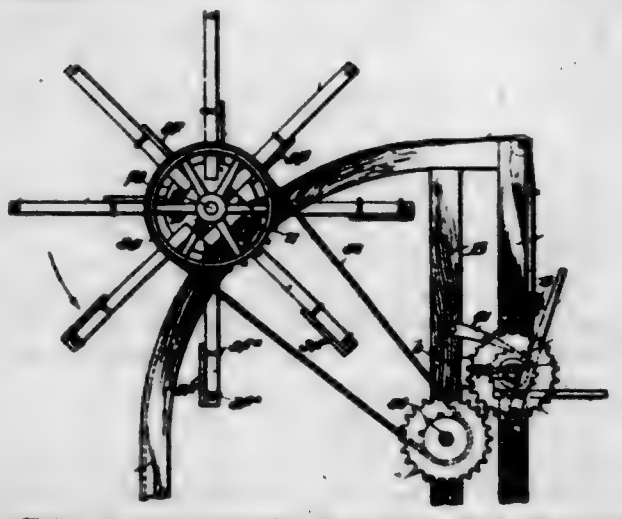

Claim.—1. The combination of a frame provided with spaced and curved standards having longitudinal channels in their outer faces, sliding bearings mounted in the channels of the standards, a water-wheel mounted in the said bearings and having a sprocket-wheel on one end of its shaft, a driven shaft provided with a sprocket-wheel and a gear-wheel, a chain belt passing around the said sprocket-wheels, a winding-shaft mounted in the frame and provided with drums, a ratchet-wheel, and a gear-wheel for meshing with the gear-wheel of the driven shaft, one end of the said shaft having sliding movement in its bearing, a pawl engaging the ratchet-wheel, a lever pivoted to the frame and connected with the end of the sliding shaft whereby the shaft may be moved to throw its gear-wheel in and out of mesh with the gear-wheel of the driven shaft, and cables having one end secured to the sliding bearings of the water-wheel shaft passed over roller-guides and their other ends secured to the drums of the winding-shaft, substantially as herein shown and described.

2. The combination of a frame provided with spaced standards having channels in their outer faces, sliding blocks mounted in the channels of the standards, a water-wheel mounted in said blocks, a driven shaft provided with a gear-wheel at one end, gearing between the said shaft and the shaft of the water-wheel, a winding-shaft mounted in the frame and provided with a ratchet-wheel, and a gear-wheel, one end of the said shaft having sliding movement in one of the bearings therefor, a pawl engaging the said ratchet-wheel, a lever pivoted to the frame and connected with the sliding end of the said shaft, whereby the shaft can be moved to throw the gear-wheel carried thereby into and out of mesh with the gear-wheel of the driven shaft, and cables having one end secured to the sliding blocks passed over guides and their other ends connected with the winding-shaft, substantially as described.

708,872. **TRACTION-ENGINE.** JESSE O. WELLS, Des Moines, Iowa. Filed Oct. 1, 1900. Serial No. 31,837. (No model.)

Claim.—1. In an automobile, fire-engine or motor-vehicle, the combination of the wheeled truck, the engine on said truck, reducing-gear connections between said engine and the traction-wheels of the truck, gear connections between said engine and the machine to be driven and means for elevating said traction-wheels.

2. In an automobile, fire-engine or motor-vehicle, the combination of the traction-truck, the engine thereon, the machine to be driven, means

for elevating the traction-wheels and shiftable power-transmitting connections between the engine and traction-wheels and between the engine and machine to be driven.

3. In a traction-engine the combination of the traction-truck, lifting-jacks hinged adjacent to the rear axle of the truck and arranged for manual actuation independent of each other whereby said traction-truck may be elevated to clear the traction-wheels from the tread-surface and means for attaching said traction-engine to a machine to be driven.

4. In a traction-engine the combination of the traction-truck, the pick-wheel hinged to and arranged for vertical oscillation or adjustment on the rear axle of said truck and geared thereto; and a clutch connecting the gearing of the pick-wheel to the rear axle of the truck and arranged to be disconnected from said pick-wheel at times, and means for connecting said traction-engine to a machine to be driven.

5. In a traction-engine the combination of the traction-truck, the pick-wheel hinged and geared to the rear axle of said truck and clutch mechanism interposed between said pick-wheel gear and rear axle.

6. In a traction-engine the combination of the traction-truck, the lifting-jacks hinged thereto and arranged in divergent planes relative to each other and means for attaching said traction-engine to a machine to be driven.

7. In a traction-engine the combination of the traction-truck, the jacks hinged thereto and arranged for independent elevation whereby the truck may be leveled on an inclined or irregular surface and means for attaching said traction-engine to a machine to be driven.

8. In a machine of the class described the combination of the wheeled truck, the engine thereon, the machine to be driven carried on said truck and shiftable gear connections between said engine and the traction-wheels and between said engine and the machine to be driven, together with jacks located in divergent planes whereby the truck may be elevated, which jacks are susceptible of independent elevation.

9. In a machine of the class described the combination of the traction-wheels, the engine, the machine to be driven and means for elevating said traction-wheels, together with gear connections between said engine, traction-wheels and machine to be driven whereby in the elevation of said traction-wheels they partake of the characteristics of balance-wheels for the engine and driven machine.

10. In a machine of the class described the combination of the traction-wheels, the engine, the machine to be driven, means for elevating said traction-wheels and shiftable gear connections between the engine, traction-wheels and driven machine.

703,873. PORTABLE TRIPOD. CHARLES WHITHAM, Rankin, Canada. Filed Aug. 28, 1901. Serial No. 73,017. (No model.)

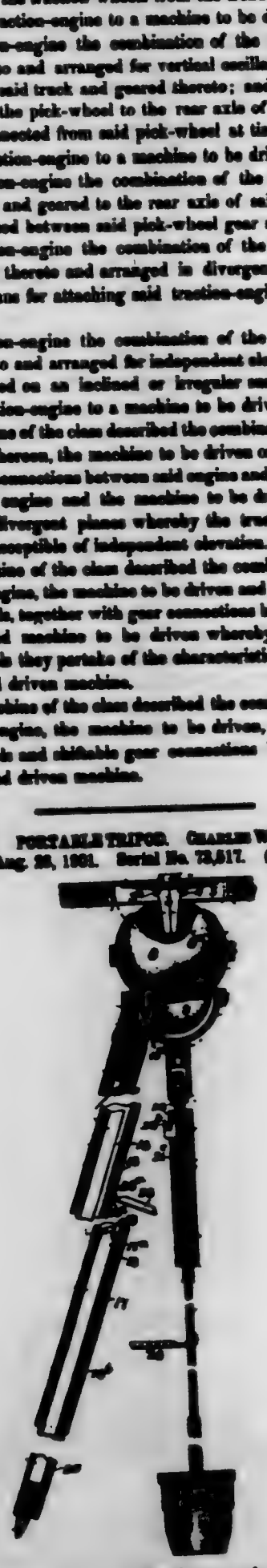

Claim.—1. In a tripod of the character described, the combination with a head having a tapered socket; of a supporting member having a tapered plug, said plug consisting of two pieces each independently hinged to swing up into the same horizontal plane and down into a vertical plane with their contiguous edges abutting, whereby to provide a member adapted to fit the tapered socket and means on the supporting member for maintaining the two plug members at their different adjusted positions, substantially as shown and for the purposes described.

2. In combination with a tripod-head, a hinged leg, having an outer hemispherical convex surface depending from the base of the head; an inner hemispherical shell at a suitable distance from the same, and having its concave interior and convex exterior surfaces concentric with the first-named convex surface; the said outer hemispherical shell having three elongated openings or slots; three hinge-pieces, said hinge-pieces being sections of a hemispherical shell of the thickness of the space between said hemispherical surfaces, each hinge-piece having an outwardly-projecting pin passing through the slots; tripod-legs attached to said projecting pins, and having their upper ends shaped to conform to the outer spherical hinge-surface, all being arranged substantially as shown and for the purposes described.

3. In a tripod of the class described, legs made in two lengths, the lower telescoping within the upper; a solid end in the upper end of each upper length, hinged to the head; a longitudinal division-plate in the upper length, preserving a uniform tube-section for the lower length to slide within; a pivoted spring-latch adapted to check the upward movement of the lower length, within the upper leg length, but allowing free downward movement, such latch being reversible on its pivot so as to resist downward, while allowing free upward movement; apertures in the upper length above and below the pivot to allow the latch to engage the lower length within the upper tubular length, in either position of the latch, and means in the lower length to engage and retain the lower length, when telescoped within the upper length, all substantially as described.

4. In a tripod as described, having hollow telescopic legs working on a hemispherical hinge-surface, in combination, a depending tubular spring-casing attached to the under side of the hinge-surface, and approximately half the length of the upper leg member; an internally-screwed sleeve fixed in the upper end of this tube; a screw in the lower center of the outer hinge-surface, countersunk on the inside, to attach, by the screwed sleeve, the tube to the head; a bushing screwed in the lower end of the spring-tube; a stem sliding within such bushing and having at its upper end a screwed portion to engage the lower half of the screwed sleeve, and just below such screwed portion a fixed collar slidable within the tube; a spiral spring surrounding the stem and within the tube; a reduced portion on the stem exterior to the tube, having a shoulder at the change of diameter, a spreader device having apertured end members, said reduced portion passing through the apertures in the ends of the spreader; a shoulder below the spreaders and a bottom ferrule secured to slide over the ends of the legs when closed, all substantially as described.

5. In a tripod, telescopic leg members, a center stem, a spreader-strut hinged at one end to about the middle of each upper leg length and having the other end flattened and provided with an oval hole, the minor axis of which is the diameter of the center stem on which it slides, and the major axis twice that; said strut having a right-angled upward bend across the center of the oval hole, adapted to allow the struts when free on the center stem to assume positions parallel to or at right angles to it, and shoulders on the center stem adapted to engage the ends of the spreader-struts and push them up or pull them down, as described.

6. A tripod of the class described, comprising leg members each formed of telescopic upper and lower sections, a central stem, a spreader-strut hinged to each upper leg-section, said spreader having its inner ends flattened and said flattened ends each having an oval aperture, the width and length of which is respectively the diameter and twice the diameter of the reduced portion of the central stem which it engages and slides in, and the said ends also having upwardly-bent right-angle portions, substantially as shown and for the purposes described.

7. In a tripod having inwardly-closing legs, a device for holding and releasing the legs consisting of a spring-controlled central stem having an end ferrule to secure the leg ends; a hook-sleeve actuated by such spring having equally-disposed outwardly-projecting and upwardly-directed hooks; a spring-casing having slots through which such hooks project and have a limited vertical movement, and means on each leg whereby the hooks may engage and retain the legs to the central stem and close to one another.

8. In a tripod of the class described, a headpiece having a socket, a member adapted to be attached to the article to be held, a tapered plug consisting of half-sections, each being independently pivoted to the said member to swing outward and against the said member, and to close toward and against each other, and pendent from said member whereby to adapt the plug to enter the socket in the headpiece, as set forth.

9. In a tripod of the character described, the combination with the socketed headpiece; of the object-holder *b*, the tapered plug-sections 3 hinged on the lower side of the holder to swing upward and outward from each other to a horizontal position and downward against each other to a vertical position, and means for sustaining said sections in either position, as set forth.

10. In a tripod of the character described, a headpiece having a pendent convex surface, a shell concaved on a plane concentric with the pendent head-surface, and having elongated openings, hinge-pieces slidable between the convexed and concaved members, said pieces having pins projected through the openings in the shell, and tripod-legs secured to the said pins, as set forth.

11. In a tripod of the character described, a headpiece having a pendent convexed inner shell, an outer shell concentric with the inner shell, and having longitudinally-elongated openings, members movably held between the inner and outer shells, and having studs or pins projected through the openings in the outer shell, tripod-legs detachably secured to the projecting ends of said pins, the attached ends of said legs being shaped to snugly bear against the outer shell, all being arranged substantially as shown and described.

12. In a tripod or supporting apparatus of the character described, the combination with the headpiece, the spherical bearing and the attaching members for joining the legs to the head, slidable on the spherical bearing; of leg members, each having a solid end adapted to detachably connect with the slidable members, said legs consisting of two lengths telescopically joined, and a reversible spring-latch device on the leg members for holding the lower leg-section to its closed-in or extended position, for the purposes specified.

13 In an apparatus as described, the combination with the head, the hinged legs and the centrally-pendent tubular stem; of spreader-struts each consisting of a body portion concaved in cross-section adapted to close up against the tubular stem, one end of said struts having a hinged connection with the legs, the other end having a pivotal and slidable connection with the tubular stem, all being arranged substantially as shown and for the purposes described.

14. In combination with the head of a tripod of the class described, a square tapered socket in the head; a plug or stem designed to fit such socket and composed of two pieces contiguous in a vertical plane through the axis of the plug; a hinge-pin at the outer edge of the base of the taper in each piece; a suitable mounting for the same, having a recess in the walls of which the hinge-pins pivot; and a flat spring in the bottom of the recess, bearing on the square outer corners of the base of the plug members and having an aperture in the center of the recess, substantially as described.

708,874. BOTTLE-FILLING DEVICE. CHARLES T. WHITE, South Bend, Ind., assignor of one-half to Abner B. Graham, South Bend, Ind. Filed Oct. 14, 1901. Serial No. 78,647. (No model.)

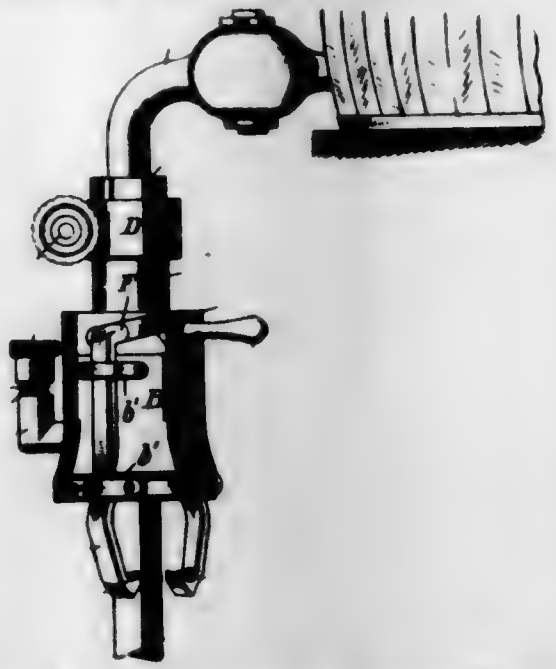

Claim.—1. In a bottling device, the combination of the body having an air-chamber, adjustable bottle-clamps slidably attached to the body and depending below the same, a gasket around the mouth of the chamber at the lower end of the body, and a cam-ring rotatably mounted on the body engaging and operating said clamps, substantially as described.

2. In a bottling device, the combination of the body having an air-chamber, a gasket around the mouth of the air-chamber, a filling-tube extending through the body, vertically-movable bottle-holding clamps slidably attached to the sides of the body, a cam-ring rotatably mounted on the body provided with cam-grooves engaged by the clamps, and an air-vent tube communicating with the chamber, and provided with means for regulating the escape of air, substantially as described.

3. In a bottling device, the combination of the body having an air-chamber, means for attaching the body to a faucet, a filling-tube extending through the air-chamber, a gasket around the mouth of the chamber at the lower end of the body, vertically-adjustable bottle-clamps slidably attached to the body and depending below the same, and a cam supported on the body and engaging and operating said clamps, substantially as described.

4. In a bottling device, the combination of the body having an interior air-chamber, a gasket around the mouth of the chamber, vertically-adjustable bottle-clamps slidably attached to the sides of and depending below said body, a cam-ring above the air-chamber for simultaneously operating said clamps, so as to cause them to engage the bottle-neck and hold it tightly against the gasket, an air-venting pipe communicating with the chamber, a valve therein and means for regulating the pressure of the valve, substantially as described.

5. In a bottling device, the combination of the body having an interior air-chamber, a filling-tube extending through said chamber, and a gasket around the mouth of the chamber; with vertically-movable bottle-clamps slidably attached to the sides of the body and depending below the same having bottle-catching hooks on their lower ends, the cams above the air-chamber engaging the bottle-clamps, the air-vent attached to the body and communicating with the air-chamber thereof, a valve in said vent, a spring for seating said valve and means for regulating the pressure of the spring, substantially as described.

6. In a bottling device, the combination of the body having an air-chamber, a gasket around the mouth of the air-chamber, a filling-tube extending through the body, opposite bottle-holding clamps attached to the sides of the body, and a ring provided with cams adapted to be engaged by the clamps; with an air-vent pipe communicating with the chamber having a threaded end provided with venting-slots, and a screw-cap fitted on the threaded end of the pipe to regulate escape of air therefrom.

7. In a bottle-filling device, the combination of the body having an interior air-chamber, a sleeve connected to the body and provided with means for attachment to a faucet, a filling-tube for conducting liquids from said sleeve through the air-chamber, and a gasket around the mouth of the air-chamber; with vertically-adjustable bottle-clamps attached to the body, a ring surrounding the sleeve having cams engaging the said clamps, to actuate the latter, a vent-pipe communicating with the chamber, having air-slots, and an adjustable cap on the slotted end of the vent-tube, substantially as described.

8. In a bottle-filling device, the combination of the body having an interior chamber, means for attaching the body to a faucet, a filling-tube communicating with the faucet and extending through the air-chamber, and a gasket around the open mouth of the air-chamber; with sliding bottle-clamps on the sides of the body having their lower ends adapted to engage the neck of a bottle, a ring rotatably mounted on the body having cams engaging said clamps, a vent-pipe attached to the body and communicating with the air-chamber, said pipe having a threaded and slotted end, a screw-cap adjustably fitted on the threaded end of the vent-pipe, and a valve in the vent-pipe, all substantially as and for the purpose described.

9. In a bottle-filling device, the combination of the body, having an interior chamber, a split sleeve connected to one end of the body, a gasket therein and a clamp on the sleeve for attaching it to a faucet, a filling-tube communicating with the sleeve and extending through the air-chamber, and a rubber gasket around the open mouth of the air-chamber; with sliding bottle-clamps on the sides of the body having hooks or teeth on their lower ends to engage the neck of a bottle, a ring rotatably mounted on the body having cam-slots engaging said clamps, a vent-pipe attached to the body and communicating with the air-chamber, said tube having a threaded and slotted end, a screw-cap adjustably fitted on the threaded end of the vent-pipe, a ball-valve in the vent-pipe and a spring for seating the valve confined by said cap, all substantially as and for the purpose set forth.

708,875. ACTIVE MATERIAL FOR STORAGE BATTERIES AND PROCESS OF MAKING SAME. WALTER R. WEMPLE, San Francisco, Cal. Filed Mar. 14, 1901. Serial No. 51,300. (No specimens.)

Claim.—1. The process of forming an active material for storage batteries, consisting of suitably binding a mass of lead salt which will retain its conformation after immersion, and reducing it by electrolysis to spongy lead in an electrolyte which is a solvent for the lead salt, and from which solution lead trees essentially parallel to each other are plated out within the mass.

2. The process of forming an active material for storage batteries consisting of suitably binding a mass of lead oxids, rendering its surface electrically conductive, and reducing by electrolysis to spongy lead in an alkaline forming-bath, which is a solvent for the lead salt and from which solution lead trees essentially parallel to each other are plated out within the mass.

3. The process of forming an active material for storage batteries consisting in mixing an oxid of lead with a suitable binder whereby the

mass is rendered electrically conductive, and reducing it to spongy lead composed of lead trees essentially parallel to each other, by electrolysis, in an alkaline forming-bath.

4. The process of forming an active material for storage batteries, consisting in mixing an oxid of lead with a glycerin solution, and reducing the wet mass by electrolysis in an alkaline forming-bath in which the lead salt is soluble, and from which solution lead trees essentially parallel to each other are plated out within the mass.

5. The process of forming an active material for storage batteries, consisting in rendering a mass of a suitable lead salt electrically conductive, and reducing it to spongy lead, consisting of a mass of lead trees essentially parallel to each other by electrolysis in a forming-bath in which the lead salt is soluble.

6. An active material for storage batteries, composed of a compact mass of lead trees running essentially parallel to each other and perpendicular to its exposed surfaces, said mass occupying the volume of the unreduced salt from which it is formed.

708,876. RAIL-JOINT. SAMUEL M. WILSON, Marcus, Iowa. Filed Feb. 6, 1902. Serial No. 92,703. (No model.)

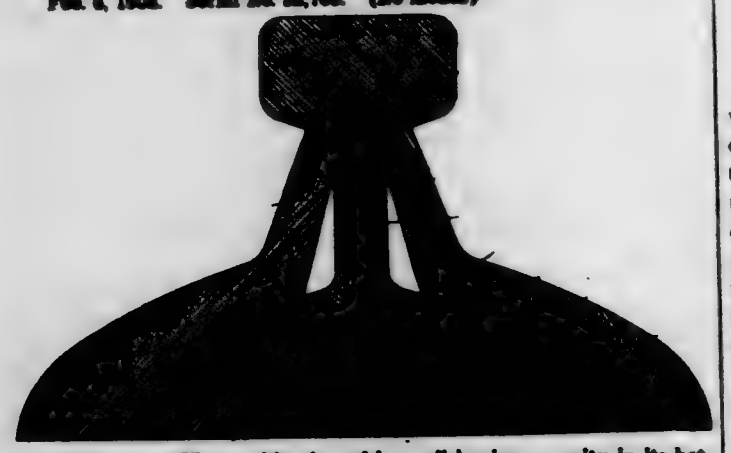

Claim.—1. The combination with a rail having a cavity in its bottom, of two joint-sections lying one on each side of the rail and having longitudinally-extending interlocking parts to fasten them together, and an upwardly-projected stud on one joint-section and adapted to enter the cavity, the cavity being larger than the stud, for the purpose specified.

2. A rail-joint, comprising two joint-sections with means for fastening them together, said sections lying on opposite sides of the rails and having portions lying under the base-flanges of the rails and also having upwardly and inwardly inclined flanges which engage the rails, for the purpose specified, and two studs carried on one fastener-section at opposite points thereon, said studs being located under the base-flanges of the rail-sections and being projected upward into cavities formed in the under faces of the base-flanges of the rail-sections.

3. The combination with rail-sections, each having a cavity in its bottom, of two joint-sections lying one on each side of the rail-sections and having means for fastening them together, and two upwardly-projected studs on one joint-section, said studs being adapted respectively to enter the cavities in the said rail-sections, and said cavities being larger than the studs, for the purpose specified.

708,877. HINGED GATE. ISAAC WOLVERTON, Portland, Oreg. Filed Feb. 6, 1902. Serial No. 92,801. (No model.)

Claim.—1. The combination with the hinged gate, and the foldable member A, disposed at an acute angle to the hinged end of the gate, and hinged at its lower end to swing upward; of the sliding latch *g*, and the double crank *e*, connected to the latch and the upper end of member A substantially as shown and described.

2. The combination with the hinged gate, the post *c*, and the foldable member A, hinged to post *c*, and arranged substantially as described; of the latch *g*, the double crank *e*, arranged in a vertical plane and having one member connected to the inner end of the latch and the other member connected to the outer end of the foldable member A, all being arranged substantially as shown and described.

3. The hereinbefore-described improved gate, comprising a gate hinged to tilt its upper part sidewise while moving to an open position, a foldable lever hinged at its outer end to project at an acute angle to the hinged end of the gate, said lever consisting of two sections *a a'*, the latter being hinged to fold flatwise on the former, the double crank *e* having one member adapted to join with the outer end of lever-section *a'*, the sliding latch *g*, with its inner end connected to the other crank member, the pivoted lever *q*, the pull-ropes and the guides therefor, all being arranged substantially as shown and described.

708,878. MEANS FOR SECURING STRAPS TO BUCKLES. FREDERICK WOODWARD, South Yarra, near Melbourne, Victoria, Australia. Filed Apr. 8, 1902. Serial No. 101,913. (No model.)

Claim.—In a device for securing straps to buckles, the combination with a buckle, of a base-plate consisting of a strip of material bent upon one end of the buckle and upon itself, means for rigidly securing together the bent portions of the strip, a pair of keepers formed of a flat strip of material depending from the lower face of the base near each end thereof, a stud depending from the base between the said pair of keepers, and a keeper of greater width than the first-mentioned keepers projecting from the upper face of said base a suitable distance from each end thereof, said keeper projecting from the upper face of the base formed of a flat piece of material, substantially as herein shown and described.

708,879. CARTRIDGE FOR ORDNANCE. ALFRED WAHSER, Rittenscheid, Germany, assignor to Fried. Krupp, Essen, Germany. Filed Apr. 27, 1901. Serial No. 57,646. (No model.)

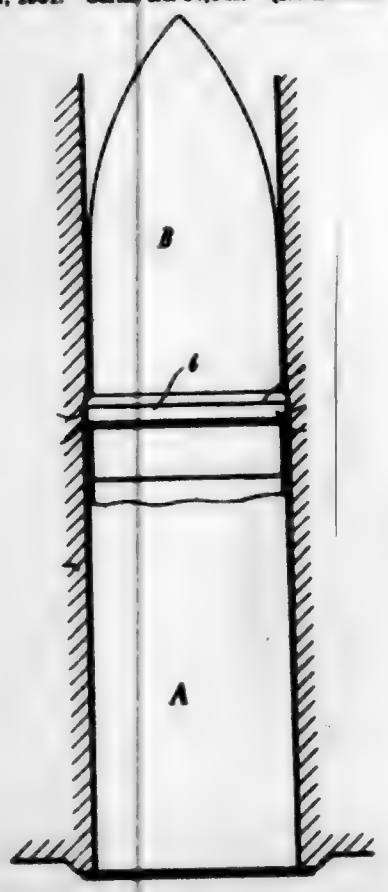

Claim.—1. A cartridge for ordnance comprising a projectile having one or more driving-bands and a case having an enlargement at its mouth into which one or more of said bands are inserted and the outer wall of the case adjacent to the enlargement being adapted to engage with the surrounding bore of the barrel, substantially as and for the purpose specified.

2. A cartridge for ordnance comprising a projectile having one or more driving-bands and a case having an enlargement at its mouth into which one of said bands is inserted, and said inserted band being provided with a shoulder adapted to rest upon the outer edge of the cartridge-case, substantially as described.

708,880. SOCKET-COVER AND GLOBE-HOLDER. JOHN F. WEIDE, Brooklyn, N. Y., assignor of one-half to Oliver R. Bonner, Brooklyn, N. Y. Filed Sept. 20, 1901. Serial No. 75,698. (No model.)

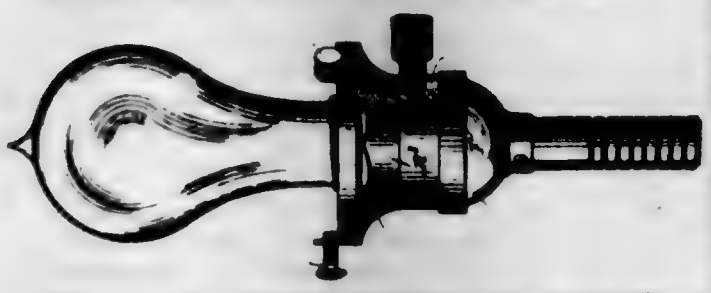

Claim.—1. As an article of manufacture an electric-light fixture comprising a cap adapted to serve as a support and provided with a screw, a socket-cover provided with a bayonet-slot for engaging said screw, said socket-cover being provided with a cylindrical portion and with a ring integrally connected with said cylindrical portion by a flaring neck, portions of said neck being cut and formed into a substantially cylindrical portion, the same forming an extension of said first-named cylindrical portion and located within said ring and concentric thereto, and a socket located partly within said cylindrical portion and partly within said cylindrical extension thereof.

2. An electric-lamp fixture comprising a combined socket-cover and globe-holder having a cylindrical portion to fit over the socket and a flaring portion connecting said cylindrical portion with the globe-holder and having portions of the flaring portion separated at their upper ends and at their sides and bent inwardly at their free ends to approximately coincide with the cylindrical portion which fits over the socket whereby to form a prolongation of said cylindrical portion toward the outer end of the fixture substantially as and for the purposes set forth.

708,881. DRIVING-GEAR FOR MOTOR-VEHICLES. KARL H. WEISZ, Rochester, Pa., assignor of one-half to Phillip Lee, Rochester, Pa. Filed Sept. 26, 1901. Serial No. 76,801. (No model.)

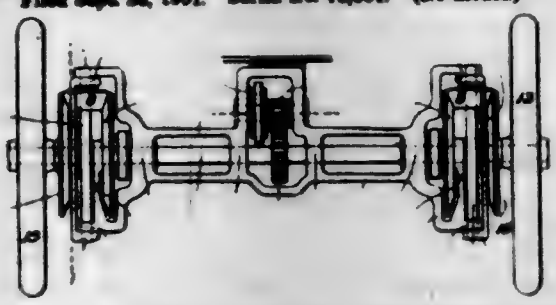

Claim.—1. In driving mechanism for motor-vehicles, the combination of a main framework, a rotatable shaft mounted in bearings therein provided with bevel-wheels at each end, traction-wheel bracket-bearings pivotally mounted in each outer end of the framework provided with clearance-openings, traction-wheels rotatably mounted on said bearings provided with bevel-wheels, pivotal shafts connecting the traction-wheel bracket-bearings with the main frame and carrying bevel-wheels intermeshing with the driving and driven bevel-wheels and extending through said clearance-openings, with means for transmitting motion to the main shaft.

2. In driving mechanism for motor-vehicles, the combination of a main framework, a rotatable shaft mounted in bearings therein provided with bevel-wheels at each end, supplemental shaft-bearings outside of the driving-bevels, traction-wheel bracket-bearings pivotally mounted in each outer end of the framework provided with clearance-openings, traction-wheels mounted thereon provided with bevel-wheels, pivotal shafts connecting the traction-wheel bracket-bearings, with the main frame and carrying bevel-wheels intermeshing with the driving and driven bevel-wheels and extending through said clearance-openings, with means for transmitting motion to the main shaft.

3. In driving mechanism for motor-vehicles, the combination of a main framework, a rotatable shaft mounted in bearings therein provided with bevel-wheels at each end, traction-wheel bracket-bearings pivotally mounted in each outer end of the framework provided with clearance-openings, and having extended steering-arms with steering mechanism connected thereto, traction-wheels rotatably mounted on said brackets provided with bevel-wheels, pivotal shafts connecting the traction-wheel bracket-bearings with the main frame and carrying bevel-wheels intermeshing with the driving and driven bevel-wheels and extending through said clearance-openings, with means for transmitting motion to the main shaft.

708,882. STEAM ROAD-ROLLER. THOMAS WRIGHT, Springfield, Ohio. Filed Feb. 26, 1902. Serial No. 95,791. (No model.)

Claim.—1. In a steam road-roller, the combination, with a rear axle, and driving-wheels mounted thereon and capable of independent motion, each driving-wheel being provided with a gear, of an engine-shaft provided with independent driving-pinions, an intermediate shaft provided at each end with a gear to mesh with said pinion and with a pinion to mesh with the driving-wheel gear, each intermediate gear and pinion being connected to move in unison with each other and independently of the intermediate gear and pinion at the other end of the intermediate shaft, and independent means for controlling the driving connection between the respective engine-shaft pinions and the gearing driven therefrom, said driving-wheel gears being similar, and the gears and pinions at the opposite ends of the engine and intermediate shafts being also similar, whereby the two trains of gearing on opposite sides of the machine are identical in construction, substantially as described.

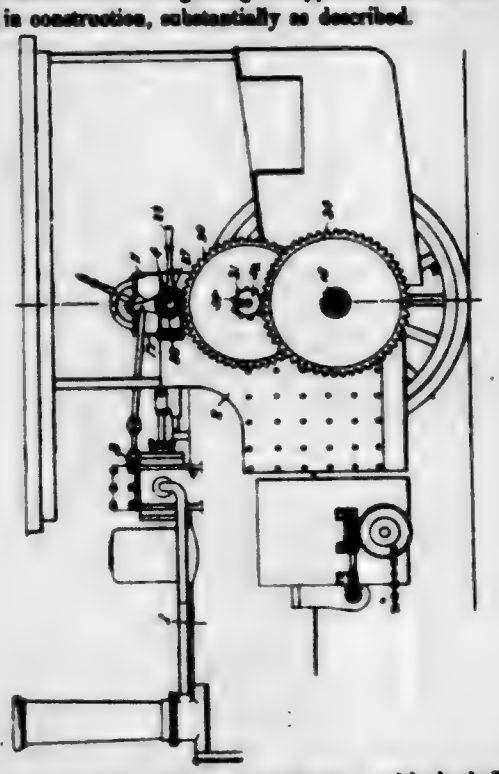

2. In a steam road-roller, the combination, with the boiler and its extension or horn plates, of a vertical integral housing secured to each extension-plate and having bearings therein for the engine-shaft, intermediate shaft and rear axle, an engine-shaft, intermediate shaft and rear axle mounted in said bearings in vertical alinement, driving-wheels mounted on the axle, and suitable gearing mounted on the engine and intermediate shaft and driving-wheels, substantially as described.

3. In a steam road-roller, the combination, with a boiler and extension-plates, of side housings mounted on the extension-plates, cross-plates connecting the upper ends of the side housings and provided with a central housing, said cross-plates being disconnected from the boiler, and an engine-shaft having its end bearings in the side housings and central bearing in said central housing, substantially as described.

708,883. SPOKE-SETTING MACHINE. GEORGE P. TRAUB, Norristown, Pa. Filed Mar. 8, 1902. Serial No. 97,302. (No model.)

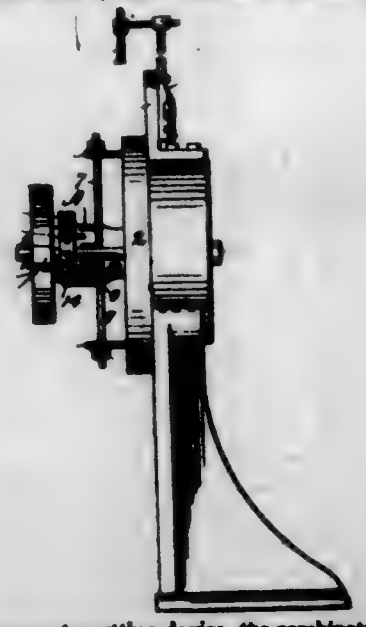

Claim.—1. In a spoke-cutting device, the combination with a disk bearing a flange constructed to fit snugly the end of a hub, a disk bear-

ing a flange constructed to fit snugly the other end of a hub and a bolt passing through the bore of said hub and through central apertures in said disks to clamp said hub in place and hold it from splitting, substantially as described.

2. In a spoke-setter, the combination with a standard, of a disk mounted on said standard and bearing a flange constructed to fit over the end of the hub to hold it from splitting, guide-pins seated in said disk, a second disk slidingly mounted on said guide-pins and bearing a flange constructed to fit over the end of said hub to hold it from splitting, and a clamping-bolt passing through apertures in said disks and through the bore of said hub, substantially as described.

3. In a spoke-setting device, the combination with a standard, of a disk bearing a flange designed to fit snugly over the end of a hub, a second disk set parallel to said first-mentioned disk and bearing a flange designed to fit over the other end of said hub, means for clamping said disks on said hub, and a gage by which to set the spokes in said hub, substantially as described.

4. In a hub-setting device, a first disk bearing a circular flange designed to fit snugly over one end of a hub, a second disk bearing a flange designed to fit over the other end of said hub, a ring designed to fit over said hub on one side of the spoke-sockets and a second ring designed to fit over the hub on the other side of the spoke-sockets, and means for clamping said disks together, substantially as described.

708,884. CUSPIDOR. RAYMOND A. YOUNIS, Pittsburg, Pa. Filed May 13, 1901. Serial No. 60,016. (No model.)

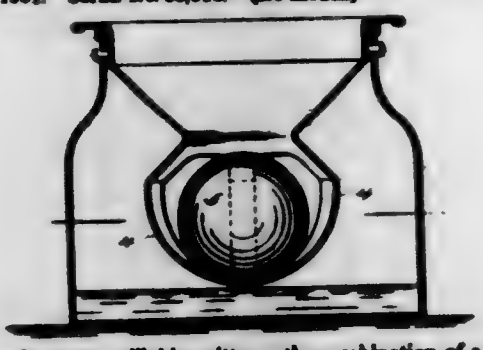

Claim.—In a non-spillable spittoon, the combination of a bowl having an integral contracted neck portion with bayonet-shaped slots formed on opposite sides thereof, of a mouthpiece having an outwardly-extended flange for engagement with the end of the contracted neck portion and extending thereheyond, said flange of the mouthpiece carrying an integral right-angular downwardly-extending flange for engagement with the said interior of the contracted neck portion, headed pins carried by said right-angular flange of the mouthpiece and operating in said slots, said mouthpiece carrying a downwardly-extending contracted portion, a pair of outwardly-extending integral strips formed integral with the said contracted portion, said strips having spaces therebetween and being bowed intermediate of their ends to form a semicircular valve-seat, the strips crossing one another at right angles, and a hollow flexible ball-valve in said seat for engagement with said contracted portion of the mouthpiece, substantially as described.

708,885. SLIDE-VALVE GEAR. SAMUEL S. YOUNGHUSBAND, Darlington, England. Filed Sept. 4, 1901. Serial No. 74,272. (No model.)

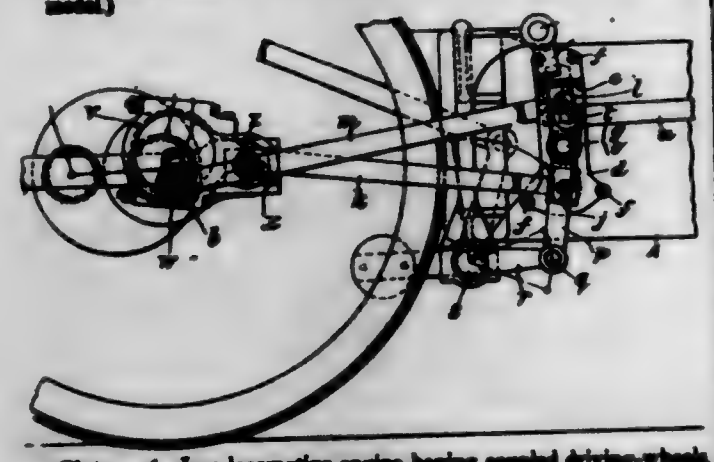

Claim.—1. In a locomotive-engine having coupled driving-wheels, inside cylinders and outside valve-chests, the combination with the link-motion and with the coupling-rod crank-pin, of a link-operating mechanism consisting of a sheave eccentric to the wheel-axle, and a stud eccentric both to the sheave and wheel-axle, said stud and sheave being formed in one with a return crank-arm and with the coupling-rod crank-pin, substantially as specified.

2. In a locomotive-engine of the class described, the combination with the link-motion, and the driving-wheel coupling-rod, of a link-operating mechanism consisting of an eccentric carried by the coupling-rod crank-pin and provided with a stud eccentric thereto, as set forth.

3. In a locomotive-engine of the class described, the combination with the link-motion, and the driving-wheel coupling-rod, of a link-operating mechanism consisting of an eccentric provided on one face with a crank-arm secured to the coupling-rod crank-pin, and on its other face with a stud projecting eccentrically therefrom, as set forth.

708,886. AIR AND VACUUM VALVE. EVERETT P. ALLEN, Chicago, Ill., assignor, by direct and mesne assignments, to R. M. Wilbur, Chicago, Ill. Filed Mar. 25, 1901. Serial No. 52,703. (No model.)

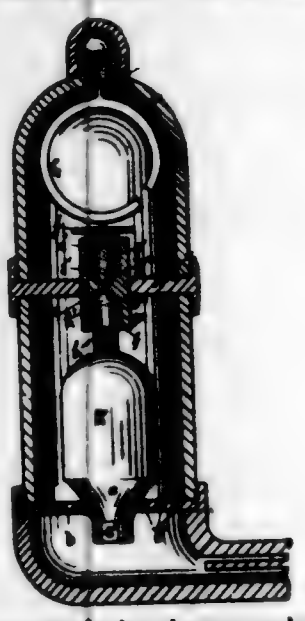

Claim.—1. In an automatic air and vacuum valve, the combination of a hollow base or cap, a cylinder or shell mounted on the base and having communication therewith, a cross partition or wall dividing the interior of the cylinder or shell into an upper and a lower chamber, a fixed vertical plug on the cross partition or wall, having an air-eduction port and passage therein furnishing communication between the two chambers of the cylinder or shell for venting air from the lower chamber into the upper chamber, a controlling pin-valve entering loosely into the eduction-passage and consisting of an outer disk or head and a body or stem, with the body or stem downwardly projecting into the air-passage for its seating end when seated to close the port and passage and when unseated to open the port and passage and having the valve held normally seated by air-pressure on the outer face of its head or disk and raised to unseat its seating end by pressure in the lower chamber against its seating end and the under face of the disk or head, a vent or outlet from the upper chamber, and a thermostatic expansible ring member adjustably suspended from the top of the cylinder or shell above the free air-valve, normally out of contact with the valve and operating under expansion to engage the valve and seat its seating end to close the air port and passage in the plug and shut off communication between the two chambers and prevent the admission of air to the lower chamber after the air is expelled therefrom, substantially as described.

2. In an automatic air and vacuum valve for radiators, the combination of a hollow base or cap, a cylinder or shell mounted on the base and having communication therewith, a cross partition or wall dividing the interior of the cylinder or shell into an upper chamber and a lower chamber, a fixed vertical plug on the cross partition or wall, having an air-eduction port and passage therein furnishing communication between the two chambers of the cylinder or shell for venting air and steam from the lower chamber into the upper chamber, a controlling pin-valve entering loosely into the eduction-passage and consisting of an outer disk or head and a body or stem, with the body or stem downwardly projecting into the air-passage for its seating end when seated to close the port and passage and when unseated to open the port and passage and having the valve held normally seated by pressure on the outer face of its head or disk within the upper chamber and raised to unseat its seating end by pressure in the lower chamber against its seating end and the under face of the disk or head, a vent or outlet from the upper chamber, and a thermostatic expansible split-ring member adjustably suspended from the top of the cylinder or shell above the free air-valve, normally out of contact with the valve permitting the pressure to unseat the valve and vent the air into the upper chamber from the lower chamber and expansible with the admission of steam into the upper chamber to engage the valve and seat its seating end closing the air port and passage between the two chambers and preventing the admission of air to the lower chamber from

the upper chamber after the expulsion of air from the lower chamber substantially as described.

3. In an automatic air and vacuum valve for radiators, the combination of a hollow base or cup, a perforated plate or partition across the base or cup at the upper end thereof, a cylinder or shell mounted on the base or cup and having communication therewith through the perforated plate or partition, a cross plate or partition dividing the interior of the cylinder or shell into an upper chamber and a lower chamber, a fixed vertical plug on the cross plate or partition, having an air-eduction port and passage therein furnishing communication between the two chambers of the cylinder or shell for venting air from the lower chamber into the upper chamber, a controlling pin-valve entered loosely into the eduction-passage and consisting of an outer disk or head and a body or stem, with the body or stem downwardly projecting into the air-passage for its acting end when seated to close the port and passage and when unseated to open the port and passage and having the valve held normally seated by air-pressure in the upper chamber on the outer face of the head or disk and having the valve raised to unseat its acting end by pressure in the lower chamber against its acting end and the under face of the disk or head, a vent or outlet from the upper chamber, and a thermostatic expansible split-ring member adjustably suspended from the top of the cylinder or shell above the free air-valve, normally out of contact with the valve and expansible with the admission of steam to the upper chamber to engage the valve and seat its acting end to close the air port and passage in the plug and shut off communication between the two chambers preventing the admission of air to the lower chamber from the upper chamber, substantially as described.

4. In an automatic air and vacuum valve for radiators, the combination of a hollow base or cup, a plate or partition across the base or cup at its upper end, a port in the plate or partition, a cylinder or shell mounted on the base or cup and having communication therewith, a cross plate or partition dividing the interior of the cylinder or shell into an upper chamber and a lower chamber, a fixed vertical plug on the cross plate or partition, having an air-eduction port and passage therein furnishing communication between the two chambers and having the port intermediate of the passage for venting air from the lower chamber into the upper chamber, a controlling pin-valve entered loosely into the upper portion of the eduction-passage and consisting of an outer disk or head and a body or stem, with the body or stem downwardly projecting into the air-passage for its acting end when seated to close the midway port of the passage and having the valve held normally seated by air-pressure in the upper chamber on the outer face of the head or disk and having the valve raised to unseat its acting end by pressure in the lower chamber against its acting end and the under face of the disk or head, a vent or outlet from the upper chamber, a thermostatic expansible ring member adjustably suspended from the top of the cylinder or shell above the free air-valve, normally out of contact with the valve and operating under expansion to engage the valve when raised and seat its acting end to close the air port and passage on the upper side of the port and shut off communication between the two chambers preventing the admission of air to the lower chamber after air is expelled therefrom, a float in the lower chamber, a pin-valve fixed to the upper end of the float and entering the lower portion of the passage in the plug for its acting end to close the midway port of the passage from below with the raising of the float from the rise of the water of condensation in the cup and lower chamber, substantially as described.

5. In an automatic air and vacuum valve for radiators, the combination of a hollow base or cup, a perforated plate or partition across the base or cup at its upper end, a port in the plate or partition, a cylinder or shell mounted on the base or cup and having communication therewith, a cross plate or partition dividing the interior of the cylinder or shell into an upper chamber and a lower chamber, a fixed vertical plug on the cross plate or partition having an air-eduction port and passage in the plug furnishing communication between the two chambers and having the port intermediate of the passage for venting air from the lower chamber into the upper chamber, a controlling pin-valve entered loosely into the upper portion of the eduction-passage and consisting of an outer disk or head and a body or stem, with the body or stem downwardly projected into the air-passage for its acting end when seated to close the midway part of the passage on the upper side and having the valve held normally seated by air-pressure in the upper chamber on the outer face of the head or disk and having the valve raised to unseat its acting end by pressure in the lower chamber operating against its acting end and the under face of the head or disk, a vent or outlet from the upper chamber, a thermostatic expansible ring member adjustably suspended from the top of the cylinder or shell above the free air-valve, normally out of contact with the valve and operating under expansion to engage the valve when raised and seat its acting end to close the air port and passage on the upper side of the port and shut off communication between the two chambers preventing the admission of air to the lower chamber after the air is expelled therefrom, a float in the lower chamber, a pin-valve fixed to the upper end of the float and entering the lower portion of the passage in the plug for its acting end to close the midway port of the passage from below with the raising of the float from the rise of the water of condensation in the base and lower chamber, substantially as described.

6. In an automatic air and vacuum valve for radiators, the combination of a hollow base or cup, a perforated plate or partition across the base or cup at its upper end, a port in the plate or partition, a steam-passage and a water-passage both leading into the base or cup, a cylinder or shell mounted on the base or cup and having communication therewith through the perforated plate or partition and divided into an upper chamber and a lower chamber having an air and steam passage between them, a port in the passage having a seat on both its upper and lower sides, a loose pin-valve having its body or stem entered into the upper portion of the passage for its acting end to seat and close the port on the upper side, a vent or outlet from the upper chamber, a thermostatic member adjustably suspended from the top of the cylinder or shell above the free air-valve, normally out of contact with the valve and expansible with the admission of steam to the upper chamber to engage the valve and seat its acting end, a float in the lower chamber, a pin-valve carried by the float on its upper end to have its acting end seat against the under face of the port in the air and steam passage, and a valve carried by the float on its lower end to open and close the port in the partition of the base or cup, substantially as described.

708,887. **FRUIT-GRADER.** WILLIAM C. ANDERSEN, San Jose, Cal., assignor, by mesne assignments, to Anderson-Barngrover Mfg. Co., San Jose, Cal., a Corporation of California. Filed May 1, 1901. Serial No. 58,254. (No model.)

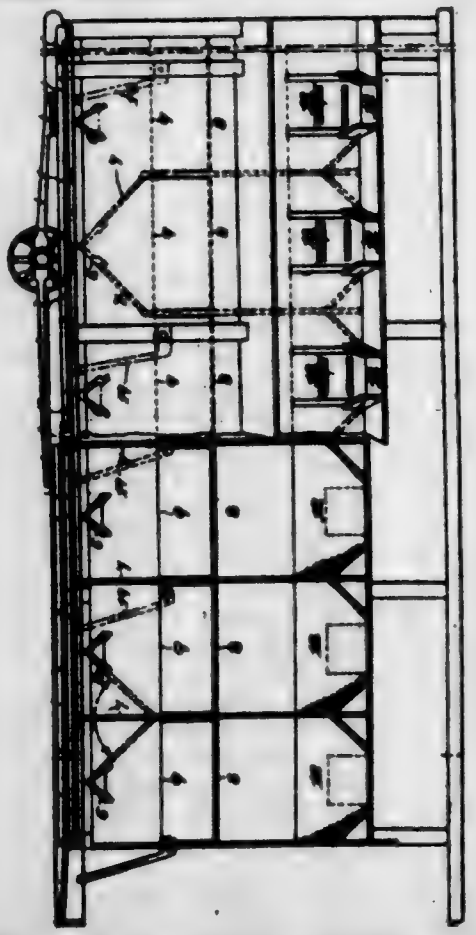

Claims.—1. In an apparatus for grading prunes, the combination of two series of perforated screens, a shorter upper series, and a longer lower one, the screens in each series having perforations increasing in size from the receiving end of the machine and the screens in the upper series adapted to deliver the fruit simultaneously upon an equal number of the lower screens, whose perforations also increase from the head end of the machine, said last-named screen having its perforations smaller than the perforations in the screen immediately above it and substantially corresponding in size with the perforations of a screen of the upper series preceding it, and means whereby the screens are given a longitudinal shaking movement.

2. In an apparatus for grading prunes, the combination of two series of screens, an upper series and a longer lower and parallel series, said screens in each series having perforations of smallest diameter in the screen nearest the feed end of the apparatus, the perforations in the succeeding screen of successive larger diameters, the perforations in the upper screens relatively larger than the perforations in the screens immediately beneath, and means whereby the fruit is made to travel over these screens.

3. In an apparatus for grading prunes, the combination of two series of screens, one above the other, the uppermost having perforations of smallest diameter in the screen at the head of the machine and gradually increasing in size through the remaining screens, said screens adapted to pass successively two or more grades of fruit therethrough, a second series of screens beneath the upper series, having perforations of smallest diameter in the screen at the head of the machine, and gradually increasing in size through the remaining screens said screens adapted to pass successively but a single grade of fruit therethrough, and means by which these screens are given a longitudinally-shaking movement.

4. The combination in a fruit grading and classifying apparatus of grading-screens and blending means centrally below the same consisting of divergent transversely-disposed surfaces beneath the screens, and hinged counting dividers interposed between adjacent blending means by which varying properties of the product of adjacent screens may be mingled or diverted.

5. In a prune-grading apparatus, the combination of a plurality of horizontal perforated screens in line and forming an upper series, a second longer series of perforated screens below and parallel with and extending beyond the first series, said lower screens arranged in line with each other, the perforations in the screens in each series increasing in diameter from the receiving to the opposite end, the perforations in the upper series relatively larger and varying in wider proportion than the perforations in the lower screens, frames within which these two series are secured, a shaft centrally disposed of these frames and connections with the frame upon either side of the shaft whereby the frames are reciprocated.

6. An apparatus for grading and classifying prunes, consisting of two series of horizontally-disposed contiguous shaking screens having perforations of gradually-increasing diameter from the commencement to the discharge end, said series consisting of a shorter upper one and a longer lower one, the screens in the upper series having perforations relatively larger than the perforations in the lower screens, roof-like sections transverse to, beneath and central of each of the lower screens, and dividers by which the product of any screen, or any proportion of said product may be mingled with the discharge from adjacent screens.

7. The combination in an apparatus for grading and classifying prunes of a shorter upper and a longer lower series of approximately horizontal shaking screens, with perforations of different sizes and increasing in diameter from the receiving to the opposite end, the screens in the upper series adapted to deliver the fruit simultaneously upon an equal number of the lower series, double inclined roof-like sections located transversely beneath the central portions of the lower screens, transverse sections hinged in line beneath the meeting edges of the screens, and turnable to divert a portion of the discharge of contiguous screens to either side, a longitudinally-disposed partition centrally located beneath said grading-sections, and sections hinged to its upper edge and turnable to divert the fruit to discharge upon either side of the apparatus.

8. In a prune-grading machine, the combination of two series of screens, one above the other, said screens in each series having perforations of smallest diameter in the screens at the head of the machine, and increasing in size in the succeeding screens, each successive lower screen having its perforations corresponding in size to those in the screen above the immediate predecessor of said lower screen.

9. The combination in a fruit grading and classifying apparatus, of grading-screens, fixed divergent, transversely-disposed surfaces located beneath the screens intermediate of their ends, and boards hinged in line beneath the junction of contiguous screens and turnable to form continuations of the divergent surfaces beneath either of said screens.

10. The combination in a fruit grading and classifying apparatus, of grading-screens, transverse downwardly-divergent surfaces fixed beneath the screens intermediate of their ends, transverse boards having their lower edges turnably supported approximately in planes below the junction of contiguous screens, whereby the upper edges may approach and form continuations with the divergent surfaces upon either side.

11. The combination in a fruit grading and classifying apparatus of grading-screens, fixed, downwardly-divergent, transversely-disposed surfaces centrally beneath the screens, transversely-hinged dividers coacting with said surfaces to mingle or divert the products of contiguous screens, longitudinally-divided bins, and longitudinally-hinged tilting boards, turnable to receive the blended product and divert it to the bins on either side.

708,888. WATER-PURIFYING APPARATUS FOR STEAM-BOILERS. JOSEPH BÖHA, Thann, Germany. Filed Oct. 15, 1901. Serial No. 78,734. (No model.)

Claim.—1. In an apparatus of the class described, a steam-boiler, a separating and filtering device, a plurality of raising-tubes connected with said separating and filtering device, and the lower ends of which are located in superposed planes, a deposit-collecting member connected with one of said pipes at the lower end thereof, a second deposit-collecting member located above the other one and connected with said other raising-pipe, and means for conveying water from said separating and filtering device.

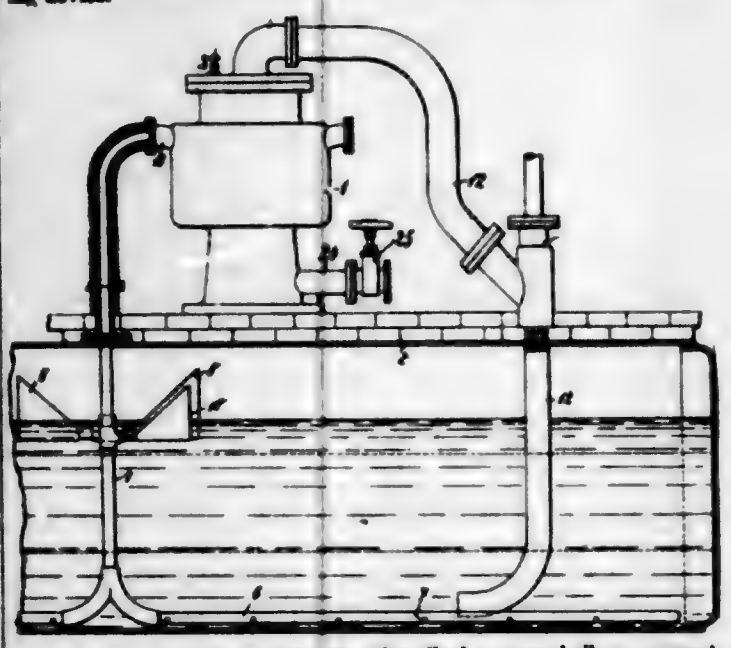

2. In an apparatus of the class described, a steam-boiler, a separating and filtering device, raising-pipes connected with said separating and filtering device, and one of them having a deposit-collecting tube, and the others having oppositely-facing funnels, and the funnels being located above said tube, and means for conducting water from said separating and filtering device.

3. In an apparatus of the class described, a steam-boiler, a separating and filtering device, raising and return pipes connected with said device, and adapted to be also connected with said steam-boiler, and a spiral pipe surrounding the return-pipe.

4. In an apparatus of the class described, a separating and filtering device, having a scum-chamber, an inverted cone arranged above said scum-chamber, a separating-chamber in connection with the scum-chamber and inclosing said cone, an annular chamber having an inlet, a spiral passage connecting the annular chamber with the separating-chamber, and a tapered chamber having reticulated top and bottom, and located above and in connection with said separating-chamber.

5. In an apparatus of the class described, a separating and filtering device, having a scum-chamber, an inverted cone arranged above said scum-chamber, a separating-chamber in connection with the scum-chamber and inclosing said cone, an annular chamber having an inlet, a spiral passage connecting the annular chamber with the separating-chamber, a tapered chamber having reticulated top and bottom, and located above and in connection with said separating-chamber, a cone in said tapered chamber, and a valved outlet for the scum-chamber.

708,889. SASH-HOLDER. BENJAMIN D. BERRY, Chester, Pa., assignor of one-half to William H. Berry, Chester, Pa. Filed June 4, 1901. Serial No. 63,105. (No model.)

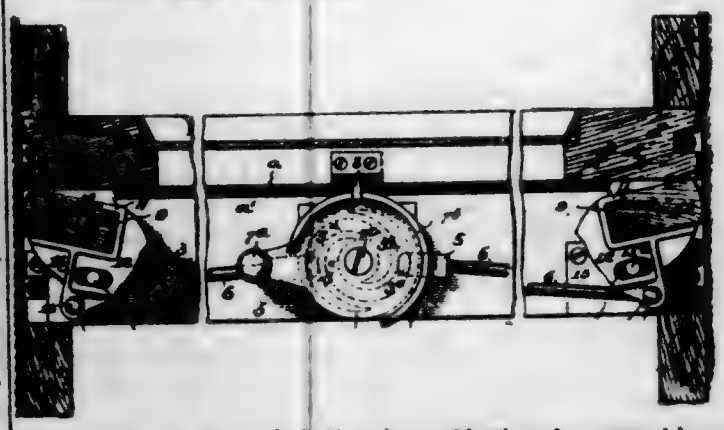

Claim.—1. In a sash-holder, the combination of upper and lower sash frames, guides for the same, pivoted division-strips between the sash-frames adapted to engage by their edges with the side bars of said sash-frames and press them against the guides, and means for rocking said division-strips, substantially as set forth.

2. In a sash-holder, the combination of upper and lower sash frames, guides therefor, a vertically-pivoted inclined division-strip on each side of and between the sash-frames, a plate pivoted at each end of the horizontal meeting-bar of one of the sash-frames, said plate loosely engaging the adjacent division-strip and adapted to slide thereon when the sash-frame

is raised or lowered, and means for rocking the plates and division-strips, substantially as set forth.

3. In a sash-holder, the combination of upper and lower sash frames, guides for the same, pivoted division-strips, and means for rocking said division-strips, substantially as set forth.

4. In a sash-holder, the combination of upper and lower sash frames, their guides, a vertically-pivoted inclined division-strip on each side of and between the sash-frames, a plate pivoted at each end of the horizontal meeting-bar of one of the sash-frames, said plate loosely engaging the adjacent division-strip and adapted to slide thereon when the sash-frame is raised or lowered, a rotatable plate pivoted to the horizontal bar and having cam-grooves formed thereon, and rods connecting said pivoted plates to the cam-plate, substantially as set forth.

5. In a sash-holder, the combination of upper and lower sash frames, their guides, vertically-pivoted division-strips adapted to force by their edges the side bars of the sash-frames into closer contact with the guides, a catch on the lower horizontal bar of the upper sash, a rotatable plate pivoted to the upper horizontal bar of the lower sash, said rotatable plate being provided with cam-grooves and an inclined flange by means of which the division-strips are forced against the guides and the sashes locked together by the one operation, substantially as set forth.

6. In a sash-holder, the combination of upper and lower sash frames, their guides, pivoted division-strips adapted to engage by their edges with the side bars of the sash-frames and press them against the guides, a plate loosely engaging each division-strip and adjusted to slide thereon, and means for rocking the plates and the division-strips, substantially as set forth.

7. In a sash-holder, the combination of upper and lower sash frames, their guides, pivoted division-strips between the sash-frames and having a slight inclination toward the upper sash, and means for rocking said division-strips whereby they are caused to impinge or bear on the sash-frames first at the extreme ends and finally for their whole length, substantially as set forth.

8. In a sash-holder, the combination of upper and lower sash frames, their guides, pivoted division-strips, a cam-plate pivoted at the center of the upper horizontal bar of the lower-sash frame, a plate pivotally secured at each end of said bar, each engaging a division-strip and adapted to slide thereon with the lower-sash frame, and connections between the cam-plate and said pivoted plates whereby, upon the rotation of the cam-plate, said division-strips may be turned upon their pivots, substantially as set forth.

708,890. ROCK-BORING MACHINE. JOSEF BEHOUBA, Strasburg, and EDUARD SCHELTE, Duesseldorf, Germany. Filed Jan. 19, 1901. Serial No. 43,945. (No model.)

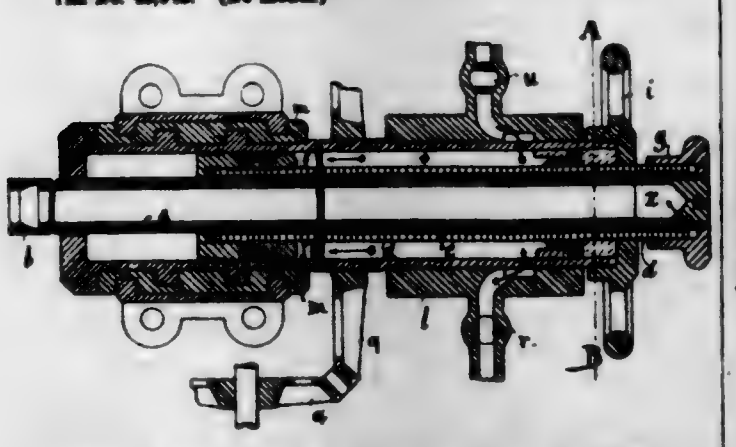

Claim.—1. In combination in a boring-machine, a boring-rod *a*, a cylinder *k*, a piston-head *f* within the said cylinder, a piston-rod *d* connected to the piston and within which the boring-rod is located and a connection between the hollow piston-rod and the boring-rod, said connection being detachable and outside the rear end of the cylinder, substantially as described.

2. In combination in a boring-machine, a boring-rod, a cylinder *k*, a piston-head *f* within the said cylinder, a piston-rod *d* connected to the piston and within which the boring-rod is located and a connection between the hollow piston-rod and the boring-rod, said connection comprising the head *g*, the pin *h* and the screw-plug *c*, substantially as described.

3. In combination, the rotary cylinder, the piston and hollow piston-rod therein, the boring-rod within the hollow piston-rod, a coupling-nut *w* between the rotary cylinder and the hollow piston-rod to turn the latter and a connection between the hollow piston-rod and the boring-rod, said connection comprising the screw-plug *c*, engaging the inner rear end of the boring-rod, substantially as described.

4. In combination, a cylinder *k*, means for rotating the same, a piston *f* working within and in contact with the cylinder, a hollow piston-rod, a boring-rod within the hollow piston-rod, a connection between the hollow piston-rod and boring-rod and a connection between the cylinder and hollow piston-rod comprising the nut *w* having portions to engage flat parts on the hollow piston-rod, said nut being connected to the cylinder, substantially as described.

708,891. CYCLE SADDLE ATTACHMENT. JOHN B. BROOKS and JOHN HOLT, Birmingham, England. Filed Feb. 15, 1902. Serial No. 94,255. (No model.)

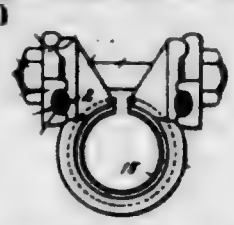

Claim.—1. In a cycle saddle attachment, the combination of a clip or body portion, a split sleeve or lining for said body portion, said body portion being angularly adjustable on said sleeve, means for contracting said body portion and sleeve, and means for connecting a cycle-saddle to said body portion.

2. In a cycle saddle attachment the combination of a clip or body portion, a split sleeve or lining for said body portion, said body portion being angularly adjustable on said sleeve or lining, means for preventing lateral movement of said body portion on said sleeve, means for contracting said body portion and sleeve, and means for attaching a cycle-saddle to said body portion.

3. In a cycle saddle attachment, the combination of a clip or body portion, a sleeve or lining for said body portion, on which said body portion is angularly adjustable, the exterior of said sleeve being round or concaved, and the interior of said body portion being hollowed or convexed to fit said sleeve, means for preventing lateral displacement of said body portion on said sleeve, and means for attaching a cycle-saddle to said body portion.

708,892. ELECTRIC TELEGRAPHY. SIDNEY G. BROWN, London, England. Filed Nov. 5, 1900. Serial No. 35,541. (No model.)

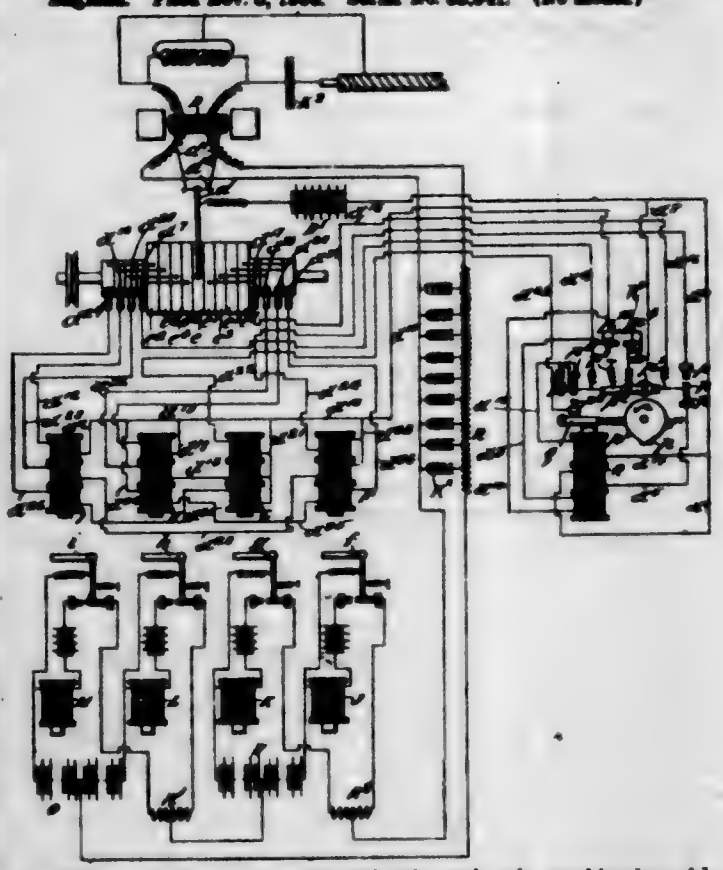

Claim.—1. In a system of electric telegraphy, the combination with the line or cable, of a plurality of transmitting instruments, a corresponding number of batteries adapted to be worked in series by said transmitting instrument, a corresponding number of recording instruments actuated by the combined effect of positive and negative impulses simultaneously transmitted by the transmitting instruments and adapted to simultaneously register signals on one or other side of their zero-lines in accordance with the polarity or direction of the currents leaving their respective transmitting instruments, substantially as described.

2. In a system of electric telegraphy, the combination with the line or cable, of a plurality of transmitting instruments, a corresponding number of batteries each of different signaling power and adapted to be worked in series by said transmitting instruments, a corresponding number of re-

cording instruments actuated by the combined effect of positive and negative impulses simultaneously transmitted by the transmitting instruments and adapted to simultaneously register signals on one or other side of their zero-lines in accordance with the polarity or direction of the currents leaving their respective transmitting instruments, substantially as described.

3. In a system of electric telegraphy, the combination with the line or cable, of a plurality of transmitting instruments, a corresponding number of batteries adapted to be worked in series by said transmitting instruments, a suspended coil-relay adapted to be moved onto one or other side of its zero-line by the effect of combined signaling currents from the transmitting-batteries, and means operated by said relay for simultaneously and separately recording the signals sent by each transmitting instrument, substantially as described.

4. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series by said transmitting instruments, a relay adapted to be worked by the arrival signaling currents, a closed-circuited inductive-coil short-circuiting said relay, and means operated by the said relay for separately recording the signals sent by each of the transmitting instruments, substantially as described.

5. In a system of electric telegraphy, the combination with the line or cable and the receiving-condenser, of a plurality of transmitting instruments, a corresponding number of batteries adapted to be worked in series by said transmitting instruments, a relay adapted to be worked by the effect of the combined signaling-currents from the transmitting-batteries, means operated by said relay for simultaneously and separately recording the signals sent by each transmitting instrument, and means operated by said relay for sending a local current through said relay to make up any loss of current caused by the gradual charging-up of the receiving-condenser by part of a succession of received signaling-currents each of the same sign and value, substantially as described.

6. In a system of electric telegraphy, the combination with the line or cable, of a plurality of transmitting instruments, a corresponding number of batteries each of different signaling power and adapted to be worked in series by the transmitting instruments, a receiving-relay adapted to be moved onto one or other side of its zero-line by the effect of combined signaling-currents from the transmitting-batteries, and means operated by the receiving-relay for simultaneously and separately recording, in accordance with the amplitude of the movement of the said relay, the signals simultaneously sent by each transmitting instrument, substantially as described.

7. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries each of different signaling power adapted to be worked in series by said transmitting instruments, a receiving-relay adapted to be operated by the arrival signaling-currents, means operated by the amplitude of the movement of the tongue of said relay for separately recording the signals sent by each of the transmitting instruments, and means operated by said relay for sending a local current through said relay to overcome "varying zero," substantially as described.

8. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries each of different signaling power adapted to be worked in series by the said transmitting instruments, a receiving-relay adapted to be operated by the arrival signaling-currents, a closed-circuited inductive-coil short-circuiting said relay, means operated by the amplitude of the movement of the tongue of said relay for separately recording the signals sent by each of the said transmitting instruments, and means operated by the said relay for sending a local current through said relay to overcome "varying zero," substantially as described.

9. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series with one another by said transmitting instruments, a relay adapted to be worked by the arrival-signaling currents, a rotary contact provided with sections insulated from one another and upon the surface of which the tongue of the said relay bears, and means connected to the sections of said rotary contact for separately recording the signals sent by each of the said transmitting instruments, substantially as described.

10. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series with one another by said transmitting instruments, a relay adapted to be worked by the arrival-signaling currents, a rotary contact provided with sections insulated from one another and upon the surface of which the tongue of the said relay bears, means connected to the sections of said rotary contact for separately recording the signals sent by each of the said transmitting instruments and for sending a local current through said relay to overcome "varying zero," substantially as described.

11. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series by said transmitting instruments, means for receiving the signaling-currents and separately recording the signals sent by each of the said transmitting instruments, local batteries at the receiving end of the said line or cable which batteries are connected in series and have their circuits arranged to include the said receiving means, means included in the circuits of said local batteries for producing the same time retardation to the currents from said batteries as the line or cable affords to the signaling-currents, and means for operating the said local batteries when signaling-currents are received, substantially as described.

12. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series with one another by the said transmitting instruments, a relay adapted to be worked by the arrival-signaling currents, local batteries connected in series and having their circuits arranged to include the coil of the said relay, means included in the circuits of said batteries for producing the same time retardation to the currents from said batteries as the line or cable affords to the signaling-currents, means operated by the said relay for separately recording the signals received from each of the transmitting instruments, and means operated by said relay for closing the circuit of the local batteries when signaling-currents are received so as to send a current from said local batteries through the coil of the said relay in the same direction to that in which the signaling-currents pass through said relay, substantially as described.

13. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series by said transmitting instruments, a receiving-relay adapted to be moved on both sides of its zero-line worked by the arrival-signaling currents, secondary relays adapted to be worked by the said receiving-relay, and means operated by the secondary relays for separately recording the signals received from each of the transmitting instruments, substantially as described.

14. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series by said transmitting instrument, a receiving-relay adapted to be worked by the arrival-signaling currents, secondary relays adapted to be worked by the said receiving-relays for sending a current through the receiving-relay to overcome varying zero, and means operated by the secondary relays for separately recording the signals received from each of the transmitting instruments, substantially as described.

15. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries adapted to be worked in series by the transmitting instruments, a receiving-relay adapted to be worked by the arrival-signaling currents, a rotary contact provided with sections insulated from one another and on the surface of which the tongue of the receiving-relay bears, secondary relays connected to the sections of said rotary contact, and means operated by said secondary relays for separately recording the signals sent by each of the transmitting instruments, substantially as described.

16. In a system of electric telegraphy, the combination with a line or cable, of a number of transmitting instruments, a corresponding number of batteries each of different signaling power and adapted to be worked in series by the transmitting instruments, a receiving-relay adapted to be worked by the arrival-signaling currents, a rotary contact provided with sections insulated from one another and upon which the tongue of the receiving-relay bears, recorders connected to the sections of said rotary contacts for separately recording the signals sent by each of the said transmitting instruments, and a contact-maker interposed between the sections of the said rotary contact and the recorders and operated by the receiving-relay in such manner that it closes the circuit of the recorders only when the tongue of the receiving-relay reaches its point of maximum deflection, substantially as described.

17. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries each of different signaling power and adapted to be worked in series by the transmitting instruments, a receiving-relay adapted to be worked by the arrival-signaling currents, a rotary contact provided with sections insulated from one another and upon the surface of which the tongue of the receiving-relay bears, secondary relays connected to the sections of the rotary contact, a contact-maker interposed between the sections of the rotary contact and the secondary relays and adapted to operate in such manner that the secondary relays are operated only when the tongue of the receiving-relay reaches its point of maximum deflection on the surface of the rotary contact, and means operated by said secondary relays for separately recording the signals transmitted by each of the transmitting instruments, substantially as described.

18. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries each of different signaling power and adapted to be worked in series by the transmitting instruments, a receiving-relay adapted to be worked by the arrival-signaling currents, a rotary contact provided with sections insulated from one another and upon which the tongue of the receiving-relay bears, secondary relays connected to the sections of the rotary contact, a contact-making lever interposed between the secondary relays and the sections of the rotary contact, an electromagnet also interposed between the sections of the rotary contact and the secondary relays, an armature adapted to be operated by said electromagnet, a rotary cam which is normally held stationary by said armature but is released and operates the contact-making lever when the said electromagnet is energized in such manner that only such secondary relay or relays are operated as are connected to the section of the rotary contact upon which the tongue of the receiving-relay bears when it reaches its point of maximum deflection, and means operated by the secondary relays for separately recording the signals sent by each of the transmitting instruments, substantially as described.

19. In a system of electric telegraphy, the combination with the line or cable, of a number of transmitting instruments, a corresponding number of batteries each of different signaling power and adapted to be worked in series by the transmitting instruments, a receiving-relay adapted to be worked by the arrival-signaling currents, a rotary contact provided with sections insulated from one another and upon which the tongue of the receiving-relay bears, secondary relays connected to the sections of the rotary contact, a contact-making lever interposed between the secondary relays and the sections of the rotary contact, an electromagnet also interposed between the sections of the rotary contact and the secondary relays, an armature adapted to be operated by said electromagnet, a rotary cam which is normally held stationary by said armature but is released and operates the contact-making lever when the said electromagnet is energized in such manner that only such secondary relay or relays are operated as are connected to the section of the rotary contact upon which the tongue of the receiving-relay bears when it reaches its point of maximum deflection, means operated by the secondary relays for sending a current through the receiving-relay to overcome "varying zero," and means operated by the secondary relays for separately recording the signals sent by each of the transmitting instruments, substantially as described.

20. In a system of electric telegraphy, the combination with the line or cable of a number of transmitting instruments, a corresponding number of batteries adapted to be controlled in series by said transmitting instrument, a receiving-relay adapted to be moved on both sides of its zero-line by the arrival-signaling currents, recording instruments operated by said receiving-relay, and means interposed between the receiving-relay and the recording instruments whereby said recording instruments are operated only at or about the middle of the arrival-signaling currents, substantially as and for the purpose specified.

21. In a system of electric telegraphy, the combination with the line or cable, of a pair of transmitting-batteries, a pair of transmitting instruments adapted to work said batteries in series with one another, a single perforated signaling-tape adapted to simultaneously operate both said transmitting instruments, means for receiving the signals, and means for separately recording the signals sent by each transmitting instrument, substantially as described.

22. In a system of electric telegraphy, the combination with the line or cable, of a pair of transmitting-batteries, two pairs of signaling-levers adapted to simultaneously work said batteries in series with one another, two pairs of needles adapted to operate said signaling-levers, a single perforated signaling-tape adapted to operate both pairs of said needles, means for receiving the signals, and means for separately recording the signals sent by each transmitting instrument, substantially as described.

23. In a system of electric telegraphy the combination with the line or cable, of a pair of transmitting-batteries, a pair of transmitting instruments adapted to work said batteries in series, a single perforated signaling-tape adapted to simultaneously operate said transmitting instruments, a toothed wheel engaging said tape, a rotatable shaft which carries said toothed wheel, a ratchet-wheel carried by said shaft, a sleeve loosely mounted on said shaft, a pawl carried by said sleeve and engaging the ratchet-wheel, a crank-arm carried by said sleeve, means for imparting reciprocating movement to said crank-arm, means for receiving the signals, and means for separately recording the signals sent by each of the transmitting instruments, substantially as described.

24. In a system of electric telegraphy the combination with the line or cable, of a pair of transmitting-batteries, two pairs of signaling-levers adapted to simultaneously work said batteries in series with one another, two pairs of needles adapted to work said signaling-levers, a single perforated signaling-tape adapted to operate both pairs of said needles, a toothed wheel engaging said tape, a rotatable shaft which carries said toothed wheel, a ratchet-wheel carried by said shaft, a sleeve loosely mounted on said shaft, a pawl carried by said sleeve and engaging the ratchet-wheel, a crank-arm carried by said sleeve, means for imparting reciprocating movement to said crank-arm, means for receiving the signals, and means for separately recording the signals sent by each of the transmitting instruments, substantially as described.

703,898. AUTOMATIC SHUTTER-OPERATING DEVICE FOR PHOTOGRAPHIC CAMERAS. FRIEDRICH RUDOLF, Ruhla, Germany. Filed Mar. 6, 1902. Serial No. 96,851. (No model.)

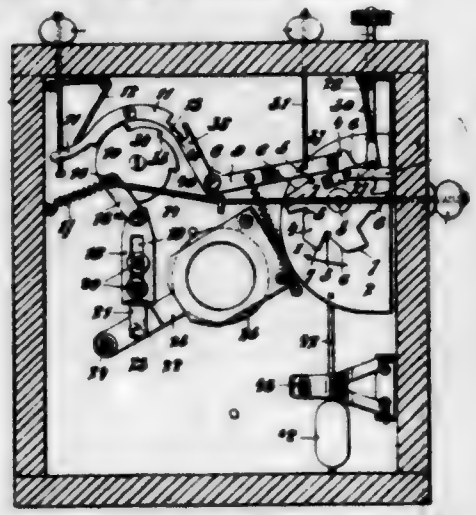

Claim.—1. In an automatic shutter-operating device for photographic cameras, a wheel provided with inclined contacting surfaces and peripheral surfaces of suitable width, mechanism for rotating said wheel, a lever suitably engaging said wheel, a ratchet-wheel connected with the shutter of the camera, a pawl adapted to engage said ratchet-wheel and lever, means for operating said lever causing thereby the operation of the pawl, and means for positioning said ratchet-wheel so that when released by said pawl its movement will cause the automatic operation of the shutter, substantially as herein shown and described.

2. In an automatic shutter-operating device for photographic cameras, a wheel provided with notches, inclined contact-surfaces and peripheral surfaces of suitable width, mechanism for rotating the said wheel, a spring return-lever suitably engaging with the said wheel during the operation thereof, a three-toothed ratchet-wheel, a pawl adapted to engage in the teeth of said ratchet-wheel and operated by said lever, means for disengaging said lever from said notched wheel causing thereby the disengagement of the pawl with the ratchet-wheel to permit of the operation of the latter, means for connecting said ratchet-wheel to the shutter of the camera, and means for positioning the ratchet-wheel so that when released by said pawl its movement will cause the operation of the shutter.

3. In an automatic shutter-operating device for photographic cameras, a wheel provided with notches, inclined contact-surfaces and peripheral surfaces of suitable width, mechanism for suitably rotating said wheel, a spring-actuated mechanism connected with and adapted to operate the shutter of the camera, and mechanism engaging with the said notched wheel and with the shutter-operating mechanism for operating the latter when the notched wheel is operated.

4. In an automatic shutter-operating device for photographic cameras, a wheel provided with notches, inclined contact-surfaces and peripheral surfaces of suitable width, a spring-actuated mechanism connected with the shutter of the camera for operating it, and means engaging the contact and peripheral surfaces and in the notches of the said wheel for causing the operation of the said spring-actuated mechanism.

708,894. SHINGLING-BRACKET. MICHEL CROQUETTE, Kankakee, Ill. Filed Sept. 25, 1901. Serial No. 76,515. (No model.)

Claim.—1. A shingling-bracket comprising a base member provided at one end with a toothed extension for insertion beneath the free edges of a shingle and at its opposite end with prongs, a clamping member pivoted to the base member and carrying a movable toothed jaw, a scaffold-rest carried by one end of the clamping member, a rest-adjusting link carried by the base member and provided with seats or recesses to be engaged by offsets carried by the scaffold-rest, and means for adjusting the clamping member with relation to the base member.

2. A shingling-bracket comprising a base member provided at one end with a toothed extension for insertion beneath the free edges of a shingle and at its opposite end with prongs, a clamping member pivoted to the base member and carrying a movable toothed jaw, a scaffold-rest

carried by one end of the clamping member, a rest-adjusting link carried by the base member and provided with seats or recesses to be engaged by offsets carried by the scaffold-rest, means for adjusting the clamping member with relation to the base member, and locking means carried by the scaffold-rest.

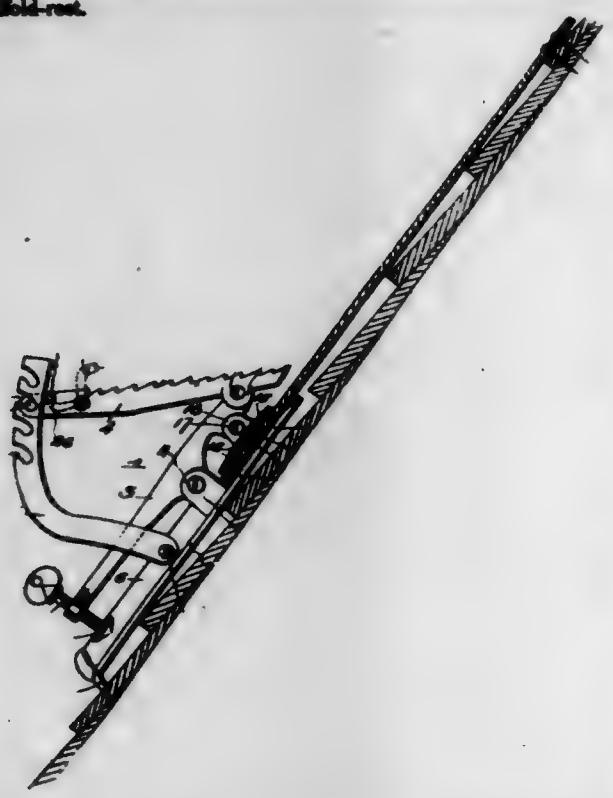

708,895. SEPARATOR-PLATE FOR SECONDARY BATTERIES. ARNOLAH F. CLARK, Philadelphia, Pa., assignor to J. Horace Harding, Philadelphia, Pa. Filed Oct. 18, 1900. Serial No. 33,470. (No model.)

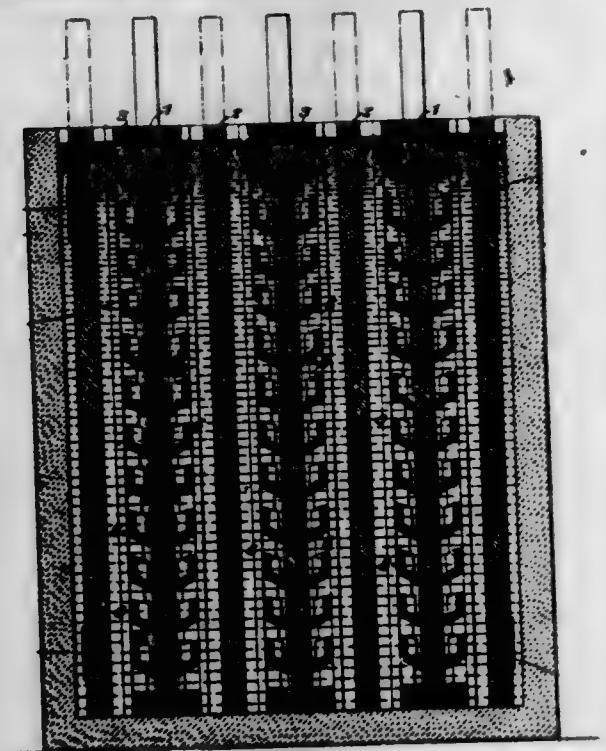

Claim.—1. As a new article of manufacture, a separator for use in connection with secondary-battery grid-plates, said separator comprising a frame, a series of cross-bars secured to said frame and a series of supporting-bars at the back of and embedded in the cross-bars, each of said cross-bars forming, with the grates of the grid, a series of pockets, substantially as described.

2. As a new article of manufacture, a separator for use in connection with secondary-battery grid-plates, said separator comprising a frame, a series of cross-bars secured to said frame and spaced apart to permit a circulation of the electrolyte, and a series of supporting-bars at the back of and embedded in the cross-bars, said cross-bars adapted to form with the grates of the grid, pockets, substantially as described.

3. As a new article of manufacture, a separator-plate for use in connection with the grid-electrodes of secondary batteries, said separator-plate comprising a series of vertical rods, and a series of cross-bars in which portions of said vertical rods are embedded, said cross-bars being spaced apart to permit the circulation of the electrolyte and having a portion contacting with the grates of the grid whereby supporting-shelves are disposed adjacent thereto, substantially as described.

4. As a new article of manufacture, a separator for use in connection with secondary-battery grid-electrodes, said separator comprising a frame, a series of vertical rods secured to said frame, and a series of cross-bars mounted on said rods, the latter being embedded in the cross-bars which are also secured to the frame, said bars being spaced apart to permit a circulation of the electrolyte and arranged to form a series of shelves or pockets adapted to coact with the grates of the grid with which they are used, substantially as described.

5. The combination in a storage-battery cell, of the negative electrodes, positive electrodes in the form of grids having active material pressed into the interstices thereof, and separating-plates arranged between said electrodes, said plates carrying a series of shelves or pockets the edges of which are in contact with the grates of the grid, said shelves or pockets serving to receive any portion of the active material that may break away from the grid, substantially as described.

708,896. MANUFACTURE OF GOLF-BALLS. JAMES P. COCHRANE, Edinburgh, Scotland. Filed Mar. 22, 1902. Serial No. 99,533. (No model.)

Claim.—1. In the manufacture of golf-balls, softening the gutta-percha rod with hot water, manipulating it to make it round, and sprinkling the surface with sulfur, substantially as hereinbefore described.

2. In the manufacture of golf-balls softening the gutta-percha rod with hot water, manipulating it to make it round, and sprinkling the surface with sulfur, rolling the piece over a hot plate so that the outer skin or surface of the gutta-percha gets impregnated with the sulfur and becomes vulcanized and thereby rendering it very hard without in any way neutralizing the rebounding and elastic nature of the gutta percha, substantially as hereinbefore described.

708,897. FITTING FOR LABORATORIES OR THE LIKE. ARTHUR W. COOKSEY, London, England. Filed Apr. 25, 1902. Serial No. 104,729. (No model.)

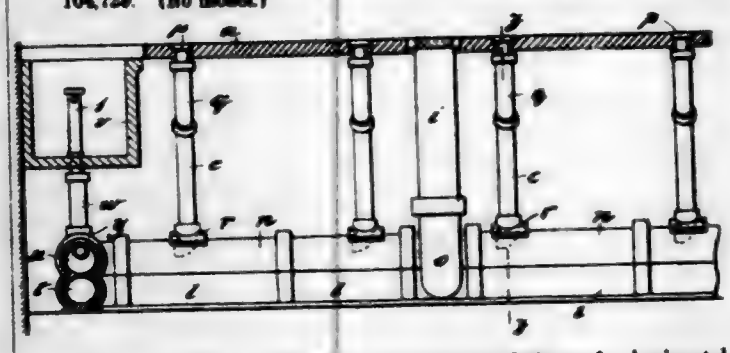

Claim.—1. The combination in laboratory-fittings of a horizontal fume-duct *l*, side passages *o*, vertical fume-duct *i*, ventilating-hood *b* and conducting-cap *j k*, with a horizontal waste-trough *n*, bridge-piece *r*, vertical drain-pipe *c q*, drain-funnels *p*, benches *a* and trays *d*, substantially as described.

2. The combination in laboratory-fittings of a horizontal fume-duct *l*, side passages *o*, vertical fume-duct *i*, ventilating-hood *b* and conducting-cap *j k*, with a horizontal waste-trough *n*, bridge-piece *r*, and vertical drain-pipe *c*, *q*, substantially as described.

3. The combination in laboratory-fittings of a horizontal fume-duct *l*, side passages *o*, vertical fume-duct *i*, with a horizontal waste-trough *n*, bridge-piece *r* and vertical drain-pipe *c q*, substantially as described.

4. The combination in laboratory-fittings of a horizontal fume-duct *l*, side passages *o*, with a horizontal waste-trough *n*, substantially as described.

5. The combination in laboratory-fittings of a horizontal fume-duct *l* with a horizontal waste-trough *n*, substantially as described.

6. The combination in laboratory-fittings of a horizontal waste-trough *n*, bridge-piece *r* and vertical drain-pipe *w*, substantially as described.

7. In laboratory-fittings the ventilating-hood *b* and conducting-cap with a depressed central portion *k*, substantially as described.

708,898. WRENCH. JOHN C. DAVISON, Friendsville, Md., assignor of one-half to E. C. W. Ryland, Friendsville, Md. Filed Nov. 21, 1901. Serial No. 83,188. (No model.)

Claim.—In a wrench of the character described, the combination with the handle provided with an opening and with a cross-piece and formed at its outer end with a head and with a fixed jaw, said head being provided with a longitudinal opening the side walls of which are formed with guide-grooves, of a movable jaw sliding upon said head and having an

angular shank to engage the aperture in the head, said shank being provided with ribs to engage said guide-grooves and with worm-teeth on its lower edge, a shaft, a worm-wheel and beveled pinion loosely mounted upon said shaft and locked to rotate in unison, a swiveled screw, a beveled gear fixed to said screw and engaging the beveled pinion, and a nut mounted upon said screw to rotate the same and thereby slide the movable jaw toward and away from the fixed jaw, substantially as set forth.

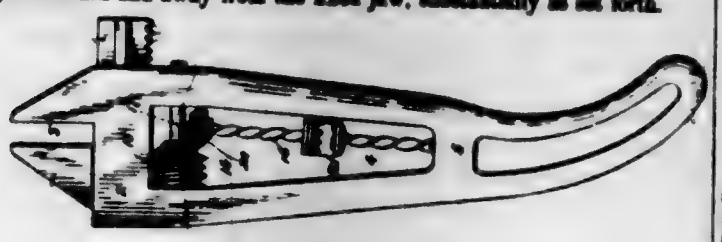

708,899. BALL-AND-SOCKET JOINT FOR DOLLS OR THE LIKE.

EDUARD DENZ, Blankenese, near Hamburg, Germany, assignor to Heinrich Eckert, Munich, Germany. Filed Dec. 19, 1901. Serial No. 86,561. (No model.)

Claim.—1. A ball-and-socket joint for dolls and the like, consisting of an articulated part having a spherical cavity and an intermediate elastic socket seated in said spherical cavity, the latter adapted to receive the ball of another articulated part.

2. In a ball-and-socket joint for dolls and the like, an articulated part having a spherical cavity and an intermediate socket of elastic material to permit the ball of the other articulated part to be forced into the spherical cavity of the intermediate socket.

3. In a ball-and-socket joint for dolls and the like, an articulated part having a spherical cavity, a ball on another articulated part, and an elastic covering for said ball to permit the latter to be forced into and out of said spherical cavity.

708,900. GUN-CARRIAGE.

KARL DEMLER, Pilsen, Austria-Hungary, assignor to Skodawerke Actiengesellschaft in Pilsen, Pilsen, Austria-Hungary, a Firm. Filed Dec. 26, 1901. Serial No. 87,260. (No model.)

Claim.—In a top carriage for ordnance carrying a recoil-checking means, the combination of a hollow body provided with a longitudinally-extending slot, a recoil-checking means mounted in said hollow body, provided with a pair of projections adapted to extend through said slot and engage with a gun to cause the operation of the recoil-checking means during the action of firing, a plate conforming to the top of the hollow body and adapted to be carried by the forward part of the underneath portion of the gun and moving with the latter for closing the exposed part of said slot, means arranged in said hollow body and surrounding said recoil-checking means for guiding the same, and a pair of V-shaped closure-plates mounted upon the hollow body and adapted to close the joint between said body and gun, substantially as herein shown and described.

708,901. APPARATUS FOR MAKING OIL-GAS.

ROBERT DEMPSTER, Marietta, Ohio, assignor to Mary Dempster, Henry H. Burns, and Norman Morrow, Marietta, Ohio. Filed Nov. 5, 1901. Serial No. 81,246. (No model.)

Claim.—1. In a device of the class specified, a retort, means for heating the same, a perforated pipe centrally disposed within said retort and forming a primary vaporizing-chamber, an oil-feeding device situated at one end of said pipe, and a second perforated pipe surrounding said primary vaporizing-chamber.

2. In a device of the class specified, a retort, means for heating the same, two concentrically-arranged perforated pipes arranged within said retort, and devices for supplying a liquid hydrocarbon to the inner of said pipes, substantially as specified.

3. In a device of the class specified, a retort, means for heating the same, two concentrically-arranged and perforated pipes located within said retort, means for supplying liquid hydrocarbon to the inner pipe, and a packing or filling of asbestos fiber arranged in the space between said pipes.

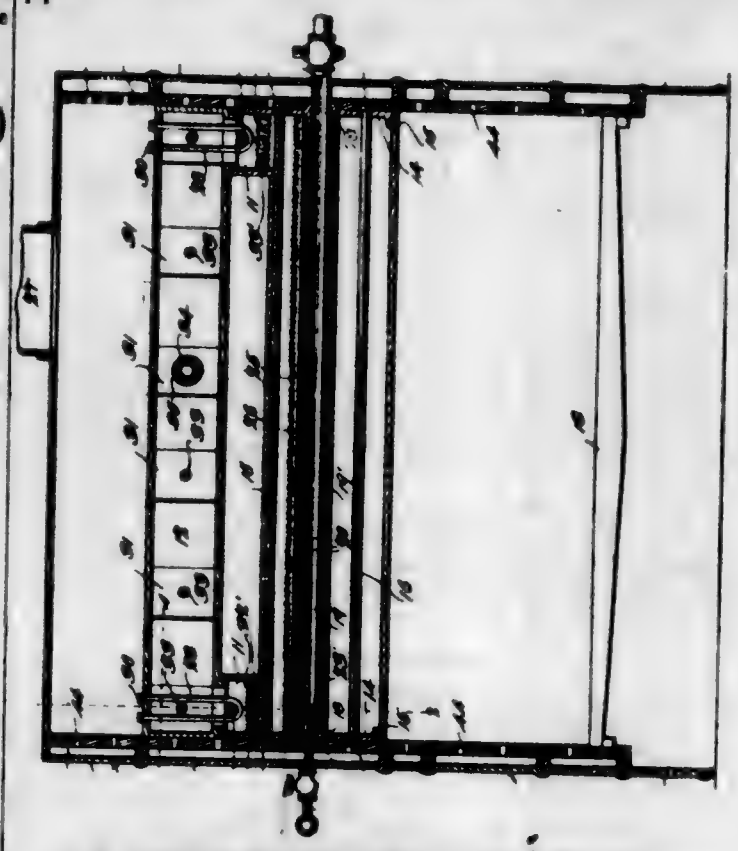

4. In a device of the class specified, a retort, a filling of asbestos fiber arranged within the retort, means for heating the retort, two concentrically-disposed pipes arranged within said retort and perforated for the passage of oily vapor, and means for supplying liquid hydrocarbon to the inner of said pipes.

5. In a device of the class specified, a retort having an asbestos filling, a reticulated shield or guard for confining said filling in place, a perforated primary vaporizing-chamber located within said retort, means for supplying liquid hydrocarbon to said primary vaporizing-chamber, and means for heating the retort.

6. In a device of the class specified, a retort having a filling of asbestos fiber, reticulated screens arranged within the retort and adapted to hold the fiber in position and to form a free gas-passage, a perforated primary vaporizing-chamber located within said retort, means for supplying liquid hydrocarbon to said primary vaporizing-chamber, and means for heating said retort.

7. In a device of the class specified, a retort having a filling of asbestos fiber, two concentrically-disposed and perforated tubes arranged centrally within the retort, the space between said tubes being filled with asbestos fiber, means for supplying liquid hydrocarbon to the inner of said tubes, and means for heating said retort.

8. In a device of the class specified, a retort having a filling of asbestos fiber, reticulated screens for confining said fiber in position, two concentrically-disposed perforated tubes arranged centrally within the retort, the space between said tubes being filled with asbestos fiber, means for supplying liquid hydrocarbon to the inner of said tubes, and means for heating said retort.

9. In a device of the class specified, a retort, means for heating the same, a perforated tube arranged centrally within said retort and forming a primary vaporizing-chamber, and an oil-feed tube extending partly within said perforated tube and having a reduced-end discharge-opening.

10. In a device of the class specified, the combination with a retort of a superheater arranged above and connected with the retort, and a filtering-screen formed of asbestos fiber arranged in the passage between the retort and the superheater.

11. In an oil-gas apparatus, a retort, a primary vaporizing-chamber arranged within the same, a superheater disposed above and connected with the retort, reticulated screens arranged in the passage between the retort and the superheater, and a filtering-bed, formed of asbestos fiber, arranged between said reticulated screens, substantially as specified.

12. In a gas apparatus, a superheater, a perforated escape-pipe arranged therein, a second perforated pipe arranged around the escape-pipe, and an asbestos filling disposed in the space between said pipes, substantially as specified.

13. In a device of the class specified, a superheater, two concentrically-disposed and perforated pipes arranged within said heater, an as-

bestos fiber forming a packing or filling in the space between said pipes and a gas-escape pipe connected to the inner of said concentric pipes.

708,902. PROTECTING DEVICE FOR INDUCTION-MOTORS. JOHN H. DIEGLE, Lasalle, Ill. Filed Oct. 21, 1901. Serial No. 79,444. (No model.)

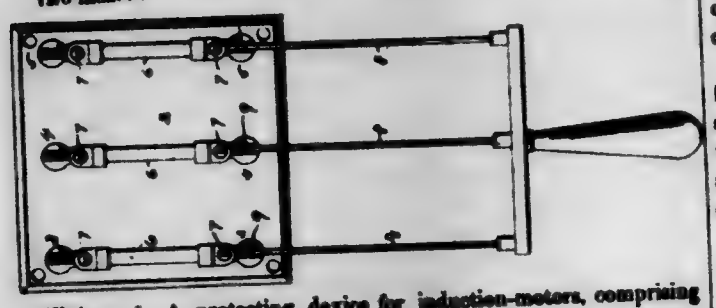

Claim.—1. A protecting device for induction-motors, comprising fuses connected with the terminals of the switchboard, and pivoted independent fuses and a handle carrying the same to bring them in line with and over the first-mentioned fuses, substantially as and for the purpose specified.

2. A switchboard having an insulating-base, terminals, fuses connected to said terminals, and pivoted fuses to lie in the plane with and adapted for use in connection with said fuses or removable to allow the said fuses to act independently after the motor has acquired the predetermined speed, as set forth.

703,908. DISCHARGE DEVICE FOR CONVEYERS. JAMES M. DODGE, Philadelphia, Pa., assignor to the Link Belt Engineering Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Feb. 6, 1901. Serial No. 46,218. (No model.)

Claim.—1. The combination in a conveyer having a horizontal or a substantially horizontal run, of a chain, a bucket pivoted longitudinally thereon so as to swing around the chain, with means for turning the buckets to discharge the material contained therein when the said buckets are on each horizontal or substantially horizontal run, substantially as described.

2. The combination in a discharge device for an endless-chain conveyer having a horizontal or substantially horizontal run, of a chain, a bucket pivoted longitudinally thereon so as to swing laterally around the chain, means for turning the bucket laterally on the chain so as to reverse it, said bucket being turned from the position with its mouth uppermost to an inverted position while on a run which is horizontal or substantially horizontal, substantially as described.

3. The combination in a discharge device for an endless-chain conveyer having a horizontal or substantially horizontal run, of a chain, a series of buckets pivoted thereto, a guide for the chain, a guide curved over the chain, a projection on each bucket engaging with said curved guide so as to turn the buckets laterally on the chain as a pivot to discharge the contents of the buckets while on a horizontal or substantially horizontal run, substantially as described.

4. The combination in a conveyer, of a chain, a bucket pivoted longitudinally thereon so as to swing around the chain, with means for turning the bucket to discharge the material contained therein, said means being longitudinally adjustable with respect to the conveyer, substantially as described.

708,904. APPARATUS FOR THE TRANSMISSION OF POWER IN VARYING DIRECTIONS. ARTHUR H. EDWARDS, London, England. Filed Jan. 2, 1902. Serial No. 88,186. (No model.)

Claim.—1. In an apparatus for transmitting power, the combination with a flexible inner member, of a flexible outer member comprising a plurality of sections separable from and unconnected to each other, one of said members being slidable longitudinally of the other.

2. In an apparatus for transmitting power, the combination with a flexible outer member comprising a plurality of sections separable from and unconnected to each other, of a flexible inner member inclosed in and longitudinally movable of said outer member.

3. In an apparatus for transmitting power, the combination with a flexible outer member comprising a plurality of sections separable from and unconnected to each other, and having an aperture extending longitudinally thereof, of an inner member comprising a wire or the like passing through said aperture and movable longitudinally thereof.

4. In an apparatus for transmitting power, the combination with a flexible inner member, of a flexible outer member comprising a plurality of sections fitting within but separable from and unconnected to each other, one of said members being slidable longitudinally of the other.

5. In an apparatus for transmitting power, the combination of a flexible outer member comprising a plurality of sections fitting within but separable from and unconnected to each other, said sections being provided with an aperture therethrough, and an inner member comprising a wire or the like mounted in and longitudinally movable through said outer member.

703,905. APPARATUS FOR THE SEPARATION OF MINERALS BY THE SELECTIVE ACTION OF OILS, &c. ALEXANDER S. ELMORE, London, England. Filed Aug. 3, 1901. Serial No. 71,271. (No model.)

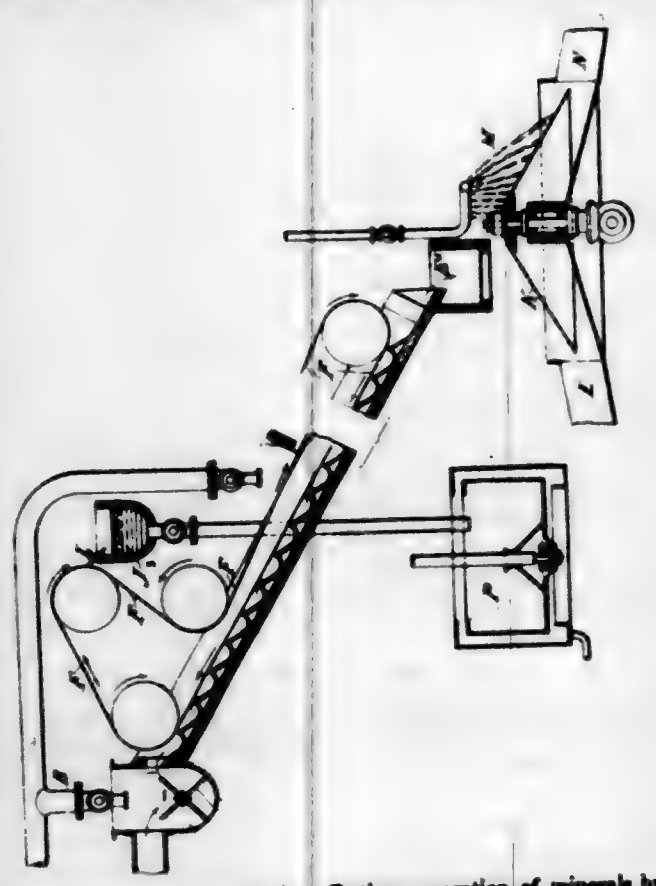

Claim.—1. Apparatus for effecting separation of minerals by the selective action of oils and like substances, comprising a mixer of the oil with the aqueous pulp of pulverized mineral an incline for downflow of the mixture having steps or baffles, an endless apron, means for distributing oil over it and means of causing it to travel in a direction opposite to the said downflow, a conical revolving sieve adapted to receive the discharge from the incline, a nozzle for delivering a shower of water over one side of the sieve, and two launders, the one lined with blanket adapted to remove the matters that pass through the sieve and the other to remove the matters that are washed over the sieve, substantially as described.

2. In apparatus for effecting separation of minerals by the selective action of oils and like substances, the combination of a stepped incline for downflow of the mixed pulp and oil with a traveling apron arranged over and in suitable proximity to the said stepped incline and provided with a distributer of oil over its surface, substantially as described.

3. In apparatus for effecting separation of minerals by the selective action of oil and like substances, the combination of a receiving-trough with a perforated bottom, a conical revolving metal sieve partly under the trough and partly under a distributer, of a water-shower, a launder adapted to lead off the matters washed over the sieve, and a launder lined with blanket adapted to lead off the matters that pass through the sieve, substantially as described.

708,906. RAILWAY-CAR CHOCK. ALONZO D. FAULKNER, Meyersdale, Pa., assignor to George H. Duncombe, Meyersdale, Pa. Filed Feb. 4, 1902. Serial No. 92,568. (No model.)

Claim.—1. A car-chock having two pairs of jaws, one pair being rigid, and the other pair expansible and retractible, and means straddling the last-named jaws and designed to force them against the sides of the rails.

2. A car-chock comprising a rigid pair of jaws and an expansible and retractible pair of jaws, and a bifurcated lever designed to straddle the last-named pair of jaws and force them against the sides of a rail.

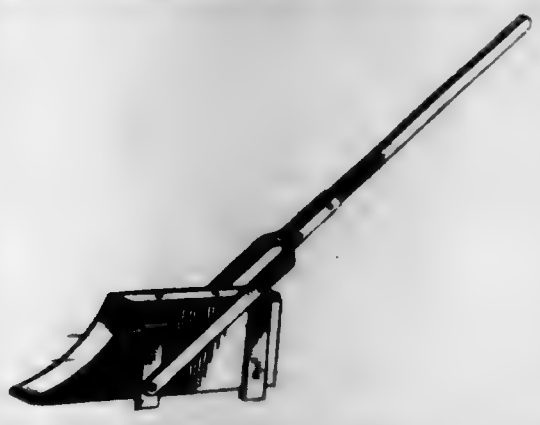

3. A car-chock comprising a body, a pair of plates carried thereby and having depending ends designed to overlap the tread of a rail, plates secured to the other end of the body and loosely mounted thereon to form expansible and retractible jaws, and means for forcing said plates against the sides of the rail whereby the body will be rigidly secured thereto.

4. A car-chock comprising a body, a pair of vertically-arranged plates carried thereby and having depending ends adapted to overlap the tread of a rail, a pair of vertically-arranged plates secured to the body and loosely carried thereby, said plates also having depending ends adapted to fit over the tread of a rail, and a bifurcated lever designed to straddle the block and last-named plates and force them in rigid contact with the rail.

708,907. BICYCLE-LAMP LOCK. AUGUSTUS FELLOWS, Washington, D. C. Filed Nov. 6, 1901. Serial No. 81,222. (No model.)

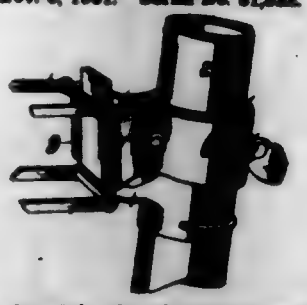

Claim.—1. A device of the class described comprising a band whose sides are arranged normally parallel throughout their entire length, lamp-connecting fingers formed integral with and at one end of the band, said fingers being arranged one at the top and the other at the bottom of the said end of the band, a reinforcing-plate carried by the said end and the said fingers, fastening means arranged at the opposite end of the band and means connected with the band for forming a loop at each end thereof.

2. A device of the class described comprising a band whose sides are arranged normally parallel throughout their entire length, lamp-connecting fingers formed integral with and at one end of the band, said fingers being arranged one at the top and one at the bottom of the band, fastening means arranged at the opposite end of the band, and means for contracting the normally parallel sides of the band one toward the other whereby a loop is formed at each end of the band.

3. A device of the class described comprising spaced members, said spaced members being arranged an equal distance from each other throughout their entire length, a web for connecting respective ends of the spaced members, said web being formed integral with the spaced members and having integral lamp-connecting fingers, one of said fingers extending above the spaced members, and one extending below the spaced members, means for fastening the opposite ends of the spaced members one upon the other, and means connected with the spaced members for drawing each one toward the other, whereby a loop is formed at each end of the spaced members.

708,908. SLIDING DOOR FOR RAILWAY GOODS-VANS. ARTHUR FISCHER, Augsburg, Germany. Filed Feb. 13, 1902. Serial No. 93,947. (No model.)

Claim.—1. A combined sliding door and gangway for cars comprising a door slidably mounted on guide-rods at top and bottom said door being connected to the lower guide-rod so as to pivot thereon when swung downward and means for releasing the top of said door from engagement with the guide-rod.

2. A combined sliding door and gangway for cars consisting of a door slidably mounted on guide-rods at top and bottom, said door being connected to, and adapted to pivot on the lower guide-rod, and means for disengaging the upper rollers from their guide-rod to permit the door to be swung outward and downward.

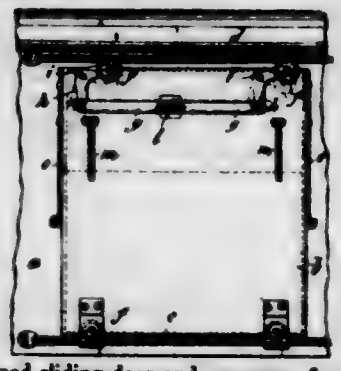

3. A combined sliding door and gangway for cars consisting of a door provided with rollers, guide-rods engaging the grooves in said rollers, said door being connected to, and adapted to pivot on, the lower guide-rod, bends in the upper guide-rod, a sliding guard-rail adapted to overhang the upper part of the rollers and provided with recesses corresponding with the bends in the guide-rod, to permit the door to be swung outward and downward when the recesses, bends and rollers are brought into registration.

708,909. AUTOMATIC FIRE-ALARM. MASON K. PEEK, Bandera Tex. Filed Mar. 22, 1902. Serial No. 99,533. (No model.)

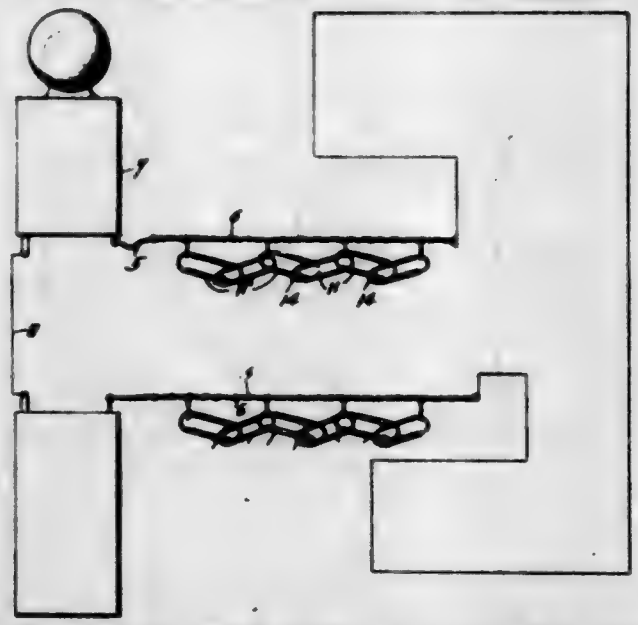

Claim.—1. An automatic fire-alarm system, comprising two line-wires arranged in a circuit including a source of electrical energy and alarm, loops formed on such line-wires, links carried by the loops and normally held from electrical contact, said links having uninsulated portions adapted to make contact and close the circuit by gravity when subjected to an abnormal increase in temperature.

2. An automatic fire-alarm, comprising two line-wires arranged in a circuit including a source of electrical energy and an alarm, uninsulated loops formed on such line-wires, partially-insulated links carried by the loops, a destructible means for connecting the insulated portions of such links, said links having uninsulated portions adapted to make contact and close the circuit by gravity when subjected to an abnormal increase in temperature.

3. An automatic fire-alarm, comprising a pair of twisted line-wires having alternately-disposed uninsulated loops, partially-insulated links in electrical contact with said loops, each loop supporting a plurality of links, and the links of the opposing line-wires being connected together to form a continuous system of circuit-closers, a destructible means for connecting the insulated portions of such links, said links having uninsulated portions adapted to make contact and to close the circuit by gravity when subjected to an abnormal increase in temperature.

708,910. UMBRELLA-FRAME. SAMUEL S. PEEVY, Philadelphia, Pa. Filed Oct. 24, 1901. Serial No. 79,294. (No model.)

Claim.—The combination with a paragon rib, of a paragon stretcher the bullion of the rib and stretcher lying away from each other when the umbrella is closed, a forked end of said stretcher, the forks of which lie

at either side of said rib at the place of the hinge-joint between the rib and stretcher and a lap surrounding the rib and having its ends folded inside the said rib at said hinge, a link stretcher having a perforated end lying between the infolded ends of the lap, and a pivot-pin extending through the said rib lap, end of link stretcher, and the forked ends of the stretcher, said stretcher being sufficiently wide to receive the side walls of the rib within its trough, and forming a tube when the umbrella is closed within which the link stretcher will lie, substantially as described.

708,911. BAT OR RACKET FOR GAME KNOWN AS PING-PONG OR TABLE-TENNIS. JOHN GIBBWOOD, Edinburgh, Scotland. Filed Mar. 10, 1902. Serial No. 97,540. (No model.)

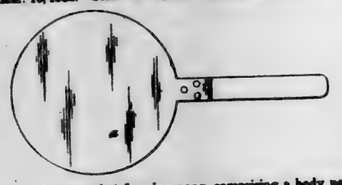

Claim.—A bat or racket for ping-pong, comprising a body portion, a lug or projection integral with said body portion, and a handle suitably attached to the said lug or projection, said handle being permanently disposed at an angle to the body portion.

708,912. SHOW-TOP. CORNELIA H. GOLDSMAN, St. Louis, Mo. Filed Nov. 7, 1901. Serial No. 81,435. (No model.)

Claim.—1. A show-top comprising a suitable frame, a fixed and sliding panel for the same, parallel grooves in the sides of said frames, and a groove at the bottom thereof, an upper rail forming one of the members of the sliding-panel and having a lower groove for the reception of the upper edge of the glass forming said panel, a tongue at each end of said rail, and supporting metallic strips having openings for the free passage of the tongues, the latter operating in the grooves formed in the lateral bars of the frame, substantially as set forth.

2. A show-top comprising a suitable frame, a stationary and a sliding panel for the same, parallel grooves in the sides of the frame, and a groove at the bottom thereof for the reception of the lower edge of the stationary panel, an upper rail forming one of the members of the sliding panel and having a lower groove for the reception of the upper edge of the glass forming said panel, a tongue at each end of said rail forming a continuation of the rail, and having a shoulder at the base of the lower edge thereof whose horizontal or lower edge forms a continuation of the base of the groove formed in said upper rail, supporting metallic strips having openings for the free passage of the tongues, and bearing against the vertical edges of the shoulders, the glass or panel being respectively embraced by said strips, and by the walls of the groove formed in said upper rail, the tongues operating in the grooves formed in the lateral bars of the frame substantially as set forth.

708,913. WASHING-MACHINE. JAMES P. GORDON, Florence, Colo. Filed July 13, 1901. Serial No. 68,175. (No model.)

Claim.—1. In a washing-machine, the combination with a tub, of an open-work washing-cylinder rotatably mounted therein, an open-work clothes-cylinder loosely supported upon the inner periphery of the washing-cylinder, and an open-work clothes-containing bag to embrace the clothes-cylinder, and provided at one end with hooks for connection therewith.

2. In a washing-machine, the combination with a tub, of an open-work washing-cylinder rotatably mounted therein, an open-work clothes-cylinder loosely supported upon the inner periphery of the washing-cylinder, and an open-work clothes-containing bag to snugly embrace the clothes-cylinder and formed from a sheet of netting, having opposite edges provided with mutually-cooperating fastening devices, and one of its other edges being provided with hooks for engagement with the open-work clothes-cylinder.

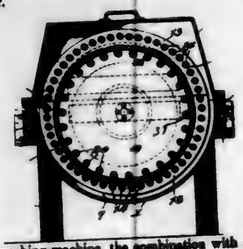

3. In a washing-machine, the combination with a tub, of an open-work washing-cylinder rotatably mounted therein, an open-work clothes-cylinder loosely supported upon the inner periphery of the washing-cylinder, and an open-work clothes-containing bag to snugly embrace the clothes-cylinder, and formed from a sheet of netting having its edges provided with marginal binding-strips, one of said strips being provided with buttonholes, buttons provided upon the opposite portion of the netting corresponding to the buttonholes, and a plate loosely connected to one of the other edges and provided with hooks for engagement with the open-work clothes-cylinder.

4. In a washing-machine, the combination with an open-work clothes-cylinder, of a clothes-confining bag provided at one end with hooks to engage with the clothes-cylinder, the bag to be of a length to pass entirely around the cylinder and to overlap the hooks.

708,914. SLEIGH. PETER R. GWYN, Delmont, Pa. Filed Jan. 9, 1902. Serial No. 89,049. (No model.)

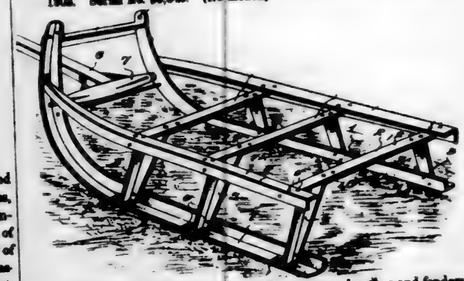

Claim.—1. A sleigh-frame comprising runners, benches and fenders rigidly assembled, and knees provided at each terminal with an outturned toe, one of which is secured to the bottom flange of the runner and the other to the under side of the benches, the flanges of the knees gradually increasing in width from the runners to the benches, all of the parts being constructed of L angle-iron, substantially as and for the purpose specified.

2. A sleigh-frame comprising runners having upturned ends connected by a cross-brace, fenders having one terminal secured to the upturned portion of the runners, benches secured to the fenders, and knees secured to the runners and to the benches, the flanges of the knees gradually increasing in width from the runners to the benches, all of the parts of the structure being made of L angle-iron, substantially as and for the purpose specified.

708,915. CIGARETTE-ROLLER. JAMES G. HALÁPLENS, Toledo, Ohio. Filed Nov. 8, 1901. Serial No. 81,900. (No model.)

Claim.—1. A cigarette-roller comprising a casing composed of two hinged sections, and a roller-apron coöperating therewith, the end pieces of said sections being formed by slitting the body portions of the sections upon opposite sides of their longitudinal centers and bending the end portions thereof at right angles thereto, and said end pieces being formed with integral, right-angular abutting stops to limit the closing of said sections and prevent excess tension on the cigarette-wrapper, substantially as specified.

2. A cigarette-rolling device comprising in its construction two segmental sections, each of said sections having right-angularly-bent end walls formed by slitting the body portion of said section upon opposite sides of its longitudinal center and bending the ends thereof at right angles thereto, the said end pieces being provided at their inner and outer ends with perforated ears and at their inner edges with stops adapted to abut to positively limit the closing of the sections, a pintle connecting the ears upon the inner ends of said end walls and hinging the sections together, guide-rods mounted in the ears upon the outer ends of the end walls, and an apron passing through the spaces between said guide-rods and the outer longitudinal edges of the sections, said edges being bent into channeled form to provide enlarged bearings for said apron, substantially in the manner set forth.

708,916. ORANGE OR LEMON CLEANER. JAMES T. HALEY, Alhambra, Cal. Filed Nov. 3, 1900. Serial No. 35,430. (No model.)

Claim.—1. An orange-washer comprising a water-tank; a hollow cylinder set aslant in the water-tank and furnished with an internal cylindrical brush-surface; a screw conveyer having brush-surface and rotating in said cylinder to convey the fruit downward through the cylinder; and an elevator mounted above the lower end of the cylinder to discharge the fruit from the machine.

2. An orange and lemon cleaner comprising a water-tank; a hollow brush-cylinder in the water-tank; a brush screw conveyer in the cylinder; and a rotary elevator in the tank above the discharge end of the cylinder to gather the fruit and discharge it from the machine.

3. In a fruit-cleaner, the combination of a water-tank; a hollow brush-cylinder set aslant in the water-tank; a brush screw conveyer to rotate in the hollow brush-cylinder; a screen below the discharge end of the cylinder; and a rotary elevator above the discharge end of the cylinder.

4. A fruit-cleaner comprising a water-tank; a hollow brush-cylinder set aslant in the water-tank; a brush screw conveyer to rotate in the brush-cylinder; a rotary elevator in the tank above the discharge end of the cylinder; and a spring-pressed guide to guide the fruit onto the backs of the rotary elevator.

5. In an orange and lemon cleaner, the combination of a water-tank; a hollow brush-cylinder mounted aslant in the tank; a brush screw conveyer in the cylinder to convey fruit through the cylinder and discharge it at its lower end; and a water-wall above the cylinder to prevent the return of the water over the cylinder toward the feed end.

6. In an orange and lemon cleaner, the combination of a water-tank; a hollow brush-cylinder set aslant in the water-tank; a brush screw conveyer to rotate in the brush-cylinder; a water-wall in the tank above the cylinder; a screen in the tank below the discharge end of the cylinder; and a screen in the tank below the cylinder and near the feed end thereof.

7. The combination of the water-tank; a hollow brush-cylinder located in the water-tank the inner surface of said hollow cylinder being a brush-surface; a screw conveyer to convey fruit through the cylinder within the tubular brush formed thereby; and an elevator in the tank at the discharge end of the cylinder to discharge fruit from the tank.

8. The combination of a water-tank; a hollow brush-cylinder set aslant in the water-tank; a screw conveyer for conveying fruit through the cylinder; means in the tank for driving the shaft of the screw conveyer; and a partition in the tank between the screw conveyer and such means.

9. The combination of a water-tank; a hollow cylinder in the tank furnished with a side extension at one end and a brush screw conveyer to rotate in the cylinder, and extending beneath the side extension.

10. The combination of a water-tank; a hollow brush-cylinder in the tank and furnished at one end with a side extension; a screw brush conveyer in the cylinder and extending beneath the side extension; and means for rotating the screw conveyer to convey fruit through the cylinder from the end having the side extension.

11. In a fruit-cleaner, the combination of a water-tank; cleats set aslant on the opposite sides of the tank-walls; a semicylindrical trough with internal brush-surface and side flanges, set with the flanges resting on the cleats respectively; an inverted semicylindrical trough with internal brush-surface and with side flanges set on the flanges of the first-named trough; and cleats to hold the flanges in place, thus forming a hollow brush-cylinder substantially as and for the purpose set forth.

708,917. SWITCH. SAMUEL J. HARRIS, Lake City, Fla. Filed Jan. 14, 1902. Serial No. 89,769. (No model.)

Claim.—1. The herein-described safety appliance for switches consisting essentially of the casing having a smooth bore, and also having its forward end open, and its rear end provided with a central aperture, the rod for exerting thrust against a switch-point, formed of one piece of material and disposed in the casing with its rear end guided in the central aperture of the casing, and having the integral collar at an intermediate point of its length snugly fitting and movable in the smooth bore of the casing, and the coiled spring surrounding the rod within the casing and interposed between the integral collar of the rod and the rear end of the casing.

2. The combination of the switch-point having the socket at one side, the casing disposed at right angles to the point, and having a smooth bore, and also having its forward end open, and its rear end provided with a central aperture, the rod for exerting thrust against the switch-point having its forward end arranged in the socket on the point; the said rod being formed of one piece of material, and being disposed in the casing with its rear end guided in the central aperture thereof, and having the integral collar at an intermediate point of its length snugly fitting and movable in the smooth bore of the casing, and the coiled spring surrounding the rod within the casing and interposed between the integral collar of the rod and the rear end of the casing.

708,918. SAFETY APPLIANCE FOR SWITCHES. SAMUEL J. HARRIS, Lake City, Fla. Filed May 2, 1902. Serial No. 105,696. (No model.)

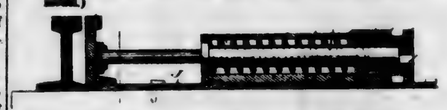

Claim.—1. The combination with a movable switch-point; of the attachment comprising the cylinder disposed at an angle to the point, and having the smooth bore in its forward portion, and its rear end interiorly threaded, an exteriorly-threaded nut arranged in said threaded end of the cylinder, and having a central smooth bore extending throughout its length, the thrust-rod formed of one piece and having its forward end arranged to press against the point, and its rear end guided in the smooth bore of the nut, and also having the collar at an intermediate point of its length snugly fitting in the smooth bore of the casing, and a coiled spring surrounding the rod within the casing, and interposed between the collar of the rod and the nut.

2. The combination with a movable switch-point; of the attachment comprising the cylinder disposed at an angle to the point, and having the smooth bore in its forward portion, and its rear end interiorly enlarged

and threaded, an exteriorly-threaded nut arranged in said enlarged and threaded end of the cylinder, and having a central smooth bore extending throughout its length, a jam-nut mounted on the exteriorly-threaded nut and arranged to bear against the cylinder, the thrust-rod formed of one piece and having its forward end arranged to press against the point, and its rear end guided in the smooth bore of the exteriorly-threaded nut, and also having the collar at an intermediate point of its length snugly fitting in the smooth bore of the casing, and a coiled spring surrounding the rod within the casing, and interposed between the collar on the rod and the exteriorly-threaded nut.

708,919. TEA OR COFFEE POT. FRANK A. HARRISON, Keokuk Iowa. Filed Aug. 2, 1901. Serial No. 70,648. (No model.)

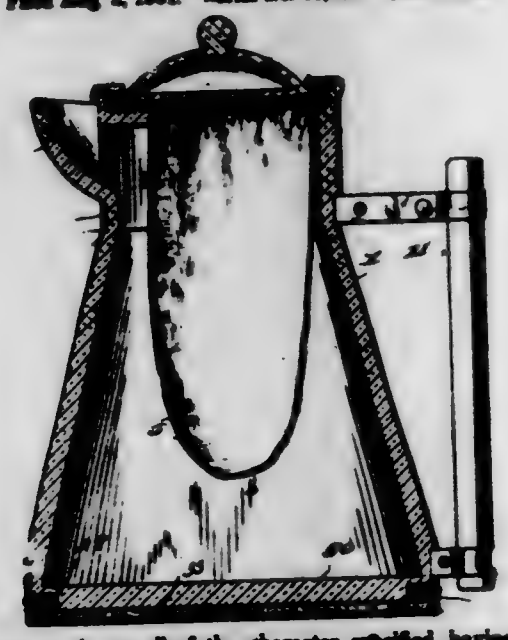

Claim.—1. A utensil of the character specified, having its body portion provided near its top and bottom with a circumferential groove, in combination with bands seated in the grooves and having their terminals arranged parallel with each other, a handhold carrying clamping-bands having their terminals arranged parallel with each other and embracing those of the body-bands, a reinforcing-plate carried by each end of the handhold and disposed between the terminals of the body-bands and the clamping-bands, and fastening means passing through the said terminals and the reinforcing-plates.

2. A utensil of the character specified, having its body portion provided near its top and bottom with a circumferential groove, in combination with body-bands seated in the grooves and having their terminals arranged parallel with each other, a handhold provided near its terminals with circumferential grooves, clamping-bands engaging the grooves and having their terminals parallel with each other and embracing those of the body-band, a reinforcing-plate carried by each end of the handhold and disposed between the terminals of the body-bands and the clamping-bands, and detachable fastening means passed through the said terminals and the reinforcing-plates.

708,920. INDICATOR FOR MAIL-BOXES. CHARLES E. HERD, Middlesboro, Ky. Filed Dec. 18, 1901. Serial No. 86,427. (No model.)

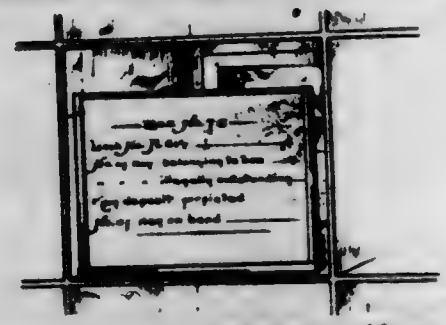

Claim.—An indicator for mail-boxes comprising an approximately rectangular frame, constructed of a single piece of wire, of a hinged label-holder on one end thereof provided with an internal flange on one of its sides to form grooves to receive a removable card, and a rearwardly-turned flange on the top of the label-holder embracing the end bar of the frame and a hinged indicating device on the opposite end of the frame.

708,921. TROLLEY-POLE. JOHN B. HEDELAS, Anderson, Ind. Filed Oct. 11, 1901. Serial No. 78,282. (No model.)

Claim.—1. The combination with a trolley-pole, of a head pivoted thereto, the plate-spring carried by said pole, and having the bracing-roller at its upper end engaging said head, and preventing lateral displacement thereof, and stops for limiting the swing of said head in both directions, substantially as specified.

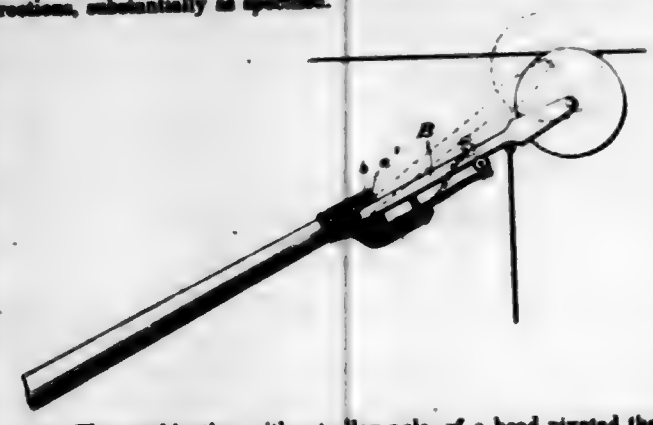

2. The combination with a trolley-pole, of a head pivoted thereto, the plate-spring carried by said pole, and having the bracing-roller at its upper end engaging said head, the securing-bolt for said spring extended to form a stop for limiting the downward swing of said head, and the stop for limiting the upward swing of said head, substantially as specified.

708,922. LOOSE-LEAF-LEDGER BINDER. HERMANN H. HOFFMANN, Chicago, Ill. Filed May 21, 1901. Serial No. 61,335. (No model.)

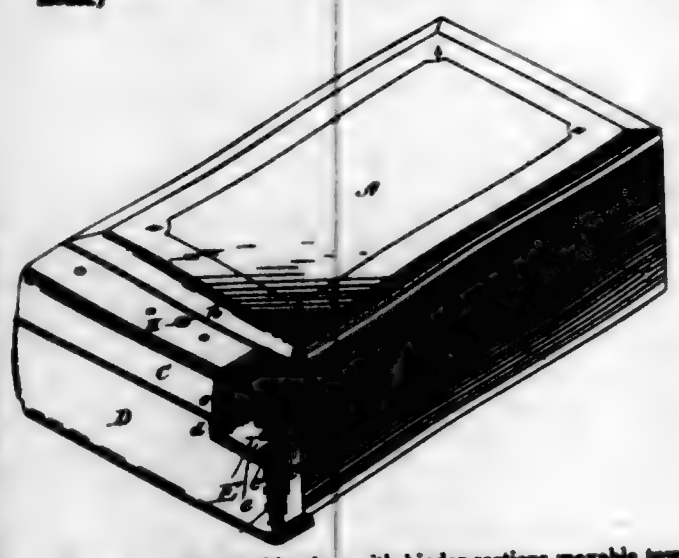

Claim.—1. The combination, with binder-sections movable toward and from each other to clamp the sheets or leaves between them and release the same respectively, of a rotary ratchet-forming screw, mounted on one section, and a nut-forming pawl mounted on the other section in engagement with the screw-threads, whereby a quick closing may be had and thereafter a final screw-and-nut compression; substantially as described.

2. The combination, with binder-sections, movable toward and from each other to clamp the sheets or leaves between them and release the same respectively, of a rotary ratchet-forming screw mounted on one section, a nut-forming pawl on the other section in engagement with said screw, and means for releasing the pawl from the screw to allow of separation of the binder-sections; substantially as described.

3. The combination, with binder-sections movable toward and from each other, of a rotary ratchet-forming screw mounted on one section and grooved longitudinally, a nut-forming pawl mounted on the other section, and provided with a releasing-dog actuated by one wall of the groove, upon a reverse turn of the screw, to disengage the pawl from said screw to allow of a quick opening of the binder; substantially as described.

4. The combination, with binder-sections movable toward and from each other, and springs to force the binder-sections apart, of a rotary ratchet-forming screw mounted on one binder-section and provided with longitudinal grooves, a nut-forming pawl mounted on the other binder-section in engagement with said screw, and a releasing-dog having a tooth to enter a groove in said screw, and by a reverse movement of the latter throw the pawl out of engagement with said screw, whereupon the springs will suddenly force the binder-sections apart; substantially as described.

5. The combination with the binder-sections movable toward and from each other, telescopic rods and tubes mounted on the respective binder-sections, springs in said tubes pressing the said rods or plungers outwardly, of a telescopic tubular lock-case having its members connected at their opposite ends to the respective binder-sections, a rotary ratchet-forming screw swiveled at its outer end in one case member, and provided

with longitudinal grooves, a nut-forming pawl pivoted in the other casing member, and engaging said screw, a releasing-dog pivoted to the lower end of the pawl and having a tooth engaging the screw for operation by a reverse movement thereof, to release the pawl, and a spring pressing the dog and the pawl toward the screw; substantially as described.

6. A binder comprising upper and lower sections formed of angle-plates overlapped at their back flanges to slide one upon the other, the vertical end edges of the lower back flange being bent around and inclosing the corresponding edges of the upper back flange, telescopic angular end posts connected at their ends to the horizontal flanges of the binder-sections to slide therewith, the vertical edges of the inwardly-projecting flanges of the lower post members being bent around the corresponding edges of the upper post members, and means for locking the binder-sections together; substantially as described.

7. A locking and releasing mechanism for binders comprising a telescopic case, a rotary ratchet-forming screw swiveled in one member of the case, a nut-forming pawl in the other case member and engaging the screw, and means for disengaging the pawl from the screw upon reversing the rotation thereof; substantially as described.

8. A locking and releasing mechanism for binders comprising a telescopic case, a rotary, longitudinally-grooved, ratchet-forming screw swiveled in one member of the case, a nut-forming pawl pivoted in the other case member, and engaging the said screw, a pawl-releasing dog pivoted to the said pawl to engage the screw-groove and by a reverse movement of the screw throw the pawl away from the screw; substantially as described.

9. A locking and releasing mechanism for binders comprising a telescopic case, a rotary, longitudinally-grooved, ratchet-forming screw swiveled in one member of the case, a nut-forming pawl pivoted in the other case member, and engaging the said screw, a pawl-releasing dog pivoted to the said pawl to engage the screw-groove and by a reverse movement of the screw throw the pawl away from the screw, and a plate-spring bearing at its free end on the rear edge of the dog and throwing it and the pawl toward the screw; substantially as described.

10. A locking and releasing mechanism for binders, comprising a telescopic case formed of two tubular members formed respectively with longitudinally-extending guide-slots and ribs, a rotary, ratchet-forming screw swiveled in one member of the case, a nut-forming pawl in the other case member, and engaging the screw, and means for disengaging the pawl from the screw upon reversing the rotation thereof; substantially as described.

11. The combination with binder-sections, movable toward and from each other to clamp the sheets or leaves between them and release the same respectively, of a locking mechanism including a ratchet device upon one section and a ratchet-engaging device on the other section, whereby a quick closing may be had, and means for imparting to the locking mechanism a final compression, and means whereby when the locking mechanism is released, the parts are separated quickly; substantially as described.

12. The combination with binder-sections movable toward and from each other to clamp the sheets or leaves between them and release the same respectively, of a locking mechanism including a rotary ratchet-forming screw mounted on one section, and means mounted on the other section for engaging the screw-threads of the ratchet-forming screw, whereby a quick closing may be had and thereafter a final screw compression; substantially as described.

13. The combination with the L-shaped or angular binder-sections, having overlapping sliding back pieces, one of which has its end edges bent around to inclose the end edges of the other section, whereby a telescopic or sliding connection is established between the two sections, and a locking mechanism; substantially as described.

708,923. WELL-BUCKET. HERBERT W. HOLLIS, Kingsland, Ark. Filed Feb. 6, 1902. Serial No. 93,230. (No model.)

Claim.—1. The combination of a bucket having a valve-seat in its lower end, a valve for said seat provided with a rod, a cross-bar secured to said bucket at its upper end and provided with a notch into which the valve-rod projects, and a clasp for closing said notch and maintaining the valve-rod in a vertical position, substantially as set forth.

2. The combination of a bucket having a valve-seat in its lower end, a valve for said seat provided with a rod, a cross-bar secured to said bucket at its upper end and provided with a notch into which the valve-rod projects, and a clasp for closing said notch or recess for holding the valve-rod in vertical position and having a sliding engagement upon said bar for frictionally locking said rod in an elevated position, substantially as set forth.

3. The combination of a bucket having a valve-seat in its lower end, a valve for said seat provided with a rod, a cross-bar secured to said bucket at its upper end and provided with a notch into which the valve-rod projects, and a clasp mounted to slide upon said rod and adapted to engage said bar for closing said notch to hold the rod in an upright position, substantially as set forth.

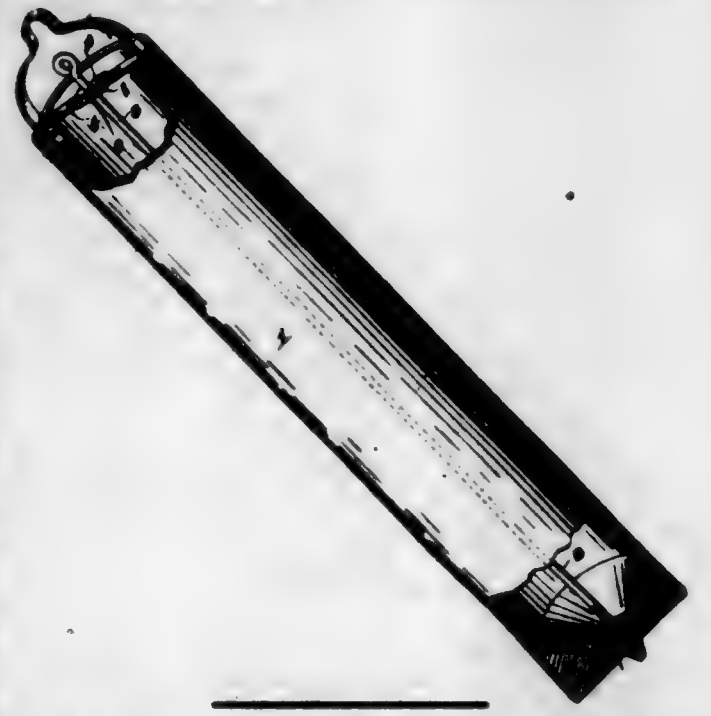

708,924. LINK-MOTION BLOCK. OLIVER D. HOLT, Braman, Okla. Filed Feb. 21, 1902. Serial No. 95,166. (No model.)

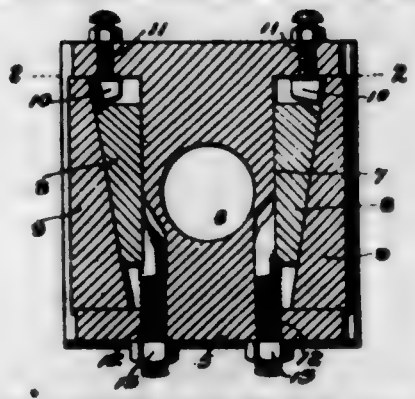

Claim.—The combination of the link-block having a central pivot-opening and provided at its opposite sides with recesses 7, laterally-movable wearing-blocks 9 having flat bearing-faces projecting slightly beyond the mouth of the recesses, said bearing-blocks being of a length and width approximately equal to the length and width of the recesses and each being provided at its narrower end with an inwardly-projecting lug 10, set-screws 11 carried by the link-block and adapted to engage with said lugs, wedge-blocks 8 situated between the inclined faces of the wearing-blocks and the inner walls of the recesses, said wedge-blocks each being provided with a recess 19 for the reception of the lugs 10, threaded stems 12 forming part of wedge-blocks and extending out through guiding-openings in the lower portion of the link-block, and nuts adapted to said threaded stems for adjusting the position of the wedge-blocks.

708,925. COUPLING FOR CONNECTING-RODS. JAMES HOSKLEY, Glade Mills, Pa., assignor of one-half to John B. Gregory, Glade Mills, Pa. Filed Jan. 6, 1902. Serial No. 88,541. (No model.)

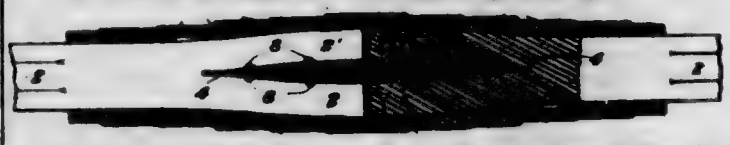

Claim.—1. A device for connecting sections of rods consisting of a tubular shell, and a wedge adapted to be passed therethrough provided with overlapping flanges.

2. A device for connecting sections of rods consisting of a tubular shell provided with interior corrugations, and a double-sided wedge provided with vertical ribs adapted to be inserted through the shell provided with an upwardly-extending support and means for securing the wedge in position.

3. A device for connecting sections of rods consisting of a tubular shell and a wedge adapted to be inserted therethrough, provided with vertical ribs and an upwardly-extending support, and means for securing the wedge in position.

4. A device for connecting sections of rods consisting of a tubular shell having an interior maximum cross-area at its middle portion and diminishing toward the ends, provided with longitudinal upper and lower wedge-openings, and a wedge adapted to pass through such openings provided with an upwardly-extending pivotal support, and means for securing the wedge in position.

5. A device for connecting sections of rods consisting of a tubular interiorly-corrugated shell having an interior maximum cross-area at its middle portion and diminishing toward the ends, provided with longitudinal upper and lower wedge-openings, and a wedge adapted to pass through such openings provided with an upwardly-extending pivoted support and means for securing the wedge in position.

6. The combination, with the slotted ends of a connecting-rod, of a surrounding tubular shell having an internal middle space to admit of the separation of the divided ends diminishing in area toward each end and provided with an upper and lower longitudinal wedge-opening, and a wedge extending through such opening and between the divided ends, with means for supporting the wedge and securing it in position.

703,926. GARMENT-SUPPORTER. WILLIAM S. HERKIN, Merriam Park, Minn. Filed Apr. 25, 1902. Serial No. 104,601. (No model.)

Claim.—1. A garment-supporter comprising a belt, studs attached thereto at the outer surface of said belt, projections from said studs to the inner surface of said belt forming buttons, said stud coöperating with a frame E attached to a nether garment by means of a pair of pins F hinged at the lower enlarged end of said frame and engaging with tangs at the edge of the narrower portion of said frame; substantially as described.

2. A garment-supporter loop comprising a continuous sheet-metal body having a central opening therein, said opening being larger at one end than at the other and entirely surrounded by the sheet-metal body, said body being broader at one end than at the other, a bushing arranged at the broader end of said body, a pin hinged in said bushing and retaining-tangs on said body at the narrow end thereof to receive the ends of said pin; substantially as described.

703,927. LOCK. CHARLES S. HUNTINGTON, Los Angeles, Cal. Filed July 30, 1901. Serial No. 70,286. (No model.)

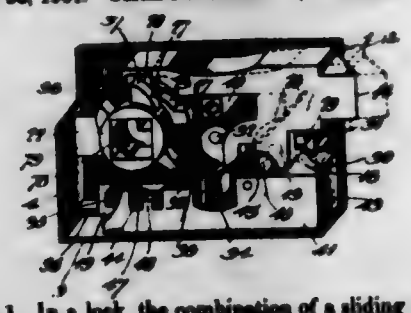

Claim.—1. In a lock, the combination of a sliding bolt capable of a limited reciprocation to operate as a latch, and adapted also to have an increased or extended reciprocation to serve as a locking-bolt, and the independently-movable inner and outer knobs provided with means for actuating the said bolt, substantially as described.

2. In a lock, the combination of a sliding bolt having a limited reciprocation to form a latch and capable also of an increased or extended reciprocation to serve as a locking-bolt, a spring for automatically moving the bolt outward when the same operates as a latch, an outer knob, and a hub or sleeve connected with the outer knob and provided with lugs arranged to move the bolt inward against the action of the spring, and adapted to throw the bolt outward to its extended position, said bolt, when extended, being arranged beyond the reach of the said lugs, substantially as described.

3. In a lock, the combination of a sliding spring-actuated bolt having a limited reciprocation to operate as a latch and capable of increased or extended reciprocation to operate as a locking-bolt, said bolt being provided near its rear end with a shoulder, a hub or sleeve provided with lugs arranged to engage the shoulder to move the bolt backward against the action of the spring, said lugs being also arranged to engage the rear end of the bolt to throw the latter to its extended position beyond the reach of the said lugs, and means for operating the hub or sleeve, substantially as described.

4. In a lock, the combination of a sliding spring-actuated bolt, capable of a limited reciprocation to operate as a latch and of an extended reciprocation to serve as a locking-bolt and provided with a key-engaged portion adapted to enable it to be returned from its extended position, and a hub or sleeve provided with a lug arranged to move the bolt inward against the action of the spring and adapted to throw the bolt outward to its extended position, substantially as described.

5. In a lock, the combination of a sliding bolt capable of a limited reciprocation to form a latch and of an extended reciprocation to serve as a locking-bolt, an outer knob, a hub or sleeve connected with the outer knob and provided with a lug arranged to engage the bolt to move the same inward against the action of the spring, and adapted to throw the bolt outward to its extended position, said bolt, when extended, lying beyond the reach of the lug, and means for limiting the forward rotation of the outer knob to prevent the bolt from being accidentally thrown to its extended position, substantially as described.

6. In a lock, the combination of a sliding bolt, capable of a limited and of an extended reciprocation, an outer knob, a hub or sleeve connected with the outer knob and provided with a lug arranged to engage the bolt to move the same inward against the action of the spring and adapted to throw the bolt to its extended position, and a movable latch arranged to engage the knob, to limit the forward rotation thereof, substantially as and for the purpose described.

7. In a lock, the combination of a sliding bolt having a limited and an extended reciprocation, an outer knob provided at its shank with a shoulder, a hub or sleeve having a lug arranged to throw the bolt to its extended position, a latch pivotally mounted adjacent to the outer knob and arranged to engage the shoulder to limit the forward rotation of the said knob, and adapted to be lifted out of such engagement, and a stop for limiting the movement of the latch, substantially as described.

8. In a lock, the combination of a sliding spring-actuated bolt capable of a limited reciprocation to form a latch and of an extended reciprocation to operate as a locking-bolt, a spindle extending through the lock, an inner knob arranged on the inner portion of the spindle, an outer knob arranged on the outer portion of the spindle, and a hub or sleeve connected with the inner knob and provided with lugs or arms arranged to engage the bolt and adapted to move the same to any of its positions, substantially as described.

9. In a lock, the combination of a sliding spring-actuated bolt capable of a limited and of an extended reciprocation, the spindle extending entirely through the lock, the independently-movable inner and outer knobs arranged on the inner and outer portions of the spindle, the outer hub or sleeve connected with the outer knob and having a lug adapted to move the bolt inward against the action of the spring, and capable of throwing the bolt to its extended position, and an inner hub or sleeve connected with the inner knob and provided with lugs arranged to move the bolt to any of its positions, substantially as described.

10. The combination in a lock, of a sliding spring-actuated bolt capable of a limited and an extended reciprocation and provided at its back with recesses 20 and 21, forming shoulders, the independently-movable inner and outer knobs, the outer hub or sleeve connected with the outer knob and provided with lugs arranged to engage the bolt at the recess 21 and adapted to move the same inward against the action of the spring, and capable of throwing the bolt to its extended position beyond the reach of the lugs, and an inner hub or sleeve connected with the inner knob and provided with a lug for throwing the bolt outward, and having an extended lug operating in the recess 20, and adapted to return the bolt from its extended position, substantially as described.

11. The combination of a sliding spring-actuated bolt capable of a limited and of an extended reciprocation, the independently-movable inner and outer knobs, the outer hub or sleeve connected with the outer knob and having a lug for throwing the bolt to its extended position, an inner hub or sleeve having lugs for engaging the bolt, one of the lugs of the inner hub or sleeve being extended to return the bolt from its extended position, and an arm carried by the bolt and arranged to be engaged by a key, whereby the bolt is returned from its extended position at the exterior of a door, substantially as described.

12. In a lock, the combination of a sliding bolt capable of a limited and an extended reciprocation to enable it to operate either as a latch or as a locking-bolt, a spring engaging the bolt and adapted to throw the same outward when the bolt operates as a latch, a catch or detent arranged to lock the bolt in its extended position and capable of permitting a free reciprocation of the bolt when the same operates as a latch, and means for actuating the bolt, substantially as described.

13. In a lock, the combination of a sliding spring-actuated bolt capable of a limited and of an extended reciprocation to enable it to operate either as a latch or as a locking-bolt, the independently-movable inner and outer knobs provided with means for actuating the bolt, and a catch or detent arranged to lock the bolt in its extended position and capable of permitting a free reciprocation of the bolt when the latter is operated as a latch, substantially as described.

14. In a lock, the combination of a sliding spring-actuated bolt, capable of a limited and of an extended reciprocation, the independently-movable inner and outer knobs provided with means for actuating the

bolt, an arm carried by the bolt and arranged to be engaged by a key to return the bolt from its extended position, and a catch or detent arranged to lock the bolt in its extended position, substantially as described.

15. In a lock, the combination of a sliding bolt capable of a limited and of an extended reciprocation and provided with a key engaged arm and having a lug or projection, a catch or detent movably mounted and provided with a shoulder for engaging the lug or projection to lock the bolt in its extended position, said catch or detent being also provided adjacent to the shoulder with an inclined face arranged to be engaged by the lug or projection to enable the bolt in moving outward to lift the catch or detent, and means for actuating the bolt, substantially as described.

16. In a lock, the combination of a sliding spring-actuated bolt capable of a limited and of an extended reciprocation to enable it to operate either as a latch or as a locking-bolt, said bolt being provided with a depending key-engaged arm having a laterally-extending lug, and a catch or detent movably mounted and provided at its outer portion with a bend forming an outer shoulder and providing an inclined face, said shoulder and inclined face being located beyond the lug, when the bolt operates as a latch, substantially as described.

17. In a lock, the combination of a sliding spring-actuated bolt, capable of a limited and an extended reciprocation to operate either as a latch or as a locking-bolt, a catch or detent pivoted between its ends and having its outer portion arranged to engage the bolt to lock the latter in its extended position, and a spring engaging the inner portion of the catch or detent and also engaging the bolt, substantially as described.

18. In a lock, the combination of a sliding spring-actuated bolt, capable of an extended and a limited reciprocation and provided with a depending key-engaged arm having a laterally-extending lug, a catch or detent pivoted between its ends and provided at its outer portion with a shoulder for engaging the lug to lock the bolt in its extended position, said catch or detent having its outer arm located above the said lug and provided with an inclined face to enable the lug to lift it automatically when the bolt is moved outward, and means for actuating the bolt and for holding the catch or detent in its engaging position, substantially as described.

19. In a lock, the combination of a sliding spring-actuated bolt having a limited and an extended reciprocation and provided with a depending key-engaged arm having a laterally-extending lug, a catch or detent pivoted between its ends and having its outer arm located above the lug and adapted to engage the same to lock the bolt in its extended position, said catch or detent having its inner portion laterally offset and provided with an opening, a spring extending through the opening and engaging the inner arm of the catch or detent, and also engaging the shoulder of the bolt, and nuts for actuating the bolt, substantially as described.

20. In a lock, the combination of a sliding bolt, a knob-spindle, a catch or detent arranged to lock the bolt in its extended position, a movable keyhole-guard, a sleeve or hub arranged on the knob-spindle and provided with means for operating the bolt and arranged to engage both the catch or detent and the keyhole-guard, substantially as described.

21. In a lock, the combination of a reciprocating bolt, a sliding keyhole-guard, a catch or tumbler pivoted between its ends and arranged to engage the bolt and the keyhole-guard, and a hub or sleeve provided with means for actuating the bolt and the keyhole-guard and for swinging the catch or tumbler out of engagement with the same, substantially as and for the purpose described.

22. In a lock, the combination of a reciprocating bolt provided with a key-engaged portion, a catch or tumbler pivoted between its ends and provided at its front end with means for locking the bolt in its extended position, and having a projection at its rear portion, a sliding keyhole-guard provided with a recess and having a lug arranged to be engaged by the projection of the catch or tumbler, and a hub or sleeve provided with means for actuating the bolt and having an arm or lug arranged to engage the catch or tumbler and adapted to operate in the said recess to engage the opposite walls thereof to reciprocate the keyhole-guard, substantially as described.

23. In a lock, the combination of a casing, a sliding bolt, inner and outer hubs or sleeves provided with means for engaging the bolt, a spindle extending through the hubs or sleeves and engaging the outer one, a bracket mounted on the casing and extending between the hubs or sleeves and having a curved flange, a cylindrical sleeve or barrel arranged on the spindle and interlocked with the said flange, inner and outer knobs capable of independent rotation, and a polygonal sleeve connected with the inner knob and interlocked with the inner hub or sleeve, substantially as described.

24. In a lock, the combination of a casing, a reciprocating bolt, inner and outer hubs or sleeves provided with means for engaging the bolt, a spindle extending through the hubs or sleeves, the inner and outer knobs capable of independent movement, the outer knob being provided with an extended shank having a concealed portion secured to the spindle, said knobs being connected with the inner and outer sleeves or hubs, and means for securing the inner knob to the spindle, substantially as described.

708,928. METHOD OF LAYING TILES. ELIAS S. HUTCHISON, Washington, D. C., assignor of one-half to Samuel Ross, Washington, D. C. Filed Apr. 28, 1902. Serial No. 104,705. (No specimens.)

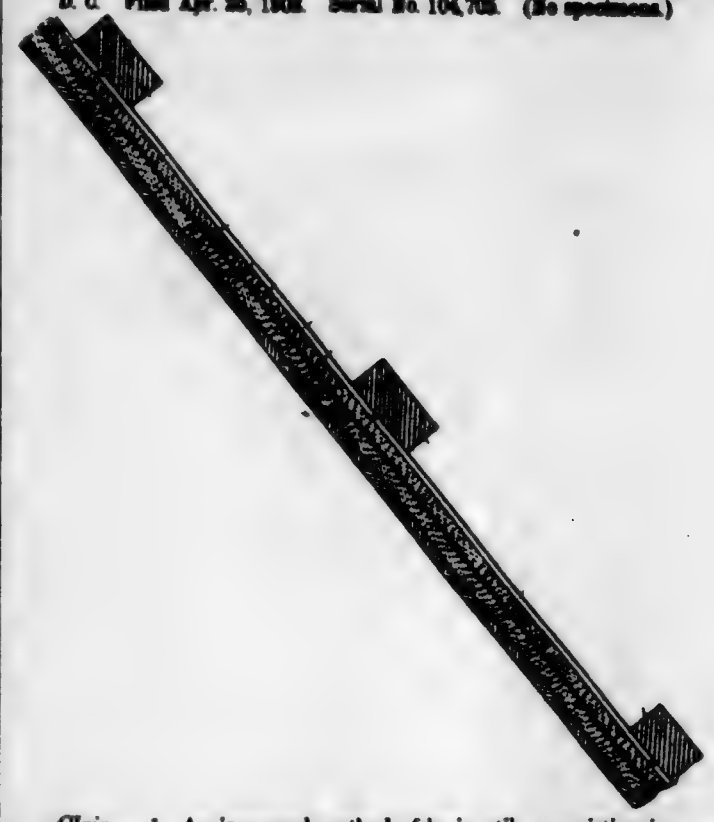

Claim.—1. An improved method of laying tiles, consisting in providing a backing, applying thereto an isolating substance to prevent an absorption of the moisture of the second plastic coating, applying to the isolating substance a second coating and laying the tiles therein while it is moist.

2. An improved method of laying tiles, consisting in providing a backing, applying thereto a coating of impervious material, applying to the impervious material while wet, a suitable quantity of sand to form a key for a coating of plastic material, and applying thereto, a coating of plastic material and then laying the tiles upon the plastic material.

708,929. PHOTOCHROMOSCOPIC AND TRICHROMATIC APPARATUS. FREDERIC E. IVES, Philadelphia, Pa. Filed May 21, 1902. Serial No. 108,384. (No model.)

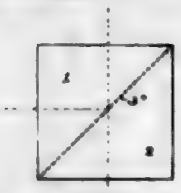

Claim.—1. In apparatus of the character described, a compound prism with internal light reflecting and transmitting surface as a means of dividing the rays of light which form two colored images.

2. In apparatus of the character described, a compound prism with internal light reflecting and transmitting surface as a means of dividing the rays of light to form two images, in combination with appropriate color screens for said divided rays.

3. In apparatus of the character described, the combination of a compound prism with internal light reflecting and transmitting surface for dividing the rays which form two images, and a plate-reflector for separating from the incident rays those which form a third image.

4. A light reflecting and transmitting device consisting of a prism having its inclined face provided with an opaque film, having breaks or openings therein distributed throughout the area of the film.

5. A light reflecting and transmitting device consisting of a compound prism formed of two prisms with their diagonal faces secured together, one of such faces having an opaque film with breaks or openings therein distributed throughout the area of the film.

708,930. PROCESS OF MANUFACTURING ROTARY CUTTERS. ERNST JANSEN, Mettingen, Germany. Filed July 6, 1901. Serial No. 67,360. (No specimens.)

Claim.—A process of manufacturing rotary cutters, which consist in melting down a charge composed of a material containing the percentage of carbon intended to be contained in the finished cutter until the said charge is thoroughly liquefied to insure a uniform distribution of the

carbon in the material, then puddling the entire fused charge by vigorous stirring so as to cause the excess of carbon to be burned by the oxygen of the atmosphere through which the temperature of the charge is raised whereby the latter is kept thoroughly liquid until after the oxidation of all the excess of carbon and the fused metal recommences to become thick, adding aluminium to prevent disengagement of gases or porosity while casting, and then suitably casting the fused metal.

708,981. TOY. HATTIE JENSON, Sturgeon Bay, Wis. Filed June 26, 1901. Serial No. 66,142. (No model.)

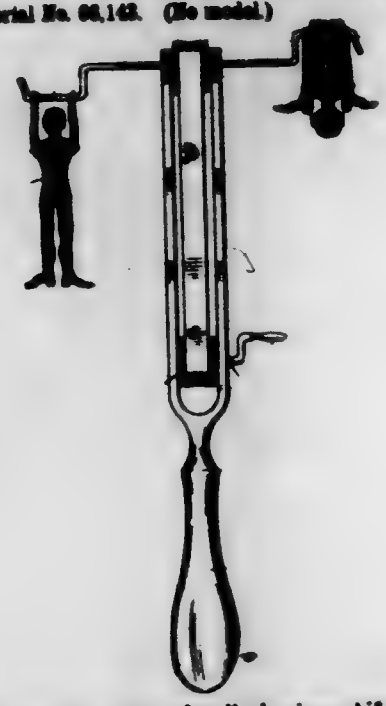

Claim.—A toy comprising a handle having a bifurcated extension providing a pair of arms, a driving-shaft journaled at the inner end of the extension and provided with a crank having an operating-handle, a pulley fixed to the driving-shaft between the arms, a driven shaft journaled at the outer end of the extension and formed with a crank at each end projecting in opposite directions, a projection on each crank parallel with the driven shaft, and an inbent guiding end on each projection, a pulley fixed to the driven shaft between the arms, a belt connecting the pulleys, and jointed figures having arms fastened to the projections so as to turn therewith and to fold thereover.

708,982. SEMAPHORE. ABRAHAM C. JOHNSON, Winona, Minn. Filed Feb. 26, 1902. Serial No. 96,602. (No model.)

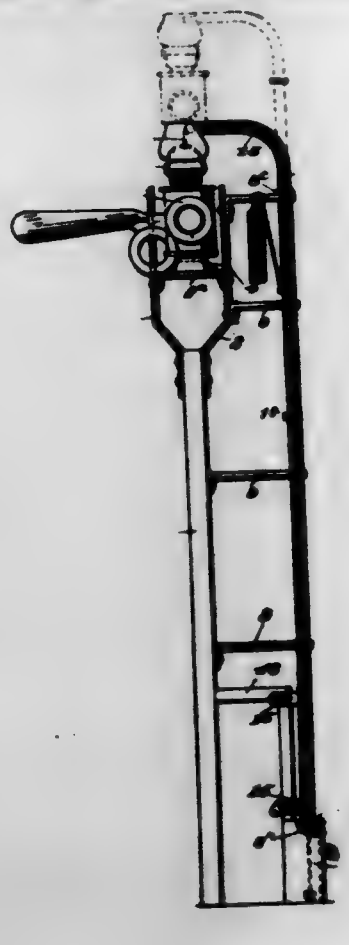

Claim.—1. In a semaphore, means for first raising the signal-lantern vertically from its pole or support, such means being adapted to be turned to one side in a horizontal plane to clear the lantern from its support, to lower the lantern to the ground below, to raise it again, to return it over its support, and to lower it thereupon, substantially as specified.

2. In a semaphore, the signal-lantern, the rope or cable connected thereto, the slidable and rotatable guide and protecting-tube for such rope, and means for locking such tube in lowered position, substantially as specified.

3. In a semaphore, the signal-lantern, the rope or cable connected thereto, the slidable and rotatable guide and protecting-tube for said rope and having the guide wings or flanges, means for counterbalancing said tube, and means for locking such tube in lowered position, substantially as specified.

4. In a semaphore, the signal-lantern, the rope or cable connected thereto, the slidable and rotatable guide and protecting-tube for said rope, and having the guide wings or flanges, a lock-box at the base of such tube, and arranged to receive the lower end thereof, and of the rope or cable, a door for said box arranged to engage said tube when closed to secure the same in lowered position, and means for counterbalancing such tube, substantially as specified.

708,983. BOOK-BINDING-MACHINE. WILLIAM G. JOYCE, Jr., New York, N. Y.; William Joyce administrator of said William G. Joyce, Jr., deceased. Filed May 17, 1901. Serial No. 60,728. (No model.)

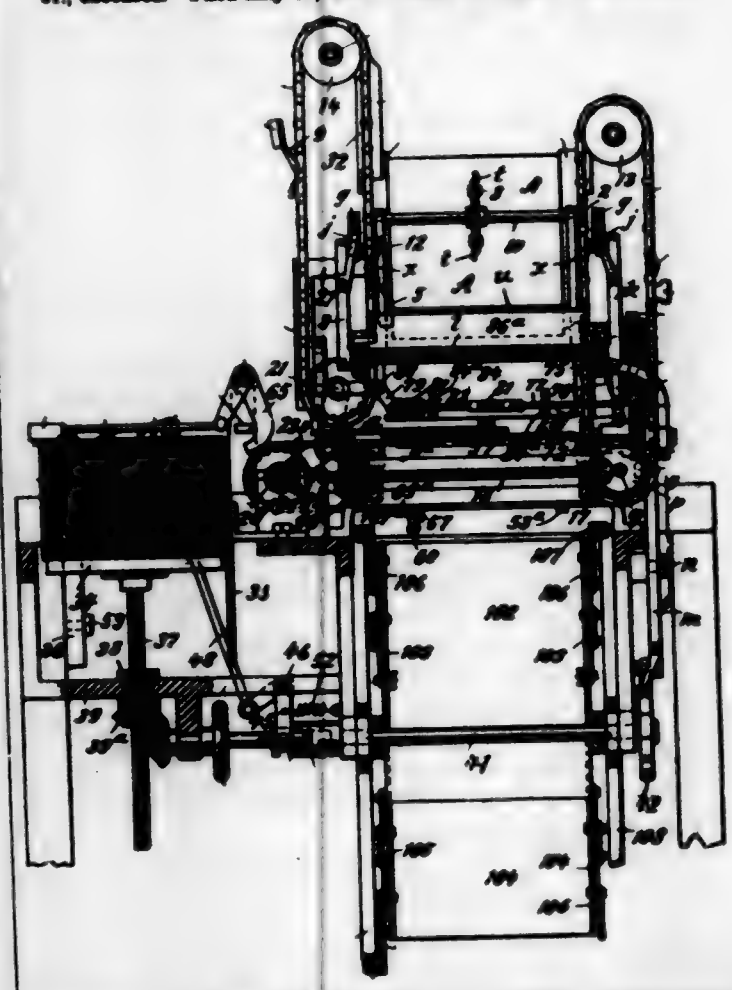

Claim.—1. The combination of the book-feeding way adapted to receive the uncovered and back-rounded books in series and set upright on their backs, means for intermittingly feeding them along sidewise, vertical endless chains and gripping-pads thereon adapted to receive the books endwise successively at the end of the feedway, and pasting-rolls receiving the books from the chains and pasting the sides of the books preparatory to receiving the covers.

2. The combination of the book-feeding way adapted to receive the uncovered and back-rounded books in series and set upright on their backs, means for intermittingly feeding them along sidewise, vertical endless chains and gripping-pads thereon adapted to receive the books endwise successively at the end of the feedway, and the automatic gage at the end of the feedway controlling the books preparatory to their engagement by the chains.

3. The combination of the book-feedway adapted to receive the uncovered and back-rounded books in series and set upright on their backs, means for intermittingly feeding them along sidewise, vertical endless chains and gripping-pads thereon adapted to receive the books endwise successively at the end of the feedway, the automatic gage at the end of the feedway controlling the books preparatory to their engagement by

the chains and while being delivered by the chains, said stop consisting of the rotating device having ends adapted for one effect and sides adapted for the other effect, and means for periodically shifting it by toothed spurs on the chain.

4. The combination of the book-feeding way adapted to receive the uncovered and back-rounded books in series and set upright on their backs, means for intermittingly feeding them along sidewise, vertical endless chains and gripping-pads thereon adapted to receive the books endwise successively at the end of the feedway, pasting-rolls receiving the books from the chains and pasting the sides of the books preparatory to receiving the covers, cover-pressing rolls under the pasting-rolls, and means for placing the covers on said pressing-rolls preparatory to receiving the books, and so as to be pressed on the books by said pressing rolls.

5. The combination of the book-feeding way adapted to receive the uncovered and back-rounded books in series and set upright on their backs, means for intermittingly feeding them along sidewise, vertical endless chains and gripping-pads thereon adapted to receive the books endwise successively at the ends of the feedway, pasting-rolls receiving the books from the chains, and having the grooves for the bulging angles of the rounded books, said rolls adapted for pasting the uncovered sides of the books preparatory to receiving the covers.

6. The combination with the pasting-rolls, cover-pressing rolls, means for supplying the books and means for supplying the covers thereto, of the guide and paper smoothing and protecting plates intermediate of said pasting and pressing rolls.

7. The combination with the cover-pressing rolls, of the cover-receiving ways, cover-carrying chains, automatic closing grippers on said chains, means for opening the grippers and means for thrusting the covers into the grippers, and means for opening the grippers for release of the covers and the gage for stopping and centering the covers.

8. The combination with the cover-feeding chains and grippers thereon, of the gripper-opening studs, cover-pullers, rock-shaft and connections for operating the cover-pullers, and the tappets on the cover-grippers for operating the rock-shaft.

9. The combination with the feedway for the books through the pasting-rolls and with said pasting and cover-pressing rolls, of the cover-centering gage normally allowing overfeeding of the covers, and the roller-stud connected to said gage and subject to reverse movement by the books entering into the covers for centering said covers.

10. The combination with the pasting and cover-pressing rolls, of the series of intermittingly-rotating book receiving and clamping racks adapted for successively receiving, pressing, carrying, and delivering the books and provided with creasing devices adapted for producing the joint-creases of the book-covers.

11. The combination with the pasting and cover-pressing rolls, of the series of intermittingly-rotating book receiving and clamping racks, each comprising a plate fixedly attached to the rotating shaft, parallel with and radially thereto, another plate parallel to the first-mentioned plate, and lazy-tongs links connecting the ends of the two plates, each system of links having a roller-stud terminal, and stationary cams engaging said studs to close the clamps to grip the books, and releasing the same for the discharge of the books.

12. The combination with the pasting-rolls, cover-pressing rolls, means for supplying the books, means for supplying the covers thereto and the springs for checking the covers when thrust up by the pressing-rolls.

13. In a bookbinding-machine, the combination with feeding devices for the partly-bound books, of a pair of pasting-rolls, said rolls having the grooves for the bulging angles of the books, means for placing the covers under said rolls to receive the books, and rolls under the pasting-rolls for pressing the covers on the books.

708,934. BURIAL-CASE. CARL D. KOEHLER, Oshkosh, Wis., assignor to the Rockwell Edwards Co., Oshkosh, Wis. Filed Mar. 4, 1902. Serial No. 96,992. (No model.)

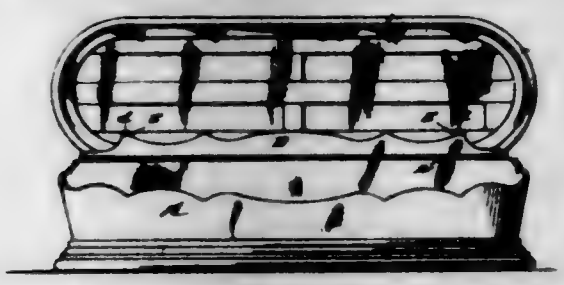

Claim.—A burial-casket comprising, in its construction, a body, a hinged top and a rear bracket hinged to braces of the top so as to depend in a vertical line with the body back when open, and swing forward to clear the body as the casket is closed, substantially as shown.

708,935. RECORDING-MACHINE. EDWARD LARSEN, Alta, Iowa. Filed Sept. 23, 1901. Serial No. 76,214. (No model.)

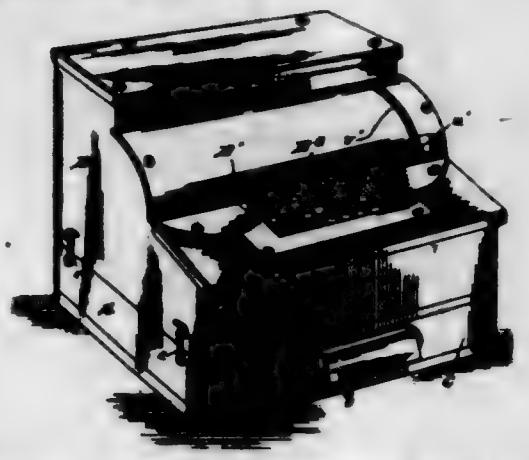

Claim.—1. In a machine for the purpose described, the combination of a case having an opening in its top, a support disposed in the case below said opening, a printing-cylinder mounted within the case and equipped to print column-headings or other matter on a strip or web of paper precedent to the passage of the same beneath the opening in the top of the case, and also equipped to leave blank spaces on the strip or web of paper immediately before the column-headings or other printed matter, a take-up roll, and means for turning the take-up roll step by step, and for also turning it a comparatively long distance incident to each of its revolutions, the latter to quickly carry the blank spaces and the headings on the paper past the opening in the top of the case.

2. In a machine for the purpose described, the combination of a take-up roll, a disk fixed with respect to said roll and having teeth, and also having a notch, a lever, a dog carried thereby and arranged to engage the teeth and drop into the notch of the disk, and a stop for limiting the rearward movements of the dog.

3. In a machine for the purpose described, the combination of a frame, a take-up roll mounted therein, a disk fixed with respect to said roll, and having teeth, and also having a notch, a lever fulcrumed at a suitable point, a pivoted dog carried by the lever and arranged to engage the teeth and drop into the notch of the disk, and a stop-lever fulcrumed on the frame, and disposed above the dog and having shoulders for the engagement thereof.

4. In a machine for the purpose described, the combination of the case having an opening in its top, a support in the case below said opening, a printing-cylinder mounted within the case in a position to enable it to print a strip or web of paper precedent to the passage of the same beneath the opening in the top of the case, a take-up roll, a ratchet-disk fixed with respect thereto, a lever, a dog carried thereby and arranged to engage said disk, and a driving connection between the take-up roll and the printing-cylinder.

5. In a machine for the purpose described, the combination of a case having an opening in its top, a support disposed in the case below said opening, a printing-cylinder mounted within the case, and equipped to print column-headings or other matter on a strip or web of paper precedent to the passage of the same beneath the opening in the top of the case, and also equipped to leave blank spaces on the strip or web of paper immediately before the column-headings or other printed matter, a take-up roll, a disk fixed with respect to said roll and having teeth and a notch, a lever, a dog carried by the lever and arranged to engage the teeth and drop into the notch of the disk, and a driving connection between the take-up roll and the printing-cylinder.

6. In a machine for the purpose described, the combination of a case having an opening in its top, a support disposed in the case below said opening, a printing-cylinder mounted within the case, and having peripheral rules for ruling columns, and also having type for printing headings at the upper ends of said columns, on a strip or web of paper precedent to the passage of the same beneath the opening in the top of the case, a take-up roll, and means for operating said take-up roll and printing-cylinder.

7. In a machine for the purpose described, the combination of a case having a drawer-compartment, and also having an opening in its top, a support arranged in the case below said opening, a drawer arranged in the drawer-compartment, a paper-supporting roll mounted in the case, a take-up roll for drawing a web or strip of paper off the paper-supporting roll and over the support, a cylinder for printing said strip or web of paper, means intermediate of the drawer and the take-up roll for turning said roll, and a driving connection between the take-up roll and the printing-cylinder.

8. In a machine for the purpose described, the combination of a case having an opening B' and a slot a' in its top, and also having a drawer-compartment, a drawer therein, a support arranged in the case below the

opening B', a paper-supporting roll mounted within the case, a printing-cylinder also mounted within the case and equipped to print column-headings or other matter on a web or strip of paper precedent to the passage of the same beneath the opening in the top of the case, and also equipped to leave blank spaces on the strip or web of paper immediately before the column-headings or other matter, a take-up roll, a driving connection between the take-up roll and printing-cylinder, disks fixed with respect to the take-up roll at the ends thereof and having teeth and notches, levers carrying dogs arranged to engage the teeth and drop into the notches of the disks; one of said levers extending through the slot s' in the case, and the other being arranged to be engaged by the drawer, and stops for limiting the rearward movements of the dogs on the levers.

9. In a machine for the purpose described, the combination of a case having an opening in its top, a support disposed in the case below said opening, a printing-cylinder mounted within the case and equipped to print column-headings or other matter on a strip or web of paper precedent to the passage of the same beneath the opening in the top of the case, and also equipped to leave blank spaces on the strip or web immediately before the column-headings or other printed matter, a take-up roll, means for turning the take-up roll step by step, and for also turning it a comparatively long distance incident to each of its revolutions, the latter to quickly carry the blank spaces and the headings on the paper past the opening in the top of the case, a driving connection between the take-up roll and the printing-cylinder, and a paper-cutting device carried by the take-up roll, and arranged to rest beneath the blank spaces of the paper wound thereon.

10. In a machine for the purpose described, the combination of a case having an opening in its top, a support arranged below said opening, a paper-supporting roll mounted within said case, a printing-roll also arranged within the case in a position to print a web or strip of paper precedent to the passage of the same over the support, an inking-roll yieldingly pressed against the periphery of the printing-cylinder, a roll disposed upon the printing-cylinder and arranged in front of the support, a swinging, spring-pressed frame carrying said roll, a take-up roll located in rear of the support, means for turning said take-up roll, and a driving connection between the take-up roll and the printing-cylinder.

708,936. REVERSING VALVE-GEAR. ANDREW R. LEITWEIN, Pueblo, Colo., assignor of one-half to Emmett H. Scantlin, Pueblo, Colo. Filed Mar. 4, 1902. Serial No. 96,977. (No model.)

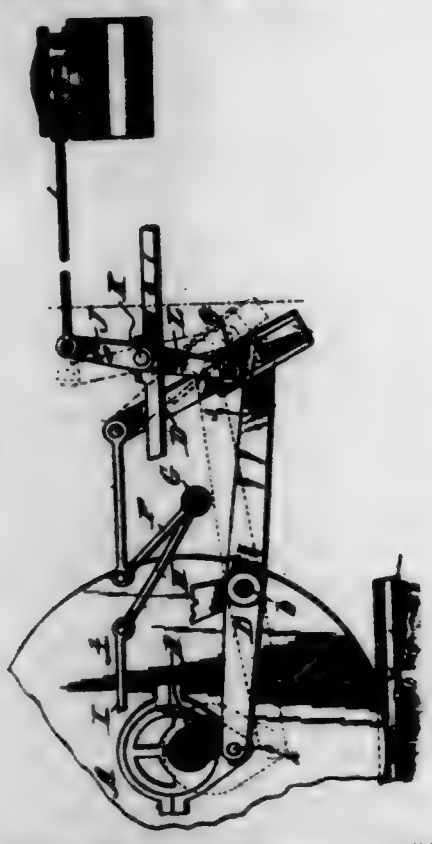

Claim.—1. A reversing-gear, comprising a reversing-slide, a guide-shoe embracing the same, a rocking arm pivoted to the reversing-slide and connected with the valve-rod, a lever jointed to the shoe and adapted to oscillate it, and means for reversing the inclination of the shoe and slide substantially as described.

2. A reversing-gear, comprising a reversing-slide, a guide-shoe embracing the same, a rocking arm pivoted to the reversing-slide and connected to the valve-rod, a lever jointed to the shoe and adapted to oscillate it, an eccentric for oscillating the lever, and means for reversing the inclination of the shoe and slide substantially as described.

3. A reversing-gear, comprising a reversing-slide, a guide-shoe embracing the slide, a rocking arm pivoted to the reversing-slide and connected to the valve-rod, a lever jointed to the shoe and adapted to oscillate it, a connecting-rod jointed to the top of the reversing-slide, and means for adjusting the same to reverse the inclination of said slide and shoe substantially as described.

4. A reversing-gear comprising a reversing-slide, a guide-shoe embracing the slide, a rock-shaft with one arm extending down to and jointed to the slide and another arm extending upwardly and connected to the valve-rod, a lever fulcrumed in the middle and jointed at one end to the shoe, an eccentric connected to the opposite end of said lever, a rod connected to the top of the reversing-slide, and a rock-shaft with an arm jointed to said connecting-rod and provided with operating mechanism under the control of the engineer substantially as described.

5. A reversing-gear, comprising a guide and a rectilinear slide moving therein, a supporting device for the guide pivoted thereto and arranged to vibrate the same over the slide, means for reversing the inclination of the guide and slide and an arm jointed to the slide and connected to the valve-rod substantially as described.

708,987. VAPORIZER FOR EXPLOSIVE-ENGINES. JOSEPH LIBOTTE, Quincy, Mass., assignor of one-half to Mellen H. Bray, Boston, Mass. Filed Nov. 21, 1901. Serial No. 83,088. (No model.)

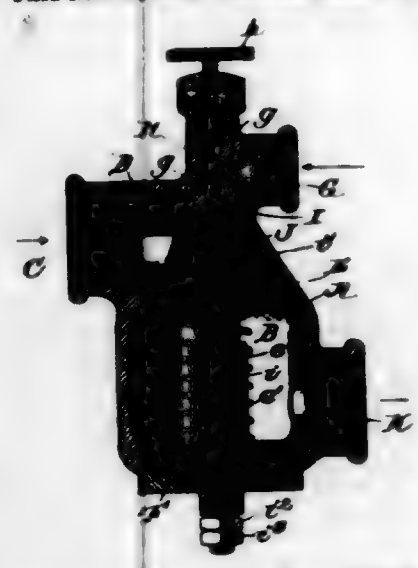

Claim.—1. In a vaporizing device the combination of a mixing-chamber, an air-chamber, above the mixing-chamber, an air-valve between said chambers provided with a stem extending outside the mixing-chamber, a gasolene-valve above the air-valve having a stem extending through the stem of the air-valve and provided with a shoulder for determining the movement of the air-valve with relation to the gasolene-valve, a spring between the valves, and a spring for holding the air-valve to its seat, substantially as described.

2. In a vaporizing device the combination of a mixing-chamber an air-chamber, an air-valve between said chambers, a gasolene-valve above said air-valve having a spreading-surface extending substantially to the periphery of the air-valve, and connections between said valves whereby the air-valve opens before and closes after said gasolene-valve, substantially as described.

3. In a vaporizing device the combination of an air-valve having a stem, a gasolene-valve on the opposite side of the air-valve from said stem, a spring tending to separate said valves, and a connection between said valves allowing a limited relative movement between said valves, substantially as described.

4. In a vaporizing device the combination of a mixing-chamber B, an air-chamber D, an air-valve E between the chambers provided with a stem *e* extending outside the chamber B, a gasolene-valve I above valve E having a stem *i* extending through stem *e* and provided with an adjustable shoulder i^3, a spring i' between the valves and a spring e' for holding valve E to its seat, substantially as described.

5. In a vaporizing device the combination of an air-valve provided with a hollow stem, a gasolene-valve having a stem extending through said hollow stem and having a shoulder for engaging the end of said hollow stem, and a spring between said valves, substantially as described.

708,988. NECK-YOKE ATTACHMENT. DAVID H. LUSE, Chinook, Mont. Filed Mar. 20, 1902. Serial No. 100,599. (No model.)

Claim.—1. The combination of the tongue, the thimble fitting on the point of the tongue and having a forwardly-facing shoulder, and a bayonet-slot in advance of said shoulder, the coupling-sleeve provided internally with a pin to enter said slot, the bracing band or ring secured

around the front end of said sleeve and provided at its upper side with an extension elongated laterally providing a cross-bar for the connecting-strap, the neck-yoke, and the connecting-strap connected with the neck-yoke and looped around the cross-bar of the bracing-ring substantially as set forth.

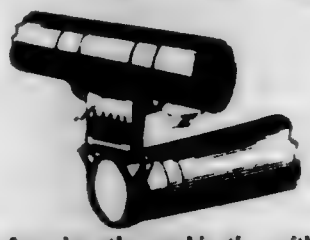

2. In a neck-yoke fastening, the combination with the pole, of the thimble upon and at the extremity of the point thereof, the sleeve fitted over and secured to said thimble, the bracing-ring secured upon the said sleeve and provided at its upper side with an extension, and the neck-yoke-connecting devices secured to said extension, substantially as set forth.

3. The combination of the sleeve to fit and be secured upon the end of the pole, the bracing band or strap secured upon and rigidly to said sleeve and spaced at its upper side away from and above the sleeve to afford means for engagement by the neck-yoke connection, the neck-yoke, and the neck-yoke connection secured to the spaced-away portion of the bracing-band substantially as set forth.

4. The combination of the pole or tongue provided on its tip end with a thimble and with a forwardly-facing shoulder, the coupling-sleeve fitting on said thimble and against said shoulder, the bracing band or ring secured around the thimble and having at its upper side a spaced-away portion, the neck-yoke, and the neck-yoke connection secured to said spaced-away portion, substantially as set forth.

5. In a neck-yoke fastening the combination of the neck-yoke, the coupling-sleeve to fit on the pole, the bracing-band secured for a portion of its length to the band and having a portion extended above and spaced away from the band, and the neck-yoke connection secured to the said spaced-away portion, substantially as set forth.

708,939. DEVICE FOR SUPPORTING PHONOGRAPH-RECORDS. GEORGE MADISON, Sandusky, Ohio. Filed Feb. 17, 1902. Serial No. 94,429. (No model.)

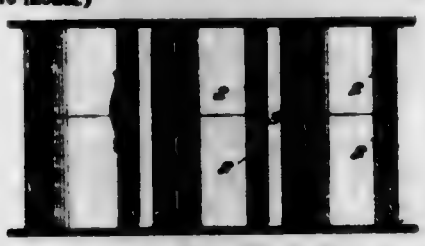

Claim.—1. A device for storing and transporting phonograph-records, and similar articles, consisting of a two-part holder or supporter, each part being provided with an equal number of record-supporting cylinders, correspondingly arranged, said cylinders having an outer surface of yielding material and provided at their bases with a head or flange, the cylinders of each part being adapted to fit into the opposite ends of the records, said cylinders being so arranged as to hold said records out of contact with each other.

2. A device for storing and transporting phonograph-records, and similar articles, consisting of a two-part holder or supporter, each part being provided with an equal number of record-supporting cylinders, correspondingly arranged, said cylinders having an outer surface of yielding material, and provided at their bases with a head or flange, the cylinders of one part having their outer ends rabbeted to fit the corresponding cylinders of the other part, the cylinders of each part being adapted to fit into the opposite ends of the records, and so arranged as to hold their record-surfaces out of contact with each other.

3. A device for storing and transporting phonograph-records, and similar articles, consisting of a two-part holder or supporter, each part composed of a suitable base and an equal number of record-supporting cylinders correspondingly arranged thereon, the cylinders of each part being slightly greater in length than one-half the length of the record, so as to support the ends of the records free from the bases, said cylinders provided with an outer surface of yielding material, and the corresponding cylinders of each part adapted to fit into the opposite ends of the records, all constructed and arranged to hold the records out of contact with each other.

4. A device for storing and transporting phonograph-records, and similar articles, consisting of a two-part holder or supporter, each part being provided with a number of record-supporting cylinders, correspondingly arranged, the cylinders of each part being adapted to fit into the opposite ends of the records and hold them out of contact, and a slidable spring mounted in each cylinder adapted to assist in holding the cylinders in position when the device is in position to support a record, and to be slid into the cylinder when not in use.

708,940. PROCESS OF THE FUSION OF METALS. HERMANN A. E. MEYER, Creusthal, Germany, assignor to Cöln-Müsener Bergwerks Action Verein, Creusthal, Westphalia, Germany. Filed Dec. 12, 1901. Serial No. 85,640. (No specimens.)

Claim.—1. The process of effecting the fusion of hardened masses, particularly the residues or slag in furnaces, which consists in supplying a jet of gas under pressure to said masses, said jet containing sufficient oxygen to burn the components of said mass and being of such a high pressure as to remove the molten masses out of the pit formed by said masses when melted, substantially as described.

2. The process of effecting the fusion of hardened masses particularly the residues or slag in furnaces which consists in applying a jet of gas under pressure to said masses, said jet being composed of any combustible gas and a surplus of oxygen to melt said masses and burn the components thereof, said jet being of such a high pressure as to remove the molten masses out of the pit formed by said masses when melted.

708,941. SEWING-MACHINE NEEDLE. FRANK W. HERRICK, Boston, Mass. Filed June 24, 1901. Serial No. 65,737. (No model.)

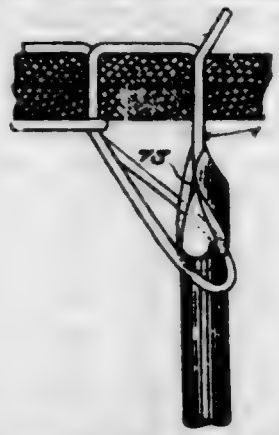

Claim.—1. A straight hooked sewing-machine needle, having a thread deflecting and detaining flange between its barb and point, substantially as described.

2. A straight hooked sewing-machine needle, having a spiral thread deflecting and detaining flange between its barb and point, substantially as described.

708,942. ELECTRIC-MOTOR POWER-TRANSMITTING DEVICE. EVERETT S. MILLER and GUSTAVE C. MARX, Elizabeth, N. J., assignors to Diehl Manufacturing Company, a Corporation of New Jersey. Filed Nov. 30, 1901. Serial No. 84,258. (No model.)

Claim.—1. The combination with a sewing or other machine to be driven, of an electric motor the shaft of which is separate from said machine and which motor-shaft is provided with a brake-wheel, a brake to

engage said wheel and which is mounted on the motor-frame, and a switch, to make and break the electric circuit, connected with said brake so that when the circuit is broken the said brake will be applied to said brake-wheel, and when the circuit is closed the said brake will be removed from said wheel.

2. The combination with a sewing or other machine to be driven, of an electric motor the shaft of which is separate from said machine and which motor-shaft is provided with a pulley and a brake-wheel, a brake to engage said brake-wheel and which brake is mounted on the motor-frame, a switch, to make and break the electric circuit, connected with said brake so that when the circuit is broken the said brake will be applied to said brake-wheel, and when the circuit is closed the said brake will be removed from said wheel, and a rheostat having a series of contacts with any one of which the said switch may be placed in contact when the circuit is to be closed.

3. The combination with a sewing or other machine to be driven, of an electric motor separate from said machine and the shaft of which is provided with a pulley and a brake-wheel, a brake to engage said brake-wheel and which brake is mounted on the motor-frame, a switch, to make and break the electric circuit, connected with said brake so that when the circuit is broken the said brake will be applied to said wheel, and when the circuit is closed the said brake will be removed from said wheel, a rheostat having a series of contacts with any one of which the said switch may be placed in contact when the circuit is closed, and a heel-and-toe treadle positively connected with said brake.

4. An electric motor the shaft of which is provided with a pulley for transmitting power and with a brake-wheel, combined with a spring-pressed brake-lever mounted on the motor-frame and provided with a brake normally pressed against said brake-wheel by its controlling-spring.

5. The combination with a stand or table comprising side frames or legs and a brace connecting the same, of a machine to be driven mounted on said stand or table and provided with a pulley, an electric motor having a hinged or pivoted connection with the said brace and the shaft of which motor is provided with a pulley to be belted to the said first-named pulley, so that by changing the position of said motor, by swinging it on its hinged or pivotal connection with said brace, the belt connecting said pulley may be tightened or loosened, and means for securing said motor in any desired position of adjustment.

6. The combination with a sewing-machine stand comprising legs or side frames and a connecting-brace, said stand being provided with a treadle, of an electric motor pivotally mounted in said stand and provided with a pulley and a brake-wheel, a sewing-machine supported by said stand and having a pulley to be driven, a brake to engage said brake-wheel, means for adjusting said motor on its hinged or pivotal mounting on said stand and for holding said motor in any desired position of adjustment, and a rheostat having a series of contacts to be engaged by said switch; the parts being so arranged that when said treadle is moved to disengage said brake from the brake-wheel the current may be turned onto said motor and so that the electric circuit may be broken when the said brake is applied to said brake-wheel.

7. The combination with a sewing-machine or similar stand or table provided with a treadle and with means for mounting a treadle-operated driving-wheel in or on said stand or table, of an electric motor provided with means whereby it may be attached to said stand or table interchangeably with and in the place at which the said driving-wheel is normally mounted, so that the motor-attaching devices occupy the position usually occupied by the driving-wheel mountings when the said electric motor is employed as a substitute for foot-power.

8. The combination with a stand or table provided with bearings suitable for receiving the hand-wheel shaft and driving-wheel of a treadle driving device, and with a treadle mounted in the lower portion of said stand or table, of a machine to be driven mounted on said stand or table, an electric motor having a frame provided with journals fitted to said hand-wheel shaft-bearings, means for maintaining said motor-frame stationary upon said stand or table when applied thereto, means for controlling the operation of said motor, a connection from said controlling means to said treadle, and a connection from said motor to said machine to be driven.

9. The combination with a stand or table and a machine to be driven mounted thereon, of an electric motor the shaft of which is separate from the shaft of the machine to be driven and which motor-shaft is provided with a brake-wheel, a brake mounted on the motor-frame adjacent to said brake-wheel, and a treadle mounted in the lower part of said stand or table and positively connected with said brake so that the frictional pressure of said brake on said brake-wheel may be controlled by said treadle.

708,948. GAS-PRODUCING APPARATUS. JOHN H. MILLER, Jr. Irwin, Pa. Filed Jan. 24, 1902. Serial No. 91,067. (No model.)

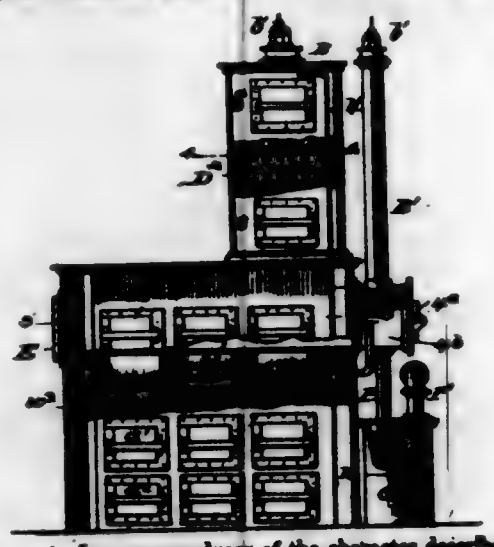

Claim.—1. In a gas-producer of the character described, the combination with the main structure including the vertical walls thereof, a vertically-disposed generating-chamber, a valved stack therefor, and means for feeding vaporized oil into the said vertical chamber; of the horizontal chamber, consisting of a metal shell endwise slidable and detachably supported in the vertical walls of the main structure, said shell having an intake in communication with the generating-chamber, a closure-cap for one end of said shell, and an extension for the other end, provided with a valved draft flue or stack and gas-outlet, all being arranged substantially as shown and for the purposes described.

2. In a gas-producing apparatus of the character described, comprising in combination, a main structure, having a series of parallel vertically-disposed generating-chambers 1, 2 and 3, a blast and a steam-injector means cooperatively joined therewith, the division-walls between the chambers 1, 2 and 3 having openings for joining said chambers, the horizontal chamber 4, having an opening in communication with the chamber 3, and having an extension provided with a valved stack and an outlet, the vaporizer-chamber D, in communication with the chamber 1, and having a valved draft-stack and an oil-supply for said chamber D, all being arranged substantially as shown and for the purposes described.

708,944. NON-REFILLABLE BOTTLE. CHARLES F. MITCHELL. Baltimore, Md. Filed June 4, 1901. Serial No. 63,069. (No model.)

Claim.—1. A non-refillable bottle substantially as described having its neck composed of upper and lower sections weakened at the juncture of such sections and provided internally with a hateful groove or chamber, the plug fitting in said neck and provided with a groove for the locking-bails and with a socket leading from such groove for the ends of the bails, and the locking-bails having their ends seated in said sockets

and arranged to be compressed entirely within the outer circle of the plug and to spring outwardly into locking engagement within the lateral groove or chamber within the neck substantially as set forth.

2. The combination of the bottle, the plug having circumferential grooves and provided at the ends thereof with sockets, and the balls having their body portions fitted to be housed in the grooves of the plug and their ends journaled and fitting in all positions of the balls in the sockets at the ends of said grooves, substantially as set forth.

3. A non-refillable bottle comprising the neck the plug fitted to close said neck and the locking-balls carried by the plug and pivotally connected at their ends therewith whereby they may be adjusted to lock the plug in the bottle-neck or to position to serve as handles for withdrawing the plug substantially as set forth.

4. The combination of the bottle having an external downwardly-facing shoulder and the guards extended over the ends of the neck at right angles to each other, and having their side bars provided at their lower ends with practically rigid arms projecting beneath and extended circumferentially under the shoulders of the neck, substantially as set forth.

708,945. CALF-WEANER. GEORGE W. HOOBY, Newmire, Colo. Filed Dec. 24, 1901. Serial No. 87,062. (No model.)

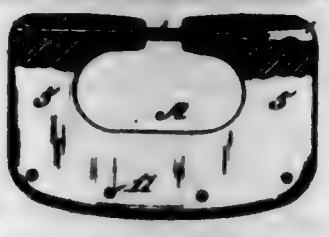

Claim.—In a calf-weaner, a barbed body having arms arranged to enter the nostrils, and arranged to straddle the wall thereof, and each of said arms being bored, a pin adapted to have its ends seated in the bores and to extend through the said wall, and having a notch, and a protuberance in the bore arranged to enter said notch.

708,946. METAL-SAWING APPARATUS. CHARLES O. HORGAN, Redwood Falls, Minn. Filed Apr. 3, 1902. Serial No. 101,264. (No model.)

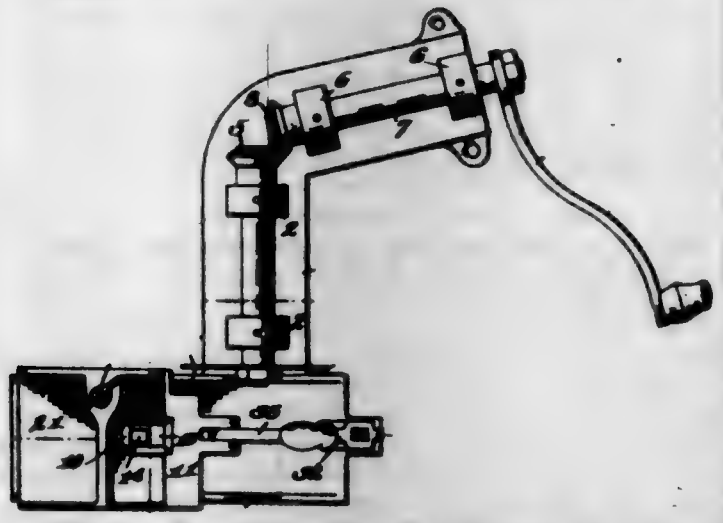

Claim.—1. In a sawing-machine, the combination with a base or framework having upwardly-extending parallel rails thereon, a saw-shaft at right angles to said rails and a saw carried thereby, of a longitudinally-movable work-table mounted upon said rails, having depending flanges which bear against the sides of said rails for preventing lateral movement of said table, and having an elongated slot therein, a support secured to said base between said rails, a projection upon the upper end of said support extending through said slot and a spring-washer upon the upper end of said projection engaging the upper side of said table, as and for the purpose set forth.

2. In a sawing-machine, the combination with a base or framework, having upwardly-extending parallel rails thereon, a saw-shaft at right angles to said rails, and a saw carried thereby, of a longitudinally-movable work-table, mounted upon said rails, having depending flanges thereon, which bear against the sides of said rails for preventing lateral displacement of said table and having a longitudinal depression therein provided with an elongated slot in its bottom wall forming ledges or shoulders, a support secured to said base between said rails, a projection on the upper end of said support extending through said slot and a washer on the upper end of said projection bearing against said shoulders or ledges for preventing the upward movement of said table.

3. In a sawing-machine, the combination with a base or framework having upwardly-extending parallel rails thereon, a saw-shaft at right angles to said rails and a saw carried thereby, of a longitudinally-movable work-table mounted upon said rails, having depending flanges thereon which bear against the sides of said rails for preventing lateral displacement of said table, and having a longitudinal depression therein provided with an elongated slot in its bottom wall forming ledges or shoulders, a support secured to said base between said rails, a projection on the upper end of said support extending through said slot, a spring-washer surrounding said projection and bearing against said shoulders or ledges, and a nut upon the upper end of said projection, as and for a purpose set forth.

4. In a metal-sawing machine, the combination with a base having two sets of uprights thereon, of a saw-shaft mounted to turn in one set of said uprights having a saw upon one end and a pinion upon the other, a drive-shaft mounted to turn in the other set of said uprights, set at an angle to said saw-shaft and having a pinion on one end meshing with the pinion on said saw-shaft, and a crank on the other end, a pair of rails secured to said base, a work-table mounted to slide on said rails, means for clamping the work to said table, an operating-lever fulcrumed to said base, and a link connecting said lever with said work-table for moving the same longitudinally toward and away from said saw.

708,947. COMBINED FIRE POKER AND TONGS. JAMES O. MOYER, Burlington, Iowa. Filed Mar. 3, 1902. Serial No. 96,418. (No model.)

Claim.—1. The combined fire tongs and poker, comprising the bar having spring bifurcations at one end portion thereof, and the slidable sleeve adapted to inclose and convert said bifurcations into a rigid rod, substantially as specified.

2. The combined fire tongs and poker, comprising the bar having spring bifurcations at one end portion thereof, the slidable sleeve adapted to inclose and convert said bifurcations into a rigid rod, and means for locking said sleeve in position at the limit of its forward movement, substantially as specified.

3. The combined fire tongs and poker, comprising the bar having spring bifurcations provided with end portions adapted to come together to form a solid end, and having stop-shoulders, the slidable sleeve for closing said bifurcations, and abutting at the limit of its forward movement against said stop-shoulders, substantially as specified.

4. The combined fire tongs and poker, comprising the bar having the spring bifurcations at one end and the handle extension at the opposite end portion, the slidable sleeve adapted to inclose and convert said bifurcations into a rigid rod, and having an elongated slot and a pin connection with said bar, said slot having a locking-offset at one end, substantially as specified.

708,948. RESPIRATOR. LOUIS H. A. HUTH, Winona, Minn. Filed Feb. 4, 1902. Serial No. 92,889. (No model.)

Claim.—1. A device of the character described comprising a hood adapted to cover the head of the wearer, a metallic plate forming a portion of said hood and provided with window-openings; a hollow projection adapted to fit the nose; springs secured to the opposite sides of the inner surface of said projection; a box projecting from said metallic plate; valves within said box; a sleeve fitting within the outer end of said box

and closed by a screen; and oppositely-disposed springs secured to the box and engaging the outer end of the sleeve.

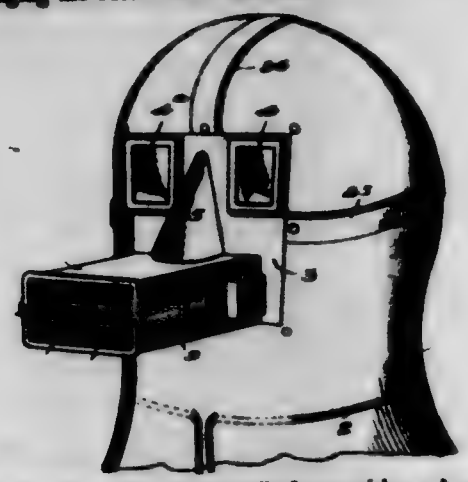

2. A device of the character described comprising a hood, a metallic plate forming a portion of the hood and having windows, a box projecting from said metallic plate, a filter-casing within said box, a valve controlling said filter-case, a laterally-extending exhalation-passage, a valve for said passage, a sleeve extending within the outer end of the box and fitting over the filter-casing, and means for detachably securing said sleeve in position.

3. A device of the character described comprising a hood, a metallic plate forming a portion of the hood and provided with window-openings, a hollow projection adapted to fit over the nose of the wearer, springs oppositely disposed within said hollow projection, a box projecting from the metallic plate below the nose projection, a filter-case within said box formed with a contracted inner end, an inwardly-opening valve at the inner end of the filter-casing, a mouthpiece at the inner end of said box, a laterally-extending exhalation-pipe, an outwardly-opening valve at the end of said pipe, a sleeve fitting over the filter-casing and closed by a screen, and means for detachably securing said sleeve within the outer end of the box.

708,949. CASKET-LOWERING DEVICE. HORACE B. MURDOCK, Detroit, Mich. Filed Oct. 16, 1901. Serial No. 78,856. (No model.)

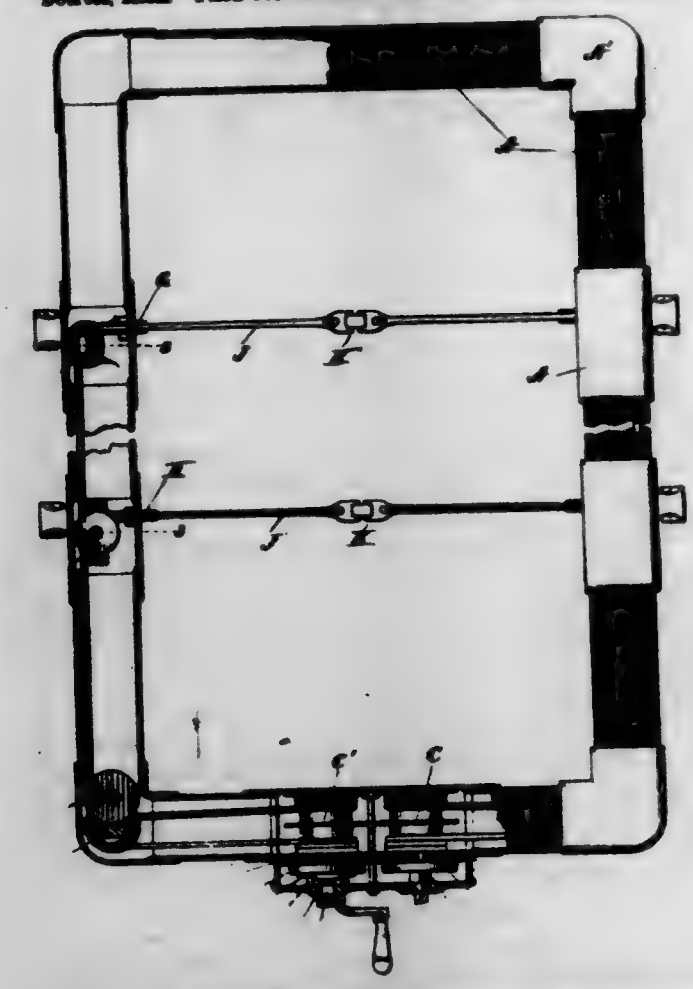

Claim.—1. In a casket-lowering device, the combination of a spring-operated drum, a second drum operatively connected to said first drum ropes carried by said drums, and means for regulating the speed of said drums.

2. In a casket-lowering device, the combination with a spring-operated drum, a second drum operatively connected to said first drum, a friction-clutch engaging said second drum for regulating the speed of said drums, and ropes carried by said drums.

3. In a casket-lowering device, the combination with the frame, of a hollow chamber formed in said frame, a pair of shafts revolubly mounted in said hollow chamber, a spring-operated drum secured fast to one of said shafts, a second drum operatively connected to said first drum loosely mounted on the other of said shafts, ropes carried by said drums, and means engaging said second drum for regulating the speed of said drums.

4. In a casket-lowering device, the combination with the frame, of a hollow chamber formed in said frame, a pair of shafts revolubly mounted in said hollow chamber, a drum secured fast to one of said shafts, a second drum, operatively connected with said first drum, loosely mounted on the other of said shafts, a wedge-plate mounted on said second shaft and operative longitudinally thereof, clutches in said second drum, engaging said wedge-plate, means for operating said wedge-plate for regulating the speed of said drums, and ropes carried by said drums.

5. In a casket-lowering device, the combination with the frame, of a pair of revoluble drums, provided with an enlarged annular casing at one end thereof, mounted in said frame, a coiled spring inclosed in the casing of one of said drums, secured at its ends to said casing and frame, a clutch mechanism in the annular casing of said other drum, for controlling the speed of said drums, and ropes carried by said drums.

6. In a casket-lowering device, the combination with the hollow frame, of an enlarged chamber formed in said frame, a pair of shafts revolubly mounted in said enlarged chamber, a drum secured fast to one of said shafts, a second drum operatively connected with said first drum, loosely mounted on the other of said shafts, screw-threads on said second shaft, a wedge-plate mounted on said second shaft, engaging said screw-threads, clutches in said second drum, engaging said wedge-plate, pulleys suitably disposed in said hollow frame, and ropes reeving over said pulleys and connected to said drums.

708,950. BUSH-CHISEL. JOHN W. MCCLURE, Richmond, Ind. Filed Sept. 10, 1901. Serial No. 74,971. (No model.)

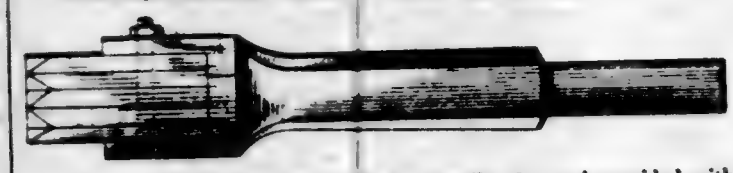

Claim.—The combination with the handle of a tool provided with integral ears and formed with a longitudinal groove or channel at its end, located between said ears, of tools having shanks, said tools having tenons and said tools located between the ears and seated with their tenons in said groove and having their cutting edges arranged in zigzag fashion, and a through-bolt for clamping the tools to said ears, substantially as set forth.

708,951. PEG-CUTTER FOR HORNS OF PEGGING-MACHINES. JOHN R. BICKFORD, Whitman, Mass. Filed Jan. 6, 1902. Serial No. 88,695. (No model.)

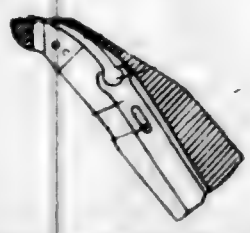

Claim.—In a rotating-horn pegging-machine; a peg-cutting knife adapted to move forward toward and over the edge of a stationary knife, thereby pressing into the leather of the shoe, whereby the peg is sheared from the surface of the said leather; and mechanism for operating said knife; a stationary knife adapted to coöperate with the moving knife, substantially as and for the purpose set forth.

708,952. ELECTROMAGNETIC CAPPING-MACHINE. LOUIS J. BORIE, San Francisco, Cal. Filed Oct. 8, 1901. Serial No. 77,972. (No model.)

Claim.—In a capping-machine comprising a stationary head supporting a jaw or die, and a movable head carrying a similar jaw or die, of means for adjusting one jaw relatively to the other to vary the degree of pressure exerted on the piece of work introduced between the jaws consisting of a rod supporting one jaw having a screw-threaded end portion, an aperture in the head through which the rod is fitted to slide, a cup-shaped cap on the threaded end, a spring interposed between the head and the cap, and a nut on the threaded portion of the rod above the head having a bearing on the top face of the head, for operation as set forth.

708,952.

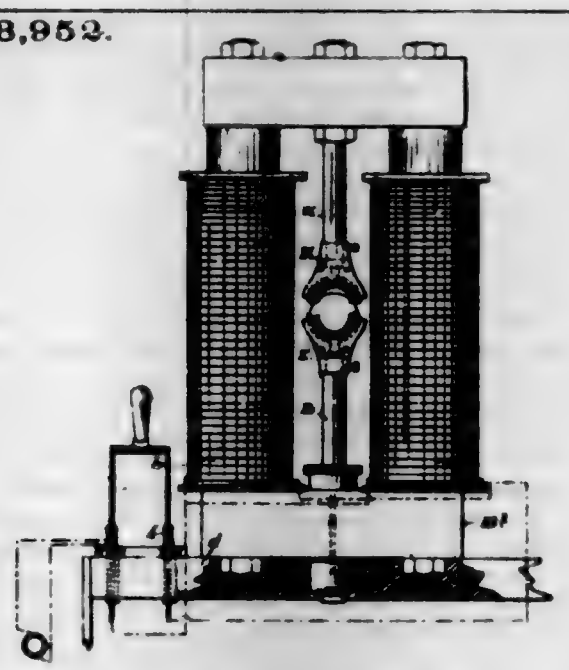

708,953. SELF-WINDING ELECTRIC CLOCK. CHARLES M. CROCK, Bristol, Conn., assignor to the National Self Winding Clock Company, Elgin, Ill., a Corporation of Illinois. Filed Mar. 9, 1901. Serial No. 50,428. (No model.)

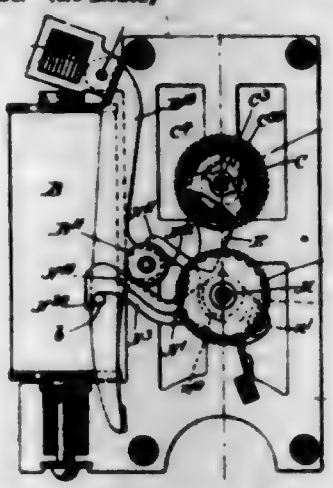

Claim.—1. In an electrically-wound clock, an electromagnet and the circuit in which it is energized; a striking-train and its motor and winding device; mechanism by which the electromagnet operates the winding device; said winding device comprising a non-continuous ratchet which is actuated in one direction in the winding action and in the reverse direction in the running down of the train.

2. In an electrically-wound clock, an electromagnet and the circuit in which it is energized; a strike-train and its motor and winding device; mechanism by which the electromagnet operates the winding device, said device comprising a non-continuous ratchet which is actuated in one direction in the winding action and in the reverse direction in the running down of the train; a pawl engaging the ratchet in the direction for winding up, and means for causing the pawl to be withdrawn out of the range of the ratchet in its retracting movement.

3. In an electrically-wound clock, an electromagnet and the circuit in which it is energized; a time-train and a striking-train and their respective motors and winding devices; mechanism by which the electromagnet operates both winding devices; the winding device of the striking-train comprising a non-continuous ratchet which is moved in one direction in winding up, and in the opposite direction in the running down of the train.

4. In an electrically-wound clock, an electromagnet and its armature, and the circuit in which the magnet is energized; a time-train and a striking-train, and their respective motors and winding devices; mechanism by which the same movement of the armature winds the motors of both trains; the winding device of the striking-train comprising a non-continuous ratchet which is moved in one direction in winding up and in the opposite direction in the running down of the train.

5. In an electrically-wound clock, an electromagnet and its armature, and the circuit in which the magnet is energized; a striking-train and its motor and winding device, and means by which the movements of the armature operate said winding device; the latter comprising a non-continuous ratchet-wheel which is actuated in one direction in the winding action and in the opposite direction in the running down of the train; and a pawl for engaging the ratchet in the direction for winding up; and means for causing the pawl to be withdrawn out of the range of the ratchet in its retracting movement.

6. In an electrically-wound clock, an electromagnet and a circuit in which it is energized; a time-train and a striking-train and their respective motors and winding devices; the armature of the electromagnet and a lever-arm extending therefrom actuating the winding-up devices of both trains; circuit making and breaking devices in the time-train for periodically causing the magnet to be energized; the winding devices of the striking-train comprising a non-continuous ratchet-wheel which is actuated in one direction in the winding action, and in the reverse direction in the running down of said train; and means causing the pawl to withdraw out of the range of the ratchet in its retracting movement.

7. In an electrically-wound clock, in combination with the winding-shaft and the ratchet thereon, a lever fulcrumed on the shaft and a pawl fulcrumed on the lever; the winding-magnet and its armature; the lever-arm on the armature having an abutment which engages with the pawl in the winding movement in direction to throw it into winding engagement with the ratchet, whereby the lever is actuated through the medium of the pawl after the latter is engaged by the ratchet, and the reverse movement takes the pawl out of the range of the ratchet.

8. In an electrically-wound train, in combination with the winding-shaft and ratchet thereon, a winding-lever; a stop for its retreating movement; a pawl fulcrumed on the lever; the armature-lever arm arranged to encounter the pawl in the winding movement and throw it into engagement with the ratchet; said pawl having an arm which is actuated by the armature-lever in its retreating movement to hold the pawl out of engagement with the ratchet after the winding-lever is stopped.

9. In an electrically-wound clock, an electromagnet and the circuit in which it is energized; the winding-shaft drum or barrel, and the lever-arm for rotating the same to wind the motor device; said arm having a cam-track or face which is substantially straight; the armature of the electromagnet, and lever-arm extending therefrom, having an abutment which bears against the straight face or cam-track of the winding-arm; the proportions of the parts and the relation of the armature-lever fulcrum to the winding-shaft axis being such as to cause the abutment on the armature-lever to move in a path whose chord makes an acute angle with the position of the straight face or cam-track of the winding-lever at the commencement of the winding action, and a greater angle, approximating a right angle therewith, at the culmination of said action.

10. In an electrically-wound clock, an electromagnet and the circuit in which it is energized; the winding-shaft drum or barrel, and the lever-arm for rotating the same to wind the motor device; said lever-arm having a cam-track or face which is substantially straight and radial to the shaft; the armature-lever having an abutment which bears against the said radial face or cam-track of the winding-lever; the length of the armature-lever arm being sufficiently different from the distance between its fulcrum and the winding-shaft axis to permit the abutment to clear said shaft as the lever swings in toward the latter in its winding action, whereby the path of the abutment makes an acute angle with the radial face of the lever at the commencement of the winding action, and approximately a right angle therewith at the culmination of said action.

11. In an electrically-wound clock, an electromagnet and the circuit in which it is energized; a time-train and a striking-train, and their respective motors and winding devices; the armature of the electromagnet, and a lever-arm extending therefrom, and winding-levers for the winding devices of the time and striking trains respectively, arranged to be encountered by an abutment on the armature-lever as the armature approaches the magnet, the parts being so disposed that the points of contact of the abutment with the levers approach the shaft respectively in the winding action, and so that the encounters of the armature-lever with such winding-levers are successive and not simultaneous; the winding-lever first encountered being so disposed with respect to the armature-fulcrum that the abutment passes the point of nearest approach to the shaft and commences to recede therefrom before the culmination of the winding movement of the other shaft.

12. In an electrically-wound clock in combination with the winding mechanism and the electric circuit for energizing it a contact making and breaking device comprising two contacting parts, one in said circuit, and the other not in the circuit, one of said parts being rotated with the train, and the other elastically pressed upon such rotating part in a direction tending to rotate the same.

13. In an electrically-wound clock in combination with the winding device and the electric circuit in which they are energized; a contact making and breaking device comprising two parts in the circuit one of which is elastically pressed upon the other; and a third part, not in the circuit, which is rotated by the running of the train and which holds the elastically-pressed part out of contact with the other during the intervals between winding, the pressure of said elastically-pressed part operating on said third part in direction tending to rotate the latter.

14. In an electrically-wound clock, an electromagnet and the circuit

in which it is energized; the time-train and its motor, and means by which the movement of the magnet-armature winds said motor; a contact-making and breaking device, comprising an element carried by a shaft of the time-train, consisting of a disk connected in the electric circuit and a deflecting-disk in juxtaposition thereto not in the circuit; a spring-finger in the circuit pressing elastically toward the periphery of the deflecting-disk and elastically deflectable laterally from the plane of said disk; said deflecting-disk having a lateral bevel tending to deflect the finger onto the periphery of the circuit-disk, said disks being of equal radius at a distance circumferentially from the foot of the bevel; whereby the spring-finger is permitted to react laterally off from the circuit-disk onto the deflecting-disk when the disks have rotated through the angle between the foot of the bevel and said point of equal radius, the spring-finger being disposed with respect to the periphery of the deflecting-disk so as to press thereon non-radially and in the direction in which the disk rotates in the running movement of the train; whereby said pressure assists such running movement.

15. In an electrically-wound clock, an electromagnet and the circuit in which it is energized; a time-train and its motor; and mechanism whereby the magnet-armature winds such motor; a circuit making and breaking device, comprising an element carried by the shaft of the time-train, consisting of a disk connected in the electric circuit and a deflecting-disk in juxtaposition thereto not in the circuit; a resilient finger in the circuit pressing toward the periphery of the deflecting-disk and elastically deflectable laterally from the plane of said disk; said deflecting-disk having a lateral bevel tending to deflect the finger onto the periphery of the circuit-disk, said disks being of equal radius at a distance circumferentially back from the foot of the bevel, whereby the resilient finger is permitted to react off from the insulated disk onto the deflecting-disk when the disks have rotated through the angle between the foot of the bevel and said point of equal radius; the periphery of the deflecting-disk being eccentric, diminishing in radius from the point at which the finger returns to it to the point at which said finger is deflected off from it.

708,954. LINE-SPACING-LOCK MECHANISM FOR TYPE-WRITING MACHINES. ROBERT J. FISHER, Athens, Texas, assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed Apr. 30, 1901. Serial No. 58,181. (No model.)

Claim.—1. In a type-writing machine, the combination with the line-spacing element located at one end of the machine-frame, of spacing-lock mechanism disposed to lock said element, and a release device for said mechanism mounted on the machine-frame at a point intermediate of the ends of the machine.

2. In a type-writing machine, the combination with a rotary line-spacing element, of spacing-lock mechanism disposed to lock said element against movement in either direction, and a releasing device operatively related to the spacing-lock mechanism and mounted on the machine-frame at a point intermediate of the ends of said frame.

3. In a type-writing machine, the combination with a rotary line-spacing element, of line-spacing mechanism, and spacing-lock mechanism operatively related to the rotary line-spacing element and to each other for interdependent operation, and a releasing device mounted on the machine-frame at a point remote from the spacing-lock mechanism intermediate of the ends of the machine, said releasing device being operatively connected with the spacing-lock mechanism.

4. In a type-writing machine, the combination with a line-spacing element, and a spacing-lock, of a plurality of independent releasing-levers for releasing said lock, and line-spacing mechanism separate from but disposed to operate one of said levers and the line-spacing element.

5. In a type-writing machine, the combination with a line-spacing element, an actuator, and a spacing-lock, of a spacing-lock lever separate from the spacing-lock and actuator respectively but disposed for actuation by said actuator.

6. In a type-writing machine, the combination with a line-spacing element, an actuator, and a spacing-lock, of a separate spacing-lock lever separate from but disposed to operate the spacing-lock and provided with a tailpiece disposed in the path of the actuator for actuation thereby.

7. In a type-writing machine, the combination with a line-spacing element, an actuator having independent movement, and a spacing-lock, of a spacing-lock lever separate from but disposed to operate the spacing-lock and provided with a tailpiece disposed in the path of the actuator for actuation thereby during the independent movement of the latter.

8. In a type-writing machine, the combination with a line-spacing element, a spacing-lock, and an actuator having a projection, of a spacing-lock lever separate from but disposed to operate the spacing-lock and having a tailpiece located to be moved by said projection and to be sustained thereby during the movement of the line-spacing element under the impulse of the actuator.

9. In a type-writing machine, the combination with a line-spacing element, a spacing-lock, and a swinging actuator having a projection and mounted for limited independent movement, a spacing of lock-lever for operating the spacing-lock and having a longitudinally-curved tailpiece disposed in the path of said projection during the independent movement of the actuator and designed to rest upon the projection while the actuator is swung to operate the line-spacing element.

10. In a type-writing machine, the combination with a frame having a frame-bar intermediate of its ends, of spacing-lock mechanism located at a point removed from the bar, and a releasing device contiguous to the bar and having operative relation with the spacing-lock mechanism, whereby the bar may be grasped and the releasing device operated simultaneously with the hand.

11. In a type-writing machine, the combination with a frame comprising a vertical frame-bar located intermediate of its ends, of spacing-lock mechanism located at or adjacent to one end of the frame, and a releasing device for said mechanism located at or adjacent to the vertical frame-bar, whereby the bar may be grasped and the releasing device operated simultaneously with one hand.

12. In a type-writing machine, the combination with a frame comprising a vertical frame-bar, of spacing-lock mechanism disposed at a point removed from the bar, a releasing-lever carried by and disposed opposite the bar, and suitable connections intermediate of the releasing-lever and locking mechanism.

13. In a type-writing machine, the combination with a frame, and spacing-lock mechanism, of a releasing-lever carried by the frame at a point removed from the spacing-lock mechanism, a spacing-lock shaft operatively related at one end to the spacing-lock mechanism and provided with a crank-arm connected to the releasing-lever.

14. In a type-writing machine, the combination with a line-spacing element, and a pair of locking members engaging the line-spacing element to lock it against movement in different directions, of an actuator and means for moving the locking members to their released positions through the movement of the actuator.

15. In a type-writing machine, the combination with a line-spacing element, and a pair of locking members engaging said element to retain it against movement in either direction, of a plurality of independent releasing devices, each of which is operatively related to the locking members to effect the simultaneous actuation of the latter.

16. In a type-writing machine, the combination with a line-spacing element, and a pair of locking members engaging said element to lock it against movement in either direction, of a spacing-lock shaft disposed for rotation to effect the simultaneous movement of said locking members to their released positions, and means for actuating the shaft.

17. In a type-writing machine, the combination with a line-spacing element, and a pair of locking members engaging said element to lock it against rotation in either direction, of a spacing-lock shaft and a lever, each having direct and independent engagement with the locking members to effect the simultaneous movement of said members to their released positions.

18. In a type-writing machine, the combination with a line-spacing element, and a pair of locking members engaging said element to lock it against movement in either direction, of a spacing-lock lever provided with a spreading-pin disposed between the locking members, and a spacing-lock shaft having a spreading-head likewise disposed between the members, whereby the locking members may be thrown out of engagement with the spacing element through the medium of either the shaft or the lever.

19. In a type-writing machine, the combination with a line-spacing element, and a pair of locking members disposed to engage said spacing element to lock it against movement in either direction, of a spacing-lock lever provided with a tailpiece and with a spreading-pin disposed between the locking members, a spacing-lock shaft provided with a spreading-head likewise disposed between the locking members and having a crank-arm at its opposite end, a releasing-lever connected to said crank-arm, and an actuator disposed to actuate the spacing element and provided with a trip-pin disposed to engage the tailpiece of the spacing-lock lever.

20. In a type-writing machine, the combination with a line-spacing element, of a pair of locking members arranged to engage said element, reactive means for retaining the locking members in their locked positions, and means for spreading the locking members against the resistance of the reactive means to effect the simultaneous disengagement of said members from the line-spacing element.

21. In a type-writing machine, the combination with a line-spacing element, and a pair of coaxial divergently-related pivoted locking members disposed to engage said element, said locking members being formed to present contiguous parallel faces and angularly-related cam-faces, of a spreading-head disposed between the parallel faces of the locking members, a spreading-pin disposed between the angularly-related faces thereof, and means for actuating the spreading-head and the spreading-pin respectively to swing the locking members out of engagement with the line-spacing element.

22. In a type-writing machine, the combination with a line-spacing element and an actuator, of a pair of locking-dogs engaging said element to positively lock the same against movement in either direction.

23. In a type-writing machine, the combination with a line-spacing element, and means for actuating the same, of a pair of angularly-related locking-dogs engaging the line-spacing element at different points to lock the same positively against movement in either direction, and means for effecting the simultaneous disengagement of said dogs from the line-spacing element.

24. In a type-writing machine, the combination with a line-spacing element and means for actuating the same, of a pair of locking-dogs swung from a common axis and engaging the line-spacing element at different points to lock the same against movement in either direction.

25. In a type-writing machine, the combination with a line-spacing element and actuating means, of a pair of locking-dogs swung from a common axis and engaging the line-spacing element at different points to retain the latter against movement in either direction, and means for moving said dogs out of engagement with the line-spacing element.

26. In a type-writing machine, the combination with a line-spacing element, and means for actuating the same, of a pair of locking-dogs engaging the line-spacing element at different points to lock the same positively against movement in either direction, and means for effecting the simultaneous disengagement of said dogs from the line-spacing element.

27. In a type-writing machine, the combination with a line-spacing element, and means for actuating the same, of a pair of angularly-related locking-dogs engaging the line-spacing element at different points to lock the same positively against movement in either direction.

708,955. CURTAIN-FIXTURE. EDWARD FLESH, Milwaukee, Wis. Filed May 20, 1901. Serial No. 61,491. (No model.)

Claim.—1. In a device for draping the lower ends of curtains, the combination with the side of a supporting-frame; of a supporting-bracket rod; a hook formed with forked shank-arms of elastic material and provided with bracket-receiving apertures therein; said arms being adapted to spread sufficiently when in normal position to cause the bracket-rod to bind in said apertures.

2. The combination of a curtain-supporting frame; an angular bracket connected with said frame; a slidable hook supported on said bracket; having means for automatically locking said hook at any desired point of adjustment upon said bracket, said hook being adapted, by the angular shape of its supporting-bracket, to be adjusted nearer to, or farther away from, said curtain-supporting frame, substantially as specified.

3. In a device for draping the lower ends of curtains, the combination with the side of a supporting-frame; of a supporting-bracket rod; a curtain-holding device formed of a piece of resilient wire doubled upon itself and bent in the form of a hook, with the free ends extending divergently to form a forked shank, and looped to form end apertures for the insertion of the bracket-rod: said shank ends being normally separated sufficiently to cause the looped ends of the wire to bind on the bracket-rod.

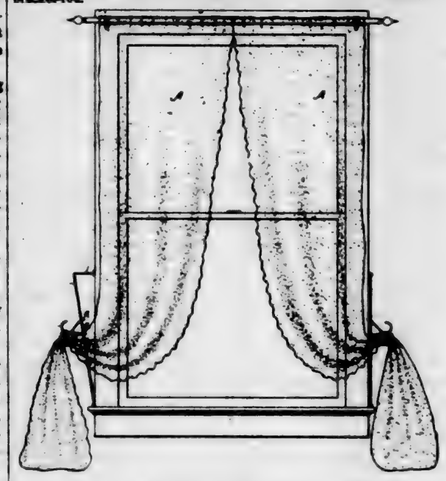

708,956. DRAFT-RIGGING. JAMES R. OSBUN, Thayer, Mo., assignor of one-half to Henry A. Clark, Thayer, Mo. Filed Oct. 21, 1901. Serial No. 79,453. (No model.)

Claim.—1. In a draft-rigging, the combination with a body-bolster having upper and lower members, of draft-timbers connected to and embraced by the members of the body-bolster and also projected in front and rear thereof, and a filling-block located between the draft-timbers and embraced by the members of the body-bolster.

2. In a draft-rigging, the combination with draft-timbers, of a body-bolster comprising top and bottom members embracing the draft-timbers between the ends thereof, the opposite ends of the lower member being inclined upwardly and connected to the upper member, abutments located between the draft-timbers and in front and rear of the body-bolster, front and rear springs bearing against the respective abutments, a draft-connection between the springs and extending between the upper and lower members of the bolster, and a draw-bar engaged with one of the springs.

3. In a draft-rigging, the combination of spaced draft-timbers, an in-

intermediate spacing-block held between the timbers, and a body-bolster secured transversely across the draft-timbers and the spacing-block, whereby said timbers project in front and rear of the body-bolster, the latter and the spacing-block being provided with corresponding vertical openings for the reception of a king-bolt.

4. In a draft-rigging, the combination with spaced draft-timbers, of an intermediate spacing-block held therebetween, and a body-bolster comprising upper and lower members disposed transversely of the draft-timbers and embracing the same and the filling-block, the latter and the members of the body-bolster being provided with corresponding king-bolt openings.

5. In a draft-rigging, the combination of spaced draft-timbers having front and rear pairs of longitudinal slots, a filling-block held rigidly between the timbers and also located between the front and rear pairs of slots, front and rear cross-heads working in the front and rear slots and projected at opposite sides of the timbers, links connecting the corresponding ends of the opposite cross-heads and lying at the outer sides of the timbers, front and rear springs bearing in opposite directions against the respective ends of the filling-block and the adjacent cross-heads to force the latter outwardly in opposite directions, and a draw-bar connected to one of the cross-heads.

6. In a draft-rigging, the combination of spaced draft-timbers having front and rear pairs of longitudinal slots, a filling-block held rigidly between the timbers and also located between the front and rear pairs of slots, wear-plates held rigidly against the respective front and rear ends of the filling-block, whereby the block forms rigid abutments for the wear-plates, front and rear cross-heads working in the front and rear slots and projected at opposite sides of the timbers, links connecting the corresponding ends of the opposite cross-heads and lying at the outer sides of the timbers, front and rear springs bearing in opposite directions against the respective wear-plates and the adjacent cross-heads to force the latter outwardly in opposite directions, and a draw-bar connected to one of the cross-heads.

7. In a draft-rigging, the combination with opposite draft-timbers, of a filling-block interposed between the timbers, the contiguous sides of the timbers and the spacing-block being provided with corresponding vertical notches, keys driven into the corresponding notches, transverse fastenings piercing the timbers, the keys and the filling-block, and a draft-spring bearing against one end of the filling-block.

8. In a draft-rigging, the combination with opposite draft-timbers, of a filling-block held between the same and located intermediate of the ends thereof, the inner faces of the timbers being provided with corresponding vertical notches at the respective ends of the filling-block, the wear-plates held in the pairs of corresponding notches, helical springs located between the timbers and bearing against the respective wear-plates, channel-irons secured to the inner faces of the timbers and overlapping the opposite sides of the respective springs, followers slidably mounted in the channel-irons and bearing against the outer ends of the springs, a coupler bearing against the front follower, a cross-head carried by the coupler and having its opposite ends projected through slots formed in the opposite draft-timbers, a cross-head bearing against the rear follower and having its opposite ends projected through slots formed in the draft-timbers, and opposite connecting-rods having terminal links connected to the corresponding ends of the opposite cross-heads.

9. In a draft-rigging, the combination with opposite draft-timbers, of an intermediate filling-block, a body-bolster secured transversely across the draft-timbers and the filling-block, the latter and the body-bolster being provided with corresponding king-bolt openings, front and rear draft-springs located between the draft-timbers and bearing against the opposite ends of the filling-block, a coupler located between the forward ends of the draft-timbers and bearing against the front spring, front and rear cross-heads for the respective springs and having their ends slidably projected through longitudinal slots formed in the draft-timbers, and opposite connections between the corresponding ends of the cross-heads.

10. In a draft-rigging, the combination with opposite draft-timbers, of a stationary filling-block held between the same, the inner face of the timbers being provided with open-ended vertical notches at one end of the filling-block, a wear-plate held in the notches, a helical spring located between the timbers and bearing against the wear-plate, channel-irons secured to the inner faces of the timbers and overlapping the opposite sides of the spring, the channel-irons being separate from the wear-plate, a follower slidably mounted in the channel-irons and bearing against the outer end of the spring, a coupling bearing against the follower, and a cross-head carried by the coupling and having its opposite ends working in openings formed in the draft-timbers.

11. In a draft-rigging, the combination with opposite draft-timbers, of a filling-block snugly fitted between the timbers, upper and lower bolster members embracing the top and bottom of the draft-timbers and the filling-block, the contiguous faces of the draft-timbers and the filling-block being provided with corresponding vertical notches, and keys driven into the respective pairs of corresponding notches and lying against the opposite sides of the bolster members.

12. In a draft-rigging, the combination with opposite timbers, of a filling-block interposed between the timbers, top and bottom bolster members embracing the filling-block and the draft-timbers, fastenings piercing the bolster members and the respective draft-timbers, the contiguous faces of the draft-timbers and the filling-block being provided with corresponding notches located at opposite sides of the bolster members, keys driven into the pairs of corresponding notches and lying against opposite sides of the bolster members, and fastenings piercing the draft-timbers, the filling-block and the respective keys at corresponding sides of the bolster members.

13. In a draft-rigging, the combination with opposite draft-timbers having their inner faces provided with corresponding vertical open-ended notches, a fixed wear-plate fitted in said notches, channel-irons secured to the inner faces of the draft-timbers and located in front of the wear-plate, the channel-irons being separate from the wear-plate, a spring supported by the channel-irons and bearing against the wear-plate, a follower working in the channel-irons and bearing against the spring, and a coupling connected to the follower.

14. In a draft-rigging, the combination of opposite draft-timbers, a filling-block held between an intermediate portion of the same, a body-bolster comprising top and bottom members embracing the draft-timbers and the filling-block and having their corresponding ends mutually connected, the top and bottom bolster members and the filling-block being provided with vertically-alined king-bolt openings, a coupling located between the timbers and in front of the filling-block, a buffing-spring interposed between the coupling and the filling-block, a cross-head carried by the coupling and projected outwardly through longitudinal slots formed in the draft-timbers, a buffer-spring located between the draft-timbers and bearing against the rear end of the filling-block, a cross-head bearing against the rear end of the rear spring and having its opposite ends projected through longitudinal slots formed in the draft-timbers, and connections between the corresponding ends of the cross-heads, said connections lying upon the outer sides of the respective timbers and between the top and bottom members of the body-bolster.

708,957. SEMAPHORE-INDICATOR FOR ELECTRIC SIGNALING. HARRY GULLIVER, South Yarra, near Melbourne, Victoria, Australia, assignor of one-half to Henry Greer Robinson, Melbourne, Victoria, Australia. Filed Apr. 23, 1902. Serial No. 104,367. (No model.

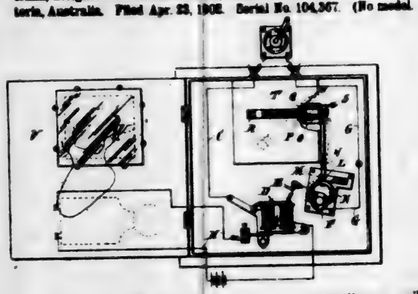

Claim.—1. A semaphore-indicator for electric signaling on railways, tramways and the like, consisting of an electromagnet, an oscillating horseshoe magnetic armature, a rocking bar carrying said armature, an upwardly-extending lever-arm on said rocking bar, a rod or spindle having a crank-arm thereon, a semaphore carried thereby, and a link connecting the crank-arm on said rod or spindle with said lever-arm, substantially as described.

2. In indicators for electric signaling on railways, tramways and the like, an electromagnet, an oscillating horseshoe magnetic armature mounted slightly out of center, with its legs on either side of said electromagnet, the ends being approximately in line with the center of the core, a signal and means connected to said armature for actuating a signal substantially as specified.

708,958. SECTIONAL SHOE-LAST. NILS F. HAGSTRÖM, Brooklyn, N. Y. Filed Apr. 11, 1901. Serial No. 55,322. (No model.)

Claim.—The combination in a sectional shoe-last, of the sole part *a*, having the instep-recess, and the sloping rear end, and also having the groove *i*, *i'*, in said end and recess; the angle-plate *j*, *j'* provided with the dovetail groove *k* lengthwise in the part *j* and fitted in said groove *i*, *i'*, the heel part *c* of the last having the dovetail rib *m* adapted to fit the groove *k*, the instep part *b* of the last fitted in the instep-recess of the sole part, and the screw *o* connecting the rear extremity of the instep part with the sole part by screwing into the part *j* of the angle-plate attached to the rear end and top of the sole part *a*.

708,959. PUNCHING-MACHINE. JOHN HEIMBERGER, New York, N. Y. Filed July 30, 1901. Serial No. 70,228. (No model.)

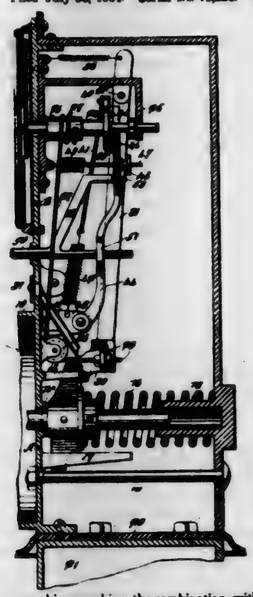

Claim.—In a punching-machine, the combination, with the casing, a dial, a pointer, and rotary shaft carrying the latter and having a disk 30, of a slidable, spring-pressed, pad-carrying shaft, a pivoted lever, and means for operatively connecting it with the pad-shaft, a rope connecting the pivoted lever with the pointer-carrying shaft, so that the swinging movement of one effects rotation of the other, means for retracting the pointer-carrying shaft, the pivoted lever 44 bearing at its free upper end upon said disk 30, a spring holding the lever in frictional engagement with the disk, and means for varying the pressure, and the slidable trip-bars projecting through the front of the casing and engaging at the inner end the lever 44, all operating as shown and described.

708,960. CUTTING ATTACHMENT FOR SEWING-MACHINES. GEORGE S. HILL, Haverhill, Mass., assignor, by mesne assignments, to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Jan. 13, 1899. Serial No. 702,620. (No model.)

Claim.—1. In a sewing-machine, stitch-forming devices, comprising an upper-thread mechanism, and an under-thread mechanism, a stationary blade, a movable blade, said blades being located under the work, and being adapted to cut both the upper and the under threads, and means for automatically actuating said movable blade to cut said threads immediately upon the completion of a stitching operation, whereby said work may be removed from the machine.

2. In combination with a two-thread sewing-machine, a stationary blade located below the work, a movable blade having two cutting edges, (one for the upper thread and the other for the under thread,) and means for actuating the movable blade.

3. In a sewing-machine, stitch-forming devices comprising upper-thread mechanism and under-thread mechanism, a cutting device for severing the under thread, and means for drawing out the under thread to leave an end of sufficient length for the next stitch.

4. In a sewing-machine, an upper-thread mechanism, an under-thread mechanism, a cutting device for severing the under thread, and a pivoted pull-off for drawing out the under thread whereby it will be sufficiently long for the next stitch.

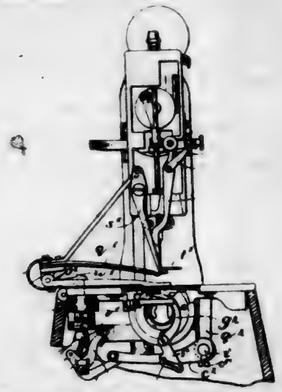

5. In a sewing-machine, an upper-thread mechanism an under-thread mechanism, a cutting device for severing the under thread, a pull-off for the under thread, and means for actuating the cutting device and the pull-off.

6. In a sewing-machine, upper-thread mechanism, under-thread mechanism, a cutting device for severing the under thread, and a pull-off movable relatively to the cutting device for drawing out the under thread.

7. In a sewing-machine, upper-thread mechanism, under-thread mechanism, a cutting device for severing the under thread, and a pull-off independent of said cutting devices for drawing out said under thread to provide a loose end of sufficient length for the next stitch.

8. A sewing-machine, comprising under-thread mechanism, a pull-off for drawing out the under thread, a cutting device for severing the thread, means for actuating both the pull-off and the cutting device, and means for locking the first said means to hold the said pull-off in an inoperative position.

9. A sewing-machine, comprising an under-thread mechanism, a pull-off for drawing out the thread, a cutting device for severing the under thread, means for actuating both the pull-off and the cutting device, and mechanism comprising toggle-levers for intermittingly locking said means against movement.

10. In a sewing-machine, the combination with a stitch-forming mechanism, including an upper needle and its bar, of a device for severing the needle-thread located below the work, and an automatic device for engaging said thread between the needle-eye and the work and drawing the severed end of said thread out of the work without moving said work.

11. In a sewing-machine, the combination with a stitch-forming mechanism, including an upper needle and its bar, of a device for severing the needle-thread, an automatic kicker for drawing the severed end of the thread out of the work, and means for maintaining said kicker inoperative during the operation of the stitch-forming mechanism.

12. In a sewing-machine, the combination with a stitch-forming mechanism, of a device located below the work for severing the thread, a kicker for drawing out the severed end of the thread, and means including toggle-levers for holding said kicker in a non-operative position.

13. In a sewing-machine, the combination with a stitch-forming mechanism, of a device located below the work for severing the needle-thread, a kicker for drawing out the severed end of the thread, means including toggle-levers for holding said kicker in a non-operative position, and an automatically-acting device for unlocking said toggle-levers.

14. In a sewing-machine, the combination of the lower clamp, a pivoted lever, an upper clamp secured thereto, a kicker for the thread pivoted to the standard, a link connecting the lever with the kicker, a spring for raising the lever up so as to move the upper clamp away from the lower clamp and the kicker into its operative position, and toggle-levers for locking said lever down with the upper clamp against the lower clamp and the kicker in an inoperative position.

15. In a two-thread sewing-machine, the combination with a stitch-forming mechanism, of a cutting device for the threads, a lever for drawing out the under thread prior to its being severed, and means for varying the movements of the said device and the said lever.

16. A sewing-machine comprising a driving-shaft for the stitch-forming mechanism, a cutting device for severing the thread, a movable bar connected medially with the said device for operating it; and a cam

on the said shaft, against which the bar is adapted to press, said cam being adjustable relatively to said shaft.

17. A sewing-machine including a continuously-rotating shaft, a driving-shaft for the stitch-forming mechanism, belt-shifting mechanism, a device for cutting the thread, a device for drawing out the severed end of said thread, means for operating the belt-shifting mechanism and both said devices and mechanism including a hand-operated key for connecting said means with said continuously-rotating shaft.

708,961. LINE-SPACING MECHANISM FOR TYPE-WRITING MACHINES. CHARLES F. LOGANER, Cleveland, Ohio, assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed Feb. 7, 1901. Serial No. 46,378. (No model.)

Claim.—1. A line-spacing mechanism for type-writing machines, comprising a single actuator, and spacing means including separate devices for fixed or predetermined spacing and for universal spacing, the latter being adjustable, said spacing means and actuator being relatively movable to effect an operative relation between the actuator and either of said devices without disturbing the adjustment of the universal-spacing device.

2. A line-spacing mechanism for type-writing machines comprising actuating means, and fixed and adjustable stop elements coöperating with said actuating means to provide respectively for fixed and universal spacings, either of said stop elements being shiftable into and out of operative position without disturbing the adjustment of the adjustable stop element.

3. A line-spacing mechanism for type-writing machines comprising an actuator, and a device having fixed and adjustable elements coöperating with said actuator to provide respectively for fixed and universal spacings, said device being shiftable to move either of said elements into or out of its operative position without disturbing the adjustment of the adjustable element.

4. A line-spacing mechanism for type-writing machines comprising an actuator, and a single device having fixed and adjustable elements coöperating with said actuator to provide respectively for fixed and universal spacings, said device being shiftable to move all of the elements simultaneously for the purpose of presenting any one of them in operative relation with the actuator without disturbing the adjustment of the adjustable element.

5. A line-spacing mechanism for type-writing machines comprising actuating means, and shiftable fixed and adjustable stop elements coöperating with said actuating means and arranged for movement into and out of their operative positions without disturbing the adjustment of the adjustable stop element.

6. A line-spacing mechanism for type-writing machines comprising an actuator, and a shiftable device having fixed and adjustable stop elements coöperating with said actuator to provide for fixed and universal spacings and shiftable to present either of the stop elements to the actuator without disturbing the adjustment of the adjustable stop element.

7. A line-spacing mechanism for type-writing machines comprising an actuator, and a stop device comprising means for effecting a plurality of fixed or predetermined adjustments for the movement of the actuator, and also for the universal adjustment thereof.

8. A line-spacing mechanism for type-writing machines comprising an actuator, and a single stop device comprising means for effecting a plurality of fixed or predetermined adjustments for the movement of the actuator, and also for the universal adjustment thereof.

9. A line-spacing mechanism for type-writing machines comprising an actuator, and a single shiftable device having fixed and adjustable stop elements coöperating with the said actuator to provide respectively for fixed or predetermined and universal spacings.

10. A line-spacing mechanism for type-writing machines comprising an actuator, and a shiftable stop device having a plurality of contacts adapted to coöperate with said actuator to determine the play thereof, one of said contacts being capable of individual adjustment.

11. A line-spacing mechanism for type-writing machines comprising an actuator, and a single shiftable stop device having a plurality of contacts disposed to be simultaneously shifted and adapted to individually coöperate with the actuator, one of said contacts being capable of individual adjustment.

12. A line-spacing mechanism for type-writing machines comprising an actuator, and a single stop device having a plurality of fixed contact-points, and a universal-adjustment element, which are arranged to individually coöperate with the actuator.

13. A line-spacing mechanism for type-writing machines comprising an actuator, and a single stop device shiftable transversely across the path of the actuator and having a plurality of contacts individually coöperating therewith, one of said contacts being capable of individual adjustment.

14. A line-spacing mechanism for type-writing machines comprising an actuator, and a single stop device shiftable in a plane intersecting the path of movement of the actuator and having a plurality of fixed contact-points for predetermined spacings, and a universal-adjustment element for universal spacing, said fixed contact-points and the universal-adjustment element individually coöperating with the actuator.

15. A line-spacing mechanism for type-writing machines comprising actuating mechanism and a stop device having fixed contact-points for predetermined spacings, and an adjustable stop-screw for universal spacing.

16. A line-spacing mechanism for type-writing machines comprising an actuator, and a shiftable stop device having a plurality of fixed contact-points for predetermined spacings, and an adjustable stop-screw for universal spacing.

17. A line-spacing mechanism for type-writing machines comprising an actuator, and a single shiftable stop device having a plurality of fixed contact-points for predetermined spacings, and an adjustable stop-screw for universal spacing.

18. A line-spacing mechanism for type-writing machines comprising an actuator, and a stop device arranged for adjustment in a plane intersecting the path of the actuator and having individual elements for fixed and universal spacings.

19. A line-spacing mechanism for type-writing machines comprising an actuator, and a single shiftable stop device adjustable in a plane intersecting the path of movement of the actuator and having a fixed stop element provided with a plurality of fixed contact-points, and an adjustable stop-screw, the latter and said contact-points being arranged to be individually presented to the actuator.

20. A line-spacing mechanism for type-writing machines comprising an actuator, a shiftable stop device having a stop element whose active portion is disposed obliquely or at an inclination to provide a plurality of stop-points for the actuator and a universal stop element also carried by the stop device and shiftable into and out of the path of the actuator.

21. A line-spacing mechanism for type-writing machines comprising an actuator, and a shiftable stop device having a stepped series of stop-shoulders coöperating with the actuator, and an independently-adjustable universal stop element.

22. A line-spacing mechanism for type-writing machines comprising an actuator, and a shiftable stop device having a stop element provided with an active contact portion arranged to present a plurality of stop-points in different planes, and a universal-adjustment element shiftable with said stop device.

23. A line-spacing mechanism for type-writing machines comprising an actuator, and a stop device consisting of a rotary head having a universal-adjustment element shiftable into and out of the path of the actuator.

24. A line-spacing mechanism for type-writing machines comprising an actuator, and a shiftable stop device consisting of a suitably-supported rotary head having a plurality of fixed contact-points for predetermined spacings, and a universal-adjustment element.

25. A line-spacing mechanism for type-writing machines comprising an actuator, a suitably-arranged support, and a shiftable stop device consisting of a rotary head mounted upon the support and having a plurality of fixed stop-points for predetermined spacings, and a universal-adjustment element.

26. A line-spacing mechanism for type-writing machines comprising an actuator, and a shiftable stop device having an adjustable stop-screw movable into and out of the path of the actuator.

27. A line-spacing mechanism for type-writing machines comprising a spacing element, an actuator, and a stop device disposed to normally retain the actuator in positive engagement with the spacing element to act as a boldback-dog for the machine.

28. A line-spacing mechanism for type-writing machines comprising a spacing element, a pivoted actuator, and a stop device disposed for presentation to the actuator in front of the pivot to hold said actuator in positive engagement with the spacing element to act as a boldback-dog for the machine.

29. A line-spacing mechanism for type-writing machines comprising a spacing element, a pivoted actuator coöperating therewith, and a stop device disposed for presentation to the actuator at the side of its pivot opposite the spacing element to hold said actuator normally in engagement with said spacing element.

30. A line-spacing mechanism for type-writing machines comprising a spacing element, a pivoted actuator coöperating therewith, and a variable stop device disposed for presentation to the actuator at a point between the spacing element and the pivot of the actuator to normally hold said actuator out of engagement with the spacing element.

31. A line-spacing mechanism for type-writing machines comprising a spacing element, an actuator, and a shiftable stop device arranged to limit the movement of the spacing element and also disposed to locate the actuator normally in and out of engagement with the spacing element, as desired.

32. A line-spacing mechanism for type-writing machines comprising a spacing element, an actuator, and a shiftable stop device disposed for presentation to the actuator at either side of its pivot.

33. A line-spacing mechanism for type-writing machines comprising a spacing element, a movable support, means for urging the support, an actuator pivoted upon said support, and a shiftable stop device disposed for presentation to the actuator at either side of its pivot.

34. A line-spacing mechanism for type-writing machines comprising a spacing element, a pivoted actuator, and a rotary stop device disposed for presentation to the actuator at either side of its pivot.

35. A line-spacing mechanism for type-writing machines comprising a spacing element, a movable support, means for urging the support, an actuator pivoted upon the said support, and a rotary stop device disposed for presentation to the actuator at either side of its pivot.

36. A line-spacing mechanism for type-writing machines comprising an actuator, and a stop device consisting of a rotary head mounted opposite the pivotal point of the actuator and having a stop element presentable to the actuator at either side of the pivotal point thereof.

37. A line-spacing mechanism for type-writing machines comprising an actuator, and a stop device consisting of a rotary head having a plurality of fixed stop elements of different lengths, and an adjustable stop-screw, either of said stop elements or the stop-screw being shiftable into or out of the path of the actuator.

38. A line-spacing mechanism for type-writing machines comprising an actuator, and a stop device consisting of a rotary head having a plurality of arms, fixed stop elements carried by certain of said arms, and an adjustable stop element carried by one of the arms.

39. A line-spacing mechanism for type-writing machines comprising an actuator, and a stop device comprising a rotary head mounted directly opposite the bearing-point of the actuator and having a plurality of radial arms, stop-fingers of different lengths depending from certain of said arms, and an adjustable stop-screw piercing one of the arms and extending therebelow.

40. A line-spacing mechanism for type-writing machines comprising an actuator a stop device coöperating with the actuator and provided with a series of shallow depressions, a relatively fixed part opposed to the stop device, and a spring-urged stop-pin carried by the fixed part and yieldingly engaging the depressions in the stop device.

41. A line-spacing mechanism for type-writing machines comprising an actuator, a shiftable stop device having a plurality of fixed points for predetermined spacings and a universal-adjustment point, and a stop-retainer for retaining the stop device in position to present any of said points to the actuator.

42. In a line-spacing mechanism for type-writing machines, the combination with the movable machine member carrying a knurled wheel, of a single rocker-arm, a spacing-lever pivotally mounted upon said rocker-arm and provided at one side of the plane of its pivot with a gripping-shoe coöperating with said wheel, and stops shiftable into direct coöperative relation with the spacing-lever.

43. A line-spacing mechanism for type-writing machines comprising a spacing element, a rocker-arm, an actuator carried by the rocker-arm and coöperating with the spacing element, and a single operating-spring common to the rocker-arm and actuator.

44. A line-spacing mechanism for type-writing machines comprising a spacing element, a pivoted rocker-arm, an actuator pivoted upon said rocker-arm and provided with a notch, and a stop-pin extending into said notch from the rocker-arm.

45. A line-spacing mechanism for type-writing machines comprising a spacing element, an actuator coöperating with said spacing element, and a spring having one end fixed and its opposite end operatively connected to the actuator and disposed to be wound by the downward movement thereof.

46. A line-spacing mechanism for type-writing machines comprising an actuator and a stop device consisting of a plurality of fixed stop elements of different lengths, and an adjustable stop element, either of said fixed stop elements, or the adjustable stop element, being shiftable into or out of the path of the actuator.

47. A line-spacing mechanism for type-writing machines comprising a shiftable stop device having a plurality of fixed points for predetermined spacings and a universal-adjustment element, and means for retaining the stop device in position to present either of said fixed contact-points or the universal element in position for presentation to the actuator.

48. A line-spacing mechanism for type-writing machines comprising an actuator, a plurality of stops for predetermined spacing, an adjustable stop for universal spacing, and means for operatively connecting the several stops, whereby the displacement of one stop from the path of the actuator will effect its replacement by another of said stops.

49. In a line-spacing mechanism for type-writing machines, the combination with an actuator, of a universal stop element adjustable in one direction to regulate the throw of the actuator and shiftable in another direction to move said universal stop element into and out of the path of the actuator, and a fixed stop element shiftable with the universal stop element, whereby the shifting of one stop out of the path of the actuator will cause its replacement by the other stop element.

50. In a line-spacing mechanism for type-writing machines, the combination with an actuator, of a universal stop element adjustable to regulate the throw of the actuator, and shiftable into and out of the path of the actuator without disturbing adjustment of said stop element.

51. In a type-writing machine, the combination with an actuator, of a single device carrying individual means for fixed spacings and for universal spacings, said individual means being shiftable into and out of the path of the actuator without disturbing the adjustment of the universal-spacing means.

708,962. LOCK. JOHN F. LYDON, Davenport, Iowa, assignor to the International Manufacturing Company, Davenport, Iowa, a Corporation of Iowa. Filed Mar. 9, 1901. Renewed Nov. 26, 1901. Serial No. 83,630. (No model.)

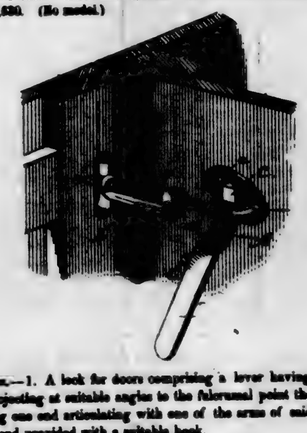

Claim.—1. A lock for doors comprising a lever having the arms thereof projecting at suitable angles to the fulcrumal point thereof and a link having one end articulating with one of the arms of said lever and the other end provided with a suitable hook.

2. In a lock for doors, the combination with a lever having arms projecting at suitable angles to the fulcrumal point thereof of a link having one end articulating with one of the arms of said lever, and an adjustable hook carried by the other end of said link.

3. In a lock for doors the combination with a lever having arms projecting at suitable angles to the fulcrumal point thereof, of a link having one end articulating with one of the arms of said lever, and the other end portion screw-threaded, and a hook consisting of a short bar of metal having one end hook-shaped and the other end tapped to engage the screw-threaded end of the link.

4. A lock for doors comprising a T-shaped lever fulcrumed at the confluence of its arms, and a link one end of which is adapted to articulate with either of the alining arms, and the other end of which is provided with a hook.

5. A lock for doors comprising a T-shaped lever fulcrumed at the confluence of its arms and having bearing-openings in the ends of its alining arms, of a link having its headed end bent laterally and adapted to be journaled in either of said openings and its other end provided with a suitable hook.

6. In a lock for doors, the combination with a T-shaped lever fulcrumed at the confluence of its arms, and having bearing-openings in the ends of its alining arms, of a link having its headed end bent laterally and adapted to be journaled in either of said openings, and having its other end portion screw-threaded, and a hook consisting of a short bar of metal having one end hook-shaped and the other end tapped to engage the screw-threaded end of the link.

7. The combination with a door and staple suitably secured thereto, and a door-frame and stop-pin projecting from the side thereof, of a lever having arms extending at suitable angles to each other from its fulcrum, and a link articulating at one end with one of said arms and having the other pin provided with a hook.

8. The combination with a door and staple suitably secured thereto, and a door-frame and stop-pin projecting from the sides thereof, of a lever having arms extending at suitable angles to each other from its fulcrum, having one end articulating with the shorter arm of said lever and having its opposite end portion screw-threaded, and an adjustable hook adapted to engage the screw-threaded portion of said link.

703,963. **VALVE.** CHARLES P. LYNCH, St. Louis, Mo., assignor to St. Louis University, St. Louis, Mo., a Corporation of Missouri. Filed Dec. 6, 1901. Serial No. 84,935. (No model.)

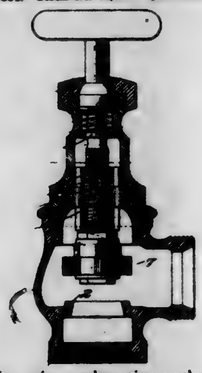

Claim.—1. In a valve, a valve-casing, a valve-stem, a cap having a seat in its lower face, an enlargement upon said stem fitting said seat, and a fixed casing portion extending under said enlargement and adjacent thereto: substantially as described.

2. In a valve, a casing having an inwardly-extending shoulder, a cap having a seat in its lower face, a valve-stem, an enlargement thereon fitting said seat, a spring about said stem and between said shoulder and said enlargement, and a collar upon said stem at substantially the point thereof which lies opposite said shoulder when the parts are assembled, said collar engaging said spring but being of less diameter than the same substantially as described.

703,964. **PALM-REST FOR FIREARMS.** HENRY MOSBAUGHER, Wilkinsburg, Pa. Filed Jan. 14, 1902. Serial No. 89,650. (No model.

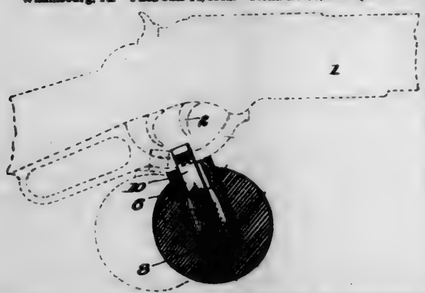

Claim.—1. In a palm-rest for guns and the like, the combination of a spherical body portion, a casing secured in said body portion, a screw-threaded shank secured in said casing, and clamping members formed integral with said shank, substantially as described.

2. In a palm-rest for guns and the like, the combination of a spherical body portion having an opening formed therein, a cylindrical casing secured in said opening having a screw-threaded opening formed in the lower portion thereof, a screw-threaded shank secured in said screw-threaded openings, and clamps carried by said shank, all parts being arranged substantially as described and for the purpose set forth.

703,965. **SAFETY-PIN.** EDWARD MCCONNELL, Richmond, Va. Filed Apr. 4, 1902. Serial No. 101,415. (No model.)

Claim.—1. A safety-pin comprising a body member formed of a coil of wire having a pin-point retainer near one end, and a pin member having one end fitted and secured to a plurality of convolutions of the body member opposite the keeper, the outer portion of said pin member being returned toward the keeper, substantially as described.

2. A safety-pin comprising a body member formed of a coil of wire having its convolutions near one end enlarged to form a keeper, and a pin member having one end passing into and secured to a plurality of the convolutions of the body member at the end opposite the keeper, and its outer portion returned toward the keeper, substantially as described.

3. The herein-described safety-pin consisting of a pin member and a body member, the body member comprising a coil of wire surrounding a straight bar, said bar and coil being unattached except at the end opposite the shield, as set forth.

4. A safety-pin comprising a body member formed of a coil of wire having a keeper at one end, and a stiffening-bar extending within the coil, and a pin member having one end fitted and secured to a plurality of convolutions of the body member at the end thereof opposite the keeper, and its outer end returned toward the keeper, substantially as described.

703,966. **COVERED SEAM FOR SEWED ARTICLES.** CHESTER MCNEIL, Chicago, Ill., assignor to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 26, 1899. Serial No. 714,579. (No model.)

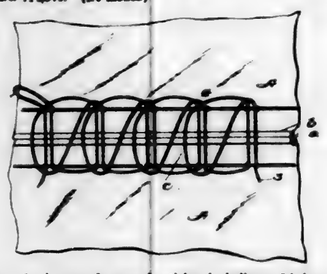

Claim.—1. A seam for sewed articles, including a fabric, and parallel rows of loops passed into the fabric and out again upon the same face of the fabric in advance of the entering point, whereby the loops lie in the direction of the length of the seam, and an interlocking cross-thread for locking the loops upon the upper surface of the fabric at the point where they emerge therefrom; substantially as described.

2. The herein-described covered seam for sewed articles, comprising the two pieces of fabric A arranged with their edges abutting and united by a line of stitching *a* and a row of loops passing into each fabric and out again upon the same face of the fabric in advance of the entering point, said rows being parallel with each other, whereby the loops lie in the direction of the length of the seam, and an interlocking cross-thread for locking the loops upon the upper surface of the fabric at the point where they emerge therefrom, substantially as described.

703,967. **PENCIL-SHARPENER.** WILLIAM O'BYRNE, New York, N. Y., assignor of one-half to William Winters, New York, N. Y. Filed Aug. 21, 1901. Serial No. 72,838. (No model.)

Claim.—A pencil-sharpener comprising a hollow cone, the angle of inclination thereof being less at its upper portion than that of the remainder thereof and formed with a spiral slot continuously extending throughout the length of the cone, including said upper portion, whereby a cutting edge is provided, a cylindrical extension below the base of the cone, and a finger-piece below said extension, said extension being formed with a horizontal slot and a vertical slot, the latter also extending through the finger-piece.

703,968. **STEAM-PUMP.** PHILIP F. ODDIE, Wimbledon, England. Filed Oct. 1, 1900. Serial No. 31,696. (No model.)

Claim.—In a steam-pump, the combination with the power-cylinder; of an auxiliary-cylinder set at an angle thereto, a lever pivotally connected to the piston of said power-cylinder, a secondary lever, having one end pivoted at a stationary point, and its other end connected to the free end of said first lever, means for adjusting the length of said second lever, a plunger in said auxiliary cylinder, abutting against the free ends of said jointed levers, a reservoir connected to said auxiliary cylinder, and a valve interposed between said cylinder and reservoir.

703,968.

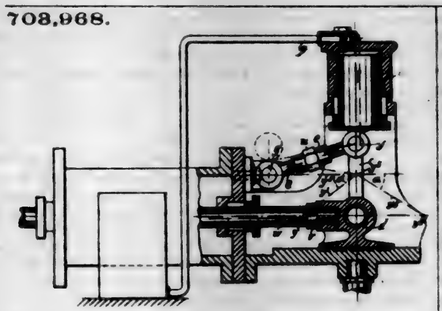

703,969. **MATTRESS-STUFFING MACHINE.** HARRY W. PRENTPACKER, Allegheny, Pa. Filed Jan. 11, 1902. Serial No. 89,302. (No model.)

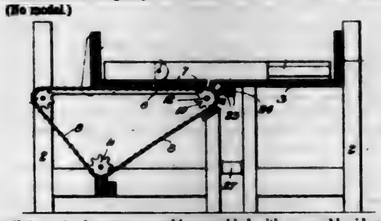

Claim.—1. A mattress-machine provided with a movable side and a normally stationary, laterally-adjustable flexible floor portion.

2. A mattress-machine provided with a permanent floor-section and a flexible floor adapted to form a continuation of the permanent floor-section.

3. A mattress-machine provided with a permanent side and floor-section, and an adjustable side and flexible floor-section with means for adjusting such adjustable side and floor-section.

4. A mattress-machine provided with a flexible floor-section composed of downwardly-tapered slats mounted on flexible carrying devices, with operating-wheels therefor, said slats being adapted to close together at the top on a level and to separate from each other around the wheels, and a vertical side adapted to move in conformity with the floor-section.

5. A mattress-machine provided with a laterally-adjustable flexible floor portion, composed of downwardly-tapered slats, adapted to conform to the level of a permanent floor-section, with means for supporting and carrying the slats.

6. A mattress-machine provided with a plunger having central slotted openings, longitudinal guideways, a carrier mounted therein provided with upwardly-extending fingers in engagement with the slotted openings of the plunger, and a carrying-chain connected with the carrier, with means for transmitting movement to the chain.

7. In a mattress-machine: a plunger composed of two interfitting laterally-extensible portions, and a supplemental folding plate pivoted to one of said portions.

8. A mattress-machine provided with a plunger having a laterally-extensible portion, a supplemental pivoted plate, and means for moving the plunger.

9. A mattress-machine provided with a plunger having a laterally-extensible portion, a supplemental pivoted plate, and a flexible carrier provided with means adapted to engage the plunger.

10. A plunger for mattress-machines consisting of a frame having a laterally-movable portion slidingly mounted on the frame, and a supplemental pivoted plate adapted to provide an extension of the plunger.

11. A mattress-machine provided with a laterally-extensible clamping-top, consisting of longitudinal members pivotally mounted at one end, interfitting sliding cross members, and removable slats, with means for supporting the slats.

12. A mattress-machine provided with a laterally-extensible clamping-top consisting of longitudinal members pivotally mounted at one end, interfitting sliding cross members, slat-supporting bars, and removable slats mounted thereon.

13. A mattress-machine provided with a laterally-extensible clamping-top consisting of longitudinal members pivotally mounted at one end, interfitting sliding cross members, slat-supporting bars, and slats provided with cleats adapted to engage the bars.

14. A mattress-machine provided with a laterally-extensible clamping-top consisting of longitudinal members pivotally mounted at one end, interfitting sliding cross members, slat-supporting bars, and slats provided with pivotally-attached cleats adapted to engage the bars.

15. A mattress-machine provided with a laterally-extensible clamping-top consisting of longitudinal members, pivotally mounted at one end, interfitting sliding cross members, removable slats, and a cross-bar, with means for applying pressure thereon, and for locking the top in position.

16. A mattress-machine provided with a laterally-extensible clamping-top consisting of longitudinal members pivotally mounted at one end, interfitting sliding cross members, removable slats, and a cross-bar, with pressure-levers and pivoted locking-hooks adapted to engage the bar.

17. A laterally-adjustable mattress-machine provided with an end-gate slidingly mounted on a bar, with means for raising and lowering the bar.

18. End-gate mechanism for a mattress-machine consisting of a bar, raising and lowering levers therefor, and a gate slidingly mounted on the bar.

19. In a mattress-machine, the combination of adjustable spout-sections, and spring-controlled hinged sections adapted to fold outwardly to form the sides of the spout.

20. In a mattress-machine, the combination of adjustable spout-sections and spring-controlled hinged sections, adapted to fold outwardly to form the sides of the spout, and a rising-and-falling gate.

21. In a mattress-machine, the combination of adjustable spout-sections, and spring-controlled hinged sections adapted to fold outwardly to form the sides of the spout, and a rising-and-falling gate laterally movable on its supporting mechanism.

22. In a mattress-machine the combination of a framework provided with a flexible laterally-adjustable sectional floor and an adjustable side, an adjustable plunger, a chain provided with means for engaging the plunger, and an adjustable clamping-top.

23. In a mattress-machine, the combination of a framework, provided with a flexible laterally-adjustable sectional floor and an adjustable side, an adjustable plunger, a chain provided with means for engaging the plunger, an adjustable clamping-top, and an adjustable spout.

24. In a mattress-machine, the combination of a framework provided with an adjustable floor and side, an adjustable plunger, a chain provided with means for engaging the plunger, an adjustable clamping-top, and an adjustable spout, with spring-controlled folding sides for the spout.

25. In a mattress-machine, the combination of a framework provided with an adjustable floor and side, an adjustable plunger, a chain provided with means for engaging the plunger, an adjustable clamping-top, an adjustable spout, and a laterally-adjustable vertically-movable gate.

703,970. **ELECTRICAL HEATING APPARATUS.** JOHN R. CHAIN, Middlesex county, England. Filed Mar. 10, 1902. Serial No. 97,618. (No model.)

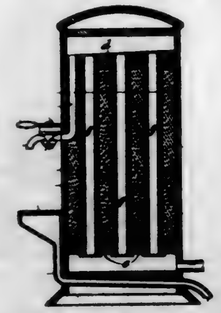

Claim.—1. In an electrical heating apparatus, the combination of a vessel provided with an inlet and an outlet, substantially parallel diaphragms mounted in said vessel, a block, provided with vertical perforations, between said diaphragms, heating-tubes passing through the perforations in said block, and means for heating said tubes by a current of electricity, substantially as described.

2. In an electrical heating apparatus, the combination of a vessel provided with an inlet and outlet, substantially parallel diaphragms mounted in said vessel, a vertically-perforated block of non-conducting material between said diaphragms, heating-tubes passing through the perforations in said block, said tubes being composed of material which offers considerable resistance to the passage of electricity therethrough, and electric connections leading to said tubes respectively, substantially as described.

3. In an electrical heating apparatus, the combination of a vessel pro-

vided with an inlet and outlet, substantially parallel diaphragms mounted in said vessel, the upper surface of the upper diaphragm being inclined, a vertically-perforated block of non-conducting material between said diaphragms, metallic tubes passing through the perforations in said block, and electrical connections leading to said metallic tubes, said block and upper diaphragm being provided with a passage communicating with the outlet of the vessel, substantially as described.

708,971. GAME-BOARD. SOPHIE SOMER, Chicago, Ill., assignor of one-half to Emerson Ingalls, Oakpark, Ill. Filed June 27, 1901. Serial No. 66,203. (No model.)

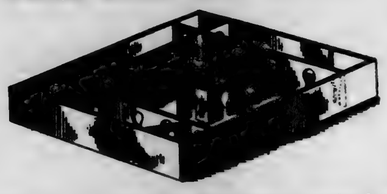

Claim.—1. In a device of the kind described, a game-board comprising a plane table, slitted marginal walls surrounding the same, intersecting vertical partitions having apertures therein larger at the top than at the bottom and adapted to permit the passage of a spinning-top therethrough, and means whereby the top of one player may be excluded from a compartment containing the top of another.

2. In a device of the kind described the combination of a plane table of vertical marginal walls surrounding the same, intersecting vertical partitions dividing the board into a plurality of compartments and provided with a plurality of apertures adapted to permit the passage of a spinning-top therethrough, means for closing one compartment with respect to the others and pins located on said board and within the compartments formed by the partitions adapted to be displaced by the spinning-top or the like, thereby affording the count or score.

708,972. EXCAVATOR FOR TRENCHES, CUTTINGS, OR THE LIKE. ERNEST SHOVELER, Leeds, England. Filed Mar. 8, 1902. Serial No. 97,311. (No model.)

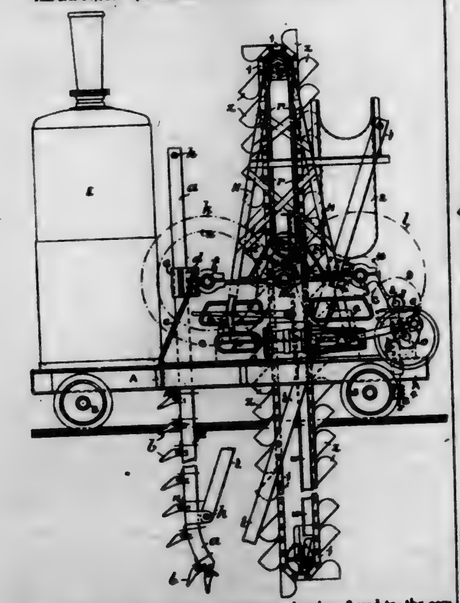

Claim.—1. In excavators of the type herein referred to, the combination of a platform A mounted on wheels B a motor D motor-shaft *p* a pair of crank-shafts *f* and *j* geared together and to the shaft *p* driving rods *a a*, carrying excavating-tools *b*, and thrust-rods *i i* connected to gether toward their rower ends and respectively to the cranks of the shafts *f* and *j* a bucket elevator comprising buckets *z* link chain 1 adjustable vertical beam *w* carrying the lower tumbler-shaft *v* top tumbler-shaft *q* driving-chain *r* and driving-shaft *s* and platform-traversing mechanism comprising worm-wheel 3 on the axle of one of the pair of wheels B worm 4 vertical shaft 5 bevel-wheels 6 and 7 cross-shaft 8 and connecting gear-wheels between the shafts *s* and 8 and the motor-shaft *p* respectively all substantially as herein set forth.

2. In excavators of the type herein referred to the combination of a platform A mounted on wheels B a motor D motor-shaft *p* a pair of crank-shafts *f* and *j* geared together and to the motor-shaft *p* driving-rods *a a* carrying excavating-tools *c b* thrust-rods *i i* connected at their lower ends to the driving-rods *a a* clamping and split journal-pieces *e d* a bucket elevator comprising buckets *z* link chain 1 adjustable vertical beam *w* carrying the lower tumbler-shaft *v* top tumbler-shaft *q* driving-chain *r* and driving-shaft *s* and gear-wheels *t* and *u* all substantially as and for the purposes specified.

3. In excavators the combination of so-called driving-rods *a* carrying excavating-tools *b c*, thrust-rods *i i* connected at their lower ends to the driving-rods a pair of crank-shafts *f* and *j* geared to rotate in the same direction and clamping and split journal-pieces *e d* all substantially as and for the purposes specified.

4. In excavators the combination of a traveling platform A carrying a motor D and frames C with a pair of crank-shafts *f* and *j* mounted thereon so-called driving-rods *a a* carrying excavating-tools *b c* thrust-rods *i i* connected at their lower ends to the rods *a a* platform-traversing mechanism comprising worm-wheel 3 worm 4 vertical shaft 5 bevel-wheels 6 and 7 cross-shaft 8 and gear-wheels between the motor-shaft *p* and the crank-shafts *f* and *j* and the shaft 8 respectively substantially as and for the purposes specified.

5. In excavators the combination of so-called driving-rods *a a* carrying excavating-tools *b c* thrust-rods *i i*, cranks *f* and *j*, clamping and journal pieces *e d* bucket elevator comprising buckets *z* link chain 1 adjustable vertical beam *w* top and bottom tumblers and shafts *q v* and chain 2 motor D and connecting-gear between the motor and the crank-shafts *f* and *j* and top tumbler-shaft *q* substantially as set forth and illustrated.

708,978. KNITTING-MACHINE. DANIEL F. SULLIVAN, Lowell, Mass., assignor of one-half to Michael J. Sullivan, Randolph, Mass. Filed Aug. 20, 1901. Serial No. 72,667. (No model.)

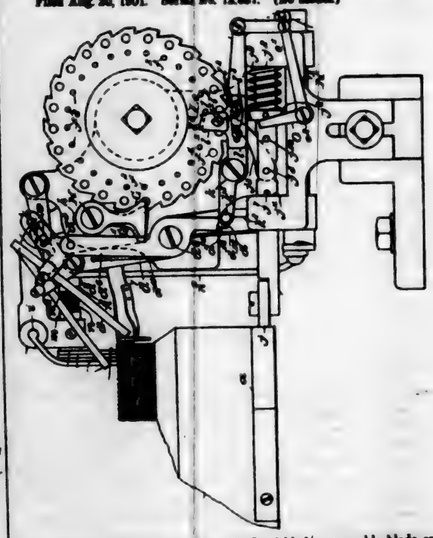

Claim.—1. The combination of a fixed blade, a movable blade and a holder, arranged in contact with said movable blade and adapted to be opened by a cam projection, with which said movable blade is provided, when said movable blade is opened, said movable blade being normally closed.

2. The combination of a fixed blade, a holder, arranged parallel with said blade, a movable blade, arranged between and in contact with said fixed blade and said holder, means for pressing said holder against said movable blade, said blades constituting a pair of shears and said movable blade being provided with a cam projection, to crowd said holder away from the body of said movable blade when said shears are opening and to permit said holder to press against said movable blade when said shears are closed, said shears being normally closed, and means of opening said shears to receive one yarn and to release another yarn.

3. In a stripping attachment for circular-knitting machines, the combination of shears, a needle-cylinder, and positive means actuated by said pattern-wheel for opening said shears, and positive means actuated by said needle-cylinder for closing said shears.

4. The combination of the needle-cylinder and needles, the shears arranged inside the circle of needles and stationary guides arranged opposite each other, one within and the other without said circle, to guide a yarn into said shears.

5. The combined fixed blade and guide-piece, provided with a notch, and a movable blade, in combination with a needle-cylinder and needles and another guide, arranged outside of said needles, opposite said first-named guides, said blades and first-named guide being arranged inside of said needles.

6. The combination with the needle-cylinder and needles of yarn-carrying levers, swinging cams to operate said levers, a pattern-wheel adapted to engage said cams, a locking-lever, adapted to engage said first-named levers, to hold them out of operative position.

7. The combination with the needle-cylinder and needles of yarn-carrying levers, swinging cams to operate said levers, a pattern-wheel adapted to engage said cams, a locking-lever, adapted to engage said first-named levers to hold them out of operative position, an incline carried by said locking-lever, unlocking-pins, carried by said pattern-wheel and engaging said incline, to move said locking-lever to unlock said first-named levers, and springs, to restore said first-named levers to operative position.

708,974. JOURNAL-BEARING. JAMES SWAN, Topeka, Kans. Filed July 13, 1901. Serial No. 68,697. (No model.)

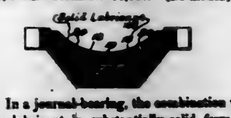

Claim.—1. In a journal-bearing, the combination with a body having a pocket, of a lubricant in substantially solid form arranged in the pocket, and a lining cast upon the body and covering the pocket and the lubricant located therein, said lining having a feed passage-way communicating with the pocket.

2. In a journal-bearing, the combination with a body having a pocket, of a solid lubricant arranged in the pocket, said lubricant comprising a granular mass and a binder holding the same together, and a lining cast upon the body and covering the pocket and the lubricant located therein, said lining having a feed passage-way communicating with the pocket.

3. In a journal-bearing, the combination with a body having a pocket, of a solid lubricant arranged in the pocket, said lubricant comprising a granular mass and a soluble binder holding the same together, and a lining cast upon the body and covering the pocket and the lubricant located therein, said lining having a passage-way communicating with the pocket.

4. In a journal-bearing, the combination with a body having a concave face, said face being provided with a pocket, of a lubricant arranged in the pocket and comprising a mixture of graphite and gum-arabic, and a bearing-lining cast upon the concave face and covering the pocket and the lubricant located therein, said lining being provided with feed-openings that communicate with the pocket.

5. In a journal-bearing, a body having a concave inner face, said face being provided with sockets, holding-lugs extending into said sockets from their outer edges, said lugs terminating short of the opposite sides of the sockets and having their ends so formed as to constitute undercut retaining-shoulders, and a bearing-lining cast upon the concave face and engaged behind said shoulders.

6. In a journal-bearing, a body having a concave face, said face being provided with oppositely-disposed sockets, holding-lugs extending into said sockets from their outer edges and tapering toward their inner ends, said lugs terminating short of the opposite sides of the sockets, and having said inner ends so formed as to constitute undercut shoulders, and a metallic bearing-lining cast upon the concave face and engaged behind said shoulders and the tapered sides of the holding-lugs.

7. In a journal-bearing, the combination with a body having a lubricant-receiving pocket, of a bearing-lining cast upon the body and forming a wall over the pocket, said lining having a lubricant-discharge opening leading from the pocket.

8. In a journal-bearing, a body having a concaved inner face, said body being provided with sockets that open from its concaved face, holding-lugs extending into the sockets from their outer edges, said lugs terminating short of the bottoms of the sockets and the opposite sides of the same and having their outer faces curved and flush with the concaved face of the body to constitute a part of the bearing-surface thereof, and a lining cast upon the concaved face and filling the pockets, said lining covering the lugs and engaging beneath the inner ends thereof.

708,975. COMBINED LATCH AND LOCK. DANIEL W. TOWNE, Grand Rapids, Mich., assignor to Grand Rapids Brass Company, Grand Rapids, Mich. Filed Dec. 2, 1901. Serial No. 84,414. (No model.)

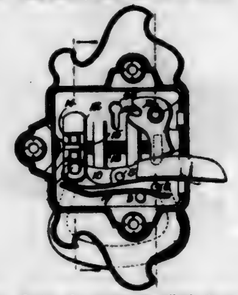

Claim.—In a device of the class described, the combination of a casing, a bolt pivotally mounted within the casing and provided with a stud, a handle pivotally mounted on the casing and provided with a bifurcated lug extending into the casing at one side of the bolt, and a link located wholly within the casing and arranged at right angles to the bolt and extending therefrom to the lug, said link being provided at one end with an aperture to receive the stud and having near its other end, a bowed portion provided with apertures receiving the sides of the bifurcated portion of the lug and forming a cross-bar for engaging the latter, substantially as described.

708,976. SASH-LOCK. ABRAHAM H. SOUTHARD, Denver, Colo., assignor of one-fourth to Augustus W. Colburn, Denver, Colo. Filed Sept. 14, 1901. Serial No. 75,470. (No model.)

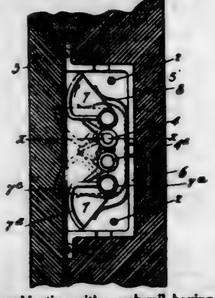

Claim.—The combination with a sash-rail having a recess or mortise, of a sash-lock comprising a casing located in said mortise of the sash-rail and open on one side, two cams journaled in said casing, each cam having a spindle, a face 7ª projecting radially from the spindle, a working face 7ᵇ and a central web, a bow-shaped leaf-spring embracing the webs of the cams and normally causing their working faces to protrude through the opening in the casing to engagement with the adjacent part of the window-frame or other structure in which the sash is located, and two auxiliary members located intermediate the cams and provided with holes journaled in the opposite walls of the casing, said members being provided with wings adapted to engage the face 7ᵃ of the cams for unlocking purposes, the holes of the auxiliary members being toothed and arranged to mesh for unlocking purposes, the spindle of one of the auxiliary members being fashioned to receive a key, the arrangement being such that the respective cams normally lock the sash against movement in the opposite direction.

REISSUES.

12,005. MANIFOLD-BOOK. ALEXANDER LEVENS, San Francisco, Cal. Filed Mar. 13, 1902. Serial No. 98,113. Original No. 694,168, dated Feb. 25, 1902.

Claim.—1. A manifold-book composed of sections, each section comprising in order a double carbon-sheet, a plurality of recording-sheets, and a cardboard backing, the record-sheets outside the stubs being divided into three substantially equal separable parts, the carbon-sheets extending the width of two of said parts, and the cardboard backing extending the width of one of said parts, said recording-sheets and backings having stubs to which they are attached along lines of perforations, said stubs and one side of each carbon-sheet being all bound together to form a book, substantially as described.

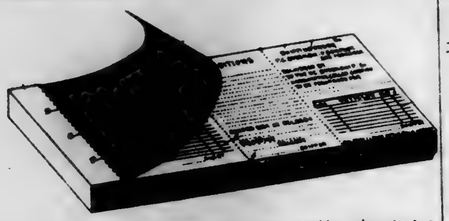

2. A manifold-book comprising in order a double carbon-sheet, a plurality of recording-sheets, and a cardboard backing, the record-sheets outside the stubs being divided into three substantially equal separable parts, and the carbon-sheet extending the width of two of said parts, said recording-sheets having stubs to which they are attached along lines of perforations, said stubs and one side of the carbon-sheet and backing being all bound together to form a book, substantially as described.

3. A manifold-book comprising in order a double carbon-sheet, and a plurality of recording-sheets, the record-sheets outside the stubs being divided into three substantially equal separable parts, and the carbon-sheet extending the width of two of said parts, said recording-sheets having stubs to which they are attached along lines of perforations, said stubs and one side of the carbon-sheet being all bound together to form a book, substantially as described.

4. A manifold-book comprising in order a double carbon-sheet, and a plurality of recording-sheets, each of said sheets outside the stubs being divided into a plurality, not less than three, of substantially equal separable parts, and the carbon-sheet extending the width of said parts except the outermost, said recording-sheets having stubs to which they are attached along lines of perforations, said stubs and one side of the carbon-sheet being all bound together to form a book, substantially as described.

5. A manifold-book comprising in order a double carbon-sheet, and a plurality of recording-sheets, each recording-sheet outside the stub being divided into a plurality not less than three of separable parts joined along lines of perforations, each part being not greater than the part next it on the side toward the stub, and the carbon-sheet extending the width of the whole of said parts except the outermost, said recording-sheet having stubs to which they are attached along lines of perforations, said stubs and one side of the carbon-sheet being all bound together to form a book, substantially as described.

12,006. NUT-LOCK. MILTON BARTLEY, Polk, Pa., assignor, by direct and mesne assignments, to the American Nut and Bolt Fastener Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Apr 30, 1902. Serial No. 105,419. Original No. 686,153, dated Aug. 14 1900. Reissue No. 11,963, dated Jan. 28, 1902.

Claim.—1. A nut-lock washer consisting of a plate provided with a bolt-hole and a bearing edge, a tongue extension partially severed from the plate on a line corresponding to the edge of the nut and bent outwardly at an angle to the face of the washer on the line of severance whereby when the tongue is bent down it will bind inwardly against the side of the nut.

2. In a nut-lock, the combination with a bolt and a nut, of a washer-plate engaging the bolt under the nut provided with a bearing edge, a partially-severed tongue extension bent outwardly on the line of severance at an angle to the face of the washer, and adapted to be bent down and to bind inwardly against the side of the nut.

3. A nut-lock washer consisting of a plate provided with a bolt-hole and a bearing edge, and a tongue partially severed from the plate on a line corresponding to the edge of the nut, and bent outwardly at an angle to the face of the washer on the line of severance whereby when the tongue is bent it will bind inwardly against the side of the nut.

4. In a nut-lock, the combination with a bolt and a nut, of a washer-plate engaging the bolt under the nut provided with a bearing edge, a partially-severed tongue bent outwardly on the line of severance, and at an angle to the face of the washer, and adapted to be bent and to bind inwardly against the side of the nut.

12,007. SUPERVISORY SIGNAL FOR TELEPHONE-SWITCHBOARDS. CHARLES E. SCRIBNER, Chicago, Ill., assignor to the Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 25, 1901. Serial No. 48,863. Original No. 638,426, dated Dec. 5 1899.

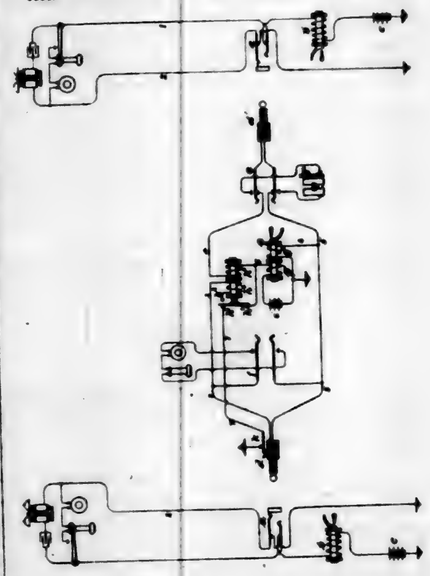

Claim.—1. The combination with united telephone-lines each provided at its station with means for determining the flow of current in the line in the use of the telephone, a bridge of the united lines and a supervisory signal and a source of current included therein, of a relay with two windings, one included in the line to each station between said station and the bridge, the switch-contacts of the said relay being adapted to break the circuit of the line between the bridge and the calling-station when the magnet is inert; whereby the supervisory signal is rendered responsive to current in both telephone-lines, substantially as and for the purpose set forth.

2. The combination with telephone-lines each provided with means at its station for determining the flow of current in the line in the use of the telephone, and link conductors uniting the lines, of a bridge between said link conductors, and a supervisory signal and a source of current included therein, a calling-key in said link conductors adapted to connect a source of calling-current with one of said lines, a relay having two windings one being placed in a link conductor toward each station, between the station and said bridge, the switch-contacts of said relay being open when the relay is inert, said switch-contacts being interposed in the link conductor between the said bridge and the calling-station, as described.

3. The combination with two telephone-lines each provided at its station with a switch for determining the flow of current in the line during the use of the telephone, of a bridge of the circuit, a supervisory signal and a source of current in the bridge, a magnet-winding in a line conductor to each station between said station and the bridge, a normal break of the line-circuit between the bridge and the calling-station, and switch-contacts actuated by said magnet-windings adapted to close the break when the winding in circuit with the called station is excited, as described.

4. In combination, a telephone-line provided at its station with means for determining the flow of current in the line during the use of the telephone, a pair of plugs and the plug-circuit thereof for making connection with the line, a bridge of the plug-circuit, a supervisory signal and a source of current in the bridge, a magnet with two windings, one of said windings being in the conductor leading from said bridge to each station, switch-contacts controlled by the said windings, one pair of said contacts adapted to be closed when the magnet is excited being interposed in a conductor of the plug-circuit between said bridge and one of the stations, and other switch-contacts adapted to be closed when the magnet is inert controlling a local circuit including a winding of the supervisory signal together with a source of current, as described.

5. In combination with telephone-lines, each provided with a switch at its station for determining the flow of current in the line during the use of the telephone, a pair of plugs and the plug-circuit thereof for making connection between lines, a bridge of the plug-circuit, and a supervisory signal and source of current therein, a relay-magnet with two windings, one of said windings being included in the plug-circuit at each side of the bridge, switch-contacts of the relay adapted to be closed when the relay is excited interposed in the conductor of the plug-circuit with one of said magnet-windings, other switch-contacts of the relay adapted to be closed when the magnet is inert, a local circuit of the supervisory signal including a source of current controlled by said last-mentioned switch-contacts of the relay, and a plug-seat switch for one of the plugs adapted to open the said local circuit when the plug is removed from its socket, substantially as described.

DESIGNS.

35,969. SCALE-BEAM SUPPORT. WILLIS H. SARGENT, St. Johnsbury, Vt., assignor to the E. & T. Fairbanks & Co., St. Johnsbury, Vt., a Corporation of Vermont. Filed May 12, 1902. Serial No. 107,046. Term of patent 7 years.

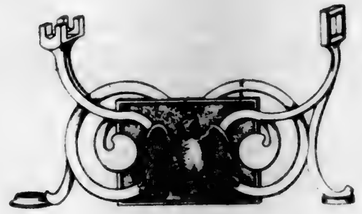

Claim.—The ornamental design for a scale-beam support; substantially as shown and described.

35,970. SCALE-BASE AND SUPPORTING-COLUMN. WILLIS H. SARGENT, St. Johnsbury, Vt., assignor to the E. & T. Fairbanks & Co., St. Johnsbury, Vt., a Corporation of Vermont. Filed May 12, 1902. Serial No. 107,046. Term of patent 7 years.

35,970.

Claim.—The ornamental design for a scale-base; substantially as shown and described.

35,971. FONT OF BORDER-TYPE. JOSEPH W. PHINNEY, Medford, Mass., assignor to American Type Founders Company, New York, N. Y., a Corporation of New Jersey. Filed Mar. 12, 1902. Serial No. 98,087. Term of patent 14 years.

Claim.—The design for a font of border-type as herein shown and described.

35,972. SOFA-PILLOW. ELIZABETH FIELD, Scotchplains, N. J. Filed May 15, 1902. Serial No. 107,523. Term of patent 7 years.

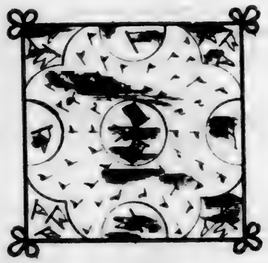

Claim.—The ornamental design for a sofa-pillow, substantially as herein shown and described.

TRADE-MARKS

REGISTERED JULY 1, 1902.

38,525. CERTAIN NAMED STATIONERY. J. S. STAEDTLER, a Firm, Nuremberg, Germany. Filed Oct. 24, 1901.

The representation of a cock. Used since May 1, 1894.

38,526. WATCHES, WATCHCASES, AND WATCH-MOVEMENTS. THE KEYSTONE WATCH CASE COMPANY, Philadelphia, Pa. Filed Mar. 31, 1902.

C

The letter "C." Used since February, 1890.

38,527. BELTS. SAMUAS & HILDER BROS., New York, N. Y. Filed May 27, 1902.

Fitform

The word "FITFORM." Used since May 1, 1902.

38,528. GLOVES. JACOB ADLER & Co., New York, N. Y. Filed Apr. 11, 1902.

A circular figure inclosing an oval-shaped figure, the body of the circular figure being stippled between its periphery and the said oval figure. Used since January 1, 1890.

38,529. SHOES. T. D. BARRY & Co., Brockton and Boston, Mass. Filed May 16, 1902.

ALLRIGHT

The word "ALLRIGHT." Used since May 1, 1896.

38,530. COTTON CLOTH. COMPAÑIA GENERAL DE TABACOS DE FILIPINAS, Barcelona, Spain. Filed Feb. 13, 1902.

CGTF

The representation of a steam-yacht, the terrestrial globe showing the Eastern Hemisphere, and the letters "C G T F." Used since August, 1901.

38,531. MERCERIZED COTTON YARN. DEXTER YARN CO., Pawtucket, R. I. Filed Mar. 15, 1902.

SILKRON

A portrait of the late Nathaniel G. B. Dexter, the originator of the business to which the applicant corporation has succeeded, together with the word "SILKRON." Used since March 13, 1902.

38,532. LEAF-TOBACCO. W. T. GRANT & Co., Louisville, Ky. Filed Apr. 23, 1902.

LS

The letters "LS" inclosed in a diamond-shaped figure. Used since January 1, 1886.

38,533. LEAF-TOBACCO. W. T. GRANT & Co., Louisville, Ky. Filed Apr. 23, 1902.

LG

The letters "L. G." inclosed in a diamond-shaped figure. Used since January 1, 1876.

38,534. SYRUPS, FLAVORINGS, TONICS, OR EXTRACTS FOR NON-INTOXICATING AERATED BEVERAGES. ELIAS HOWELL CRANE, Gadsden, Ala. Filed Apr. 17, 1902.

PepToLac

The hyphenated word "PEP-TO-LAC." Used since January 1, 1902.

38,535. COFFEES AND TEAS. WOOLSON SPICE COMPANY, Toledo, Ohio. Filed Apr. 23, 1902.

MAXIMO

The word "MAXIMO." Used since June 25, 1901.

38,536. FRUIT-JUICES. WARREN H. EARLE, Los Angeles, Cal. Filed Apr. 10, 1902.

Navelade

The word "NAVELADE," and behind the same a rectangular figure, above and below which are shown upper and lower portions of a bunch of oranges, together with orange-leaves. Used since December, 1900.

38,537. CERTAIN NAMED PACKING-HOUSE PRODUCTS. LIGHT, MCILHENNY & LIGHT, Chicago, Ill. Filed June 24, 1901.

Melrose

The word "MELROSE." Used since September 14, 1900.

38,538. CERTAIN NAMED PACKING-HOUSE PRODUCTS. SWIFT AND COMPANY, Chicago, Ill. Filed May 13, 1902.

JEWEL

The word "JEWEL." Used since April 1, 1902.

38,539. CERTAIN NAMED GROCERIES. SPRAGUE, WARNER & COMPANY, Chicago, Ill. Filed Mar. 10, 1902.

MOOSE

The word "MOOSE." Used since February 19, 1902.

38,540. BREAD. THE HEBREW BAKING COMPANY, Chicago, Ill. Filed June 7, 1902.

The representation of a woman cutting a loaf of bread. Used since March, 1898.

38,541. WITHDRAWN.

38,542. COUGH-DROPS. JOSEPH A. ARBENT, Portland, Oreg. Filed Mar. 10, 1902.

88,542.

The words "QUEEN BEE" and the representation of a beehive sitting on a slab surrounded with vegetation, with a large bee shown upon the beehive surrounded by an oval-shaped figure having projecting tabs at the opposite extremities thereof inclosing small bees. Used since October 25, 1901.

88,543. MEDICINES FOR TREATMENT OF THE BLOOD. WILLIAM MOORE HOSHAW, Bisbee, Ariz. Filed May 22, 1902.

The representation of an Indian chief in sitting position supporting in one hand a hat and in the other hand a battle-club. Used since October, 1901.

88,544. CERTAIN NAMED MEDICINAL COMPOUND. JULIUS HOFNEKER, Vienna, Austria-Hungary. Filed May 23, 1902.

PHORXAL

The word "PHORXAL." Used since November 1, 1901.

88,545. ANTISEPTICS FOR TOILET AND MEDICINAL PURPOSES. THE R. PAXTON COMPANY, Boston, Mass. Filed May 31, 1902.

PAXTINE

The word "PAXTINE." Used since December, 1898.

88,546. CERTAIN DISTILLED PRODUCT OF WITCH-HAZEL. EDWARD E. DICKINSON & Co., Essex, Conn. Filed May 9, 1902.

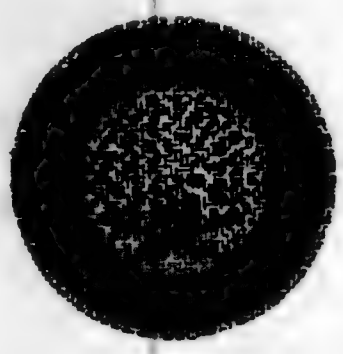

A yellow circular medallion having upon its face a red ring which is contained within two concentric black circles. On the lower part of the medallion is the representation of two crossed swords and a crown. Used since 1887.

88,547. REMEDY FOR DANDRUFF. JOHN F. HAMILTON & Co., Maple Lake, Minn. Filed May 26, 1902.

The photograph of J. F. Hamilton, with the autograph signature of "J. F. HAMILTON" associated therewith. Used since May 7, 1902.

88,548. HAIR-TONICS AND DANDRUFF CURES. MYRON A. PEARCE, Chicago, Ill. Filed May 13, 1902.

FUR-FUR

The compound word "FUR-FUR." Used since January 1, 1902.

88,549. MEDICINAL COMPOUND FOR RESTORING HAIR. THE NATIONAL HAIRCOME CO., Milwaukee, Wis. Filed Feb. 19, 1902.

The representation of a Maltese cross having the word "COME" arranged across its center and the arbitrarily-chosen letters "ARHI" particularly arranged thereon in the manner following: The upper and lower arms have the letters "A" and "R," respectively, and the side arms have the letters "H" and "I," the arm at the left having the letter "H" and the arm at the right having the letter "I." Used since January 1, 1899.

88,550. TOILET SOAP. [illegible] Soap Works, Nashville, Tenn. Filed May 3, 1902.

The portrait of Charles A. Cozzy. Used since April 15, 1901.

88,551. VEGETABLE ALBUMENS IN DRY OR LIQUID FORM. United States Plantose Company, Limited, Saginaw, Mich. Filed Jan. 27, 1902.

Plantose.

The word "PLANTOSE." Used since December 27, 1901.

88,552. CERTAIN NAMED CHEMICAL COMPOUND. Rosenwerg & Ramdahl, Cassel, Germany. Filed Feb. 6, 1902.

Mikrosol.

The word "MIKROSOL." Used since October 31, 1900.

88,553. CERTAIN NAMED PAINTS. James G. Cosgrove & Co. Philadelphia, Pa. Filed June 15, 1901.

Battery

The word "BATTERY." Used since June 8, 1899.

88,554. INSULATING MATERIAL. Dennison M. Steward, Chattanooga, Tenn., and New York, N. Y. Filed May 19, 1902.

LAVITE

The word "LAVITE." Used since April 1, 1902.

88,555. ROOF-PAINT IN LIQUID FORM. Albert F. Hawthorn, Lancaster, Pa. Filed May 15, 1902.

The monogrammic symbol composed of the letters "A F H R P." Used since March 15, 1902.

88,556. APPLES, APPLE-TREES, SCIONS, CUTTINGS, GRAFTS, ROOTS, AND STOCKS. Stark Bro's Nurseries & Orchards Co., Louisiana, Mo. Filed May 14, 1902.

BLACK BEN

The words "BLACK BEN." Used since November 11, 1895.

88,557. TUBULAR AND PRONGED RIVETS. Tubular Rivet & Stud Co., Boston, Mass. Filed May 22, 1902.

A monogram of the letters and character "T R & S Co." Used since May 1, 1902.

88,558. STOVES, FURNACES, AND ATTACHMENTS THEREFOR. Allen Gardiner Dallas, Montreal, Canada. Filed May 19, 1902.

KINETIC HEAT

The words "KINETIC HEAT." Used since February 20, 1901.

88,559. ORE-CRUSHING MILLS. Simeon V. Trent, Salt Lake City, Utah. Filed May 20, 1902.

MONADNOCK

The word "MONADNOCK." Used since June 1, 1901.

88,560. FIRE, BURGLAR, AND WATER PROOF SAFES AND VAULTS. HARRY D. CASEY, New York, N. Y. Filed May 5, 1902.

PAN-AMERICAN.

The compound word "PAN-AMERICAN." Used since May 1, 1901.

88,561. CERTAIN NAMED AMMUNITION. THE PETERS CARTRIDGE CO., Cincinnati, Ohio. Filed May 21, 1902.

RECORD

The word "RECORD." Used since May 16, 1902.

88,562. CERTAIN NAMED AMMUNITION. THE PETERS CARTRIDGE CO., Cincinnati, Ohio. Filed June 2, 1902.

HIGH GUN

The words "HIGH GUN." Used since May 16, 1902.

88,563. EXPLOSIVES. EVERARD SCHOLA, Mill Valley, Cal. Filed June 3, 1902.

STEELITE.

The word "STEELITE." Used since May 6, 1902.

THE NORRIS PETERS CO.

LABELS

REGISTERED JULY 1, 1902.

9,249.—*Title:* "100% PURE-WOOL." (For Cloth.) THE J. CAPPS & SONS, LTD., Jacksonville, Ill. Filed June 9, 1902.

9,250.—*Title:* "COW HIDE." (For Paper Bags.) OLD DOMINION PAPER CO., Norfolk, Va. Filed May 29, 1902.

9,251.—*Title:* "ERUPTION OF MT. PELEE." (For Fireworks.) THOMAS LLOYD, New York, N. Y. Filed June 7, 1902.

9,252.—*Title:* "MASURITE SAFE EXPLOSIVE." (For an Explosive.) MASURITE EXPLOSIVE COMPANY, New York, N. Y. Filed June 6, 1902.

9,253.—*Title:* "EUREKA." (For Evaporated Fruits.) WM. A. HIGGINS & CO., New York, N. Y. Filed May 26, 1902.

9,254.—*Title:* "BLUE BELL." (For Evaporated Fruits.) WM. A. HIGGINS & CO., New York, N. Y. Filed May 26, 1902.

9,255.—*Title:* "ATHENIAN." (For Evaporated Fruits.) WM. A. HIGGINS & CO., New York, N. Y. Filed May 26, 1902.

9,256.—*Title:* "HOLLY." (For Evaporated Fruits.) WM. A. HIGGINS & CO., New York, N. Y. Filed May 26, 1902.

9,257.—*Title:* "MISLETOE." (For Evaporated Fruits.) WM. A. HIGGINS & CO., New York, N. Y. Filed May 26, 1902.

9,258.—*Title:* "CHARIOT." (For Evaporated Fruits.) WM. A. HIGGINS & CO., New York, N. Y. Filed May 26, 1902.

9,259.—*Title:* "YANKEE CREAM CORN." (For Canned Corn.) N. C. CUMMINGS & BRO., Portland, Me. Filed June 5, 1902.

9,260.—*Title:* "WHISKEY WITHOUT A HEADACHE." (For Whisky.) GREENWALD & CO., Philadelphia, Pa. Filed June 6, 1902.

9,261.—*Title:* "JOHN GIBSON'S SON & CO'S RYE WHISKEY." (For Whisky.) MOORE & SINNOTT, Philadelphia, Pa. Filed June 6, 1902.

9,262.—*Title:* "WINNER WHISKEY." (For Whisky.) WILLIAM MULHERIN & SONS, Philadelphia, Pa. Filed June 5, 1902.

9,263.—*Title:* "BRÄU." (For Beer.) ALFRED VON COTZHAUSEN, Milwaukee, Wis. Filed June 6, 1902.

9,264.—*Title:* "MIEBIS." (For Cigarettes.) THE MIEBIS TOBACCO CO., New York, N. Y. Filed May 14, 1902.

9,265.—*Title:* "THE FAST CIGAR." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed June 6, 1902.

9,266.—*Title:* "OLD FIRESIDE." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed June 10, 1902.

9,267.—*Title:* "LA ROMANA." (For Cigars.) SANCHEZ & HAYA CO., Tampa, Fla., and New York, N. Y. Filed June 6, 1902.

9,268.—*Title:* "LA ORIENTAL." (For Cigars.) SANCHEZ & HAYA CO., Tampa, Fla., and New York, N. Y. Filed June 6, 1902.

9,269.—*Title:* "FARMER BOY." (For Cigars.) N. F. YOUNG, Redlion, Pa. Filed May 12, 1902.

9,270.—*Title:* "FIRST PAGE." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed June 5, 1902.

9,271.—*Title:* "LISTERETS." (For a Lotion.) JOHN M. FISHER, New York, N. Y. Filed March 1, 1902.

9,272.—*Title:* "IDEALA." (For Toilet Cream.) THE IDEALA CO., Canton, Ohio. Filed June 5, 1902.

9,273.—*Title:* "THE QUEEN'S CREAM OF ROSES." (For a Toilet Preparation.) WILLIAM E. TERRILL, Montpelier, Vt. Filed June 9, 1902.

9,274.—*Title:* "DR. SPINNER'S STOMACH-AID." (For a Medicine.) THE SPINNER MEDICINAL TABLET CO., Providence, R. I. Filed June 9, 1902.

PRINTS

REGISTERED JULY 1, 1902.

527.—*Title:* "MEN'S APPAREL." (For Men's Apparel.) WM. C. BORN, Chicago, Ill. Filed June 9, 1902.

528.—*Title:* "HYGIENIC SUSPENSORY." (For Suspensory Bandages.) J. C. SCHNOTER CO., New York, N. Y. Filed May 24, 1902.

529.—*Title:* "NAILITZA." (For a Cleaning Preparation.) NAILITZA COMPANY, New York, N. Y. Filed June 4, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

LUGER v. BROWNING.

Decided February 7, 1903.

1. ALLOWANCE OF CLAIMS—NOTICE—INTERFERENCE.

Where the Examiner has rejected certain claims, but subsequently declares an interference as to them, *Held* that this amounts to an allowance of them, although no formal notice to that effect was sent.

2. INTERFERENCE—IRREGULARITY—ALLOWANCE OF CLAIMS.

Where the Examiner has not notified the parties that the claims in issue are patentable, *Held* that this does not constitute such irregularity as will preclude a proper decision of the question of priority of invention and does not warrant a dissolution of the interference.

3. SAME—INTERLOCUTORY QUESTIONS—FINAL HEARING.

Held that questions as to the patentability of the claims and irregularity in the declaration should be raised by motion under Rule 122 and that they will not be considered upon an appeal relating to priority of invention.

APPEAL from Examiners-in-Chief.

RECOIL-OPERATED MAGAZINE-GUN.

Application of Georg Luger filed March 17, 1900, No. 9,083. Application of John M. Browning filed May 6, 1899, No. 715,822.

Mr. Herbert W. T. Jenner for Luger.

Messrs. Seymour & Earle for Browning.

ALLEN, *Commissioner:*

This is an appeal by Luger from the decision of the Examiners-in-Chief affirming the decision of the Examiner of Interferences awarding priority of invention to Browning upon the following issue:

"In recoil-firearms having movable barrels, the combination of the rearward-moving barrel with linked levers, a stud or projection at the bending or "knee" point of the linked levers, and a curved guide-surface of the casing located in the path of the said projection, which in consequence of the recoil after firing is pressed against the said surface, substantially as shown and described.

The testimony shows clearly that Browning made the invention before Luger, who is a foreigner, introduced a knowledge of the invention into this country, and therefore the decision in favor of Browning is correct.

Luger's present appeal alleges the following errors in the decision below:

Granting motion to strike out rebuttal testimony of Luger. Awarding priority to Browning without qualification. Irregularity in declaring the interference.

An examination of the rebuttal testimony on behalf of Luger shows that it was properly suppressed, and even if it were accepted and considered it would not affect the decision on the question of priority.

The award of priority to Browning was proper, for the reason that the evidence shows him to be the first inventor. The facts of this case do not bring it within the doctrine announced in *Bechman* v. *Wood*, (81 O. G., 287.)

The alleged irregularity in declaring the interference seems to have been the failure of the Examiner to formally allow the claims of the applications before declaring the interference or suggesting the claims to one of the parties. The declaration of the interference amounted to a formal allowance of the claims involved and showed that the Examiner had changed his mind upon the question of patentability of the claims which had previously been rejected. Even if it could be considered an error by the Examiner not to have formally notified the parties of the allowance of the claims before declaring the interference it was not such irregularity as would preclude a proper determination of the question of priority. This matter is furthermore one which if raised at all should have been presented by a motion to dissolve under Rule 122.

In his present appeal Luger protests against the issue of a patent to Browning upon the ground that certain newly-discovered references mentioned anticipate the invention. It is well settled that the question of anticipation will not be considered and decided upon an appeal of this kind, except under very unusual circumstances. The Primary Examiner is the tribunal to pass upon that question in the first instance. No good reason is seen for departing from the usual practice in this case. The Primary Examiner is directed to consider the newly-discovered references cited in Luger's brief in connection with the claims of Browning's application when it comes before him for *ex parte* consideration after the conclusion of this interference.

The decision of the Examiners-in-Chief awarding priority of invention to Browning is affirmed.

EX PARTE ORGAN.

Decided June 11, 1903.

PETITION—PRACTICE—STATEMENT OF POINTS.

A petition to the Commissioner should state the point or points to be reviewed and should not be taken until the questions have been twice acted upon by the Examiner.

ON petition.

HORSESHOE.

Application of Joseph H. Organ filed October 5, 1903, No. 77,696.

Mr. Organ pro se.

ALLEN, *Commissioner:*

This is a petition from an action of the Examiner in charge of the above-entitled application making certain objections to the specification and claim and also rejecting the claim. The petitioner asks that the Commissioner "examine into the case and review the points at issue, that justice may be done in the premises." The petition does not comply with the rules, because it does not state the facts involved and the "point or points to be reviewed." (Rule 145.) Moreover, it is improperly taken, inasmuch as it requests a review by the Commissioner of matters involving the merits of the invention and the rejection of a claim. A review of the Examiner's action on these matters is to be made in the first instance by the Examiners-in-Chief, as provided by Rule 133.

It appears, further, that the petition is premature, since the questions have not been twice acted upon by the Examiner.

The petition is dismissed.

GALES *v.* BERRIGAN.

Decided June 20, 1902.

PRELIMINARY STATEMENT—AMENDMENT.

Where it appears that an amendment to a preliminary statement will not carry the date of reduction to practice back of that of the opposing party and a reasonable excuse is offered for the delay in presenting the amendment and, further, that no testimony has been taken, *Held* that the amendment should be permitted.

APPEAL on motion.

CENTRIFUGAL CREAM-SEPARATOR.

Application of Nicholas W. Gales filed October 4, 1900, No. 32,019. Patent granted John J. Berrigan December 4, 1900, No. 663,115.

Messrs. C. A. Snow & Co. for Gales.

Messrs. Harding & Harding for Berrigan.

ALLEN, *Commissioner:*

This is an appeal by Gales from a decision of the Examiner of Interferences denying his motion to amend his preliminary statement.

It appears that Gales filed his preliminary statement October 1, 1901. In this statement he alleges that he completed a full-sized working separator on or about the 28th day of May, 1900. On April 9, 1902, the present motion to amend was filed to permit Gales to amend this statement to carry back his date of reduction to practice from May 28, 1900, to September 5, 1899, a period of more than eight months. In his affidavit accompanying the motion Gales gives as a reason why he did not include this earlier date in his original statement—

* * * that he supposed that the power-separator completed in May, 1900, was the one of most importance and * * * neglected to advise his attorneys * * * thereof; that the hand-power separator completed in September 1899 was the first completed separator containing the elements of the invention.

There is also an affidavit by one Jordan—

* * * that during the fore part of September, 1899, deponent saw in Gales's possession a hand-operated cream-separator wherein the whole milk is discharged between the milk and cream cones at an angle to the radius of the conical plates; * * * and that deponent believes this construction and arrangement, as embodied in the aforesaid hand-operated machine, to have been the invention of said Gales.

No testimony has yet been taken in the case, and the proposed amendment does not carry Gales's date of reduction to practice back of that alleged by Berrigan in his preliminary statement.

There has been a delay of some seven months in filing the motion to amend; but this delay is explained by the fact set forth in the affidavits accompanying the motion, that Gales was suffering from an accident to his eyes, which occurred in the summer of 1901, and during a large part of the time since has been unfit for business and has been in a hospital under treatment.

In view of all the facts appearing of record it is believed that the amendment should be permitted. The opposing party will not be injured, since no testimony has been taken, he has not been misled, nor have the expenses of the proceeding been increased. In this case, therefore, the necessity for the strict rule laid down in *Franklin* v. *Morton* v. *Cooley* (95 O. G., 2063) does not arise. The case comes, rather, within the doctrine announced in *May* v. *Merker*, (85 O. G., 150,) in which it was said:

It is the duty of the Office to issue a patent to the one entitled thereto, and to that end it is desirable to have before it for consideration all the facts essential to a correct determination of the question of priority. Where, therefore, an adversary will not be injured by the grant of a motion to amend a statement, and to deny the motion would be unjust to the moving party and might lead to the grant of a patent to one who was not entitled to it, *Held*, that the motion to amend should be granted. (Syllabus.)

The decision of the Examiner of Interferences is reversed.

EX PARTE FOULIS.

Decided June 20, 1902.

DIVISION—ARTICLE—PROCESS.

Division was properly required between claims covering a golf-ball and claims covering the process of making the same where it appears that the golf-balls are not necessarily the product of the method and that they could be made by other methods than that claimed.

ON petition.

GOLF-BALLS AND PROCESSES OF MANUFACTURING THE SAME.

Application of James and David Foulis filed February 10, 1902, No. 93,479.

Mr. Thomas F. Sheridan for the applicants.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division between claims 1 and 2, which cover a process of making a golf-ball, and the remaining claims, which cover a golf-ball.

The petitioners contend that claims 1 and 2 are confined to methods of making golf-balls and that no other article than a golf-ball, such as covered in the remaining claims, can result from this method.

The Examiner does not regard the method claims to be limited to making golf-balls, but holds that any other articles of various shapes can be made as well by this method—as, for instance, bicycle-handles.

Whether the method claims are limited to the making of golf-balls or are broad enough to cover the method of making articles of other shapes it is not necessary to decide.

An examination of the article claims makes it

clear that the golf-balls covered by them are not necessarily the products of the methods set forth in claims 1 and 2. It does not appear that the article claimed is the necessary result of the particular sequence of steps set forth in claims 1 and 2.

The article covered in claims 3 and 6 could be formed by placing the hardened blocks of material on a lathe and turning them down to the shape of a ball or by operating in other ways by means of sharp tools. The product covered in all of the claims could, moreover, be formed by compression before the material is allowed to become completely cool and hard, which is a distinct step in the method claimed.

It is clear, therefore, that the article covered in claims 3 to 6 can be made by other methods than that covered by claims 1 and 2, and that a disclosure of the article does not necessarily disclose the method.

Division was properly required. (*Ex parte Erdman*, 93 O. G., 2581.)

The petition is denied.

EX PARTE LEE.

Decided June 20, 1902.

DIVISION—INSULATING COMPOUND AND INSULATED CONDUCTOR.

Division properly required between claims for an insulating compound and process of making it and claims for an insulated conductor and process of making the same.

ON petition.

INSULATING MATERIAL, INSULATED CONDUCTOR AND PROCESS.

Application of John C. Lee filed April 10, 1902, No. 102,299.

Mr. Thomas D. Lockwood and *Mr. Philip Mauro* for the applicant.

ALLEN, *Commissioner:*

This is a petition from an action of the Examiner requiring division between the claims of the above-entitled application.

Division has been required between claims 1 to 4, inclusive, which cover an insulating compound and the process of making it, and claims 5 to 12, inclusive, which cover an insulated conductor and the process of making the same.

The insulated conductor covering the last set of claims is made by coating a conductor with the compound covered by the first set of claims; but it is clear that this compound is not limited in use to conductors. Moreover, insulating compounds are recognized in the Office classification as distinct articles from conductors. Such compounds are also separate subjects of manufacture and sale. It is true that the classification in this Office is not in all cases a controlling test as to whether or not division should be required; but it is a most important test, especially when, as in the present case, it indicates the lines of invention and manufacture which have arisen in the art. As was said in the decision in *ex parte Fox and Barrett*, (99 O. G., 862:)

The mere fact that inventions would be separately classified in this Office is not in itself sufficient to warrant a requirement for division, but in the present case the classification has followed the lines established by inventors and manufacturers and is evidence of the fact that the devices have acquired such a distinct status in the art as warrants not only separate classification, but also separate applications for inventions included therein.

The action of the Examiner was right and is affirmed.

EX PARTE WATERMAN.

Decided June 20, 1902.

1. DIVISIONAL APPLICATION—DESIGN APPLICATION—MECHANICAL APPLICATION.

A mechanical application cannot be considered a division of a design application.

2. SAME—SUBJECT-MATTER OF.

It is fundamental that "a proper divisional application does and can contain only matter carved out of the original case." (*Ex parte Henry*, 64 O. G., 999.) The subject-matter of the divisional application need not have been claimed or reached by any statement of invention in the original case. It is sufficient if the matter has been fully disclosed in the original application.

3. SAME—SAME—DISCLOSURE.

This disclosure, however, must be in an application in which the applicant would be permitted to present and prosecute a claim for the matter so disclosed. In other words, an applicant will be permitted to claim in a divisional application such segregable matter as might have, had he so elected, been claimed in the original application.

4. SAME—DESIGN AND MECHANICAL PATENTS.

Design patents and mechanical patents cover different monopolies. They are granted under different sections of the statute for different terms.

5. DESIGN PATENTS—SUBJECT-MATTER OF.

The subject-matter of a design application relates to the appearance of the article and not to its mechanical function. It is immaterial in what manner the invention is described in such an application or what the showing is, the subject-matter still relates to a design.

6. SAME—MISTAKE IN DESCRIPTION AND CLAIM.

If through ignorance or mistake an applicant claims in a design application subject-matter for which a design patent cannot under the statutes be granted, the claims must be rejected. (*Ex parte Proudfit*, 10 O. G., 585.)

7. SAME—REQUIREMENT FOR DIVISION UNWARRANTED.

There is no warrant for a requirement for division in such a case. Since claims for mechanical functions cannot be made in a design application, it follows that such claims cannot be divided out of such an application.

ON petition.

FOUNTAIN-PENS.

Application of Frank D. Waterman filed March 27, 1902, No. 100,204.

Mr. James A. Skilton for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner refusing to treat the above-entitled application as a division of a certain design application filed September 28, 1897.

It appears that a design application was filed for a fountain-pen, as above stated, on September 28, 1897, and that the drawing of this application contained a complete disclosure of the invention claimed in the present application, while the specification of said design application contained a full description of the invention and claimed the same. This design application was for the term of fourteen years and the fee of thirty dollars was paid thereon.

The claims of this application were refused consideration by the Examiner because they did not

cover proper subject-matter for a design and were by amendment limited to the design.

On March 27, 1902, the present application for a mechanical patent was filed, containing claims to the structure disclosed and claimed in the earlier design application, and it is sought to have this application considered and treated as a division of the design application, so as to have the benefit of the filing date thereof in order that the statutory bar of public use may be avoided.

It is fundamental that "a proper divisional application does and can contain only matter carved out of the original case." (*Ex parte Henry*, 64 O. G., 299.) By a liberal interpretation of the rules it has been held (see *ex parte Henry*, *supra*) that the subject-matter of the divisional application need not have been claimed or reached by any statement of invention in the original case, but that it is sufficient if the matter has been fully disclosed in the original application. It is to be observed, however, that this disclosure must be in an application in which the applicant would be permitted to present and prosecute a claim for the matter so disclosed. In other words, an applicant will be permitted to claim in a divisional application such segregable matter as might have, had he so elected, been claimed in the original application. Such a divisional application relates back to and has the benefit of the filing date of the original application as a date of constructive reduction to practice and to avoid the bars of prior publication and public use.

Design patents and mechanical patents cover different monopolies. They are granted under different sections of the statute for different terms. It is true that the procedure in obtaining a design patent is very similar to that in obtaining a mechanical patent, but nevertheless the monopolies granted in such cases, as above stated, are different. It is possible to obtain a design patent and a mechanical patent for the same article of manufacture.

When, therefore, an application for a design patent is filed, the subject-matter of this application relates to the appearance of the article and not to its mechanical function. It is immaterial in what manner the invention is described in such an application or what the showing is, the subject-matter still relates to a design. If the description and showing are incorrect, they may be changed by proper amendment. If through ignorance or mistake an applicant claims in a design application subject-matter for which a design patent cannot under the statutes be granted, the claims must be rejected. (*Ex parte Proudfit*, 10 O. G., 585.) There is no warrant for a requirement for division in such a case, because, as stated above, a divisional application must contain such matter as might have been claimed in the original application. Since claims for mechanical functions cannot be made in a design application, it follows that such claims cannot be divided out of such an application.

A consideration of the nature of a divisional application will throw further light upon this subject.

Such an application has the benefit of the filing date of the original case as a date of constructive reduction to practice. This is so because the applicant may be said to have filed an allowable application for the subject-matter divided out at the earlier date and could have claimed it then had he so elected. But no description of a mechanical device in a design application, however complete it may be, can be held to be such a constructive reduction to practice, because the filing of the design application is not and cannot be under any circumstances the filing of an allowable application for the mechanical device. The same is true when the statutory bars of two years prior publication or two years prior public use or sale are concerned. These bars can be avoided only by the filing of an application. The filing of an application for a design, however, is not the filing of an application for the mechanical structure and cannot operate to avoid these bars to patentability of the mechanical structure.

It must be held that the application now under consideration is not a proper division of the earlier design application.

The Examiner's action was right, and it is affirmed.

EX PARTE GOLDMAN.

Decided June 20, 1902.

1. REQUIREMENT OF DIVISION—ACTION ON MERITS—PRACTICE.

Where the independence of the inventions is clear, it is the usual practice not to act on the merits of the case when the requirement of division is made in the first action. The most that is usually done is to cite patents after a cursory examination in order to show that the requirement of division has been correctly made.

2. SAME—SAME—SAME.

If the Examiner desires to make a complete action on the merits of the case in the same letter in which division has been required, there is no objection to his doing so; but it should be made clear in said action that the whole case has been considered on its merits and that not only those claims which are specifically rejected have been considered, but all of the others as well.

3. FINAL REJECTION PREMATURE—RIGHT TO AMEND.

Where in requiring division the Examiner rejects some of the claims upon references, but does not make it plain that he has given a full action upon the merits, *Held* that a final rejection given in the next letter is premature and that the applicant is thereafter entitled to amend.

ON petition.

CALCULATING-MACHINE.

Application of Henry Goldman filed August 1, 1900, No. 25,483.

Messrs. Parker & Carter for the applicant.

ALLEN, *Commissioner:*

This is a petition from the refusal of the Examiner to enter and consider a proposed amendment filed after a final rejection of certain claims in the above-entitled application and from his action holding the application to be abandoned for failure to take such action as the condition of the case required within one year from the date of such final rejection.

The record shows that the first Office action was made on August 30, 1900. In this action the Examiner made certain formal objections to the specification and to some of the claims, the claims were held to cover three separate and independent inventions, and division was therefore required. The Examiner proceeded further and specifically rejected two of the seventeen claims presented. The following language was used:

> The only point of difference between claim 9 and the structure of the former patent No. 634,788, is the groove in the lever. As such a groove does not diminish friction the claim is rejected. * * *
>
> Claim 15 is also rejected on No. 634,788.

On January 31, 1901, the petitioner filed an amendment which cured most of the formal objections that were urged by the Examiner and canceled two of the groups of claims which covered two of the independent inventions which were at first claimed. The cancellation of these claims changed the number of those remaining, so that the claims which were originally numbered 9 and 15 became claims 7 and 12.

On February 18, 1901, the Examiner finally rejected claims 7 and 12 and made final an objection which had been originally made to one of the other claims.

On February 10, 1902, the petitioner filed an amendment inserting three new claims and accompanied the same with an argument.

On February 24, 1902, the Examiner refused to enter and consider this amendment on the ground that the application was under final rejection and the amendment not being such a proper action as the condition of the case required the application had become abandoned. From this action this petition is taken.

The facts in this case make it necessary to determine whether the final rejection of February 18, 1901, was a proper one, for if it was the subsequent actions of the Examiner are clearly correct. The determination of this question depends solely on whether or not the two claims should have been rejected in the first Office action in which the requirement of division was made.

Rule 42 provides in part as follows:

> 42. If several inventions, claimed in a single application, be of such a nature that a single patent may not be issued to cover them, the inventor will be required to limit the description, drawing, and claim of the pending application to whichever invention he may elect. * * * If the independence of the inventions be clear, such limitation will be made before any action upon the merits; otherwise it may be made at any time before final action thereon, in the discretion of the Examiner.

It is the usual practice not to act on the merits of an application, especially in the first action, when a requirement of division is made. The most that is usually done is to cite patents after a cursory examination in order to show that the requirement of division has been correctly made and that patents have been granted covering the separate and independent inventions which are held by the Examiner to be claimed in the single application before him.

If the Examiner desires to make a complete action on the merits of the case in the same letter in which division has been required, there is no objection to his doing so; but it should be made clear in said action that the whole case has been considered on its merits and that not only those claims which are specifically rejected have been considered, but all of the others as well. If this is not done, in view of the usual practice when division is required the applicant may easily fall into error and believe that the patents cited were only to show the state of the art and were not meant to be formally cited against the claims for the purpose of rejecting them.

In the letter the Examiner used the word "reject" in treating the two claims in question. Nothing was said as to the merits of the other claims. The action is full and complete as to the requirement of division, but it does not appear from the letter that it was intended to act also on the merits of the case throughout. In view of the fact that such an action is unusual it is not surprising that the applicant did not appreciate the fact that the Examiner intended to act on the merits of the case throughout, but that he merely intended to cite the best references at hand to show the state of the art pending the final determination of the question of division.

In cases where division is required and the Examiner also makes a complete action on the merits of the case this fact should be clearly brought out in the letter requiring division. That the applicant did not appreciate the fact that the Examiner intended to act fully on the merits of the case in addition to this requirement of division is apparent from the following statement of the petitioner in referring to the first action which was made by the Examiner:

> Some references were cited but in view of the division applicant did not think this was a full action for it is not customary to give a complete action when division is called.

In view of the fact that it does not appear in the first action requiring division that it was the intention also to act throughout on the merits of the case and that, in fact, the case was so acted upon it is held that the final rejection of February 18, 1901, was premature.

It follows, therefore, that the amendment filed February 10, 1902, should be entered and considered.

The petition is granted.

EX PARTE DOWNIE AND MESSNER.

Decided June 20, 1902.

DIVISION—STEAM-BOILER—FURNACE.

Division was properly required between claims covering a boiler construction and claims covering a furnace construction, as they are recognized by inventors and manufacturers as separate and independent inventions and are capable of separate use irrespective of their particular construction.

ON petition.

STEAM-BOILER.

Application of Robert M. Downie and David A. Messner filed February 21, 1902, No. 95,106.

Mr. E. G. Siggers for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division between claims 12 and 13 and the remaining claims in the above-entitled application.

The Examiners of Divisions XVIII and XIX are each of the opinion that all the claims in the above-entitled application, with the exception of claims 12 and 13, relate to a furnace construction and should be examined in Division XIX. The Examiner of Division XVIII is also of the opinion that claims 12 and 13 cover a boiler construction and that an application including only such claims should be examined in his division.

A boiler construction and a furnace construction are recognized by inventors and manufacturers as separate and independent inventions. They are capable of separate use irrespective of their particular construction.

Claims 12 and 13 are the only claims now presented in this case which include the water-tubes as elements in the combinations. The result is that claims 12 and 13 necessarily cover a boiler construction. The remaining claims are not limited to a boiler construction, but merely cover a furnace construction capable of use in other relations than with a boiler—a hot-air furnace, for example.

It is held, therefore, that claims 12 and 13 cover a separate and independent invention from that covered by the remaining claims. The requirement of division was a proper one.

The petition is denied.

EX PARTE LUDINGTON.

Decided June 25, 1902.

APPLICATION—COMPLETE PROCESS—NO DRAWING.

Where an application for a process was filed December 11, 1901, complete as to all of its parts except the drawing and it appeared that a drawing was not necessary for a full disclosure of the invention, *Held* that the application should be given a filing date as of December 11, 1901.

ON petition.

PROCESS OF MAKING CIGARETTES FROM CONTINUOUS CIGARETTE-RODS.

Application of Frank J. Ludington filed January 16, 1902, No. 90,052.

Mr. Thomas S. Crane for the applicant.

ALLEN, *Commissioner:*

This is a petition that the filing date of the above-entitled application be changed from January 16, 1902, to December 11, 1901.

It appears that the invention described in this application related to a process for making cigarettes. On December 11, 1901, all the parts of the application were filed except the drawing, which was afterward filed, upon request, January 16, 1902.

The process constituting the invention was fully disclosed in the specification as filed on December 11, 1901, and the disclosure was sufficient for the purpose of examination of the invention upon its merits.

Under these circumstances the rule laid down in *ex parte Russell* (84 O. G., 2021) is applicable to this case. This rule is stated as follows:

Where the application is drawn to cover a process and discloses the invention sufficiently to permit of examination on the merits, although no drawing is furnished, *Held* that it must be given the time of filing as the date of application, although a drawing is subsequently found to be desirable and is required not to show the invention, but as showing some means for carrying into practice.

In the present case the disclosure made in the application as filed on December 11, 1901, was sufficient for action on the merits. The application is therefore entitled to that date as its date of filing.

The petition is granted.

Changes in Classification.

(ORDER No. 1,485.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 26, 1902.

Changes in classification are directed as follows:

The following subclasses in classes 178, Telegraphy, and 179, Telephony, are abolished, and subclasses of the same numbers and titles are established in class 177, Electric Signaling:

Class 178, Telegraphy—

311. Alarms—
312. Æquoreal,
313. Barokinetic,
314. Burglar,
315. Hose,
316. Safe.
10. Circuit-closers—
208. Burglar,

Circuit-closers—
201. Letter-box,
205. Lock,
204. Retarded,
198. Thermal—
202. Fluid,
203. Fusible.

Class 179, Telephony—

3. Annunciators—
188. Drop,
189. Drop-system,

Annunciators—
190. Elevator,
191. Step-by-step.

The following subclasses are abolished in class 178, Telegraphy:

30. Lightning-arresters—
214. Magnetic,
215. Thermal.

Subclasses with the same numbers and titles are established in class 175, Electricity, Special Applications.

Subclass 81, Conductors, anti-inductive, is transferred from class 179, Telephony, to class 173, Electricity, Conductors.

In class 126, Stoves and Furnaces, subclass 117, Electric heaters, is abolished.

In class 206, Metal-Welding, the following subclasses are abolished:

Metal-working—
8. Electric—
11. Arc system,
12. Liquid electrode,
13. Riveting.

A new class is established to be entitled class 219, Electric Heaters, with the following subclasses:

Metal-working—
2. Electric—
3. Arc system,
4. Liquid electrode,
5. Riveting,
1. Miscellaneous.

Class 50, Fluid-Pressure Regulators, is transferred from Division XXXV to Division XXX.

F. I. ALLEN,
Commissioner.

Patents Nos. 703,977 to 704,491.

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OF THE
United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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Total issue	574	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	2		Nebraska	1	
Alaska Territory			Nevada		
Arizona Territory	1		New Hampshire	2	1
Arkansas	1		New Jersey	25	2
California	17	3	New Mexico Territ'y		
Colorado	4		New York	72	9
Connecticut	11	3	North Carolina	3	
Delaware			North Dakota	1	
District of Columbia	9		Ohio	27	5
Florida	1		Oklahoma Territ'y		
Georgia	1	2	Oregon	2	
Hawaii Territory			Pennsylvania	50	7
Idaho	1		Rhode Island	2	
Illinois	53	4	South Carolina	1	1
Indian Territory	1		South Dakota	4	
Indiana	14	2	Tennessee	3	
Iowa	9	1	Texas	6	
Kansas	5		Utah	2	
Kentucky		2	Vermont	2	
Louisiana			Virginia	4	1
Maine	2		Washington	3	
Maryland	11		West Virginia	2	
Massachusetts	41	4	Wisconsin	12	3
Michigan	10		U. S. Navy		
Minnesota	1		U. S. Rev. Marine		
Mississippi	3				
Missouri	24		Total to citizens of the United States	446	50
Montana	2				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Austria-Hungary	1		Netherlands		
Barbadoes			Newfoundland		
Belgium	2		New South Wales		
Bermuda			New Zealand	3	
Brazil			Norway		
Canada	9		Peru		
Cape Colony			Portugal		
Chile			Roumania		
China			Russia	1	
Cocos Island			Scotland	3	1
Colombia			South African Republic		
Cuba			South Australia		
Denmark			Spain		
Egypt			Sweden	1	
England	25	2	Switzerland	3	
France	8		Uruguay		
Germany	17		Victoria		
Gautemala			Western Australia		
India					
Ireland	1		Total to citizens of foreign countries	74	3
Italy					
Mexico					

Photographic Copies of Drawings.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 1, 1902.

The Patent Office is now prepared to furnish black line on white ground copies of any unbound drawing, foreign or domestic, which may be in its possession, instead of the blue-prints heretofore furnished. Only the 7x11 (patent) size and the full or 10x15 size prints will hereafter be furnished, at 15 and 25 cents per sheet, respectively.

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F. I. ALLEN,
Commissioner.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business July 1, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	In arrears—Under one month.			
106	II. Farm Products, etc., Lubricators, Presses, etc.	June 11	June 10	213
317	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	June 10	June 6	84
253	X. Carriages and Wagons	June 7	June 19	62
246	I. Tillage, etc., and Fences	June 2	June 16	256
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 2	June 6	200
80	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	June 2	June 5	294
102	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 2	June 4	251
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	May 31	June 17	217
	Between one and two months.			
123	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	May 29	June 17	211
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	May 28	June 11	220
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	May 27	June 6	217
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	May 27	June 4	264
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	May 26	June 16	197
218	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	May 26	June 11	235
251	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	May 24	June 11	317
197	XXX. Fluid Pressure Regulators, Lamps and Gas-Fittings.	May 21	June 10	316
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	May 22	June 10	184
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	May 21	June 17	266
208	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	May 20	June 9	216
44	XXIV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	May 19	June 12	322
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	May 19	June 9	486
249	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	May 19	June 5	400
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	May 19	June 3	289
125	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	May 17	June 19	274
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	May 15	May 28	267
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	May 6	May 13	335

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
123	XXIX. Wood-Working Machines, Coopering and Roofing.	May 5	June 6	255
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	May 3	May 15	435
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	May 3	Apr. 28	446
93	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 1	Apr. 24	462
	Between two and three months.			
248	XVIII. Steam-Engineering, etc.	Apr. 21	May 3	452
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	Apr. 16	May 12	451
109	XXII. Fire-Arms, Ordnance, Navigation.	Apr. 12	May 20	248
91	XVI. Telegraphy and Telephony.	Apr. 7	Apr. 5	720
89	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	Apr. 5	Apr. 5	573
	Between three and four months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 7	May 19	477
89	XXXVII. Electricity, Conductors and Special Applications, Electric Lighting and Signaling. Heaters.			
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Educational Appliances, Signals, Stone-Working, Store Furniture, Care of Live Stock, Stationery, Fishing and Trapping.			

Total number of applications awaiting action.....11,042

Under one month.			
*Designs	June 20	June 20	86
†Trade-Marks	June 6	June 23	154
‡Labels and Prints	June 26	June 26	8

Disclaimer.

683,6[illegible]—*Henry W. Avery*, Cleveland, Ohio. SEAT FOR HARVESTERS OR THE LIKE. Patent dated October 1, 1901. Disclaimer filed June 30, 1902, by the patentee and the assignee, *The Avery Stamping Company*.

Enter their disclaimer—

"To the construction which is defined by claims 1 and 2 of said patent in the following words, to wit:

"1. A seat made of sheet metal and reinforced by a plate held to the seat by rivets which have downwardly-projecting heads adapted to abut a supporting-bar, substantially as described.

"2. A seat made of sheet metal and reinforced by a plate held to the seat by a plurality of rivets, which rivets have downwardly-extending heads and are adapted to have their inner sides engage the edges of a supporting-bar beneath the seat, substantially as described."

Hearings.

Notice is hereby given that there will be no cases placed upon the docket to be heard by either the Commissioner or the Assistant Commissioner during the months of July and August, 1902.

F. I. ALLEN,
Commissioner.

Inks.

(ORDER NO. 37.)

All applications, communications, and other instruments in writing or print, which should properly constitute a permanent record in this Office, must be prepared with a substantially permanent ink. Aniline and other perishable inks will not be accepted.

PATENTS

GRANTED JULY 8, 1902.

708,977. ROAD-GRADER. JONAS H. ALDRICH, Butler, Ind. Filed Sept. 23, 1901. Serial No. 76,198. (No model.)

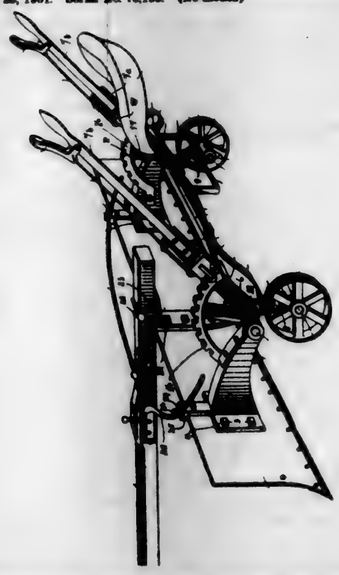

Claim.—1. In a road-grader, the combination with a cutter, of a pair of brackets secured to and projecting from the back of the cutter; bell-crank levers pivoted at their angles to the rear ends of the brackets and having their lower ends trailing behind the cutter and provided with casters; a tongue for the cutter; means for securing the tongue to the cutter and adjusting it at different angles thereto; means to lock each lever in different positions throughout the arc of its movement; and means to set and lock the casters against turning in their sockets with their wheels adjusted to the line of draft.

2. In a road-grader, the combination with a cutter, of a pair of brackets secured to and projecting from the back of the cutter; bell-crank levers pivoted at their angles to the rear ends of the brackets and having their lower ends trailing behind the cutter and provided with casters; a tongue for the cutter; means for securing the tongue to the cutter and adjusting it at different angles thereto; means to lock each lever in different positions throughout the arc of its movement; a seat-supporting bar secured to the rear ends of the tongue and extending to the rear of the caster-wheels; and a seat mounted on the outer end of the bar.

3. In a road-grader, the combination with a cutter, of a pair of brackets secured to and projecting rearward from the back of the cutter and provided at their free ends with transverse horizontal pivots; bell-crank levers mounted on the pivots by bearings at their angles with their lever-arms trailing behind the cutter and provided with casters; a tongue for the cutter; means to secure the tongue to the cutter at various angles thereto, comprising a table-bracket centrally secured to the back of the cutter and pivotally supporting the rear end of the tongue, clips integral with the lever-brackets engaging the top of the cutter and provided with eyelets, bounds secured to the tongue and projecting through the eyelets, and set-screws in the eyelets adapted to engage the bounds; and means to lock each lever in different positions throughout the arc of its movement.

708,978. INCANDESCENT GAS-LAMP. LEE T. ALTON, Brooklyn, N. Y. Filed Mar. 26, 1901. Serial No. 52,895. (No model.)

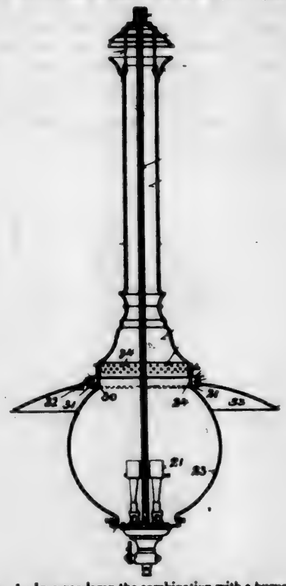

Claim.—1. In a gas-lamp the combination with a burner, of a globe, provided with an annular rim and inclosing said burner, and a draft-tube superposed above said globe and provided with an annular channeled projection at the base thereof surrounding said rim and forming therewith an annular chamber at the top of the globe.

2. In a gas-lamp, the combination with a burner, of a globe, provided with an annular rim and inclosing said burner, a draft-tube superposed above said globe, provided with a perforated base portion and an annular channeled projection below said perforated portion surrounding said rim and forming therewith an annular air-chamber, and a circular band revolubly supported on said annular projection and provided with perforations adapted to register with the perforations in the base portion of the draft-tube for admitting air to the draft-tube when desired.

708,979. RAILWAY-RAIL JOINT. WILLIAM J. AMERN, Milwaukee, Wis., assignor to Permilla J. Austin. Original application filed Mar. 3, 1898, Serial No. 672,422. Divided and this application filed Nov. 12, 1900. Serial No. 36,311. (No model.)

Claim.—1. A rail-joint comprising the proximate ends of two rail lengths; a sleeve partially encompassing said ends; and a filling of metal between the sleeve and the rails, and united to both by fusion.

2. A rail-joint comprising the proximate ends of two rails; a sleeve or coupling partially encompassing said rail ends; and a body of cast metal

filling the space between the rails and the sleeve, passing through the webs of the rails, and united by fusion both to the rails and to the sleeve.

3. In combination with the proximate ends of two railway-rails; a longitudinally-divided sleeve or coupling applied to and partially encompassing said rail ends; and a filling of cast metal within the sleeve and united to the sleeve and the rails by fusion.

4. In combination with two rails; a sleeve or coupling comprising members A and A' overlapping the meeting-point of said rails; fastenings G applied to the sections A, A' and serving to hold them together; and a filling of cast metal between the sleeve and the rails and fused to both.

5. In combination with the proximate ends of two rails; a longitudinally-divided sleeve extending beneath and upward beside said ends; projections extending inward from the members of the sleeve toward the webs of the rails; and a filling of metal introduced within the sleeve and united by fusion to the sleeve and rails.

6. The combination of a pair of rail ends; a jacket adjusted to the rail ends; adjusting-bolts passing transversely through openings in the webs of the rail-sections and through the sides of the jacket; and a body of metal molded in the jacket, and adhering to said jacket and to the rail ends.

708,980. COMBINED SWITCH AND LIGHTNING-ARRESTER. WILLIAM J. BELL, Baraboo, Wis. Filed Mar. 26, 1902. Serial No. 100,088. (No model.)

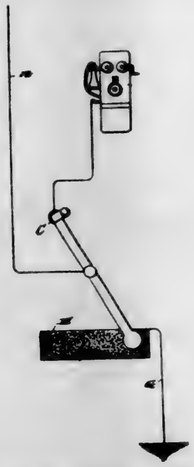

Claim.—1. In a combined switch and lightning-arrester, the combination of the line-wire of a telephone or other electrical system, an instrument, a carbon plate electrically connected with the ground, and a movable device for making and breaking electrical connection between the line-wire and the instrument; the said device having a portion of carbon, movable in close proximity to the carbon plate.

2. In a combined switch and lightning-arrester, the combination with the line-wire of a telephone or other electrical system, and an instrument; of a carbon plate electrically connected with the ground, and a lever for making and breaking electrical connection between the line-wire and the instrument; the said lever having a portion of carbon movable over the carbon plate, substantially as and for the purpose specified.

708,981. SUSPENDER. CASPER BLOOMBERG, New York, N. Y. Filed Apr. 14, 1902. Serial No. 102,896. (No model.)

Claim.—1. A suspender for trousers comprising a shoulder-strap looped at the end and having loosely held in the loop a connector, a suspender-end the width of the upper end of which substantially equals the width of said connector, said suspender-end being constructed of a single member or tab slitted to form a buttonhole and provided with a reinforcing-flap at the upper end thereof, the edge of said flap crossing the tab in close proximity to the upper end of said buttonhole and the flap being stitched to the tab also in close proximity to said upper end of the buttonhole, as and for the purpose set forth.

2. A suspender for trousers comprising a shoulder-strap looped at the end and having loosely held in the loop a connector, a suspender-end the width of the upper end of which substantially equals the width of said connector, said suspender-end being constructed of a single member or tab folded over at its upper end for connection to said connector and slitted to form a buttonhole, and provided with a reinforcing-flap at the upper end thereof, the edge of said flap crossing the tab in close proximity to the upper end of said buttonhole and the flap being stitched to the tab also in close proximity to said upper end of the buttonhole, as and for the purpose set forth.

3. A suspender for trousers comprising a shoulder-strap looped at the end and having loosely held in the loop a connector, a suspender-end the width of the upper end of which substantially equals the width of said connector and which upper end is folded over and stitched to fit the loop, said suspender-end being constructed of a single member or tab slitted to form a buttonhole and also having a reinforcing-flap substantially hemispherical in form secured to the tab by stitching which crosses the tab in close proximity to the upper end of said buttonhole.

708,982. GAS-STOVE. HEWSON BOMBOR, Birmingham, England. Filed Feb. 13, 1902. Serial No. 93,990. (No model.)

Claim.—The combination with an open grate having a bottom dead-plate and a chimney, of a plurality of vertical open-ended tubes passing upward through said dead-plate and grate and curving outwardly through the wall of the chimney, said tubes having deflected portions or bends, and burners located directly beneath said deflected portions, substantially as described.

708,983. BOOT OR HOUSING FOR PNEUMATIC ELEVATORS. CHESTER BRADFORD, Indianapolis, Ind. Filed Nov. 19, 1900. Serial No. 37,061. (No model.)

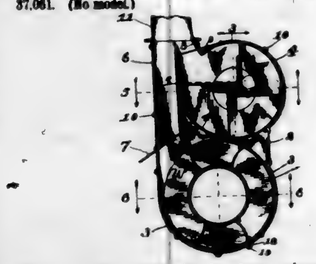

Claim.—1. The combination, in a boot or housing for pneumatic elevators, of two cast sides having grooves therein, rim-pieces substantially surrounding the spaces therein wherein the throwing-wheel and fan are situated, division and side walls arranged as shown, whereby said throwing-wheel and said fan are separately inclosed and the egress-passages divided keeping the grain and air separate until the neck of the housing is reached, said rim-pieces, division and side walls entering said grooves in the sides, and bolts passing through the sides and clamping the same onto the rim-pieces and walls, substantially as shown and described.

2. The combination, in a boot or housing for pneumatic elevators embodying two wheel-receptacles having passages leading therefrom to a common discharging point or neck, of a slide positioned below said neck and adapted to extend across one of said passages to the partition dividing the same from the other passage, whereby the blast from one wheel may be cut off, substantially as shown and described.

3. The combination, in a boot or housing for pneumatic elevators embodying two wheel-receptacles having passages leading therefrom to a common discharging point or neck, of an adjustable slide positioned below said neck and adapted to extend across one of said passages to the partition dividing the same from the other passage, whereby any desired portion of the blast from one wheel may be cut off, and a clamping device, as 13, whereby said slide may be secured in any position to which it may be adjusted.

4. The combination, in a boot or housing for pneumatic elevators, of two cast sides having grooves therein, sheet-metal rims or walls for the housing-chambers and egress-passages the edges of which enter said grooves, and which separately inclose the throwing-wheel and the fan and divide the passages leading therefrom to the housing-neck, bolts passing through the sides and clamping the same against the edges of the sheet-metal walls, and a cast neck-piece secured to said housing over the passages leading from the chambers of the housing, substantially as shown and described.

708,984. SUPPORTING DEVICE FOR ELECTRIC LAMPS. WILLIAM F. BREWSTER, New York, N. Y. Filed Dec. 19, 1901. Serial No. 86,504. (No model.)

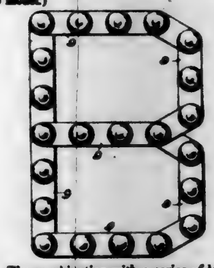

Claim.—1. The combination with a series of lamp-receptacles, and a series of separate adjustable receptacle-supporting devices connecting said lamp-receptacles, of independent plates or strips also connecting the several receptacles and located in front of the adjustable connecting devices.

2. The combination with a series of lamp-receptacles and a series of adjustable links connecting said receptacles, of independent plates or strips connecting the several receptacles and covering the links and wire conductors.

3. The combination with a series of lamp-receptacles, and a series of adjustable links connecting said receptacles, of independent plates or strips connecting the several receptacles and covering the links and wire conductors, and sleeves over the outer ends of the receptacles.

4. The combination with a series of lamp-receptacles, a series of flat links each having serrated ends and means for adjustably connecting the links to the receptacles, of plates connected to the several receptacles and covering and concealing said links from the front.

5. The combination with a series of lamp-receptacles, a series of links and means for adjustably connecting the links to the receptacles, of plates supported by the receptacles in front of the links, and sleeves or guards covering the exposed front ends of the receptacles.

6. The combination with a series of lamp-receptacles, a series of links, and means for adjustably connecting the links to the receptacles, of plates supported by the receptacles in front of the links, and spring-pressed sleeves or guards embracing the outer exposed ends of the receptacles.

7. The combination with a series of lamp-receptacles, a series of links and means for adjustably connecting the links to the receptacles, of plates supported by the receptacles in front of the links, and spring-pressed sleeves or guards embracing the outer exposed ends of the receptacles, each sleeve or guard having an inwardly-projecting flange at its outer end.

8. The combination with a series of lamp-receptacles and a sectional and adjustable supporting-frame therefor, of a spring-pressed sleeve or guard embracing the outer end of each receptacle and provided at its outer end with an inwardly-projecting flange adapted to bear against the lamp.

9. The combination of a series of lamp-receptacles, a series of links each having interlocking serrated or toothed ends, and means connecting said links with the lamp-receptacles.

708,985. ELECTRIC LOCOMOTIVE-CRANE. GEORGE M. BRILL, Philadelphia, Pa. Filed Jan. 4, 1901. Serial No. 42,043. (No model.)

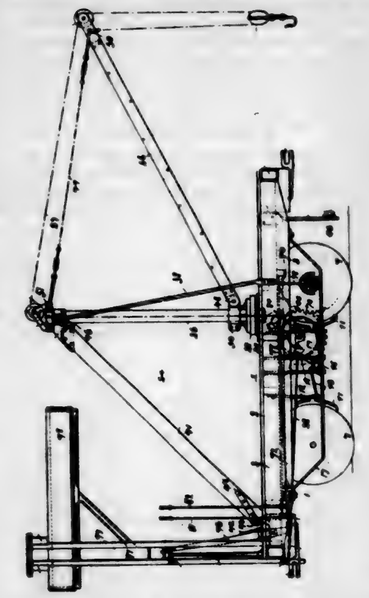

Claim.—1. In a crane, the combination with a locomotive provided with driving-wheels; of a swinging crane mounted upon the platform of said locomotive, a winding-drum mounted beneath said platform adapted to receive the hoisting-rope, a motor carried beneath said platform, mechanism controlled from one end of said locomotive for connecting said motor and said driving-wheels, mechanism controlled from the same end of said locomotive for connecting said motor, and winding-drum and brake mechanisms for said winding-drum and said locomotive-wheels, controlled from the same end of said locomotive, substantially as described.

2. In a crane, the combination with a locomotive, provided with driving-wheels; of a swinging crane mounted upon the platform of said locomotive, a winding-drum mounted beneath said platform, a brake-band upon said drum and mechanism for operating the same from the front of the locomotive, a motor suspended beneath said platform, adapted to be connected with said winding-drum and said driving-wheels, substantially as described.

3. In a crane, the combination with a locomotive provided with driving-wheels; of a swinging crane mounted upon the platform of said locomotive, a bearing-plate provided with raceways resting upon said platform, and a pivot-plate secured upon the lower portion of said crane, having corresponding raceways adapted to receive balls or rollers, said crane passing through said bearing-plate, and secured beneath the platform, substantially as described.

4. In a crane, the combination with a locomotive provided with driving-wheels; of a crane mounted upon the platform of said locomotive, a winding-drum beneath said platform, a motor suspended beneath said platform, a gear-wheel loosely mounted upon the shaft with said drum, a clutch carried by said shaft, a gear-wheel also loosely mounted upon the axle of said driving-wheels, a clutch also carried by said axle, and means for throwing said clutch into and out of action, substantially as described.

5. In a crane, the combination with a locomotive provided with a pair of driving-wheels; of a swinging crane mounted upon the platform of said locomotive, a winding-drum mounted beneath said platform, a friction-brake carried by said drum, means for operating said brake from the front of said locomotive, a motor suspended beneath the platform of said locomotive and mechanism controlled from the front of said locomotive for throwing said motor into gear with said driving-wheels or said winding-drum, substantially as described.

6. In a crane, the combination with the locomotive provided with driving-wheels; of a swinging crane mounted upon the platform of said locomotive, a motor suspended beneath the platform of said locomotive, a pinion upon the shaft of said motor, a gear-wheel loosely mounted upon the axle of said driving-wheels, a clutch carried by said axle, a rock-shaft

adapted to operate said clutch, and means for actuating said rock-shaft from the front of said locomotive, substantially as described.

7. In a crane, the combination with a locomotive provided with driving-wheels, of a crane mounted upon the platform of said locomotive, a hoisting-drum mounted beneath the platform of said locomotive, a gear-wheel loosely mounted upon the shaft of said drum, a motor suspended beneath the platform of said locomotive, a pinion upon the shaft of said motor, intermediate gearing between said pinion and said loose gear-wheel, a clutch carried upon the shaft of said drum, and mechanism for operating said shaft from the front of said locomotive, substantially as described.

8. In a crane, the combination with a locomotive provided with a pair of driving-wheels; of a crane mounted upon the platform of said locomotive, a hoisting-drum beneath said platform, a gear-wheel loosely mounted upon the shaft with said gear-wheel, a motor suspended beneath said platform, a pinion carried upon the shaft of said motor, a gear-wheel loosely mounted upon the axle of said driving-wheels, said loose wheels and said pinion intermeshing, and mechanism for locking either or both of said loose gears upon their respective shafts, substantially as described.

9. In a crane, the combination with a locomotive provided with a pair of driving-wheels; of a swinging crane mounted upon the platform of said locomotive, a winding-drum carried by said locomotive, intermeshing gear-wheels loosely mounted upon the shaft of said drum and the axle of said driving-wheels, a motor, a pinion provided upon the shaft of said motor meshing with said gear-wheels and clutches for transmitting motion from said gear-wheels to said shafts, substantially as described.

10. In a crane, the combination with a locomotive provided with a pair of driving-wheels; of a crane mounted upon the said locomotive, a winding-drum carried by said locomotive, a brake carried by said winding-drum, mechanism for operating said brake from the front of the locomotive, gear-wheels loosely mounted upon the shaft of said winding-drum, and the axle of said driving-wheels, clutches carried by said shaft and axle, mechanism for operating said clutches independently from the front of said locomotive, and a motor provided with a pinion adapted to mesh with said loose gears, substantially as described.

11. In a crane, the combination with the vertical mast, the swinging boom carried thereby, and a bracket clamped upon the lower end of said mast, and supporting the lower end of said boom; of an upper bearing-plate rigidly secured upon the lower end of said mast and having its upper edge abutting against the bottom of said bracket, and a lower bearing adapted to receive the weight from said upper bearing-plate, substantially as described.

12. In a swinging crane, the combination with the vertical mast, and the swinging boom carried thereby, and a bracket clamped upon the lower end of said mast, said bracket securing the lower end of said boom; of an upper bearing-plate rigidly secured upon said mast upon which rests said bracket, raceways provided upon the lower surface of said plate, said plate being provided with a flanged edge, and a lower bearing-plate adapted to fit up under said flange, raceways provided upon the upper surface of said bearing and antifriction devices adapted to run in said raceways, substantially as described.

13. In an electric locomotive-crane, the combination with a locomotive provided with a deck or platform, of a swinging hoisting-crane thereon comprising a hollow iron mast journaled at the top and bottom, bracing to maintain the same erect, a boom secured to the mast at the lower end, the other end being supported by a rod or chain from the upper end of the mast, a sheave mounted at the end of the boom, another sheave mounted on top of the mast, a guide-wheel secured to the platform and located beneath the end of the mast, a winding-drum located beneath said platform, a hoisting rope or chain passing over the two sheaves, down the hollow mast and over the guide-wheel to the drum, a single electric motor for driving both said locomotive and said crane, the said motor being supported beneath the platform of the locomotive in the usual way, and gearing connecting said motor with both the locomotive-axle and the winding-drum whereby either may be operated.

14. In an electric locomotive-crane, the combination with a locomotive provided with a deck or platform, of a swinging hoisting-crane thereon comprising a hollow iron mast journaled at the top and bottom, bracing to maintain the same erect, a boom secured to the mast at the lower end, the other end being supported by a rod or chain from the upper end of the mast, a sheave mounted at the end of the boom, another sheave mounted on top of the mast, a guide-wheel secured to the platform and located beneath the end of the mast, a winding-drum shaft located beneath the platform on one side of one of the locomotive-axles, an electric motor on the other side of the said axle, a driving-pinion connected therewith, gears loosely mounted upon the axle and drum-shaft and meshing with each other and the motor-pinion, and means to clutch said gears to their shafts, to operate either the locomotive or the drum from the said electric motor.

15. In an electric locomotive-crane, the combination with a locomotive provided with a deck or platform, of a swinging hoisting-crane thereon comprising a hollow iron mast journaled at the top and bottom, bracing to maintain the same erect, a boom secured to the mast at the lower end, the other end being supported by a rod or chain from the upper end of the mast, a sheave mounted at the end of the boom, another sheave mounted on top of the mast, a guide-wheel secured to the platform and located beneath the end of the mast, a winding-drum shaft located beneath the platform on one side of the locomotive-axle, an electric motor on the other side having a shaft with a pinion secured thereto, a gear-wheel loosely mounted upon the shaft of the drum, and another on the axles, said gears intermeshing and the axle-gear meshing with the motor-pinion, whereby, when the motor is operated both gears are also operated, clutches carried on the axle and drum-shafts, to rotatably connect said gears with the axle or shaft, clutch-operating levers arranged near the forward end of the locomotive and connected with the said clutches whereby the crane or the locomotive may be handily connected with the motor from the forward end of the platform.

16. In an electric crane, the combination with a hoisting-crane and a winding-drum therefor, of an electric locomotive, on the deck of which the crane is carried and comprising the wheels and axles, and a motor for driving the same supported from one of the axles and the frame of the locomotive, and having a driving-pinion, a gear-wheel connected with the axle and meshing with said pinion, and means to connect said motor with the winding-drum of the crane.

17. The combination with an electric locomotive comprising a deck or platform and the usual wheels and axles, and a motor suspended beneath the deck-frame to propel the locomotive of a hoisting-crane located on the deck, and having a winding-drum therefor, and mechanism to connect said motor with said drum, or with one of the axles, of the locomotive.

18. The combination with an electric locomotive having a deck or platform, wheels and axles therefor, a motor suspended from the axle in the usual way and from the deck-frame and having a driving-pinion, a gear loosely carried upon axle and meshing with the said pinion and the clutch to connect said gear to said axle, of a hoisting-crane carried upon said deck, a winding-drum and shaft therefor, a gear-wheel loosely carried upon the drum-shaft, a clutch to rigidly connect said gear with the drum-shaft and means to operate both said clutches whereby the usual car-motor may also be utilized to operate the winding-drum.

19. In an electric locomotive-crane, a frame, an axle and a winding-drum shaft having a winding-drum secured thereto, intermeshing gears loosely mounted upon said axle and shaft, a motor supported from said axle and the frame of the locomotive and having a driving-pinion meshing with the axle-gear, and clutching means to operatively engage and disengage said gears and their shafts.

20. In an electric locomotive-crane, an axle and wheels for the locomotive, a winding-drum for the crane having its shaft located adjacent the axle, intermeshing gears loosely mounted upon the axle and shaft, a motor having a driving-pinion meshing with the gear carried by said axle, clutches to engage said gears and the shaft and axle, a hand-brake for the drum and shoe-brakes for the wheels.

21. In a swinging hoisting-crane, the combination with a revoluble mast, a platform for the mast, a lower pivot-plate through which the mast extends, an upper pivot-plate to bear upon the lower pivot-plate, through which the mast passes, clamping rings or bands about the mast and above the upper plate to clamp or grip the mast.

22. In a swinging hoisting-crane, a platform, a mast thereon, pivot-plates to form a bearing for the mast through which it extends, the lower plate being secured to said platform, a boom for the crane, clamping rings, bars or bands about the mast above the upper plate, the boom being secured at its lower end to said clamping members.

23. In a crane, a top mast-sheave holder, consisting of substantially semicircular bands or bars, bolts adapted to clamp the same about the top of the mast, bars curved upward near the middle, and supported at their ends on the said clamping-plates, and a sheave or pulley journaled between said upwardly-bent supporting-bars.

24. In a swinging crane, the combination with a cast-metal-pipe mast-holder having niches or places formed therein to which the main and side braces are attached, a mast journaled in the same, and extended up through the same clamping bars or rings, bolts to clamp the same about the upper end of the mast, sheaves supporting bars 54 secured at their ends on the said clamping-bolts, a sheave journaled between said supported bars over the end of the mast, and a boom-supporting chain or rod also secured to one of said clamping-bolts.

25. The combination with a flat-car, of a trolley-stand mounted thereon, at one end comprising vertical standards or posts, cross braces or girths secured to said standards near their upper ends, and a trolley base or pedestal secured to the said girths or braces, a motor carried by the car, and means to control the car from the front end thereof.

26. The combination with a flat-car, of a trolley-stand mounted thereon at one end, comprising vertical standards or posts, cross braces or girths secured to said standards near their upper ends, and a trolley base or pedestal secured to the said girths or braces, and a roof also supported by said standards arranged beneath the trolley-pedestal, substantially as described.

27. The combination of a flat-car, a trolley-stand carried thereon at one end, and comprising vertical standards placed near each side of the car and secured to the platform, cross braces or girths extending between said standards at their upper ends, and a trolley-stand proper or pedestal secured to said braces near the center line of the car, and a roof extending between and supported by said braces.

28. The combination of a flat-car having a platform including end sills in its construction, a trolley-stand erected at one end of the car, and comprising vertical standards near each end sill, each including two pieces secured to either side of the sill, and two joists or girths extending between the top of the two standards, and each secured to corresponding pieces thereof, and a flat base or pedestal secured to said two joists near the center on which a trolley is adapted to be mounted.

703,986. **MACHINE FOR CUTTING WORM-THREADS.** JOHN P. ROPER, Cleveland, Ohio, assignor to the Cleveland Machine Screw Company, Cleveland, Ohio, a Corporation of Ohio. Filed July 30, 1900. Serial No. 25,261. (No model.)

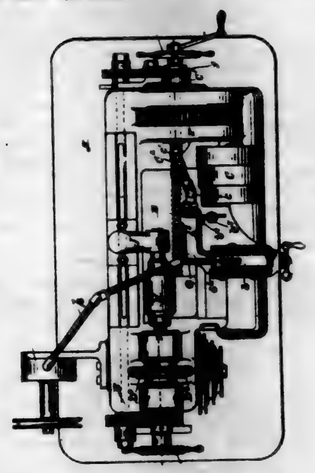

Claims.—1. In a machine for cutting worm-threads, the combination of a tool-carriage, a screw for feeding same longitudinally of the work, driving means, and a graduated disk mounted upon said screw so as to be rotatable therewith but movable thereon.

2. In a machine for cutting worm-threads, the combination of a tool-carriage, a screw for feeding same, driving means, a clutch member secured to said screw, and a graduated ring mounted upon the latter so as to be rotatable therewith but movable independently thereof.

3. In a machine for cutting worm-threads, the combination of a tool-carriage, a screw for feeding said carriage longitudinally of the work head-stock, means for driving said head-stock, gearing connecting said feed-screw and driving means, mechanism for disconnecting the driving means from the head-stock, whereby said screw and the work may be rotated independently of the driving means, and mechanism for driving the cutting-tool independently of said head-stock-driving means.

4. In a machine for cutting worm-threads, the combination of a tool-carriage, a screw for feeding same, driving means, a clutch member secured to said screw and provided with a shoulder, a graduated ring mounted upon such shoulder, and clamping means for securing such ring in place, said means adapted to permit of the movement of the ring upon the clutch member.

5. In a machine for cutting worm-threads, the combination of a tool-carriage, a screw for feeding same, driving means, a clutch member secured to said screw provided with a shoulder and mounted in proximity to the machine-frame, a graduated ring mounted upon said shoulder, the contiguous frame portion provided with a mark cooperating with said ring, and a series of clamps adapted to secure said ring to the clutch member to effect simultaneous rotation and permit of its movement independently of said member.

6. In a machine for cutting worms, the combination of a live spindle, a movable tool-carriage, a rotatable arm mounted in said carriage, the lines of the spindle and arm-axes lying in the same plane, a tool-spindle mounted transversely in the end of said arm, and a tool mounted upon said tool-spindle and having its center lying in said plane.

7. In a machine for cutting worm-threads, the combination of a tool-carriage, a screw for feeding said carriage longitudinally of the work, head-stock-driving means, gearing connecting said feed-screw and driving means, means for disconnecting the latter means from the head-stock whereby said screw and work may be rotated independently of said head-stock-driving means, and means for driving said tool independently of said head-stock-driving means embodying a tool-shaft provided with universal joints.

703,987. **TYPE-WRITING MACHINE.** ROYAL M. BULLARD, Chicago, Ill., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y., a Corporation of New York. Filed May 9, 1902. Serial No. 106,601. (No model.)

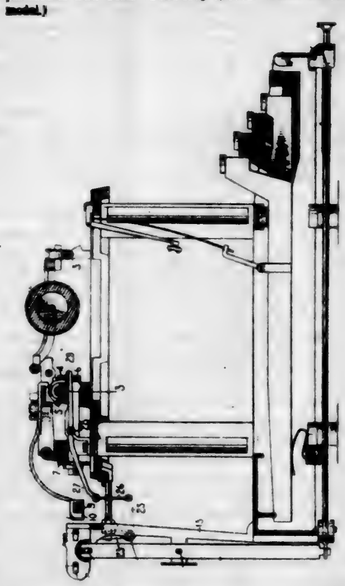

Claims.—1. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops, a stop adapted to cooperate with each of said column-stops, a skipping-stop arranged to avoid each of said column-stops, and a special column-stop adapted to cooperate with said skipping-stop.

2. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops, a stop adapted to engage with each of said column-stops, a supplemental column-stop having a greater projection than said plurality of column-stops, and a skipping-stop having a projection only great enough to cooperate with said supplemental column-stop.

3. In a type-writing machine and in a tabulating mechanism, the combination with a plurality of column-stops of uniform projection, a denomination-stop adapted to cooperate with each of said column-stops, a supplemental column-stop having a greater projection than the said plurality of stops, and a skipping-stop having a less projection than said denomination-stop, whereby the said skipping-stop when operated will cooperate only with the said supplemental column-stop.

4. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to engage with each of said plurality of column-stops, and a key-actuated skipping-stop adapted to cooperate only with said supplemental column-stop.

5. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to cooperate with the said plurality of column-stops, and a key-actuated skipping-stop having a less projection than the other said key-actuated stop and adapted to cooperate only with the said supplemental column-stop.

6. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to engage with each of said plurality of column-stops, a key-actuated skipping-stop adapted to coöperate only with said supplemental column-stop, and means connected to each of said key-actuated stops for releasing the carriage when either of said stops is projected.

7. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar and also a supplemental column-stop extending beyond the working faces of said plurality of column-stops, a key-actuated stop adapted to coöperate with the said plurality of column-stops, a key-actuated skipping-stop having a less projection than the other said key-actuated stop and adapted to coöperate only with the said supplemental column-stop, and means connected to each of said key-actuated stops for releasing the carriage when either of said stops is projected.

8. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop on said carriage, a key-actuated stop upon the framework to engage said stop, a second column-stop on said carriage and having a greater projection than the first, and a key-actuated skipping-stop on the framework to coöperate only with the said second column-stop.

9. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop on said carriage, a key-actuated stop upon the framework to engage said stop, a second column-stop on the carriage and having a greater projection than the first, a key-actuated skipping-stop on the framework to coöperate only with the said second column-stop, and means for releasing the carriage when either one of said key-actuated stops is projected.

10. In a type-writing machine and in a tabulating mechanism, the combination of column-stops projecting different distances and coöperating stops one of which is adapted to engage only that one of the column-stops having the greatest projection.

11. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of column-stops of uniform projection, a supplemental column-stop of greater projection, a key-actuated stop on the framework adapted to coöperate with each of said plurality of column-stops, and a key-actuated skipping-stop on the framework of less length than the other key-actuated stop and adapted to coöperate only with the said supplemental column-stop.

12. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of column-stops of uniform projection, a supplemental column-stop of greater projection, a key-actuated stop on the framework adapted to coöperate with each of said plurality of column-stops, a key-actuated skipping-stop on the framework of less length than the other key-actuated stop and adapted to coöperate only with the said supplemental column-stop, and means connected with each of said key-actuated stops for releasing the carriage when either of said stops is projected.

13. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops of equal projection, a plurality of denomination-stops of equal projection, and each adapted to coöperate with said plurality of column-stops, a skipping-stop having a less projection than said denomination-stops, and a supplemental column-stop of greater projection than said plurality of column-stops.

14. In a type-writing machine and in a tabulating mechanism, the combination of a plurality of column-stops of equal projection, a plurality of denomination-stops of equal projection and each adapted to coöperate with said plurality of column-stops, a skipping-stop having a less projection than said denomination-stops, a supplemental column-stop of greater projection than said plurality of column-stops, and means for releasing the carriage when any one of said denomination-stops or said skipping-stop is actuated.

15. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar, a plurality of key-actuated denomination-stops of equal projection on the framework of the machine to coöperate with said column-stops, a key-actuated skipping-stop of less length or projection than the said denomination-stops, and an elongated column-stop on the column-stop bar adapted to coöperate only with said skipping-stop.

16. In a type-writing machine and in a tabulating mechanism, the combination of a power-driven carriage, a column-stop bar thereon, a plurality of uniform column-stops on said bar, a plurality of key-actuated denomination-stops of equal projection on the framework of the machine to coöperate with said column-stops, a key-actuated skipping-stop of less length or projection than the said denomination-stops, an elongated column-stop on the column-stop bar adapted to coöperate only with said skipping-stop, and means for releasing the carriage when any one of said key-actuated stops is operated.

17. In a type-writing machine and in a tabulating mechanism, the combination with a plurality of column-stops and coöperating key-actuated denomination-stops, of a skipping-stop arranged on the right of said series of denomination-stops, and a supplemental column-stop to coöperate only with said skipping-stop and arranged on the right of said plurality of column-stops.

708,988. LEMON-SQUEEZER. JOSEPH G. BULLOCH, Cherokee, N. C. Filed Sept. 25, 1901. Serial No. 76,472. (No model.)

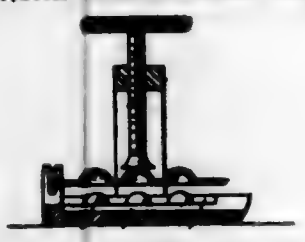

Claim.—A lemon-squeezer comprising a base having a raised edge and a spout leading from the inclosure of the edge, said base having also a plurality of projections within the inclosure of the edge and having channels between the projections and leading to the spout, a presser-plate having recesses to receive the projections and adapted to enter the inclosure of the edge of the base, said plate being mounted upon the base for pivotal and bodily movement into and out of the inclosure of the edge, an upright at each end of the base, one of the said uprights having a slotted upper end and a spring-latch, a beam pivoted to the other upright and adapted for engagement of its free end in the slot of the first upright and beneath the latch, and a screw engaged with the beam and adapted to engage the pressure-plate and force it into the inclosure of the edge of the base.

708,989. MAGNETO-THERAPEUTIC APPARATUS. JOHN BURRY, Fort Lee, N. J., assignor to Max Wyler, Fort Lee, N. J., and Marie Burry, Brooklyn, N. Y. Filed May 3, 1900. Serial No. 15,870. (No model.)

Claim.—1. A therapeutic apparatus consisting of a solenoid combined with but insulated from a metal lining, substantially as described.

2. A therapeutic apparatus consisting of a solenoid combined with but insulated from a copper lining, substantially as described.

3. A therapeutic apparatus consisting of a solenoid combined with but insulated from an iron jacket, substantially as described.

4. A therapeutic apparatus consisting of a solenoid combined with but insulated from a copper lining and an iron jacket, substantially as described.

5. A therapeutic apparatus consisting of a solenoid combined with a protective closed metallic casing or sheath through which the terminals of the solenoid project, said casing being insulated from the solenoid, substantially as described.

6. A therapeutic apparatus consisting of a solenoid combined with a copper lining-tube and an iron jacketing-tube, the said tubes being joined together in a water-tight manner at the ends of the solenoid and the terminals of the solenoid projecting through the casing formed by said tubes and connecting ends, substantially as described.

7. A therapeutic apparatus consisting of a solenoid combined with a copper lining-tube provided with an outside flange at one end of the solenoid and an iron jacketing-tube provided with an inside flange at the other end of the solenoid, said flanges and tubes being joined together, substantially as described.

708,990. BAGGAGE-TRUCK. GALE W. BURTON, Muncie, Ind. Filed Nov. 13, 1901. Serial No. 82,110. (No model.)

Claim.—An adjustable baggage-truck, consisting of a running-gear; lower recessed bolsters mounted on the running-gear; upper recessed bol-

stors mounted above said lower bolsters; coupling-tongues uniting said lower bolsters; cogged hoisting-beams secured in the recesses of the upper bolsters, and passing down into depressions in the lower bolsters; a system of shafts and cog-wheels secured to the lower bolsters, and coupling-tongues, adapted to raise and lower the upper bolsters; a bed, having end and side walls, secured to the upper faces of the upper bolsters; rollers vertically journaled in the side walls of said bed with their peripheries extending slightly inwardly and beyond the inner faces of said side walls; rollers journaled longitudinally on the upper edge of one of the walls of said bed; a leaf extending downwardly from said wall; a shelf extending outwardly at right angles to said leaf; a table mounted on casters and adapted to run forwardly and rearwardly in said bed; rollers journaled longitudinally in the upper face of said table, their peripheries extending slightly above the upper face of said table; rollers journaled crosswise said table, their peripheries extending slightly above the upper face thereof; a frame secured vertically to the forward end of said table, substantially as shown and described and for the purposes set forth.

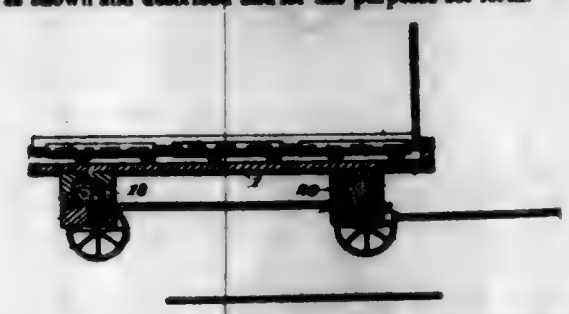

703,991. MACHINE FOR ABRADING FRONTS OF SHOE-HEELS. JOHN G. BURRELL, Lynn, Mass. Filed Mar. 22, 1900. Serial No. 9,747. (No model.)

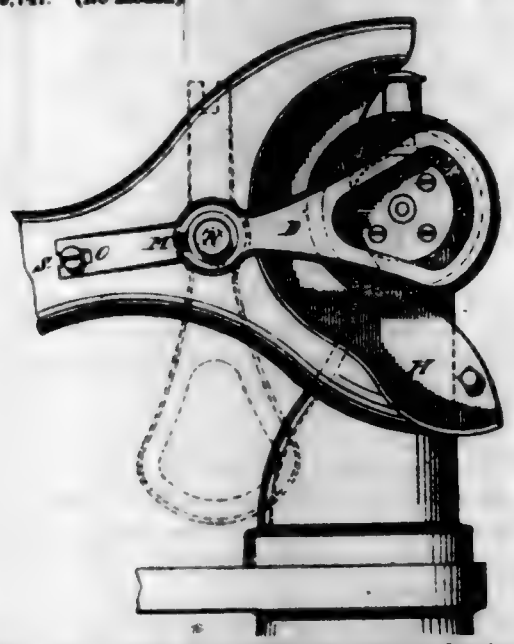

Claim.—In a machine for abrading the fronts of shoe-heels the combination of a disk having abrading material upon a face making an acute angle with the free end of the disk, means adapted to cause said disk to revolve, a metal guard conforming to the working edge of the disk, having slots therein, said guard being held rigidly close to said working edge, the stud N and thumb-screw S which engage slots M and O of the guard substantially as shown or described

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703,992. LOOM-SHUTTLE. LEON W. CAMPBELL, Woonsocket, R. I., assignor of one-half to Malcolm Campbell, Boston, Mass. Filed Nov. 24, 1900. Serial No. 37,618. (No model.)

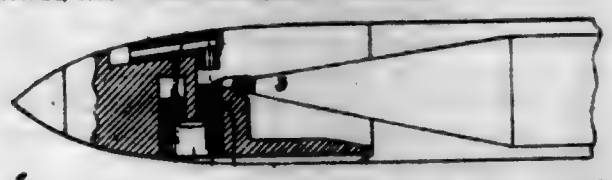

Claim.—A shuttle having a thread-aperture, the inlet of which extends out toward the bottom thereof, and the outlet of which extends toward the side thereof, with a communicating duct extending upward from the inlet to the outlet, said shuttle having a device consisting of an induction-tube located in the groove of the top of the shuttle, and having a nozzle located above the inlet of the thread-aperture.

703,998. BOLSTER. EDWARD CARLSON and JAMES PERRIE, Chicago, Ill. Filed Mar. 7, 1902. Serial No. 97,160. (No model.)

Claim.—1. A bolster having its compression and tension members formed of two bars or plates, one of which is provided with end flanges and the other one of which is provided at its ends with double-angled flanges engaging said first-named flanges; substantially as described.

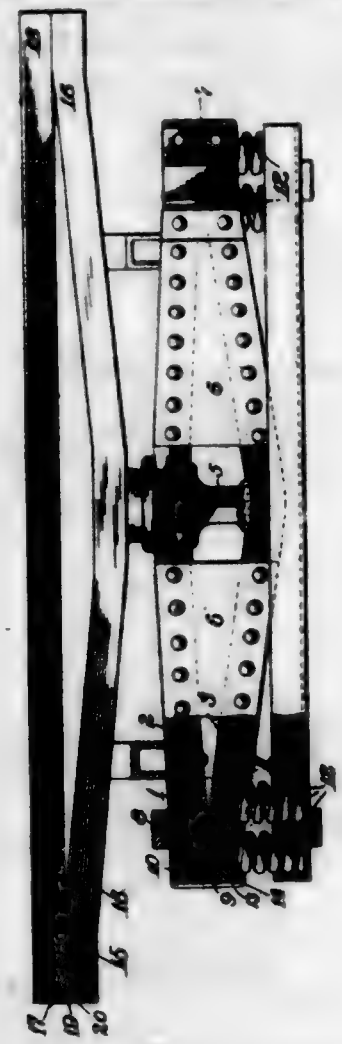

2. A bolster having its compression and tension members formed of channel-bars gibbed at their meeting ends as to both their webs and flanges; substantially as described.

3. A bolster having its compression and tension members formed of channel-bars arranged web to web with their flanges outwardly directed, said members being gibbed as to their ends.

4. A bolster having its compression and tension members arranged web to web, the ends of said members being gibbed; substantially as described.

5. A bolster having its compression and tension members arranged web to web with their meeting ends gibbed and plates secured to the sides of said members; substantially as described.

6. A bolster having its compression and tension members arranged web to web, the web of one member having a flange and the web of the other member having a double-angled flange receiving the first-mentioned flange; substantially as described.

7. A truck-bolster having compression and tension members gibbed together at their ends, spring-seats, and means on the ends of each tension member to hold said seats in place; substantially as described.

8. A truck-bolster having its compression and tension members gibbed together at their ends, spring-seats, and a flange on the ends of each tension member to hold said seats in place; substantially as described.

9. A truck-bolster having a compression and a tension member formed of channel-bars, and spring-seats, the end of the web of the tension member being upset to form a flange both above and below the web, the end of the other web bearing against the upper flange whereby the said members are gibbed together at their ends and the spring-seats bearing against the lower flange and held in place thereby; substantially as described.

10. A truck-bolster having a compression and a tension member, and spring-seats, the end of the web of the tension member being upset to form a flange both above and below the web, the end of the web having a double-angled flange receiving the upper flange of the tension member and the spring-seats bearing against the lower flange; substantially as described.

11. A truck-bolster comprising a compression member having a web 1 and flanges 2, a tension member having a web 3 and flanges 4, the members being arranged web to web, a central support, the web 3 being upset to form upper and lower flanges 8 and 9 and the web 1 having a

double-angled flange 10 to fit the flange 8, and a spring-seat 11 bearing against the under side of the web 3 and having a flange 13 fitting against the flange 9; substantially as described.

708,994. MACHINE FOR FINISHING BARRELS. GEORGE M. CARTER, Poplarbluff, Mo., assignor to himself and William Ferguson, Poplarbluff, Mo. Filed Sept. 24, 1901. Serial No. 76,491. (No model.)

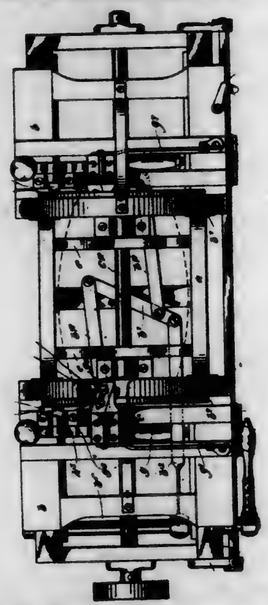

Claim.—1. The combination with a frame, of a carriage mounted thereon, a ring arranged to turn in the carriage, the ring receiving the end of a barrel, means for turning the ring, cam-shaped dogs mounted in the ring to engage the barrel and hold it firmly therein, and a tool working with the barrel, for the purpose specified.

2. The combination of a frame, a carriage mounted thereon, a gear-ring arranged to turn in the carriage, a driven gear meshing with the gear-ring to drive it, a choke-ring fitted in and turning with the gear-ring, cam-shaped dogs mounted in the choke-ring to engage and hold the barrel, and a tool working with the barrel, for the purpose specified.

3. The combination with a frame and means for carrying and turning a barrel, of a lever mounted on the frame, a tool carried by the lever and adapted to work with the barrel, a second tool, and means for mounting said tool to swing into and out of operative position, the lever striking said means when moving the first tool into action, whereby to throw the second tool into action.

4. The combination with a frame and with means for mounting and turning a barrel, of a lever mounted on the frame, a tool carried thereby and adapted to work with the barrel, a rock-shaft, a second tool mounted on the rock-shaft, and an arm on the rock-shaft, the arm being struck by a part of the lever, whereby to throw the second-named tool into operative position.

5. The combination with a frame and means for mounting and carrying a barrel, of a tool, means for mounting said tool to move into and out of operative position, a second tool, and means for mounting the second tool to move into and out of operative position, the mounting means of one tool striking the other to actuate it, whereby the tools are moved simultaneously into operative position.

6. In a machine for finishing barrels, the combination with a frame and the means for mounting and turning a barrel, of a tool, means for carrying the tool to work against the inside of the barrel, a second tool, and means for carrying the second tool to work against the end of the barrel to trim it, said tool-carrying means being juxtaposed to be actuated the one from the other.

7. The combination with a frame and means for mounting and turning a barrel, of a lever mounted on the frame, a cutter-head projecting transversely from the lever, a tool carried by the cutter-head and working on the inside of the barrel, a second tool working on the end of the barrel, and means for carrying the second tool to move into and out of operation, said means for carrying the second tool being struck by a part of the lever to throw both tools into action simultaneously.

708,995. GAS-GENERATOR. FRED R. CATON and FRANKLIN B. WARRING, San Jose, Cal., assignors to Caton's Foundry and Machine Company, San Jose, Cal., a Corporation of California. Filed Mar. 1, 1902. Serial No. 96,317. (No model.)

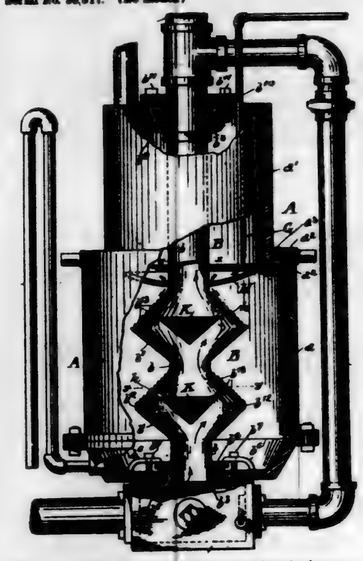

Claim.—1. In a gas-generator having an interior heater or vaporizer over which the oil flows, an exterior casing inclosing said heater or vaporizer, said casing being constructed of telescopic sections, adapting a section to be slipped upon another to expose and afford access to the heater or vaporizer.

2. In a gas-generator having an interior heater or vaporizer over which the oil flows, an exterior casing inclosing said heater or vaporizer, said casing being constructed of telescopic sections, adapting a section to be slipped upon another to expose and afford access to the heater or vaporizer and a safety-joint between the sections to relieve abnormal gas-pressure within the casing.

3. In a gas-generator having an interior heater or vaporizer over which the oil flows, an exterior casing inclosing said heater or vaporizer, said casing being constructed of telescopic sections, adapting a section to be slipped upon another to expose and afford access to the heater or vaporizer, said sections having flanges on their adjacent ends, and a temporary packing seated between the flanges, to form a relief or safety joint against abnormal gas-pressure within the casing.

4. In a gas-generator having an exterior casing, a heater or vaporizer over the outer surface of which the oil flows, said heater or vaporizer being mounted in a journal-bearing within said casing adapting it to be rotated upon its axis.

5. In a gas-generator having an exterior casing with means for affording access to its interior, a heater or vaporizer over the outer surface of which the oil flows, said heater or vaporizer being mounted in a journal-bearing within said casing adapting it to be rotated upon its axis.

6. In a gas-generator having an exterior casing, with means affording access to its interior, a heater or vaporizer within said casing and mounted above and below in the top and bottom of the casing with journal-bearings adapting it to be rotated on its axis.

7. In a gas-generator having an exterior casing with means affording access to its interior, a heater or vaporizer within said casing having at its top a journal-bearing adapting it to be axially rotated, and a journal-bearing at its bottom consisting of an end projecting into the base-plate of the casing, a flange with intervening packing resting on said base-plate and releasable clamps bearing on the flange.

8. In a gas-generator the combination of the outer casing, a hollow cone within said casing, a means for feeding the oil to the outer surface of said cone, a means for directing the heating-gases through said cone, and a heat-deflector within and connected directly with said cone.

9. In a gas-generator and in combination with hollow cones of its heater or vaporizer, the conical heat-deflectors within the cones and connected directly therewith by spaced arms.

10. In a gas-generator, a hollow heater or vaporizer through which heated gases pass, and consisting of tubular portions and conical portions, the latter having formed upon their upper surfaces a spirally-directed groove forming a continuous channel for the oil.

11. In a gas-generator, a hollow heater or vaporizer through which heated gases pass, and consisting of tubular portions and conical portions, the latter having formed upon their upper surfaces a spirally-directed groove forming a continuous channel for the oil, and heat-deflecting cones within said conical portions and connected directly therewith.

12. A gas-generator consisting of a sectional telescopic casing, having an air-inlet and a gas-outlet, a hollow heater or vaporizer with conical portions, within said casing, said conical portions having upon their surfaces, spirally-directed grooves forming continuous channels for the oil, heat-deflectors within the conical portions and directly connected therewith, a connection for supplying heated gases to the interior of the heater or vaporizer and means for feeding oil to the surface of said heater or vaporizer.

708,996. LINE-GUIDE FOR FISHING-RODS. EDWARD C. CATTLEY and ERNEST H. CATTLEY, Brooklyn, N. Y., assignors of one-third to Hartley C. Cattley, Brooklyn, N. Y. Filed Feb. 8, 1902. Serial No. 93,231. (No model.)

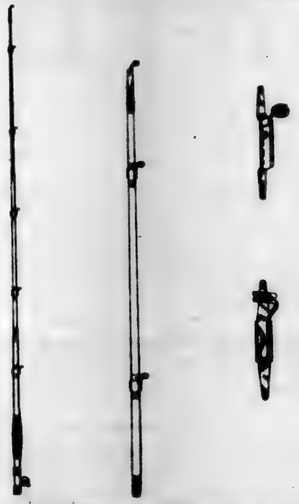

Claim.—1. A line-guide for fishing-rods comprising a ring formed as part of a helix, and a shank, in combination with a keeper adapted to be secured to a rod, and means for removing the shank from the keeper without removing the latter, substantially as described.

2. A line-guide for fishing-rods comprising a ring formed as part of a helix; a shank; and a spring-tongue formed by bending the shank back upon itself, in combination with a keeper forming a socket for the shank and spring-tongue and having a slot formed in its side to provide a shoulder for engagement by the end of the latter, substantially as described.

3. A line-guide for fishing-rods, comprising a ring formed as part of a helix; a shank; and a spring-tongue formed by bending the shank back upon itself, in combination with a cap to fit on a rod-tip; and a keeper integral with the cap forming a socket for the shank and spring-tongue and having a slot formed at each side to provide shoulders with either of which the end of the spring-tongue may engage, substantially as described.

4. A fishing-rod having two series of keepers secured thereto at opposite sides, and a keeper secured to the end of the tip, in combination with a series of rings formed as parts of a helix; suitable shanks integral with the said rings; means for detachably holding the said shanks in either of the series of keepers; and means for holding the shank of a ring in the keeper at the tip end in either of two opposite positions, substantially as described.

708,997. WAVE-MOTION PUMP. EPHRAIM CHAQUETTE, New Rochelle, N. Y. Filed Apr. 23, 1901. Serial No. 56,236. (No model.)

Claim.—1. A wave-motion pump which consists of a waterway formed between suitable piers, a shaft extending across said waterway, arms extending from said shaft longitudinally over said waterway, a pendulum suspended from said arms and adapted to swing in said waterway, a walking-beam mounted upon said shaft and means substantially as described whereby the reciprocating motion of the walking-beam is converted into a rotary motion and transmitted to the mechanism to be operated thereby.

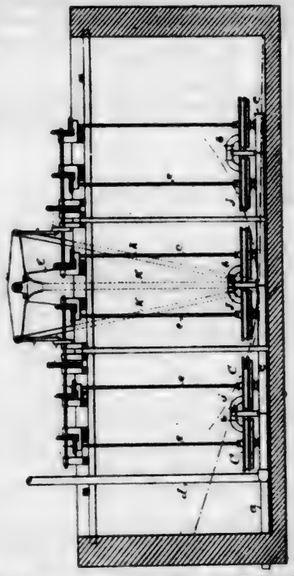

2. In a wave-motion pump the above-described pendulum consisting of a tapering lower portion extending across the waterway and of rods suspending the same from the cross-arms of the rock-shaft of said pump, substantially as described for the purposes specified.

708,998. WAVE-MOTOR. EPHRAIM CHAQUETTE, New Rochelle, N. Y. Filed July 27, 1901. Serial No. 69,820. (No model.)

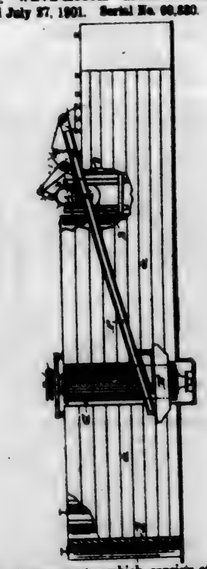

Claim.—1. A wave-motor which consists of piers inclosing a waterway on three sides, a pair of water-gates situated therein and adapted

to control said waterway in the vicinity of the float; and a float set in said waterway and mechanism connected therewith whereby the rising and falling of the float is converted into a continuous rotation of a power-shaft.

2. A wave-motor which is provided with a pair of water-gates of somewhat-semicylindrical character connected together for simultaneous operation and situated in the waterway in such manner that when turned in one position they tend to choke the waterway and bank up the water therein and when turned into the opposite position, offer no impediment to the flow of water through said waterway.

708,999. SHEEP-TRAIL. JOSEPH CHERPAW and FREDERICK MCGUIRE, Uxbridge, Canada. Filed Jan. 29, 1901. Serial No. 45,202. (No model.)

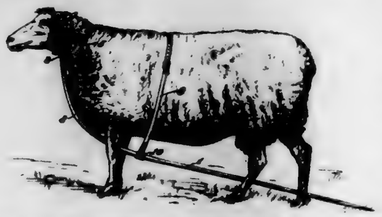

Claim.—1. In a sheep-trail, the combination of a bar pointed at its lower end and curved at its upper end, to conform to the breast of the animal, of a collar secured to said bar near its upper end and by means of which said bar is secured to the animal, and means whereby said bar is held in position, said bar adapted to extend rearwardly and to grip the animal's neck when its pointed end engages the ground.

2. In a sheep-trail, the combination of an extensible bar, of a strap secured to said bar near its central portion, for holding said bar in place, and a collar comprising an adjusting-strap and a semicircular portion of resilient material whereby the upper end of said bar may grip the animal's neck without injury to the animal.

3. In a sheep-trail, the combination of a tubular bar curved at its upper end, a pointed bar adapted to slide within said tubular bar, a set-screw seated in said tubular bar, said set-screw bearing against said pointed bar and holding the same in adjustment; of a strap secured to said tubular bar for holding said tubular bar in place and a collar secured to said tubular bar near the upper end thereof, said collar comprising an adjusting-strap and a semicircular portion of resilient material, whereby the upper end of said tubular bar may grip the animal's neck without injury to the animal.

704,000. LIFE-PRESERVER. GEORGE B. COULBY, Cleveland, Ohio. Filed Jan. 13, 1902. Serial No. 89,495. (No model.)

Claim.—1. A life-preserver comprising the combination of a folding framework consisting of a series of curved ribs hinged together at their respective ends, means for engaging two of the said ribs, a flexible waterproof cover secured at one end to one of the said engaging ribs and at its other end to the other of the said engaging ribs, and arranged to completely envelop the said framework, and springs secured within the said framework and arranged to hold the said ribs properly spaced when the framework is expanded and to cause the ribs to lie closely on each other when the frame is folded up, substantially as described and for the purpose set forth.

2. A life-preserver comprising the combination of an oval framework adapted to fold upon itself, consisting of a series of curved ribs hinged together at their respective ends, means for causing an engagement between two of the said ribs, a flexible waterproof covering secured to one of the last-mentioned ribs and extending around the framework and secured to the other of the last-mentioned ribs, springs secured within the said framework and arranged to hold the said ribs properly spaced when the framework is expanded and to cause the ribs to lie closely upon each other when the frame is folded up, closed sleeves arranged in the sides and bottom of said cover, and means for automatically adjusting the length of the said sleeves, substantially as described and for the purpose set forth.

3. A life-preserver comprising the combination of a folding framework consisting of a series of curved ribs hinged together at their respective ends, means for engaging two of the said ribs, and a flexible waterproof cover secured at one end to one of the said engaging ribs and at its other end to the other of the engaging ribs and arranged to completely envelop the said framework, substantially as described and for the purpose set forth.

4. A life-preserver comprising the combination of a folding framework consisting of a series of curved ribs hinged together at their respective ends, means for causing two of the said ribs to engage with each other, a flexible waterproof cover secured at one end to one of the said engaging ribs and at its other end to the other of the said engaging ribs and arranged to completely envelop the said framework, an air-tube arranged in the top of the said cover, sight-holes formed in the sides of said cover, springs secured at their respective ends to ribs at each side of the said engaging ribs and arranged to hold the ribs of the said framework properly spaced when the framework is expanded and to cause the said ribs to lie closely upon each other when the frame is folded up, closed sleeves secured in the sides and bottom of said cover and strips of resilient material secured within the said sleeves, substantially as described and for the purpose set forth.

5. In a life-preserver, the combination of a framework comprising two end plates and a series of curved ribs hinged at their respective ends to the said end plates, sight-holes arranged in the said end plates, a flexible waterproof covering secured to said framework, said covering having an opening at its top, springs having their respective ends secured to the ribs on opposite sides of said opening, and means for locking together the ribs adjacent to the said opening, substantially as described and for the purpose set forth.

6. In a life-preserver, a framework comprising two end plates, a series of curved ribs hinged at their respective ends to the said end plates, sight-holes arranged in the said end plates, a flexible waterproof covering secured to said framework, said cover being arranged to separate at the top, sleeves secured to the sides of the said cover, leg-pieces secured at the bottom of said cover, and means for adjusting the length of said leg-pieces, substantially as described.

704,001. DRAFT-EQUALIZER. BERNHARD CREPLIN, Goodland Ind. Ter. Filed Mar. 12, 1902. Serial No. 97,937. (No model.)

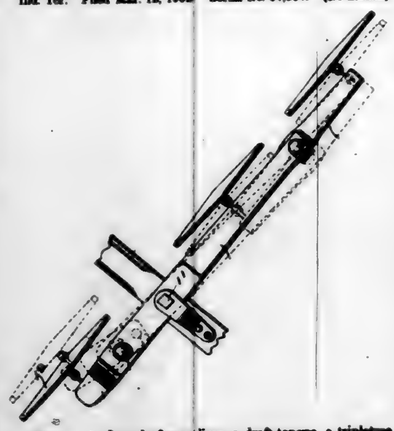

Claim.—1. In a draft-equalizer, a draft-tongue, a triplotree pivotally united to said tongue at one side of the center, with the doubletree coupled to its long end and with the under side of the short end cut away, a brace-arm rigidly connected to said tongue and extending laterally therefrom beneath the short end of said triplotree, a coupling-bar having its upper part cut away and engaging the space between said brace-bar and said cut-away portion of said triplotree and adapted to support the singletree, a pivot-bolt uniting said triplotree and said coupling-arm, and a pivot-bolt uniting said coupling-arm and said brace-arm, whereby the parts are coupled without increasing the vertical thickness, substantially as described.

2. In a draft-equalizer, a draft-tongue, a triplotree pivotally united to said tongue at one side of the center with the doubletree coupled to its long end and with the under side of the short end cut away, a brace-arm rigidly connected to said tongue, and extending laterally therefrom beneath the short end of said triplotree, a coupling-bar having its upper part cut away and engaging the space between said brace-bar and said cut-away portion of said triplotree and adapted to support the singletree, a wear-plate embracing the upper and lower surfaces and the extremity of the short end of said triplotree and between it and said tongue and between it and said brace-arm, a wear-plate upon the upper and lower surfaces and the inner extremity of said coupling-arm and between it and said brace-arm and between it and said triplotree, a pivot-bolt uniting said triplotree and said coupling-arm, and a pivot-bolt uniting said coupling-arm and said brace-arm, substantially as described.

704,002. WIND-ACTUATED ADVERTISING DEVICE. CLINTON G. CRIBBS and FRANCES M. ALLERDING, Benton Harbor, Mich. Filed Oct. 21, 1901. Serial No. 79,466. (No model.)

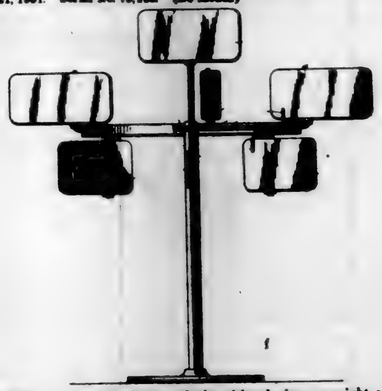

Claim.—1. In a wind-actuated advertising device, an upright, a hub on the upright, spokes radiating from the hub, a ring through which the spokes project, signs on the spokes and spring-fingers for arresting the signs.

2. In a wind-actuated advertising device, an upright, a frame rotatable thereon and comprising a hub, spokes radiating therefrom, and a ring through which the spokes protrude, said spokes alternately projecting upwardly and downwardly and spring-fingers on the extensions for arresting the signs.

704,008. MUSIC-HOLDER. ALFRED D. CREE, Ada, Ohio. Filed Dec. 3, 1901. Serial No. 84,548. (No model.)

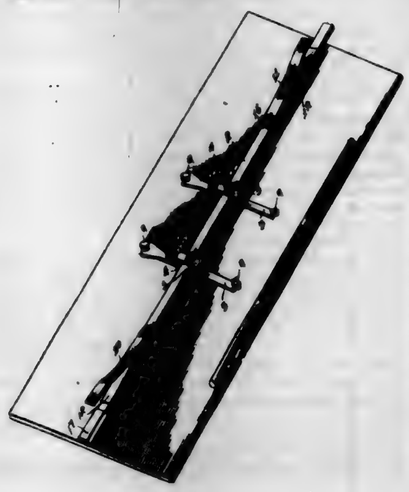

Claim.—1. The combination with a support carrying threaded studs or projections, of a music-holder comprising a clip-carrying bar, brackets adjustably connected therewith and provided at their terminals with means to engage said studs, and thumb-nuts carried by the studs.

2. The combination with a support carrying threaded studs or projections, of a music-holder comprising a bar, brackets connected therewith and having their terminals in engagement with the studs or projections, clamping means carried by the studs to engage the terminals, clips slidably mounted on the bar, and means for limiting the lateral movement of the clips.

704,004. SCREEN. GEORGE W. CROSS, Carbondale, Pa. Filed Mar. 6, 1899. Serial No. 707,970. (No model.)

Claim.—1. An integral screen-surface having substantially quadrilateral interstices, each bounded by four webs, two, opposite, webs of which are parallel and concave from end to end, the other two, opposite, webs being also parallel and curved relatively to the plane of the screen-surface, the interstices of one row being opposite the webs separating and forming the sides of the interstices of the adjacent rows, substantially as described.

2. An integral screen-surface having substantially quadrilateral interstices arranged in staggered relation, one interstice being bounded by four webs, of which two are concave and two convex, while the diagonally adjacent interstice is bounded by four webs all of which are concave, substantially as described.

704,005. DISPLAY-CASE. FRANK B. DEITER, Coudersport, Pa. Filed Mar. 23, 1901. Serial No. 52,580. (No model.)

Claim.—1. In a show-case, a case, each end of which is provided with a curved guideway and the rear is provided with an opening registering with each guideway, a curved front for the case with its ends mounted in said guideways, a spring located in the rear portion of each guideway, a cord secured to each end of the front and extending through its respective spring and out through the opening in the case, and a catch for engaging with the rear of the front and holding it in its rearward position.

2. In a show-case, a case, the front of which is curved and movable to the rear, springs at the rear of the case for engaging with the front when it is drawn to the rear, a cord secured to each end of the front and provided with means for operating it, a yielding stop in each cord to cushion the force of the front when it reaches the limit of its forward movement, and an automatic catch for holding the front in its rearward position.

704,006. HAMMER. JAMES DEMPSEY, Keating Summit, Pa. Filed Feb. 7, 1902. Serial No. 93,043. (No model.)

Claim.—1. The combination with a hammer, of a duplex nail-holding device, and means coacting with one of the holding devices for projecting the point of a nail held thereby beyond that held by the other device.

2. The combination with a hammer, of a duplex nail-holding device, and a plate disposed beneath one of the devices for projecting it beyond the plane of the other device.

3. The combination with a hammer, of a nail-holding device having its outer edges curved to hold the intermediate portion out of engagement with the hammer-head.

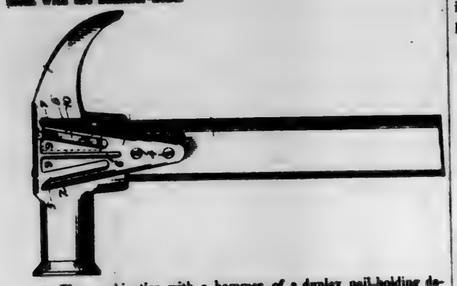

4. The combination with a hammer, of a duplex nail-holding device having its outer edges curved to hold the intermediate portion out of engagement with the hammer-head, and nail-projecting means coacting with one of the holding devices.

704,007. CORSET. JAMES E. DOOLITTLE, Bridgeport, Conn., assignor to Bristol and Somers, Bridgeport, Conn., and New York, N. Y. Filed Mar. 27, 1902. Serial No. 100,314. (No model.)

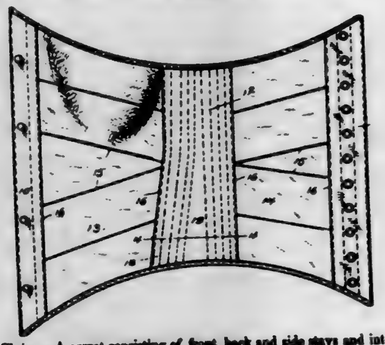

Claim.—A corset consisting of front, back and side stays and intermediate the side stay and the front and back stays respectively, front and back sections having a plurality of plaits lying in the general direction of the waist-line and attached at the ends only.

704,008. SPARK-PREVENTER FOR LOCOMOTIVE OR OTHER ENGINES. DUGALD DEMMOND, Surbiton, England. Filed Apr. 26, 1902. Serial No. 104,619. (No model.)

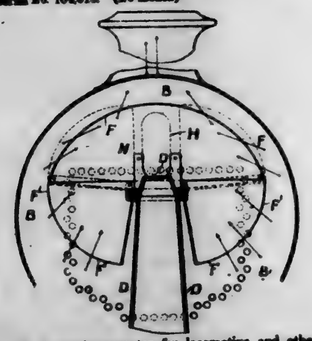

Claim.—1. A spark-preventer for locomotive and other engines comprising in combination with the exhaust-pipe a pair of wings fitted on the upper end thereof and extending transversely of the smoke-box, plates pivoted between these wings on either side of said pipe having upturned flanges and a tubular casing communicating with the smoke-box and with the space between the wings, substantially as described.

2. A spark-preventer for locomotive and other engines comprising in combination with the exhaust-pipe a pair of wings fitted on the upper end thereof and extending transversely of the smoke-box and plates having upturned flanges pivoted between these wings on either side of said pipe, substantially as described.

704,009. HOT-WATER HEATING SYSTEM. JOHN EBERSOLE, Chambersburg, Pa. Filed Mar. 27, 1902. Serial No. 100,315. (No model.)

Claim.—In a hot-water heater, the combination with a coal-stove or range, of a heating device arranged within the fire-box of the stove, a flue composed of interfitting sections, provided at their meeting ends with open bearings, a damper mounted in said bearings and adapted to be removed upon the separation of the sections of the flue, boilers arranged one above the other and between which the damper is located, the lower boiler being connected with said heating device, a valved connection between the two boilers for the supply of water from one to the other, hot-water-supply pipes leading from the boilers, and return-pipes for conducting the cooled water from the radiators back to the boilers, substantially as set forth.

704,010. APPARATUS FOR CONCENTRATING MAGNETIC IRON ORES. THOMAS A. EDISON, Llewellyn Park, N. J. Filed May 23, 1896. Serial No. 591,472. (No model.)

Claim.—1. A connected apparatus for concentrating iron ore, comprising a set of pulverizing-rolls by which the material is finely pulverized, a screen to which the finely-pulverized material is fed, a magnetic separater for separating the magnetic from the non-magnetic particles of the screenings of said screen, a drier to which the magnetic particles are fed and by which they are dried, a fine screen to which the dried magnetic particles are fed, a second set of pulverizing-rolls for pulverizing the tailings of the fine screen, and means for returning the repulverized material to said fine screen, substantially as set forth.

2. A connected apparatus for concentrating iron ore, comprising a set of pulverizing-rolls for finely pulverizing the material, a screen to which the finely-pulverized material is fed, means for returning the tailings of said screen to said pulverizing-rolls, a magnetic separator for separating the magnetic from the non-magnetic particles of the screenings of said screen, a drier for drying the magnetic particles removed by said separator, a fine screen to which the dried magnetic particles are fed, a second set of pulverizing-rolls for repulverizing the tailings of the fine screen, and means for returning said repulverized tailings to the fine screen, substantially as set forth.

3. A connected apparatus for concentrating iron ore, comprising a set of pulverizing-rolls by which the material is finely pulverized, a screen to which the finely-pulverized material is fed, means for returning the tailings of said screen to the pulverizing-rolls, a magnetic separator for separating the magnetic from the non-magnetic particles of the screenings of said screen, a drier, a fine screen to which the magnetic particles are fed, a second set of pulverizing-rolls for repulverizing the tailings of said fine screen, means for returning said repulverized tailings to the fine screen, a second magnetic separator for separating the magnetic from the non-magnetic particles of the screenings of the second screen, and means for conveying the particles rejected by the second separator to the second set of pulverizing-rolls, substantially as set forth.

4. A connected apparatus for concentrating iron ore, comprising a set of pulverizing-rolls by which the material will be pulverized, a screen to which the finely-pulverized material is fed, means for returning the tailings of said screen to the pulverizing-rolls, a magnetic separater for separating the magnetic from the non-magnetic particles of the screenings of said screen, a drier for drying the magnetic particles, a fine screen to which the dried magnetic particles are fed, a second set of pulverizing-rolls for repulverizing the tailings of the fine screen, means for returning said repulverized tailings to the fine screen, a second magnetic separater for separating the magnetic from the non-magnetic particles of the screenings of the said fine screen, and a dusting apparatus for removing dust from the concentrates, substantially as set forth.

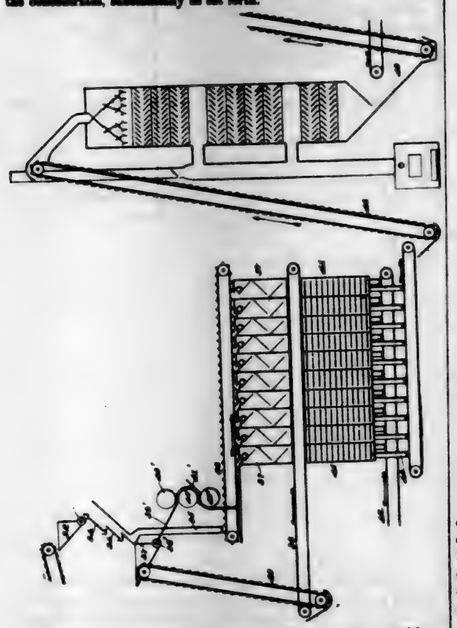

5. A connected apparatus for concentrating iron ore, comprising a set of pulverizing-rolls by which the material will be pulverized, a screen to which the finely-pulverized material is fed, means for returning the tailings of said screen to the pulverizing-rolls, a magnetic separater for separating the magnetic from the non-magnetic particles of the screenings of said screen, a drier for drying the magnetic particles, a fine screen to which the dried magnetic particles are fed, a second set of pulverizing-rolls for repulverizing the tailings of the fine screen, means for returning said repulverized tailings to the fine screen, a second magnetic separater for separating the magnetic from the non-magnetic particles of the screenings of the said fine screen, a dusting apparatus for removing dust from the concentrates, and a third magnetic separater for effecting a final separation of the dusted concentrates, substantially as set forth.

6. A connected apparatus for concentrating iron ore, comprising a set of pulverizing-rolls by which the material will be finely pulverized, a screen to which the finely-pulverized material is fed, means for returning the tailings of said screen to the pulverizing-rolls, a magnetic separater for separating the magnetic from the non-magnetic particles of the screenings of said screen, a drier for drying the magnetic particles, a fine screen to which the dried magnetic particles are fed, a second set of pulverizing-rolls for repulverizing the tailings of the fine screen, a second magnetic separater to which the screenings of the fine screen are fed and by which the magnetic particles will be separated from the non-magnetic particles, a dusting apparatus for dusting the magnetic particles, a third magnetic separater for effecting a final separation of the dusted concentrates, and means for returning the particles rejected by the third separater to the repulverizing-rolls, substantially as set forth.

704,011. APPARATUS FOR SEPARATING NAPHTHA FROM OIL. ERNEST R. ENNIS, Cleveland, Ohio. Filed Aug. 26, 1901. Serial No. 73,279. (No model.)

Claim.—1. Apparatus of the character indicated, comprising a percolator; an oil-storage tank or reservoir; a valved pipe arranged to conduct oil from the percolator to the said reservoir; a pump; a valved pipe arranged to conduct oil from the said reservoir and connected with the receiving end of the pump; an evaporator comprising a vaporizing-chamber; a pipe-line extending from the discharging end of the pump into the aforesaid vaporizing-chamber; a condenser having an oil-outlet; a pipe or flue connecting the vaporizing-chamber with the chamber of the condenser; a suction-creating device for drawing air and vapor from the vaporizing-chamber into the condenser, and a valved pipe-line connecting the vaporizing-chamber at the bottom with the chamber of the aforesaid reservoir.

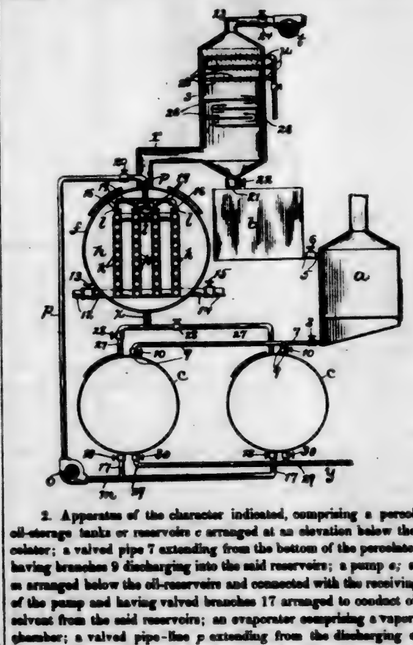

2. Apparatus of the character indicated, comprising a percolator, oil-storage tanks or reservoirs *c* arranged at an elevation below the percolator; a valved pipe 7 extending from the bottom of the percolator and having branches 9 discharging into the said reservoirs; a pump *e*; a pipe so arranged below the oil-reservoirs and connected with the receiving end of the pump and having valved branches 17 arranged to conduct oil and solvent from the said reservoirs; an evaporator comprising a vaporizing-chamber; a valved pipe-line *p* extending from the discharging end of the pump into the aforesaid vaporizing-chamber; a condenser having an oil-outlet at the bottom; a pipe or flue *r* connecting the vaporizing-chamber with the chamber of the condenser; a pipe for conducting air from the upper end of the condenser; a suction-creating device connected with the said air-conducting pipe; and a valved pipe-line *s* leading from the bottom of the vaporizing-chamber and having valved branches 27 discharging into the aforesaid oil-reservoirs.

3. Apparatus of the character indicated, comprising a percolator, an oil-storage tank or reservoir, means for conducting oil from the percolator to the said reservoir, an evaporator comprising a vaporizing-chamber, means for conducting oil from the reservoir to the said vaporizing-chamber, a condenser having an oil-outlet, a pipe or flue connecting the vaporizing-chamber with the chamber of the condenser, a suction-creating device for drawing air and vapor from the vaporizing-chamber into the condenser, and means for conducting oil from the vaporizing-chamber to the aforesaid reservoir.

4. Apparatus of the character indicated, comprising a percolator, an oil-storage tank or reservoir, a pump, a pipe arranged to conduct oil from the reservoir and connected with the receiving end of the pump, an evaporator comprising a vaporizing-chamber, a pipe-line extending from the discharging end of the pump to the vaporizing-chamber, a condenser having an oil-outlet, a pipe or flue connecting the vaporizing-chamber with the chamber of the condenser, and a valved pipe-line connecting the vaporizing-chamber at the bottom with the chamber of the aforesaid reservoir.

704,012. STRAINER FOR SUCTION-PIPES OF PUMPS. WILLIAM R. EMERSON, Washington, D. C. Filed Mar. 22, 1902. Serial No. 99,494. (No model.)

Claim.—1. The combination with a suction-pipe for a pump, of a foot-casting carried by but projecting below the pipe and having an imperforate bottom portion with a peripheral seat, of a strainer-casting having a reduced central portion surrounding and guided by the suction-pipe

above the foot-casting, and a perforated apron extending out over said casting and resting at its edge on the peripheral seat of the imperforate portion; substantially as described.

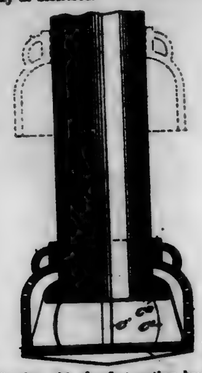

2. The combination with the foot-casting having the imperforate lower portion with arms extending therefrom for attachment to the lower end of a suction-pipe, of the strainer-casting having a central collar for the passage of the suction-pipe, such collar being located above the foot-casting, and a perforated apron extending from said collar out over the foot-casting and adapted to rest on the imperforate portion thereof; substantially as described.

3. The combination with a foot-casting having the imperforate bottom portion, the arms extending therefrom, the annulus uniting the ends of said arms with means whereby said annulus may be secured to the lower end of a suction-pipe, of a strainer-casting having a collar for the passage of the suction-pipe above the foot-casting annulus and a perforated apron adapted to coöperate with the periphery of the imperforate portion of the foot-casting, whereby the strainer-casting is guided by the suction-pipe and is adapted when in working position to bridge the space between the imperforate portion of the foot-casting and the suction-pipe to prevent the entry of obstructions; substantially as described.

4. The combination with a suction-pipe, a foot-casting secured to its lower end and embodying an imperforate portion and upwardly-extending arms having their outer sides inclined outwardly with an annular inclined seat around the base of said arms, of a strainer-casting having a collar surrounding said suction-pipe above the foot-casting and a dome-shaped perforated apron extending from said collar outwardly and downwardly around the arms and resting at its edge on the inclined annular seat of the foot-casting; substantially as described.

5. A strainer-casting for suction-pipes embodying a movable collar adapted to surround and be guided by the suction-pipe and an outwardly-flaring perforated apron connected with and supported by said collar, combined with a fixed foot-casting having an imperforate portion against which the peripheral portion of the apron rests; substantially as described.

704,013. **INSECTICIDE AND FERTILIZER.** JOHN A. ESSE and JOHN G. KNOUT, York, Pa. Filed Aug. 2, 1901. Serial No. 70,713. (No specimens.)

Claim.—A liquid coating for grain, as a remedy for the Hessian wheat-fly, composed of turpentine, kerosene, and English red.

704,014. **SASH-LOCK.** JOHN A. BENTALLER, Chicago, Ill., assignor of one-half to Albert Wohlstetter, Oakpark, Ill. Filed Oct. 21, 1901. Serial No. 79,285. (No model.)

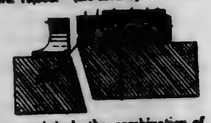

Claim.—1. In a sash-lock, the combination of a horizontal pintle adapted to be secured to one sash, a keeper adapted to be secured to the other sash, a lug projecting transversely of said pintle and a sleeve journaled on said pintle and having a cam-slot with which said lug engages and a hook formed on and projecting from the edge of said sleeve at one end for engaging said keeper, substantially as set forth.

2. In a sash-lock the combination of a horizontal pintle adapted to be secured to one sash, a keeper adapted to be secured to the other sash, a lug projecting transversely of and supporting said pintle and a sleeve journaled on said pintle and provided in its side with a cam-slot with which said lug engages and at its end with a hook for engaging with said keeper, substantially as set forth.

3. In a sash-lock a blank for constituting the bolt thereof, formed with a V-shaped slot and two projections extending substantially at right angles to each other and constituting respectively a handle and the hook for engaging the keeper of the sash-lock, substantially as set forth.

4. In a sash-lock the combination of a rotary reciprocatory bolt adapted to be secured to one sash, a base-plate adapted to be secured to the other sash, a standard rising from and formed integrally with said base-plate, and a horizontal pintle formed of sheet metal integrally with said standard and rolled into a cylindrical form, and a bolt journaled on said pintle and adapted to engage said keeper, substantially as set forth.

704,015. **RAILWAY-SEMAPHORE, &c.** WILLIAM D. FARRIS, Danville, Cal. Filed July 24, 1900. Serial No. 24,674. (No model.)

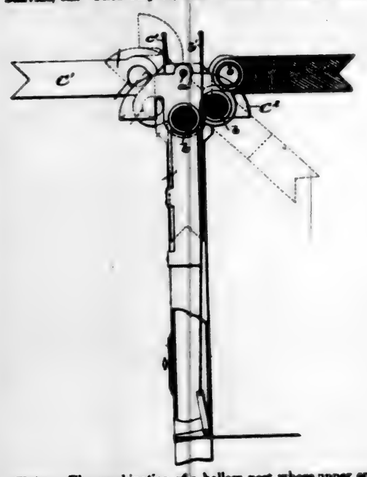

Claim.—The combination of a hollow post whose upper end terminates in an enlarged hood-section and whose opposite faces are provided with apertures, a shaft journaled in the said hood and having its ends projecting through the hood, semaphore-arms secured to the ends of the shaft, the said arms having a series of openings arranged intermediate its ends, one end of the arm having a counterbalance-weight secured thereto, rods projecting from the arms, cords connected to the rods for operating the arms, a lantern arranged within the hood and having a cord connected thereto which passes up over and around the said shaft and suspends the lantern in an elevated position, the lower end of the cord being secured to the post, substantially as shown and described.

704,016. **STRING-FASTENING DEVICE.** ELMER FLOWERS, Harrisburg, Pa. Filed May 27, 1901. Serial No. 62,123. (No model.)

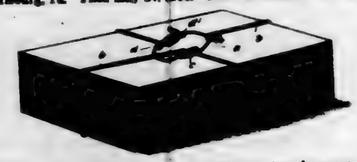

Claim.—1. A string-fastener comprising a clasp, having two hooks lying side by side and a sleeve secured over the hooks and provided with means for the attachment of the string.

2. A string-fastener having a clasp with an open center, said clasp being provided with means for permanently attaching one end portion of a string thereto, a means on the clasp at one side for removably holding an intermediate part of the string and a double hook at the other side of the clasp for removably holding the other end portion of the string, said double hook comprising two oppositely-projected hook members joined together by a downwardly-bowed or crescent-shaped part, said part being also bent toward the hook members to lie parallel therewith for the purpose specified.

3. A fastener comprising a clasp having thereon a double hook for the purpose specified, said hook being formed of two oppositely-projected hook members joined together by a downwardly-bowed or crescent-shaped part, said part being also bent toward the hook members to lie parallel therewith for the purpose specified.

704,017. **RESPIRATOR.** GEORGE L. FOWLER, London, England. Filed Dec. 13, 1901. Serial No. 85,798. (No model.)

Claim.—The respirator described composed of framework plates of a material not affected by the acids of the mouth, an asbestos layer interposed between said plates, a smooth hollow rounded rim embracing the edges of said plates and asbestos layer, the said rim being divided, means for uniting the ends of said rim at the division, the said device being curved and shaped to fit the mouth of the wearer between the inside of the lips and the gums, all substantially as shown and described.

704,018. **COPY-HOLDER.** WILLIAM R. FOX, Grand Rapids, Mich., assignor to the Fox Machine Company, Grand Rapids, Mich. Filed Dec. 2, 1901. Serial No. 84,914. (No model.)

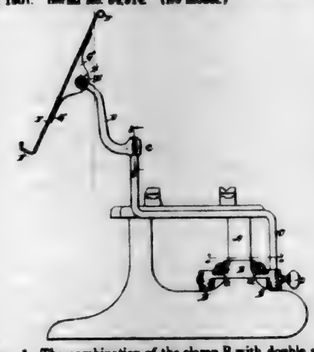

Claim.—1. The combination of the clamp B with double sockets B and a clip-piece B″ for retaining it; a crank-shaped standard C; a copy-holder frame F of sheet metal with rearwardly-projecting ears and a supporting-arm adjustably secured between the ears and supported on the crank-shaped standard, for the purpose specified.

2. The combination of a clamp having vertically-opening sockets B′ at each side and a clip-piece at the back for retaining it; a standard for insertion into either of the said sockets, whereby the standard may be held in different positions; and a copy-holder carried by said standard, for the purpose specified.

3. The combination of a copy-holder frame of sheet metal formed into a shelf at the bottom and having a central portion struck up to form a supporting-rim G″; ears G′; and a supporting-arm adjustably secured between the ears G′; and a suitable screw E with a thumb-nut E′ thereon, for the purpose specified.

4. The combination of a copy-holder frame of sheet metal having a central portion struck up to form a supporting-rim; a supporting-arm adjustably secured to said rim; and a suitable screw E with a thumb-nut E thereon, for the purpose specified.

5. The combination of a copy-holder frame of sheet metal having a central portion struck up to form supporting-ears; and a supporting-arm adjustably secured between said ears, for the purpose specified.

704,019. **ELECTRICAL TRANSPORTATION SYSTEM.** HENRY F. FREED, Harrisburg, Pa., assignor of nine-tenths to Isaac Frost, Harrisburg, Pa., and Sylvester G. Spring, Peoria, Ill. Filed Mar. 11, 1901. Renewed Jan. 13, 1902. Serial No. 89,462. (No model.)

Claim.—1. In an electrical transportation system, the combination of separate track-rails, a carriage supported to travel upon said track-rails, an electric motor carried by said carriage and geared with one of the track-rails, a reversing-switch carried by said carriage and circuited with said electric motor and said separate track-rails, quick-break switches circuited with the track-rails, and means located within the path of movement of the reversing-switch to shift said reversing-switch to break the circuit, open said quick-break switch and reverse said reversing-switch, substantially as set forth.

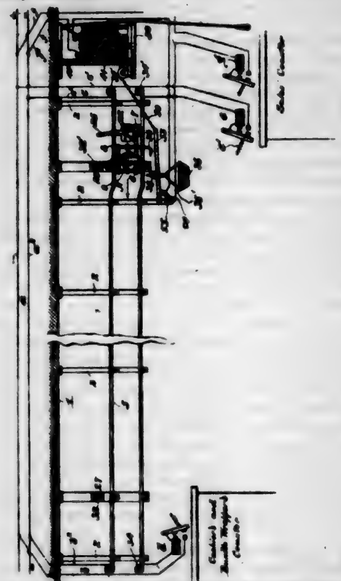

2. In an electrical transportation system, the combination of separate track-rails, a motor-carriage mounted to travel along said track-rails, a reversing-switch carried by said carriage and circuited with the motor and track-rails, quick-break switches located near the ends of said track-rails and circuited therewith and devices arranged within the path of movement of the reversing-switch for operating said reversing-switch to break the circuit through the track-rails and quick-break switches and for reversing said reversing-switch, substantially as set forth.

3. In an electrical transportation system, the combination of the separate track-rails, a motor-carriage mounted to travel along said track-rails, a reversing-switch having a shifting-lever and carried by said carriage, quick-break switches, said reversing-switch circuited with the motor, the track-rails and the quick-break switches, trips arranged at opposite ends of the track within the path of movement of said lever, each trip movable by pressure from one direction to permit the lever to pass freely from engagement with it without being reversed and immovable by pressure from the opposite direction to trip said lever to reverse the switch said trips being movable in opposite directions, substantially as set forth.

4. In an electrical transportation system, the combination of the separate track-rails, a motor-carriage mounted to travel along the track-rails, a reversing-switch having a shifting-lever and carried by said carriage, quick-break switches, said reversing-switch circuited with the motor, the track-rails and the quick-break switches, trips arranged near the opposite ends of the track within the path of movement of the shifting-lever, said trips mounted to swing in opposite directions from their normal positions within the path of movement of the shifting-lever, in an inclined plane out of the path of movement of said shifting-lever, substantially as set forth.

5. In an electrical transportation system, the combination with track-rails and an electrically-propelled carriage, of a receptacle or car releasably connected to the carriage, a lever pivoted adjacent to the rails in position to receive the receptacle or car and disengage it from the carriage and means for lowering said lever with its supported receptacle or car, substantially as set forth.

6. In an electrical transportation system, the combination with track-rails and an electrically-propelled carriage, of a receptacle or car releasably connected to the carriage, a lever pivoted adjacent to the rails in position to receive the receptacle or car and disengage it from the carriage, means for lowering said lever with its supported receptacle or car, and means for elevating said lever to raise the receptacle or car within the path of movement of the carriage, substantially as set forth.

7. In an electrical transportation system, the combination with the track-rails and an electrically-propelled carriage, of a receptacle or car releasably connected to the carriage, a lever pivoted adjacent to the rails in

position to receive the receptacle or car and disengage it from the carriage, and means for elevating the lever to raise the receptacle or car within the path of movement of the carriage, substantially as set forth.

8. In an electrical transportation system, the combination with the track-rails deflected at one end and the electrically-propelled carriage mounted to travel along said track-rails, of a receptacle or car releasably connected with said carriage, a bar or lever arranged under the track-rails and normally retained at an angle to the track-rails in position to release the car or receptacle from the carriage and support the same, and means for raising and lowering said bar, substantially as set forth.

9. In an electrical transportation system, the combination with the track-rails and the carriage mounted thereon, of a car or receptacle releasably connected to the carriage, a bar supported under the track, and designed to disengage the car or receptacle from the carriage, and an electric motor for moving said bar upward to raise the car in the path of movement of the carriage, substantially as set forth.

10. In an electrical transportation system, the combination with the track-rails and the carriage mounted to travel thereon and provided with a hook, a bar or lever mounted below the track-rails, of a car or receptacle, and a double hook connecting the car or receptacle with the carriage and provided with a grooved wheel to ride upon the bar or lever, substantially as set forth.

11. In a hoisting device for the purpose described, the combination of a suitably-supported windlass, an electric motor geared to the windlass, a hoisting bar or lever, a connection between the hoisting bar or lever and the windlass, a contact-point, a second contact-point carried by the lever and adapted to engage with the first contact-point, and a switch circuited with the motor and the contact-points, substantially as set forth.

12. In a hoisting device for the purpose described, the combination of a suitably-supported windlass, an electric motor geared to the windlass, a hoisting bar or lever, a connection between the hoisting bar or lever and the windlass, a contact-point, a second contact-point carried by the lever and adapted to engage with the first contact-point, and a quick-break switch circuited with the motor and the contact-points, substantially as set forth.

13. In a hoisting device for the purpose described, the combination of a suitably-supported windlass, an electric motor geared to the windlass, a pawl and ratchet for controlling the backward movement of the windlass, a hoisting bar or lever, a connection between the hoisting bar or lever and the windlass, a contact-point, a second contact-point carried by the lever and adapted to engage with the first contact-point, and a switch circuited with the motor and the contact-points, substantially as set forth.

704,020. SYSTEM OF TRAIN MANIPULATION. LOUIS A. FREEMAN and CHARLES I. FREEMAN, New York, N. Y. Filed Mar. 1, 1902. Serial No. 96,231. (No model.)

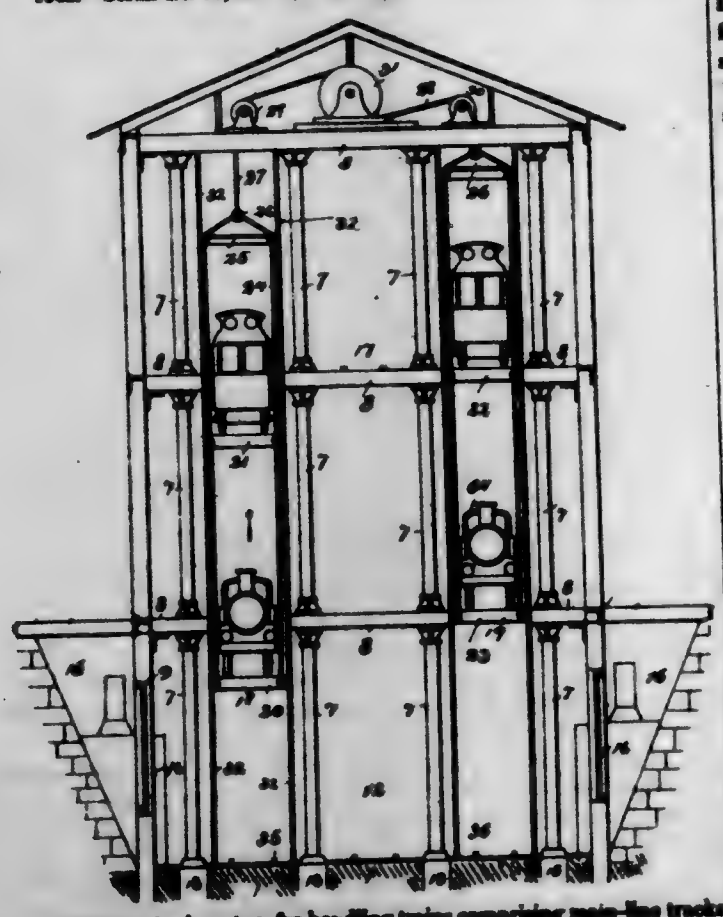

Claim.—1. A system for handling trains comprising main-line tracks and a plurality of elevators in connection with the said main-line tracks, and tracks supported at a level above and below the main line, each of the auxiliary system of tracks being connected by switches, one of them being provided with a turn-table.

2. A system of handling trains comprising main-line tracks, and elevator and lower-level track to which said elevator may descend, a shunting-track leading from said level, a further lower-level shunting-track, an elevator operating in connection therewith, means for placing both lower-level shunting-tracks in connection with each other, another main-line track between which and the latter lower-level shunting-track said elevator may operate, substantially as described.

3. A system of handling trains comprising main-line tracks, an elevator on ' lower-level track to which said elevator may descend, a shunting-track leading from said lower level, a further lower-level shunting-track, an elevator operating in connection therewith, means for placing both lower-level shunting-tracks in communication with each other, another main-line track between which and the latter lower-level shunting-track said elevator may operate, a turn-table in connection with the shunting-track, substantially as described.

4. In a system for manipulating railroad-trains, the combination with the following instrumentalities: a plurality of main-line tracks, a double-decked elevator adapted to be vertically operative in alinement with the main-line tracks so as to bring either deck in alinement with said main-line track, and a plurality of shunting-tracks arranged at a level above and below, and in alinement with the main-line tracks, and switches for placing the shunting-tracks in communication with each other and with the several elevator-tracks.

5. In a system for manipulating railroad-trains, the combination with the following instrumentalities: a plurality of main-line tracks, a double-decked elevator adapted to be vertically operative in alinement with the main-line tracks so as to bring either deck in alinement with said main-line tracks, and a plurality of shunting-tracks arranged at a level above and below, and in alinement with the main-line tracks and switches for placing the shunting-tracks in communication with each other and with the several elevator-decks, and an intermediate storage-track in communication with the shunting-tracks.

6. In a system for manipulating railroad-trains, the combination with the following instrumentalities: a plurality of main-line tracks, a double-decked elevator adapted to be vertically operative in alinement with the main-line tracks, and a plurality of shunting-tracks at a level above and below, and in alinement with the main-line tracks, and switches for placing the shunting in communication with each other and with the several elevator-decks, and a turn-table and the lower-level shunting-tracks.

7. In a system for manipulating railroad-trains, the combination with the following instrumentalities: a plurality of main-line tracks, a double-decked elevator adapted to be vertically operative in alinement with the main-line tracks, and a plurality of shunting-tracks at a level above and below, and in alinement with the main-line tracks and switches for placing the shunting in communication with each other and with the several elevator-decks, an intermediate storage-track in communication with the shunting-track, a turn-table and the lower-level shunting-tracks, and an intermediate track and turn-table.

704,021. AUTOMATIC LUBRICATOR. ALBERT A. FREEMAN, Philadelphia, Pa., assignor to Standard Automatic Lubricator Company, Philadelphia, Pa., a Corporation of New Jersey. Filed Aug. 26, 1901. Serial No. 73,256. (No model.)

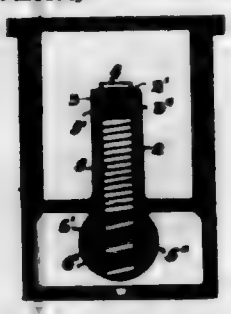

Claim.—1. In an automatic lubricator, a valve comprising a shell and a core cast therein, in combination with a spring having coils thereof embedded in said core, substantially as specified.

2. In an automatic lubricator, a valve comprising a spherical shell, and a core of loading material cast therein, in combination with a spring having open coils embedded in said core and closed coils forming a flexible supporting-column, substantially as specified.

3. In an automatic lubricator, a reservoir, an open pedestal therein, a head having shoulders for holding the same against turning by engagement with said pedestal, a coiled spring supported by said head, said head having a threaded shank which engages the coils of said spring, and a valve permanently fixed to said spring and supported thereby, said valve

comprising a shell and a core in which the end of said spring is embedded, substantially as specified.

4. In an automatic lubricator, a reservoir, guiding-struts therein, a head having shoulders for holding the same longitudinally and against turning, a coiled spring forming a closed column supported by said head, and a valve comprising a spherical shell having a core of leading material cast therein, the lower coils of said spring being embedded in said core, substantially as specified.

704,022. **STEAM AND OIL SEPARATOR.** EDUARD FRIEDRICH, Bietigheim, Germany. Filed Nov. 18, 1901. Serial No. 82,770. (No model.)

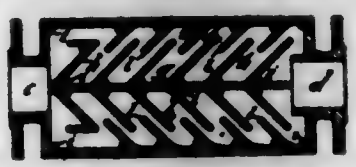

Claim.—In an apparatus for the separation of oil and condensation-water from exhaust-steam, the combination of a rectangular outer vessel open at the top and provided with a double bottom, vertical ribs arranged on the inner side of the two longitudinal walls of same, said ribs being inclined toward their bearing edges or surfaces, horizontal nozzles for the inlet and outlet of the steam, located on the two narrow sides of the outer vessel, a flat cover having on its inner side a central wall extending to the bottom of the said outer vessel when the parts are assembled, the said middle wall being provided with a number of vertical ribs inclined toward their bearing surfaces or edges, and projecting between said vertical ribs of the side walls, as and for the purpose set forth.

704,023. **TELEGRAPH.** CHARLES E. PIERCE, New York, N. Y. Original application filed Apr. 2, 1901, Serial No. 54,552. Divided and this application filed Oct. 10, 1902. Serial No. 77,008. (No model.)

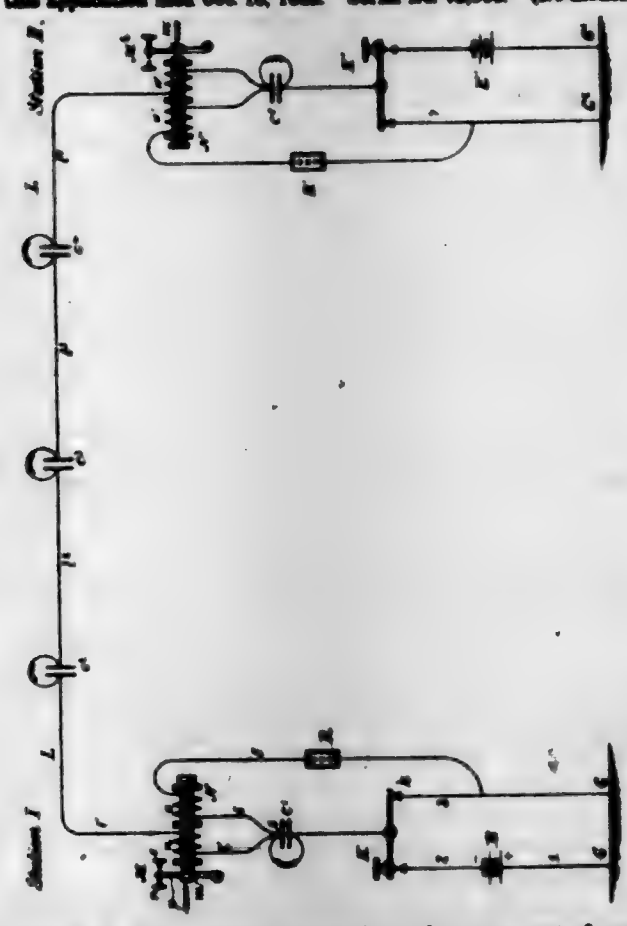

Claim.—1. An improved construction and arrangement of conductors and apparatus for telegraphic and like purposes, consisting in the combination substantially as hereinbefore set forth of a composite and organized main line composed of two or more non-inductive and non-retarding sections inductively connected together in series by condensers; water-tight casings, which protect said connecting devices from the tension of the line and are suitable for forming a constituent part of the line in the open air, earth or sea; one or more sets of transmitting apparatus at the terminal stations for producing electrical signals or impulses and thereby charging the terminal condensers of the line; and one or more sets of receiving apparatus at the ends of the line for recording or translating said signals or impulses.

2. A main line for telegraphic and like uses, made non-inductive for a given work or speed consisting of sections having electrostatic capacities between stations which will individually permit of such working or speed, and inductive devices uniting them into a line which has the same special fitness or properties as its sections, substantially as set forth.

3. A main line for telegraphic and like uses, consisting of the combination of a wire or cable divided between two stations into two or more sections, condensers inductively connecting the sections in series, and means for protecting said condensers and connections from injury by strain, water or weather.

4. A main line for telegraphic and like uses, consisting of sections whose electrostatic capacities by the rules herein set forth come below or within a capacity fixed upon as a maximum allowable in the given conditions, and condensers inductively uniting the sections together in series, substantially as set forth.

5. A composite and organized main line for telegraphic and like uses, consisting of the combination of two or more non-inductive and non-retarding sections of suitable conductor or cable; inductive devices connecting said sections in series and adapted to transmit signals or impulses from one section to and over the next one, in either direction, without mechanism or moving parts but by induction alone; means for protecting said devices from the tension of the line; and suitable water-tight casings or coverings when required for protecting the inductive devices and their connections and adapted to be used in the open air, earth or sea as a constituent part of the line.

6. The combination of a main line connecting two stations and consisting of sections connected by condensers, and an artificial line connected thereto at one of the stations and having an electrostatic capacity equal to that of the terminal section of the main line to which it is connected, instead of being adjusted to the whole of the main line as is usually done.

7. In a sectional main line, the combination of two or more sections approximately equal in inductive resistances, such resistances being not greater than is consistent with the work and speed required on the line; and condensers inductively connecting said sections in series and also being approximately equal in capacity.

8. A circuit for variable currents, having the sections adjusted to enable the desired current to flow over the line by the interposition of condensers suited to the electrical resistances in the sections.

9. An electric circuit divided into sections, and having the sections adjusted to enable the selected or predetermined current to flow over the line by the interposition between the sections of condensers suited to the number of them in the series or line.

10. A non-inductive sectional line consisting of the combination of sections of approximately equal electrical and inductive resistances, connected by the interposition of approximately equal condensers or equivalent devices.

11. The combination of two terminal stations with transmitting and receiving apparatus; a circuit or line connecting said stations, consisting of practically non-inductive sections; and condensers or equivalent devices interposed between them, whose capacities are approximately equal, and proportionate to the number of them connected in the series or line.

12. The combination of a main line between stations consisting of sections free from inductive resistance inductively connected in series by condensers; suitable transmitting apparatus at the terminal station or stations; and a transmitting-condenser connecting said apparatus to the main line and having double the capacity of the condensers in the main line.

13. The combination of a practically non-inductive sectional main line between stations; suitable transmitting apparatus at the terminal station or stations; and a transmitting-condenser connecting said apparatus to the main line, having double the capacity of the condensers in the line, one pole of the battery or generator being connected directly to said condenser with a very low resistance between them.

14. The combination of transmitting apparatus; a main line between stations which, for the purpose of avoiding, preventing or lessening static charge and retardation, is constructed from two or more sections without inductive resistances inductively connected in series by condensers; and a condenser connecting said transmitting apparatus to one end of the line and forming the connection between said line and the local circuit at the transmitting-station.

15. The combination of a sectional main line between stations; suitable transmitting and receiving apparatus at the terminal stations; condensers inductively connecting said apparatus and the main line; and artificial lines at each station, whose resistances are adjusted to those of the particular sections or circuits to which they are connected.

16. The combination, substantially as hereinbefore set forth, of a main-line conductor divided between stations into sections without inductive resistance by the interposition of condensers between said sections; and a differential electromagnet having one of its coils included in one section of said main line between two condensers, and its remaining coil in the circuit of a conductor extending from the adjacent plate of one of said condensers and forming an artificial line uniting the terminals of said condenser, whereby an electric current traversing the first-mentioned coil

to the condenser and reverting through the second coil will in each case produce a like magnetic effect upon the core of said electromagnet.

17. The combination of a sectional main line between stations which is divided into sections by the interposition of condensers between said sections; an artificial line whose electrostatic capacity is equal to that of the main-line section to which it is connected; and a differential receiving instrument one coil or part of which is in the main line and the other coil in the artificial line.

18. The combination of a sectional main line which is divided into sections by the interposition of condensers between said sections; means for producing alternating electrical signals or impulses; a condenser connecting said means to one end of the line; suitable receiving apparatus, adapted to respond to incoming but not to outgoing currents, at the other end of the line; and a condenser at said end connecting it to a grounded wire or circuit.

19. The combination of a circuit divided into practically non-inductive sections disposed in inductive relation and in series; sections approximately equal in inductive and electrical resistances; and condensers interposed between said sections which are suitable for the resistances in the sections and the number of them connected in the series or circuit.

20. The combination of a non-inductive line consisting of sections connected by condensers, as described; generating apparatus sending to said line currents or impulses which charge and discharge the condensers in equal ratios; and condensers having electrostatic capacities capable of receiving and storing as charges the longest impulses or signals sent over the line.

21. The combination of sections made short enough to have the desired freedom from electrical and inductive resistances; condensers or equivalent devices connecting the sections in series and having capacities proportionate to the resistances in the sections and the number of them in the series or line.

22. In a sectional main line, an inductive connection between the sections consisting of the combination substantially as described of a condenser of suitable construction and capacity inserted directly in the line, means for protecting the condensers from exposure and from strain from the tension of the line, and means for electrically connecting the sections with the armatures of the condenser, the whole adapted to be used in the open air, earth or sea, as a part of the line.

23. In a sectional line, an inductive connection between the sections consisting of the combination of condenser-plates insulated from each other by dielectrics and rolled upon a non-conducting rod, and means for sustaining the strain of the conductors from the opposite extremities of said rod and electrically connecting the same with the respective plates.

24. In a non-inductive line in which sections made from cables and lines of high electrostatic capacity may be connected with sections of bare wire or conductor of low electrostatic capacity, the combination of sections of different characters or kinds but adjusted to have approximately equal electrostatic capacities, with condensers or equivalent devices having approximately equal capacities, as inductive connections between the sections.

25. The combination of a cable or electric line or circuit divided into sections free from inductive resistance; a device for transmitting electrical impulses by electrical induction from one section to and over the adjacent one, in both directions, interposed between the sections and having each section electrically connected with one side of said device; means for securing the cable or line and preventing any strain upon the connections of the conductor to said device; and a suitable water-tight casing inclosing the same.

26. In a sectional line, an inductive connection for uniting the terminals of the adjacent sections consisting of the combination of a dielectric composed of thin sheets of india-rubber or other suitable insulating material; conducting plates or armatures arranged between said sheets means for attaching the terminals of the sections to the opposite armatures or plates without subjecting them to strain or tension from the line; and a water-tight casing inclosing the same, adapted to be used in the open air, earth or sea and to form a constituent part of the line itself between stations.

27. The combination of a plurality of non-inductive sections such as described, arranged in series as a discontinuous line; and condensers or equivalent devices connecting said sections into a line, and transmitting the line-currents through them, to and over the adjacent sections in both directions, without mechanism or moving parts, but by induction only.

28. The combination of a line consisting of sections inductively connected by condensers; shunts around the condensers; and resistances in said shunts which are high enough to stop the passage of signals or impulses through the shunts, and cause them to charge the condensers and be transmitted by them over the line.

29. In a line consisting of sections inductively connected by condensers, the combination of a condenser; a shunt around the condenser; and a resistance in said shunt, having no movable parts and performing no other function in the line, the whole arranged and operating to send the signals or impulses through the condenser and to prevent any currents passing through the resistance till they acquire their full strength at the condenser, and to then let the opposite charges thereof pass freely through the resistance and neutralize each other immediately therein.

30. In a line consisting of sections inductively connected in series by condensers, the combination of a condenser; a shunt around said condenser; a discharging resistance in the shunt approximately equal to the resistance of the adjacent sections of the line.

31. In a sectional line, the combination of a condenser; a shunt connecting the opposite terminals or armatures of the condenser; and a charging resistance in said shunt which is sufficiently high to practically prevent the signals or impulses from passing through it till they have acquired their full strength at the condenser, and sufficiently low in electrical resistance to then allow the opposite charges to pass freely through it and neutralize each other.

32. In a sectional line, the combination of a condenser; a shunt around the condenser; a discharging resistance in said shunt, adjusted to regulate the speed and perfection of the neutralization of the opposite charges of the condenser through it, substantially as set forth.

33. The combination substantially as set forth of a main-line conductor divided between stations into sections; a condenser inductively uniting the adjacent terminals of said sections; a conductor uniting the opposite terminal plates of the condenser; a suitable resistance in said shunt-conductor; and a water-tight casing or covering for protecting the condenser, resistance and connections, and adapted to be used as a part of the line in the open air, earth or sea, between stations.

34. In a composite and organized main line for telegraphic and like uses, the combination of terminal sections containing transmitting and receiving apparatus; interior non-inductive sections substantially alike and having no such apparatus; and condensers inductively uniting said sections in series; substantially as and for the purposes set forth.

35. In a composite and organized main line for telegraphic and like uses, the combination of terminal sections containing transmitting and receiving apparatus; interior sections having no such apparatus; condensers inductively connecting said sections in series; a conductor connecting the opposite armatures of the terminal condensers; and a suitable shunt resistance in each of said conductors, all substantially as and for the purposes set forth.

36. In a sectional line such as described, the combination of a non-inductive standard or normal section, that is to say, one in which static induction and retardation are substantially removed and prevented, thus adapting it for the required speed of transmission over the line; one or more other sections whose electrostatic capacities are approximately equal to that of the standard section, that is to say, the same or fewer; condensers inductively connecting said sections in series and adapted to be used in the open air, earth or sea, as a part of the line between stations.

37. In a sectional line such as described, the combination of a standard non-inductive section, that is to say, one which has been altered and shortened till static induction and retardation are removed and thus adapted for the required speed of transmission over it; one or more other sections whose electrostatic capacities are less than that of the standard section; terminal sections containing transmitting and receiving apparatus; and condensers inductively uniting said sections in series, substantially as and for the purposes set forth.

38. A non-inductive line, consisting of the combination of a line or cable divided into sections which will be practically free from inductive resistances in the proposed conditions; a sufficient number of sections having such proper lengths and properties arranged in inductive relation and in series; and suitable condensers connecting the adjacent ends of said sections into a line.

39. The combination of a condenser between two sections of a sectional line; a conductor connecting the two sides of said condenser; and suitable shunt resistance in said conductor, as set forth.

40. The combination of a sectional line consisting of non-inductive sections connected in series by condensers; a transmitting-condenser connected to the end of said line; and a transmitting or charging generator therefor, having its pole connected directly to the transmitting-condenser.

41. In a sectional line, the combination of non-inductive sections or conductors, and condensers connecting them in series, with capacities proportional to the predetermined line-current.

42. A sectional line consisting of the combination of sections or conductors; condensers connecting them in series; and total resistance in each section conforming to the standard section resistance of the line.

43. In a sectional line, the combination of standardized sections connected in series by standardized condensers, as set forth.

44. A line consisting of two or more conductors or sections connected in series by condensers, each of the sections having its resistances, capacities and electromotive forces coördinated or proportioned to conform

to a predetermined section standard, whereby the selected line-current can be transmitted successively over all of the sections.

45. The combination of a line or conductor divided into practically non-inductive sections; and condensers or equivalent devices between the adjacent terminals of the sections; and acting as inductive connections, which transmit electrical impulses through them by electric induction from each section to and over the adjacent sections in both directions.

46. The combination of a line or conductor divided into practically non-inductive sections; condensers or equivalent devices between the adjacent terminals of the sections, acting as inductive connections between them; conductors connecting the opposite poles or armatures of one or more of said condensers; and suitable resistances in said shunts which are high enough to prevent the passage of any current through them till the condensers are fully charged and ready to discharge, and which are then low enough to permit the opposite condenser charges to flow freely through them and neutralize each other therein—whereby discharge or return currents are prevented from flowing back over the line.

47. The combination of a main-line conductor divided into two or more non-inductive sections as described; and a series of condensers or equivalent devices inductively uniting the adjacent terminals of said sections.

48. The combination of a main-line conductor divided into two or more non-inductive sections such as described, and having approximately equal inductive capacities, or at least none of them exceeding the standard or proper section capacity for that line; and condensers or equivalent devices inductively connecting the adjacent terminals of said sections.

49. The combination of sections made short enough to be practically equal in freedom from inductive resistances, and without any earth connections between the terminal stations while operating; and suitable condensers or equivalent devices connecting said sections into a line, substantially as set forth.

50. The combination of sections made short enough to be practically equal and free from inductive resistances, and without any earth connections between the terminal stations while operating; suitable condensers or equivalent devices connecting said sections into a line; shunts around said condensers; containing suitable resistances such as described, but having no other branch circuits nor resistances in shunt with said condensers.

51. The combination of a line divided into practically non-inductive sections approximately equal in length, or at least in electrical and inductive resistances; and connected in series by the interposition at periodically-recurring points of condensers or equivalent devices, which receive impulses or signals on one side, and by electrical induction through them send equivalent impulses or signals from their other sides, to and over the adjacent sections in both directions.

52. The combination of a line divided into practically non-inductive sections approximately equal in electrical and inductive resistances, or at least none of the sections much exceed the standard or proper amount of section resistance for that line; connected in series by condensers or equivalent devices which receive and transmit currents through them by electrical induction, to and over the adjacent sections in both directions.

704,024. SINGLE-TRIGGER MECHANISM FOR FIREARMS. ELIJAH D. FELPORE, Utica, N. Y., assignor of one-half to J. H. Webster and Paul Korth, Cleveland, Ohio. Filed July 24, 1901. Serial No. 69,463. (No model.)

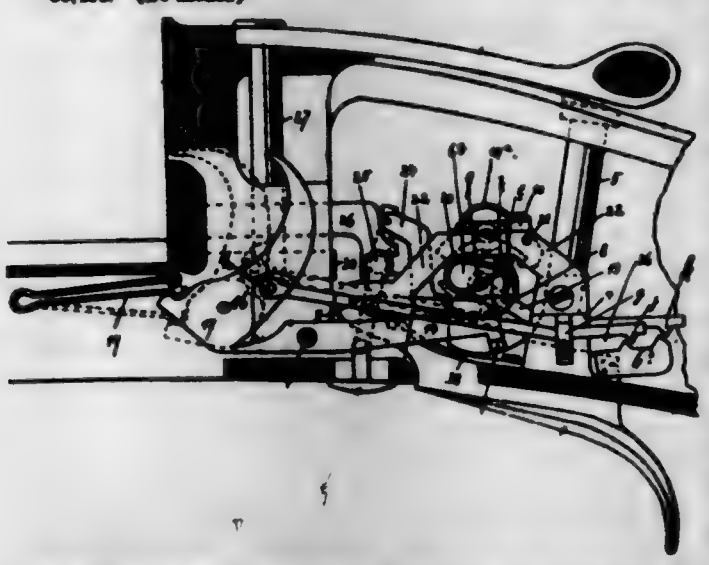

Claim.—1. In a single-trigger mechanism, the combination of a trigger, an escapement-wheel mounted on the trigger and sear-catches connected therewith, an escapement-anchor also mounted on the trigger and movable therewith and means for securing one end of the escapement-anchor whereby the same is operated in the movement of the trigger, substantially as set forth.

2. In a single-trigger mechanism for firearms, the combination of the trigger, a ratchet or escapement wheel mounted upon and movable with the trigger, adjustable sear-catches connected with and temporarily secured to said ratchet-wheel, an escapement-anchor mounted upon the trigger, means for holding one end of the escapement-anchor against play and means for resetting said sear-catches, substantially as set forth.

3. The combination in a single-trigger mechanism for firearms of the single trigger, a ratchet-wheel mounted thereon having catches for successively engaging the sears, an escapement-anchor mounted on the trigger, means for securing one end of said escapement-anchor from oscillating movement and means for resetting said ratchet-wheel and sear-catches, substantially as set forth.

4. In a single-trigger mechanism for firearms, the combination of the sear, the trigger, catches for successively engaging the sears mounted on the trigger, a ratchet-wheel controlling the movement of said catches, an escapement-anchor for said ratchet-wheel, a joint in said escapement-anchor and means for resetting said catches, substantially as set forth.

704,025. SINGLE TRIGGER FOR FIREARMS. ELIJAH D. FELPORE, Utica, N. Y., assignor of one-half to J. H. Webster and Paul Korth, Cleveland, Ohio. Filed Aug. 21, 1901. Serial No. 72,726. (No model.)

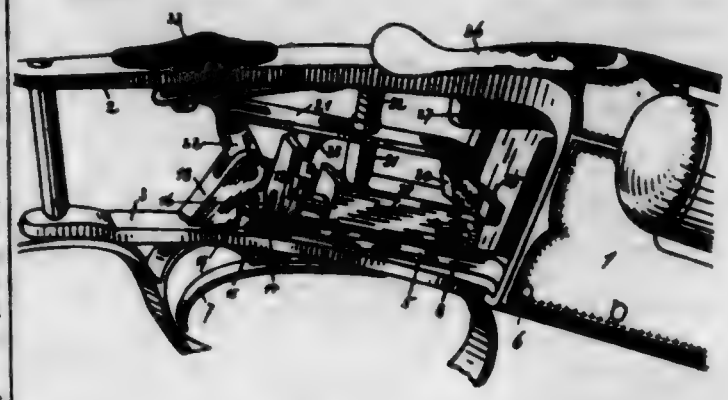

Claim.—1. In a single-trigger mechanism the combination of sears each having two points of engagement as between the sears and triggers, a trigger, an adjustable catch-piece on the trigger arranged to engage with one or the other of the sears at the first point of engagement, a movable catch arranged to engage with the second points of engagement of both sears, means for moving said catch and means for holding the same in check and releasing upon the first movement of the trigger substantially as set forth.

2. The combination in a single-trigger mechanism of the sears, the trigger having an adjustable catch-piece adapted to engage with one only at a time of the sears, a cylinder mounted on said trigger, a piston and spring in the cylinder, a movable catch attached to said piston and adapted to engage with the sears, means for moving said catches and piston, means for securing and releasing said catches upon the first movement of said trigger and means for resetting the parts substantially as set forth.

3. In a single-trigger mechanism, the combination of two sears, a trigger, a shifter-catch and a movable catch both mounted on the trigger and adapted to engage with the sears, means for adjusting the shifter-catch, an air-cushion for retarding the movement of and means for securing, releasing and resetting the movable catch, substantially as set forth.

4. In a single-trigger mechanism the combination with the frame-hammers and sears of a single trigger, having a cylinder, piston and operating-spring therefor mounted thereon, a movable catch connected with said piston for operating on the sears an adjustable catch also mounted on the trigger for engaging with the sears, a catch for securing the movable catch and parts in check and a resetting device substantially as set forth.

5. The combination with the sears and hammer of a firearm of a single trigger, having a cylinder-body and piston arranged thereon, a movable sear-catch connected with said piston, a catch for securing said parts in retracted position and a resetting mechanism consisting of a multiplying lever 20 adapted to be engaged by the catch-bar of the firearm, the connecting-bar 21 and the shoulder-piece 28 adapted to engage with movable catch mechanism substantially as set forth.

6. The combination in a single-trigger mechanism of the trigger and sears, a movable, primarily-disconnected catch between the trigger and sears, means for moving said catch into locking engagement with the sears, means for securing and for releasing said catch upon the first operation of the trigger and a cylinder and piston connected with said catch for retarding by an air cushion or pressure the movement of said catch, substantially as set forth.

704,026. CLOTHES-LINE SUPPORT. MEETHOSEH T. GORDON and FRANK DAVE, Stapleton, N. Y. Filed Jan. 3, 1902. Serial No. 88,201. (No model.)

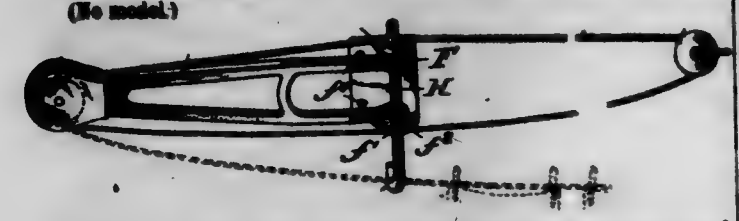

Claim.—1. The combination in a clothes-line support, with a stand adapted to be secured to the window-casing or other support and provided with an upper and an under ear projecting from its face, the under of which ears is equipped with an upwardly-extending notched flange, of a crane pivoted between such ears and not only adapted to engage with the notches in such flange, but constructed of a depth slightly less than that between the upper ear and the upper edge of this upwardly-extending flange on the under ear, substantially as described.

2. The combination in a clothes-line support, with a stand adapted to be secured to the side of a window or other support and provided with an upper and an under ear extending outward from its face, a crane carrying a pulley at its free end, a pivot by which this crane is pivoted between such ears provided with ends that extend both above and below these ears, a pole or other support provided with a second pulley, of an endless clothes-line extending over and from one of these pulleys to and over the other on the side of the pivot opposite to that toward which the crane will move when being swung from the interior of a flat or other apartment to the exterior thereof and means for locking the crane in adjusted positions, substantially as described.

704,027. PROCESS OF PURIFYING SUGAR-JUICES. HENRI GOUTHIÈRE, Paris, France, assignor to Gustav Edward Juntas, London, England. Filed May 7, 1901. Serial No. 59,079. (No specimens.)

Claim.—1. The process of purifying sugar-juice, which consists in treating it with ferric fluorid, substantially as described.

2. The process of purifying sugar-juice, which consists in treating it with ferric fluorid in the shape of a concentrated solution, substantially as described.

3. The process of purifying sugar-juice which consists in treating it with ferric fluorid and adding milk of lime.

4. The process of purifying sugar-juice which consists in treating it with a concentrated solution of ferric fluorid and adding milk of lime whereby calcium fluorid and hydrated ferric oxid are produced in a nascent state and act to purify and clarify the juice, substantially as described.

5. The process of purifying sugar-juice which consists in treating it with ferric fluorid, in adding milk of lime, and in then precipitating the iron as a phosphate, substantially as described.

704,028. AXLE-LUBRICATOR. RICHARD H. SOWAR, Corsicana, Tex. Filed Aug. 13, 1901. Serial No. 71,884. (No model.)

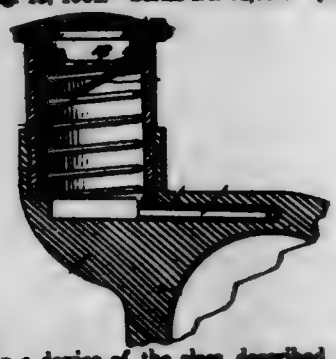

Claim.—1. In a device of the class described, the combination of an axle having an oil-passage extending to the bearing, an oil-cup arranged at the outer end of the passage, a depressible spring-supported plunger arranged within the oil-cup at the top thereof and adapted to be moved downward to force the oil through the oil-passage, said plunger being provided with an opening to permit the cup to be supplied with oil and having a valve arranged to cover the opening when the plunger is forced downward, substantially as described.

2. In a device of the class described, the combination of an axle provided with an oil-passage, an oil-cup, a spring-supported plunger arranged within the oil-cup at the top thereof and provided with an opening adapted to permit oil to be introduced into the oil-cup, and having an automatically-closing valve arranged to cover the opening when the plunger is depressed, substantially as described.

3. In a device of the class described, the combination of an axle having an oil-passage, an oil-cup, a plunger arranged within the oil-cup and having a cross-piece and provided at opposite sides thereof with openings, a valve arranged to close the openings when the plunger is depressed, and a coiled spring arranged beneath and supporting the plunger, substantially as described.

4. In a device of the class described, the combination of an axle having an oil-passage and provided with a socket, an oil-cup secured within the socket and provided at its top with a stop and having a lid closing the top of the cup and located above the stop, a plunger arranged within the oil-cup and provided with a valve, and a spring supporting the plunger in an elevated position and holding the same normally against the said stop, said stop limiting the upward movement of the plunger and preventing the same from raising the lid, substantially as described.

704,029. BICYCLE. OLIVER W. GRIFFITH, Brooklyn, N. Y. Filed May 14, 1896. Serial No. 591,506. (No model.)

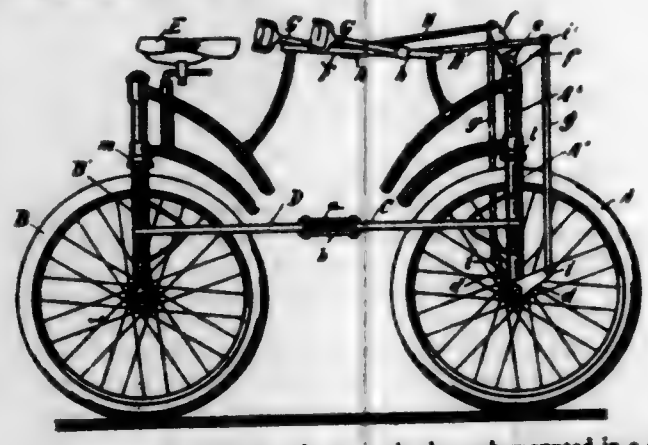

Claim.—1. In a bicycle, the two wheels, each mounted in a separate turning post at the extremity of the vehicle-frame, and two arcs connected by cross-links, *a*, *b*, one of which arcs is arranged to support the feet of the rider, substantially as explained, the turning of one arc with the feet compelling the turning of the other in the opposite direction, for the purpose of steering, the whole vehicle being arranged to be propelled by the hands and arms, for the objects set forth.

2. In a bicycle, the wheels mounted in turning posts located at the extremities of the vehicle-frame and the two arcs connected by cross-links, *a*, *b*, as explained, the forward wheel being arranged to be driven by the hands and arms of the rider from a shaft on the top of its post, said shaft being connected with the axle of the wheel, and the wheel-connecting arcs arranged to be moved simultaneously but in opposite direction by the feet of the rider supported on one of the said arcs, the whole being combined and arranged for operation substantially as and for the purposes set forth.

704,030. WINDMILL. LEVI A. HADLEY, Kansas City, Mo. Filed Feb. 6, 1902. Serial No. 92,948. (No model.)

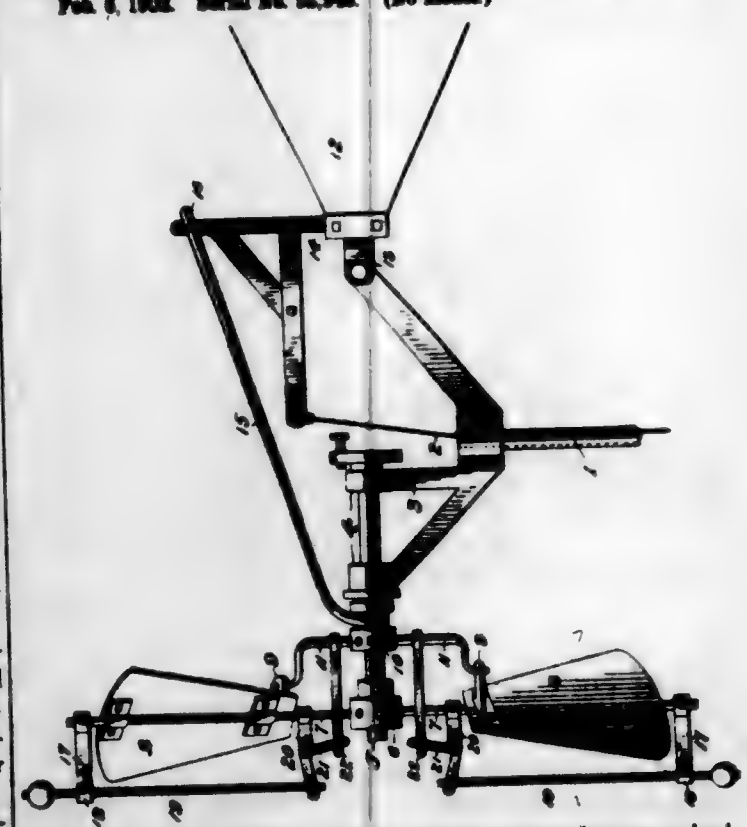

Claim.—In combination a frame, a shaft mounted thereon, a wheel mounted on said shaft, a sleeve on said shaft, weighted rods 19 and el-

bow-levers 21 attached to the sleeve by rods 22 whereby the centrifugal force of the weighted rods when operating to throw said weighted rods outward will pull the sleeve toward the hub of the wheel, and in combination the attachment of all the parts together to work in the manner and for the purpose substantially as described.

704,031. TREE-LIMB SUPPORT. SYLVESTER T. HALL, Riverside, Cal. Filed Sept. 12, 1901. Serial No. 75,226. (No model.)

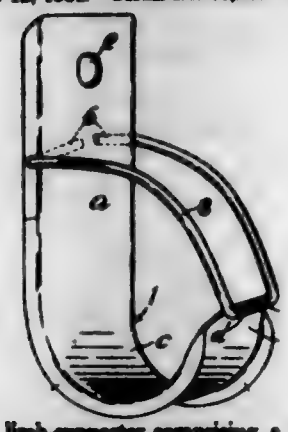

Claim.—1. A limb-supporter comprising a loop furnished with a broad limb-supporting portion and a tie-retaining spring-catch; and a tie pivoted to one member of the loop and constructed to extend across the loop and engage the catch.

2. A limb-supporter comprising a loop furnished with a broad limb-supporting portion and a tie-retaining spring-catch; and an arched tie pivoted to one member of the loop and constructed to engage the catch.

3. A limb-supporter comprising a sheet-metal loop furnished with a tie-retaining spring-catch and a tie pivoted to the loop and constructed to extend across the loop and engage the catch.

4. A limb-supporter comprising a sheet-metal loop bent at one end to form a catch; and a wire loop having free ends pivoted to the sheet-metal loop and having an end member to engage the catch.

5. A limb-supporter comprising a ribbed sheet-metal limb-supporting loop bent at one end to form a catch and a tie consisting in a wire loop having inbent ends inserted through the ribs of the limb-supporting loop.

6. A limb-supporter comprising a limb-supporting loop, one member of which is furnished with a catch, and a wire tie having inbent ends by which it is pivoted to the other member of the loop, one or both of said ends being deflected to afford means for manipulating the tie.

7. The combination of a sheet-metal loop furnished at the end of one member with a spring-catch; and a wire-loop tie constructed to engage the catch and pivoted to the other member of the sheet-metal loop.

8. The combination of a ribbed sheet-metal loop furnished at the end of one member with a spring-catch, and a loop-tie constructed to engage the catch, and pivoted to the other member and furnished at the pivot with means for manipulating the tie.

9. The combination of a loop furnished with a catch and a loop-tie constructed to extend across the loop and to engage the catch, and pivoted to the loop and furnished at the pivot with means by which to manipulate the tie.

10. A loop furnished with a catch and a loop-tie constructed to extend across the loop and to engage the catch, and being pivoted to the loop on the outer side thereof, and there provided with means for manipulating the tie.

704,032. ACETYLENE-GAS GENERATOR. ISAAC L. HARRIS, Jacksonville, Fla., assignor of one-half to Hugh Partridge, Jacksonville, Fla. Filed Aug. 31, 1901. Serial No. 74,007. (No model.)

Claim.—1. In an acetylene-gas generator, a generating-tank, a water-tank, a gas-bell in the latter, a gas-pipe leading from the generating-chamber to the gas-space of the bell, a cup-shaped valve situated in the generating-tank and having a body of water adapted to close and seal the lower end of said gas-passage, said valve being arranged immediately below the gas-pipe and adapted to receive its sealing-water from the overflow through said gas-pipe, and a dome or casing surrounding the lower end of the gas-pipe and serving to receive and guide the valve.

2. In an acetylene-gas generator, a generating-tank having a vent-pipe, a valve in said vent-pipe, an operating-lever for said valve, a water-tank above the generator, a gas-bell in the latter, a gas-pipe leading up through the water-tank from said generating-tank to the gas-space of the bell and having open upper and lower ends, a valve having a body of water adapted to close and seal the open lower end of said gas-pipe, and a rod connecting said operating-lever and sealing-valve for simultaneously opening the valve of the vent-pipe and closing the valve of the gas-pipe.

3. An acetylene-gas generator having a vent-valve and a sludge-discharge valve, in combination with a telescopic rod connecting said valves, the lower rod-section being connected to the sludge-valve and the upper to the vent-valve, whereby an opening movement of said vent-valve will release said sludge-valve, and a closing movement of the vent-valve will lock and close said sludge-valve.

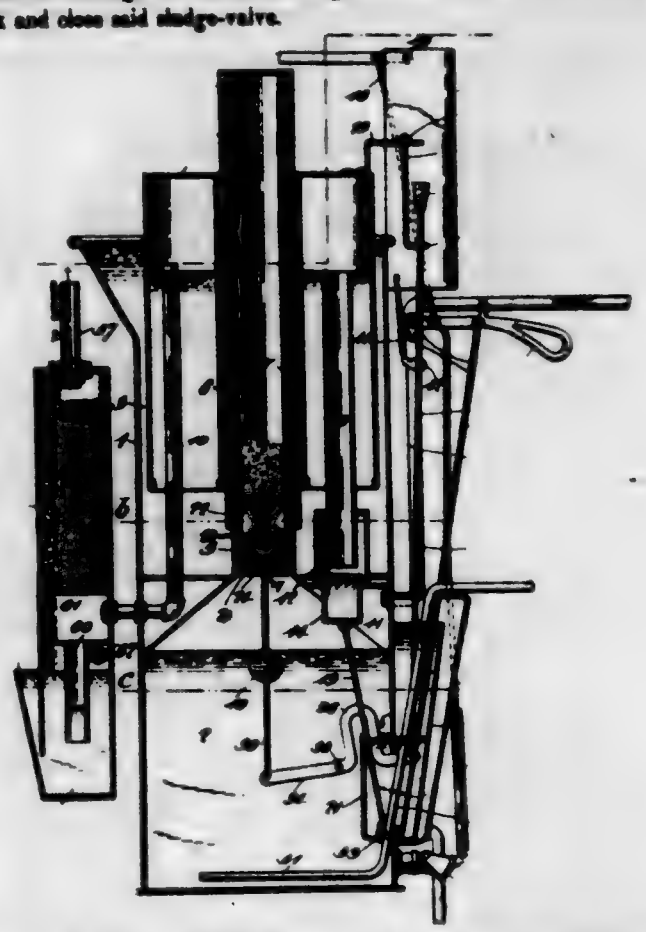

4. In an acetylene-gas generator, a gas-generating tank having a lower opening for the discharge of water and sludge, an overflow-spout arranged above said opening, a water seal formed by an open-top chamber communicating with the interior of the tank and with the spout on the exterior of said tank, the side wall of the tank being extended below the top of said chamber to form a water seal and the chamber serving to retain a quantity of water and thus prevent the escape of gas through the spout when the water and sludge are withdrawn through the lower discharge-opening.

5. In an acetylene-gas generator, the combination of the generator-tank having a valved vent-pipe, an operating-handle secured to said valve, a water-tank, a gas-bell situated therein and having a movable element, a carbid-magazine, a carbid-feed valve therefor, a valve-operating rod connected to the carbid-feed valve and mounted in operable relation to the movable element of the gas-bell, a weight normally maintaining said rod in operative position, and a finger or lug carried by the vent-valve lever and adapted to move said rod to inoperative position when the vent-valve is opened, substantially as specified.

6. In an acetylene-gas generator, the combination of a gas-bell, a carbid-feed valve, a trip-rod connected to the feed-valve, a tappet on the gas-bell adapted to depress said trip-rod when the bell descends and thereby open the carbid-feed valve, a weight normally acting to hold the trip-rod in operative relation to the tappet, means for moving said rod from operative position, a link depending from the tappet and having an eye surrounding and forming a guide for the trip-rod, said link being adapted to engage with the upper end of the trip-rod on the ascent of the gas-bell and thereby to lock said carbid-valve in closed position, substantially as specified.

704,033. SKIRT FACING AND BINDING. WILLIAM J. HAY, Oshkosh, Wis. Filed Nov. 5, 1900. Renewed May 29, 1902. Serial No. 108,482. (No model.)

Claim.—A skirt facing and binding, consisting of a facing-strip a separate supplemental strip looped around and secured to the lower edge of the facing-strip, with its outer face outermost, and which outer face is adapted to be of the same color as the skirt to which the facing and binding is attached, a binding-strip also arranged within the loop of the supplemental strip, the three members being stitched or secured together, and the binding-strip turned down and around the supplemental strip and finally brought around on the inner side of the facing-strip and secured to

said inner side, the completed facing and binding being adapted to be secured to the lower edge of a skirt on the inner side of the skirt, and with the roll projecting inwardly, laterally therefrom, the separate supplemental strip being of considerable thickness, and thereby forming a filling for the completed roll.

704,084. CARBURETER. WILLIAM S. HEAD and GEORGE J. DOVEY, Latrobe, Pa. Filed Apr. 9, 1902. Serial No. 101,961. (No model.)

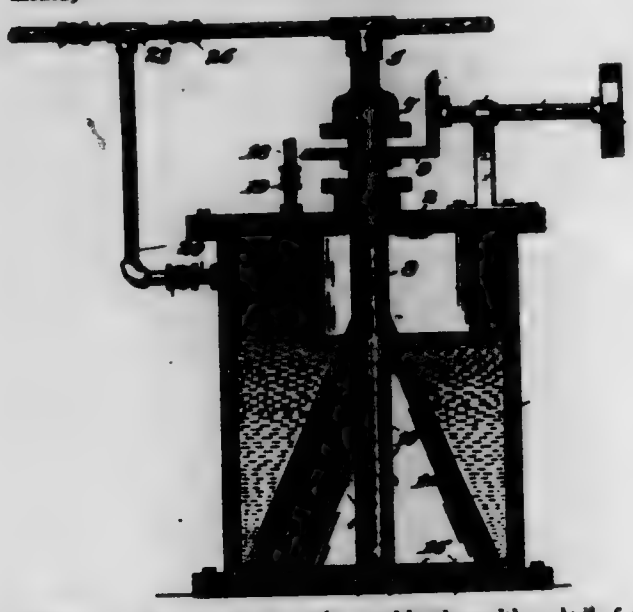

Claim.—1. In a gas-machine, the combination with a shell of a revolving air-shaft carried therein provided with perforations therein, a cone carried on said shaft, a perforated bottom on said cone, means for admitting air to said revolving shaft, and means for conducting the carbureted air from the machine.

2. In a gas-machine the combination with a shell of an air-pipe, a gas-line leading from said shell a pipe connecting said air-pipe and gas-line, a revolving perforated air-shaft, a cone carried thereon and provided with a perforated bottom.

704,085. FENCE-POST. ALBERT HENRY, Nebraska City, Nebr. Filed Aug. 13, 1901. Serial No. 71,959. (No model.)

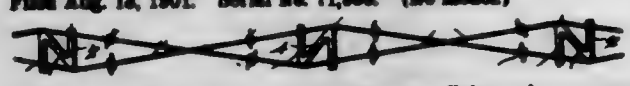

Claim.—1. A fence-post comprising two parallel members connected by a diagonally-disposed web, the members being rounded at their point of juncture with the web, and provided, adjacent to their edges, with wire-openings disposed approximately in line with the crest of the rounded corners.

2. A fence-post comprising two parallel members connected by a diagonally-disposed web, the members being rounded at their point of juncture with the web, and provided adjacent to their edges with wire-openings disposed approximately in line with the crest of the rounded corners, and with oblique slits entering the openings.

3. A fence composed of a plurality of fence-posts each comprising two members connected by a diagonally-disposed web, the members having rounded corners, and provided adjacent their edges with wire-openings disposed approximately in line with the crest of the said corners, and fence-wires alternately engaging the openings in the members, in zigzag order, all substantially as and for the purpose specified.

4. A fence-post, comprising two parallel members connected by a diagonally-disposed web, the members being rounded at their point of juncture with the web, and provided adjacent to their edges with wire-openings disposed approximately in line with the crest of the rounded corners and with oblique slits entering the openings, the lower end of each member being beveled or cut away to present, in conjunction with the web, a chisel-point, substantially as and for the purpose specified.

704,086. PROCESS OF SEPARATING ALKALI-METAL SULFATES FROM MIXED SOLUTIONS. CARL HOEPFNER, Frankfort-on-the-Main, Germany; Henry Orth, Jr., administrator of said Hoepfner, deceased. Filed Sept. 27, 1899. Serial No. 731,353. (No specimens.)

Claim.—1. The method of separating alkaline sulfates from mixed solutions, which consists in rapidly cooling the same by allowing them to flow into a cold solution of a suitable chlorid, thereby preventing the formation of double salts, substantially as set forth.

2. The method of separating alkaline sulfates from mixed solutions, which consists in rapidly cooling the same by allowing them to flow into a suitable cold chlorid solution while being constantly stirred, substantially as set forth.

3. The method of separating alkali-metal sulfates from mixed solutions of high concentration, which consists in rapidly cooling the same by allowing them to flow into a cold solution of a suitable chlorid while being constantly stirred, substantially as set forth.

4. The method of separating alkaline sulfates from mixed solutions, which consists in rapidly cooling the same by allowing them to flow into a cold solution of a chlorid while being constantly stirred, using the resulting cold solution to reduce the temperature of cooling-gases used in the refrigerating plant, substantially as set forth.

704,087. LOCOMOTIVE SANDING DEVICE. JOHN C. HOOVER, Baltimore, Md., assignor to Boonsboro Locomotive Sander Company, Baltimore, Md., a Corporation of Maryland. Filed Mar. 6, 1902. Serial No. 96,533. (No model.)

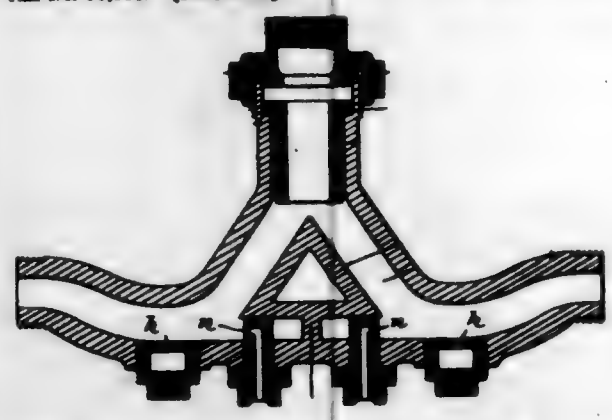

Claim.—1. A sanding device consisting essentially of an integral casing containing an initial vertically-arranged tubular inlet-passage, having an enlarged diameter at its mouth end, an adjustable sleeve in said passage supported between the two diameters thereof, a tubular coupling-nut and an annular coupling-ring, a downwardly-inclined passage leading from the base of the inlet-passage, an air-blast nozzle below the same, in the base of the casing, a shield over the same, and a substantially horizontal tubular discharge-passage communicating with the inclined passage at its lower end, and arranged in alinement with the direction of discharge from the air-nozzle.

2. A sanding device consisting essentially of an integral casing containing an initial vertically-arranged tubular inlet-passage, a downwardly-inclined passage leading therefrom, an air-blast nozzle below the same, in the base of the casing, a shield over the same, and a tubular discharge-passage communicating with the inclined passage at its lower end and slightly curved upward, said air-nozzle being arranged to discharge an air-blast in the direction of the flow of sand through the curved discharge-passage.

3. A sanding device consisting essentially of an integral casing containing an initial vertically-arranged tubular inlet-passage, means to connect sand-delivery tubes therewith, means to adjustably change the size of the passage, a downwardly-inclined passage leading from said initial inlet, an air-blast nozzle below the inclined passage in the base of the casing, a shield over the same, and a tubular discharge-passage slightly curved upward communicating with the inclined passage at its lower end, and arranged in substantial alinement with the direction of discharge from the air-nozzle.

4. In combination with a sand-dome having a discharge-pipe, of a sanding device into which sand is fed by gravity, said sanding device consisting essentially of a vertical tubular inlet and downwardly-inclined passage leading therefrom, a horizontally-disposed tubular discharge-passage leading from the base of the inclined passage and slightly curved upward toward its discharge end, an air-blast nozzle arranged and adapted to discharge at the rear of and in alinement with the tubular discharge-chamber, and a shield over said air-blast nozzle adapted to deflect therefrom the flow of sand through the inclined passage and direct it wholly against the body of sand in the discharge-chamber.

5. A sanding device consisting essentially of a hollow casing having at top an initial tubular sand-inlet, and at base a horizontally-disposed tubular sand-discharge passage, a wall at the interior base of the casing, and a shield supported thereon, said shield having a flat base and a vertically-inclined side at the top thereof in alinement with the said inlet, forming by such construction and combination of said elements an inclined sand-passage leading from the sand-inlet to the sand-discharge, and also forming thereby an air-chamber in alinement with said sand-discharge; and an air-nozzle within said chamber discharging outwardly; substantially as described.

6. A sanding device consisting essentially of an integral hollow casing having at top an initial vertically-arranged tubular inlet-passage for sand,

and two oppositely-disposed tubular sand-discharge passages leading from the base of the casing, a shield having a flat base and opposite inclined sides centrally disposed within the casing and with its apex in alinement with the initial sand-passage, thereby forming two oppositely disposed inclined passages leading from the initial sand-inlet to the respective sand-discharge passages, a partition-wall supporting said shield above the base of the casing in such manner as to form separate chambers, and an air-blast nipple in each of said chambers arranged to discharge in alinement with the adjacent tubular sand-discharge passage of the casing; substantially as described.

704,088. FAN-CASE FOR BLAST-FANS. JOHN T. HOPE, Kansas City, Mo. Filed June 28, 1901. Serial No. 66,376. (No model.)

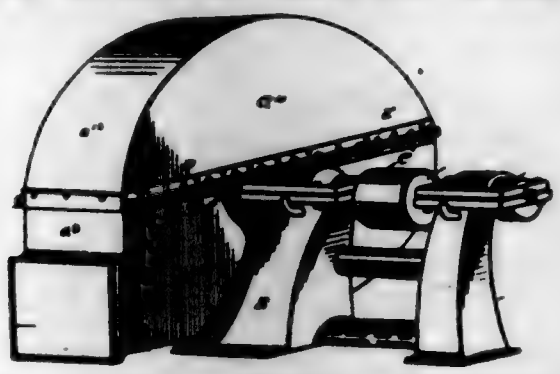

Claim.—1. A fan-case comprising a lower sectional part and a shaft extending through one side thereof and an upper sectional part of said case separable transversely to the case upon a line above the plane of said shaft, angle-plates upon the side of said case through which said shaft extends and near the line of separation of said upper and lower sectional parts one of which angle-plates extends from one end of said case to the other and suitable fastening devices for said angle-plates substantially as described.

2. A fan-case comprising a lower sectional part and a shaft extending through one side thereof, and a support for said shaft adjacent to said side an upper sectional part of said case separable transversely to the case upon a line above the plane of said shaft, angle-plates upon the side of said case through which the shaft extends and near the line of separation of said upper and lower sectional parts, one of which angle-plates extends from one end of said case to the other end, fastening devices for said angle-plates and a lug on the support for said shaft beneath said angle-plates.

3. In a fan-case comprising a lower sectional part and an upper sectional part the combination of angle-plates upon the sides of said sectional parts at the line of separation of said upper and lower parts, devices for securing said plates together and separate air-excluding plates connected with the ends of one of said sectional parts in position to engage with the other when the parts are brought together.

704,089. COAL-PICK. FERDINAND HOKE, Coshocton, Ohio. Filed Sept. 17, 1900. Serial No. 30,296. (No model.)

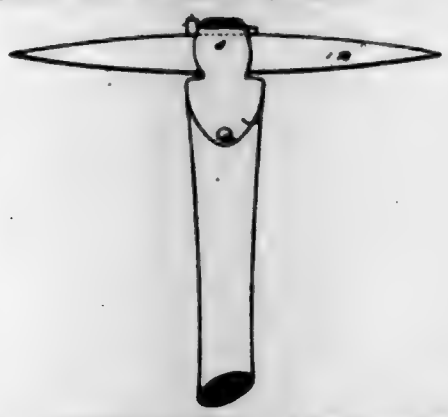

Claim.—A coal-pick comprising a helve-socket provided with an eye having its lower wall reduced in width to present a shoulder, a pick having a recess to engage the shoulder, and a solid key firmly bearing against the pick and the walls of the eye and constituting a non-yielding surface which will operate to prevent vibration of the pick, in the eye, under impact, one end of the key being provided with a step and the other end with laterally-projecting members disposed exteriorly of the eye and operating positively to hold the key against accidental separation therefrom.

704,040. GLASS-TANK. LEE HOUSE, Hartford City, Ind. Filed Mar. 29, 1901. Serial No. 53,377. (No model.)

Claim.—1. The combination with a melting-tank, of a cooling-pipe within the tank consisting of an outer shell having an outlet adjacent one of its ends and both of its ends closed, a stud extending inwardly from the closed end of the shell farthest away from the outlet, an inlet-pipe extending into the shell through the end nearest the outlet, the inner end of the inlet-pipe being secured to and supported by the stud and provided with a series of perforations adjacent its inner end.

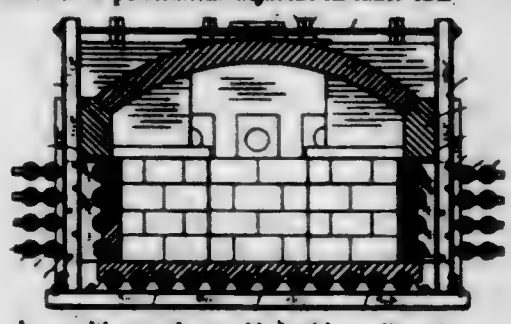

2. A glass-melting tank provided with cooling-pipes, supporting-bars on the outside of the furnace, a plate secured to the bars and provided with semicircular grooves, and bricks on the interior of the furnace also provided with semicircular grooves registering with the grooves in the plate the cooling-pipes being located in the grooves in the plate and bricks.

704,041. COMBINED VELOCIPEDE AND WAGON. REBIA L. HOY, Lovey, Iowa, assignor of one-half to Charles Ridgway, Lovey, Iowa. Filed Jan. 27, 1902. Serial No. 91,304. (No model.)

Claim.—In a combined velocipede and wagon, the combination with a wagon-body having rear supporting-wheels, and a velocipede having a front steering-wheel; of an axle removably mounted to swing upon the front end of the wagon-body and removably secured to the rear end of the velocipede, and interchangeable as a common support for both or independent support for either, whereby the parts may be connected up to form the combined velocipede and wagon or the axle removed from one and used upon the other to form a complete velocipede or a complete wagon, substantially as set forth.

704,042. SKIRT-RETAINER. MARY C. HUFFMAN, Boston, Mass. Filed May 15, 1899. Serial No. 716,808. (No model.)

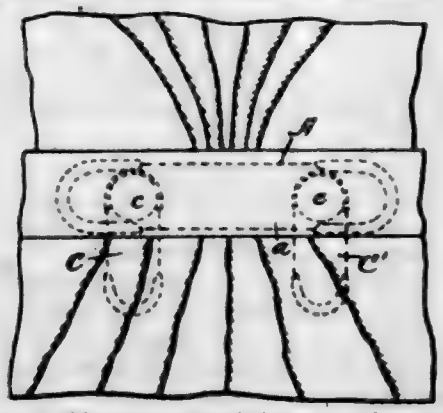

Claim.—1. A skirt-supporter and placket-opening retainer comprising a flexible strip adapted to be sewed or otherwise secured to a belt or skirt-waist at the waist-line in a horizontal position said strip having parts of separable fasteners secured thereto with the separable fasteners one on either side of the line of the skirt-opening or placket; and two vertically-disposed flexible strips having the companion parts of said separable fasteners secured to their upper ends for engagement with the fastener members on said horizontally-placed strip, said vertically-disposed strips being adapted to be secured at their lower ends to a skirt below the waistband, one on either side of the placket-opening.

2. A skirt-supporter and placket-opening retainer comprising a flexible strip A adapted to be attached in a horizontal position to a belt or other article of apparel at the waist-line, said strip A having parts B, B' of separable fasteners secured thereto, one on either side of the line of the skirt-opening or placket; two flexible strips C, C', provided at their lower ends with a detachable fastening device by which they may be secured in a vertical position to a skirt at points just below the waistband

thereof, one on either side of the skirt-opening or placket; the companion parts *c*, *c*, of said separable fasteners secured to the upper ends of said vertically-disposed strips C, C' for engagement with the said fastener members B, B', whereby the said strips C, C' may be separably connected to the strip A, the skirt upheld, the placket-opening maintained in closed position, and strain upon and sagging of the waistband prevented.

704,048. HEATER. ALFRED H. HUMPHREY, Kalamazoo, Mich., assignor to Herbert S. Humphrey, Kalamazoo, Mich. Filed July 13, 1898. Renewed Dec. 30, 1901. Serial No. 87,892. (No model.)

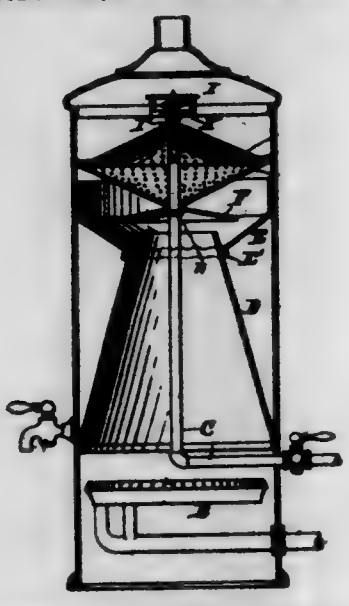

Claim.—1. In a water-heater, the combination of a casing; a plurality of perforated cones mounted one upon another within the casing forming a complete partition therein and adapted to guide and finely divide the water fed to the same so as to seal or partially seal said perforations; devices for feeding the water to said cones in a finely-divided state; and means for introducing heated gases into said casing below said cones, whereby said gases are caused to pass upwardly through said perforations and break the film of water formed over the same, for the purpose specified.

2. In a water-heater, the combination of a casing; a perforated cone within the casing adapted to finely divide the water fed to the same so as to seal or partially seal said perforations; devices for feeding the water to said cone near its top in a finely-divided state; and means for introducing heated gases into said casing below said cone, whereby said gases are caused to pass upwardly through said perforations and break the film of water formed over the same, for the purpose specified.

704,044. SIDE BEARING FOR RAILWAY-CARS. CHARLES F. HUNTOON, Chicago, Ill., assignor to the Chicago Railway Equipment Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 23, 1902. Serial No. 104,231. (No model.)

Claim.—1. In a side bearing for railway-cars, the combination with spring-posts, of a casting supported upon the upper ends of said posts, and antifriction devices arranged in said casting for supporting the load imparted thereto; substantially as described.

2. In a side bearing for railway-cars, the combination with spring-posts, of a casting carried by the upper ends thereof, antifriction devices arranged in said casting and capable of vertical and lateral contact, and means carried by the car-body for coöperating with said antifriction devices; substantially as described.

3. In a side bearing for railway-cars, the combination with suitable supports, of a casting, rollers mounted within said casting and protruding through the upper wall thereof, and rollers mounted at the sides of the casting for lateral contact; substantially as described.

4. In a side bearing for railway-cars, the combination with a casting, of rollers housed within the casting and protruding through the top wall thereof, perforated lugs or ears projecting from the side of the casting, and rollers mounted between said lugs or ears; substantially as described.

5. In a side bearing for railway-cars, the combination with a casting, of antifriction devices carried thereby and capable of vertical and lateral contact, and angular projections at the ends of the casting, said projections being provided with sockets for receiving the ends of supporting-posts; substantially as described.

6. In a side bearing for railway-cars, the combination with spring-supporting posts, of a casting carried by the upper ends of said posts, rollers mounted in said casting and rotating about horizontal and vertical axes respectively, and an angle-iron on the car-body whose horizontal leg coöperates with one set of rollers and whose vertical leg coöperates with the other set of rollers.

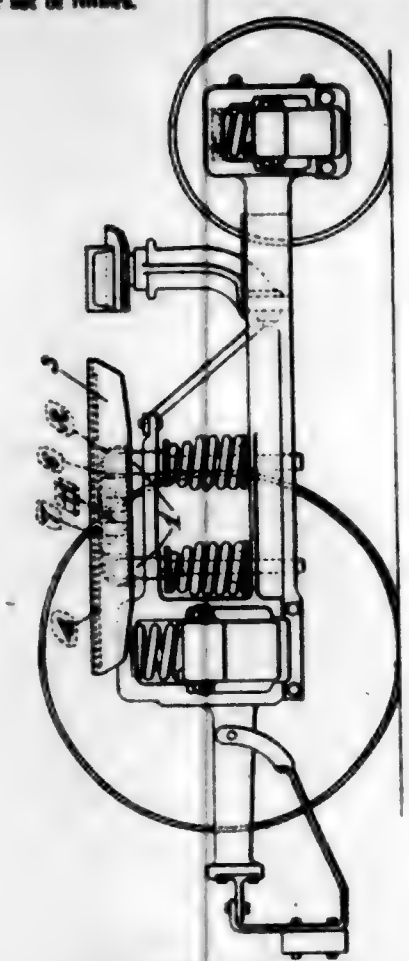

704,045. APPARATUS FOR CLEANING THE INTERIOR OF HOSE OR LIKE PIPES. SVEN HYDÉN and KNUT A. SIEGBAHN, Stockholm, Sweden. Filed May 8, 1901. Serial No. 59,204. (No model.)

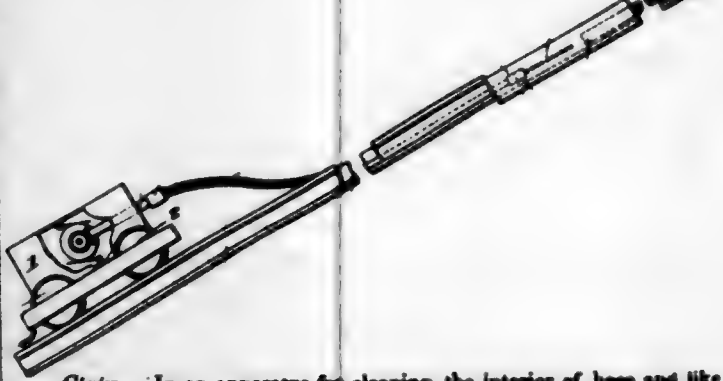

Claim.—In an apparatus for cleaning the interior of hose and like pipes, a motor, a carriage supporting the same and adapted to travel on rails or other guideways, a shaft operatively connected with said motor, a transmission-shaft of coiled wire coupled to said shaft, and a brush coupled to the end of the transmission-shaft, trough to receive the hose to be cleaned, and means for supplying water to said trough, substantially as shown and described.

704,046. POTATO-DIGGER. JOHN L. IRVERSOLL, Mayville, Mich. Filed Feb. 28, 1902. Serial No. 96,165. (No model.)

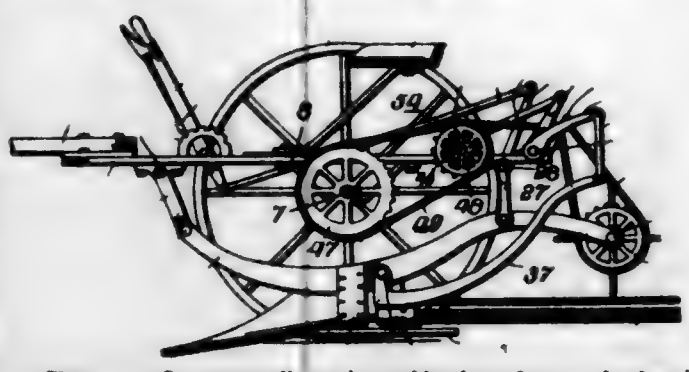

Claim.—1. In a potato-digger, in combination, a frame and a shovel, and means to support and vertically adjust the shovel comprising hori-

zontally-disposed bars to and between which the shovel is attached, said bars having at their front ends connecting-links to the frame, and levers fulcrumed on the frame and connected to the bars rearward of the shovel to adjustably elevate the same.

2. The combination with a wheeled frame, of bars linked at their forward ends to the frame at each side thereof, a shovel secured to and between the bars, bent vibrating levers pivoted to the bars, a screen suspended from the levers behind the shovel, and a revolving tedder journaled in the bars and extending across above the screen.

704,047. SOUND RECORDING AND REPRODUCING DEVICE. ELDRIDGE R. JOHNSON, Philadelphia, Pa. Filed Nov. 2, 1900. Serial No. 35,193. (No model.)

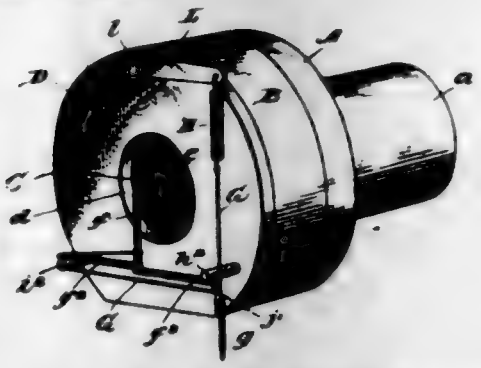

Claim.—1. In a sound-recording apparatus, the combination with the sound-box frame having a diaphragm located therein, of a horizontally-disposed stylus-bar having an arm perpendicularly disposed and connected with the diaphragm, knife-edge bearings on the under side of the horizontally-disposed bar at one end and on the upper side at the opposite end, and means for maintaining the said stylus-bar in contact with its bearings, for the purpose described.

2. In a sound-recording apparatus, the combination with the sound-box frame, of a diaphragm located therein, a horizontally-disposed stylus-bar having a central arm connecting with the diaphragm, supports carried by the sound-box frame extending under one end of the stylus-bar and above the opposite end, knife-edges carried by the under and upper ends of the stylus-bar respectively adapted to bear against the supports and means for keeping the stylus-bar in contact with its bearings, substantially as described.

3. In a sound-recording apparatus, the combination with the sound-box frame, a diaphragm located therein, a horizontally-disposed arm connecting the stylus-bar with the diaphragm, knife-edge bearings located at each end of the stylus-bar on its upper and lower sides respectively, studs carried by the sound-box frame against which the knife-edges bear, and a cord secured to the central arm of the stylus-bar bearing against one end of the horizontal bar and passing under its supporting-stud and through an opening provided in the opposite end of the same, the end of said cord being yieldingly secured to the sound-box frame, substantially as described.

4. In a sound recording and reproducing apparatus, the combination with the sound-box frame, of a diaphragm, a horizontally-disposed stylus-bar, a central arm for said bar having a connection with the diaphragm, studs arranged below one end and above the other end of the stylus-bar, knife-edges adapted to bear against the said studs, a cord secured to the stylus-bar and passing under each of its bearings, a spring secured to the other end of said cord and means for adjusting the tension of said spring, substantially as described.

5. The combination with the sound-box frame, of a diaphragm located therein, a T-shaped stylus-bar having its vertical arm secured to the diaphragm, a pair of studs secured to the sound-box frame, extending under the stylus-bar at one end and above the same at the other end, V-shaped notches formed in said studs, knife-edges carried by the lower side of the bar at one end and the upper side at the opposite end, a cord secured to the stylus-bar and passing under each of its bearings for keeping the said bearings in contact with the studs, a yielding spring connecting the end of the cord, and an adjustable arm secured to the sound-box to which the free end of the spring is connected, substantially as described.

6. The combination with the sound-box casing, of a diaphragm located therein, a T-shaped stylus-bar having its vertical arm connected to the diaphragm, a stud, i^3, extending under one end of the stylus-bar, a knife-edge carried by the lower side of the stylus-bar adapted to a V-shaped groove in the stud, a stud, h^3, located above the other end of the stylus-arm, a knife-edge carried by the upper side of the stylus-bar adapted to a V-shaped groove provided in the stud, a cord, G, secured to the stylus-bar passing over the end of same and under the stud, i^3, said cord passing through an eye formed in the opposite end of the stylus-bar and passing upwardly against the stud, h^3, a coiled spring secured to the upper end of the cord, an arm, L, carried by the sound-box frame supporting the coiled spring at its free end, and a set-screw, *l*, for adjusting the said arm, substantially as described.

704,048. BALE-TIE. WILLIAM T. JOHNSON, Sylvan, Tex. Filed Apr. 22, 1902. Serial No. 104,160. (No model.)

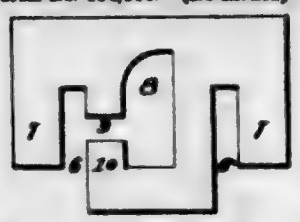

Claim.—A bale-tie comprising a buckle-plate having a middle portion with an opening therein, arms at each end separated from the middle portion by spaces open at one side, a longitudinal entering-passage connecting the opening with one of said spaces, and a hoop the free ends of which are looped down through said opening and up through the spaces, resting upon the arms under the standing part of the hoop.

704,049. HORSESHOE-MACHINE. MICHAEL J. KELLY, Troy, N. Y. Filed Nov. 20, 1900. Serial No. 37,114. (No model.)

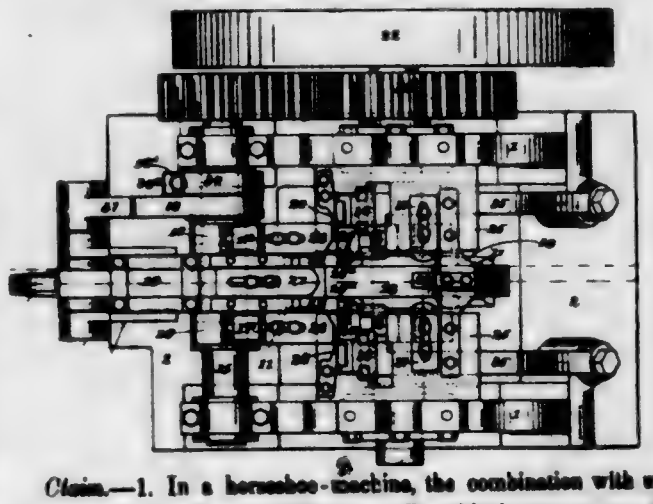

Claim.—1. In a horseshoe-machine, the combination with upper and lower rotating dies, of stationary anvils, a blank-support, a reciprocating bar provided with a bending-tongue, and means for operating said reciprocating bar and dies, substantially as shown and described.

2. In a horseshoe-machine, the combination with upper and lower rotating dies, of a blank-support, stationary anvils, swaging-blocks secured to oscillating levers, a reciprocating bar provided with a bending-tongue, and means for operating said dies, reciprocating bar and swaging-blocks, substantially as shown and described.

3. In a horseshoe-machine, the combination with a rotating die-wheel having frog-form dies provided with a longitudinal groove, of an upper die mounted upon a rotating shaft, a reciprocating arm provided with a bending-tongue and a longitudinal rib adapted to engage the groove of said dies, stationary anvils and means for operating said dies and bar, substantially as shown and described.

4. In a horseshoe-machine, the combination with upper and lower rotating dies, of a blank-support, stationary anvils, a reciprocating bar provided with a bending-tongue, a cam adjustably mounted upon a rotating shaft, and an oscillating shaft provided with an upper lever adapted to bear against said reciprocating bar and a lower lever adapted to engage said adjustable cam, substantially as shown and described.

5. In a horseshoe-machine, the combination with upper and lower rotating dies, of a blank-support, stationary anvils, a reciprocating bar provided with a bending-tongue, a collar or hub rigidly secured to a rotating shaft, a cam loosely mounted upon said shaft and adjustably secured to said hub, an oscillating shaft provided with the levers adapted to engage said cam and reciprocating bar, substantially as shown and described.

6. In a horseshoe-machine, the combination with upper and lower rotating dies, of a blank-support, stationary anvils, a reciprocating bar provided with a bending-tongue, means for moving said bar forwardly and a segmental collar mounted upon a rotating shaft adapted to bear against said bar and move it backwardly, substantially as shown and described.

7. In a horseshoe-machine, the combination with a main die-wheel provided with frog-form dies, of an upper die mounted upon a rotating shaft, stationary anvils and a reciprocating arm provided with a bending-tongue movable in a line tangential to said die-wheel, substantially as shown and described.

8. In a horseshoe-machine, the combination with a main die-wheel provided with frog-form dies, of an upper die mounted upon a rotating

shaft, stationary anvils, a reciprocating bar provided with a bending-tongue having a slow forward movement by means of upper and lower levers mounted on an oscillating shaft and a cam mounted upon a rotating shaft, and a quicker return movement by means of a segmental collar mounted upon said rotating shaft and provided with a shoulder, substantially as shown and described.

9. In a horseshoe-machine, the combination with upper and lower rotating dies, of stationary anvils provided with curved ends and flanges projected horizontally from their upper surfaces, a blank-support, a reciprocating bar provided with a bending-tongue, and means for operating said reciprocating bar, substantially as shown and described.

10. In a horseshoe-machine, the combination with a die-wheel provided with frog-form dies having a longitudinal recess in the frog of each die, a reciprocating tongue having a rib adapted to engage the recess of said dies, stationary anvils and means for moving said reciprocating tongue inward and outward, substantially as shown and described.

11. In a horseshoe-machine, the combination with upper and lower rotating dies, of stationary anvils, a blank-support, a reciprocating bar provided with a bending-tongue, means for operating said reciprocating bar, and heel-swagers, cams secured to a rotating shaft arranged to operate said swagers in advance of the movement of said bar, substantially as shown and described.

704,050. TORPEDO AND MEANS FOR PROPELLING SAME. ALEXANDER KLEMIN, Silverton, Colo. Filed Oct. 12, 1901. Serial No. 78,478. (No model.)

Claim.—1. Means for propelling and controlling a torpedo comprising a vessel equipped with a propeller; a float or shell connected with said vessel and also provided with a propeller; a float supported above said float or shell; a torpedo connected to the forward end of said float or shell and suspended from a float.

2. Means for propelling and controlling a torpedo comprising a vessel equipped with a propeller; conning-tower rising from said vessel and formed with a sight-opening; a float or shell secured to the vessel; and also provided with a propeller; a float supported above said float or shell and provided with a projecting sight; a torpedo secured to the forward end of said float or shell; and a float supported above the torpedo and provided with a projecting sight.

3. Means for propelling and controlling a submarine torpedo comprising a vessel equipped with a propeller, a turret formed with a sight-opening, an air-pipe; a float or shell having a propeller and secured detachably to the vessel, a float supported above the shell, a torpedo secured to the front end of said shell, and a float supported above the torpedo.

704,051. STOVE. EDWARD J. LAHAM, Quincy, Ill. Filed Dec. 14, 1901. Serial No. 86,048. (No model.)

Claim.—1. A stove provided with a magazine having near the upper end of its rear portion a plurality of gas-escape openings, a main back flue having its inlet end disposed below the said openings, and means for supplying a constant current of air to the upper portion of the said flue thereby to draw gases out of the magazine through the said openings and to set up secondary combustion within the said flue to increase the draft of the stove.

2. A stove having a magazine provided at its top with a damper, and having at its rear a plurality of gas-escape openings, a main back flue having its inner wall terminating short of the magazine, and an air-intake flue entering the main back flue near its top and operating to withdraw gases from the magazine.

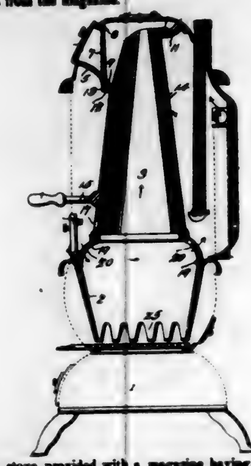

3. A stove provided with a magazine having gas-escape openings near the upper end of its rear side and operating normally to withdraw gases from the magazine, a main back flue having its intake end disposed near the fire-pot, and a damper arranged above or near the magazine and operating, when opened, to drive the gases downward into the fire-pot.

4. A stove provided with a magazine supported for rotary movement therein and having its rear wall extended to a point near the top of the stove and provided with gas-escape openings, a feed-door, a gravity-controlled door normally closing the inlet to the magazine, and a main back flue having its inlet end disposed below the gas-escape openings.

5. A stove provided with a magazine supported for rotary movement about a vertical axis, a fire-pot, a circle grate arranged between the lower end of the magazine and the fire-pot and operating to prevent fuel from contacting with the drum, and a main back flue having its inner wall disposed adjacent to the circle grate.

6. A stove provided with a magazine, circle grate, and fire-pot, combined with a main back flue, the inner wall of which terminates short of the bottom of the magazine, and an air-supply pipe entering the back flue near its top.

704,052. COMBINED TOBACCO BOX AND CUTTER. FRANK LAPORTE and LOUIS RAPPERT, St. Louis, Mo. Filed Mar. 24, 1902. Serial No. 99,567. (No model.)

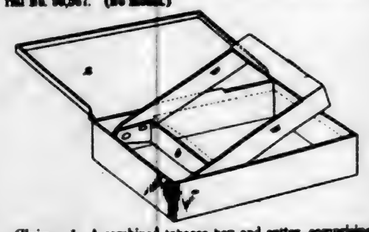

Claim.—1. A combined tobacco box and cutter, comprising a box, a frame composed of two sides and a cross-bar, a knife-blade carried by the sides of said frame and extending across and in the box, said frame pivoted at its ends to the inner sides of the box, and a cover for concealing the contents of said box, substantially as specified.

2. A combined tobacco box and cutter, comprising a box, a pivoted lid therefor, a frame composed of two sides and a cross-bar pivotally mounted within the box, and a knife-blade carried by the sides of the frame at an inclined angle; said frame being adapted to fit within the box so that the lid may inclose the frame within the box.

704,053. NUT-LOCK. GEORGE H. LAING, Havelock, Canada. Filed Oct. 4, 1901. Serial No. 77,560. (No model.)

Claim.—A nut-lock comprising a base-plate through which the bolts of the nuts to be locked, pass, and against which the nuts are jammed, a locking-bar provided with a suitable number of recesses, the sides of said recesses being provided with flanges which are designed to engage the sides of the nuts to be locked and lock the same, the lower corners of said recesses being rounded, and links connecting said locking-bar to said base-plate, as and for the purpose specified.

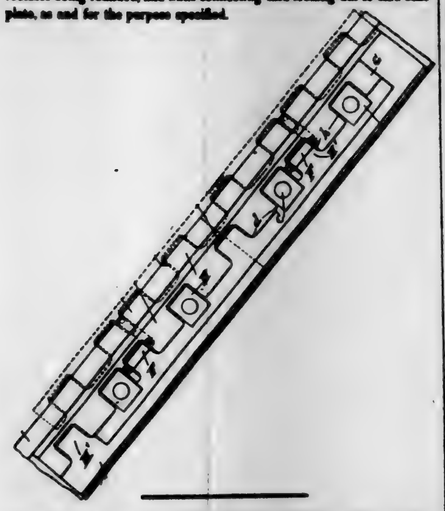

704,054. CONDENSING PUMPING-ENGINE. FRANK H. LEAVITT, Brooklyn, N. Y., assignor to the R. W. Hunt Company, Brooklyn, N. Y., a Corporation of West Virginia. Filed June 3, 1899. Serial No. 719,226. (No model.)

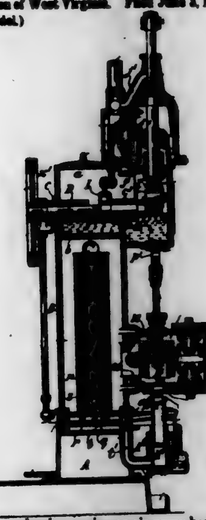

Claim.—1. In a condensing-engine, an air-pump having a discharge-port, a suction-passage terminating adjacent to said port, a slide-valve adapted to connect said discharge-port with said suction-passage, whereby to place the latter in communication with the pump-cylinder, and adapted to open said discharge-port to permit discharge from said cylinder, and a water-chamber inclosing said valve and receiving the discharge from said cylinder, whereby the water discharged from said cylinder forms a seal for said valve.

2. In a condensing-engine, a standard, formed with an exhaust-passage, a pump-cylinder fitting said standard and formed with a continuation of said passage, and a water-chamber surrounding said cylinder and sealing the joint between said passages.

3. In a condensing-engine, an air-pump cylinder having an annular internal water-groove against its plunger, and a water-chamber surrounding said cylinder and in communication with said groove, adapted to keep said groove filled with water to constitute a water seal around the plunger.

4. In a condensing pumping-engine, the steam-cylinder, water-pump cylinder and air-pump cylinder arranged in line, cross-heads connected to the steam-piston and pump-pistons, parallel connecting-rods connecting said cross-heads, a crank-shaft driven from the engine-piston, an eccentric thereon, a slide-valve for said air-pump, and a mechanical connection from said eccentric to said valve.

704,055. MACHINE FOR MAKING GLASS BOTTLES. CARL LEISTNER, London, England. Filed Aug. 31, 1901. Serial No. 73,967. (No model.)

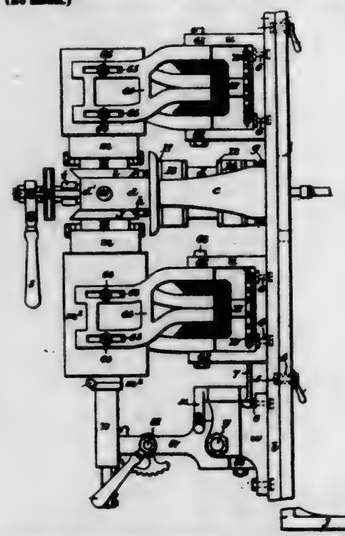

Claim.—1. A machine for making glass bottles having, in combination, a pair of normally vertical neck-molds movable around a horizontal axis, a parison-mold adapted to be aligned with said neck-molds in succession at top, a blowing-mold adapted to be aligned with the same in succession at bottom, and means for introducing the air.

2. A machine for making glass bottles having, in combination, a pair of normally vertical neck-molds movable around a horizontal axis, a parison-mold adapted to be aligned with said neck-molds in succession at top, a blowing-mold adapted to be aligned with the same in succession at bottom, means for transmitting rotary motion to either neck-mold at will, and means for introducing the air.

3. A machine for making glass bottles having, in combination, a pair of normally vertical neck-molds movable around a horizontal axis, a parison-mold adapted to be aligned with said neck-molds in succession at top, a blowing-mold adapted to be aligned with the same in succession at bottom, and an air-supply device common to both neck-molds.

4. A machine for making glass bottles having, in combination, a pair of normally vertical neck-molds movable around a horizontal axis, a parison-mold adapted to be aligned with said neck-molds in succession at top, a blowing-mold adapted to be aligned with the same in succession at bottom, means for transmitting rotary motion to either neck-mold at will, comprising a shaft substantially concentric with said horizontal axis and means for continuously rotating said shaft, and means for introducing the air.

5. A machine for making glass bottles having, in combination, a pair of normally vertical neck-molds movable around a horizontal axis, a parison-mold adapted to be aligned with said neck-molds in succession at top, a blowing-mold adapted to be aligned with the same in succession at bottom, and an air-supply device common to both neck-molds, comprising an inlet-pipe and a spigot-valve concentric with said horizontal axis.

6. A machine for making glass bottles having, in combination, a pair of neck-molds, normally vertical, arranged back to back, and movable around a horizontal axis common to both, a longitudinally-bisected parison-mold adapted to be aligned with said neck-molds in succession at top, a longitudinally-bisected blowing-mold adapted to be aligned with

said neck-molds in succession at bottom, and mechanism for opening and closing said parison-mold and said blowing-mold simultaneously.

7. A machine for making glass bottles having, in combination, a pair of neck-molds, normally vertical, arranged back to back, and movable around a horizontal axis common to both, a longitudinally-bisected parison-mold adapted to be alined with said neck-molds in succession at top, a longitudinally-bisected blowing-mold adapted to be alined with said neck-molds in succession at bottom, and mechanism for opening and closing said parison-mold and said blowing-mold simultaneously, comprising a treadle, a tension-rod coupled thereto, an endless sprocket-chain, a pair of sprocket-wheels embraced by said chain, and miter-gearing transmitting motion from each sprocket-wheel to the parts of one of the molds last named.

8. A machine for making glass bottles having, in combination, a pair of neck-molds, normally vertical, arranged back to back, and movable around a horizontal axis common to both, a longitudinally-bisected parison-mold adapted to be alined with said neck-molds in succession at top, a longitudinally-bisected blowing-mold adapted to be alined with said neck-molds in succession at bottom, means for retracting the parts of said parison-mold and said blowing-mold, and means for swinging the stripped parison from the normal position of said parison-mold to the normal position of said blowing-mold, and for swinging the same in its depending position to elongate the parison.

9. A machine for making glass bottles having, in combination with means for introducing the air, a pair of longitudinally-bisected neck-molds, normally vertical, arranged back to back, and movable around a horizontal axis common to both, a parison-mold adapted to be alined with said neck-molds in succession at top, a bisected blowing-mold, having internally-movable parts, adapted to be alined with said neck-molds in succession at bottom, means for simultaneously opening the blowing-mold and the neck-mold in communication therewith sufficiently to release the blown bottle, and means for lowering the blown bottle.

10. A machine for making glass bottles having, in combination with means for introducing the air, a pair of longitudinally-bisected neck-molds, normally vertical, arranged back to back, and movable around a horizontal axis common to both, a parison-mold adapted to be alined with said neck-molds in succession at top, a bisected blowing-mold, having internally-movable parts, adapted to be alined with said neck-molds in succession at bottom, means for simultaneously opening the blowing-mold and the neck-mold in communication therewith sufficiently to release the blown bottle, means for lowering the blown bottle, and means for moving the blown bottle laterally to a discharge-point.

11. A machine for making glass bottles having, in combination with means for introducing the air, a pair of longitudinally-bisected neck-molds, normally vertical, arranged back to back, and movable around a horizontal axis common to both, a parison-mold adapted to be alined with said neck-molds in succession at top, a bisected blowing-mold, having laterally-movable parts, adapted to be alined with said neck-molds in succession at bottom, means for simultaneously opening the blowing-mold and the neck-mold in communication therewith sufficiently to release the blown bottle, means for lowering the blown bottle, and means for moving the blown bottle laterally to a discharge-point, comprising a mold-bottom adapted to be tilted.

12. A machine for making glass bottles having, in combination with means for introducing the air, a pair of longitudinally-bisected neck-molds, normally vertical, springs which render the same normally closed, means for revolving the closed neck-molds around a horizontal axis, a parison-mold adapted to be alined with said neck-molds in succession at top, a bisected blowing-mold, having internally-movable parts, adapted to be alined with said neck-molds in succession at bottom, and means whereby the separation of said parts of the blowing-mold opens the neck-mold in communication therewith.

13. In a machine for making glass bottles by casting and blowing, the combination with means for introducing the air and with parison and blowing molds of a neck-mold with which each parison-mold and each blowing-mold are alined in succession, a support for the same having a cylinder within it, a piston movable within said cylinder, a mouth-core carried by said piston, means for rendering said mouth-core normally protruded for the casting operation, and means for retracting said mouth-core by the air on its way to the interior of the bottle.

14. In a machine for making glass bottles by casting and blowing, the combination with means for introducing the air and with parison and blowing molds of a neck-mold with which each parison-mold and each blowing-mold are alined in succession, a support for the same having a cylinder within it, a piston movable within said cylinder, a mouth-core carried by said piston, a spring arranged behind said piston within said cylinder which renders said mouth-core normally protruded for the casting operation, and means for retracting said mouth-core by the air on its way to the interior of the bottle.

15. In a machine for making glass bottles by casting and blowing, the combination with means for introducing the air and with parison and blowing molds of a neck-mold with which each parison-mold and each blowing-mold are alined in succession, a support for the same having an axial cylinder within it, a piston movable within said cylinder, a mouth-core carried by said piston, a spring arranged behind said piston within said cylinder which renders said mouth-core normally protruded for the casting operation, and means for retracting said mouth-core by the air on its way to the interior of the bottle, such means comprising an inlet-pipe, a chambered neck-mold carrier to which said pipe is coupled, a hand-actuated valve within said carrier, and an open-ended tube embraced by said piston and in communication with said pipe by way of said valve in one position of the lever-handle.

16. In a machine for making glass bottles by casting and blowing, the combination with means for introducing the air, and with parison and blowing molds, of a neck-mold with which each parison-mold and each blowing-mold are alined in succession, a rotatable support for the same having a conical bore concentric with the neck-mold, a neck-mold carrier having a seat for said rotatable support and a concentric tapped bore, a cylinder-forming hollow screw fitted to said bores, a piston within each cylinder, a normally protruding mouth-core carried by said piston, and means for retracting said mouth-core by the air on its way to the interior of the bottle.

17. In a machine for making glass bottles by casting and blowing, the combination with means for introducing the air, and with parison and blowing molds, of a neck-mold with which each parison-mold and each blowing-mold are alined in succession, a separable mouth-core within the same interchangeable with others of different shapes and sizes, means for rendering such mouth-core normally protruded, and an interchangeable lip-molding ring surrounding said mouth-core and limiting its protrusion.

18. The combination, in a machine for making glass bottles, of a vertical parison-mold, a subjacent neck-mold alined therewith and rotatable around its longitudinal axis, a shaft substantially at right angles to the axis of said neck-mold, means for continuously rotating said shaft, a bearing for said shaft having diametrical pivots, means for tilting said bearing on said pivots, a friction-wheel carried by said shaft, and a driven friction-wheel by which said neck-mold is carried.

19. The combination, in a machine for making glass bottles, of a vertical parison-mold, a subjacent neck-mold alined therewith and rotatable around its longitudinal axis, a shaft substantially at right angles to the axis of said neck-mold, means for continuously rotating said shaft, a bearing for said shaft having diametrical pivots, means for tilting said bearing on said pivots, a friction-wheel carried by said shaft, a driven friction-wheel by which said neck-mold is carried, and means for tilting said bearing comprising a swiveled ring surrounding said shaft and provided with beveled lugs, rods having oblique forks engaged with said lugs, a connecting-ring to which said rods are attached, a ring swiveled to said connecting-ring, and a lever-handle connected with the ring last named.

20. The combination, in a machine for making glass bottles, of a neck-mold, a blowing-mold vertically alined therewith, means for introducing the air, and means for rotating the neck-mold, the latter comprising a shaft substantially at right angles to the axis of said neck-mold, means for continuously rotating said shaft, a bearing for said shaft having diametrical pivots, means for tilting said bearing on said pivots, a friction-wheel carried by said shaft and a driven friction-wheel by which said neck-mold is carried.

21. The combination, in a machine for making glass bottles, of a neck-mold, a blowing-mold vertically alined therewith, means for introducing the air, and means for rotating the neck-mold, the latter comprising a shaft substantially at right angles to the axis of said neck-mold, means for continuously rotating said shaft, a bearing for said shaft having diametrical pivots, a friction-wheel carried by said shaft, a driven friction-wheel by which said neck-mold is carried, and means for tilting said bearing comprising a swiveled ring surrounding said shaft and provided with beveled lugs, rods having oblique forks engaged with said lugs, a connecting-ring to which said rods are attached, a ring swiveled to said connecting-ring, and a lever-handle connected with the ring last named.

22. The combination, in a machine for making glass bottles, of a neck-mold adapted to be rotated, a subjacent blowing-mold vertically alined therewith, and means for introducing the air and for rotating the glass at will, such means comprising a lever-handle common to both operations and having a hand end movable in different planes, a spigot-valve turned by said lever-handle, a fork carried by the inner end of said lever-handle, a swiveled ring to which said fork is connected, a connecting-ring carrying said swiveled ring, rods attached at one end to said connecting-ring and having oblique forks at their other ends, a swiveled ring having beveled lugs embraced by said forks, a continuously-driven shaft, and friction-gearing, thrown into and out of mesh by the edgewise movement of the ring last named, for transmitting motion from said shaft to the neck-mold.

23. The combination, in a machine for making glass bottles, of a pair of neck-molds, arranged back to back, adapted to be rotated and to be moved around a horizontal axis into alternative vertical positions, a parison-mold and a blowing-mold alined with the respective neck-molds, and means for introducing the air and for rotating the glass at will, such means comprising a lever-handle common to both operations and having a hand end movable in different planes, a spigot-valve, concentric with said horizontal axis, turned by said lever-handle, a fork carried by the inner end of said lever-handle, a swiveled ring to which said fork is connected, a connecting-ring carrying said swiveled ring, rods attached at one end to said connecting-ring and having oblique forks at their other ends, a swiveled ring having beveled lugs embraced by said forks, a continuously-driven shaft, and friction-gearing, thrown into and out of mesh by the edgewise movement of the ring last named, for transmitting motion from said shaft to either neck-mold, substantially as hereinbefore specified.

704,056. **SHOW-CASE.** JOHN S. LEWIS and DANIEL F. SNOW, Wabash, Ind., assignors of three-tenths to Ludwig Wolf, Wabash, Ind. Filed Nov. 18, 1900. Serial No. 37,015. (No model.)

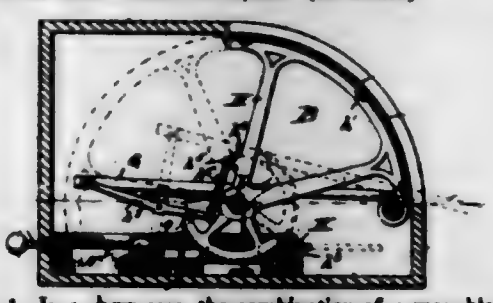

Claim.—1. In a show-case the combination of a movable front, a movable bottom secured to said case, and connected to said front; an operating-rod under said bottom adapted to operate said movable front and movable bottom, intermediate mechanism, between said operating-rod and said movable front and said movable bottom, whereby said bottom is extended and tilted and said front raised, substantially as described.

2. In a show-case the combination of a movable front, a movable bottom secured in said case, an operating-rod under said bottom whereby said movable front and movable bottom are simultaneously operated intermediate mechanism, an operating-lever adapted to turn said operating-rod, a spring-catch adapted to engage said operating-rod, a cash-drawer secured to said spring-catch, and means for releasing said drawer by said operating-rod substantially as described.

3. In a show-case, the combination of a movable front, a bracket supporting said front, a toothed arc integral therewith, an operating-rod adapted to move said toothed arc, means on said rod for coöperating with said toothed arc, a movable bottom connected to said bracket, and means for simultaneously moving said front and bottom, substantially as described.

4. In a show-case, the combination of a movable front, means for supporting said front, a movable bottom connected to said supporting means, means for extending and tilting said bottom, and simultaneously moving said front.

704,057. **EXPANSIBLE BORING-TOOL.** HENRY LIEBERKNECHT, St. Louis, Mo., assignor to Sandford Northrop, St. Louis, Mo. Filed Oct. 21, 1901. Serial No. 79,201. (No model.)

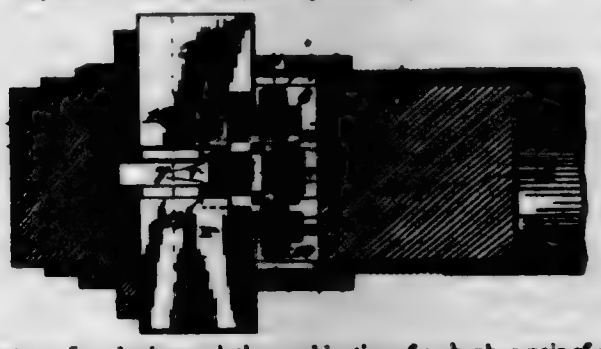

Claim.—In a boring-tool, the combination of a shank, a pair of cutter-holders movably located in said shank, carrier-blocks connected to said cutter-holders, an adjustment-rod having right and left screws seated in said carrier-blocks, a collar loosely fitted to said adjustment-rod, and a set-screw by which said collar is removably held, substantially as described.

704,058. **ENVELOP-FEEDER FOR PRINTING-PRESSES.** HYMEN W. LILLY, Leavenworth, Kans. Filed Apr. 13, 1901. Serial No. 55,747. (No model.)

Claim.—A machine for feeding and printing envelops comprising in combination a main frame having the printing-roll, the platen-roll and inking-rolls journaled therein, the table having a plurality of longitudinal slots, a block sliding in ways in the sides of the main frame, and beneath the table, the forward end of said block being inclined, the feed-plate having an elongated opening, said plate having a plurality of pusher-fingers which project through the slots of the table, said feed-plate being adjustable upon the end of the sliding block, the envelop-hopper arranged above the slotted portion of the table, said hopper having openings at the bottom of the front and rear sides, and a gage-plate adjustable upon the exterior of the front side of hopper, and means for operatively connecting the printing-roll and sliding block for the purpose described.

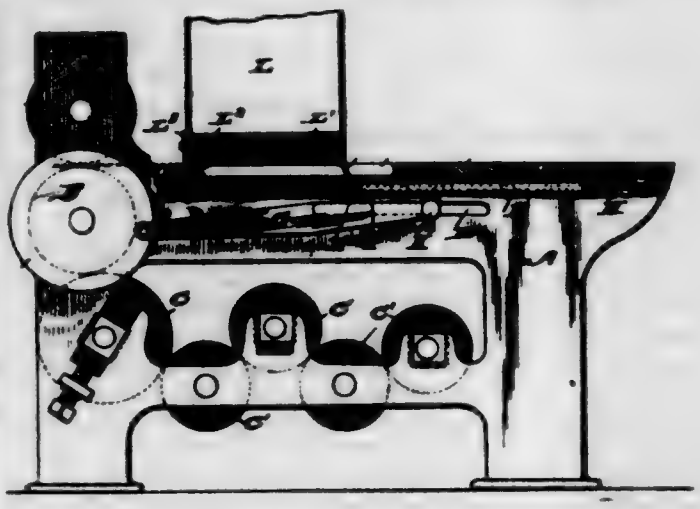

704,059. **HYDRAULIC AIR-COMPRESSOR.** WILLIAM J. LEITCH, Woodstock, Canada, assignor to the Taylor Hydraulic Air Compressing Company, Limited, Montreal, Canada, a Corporation of Canada. Filed Feb. 21, 1900. Serial No. 6,044. (No model.)

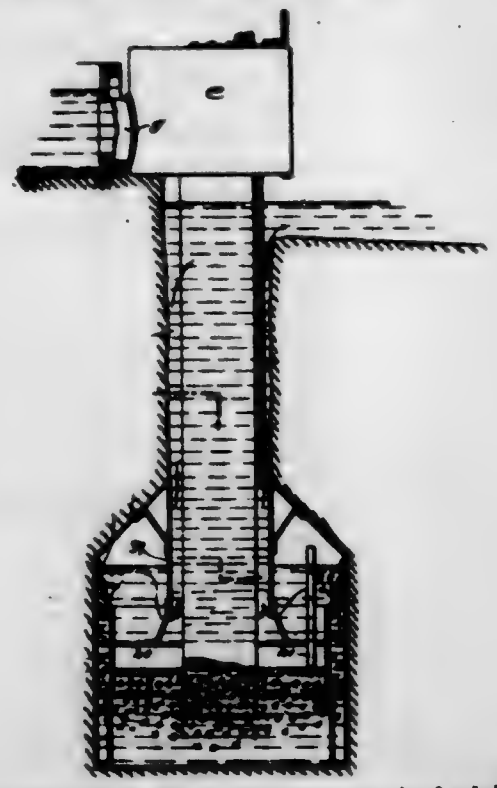

Claim.—1. In a hydraulic air-compressor, a pair of subchambers located one above the other, a vertical water-conduit communicating at its lower end with the lower subchamber; a water-passage leading from said lower to said upper subchambers; a water-conduit leading from the upper subchamber to the overflow of the compressor; an air-pipe leading from the lower to the upper subchambers and an air-pipe leading from the upper subchamber to the point of consumption.

2. In a hydraulic air-compressor, a pair of subchambers located one above the other; a vertical water-conduit communicating at its lower end with the lower subchamber at a point a short distance from the lower end thereof; a water-passage leading from said lower to said upper subchamber; a water-conduit leading from the upper subchamber to the overflow of the compressor; an air-pipe leading from the lower to the upper subchamber; and an air-pipe leading from the upper subchamber to the point of consumption, substantially as described and for the purpose set forth.

3. In a hydraulic air-compressor, a pair of subchambers located one above the other; a vertical water conduit communicating at its lower end with the lower subchamber at a point a short distance from the lower end

thereof; a water-passage leading from a short distance above the level of the lower end of said vertical water-conduit in said lower subchamber to a point above the lower end of said upper subchamber; a water-conduit leading from a point in the upper subchamber slightly below the upper end of the said water-passage to the overflow of the compressor; an air-pipe leading from the lower to the upper subchamber; and an air-pipe leading from the upper subchamber to the point of consumption, substantially as described and for the purpose set forth.

4. In a hydraulic air-compressor, a pair of subchambers located one above the other; a vertical water-conduit communicating at its lower end with the lower subchamber at a point a short distance from the lower end thereof; a water-passage leading from said lower to said upper subchamber; a water-conduit leading from the upper subchamber to the overflow of the compressor; an air-pipe leading from a point in the lower subchamber intermediate the top thereof and the lower end of said water-passage to a point in the upper subchamber intermediate the top thereof, and the upper end of said water-passage; and an air-pipe leading from the upper end of the upper subchamber to the point of consumption, substantially as described and for the purpose set forth.

5. In a hydraulic air-compressor, a pair of subchambers located one above the other; a vertical water-conduit communicating at its lower end with the lower subchamber at a point a short distance from the lower end thereof; a water-passage leading from a short distance above the level of the lower end of said vertical water-conduit in said lower subchamber to a point above the lower end of said upper subchamber; a water-conduit leading from a point in the upper subchamber slightly below the upper end of the said water-passage to the overflow of the compressor; an air-pipe leading from a point in the lower subchamber intermediate the top thereof and the lower end of said water-passage to a point in the upper subchamber intermediate the top thereof and the upper end of said water-passage; and an air-pipe leading from the upper end of the upper subchamber to the point of consumption, substantially as described and for the purpose set forth.

6. A hydraulic air-compressing apparatus having a vertical stand-pipe for conducting the water downwardly a dome inclosing the lower end of said stand-pipe and interiorly divided to form a pair of subchambers located one above and adjacent to the other said lower subchamber having its lower end open and said upper subchamber having its upper end open; an air-pipe leading from the lower to the upper subchamber, a second air-pipe leading from the upper subchamber to the point of consumption, and a water-conductor leading upwardly from the dome, substantially as described and for the purpose set forth.

7. A hydraulic air-compressing apparatus having a vertical stand-pipe for conducting the water downwardly, a dome inclosing the lower end of said stand-pipe and interiorly divided to form a subchamber above and adjacent to the lower end of said stand-pipe, said subchamber having its lower end open; a truncated conical top upon said dome; a water-passage leading from said subchamber to the space in the dome above said subchamber; a tubular section connected at its upper end to the edge of the opening in said truncated top and extending downwardly into said dome to close proximity to said subchamber; an air-pipe leading from the subchamber to the space between said tubular section and the top of the dome; a second air-pipe leading from the said space between the tubular section and the top of the dome to the point of consumption, and a water-conductor leading upwardly from the upper end of said tubular section, substantially as described and for the purpose set forth.

8. A hydraulic air-compressing apparatus having a vertical stand-pipe for conducting the water downwardly, a dome located at and inclosing the lower end of said stand-pipe and having a truncated conical top; a vertically-arranged cylindrical section with open ends supported in said dome above the lower end of said stand-pipe and of sufficiently less diameter than said dome to provide a vertical passage therebetween and said dome, a horizontal diaphragm dividing said cylindrical section midway of its height; a tubular section connected at its upper end to the edge of the opening in the top of the dome and extending downwardly a short distance below the upper edge of the cylindrical section, an air-pipe leading from a point a short distance above the lower end of said cylindrical section upwardly to the space between said tubular section and the top of the dome; and a second air-pipe leading from said space to the point of consumption, substantially as described and for the purpose set forth.

9. The combination with a water-conductor, of an air-supplying bar and means for supplying air to said bar, said bar being arranged transversely of the said conductor and adapted to supply air throughout one side thereof to the body of water traveling through said conductor.

10. In a hydraulic air-compressor of the class described, the combination with the water-conductor, of an air-supplying bar and means for supplying air to said bar, said bar being arranged transversely of the said conductor and adapted to supply air throughout one side thereof to the body of water traveling through said conductor to provide an air-supply of extended area.

11. In a hydraulic air-compressor of the class described, the combination with the water-conductor, of an air-supplying bar, and a valve-controlled pipe for supplying air to said bar, said bar being arranged transversely of the said conductor and adapted to supply air throughout one side thereof to the body of water traveling through said conductor to provide an air-supply of extended area.

12. In a hydraulic air-compressor of the class described, the combination with the water-conductor of an air-supplying bar of V cross-section and extending transversely of said conductor with its open side facing the exit end of said conductor, substantially as and for the purpose set forth.

13. The combination with a water-conductor, of an air-supplying section consisting of a hollow annular part; a series of air-conducting bars extending transversely of and communicating at their ends with said annular part, and having air-exits in their sides facing the direction of water-flow; and an air-conducting pipe connected to said annular part.

14. In a hydraulic air-compressor of the class described, the combination with the water-conductor of an air-supplying section consisting of a hollow annular part resting upon the upper end of said water-conductor; a series of air-conducting bars extending transversely of and communicating at their ends with said annular part, and having air-exits in their under sides; and an air-conducting pipe communicating with the atmosphere at its upper end and connected to said annular part at its lower end substantially as described and for the purpose set forth.

15. In a hydraulic air-compressor of the class described, the combination with the water-conductor of an air-supplying section consisting of a hollow annular part resting upon the upper end of said water-conductor; a series of air-conducting bars extending transversely of and communicating at their ends with said annular part and having air-exits in their under sides; an air-conducting pipe communicating with the atmosphere at its upper end and connected to said annular part at its lower end and a damper for controlling said pipe, substantially as described and for the purpose set forth.

16. In a hydraulic air-compressor of the class described, the combination with the water-conductor of an air-supplying section consisting of a hollow annular part resting upon the upper end of said water-conductor; a series of air-conducting bars of V cross-section arranged with their open sides facing downwardly and extending transversely of and communicating at their ends with said annular part; and an air-conducting pipe communicating with the atmosphere at its upper end and connected to said annular part at its lower end, substantially as described and for the purpose set forth.

17. In a hydraulic air-compressor of the class described, the combination with the water-conductor of an air-supplying section consisting of a hollow annular part resting upon the upper end of said water-conductor; a series of air-conducting bars of V cross-section arranged with their open sides facing downwardly and extending transversely of and communicating at their ends with said annular parts; an air-conducting pipe communicating with the atmosphere at its upper end and connected to said annular part at its lower end and a damper for controlling said pipe, substantially as described and for the purpose set forth.

18. In an air-compressor of the class described, the combination with the stand-pipe, of a series of horizontally-arranged air-supplying sections superimposed one upon the other, and an independent air-conducting pipe leading to each section, substantially as and for the purpose set forth.

19. In an air-compressor of the class described, the combination with the stand-pipe, of a series of horizontally-arranged air-supplying sections superimposed one upon the other, an independent air-conducting pipe leading to each section, and a damper for controlling each pipe, substantially as and for the purpose set forth.

20. In an air-compressor of the class described, the combination with the stand-pipe, of a series of horizontally-arranged air-supplying sections superimposed one upon the other, each section consisting of a hollow annular part and a series of air-conducting bars extending transversely of and communicating at their ends with said annular part and having air-exits in their under sides; and an independent air-conducting pipe leading to each section, substantially as and for the purpose set forth.

21. In an air-compressor of the class described, the combination with the stand-pipe, of a series of horizontally-arranged air-supplying sections superimposed one upon the other, each section consisting of a hollow annular part and a series of air-conducting bars of V cross-section arranged with their open sides facing downward extending transversely of and communicating at their ends with said annular part, and an independent air-conducting pipe leading to each section, substantially as and for the purpose set forth.

22. In an air-compressor of the class described, the combination with the stand-pipe of a series of horizontally-arranged air-supplying sections superimposed one upon the other, each section consisting of a hollow annular part and a series of air-conducting bars of V cross-section arranged with their open sides facing downward extending transversely of and com-

communicating at their ends with said annular part; an independent air-conducting pipe leading to each section, and a damper for controlling each pipe, substantially as and for the purpose set forth.

22. In a hydraulic air-compressor comprising a descending body of water, a series of air-supplying devices immersed at their lower ends in said descending body of water and communicating at their upper ends with the atmosphere, and means for deflecting said water to flow across and in close proximity to the air-egress ports of said devices, for the purpose set forth.

24. In a hydraulic air-compressor comprising a descending body of water, a series of air-supplying devices immersed at their lower ends in said descending body of water and communicating at their upper ends with the atmosphere, and adjustable means for deflecting said water as it varies in volume to flow across and in close proximity to the air-egress ports of said devices, for the purpose set forth.

25. In a hydraulic air-compressor comprising a descending body of water, a series of air-supplying devices immersed at their lower ends in said descending body of water and communicating at their upper ends with the atmosphere, means for automatically controlling the passage of air through the air-egress ports of said devices, for the purpose set forth.

26. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and means located between the lower sides of said bars for deflecting the descending water to flow across and in close proximity to said open sides, substantially for the purpose set forth.

27. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and vertically-adjustable means located between the lower sides of said bars for deflecting the descending water to envelop said open sides, for the purpose set forth.

28. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and means located between the lower sides of said bars for deflecting the descending water to envelop said open sides, said deflecting means consisting of a ring, a series of bars triangular in cross-section with concave upper sides and set rigidly at their ends in said ring, and means for supporting said ring, substantially as and for the purpose set forth.

29. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and automatically vertically adjustable means located between the lower sides of said bars for deflecting the descending water to envelop said open sides, for the purpose set forth.

30. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and means located between the lower sides of said bars for deflecting the descending water to envelop said open sides, said deflecting means consisting of a ring, a series of bars triangular in cross-section with concave upper sides and set rigidly at their ends in said ring, and vertically-adjustable means for supporting said ring, substantially as and for the purpose set forth.

31. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and means located between the lower sides of said bars for deflecting the descending water to envelop said open sides, said deflecting means consisting of a ring, a series of bars triangular in cross-section with concave upper sides and set rigidly at their ends in said ring, and vertically-adjustable rods for supporting said ring and means for adjusting said rods, substantially as and for the purpose set forth.

32. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and means located between the lower sides of said bars for deflecting the descending water to envelop said open sides, said deflecting means consisting of a ring, a series of bars triangular in cross-section with concave upper sides and set rigidly at their ends in said ring, means for supporting said ring, and means for automatically vertically adjusting said supporting means, substantially as and for the purpose set forth.

33. In a hydraulic air-compressor comprising a descending body of water, a series of air-bars of V cross-section arranged parallel to one another with their open sides facing downwardly and in the same horizontal plane, means for supplying air to said bars, and means located between the lower sides of said bars for deflecting the descending water to envelop said open sides, said deflecting means consisting of a ring, a series of bars triangular in cross-section concave upper sides and set rigidly at their ends in said ring, and vertically-adjustable rods for supporting said ring and means for automatically adjusting said rods, substantially as and for the purpose set forth.

34. In combination with the stand-pipe of a hydraulic air-compressor of the class described, a valvular cylindrical section of a diameter to rest upon the top of said stand-pipe, and means for adjusting said valvular section to and from said stand-pipe, for the purpose set forth.

35. In combination with the stand-pipe of a hydraulic air-compressor of the class described, a valvular cylindrical section of a diameter to rest upon the top of said stand-pipe and means under control of the air compressed by said compressor for automatically adjusting said valvular section to and from said stand-pipe, substantially as and for the purpose set forth.

36. In a hydraulic air-compressor, the combination with the stand-pipe thereof and the pipe for conducting the compressed air therefrom, of a valvular cylindrical section of a diameter to rest upon the top of said stand-pipe; a vertical cylinder; means for supporting said vertical cylinder above said annular section; a piston within said vertical cylinder; a piston-rod connected at its upper end to said piston and at its lower end to said valvular section; a three-way valve; a branch pipe connecting the lower end of said vertical cylinder to one of the ports of said three-way valve; a second branch pipe connecting another of the ports of said three-way valve to the said compressed-air conducting-pipe; a horizontal cylinder located adjacent to said three-way valve; a piston within said last-mentioned cylinder; a piston-rod connected at one end to said last-mentioned piston; a bell-crank lever; means for supporting said bell-crank lever; one of the arms of said bell-crank lever being connected to the outer end of said last-mentioned piston-rod, the other arm of said bell-crank lever being elongated and graduated in the form of a beam and having a counterpoise movable longitudinally thereon; a lever connected rigidly at one end to the valve-stem of said three-way valve and at its other end to the outer end of said last-mentioned piston-rod; a branch pipe connecting said second branch pipe to said horizontal cylinder; and means for guiding said valvular cylindrical section in its movement to and from the top of the stand-pipe; substantially as described and for the purpose set forth.

704,060. INTERNAL-COMBUSTION ENGINE. FRANK LEITER, Keighley, England. Filed July 27, 1901. Serial No. 69,998. (No model.)

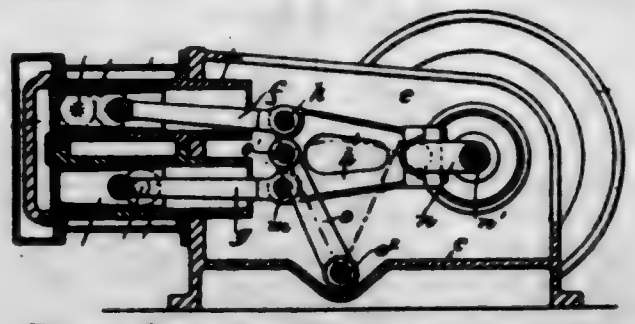

Claim.—1. In an engine of the class described, a cylinder having an inlet-port, a cylinder having an exhaust-port, pistons operating in said cylinders, a crank-shaft, an intermediate rigid connecting-piece extending rearward from the crank toward the two pistons and pivotally connected with the crank and pistons, and means for guiding said intermediate piece in a predetermined path during its reciprocations, whereby said crank-shaft is coupled to said pistons so that one piston leads the other, substantially as herein specified.

2. In an engine of the class described, a cylinder having an inlet-port, a cylinder having an exhaust-port, an explosion-chamber common to these cylinders, pistons in said cylinders, a crank-shaft and an intermediate connecting-piece extending rearward from the crank toward the two pistons and pivotally connected with the crank and pistons, and means for guiding said connecting-piece in a predetermined path during its reciprocations to enable one piston to lead the other.

3. In an engine of the class described, two cylinders having a common explosion-chamber, pistons in said cylinders, connecting-rods on said pistons, a triangular piece or three-armed lever pivotally connected to said rods and a crank to which said triangular piece is pivotally connected, in combination substantially as herein set forth.

4. In an engine of the class described, a plurality of cylinders, pistons for said cylinders, rods pivotally connected to said pistons, a crank, a triangular piece, connecting said rods to said crank, and a lever for supporting the triangular piece in combination substantially as herein specified.

5. In an engine of the class described, a plurality of cylinders, pistons to operate in the same, piston-rods, a crank-shaft, rigid connections separate from the crank-shaft and interposed between said crank-shaft and the piston-rods, and means for controlling the movements of said connections, whereby one piston will lead the other.

6. In an engine of the class described, a plurality of cylinders, feed and exhaust ports having valves mounted within them in connection with said cylinders, pistons constructed to operate in said cylinders and other means in conjunction with said pistons whereby after expansion and exhaust of the waste gases during movement of the pistons in one direction the charge is induced to enter the cylinders by the continued motion of said pistons and the other parts in the same direction whereby said pistons may be coupled to the crank and said crank in combination substantially as specified.

7. In an engine of the class described, a plurality of parallel cylinders, pistons operating in said cylinders, a crank, a rigid connecting-piece for coupling said crank and said pistons together, means for controlling the movements of said connecting-piece, and a pump for supplying the charge to said cylinders and means for operating said pump in combination substantially as herein specified.

8. In an engine of the class described, a plurality of parallel cylinders, pistons for same, a crank, a rigid connecting-piece for coupling said crank to said pistons, means for controlling the movements of said connecting-piece, a casing for inclosing said crank and other parts, a valve mounted on said casing, an inlet-port leading from the interior of said casing to the interior of the cylinders and said casing in combination substantially as herein specified.

9. In an engine of the class described, a plurality of parallel cylinders, pistons for same, a crank, a rigid connecting-piece for coupling said crank to said pistons, means for controlling the movements of said connecting-piece, a pump for supplying the charge to said cylinders, a governor on said pump whereby the charge when not required is forced back into the main, and means for operating same in combination substantially as herein specified.

704,061. **HORSE-HOLDING DEVICE.** MATEO LOPESON, Sacramento, Cal. Filed Apr. 21, 1902. Serial No. 103,894. (No model.)

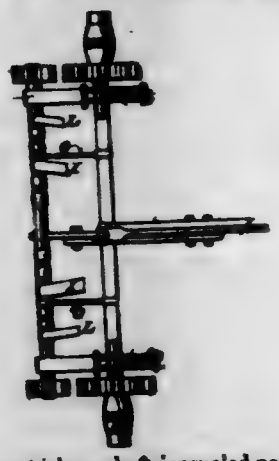

Claim.—1. In a vehicle, a shaft journaled parallel with and behind the rear axle, the guides slidable upon the rear axle, and to which the journal-boxes of the shaft are connected whereby the guides and shaft move in unison, gears fixed to the ends of the shaft, corresponding gears in line therewith carried upon the rear-wheel hubs, springs by which the shaft is normally drawn toward the axle and the gears engaged, and a lever and connections by which the shaft and guides may be moved backward and the gears disengaged.

2. A vehicle having a shaft movably journaled with relation to the rear axle, guides extending from the shaft and slidably mounted upon said axle said shaft and guides movable in unison, gears carried by the shaft in the rear wheels, springs by which the shaft is normally drawn forward and the gears engaged, straps coiled upon the shaft extending forwardly, and means for detachably connecting the straps with the driving-reins and also with the breeching of the harness.

3. A vehicle having a shaft movably journaled with relation to the rear axle, gears carried by the shaft and the rear wheels, springs by which the shaft is normally drawn forward and the gears engaged, straps coiled upon the shaft extending forwardly, other straps detachably connected therewith leading through guides upon the tugs or traces and returned and connected with the breeching of the harness.

4. Means for controlling horses attached to vehicle consisting of a shaft guided and movably mounted with relation to the rear axle of the vehicle, gears carried upon the rear-axle hubs, corresponding gears mounted upon the shaft, springs by which the shaft is normally drawn toward the axle and gears engaged, straps adapted to coil upon the shaft when rotated, connections between said straps and the breeching and driving-reins, and a foot-lever and connections between it and the shaft whereby the latter may be moved and the gears held out of engagement while the vehicle is being driven.

704,062. **AMMONIA-COMPRESSOR.** JAMES T. LUDLOW, San Francisco, Cal. Filed June 28, 1901. Serial No. 66,378. (No model.)

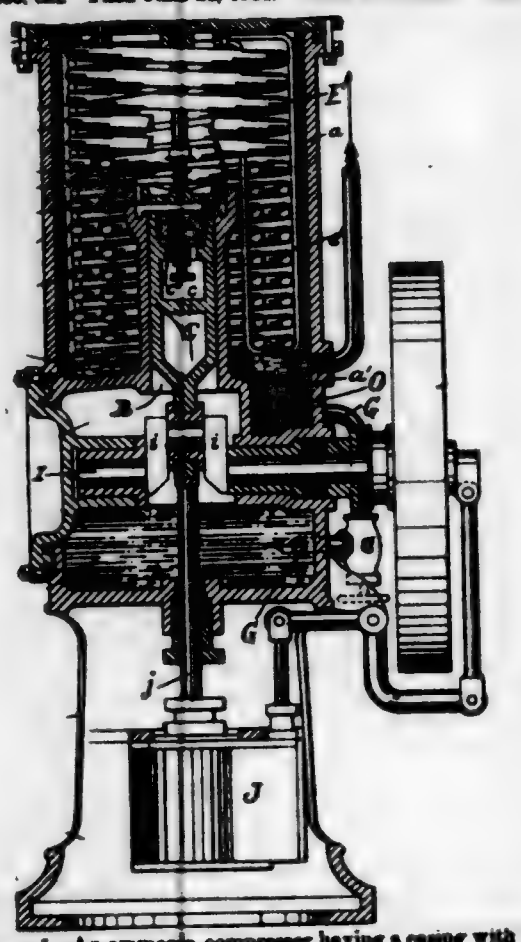

Claim.—1. An ammonia-compressor having a casing with an upper compartment, to receive the condensed ammonia, and a lower compartment, to hold the lubricating-oil, a compressing mechanism in the upper compartment, adapted to receive the ammonia-gas from the evaporating-circuit and to compress and discharge it into said upper compartment, means within said upper compartment for condensing the gas therein, driving connections in the lower compartment for the compressing mechanism, said connections working in the oil contained therein, a communication between the upper and lower compartment, to draw back again into the lower compartment, any oil which may be carried by the compressing mechanism into the upper compartment, and an outlet for the condensed ammonia, to the evaporating-circuit.

2. An ammonia-compressor having a casing with an upper compartment, to receive the condensed ammonia, said compartment having a depression in its floor to form an oil-collecting well, and said casing having also a lower compartment to hold the lubricating-oil, a compressing mechanism in the upper compartment, adapted to receive the ammonia-gas from the evaporating-circuit and to compress and discharge it into said upper compartment, means within said upper compartment for condensing the gas therein, driving connections in the lower compartment for the compressing mechanism, said connections working in the oil contained therein, a communication between the oil-collecting well of the upper compartment and the lower compartment, to draw back again into the lower compartment, any oil which may be carried by the compressing mechanism into the upper compartment, and an outlet for the condensed ammonia, to the evaporating-circuit

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704,068. **DIVIDER FOR HARVESTERS.** JAMES MACPHAIL, Blue Island, Ill., assignor to the McCormick Harvesting Machine Company, Chicago, Ill. Filed Dec. 17, 1900. Renewed Apr. 29, 1902. Serial No. 105,235. (No model.)

Claim.—1. In a harvester, the combination with the cutting apparatus and the platform, of an outside divider, projecting normally in advance of the cutters, and a radius-bar that is pivoted to the frame and has the divider pivoted to it so as to permit the divider to be folded over backward.

2. In a harvester, the combination with the cutting apparatus and the platform, of an outside divider, projecting normally in advance of the cutters, a radius-bar that is pivotally connected to the frame at its rear end and has the divider pivoted to it at its outer end, so as to permit the divider to be folded over backward.

2. In a harvester, the combination with the cutting apparatus and the platform, of an outside divider, projecting normally in advance of the cutters, and a radius-bar that is pivotally connected to the frame at its rear end, and has the divider pivoted to it at its outer end said divider being also detachably connected at its rear to a supporting-standard rising from the machine-frame, whereby it may be detached from its rear supporting-standard and folded over backward.

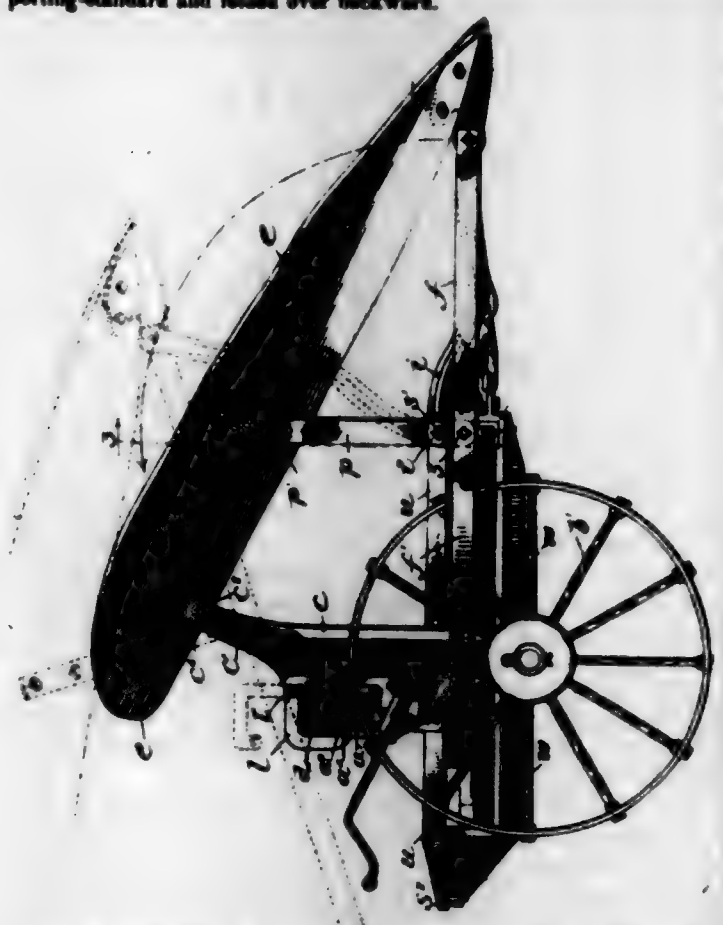

4. In a harvester, the combination with the cutting apparatus and the platform, of an outside divider, projecting normally in advance of the cutters, a radius-bar that is pivoted to the frame at its rear end and having the divider pivoted to it at its outer end, a supporting-standard rising from the machine-frame in rear of the pivot of the radius-bar, and means for securing the rear end of the divider to the standard, whereby its rear end is supported and its front end held rigidly in working position, said means being such as to permit the detachment of the divider from the standard and folding it over backward.

5. In a harvester, the combination with the platform, of an outside divider projecting normally in advance of the platform, and a radius-bar that is pivoted to the frame, and has the divider pivoted to it so as to permit the divider to be folded over backward.

704,084. CHURN-POWER. JOHN A. MADDOX, West Union, Ohio, assignor to Harvey J. Thompson, West Union, Ohio. Filed Oct. 5, 1901. Serial No. 77,671. (No model.)

Claim.—1. A compact churn-power, comprising a standard having in its upper end an elongated slot, a horizontal arm extending from the standard at a point below the lower end of the slot, an outwardly-dished internal gear journaled to the outer end of the said arm, a depending arm connected with the said horizontal arm, the depending arm located within the dish of the said gear-wheel, a pinion journaled to the inner side of the said depending arm and meshing with the said internal gear, a slide in said slot, the pitman having its inner end loosely connected with the slide at a point between the gear-wheel and the said standard, the lower end of the pitman loosely connected with the said pinion, and said pitman being curved to prevent interference with the said horizontal arm, substantially as described.

2. A compact churn-power, comprising a vertical standard having in its upper end an elongated slot, an arm projecting horizontally from the standard at a point below the lower end of the slot, a dish internal gear-wheel journaled to the outer end of the said arm, a depending arm connected with the outer end of the horizontal arm, and located within the dish of the internal gear-wheel, a pinion journaled to the inner side of the lower end of said depending arm and in mesh with the internal gear, the pinion provided with an inwardly-projecting arm, a pitman pivotally connected to the said projecting arm, and a slide in the said slot, the upper end of the pitman being loosely connected with the slide at a point between the standard and the internal gear, substantially as described.

704,064.

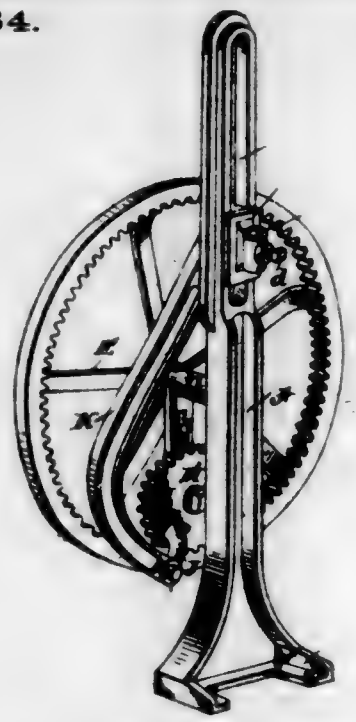

704,065. WEIGHING APPARATUS. JOHN MAHR, San Francisco, Cal. Filed Oct. 28, 1901. Serial No. 80,393. (No model.)

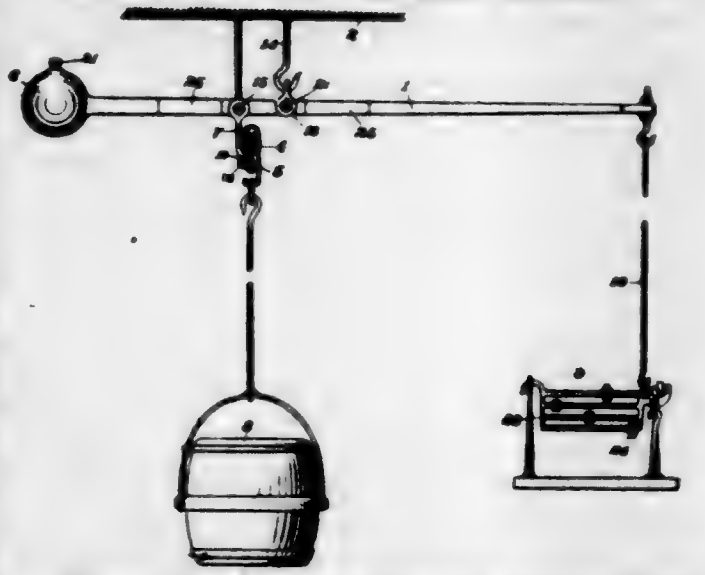

Claim.—1. In weighing apparatus, a main scale-beam, integrally formed with a divided or dual intermediate section, provided with fulcra and knife-edges on said dual members, means for adjusting the balance of said beam at one extremity thereof, a compound auxiliary scale-beam at the other extremity thereof, suitably connected thereto, a trolley-way, a vertically-movable trolley-section suspended from said knife-edges of the main scale-beam, and adjustable means for guiding said movable trolley-section relatively to said trolley-way, substantially as specified.

2. In weighing apparatus, a main scale-beam, integrally formed with a divided or dual intermediate section, fulcra and knife-edges on said dual members, a trolley-way, a vertically-movable free section of said trolley-way suspended from the knife-edges of said main scale-beam, suspensory links having transverse stems 18 adjustable longitudinally on said trolley-section, and slotted guides on the fixed portions of the trolley-way cooperating with said transverse stems to permit free vertical movement thereof, substantially as specified.

3. In weighing apparatus, a main scale-beam having fulcra and knife-edges, a trolley-way beneath, a vertically-movable section of said trolley-way suspended from said knife-edges, a roller-carriage or trolley adapted to traverse upon said trolley-way and its movable section, guides 20 on the fixed portions of said trolley-way, and longitudinally-adjustable stems 18 on said movable section, coöperating with said guides 20 to limit lateral and longitudinal movement while permitting free vertical movement of said trolley-section relative to the fixed portions of the trolley-way, substantially as specified.

704,066. BUILDING MATERIAL. MARK W. MARSDEN, Philadelphia, Pa. Filed Sept. 24, 1901. Serial No. 76,251. (No specimens.)

Claim.—1. Material for building purposes, consisting of fibrous sheets or plates impregnated with a solution of silicate of soda and sulfate of magnesia and adapted and arranged for the reception of plaster.

2. Material for building purposes, consisting of fibrous sheets or plates impregnated with a solution of silicate of soda and sulfate of magnesia and waterproofed.

3. Material for building purposes consisting of fibrous sheets or plates impregnated with a solution of silicate of soda and sulfate of magnesia and coated with a waterproof compound, and adapted and arranged for the reception of plaster.

4. Material for building purposes, consisting of fibrous sheets or plates impregnated with a solution of silicate of soda and sulfate of magnesia and coated with a waterproof compound, said sheets or plates having spaces for the reception of plaster.

5. Material for building purposes consisting of fibrous sheets or plates impregnated with a solution of silicate of soda and sulfate of magnesia and coated with a waterproof compound, said sheets or plates having perforations for the reception of plaster.

6. A partition, ceiling or wall, consisting of sidings, which are separated by an air-space and composed of fire and water proof fibrous sheets or plates which are perforated for the reception of plaster, and provided at their edges with tongues, which overlap the edges of adjoining plates, and tie or distance pieces extending transversely of said air-space and rigidly connecting said sidings, substantially as described.

7. A partition, ceiling or wall, consisting of fibrous sheets or plates impregnated with a solution of silicate of soda and sulfate of magnesia and coated with a waterproof compound and adapted and arranged for the reception of plaster, and a layer of plaster applied to said plates.

8. A partition or wall, consisting of fibrous sheets or plates perforated and impregnated with a solution of silicate of soda and sulfate of magnesia and coated with a waterproof compound, and plaster applied to said plates and keying through the perforations.

9. A partition or the like consisting of fibrous sheets or plates perforated and impregnated with a solution of silicate of soda and sulfate of magnesia and coated with a waterproof compound, tie or distance pieces for spacing said plates, and plaster applied to said plates and keying through the perforations.

10. A partition, ceiling or like construction, consisting of overlapping fibrous plates impregnated with a solution of silicate of soda and sulfate of magnesia, and adapted and arranged for the reception of plaster.

11. A partition, ceiling or wall, consisting of fire and water proof fibrous sheets or plates provided at their edges with tongues, which overlap the edges of adjoining plates, said fibrous sheets or plates having spaces for the reception of plaster, and transversely-extending tie or distance pieces for rigidly securing the plates, substantially as described.

12. A partition, ceiling or like construction, consisting of sidings separated by an air-space and composed of one-ply fire and water proof fibrous sheets or plates perforated for the reception of plaster and provided at their edges with tongues, which overlap the edges of adjoining plates, and tie or distance pieces extending transversely of said air-space and rigidly connecting the sidings, substantially as described.

704,067. TRAMWAY-CAR. ADOLF MAURER, Ehrenfeld, near Cologne, Germany. Filed Mar. 3, 1902. Serial No. 96,562. (No model.)

Claim.—1. Benches for tramway-cars having seats and backs directed not only upward but also exactly symmetrically-arranged seats and backs directed downward, and pivots provided at the ends of the benches respectively which pivots are connected with the end walls of the car, as and for the purpose set forth.

2. In tramway-cars the combination with the end walls of the car, having horizontal slots *c* arranged in each end walls of benches *a*, having seats and backs directed not only upward but also exactly symmetrically-arranged seats and backs directed downward and pivots *b* attached to the ends of the benches, respectively, which pivots rest in the said slots *c*, as and for the purpose set forth.

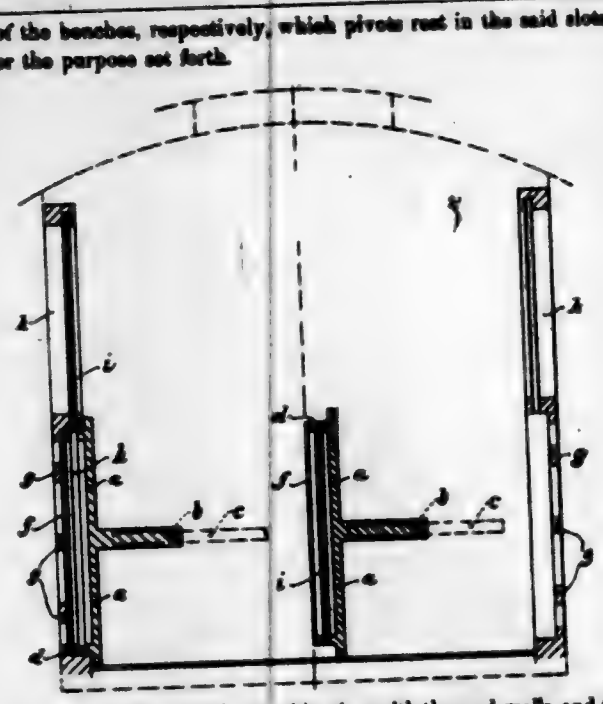

3. In tramway-cars the combination with the end walls and the side walls having recesses at their under parts of benches having seats and backs directed not only upward but also exactly symmetrically-arranged seats and backs directed downward, pivots provided at the ends of the benches and turnably attached to the end walls, respectively, frames *d* forming part of the backs of the benches and projecting into the said recesses of the side walls, the plates *f* of the latter being rigidly fastened to such frames, and stays *g* placed outside of the plates *f*, as and for the purpose set forth.

4. In tramway-cars the combination with the end walls and the side walls having recesses at their inner parts of benches having seats and backs directed not only upward but also exactly symmetrically-arranged seats and backs directed downward, pivots provided at the ends of the benches and turnably attached to the end walls, respectively, frames *d* forming part of the backs of the benches and projecting into the said recesses of the side walls, the plates *f* of the latter being rigidly fastened to such frames, grooves *h* let into the frames *d*, windows *i* movably arranged in the upper part of the side walls and adapted to be lowered into said grooves *h*, and stays *g* placed outside of the plates *f*, as and for the purpose set forth.

704,068. MACHINE FOR THE MANUFACTURE OF INLAID LINOLEUM. DAVID H. MELVIN, Lincolnville, N. Y. Filed Oct. 22, 1901. Serial No. 79,686. (No model.)

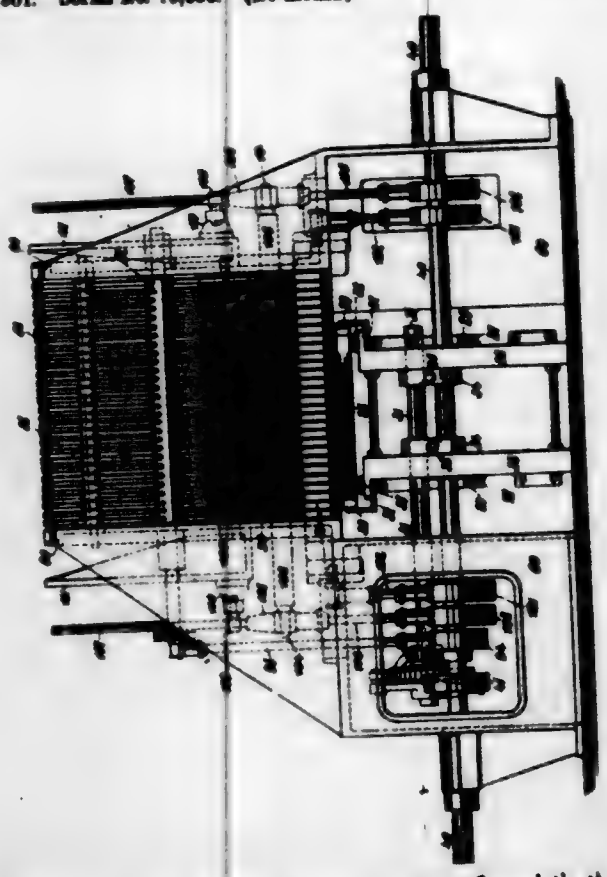

Claim.—1. In a machine for use in making floor-cloth, the series of spools for the composition ribbons, and a feed-plate over which said

ribbons are moved, combined with means for feeding predetermined lengths of said ribbons to and upon a foundation, means for severing such lengths from the ribbons, and means for pressing the same upon said foundation; substantially as set forth.

2. In a machine for use in making floor-cloth, the series of spools for the composition ribbons, a feed-plate over which said ribbons are moved, and means for imparting a step-by-step movement to a foundation, combined with means for feeding predetermined lengths of said ribbons to and upon said foundation, means for severing such lengths from the ribbons, and means for pressing the same upon said foundation; substantially as set forth.

3. In a machine for use in making floor-cloth, the series of spools for the composition ribbons, and a feed-plate over which said ribbons are moved, combined with means for feeding predetermined lengths of said ribbons to and upon a foundation, means for determining when said ribbons shall be fed upon said foundation in accordance with the pattern to be produced thereon, means for severing such lengths from said ribbons, and means for pressing the same upon said foundation; substantially as set forth.

4. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, and means for imparting a step-by-step movement to a foundation to receive the tesserm, combined with means for feeding predetermined lengths of said ribbons to and upon said foundation, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation; substantially as set forth.

5. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, and means for imparting a step-by-step movement to a foundation to receive the tesserm, combined with means for feeding predetermined lengths of said ribbons to and upon said foundation, means for determining when said ribbons shall be fed upon said foundation in accordance with the pattern to be produced thereon, means for severing such lengths from said ribbons, and means for pressing the same upon said foundation; substantially as set forth.

6. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, and means for moving by a step-by-step movement a foundation through the machine, combined with means for feeding predetermined lengths of said ribbons to and upon said foundation, means for determining when said ribbons shall be fed upon said foundation in accordance with the pattern to be produced thereon, and means for severing such lengths from said ribbons; substantially as set forth.

7. In a machine for use in making floor-cloth, means supporting a series of the composition ribbons in horizontal edge-to-edge order, combined with means for feeding simultaneously predetermined lengths of said ribbons beyond a given line, and means for severing such lengths simultaneously from said ribbons to form the tesserm; substantially as set forth.

8. In a machine for use in making floor-cloth, means supporting a series of the composition ribbons in horizontal edge-to-edge order, combined with means for feeding predetermined lengths of said ribbons beyond a given line, means for determining when and which of said ribbons shall be fed in accordance with the pattern to be produced, and means for severing such lengths from said ribbons to form the tesserm; substantially as set forth.

9. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, and means for moving by a step-by-step movement a foundation through the machine, combined with means for feeding predetermined lengths of said ribbons to and upon said foundation, means for determining when and which special ones of said ribbons shall be fed upon said foundation in accordance with the pattern to be produced thereon, and means for severing such lengths from said ribbons; substantially as set forth.

10. In a machine for use in making floor-cloth, the series of spools for the composition ribbons, a feed-plate over which said ribbons are moved to and upon a foundation, and means for moving by a step-by-step movement said foundation through the machine, combined with means for feeding predetermined lengths of said ribbons from over said feed-plate and to and upon said foundation, means for determining when said ribbons shall be fed upon said foundation in accordance with the pattern to be produced thereon, and means for severing such lengths from said ribbons; substantially as set forth.

11. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, and means for imparting a step-by-step movement to a foundation, combined with a series of yielding feet operable from the power-shaft for feeding predetermined lengths of said ribbons to and upon said foundation, a knife for severing such lengths from said ribbons to form the tesserm, and a yielding plunger for pressing the tesserm upon said foundation; substantially as set forth.

12. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, combined with the pivotally-mounted bars 81 carrying the feet 80 for feeding predetermined lengths of the said ribbons to and upon a foundation, means for imparting vertical and oscillatory motion to said bars 81, for causing said feet 80 to feed said ribbons, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation; substantially as set forth.

13. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, combined with the series of bars 81 having the feet 80 for feeding predetermined lengths of said ribbons to and upon a foundation, means for actuating said bars 81 to cause said feet to effect such feeding, means for throwing some of the said bars 81 out of operation when such result is desired in accordance with the pattern to be produced, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the tesserm upon said foundation; substantially as set forth.

14. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, combined with the series of bars 81 having the feet 80 for feeding predetermined lengths of said ribbons to and upon a foundation means for actuating said bars 81 to cause said feet to effect such feeding, a perforated pattern device 82 for determining the pattern to be formed upon said foundation, means intermediate said pattern device and said bars 81, for determining by means of said pattern device when said bars 81 shall act to feed said ribbons, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the tesserm upon said foundation; substantially as set forth.

15. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, combined with the series of pivotally-mounted and vertically-slidable bars 81 having the feet 80 for engaging and feeding predetermined lengths of said ribbons to and upon a foundation, the bar 103 engaging said bars 81 and adapted by its motion to impart the proper feeding action to said bars 81, the pivoted arms 90 carried by said bars 81 and adapted to lock said bars 81 to said bar 103, the perforated pattern-roller 82, the series of levers 83 having ends adapted to enter the apertures of said roller 82 and being in coöperative engagement with said arms 90 for unlocking said arms 90 from said bar 103, when it is desired that said bars 81 shall not act to feed said ribbons, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation; substantially as set forth.

16. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, combined with the series of feet for feeding predetermined lengths of said ribbons to and upon a foundation, means for actuating said feet, a perforated pattern device 82 for determining the pattern to be formed upon said foundation, means intermediate said pattern device 82 and said feet for controlling by means of the said pattern device when said feet shall act to feed the linoleum ribbons, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation; substantially as set forth.

17. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, combined with the series of bars 81 having the feet 80 for feeding predetermined lengths of said ribbons to and upon a foundation, the pivotally-mounted bar 100 upon which said bars 81 are mounted and upon which they are adapted to have vertical and pivotal movement, the bar 103 upon which said bars 81 are also mounted, means for imparting vertical and oscillatory motion to said bar 103 for actuating said bars 81, springs 102 suspending said bars 81, springs 92 secured to said bars 81, the arms 90 pivotally secured to said bars 81 and having their lower ends 91 normally locking said bars 81 to said bar 103, the perforated pattern-roller 82, means for imparting an intermittent rotary motion to said pattern-roller, the pivotally-mounted levers 83 having portions adapted to contact with said arms 90 and also having pointed ends to enter at the proper time the perforations in said roller 82, the springs 93 normally operating to relieve the levers 83 from the roller 82 and to press the lower portions of said levers 83 against the upper portion of said arms 90 in contact with said springs 92, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation, the said perforated roller 82 with the devices coöperating therewith, determining the pattern which shall be formed upon said foundation; substantially as set forth.

18. In a machine for use in making floor-cloth, the series of spools supporting the composition ribbons, the feed-plate over which said ribbons are led, a casing inclosing said spools and feed-plate, and means for maintaining the chamber within said casing at a low temperature, combined with means for feeding predetermined lengths of said ribbons to and upon a foundation, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation; substantially as set forth.

19. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, a feed-plate over which said rib-

bons are fed to a foundation, and the superposed frame above said feed-plate and comprising the longitudinal strips carrying partitions for separating said ribbons, combined with means for feeding predetermined lengths of said ribbons to and upon said foundation, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation; substantially as set forth.

20. In a machine for use in making floor-cloth, means for supporting a series of the composition ribbons, a feed-plate over which said ribbons are led, and means for chilling said feed-plate, combined with means for feeding predetermined lengths of said ribbons to and upon a foundation, means for severing such lengths from said ribbons to form the tesserm, and means for pressing the same upon said foundation; substantially as set forth.

704,069. MACHINE FOR THE MANUFACTURE OF INLAID LINOLEUM. DAVID H. MELVIN, Lincolnville, N. Y. Filed Oct. 23, 1901. Serial No. 79,698. (No model.)

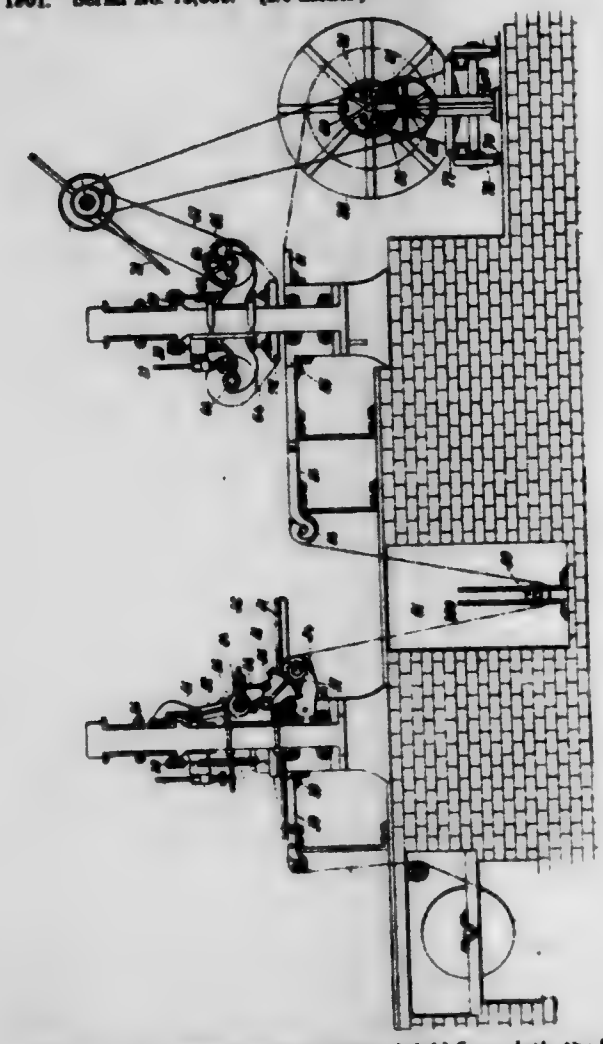

Claim.—1. In a machine for making inlaid floor-cloth, the first press having the bed-plate and platen between which the foundation fabric passes and which are adapted to and to receive between them the pattern-blocks carrying the tesserm for transference to said fabric by said press, and means for automatically stripping the tesserm from said pattern-blocks after said press has caused the tesserm to adhere to said fabric, whereby the tesserm leave said blocks and remain attached to said fabric, combined with the second press through which said fabric with the tesserm thereon thereupon passes and wherein it is subjected to heat and pressure for finishing the floor-cloth, and means for effecting the intermittent travel of said fabric through said presses; substantially as set forth.

2. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with the pin-roller at the rear of said bed-plate for engaging and feeding the said fabric, and means for imparting an intermittent rotary motion to said roller; substantially as set forth.

3. In a machine for making inlaid floor-cloth, the first press having the heated bed and cold platen between which the foundation fabric is fed and which are adapted to and to receive between them the pattern-blocks carrying the tesserm for transference to said fabric by said press, combined with the second press having the heated bed and heated platen between which the said fabric with the tesserm thereon is fed and wherein it is subjected to heat and pressure for finishing the floor-cloth, and means for effecting the intermittent travel of said fabric through said presses; substantially as set forth.

4. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with tables extending to the front and rear of said bed-plate beyond the vertical plane of the said platen, and adapted to receive the pattern-blocks used for carrying the tesserm, and means for drawing said fabric through said press, said fabric on its movements through the press serving to carry one of said pattern-blocks from below the platen and the next following pattern-block to position below the platen; substantially as set forth.

5. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with the pin-roller in rear of said bed-plate and over which said fabric travels and which causes the said fabric to turn downwardly as it is fed onward, the table in rear of said roller, and means for imparting intermittent rotary motion to said roller and through it to said fabric; substantially as set forth.

6. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with means at the rear of said bed-plate for engaging the said fabric and turning the same downward therefrom as it is fed onward, and the rear table, adapted to receive one after another the pattern-blocks used for carrying the tesserm, said means while turning said fabric downward serving to strip the tesserm from said pattern-blocks and move the latter upon said rear table; substantially as set forth.

7. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with means at the rear of said bed-plate for turning the said fabric downward as it feeds onward, said means while turning said fabric downward serving to strip the tesserm from the pattern-blocks; substantially as set forth.

8. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with the table at the rear of said bed-plate and between which and said bed-plate said fabric feeds downward, and means for feeding said fabric, said fabric with the tesserm thereon being stripped from said pattern-blocks as the fabric turns downward, while said blocks move onto said table; substantially as set forth.

9. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with the second press through which said fabric with the tesserm thereon travels and which subjects the same to further pressure, and the well intermediate said presses into which the fabric with the tesserm thereon is looped; substantially as set forth.

10. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with the second press through which said fabric with the tesserm thereon travels and which subjects the same to further pressure, the well intermediate said presses into which the fabric with the tesserm thereon is looped, and the tension-roller resting loosely within the loop of said fabric; substantially as set forth.

11. In a machine for making inlaid floor-cloth, the press having the bed-plate over which the foundation fabric may travel, the platen for exerting the pressure to cause the tesserm to adhere to said fabric, and means for operating said platen, combined with the second press through which said fabric with the tesserm thereon travels and which subjects the same to further pressure, the well intermediate said presses into which the fabric with the tesserm thereon is looped, the tension-roller resting loosely within the loop of said fabric, and the vertical guides for said roller; substantially as set forth.

12. In a machine for making inlaid floor cloth, the first press having the bed-plate and platen between which the foundation fabric passes and which are adapted to and to receive between them the pattern-blocks which carry the tesserm for transference to said fabric under the action of said press, combined with the second press having the bed and platen between which said fabric with the tesserm thereon travels and therein is subjected to heat and pressure for finishing the floor-cloth, and means for effecting the intermittent travel of said fabric through said presses; substantially as set forth.

13. In a machine for making inlaid floor-cloth, the first press having the heated bed and cold platen between which the foundation fabric is fed, and by means of which platen the tesserm are caused to adhere to said fabric, combined with the second press having the heated bed and heated platen between which the said fabric with the tesserm thereon is

fed to receive finishing pressure therefrom, and a smooth sheet carried below the platen of said second press; substantially as set forth.

704,070. MACHINE FOR THE MANUFACTURE OF INLAID LINOLEUM. DAVID H. MELVIN, Linoleumville, N. Y. Filed Oct. 23, 1901. Serial No. 79,760. (No model.)

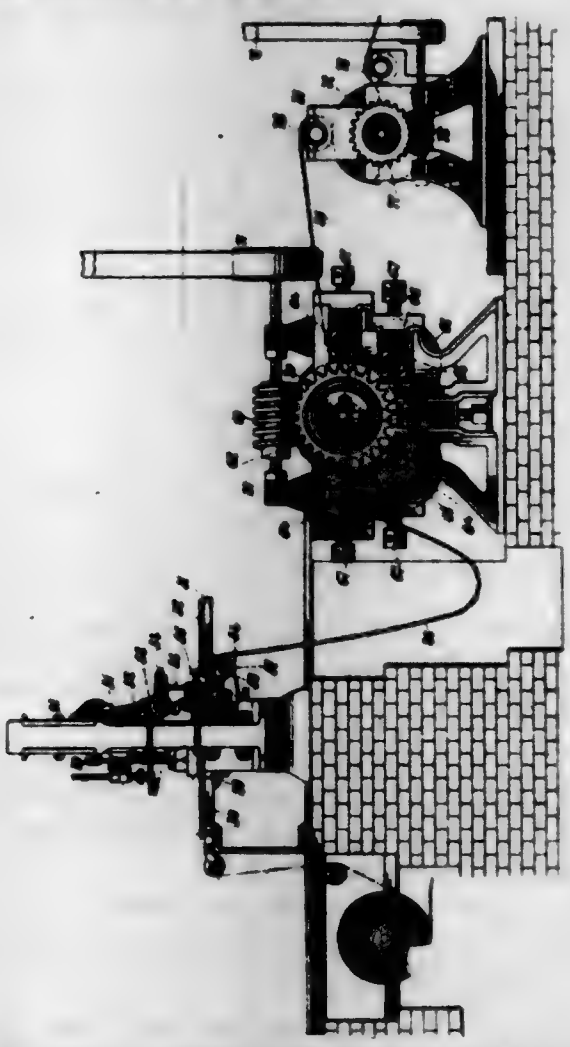

Claim.—1. In a machine for making inlaid floor-cloth, the first press having the bed-plate and platen between which the foundation fabric passes and which are adapted to receive between them the pattern or pin blocks carrying the tesseræ to be transferred to said fabric, combined with the second press which receives said fabric with the tesseræ thereon and subjects the same to heat and finishing pressure, said second press comprising the heated roller and the series of smaller rollers encompassing the same and between which and said heated roller said fabric passes, said smaller rollers pressing the floor-cloth against said heated roller; substantially as set forth.

2. In a machine for making inlaid floor cloth, the first press having the bed-plate and platen between which the foundation fabric passes and which are adapted to receive between them the pattern or pin blocks carrying the tesseræ to be transferred to said fabric, combined with the second press which receives said fabric with the tesseræ thereon and subjects the same to heat and finishing pressure, said second press comprising the heated roller, the series of smaller rollers encompassing the same and between which and said heated roller said fabric passes, the series of sliding bearings for said smaller rollers, the springs pressing said smaller rollers toward said heated roller, and means for controlling said springs; substantially as set forth.

3. In a machine for making inlaid floor-cloth, the first press having the bed-plate and platen between which the foundation fabric passes and which are adapted to receive between them the pattern or pin blocks carrying the tesseræ to be transferred to said fabric, and means for feeding said foundation fabric through said press, combined with the heated press through which said fabric with the tesseræ thereon passes and which subjects the same to finishing pressure, and the cold roller over which the floor-cloth is carried after leaving said heated press; substantially as set forth.

4. In a machine for making inlaid floor-cloth, the first press having the bed-plate and platen between which the foundation fabric passes and which are adapted to receive between them the pattern or pin blocks carrying the tesseræ to be transferred to said fabric, and means for feeding said foundation fabric through said press, combined with the heated press through which said fabric with the tesseræ thereon passes and which subjects the same to finishing pressure, and the cold-roller mechanism through which the floor-cloth passes after leaving said heated press, said cold-roller mechanism comprising the large roller and the smaller roller with means for driving the said large roller; substantially as set forth.

5. In a machine for making inlaid floor-cloth, the first press by which the tesseræ are pressed upon and attached to the foundation fabric, combined with the second or heated press through which said fabric with the tesseræ thereon passes and which subjects the same to finishing pressure, and the cold roller over which the floor-cloth is carried after leaving said heated press; substantially as set forth.

6. In a machine for making inlaid floor-cloth, the first press having the bed-plate and platen between which the foundation fabric passes and which are adapted receive between them the pattern or pin blocks carrying the tesseræ to be transferred to said fabric, and means for feeding said foundation fabric through said press, combined with the heated press, through which said fabric with the tesseræ thereon passes and which subjects the same to finishing pressure, and the cold roller over which the floor-cloth is carried after leaving said heated press, said heated press comprising the large heated roller and the series of encompassing smaller rollers with means for driving said rollers; substantially as set forth.

704,071. WASHING-MACHINE. EDWARD F. MILLER, Lenark, Ill. Filed Dec. 27, 1901. Serial No. 87,409. (No model.)

Claim.—1. In a washing-machine, a rod having a pounder at one end, and means for operating said rod, comprising a lever pivoted to the other end thereof, a support for said rod, a sleeve rigidly secured to the support, a pivot-block surrounding said sleeve and held in place by a collar, and a link pivoted to said lever at one end, and at the other end to said pivot-block, substantially as specified.

2. In a washing-machine, a rod having a pounder at one end and means for operating said rod, comprising a lever pivoted to the other end thereof, a support for said rod, a sleeve rigidly secured to said support, a pivot-block mounted to rotate on said sleeve but held against longitudinal movement thereon, and a link connected to the lever and to the pivot-block, substantially as specified.

704,072. METALLIC LATHING. PERRY A. MITCHELL, New York, N. Y. Filed Sept. 25, 1901. Serial No. 76,477. (No model.)

Claim.—1. A lath consisting of a metallic plate having a plurality of keepers stamped up therefrom so that the opposite edges thereof will lie above the plane of the body of the plate and substantially parallel therewith throughout their length, and each keeper having a flaring and a contracted opening respectively formed on its opposite sides, substantially as described.

2 A lath consisting of a metallic plate having a plurality of open keepers stamped up therefrom so that the opposite edges thereof will lie above the face of the plate and in different planes, the arrangement being such that the openings on the opposite sides of the keepers will differ in depth throughout substantially their entire length, substantially as described.

3. A lath consisting of a metallic plate having a plurality of keepers stamped up therefrom, each keeper having a flaring and a contracted opening respectively formed on its opposite sides, the highest portion of said keeper being flat and straight and disposed parallel to the plane of the body of the lath, and thence inclined toward the said contracted opening, substantially as described.

4. A lath consisting of a metallic plate having a plurality of rows of parallel slits arranged in pairs, the slits of each pair being of unequal length and the metal between each pair of slits being stamped up to form an open keeper, the arrangement being such that each keeper has a flaring and a contracted opening respectively formed on its opposite sides said openings differing both as to length and width.

5. A lath consisting of a metallic plate having a plurality of keepers stamped therefrom and open on opposite sides, each of said keepers being inclined for a portion of its width and said inclined portion terminating in a flat edge wall that lies parallel with the plane of the plate.

6. A lath consisting of a metallic plate having a plurality of rows of keepers stamped therefrom and open on opposite sides, the keepers of each row being alternately inclined in opposite directions relatively to the plane of the body of the lath.

704,073. CLOTHES-LINE PROP-HEAD. JOHN G. HOLE, Batavia, Ill. Filed Mar. 10, 1902. Serial No. 97,622. (No model.)

Claim.—1. A prop-head for clothes-lines, comprising a hollow body part, having a vertical lug provided with companion horizontal binding-pins projecting in the same direction from one side thereof and adapted to grip the line, and the retaining-hooks inclining in opposite directions, substantially as set forth.

2. The combination with a prop-head, comprising a hollow body part provided with a vertical lug extension and horizontal binding-pins having hooks set at different angles, of a prop on which said head is mounted, and means for securing said head in its mounted position, substantially as set forth.

704,074. CARPENTER'S FOLDING SQUARE. EDWARD J. MORRELL, Quincy, Mass. Filed Aug. 26, 1901. Serial No. 73,273. (No model.)

Claim.—A folding square composed of two members, one member consisting of one entire arm and a right-angle projection integral therewith, said projection and the end of the arm adjacent thereto being recessed, the free ends of said arm being diagonal to its length, the other member maintaining the same width as said projection but having a portion of less thickness adapted to enter said recess, said reduced portion having its upper outer edge recessed and its under outer edge chamfered a pivot connecting the two parts, a spring-latch secured to the first member in the path of said chamfered edge and adapted to be engaged and forced outwardly thereby and to automatically engage said recess in the second member and lock it when in operative position, diagonal abutting shoulders adjacent to the reduced portion adapted to engage the diagonal ends of the other member, the portion of said folding member beyond the pivot being of greater length than the width of the projection from the pivot-point to the edge thereof, whereby, when folded, angles of ninety degrees are formed on the outside thereof and an angle of more than ninety degrees on the inside thereof.

704,075. TIN SEALING-WAX CAN. WILSON R. MOYER, Richland Station, Pa. Filed Feb. 6, 1902. Serial No. 92,931. (No model.)

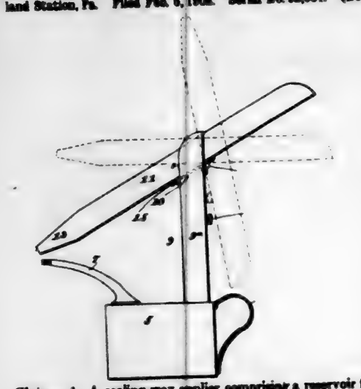

Claim.—1. A sealing-wax applier comprising a reservoir for an inflammable fluid, a burner, and an upward-extending post secured thereto, and a sealing-wax holder pivoted to said post, adapted to swing toward and away from the burner, substantially as shown and described.

2. A sealing-wax applier comprising a reservoir for an inflammable fluid, a burner removably secured thereto, an upward-extending post secured to the reservoir, and a sealing-wax holder hinged to said post, adapted to swing toward and away from said burner, substantially as shown and described.

3. A sealing-wax applier comprising a reservoir for an inflammable fluid, a burner and an upward-extending post secured thereto, an inclined ledge on the post, and a sealing-wax holder secured to the post and normally supported by said ledge, adapted to swing away from the burner, substantially as shown and described.

704,076. VENTILATOR AND MIRROR-PROTECTOR. WILLIAM C. MCBRIDE, Hillsboro, Tex. Filed Sept. 28, 1901. Serial No. 76,899. (No model.)

Claim.—1. A mirror-protecting and ventilating device, comprising a series of streamers arranged on an endless band, means to support and move longitudinally the band and streamers in front of a mirror, and a fan pendent in front of the streamers, air from the fan being adapted to agitate the streamers.

2. A mirror-protecting and ventilating device, comprising a pendent fan in front of a mirror, pulleys held to rotate at opposite side edges of the mirror, an endless flexible connection on the two opposite pulleys, streamers pendent from the endless connection, a pulley on the fan, a pulley affixed to and above one of the pulleys supporting the endless connection, and an endless belt connecting the uppermost pulley with the pulley on the fan.

704,077. HINGE. CHARLES H. MCCAMLEY, Baltimore, Md., assignor to the Glen Rock Stamping Company, Glenrock, Pa., a Corporation. Filed June 22, 1901. Serial No. 65,041. (No model.)

Claim.—1. A hinge comprising two leaves each having an outwardly-bent wing, said wings being arranged face to face and pivotally connected and having their free outer edges yieldingly pressed together, one of said wings having a series of depressions arranged in the arc of a circle whose center is at the pivotal point of the hinge, and the other wing having one or more elevations adapted to engage said depressions.

2. A hinge comprising two leaves each having an outwardly-bent spring-metal wing, said wings being arranged face to face and pivotally connected, one of said wings having a series of depressions arranged in the arc of a circle whose center is at the pivotal point of the hinge, and the other wing having one or more elevations adapted to engage said depressions.

3. A hinge comprising two leaves each having an outwardly-bent spring-metal wing united thereto by a contracted portion, said wings being arranged face to face and pivotally connected near their junction with the leaves, one of said wings having a series of depressions arranged in the arc of a circle whose center is at the pivotal point, and the other wing having one or more elevations adapted to engage with said depressions.

704,078. SAND-MOLDING MACHINE. JOHN J. MCCLELLAND, London, England. Filed Mar. 8, 1900. Serial No. 7,776. (No model.)

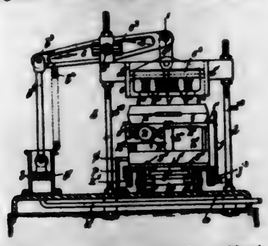

Claim.—1. In a sand-molding machine, the combination with a bed, of a railway carried by the bed, an extension of the railway adjacent thereto mounted upon a bed disconnected from the first-mentioned portion of the railway, a mold box or flask carriage mounted on the railway, a frame carried by the bed, a rammer carried by the frame, means for reciprocating the rammer, a mold box or flask carried by the mold box or flask carriage and provided with perforated lugs i^3, upright standards K having pins K^3 adapted to enter the perforations i^3 carried by the carriage, and a lever for reciprocating the standards K, substantially as shown and described.

2. In a sand-molding machine, the combination with a bed, of a railway carried by the bed, an extension of the railway adjacent thereto mounted upon a bed disconnected from the first-mentioned portion of the railway, a mold box or flask carriage mounted on the railway, a motor carried by the mold box or flask carriage, and mechanism also carried by the mold box or flask carriage and actuated by the motor for vibrating such carriage, a frame carried by the bed, a rammer carried by the frame, means for reciprocating the rammer, a mold box or flask carried by the mold box or flask carriage, and mechanism carried by the mold box or flask carriage for lifting the mold box or flask from the completed mold, substantially as shown and described.

704,079. SUCTION-BOX ATTACHMENT FOR PAPER-MACHINES. FRANK B. MALLORY, Wrentwright, Mass. Filed Feb. 17, 1902. Serial No. 94,208. (No model.)

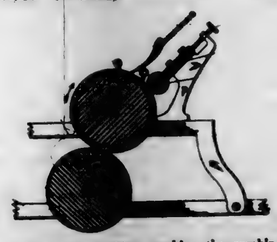

Claim.—1. In a paper-making machine, the combination of the couch-roll, and a cleaning-roll arranged to engage the couch-roll and to turn at a different peripheral speed from that of the couch-roll, so as to have a combing action thereon.

2. In a paper-making machine, the combination of the couch-roll, a cleaning-roll, a driving-gear turning with the couch-roll and engaging a pinion turning with the cleaning-roll, said gears being proportioned so that the peripheral speed of the cleaning-roll will be less than that of the couch-roll.

3. In a paper-making machine, the combination of the couch-roll, an adjustable guard-board, a cleaning-roll journaled in the guard-board and having a surface of flexible material, a driving-gear turning with the couch-roll and meshing with a pinion turning with the cleaning-roll, said gears being proportioned so that the peripheral speed of the cleaning-roll will be less than that of the couch-roll, a supplemental scraper or doctor, and two spraying devices for the couch-roll, one for spraying the surface of the couch-roll in front of the drying-roll.

704,080. FOLDING BOX. BENJAMIN B. MCFADDEN, Binghamton, N. Y. Filed Sept. 12, 1901. Serial No. 75,216. (No model.)

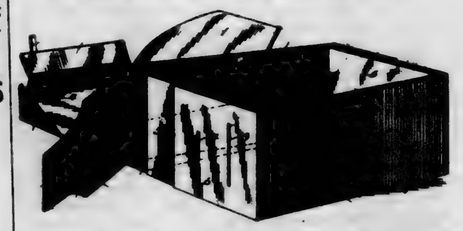

Claim.—1. A box, formed in two separate blank members, the main blank having four main sections, a front side section at one end of the blank, a cover-section at the opposite end of the blank, a bottom section at the inner edge of the front section, and a back section between the bottom and cover sections, the front and back sections corresponding in size and the bottom and cover sections corresponding in size, each of the front, bottom and cover sections having opposite end flaps, which are substantially coextensive with the end of the box, and the other blank member comprising an intermediate body corresponding to the back section, and having opposite terminal flaps which fit against the ends of the box.

2. A box, comprising two separate members, the main member having a bottom section, a front section, a back section, a cover-section carried by the back section and provided with opposite end flaps, the bottom and front sections also being provided with end flaps, of which the front flaps lie upon the outer sides of the bottom flaps, and the other member embracing the rear edges of the bottom flaps and having its opposite ends folded across and connected to the front flaps, the spaces between the bottom flaps and the front flaps forming pockets for the reception of the respective cover-flaps.

3. A box formed in two separate foldable members, the main box member having a bottom, a front, opposite ends, a back, and a cover carried by the back, and the other member having an intermediate body portion embracing the rear edges of the ends of the box between said ends and the back portion of the main blank, and also provided with opposite end flaps which are connected to the box, whereby the back portion of the main blank is foldable away from the box with the cover to fully expose the open top of the box.

4. A box formed in two separate foldable members, the main member having a bottom, a front, opposite ends, a back, and a cover carried by the back, and the other member being applied to the rear edges of the ends of the box to form a back normally lying between the ends of the box and the back of the main blank and thereby to complete the body of the box, whereby the back of the main section is foldable rearwardly with the cover to fully expose the open top of the box.

5. A box formed in two separate members, the main member having a bottom section, front and back sections carried thereby, a cover-section hinged to the back section, the cover, bottom and front sections being provided with opposite end flaps, each of the front flaps being provided with a pair of transverse slits, and the other box member having an intermediate body portion corresponding to the front and back of the main member and provided with opposite end flaps, the outer end of each flap being reduced to form a tongue, and the intermediate portion of the flap having a tongue cut and bent therefrom and projected toward one end thereof.

6. A box formed in two separate members, the main box member having upstanding bottom flaps, opposite side flaps folded across the outer sides of the bottom flaps, and a cover provided with opposite end flaps to fit within the pockets formed by the adjacent bottom flaps and side flaps, and the other box member having an intermediate body portion applied to one side of the box and provided with opposite end flaps embracing the respective ends of the box and connected to the adjacent side flaps thereof.

704,081. ROCK-DRILL CHUCK. MARTIN MCHALE, Phœnix, and JOSEPH TRAHERN, Rhoik, Canada. Filed Oct. 10, 1901. Serial No. 78,319. (No model.)

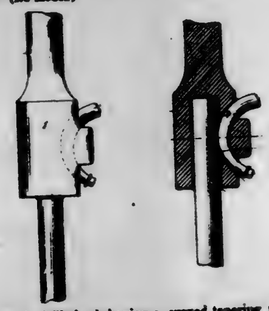

Claim.—1. A drill-chuck having a curved tapering passage communicating with the drill-chamber, said passage having its ends leading out through the wall of the chuck at separate and distinct points one above the other, and a curved and tapering key in said passage, as set forth.

2. A drill-chuck having a curved tapering passage communicating with the drill-chamber, said passage being circular in cross-section and having its ends leading out through the wall of the chuck at separate and distinct points one above the other, and a curved tapering key circular in cross-section and fitting in said passage, as set forth.

3. A drill-chuck having a curved tapering passage communicating with the drill-chamber, said passage being circular in cross-section and having its ends leading out through the wall of the chuck at separate and distinct points, one above the other, and a round curved and tapering key fitting in the said passage, said key being provided with a longitudinal groove in its outer periphery, as set forth.

704,082. VARNISH FOR MAKING ENAMEL AND PATENT LEATHERS. HARRY C. MCKAY, Huntington, Pa., assignor, by mesne assignments, to American Patent Kid Company, a Corporation of New Jersey. Filed Dec. 28, 1900. Serial No. 41,461. (No specimens.)

Claim.—1. A preparatory varnish for the purpose described, composed essentially of boiled linseed-oil admixed with a solution of guncotton in amyl acetate.

2. A mordanting varnish for the purpose described, composed essentially of boiled linseed-oil admixed with a solution of guncotton in amyl acetate, and a coloring-matter dissolved in methyl alcohol.

704,083. WOVEN CHENILLE. THOMAS F. HAYLOR and ARTHUR HAYLOR, Kidderminster, England. Filed July 12, 1901. Serial No. 68,052. (No specimens.)

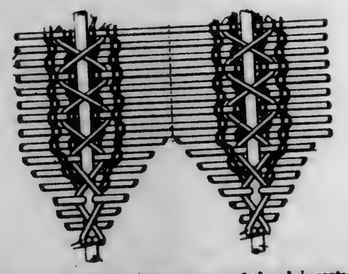

Claim.—A chenille consisting of a core, weft-threads in contact with the core, warp-threads woven with the weft-threads and a pair of dog-threads woven with the weft-threads and crossing from one side of the core to the other to hold the weft-threads up in the form of tufts, substantially as described.

704,084. FLY-SCREEN ATTACHMENT. ANDREW M. NELSON, Lockport, Ill. Filed Nov. 11, 1901. Serial No. 81,795. (No model.)

Claim.—A screen attachment, comprising an overhead screen secured to a wire rod, the ends of said wire rod being bent downward at right angle in such a manner that the screen may readily be attached to the door-casing, a side screen secured to a wire rod, the ends of said rod being bent to form hooks, by which the said side screen is attached to the overhead screen, substantially as shown and described.

704,085. CAR-AXLE BOX. CESAR NEWBURG, San Francisco, Cal. Filed Dec. 28, 1900. Serial No. 41,418. (No model.)

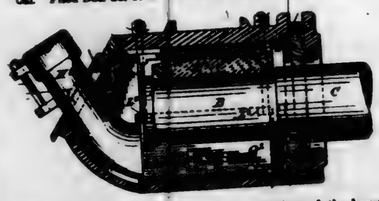

Claim.—1. The combination with a car-axle, and the box thereof, of a device adapted to feed lubricating matter to the axle-journal, and means extending through the top of the box for adjusting said feed device, substantially as described.

2. The combination with a car-axle and box therefor provided with a suitable inlet, of a tray adapted to hold a lubricant under the journal in said box, a feed-tube at the outer end of the box extending through the cover thereof and operating to deliver the lubricant through said inlet to the box and into the tray therein, and a pressure-cap at the end of the tube bearing on the lubricant therein, substantially as described.

3. In a car-axle box, the combination with the journal and bearing therein, of a tray adapted to hold a lubricant under said journal and bearing, a feeder arranged to supply the lubricant to said tray, a cap fitted to said feeder so as to press on the lubricant, and means extending upwardly through the top of the box for positively drawing up the tray and its contents toward the journal and bearing, substantially as described.

4. In combination with the axle-journal, and the bearing therefor, of a feeder adapted to discharge lubricating matter into said bearing, means suspended from the upper portion of the bearing for supporting the feeder, and means extending through the top of the box for adjusting said suspended means, substantially as described.

5. In combination substantially as described, a journal, a bearing-box therefor, a tray beneath the journal, a curved tube leading from the outside of the box and connected with one end of the tray constituting therewith a continuous unobstructed passage for a lubricant material, and a cup-shaped cap held at the end of said tube and adapted to press directly upon the lubricant material therein.

6. In combination with the axle-journal and the bearing therefor, of a feeder adapted to discharge lubricating matter to said bearing comprising an open-top tray, its outer wall extending beyond the end of said axle and its inner wall being cut away to permit an extended vertical adjustment of the tray and means adjacent the top of the box for adjusting said tray, substantially as described.

7. In combination substantially as described, a lubricant-holding tray comprising a body portion having an open top, a tubular inlet at one end of said body portion, and a pressure-exerting device at the end of the tube, the inner end of the said body portion being cut away for the purpose described.

8. The combination with a car-axle its box and the cover therefor, of a feed-tube adapted to discharge lubricating matter into said box through said cover so that the same will reach the axle-journal, a cap fitted to said tube having a smooth hollow interior and arranged to press on the lubricant matter, and means for advancing said cap and retaining the same in such advanced position, substantially as described.

9. The combination with a car-axle and its box, of a feed-tube at the lower portion of said box adapted to discharge lubricating matter beneath the axle-journal, and means for feeding the lubricating matter through said tube comprising a flanged cap slidably engaging the exterior surface of the tube, and means in engagement with said cap for forcing the same inwardly, substantially as described.

704,086. FIRE-ESCAPE. GILBERT P. HINE and EDWARD F. LARDNER, Williamsport, Pa. Filed June 7, 1901. Serial No. 62,640. (No model.)

Claim.—1. In a ladder, the combination of parallel ropes or cables and a rung having peripheral grooves therein to receive the cable, of clamping-links, each comprising a wire bent at each end to form loops or eyes to receive the cable above and below the rung, said clamping-links bent between their ends and disposed in the peripheral grooves therein to partly surround the rung and clamp the cable and itself in the grooved portion of the rung.

2. The combination with a supporting-plate and a ladder having rope or cable uprights and rungs, of clamping-sleeves on the plate, the upper rung and upper ends of the cables being clamped in said clamping-sleeves.

3. The combination with a plate adapted for attachment to a window-sill, of a second plate hinged to the lower edges of the first-mentioned plate, sleeves on said second plate, a flexible ladder having cables and rungs, the upper ends of said cables inserted into the sleeves and means for clamping said cables in the sleeves.

704,087. VALVE. NOVA S. HENDERSON, Hammond, Ind. Filed Jan. 2, 1902. Serial No. 88,668. (No model.)

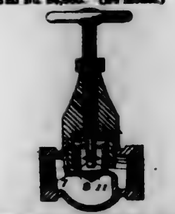

Claim.—The combination with a valve casing and seat, and a cap for the casing having bars projecting therefrom forming a cage above and around the valve-seat, of a valve comprising connected upper and lower disks, the former having an axial opening and the latter fitting the valve-seat, and an axially-adjustable valve-stem extending loosely through the upper disk and having stops above and below the upper disk to engage the disk and hold the valve to or from the seat.

704,088. KEG SHARING FOR RAILWAY-CARS. SAMFORD HORTHROP and ANDREW G. SCHNEIDEWIND, St. Louis, Mo. Filed Nov. 21, 1901. Serial No. 83,073. (No model.)

Claim.—1. In a side bearing, the combination of a body, a roller-carriage movably mounted on said body and having sides provided with apertures, a rock-shaft mounted in said body and extending through said apertures, and means carried by said rock-shaft for moving said carriage on said body, substantially as described.

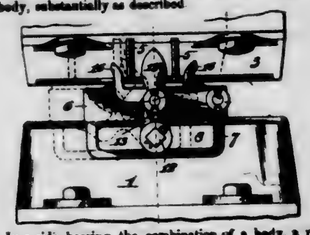

2. In a side bearing, the combination of a body, a roller-carriage movably mounted on said body and having sides provided with apertures, a rock-shaft mounted in said body and extending through said apertures, and a rocker-arm fixed to said rock-shaft and arranged to move said carriage, substantially as described.

3. In a side bearing, the combination of a body, a roller-carriage movably mounted on said body, a rocker-arm supported by said body, a central finger and a pair of outer fingers carried by said rocker-arm, a bolster-plate, and ribs carried by said bolster-plate adapted to receive the engagement of said rocker-arm fingers, substantially as set forth.

4. In a side bearing, the combination of a body, a carriage movably mounted on said body, rollers mounted in said carriage, and wings interior of said carriage adapted to rest on said body to support it and relieve the spindles of said rollers from strain, substantially as described.

5. In a side bearing, the combination of a body, a carriage movably mounted on said body and having apertured sides, wings interior of said carriage adapted to rest on said body to support it, means in said body for holding said carriage thereto, and rollers loosely positioned in said carriage, substantially as described.

704,089. PUZZLE. JOSHUA H. O'BEES, New Brighton, Pa. Filed Mar. 29, 1901. Serial No. 53,517. (No model.)

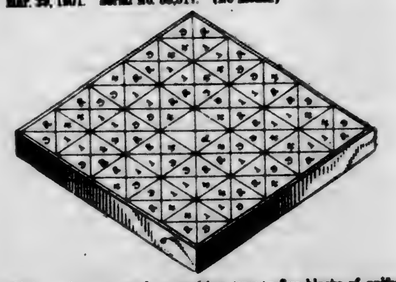

Claim.—A game-puzzle comprising twenty-five blocks of uniform size formed into a square having five blocks at each edge, each of the blocks being divided into four triangular spaces by diagonal lines, the center block having its four spaces blank, the remaining twenty-four blocks having the numerals "1," "2," "3" and "4" in vertical position, six of the blocks having the numeral "1" in the bottom space, six in the right-hand space, six in the left-hand space and the remaining six in the top space, the numeral "2" appearing in the right-hand space of six blocks, in the left-hand space of six other blocks, in the top space of another six and in the bottom space of the last six blocks, the numeral "3" being provided on each of the blocks in the bottom space of six, in the top space of six, in the right-hand space of six and in the left-hand space of the remaining six, and the numeral "4" in the right-hand space of six of the blocks, in the left-hand space of six other blocks, in the bottom space of another six blocks and in the top space of the last six blocks, substantially as set forth, whereby the numerals of adjacent spaces of contiguous blocks may match in vertical and horizontal lines when the blocks are arranged in square form, substantially as herein shown and described.

704,090. AERIAL TOY. FREDERICK M. GREEN, Manchester, N. H. Filed Jan. 29, 1902. Serial No. 91,667. (No model.)

Claim.—1. In an aerial toy, a stick, an expansible member carried by said stick and free to slide thereon, said member when expanded operating to retard the movement of the toy through the air, and means connecting said member to a fixed point on the stick, the construction being

such that as the member is expanded it has a sliding movement on the stick.

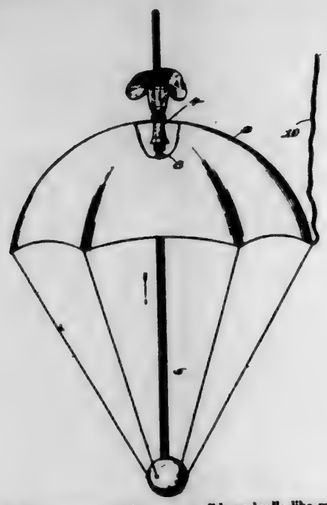

2. In an aerial toy, a stick, an expansible umbrella-like member of flexible material slidably mounted on said stick, and flexible members connecting the outer edge of said umbrella-like member to a fixed point on the stick.

3. In a toy, a stick, an umbrella-like member of flexible material having an eye in its central portion through which the stick is free to move, and flexible connections between the outer edge of said member and a fixed point on the stick.

4. In a toy, a stick, an umbrella-like member having an eye in its central portion through which the stick is free to slide, connections between the outer edge of said member and a fixed portion of the stick, and means to hold the expansible member furled during its ascent, said member, when expanded, operating to retard the movement of the toy through the air.

5. A stick, a counting balance-weight, an expansible umbrella-like member slidingly mounted on said stick, flexible members fixed to the stick and connected to said expansible member, and means to maintain said expansible member folded as the stick is started in motion, said member automatically opening as the stick begins to descend and when open operating to retard the movement of the device through the air.

6. In a toy, an expansible umbrella-like member of flexible material, a stick extended loosely through said member whereby said member can move relatively to the stick, a directing-weight carried by the stick, and connections between said member and a fixed point on the stick, the construction being such that as the member is expanded it slides upon the stick.

7. In an aerial toy, an expansible, umbrella-like member of fibrous material, a stick passing freely therethrough, and capable of a movement independent of the umbrella-like member, and flexible connections between the outer edge of the umbrella-like member and a fixed point on the stick.

704,091. PROCESS OF MAKING MATCHES. WILLIAM H. PARKER, Melrosville, N. Y., assignor, by mesne assignments, to Parker Match Company, a Corporation of New Jersey. Filed Sept. 23, 1901. Renewed June 9, 1902. Serial No. 110,998. (No specimens.)

Claim.—1. The herein-described process of making matches which consists in affixing to the outer edge of a strip of material suitable for matches so as to cover and envelop the said edge, a firing composition and then cutting the strip transversely into individual matches.

2. The herein-described process of making matches which consists in rolling a strip of material suitable for matches, separating the adjacent edges so that the banded parts cannot touch, providing the edges with a firing composition, and then cutting the strip into matches.

3. The herein-described process of making matches which consists in forming into a roll a strip of flexible material suitable for matches, rolling up with the match material a substance which will separate the edges of the said material, dipping the separated edges into the necessary composition to form a firing composition along the said edges, and then cutting the strip of material into matches.

4. The herein-described process of making matches which consists in rolling up with a strip of veneer a belt or substance which will cause the edge portions of the strip to be separated, dipping the said separated edge portions into a firing composition, permitting the said composition to set, and then unrolling the said strip of veneer and cutting it into matches as it is unrolled.

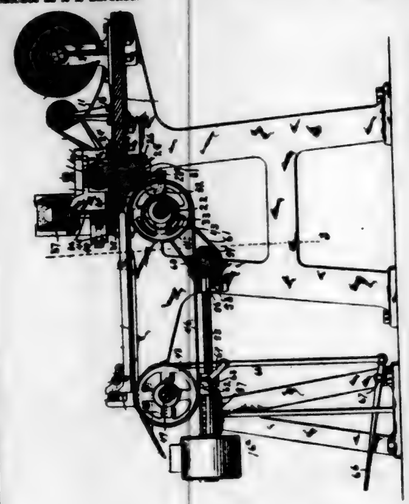

704,092. CONTACT SYSTEM FOR ELECTRIC RAILWAYS. THEODORE B. PAYNE, North Cambridge, Mass. Filed Nov. 29, 1901. Serial No. 84,033. (No model.)

Claim.—1. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track in such a manner as to present only its under side to an upward-bearing shoe of sufficient length to contact with two of said plates simultaneously, said contact-plates being insulated from said standards and connected to a source of power.

2. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, a cap covering each of said contact-plates, except upon the under side of said plate, and insulating material between said cap and plate, said plates being connected to a source of power.

3. In a contact system for electric railways, a standard provided with a vertical chamber extending therethrough, an insulating-sleeve in said chamber, and a contact-plate having a stem projecting downwardly therefrom into said insulating-sleeve.

4. In a contact system for electric railways, a standard provided with a vertical chamber extending therethrough, an insulating-sleeve in said chamber, a contact-plate having a stem projecting downwardly therefrom into said insulating-sleeve, a cap covering said contact-plate, and insulating material between said cap and plate.

5. In a contact system for electric railways, a standard provided with a vertical chamber extending therethrough, an insulating-sleeve in said chamber, a contact-plate triangular in cross-section having a stem projecting downwardly into said insulating-sleeve, an angle-shaped cap covering said plate, and insulating material between said cap and plate.

6. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, a cap covering each of said contact-plates, except upon the under side of said plate, and insulating material between said cap and plate, said plates being connected to a source of power; in combination with an electric-car truck and an upward-bearing shoe supported upon said truck and arranged to engage the under side of two of said contact-plates simultaneously.

7. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of plates, one of said plates fast to each of said standards and extending laterally therefrom toward said track, a cap covering each of said contact-plates, except upon the under side of said contact-plate, and insulating material between said cap and plate, said plates being connected to a source of power; in combination with an electric-car truck and an upward-bearing spring-supported shoe supported upon said truck and arranged to engage the under side of two of said contact-plates simultaneously.

8. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, a cap covering each of said contact-plates, except upon the under side of said plate, and insulating material between said cap and plate, said plates being connected to a source of power; in combination with an electric-car truck, a bracket fast to said truck, a spring-controlled arm pivoted to said bracket, and a shoe fast to said arm and arranged to engage the under side of two of said plates simultaneously.

9. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, a cap covering each of said contact-plates, except upon the under side of said plate, and insulating material between said cap and plate, said plates being connected to a source of power; in combination with an electric-car truck, a bracket fast to said truck, a spring-controlled arm pivoted to said bracket, a shoe fast to said arm and arranged to engage the under side of two of said plates simultaneously, and means to adjustably limit the upward movement of said shoe.

704,093. CONTACT SYSTEM FOR ELECTRIC RAILWAYS. THEODORE B. PAYNE, North Cambridge, Mass. Filed Apr. 4, 1902. Serial No. 101,321. (No model.)

Claim.—1. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, and a shoe supported upon said shoe-support and arranged to engage two of said contact-plates simultaneously.

2. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, a cap covering each of said contact-plates, except upon the under side of said plate, and insulating material between said cap and plate, said plates being connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, and a shoe supported upon said shoe-support and arranged to engage two of said contact-plates simultaneously.

3. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of plates, one of said plates fast to each of said standards and extending therefrom laterally in such a manner as to present only its under side to an upward-bearing shoe of sufficient length to contact with two of said plates simultaneously, said contact-plates being insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, and a shoe supported upon said shoe-support and arranged to engage two of said contact-plates simultaneously.

4. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, a shoe supported upon said shoe-support, and a spring supporting said shoe and arranged to engage two of said contact-plates simultaneously.

5. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, and a shoe pivotally supported upon said shoe-support and arranged to engage two of said contact-plates simultaneously.

6. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, and a shoe pivotally and spring supported upon said shoe-support and arranged to engage two of said contact-plates simultaneously.

7. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, a shoe supported upon said shoe-support, and links pivotally connected to said shoe and to said shoe-support.

8. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, a shoe supported upon said shoe-support, links pivotally connected to said shoe and to said shoe-support, and a torsional spiral spring operatively connected to one of said links and acting to press said shoe against said contact-plates.

9. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks and having a sliding engagement with the other of said trucks, a shoe supported upon said shoe-support, a link pivotally connected to said shoe-support at one end, and a slide upon said shoe to which the other end of said link is pivotally connected.

10. In a contact system for an electric railway, a series of standards located outside the tracks of said railway, a series of contact-plates, one of said plates fast to each of said standards and extending therefrom laterally toward said track, said plates insulated from said standards and connected to a source of power; in combination with two car-trucks, a shoe-support pivoted to one of said trucks, a swivel rotary block supported upon the other of said trucks, with which block said shoe-support has sliding engagement, and a shoe supported upon said shoe-support.

11. In a contact system for an electric railway, a series of standards located between two tracks of a double-track system, a series of contact-plates, two of said plates fast to and extending laterally from each of said standards in opposite directions toward said tracks, said plates insulated from said standards and connected to a source of power.

12. In a contact system for an electric railway, a series of standards located between the two tracks of a double-track system, a series of contact-plates, two of said plates fast to and extending laterally from each of said standards in opposite directions in such a manner as to present only their under sides to an upward-bearing shoe of sufficient length to contact with two plates upon two of said standards simultaneously, said contact-plates being insulated from said standards and connected to a source of power.

13. In a contact system for an electric railway, a series of standards located between the two tracks of a double-track system, a series of contact-plates arranged in pairs, each pair of said plates fast to and extending laterally from each of said standards in opposite directions toward said tracks, a cap covering each of said pairs of contact-plates, except upon the under side of said plates, and insulating material between said cap and plates, said plates being connected to a source of power.

704,094. SHARING. CHARLES H. PIELDS, Springfield, Ohio. Filed Jan. 2, 1901. Serial No. 41,203. (No model.)

Claim.—1. A driving-disk for fertilizer-distributors provided on its face with a plurality of ribs, each rib having recesses in its opposite sides, and the recesses of the adjacent ribs being located opposite each other,

whereby concentric series of laterally-defined recesses are formed, substantially as described.

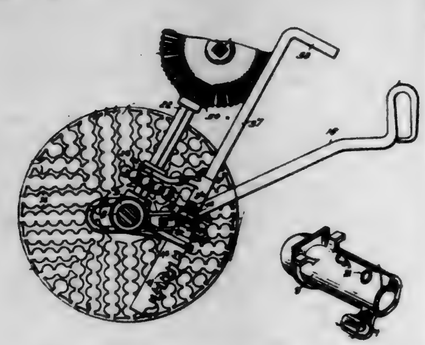

2. In a fertilizer-distributer, the combination, with an axle, of a driving-disk mounted thereon and provided with a plurality of ribs on its working face, each rib having recesses in its opposite sides, and the recesses of the adjacent ribs being opposite each other, whereby concentric series of laterally-defined recesses are formed, a shaft arranged at right angles to the axle and suitably connected with the feeding devices, and a pinion rotating with and slidable longitudinally on said shaft and provided with spherical teeth to engage the recesses of the driving-disk, substantially as described.

3. The combination, with a rotating axle, of a shaft at right angles thereto provided with a pinion, a driving-disk loosely mounted on the axle and provided with a hub having a longitudinal groove or slot, a collar fixed on the axle and having a longitudinal flange extending over the end of the hub of the disk and provided with a rib or key to enter the slot or groove thereof, an exposed spring surrounding the hub and bearing against the disk and collar, and means for moving the disk toward and from the collar, substantially as described.

4. In a variable-speed gear for fertilizer distributers, &c, the combination, with a shaft, and a pinion rotating with and slidable on said shaft, of a shifting device for the pinion comprising an arm engaging the pinion and provided with a sleeve, a rod passing through said sleeve and adapted to rotate therein and to move the sleeve longitudinally, a second sleeve secured to the lower end of the rod and provided with teeth, and a fixed lug having an aperture to receive said last-mentioned sleeve and a radial slot for the passage of the teeth, said lug being of a thickness to engage between the teeth, substantially as described.

5. In a variable-speed gear for fertilizer-distributers, &c., the combination, with a driving-disk mounted to rotate with and move longitudinally of the axle and provided with concentric series of gear-teeth, of a shaft arranged at right angles to the axle, a pinion mounted to slide longitudinally of and rotate along with said shaft, a rod provided with an arm engaging said pinion, a fixed locking-lug, and an extension of said rod provided with locking-teeth to engage the locking-lug, the connection between said rod and its extension being adjustable, so that the locking-points may be adjusted to correspond to the engaging points of the pinion, substantially as described.

6. A variable-speed gear for fertilizer-distributers, &c., comprising an axle, a driving-disk mounted thereon and provided with concentric circular rows of gear-teeth, a shaft at right angles to the axle and having a pinion mounted to rotate therewith and slidable thereon, an arm engaging said pinion and provided with a sleeve threaded at its lower end, a rod passing loosely through said sleeve and provided with a locking-sleeve at its lower end, means for engaging said locking-sleeve at predetermined intervals, and a cap rotatably mounted on said locking-sleeve and threaded to engage the threaded lower end of the shifting arm-sleeve, substantially as described.

7. The combination, with a rotating shaft or axle and a fixed bearing therefor, of a driving-disk mounted to slide on and rotate with the axle, a spring to press said disk normally toward said fixed bearing, a shaft mounted in said fixed bearing and provided with a pinion adapted to slide thereon and rotate therewith, the fixed bearing being provided with a cam-incline and with a separate locking-recess at the end of the incline, and a longitudinally-sliding cam-bar interposed between the fixed bearing and the driving-disk and provided with a cam-incline to cooperate with that of the bearing, and with a separate locking projection at the end of said incline to engage with the locking-recess of the bearing, substantially as described.

704,095. MACHINE FOR TREATING HIDES OR SKINS. FRANKLIN J. PERKINS, Woburn, and FREDERIC A. PARKHURST, Peabody, Mass., assignors to Vaughn Machine Company, Boston, Mass., a Corporation of West Virginia. Filed Oct. 1, 1901. Serial No. 77,248. (No model.)

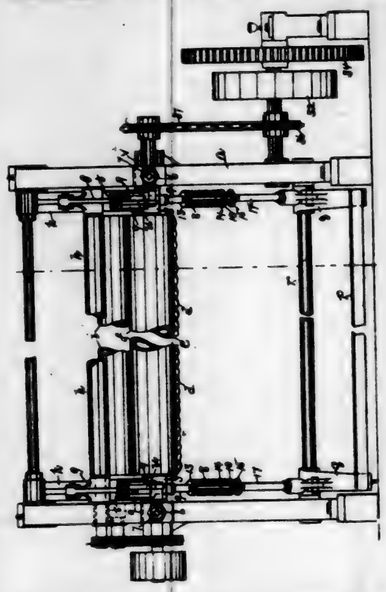

Claim.—1. In an apparatus of the class described, the combination with a roll mounted in fixed bearings, and a bed-roll, of a feed-roll coöperating with said bed-roll to hold the hide or skin in contact therewith, means to support said feed-roll and bed-roll normally separate from each other on opposite sides of a plane substantially through the center of the rolls when in their operative position, and means for moving said feed-roll and bed-roll toward each other and into their operative position with their axes substantially in the same plane.

2. In an apparatus of the class described, the combination with a bed-roll, and levers in which said bed-roll is mounted, of a feed-roll, and separate levers in which said feed-roll is mounted, and means to connect the said levers on opposite sides of their pivots, whereby the bed-roll and feed-roll may be moved simultaneously toward and away from each other, substantially as and for the purpose specified.

3. In an apparatus of the class described, the combination with a bed-roll, and levers in which said bed-roll is mounted, toggle-levers to which said levers are connected, of a foot-treadle, and a yielding connection between the said foot-treadle and the said toggle-levers, the latter being out of line with each other when the bed-roll is in its operative position, for the purpose specified.

4. In an apparatus of the class described, the combination with a bed-roll, and levers in which the said bed-roll is mounted, of toggle-levers having one end connected to the levers carrying the bed-roll and the other end to a fixed pivot, a foot-treadle, and a yielding connection between the said toggle-levers and the said foot-treadle, said toggle-levers being out of line with each other when the bed-roll is in its operative position, for the purpose specified.

5. In an apparatus of the class described, the combination with an operating-tool, of a bed-roll movable toward and from said tool, and a feed-roll cooperating with said bed-roll and movable toward and from the same, said feed-roll and bed-roll being normally separated and located on opposite sides of a plane substantially through the center of the rolls when in their operative position, and means for moving said feed-roll and bed-roll toward each other and into their operative position with their axes substantially in the same plane.

6. In an apparatus of the class described, the combination with a bed-roll and a movable support therefor, of toggle-levers connected at one end to said movable support and at their other end to a fixed support, said fixed support, a lever for moving said toggle-levers toward a straight line through their pivots, and a yielding mechanism connecting said lever with said toggle-levers, said toggle-levers being out of line with each other when the bed-roll is in its operative position, for the purpose specified.

7. In an apparatus of the class described, the combination with a bodily-movable bed-roll, of a bodily-movable feed-roll coöperating with said bed-roll to hold the hide or skin in contact therewith, and levers in which said feed-roll is mounted having their pivots in an inclined plane substantially through the center of the bed-roll when the latter is in its operative position, and supporting said feed-roll with its axis slightly at one side of said inclined plane, substantially as described.

8. In an apparatus of the class described, the combination with a bed-roll, levers in which said bed-roll is supported, and adjustable boxes or blocks, means to secure said boxes or blocks in their adjusted position, toggle-levers having one end pivoted to said adjustable boxes or blocks and their other end to said levers, a foot-treadle and a yielding connection between said foot-treadle and said toggle-levers, the latter being out of line with each other when the bed-roll is in its operative position, for the purpose specified.

704,096. STAKING-MACHINE. FRANKLIN J. PERKINS, Woburn, Mass., assignor to Vaughn Machine Company, Boston, Mass., a Corporation of West Virginia. Filed Dec. 21, 1901. Serial No. 86,752. (No model.)

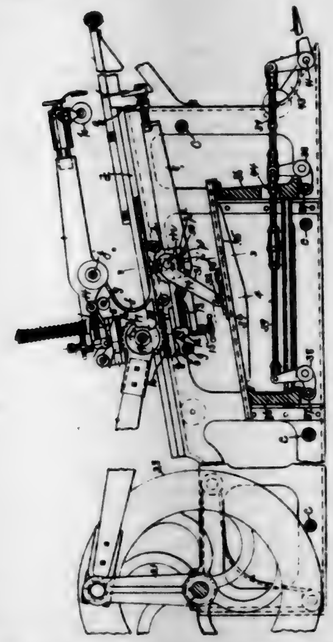

Claim.—1. In a machine of the class described, in combination, a reciprocating cross-head or support, upper and lower tool-carrying levers pivoted thereto, sliding cam plates or bars provided with cams which coöperate with said levers to turn the same on their pivots, guides in said cross-head for said sliding cam-plates, means intermediate of said cam plates or bars for moving the same in opposite directions to each other and into and out of operative relation with said levers, and means for reciprocating said cross-head or support.

2. In a machine of the class described, in combination, a reciprocating cross-head or support, upper and lower tool-carrying levers pivoted thereto, cam plates or bars provided with cams which coöperate with said levers to turn the same on their pivots, rack-bars attached to said cam plates or bars, a gear in mesh with said rack-bars, and means for oscillating said gear, substantially as described.

3. In a machine of the class described, in combination, a reciprocating cross-head, a pivoted lever carried by the cross-head, sliding boxes movable in said cross-head in a direction transversely of the length of said lever and in which the pivot for said lever is mounted, and means for moving said sliding boxes, substantially as described.

4. In a machine of the class described, in combination, a reciprocating cross-head, a pivoted lever carried by the cross-head, sliding boxes movable in said cross-head and in which the pivot for said lever is mounted, means for moving said sliding boxes, a vertically-movable table, means supported by said table for sustaining said sliding boxes in their adjusted position, and means for raising and lowering said table, substantially as described.

5. In a machine of the class described, in combination, a reciprocating cross-head, a pivoted lever carried by said cross-head, sliding boxes movable in said cross-head and supporting the pivot for said lever, a vertically-movable table, means supported by said table for sustaining said pivoted lever, a foot-treadle, and bell-crank levers supporting said table and operatively connected with said foot-treadle to be turned thereby to raise said table, substantially as and for the purpose specified.

6. In a machine of the class described, in combination, a reciprocating cross-head or frame, upper and lower tool-carrying levers pivoted thereto, independent cams for operating said levers bodily movable in opposite directions to each other, guides on the cross-head for said bodily-movable cams, and means for moving said cams, substantially as described.

7. In a machine of the class described, in combination, a reciprocating cross-head or frame, upper and lower tool-carrying levers pivoted thereto, arms pivoted to said levers, independent cams movable in opposite directions to each other, guides on the cross-head for said bodily-movable cams, means to adjust said arms with relation to said cams, and means for moving said cams in opposite directions, substantially as described.

8. In a machine of the class described, in combination, a reciprocating cross-head comprising side frames or uprights provided with guideways, upper and lower tool-carrying levers pivotally connected to said cross-head to move therewith, reciprocating cam plates or bars movable in said guideways, cams on said plates or bars coöperating with said levers and oppositely arranged, means for simultaneously moving said cam plates or bars in opposite directions to each other, and means for reciprocating said cross-head, substantially as described.

704,097. FURNACE. COLUMBUS PHILLIPS, Meridian, Miss. Filed Apr. 16, 1901. Serial No. 56,414. (No model.)

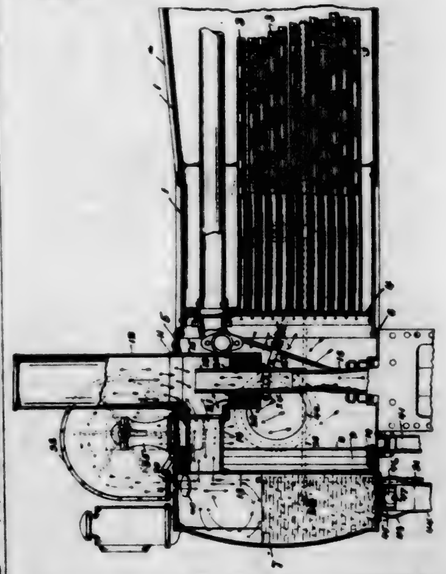

Claim.—1. The combination with a boiler; of a smoke-stack having a direct and indirect connection with the smoke-box; an adjustable pipe concentric with said smoke-stack for conveying a jet-draft thereto; and a valve adapted when in one position to close the said direct communication between the smoke-box and smoke-stack, substantially as described.

2. The combination with a boiler; of a smoke-stack having a direct and indirect connection with the smoke-box; an adjustable exhaust-pipe carrying a valve adapted when in one position to close said direct communication between the smoke-box and smoke-stack; a draft-inducing means; and a spark-arresting compartment in said indirect connection, substantially as described.

3. The combination with a boiler having a smoke-box therein and

a spark-arresting compartment; of a smoke-stack having a direct communication with said smoke-box and an indirect connection therewith through said spark-arresting compartment; a draft-inducing means forming the sole medium of connection between said smoke-box and spark-arresting compartment; an adjustable pipe for conveying a jet-draft into said smoke-stack and having a valve connected therewith; and means for adjusting said pipe, so that said valve will cover or uncover the said direct communication between said smoke-box and smoke-stack, substantially as described.

4. In a boiler having a smoke-box therein and a spark-arresting compartment 7; of a smoke-stack connected therewith; means, as a dust 14 and T 15, for connecting said spark-arresting compartment with said stack; an exhaust-pipe 16 having an extension-pipe 19 movable thereon; and a valve 21 fixed to said extension-pipe and adapted to cover and uncover the opening into said stack from said smoke-box, all constructed and operating substantially as described.

704,098. PNEUMATIC LASTING-MACHINE. CHAS. K. PICKLES, St. Louis, Mo., assignor to himself, Louis Bry, St. Louis, Mo., and Ike Block, Memphis, Tenn. Filed May 13, 1901. Serial No. 60,844. (No model.)

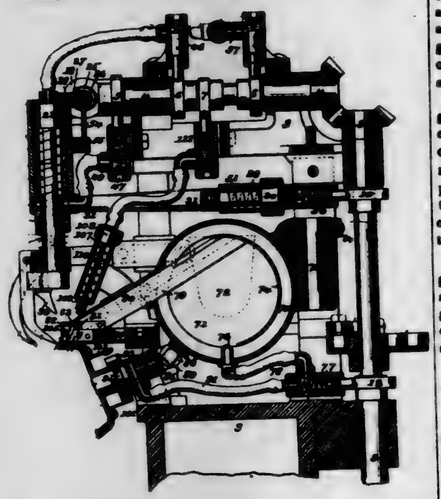

Claim.—1. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with a motor-engine having operative connection with said pincers mechanism and adapted to impart a pulling motion to such mechanism, and an automatically-operated valve controlling said motor-engine, substantially as set forth.

2. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, and an automatically-operated valve controlling said motor-engine, substantially as set forth.

3. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with a motor-engine for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, and a pair of automatically-operated valves controlling said motor-engines, substantially as set forth.

4. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with a single-acting motor-engine for imparting a pulling motion to such mechanism, and an automatically-operated valve controlling said motor-engine, substantially as set forth.

5. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with a single-acting motor-engine for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, and a pair of automatically-operated valves controlling said motor-engines, substantially as set forth.

6. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with a single-acting motor-engine for imparting a pulling motion to such mechanism, a single-acting motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, a spring tending to move the pincers-jaws into an open condition, and a pair of automatically-operated valves controlling said motor-engines, substantially as set forth.

7. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with a motor-engine having operative connection with said pincers mechanism and adapted to impart a pulling motion to said mechanism, a valve controlling said motor-engine, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with the said valve, substantially as set forth.

8. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, a valve controlling said motor-engine, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

9. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with a motor-engine for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, a pair of valves controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, and cams carried by said shaft and having operative connections with said valves, substantially as set forth.

10. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with a single-acting motor-engine for imparting a pulling motion to such mechanism, a valve controlling said motor-engine, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

11. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with a single-acting motor-engine for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, a pair of valves controlling said motor-engines, a cam-shaft revolubly mounted on the main frame, and cams carried by said shaft and having operative connections with said valves, substantially as set forth.

12. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pair of jaws capable of movement in common and one of which jaws is movable with relation to the other, combined with a single-acting motor-engine for imparting a pulling motion to such mechanism, a single-acting motor-engine having operative connection with the independently-movable jaw of the pincers mechanism, a spring tending to move the pincers-jaws into an open condition, a pair of valves controlling said motor-engines, a cam-shaft revolubly mounted on the main frame, and cams carried by said shaft and having operative connections with said valves, substantially as set forth.

13. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, and an automatically-operated valve controlling said motor-engine, substantially as set forth.

14. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, and an automatically-operated valve controlling the flow of motive fluid to said cylinders, substantially as set forth.

15. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, an automatically-operated valve controlling said motor-engine, and a manually-operated reversing-valve for governing the direction of the pincers mechanism, substantially as set forth.

16. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, an automatically-operated valve controlling motive fluid to such cylinders, and a manually-operated reversing-valve for governing the direction of the turning movement of the pincers mechanism, substantially as set forth.

17. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to such mechanism, and an automatically-operated valve controlling motive fluid to said cylinders, substantially as set forth.

18. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal and central position, and an automatically-operated valve controlling said motor-engine, substantially as set forth.

19. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal central position, and an automatically-operated valve controlling motive fluid to said cylinders, substantially as set forth.

20. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to such mechanism, a spring adapted to return the parts to a normal central position, and an automatically-operated valve controlling the flow of motive fluid to said cylinders, substantially as set forth.

21. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a valve controlling said motor-engine, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

22. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a valve controlling the flow of motive fluid to said cylinders, a cam-shaft revolubly mounted on the machine-frame, a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

23. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to said mechanism, a valve controlling the flow of motive fluid to said cylinders, a cam-shaft revolubly mounted on the machine-frame, a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

24. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal and central position, a valve controlling said motor-engine, a cam shaft revolubly mounted on the machine-frame, a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

25. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal central relation, a valve controlling the flow of motive fluid to said cylinders, a cam-shaft revolubly mounted on the machine-frame, a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

26. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to such mechanism, a spring adapted to return the parts to a normal central position, a valve controlling the flow of motive fluid to said cylinders, a cam-shaft revolubly mounted on the machine-frame, a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

27. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same, means for returning the pincers mechanism to a central position and an automatically-operated valve controlling said motor-engine, substantially as set forth.

28. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders and having operative engagement with the pincers mechanism and adapted to impart a lateral movement to the same, and an automatically-operated valve controlling the flow of motive fluid to said cylinders, substantially as set forth.

29. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same, means for returning the pincers mechanism to a central position and an automatically-operated valve mutually controlling said motor-engines, substantially as set forth.

30. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders and having operative engagement with the pincers mechanism and adapted to impart a lateral movement to the same, an automatically operated valve controlling supply of motive fluid to said cylinders, and a manually-operated reversing-valve for governing the direction of the turning and lateral movements of the pincers mechanism, substantially as set forth.

31. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine having operative connection with the pincers mechanism and adapted to impart lateral movement to the same, means for returning the pincers mechanism to a central position, an automatically-operated valve mutually controlling said motor-engines, and a manually-operated reversing-valve for governing the direction of the turning and lateral movements of the pincers mechanism, substantially as set forth.

32. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same, means for returning the pincers mechanism to a central position and an automatically-operated valve mutually controlling the said motor-engines substantially as set forth.

33. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to the same, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same, means for returning the pincers

mechanism to a central position and an automatically-operated valve controlling the said motor-engines, substantially as set forth.

34. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal and central position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, means for returning the pincers mechanism to a central position and an automatically-operated valve mutually controlling the motor-engines, substantially as set forth.

35. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal central position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, means for returning the pincers mechanism to a central position and an automatically-operating valve mutually controlling the motor-engines, substantially as set forth.

36. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal and central position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, means for returning the pincers mechanism to a central position, an automatically-operating valve mutually controlling the motor-engines, and a manually-operated reversing-valve for governing the direction of the turning and lateral movements of the pincers mechanism substantially as set forth.

37. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism, and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal central position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, means for returning the pincers mechanism to a central position, an automatically-operating valve mutually controlling the motor-engines, and a manually-operated reversing-valve for governing the direction of the turning and lateral movements of the pincers mechanism, substantially as set forth.

38. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to such mechanism, a spring adapted to return the parts to a normal central position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, means for returning the pincers mechanism to a central position and an automatically-operated valve mutually controlling the motor-engines, substantially as set forth.

39. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, means for returning the pincers mechanism to a central position and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

40. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine having operative connection with the pincers mechanism and adapted to impart lateral movement to the same in one direction, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, means for returning the pincers mechanism to a central position and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

41. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts adapted to impart a turning movement to said mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, means for returning the pincers mechanism to a central position and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

42. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal and central position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, means for returning the pincers mechanism to a central position and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

43. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to such mechanism, a spring adapted to return the parts to a normal central position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, means for returning the pincers mechanism to a central position and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

44. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to said mechanism, a spring adapted to return the parts to a central normal position, a motor-engine having operative connection with the pincers mechanism and adapted to impart a lateral movement to the same in one direction, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, means for returning the pincers mechanism to a central position and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

45. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, and an automatically-operated valve mutually controlling said motor-engines substantially as set forth.

46. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, and an automatically-operated valve mutually controlling said motor-engines, substantially as set forth.

47. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, and an automatically-operated valve mutually controlling said motor-engines, substantially as set forth.

48. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal and central position, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, a valve mutually controlling said motor-engines, substantially as set forth.

49. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal central position, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, and an automatically-operated valve mutually controlling said motor-engines, substantially as set forth.

50. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to such mechanism, a spring adapted to return the parts to a normal central position, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, and an automatically-operated valve mutually controlling said motor-engines, substantially as set forth.

51. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

52. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to the same, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

53. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts adapted to impart a turning movement to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

54. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart a turning movement to the same, a spring adapted to return the parts to a normal central position, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

55. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism and adapted to impart a turning movement to such mechanism, a spring adapted to return the parts to a normal central position, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

56. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, a piston common to both cylinders and having operative engagement with the pincers mechanism by engaging recesses and projections on the respective parts and adapted to impart a turning movement to such mechanism, a spring adapted to return the parts to a normal central position, a motor-engine comprising a pair of single-acting motor-cylinders arranged transversely of the machine, individual pistons in said cylinders connected to opposite sides of the pincers mechanism and adapted to impart lateral motion to the same, a valve mutually controlling said motor-engines, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

57. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart an outward overmovement to the same, and an automatically-operated valve controlling said motor-engine, substantially as set forth.

58. A lasting-machine having a pincers mechanism adapted to engage the upper combined with a motor-engine for imparting a pulling motion to such mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart an outward overmovement to the same, and automatically-operated valves controlling said motor-engines, substantially as set forth.

59. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with a single-acting motor-engine for imparting a pulling motion to such mechanism, a single-acting motor-engine having operative connection with the movable jaw of the pincers mechanism, a spring tending to move the pincer-jaws into an open condition, a motor-engine having operative connection with the pincers mechanism and adapted to impart an outward overmovement to the same, and automatically-operated valves controlling said motor-engines, substantially as set forth.

60. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a single-acting motor-engine adapted to impart an outward overmovement to said mechanism, a spring adapted to impart an inward overmovement to said mechanism, and an automatically-operated valve controlling said motor-engine, substantially as set forth.

61. A lasting-machine having a pincers mechanism adapted to engage the upper combined with means for imparting a pulling motion to said mechanism, a motor-engine having operative connection with the pincers mechanism and adapted to impart an outward overmovement to the same, a valve controlling said motor-engine, a cam-shaft revolubly mounted on the machine-frame, and a cam carried by said shaft and having operative connection with said valve, substantially as set forth.

62. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the companion-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a pair of automatically-operated valves con-

trolling the supply of motive fluid to actuate said mechanisms, substantially as set forth.

63. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a spring tending to move said piston-head upward, and a pair of automatically-operated valves controlling the supply of motive fluid to actuate said mechanisms, substantially as set forth.

64. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder and provided with a stop-cap at its upper end, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger, and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a pair of automatically-operated valves controlling the supply of motive fluid to actuate said mechanisms, substantially as set forth.

65. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger, and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a transversely-arranged motor-engine having operative connection with said tubular plunger and adapted to impart a turning movement to the same, a pivot-yoke supporting said pendent cylinder and motor-engine, pivot-legs on the pendent cylinder having pivotal connection with the transversely-arranged motor-engine, a motor-engine adapted to impart a forward overmovement to the pincers mechanism, and a series of valves operating in unison to control the supply of motive fluid to actuate said mechanisms, substantially as set forth.

66. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a transversely-arranged motor-engine having operative connection with said tubular plunger and adapted to impart a turning movement to the same, a pivot-yoke supporting said pendent cylinder and motor-engine, pivot-legs on the pendent cylinder having pivotal connection with the transversely-arranged motor-engine, a motor-engine adapted to impart a forward overmovement to the pincers mechanism, a pair of transversely-arranged motor-engines adapted to impart lateral movement to the pendent cylinder, and a series of valves operating in unison to control the supply of motive fluid to actuate said mechanisms, substantially as set forth.

67. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger, and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a transversely-arranged motor-engine having operative connection with said tubular plunger and adapted to impart a turning movement to the same, a pivot-yoke supporting said pendent cylinder and motor-engine, pivot-legs on the pendent cylinder having pivotal connection with the transversely-arranged motor-engine, a motor-engine adapted to impart a forward overmovement to the pincers mechanism, a series of valves controlling the supply of motive fluid to actuate said mechanism, cam-shafts revolubly mounted in the machine-frame, and a series of cams carried by said shafts and having operative connection with said valves, substantially as set forth.

68. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a transversely-arranged motor-engine having operative connection with said tubular plunger and adapted to impart a turning movement to the same, a pivot-yoke supporting said pendent cylinder and motor-engine, pivot-legs on the pendent cylinder having pivotal connection with the transversely-arranged motor-engine, a motor-engine adapted to impart a forward overmovement to the pincers mechanism, a pair of transversely-arranged motor-engines adapted to impart lateral movement to the pendent cylinder, a series of valves controlling the supply of motive fluid to actuate said mechanisms, cam-shafts revolubly mounted in the machine-frame, and a series of cams carried by said shafts and having operative connection with said valves, substantially as set forth.

69. A lasting-machine having a pincers mechanism adapted to engage the upper and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger, and a companion pincer-jaw secured to the lower end of the piston-rod, combined with a transversely-arranged motor-engine having operative connection with said tubular plunger and adapted to impart a turning movement to the same, a pivot-yoke supporting said pendent cylinder and motor-engine, pivot-legs on the pendent cylinder having pivotal connection with the transversely-arranged motor-engine, a motor-engine adapted to impart a forward overmovement to the pincers mechanism, a pair of transversely-arranged motor-engines adapted to impart lateral movement to the pendent cylinder, a manually-operated reversing-valve for governing the direction of the turning movement of the pincers mechanism, and a series of valves operating in unison to control the supply of motive fluid to actuate said mechanisms, substantially as set forth.

70. A lasting-machine having a pincers mechanism adapted to engage the upper, and comprising a pendent cylinder constituting the suspension-hanger of the mechanism, a tubular plunger arranged in said cylinder, a piston arranged in the bore of said plunger and having a downwardly-extending piston-rod, a pincer-jaw secured to the lower end of the plunger and a companion pincer-jaw secured to the lower end of the piston-rod combined with a transversely-arranged motor-engine having operative connection with said tubular plunger and adapted to impart a turning movement to the same, a pivot-yoke supporting said pendent cylinder and motor-engine, pivot-legs on the pendent cylinder having pivotal connection with the transversely-arranged motor-engine, a motor-engine adapted to impart a forward overmovement to the pincers mechanism, a pair of transversely-arranged motor-engines adapted to impart lateral movement to the pendent cylinder, a manually-operated reversing-valve for governing the direction of the turning movement of the pincers mechanism, and a series of valves operating in unison to control the supply of motive fluid to actuate said mechanisms, substantially as set forth.

71. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, means for feeding and driving the tacks, the forwardly-moving tack-driving mechanism comprising a motor-cylinder, a piston within said cylinder, a tack-driving plunger forming part of such piston, an automatically-operated valve controlling the supply of motive fluid to said motor-cylinder, and a reciprocating slide having a forward movement in unison with the tack-driving mechanism and provided with a tack-holder in line with the tack-driving plunger, substantially as set forth.

72. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, means for feeding and driving the tacks, the tack-driving mechanism comprising a motor-cylinder, a piston within said cylinder, a tack-driving plunger forming part of said piston, an automatically-operated valve controlling the supply of motive fluid to said motor-cylinder, and a reciprocating slide carrying said motor-cylinder and provided with a tack-holder in line with the tack-driving plunger, substantially as set forth.

73. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, means for feeding and driving the tacks, the forwardly-moving tack-driving mechanism comprising a motor-cylinder, a piston within said cylinder, a tack-driving plunger forming part of such piston, an automatically-operated valve controlling supply of motive fluid to said motor-cylinder, a reciprocating slide having a forward movement in unison with the tack-driving mechanism and provided with a tack-holder in line with the tack-driving plunger, a cam-shaft revolubly mounted on the machine-frame, and a cam on said shaft having operative connection with the controlling-valve, substantially as set forth.

74. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, means for feeding and driving the tacks, the forwardly-moving tack-driving mechanism comprising a motor-cylinder, a piston within said cylinder, a tack-driving plunger forming part of such piston, an automatically-operated valve controlling supply of motive fluid to said motor-cylinder, a reciprocating slide having a forward movement in unison with the tack-driving mechanism and provided with a tack-holder in line with the tack-driving plunger, a cam-shaft revolubly mounted on the machine-frame, and a cam on said shaft having operative connection with the reciprocating slide, substantially as set forth.

75. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to such mechanism, means for feeding and driving the tacks, the forwardly-moving tack-driving mechanism comprising a motor-cylinder, a piston within said cylinder, a tack-driving plunger forming part of such piston, an automatically-operated valve controlling the supply of motive fluid to said motor-cylinder, a reciprocating slide having a forward movement in unison with the tack-driving mechanism and provided with a tack-holder in line with the tack-driving plunger, substantially as set forth.

76. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments, duplicate tack-races secured to the tack-box, and means for imparting lateral movement to the tack-box to one side or the other of a central line, the same comprising a motor-engine an automatic controlling-valve, a manually-operated reversing-valve and means for returning the tack-box to a central position, substantially as set forth.

77. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, a tack-driving mechanism, a reciprocating slide carrying the tack holding and driving mechanism, a tack-box having duplicate tack-compartments, duplicate tack-races secured to the tack-box, and means for imparting lateral movement to the tack-box to one side or the other of a central line, the same comprising a motor-engine, an automatic controlling-valve, a manually-operated reversing-valve and means for returning the tack-box to a central position, substantially as set forth.

78. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments, duplicate tack-races secured to the tack-box, and means for imparting lateral movement to the tack-box to one side or the other of a central line, the same comprising a pair of single-acting motor-engines arranged transversely, an automatic controlling-valve and a manually-operated reversing-valve, substantially as set forth.

79. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, a tack-driving mechanism, a reciprocating slide carrying the tack holding and driving mechanism, a tack-box having duplicate tack-compartments, duplicate tack-races secured to the tack-box, and means for imparting lateral movement to the tack-box to one side or the other of a central line, the same comprising a pair of single-acting motor-engines arranged transversely, an automatic controlling-valve, and a manually-operated reversing-valve, substantially as set forth.

80. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments, duplicate tack-races secured to the tack-box and means for imparting lateral movement to the tack-box to one side or the other of a central line, the same comprising a motor-engine, an automatic controlling-valve, a reversing-valve, and a duplex side rest or abutment for the last having operative connection with the reversing-valve, substantially as set forth.

81. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments, duplicate tack-races secured to the tack-box and means for imparting lateral movement to the tack-box to one side or the other of a central line, the same comprising a pair of single-acting motor-engines arranged transversely, an automatic controlling-valve, a reversing-valve, and a duplex side rest or abutment for the last having operative connection with the reversing-valve, substantially as set forth.

82. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having a curved conduit extending from the lower to the upper portion of the tack-box compartment, a tack-race secured to the tack-box, a jet-head arranged at the lower end of such conduit and adapted to discharge a jet of motive fluid into such conduit and means for controlling such jet, substantially as set forth.

83. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments and duplicate curved conduits extending from the lower to the upper portions of such compartments, duplicate tack-races secured to the tack-box, and jet-heads arranged at the lower ends of said conduits and adapted to discharge jets of motive fluid into such conduits, substantially as set forth.

84. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments and duplicate curved conduits extending from the lower to the upper portions of such compartments, duplicate tack-races secured to the tack-box, jet-heads arranged at the lower ends of said conduits and adapted to discharge jets of motive fluid into such conduits, and means for imparting lateral movement to the tack-box to one side or the other of a central line substantially as set forth.

85. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box pivoted at its rear end and having duplicate tack-compartments and curved conduits extending from the lower to the upper portions of such compartments, duplicate tack-races secured to the tack-box, and jet-heads arranged at the lower ends of said conduits and adapted to discharge jets of motive fluid into such conduits, substantially as set forth.

86. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments and duplicate curved conduits extending from the lower portions of such compartments, duplicate tack-races secured to the tack-box, jet-heads arranged at the lower ends of said conduits and adapted to discharge jets of motive fluid into such conduits, and means for imparting lateral movement to the tack-box to one side or the other of a central line, the same comprising a motor-engine, an automatic controlling-valve, a manually-operated reversing-valve, and means for returning the tack-box to a central position, substantially as set forth.

87. A lasting-machine having a pincers mechanism adapted to engage the upper, combined with means for imparting a pulling motion to said mechanism, a central tack-holder, means for driving the tacks, a tack-box having duplicate tack-compartments and duplicate curved conduits extending from the lower to the upper portions of such compartments, duplicate tack-races secured to the tack-box, jet-heads arranged at the lower end of said conduits and adapted to discharge jets of motive fluid into such conduits, and means for imparting lateral movement to the tack-box to one side or the other of a central line the same comprising a pair of single-acting motor-engines arranged transversely, an automatic controlling-valve and a manually-operated reversing-valve, substantially as set forth.

704,099. ELECTRIC-MOTOR REGULATION. OSCAR H. PIEPER and ALPHONSE F. PIEPER, Rochester, N. Y. Filed Mar. 24, 1898. Serial No. 710,266. (No model.)

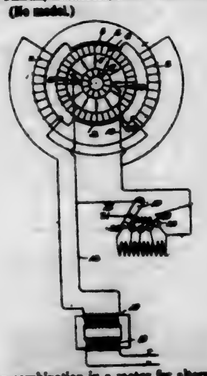

Claim.—1. The combination in a motor for alternating currents, of field-windings, armature-coils, commutator and commutator-brushes arranged at the neutral point, all connected in series, as customary in constant-current motors, and a regulating device for controlling the speed of the motor consisting of a variable resistance permanently in shunt across the armature.

2. The combination in a motor for alternating currents, of a field-winding with relatively high self-induction and armature-coils with relatively low self-induction, commutator and commutator-brushes arranged on the neutral point, all connected in series, as customary in continuous-current motors, and a variable resistance in shunt with the armature.

3. The combination in a motor for alternating currents, of field-windings with relatively high self-induction and armature-coils with relatively low self-induction, commutator and commutator-brushes arranged on the neutral point, all connected in series as customary in continuous-current

motors, and a regulating device consisting of resistance-coils in shunt to the armature.

4. The combination in a motor for alternating currents, of field-windings with relatively high self-induction, and armature-coils, commutator and commutator-brushes arranged at the neutral point, all connected in series, as customary in constant-current motors, a permanent shunt across the armature-terminals and means for short-circuiting the armature-brushes to arrest the motion of the armature.

5. The combination in a motor for alternating currents, of field-windings and armature-coils adapted for alternating currents, commutator and commutator-brushes arranged at the neutral point, all connected in series, as customary in constant-current motors, and a permanent shunt across the armature.

6. The combination in a motor for alternating currents, of field-windings and armature-coils adapted for alternating currents, commutator and commutator-brushes arranged at the neutral point, all connected in series, as customary in constant-current motors, and a permanent shunt and a variable resistance arranged between the armature-terminals.

7. The combination in a motor for alternating currents, of field-windings designed for a relatively high electromotive force, and armature-coils designed for a relatively low electromotive force, commutator and commutator-brushes arranged on the neutral point as customary in continuous-current motors, and a variable resistance arranged between the armature-terminals.

8. The combination in a motor for alternating currents, of field-windings designed for relatively high self-induction or high electromotive force, armature-coils designed for relatively low self-induction or low electromotive force, commutator and commutator-brushes at the neutral point and all arranged in series, and a variable resistance in shunt across the armature-terminals.

704,100. PERPETUAL-REMINDER SYSTEM. BERTHOLD PERSON, Chicago, Ill. Filed Feb. 28, 1902. Serial No. 96,092. (No model.)

Claim.—1. A reminder system comprising a series of receptacles, being one receptacle for each unit of time of a recurring cycle, and a plurality of memorandum-blanks adapted to be filed in said receptacles, substantially as described.

2. A reminder system comprising a pocket-case provided with one pocket for each unit of time of a recurring succession of days, and a plurality of reminder-cards adapted to be temporarily filed in any of said pockets, substantially as described.

3. A reminder system comprising a pocket-case provided with one pocket for each day of a recurring succession of days, and a plurality of reminder-cards bearing the figures 1 to 31, inclusive, and having space for memoranda to be written thereon, substantially as described.

4. A reminder system comprising a pocket-case consisting of a flexible back provided on its face with seven pockets, and a plurality of reminder-cards bearing on one face the figures 1 to 31, inclusive, and having on their opposite face space for memoranda to be written thereon, each of said cards being adapted to be filed in each of said pockets in succession, substantially as described.

704,101. NUT-LOCK. FELIX K. POPPLEWELL, Bronte, Tex. Filed Oct. 29, 1901. Serial No. 80,347. (No model.)

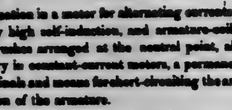

Claim.—In combination with a member having a circular recess, of a bolt and nut for clamping said member in position, a locking-pin E provided with a head *e* circular in cross-section and adapted to be inserted in said recessed member and rotated therein, and a shank portion integral with said head *e* and flattened on the side adjoining the head, substantially as and for the purpose described.

704,102. STEERING AND CONTROLLING DEVICE FOR ROAD-VEHICLES. MASON D. PERKINS, New York, N. Y., assignor to Clarence F. Jewett, trustee, New York, N. Y. Filed Feb. 11, 1902. Serial No. 93,593. (No model.)

Claim.—1. In an automatic controlling and steering mechanism for vehicles, the combination substantially as described of the vertical transmission rock-shaft, the steering-arm pivotally connected to the head thereof, a grip connected to a rod or bar rotatable in or on said arm, a spool or block rotatable in bearings in the head of the vertical transmission-shaft, means for detachably connecting said spool and rotatable rod and power-controlling mechanism having intermediate connections with said spool to permit the power to be turned on or off by the rotation of the spool or block.

2. In an automatic controlling and steering mechanism for vehicles, the combination substantially as described with the vertical transmission rock-shaft connected with the steering mechanism, of a block or sheave adapted to move vertically thereon and connected with the throttle or other power-controlling device, a spool or block rotatable in bearings on the head of the vertical rod or bar, a cord adapted to be wound thereon and connected with the sleeve which imparts movement to the throttle, and a spring which tends to unwind said cord and shut off the power.

3. In a combined steering and power-controlling mechanism, the combination substantially as described of a hollow vertical transmission rock-shaft, a steering-arm pivotally connected to the head thereof and adapted to swing in a vertical plane, a grip adapted to rotate on said arm, a spool or block rotatable in the head of the rock-shaft, and an automatic clutch connecting the grip and spool as and for purpose described.

4. In a combined steering and power-controlling device for vehicles, the combination substantially as described, of the hollow transmission rock-shaft, a steering-arm pivotally connected to the head thereof, a grip or handle adapted to rotate on said arm, a spool or block adapted to rotate in the head of the shaft and connected with said rotatable grip, a block guided on the vertical shaft, means for imparting motion thereto by the rotation of the spool in the head of the shaft, and a spring within said shaft connected to said block for automatically shutting off the power when the operator releases the grip or handle.

5. In a combined steering and controlling device for vehicles, the combination substantially as described, of a hollow vertical shaft 4, and hollow steering-arm 1, pivotally connected to the shaft 4, a rod 2 adapted to rotate in the arm 1, a grip or handle 3, secured to the shaft 2, a spool or block 6 mounted to rotate in the head of the vertical shaft, a sheave or block 8 guided on said shaft, means for connecting the same with the rotatable spool, and a spring actuating on the block 8 when the grip is released, as and for the purpose described.

704,103. BRAKE MECHANISM. OSCAR F. RANDALL, Davis, Ill. Filed July 5, 1901. Serial No. 67,206. (No model.)

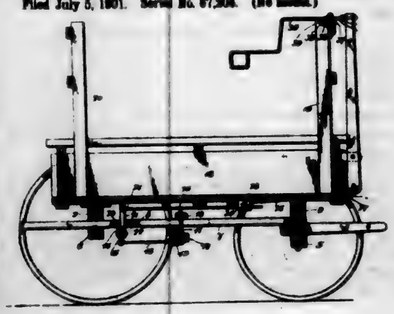

Claim.—In combination with a hay-wagon having front and rear ladders of a brake mechanism including a lever pivoted to the front of the wagon and extending above the front ladder, an operating-rod pivoted to the upper end of the lever and extending rearwardly over the forward ladder, said rod having racks upon its upper and lower faces adjacent to the ladder, and the free end of the rod being offset in a vertical plane to project above or below the ladder, and a knife-edge removably connected to the upper end of the forward ladder for reversal and to permit engagement of either rack of the bar from above or below.

704,104. SHEET-MUSIC RETAINER. JOHN RAWLINS, St. Louis, Mo. Filed Oct. 7, 1901. Serial No. 77,857. (No model.)

Claim.—1. In an article-supporting device, the combination with a pivotally-supported horizontal arm, of article-supporting means carried by said arm, and indicating means extending at different angles to the arm and carried by said supporting means relative to each particular article all of said indicating means being visible from a single point of observation, substantially as described.

2. In an article-supporting device, the combination of a plurality of supporting-rods, means pivotally supporting the same, means at one end of each of said rods for receiving the article to be supported, and means carried by said rods for indicating the particular article supported by the respective rod, said indicating means extending at varying angles relative to said rods, substantially as described.

3. In a sheet-music support, the combination with a horizontally-arranged arm, of supporting-rods carried thereby, tab-carrying means at the upper ends of said rods, and a tab carried by each of said rods provided with means for indicating the particular sheet carried by its respective rod, the said tab-carrying means of the various rods extending at varying angles from said arm, whereby all of said tabs are simultaneously exposed, substantially as described.

4. In a support for sheet-music and other articles, the combination with a suitable upright, of a vertical standard pivoted thereto, a horizontally-arranged arm secured to said standard, means carried by said arm for supporting a plurality of said sheets or other articles, and means above each of said sheets for indicating the same, the said indicating means being so arranged that all of the same will be visible at the same time, substantially as described.

5. In an article-supporting device, the combination with a suitable upright, of a vertical standard pivoted thereto, means carried thereby for supporting a plurality of articles, and means carried by the supporting means for indicating the respective articles, all of the indications being simultaneously visible, substantially as described.

6. In an article-supporting device, the combination with a suitable upright, of a vertical standard supported thereby, a horizontally-arranged arm carried by said standard, means connecting the outer end of said arm with said standard, rods supported by said arm, means at one end of each of said rods for supporting an article, and a tab carried at the opposite end of each of said rods for indicating its respective article supported, the said connecting means between the outer end of the arm and the standard being spaced a sufficient distance above said arm, except at the point of contact, to permit said tabs to extend from said arm in the direction of the said connecting means, substantially as described.

704,105. BOTTLE OR FLASK. ELIAS D. REAR, Pittsburg, Pa. Filed Nov. 29, 1901. Serial No. 84,053. (No model.)

Claim.—A bottle of the class described, having a stopper, and having separate compartments, a tube extending from each compartment through the stopper and connected on the outside thereof to the branch of a bifurcated flexible tube having a mouthpiece and means for admitting air to each of the said compartments, substantially as described.

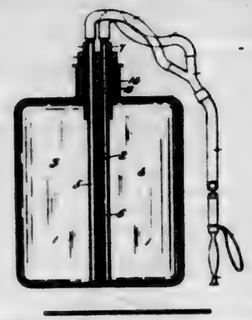

704,106. SHARPENING-MACHINE. FERDINAND A. REINHARDT, Elizabeth, and HENRY WILSON, Newark, N. J.; said Wilson assignor to said Reinhardt. Filed July 24, 1901. Serial No. 69,484. (No model.)

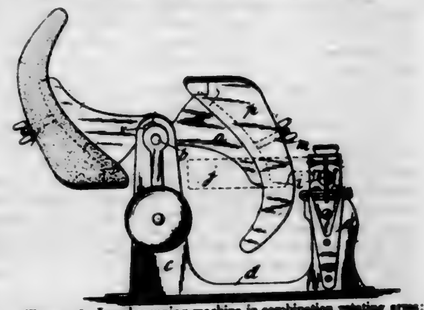

Claim.—1. In a sharpening-machine, in combination, rotating arms; removable blocks provided with abrading or polishing surfaces on their sides and detachably secured to the arms; a blade-holder adapted to hold a blade in the paths of rotation of the abrading or polishing surfaces of the blocks; and means for rotating the arms.

2. In a sharpening-machine, in combination, arms adapted to be rotated in two circular planes at an angle to each other; removable blocks provided with abrading or polishing surfaces on their sides and detachably secured to the arms, so arranged as to cause the opposed active surfaces of the blocks to be rotated in the two circular planes; a blade-holder adapted to hold a blade in the paths of rotation of the active surfaces of the blocks; and means for rotating the arms.

3. In a sharpening-machine, two blocks each having on one side a stone or honing material and on their other sides leather or stropping material; two rotating arms and means for the interchangeable attachment of the blocks to the arms, so that their opposed side surfaces will be of the same character; means for holding a blade in the paths of rotation of the active surfaces of the block; and means for rotating the arms.

4. In a sharpening-machine of the character herein described: a blade-holder; a block provided on each of its sides with an abrading or polishing material differing in quality or character from that on the other side; and means for holding and moving the block so that either of its sides having the active material thereon will be caused to rub over one of the sides of the blade.

5. In a sharpening-machine, two arms carried by a rotating shaft having flat flanges at their peripheries, two blocks each having a groove in its inner edges corresponding to and adapted to fit over either of the flat flanges of the arms, the opposite sides of the two blocks being provided with an abrading or polishing surface of similar character; and means, as threaded rods and nuts for holding the blocks on the arms.

6. In a sharpening-machine, a compound shaft comprising two parts fitted to rotate in angularly-arranged bearings one of said parts having a groove formed in its inner end and the other part having at its inner end a projecting flange and side springs extending into said groove, whereby rotary motion of one part will be imparted to the other part with substantial uniformity; arms carried by the two parts of the shaft; abrading or polishing surfaces attached to the arms; means for holding a blade in the paths of the abrading or polishing surfaces; and means for rotating the shaft.

7. In a sharpening-machine, a rotatable shaft; arms carried thereby provided with abrading or polishing surfaces; a blade-holder constructed to hold a blade in the path of the active surfaces of the arms; and an operating crank-handle attached to the shaft by means of quick or coarse pitch screw-thread, and a stop-arm projecting from the shaft against which the crank-arm contacts only when said crank is moved in one direction so as to be locked thereon and is released therefrom when the crank-handle is moved in the other direction.

8. In a sharpening-machine; a blade-holder comprising a pair of vise-jaws, means for moving them, one of said jaws having formed in face lateral angular grooves, and a third jaw or holding-down device formed to extend over the opening between the jaws and down the side of laterally-grooved jaw, said part having counterpart grooves, which are so shaped that when pressure is applied between these parts the upper part of this third jaw is moved downwardly, thereby constituting, with the vise-jaw, a three-side grip on the device placed between the jaws.

9. In a sharpening-machine, a rotatable shaft; arms carried thereby provided with abrading or polishing surfaces, a blade-holder constructed to hold a blade in the path of the active surfaces of the arms; said holder consisting of a pair of clamping-jaws adapted to be moved toward and from one another, and a holding-clamp attached to one of the jaws arranged to extend over the opening between the jaws and having angular grooves formed in its side adjacent to said jaw, formed to engage with counter-grooves laterally formed in the front of said jaw.

10. In a sharpening-machine, a blade-holder comprising clamping-jaws; a slide carrying the jaws; a guideway in which the slide works; parallel links horizontally arranged, connected at one end to the slide and at the other to the guideway-frame; and springs acting on the slide to hold it in central position.

11. In a sharpening-machine, a rotatable shaft; arms carried thereby provided with abrading or polishing surfaces, a blade-holder constructed to hold a blade in the path of the active surfaces of the arms; said holder consisting of a pair of clamping-jaws adapted to be moved toward and from one another, and a holding-clamp attached to one of the jaws arranged to extend over the opening between the jaws and having angular grooves formed in its side adjacent to said jaw, formed to engage with counter-grooves laterally formed in the front of said jaw; a slide carrying the jaws; a guideway in which the slide works; parallel links horizontally arranged, connected at one end to the slide and at the other to the guideway-frame; and springs acting on the slide to hold it in central position.

704,107. SEAL-LOCK. CHARLES J. REYNOLDS, Boston, Mass. Filed Oct. 2, 1901. Serial No. 77,252. (No model.)

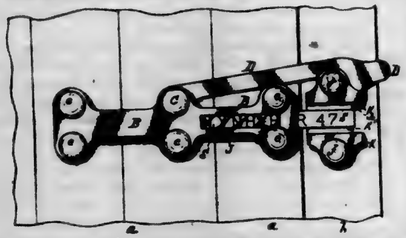

Claim.—1. In a seal-lock of the character described, the bottom or rear plate A provided with the inwardly-extending spur F, F', F''; and the upper or front plate B provided with the inwardly-extending spur H, H', H'', said plates facing each other and secured together and provided with a passage between them for the seal, and the said plate B being furthermore provided with the inwardly-extending shoe I, I' between the spur F, F', F'' and the outer or rear ends of the plates, whereby a double protection is provided by pressing the seal toward the plate A and preventing the passage of a thin piece of metal into the lock, substantially as set forth.

2. In a seal-lock of the character described, the bottom or rear plate A provided with the inwardly-extending spur F, F', F''; and the upper or front plate B provided with the inwardly-extending spur H, H', H'', said plates facing each other and secured together and provided with a passage between them for the seal, said plate A being formed on its inner surface with the groove E having a straight or level bottom, and located between the spur F, F', F'' and the rear end of said plate A, and the plate B being provided on its inner surface with the shoe I, I' extending up into said groove in the opposite plate, whereby the seal is pressed toward the straight surface formed by said groove, and the passage of a wire or piece of metal inserted at the rear end of the device beyond said shoe is prevented, substantially as described.

3. In a seal-lock of the character described, locking-plates adapted to be secured to the door of a freight-car; a plate adapted to be secured to the jamb thereof; a strip or seal S adapted to extend from the plate on the jamb and be engaged by the locking-plates; the cam-lock P, P'; a rotative bolt upon which said cam-lock is rigidly secured, said bolt being supported by the plate on the jamb; and the latch D pivotally connected at one end to the locking-plates and formed at its opposite end into hook shape D'' whereby it may be engaged by said cam-lock and released by the rotation of the bolt, substantially as set forth.

704,108. PROGRAM-CLOCK. OTIS D. RICE, Winthrop, Mass. Filed July 30, 1901. Serial No. 70,946. (No model.)

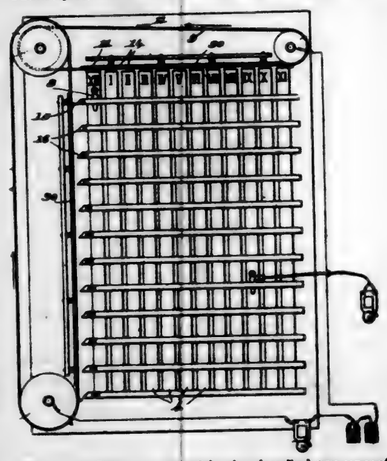

Claim.—1. In an apparatus of the class described, two series of bars, means to electrically connect any bar of one series with any bar of the other series, a circuit including two endless conductors, means to put one conductor in electrical contact with the successive bars of one series at predetermined intervals of time, and to put the other conductor in electrical contact with the successive bars of the other series at fractional portions of such intervals of time.

2. In an apparatus of the class described, two series of bars, means to electrically connect any bar of one series with any bar of the other series, a circuit including two endless conductors, means to put one conductor in electrical contact with the successive bars of one series at predetermined intervals of time, and to put the other conductor in electrical contact with the successive bars of the other series at fractional portions of an hour.

3. In an apparatus of the class described, two series of bars, means to electrically connect any bar of one series to any bar of the other series, a circuit including two endless conductors, each having a contact-piece, means to move said conductors to bring the contact-piece on one conductor in electrical contact with the successive bars of one series at predetermined intervals of time, and to bring the contact-piece on the other conductor in contact with the successive bars of the other series in fractional portions of such interval.

4. In an apparatus of the class described, two series of bars, means to put any bar of one series in electrical contact with any bar of the second series, a circuit including two endless conductors, means to put one of said conductors in electrical contact with each successive bar of one series for a predetermined interval of time and to momentarily put the other conductor into electrical contact with the successive bars of the other series at fractional portions of such interval of time.

5. In an apparatus of the class described, two series of bars, means to put any bar of any series in electrical contact with any bar of the other series, a circuit including two endless conductors each having a contact-piece thereon, means to put one of said contact-pieces in electrical contact with each successive bar of one series for a predetermined interval of time, and to momentarily put the other contact-piece into electrical contact with the successive bars of the other series at fractional portions of such interval of time.

6. In an apparatus of the class described, two series of bars, means to put any bar of one series in electrical contact with any bar of the second series, a circuit including two endless conductors, each of said conductors having a plurality of contact-pieces, means to move said conductors continuously in one direction, the movement of the conductors bringing each contact-piece on one conductor into electrical contact with the successive bars of one series at predetermined intervals of time, and each contact-piece on the other conductor into electrical contact with the successive bars of the other series at fractional portions of such intervals of time, each contact-piece coming into contact with the first bar of the series as the preceding contact has moved out of contact from the last bar of the series.

7. In an apparatus of the class described, two series of bars, means to put any bar of one series in electrical contact with any bar of the other series, an electrical circuit including two endless conductors each having a contact-piece, means to move said conductors continuously in one direction, the movement of said conductors bringing each contact-piece on one conductor into electrical contact with the successive bars of one series for a predetermined interval of time, and each contact-piece on the other conductor momentarily into electrical contact with the successive bars of the other series at fractional portions of such intervals.

8. In an apparatus of the class described, two series of bars, means to put any bar of one series in electrical contact with any bar of the other series, an electrical circuit including two endless conductors, one of said conductors having a contact-piece adapted to move across the ends of the bars in the other series, means to move said conductors with such speeds that one contact-piece is brought into contact with the ends of the successive bars in one series at predetermined intervals of time, and the other series is brought into electrical contact with the ends of the successive bars of the other series in fractional portions of such intervals of time.

9. In an apparatus of the class described, two series of bars, the ends of the bars of one series being flat and those of the other series being pointed, means to put any bar of any series in electrical contact with any bar of the other series, a circuit including two endless conductors, one of said conductors having a contact-piece adapted to move across the flat ends of the successive bars in the first-mentioned series, and the other bar having a contact-piece adapted to momentarily contact with the pointed ends of the successive bars of the other series, and means to move said conductors with such speeds that one contact-piece is put in contact with the ends of the successive bars in one series at predetermined intervals of time, and the other contact-piece is brought into electrical contact with the pointed ends of the successive bars of the other series in fractional portions of such intervals of time.

10. In an apparatus of the class described, two series of bars, each bar of both series being normally electrically insulated from all the other bars, means to electrically connect any bar of one series with any bar of the other series, a circuit including two moving conductors, means to put one conductor in electrical contact with the successive bars of one series at predetermined intervals of time, and means to put the other conductor in electrical contact with the separated bars of the other series in succession at fractional portions of such intervals of time.

11. In an apparatus of the class described, two series of bars, the bars of each series being electrically independent, means to electrically connect any bar of one series with any bar of the other series, a circuit including two movable contacts, means to move one contact across the bars of one series to bring said contact directly into engagement with the successive bars of said series at predetermined intervals of time, and means to move the other contact across the bars of the other series to bring said last-mentioned contact directly into engagement with the successive bars of the second series at fractional portions of such intervals of time.

12. In an apparatus of the class described, two series of bars, the bars of each series being electrically independent from each other, means to electrically connect any bar of one series with any bar of the other series, a circuit including two movable contact-points, means to put one contact-point in mechanical contact with the successive bars of one series at predetermined intervals of time, and means to put the other contact-point in mechanical contact with the successive bars of the other series at fractional portions of such intervals of time.

704,109. ATTACHMENT FOR CHAIRS. ARTHUR H. RICHARDS, Chicago, Ill. Filed Feb. 11, 1901. Serial No. 46,933. (No model.)

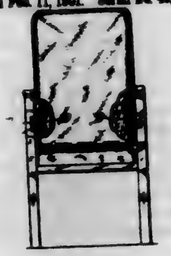

Claim.—1. An attachment for chairs, comprising a panel-plate and a chair-plate pivotally attached to each other, spring-engaging means upon said plates, a leaf-spring surrounding the connecting-pivot and adjacent to said spring-engaging means so as to yieldingly resist the pivotal movement of either plate across the face of the other plate, substantially as described.

2. An attachment for chairs, comprising a plate provided with a boss upon one face thereof, a reduced extension upon said boss, a second plate pivotally mounted upon said extension of said boss, spring-engaging means upon said plates, and a leaf-spring interposed between said plates and adjacent to said spring-engaging means so as to yieldingly oppose the pivotal movement of either of said plates across the face of the other of said plates, substantially as described.

3. An attachment for chairs, comprising a plate, a boss upon one face of said plate, means upon said plate for engaging a spring, a second plate pivotally mounted upon said first plate, means upon said second plate for engaging a spring, a leaf-spring interposed between said plates and around said boss and adapted to coact with said spring-engaging means upon each of said plates, so as to yieldingly resist the pivotal movement of either plate across the face of the other plate, substantially as described.

4. In an attachment for panel-back chairs, the combination of a plate provided with an angular portion constituting a face-plate for attachment to one part of a chair, a boss upon one face of said first-named plate, a spring-engaging lug upon the same face of said plate, a second plate pivotally mounted upon said boss, a spring interposed between said plates mounted upon said boss and adapted to engage said spring-engaging lug, a lug upon said second plate also adapted to engage said spring, screw-holes in said second plate for receiving attaching-screws and larger holes in said first plate registering with said screw-holes in such a manner that screws may be passed entirely through said first plate into the screw-holes in said second plate so that said second plate may be attached thereby to the chair, substantially as described.

5. An attachment for chairs comprising a pair of plates pivotally attached to each other, a spring interposed therebetween, surrounding the connecting-pivot, means upon each of said plates for engaging said spring, perforations through one of said plates for the passage of attaching devices, and smaller perforations in the other of said plates for receiving and engaging said attaching devices, substantially as described.

704,110. FRICTION DRAFT-GEAR. OLIVER P. RITTER, Chicago, Ill. Filed Mar. 10, 1902. Serial No. 97,496. (No model.)

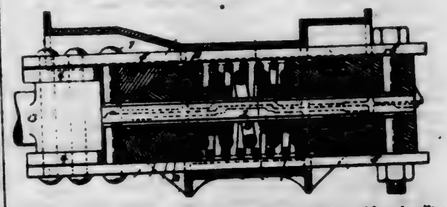

Claim.—1. In a friction draft-gear, the combination with a plurality of movable elements which alternately act as friction elements and as followers, of an interposed resilient element, a plurality of seats for said movable elements upon which seats the said elements are at rest when acting as friction elements and from which they are displaced when acting as followers, and a coacting friction element movable with relation to the first-named elements, substantially as and for the purposes specified.

2. In a friction draft-gear, the combination with a plurality of movable elements which alternately act as friction elements and as followers, of an interposed resilient element, a plurality of seats for said movable elements upon which seats the said elements are at rest when acting as friction elements, a coacting friction element movable with relation to the first-named elements, and means for causing a translation of the said first-named elements equal in displacement to that of the transmission element, substantially as and for the purposes specified.

3. In a friction draft-gear, the combination with a transmission element, of a yielding resistance element; a plurality of friction elements having inclined faces, a plurality of correspondingly-inclined seats independent of said friction elements, a friction element coacting therewith and relatively movable with relation to the first-named friction elements, and means for displacing said first-named friction elements from their seats, substantially as and for the purposes specified.

4. In a friction-gear, the combination with a load-transmission element, of a plurality of bodies or inclines movable with said transmission element, a plurality of inclines independent of said transmission element,

a plurality of follower friction draft-blocks adapted to be seated on either end of inclines independently of the other set, a friction element relatively movable with relation to said follower friction-blocks and coacting therewith, and means for creating yielding pressure between the coacting friction elements, substantially as and for the purposes specified.

5. In a friction draft-gear, the combination with a centrally-disposed element having parallel friction-faces, of a plurality of oppositely-disposed friction elements in opposition therewith, a spring interposed between the last-named friction-elements, oppositely-disposed seats for said last-named friction elements, and displacers for seating the oppositely-disposed friction elements, substantially as and for the purposes specified.

6. In a friction draft-gear, the combination with a centrally-disposed friction element having parallel friction-faces, of a plurality of oppositely-disposed friction elements in opposition therewith, a spring interposed between the last-named friction elements, oppositely-disposed seats for said last-named friction elements, displacers for seating the oppositely-disposed friction elements and straps connecting said displacers, substantially as and for the purposes specified.

7. In a friction draft-gear, the combination with a centrally-disposed friction element, coacting friction elements in opposition therewith, a spring interposed between said last-named elements, seats for said last-named elements, and a strap which includes said friction elements and is connected with the central friction element, substantially as and for the purposes specified.

8. In a friction draft-gear, the combination with a centrally-disposed friction element, and coacting friction elements having suitable seats, of a spring interposed between the last-named friction elements, and displacers, substantially as and for the purposes specified.

9. In a friction draft-gear, the combination with a housing having a longitudinal opening therethrough and internally-disposed converging inclined seats at opposite ends thereof, of spring-pressed friction elements at rest upon said seats, and a coacting friction element longitudinally movable in said housing, substantially as and for the purposes specified.

10. In a friction draft-gear, the combination with a coacting friction element having friction-faces parallel to the line of applied force, of a plurality of friction elements movable toward and from each other and having inclined seats, correspondingly-inclined seats on which said last-named friction elements are relatively at rest when acting as friction elements, and means for creating pressure between the coacting friction elements, substantially as and for the purposes specified.

11. In a friction draft-gear, the combination with a coacting friction element, of friction elements having friction-faces parallel to the line of applied force and relatively movable longitudinally with a displacement equal to the displacement of the load-transmission element, a yielding resistance element interposed between said last-named friction elements, a load-transmission element, and means for creating pressure between the coacting friction elements, substantially as and for the purposes specified.

12. In a friction draft-gear, the combination with a load-transmission element, of a friction element having friction-faces parallel to the line of applied force, coacting friction elements having a motion of translation equal in displacement to that of the load-transmission element, and a spring interposed between said last-named elements, substantially as and for the purposes specified.

704,111. CUFF-HOLDER. FELIX J. ROSSETT, Tunis, W. Va. Filed Feb. 14, 1901. Serial No. 47,263. (No model.)

Claim.—As an article of manufacture, a cuff-holder consisting of an integral member including a body portion having a narrowed neck at one end and a transverse head thereabeyond and provided with teeth at one end and upwardly-directed and perforated ears at the sides of the head, a stud fixed upon the body of the member, the neck of the member having spaced openings and an intervening web, a second integral member having a terminal hook engaged through the opening of the first member and around the web thereof, the second member having a spring-casket to receive the stud, a jaw pivotally connected with the ears of the first member, and a spring disposed and constructed to hold the jaw yieldably against the teeth of the first member.

704,112. TYPE-WRITING MACHINE. THEODORE B. ROSSBERG, Albany, N. Y. Filed Jan. 26, 1902. Serial No. 91,170. (No model.)

Claim.—1. In a type-writing machine, the combination with a series of finger-keys, of a series of type-operating bars, a series of sounding devices, and a series of striking devices adapted to produce predetermined sounds by the operation of said finger-keys and type-operating bars, substantially as shown and described.

2. In a type-writing machine, the combination with a series of finger-keys, of a series of type-operating bars, a series of striking and sounding devices each sounding device having a distinct relation with a particular type so that each key will produce a predetermined sound for each character, substantially as shown and described

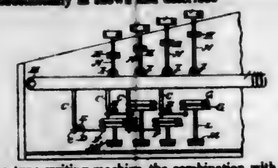

3. In a type-writing machine, the combination with a series of finger-keys, of a series of type-operating bars, and a series of striking and sounding devices adapted to produce a predetermined sound distinguishing each character or type operated by said bars, substantially as shown and described.

4. In a type-writing machine, the combination with a series of finger-keys, of a series of type-operating bars, a series of sounding devices, and a series of pivoted levers connected with said operating-bars and adapted to strike said sounding devices, substantially as shown and described.

5. In a type-writing machine, the combination with a series of finger-keys, of a series of type-operating bars, a series of sounding devices arranged in sets in varying horizontal planes, striking devices connected with said operating-bars and adapted to come in contact with said sounding device, substantially as shown and described.

704,118. CIRCUIT-CLOSER FOR PORTABLE ELECTRICAL APPARATUS. WILLIAM ROSSI, Jersey City, N. J. Filed Dec. 5, 1901. Serial No. 84,749. (No model.)

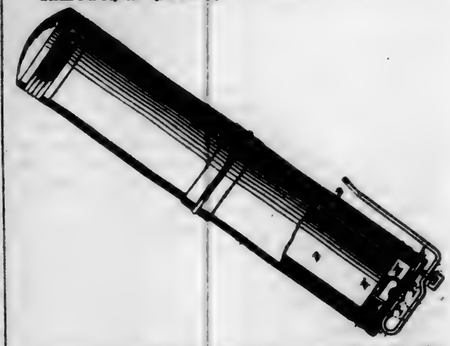

Claim.—1. In a circuit-closer for electric apparatus, the combination of a conducting cap or carrier with a circuit-closer carried by said cap, but insulated therefrom and provided with an attached end portion, a spring-bend at one end of said attached portion, a return member extending substantially parallel with the end portion and provided with a contact arranged to engage the end surface of the cap or carrier, and a handle portion connected with said return member and extending along the side of the cap or carrier out of contact therewith.

2. In an electric-circuit closer the combination of a cap or carrier with a circuit-closer carried by said cap but insulated therefrom, said circuit-closer comprising an attached end portion, a spring-bend at one end of said end portion, a return member extending along the end surface of the cap, a handle portion extending along the side of the cap, and a contact-screw carried by the return member and adapted to engage the end surface of the cap.

3. In an electric-circuit closer the combination of a conducting-cap having a slot, an insulating-plate secured on the inside of the cap, a circuit-closer secured to said plate within the slot of the cap, but out of contact with the cap, said circuit-closer having a spring-bend adjacent to its attached end, a return member connected with said spring-bend and adapted to effect contact with the end surface of the cap, and a handle portion extending along the side of the cap.

4. The combination with the battery-casing, a conducting-cap therefor adapted for connection with one pole of the battery, a circuit-closer carried by the cap, but insulated therefrom and adapted for contact with the cap, and a spring carried by the cap and connected with the circuit-closer, said spring being adapted to engage with pole of the battery.

5. The combination of the battery-casing, a conducting-cap therefor adapted for connection with one pole of the battery and provided with a slot in its end surface, an insulating-plate secured to the inside of the cap, a circuit-closer arranged on the outside of the plate within the slot of the cap and adapted for contact with the cap, a contact making spring arranged on the inside of the insulating-plate and adapted for engagement with the other pole of the battery, and conducting fastening devices extending through the insulating-plate and forming an electric connection between the circuit-closer and the spring.

6. The combination of the conducting cap or carrier, with a circuit-closing arm comprising a spring portion secured to said carrier but insulated therefrom, a contact member extending from said spring portion substantially parallel with the end surface of the cap and movable toward the cap to engage the end surface thereof, against the tension of the spring portion, and a handle member extending from the outer end of the contact member lengthwise at the side of the cap and out of contact therewith.

7. The combination of the conducting cap or carrier, with a circuit-closing arm having one of its ends secured to said carrier but insulated therefrom, and provided with a transverse member extending across the end surface of the cap and having a contact portion which is nearer the said end surface than the remainder of said member, and a handle member extending from the outer end of said cross member lengthwise at the side of the cap and out of contact therewith.

704,114. COMPUTING-MACHINE. EDWARD ROSSITER, Grand Rapids, Wis. Filed Apr. 17, 1901. Serial No. 56,298. (No model.)

Claim.—1. A computing-machine comprising the casing provided at its ends with upwardly-extending arms and having a central transversely-curved top section 10 forming an exterior groove or depression, said casing being provided at opposite sides of the central top section with opposite longitudinal apertures, rolls located within the casing at opposite sides thereof, a result-sheet arranged on the rolls and exposed at the apertures of the casing, the longitudinal feed-screws arranged on the exterior of the casing in the longitudinal grooves or depression of the top section 10, gearing arranged at one end of the casing and connecting the feed-screws with the rolls, the slide arranged on the feed-screws and adapted to extend across the casing and provided with pointers or indicators extending to the said apertures, and the longitudinal rod connecting the said arms and located directly above and adjacent to the feed-screws and adapted to facilitate the operation of the machine and forming a guard for the screws and the slide, substantially as described.

2. A computing-machine comprising a casing provided at its ends with centrally-arranged supporting-arms and having a groove or depression extending between the arms at the top of the casing, said casing being provided at opposite sides with longitudinal apertures, rolls located within the casing, a result-sheet arranged on the rolls and exposed at the said apertures, the longitudinal feed-screws arranged on the exterior of the casing between the said arms at the groove or depression, the pinions 21 and 22 connected with the rolls, the pinion 26 mounted on the feed-screws, the gear-wheel 24 meshing with the pinions 22 and 26, the pinion 28 meshing with the gear-wheel 24 and with the pinion 21, the exteriorly-arranged slide mounted on and adapted to rotate the feed screws, and provided with transversely-disposed pointers or indicators, and the rod fixed to the arms and located directly above the feed-screws and forming a grip and a guard, substantially as described.

3. A computing-machine comprising a casing provided at opposite sides with apertures and having centrally-arranged upwardly-extending arms, a rod connecting the arms and forming a handle, rolls arranged within the casing, a result-sheet mounted on the rolls, a longitudinal feed shaft or screw located beneath the rod, gearing connecting the shaft or screw with the rolls, and a slide mounted on the feed shaft or screw and connecting the same and provided with oppositely-disposed pointers or indicators arranged to move longitudinally of the apertures, substantially as described.

4. A computing-machine comprising a casing provided at opposite sides with apertures and having a top composed of central and side portions, arms depending from the side portions of the top, rate-bars mounted on the arms and spaced from the said side portions to provide longitudinal openings, rolls arranged within the casing, a result-sheet disposed on the rolls, a longitudinal feed shaft or screw mounted above the central portion of the top of the casing, gearing connecting the feed shaft or screw with the rolls, and a slide mounted on and engaging the feed shaft or screw and provided with oppositely-disposed pointers or indicators extending beneath the side portions of the top and projecting through the longitudinal openings and arranged on the exterior of the rate-bars, substantially as described.

704,115. THERMOSTAT. ALFRED ROSSEL, Bridgeport, Conn., assignor to Davis & Rossel Temperature Controlling Company, New York, N. Y., a Corporation of New Jersey. Filed Jan. 14, 1901. Serial No. 43,188. (No model.)

Claim.—1. In a thermostat, the combination with a base and a lever having a pivotal connection, near one of its ends, with said base, of a metallic strip whose coefficient of expansion is greater than that of the base, secured at one end to the base, and at its other end linked to the lever adjacent to its pivotal point, whereby contraction of the said strip relatively to the base will move the lever in one direction; a spring between the lever and the base opposing such movement, and adapted to move the lever in the opposite direction upon the relative expansion of such strip and a regulator adapted to bear laterally against said strip.

2. In a thermostat, the combination with a base and a lever having a pivotal connection, near one of its ends, with said base, of a metallic strip whose coefficient of expansion is greater than that of the base, secured at one end to the base, and at its other end linked to the lever adjacent to its pivotal point, whereby contraction of the said strip relatively to the base will move the lever in one direction, a spring between the lever and the base opposing such movement and adapted to move the lever in the opposite direction upon the relative expansion of such strip, and a regulating-screw adapted to bear laterally against the said strip.

704,116. PLANT-PROTECTOR. JESSE W. ROSS, Alma, Ill. Filed Feb. 18, 1902. Serial No. 94,254. (No model.)

Claim.—1. In a plant-protector the combination with a hood and an inverted-U-shaped anchor, of means carried on said hood for engaging said anchor at any point along the side of said anchor, whereby the entire protector may be raised and tilted at any point, substantially as described.

2. In a plant-protector the combination of a hood, an anchor secured therein, and a notched flap on the top of said hood adapted to engage said anchor, substantially as described.

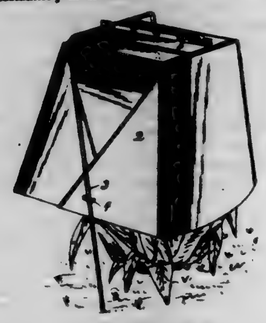

704,117. SIGNALING SYSTEM. JOHN J. RUSSELL, Newton, Mass., assignor to United States Electric Signal Company, Watertown, Mass., a Corporation of Maine. Filed July 26, 1901. Serial No. 69,808. (No model.)

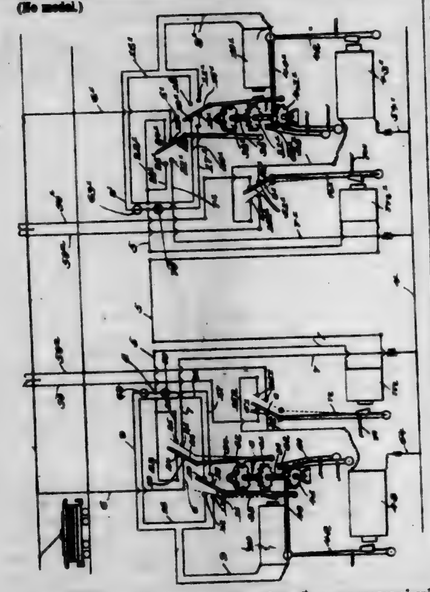

Claim.—1. In a block-signal system for railways, a power-circuit including a main conductor and a return-wire, a single signal-circuit including a signal, said signal-circuit normally having both ends thereof connected to the same side of the power-circuit, means operated by a car entering the block to connect one end of said signal-circuit to the opposite side of the power-circuit and means operated by the same car leaving the block to connect the other end of said signal-circuit to said opposite side of the power-circuit.

2. In a block-signal system for railways, a power-circuit including a main conductor and return-wire, a signal-circuit extending the length of the block and having a signal therein, said signal-circuit normally having both ends thereof connected to the same side of the power-circuit, and means operated by a car entering either end of the block to connect one end of said signal-circuit to the opposite side of the power-circuit, whereby the signals are displayed, and means operated by said car as it leaves the block to connect the other end of said signal-circuit to the opposite side of the power-circuit.

3. In a block-signal system for railways, a power-circuit including a main conductor and a return-wire, a single signal-circuit including a signal, said signal-circuit extending the length of the block and having both ends thereof normally connected with the same side of the power-circuit, means operated by a car entering the block to connect the signal-circuit at the entering end of the block to the opposite side of the power-circuit whereby the signal is displayed, and means operated by the same car leaving the block to connect the other end of said signal-circuit to said opposite side of the power-circuit.

4. In a block-signal system for railways, a power-circuit including the main conductor and return-wire, a signal-circuit extending the length of the block and having a signal therein, said signal-circuit normally having both ends thereof connected to the same side of the power-circuit, means operated by a car entering either end of the block to connect the corresponding end of said signal-circuit to the opposite side of the power-circuit whereby the signal is displayed, and means operated by said car as it leaves the block to connect the other end of said signal-circuit to the opposite side of the power-circuit.

5. In a block-signal system for railways, a power-circuit including a main conductor and a return, a signal-circuit having a signal therein, means actuated by successive cars entering the block to connect one end of said signal-circuit alternately with the main conductor and the return, and means actuated by the said cars leaving the block to connect the other end of said signal-circuit alternately with the main conductor and return, the construction being such that when a car is in the block the ends of the signal-circuit are connected to opposite sides of the power-circuit, and when the block is empty both ends of the signal-circuit are connected to the same side of the power-circuit.

6. In a block-signal system for railways, a power-circuit including a main conductor and return-circuit, a signal-circuit extending the length of the block, a signal operated thereby, switches at each end of the signal-circuit and normally connecting said circuit with the same side of the power-circuit, means rendered operative by a car entering the block to throw the switch at the entering end of the block to connect the corresponding end of the signal-circuit with the opposite side of the power-circuit, and means rendered operative by a car leaving the block to throw the switch at that end of the block from which the car leaves to connect said end of the signal-circuit with the said opposite side of the power-circuit.

7. In a block-signal system for railways, a power-circuit including a main conductor and return-circuit, a signal-circuit having a signal therein, switches at each end of the signal-circuit and normally connecting both ends of said circuit to the same side of the power-circuit, means rendered operative by a car entering either end of the block to throw the switch at the entering end of the block to connect the corresponding end of the signal-circuit to the opposite side of the power-circuit, and means rendered operative by the car leaving the block in either direction to throw the switch at that end of the block from which the car leaves to connect the corresponding end of the signal-circuit to the same side of the power-circuit as the opposite end of said signal-circuit.

8. In a block-signal system, a power-circuit including a main conductor and a return-wire, a signal-circuit extending the length of the block, a signal therein, and means actuated by cars entering the block to put one end of said signal-circuit alternately in connection with opposite sides of the power-circuit, and means actuated by the cars leaving the block to put the other end of the signal-circuit alternately in connection with the opposite side of the power-circuit.

9. In a block-signal system, a power-circuit including a main conductor and a return-wire, a signal-circuit extending the length of the block and having a signal therein, vibrating switches at each end of said signal-circuit, said switches normally connecting both ends of the signal-circuit to the same side of the power-circuit, means actuated by a car entering the block to throw one of said switches to connect one end of said signal-circuit to the opposite side of the power-circuit, and means actuated by the car leaving the block to throw the other of said switches into a corresponding position.

10. In a block-signal system, a power-circuit including a main conductor and return-wire, a signal-circuit having a signal therein, means operated by a car entering the block to connect the signal-circuit across from the main conductor to the return-wire, and means rendered operative by the current traversing in the signal-circuit to prevent a second car entering the block from affecting the signal while the preceding car is in the block.

11. In a block-signal system, a power-circuit including a main conductor and return-wire, a signal-circuit having a signal therein, said signal-circuit having both ends thereof normally connected to the same side of the power-circuit, switch devices rendered operative when a car enters an empty block to connect one end of said signal-circuit to the opposite side of the power-circuit, and means to lock said switch devices against movement while the car is in the block, whereby a second car entering the block before the preceding car leaves the same does not affect the signal.

12. In a block-signal system, a power-circuit including a main conductor and return-wire, a signal-circuit having a signal therein, switches normally connecting both ends of said signal-circuit to the same side of the power-circuit, a signal-setting circuit including an actuating-magnet, switch-operating devices controlled by said actuating-magnet, and means actuated by a car entering the block to momentarily close the setting-circuit, whereby one of the switches is operated to connect the signal-circuit across from the main conductor to the return-wire.

13. In a block-signal system, a signal-circuit, a signal therein, signal-actuating mechanism including an electromagnet, a signal-setting circuit and a signal-suppressing circuit, said signal-actuating mechanism being normally connected to the signal-setting circuit, means rendered operative when the signal is set to connect said signal-actuating mechanism to the signal-suppressing circuit, and means for automatically closing said signal-setting circuit when a car enters the block, and said signal-suppressing circuit when a car leaves the block.

14. In a block-signal system, a signal, signal-actuating mechanism at each end of the block, a signal-setting circuit and a signal-suppressing circuit at each end of the block, the signal-actuating mechanism at each end of the block being normally connected to the corresponding signal-setting circuit, means rendered operative by the setting of the signal to connect each of said signal-actuating mechanisms to the corresponding signal-suppressing circuit, and means for automatically closing one of said signal-setting circuits when a car enters the block, and means for automatically closing one of said signal-suppressing circuits when a car leaves the block, whereby the signal is set by a car entering the block from either direction and is restored to normal when the car leaves the block from either direction.

15. In a block-signal system, a signal, signal-actuating mechanism including an actuating-magnet, a signal-setting circuit and a signal-suppressing circuit, said signal-setting circuit normally including the coils of said actuating-magnet, means rendered operative by the signal-actuating mechanism when operated to set the signal to connect said actuating-magnet with the signal-suppressing circuit, and means for automatically closing said signal-setting circuit when a car enters a block and said signal-suppressing circuit when the car leaves the block.

16. In a block-signal system, a signal, a signal-actuating mechanism at each end of the block and including an actuating-magnet, a signal-setting circuit and a signal-suppressing circuit at each end of the block, said signal-setting circuits each normally including the coils of the corresponding actuating-magnet, means to connect said actuating-magnet with the signal-suppressing circuit, said means being rendered operative when the signal is set, and means operated by a car entering the block in either direction to close one of said signal-setting circuits and by a car leaving the block in either direction to close one of the signal-suppressing circuits.

17. In a block-signal system, a power-circuit including a main conductor and return-wire, a signal-circuit having a signal therein, switches at each end of the signal-circuit, and normally connecting both ends thereof to the same side of the power-circuit, a signal-setting circuit and a signal-suppressing circuit at each end of the block, each of said signal-setting circuits normally including the coils of an actuating-magnet, a switch-operating device controlled by each of said actuating-magnets, means to connect the actuating-magnets with the signal-suppressing circuits when a car is in the block, means actuated by a car entering the block to momentarily close the signal-setting circuit at the entering end of the block, and means actuated by a car leaving the block to close the signal-suppressing circuit at that end of the block, whereby when the car is in the block, the signal can only be operated through one of the signal-suppressing circuits.

18. In a block-signal system, a power-circuit including a main conductor and return-wire, a signal-circuit having a signal therein, switches at each end of the signal-circuit, and normally connecting both ends thereof, to the same side of the power-circuit, a signal-setting circuit and a signal-suppressing circuit at each end of the block, each of said signal-setting circuits normally including the coils of an actuating-magnet, a switch-operating device controlled by each of said actuating-magnets, means operated when the signal is set to connect the actuating-magnets with the signal-suppressing circuits, means actuated by a car entering the block from either direction to momentarily close one of said setting-circuits, and means actuated by a car leaving the block in either direction to close one of said signal-suppressing circuits, whereby when the car is in the block, the signal can only be operated through one of the signal-suppressing circuits.

19. In a block-signal system, a power-circuit including a main conductor and return-wire, a signal-circuit having a signal therein, switches at each end of the signal-circuit, and normally connecting both ends of the signal-circuit with the same side of the power-circuit, a signal-setting circuit and a signal-suppressing circuit, said signal-setting circuit normally having an actuating-magnet therein, means actuated by a car entering the block to momentarily close the setting-circuit whereby the magnet is energized and the signal is set, means operated when the signal is set to connect said actuating-magnet with the signal-suppressing circuit, and means operated by a car leaving the block to close said signal-suppressing circuit, whereby when a car is in the block the signal can only be operated by a car leaving the block.

20. In a block-signal system, a single signal-circuit extending the length of the block and having a pair of differently-distinguished signals at each end thereof, a signal-actuating circuit at each end of the block, said signal-actuating circuits being independent from each other, means whereby as the car enters the block it closes the signal-actuating circuit at the entering end of the block and renders the signal-circuit operative to set a signal of one character or kind at one end of the block and a signal of the other character or kind at the opposite end of the block, and means whereby as the car leaves the block it closes the signal-actuating circuit at that end of the block from which it leaves to thereby restore the signal-circuit to its normal condition, the construction being such that the signals when set always indicate the direction in which the car has entered the block.

21. In a block-signal system, a single signal-circuit extending the length of the block and having a plurality of signals at each end of the block connected thereto, a signal-actuating circuit at each end of the block, said signal-actuating circuits being independent from each other, and means whereby as the car enters the block it closes the signal-actuating circuit at the entering end of the block and thereby renders the signal-circuit active to set the signals, the signals when set indicating the direction in which the car has entered the block, and means whereby as the car leaves the block the signal-actuating circuit at that end of the block from which the car leaves is closed to thereby restore the signal-circuit to its normal condition.

22. In a block-signal system, a single signal-circuit extending the length of the block and having a plurality of signals therein, a signal-setting circuit, and a signal-suppressing circuit, each adapted to be closed by a car entering or leaving the block, respectively, means whereby as the signal-setting circuit is closed the signals in the signal-circuit are set, and means whereby when the signal-suppressing circuit is closed by a car leaving the block the signals in the signal-circuit are suppressed or restored to normal, these signals being of such a character that when set they indicate the direction in which the car has entered the block.

23. In a block-signal system, a power-circuit, including a main conductor and a return, a signal-circuit extending the length of the block, said signal-circuit being branched at each end, one branch at each end having a white signal therein, and the other branch having a red or differently-colored signal therein, the two branches having the red lights therein being normally connected to the same side of the power-circuit, means operated by a car entering the block to open the branch at the entering end of the block having the red signal therein, and connect that branch at said entering end of the block which has the white signal therein with the opposite side of the power-circuit, whereby a white signal is displayed at the entering end of the block and a red signal at the opposite end thereof.

24. In a block-signal system, a power-circuit, including a main conductor and a return, a signal-circuit extending the length of the block, said signal-circuit being branched at each end, one branch at each end having a white signal therein, and the other branch having a red or differently-colored signal therein, the two branches having the red lights therein being normally connected to the same side of the power-circuit, means operated by a car entering the block to open the branch at the entering end of the block having the red signal therein, and connect that branch at said entering end of the block which has the white signal therein with the opposite side of the power-circuit, whereby a white signal is displayed at the entering end of the block and a red signal at the opposite end thereof, and means whereby as the car leaves the block the signals are restored to normal.

25. In a block-signal system for railways, a power-circuit, including a main conductor and return-wire, a single signal-circuit including a plurality of signals, said signal-circuit having both ends thereof connected to the same side of the power-circuit, means operated by a car entering the block to connect one end of the signal-circuit to the opposite side of the power-circuit, means operated by a car leaving the block to connect the other end of said signal-circuit to said opposite side of the power-circuit, and means whereby the signals indicate the direction in which the car has entered the block.

704,118. LACING-STUD. LEON L. RUSSELL, Grouse, Iowa. Filed Apr. 24, 1902. Serial No. 104,554. (No model.)

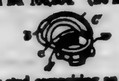

Claim.—1. A lacing-stud comprising an eyelet, and a spring-hook connected at one end to the eyelet and overhanging the same, whereby,

when the blight of the hook is subjected to death, the free end thereof will be drawn down into the eyelet.

2. A lacing-stud comprising an eyelet adapted for connection to a shoe-upper or other article to be laced, and a hook overhanging the eyelet; the said hook being formed of spring-metal, and having one end fixed to the eyelet, and its other end free, and also having the loop *a*, the blight *b* disposed in rear of and below the loop, and the movable blight *c* also disposed in rear of and below the loop, and normally in advance of the blight *b*.

3. A lacing-stud comprising an eyelet adapted for connection to a shoe-upper or other article to be laced, and a hook overhanging the eyelet; the said hook being formed of spring-metal, and having one end fixed to the eyelet, and its other end free, and also having the loops *a*, a portion of which is of reduced thickness, the blight *b* disposed in rear of and below the loop, and the movable blight *c* also disposed in rear of and below the loop, and normally in advance of the loop *b*.

4. The combination of a shoe-upper or other article to be laced, a spring-hook connected at one end thereto, and means on the upper or other article to be laced, fixed with respect to the hook, and adapted when the hook is placed under tension to guard the free end thereof.

704,119. COPY-HOLDER FOR TYPE-WRITERS USE. AXEL ERMES, Chicago, Ill., assignor to Chicago Writing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Sept. 14, 1901. Serial No. 75,288. (No model.)

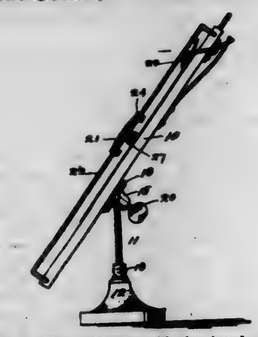

Claim.—1. The combination with the slotted plate or holder 10, of the block adjustable in the slot of the plate and a standard for the holder having a rod hinged to the block, substantially as specified.

2. The combination with the slotted plate or holder 10, of the block adjustable in the slot of the plate, and having a rear projecting portion receiving the bent end of the rod 11 of the holder-standard, the standard, and the rod having its end bent and inserted in the block, substantially as specified.

3. The combination with the slotted plate or holder 10, of the block adjustable in the slot of the plate and having a rear projection with an elongated slot receiving the bent end of the rod, a washer controlling said projection, a rod having its bent end inserted in the slot of the block, and a pressure-exerting device bearing on said bent end, substantially as specified.

4. In a copy-holder, the combination with the slotted plate, of a supporting-block adjustable in the slot of the plate and having a rear projection, and also a front flange bearing on the plate, a washer loosely encircling said projection and bearing on the plate, a rod 11 for retaining the washer on the projection, and a screw for tightening the washer, substantially as specified.

5. In a copy-holder, a copy-holding plate and a supporting-block adjustably attached to the plate, in combination with a standard having a rod the upper end of which is bent to a horizontal position and passes through an opening in the block, and a cut-screw crossing friction upon said horizontal part of the rod, substantially as specified.

6. The presser 20 for holding the copy, having its ends bent to form pivots and crank-arms as set forth and combined with clips for the pivots and springs for holding the presser both in its casing and in its raised position, substantially as specified.

7. The combination with a copy-holder of a spring 26 located at the top of the holder and having its free end resting on a stationary part thereof, substantially as specified.

704,120. WEEDING IMPLEMENT. ISAAC SAMUEL, Thompson, Miss. Filed Mar. 20, 1902. Serial No. 98,958. (No model.)

Claim.—A weeding implement comprising a beam having a depending perforated web, a standard consisting of a plate bent upon itself and disposed to straddle the web with its blight lying against the upper face of the beam, a bolt passed through the sides of the standard for engagement with the perforations of the web interchangeably, a second bolt passed through the sides of the standard below the first-named bolt, a brace secured to the beam and having its forward end engaged with the bolt between the sides of the standard, a blade having a bolt passed therethrough and between the sides of the standard and having a champing-nut for engagement with the rear edges of the standard to hold the blade at different elevations, and spring-arms attached to the ends of the blade and to the ends of the second bolt to hold the blade yieldably against pivotal movement and to permit of adjustment of the blade to different elevations.

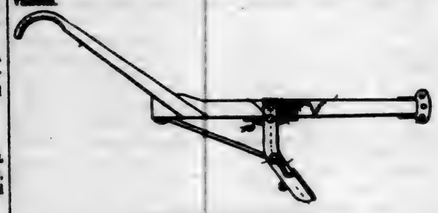

704,121. SELF-CLOSING COCK. PETER SCHWEER, Dayton, Ohio. Filed Sept. 13, 1901. Serial No. 75,248. (No model.)

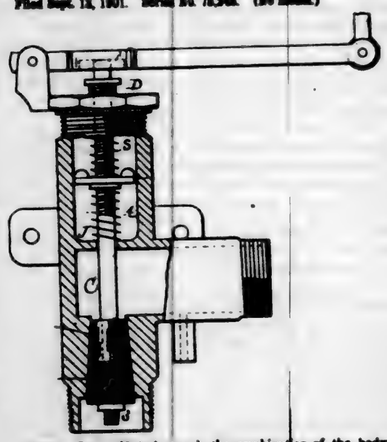

Claim.—In a self-closing cock the combination of the body having suitable inflowt and effluent orifices, the bearing-ledge and a cone-shaped seat, the closing-cap provided with ears and a packing-gland, the stem with its metallic and rubber rings forming the valve, the threaded adjusting-nut held on said stem, the spiral spring for closing said valve, the spiral spring for staying said adjusting-nut, substantially as described.

704,122. ILLUMINATED DISPLAY-SIGN. CHARLES G. SCOTT, Boston, Mass., assignor to Alfred C. Fulkin and Mario L. Fulkin, co-partners under firm-name of A. C. and M. L. Fulkin, Boston, Mass. Filed Jan. 2 1902. Serial No. 88,044. (No model.)

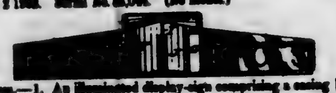

Claim.—1. An illuminated display-sign comprising a casing having a face provided with open or translucent characters or designs and a rear wall provided with a corrugated reflector, a light within said casing, and a screen having a reflecting-surface upon its outer or front side toward said characters or designs, so disposed as to intercept all the direct rays from the light to said characters or designs, whereby said characters or designs shine only by reflected light, and all the surfaces within the range of vision through said characters or designs are reflecting-surfaces.

2. An illuminated display-sign comprising a casing having a face provided with open or translucent characters or designs, the entire interior of said casing being covered with a reflecting-surface, a light within said casing, and a screen having a reflecting-surface upon its outer or front side toward said characters or designs, so disposed as to intercept all the direct rays from the light to said characters or designs, whereby said characters or designs shine only by reflected light, and all the surfaces within the range of vision through said characters or designs are reflecting-surfaces.

3. An illuminated display-sign comprising a casing having a face provided with open or translucent characters or designs, a reflecting-surface upon the interior walls of said casing, a light within said casing, and a screen having a reflecting-surface upon its outer or front side toward said characters or designs, so disposed as to intercept all the direct rays from the light to said characters or designs, whereby said characters or designs shine only by reflected light, and all the surfaces within the range of vision through said characters or designs are reflecting-surfaces, and a revolving drum surrounding said light, comprising a series of segments adapted to control the passage and character of the rays from the light to the reflectors.

4. An illuminated display-sign, comprising a casing having a face provided with open or translucent characters or designs, a rear wall angularly disposed with relation to said face and covered with the reflecting substance, a light within said casing, the direct rays of which are wholly screened from said characters or designs by means of a screen having a reflecting-surface upon its outer or front side toward said characters or designs, a revolving drum surrounding said light provided with a series of light-controlling segments, and a power-fan at the top of said drum adapted to be driven by the ascending current of hot air from said light and to rotate said drum.

704,123. LADDER. ROBERT L. SCOTT, Arlington, Cal. Filed Nov. 7, 1901. Serial No. 81,512. (No model.)

Claim.—1. A ladder consisting of two rails, rounds pivoted to the rails respectively, steps on said rails for the rounds, the steps on one of the rails being above their respective rounds and steps on the other rail being below their respective rounds, a combined foot-rest and catch near the bottom of one of the rails and a hook pivoted to the other rail near the bottom thereof to extend obliquely upward to hook over the catch when the ladder is in an expanded position.

2. A ladder provided with recessed side rails or bars having shoulders, rounds movably mounted within said recesses on opposite sides of said shoulders, a hook movably connected with one of the side bars and a device upon the other side bar constructed to be engaged by said hook in one position to prevent the collapsing of the ladder and in another position to prevent the expansion thereof.

3. A ladder provided with recessed side rails or bars having shoulders, rounds movably mounted within said recesses on opposite sides of said shoulders, a hook movably connected with one of the side bars and a bracket upon the other side bar constructed to be engaged by said hook in one position to prevent the collapsing of the ladder and in another position to prevent the extension thereof, said bracket being constructed to receive the pressure from the foot of the user to expand the ladder.

4. A ladder provided with rails or bars, rounds movably connected therewith and a foot rest or bracket secured upon one of said bars or rails, constructed to receive the pressure of the foot of the user to expand the ladder.

704,124. PRINTING-PRESS. WALTER SCOTT, Plainfield, N. J. Filed June 13, 1898. Serial No. 683,918. (No model.)

Claim.—1. The combination of a horizontally-disposed rotatory gear, a plurality of gears meshing therewith to drive the same, a planet-gear journaled thereon, a fixed gear meshing with and rotating the planet-gear, a reciprocatory bed connected with and operated by the planet-gear, and a casing surrounding the first-named gear.

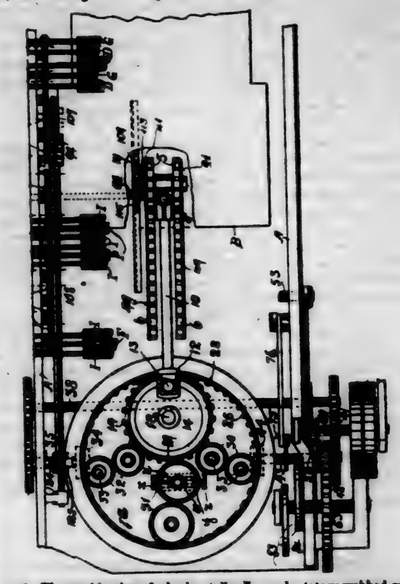

2. The combination of a horizontally-disposed rotatory webbed gear, gears meshing therewith at opposite points thereof for driving the same, a planet-gear journaled on the first-named gear, a fixed gear meshing with and rotating the planet-gear, a reciprocatory bed connected with and operated by the planet-gear, and a casing surrounding the first-named gear.

3. The combination of a rotatory gear, means for driving it, a planet-gear journaled on said gear, a fixed internal gear meshing with said planet-gear, a casing surrounding the first-named gear and to which the said internal gear is fixed, bearers on the said fixed, planet, and first-named gears for transmitting the pressure to said casing, and a reciprocating bed connected with and operated by said planet-gear.

4. The combination of a bevel-gear, means for driving it, a planet-gear journaled on said gear, a fixed internal gear meshing with the planet-gear, a casing surrounding the first-named gear and to which the internal gear is fixed, bearers on said fixed, planet and bevel gears for transmitting pressure to the casing, and a reciprocatory bed connected to and driven by said planet-gear.

5. The combination of a fixed casing provided with a flaring race or track, a bevel-gear within said casing and having its teeth bearing on said raceway or track, a planet-gear journaled on said bevel-gear, an internal gear fixed to said casing and meshing with said planet-gear, a to-and-fro movable bed, and mechanism intermediate and connecting said planet-gear and said bed.

6. The combination of a fixed casing provided with a flaring ring, a bevel-gear within the casing and having its teeth above said flaring ring, bevel-gears at opposite sides of said casing passing through openings therein and driving said first-named bevel-gear, a planet-gear connected to said first-named bevel-gear, an internal gear meshing with said planet-gear and fixed to said casing, and a reciprocatory bed connected to and driven by said planet-gear.

7. The combination of a driven bevel-gear, a bevel-gear for driving it, a spur-gear journaled on said driven bevel-gear eccentrically thereof, an internal gear meshing with said spur-gear, a fixed casing inclosing said driven bevel-gear and said spur and internal gears, a bearing-ring, said ring, casing and internal gear being fast together, a bearing-ring fast on said spur-gear and coacting with said first-named bearing-ring, bearing-wheels journaled on the driven bevel-gear and coacting with said bearing-rings, and a bed connected with said spur-gear and driven thereby.

8. The combination of a reciprocatory bed, a rack thereunder, a rolling gear meshing with said rack and with a fixed rack on the frame, a head pivotally connected with the horizontal axis of said gear, a vertical pivot on said head, a rod connected with said vertical pivot, a planet-gear having a vertical axis and provided with a stud or pent to which said rod is pivotally connected, and a fixed gear meshing with said planet-gear.

9. The combination of a casing provided with a flaring part and with a cylindrical portion above said part and with a shoulder or offset above said cylindrical portion and with a flanged cylindrical part above said shoulder, a webbed bevel-gear within said casing and having its teeth over said flaring part and its top flush with or below said shoulder, an internal gear seated in said casing and resting on said shoulder, a spur-gear journaled on said bevel-gear concentrically thereof and meshing with said internal gear, bearing-rings on said internal and said spur gears, and bearing-wheels journaled on said bevel-gear and coacting with said rings, with means for driving said bevel-gear.

10. The combination of a reciprocatory bed, a casing having a flaring ring with a cylindrical part above said ring and a shoulder or flange above said cylindrical part and a flanged cylindrical top above said shoulder, a webbed bevel-gear within said casing with its teeth above said flaring ring and its top flush with or below said shoulder, an internal gear fast to said casing and resting on said shoulder, a spur-gear journaled on said bevel-gear concentrically thereof and meshing with said internal gear, driving bevel-gears symmetrically placed about said casing and engaging with the first-named bevel-gear through openings in said casing, and a reciprocatory bed connected to and driven by said spur-gear.

11. The combination of a reciprocatory bed, a casing having a flaring ring, a cylindrical part above said ring, a shoulder or flange above said cylindrical part, and a flanged cylindrical top above said shoulder, a webbed bevel-gear within said casing with its teeth above said flaring ring and its top flush with or below said shoulder, an internal gear fixed within said casing and resting on said shoulder, a spur-gear journaled on said bevel-gear concentrically thereof and meshing with said internal gear, driving bevel-gears placed symmetrically about said casing and engaging with the first-named bevel-gear through openings in said casing, bearing-rings on said internal and said spur gears, bearing-wheels journaled on said webbed bevel-gear and coacting with said rings, and connections between said bed and said spur-gear for driving the bed.

12. The combination of a two-revolution step impression-cylinder, a mutilated gear thereon, a rack fixed on said bed for coaction with said gear, a segment-gear on said cylinder opposite the mutilated part of said gear, a movable rack of said bed for coaction with said segment-gear, a movable cam on said bed for operating said movable rack, and means on the framework of the machine for operating said cam, said means being connected with and operating or controlling said cam at all points in the motion of the bed.

13. In a two-revolution step-cylinder press in which the impression-cylinder is "carried over" from the first to the second revolution by means of a segment-gear and a movable rack, the combination of the cylinder, a segment-gear, a movable rack, means on the bed for operating said rack, said means being provided with an arm, a channel-bar for coaction with said arm, and means for moving said bar at right angles to its length.

14. In a two-revolution step-cylinder press, in which the impression-cylinder is "carried over" from the first to the second revolution thereof by means of a segment-gear and a movable rack, the combination of the cylinder, a segment-gear, a movable rack, a movable cam on the bed for coaction with said rack, and means on the framework of the machine for operating said cam, said means controlling said cam at all points in the traverse of the bed.

15. In a printing-press, the combination of a rising and falling cylinder, a gear connected thereto, a reciprocating bed, and a rack on said bed for coaction with said gear, said rack having an end section thereof inclined upwardly to coact with said gear as the cylinder is moved in a vertical direction.

16. In a printing-press, the combination of a rising and falling cylinder, a gear connected thereto, a reciprocating bed, and a rack on said bed for coaction with said gear, said rack having each end section thereof inclined upwardly to coact with said gear as the cylinder is moved up and down.

17. The combination of a two-revolution impression-cylinder, a mutilated gear thereon, a reciprocating bed, a rack fixed on said bed for coaction with said gear, a segment-gear on said cylinder opposite the mutilated part of said gear, a movable rack on said bed for coaction with said segment, and positive means for operating said movable rack, said positive means being continuously connected with and preventing accidental motion of said movable rack.

18. The combination of a two-revolution impression-cylinder, a mutilated gear thereon, a reciprocating bed, a fixed rack on said bed for coaction with said gear, a segment-gear on said cylinder opposite the mutilated part of said gear, a rack movable on the bed for coaction with said segment-gear, a controlling-bar on the fixed frame, and connections from said controlling-bar to said movable rack, with means for operating said controlling-bar.

19. The combination of an impression-cylinder which turns twice while the bed travels in one direction and is at rest while the bed is returning in the other direction, a reciprocating bed, and mechanism for raising the cylinder as the bed nears the end of its printing stroke and lowering the cylinder after the bed begins its printing stroke.

20. In a printing-press in which the impression-cylinder is raised and lowered, the combination of the impression-cylinder, slides in which it is journaled, a rock-shaft journaled in said slides, toggle-joints connecting said slides and the fixed framework, adjusting-screws on the fixed framework, springs 51, cams 62, and connections from said cams to said shaft for rocking it.

21. In a printing-press in which the impression-cylinder revolves twice during one stroke of the bed and stops during the return stroke of the bed, the combination of the impression-cylinder, a gear thereon a portion of which is cut away or omitted, means for raising and lowering the cylinder, a reciprocating bed, a rack on said bed for coaction with said gear, said rack having its end portions inclined upwardly to conform to the rise and fall of the cylinder, and means for carrying over the cylinder from the first to the second revolutions thereof.

22. In a printing-press, the combination of an impression-cylinder, means for raising and lowering said cylinder relatively to the fixed framework, a reciprocating bed, a rack on said bed having an end portion thereof inclined upwardly, a mutilated gear on said cylinder, and means for starting and stopping said cylinder.

23. In a two-revolution step-cylinder printing-press, the combination of the impression-cylinder, a segment-gear thereon, a rack movable up and down on the bed, said rack being provided with an overhang, a cam for coaction with said overhang, an arm connected with said cam, a channel-bar for operating said arm, and means for operating said channel-bar.

24. The combination of a horizontally-disposed rotatory gear, a planet-gear thereon, a fixed gear meshing with said planet-gear, a reciprocating bed, a pitman connected through a vertical axis with said bed, and a post or stud on said planet-gear, wholly within the pitch-circle thereof, with which said pitman is connected, whereby the pitman lies closely above the planet and the fixed gears.

25. The combination of a rotating carrier, a planet-gear journaled thereon, a fixed gear meshing with the planet-gear, a reciprocating bed connected to and operated by the planet-gear, coacting bearing-rings on said planet and said fixed gears, bearing-wheels journaled on said carrier and coacting with said rings, and means for adjusting the position of certain of said bearing-wheels to take up wear and play.

26. The combination of a carrier rotating in a horizontal plane, a planet-gear journaled thereon, a fixed gear meshing with said planet-gear, a reciprocatory bed connected to and operated by said planet-gear, and coacting bearing-rings on said fixed and said planet gears.

27. The combination of a carrier rotating in a horizontal plane, a planet-gear journaled thereon, a fixed gear meshing with said planet-gear, a reciprocatory bed connected to and operated by the planet-gear, coacting bearing-rings on said planet and fixed gears, and bearing-wheels journaled on said carrier and coacting with said rings.

28. The combination of a carrier rotating in a horizontal plane, a planet-gear journaled thereon, a fixed gear meshing with said planet-gear, a reciprocatory bed, a pitman connected through a vertical axis with said bed, a post on said planet-gear wholly within the pitch-circle thereof and with which said pitman is connected pivotally, coacting bearing-rings on said fixed and planet gears, and bearing-wheels journaled on said carrier and coacting with said rings.

29. The combination of a carrier rotating in a horizontal plane, a planet-gear journaled thereon, a fixed internal gear meshing with said planet-gear, a reciprocatory bed, a pitman connected through a vertical axis with said bed, a post on said planet-gear wholly within the pitch-circle of the planet-gear, said pitman being pivotally connected with said post, and coacting bearing-rings on said fixed and planet gears.

30. The combination of a horizontally-disposed driven bevel-gear, a circular raceway rigidly connected with the fixed framework, the teeth of said bevel-gear sliding on said raceway, an internal gear rigidly connected to the fixed framework, a planet-gear journaled on said bevel-gear, a reciprocatory bed, a post on said planet-gear wholly inside the pitch-circle thereof, means having a vertical pivot interposed between and connecting said post and bed, and coacting bearing-rings on said planet and internal gears.

31. The combination of a horizontally-disposed driven bevel-gear, a circular raceway rigidly connected with the fixed framework, the teeth of said bevel-gear sliding on said raceway, an internal gear rigidly connected with the fixed framework, a planet-gear journaled on said bevel-gear, a reciprocatory bed, a post on said planet-gear wholly within the pitch-circle thereof, means having a vertical pivot interposed between and connecting said post and bed, coacting bearing-rings on said planet and internal gears, and bearing-wheels journaled on said bevel-gear and coacting with said rings.

32. The combination of a carrier rotating in a horizontal plane, a planet-gear journaled thereon, a fixed gear meshing with said planet-gear, a reciprocatory bed having a rack thereon, a rolling gear meshing with said rack and with a rack on the fixed frame of the machine, a head in which said rolling gear is journaled, a post on said planet-gear wholly within the pitch-circle thereof, a pitman pivotally connected with said post and also connected with said head by a vertical pivot, and coacting bearing-rings on said planet and fixed gears.

33. The combination of a carrier rotating in a horizontal plane, a planet-gear journaled thereon, a fixed gear meshing with said planet-gear, a reciprocatory bed, a rolling gear meshing with racks on the bed and framework of the machine, a head in which said rolling gear is journaled, a post on said planet-gear wholly within the pitch-circle thereof, a pitman pivotally connected with said post and with a vertical axis on said head, coacting bearing-rings on said planet and fixed gears, and bearing-wheels journaled on the said carrier and coacting with said rings.

34. The combination of a rotating gear, a planet-gear carried thereby, a gear fixed to the frame of the machine and meshing with the said planet-gear, a reciprocatory bed connected to and operated by said planet-gear, a bearer fixed on the frame concentrically with the said fixed gear, and a bearer fixed on the planet-gear concentrically thereof and contacting with the first-named bearer.

35. The combination of a casing fixed to the framework of the machine, a rotating gear therein, a planet-gear journaled on the said gear, a fixed gear fastened to said casing, a fixed bearer concentric with said fixed gear and fastened thereto, a bearer concentric with and fast on the planet-gear, and a reciprocatory bed connected to and operated by the planet-gear, whereby the thrust of the bed when turning or reversing is sustained by the fixed bearer.

36. The combination of a rotating gear, a planet-gear journaled thereon, a gear fixed to the framework of the machine and meshing with the planet-gear, a stud on the planet-gear, a reciprocatory bed, a rod connecting the bed and stud, a bearer fast to the framework concentric with the fixed gear, and a bearer fast on the planet-gear concentrically thereof and coacting with the bearer first named, whereby the thrust of the bed in turning or reversing is taken by the fixed bearer on the framework of the machine.

37. The combination of a rotary gear, two driving-gears set opposite each other and meshing with said gear, a planet-gear carried by the first-named gear, a gear fixed to the framework of the machine, and meshing with said planet-gear, a reciprocatory bed connected to and operated by said planet-gear, a bearer fixed to the framework of the machine concentric with said fixed gear, and a bearer on the planet-gear and concentric therewith and coacting with the first-named bearer.

38. The combination of a fixed casing provided with a race or track, a gear running on said race or track, a planet-gear journaled on said running-gear, an internal gear fixed to said casing and meshing with said planet-gear, a to-and-fro movable bed, and means interposed between and connecting said bed and planet-gear.

704,125. BATTERY. WILLIAM T. SUMNER, Minersville, Pa. Filed July 30, 1901. Serial No. 69,112. (No model.)

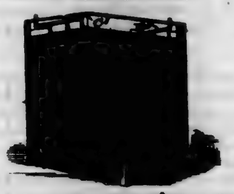

Claim.—In a battery the combination with a cell or case having vertically-grooved strips arranged upon opposite sides, of the zinc plates arranged in the said groove and having shoulders at their upper ends adapted to rest upon the strips, and the carbon electrodes having shoulders at their upper ends, said carbon electrodes being hollow and adapted to receive a depolarizing solution, substantially as set forth.

704,126. FIRE-ESCAPE. CHARLES SUMNER, Irvington, N. J., assignor of one-half to Gustav Gunzle, borough of Brooklyn, New York N. Y. Filed Oct. 1, 1901. Serial No. 77,189. (No model.)

Claim.—1. The combination of the fixed support, the rungs pivoted thereto, the upright connected with the free ends of the rungs, and a locking device comprising two coöperating members, one secured to a fixed part and the other to the upright, one of said members being mounted to slide and to turn about an upright axis, the sliding movement serving to lock or unlock the two members, while the turning movement serves to throw the upright outward by bringing said member in operative contact with it.

2. The combination of the stationary support, the upright arranged to move in a plane at one side of the support, brackets located upon the support at the other side thereof, and parallel therewith, and rungs each having one end portion extended between a bracket and the adjacent portion of the support and pivotally connected therewith, while the other end portion of the rung is pivotally connected with the upright, and the central portion of the rung is disposed obliquely to said end portions.

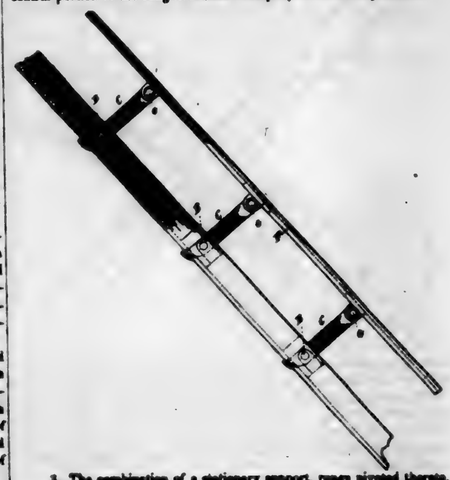

3. The combination of a stationary support, rungs pivoted thereto, an upright connecting the outer ends of the rungs, and a locking device comprising two coöperating members secured respectively to the support and to the upright, one of said members being mounted to slide on the part carrying it and also to turn on the said part about an upright axis so as to cause the upright to be swung away from the support.

4. The combination of the stationary support, the rungs having their inner ends pivoted to one side of said support, the upright arranged to fold against the said support, means for pivotally connecting the outer ends of the rungs with the upright at the opposite side to their pivotal connection with the support, and a compressible waterproof lining arranged to form a joint between the upright and the support when the former is folded against the latter the lining being carried by one of said parts.

704,127. COMBINED DISTRICT TELEGRAPH AND TELEPHONE SIGNAL. CHARLES SELDEN, Baltimore, Md. Filed Jan. 20, 1902. Serial No. 91,161. (No model.)

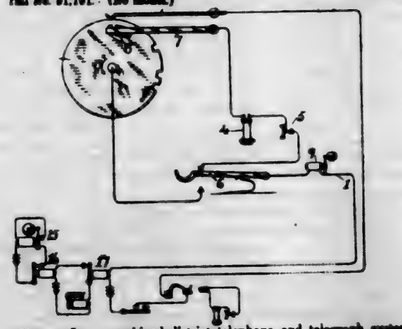

Claim.—In a combined district telephone and telegraph system, the combination with the apparatus at the central office for recording the box-signals designating the number of the box, of a vibrating receiver adapted to produce a prolonged vibratory signal of varying duration, a district-telegraph box having the usual circuit-breaking wheel and contact-brush, and a supplemental contact-brush adapted to bear upon the face of the wheel and in line with one or more prolonged breaks in the surface of the wheel for the purpose of sending a signal adapted to produce in the vibratory receiver a prolonged sound indicating audibly to the central-office operator that telephonic communication is desired.

704,128. UMBRELLA-RUNNER RETAINER. WILLIAM S. BEYNON, Philadelphia, Pa., assignor to Pennsylvania Tube Company, Philadelphia, Pa., and Camden, N. J., a Corporation of New Jersey. Filed Apr. 11, 1901. Serial No. 55,267. (No model.)

Claim.—1. An umbrella-runner retainer for use with hollow umbrella-sticks, said retainer having two long, curved arms, the combined width of said arms being less than the internal diameter of the tube, one of said arms having an undercut leg extending into the slot of the stick, the other arm having a leg forming a fulcrum for engaging the opposite wall of the stick, and a portion joining said arms and curved so that its end will engage the wall opposite the fulcrum and below the latter, substantially as described.

2. As a new article of manufacture, an umbrella-runner retainer made of a single piece of metal and having the curved spring-arms *a* and *d* of less width than the internal diameter of the tube, said arm *a* having a projecting retaining portion for the spring-arm *d*, said arm *d* having an undercut retaining-leg for engagement with the wall of the slot, said retainer having bearing portions *e* and *f*, the bearing portion *e* being carried by the spring-arm *a* and the other formed by the end of the curved metal piece from which the two arms spring, said bearing portions engaging opposite walls of the tube at some distance from each other, substantially as described.

704,129. LIQUID-DELIVERY APPARATUS. PATRICK SHERRY and ALEXANDER CAMPBELL, Los Angeles, Cal. Filed Nov. 22, 1901. Serial No. 83,230. (No model.)

Claim.—1. In a liquid-delivery apparatus, the combination of a liquid-receptacle divided into two compartments, liquid-supply pipes leading into each compartment, a pressure-actuated supply-valve controlling each pipe, a fluid-pressure pipe leading into each compartment and having branches conducting fluid-pressure to operate said supply-valves, a pressure-valve controlling said fluid-pressure pipe and an automatic device in one compartment for shifting said pressure-valve.

2. In a liquid-delivery apparatus, the combination of a liquid-receptacle divided into two compartments, a liquid-supply pipe having a branch leading into each compartment, supply-valves controlling the supply of liquid through each branch pipe, liquid-delivery pipes leading out of said compartments, fluid-pressure-supply pipes leading into each compartment and having branch pipes leading to said supply-valves, means actuated by said pressure and controlling the supply-valves, a pressure-valve controlling the supply of fluid-pressure to each compartment, and an automatic device in one compartment for shifting said pressure-valve.

3. In a liquid-delivery apparatus, the combination of a liquid-receptacle divided into two compartments, liquid-supply pipes leading into said compartments, inwardly-opening check-valves governing said supply-pipes, controlling-pistons, each fitted to work in a fluid-pressure cylinder and to hold one of said check-valves to its seat, liquid-delivery pipes leading out of said compartments, fluid-pressure-supply pipes leading into said compartments, each communicating with one of the controlling-piston cylinders, a valvular mechanism controlling communication between each of said compartments and its fluid-pressure pipe, and between said compartment and an exhaust-opening, a float which rises and falls with the liquid-level in one of the compartments, and means, actuated by the float, through which the valvular mechanism is operated at the limit of traverse of the float in each direction.

4. In a liquid-delivery apparatus, the combination of a liquid-receptacle divided into two compartments, liquid-supply pipes leading into said compartments, inwardly-opening check-valves, each governing one of said supply-pipes, fluid-pressure pistons, each controlling one of said check-valves, liquid-delivery pipes leading out of said compartments, outwardly-opening check-valves controlling said delivery-pipes, fluid-pressure-supply pipes leading into said compartments, a valvular mechanism controlling communication between each of said compartments and its fluid-pressure pipe, and between said compartment and an exhaust-opening, a float which rises and falls with the liquid-level in one of the compartments, and means, actuated by the float, through which the valvular mechanism is operated at the limit of traverse of the float in each direction.

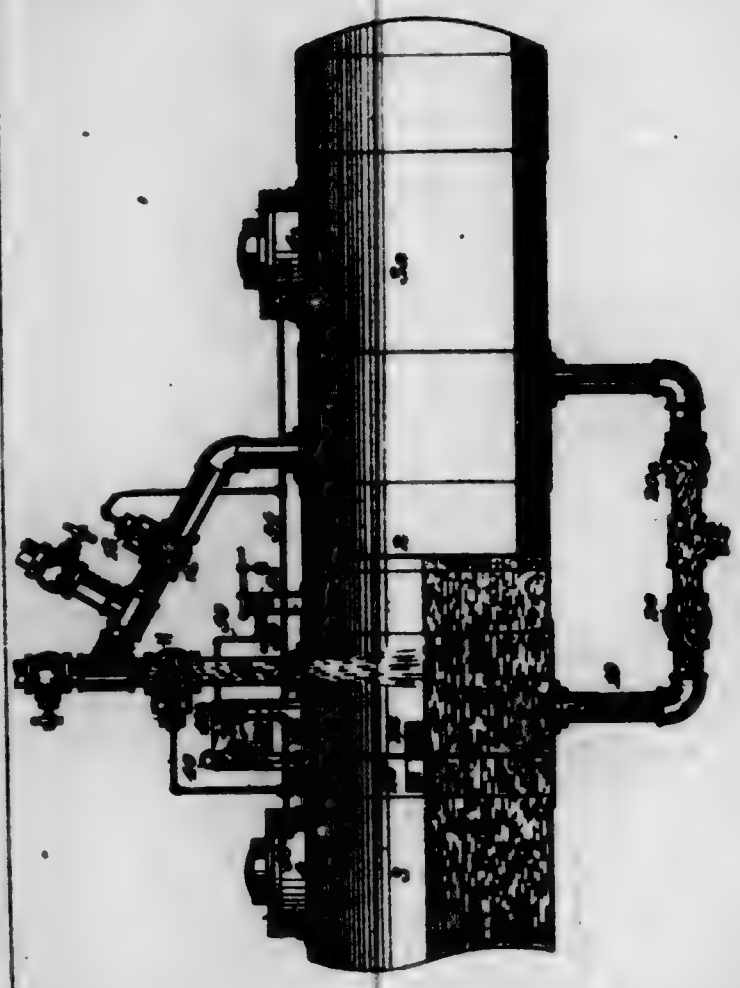

5. In a fluid-delivery apparatus, the combination of a liquid-receptacle divided into two compartments, a supply-pipe leading into each compartment, pressure-actuated valves controlling the flow of liquid through said supply-pipes, a fluid-pressure system connected with each compartment and with each supply-valve, and automatic means alternately admitting pressure to each compartment and to operate each supply-valve while venting it from the other compartment and its supply-valve.

6. In a liquid-delivery apparatus, the combination of a liquid-receptacle divided into two compartments, liquid-supply pipes leading into said compartments, supply-valves controlling said pipes, liquid-delivery pipes leading out of said compartments, fluid-pressure-supply pipes leading into said compartments and to said supply-valves, a distribution-valve controlling communication between each of said compartments and its fluid-pressure pipe, and between said compartment and an exhaust-opening, a float which rises and falls with the liquid-level in one of the compartments, a vertically-movable rod carrying collars against which the float abuts at the upper and lower limits of its traverse, a vibratory valve-actuating lever adapted to impart movement, in opposite directions, to the distribution-valve, and trippers connected to the vertically-movable rod, by which movement is imparted to the valve-actuating lever at the limit of traverse of the float in each direction.

7. In a liquid-delivery apparatus, the combination of a distribution-valve, a vibratory valve-actuating lever of bell-crank form, having a weight on its upper arm and opposite cam-faces on its lower arm, a reciprocating bar carrying upper and lower tripper-pins adapted to abut against the cam-faces of the valve-lever, said pins being placed at a greater distance apart than the maximum distance between the cam-faces of the valve-actuating lever, a vibratory lever-arm journaled concentrically with the valve-actuating lever and coupled to the stem of the distribution-valve, and pins fixed to the upper arm of the valve-actuating lever, one of said pins abutting against the lever-arm and imparting movement to the stem of the distributing-valve in one by the traverse of the valve-actuating lever in either direction.

704,180. CIRCULATOR FOR LOCOMOTIVE-CYLINDERS. PATRICK SHEEDY and ALEXANDER CAMPBELL, Los Angeles, Cal. Filed Dec. 18, 1901. Serial No. 86,473. (No model.)

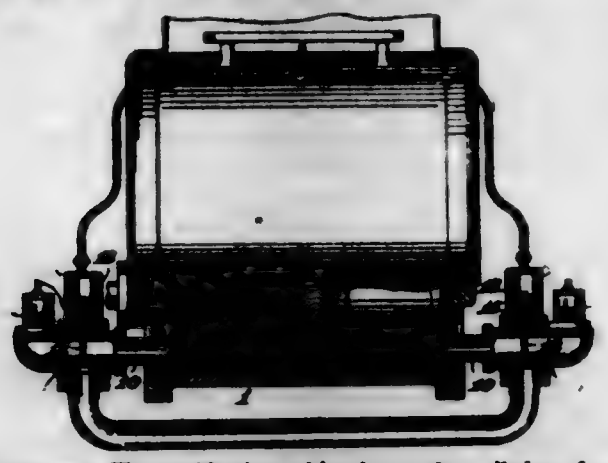

Claim.—1. The combination, with a locomotive-cylinder, of a circulating-pipe, cut-out valves, each seating at one end of said pipe and subject to steam-pressure in closing direction only, and controlling communication between said end of said pipe and the adjacent end of the cylinder, pistons, each fitting in a piston-chamber and connected to one of the cut-out valves, steam-supply pipes leading from the piston-chambers to a connection with the steam-supply passage of the cylinder, and means for automatically unseating the cut-out valves when pressure is relieved in the steam-supply passage.

2. The combination, with a locomotive-cylinder, of a circulating-pipe, cut-out valves, each seating at one end of said pipe and subject to steam-pressure in closing direction only, and controlling communication between said end of said pipe and the adjacent end of the cylinder, pistons, each fitting in a piston-chamber and connected to one of the cut-out valves, springs bearing on said pistons in direction to unseat the cut-out valves, and steam-supply pipes leading from the piston-chambers, on the sides of the pistons opposite the springs, to a connection with the steam-supply passage of the cylinder.

3. The combination, with a locomotive-cylinder, of a circulating-pipe, cut-out valves, each controlling communication between one end of said pipe and the adjacent end of the cylinder, pistons, each fitting in a piston-chamber and connected to one of the cut-out valves, steam-supply pipes leading from the piston-chambers to a connection with the steam-supply passage of the cylinder, and a check-valve controlling the flow of steam through said supply-pipes, said check-valve opening in the direction of the piston-chambers and having a discharge-passage for the exhaust of steam therefrom.

4. The combination, with a locomotive-cylinder, of a circulating-pipe, cut-out valves, each controlling communication between one end of said pipe and the adjacent end of the cylinder, pistons, each fitting in a piston-chamber and connected to one of the cut-out valves, a tubular connection leading into the steam-supply passage of the cylinder and having its open end therein facing the flow of steam through said passage, and steam-supply pipes leading from said tubular connection to the piston-chambers.

5. The combination, with a locomotive-cylinder, of two valve-chambers, each connected to and open into one end of said cylinder, a circulating-pipe connected, at its opposite ends, to said valve-chambers, cut-out valves, each seating at one end of the circulating-pipe and subject to steam-pressure in closing direction only, and controlling communication between said end of said pipe and the connected valve-chamber, piston-chambers, each connected to one of the valve-chambers, pistons, each fitting in one of the valve-chambers and connected to a cut-out valve, steam-supply pipes leading from the piston-chambers to a connection with the steam-supply passage of the cylinder, and means for automatically unseating the cut-out valves when pressure is relieved in the steam-supply passage.

6. The combination of a locomotive-cylinder, cylinder-heads secured removably to and closing the ends thereof, two valve-chambers, each connected to one of the cylinder-heads and open to the cylinder through the same, a circulating-pipe connected, at its opposite ends, to said valve-chambers, cut-out valves, each seating at one end of the circulating-pipe and subject to steam-pressure in closing direction only, and controlling communication between said end of said pipe and the connected valve-chamber, piston-chambers, each connected to one of the valve-chambers, pistons, each fitting in one of the valve-chambers and connected to a cut-out valve, steam-supply pipes leading from the piston-chambers to a connection with the steam-supply passage of the cylinder, and means for automatically unseating the cut-out valves when pressure is relieved in the steam-supply passage.

7. The combination, with a locomotive-cylinder, of two valve-chambers, each connected to and communicating with one end of said cylinder, a circulating-pipe connected, at its opposite ends, to said valve-chambers, cut-out valves, each controlling communication between one end of the circulating-pipe and the connected valve-chamber, piston-chambers, each connected to one of the valve-chambers, pistons, each fitting in one of the piston-chambers and connected to a cut-out valve, steam-supply pipes leading from the piston-chambers to a connection with the steam-supply passage of the cylinder, and atmospheric relief-valves each connected to one of the valve-chambers.

704,181. CULTIVATOR. CHARLES W. SLEETER, Decatur, Ill. Filed Nov. 16, 1901. Serial No. 82,607. (No model.)

Claim.—1. A device of the kind described, comprising a central draft-beam, beams arranged parallel thereto and having their forward ends provided with supporting-wheels, rack-bars adjustably held in the forward ends of the beams and adapted to carry cultivator-points, spring-pawls arranged upon the beams for engagement with the said rack-bars and means connecting the said draft-beam and parallel beams for adjustably holding the said beams parallel to the draft-beam, substantially as shown and described.

2. The combination of a central draft-beam having a slot arranged therein, parallel beams arranged upon either side of the draft-beam and having slots arranged therein, their forward ends being provided with brackets, wheels journaled in the said brackets, semicircular bars adapted to be held in the said parallel beams and having cultivator-points arranged upon the ends thereof, brackets journaled upon the axles of the said wheels and having their ends connected to the said semicircular bars and means carried by the said parallel beams for holding the semicircular bars firmly in position, bars pivotally held at one end to the draft-beam and having their outer ends pivotally connected to the parallel beams and bracing-arms pivotally connected to the parallel bars at one end and having their opposite ends provided with apertures through which passes a bolt that is adapted to operate in the slot of the said draft-beam and means for holding the said arms to the beam, substantially as shown and described.

3. The combination of a central draft-beam having a slot arranged therein, parallel beams arranged upon either side of the said draft-beam, and having slots arranged in the forward ends thereof, bars connecting the said beams, supporting-wheels carried by the parallel beams, semicircular rack-bars held in the slots of the parallel bars, and adapted to carry cultivator-points, spring-pawls arranged for engagement with the rack-bars, a breastplate arranged upon the rear end of the draft-beam and grip-handle sections arranged upon the parallel beams, substantially as shown and described.

704,182. MOP HOLDER AND WRINGER. ARTHUR W. SMITH, New York, N. Y. Filed Apr. 30, 1902. Serial No. 105,176. (No model.)

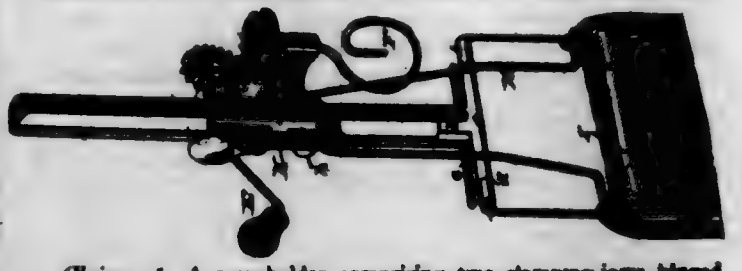

Claim.—1. A mop-holder comprising two clamping-jaws hinged together at their lower ends, one of said jaws being pivotally connected with the handle and the opposite jaw adapted to slide on said handle, whereby the two jaws with the mop may be elevated, substantially as and for the purpose set forth.

2. A mop-holder consisting of a suitable handle having laterally-extending tubular arms, a clamping-jaw having inwardly-extending ends to engage with the tubular arms and bearing-eyes at its lower end, a second clamping-jaw having a loop at its upper end through which the handle

extends, and at its lower end having inwardly-extending ends to engage the bearing-eyes, and a tubular bearing-roller located between the eyes, substantially as and for the purpose specified.

3. In a mop-holder, the combination with a suitable slidable wringing device provided with means for holding it in operative position, of two clamping-jaws hinged together at their lower ends and one of the jaws being pivotally connected with the handle and the opposite jaw having a loop at its upper end through which the handle extends and adapted to slide upon the handle, substantially as and for the purpose described.

704,138. MOP HOLDER AND WRINGER. ARTHUR W. SMITH, New York, N. Y. Filed Apr. 29, 1902. Serial No. 105,177. (No model.)

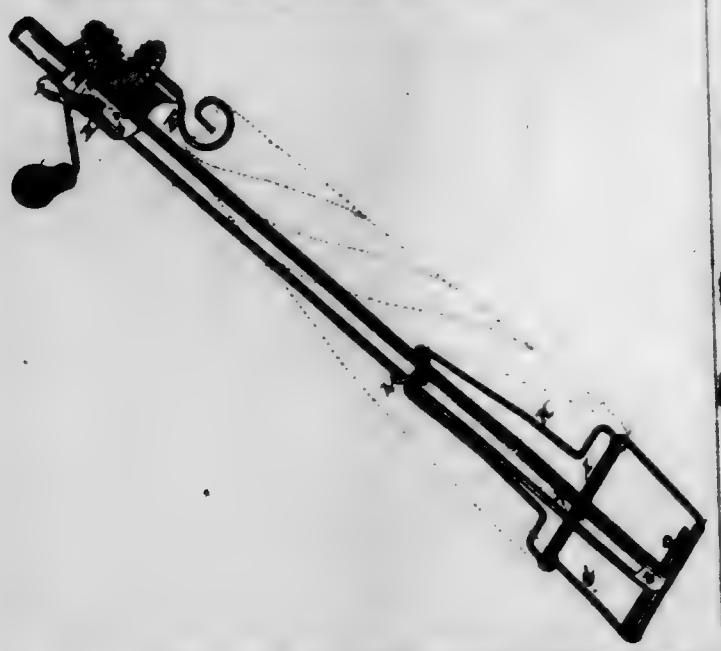

Claim.—1. The combination with a mop-holder having two pivoted and hinged jaws, of a wringer provided with a hook device for engaging the mop, said wringer provided with a sleeve slidable upon the handle of the mop-holder, and a spring-actuated latch for holding the sleeve against rotation and holding it in a lowered or raised position, substantially as and for the purpose set forth.

2. A mop-holder comprising two hinged and pivoted clamping-jaws, one of said jaws having a loop at its upper end and a handle extending through the loop, a longitudinal groove in the handle and sockets in the groove, and a suitable wringer slidable upon the handle, and a spring-actuated latch to engage the groove and sockets to hold the wringer from turning upon the handle and also hold it stationary in either a lowered or elevated position, substantially as and for the purpose specified.

704,184. MILLING-MACHINE. GEORGE W. SMITH, Rockford, Ill., and ROBERT J. LEES, Franklin, Pa., assignors to the Ingersoll Milling Machine Company, a Corporation of Illinois. Filed Sept. 21, 1901. Serial No. 76,107. (No model.)

Claim.—1. In a milling-machine, the combination with a suitable frame, of adjustable vertical milling-heads mounted thereon, and adjustable horizontal milling-heads also on said frame, cutters carried by all of said heads, means for communicating a rotary motion to the said cutters no matter what the adjusted position of the milling-heads, means for adjusting the vertical heads simultaneously or separately toward or away from each other, and means for operating all of the said cutters simultaneously or any one or more of them without the others, substantially as described.

2. In a milling-machine, the combination with a frame, a plurality of horizontal milling-heads, and a plurality of vertical milling-heads, and means for adjusting the said milling-heads vertically and horizontally irrespective of each other, of means for operating any one of the milling-heads separately or in conjunction with any other milling-head, the operation of any of the milling-heads either separately or conjointly not interfering with the operation of others, substantially as described.

3. A milling-machine, comprising a suitable frame, and housings, a plurality of vertical milling-heads adjustably mounted in said frame, means for adjusting them simultaneously or separately in either direction, a shaft common to said milling-heads, and means connecting the shaft with each milling-head for driving rotary cutters at different rates of speed, and changing from one speed to another, substantially as described.

4. A milling-machine comprising a suitable frame, a vertically-adjustable cross-rail movable upon the said framing, vertical milling-heads adjustably mounted on the said cross-rail, spindles carried by said heads, a shaft carried by the said cross-rail for actuating the vertical milling-spindles, means for driving the said shaft from either or both ends thereof comprising loose pulleys mounted thereon, clutch members on the said shaft for engaging the said pulleys, and belts engaging each of the said loose pulleys and receiving their power from any suitable source, together with idler-pulleys also carried by the said cross-rail for maintaining the belt taut no matter what the position of the cross-rail, the said clutches making it possible to connect the belt-wheels with the said shaft at one or both ends thereof as found desirable for actuating the shaft from either end or from both ends, substantially as described.

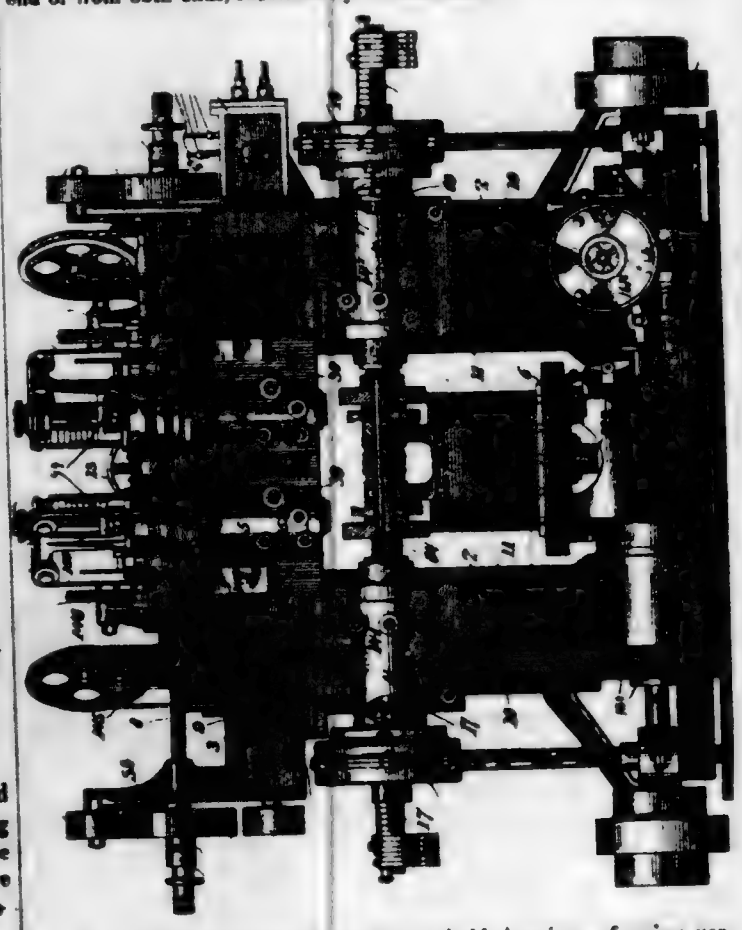

5. A milling-machine comprising a suitable housing or framing, vertical milling-heads mounted thereon, spindles carried by said heads, a shaft for operating them, means for driving the said shaft from either or both ends, comprising belt-engaging pulleys loosely mounted on said shaft, the hubs of said pulleys being formed with clutch-engaging teeth, spring-pressed clutch members splined upon the said shaft and having teeth for engaging the teeth upon the said pulleys, and spring-controlled plungers or detents carried by the said clutch members for engaging recesses formed in the shaft, so that the clutch members may be held out of engagement when desired, and when the shaft is being driven by belts on both sides of the machine any unevenness in the length of the belts will be compensated by the slipping of one or the other of the clutch members, substantially as described.

6. A milling-machine comprising a frame, milling-heads mounted thereon, cutter-actuating spindles carried by the said milling-heads, depth-gages applied to the said spindles comprising a series of gage-blocks adapted to be swung against the spindles separately or together, clamp-collars secured to the spindles and adjusting-collars engaging the clamp-collars, the depth to which the cutters will be operated being quickly and accurately gaged, substantially as described.

7. In a milling-machine the combination with suitable cutter-operating spindles, depth-gages for the said spindles comprising a series of gage-blocks, a standard near each spindle for pivotally supporting the said gage-blocks, the said gage-blocks being formed with concaved recesses so that they may fit closely around the spindles, a clamp-collar secured to each spindle, an adjustable collar engaging threads upon each of the clamp-collars, the gage-blocks being made of predetermined thickness and the adjustable collars being movable so as to secure fractional parts of said thickness, the depth to which the spindles will be permitted to operate being regulated to the thousandth part of an inch, substantially as described.

8. In a milling-machine the combination with vertical and horizontal cutter-spindles of depth-gages, arranged at their outer ends for regulating the depth of the cuts, comprising standards or bases secured to the frame of the machine and surrounding the said spindles, standards or rods projecting therefrom, a series of gage-blocks pivoted to the said standard so that they may be swung against or away from the said spindles, the said gage-blocks being made of a predetermined thickness and formed with concaved recesses so that they may fit around the spindles, clamp-

collars fastened to the spindles, and adjustable collars engaging screw-threads upon the said clamp-collars adjustments to the fraction of an inch being thus obtained, the said adjusting gage-blocks affording means for obtaining quickly approximate adjustments to the proper depth, substantially as described.

9. A milling-machine comprising adjustable milling-heads, cutters carried thereby, and a frame for supporting the same, spindles for carrying the milling-cutters arranged horizontally in the said milling-heads, means for adjusting said spindles toward or away from each other, means for rotating the said spindles, an intermediate spindle for connecting the said horizontal spindles, so that when horizontal cutters are being employed they may be actuated simultaneously from both sides of the machine by the said horizontal spindles thus connected, substantially as described.

10. A milling-machine comprising a suitable housing upon the frame of the machine, horizontal milling-heads movable thereon, spindles mounted in the said milling-heads, gearing for rotating the said spindles, clutches for connecting the spindles with the said gearing, the said clutches being splined upon the said spindles so as to rotate therewith and yet capable of longitudinal movement thereon, levers for moving the said clutches to bring them into engagement with the said gearing, an intermediate connecting-spindle for joining the said horizontal spindles, the said intermediate spindle having tapered ends adapted to be keyed in the ends of the horizontal spindles so as to make practically one shaft of them, the arrangement of the clutches being such that the said spindles and shaft may be driven from either one or both sides of the machine, the levers affording means for bringing the clutches again into engagement with the gearing when they have been thus thrown out of such engagement, substantially as described.

11. A milling-machine comprising a suitable frame, a cross-rail adjustable thereon carrying vertical milling-heads, horizontal milling-heads movable on said frame, means for adjusting the cross-rail vertically on the frame and separate means for adjusting the horizontal milling-heads vertically on the frame and means for connecting the horizontal milling-heads with the cross-rail so that they may be adjusted simultaneously by one of said adjusting means, substantially as described.

12. A milling-machine comprising a suitable frame, a cross-rail carrying milling-heads mounted thereon, means for adjusting the said cross-rail vertically in the frame of the machine, horizontal milling-heads also vertically adjustable upon said frame by independent means, means for securing the horizontal heads to the cross-rail comprising bolts pivoted at their lower ends to the said horizontal heads, nuts engaging threads upon the said bolts, the said cross-rail having slotted recesses formed in its lower edge for receiving the said bolts and nuts, so that by connecting the said horizontal milling-heads with the cross-rail they may be moved simultaneously therewith and will be held exactly opposite to each other during the said movement, substantially as described.

13. A milling-machine, comprising a suitable framing, vertical milling-heads mounted thereon, spindles for carrying milling-cutters mounted therein, a plurality of trains of gearing adapted to be connected with said cutters for rotating them, and mechanism for connecting the cutters directly with one of said trains of gearing or indirectly therewith through the other train of gearing, so that the cutters may be revolved at different speeds by changing the gearing, substantially as described.

14. In a milling-machine the combination with a suitable frame of an adjustable cross-rail, vertical milling-heads adjustably mounted thereon so that they may be moved to different positions in the machine, one or more trains of gearing connected with a source of power and adapted to be connected with the spindles of the said milling-heads for imparting a rotary motion thereto, a plurality of shafts carrying said gearing, the adjustment of the cross-rail and of the milling-heads to different positions on the machine not interfering in the least with the operation of the said gears, and means for bringing the gears into engagement with one shaft directly or indirectly through the agency of the other shaft, or throwing them out of engagement therewith when they are not being used, substantially as described.

15. In a milling-machine, the combination with a suitable frame of an adjustable cross-rail, movable milling-heads mounted thereon, a shaft common to a plurality of the said milling-heads, counter-shafts adjacent to said common shaft, gearing connecting the counter-shafts with the common shaft, the common shaft being adapted to operate the milling-heads directly through some of the gearing or indirectly through other gearing of the said counter-shafts, cutter-actuating spindles in the milling-heads having gears adapted to engage the gearing upon the said shafts, and clutches for throwing the said gears into or out of engagement with the said spindles, substantially as described.

16. In a milling-machine, the combination with a frame of vertical milling-heads adjustably mounted thereon, an actuating-shaft arranged across the machine so that it may be caused to actuate the milling-heads, cutter-carrying spindles in each of the milling-heads, upper and lower gears loosely mounted on the said spindles, clutches for connecting the gears with the said spindles, gearing upon the said cross-shaft for engaging one set of gears on the spindles, a counter-shaft mounted in suitable proximity to the cross-shaft, gearing for transmitting motion from the cross-shaft to the counter-shafts, and gears upon the counter-shaft for engaging the other set of gears upon the spindles, and clutches for controlling the said gears, either set of gears being used to drive the spindles, so that different speeds may be imparted to the same according to the train of gears which is selected, substantially as described.

17. In a milling-machine the combination with a suitable frame of laterally-adjustable vertical milling-heads mounted thereon, a cross-shaft supported in the machine so as to actuate each of the said milling-heads, counter-shafts adjacent to said cross-shaft and geared thereto, two trains of gearing connecting the spindles of the milling-heads with the cross-shaft and counter-shafts, and means for throwing either train of gearing into engagement for driving the spindles directly by the cross-shaft or indirectly through the counter-shafts, substantially as described.

18. In a milling-machine the combination with a suitable frame of laterally-adjustable vertical milling-heads mounted thereon, cutter-carrying spindles mounted in each milling-head, a cross-shaft for actuating the said milling-heads, two trains of gearing for connecting the said cross-shaft with the said spindles, one comprising worm-gears directly connecting the said spindles with the said shaft, and the other comprising counter-shafts, gearing for connecting the counter-shafts with the cross-shaft, and spiral gearing connecting the counter-shaft with the said vertical spindles, clutches for throwing either the worm-gearing or the spiral gearing into engagement with the spindles, and clutches for connecting the counter-shafts with the gearing interposed between them and the said cross-shaft, substantially as described.

19. In a milling-machine the combination with a suitable frame of vertical milling-heads adjustably mounted thereon, spindles mounted in the said milling-heads, upper and lower gears loosely mounted thereon, splined clutches for connecting each gear to the spindle, levers for operating the said clutches, gears upon the cross-shaft for engaging the lower gears on the spindles, counter-shafts arranged above the cross-shaft, gearing connecting the counter-shafts and cross-shaft, clutches for throwing the gearing into and out of engagement with the said counter-shafts, and gearing connecting the counter-shafts with the upper gears upon the spindles, either the upper or the lower train of gearing being employed for actuating the spindles according to the speed with which it is desired to operate the same, substantially as described.

20. In a milling-machine the combination with a suitable frame of vertical milling-heads mounted thereon, means for raising and lowering the milling-heads, cutter-actuating spindles mounted in each of the milling-heads, means for raising or lowering either of the spindles independently of each other in the milling-heads, and independently of the milling-head adjustments, comprising sleeves supporting the said spindles, and vertically movable in the milling-heads, racks upon the said sleeves, and pinions for engaging the said racks, gearing splined to the upper portion of the said spindles, and means for throwing the said gearing into and out of engagement with the spindles, the spindles being adjusted vertically without interfering with their connection with the driving-gearing, substantially as described.

21. In a milling-machine the combination with a suitable frame of a cross-rail mounted thereon, means for raising or lowering the said rail on the said frame, vertical milling-heads adjustably mounted upon the said cross-rail, whereby they may be moved laterally to different points in the machine, vertical spindles mounted in the milling-heads, a cross-shaft carried by the cross-rail and arranged so as to be common to both the milling-heads, gearing interposed between the said cross-shaft and the said vertical spindles, the said gearing being some of it splined to the cross-shaft and some of it splined to the vertical spindles, suitable casings for holding the gearing in place with respect to the milling-heads, the milling-heads being adjusted up or down in the machine or laterally without interfering with the actuating-gearing, substantially as described.

22. In a milling-machine the combination with a suitable frame of vertical milling-heads mounted thereon, vertical spindles mounted in each milling-head, a cross-shaft mounted upon the machine so that it may be employed or actuated in said milling-heads, casings mounted upon the said milling-heads so as to surround a portion of the said shaft as well as a portion of each of the said spindles, counter-shafts carried in each of the said casings, spur-gears connecting the counter-shafts with the said cross-shaft, an actuating-gear upon the cross-shaft opposite each spindle, an actuating-gear upon each counter-shaft opposite each spindle, gears upon the spindles meshing with the gears upon the cross-shaft and counter-shafts, and clutches for controlling all of the said gears, the counter-shaft transmitting either motion directly to the spindles or indirectly through the counter-shafts for varying the speed with which the spindles are driven, substantially as described.

23. In a milling-machine the combination with a suitable frame of

horizontal milling-heads mounted thereon, horizontal spindles carried thereby, vertical actuating-shafts arranged in suitable proximity to the said spindles, and gearing connecting the vertical shafts with the spindles, some of the said gearing being splined to the vertical shafts and some of the said gearing being splined to the said spindles, clutch mechanisms for connecting or disconnecting the parts, and means for raising or lowering the milling-heads on the frame, and means for adjusting the horizontal spindles in and out in the milling-heads, the splined engagement of the gears with the said shafts and with the said spindles permitting of such adjustment, substantially as described.

24. In a milling-machine the combination with the main frame of horizontal milling-heads mounted thereon, and adapted to be vertically adjusted, horizontal spindles carried by the said milling-heads, vertical shafts for driving the spindles, casings carried by the milling-heads and inclosing portions of the vertical shafts and portions of the said spindles, counter-shafts mounted in the said casings and connected by gearing with the said vertical shafts, a train of gearing connecting each vertical shaft with each spindle, and gearing connecting each counter-shaft with each spindle, and clutches controlling the said gearing, the horizontal spindles being driven directly from the vertical shafts at one speed and indirectly through the counter-shafts at another speed, substantially as described.

25. In a milling-machine the combination with a supporting-frame of vertical and horizontal milling-heads mounted thereon, spindles carried by each of the milling-heads, means for adjusting the vertical milling-heads vertically in the machine and means for adjusting them longitudinally, means for adjusting the spindles in said vertical heads independently of each other in a vertical manner, comprising racks, sleeves carrying the said racks and holding the said spindles, and pinions for actuating the said racks, means for adjusting the horizontal milling-heads vertically in the machine, means for adjusting the horizontal spindles back and forth in their respective heads independently of each other, comprising racks formed upon sleeves and attached to the spindles, and pinions for engaging the same, substantially as described.

26. In a milling-machine the combination with a supporting-frame of laterally-adjustable vertical milling-heads mounted thereon, feed screw-rods for moving the said milling-heads back and forth, adjustable gearing interposed between the said rods, means for controlling the said gearing whereby the feed-rods may be connected thereby or disconnected, a pulley for actuating the gearing, a shaft carrying the same, speed-controlling friction feed-disks connected with the said shaft, reversible gears for receiving motion from the said feed-disks, and a train of gears for connecting the said reversible gears with the gears of the feed-rods, both rods being driven simultaneously by power in either direction or by hand separately and independently of each other, substantially as described.

27. In a milling-machine the combination with a supporting-frame of laterally-adjustable vertical milling-heads mounted thereon, feed-rods for moving the milling-heads back and forth on the machine, gearing connecting the feed-rods, an idler-pulley mounted in the frame in suitable proximity to said gearing and adapted to engage one of the driving-belts of the machine, speed-controlling feed-disks for receiving motion from the shaft of the said pulley, a lever for operating the said disks, reversible gears receiving motion from the said feed-disks, a lever for operating the said reversible gears, a train of gearing connecting the reversible gears with the gearing upon the feed-rods, and a casing formed with bearings for supporting the arbors and shafts of all the said gears, substantially as described.

28. In a milling-machine the combination with a supporting-frame of laterally-adjustable vertical milling-heads mounted thereon, a cross-rail for supporting them, means for raising or lowering the cross-rail, and depth-gages for limiting their downward movement comprising adjustable members secured to the vertical housings of the machine on both sides thereof, and a fixed member secured to the cross-rail opposite each of the adjustable members, an adjusting-screw carried by the said adjustable members and adapted to be engaged by the fixed members, the said stops being very accurately adjusted by means of said screws for permitting the cross-rail to descend the same depth a number of times, substantially as described.

29. In a milling-machine the combination with a supporting-frame of a cross-rail mounted thereon, and carrying milling-heads, a depth-gage for controlling the depth to which the cross-rail may be lowered in the machine comprising a movable member secured to each side of the machine, bolts engaging vertically-arranged grooves in the housings of the machine for holding the movable members in their different adjusted positions, an adjusting-screw carried by each movable member, a clamp-screw for clamping the said adjustable screw when they have been arranged at the desired height, a fixed member secured to the cross-rail opposite each adjustable member, a bolt arranged in each fixed member so that its head forms a contact or bearing surface for engaging the end of the adjusting-screw held by its corresponding movable member, and means for adjusting the said adjusting-screws, substantially as described.

704,185. STATION-INDICATOR. HARRY T. SMITH and ARTHUR J. TARRANT, Christchurch, New Zealand. Filed Jan. 14, 1902. Serial No. 89,660. (No model.)

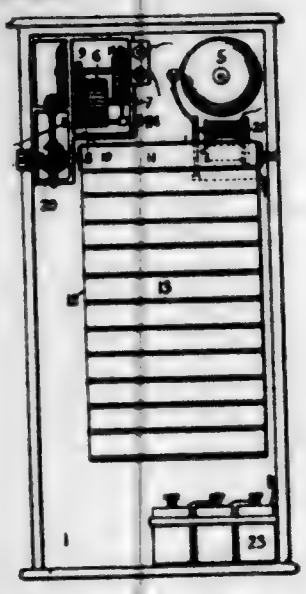

Claim.—1. A station-indicator comprising a case provided with a door, an opening and grating in said door, a wound coiled spring attached to and turning a spindle, a ratchet-wheel secured thereto, a spring-compressed pawl secured to a toothed wheel running loose on said spindle and engaging said ratchet-wheel; intermediate gearing operating a removable four-sided roller carrying an endless belt having lathe attached thereto for the inscription of station-names, a slotted escapement-lever with two steps spanning an escapement-disk provided with studs, said escapement-lever carrying an armature attracted by a magnet, and a spiral spring to withdraw same, beveled gearing to reverse the movement of said roller, and magnets to operate said escapement-lever connected electrically with any convenient source of current all substantially as described.

2. A station-indicator comprising a case provided with a door, an opening and grating in said door, a wound coiled spring attached to and turning a spindle, a ratchet-wheel secured thereto, a spring-compressed pawl secured to a toothed wheel running loose on said spindle and engaging said ratchet-wheel, intermediate gearing operating a removable four-sided roller carrying an endless belt having lathe attached thereto for the inscription of station-names, a slotted escapement-lever with two steps spanning an escapement-disk provided with studs, said escapement-lever carrying an armature attracted by a magnet, and a spiral spring to withdraw same, beveled gearing to reverse the movement of said roller, in combination with an electric bell, and magnets to operate said escapement-lever and bell connected electrically in parallel with any convenient source of current all substantially as described.

704,186. EXPANDING REAMER FOR OIL OR ARTESIAN WELLS. JONAS P. SMITH, Peru, Ind., assignor of one-half to James A. Beverly, Omaha, Nebr. Filed Feb. 20, 1902. Serial No. 94,980. (No model.)

Claim.—1. The combination in an expanding reamer for boring oil-wells or other Artesian wells, of a reamer-body having a slot or opening therein, a pair of cutter-jaws pivoted together at their upper ends and so mounted in said slot or opening as to move up and down therein, a block connecting the central part of the sides of the body together in the lower portion of said slot or opening, bearings on the jaws adapted to contact with said block when the jaws are raised in said slot, and means for retaining the jaws in a normally upraised position, substantially as and for the purpose set forth.

2. The combination in an expanding reamer for boring out oil or other Artesian wells, of a reamer-body having a vertical slot or opening therein, a tapering block connecting the central portion of the sides of the body together at the lower end of the slot, a pair of cutter-jaws pivoted together at their upper ends and arranged to slide vertically in said slot or opening, so that their lower portions extend down past each side of said central block, grooves in the body at each side of said block, ribs or guides on the jaws operating in said grooves, and spring-actuated mechanism operating to raise the jaws in the body, substantially as and for the purpose set forth.

3. The combination in an expanding reamer for boring oil or other Artesian wells, of a reamer-body A provided with a screw-threaded pin *a*, and having a slot or opening B therein with its upper end *b* circular,

and depressions or grooves *b'* and D D in the inside faces of said slot or opening, a tapering block C connecting the sides A' A' of the body A between the depressions or grooves D D, a pair of jaws E E pivoted together at their upper ends by means of a pin *a*, and having their joint circular so as to fit against the surface *b*, bearing-surfaces E' E' on the lower portions of the jaws adapted to fit against the sides of the block C, and ribs *c' c'* thereon adapted to fit into the grooves D D, and a spring-actuated rod F adapted to raise the jaws in the slot or opening B in the reamer-body, substantially as and for the purpose set forth.

704,187. FEEDING MECHANISM FOR SEWING-MACHINES. DAVID M. SMYTH, Pasadena, Cal., assignor, by mesne assignments, to Smyth Machine Company, Hartford, Conn., a Corporation of Arizona Territory. Filed Jan. 30, 1900. Serial No. 703,812. (No model.)

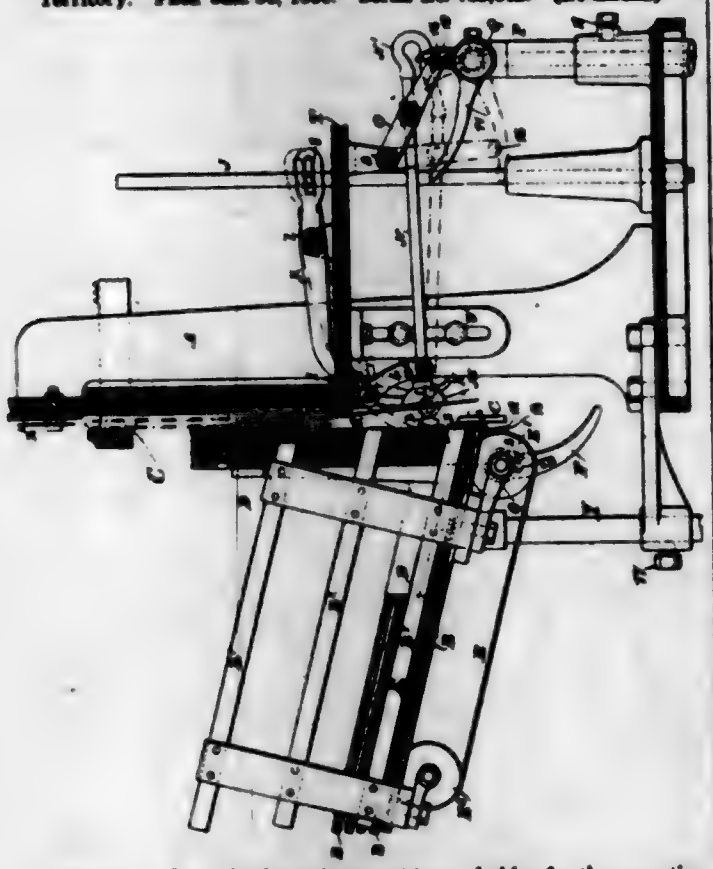

Claim.—1. In a book-sewing machine, a holder for the reception of signatures composed of a bottom and connected end portion at right angles to each other, the bottom being inclined downwardly toward its delivery edge and also longitudinally tipped so that the side to which the end portion is connected is lowest, the bottom having a portion along the delivery edge that in section is horizontal and level, substantially as specified.

2. The combination with the signature-holder, of the rock-shaft G, an arm L connected to said rock-shaft, the sucker M hinged to said arm, the tubular rod N connected at one end to said sucker, a pivoted lever O to which the other end of said rod N is connected, a pipe and cock connected to said tubular rod N and the arm 19 and lever 11 upon the cock against which the lever O acts to open and close said cock, substantially as specified.

3. The combination with the holder for a pile of signatures, a sucker for opening the lower signature in the pile of signatures by moving half of the signature away from the other half, an endless belt and pulleys for moving the pile of signatures toward the place of delivery, an adjustable stop R acting near the junction of the folded back and top edges of the signatures for preventing the signatures moving too far as they slide down the holder, a spring-claw acting at the lower edges of the signatures and means for giving motion to said endless belt, substantially as specified.

4. In a book-sewing machine the combination with the sheet-holding arm, of a signature-holder composed of a bottom and connected end portions at right angles to each other, said bottom being inclined downwardly toward its delivery edge and also longitudinally tipped so that the side to which the end portion is connected is lowest, an endless belt in the bottom and near the lower corner and end portion of the holder and inclined longitudinally to agree with the inclination of the signature-holder and parallel therewith and upon which belt the edges of all the signatures rest, pulleys around which the belt passes and a ratchet, pawl and lever-arm actuated by the sheet-holding arm for moving the belt progressively to carry the signatures toward said arm, substantially as specified.

5. In a book-sewing machine, the combination with the sheet-holding arm, of a signature-holder composed of a bottom and connected end portions at right angles to each other, said bottom being inclined downwardly toward its delivery edge and also longitudinally tipped so that the side to which the end portion is connected is lowest, an endless belt in the bottom and near the lower corner and end portion of the holder and inclined longitudinally to agree with the inclination of the signature-holder and parallel therewith and upon which belt the edges of all the signatures rest, pulleys around which the belt passes, and means for moving the belt progressively to carry the signatures toward said arm, substantially as specified.

6. The combination with the holder for a pile of signatures, of means for opening the lower signature in the pile of signatures by moving half of the signature away from the other half, an endless belt and pulleys for moving the pile of signatures toward the place of delivery, a pivoted spring-claw acting at the lower edges of the signatures, and means for giving motion to the endless belt intermittently, substantially as set forth.

704,188. CRANK-HANGER. WILLIAM R. SPENCER, Chicago, Ill. Filed Sept. 19, 1900. Serial No. 30,495. (No model.)

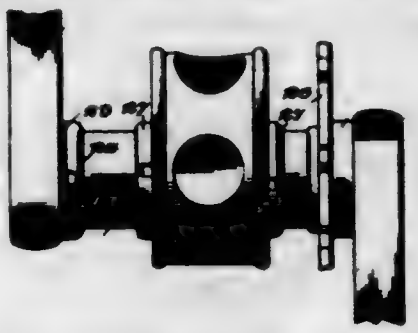

Claim.—1. The combination with a hanger-band and separate heads, of a hanger-sleeve piercing the heads eccentrically and capable of endwise adjustment, and locking-rings screwed upon the sleeve and clamping against the outer faces of the heads to retain the sleeve in its adjusted positions and to retain the heads in place.

2. The combination with a hanger-band and heads provided with openings and with annular concavities receiving the opposite edges of the band and openings, of internally-threaded locking-rings extended into the openings of the heads and having shoulders opposed thereto, and a hanger-sleeve piercing the heads and externally-threaded for engagement with the locking-rings, and a bolt extending from one head and loosely engaging the other to maintain their proper relative positions.

3. The combination with a hanger-band frame-tubes connected thereto and heads adjustable with respect to the band, of a hanger-sleeve connected to the heads for endwise adjustment, independent of the heads and located at a point eccentric to said heads.

4. The combination with a hanger-band and movable heads, of a hanger-sleeve piercing the heads eccentrically and capable of endwise adjustment independent thereof, and means for retaining the heads in its endwise adjusted position and for retaining the sleeve in fixed relation to the heads.

5. The combination with a hanger-band and heads, of a hanger-sleeve piercing the heads eccentrically and capable of endwise adjustment, and locking means screwed upon the sleeve and clamping the heads to retain said heads in fixed relation to the band and to retain the sleeve in fixed relation to the heads.

6. The combination with a crank-hanger comprising a band, heads disposed against the opposite edges of the band and capable of rotary movement, means for compelling the heads to move in unison, an endwise-adjustable hanger-sleeve piercing the heads eccentrically, and locking-rings clamping said heads.

7. The combination with a hanger-band and heads provided with eccentric openings and with annular cavities receiving the opposite edges of the band, of internally-threaded locking-rings extended into the openings of the heads and having shoulders opposed thereto, a hanger-sleeve piercing the heads and externally threaded for engagement with the locking-rings, and a bolt extending from one head and loosely engaging the other to maintain their proper relative positions.

8. The combination with a hanger-band, frame-tubes connected thereto, and adjustable heads opposed to the opposite edges of the band and provided with eccentric openings, of a hanger-sleeve extended through the eccentric opening in the head, and locking-rings screwed upon the sleeve beyond the heads and bearing against the same, whereby said rings perform the dual function of means for adjustably retaining the sleeve in the heads and for adjustably retaining the heads in contact with the hanger-band.

704,189. FOOD-GUARD. ALITA M. STARKMAN, New Rochelle, N. Y. Filed Aug. 27, 1901. Serial No. 73,433. (No model.)

Claim.—1. A food-guard comprising a strip constructed to be disposed edgewise upon and at right angles to the bottom of the plate, and an arm projecting from said strip and disposed at right angles thereto for securing it in place on a plate.

2. A food-guard comprising a strip to be disposed on a plate, and a clamp projecting from said strip, said clamp comprising a member to be disposed under the plate and a member to press upon the upper face of the flange of the plate.

3. A food-guard comprising a strip to be disposed on a plate and means to engage the top and bottom of the plate for positively locking said strip in place on the plate.

4. A food-guard comprising a strip to be disposed on a plate, and an arm to embrace the flange of the plate and having a notch to receive the bead on the bottom of the plate for locking the device in place.

5. A food guard or stop comprising a segmental shield or abutment, an integral clamping-arm thereon adapted to project beneath a plate to secure the shield in place, and a spring-tongue integral with said arm and adapted to press against the upper edge of the plate.

704,140. MEANS OR APPARATUS FOR COOKING EGGS. LUCY H. STOCKS, Leeds, England. Filed July 1, 1901. Serial No. 66,735. (No model.)

Claim.—1. In an egg-poacher the combination of a semispherical and perforated body divided into two portions jointed together at a point above the upper edge, a horizontally-projecting handle attached to the upper edge of each portion of the semispherical body for opening purposes, and a handle attached to the portions of the semispherical body above the upper edge for carrying purposes substantially as set forth.

2. In an egg-poacher, the combination of a perforated semispherical body formed in two portions out of a blank stamped to a concavo-convex shape provided with an irregular division-line at the points where the two portions meet and fit into each other, projections on the said semispherical body portion by which the said two portions are jointed together above their upper edge, a pivot-pin on which the said two parts turn, and horizontally-projecting loop-handles on the semispherical body portion for opening purposes, as set forth.

3. In an egg-poacher, the combination of a perforated body formed in two portions, each portion having projections by which the body portions are jointed together above their upper edge, said projections being of different lengths, a pivot-pin for jointing the two body portions together, handles attached as described to upper edge of said body portions for opening purposes, and a handle for carrying purposes attached to the longer projections, substantially as set forth.

704,141. STREET-CAR FENDER. CHARLES T. STOELTING, St. Louis, Mo. Filed Dec. 9, 1901. Serial No. 85,281. (No model.)

Claim.—1. A car-fender comprising a bar supporting the fender-rods, means for allowing lateral and vertical movement of the bar, rods carried by said bar and free to move thereon, a shaft carried by the frame and allowed to move in slots formed in lower ends of the rods, auxiliary wheels mounted on the shaft, a plurality of peculiarly-bent springs carried by the frame and means whereby the fender will follow the rails while turning a curve, substantially as specified.

2. A car-fender of the class described, comprising a horizontal bar, a slot formed in the bar, recesses formed in the ends of the bar, fender-rods movably secured in said recesses, a brace connecting the fender-rods a shaft pivotally connected to the brace, its ends moving freely in slots formed in the lower ends of the fender-rods, and a plurality of spring-straps carried by the fender-frame, substantially as specified.

3. A car-fender, comprising a suitable frame, movable joints securing together the frame, a plurality of spring-straps connected to said frame, and means whereby lateral and vertical movement of the fender is permitted, and means whereby the fender is folded against the car.

4. A car-fender, comprising a pair of rods, wheels mounted in the lower ends thereof, a fender-frame carried by said rods, a bar pivotally connected to a car-platform, to allow the bar to have a lateral movement, and swinging joints to connect the rods and the bar together to allow a vertical movement to the fender.

5. In combination with a car having mounted thereon a pivot and springs, of a car-fender comprising a bar mounted upon said pin, a pair of rods swingingly connected to the bar, and a fender-frame carried by the rods.

6. In combination with a car having mounted thereon a pivot and a spring surrounding the pivot, of a car-fender comprising a bar mounted upon said pivot above the spring, a pair of rods having wheels to engage the rails mounted in their lower ends pivotally connected to said bar, and a fender-frame supported by the rods.

704,142. LOADING APPARATUS. JACOB STRAUB, Campbellsport, Wis. Filed Apr. 10, 1902. Serial No. 102,267. (No model.)

Claim.—1. In a loading apparatus, the combination with a sectional and portable structure embodying an overhead rail, a carrier mounted to travel on said rail and an operating-cable for the carrier, of a scoop detachably connected with the carrier, a suspending-ring, a sectional bail consisting of two arms having a loose pivotal connection with the suspending-ring and a hooked detachable connection with the scoop, and a combined hook-arm and trip-lever mounted on the suspending-ring, the hook-arm being adapted to support the scoop in a substantially horizontal position when filled, substantially as described.

2. In a loading apparatus, a scoop provided with oppositely-located holes in its sides and in rear of its center, in combination a detachably jointed bail comprising a pair of downwardly-diverging arms having hooked lower ends for insertion in the holes in the sides of the scoop and having their upper ends pivotally connected with a suspending-ring, and a combined hook-arm and trip-lever pivotally connected with the suspending-ring, the hook-arm being adapted to engage the front of the scoop, substantially as and for the purpose specified.

3. In a loading apparatus, a scoop in combination with a detachably-jointed bail comprising a suspending-ring, and a pair of downwardly-diverging arms provided at their upper ends with eyes to receive the suspending-ring and having hooks at their lower ends to engage the scoop, and a combined hook-arm and trip-lever journaled on the suspending-ring between the arms of the jointed bail, the hook-arm being adapted to engage the scoop and hold the same in a substantially horizontal position when filled, substantially as described.

704,148. HAND-STRAP FOR STREET-RAILWAY CARS. MAX STRAUS, Denver, Colo. Filed Oct 28, 1901. Serial No. 80,297. (No model.)

Claim.—1. A hand-strap, the lower end of which is formed into a loop; a plurality of steps or loops, arranged one above the other, between the two members of the main loop, and securely attached at each end to one of the members of the said loop, substantially as shown.

2. A hand-strap, the lower portion of which is formed into a loop, a

plurality of short straps which extend longitudinally from one member of the loop to the other, the said straps being arranged one above the other, and secured to the members of the aforesaid loop, substantially as shown.

704,144. CENTRIFUGAL PUMP. HEINRICH SULZER, Winterthur, Switzerland, assignor to Gebrüder Sulzer, Winterthur, Switzerland. Filed Dec. 2, 1901. Serial No. 84,308. (No model.)

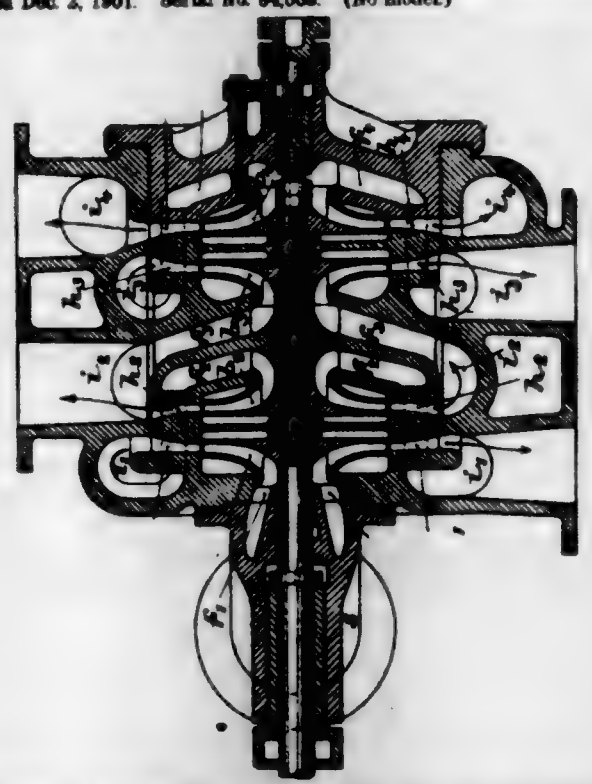

Claim.—A centrifugal pump adapted to be driven at a constant speed and comprising a plurality of pump-sections arranged in series relation with respect to each other, each pump-section communicating independently with the outlet, whereby by opening one or the other of such communications the lifting power of the pump may be varied without varying its speed, as and for the purpose set forth.

704,145. ATTACHMENT FOR BICYCLES. FELIX W. TALLEY, New York, N. Y. Filed Jan. 11, 1902. Serial No. 89,353. (No model.)

Claim.—In combination with a bicycle an attachment consisting of a rotary disk having intersecting grooves and blocks fitted so as to slide back and forth therein, a connecting-rod pivoted at one end to the sliding blocks its opposite end being connected to a crank secured to the shaft of the driving-wheel, the connecting-rod slotted centrally so as to admit of longitudinal and vibrating movements over a fulcrum secured to the frame of the vehicle substantially as herein set forth and shown.

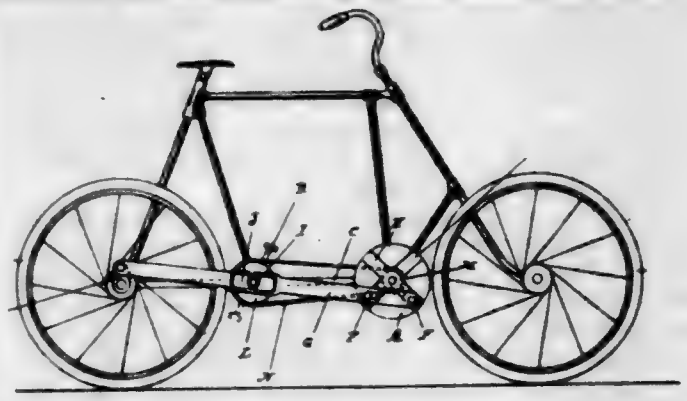

704,146. BUSTLE. HENRY H. TAYLOR, Bridgeport, Conn. Filed Mar. 10, 1902. Serial No. 97,560. (No model.)

Claim.—1. A bustle comprising a woven-wire bulging form having its edges bound with tape, and a closed backing sewed to the inside of said form at a distance from said tape, substantially as set forth.

2. A bustle comprising a woven-wire bulging form having its edges bound with tape, and a comparatively small closed backing stretched tightly and sewed to the inside of said form, the perimeter of said backing throughout its extent being separated from said tape whereby the edges of the bulging form are rendered flexible, substantially as set forth.

704,147. PRESSURE DEVICE FOR WOODWORKING-MACHINES. JOHN R. THOMAS, Cincinnati, Ohio, assignor to J. A. Fay & Egan Company, Cincinnati, Ohio, a Corporation of West Virginia. Original application filed May 29, 1901, Serial No. 62,413. Divided and this application filed Dec. 23, 1901. Serial No. 87,080. (No model.)

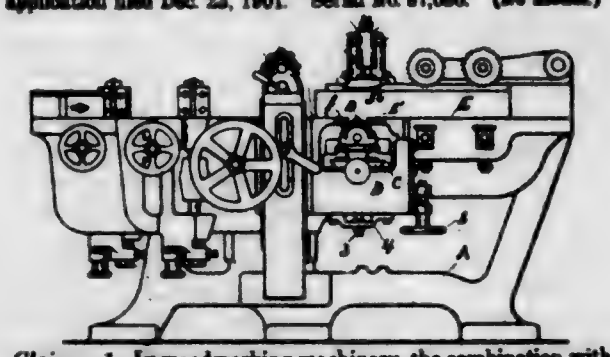

Claim.—1. In woodworking machinery, the combination with a machine-frame, and a cutter-head therefor, of a pressure device comprising in combination a swinging frame projecting sidewardly over the cutter-head, a plurality of separately-yielding pressure-feet side by side in the swinging frame, and means for securing the swinging frame rigidly in place, substantially as described.

2. In woodworking machinery, the combination with a machine-frame, a work-supporting table therefor, and a cutter-head, of a pressure device comprising in combination a swinging frame pivoted with relation to the machine-frame to one side of the table and freely overhanging the cutter-head, with a plurality of separately-yielding pressure-feet side by side in the swinging frame, and a fastening device for securing the swinging frame against upward movement to the same side of the table as the pivot, substantially as described.

3. In woodworking machinery, the combination of a pressure device above the cutter-head comprising a swinging frame, a plurality of sockets in the frame, pressure-feet taking into the sockets, springs taking against the pressure-feet for resisting their upward movement, with the swinging frame constructed and arranged for being raised upwardly away from the cutter-head, substantially as described.

4. In a pressure device for woodworking machinery, the combination of a machine-frame, a cutter-head therefor, a swinging frame extend-

ing above the cutter-head and pivoted to the main frame, sockets for the swinging frame above the cutter-head, pressure-foot having shanks taking into and sliding in the sockets from their lower ends, bolts screwing into the sockets from their upper ends, springs interposed between the shanks and bolts for forcing the pressure-foot downwardly, and additional bolts taking slidably through the first-named bolts and screwing into the shanks of the pressure-foot for adjustably limiting the downward movement of the pressure-foot, with means for rigidly holding the swinging frame above the cutter-head and arranged for releasing the swinging frame and permitting the same to be swung upwardly away from the cutter-head, substantially as described.

5. In a woodworking-machine, the combination of a main frame, a cutter-head, a plate for the frame, ears extending therefrom, a swinging frame pivoted to the plate and arranged to take snugly between the ears, a link for rigidly holding down the swinging frame between the ears, sockets for the swinging frame extending above the cutter-head, pressure-foot having shanks taking into the sockets, bolts for the shanks, and springs taking between the shanks and bolts, and arranged for permitting the swinging frame to be raised away from the cutter-head, substantially as described.

704,148. BED-RAIL. WILLIAM TUCKER, Indianapolis, Ind., assignor to the T. B. Laycock Manufacturing Company, Indianapolis, Ind., a Corporation of Indiana. Filed Dec. 23, 1901. Serial No. 87,022. (No model.)

Claim.—1. In a corner-fastener for bedsteads a post, a shank on the post having a rounded end and a reverse curve forming a hook near its base and a shoulder between the hook and shank and oblique to the upper and lower edges of the shank and a rail having a head with a shank, the end of said shank fitting into the hook of the post-shank and having a hook to engage the end of the post-shank and a shoulder to contact with the shoulder of the post-shank to draw the parts of the fastener together when the bed-rail is depressed.

2. In a corner-fastener for bedsteads a post, a shank on the post having a rounded end, and a reverse curve forming a hook near its base and a shoulder separating the two curves, said shoulder being oblique to the upper and lower edges of the shank and being a straight surface inclined downwardly toward the post, and a bed-rail having a head with a shank, said shank having a rounded end to fit into the hook of the post-shank and having a reverse curve forming a hook to receive the rounded end of the post-shank and having a shoulder between the hook and end to contact with the oblique shoulder of the post-shank.

3. In a corner-fastener for bedsteads a post, a shank on the post having a rounded end and a reverse curve forming a hook near its base and an oblique shoulder between said hook and the end of the shank, a side rail having a shank with a rounded end to fit into the hook of the post-shank and a reverse curve forming a hook near its base and a shoulder between said hook and the end of the shank, the ends of the two shanks engaging the opposite hooks of the shanks and the shoulders contacting with each other.

4. In a corner-fastener for bedsteads a post, a shank on the post having a rounded end and a reverse curve forming a hook near its base and an oblique shoulder between said hook and the end of the shank said shoulder sloping downwardly toward the post, a side rail having a shank with a rounded end and a reverse curve forming a hook near its base with a shoulder between said hook and the end of the shank said shoulder sloping from its middle portion toward each end and toward the outer end of the shank, the ends of the two shanks engaging the opposite hooks of the shanks and the shoulders contacting with each other.

5. In a corner-fastener for bedsteads, a post, a shank on the post having an abrupt decrease in thickness on one side to form a shoulder and having a stop farther out toward its end, a rail or frame fixture having a head with an end to fit the shoulder on the shank and having a projection to engage said stop, the said stop and its engaging projection having in their construction a wedge formation to compel a close fit between said head end and shank-shoulder.

704,149. GAME-COUNTER. EUGENE T. VAN GIESON, Newark, N. J. Filed Mar. 1, 1902. Serial No. 96,195. (No model.)

Claim.—1. In a single-dial game-counter, the combination, with a flat base and a visible circular dial pivoted thereon and formed with arms to turn the same, and having a spring-pawl to hold the dial in place, and a series of holes adjacent to its edge with divisions between the holes at intervals and numbers applied to the divisions, of two score-pins operated in connection with such holes for indicating respectively the score prior to the last play, and the score made during such play, a series of game-counting holes in the arms of the dial, numbered serially, an additional hole without number, and a pin fitted to such game-counting and additional holes to register the number of games, the whole arranged and operated substantially as herein set forth.

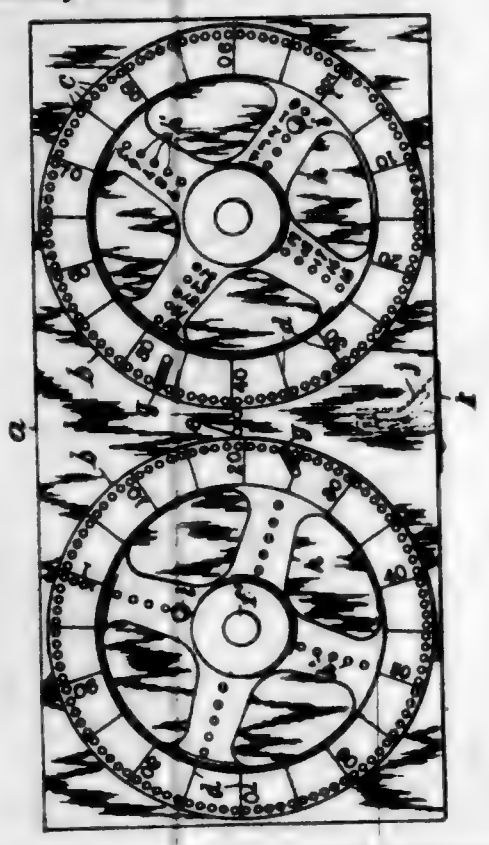

2. The combination, with the base *a*, of two single-dial game-counters comprising each the circular dial *b* having the series of holes *c* adjacent to its edge with divisions *d* between the holes at intervals and numbers applied to the divisions, of two score-pins operated in connection with such holes to indicate simultaneously, when the score is registered, the score prior to the last play and the score made during the last play, the dials being held each rotatably upon the base by the central clamp-screw *f*, which permits them to be turned separately into convenient positions for the use of two players.

704,150. REFRACTO-OPHTHALMOMETER. HERBERT VAN PATTEN, Meadville, Pa. Filed Oct. 26, 1901. Serial No. 80,545. (No model.)

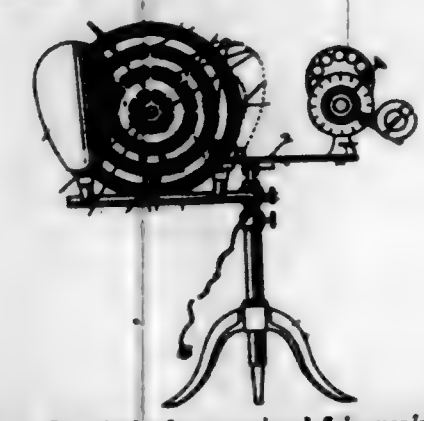

Claim.—1. In a device for correcting deficiencies in eyesight, a disk having a central aperture, concentric black and white bands thereon and lines indicating degrees of a circle, a telescopic eye-tube at the rear thereof opposite said central aperture, a disk around the end of said tube, lines on said disk indicating the degrees of a circle, and disks revolubly mounted on said disk each having a multiplicity of lenses arranged in a series near its periphery, substantially as shown and described.

2. In a device for correcting deficiencies in eyesight, a suitable standard, a bracket mounted thereon, a disk attached thereto having a central aperture, concentric circular bands of black and white on the front of said disk and radial lines crossing said bands indicating degrees of a circle, the rear of said bracket extended upward to support a barrel portion, a

telescopic eye-tube mounted in said barrel portion, and disks, having a multiplicity of lenses arranged near their periphery, mounted to rotate said lenses into the line of vision of said eye-tube, substantially as shown and described.

3. In a device for correcting deficiencies in eyesight, a suitable standard, a bracket mounted thereon, a disk mounted on said standard, concentric circular bands of black and white on the front of said disk and radial lines crossing said bands indicating degrees of a circle, the rear of said bracket extended upward and supporting a barrel portion, an eye-tube mounted in said barrel portion, a disk around the end of said tube, radial lines on said disk indicating degrees of a circle, disks revolubly mounted on said disk each having set therein a series of lenses near its periphery, a bar arranged for vertical adjustment on said standard and a chin-rest on said bar, substantially as shown and described.

4. In a device for correcting deficiencies in eyesight, an eye-tube arranged for rotation, a disk mounted around the end thereof, a multiplicity of disks revolubly mounted on said disk and having set therein a series of lenses near their periphery, and means for rotating said eye-tube and disks, substantially as shown and described.

5. In a device for correcting deficiencies in eyesight, an eye-tube arranged for rotation, a disk mounted around the end of said eye-tube, the front of said disk being divided by radial lines into degrees of a circle, means for rotating said eye-tube and disk, studs on rear of said disk, disks revolubly mounted on said studs and a series of lenses set in each said disk near its periphery, substantially as shown and described.

6. In a device for correcting deficiencies in eyesight, a frame suitably mounted, an eye-tube revolubly mounted thereon, a disk mounted around the end of said eye-tube having its face divided by radial lines in degrees of a circle, pointers on said frame indicating points on said disk ninety degrees removed from each other, a circular rack fixed on said disk, a shaft journaled in said frame, and a pinion-gear keyed to the shaft meshing with said circular rack, substantially as shown and described.

7. In a device for correcting deficiencies in eyesight, a frame suitably mounted, an eye-tube journaled therein, a disk mounted around the end of said eye-tube having its face divided by radial lines in degrees of a circle, pointers on said frame indicating points on said disk ninety degrees removed from each other, a circular rack fixed on said disk, a shaft journaled in said frame, a pinion-gear keyed to the shaft meshing with said circular rack, disks mounted for rotation on the rear of the first-mentioned disk, each of said disks having a series of lenses set near its periphery, substantially as shown and described.

8. In a device for determining muscular insufficiency in eyes, a frame suitably mounted, an eye-tube journaled therein, means attached to said eye-tube and to said frame for determining focal deficiencies in eyesight, an arm revolubly mounted on said eye-tube having a slot near its free end, a disk adjustably mounted in said slot to regulate the distance between said eye-tube and said disk to the distance between the pupils of the eyes of the patient, and a cylindrical glass rod revolubly mounted in said disk, substantially as shown and described.

9. In a device for determining muscular insufficiency in eyes, a frame suitably mounted, an eye-tube journaled therein, means attached to said eye-tube and to said frame for determining focal deficiencies in eyesight, an arm revolubly mounted on said eye-tube having a slot near its free end, a circular plate mounted in said slot and adapted to be adjusted longitudinally of said arm, a cylindrical glass rod set in a disk journaled in said circular plate, a rack on the edge of said disk, and a gear-wheel meshing with said rack and adapted to rotate said disk, substantially as shown and described.

704,151. WHEEL FOR MOTOR-VEHICLES. GEORGE O. VESSEL, Lawrence, Mass. Filed May 1, 1902. Serial No. 105,422. (No model.)

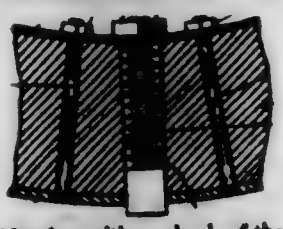

Claim.—In combination with a wheel, of the rim, a metal tire surrounding the same, said rim having a series of chambers extending radially therethrough, a tooth located in each chamber, each tooth having an enlarged head which projects beyond the bearing-surface of the rim and having a shank which projects through the inner side thereof, a stop-plate through which said shank passes, bolts for securing said plate to the inner side of the rim which pass through said tire, rim and plate successively, the heads of said bolts engaging the outer side of the tire, nuts on said bolts which engage the opposite side of said plate from the rim, a spring which is interposed between said plate and said enlarged head, and a stop for limiting the outward movement of said tooth, substantially as described.

704,152. TYPE-CARRIER ACTION AND MEANS FOR MOUNTING SAME. FRANK X. WAGNER, New York, N. Y., assignor to the Wagner Typewriter Company, New York, N. Y., a Corporation of New York. Filed June 4, 1900. Serial No. 18,969. (No model.)

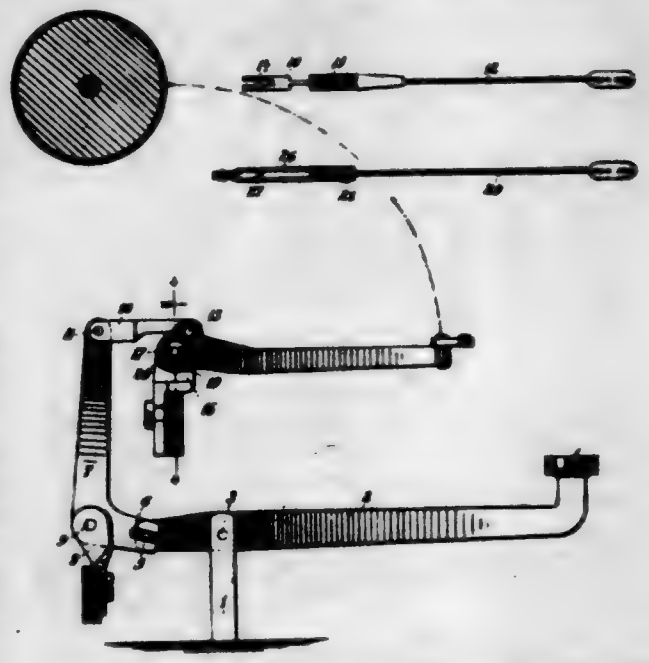

Claim.—1. In an action for type-writing machines, the combination of an oscillating type-carrier, a hanger to which said type-carrier is pivoted, one of said parts being bifurcated, a two-part pivot for uniting said type-carrier and hanger, said two-part pivot comprising a headed internally-screw-threaded member which is adapted to extend substantially through said type-carrier and hanger and a headed externally-screw-threaded member adapted to be received in said first-mentioned member, means for locking the internally-screw-threaded member of said pivot to the bifurcated part and means for seating the head of the externally-threaded member in one of the arms of the bifurcated part as specified.

2. In an action for type-writing machines, the combination of an oscillating type-carrier, a hanger disconnectedly pivoted thereto, means for adjusting said hanger in a direction perpendicular to the axis of the type-carrier, a bifurcated compressed link pivoted to said type-carrier adapted to be sprung apart, a key-lever and means for operatively connecting said key-lever to said link.

3. The combination of a segmental support, overlapping type-carrier hangers having their shanks S6 wider than their projecting portions and mounted upon opposite sides of said support and staggered with relation to one another, the pivotal openings in said hangers being in alinement with one another and oscillating type-carriers pivoted to said hangers all arranged to permit said type-carriers to be brought close together as specified.

4. The combination of a hanger-support, a positioning-lug 37 for each hanger on said support, a hanger having a bifurcated securing-arm adapted to straddle the lug 37 and a screw passing through the bifurcated portion of the securing-arm and secured to the hanger-support, the stem of said screw being smaller in diameter than the distance between the arms of the bifurcated portion to permit of a longitudinal and limited lateral adjustment of the hanger.

5. In a visible type-writer, the combination of a segmental support with hangers carrying type-levers, said hangers being applied alternately to opposite faces of the segmental support and so arranged as to be staggering and overlapping, substantially as and for the purposes specified.

6. In a visible type-writer, the segmental support for the type-levers combined with hangers to which the type-levers are pivoted, said hangers forming shoulders that rest on the upper edge of the segmental support and having pivot-holes for receiving the type-levers which pivot-holes are in line with the center of the segmental support as specified, all arranged so that the hangers can be arranged in staggering and overlapping order alternately on opposite faces of the segmental support as set forth.

704,158. COMBINED LETTER-SHEET AND ENVELOP. HENRY V. WARNER, Bonnieburst, N. Y. Filed Sept. 13, 1901. Serial No. 75,152. (No model.)

Claim.—1. A combined letter and envelop comprising a plurality of pages, a sealing-flap provided with a gummed coating arranged along an edge of one of the pages, a covering-flap also arranged along an edge of one of the pages, and a safety-flap having a gummed coating arranged at and extending along an edge of the covering-flap and adjacent to the sealing-flap.

2. A combined letter and envelop comprising a plurality of pages,

a sealing-flap provided with a gummed coating arranged along an edge of one of the pages, a covering-flap also arranged along an edge of one of the pages, and a safety-flap having a gummed coating and arranged relatively to the pages so as to fold over a page and under the sealing-flap.

3. A combined letter and envelop comprising a plurality of pages, a covering-flap attached to one page and adapted to be folded over and protect a loose edge of one or more pages, a sealing-flap attached to one page and adapted to be folded over and protect a loose edge of one or more pages, means for rigidly retaining both said sealing-flap and said covering-flap in their said folded and protecting positions—the said letter and envelop being adapted to be opened by a single cut along one edge of the same as folded.

4. A combined letter and envelop comprising a plurality of pages, a sealing-flap attached to one page and adapted to be folded over and protect a loose edge of one or more pages, a covering-flap attached to a page and adapted to be folded over and protect a loose edge of one or more pages, and a safety-flap attached to said covering-flap and adapted to be rigidly secured and to hold said covering-flap in its folded-over and protecting position—the said letter and envelop being adapted to be opened by a single cut along one edge of the same as folded.

704,154. BRACKET-SHELF. REUBEN R. WALKER, Indianapolis, Ind. Filed Jan. 21, 1902. Serial No. 90,712. (No model.)

Claim.—1. The combination, in a bracket-shelf, of wire brackets adapted to be secured to a wall and provided with notches extending transversely thereof, and a shelf adapted to be placed on said brackets and provided with clips adapted to engage with said notches whereby the shelf is removably but securely held in place thereon, substantially as set forth.

2. The combination, in a bracket-shelf, of brackets composed of wire each having a horizontal and an inclined member, the upper or horizontal member being screw-pointed at its rear end, and provided with a flange or collar in front of the screw-pointed portion, and having a notch in front of the flange or collar, and a shelf provided with clips having slits therein adapted to embrace those portions of the brackets where the notches are and to enter and engage with said notches, substantially as set forth.

704,155. MOORING SHIPS. WILLIAM M. WALTERS, Liverpool, England. Filed Sept. 10, 1901. Serial No. 74,932. (No model.)

Claim.—1. In combination with a ship an upwardly and backwardly sloping tube extending from the bottom of the ship near the keel, at about one-quarter of the length of the ship from the bow, to the deck, a wheel located within the tube at about the center of resistance to wind and waves such wheel being arranged to guide the cable, and means for hauling and securing the cable, substantially as described.

2. In combination with a ship an upwardly and backwardly sloping tube extending from the bottom of the ship near the keel, at about one-quarter of the length of the ship from the bow, to the deck, said tube being narrower at the top than at the bottom, a wheel located within the tube at about the center of resistance to wind and waves, such wheel being arranged to guide the cable passing up the tube, and means for hauling and securing the cable, substantially as described.

3. A vessel having a substantially vertical opening leading upward from the bottom of the vessel at about one-quarter the length of the vessel from the bow, said opening having a front wall inclining forwardly and downwardly, and a guide for a cable located approximately centrally of the height of said opening, substantially as described.

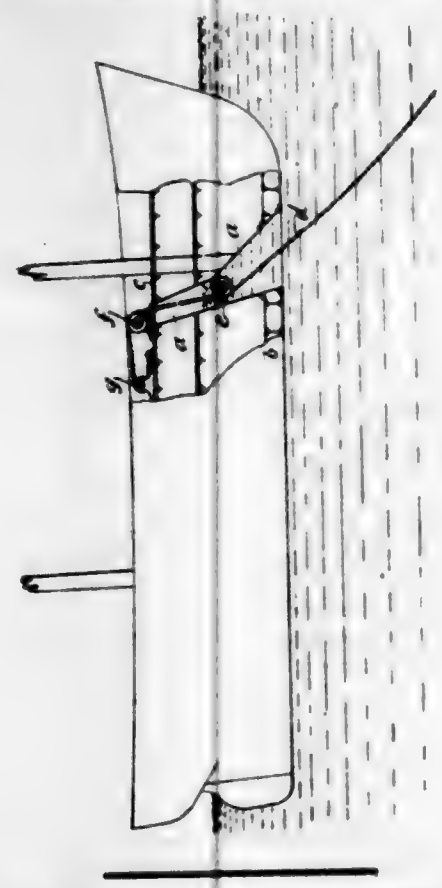

704,156. STEERING AND BRAKING DEVICE. CHRISTIAN F. WEBER, Jr., Albany, N. Y. Filed Dec. 13, 1901. Serial No. 85,756. (No model.)

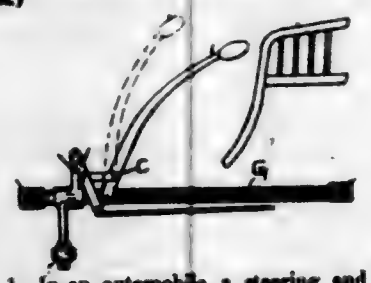

Claim.—1. In an automobile, a steering and braking device consisting of a rocking shaft, adapted to turn in bearings attached to the automobile; a downwardly-projecting arm and an upwardly-projecting arm attached to said rocking shaft; a connecting-rod connecting the said downwardly-projecting arm with the steering-knuckles of the automobile, whereby the rocking of said shaft in its bearings will operate said steering-knuckles; a handle attached to said rocking shaft; a brake-lever attached at one end to said upwardly-projecting arm of said rocking shaft, and at the other end to the brake, by suitable intermediate connections and means for connecting said brake-lever to said handle, whereby said handle will be adapted to both operate said brake and turn said rocking shaft in its bearings, substantially as described and for the purposes set forth.

2. A braking device to an automobile consisting of a handle adapted to be operated by the driver of the automobile attached to a rocking shaft at or under the floor of the automobile; said rocking shaft adapted to turn in bearings attached to the automobile at or under the floor of the automobile; a projecting arm attached to said rocking shaft; a brake-lever attached to said projecting arm as a fulcrum and by suitable intermediate connections to the brake of the automobile and means for connecting said brake-lever to said handle, whereby said handle will be adapted to operate said brake while turning said rocking shaft in its bearings, substantially as described.

3. In a steering and braking device to an automobile, a rocking shaft adapted to turn in its bearing, two or more bearings attached to said automobile adapted to receive and retain said rocking shaft; an upwardly-projecting arm and a downwardly-projecting hanging arm attached to said rocking shaft; a connecting-rod connecting said hanging arm with the steering-knuckles of the automobile; a handle attached to said rocking shaft adapted to be operated by the driver of the automobile; a brake-rod parallel to and immediately under said rocking-shaft; a brake-lever in two parts, each part connecting said brake-rod to said upwardly-projecting arm, one on each side of said rocking shaft; a connecting-arm con-

necting said handle to said brake-lever whereby said handle is adapted to both operate the brake-rod and turn said rocking shaft in its bearings at the same time, while maintaining the brake-rod in the same relative position to the rocking shaft, all substantially as described and for the purpose set forth.

4. In a steering and braking device to an automobile; a rocking shaft having a downwardly-projecting arm and an upwardly-projecting arm; means for connecting the downwardly-projecting arm to the steering-knuckles of the automobile; a brake-lever attached to said upwardly-projecting arm; means for connecting said brake-lever to the brake of the automobile; a handle attached to said rocking shaft and suitably connected to said brake-lever, whereby said handle is adapted to both turn said rocking shaft in its bearings and operate said brake, substantially as described and for the purpose set forth.

704,157. DISPLAY-RACK. WILLIAM WHITE, Lawrenceburg, Tenn. Filed July 23, 1900. Renewed Dec. 9, 1901. Serial No. 85,273. (No model.)

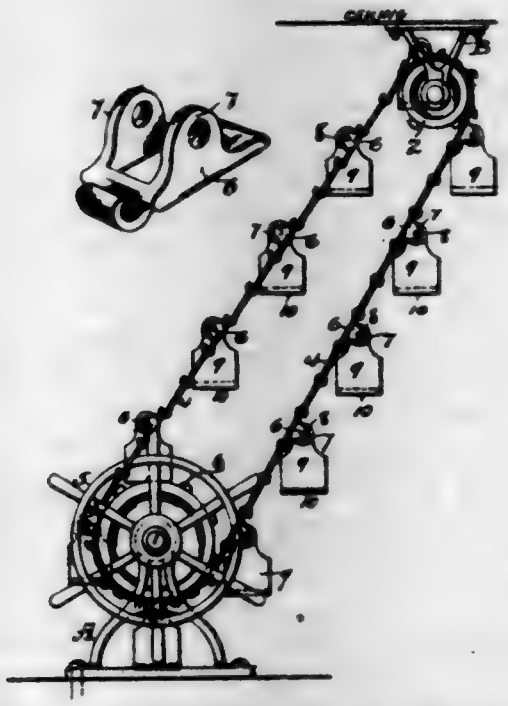

Claim.—1. In a display-rack, the combination with upper and lower revolubie supports, the upper support disposed in a plane rearwardly of the lower support, of a set of sprocket-chains passing over said supports, shelves pivotally suspended from said chains so as to be disposed in different vertical planes and constantly in horizontal positions, said supports, chains and shelves constituting the entire display-rack whereby articles can be supported on each shelf without interference with the shelf next above and free access be had to shelves from the front of the rack and means connected with the lower revolubie support for operating the rack.

2. In a display-rack, the combination with a support, and means for raising, and lowering said support, of a broad shelf, vertical end pieces on said shelf having curved slots in their upper ends, arms pivotally connected to the lower ends of said end pieces, trunnions on said arms disposed in the slots, means for securing the trunnions in any portion of the slots and bearings in the movable support for said trunnions.

3. In a display-rack, the combination with a support, means for moving said support up and down, of a broad shelf, vertical end pieces on said shelf having curved slots in their upper ends, arms pivotally connected to the lower ends of said end pieces, trunnions on said arms disposed in the slots and screw-threaded throughout a portion of their length, nuts on the threaded portions of said trunnions to secure them in any portion of the slots and bearings in the movable support for said trunnions.

704,158. WATER ATTACHMENT FOR POWER-DRILLS. FREDERICK L. WHITEHEAD, Butte, Mont. Filed July 16, 1901. Serial No. 68,498. (No model.)

Claim.—1. In combination with a power-drill, a power-fluid-supply pipe, of a cylinder, a pipe connecting the fluid-supply pipe to the top of said cylinder, a water-supply to the cylinder and a pipe for conducting the water to the drill-hole.

2. An attachment for power-drills comprising a cylinder, a coupling on the end terminating in a tube, a cock on the opposite end, a connection from the cock to the fluid-pressure-supply pipe, a second cock extending from the side of the cylinder and a water-reservoir in communication with the cylinder through the last-named cock.

704,158.

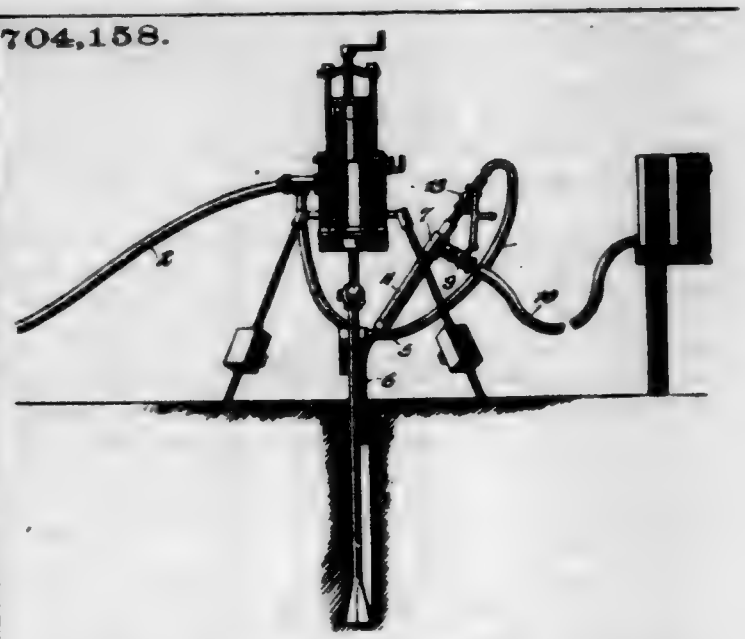

704,159. BICYCLE HANDLE-BAR. WILLIAM H. WHITELY and WILLIAM H. WHITELY, Jr., Springfield, Ohio. Filed Jan. 23, 1900. Serial No. 2,499. (No model.)

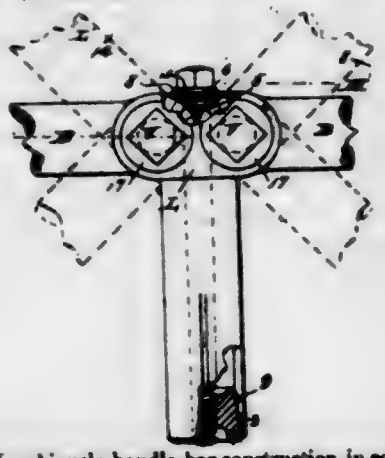

Claim.—1. In a bicycle-handle-bar construction, in combination with the handle-bar post, of vertically-adjustable handle-bars, separately and pivotally mounted upon said post, a link, corrugated upon its face around its eyes, engaging the handle-bars by similar corrugations upon their faces, two separate and independent screw-threaded pivotal clamping-bolts passing through the eyes of said link and bearing-apertures of said bars and having screw-threaded connection with said post; said link and bolts forming the supporting and adjusting means of the bars upon said post.

2. In a bicycle-handle-bar construction, in combination with the handle-bar post, of vertically-adjustable handle-bars, separately and pivotally mounted upon said post and geared together, one bar controlling its fellow bar to move in unison, a link corrugated upon its face around its eyes, engaging the bars upon their faces by similar corrugations, and interlocking with each bar opposite the post, said link connecting each bar directly to the pivot of the other bar by two separate and independent screw-threaded pivotal clamping-bolts passing through the eyes of said link and the bearing-apertures of said bars and having screw-thread connection with said post; said link and bolts forming the supporting and adjusting means of said bars upon said post that the adjustable handle-bar members shall be as one continuous piece when adjusted and clamped together by said bolts and said corrugated link.

3. In a bicycle-handle-bar construction, in combination with the vertically-adjustable handle-bar post, having binding contact with the hollow steering-fork stem, of vertically-adjustable handle-bars having intermeshing gear-segments on their inner ends, said bars being individually and pivotally mounted on said post on separate centers, a clamp within the post, a rod for operating said clamp passing longitudinally and centrally throughout said post clearly to one side of the geared ends of said bars, a connecting-link corrugated around its eyes engaging corresponding corrugated faces on said bars, two clamping-bolts for clamping said link and bars to said post to permit of vertical adjustment of the handle-bars and vertical adjustment of the handle-bar post independently of each other.

4. In a bicycle-handle-bar construction, in combination, a handle-bar post, and integral therewith a head having ear projections 11 suitably formed to support two vertically-adjustable handle-bars upon said ear projections 11, the handle-bar post being longitudinally perforated, said handle-bars intermeshing with each other at their meeting ends by means of gear-segments, a clamp-actuating rod passing through said han-

gitudinal perforation between said ears 11 and centrally of said post independent of said bars and entirely to one side thereof, an expander-clamp within the post operated by the clamp-actuating rod; said bars secured to said ears 11 by pivotal clamping-bolts and held against rotation by means of a corrugated link engaging similar corrugations upon the faces of the bars, the eyes of said corrugated link inclosing each of said clamping-bolts.

5. In a bicycle-handle-bar construction, the combination of a handle-bar post longitudinally perforated, and integral therewith the head having suitably-formed lateral ear projections, vertically-adjustable handle-bars externally secured to one side thereof, said bars intermeshing with each other at their meeting ends by means of gear-segments, a handle-bar-post clamp-actuating rod passing through said longitudinal perforation between said ears and centrally of said post, independent of said bars and entirely to one side thereof; said bars secured to said ears by clamping-bolts and held from rotation by means of a corrugated connecting-link and by similar corrugations upon their faces, the eyes of said link inclosing each of the two clamping-bolts, and the bars and post secured in any desired adjustment, substantially as described.

6. In a bicycle-handle-bar construction, in combination, a handle-bar post having a head suitably formed with ear projections, two handle-bars individually and separately mounted upon said ears, and geared together to move in unison during adjustment, said ears and said bars having smooth-faced concave and convex surfaces, respectively, engaging each other at the rotative centers of the bars, a connecting corrugated faced link extending from one of said centers to the other, surrounding screw-threaded clamping-bolts at each center of said bars, said bolts passing through said link and bars and having screw-thread connection with said ears to hold said bars rigidly together when adjusted.

7. The combination with a handle-bar post of two vertically-adjustable handle-bars pivoted thereon on trunnions integral with said post, and means for clamping the handle-bars in fixed position relative to said post consisting of a link having corrugations engaging corresponding corrugations on the ends of the handle-bars and screw-threaded bolts for clamping said link in engagement with the handle-bars, of an actuating-rod passing longitudinally through said post from top to bottom, and a clamp at the lower end of said rod within the post for the adjustment thereof, as and for the purposes shown and described.

704,160. ANTIRATTLER FOR THILL-COUPLINGS. JAMES R. WHITNEY, Leominster, Mass. Filed Jan. 23, 1902. Serial No. 91,563. (No model.)

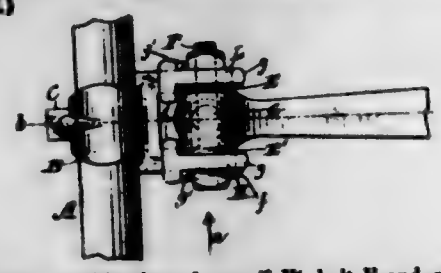

Claim.—The combination of ears E E', bolt F and shaft-iron eye G, with hollow hub H, elastic cushion J fitted therein, block K, means for regulating the pressure of said block against said shaft-iron eye, clamp L attached at its lower end to hub H and adapted to fit and hook over the ear E, clamp M pivoted at its lower end to a cam-lever *f*, and adapted to fit and hook over the other ear E', and said cam-lever *f*, pivoted at its inner end to hub H, substantially as and for the purpose set forth.

704,161. BICYCLE-SUPPORT. ERNEST O. WILCOX, Wichita, Kans., assignor to John H. Hedrell, Wichita, Kans. Filed Oct. 7, 1901. Serial No. 77,879. (No model.)

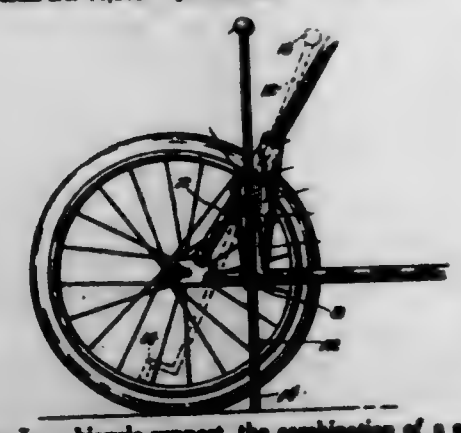

Claim.—In a bicycle-support, the combination of a support-frame provided with means of attachment to a bicycle-frame, a hand swiveled to the support to swing in a plane parallel to the bicycle-frame and having laterally-projecting ears formed with alined apertures, a prop inserted through said apertures and provided with a stop-pin adapted to limit its downward movement, and fastenings carried by said support, one located below and in the vertical line of the head, and the other above and to one side of the vertical line of the head, for securing the prop against movement when adjusted in contact with the ground, or elevated, substantially as set forth.

704,162. LOCK-NUT. PETER J. WILSON, Sheffield, England. Filed Feb. 21, 1901. Serial No. 48,327. (No model.)

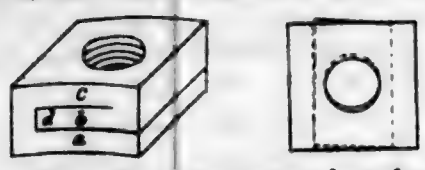

Claim.—1. The herein-described improved nut formed of a blank of a spring metal, and consisting of inner, middle and outer layers formed integral, the outer layer being sufficiently long to fold over the top, beyond the end and under the middle layer, thus forming the outer convex and inner concave layers, the length of the middle layer being shorter by the thickness of the metal than the inner and outer layers, the displacing of the middle layer or fold about half the depth of the thread of the nut, so that one edge stands within, and the other without the inner and outer folds, or layers, substantially as specified.

2. The herein-described improved nut formed of a blank of a spring metal and consisting of inner, middle and outer layers formed integral, the outer layer being sufficiently long to fold, under, beyond the end, and over the top of the middle layer, thus forming the inner concave and outer convex layers, the middle layer being shorter by the thickness of the metal than the inner and outer layers, the displacing of the middle layer or fold about half the depth of the thread of the nut, so that one edge stands within, and the other without the inner and outer folds or layers, substantially as specified.

704,168. CIGAR OR CIGARETTE LIGHTING DEVICE. ROBERT WILSON, Newark, N. J., assignor to William Walker, Newark, N. J. Filed Nov. 5, 1901. Serial No. 81,812. (No model.)

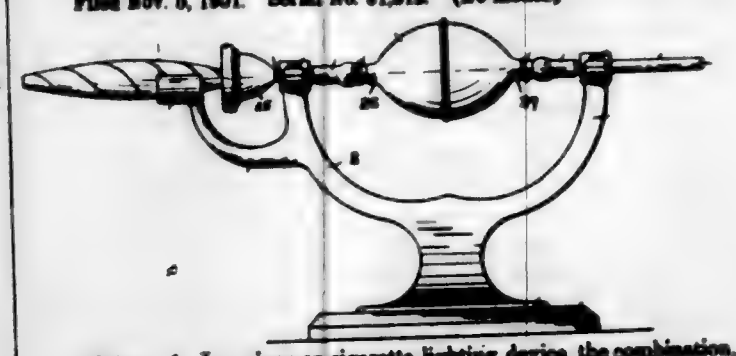

Claim.—1. In a cigar or cigarette lighting device, the combination, with a means of support for the cigar or cigarette, of a compressible air-bulb, an induction-valve at one end of said bulb, and an eduction-valve at the other end of said bulb, an eduction-tube connected with said eduction-valve, an induction-tube connected with the casing of said induction-valve, a funnel-shaped member on said induction-tube, and a perforated disk in said funnel-shaped member, all arranged for receiving the end of a cigar or cigarette and causing a motion of air through the same, substantially as and for the purposes set forth.

2. In a cigar or cigarette lighting device, the combination, with a means of support for the cigar or cigarette, of a compressible air-bulb, an induction-valve at one end of said bulb, and an eduction-valve at the other end of said bulb, an eduction-tube connected with said eduction-valve, an induction-tube connected with the casing of said induction-valve, a funnel-shaped member on said induction-tube, provided with a screw-thread, a screw-ring thereon, and a pair of perforated disks in said funnel-shaped member, the perforation in the one disk being larger than the perforation in the other disk, all arranged for receiving the end of a cigar or cigarette and causing a motion of air through the same, substantially as and for the purposes set forth.

3. In a cigar or cigarette lighting device, the combination, with a standard having a pair of upwardly-extending arms, and a bearing on each arm, of a support on one of said arms provided with a shelf for the arrangement thereon of a cigar or cigarette, a compressible air-bulb supported by the said bearings, and means connected therewith for causing a motion of air through the cigar or cigarette, substantially as and for the purposes set forth.

4. In a cigar or cigarette lighting device, the combination, with a standard having a pair of upwardly-extending arms, and a bearing on each arm, of a support on one of said arms provided with a shelf for the

arrangement thereon of a cigar or cigarette, a compressible air-bulb supported by the said bearings, an induction-valve at one end of said bulb, and an eduction-valve at the other end of said bulb, and a means of communication with the casing of said induction-valve for causing a suction of air through the cigar or cigarette, substantially as and for the purposes set forth.

5. In a cigar or cigarette lighting device, the combination, with a standard having a pair of upwardly-extending arms, and a bearing on each arm, of a support on one of said arms provided with a shelf for the arrangement thereon of a cigar or cigarette, a compressible air-bulb supported by the said bearings, an induction-valve at one end of said bulb, and an eduction-valve at the other end of said bulb, an eduction-tube connected with said eduction-valve, an induction-tube connected with the casing of said induction-valve, a funnel-shaped member on said induction-tube, and a perforated disk in said funnel-shaped member, all arranged for receiving the end of a cigar or cigarette and causing a suction of air through the same, substantially as and for the purposes set forth.

6. In a cigar or cigarette lighting device, the combination, with a standard having a pair of upwardly-extending arms, and a bearing on each arm, of a support on one of said arms provided with a shelf for the arrangement thereon of a cigar or cigarette, a compressible air-bulb supported by the said bearings, an induction-valve at one end of said bulb, and an eduction-valve at the other end of said bulb, an eduction-tube connected with said eduction-valve, an induction-tube connected with the casing of said induction-valve, a funnel-shaped member on said induction-tube, provided with a screw-thread, a screw-ring thereon, and a pair of perforated disks in said funnel-shaped member, the perforation in the one disk being larger than the perforation in the other disk, all arranged for receiving the end of a cigar or cigarette and causing a suction of air through the same, substantially as and for the purposes set forth.

7. In a cigar or cigarette lighting device, the combination, with a means of support for the cigar or cigarette, of a means for creating a suction and an induction-tube connected therewith, a funnel-shaped member on one end of said tube, a perforated flexible disk in said funnel-shaped member adapted to receive the end of a cigar or cigarette in its perforation, and means for securing said disk in position, substantially as and for the purposes set forth.

8. In a cigar or cigarette lighting device, the combination, with a means of support for the cigar or cigarette, of a means for creating a suction and an induction-tube connected therewith, a funnel-shaped member on one end of said tube, a perforated flexible disk in said funnel-shaped member adapted to receive the end of a cigar or cigarette in its perforation, means for securing said disk in position, and a screen in said funnel-shaped member, substantially as and for the purposes set forth.

9. In a cigar or cigarette lighting device, the combination, with a means of support for the cigar or cigarette, of a means for creating a suction and an induction-tube connected therewith, a funnel-shaped member on one end of said tube, a pair of perforated flexible disks in said funnel-shaped member, the perforation in one of said disks being larger than the perforation in the other disk, and means for securing said disks in position, substantially as and for the purposes set forth.

10. In a cigar or cigarette lighting device, the combination, with a means of support for the cigar or cigarette, of a means for creating a suction and an induction-tube connected therewith, a funnel-shaped member on one end of said tube, a pair of perforated flexible disks in said funnel-shaped member, the perforation in one of said disks being larger than the perforation in the other disk, means for securing said disks in position, and a screen in said funnel-shaped member, substantially as and for the purposes set forth.

11. In a cigar or cigarette lighting device, the combination, with a means of support for the cigar or cigarette, of a means for creating a suction and an induction-tube connected therewith, a funnel-shaped member on one end of said tube, a pair of perforated flexible disks in said funnel-shaped member, the perforation in one of said disks being larger than the perforation in the other disk, and the disk which is provided with the smaller perforation being formed with radially-extending slits, and means for securing said disks in position, substantially as and for the purposes set forth.

704,164. GAME APPARATUS. MARIE R. WRIGHT, New York, N. Y. Filed Mar. 12, 1902. Serial No. 97,913. (No model.)

Claim.—A game apparatus comprising a board with peripheral wall, divided into communicating compartments by partition-walls, corner-partitions to said board, a block-house in one of the compartments disposed diagonally with relation to the transverse partition-walls and its opposite faces parallel to the adjacent diagonal partition-walls respectively, a horizontally-disposed block mounted on the upper surface of the board and against the end wall thereof, and intermediate the adjacent ends of the partitions screen the corners of one end of the board, said end wall having a transverse slot and a central vertical slot, the latter cut in from the upper edge of the end wall, with its lower marginal edge flush with the upper horizontal surface of said block, as set forth.

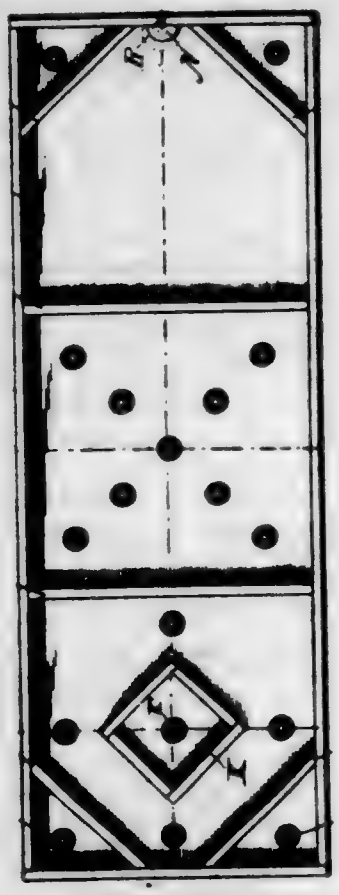

704,165. TELEGRAPHIC SAFETY DEVICE. SELDEN B. WRIGHT, Morton, N. Y. Filed Dec. 13, 1901. Serial No. 85,775. (No model.)

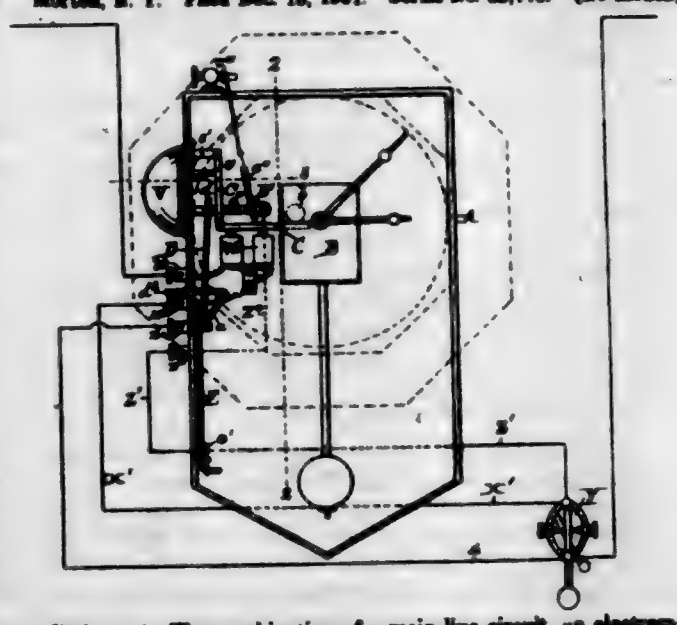

Claim.—1. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt-circuit around said key, a time mechanism, and a circuit-closer mechanism for said shunt-circuit comprising a movable part adapted when the main-line circuit is broken to connect with and be moved by said time mechanism, and a contact-piece in said shunt-circuit having an insulated portion and an uninsulated portion, and a movable arm adapted to be moved from said insulated portion to said uninsulated portion when said movable part is operated by said time mechanism, substantially as described.

2. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt-circuit around said key, a time mechanism, and a circuit-closer mechanism for said shunt-circuit comprising an armature for said electromagnet having a movement to and from said electromagnet and another movement, means for making connection between said armature and said time mechanism for moving the former when the main-line circuit is broken, and a circuit-closer in said shunt-circuit adapted to close the shunt-circuit by the second-mentioned movement of said armature, substantially as described.

3. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt-circuit around said key, a time mechanism, and a circuit-closer mechanism for said shunt-circuit comprising an armature for said electromagnet having a movement to and from the same and another movement, means for making connection between

said armature and said time device for moving the former, and a circuit-closer in said shunt-circuit consisting of an insulated section and an uninsulated section, and a movable arm normally making contact with said insulated section but when moved by the second movement of the armature to close the shunt-circuit by contact with said uninsulated section, substantially as described.

4. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt-circuit around said key, a time mechanism having a toothed wheel, and a circuit-closer mechanism for said shunt-circuit comprising a toothed armature for said electromagnet, a spring adapted to lift the teeth of the armature into contact with the teeth of the wheel when the circuit through the electromagnet is broken, a support for said armature permitting the movement of the same to and from the electromagnet and also another movement, a part in said shunt-circuit having an insulated section and an uninsulated section, and a movable arm in said shunt-circuit normally in contact with said insulated section and adapted to be moved to make contact with the uninsulated section to close the shunt-circuit by said second-mentioned movement of said armature, substantially as described.

5. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt-circuit around said key, a time mechanism, and a circuit-closer mechanism for said shunt-circuit comprising a movable part adapted when the main-line circuit is broken to connect with and be moved by said time mechanism, and a contact-piece in said shunt-circuit having an insulated portion and an uninsulated portion, a movable arm adapted to be moved from said insulated portion to said uninsulated portion when said movable part is operated by said time mechanism, and an alarm device adapted to be operated upon the same movement of said movable part, substantially as described.

6. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt-circuit around said key, a time mechanism and a circuit-closer mechanism for said shunt-circuit comprising an armature for said electromagnet having a movement to and from said electromagnet and another movement, means for making connection between said armature and said time mechanism for moving the former, a circuit-closure in said shunt-circuit adapted to close the shunt-circuit by the second-mentioned movement of said armature, and an alarm device adapted to be operated upon the same movement of said movable part, substantially as described.

7. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt circuit around said key, a time mechanism, and a circuit-closer mechanism for said shunt-circuit comprising an armature for said electromagnet having a movement to and from the same and another movement, means for making connection between said armature and said time device for moving the former, a circuit-closer in said shunt-circuit consisting of an insulated section and an uninsulated section, a movable arm normally making contact with said insulated section but when moved by the second movement of the armature to close the shunt-circuit by contact with said uninsulated section, and an alarm device adapted to be operated upon said second-mentioned movement of said armature, substantially as described.

8. The combination of a main-line circuit, an electromagnet and a key in said circuit, a normally open shunt-circuit around said key, a time mechanism having a toothed wheel, and a circuit-closer mechanism for said shunt-circuit comprising a toothed armature for said electromagnet, a spring adapted to lift the teeth of the armature into contact with the teeth of the wheel when the circuit through the electromagnet is broken, a support for said armature permitting the movement of the same to and from the electromagnet and also another movement, a part in said shunt-circuit having an insulated section and an uninsulated section, a movable arm in said shunt-circuit normally in contact with said insulated section and adapted to be moved to make contact with said uninsulated section to close the shunt-circuit by said second-mentioned movement of said armature, and an alarm device adapted to be operated upon said second-mentioned movement of said armature, substantially as described.

9. The combination of a main-line circuit, an electromagnet and a key in said circuit, a time mechanism, an alarm device, and means for causing the operation of said alarm device comprising a movable part adapted when the main-line circuit is broken to connect with and to be moved by said time mechanism, substantially as described.

10. The combination of a main-line circuit, an electromagnet and a key in said circuit, time mechanism, an alarm device and a mechanism for causing operation of said alarm device comprising an armature for said electromagnet having a movement to and from said electromagnet and another movement, means for making connection between said armature and said time mechanism for moving the former when the main-line circuit is broken and thereby putting said alarm device in operation by the last-mentioned movement of said armature, substantially as described.

11. The combination of a main-line circuit, an electromagnet and a key in said circuit, a time mechanism having a toothed wheel, an alarm device and means for putting said alarm device in operation comprising a toothed armature for said electromagnet, a spring adapted to lift the teeth of the armature into contact with the teeth of the wheel when the circuit through the electromagnet is broken, a support for said armature permitting the movement of the same to and from the electromagnet and also another movement and connections between said armature and said alarm device for putting the same in operation by the last-mentioned movement of said armature, substantially as described.

704,166. STREET-CAR FENDER. CASPER ZIMMERMAN, Chicago, Ill. Filed Feb. 19, 1902. Serial No. 94,806. (No model.)

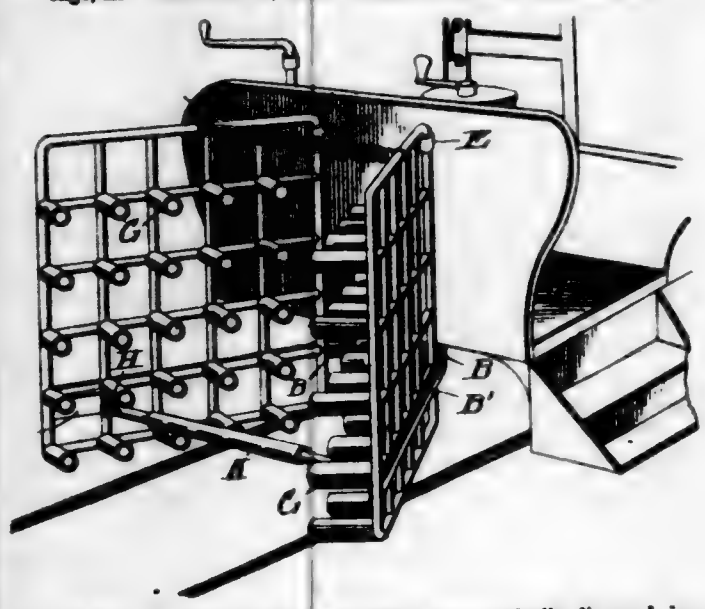

Claim.—1. A car-fender, comprising two vertically-disposed jaws pivotally mounted at the end of a car, buffers on the adjacent faces of the jaws, springs for normally holding the jaws closed, a bar having antifriction-wheels, pivoted one at each end of said bar, notched lugs, one mounted on each inner face of a jaw and adjacent to the lower edges thereof, a guard-plate adjacent to each notched lug, said antifriction-wheels designed to be held in said notched lugs and to contact with said guard-plates under pressure of the spring-actuated jaws, as set forth.

2. In combination with the platform and dashboard of a car, springs secured to the under face of the platform, vertically-mounted jaws having pivotal connection with the dashboard, the lower portions of said jaws fastened to said springs, a horizontally-disposed spring connecting the upper edges of the two jaws, flexible buffers on the adjacent faces of the jaws, a bar having antifriction-wheels pivotally mounted at the ends of said bar, notched lugs on the inner faces of the jaws, and designed to receive the antifriction-wheels, as set forth.

704,167. SHEET-METAL SEALING-CAP FOR BOTTLES. NATHANIEL B. ABBOTT, Baltimore, Md., assignor to Imperial Bottle Cap & Machine Company, Baltimore, Md., a Corporation of Delaware. Filed Feb. 6, 1902. Serial No. 92,885. (No model.)

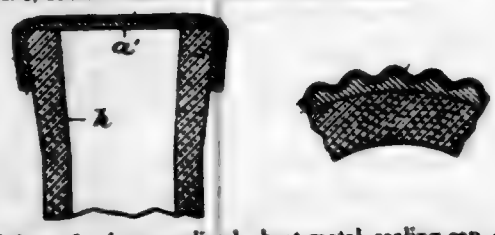

Claim.—1. A paper-lined sheet-metal sealing-cap composed of a metallic crown circular in outline with integral pendent annular flange, an adherent paper lining therefor coextensive with and conforming to the interior thereof, and longitudinal crimps or corrugations in the metal flange the inner ribs of which are embedded in the coinciding surface of the paper flange without penetrating through the same, said paper flange thereby retaining a smooth interior surface.

2. A paper-lined sheet-metal sealing-cap, composed of a sheet-metal portion having a circular crown with integral pendent annular flange, an adherent like-shaped paper lining therefor, a series of longitudinal crimps or corrugations in the sheet-metal flange, the inner ribs of which are embedded in the coinciding surface of the paper-lining flange without penetrating through the same, said concrete flange having a crimped exterior metallic surface and a smooth interior paper surface, and diametric ribs in the crown of the concrete cap of less length than the diameter thereof.

3. A paper-lined sheet-metal sealing-cap, composed of a sheet-metal circular crown with an integral pendent annular flange, a like-shaped paper lining therefor fitting closely within the interior of the metal cap and

its flange, said sheet-metal crown being provided with diametric depressions embedded in the surface of the interior paper crown, of less length than the full diameter of the crown.

4. In combination with a bottle, a paper-lined sheet-metal sealing-cap therefor consisting of an exterior metallic portion and an interior like-shaped coextensive paper-lining portion, each having a circular crown with integral pendent annular flange, the flange of the paper lining having a smooth interior surface, and the metallic portion of the concrete paper-lined flange having longitudinal corrugations entering without penetrating through or interrupting the smooth interior surface of the paper flange, and circumferentially compressed around the bottle-neck and against the interposed interiorly-smooth paper-lining flange.

5. In combination with a bottle, a paper-lined sheet-metal sealing-cap therefor, consisting of an exterior metallic portion and an interior like-shaped coextensive paper-lining portion, each composed of a circular crown with central diametric ribs and each having an integral pendent annular flange, the flange of the paper lining having a smooth interior surface, and the metallic portion of the concrete paper-lined flange having longitudinal corrugations entering without penetrating through or interrupting the smooth interior surface of the paper flange, and circumferentially compressed around the bottle-neck and against the interposed interiorly-smooth paper-lining flange, and a central section of both metal and paper of the crown of the concrete cap being forced into the bottle-mouth.

704,168. **MEANS FOR CASHING SALES ACCOUNTS.** FRANK E. ANDERSON, New York, N. Y. Filed Nov. 29, 1901. Serial No. 83,974. (No specimens.)

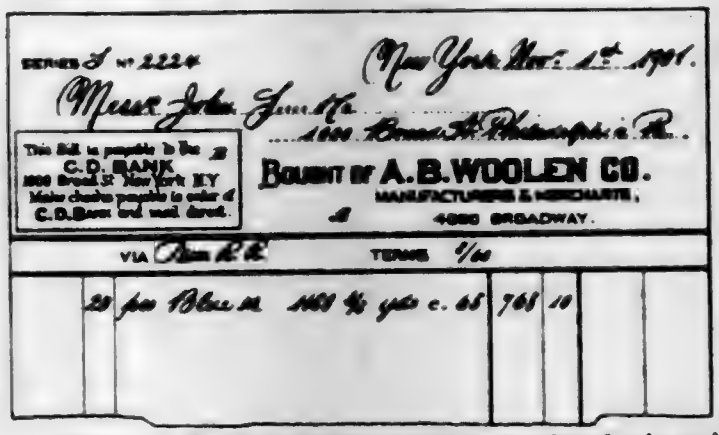

Claim.—1. The hereinbefore-described means adapted to be used in cashing sales accounts consisting of the combination of a bill for goods sold and delivered, a duplicate bill and an obligation of the seller of the goods on said duplicate bill consisting of an assignment of the debt, a guaranty of the *bona fides* of the sale, of the correctness of the account and that the seller will make good any claims or allowances or failure of payment and a statement on the original bill of sale that said bill is payable to a determined assignee.

2. The combination of a series of documents which together form a chain of bankable collateral, consisting of an original bill for goods sold and delivered made out to the buyer, which said original bill bears upon its face the statement that it is payable by check to the order of a certain bank; a duplicate of said bill, which duplicate contains an assignment of said account, together with a guaranty by the seller of the *bona fides* of the sale, of the correctness of the account, of the delivery and acceptance of the goods, and a further guaranty that the seller will make good any claims or deductions, or allowances made by the buyer from the amount of said bill, or his failure to pay the same when due; a certificate upon said duplicate sales account that the sale is insured under the terms of a specific policy of credit insurance referring thereto; a second assignment by the first assignee of said account to the bank to which the original bill is on its face made payable, which said second assignment contains a further guaranty by the first assignee that said sales account will be paid when due, said series of documents constituting a chain of guaranteed collateral upon which a loan is made by said bank.

3. The herein-described collateral security consisting of the combination of a bill of sale displaying a notice that the same is payable to a lender of money; a duplicate bill of sale containing an assignment of the account to an intermediary; a reassignment of the account and a guaranty of payment in full to the aforesaid lender of money.

4. The herein-described collateral security consisting of the combination of a bill of sale displaying a notice that the same is payable to a lender of money; a duplicate bill of sale containing an assignment of the account to an intermediary; a reassignment of the account with a certificate that the account is covered by insurance and a guaranty of payment in full to the aforesaid lender of money.

5. The hereinbefore-described means adapted to be used in cashing sales accounts consisting of the combination of an original and a duplicate bill of sale, the original displaying a notice that the account is payable to the concern which shall advance money thereon, the duplicate containing an assignment of the claim and a guaranty of its *bona fide* character and that the seller will settle allowances and claims made by the purchaser of the goods.

6. The hereinbefore-described means adapted to be used in cashing sales accounts consisting of the combination of an original and a duplicate bill of sale, the original displaying a notice that the account is payable to the concern which shall advance money thereon, the duplicate containing an assignment of the claim.

7. The hereinbefore-described means adapted to be used in cashing sales accounts consisting of the combination of an original and a duplicate bill of sale, the original displaying a notice that the account is payable to the concern which shall advance money thereon, the duplicate containing an assignment of the claim, a guaranty of its *bona fide* character and that the seller will settle allowances and claims made by the purchaser of the goods, and a certificate that the sales account is insured.

8. The hereinbefore-described means adapted to be used in cashing sales accounts consisting of the combination of an original and a duplicate bill of sale the original displaying a notice that the account is payable to the concern which shall advance money thereon, the duplicate containing an assignment of the claim and a certificate that the sales account is insured.

704,169. **POTATO-DIGGING MACHINE.** FRANK O. ANDREWS, Christchurch, New Zealand. Filed Oct. 25, 1901. Serial No. 80,007. (No model.)

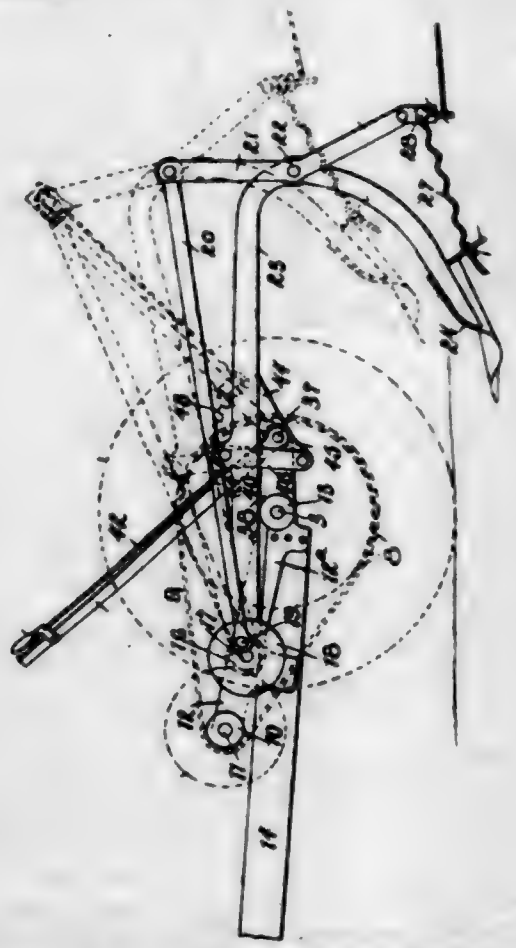

Claim.—1. In a machine for the purpose indicated the combination of a share-scoop arranged between and fixed to a pair of beams one upon each side of the implement said beams being pivotally supported at their forward ends upon a spindle journaled in a bracket carried upon the axle of a pair of traveling wheels, a grid consisting of a plurality of bars, each bar having a plain portion at one end, which works in a hole formed for its reception in the share-scoop, and an eye at the other end which is threaded upon a bar, said bar being connected to and extending between a pair of levers which are pivoted one upon each beam a rod connecting each lever with a crank-pin carried by a crank-disk the spindle of said crank-disks being journaled in bearings upon which the beams are pivoted, and means for imparting motion to said crank by the forward movement of the implement whereby jigging motion is communicated to said grid as specified.

2. In a machine for the purpose indicated the combination with a share-scoop having a downwardly-projecting flange along its rear end, of a grid formed of bars the upper rear ends of which are threaded upon a bar which is carried between pivoted levers, the lower end of each grid-bar passing through a hole in said flange and means for vibrating said levers whereby jigging motion is communicated to said grid as specified.

704,170. SAWING-MACHINE. PETER P. BATTE, Petersburg, Va. Filed Mar. 4, 1902. Serial No. 96,667. (No model.)

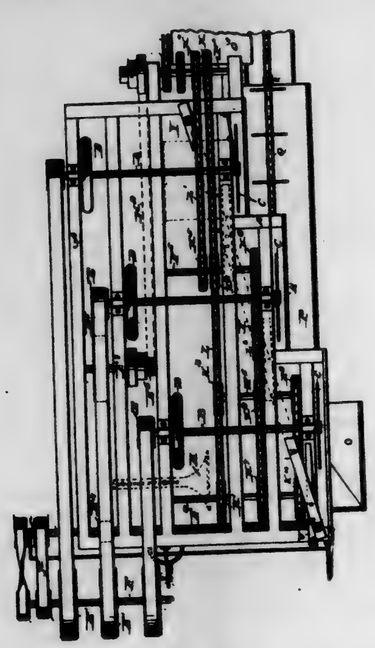

Claim.—1. The combination with devices adapted to convey sticks laterally of a series of parallel saws in position to act in succession cutting successive segments from the end of a stick conveyed by said devices, a table for supporting the saws, and means for driving the devices and saws; said conveying devices, table and driving means being arranged to permit each of the successive segments as it is cut from the stick to drop instantly below the saw which severed it.

2. The combination of a series of saws arranged to cut segments in succession from the end of a stick fed sidewise to them and mounted in a frame permitting each segment as it is severed to fall below the plane of the saw severing it, and means for so feeding sticks in succession to the saws.

3. The combination with a suitable open frame, of means for carrying a series of sticks transversely across the frame, saws arranged in succession in the path of said sticks to cut from each successive segments, and a carrier arranged below the plane of the saws in position to receive the segments or blocks as they fall in succession from the saws.

4. The combination with a series of saws arranged in position to cut segments or blocks in succession from the end of a stick, fed sidewise to the saws, carrying devices arranged to thus feed the sticks to the saws, and means for at will reversing the movement of said devices.

5. A series of saws arranged out of line and one in advance of another and mounted in a frame adapted to permit blocks at one side of any saw to fall below the latter, carriers arranged to feed long wood sidewise to the saws without obstructing such fall of blocks, and means for pressing the sticks firmly against said carriers while any saw acts upon it.

6. The combination with a series of saws arranged in position to cut blocks in succession from one end of sticks advancing sidewise to the saws and mounted in a frame adapted to permit each block to fall when severed, carriers driven independently of the saws and arranged for thus advancing a succession of sticks to the saws, and means operable from either side of the frame to reverse the movement of the carriers.

7. The combination with a table of devices arranged to convey sticks sidewise along the same, of parallel saws arranged at successively greater distances from that side from which the sticks are conveyed and in the path of such sticks; said table being narrowed by successive offsets, whereby each saw lies near the table's margin, to the end that each of the successive segments cut from the end of any stick by the several saws may drop instantly below the saw which severed it.

704,171. BOTTLE FILLING AND STOPPERING MACHINE. PICKLES BURNS, Shipley, England. Filed Mar. 22, 1901. Serial No. 52,416. (No model.)

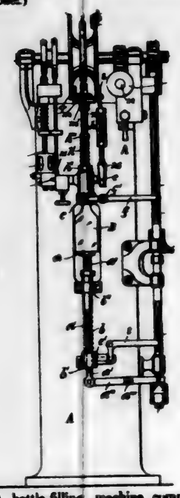

Claim.—1. A bottle-filling machine comprising adjustable supports for the bottle, a clamp for grasping the neck of the bottle, a vertically-moving shaft having a clutch for removing and replacing a stopper, said clutch comprising a horizontal pin at the end of the shaft, two clutching jaws pivoted on the pin and a spring coiled about said pin and having its ends bearing outwardly upon the portions of the jaws above the pin, substantially as herein specified.

2. A bottle-filling machine comprising a vertically-movable and yieldingly-supported spindle on which the bottle is adapted to rest, a lever connected with said spindle, means for intermittently and positively holding the lever to prevent upward movement of the spindle, a shaft above and in alinement with the spindle, means for alternately rotating said shaft in opposite directions, a clutch at the lower end of the shaft said clutch comprising a horizontal pin at the end of the shaft, two clutching-jaws pivoted on the pin and a spring coiled about said pin and having its ends bearing outwardly upon the portions of the jaws above the pin, substantially as herein specified.

3. A bottle-filling machine comprising a support for the bottle, a vertically-movable shaft having a stopper-clutch at its lower end, means for vertically moving said shaft, a pinion splined on said shaft, and a horizontal power-shaft above the stopper-shaft, said power-shaft having two disks provided with segmental gears adapted to alternately engage and rotate the pinion and the stopper-shaft, said pinion having a polygonal plate or flange, and the disks having surfaces at the ends of the segmental gears to bear on the straight sides of the polygonal flange to hold the pinion from turning when not engaged by the segmental gears.

4. A bottle-filling machine comprising a support for the bottle, a vertically-movable shaft having a stopper-clutch at its lower end, a spring for normally pressing said shaft upward, a pinion splined on said shaft, and a horizontal power-shaft above the stopper-shaft and having two disks provided with segmental gears adapted to alternately engage and rotate the pinion and the stopper-shaft, and a cam between the disks and adapted to bear on and depress the stopper-shaft against the action of its elevating-spring, said pinion having a polygonal plate or flange, and the disks having surfaces at the ends of the segmental gears to bear on the straight sides of the polygonal flange to hold the pinion from turning when not engaged by the segmental gears.

704,172. INSULATOR. JAMES E. CALVIN, Camptonville, Cal., assignor of one-half to Enos C. Cochran, Camptonville, Cal. Filed May 1, 1902. Serial No. 105,461. (No model.)

Claim.—1. An insulator consisting of a base having a longitudinally-slotted screw-threaded stem or post and cap screwing on over said stem and having its under face radially recessed.

2. An insulator consisting of a base having a slotted screw-threaded stem, a screw-cap fitting said stem, said cap having radial corrugations on its edge in which the wire to be held is engaged.

3. An insulator consisting of a base, a cylindrical screw-threaded stem thereon, an annular shoulder on said base, said stem having a slot adapted to receive a conductor, said shoulder having grooves coincident with said slot so that the conductor is maintained and supported in an essentially straight line, and a screw-cap fitting over said stem and having corrugations on its edge in which the conductor is adapted to rest and prevent the cap from unscrewing.

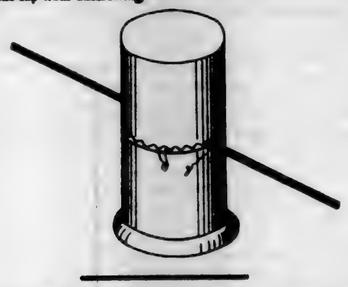

704,178. CAN-BODY-FORMING MACHINE. WILBER S. CASE, Haywards, Cal., assignor of one-half to Joseph H. Hunt, Oakland, Cal. Filed Dec. 12, 1901. Serial No. 85,562. (No model.)

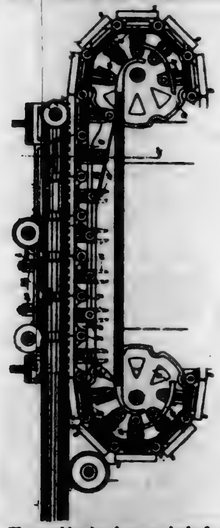

Claim.—1. The combination in a can-body-forming machine of a horn about which the can is formed, a channel made longitudinally in the horn, clamps, or jaws and devices for opening and closing them about the horn, means for holding the metal sheet within the jaws and bending it about the horn with the edges overlapping and crossing the channel, and a folding edge depending into the channel, beneath which the overlapping edges of the blank are carried and folded into the channel.

2. In a can-body-forming machine an endless traveling carrier, said carrier consisting of a series of flexibly-connected tables, with surfaces adapted to receive the blanks, folding-clamps centrally pivoted beneath the upper surfaces of the tables, open channels formed in the tables in line above the clamps, mechanism by which the clamps are closed about their pivots, and a stationary horn about which the blanks are folded by the clamps.

3. The combination in a can-body-forming machine of an endless traveling carrier composed of a series of flexibly-connected channeled tables having surfaces adapted to receive the blanks and upturned ledges at the sides with inclined surfaces between said ledges and the flat central portion of the table, rollers with the peripheries beveled to travel upon said inclines, a horn located above the line of travel of the tables, clamps centrally hinged beneath the upper surface of each table and mechanism by which the clamps are closed to fold the blank about the horn.

4. The combination in a can-body-forming machine of a series of flexibly-connected channeled tables with inclined edges and upturned guides to receive the blanks, rollers having the peripheries beveled to bend the edges of the blanks between said rollers and the inclines, a horn located above and in the line of travel of the tables, clamps hinged beneath the upper surfaces of the tables, and mechanism by which they are actuated to fold the blanks about the horn, a longitudinal groove in the top of the horn over which the edges of the blank are lapped, and a folding device beneath which said overlapping edges are passed and by which they are bent into the groove.

5. The combination in a can-body-forming machine of an endless traveling carrier composed of a series of flexibly-connected open-centered tables adapted to receive the blanks, a horn located above the line of travel of the carrier, folding jaws or clamps centrally hinged below the upper surface of each table, vertically-guided slidable blocks, links connecting said blocks with the jaws, and stationary inclines over which the blocks pass during the forward movement of the carriers and by which the jaws are closed.

6. The combination in a can-body-forming machine of an endless traveling carrier composed of a series of flexibly-connected open-centered tables adapted to receive and carry the blanks, folding jaws or clamps centrally hinged below the upper surface of the tables, a horn located above the line of travel of the carrier, vertically-guided independently-slidable blocks, links connecting each of said blocks with one of the jaws, and inclined surfaces of different pitch, over which the jaw-actuating blocks move whereby the jaws are closed successively.

7. The combination in a can-body-forming machine of an endless traveling carrier composed of flexibly-connected tables, adapted to receive and advance the blanks, centrally-hinged jaws or clamps on each table, a horn located above the line of travel of the carrier with a longitudinal groove upon the upper side, having a shallow depression upon one side of said groove, vertically-guided slides connected with the folding-jaws, and cams or inclines of different pitch over which the slides pass, whereby one jaw moves in advance of the other to fold one edge of the blank across the groove and into the depression of the horn, with the succeeding edge overlapping said first edge.

8. The combination in a can-body-forming machine of an endless traveling carrier composed of flexibly-connected tables adapted to receive and advance the blanks, a horn located above the line of travel of the carrier having a groove made in its upper surface, and a shallow depression made upon one side of said groove, folding-jaws centrally hinged beneath the upper surface of each table, mechanism whereby said jaws are actuated, one in advance of the other whereby one edge of the blank is folded across the groove into the depression of the horn, and the other edge is folded above the first one, and just above the groove, and a wheel or folder located above the groove and acting to bend the overlapping edges of the blanks into the groove as they pass beneath the folder.

9. The combination in a can-body-forming machine of an endless traveling carrier composed of flexibly-connected tables adapted to receive and advance the blanks, curved jaws centrally hinged beneath the upper surface of the tables, mechanism by which said jaws are closed, one in advance of the other, a horn located above the line of travel of the carrier about which here the blank is closed by the jaws, said horn having a groove longitudinal upon its upper side with a depression at one side of the groove whereby one edge of the blank is carried across the groove to lie in the depression, and the other edge is laid upon the first-named portion and above the groove, and a roller journaled above the groove with its edge adapted to bend the overlapping edges into the groove and form a double bend of the inner fold, and a single bend of the outer one embraced by the two sides of the inner fold.

10. The combination in a can-body-forming machine of an endless traveling carrier composed of flexibly-connected tables adapted to receive and advance the blanks, a horn located above the line of travel of the carrier having a groove formed in its upper side, the first portion of said groove being essentially radial to the axis of the horn and the subsequent portion being gradually turned in a spiral manner until it is brought to the surface as above, jaws hinged to each of the tables, mechanism by which said jaws are moved to fold the blank about the horn with one of its edges in advance of the other, and overlapping the groove on the upper side of the horn and the other edge laid above said groove, a wheel journaled above and adapted to fold the overlapping edges into the groove of the horn so that the double bend of one edge inclosed the single bend of the other, projections upon the table and upon the folding-jaws, channels formed in the sides of the horn into which the projections enter whereby the advance of the carrier and jaws impels the folded blank along the horn and causes the interlocked edges to follow the changing direction of the groove into which they are folded.

11. The combination in a can-body-forming machine of an endless traveling carrier composed of flexibly-connected tables adapted to receive the blanks from which the body is to be formed, a horn located above the line of travel of the carrier having a groove formed in its upper side, the first portion of said groove being essentially radial to the axis of the horn, and the subsequent portions being gradually turned in a spiral manner so that the bottom of the groove finally arrives at the surface of the horn,

clamps or jaws hinged centrally to each table, mechanism by which the jaws are closed as the tables advance and the blank is folded about the horn with one edge crossing the groove and the other overlapping it and terminating in line above the groove, a wheel journaled above the groove adapted to press the overlapping edges of the blank into the groove so that the inner edge has a double bend inclosing the single bend of the outer edge, lugs projecting from the table and from the folding-arms so as to contact with the rear edge of the blank when folded, channels made in the horn in the line of travel of the lugs whereby the folded blank is evenly advanced from one end to the other of the horn.

12. The combination in a can-body-forming machine of an endless traveling carrier composed of flexibly-connected tables adapted to receive and advance the blanks, jaws hinged beneath the upper surface of said tables, mechanism by which said jaws are closed and a blank folded during the forward movement of the carrier, a horn located above the carrier having a groove in its top about which horn the jaws fold the blank with one edge in advance of the other and overlapping the groove, a wheel journaled above the horn so that its periphery acts to bend the overlapping edges of the blank into the groove, and a pressure plate or bar beneath which the partially-united edges pass after leaving the roller.

13. The combination in a can-body-forming machine of an endless traveling carrier composed of flexibly-connected tables adapted to receive and advance the blanks, jaws hinged beneath the upper surface of said tables, mechanism by which said jaws are closed and a blank folded during the forward movement of the carrier, a horn located above the carrier, having a groove in its top about which horn the jaws fold the blank, with one edge in advance of the other and overlapping the groove, a wheel journaled above the horn so that its periphery acts to bend the overlapping edges of the blank into the groove, a pressure plate or bar beneath which the partially-united edges pass after leaving the roller, and a roller journaled above the terminal end of the groove whereby the interlocked seam is compressed and finished.

704,174. AUTOMATIC STOP-SIGNAL FOR RAILWAYS. THOS. P. CHALONER, New York, N.Y. Filed May 14, 1902. Serial No. 107,203. (No model.)

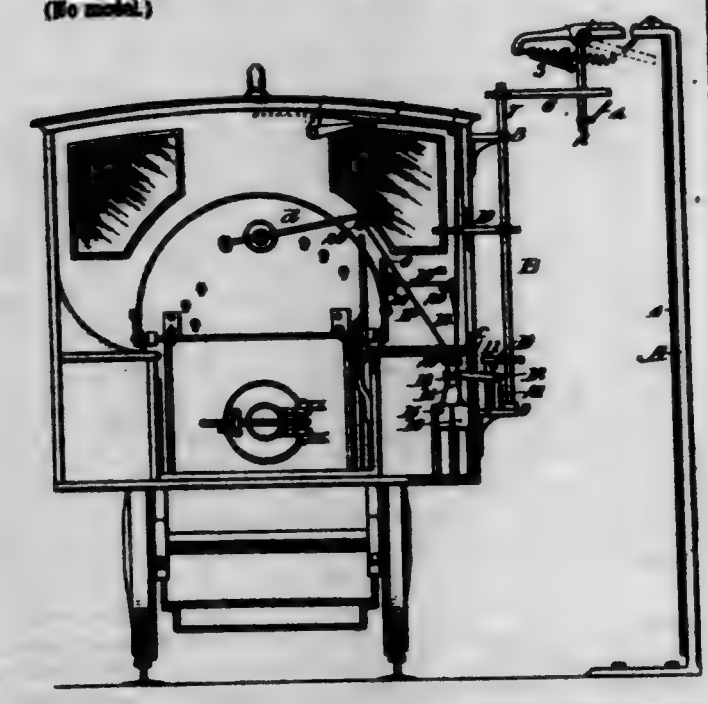

Claim.—1. The combination with the throttle-lever, in a locomotive, of a tappet-actuated arm, a vertical rock-shaft from which said arm projects horizontally outward, and provided with a latch-engaging arm, a latch projecting normally in the path of the arm last named, a horizontal lever normally engaged with said latch, a ring normally engaged with said horizontal lever, a weight normally suspended from said ring, and a connection between said weight and said throttle-lever, arranged to actuate the throttle-lever for shutting off the steam when said weight is liberated by the automatic retraction of said latch.

2. The combination with an air-brake lever, in a locomotive, of a tappet-actuated arm, a vertical rock-shaft from which said arm projects horizontally outward, and provided with a latch-engaging arm, a latch projecting normally in the path of the arm last named, a horizontal lever normally engaged with said latch, a ring normally engaged with said horizontal lever, a weight normally suspended from said ring, and a connection between said weight and said air-brake lever arranged to actuate said lever so as to apply the brake by means of said weight when said latch is automatically retracted.

3. The combination with a whistle-lever, in a locomotive, of a tappet-actuated arm, a vertical rock-shaft from which said arm projects horizontally outward, and provided with a latch-engaging arm, a latch projecting normally in the path of the arm last named, a horizontal lever normally engaged with said latch, a ring normally engaged with said horizontal lever, a weight normally suspended from said ring, and a connection between said weight and said whistle-lever arranged to actuate said lever and start the whistle by means of said weight when said latch is automatically retracted.

4. The combination, substantially as hereinbefore specified, of a tappet-actuated arm, a vertical rock-shaft turned by said arm, a latch-retracting arm carried by said rock-shaft, a horizontal lever normally engaged by said latch, a pair of rings normally engaged with said horizontal lever, a pair of weights connected with said rings respectively, and cords, leading from said weights, adapted respectively to operate the throttle-lever and the air-brake lever within the cab of a locomotive.

5. The combination, substantially as hereinbefore specified, of a tappet-actuated arm, a vertical rock-shaft turned by said arm, a latch-retracting arm carried by said rock-shaft, a horizontal lever normally engaged by said latch, a pair of rings normally engaged with said horizontal lever, a cord extending from one of said rings and adapted to be connected with the throttle-lever of the locomotive, and a bifurcated cord attached to the other ring and arranged for connection with the air-brake lever and whistle-lever of the locomotive.

6. The combination with the cab of a locomotive of a tappet-actuated arm projecting therefrom, a rock-shaft actuated by said arm, a latch-retracting arm carried by said rock-shaft, a spring-retracted latch projecting normally in the path of said latch-retracting arm, a horizontal lever normally engaged by said latch, a ring normally engaged with said horizontal lever, a weight suspended from said ring, and a cord extending from said weight to a safety device carried by the locomotive.

7. The combination with the cab of a locomotive of a tappet-actuated arm projecting therefrom, a rock-shaft actuated by said arm, a latch-retracting arm carried by said rock-shaft, a spring-retracted latch projecting normally in the path of said latch-retracting arm, a horizontal lever normally engaged by said latch, a pair of rings normally engaged with said horizontal lever, a pair of weights suspended from said rings, and cords extending from said weights respectively and adapted to operate safety devices carried by the locomotive, substantially as hereinbefore specified.

704,175. HORSESHOE. FRED W. CLINE, Chicago, Ill., assignor of one-half to A. G. Thompson, Chicago, Ill. Filed Aug. 19, 1901. Renewed June 11, 1902. Serial No. 111,139. (No model.)

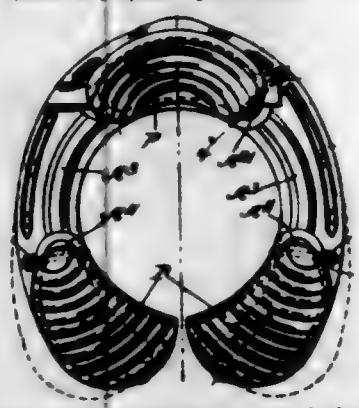

Claim.—1. A horseshoe comprising a metal body or base, having cavities for heel and toe calks, and undercut recesses or apertures at a point in the periphery of each of said cavities; removable calks adapted to be lodged in the cavities and having projections adapted to enter said undercut recesses, the shoe-base having the bounding walls or flanges of said cavities at points opposite said undercut recesses respectively, pierced in position to admit a retaining device to prevent withdrawal of the projections from the recesses respectively.

2. In a horseshoe, in combination with the base A, having the cavities for the calks provided with undercut recesses at one end, calks adapted to be lodged in said cavities, having lugs to enter the recesses; the flanges or bounding walls of the cavities at the opposite ends being pierced to receive a retaining-pin, and the web of the shoe outside the wall having a depression to lodge the head of such pin; in combination with a headed pin inserted through said flanges in position to retain the calks, and having its head lodged in said depression.

3. A horseshoe, having its body or base provided with a cavity for a toe-calk, such cavity having its forward wall recessed or undercut, in combination with a calk having a rigid base adapted to enter the cavity, provided with a flange or head adapted to enter the undercut recess; the body of the shoe being apertured transversely back of the calk, and a key inserted endwise through the edge of the shoe, behind the calk, to hold the same engaged in the undercut recess.

4. A horseshoe, having at the forward side a cavity for a toe-calk, whose forward wall is forwardly convex and undercut, in combination with a calk adapted to enter the cavity and having its forward edge curved to conform with the outline of the cavity, and provided with a head or flange entering the undercut recess of the forward wall of the cavity, and a key inserted transversely through the shoe, holding the calk, preventing its direct withdrawal from the recess.

5. A horseshoe, having the heel-calks corrugated in concentric arcs convex rearward about centers at the opposite sides of the shoe.

704,176. BAG-FILLING MACHINE. JAMES L. DUGGINS, Dunkirk, N. Y. Filed Aug. 19, 1901. Serial No. 72,698. (No model.)

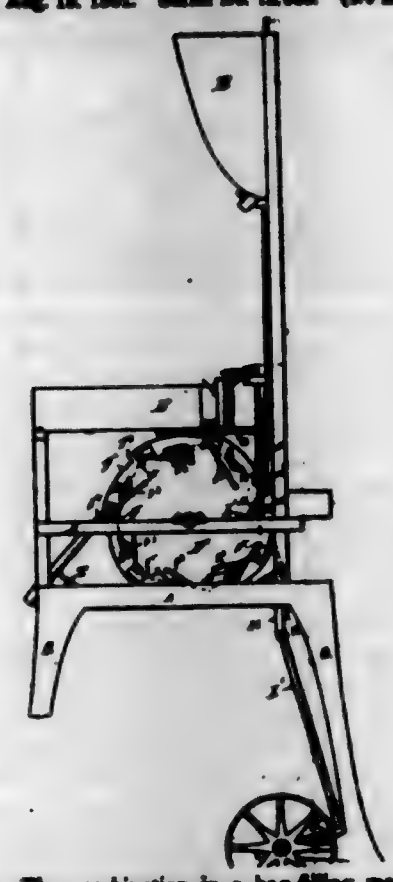

Claim.—1. The combination in a bag-filling machine, of a bag-holder, a rotary carrier, a cementing apparatus, and a reciprocating plunger adapted to deliver bags from the bag-holder upon the rotary carrier, and cooperating with and actuating the rotary carrier, substantially as set forth.

2. The combination in a bag-filling machine, of a bag-holder, a rotating bag-carrier, flattened peripheral faces on said carrier adapted to receive bags from the bag-holder, a cement-carrier adapted to deposit cement on bags on the rotary carrier, bag-flap-folding mechanism on said rotating carrier, and a hollow reciprocating plunger mechanism, cooperating with and actuating said mechanism, substantially as set forth.

3. The combination in a bag-filling machine, of a bag-holder, a follower automatically moving bags along therein, a rotary carrier under said bag-holder adapted to receive bags removed from the bag-holder, a cementing mechanism in front of said carrier adapted to deposit cement on bags on the carrier, bag-flap folders on the carrier adapted to fold down bag-flaps after the bags are cemented, a hopper above the bag-holder, a reciprocating frame carrying a hollow plunger, adapted to remove bags from the bag-holder, deliver them upon the carrier and deposit a predetermined amount of the contents of the hopper therein, and means on the reciprocating frame and plunger for operating the carrier and the cementing apparatus, substantially as set forth.

4. The combination in a bag-filling machine of a bag-holder, means for moving bags forward therein, a carrier, means thereon for receiving bags and folding down the flaps thereof, a cement-receptacle, means for delivering cement therefrom to a bag on the carrier, a hopper, a reciprocating frame carrying a hollow plunger operating in said hopper, and also provided with means for removing a bag from the bag-holder and depositing it upon the carrier, means on said reciprocating mechanism for rotating the carrier and operating the flap-folding mechanism thereon, and means on said reciprocating parts for operating the cementing apparatus, substantially as set forth.

5. The combination in a bag-filling machine, of a frame having an upright extension thereon, a bag-holder, a follower therein for moving the bags forward, means for actuating said follower, a carrier, faces thereon for receiving bags, spring-actuated flap-holders on said carrier, stops on said carrier, spring-actuated latches on the frame engaging the flaps on the carrier, a cement-receptacle in front of the carrier, a cement-conveying apparatus therein, a reciprocating frame operating vertically in said machine-frame and the upright extension thereon, mechanism for actuating said reciprocating frame, a hopper on the upright extension of the frame, a hollow plunger carried by said reciprocating frame, and communicating with said hopper, cut-off valves in said hollow plunger, a lip on the lower end of the plunger adapted to enter the mouth of a bag in the end of the bag-holder, arms on said reciprocating mechanism adapted to engage and rotate the carrier, and operate the bag-flap folders thereon, mechanism on the reciprocating frame adapted to disengage the latches from the stops on the carrier, and also for operating the cement-carrier, substantially as set forth.

6. In a bag-filling machine, a rotary carrier, peripheral faces thereon adapted to receive a bag, spring-actuated bag-flap-folding mechanism on said rotary carrier, means for engaging and opening the bag-flap folders, and means for actuating said rotary carrier, substantially as set forth.

7. In a bag-filling machine, a rotary carrier, having faces thereon adapted to receive and retain a bag when filled spring-actuated bag-flap-closing mechanism thereon, curved arms on said bag-flap closers, a chute at the rear of the carrier resting thereon having slots therein adapted to engage the curved arms on the bag-flap closers and release the bags from the carrier, substantially as set forth.

704,177. ELECTRICAL APPARATUS FOR OPERATING RAILWAY SWITCHES AND SIGNALS. THÉOPHILE DUCRETET, Paris, France. Filed Sept. 22, 1900. Serial No. 691,597. (No model.)

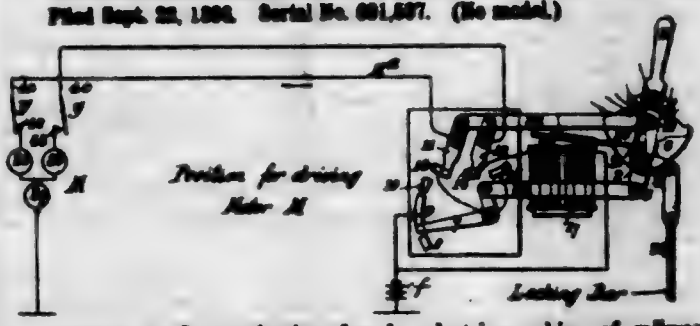

Claim.—1. In mechanism for the electric working of railway-switches, a transmitting-commutator, a lever for working it, pawls on said lever acting in opposite directions, a current-controlled bolt, and means for projecting said bolt into the path of said pawls in case of accidental throwing of the switch.

2. In mechanism for the electric working of railway-switches, a transmitting-commutator, a lever for working it, pawls on said lever acting in opposite directions, in combination with a frame having notches adapted to receive said pawls, and means for closing said notches to permit the passage of said pawls in the normal operation of the mechanism.

3. In mechanism for the electric working of railway switches and signals, a transmitting-commutator, a lever for working it, pawls on said lever acting in opposite directions, notches or steps on the frame adapted to receive said pawls, in combination with means for preventing engagement of the notches and pawls when moved in the forward direction and permitting engagement thereof in the opposite direction.

4. In mechanism for the electric working of railway-switches, a transmitting-commutator, a lever for working it, pawls on said lever acting in opposite directions, a frame having notches or steps adapted to receive said pawls, and a cam on said frame with two notches differing in position from those on the frame, the said cam adapted to disengage the pawl from the notch or step for the movement of the lever forward, and to permit the pawl to engage the notch or step for the back movement.

5. In mechanism for the electric working of railway-switches, a transmitting-commutator, a lever for working it, pawls on said lever acting in opposite directions, a frame having notches or steps thereon, a cam with two notches adapted to be brought into coincidence with the notches on the frame, and two shoulders on said cam in the path of said pawls whereby the cam is moved by the lever to the ends of its stroke.

6. In mechanism for the electric working of railway-switches, a transmitting-commutator, a lever, connections between said commutator and said lever whereby the movement of the latter controls the former, an electric bolt controlling the lever, two pawls on the lever, and a notched and shouldered cam adapted to be operated by said lever.

7. In mechanism for the electric working of railway-switches, a transmitting-commutator, a lever for working it, an electric bolt controlling the lever, two pawls on the lever, a notched and shouldered cam adapted to be operated by said lever, a reversing-switch adapted to be operated by said cam, and a motor attached to said railway-switches, in combination with a transmitting-circuit from said switch to said motor.

8. In mechanism for the electric working of railway-switches, a transmitting-commutator, a lever for working it, an electric bolt controlling the lever, two pawls on the lever, a notched and shouldered cam adapted to be operated by said lever, and a reversing-switch adapted to be operated by said cam, in combination with a transmitting-circuit and a circuit adapted to operate the electric bolt.

9. In mechanism for the electric working of railway-switches, a wheel, a crank-roller thereon, a slotted lever for locking and moving the switch, the wheel operating in said slot, a worm and electric motor for operating said wheel, and a commutator having two springs, in combination with a rod attached to the moving part of the switch, and means connected to said rod whereby one or the other of the springs is strained by the movement of the switch.

10. In mechanism for the electric working of railway-switches, a wheel, a crank-roller thereon, a slotted lever, the roller operating in said slot, a worm and electric motor for operating said wheel, a commutator having two springs, and means for straining said springs by the movement of the switch, in combination with a releasing-lever and two studs on the wheel whereby the commutator is released when the switch is fully moved and locked.

11. In mechanism for the electric working of railway-switches, a wheel, a crank-roller thereon, a worm and electric motor for operating said wheel, a slotted lever operated by said roller and connected to said switch, a commutator having two springs, means for straining said springs by the movement of the switch, a releasing-lever for said springs, two studs on the wheel adapted to operate said lever, and a controlling apparatus and transmitting-circuit leading therefrom, the commutator being adapted to connect the motor and the transmitting-circuit.

12. In mechanism for the electric working of railway-switches, a wheel, a crank-roller thereon, a worm and an electric motor for operating said wheel, a slotted lever operated by said roller and connected to said switch, a commutator having two springs, means for straining said springs by the movement of the switch, a releasing-lever for said springs, two studs on the wheel adapted to operate said lever, a controlling apparatus, a transmitting-circuit leading therefrom, the commutator being adapted to connect the motor with said transmitting-circuit, a safety device, and means whereby the motor is connected to the transmitting-circuit during its action, and after its action is automatically put in circuit with said safety device.

13. In mechanism for the electric working of a group of simultaneously-acting switches, controlling apparatus, motors connected directly to said switches, transmitting-circuits connecting said controlling apparatus and said motors and comprising two wires, and a relay in each of said wires controlling the circuit of the other wire.

14. In mechanism for the electric working of a group of simultaneously-acting switches, central apparatus, local motors, line-wires connecting said apparatus, and a relay in each of the line-wires, in combination with a contact-breaker in each motor of the group, and an electromagnet in series with said contact-breakers, the electromagnet being so arranged as to lock the relay in one of its positions so that the relay is only released when all the contact-breakers in series close the circuit.

15. In mechanism for the electric working of railway-switches, a safety device and a transmitting-circuit comprising two line-wires, in combination with two differential circuits, an electromagnet in one of said differential circuits and a relay in the other, means for connecting said differential circuits to said line-wires and means connected with said electromagnet and said relay for controlling said safety device.

16. In mechanism for the electric working of railway-switches, a safety device, a transmitting-circuit comprising two line-wires and two differential circuits, an electromagnet in one of said differential circuits and a relay in the other, means for connecting said differential circuits to said line-wires, means connected with said electromagnet for controlling said safety device, and means connected with said relay for controlling the current through said electromagnet, so that any break or equilibrium in the current of the differential circuits works the safety device.

704,178. METALLIC-HUB-DRILLING MACHINE. GEORGE H. EVERSON, Pittsburg, Pa. Filed May 20, 1901. Serial No. 61,168. (No model.)

Claim.—1. The combination of radially-disposed drill-spindles arranged in different planes, levers operatively connected to the spindles and fulcrumed in correspondingly-different planes, lever-actuating mechanism, and connections arranged in different planes between said actuating mechanism and the levers, the difference in plane of said connections corresponding to the difference in plane of the lever-fulcrums and of the drill-spindles, substantially as shown and described.

2. The combination of a circular series of horizontal spindles, a circular series of vertical levers operatively connected to the spindles for moving them longitudinally, a vertically-movable spider, a toggle-lever connection between each lever and spider, and means for adjusting the spider vertically, substantially as shown and described.

3. In a hub-drilling machine, the combination of drilling mechanism, and a hollow hub-holder adapted to embrace and rigidly confine the hub while being drilled, substantially as shown and described.

4. The combination of a frame formed with a central depression, a hollow hub-embracing hub-holder removably centered in the depression, and hub-drilling mechanism, substantially as shown and described.

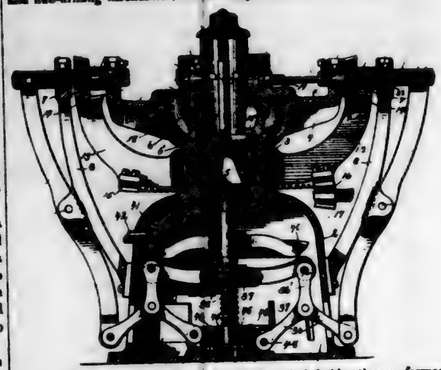

5. The combination of a frame, a hollow hub-holder thereon formed with an internal hub-supporting flange, tool-apertures in the holder, and hub-drilling mechanism, substantially as shown and described.

6. The combination of a frame, a hollow hub-holder having a radial series of tool-guiding passages, and a radially-arranged series of tools operative through said passages, substantially as shown and described.

7. The combination of a frame, a hollow hub-holder having a radial series of tool-guiding passages, means for sustaining a hub within the holder with the points to be drilled in line with said tool-passages, and tools operative through said passages, substantially as shown and described.

8. In a hub-drilling machine, the combination of drilling mechanism, and a removable hollow hub-holder adapted to embrace and rigidly secure the hub while being drilled, substantially as shown and described.

9. In a hub-drilling machine, the combination of drilling mechanism, a hub-holder, and a hub-holder receiver adapted to confine holders for hubs of different sizes, substantially as shown and described.

10. In a drilling-machine, the combination of a horizontal series of radially-arranged drill-spindles, a corresponding series of vertical levers operatively connected at their upper ends to the spindles and fulcrumed between their ends, a vertically-movable device arranged centrally between the lower ends of said levers, and toggle mechanism connecting said device and lever ends, substantially as shown and described.

704,179. DOOR-BOLT. EMILE FAGES, Paris, France. Filed Apr. 8, 1901. Serial No. 101,919. (No model.)

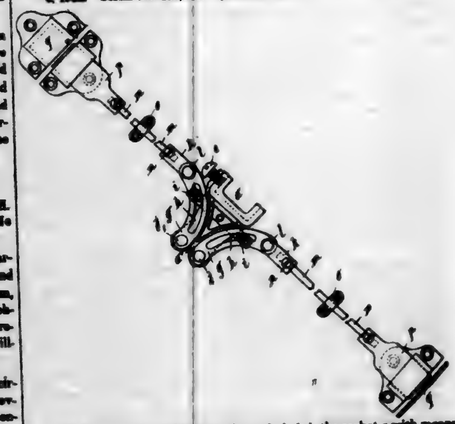

Claim.—1. In combination, the main bolt *b*, the socket *a* with means for clamping it to said main bolt, the sliding segments having their inner ends pivoted to said bolt, guiding means for said segments, supplemental bolts at the top and bottom of the door, and connections from said supplemental bolts to the outer ends of said segments, substantially as described.

2. In combination, the main bolt *b*, the socket *a* with means for clamping it to said bolt, the sliding segments having their inner ends pivoted to said bolt, stationary pins engaging curved slots in the segments, supplemental bolts at the top and bottom of the door, and connections from said supplemental bolts to the outer ends of the segments, substantially as described.

704,180. LOCK. ALAN B. PEDDINGHAUS, New York, N. Y. Filed Apr. 22, 1901. Serial No. 56,557. (No model.)

Claim.—1. In a lock, the combination of a pair of bolts or latches, one behind the other, one a main latch and the other an auxiliary member or bolt; a shiftable tumbler for engaging the bolt; and means carried by the auxiliary bolt and movable between the tumbler and main latch for positively moving and holding the tumbler out of engagement with the main latch when said auxiliary bolt is in its protracted position.

2. In a lock mechanism, the combination with a latch or bolt, of a locking-tumbler for locking said latch and comprising a pivoted lever having a flanged end; and an auxiliary bolt having a laterally-extending part movable between the flanged end of said tumbler and the latch and effective when in its protracted position to interfere with the locking of said latch by said tumbler, and when shifted into a retracted position to permit the locking of said latch.

3. In a lock, the combination with a casing, of a knob-spindle carried thereby having a tumbler-engaging surface; a pair of spring-controlled latches or bolts, one behind the other, one a main latch connected with said spindle for movement thereby and the other an auxiliary bolt; a spring-controlled tumbler having a part adapted to engage said main latch and lock the latch in a protracted position, said auxiliary bolt having a part movable between the tumbler and main latch for positively moving and holding the tumbler out of engagement with the main latch when said auxiliary bolt is in its protracted position, the organization being such that on the rotation of the knob-spindle or the protraction of the auxiliary bolt the tumbler will be disengaged from the main latch.

4. In a lock mechanism, the combination with a tubular casing, of a knob-spindle projecting transversely thereof and carrying a cam; a main bolt or latch carrying a spiral spring and connected with said spindle by a chain and having a stop-face; a tumbler pivotally connected to said casing at one side of the spindle and having a flanged end at the other side of said spindle effective to engage the stop-face of said latch; a spring for throwing said tumbler into locking position, the cam on the operation of the knob being effective to lift said tumbler from the latch; an auxiliary bolt mounted in said casing and carrying a spiral spring, said bolt having a laterally-projecting part provided with a beveled end working intermediate the flanged end of said tumbler and the latch and effective in one position to permit the locking of said latch by the tumbler, and in another position to lift said tumbler free of the latch.

704,181. METHOD OF BUILDING DAMS. ARTHUR D. FOOTE, Grass Valley, Cal. Filed Mar. 17, 1902. Serial No. 98,501. (No model.)

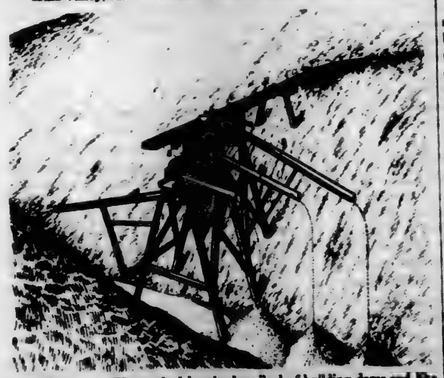

Claim.—1. The method herein described of building dams and like structures consisting in first separating and grading the material from the coarser to the finer while said material is in motion, and then depositing the separated materials successively from the front to the back of the structure.

2. The method herein described of building dams and like structures, consisting in first separating associated material into its coarser and successively finer elements, then delivering these separated materials by chutes or the like to form successive embankments, commencing with the coarser and terminating with the finer material.

704,182. DISINFECTING APPARATUS. WILLIAM H. FRAHER, Philadelphia, Pa. Filed May 7, 1901. Serial No. 60,121. (No model.)

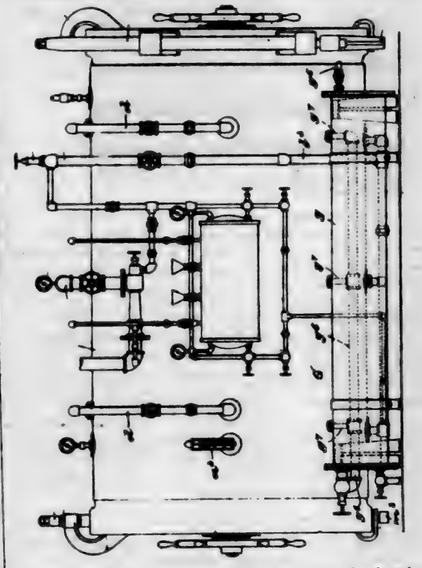

Claim.—1. In a disinfecting or sterilizing apparatus, a chamber wherein the articles to be treated are adapted to be introduced, a jacket surrounding said chamber, a valve-controlled steam-pipe leading from a source of steam-supply directly to the base of the jacket, a valve-controlled pipe leading from the jacket above the base of said jacket to the upper portion of the chamber and constituting the sole means for introducing steam into said chamber, a box open at one end to the external atmosphere, a steam-coil supplied from the source of steam-supply and inclosed in said box, a pipe leading from the closed end of said box and entering said chamber, said pipe and box constituting the sole means for introducing hot air into said chamber, and an exhaust apparatus connected directly with the chamber and operated by steam from the source of steam-supply.

2. In a disinfecting or sterilizing apparatus, a chamber, wherein the articles to be treated are adapted to be introduced, a curved hood following closely the interior of the chamber and arranged within and some distance from the top or roof of said chamber, said hood, consisting of a central curved upper section and two end curved sections concentric with and overlapped by said central section, and means for introducing steam to the chamber directly above the upper curved section.

704,188. ATTACHMENT TO KEYBOARDS OF COMPOSING MACHINES. DAVID W. FRATHER, Detroit, Mich., assignor of one-third to Harry B. Caldwell, Detroit, Mich. Filed June 11, 1900. Renewed May 17, 1902. Serial No. 107,826. (No model.)

Claim.—1. In a machine of the kind described, the combination of the key-levers lying parallel to each other, intermediate levers pivoted at one side of and extending across said key-levers, and word-levers pivoted at one side of the key-levers and of the intermediate levers, and extending across the free end of said intermediate levers beyond the key-levers, each of the word-levers being adapted to actuate a certain number of the intermediate levers, and each of the intermediate levers being adapted to actuate a certain number of the key-levers, substantially as described.

2. The combination with the keyboard of a composing-machine, the key-levers thereof, a word-lever, and intermediate levers interposed between the key-levers and the word-lever, the said word-lever being ar-

ranged to actuate the intermediate levers successively, and the intermediate levers being arranged to actuate the key-levers in the order of their own actuation, substantially as described.

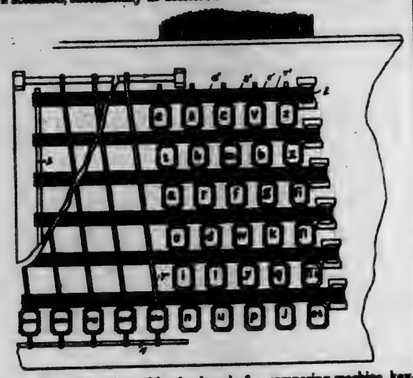

3. In combination with a keyboard of a composing-machine, key-levers, word-levers arranged at the side of the keyboard, and intermediate levers interposed between the key-levers and the word-levers, each intermediate lever being adapted to actuate a single key-lever, and each word-lever being adapted to actuate a plurality of intermediate levers, substantially as described.

4. In combination with the key-levers of a composing-machine, a plurality of word-levers, and a plurality of intermediate levers, each intermediate lever being arranged to engage with and actuate a single key-lever, and each word-lever being adapted to engage with and actuate a plurality of intermediate levers, substantially as described.

5. In combination with the keyboard of a composing-machine, a plurality of word-levers arranged in approximate parallelism with the key-levers, a plurality of intermediate levers arranged at approximate right angles to the key-levers and above the same and engaging under the word-levers, substantially as described.

704,184. STIRRUP. CHARLES W. GILLESPIE, Tascosa, Tex. Filed Nov. 14, 1901. Serial No. 82,262. (No model.)

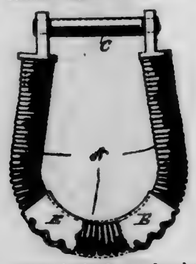

Claim.—1. A stirrup having its tread and each side formed of a continuous coiled spring said spring being bent in the form of a stirrup with its ends sprung toward each other and held in such position by a suitable bolt connecting said ends.

2. A stirrup having its tread and sides formed of a coiled spring bent in U shape, heads adapted to be secured to the ends of said springs, and a tie connecting said heads forming a connection adapted to retain the coiled spring in its bent position.

3. A stirrup consisting of a continuous coiled spring bent in U shape, heads having eyes adapted to enter the ends of said spring provided with threads adapted to engage with the coils of said spring, standards formed integral with said heads projecting above the same, and a tie connecting said standards.

704,185. APPARATUS FOR MAKING CHAINS. JOSEPH GELOT, Jolie St. Pierre, Belgium, assignor to Société Générale du Lamissage Automatique pour la Fabrication de Chaînes sans Soudure, Brussels, Belgium, a Corporation of Belgium. Filed Apr. 28, 1902. Serial No. 105,044. (No model.)

Claim.—1. Apparatus for making chains of successive superposed windings of a metal strip, comprising a stationary core provided with a recess for a previously-formed link, rotating cylinders in the core and compressing-rollers, substantially as described.

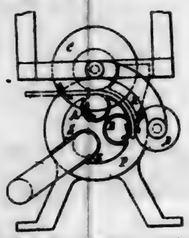

2. Apparatus for making chains of successive superposed windings of a metal strip, comprising a stationary core provided with a recess for a previously-formed link, rotating cylinders in the core, compressing-rollers and a guide between the compressing-rollers, substantially as described.

3. Apparatus for making chains of successive superposed windings of a metal strip, comprising a stationary core provided with a recess for a previously-formed link, rotating cylinders in the core, compressing-rollers, one compressing-roller having a rim, and a guide K, substantially as described.

4. Apparatus for making chains of successive superposed windings of a metal strip, comprising a stationary core, a portion of said core being of less diameter than the main body, the core being provided with a recess for the previously-formed link, rotating cylinders in the core and compressing-rollers, substantially as described.

5. Apparatus for making chains of successive superposed windings of a metal strip, comprising a stationary core, a portion of said core being of less diameter than the main body, the core being provided with a recess for the previously-formed link, rotating cylinders in the core, compressing-rollers and a guide between said rollers, one of which has a rim, substantially as described.

704,186. BOAT PROPELLING DEVICE. FRANK J. GLEASON, Vanwert, Ohio. Filed Apr. 23, 1902. Serial No. 105,668. (No model.)

Claim.—1. A rowing mechanism for boats comprising an angle-lever pivoted to the gunwale of a boat, a feathering-blade pivoted to one end of said lever, a pivoted operating-handle, and link connection between the same and said lever, as set forth.

2. A reverse-action rowing mechanism comprising in combination with an angle-lever adapted for attachment to the side of a boat, a feathering-blade having integral arms which are pivoted on opposite sides of the free end of said lever, the lower end of the latter adapted to form a stop against which the face of the blade is adapted to contact during the stroke of the oar, the pivotal handle, and link connections between the same and said lever, as set forth.

704,187. CHAIR-BRACE. ARNOLD GRUENWALD, Columbia, S. D. Filed July 16, 1901. Serial No. 68,587. (No model.)

Claim.—1. A furniture-brace comprising a cross-head, tensile bracing elements for connecting the cross-head with an article of furniture, a hanger having a threaded stem adjustably connected with the cross-head, said hanger being composed of two sections arranged to slide longitudinally on each other and provided with means for securing them at the desired adjustment, and means for swiveling the hanger to an article of furniture, whereby the hanger is adapted to be rotated bodily for adjusting the cross-head, substantially as described.

2. A furniture-brace composed of two sections arranged to slide longitudinally on each other, one of the sections being provided with a shank and the other being provided with parallel sides spaced apart to receive the section having the said shank, an adjustable cross-head mounted on the shank, means for swiveling the hanger to an article of furniture, whereby the hanger is adapted to be rotated bodily for adjusting the cross-head, and tensile bracing elements connecting the cross-head with the article of furniture, substantially as described.

3. A furniture-brace comprising a hanger having a stationary member provided with parallel sides or cheeks, an adjustable member fitted between said sides or cheeks for vertical adjustment, and means for securing the adjustable member at the desired adjustment on the stationary member, a cross-head swiveled upon the adjustable member, and looped tensile bracing means engaged with the cross-head and provided with terminal clamps for engagement with chair elements.

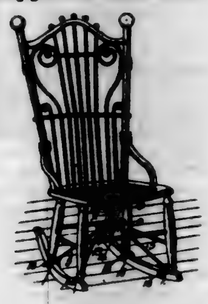

704,188. CAR-TRUCK. ROCHESTER HASKELL, Saginaw, Mich. Filed May 13, 1902. Serial No. 107,080. (No model.)

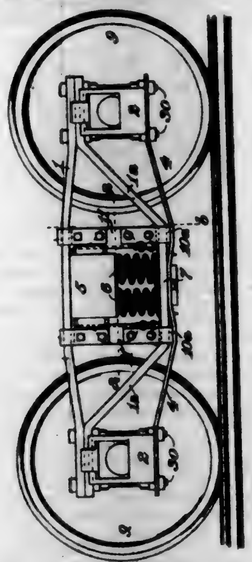

Claim.—1. In a car-truck, the combination of an arch-bar having a pair of U-shaped straps fixed to and depending from its middle portion, an inverted arch-bar having a pair of similar straps fixed to and extending upwardly from its middle portion, bolster-guides fitting, at one end, between the arms of a strap of the arch-bar, and, at the other, between the arms of a strap of the inverted arch-bar, and connections securing the bolster-guides to the straps.

2. In a car-truck, the combination of an arch-bar having a pair of U-shaped straps fixed to and depending from its middle portion, an inverted arch-bar having a pair of similar straps fixed to and extending upwardly from its middle portion, bolster-guides fitting, at one end, between the arms of a strap of the arch-bar, and, at the other, between the arms of a strap of the inverted arch-bar, flanges projecting laterally from the lower ends of the bolster-guides for the attachment of a spring-plank, and connections securing the bolster-guides to the straps.

3. In a car-truck, the combination of an arch-bar having a pair of U-shaped straps fixed to and depending from its middle portion, an inverted arch-bar having a pair of similar straps fixed to and extending upwardly from its middle portion, bolster-guides, of channel-section, fitting, at one end, between the arms of a strap of the arch-bar, and, at the other, between the arms of a strap of the inverted arch-bar, and bolts or rivets passing through transverse lugs on the bolster-guides and securing said guides to the straps.

4. In a car-truck, a side frame comprising an arch-bar and an inverted arch-bar, each having inwardly-projecting U-shaped straps, fixed to its middle portion without the employment of bolts or other independent connections, and bolster-guides fitting between, and connected to, the arms of said straps.

5. A bolster-guide for car-trucks, consisting of a casting of box or channel form, having transverse lugs for the reception of bolts to connect the guide to the arch-bars of a truck, and lower lateral flanges for connection to a spring-plank.

704,189. HAND-STAMP. LEROY J. HEIDENREICH, Spokane, Wash. Filed Mar. 20, 1902. Serial No. 99,063. (No model.)

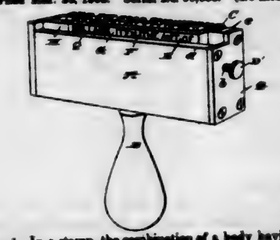

Claim.—1. In a stamp, the combination of a body having a socket, and also having one side wall *c* of the socket extended downwardly below the other side wall *d* thereof, a type projecting beyond the face of the wall *c*, a type removably arranged in the socket with its face flush with that on wall *c*, and having an inscription corresponding to the matter it is adapted to print on its side adjacent to the wall *d*, and means for securing the removable type in the socket.

2. In a stamp, the combination of a body having a socket, and also having one side wall *c* of the socket extended downwardly below the other side wall *d* thereof, a line of type permanently secured on the face of the wall *c*, one or more removable types arranged in the socket with their faces flush with that of the line of type, and having inscriptions corresponding to the matters they are adapted to print on their sides adjacent to the wall *d*, and a screw bearing in one end wall of the socket and arranged to engage the adjacent type.

704,190. RAIL-JOINT. THOMAS HEMBERGER, Larimore, N. D. Filed Apr. 18, 1902. Serial No. 103,005. (No model.)

Claim.—In a rail-joint, rails having the lower corners of the head of the adjacent ends cut away, a rail-chair, and fish-plates arranged on opposite sides of the rails and having their lower edges interlock with the said chair and their upper edges interlock with the head of the rails, one of the fish-plates having an extension to enter the space formed by the cut-away portions at the lower corners of the rail-heads, substantially as specified.

704,191. APPARATUS FOR DYEING. ROCHESTER ILLINGWORTH, JOHN T. HARDY, and GEORGE HAYLOR, Coventry, England. Filed Jan. 18, 1902. Serial No. 90,203. (No model.)

Claim.—1. An apparatus for dyeing comprising a vessel for containing the dyeing liquor, a piston reciprocating therein, hollow pillars carried by said piston having lateral apertures and perforated tubes upon which the material to be treated is wound removably carried by said pillars, substantially as described.

2. An apparatus for dyeing comprising a vessel for containing the dyeing liquor, a piston reciprocating therein, hollow pillars carried by said piston having spool-shaped upper ends, perforated tubes removably seated upon the spool-shaped portions of said pillars, said pillars having lateral apertures, and caps removably secured upon the upper ends of the pillars and abutting against the upper edges of the tubes, substantially as described.

3. An apparatus for dyeing comprising a vessel for containing the liquor, a piston representing therein, hollow pillars carried by the said piston and having cross-ports immediately above the upper sides of the said piston, the said hollow pillar and cross-ports communicating with the vessel on the opposite side of the piston from that upon which they are located, substantially as described.

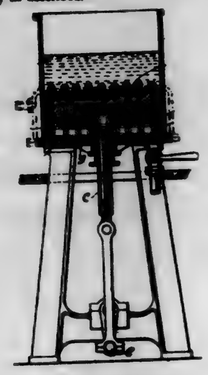

704,192. SWING. ALBERT C. JACOBS, Birmingham, Ala. Filed Dec. 20, 1901. Serial No. 87,712. (No model.)

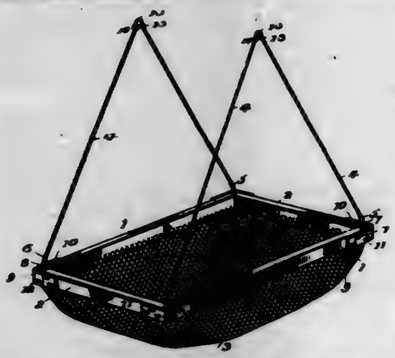

Claim.—1. The herein-described swing comprising a suitable frame-section; a flexible member 8 connected to the frame-section and depending therefrom; suitable supporting-ropes and means to secure the upper ends thereof, in combination with compensating corner-plates 10 having elongated apertures 11 operatively connected to each corner of said frame; a compensating wedge 9 within an opening between the meeting ends of the frame-sections, and suitable means to connect the lower ends of the supporting-ropes to said wedge, all substantially as specified and for the purpose set forth.

2. In a swing of the character specified, a suitable supporting-frame having expansible corner-sections; a wedge-section 9 for each corner of said frame, each wedge having an apertured ear upon its tapered edge, in combination with an expansible tubular clamp fitting around each of said ropes near each corner of the swing; a collar fitting around said tubular clamp and adapted to secure the same in an adjusted position upon the rope and means to connect the tubular clamp and said ear, all combined substantially as specified and for the purpose set forth.

3. In a swing of the character specified, a frame-section and supporting-ropes, said frame-section having reinforcing corner-plates 10 provided with elongated apertures whereby when screws are entered through said apertures into the frame, the frame-sections are left free to move away from each other, thereby expanding the frame, in combination with a wedge fitting in the opening between the meeting ends of the frame-sections and suitable means to connect said wedge with the supporting-rope, all combined substantially as specified and for the purpose set forth.

704,193. ENGRAVING-MACHINE. RUDOLF JAY, Leipsic, Germany. Filed Oct. 9, 1901. Serial No. 78,003. (No model.)

Claim.—1. In an engraving-machine, the combination of a rotatable screw with a slide engaged thereby, a lever pivoted to the slide, a tracing-tool and an engraving-tool mounted upon the lever, an electric motor for driving the screw, a resistance in the circuit of the motor, and a contact mounted upon the slide and gliding upon said resistance, substantially as specified.

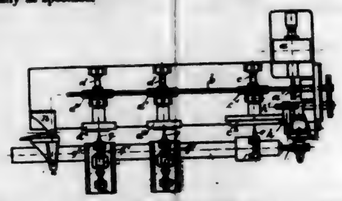

2. In an engraving-machine, the combination of an electric motor with a shaft driven thereby, pattern-plate and work-plate rotated by said shaft, a screw, means intermediate the shaft and screw for rotating the latter, a slide engaged by the screw, a lever pivoted to the slide, a tracing-tool and an engraving-tool carried by the lever, means for rotating the engraving-tool, an electric resistance in the circuit of the electric motor, and a contact on the slide that engages said resistance, substantially as specified.

704,194. WORKMAN'S TIME-RECORDER. ALFONSO L. JAYNES, Buffalo, N. Y., assignor, by mesne assignments, to International Time Recording Company. Filed Sept. 20, 1900. Serial No. 31,145. (No model.)

Claim.—1. In a time-recorder, the combination of a time-stamp, time mechanism connected thereto, and means whereby a record is printed by said stamp upon a card, said means being constructed and arranged to be operated by the card to be printed as the latter is presented to the time-stamp.

2. In a time-recorder, the combination with a time-stamp comprising adjustable type, and an impression device coöperating with said type, of time mechanism for adjusting said type, and means for operating the impression mechanism to print the time upon a card, said means being constructed and arranged to be operated by the card as the latter is presented to the time-stamp.

3. In a time-recorder, the combination with a time-stamp comprising time-printing wheels, and an impression device coöperating with said wheels, of time mechanism for adjusting said wheels, and means for operating the impression mechanism to print the time upon a card, said means being constructed and arranged to be operated by the card as the latter is presented to the time-stamp.

4. In a time-recorder, the combination with a time-stamp comprising adjustable type, and an impression device coöperating with said type, of time mechanism for adjusting said type, a movable abutment constructed and arranged to limit the inward movement of a card presented to said time-stamp, and a connection between said abutment and said impression device whereby the movement of the abutment by the card causes the impression device to imprint the time upon said card.

5. In a time-recorder, the combination with a time-stamp comprising adjustable type, and an impression device coöperating with said type, of time mechanism for adjusting said type, and means for operating the impression mechanism to print the time upon a card, said means being constructed and arranged to be operated by the card as the latter is presented to the time-stamp, and said operating means and time-stamp being relatively adjustable whereby the latter is adapted to print upon different portions of the card.

6. In a time-recorder, the combination with a time-stamp comprising adjustable type, and an impression device coöperating with said type, of time mechanism for adjusting said type, and means for operating the impression mechanism to print the time upon a card, said time-stamp being adjustable to different positions to correspond to different days or dates, and said means for operating the impression mechanism being constructed and arranged to be operated by the card as the latter is presented to the time-stamp.

7. In a time-recorder, the combination with a time-stamp comprising adjustable type, and an impression mechanism coöperating with said type, of time mechanism for adjusting said type, a card-receiver into which the card is inserted to be printed by the time-stamp, means for moving said stamp relatively to said receiver to cause the stamp to print upon different parts of the card, and operating means for the impression mechanism constructed and arranged to be actuated by the card as the latter is presented to the time-stamp.

8. In a time-recorder, the combination with a time-stamp comprising adjustable type, and an impression device coöperating with said type, of time mechanism for adjusting said type, a movable abutment arranged to limit the movement of a card presented to said time-stamp, and a connection between said abutment and said impression device, said abutment and time-stamp being relatively movable and said connection being adapted to operate the time-stamp in any of its relative positions.

9. In a time-recorder, the combination with a card-receiver adjustable in one direction, and a time-stamp adjustable in a direction at right angles to the path of the said receiver, and comprising adjustable type and an impression device coöperating with said type, of means for operating the impression mechanism to print the time upon a card, said means being constructed and arranged to be operated by the card as the latter is presented to the time-stamp.

10. In a time-recorder, the combination of a laterally-movable card-receiver, a time-stamp movable longitudinally of said receiver, and an abutment providing a fixed limit to the longitudinal movements of cards thrust into said receiver, whereby different sections of a card may be printed, the card being always thrust into the receiver to the same extent.

11. In a time-recorder, the combination of a bodily-movable time-controlled stamp, and actuating mechanism movable within fixed limits and adapted to be operated by the time-card to actuate said time-controlled stamp in any of its adjustments to print upon said card, for the purpose set forth.

12. In a time-recorder, the combination with the time-stamp and time mechanism for operating the same, of a card guide or receiver, a pivoted abutment adapted to be operated by a time-card, and a part connected to said abutment adapted to actuate an impression mechanism to print upon said card, substantially as set forth.

13. In a time-recorder, the combination with the time mechanism, of a time-stamp embodying marking-wheels operated thereby, a movable hammer having a tooth or trip formed thereon and adapted to coact with said marking-wheels, a card guide or receiver in proximity to said stamp, an abutment pivoted at its upper end and arranged to be operated by said time-card, a bar pivoted between its ends to said abutment and having a series of teeth formed thereon which are adapted to engage the tooth or trip formed on said movable hammer so as to elevate the same, and means for controlling the movement of said bar whereby it is disengaged from the hammer and allows the same to drop, thus causing the time-card to be marked, substantially as set forth.

14. In a time-recorder, the combination with the time mechanism, of a time-stamp embodying marking-wheels operated thereby, a movable hammer having a tooth or trip formed thereon and adapted to coact with said marking-wheels, a card guide or receiver in proximity to said stamp, an abutment pivoted at its upper end and arranged to be operated by the time-card, an actuating-bar pivoted between its ends to said abutment and having a series of teeth formed thereon which are adapted to engage the tooth or trip formed on said movable hammer so as to elevate the same, and means for controlling the movement of said actuating-bar whereby it is disengaged from the hammer and allows the same to drop, thus causing the time-card to be marked, substantially as set forth.

15. In a time-recorder, the combination with a time-controlled stamp manually adjustable in one direction, of a card-guide manually adjusted in another direction, a time-card adapted to be stamped, and actuating mechanism operated by said time-card whereby it is caused to be marked by said time-controlled stamp, substantially as set forth.

16. In a time-recorder, the combination with a time-stamp and time mechanism for adjusting the same, of an impression device, a time-card having a reinforcing device permanently connected thereto, and the actuating mechanism for said impression device constructed to be operated by the insertion of said reinforced time-card, whereby the time-card is automatically marked by the time-stamp when inserted in the machine.

17. In a time-recorder, the combination with a time-controlled stamp, a shaft having an indicator thereon, operating connections between the two whereby said time-controlled stamp is adjusted by said shaft, an impression device, a card guide or receiver in proximity to said stamp, a time-card adapted to enter said card guide or receiver, and actuating mechanism for the impression device constructed to be operated by said time-card, whereby the time-controlled stamp is actuated, substantially as set forth.

18. In a time-recorder, the combination with the casing having a sight-opening therein, of a time-controlled stamp, a shaft carrying an indicator bearing the days of the week and being located in rear of said sight-opening, a pinion secured to said shaft, a bell-crank lever having a gear-segment at one end adapted to mesh with said pinion, a link connecting the other end of said bell-crank lever with the time-controlled stamp, a card guide or receiver in proximity to said stamp, and actuating mechanism whereby the card when placed in said guide or receiver is caused to be stamped or marked, substantially as set forth.

19. In a time-recorder, the combination with a card guide or receiver, and a time card adapted to enter said guide or receiver, of means for trapping or retaining a card partially inserted in the card-guide to prevent its withdrawal before it has been properly inserted for printing and to prevent its withdrawal after printing.

20. In a time-recorder, the combination with a card guide or receiver and a time-card adapted to enter said card guide or receiver, of means for trapping or retaining a card partially inserted in the card-guide to prevent its withdrawal before it has been properly inserted for printing, and means for releasing the card when fully inserted, said latter means being operated by the card.

21. In a time-recorder, the combination with a time-controlled stamp, of actuating mechanism therefor, a card guide or receiver in proximity to said stamp, a pawl pivotally held on said card guide or receiver, a time-card having a slot therein and being adapted to tilt said pawl and slide under said pawl until said slot is directly under the same, when the card may be withdrawn from said card guide or receiver.

22. In a time-recorder, the combination with an adjustable time-controlled stamp having an actuating-hammer pivoted thereto and a tooth or trip formed on said hammer, of a card guide or receiver, a time-card adapted to be marked, an abutment pivoted at its upper end and adapted to be operated by said time-card, an actuating-bar pivoted between its ends to said abutment and having a series of teeth formed thereon and rollers secured thereto at its rear end on opposite sides thereof, one of the teeth of said actuating-bar being engaged with the tooth or trip on the actuating-hammer by the movement of the abutment, and a casing secured to the casing having grooves in which said rollers travel and whereby the front end of the actuating-bar is raised and disengaged from the tooth or trip of said actuating-hammer, thereby allowing the hammer to drop and cause the time-card to be marked, substantially as set forth.

23. The combination with a stamp, of a card guide or receiver, a card adapted to be stamped, a movable abutment adapted to be operated by said card, and an actuating-bar connected to said abutment and adapted to actuate the stamp, substantially as set forth.

24. The combination with the stamp, of a movable hammer having a tooth or trip formed thereon and adapted to coact with said stamp, a card adapted to be stamped, an abutment pivoted at its upper end and operated by said card, an actuating-bar pivoted between its ends to said abutment and having a series of teeth formed thereon, one of which is adapted to engage the tooth or trip formed on said movable hammer so as to elevate the same, and means for controlling the movement of said actuating-bar whereby it is disengaged from the hammer and allows the same to drop, thus causing the card to be marked, substantially as set forth.

25. In a time-recorder, the combination with a time-stamp, time mechanism for adjusting said stamp, a time-card, and an impression device adapted to be set in motion by the time-card when the latter is inserted to be printed, whereby the printing of the card is effected by the presentation of the card to the time-stamp.

26. In a workman's time-recorder, the combination of a casing, a time-stamp having suitable mechanism for setting the same, a card-guide and mechanism for producing such a relative movement between the time-stamp and card-guide element that various portions of the surface of the card in the card-guide can be printed upon, and means for effecting the printing by the presence of the card in the guide.

27. In a time-recorder, the combination of a card-guide and time-stamp mechanism including means for setting the time-stamp, one of the time-stamp and card-guide elements being adjustable with respect to the other so as to effect the printing on various portions of the card, and means for causing an impression to be made, controlled by a movement of the card while in the card-guide.

28. In a time-recorder, the combination of a card-guide and time-stamp, one bodily adjustable with respect to the other, means for adjusting the types of the time-stamp, and means for effecting the printing directly by mechanism whose movement is initiated by a movement of the card in the time-stamp.

29. In a time-recorder, the combination of a card-receiver for receiving the time-card to be printed, an abutment fixed relatively to the mouth of said receiver providing a limit to the movement of cards thrust into said receiver and a time-stamp, said receiver being bodily movable relatively to said time-stamp in order to print upon different parts of a card held therein.

704,195. GRINDING-MILL. HANS G. JOHNSON, Waukon, Iowa, assignor of one-half to Theodore Schulte, Waukon, Iowa. Filed Nov. 1, 1901. Serial No. 80,725. (No model.)

Claim.—In a mill of the character specified, a suitable grinding disk or wheel having a milled surface upon both sides and a toothed periphery; suitable means to rotatably mount said wheel; a pair of levers 6 and 7 carrying a detent designed to engage the periphery of said grinding-wheel; connecting-rods operatively connected to the lower end of said levers and a walking-beam pivotally connected to the upper end thereof; a hopper and grain-agitating devices carried by the hopper and connected to one of said rods whereby the contents of the hopper will be agitated and prevented from clogging, and means intermediate the hopper and the grinding-wheel to deliver the grain to the latter, all substantially as specified and for the purpose set forth.

704,196. TOBACCO-HANGER. WILLIAM M. KEYSER, Terryville, Conn. Filed Feb. 15, 1902. Serial No. 94,173. (No model.)

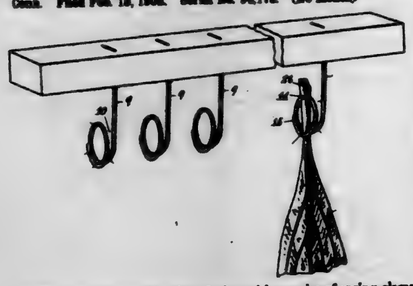

Claim.—1. The combination of a bar with a series of spring-clamps each forming an open throat, converging to a substantially closed portion for receiving and clamping a stem.

2. In a tobacco-hanger, the combination of a bar with a series of spring-clamps, each having an integral shank fixed in the bar, and forming an open converging throat for receiving and clamping a stem, the series of throat-openings being substantially parallel with each other.

3. In a tobacco-hanger, the combination of a bar, and a series of coiled spring-clamps, each forming an open converging throat between its coils for receiving and clamping a leaf, each clamp being provided with an integral shank clenched in the bar, for maintaining the clamps in substantially parallel relation.

704,197. ICE-TANK FOR REFRIGERATOR-CARS. THOMAS B. KENT, Chicago, Ill., assignor to Armour & Company, copartnership of Philip D. Armour, Jonathan G. Armour, and Philip D. Armour, Jr., Chicago, Ill. Filed Oct. 23, 1897. Serial No. 656,057. (No model.)

Claim.—1. In a refrigerator-car, the combination, with an ice-tank, of a lower support consisting of I-beams extending transversely of the car and suitably connected, and brackets supporting said beams, and other supports located above the lower supports and consisting of angle-bars secured to the sides of the tank, and a movable floor adapted to rest on either of said supports and to be tilted to pass between the same, substantially as described.

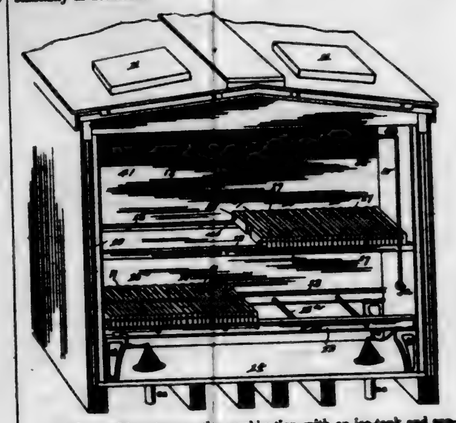

2. In a refrigerator-car, the combination, with an ice-tank and supports therein, of a movable floor composed of separate sections adapted to rest on said supports, locking-rods hinged to the tank-walls adjacent to said supports and having apertured ends adapted to pass downward through said floor, a locking-pin adapted to be inserted through said apertures, and a fixed locking-bar above said locking-pin, substantially as described.

704,198. CUPELLATION-FURNACE. DAVID LAIRD, Forfar Scotland. Filed Sept. 24, 1901. Serial No. 76,208. (No model.)

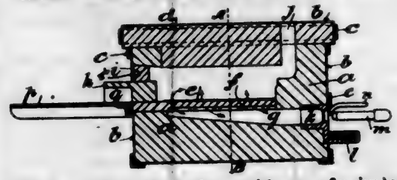

Claim.—1. In combination in a cupel-furnace, a fire-clay body *a*, enveloped in sheet metal and provided with a lid *g*, the fire-clay body *a* being provided with a hearth of refractory material having ribs on its under side, an inclined flame-bed below the hearth having side passages, said transverse ribs serving to divert the heated gases to the side passages, a burner of oil and air or gas and air under pressure to supply heat to the flame-bed, a tray for the cupels arranged on the hearth and dampers A and *i* adapted to close the entrance to the hearth, substantially as described.

2. In a cupel-furnace, a removable tray to carry the cupels, a hearth of refractory material having ribs on its under side, a flame-bed below the hearth, having side passages, and said transverse ribs serving to divert the heated gases to the side passages, the space above the hearth being adapted to receive the tray of cupels, substantially as described.

704,199. APPARATUS FOR RECOVERING MINERALS CARRIED OFF IN THE FUMES FROM SMELTING-FURNACES. WILLIAM B. LEE, Marion, Ill. Filed Aug. 28, 1901. Serial No. 73,513. (No model.)

Claim.—1. The combination with a smelting-furnace, of a precipitating-chamber having baffle-plates arranged therein and separating the chamber into communicating compartments, an induction-flue connecting one end of the chamber with the furnace and including means for accelerating the projection of fumes to the chamber and for moistening the same, water-spraying mechanism arranged in the compartments, an induction-flue including suction mechanism connecting with the other end of the chamber, a conduit for conveying the precipitated materials from the chamber, and settling-troughs including valve mechanism connecting with the conduit.

2. The combination with a smelting-furnace, of a precipitating-chamber, an inverted-U-shaped flue connecting one end of the chamber with the dome of the furnace, an upwardly-discharging steam-pipe entering the leg of the flue connecting with the furnace, a downwardly-discharging water-pipe connecting with the leg of the flue entering the chamber, water-spraying means communicating with the chamber, and a flue including suction mechanism disposed at the discharge end of the chamber.

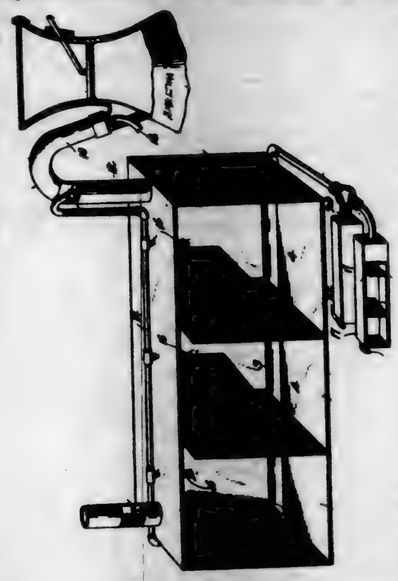

704,200. SEWING-MACHINE GUIDE. ALEXANDER LESSOX, Harrison, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Apr. 2, 1901. Serial No. 54,098. (No model.)

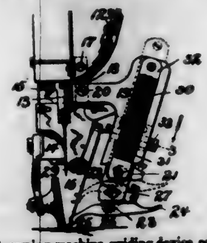

Claim.—1. A sewing-machine guiding device comprising the combination with a frame or bracket adapted for attachment to the head of the machine, so as to be supported above the work-plate thereof, of a sliding bar mounted in said frame or bracket and movable up and down, a spring for lifting said bar, a latch or catch for holding said bar in working position when depressed, a horizontally-disposed arm or bar pivotally attached to the lower end of said sliding bar and provided with a guide, and a spring acting on said arm or bar and serving to yieldingly hold the said guide downward in working position, while permitting it to yield upwardly to accommodate material of varying thickness passing beneath it.

2. In a sewing-machine, the combination, of a guide supported above the work-plate of the machine and having a recessed part to receive the edge of the material being guided, and having also a small lip extending beneath the ply of material to be guided, a sliding bar, movable up and down, with which said guide is connected, a latch or catch for holding said bar down when the guide is in working position, and a spring for lifting said bar, and thereby removing the said guide out of the way, when the said catch or latch is released.

3. In a sewing-machine, the combination, of a guide supported above the work-plate of the machine and having a recessed part to receive the edge of the material being guided, and having also a small lip extending beneath the ply of material to be guided, a sliding bar, movable up and down, with which said guide is connected, a latch or catch for holding said bar down when the guide is in working position, and a spring for yieldingly holding said guide downward while permitting it to move upwardly to accommodate material of varying thickness passing beneath it.

4. In a sewing-machine guiding device, the combination with the frame or bracket 19 adapted for attachment to the head of the machine, of the sliding bar 21 movable up and down in said frame or bracket, the spring 30 for lifting said bar, the spring-pressed sliding catch or latch 33 for retaining said bar in a lowered position, the bar 24 pivotally attached to the lower end of the said sliding bar and provided with a recessed guiding part or guide 25 supported above the work-plate of the machine, and the spring 26 for yieldingly pressing the said guiding part or guide 25 downward.

704,201. COIN-OPERATED VENDING-MACHINE. PHINEAS G. MACLEAN, Boonton, N. J. Filed Aug. 17, 1901. Serial No. 72,337. (No model.)

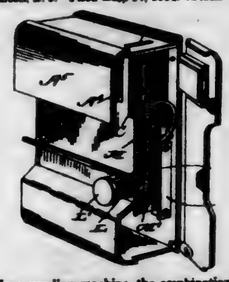

Claim.—1. In a vending-machine the combination with a case, of a casting-plate arranged therein, said casting-plate having side flanges, a plunger working between the flanges and across the top of the casting-plate, said plunger having integral webs or flanges, one of which is provided with a lateral extension, and another slotted vertically, a rock-shaft to which the plunger is connected, an operating-lever having a laterally-projecting pin adapted to engage the slotted flange of the plunger, the coin-chute, operating-rod and spring for returning the several parts to their normal positions, substantially as shown and described.

2. In a vending-machine the combination with a case, of a casting-plate arranged therein dividing the case into front and rear compartments, the spring-actuated follower arranged in the forward compartment and adapted to support a plurality of packages, a plunger consisting of a plate provided with a number of rearwardly-extending flanges, one of which is formed with a lateral extension, the other slotted vertically and another connected by means of an arm to a rock-shaft, the operating-lever having a laterally-projecting lower end attached to the said casting-plate, said casting-plate having flanges at each side, one of the flanges being cut away at its rear side to receive the laterally-projecting lower end of the lever, the push-rod and plate, the spring for bearing upon said plate, and the guide-plate for guiding the inner end of the push-rod plate, all arranged and adapted to operate substantially as shown and described.

3. In a vending-machine the combination with a case, of a casting-plate arranged therein dividing the case into front and rear compartments, the spring-actuated follower arranged in the forward compartment and adapted to support a plurality of packages, a plunger consisting of a plate having a perforation therein and provided with a number of rearwardly-extending flanges, one of which is formed with a lateral extension, the other slotted vertically and another connected by means of an arm to a rock-shaft, the operating-lever having a laterally-projecting lower end, said lever being connected to the aforesaid casting-plate, said casting-plate having flanges at each side, one of the flanges being cut away at its rear side to receive the laterally-projecting lower end of the lever, the push-rod and plate, the spring for bearing upon said push-rod and plate, and the guide-plate for guiding the inner end of the push-rod plate, and a guide-pin carried by the follower, the upper end projecting above the follower and adapted to engage the perforation in the plunger when the supply of confections becomes exhausted, substantially as described.

704,202. SWITCHING APPARATUS. CARL MICHALKE, Charlottenburg, Germany, assignor to Siemens & Halske Electric Company of America, Chicago, Ill., a Corporation of Illinois. Filed Nov. 13, 1900. Serial No. 737,467. (No model.)

Claim.—1. In a switch, the combination with a member *a*, of contact means acting therewith for controlling the continuity of a circuit, the said member being movable longitudinally with relation to the contact means, a sleeve surrounding the contact member *a*, said member being also movable longitudinally with relation to the said sleeve to enable the contact member to be drawn within the sleeve to extinguish arcs formed in the operation of the switch, and supplemental means associated with the said sleeve for radiating the heat due to the arcs to prevent the heat from injuriously affecting the sleeve, substantially as described.

2. In a switch, the combination with a metallic member *a*, of me-

bolts contact means acting therewith for controlling the continuity of a circuit, the said member being movable longitudinally with relation to the contact means, a sleeve of insulating material surrounding the contact member a, the said member being also movable longitudinally with relation to said sleeve to enable the contact member to be drawn within the sleeve to extinguish arcs formed in the operation of the switch, and a body of metal surrounding the said member and interposed between the same and the sleeve for radiating and dissipating the heat to prevent the same from injuring the sleeve, substantially as described.

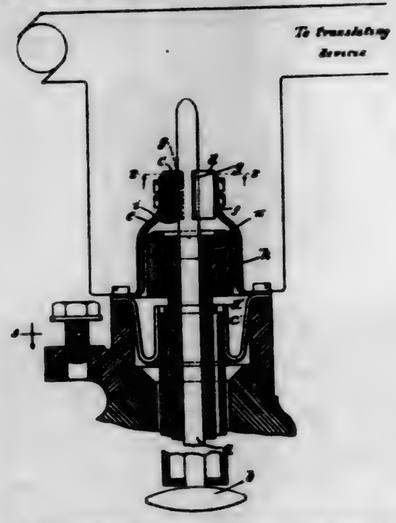

3. In a switch, the combination with a longitudinally-movable metallic rod a, of metallic contact means, a sleeve of insulating material inclosing the rod, and a metallic ring also inclosing the rod, interposed between the same and the said sleeve and located near the end of the said sleeve contiguous to the said contact means, substantially as described.

4. In a switch, the combination with a longitudinally-movable metallic rod a, of contact means, the said rod by its longitudinal movement being adapted to be engaged and removed from engagement with the said contact means, a sleeve surrounding the said rod and having an end opposed to the said contact means, and a heat-radiating device interposed between the said contact means and the said sleeve to prevent heat from injuring the sleeve, substantially as described.

5. In a switch, the combination with a longitudinally-movable metallic rod a, of contact means, the rod by its longitudinal movement being adapted to be engaged and removed from engagement with the said contact means, a sleeve of insulating material surrounding the said rod and having an end opposed to the said contact means, and a body of metal interposed between the said contact means and the said sleeve to prevent heat from injuring the sleeve, substantially as described.

6. In a switch, the combination with a longitudinally-movable metallic rod a, of contact means, the rod by its longitudinal movement being adapted to be engaged and removed from engagement with the said contact means, a sleeve of insulating material surrounding the said rod and having an end opposed to the said contact means, a recess being provided in the said end, and a metallic body contained within the said recess placed adjacent to the said rod, adapted to prevent heat due to arcing from injuring the sleeve, substantially as described.

7. In a switch, the combination with main switch portions, of a rod movable with one of the aforesaid main switch portions, supplemental metallic contact means, the said rod and supplemental metallic contact means serving to open the circuit after the main switch portions have been separated, a sleeve of insulating material inclosing the rod, and means interposed between the rod and said sleeve for preventing the heat due to arcing from injuring the sleeve, substantially as described.

8. In a switch, the combination with main switch portions, of a longitudinally-movable metallic rod, metallic contact means, the said rod and metallic contact means serving to open the circuit after the main switch portions have been separated, a sleeve of insulating material inclosing the rod, and means interposed between the rod and the said sleeve for preventing the heat due to arcing from injuring the sleeve, substantially as described.

704,203. PULLEY-AND-BAND POWER-TRANSMITTING APPLIANCE. JAMES MOSSBROOK, Ashton-under-Lyne, England. Filed Mar. 1, 1901. Serial No. 49,962. (No model.)

Claim.—The combination of two pulleys, one at least of which is conical, a driving-belt passing around said pulleys, a loose pushing-strap intermediate the belt and conical pulley, and means embracing said belt and strap to hold them in operative position, as and for the purpose set forth.

704,204. POT FOR CONTAINING SHELLAC, &c. WILLIAM L. HOZEN, Cleveland, Ohio. Filed Jan. 18, 1900. Serial No. 1,881. (No model.)

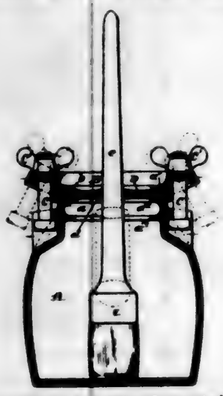

Claim.—1. A shellac-pot consisting of a receptacle and cover therefor and provided with a disk of flexible material formed with an aperture for receiving a brush-handle, and two screw-bolts for securing said disk between said cover and the rim of the receptacle, substantially as set forth.

2. A shellac-pot consisting of a receptacle and cover therefor and provided with a disk of flexible material formed with an aperture for receiving a brush-handle, and two screw-bolts removably engaging said receptacle for securing said disk between said cover and the rim of the receptacle, substantially as set forth.

3. A shellac-pot consisting of a receptacle and cover therefor, the latter having two eyes and a shoulder, and provided with a disk of flexible material formed with an aperture for receiving a brush-handle, and two screw-bolts passing through said eyes and removably engaging said receptacle for securing said disk between said shoulder and the receptacle-rim, each of said bolts having pivotal movement in its respective eye, substantially as set forth.

4. A shellac-pot consisting of a receptacle and cover therefor, the latter provided with an annular shoulder and with two laterally-disposed eyes, a disk of flexible material formed with an aperture for receiving a brush-handle, and two screw-bolts passing through and having pivotal movement in said eyes, said receptacle formed with lateral slotted lugs for receiving the bolt-heads, each bolt provided with a thumb-nut engaging the upper surface of the cover, whereby the latter may be secured to the receptacle-rim, said disk located between said rim and said shoulder, substantially as set forth.

704,205. CURTAIN-FIXTURE. SEMPHIS T. HAKAMIIAN, Worcester, Mass. Filed Apr. 12, 1901. Serial No. 55,504. (No model.)

Claim.—A curtain-fixture, comprising in combination the shade-roller, the supporting parts B B' at each end thereof and means for fastening said parts in position, the parts B B', each consisting of a single

piece of sheet metal cut, bent and compressed to form the brackets c, d provided respectively with the socket c' and notch d' at their outer ends, and of the horizontal longitudinally-slotted base-plates e e, e e, one at each side of each bracket and projecting at right angles in opposite directions from the inner ends thereof, substantially as and for the purpose set forth.

704,206. BIB. HARVEY NEWLIN, Brooklyn, N. Y. Filed Oct. 7, 1901. Serial No. 77,766. (No model.)

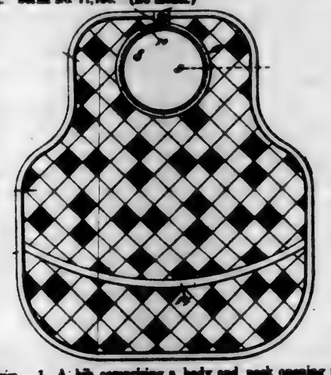

Claim.—1. A bib comprising a body and neck opening provided with a circular neck-opening which opens outwardly through the neck portion by means of a radial slit formed therein, and a circular open spring contractile ring placed around said neck-opening and held in place by a loop or tape, said ring being provided at the opening therein with radial extensions which are secured in the opposite sides of said slit substantially as shown and described.

2. A bib provided with a neck portion having a circular neck-opening which opens outwardly through said neck portion by means of a radial slit, and an open spring-ring secured around the periphery of said circular opening and provided at the open side with parallel radial projections which are secured in the side portions of said slit, substantially as shown and described.

704,207. HINGE FOR SURGICAL INSTRUMENTS. CHARLES J. PILLING and GEORGE T. BARNES, Philadelphia, Pa., assignors to George P. Pilling and Charles J. Pilling, copartners trading as George P. Pilling & Son, Philadelphia, Pa. Filed Jan. 9, 1902. Serial No. 88,999. (No model.)

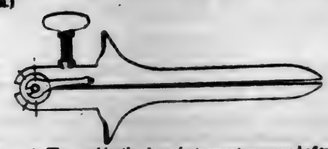

Claim.—1. The combination in an instrument composed of two blade members, of a pivotally-connecting hinge between them, each hinge-section having on one wall a semicircular recess, and on the opposite wall a semicircular projection with a rim or flange to fit within said recess, the two members being so constructed in reverse position relatively, a lateral opening in said projection on each member, and a pivot-pin passing through said opening and operating to maintain the parts in register.

2. The combination in an instrument composed of two blade members, of a pivotally-connecting hinge between them, each section of which has two separate bearing-surfaces lying in parallel planes, said sections being formed with a semicircular groove and within the same a semicircular rim on the exterior of one wall thereof and a semicircular projection with an outer flange edge or rim and an interior concentric rim or edge on the opposite wall, arranged in reverse order on the two hinge-sections, the flanges and grooves on each registering with those in the other hinge-section when said parts are assembled, and a pivoting device adapted to fit a centrally-bored opening passing through said semicircular projection and grooved wall, and adapted to maintain the parts in register.

3. The combination in an instrument having two blade members each having a channeled portion forming opposite walls, a disk with a rim or flange on its inner face, secured on the exterior of one of said walls, and a semicircular groove on the exterior of the opposite wall, said blade members being provided with said recess and projection on reverse walls of each and assembled and combined in such manner that the rim or flange of the projection of each blade member will enter and rotate in the semicircular groove of the other, whereby each section of the hinge will have two independent bearing-surfaces in parallel planes; a central opening in said disk and like semicircular openings in the two opposite walls in line with said disk-opening, and a pivot-pin adapted to enter said openings and maintain the parts in position.

704,208. CALENDAR. CLAUDE I. POST, Chicago, Ill. Filed Nov. 4, 1901. Serial No. 81,102. (No model.)

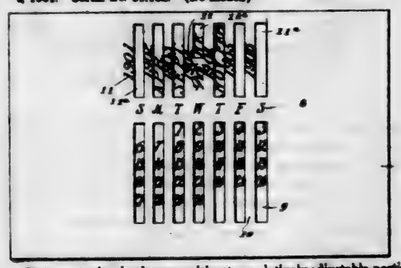

Claim.—1. A calendar comprising two relatively adjustable portions, one bearing the year or years and the days of the week, and the other bearing the months, and the days of the month consecutively duplicated except 31.

2. A calendar comprising a relatively fixed portion bearing the years and the days of the week and openings corresponding thereto through which the months may be exposed relative to the years and the month-days relative to the week-days, and a relatively movable portion bearing the months and the days of the month, so arranged that thirty days, only, will be exposed with the thirty-day months and thirty-one days with the thirty-one-day months.

704,209. VEHICLE-BODY. CHARLES F. PUTNAM, Fitchburg, Mass. Filed Mar. 4, 1902. Serial No. 97,205. (No model.)

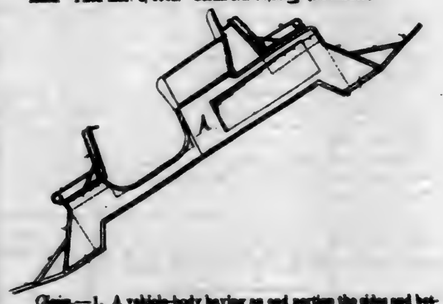

Claim.—1. A vehicle-body having an end portion the sides and bottom of which are dropped vertically below the bottom line of the body, a main seat, and a supplemental seat-frame disposed substantially vertically above the said dropped portion of the body to enable said seat to occupy a lower horizontal plane than the main seat.

2. A vehicle-body having an angular end portion the bottom of which lies in a lower horizontal plane than the bottom of the body, a main seat-frame upon the body, a supplemental seat-frame surmounting the angular dropped end portion, and a hinged closure for the end of the dropped portion.

3. A vehicle-body having a horizontal base-line extending the major portion of its length and a portion at each end of said line and representing the front and rear ends of the vehicle, dropped below the said base-line, a gate or footboard hinged approximately in the plane of the lower edge of each of the dropped portions, a main seat, and a seat surmounting each dropped portion, and with the seat in front of the central seat in a lower horizontal plane than said central seat substantially as and for the purpose described.

4. A vehicle-body, the end of which drops horizontally below the base-line of the body, said dropped portion having a downwardly and outwardly inclined outer end, a seat surmounting the dropped portion, a hinged footboard or gate to operate in the inclined end of the dropped portion, and a main seat longitudinally in line with the first-named seat and occupying a higher horizontal plane than said seat.

704,210. SANDER FOR RAILWAYS. JAMES GEER, Toronto, Canada. Filed Aug. 24, 1901. Serial No. 73,198. (No model.)

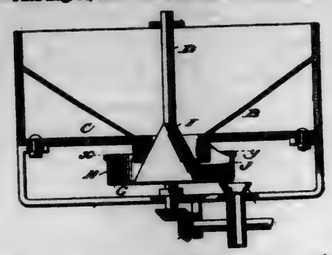

Claim.—1. In a sander, a pan capable of continuous rotation in the same direction, a hopper provided with a spout projecting into said pan, means for rotating said pan at will and means for causing the sand to overflow the pan whenever the latter is rotated, substantially as described.

2. In a sander, a rotatable pan, a hopper provided with a spout projecting into said pan, means for rotating said pan at will, and means for causing the sand to overflow the pan, said means comprising a plow projecting into said pan, substantially as described.

3. In a sander, a rotatable pan provided with a central cone, in combination with a hopper provided with a discharge-spout projecting down within the pan, substantially as described.

4. In a sander, a rotatable pan; and a stationary plow so held as to project down within the pan close to its outer edge, in combination with a hopper provided with a spout projecting down within the pan, substantially as described.

5. In a sander, a rotatable pan; the central cone secured within the pan; and a stationary plow so held as to project down within the pan close to its outer edge, in combination with a hopper provided with a spout projecting down within the pan, substantially as described.

6. In a sander, a rotatable pan; a central cone secured within the pan; and a stationary plow so held as to project down within the pan close to its outer edge in combination with means for supplying sand to the pan, substantially as described.

7. In a sander, a rotatable pan; a central cone secured within the pan; and a stationary plow so held as to project down within the pan close to its outer edge, in combination with a hopper provided with a spout projecting down within the pan; and a spout into which the sand is discharged, substantially as described.

8. In a sander, a rotatable pan; gearing adapted to drive the same; a screw-threaded rotatable crank-spindle adapted to operate the said gearing, a nut engaging the said screw-headed spindle; means for preventing the said nut from rotating or releasing it at will; in combination with a stationary plow projecting down within the pan close to its outer edge; and a hopper provided with a spout projecting down within the pan substantially as described.

9. In a sander a pan, in combination with a hopper provided with a spout projecting down within the pan; a plow held so as to project down within the pan close to its outer edge; and means for revolving the pan and plow relatively to one another, substantially as described.

704,211. FLUSHING-VALVE. JOHN O. RAYMOND, Providence, R. I., assignor of one-half to William A. Hathaway, Edgewood, R. I. Filed Apr. 16, 1901. Serial No. 56,070. (No model.)

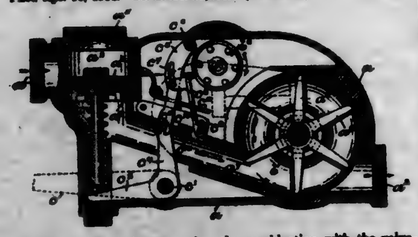

Claim.—1. In a flushing-valve, the combination with the valve-body, the inlet and outlet openings, the ducts and cavities in the body, and a spring-controlled valve, of a rock-shaft, levers connected with the rock-shaft for opening the valve, a locking-arm for locking the valve and the actuating-levers in the open position, a pawl on the locking-arm, a motor operated by the flushing-stream, a pawl-lifter and worm and worm-gear mechanism intermediate the motor and the pawl-lifter, whereby at a predetermined interval the valve is released and closed automatically, as described.

2. A flushing-valve having a motor operated by the stream flowing through the valve-body, means, comprising a bell-crank lever, for opening the valve, a locking-arm for locking the bell-crank lever, and mechanism, comprising a pawl-lifter, a worm and worm-gear, operated by the motor for releasing the valve at a predetermined interval, as described.

3. In an automatic self-closing valve, a self-closing valve, a lever for opening the valve, a locking-arm for locking the valve in the open position, and means comprising a motor operated by the flushing-stream, a pawl connected to the locking-arm, a pawl-lifter, and worm and worm-gear mechanism intermediate the motor and the pawl-lifter; whereby at a predetermined interval the valve is released and closed automatically, as described.

4. In combination in a flushing-valve, a spring-pressed valve, a rock-shaft, an arm on the rock-shaft engaging with the valve, an arm on the rock-shaft engaging with a locking-arm to hold the valve in the open position, mechanism comprising a pawl, a pawl-lifter, a worm, and a worm-gear, operated by a motor actuated by the stream passing through the valve for moving the locking-arm out of engagement with the arm on the rock-shaft, and a case inclosing the parts, as described.

5. In a flushing-valve, the combination with the stem of the valve a^9, the rock-shaft c' and the arms c^2 and c^4, of the notched locking-arm c^{10}, the lever c^5, the pawl c^6 pivotally connected with the arm c^{10} and lever c^5, and the pawl-lifter, of means, actuated by the stream passing through the valve, to operate the pawl-lifter, as described.

704,212. CLASP FOR CHATELAINES. JACOB RITTER, New York, N. Y. Filed May 7, 1901. Serial No. 58,130. (No model.)

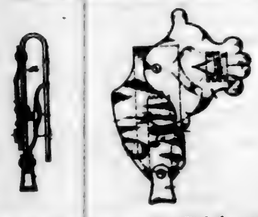

Claim.—In a device of the character described, the combination of a suspension-hook, a part consisting of a spring-clip attached at one end to the hook and having its other end free, and adapted by its resilience to retire from one leg of the hook, with a second part consisting of a laterally-movable plate mounted upon the hook, and a cam device carried by one of said parts, which cam device is adapted to coact with the other of said parts to force the free end of the clip toward a leg of the hook, substantially as described.

704,218. VENEER-SLICER. JOHN H. ROBERTS, Indianapolis, Ind., assignor to Lilly & Roberts Veneer Company, Indianapolis, Ind., a Partnership. Filed May 13, 1901. Serial No. 59,994. (No model.)

Claim.—1. In a veneer-cutting machine, the combination with the cutter thereof, of a flitch-holding table, consisting of a main body, a plate pivotally mounted thereon, means for holding said plate in various positions, a platen pivotally mounted upon said plate on an axis at an angle to the axis of the plate, and means for holding said platen in various positions of adjustment, said platen being adapted to receive a flitch.

2. In a veneer-cutting machine, the combination with the cutter thereof, of a flitch-holding table, consisting of a main body, a plate pivotally mounted upon said body, means for holding said plate in various positions of adjustment, a platen pivotally mounted upon said plate upon an axis at an angle to the axis of the plate, means for holding said platen in various positions of adjustment, and clamping-dogs carried by said platen in position to engage a flitch.

3. In a veneer-slicer, the combination with the knife, of a table, means for moving said table at an angle to and past the edge of the knife, a plate pivoted upon said table on an axis at right angles to the edge of the knife, means for holding said plate in various positions of adjustment, a flitch-receiving platen pivotally mounted upon said plate upon an axis at right angles to the axis of the plate, and means for holding said platen in various positions of adjustment.

4. In a veneer-slicer, the combination with the knife, of a pressure-bar arm, having a pressure-bar carried thereby and arranged above the edge of the knife, means for adjusting the pressure-bar toward and from the knife, a flitch-carrying table, and means for driving said flitch-carrying table beneath the knife and pressure-bar, whereby the force of the flitch upon the pressure-bar is in opposition to the weight of said bar.

5. In a veneer-slicer, the combination with substantially vertical ways, of a knife-arm supported thereon, one or more substantially vertical adjusting-screws carried by the knife-arm, a wedge carried by each screw, a cooperating wedge mounted adjacent each of said wedges, a flitch-receiving table, means for driving said table beneath the knife, means operated by said table for shifting the cooperating wedges so as to intermittently axially reciprocate the adjusting-screws, and means for intermittently rotating the adjusting-screws so as to advance the knife.

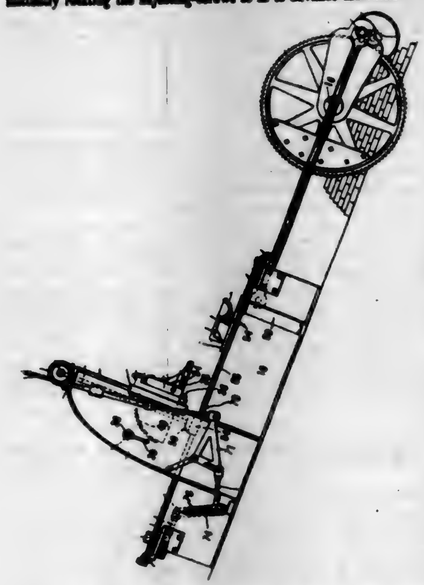

6. In a veneer-slicer, the combination with substantially vertical ways, of a knife-arm mounted thereon, one or more substantially vertical adjusting-screws carried by the knife-arm, a wedge carried by each of said screws, a cooperating wedge mounted adjacent each of said wedges, a flitch-carrying table, means for reciprocating said table on a line at an angle to the movement of the knife-arm, means operated by said table for intermittently reciprocating the cooperating wedges so as to intermittently shift the adjusting-screws axially, and intermediate connecting mechanism between said table and adjusting-screws for rotating said adjusting-screws during the return stroke of the table.

7. In a veneer-slicer, the combination with a pair of adjustable heads, of a knife-arm pivotally mounted between said heads, and a pressure-bar pivotally mounted upon the knife-arm.

8. In a veneer-slicer, the combination with a pair of adjustable heads, of a knife-arm pivoted upon said heads, a pair of blocks adjustably mounted upon said knife-arm, and a pressure-bar pivotally supported upon said blocks.

9. In a veneer-slicer, the combination with a knife, of a flitch-carrying table, means for reciprocating said table adjacent said knife, means for retracting said knife from the path of the flitch before the return of the flitch, means for automatically advancing the knife through the distance of the feed during the major portion of the return movement of said flitch, and for afterward advancing the knife through the distance of its retraction.

10. In a veneer-slicer, the combination with a knife, of a flitch-carrying table, means for reciprocating said table adjacent said knife, means operated by the table for retracting said knife from the path of flitch before the return of the flitch, means operated by the table for advancing the knife during the major portion of the return movement of the table, and means operated by the table for afterward advancing the knife through the distance of retraction.

11. In a veneer-slicer, the combination with a support, of a knife-arm pivoted upon said support, and a pressure-bar pivotally mounted on the knife-arm.

704,214. MEANS FOR LONGITUDINALLY COMPRESSING WIRED-ON CUSHION-TIRES BEFORE FITTING THEM INTO THEIR RIMS. GODFREY RENDLE, London, England. Filed Feb. 27, 1902. Serial No. 96,917. (No model.)

Claim.—In apparatus for the purpose set forth, comprising a trough or channel wherein the tire is compressed, the combination of a trough A whereof one of the sides is removed or cut away toward one end, and a vise or clamp revolvable about a vertical axis mounted at each end of the trough, whereby the tire after compression may be drawn along the trough to said vise and its wires having been gripped therein may be drawn sidewise from the trough, the vise turning with it, substantially as described and for the purpose specified.

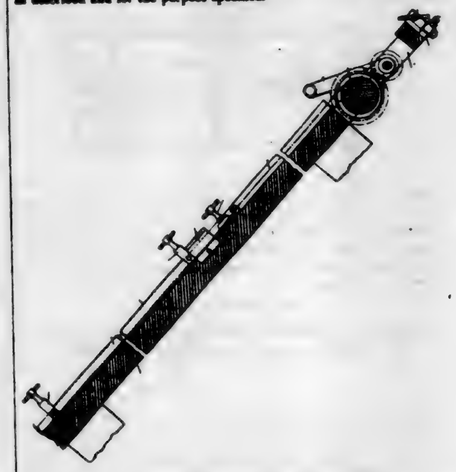

704,215. BED-BOTTOM. PATRICK B. ROONEY, New York, N. Y. Filed Feb. 1, 1902. Serial No. 92,192. (No model.)

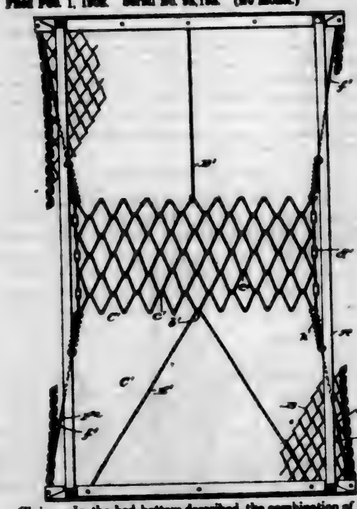

Claim.—In the bed-bottom described, the combination of the frame, the fabric B connected thereto, and the support for the fabric B comprising the flexible body made up of wires arranged in pairs, transversely of the bed-bottom, and having the interlocked loops b', and connections d' interposed between the ends of the wires of each pair; the said body resting immediately below and directly against the fabric B at either side of the transverse and longitudinal median lines thereof so as to both reinforce and support a considerable portion of said fabric, and elastic connections between the body and opposite bars of the frame, yieldingly holding the body directly against the under side of the fabric B.

704,216. ACCOUNT-BOOK. CHARLES K. ROSENBERG, San Francisco, Cal. Filed Aug. 22, 1898. Serial No. 689,194. (No model.)

Claim.—1. In a book of the character described, the combination with the adjustable frame-plates, the telescopic connecting-posts carried thereby and which constitute leaf-supports, of the screw-actuated lock mechanism by which the frame-plates are adjusted toward and from each other, said mechanism comprising a thimble having a screw-threaded opening therein, a screw or worm working therein, means for holding the screw or worm against longitudinal movement, and means at each end of said screw or worm to facilitate turning of the same.

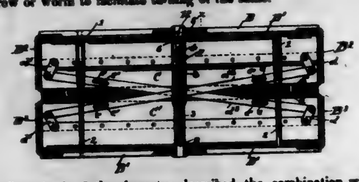

2. In a book of the character described, the combination with a backbone and cover, of an automatic take-up connected with the free ends of the cover whereby said cover may be adjusted to the adjustment of the backbone comprising the lever-rods d^3, d^3 and the relatively short links d, d' pivoted to the respective ends of said rods and to said cover, and means for positively expanding or contracting said backbone, substantially as described.

704,217. JAR-COVER-REPAIRING TOOL. LEON SARR, Ceylon, Ohio. Filed Mar. 12, 1902. Serial No. 97,946. (No model.)

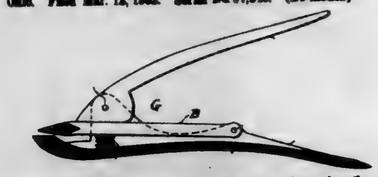

Claim.—In a jar-cover-repairing tool having a lower handle with a beveled curved jaw at one end and handholding piece at the other, an intermediate lever pivoted in the lower lever at one end, and having beveled curved jaws at the other, fitting jaws on the lower lever, a spring for raising the said intermediate lever, and an upper lever pivoted in the lower lever and having a cam on the under side which engages the intermediate lever to force it down on the lower bevel-curved jaw of the lower handle, thus forming a means of pressing the edges of a jar-cover substantially as shown and described.

704,218. TYPE-WRITER HAMMER MECHANISM. SAMUEL J. SNEIDER, Chicago, Ill., assignor to Chicago Writing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed June 15, 1901. Serial No. 64,846. (No model.)

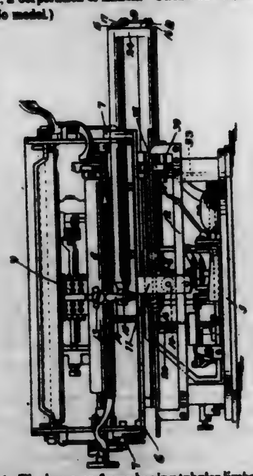

Claim.—1. The hammer-frame having tubular limbs, in combination with the hammer rock-shaft in one limb of the frame, the rock-shaft actuated by the keys and supported in the other limb of the frame, and the connections between the shafts, substantially as specified.

2. The hammer-frame made U-shaped and having its limbs made tubular, in combination with the hammer, and mechanism for actuating it, such mechanism embodying rock-shafts supported in the tubular limbs of the frame, substantially as specified.

3. The combination with the paper-carriage and the hammer of a shaft for actuating the hammer located coincidentally with the axis upon which the carriage tips, and means for supporting the shaft in such position without interfering with the carriage, substantially as specified.

4. The combination with the paper-carriage, the hammer, and the hammer-shaft, of a U-shaped frame supporting said shaft in one of its limbs and positioning it in coincidence with the axis on which the carriage tips, substantially as specified.

5. The combination with the hammer, of a frame made U-shaped and with tubular limbs, a rock-shaft for vibrating the hammer supported in one limb of the frame, a second rock-shaft for actuating the first-mentioned one and itself rocked by the keys, connections between the shafts at one end thereof, and supports for the frame permitting longitudinal movement thereof, substantially as specified.

6. The combination in a type-writer, of a carriage, the hammer and the U-shaped hammer-frame, the hammer being supported upon a shaft in said frame whose axis is coincident with the axis upon which the carriage tips, substantially as specified.

7. The type-writer wherein are combined a laterally-movable hammer-frame, and means for automatically locking said frame, such means consisting of the arm 33 attached to the frame, and the spring-pressed hooked lever 30, substantially as specified.

8. The type-writer wherein are combined a laterally-movable hammer-frame, an arm 33 attached to the frame, and the slotted stationary guide 38 traversed by the arm, substantially as specified.

704,219. GRAVITY-LEVEL. GUSTAV SCHWARTZ, Brooklyn, N. Y. Filed Jan. 25, 1901. Serial No. 44,761. (No model.)

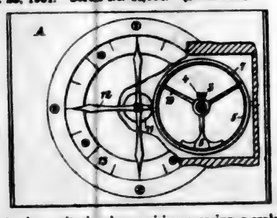

Claim.—1. A gravity-level comprising a casing, a scale on the casing, a shaft mounted in the casing, an indicating device and a serrated wheel secured to the shaft; a second shaft mounted in the casing, and a rim conforming to a circle of a diameter equal to the distance from the center of the second shaft to the circumference of the serrated wheel, and having a yielding covering on its face, secured to the shaft, and a weight secured to the rim.

2. A gravity-level comprising a case, two shafts mounted in bearings set in the case, a circular rim secured to one shaft, a weight and a yielding covering affixed to the rim; a wheel, serrated on its circumference and engaging with the rim, set on the other shaft; a pointer also secured to the other shaft and a scale set on the case in the path of the pointer.

3. The combination of a casing provided with a scale, a shaft revolubly mounted therein, a pointer and a serrated wheel set on the shaft, and of a weighted balancing-wheel revolubly mounted in the casing in position to engage with the serrated wheel and having a yielding covering applied on its face engaging with the serrated wheel.

704,220. DRIVING MECHANISM. ALFRED F. SPAULDING, Northfield, Vt. Filed Apr. 25, 1901. Serial No. 57,502. (No model.)

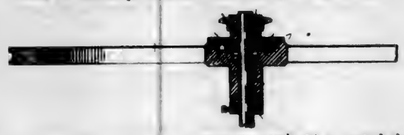

Claim.—In combination, a wheel provided with a central shaft-opening and ball-recesses communicating therewith in opposite ends of the hub, a shaft located in said opening, balls located in said recesses and bearing upon said shaft, a washer and collar mounted upon said shaft at one end of the hub to retain the balls in the adjacent recess, a sprocket-wheel mounted on said shaft, its hub being extended to form a closure for the other of said ball-recesses, said first-mentioned hub being provided with a corrugated counterbrink surrounding said sprocket-hub, a cam-wheel keyed to the latter hub and located in said counterbrink, clutch-balls located in the space between the cam and the first-mentioned hub, a follower to retain said clutch-balls in place, the other end of the sprocket-hub being provided with a recess, balls in said recess bearing upon the shaft, and a washer and collar cooperating with the other washer and collar to retain the bearing-balls in position and the wheels in proper position on the shaft, as set forth and described.

704,221. RAIL-FASTENER. JAMES M. SPAULDING, Syracuse, N. Y. Filed July 24, 1901. Serial No. 69,570. (No model.)

Claim.—1. A rail-fastener comprising tie-sections having lengthwise ribs or flanges engaged with each other and each provided with transverse slots or openings, keys inserted in the openings for locking the sections together, and a pair of fastening members detachably mounted on the tie and having their adjacent ends engaged with the rail and their opposite ends engaged with the keys for the purpose set forth.

2. The herein-described tie composed of lengthwise sections having openings arranged at opposite sides of the rail-seat, in combination with keys inserted in the openings for securing the sections together, and rail-holding members engaged with the keys.

3. The combination with a tie composed of lengthwise sections having transverse openings, of rail-holding members having transverse openings, and keys inserted into the openings of the tie-sections and said members for locking the same together.

4. In a rail-fastener, the combination with a tie composed of lengthwise sections, one having a groove and the other fitting in the groove and each provided with a pair of transverse openings, rail-holding members removably mounted on the tie and having transverse openings, and keys inserted in the openings for locking the tie-sections and members together.

5. The combination with rail-sections arranged end to end and having transverse apertures therethrough, of a tie receiving the meeting ends of the rail-sections and composed of lengthwise parts fitting one upon the other and each provided with an opening, means inserted in said opening for securing the tie parts together, and a rail-holding member mounted on the tie and engaged with said means, said member having studs or pins entering the apertures of the rail-sections.

6. The combination with rail-sections arranged end to end and having transverse apertures therethrough, of a tie receiving the meeting ends of the rail-sections and composed of lengthwise parts fitting one upon the other, each of the sections having a pair of openings, keys inserted in said openings for securing the tie parts together, and rail-holding members mounted on the tie at opposite sides of the rail and engaging said keys, one of said members having studs or pins entering the apertures of the rail-sections and the other having apertures receiving the studs or pins.

7. The combination with rail-sections arranged end to end and provided with transverse apertures, of lengthwise tie-sections mounted one upon the other and provided with alined openings arranged in pairs, rail-holding members mounted on the tie and formed with transverse openings, one of the members of each pair having studs or pins inserted through the apertures of the rail-sections, and the other member having apertures receiving the projecting ends of said studs or pins, and keys inserted into the openings of the tie-sections and said members for locking the same together.

704,222. HOISTING DEVICE. ELLERY STOWELL, Denver, Colo. Filed Nov. 13, 1901. Serial No. 82,146. (No model.)

Claim.—1. A hoisting device, comprising a supporting-bar, a yoke having its arms pivoted intermediate their length to said bar, at the upper end thereof, and means near the lower end of said bar for rotating said yoke upon its pivots, substantially as described.

2. A hoisting device, comprising a supporting-bar, a yoke having its arms pivoted intermediate their length to said bar, a normally downwardly opening hook formed upon each of the said yoke-arms, and means for rotating said yoke upon its pivots for inverting the position of said hooks, substantially as described.

3. A hoisting device, comprising a supporting-bar, formed with a transverse groove in its upper end, a shaft supported therein, a yoke pivotally supported by said shaft, hooks formed upon the arms of said yoke and normally opening downwardly, and means for rotating said yoke upon its pivot for inverting the position of said hooks, substantially as described

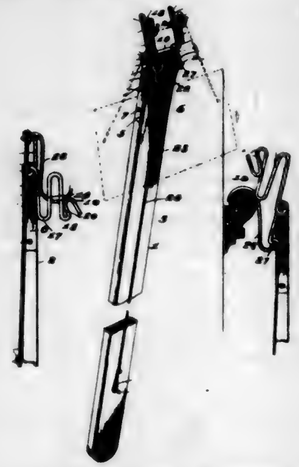

4. A hoisting device, comprising a supporting-bar, a yoke pivoted to the upper end thereof, means for limiting the backward movement of the arms of said yoke, a hook formed upon each of said yoke-arms normally opening downwardly, a cable secured to the upper end of said yoke and passed downwardly longitudinally of said supporting-bar and designed to be operated for rotating said yoke and thereby altering the position of said hooks, and means for retaining said cable in a taut condition when said upper portion of the yoke is at the lowest point of its movement, substantially as described.

5. A hoisting device, comprising a supporting-bar, a shaft extending transversely of the upper end thereof, a yoke formed of a cross-bar, an eye at either end thereof, an arm extending at a right angle to said cross-bar at each end thereof, each of said arms being formed with an eye adapted to inclose one end of said transverse shaft and thereby pivotally engaging the same and projecting beyond said shaft and formed into a number of plications, a cable connecting and passed through said eyes and extending downwardly longitudinally of said supporting-bar, and means for retaining that portion of said cable between the said eyes in a slack condition, substantially as described.

6. A hoisting device, comprising a supporting-bar, a yoke pivoted thereto intermediate the length of its arms, a plurality of plications formed in the length of said arms to one side of their pivot, transversely-arranged bars connecting portions of the plications of the opposite arms and forming a grated basket or cradle designed for the reception of a picture-book, and means for rotating said yoke for inverting the said hook, substantially as described.

7. A hoisting device, comprising a yoke formed of parallel arms, each of said arms being formed with a plurality of plications, means securing said arms together, means pivotally supporting said yoke, and means for rotating the same upon its pivot, substantially as described.

8. A hoisting device, comprising parallel arms, plications formed upon one end of each of said arms, an eye intermediate the length of each of said arms, designed to receive pivotal supporting means, a bar connecting said arms, and eyes carried by said arms for receiving operating means, substantially as described.

704,223. CAR-COUPLING. JAMES B. THOMAS, St. Louis, Mo. Filed Mar. 8, 1901. Serial No. 50,334. (No model.)

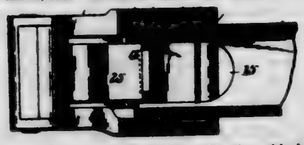

Claim.—1. In a car-coupling, the combination with the draw-bar, of a draw-head having a pivot ball-bearing arranged to bear the weight of the head.

2. In a car-coupling, the combination with the draw-bar, the draw-head, and a separate pivotal ball-bearing connection coupling the head with the bar and arranged to bear the weight of the head.

3. In a car-coupling, the draw-bar, the draw-head, and a pivotal connection between the draw-bar and draw-head, the said pivotal connection comprising means for permitting the draw-head to have an independent lateral oscillation, and also for causing it to automatically return to a centered position when released from lateral strain.

4. In a car-coupling, the draw-bar, the draw-head, and means for permitting the draw-head to have an independent lateral oscillation, and also to gravitate automatically to a centered position when released from lateral strain.

5. In a car-coupling, the draw-bar, the draw-head, and a pivotal connection between the draw-head and the draw-bar, said connection comprising means for causing the draw-head to automatically gravitate to a centered position when released from lateral strain.

6. In a car-coupling, the draw-bar, the draw-head, and a pivotal ball-bearing connection between the draw-head and the draw-bar, said pivotal ball-bearing connection comprising means for causing the draw-head to automatically gravitate to a centered position when released from lateral strain.

7. In a car-coupling, the draw-bar, the draw-head, and a pivotal connection between the draw-head and the draw-bar, said pivotal connection being detachable from the draw-head and comprising means for causing the latter to automatically gravitate to a centered position when released from lateral strain.

8. In a car-coupling, the draw-bar, the draw-head, and a pivotal connection between the draw-head and the draw-bar, said pivotal connection comprising oppositely-arranged bearing members, and a ball-bearing associated with one of said members, and arranged to permit the automatic gravitation of the head to a centered position.

9. In a car-coupling, the draw-bar, the draw-head, and a pivotal connection between the draw-head and the draw-bar, said pivotal connection comprising upper and lower bearing-steps pivotally fitting the draw-bar, and a ball-bearing interposed between the upper bearing-step and the draw-bar, and arranged to permit of the automatic gravitation of the head to a centered position.

10. In a car-coupling, the draw-bar, the draw-head, a pivotal connection between the draw-head and the draw-bar comprising upper and lower bearing-steps, the upper step and the adjacent side of the draw-bar having a ball-seat, and a bearing-ball arranged therein.

11. In a car-coupling, the draw-bar, the draw-head, a pivotal connection between the draw-head and the draw-bar comprising upper and lower bearing-steps arranged respectively at the upper and lower sides of the draw-bar, said draw-bar being provided beneath the upper bearing-step with a ball-seat having inclined walls, a bearing-ball arranged in said bearing-seat, and means for holding said ball in place.

704,224. ROTARY PUMP. WILLIAM W. WAINWRIGHT, Connersville, Ind., assignor to the P. H. & F. M. Roots Company, Connersville, Ind. Filed Jan. 11, 1902. Serial No. 89,366. (No model.)

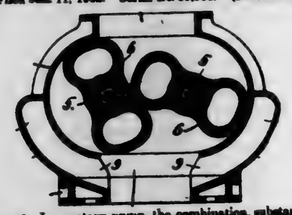

Claim.—1. In a rotary pump, the combination, substantially as set forth, of a casing having an inlet and an outlet, a pair of lobed impellers mounted in the casing, and a pair of separate air-chambers connected with opposite sides of the single pump-inlet at the point where the latter enters the casing and disposed substantially in the plane of rotation of the impellers.

2. In a rotary pump, the combination, substantially as set forth, of a casing having an inlet and an outlet, a pair of lobed impellers mounted in the casing, and outer walls joining the casing and in conjunction therewith forming separate air-chambers having connection with the single pump-inlet at the point where the latter enters the casing, said separate air-chambers being oppositely disposed in substantially the plane of rotation of the impellers.

3. In a rotary pump, the combination, substantially as set forth, of a casing having an inlet and an outlet, a pair of lobed impellers mounted in the casing, a base separably secured to the casing at the inlet thereto, and outer walls connected with the casing and the base and in conjunction therewith forming separate air-chambers at the opposite sides of the inlet in substantially the plane of rotation of the impellers and having connection therewith at the point where the single inlet enters the casing.

704,225. SASH-BALANCE CONNECTION. ALBERT WEIDMANNER, St. Louis, Mo. Filed Sept. 9, 1901. Serial No. 74,785. (No model.)

Claim.—1. An article of the class described comprising a body having a corrugated surface, and tongues located upon two opposite sides of the body and adapted to clamp a flexible connection thereon.

2. An article of the class described comprising a body having a corrugated surface and tongues located upon two opposite sides of the body at each depression in the surface and adapted to clamp a flexible connection thereon.

3. An article of the class described comprising a body, and tongues upon two opposite sides of the body; each of said tongues being grooved.

4. An article of the class described comprising a body having grooves, and tongues located upon opposite sides of the body and provided with grooves; the grooves in the tongues being continuations of the grooves in the body.

5. An article of the class described comprising a body having corrugations, tongues located upon two opposite sides of the body at each depression in the same, a finger secured to the body and extending transversely thereover, an arm located adjacent to the free end of the finger, and a hook.

704,226. ACETYLENE-GAS GENERATOR. ALLEN WILCE, Chicago, Ill. Filed July 15, 1901. Serial No. 68,384. (No model.)

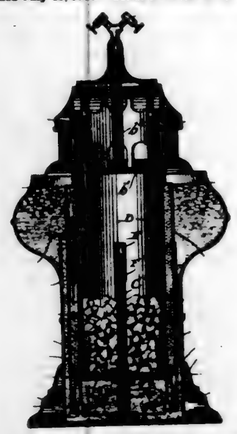

Claim.—1. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up from the bottom of the generating-chamber, a valve at the lower end of said tube, a laterally-perforated closed cap on the upper end of said tube, and a downwardly-converging funnel extending from the perforations in said cap down into the tube and terminating in a restricted opening, substantially as described.

2. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber, and a downwardly-converging funnel extending down into the tube and terminating in a restricted opening through which the water in the tube passes to enter the generating-chamber, substantially as described.

3. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber, a laterally-perforated cap on the upper end of said tube, and a downwardly-converging funnel extending from the perforations in said cap down into the tube and terminating in a restricted opening, substantially as described.

4. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber, a downwardly-converging funnel extending down into the tube and terminating in a restricted opening, an inlet-valve at the lower end of the tube provided with a restricted opening, substantially as described.

5. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber, a laterally-perforated cap on the upper end of said tube, a downwardly-converging funnel extending from the perforations in said cap down into the tube and terminating in a restricted opening, substantially as described.

6. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber, a laterally-perforated cap on the upper end of said tube, the upper end of said cap being closed and terminating not far above its lateral perforations, and a downwardly-converging funnel extending from the perforations in said cap down into the tube and terminating in a restricted opening, substantially as described.

7. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending into the generating-chamber, and a removable carbid-receptacle in said generating-chamber consisting of a cylindric cup provided with a detachable bottom perforated to set over the inlet-tube, substantially as described.

8. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending into the generating-chamber, and a removable carbid-receptacle in said generating-chamber consisting of a cylindric cup provided with a loose bottom perforated to set over the inlet-tube, slots in said bottom, and bent wires secured to the receptacle and entering said slots to hold the bottom in place, substantially as described.

9. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber, and a closed cap on the upper end of said tube, provided with perforations at different levels, substantially as described.

10. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber, a closed cap on the upper end of said tube provided with perforations at different levels, and a downwardly-converging funnel extending from the lower perforations in the cap down into the tube, substantially as described.

11. A gas-lamp comprising a font, a generating-chamber in said font, an inlet-tube extending up into the generating-chamber and provided with a valveless port affording open communication between the upper end and body portion of the tube, and a laterally-perforated closed cap on the upper end of said tube, substantially as described.

704,227. RATCHET-BRAKE FOR CARS. HERBERT WHITE, St. Louis, Mo., assignor to St. Louis Car Company, St. Louis, Mo., a Corporation. Filed July 3, 1901. Serial No. 66,966. (No model.)

Claim.—1. The combination with a brake-staff, and a ratchet-head, of a bracket having a projection, a handle, a pawl secured to the handle, and a dog pivoted to the handle at one side of the pawl, connected to the pawl and extending over the same to engage with the projection on the bracket.

2. The combination with a brake-staff and a ratchet-head, of a bracket having a projection, a handle, a spring-pressed pawl sliding longitudinally within the handle and having a pin, and a dog provided with a slot in which the pin on the pawl works, pivoted to the handle at one side of the pawl, and extending over the same to engage with the projection on the bracket.

704,228. GUARD-GATE FOR RAILWAY-CARS. HERBERT WHITE, St. Louis, Mo., assignor to St. Louis Car Company, St. Louis, Mo., a Corporation. Filed Oct. 21, 1901. Serial No. 79,304. (No model.)

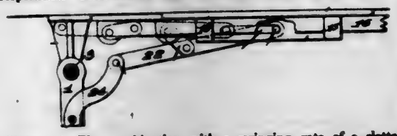

Claim.—1. The combination with a swinging gate of a slotted bracket supported beside said gate, a throw-rod pivoted to said gate and arranged to operate in said bracket, a push-rod, a connecting-link by which said push-rod and throw-rod are connected, and a hand-lever having connection with said push-rod, substantially as described.

2. The combination with a swinging gate, of a bracket mounted beside said gate having a pair of slotted arms, a throw-rod pivotally connected to said gate and arranged to operate in said bracket-arms and be guided thereby, a push-rod, a connecting-link by which said throw-rod and push-rod are connected, and a hand-lever connected to said push-rod, substantially as described.

3. The combination with a swinging gate, of a bracket mounted beside said gate having a pair of slotted arms, a throw-rod connected to said gate, a push-rod, a connecting-link by which said throw-rod and push-rod are united, and studs carried by said throw-rod adapted to operate in the slots in said bracket-arms to guide and limit the movement of said throw-rod, substantially as described.

704,229. BRAKE. JAMES S. ALEXANDER, Fairfield, Iowa. Filed Jan. 4, 1902. Serial No. 88,400. (No model.)

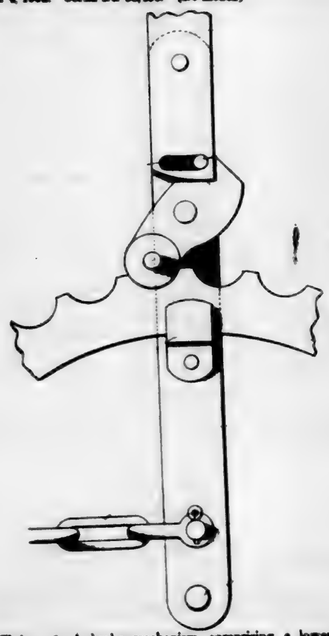

Claim.—1. A brake mechanism, comprising, a lower fulcrumed member, an upper handle member pivoted intermediately thereon and extending thereabove, a pawl intermediately pivoted on the said fulcrumed member and below the handle member and adapted to be vibrated thereby, a loose roller at the lower free end of the pawl, and a locking-bar below the pawl and provided with recesses substantially agreeing with the said loose roller of the pawl and adapted to receive the same.

2. A brake mechanism, comprising, a lower fulcrumed member, an upper handle member pivoted thereon and extending thereabove, a pawl pivoted on the said fulcrumed member and adapted to be vibrated by the said handle member, a loose roller carried by the free end of the pawl, and a locking-bar below the pawl and provided with recesses for engaging the said loose roller.

3. A brake mechanism, comprising, a lower fulcrumed member, an upper handle member overlapping the upper end of and intermediately pivoted to the lower fulcrumed member, and terminating at its lower end in a shoulder and provided above the same with a segmental slot, a pin projecting from the lower member and engaging the slot, a loosely-pivoted gravity-pawl mounted on the lower member and provided at its upper end with a shoulder located in the path of that of the upper handle member and adapted to be struck thereby, a loose roller mounted on the lower free end of the pawl, and a curved locking-bar provided with a series of substantially semicircular recesses of substantially the same diameter as the roller and adapted to engage the same.

704,230. TANK-VALVE. SYLVESTER J. ARDELL, Paterson, N. J. Filed Feb. 7, 1902. Serial No. 93,067. (No model.)

Claim.—1. The combination, with a valve-casing, of a cap for said casing forming therewith a valve-chamber and screwed onto the same,

the contiguous portions of said cap and casing being provided with internal annular flanges, a tubular valve-seat having a surrounding flange clamped between said casing and cap flanges, said valve-seat having its tubular or body portion thus spaced from the surrounding casing and cap walls, and a tubular part disposed in said casing below said valve-seat, having its upper end formed as a valve, and also having ducts opening laterally into said casing, substantially as described.

2. The combination, with a valve-casing and a cap surmounting the same and forming therewith a valve-chamber, of a valve-seat arranged in said chamber, a vertically-movable valve also arranged in said chamber and adapted to take against said valve-seat, and a tubular portion extending substantially horizontally from said chamber and communicating therewith, the tops of said chamber and the tubular portion being flush with each other, substantially as described.

3. The combination, with a valve-casing open at the top, of a hollow cap closed at the top and surmounting said casing to form therewith a valve-chamber, a tubular portion extending laterally from, and communicating with, said hollow cap and having the top portion of its bore-surface in a plane coincident with that of the inside top surface of said cap, a tubular valve-seat disposed substantially centrally in said valve-chamber and having its tubular portion appreciably spaced from the surrounding casing and cap walls, and a tubular part disposed in said casing below said valve-seat, having its upper end formed as a valve, and also having ducts opening laterally into said casing, substantially as described.

704,281. HYDRAULIC DREDGE. LINDON W. BATES, Chicago, Ill.
Filed July 19, 1900. Serial No. 24,251. (No model.)

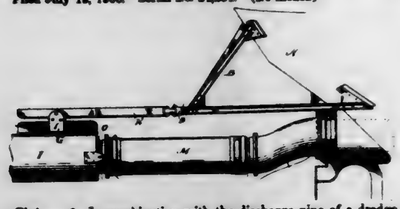

Claim.—1. In combination with the discharge-pipe of a dredge, a pontoon; a discharge-pipe carried by said pontoon; a flexible connection intermediate said pipes; and an adjustable universal connection intermediate the dredge and the pontoon independent of the flexible connection between the pipes.

2. In combination with the discharge-pipe of a dredge, a pontoon; a discharge-pipe carried thereby; a flexible connection intermediate the discharge-pipe and the pipe carried by the pontoon; a brace or strut connected to the rear of the dredge; a frame universally connected to said brace; and pivotal connections intermediate the frame and the pontoon.

3. In combination with the discharge-pipe of a dredge; a pontoon; a discharge-pipe carried thereby; a flexible pipe intermediate the discharge-pipe and the pipe on the pontoon; a strut or brace rigidly attached to the rear of the dredge; a frame universally jointed to the rear end of said strut or brace; and adjustable pivotal connections between said frame and the pontoon.

4. In combination with the discharge-pipe of a dredge, a pontoon; a pipe carried thereby; a flexible pipe connecting said discharge-pipe and the pipe on the pontoon; a strut or brace extending out from the rear of the dredge; a frame universally connected to the rear end of said strut or brace; rails secured to the pontoon; brackets adjustably mounted upon said rails; and pivotal connections intermediate said bracket and the frame.

5. In combination with the discharge-pipe of a dredge; a pontoon; a pipe carried thereby; wedge-shaped sections connected to the end of the discharge-pipe and the pipe carried by the pontoon; and a flexible pipe connecting said wedge-shaped sections.

6. In combination with the discharge-pipe of a dredge; a pontoon; a pipe carried thereby; wedge-shaped sections connected to the end of the discharge-pipe and the pipe carried by the pontoon; a flexible pipe connecting said wedge-shaped sections; and means for holding the pontoon in its proper position relative to the dredge.

704,282. MACHINE FOR MAKING BLUE-PRINTS. ROBERT A. BELL, Philadelphia, Pa., assignor to Charles A. Rutter, Philadelphia, Pa.
Filed Nov. 18, 1901. Serial No. 82,462. (No model.)

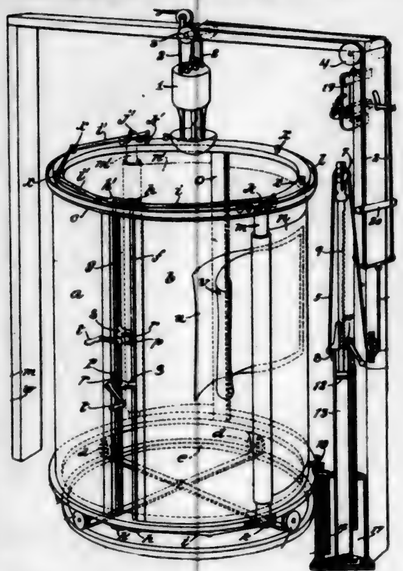

Claim.—1. The combination in a machine for making prints, of a glass platen, a curtain one end of which is secured to a line along said platen, a spring-actuated roller to which the other end of said curtain is secured, and means for drawing said roller across said platen.

2. In a machine for making prints, in combination, a glass cylinder, rings secured to the top and bottom of said cylinder, a curtain one end of which is fixed to said cylinder, a spring-actuated roller to which the other end of said curtain is secured, means carried by said rings for carrying said roller, and means for drawing said roller and connected parts circumferentially around said glass cylinder.

3. In a machine for making prints, in combination, a sectional glass cylinder, metallic rings carried by and securing the ends of said sections, a curtain secured to said cylinder upon a line parallel with its axis, spring-actuated rollers upon which the ends of said curtain are rolled, means carried by said rings for carrying said rollers, and means for drawing said rollers circumferentially around said glass cylinder toward one another and away from the point at which said curtain is secured to said cylinder.

4. In a machine for making prints, in combination, a glass cylinder, metallic rings carried by the ends of said cylinder furnished with grooves concentric with said cylinder, a curtain one end of which is secured to said cylinder, a spring-actuated roller to which the other end of said curtain is secured, carriages carried by said rings carrying the ends of said roller and being guided in their movements by said grooves in said rings, a shaft, pulleys upon said shaft, belts secured at one end to said carriages and at the other to said pulleys, a gear-wheel upon said shaft, a gear-wheel meshing with said first gear, and means for revolving said latter gear.

5. The combination with the glass cylinder and the curtains as described, of a lamp, a cord one end of which is secured to said lamp and the other to a fixed point, a stationary pulley under which said cord passes, a movable pulley over which said cord passes, a rod carrying said latter pulley, a piston to which said rod is secured, a cylinder in which said piston works, a reservoir, a connection between said reservoir and said cylinder, and a valve by means of which the flow of liquid from said cylinder to said reservoir, or vice versa, may be controlled.

704,283. MUSICAL TOY. HAROLD P. BROWN, Montclair, N. J.
Filed May 22, 1900. Serial No. 17,031. (No model.)

Claim.—1. A wind instrument comprising a cylindrical tube having a series of riffles on its interior wall, the said riffles being transverse to the longitudinal axis of the tube and means for applying the mouth to the tube to force air through it, substantially as set forth.

2. A wind instrument comprising a cylindrical tube provided with a series of riffles projecting from and extending around the interior wall of the tube transverse to the longitudinal axis of the tube and means for applying the mouth to the end of the tube, substantially as set forth.

3. A wind instrument comprising a cylindrical tube provided with riffles extending spirally around the interior of the tube and means for applying the mouth to the end of the tube to force the wind through the tube, substantially as set forth.

4. A wind instrument comprising a cylindrical tube having its wall crimped to form riffles projecting from the interior of the tube transverse to the longitudinal axis of the tube, a mouthpiece attached to one end of the tube and a bell attached to the opposite end of the tube, substantially as set forth.

704,284. WHEEL. WILLIAM T. W. BUSHNELL, Bradley, Ill.
Filed Jan. 14, 1901. Serial No. 43,178. (No model.)

Claim.—1. A wheel composed of a rim, a hub consisting of separable sections fitted together, means for holding said sections together, a series of independent, spoke-sockets carried by each of said sections, said sockets having laterally-bendable clamping devices and spokes secured in said spoke-sockets and to the rim.

2. A wheel, consisting of a rim, a hub composed of separable sections, a series of independent radial spoke-sockets carried by each of said sections, each of said sockets having a clamp, means for holding said sections together, and spokes secured in said sockets and to the rim.

3. A wheel, consisting of a rim, a hub composed of separable interlocking sections, a hub-box upon which said sections are fitted, said box having a stop near one end against which one of said sections bears, means binding said sections together and against said stop, a series of spoke-sockets carried by each of said sections, and spokes secured in said sockets and to the rim, substantially as described.

4. A wheel, consisting of a rim, a hub-box having a peripheral flange, hub-sections fitted on said box, one of said sections bearing against said flange, a cap secured on the end of the box and arranged to bear against the other hub-section, a series of independent spoke-sockets carried by each of said sections, and spokes secured in said sockets and to the rim.

5. The combination of a hub-box, closed at one end and screw-threaded at the other end, an axle having a spindle projecting into said hub-box and carrying a collar, a cap fitted upon said axle and screwed upon the open end of said hub-box, said cap inclosing said collar, a peripheral flange carried by the hub-box and a hub on the hub-box between said flange and collar, the inner edge of said collar being arranged to bear against said hub and bind it against said collar.

6. A wheel, comprising a rim, a hub having on its periphery spoke-sockets, said sockets being enlarged near the hub and being open at the sides to the full depth of the sockets to permit the introduction and removal of the spokes by a lateral movement, spokes having their outer ends secured to the rim, their inner ends having enlarged heads which fit in said sockets and abut against the bottoms thereof, whereby the end thrust of said spokes is directed against the periphery of the hub, and clamps carried by the hub and bendable laterally around the stems of said spokes for securing them in the hub, substantially as described.

704,285. CRAB-MAKER'S BOARD. ALONZO C. CAMPBELL, Charleston, S. C., assignor of one-half to W. B. Crum, Charleston, S. C.
Filed Oct. 26, 1901. Serial No. 80,036. (No model.)

Claim.—1. As an article of manufacture, a cigar-maker's board, consisting of a series of convex wood sections the grain of which is vertically disposed, and means for securing said sections side by side.

2. As an article of manufacture, a cigar-maker's board, consisting of a series of convex wood sections the grain of which is vertically disposed, and a series of tie-rods passed through the sections and provided at their ends with nuts.

3. As an article of manufacture, a cigar-maker's board having a flat base or bottom and an upper convex working surface.

4. As an article of manufacture, a cigar-maker's board, formed of wood with the grain on end or vertically disposed, said board having a flat base or bottom and an upper convex working surface.

5. As an article of manufacture, a cigar-maker's board, consisting of a series of convex sections arranged side by side and each having its grain vertically disposed, and devices for securing the sections together, the working surface of the board declining from the center toward the edges, the greatest decline being toward the front end.

6. As an article of manufacture, a cigar-maker's board having a flat base or bottom and an upper convex working surface, the greatest slope of said working surface being toward the front.

704,286. WATCH-PROTECTOR. FRANK A. CHERVENKA, Milwaukee, Wis. Filed Oct. 3, 1901. Serial No. 77,845. (No model.)

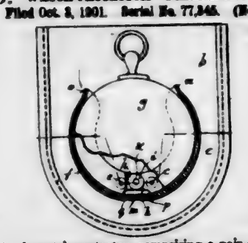

Claim.—1. A watch-protector, comprising a pair of yielding interiorly-grooved curved shells, pivotally connected at their lower ends, in combination with a watch-pocket of flexible yielding material, and screws passing through one wall of said pocket into said shells for directly securing the same to the watch-pocket of the wearer.

2. A watch-protector, comprising a pair of interiorly-grooved curved shells, pivotally connected at their lower end, in combination with a spring for normally forcing the upper ends of said shells toward each other, and a pair of screws, engaging horns in said shells adjacent to their pivotal connection, for securing said protector to a watch-pocket.

3. A watch-protector, comprising a pair of interiorly-grooved curved shells, formed with inwardly-projecting upper extensions at their lower ends; pivots centrally uniting said projections; opposing pins projecting inwardly from said lower ends of the shells, below the plane of said extensions and above the lowest plane of the shells; a spiral spring having its opposite ends in engagement with said pins; and screws connected to said shells for securing the same to a watch-pocket.

704,287. TYPE-WRITER COVER. HENDERSON P. CHILDERS, Memphis, Tenn. Filed Jan. 4, 1902. Serial No. 88,451. (No model.)

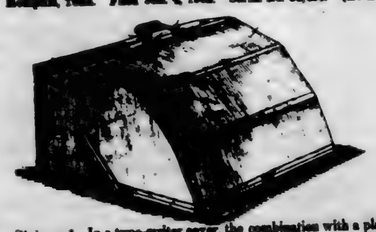

Claim.—1. In a type-writer cover, the combination with a platform arranged to support a type-writer, of a collapsible frame pivoted to the

platform, and a flexible covering secured to the frame, said frame and covering being supported upon the platform when in collapsed position.

2. In a type-writer cover, the combination with a platform arranged to support a type-writer, of a collapsible frame comprising a main bow pivoted to the platform and supplemental bows pivoted to the main bow and to each other, and a flexible covering secured to the bows of the frame.

3. In a type-writer cover, the combination with a platform arranged to support a type-writer, of a collapsible frame movable over and away from the platform, and a covering secured to the frame and the platform.

4. In a type-writer cover, the combination with a platform arranged to support a type-writer, of a collapsible frame mounted upon the platform and movable over and away from the same, and a flexible covering secured to the frame and the platform.

5. In a type-writer cover, the combination with a platform arranged to support a type-writer, of a collapsible frame pivotally connected to the platform, and a flexible covering secured to the frame and collapsible therewith.

6. In a type-writer cover, the combination with a platform adapted to support a type-writer, of a collapsible frame pivoted to the platform and comprising a plurality of pivotally-connected ribs, and a flexible covering secured to said ribs, and having its edges extended below the edges of the platform.

7. In a type-writer cover, the combination with a platform adapted to support a type-writer, of a main bow pivoted at its opposite ends to intermediate portions of the platform, supplemental bows pivoted to the main bow, and a flexible cover attached to said several bows, and having its edges extended below the edges of the platform.

8. In a type-writer cover, the combination with a platform adapted to support a type-writer, of a main bow pivoted at its opposite ends to the platform, supplementary bows pivoted to the main bow, a flexible cover attached to said several bows, and a handle secured to the main bow and projecting above the cover.

9. In a type-writer cover, the combination with a platform adapted to support a type-writer, of a main bow pivoted at its opposite ends to the platform, supplementary bows pivoted to the main bow, a flexible cover attached to said several bows, means for securing the cover about a portion of the platform, one of said bows having a detachable engagement with the platform, whereby a type-writer supported thereon may be completely inclosed.

10. In a type-writer cover, the combination with a base arranged to support a type-writer, of a main bow pivoted at its opposite ends to the base, supplementary bows pivotally connected to the main bow, a flexible cover attached to said several bows, and a holding-bow secured to a portion of the base and having the covering attached thereto, one of said pivoted bows being secured to the edge of the covering and having a detachable engagement with the base whereby a type-writer supported thereon may be completely inclosed.

11. In a type-writer cover, the combination with a base arranged to support a type-writer, of a main bow pivoted at its opposite ends to the base, supplementary bows pivotally connected to the main bow, a flexible cover attached to said several bows, a holding-bow secured to a portion of the base and having the covering attached thereto, one of said pivoted bows being secured to the edge of the covering and having a detachable engagement with the base, whereby a type-writer supported thereon may be completely inclosed, and means for securing said pivoted bow to the base.

12. In a type-writer cover, the combination with a platform having an offset ledge about its edge, of a main bow pivoted at its ends to the opposite portions of the base, supplementary bows pivoted to the main bow, a flexible cover attached to said several bows, a holding-bow secured upon a portion of the peripheral ledge of the base and having the covering attached thereto, one of said pivotal bows being secured to the edge of the covering and detachably fitting upon the remaining portion of the peripheral ledge, and means for securing said pivoted bow to the base.

13. In a type-writer cover, the combination with a base adapted to support a type-writer, of a main bow pivoted at its ends to opposite portions of the base, supplementary bows pivoted to the main bow, a flexible covering attached to said several bows, and means for securing the main bow against its pivotal movement.

14. In a type-writer cover, the combination with a base adapted to support a type-writer, of a main bow pivoted at its ends to opposite portions of the base, supplementary bows pivoted to the main bows, a flexible cover attached to said several bows, and a fastening-arm pivoted to the main bow and having a detachable engagement with the base to hold said bow against movement thereon.

15. In a type-writer cover, the combination with a platform having a peripheral ledge, of a collapsible frame secured to and carried by the platform, and a flexible cover carried by the frame and having its edges resting upon the ledge of the platform.

16. In a type-writer cover, the combination with a machine-supporting platform, of a collapsible frame pivoted to the platform at an intermediate point of the length thereof, that portion of the platform in rear of the pivotal attachment of the frame constituting a support for the latter when folded, and a flexible covering secured to the frame and encircling the edge of the platform when unfolded.

704,238. PIPE OR CONDUIT. ARTHUR W. COOMEY, London, England. Filed Jan. 14, 1902. Serial No. 89,750. (No model.)

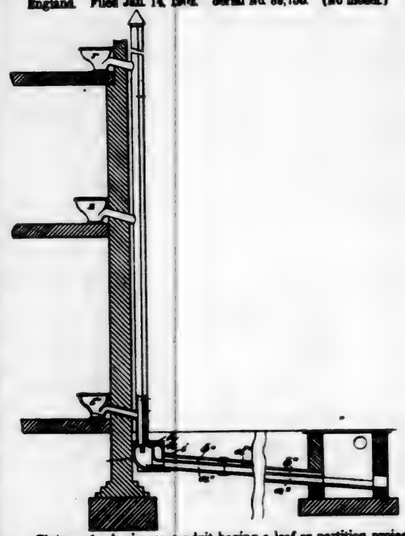

Claim.—1. A pipe or conduit having a leaf or partition projecting from one side of its internal surface and extending partly across to the other side thereof, substantially as and for the purposes set forth.

2. A pipe or conduit divided into two compartments connected together by a longitudinal aperture in the dividing leaf or partition, one compartment forming a duct for the passage of liquid or other substance and the other an air-compartment for receiving the air escaping from the said duct through the said aperture, substantially as and for the purpose set forth.

704,239. TOY BANK. ORLO G. CRANDELL, Worcester, Mass., assignor of one-half to Julian F. Bigelow, Worcester, Mass. Filed May 31, 1901. Serial No. 62,567. (No model.)

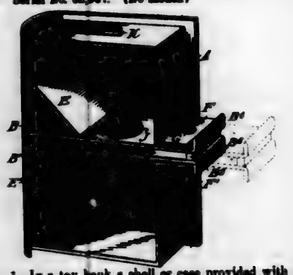

Claim.—1. In a toy bank a shell or case provided with two compartments, one above the other, a sliding plate between said compartments provided with a perforation adapted to receive a single coin, a partition normally beneath said perforation, and a coin-supporting lug located beyond the end of said partition and in a plane below said partition equal to the thickness of a coin, whereby the coins are individually transferred from the upper to the lower compartment by the sliding movement of said plate, substantially as described.

2. The combination in a toy bank comprising two compartments, one above the other, of the plates B, B' provided with perforations D and D', a partition C and coin-supporting lugs at the end of said partition, substantially as described.

3. The combination of compartments A' and A², one above the other, a horizontal sliding plate having a coin-perforation and placed between said compartments, a separating-partition having a thin edge to contact with the coin as the sliding plate is moved, and a supporting-lug for the coin when the sliding plate is drawn out, substantially as described.

4. The combination of a case having two compartments, one above the other, a pair of duplicate sliding plates, each having a coin-perforation, a separating-partition normally separating said perforations, a pair of lugs above and below said sliding plates by which the coin is supported as it is pushed against the edge of said separating-plate, substantially as described.

5. The combination of a case or shell A having the compartments A' and A², partitions C and K, E', sliding plates B, B' having coin-perforations D, D' and lugs F, F' provided with the openings G, whereby a coin held in said perforations is supported normally on said partition C and when the slide is drawn, is allowed to fall on one of said coin-supporting lugs by gravity and be carried to the opposite side of said partition C by the reverse movement of said sliding plates, substantially as described.

704,240. WHEEL-PLOW. BRADFORD CROSS, Canton, Ill., assignor to Parlin & Orendorff Company, Canton, Ill., a Corporation of Illinois. Filed May 8, 1902. Serial No. 106,464. (No model.)

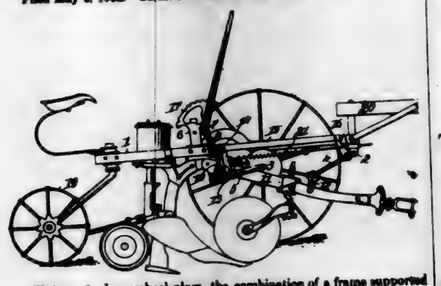

Claim.—1. In a wheel-plow, the combination of a frame supported on wheels, a plow-beam having a plow attached thereto, a pair of bails pivoted in the frame, one in front of the other, and both connected pivotally with the plow-beam and a strut-bar to transmit the motion of one bail to the other.

2. In a wheel-plow, the combination of a frame supported on wheels, a plow-beam having a plow attached thereto, a bail pivoted in the frame and connected pivotally with the plow-beam, a second bail pivoted in the frame in front of the first-named bail, a swinging link connecting the front bail with the plow-beam, and a strut-bar to transmit motion from one bail to the other.

3. In a wheel-plow, the combination of a frame supported on wheels, a plow-beam having a plow attached thereto, a pair of bails pivoted in the frame, one in front of the other, with the rear bail connecting pivotally with the plow-beam, a swinging link connecting the front bail with the plow-beam, arms attached to the beams and extended upward therefrom, and a strut-bar connected pivotally at its ends with the arms of the bails, the connection of the rear end of the bar being farther from the pivot of the bail than the connection of the front end.

4. In a wheel-plow, the combination of a frame supported on wheels, a plow-beam having a plow attached thereto, a pair of bails pivoted in the frame, one in front of the other, with the rear bail connecting pivotally with the plow-beam, a swinging link connecting the front bail with the plow-beam, arms attached to the bails and extended upward therefrom, and an adjustable strut-bar connected at its ends with the arms of the bails and forming a longitudinally-extensible connection between the arms.

5. In a wheel-plow, the combination of a frame supported on wheels, a plow-beam having a plow attached thereto, a pair of bails pivoted in the frame, one in front of the other, and connected pivotally with the plow-beam, a strut-bar connecting the bails, a lift-lever, and a link connecting the lift-lever with the rear bail.

704,241. SEPARATOR. FRED CUTLER, Bradbriton, Ill. Filed Nov. 8, 1901. Serial No. 81,698. (No model.)

Claim.—1. In a separator, the combination of a board, endless chains running over the board, straw-slats attached to the chain in contact with the board, other straw-slats pivotally connected with the chains out of contact with the board, straw-carrying fingers extending rearward from the pivoted slats, a side board having a sinuous groove extending lengthwise thereof and guide-fingers for the pivoted slats engaging the groove.

2. In a separator, the combination of a hollow frame consisting of an upper board, a lower board and side boards, a fan to force air through the hollow frame, a shaft in the open discharge end of the hollow frame, sprocket-wheels on the shaft, endless chains running around the sprocket-wheels with their upper runs above the upper board, cross-slats attached to the chains in position to move in contact with the upper board, other slats pivotally connected with the chains, out of contact with the upper board, straw-carrying fingers extending rearward from the pivoted slats, a side board having a sinuous groove and guide-fingers for the slats engaging the groove.

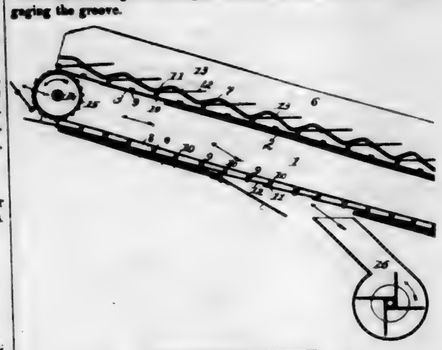

704,242. TYPE-WRITING MACHINE. NOBLE C. DARROW, Minneapolis, Minn. Filed Sept. 9, 1901. Serial No. 74,757. (No model.)

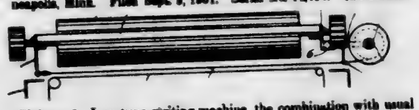

Claim.—1. In a type-writing machine, the combination with usual inking means, of a secondary inking-ribbon differing in color from said normal inking means, a spool therefor, means for connecting the spool to one end of the paper-carriage, and means for temporarily connecting the unwound portion of the ribbon to the opposite end of the carriage, whereby the ribbon may be periodically presented at the printing-point to produce print differing in color from the normal, substantially as set forth.

2. In a type-writing machine, the combination with usual inking means, of a secondary inking-ribbon differing in color from said normal inking means, a spool therefor, means for connecting the spool to one end of the paper-carriage, a spring for rotating the spool to wind the ribbon, a clamping device for the free end of the ribbon, and means for temporarily connecting such clamp to the opposite end of the carriage, whereby the ribbon may be periodically presented at the printing-point to produce print differing in color from the normal, substantially as set forth.

3. In a type-writing machine, the combination with usual inking means, of a secondary inking-ribbon differing in color from said normal inking means, a spool therefor, means for connecting the spool to one end of the paper-carriage, a spring for rotating the spool to wind the ribbon, a clamping device for the free end of the ribbon, and means for shifting the spool longitudinally on its axis and means for shifting the clamp correspondingly, whereby successive portions of the ribbon may be periodically presented at the printing-point to produce print differing in color from the normal, substantially as set forth.

704,243. BRACELET OR THE LIKE. EDWARD P. DAVIS, Wrentham, Mass., assignor to Whiting & Davis, Wrentham, Mass., a copartnership composed of Charles A. Whiting, Brooklyn, N. Y., and Edward P. Davis, Wrentham, Mass. Filed Jan. 2, 1902. Serial No. 88,053. (No model.)

Claim.—1. A bracelet formed of sections pivoted together at their ends, one of said sections having secured therein a spring which extends

into the adjacent section in its extreme open position, a cam in the end of the adjacent section which engages with said spring and holds the two sections in the open and closed positions, and means which limit the extent of opening movement, substantially as described.

2. A bracelet formed of hollow sections pivoted together at their ends, one of said sections having secured therein a spring having a free end which extends into the hollow end of the adjacent section both while closed and while in the extreme open position, a cam fixed to said adjacent section which engages with said spring and holds the spring close to the inside walls of the said sections when in their extreme open position, substantially as described.

3. A bracelet formed of curved tubular sections pivoted together, a spring secured inside of one of said tubular sections and having a free end which extends across into the inside of the opposing section when the joint is in its extreme open position, a cam fixed to said opposing section, and having a projection the extreme end of which engages the said spring when the joint is in its extreme open position and holds the said spring close to the inside walls of the sections, and means which limit the extent of opening of said sections, substantially as described.

704,244. APPARATUS FOR PURIFYING WATER. JOHN DAVIS, Pittsburg, Pa. Filed Jan. 2, 1902. Serial No. 88,109. (No model.)

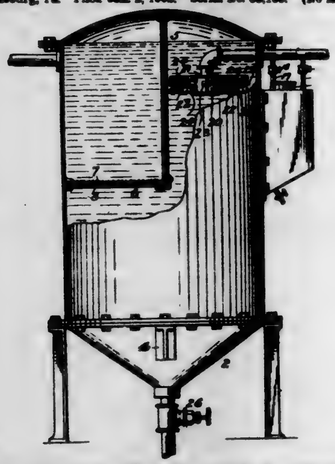

Claim.—1. A water-purifier having a supply-pipe, means for supplying a coagulant or reagent to the water in the supply-pipe, and a mechanical mixer submerged in the purifier, revolubly secured to the discharge end of said supply-pipe and revolved by the water flowing through the mixer.

2. A water-purifier having a supply-pipe, means for supplying a coagulant or reagent to the water in the supply-pipe, and a submerged mixer provided with radial arms through which water is discharged and revolubly secured to the end of said supply-pipe.

3. A water-purifier having means for supplying a coagulant or reagent thereto, a water-supply pipe, and a mixer revolubly secured to the end of said supply-pipe and provided with radial arms through which the water is discharged, and vanes secured to said arms.

4. A water-purifier having means for supplying a coagulant or reagent thereto, a water-supply pipe, and a submerged mixer revolubly secured to the end of said supply-pipe and provided with radial arms through which the water is discharged, and perforated vanes secured to said arms.

5. A water-purifier having means for supplying a coagulant or reagent thereto, a water-supply pipe, and a mixer revolubly secured to the supply-pipe and through which the water is discharged into the purifier, in combination with a baffle-plate opposite the mixer and an arrester forming the bottom of a chamber from which clear water is discharged.

704,245. MEANS FOR TRANSMITTING ROTARY MOTION. PATRICK W. DUNNE, River Forrest, Ill. Filed Jan. 20, 1901. Serial No. 43,891. (No model.)

Claim.—1. The means for communicating rotary motion from one shaft or rotating part to another, which consists in the combination of two shafts or rotating parts, a disk having flat parallel sides in its plane of rotation mounted on one of the shafts, two parallel rings or parts each having a flat parallel side in the plane of their rotation between which the disk is clamped with a frictional contact, and means for adjustably applying the clamping force adjacent to the place of frictional contact, substantially as specified.

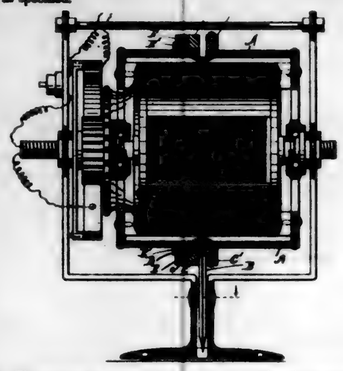

2. The means for communicating rotary motion from one shaft or rotating part to another, which consists in the combination of two shafts or rotating parts, a disk having flat parallel sides in its plane of rotation mounted on one of the shafts, two parallel rings or parts each having a flat parallel side in the plane of their rotation between which the disk is clamped with a frictional contact, and means for adjustably applying the clamping force adjacent to the place of frictional contact, said means consisting of a screw-ring bearing against one of the clamping-rings immediately opposite to the frictional surfaces in contact, substantially as specified.

704,246. BURGLAR-ALARM. PATRICK W. DUNNE, River Forrest, Ill. Filed Mar. 30, 1901. Serial No. 53,894. (No model.)

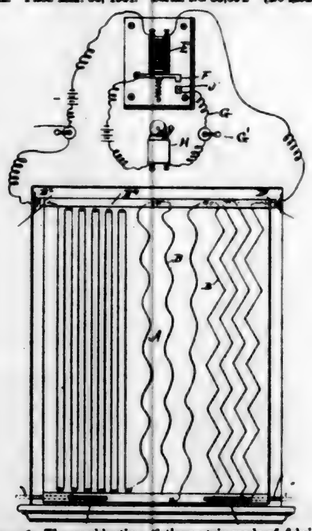

Claim.—1. The combination of the curtain made of fabric whereof a portion of the warp-threads are made of wire, said wire warp-threads being united together to form a continuous electric conductor; the shade-roller with metallic axes and fixtures, connected to said continuous curtain-wire; the electric circuit including an electromagnet which controls a secondary circuit including an alarm-bell, substantially as specified.

2. The combination of the curtain made of fabric whereof a portion of the warp-threads are made of wire, said wire warp-threads being united together to form a continuous electric conductor; the shade-roller with metallic axes and fixtures, connected to said continuous curtain-wire; the electric circuit including an electromagnet which controls a secondary circuit including an alarm-bell, and means at the bottom of the curtain for fastening it down to the window or frame, substantially as specified.

3. The combination of the curtain made of fabric whereof a portion of the warp-threads are made of wire, said wire warp-threads being united together to form a continuous electric conductor; the shade-roller with metallic axes and fixtures, connected to said continuous curtain-wire; the electric circuit including an electromagnet which controls a secondary circuit including an alarm-bell, and means at the bottom of the curtain for fastening it down to the window or frame which consists of a hollow tube provided with sliding bolts one at each end setting into sockets in the window-framing, substantially as specified.

704,247. BURGLAR-ALARM. CHARLES PERSHAW, Chicago, Ill. Filed Dec. 26, 1901. Serial No. 87,233. (No model.)

Claim.—1. In an electric burglar-alarm for doors and the like, the combination of battery-terminals, a pivoted support, contacts on the support movable to engage the terminals, a spring-pressed rod movable to engage the block and elevate the contacts into engagement with the terminals, an electric circuit including an alarm-signal connected with the contacts, and means on the door for engaging and restraining the rod.

2. In a burglar-alarm for doors and the like the combination of a normally open electric circuit including contacts and an alarm-signal, a separate normally open distant alarm electric circuit, including a circuit-closer, a swinging lever adapted in its movement in one direction to elevate the contacts into engagement with the terminals, an arm on the lever arranged to engage the closer of the other circuit, a rod for moving the lever and means on the door or the like for restraining the rod.

3. The combination of a casing, an electric battery in the casing having hooked terminals *k*, swinging lever D in the casing carrying hooked contacts *i* in circuit with alarm-sounding mechanism, rod E connected with the lever and extending through a wall of the casing, spring upon the rod tending normally to move the lever to cause the contacts *i* to engage the terminals *k* and means for engaging and releasing the rod, substantially as and for the purpose set forth.

704,248. CANDY-DIPPING MACHINE. FERDINAND GOLDSCHMIDT, Chicago, Ill. Filed Oct. 18, 1901. Serial No. 79,066. (No model.)

Claim.—1. In a machine of the kind specified, the combination with a receptacle adapted to receive the coating, and devices movable in said receptacle for removing the dipped candy, of a receiver movable over said receptacle and provided with chutes to receive the candy to be dipped and deliver same to said receptacle at predetermined points, and devices carried by said receiver for forcibly immersing the candy.

2. In a machine of the kind specified, the combination with a receptacle, a receiver movable over same and provided with a series of chutes each adapted to receive a piece of candy to be dipped and deliver same into said receptacle at predetermined points, and devices carried by said receiver for forcibly immersing said candy in the coating contained in said receptacle, of a crank-shaft above said receptacle carrying forks adapted to move into and out of said receptacle to remove the dipped candy, said forks corresponding in number and position with said chutes.

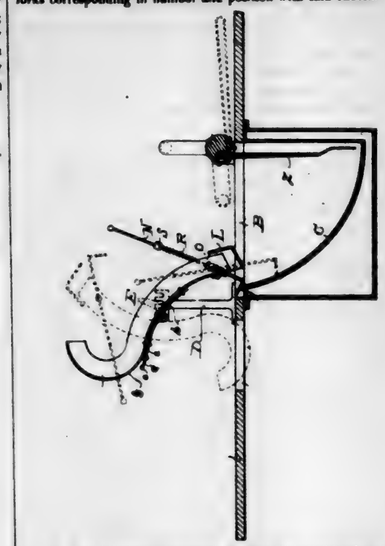

3. In a machine of the kind specified, the combination with a receptacle adapted to contain coating, a receiver provided with chutes at regular intervals pivotally mounted adjacent to said receptacle and projecting over same at one end, said chutes being adapted each to receive a piece of candy to be dipped, and deliver same to said receptacle at predetermined points, and devices for forcibly immersing said candy, of a shaft mounted adjacent said receptacle, guides on said shaft, a member movable in said guides, and forks each secured at one end to said shaft and at its other to the member movable in said guides, said forks being adapted to be turned by the movements of said member as said shaft is turned, said forks corresponding in number and location with said chutes.

704,249. HOSE-SUPPORTER HOOK. MYRON E. HAMMOND, Bridgeport, Conn. Filed Apr. 17, 1902. Serial No. 103,572. (No model.)

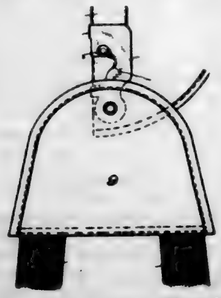

Claim.—A hose-supporter hook, comprising a sheet-metal body cut away at its front edge and having a notch in the upper wall of said cut-away portion and a recess in the rear wall of said portion immediately below said notch, and provided with rearwardly-extending resilient flanges at the upper and lower ends of said cut-away portion, said fastener adapted to be forced on the corset-busk with the flanges extending in the rear of said busk, while the notch is capable of embracing the stud of the corset-clasp, substantially as set forth.

704,250. WELL-RIG. EDWIN A. HARDISON, Santa Paula, Cal., assignor of one-half to Joseph L. Olive, Santa Paula, Cal. Filed Sept. 6, 1899. Serial No. 729,598. (No model.)

Claim.—1. A well-rig, comprising a band-wheel provided on one

side with a beveled friction-cost; a loose tug-pulley mounted to slide on the axle of the band-wheel and beveled to fit the friction-cost of the band-wheel; means for sliding the loose tug-pulley into and out of the seat in the band-wheel; an extra bull-wheel and shaft mounted on the side of the derrick opposite the main bull-wheel, said shaft being provided with two spools, one of which is fixed to the shaft and the other of which is journaled to rotate on the shaft; a latch or clutch for fixing the loose spool to the shaft; an extra bull-rope around the loose tug-pulley and the extra bull-wheel; and means for tightening and loosening the extra bull-rope.

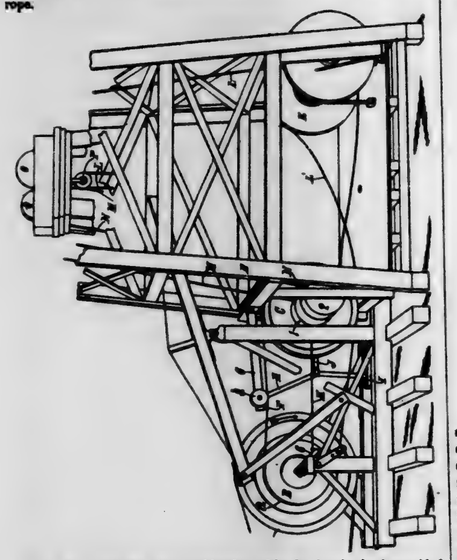

2. In a well-rig, the combination with the band-wheel provided with a friction-cost; of a tug-pulley loosely mounted on the shaft of the band-wheel and provided with a flanged neck; a stationary cam; a cam-lever upon the flanged neck and upon the stationary cam to slide the loose tug-pulley on the shaft of the band-wheel to bring it into and out of engagement with the friction-cost; an extra bull-wheel; an extra bull-rope connecting said loose tug-pulley with the extra bull-wheel, and means for tightening and loosening said extra bull-rope.

3. The combination with the band-wheel, of the loose tug-pulley to rotate with the band-wheel; the extra bull-rope around the loose tug-pulley and the extra bull-wheel; a pivoted lever extending along the extra bull-rope and provided with a grooved wheel to run on top of the extra bull-rope, a knuckle-joint pivoted at one end to the lever and at the other end to a stationary support; and a handle pivoted to the joint of the knuckle for operating the knuckle-joint.

4. In a well-rig the combination with the band-wheel; of an extra bull-wheel provided with a fixed spool and a spool which is loose on the shaft and constructed to be coupled with and uncoupled from said shaft; and means for connecting and disconnecting the extra bull-wheel and band-wheel independently of the main bull-wheel.

5. A well-rig comprising a main bull-wheel; a band-wheel; a loose tug-pulley to rotate with the band-wheel; the extra bull-wheel; the extra bull-rope around the loose tug-pulley and the extra bull-wheel; a pivoted lever extending along the extra bull-rope and provided with a grooved wheel above the extra bull-rope to run thereon; a knuckle-joint pivoted at one end to the lever and extending downward therefrom and pivoted at the other end to a stationary support; and a handle pivoted to the joint of the knuckle for operating the knuckle-joint to raise the grooved wheel when the joint is straightened, and vice versa.

704,251. BAG-HOLDER. WALTER HAYWARD, Palmerston, Canada. Filed Mar. 11, 1902. Serial No. 97,727. (No model.)

Claim.—1. In a bag-holder, the combination with a supporting frame or stand, of an elbow-lever fulcrumed thereto, a link-bar pivoted to said frame or stand, a head connected to the upper ends of said lever and link, and an inner and an outer clamping-frame pintled to said head, said head having bearings to maintain both frames horizontally, substantially as and for the purpose set forth.

2. In a bag-holder, the combination with a supporting frame or stand, of an elbow-lever fulcrumed thereto, a link-bar pivoted to said frame or stand, a horizontal head connecting the upper ends of said lever and link and pivoted thereto to oscillate by the operation of the lever, said horizontal head having a projecting stop or lip, and inner and outer clamping-frames pintled to said horizontal head, the inner frame being provided with a push-bar to disengage a bag from said lip when the frame is lifted inclinedly, said horizontal head having bearings to support said frames horizontally, as and for the purpose set forth.

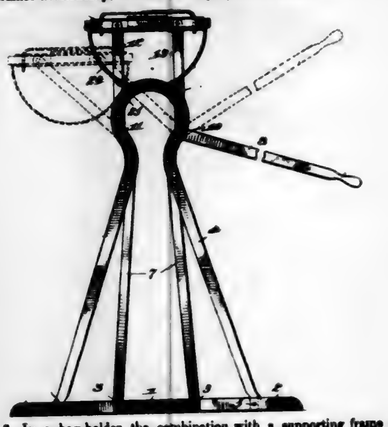

3. In a bag-holder, the combination with a supporting frame or stand, of an elbow-lever fulcrumed thereto, a link-bar pivoted to said stand, a horizontal head pivoted to the upper ends of said lever and link, said horizontal head having rectangularly-bent ends and at the middle a rearwardly-projecting stop or lip, and an inner and an outer clamping-frame pintled to said horizontal head and supported horizontally by said bent ends and lip, said inner frame having a push-rod to disengage a bag when lapped on said lip when the inner frame is raised to an inclined position, and the inner frame having a bail to lift both frames simultaneously to an inclined position, substantially as and for the purpose set forth.

4. In a bag-holder, the combination with a suitable bag-retaining device, of a frame or stand comprising a base, uprights secured at their lower ends to said base, and joined together at their upper ends to form a head, braces secured at their lower ends to said base and at their upper ends to said uprights, a link-bar pivoted to said head, and an elbow-lever fulcrumed to said head, said bar and lever pivotally supporting said retaining device.

704,252. PROCESS OF MAKING PLATES FOR STORAGE BATTERIES AND PRODUCT THEREOF. HENRY K. HESS, Philadelphia, Pa. Filed July 30, 1901. Serial No. 70,373. (No specimens.)

Claim.—1. The process for forming an electric-battery plate consisting, first, in mechanically applying an active material or material to become active to the back piece of a suitable mold; second, arranging portions of a series of separate metal strips against the material in separated relation and other portions in sliding contact; third, applying mechanically extra active material or material to become active to the exposed surfaces of said separated portions of the strips so that the separated portions of the strips are concealed, and then compressing the active material so as to form a self-supporting mass to hold the strips in position.

2. A product of the herein-described process consisting of an electrode composed of outer layers of active material or material to become active and metal strips having portions separated and concealed in the material, portions exposed and protruding from said material and arranged in sliding contact for the purpose described.

3. The art or method of making plates for storage batteries consisting, first, in spreading active material or material to become active on a suitable support to form a layer of substantially uniform thickness, then arranging portions of independent strips of metal on said layer in separated relation and other portions in sliding contact, then mechanically applying an additional layer of the same material to the exposed surfaces of said separated portions of the strips so as to conceal the separated portions of the metal strips.

704,253. STEAM-PROPELLED VEHICLE. HENRY K. HESS, Philadelphia, Pa. Filed Nov. 15, 1901. Serial No. 82,576. (No model.)

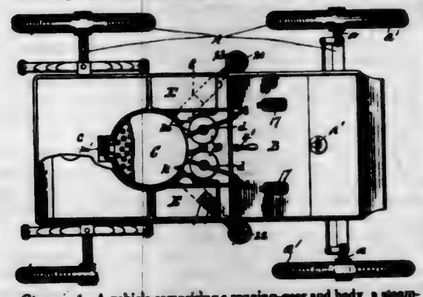

Claim.—1. A vehicle comprising a running-gear and body, a steam-generator and engine mounted on the body, means actuated by the engine and connected to the generator to force air into the combustion-chamber, and additional means controlled by the operator for connecting and disconnecting the engine and running-gear independently of the former means.

2. The combination with a running-gear and body of a vehicle, of a steam-generator and engine mounted on the body, the generator having a coal-burner, a fan connected to the engine and discharging into the burner, and movable means controlled by the operator to connect or disconnect the engine and running-gear and to drive the fan independently of the running-gear by the engine.

3. A steam-propelled vehicle comprising a running-gear and body, a steam-boiler and engine mounted on the body, a coal-burner for the boiler, a fan driven by the engine and discharging air to the burner, and driving mechanism connecting the engine and running-gear and having a clutch whereby the fan may be operated by the engine without propelling the vehicle.

4. A steam-propelled vehicle comprising a running-gear and body, a steam-boiler and engine mounted on the body, a coal-burner for the boiler, a fan driven by the engine and discharging air to the burner, driving mechanism connecting the engine and running-gear and having a clutch whereby the fan may be operated by the engine without propelling the vehicle, and and means in proximity to the seat of the vehicle for controlling the clutch.

5. In a steam-propelled vehicle, a steam-generator and an engine mounted on the vehicle, a clutch-section connected to the engine, an additional clutch-section connected to the running-gear of the vehicle, manually-operated means for moving one section into and out of engagement with the other, and a blower actuated by the engine independently of the running-gear of the vehicle and discharging air into the burner of the generator.

6. In a steam-propelled vehicle, a steam-generator and an engine mounted on the vehicle, the generator having a coal-burner, clutch-sections connected to the engine and running-gear, means for moving one of the sections into and out of engagement with the other, and a blower actuated by the engine independently of the running-gear and discharging into the burner.

7. In a steam-propelled vehicle, the combination with a steam-generator and an engine, a fuel-bunker discharging into the combustion-chamber, means on the vehicle actuated by the engine to feed the fuel to the combustion-chamber, and an air-feed device actuated by the engine to force air into said chamber.

8. In a steam-propelled vehicle, the combination with a steam-generator and an engine, a fuel-bunker discharging into the combustion-chamber, means on the vehicle actuated by the engine to feed the fuel to the combustion-chamber, and an air-feed device actuated by the engine to force air into said chamber, manually-operated means on the vehicle to disconnect the fuel-feed from the engine, a blower operated by the engine, and vehicle-propelling mechanism operated by the engine independently of the fuel-feed mechanism.

9. In a steam-propelled vehicle, the combination with a steam-generator, and an engine mounted on the vehicle, of a fuel-bunker and a channel leading from the bunker to the combustion-chamber of the generator, a fuel-feed in said channel and of less cross-sectional area than the channel for the purpose described, means to actuate the feed, said feed being of such construction and arrangement relative to the channel that lumps of fuel, as coal, or charcoal, may be fed to the combustion-chamber and retained in the channel when fuel is fed to the combustion-chamber beyond its capacity.

10. A steam-propelled vehicle comprising a running-gear and body, an engine and boiler mounted on the body, a fuel-bunker and a channel connecting the fuel-bunker with the combustion-chamber of the boiler, a feed-screw rotatable in the channel and of less cross-sectional area than said channel, means to rotate the screw having a device in proximity to the seat for controlling its rotation.

11. In combination with a running-gear and body of a vehicle, an engine and boiler mounted on the vehicle, mechanism adapted to be thrown into and out of connection with the engine for propelling the vehicle, a fan actuated by the engine independently of the running-gear, a fuel-bunker, a feed-channel connecting the bunker to the combustion-chamber of the boiler, a rotary screw-feed in the channel of less cross-sectional area than the channel, and mechanism adapted to be thrown into and out of connection with the engine for operating the screw-feed independently of or simultaneously with the operation of the running-gear.

12. The combination with the running-gear and body of a vehicle, a steam-generator and an engine mounted upon and connected to propel the vehicle, a smoke-conduit leading from the smoke-chamber of the generator, a steam-conduit discharging into the smoke-conduit for the purpose described and provided with means in proximity to the seat for controlling the passage of steam to the smoke-conduit, a fuel-bunker mounted on the vehicle-body, a conduit connecting the fuel-bunker to the combustion-chamber of the generator, a rotary screw-feed in said conduit for feeding the fuel from the bunker to the combustion-chamber, and mechanism adapted to be thrown into and out of connection with the engine for controlling the operation of the screw.

704,254. STEAM-PROPELLED VEHICLE. HENRY K. HESS, Philadelphia, Pa. Filed Jan. 14, 1902. Serial No. 89,713. (No model.)

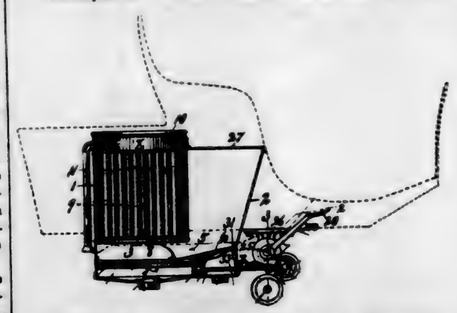

Claim.—1. The combination of a vehicle-body, a steam-generator mounted on the body, a coal-bunker located by the side of the generator, a rotary grate beneath the steam-generator, an additional grate beneath the bunker arranged to discharge the fuel upon the former grate, an air-chamber beneath one of the grates and means for supplying air to said chamber.

2. The combination of a vehicle-body, a steam-generator mounted on the body, a coal-bunker located by the side of the generator, a rotary grate beneath the steam-generator, an additional grate beneath the coal-bunker arranged to discharge fuel onto the rotary grate, an air-chamber beneath the said additional grate, and means for supplying air to said air-chamber.

3. The combination of a vehicle-body, a steam-generator mounted on the body, a coal-bunker located by the side of the generator, a rotary grate beneath the steam-generator, a grate beneath the bunker inclining downwardly toward the rotary grate to discharge the fuel thereon, an air-chamber beneath the inclined grate, and means for supplying air to the air-chamber.

4. The combination of a vehicle-body, a steam-generator mounted on the body, a coal-bunker located by the side of the generator, a rotary grate beneath the steam-generator, an inclined grate beneath the coal-

bunker arranged to discharge onto the rotary grate, air-chambers beneath said grates and means for supplying air to said chambers.

5. The combination of a vehicle-body, a steam-generator and engine mounted on the body, a coal-bunker situated at one side of the steam-generator, a rotary grate beneath the generator, a second grate beneath the coal-bunker arranged to discharge fuel onto the rotary grate, connections between the engine and grate to rotate the grate, and means in proximity to the seat of the vehicle for making and breaking said connections.

6. The combination of a vehicle-body, a steam-generator and engine mounted on the body, a coal-bunker situated at one side of the steam-generator, a grate beneath the generator, a second grate beneath the bunker arranged to discharge onto the former grate, an air-chamber beneath the second grate, means actuated by the engine to supply air to the air-chamber, and additional means in proximity to the seat of the vehicle to control the action of the former means.

7. In a steam-propelled vehicle, the combination with a vehicle-body and having a combustion-chamber in its base, of a steam-generator mounted on the body, and a closed coal-bunker located at the side of the generator and opening at its base into the combustion-chamber for feeding and burning the fuel at the junction of the bunker and combustion-chamber and preventing the combustion of the fuel in the bunker and means on the vehicle controlled by the operator for feeding air to the combustion-chamber.

8. In a steam-propelled vehicle, the combination with a vehicle-body, of a steam-generator mounted on the body, an air-tight coal-bunker located at the side of the generator and provided with an inlet-opening for the fuel and a discharge-opening leading to the combustion-chamber of the generator, a closure for the inlet preventing the entrance and exit of air or gases to or from the bunker, a grate and subchamber in the base of the burner, and an air-feeding mechanism connected to the subchamber and controlled by the operator for feeding air to said subchamber.

704,255. CAN HEADING OR BEADING MACHINE. JOHN S. ROBBINS and EDGARTO H. ROBBINS, Haywood, Ill., assignors, by mesne assignments, to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Oct. 22, 1900. Serial No. 33,903. (No model.)

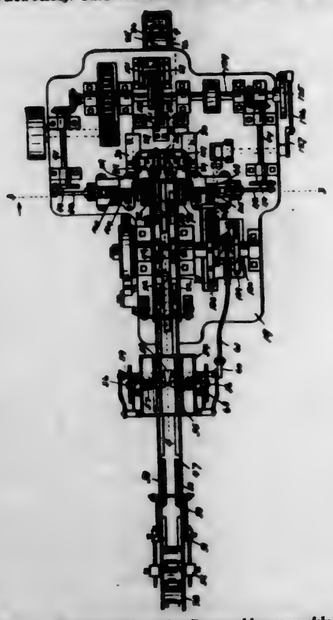

Claim.—1. The automatic can-heading machine, comprising in co-operative combination a rotary carrier 20, having arms or heads 21, a series of pairs of endwise-sliding heading-jaws 22, a spacer-cam 35, can-body feed-chute 47, having automatic can-body discharge-gate 50, and movable sliding or fluting disks 55, a reciprocating slide 29 having head 31, and a pair of endwise-sliding header-jaws 22, furnished each with a pin 33, a stationary cam or fork 34, heading-plungers 37, operating-slides 40 therefor, furnished with roller or projection 105, can-header-operating levers 104, a bottom-head feed-chute 72, top-head feed-chute 73, can-head feeders 79 and 82 in said chutes, connecting-lever 102, lever 108, engaged by can-body on said carrier 20 to move said connection 102 into position to be operated by said levers 104, a device in said bottom-head feed-chute for arresting top heads or reversed bottom heads, said feeder 82 in said top-head feed-chute 73 having a device for arresting bottom heads, substantially as specified.

2. In a can-heading machine, the combination with heading-plungers, of two pairs of endwise-sliding heading-jaws, a pair of can-head chutes and a pair of stationary can-head-centering guides or rings in which said heading-plungers reciprocate, substantially as specified.

3. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding heading-jaws mounted thereon, a pair of can-head chutes and a pair of stationary can-head-centering guides or rings in which said heading-plungers reciprocate, substantially as specified.

4. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding jaws mounted thereon and heading-plungers, a pair of can-head chutes and a pair of stationary can-head-centering guides or rings in which said heading-plungers reciprocate, substantially as specified.

5. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise heading-jaws mounted thereon, and heading-plungers, and a stationary cam engaged by the heading-jaws on said rotary wheel or carrier to restore the same to position, substantially as specified.

6. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding jaws mounted thereon, heading-plungers, and a stationary cam or fork engaged by the heading-jaws on said slide to restore them to position, substantially as specified.

7. In a can-heading machine, the combination with a rotary wheel or carrier having a series of pairs of endwise-sliding heading-jaws mounted thereon, a reciprocating slide having a pair of endwise-sliding jaws mounted thereon, heading-plungers, a stationary cam or fork engaged by the heading-jaws on said slide to restore them to position, and a stationary cam engaged by the heading-jaws on said rotary wheel or carrier to restore the same to position, substantially as specified.

8. In a can-heading machine, a rotary wheel or carrier 20, having a series of heads 21, a series of heading-jaws 22 fitting and sliding on said heads, and cams 35 and 36 for centering said heading-jaws on the carrier, substantially as specified.

9. In a can-heading machine, the combination with a reciprocating slide 29, having head 31, and endwise-sliding heading-jaws mounted thereon and having slots 23 fitting and sliding on said head 31, substantially as specified.

10. In a can-heading machine, the combination with a reciprocating slide 29, having head 31, endwise-sliding heading-jaws mounted thereon provided with jaws or projections 33, and cams 34 engaged by said pins to move the heading-jaws endwise into position, substantially as specified.

11. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, and endwise-sliding heading-jaws 22ª thereon, heading-plungers 37 and can-head-centering guides or rings 26 on the frame of the machine and means for registering said heading-jaws with said can-head-centering guides, substantially as specified.

12. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22ª thereon, heading-plungers 37, stationary can-head-centering guides or rings 26 and can-head feed-chutes, substantially as specified.

13. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22ª thereon, heading-plungers, said heading-plungers 37 having curved recesses 46 in their upper portions, substantially as specified.

14. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22ª thereon, heading-plungers 37, stationary can-head-centering guides or rings 26, can-head feed-chutes, said can-head feed-chutes being provided with vibrating can-head feeders, substantially as specified.

15. The combination with rotary carrier 20 having arms or heads 21 and endwise-sliding heading-jaws 22 thereon, of slide 29 having head 31, endwise-sliding heading-jaws 22ª thereon, heading-plungers 37, stationary can-head-centering guides or rings 26, can-head feed-chutes, said can-head feed-chutes being provided with vibrating can-head feeders, and a lever engaged by the can-body on the carrier controlling the operation of said can-head feeders, substantially as specified.

16. The combination with a can-head feed-chute provided with a can-head feeder, of a heading-plunger and a can-head-feeder-operating lever operated by the forward movement of the heading-plunger, a trip-lever or connection 102, a can-body carrier and a lever operated by the can-body on the carrier to move the trip-lever or connection into position, substantially as specified.

17. The combination with the can-body carrier 20, of a heading-plunger, a lever 104 operated by the forward movement of the heading-plunger, a can-head feed-chute, a movable feeder therein, a lever 108 operated by the can-body on the carrier, and a movable lever, link or connection 102 operated by said lever 108 to cause said lever 104 to operate the can-head feeder, substantially as specified.

18. In a can-heading machine, the combination with heading-jaws of a can-body feed-chute having a movable automatically-opening gate 50 to automatically discharge surplus cans from the feed-chute and prevent crowding, substantially as specified.

19. The combination with a can-body carrier 20, a feed-chute 47 therefor, furnished with a hinged weighted automatically-opening gate 50 adapted to receive thereon and be depressed by a plurality of cans, substantially as specified.

20. In a can-heading machine the combination with the carrier 20 having heading-jaws 22 thereon to receive the can-bodies, of a can-body feed-chute 47, having rotary sliding or fluting disks 55 at its sides to engage the ends of the can-bodies as they pass along the feed-chute, and springs for pressing said disks together against the can-bodies, substantially as specified.

21. In a can-heading machine, the combination with the carrier 20 having heading-jaws 22 thereon to receive the can-bodies, of a can-body feed-chute 47, having rotary sliding or fluting disks 55 at its sides to engage the ends of the can-bodies as they pass along the feed-chute, springs for pressing said disks together against the can-bodies, and a vibrating wedge or cam for separating said disks, substantially as specified.

22. In a can-heading machine, the combination with the heading-jaws and heading-plungers, of can-head chutes, furnished with pivoted pawls or retarders 74 movable by the weight of the can-head itself and adapted to engage and prevent the can-heads from dancing or rebounding upward in the can-head chutes, substantially as specified.

23. In a can-heading machine, the combination with heading-jaws and heading-plungers, of can-head chutes provided with devices for arresting reversed can-heads in the chutes, substantially as specified.

24. In a can-heading machine, the combination with a can-head feed-chute for feeding bottom heads, of a device for stopping a reversed bottom head, substantially as specified.

25. In a can-heading machine, the combination with heading-jaws and heading-plunger of a can-head feed-chute, for feeding top heads, of a device therein for stopping a reversed top head, substantially as specified.

26. In a can-heading machine, the combination with heading-jaws and heading-plunger of a can-head feed-chute for feeding bottom heads, of a device therein for arresting a top head, substantially as specified.

27. In a can-heading machine, the combination with heading-jaws and heading-plunger of a can-head feed-chute for feeding top heads, of a device therein for arresting a bottom head, substantially as specified.

28. The combination with top-head feed-chute 73, of can-head feeder 82, provided with a spring-stop 87, and a pivoted catch 91, adapted to be released by said spring stop-pin engaging a bottom head, substantially as specified.

29. The combination with can-heading jaws and plunger and bottom-head feed-chute 72, of a spring-hook 114 adapted to stop a top head or a reversed bottom head, substantially as specified.

30. The combination with can-heading jaws and plunger and a can-head feed-chute, of a series of movable retarders 74 therein, substantially as specified.

31. The combination with carrier 20, having heads 21 and endwise-sliding header-jaws 22, of slide 29 having head 31, and endwise-sliding header-jaws 22 thereon, header-plungers 37, reciprocating slides 40 therefor, can-head feeder-levers 104 operated by said slides 40, can-head feed-chutes 72, 73 having each vibrating feeders 79, 82, connecting-bars 100, lever 102, and can-body-operated lever 108, substantially as specified.

704,256. AUTOMATIC SIDE-SEAM-SOLDERING MACHINE FOR SHEET-METAL CANS. JOHN S. ROBBINS, Haywood, Ill., and JOHN C. TALIAFERRO, Baltimore, Md., assignors, by mesne assignments, to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Nov. 24, 1900. Serial No. 37,000. (No model.)

Claim.—1. In a side-seam-soldering machine for can-bodies, the combination with a solder bath or vessel, of a furnace for keeping the solder therein molten, a float in the solder bath or vessel, upper and lower guides on the float for the can-bodies, guides or tracks for the can-bodies leading to and from the float and connecting with the can-body guide on the float, a can-body carrier or conveyer chain having side bars and cross-bars with open spaces between to receive the can-bodies, sprocket-wheels for said carrier-chain, a track or guide for said carrier-chain, the rear sprocket-wheel having central spokes furnished with flanges at their outer ends forming a slot or channel between the same, an inside supporting trunk or rod H around which the can-bodies pass, furnished with a curved end H' fitting between the flanges on said central spokes of the rear sprocket-wheel, and engaging on its outer curved face the cross-bars of the carrier-chain, a can-body-turning device G connected at its rear end to said trunk or rod H and open at its front end to receive the can-bodies around it, and provided with a longitudinal channel or slot having diverging walls or shoulders to engage the side seam of the can-body, an inside wiper-bar connected to said trunk or rod, and provided with wiper-holder blocks and wipers, an inside wiper or dusting-brush connected to said trunk or rod, outside wipers, wiper-holders and weight-arm rock-shafts therefor, a series of outside wipers or duster-brushes, a traveling belt or chain upon which they are mounted, a plate or shoe for pressing said brushes against the can-bodies, brush-cleaner devices in the path of the brushes, can-body-receiving chutes or devices O and O', a can-body-turning finger or device O², and a can-body conveyer O³, substantially as specified.

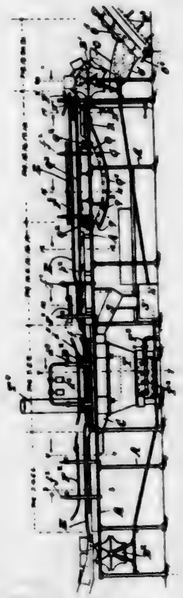

2. In a side-seam-soldering machine, the combination with a solder-bath, of a float-guide for the can-bodies extending over the solder-bath, a fixed can-body track or guide connecting with said float-guide, and means for moving the can-bodies horizontally along said can-body guide and float-guide, substantially as specified.

3. The combination with a molten solder-bath, of a guide for the cans floating in the molten solder and thus automatically maintaining a fixed relation to the surface of the molten solder and a horizontally-moving can-body conveyer, substantially as specified.

4. The combination with a solder-bath of guide or track for the can-bodies, and a float in the solder-bath supporting said guide or track and a horizontally-moving can-body conveyer, substantially as specified.

5. The combination with a solder-bath, of upper and lower guides for the can-bodies and a float upon which both said guides are mounted or supported and means for moving the can-bodies along between said upper and lower guides, substantially as specified.

6. The combination with a solder-bath, of a float-guide, a fixed can-body track connecting therewith and a can-body conveyer for moving the can-bodies horizontally along, substantially as specified.

7. The combination with a solder-bath, of a float-guide, a horizontally-moving can-body conveyer, and means for supporting the conveyer independently of the float-guide, substantially as specified.

8. The combination with a furnace, of a solder bath or vessel form-

ing the top of the furnace, a fleet having a central slot or channel for the solder to enter, a guide or track for the can-bodies on the fleet, a can-body conveyor or carrier, and a track or guide for the same, substantially as specified.

9. The combination with a furnace, of a solder bath or vessel forming the top of the furnace, a fleet having a central slot or channel for the solder to enter, a guide or track for the can-bodies on the fleet, a can-body conveyor or carrier, a track or guide for the same, and means for adjusting the height of the fleet in respect to the surface of the solder, substantially as specified.

10. The combination with a furnace, of a solder bath or vessel, a fleet therein, a can-body guide or track on the fleet, a can-body carrier, a track or guide therefor, sprocket-wheels for the carrier, and a can-body track or guide connecting with said track on the fleet, substantially as specified.

11. The combination with a furnace, of a solder bath or vessel, a fleet therein, a can-body guide or track on the fleet, a can-body carrier, a track or guide therefor, sprocket-wheels for the carrier, a can-body track or guide connecting with said track on the fleet, and a can-body-turning device in the path of the can-bodies and around which the can-bodies pass, substantially as specified.

12. The combination with a furnace, of a solder bath or vessel, a fleet therein, a can-body guide or track on the fleet, a can-body carrier, a track or guide therefor, sprocket-wheels for the carrier, a can-body track or guide connecting with said track on the fleet, a can-body turning device in the path of the can-bodies and around which the can-bodies pass, and an inside trunk or supporting-rod extending from said can-body-turning device to the rear sprocket-wheel of the carrier, and provided with a curved end extending partially around said rear sprocket-wheel for holding the can-body-turning device in position, substantially as specified.

13. The combination with a furnace, of a solder bath or vessel, a fleet therein, a can-body guide or track on the fleet, a can-body carrier, a track or guide therefor, sprocket-wheels for the carrier, a can-body track or guide connecting with said track on the fleet, a can-body-turning device in the path of the can-bodies and around which the can-bodies pass, and an inside trunk or supporting-rod extending from said can-body-turning device to the rear sprocket-wheel of the carrier, and provided with a curved end extending partially around said rear sprocket-wheel for holding the can-body-turning device in position, said trunk or rod extending over and around the path of the cross-bars of the can-body carrier, substantially as specified.

14. The combination in a side-seam-soldering machine, with a can-body carrier or conveyor and its sprocket-wheels, of a can-body-turning device in the path of the can-bodies and around which they pass, of a trunk or rod for holding the same in position having a curved end extending partially around the rear sprocket-wheel, substantially as specified.

15. The combination in a side-seam-soldering machine, with a can-body carrier or conveyor and its sprocket-wheels, of a can-body-turning device in the path of the can-bodies and around which they pass, of a trunk or rod for holding the same in position having a curved end extending partially around the rear sprocket-wheel, and a track for the can-bodies, substantially as specified.

16. The combination in a side-seam-soldering machine, with a can-body carrier or conveyor and its sprocket-wheels, of a can-body-turning device in the path of the can-bodies and around which they pass, of a trunk or rod for holding the same in position having a curved end extending partially around the rear sprocket-wheel, and a track for the can-bodies having a curved end extending partially around said rear sprocket-wheel, substantially as specified.

17. The combination in a side-seam-soldering machine, with a can-body carrier or conveyor and its sprocket-wheels, of a can-body-turning device in the path of the can-bodies and around which they pass, of a trunk or rod for holding the same in position having a curved end extending partially around the rear sprocket-wheel, said can-body-turning device having a longitudinal slot or recess furnished with curved or inclined diverging shoulders to engage the side seam of the can-body, substantially as specified.

18. In a side-seam-soldering machine, a can-body-turning device connected at its rear end with a rod for holding it in position, and open at its front end for the can-bodies to pass onto and around it, substantially as specified.

19. In a side-seam-soldering machine, a can-body-turning device connected at its rear end with a rod for holding it in position, and open at its front end for the can-bodies to pass onto and around it and furnished with a longitudinal slot or recess having diverging curved or inclined shoulders, substantially as specified.

20. In a side-seam-soldering machine, a can-body-turning device connected at its rear end with a rod for holding it in position, and open at its front end for the can-bodies to pass onto and around it, and a track for the can-bodies, substantially as specified.

21. In a side-seam-soldering machine, a can-body-turning device connected at its rear end with a rod for holding it in position, and open at its front end for the can-bodies to pass onto and around it furnished with a longitudinal slot or recess having diverging curved or inclined shoulders, and a curved or shoe-shaped track for the can-bodies, substantially as specified.

22. In a side-seam-soldering machine, a can-body-turning device connected at its rear end with a rod for holding it in position, and open at its front end for the can-bodies to pass onto and around it and furnished with a longitudinal slot or recess having diverging curved or inclined shoulders, and a can-body carrier or conveyor engaging the can-bodies at their ends and leaving them free to turn, substantially as specified.

23. In a side-seam-soldering machine having an endless flexible can-body carrier mounted on sprocket-wheels, an inside supporting trunk or rod around which the can-bodies pass, furnished with a curved end extending partially around the rear sprocket-wheel, substantially as specified.

24. In a side-seam-soldering machine having an endless flexible can-body carrier mounted on sprocket-wheels, an inside supporting trunk or rod around which the can-bodies pass, furnished with a curved end extending partly around the rear sprocket-wheel, the cross-bars of the carrier engaging said curved end on its outside and holding the rod from forward longitudinal movement, substantially as specified.

25. In a side-seam-soldering machine having an endless flexible can-body carrier mounted on sprocket-wheels, an inside supporting trunk or rod around which the can-bodies pass, furnished with a curved end extending partly around the rear sprocket-wheel, the cross-bars of the carrier engaging said curved end on its outside and holding the rod from forward longitudinal movement, said rear sprocket-wheel having guides or flanges engaging said curved end and holding said rod laterally in position and from axial turning, substantially as specified.

26. In a side-seam-soldering machine having an endless flexible can-body carrier mounted on sprocket-wheels, an inside supporting trunk or rod around which the can-bodies pass, furnished with a curved end extending partly around the rear sprocket-wheel, the cross-bars of the carrier engaging said curved end on its outside and holding the rod from forward longitudinal movement, said rear sprocket-wheel having guides or flanges engaging said curved end and holding said rod laterally in position and from axial turning, and said sprocket-wheel being further provided with rollers or projections engaging the inner face of said curved end, substantially as specified.

27. In a side-seam-soldering machine, the combination with an inside wiper-bar free at its front end to admit the can-bodies around the same and furnished with an inside wiper, and connected at its rear end with a rod for holding it longitudinally in position and adapted to permit the can-bodies to pass off the same, substantially as specified.

28. In a side-seam-soldering machine, the combination with an inside wiper-bar furnished with an inside wiper, and connected at its rear end with a rod for holding it longitudinally in position, a can-body carrier, sprocket-wheels therefor, and said rod having a curved end extending partly around said sprocket-wheel, substantially as specified.

29. In a side-seam-soldering machine, the combination with an inside wiper-bar furnished with an inside wiper, and connected at its rear end with a rod for holding it longitudinally in position, a can-body carrier, sprocket-wheels therefor, said rod having a curved end extending partly around said sprocket-wheel, and an inside wiper or duster brush also connected to said rod, substantially as specified.

30. In a side-seam-soldering machine, the combination with a solder-bath, a track for the can-bodies, an endless flexible can-body carrier, sprocket-wheels therefor, an inside supporting trunk or rod extending from the rear sprocket-wheel over the solder-bath in the path of the can-bodies, a can-body turner open at its front end for entrance of the can-bodies around it, and connected at its rear end to said trunk or rod, substantially as specified.

31. In a side-seam-soldering machine, the combination with a solder-bath, a track for the can-bodies, an endless flexible can-body carrier, sprocket-wheels therefor, an inside supporting trunk or rod extending from the rear sprocket-wheel over the solder-bath in the path of the can-bodies, a can-body turner open at its front end for entrance of the can-bodies around it, and connected at its rear end to said trunk or rod, and an inside wiper supported from said trunk or rod, substantially as specified.

32. In a side-seam-soldering machine, the combination with a solder-bath, a track for the can-bodies, an endless flexible can-body carrier, sprocket-wheels therefor, an inside supporting trunk or rod extending from the rear sprocket-wheel over the solder-bath in the path of the can-bodies, a can-body turner open at its front end for entrance of the can-bodies around it, and connected at its rear end to said trunk or rod, and an inside wiper or duster brush also connected with said trunk or rod, substantially as specified.

33. In a side-seam-soldering machine, the combination with a solder-bath, a track for the can-bodies, an endless flexible can-body carrier,

sprocket-wheels therefor, an inside supporting trunk or rod extending from the rear sprocket-wheel over the solder-bath in the path of the can-bodies, a can-body turner open at its front end for entrance of the can-bodies around it, and connected at its rear end to said trunk or rod, and an inside wiper-bar connected with said trunk or rod and furnished with a longitudinal slot or channel, and a series of wiper-holder blocks mounted in said slot or channel, substantially as specified.

34. The combination in a side-seam-soldering machine, with an inside wiper-bar, of a series of independently-removable wiper-holder blocks, substantially as specified.

35. The inside wiper-holder bar M, in combination with the removable wiper-holder block M' having hook m^2, substantially as specified.

36. The combination of wiper-holder bar M having a slot or recess m' and transverse pins m^3, of wiper-holder block M' having hook M^3, substantially as specified.

37. The combination of wiper-holder bar M having a slot or recess m' and transverse pins m^3, of wiper-holder block M' having hook m^2, wiper M^2 and wiper clamp or screw m', substantially as specified.

38. The combination with a solder-bath, track for the can-bodies and can-body carrier, of a series of outside traveling wiper or duster brushes mounted on an endless flexible belt or chain below the track for the can-bodies, and a guide shoe or plate over which said belt or chain passes and against which it bears for pressing the brushes against the can-bodies, substantially as specified.

39. The combination with a solder-bath, track for the can-bodies and can-carrier, of a series of outside traveling wiper or duster brushes mounted on an endless flexible belt or chain below the track for the can-bodies, a guide shoe or plate over which said belt or chain passes and against which it bears for pressing the brushes against the can-bodies, and means for adjusting said shoe or plate, substantially as specified.

40. The combination with a solder-bath, track for the can-bodies and can-body carrier, of a series of outside traveling wiper or duster brushes on an endless flexible belt or chain, and a guide shoe or plate over which said belt or chain passes for pressing the brushes against the can-bodies, and a cleaner for said brushes, substantially as specified.

41. In a side-seam-soldering machine, the combination with a solder-bath, a track for the can-bodies, a can-body carrier, sprocket-wheels therefor, said track for the can-bodies having a curved extension extending partly around the rear sprocket-wheel of the carrier, an inside rod H having a curved end H' around which the can-bodies pass, a can-body-receiving chute O, a can-body passage-way O', and a can-body-turning finger O^2, substantially as specified.

42. In a side-seam-soldering machine, the combination with a solder-bath, a track for the can-bodies, a can-body carrier, sprocket-wheels therefor, said track for the can-bodies having a curved extension extending partly around the rear sprocket-wheel of the carrier, an inside rod H having a curved end H' around which the can-bodies pass, a can-body-receiving chute O, a can-body passage-way O', a can-body-turning finger O^2, and a can-body conveyor O^3, substantially as specified.

43. The combination with the inside supporting trunk or rod H, of the inside wiper or duster brush N, its metal holder or block N', and pivoted links N^2 connecting it with said trunk or rod, substantially as specified.

704,257. CAN-SOLDERING MACHINE. JOHN G. HODGSON, Maywood, Ill., and JOHN C. TALIAFERRO, Baltimore, Md., assignors, by mesne assignments, to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Nov. 24, 1900. Serial No. 37,500. (No model.)

Claim.—1. In a can-end-soldering machine, the combination with a solder bath or vessel, of a fluxing device, a furnace for heating and keeping molten the solder, a pair of oppositely and transversely inclined can-body track-plates having upper and lower guides for the cans, can-carriers for rolling the cans along said plates, a pair of cooling-belts for conveying the cans in an upright position, a curved and twisted guideway for turning the cans into an upright position, and delivering them in such position to the cooling-belt, air trunks or boxes above, below and at the side of the cans as they are carried on the cooling-belts, an inclined loop-shaped track furnished with an elevator for conveying the cans from the first cooling-belt, turning them end for end and delivering them with their unsoldered ends downmost to the second can fluxing and soldering track or plate, and flues leading from the furnace horizontally over the solder-bath and fluxing device for heating the ends of the cans preparatory to soldering, said solder-bath having a solder-overflow passage or spout at a point where the cans roll out of the same, substantially as specified.

2. In a can-end-soldering machine, the combination with a solder bath or vessel, of means for automatically feeding solder thereto, and a track or guide extending over said solder vessel along which the cans may be rolled in an inclined position to present the end seam of the can to the molten solder, said solder bath or vessel having a solder overflow or channel in the path of the corners of the cans and along and through which the cans roll to prevent the solder from walling up, whereby the level or surface of the solder is maintained constant in respect to the guide or track for the cans, substantially as specified.

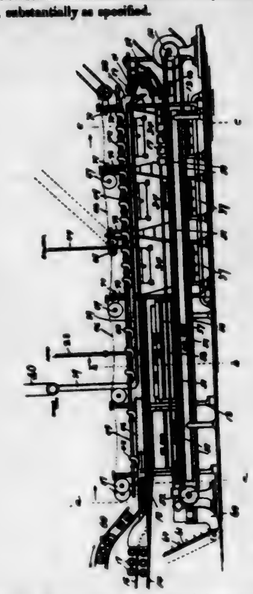

3. The combination with a solder-bath having a solder overflow or channel in the path of the corners or seams of the cans, and a track or guide for the cans to cause the corners or seams of the cans to pass through and along said solder overflow or channel to prevent the solder from walling up thereon, and means for automatically and continuously feeding the solder into said solder vessel, substantially as specified.

4. The combination with a solder-bath having a solder overflow or channel in the path of the corners or seams of the cans, and a track or guide for the cans to cause the corners or seams of the cans to pass through and along said solder overflow or channel to prevent the solder from walling up thereon, and solder-feed rollers for continuously feeding or delivering solder to said bath or vessel, substantially as specified.

5. In a soldering-machine, the combination with a can-cooling belt or conveyor, of air trunks or boxes furnished with openings for directing blasts of air against the top, bottom and sides of the cans as they are conveyed along the cooling-belt, substantially as specified.

6. In a can-soldering machine, the combination with a can-cooling belt or conveyor, of a can-spacer for automatically spacing the cans on the belt, substantially as specified.

7. In a can-soldering machine, the combination with a can-cooling belt or conveyor, of a can-spacer for automatically spacing the cans on the belt, and retarder-springs, substantially as specified.

8. In a can-soldering machine, the combination with a cooling-belt, of a star-wheel-shaped can-spacer 65 and retarder-springs 66 and 67, substantially as specified.

9. In a can-end-soldering machine, the combination with a solder bath or vessel, of a fluxing device, a furnace for heating and keeping molten the solder, a pair of oppositely and transversely inclined can-body track-plates having upper and lower guides for the cans, can-carriers for rolling the cans along said plates, a pair of cooling-belts for conveying the cans in an upright position, a curved and twisted guideway for turning the cans into an upright position and delivering them in such position to the cooling-belt, air trunks or boxes above, below and at the side of the cans as they are carried on the cooling-belts, an inclined loop-shaped track furnished with an elevator for conveying the cans from the first cooling-belt, turning them end for end and delivering them with their unsoldered ends downmost to the second can fluxing and soldering track or plate, substantially as specified.

10. In a can-end-soldering machine, the combination with a solder bath or vessel, a pair of oppositely and transversely inclined can-body track-plates having upper and lower guides for the cans, can-carriers for rolling the cans along said plates, a pair of cooling-belts, and an inclined

loop-shaped track furnished with an elevator for conveying the cans from the first cooling-belt turning them end for end and delivering them with their unsoldered ends downmost to the second inclined track-plate, substantially as specified.

11. In a can-end-soldering machine, the combination with a solder bath or vessel, of an inclined track-plate along which the cans roll, a can-carrier for rolling the cans along said plate, rail 49 and pivoted weights 48 furnished with guide-fingers 50 overhanging said rail 49, substantially as specified.

12. The combination with a can-rolling chain 46, of a rail 49, metal weights 48 pivoted to said rail 49 and provided with guide-fingers 50, substantially as specified.

13. In a can-soldering machine, the combination with the flux or acid pan 25, of an inclined plate or guide 18 along which the cans are rolled, provided with small angular flux troughs or channels 26 at each side of and below the flux-pan 25, so that as the cans roll along said track-plate their end seams will come in contact with a shallow channel of acid or flux flowing in said trough, substantially as specified.

14. In a can-soldering machine, the combination with the flux or acid pan 25, of an inclined plate or guide 18 along which the cans are rolled, provided with small angular flux troughs or channels 26, at each side of and below the flux-pan 25 so that as the cans roll along said track-plate their end seams will come in contact with a shallow channel of acid or flux flowing in said trough, and a surplus-flux pan 29 beneath the angle-trough 26, substantially as specified.

15. In a can-end-soldering machine the combination with a plurality of coal-burning furnaces, each having an open top, a grate, a fire-box above the grate, and a box beneath the grate, of a single molten-solder vessel, extending over all of the furnaces and resting on and closing the tops thereof, tracks, or guides, extending to, from and over the solder-bath, and along which the cans may be rolled, and means for rolling the cans along said track, substantially as specified.

16. In a can-end-soldering machine the combination with a plurality of coal-burning furnaces arranged in line with each other and having each an open top, a grate, a fire-box above the grate and a closed box beneath the grate, and provided each with an air feed or blast pipe entering said closed box, of a single molten-solder vessel extending over all of the furnaces and resting on and closing the tops thereof, said solder vessel being directly above the plurality of grates and receiving the radiant heat of the furnace fire-boxes of which it forms the top, tracks or guides extending to, from and over the solder-bath along which the cans may be rolled, and a means for rolling the cans along said track substantially as specified.

704,258. PROCESS OF CANNING FOOD PRODUCTS. JOHN G. HODGSON, Maywood, Ill., assignor to Automatic Vacuum Canning Company, Chicago, Ill., a Corporation of Illinois. Filed June 28, 1901. Serial No. 66,251. (No specimens.)

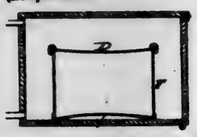

Claim.—The process or method of producing hermetically-sealed and sterilized can goods having inwardly-curved or collapsed heads, consisting in first putting the goods to be preserved in a can having an inwardly-curved head then applying and double-seaming an inwardly-curved final head to the can-body, and then cooking and sterilizing, substantially as specified.

704,259. PROCESS OF TREATING FIBROUS SUBSTANCES. ENOCH T. HOLMES, Chicago, Ill., assignor of one-third to John C. Brockhausen, Chicago, Ill. Filed Mar. 1, 1900. Serial No. 6,960. (No specimens.)

Claim.—The herein-described process of treating fibrous substances, such as flax-straw, which consists in cooking said straw in an alkaline solution of 6° to 7° Baumé in about the proportion of fifty gallons of said solution to one hundred pounds of straw, at a pressure of from eighty to one hundred and twenty pounds, and for a length of time, within the limits of six to four hours, varying substantially in an inverse ratio to the pressure and temperature employed.

704,260. STACKING OF BOARDS. GREENLEAF JOHNSON, Jr., Baltimore, Md. Filed Dec. 27, 1901. Serial No. 87,461. (No model.)

Claim.—A stack of boards consisting of the combination of boards laid flatwise in horizontal layers with means to separate the said layers, devices to separate the adjoining boards of each layer, and mechanism to clamp the said adjoining boards edgewise, substantially as, and for the purpose specified.

704,261. SHEET-METAL BAILED CAN OR VESSEL. BERNARD H. LARKIN, River Forrest, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Oct. 22, 1900. Serial No. 33,234. (No model.)

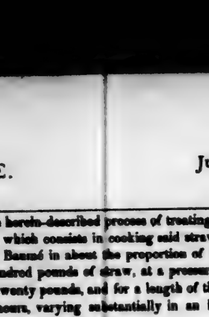

Claim.—1. The combination with a body A, of a head or breast D, provided with exterior flange d', soldered to the can-body and having integral bail-ears d^2, projecting downwardly from the lower edge thereof and fitting and secured to the can-body, substantially as specified.

2. The head or breast D, for cans or vessels, provided with integral flange D', having integral dish-shaped bail-ears d^2 projecting downwardly from the lower edge thereof, in combination with a body A, to the exterior wall of which said integral bail-ears and said flange are soldered, substantially as specified.

3. The combination with a can-body A of seamless ring or breast D having inner flange d and exterior flange d' provided with integral bail-ears d^2 projecting downwardly from the lower edge of said exterior flange d', substantially as specified.

704,262. FOUNTAIN-PEN. WILLIAM E. LINDSAY, Baltimore, Md. Filed Jan. 3, 1902. Serial No. 88,297. (No model.)

Claim.—1. In a fountain-pen, the combination of a hollow handle; a pen-point projecting from one end of the hollow handle; a cap adapted to fit over either end of said handle and having an elongated slot in the side thereof; and a removable piece of absorbent material impinging against the inner side of the said cap.

2. In a fountain-pen, the combination of a hollow handle; a pen-point projecting from one end of said handle; a cap adapted to fit over either end of said handle; a piece of resilient metal having a piece of absorbent material secured thereto and adapted to be inserted in the said cap, for the purpose described.

3. The combination with a fountain-pen, of a cap adapted to fit over either end of the said pen, and a removable lining of absorbent material for the side wall of the said cap and adapted to surround the conical end of the hollow handle when the cap is fitted thereon, as and for the purpose described.

4. In a fountain-pen, the combination of a hollow handle; a pen-point projecting from one end of the hollow handle; and a cap adapted to fit over either end of said handle and having a removable lining of absorbent material for the side wall.

5. In a fountain-pen, the combination of a hollow handle; a pen-point projecting from one end of said handle; a cap adapted to fit over either end of said handle; and a removable lining of absorbent material for the inner side wall of said cap and adapted to surround the conical end of the hollow handle when the said cap is fitted thereon, as and for the purpose described.

704,263. MEASURING INSTRUMENT. GUSTAVE J. LOCK, Milwaukee, Wis., assignor of one-half to Allis-Chalmers Company, Chicago, Ill., a Corporation of New Jersey. Filed Dec. 16, 1901. Serial No. 86,132. (No model.)

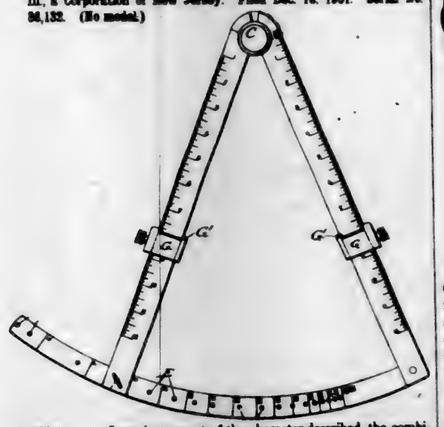

Claim.—1. In an instrument of the character described, the combination of a pair of arms pivotally connected together at one end; a scale-plate carried by the outer end of one of said arms; means for securing the other arm to said plate in its desired adjusted position; and blocks slidably mounted upon the arms, said blocks being provided with scale or center punch-marks which come into alinement with the graduations on the scale-plate when the parts are adjusted, substantially as described.

2. In an instrument of the character described, the combination of a pair of arms pivotally connected together at one end, said arms being graduated; a block slidably mounted upon each of said arms, said blocks being provided with a scale or center punch-mark; means for securing the blocks in their adjusted position; a scale-plate carried by one of said arms; and means for securing the other arm to said plate in any desired adjustment.

704,264. CONTROLLING SYSTEM FOR ELECTRIC HOISTS OR ELEVATORS. ANDREW B. MACOMBER, Braddock, Pa., assignor to the Otis Elevator Company, New York, N. Y., a Corporation of New Jersey. Filed Apr. 29, 1898. Serial No. 679,204. (No model.)

Claim.—1. In an electric hoist, a reversing-controller and a hand-controlled cut-out switch included in the circuit, and a mechanism connected with the cut-out switch operated by the movement of the hoist and arranged to automatically break the main circuit when the car has reached the limit of its travel; substantially as described.

2. In an electric hoist, a hand-operated reversing-controller and a rotary cut-out switch included in the main circuit, and actuating connections between the hoisting-drum and the cut-out switch arranged to throw such switch so as to break the main circuit independently of the position of the controller, when the car has reached the limit of its travel; substantially as described.

3. In an electric hoist, an electromagnet arranged in series with the current flowing through the motor and adapted to cut in and cut out resistance automatically, a switch actuated thereby, and an adjusting device for the electromagnet, said adjusting device being arranged to vary the air-gaps of the electromagnet so that it will lift for heavy loads and cut out resistance, and remain in normal position for light loads, leaving resistance in, to stop the hoist at the same point, independent of the load carried; substantially as described.

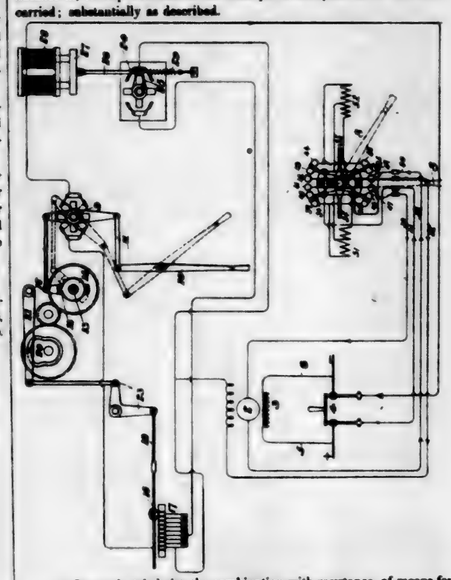

4. In an electric hoist, the combination with resistance, of means for cutting in said resistance near the end of the travel of the car, and an electromagnet in series with the current flowing through the motor and arranged to close the switch so as to cut out a part of the slow-down resistance when the motor is started and arranged so that it will open the switch on a light load when the car nears the end of its travel and thus slow down the motor, but may be held by the current when a heavy load is carried; substantially as described.

5. In an electric hoist, a reversing-controller and a hand-operated cut-out switch included in the circuit, connections between the cut-out switch and the hoisting-drum arranged to operate the switch to break the main current when the car reaches the end of its travel, mechanism arranged to cut in a slow-down resistance as the car nears the end of its travel, and another switch arranged in connection with the slow-down resistance and actuated by a solenoid in series with the current through the main motor; substantially as described.

6. A car, a hoisting-motor therefor, means for accelerating the speed of the motor as it starts up, and means operated by the motor for automatically arresting the car at any predetermined point; substantially as described.

7. A car, a hoisting-motor therefor, and means actuated by the motor for reducing the speed thereof as the car approaches any predetermined stopping-point; substantially as described.

704,265. TRAINING APPARATUS. JOHN MCMASTER, Cambridge, Mass., assignor to A. G. Spalding & Bros., Jersey City, N. J., and New York, N. Y., a Corporation of New Jersey. Filed Apr. 29, 1902. Serial No. 105,154. (No model.)

Claim.—1. A training apparatus for foot-ball players, comprising a dummy figure, a support therefor, and a releasing device interposed between the dummy figure and its support, whereby the dummy figure is

released from its support when properly tackled, substantially as described.

2. A training apparatus for foot-ball players, comprising a dummy figure, a support therefor, and a releasing device interposed between the dummy figure and its support, said releasing device comprising a spring and a latch engaged by the dummy figure and held normally in its closed position by said spring, substantially as described.

3. A training apparatus for foot-ball players, comprising a dummy figure, a support therefor, and a releasing device interposed between the dummy figure and its support, said releasing device comprising a rod secured to the support and having a cross-head, a second rod also having a cross-head, a spring interposed between said cross-head, and a latch engaged by the dummy figure and normally held by said spring in engagement with one of said cross-heads, substantially as described.

704,266. CAN-HEAD-DELIVERING APPARATUS. HORATIO H. HORTON, Maywood, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Oct. 22, 1900. Serial No. 33,988. (No model.)

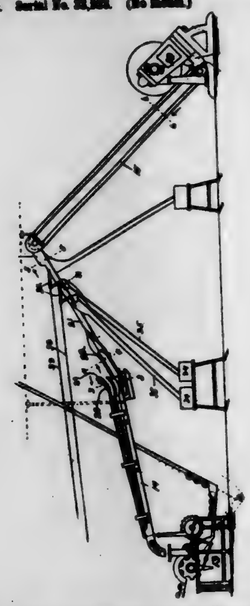

Claim.—1. The combination with a can-beading mechanism and a can-head-forming mechanism or press, of a can-head feed-chute along which the can-heads pass in an upright position, of a continuously-operating can-head elevator upon which the can-heads rest in a flat position, and an intermediate curved or twisted connecting-chute operating to turn the can-heads onto their edge and deliver them into the can-head chute in this position, substantially as specified.

2. The combination with a continuously-operating can-head elevator, of a can-head chute having a curved or twisted portion to turn the can-heads onto their edges and a can-heading mechanism, substantially as specified.

3. The combination with a can-head-forming mechanism a can-head elevator, of a can-head chute having a curved or twisted portion to turn the can-heads onto their edges, and provided with means for separation and escape of flat disks or punchings of sheet metal, substantially as specified.

4. The combination with a continuously-operating can-head elevator, of a can-head chute having a curved or twisted portion to turn the can-heads onto their edges, and provided with a movable gate for the discharge of surplus can-heads and a can-heading mechanism, substantially as specified.

5. The combination with a continuously-operating can-head elevator, of a can-head chute having a curved or twisted portion to turn the can-heads onto their edges, and provided with a movable gate and a discharge-chute for the discharge of surplus can-heads and a can-heading mechanism, substantially as specified.

6. The can-head feed-chutes for conveying can-heads in an upright position, provided with a narrow blade or rail at its bottom to permit escape of flat disks or punchings from the can-heads, substantially as specified.

7. The combination with the can-head feed-chute 14, of intermediate chute 21, having a curved or twisted portion 22, said chute 14 having a curved brake-acting upper guide 26, substantially as specified.

8. The combination with a can-head-forming mechanism or press, of a can-heading mechanism and means for automatically delivering the can-heads from the can-head-forming mechanism to the can-heading mechanism, said means having a device for separating flat disks or punchings from the can-heads, substantially as specified.

9. The combination with a can-head-forming mechanism or press, of a can-heading mechanism, means for automatically and continuously delivering can-heads from the can-head-forming mechanism, and a movable gate or device for discharging surplus can-heads interposed between said continuously-operating can-head-delivery means and the can-heading mechanism, substantially as specified.

704,267. CAN-TESTING MACHINE. HORATIO H. HORTON, Maywood, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Oct. 22, 1900. Serial No. 33,989. (No model.)

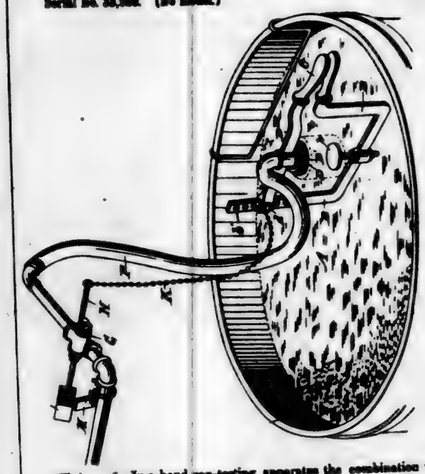

Claim.—1. In a hand can-testing apparatus the combination with a water-bath, of a movable can-holder having a handle, a clamp having a handle and an air-pipe, of a valve connected with the can-holder and automatically operated to open and close as the can-holder is immersed in and taken out of the water, the handles of said holder and clamp being adapted to be grasped by the hand for moving the can in the holder and clamp into and out of the bath, substantially as specified.

2. The combination with a bath, of a can-holder having a handle, a clamp having a handle, an air-pipe and valve connected with the holder and automatically operated by its movement, the handles of said holder and clamp being adapted to be grasped by the hand for moving the can in the holder and clamp into and out of the bath, substantially as specified.

3. The combination with a bath, of a can-holder having a handle, a clamp having a handle and air-pipe, of a valve, a lever for operating the same, a connection between the lever and the can-holder and a weight connected with the valve, the handles of said holder and clamp being adapted to be grasped by the hand for moving the can in the holder and clamp into and out of the bath, substantially as specified.

4. The combination with a bath, of a movable can-holder having a handle, a clamp having a handle, an air-pipe and an automatically-operated valve in the air-pipe, the handles of said holder and clamp being adapted to be grasped by the hand for moving the can in the holder and clamp into and out of the bath and means for automatically operating said valve, substantially as specified.

704,268. COIN-COLLECTOR FOR TELEPHONE TOLL-LINES. JOSEPH J. O'CONNELL, Chicago, Ill., assignor to the Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed Oct. 17, 1900. Serial No. 33,234. (No model.)

Claim.—1. In a toll-collecting appliance for telephone-lines, the combination with a chute for receiving a coin, of a coin-distributing electromagnet and mechanism connected therewith for directing the course of the coin, an electric circuit, a pair of contact-terminals controlling the continuity of said circuit, said contact-terminals being adapted to be closed together to complete said circuit by a coin deposited in said chute, and mechanism operated by the armature of said electromagnet, for closing said contacts together independently of the coin, substantially as described.

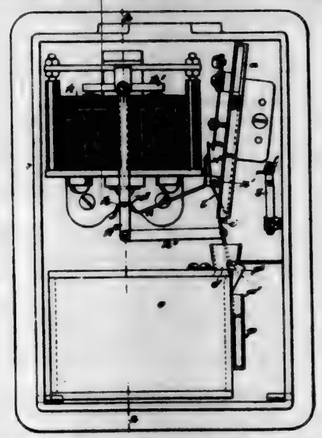

2. In a toll-collecting appliance for telephone-lines, the combination with a chute for receiving a coin, of a polarized coin-distributing electromagnet and an armature therefor adapted to tilt to one side or the other, according to the character of the current flowing through the coils of said magnet, mechanism operated by said armature for directing the coin to one side or the other as it leaves the chute, means for yieldingly maintaining said armature in a central position, an electric circuit, a pair of contacts controlling the same, said contacts being adapted to be closed together by a coin deposited in said chute, and means, operated by the armature of said electromagnet, for closing said contacts together independently of a coin when the armature is moved out of its central position, substantially as described.

3. The combination with the coin-chute *a*, of a valve *i* for directing the course of a coin, a coin-distributing electromagnet *h* and an armature therefor adapted to operate said valve, a contact-lever *l* adapted to be actuated by a coin within the chute, an electric circuit including the winding of said electromagnet, said circuit being controlled by said contact-lever, and a lever *n* operated by the armature of said electromagnet, adapted to actuate said contact-lever *l* independently of a coin, substantially as set forth.

4. The combination with the coin-chute *a*, of an electromagnet and mechanism operated thereby for directing the course of the coin, a contact-lever *l* adapted to be actuated by a coin within the chute, a contact-anvil *m* adapted to be engaged by said contact-lever, an electric circuit including the winding of said electromagnet, said circuit being controlled by the contact-pieces *l m*, and an actuating-lever *n* adapted to be moved by said electromagnet, simultaneously with the coin-distributing mechanism, said lever *n* engaging with the contact-lever *l* and serving to maintain the same in engagement with its contact-anvil *m* after the coin has passed from the chute, substantially as set forth.

5. The combination with the coin-chute *a*, of a polarized electromagnet, an armature therefor adapted to tilt to one side or the other under the influence of current flowing in the coils of said magnet, according to the direction of such current, a valve *i* for directing the course of a coin as it leaves the chute, a mechanical connection between the valve and said armature, whereby the valve is caused to tilt to one side or the other by the movement of said armature, a centralizing-spring *k* adapted yieldingly to maintain the armature and valve in central positions, an electric circuit including the winding of said electromagnet, contact-pieces *l m* controlling said circuit, said contact-pieces being adapted to be closed together by a coin within said chute, and an actuating-lever *n* moved through the agency of the electromagnet when the same is energized, for maintaining said contact-pieces in engagement, substantially as set forth.

704,269. PADLOCK. FREDERICK W. PIRRIE, Willenhall, England. Filed Jan. 9, 1902. Serial No. 38,868. (No model.)

Claim.—1. In a padlock, a tubular body divided lengthwise, separately-formed end pieces fixed to the body, means for securing said parts together, a shackle pivoted near the rear end of the body, and lock mechanism for engagement with the free end of the shackle, substantially as set forth.

2. In a padlock, a tubular body divided lengthwise, a sheath surrounding the body and holding the divisions together, end pieces fixed to the body, means for securing said parts together, a shackle pivoted near the rear end of the body, and lock mechanism for engagement with the free end of the shackle, substantially as set forth.

3. A padlock having a shackle and locking mechanism, a tubular body divided lengthwise, separately-formed end pieces for the body having rims which embrace and house the respective ends of the sectional body, and means for securing the said parts together, substantially as set forth.

4. A padlock having a tubular body divided lengthwise, separately-formed ends having rims which house the respective ends of the sectional body, means for securing said parts together, said means consisting of an integral, headed pin which extends through the axis of the body and the said end pieces and rigidly distances the latter, a shackle, and locking mechanism for the shackle, substantially as set forth.

5. In a padlock, a tubular body divided lengthwise, and a diaphragm forming the inner end of the lock-mechanism chamber, secured to the body by lugs within slots of the divisions of the body, substantially as set forth.

704,270. CONTROLLING MECHANISM FOR STEAM-ENGINE REGULATORS. EDWIN REYNOLDS, Milwaukee, Wis. Filed May 8, 1900. Serial No. 15,973. (No model.)

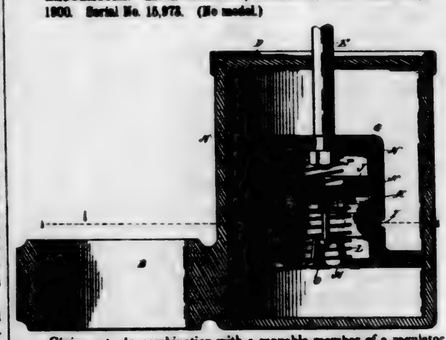

Claim.—1. In combination with a movable member of a regulator for steam-engines, means for holding said member against a force of any magnitude exerted for a short period, and permitting the movement thereof when said force is exerted for a greater period, and finally holding the regulator in its new adjusted position.

2. In combination with a movable member of a regulator for steam-engines, a fluid-controlling device directly connected thereto and adapted and arranged to hold said member against any sudden movement, but permitting the same to move after a stated period of time, and finally to hold it in its adjusted position.

3. In combination with a movable member of a regulator for steam-engines, a fluid-containing pot or chamber; controlling devices mounted and working therein, comprising a piston and valve carried thereby, said valve normally closing the passages through the piston; and direct connections intermediate the movable member of the regulator and the controlling devices mounted in the pot.

4. In combination with a movable member of a regulator for steam-engines, a pot or chamber; a piston mounted therein; connections intermediate said piston and the movable member of the regulator; a valve working in conjunction with said piston; and means for holding the valve in such position relatively to the piston that the piston and rod will be prevented from being moved to any extent through the exertion of a force of any magnitude for a short period, but which will permit the parts to move when said force has been exerted for a period of any length, and will lock the parts in their adjusted position when they come to rest.

5. In combination with a movable member of a regulator for steam-

engines, a pot or chamber; a piston mounted therein having openings formed near its upper end and ports I below the same; connections intermediate said piston and the movable member; a valve working within said piston and adapted normally to close the ports; and means for holding said valve in such position.

6. In combination with a movable member of a regulator for steam-engines, a pot or chamber; a valve G mounted therein and provided with openings H near its upper end and ports I near its lower end; connections intermediate said piston and the movable member; a valve mounted in said piston and provided with ports K; a spring adapted to hold said valve in its elevated position with the ports out of alinement; and means for limiting the upward movement of said spring.

7. In combination with a movable member of a regulator for steam-engines, a pot or chamber; a piston G mounted therein and provided with openings H near its upper end and with ports I near its lower end; a valve mounted therein and provided with ports K; a spider M secured to the piston below the valve; a spring mounted upon said spider; a plate N interposed between the upper end of the spring and the valve; and a screw or stem O extending through the spider and connected to the plate, and adapted and arranged to limit the upward movement of the spring.

704,271. CONTROL DEVICE FOR HOISTING-MACHINES. GEO. H. REYNOLDS, Chicago, Ill., assignor to the Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Dec. 29, 1898. Serial No. 700,637. (No model.)

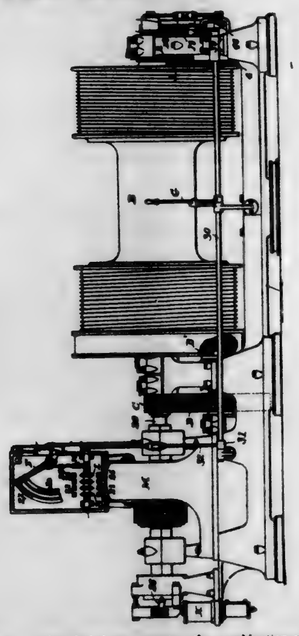

Claim.—1. In a hoisting apparatus, the combination with control devices for starting and stopping the engine, of automatic regulating devices connected to some moving part of the apparatus for reducing the speed of the engine before the hoist reaches the limits of its movement, substantially as described.

2. In a hoisting apparatus, the combination with the control devices for starting and stopping the engine, of an automatic stop device for stopping the engine as the hoist reaches the limits of its movement, and automatic regulating devices connected to some moving part of the apparatus for reducing the speed of the engine before the hoist reaches the limits of its movement, substantially as described.

3. A hoisting-engine provided with a control device for cutting off and turning on the motor fluid, and connections operated by the engine for shifting said devices at the limits of travel of the cable, and with an auxiliary or speed-regulating device for gradually decreasing or increasing the flow of said fluid, and means for shifting the regulating device to retard said flow prior to the operation of the control device, substantially as set forth.

4. A hoisting-engine provided with a motor and its control and regulating devices, a winding-drum, two shifting devices, and means for operating the same, one connected with the control device and the other with the regulating device of the motor, substantially as set forth.

5. The combination of a hoisting-engine, motor, motor control and regulating devices, and two shifting devices connected to be moved by operating parts of the apparatus and respectively connected to operate the control and regulating devices, substantially as set forth.

6. The combination with a hoisting drum and motor, of two shifting devices connected to independently control the operation of the motor, and means for operating the shifting devices in succession, substantially as set forth.

7. The combination with a hoisting drum and motor, of two shifting devices connected to independently control the operation of the motor, and means for operating the shifting devices in succession as the drum terminates its travel in either direction, substantially as set forth.

8. The combination of a hoisting-drum, two shifting devices, and a train of gears between each shifting device and the drum, substantially as set forth.

9. The combination of a hoisting-drum, drum-shaft, a shifting-cam N and shifting-lever 37, and a train of gears between each shifting device and the drum-shaft arranged to successively operate the same as the drum completes a predetermined travel in either direction, substantially as set forth.

10. The combination of a motor provided with control and regulating devices and a winding-drum provided with a shifting-cam and connections between the latter and the regulating device, and a shifting-lever and connections between the same and the control device, substantially as set forth.

11. In a hoisting mechanism, the combination of a car, mechanism for moving said car, means for stopping said car at the ends of its traverse and automatic means independent of the stopping means for changing the rate of movement of the car as it reaches certain predetermined points in its traverse substantially as set forth.

12. In a hoisting mechanism, the combination of a car, mechanism for moving said car, automatic means for changing the rate of movement of the car from slow to fast and from fast to slow, as it reaches certain predetermined intermediate points in its traverse, and means for automatically stopping the car at the ends of its traverse, substantially as set forth.

13. In a hoisting mechanism, the combination of a car, a motor for moving said car, a connection from the motor to the generator, said connection being automatically controlled to effect a change of speed of the motor as the car reaches certain predetermined points in its traverse, and a normally operative connection from the generator to the motor, substantially as set forth.

14. In a hoisting mechanism, the combination of a car, mechanism for moving said car and automatic means for changing the rate of movement of the car from slow to fast and from fast to slow as it reaches certain predetermined intermediate points in its traverse, substantially as set forth.

15. A car, a hoisting-motor therefor, means for accelerating the speed of the motor as it starts up, and means operated by the motor for automatically arresting the car at any predetermined point.

16. A car, a hoisting-motor therefor, and means actuated by the motor for reducing the speed thereof as the car approaches any predetermined stopping-point.

17. In a hoisting mechanism, the combination of a car, mechanism for moving said car, an automatic brake, means for stopping the car at the ends of its traverse, and automatic means independent of the stopping means for changing the rate of movement of the car as it reaches certain predetermined points in its traverse, substantially as described.

18. In a hoisting mechanism, the combination of a car, mechanism for moving said car, an automatic brake which is held out of action by the motor fluid and is put into action by cutting off the motor fluid, means for stopping said car at the ends of its traverse, and automatic means for changing the rate of movement of the car, as it reaches certain predetermined points in its traverse, substantially as set forth.

19. In a hoisting mechanism, the combination of a car, mechanism for moving said car, means for stopping said car at the ends of its traverse, and automatic means independent of the stopping means for changing the rate of movement of the car, said automatic means being constantly connected to mechanism for moving said car, substantially as set forth.

704,272. APPARATUS FOR MAKING CARBONIC-ACID OR OTHER GAS. VAN VECHTEN W. REMSEN, Philadelphia, Pa. Original application filed July 15, 1901, Serial No. 68,726. Divided and this application filed Sept. 26, 1901. Serial No. 76,610. (No model.)

Claim.—1. In an apparatus for the manufacture of gas, a gasometer, comprising a fixed tank adapted to receive the carbonaceous or similar material, and a removable dome adapted to telescope with the tank, a shaft traversing the dome and tank, means for oscillating or turning said shaft, and agitating means carried by said shaft and adapted to enter the carbonaceous or similar material.

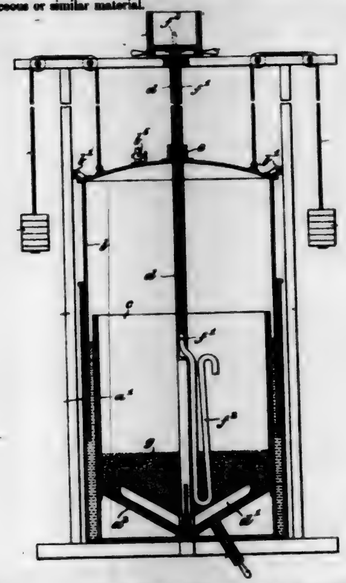

2. In an apparatus for the manufacture of gas, a gasometer, comprising a fixed tank adapted to receive the carbonaceous or similar material, a dome adapted to telescope with said tank, a hollow shaft traversing the dome and extending into the tank, means for turning or oscillating said shaft, agitating means carried by said shaft and adapted to enter the carbonaceous or similar material, a box or receptacle for the acid, and a non-corrodible pipe leading from the acid-receptacle and adapted to traverse the hollow shaft and to discharge acid upon the carbonaceous or similar material.

3. In an apparatus of the character described, a collapsible receptacle for the carbonaceous or similar material, a hollow shaft extending into said receptacle, a box or receptacle for the acid located outside the collapsible receptacle, and a non-corrodible pipe leading from the acid-receptacle and adapted to traverse the hollow shaft and to discharge acid upon the carbonaceous or similar material.

4. In an apparatus of the character described, a collapsible receptacle for the carbonaceous or similar material, a hollow shaft extending into said receptacle, a box or receptacle for the acid located outside the collapsible receptacle, a non-corrodible pipe leading from the acid-receptacle and traversing the shaft, and a siphon located without the shaft and discharging upon the carbonaceous or similar material, said siphon connected with said acid-pipe.

704,273. FINGER-RING. NATHAN ROSEN, New York, N. Y. Filed Apr. 26, 1902. Serial No. 104,563. (No model.)

Claim.—A ring provided at one side with a crown and a bezel which is adapted to fit on said crown, said crown being provided at its opposite sides with notches or recesses and said bezel with a bar which is less in diameter than said bezel and the ends of which are adapted to fit in said notches or recesses, and a locking-pin passed through the opposite sides of the crown and longitudinally through said bar, substantially as shown and described.

704,274. RIDING-PLOW. CHARLES S. RUEF and CLARENCE L. TOOLEMON, Dixon, Ill., assignors to Grand Detour Plow Company, Dixon, Ill., a Corporation of Illinois. Filed July 15, 1901. Serial No. 68,602. (Model.)

Claim.—1. In a plow, the combination of a plow, its frame, and means for raising the plow comprising a lever pivoted intermediate of its length upon the frame and a link pivotally connected respectively to the lower end of said lever and to said plow; substantially as described.

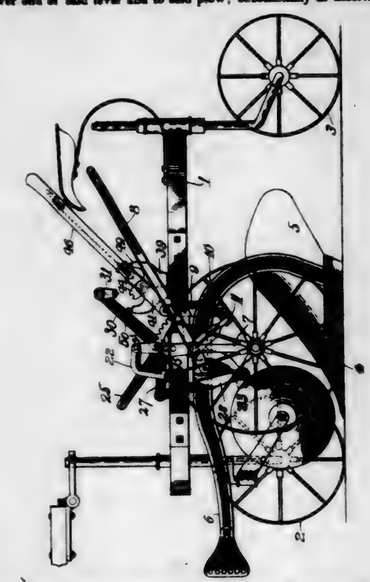

2. In a plow, the combination of a plow, its frame and means for raising the plow, comprising a lever pivoted intermediate of its length upon the frame and a link pivotally connected at its lower end to the plow and intermediate of its length to the lever; substantially as described.

3. In a plow, the combination of a plow, its frame and means for raising the plow comprising a lever pivoted intermediate of its length upon the frame, a link pivotally connected at its lower end to the plow and intermediate of its length to the lever, and an adjustable stop arranged on said lever and adapted to be contacted by the upper or free end of said link; substantially as described.

4. In a plow, the combination of a plow, its frame, a raising-lever pivoted intermediate of its length to said frame, a link pivoted at a point intermediate of its length to the lower end of said raising-lever and at its lower end to the plow, a lowering-lever pivoted to said frame and a link connection pivoted at one end to said lowering-lever and at its other end to the plow; substantially as described.

5. In a plow, the combination of a plow, its frame, a raising-lever pivoted to said frame, a link pivotally connected to the raising-lever and the plow, a lowering-lever also pivoted to said frame and a second link pivotally connected to the lowering-lever and to the plow on the same pivotal axis as the first link; substantially as described.

6. In a plow, the combination of a plow, its frame, a raising-lever and lowering-lever pivoted on said frame on a common axis, a link pivotally connected to the raising-lever and the plow, and a second link pivotally connected to the lowering-lever and to the plow, on the same pivotal axis as the first link; substantially as described.

7. In a plow, the combination of a plow, its frame, a lowering-lever pivoted on said frame and having two forks, one of which has a footpiece, a link connecting the other of said forks to the plow and a stop arranged on said lever to limit the movement of said link in one direction; substantially as described.

8. In a plow, the combination, with the plow and a frame, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between the lever and plow, an arm 21 on the shaft, an arm 23, a connection between said arms and a member carrying arm 23 and arranged to have a slight oscillatory movement in the frame; substantially as described.

9. In a riding-plow, the combination, with the plow and a frame, of means for lowering the plow comprising a foot-actuated lever, having a shaft journaled on the frame, a connection between the lever and plow, an arm on said shaft, a sleeve journaled in said frame, an arm on such sleeve, a connection between said arms and means for roterily adjusting the position of the sleeve; substantially as described.

10. In a riding-plow, the combination with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever, having a shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve, substantially as described.

11. In a riding-plow, the combination with the plow, a frame and a land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve, comprising a sector and adjusting-lever coöperating therewith; substantially as described.

12. In a riding-plow, the combination with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between said lever and plow, and an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve, comprising a sector on the sleeve and an adjusting-lever cooperating with said sector; substantially as described.

13. In a riding-plow, the combination with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having a shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, and means for rotarily adjusting the position of the sleeve comprising a sector on the sleeve and an adjusting-lever loosely mounted on said axle and coöperating with said sector; substantially as described.

14. In a riding-plow, the combination, with the plow, a frame and the land-wheel having an axle, of means for lowering the plow comprising a foot-actuated lever having the shaft journaled on the frame, a connection between said lever and plow, an arm on said shaft, a sleeve journaled in said frame and encircling said axle, a second arm on said sleeve, a connection between said arms, means for rotarily adjusting the position of the sleeve comprising a sector on the sleeve, an adjusting-lever loosely mounted on said axle and coöperating with said sector, and a yielding connection between the lever and axle; substantially as described.

15. In a riding-plow, the combination, with the plow and a frame, of means for raising and lowering the plow, comprising a foot-actuated lever having a shaft journaled in the frame, a connection between the lever and plow, an arm on said shaft, a sleeve journaled in said frame, a second arm on such sleeve and a bent link connecting said arms and permitting a locking of said arms and lever; substantially as described.

16. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a foot-actuated lever pivoted in the frame, a connection between the upper end of such lever and the plow and a stop arranged on the lever and contacted by the link when the lever has substantially completed its upward movement; substantially as described.

17. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a foot-actuated lever pivoted in the frame, a connection pivotally connected at its upper end to the upper end of the lever and at its lower end to the plow, said connection having a relative swinging movement over the face or side of the lever, and a projection arranged on the side of the lever in the path of the connection to limit its swing; substantially as described.

18. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a shaft 20 journaled in the frame, a lever 24 connected at its lower end to the shaft, a bracket 29 on the plow, a link 33 pivotally secured at its lower end to the bracket and at its upper end to the upper or free end of said lever, and a projection on the side of the lever against which the link comes to rest in the upward position of the parts; substantially as described.

19. In a plow, the combination with the plow and frame, of means for lowering the plow comprising a shaft 20 journaled in the frame, a lever 24 pivoted at its lower end and having two upwardly-projecting forks, a footpiece on one fork, a link connected at one end to the other fork and extending downwardly below the shaft and pivotally connected to the plow, and a projection on the side of the lever against which the link comes to rest in the upward position of the parts; substantially as described.

20. In a riding-plow, the combination of a plow, its frame, and means for raising and lowering the plow comprising a lowering-lever pivoted in the frame, a link between said lever and plow, a raising-lever pivoted intermediate of its length in the frame, and a second link between one arm of the raising-lever and plow; substantially as described.

21. In a riding-plow, the combination of a plow, its frame, and means for raising and lowering the plow comprising a shaft mounted in the frame, a lowering-lever on said shaft, a link between said lever and plow, a raising-lever pivoted on said shaft, and a second link between the plow and raising-lever; substantially as described.

22. In a riding-plow, the combination of a plow, its frame and means for raising and lowering the plow, comprising a shaft mounted in the frame, a lowering-lever on said shaft, a link between said lever and plow, a raising-lever pivoted intermediate of its length on said shaft and a second link between one of the arms of the raising-lever and the plow; substantially as described.

23. In a riding-plow, the combination of a plow, its frame, and means for raising and lowering the plow, comprising a lowering-lever pivoted in the frame, a link between said lever and plow, a raising-lever also pivoted in the frame and a link between the raising-lever and the plow, and means for locking the raising-lever and its link; substantially as described.

24. In a riding-plow, the combination, of a plow, its frame, and a foot-actuated raising-lever device comprising a lever pivoted intermediate of its length on the frame, a step on said lever, a link pivoted intermediate of its length to said lever and at its lower end to the plow, the upper or free end of said link being adapted to contact said stop; substantially as described.

25. In a riding-plow, the combination of a plow, its frame, and a foot-actuated raising-lever device comprising a lever pivoted intermediate of its length on the frame, an adjustable stop on said lever, a link pivoted intermediate of its length to said lever and at its lower end to the plow, the upper or free end of said link being adapted to contact said stop; substantially as described.

26. In a riding-plow, the combination of a plow, its frame and a foot-actuated raising-lever device comprising a lever pivoted intermediate of its length on the frame, a stop on said lever comprising a lug and a set-screw therein, a link pivoted intermediate of its length to said lever and at its lower end to the plow, the upper or free end of said link being adapted to contact said stop; substantially as described.

27. In a riding-plow, the combination of a plow, its frame, and means for lowering the plow comprising a lever pivoted at one end to the frame and having its other end forked, one of said forks having a footpiece, and a link connection between the other of said forks and the plow; substantially as described.

28. In a riding-plow, the combination of a plow and its beam, the main frame 1, the auxiliary frame 15, a sleeve 12 journaled in said frames, a shaft 20 journaled in the main frame, a lever 24 mounted on said shaft, and having the forks 25 and 27, a footpiece 26 on the fork 25, a plow-beam bracket 29 and a link 28 between the fork 27 and the bracket; substantially as described.

29. In a riding-plow, the combinative of a plow and its beam, the main frame 1, an auxiliary frame 15, a sleeve 12 journaled in said frames, an arm 23 on the sleeve, a shaft 20 in the main frame, an arm 21 on one end of the shaft, a link 22 between said arms, a lever 24 secured at its lower end to the shaft and having forks 25 and 27, a footpiece 26 on one fork, a bracket 29 secured to the plow-beam, and a link 28 between the fork 27 and the bracket; substantially as described.

30. In a riding-plow, the combination of a plow and its beam, the main frame, a shaft 20 in said frame, a lowering-lever 24 on said shaft, a raising-lever pivoted intermediate of its length on said shaft and independently movable thereon, a bracket 29 on the plow-beam, a link 28 between the lever 24 and the bracket, a link 33 pivoted at one end to the bracket and intermediate of its length to one end of the raising-lever, said link having a free end 35, a lug 36 on said raising-lever and a set-screw 37 adapted to be contacted by the said end of the link 33; substantially as described.

31. In a riding-plow, the combination of a plow, foot-actuated mechanism for raising or lowering the plow comprising an actuating-lever, and operative connections between it and the plow, and a footpiece loosely pivoted on said lever; substantially as described.

32. In a riding-plow, the combination of a plow, foot-actuated mechanism for raising or lowering the plow, comprising an actuating-lever and operative connections between it and the plow, and a stirrup loosely pivoted on said lever; substantially as described.

33. In a riding-plow, the combination of a plow, foot-actuated mechanism for raising or lowering the plow comprising an actuating-lever and operative connections between it and the plow and a stirrup loosely pivoted and arranged to move independently on said lever; substantially as described.

34. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a shaft in said frame, a pivoted lever having a plunger, an arm on the shaft and having a notch adapted to be engaged by said plunger, rests for the forward and rearward positions of the lever and an operative connection between said shaft and the plow; substantially as described.

35. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a shaft in said frame, a pivoted lever having a plunger, an arm on the shaft and having a notch adapted to be engaged by said plunger, a second arm secured to said shaft, a bracket secured to the plow and a link connection between such second arm and the said plow-bracket; substantially as described.

36. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a bracket arranged on the frame, having the two steps or rests 49 and 50, a cross-shaft therein, operative connection between said shaft and plow and a hand lifting-lever adapted to be put into and out of coöperative relation with the shaft and to rest on either one of such rests or steps; substantially as described.

37. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow comprising a bracket arranged on the frame, a cross-shaft thereon, operative connection between said shaft and plow, comprising a horizontal arm 41 on said shaft, a bracket 43 on the plow-beam, and a link pivotally connected to the arm 41 and bracket 43 respectively, a notched arm on said shaft and a hand lifting-lever having a spring-pressed plunger adapted to engage and be disengaged from said notched arm; substantially as described.

38. In a riding-plow, the combination of a frame, a plow, a hand device for raising and lowering the plow, comprising a bracket arranged on the frame and having a pair of steps, a shaft in said bracket, operative connection between said shaft and plow, and a hand lifting-lever loosely pivoted on the shaft and adapted to coöperate with the latter, said lever being arranged to rest against one or the other of the steps; substantially as described.

39. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, and a hand-lever adapted to engage said sleeve and having a yielding connection with said axle; substantially as described.

40. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, and a hand-lever pivoted on said axle and having a yielding connection therewith; substantially as described.

41. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, a hand-lever pivoted on said axle and a spring interposed between the lever and the axle; substantially as described.

42. In a wheeled plow, the combination of a frame, a plow-beam supported by the frame, a rotatable sleeve in such frame, an operating connection between such sleeve and plow-beam, a land-wheel having an axle, a hand-lever pivoted on said axle, an arm projecting from said axle and a spring connected at its ends to the lever and to the arm to form a yielding operative connection between the axle and lever; substantially as described.

43. In a wheeled plow, the combination of a frame, a plow-beam supported thereby, a movable sleeve in such frame and having operative connection with the plow-beam, a toothed segment on such sleeve, a land-wheel having an axle received by such sleeve, a hand-lever pivoted on said axle and adapted to coöperate with said segment and a yielding operating connection between the lever and axle; substantially as described.

704,275. RAILWAY JUMPING-POST. PATRICK SCANLIN, Boone, Iowa. Filed Mar. 15, 1902. Serial No. 98,248. (No model.)

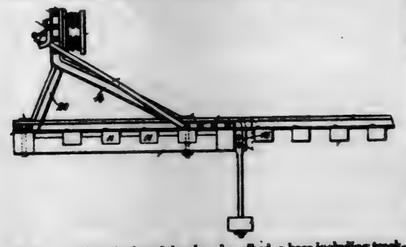

Claim.—1. In a device of the class described, a base including track-rails, two rails having their forward ends on the base and their body portions extending rearwardly and upwardly, two rails having their upper ends connected with the rear ends of the aforesaid rails and their body portions extended downwardly and resting on the base and an anchor connected with the forward ends of the first-mentioned rails.

2. In a device of the class described, a base including track-rails and ties and stringers connecting the ties, two rails having their forward ends fixed to the track-rails and ties and projected downwardly and in engagement with one of the sides of one of the ties and having their body portions extended rearwardly and upwardly, two rails having their upper ends connected with the rear ends of the aforesaid rails and the body portions extending downwardly and having their lower ends resting on the base and an anchor beneath the forward ends of the first-mentioned rails and rods attached to the downwardly-inclined portions of said rails and also to said anchor.

3. In a device of the class described, a base including track-rails, two rails having their forward ends on the base and their body portions extending rearwardly and upwardly, two rails having their upper ends connected with the rear ends of the aforesaid rails and their body portions extended downwardly and resting on the base and an anchor connected with the forward ends of the first-mentioned rails, a plate engaging the rear faces of the upper ends of said rails and rods attached to said plate and projected forwardly and downwardly and attached to the track-rails.

4. An improved railway bumping-post, comprising in combination, a number of railway-ties, stringers connecting said ties, straight track-rails mounted on said ties, two rails having their forward ends inclined vertically and in engagement with the front face of one of said ties and the body portions inclined first horizontally and parallel with the track-rails and secured thereto, then rearwardly, upwardly, and inwardly toward the center of the track and finally straight upwardly, two rails with their forward ends arranged vertically with their upper ends and between the rear ends of the first-mentioned rails and their body portions projected downwardly and rearwardly and their rear ends projected horizontally and resting upon one of the ties, means for connecting the upper ends of both pairs of rails, a plate resting on top of the ties on which the rearwardly-inclined rails rest, and connected with the track-rails, a metal strap on said plate and overlapping the ends of said rails, a bar connected with one of the ties and with its ends engaging horizontal portions of the forward rails to space them apart, an anchor beneath the forward end of the forward rails and rods fixed to the said rails and to the said anchor, for the purposes stated.

5. An improved railway bumping-post, comprising in combination, a number of railway-ties, stringers connecting said ties, straight track-rails mounted on said ties, two rails having their forward ends inclined vertically and in engagement with the front face of one of said ties and the body portions inclined first horizontally and parallel with the track-rails and secured thereto, then rearwardly, upwardly, and inwardly toward the center of the track and finally straight upwardly, two rails with their forward ends arranged vertically with their upper ends and between the rear ends of the first-mentioned rails and their body portions projecting downwardly and rearwardly and their rear ends projecting horizontally and resting upon one of the ties, means for connecting the upper ends of both pairs of rails, a plate resting on top of the ties on which the rearwardly-inclined rails rest, and connected with the track-rail, a metal strap on said plate and overlapping the ends of said rails, a bar connected with one of the ties and with its ends engaging the horizontal portions of the forward rails to space them apart, an anchor beneath the forward end of the forward rails, and rods fixed to the said rails and to the said anchor, and a plate fixed at the rear face of the upper ends of said rails and rods fixed to said plate and extended forwardly and downwardly and attached to the track-rails, for the purposes stated.

704,276. BUGGY BOOT OR APRON. HERMAN A. SCHIPPER, Hinckley, Ill. Filed Dec. 19, 1901. Serial No. 86,571. (No model.)

Claim.—A lap-robe forming a bag open at its upper end to receive the lower limbs and comprising a lap-section, an under section, a foot-

section, having its opposite edges permanently connected to the lower edges of the lap and under sections, and side sections having their lower edges permanently connected to the ends of the foot-section and their side edges permanently connected respectively to the side edges of the lap and under sections, the latter being narrowed and extended beyond the side sections to form a seat-flap and the lap-section being narrowed and extended at its upper end to form a chest-protecting flap, substantially as described.

704,277. PORTABLE FENCE. JAKOB STEBLER, Toledo, Ohio. Filed Nov. 26, 1901. Serial No. 83,554. (No model.)

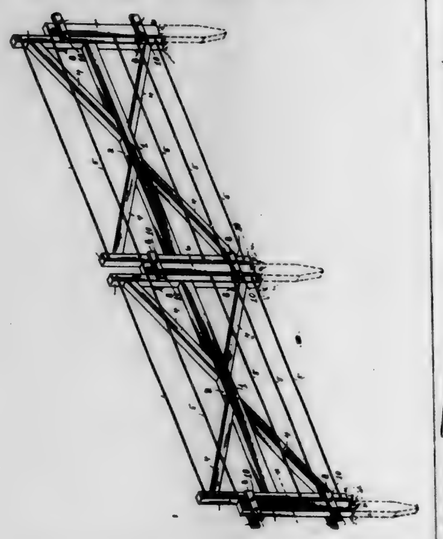

Claim.—In a portable fence, the combination of portable panels with wooden posts having their lower end portions pointed for driving into the ground and their top and middle portions each provided with pairs of cleats clamped thereto by bolts engaging inserts in the edges of the posts, the cleats so clamped being adapted to receive and support the ends of panels abutting the posts and to prevent splitting of the posts when driven into the ground.

704,278. CAN-TESTING MACHINE. WILLIAM H. H. STEVENSON, Baltimore, Md. Filed May 15, 1901. Serial No. 60,267. (No model.)

Claim.—1. In a can-testing machine, the combination of a tank; a can-carrier; a movable head to clamp and close the head of the can; and means which on its preliminary stroke will force the movable head against and close the head of the can and then force the carrier downwardly, as and for the purpose described.

2. In a can-testing machine, the combination of a tank; a can-carrier; means to raise and lower said can-carrier; a longitudinally-movable head for clamping and closing the can having a predetermined movement in advance of the movement of the can-carrier; and means to operate said head, as and for the purpose described.

3. In a can-testing machine, the combination of a tank; a can-carrier; means to raise and lower the can-carrier; a movable head to clamp and close the head of the can; and means to automatically operate the movable head to close the head of the can before the can-carrier is moved, as and for the purpose described.

4. In a can-testing machine, the combination of a base having an upright at the rear end thereof; a tank; a frame fulcrumed to said upright; a can-carrier carried by said frame; a movable head to clamp and close the head of the can; means to operate the movable head to close the head of the can before the can-carrier begins its downward movement; and means to admit air to the can after it has been submerged, as and for the purpose described.

5. In a can-testing machine, the combination of a base having an upright at the rear thereof; a tank; a frame fulcrumed to said upright and carrying a vertically-movable frame; a can-carrier secured to the said vertically-movable frame; a movable head to close the head of the can; a rock-arm carried by the vertical frame; means to rock the said arm to cause the movable head to clamp and close the head of the can before the can-carrier begins its downward movement; and means to operate the fulcrumed frame to raise and lower the can-carrier, as and for the purpose described.

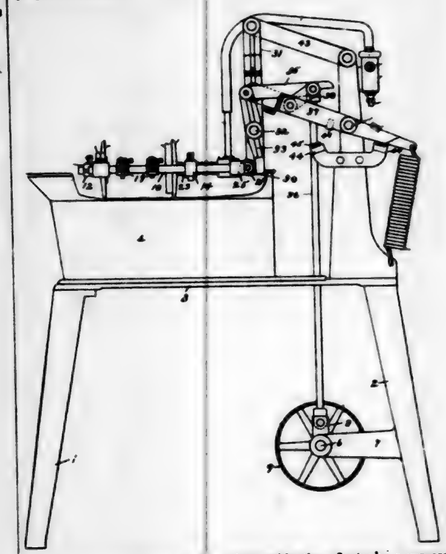

6. In a can-testing machine, the combination of a tank; a can-carrier; means to raise and lower the can-carrier; a movable head having a hollow tube connected thereto through which air is supplied to the can; a main shaft journaled to the frame; a rock-arm connected with the main shaft to operate said head, as and for the purpose described.

7. In a can-testing machine, the combination of a frame having an upright at the rear thereof; a shaft journaled to said frame; a metal frame movably connected to said upright; a normally closed air-valve; a movable head to clamp and close the head of the can; a tube leading from the air-valve to the movable head; and means connecting with the main shaft to cause the movable head to clamp and close the can and then lower the can-carrier into the tank, as and for the purpose described.

704,279. SASH-LOCK. CHARLES STEPENS, Plainfield, N. J. Filed Feb. 27, 1902. Serial No. 96,803. (No model.)

Claim.—1. In a sash-lock, the combination with a case to be secured to the top surface of the upper rail or member of the lower sash, of a swinging arm pivoted within the said case, a latch-lever pivoted to the said swinging arm and movable within said case, and a mortise-plate secured in the face of the vertical rail of the upper sash and adapted to be engaged by the latch-lever, the swinging of the said arm causing the end of the latch-lever to move out of the case, engage the mortise-plate, lock the sashes and draw the same together, substantially as specified.

2. A sash-lock comprising a case having opposite side apertures, a swinging arm pivoted within the case at a point distant from either end and having one end projecting through one side aperture, a latch-lever within the case pivoted only to the short end of the swinging arm and at its free latch end moving through the opposite side aperture, the pivot of said arm and latch swinging from the retracted position at one side of the pivot of the arm to the position of engagement at the other side of the said pivot, and a mortise-plate engaged by the latch-lever, substantially as specified.

704,280. ROTARY ENGINE. ALFRED T. STIRMAN, Eureka, Cal. Filed Aug. 24, 1901. Serial No. 73,192. (No model.)

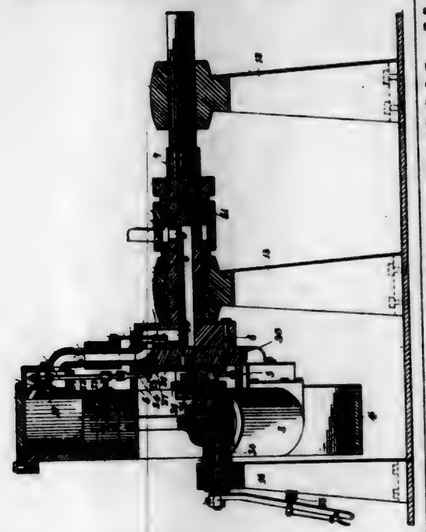

Claim.—1. In a rotary engine, the combination with a hollow engine-shaft, means for supplying the motive fluid thereto, and a series of cylinders mounted to revolve in unison with the shaft and having communication therewith, of a stationary eccentric shaft, pistons within the cylinders, oscillatory piston-rods connected to the cylinders and to the stationary shaft, controlling-valves controlling the supply and exhaust of motive fluid to and from the cylinders, and governor mechanism independent of the controlling-valves, for independently regulating the supply of motive fluid to each of the cylinders.

2. In a rotary engine, the combination with a hollow engine-shaft, and means for supplying steam thereto, of a plurality of cylinders mounted to revolve in unison with the engine-shaft, steam-chests mounted upon the cylinders, steam-passages leading from the engine-shaft to the steam-chests and from the steam-chests to the interior of the cylinders, controlling-valves within the steam-chests, means for operating said valves, a governor-valve within each of the steam-passages leading to the steam-chests, means for operating the governor-valves, pistons within the cylinders, a stationary eccentric shaft, and oscillatory piston-rods connected to said shaft and to the several pistons.

3. In a rotary engine, the combination with a hollow engine-shaft, and means for supplying steam thereto, of a plurality of cylinders mounted to revolve in unison with the shaft, pistons within the cylinders, a stationary eccentric shaft, oscillatory piston-rods connected to said shaft and to the several pistons, steam-chests mounted on the cylinders, controlling-valves therein, means for operating said valves, steam-passages leading from the engine-shaft to the steam-chests, independent governor-valves located in said passages and centrifugally-operated governor members arranged to operate the governor-valves.

4. The combination with a hollow engine-shaft, and means for supplying steam thereto, of a plurality of cylinders mounted to revolve in unison with the shaft, pistons within the cylinders, a stationary eccentric shaft, oscillatory piston-rods connected to said shaft and to the several pistons, steam-chests mounted on the cylinders, controlling-valves therein, radial steam-pipes connected to the steam-chests and communicating with the engine-shaft, governor-valves disposed to regulate the supply of steam through said steam-pipes, and centrifugally-operated governor-weights slidably mounted on said steam-pipes and operatively connected to the governor-valves.

5. In a rotary engine, the combination with a plurality of cylinders mounted for rotation in unison around a common center, of steam-chests mounted upon the cylinders, controlling-valves in the steam-chests to control the supply and exhaust of steam to and from the cylinders, sun-and-planet gearing operatively connected with said valves to operate the same, and means for holding the sun or master gear stationary or for effecting its movement, as desired.

6. In a rotary engine, the combination with a plurality of cylinders mounted to rotate in unison around a common center, of steam-chests mounted on said cylinders, controlling-valves in the steam-chests, sun-and-planet gearing operatively related to said valves, and a shiftable controlling device arranged to reverse the operation of the gearing.

7. In a rotary engine, the combination with a plurality of cylinders mounted to revolve around a common center, of steam-chests mounted on the cylinders, controlling-valves therein, sun-and-planet gearing operatively connected to the controlling-valves, the sun or master gear of said gearing being loosely mounted for free rotation and provided with a toothed rim, a locking-pinion arranged to engage the toothed rim of the master-gear, and means for holding the locking-pinion stationary, or for effecting the partial rotation thereof.

8. In a rotary engine, the combination with a plurality of cylinders mounted to revolve around a common center, of steam-chests mounted on the cylinders and controlling-valves within the steam-chests, sun-and-planet gearing operatively connected to the valves, a stationary eccentric shaft, pistons within the cylinders, oscillatory piston-rods connected at their inner ends to the eccentric shaft and at their outer ends to the several pistons, and mechanism associated with said eccentric shaft for controlling the operation of the sun-and-planet gearing.

9. In a rotary engine, the combination with a plurality of cylinders mounted to revolve around a common center, steam-chests thereon and controlling-valves within the steam-chests, of sun-and-planet gearing operatively connected to the valves, pistons within the cylinders, a stationary eccentric shaft, oscillatory piston-rods connected to said shaft and to the several pistons, a controlling-lever located beyond one end of the eccentric shaft, a locking device located at the other end of the eccentric shaft for engagement with the sun or master gear of the sun-and-planet gearing, and means for operatively connecting the lever with the locking device.

10. In a rotary engine, the combination with a plurality of cylinders mounted to revolve around a common center, steam-chests thereon and controlling-valves in the steam-chests, of sun-and-planet gearing arranged to operate the valves, the sun or master gear of said gearing being provided with a toothed rim, a hollow stationary eccentric shaft, pistons within the cylinders, oscillatory piston-rods connected to the said eccentric shaft and to the several pistons, a rod extended through the hollow shaft and provided upon one end with a locking-pinion arranged to engage the toothed rim of the sun or master gear, and a controlling-lever connected to the opposite end of said rod to actuate the same.

11. In a rotary engine, the combination with inner and outer concentric rims, a series of interposed cylinders, and a hub supporting said rims and located in rear thereof, of sun-and-planet gearing mounted on the face of the hub, steam-chests mounted on the cylinders, controlling-valves located in the steam-chests and operatively connected to the sun-and-planet gearing, a stationary eccentric shaft, pistons within the cylinders, oscillatory piston-rods connected to the stationary eccentric shaft and to the pistons, respectively, and means for controlling the operation of the sun-and-planet gearing.

12. In a rotary engine, the combination with a hollow engine-shaft, and means for supplying motive fluid thereto, of a plurality of cylinders provided with pistons and disposed to rotate in unison, a hub connected to the engine-shaft and cylinders and provided with ports in communication with the interior of the shaft, said hub having a flat face located beyond the shaft, steam-chest mounted upon the cylinders and in communication with said ports, valves within said chests, and valve-operating mechanism connected to the several valves and located upon the flat face of the hub.

13. In a rotary engine, the combination with a hollow engine-shaft, and means for supplying motive fluid thereto, of a plurality of cylinders provided with pistons and disposed to rotate in unison, a hub connected to the engine-shaft and cylinders and provided with ports in communication with the interior of the shaft, steam-chests mounted upon the cylinders and in communication with said ports, valves within said chests, valve-operating mechanism connected to the several valves and located upon the face of the hub, governor-valves located within the ports in the hub, and centrifugally-operated governor-weights operatively related to said governor-valves.

14. In a rotary engine, the combination with an engine-shaft, and means for supplying steam thereto, of a plurality of cylinders mounted to revolve in unison with the shaft, pistons within the cylinders, steam-chests mounted on the cylinders, controlling-valves therein, radial steam-pipes connected to the steam-chests and communicating with the engine-shaft, valve-operating mechanism located in advance of said pipes, governor-valves located in rear of said pipes and disposed to regulate the supply of steam therethrough, and centrifugally-operated governor-weights slidably mounted on the pipes and operatively connected to the governor-valves.

704,281. AUTOMATIC VEHICLE-BRAKE. ENOCH G. STONE, Bloomington, Tenn., assignor of one-half to Dixon A. Robinson, Bloomington, Tenn. Filed Sept. 20, 1901. Serial No. 75,880. (No model.)

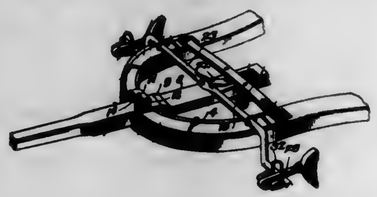

Claim.—1. In an automatic vehicle-brake, the combination of the front bounds, a tongue or pole capable of longitudinal movement, a laterally-movable support mounted on the bounds and capable of movement independently thereof, brake-shoes, and operating mechanism mounted on the support and actuated by the tongue or pole and carrying the brake-shoes, substantially as described.

2. In an automatic vehicle-brake, the combination with a running-gear having a pole capable of longitudinal movement, a support mounted on the running-gear and capable of lateral movement independently thereof, whereby when the brake is applied the pole is prevented from whipping against the animals, a shaft carried by the support and provided with brake-shoes, and connections between the shaft and the pole, substantially as described.

3. In an automatic vehicle-brake, the combination with a running-gear having a pole capable of longitudinal movement, of a slide mounted on the running-gear and capable of a limited movement laterally of the running-gear, whereby the pole is prevented from whipping against the animals, a shaft mounted on the slide and provided with arms located at its center and ends, the central arms being connected with the pole, and brake-shoes mounted on the arms at the ends of the shaft, substantially as described.

4. In an automatic vehicle-brake, the combination with a pole capable of longitudinal movement, of front bounds having curved ways and located at opposite sides of the pole, a curved slide mounted in the curved ways, a shaft carried by the slide and connected with the pole, and brake-shoes connected with the shaft, substantially as described.

5. In an automatic vehicle-brake, the combination of the bounds provided with curved ways, a curved slide mounted in the ways, a rock-shaft journaled on the slide and provided at its ends with brake-shoes and having a central arm, and means for actuating the central arm, substantially as described.

6. In an automatic vehicle-brake, the combination of the front bounds provided with curved grooves and spaced apart, a curved slide provided at its front with a loop, a transverse bar connecting the ends of the slide and provided with a guide, a tongue passing through the loop and through the guide and provided with a slot, a rock-shaft having a central arm arranged in the said slot, and brake-shoes carried by the rock-shaft, substantially as described.

7. In an automatic vehicle-brake, the combination with a running-gear having a longitudinally-movable tongue or pole, of a slide, a guide connected with the slide and receiving the tongue or pole, a spring mounted on the guide and engaging the lower face of the tongue or pole, and a shaft mounted on the slide and operated by the tongue or pole and provided with brake-shoes, substantially as described.

8. In an automatic vehicle-brake, the combination of a running-gear having a longitudinally-movable tongue provided with a slot, a slide mounted on the running-gear, a shaft having a central arm arranged in the slot and adapted to be engaged by one of the walls thereof to move the shaft in one direction, a pin mounted on the tongue and extending across the slot and adapted to engage the arm to move the shaft in the opposite direction, and brake-shoes carried by the same, substantially as described.

9. In an automatic vehicle-brake, the combination of a running-gear having a longitudinally-movable tongue, a slide, a guide connected with the slide and receiving the tongue, a spring mounted on the guide and arranged at the bottom of the tongue, and a wedge mounted on the tongue and arranged to engage the spring, substantially as described.

10. In an automatic vehicle-brake, the combination of the front bounds spaced apart, a slide, a tongue extending between the bounds and provided with an enlarged portion to engage the same and having a narrow portion to permit a limited movement of the bounds independently of the pole, brake-shoes, and mechanism mounted on the slide and actuated by the tongue for carrying the brake-shoes into and out of engagement with the wheels, substantially as described.

704,282. ROPE-GRIP FOR SHAFTING. JOHN H. WALLACE, Strathisla, Scotland. Filed July 24, 1900. Serial No. 24,667. (No model.)

Claim.—1. In a rope-grip for the purposes referred to, the combination of the frame A formed at its apex to constitute one jaw of the grip; the grip-plate B hinged at one end to the frame A and formed at its other end to grip the rope against the apex of the frame A and having an aperture D intermediate of its ends for the reception of the knotted end of the rope, substantially as described.

2. In a rope-grip for the purposes referred to, the frame A formed at its apex to constitute one jaw of the grip and the grip-plate B hinged at one end to the frame A, formed at its other end to grip the rope against the apex of the frame A, and having an aperture D intermediate of its ends to receive and retain the knotted part of the rope; in combination with the stop a' adjacent to the hinge to limit the extent to which the free end of the plate B may rise above the gripping end of the frame A, substantially as set forth.

3. In a rope-grip for the purposes referred to, the combination of the frame A: the grip-plate B hinged at one end thereto, formed at its other end to grip the rope against the frame A, and having an apertured projection C at its hinged end, through which the rope is passed and an aperture D intermediate of its ends for the reception of the knotted end of the rope, substantially as described.

4. In a rope-grip, the combination of the frame A, having an aperture E near one end for the reception of the rope; and the plate B hinged to the other end of the frame and having at its free end a gripping-recess *b* adjacent to the aperture E in the frame; a guard or keeper *b'* surrounding the gripping-recess *b* and intermediate of its ends an aperture D in which the other end of the rope is secured, as explained.

704,283. APPARATUS FOR DYEING. ROBERT WEBB, Klingenthein, near Malhouse, Germany. Filed Jan. 13, 1900. Serial No. 1,320. (No model.)

Claim.—1. In an apparatus for the purpose specified, the combination with a closed boiler to contain the material, a closed compensating vessel situated wholly above the boiler, a pipe connecting the top of the boiler with the bottom of said compensating vessel, means for causing the circulating liquid to flow from the bottom of the boiler to the upper part of said compensating vessel, and means for heating the circulating liquid up to the required temperature.

2. In an apparatus for treating textile material with circulating liquids having a temperature above 100° centigrade, the combination with a closed boiler to contain the material, and a pump to maintain a continuous circulation of the liquid through the material in the boiler, of a compensating vessel closed against the atmosphere, coupled at its upper part to the pump and at its lower part to the upper part of said boiler, and means for heating the circulating liquid up to the required temperature, said compensating vessel being situated wholly above the boiler and adapted to contain such a quantity of the liquid that a quantity of the liquid will be always present in the upper part of the boiler sufficient to insure that the textile material in the boiler shall be always covered with liquid, whereby the treatment may be effected at a high temperature and under considerable pressure, substantially as and for the purposes set forth.

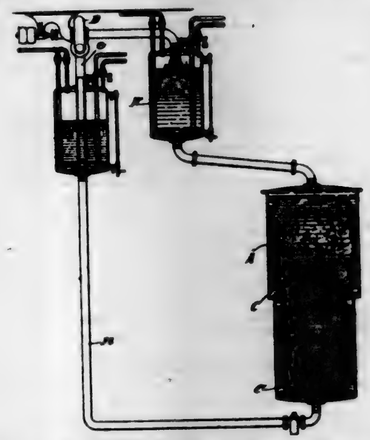

3. In an apparatus for treating textile material with circulating fluids, the combination with a boiler in which the textile material is to be treated, of a basket to contain the textile material and to be introduced into the said boiler, the sides of said basket, which are to come into contact with the boiler-wall, being formed of outwardly-curved springs *d*, and the largest diameter of said basket: that is to say, the diameter including the outwardly-curved springs, being greater than that of the part of the boiler to receive the basket, substantially as and for the purposes set forth.

4. In an apparatus for treating textile material with circulating fluids, the combination with a boiler in which the textile material is to be treated, of baskets to contain the material, of different diameters, placed one above another in the boiler and the bottoms of which are adapted to rest upon ledges in said boiler, the sides of said baskets being formed of outwardly-curved springs *d*, the largest diameter of the basket: that is to say, the diameter including said curved springs, being greater than that of the part of the boiler to receive the corresponding basket, substantially as and for the purposes set forth.

704,284. AUXILIARY HAND-OPERATED DRIVING MECHANISM FOR BICYCLES. KARL WEBBER, Regensburg, Germany. Filed June 18, 1901. Serial No. 65,113. (No model.)

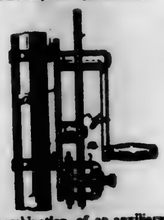

Claim.—1. In the combination, of an auxiliary hand driving-gear mechanism, with the driving-gear of a bicycle, comprising a plurality of gear-wheels mounted upon a supporting-plate, means for securing the same to the head of the bicycle-frame, a crank for operating said gear-wheels, a sprocket-wheel loosely supported on the shaft of the lower of said gear-wheels, a spring-actuated dog mounted on said shaft and adapted to connect said sprocket with said gear-wheel, and means for locking said dog in engagement with said sprocket, substantially as set forth.

2. In the combination, of an auxiliary hand driving-gear mechanism, with the driving-gear of a bicycle, comprising a plurality of gear-wheels mounted upon a supporting-plate, means for securing the same to the head of the bicycle-frame, a crank for operating said gear-wheels, a sprocket-wheel loosely supported on the shaft of the lower of said gear-wheels, a longitudinal slot in the outer end of said shaft, a spring-actuated dog mounted on said shaft having arms extending inwardly through said gear-wheel and adapted to engage diametrically-arranged openings in said sprocket, and a spring-actuated key secured in slot of said shaft and having a shoulder engaging the dog, substantially as set forth.

704,285. COMPOUND FOR USE IN REDUCING METAL SHEETS IN PACKS. THOMAS V. ALLIS, Bridgeport, Conn., assignor, by mesne assignments, to the International Tin Plate Corporation, a Corporation of New Jersey. Filed Feb. 5, 1901. Serial No. 46,068. (No specimens.)

Claim.—1. A compound for coating the contact-surfaces of metal plates in packs to prevent adhesion or cohesion of the plates in the operation of heating and reducing the same to sheets, consisting of a refractory material combined with water and an adhesive substance.

2. The within-described compound for coating the contact-surfaces of metal plates in packs to prevent adhesion or cohesion of the plates in the operation of heating and reducing the same to sheets, consisting of powdered asbestos combined with water, and an adhesive material.

704,286. FURNACE FOR PROGRESSIVE METAL-HEATING. THOMAS V. ALLIS, Bridgeport, Conn., assignor, by mesne assignments, to the International Tin Plate Corporation, a Corporation of New Jersey. Filed Apr. 20, 1901. Serial No. 56,788. (No model.)

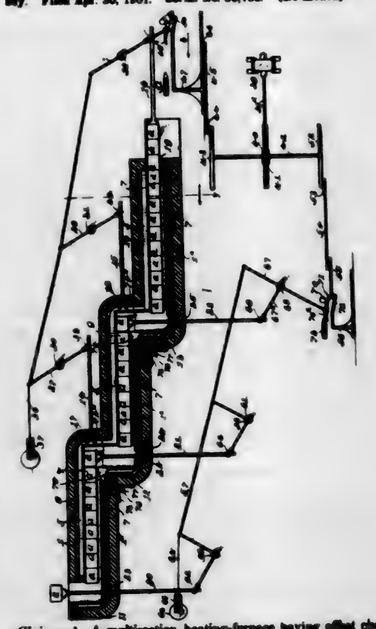

Claim.—1. A multisection heating-furnace having offset chambers located one in advance of another in a substantially horizontal plane, the forward end of each chamber overlapping the rear end of the preceding chamber, passages connecting said overlapping chambers, and means intermediate the ends of the heating-chambers for heating each chamber, as set forth.

2. A multisection heating-furnace having offset chambers located one in advance of another in a substantially horizontal plane, the forward end of each chamber overlapping the rear end of the preceding chamber, passages connecting said overlapping chambers, said furnace being constructed at its opposite ends with charging and delivery openings, and means intermediate the ends of the heating-chambers for heating each chamber, and means for mechanically progressing the metal therethrough, as set forth.

3. A furnace having a plurality of chambers arranged in succession, a cross passage or passages connecting said chambers, a pusher entering one end of each chamber, and means for simultaneously advancing the several pushers, as set forth.

4. A furnace having three or more chambers arranged in succession, cross-passages connecting the chambers, pushers in said cross-passages and means for simultaneously advancing said pushers, as set forth.

5. The combination, with a furnace of the character described, having a plurality of chambers set one in advance of another, and transfer-passages connecting said chambers, of pusher-rods for said chambers and transfer-passages, linked together in two separate gangs or sets, and means whereby both gangs or sets are operated and each gang or set tripped and returned to its normal position, as set forth.

6. The combination, with a furnace of the character described, of gangs of feeding pusher-rods and gangs of transfer pusher-rods, means for effecting the forward stroke of each of said gangs, and adjustable means for tripping each gang on its forward stroke and returning the same to a normal position, as set forth.

7. The combination, with a furnace of the character described, having a plurality of chambers set one in advance of another, and transfer-passages connecting said chambers, of interposed guides at the junction of said chambers and passages to prevent colliding of the metal transferred from one chamber, with the metal of an adjoining chamber, as set forth.

8. The combination, with a furnace of the character described, having a plurality of chambers set one in advance of another, and transfer-passages connecting said chambers, of adjustable and interchangeable interposed guides at the junction of said chambers and passages to prevent colliding of the metal transferred from one chamber with the metal of an adjoining chamber, as set forth.

704,287. METHOD OF PRODUCING METAL SHEETS. THOMAS V. ALLEN, Bridgeport, Conn., assignor, by mesne assignments, to the International Tin Plate Corporation, a Corporation of New Jersey. Filed July 13, 1901. Serial No. 68,762. (No specimens.)

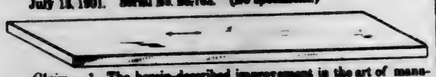

Claim.—1. The herein-described improvement in the art of manufacturing metal sheets, which consists in rolling a plurality of initial plates of an established uniform thickness and of predetermined different widths, cutting sections transversely therefrom of a length required in the width of the next succeeding or secondary plates, and cross-rolling said sections into succeeding or secondary plates of uniform thickness, the width and thickness of the initial plates determining the length and thickness of said secondary plates, as set forth.

2. The herein-described improvement in the art of manufacturing metal sheets in packs of predetermined varying sizes, which consists in rolling initial plates of an established uniform thickness and of predetermined different widths, cutting sections transversely from said initial plates of a length required in the width of the secondary or next succeeding plates, and cross-rolling said sections into the next succeeding or secondary plates of a uniform thickness, cutting these secondary plates transversely into sections and to lengths of the required width of packs, prior to reduction, piling said sections into packs, heating the packs, and reducing the same by cross-rolling, as set forth.

704,288. BICYCLE. ANDREW G. ARESKOOG, Worcester, Mass., assignor to Edmund Converse, Worcester, Mass. Filed Nov. 27, 1899. Serial No. 738,266. (No model.)

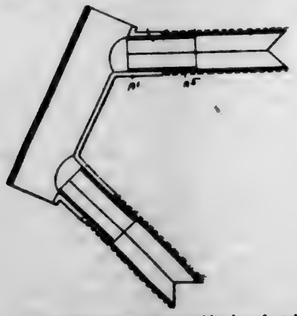

Claim.—1. In a bicycle-frame, the combination of a tubular prong having its end reduced in thickness and forming a shoulder, an interior tube having one end inserted in the end of said tubular prong and having the diameter of its opposite end equal to the diameter of the reduced section of said prong and a tubular strut inclosing the enlarged end of said interior tube and the reduced section of said prong with the overlapping surfaces of said prong, interior tube and inclosing tubular strut brazed together, substantially as described.

2. In a bicycle-frame, the combination of a tubular member divided longitudinally at one side and having a projecting divided prong, the parts of which are located at opposite sides of the division of said longitudinal member and form together a complete prong, the outer portion of which prong is reduced forming an external shoulder, an interior tube secured in said prong and projecting beyond the same and a strut, or frame-tube, fitting over the projecting end of said interior tube and surrounding the reduced portion of said prong to hold the parts thereof together and abutting at its end against said external shoulder of the prong, whereby the external surfaces of the prong and the strut, or frame-tube, form a flush joint, substantially as described.

3. In a bicycle-frame, the combination with a tubular member divided longitudinally at one side and having projecting half-prongs located at opposite sides of the division and forming together a complete prong, the outer portion of said prong being reduced forming a shoulder near the end thereof, of an interior tube secured in said prong and projecting beyond the same, the outer wall of said interior tube being substantially flush with the outer face of the reduced portion of the prong and provided with a shoulder which abuts against the reduced end of the prong and a strut or frame-tube fitting over said interior tube and the reduced portion of said prong and abutting at its end against the shoulder of the prong, substantially as described.

704,289. BELL. WAYLAND B. AUSIN, Deerharbor, Wash. Filed Mar. 11, 1902. Serial No. 97,702. (No model.)

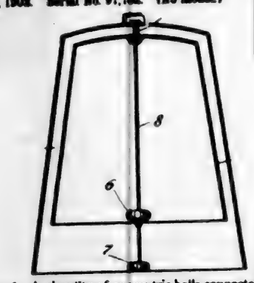

Claim.—1. A plurality of concentric bells connected centrally at the top and having suitable spaces between them, and interior swinging clappers for sounding them, substantially as set forth.

2. The combination of a plurality of bells of different heights and diameters secured together at their tops one within another, and clappers suspended therein for sounding them, substantially as set forth.

704,290. ADJUSTABLE HUB-RUNNER. FREDERICK O. BAILEY, Portland, Me. Filed Dec. 12, 1901. Serial No. 85,558. (No model.)

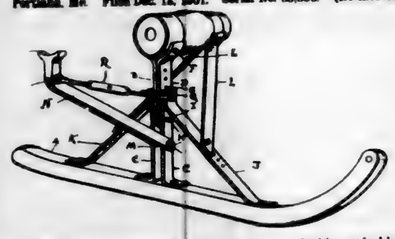

Claim.—1. In a hub-runner, in combination, a double vertical brace, inclined braces running rearwardly and forwardly from said vertical braces to the runner, a vertically-adjustable hub-support moving within said vertical brace and an inwardly-extending vertically-adjustable arm pivotally mounted on said vertical braces.

2. In a hub-runner, in combination, a hub, central vertical braces, a sliding hub-support adapted to have vertical movement therein, an inwardly-extending brace having a rest on the inner end pivotally attached to said vertical brace and capable of being rigidly held in position, inclined braces running from said central brace to the runner and braces running from the outer end of the hub to said inclined braces and capable of vertical adjustment thereon.

3. In a hub-runner, in combination, a hub, a vertically-adjustable hub-support, a central vertical brace, an axle-support pivotally mounted on said central vertical support and means for raising and lowering said support and holding it rigidly in position, inclined braces running from the said central brace to the runner and braces adjustable on said inclined braces running therefrom to the outer end of the hub.

704,291. OVERSEAMING AND BLINDSTITCHING ATTACHMENT FOR SEWING-MACHINES. WILLIAM D. BEAN, New York, N. Y., assignor to William D. Higer, New York, N. Y. Filed Apr. 7, 1900. Serial No. 11,959. (No model.)

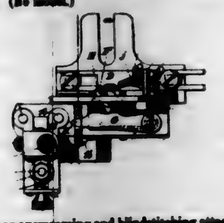

Claim.—1. In an overseaming and blindstitching attachment for sewing-machines, the combination of a base-plate, a slide working thereon, a rule-jointed lever operated by the needle-bar and actuating the slide, a ratchet-wheel journaled on the base-plate, a fixed pin on the base-plate, a pawl attached to the slide and having, in addition to the engaging point thereof, two lips at opposite sides of the pawl-pivot contacting with the pin on the base-plate, whereby the pawl is thrown noiselessly into and out of contact with the teeth of the ratchet-wheel without the aid of a spring, a reciprocatory pusher, and operating connections between the ratchet-wheel and the pusher, as and for the purpose set forth.

2. In an overseaming and blindstitching attachment for sewing-machines, the combination of a base-plate, a needle-bar, a pin attached to the needle-bar, a rule-jointed lever, one arm of which is provided with a slot in which said pin works, a fixed pin on the base-plate, a reciprocating slide, a pawl carried thereby and having, in addition to the engaging point thereof, two projecting lips arranged to come in contact with the pin on the base-plate, an intermittently-operated cam actuated by the pawl, a cam-lever operated by the cam, and a reciprocating dismal pusher operated by the cam-lever, as and for the purpose set forth.

704,292. RACKING APPARATUS. DILLON BERRY, Newark, N. J. Filed Feb. 1, 1902. Serial No. 92,196. (No model.)

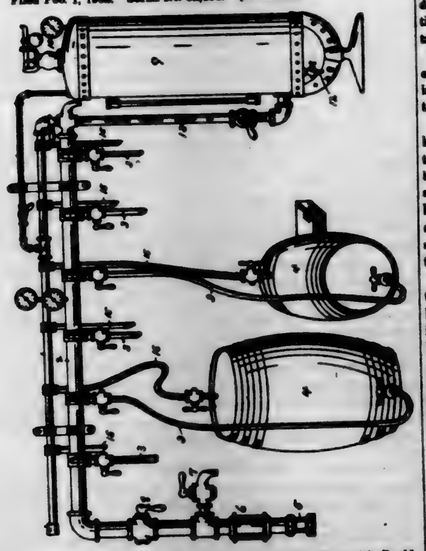

Claim.—1. In a racking apparatus, the combination with liquid-supply means, of a back-pressure tank, had a branched or bifurcated vent-duct having its branches opening into upper and lower points of the back-pressure tank and both providing simultaneously open gas connections between the tank and a package being filled.

2. In a racking apparatus, the combination with a liquid-supply duct, of a back-pressure tank, a vent-duct connecting with the lower part of said tank, and an auxiliary vent-duct of smaller capacity than the first said vent-duct branching therefrom and opening into the upper part of the back-pressure tank, both said ducts permitting simultaneously an escape of gas from a package being filled to the back-pressure tank.

3. In a racking apparatus, the combination of a main liquid-supply pipe and branch tubes, a back-pressure tank, a main back-pressure pipe connected to the said tank and having branch tubes leading from itself and adapted to be connected to packages, and an auxiliary back-pressure duct leading from said main back-pressure pipe, at a point thereon adjacent to its branch tubes, to a point of said tank above its connection with the main back-pressure pipe, said ducts presenting equally available alternative passages for the escape of gas from a package to the back-pressure tank.

4. In a racking apparatus, the combination with suitable liquid-supply means, of a back-pressure tank or reservoir, a main back-pressure pipe leading from said tank and having a plurality of branch tubes adapted to be connected to packages, and an auxiliary back-pressure duct leading from said tank at a higher point than the main pipe and connecting with said main pipe at a plurality of points adjacent to the said branch tubes thereof, both said main pipe and auxiliary duct affording simultaneously open communication with the back-pressure tank.

704,293. INSECT-TRAP. HENRY A. BERLET, Indianapolis, Ind., assignor to the Household Manufacturing Company, Indianapolis, Ind., a Corporation of Indiana. Filed Apr. 25, 1902. Serial No. 104,701. (No model.)

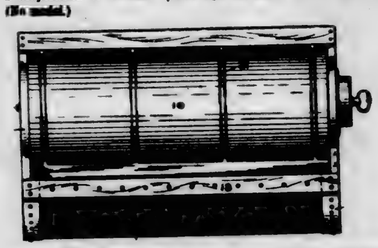

Claim.—1. A trap of the class described including a rotary cylinder with depressions in its surface for bait, and a casing into which a portion of the cylinder extends for entrapping the insects as the cylinder rotates.

2. A trap of the class described including a rotary cylinder made of bright material with depressions in its surface for bait, and a casing into which a portion of the cylinder extends for entrapping the insects as the cylinder is rotated.

3. A trap of the class described including a casing having two chambers, one closed and the other open at the top and separated by a partition having openings leading from the open chamber into the closed chamber, the bottom of said chambers, the outer side of the closed chamber, and the partition below the openings therethrough being made of translucent material, a rotary bait-cylinder horizontally mounted in said open chamber with one side adjacent the partition between said chambers, and a guard-plate secured to the partition immediately above the openings therein and extending toward said cylinder.

4. A trap of the class described including a cylinder with grooves therein for bait, a casing in which said cylinder is horizontally mounted having a chamber in which the lower part of the cylinder extends, leaving the upper half of the cylinder exposed and the bottom of the casing being formed of translucent material and on one side the wall of said chamber closely approaching the cylinder, a guard-plate closing the other side of said chamber which extends toward the cylinder but is spaced therefrom far enough to permit insects on said cylinder to pass it, and means for rotating the cylinder.

5. A trap of the class described including a casing forming a chamber with the upper part open and the lower part made of translucent material, a cylinder mounted in said casing and having its lower portion extending into said chamber, said cylinder being provided with depressions in its surface for bait, means for rotating the cylinder, a guard-plate closing said chamber at one side of the cylinder but spaced sufficiently from the latter to permit insects on the cylinder passing into the chamber, and a guard-plate on the other side of the cylinder and closely approaching the latter.

6. A trap of the class described including a chamber one side of which is formed of translucent material and the opposite side of which is provided with a plate having openings through which the insects may pass, a rotary cylinder mounted adjacent to the side of the chamber having said openings, said cylinder being provided with depressions in its surface for bait, and a guard-plate arranged above said openings for directing the insects thereto.

7. A trap of the class described including a stationary casing with its bottom and side formed of wire-netting, a cylinder mounted horizontally with the lower portion extending into said casing, means for rotating said cylinder, a partition extending longitudinally of the casing for forming a chamber separated from the casing, the lower portion of which is made of translucent material and has openings through it for the passage of insects, and a guard-plate extending from the non-translucent portion of said partition immediately above the openings that approaches the cylinder.

8. A trap of the class described having a casing forming a chamber open at the top, a bait-cylinder made of bright material horizontally mounted in said chamber and closing the same, means for rotating the cylinder, means for supporting the casing in an elevated position, openings through the bottom of the casing through which insects may enter, and a closed chamber beside said open chamber and having openings leading from the open chamber, the bottom and side of said closed chamber being made of translucent material.

9. A trap of the class described including a casing having two longitudinally-extending chambers one open at the top the sides and bottoms of the chambers being formed of wire-netting, a longitudinal partition for separating the chambers the upper portion of which is formed of a bright plate with a series of conical passage-ways through said plate from the open chamber to the other chamber, a cylinder horizontally mounted with the lower portion extending into said open chamber and closing the same, means for rotating the cylinder, a guard-plate extending from the partition at a point above the openings therethrough toward the cylinder but spaced from the cylinder far enough to permit insects on the cylinder to pass it, means for supporting the casing in an elevated position, and a series of conical openings through the bottom of the casing leading into the chamber containing said cylinder.

704,294. LEATHER-LACE CUTTER. GODFREY O. BOEKHARDER, Eau Claire, Wis. Filed June 21, 1901. Serial No. 65,517. (No model.)

Claim.—1. In a lace-cutter the combination of a graduated regulating-plate pivoted on a suitable support, a spring-guide pivoted thereon and having two arms terminating in vertical and horizontal lips and a cutter fixed in the support, adjacent to such lips, as set forth.

2. In a lace-cutter the combination of a graduated regulating-plate pivoted on a suitable support, a spring-guide pivoted thereon and having two arms terminating in vertical and horizontal lips, a spring-guard between the upper arm of the guide and its clamping thumb-nut, and a cutter-support adjacent to the guide-lips, as set forth.

704,295. NARROW-WARE LOOM. JOHN C. BROOKS, Paterson, N. J., assignor of one-half to Robert H. Sterrett, Paterson, N. J. Filed July 9, 1900. Serial No. 22,922. (No model.)

Claim.—1. In a needle-motion for looms, the combination of an oscillating arm or needle having a weft-tension device, of a weft-delivering finger pivoted at the end of the said arm or needle, a spring attached within the arm or needle, and acting normally to hold the finger in parallelism with the arm or needle, and a stop against which one end of the finger is brought in the oscillation of the arm or needle, whereby the finger is rested against the face of the spring and the loop of weft or filling thread widened so as to facilitate the passage therethrough of the selvage-shuttle, substantially as shown and described.

2. In a loom, a filling-controlling device comprising a filling-inserting needle, a thread-engaging device, and a spring inclosed within said needle, one end of the spring being secured to the needle and the other to the thread-engaging device.

704,296. AUTOMOBILE. JACKSON D. CARRINGTON, Newcastle, Pa.; John S. Whitla administrator of said Carrington, deceased. Filed Jan. 24, 1902. Serial No. 91,089. (No model.)

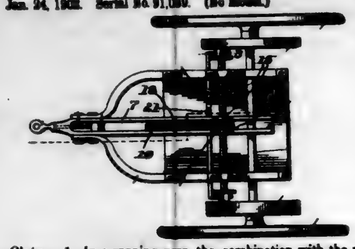

Claim.—1. In a running-gear, the combination with the rear axle and interior gears mounted thereon, of a pair of bounds secured to the axle and having inwardly-projecting forward ends, a pair of braces secured at their rear ends to the said axle, and having their forward ends connected together and arranged between the forward ends of the said bounds, means for securing the forward end of the braces and the bounds together, a swivel connection secured in the forward ends of the said braces, a driven shaft journaled in bearings secured to the said bounds and having square end portions, pinions slidably mounted on the ends of the said shaft, means for independently operating said pinions into and out of engagement with the said interior gears, and means carried by the said driven shaft to rotate the said pinions, substantially as described.

2. In a running-gear, the combination with the rear axle, gears mounted thereon, of a pair of bounds secured to the axles and having their forward ends projecting inwardly, and their rear ends extending to the rear of the axle, brace-rods secured to the axle, and having their forward ends secured between the said bounds, a driven shaft, pinions slidably mounted on said driven shaft, means to operate said pinions into and out of engagement with said gears, hangers secured to the said bounds to the front and rear of the axle, and a platform supported by the said hangers, substantially as described.

704,297. SEWING-MACHINE TAKE-UP. JOSEPH J. M. CHAUVET and JOHN W. COULTER, New York, N. Y. Filed Aug. 1, 1900. Serial No. 25,482. (No model.)

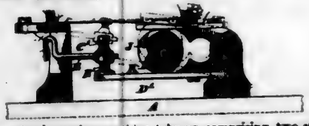

Claim.—1. A sewing-machine take-up comprising two stationary and separated thread-guiding members, a pivoted lever, and means for vibrating the same, and a guide carried by said lever between the other guides and adjustable toward and from the lever-pivot whereby the amount of the take-up may be varied.

2. A sewing-machine take-up, comprising stationary thread-guides, a vibrating take-up lever coöperating therewith, a normally inoperative thread-nipping device between the take-up and thread-supply comprising a lever and its support secured together at one end and adapted to engage the thread in the angle between them, the take-up lever having an arm extending over the thread-nipping lever, and an adjustable member carried by said arm and adapted to engage the movable member of the thread-nipping device before the completion of the take-up stroke.

3. The combination with a take-up device, of a thread-nipping or tension device comprising a support and a spring-bar secured by one end to said support and adapted to receive the thread between them in its passage to the take-up, means for guiding the thread between said members and transversely of the spring-bar, a thread-stop extending across the space between spring-bar and support to limit the entrance of the thread between the two, said stop being located in the path of travel of the thread whereby the extent of the entrance of the thread within the angle between the parts of the nipping or tension device is determined, and means carried by the take-up for engaging said spring-bar to press it upon the thread before the completion of the take-up stroke.

704,298. BOX. EDGAR G. CLARK, New York, N. Y., assignor to Richard H. Colgate, Sidney H. Colgate, and Austen Colgate, Orange, N. J., and Gilbert Colgate, New York, N. Y., copartners doing business as Colgate & Company, Jersey City, N. J., and New York, N. Y. Filed Apr. 15, 1902. Serial No. 103,048. (No model.)

Claim.—The combination with a box-body and a cover hinged thereto, of a strip having its ends secured to the box-body and adapted to flex on four lines, whereby said strip may be folded flat against the body and may be extended to form a quadrangular support beneath the cover to retain the same, substantially as described.

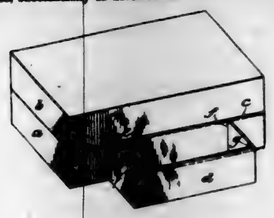

704,299. LAMP. FREDERICK J. CLEARE, Montreal, Canada. Filed Feb. 19, 1902. Serial No. 94,502. (No model.)

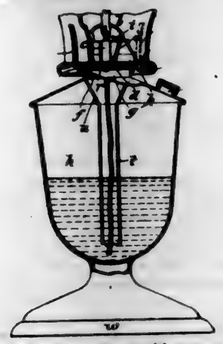

Claim.—1. In a lamp comprising a wick-passage and a chimney-support, the combination with said wick-passage, of a movable device consisting of a plate, a pair of levers fulcrumed between their ends one at each end of said wick-passage and carrying said plate at their upper ends, a contractile spring connected to the lower end of said levers for retaining the same yieldingly in a position with said plate across the exit end of said wick-passage, a movable device bearing upon the chimney carried upon the chimney-support and moving when said chimney is removed, and a link connection between said movable device and the lower end of said levers, whereby said plate will be caused to move to a position across said wick-passage upon the removal of said chimney, substantially as described and for the purpose set forth.

2. In a lamp the combination with a wick-passage and a chimney-supporting tray having a pair of stationary chimney-retaining fingers, of a movable device consisting of a plate, a pair of levers fulcrumed one at each end of said wick-passage and carrying said plate at their upper ends, a spring connected to the lower ends of said levers for retaining same yieldingly in a position with said plate across the exit end of said wick-passage, a pair of yielding fingers bearing upon the chimney carried by the tray, means for movably connecting said fingers to said tray and a pair of links connecting said movable fingers to the lower ends of said levers, substantially as described and for the purpose set forth.

3. The combination with a burner comprising a passage for the illuminant to be burned and a tray for supporting a chimney said tray having a pair of eccentric slots converging toward the center thereof, of a movable device, yielding means for retaining said device across said passage, a pair of angular strips each having a portion projecting upwardly through said slots, the other portion of each being slidably connected to the under side of the tray and means for operatively connecting said angular strips to said movable device, substantially as described and for the purpose set forth.

4. In a lamp the combination with a chimney-supporting tray having a pair of chimney-retaining fingers, a wick-passage; a wick raising and lowering spindle; of a plate; a pair of levers fulcrumed upon said spindle one at each side of said wick-passage and carrying said plate at their upper ends; an annular flange of rounded cross-section integral with and depending from the periphery of said tray; a contractile bailed spring located in said rounded flange and connected at its opposite ends to the lower ends of said levers; a pair of movable chimney-retaining fingers carried upon said tray, and link connections between said movable fingers and the lower ends of said levers, substantially as described and for the purpose set forth.

704,300. KNOCKDOWN OVEN. WILLIAM H. DAHMAN, St. Louis, Mo., assignor to A. Gutsel Manufacturing Company, St. Louis, Mo. Filed Apr. 24, 1902. Serial No. 104,602. (No model.)

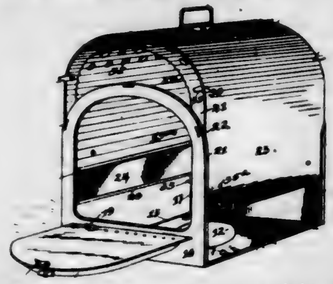

Claim.—1. In a knockdown oven, a bottom; end plates extending upwardly from the ends of the bottom, and forming one shipping-piece; and a plate forming side pieces and a top adapted to fit between the end plates and form a second shipping-piece, said pieces carrying means of securing the parts together, substantially as specified.

2. In a knockdown oven, a bottom; end plates extending upwardly from the bottom and formed integrally therewith; a plate forming sides and top adapted to fit between the end plates; a lining mounted in the sides and top as required to make a flexible second shipping-piece; and means carried by said shipping-pieces for securing the parts together, substantially as specified.

3. In a knockdown oven, a bottom; end plates extending upwardly from the ends of the bottom, there being a door in one end plate; a plate forming sides and top and adapted to fit between said end plates; a lining attached to the sides and top to form an air-space; means of securing the parts together; and a shelf adapted to be mounted above the bottom, substantially as specified.

4. In a knockdown oven, a bottom having a heat-opening at its center; flanges extending upwardly from the side edges of the bottom; stop-tongues cut from the bottom, and extending upwardly inside of the flanges; an imperforate end plate extending upwardly from one end of the bottom; a second end plate extending upwardly from the other end of the bottom and having a door-opening; a door attached to the second end plate, all forming a single shipping-piece; a plate forming side pieces and the top adapted to fit between said end plates; flanges extending inwardly from the lower edges of said sides and adapted to fit between the flanges extending upwardly from the bottom and the stop-tongues; a lining mounted within the sides and top to form an air-space, said lining having a limited number of perforations in its upper part, and said lining being flexible; and sheets of asbestos paper outside of the lower parts of said lining, all forming a second shipping-piece; and a shelf adapted to be mounted between the lower edges of said lining and forming a third shipping-piece, substantially as specified.

5. A knockdown oven comprising a bottom having a heat-opening at its center; flanges extending upwardly from the side edges of the bottom; stop-tongues cut from the bottom and extending upwardly from one end of the bottom; a second end plate extending upwardly from the other end of the bottom, and having a door-opening; a door attached to said second end plate for closing said door-opening; flanges extending inwardly from the edges of both of said end plates, there being fastening-tongue openings through said end plates immediately inside of said flanges, all in one shipping-piece; a plate adapted to fit between said end plates and form the side pieces and top, said top being curved; flanges extending inwardly from the lower edges of said sides and adapted to fit between the flanges extending upwardly from the sides of the bottom, and said stop-tongues, so as to hold the side plates in position; spacing-flanges extending inwardly from the ends of the side plates; spacing-blocks extending inwardly from the side plates at points intermediate of their ends; a lining placed in position against the inner faces of said spacing-blocks and the inner edges of said spacing-flanges, so as to form an air-chamber between the lining and side plates and top, said lining being longitudinally corrugated to make it flexible and said lining having a limited amount of perforations to distribute heat from said chamber; bolts inserted through the side plates, through the spacing-blocks, and through the lining to hold the lining removably in position; shelf-flanges extending inwardly from the lower edges of said lining, said flanges being some distance above the bottom; fastening-tongues riveted to the edges of the top plate and

adapted to be inserted through said fastening-tongue openings formed in the end plates, said tongues being bent after insertion through said openings to hold the parts in position; and a handle attached to the top plate, all forming a second shipping-piece; and a shelf adapted to be supported by said shelf-flanges, and forming a third shipping-piece, substantially as specified.

704,801. LEUCOGALLOCYANIN AND PROCESS OF MAKING SAME. CHARLES DE LA HARPE, Basle, Switzerland, assignor to Firm of Dye Works, formerly L. Durand Huguenin & Co., Basle, Switzerland. Filed Feb. 27, 1902. Serial No. 96,995. (Specimens.)

Claim.—1. An improvement in the manufacture of leucogallocyanins, consisting in treating the sulfonic gallocyanins by a reducing agent, substantially as set forth.

2. An improvement in the manufacture of leucogallocyanins, consisting in treating a sulfonic gallocyanin derived from a nitrosoalkylbenzylanilinsulfonic acid by a reducing agent, substantially as set forth.

3. An improvement in the manufacture of the leucogallocyanins, consisting in treating a sulfonic gallocyanin derived from the nitrosoethylbenzylanilinsulfonic acid, by a reducing agent, substantially as set forth.

4. As a new article of manufacture, the sulfonated leucogallocyanin obtained by means of a gallocyanin derived from a nitrosoalkylbenzylanilinsulfonic acid, this sulfonated leucogallocyanin being soluble in hot water with a yellowish-green coloration, in sodium acetate with a pale-blue color and in sulfuric acid with a reddish coloration turning to blue by addition of small quantities of an oxidizing agent.

704,802. HAND-STAMP. JOHN DURAND, Durham, N. C., assignor to The Firm of Durand and Ivey, Union Point, Ga. Filed July 15, 1901. Serial No. 68,223. (No model.)

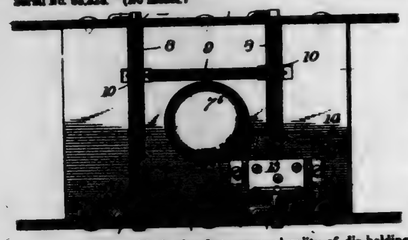

Claim.—1. In a multicolor hand-stamp, a plurality of die-holding plates, and mechanism to shift part of said plates above or below the plane of the remainder to allow the dies to receive inks of different colors, and to shift the plates to a flush position to print from all the dies at a single impression.

2. A hand-stamp having a plurality of holders movable relative to each other adapted to receive type, and a rock-shaft to shift the holders into different planes.

3. A hand-stamp having a plurality of type-holders, a plurality of plates movable relative to each other, to which the holders are adapted to be attached, and a rock-shaft to move the plates into different planes.

4. A hand-stamp comprising a block or base, stationary and movable plates mounted thereon, type-holders supported by the plates, a rock-shaft connected to the movable plates and adapted to shift them out of plane with the stationary plates.

704,808. REVERSIBLE GALVANIC BATTERY. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to Edison Storage Battery Company, a Corporation of New Jersey. Filed Jan. 8, 1901. Serial No. 42,514. (No model.)

Claim.—1. In a reversible galvanic cell employing an alkaline electrolyte, an oxygen-storing element therefor comprising an intimate mixture of finely-divided oxid of mercury and an inert flake-like conducting material, substantially as set forth.

2. In a reversible galvanic cell employing an alkaline electrolyte, an oxygen-storing element therefor comprising an intimate mixture of flake-graphite and oxid of mercury, substantially as set forth.

3. In a reversible galvanic cell employing an alkaline zincate as the electrolyte, an oxygen-storing element containing finely-divided oxid of mercury and an inert flake-like conducting material, and a plate for receiving the deposited zinc, substantially as set forth.

4. In a reversible galvanic cell, an alkaline zincate as the electrolyte, an oxygen-storing element containing finely-divided oxid of mercury, and a plate of magnesium for receiving the deposited zinc, substantially as set forth.

5. An electrode for a reversible galvanic cell, comprising a receptacle having perforated walls and an active material mixed with flake-graphite in said receptacle, the bulk of the particles of the graphite being larger than such perforations, substantially as set forth.

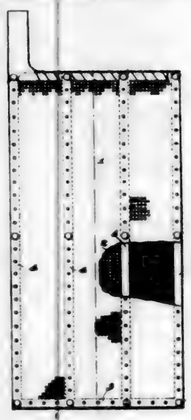

704,804. REVERSIBLE GALVANIC BATTERY. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to Edison Storage Battery Company, a Corporation of New Jersey. Filed Mar. 1, 1901. Serial No. 49,662. (No model.)

Claim.—1. An active element for an alkaline reversible galvanic battery, comprising a conducting-support and a mixture of oxid of cobalt and an inert flake-like conducting material carried thereby, substantially as set forth.

2. An active element for an alkaline reversible galvanic battery, comprising a conducting-support and a mixture of an oxid of cobalt containing more oxygen than the black oxid (Co_3O_4) and a flake-like inert conducting material carried thereby, substantially as set forth.

3. An active element for an alkaline reversible galvanic battery, comprising a conducting-support and a mixture of a hydrated oxid of cobalt and an inert flake-like conducting material carried thereby, substantially as set forth.

4. An active element for an alkaline reversible galvanic battery comprising a conducting-support, and a mixture of flake-graphite and oxid of cobalt carried thereby, substantially as set forth.

5. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided electrolytically-active iron when charged, and a conducting-support carrying an oxid of cobalt capable of furnishing oxygen on discharge, substantially as set forth.

6. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided iron when charged, and a conducting-support carrying a mixture of flake-graphite and oxid of cobalt capable of furnishing oxygen on discharge, substantially as set forth.

7. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of working, and two elements therein insoluble in such electrolyte, the depolarizing element having for its active material an electrolytically-active oxid of cobalt, substantially as set forth.

8. In a reversible galvanic battery, the combination of an alkaline electrolyte which remains unchanged during all conditions of working, a conducting-support therein, an insoluble oxidizable material carried by said support, a second conducting-support, and an oxid of cobalt carried thereby having more oxygen than Co_3O_4, substantially as set forth.

9. In a reversible galvanic battery, the combination of an alkaline electrolyte which remains unchanged during all conditions of working, a conducting-support therein, an insoluble oxidizable material carried by said support, a second conducting-support, an oxid of cobalt carried thereby having more oxygen than Co_3O_4, and an inert conducting material intimately mixed with said oxid, substantially as set forth.

10. In a reversible galvanic battery, the combination of an alkaline electrolyte which remains unchanged during all conditions of working, a conducting-support therein, an insoluble oxidizable material carried by said support, a second conducting-support, an oxid of cobalt carried thereby having more oxygen than Co_3O_4, and an inert flake-like conducting material intimately mixed with said oxid, substantially as set forth.

11. In a reversible galvanic battery, the combination of an alkaline electrolyte which remains unchanged during all conditions of working, a conducting-support therein, an insoluble oxidizable material carried by said support, a second conducting-support, an oxid of cobalt carried thereby having more oxygen than Co_3O_4, and flake-graphite intimately mixed with said oxid, substantially as set forth.

12. In a reversible galvanic battery, the combination of an alkaline electrolyte which remains unchanged during all conditions of working, a conducting-support therein, an insoluble oxidizable material carried by said support, a second conducting-support, a hydrated oxid of cobalt carried thereby, and a flake-like inert conducting material intimately mixed with said oxid, substantially as set forth.

13. In a reversible galvanic battery, the combination of an alkaline electrolyte which remains unchanged during all conditions of working, a conducting-support therein, an insoluble oxidizable material carried by said support, a second conducting-support, a hydrated oxid of cobalt carried thereby, and flake-graphite intimately mixed with said oxid, substantially as set forth.

14. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided iron when charged, and another conducting-support carrying oxid of cobalt having when charged electrolytically more oxygen than Co_3O_4, substantially as set forth.

15. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided iron when charged, and another conducting-support carrying a hydrated oxid of cobalt, substantially as set forth.

16. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided iron when charged, another conducting-support carrying oxid of cobalt capable of furnishing oxygen for the oxidation of the iron on discharge, and flake-graphite intimately mixed with said oxid, substantially as set forth.

17. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided oxid of iron when discharged, another conducting-support carrying an oxid of cobalt, and flake-graphite intimately mixed with said oxid, substantially as set forth.

18. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided iron when charged, another conducting-support carrying oxid of cobalt having when charged electrolytically more oxygen than Co_3O_4, and flake-graphite intimately mixed with said oxid, substantially as set forth.

19. In a reversible galvanic battery, an alkaline electrolyte, a conducting-support carrying finely-divided iron when charged, another conducting-support carrying a hydrated oxid of cobalt, and flake-graphite intimately mixed with said oxid, substantially as set forth.

704,805. ELECTRODE FOR BATTERIES. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to Edison Storage Battery Company, a Corporation of New Jersey. Filed May 17, 1901. Serial No. 60,661. (No model.)

Claim.—1. An electrode for a galvanic battery, comprising a support, a plurality of pockets or receptacles carried thereby and arranged in substantially the same plane, each pocket or receptacle being made of elastic metal with corrugated walls, and an active material in said pockets or receptacles, substantially as set forth.

2. An electrode for a galvanic battery, comprising a support, a plurality of pockets or receptacles carried thereby and arranged in substantially the same plane, each pocket or receptacle being made of elastic metal with horizontally-corrugated walls, and an active material in said pockets or receptacles, substantially as set forth.

3. An electrode for a galvanic battery comprising a grid having an opening therein, a pocket or receptacle secured in said opening and having corrugated walls, and an active material in said pocket or receptacle, substantially as set forth.

4. An electrode for a galvanic battery comprising a grid having an opening therein, a pocket or receptacle secured in said opening and having horizontally-corrugated walls, and an active material in said pocket or receptacle, substantially as set forth.

5. An electrode for a galvanic battery comprising a grid having a plurality of openings therein, a pocket or receptacle secured in each opening and having corrugated walls, and an active material in said pockets or receptacles, substantially as set forth.

6. An electrode for a galvanic battery, comprising a support, a plurality of pockets or receptacles carried thereby and arranged in substantially the same plane, each pocket or receptacle being made of interengaging sections of elastic metal with corrugated walls, and an active material in said pockets or receptacles, substantially as set forth.

7. An electrode for a galvanic battery comprising a support, a pocket or receptacle having corrugated walls and secured at its edges to said support, and an active material in said pocket or receptacle, substantially as set forth.

8. An electrode for a galvanic battery comprising a support, a pocket or receptacle carried thereby and having perforated outer faces and being formed of two sections, one of which is deeper than the other and the deeper being turned over upon the shallow section, and an active material in said pocket or receptacle, substantially as set forth.

9. An electrode for a galvanic battery comprising a support, a pocket or receptacle carried thereby made of elastic metal and formed of two cup-like sections fitted together, the main face of each section being perforated with numerous perforations within the sides thereof, and an active material in said pocket or receptacle, substantially as set forth.

10. An electrode for a galvanic battery comprising a support, a perforated receptacle carried thereby and made of highly-elastic metal, and an active material in said receptacle so proportioned in bulk in relation to the elasticity of the elastic metal that any changes in volume thereof will be within the elastic limits of the walls of said receptacle, substantially as set forth.

704,806. REVERSIBLE GALVANIC BATTERY. THOMAS A. EDISON, Llewellyn Park, N. J., assignor to Edison Storage Battery Company, a Corporation of New Jersey. Filed June 20, 1901. Serial No. 65,222. (No model.)

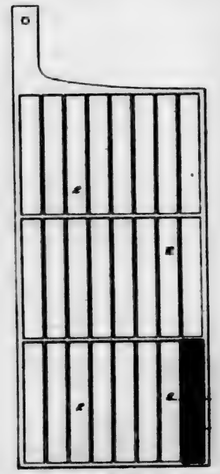

Claim.—1. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by said support, a second conducting-support, and an electrolytically-active oxid of a magnetic metal other than iron carried by the second support, substantially as set forth.

2. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by said support, a second conducting-support, and a mixture of electrolytically-active oxid of a magnetic metal other than iron and a flake-like conducting material carried by the second support, substantially as set forth.

3. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by said support, a second conducting-support, and a mixture of electrolytically-active oxid of a magnetic metal other than iron and flake-graphite carried by the second support, substantially as set forth.

4. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by the conducting-support, a second conducting-support having perforated pockets or receptacles, and an electrolytically-active oxid of a magnetic metal other than iron carried within said pockets or receptacles, substantially as set forth.

5. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by the conducting-support, a second conducting-support having perforated pockets or receptacles, and a mix-

ture of electrolytically-active oxid of a magnetic metal other than iron and an inert flake-like conducting material carried within said pockets or receptacles, substantially as set forth.

6. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by the conducting-support, a second conducting-support having perforated pockets or receptacles, and a mixture of electrolytically-active oxid of a magnetic metal other than iron and flake-graphite carried within said pockets or receptacles, substantially as set forth.

7. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, a mixture of finely-divided copper and a flake-like inert conducting material carried by said support, a second support, and an electrolytically-active oxid of a magnetic metal other than iron carried by the second support, substantially as set forth.

8. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, a mixture of finely-divided copper and flake-graphite carried by said support, a second support, and an electrolytically-active oxid of a magnetic metal other than iron carried by the second support, substantially as set forth.

9. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support having perforated pockets or receptacles, finely-divided copper carried within said pockets or receptacles, a second conducting-support, and an electrolytically-active oxid of a magnetic metal other than iron carried by the second support, substantially as set forth.

10. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support having perforated pockets or receptacles, a mixture of finely-divided copper and a flake-like conducting material carried within said pockets or receptacles, a second conducting-support, and an electrolytically-active oxid of a magnetic metal other than iron carried by the second support, substantially as set forth.

11. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support having perforated pockets or receptacles, a mixture of finely-divided copper and flake-graphite carried within said pockets or receptacles, a second conducting-support, and electrolytically-active oxid of a magnetic metal other than iron carried by the second support, substantially as set forth.

12. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support having perforated pockets or receptacles, finely-divided copper carried within said receptacles, a second conducting-support having pockets or receptacles, and electrolytically-active oxid of a magnetic metal other than iron carried within the receptacles of the second support, substantially as set forth.

13. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support having perforated pockets or receptacles, a mixture of finely-divided copper and an inert conducting material carried within said pockets or receptacles, a second conducting-support having pockets or receptacles, and a mixture of electrolytically-active oxid of a magnetic metal other than iron and a flake-like conducting material carried within the pockets or receptacles of the second support, substantially as set forth.

14. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support having perforated pockets or receptacles, a mixture of finely-divided copper and flake-graphite carried within said pockets or receptacles, a second conducting-support having pockets or receptacles, and a mixture of electrolytically-active oxid of a magnetic metal other than iron and flake-graphite carried within the pockets or receptacles of the second support, substantially as set forth.

15. In a reversible galvanic battery, the combination of an alkaline electrolyte, a conducting-support, copper carried thereby in such finely-divided form that when subjected to electrical oxidation it does not produce a copper salt soluble in such solution, a second conducting-support, and electrolytically-active oxid of a magnetic metal other than iron carried by the second support, substantially as set forth.

16. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by said support, a second conducting-support, and an electrolytically-active oxid of nickel carried by the second support, substantially as set forth.

17. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by said support, a second conducting-support, and a mixture of electrolytically-active oxid of nickel and a flake-like conducting material carried by the second support, substantially as set forth.

18. In a reversible galvanic battery, the combination of an electrolyte which remains unchanged during all conditions of use, a conducting-support, finely-divided copper carried by said support, a second conducting-support, and a mixture of electrolytically-active oxid of nickel and flake-graphite carried by the second support, substantially as set forth.

704,807. PERSPECTOGRAPH. OTTO EICHENBERGER, Geneva, Switzerland, assignor to Paul Galopin, Geneva, Switzerland. Filed Oct. 22, 1901. Serial No. 79,560. (No model.)

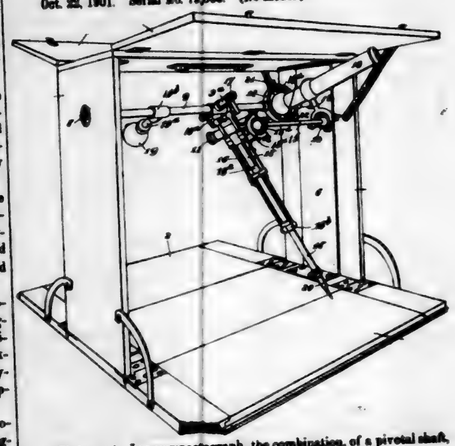

Claim.—1. In a perspectograph, the combination, of a pivotal shaft, standards therefor, a telescope mounted on said shaft, a pencil-holding frame independently mounted on said shaft in a plane at right angles to said telescope, and a rod connecting said telescope and pencil-holding frame, substantially as set forth.

2. In a perspectograph, the combination of a pivotal shaft, standards therefor, a telescope mounted on said shaft, a pencil-holding frame independently mounted on said shaft in a plane at right angles to said telescope, and a rod connecting said telescope and pencil-holding frame at points equidistant from their respective pivotal centers, substantially as set forth.

3. In a perspectograph, the combination, of a pivotal shaft supported on suitable standards, a telescope, a ring provided in said shaft, lugs on said telescope for mounting the telescope in said ring, a pencil-holding frame pivotally mounted on said shaft a suitable distance from said telescope and movable in a plane at right angles thereto, and a rod provided with universal joints for connecting with said telescope and pencil-holding frame at similar points relatively to their respective pivotal centers, substantially as set forth.

704,808. PEDAL DEVICE FOR BASS-DRUMS AND CYMBALS. WILLIAM C. L. EVANS, Brooklyn, N. Y. Filed Oct. 4, 1901. Serial No. 77,598. (No model.)

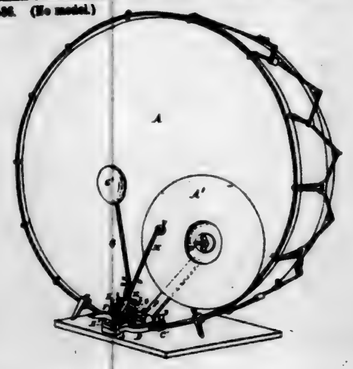

Claim.—In a pedal device for playing the bass-drum and cymbal, the combination of the pedal-lever and its base-plate, with the clamps for attaching the drum and a detachable cymbal-holder, a cymbal-beater and drum-stick on one pivot-lever and the pedal-lever engaging said pivot-lever to operate both said beater and drum-stick.

704,809. HOT-AIR FURNACE. GEORGE H. FOOTE, Dayton, Ohio. Filed Jan. 13, 1902. Serial No. 89,862. (No model.)

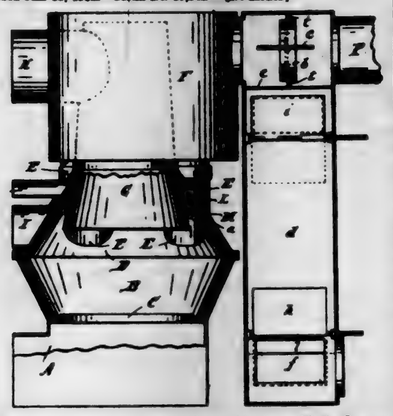

Claim.—1. In a hot-air furnace, the combination, with the fire-pot, combustion-chamber, and fuel-magazine, of an air-chamber surrounding only the lower end of the magazine above the combustion-chamber, with air-inlet therefor, and a perforated bottom plate for said air-chamber above the mouth of said magazine to admit the air-blast into the combustion-chamber around the magazine but not at its mouth, substantially as shown and described.

2. In a hot-air furnace, the combination, with a fire-pot, combustion-chamber and heating-drum, of a smoke-retainer, having a direct passage therethrough to the smoke-pipe, and provided with medial partitions forming four passage-ways for the smoke from top to bottom of the furnace, with dampers for controlling said passage-ways, said passage-ways and dampers being so arranged that the products of combustion may be compelled to traverse only two or most passage-ways, when desired, substantially as shown and described.

704,810. MAGAZINE TORPEDO-CANE. JOHN H. FOX, Fostoria, Ohio. Filed Nov. 12, 1901. Serial No. 82,044. (No model.)

Claim.—1. In a repeating torpedo-cane, the combination of a cane-body or the like having a magazine extending from the lower end upward to an inlet; an inner ferrule permanently mounted on the lower end of the body and having a lateral outlet for the magazine; an outer ferrule telescopically mounted over the inner ferrule and adapted to reciprocate thereon to and from contact of the bottom ends of the ferrules; complementary grooves in the outer and inner ferrules; a ball confined within the grooves, adapted to limit the outward movement of the parts, and means to feed torpedoes singly from the outlet of the magazine into the outer ferrule by the reciprocation of the ferrules.

2. In a magazine torpedo-cane, the combination of a cylindriform mortar having interior parallel longitudinal grooves in its wall; a cylindriform firing-plug mounted in the mortar and movable telescopically therein to and from contact with the bottom of the mortar and having exterior grooves in alinement with the grooves of the mortar adapted to fully register therewith when the bottom of the plug is in contact with the bottom of the mortar, and form inclosed bisected bores; balls in the bisected bores thus formed, adapted to prevent the full withdrawal of the plug; a cane-body or the like having its lower end mounted in the firing-plug and provided with a magazine having a lateral outlet through the plug, and means to feed torpedoes singly from the outlet of the magazine into the mortar by the reciprocation of the mortar on the plug or the plug in the mortar.

3. In a torpedo-cane the combination of a cylindriform mortar having a lateral cavity in its interior wall; a cylindriform firing-plug mounted in the mortar and movable telescopically therein to contact with the bottom of the mortar and having a lateral orifice through its wall adapted to register with the cavity in the wall of the mortar when the bottom of the plug is in contact with the bottom of the mortar and to be kept closed by the wall of the mortar when moved out of register with the cavity; and means to prevent the entire withdrawal of the plug from the mortar, and its rotation therein.

4. In a torpedo-cane the combination of a cylindriform mortar having a lateral cavity in its interior wall; a cylindriform firing-plug mounted in the mortar and movable telescopically therein to contact with the bottom of the mortar and having a lateral orifice through its wall adapted to register with the cavity in the wall of the mortar when the bottom of the plug is in contact with the bottom of the mortar and to be kept closed by the wall of the mortar when moved out of register with the cavity; means to prevent the entire withdrawal of the plug from the mortar, a cane-body having its lower end secured in the plug and having a central longitudinal bore extending from the lower end upward to an opening provided with a closure, and a lateral opening from the bore of the cane-body to the lateral orifice of the plug.

5. In a magazine torpedo-cane, the combination of a cylindriform mortar, having an interior longitudinal segmental plane provided with a lateral cavity and a groove extending longitudinally within the plane out of line with the cavity; a cylindriform firing-plug telescopically mounted in the mortar having an exterior segmental plane coinciding with the plane of the mortar, and closing its lateral cavity, and provided with an orifice adapted to register with the cavity and also provided with a groove adapted to register with the grooves of the mortar and form an inclosed bisected bore, when the bottom of the plug is in contact with the bottom of the mortar; a ball in the bisected bore adapted to prevent the entire withdrawal of the plug from the mortar; a cane-body secured in the plug and having a central longitudinal bore extending from the lower end upward to an opening provided with a closure; and a lateral opening from the bore of the cane-body to the lateral orifice of the plug.

6. In a magazine torpedo-cane the combination of a cane-body having a central longitudinal bore extending from the lower end upward to an opening provided with a closure; an inner ferrule permanently mounted on the lower end of the cane-body having a lateral orifice connected with the bore of the cane-body; an outer ferrule telescopically mounted over the inner ferrule and closing its lateral orifice and having a lateral cavity adapted to register with the lateral orifice of the inner ferrule when the bottom of the latter contacts with the bottom of the outer ferrule; complementary coinciding grooves in the coinciding faces of the ferrules; and a ball confined between each pair of complementary grooves.

704,811. FACE-PROTECTOR. MAXIMILIAN GALLEY, Hanover, Germany. Filed Nov. 23, 1900. Serial No. 37,268. (No model.)

Claim.—1. A face-protector comprising a suitable curved imperforate screen adapted to fit around the wearer's forehead and cover his face to a point below the mouth, means for holding the screen in place, and means for holding the screen away from the wearer's face, substantially as set forth.

2. A face-protector comprising a suitably-curved imperforate screen adapted to fit around the wearer's forehead and cover his face to a point below the mouth, a band attached to the upper edge of the screen and adapted to fit upon some part of the wearer's head to secure said screen in place, and means for holding the screen away from the wearer's face, substantially as set forth.

3. A face-protector comprising a suitably-curved imperforate screen adapted to fit around the wearer's forehead and cover his face to a point below the mouth, a band attached to the upper edge of the screen and adapted to fit upon some part of the wearer's head to hold said screen thereto, and a suitable pad on the inner side of the screen and adapted to rest on the wearer's nose, substantially as set forth.

4. A face-protector comprising a suitably-curved screen adapted to fit around the wearer's forehead and cover his face to a point below the mouth, a band attached to the upper part of the screen and adapted to fit upon some part of the wearer's head to hold the screen thereto, and an elastic band connected to the sides of said screen and adapted to fit under the wearer's chin, substantially as set forth.

5. The combination with a suitably-curved screen adapted to fit around the wearer's forehead and cover his face, and means for holding said screen in position on the wearer, of an inner band attached to the sides of the screen and adapted to fit over the wearer's mustache, substantially as set forth.

6. A face-protector comprising a suitably-curved screen adapted to fit around the wearer's forehead and cover his face, means for holding the screen in position on the wearer, and an open tray projecting from the lower edge of the screen, into which the scurf, cut hair and the like may fall, substantially as set forth.

7. A face-protector comprising a suitably-curved screen adapted to fit around the wearer's forehead and cover his face to a point below the mouth, means for holding the screen in position on the wearer, a pad attached to the screen and adapted to sit on the wearer's nose, an inner band attached to the side of the screen and adapted to fit over the wearer's mustache, and an open tray projecting from the lower edge of the screen to receive chippings and other debris, substantially as set forth.

8. A face-protector comprising a suitably-curved screen of transparent material, adapted to fit over the wearer's forehead and cover his face to a point below the mouth, and means for attaching said screen to the head, substantially as set forth.

704,812. COIN-ACTUATED MACHINE. PAUL S. GATTOLLIAT, Jersey City, N. J., assignor of two-fifths to William H. Bernard, Jersey City, N. J. Filed June 24, 1901. Serial No. 65,769. (No model.)

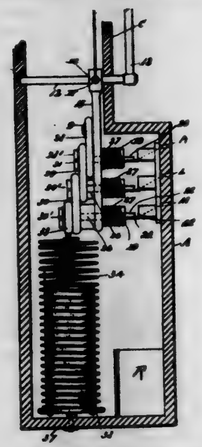

Claim.—1. In an apparatus of the class described, the combination with a resistance or tensional device, of a lever suitably fulcrumed adjacent thereto and in connection with said resistance or tensional device, and coin-actuated devices for changing the point of the connection of said lever with said resistance or tensional device longitudinally of said lever, substantially as shown and described.

2. In an apparatus of the class described, a casing, a tensional or resistance device in the bottom of said casing, a lever supported over said device and projecting from the top of said casing, a plurality of pivotal connected links pivotally connected at one end with said lever and at the opposite end with said resistance or tensional device and coin-actuated devices for connecting each of said links with said lever so as to increase the distance between the pivotal support of the lever and its connection with said resistance or tensional device, substantially as shown and described.

3. In an apparatus of the class described, a casing, a tensional or resistance device in the bottom of said casing, a lever pivoted in the top portion of said casing, a plurality of pivotally-connected links, said links being connected at one end to said lever and at the opposite end to said tensional or resistance device, and coin-actuated devices for connecting the opposite links with said lever at different distances from its pivotal support, said casing being also provided in the front thereof with slots corresponding with said links and with said coin-actuated devices and through which a coin may be passed, substantially as shown and described.

4. In an apparatus of the class described, a casing, a tensional or resistance device secured in the bottom of said casing, a lever pivoted in the top portion of said casing, a link pivoted to said lever, a second link pivoted to the first-named link, and in operative connection with the tensional or resistance device, a hollow pivoted stud at the bottom of the first link and coin-actuated devices adapted to be operated by the vibration of the lever, so as to connect the second link with the lever, said devices comprising a pin adapted to lock the second link to the lever by passing into said stud, a spring normally forcing such pin into the unlocking position, a coin-plate having a semicircular cavity in the side of one-half of the diameter of the actuating-coin, a like coin-cavity formed in a coin-shelf secured to the casing, and a slot in the casing through which a coin may be passed, substantially as shown and described.

5. In a device of the class described, the combination with a casing, of a plurality of adjacent coin-slots, a plate having a semicircular coin-receiving cavity with a coin-receiving shelf of less width than one-half the diameter of the coin fitting each cavity located below each of the coin-slots, a pivoted hand-actuated lever carrying a plurality of coin-shelves adapted to coact with the coin-shelves secured to the casing adjacent to the slot so as to receive a coin between them, means carried by such coin-shelves for causing the shelves to be forced backward by the pressure exerted thereon by the coin upon the first movement of the lever, and a plurality of devices each having a different action from the other and adapted to be locked to the lever separately accordingly as the coin is inserted in one slot or the other, substantially as shown and described.

6. In a device of the class described, the combination with a casing, of a shaft vibratorily mounted in the casing, a hand-lever located without the casing secured to the shaft in such manner as to vibrate the same, an actuating-lever secured to the shaft so as to vibrate therewith located within the casing, an air recoil-cylinder closed at the bottom and open at the top located within the casing and secured thereto at the bottom by a pivot-joint, a spiral spring surrounding the cylinder secured to such cylinder at the bottom, a piston within the cylinder, a piston-rod secured to the piston secured to the upper end of the spring, a link pivoted to the upper end of the piston-rod in pivotal connection with the actuating-lever, a coin slot in the casing having a coin-shelf in the inner side of the casing adjacent thereto to receive the coin, and mechanism carried by the actuating-lever adapted to receive a portion of the coin dropped through the slot upon the coin-shelf in such manner that the first movement of the lever will by the pressure exerted upon the coin lock the link to the lever so as to vibrate the same in unison with the lever, substantially as shown and described.

7. In a device of the class described the combination with a casing, of a shaft vibratorily mounted in the casing, a hand-lever located without the casing secured to the shaft in such manner as to vibrate the same, an actuating-lever secured to the shaft so as to vibrate therewith located within the casing, an air recoil-cylinder closed at the bottom and open at the top located within the casing and secured thereto at the bottom by a pivot-joint, a spiral spring surrounding the cylinder secured to such cylinder at the bottom, a piston within the cylinder, a piston-rod secured to the piston secured to the upper end of the spring, a plurality of links pivoted together, the ends of the chain so formed being pivoted at one end to the piston-rod and at the other to the actuating-lever, a like plurality of coin-slots formed in the casing provided on the inner side of the casing with coin-receiving shelves located below the same provided with coin-cavities in the side walls, a like plurality of coin-receiving shelf-plates provided with semicircular cavities merging by gentle curves into outward projections on either side carried by the lever normally pressed away therefrom by suitable springs, and a locking-pin carried by each of said coin-shelves adapted to be forced backward through the actuating-lever so as to lock the lower end of the link adjacent thereto to the lever by the pressure caused by the contact of the outer projections of the coin-shelf against the coin in the vibration of the lever, substantially as shown and described.

8. In a device of the class described, the combination with a casing, of a shaft vibratorily mounted in the casing, a hand-lever located without the casing secured to the shaft in such manner as to vibrate the same, an actuating-lever secured to the shaft so as to vibrate therewith located within the casing, an air recoil-cylinder closed at the bottom and open at the top located within the casing, and secured thereto at the bottom by a pivot-joint, a spiral spring surrounding the cylinder secured to such cylinder at the bottom, a piston within the cylinder, a piston-rod secured to the piston secured to the upper end of the spring, a plurality of links pivoted together, the ends of the chain so formed being pivoted at one end to the piston-rod and at the other to the actuating-lever, a like plurality of coin-slots formed in the casing provided on the inner side of the casing with coin-receiving shelves located below the same provided with coin-cavities in the side walls, a like plurality of coin-receiving shelf-plates provided with semicircular cavities merging by gentle curves into outward projections on either side carried by the lever normally pressed away therefrom by suitable springs, a locking-pin carried by each of said coin-shelves adapted to be forced backward through the actuating-lever so as to lock the lower end of the link adjacent thereto to the lever by the pressure caused by the contact of the outer projections of the coin-shelf against the coin in the vibration of the lever, an indicating-dial, an indicating-hand pivoted to the dial, and means connecting the hand with the vibrating shaft whereby such hand is vibrated upon the vibration of the handle, substantially as shown and described.

9. In a device of the class described, the combination with a casing, of a recoil air-cylinder closed at the bottom and open at the top secured at the bottom to the casing by a flexible joint, a spiral spring secured to the bottom cylinder and surrounding the same, a piston located within the same, a piston-rod secured to the piston, a shaft vibratorily mounted in the casing, a hand-lever vibrating such shaft secured thereto without the casing, an actuating-lever secured to such shaft within the casing, a link 29 pivoted to the lever, a link 29 pivoted to the link 26 upon a pivot-stud having an axle-hole, a like link 30 pivoted in like manner to the link 29 provided with a like stud pivotally secured to the top of the piston-rod, studs 19 secured upon the opposite sides of the actuating-lever, coin-plates 21 provided with a central circular cavity merging at the sides into outward projections 23 reciprocating in the slot and in the studs 19, a locking-pin carried by the coin-plates passing through the actuating-lever and adapted to be forced back into the link adjacent thereto, one of such studs and plates being provided for each of the links, springs located between the coin-shelf and the actuating-lever normally forcing the bolts into the unlocking position, a coin-slot in the casing for each of the links, and a coin-shelf located below each of the slots adapted to coact with each of the coin-shelves carried by the studs upon the lever to receive the coins, substantially as shown and described.

10. In an apparatus of the class described, a casing, a resistance or tensional device mounted in the bottom thereof, a lever suitably fulcrumed adjacent thereto and in connection with said resistance or tensional device and passing through the top of the casing and coin-actuated devices for changing the point of connection of said lever and said resistance or tensional device longitudinally of said lever, said lever being also provided at the upper or outer end thereof with a finger hole or piece, substantially as shown and described.

704,813. RULE. BENJAMIN M. GERARDE, Jersey City, N. J. Filed Oct. 17, 1901. Serial No. 79,088. (No model.)

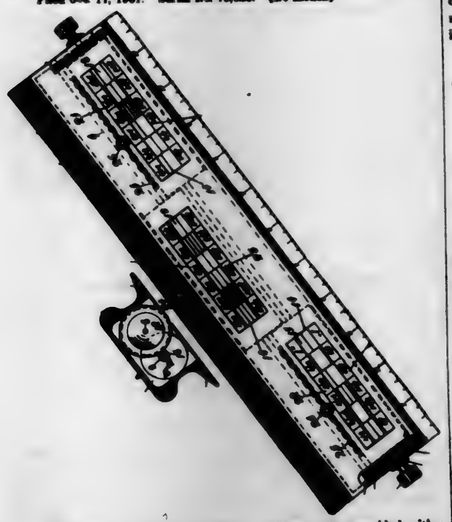

Claim.—1. A scale comprising an oblong casing provided with a plurality of longitudinal shafts geared in connection so that one of said shafts will turn more rapidly than the other, said casing being also provided in the top thereof with a plurality of slots or openings and said shafts being provided with scale-cylinders beneath said slots or openings, and said slots or openings being provided at one side thereof with a scale-index, substantially as shown and described.

2. A rule comprising an oblong casing having a plurality of shafts mounted therein longitudinally thereof and geared in connection in such manner that one of said shafts will turn more rapidly than the other, said casing being also provided in the top thereof over said shafts with slots or openings having a scale-index at the sides thereof, and scale-cylinders mounted on said shafts beneath said slots or openings substantially as shown and described.

3. A scale comprising an oblong casing provided with a plurality of longitudinal shafts geared in connection so that one of said shafts will turn more rapidly than the other, said casing being also provided in the top thereof with a plurality of slots or openings and said shafts being provided with scale-cylinders beneath said slots or openings and said slots or openings being provided at the sides thereof with a scale-index, one of said shafts being also projected through both ends of the casing and being provided at both ends with a knob or handle, substantially as shown and described.

704,814. TAKE-UP FOR LOOMS. FREDERICK C. GERTH, Columbia, Pa., assignor of one-half to Ferdinand W. Kort, Columbia, Pa. Filed Oct. 1, 1901. Serial No. 77,188. (No model.)

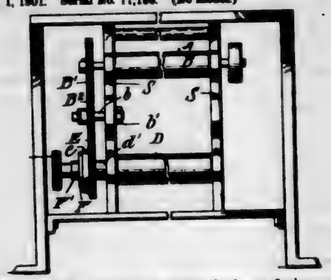

Claim.—The herein-described frictional take-up for looms comprising a take-up roll having a projecting shaft threaded at its end, a collar fixed on the shaft, a pinion rotatably mounted on the end of said shaft between the collar and the threaded portion thereof, a frictional disk slidably mounted on the shaft exterior to the pinion but rotatable with the shaft, a hand-operated nut screwed on the threaded end of said shaft exterior to and engaging the hub of the disk, and a separating-spring placed on the shaft between the disk and pinion, said spring being confined in a recess in the disk; with the outfeed-roll, and gearing for driving said pinion from said outfeed-roll, substantially as and for the purpose specified.

704,815. STOP-COCK FOR GAS-BURNERS. GLENN D. GIBBS, Pittsburg, Pa. Filed Mar. 15, 1902. Serial No. 98,752. (No model.)

Claim.—A gas-cock comprising a valve-casing having oppositely-disposed inlet and outlet ports, a plug-valve fitted to rotate in the casing and having a recess, a shoulder on the valve extending over the recess, a by-pass in said casing, means for regulating the flow of gas through the by-pass, and an indicating-lug carried by the handle of the valve to indicate the position of the valve, substantially as shown and described.

704,816. MACHINE FOR DRAWING TUBES. JOSEF GIESHOLDT, Dusseldorf, Germany. Filed Aug. 23, 1900. Serial No. 28,268. (No model.)

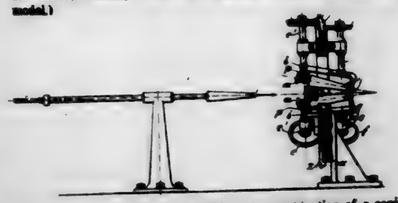

Claim.—In a tube-drawing machine, the construction of a conical hollow axially-movable outer mandrel, with an inner mandrel axially movable within the outer mandrel, a series of conical drawing-rolls, and sepa-

rate means for radially adjusting each end of said rolls, substantially as specified.

704,817. BICYCLE. HARRY R. GILLIS, Hinkwonsin, Ind., assignor of one-half to Mathias Lang, Hinkwonsin, Ind. Filed July 7, 1897. Serial No. 643,722. (No model.)

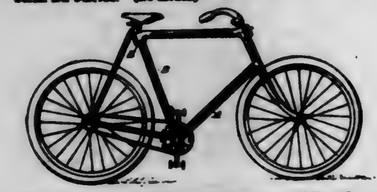

Claim.—1. A detachable brace for bicycles consisting of a substantially U-shaped bar provided at one end with a clamp to engage the steering-head, at the other end with a clamp to engage the upright seat-support, and intermediate the two ends with a clamp engaging the drop portion of the bicycle, substantially as described.

2. A detachable frame-bar for bicycles provided with a clamp at each end set at the proper angle to embrace the steering-head and the seat-supporting bar of a bicycle-frame, and an additional clamp located intermediate of the ends of the bar to engage the front bar of said frame, each clamp consisting of two members curved to conform to the shape of the part or bar to be engaged, one of said members being rigid upon the bar, while the other member has a hinged connection therewith, a perforated flange upon the outer end of each member, and bolts to engage the perforations to secure the members together, substantially as described.

3. In a convertible bicycle, the combination with a removable upper frame-bar, of a detachable brace consisting of a curved bar provided at the ends with means to engage the steering-head and the seat-support and intermediate the two ends with means to engage the drop portion of the frame, substantially as described.

704,818. DUMP-WAGON. BYRON H. GLEASON, Canastota, N. Y., assignor of one-half to Abram T. Van Valkenburgh, Canastota, N. Y. Filed Nov. 26, 1901. Serial No. 83,627. (No model.)

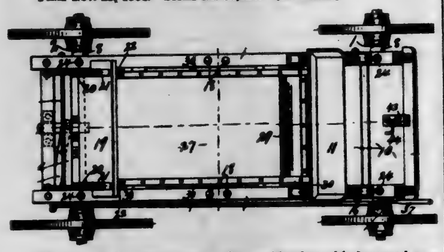

Claim.—1. In a dump-wagon, the combination with front and rear axles, of a frame having parallel side bars mounted on the axles, a transverse tie-rod connecting the intermediate portions of the side bars, a stop-bar secured to the side bars in front of said rod, a second bar connecting the rear ends of the side bars, and a box pivotally mounted resting on the stop-bar and its rear end open and tilting between the other bar and the rod in front of the rear axle.

2. In a dump-wagon, the combination with front and rear axles, of a frame having parallel side bars mounted on the axles, a transverse tie-rod connecting the intermediate portions of the side bars, a seat mounted on the side bars in front of the tie-rod, a tail-board connecting the rear ends of the side bars at the rear of the tie-rod, and a box pivotally mounted on the rod and swinging between the seat and tail-board in front of the rear axle.

3. A dump-wagon comprising front and rear axles, lengthwise side bars connected to the axles, a tie-rod connecting the central portions of the side bars, a transverse bar connecting the rear ends of the side bars, a tail-board rising from the side bars in front of the transverse bar, a seat mounted on the front ends of the side bars in front of the tie-rod, a tilting box mounted on the rod and swinging between the seat and tail-board in front of said transverse bar and rear axle, and a catch for holding the box in normal position.

4. A dump-wagon comprising a frame and a rearwardly-tilting box pivotally mounted on the frame each having inclined stop-faces at the front and at the rear of the pivot for the purpose set forth.

5. A dump-wagon comprising a frame having separated lengthwise side bars, a tilting box pivotally mounted on the frame, and movable between the bars, said bars and box having rub-plates at opposite sides of the pivot and provided with upwardly-converging faces to hold the box from lateral and endwise movement when in its normal position.

6. A dump-wagon comprising a frame having intermediate bearings and transverse bars in front and at the rear of the bearings, a rearwardly-tilting box mounted in said bearings in front of the rear transverse bar and normally resting on the front transverse bar and swinging downwardly in front of the rear transverse bar, and a movable catch mounted on the rear transverse bar and holding the box in its normal position.

7. A dump-wagon comprising a frame having separated lengthwise side bars, a seat fixed to one end of the frame, a tail-board fixed to the opposite end of the frame, journal-bearings secured to the bars and depending therefrom between the seat and tail-board, a rearwardly-tilting box pivotally mounted in said bearings and tilting between the bars and between the seat and tail-board, a stop-bar in front of the bearings to hold the box from tilting, a sliding catch beneath the tail-board to engage the rear end of the box and means at the front of the frame and connected to move the catch to release the box.

8. In a dump-wagon the combination with a frame having a fixed tail-board, a rearwardly-tilting box mounted on a fixed pivot and having an open rear end, rub-plates on the frame located at the front and at the rear of the pivot and a box having engaging shoulders concentric with the pivot to prevent endwise or lateral movement of said box when in its normal position, a catch to hold the box from tilting, and means for moving the catch to release the box.

9. In a dump-wagon, an open frame, a rearwardly-tilting box having its rear end open, a curved tail-board fixed to the frame and normally closing the open end of the box, rub-plates on the sides of the box and frame for the purpose described, a catch to hold the box from tilting, a lever connected to move the catch from the box, a second lever connected to operate the former lever, and a drum and cable to return the box to its normal position.

10. In a dump-wagon, the combination with separated lengthwise side bars having depending journal-bearings, a tilting box mounted in the bearings between the bars and having its rear end open, a sliding catch movable beneath the rear end of the bottom of the box, a lever having one end connected to the catch and its other end extended laterally beyond the side of the box, a second lever at the front end of the box and connected to the outer end of the former lever to move the catch and release the box, rub-plates on the sides of the frame and box for the purpose set forth, and a drum and cable connected to the box to return the same to its normal position.

11. In a dump-wagon, the combination of parallel side bars, a transverse rod connecting the intermediate portion of the side bars, a rearwardly-tilting dump-box pivotally balanced on the rod, a platform and seat in front of the box mounted upon the side bars, a tail-board at the rear of the box also mounted upon the side bars, a windlass on the platform, a cable having one end connected with the windlass and the other end connected to the front end of the box for returning the box to normal position.

704,819. STOVE-DAMPER. EDWARD H. GLEASON, Neenah, Wis. Filed Feb. 26, 1902. Serial No. 95,720. (No model.)

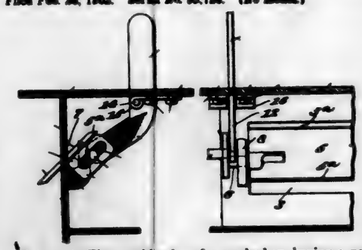

Claim.—1. The combination of a smoke-box having a passage in its wall, and having at opposite sides of said passage devices for pivotally holding a damper-plate, one of said devices being a hook-shaped projection, a damper-plate having pintles engaged with said devices, and having on the outer end of its pintle which is engaged with said hook-shaped projection a slotted arm, and an actuating-lever pivotally mounted and having at its lower end a pin engaged with the slot of said arm, the lower end of said lever being between said arm and the hook-shaped projection, substantially as set forth.

2. The combination of the smoke-box of a stove or range having a passage in its wall, a balanced damper-plate pivotally mounted at said

passage and arranged to control the flow of gases through said passage, an actuating-lever having at one end connection with the damper-plate to move the same and a device carried on the stove or range adjacent to said connected end of the lever and arranged to hold the said connected end against disengagement from the damper-plate, substantially as set forth.

704,820. FOLDING CAMERA WITH ROLL-FILM MAGAZINE. CARL P. GOERZ, Friedenau, near Berlin, Germany. Filed May 1, 1901. Serial No. 58,321. (No model.)

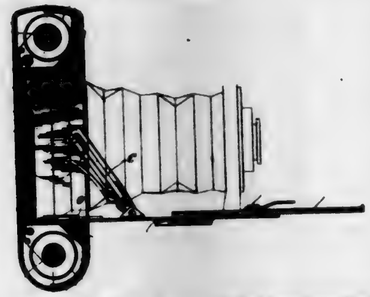

Claim.—1. In a folding camera of the kind hereinbefore described, two frames, one foldable within the other and one carrying film-spools and inclosing film-tubes, means for fastening the film-spools in the corresponding film-tubes, comprising removable covers fastened to rods rotatably guided at the outside of the film-tubes, coiled springs slung around said rods pressing with one of their ends against a collar of said rods and with their other one against an abutment arranged on the outside of the film-tube, pressing the cover against the open end of the tube; substantially as shown and described.

2. In a folding camera of the kind hereinbefore described, a removable frame, film-spools carried thereby, film-tubes inclosing said spools, a spring-actuated axis arranged on one side of the frame and having a light-tight curtain fastened thereto; at the other side of the frame arranged a similar axis provided with means for rotating the same; the free end of said curtain being fastened to said second axis by means of bands or strips, and curved prolongations on the camera-frame embracing said tubes and cooperating with the first-mentioned frame.

3. In a folding camera of the kind described, the combination with the tubes, and a frame connecting them, of the camera-frame over which said frame fits, a cover for said connecting-frame, curved prolongations on the camera-frame to form a light-tight connection between the two tubes and frames, film-spools mounted within said tubes, means for rotating said spools and spring-actuated pivots about which said spools rotate, an axis parallel with the axis of the film-tube and a light-tight curtain fastened thereto and movable in the planes parallel with the film, all substantially as shown and described.

704,821. KNEE-JOINT OR HINGE CONNECTION. GEORGE W. GREENWOOD, Cleveland, Ohio. Filed Mar. 31, 1902. Serial No. 100,843. (No model.)

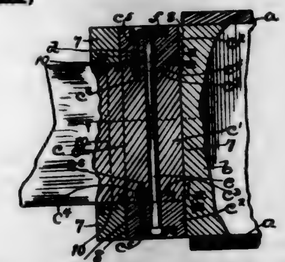

Claim.—1. A knee-joint or hinge connection between two parts or members of a machine, comprising an open-ended box formed on one part and having a lateral slot 10 extending along its central portion between and a suitable distance from each end of the box, and a journal formed on the other part and having bearing in the aforesaid box, which journal comprises a central section adapted to be passed into or out of the box through the aforesaid slot and two cylindrical end sections having bearing within opposite end portions, respectively, of the box beyond opposite ends, respectively, of and in line with the central journal-section and projecting, at their inner ends, into the said central journal-section; pins extending from within the end journal-sections into the central journal-section, and means holding the said journal-sections in their assembled position, substantially as and for the purpose set forth.

4. A knee-joint or hinge connection between two parts or members of a machine, comprising an open-ended box formed on one part and having a lateral slot 10 extending along its central portion between and a suitable distance from each end of the box, and a journal formed on the other part and having bearing in the aforesaid box, which journal comprises a central section adapted to be passed into or out of the box through the aforesaid slot and two cylindrical end sections having bearing within opposite end portions, respectively, of the box beyond opposite ends, respectively, of the aforesaid slot and arranged, at opposite ends, respectively, of and in line with the central journal-section and projecting, at their inner ends, into the said central journal-section, and means holding the said journal-sections in their assembled position, substantially as and for the purpose set forth.

5. A knee-joint or hinge connection between two parts or members of a machine, comprising an open-ended box formed on one part and having a lateral slot 10 extending along its central portion between and a suitable distance from each end of the box, and a journal formed on the other part and having bearing in the aforesaid box, which journal comprises a central section adapted to be passed into or out of the box through the aforesaid slot and two cylindrical end sections having bearing within opposite end portions, respectively, of the box beyond opposite ends, respectively, of the aforesaid slot and arranged, at opposite ends, respectively, of the central journal-section and projecting, at their inner ends, into the said central section; a bolt extending centrally and longitudinally of and through the said journal-sections and arranged with its head bearing against the outer end of one of the aforesaid end sections, and a nut mounted upon the shank of the bolt at and arranged to bear against the outer end of the other end section of the journal, substantially as and for the purpose set forth.

704,822. ELECTRICAL PUSH AND SWITCH. EDGAR G. HARCOURT, Birmingham, England, and MARSHALL B. LLOYD, Minneapolis, Minn. Filed July 9, 1901. Serial No. 67,691. (No model.)

Claim.—1. In a push-button, the combination with the base provided with an apertured flange on its upper side, and a spring-catch projecting through the flange-aperture, of a dome to pass over the said flange and having a groove on its inner side to engage the catch and a recess in its lower edge intersecting the groove; substantially as described.

2. In a push-button, the combination with the base provided with a raised apertured flange, and a curved spring within the flange and having its ends bent outwardly through the flange-apertures to form spring-catches, and the dome having an internal annular groove to engage the catches and a recess in its lower edge intersecting said annular groove; substantially as described.

3. In a push-button, the combination with the base provided with a raised annular flange having opposite pairs of apertures, and two opposed curved springs resting against the inner wall of the said flange with their ends projecting through the apertures therein and formed as catches, of a dome fitting over the said flange and provided with an internal annular groove receiving said catches and a recess in its lower edge intersecting said groove; substantially as described.

704,823. AUTOMATIC ELECTRIC SEMAPHORE-SIGNAL. JAMES H. HARPER, Kansas City, Mo. Filed Apr. 26, 1901. Serial No. 57,202. (No model.)

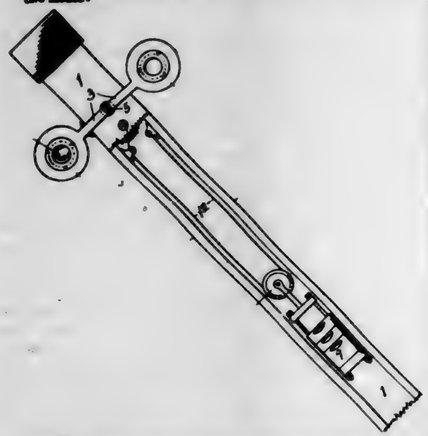

Claim.—In a semaphore, a hollow supporting-column, a transverse rotatable shaft extending therethrough, a signal-arm secured centrally on each end of said shaft and extending in opposite directions therefrom, annular plates carried by the ends of said arms, colored media secured within said annular plates, an electric lamp held at one side of said column between an adjacent pair of said media when said arms are in horizontal position, a notched controller-wheel secured on said transverse shaft within said column, a movable detent for arresting the rotation of said wheel, an electromagnet for disengaging the detent therefrom, a spur-pinion secured on said shaft, a winding-shaft, a winding-drum and a ratchet secured thereon, a gear-wheel mounted rotatably on said winding-shaft, and engaging said pinion, a pawl secured to said gear and engaging said ratchet, a cable secured to said winding-drum, and a weight hung from the cable, for actuating the aforesaid wheels, substantially as described.

704,824. GRINDING DEVICE. SETH P. HASTINGS, Wellington, Ohio, assignor to George D. Henderson, Cleveland, Ohio. Filed Aug. 31, 1901. Serial No. 73,944. (No model.)

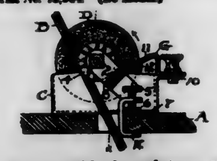

Claim.—1. As a new article of manufacture, a grinding attachment for sewing-machines comprising the rectangular sheet-metal box C, having a side projection 7 at its side and bottom to secure it in place and a side projection 8 to support one end of the grinder-spindle, in combination with a spindle 2 fixed at one end in said projection 7 and at its other end to the opposite side of box C, a rotatable sheave on said spindle and grinding-stone D thereon, and a sheave 4 fixed on said sheave outside of box C, whereby the sheave and sheave and grinder rotate together, substantially as described.

2. A grinder attachment for sewing-machines comprising a grinding-wheel and a supporting-box provided with a rearward projection 10 at its top rigid with the box, in combination with a rigid blade-support G fixed adjustably to said projection and having inclined portion 11 and down portion 12 next to said stone, substantially as described.

704,825. SMOKE-PREVENTING FURNACE. HENRY F. HAYNES, Washington, D. C., assignor of one-third to James Henry Jennings, Washington, D. C. Filed Dec. 14, 1900. Renewed Apr. 19, 1902. Serial No. 103,761. (No model.)

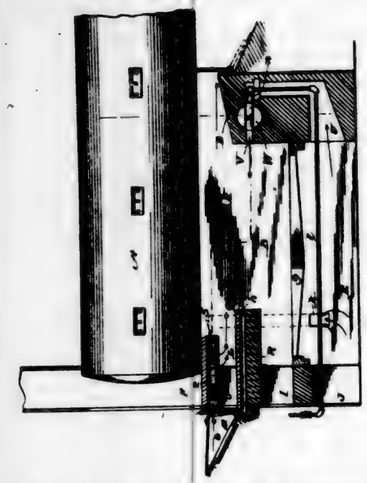

Claim.—1. In a furnace for preventing the formation of smoke the combination with a fire-chamber, of a coking-oven comprising an inwardly-projecting coking-plate, a series of air-channels beneath said plate, a superimposed perforated air-chamber, and suitable passages for conducting to said chamber an air-supply, substantially as described.

2. In a furnace for preventing the formation of smoke the combination with a fire-chamber, of a coking-oven located in the front wall thereof comprising an inwardly-projecting coking-plate, a series of air-channels beneath said plate, a register for closing said channels, a superimposed perforated air-chamber, and suitable passages for conducting to said chamber an air-supply, substantially as described.

3. In a furnace for preventing the formation of smoke the combination with a fire-chamber and ash-pit, of a coking-oven located in the front wall thereof comprising a coking-plate, a superimposed perforated air-chamber, and suitable passages communicating with said chamber at its ends for conducting thereto an air-supply directly from the ash-pit of the furnace, substantially as described.

4. In a furnace for preventing the formation of smoke the combination with a coking-oven, of a hopper for feeding said oven, a partition dividing said hopper into compartments, and a sliding door set at an angle to the furnace-front for controlling the discharge of each compartment, substantially as described.

5. In a furnace for preventing the formation of smoke the combination with a coking-oven, of a hopper for feeding said oven, a partition dividing said hopper into compartments, a sliding door set at an angle to the furnace-front for controlling the discharge of each compartment, a lid for the top of said hopper, and stoke-hole doors in its bottom, substantially as described.

6. In a furnace for preventing the formation of smoke the combination with a fire-chamber, ash-pit and bridge-wall, of an air-duct entering said bridge-wall from the ash-pit and terminating in a plurality of diverging flattened ports for introducing heated air into the fire-chamber above the fire to reverse the natural draft thereof, substantially as described.

7. In a furnace for preventing the formation of smoke the combination with a fire-chamber, ash-pit and bridge-wall, of an air-duct entering said bridge-wall from the ash-pit, a plurality of diverging ports communicating with said duct and directed into the fire-chamber, and a series of injector-nozzles for forcing a draft of air through said duct and ports, substantially as described.

8. In a furnace for preventing the formation of smoke the combination with a fire-chamber, ash-pit and bridge-wall, of a feed-water heater in said bridge-wall fitted with a series of transverse tubes, an air-duct entering the bridge-wall from the ash-pit, a plurality of diverging ports communicating with said duct through the tubes aforesaid in the feed-water heater, and suitable injector-nozzles for forcing air through said duct, tubes and ports, substantially as described.

704,826. SMOKE-PREVENTING FURNACE. HENRY F. HAYNES, Washington, D. C., assignor of one-third to James Henry Jennings, Washington, D. C. Filed Mar. 3, 1902. Serial No. 96,435. (No model.)

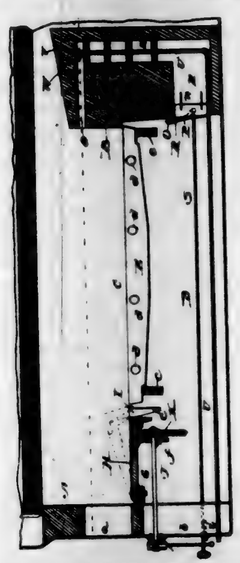

Claim.—1. In a furnace for preventing the formation of smoke the combination with a fire-chamber and stationary grate-bars, of a dead-plate extending from wall to wall of the furnace and pivotally supported at its outer edge in said walls, and means for raising the dead-plate above the horizontal plane of the stationary grate-bars, substantially as decribed.

2. In a furnace for preventing the formation of smoke the combination with a fire-chamber and stationary grate-bars, of a dead-plate extending from wall to wall of the furnace and pivotally supported at its outer edge in said walls, an auxiliary grate secured to the inner edge of said dead-plate, and means for elevating the dead-plate above the horizontal plane of the stationary grate-bars, substantially as described.

3. In a furnace for preventing the formation of smoke the combination with a fire-chamber provided with stationary grate-bars, of a dead-plate extending from wall to wall of the furnace and pivotally supported at its outer edge in said walls, a downwardly-projecting auxiliary grate secured to the inner edge of said dead-plate, and means for elevating the dead-plate above the horizontal plane of the stationary grate-bars, substantially as described.

4. In a furnace for preventing the formation of smoke the combination with a fire-chamber and stationary grate-bars of a dead-plate extending from wall to wall of the furnace and pivotally supported at its outer edge in said walls, and a cam beneath said dead-plate for elevating or lowering it, a forwardly-projecting cam-shaft, and a lever applied to said shaft for rotating it, substantially as described.

5. In a furnace for preventing the formation of smoke the combination with a pivotally-supported dead-plate having a serrated surface, of a suitable cam and cam-shaft for elevating or lowering the dead-plate, and a lever applied to said shaft for rotating it, substantially as described.

6. In a furnace for preventing the formation of smoke the combination with a fire-chamber, of main stationary grate-bars offset from each other by laterally-projecting side lugs, a dead-plate extending from wall to wall of the furnace and pivotally supported at its outer edge in said walls, a downwardly-projecting detachable auxiliary grate secured to the inner movable edge of the dead-plate, and means for elevating said dead-plate and auxiliary grate above the horizontal plane of said stationary grate-bars, substantially as described.

7. In a furnace for preventing the formation of smoke the combination with a fire-chamber, ash-pit and bridge-wall, of a feed-water heater in said bridge-wall fitted with a series of transverse tubes, an air-duct entering the bridge-wall from the ash-pit, a plurality of diverging ports communicating with said duct through the tubes aforesaid in the feed-water heater, and suitable injector-nozzles for forcing air through said duct, tubes and ports, substantially as described.

704,827. VEHICLE-AXLE. GUSTAV HEDE, Detroit, Mich., assignor of one-half to Rudolph Mardian, Detroit, Mich. Filed Feb. 18, 1902. Serial No. 94,061. (No model.)

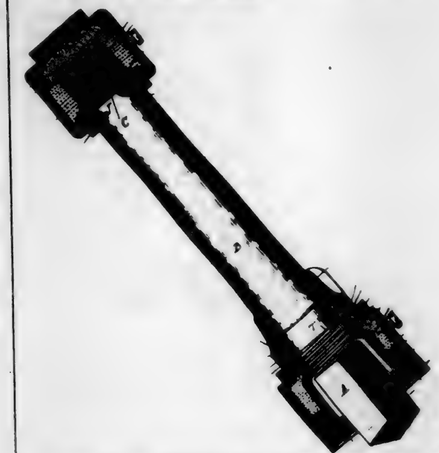

Claim.—1. In a vehicle-axle, the combination with the axle proper, of its spindle, the skein revolubly mounted upon the spindle, two concentrically-arranged and inwardly-extending casings spaced from each other forming therebetween an oil-chamber and carried respectively by the axle and skein, there being an oil-duct leading from said chamber to the spindle, and an annular flange upon one of said casings extending outward and bearing against the other.

2. In a vehicle-axle, the combination with the axle proper, of its spindle, the skein revolubly mounted upon the spindle, two concentrically-arranged and inwardly-extending casings spaced from each other forming therebetween an oil-chamber and threaded respectively upon the axle and skein, there being an oil-duct leading from said chamber to the spindle, and an annular flange integral with the inner casing and projecting outward and having a bearing against said outer casing.

3. In a vehicle-axle, the combination with the axle proper, of its spindle, the skein revolubly mounted upon the spindle, two concentrically-arranged and inwardly-extending casings spaced from each other and carried respectively by the axle and skein, an annular flange upon the inner casing projecting toward and bearing against the outer casing, a packing arranged intermediate of the casings and inwardly of the flange, and a packing-retaining cap engaging both casings.

704,828. OVEN. SARAH A. HENRY, St. Joseph, Mo. Filed Sept. 3, 1901. Serial No. 74,215. (No model.)

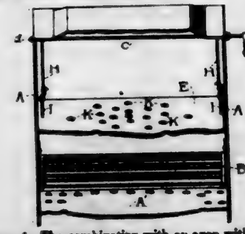

Claim.—1. The combination with an oven without side vents to be set on the top of a gaseous or gas stove over the flame or flames thereof, and its grates, of a single light-metal perforated plate of single thickness adapted to be hung in the oven above the grates, of the horizontal shaft located permanently near top of the oven and its crank and nut on outside of the oven, of the flexible wires having connection with said shaft at points in the oven near the sides and with hooks rigidly set in the plate

near its sides at a line equidistant between the front and back of the oven, substantially as described.

2. The combination with a gas or gasolene stove oven provided with vents or openings in its bottom only, and with a lower grate, of the shaft C, its crank D and nut *d*, the light vertically-adjustable plate E provided with draft-perforations K K and hooks I I, and duplicate flexible wires H H having connection with said shaft near each end and with said plate-hooks, substantially as described and for the purpose specified.

704,329. **MEANS FOR CLOSING CASKS.** JACOB J. HENDRICKS, New York, N. Y. Filed Nov. 1, 1901. Serial No. 80,739. (No model.)

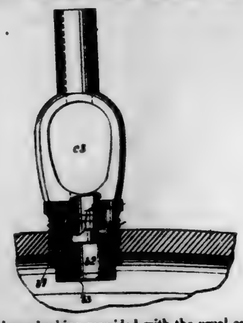

Claim.—A bung-bushing provided with the usual central bore, the upper or outer end of which is enlarged to receive a stopper-placing device, the lower or inner end of said bore being also provided with an enlarged chamber which is formed by an inwardly-directed annular flange at the bottom thereof and a corresponding inwardly-directed flange at the top thereof, the bottom flange being beveled or inclined, substantially as shown and described.

704,330. **APPARATUS FOR HEATING WATER.** EDWIN W. HIXSON, Northampton, Mass. Filed Dec. 6, 1901. Serial No. 84,909. (No model.)

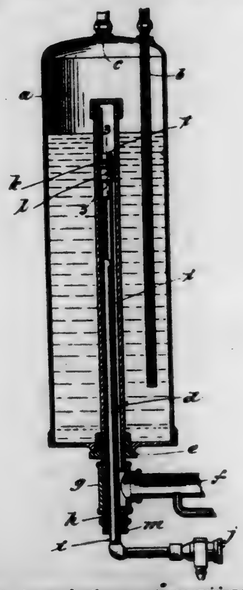

Claim.—1. A water-heating apparatus comprising a reservoir, a heating-pipe extending through the wall of the reservoir, the inner end of which pipe is closed, and the outer end of which is in communication with a steam-generator; a vent-pipe extending into the heating-pipe, means for adjusting the position of the open end of said vent-pipe longitudinally in the heating-pipe relative to the end of the latter, and a thermostatic valve of said vent-pipe outside of the reservoir.

2. A water-heating apparatus comprising a reservoir, a heating-pipe extending through the wall of the reservoir, the inner end of which pipe is closed, and the outer end of which is in communication with a steam-generator; a vent-pipe extending into the heating-pipe, a head on the vent-pipe adapted to provide a partition between the ends of the heating-pipe, said head being slidable in the latter, a thermostatic valve on the outlet end of said vent-pipe, there being a passage for steam through the latter from a point under said head, and thence through said valve to the atmosphere.

3. In a water-heating apparatus, a reservoir, a heating-pipe in said reservoir adapted to be placed in communication with a source of steam-supply, a vent-pipe in said heating-pipe, means for adjusting the position of the end of said vent-pipe longitudinally in the heating-pipe, and a valve on said vent-pipe, substantially as described.

4. In a water-heating apparatus, a reservoir, a heating-pipe in said reservoir adapted to be placed in communication with a source of steam-supply, a vent-pipe extending into said heating-pipe, means for adjusting the position of the end of said vent-pipe longitudinally in the heating-pipe, and a valve on said vent-pipe outside the reservoir, substantially as described.

5. In a water-heating apparatus, a reservoir, a heating-pipe in said reservoir adapted to be placed in communication with a source of steam-supply, a vent-pipe extending into said heating-pipe, means for adjusting the position of the end of said vent-pipe longitudinally in the heating-pipe, and a thermostatic valve on said vent-pipe outside of the reservoir, substantially as described.

6. In a water-heating apparatus, an adjustable vent-pipe comprising a pipe-section *i*, coupling *p* on the vent-pipe having passages *l*, nipple *g*, supported by the coupling means for closing the end of the nipple, a piston-head on the nipple, means for securing the piston-head on the nipple, and a valve on the outer end of the vent-pipe, substantially as described.

704,331. **HEATING-STOVE.** LINCOLN HOWARD, Savannah, Mo. Filed Feb. 27, 1902. Serial No. 95,845. (No model.)

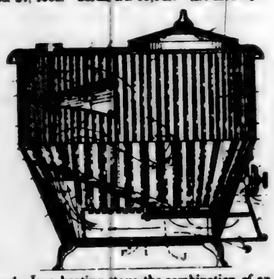

Claim.—1. In a heating-stove the combination of an inverted conical casing inclosing a combustion-chamber, a corrugated floor, said corrugations forming air-spaces between said floor and the bottom of the casing, a vertically-corrugated fire-pot supported by said floor, a fuel-support its front end connecting with the rear of the stove-grate and its elevated back end with the rear of the fire-pot, a lateral flange at the top of said fire-pot adapted to fit closely around against the stove-casing and provided with semicircular openings in that portion contacting with the rear part of the stove-casing to serve as draft-vents from beneath the combustion-chamber under the grate and fuel support up between the corrugations at the back of the fire-pot and the stove-casing into the space above the fuel-bed, substantially as described and for the purpose specified.

2. In a heating-stove the combination with an inverted conical combustion-chamber and a vertically-corrugated fire-pot open at the lower part of the back thereof and located within said chamber and spaced therefrom to form a heating-chamber, of a fuel-support set back of the stove-grate and elevated at its rear end thereby forming an enlarged upward extension of an air-chamber, of a corrugated floor beneath the fire-pot, spaced therefrom allowing said air-chamber to extend through the entire base of the stove, of a flange on the top of the corrugated fire-pot provided at the rear of the stove with openings adapted to carry the draft of the stove up from said air-chamber and its upward extension into the chamber above the fuel-bed to form perfect combustion with the gas therein, substantially as described and shown.

3. In a heating-stove comprising in combination a combustion-chamber, a heating-drum supported thereon and a perforated check-damper therein spanning that portion adjacent to the flue connection, a vertically-corrugated fire-pot having its lower rear portion cut away, a grate set therein at the front, a fuel-support extending backward from said grate and bearing upward at an angle with its edge adapted to fit into the side and back corrugations of the fire-pot and close the opening made in the fire-pot at the cut-away portion thereof, and a lateral flange on the rim of the fire-pot above said cut-away portion provided with draft-openings at the tops of corrugations, substantially as set forth and shown.

704,882. **NUT-LOCK.** ROBERT D. HUDSON, Vermilion, Va., assignor, by direct and mesne assignments, of two-thirds to Robert O. Horton and Charles F. Patterson, Lynchburg, Va. Filed Sept. 12, 1901. Serial No. 75,202. (No model.)

Claim.—1. A nut-lock comprising a washer having a bolt-opening therein, and a slit extending from one edge of the washer to the opening, the section on one side of the slit being outturned from the remainder of the washer to form a yielding tongue, said tongue being provided on its outer face with a locking-shoulder that extends transversely across the same from the slit to the outer edge and tapers in thickness toward said outer edge.

2. The combination with a bolt, of a nut threaded on the bolt and having an outstanding flange on its outer side edge, and a lock for the nut comprising a washer having an opening through which the bolt passes and a slit extending from one edge of the washer to the opening, the section of the washer on one side of this slit being outturned from the remaining portion of said washer to form a yielding tongue, said tongue being provided on its outer face with a locking-shoulder that extends diagonally across the same from the slit to the outer edge and tapers in thickness toward said outer edge, the outer end of the tongue beyond the shoulder being disposed outside of the nut and beneath but spaced from the flange thereof.

3. The combination with a bolt, of a nut threaded on the bolt and having an outstanding flange on its outer side edge, and a lock for the nut interposed between the article held and the nut, said lock comprising a washer projecting beyond the side edges of the nut, one projecting side of said washer fitting flat against the article to be held, the opposite side constituting a spring-tongue that is raised above the article to be held and is spaced from the flange of the nut a sufficient distance to receive the head of a wrench, whereby, when the wrench is inserted between said flange and tongue, the latter will be forced back and out of engagement with the nut to release the same.

704,888. **SELF-WINDING CLOCK.** CHARLES HERRY, Philadelphia Pa. Filed Mar. 27, 1902. Serial No. 100,220. (No model.)

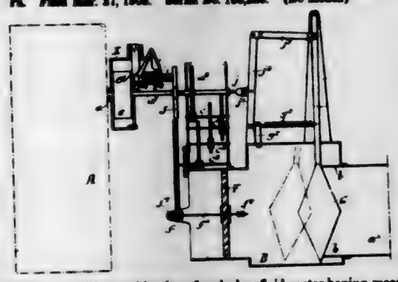

Claim.—1. The combination of a clock, a fluid-motor having means connecting it to the operating mechanism of said clock, together with means for governing the supply of motive fluid to the fan actuated by said motor through the operating mechanism of the clock, substantially as described.

2. The combination of a clock, a fan connected to the driving mechanism thereof, a valve controlling the flow of fluid to said fan, said valve being operated by the motor through the driving mechanism of the clock, substantially as described.

3. The combination of a clock having a mainspring, a fan having gearing connecting it to the same, a valve governing the flow of fluid to said fan and mechanism between the valve and the spring whereby changes in the position of the spring varies the position of the valve, substantially as described.

4. The combination of a clock having a mainspring, with a supporting-spindle, a fan for winding said spring, a valve controlling the flow of fluid to the fan, and means for connecting the valve and the spring, the same including mechanism revoluble around said spindle, whereby variations in the distance of a portion of said spring from the spindle are made to operate said valve, substantially as described.

5. The combination of a clock having a mainspring with a spindle, a fan geared to said spindle for winding the spring, a valve controlling the flow of fluid through the fan, a device primarily operated by the fan and revoluble with one end of said spring, together with mechanism for operating the valve, the same being in engagement with said device, substantially as described.

6. The combination of a clock having a spring, a spring-barrel and a spindle connected respectively to the ends of said spring, a fan having gearing operatively connected to the spindle, a piece revolvable with the gear-wheel, having means connecting it to a movable portion of the spring, a valve controlling the supply of fluid to the fan, means for movably suspending the said valve, and a framework connected to the suspending means of the valve, the same being in operative engagement with the piece moved by the spring, substantially as described.

7. The combination of a clock having a spring, a gear-wheel and a spindle connected respectively to the ends thereof, a fan-casing, a fan and a valve therein, gearing connecting the spring-spindle and the fan, means for normally retaining the valve in an open position, levers for operating the valve, a plate connected to said levers, and a device having means connecting it with the spring constructed to act on said plate whereby variations in the position of a portion of said spring move the plate and through said levers operate the valve, substantially as described.

704,884. **CAMERA.** CHARLES E. HUTCHINS, Rochester, N. Y., assignor to Rochester Optical and Camera Company, Rochester, N. Y., a Corporation of New York. Filed Apr. 4, 1902. Serial No. 101,397. (No model.)

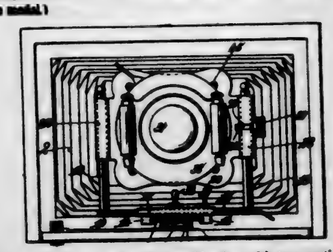

Claim.—1. In a camera, the combination with two vertical posts of the lens-front comprising a metallic plate provided centrally with an opening for the insertion of a lens, and having its opposite vertical edges bent up to form sleeves which encircle and are vertically movable on said posts, and means for locking one of said sleeves to the post which it encircles, substantially as described.

2. In a camera, the combination with two vertical posts, of a lens-front comprising a plate provided at its opposite sides with sleeves vertically movable on said posts, one of said sleeves being transversely slotted, a ring disposed in said slot and encircling the post therein, said ring being provided with a threaded shank projecting laterally through said slot, and a nut screwed on said shank and operating to bind the ring on the post, substantially as described.

3. In a camera, the combination with a plate supported on the bed of the camera and provided on its forward and rear edges with inturned overhanging flanges, one of said flanges being longitudinally slotted, of a plate slidably arranged between said flanges transversely to the camera-bed, an oscillatory lever-handle provided at one end with a screw projecting through said slot and tapped in said flanged plate, and a lens-front vertically movable on the sliding plate, substantially as described.

4. In a camera, the combination with a plate supported on the bed of the camera and provided on its forward and rear edges with inturned overhanging flanges, one of said flanges being longitudinally slotted, of a plate slidably arranged between said flanges transversely to the camera-bed, an oscillatory lever-handle provided at one end with a screw projecting through said slot and tapped in said flanged plate, a lens-front vertically movable on the sliding plate, and means for limiting the oscillatory movement of said lever, substantially as described.

5. In a camera, the combination with a plate supported on the bed of the camera and provided on its forward and rear edges with inturned overhanging flanges, one of said flanges being longitudinally slotted, of a plate slidably arranged between said flanges transversely to the camera-bed, and an oscillatory lever-handle provided at one end with a screw pro-

jecting through said slot and tapped in said flanged plate, a lens-front vertically movable on the sliding plate, and a beveled catch arranged to be engaged by said lever-handle and hold the same in its locked position, substantially as described.

6. In a camera, the combination with a bellows, the lens, and the shutter-casing, of the lens-front consisting of a thin centrally-apertured metallic plate, the externally-threaded lens-tube fitted in the rear side of the shutter-casing and projecting through said lens-front, a flanged collar screwed on said lens-tube in rear of the lens-front, and a metallic plate attached to the forward end of the bellows and clamped between the lens-front and the flange on said collar, substantially as described.

704,885. PHOTOGRAPHIC CAMERA. CHARLES E. HUTCHINS, Rochester, N. Y., assignor to Rochester Optical and Camera Company, Rochester, N. Y., a Corporation of New York. Filed Apr. 4, 1902. Serial No. 101,499. (No model.)

Claim.—1. The combination with a camera-box, and a cover for the front of the same, hinged thereto, of a lock for retaining said cover in horizontal position, and a spring secured within said camera-box for throwing open said cover and operating said lock.

2. The combination with a camera-box and a cover for the front of the same, hinged thereto, of links pivoted to said cover, and having a sliding connection with said box, means thrown into operation by the upward movement of the free ends of said links for locking said cover in its horizontal position, and springs secured within said camera-box and acting upon said links for opening said cover and throwing into operation the locking means therefor.

3. The combination with a camera-box and a cover for the front of the same, hinged thereto, of links pivoted to said cover and having elongated slots therein provided with lateral offsets, projections extending inwardly from the sides of the camera-box through said slots and adapted to fit within said offsets for locking said cover in horizontal position, and springs secured within said camera-box and constantly held under tension by said links, whereby said cover is automatically thrown open when the lock for closing the same is released, and whereby the free ends of said links are automatically thrown outwardly, when said cover reaches its horizontal position, to move said offsets into interlocking relation with said projections.

4. The combination with a camera-box and a cover for the front of the same, hinged thereto, of links pivoted to said cover and having elongated slots therein provided with lateral offsets, projections extending inwardly from the sides of the camera-box through said slots and adapted to fit within said offsets for locking said cover in horizontal position, and springs secured at their upper inner ends within said camera-box, extending downwardly and outwardly from their points of attachment to said box, and having their free ends reversely curved to form engaging portions, the said engaging portions lying in constant contact with the inner edges of said links, and said springs being maintained normally under tension by said links, whereby said cover is automatically thrown open when the lock for closing the same is released, and whereby the free ends of said links are automatically thrown outwardly, when said cover reaches its horizontal position, to move said offsets into interlocking relation with said projections.

704,886. REVERSING-SWITCH MOTOR. JOHN D. ISELIN, Yonkers, N. Y., assignor to Otis Elevator Company, Orange, N. J., a Corporation of New Jersey. Filed Apr. 4, 1900. Serial No. 711,711. (No model.)

Claim.—1. In a switch, the combination with a plurality of electrically-operated switch-arms, of a safety device controlled by the movement of one switch-arm and controlling the movements of another switch-arm, whereby the switch-arms are operated in a predetermined order or succession, substantially as described.

2. In a switch, the combination with a plurality of electrically-operated switch-arms, of a safety-arm controlled by the movement of one switch-arm and controlling the movements of another switch-arm, whereby the switch-arms are operated in a predetermined order or succession, substantially as described.

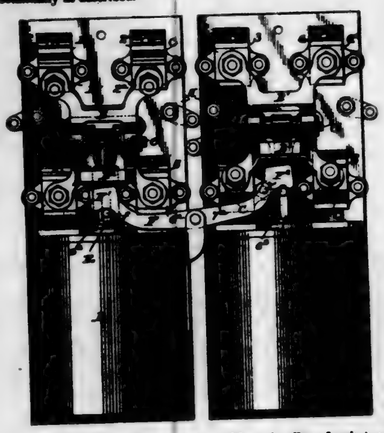

3. In a switch, the combination with a plurality of switch-arms, of independent electrical devices for moving the arms, and a safety device connected to be operated by the moving device of one of the switch-arms and to control the movements of another switch-arm, whereby the switch-arms are operated in a predetermined order or succession, substantially as described.

4. In a switch, the combination with a plurality of switch-arms, of independent devices for moving the arms, and a rocking safety device controlled by the independent moving device of one switch-arm and controlling the movements of another switch-arm, whereby the switch-arms are operated in a predetermined order or succession, substantially as described.

5. In a switch, the combination with a plurality of switch-arms, of independent devices for operating the arms, magnets to move said independent devices, and a safety device connected to be moved by the magnet of one switch-arm and controlling the movements of another switch-arm, whereby the switch-arms are operated in a predetermined order or succession, substantially as described.

6. In a switch, the combination with the pivoted switch-arms, of magnets the cores of which are connected to move the switch-arms, a pivoted safety device, and connections between the cores and the pivoted safety device for moving the latter, substantially as described.

7. In a switch, the combination with the pivoted switch-arms, of magnets for moving the switch-arms, magnet-core extensions connected to the switch-arms and carrying pins, a pivoted safety-arm having extensions engaging the pins, and stops on the switch-arms engaging the extensions, substantially as described.

8. In a switch, the combination with a plurality of switch-arms, each arm carrying a contact at each end, of independent devices for moving the arms, and a safety device controlled by the movement of one switch-arm and controlling the movements of another switch-arm, whereby the switch-arms are operated in a predetermined order or succession substantially as described.

9. In a switch, the combination with the stationary spring-supported contacts, of pivoted switch-arms carrying contacts coöperating therewith, electromagnets for operating the switch-arms, cores connected to the arms, a pivoted safety-arm, pins connected to the cores for operating the safety-arm, and stops on the switch-arms coöperating with the safety-arm, substantially as described.

704,887. CONTROLLING SYSTEM FOR ELECTRIC ELEVATORS. JOHN D. ISELIN, Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Jan. 11, 1902. Serial No. 89,341. (No model.)

Claim.—1. In a motor-controlling apparatus, the combination of controlling-circuits of different potentials reciprocally controlling each other, substantially as described.

2. In an apparatus for controlling elevators, the combination of two controlling-circuits of different potentials reciprocally controlling each other, substantially as described.

3. In a motor-controlling apparatus, the combination of controlling-circuits reciprocally controlling each other and derived from different sources, substantially as described.

4. In a motor-controlling apparatus, the combination of controlling-circuits reciprocally controlling each other and derived from separate sources of different potentials, substantially as described.

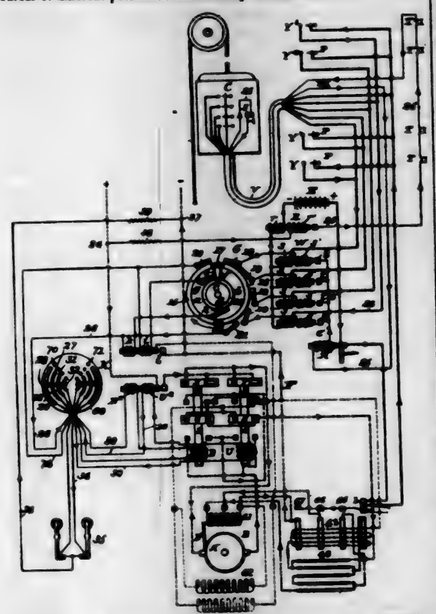

5. In an electrical controlling system for elevators, the combination with a motor, and car, of a main motor-circuit, a controlling-circuit of lower potential than said main circuit, and means for momentarily energizing the low-potential circuit to start the car and for then rendering said low-potential circuit inoperative, substantially as described.

6. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for rendering said controlling-circuit inoperative after the motor is started, substantially as described.

7. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for rendering said controlling-circuit temporarily inoperative after the motor is started, substantially as described.

8. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for maintaining said controlling-circuit inoperative while the motor is in operation, substantially as described.

9. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for cutting out said controlling-circuit as the motor starts, substantially as described.

10. In an electrical controlling system for elevators, the combination with a motor and its main circuit, of a controlling-circuit derived from a separate source of lower potential than the main circuit, and means for cutting out said separate source as the motor starts, substantially as described.

11. In an elevator, the combination with a motor, car, and stations, of a main circuit for the motor, and means at the stations included in a circuit of lower potential than said main circuit for controlling the operation of the motor, substantially as described.

12. In an elevator, the combination with a motor, car, and stations, of a main circuit for the motor, and means on the car included in a circuit of lower potential than said main circuit for controlling the operation of the motor, substantially as described.

13. In an elevator, the combination with a motor, car, and stations, of a main circuit for the motor, and means on the car and at the stations included in a circuit of lower potential than said main circuit for controlling the operation of the motor, substantially as described.

14. In an electrical controlling system for elevators, the combination with a motor, car, and stations, of a main circuit for the motor, a controlling-circuit of lower potential than said main circuit, and means for rendering the controlling-circuit inoperative when the motor starts, substantially as described.

15. In an electrical controlling system for elevators, the combination with a motor, car, and stations, of a main circuit for the motor, a controlling-circuit of lower potential than said main circuit, and means for rendering the controlling-circuit inoperative after having been energized, substantially as described.

16. In an electrical controlling system for elevators, the combination with a motor, car, and stations, of a main circuit for the motor, a controlling-circuit of lower potential than said main circuit, means at the stations included in said controlling-circuit for controlling the starting of the motor, and means for rendering said controlling-circuit inoperative after the motor has started, substantially as described.

17. In an electrical controlling system for elevators, the combination with a motor, car, and stations, of a main circuit for the motor, a controlling-circuit of lower potential than said main circuit, means on the car included in said controlling-circuit for controlling the starting of the motor, and means for rendering said controlling-circuit inoperative after the motor has started, substantially as described.

18. In an electrical controlling system for elevators, the combination with a motor, car, and stations, of a main circuit for the motor, a controlling-circuit of lower potential than said main circuit, means on the car and at the stations included in said controlling-circuit for controlling the starting of the motor, and means for rendering said controlling-circuit inoperative after the motor has started, substantially as described.

19. In an elevator, the combination with a motor, and its main circuit, of means controlling the starting of the motor included in a circuit of lower potential than said main circuit, and means for rendering said low-potential circuit inoperative after the motor has started, substantially as described.

20. In an elevator, the combination with a motor, car, stations, and main circuit of the motor, of means included in a circuit of lower potential than said main circuit for starting the car to a particular station, and means for rendering said starting means inoperative after once being operated, substantially as described.

21. In an elevator, the combination with a motor, car, stations, and main circuit of the motor, of means included in a circuit of lower potential than said main circuit for starting the car to a particular station, and means for rendering said starting means temporarily inoperative after once being operated, substantially as described.

22. In an apparatus for controlling elevators, the combination with a motor, car, and stations, main circuit of the motor, and controlling devices, of means included in a circuit of lower potential than said main circuit for controlling said controlling devices and starting the car to a particular station, and means for rendering said circuit of low potential inoperative after having started the car, substantially as described.

23. In an electrical controlling system for elevators, the combination with a motor, its main circuit, controlling devices, and circuits therefor, of means included in a circuit of lower potential and derived from a different source than the main circuit for controlling said controlling devices, substantially as described.

24. In an electrical controlling system for elevators, the combination with a motor, its main circuit, controlling devices and circuits therefor, of means included in a circuit of lower potential than the main circuit for controlling said controlling devices, and means for rendering said circuit of low potential temporarily inoperative after having once been energized, substantially as described.

25. In an apparatus for controlling elevators, the combination with a motor, and its main circuit, of motor-controlling devices and circuits therefor, and a circuit of lower potential than the main circuit and derived from a separate source controlling the operation of said controlling devices and their circuits, substantially as described.

26. In an apparatus for controlling elevators, the combination with a motor, and its main circuit, of motor-controlling devices and circuits for the same derived from said main circuit, and a circuit of lower potential than said main circuit derived from a separate source for controlling the operation of said controlling devices and their circuits, substantially as described.

27. The combination with an elevator-motor, of switches, circuits and connections including the switches and motor for controlling the operation of the motor, the portion of said circuits including the switches being of lower potential than the remainder of the circuits, and means for cutting said portion of low potential out of circuit after the motor is started, substantially as described.

28. The combination with an elevator-motor, of switches, circuits and connections including the switches and motor for controlling the operation of the motor, the portion of said circuits including the switches being of lower potential than the remainder of the circuits, and means for automatically cutting said portion of low potential out of circuit as the motor starts, substantially as described.

29. The combination with an elevator-motor, of switches, circuits and connections including the switches and motor for controlling the op-

uration of the motor, the portion of said circuits including the switches being of lower potential than the remainder of the circuits, and means for automatically cutting said portion of low potential out of circuit when one of said switches is operated, substantially as described.

30. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons and switches for each station, controlling-circuits and connections between the push-buttons and motor for controlling the operation of the motor, the portion of said circuits including the push-buttons being of lower potential than the remainder of the circuits, and means for automatically rendering the push-buttons inoperative while maintaining the switches at the stations operative after one of the push-buttons is manipulated, substantially as described.

31. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a circuit including switches for setting the motor in operation, and a circuit including motor-controlling devices, said circuits being so arranged as to reciprocally control each other, substantially as described.

32. In an apparatus for controlling elevators, the combination with an electric motor, of a circuit including switches for setting the motor in operation, and a separate circuit including motor-controlling devices and derived from a separate source, said circuits being so arranged as to reciprocally control each other when one of said switches is operated, substantially as described.

33. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a circuit including switches for setting the motor in operation, and a circuit including motor-controlling devices, said circuits being so arranged that when a switch is manipulated the circuit of the switches closes the circuit of the motor-controlling devices and said latter circuit opens the circuit of the switches, substantially as described.

34. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a circuit including motor-controlling devices, and a circuit of lower potential than the same including switches for setting the motor in operation, said circuits being so arranged as to reciprocally control each other, substantially as described.

35. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a circuit including motor-controlling devices, and a circuit of lower potential than the same including switches for setting the motor in operation, said circuits being so arranged that when a switch is manipulated the circuit of the switches closes the circuit of the motor-controlling devices and said latter circuit opens the circuit of the switches, substantially as described.

36. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of motor-controlling devices, a circuit including the same derived from the main circuit, switches for setting the motor in operation, and a circuit including the same derived from a separate source of lower potential than the main circuit, said circuits including the motor-controlling devices and switches being so arranged as to reciprocally control each other, substantially as described.

37. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of motor-controlling devices, a circuit including the same derived from the main circuit, switches for setting the motor in operation, and a circuit including the same derived from a separate source than the main circuit, said circuits including the motor-controlling devices and switches being so arranged as to reciprocally control each other, substantially as described.

38. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons at each station for setting the motor in operation, a circuit including the same, and a circuit including door-switches at the stations and also including devices for controlling the motor, said circuits being so arranged as to reciprocally control each other, substantially as described.

39. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons on the car for setting the motor in operation, a circuit including the same, and a circuit including door-switches at the stations and also including devices for controlling the motor, said circuits being so arranged as to reciprocally control each other, substantially as described.

40. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons on the car and at the stations for setting the motor in operation, a circuit including the same, and a circuit including door-switches at the stations and also including devices for controlling the motor, said circuits being so arranged as to reciprocally control each other, substantially as described.

41. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of switches at each station for setting said motor in operation, a circuit including the same, and a circuit including other switches at the stations and also including devices for controlling the motor, said circuits being so arranged as to reciprocally control each other, substantially as described.

42. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of switches on the car for setting the motor in operation, a circuit including the same, and a circuit including switches at the stations and also including devices for controlling the motor, said circuits being so arranged as to reciprocally control each other, substantially as described.

43. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of switches on the car and at the stations for setting the motor in operation, a circuit including the same, and a circuit including other switches at the stations and also including devices for controlling the motor, said circuits being so arranged as to reciprocally control each other, substantially as described.

44. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of circuits including door-switches at the stations and also devices for controlling the motor, push-buttons at each station for setting the motor in operation, and a circuit including the same of lower potential than the circuit including the door-switches and motor-controlling devices, said circuits of different potentials being so arranged as to reciprocally control each other, substantially as described.

45. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of circuits including door-switches at the stations and also devices for controlling the motor, push-buttons on the car and at the stations for setting the motor in operation, and a circuit including the same of lower potential than the circuit including the door-switches and motor-controlling devices, said circuits of different potentials being so arranged as to reciprocally control each other, substantially as described.

46. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of a circuit including switches at the stations and also including devices for controlling the motor, other switches at each station for setting the motor in operation, and a circuit including the same of lower potential than the circuit including the motor-controlling devices, said circuits of different potentials being so arranged as to reciprocally control each other, substantially as described.

47. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of a circuit including switches on the car and also including devices for controlling the motor, and a circuit of lower potential than the same, said circuits being so arranged as to reciprocally control each other, substantially as described.

48. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons for each station and a circuit including the same, and motor-controlling devices and a circuit including the same, said circuits being so arranged as to reciprocally control each other, substantially as described.

49. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons for each station and a circuit including the same, and motor-controlling devices and a circuit including the same, said circuits acting reciprocally upon each other, substantially as described.

50. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons for each station and a circuit including the same, and motor-controlling devices and a circuit including the same, said circuits being so arranged that when a push-button is manipulated the push-button circuit closes the circuit of the motor-controlling devices, and said latter circuit opens the circuit of the push-buttons, substantially as described.

51. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons for each station and a circuit including the same, motor-controlling devices and a circuit including the same, and means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, substantially as described.

52. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of push-buttons for each station and a circuit including the same, motor-controlling devices and a circuit including the same, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening the circuit of the push-buttons, substantially as described.

53. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of motor-controlling devices and a circuit including the same, push-buttons for each station, and a circuit including the same of lower potential than the circuit including the motor-controlling devices, said circuits being so arranged as to reciprocally control each other, substantially as described.

54. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of motor-controlling devices and a circuit including the same, push-buttons for each station, and a circuit including the same of lower potential than the circuit including the motor-controlling devices, said circuits acting reciprocally upon each other, substantially as described.

55. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of motor-controlling devices and a circuit including the same, push-buttons for each station, and a circuit including the same of lower potential than the circuit including the motor-controlling devices, said circuits being so arranged that when a push-button is manipulated the push-button circuit closes the circuit of the motor-controlling devices and said latter circuit opens the circuit of the push-buttons, substantially as described.

56. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of motor-controlling devices and a circuit including the same, push-buttons for each station and a circuit including the same of lower potential than the circuit including the motor-controlling devices, and means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, substantially as described.

57. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main motor-circuit, of motor-controlling devices and a circuit including the same, push-buttons for each station and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening the circuit of the push-buttons, substantially as described.

58. In an apparatus for controlling elevators, the combination with a motor, car, stations, and main circuit of the motor, of a circuit derived from the main circuit and including motor-controlling devices, switches at the stations for setting the motor in operation, and a circuit including the same derived from a separate source of lower potential than the main circuit, said circuits derived from the main circuit and the separate source being so arranged as to reciprocally control each other, substantially as described.

59. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons at the stations and a circuit including the same, motor-controlling devices and a circuit including the same, electromagnets in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and an electromagnet in said latter circuit for opening the push-button circuit, substantially as described.

60. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, switches for setting the motor in operation and a circuit including the same, means in the circuit of said switches for closing the circuit of the motor-controlling devices, and means in the circuit of the motor-controlling devices for maintaining the circuit of the same closed, substantially as described.

61. In an apparatus for controlling elevators, the combination with a motor, and its main circuit, of two motor-controlling circuits one including switches for starting the motor and adapted to be opened when the motor is in operation and the other including motor-controlling devices, means in the circuit of said switches for closing the circuit of the motor-controlling devices, and means in the circuit of the motor-controlling devices for maintaining the circuit of the same closed while the motor is in operation, substantially as described.

704,838. CONTROLLING SYSTEM FOR ELECTRIC ELEVATORS.

JESSE D. ILLSLEY, Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Jan. 13, 1902. Serial No. 89,551. (No model.)

Claim.—1. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for rendering a portion of said controlling-circuit inoperative after the motor is started, substantially as described.

2. In an electric controlling system for elevators, the combination with a motor and car, of a main motor-circuit, a controlling-circuit of lower potential than the main circuit, and means for energizing the controlling-circuit to start the car and for then rendering said circuit in part inoperative, substantially as described.

3. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for rendering a portion of said controlling-circuit temporarily inoperative after the motor is started, substantially as described.

4. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for maintaining a portion of said controlling-circuit inoperative while the motor is in operation, substantially as described.

5. The combination with an electric motor, and its main circuit, of a controlling-circuit of lower potential than the main circuit, and means for cutting out a portion of said controlling-circuit as the motor starts, substantially as described.

6. In an electrical controlling system for elevators, the combination with a motor, car, and stations, of a main circuit for the motor, a controlling-circuit of lower potential than the main circuit, and means for rendering a portion of said controlling-circuit inoperative when the motor starts, substantially as described.

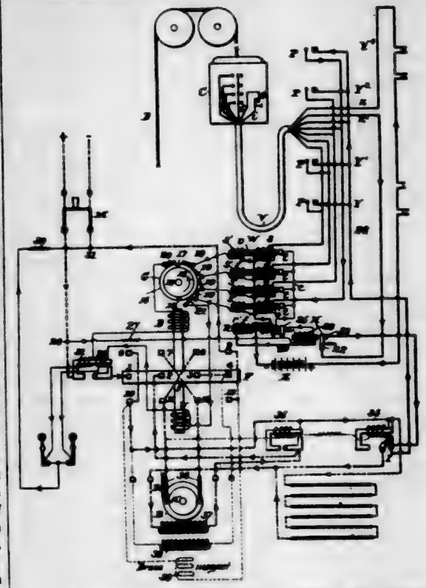

7. In an electrical controlling system for elevators, the combination with a motor, car and stations, of a main circuit for the motor, a controlling-circuit of lower potential than the main circuit, and means for rendering a portion of said controlling-circuit inoperative after said circuit has once been energized, substantially as described.

8. In an electrical controlling system for elevators, the combination with a motor, car, and stations, of a main circuit for the motor, a controlling-circuit of lower potential than the main circuit, means at the stations included in said controlling-circuit for controlling the starting of the motor, and means for rendering a portion of said controlling-circuit inoperative after the motor has started, substantially as described.

9. In an electrical controlling system for elevators, the combination with a motor, and its main circuit, of means for controlling the starting of the motor included in a circuit of lower potential than the main circuit, and means for cutting out that portion of the low-potential circuit including the means for controlling the starting of the motor as the motor starts, substantially as described.

10. In an electrical controlling system for elevators, the combination with a motor, car, stations, and main circuit of the motor, of means included in a circuit of lower potential than the main circuit for starting the car to a particular station, and means for rendering that portion of the low-potential circuit which contains the means for starting the car inoperative after having started the car, substantially as described.

11. In an electrical controlling system for elevators, the combination with a motor, its main circuit, controlling devices, and circuits therefor, of means included in a circuit of lower potential than the main circuit for controlling said controlling devices, and means for rendering a portion of said controlling-circuit inoperative after said controlling devices have been operated, substantially as described.

12. In an electrical controlling system for elevators, the combination with a motor, its main circuit, controlling devices, and circuits therefor, of means included in a circuit of lower potential than the main circuit for controlling said controlling devices, and means for rendering a portion of said controlling-circuit inoperative after it has once been energized, substantially as described.

13. In the electrical controlling system for elevators, the combination with a motor, its main circuit, controlling devices, and circuits therefor, of means included in a circuit of lower potential than the main circuit for controlling said controlling devices, and means for rendering a portion of said controlling-circuit inoperative after it has once been energized while maintaining the remainder energized, substantially as described.

14. In an electrical controlling system for elevators, the combination with a motor, and its main circuit, of motor-controlling devices and circuits therefor, a circuit of lower potential than the main circuit for controlling the operation of said controlling devices and their circuits and means for rendering a portion of said controlling-circuit inoperative after said controlling devices have been operated, substantially as described.

15. In an electrical controlling system for elevators, the combination with a motor, and its main circuit, of controlling devices and circuits therefor, operative means included in a circuit of lower potential than the main circuit for controlling the operation of said controlling devices and their circuits, and means for cutting out a portion of the low-potential circuit as the motor starts, substantially as described.

16. In an electrical controlling system for elevators, the combination with a motor, and its main circuit, of motor-controlling devices and circuits for the same derived from the main circuit, a circuit of lower potential than said main circuit derived from a separate source of power for controlling the operation of said controlling devices and their circuits, and means for cutting out a portion of said controlling-circuit when the motor-controlling devices are operated, substantially as described.

17. In an electrical controlling system for elevators, the combination with a motor, and its main circuit, of motor-controlling devices with circuits for the same derived from said main circuit, means for controlling said devices and their circuits included in a circuit derived from a separate source of lower potential than said main circuit, and means for rendering a portion of said low-potential circuit inoperative when the motor-controlling devices are operated, substantially as described.

18. In an electrical controlling system for elevators, the combination with a motor, and its main circuit, of motor controlling devices with circuits for the same derived from said main circuit, means for controlling said devices and their circuits included in a circuit derived from a separate source of lower potential than said main circuit, and means for rendering a portion of said low-potential circuit inoperative when the motor-controlling devices are operated while maintaining the remainder of said low-potential circuit operative, substantially as described.

19. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of switches corresponding to the floors and stations, circuits and connections of high and low potential including the switches and the motor for controlling the operation of the motor, and means for rendering a portion of the circuits of low potential inoperative as the motor starts, substantially as described.

20. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of switches corresponding to the floors and stations, circuits and connections of high and low potential including the switches and the motor for controlling the operation of the motor, and means for cutting out a portion of the low-potential circuits after the car has started, substantially as described.

21. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of switches corresponding to the floors and stations, circuits and connections of high and low potential including the switches and the motor for controlling the operation of the motor, and means for cutting out a portion of the low-potential circuits after the car has started while maintaining the remainder operative, substantially as described.

22. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a main circuit for the motor, switches, circuits and connections including the switches and the motor for controlling the operation of the motor, the portion of said circuits including the switches being of lower potential than said main circuit, and means for automatically cutting out a portion of said circuit of lower potential when one of the switches is operated, substantially as described.

23. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a main circuit for the motor, switches on the car, circuits and connections including the switches and the motor for controlling the operation of the motor, the portion of said circuits including the switches being of lower potential than said main circuit, and means for automatically cutting out a portion of said circuit of lower potential when one of the switches is operated, substantially as described.

24. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a main circuit for the motor, switches at the stations, circuits and connections including the switches and the motor for controlling the operation of the motor, the portion of said circuits including the switches being of lower potential than said main circuit, and means for automatically cutting out a portion of said circuit of lower potential when one of the switches is operated, substantially as described.

25. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a main circuit for the motor, switches, circuits, and connections including the switches and the motor for controlling the operation of the motor, the portion of said circuits including the switches being of lower potential than said main circuit, and means for rendering a portion of the circuit of lower potential inoperative after the motor has started while maintaining the remainder of said low-potential circuit operative, substantially as described.

26. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a main circuit for the motor, switches on the car, circuits and connections including the switches and the motor for controlling the operation of the motor the portion of said circuits including the switches being of lower potential than said main circuit, and means for rendering a portion of the circuit of lower potential inoperative after the motor has started while maintaining the remainder of said low-potential circuit operative, substantially as described.

27. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of a main circuit for the motor, switches at the stations, circuits and connections including the switches and the motor for controlling the operation of the motor, the portion of said circuits including the switches being of lower potential than said main circuit, and means for rendering a portion of the circuit of lower potential inoperative after the motor has started while maintaining the remainder of said low-potential circuit operative, substantially as described.

28. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons for each station and a circuit including the same, motor-controlling devices and a circuit including the same, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening a portion of the push-button circuit including the push-buttons while maintaining another portion of said circuit closed, substantially as described.

29. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons for each station and a circuit including the same, motor-controlling devices and a circuit including the same, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, substantially as described.

30. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons for each station and a circuit including the same, motor-controlling devices and a circuit including the same, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, and means in said shorter circuit for maintaining the circuit of the motor-controlling devices closed, substantially as described.

31. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons on the car and at the stations, a circuit including the same, motor-controlling devices and a circuit including the same, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening a portion of the push-button circuit including the push-buttons while maintaining another portion of said circuit closed.

32. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons on the car and at the stations and a circuit including the same, motor-controlling devices and a circuit including the same, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, substantially as described.

33. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons on the car and at the stations and a circuit including the same, motor-controlling devices and a circuit including the same, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, and means in said short circuit for maintaining the circuit of the motor-controlling devices closed, substantially as described.

34. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons for each station and a circuit including the same, and motor-controlling devices and a circuit including the same, electromagnets in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, an electromagnet in said latter circuit for closing a short circuit around the push-buttons and said magnets when the push-button circuit is opened, a magnet in said shorter circuit for maintaining the circuit of the motor-controlling devices closed, and other magnets in the circuit of the motor-controlling devices for maintaining the circuit of the same closed, substantially as described.

35. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons for each station and a circuit including the same of lower potential than the circuit including the motor controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in the latter circuit for opening a portion of the push-button circuit including the push-buttons and maintaining another portion of said circuit closed, substantially as described.

36. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons for each station and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, substantially as described.

37. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons for each station and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, and means in the said shorter circuit for maintaining the circuit of the motor-controlling devices closed, substantially as described.

38. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons on the car and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in the latter circuit for opening a portion of the push-button circuit including the push-buttons and maintaining another portion of said circuit closed, substantially as described.

39. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons on the car and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, substantially as described.

40. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons on the car and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, and means in the said shorter circuit for maintaining the circuit of the motor-controlling devices closed, substantially as described.

41. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons on the car and at the stations and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in the latter circuit for opening a portion of the push-button circuit including the push-buttons and maintaining another portion of said circuit closed, substantially as described.

42. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons on the car and at the stations and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, and means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, substantially as described.

43. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of motor-controlling devices and a circuit including the same, push-buttons on the car and at the stations and a circuit including the same of lower potential than the circuit including the motor-controlling devices, means in the push-button circuit for closing the circuit of the motor-controlling devices when a push-button is manipulated, means in said latter circuit for opening a portion of the push-button circuit including the push-buttons and closing a shorter circuit around the same, and means in the said shorter circuit for maintaining the circuit of the motor-controlling devices closed, substantially as described.

44. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons and switches for each station, controlling-circuits and connections between the push-buttons, switches and the motor for operating the motor, the portion of said circuits including the push-buttons and switches being of lower potential than the remainder of the circuits, and means for automatically rendering the push-buttons inoperative while maintaining the switches operative when one of the push-buttons is manipulated, substantially as described.

45. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons and switches on the car, controlling-circuits and connections between the push-buttons, switches and the motor for operating the motor, the portion of said circuits including the push-buttons and switches being of lower potential than the remainder of the circuits, and means for automatically rendering the push-buttons inoperative while maintaining the switches operative when one of the push-buttons is manipulated, substantially as described.

46. In an apparatus for controlling elevators, the combination with a motor, car, and stations, of push-buttons and switches on the car and at the stations, controlling-circuits and connections between the push-buttons, switches and the motor for operating the motor, the portion of said circuits including the push-buttons and switches being of lower potential than the remainder of the circuits, and means for automatically rendering the push-buttons inoperative while maintaining the switches operative when one of the push-buttons is manipulated, substantially as described.

704,889. METHOD OF WEAVING WIRE. CHARLES W. JAMES, Philadelphia, Pa. Filed Mar. 26, 1901. Serial No. 53,907. (No specimens.)

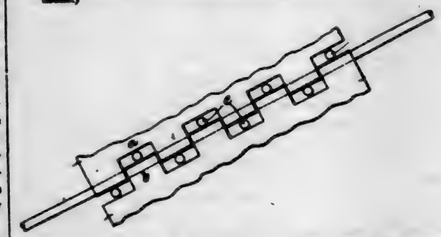

Claim.—1. The herein-described process of weaving heavy wire, which consists in arranging straight warp-wires parallel with one another, moving said warp-wires forward step by step in the direction of their length, permanently crimping the consecutive wires in suitable dies in alternately opposite directions after each movement, thereby forming a series of loops extending transversely of the fabric and inserting a weft-wire into each shed or series of loops thus formed.

2. The herein-described process of weaving heavy wire, which consists in arranging straight warp-wires parallel with one another, moving said wires step by step in the direction of their length, forming simultaneously two series of loops extending transversely of the fabric after each movement by making a permanent reverse bend in each wire, the adjacent bends in consecutive wires extending in alternately opposite directions, and inserting a weft-wire into each shed or series of loops thus formed.

3. The herein-described process of weaving heavy wire which consists in arranging straight warp-wires parallel with one another, moving said warp-wires forward step by step in the direction of their length, permanently crimping the consecutive wires in suitable dies in alternately opposite directions after each movement, thereby forming a series of loops extending transversely of the fabric and inserting a weft-wire into each shed or series of loops thus formed, and then compressing the warp-wires upon the weft-wires.

4. The herein-described process of weaving heavy wire, which consists in arranging straight warp-wires parallel with one another, moving said wires step by step in the direction of their length, forming simultaneously two series of loops extending transversely of the fabric after each movement by making a permanent reverse bend in each wire, the adjacent bends in consecutive wires extending in alternately opposite directions, and inserting a weft-wire into each shed or series of loops thus formed, and then compressing the warp-wires upon the weft-wires.

704,840. HEARSE. DAVID JOHNSON, Waterloo, Ill. Filed Feb. 4, 1902. Serial No. 92,894. (No model.)

Claim.—1. A hearse having slots in its floor, the said slots being divergent with relation to a central point, guide-rods extended along said slots, clamping-blocks movable on the said rods within the slots, sprocket-pinions arranged at the ends of the slots, a chain engaging with the several sprocket-pinions and also having connection with the several clamping devices, an operating-gear having connection with said chain, and means for locking the operating-gear, substantially as specified.

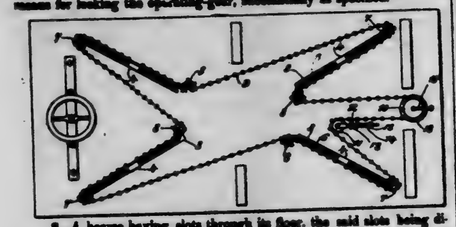

2. A hearse having slots through its floor, the said slots being divergent with relation to a central point, guide-rods extended along said slots on the lower side of the hearse bottom or flooring, clamping-blocks movable on said rods, sprocket-pinions at the ends of the slots, a sprocket-chain engaging with the several pinions and also having connection with the clamping-blocks, an operating-gear with which the chain engages, and a spring-pressed take-up roller for the chain, substantially as specified.

3. A hearse having divergent slots through its flooring, guide-rods extended along said slots at the under side of the flooring, blocks movable on said rods within the slots, sprocket-pinions at the ends of the slots, a sprocket-chain engaging with the several pinions and also having connection with the several blocks, an operating-gear with which the chain engages, a crank for said gear and consisting of spring metal, a plate between the gear and the lower side of the flooring of the hearse, the side plate being provided with a series of perforations, and a pin carried by the crank for engaging in any one of the said perforations, substantially as specified.

704,841. COLLAPSIBLE DISPLAY RACK OR STAND. FREDERICK C. JOHNSTON and GEORGE H. MERRELL, Brooklyn, N. Y., assignors to the National Biscuit Company, Chicago, Ill., a Corporation of New Jersey. Filed Aug. 23, 1901. Serial No. 73,061. (No model.)

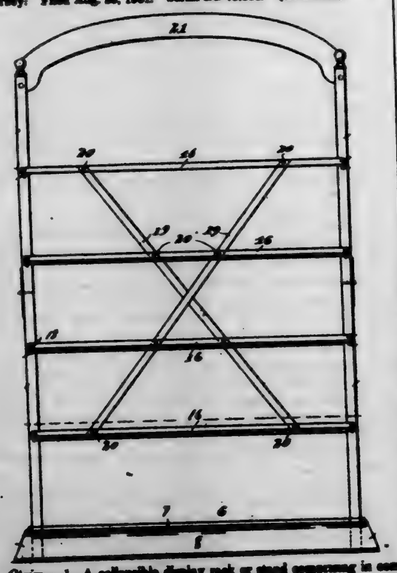

Claim.—1. A collapsible display rack or stand comprising in combination, a rectangular base, a series of uprights formed in a plurality of hinged sections and at their lower ends supported in said base, a series of suitably-spaced rounds connecting the uprights at each side of the structure, a series of shelves resting on said rounds and cut out at their ends to engage said uprights, and one or more diagonally-disposed braces secured to and uniting the rear edges of said shelves, substantially as described.

2. A collapsible display rack or stand, the same having a base, a series of hinged uprights or corner-posts removably supported therein, a series of removable shelves carried by said uprights, a removable tie-bar connecting the upper ends of said uprights on opposite sides of the structure, and one or more diagonal braces connecting the shelves along their rear edges, the elements enumerated being all of substantially the same length whereby they may be compactly assembled when the stand is knocked down, substantially as and for the purposes described.

3. A collapsible display rack or stand comprising in combination a rectangular hollow base having square holes formed through the top at the several corners thereof, two pairs of hinged and foldable uprights square in cross-section and at their lower ends passing through said holes in the base, a series of suitably-spaced rounds rigidly connecting the two uprights of each pair, a series of shelves at their ends overlying and resting upon said rounds and further having their ends cut out near the corners thereof to engage the side and inner walls of the uprights, a pair of removable diagonal braces applied to the rear edges of the shelves, and a removable tie-bar connecting the opposite side uprights of the structure at their upper ends, said base, shelves, braces, tie-bar, and sections of uprights being constructed of substantially uniform length, as and for the purposes described.

704,842. FEED-WATER, BURNER, OR LIKE REGULATOR. JOHN JOHNSTON, London, England, assignor to Archibald Edward Dobbs, London, England. Filed Feb. 26, 1902. Serial No. 95,723. (No model.)

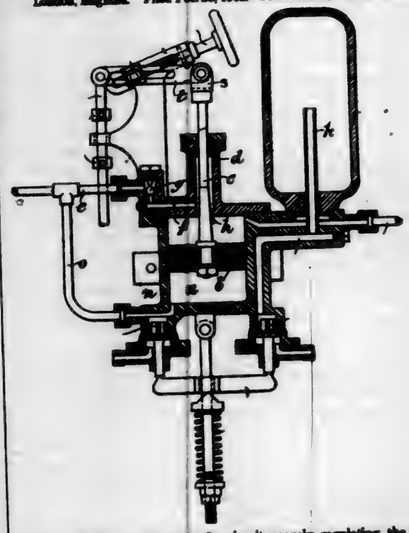

Claim.—1. An apparatus for simultaneously regulating the feed-water supply and heating arrangements for steam-boilers in accordance with the variations in boiler-pressure consisting of, a cylinder divided by a piston into two chambers, one in constant communication with the boiler and the other interpolated between the feed-supply and the boiler, and a conical or like piston-rod for controlling the feed-outlet from the latter chamber and connected to the burner-supply or furnace-draft regulating arrangements, substantially as hereinbefore described.

2. An apparatus for simultaneously regulating the feed-water supply and heating arrangements for steam-boilers in accordance with the variations in boiler-pressure consisting of, a cylinder, a piston therein, an opening in the cylinder-cover connecting one side of the piston with a passage leading to the boiler and fitted with a non-return valve, a second passage leading from the feed-supply to the same side of the piston and fitted with an air vessel and relief-valve, a passage leading from the boiler to the other side of the piston and fitted with a safety-valve, a conical piston-rod, passing through the aforesaid opening in the cylinder-cover and connected to a rocking lever, a fulcrum for said lever and screw adjustment therefor, and a rod provided with stops and connecting said rocking lever with the burner-supply or furnace-draft regulator, substantially as hereinbefore described.

3. In an apparatus for simultaneously regulating the feed-water supply and heating arrangements for steam-boilers in accordance with the boiler-pressure, comprising a cylinder fitted with a piston acted upon on one side by boiler-pressure and on the other by feed-pump pressure the piston-rod controlling both the feed-supply and heating arrangements, the combination of a safety-valve and a relief-valve one connected to the boiler side of the piston and the other to the feed side and both adjusted by the same lever and spring substantially as hereinbefore described.

704,843. WRIST-SUPPORTING ATTACHMENT FOR PIANO FORTES. ARMIN H. JOSSE, Boston, Mass. Filed Oct. 31, 1901. Serial No. 80,584. (No model.)

Claim.—1. A wrist-supporter for pianofortes, comprising angular brackets having loop-shaped horizontal portions adapted to be clamped against the piano-frame under the keyboard, and vertical standard portions, provided at their upper ends with vertical guides, said brackets being formed of wire, a horizontal wire bar connecting said brackets, an elongated rest having vertical arms at its ends which are movable in said guides and are slidingly connected thereby with the standard portions of the brackets to effect a vertical adjustment of the rest, and means for securing the arms and rest at any point within the limits of their vertical adjustability.

2. A wrist-supporter for pianofortes composed of two wire parts, one part comprising loop-shaped horizontal portions adapted to be clamped against the piano-frame under the keyboard, vertical standard portions provided at their upper ends with vertical guides and with set-screws co-operating with said guides, said horizontal and vertical portions constituting brackets, and a horizontal portion connecting said brackets, the other part comprising an elongated horizontal rest and vertical arms at its ends adapted to move in said guides and to be secured therein at various heights by said set-screws, the said arms having eyes adapted to slide on said standard portions.

704,844. COMBINED PUNCH AND SHEARS. JOHN F. KIDDER, Winooski, Vt. Filed Feb. 15, 1902. Serial No. 94,317. (No model.)

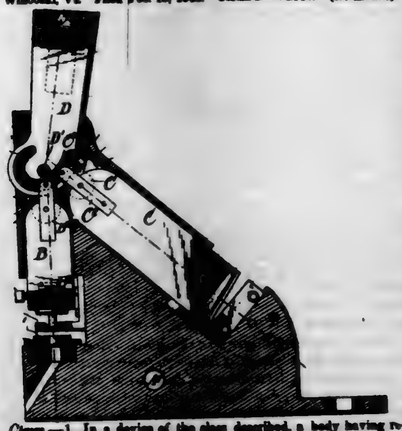

Claim.—1. In a device of the class described, a body having recesses therein, plunger and shearing pistons located in said recesses, and a pivoted lever having a cam-face adapted to successively bear upon said pistons; substantially as specified.

2. In a device of the class described, a body having recesses therein, plunger and shearing pistons located in said recesses, a pivoted lever having a cam-face adapted to successively bear upon said pistons and a trunk or way in said lever, and connectors extending from said pistons to said trunk; substantially as specified.

3. In a device of the class described, a body having recesses therein, plunger and shearing pistons located in said recesses, a pivoted lever having a cam-face adapted to successively bear upon said pistons and a trunk or way in said lever, connectors extending from said pistons to said trunk, a bearing-roller carried by said connectors and disposed in said trunk, and a bearing-roller upon the upper contact end of each piston; substantially as specified.

4. In a device of the class described, a body portion, a reciprocating piston, a contact-roller pivoted at the upper end thereof, an operating-cam pivotally mounted in said body, a connector disposed within a recess upon one face of said piston, a track or way in said cam provided with an outlet-opening at one end thereof, and a projection from said connector extending into said track or way and carrying a contact-roller opposite the roller upon the piston; substantially as specified.

5. In a device of the class described, a body portion, a reciprocating piston mounted thereon, an operating-cam pivotally mounted in said body and having a track or way provided with an outlet-opening at one end thereof, and a connector adapted to enter said track through said opening and at its opposite end secured to said piston; substantially as specified.

6. In a device of the class described, a body portion, a reciprocating punching-piston mounted therein, a punch carried thereby, a die-cast in said body beneath said punch provided with a discharge-channel extending outwardly therefrom, a die located upon said seat, a cleaner disposed above said die, an operating-cam above said punch provided with a cam-face for engaging the same and with a retracting-groove or way having an outlet-opening at one end, and a connector extending from said piston to said groove or way; substantially as specified.

7. In a device of the class described, a reciprocating shearing-piston, means for operating the same, a blade carried by said piston, and a blade adjustable upon its base by oscillation relative to the blade carried by said piston; substantially as specified.

8. In a device of the class described, a reciprocating shearing-piston, means for operating the same, a blade carried by said piston, a stationary blade having a bearing at its base beneath said piston-blade, an angle-iron for oscillating said stationary blade, a screw extending through an enlarged aperture in said angle-iron into the body, and adjustable set-screws mounted in said angle-iron for the purpose of varying the relative relation of said blades by oscillating the fixed blade; substantially as specified.

9. In a device of the class described, a casting having a vertical piston-channel, a piston-channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof disposed within vertical and inclined faces, pistons located in said channels, and an operating-cam pivoted between said ears and connected to both of said pistons; substantially as specified.

10. In a device of the class described, a casting having a vertical piston-channel, a piston-channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof, pistons located in said channels, and an operating-cam pivoted between said ears and connected to both of said pistons; substantially as specified.

11. In a device of the class described, a casting having a vertical piston-channel, a piston-channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof, pistons located in said channels, an operating-cam pivoted between said ears and connected to both of said pistons, and a die-receiving recess beneath said vertical channel and provided with a discharge-channel leading obliquely outward therefrom; substantially as specified.

12. In a device of the class described, a casting having a vertical piston-channel, a piston-channel disposed obliquely thereto, pivoting-ears at the upper end of said channels, transverse openings at the lower portions thereof, pistons located in said channels, an operating-cam pivoted between said ears and connected to both of said pistons, a die-receiving recess beneath said vertical channel and provided with a discharge-channel leading obliquely outward therefrom, and an adjustable-blade holder mounted upon the lower face of the recess at the bottom of the obliquely-inclined piston-channel; substantially as specified.

704,845. COMBINED RAKE AND STACKER. JOHN H. KINNAMAN, Russell, Kans. Filed May 10, 1901. Serial No. 59,512. (No model.)

Claim.—1. In a combined hay rake and stacker, a rake consisting of an upright back member, a forwardly-extending toothed member disposed at an angle to the back member and pivotally connected thereto, brackets attached to the toothed rake member and provided with latch-keepers, and a latch-rod mounted on the upright rake member and having latches adapted to engage with said keepers, combined with an upright rake-supporting frame on which the back member of said rake is fitted, means for limiting the back rake member to sliding movement on said rake-supporting frame, means for bodily raising the rake, and a trip

mechanism disposed in the path of said latch-rod and adapted for engagement automatically therewith on the elevation of said rake to a predetermined position.

2. In a combined hay rake and stacker, the combination of a wheeled carrying-frame, and upright rake-supporting frame pivoted thereon and provided with depending stirrups, and adjusting devices connected to said upright frame for shifting the latter to different inclined positions, a two-part rake having its members pivoted together and one of said members limited to slidable movement on said upright frame and adapted to be lowered into engagement with said depending stirrups, a latch mechanism for holding said members of the rake in rigid operative relation, coacting guide devices on the wheeled frame and the rake, and adapted to maintain the latter in fixed relation to said frame when the rake is lowered into engagement with the stirrups, a projection disposed on the upright frame in the path of the latch mechanism, and mechanism for bodily hoisting the rake.

3. In a hay rake and stacker, the combination, with a wheel-supported frame, a vertical frame pivoted upon the wheel-supported frame, and an adjustable trip carried by the pivoted frame, of a support having roller-bearings upon the pivoted frame, a rake hinged to said support, a shaft carried by the support, latches secured to said shaft, keepers carried by the rake and adapted for engagement with said latches, an arm projected from the shaft and arranged to be engaged by said trip, and means, operated by the movement of the machine, for raising the rake, substantially as described.

4. In a hay rake and stacker, the combination, with a wheel-supported frame, an upright frame pivotally connected with the wheel-supported frame, said upright frame being provided with a forwardly-extending upper section, and a trip secured to the said upright frame, of a support having roller-bearings upon the upright frame and adapted to travel thereon, a rake having hinged connection with said support, latches carried by the support, keepers for the latches carried by the rake, an arm operating the latches and adapted for engagement with the trip on the upright frame, a series of ropes attached to the upper portion of the upright frame and passed over palleys attached to the head of the rake and over palleys at the upper portion of the upright frame, theses over palleys carried by the wheel-supported frame, the ropes being connected at their rear ends, and a drag or anchor attached to the said connected ropes, as and for the purpose specified.

5. In a combined hay rake and loader, the combination with an upright frame, of a two-part rake having members pivoted together and arranged for one member to travel on the upright frame, a latch mechanism between the rake members, means for hoisting the rake, means for tripping the latch, and a spring connecting the members of the rake and held normally in an inactive condition by maintenance of the rake members in an operative condition, said spring being movable vertically with the rake as a part thereof and adapted to be brought automatically into service on the release of the latch by the tripping device and the dropping of one rake member to a dumping-position.

6. In a combined hay rake and stacker, the combination of a wheeled base-frame, an upright frame pivotally mounted thereon, and provided with stirrups arranged to depend below the axis of the wheeled frame, a rake having one member thereof provided with carrying-wheels, that are arranged to travel upon the upright frame and to descend into engagement with said stirrups, means for tilting the upright frame, and bringing the rake into operative position, to collect the load, and mechanism for bodily hoisting the rake, substantially as described.

7. In a combined hay rake and stacker, a rake consisting of an upright slatted member, an outwardly-extending toothed member, connected pivotally with the said upright member, brackets attached to the outwardly-extending member and provided with keepers, and a latch-rod mounted on the upright member and provided with latches for engagement with said keepers, combined with an upright frame on which the back member of the rake is mounted, means for limiting the back rake member to slidable movement and in a vertical path to said upright frame, trip devices supported on said upright frame and adapted to actuate the latch-rod, and means for bodily hoisting said rake, substantially as described.

8. In a combined hay rake and stacker, a rake consisting of an upright member provided with carrying-wheels facing in directions at right angles to each other, an outwardly-extending member pivoted to said upright member, brackets fast with said outwardly-extending member and provided with keepers, a latch-rod mounted on the upright member, and having a rearwardly-extending arm, latches fast with the latch-rod, and arranged for engagement with said keepers, and a spring connected with said arm on the latch-rod, combined with an upright frame, on which the rollers of the back rake member are adapted to travel, and a trip mounted on the upright frame in the path of said arm on the latch-rod.

9. In a combined hay rake and stacker, the combination of a wheeled supporting-frame provided with a suitable cross-bar, an upright rake-supporting frame having the depending stirrups and the yokes which are loosely engaged with said cross-bar, a main lever mounted on a wheeled frame and adapted to be held in different positions by suitable locking devices, a segment carried by the main lever, an auxiliary lever fulcrumed on the main lever and adapted for engagement with said segment, operative connections between the upright frame and the auxiliary lever, a rake slidably mounted on the upright frame and adapted to be lowered into engagement with the stirrups, and a hoisting mechanism for said rake.

704,846. TOY MILK-WAGON. HARRY T. KIRSHNER, Keene, N. H. Filed Aug. 6, 1901. Serial No. 71,079. (No model.)

Claim.—1. The herein-described toy cart, comprising integral top and side pieces, said side pieces being provided with projections, a bottom member having slots to receive said projections, and having an upwardly and forwardly projecting end, said upwardly and forwardly projecting end being provided with transverse slots and spring-shafts having hooked ends passing through said slots, substantially as described.

2. The herein-described toy cart, comprising integral top and side pieces, said side pieces being provided with projections, a bottom member having slots to receive said projecting members and having an upwardly and forwardly projecting end, said upwardly and forwardly projecting end being provided with transverse slots and the side pieces being provided with slots; and spring-shafts having hooked ends engaging said slots; substantially as described.

704,847. RAILROAD SIGNALING SYSTEM. ALLEN W. KNEE, Syracuse, N. Y., assignor of one-third to Frank J. Mann, Syracuse, N. Y. Filed Mar. 7, 1902. Serial No. 97,196. (No model.)

Claim.—1. An electric signaling system for railways constructed and arranged as follows: a locomotive or car equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a switch for cutting out and in said sources whereby the current is used from only one source at a time, a conductor connected to the circuit and provided with a brush or other device maintained permanently in contact with one of the axles or wheels of the locomotive or car, a pair of separate and independent metallic brushes or other contact devices connected to the electric circuit and carried on the locomotive or car, said contact-brushes being disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail disposed along the railway parallel to and between the track-rails and disposed in the path of said contact-brushes to effect the sounding of the alarm, means along the railway adapted to automatically form a cross in the electric circuit for the purpose of either preventing or stopping the sounding of the alarm, and manually-operated means carried on the locomotive or car for forming said cross.

2. An electric signaling system for railways constructed and arranged as follows: a locomotive or car equipped with a normally open circuit having two sources reversely connected thereto and including suitable alarm devices, a switch for cutting out and in said sources whereby the current is used from only one source at a time, a conductor connected to the circuit and provided with a brush or other device maintained permanently in contact with one of the axles or wheels of the locomotive or car, a pair of separate and independent metallic brushes or other contact devices connected to the electric circuit and carried on the locomotive or car, said contact-brushes being disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail disposed along the railway parallel to and between the track-rails and disposed in the path of said contact-brushes to effect the sounding of the alarm, means along the railway adapted to automatically form a cross in the electric circuit for the purpose of either preventing or stopping the sounding of the alarm, and manually-operated means carried on the locomotive or car for forming said cross.

3. An electric signaling system constructed and arranged as follows: a locomotive or car equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of electric terminals for the conductors extending from the respective sources, means adapted to connect either of said pairs, a switch for cutting out and in said sources whereby the current is used from only one source at a time, for the purpose set forth, the track-rails suitably connected to the electric circuit a pair of separate and independent metallic brushes or other contact devices connected with the circuit and carried on said locomotive or car, said contact-brushes being disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail disposed parallel to and between the track-rails and in the path of said contact-brushes to effect the sounding of the alarm, and means for forming a cross in the electric circuit between said track-rails and circuit-closing rail to either prevent or stop the sounding of the alarm.

4. An electric signaling system constructed and arranged as follows: a locomotive or car equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of electric terminals for the conductors extending from the respective sources, a movable metallic arm adapted to connect either of said pairs of terminals, a switch operated by said arm and serving to cut said sources out and in whereby the current is used from only one source at a time, for the purpose set forth, a conductor connected to the circuit and provided with the suitable contact device maintained permanently connected to either one of the axles or wheels of the locomotive or car, a pair of separate and independent metallic brushes or other contact devices connected to the circuit and carried on said locomotive or car, said contact-brushes being disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail disposed parallel to and between the track-rails and in the path of said contact-brushes to effect the sounding of the alarm, and means for forming a cross in the electric circuit between said track-rails and circuit-closing rail to either prevent or stop the sounding of the alarm.

5. An electric signaling system constructed and arranged as follows: a locomotive or car, equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, means connected to the circuit for cutting out and in said sources whereby the current is used from only one source at a time for the purpose set forth, the track-rails suitably connected to the electric circuit, a pair of separate and independent metallic brushes or other contact devices also connected to the circuit and carried on said locomotive or car, said contact-brushes being disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail disposed parallel to and between the track-rails and in the path of said contact-brushes to effect the sounding of the alarm, and means adapted to automatically form a cross in the electric circuit between said track-rails and the circuit-closing rail to either prevent or stop the sounding of the alarm.

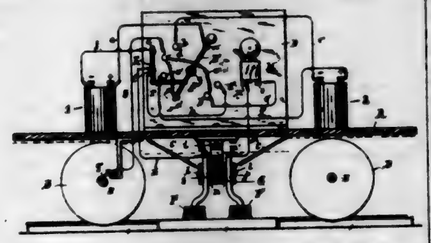

6. An electric signaling system constructed and arranged as follows: a locomotive or car equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of main electric terminals for the conductors extending from the respective sources, a pivoted metallic arm adapted to connect either of said pairs of terminals, a suitably-pivoted switch-lever provided with a pair of terminals to which the respective sources are connected, said lever and latter terminals being so related as to permit the said sources to be cut out and in whereby only one source is used at a time, a conductor permanently connecting said main terminals and one of the axles or wheels of the locomotive or car, a pair of separate and independent and metallic brushes or other contact devices connected to the electric circuit, and carried on said locomotive or car and disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail disposed parallel to and between the track-rails and in the path of said contact-brushes to effect the sounding of the alarm, means for automatically forming a cross in the electric circuit between said track-rails and circuit-closing rail to either prevent or stop the sounding of the alarm, and manually-operated means carried on said car or locomotive for forming said cross.

7. An electric signaling system constructed and arranged as follows: a locomotive or car equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of main electric terminals for the conductors extending from the respective sources, a pivoted metallic arm adapted to connect either of said pairs of terminals, a suitable pivoted switch-lever provided with a pair of terminals to which the respective sources are connected, said lever and latter terminals being so related as to permit the said sources to be cut out and in whereby only one source is used at a time, a conductor permanently connecting said main terminals and one of the axles or wheels of the locomotive or car, a pair of separate and independent metallic brushes or other contact devices connected to the electric circuit, and carried on said locomotive or car, said contact-brushes being disposed one in front of the other to travel over the road-bed of the railway a circuit-closing rail disposed parallel to and between the track-rails and in the path of said contact-brushes to effect the sounding of the alarm, means along the railway-track adapted to automatically form a cross in the electric circuit between said track-rails and circuit-closing rail to either prevent or stop the sounding of the alarm, a pair of auxiliary electric terminals in the electric circuit, and connected respectively to the conductor leading to the axle or wheel and to a conductor leading to one of said contact-brushes, said auxiliary terminals being disposed to be connected by the aforesaid pivoted arm whereby said cross may be formed.

8. An electric signaling system constructed and arranged as follows: a locomotive or car equipped with a normally open electric circuit having two batteries or sets of batteries reversely connected thereto and including suitable alarm devices and provided with a switchboard, a pair of main electric terminals on the switchboard for the conductors leading from respective batteries, a metallic arm pivoted to said switchboard and adapted to connect either of said pairs of terminals, a metallic switch-lever also pivoted to the switchboard and provided with a pair of electric terminals to which the respective batteries are connected, said lever being adapted to move into contact with either of said latter terminals to cut out and cut in the batteries whereby only one battery is used at a time, an insulated bar or rod connecting the aforesaid pivoted arm and lever for operating said parts simultaneously, a conductor permanently connecting one of each pair of main terminals with one of the axles or wheels of the locomotive or car, a pair of metallic contact-brushes included in the electric circuit and connected respectively to the alarm devices and aforesaid switch-lever, said brushes depending from the locomotive or car and disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail disposed parallel to and between the track-rail and in the path of said contact-brushes to effect the sounding of the alarm, means along the railway adapted to automatically form a cross in the electric circuit between said track-rails and circuit-closing rail, to either prevent or stop the sounding of the alarm, a pair of auxiliary electric ter-

minals in the circuit and entered to the switchboard, a conductor connecting one of said auxiliary terminals to the switch-lever and the other auxiliary terminal connected to the conductor leading to the axle or wheel, and both of the latter terminals being disposed to be connected by the aforesaid pivoted metallic arm whereby a cross may be formed in the electric circuit.

9. An electric block-signaling system for railways constructed and arranged as follows: a plurality of locomotives moving on the same track and each equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, means on the locomotive for cutting out and in said sources to cause the current to flow from only one source at a time and to permit a locomotive moving in one direction to use a source connected reverse to that of a locomotive moving in the opposite direction, the track-rails being suitably connected to the electric circuit of both locomotives, a pair of separate and independent metallic brushes carried on each locomotive and connected to the electric circuit thereof, and disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail composed of overlapping sections insulated apart and disposed along the road-bed in the path of said contact devices to effect an alarm on a locomotive passing singly over a section of the circuit-closing rail and whereby a cross is formed in the electric circuit of both locomotives traveling over said rail-section and moving in opposite directions, and thus the alarm on each locomotive is either prevented or stopped from sounding.

10. An electric block-signaling system for railways constructed and arranged as follows: a plurality of locomotives moving on the same track and each equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of electric terminals for the conductors leading from the respective sources, means adapted to connect either of said pairs, a switch for cutting out and in said sources to cause the current to flow from only one source at a time, and to permit a locomotive moving in one direction to use a source connected reverse to that of a locomotive moving in the opposite direction, the track-rails being suitably connected to the electric circuit of both locomotives, a pair of separate and independent metallic brushes carried on each locomotive and connected to the electric circuit thereof, and disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail composed of overlapping sections insulated apart and disposed along the road-bed in the path of said contact devices to effect an alarm on a locomotive passing singly over a section of the circuit-closing rail, and whereby a cross is formed in the electric circuit of both locomotives traveling over said rail-section simultaneously, and thus the alarm on each locomotive is either prevented or stopped from sounding.

11. An electric block-signaling system for railways constructed and arranged as follows: a plurality of locomotives moving on the same track and each equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of electric terminals for the conductors leading from the respective sources, a pivoted metallic arm adapted to connect either of said pairs, a switch operated by said arm and adapted to cut out and in said sources to cause the current to flow from only one source at a time and to permit a locomotive moving in one direction to use a source connected reverse to that of a locomotive moving in the opposite direction, the track-rails being suitably connected to the electric circuit of both locomotives, a pair of separate and independent metallic brushes carried on each locomotive and connected to the electric circuit thereof and disposed one in front of the other to travel over the road-bed of the railway, and a circuit-closing rail composed of overlapping sections insulated apart and disposed along the road-bed in the path of said contact-brushes to effect the sounding of an alarm on a locomotive passing singly over a section of the circuit-closing rail and whereby a cross is formed in the electric circuit of both locomotives traveling over said rail-section, simultaneously, and thus the alarm on each locomotive is either prevented or stopped from sounding.

12. An electric block-signaling system for railways constructed and arranged as follows: a plurality of locomotives moving on the same track and each equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of electric terminals for the conductors leading from the respective sources, a pivoted metallic arm adapted to connect either of said pairs of terminals, a switch operated by said arm, a second pair of terminals connected to the respective sources and disposed to be connected singly with the switch to cause the current to flow from only one source at a time and to permit a locomotive moving in one direction to use a source connected reverse to that of a locomotive moving in the opposite direction, the track-rails being suitably connected to the electric circuit of both locomotives, a pair of separate and independent metallic brushes carried on each locomotive and connected to the electric circuit thereof and disposed one in front of the other to travel over the road-bed of the railway, a circuit-closing rail composed of overlapping sections insulated apart and disposed along the road-bed in the path of said contact-brushes to effect an alarm on a locomotive passing singly over a section of the circuit-closing rail and whereby a cross is formed in the electric circuit of both locomotives traveling over said rail-section simultaneously and thus the alarm on each locomotive is either prevented or stopped from sounding.

13. An electric block-signaling system constructed and arranged as follows: a plurality of locomotives moving on the same track and each equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of electric terminals for the conductors leading from the respective sources, a pivoted metallic arm adapted to connect either of said pairs of terminals, a switch-lever, an insulated bar or rod connecting said arm and switch-lever whereby said parts operate in unison, a second pair of terminals connected to the respective sources and disposed to separately make contact with said switch-lever to cause the current to flow from only one source at a time and to permit a locomotive moving in one direction to use a source connected reverse to that of a locomotive moving in the opposite direction, a conductor on each locomotive permanently connecting the electric terminals thereon to one of the axles or wheels of the locomotive to include the track-rails in both electric circuits, a pair of metallic brushes carried separately and independently on each locomotive, each pair of contact-brushes being arranged one in front of the other and disposed to travel over the road-bed of the railway, and a circuit-closing rail composed of overlapping sections insulated apart and disposed along the road-bed in the path of said contact-brushes to effect a sounding of an alarm on a locomotive passing singly over a section of the circuit-closing rail and whereby a cross is formed in the electric circuit of both locomotives traveling over said rail-section simultaneously and thus the alarm on each locomotive is either prevented or stopped from sounding.

14. An electric block-signaling system constructed and arranged as follows: a plurality of locomotives moving on the same track and each equipped with a normally open electric circuit having two sources reversely connected thereto and including suitable alarm devices, a pair of main electric terminals for the conductors leading from the respective sources, a pivoted metallic arm adapted to connect either of said pairs of main terminals, a switch-lever, an insulated bar or rod connecting said arm and switch-lever whereby said parts operate in unison, a second pair of terminals connected to the respective sources and disposed to separately make contact with said switch-lever to cause the current to flow from only one source at a time and to permit a locomotive moving in one direction to use a source connected reverse to that of a locomotive moving in the opposite direction, a conductor on each locomotive permanently connecting the electric circuit thereon to one of the axles or wheels of the locomotive to include the track-rails in both electric circuits, a pair of metallic brushes carried separately and independently on each locomotive, each pair of contact-brushes being arranged one in front of the other and disposed to travel over the road-bed of the railway, a circuit-closing rail composed of overlapping sections insulated apart and disposed along the road-bed in the path of said contact-brushes to effect the sounding of the alarm on a locomotive passing singly over a section of the circuit-closing rail and whereby a cross is formed in the electric circuit of both locomotives traveling over said rail-section simultaneously and thus the alarm on each locomotive is either prevented or stopped from sounding, a pair of auxiliary terminals connected to the respective sources in the circuit of each locomotive, and disposed to be connected by the aforesaid pivoted metallic arm to form said cross.

704,848. GRINDING-MACHINE. JOSEPH E. LAPOINTE, Hyde Park, Mass. Filed Jan. 3, 1902. Serial No. 88,312. (No model.)

Claim.—1. In a grinding-machine, the combination with a grinding member, of a work-holder, and automatic means for imparting a compound movement to the work-holder consisting of a bodily oscillation and an oscillatory rotation.

2. In a grinding-machine, the combination with a grinding member, of a work-holder, and automatic means for simultaneously imparting a movement of translation and an oscillatory movement of rotation to the work-holder.

3. In a grinding-machine, the combination with a grinding member, of a work-holder, and automatic means for simultaneously imparting a movement of translation in a curved path and a movement of rotation to the work-holder.

4. In a grinding-machine, the combination with a grinding member and a work-holder, of means for laterally moving the grinding member and work-holder relatively to one another, and automatic means for imparting a compound movement to the work-holder.

5. In a grinding-machine, the combination with a grinding member and a work-holder, of means for moving the grinding member laterally of the work-holder, and automatic means for imparting a compound movement to the work-holder.

6. In a grinding-machine, the combination with a grinding member and a work-holder, of automatic means for moving the grinding member laterally of the work-holder, and automatic means for imparting a compound movement to the work-holder.

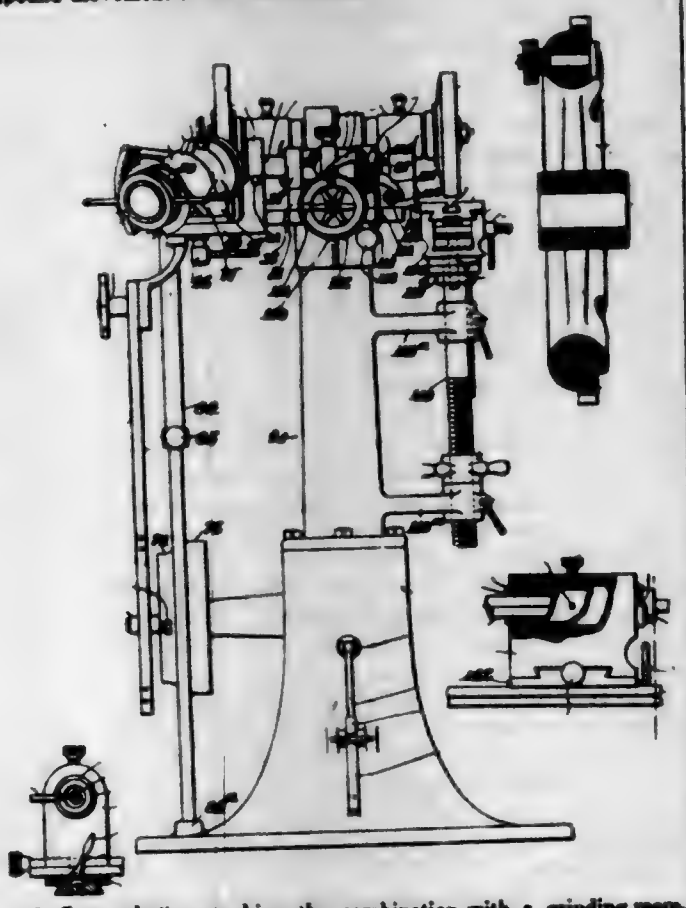

7. In a grinding-machine, the combination with a grinding member and a work-holder, of means for securing a feeding movement of the grinding member and work-holder toward and from one another, and automatic means for imparting a compound movement to the work-holder.

8. In a grinding-machine, the combination with a grinding member and a work-holder, of automatic means for feeding the work-holder toward the grinding member, and automatic means for imparting a compound movement to the work-holder.

9. In a grinding-machine, the combination with a grinding member and a work-holder, of automatic means for moving the grinding member laterally of the work-holder, and means for simultaneously imparting a compound movement to the work-holder and a feeding movement toward the grinding member.

10. In a grinding-machine, the combination with a grinding member, of a work-holder, automatic means for imparting a compound movement to the work-holder, and adjusting means whereby any component of the compound movement may be varied.

11. In a grinding-machine, the combination with a rotary grinding member, an oscillatory work-holder and a continuously-operative driver, of means connected with the driver for moving the grinding member laterally of the work-holder, and a throw-out device between the moving means and driver.

12. The combination with a grinding member, of a work-holder mounted for a bodily movement of oscillation, a continuously-operative driver, and a connector between the driver and work-holder.

13. The combination with a grinding member, of a work-holder mounted for a bodily movement of oscillation, a continuously-operative driver, and an adjustable connector between the driver and work-holder.

14. The combination with a grinding member, of a work-holder mounted for a bodily movement of oscillation, a continuously-operative driver, a connector between the driver and work-holder, and means for varying the point of connection between the driver and connector.

15. The combination with a grinding member, of a work-holder mounted for a bodily movement of oscillation, a continuously-operative driver, a two-part connector between the driver and work-holder, and means for varying the angle between the parts of the connector.

16. The combination with a grinding member, of an oscillatory work-holder, and means mounted upon the work-holder for imparting to an oscillatory portion thereof a movement of rotation.

17. The combination with a grinding member, of an oscillatory work-holder, and means pivoted upon the work-holder and connected to a fixed point for imparting to a portion of said work-holder a movement of rotation.

18. The combination with a grinding member, of a casing, a clamping member provided with teeth and rotatably mounted in the casing, a gear turning upon the casing and meshing with the teeth of the clamping member, and means for controlling the movement of the gear.

19. The combination with a grinding member, of a casing, a clamping member provided with teeth and rotatably mounted in the casing, a gear turning upon the casing and meshing with the teeth of the clamping member, and a connector between the gear and a fixed point.

20. The combination with a grinding member, of a casing, a clamping member provided with teeth and rotatably mounted in the casing, a gear turning upon the casing and meshing with the teeth of the clamping member, and an adjustable connector between the gear and a fixed point.

21. The combination with a grinding member, of a casing, a clamping member provided with teeth and rotatably mounted in the casing, a gear turning upon the casing and meshing with the teeth of the clamping member, a two-part connector between the gear and a fixed point, and means for varying the length of the connector.

22. The combination with a grinding member, of a casing, a clamping member provided with teeth and rotatably mounted in the casing, a gear turning upon the casing and meshing with the teeth of the clamping member, a guard-arm fixed to the casing and extending over the gear, a wearing-plate interposed between the guard-arm and gear, and means for controlling the movement of the gear.

23. The combination with a grinding member, of an oscillatory support, a work-holder mounted thereon, means for adjusting the angle of the work-holder with the grinding member, and means for rotating a portion of the work-holder.

24. The combination with a grinding member, of an oscillatory support, a work-holder mounted thereon, the work-holder and support being provided with a suitable scale and index, means for clamping the work-holder in the desired position, a continuously-operative driver, and a connector between the driver and work-holder.

25. The combination with a grinding member, of a casing, a rotatable clamping member mounted in the casing, and a gear for rotating the clamping member, said gear and clamping member being provided with detent mechanism for determining their relative position.

26. The combination with a grinding member, of a casing, a rotatable clamping member mounted in the casing and provided with notches, a gear for rotating the clamping member, and a detent upon the gear for engaging the notches.

27. The combination with a grinding member, of a casing, a rotatable clamping member mounted in the casing and provided with a plurality of sets of notches one notch of which is common to all the sets, a gear for rotating the clamping member, and a detent upon the gear for engaging the notches.

28. The combination with a grinding member, of a work-holder, means for continuously oscillating the work-holder toward and from the grinding member, and means for intermittently moving the work-holder toward the grinding member.

29. The combination with a movable grinding member, of a carriage, a work-holder mounted upon the carriage, and means whereby the movement of the grinding member causes an advance of the carriage.

30. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, an actuating member moving with the carriage, and ratchet mechanism connecting the feed-screw and actuating member.

31. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, a spring-pressed actuating member moving with the carriage, a contact member with which the actuating member coöperates, and ratchet mechanism connecting the feed-screw and actuating member.

32. The combination with a movable grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, a spring-pressed actuating member moving with the carriage, an elongated contact member moving with the grinding member with which the actuating member coöperates, and ratchet mechanism connecting the feed-screw and actuating member.

33. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, a spring-pressed actuating member moving with the carriage, a contact member with which the actuating member coöperates, and ratchet mechanism connecting the feed-screw and actuating member and operating under the action of the spring to turn the feed-screw.

34. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, an actuating member moving with the carriage, and adjustable ratchet mechanism connecting the feed-screw and actuating member.

35. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, an actuating member moving with the carriage, ratchet

mechanism connecting the feed-screw and actuating member in which slip is permitted, and a stop with which the carriage may coact.

36. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, an actuating member moving with the carriage, ratchet mechanism connecting the feed-screw and actuating member in which slip is permitted, a stop with which the carriage may coact, and means for adjusting the position of the stop.

37. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, a shaft journaled in the carriage, a finger fixed to the shaft, a movable roll with which the finger contacts, a ratchet mounted upon the shaft, and a ratchet-wheel upon the feed-screw which is engaged by the ratchet.

38. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, a shaft journaled in the carriage, a finger fixed to the shaft, a contact member with which the finger coacts, a ratchet mounted upon the shaft, and a two-part ratchet-wheel upon the feed-screw which is engaged by the ratchet, said ratchet-wheel having a connection between the parts permitting them to slip relatively to one another.

39. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, a shaft journaled in the carriage, a finger fixed to the shaft, an elongated contact-roll with which the finger coacts, a spring serving to hold the finger against the roll, a ratchet mounted upon the shaft, and a ratchet-wheel upon the feed-screw which is engaged by the ratchet.

40. The combination with a grinding member, of a movable carriage, a work-holder mounted upon the carriage, a feed-screw for advancing the carriage, a shaft journaled in the carriage, a finger fixed to the shaft, an elongated contact-roll with which the finger coacts, a spring serving to hold the finger against the roll, means for adjusting the tension of the spring, a ratchet mounted upon the shaft, and a ratchet-wheel upon the feed-screw which is engaged by the ratchet.

41. The combination with a grinding member, of a rotatable shaft, a support fixed to the shaft, a casing mounted upon the support, a clamping device carried by the casing, and means connected with the support for rotating the shaft.

42. The combination with a grinding member, of a rotatable shaft, a support fixed to the shaft, and means for adjusting the point of attachment of the support to the shaft.

43. The combination with a grinding member, of a rotatable shaft, a support fixed to the shaft, and means for varying the position of the shaft whereby the support may be adjusted laterally of the grinding member.

44. The combination with a grinding member, of a rotatable shaft, an arm fixed to the shaft, a table extending from the arm substantially parallel to the shaft, a casing mounted upon the table, a clamping device carried by the casing, and means connected with the support for rotating the shaft.

45. The combination with a grinding member, of a rotatable shaft, a support fixed to the shaft, a casing mounted upon the support, a clamping device carried by the casing, a driving-wheel, and a rod connecting the support and driving-wheel.

46. The combination with a grinding member, of a rotatable shaft, a support fixed to the shaft, a casing mounted upon the support, a clamping device carried by the casing, a driving-wheel provided with a projection, and a rod connected with the support and provided with a slot adapted to receive the projection.

47. The combination with a grinding member, of a rotatable shaft a support fixed to the shaft, a casing mounted upon the support, a clamping device carried by the casing, a driving-wheel provided with an adjustable projection, and a rod connected with the support and provided with a slot adapted to receive the projection.

48. The combination with a grinding member, of a rotatable shaft, a support fixed to the shaft, a casing mounted upon the support, a clamping device carried by the casing, a driving-wheel, a rod connecting the support and driving-wheel formed in two parts pivotally joined together, and means for clamping the parts together.

49. The combination with a grinding member, of a work-holder comprising a casing, a clamping device rotatably mounted in the casing, gearing for rotating the clamping device, and means carried by the casing for securing the clamping device against rotation when desired.

50. The combination with a grinding member, of a work-holder comprising a casing provided with a movable section, a clamping device rotatably mounted in the casing, gearing for rotating the clamping device, and a screw for forcing the movable section against the clamping device.

51. The combination with a grinding member, of a work-holder comprising a casing provided with a movable section, a clamping device rotatably mounted in the casing, gearing for rotating the clamping device, a screw for forcing the movable section against the clamping device, and packing interposed between the adjacent edges of the movable section and the casing.

52. The combination with a work-holder, of a grinding-head movably mounted in proximity thereto and provided at its under side with a slot, an operating member journaled beneath the head and provided with an eccentric projection extending into the slot, and means for rotating the operating member.

53. The combination with a work-holder, of a grinding-head movably mounted in proximity thereto and provided at its under side with a slot, an operating member journaled beneath the head and provided with an eccentric projection extending into the slot, a continuously-operative driver, and a connector between the operating member and driver movable into and out of coaction with said driver.

54. The combination with a work-holder, of a grinding-head movably mounted in proximity thereto and provided at its under side with a slot, an operating member journaled beneath the head and provided with an eccentric projection extending into the slot, a continuously-operative driver, a connector between the operating member and driver movable into and out of coaction with said driver, a lever for moving the connector from coaction with the driver, a spring for holding the connector normally in engagement with the driver, and a look for the lever.

55. The combination with a work-holder, of a grinding-head mounted to slide upon ways and provided with a transverse slot between the ways, a crank member journaled between the ways and provided with a crank-pin extending into the slot, a shaft connected to the crank member through a universal joint, a driving-shaft, a worm fixed thereto, a worm-wheel upon the shaft meshing with the worm, and a treadle connected with the shaft.

56. In a grinding-machine, the combination with a shaft, of a plate fixed thereto, a grinding-wheel abutting against the plate, and being free to turn in contact therewith, a second plate on the opposite side of the grinding-wheel movable along the shaft but held against rotation thereon, and means for forcing the last-named plate against the wheel and a wheel against the first-named plate to secure said wheel against rotation upon the shaft.

57. In a grinding-machine, the combination with a shaft, of a plate fixed thereto, a grinding-wheel abutting against the plate, a second plate on the opposite side of the grinding-wheel splined to the shaft, and a screw taking into the end of the shaft and serving to force the last-named plate against the wheel.

58. In a drill-grinding machine, the combination with a grinding member, of a holder adapted to support the drill to be ground with its axis at an acute angle both to vertical and horizontal planes passing through the point of contact of the tool and grinding-surface, and means for moving the holder toward and from the grinding member.

59. In a drill-grinding machine, the combination with a grinding member, of a holder adapted to support the drill to be ground with its axis at an acute angle both to vertical and horizontal planes passing through the point of contact of the tool and grinding-surface, and means for moving the holder toward and from the grinding member in a curved path.

60. In a drill-grinding machine, the combination with a grinding member, of a holder adapted to support the drill to be ground with its axis at an acute angle both to vertical and horizontal planes passing through the point of contact of the tool and grinding-surface, and automatic means for moving the holder toward and from the grinding member in a curved path.

61. In a drill-grinding machine, the combination with a grinding member, of a holder adapted to support the drill to be ground with its axis at an acute angle both to vertical and horizontal planes passing through the point of contact of the tool and grinding-surface, means for securing a feeding movement of the grinding member and holder toward and from one another, and means for moving the holder toward and from the grinding member in a curved path.

62. In a drill-grinding machine, the combination with a grinding member, of a holder adapted to support the drill to be ground with its axis at an acute angle both to vertical and horizontal planes passing through the point of contact of the tool and grinding-surface, means for moving the grinding member and holder relatively to one another, and means for moving the holder toward and from the grinding member in a curved path.

704,349. PROCESS OF MANUFACTURING RICE-STARCH OR OTHER AMYLACEOUS SUBSTANCES. EUGÈNE LESCUYER, Estaires, and JÉRÔME LESCUYER, Paris, France. Filed Mar. 15, 1901. Serial No. 51,293. (No specimens.)

Claim.—The process of manufacturing starch, which consists in treating the starchy substances with successive alkaline solutions of decreasing strength and in washing and milling the same, and finally subjecting the mass to the action of an alternating electric current while in an alkaline solution.

704,849.

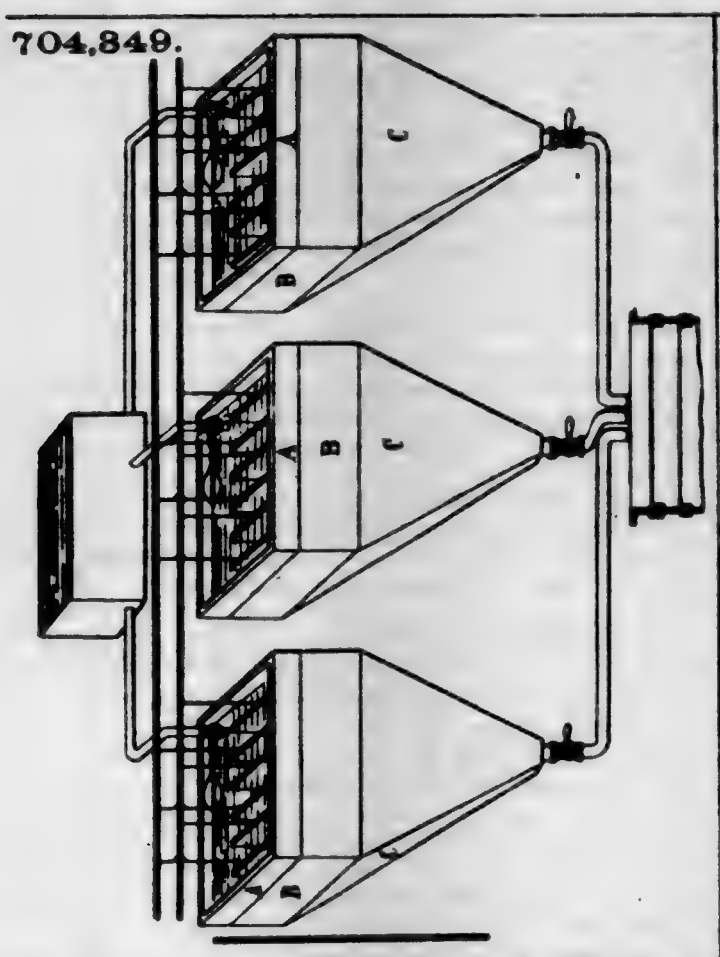

704,850. TELLURIAN. JAMES A. B. LOVETT, Mountsville, Ala. Filed Oct. 3, 1901. Serial No. 77,461. (No model.)

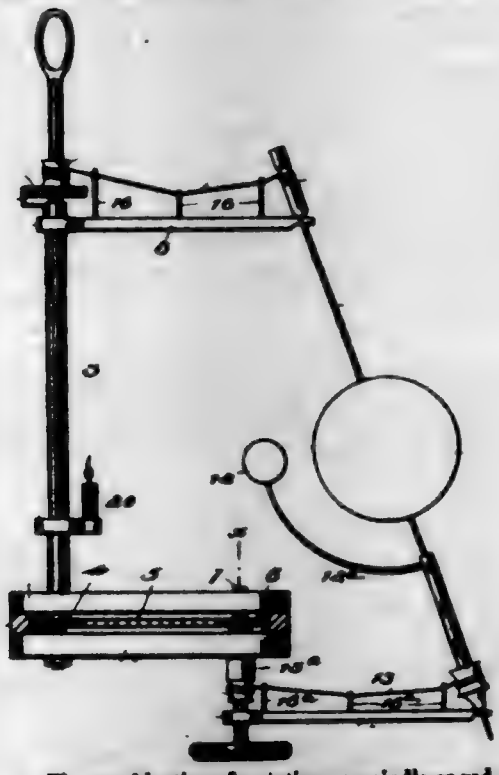

Claim.—1. The combination of a stationary spindle or rod, a hollow or tubular shaft thereon carrying an illuminant, a second shaft geared to the former shaft, arms secured to said shafts, means stretched from the free ends of said arms for carrying a globe or sphere at an angle corresponding to that of the axis of the earth, and means for actuating said shafts and arms, substantially as set forth.

2. The combination of a spindle or rod, a hollow shaft thereon carrying an illuminator, a second shaft geared to the former shaft, arms fixed to said shafts, and a wire or rod extending from the free ends of said arms at an angle corresponding to the earth's axis, and a sphere or globe centrally secured to said wire or rod, substantially as described.

3. The combination of a spindle or rod, a hollow shaft thereon carrying an illuminator, a second shaft, arms fixed to said shafts, and a wire or rod extending from the free ends of said arms at an angle corresponding to the earth's axis, and a sphere or globe centrally secured to said wire or rod, said shafts having pinions belted together, substantially as described.

4. The combination of a stationary spindle or rod, a rotary shaft concentric to said rod and carrying an illuminant, a second shaft geared to the first-referred-to shaft, arms fixed to said shafts, a shaft or axis having a corresponding angle to that of the earth's axis and bearing a globe representing the earth and journaled in or carried by said arms, and means for imparting an axial motion to the shaft or axis bearing the earth-globe, substantially as described.

5. The combination of a stationary spindle, a rotary shaft concentric to said spindle and carrying an illuminant, a second shaft geared to the first-referred-to shaft, arms fixed to said shafts, a shaft or axis having a corresponding angle to that of the earth's axis bearing a globe representative of the earth and carried by said arms, and pulleys belted together and fixed to said spindle and the earth-globe-bearing axis or shaft, substantially as described.

6. The combination of a stationary spindle or rod, a rotary shaft concentric to said spindle and carrying an illuminant, a second shaft geared to the aforesaid shaft, arms carried by said shafts, a globe-bearing shaft or axis carried by said arms and arranged at an angle corresponding to the earth's axis, means for imparting an axial motion to said globe-bearing shaft, a shaft concentric to said globe-bearing shaft and, itself, carrying a globe representative of the earth's satellite, and means for actuating said last-referred-to shaft, substantially as described.

7. The combination of a stationary spindle or rod, a shaft concentric to said spindle and carrying an illuminant, a second shaft geared to the aforesaid shaft, a globe-bearing shaft or axis arranged at an angle corresponding to that of the earth's axis and a shaft bearing a second globe representative of the earth's satellite and having a pulley belted to a fixed pulley arranged concentrically with said second shaft, substantially as described.

8. The combination of a stationary spindle or rod having a fixed pulley or spool, a rotary shaft concentric to said spindle and bearing an illuminant, a second shaft geared to the aforesaid shaft, arms fixed to said shafts, a pulley having its support arranged concentric to said second shaft, a globe-bearing shaft or axis carried by said arms arranged at an angle corresponding to that of the earth's axis and having a fixed pulley or spool, a cord or line wound or coiled around the pulley or spool of said globe-bearing shaft and connected to the pulley or spool of said stationary spindle, a second globe-bearing shaft arranged concentric to the aforesaid globe-bearing shaft, and a line or cord coiled around the pulley or spool of second globe-bearing shaft and connected to the pulley or spool arranged concentrically to said second shaft, substantially as described.

704,851. CURTAIN-POLE AND SHADE-ROLLER BRACKET. GEORGE L. LYONS, Bradford, Pa. Filed Aug. 15, 1901. Serial No. 72,106. (No model.)

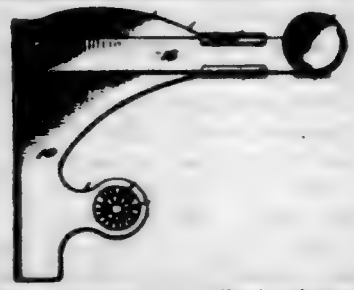

Claim.—In a curtain-pole and shade-roller bracket, a bracket member having means for attachment to a window or a door frame or a like support, the body of the bracket member being provided with an outwardly-extending arm and slideways formed at the top and bottom portions of said arm at its inner face, and a shorter arm also outwardly extending and located at a point below the vertical center of the bracket, the lower and shorter arm having means for receiving a trunnion of a shade-roller, a slide in the shape of a bar or plate which has guided movement in the said slideways, terminating in a disk formation at its outer end, and a segmental receiver for a curtain-pole, having its open portion facing in an upward direction, which receiver is connected with the bottom portion of the outer disk formation of the said movable plate or bar, extending inwardly at a right angle from the outer terminal of the said adjustable plate or bar, as and for the purpose described.

704,852. REVOLVING TRIMMER FOR PHOTOGRAPHIC PRINTS. JOSEF MATHEIS, Bolton, Conn., assignor to the Anthony & Scovill Company, New York, N. Y., a Corporation of New York. Filed Mar. 18, 1902. Serial No. 98,773. (No model.)

Claim.—A trimmer having a spindle, the upper part of which is reduced in size and adapted to engage with the handle of the instrument and a slotted and cylindrical lower part in which the cutting-disk is mounted, said cutting-disk itself and a removable axis therefor, comprising a

straight section adapted to pass through holes in the cylindrical part of the spindle and through the cutting-disk, and an elastic curved section adapted to spring about and embrace the cylindrical portion of the spindle and arranged to rest fully exposed on the exterior thereof, for the purpose set forth.

704,858. STEAM-BOILER FURNACE. HARRISON B. HEBER, New York, N. Y. Filed Nov. 14, 1901. Serial No. 82,208. (No model.)

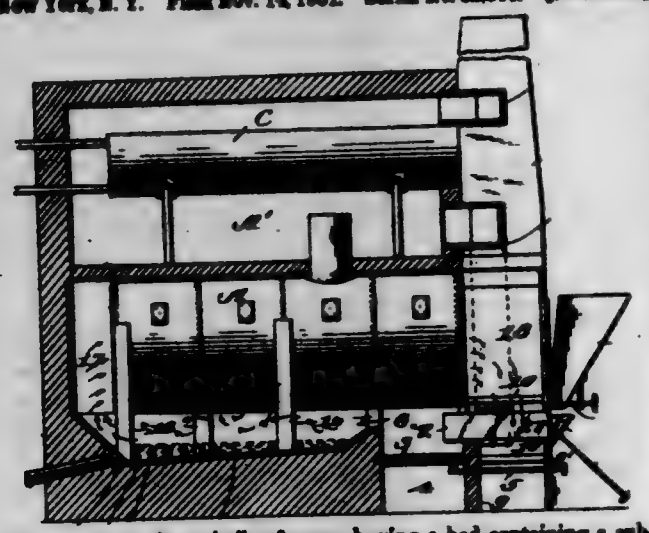

Claim.—1. A steam-boiler furnace having a bed containing a substance capable of fusing by heat, a boiler free of such substance, and a fire-box, the products of combustion from which are adapted to pass between said boiler and bed to heat the boiler and fuse such substance, and such substance when fused serving to apply radiant heat to the boiler.

2. A steam-boiler furnace, having a bed provided with a substance capable of fusing by heat, a boiler above said bed, and a fire-box, the products of combustion from which are adapted to pass between said boiler and bed, to heat the boiler and fuse said substance, and the latter when fused serving to apply radiant heat directly to the boiler.

3. A steam-boiler furnace, having a bed provided with a substance capable of fusing by heat, a boiler above said bed, a fire-box, the products of combustion from which are adapted to pass between said boiler and bed, to heat the boiler and fuse said substance, and the latter when fused serving to apply radiant heat directly to the boiler, and a coking-retort adapted to be heated by such products of combustion, and to discharge its gases into said fire-box.

4. A steam-boiler furnace having a concaved bed, the concavity of which is adapted to contain a substance capable of fusing by heat, a plurality of staggered partitions extending partially across and rising from said bed and connected with the walls of the furnace, a fire-box the products of combustion from which are adapted to pass between said boiler and concaved bed to heat the boiler and fuse such substance, and the latter when fused serving to apply radiant heat to the boiler.

5. A steam-boiler furnace having a bed provided with a substance capable of fusing by heat, a boiler above said bed, a fire-box the products of combustion from which are adapted to pass between said boiler and bed to heat the boiler and fuse such substance, and the latter when fused serving to apply radiant heat directly to the boiler, a coking-retort adapted to deliver its gas into such fire-box, imperforate partitions connected with the walls of the furnace at opposite sides of said retort to thereby form a chamber for inclosing said retort, a conduit for delivering such products of combustion into said chamber and a second conduit adapted to carry the products of combustion from said chamber.

6. A steam-boiler furnace having a bed provided with a substance capable of fusing by heat, a boiler above said bed, a fire-box the products of combustion from which are adapted to pass between said boiler and bed, to heat the boiler and fuse such substance, and the latter when fused serving to apply radiant heat to the boiler, a row of horizontally-disposed coking-retorts adapted to deliver their gas into the fire-box, superposed horizontal walls above and below said retorts and connected with the side walls of the furnace to form a chamber, a conduit connected with one end of said chamber for delivering products of combustion into one end of said chamber, and a second conduit connected with the opposite end of said chamber for carrying off the products of combustion therefrom.

7. A steam-boiler furnace, having a bed provided with a substance capable of fusing by heat, a boiler above said bed, a fire-box, the products of combustion from which are adapted to pass between said boiler and bed to simultaneously heat the boiler and fuse said substance, and the latter when fused serving to apply radiant heat directly to the boiler, a stack, a chamber in communication with the stack, and adapted to receive the products of combustion, and a coking-retort extending through said chamber, said the inner end thereof being located in the fire-box.

8. The combination of a combustion-chamber provided with a substance capable of fusing by heat, a receptacle arranged in said combustion-chamber, and a fire-box the products of combustion from which are adapted to pass between said receptacle and said substance, to heat said receptacle and fuse such substance, and such substance when fused serving to apply radiant heat to said receptacle.

9. A steam-boiler furnace having a combustion-chamber provided with a concaved bottom containing a substance capable of fusing by heat, a boiler above said concaved bottom, a fire-box the products of combustion from which are adapted to pass between said boiler and concaved bottom, to simultaneously heat the boiler and fuse such substance, and the latter when fused serving to apply radiant heat to the boiler, a plurality of staggered partitions extending partially across and rising from said concaved bottom, a chamber adapted to receive the products of combustion after the same have passed from said combustion-chamber, and a coking-retort extending through said last-mentioned chamber and its inner end being situated in the fire-box.

10. A steam-boiler including a concaved bed, a mass in the concavity of said bed capable of fusing by heat, a plurality of staggered partitions extending partially across and rising from said bed, and connected with the walls of the furnace, a retort, a grate between said retort and concaved bed, a steam-boiler having flues and arranged above said bed, a chamber inclosing said retort and communicating with the flues of the boiler, a second chamber above the boiler and in communication with the first chamber, a water-heater in said second chamber, and a stack connected with said second chamber.

11. A steam-boiler furnace, having a bed provided with a substance capable of fusing by heat, a boiler above said bed, a series of retorts, a fire-box having grates located between the retorts and furnace-bed, and the products of combustion from the fire-box being adapted to pass between said boiler and bed, to simultaneously heat said boiler and fuse said substance, and the latter when fused serving to apply radiant heat directly to the boiler, and a flue-chamber in communication with the front end of the boiler and inclosing said retorts, and in communication with the boiler-stack.

12. A steam-boiler furnace including a bed having a concavity, a substance in said concavity capable of fusing by heat, a plurality of staggered half-partitions in the furnace-bed, a series of retorts, a fire-box intermediate the retorts and furnace-bed, a series of hot-air tubes or pipes along the walls of the furnace, communicating with the fire-box, a flue or tubular boiler above said concavity and fire-box, and the products of combustion from the latter being adapted to pass between said boiler and concavity and serving to heat the boiler and fuse such substance and the latter when fused serving to apply radiant heat directly to the boiler, a flue-chamber connected with the front end of such boiler and passing around said retorts, and a chamber above the boiler containing a water-heater, communicating with a flue which surrounds said retorts, and in communication with the stack.

704,854. APPARATUS FOR CONTROLLING RAILWAY-WAGONS IN LOADING OR UNLOADING. JOHN D. MILLER and ROBERT YATES, Coatbridge, Scotland. Filed Apr. 22, 1902. Serial No. 104,206. (No model.)

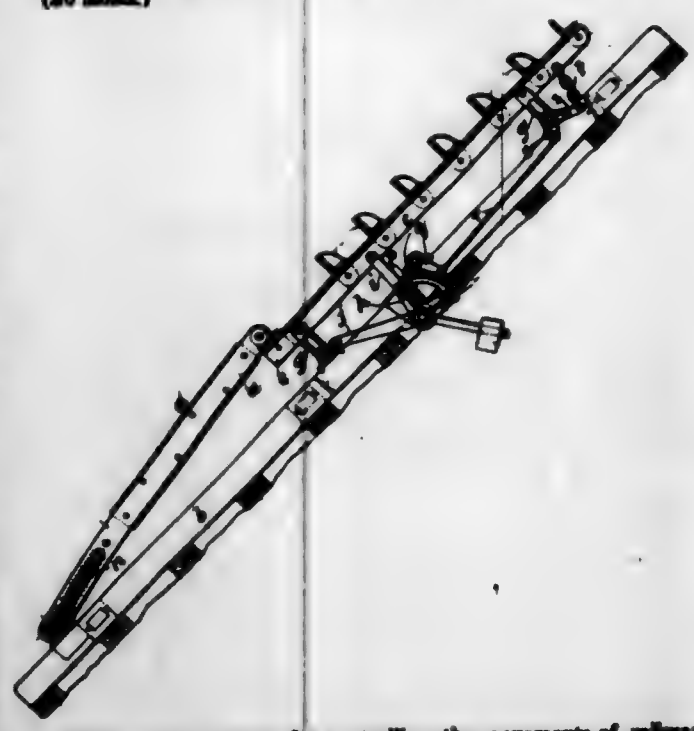

Claim.—1. Apparatus for controlling the movements of railway-wagons composed of an inclined lever-bar or brake-bar located and pivoted between the rails and adapted to act as a brake upon the wagon-axle, and

means such as levers operated by an attendant for lowering and raising the said brake-bar to graduate the progressive forward movement of the wagon, substantially as described.

2. Apparatus for controlling the movements of railway-wagons comprising an inclined lever or brake bar located and pivoted between the rails and a catch-bar pivoted thereto and furnished with projecting paws adapted to engage with the axle or other fixture on the wagon and means such as levers for supporting and operating said catch-bar to bring the paws successively into engagement with the wagon-axle, substantially as described.

3. Apparatus for controlling the movements of railway-wagons upon inclines comprising in combination a lever or brake bar extending longitudinally between the rails and pivoted yieldingly to beams secured to the sleepers, a catch-bar provided with upwardly-projecting catches hinged to said brake-bar and pivotally guided from the beams a supporting-link centered on said bar a brake-wheel or quadrant connected to said supporting-link and operated by hand or power and a brake-shoe adapted to automatically act upon the quadrant on the lowering of the catch-bar, substantially as described.

704,855. ANIMAL-TRAP. James S. Moon, Nevada, Mo. Filed Jan. 8, 1902. Serial No. 88,676. (No model.)

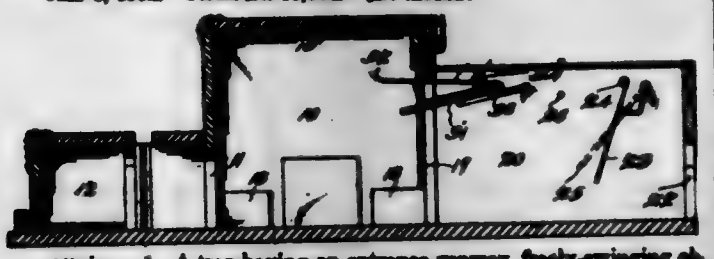

Claim.—1. A trap having an entrance-runway, freely-swinging obstructing-bars disposed across the same, means to raise said obstructing-bars, a gate in said runway, behind the said bars, means to raise said gate and secure the same against outward movement, and obstructing-bars connected to and carried by said gate, free to swing inwardly therefrom and prevented by the gate from moving outwardly, substantially as described.

2. A trap provided with a swinging gate at the entrance thereto, a crank-shaft disposed adjacent to said gate and provided with a crank-handle, and means for locking said handle in adjusted position and holding said gate against outward movement.

3. A trap provided with a swinging gate at the entrance thereto, a crank-shaft disposed in front of said gate and having a crank-handle connected therewith, and pins disposed at various points on said trap for engaging said handle and holding it in adjusted position for locking the gate in the desired position.

704,856. BUTTON-MACHINE. THOMAS F. MOSSMEY, West Orange, N. J., assignor of two-thirds to James H. Ashworth and David D. Ashworth, New York, N. Y. Filed Dec. 9, 1901. Serial No. 85,152. (No model.)

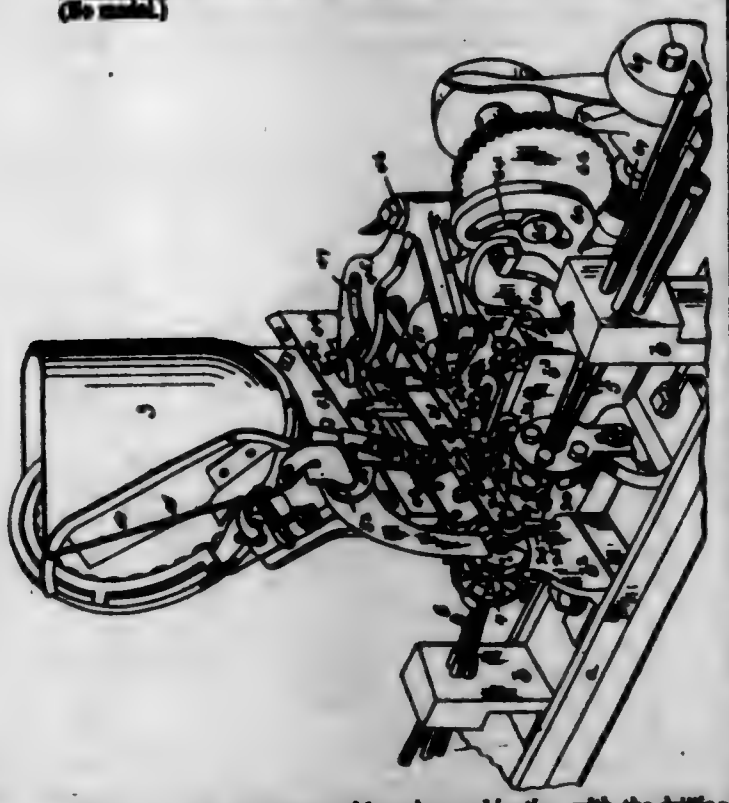

Claim.—1. In a button-machine, the combination with the drilling and counterboring tools and means for operating the same, of a carriage or slide movable reciprocally in a direction approximately parallel with said drilling and counterboring tool and supporting means for feeding the buttons to the tools, and means for reciprocating said slide or carriage, comprising a wheel having an eccentric-pin, and means for rotating said wheel, a lever having a cam-slot and an arm or link connecting said lever and slide, the latter being irregularly moved thereby.

2. In a button-machine, the combination with the bed-plate having a slideway, and drilling and counterboring tools and means for operating said tools, of a carriage or slide adapted to move reciprocally on said slideway and supporting a button-receptacle and means for feeding the buttons to said tools, and means for reciprocating said slide comprising a worm-wheel and means for rotating the same, a slotted lever fulcrumed on the bed-plate and an arm or link connecting said lever and slide, substantially as set forth.

3. In a button-machine, the combination with the bed-plate having a slideway, drilling and counterboring tools and means for operating said tools, of a slide or carriage arranged on said slideway and carrying a button-receptacle and means for transferring the buttons from the said receptacle to a point in line with the drilling and counterboring tools, said slide having an arm or link projecting therefrom, a cam-lever, fulcrumed on the bed-plate and near its free end pivotally connected to said arm, and having a cam-slot, a worm-wheel having an eccentric-pin working within said cam-slot, a coöperating worm-wheel arranged on a shaft and a pulley on said shaft with the said coöperating worm-wheel, substantially as set forth.

4. In a button-machine, the combination with the bed-plate having a slideway and drilling-tool and counterboring-tools, a slide or carriage arranged in said slideway, and having button-clutching means, means for reciprocally moving said slide or carriage, a transverse slide arranged on the first said slide or carriage and having rack-teeth, means for reciprocating the last said slide, an oscillating button-feed having a pinion meshing with said rack-teeth, a button-setting arm adapted to push the button from the button-feed into the chuck while the latter is distant from the drilling and counterboring tools, means for operating said button-setting arm, counterboring and drilling tools between which the chuck is movable, a cam-lever having a curved slot, a wheel having an eccentric-pin working in said curved slot, means for rotating said wheel and means for transferring movement from the cam-lever to the slide or carriage having the chuck, substantially as set forth.

5. In a button-machine, the combination with the drilling and counterboring tools and means for operating the same of a chuck moving back and forth between said tools, and means for thus moving said chuck, said chuck being open to receive the button and said chuck being provided with clutching-slides, means for operating said parts, a setting-arm 26, having a hollow finger, a spring for releasing said setting-arm from the chuck and means for operating the setting-arm to effect a thrust of the button from the button-feed arm into the chuck a button-feed arm and means for operating the same, all substantially as set forth.

6. In a button-machine, the button-chuck herein described, comprising a bracket having a central perforation with slots at opposite sides thereof, slides having pins extending through said slots, a ring arranged at the opposite side of said bracket from said slides and having tangential grooves, and means for turning said ring on said bracket and effecting a clutching or releasing movement of the slides, substantially as set forth.

7. In a button-machine, the button clutch or chuck comprising a perforated bracket having means for clutching the button, and a ring adapted to be oscillated on said clutch to effect an opening or closing of the button-clutching means, said ring having an arm having a pin 15, a lever 16, engaging the pin 15, to oscillate the ring, and means for reciprocating said lever, substantially as set forth.

8. In a button-machine, the button-clutching means comprising a slide *c*, carrying a bracket, means for operating said slide *c*, a bracket having slides 10, means for holding the button between said bracket-slides 10, a ring adapted to operate said slides to release or grasp the button, said ring having an arm 14, and pin 15, a spring for turning the ring in one direction on the bracket and a train of mechanism operated by the slide *c*, for turning the ring in the opposite direction, substantially as set forth.

9. In a button-machine, the button-clutching means comprising a slide *c*, carrying a clutch or chuck, bracket, means for operating said slide *c*, slides 10, on said bracket, means for holding the button between said bracket-slides 10, a ring adapted to move said slides oppositely and a train of mechanism actuated by the slide *c*, and transmitting movement to said slides 10, substantially as set forth.

10. The combination with the slide *c*, said chuck carried thereby and adapted to be opened to release the button, of the lever 16, fulcrumed on said slide *c*, and adapted to travel therewith, of the block 19, adapted to enter into engagement with said lever to turn the same and effect an opening of the chuck, substantially as set forth.

11. The combination with the slide *c*, and chuck carried by said slide and adapted to be opened to release the button, of the lever 16, adapted to open the chuck and a hinged block adapted to raise said lever as said lever travels with said slide *c*, to effect an opening of the chuck, substantially as set forth.

12. The combination with the slide *c*, and chuck, carried by said slide and adapted to be opened to release the button, of the lever 16, fulcrumed on said slide and connected to the chuck, a slide 20, carrying a hinged block and a lever 22, operating the slide 20, and acted upon by the slide *c*, substantially as set forth.

13. The combination with the slide *c*, having a pin 30, and a chuck carried thereby, of the lever 16, fulcrumed on said slide and connected to the chuck, a slide 20, carrying a hinged block adapted to raise the said lever, a slotted lever adapted to operate the slide 20, and adapted to be operated by the pin 30, to hasten the engagement of the block and lever 16, substantially as set forth.

704,857. DEVICE FOR UNTYING HARD KNOTS. JOHN W. MUTTON, Boston, Mass. Filed Aug. 30, 1901. Serial No. 73,840. (No model.)

Claim.—1. As an article of manufacture a device for untying hard knots composed of cord having two free ends, a loop formed in said cord between the ends thereof, and means for attaching one of said free ends to the portion of said cord between the ends thereof by a sliding connection.

2. As an article of manufacture a device for untying hard knots, which consists of a cord, a ring attached to said cord between the ends thereof, and a loop formed by doubling one of the free ends of said cord upon itself and passing said free end through said ring.

704,858. BILGE-BLOCK. JAMES MCCULLOUGH, Rosebank, N. Y., assignor to the Schmidt-Perrin Manufacturing Company, Jersey City, N. J., a Corporation of New Jersey. Filed Nov. 14, 1901. Serial No. 82,192. (No model.)

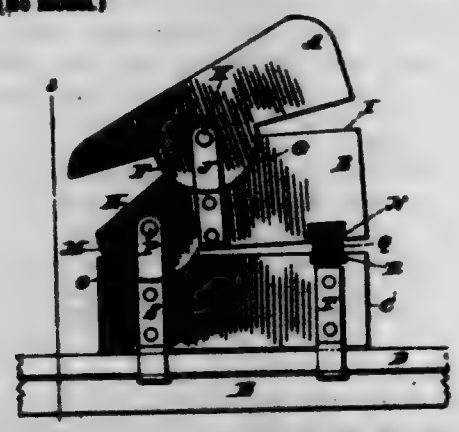

Claim.—1. A bilge-block comprising the tiltable upper section A, the intermediate section B and the base-section C, said upper section A having the curved bearing F to enter and turn within the recess G in the intermediate section B, and said intermediate section B having at its inner end the curved bearing M to enter and turn within the recess O in the lower section C, combined with means for inclining and maintaining in an inclined position said intermediate section B, substantially as set forth.

2. A bilge-block comprising the tiltable upper section A, the intermediate section B, and the lower or supporting section C, said section A having the central curved bearing F to engage the bearing-recess G in the intermediate section B, and said section B having at its inner end the curved bearing M to engage the recess O in the base-section C, combined with a wedge intermediate the outer ends of said sections B, C, said sections B, C, being respectively provided with the grooves N, R, to receive said wedge; substantially as set forth.

3. A bilge-block comprising the tiltable upper section A, the intermediate section B and the lower section C, said section A being substantially of wedge outline and centrally pivotally supported upon the section B, the upper surface of said section B being at its inner end inclined so as to permit of the automatic tilting action of the section A and also to receive the lower surface of the inner end of the section A when necessary upon a sufficient inclination of said section A, combined with means for hinging the inner end of the section B, and means for elevating and permitting the lowering of the outer end of said section B; substantially as set forth.

4. In a bilge-block the upper section A of wedge outline and having at the central part of its lower surface the curved bearing F, combined with the section B having in the central portion of its upper surface the bearing-recess G to receive said bearing F, and also having at the inner side of said recess G the inclined surface H and at the other side of said recess the substantially horizontal surface I, whereby the outer end of said block or section A may when said section is in a substantially horizontal position, find a firm support upon said surface I, and when said section is tilted to its other extreme the inner end of said block A may find a firm bearing upon said inclined surface H, and whereby also when said block A is tilted in any of its intermediate positions, it will find a firm support through the bearing F upon the walls of the recess G; substantially as set forth.

704,859. DOMESTIC GARBAGE-BURNER. FRANK E. MCGURRIN, Salt Lake City, Utah. Filed Sept. 12, 1901. Serial No. 75,215. (No model.)

Claim.—1. In a domestic garbage-burner, the combination of a casing having flue-openings, a movable hopper having openings in its walls located within the casing and a removable garbage-basket adapted to fit within the hopper; substantially as described.

2. In a domestic garbage-burner, the combination of a casing having flue-openings, a movable hopper having open back and sides and a removable garbage-basket adapted to fit within the hopper; substantially as described.

3. In a domestic garbage-burner, the combination of a casing having flue-openings, a movable hopper having openings in its walls located within the casing and a removable garbage-basket adapted to fit within the hopper and having an opening therein and means for closing the opening; substantially as described.

4. In a domestic garbage-burner, the combination of a casing having flue-openings, a movable hopper located within the casing and having open back and sides and a removable garbage-basket adapted to fit within the hopper and having an opening within and means for closing the opening; substantially as described.

5. In a domestic garbage-burner, the combination of a casing having flue-openings, a garbage-basket of wire-netting having an opening in its back and means for closing the opening and means for removably sustaining the basket within the casing; substantially as described.

704,860. BLOWER AND COMPRESSOR. CHRISTIAN NEUHAUS, St. Louis, Mo., assignor to the Natural Power Co., St. Louis, Mo. Filed July 3, 1901. Serial No. 66,960. (No model.)

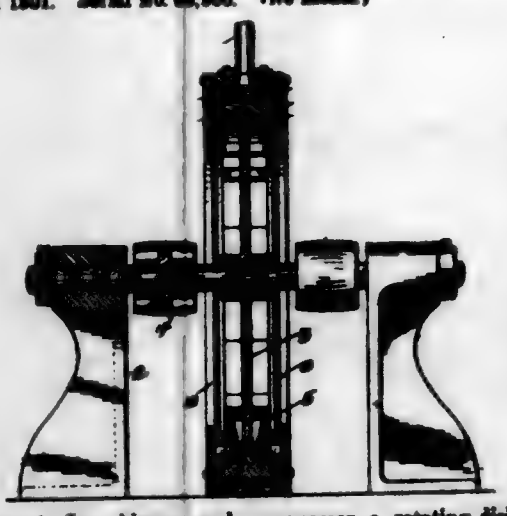

Claim.—1. In a blower and compressor, a rotating disk; a ring fixed upon each side of said disk at its periphery, there being angular compression-passages formed within said rings, said passages being funnel-shaped in cross-section; stationary rings mounted beside the first-mentioned rings and extending outwardly and forming close joints with

the first-mentioned rings; and an outer stationary casing connecting the outer edges of said stationary rings, substantially as specified.

2. In a blower and compressor, a rotating disk; a ring fixed upon each side of said disk at its periphery; funnel-shaped angular passages formed in said rings; stationary rings mounted beside the first-mentioned rings and extending outwardly; flanges extending inwardly from the inner edges of said stationary rings and forming close joints with said rotatable rings; and an outer stationary casing connecting the outer edges of said stationary rings, substantially as specified.

3. In a blower and compressor, a shaft; a rotating disk mounted upon the shaft; a ring fixed upon each side of said disk at its periphery; funnel-shaped angular passages formed in said rings; stationary rings mounted beside the first-mentioned rings and extending outwardly; flanges extending inwardly from the inner edges of said stationary rings and forming close joints with said rotatable rings; rings extending inwardly toward the shaft from the inner peripheries of said stationary rings and forming air-retainers; and an outer stationary casing connecting the outer edges of said stationary rings to form an air-chamber to receive the air passing through the openings in said rotating rings, substantially as specified.

4. In a blower and compressor, a rotary disk; rings fixed upon the sides of said disk at its periphery; angular air-passages formed through said rings, said passages turning laterally at their outer ends; a band surrounding said disk and rings and forming the outer sides of the air-passages to deflect the air laterally; and an air-chamber around the disk to receive the air, substantially as specified.

704,861. ELECTRIC CUT-OUT. OSCAR H. CRESSY, Brooklyn, N. Y., assignor of one-half to Oscar F. Maris, New York, N. Y. Filed Dec. 14, 1901. Serial No. 86,033. (No model.)

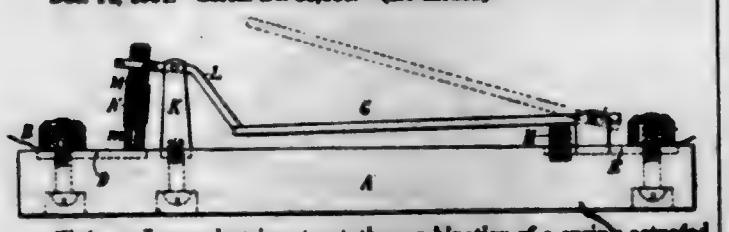

Claim.—In an electric cut-out, the combination of a spring-actuated lever, a catch-lever, an expansible rod adjustably carried by the catch-lever, a terminal plate on which the expansible rod rests, and a resistance-wire around the said rod and completing the circuit from said plate to the catch-lever, as and for the purpose set forth.

704,862. BULK-CARGO VESSEL. JOSEPH H. OLSHAM, Cleveland, Ohio. Filed Feb. 6, 1902. Serial No. 92,802. (No model.)

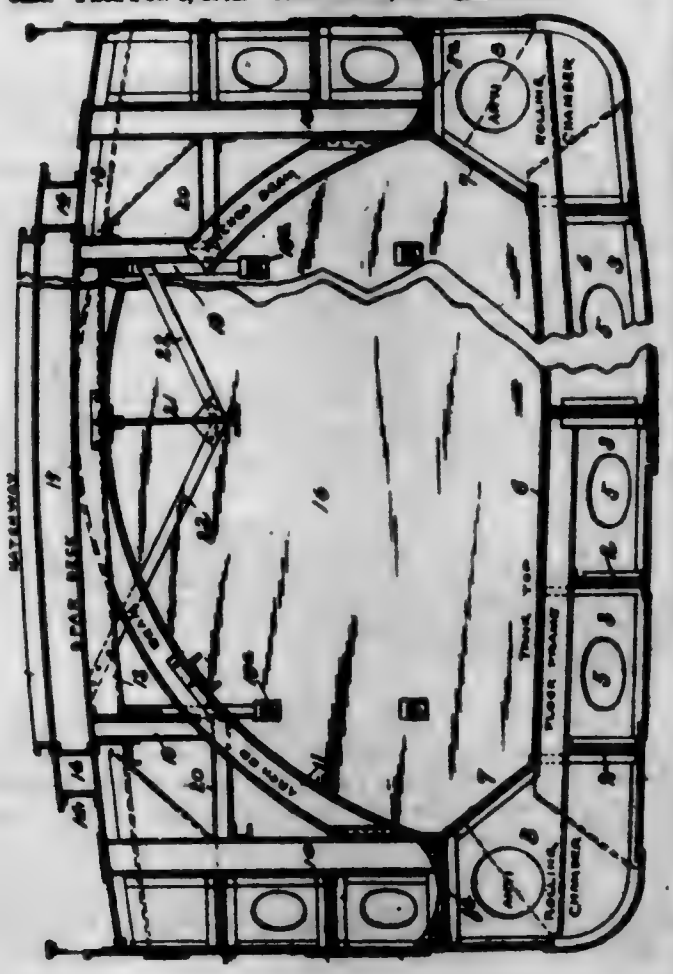

Claim.—1. In a vessel the combination of arched girders spanning the hold of the vessel, transverse deck-girders headed on the sides of the vessel and supported centrally by said arched girders, substantially as described.

2. In a hull, the combination with transverse deck-girders, transversely-extending arched girders spanning the hold and supporting said deck-girders, longitudinal girders connected to said transverse girders and designed to form a hatch-deck, and transverse bulkheads supporting said longitudinal girders, substantially as described.

3. In a vessel, the combination with a deck, of deck-girders extending transversely the hold of the vessel and supporting said deck, and circular arched girders spanning the hold and supporting said deck-girders, substantially as described.

4. In a bulk-cargo vessel, the combination with a hull divided by transverse bulkheads, of longitudinally-extending arched girders supporting said deck and footed on said bulkheads, substantially as described.

704,868. SWITCH-STAND ATTACHMENT. HARLOW F. OSE, Wendling, Oreg. Filed Feb. 1, 1902. Serial No. 92,190. (No model.)

Claim.—1. The combination with a switch-stand, comprising a turning post and a hand-lever attached thereto, of a shaft carried movable on the post parallel thereto, a signal carried by the shaft, and a connection between the shaft and hand-lever.

2. The combination with a switch-stand, comprising a turning post and a hand-lever attached thereto, of a shaft hingedly carried on the post alongside of the same, a signal carried by the shaft and a connection between the shaft and hand-lever, said connection including a transverse arm on the shaft, and a link attached to the arm and to the hand-lever.

3. The combination with a switch-stand, comprising a turning post and a hand-lever attached thereto, of a shaft carried to move on the post, a signal carried by the shaft, and a connection between the shaft and hand-lever, the said shaft being connected to the post by means of hinges so as to swing around the same.

4. The combination with the switch-stand and with the post or shaft mounted therein and connected with the switch, of a hand-lever attached to said shaft, a second shaft, means movably mounting said shaft, a crank-arm on the second shaft, a link connecting the crank-arm and hand-lever, and a signal connected with the second shaft.

5. The combination with the switch-stand, of a hand-lever connected with the switch, a movably-mounted shaft, a signal connected therewith a crank-arm on the shaft and a link connecting the crank-arm and hand-lever.

704,864. SOAP. HARRY C. PEPPER, New Kensington, Pa. Filed Nov. 4, 1901. Serial No. 81,077. (No specimens.)

Claim.—1. A soap containing hydrated alumina disseminated through it; substantially as described.

2. A soap cake having powdered hydrate of alumina disseminated through its mass; substantially as described.

704,865. CRAYON-SHARPENER. ANDREW P. PETERSON, Racine, Wis. Filed Dec. 26, 1901. Serial No. 87,203. (No model.)

Claim.—1. In a crayon-sharpener, the combination of the casing, the movable divergent cutter, the horizontal guides therefor, the pivoted lever and connections for reciprocating said cutters, substantially as described.

2. In a crayon-sharpener, the combination of the casing, the reciprocating cutters, the crayon-stops, and the lever and connections for reciprocating the cutters, substantially as described.

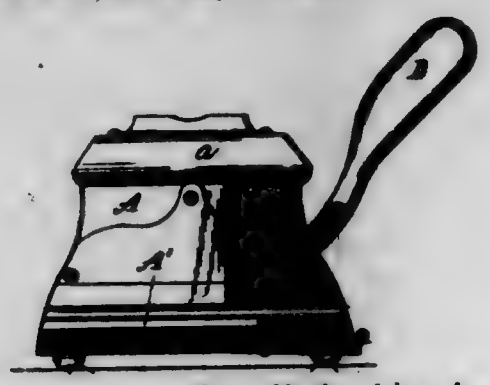

3. In a crayon-sharpener, the combination of the casing, the reciprocating slide, the cutters mounted thereon, the lever for operating said slide, and the guide fingers or springs arranged beside the path of the cutters, substantially as described.

4. In a crayon-sharpener, the combination of the casing, the reciprocating slide, the cutters thereon, the lever and connections for reciprocating said slide, the crayon-stops and the holding-springs beside and projecting beyond the stops, substantially as described.

5. In a crayon-sharpener, the combination of the casing, having an opening or slot in its upper end, a slide adapted to reciprocate in said slot, the cutters attached to slide and the lever and connections for reciprocating said slide; with the pairs of guide-springs above the slide at each end of the slot, and the cover, substantially as and for the purpose described.

6. In a crayon-sharpener, the combination of the casing having an opening or slot in its upper end, guides at the side of the slot, a slide mounted upon and between said guides, the cutters mounted on said slide, the pivoted lever and connections for operating said slide, the stops above and at each end of the slot in the casing, the pairs of springs beside the stops projecting inwardly beyond the same, and the cover having a slot for insertion of the crayon during the sharpening operation, substantially as and for the purpose described.

7. The combination of the casing having an opening in its top, hinged bottom plates closing the base of casing, a slide reciprocatable in said opening, and cutters on said slide; with a bent lever pivoted at its bend to the base of casing and having one end bifurcated and engaging said slide, and its other end projecting out of the casing, the stops, and guide-springs at each end of the opening in top of casing, and the removable cover, for the purpose and substantially as described.

704,866. WROUGHT-METAL BARREL. ELWOOD C. PHILLIPS, Chicago, Ill., assignor of three-fourths to Charles P. Barrett, Chicago, Ill. Filed Mar. 29, 1902. Serial No. 100,402. (No model.)

Claim.—1. A wrought-metal barrel or the like comprising a pair of outer sections having internally-screw-threaded ends, and tapered bores adjacent thereto, and a central connecting-section having primary differential and screw-threaded extensions, and secondary tapered extensions, adapted to have engagement with the tapered bores of the end sections, substantially as set forth.

2. A wrought-metal barrel or the like comprising a pair of outer sections having internally-screw-threaded ends, and tapered bores adjacent thereto, lining-sheets arranged within said end sections, a central connecting-section having primary differential and screw-threaded extensions and secondary tapering extensions, and a lining-sheet fitting the interior of the central section and having its ends folded over the secondary extensions thereof, substantially as set forth.

704,867. PROCESS OF MAKING WHITE ANTIMONY OXID. ARTHUR S. PLEWS, London, England. Filed Feb. 14, 1902. Serial No. 94,326. (No specimens.)

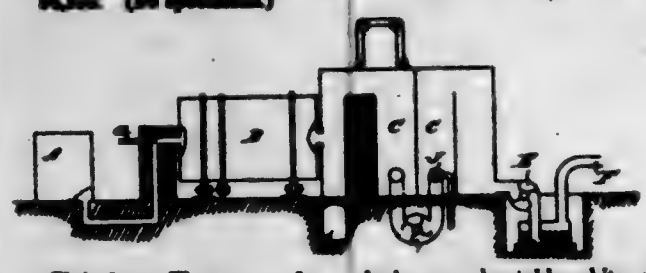

Claim.—1. The process for producing merchantable white oxid of antimony direct from the ore by exposing the said ore at a bright red heat to make a smokeless current of gases, and periodically changing the said gases from a reducing to an oxidizing atmosphere and back again until the antimony is volatilized, condensing the fumes in the presence of aqueous vapor and collecting the condensed products substantially as set forth.

2. The process for producing merchantable white oxid of antimony direct from the ore, which comprises the following steps: roasting the crushed ore with smokeless fuel in a quick draft at a bright red heat, periodically changing the flame from an oxidizing to a reducing flame and vice versa as long as antimony fumes continue to be evolved, subjecting the antimony fumes to the action of steam escaping under pressure, and collecting the mingled combustion products and steam in condensing-chambers having means for absorbing any traces of antimony from the exit-gases.

704,868. PACKAGE-CARRIER. ORLANDO H. PUFF, Independence, Iowa. Filed Dec. 13, 1901. Serial No. 85,726. (No model.)

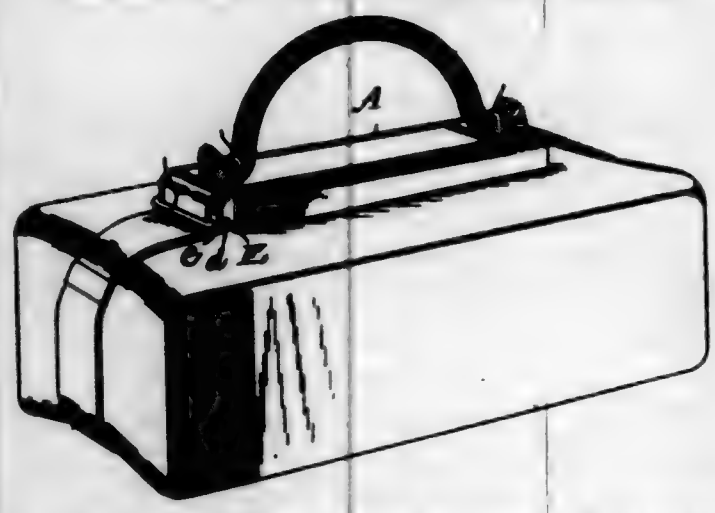

Claim.—1. In a package-carrier the combination of the bar, the staple-shaped keeper attached to one end thereof, the catch-plate slidably mounted on the keeper, and the strap attached at one end to the bar and having its free end passed through the keeper and between the catch-plate and end of bar, substantially as described.

2. In a package-carrier, the combination of the bar, the hand-loop, and the strap attached at one end to the bar; with a staple-shaped keeper fastened to one end of the bar, the catch-plate strung on the legs of the keeper and movable to and from the end of bar, said catch-plate having its upper edge bent toward the bar and serrated, substantially as and for the purpose set forth.

704,869. COMBINED LEVEL AND PLUMB. ROBERT W. PRITT, Julia, W. Va. Filed Mar. 20, 1902. Serial No. 100,574. (No model.)

Claim.—In a tool of the character described, a body or stock having a slot in one end, a blade adapted to fold and slide in said slot and provided with a series of openings, and a spring-catch at one side of the stock to engage with any one of the openings in the blade and hold it in adjusted position, substantially as set forth.

704,870. PHOTOGRAPHIC CAMERA. HENRY P. PEARSE, London, England. Filed Apr. 24, 1902. Serial No. 104,594. (No model.)

Claim.—1. Means for fitting a plate-holder to roll-film holders and roll-film cameras, consisting of a case provided with a slot communicating with the interior thereof; means in continuation of said slot whereby the plate-holder is guided to and located in a position parallel with and immediately in front of a film without displacing the latter, said means being adapted, in conjunction with the plate-holder, to exclude light from said film; and means for rendering said slot light-proof, substantially as set forth.

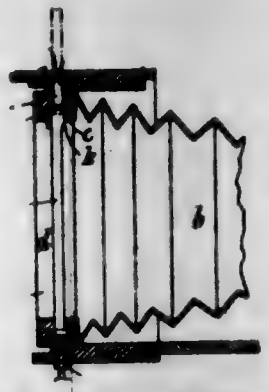

2. In roll-film holders and cameras, the combination of the case provided with a slot; a plate-holder adapted to pass through said slot; a back frame adapted to locate and retain the plate-holder in a parallel position immediately in front of a film and so as to exclude light therefrom; and means for rendering the slot light-proof, substantially as set forth.

3. The combination with roll-film holders and cameras, of the case thereof provided with a slot; a plate-holder approximately fitting said slot; a back frame provided with grooves formed in continuation of said slot; a self-closing light-trap at the inner end of said slot; and means for excluding dirt and dust from said slot and assisting to exclude light, substantially as set forth.

4. In a camera, the combination with roll-film holders and the case thereof provided with a slot, the back frame thereof provided with grooves, said slot and groove adapted to receive a plate-holder in front of the film without displacing the same, of a sliding cover adapted to be moved across said slot in the case, and means to render said cover self-closing, substantially as described.

5. In a camera, the combination with the case thereof provided with a slot and a back frame provided with grooves, said slot and grooves adapted to receive a plate-holder, of a push-pin suitably connected with the case and adapted to assist in removing the plate-holder therefrom.

6. In a camera, the combination with the case thereof provided with a slot and the back frame provided with grooves registering with the slot, said slot and grooves adapted to receive a plate, of means for closing the inner end of said slot to prevent light passing through said slot into the camera, and means for closing the outer end of said slot.

704,871. VOLTAGE-REGULATOR. THOMAS H. PERRY, Kennett Square, Pa. Filed Aug. 5, 1901. Serial No. 70,961. (No model.)

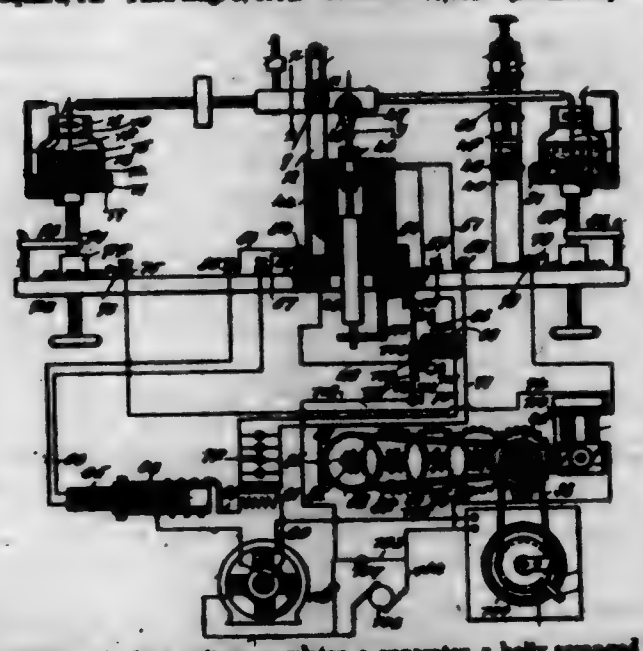

Claim.—1. In a voltage-regulator, a generator, a helix arranged in circuit with the generator, a rheostat for the generator, a circuit for operating the rheostat, a balance-beam controlled by the helix and having contacts at its ends, liquid-containing receptacles, conducting liquid in the receptacles and in connection with the rheostat-operating circuit, adjustably mounted above and below one end of the beam, and an adjustable counterweight on the beam, substantially as specified.

2. In a voltage-regulator for a generator, a helix arranged in circuit with the generator, an electromagnet in the circuit normally holding a rheostat-controlling circuit open, a rheostat in a circuit with the main generator, electrically-controlled means for operating the rheostat, an induction-coil, an exciting-coil for the induction-coil and in circuit with the generator, and a helix surrounding the first-named helix and having connection with the induction-coil, substantially as specified.

3. A voltage-regulator in connection with a generator, comprising a helix in circuit with the generator, a rheostat for the generator, a motor for the rheostat, shunt-circuit from the exciter-circuit in which the motor is arranged, a balance-beam controlled by the helix, said balance-beam being in the shunt-circuit, contacts carried by the balance-beam, and contacts arranged in the shunt-circuit and adjustable relatively to the first-named contacts, substantially as specified.

4. In a voltage-regulator, a generator, a rheostat for the generator, a motor for controlling the rheostat, a shunt-circuit from the exciter-circuit in which the said motor is arranged, a helix arranged in circuit with the generator, a balance-beam arranged in the shunt-circuit and controlled by said helix, contacts carried by said beam, liquid-containing vessels into which said contacts extend, supports for said vessels, means for adjusting the supports vertically, contacts fixed in the vessels and in said shunt-circuit, and an electromagnet in the main circuit of the generator for controlling the motor-circuit, substantially as specified.

5. In a voltage-regulator for a generator, a shunt-circuit from the exciter-circuit, means arranged in said shunt-circuit for operating a rheostat for the generator, means for closing said shunt-circuit, comprising a balance-beam having contacts at its ends coacting with fixed contacts, a supporting-yoke for said beam, fulcrum-points on the beam supported in said yoke, and means carried by the yoke for limiting the lateral movement of said points relatively to the yoke, substantially as specified.

6. In a voltage-regulator for a generator, a helix, an electromagnet arranged in circuit between said helix and said generator, a transformer in a circuit with the generator, an induction-coil controlled by a circuit from the generator, a helix surrounding the first-named helix and in electrical connection with the induction-coil, and contacts arranged in the shunt-circuit and controlled by the first-named helix for regulating the voltage of the generator, substantially as specified.

7. In an electrical regulator, a liquid-containing receptacle, a liquid conductor in the receptacle, a contact fixed in the receptacle, a contact movable into and out of the liquid conductor, a vertically-adjustable post, a cup-shaped holder on said support for receiving the receptacle, and a packing arranged between said cup-shaped holder and the receptacle, substantially as specified.

8. In an electric regulator, a liquid-containing receptacle, a liquid conductor in the receptacle, a non-conducting liquid on the conducting liquid, a fixed contact in the vessel, a contact movable in the non-conducting liquid and into and out of the conducting liquid, a screw-post or support, a brake for holding said post as adjusted, a metal cup on said post for receiving the receptacle, and an absorbent material between the receptacle and said cup, substantially as specified.

9. In an electric conductor, a vessel for holding liquid, a conducting liquid in the vessel, a fixed contact extended into the liquid, a contact movable into and out of the liquid, and a valve or stopper carried by the movable contact for closing the opening of the vessel, substantially as specified.

704,872. GOLD-SAVING MACHINE. CHARLES RANDS, Vancouver, Canada. Filed Sept. 10, 1901. Serial No. 74,874. (No model.)

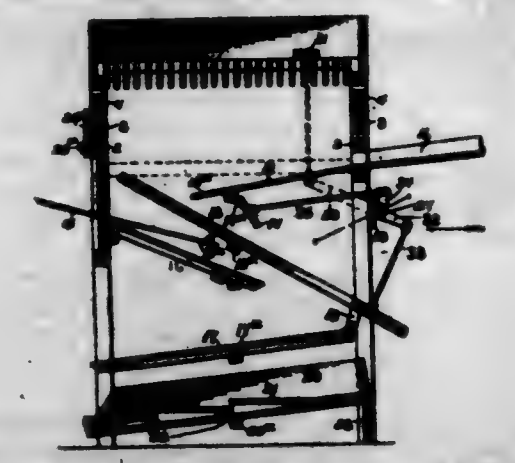

Claim.—1. In a machine for the purpose specified, having a steel open framework adapted to receive a series of baffles and screens; a rectangular frame surmounting such, and sustained on pivots at its ends; a grizzly having three raised sides, and resting by means of curved rockers on the pivoted frame; and means whereby such grizzly may be rocked and tilted in cross motion, substantially as described.

2. In a machine for the purpose specified, in combination with a grizzly suitably supported on pivots and rockers over an open framework; within such frame, the sloping dead-plate 12 having perforations at its lower end; the grizzly 13 so pivoted below such that its slope may be varied; the flap-door 14 pendent on pins from the lower part of the dead-plate 12; the rake 15 slidable in the sides of the machine, the times of which are pitched to enter the spaces between the grizzly-bars at its farthest slope; the dead-plate 16 adapted to throw the dirt toward the opposite end of the machine; the perforated screen-plate 17 pivoted at its center and linked to the lower end of the grizzly 13; and the chute-box 20 pivoted at its center and provided with stepped perforated receiving-plates and screen-riffles, with means whereby its slope may be varied as desired.

3. In a machine of the class described, having a receiving-grizzly to which a rocking and tipping movement may be imparted, surrounding an open framework; in combination with a series of baffles and screens within such frame; the shaft 27 in bearings 26 fixed to the frame; the levers 28, 32 and 34 fixed to the shaft 27; the rod 30 connecting the receiving-grizzly cross-frame 4 to the lever 28; the rods 35 connecting levers 34 to the flap-door 14; the rod 33 connecting the lever 32 to the lower end of the pivoted grizzly 13, and the links 18 connecting the lower end of 13 to the end of the screen 17; by means of which these various parts are moved as specified by the tipping movement of the receiving-grizzly.

4. In a machine for the purposes described, a supporting-frame, shaking-screens and baffles mounted thereon, a rectangular frame pivotally mounted on the top of the supporting-frame to rock in lateral directions over the said supporting-frame, a grizzly having three raised sides, and having rocker-bearings on the pivoted frame extended lengthwise of said pivoted frame, and a hand-operated means for simultaneously imparting a rocking motion to the pivoted frame crosswise of the supporting-frame, and of the grizzly lengthwise of the pivoted frame, substantially as shown and for the purposes described.

704,873. WOOD-FLUTING MACHINE. EDWARD RAWSON, Moscow, Idaho. Filed Jan. 15, 1902. Serial No. 89,855. (No model.)

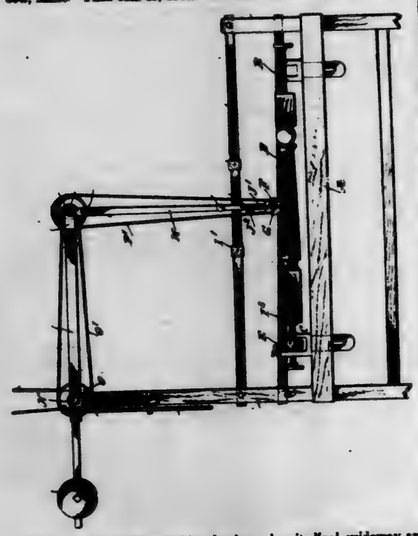

Claim.—1. A fluting-machine, having a longitudinal guideway arranged over the work, an arm guided longitudinally in the said guideway and free to move up and down, an arbor journaled on the said arm and arranged to carry the working tool, and a counterbalanced walking-beam on which the said arm is pivoted, as set forth.

2. A fluting-machine, having a longitudinal guideway arranged over the work, an arm guided longitudinally in the said guideway and free to move up and down, an arbor journaled on the said arm and arranged to carry the working tool, a counterbalanced walking-beam on which the said arm is pivoted, and a driving-gear for the said arbor and carried by the arm and walking-beam, as set forth.

3. A fluting-machine, having an arbor for carrying the working tool, an arm, in one end of which the arbor is journaled, the other end being provided with a fork, a vertically-disposed guideway on the arm, a guide-bar extending through the said guideway, a counterbalanced walking-beam having a forked end, a shaft pivotally connecting the fork of the arm with the fork of the walking-beam, pulleys on the said shaft and the said arbor, and a belt for connecting the pulleys with each other, as set forth.

4. A fluting-machine, having a longitudinal guideway provided with stops and arranged over the work, an arm guided longitudinally in the said guideway and free to move up and down, the arm having a gage-shoe, a counterbalanced walking-beam on which the said arm is fulcrumed, an arbor journaled in the free end of the said arm, and a driving-gear for the arbor and carried by the said arm and the said walking-beam, as set forth.

5. A fluting-machine having an arbor for carrying the working tool, a pivoted arm free to move up and down and in one end of which the arbor is journaled, a bracket on the said arm, and a gage-shoe having a shank adjustable vertically and transversely on the said bracket, as set forth.

6. A fluting-machine having an arbor for carrying the working tool, an arm on the lower end of which the arbor is journaled, a counterbalanced beam on which the arm is pivoted, a bracket on the said arm, a gage-shoe having a shank adjustable on the said bracket, a guard arranged over the working tool, and means for driving the arbor, as set forth.

7. A fluting-machine having an arbor for carrying the working tool, an arm in which the arbor is journaled, the said arm being mounted to swing and to move up and down, a vertically-disposed guideway on the arm, and a fixed guide-bar extending through the guideway and provided with adjustable stops, as set forth.

704,874. OIL-BURNER. ERNST B. RAYBOLD, St. Louis, Mo. Filed Aug. 19, 1901. Serial No. 72,564. (No model.)

Claim.—1. An oil-burner, comprising a tube and a globe connected thereto, a chamber carried within the tube and opening into the globe and adapted to receive oil, means for heating the oil within the chamber, means for distributing the oil within the globe, and means for delivering the oil from the globe into a furnace, substantially as specified.

2. The improved oil-burner, comprising a tube adapted to be connected to a furnace, a chamber located within the tube adapted to receive the oil before it is admitted into the furnace, means for heating the oil within the chamber, a valve for controlling the flow of the oil from the chamber, a second valve for controlling the flow of oil into the furnace, and means for simultaneously operating said valves, substantially as specified.

704,875. FLYING-MACHINE. JOEL T. RICE, Hot Springs, Ark. Filed Feb. 21, 1901. Serial No. 48,272. (No model.)

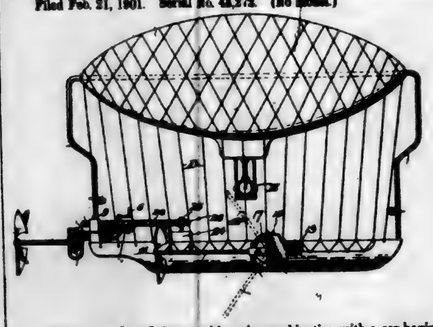

Claim.—1. In a flying-machine, the combination with a car having drive-shafts at opposite forward ends thereof, carriers pivoted to the shafts, gear and sprocket wheels fixed on the same shafts, propellers with shafts pivoted to the carriers having pinions on the rear ends thereof meshing with the fixed gear-wheels, means connected to the sprocket-wheels and to a motor whereby to rotate the propeller-wheels, the rear ends of the carriers being bent upwardly and rearwardly and pivoted to opposite ends of a curved rack-bar, a pinion meshing with said rack-bar, and a crank-arm on said pinion so as to shift the propeller-wheels in unison in the same direction, substantially as specified.

2. In a flying-machine, the combination with a car having a rotating shaft extending transversely across the same and extending on opposite sides thereof, having on opposite ends gear-wheels, a segmental rack on said shaft with integral bent arms to form bearings, propeller-shafts with wheels mounted in the bearings of the arms, the rear ends of the propeller-shafts having bevel-gears inclosed within said bends of the arms and meshing with said gear-wheels, a sprocket-wheel secured on the first-mentioned rotating shaft, means connected to said sprocket-wheel and with suitable gearing of a motor, of a second transversely centrally arranged shaft provided with a sprocket-wheel, a pinion on said shaft meshing with said segmental rack, a sprocket-wheel with an operating crank-arm, a chain connected thereto and to the sprocket-wheel on the second transversely-arranged shaft, substantially as specified.

704,876. CULTIVATOR. JAMES D. RIDDLE, Chatham, Va. Filed Mar. 6, 1902. Serial No. 96,998. (No model.)

Claim.—1. The combination with a main beam, of shovel-beams lying at opposite sides thereof and having their forward ends pivotally connected thereto, a cross-head pivoted intermediately to the main beam and having its opposite ends longitudinally bifurcated, the top and bottom members of the cross-head being provided with corresponding perforations, the shovel-beams being received within the respective bifurcations of the cross-head, and pivots for engagement with the perforations to adjustably connect the shovel-beams to the cross-head.

2. The combination with a main beam having a substantially horizontal longitudinal slot, of a shovel-beam pivoted to the main beam to swing in the substantially horizontal plane of the slot and capable of being swung into and out of the slot.

3. The combination with a main beam having a substantially horizontal longitudinal slot, of shovel-beams lying at opposite sides of the main beam with their forward ends pivoted within the slot to swing in the substantially horizontal plane of said slot, the depth of the latter being at least equal to the thickness of each shovel-beam, and the latter being adapted to lie within the slot at one and the same time.

4. The combination with a longitudinally-slotted main beam, of shovel-beams lying at opposite sides of the main beam and capable of being adjusted into the slot of the main beam.

5. The combination with a longitudinally-slotted main beam, of shovel-beams lying at opposite sides thereof and having their forward ends pivotally connected within the slot and also capable of being swung into the slotted portion of the main beam.

6. The combination with a longitudinally-slotted main beam, of shovel-beams lying at opposite sides thereof, and a cross-head intermediately pivoted to the main beam and having its opposite ends pivotally connected to the shovel-beams, whereby the latter may be swung into the slotted portion of the main beam.

7. The combination with a longitudinally-slotted main beam, of shovel-beams lying at opposite sides thereof, and a cross-head intermediately pivoted within the slot of the main beam and having its opposite ends pivotally connected to the shovel-beams, the cross-head being freely movable within the main beam and capable of being reversed, whereby the shovel-beams may be alternately shifted one in front of the other and also swung inwardly into the slotted portion of the main beam.

8. The combination with a longitudinally-slotted main beam, of shovel-beams located at opposite sides of the main beam and pivotally connected within the slotted portion thereof and capable of adjustment into and out of said slotted portion, and means for locking the shovel-beams within the slotted portion of the main beam and also when lying externally at opposite sides thereof.

9. The combination with a longitudinally-slotted main beam having a pair of handles extended rearwardly therefrom, of shovel-beams located at opposite sides of the main beam, pivotally connected within the slotted portion thereof and capable of being swung into and out of said slotted portion, means for locking the shovel-beams within the slotted portion of the main beam and also when disposed externally thereof, and means in reach of an operator when standing at the rear end of the handles for controlling the locking means.

10. The combination with a longitudinally-slotted main beam, of shovel-beams located at opposite sides thereof and pivotally connected within the slotted portion of the beam and also capable of being swung into said slotted portion, and locking means which is capable of embracing the shovel-beams when disposed within the main beam, and also capable of being inserted between the shovel-beams and the main beam to lock the former beams when adjusted externally of the main beam.

11. The combination with a longitudinally-slotted main beam, of shovel-beams located at opposite sides and pivotally connected within the slotted portion thereof and also capable of being swung into said slotted portion, and an inverted substantially U-shaped locking-clip mounted upon the main beam, and constructed to have its opposite end portions embrace the shovel-beams when swung into the slotted portion of the main beam, and also to be inserted between the shovel-beams and the main beam when the former beams are swung outwardly from the main beam.

12. The combination with a longitudinally-slotted main beam, of shovel-beams lying at opposite sides and having their forward ends pivotally connected within the slotted portion thereof and also capable of being swung into said slotted portion, and a spring-actuated inverted substantially U-shaped locking-clip mounted upon the main beam in rear of the pivotal connection of the shovel-beams, the opposite end portions of the clip being constructed to embrace the shovel-beams when swung into the main beam, and also to be inserted between the shovel-beams and the main beam when the former beams are swung outwardly from the main beam.

13. The combination with a longitudinally-slotted main beam, of shovel-beams lying at opposite sides and having their forward ends pivotally connected within the slotted portion thereof and also capable of being swung into said slotted portion, an inverted substantially U-shaped locking-clip mounted upon the main beam in rear of the pivotal connection of the shovel-beams, the opposite end portions of the clip being constructed to embrace the shovel-beams when swung into the main beam, and also to be inserted between the shovel-beams and the main beam when the former beams are swung outwardly from the main beam, and a spring having one end connected to the main beam and its free end connected to the clip to normally hold the latter depressed.

14. The combination with a longitudinally-slotted main beam, of shovel-beams located at opposite sides and having their forward ends pivotally connected within the slotted portion of the main beam, whereby the shovel-beams are capable of being swung into and out of the slotted portion of the main beam, the rear ends of the shovel-beams being offset laterally outward so as to be separated by an interspace when the forward portions are swung into the slotted portions of the main beam.

15. The combination with a longitudinally-slotted main beam, of shovel-beams located at opposite sides and pivotally connected within the slotted portion of the main beam and capable of adjustment into and out of said slotted portion, and means for locking the shovel-beams within the slotted portion of the main beam.

16. The combination with a longitudinally-slotted main beam, having a pair of handles extending rearwardly therefrom, shovel-beams located at opposite sides of the main beam, pivotally connected within the slotted portion thereof and capable of being swung into and out of said slotted portion, means for locking the shovel-beams within the slotted portion of the main beam, and means in reach of an operator when standing at the rear end of the handles for controlling the locking means.

17. The combination with a longitudinally-slotted main beam, of opposite shovel-beams to lie within the slotted portion of the main beam and capable of being alternately shifted one in advance of the other, and means for locking the shovel-beams within the main beam.

18. The combination with a longitudinally-slotted main beam, of a cross-head intermediately pivoted within the slotted portion thereof, shovel-beams pivoted to the respective ends of the cross-head and capable of being swung into the slotted portion of the main beam alternately one in advance of the other, the rear end portions of the shovel-beams being offset laterally, and means for locking the shovel-beams when shifted one in advance of the other.

19. The combination with a longitudinally-slotted main beam, of front and rear cross-heads intermediately pivoted within the slotted portion of the main beam, shovel-beams located at opposite sides of the main beam, pivotally connected to corresponding ends of the front and rear cross-heads, and also capable of being swung into the slotted portion of the main beam and alternately shifted one in advance of the other, and means for locking the shovel-beams when located within the slot of the beam and also when located exteriorly of the beam.

20. The combination with a longitudinally-slotted main beam, of a front cross-head pivoted intermediately within the main beam and having opposite reduced arms, a rear cross-head pivoted intermediately within the main beam and having longitudinally-bifurcated ends, shovel-beams

located at opposite sides of the main beam with their rear ends received within the bifurcated portions of the rear cross-head and pivotally connected thereto, the front ends of the shovel-beams being bifurcated to receive the respective ends of the cross-head, pivotal connections between the front ends of the shovel-beams and the front cross-head, and means for locking the shovel-beams in differently-adjusted positions.

21. The combination with a longitudinally-bifurcated main beam, of a front cross-head intermediately pivoted within the main beam and having opposite reduced arms, a rear cross-head intermediately pivoted within the beam and having bifurcated ends, the opposite sides of the bifurcated portions being provided with a plurality of corresponding perforations, shovel-beams located at opposite sides of the main beam and capable of being received within the slotted portion thereof, the forward ends of the shovel-beams being bifurcated and pivotally embracing the respective ends of the front cross-head, the rear end portions of the shovel-beams being offset laterally, received within the bifurcated portions of the rear cross-head and provided at their rear ends with standards, detachable fastenings piercing the shovel-beams and corresponding perforations of the rear cross-head, cultivator-shovels carried by the standards, a pair of handles inclined upwardly and rearwardly from the top of the main beam, braces rising from opposite sides of the main beam and connected to the handles, a vertically-movable inverted substantially U-shaped clip embracing the main beam in rear of the front cross-head with its opposite pendent end portions capable of embracing the shovel-beams when lying within the main beam and also of being inserted between the main beam and the shovel-beams to lock the latter when adjusted away from the main beam, a spring to maintain the clip at its lowermost position, and a controlling-rod connected to the clip and extended to the rear ends of the handles for convenience in manipulation.

704,877. MEANS FOR PROPELLING VEHICLES. ANDREAS RIEDER, Flensburg, Germany. Filed Sept. 20, 1901. Serial No. 75,998. (No model.)

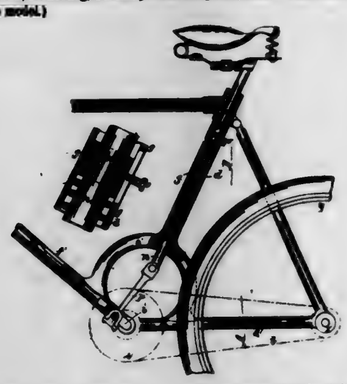

Claim.—The combination, in a vehicle-frame, of a front brace, a pair of side bars, a forked arch connecting the front brace with the two side bars, a crank-shaft journaled at the junction of the front brace and side bars, a tubular upright open at both ends, supported at its lower end in the arch, bushed or thickened at its lower end and provided with a longitudinal slot, a saddle-post slidably mounted in the tubular upright and projecting at the upper and lower ends thereof, a pitman connecting the lower end of the saddle-post with the crank-shaft, a spring coiled about the saddle-post in the tubular upright and having a lower bearing upon a thickened or bushed portion of said upright, a ring adjustable on the saddle-post and forming the upper bearing of the spring, and a set-screw projecting through the slot in the tubular upright and serving to secure the ring to the saddle-post in any adjustment within the limit of the length of the slot, substantially as described.

704,878. PHOTOGRAPHIC-CAMERA ATTACHMENT. JOHN A. ROBERTSON and CHARLES E. HUTCHINS, Rochester, N. Y., assignors to Rochester Optical and Camera Company, Rochester, N. Y., a Corporation of New York. Filed Mar. 13, 1902. Serial No. 98,107. (No model.)

Claim.—1. In a camera, the combination with a guideway, of a lens-carriage adjustable thereon, a locking device adjustably arranged on the guideway and constructed and arranged to engage the lens-carriage and automatically lock the latter at a predetermined point when the lens-carriage is drawn out, substantially as described.

2. In a camera, the combination with a guideway, of a lens-carriage adjustable thereon, a locking device movably arranged on said guideway toward and from the carriage, means for locking said locking device on the guideway, and means carried by the lens-carriage and arranged to be automatically engaged by said locking device to lock the lens-carriage at a predetermined point when drawn out, substantially as described.

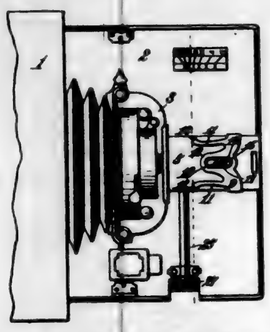

3. In a camera, the combination with a guideway, of a lens-carriage movably arranged on said guideway, a locking device carried by said guideway and arranged to automatically engage the lens-carriage and lock the latter at a predetermined point when drawn out, and means for adjusting said guideway backward and forward, substantially as described.

4. In a camera, the combination with a guideway, of a lens-carriage movably arranged thereon, of a locking device comprising a plate adjustably mounted on said guideway and provided with spring-fingers adapted to engage and interlock with the lens-carriage, substantially as described.

5. In a camera, the combination with a guideway and a lens-carriage movably arranged thereon, a locking device comprising a plate having depending flanges which engage the opposite sides of said guideway and having spring-fingers constructed and arranged to engage the lens-carriage and lock the latter in place, substantially as described.

6. In a camera, the combination with a guideway and a lens-carriage movably arranged thereon, of a locking device comprising a plate provided at its opposite sides with depending flanges arranged to engage the opposite sides of said guideway and having a centrally-slotted portion, a set-screw passing through said slotted portion and holding said plate in place, the said plate being provided with spring-fingers having beveled heads adapted to engage corresponding recesses in the lens-carriage, substantially as described.

7. In a camera, the combination with a guideway, of a lens-carriage movably arranged thereon, a locking device on the guideway and comprising a plate secured to the guideway and having two horizontal spring-fingers provided on the outer sides of their ends with laterally-projecting beveled heads, and two ribs on the lens-carriage arranged to straddle and compress said spring-fingers and provided on their adjacent faces with notches adapted to be engaged by said beveled heads, substantially as described.

704,879. PHOTOGRAPHIC VIEW-FINDER. JOHN A. ROBERTSON and CHARLES E. HUTCHINS, Rochester, N. Y., assignors to Rochester Optical and Camera Company, Rochester, N. Y., a Corporation of New York. Filed Mar. 13, 1902. Serial No. 98,108. (No model.)

Claim.—1. A view-finder casing, comprising a body portion consisting of an integral piece of sheet metal bent up into substantially a right-angular prismatic shape, a flanged cap fitted over the upper open end of said body portion, an objective fitted in the vertical front portion of said casing, a reflector fitted in the rear inclined portion thereof, and a magnifying-lens fitted in the said cap, substantially as described.

2. In a view-finder casing, comprising a body portion consisting of an angular piece of sheet metal bent up into substantially a right-angular

prismatic shape and having fitted in its front portion an objective, and in its rear inclined portion a reflector, a spring fitted within said casing and holding said reflector in its seat, a cap fitted over the upper open portion of the body of the casing and a magnifying-lens fitted within said cap, substantially as described.

3. In a view-finder, the combination with a casing comprising a body portion formed of an integral piece of sheet metal bent up into substantially right-angular prismatic shape and having fitted in its front vertical portion an objective, a reflector seated against the rear inclined portion of the casing, a spring for holding said reflector to its seat and consisting of a resilient wire bent intermediate its ends to encircle the objective and resting against the vertical front side of the casing, and terminating in parallel rearwardly-inclined arms that bear against the edges of the reflector, and a cap fitted over the upper open end of said casing and provided with a magnifying-lens, substantially as described.

4. In a view-finder, a casing comprising a body portion consisting of an integral piece of sheet metal bent up into substantially a right-angular prismatic form and provided in its front vertical edge with an objective, and in its rear inclined portion with a reflector, of a flanged cap fitted over the upper, open end of said casing, and a lens fitted within said cap and resting on the opposite upper side edges of the casing, substantially as described.

5. In a view-finder, a casing comprising an integral piece of sheet metal bent up into substantially a right-angular prismatic form, and having an objective fitted in its vertical front face, and a reflector against its rear inclined face, the opposite upper side edges of said casing being concaved, of a flanged arch-shaped apertured cap fitted over the upper open end of said casing, and a lens fitted within said cap and resting on said concaved edges, substantially as described.

6. In a view-finder, a casing comprising an integral piece of sheet metal bent up into substantially a right-angular prismatic form, and having an objective fitted in its vertical front face, and a reflector against its rear inclined face, the opposite upper side edges of said casing being provided with upwardly-projecting tongues, a lens resting on said upper edges between said tongues, and a flanged cap fitted over the upper open end of said casing, substantially as described.

7. In a view-finder casing, the combination with a bracket-arm adapted to be secured to a camera, of a view-finder provided with an attaching-bracket pivoted to said bracket-arm, said attaching-bracket having a V-shaped extension, and a spring supported on said bracket-arm and arranged at its free end to bear against either of the sides of said V-shaped extension to hold the finder in either a vertical or a horizontal position, substantially as described.

704,880. COLLAPSIBLE CARTON. CHARLES H. RUSSELL, Manistee, Mich. Filed Mar. 27, 1902. Serial No. 100,257. (No model.)

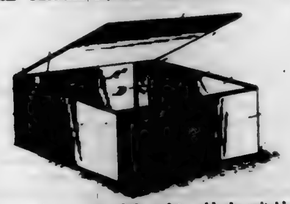

Claim.—1. A carton consisting of two blanks suitably scored, one of which forms the top, bottom and rear walls thereof, the other blank forming the front and end walls and laps thereto, and means secured to said laps for detachably securing the same to the rear wall.

2. A carton consisting of two blanks suitably scored, one of which comprises three members forming respectively the top, bottom and back wall thereof, the other blank comprising members forming the front wall and ends of the carton, the end members being provided with laps lying against the inner face of the back wall of the carton, detachable fasteners securing said laps to the back wall and means for securing the front wall and top and bottom members of the carton together.

3. A carton consisting of two blanks suitably scored, one of which comprises three members forming respectively the top, bottom and rear wall thereof, the other blank comprising the front and end portions of the carton, the said end portions being provided with laps having attaching means secured thereto, said laps being adapted to lie against and be detachably secured to the inner face of the back wall, whereby the body portion of the carton may be collapsed and lie flat against the back wall thereof.

4. In a carton the combination of a blank scored and bent to form the top, bottom and back wall thereof, slots in the top and bottom members, a second blank scored and bent to form the front walls, end walls and laps thereto, said laps lying against the inner face of the back wall of the carton, slots in said laps, slots in said back wall registering with the slots in the laps, removable fasteners passed through and secured in said registering slots, a fastener secured in the front wall of the carton and provided with members adapted to pass through the slots in the top and bottom of the carton and be bent over, thereby locking the said parts together substantially as shown and described.

5. In a carton the combination with a body portion provided with hinged cover and bottom of an independent fastener secured to the body portion, said fastener consisting of a main or body portion and oppositely-extending arms adapted to extend over and fasten the said cover and bottom against the body portion.

6. In a carton the combination with a body portion having hinged cover and bottom, said cover and bottom provided with openings near their edges, of an independent fastener secured to the said body portion, and consisting of a head and two oppositely-extending arms, said arms being adapted to pass through the openings in the cover and bottom and be bent over the edges of the cover and bottom and fasten the same against the top and bottom edges of the said body portion.

704,881. LACING DEVICE. EMILE SAVOYE, Paris, France. Filed Dec. 13, 1901. Serial No. 85,501. (No model.)

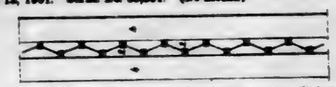

Claim.—1. In a lacing device with eyelets having their axes in alinement, an eyelet formed of coiled metallic thread, comprising a series of helical spirals spaced at intervals from one another and curved on the outer side against which the lacing should rest, in combination with the parts arranged to be secured to the objects to be connected by the lacing.

2. In a lacing device with eyelets having their axes in alinement, an eyelet of coiled metallic thread, comprising a series of helical spirals arranged on the outside of the part to which the eyelet is attached, said spirals being arranged a certain distance apart and following a meridian line convex on the inside, in combination with parts arranged to be secured to the objects to be connected by the lacing.

3. In a lacing device with eyelets having their axes in alinement, an eyelet of coiled metallic thread comprising a series of helical spirals arranged a certain distance apart and formed by the coiling of a continuous thread, one of the ends of said thread being arranged to be fixed to one of the objects to be connected by the lacing, and the other end being free so that the lacing can be introduced between the said ends into the spirals.

704,882. AMMONIA-PURIFIER FOR REFRIGERATING PLANTS. JOHN BERENDSEN, Washington, D. C. Filed Mar. 14, 1902. Serial No. 98,194. (No model.)

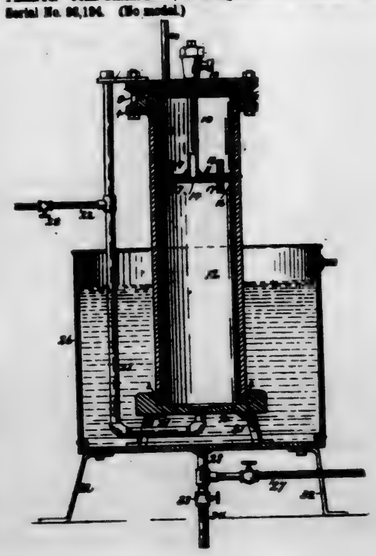

Claim.—1. The combination of an expansion-valve for effecting initial vaporization, and an ammonia-purifier provided with a diaphragm separating the purifier into a liquid-chamber and a gas-chamber, said diaphragm being constructed to distribute the liquid ammonia in the liquid-chamber, means for heating the liquid-chamber, means for conducting gas from the liquid-chamber to the gas-chamber, a discharge-pipe for the gas-chamber, and means for removing the impurities from the liquid-chamber.

2. An ammonia-purifier consisting of a receptacle provided with means for attachment to a liquid-ammonia receiver of a refrigerating plant, a diaphragm permanently separating the receptacle into a liquid and a gas chamber and provided with means for distributing the liquid ammonia, means of communication between said chambers, a connection with the gas-chamber leading to a suction-pump, a discharge for impurities from the liquid-chamber, and means for warming the liquid-chamber.

3. An ammonia-purifier for refrigerating plants, consisting of a receptacle permanently separated into a liquid-chamber and a gas-chamber by a diaphragm having means for distributing liquid ammonia and means of communication between said chambers, a suitable discharge for each chamber, and means for warming the liquid-chamber.

4. An ammonia-purifier for refrigerating plants, consisting of a receptacle having a liquid-supply, a diaphragm having radial passages and a peripheral discharge for distributing liquid ammonia and separate passages for gas extending through said diaphragm, a liquid-chamber below the diaphragm provided with a discharge for impurities, a gas-chamber above the diaphragm provided with means of attachment with a suction-pump, and means for warming the liquid-chamber.

704,883. PROCESS OF PURIFYING REFRIGERANTS IN CIRCULATION IN REFRIGERATING PLANTS. JOHN SCHEIDEMAN, Washington, D. C. Filed Apr. 19, 1902. Serial No. 103,723. (No specimens.)

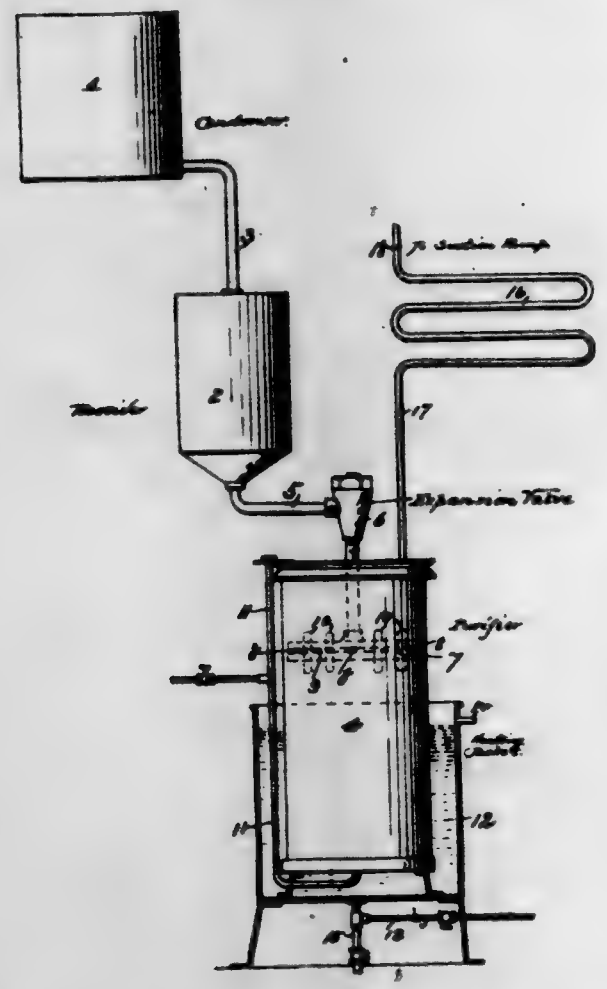

Claim.—1. The process of purifying a refrigerant in circulation in a refrigerating plant, which consists in collecting liquid refrigerant the product of condensation, vaporizing said liquid, then collecting the impurities from the refrigerant, vaporizing the refrigerant contained in said impurities, commingling the products of the several vaporizations and delivering these gases directly to the refrigerating-coils of the plant.

2. The process of purifying a refrigerant in circulation in a refrigerating plant, which consists in collecting liquid refrigerant the product of condensation, vaporizing said liquid, then collecting the impurities from the refrigerant, vaporizing the refrigerant contained in said impurities, commingling the products of the several vaporizations and delivering these gases directly to the refrigerating-coils of the plant, and removing the impurities.

704,884. BACKSTAY FOR CARRIAGE-TOPS. ROBERT C. SCHERMERHORN, Union City, Ind. Filed May 12, 1902. Serial No. 107,001. (No model.)

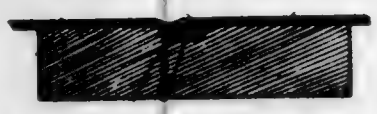

Claim.—A backstay comprising a textile filling, and a leather portion arranged on and turned over the textile filling, and made up of pieces of leather, enameled at one side; the said pieces of leather having the end portions of their enameled sides arranged together and connected by through-and-through stitches, and one of the pieces having a lap-welt disposed over the seam formed by said stitches.

704,885. HYDRAULIC BORING APPARATUS. GEORG SCHMIDT, Charlottenburg, Germany. Filed May 17, 1902. Serial No. 107,758. (No model.)

Claim.—1. In a hydraulic boring apparatus, the combination with the boring-tool of a piping suspended on springs and a check-valve between the piping and the tool for automatically checking the circulating water at a certain speed of the latter, substantially as and for the purpose described.

2. In a hydraulic boring apparatus, the combination with the boring-tool of a piping suspended on springs and a check-valve between the piping and the tool, the check-valve comprising a valve-chamber with an inlet and outlet opening and a weighted or spring-actuated valve for closing the outlet-opening of the valve-chamber at a certain speed of the circulating water, substantially as and for the purpose described.

3. In a hydraulic boring apparatus, the combination with the boring-tool of a piping suspended on springs and a check-valve between the piping and the tool, the check-valve comprising a valve-chamber with an inlet and outlet opening, a valve-spring the tension of which is capable of being adjusted, substantially as and for the purpose described.

704,886. APPARATUS FOR FILLING BOTTLES OR JUGS WITH BEER. ADOLF SCHROEDTER, Berlin, Germany. Filed Jan. 12, 1901. Serial No. 43,018. (No model.)

Claim.—In an apparatus for filling bottles or jugs with carbonated liquids, the combination with a filling-tube connected with a source of liquid-supply and means for automatically opening and closing said filling-tube, of a counter-pressure device, comprising pump-cylinders with weighted pistons, means for connecting said cylinders together, an automatic air-discharge device and a float-valve located between said cylinders and a vertically-reciprocable filling-head through which said filling-tube reciprocates, and means for reciprocating said filling-tube and filling-head, substantially as set forth.

704,886.

704,887. MEANS FOR MOVING HEAVY LOADS. ARTHUR SCHULZ, Friedenau, Germany. Filed Apr. 12, 1902. Serial No. 102,826. (No model.)

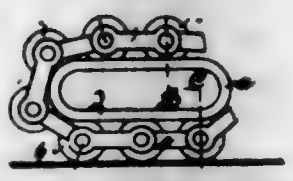

Claim.—1. In means for moving heavy loads, the combination of a frame adapted to carry the load and circumferentially grooved in its outer face, and an endless chain composed of link-cheeks pivotally connected at their ends, having central longitudinal elongated slots, and spaced-apart and trunnioned rollers journaled and engaging in the groove of the frame, in said slots, said rollers being of decreasing thickness from their centers toward their circumferences, substantially as and for the purposes set forth.

2. In means for moving heavy loads, the combination of a frame adapted to carry the load, circumferential flanges on the said frame and an endless chain, comprising link-cheeks, pins pivotally connecting the said link-cheeks, rollers tapering toward the circumference, trunnions centrally secured to the said rollers and journaled in oblong slots in the said link-cheeks, and ribs on the ends of the said link-cheeks, adapted to travel on the said circumferential rim-flanges, the parts being constructed, arranged and working substantially as and for the purpose set forth.

704,888. BELT-TIGHTENER. GEORGE A. SCHWIDER, Akron, Ohio. Filed Feb. 5, 1902. Serial No. 92,694. (No model.)

Claim.—1. The combination with a belt, and a fixed roller therefor, of a roller for the other end of said belt, bearings for said roller movable to and from the fixed roller, cams abutting said bearings, and means for operating said cams to control the position of said bearings and roller.

2. The combination with a belt, and a fixed roller therefor, of a roller for the other end of said belt, bearings for said roller consisting of bars having a slotted engagement with bolts or pins on the frame, cams abutting the inner ends of said bars, a shaft to which said cams are fixed, and an operating-lever for said shaft.

704,889. ART OF AGING OR TREATING SPIRITS. RICHARD C. SCOTT, Liverpool, England. Filed Feb. 24, 1902. Serial No. 95,441. (No model.)

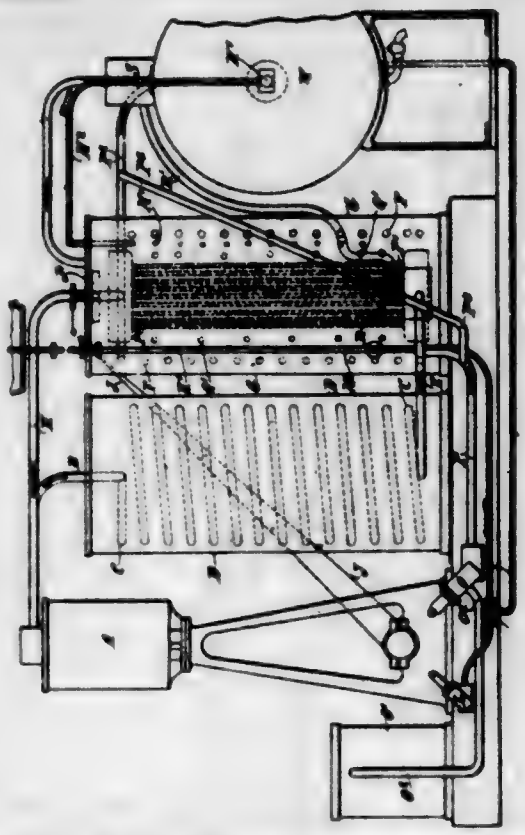

Claim.—1. The herein-described art of treating spirit by cooling it to about 32° Fahrenheit or below and spraying it in a stream of constantly-changing air at a warmer temperature.

2. The herein-described art of treating spirit by cooling it to about 32° Fahrenheit or below and spraying it in a stream of constantly-changing air alternately at a warmer temperature and at about 32° Fahrenheit or below.

704,890. HAIR-CURLER. ALESSANDRO G. B. SCURI, Liege, Belgium. Filed Dec. 30, 1901. Serial No. 87,785. (No model.)

Claim.—1. In a device of the type set forth, the combination of a comb shaped to fit the upper lip, a correspondingly-shaped plate movably carried by the front of said comb and adapted normally for engagement therewith, a depending handle secured to the lower portion of the comb, means engaging the front of the said plate for actuating said plate out of engagement with the comb, means for operating said last-named means, substantially as described.

2. In a device of the type set forth, the combination of a comb shaped to fit the upper lip, and carrying a depending handle, a correspondingly-shaped plate, an extension carried by the front of the comb at its upper portion, a lever pivotally secured to the extremity of said extension and carrying a handle at its lower portion, a right-angular arm secured centrally of the lever and having its free end pivotally secured to the front face of the plate, the plate having a downward movement, substantially as described.

704,891. AUTOMATIC GAS-LIGHTING MECHANISM. ALBERT R. SHAW, West Medford, Mass. Filed Sept. 30, 1901. Serial No. 77,018. (No model.)

Claim.—1. A gas-supply pipe, a gas-burner attached thereto, a valve controlling the supply of gas to said burner, a time mechanism, and connecting mechanism between the time mechanism and said valve, whereby the valve is controlled by said time mechanism, combined with a protecting-lantern having its base portion located intermediate the time mechanism and said valve, for the purpose set forth.

2. A gas-supply pipe, a gas-burner attached thereto, a valve controlling the supply of gas to said burner, a time mechanism, a casing for said time mechanism, connecting mechanism between the time mechanism and said valve, whereby the valve is controlled by the time mechan-

ism, combined with a protecting-lantern having its base portion located intermediate the time mechanism and said valve, and an inclosing casing for said connecting mechanism passing through the base portion of the lantern and forming a means by which the time mechanism and its inclosing casing are suspended from said gas-supply pipe, for the purpose set forth.

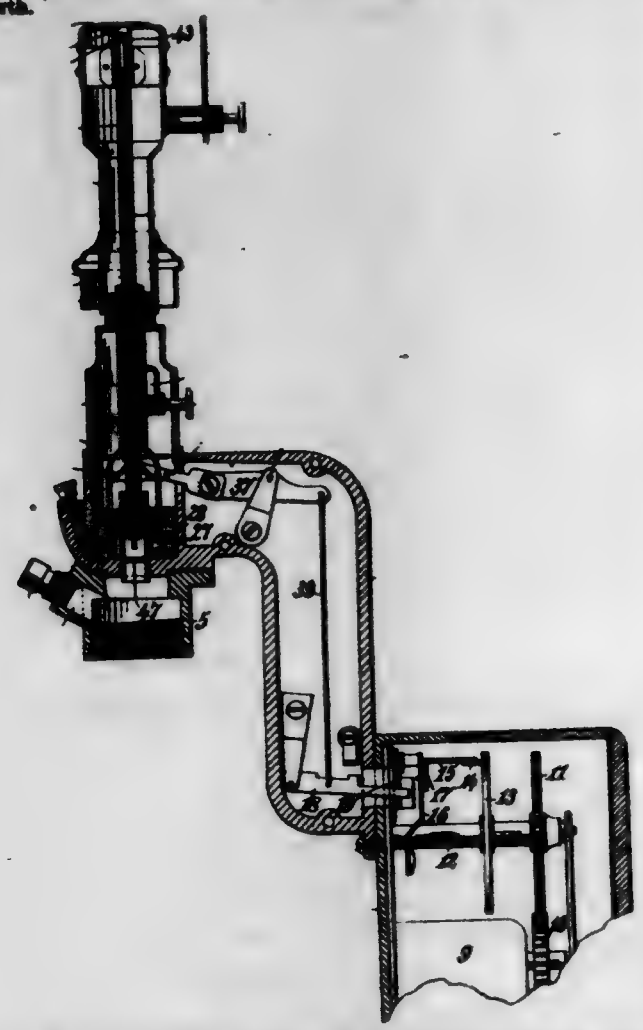

3. In an automatic gas lighting and extinguishing device for a street-lamp, a lantern, a gas-supply pipe entering the lantern, a burner in the lantern, a valve controlling the supply of gas to said burner, a time mechanism, and connecting mechanism between said time mechanism and valve including two levers and a connecting-rod between said levers, one lever engaging the valves within the lantern and the other lever engaged and acted upon by the time mechanism outside the lantern, whereby the bottom of the lantern will be located intermediate the time mechanism and the valve, for the purpose set forth.

4. In an automatic gas lighting and extinguishing device, a burner, a valve controlling the supply of gas to the burner, a time mechanism, a casing for the time mechanism and a connecting mechanism between the time mechanism and the gas-controlling valve engaging the valve at a plane above the casing for the time mechanism, adapted to receive a protecting-lantern having its base portion located intermediate the time mechanism and the gas-controlling valve, for the purpose set forth.

704,892. SHIRT-VEST. GEORGE W. SHECKELLS, Baltimore, Md. Filed Sept. 24, 1901. Serial No. 76,287. (No model.)

Claim.—1. A garment comprising a vest having a shirt-bosom disposed therein, said bosom being attached at its upper edges to the vest at the shoulder-seams thereof and a neckband attached to the upper edges of the bosom and the back of the vest and adapted for attachment of a collar thereto, the bosom being unattached at its side and bottom edges and lying behind the front of the vest.

2. A garment comprising a vest having its back and its front formed double, sleeves attached to the back and the linings of the front sections only, and a bosom attached to the upper portion of the vest and having a neckband, said band being attached also to the upper edge of the back of the vest.

704,893. MANUFACTURE OF IRON, MANGANESE, AND ALLOYS OF THESE METALS BY AID OF ELECTRICITY. ALBERT SIMON, Bordeaux, France. Filed Feb. 27, 1901. Serial No. 48,120. (No specimens.)

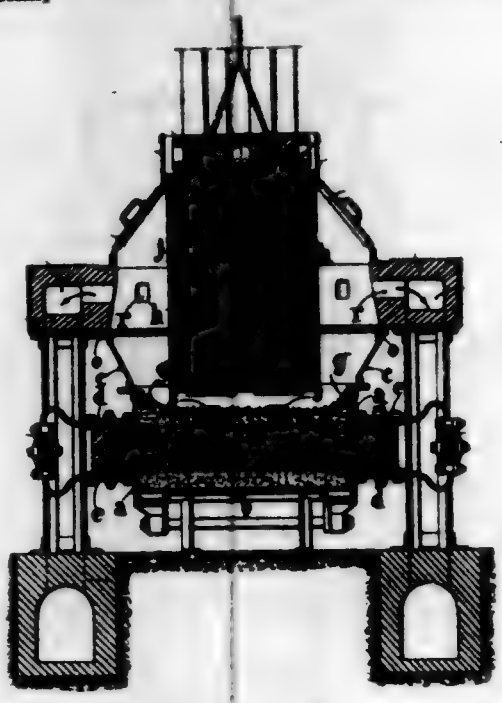

Claim.—A process of manufacturing iron, manganese and the alloys of such metals, consisting in adding to the material to be treated carbon, and an electrolyte consisting of fluorid of calcium, in sufficient quantity, to dissolve the material and then subjecting the mass to the action of a continuous electric current to cause the electrolytic decomposition and the keeping of the material in a fluid condition, substantially as described and for the purpose set forth.

704,894. RAILROAD-TIE. BENJAMIN H. SMITH, Shippensburg, Pa. Filed Feb. 5, 1902. Serial No. 92,632. (No model.)

Claim.—The herein-described tie formed of plastic or molten material and provided upon its under side with means to engage the contiguous part of the road-bed whereby a longitudinal and lateral slipping movement will be prevented, in combination with a reinforcing bar or bars fitting a groove in a contiguous part of the tie and means to hold said reinforcing-bars in place and additional means cooperating with said tie and bars to engage the track-rails and lock them in union with said parts, all combined substantially as specified and for the purpose set forth.

704,895. AUTOMATIC THRESHOLD. CHARLES R. SOWDEN, Basin, Mont. Filed Sept. 3, 1901. Serial No. 74,103. (No model.)

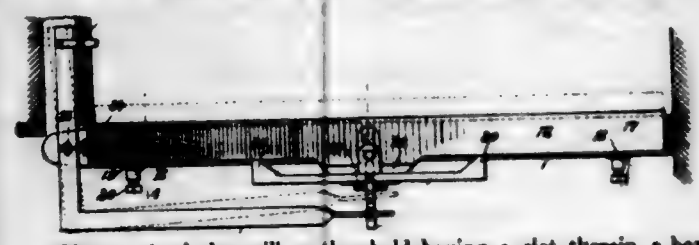

Claim.—1. A door-sill or threshold having a slot therein, a box-frame to which the door-sill or threshold is attached, a weather-strip extending practically from end to end of the box-frame and capable of moving in the slot of the sill or threshold, a lifting-bar having bearing at its ends against the lower edge of the weather-strip, and a lever in operative and adjustable connection with the said lifting-bar, which lever is operated by the movement of the door as the said door is opened and closed.

2. The combination with a sill or threshold having a longitudinal opening therein, a box-frame to which the sill or threshold is attached, a weather-strip having vertical movement in the frame and adapted to extend through the slot in the sill or threshold, an equalizing-bar carried by the said frame and having engagement with the threshold-strip at both

sides of its center, guides for the said equalizing-bar, which equalizing-bar is likewise a lifting-bar, a lever connected with the equalizing-bar, adapted in one position of the lever to raise the equalizing-bar, and a plunger carried by the lever and adapted to be operated by a door while opening or closing, as described.

3. In automatic thresholds, the combination, with a box-frame, a sill or threshold attached to the upper portion of the box-frame and provided with a longitudinal opening therein, a weather-strip mounted to slide vertically in the said box-frame and extend through the openings in the said sill, stop devices carried by the said frame, and in adjustable engagement with the lower edge of the weather-strip at its end portions, and an equalizing or lifting bar having bearing against the bottom of the weather-strip at each side of its center, of a shifting device for the lifting or equalizing bar, which shifting device has guided movement in the said frame, an elbow-lever fulcrumed upon the box-frame, having one end connected with the said shifting device, and a plunger connected with the opposite end of said lever, adapted to be operated by the opening and closing of a door, as described.

4. A door-sill or threshold having a slot therein, a frame to which the door-sill or threshold is attached, a weather-strip mounted to slide vertically in said slot, stop devices for the end portions of the weather-strip carried by said frame for engagement with the lower edge of the weather-strip, and devices for raising and lowering the weather-strip, acting thereon at points each side of the center of the weather-strip, substantially as described.

5. In automatic thresholds, a frame, a sill or threshold carried by the upper portion of the frame and having an opening therein, a weather-strip mounted to slide in the frame and through the opening in the sill, stop devices for adjustable engagement with the weather-strip, and devices for raising and lowering the weather-strip, as set forth.

704,896. FENCE-MAKING MACHINE. ELZA E. STEWART, New Ramley, Ohio. Filed Jan. 20, 1902. Serial No. 90,448. (No model.)

Claim.—1. In a fence-making machine, the combination of a supporting-frame, a shaft journaled vertically in the frame and provided with a pinion and with worm-gears, a horizontal drive-shaft carrying a gear-wheel meshing with the pinion, an operating device connected to said drive-shaft, bearings upon the frame, and twister-heads having worm-gears meshing with the worm-wheels on the vertical shaft, journals turning in said bearings and flanges to hold said wheel against displacement, substantially as described.

2. In a fence-making machine, the combination of a supporting-frame, a shaft journaled vertically in the frame and provided with a pinion and with worm-gears, a horizontal drive-shaft carrying a gear-wheel meshing with the pinion, an operating device connected to said drive-shaft, twister-head supports and bearings upon the frame, each consisting of opposing side plates, one of said plates being divided and having coinciding segmental notches, and twister-heads, each having gear-teeth to mesh with a worm-gear, a journal turning in the bearing formed by the walls of said notches, and a flange arranged between the plates and holding the head against displacement, substantially as and for the purpose set forth.

704,897. ANTIRATTLER FOR AWNING-FIXTURES. JAMES SULLIVAN, New York, N. Y. Filed Oct. 25, 1901. Serial No. 79,666. (No model.)

Claim.—1. An antirattling device for awning-fixtures, consisting of a strip of pliable material such as leather, having an enlarged intermediate portion or body-section and apertured tube extending from opposite sides of the body-section, the body-section being adapted to be bent about an axis parallel to the length of the strip into tubular form, and the tube bent outward from the ends thereof, for the purpose described.

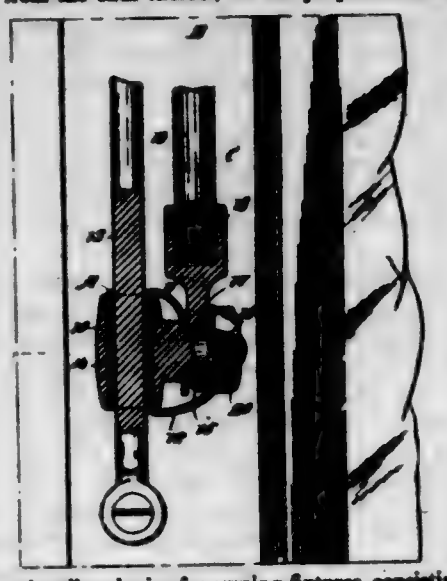

2. An antirattling device for awning-fixtures, consisting of a strip of leather provided with a rectangular body, and apertured tube extending from opposite sides of the said body, one tab being longer than the other, for the purpose described.

3. In awning-fixtures, the combination, with a guide-rod, a sleeve mounted to slide on the rod and provided with a threaded projection, and a socket for a member of the awning-frame mounted to turn upon the projection from the said sleeve, of an antirattling device consisting of a strip of leather or a like material, comprising a body-section and apertured tube extending from opposite sides of the body-section, the body-section being bent to cylindrical form and introduced into the said sleeve, the tube extending respectively from the top and bottom of the sleeve, one tab being passed over the projection of the sleeve, entering the space between the socket and the sleeve, the other tab being also passed over the projection from the sleeve, engaging with the opposite face of the said socket, and a lock-nut located on the said projection and engaging with the upwardly-carried tab of the antirattling device, for the purpose set forth.

704,898. SAFETY DEVICE. AUGUST SIEBEL, Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Oct. 12, 1901. Serial No. 78,480. (No model.)

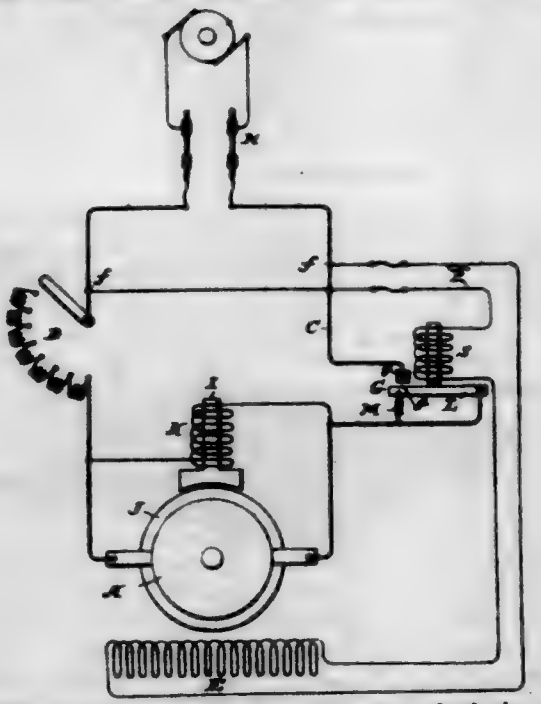

Claim.—1. The combination of a motor, and a brake-magnet connected in a shunt to the armature-circuit and controlled by the field-circuit, substantially as described.

2. The combination of a motor, a field-circuit normally closed in shunt to the mains, and a switch in the armature-circuit controlled by an electroresponsive device in said field-circuit, substantially as described.

3. The combination of a motor, a field-circuit normally closed in shunt to the mains, and a normally open switch in the armature-circuit controlled by an electroresponsive device in said field-circuit, substantially as described.

4. The combination of a motor, a field-circuit normally closed in shunt to the mains, a switch in the armature-circuit, and means controlled

by the said field-circuit for closing and opening said switch, substantially as set forth.

5. The combination of a motor, its armature-circuit and shunt field-winding, and means in the circuit of the shunt field controlling the armature-circuit, and a brake controlled by the armature-circuit, substantially as described.

6. The combination of a main circuit and a motor, its shunt field-winding, and an electroresponsive device therein controlling contacts in the main circuit, a main-circuit switch and an electroresponsive device energized from the main circuit and controlling a brake, substantially as described.

7. The combination of a main circuit and a motor, its shunt field-winding and an electroresponsive device therein controlling the operation of a switch in the main circuit, another switch in the main circuit for starting the motor, and an electroresponsive brake-controlling device connected to the main circuit in such a manner as to become deënergized when the circuit of the field-winding becomes deënergized, substantially as described.

8. The combination of a main circuit and a motor, its shunt field-winding and an electroresponsive device therein controlling the operation of a switch in the main circuit, another switch in the main circuit for starting the motor, and an electroresponsive brake-controlling device connected in shunt with the main circuit in such manner as to become deënergized when the main circuit is broken, substantially as described.

9. The combination of a main circuit and a motor, its shunt field-winding and an electroresponsive device therein controlling the operation of a switch in the main circuit, another switch in the main circuit for starting the motor, and an electroresponsive brake-controlling device adapted to be deënergized when the circuit of the shunt field-winding is broken, substantially as described.

10. The combination of a main circuit and a motor, its shunt field-winding and an electroresponsive device therein controlling the operation of a switch in the main circuit, a brake, and an electroresponsive brake-controlling device adapted to apply the brake when the field-winding becomes deënergized, substantially as described.

11. The combination of a source of supply and a main circuit, an armature connected thereto, starting and controlling switches in the main circuit, a shunt field-circuit connected to the main circuit at points between the source of supply and said starting and controlling switches, and an electroresponsive device in said field-circuit controlling said controlling-switch, substantially as described.

12. The combination of a source of supply and a main circuit, an armature connected thereto, starting and controlling switches in the main circuit, a shunt field-circuit connected to the main circuit at points between the source of supply and said starting and controlling switches, an electroresponsive device in said field-circuit controlling said controlling-switch, and an electroresponsive brake-controlling device connected to points on the main circuit between the starting and controlling switches and the armature, substantially as described.

704,399. STAINED-GLASS WINDOW OR SIMILAR OBJECT AND PROCESS OF MAKING SAME. JULIUS TALSAU, Philadelphia, Pa., assignor of one-half to Henry W. Scattergood, Philadelphia, Pa. Filed Dec. 16, 1899. Serial No. 572,318. (No model.)

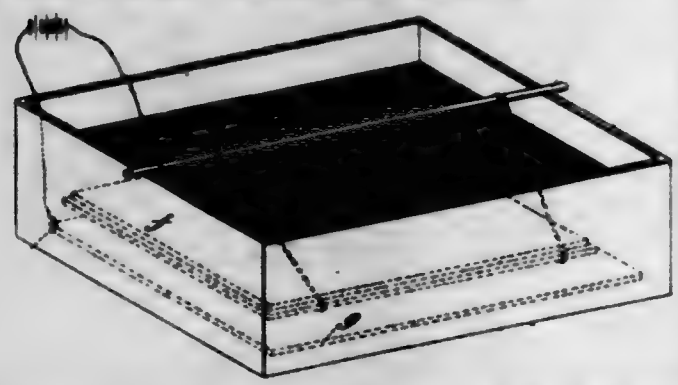

Claim.—1. The method of uniting sections of glass or tile, which consists in arranging such sections on a support with their adjacent edges apart, said support provided with a conducting-surface along the spaces between the edges of the sections, and then electrodepositing metal upon said support until the spaces between such sections are filled by the deposited metal.

2. The process of framing or uniting electrically non-conductive objects, such as glass in stained-glass transparencies, which consists in arranging such objects upon an electrically-conductive backing or foundation, in given design, with their adjacent edges apart, and then electrically depositing metal in the spaces between such adjacent edges and around the boundary of the object, substantially as described.

3. The process of framing or uniting electrically non-conductive objects, such as glass in stained-glass transparencies, which consists in arranging such objects upon an electrically-conductive backing or foundation, in given design, with their adjacent edges apart, and then electrically depositing metal in the spaces between such adjacent edges and around the boundary of the object, and finally stripping off the backing or foundation, substantially as described.

4. As an improved article of manufacture, a stained-glass window or other object, composed of a number of pieces of essentially electrically non-conductive material, and a continuous and homogeneous frame of electrodeposited metal between the adjacent edges of the component pieces and around the perimeter of the article as a whole, substantially as described.

5. The method of uniting sections or pieces of glass and other electrically non-conductive material, which consists in arranging such sections upon a conducting-support, with their edges apart, and then electrodepositing metal upon said support until the spaces between such sections are filled by the deposited metal.

6. The method of mounting sections or pieces of glass and other electrically non-conductive material, which consists in arranging the sections or pieces in any desired manner on a conducting-surface, exposing the whole in the electrolytic bath until the interstices between the sections or pieces are filled by the deposit formed on the conducting-surface, and then removing the conducting-surface to expose the faces of the complete product.

7. The method of mounting sections of glass and other electrically non-conductive material, which consists in arranging the sections or pieces in the desired manner on a temporary conducting-surface on a removable support, exposing the whole in the electrolytic bath until the interstices between the sections are filled by the deposit formed on the conducting-surface, then removing the support and conducting-surface to expose the faces of the complete product.

704,400. METHOD OF FRAMING GLASS. JULIUS TALSAU and HENRY W. SCATTERGOOD, Philadelphia, Pa. Filed June 30, 1897. Serial No. 643,266. (No specimens.)

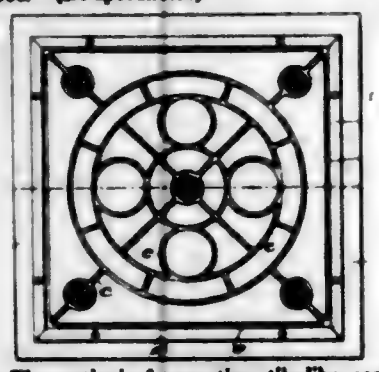

Claim.—1. The method of mounting tile-like sections which consists in arranging the sections in the desired manner on a support with spaces between the sections, the support being provided with a conducting-surface along the spaces between the edges of the sections, exposing the whole in an electrolytic bath until the interstices between the sections are filled with the deposit formed, then continuing the exposure until the deposited metal is in the form of an I-beam.

2. The method of framing sections of glass and other material, which consists in providing a wax-like support with a conducting-surface, arranging the sections on such surface in the desired relation and with spaces between them, exposing the whole in an electrolytic bath until the interstices between the sections are filled with the deposit made on the exposed conducting-surfaces, then melting off or otherwise detaching the support.

3. The method of framing sections of glass and other material, which consists in providing a body of wax to which the glass may be temporarily applied, and having a conducting-surface, arranging the objects on such surface in the desired relation and with spaces between them, exposing the whole in an electrolytic bath and depositing in the spaces the material of the electrolyte, and then removing from the bath and melting off or otherwise detaching the wax, substantially as described.

4. The method of framing sections of glass and other material, which consists in providing a fugitive body to which the glass may be temporarily applied, and having a conducting-surface, arranging such fugitive body upon a support having non-fugitive projections below the surface of the fugitive body, arranging the objects to be framed on such surface, and in the desired relation, and with spaces between them, exposing the whole in an electrolytic bath, and depositing in the spaces the material of the electrolyte, and then removing from the bath and displacing the fugitive body down to or below the outer edges of the non-fugitive projections on the support, substantially as described.

5. The method of framing pieces of glass or other substance, which consists in providing a temporary support for such pieces, arranging the pieces on such support in the desired relation and with intervening spaces, providing a metallic or metallized foundation in said spaces, removing the object from the bath and then filling or partly filling the spaces above such foundation with a suitable material and confining it between the foundation and the pieces, and then removing from the temporary support, substantially as described.

6. The method of framing pieces of glass or other substance, which consists in providing a temporary support for such pieces, arranging the pieces on such support in the desired relation and with intervening spaces, forming a metallic or metallized foundation in said spaces, removing the object from the bath, then filling or partly filling the spaces above such foundation with a suitable material, finishing the surface of the filling by electrodeposition of metal, and then removing from the temporary support, substantially as described.

7. The method of framing pieces or sections of glass or other material, which consists in providing a removable conducting-surface, placing thereon the pieces or sections in proper relation and with intervening spaces, depositing a metallic foundation in said spaces, then filling the spaces with alternate layers of metallic filings and electrically-deposited metal, and then removing the removable conducting-surface, substantially as described.

8. The method of framing pieces or sections of glass, which consists in providing a removable conducting-surface and a suitable support therefor, placing on such surface the pieces or sections in proper relation with intervening spaces, surrounding the object thus formed with a frame between which and the object a space is left, and then building up the framing in said several spaces by the electrodeposition of a suitable metal, and then removing the conducting-surface, substantially as described.

9. The method of framing pieces or sections of glass or other material, which consists in providing a temporary conducting-surface, placing thereon the pieces in proper relation and with intervening spaces, exposing in the electrolytic bath and depositing metal in the interstices, removing the conducting-surface so as to expose both sides of the product, and forming ledges on the exposed surfaces of the deposited metal to overhang the edges of the glass or other pieces, by a further exposure in the electrolytic bath, substantially as described.

10. The method of framing pieces or sections of glass or other material, which consists in providing a temporary support having a conducting-surface, and arranging thereon the pieces or sections in proper relation and with intervening spaces, exposing the object in an electrolytic bath and depositing the metal in such spaces against the conducting-surface, removing the object from the bath and support, and again exposing in the bath, substantially as described.

11. As an improved article of manufacture, a stained-glass window, or other object, having a frame or framing composed of a foundation of electrodeposited metal arranged between the edges of the pieces or sections which form parts of the window or other object and within the plane of their faces, and a superstructure of finely-divided filling material bound in between the foundation and the said pieces or sections, substantially as described.

704,401. METHOD OF FRAMING GLASS. JULIUS TALBOT, Philadelphia, Pa., assignor of one-half to Henry W. Suttergood, Philadelphia, Pa. Filed Mar. 22, 1898. Serial No. 674,513. (No model.)

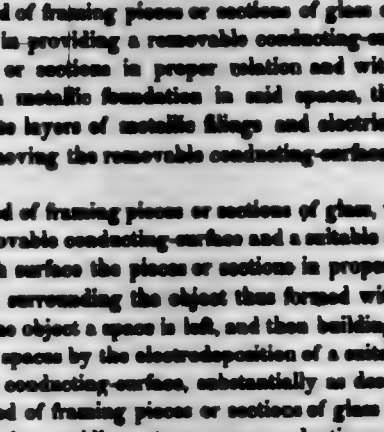

Claim.—1. The method of uniting pieces of glass or other material, which consists in arranging such pieces on a support to hold them in relative position with spaces between them, then providing an electric conductor on such support in proximity to such spaces, then exposing in an electrolytic bath and electrodepositing on such conductor and within such spaces until the spaces are entirely filled with deposited metal, so as to form an electrodeposited holding-frame therefor.

2. The method of electroglazing glass and other substances, consisting in providing a support upon which the several pieces are placed in such manner as to have their adjacent edges slightly separated, some cementitious or adhesive material being interposed between the support and the pieces, the spaces between the pieces being provided with an electric conductor, then inserting the object into an electrolytic bath and depositing material upon the electric conductors between the several pieces, and then removing the support.

3. The method of forming a series of pieces of glass or other substances into a body, consisting in placing the several pieces upon a support in such manner that their adjacent edges will be slightly separated, a quantity of cementitious or adhesive material being interposed between the pieces and the support, then applying electrically-conducted material in the spaces between the several pieces, then immersing the body in an electrolytic bath and depositing metal between the parts to be connected, and thereby connecting the pieces to adapt them to receive a surrounding frame, the support being removed or retained as desired.

704,402. BLEACHING-VAT. FRANK TAYLOR, Dough, and ALEXANDER COOKE and ROBERT W. D. MONTGOMERY, Belfast, Ireland, assignors to the Linhouse Process Bleaching Company, Limited, Cornhulme, England. Filed Mar. 15, 1901. Serial No. 51,570. (No model.)

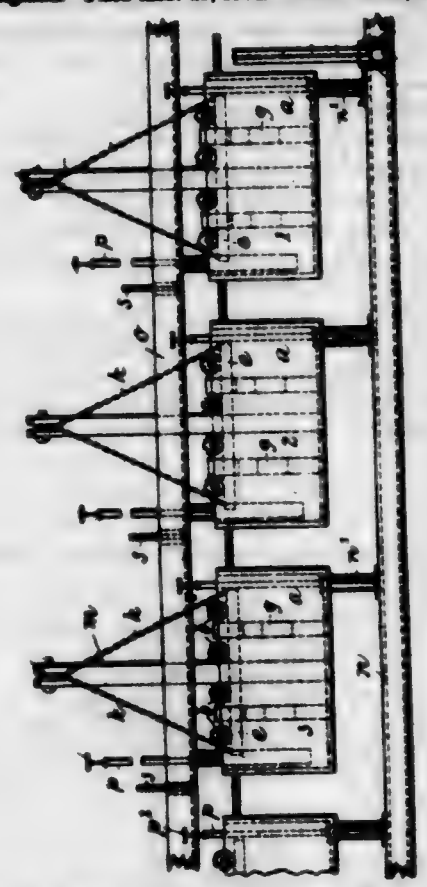

Claim.—1. In combination, a vat having a discharge-opening, a delivery-trough for liquids above same having a discharge-opening above the trough, a discharge-trough beneath the vat, plugs for the discharge-openings both of the delivery-trough and the vat each comprising a cylinder, means for compressing air in same, a flange on the cylinder resting on the receptacle, a perforated extension of the cylinder below such flange, a further smaller flange adapted to pass into the opening of the receptacle and an elastic surrounding wall for the chamber formed between such flanges adapted to be expanded in the opening by the air-pressure in the cylinder.

2. In combination, a liquid-receptacle having an opening therein, a plug for such opening comprising a cylinder, piston, and operating means for the latter, a flange on the cylinder resting on the receptacle, a perforated extension of the cylinder below such flange, a further smaller flange adapted to pass into the opening of the receptacle and an elastic surrounding wall for the chamber formed between such flanges adapted to be expanded in the opening by the action of the piston.

704,403. ADJUSTABLE SUPPORT FOR PHOTOGRAPHIC OR SIMILAR APPARATUS. PETER TRILL, Cologne, Germany. Filed Aug. 9, 1901. Serial No. 71,457. (No model.)

Claim.—1. A support for photographic and other apparatus or instruments comprising a rod carrying adjusting devices for securing it between two fixed surfaces; and a holder for the apparatus adjustable laterally and circumferentially on said rod and means for clamping said holder on said rod.

2. A support for photographic and other apparatus or instruments comprising a rod having adjustable devices at the ends thereof to permit

of a securing thereof between two surfaces at varying angles; and a holder for the apparatus adjustable laterally and circumferentially on said support and means for clamping said holder on said rod.

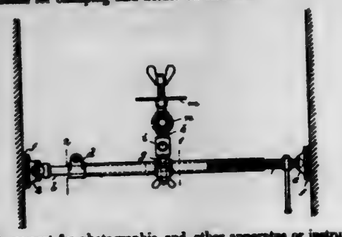

3. A support for photographic and other apparatus or instruments comprising a rod; extensions adjustably located at the ends thereof; and pads jointed to said extensions, whereby the rod may be fixedly mounted at varying angles between two surfaces.

4. A support for photographic and other apparatus or instruments comprising a rod; extensions adjustably located at the ends thereof; pads jointed to said extensions, whereby the rod may be fixedly mounted at varying angles between two surfaces; and a holder for the apparatus adjustable laterally and circumferentially on said support.

5. A support for photographic and other apparatus or instruments comprising a rod; extensions adjustably located at the ends thereof; pads jointed to said extensions, whereby the rod may be fixedly mounted at varying angles between two surfaces; and a holder for the apparatus adjustable laterally and circumferentially on said support, said holder being offset from the axis of said support.

6. A support for photographic and other apparatus or instruments comprising a rod; extensions adjustably located at the ends thereof; pads jointed to said extensions, whereby the rod may be fixedly mounted at varying angles between two surfaces; a holder for the apparatus adjustable laterally and circumferentially on said support, said holder being offset from the axis of said support; and a plate pivotally carried by said holder.

704,404. FASTENER FOR LABEL-HOLDERS. JOHN R. THORUP, Rantoul, Ill. Filed May 3, 1901. Serial No. 58,505. (No model.)

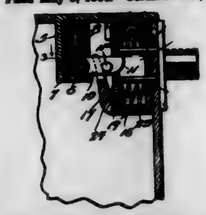

Claim.—1. The combination with a holder of the class set forth, a movable closure for one end of the holder, a rotatable spindle supported by the holder and having a catch-arm with a cross-pin therein, an inwardly-extending slotted striker secured to the closure, and a spring-actuated slotted catch-plate also carried by the closure and normally positioned outwardly from the striker.

2. In a device of the class set forth comprising a casing and a movable closure for one end thereof, a catch device movably supported by the casing and located on the interior of the latter, said catch device being operative from the exterior of the casing, a vertically-disposed catch-plate and an upwardly and inwardly extending striker carried by the closure, the catch-plate being freely movable and having a slot therein, and means for exteriorly operating the catch-plate.

3. In a device of the class set forth, the combination of a casing having a movable closure at one end, a catch device movably supported by and located interiorly of the casing, and a striker and catch-plate hold by the closure, the catch-plate being vertically disposed and freely movable to and from the striker and having a slot therein, the catch device and catch-plate having exteriorly-located operating means.

4. In a device of the class set forth, the combination of a casing having a movable closure at one end, a catch device movably supported by an interior portion of the casing and having exteriorly-located operative means, an inwardly and upwardly extending striker carried by the closure to receive the catch device, and a slidable plate with an opening therein also carried by the closure and operating to prevent release of the catch device from the striker until cleared from the end of said catch device.

704,405. WATER-WHEEL. SANFORD M. THURMAN, YUMA, ARIZ. Filed Nov. 2, 1901. Serial No. 80,957. (No model.)

Claim.—A water-wheel having at each end a series of radial arms, inclined braces extending from the outer end of one radial arm to the middle portion of the next radial arm, paddles hinged along their outer edges to the point where the outer ends of the radial arms and the outer ends of the inclined braces converge and unite to form the outer angles of the wheel, the said inclined braces also forming rests or supports for the paddles when receiving the water-pressure substantially as described.

704,406. SHUTTLE FOR SEWING-MACHINES. HARRIET R. TRAUT, London, England. Filed Mar. 21, 1899. Serial No. 709,825. (No model.)

Claim.—1. A vibratory shuttle provided with an arm to retain the loop of the needle-thread during the reverse movement of the shuttle, the arm being secured near the heel of the shuttle and extending in a plane above the lower edge of the shuttle in the direction of the shuttle-nose, substantially as described.

2. A vibratory shuttle provided with an arm to retain the loop of the needle-thread during the reverse movement of the shuttle, the arm being secured near the heel of the shuttle, and having its free end terminated between the heel and the nose of the shuttle, substantially as described.

3. A vibratory shuttle provided with an arm to retain the loop of the needle-thread during the reverse movement of the shuttle, the arm being secured near the heel of the shuttle, and extending in the direction of the nose of the shuttle, the arm having its outer edge curved, and being of greatest width at its center, substantially as described.

4. A vibratory shuttle provided with a loop-retaining arm secured near the heel thereof, the arm extending in the direction of the shuttle-nose and thereby adapted upon the reverse movement of the shuttle to release the loop at a point where it will not be engaged by the descending needle, substantially as described.

5. A lock-stitch vibratory shuttle provided with a loop-retaining arm secured near the heel of the shuttle, the arm extending in the direction of the shuttle-nose, but terminating short of the shuttle-nose and thereby adapted upon the reverse movement of the shuttle to release the loop at a point where it will not be engaged by the descending needle, substantially as described.

704,407. WRENCH. EDWARD L. UTLEY, Fayetteville, N. C. Filed Nov. 5, 1901. Serial No. 81,211. (No model.)

Claim.—1. In a wrench, the combination with a hollow handle provided with a fixed jaw and provided internally with a toothed rack, of a movable jaw having a shank adjustably fitted in the hollow handle, a pawl carried by said shank, means for normally holding one end of the pawl in engagement with the rack, and a thumb-piece carried by the other end of pawl and projecting through an elongated slot formed in the side of the handle opposed to the rack, substantially as described.

2. In a wrench, the combination with a hollow handle provided with a fixed jaw and provided internally with a toothed rack, of a movable jaw having a shank movably fitted in the hollow handle and longitudinally slotted from side to side intermediate its ends, a pawl disposed in said slot and fulcrumed therein intermediate its ends, said pawl being provided at one end with a tooth adapted to engage the rack and at its other end with a thumb-piece projecting through an elongated slot formed in

the hollow handle, and means for normally holding the pawl in engagement with the rack, substantially as described.

3. In a wrench, the combination with a hollow handle provided with a fixed jaw and provided internally with a toothed rack each tooth of the rack having a straight and an inclined face, the inclined faces of the teeth being disposed toward the fixed jaw, of a movable jaw having a shank movably fitted in the hollow handle and longitudinally slotted from side to side intermediate its ends, a pawl disposed in said slot and fulcrumed therein intermediate its ends, said pawl being provided at one end with a tooth adapted to engage the rack and at its other end with a thumb-piece projecting through an elongated slot formed in the hollow handle, and a spring arranged to normally hold the pawl in engagement with the rack, substantially as described.

4. In a wrench the combination with a hollow handle provided with a fixed jaw and provided internally with a toothed rack, each tooth of the rack having a straight and an inclined face, the inclined faces of the teeth being disposed toward the fixed jaw, of a movable jaw having a shank movably fitted in the hollow handle and longitudinally slotted from side to side intermediate its ends, two pawls of unequal length disposed in said slot and fulcrumed therein intermediate their ends, each of said pawls being provided at one end with a tooth adapted to engage the rack and at its other end with a thumb-piece projecting through a slot formed in the hollow handle, and springs arranged to normally hold the pawls in engagement with the rack, substantially as described.

5. In a wrench, the combination with a hollow handle provided with a fixed jaw and provided internally with a toothed rack, each tooth of the rack having a straight and an inclined face, the inclined faces of the teeth being disposed toward the fixed jaw, of a movable jaw having a shank movably fitted in the hollow handle, a pivoted pawl carried by said shank and provided with a tooth adapted to engage the rack, the teeth of the rack and pawl being so constructed and arranged that when the pawl is swung into and out of engagement with the rack the point of the pawl-tooth will move in the arc of a circle divergent from the adjacent abutting face of the corresponding rack-tooth and the beveled spaces of said teeth will clear one another without touching, substantially as described and for the purpose specified.

704,408. SPOUT-BRACE FOR SHEET-METAL VESSELS. CHARLES L. WAGANER, Baltimore, Md., assignor to National Enameling & Stamping Co., a Corporation of New Jersey. Filed May 9, 1902. Serial No. 106,562. (No model.)

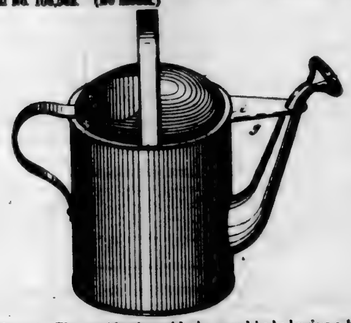

Claim.—1. The combination with the vessel-body having a breast and spout, of a sheet-metal brace having a tang end secured to the said body at the joinder of the body-wall and breast and provided at its other end with an opening formed entirely within its margin, said opening receiving and entirely surrounding the spout, and the marginal edge of the brace extending across said brace in contact with the upper surface of the same, as set forth.

2. A sheet-metal vessel, comprising a body provided at its upper edge with a recess; a spout secured to said body; a brace provided at one end with an opening which receives the said spout and provided at its other end with tangs taking through said recess; and a breast having its marginal edge interlocked with the upper edge of the vessel-body and extending over said brace in contact with the upper surface of the same whereby to secure said brace to the body, as set forth.

704,409. ORE-TESTING TABLET. HENRY H. WAY, Custer, S. D., assignor of one-half to Harry B. Griffith, Custer, S. D. Filed Feb. 7, 1901. Serial No. 46,267. (Specimens.)

Claim.—1. As a new article of manufacture, a composition tablet for testing ores comprising a fuel and a decomposable compound containing oxygen for burning said fuel, said oxygen-furnishing compound being employed in proportions sufficient to burn said fuel to produce a reducing heat and also fluxing reagent reducing agents as described.

2. As a new article of manufacture, a composition tablet for testing ores comprising a fuel, and a decomposable compound containing oxygen for burning said fuel, said oxygen compound being in greater proportion by weight than the fuel as described.

3. As a new article of manufacture, a composition tablet for testing ores comprising charcoal and potassium nitrate, the potassium nitrate being in excess by weight.

4. As a new article of manufacture, a composition tablet for testing ores comprising a fuel and a decomposable compound supplying both oxygen for burning the fuel and cyanid of potassium for reducing the ores, substantially as described.

5. As a new article of manufacture, a composition tablet for testing ores comprising charcoal sixteen parts by weight, and nitrate of potassium twenty-seven parts by weight, substantially as described.

704,410. LEAF-HOLDER. CALVIN P. WEAVER, Bloomsburg, Pa. Filed July 11, 1901. Serial No. 67,823. (No model.)

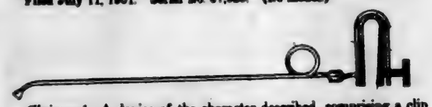

Claim.—1. A device of the character described, comprising a clip provided with pins, a clamping-plate hinged upon the pins, a packing arranged between the clamping-plate and one of the arms of the clip, means for forcing the plate against the support, and a spring-arm projecting from the clip and having a plurality of coils arranged at different angles to each other.

2. In a device of the character described, the combination with a U-shaped clip, the lower arm of which is formed with two diametrically opposite pins, a clamping-plate adapted to rest on the upper face of said arm and having extensions bent to form barrels and encircling said pins, a screw for forcing said clamping-plate against the support and a spring-arm arranged vertically of the top of said clip, for the purpose described

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704,411. TENSION DEVICE. HAROLD A. WEBSTER, Haverhill, Mass., assignor to the Goodyear Shoe Machinery Company, Portland, Me., a Corporation of Maine. Filed July 30, 1898. Serial No. 688,422. (No model.)

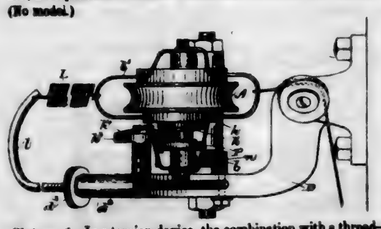

Claim.—1. In a tension device, the combination with a thread-truck capable of rotation and lateral movement, of a clutch to hold said truck from rotation opened and closed by the lateral movement of said truck, means controlled by the pull of the thread for imparting the said lateral movement to said truck, substantially as described.

2. In a tension device, the combination with a thread-truck, of a clutch comprising two clutch members capable of relative lateral movement toward and from each other, one of said clutch members being held to rotate with said truck and the other held from rotation, and means controlled by the pull of the thread to effect a relative lateral movement of said clutch members to engage and disengage the clutch members, substantially as described.

704,412. APPARATUS FOR MAKING SULFUROUS ACID. WILLIAM WEIDEL, Appleton, Wis. Filed Feb. 10, 1902. Serial No. 93,413. (No model.)

Claim.—1. In an apparatus for making sulfurous acid, the combination with a tank, of a sulfur-burner communicating with said tank, an aspirator-ejector one leg of which is horizontally disposed and the other leg

of which is vertically di-posed, the ends of the legs being open, means for passing a stream of liquid through the open end of the vertical leg, and a suction-pipe connected with said tank and inserted into the vertical leg of the ejector, the lower end of the suction-pipe being situated below the horizontal leg of the ejector and being of less external diameter than the internal diameter of the vertical leg of said ejector and the latter being arranged to deliver the water away from said tank.

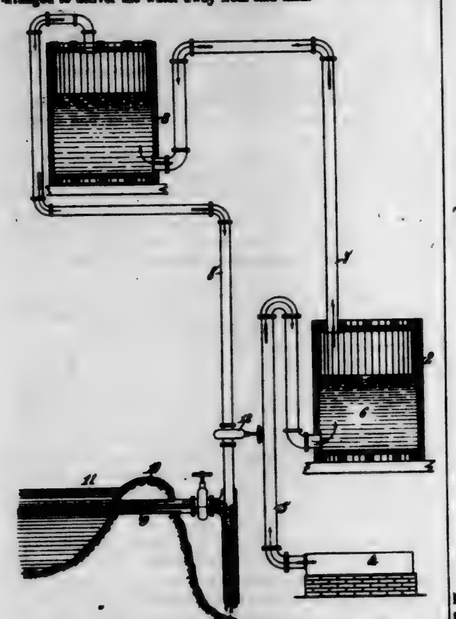

2. In an apparatus for making sulfurous acid, the combination of a plurality of tanks, piping connecting said tanks, a sulfur-burner, piping connecting said sulfur-burner with the primary tank, an ejector, means for passing a body of water through said ejector, and a suction-pipe connected respectively with the secondary tank and the ejector, and the latter being arranged to deliver the water away from said secondary tank.

704,418. HASP-FASTENER. ADA L. WESTON, Dover, Ohio. Filed Jan. 31, 1902. Serial No. 91,942. (No model.)

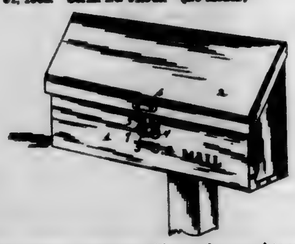

Claim.—The combination with a staple secured to a stationary portion of a box or inclosure, of a hasp secured to a cover or movable portion, the said hasp being formed of an integral loop, the sides of which pass one on each side of the staple, and the looped extremity being turned upward to engage the upper edge of the staple substantially as described.

704,414. RAILWAY-SWITCH. WILLIAM WHARTON, Jr., Philadelphia, Pa., assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa., a Corporation of Pennsylvania. Filed May 6, 1902. Serial No. 106,106. (No model.)

Claim.—1. In a railway-switch, the combination of a switch-rail and a reinforcing-bar having two longitudinal strengthening-ribs.

2. In a railway-switch, the combination of a switch-rail and a reinforcing-bar attached thereto having two longitudinal strengthening-ribs and connecting-rods having their ends fitting between said ribs and attached thereto by suitable fastening means.

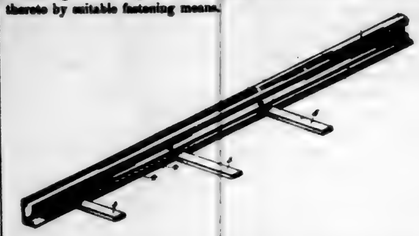

704,415. BLUE-PRINTING APPARATUS. SAMUEL B. WEHRY, Pittsburg, Pa., assignor to the Pittsburgh Blue Print Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Feb. 5, 1902. Serial No. 92,750. (No model.)

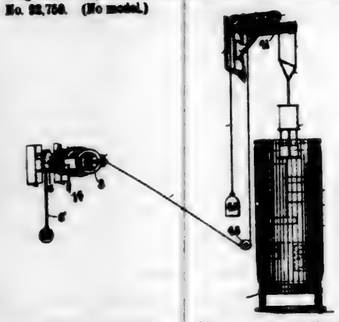

Claim.—1. A printing-drum, a lamp, an escapement mechanism for lowering the lamp into the drum, and a catch for preventing the operation of the said mechanism.

2. A printing-drum, a lamp, a winding-drum, connections between the winding-drum and the lamp, an escapement mechanism for governing the speed of the winding-drum, said winding-drum and escapement being separable to permit the free turning of the former.

3. A printing-frame, a lamp, a winding-drum, a pair of cords for suspending the lamp, an escapement mechanism for governing the travel of the lamp, and a weight, one of the cords being connected to the drum and the other, to the weight.

4. A printing-frame, a lamp, a winding-drum, a pair of cords for suspending the lamp, an escapement mechanism for governing the travel of the lamp, and a weight, the drum being separable from the escapement-wheel to permit the free turning of the former, one of the cords being connected to the drum and the other to the weight.

704,416. SPRING BED-BOTTOM. CHARLES B. WHITE and FRANKLIN WHITE, Landover, Md. Filed Apr. 4, 1902. Serial No. 101,410. (No model.)

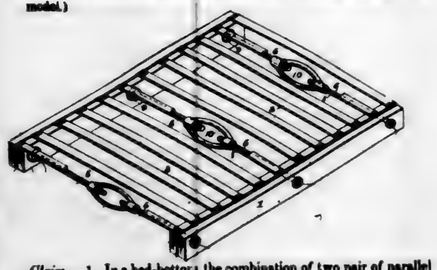

Claim.—1. In a bed-bottom, the combination of two pair of parallel side members, bowed springs having downturned ends which ends are engaged by said side members, tie-rods passing through apertures in said side members, nuts mounted on said rods to clamp said parallel side members together to hold said springs, and turnbuckles connecting said tie-rods, substantially as described.

2. In a bed-bottom, the combination of two pair of parallel side members, bowed springs having downturned ends which ends are engaged by said side members, tie-rods passing through transverse apertures in said side members and provided with heads which bear on the outer faces of the outer member of said pairs of parallel side members, nuts mounted on said tie-rods and bearing on the inner faces of said side members to clamp them together and hold said springs, and turnbuckles connecting said tie-rods, substantially as described.

704,417. IGNITER. CHARLES A. WILKINSON, Worcester, Mass. Filed Oct. 15, 1901. Serial No. 78,726. (No model.)

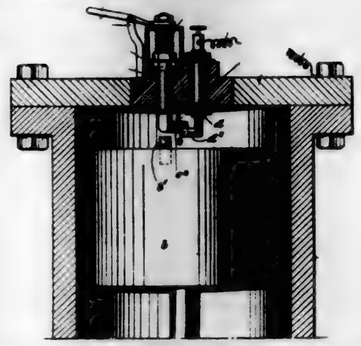

Claim.—1. An electrical igniter for internal-combustion engines, comprising two conducting-pins mounted in the cylinder-head in parallelism with each other, one of said pins being movable longitudinally by the pressure of the piston thereon, and said pin having a laterally-turned toe at its inner end, and the other pin being insulated from the cylinder-head and having a laterally-turned fork at its inner end, and means for pressing on the first-named or movable pin to hold its toe yieldingly between the members of the fork on the second-named pin.

2. An electrical igniter for internal-combustion engines, comprising a plug fitted in the cylinder-head, a conducting-pin fitted rigidly in the plug and insulated therefrom, said pin having at its inner end a laterally-turned fork, a second pin mounted in the plug parallel with the first pin and arranged to slide longitudinally under pressure from the piston, said pin having a laterally-turned toe bearing normally between the members of the fork, means for pressing the second pin yieldingly in place, and a key working between the second pin and the plug to prevent said pin from turning.

704,418. BRICK-KILN. THOMAS M. WILSON, Layton, Pa. Filed Oct. 26, 1901. Serial No. 80,089. (No model.)

Claim.—1. The combination of a kiln, furnaces immediately adjacent each other communicating with the kiln, and a transversely open partition-wall separating the furnaces.

2. The combination of a kiln having a furnace-opening, a furnace structure inclosing the opening and containing two immediately adjacent furnaces, and a transversely open partition-wall separating the furnaces.

3. The combination of a kiln having an opening in its wall, two adjacent furnaces communicating with the kiln through said opening, and a partition separating said furnaces and intersecting the kiln-wall above the opening.

4. The combination of a kiln having an opening in its wall, two adjacent furnaces communicating with the kiln through said opening, and a vertical partition separating the furnaces, the partition extending through the kiln-opening and above the same, thereby laterally bracing the kiln-wall above the opening.

5. The combination of a kiln having an opening in its wall, two adjacent furnaces communicating with the kiln through said opening, and a vertical partition separating the furnaces, the partition having a transverse opening through which the furnaces communicate, said partition extending through the kiln-opening and above the same on the inner and outer sides of the kiln-wall, thereby laterally bracing the same.

6. The combination of a kiln having an opening, a furnace structure inclosing the opening and a portion of the kiln-wall adjacent the opening, and a lateral reinforcement within the furnace structure for the said inclosed portion of the wall.

7. The combination of a kiln having an opening, a furnace communicating with the kiln through the opening, and a transverse wall intersecting the kiln-wall immediately above the said opening and laterally bracing the same.

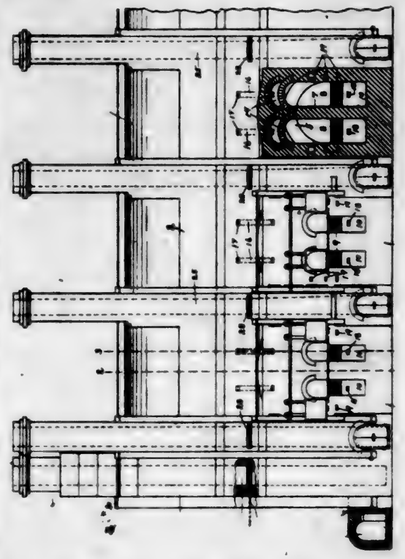

8. The combination of a kiln having an opening, a furnace structure without the kiln and inclosing the opening and communicating with the kiln through the opening, and a lateral reinforcement within the furnace for the portion of the kiln-wall immediately over said opening.

9. The combination of a kiln having an open floor, flues extending inward from the outer wall of the kiln and into which the floor opens, a dampered chimney connection for each flue, an additional flue communicating with each of the inwardly-extending flues, and means for inducing a draft in said additional flue.

10. The combination of a kiln having an open floor, flues extending inward from the outer wall of the kiln and into which the floor opens, an additional flue communicating with each of the inwardly-extending flues, and a separate dampered chimney connection for each of said flues.

11. The combination of a kiln having an open floor, flues extending inward from the outer wall of the kiln and into which the floor opens, a dampered chimney connection for each of said flues, an additional flue communicating with each of the inwardly-extending flues, and means adapted to be connected to said additional flue for either drawing air therefrom or forcing air thereinto.

12. The combination of a kiln having an open floor, two separated flues extending longitudinally of the floor adjacent the center thereof, transverse flues communicating at their inner ends with said longitudinal flues, and separate dampered chimney connections for said longitudinal and transverse flues.

13. The combination of a kiln having an open floor, three separate flues extending longitudinally of the kiln-center, dampered chimneys for opposite ends of said flues in the end walls of the kiln, transverse flues extending inward from the side walls of the kiln and communicating with the outer two of said longitudinal flues, and dampered chimneys in the side walls of the kiln for the said transverse flues.

14. The combination of a series of kilns, two flues—each having a separate dampered connection with each kiln, and means interposed between and connecting said flues for drawing air from one flue and forcing it into the other flue.

15. The combination of a series of kilns, flues beneath the kiln-floors into which the latter open, and flues at opposite ends of and common to all the kilns and having dampered connection with each kiln through the said underfloor flues.

16. The combination of a series of kilns, two flues each having dampered connection with each kiln, air drawing and forcing mechanism connected to and adapted to draw air from one of said flues, a drier, and a dampered connection between said mechanism, the other of said flues, and the drier, whereby air may be drawn from any one kiln and forced into any other kiln or into the drier.

704,419. FIXTURE FOR WASHSTANDS, BATH-TUBS, OR THE LIKE. ADOLPH P. WIEDOLPH, New York, N. Y. Filed Jan. 21, 1902. Serial No. 90,045. (No model.)

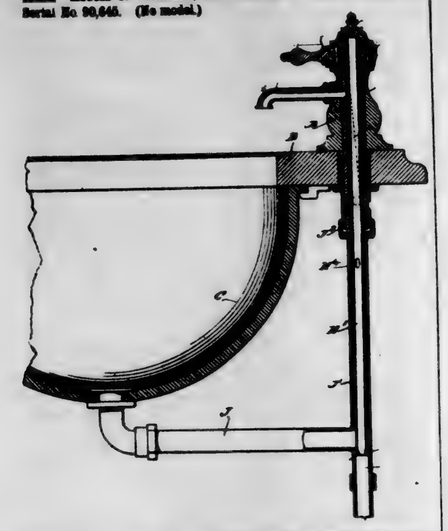

Claim.—1. A fixture for washstands, bath-tubs and the like, comprising a valve-body having a discharge-spout and connected with a hot-water supply and a cold-water supply, an elongated valve-plug mounted to turn in the said valve-body, and having separate longitudinal grooves in its peripheral face winding partially around the valve-plug, one for connection at the lower end with the hot-water supply and the other for connection at the lower end with the cold-water supply, the grooves being diametrically opposite each other at their lower ends and on the same side of the plug at their upper ends and adapted to register singly or simultaneously at their upper ends with the said discharge-spout, as set forth.

2. A fixture for washstands, bath-tubs and the like, comprising a valve-body having a discharge-spout and connected with a hot-water supply and a cold-water supply, an elongated valve-plug mounted to turn in the said valve-body and having separate longitudinal grooves in its peripheral face winding partially around the valve-plug, one for connection at the lower end with the hot-water supply and the other for connection at the lower end with the cold-water supply, the grooves being diametrically opposite each other at their lower ends and on the same side of the plug at their upper ends and adapted to register singly or simultaneously at their upper ends with the said discharge-spout, and a vertically-sliding valve for controlling the discharge of the waste water, the said valve having its valve-stem extending through the said valve-plug, as set forth.

3. A fixture for washstands, bath-tubs or the like, comprising a valve-body having a discharge-spout and connected with a hot-water supply and a cold-water supply, a valve-plug mounted to turn in the said valve-body, having separate grooves in its peripheral face, one for connection at one end with the hot-water supply and the other for connection at one end with the cold-water supply, the grooves being adapted to register singly or simultaneously at their other ends with the said discharge-spout, a valve for controlling the discharge of the waste water the said valve having its valve-stem extending through the said valve-plug, and means for controlling the said valve-stem from the said valve-plug to lift the valve off its seat, as set forth.

4. A fixture for washstands, bath-tubs and the like, comprising a valve-body having a discharge-spout and connections for a hot-water supply and a cold-water supply, and having a hollow stem extending downwardly, a valve-plug mounted to turn in the said valve-body, having separate grooves in its peripheral face, one for connection at one end with the hot-water supply and the other for connection at one end with the cold-water supply, the grooves being adapted to register singly or simultaneously at their other ends with the said discharge-spout, a waste-pipe for the washstand, bath-tub or the like connected to the hollow stem at the lower end of the inlet-valve body at a point external to the basin or tub, a valve adapted to be seated in the waste-pipe, and having a hollow stem extending through a bore in the hollow stem of the inlet-valve body and having overflow-openings discharging into the latter to allow the overflow of the bowl to discharge through the hollow stem and its valve, as set forth.

704,420. LEDGER. JOSEPH B. WISE, Austin, Tex. Filed Mar. 14, 1902. Serial No. 98,192. (No model.)

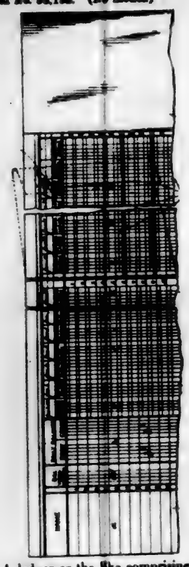

Claim.—1. A ledger or the like comprising long leaves, each provided with a name-space, a single designated "daily-balance" column, adjacent to the name-space, and a series of designated "daily-entry" columns for one month's business, and short leaves between and of less length than the long leaves and each beginning with a designated "monthly-balance" column, followed by a series of designated "daily-entry" columns for one month's business; the short leaves being of a length that when laid over on the long leaves the name-space and "daily-balance" spaces will be exposed to view, and the latter serve for use with all of the other columns; substantially as described.

2. A ledger or the like, comprising long leaves each having a name-space, a designated "transfer-balance" column, a single designated "daily-balance" column, and a series of designated "daily-entry" columns for one month's business, and short leaves between and of less length than the long leaves and each beginning with a designated "monthly-balance" column followed by a series of designated "daily-entry" columns for one month's business; the short leaves being of a length that when laid over on the long leaves the name-space, "transfer-balance" column and the "daily-balance" column will all be exposed to view and the latter serve for use with all of the other columns; substantially as described.

3. A ledger or the like, provided with long leaves each having a single designated "daily-balance" column and short leaves beginning with a designated "monthly-balance" column to fall adjacent to the said single "daily-balance" column, when the short leaf is laid on the long leaf to facilitate the recording of the balances in ink from the "daily-balance" column on the last day of the month and thereby obviating the necessity of folding the edge of the short leaf upon itself; substantially as described.

4. A ledger or the like, provided with a vertical name-space, next a designated vertical transfer-balance column, next a single vertical designated "daily-balance" column, next a single vertical designated "monthly-balance" and followed by a series of vertical "daily-entry" columns; all of the before-mentioned columns exposed to view at the same time, for the purposes set forth.

704,421. ATTACHMENT FOR FRUIT CAN OR JAR COVERS. GEORGE R. WOODBURY, Charlotte, Mich. Filed Aug. 15, 1901. Serial No. 72,205. (No model.)

Claim.—1. An attachment for a jar or can top as set forth, comprising a lower encircling device with depending lips at diametrically opposite points having outwardly-beveled lower edges, and means for securing the encircling device in immovable relation to the top of a can or jar.

2. An attachment of the class set forth having a lower encircling device for the top of a can or jar provided with pairs of diametrically-opposed lips depending below the same and formed with outwardly-beveled lower edges.

3. An attachment of the class set forth, comprising a lower encircling band with pairs of diametrically-disposed lips depending therefrom and having outwardly-beveled lower edges, arms rising from the said band, one of said arms having an inwardly-extending lip, a clamping-screw mounted in the opposite arm, and a grip to which the upper ends of the arms are secured.

704,422. LAMP-BURNER. HENRY H. REHERMAN, Harvel, Ill. Filed Oct. 23, 1901. Serial No. 80,455. (No model.)

Claim.—A lamp-burner embodying a base or body having thereon, a perforated floor 3 and a cone 6, the cone being closely hinged to the floor 3 at one point and having an inward concave bend below its upper convex contour and also having on the inner side at a point opposite the hinged connection a downwardly and inwardly inclined curved flange 14 at an elevation above the lower edge of the cone, and a filling-tube passing through and supported by the floor and correlative parts of the burner, said tube diverging toward the upper end and inclined upwardly and outwardly and the upper end cut away to form a concave seat corresponding in curvature to that of the lower portion of the cone so that the inner convex part of the latter will snugly fit against the upper end of the tube and close the same, the said flange bearing against the upper portion of the tube when the cone is closed.

704,423. WALL-PLATE OR SHIELD FOR ELECTRIC WIRES. BOYD W. ALLEN, Boston, Mass. Filed Feb. 26, 1902. Serial No. 95,513. (No model.)

Claim.—A wall-plate or shield for electric wires, comprising a plate adapted to be secured to the wall around the aperture through which the electric wires extend, said plate being formed with a central hole through which said wires can project, and with a peripheral flange extending forward therefrom; a cover provided with a peripheral flange adapted to fit over and be thereby secured to the flange of the said plate, said cover being provided with a central hole; and a tube or ring of non-conductive material secured to the cover within said central opening, substantially as set forth.

704,424. JUNCTION-BOX FOR ELECTRIC WIRES IN BUILDINGS. BOYD W. ALLEN, Boston, Mass. Filed Feb. 26, 1902. Serial No. 95,514. (No model.)

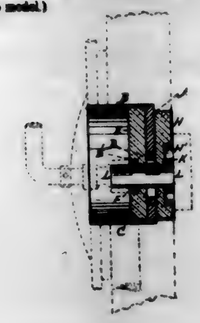

Claim.—1. In a junction-box of the character described, the metallic main portion comprising the wall A formed with a large hole D and provided with suitable flanges B, C; a pair of slabs of porcelain or other insulating material held against the rear and front surfaces of said wall; and a nipple adapted to receive a fixture extending through said porcelain slabs and through the central portion of the hole in the wall of the box, said hole being larger in diameter than the nipple, whereby the nipple is entirely out of electrical contact with the metallic portion of the box, substantially as described.

2. In a junction-box of the character described, the metallic main portion comprising the wall A formed with the large hole D and provided with suitable flanges B, C; the slab E of porcelain or other insulating material within the box and next the inner surface of the wall thereof; the slab H of porcelain or other insulating material next the outer wall of the box; a nipple extending through coincident holes in said slabs and through the central portion of the large hole D; and nuts on the nipple setting against the inner and outer surfaces of the inner and outer slabs respectively, the inner slab being recessed around its hole to correspond in size and shape with the nut next said slab, and the outer slab being formed with a recess around its hole large enough to allow the nut next said slab to rotate, substantially as set forth.

704,425. JUNCTION-BOX FOR ELECTRIC WIRES IN BUILDINGS. BOYD W. ALLEN, Boston, Mass. Filed Mar. 5, 1902. Serial No. 97,283. (No model.)

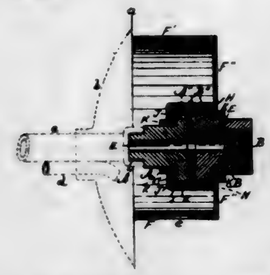

Claim.—1. In a junction-box of the character described, a split nipple or pair of nipples set reversely with each other, and provided with a gas-passage; the case of the junction-box inclosing said nipple and retaining in position and holding together the two parts thereof by means of its shape alone; a layer of insulating material between the two portions of the split nipple; and a layer of insulating material between the split nipple and that portion of the box which surrounds the nipple and holds its parts together, substantially as described.

2. In a junction-box of the character described, the split nipple comprising the two parts A, B provided with the adjacent portions A'' and B'' larger in diameter than the portions A and B; the cone F', F'' formed with the annular shoulder H, tubular portion I and inwardly-bent portion J, corresponding substantially with the shape of, and inclosing the adjacent portions of the split nipple; a layer of insulating material between adjacent portions of the nipple, and a layer of insulating material between the nipple and said portions H, I and J, substantially as set forth.

704,426. COMBINED AMMUNITION AND WATER CARRIER AND LITTER. HERBERT F. L. ALLEN, Washington, D. C., assignor to American Military Equipment Co., Washington, D. C., a Corporation of West Virginia. Filed Nov. 21, 1901. Renewed June 13, 1902. Serial No. 111,573. (No model.)

Claim.—1. A vehicle comprising a frame collapsible widthwise, a supporting-wheel, and an axle-bearing with which the sides of the frame have hinged connection.

2. A vehicle comprising a frame collapsible widthwise, a supporting-wheel, and an axle-bearing with the ends of which the sides of the frame have hinged connection.

3. A vehicle comprising a collapsible framework, a supporting-wheel, and an axle-bearing with which said framework has hinged connection, and water-tank adapted to be supported by said framework and when in place preventing the collapse of the framework.

4. A vehicle comprising a collapsible framework, a supporting-wheel, and an axle-bearing with which said framework has hinged connection, water-tank adapted to be supported by said framework and when in place preventing the collapse of the framework, and folding legs having hinged connection with said framework.

5. The combination with a collapsible framework composed of sides and folding braces, of removable water-tank which will prevent the collapse of the frame when in position.

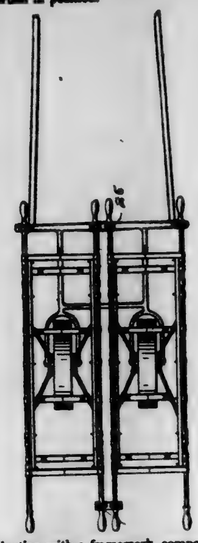

6. The combination with a framework, composed of sides and folding braces hinged to said sides, of removable water-tank supported by said framework, said tank having legs hinged thereto upon which to support the tank when removed from the framework.

7. The combination with a framework consisting of sides and folding braces, said sides having cleats or ledges connected with their inner surfaces, said removable ammunition-boxes supported thereon, said boxes when in position preventing the collapse of the frame.

8. The combination with a framework consisting of sides and folding braces, said sides having cleats or ledges connected with their inner surfaces, and removable ammunition-boxes supported thereon, said boxes when in position preventing the collapse of the frame, and hooks projecting inwardly from the framework to receive a stretcher thereon.

9. The combination with a framework consisting of sides and folding braces, said sides having cleats or ledges connected with their inner surfaces, and removable ammunition-boxes supported thereon, said boxes when in position preventing the collapse of the frame, hooks projecting inwardly from the framework to receive a stretcher thereon, and water-tanks removably supported on the framework.

10. The combination of a framework consisting of sides and folding braces hinged thereto, folding straps extending across from side to side, and water-tanks removably supported on said straps.

11. The combination with a framework, consisting of sides and folding braces, of an axle-bearing, a wheel adapted to turn thereon, arms connected with the ends of the axle-bearing, and rigid braces having hinged connection with said arms and secured to the sides.

12. The combination with a framework, consisting of sides and folding braces, of an axle-bearing, a wheel adapted to turn thereon, arms connected with the ends of the axle-bearing, and rigid braces having hinged connection with said arms and secured to the sides, and folding braces extending across from one rigid brace to the other opposite.

13. The combination with a framework, consisting of sides and folding braces, of an axle-bearing, a wheel adapted to turn thereon, arms connected with the ends of the axle-bearing, and rigid braces having hinged connection with said arms and secured to the sides, folding braces extending across from one rigid brace to the other opposite, and folding legs connected with the framework.

14. The combination with a pair of vehicles collapsible widthwise and supported each on a central wheel, of coupling means for securing them together and means by which they are attached to a draft-animal.

15. The combination with a pair of vehicles collapsible widthwise and supported each on a central wheel, of coupling means for securing them together and means by which they are attached to a draft-animal, said means connected with the axles of each wheel.

16. The combination with a pair of vehicles collapsible widthwise and supported each on a central wheel, of coupling means for securing them together and means by which they are attached to a draft-animal, said means connected with the axles of each wheel, and having a pair of forks at the rear end which span the wheels and are connected to the axles thereof.

704,427. PORTABLE AMMUNITION AND WATER CARRIER AND LITTER. HERBERT F. I. ALLEN, Washington, D. C., assignor to American Military Equipment Co., Washington, D. C., a Corporation of West Virginia. Filed Dec. 4, 1901. Serial No. 84,704. (No model.)

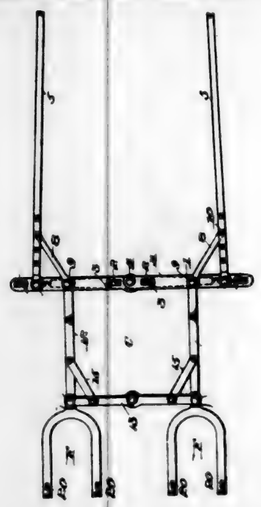

Claim.—1. A collapsible draft appliance having forks swiveled at its rear end whereby the appliance is capable of attachment to the axle of the vehicle.

2. A collapsible draft appliance comprising a folding cross-bar and brace, draft-bars, means for attaching the appliance to the draft-animal, and rigid braces.

3. A collapsible draft appliance comprising a folding cross-bar and brace, draft-bars, means for attaching the appliance to the draft-animal, and forks swiveled to the rear ends of the draft-bars, said forks constructed and adapted for attachment to the axle of the vehicles to which the appliance is connected.

4. A collapsible draft appliance comprising draft-bars, folding cross-bar and brace, said parts pivotally connected together, shafts or thills pivotally connected with the cross-bar, rigid braces connecting the folding brace with the draft-bars and the cross-bar with the shafts or thills, and a singletree pivoted to the cross-bar by the same bolt which connects the sections of the cross-bar together.

5. The combination with a pair of collapsible vehicles, of a cross-bar made in sections capable of folding together, means connected therewith for the attachment of a draft-animal, clamps for connecting the cross-bar to the side bars of the vehicles, and means for connecting the rear ends of the vehicles together.

704,428. DEVICE FOR GRINDING TAPERS. WILLIAM Y. ALLEN, Newton, Mass. Filed Sept. 23, 1901. Serial No. 76,225. (No model.)

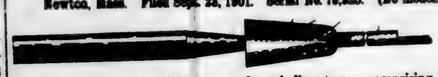

Claim.—1. A dental instrument for grinding tapers, comprising a shaft having at one end a head provided with a conical cavity which is axially concentric with said shaft and corresponds with the taper to be ground, the walls of said cavity being free from cutting devices and being made of rigid material of greater wear-resisting qualities than the material to be operated upon, substantially as described.

2. A dental instrument for grinding tapers, consisting of a head provided at one end with means whereby it may be rotated, and hollowed out in the form of a conical cavity, said cavity being formed to correspond with the taper to be ground and having its interior surface free from cutting devices, and said head being provided with a hole extending from its exterior to its interior, near the inner end of the latter, substantially as described.

704,429. AUTOMATIC WEIGHING-MACHINE. FRANK BAETA, Islip, N. Y. Filed Oct. 10, 1901. Serial No. 78,198. (No model.)

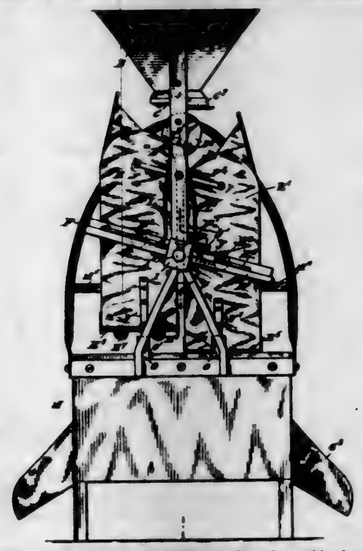

Claim.—1. In an automatic weighing-machine, the combination with a hopper, a scale-beam and suitable receptacles under the control of said scale-beam, of a shiftable stream-deflector, and connecting-rods between said beam and the stream-deflector, said connecting-rods located on opposite sides of the axis of movement of said deflector and the scale-beam and operable to shift the deflector immediately following the beginning of the descent of either loaded receptacle, whereby the deflector is at once shifted when the receptacle is fully loaded.

2. In an automatic weighing-machine, the combination with a hopper, a scale-beam and suitable receptacles under the control of said scale-beam, of a shiftable stream-deflector, and connecting-rods between said beam and the stream-deflector, said connecting-rods being movable endwise and in opposite directions simultaneously, one rod on the descent of one loaded receptacle acting to immediately shift the stream-deflector and the other rod serving to lock the stream-deflector in its changed position.

3. In an automatic weighing-machine, the combination with a hopper, a scale-beam and suitable receptacles under the control of said scale-beam, of a shiftable stream-deflector, and connecting-rods between said beam and the stream-deflector, said connecting-rods acting alternately on the stream-deflector and with a pushing movement and on opposite sides of the axis of adjustment of said stream-deflector.

4. In an automatic weighing-machine, the combination with a hopper, a scale-beam and suitable receptacles under the control of said scale-beam, of a shiftable stream-deflector, and connecting-rods between said beam and the stream-deflector, said connecting-rods being slidably fitted to the stream-deflector and having projections arranged to act against said deflector on the up-and-down movements of said rods, and means disposed in the path of the rod projections and operable to disengage the latter temporarily from operative connection with the shifter.

5. In an automatic weighing-machine, the combination with a scale-beam, of receptacles carried thereby, and having hinged drop-bottoms each provided with a closing device, a catch for normally locking the drop-bottom in a closed position, and a trip in the path of said catch, said trip having a slotted part disposed in the path of the catch and yieldable upwardly to allow the bottom to be closed immediately following the discharge of the load.

6. In an automatic weighing-machine, the combination with a scale-beam, and receptacles controllably thereby, of hinged bottoms to said receptacles, a catch for locking each bottom in a closed position, a trip disposed in the path of each catch, said trip being yieldable freely in one direction and allowing the bottom to be closed immediately following the discharge of the load from the receptacle, and means for closing the bottom while the receptacle is lowered and independently of the position or action of the companion receptacle.

7. A weighing-machine having a shifting and locking device for a stream-deflector, comprising rods mounted to move alternately up and down on opposite sides of the stream-deflector shaft, each of the rods having a lug below its upper end, and plates on the stream-deflector shaft projecting at opposite sides thereof and adapted to be engaged by the said rods and their lugs, as set forth.

8. A weighing-machine having a shifting and locking device for a stream-deflector, comprising rods mounted to move alternately up and down on opposite sides of the stream-deflector shaft, each of the rods having a lug below its upper end, and plates projecting from the stream-deflector shaft at opposite sides thereof, the said lugs being located above and below the axis of the stream-deflector shaft and the lower plate having slots for guiding the rods, as set forth.

9. A weighing-machine having a shifting and locking device for a stream-deflector, comprising rods mounted to move alternately up and down on opposite sides of the stream-deflector shaft, each of the rods having a lug below its upper end, and plates projecting from the stream-deflector shaft at opposite sides thereof, the said lugs being located above and below the axis of the stream-deflector shaft and the lower plate having slots for guiding the rods, the ends of the rods being adapted to engage the under side of the upper plate and the lugs on the said rods being adapted to rest on top of the lower plate, as set forth.

10. In an automatic weighing-machine, the combination with a movable load-receiver, and a drop-bottom therefor, of a catch for said bottom, and a trip disposed in the path of said bottom, said trip occupying a fixed relation to the downward movement of the catch and being yieldable freely to impingement of the catch on the upward movement of said load-receiver.

11. A weighing-machine having a receptacle and a drop-bottom therefor, hinged to the receptacle at one side, a locking-catch on the receptacle for engaging the free end of the drop-bottom, and a releasing device for the catch, to open the latter on the downward movement of the receptacle, said releasing device consisting of a trip having an inclined upper end formed with a slot, the lower end of the trip being held against movement in one direction, and a pin carried by the said catch and adapted to engage the said inclined end, to swing the catch out of engagement with the free end of the bottom, the pin being also adapted to pass through the end of the slot, as set forth.

12. A weighing-machine having a receptacle and a drop-bottom therefor hinged to the receptacle at one side, a locking-catch on the receptacle for engaging the free end of the drop-bottom, a releasing device for the catch to open the latter on the downward movement of the receptacle, a counterbalancing-weight for the drop-bottom, and a fixed spring-arm acting as a stop for the said drop-bottom, and also acting to start the bottom on its return or closing movement, as set forth.

13. A weighing-machine, having a hopper, and a valve on the discharge end of said hopper, said valve comprising two slidable plates mounted to move toward and from each other and across said discharge end, centrally-fulcrumed levers pivoted to said valve-plates and adapted to impart equal play thereto and to maintain said valve-plates in parallel relation, and an arm projecting from one of said valve-plates.

14. In an automatic weighing-machine, the combination with a frame, a hopper, and a stream-deflector, of a bell-shaped scale-beam fulcrumed on the frame and provided at its rear side with a right-angular extension, receptacles in said scale-beam in front of the extension thereof and pivoted to the beam, a link pivoted to the frame and to said receptacles to maintain the latter in parallel relation to each other, and a vertically-shiftable poise mounted in said extension of the bell-shaped scale-beam.

15. In an automatic weighing-scale, the combination of a bell-shaped scale-beam, provided at its rear side with a vertically-shiftable poise and having the longitudinal bars or rods F', F² receptacles pivoted within the scale-beam, a counterbalancing-poise adapted to be fixed on one bar or rod, a supplementary poise shiftable to variable positions on the other bar or rod, a hopper, and a shiftable stream-deflector.

704,430. SPEED REGULATING AND REVERSING DEVICE FOR POWER-TRANSMITTING MECHANISM. FRANK H. BATES, Philadelphia, Pa., assignor, by mesne assignments, to William Wolcomte Bates, Philadelphia, Pa. Filed Jan. 13, 1901. Serial No. 43,572. (No model.)

Claim.—1. The combination of a driving and a driven engine, a branched inlet and a branched exhaust pipe to each engine, a direct connection between a branch of the inlet and a branch of the exhaust pipes of the driving and also of the driven engine, a pipe connecting a branch of the inlet-pipe 15 of the driving-engine with a branch of the exhaust-pipe 10 of the driven engine, a pipe connecting a branch of the exhaust 16 of the driving-engine with a branch of the inlet 9 of the driven engine, and a pipe 11 connecting said two latter pipes, substantially as described.

2. The combination of a driving and a driven engine, a branched inlet and a branched exhaust pipe to each engine, a direct connection between a branch of the inlet and a branch of the exhaust pipes of the

driving and also of the driven engine, a pipe connecting a branch of the inlet 15 of the driving-engine with a branch of the exhaust 10 of the driven engine, a pipe connecting a branch of the exhaust 16 of the driving-engine with a branch of the inlet 9 of the driven engine, and a pipe 11 connecting said two latter pipes, a valve in the inlet-pipe 9 of the driven engine having said pipe 11 connected to one of its openings, and a valve at the point of branching of the discharge-pipe of the driven engine, substantially as described.

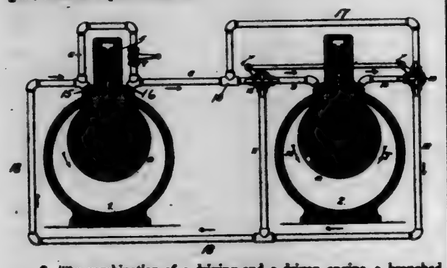

2. The combination of a driving and a driven engine, a branched inlet and a branched exhaust pipe to each engine, a direct connection between a branch of the inlet and a branch of the exhaust pipes of the driving and also of the driven engine, a pipe connecting a branch of the inlet 15 of the driving-engine with a branch of the exhaust 10 of the driven engine, a pipe connecting a branch of the exhaust 16 of the driving-engine with a branch of the inlet 9 of the driven engine, and a pipe 11 connecting said two latter pipes, a valve in the inlet-pipe 9 of the driven engine having said pipe 11 connected to one of its openings, and a valve at the point of branching of the discharge-pipe of the driven engine, and means whereby said valves may be simultaneously operated, substantially as described.

4. The combination of a driving and a driven engine, a branched inlet and a branched exhaust pipe to each engine, a direct connection between a branch of the inlet and a branch of the exhaust pipes of the driving and also of the driven engine, a pipe connecting a branch of the inlet 15 of the driving-engine with a branch of the exhaust 10 of the driven engine, a pipe connecting a branch of the exhaust 16 of the driving-engine with a branch of the inlet 9 of the driven engine, and a pipe 11 connecting said two pipes, a valve in the inlet-pipe 9 of the driven engine and a second valve at the point of branching of the exhaust-pipe 10 of the driven engine, said first valve being constructed to permit the inlet 9 of the driven engine to communicate directly with its point of branching or with said pipe 11 as will and the second valve being constructed to connect the exhaust of the driven engine to either of its branches at will; substantially as described.

704,431. HAT-BOX. JOSEPH M. BEAN, Washington, D. C. Filed Feb. 7, 1902. Serial No. 93,942. (No model.)

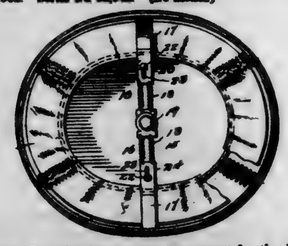

Claim.—1. In a hat-box, a movable support for the brim of the hat, and a cushion-rest for the said support located beneath the same.

2. In a hat-box, a vertically-movable brim-rest consisting of a frame having a cushion-body, and a cushion-support for the said rest located beneath the same.

3. The combination with a hat-box, of a stay comprising elastic and inelastic sections and secured to the box so as to bear on the hat to hold it in the box.

4. A hat-box having an interior yieldingly-supported brim-rest, and a separate elastic fastening-stay having supplemental yielding holding means.

5. In a hat-box, the combination with the supporting means for the hat, of a supplemental holder for the hat comprising holding means engaging the brim portion.

6. In a hat-box, the combination with the supporting means for the hat, of a supplemental holder for the hat carried by the casing and comprising holding means engaging the brim portion.

7. In a hat-box, the outer case, a vertical yieldable brim-rest arranged within the case and cushion-supports for the said rest located beneath the same.

8. In a hat-box, the outer case, an interior brim-rest yieldably supported within the case, and guiding means for the brim-rest located beneath the same.

9. In a hat-box, the outer case, and a yieldable continuous brim-rest provided with swelled retaining-bosses for engagement with the riser portions of the hat-brim.

10. In a hat-box, the outer case, an interior yieldable brim-rest, a plurality of cushion-supports for the rest, and guiding means for the rest.

11. In a hat-box, the outer case, an interior holding-bracket, a yieldable brim-rest having a plurality of guiding-stems loosely engaging the bracket, and spring-cushions interposed between the bracket and the end side of the said brim-rest.

12. In a hat-box, the combination with the outer case, of a yieldable brim-rest, and a yieldable crown-receiver arranged within the case, said brim-rest and said crown-receiver having an operative connection.

13. In a hat-box, the outer case, a vertical yieldable brim-rest having cushion-supports, and a crown-receiver cushioned to yield in any direction.

14. In a hat-box, the outer case, a crown-receiver arranged within the case and having a cushion-support at the bottom, cushion-braces interposed between the sides of the receiver and the sides of the case, and a vertical yieldable brim-rest yieldingly supported upon the crown-receiver.

15. In a hat-box, the combination with the interior supporting means for the hat, of a fastening-stay consisting of separate yielding members detachably connected and each provided with a supplemental holder for the hat.

16. In a hat-box, the combination with the interior supporting means for the hat, of a fastening-stay consisting of separate yielding members detachably connected and each provided with a yielding supplemental holder for the hat.

17. In a hat-box, the combination with the supporting means for the hat, of a fastening-stay consisting of separate yielding members detachably connected and each comprising a spring-section, an inelastic section and a holding device, said holding device being provided with an independently-yielding hat-engaging pin or member adapted to extend within and engage each portion of the hat-body.

704,432. GUARD-RAIL FOR STREET-CARS. WILLIAM S. BRADLEY, Philadelphia, Pa. Filed May 3, 1902. Serial No. 105,280. (No model.)

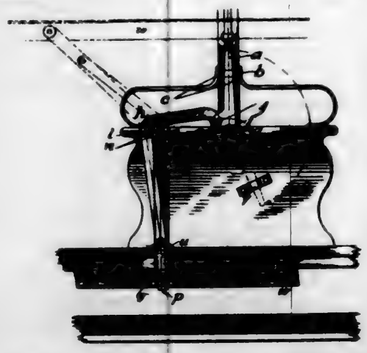

Claim.—1. A movable guard-rail for a car combined with supporting and adjusting mechanism arranged as described to swing the rail transversely to the car when in its lower position and longitudinally to the car when in its upper position.

2. A movable guard-rail for a car combined with operative mechanism and hung upon arms hinged upon an axis parallel with the longitudinal lines of the car and arranged to swing from a position extending inwardly beneath the car-body to a position extending outwardly from the car substantially as described.

3. A movable guard for a car consisting of a rail extending parallel with the car-body, a hinged arm supporting the same and having a rigidly-attached pinion, a vertically-adjustable rack engaging said pinion and operative mechanism for moving the rack up and down substantially as shown and described.

4. The combination in a car; of a longitudinal guard-rail arranged beside the car, arms for supporting and swinging the same transversely to the car, a lifting-link for operating said arms and also swinging the rail longitudinally and vertically, a connecting-bar connected to said link, and a hand-lever fulcrumed to the car and also to the connecting-bar, said connecting-bar having its end next to the hand-lever bent downwardly and adapted to pass over and below the fulcrum of the hand-lever to lock below the same substantially as described.

5. The combination in a car; of a longitudinal guard-rail arranged beside the same, arms for supporting and moving the guard-rail transversely to the car, a lifting-link for operating said arms and also swinging the rail longitudinally and vertically, a connecting-bar connecting at one end to the said link, a short crank also connected to the link at the same point and turning on a stationary axis, a hand-lever having a stationary axis and jointed to the connecting-bar, both ends of the said connecting-bar being bent down to lock substantially as described.

6. The combination in a car; of a longitudinal guard-rail arranged beside the same, arms for supporting and moving the guard-rail transversely to the car, a lifting-link for operating said arms and also swinging the rail longitudinally and vertically, a hanger-bar forming at its lower end a guide for the connection of the link and swinging arm, a connecting-bar connecting at one end to said link, a short crank also connected to the link at the same point and turning on a stationary axis, a hand-lever having a stationary axis and jointed to the connecting-bar, both ends of said connecting-bar being bent down to lock substantially as described.

7. The combination in a car; of a longitudinal guard-rail arranged beside the same, arms for supporting and moving the guard-rail transversely, one of said arms having a rigidly-connected pinion, a vertically-sliding rack meshing with such pinion, a hanger-bar having a guide at its lower end for the rack, a lifting-link connected to the rack, a connecting-bar jointed to the top of the link, a short crank also connected to the link at the same point and turning on a stationary axis, a hand-lever having a stationary axis and jointed to the connecting-bar, both ends of said connecting-bar being bent down to lock substantially as described.

704,433. SASH-FASTENER. ADOLPH BRAUER, Seattle, Wash. Filed Feb. 14, 1902. Serial No. 94,072. (No model.)

Claim.—In a sash-fastener, the combination with a window-frame having a vertically-disposed corrugated strip thereon, of a sash having a dog mounted in the side stile and pivotally attached at its upper end, the lower extremity of the dog being enlarged to form a head and provided with corrugations to engage the said strip, a spring interposed between the lower extremity of the dog and an adjacent portion of the stile, a link attached to the lower extremity of the dog, a socket secured to the inner side of the stile and having an opening therein, and a shank projecting through the socket and connected to the inner end of the link, the outer extremity of the shank being in the form of a head.

704,434. PAPER-COATING MACHINE. JOSEPH CHEVALIER, Holyoke, and NAPOLÉON LABRIE and EDWARD LABRIE, Chicopee, Mass. Filed Jan. 21, 1902. Serial No. 91,295. (No model.)

Claim.—1. A paper-coating apparatus comprising two feed-rolls adapted to be partially encircled by the paper located in separated relation one above the other; a receptacle for liquid coating material within which a portion of the lower feed-roll is immersed, means for adjusting said lower feed-roll toward and from the upper roll, and means for rotating the latter at a higher rate of speed than the former; a roll having an adjustably-yielding contact with said lower roll, and means for rotating said upper feed-roll at a higher rate of speed than the lower roll.

2. A paper-coating machine comprising two feed-rolls adapted to be partially encircled by the paper, a receptacle for the liquid coating material, one of said rolls being in contact with the latter, a roll having a yielding contact with the feed-roll running in the coating material, and adjustable relative thereto, means for rotating said feed-rolls at different rates of speed, and means for rotating said roll in contact with the feed-roll at different rates of speed.

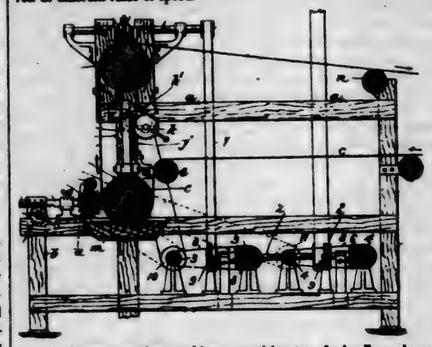

3. A paper-coating machine comprising two feed-rolls, and means for rotating them at different rates of speed, composed of separate cone-pulleys for driving each of said feed-rolls, shiftable belts for said cone-pulleys whereby the feed-rolls may be rotated at different rates of speed, combined with a roll having a yielding contact with one of said feed-rolls, and means for adjusting said roll relative to said feed-roll.

4. A paper-coating machine comprising two feed-rolls adapted to be partially encircled by the paper located in separated relation one above the other; a receptacle for liquid coating material within which a portion of the lower feed-roll is immersed, means for adjusting said lower feed-roll toward and from the upper wiper-roll, and means for rotating the latter at a higher rate of speed than the former; a roll having an adjustably-yielding contact with said lower roll, means for rotating said wiper-roll at a higher rate of speed than the lower roll, a brush bearing on said upper feed-roll, and means for imparting reciprocating movements to said brush, and-wise.

704,435. SPOOL FOR SAND-REELS, &c. KEITON CRESKEBIRE, Oil City, Pa. Filed Jan. 6, 1902. Serial No. 88,912. (No model.)

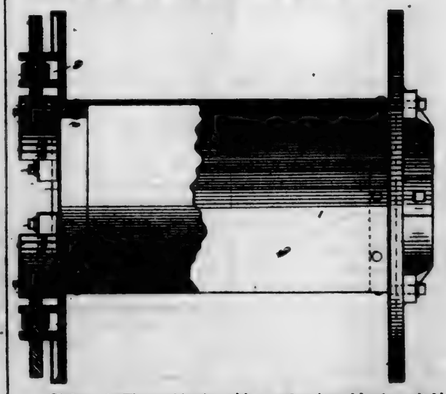

Claim.—1. The combination with a sand-reel spool having suitable heads, one of said heads provided with a clamp-guide, of clamps movable on said guide to and from the axis of the spool, means for adjusting said clamps along said guide to and from the axis of the spool, and means for binding said clamps on the guide after adjustment thereon, substantially as and for the purpose specified.

2. The combination with a sand-reel spool having suitable heads, one of said heads provided with parallel clamp-guides oppositely disposed with relation to the axis of the spool, of oppositely-disposed adjustable clamps which travel on said parallel clamp-guides, and a screw for each of said clamps centrally disposed with relation to its clamp for adjusting said clamps on the guides to and from the axis of the spool, substantially as and for the purpose specified.

3. The combination with a sand-reel spool having suitable heads, one of said heads provided with parallel clamp-guides having scales marked thereon, of a plurality of clamps, and means for adjusting said clamps on the clamp-guides to and from the axis of the spool, substantially as and for the purposes specified.

4. The combination with a sand-reel spool having suitable heads, one of said heads provided with parallel beveled clamp-guides, of a plurality of adjustable clamps having guideways which correspond with and engage said beveled clamp-guides said clamps slotted for the reception of set-screws, and set-screws for confining said clamps to said beveled guides after adjustment thereon, substantially as and for the purposes specified.

5. In a sand-reel spool, the combination with a suitable drum of a head having oppositely-disposed arc-shaped flanges, oppositely-disposed parallel clamp-guides connecting said arc-shaped flanges, adjustable clamps movable on said parallel clamp-guides, means for adjusting said clamps on said guides to and from the axis of the spool, and means for binding said clamps to the clamp-guides of the head after adjustment, substantially as and for the purposes specified.

6. In a sand-reel spool, the combination with the head thereof provided with oppositely-disposed flanges and oppositely-disposed parallel clamp-guides, said flanges and guides arranged around the axis of the spool, of oppositely-disposed clamps movable on said guides to and from the axis of the spool, adjusting-screws which pass through the concentric flanges, and nuts for said screws between said concentric flanges, substantially as and for the purposes specified.

7. In a sand-reel spool, the combination with the head thereof provided with oppositely-disposed concentric flanges, of parallel slotted clamp-guides arranged on opposite sides of the axis of the spool, clamps movable on said clamp-guides to and from the axis of the spool, screws for adjusting said clamps, nuts for said screws arranged between the concentric flanges, and set-screws which pass through the slots of the clamps and into the clamp-guides, substantially as and for the purposes specified.

704,486. MEANS FOR STOPPING LOOMS AT INTERVALS. GEORGE A. CLAFF, Paterson, N. J., assignor of two-fifths to John J. Powers, Paterson, N. J. Filed Dec. 3, 1901. Serial No. 84,508. (No model.)

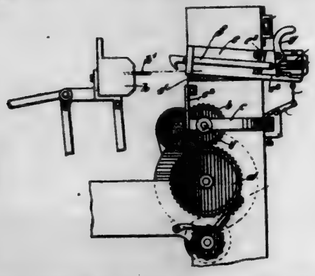

Claim.—1. In a loom attachment, the combination with a part of the loom moving in a fixed path, of a device connected with the loom for throwing the loom out of gear, a carrier on which said device is mounted, and means operated periodically from the loom for moving said carrier.

2. In a loom attachment, the combination with a part of the loom moving in a fixed path and provided with an eye, of a hook mounted to slide and connected with the loom to throw it out of gear, the hook being adapted to be engaged by the said eye, means for normally holding the hook out of the path of the eye, and releasing means for the hook operated periodically from the loom, for the purpose specified.

3. In a loom attachment, the combination with a part of the loom, said part moving in a fixed path, of a hook connected with the loom to throw it out of gear, a carrier on which the hook is mounted to move into and out of the path of the said part of the loom, means for normally holding the carrier with the hook in inactive position, and trip devices for said means, the trip devices being operated periodically from the loom, for the purpose specified.

4. In a loom attachment, the combination with a part of the loom, said part moving in a fixed path, of a hook connected with the loom to throw it out of gear, the hook being adapted to be actuated by said part of the loom, means for normally holding the hook out of the path of the said part of the loom, and trip devices for said means, the trip devices being operated periodically from the loom, for the purpose specified.

5. In a loom attachment, the combination with a part of the loom, said part moving in a fixed path, of a carrier, a hook mounted thereon and connected with the loom to throw it out of gear, a stop normally engaged with the carrier to hold it with the hook out of the path of said part of the loom, and devices for releasing the dog to move the hook into the path of said part of the loom, the said devices being operated periodically from the lever.

6. In a loom attachment, the combination with the clock driven in time with the loom, of a cam attached to the clock, a lever actuated from the cam, a fulcrumed carrier connected with said lever, a device mounted on said carrier and connected with the loom to throw it out of gear, the said device being adapted to be moved into the path of a part of the loom and to be engaged thereby for the purpose specified.

7. In a loom attachment, the combination with a clock driven in time with the loom, of a cam on the clock, a lever actuated from the cam, a carrier, a hook mounted on the carrier and connected with the loom to throw it out of gear, the hook being adapted to be engaged by a part of the loom moving in a fixed path, a stop for holding the carrier with the hook normally out of the path of the said part of the loom, and a connection between the lever and the carrier, for the purpose specified.

8. In a loom attachment, the combination with the batten provided with an eye, of a hook connected with the loom to throw the same out of gear, a fulcrumed support on which the hook is mounted to slide, and means operated periodically for moving said support to carry the hook into the path of the eye, for the purpose specified.

9. In a loom attachment, the combination with the batten of the loom provided with an eye, a dial driven in time with the loom, and a stationary pointer for indicating on said dial, of a cam on the face of the dial, a lever actuated from the cam, a counterweighted fulcrumed carrier, a hook mounted to slide on the carrier, a cord passing over pulleys and connecting the hook with the shipper of the loom to throw the loom out of gear, the hook being adapted to be engaged by the eye on the batten a pivoted stop for holding the carrier with the hook normally out of the path of the eye of the batten, and a cord connecting the lever and the carrier, for the purpose specified.

10. In a loom attachment, the combination with a part of the loom moving in a fixed path, of a hook connected with the loom to throw it out of gear and mounted to move longitudinally and also to swing in a vertical plane, the said hook being adapted to be engaged and moved longitudinally in one direction by said part of the loom to throw the loom out of gear, a spring for holding the hook normally in the opposite direction, means for normally holding the hook raised and out of the path of said part of the loom, and a releasing device for said means operated periodically from the loom to permit the hook to swing into the path of said part of the loom, for the purpose specified.

704,487. BELT FASTENER, CLASP, OR BUCKLE. MARIA COCHRAN, New York, N. Y. Filed June 6, 1901. Serial No. 63,366. (No model.)

Claim.—1. The combination of a belt having a suitable clasp or buckle, and a hook applied to the back of said clasp or buckle, said hook having a shank portion adapted and arranged to stand away from the back of the clasp or buckle and thereby adapted to lie beneath or back of the waistband of an outer garment, and the hook being formed with an upturned point adapted to engage the cloth of an undergarment, substantially as described.

2. The combination of a belt having a suitable clasp or buckle, and a hook applied as an attachment to the back of said clasp or buckle and adapted for holding the belt in place, said hook having a shank portion adapted to stand away from the back of the buckle or clasp and projecting downwardly beneath or back of the waistband of an outer garment, and the hook thus formed and applied being provided with an outwardly and upwardly projecting point adapted to engage the cloth of an undergarment, substantially as described.

3. A device adapted to be applied as an attachment to ladies' belts and adapted for holding the front of such belt down in place, consisting of a wire with its end portions bent back in opposite directions to form a reversely-bent hook, one of such hook portions being adapted for attachment to the back of a belt buckle or clasp, so as to have the shank portion of the hook stand away from the back of such buckle or clasp, and the lower upturned hook portion being provided with a hook-point for engaging the cloth of an undergarment, the said shank portion by standing away from the back of the buckle or clasp being adapted for insertion back of the waistband of an outer garment, substantially as described.

704,488. PANORAMIC HAND-CAMERA. NAPOLEON COMTE, Paris, France. Filed Dec. 5, 1900. Serial No. 39,234. (No model.)

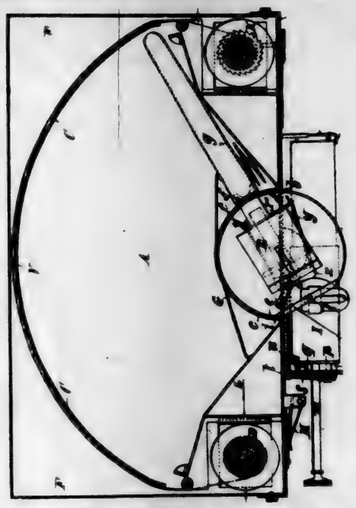

Claim.—1. In a camera for photographing panoramic views, a rotatable drum, a lens mounted in said drum, a light-shaft movable with the drum and through which the lens is adapted to project rays of light onto a sensitized surface, a shutter mounted in and movable with the drum, motor mechanism for rotating the drum, a detent for holding the motor mechanism set and adapted to be operated to release the motor mechanism, and shutter-opening means operated simultaneously with the release of the motor mechanism.

2. In a camera for photographing panoramic views, a rotatable drum, a lens mounted in said drum, a light-shaft movable with the drum and through which the lens is adapted to project rays of light onto a sensitized surface, a shutter mounted in and movable with the drum, motor mechanism for rotating the drum, a detent for holding the motor mechanism set and adapted to be operated to release the motor mechanism, shutter-opening means operated simultaneously with the release of the motor mechanism, and means automatically closing the shutter at the proper time.

3. In a camera for photographing panoramic views, a rotatable drum, a lens mounted in said drum, a light-shaft movable with the drum and through which the lens is adapted to project rays of light onto a sensitized surface, a shutter mounted in and movable with the drum, motor mechanism for rotating the drum, a detent for holding the motor mechanism set and adapted to be operated to release the motor mechanism, shutter-opening means operated simultaneously with the release of the motor mechanism, means automatically closing the shutter at the proper time, a curved transparent-glass plate so mounted that the end of the light-shaft travels in proximity with its concave surface, a sensitized film stretched over the convex surface of the glass plate, and means for moving the film.

4. In a camera, the combination with a rotatable drum and a lens mounted therein for projecting rays of light onto a sensitized surface, of means for rotating said drum consisting of a fixed cylinder having a vent-opening at one end, a piston operating in conjunction with the cylinder and adapted when moved in one direction by the operator to draw air into the cylinder through the vent-opening, a spring placed under tension by the said movement of the piston and adapted to impart a reverse movement to the piston expelling the air from the cylinder through the vent-opening, and connections for imparting movement from the piston to the drum.

5. In a camera, the combination with a rotatable drum and a lens mounted therein for projecting rays of light onto a sensitized surface, of means for rotating said drum consisting of a fixed cylinder having a vent-opening at one end, a piston operating in conjunction with the cylinder and adapted when moved in one direction by the operator to draw air into the cylinder through the vent-opening, a spring placed under tension by the said movement of the piston and adapted to impart a reverse movement to the piston expelling the air from the cylinder through the vent-opening, a detent for holding the motor mechanism set and adapted to be operated to release the motor mechanism, shutter-opening means operated simultaneously with the release of the motor mechanism, and means automatically closing the shutter at the proper time.

6. In a camera, the combination with a rotatable drum, a lens mounted therein for projecting rays of light onto a sensitized surface, of means for rotating said drum consisting of a fixed cylinder having a vent-opening at one end, a piston operating in conjunction with the cylinder and adapted when moved in one direction by the operator to draw air into the cylinder through the vent-opening, a spring placed under tension by the said movement of the piston and adapted to impart a reverse movement to the piston expelling the air from the cylinder through the vent-opening, a detent for holding the piston against said reverse movement and the spring under tension but adapted to be manipulated by the operator to release the piston, and connections for imparting movement from the piston to the drum.

7. In a camera, the combination with a rotatable drum, a lens mounted therein for projecting rays of light onto a sensitized surface, and a shutter movable with the drum, of means for rotating said drum consisting of a fixed cylinder having a vent-opening at one end, a piston operating in conjunction with the cylinder and adapted when moved in one direction by the operator to draw air into the cylinder through the vent-opening, a spring placed under tension by the said movement of the piston and adapted to impart a reverse movement to the piston expelling the air from the cylinder through the vent-opening, a detent for holding the piston against said reverse movement and the spring under tension but adapted to be manipulated by the operator to release the piston, connections from the detent to the shutter whereby the latter is opened simultaneously with the release of the piston, and connections for imparting movement from the piston to the drum.

704,489. THERMAL PROTECTOR FOR ELECTRIC CIRCUITS. FRANK B. COOK, Chicago, Ill. Filed July 29, 1896. Serial No. 600,970. (No model.)

Claim.—1. A heat-coil protector consisting of an inclosing shell, interior insulating material, a heat-coil, a concave socket, a convex head fitted therein, fusible material between the face of the socket and the face of the head, and means for holding a spring contact-strip or contact-strips.

2. In a heat-coil-protective apparatus an inclosing shell of insulating material, a body of interior insulating material, a collar of conducting material secured to one end of the body of interior insulating material, a spring-contact connected to and held by said collar, another collar held at the other end to the inclosing shell, a spring-contact connected to and held by said latter collar, a concave socket and concave head fitted therein and fusible material between the face of the socket and the face of the head.

3. The combination with a heating-coil, of a small quantity of conducting material adapted to be fused by the heat of the coil, a switch-spring held under tension by said fusible conducting material, and an electric circuit including said heating-coil, fusible material and spring-switch in series, whereby the fusing of said fusible material permits the movement of said spring-switch to open the circuit; substantially as described.

4. The combination with a small resistance-coil, of a spool of good heat-conducting material upon which the coil is wound, a stem secured to said spool by easily-fusible solder, a spring adapted to move said stem out of contact with the spool when the solder is fused, and an electric circuit including said coil, spool, solder and stem in series; whereby the detachment of said stem from the spool effects the opening of the circuit.

5. The combination with a heat-coil, of a small quantity of conducting material adapted to be fused by the heat of the coil, a spring-switch held under tension by said fusible conducting material, and an electric circuit including said heat-coil, fusible material and spring-switch in series, together with an earth connection and a normally open circuit thereto whereby the spring-switch when released closes said normally open circuit.

6. A normally closed circuit comprising an instrument to be protected, a line, a heat-coil and a spring-switch, together with a normally open circuit to earth only, and means operated by the heat-coil whereby the spring-switch closes the normally open circuit and opens the normally closed circuit.

7. A normally closed circuit comprising an instrument to be protected, a line, a heat-coil, a spring-switch in series with the heat-coil, a normally open branch to earth, and means operated by the heat-coil to cause the spring-switch to open the normally closed circuit and close the normally open earth branch.

8. A spring or springs, a separable conductor, fusible material interposed between and holding the parts or sections of said conductor together, and a heat-concentrating member which, fusing the material, permits the spring to separate the conductor and open the circuit, said heat-concentrating member and springs being serially included in the circuit.

9. A normally closed circuit comprising an instrument to be protected, a line, a heat-concentrating member, and a spring-switch, together with a normally open circuit to earth only, and means operated by the heat-coil whereby the spring-switch closes the normally open circuit and opens the normally closed circuit.

10. The combination with a heat-concentrating device, of a small quantity of conducting material adapted to be fused by the said heat-concentrating device, a spring-switch held under tension by said fusible conducting material, and an electric circuit including said heat-concentrating device, fusible material, and spring-switch in series, with an earth connection and the normally open circuit thereto, whereby the spring-switch when released closes said normally open circuit.

11. In a heat-coil apparatus, a pair of springs, a removable member held by the said springs, the heads of said member engaged by said springs, an inclosing shell, an insulating-block within said inclosing shell, a heat-coil, a stem held within the insulating-block, a connector-face held on the stem, said insulating-block, stem and connector-face being held by one spring-head and another stem projected from the other head carrying a connector-face, said faces being normally held together by fusible material.

12. A device for automatically opening a circuit and establishing connection with the ground, comprising a suitable spring, a post insulated from and subject to the tension of said spring, a heat-concentrating member and fusible material arranged between said spring and said post, the fusible material being adapted and arranged to be fused by the said heat-concentrating member and to hold the said spring under tension, a circuit including said spring, post and heat-concentrating member in series, an insulated stop limiting the movement of said spring when released by the fusing of said material, and a grounded conductor connected with said stop, whereby the said spring when released opens said circuit and establishes connection with the ground.

13. A conductor made in sections and formed with a headed end portion, a flat spring having a notched end adapted to removably engage said headed end portion, a member removably engaging the other end of said conductor and subject to the tension of said spring, said member and spring being insulated from each other, a connection holding the sections of the conductor together, and a heat-concentrating member arranged to cause said connection to weaken and break, so as to allow said spring to pull the conductor-sections apart.

14. A conductor made in sections and having its opposite ends formed with reduced headed portions, a connection holding the sections together, flat supports insulated from each other and having their ends notched to receive said reduced headed portions, one of said supports being flexed or sprung so as to pull on the said connection, and a heat-concentrating member arranged to cause said connection to weaken and break, so as to allow the flexed support to pull the conductor-sections apart.

15. The combination of two conductor parts extending one within the other, a connection holding the two parts together, a heat-coil on one of said parts, said heat-coil being adapted to cause said connection to weaken and break, a support removably engaging the outer end of one of said parts, and a spring removably engaging the outer end of the other part, the said support, heat-coil and spring being serially included in a circuit, and the said support and connection being normally subject to the tension of said spring, whereby the two parts extending one within the other are moved apart or separated upon the weakening or breaking of said connection.

16. The combination of a separable conductor, a connection holding the sections of the conductor together, a heat-concentrating member arranged to cause the said connection to weaken and break, a tubular shell inclosing the heat-concentrating member, a support removably engaging one end of the separable conductor, and a spring removably engaging the other end of the same and exerting spring tension upon said connection, the said spring and support being insulated from each other, and the said support being also subject to the tension of said spring.

17. A thermal cut-off comprising a stem and wire, connected by solder, in a coil of wire, between two posts, one of which is a spring pulling upon the solder, away from the other, all in the circuit.

18. The combination of a suitable support, a flat spring insulated from said support, a conductor made in sections and adapted to be inserted between said support and spring, solder uniting the sections of said conductor, a heat-coil associated with said solder, an electric circuit including said support, solder, heat-coil and spring in series, and a stop adapted to limit the movement of said spring and to be connected with a grounded conductor, the said solder and support being normally subject to the tension of said spring, and the said spring when released by the fusing of the solder operating to establish connection between the circuit and the grounded conductor.

19. The combination of two metal parts extending one within the other, solder uniting said parts, a heat-coil wrapped around one part adjacent to the solder, a support and a spring insulated from each other, the said support and solder being normally subject to the tension of said spring, an electric circuit including said spring, heat-coil, solder and support in series, the said spring causing the two metal parts to move relatively when the solder is melted by the heat-coil, a grounded conductor, and means whereby the said spring when released operates to establish connection between the said circuit and the said grounded conductor.

704,440. LATHE AUXILIARY APPLIANCE. SAMUEL H. CROKER, Liverpool, England, assignor of one-half to John William Barnes, Liverpool, England. Filed Oct. 26, 1901. Serial No. 79,972. (No model.)

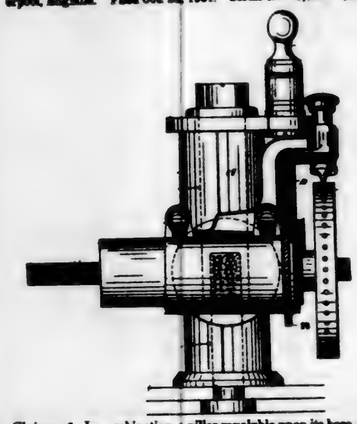

Claim.—1. In combination, a pillar revolubly upon its base, a screwed rod parallel with and journaled in the cap of said pillar, a bracket bored to receive the pillar and screwed rod and threading with the latter whereby it may be adjusted vertically on the pillar, a face on said bracket and a bevel-groove therein receiving a beveled button on a quill-holder, a quill within said holder, means for adjusting and for locking such parts, a mandrel journaled in the quill, and means for rotating the mandrel, forming a lathe-tool or work holder, as described.

2. In combination, a pillar and a keyway therein, a bracket capable of vertical movement on said pillar and keyway, a screwed spindle journaled on the pillar and threading a nut on the bracket, by which the latter is moved, a knife-edge, and a scale on the pillar proportionate to the thread on the spindle, means for indicating partial revolutions of the spindle, whereby the bracket movement is graduated, a quill-holder revolubly on said bracket and containing a quill, and a rotating mandrel journaled axially in said quill, forming a lathe-tool or work holder, as described.

3. In combination, a revolvable pillar supporting an axially-adjustable bracket, a face on said bracket parallel with the axis of the pillar, a bevel-groove in said face with a semicircular finish, receiving a beveled button on a quill-holder, a follower in said groove completing a socket for said button, a stud for tightening the follower on the button whereby the quill-holder is revolubly on and may be locked to said bracket, a quill in said holder and a rotating mandrel in the quill, forming a lathe-tool or work holder, as described.

4. In combination, a quill-holder revolubly on a bracket adjustably supported on a revolvable pillar, a quill held rigidly therein, and a mandrel journaled in the quill with projecting extremities carrying an implement and an index-wheel respectively, and a detent carried by a bracket on said quill-holder, said detent controlling the rotation of the mandrel and implement by engaging the index-wheel, forming a lathe-tool or work holder, as described.

5. In combination, a quill-holder revolubly on a bracket adjustably supported on a revolvable pillar, a quill in said holder and a mandrel in said quill, an index-wheel on the mandrel engaged by a detent carried by a bracket, a beveled slot in said holder receiving the said detent-bracket and a lock-nut on said quill-holder for retaining said bracket in its socket, forming a lathe-tool or work holder, as described.

704,441. MEANS FOR PREVENTING DUST, DRAFT, AND RAIN FROM ENTERING UNDER DOORS. JOHN CROWTHER, Invercargill, New Zealand. Filed Jan. 15, 1902. Serial No. 89,888. (No model.)

Claim.—1. A drop-board or shutter extending across the width of the door and fitting within a groove in the bottom edge thereof, a lever pivoted above it which is connected therewith, a rod or shaft extending internally through the door and projecting beyond the edge thereof and connected with the lever, in combination with a small two-armed lever pivoted within the hinge-jamb of the doorway and so adjusted with regard to the door that when the same is closed the projecting end of the rod or shaft shall engage with one arm of the lever, while the edge of the door shall engage with and press upon the other arm, as herein specified.

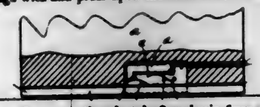

2. In means for preventing dust draft and rain from entering under doors, a drop-board or shutter extending across the width of the door and fitting within a groove in the bottom edge of the door and extending across the width thereof, a drop-board or shutter fitting within the groove, a frame secured within the groove, a two-armed lever pivoted to the frame, above the drop-board, a bow-spring secured to the top edge of the drop-board by means of pins passed through slots therein, a connecting-piece connecting one arm of the lever with the center of the bow-spring, and means whereby the lever may be depressed and raised, as the door is closed and opened, as herein specified.

704,442. FILLING-INDICATOR. LOUIS F. DOELLINGER, Davenport, Iowa. Filed Feb. 14, 1902. Serial No. 94,068. (No model.)

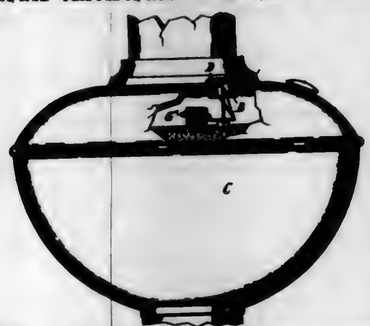

Claim.—1. The improvement in indicating devices substantially as herein described, consisting of the supporting-tube provided in its inner side with the longitudinal grooves and with the sockets leading outwardly therefrom, the cap on said tube and having a sight-opening, the carrier having a lower cross-bar, side bars or arms, and studs or stems extending laterally from said arms, and fitted to the supporting-tube with the stems or studs in the sockets and the side bars lying in the longitudinal grooves of such tube, and the indicator having a main plate, ears thereon pivoting on the cross-bar of the carrier, a float-supporting arm, and an arm extending upwardly between the side bars of the carrier and provided at its upper end with a head operating within the supporting-tube, substantially as and for the purposes set forth.

2. In an indicator substantially as described, the combination with the supporting-tube having the internal longitudinal grooves, sockets leading outwardly therefrom, the carrier having a cross-bar and side bars or arms lying within said longitudinal grooves, and studs or stems projecting into the sockets, and the rocking indicator proper pivoted upon the cross-bar of the carrier, substantially as set forth.

3. An indicator substantially as described, comprising the carrier having a cross-bar and opposite spring side bars, and the indicator proper having a lever composed of a main plate, ears thereon pivoted on the cross-bar of the carrier, and float supporting and indicating arms, substantially as set forth.

4. The combination with the supporting-tube having internal longitudinal grooves, and sockets leading therefrom, of the carrier having the spring side bars to fit in said grooves and the studs or stems to fit in the sockets, and the rocking indicator proper supported by said carrier, substantially as set forth.

5. The combination of the supporting-tube, the carrier having the opposite side bars engaged at their upper ends with said tube, and the indicator proper pivoted to said carrier and having an indicating-arm operating between the side bars of the carrier and a float-supporting arm, substantially as set forth.

6. An indicating device substantially as described, consisting of the support, the carrier comprising a lower cross-bar and arms for connection with the support and the indicator having the indicating devices and the ears provided with bearings for the cross-bar of the carrier and fitted to said bearings to facilitate the connection of the said parts, substantially as set forth.

704,448. COMBINED CRIB AND TABLE. HARRY S. DORAN, Brooklyn, N. Y. Filed Dec. 10, 1901. Serial No. 85,316. (No model.)

Claim.—1. In a combined crib and table, a supporting-frame, supporting-pins extending in direction of each other from the supporting-frame, the said pins being oblong in cross-section, having two flattened opposing faces and two opposing circular faces, and a box-body having keyhole-slots in opposite sections adapted to receive the said supporting-pins, as and for the purpose set forth.

2. In a combined crib and table, the combination with a supporting-frame provided with uprights, and supporting-pins horizontally extending in direction of each other from the said uprights, the said supporting-pins being oblong in cross-section, having opposing flat faces and opposing cylindrical faces, of a body-section comprising a bottom board and end boards, and side rails fixed to the bottom board and end boards, the said end boards being provided with centrally-located transverse keyhole-slots, the enlarged portions of which slots are near the upper edges of the end boards, auxiliary rails having hinged connection with the fixed rails of the box-body, the said auxiliary rails being adapted to stand vertically on the fixed rails or to fold inwardly therefrom over the bottom of the box-body, and fastening devices for the hinged or auxiliary rails, substantially as shown and described.

704,444. PAPER-FEEDER. EDWARD DURKEE, Newton, Mass. Filed Dec. 27, 1898. Serial No. 700,436. (No model.)

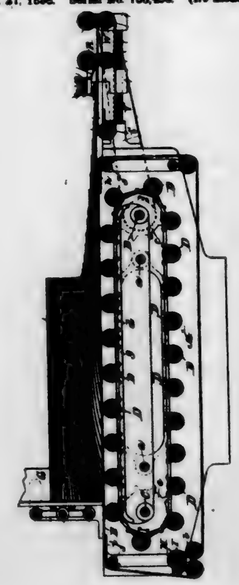

Claim.—1. In a sheet-feeder and in combination with devices for fanning out the sheets from a pile, said devices acting on the surface of the pile, an apron between said devices and surface, and means for preventing and permitting a forward movement of said apron to determine the rapidity of said fanning out and the extent of offset of the sheets, substantially as set forth.

2. In a sheet-feeder the combination with rollers acting on the surface of a pile of sheets maintained in position opposite said rollers, and devices for operating said rollers, an apron between said rollers and surface, and means for preventing and permitting a forward movement of said apron to regulate said fanning out and the offset of the sheets, substantially as set forth.

3. In a sheet-feeder in which the sheets are fanned out by action of devices on the surface of a pile of sheets, the combination of several bands between said devices and surface, and means for preventing and permitting a forward movement of one of said bands independently of another of said bands, substantially as set forth.

4. In a sheet-feeder in which the sheets are fanned out by action of rollers on a pile of sheets maintained in position opposite said rollers, the combination of several bands between said rollers and surface, and means for preventing and permitting a forward movement of one of said bands independently of another of said bands, substantially as set forth.

5. In a sheet-feeder in which the sheets are fanned out by action of devices on the surface of a pile of sheets maintained in position opposite said devices, the combination of several endless bands, a part of each band being between said devices and surface, means for guiding and restraining the movement of one of said bands, means for guiding and restraining another of said bands, and devices operated by the forward edge of said fanned-out sheets for controlling said means independently of each other, substantially as set forth.

6. In a sheet-feeder in which the sheets are fanned out by action of rollers on the surface of a pile of sheets maintained in position opposite said rollers, the combination of several endless bands, a part of each band being between said rollers and said surface, two independent shafts on each of which is a roll having a frictional grip on one of said bands, a ratchet-wheel on each of said shafts, a pawl for each of said wheels, means for reciprocating said pawls, and a latch to prevent action of each of said pawls on the corresponding ratchet-wheel, and a device operated by the front edge of the fanned-out sheets for controlling said latch, substantially as set forth.

7. In combination with mechanism for fanning out sheets from a pile of sheets by action of devices on the surface of the pile, two endless bands, a part of each band being between said devices and pile to have a forward movement, and means operated by electricity for controlling the movement of said bands, substantially as set forth.

8. In combination with mechanism for fanning out sheets from a pile of sheets by action of rollers opposite the surface of the pile, two endless bands, a part of each band being between said rollers and pile and to have a forward movement by action of said rollers thereon, and means for gaging said forward movement controlled by electricity and the edge of the fanned-out sheets, substantially as set forth.

9. In combination with mechanism for fanning out sheets from a pile of sheets embodying rollers acting on the surface of the pile, two endless bands, a part of each band being between said rollers and pile to have a forward movement by action of said rollers thereon, two rolls to revolve independently of each other, each roll having a frictional grip on one of said bands, a ratchet-wheel connected with each of said rolls to revolve therewith, a lever bearing a pawl for each of said wheels, means for swinging said levers, and a latch operated electrically and controlled by means of the edge of said sheets to engage with each of said levers, substantially as set forth.

10. In combination with an endless band in part between the surface of a pile of sheets and devices opposite said surface to act on said pile and band, means for gripping said band and preventing the movement thereof, an electromagnet for releasing said means and permit movement of said band and a contact-breaker in position to be operated by said sheets moved by said devices and in circuit with said magnet, substantially as set forth.

11. In combination with two endless bands and means for causing movement of sheets from a pile and movement of said bands which are in part on the surface of said pile acted on by said means, a device for gripping each of said bands independently of the other band, mechanism embodying an electromagnet for releasing each of said devices and thus permitting motion of the corresponding band, an electric circuit for each magnet, and a contact-breaker in each circuit in position to be operated by said sheets moved by said means, substantially as set forth.

12. The combination with means for fanning out sheets from a pile, an endless band in part on the surface of said pile operated on by said means, and a device for gripping the edge of the outermost sheet and drawing out this sheet, of an electric circuit, a contact-breaker and electromagnet in said circuit, said breaker being in near position to said device and to be operated by said sheet, and mechanism controlled by said magnet for permitting and restraining the movement of said band, substantially as set forth.

13. In combination with mechanism for fanning out sheets from a pile, two electric circuits, an electromagnet and contact-breaker in each circuit, and a device governing the movement of said sheets controlled by said magnets, said contact-breakers being one at the rear of the other in the path of the fanned-out sheets, substantially as set forth.

14. In combination with mechanism for fanning out sheets from a pile, two electric circuits, an electromagnet in each circuit, an adjustable contact-breaker in each circuit, one of said breakers being at the rear of the other in the path of said sheets, and a device governing the movement of said sheets controlled by said magnets, substantially as set forth.

15. In combination with mechanism for fanning out sheets from a pile, embodying two bands which intervene between the fanning-out devices and said pile, two devices, each governing the movement of each of said bands independently of the other, two electromagnets controlling each of said devices, an electric circuit for each of said magnets, and contact-breakers for each of said circuits in the path of said sheets, substantially as set forth.

16. The combination of mechanism for fanning out sheets from the bottom of a pile, embodying rollers forming a support for the pile, devices causing a forward movement of that part of the sheets at either side of the pile independently of the forward movement of that part of the same sheets at the other side of the pile, and means for governing the action of said devices controlled by the front edges of the sheets, substantially as set forth.

17. In combination with devices acting on the surface of a pile of sheets to move the sheets forward, two endless bands intervening (as to a part of each) between said devices and the pile, mechanism for gripping said bands and for preventing or permitting the forward movement of one of said bands independently of the other band, means operated by the front edges of the sheets for controlling the action of said mechanism, and adjustable rolls located as required to seize and carry each sheet moved forward the necessary distance by said devices, substantially as set forth.

18. A paper-feeder embodying mechanism for moving forward the sheets of a pile individually one on another, a table or support over which the sheets pass, two rolls which receive each sheet therebetween, located transversely with reference to said table and adjustable lengthwise of said table, and means operated by the front edges of the sheets for controlling the action of said mechanism, connected with the supports of said rolls to be adjusted therewith in combination with a folding or other machine to be fed, and devices for moving one of said rolls out of contact with the other roll, substantially as set forth.

19. In a paper-feeder and in combination with mechanism for moving forward the sheets of a pile one on another, a device governing the movement of said sheet embodying a ratchet-wheel, a pivoted lever bearing a pawl to engage with said wheel, means for swinging said lever in the direction for the pawl to engage with said wheel, a stop to permit or prevent a reverse motion of the lever and pawl, another stop adjustable to gage the further return of the lever and pawl, and means controlling the action of said stops operated by the sheets as they move forward, substantially as set forth.

20. In mechanism for controlling the movement forward of sheets from a pile of sheets the combination of a ratchet-wheel and pawl therefor, means for carrying said pawl to and fro in a suitable path with reference to said wheel, a latch to prevent the return motion of said pawl as required, an adjustable latch to prevent the further return of said pawl if required, and an adjustable stop to limit the return movement of said pawl, two electric circuits, an electromagnet in each circuit in position to operate one of said latches, and a contact-breaker in each of said circuits and in the path of said sheets, substantially as set forth.

704,445. ENDLESS-CHAIN REEL. JAMES M. DUNAGAN, Hood River, Oreg., assignor of one-half to Robert J. Glen, Mora, Oreg. Filed June 3, 1901. Serial No. 63,746. (No model.)

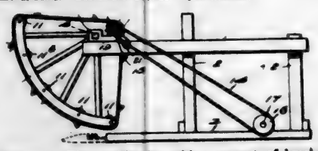

Claim.—1. The combination with a support, of brackets pivotally secured to the support, a quadrantal frame rigidly secured to the brackets, a drive-shaft journaled on said brackets, sprocket-chains mounted upon the shaft and frame, acute-angular projections secured to the links of the chains, and slats seated upon the projections whereby they are secured at an acute angle with relation to the chains, and adapted to pass edgewise between the standing stalks of grain.

2. In a reel for harvesters, the combination with a supporting-frame, of a shaft secured to said frame, quadrantal frame members secured to said shaft, sprocket-wheels or pulleys on the curved guide-pieces of the frame members, a drive-shaft carrying coöperating pulleys, and mounted in rear of and above said first-mentioned shaft, belts or sprocket-chains passed around said pulleys or sprocket-wheels, and slats connected to the belts.

3. In a reel for harvesters, the combination with a supporting-frame; of brackets having their rear ends downwardly curved and provided with perforations by means of which said brackets are pivotally secured to said supporting-frame, sockets upon the forward ends of said brackets, bearings upon said brackets in rear of and elevated above said sockets, a bar or shaft rigidly mounted in said sockets, a series of radial arms projecting from said bar or shaft, a curved guide-bar carried by each series of arms and forming therewith a quadrantal frame, said guide-bars being provided with sprockets, a drive-shaft journaled in said bearings, sprockets mounted on said drive-shaft to coöperate with the first-mentioned sprockets, sprocket-chains passed around the sprockets on the guide-bars and drive-shaft, and slats set at an acute angle on said chains.

4. The combination with a supporting-frame; of brackets pivotally secured to said supporting-frame, sockets upon the forward ends of said brackets, bearings upon said brackets in the rear of and elevated above said sockets, a bar or shaft rigidly mounted in said sockets, a frame carried by said bar or shaft, sprockets upon said frame, a drive-shaft journaled in said bearings, sprockets mounted on said drive-shaft to coöperate with the first-mentioned sprocket, sprocket-chains carried by the sprockets, and slats set at an acute angle on said chains.

704,446. WATCH-DIAL ILLUMINATOR. FREDERICK M. DURKEE, Newton, Mass., assignor of one-half to Ulric Blatter, Jamaica Plain Boston, Mass. Filed Sept. 26, 1901. Serial No. 76,652. (No model.)

Claim.—1. A watch-dial illuminator comprising a casing having an open back, the top and bottom of the casing having flexible conducting-clips adapted to contact with the top and bottom of a battery-cell inserted through the said open back, said casing having means for engagement with a supporting device, and having a watch-holder at its front, a bracket projecting outwardly beyond the watch-holder, an incandescent lamp engaged with the outer portion of the bracket and electrically connected with said clips, and a circuit-closer connected with the said clips.

2. A watch-dial illuminator comprising a casing having an open back, the top and bottom of the casing having flexible conducting-clips adapted to contact with the top and bottom of a battery-cell inserted through the said open back, said casing having a perforated ear at its upper end and having a watch-holder at its front, a bracket projecting outwardly beyond the watch-holder, an incandescent lamp engaged with the outer portion of the bracket and electrically connected with said clips, and a flexible cable composed of wires connected with the clips and provided with a circuit-closer at its free end.

704,447. PROTECTIVE OPERATING DEVICE FOR ELECTRIC MOTORS. ARTHUR C. EASTWOOD, Cleveland, Ohio, assignor to the Electric Controller & Supply Company, Cleveland, Ohio, a Corporation of Ohio. Filed Nov. 16, 1901. Serial No. 82,539. (No model.)

Claim.—1. The combination with an operating device for electrical apparatus, said device having contact-plates, of a contact-arm for said plates, means acting upon said arm to return it to its off position when it is moved therefrom, and means for holding said arm at a level such that it will contact with said plates, with means operative upon said arm at its center of rotation for moving the arm away from said level whereby it is allowed to return to its off position without engaging the contact-plates, substantially as described.

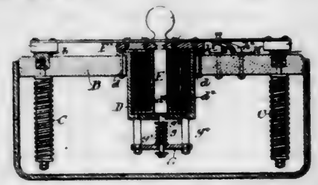

2. The combination with an operating device for electrical apparatus, said device having contact-plates, of a contact-arm for said plates, means for acting upon said arm to return it to its off position when it is moved therefrom, and a magnet for holding said arm at a level such that it will contact with said plates as long as the magnet is energized, with means for moving the arm away from said level when the magnet is deënergized, whereby said arm is allowed to return to its off position without engaging the contact-plates, substantially as described.

3. An operating device for electrical apparatus, said device having contact-plates connected to resistances, a rotatable arm having electrical mechanism for holding it in engagement with the plates when the controller is operated, means for moving the arm at right angles to the plane of its rotation away from the level of said plates, and means for returning the arm to its off position when it has been so moved away from said level, substantially as described.

4. An operating device for electrical apparatus, the same having contact-plates connected to resistances, a movable arm operative in connection with the plates for throwing more or less of said resistance into circuit, means operated by an electric current for retaining the arm in working relation with the contact-plates, and means for moving the arm away from the level of the plates when the said arm-retaining means are out of action, and means for returning the arm to its off position when it has been so moved away from said level, substantially as described.

5. An operating device for electrical apparatus, said device having contact-plates connected to resistances, a rotatable arm having a magnet for holding it in engagement with the plates when the controller is operated, means for moving the arm at right angles to the plane of its rotation away from the level of said plates when the magnet is deënergized, and means for returning the arm to its off position when it has been so moved away from said level, substantially as described.

6. An operating device for electrical apparatus, said device having contact-plates connected to resistances, a rotatable arm having a magnet for holding it in engagement with the plates when the controller is operated, means for moving the arm at right angles to the plane of its rotation away from the level of said plates when the magnet is deënergized, means for returning the arm to its off position when it has been so moved away from said level, and means for preventing movement of the arm from its full-on position as long as said magnet is energized, substantially as described.

7. An operating device for electrical apparatus, said device having contact-plates connected to resistances, a contact-arm for said plates rotatably carried by the controller, a spring acting to retain said arm in its off-position, a magnet having an armature fixed to the arm, a second spring acting to move the armature away from the magnet and a stop for retaining the arm in its full-on position against the action of the first spring, substantially as described.

8. An operating device for electrical apparatus, said device having contact-plates and a contact-arm, said controller being provided with means for retaining the arm in contact with the plates as long as current flows normally through the supply-mains, said controller also having means for moving the arm away from the contact-plates and returning it to the off position without engagement with said plates upon the cessation of the flow of current, substantially as described.

9. An operating device for electrical apparatus, said device having plates electrically connected to resistances and an arm, carried on a rotatable bar, for contacting with the plates, means for returning the arm to its off position when it has been moved therefrom, means for moving the bar longitudinally and thereby moving the said arm away from the said plates, with a magnet electrically connected so as to be energized when current flows in the supply-mains, said magnet holding the arm at a level

to contact with the plates, against the action of the means for moving said bar longitudinally, substantially as described.

10. The combination of an operating device for electrical apparatus, said device carrying a magnet, a movable core to said magnet having fixed to it a rotatable contact-arm, contact-plates on the controller connected to resistances and placed to be engaged by said arm, a spring acting on said core to force it away from the magnet, said spring holding the contact-arm away from the level of the contact-plates when the magnet is deënergized, a spring acting on the arm to return the same to its off position and a stop on the controller engaging the contact-arm when it is in a full-on position and preventing its rotation as long as the magnet is energized, substantially as described.

11. In an operating device for electrical apparatus, a magnet having a core movable into and out of said magnet and rotatable within the magnet, an armature fixed to said core and carrying a contact-arm, contact-plates therefor placed to be engaged by the arm when the armature is magnetically held to the magnet, a spring-controlled stop on the device holding the arm in its full-on position, with means for moving the armature so that the arm is free to pass over the stop, and means for returning said arm to its off position, substantially as described.

12. In a device of the character described, a magnet-frame held to the insulating-plate of the controller, a magnet and an armature therefor, a rotatable core for the magnet fixed to the armature, a bar projecting from said core, a yoke carried by the magnet-frame, a spring on said bar tending to force the core and armature away from the magnet, and a contact-arm fixed to the armature, said arm being at a level to engage the contact-plates of the device when the magnet is energized, and being held away from the same when the magnet is deënergized, substantially as described.

13. In a protective operating device for electric motors, the combination of a controller having a number of contact-plates connected to resistances and a contact-arm whereby said resistances are successively cut out of circuit with the armature of the motor, a magnet in series with the field of the motor, with means whereby the magnet holds said arm in engagement with the contact-plates so long as the field of the motor is energized, and means for moving said arm off of the contacts and then returning it to its off position upon the failure of the current, substantially as described.

14. In a current-controlling device for electrical apparatus, the combination of contact-plates connected to resistances, a contact-arm for said plates provided with means for holding it in engagement with certain of the plates when the device is in operation, together with means for automatically moving said arm away from the level of said contact-plates upon the cessation of the flow of current in the device, substantially as described.

15. In a protective operating device for electrical apparatus, the combination of contact-plates, a contact-arm for the same, a magnet for holding said arm in engagement with said contacts as long as the device is in operation and mechanism for moving said arm away from the level of the plates upon the cessation of the flow of current through the device, substantially as described.

16. A protective operating device for electrical apparatus, having contact-plates connected to resistances, a contact-arm for the plates, a magnet connected in series with the circuit through said device and operative upon said arm when current flows through the device to hold the same in engagement with the contact-plates, together with means for moving the arm away from the plane of the contact-plates upon the cessation of the flow of current through the device, substantially as described.

704,448. RHEOSTAT. ARTHUR C. HASTWOOD, Cleveland, Ohio, assignor to the Electric Controller and Supply Company, Cleveland, Ohio, a Corporation of Ohio. Filed Apr. 10, 1902. Serial No. 102,234. (No model.)

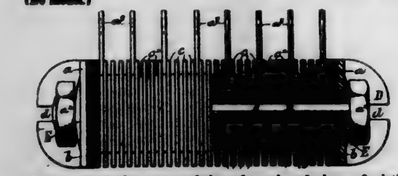

Claim.—1. A rheostat consisting of a series of plates of relatively high electrical conductivity having coatings of relatively low conductivity, with means yieldingly holding said plates in contact with one another, said plates being connected to each other through said coatings, substantially as described.

2. A rheostat consisting of a series of plates of relatively high electrical conductivity having coatings of relatively low conductivity, certain of said plates extending beyond the edges of others and thereby providing heat-radiating surfaces, with means yieldingly holding said plates in contact with one another, substantially as described.

3. A rheostat consisting of a series of plates of relatively high electrical conductivity having coatings of relatively low conductivity, said plates having openings through them and having certain of their number extending beyond the others, a supporting member extending through said openings having means for yieldingly retaining the plates in contact with one another, substantially as described.

4. In a rheostat, the combination of metal plates having their surfaces coated with a material of relatively low electrical conductivity, bodies of metal between said plates of relatively large mass, said bodies having portions thinner than the remainder thereof extended beyond said plates, thereby providing heat-radiating surfaces, the plates and said bodies of metal being electrically connected through the said coatings, substantially as described.

5. A rheostat consisting of a series of metallic plates, said plates having upon their surfaces a coating of a material of relatively low conductivity, and being electrically connected through said coatings, said plates having a relatively large body portion adjacent to their contact-surfaces and having portions extending beyond said surfaces of less thickness than said body portions, with plates of uniform thickness alternating with said other plates, substantially as described.

6. A rheostat consisting of a series of plates having openings through them, a supporting member extending through said openings, certain of said plates extending beyond the edges of others and certain of the openings through the plates being of a size different from those through the others, substantially as described.

7. The combination in a rheostat of a series of metal plates of relatively great thickness at certain points, plates of substantially uniform thickness alternating with said other plates, said plates of uniform thickness having a coating of relatively low electrical conductivity upon their surfaces, with means for retaining said plates in contact with one another, substantially as described.

704,449. PROJECTING APPARATUS. ROLAND H. EDWARDS, London, England. Filed May 16, 1898. Serial No. 680,851. (No model.)

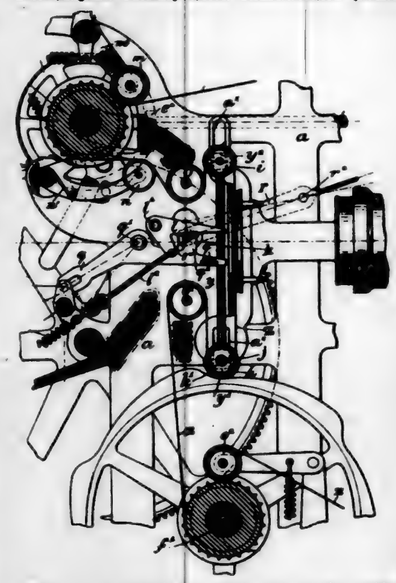

Claim.—1. In animated-photograph apparatus, the combination with the film-advancing rollers, and fixed guide-rollers over which a looped portion of the film passes across the axis of a lens; of a vibrating frame, and an idle roller mounted on each end of said frame, said frame and rollers being situated within the looped portion of the film, means for continuously winding and unwinding the film, means for vibrating said frame alternately in a direction with, and in a direction the reverse of the movement of the film, the movement of the said frame with the film carrying said film at an accelerated speed, and the reverse movement of said frame being at a speed equal to the speed of the advance of the film, a shutter, and means for operating said shutter synchronously with the vibration of said frame; substantially as described.

2. In an animated-photographic apparatus, the combination with the film-advancing rollers, and fixed guide-rollers over which a looped portion of the film is guided across the axis of a lens; of a vibrating frame and an idle roller mounted on each end of said frame, said frame and rollers being situated in said looped portion of the film, means for continuously unwinding the film, means for vibrating said frame alternately in a direction with and in a direction the reverse of the movement of the film, the reverse movement of said frame being at a speed equal to the speed of the advance of the film, and the movement with the film being accelerated and carrying the film with it, substantially as described.

3. In an animated-photograph apparatus, the combination with the film-advancing rollers, and film unwinding and winding rolls; a vibratory frame; a roller journaled in each end of said frame; means to reciprocate said frame and said rollers therein in such manner that the part of the film between said rollers is held stationary with respect to the lens-axis during the movement in one direction of said vibratory frame, while the speed of travel of said portion of the film is accelerated on the return movement of the said frame; and a shutter adapted to operate synchronously with such return movement, substantially in the manner and for the purpose herein set forth.

4. In animated-photograph apparatus, the combination with the film-advancing rollers, and the film unwinding and winding rolls, of a pair of movable rollers adapted to be reciprocated simultaneously, a roller on each end of one of said rollers, cam-wheels operating in conjunction with said rollers to reciprocate the movable rollers; two pairs of stationary rollers arranged and acting in conjunction with said movable rollers whereby that part of the film between said pair of movable rollers is held stretched across the axis of a lens and intermittently held stationary with respect thereto, and intermittently caused to advance at an accelerated speed; and a shutter adapted to act simultaneously with such accelerated movement, substantially as and for the purposes herein set forth.

5. In animated-photograph apparatus, the combination with film-advancing rollers; of a vibrating frame; a pair of idle rollers mounted in said frame, and fixed guide-rollers, over which a looped portion of the film is guided across the axis of a lens; means for continuously unwinding and winding the film, a cam-wheel operating in conjunction with one of the film-advancing rollers engaging a portion of said vibrating frame and operating the same alternately in a direction with, and in a direction the reverse of the movement of the film, the reverse movement of said frame being at a speed equal to the speed of the advance of the film, and the return movement being accelerated; a shutter, and means for operating said shutter synchronously with the operation of said frame, substantially as described.

6. In animated photographic apparatus, the combination with the film-advancing rollers; of a vibrating frame; an idle roller mounted on each end of said frame; over which a looped portion of the film is guided across the axis of a lens; means for continuously unwinding the film; a roller on each end of one of said idle rollers, cam-wheels operating in conjunction with said rollers for vibrating said frame alternately in a direction with and in a direction the reverse of the movement of the film; said reverse movement being at a speed equal to the speed of the advance of the film, and the return movement being accelerated, substantially as described.

7. In animated photographic apparatus, the combination with the film-advancing rollers; of a vibrating frame; an idle roller mounted on each end of said frame over which a looped portion of the film is guided across the axis of a lens; means for vibrating said frame alternately in a direction with and in a direction the reverse of the movement of said film, the reverse movement of said frame being at a speed equal to the speed of the advance of the film, and the return movement being accelerated, substantially as described.

8. In an animated photograph apparatus, the combination, with film-reels, and film-feeding mechanism, of a film-support, carrying the portion of the film which is in the field of the apparatus, which support is independent of the reels, is movable in the direction of motion of the film through said field, and imparts motion to the film passing over it independent of the motion imparted thereto by the feeding mechanism, and means for vibrating the support laterally in the direction of motion of the film and in the opposite direction, substantially as described.

9. In a consecutive-view apparatus, the combination with reels or equivalent means for supplying and taking up a flexible film or picture-strip and mechanism for feeding the film through the field of the apparatus, of a movable film-support, independent of said reels or equivalent means, and over which the film passes when passing through the field of the apparatus, said support being mounted to move in a direction opposite to that of the film passing over it, and means for so moving said support at a speed substantially equal to that of the film passing over it, whereby the portion of the film passing over said support may be held

stationary, at intervals, in the field of the apparatus, substantially as described.

10. In a consecutive-view apparatus, the combination with reels or equivalent means for supplying and taking up a flexible film or picture-strip, and mechanism for feeding the film through the field of the apparatus, of a movable film-support independent of said reel or equivalent means and of said feeding mechanism, and over which the film passes when passing through the field of the apparatus, said support being mounted to move at intervals in a direction opposite to that of the film passing over it, and means for so moving said support at a speed substantially equal to that of the film passing over it, whereby the portion of the film passing over said support may be held stationary at intervals in the field of the apparatus, substantially as described.

11. In a consecutive-view apparatus, the combination with reels or equivalent means for supplying and taking up a flexible film or picture-strip, and mechanism for feeding the film through the field of the apparatus, of a movable film-support, independent of said reels or equivalent means and over which the film passes when passing through the field of the apparatus, said support being mounted to move at intervals in a direction opposite to that of the film passing over it, and having stationary axes near which the film passes when passing to and from said support, and means for moving said support in a direction opposite, but at a speed substantially equal to that of the film passing over it, whereby the portion of the film passing over said support may be held stationary, at intervals, in the field of the apparatus, substantially as described.

12. In a consecutive-view apparatus, the combination with reels or equivalent means for supplying and taking up a flexible film or picture-strip, and mechanism for feeding the film through the field of the apparatus, of a vibrating film-support independent of said reels or equivalent means, and over which the film passes when passing through the field of the apparatus, said film-support being arranged to move alternately in the direction of motion of the film passing over it and in the direction opposite thereto, and a cam for vibrating said support, arranged to move in the direction opposite to that of the film with a velocity substantially equal to that of the film, whereby the portion of the film passing over said support may be held stationary, at intervals, in the field of the apparatus, substantially as described.

13. In a consecutive-view apparatus, the combination with reels or equivalent means for supplying and taking up a flexible film or picture-strip, and mechanism for feeding the film through the field of the apparatus, of a vibrating film-support, independent of said reels or equivalent means, and over which the film passes when passing through the field of the apparatus, said film-support being arranged to move alternately in the direction of motion of the film passing over it and in the direction opposite thereto, and a cam for vibrating said support arranged to move it in the direction opposite to that of the film with a velocity substantially equal to that of the film, and so proportioned that the period during which the support is moved in opposition to the motion of the film, is longer than the period during which said support is moved with the film, whereby the portion of the film passing over said support may be held stationary, at intervals, in the field of the apparatus, and for longer periods than the periods of motion of the film through the field of the apparatus, substantially as described.

14. In a consecutive-view apparatus, the combination with reels or equivalent means for supplying and taking up a flexible film or picture-strip, a main driving-shaft, and film-feeding rolls driven thereby, of a movable film-support having film-guides located upon opposite sides of the field of the apparatus, and over which the film may pass, said support imparting motion to the portion of the film passing over it independent of the motion imparted thereto by the feeding-rolls, and a cam on said driving-shaft arranged to move said film-support alternately in the direction of motion of the film and in the direction opposite thereto, substantially as described.

704,450. ICE-RUNWAY. FREDERICK H. REMMERS, CHARLES H. REMMERS, and FREDERICK P. DESSELL, Athens, N. Y. Filed Feb. 19, 1902. Serial No. 94,769. (No model.)

Claim.—1. An ice-runway comprising a main runway, a shunt-runway having swinging connection with the main runway, slat connections for directing ice from the inlet end of the main runway to the shunt-runway, a trap mounted to swing in the main runway and normally forming a portion of the bottom thereof, and means for elevating said trap to permit the passage of ice from the main runway to the shunt-runway, substantially as specified.

2. An ice-runway comprising a main runway, consisting of side rails and bottom slats, a hanger on said main runway, a shunt-runway having swinging connection with said hanger, slat connections for directing ice from the inlet end of the main runway to the shunt-runway, a trap mounted to swing in the main runway and normally forming a portion of the bottom thereof, a crank-shaft having swinging connection with the

main runway and engaging against the under side of the trap, and a handle on said crank-shaft, substantially as specified.

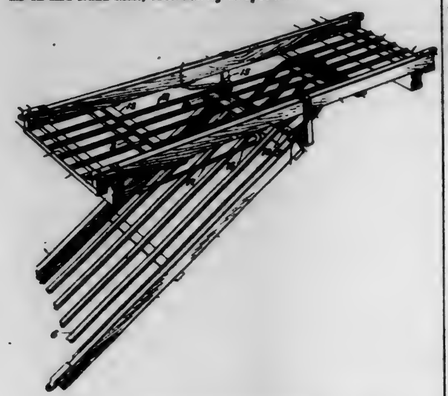

704,451. FASTENER FOR SHOE-UPPERS. WARREN E. ELLIS, Haverhill, Mass. Filed Feb. 26, 1901. Serial No. 48,943. (No model.)

Claim.—1. A detachable fastener for shoe-uppers comprising two members, each provided with eyelet engaging and retaining means, said members being hinged together midway between the free ends of the fastener, for the purpose set forth.

2. A detachable fastener for shoe-uppers comprising two members each of which consists of a central portion 2 and end portions 3 and 4 each of said end portions being provided with eyelet engaging and retaining means, and said central portions 2 being hinged together, for the purpose set forth.

3. A detachable fastener for shoe-uppers composed of two members each of which comprises a central portion 2 and end portions 3 and 4, each of said end portions being provided with eyelet engaging and retaining means, and a clip wrapped around said central portions 2, whereby said members are hinged together, substantially as described.

4. A detachable fastener for shoe-uppers comprising two members, the ends of which are each provided with an eyelet-engaging hook extended to form a short free end united thereto by an abrupt bend, said members being hinged together midway between said ends, for the purpose set forth.

5. A detachable fastener for shoe-uppers comprising two members, each of which consists of a central portion 2 and end portions 3 and 4, said central portions 2 being hinged together and each of said end portions being provided with an eyelet-engaging hook and extended beyond the same to form a short free end which is united to the corresponding hook by an abrupt bend, substantially as and for the purpose set forth.

704,452. VEHICLE-BRAKE. CHARLES B. FAIRCHILD, New York, N. Y. Filed Sept. 16, 1901. Serial No. 75,467. (No model.)

Claim.—1. In a vehicle-brake of the type described, the combination with a brake-brush, of a head or frame in which said brake-brush is revolubly mounted, a rigid frame, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement, means to impart movement to said brush-carrying head or frame toward and from the road-bed or pavement and stops to limit the rotation of said brake-brush, substantially as described.

2. In a vehicle-brake of the type described, the combination with a brake-brush, of a head or frame in which said brake-brush is revolubly mounted, stops thereon to limit the rotation of said brake-brush, a rigid frame secured to and depending from the car-body, rigid supports against which the lower end of said frame abuts adapted to receive the end thrust due to the application of the brake, guides or ways in said rigid frame to which the brush-carrying frame is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the pavement, substantially as described.

3. In a vehicle-brake of the type described, the combination of a brake-brush, a head or frame in which said brake-brush is revolubly mounted, stops to limit the rotation of said brake-brush, a frame rigidly supported beneath the car-body, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed, said means comprising a screw revolubly connected to said brush-carrying head and to the car-body, the connection to one thereof comprising a nut to which said screw is threaded, and means to impart rotary movement to said screw, substantially as described.

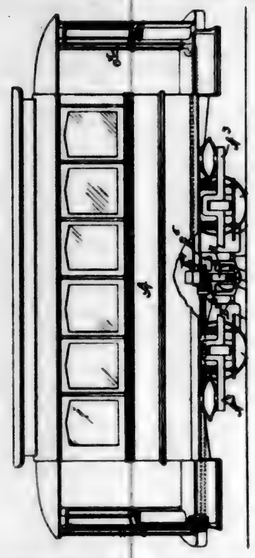

4. In a vehicle-brake of the type described, the combination with the brake-brush of a head or frame in which said brake-brush is revolubly mounted, stops which limit the rotation of said brake-brush, a rigid frame secured to and depending from the car-body, rigid supports against which the lower end of said frame abuts adapted to receive the end thrust due to the application of the brake, guides or ways in said rigid frame to which the brush-carrying head or frame is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, said means comprising a screw revolubly connected to said brush-carrying head or frame and to the car-body, the connection to one thereof comprising a nut secured thereto to which said screw is threaded, and means to rotate said screw, substantially as described.

5. In a vehicle-brake of the type described, the combination with a brake-brush of a head or frame in which said brake-brush is revolubly mounted, stops to limit the rotation of said brake-brush, a rigid frame, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, said means comprising nuts of different lead secured to said brush-carrying head and to the car-body, a screw the opposite ends of which are threaded to said nuts and means to rotate said screw, substantially as described.

6. In a vehicle-brake of the type described, the combination with a brake-brush of a head or frame in which said brake-brush is revolubly mounted, stops which limit the rotation of said brake-brush, a rigid frame secured to and depending from the car-body, rigid supports against which the lower end of said rigid frame abuts adapted to receive the end thrust due to applying the brake, guides or ways in said rigid frame to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head or frame toward and from the road-bed or pavement, said means comprising nuts of different lead secured to said brush-carrying head and to the car-body, a screw the opposite ends of which are threaded to said nuts and means to rotate said screw, substantially as described.

7. In a vehicle-brake of the type described, the combination with a brake-brush of a head or frame in which said brake-brush is revolubly mounted, stops to limit the rotation of said brake-brush, a rigid frame, guides or ways therein to which said brush-carrying head or frame is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, said means comprising a screw revolubly connected to said brush-carrying head and to the car-body, the connection to one thereof comprising a nut pivoted thereto, and means to rotate said screw, substantially as described.

8. In a vehicle-brake of the type described, the combination with a brake-brush, of a head or frame in which said brake-brush is revolubly mounted, stops to limit the rotation of said brake-brush, a rigid frame, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, said means comprising nuts of different lead pivotally connected to said brush-carrying head and to the car-body, a screw the opposite ends of which are threaded to said nuts and means to rotate said screw, substantially as described.

9. In a vehicle-brake of the type described, the combination with a brake-brush of a head or frame in which said brake-brush is revolubly mounted, stops which limit the rotation of said brake-brush, a rigid frame secured to and depending from the car-body, rigid supports against which the lower end of said rigid frame abuts adapted to receive the end thrust due to applying the brake, guides or ways in said rigid frame to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, said means comprising nuts of different lead pivoted to the brush-carrying head and to the car-body, a screw the opposite ends of which are threaded to said nuts and means to rotate said screw, substantially as described.

10. In a vehicle-brake of the type described, the combination with a brake-brush of a head or frame in which said brake-brush is revolubly mounted, stops to limit the rotation of said brake-brush, a rigid frame, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement, means to impart movement to said brush-carrying head toward and from said pavement, said means comprising a screw revolubly connected to said brush-carrying head and to the car-body, the connection to one thereof comprising a nut pivoted thereto to which said screw is threaded and means to rotate said screw and stops adapted to limit the pivotal movement of said brush-carrying head or frame, substantially as described.

11. In a vehicle-brake of the type described, the combination with a brake-brush of a head or frame in which said brake-brush is revolubly mounted, stops which limit the rotation of said brake-brush, a rigid frame secured to and depending from the car-body, rigid supports against which the lower end of said rigid frame abuts adapted to receive the end thrust due to applying the brake, guides or ways in said rigid frame to which said brush-carrying head or frame is fitted and is movable toward and from the road-bed or pavement, rigid surfaces on said brush-carrying head or frame which are opposite rigid surfaces on said rigid frame and diverge gradually therefrom and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, said means comprising nuts of different lead pivoted to the brush-carrying head and to the car-body, a screw the opposite ends of which are threaded to said nuts and means to rotate said screw, substantially as described.

12. In a vehicle-brake of the type described, the combination with a brake-brush, of a head or frame in which said brake-brush is revolubly mounted, a rigid frame, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement, means to impart movement to said brush-carrying head or frame toward and from the road-bed or pavement and counterbalance-springs applied to said brush-carrying head or frame, substantially as described.

13. In a vehicle-brake of the type described, the combination with a brake-brush, of a head or frame in which said brake-brush is revolubly mounted, a rigid frame secured to and depending from the car-body, rigid supports against which the lower end of said rigid frame abuts adapted to receive the end thrust due to applying the brake, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement, means to impart movement to said brush-carrying head toward and from the road-bed or pavement and counterbalance-springs which connect said brush-carrying head with the car-body, substantially as described.

14. In a vehicle-brake of the type described, the combination with a brake-brush, of a head or frame in which said brake-brush is revolubly mounted, said head or frame consisting of right and left hand sections comprising overlying members rigidly secured together, a rigid frame, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, substantially as described.

15. In a vehicle-brake of the type described, the combination with a brake-brush comprising a back or support, heads or disks and trunnions on said heads or disks, all formed integral with each other, of a head or frame to suitable bearings in which the trunnions on said brake-brush are fitted, said head or frame consisting of right and left hand sections comprising overlying members rigidly secured together, a rigid frame, guides or ways therein to which said brush-carrying head is fitted and is movable toward and from the road-bed or pavement and means to impart movement to said brush-carrying head toward and from the road-bed or pavement, substantially as described.

16. A brake-brush for a brake of the type described, comprising a back or support to which the brushes are secured, disks secured to the ends thereof and trunnions on said disks located eccentrically thereof on the side of said brush back or support, substantially as described.

17. A brake-brush for a brake of the type described comprising a back or support, a flange thereon to which the brushes are attached, heads or disks secured to the ends of said brush back or support and trunnions on said heads or disks located eccentrically thereof on the side of said brush back or support, substantially as described.

18. A brake-brush for a brake of the type described, comprising a back or support to which the brushes are secured, heads or disks secured to the ends thereof and trunnions on said heads or disks located eccentrically thereof on the side of said brush back or support, the outer curved surfaces of said brush back or support and of said heads or disks being grooved or corrugated forming teeth therein, substantially as described.

19. A brake-brush for a brake of the type described, comprising a back or support, heads or disks secured to the ends thereof and shoes removably secured in said heads or disks which extend on both sides of the free ends of the brush-teeth when in normal unflexed position, substantially as described.

20. A brake-brush for a brake of the type described, comprising a support to which the brushes are secured and rigid cam-surfaces adapted to rotate said brake-brush in the manner described, said cam-surfaces being provided with teeth or projections, substantially as described.

21. A brake-brush for a brake of the type described, comprising a back or support to which the brushes are secured, heads or disks secured to the ends thereof, trunnions on said heads or disks located eccentrically thereof on the side of said back or support and removable shoes secured in the edges of said heads or disks which extend on both sides of the free ends of the brushes when in normal unflexed position, substantially as described.

22. In a vehicle-brake of the type described, the combination with a frame supported upon the vehicle so as to be movable toward and from the road-bed or pavement and means to impart movement to said frame toward and from the road-bed or pavement, a brake-brush revolubly mounted in said frame and stops adapted to limit the rotation of said brake-brush, of a spring or springs applied to said brake-brush and adapted to give it an impulse toward its normal position when said brake is released, substantially as described.

23. In a vehicle-brake of the type described, the combination with a frame supported upon the vehicle so as to be movable toward and from the road-bed or pavement and means to impart movement to said frame toward and from said road-bed or pavement and a brake-brush revolubly mounted in said frame, of stops adapted to limit the rotation of said brake-brush, said stops comprising a rigid projection or projections on said brake-brush and a dog or dogs pivoted upon said frame in the path of travel of said projection or projections, stops on said frame which limit the pivotal movement of said dog or dogs and springs applied to said dog or dogs adapted to maintain them normally in central position, substantially as described.

704,453. MEANS FOR CHANGING THE TENSION OF CURRENTS. WILLIAM M. FAIRFAX, Brooklyn, N. Y. Filed Oct. 11, 1898. Serial No. 443,612. (No model.)

Claim.—1. In a system of electrical generation, transmission and distribution, the combination of a generator of continuous currents, a local circuit or circuits connected thereto, a transformer having a stationary core and stationary primary and secondary coils, the primary coils being connected to a local circuit, and the secondary coils being normally permanently connected to interconnected three-phase transmission-leads, a rotary commutating device electrically connected to the primary coils for producing successively-acting magnetomotive forces in the stationary core of the transformer, thereby producing successively-acting electromotive forces in the secondary coils of the transformer which result as three-phase currents in the interconnected transmission-leads, a transformer with stationary core and primary and secondary coils located at a distant station, the primary coils thereof being permanently connected to the interconnected three-phase transmission-leads, and a rotary commutating device which changes the successively-produced electromotive forces in the secondary coils into direct currents in the secondary circuits at the distant station, substantially as described.

2. In a system of electrical generation, transmission and distribution, the combination of a generator of low-tension continuous currents, a local circuit or circuits connected thereto, a transformer having a stationary core and stationary low-tension primary and high-tension secondary coils, the primary coils being connected to a local circuit, and the secondary coils being normally permanently connected to interconnected three-phase transmission-leads, a rotary commutating device electrically connected to the primary coils for producing successively-acting magnetomotive forces in the stationary core of the transformer, thereby producing successively-acting electromotive forces in the secondary coils of the transformer which result as three-phase currents in the interconnected transmission-leads, a transformer with stationary core and primary and secondary coils located at a distant station, the primary coils thereof being permanently connected to the interconnected three-phase transmission-leads, and a rotary commutating device which changes the successively-produced electromotive forces in the secondary coils into direct currents in the secondary circuits at the distant station, substantially as described.

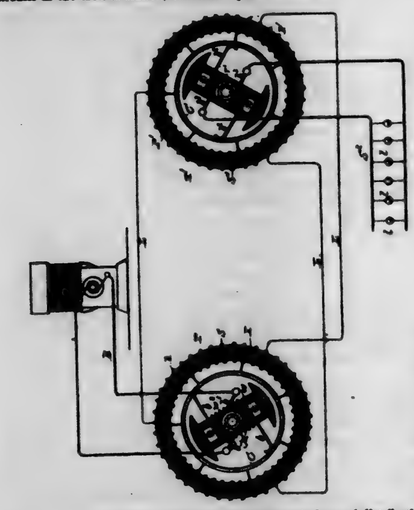

3. In a system of electrical generation, transmission and distribution, the combination of a generator of continuous currents, a local circuit or circuits connected thereto, a transformer having a stationary core and stationary low-tension primary and high-tension secondary coils, the primary coils being connected to a local circuit, and the secondary coils being normally permanently connected to interconnected three-phase transmission-leads, a rotary commutating device electrically connected to the primary coils for producing successively-acting magnetomotive forces in the stationary core of the transformer, thereby producing successively-acting electromotive forces in the secondary coils of the transformer which result as three-phase currents in the interconnected transmission-leads, a transformer with stationary core and high-tension primary and low-tension secondary coils located at a distant station, the primary coils thereof being permanently connected to the interconnected three-phase transmission-leads, and a rotary commutating device which changes the successively-produced electromotive forces in the secondary coils into direct currents in the low-tension secondary circuits at the distant station, substantially as described.

4. In a system of electrical generation, transmission and distribution, the combination of a generator of continuous currents, a local circuit or circuits connected thereto, a transformer having a stationary core and stationary primary and closed-circuited secondary coils, the primary coils being connected to a local circuit, and the secondary coils being normally permanently connected to interconnected three-phase transmission-leads, a rotary commutating device electrically connected to the primary coils for producing successively-acting magnetomotive forces in the stationary core of the transformer, thereby producing successively-acting electromotive forces in the secondary coils of the transformer which result as three-phase currents in the interconnected transmission-leads, a transformer with stationary core and closed-circuited primary and secondary coils located at a distant station, the primary coils thereof being permanently connected to the interconnected three-phase transmission-leads, and a rotary commutating device which changes the successively-produced electromotive forces in the secondary coils into direct currents in the secondary circuits at the distant station, substantially as described.

704,454. FEED-WATER HEATER AND CONDENSER. HENRY A. PETERSON, Williamsport, Pa. Filed June 18, 1900. Serial No. 20,697. (No model.)

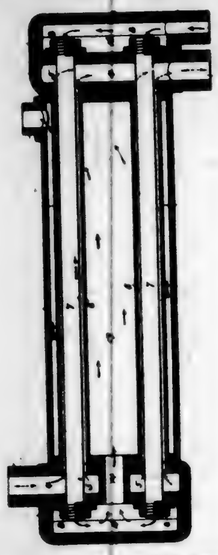

Claim.—1. A heater or condenser comprising opposite hollow headers, one having an inlet for fluid and the other an outlet for the same, a tubular casing seated upon and confined between said headers, a series of tubes contained within said casing and likewise seated upon and confined between the headers, said tubes communicating with the chambers within the headers, an inlet for another volume of fluid, an outlet for the same, and a second set of tubes passing through the headers and through the tubes which communicate with the chambers in said headers, said internal tubes having end fastening devices bearing upon the outer faces of the headers and serving as tubular stay-bolts to confine the headers to the said casing, substantially as specified.

2. A heater or condenser consisting of opposite hollow headers one having a fluid-inlet and the other an outlet for the said fluid, a tubular casing seated upon and confined between said headers and having an outlet for another volume of fluid, a series of tubes contained within said casing and likewise seated upon and confined between the headers and communicating with the chambers within said headers, other tubes passing through the headers and through the tubes which connect the chambers of said headers, fastening devices secured to the ends of said inner tubes, and bearing upon the outer faces of the headers, and caps secured to the headers and inclosing chambers with which said internal tubes communicate, one of said caps having an inlet branch for the second volume of fluid and the opposite header having a passage leading from the chamber of its cap to the chamber within the central tubular casing, substantially as specified.

3. A heater or condenser consisting of opposite hollow headers, one having an inlet for fluid and the other having an outlet for the same, a tubular casing seated upon and confined between said headers and having an outlet for another volume of fluid, a series of tubes contained within said casing and likewise seated upon and confined between the opposite headers, said tubes communicating with the chambers within the headers, other tubes passing through the headers and through said connecting-tubes and having fastening devices bearing upon the outer faces of the headers and serving to secure the latter to the central structure, threaded flanges projecting outwardly from each header, and caps screwed upon said flanges, one of said caps having an inlet for the second volume of fluid, and the opposite header having a passage providing a communication between the chamber within its cap and the chamber within the central tubular casing, substantially as specified.

704,455. HEDDLE-FRAME. TOUSSAINT J. PUTAT, Hudson, Mass. Filed Nov. 2, 1901. Serial No. 80,980. (No model.)

Claim.—1. A heddle-frame comprising wooden upper and lower bars, and metal channel-irons connecting said bars, the ends of said bars fitting between the sides of the channel-irons substantially as described.

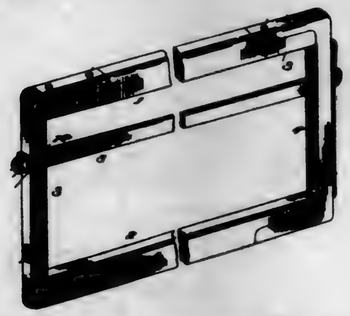

2. A heddle-frame comprising wooden upper and lower bars, and metal channel-irons connecting said bars, said channel-irons being bent at the ends and recessed to the upper and lower bars, the ends of said wooden bars being partially inclosed by the bent ends of the channel-irons substantially as described.

3. A heddle-frame comprising upper and lower wooden bars having their outer ends and part of their sides adjacent said ends recessed, metal angle-bars formed of channel-irons, the ends of said irons being bent, the outer portion thereof fitting the recess in the outer ends of the wooden bars while the side portions of the metal bars fit the recesses in the sides of the wooden bars, and forming means for securing the two sets of bars together.

704,456. ROTARY MOTOR. THOMAS U. GRAY, London, England. Filed Mar. 18, 1901. Serial No. 51,703. (No model.)

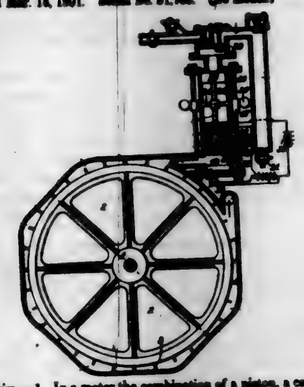

Claim.—1. In a motor the combination of a piston, a casing for said piston provided with inlet and exhaust ports, a combustion-chamber communicating with the inlet-port, a valve provided with a passage and adapted to reciprocate in the combustion-chamber, a compression-chamber which communicates with the combustion-chamber and coöperates with the valve-passage, a valve-stem carried by said valve, a piston carried by the valve-stem, a cylinder within which the said piston is adapted to reciprocate and which communicates by means of valves with the combustion-fluid source and with the compression-chamber, and sparking apparatus adapted to be operated after the valve has been moved by the working charge so as to close the communication between the combustion-chamber and the compression-chamber, substantially as described and for the purpose specified.

2. In a motor the combination of a piston and its casing, a combustion-chamber, a valve reciprocative in said combustion-chamber and having a passage, a compression-chamber coöperative with said passage, a cylinder adapted to communicate with a source of fluid-supply and also with said compression-chamber, a piston in said cylinder, a stem connecting the cylinder and valve, the latter being arranged to be acted upon by the working charge to close the communication between the combustion and compression chambers, cross-arms connected to said stem, guides for said cross-arms, and sparking means operable with one of said parts.

3. In a rotary motor the combination of a rotary drum, pistons or vanes carried by said drum, a casing provided with a fluid-pressure passage through which the pistons or vanes travel and having inlet and exhaust ports, a combustion-chamber communicating with the inlet-port, a valve provided with a passage and adapted to reciprocate in the combustion-chamber, a compression-chamber which communicates with the combustion-chamber and coöperates with the valve-passage, a valve-stem carried by said valve, a piston carried by the valve-stem, a cylinder within which the said piston is adapted to reciprocate and which communicates by means of valves with the combustible-fluid source and with the compression-chamber, electric sparking apparatus, and a contact carried by the valve-stem and adapted to close the circuit of said sparking apparatus after the valve has been moved by the working charge so as to close the communication between the combustion-chamber and the compression-chamber, substantially as described and for the purpose specified.

704,457. SHOE-SEWING AND WELT-BEVELING MACHINE. JOHN B. HADAWAY, Brockton, Mass. Filed June 3, 1898. Serial No. 682,433. (No model.)

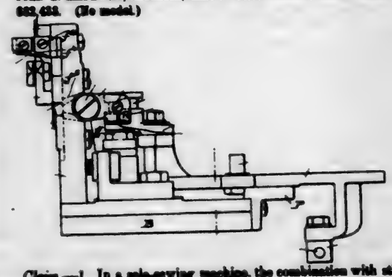

Claim.—1. In a sole-sewing machine, the combination with stitch-forming mechanism, of welt-beveling mechanism and means for throwing the welt-beveling mechanism into and out of operation during the continued operation of the machine, substantially as described.

2. In a sole-sewing machine, the combination with stitch-forming mechanism, of welt-beveling mechanism, a movable gage, means for throwing the welt-beveling mechanism into and out of operation during the continued operation of the machine, and means for throwing the movable gage into and out of operation, substantially as described.

3. In a sole-sewing machine, the combination with stitch-forming mechanism, of welt-beveling mechanism, a movable gage and connected means for throwing the welt-beveling mechanism and the movable gage into and out of operation, substantially as described.

4. In a sole-sewing machine, the combination with stitch-forming mechanism, feeding means and feed-regulating means, of welt-beveling mechanism and connected means for throwing the welt-beveling mechanism into and out of operation and operating the feed-regulating means, substantially as described.

5. In a sole-sewing machine, the combination with stitch-forming mechanism, feeding means and feed-regulating means, welt-beveling mechanism, a movable gage, and connected means for throwing the welt-beveling mechanism into and out of operation and operating the movable gage and the feed-regulating means, substantially as described.

6. In a sole-sewing machine, the combination with stitch-forming mechanism, of welt-beveling mechanism, a movable crease-gage, means for throwing the welt-beveling mechanism into and out of operation, and means for throwing the movable crease-gage into and out of operation, substantially as described.

7. In a sole-sewing machine, the combination with stitch-forming mechanism, of welt-beveling mechanism, a movable crease-gage and connected means for throwing the welt-beveling mechanism and the movable crease-gage into and out of operation, substantially as described.

8. In a sole-sewing machine, the combination with stitch-forming mechanism, feeding means, and a feed-regulating means, of welt-beveling mechanism, a movable crease-gage and connected means for throwing the welt-beveling mechanism into and out of operation and operating the movable crease-gage and the feed-regulating means, substantially as described.

704,458. SHOE-SEWING AND WELT-BEVELING MACHINE. JOHN B. HADAWAY, Brockton, Mass. Filed July 5, 1899. Serial No. 722,216. (No model.)

Claim.—1. In a sole-sewing machine, the combination with stitch-forming mechanism, feeding means and feed-regulating means, of a welt-beveling cutter, a movable edge-gage, and means for throwing the welt-beveling cutter into and out of operation and operating the movable edge-gage and the feed-regulating means, substantially as described.

2. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and the movable gage into and out of operation comprising a cam and a lever, substantially as described.

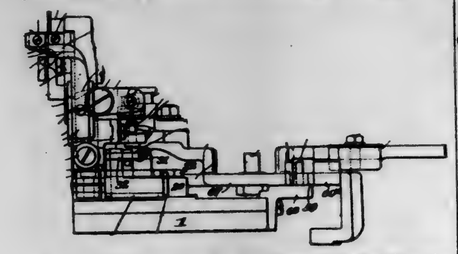

3. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and the movable gage into and out of operation comprising a cam and a lever, said cam having two cam-faces for operating the cutter and gage respectively, substantially as described.

4. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and movable gage into and out of operation comprising a cam and a lever, feed mechanism including a feed-adjusting lever and coöperating stops and projections on the two levers, substantially as described.

5. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter and a lever for throwing it into and out of operation, feed mechanism including a feed-adjusting lever, the two levers having coöperating stops and projections, substantially as described.

6. In a sole-sewing machine, the combination with stitch-forming mechanism, of a movable gage, welt-beveling mechanism arranged to be thrown into and out of operation, work-feeding mechanism, a lever for adjusting the stroke of the work-feeding mechanism, a lever for simultaneously advancing or retracting the movable gage and throwing the welt-beveling mechanism into and out of operation, and an adjustable block carried by said lever arranged to engage the lever of the feed-adjusting mechanism, substantially as described.

7. In a sole-sewing machine, the combination with stitch-forming mechanism, of a movable gage, a lever for actuating said gage, work-feeding mechanism and a lever for adjusting the stroke of said work-feeding mechanism, diverging stops carried by said lever and an adjustable block carried by the gage-actuating lever, arranged to engage the said stops, substantially as described.

8. In a sole-sewing machine, the combination with stitch-forming mechanism, of a welt-beveling cutter, a gage, and means for moving the gage forward and back in the direction of the feed simultaneously with the forward and back feed movements, substantially as described.

9. In a sole-sewing machine, the combination, with stitch-forming mechanism, and feed mechanism, of a welt-beveling cutter, a gage, said welt-beveling cutter and gage being mounted upon a part of the feed mechanism and partaking of its movements, substantially as described.

10. In a sole-sewing machine, the combination with stitch-forming mechanism and feed mechanism, of a gage, said gage being mounted upon a part of the feed mechanism and partaking of its movements, substantially as described.

11. In a sole-sewing machine, the combination with stitch-forming mechanism, and a feed-slide, of a welt-beveling cutter and a gage mounted upon said slide, substantially as described.

12. In a sole-sewing machine, the combination with stitch-forming mechanism and a feed-slide, of a welt-beveling cutter, a movable gage, and means for throwing the welt-beveling cutter and movable gage into and out of operation, said cutter, gage and throwing means being mounted upon said feed-slide, substantially as described.

704,459. ADJUSTABLE RECLINING-CHAIR. JAMES R. HARGER, Washington, D. C. Filed Oct. 18, 1901. Serial No. 79,152. (No model.)

Claim.—1. In a reclining-chair, the combination of two side frames capable of adjustment toward and from each other at the top, the back and seat pivoted between said frames and a combined tie-bolt and clamp-screw extending through said frames beneath the seat whereby the back and seat may be clamped in any desired position by means of said clamp-screw.

2. In a reclining-chair, the combination with two side frames detachably connected together, a combined tie-bolt and clamp-screw connecting said side frames, lugs projecting forwardly near the front end of said side frames, a back pivoted between said side frames and projecting downward beneath the seat, a seat pivoted to said back and resting at its forward end on said lugs, a foot-rest pivoted at the forward end of said seat, and links connecting the lower end of said back and said foot-rest, substantially as described.

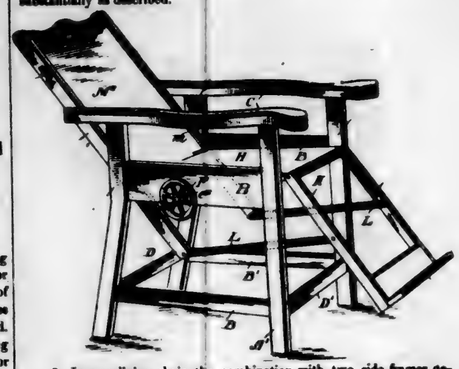

3. In a reclining-chair, the combination with two side frames detachably connected together, a back comprising side pieces pivoted between said side frames and a sliding piece adjustably mounted between said side pieces, a seat pivoted to said back at some distance from the lower end thereof, a foot-rest pivoted to the front end of said seat, and links connecting the lower ends of the side pieces of said back to the foot-rest, and means for clamping said side frames against said seat, substantially as and for the purposes described.

4. In a reclining-chair, the combination with two side frames provided with lugs for supporting the front end of the seat, the back and seat pivoted between said frames, a foot-rest pivoted to the front end of said seat, links connecting said foot-rest and the lower end of said back, a clamp-screw spanning said frames beneath said seat with a hand-wheel on said clamp-screw, substantially as described.

5. In a reclining-chair, the combination with two side frames detachably connected together, a combined tie-bolt and clamp-screw connecting said side frames, a hand-wheel on said clamp-screw, lugs projecting forwardly near the front end of said side frames, a back provided with side pieces pivoted between said side frames and projecting downward beneath the seat, and an adjustable sliding piece mounted between said side pieces, a seat pivoted to said back and resting at its forward end on said lugs, a foot-rest pivoted at the forward end of said seat, and links connecting the lower end of said back and said foot-rest, substantially as described.

704,460. CROSS-BAR FOR VEHICLE-SHAFTS. SAMUEL H. HAYDEN and HARLOW D. HATHAWAY, Flint, Mich. Filed Dec. 26, 1901. Serial No. 87,208. (No model.)

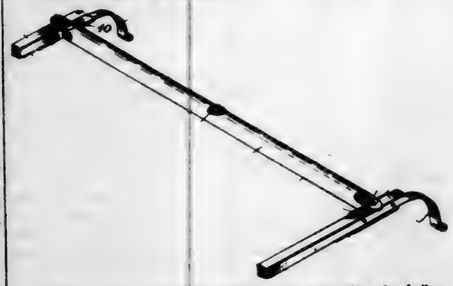

Claim.—In a cross-bar for vehicles, the combination of a hollow body U-shaped in cross-section, a whiffletree-plate mounted centrally said bar, apertured ears and a strap mounted on the ends of said body to serve in securing said bar to shafts.

704,461. CAR-FENDER. JOHN T. HOGGINS, St. Louis, Mo. Filed Nov. 4, 1901. Serial No. 81,056. (No model.)

Claim.—1. A car-fender comprising a suitable drum or disk located in advance of the car-truck, and adapted to be forced into engagement with the car-wheels upon impact with a body on the track, and to have rotation imparted thereto in a direction contrary to that of the wheels with which it is in engagement, substantially as set forth.

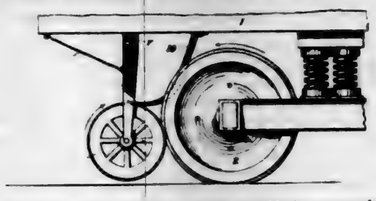

2. A car-fender comprising a suitable rotatable drum suspended on arms pivotally depending from the car-body, springs for normally retaining said drum out of engagement with the car-wheels, the heads of the drum being adapted to be forced into engagement with the tread of the wheels upon impact with an object on the track, whereby rotation is imparted to said drum in a direction contrary to the wheels and the object struck effectively swept off the track, substantially as set forth.

704,462. MANUFACTURE OF GOLF-BALLS. ELEAZER KEMPSHALL, Boston, Mass. Filed Mar. 15, 1902. Serial No. 98,321. (No model.)

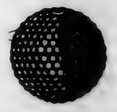

Claim.—1. The process in producing a playing-ball, consisting in repeatedly heating a mass of gutta-percha to an extent to soften the same, and each time compressing it to the shape of a ball while heated and soft, and also maintaining the compression at each operation until the ball cools sufficiently to become hard.

2. The process in producing a playing-ball, consisting in heating gutta-percha to an extent to soften it; molding it under pressure, while heated and soft, to approximate its final form; maintaining the pressure until the ball cools sufficiently to become hard; reheating the ball by heating it; recompressing it while warm and soft; and maintaining the compression until the ball cools sufficiently to become hard.

3. The process in producing a playing-ball, consisting in heating gutta-percha, molding it under compression while heated into an approximate form, reheating the ball so as to soften it, recompressing the ball while hot, and maintaining the compression until the ball is cooled and hardened.

704,463. PROCESS OF MAKING PLAYING-BALLS. ELEAZER KEMPSHALL, Boston, Mass. Filed Apr. 5, 1902. Serial No. 101,462. (No model.)

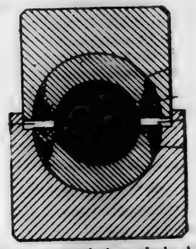

Claim.—1. A process in producing a playing-ball, consisting in applying undersized soft-rubber segments to a spherical core, drawing said segments together upon said core so as to stretch the rubber and also to cause the edges of the segments to meet, and applying means for holding said segments together so as to form a tensioned sphere upon the core.

2. A process in producing a playing-ball consisting in applying undersized soft-rubber segments to a spherical core, drawing said segments together upon said core so as to stretch the rubber and also to cause the edges of the segments to meet, and connecting said edges together.

3. A process in producing a playing-ball consisting in applying undersized soft-rubber segments to a spherical core, drawing said segments together upon said core so as to stretch the rubber and also to cause the edges of the segments to meet, connecting said edges together, and compressing a hard cover upon the soft-rubber sphere.

704,464. PROCESS OF MANUFACTURING PLAYING-BALLS. ELEAZER KEMPSHALL, Boston, Mass. Filed Apr. 14, 1902. Serial No. 102,804. (No model.)

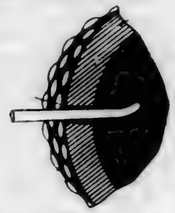

Claim.—1. A process of making a playing-ball, consisting in forming a body of tensioned rubber, applying an external structure or shell thereto, and piercing or cutting such body of rubber so as to relieve the tension and permit the rubber to expand in radial directions.

2. A process of making a playing-ball, consisting in forming a body or center of overwound thread, applying an external structure or shell thereto, and cutting or severing such thread.

3. A process of making a playing-ball, consisting in forming a body or center of overwound thread, applying an external structure or shell thereto under heat and compression, and cutting or severing such thread.

4. A process of making a playing-ball, consisting in forming a body or center of overwound rubber, applying an external structure or shell thereto under heat and compression, maintaining the compression until the shell hardens, and finally cutting or severing such rubber.

5. A process of making a playing-ball, consisting in forming a body or center of overwound tensioned thread, applying an external structure or shell thereto, and cutting or severing such thread.

6. A process of making a playing-ball, consisting in forming a body or center of overwound thread, applying an outer structure or shell thereto, and cutting or severing such thread.

7. A process of making a playing-ball, consisting in forming a spherical body or center of overwound rubber thread, applying an external structure or shell thereto, and cutting or severing such winds.

8. A process of making a playing-ball, consisting in forming a body or center under tension, applying an outer structure or shell to the body, and then releasing such tension to cause the body to spring outwardly at all points under restraint of the shell.

9. A process of making a playing-ball, consisting in forming a body or center of overwound thread under tension, applying an outer structure or shell to the body, and then releasing such tension to cause the body to spring outwardly at all points under restraint of the shell.

10. A process of making a playing-ball, consisting in forming a body or center of overwound elastic thread under tension, applying an outer structure or shell of hard springy material, and then releasing such tension to impart to the body a bursting tendency at all points under restraint of the shell.

11. A process of making a playing-ball, consisting in forming a spherical body or center of thread overwound upon itself, applying an external structure or shell thereto, and then severing the winds of the thread to impart to the body a bursting tendency at all points under restraint of the shell.

12. A process of making a playing-ball, consisting in forming a body or center under tension, applying an external structure or shell thereto, forming an opening in the shell, and then introducing a suitable implement into the opening and releasing such tension to impart to the body a bursting tendency at all points under restraint of the shell.

13. A process of making a playing-ball, consisting in forming a body or center under tension, applying an external structure or shell thereto, forming an opening in the shell, introducing a suitable implement into the opening and releasing such tension, and finally withdrawing the implement and filling up the opening.

14. A process of making a playing-ball, consisting in forming a body or center under tension, applying an external structure or shell thereto by compression, forming openings in the shell and introducing an implement therein and releasing such tension to impart to the body a bursting tendency at all points, then filling up the openings, and again subjecting the ball to compression under heat.

704,465. BLASTING-CARTRIDGE. WASSILY KIBALNOV, Moscow, Russia. Filed Oct. 23, 1901. Serial No. 79,360. (No model.)

Claim.—1. A blasting-cartridge closed by a cylinder with hemispherical bottom formed by a number of tongues the adjacent edges of which cover each other reciprocally forming at the center a star-shaped opening which is automatically closed as soon as the pressure is applied.

2. A blasting-cartridge closed by a cylinder with hemispherical bottom formed by a number of tongues, the adjacent edges of which cover each other successively, forming at the center a star-shaped opening adapted to be closed by the pressure in the cartridge, and means for retaining said cylinder in said cartridge, substantially as described.

3. A blasting-cartridge consisting of a tube closed at one end, explosive compound in said tube, a cylinder with a hemispherical bottom formed by a number of tongues, inserted in said tube upon the explosive compound, the said tongues being adapted to close the bottom of the cylinder when the explosion takes place, substantially as described.

4. A blasting-cartridge closed by a cylinder with a hemispherical bottom formed by a number of tongues adapted to be closed by the pressure in the cartridge, and a fuse in said cylinder, substantially as described.

704,466. **VENDING APPARATUS FOR NEWSPAPERS.** LOUIS C. OVERPECK, Hamilton, Ohio, assignor to the National Newspaper Distributing Company, Cincinnati, Ohio. Filed Sept. 14, 1900. Serial No. 30,064. (No model.)

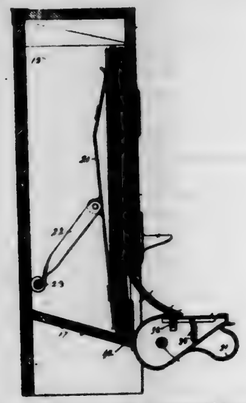

Claim.—1. The combination with a receptacle formed with a discharge-opening, and a slanting bottom terminating at the bottom of said opening, of a hinged apron to close the opening and terminating in a projecting lip contiguous to the bottom adapted to engage with the edge of a newspaper within the receptacle and carry it through the opening with the movement of the apron.

2. The combination with a receptacle formed with a discharge-opening, a slanting bottom terminating at the bottom of said opening, and clamping mechanism adapted to maintain a newspaper in the receptacle with its edge on the bottom contiguous to the opening, of a delivery-apron adapted to close the opening and arranged to engage with the edge of the paper and carry it through the opening, and means to lock the apron in the closed position.

3. The combination with a receptacle formed with a discharge-opening, a hinged apron adapted to close the opening, and having an adjustable gap, means for rendering said gap adjustable, and means adapted to lock the apron in the closed position, of a clamp within the receptacle adapted to engage the edge of a newspaper thereunder within the gap, whereby it may be carried through the opening by the opening movement of the apron.

4. The combination with a closed receptacle formed with a discharge-opening, a hinged delivery-apron to close the opening and formed with a lip to register with the bottom of the opening, and a gage-plate adjustable on the apron in relation to the lip, of a spring-actuated clamp within the receptacle and arranged to feed newspapers thereunder successively against the plate and with their folded edges in engagement with the lip, whereby they may be discharged through the opening by the apron.

5. The combination with a receptacle formed with a discharge-opening, a delivery-apron hinged thereon and actuated by a spring to close the opening, and a lug on the apron, of a vertical tube mounted within the receptacle, a slide thereunder and formed with an opening therethrough, a spring arranged to move the slide with the opening therein in registration with the tube, and a fulcrumed lever engaging with the slide and actuated by the lug in closing the apron to move the slide with the opening therein out of registration with the tube.

6. The combination with a newspaper-receptacle containing a discharge-opening, and a hinged delivery-apron adapted to close the opening, of a sliding gate actuated by the opening movement of the apron to partially close the opening while the apron remains open.

7. A newspaper-receptacle with discharge-opening, an apron for closing said opening, and having a gap, means for making said gap adjustable, and a device actuated by the opening movement of said means to partially close the opening while said apron remains open, as set forth.

8. A newspaper-receptacle having a discharge-opening, means to close said opening having a gap, means for making said gap adjustable, a locking device for said adjusting means, and a sliding plate to partially close said opening and movable by the movement of said closing means, as set forth.

9. In a device for the purpose described, an apron having a gap at its edge, a receiving-plate yieldingly mounted on said apron, a movable notched wedge and a contiguous partition engaging said wedge for adjusting said plate, as and for the purpose specified.

704,467. **MAGAZINE NAILING-HAMMER.** GEORGE I. SMITH, Mayview, Kans. Filed Aug. 9, 1900. Renewed Mar. 8, 1902. Serial No. 96,972. (No model.)

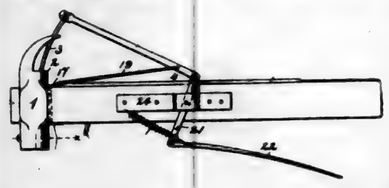

Claim.—1. A self-feeding nailing-hammer comprising in combination a handle provided with a nail-magazine, a hammer-head provided with a tubular bore extending to the striking-face of the hammer, an oscillatory notched disk to deliver the nails individually from the magazine into the bore of the hammer-head, a plunger to advance the nails through said bore, a lever, and connections therewith to oscillate said disk to deliver a nail on the movement of the lever in one direction and to advance the plunger to force the nail along the bore on the movement of said lever in the other direction, as set forth.

2. A self-feeding nailing-hammer, comprising in combination, a handle provided with a nail-magazine, a spring-actuated follower in said magazine, a hammer-head having a tubular bore extending to the striking-face thereof, an oscillatory notched disk to feed the nails individually from the magazine to said bore, a yielding detent extending across said bore to support the nail therein, means to force the nail through said bore past the detent and project the point of the nail beyond the striking-face of the hammer-head, a lever and connections therewith to operate said disk and said last-mentioned means to feed the nail from the magazine and to advance the same into position to be driven, as set forth.

3. A self-feeding nailing-hammer comprising a hammer-head provided with a tubular bore extending to the striking-face thereof, a handle provided with a nail-magazine, a spring-actuated follower adapted to force the nails toward the hammer-head, an oscillatory disk having a peripheral recess and adapted to deliver the nails individually from the magazine to said bore, a spring-actuated detent extending across the bore and means to advance the nails through said bore and past the detent to deliver them in position to be driven, as set forth.

704,468. **SAFETY DEVICE FOR ELEVATORS.** WILLIAM H. WILSEY, Sioux City, Iowa. Filed Apr. 12, 1902. Serial No. 102,636. (No model.)

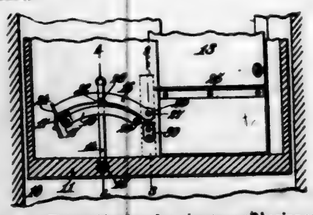

Claim.—1. The combination of an elevator-well having an opening, a door for said opening, a latch for holding the door shut, a car, a controller on the car, a detent operative independently of said controller and

effective for holding the controller in a central position, and means upon the latch for holding the detent in its effective position when the door is opened, and the detent, when in its ineffective position serving to prevent retroactive movement of the latch.

2. The combination of an elevator-well having an opening, a door for said opening, a latch for holding the door shut, a car, a controller on the car, a detent operative independently of said controller and effective for holding the controller in a central position and having a perforation, and a pin upon the latch adapted to enter said perforation when the detent is in its effective position.

3. The combination of an elevator-well having an opening, a door for said opening, a latch for holding the door shut, a car, a controller on the car, having a projection, a notched detent, the notch of which is adapted to engage over the projection on the controller, and said detent having a perforation, and a pin upon the latch adapted to enter said perforation.

4. The combination of an elevator-well having an opening, a door for said opening, a spring-latch for holding the door shut, a car, a controller on the car, a detent operative independently of said controller and effective for holding the controller in a central position, and means upon the latch for holding the detent in its effective position when the door is open, and the detent when in its ineffective position serving to prevent retroactive movement of the latch.

5. The combination of an elevator-well having an opening, a door for said opening, a latch for holding the door shut, a car, a controller on the car, a detent operative independently of said controller and effective for holding the controller in a central position, means upon the latch for holding the detent in its effective position when the door is opened, and the detent when in its ineffective position serving to prevent retroactive movement of the latch, and means upon the door for holding said latch in its retracted position while the door is open.

6. The combination of an elevator-well having an opening, a door for said opening, a ledge extending entirely across the door, a latch disposed in the path of the ledge, a car, a controller on the car, a detent operative independently of said controller and effective for holding the controller in a central position, and means upon the latch for holding the detent in its effective position when the door is open and the detent, when in its ineffective position, serving to prevent retroactive movement of the latch, and said ledge, when the door is open, being adapted to hold the latch in its retracted position.

7. The combination of an elevator-well having an opening, a door for said opening, a detent for holding the door shut, a car, a controller on the car, a pivoted latch operative independently of said controller and effective for holding the controller in a central position, and means upon the latch for holding the detent in its effective position when the door is open, and the detent, when in its ineffective position, serving to prevent retroactive movement of the latch.

8. The combination of an elevator-well having an opening, a door for said opening, a detent for holding the door shut, a car, a controller on the car, a pivoted latch operative independently of said controller and effective for holding the controller in a central position, means upon the latch for holding the detent in its effective position when the door is open, and the detent, when in its ineffective position, serving to prevent retroactive movement of the latch, and a bracket upon the car contiguous to the free end of the detent.

9. The combination of an elevator-well having an opening, a door for said opening, a latch for holding the door shut, a car, a controller on the car, having a projection, a detent having a notch to engage over said projection and a perforation, a pin upon the latch adapted to enter said perforation, and a ledge extending across the door, the latch being disposed in the path of the ledge.

704,469. **PURGE-FEEDING APPARATUS FOR STEAM PLANTS.** JOHN ANGELL, St. Louis, Mo. Original application filed Apr. 27, 1901, Serial No. 57,625. Divided and this application filed July 27, 1901. Serial No. 69,562. (No model.)

Claim.—1. The combination with the main feed-water chamber provided with a steam-inlet neck and a steam-outlet neck, of a feed-water-inlet pipe provided with a regulating-valve, a float-chamber secured to the side of the main heater-casing and having equalizing connections therewith by a water pipe or passage extending to the lower portion of the heater-casing and a steam pipe or passage extending to the upper portion of the heater-casing, a float arranged in said float-chamber, operative connections between the float and the regulating-valve in the feed-water-inlet pipe, a purge-tank, and a purge-outlet pipe connecting with the feed-water-inlet pipe and arranged in the equalizing-pipe connections of the float-chamber, substantially as set forth.

2. The combination with the main feed-water chamber provided with a steam-inlet neck, a steam-outlet neck, and a feed-water-inlet pipe, of a purge-tank, an outlet-pipe from the purge-tank connected to the feed-water-inlet pipe, and a tubular casing surrounding the purge-outlet pipe, said casing having communication with the main heater-casing, substantially as set forth.

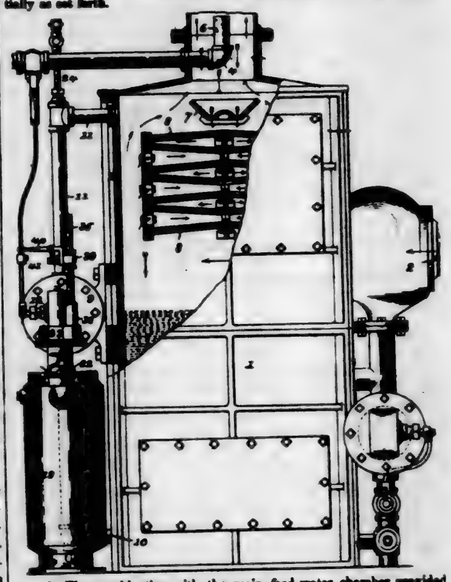

3. The combination with the main feed-water chamber provided with a steam-inlet neck, a steam-outlet neck and a feed-water-inlet pipe, of a purge-tank, an outlet-pipe from the purge-tank connected to the feed-water-inlet pipe, and a vertical pipe or passage connecting with the top and bottom of the main heater-chamber and inclosing the purge-outlet pipe, substantially as set forth.

4. The combination with the main feed-water chamber provided with a steam-inlet neck, a steam-outlet neck, and a feed-water-inlet pipe, of a purge-tank, an outlet-pipe from the purge-tank connected to the feed-water-inlet pipe, means for forcing the purge composed from said tank, and means for agitating the contents of the purge-tank, the same comprising a rotary agitator arranged in said purge-tank, and a motor-engine connected to said agitator and secured to the upper end of said tank, substantially as set forth.

5. The combination with the main feed-water chamber provided with a steam-inlet neck, a steam-outlet neck and a feed-water-inlet pipe, of a purge-tank, an outlet-pipe from the purge-tank connected to the feed-water inlet, means for forcing the purge composed from said tank, and means for agitating the contents of the purge-tank, the same comprising, a rotary agitator arranged within the tank, a motor-engine having operative connection with said agitator and provided with motive-fluid inlet and outlet passages, and a pipe connecting the outlet-passage with the interior of the feed-water chamber, substantially as set forth.

6. The combination with the main feed-water chamber provided with a steam-inlet neck, a steam-outlet neck and a feed-water-inlet pipe, of a purge-tank, an outlet-pipe from the purge-tank connected to the feed-water inlet, means for forcing the purge composed from said tank, means for agitating the contents of the purge-tank, the same comprising, a rotary agitator arranged within the purge-tank, a motor-engine having operative connection with said agitator and provided with motive-fluid inlet and outlet passages, and means for automatically controlling the operation of said motor-engine, the same comprising a valve in the motive-fluid-supply passage, a float-chamber connected with the main heater-chamber, a float in said chamber, and operative connections between said float and said valve, substantially as set forth.

704,470. **HEATING-STOVE.** JAMES L. RAMSAY, Suffolk, Va., assignor of one-half to Thomas J. Hoy and Henry W. Campbell, Suffolk, Va. Filed Oct. 3, 1901. Serial No. 77,468. (No model.)

Claim.—1. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing the stove and having a tapered discharge end projected exteriorly thereof and provided with discharge-perforations, an inverted conical deflector carried by the tapered end of the pipe and

having its sides flared across the perforations therein to deflect the air escaping therefrom, and means located in the projected portion of the pipe for producing a centrifugal discharge of air through the perforations.

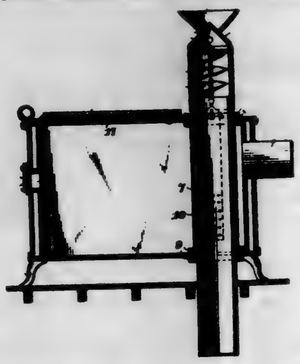

2. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing the stove and having a tapered discharge end projected exteriorly thereof and provided with discharge-perforations, an inverted conical deflector carried by the tapered end of the pipe and having its sides flared across the perforations therein to deflect the air escaping therefrom, and a spiral deflector located within the projected end of the pipe to produce a centrifugal discharge through the perforations thereof.

3. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing the stove and having a tapered discharge end projected exteriorly thereof and provided with discharge-perforations, an inverted conical deflector carried by the tapered end of the pipe and having its sides flared across the perforations therein to deflect the air escaping therefrom, and a rotatable spiral deflector located within the projected end of the pipe to produce a centrifugal discharge of air through the perforations thereof.

4. In a stove, the combination with the stove-body, of a heating-pipe piercing the same and having its discharge end tapered and projected exteriorly of the stove and also provided in its tapered portion with discharge-perforations, a combined deflector and water-receptacle comprising a hollow inverted conical imperforate deflector rising from the top of the pipe at a point between the perforations and overhanging the latter, and a rotatable spiral deflector carried within the projected end of the pipe to produce a centrifugal discharge of air through the perforations.

5. In a heating-stove, the combination with the body thereof, of a heating-pipe piercing the stove and having a tapered discharge end projected exteriorly of the stove and provided with discharge-perforations, and an inverted conical deflector carried by the tapered end of the pipe and having its sides flared across the perforations in the pipe to deflect the air escaping therethrough.

6. In a heating-stove, the combination with the stove-body, of an open-ended heating-pipe piercing the same and in communication with the external air, a removable conical cap at the discharge end of the pipe and provided with perforations in the conical portion thereof, and an inverted conical deflector projected from the outer end of the conical cap and overhanging the perforations thereof.

7. In a heating-stove, the combination with the body thereof, of an open-ended heating-drum piercing the same and in communication with the external air, a tubular casing removably applied to the discharge end of the drum and having an outer conical perforate end, and an inverted hollow conical deflector projected from the outer end of the cap, and overhanging the perforations in the outer end of the casing.

8. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage communicating between the fire-box and the external air, a perforate movable closure for the outer end of the passage, a stem forming a handle projected therefrom, and an imperforate damper-plate slidably mounted upon the stem exteriorly of the closure to normally close the perforations thereof and capable of yielding under excess gas-pressure to open said perforations.

9. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage communicating between the fire-box and the external air, a pivotal perforate closure for the outer end of the passage, whereby the latter may be opened, and a yieldable damper-plate carried exteriorly by the closure to normally close the perforations thereof and capable of yielding outward under excess gas-pressure to uncover the perforations.

10. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage communicating between the fire-box and the external air, a pivotal conical perforate closure for opening and closing the same for the outer end of the passage, a handle projected from the apex of the closure, and a yieldable conical damper-plate slidably mounted upon the handle.

11. In a stove, the combination with the stove-body having a fire-box for burning fuel, of a gas-relief passage piercing the top of the stove and communicating with the fire-box, a perforate closure-cap movably mounted upon the top of the stove to cover and uncover the top of the gas-relief passage to give access to the interior thereof, and a damper-plate fitted upon the top of the perforate closure-cap and capable of yielding under excess gas-pressure to uncover the perforations of the cap and permit escape of the gas.

12. In a stove, the combination with the stove-body, of a gas-relief tube piercing the stove-body and having its inner end portion provided with perforations and its outer end in communication with the external air, and a gas-pressure-actuated controlling device carried by the outer end of the tube.

13. In a stove, the combination with the stove-body having inner and outer shells, of a gas-relief tube piercing the top of the stove and lying between the inner and outer shells, the adjacent portions of the tube and inner shell having registered perforations, and a gas-actuated controlling device for the upper open end of the tube.

14. In a stove, the combination with the body thereof having inner and outer shells, of a vertical gas-escape tube piercing the top of the stove and located between the inner and outer shells, the adjacent portions of the tube and inner shell being provided with registered perforations, a conical perforate closure-cap for the upper open end of the tube and also pivotally connected to the top of the stove, a shank rising from the apex of the cap and terminating in an enlarged handle, and a conical gravity damper-plate normally closing the perforations of the cap and slidably mounted upon the shank.

15. In a stove, the combination with the stove-body, of a heating-pipe piercing the same and having its discharge end projected exteriorly of the stove and provided in its top with discharge-perforations, and a combined deflector and water-receptacle comprising a hollow inverted conical imperforate deflector rising from the top of the pipe at a point between the perforations and overhanging the latter.

704,471. VENTILATOR ATTACHMENT FOR WATER-CLOSETS. SCHUYLER C. BROWN, Saratoga Springs, N. Y. Filed Mar. 16, 1901. Serial No. 51,496. (No model.)

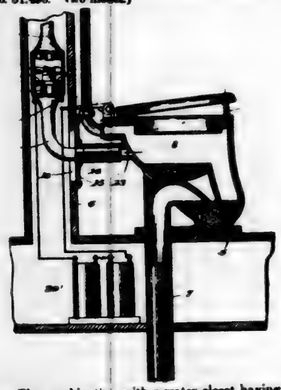

Claim.—The combination with a water-closet having a ventilating-nipple, and an adjacent hollow wall having an opening therein, of a covering-plate for the opening, a sleeve passed through the covering-plate and engaged over the nipple, a ventilating-pipe within the wall and connected with the sleeve, said pipe having an enlarged portion forming a chamber, a fan in the chamber and having a motor, and means operable by a person using the closet, for energizing the motor.

704,472. MACHINE FOR CUTTING AND COLLATING PAPER. WILLIAM Y. DEAR, Jersey City, N. J. Filed Dec. 31, 1900. Serial No. 41,668. (No model.)

Claim.—1. In a device of the character described, means for perforating paper in lines, in combination with a device for tearing the paper in strips along said perforated lines, and an apparatus for piling said strips and cutting them into blocks of sheets, substantially as described.

2. In a device of the character described, in combination with a device for tearing a sheet of paper along perforated lines into strips, apparatus for piling the said strips and cutting them into a number of blocks of sheets, and means for collecting the said blocks of sheets in their regular order, substantially as described.

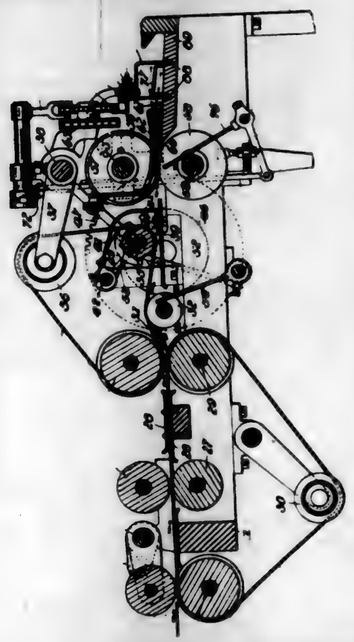

3. In a device of the character described, a pair of rollers adapted to tightly press against a sheet of perforated paper passed therebetween, shield-plates, or guides, receiving the paper from the pair of rollers, and a second pair of rollers operated at a greater surface speed than the said first pair of rollers, for receiving the paper from the shield-plates and tearing it along the perforations while said perforations lie between the shield-plates, substantially as described.

4. In a device of the character described, a pair of rollers adapted to tightly press against a sheet of perforated paper passed therebetween, a second pair of rollers also tightly pressing said sheet between them and operated at a greater surface speed than the said first pair of rollers, and them adapted to tear the paper in strips along the lines of perforations, a plate adapted to receive the strips from the said roller and tapes, and a roller around which the tapes travel provided with projecting fins for adjusting the pile of strips on the said plate, substantially as described.

5. In a device of the character described, a pair of rollers adapted to tightly press against a sheet of perforated paper passed therebetween, a second pair of rollers also tightly pressing said sheet between them, and operated at a greater surface speed than the said first pair of rollers, to tear the paper in strips along the lines of perforation, a slotted plate adapted to receive the strips from the said roller and tape, a stop against which the strips are piled, and a number of fingers operating within the slots of the plate for ejecting the pile of strips when the stop is removed, substantially as described.

6. In a device of the character described, a suitably-driven roller, tapes bearing thereon, and adapted to act with the roller to advance and pile on each other strips of paper fed therebetween, a plate upon which the strips of paper are piled on leaving the roller and tapes, a stop against which the strips are piled, a second roller with projecting helical fins thereon for evening the pile of strips, a number of fingers for discharging the pile of strips from the plate, and means for removing the stop and operating the fingers, substantially as described.

7. In a device of the character described, a suitably-driven roller, tapes bearing thereon and adapted to act with the roller to advance strips of paper fed therebetween, a slotted plate upon which the strips of paper are piled on leaving the roller and tapes, stops against which the strips are piled, a guide beneath which the front edges of the strips are led, a second roller around which the tapes travel having projecting helical fins thereon for evening the pile of strips therebeneath, a number of fingers operating within the slots of the plate to discharge the pile of strips thereon, and a cam for removing the stop and operating the fingers simultaneously, substantially as described.

8. In a device of the character described, a pair of rollers adapted to tightly press against a sheet of perforated paper passed therebetween, shield-plates receiving the paper from the pair of rollers, a second pair of rollers also tightly pressing said sheet between them and operated at a greater surface speed than the said first pair of rollers and adapted to tear the paper in strips along the lines of perforation, a slotted plate to receive the strips of paper from the said roller and tapes, stops against which the strips are piled, a roller around which the tapes pass with projecting helical fins thereon for evening the pile of strips, a number of fingers operating within the slots of the plate to discharge the pile of strips therefrom, and means for removing the stop and operating the fingers simultaneously, substantially as described.

9. In a device of the character described, a shaft, a number of cutter-rolls mounted thereon, annular projecting cutting-blades located in the center of the peripheries, a pair of disks journaled beneath each cutter-roll and adapted to receive the cutter-blade therebetween, a number of pivoted arms operating between the pairs of disks, and means for operating the arms, substantially as described.

10. In a device of the character described, a shaft, a number of cutter-rolls mounted thereon, a pair of disks journaled beneath each cutter-roll and adapted to support a pile of paper strips while being cut in blocks by the cutter-rolls, a number of pivoted arms located between the pairs of disks and adapted to remove the blocks from the cutter-rolls when cut, and an inclined guide in one side of the path of each block, substantially as described.

11. In a device of the character described, a shaft, a number of cutter-rolls mounted thereon, a pair of disks journaled beneath each cutter-roll and adapted to support a pile of paper strips while being cut into blocks by the cutter-rolls, a number of pivoted arms located between the pairs of disks and adapted to remove the blocks from the cutter-rolls when cut, an inclined guide at one side of the path of each block, a number of inclined plates for receiving the blocks from the guides, and means for collecting the blocks from the inclined plates, substantially as described.

12. In a device of the character described, a shaft, a number of cutter-rolls mounted thereon, a pair of disks journaled beneath each cutter-roll and adapted to support a pile of paper strips while being cut into blocks by the cutter-rolls, a number of pivoted arms located between the pairs of disks and adapted to remove the blocks from the cutter-rolls when cut, an inclined guide in one side of the path of each block, a slotted guide located above each pivoted arm and adapted to retain the blocks in position previous to their discharge by said arms, a number of inclined plates for receiving the blocks from the guides, a suitably-operated endless chain, a lug carried thereby, a guide-rod, a sleeve slidable thereon, means on the sleeve to be engaged by the lug, and arms on the sleeve to collect the blocks from the inclined plates in regular order, substantially as described.

13. In a device of the character described, a number of inclined plates adapted to support blocks of paper sheets, a guide-rod, a sleeve slidable thereon, arms on the sleeve clearing the inclined plates, a suitably-driven endless chain, a lug thereon, an arm on the sleeve for engaging the lug to carry the sleeve along the inclined plates and collect the blocks therefrom, and a weight connected to the sleeve to retract it to its normal position on being disengaged from the lug, substantially as described.

704,478. DESK. CHARLES F. DEPLANTY, Coffeyville, Kans., assignor to Emil W. Rooney, Coffeyville, Kans. Filed Aug. 20, 1901. Serial No. 73,712. (No model.)

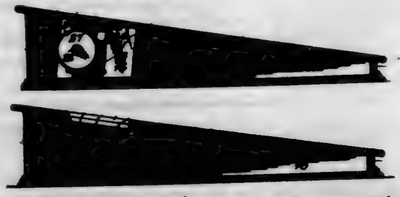

Claim.—1. The combination with a desk having an opening in its top, of a receptacle located beneath the opening, a follower slidably mounted in the receptacle beneath the opening, a shaft journaled across the desk, a hand secured to the shaft and having an engagement with the follower to move the same within the receptacle and toward the desk-top, and a

retracting-spring located beneath the follower and within the receptacle, said spring being fastened to the follower to move it away from the desk-top.

2. A desk having an opening in the platform thereof, a follower located beneath the opening and movable toward and from the same, manually-operated means for positively moving the follower toward the opening, and a look engaging the manually-operated means to hold the follower against movement.

3. A desk having an opening in its platform, a follower located beneath the opening and movable toward and from the same, a shaft journaled upon the desk, connections between the shaft and the follower, and means for holding the shaft against movement.

4. The combination with a desk having an opening in its top, of a receptacle located beneath the opening, a follower slidably mounted in the receptacle and having portions projecting beyond the opposite ends of the same, a shaft journaled across the desk, and connections between the shaft and the projecting ends of the follower.

5. The combination with a desk having an opening in its top, of a receptacle located beneath the opening, a follower slidably mounted in the receptacle and having portions projecting through the opposite ends of the same, a shaft journaled across the desk beneath its top and projecting from one side thereof, said projecting end being provided with a handle-knob, disks secured to the shafts at the opposite ends of the receptacle, bands secured to the disks and passing about the projecting portions of the follower, a friction-wheel attached to the shaft, a holding-spring bearing against the wheel, and a coiled spring secured to the under side of the follower for retracting the same.

704,474. CAR-WHEEL-HOLDING DEVICE. ERROM C. DEMUTH, Moberly, Mo. Filed May 5, 1902. Serial No. 106,045. (No model.)

Claim.—1. In a car-wheel-holding device of the class described, a body arranged to be inserted between the car body and wheel, said body having a wedge.

2. In a car-wheel-holding device of the class described, a body-bar, and a wedge movably mounted upon the body-bar.

3. In a car-wheel-holding device of the class described, a body-bar, and a wedge mounted upon the body-bar and slidable longitudinally thereon.

4. In a car-wheel-holding device of the class described, a body-bar, and a wedge mounted upon the body-bar and slidable longitudinally thereon, said wedge having its outer inclined face roughened.

5. In a car-wheel-holding device of the class described, a body-bar, and a wedge slidably mounted on the body-bar, said wedge having a shoe on its outer inclined face, the outer face of said shoe being roughened.

6. In a car-wheel-holding device of the class described, a body-bar having a longitudinal guideway, and a wedge-block slidably mounted upon the body-bar and having a guide element located in the guideway.

7. In a car-wheel-holding device of the class described, a body-bar having a longitudinal guideway, a guide-rod arranged in the guideway, and a wedge-block slidably mounted upon the body-bar and having opened guide elements located in the guideway and engaging the rod.

8. In a car-wheel-holding device of the class described, a body having a longitudinal guideway, a guide-rod arranged within the guideway and spaced from the side walls thereof, and a wedge-block slidably mounted upon the body-bar and having eyes located in the guideway, said eyes having openings through which the rod is passed.

9. In a car-wheel-holding device of the class described, the body-bar arranged to be inserted between the car body and wheel, said body-bar having a block slidably mounted thereon.

704,475. COMBINED JOURNAL-BEARING AND AIR-COMPRESSOR. CHARLES F. DU BOIS, Denver, Colo. Filed June 1, 1899. Serial No. 14,739. (No model.)

Claim.—In a combined journal-bearing and air-compressor for vehicles, the combination of the journal-box, a spindle eccentrically located within the journal-box and of smaller diameter than the latter; with slides or pistons attached to the spindle for compressing the air as the vehicle is moved forward, pipes for collecting the compressed air, and means for admitting air into the lower part of the journal-box, for the purpose and substantially as described.

704,475.

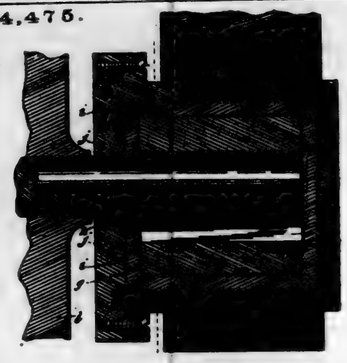

704,476. WOODWORKING-MACHINE. FRANZ DUDEK, Bielitz, and RUDOLF DEMBOWSKI, Bielitz, Austria-Hungary, assignors of one-half to Firm of G. Josephy's Erben, Bielitz, Austria-Hungary. Filed Dec. 30, 1901. Serial No. 87,202. (No model.)

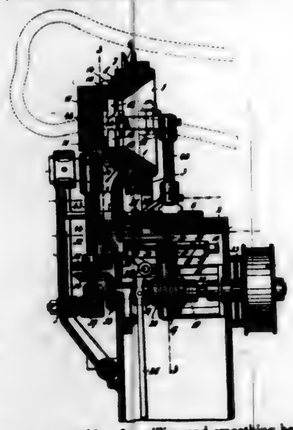

Claim.—1. A machine for milling and smoothing bent or straight round wood rods or sticks for bent-wood chairs and the like comprising cutters disposed in a rotating cutter-head for milling and smoothing the blank, guide-bar in front of the cutter-head, and guiding-arms at the rear of the same for guiding the blank, an exchangeable disk with cams for controlling the movements of the cutters toward or away from the blank and for controlling the movements of the guiding organs of the blank and means actuated by the cam-disk for displacing the cutters and the guiding organs of the blank, essentially as and for the purpose stated.

2. In a machine for milling and smoothing bent or straight round wood rods or sticks for bent-wood chairs and the like comprising a rotating cutter-head, guide-bar, guiding-arms, an exchangeable cam-disk for controlling the movements of the cutters and the guiding organs, the combination of the cam-groove 35 with a rotary bell-crank lever one end of which engages in the said cam-groove and the other end a bolt rigidly connected to a standard whereby a to-and-fro movement is imparted to the said standard, essentially as and for the purpose stated.

3. In a machine for milling and smoothing bent or straight round wood rods or sticks for bent-wood chairs and the like, comprising a rotating cutter-head, guide-bar, guiding-arms and exchangeable cam-disk, the combination of the cam-groove with rotary bell-crank lever, a standard to which a to-and-fro movement is imparted by the said bell-crank lever, guide-cheeks fixed in the standard and being provided with inclined slots, cutter-holders rotatable on bolts in the cutter-head and projections of the cutter-holders engaging in the said slots of the guide-cheeks, essentially as and for the purpose stated.

4. In a machine for milling and smoothing bent or straight round wood rods or sticks for bent-wood chairs and the like, comprising a rotating cutter-head, guide-bar, guiding-arms and exchangeable cam-disk, the combination of the cam-groove with a rotary bell-crank lever, standard,

guide-cheeks fixed in the standard, rotary cutter-holders, projections of the cutter-holders engaging in slots provided in the guide-cheeks, studs arranged on said standard, vertical rotary shafts with angle-piece fixed thereon and provided with slots in which the said studs engage and guiding-arms carried by the said rotary shafts which guiding-arms hold the work-piece, essentially as and for the purpose stated.

5. In a machine for milling and smoothing bent or straight round wood rods or sticks for bent-wood chairs and the like, comprising a rotating cutter-head, guide-bar, guiding-arms, exchangeable cam-disk, means for imparting to the cutters a displacement toward and away from the blank, means for displacing the guiding-arms, the combination with the flange of the cam-disk provided with a cam, of a guide-bar disposed in the front of the cutter-head and sliding on said cam the guide-bar being provided with a recess in which the blank is held, essentially as and for the purpose stated.

704,477. PADDLE-WHEEL. FRANK EHLER, Geddes, S. D., assignor, by direct and mesne assignments, to Vertical Propeller Company, Geddes, S. D. Filed Nov. 18, 1901. Serial No. 82,494. (No model.)

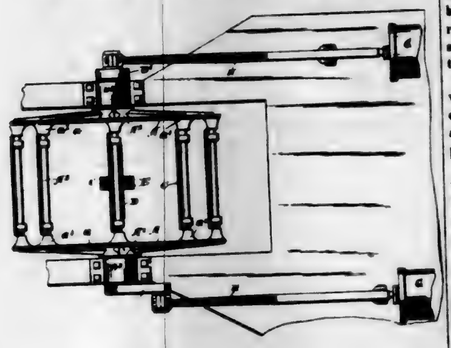

Claim.—1. A wheel comprising two rotative members arranged eccentrically with respect to each other, blades or paddles interposed between and pivoted to said rotative members, shafts to which said rotative members are attached, said shafts overlapping each other between the rotative members, and a rigid frame embracing laterally-separated side members with which said shafts have rotative engagement and by which said shafts are positively held in parallel relation.

2. A wheel comprising two rotative members arranged eccentrically with respect to each other, blades or paddles interposed between and pivoted to said rotative members, shafts to which said rotative members are attached, said shafts overlapping each other between the rotative members, a rigid frame embracing laterally-separated side members with which said shafts have rotative engagement, gear-wheels attached to said shafts within said frame, and an intermediate gear-pinion mounted in said frame and intermeshing with both of said gear-wheels.

3. A wheel comprising two rotative side members arranged eccentrically with respect to each other, blades or paddles interposed between said members, and pivot-rods on the side members which extend inwardly therefrom along the upper and lower edges of said blades or paddles and which have pivotal engagement with the latter at both lateral edges thereof.

4. A wheel comprising two rotative side members arranged eccentrically with respect to each other, blades or paddles interposed between said members, and pivot-rods on the side members which extend inwardly therefrom along the top and bottom edges of the said blades or paddles and have pivotal engagement with the latter at both lateral edges thereof, said blades or paddles being considerably narrower than the space between the side members to afford wide spaces between the side edges of the blades or paddles and said side members.

5. A wheel comprising two rotative side members arranged eccentrically with respect to each other, shafts to which said side members are attached, said shafts overlapping each other between said side members and being provided with crank-arms arranged in angular relation to each other, blades or paddles interposed between and pivoted to said rotative members, a rigid frame having laterally-separated side members with which said shafts have rotative engagement, gear-wheels on the said shafts, an intermediate gear-pinion mounted in said frame and intermeshing with said gear-wheels, and two cylinders the pistons of which are severally connected with and give motion to the crank-arms on said shafts.

704,478. PADDLE-WHEEL. FRANK EHLER, Geddes, S. D., assignor, by direct and mesne assignments, to Vertical Propeller Company, Geddes, S. D. Filed Jan. 15, 1902. Serial No. 89,866. (No model.)

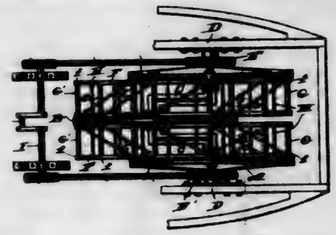

Claim.—1. A wheel comprising two rotative members arranged eccentrically with respect to each other, a stationary supporting-bar having parallel, offset, rigidly-connected portions on which said rotative members are mounted, means for driving one of said rotative members, pivot-rods rigidly attached to said rotative members, and connections between said pivot-rods, whereby motion given to one member is transmitted to the other.

2. A wheel comprising two rotative members arranged eccentrically with respect to each other, a stationary supporting-bar having rigidly-connected, parallel, offset portions on which the said rotative members are mounted, pivot-rods rigidly secured to the said rotative members, and paddle-frames pivotally engaging and connecting said pivot-rods.

3. A wheel comprising two rotative members arranged eccentrically with respect to each other, a rigid, stationary bar having rigidly-connected, parallel, offset portions on which the said rotative members are mounted, pivot-rods on said members, paddle-frames having pivotal engagement with said pivot-rods, and paddle-blades attached to said paddle-frames.

4. A wheel comprising two rotative members arranged eccentrically with respect to each other, a stationary supporting-bar having rigidly-connected, offset portions on which said rotative members are mounted, and one end of which is rigidly attached to a support, a hollow driving-shaft which engages one of the offset parts of the supporting-bar and to which one of said rotative members is attached, driving means applied to said hollow shaft for turning said member attached thereto, pivot-rods on the wheel members, and means connecting said pivot-rods whereby motion is transmitted from the driven to the non-driven member.

5. A wheel comprising two rotative members arranged eccentrically with respect to each other, a stationary supporting-bar having rigidly-connected, parallel offset parts on which said rotative members are mounted, said offset parts being arranged in the same horizontal plane, means applied to one of said members for driving the same, pivot-rods rigidly attached to said members, horizontally-arranged paddle-frames mounted on said pivot-rods and connecting the same, and blades rigidly attached to and extending downwardly from said paddle-frames.

6. The combination with eccentric, rotative wheel members, and paddle-frames pivotally connected therewith, said blades attached to said paddle-frames, said frames being provided with vertically-arranged side plates depending from the frames and attached to the ends of said blades.

7. A wheel comprising two exterior rotative members, an intermediate, eccentric, rotative member, a stationary supporting-bar on which said exterior rotative members are mounted, said supporting-bar having a central offset part on which the intermediate member is mounted, said bar being attached at its ends rigidly to stationary supports, pivot-rods on the exterior and intermediate members and connections between said pivot-rods.

704,479. FOLLOWER-PLATE FOR TYPE-WRITING-MACHINES. CHARLES F. LAGARDE, Cleveland, Ohio, assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed June 21, 1901. Serial No. 65,499. (No model.)

Claim.—1. In a type-writing machine, the combination with a flat platen for the support of a work-sheet, of a work-engaging member shiftable over the platen, and means for effecting the return of said member to its initial position.

2. In a type-writing machine, the combination with a flat platen to support the work-sheet, of a work-engaging member shiftable over the platen in the direction of line-spacing, and means for effecting the return of said member to its initial position at the rear end of the platen.

3. In a type-writing machine, the combination with a flat platen to support the work-sheet, and designed to support traveling printing mechanism, of a work-engaging member shiftable over the platen, and means, independent of the printing mechanism, for effecting the automatic movement of said member.

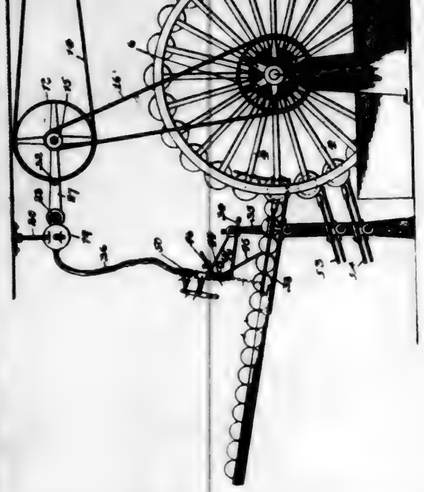

5. In a type-writing machine, the combination with a flat platen to support the work-sheet, and traveling printing mechanism movable over the platen, of a follower-plate disposed over the platen for advance with the printing mechanism, and means independent of the printing mechanism for effecting the return of the follower-plate to its initial position.

6. In a type-writing machine, the combination with a flat platen, and the tracks or guides for the traveling printing mechanism, of a follower-plate slidably engaging said tracks or guides, and having means disposed for engagement with the traveling printing mechanism to effect the movement of the follower-plate through the movement of said printing mechanism.

7. In a type-writing machine, the combination with a flat platen, and the swinging tracks or guides for the traveling machine-frame, of a follower-plate having loose sliding engagement with said tracks or guides, whereby said plate will gravitate to its initial position when the tracks or guides are raised, and machine-engaging means carried by said follower-plate and disposed in the path of movement of the traveling machine-frame.

8. In a type-writing machine, the combination with the flat platen, and the swinging tracks or guides for the traveling printing mechanism, of a follower-plate having loose sliding engagement with said tracks or guides, whereby said plate will gravitate to its initial position when the tracks or guides are raised, and machine-engaging projections located above the top surface of the follower-plate.

9. In a type-writing machine, the combination with a flat platen, and the swinging tracks or guides for the traveling machine-frame, of a follower-plate having loose sliding engagement with said tracks or guides, whereby said plate will gravitate to its initial position when the tracks or guides are raised.

10. In a type-writing machine, the combination with a flat platen, and the tracks or guides for the traveling printing mechanism, of a follower-plate slidably engaging said tracks or guides and movable away from the writing-surface when said tracks or guides are elevated, and means for effecting an engagement of the follower-plate with the traveling printing mechanism to insure the advance of the follower-plate in the direction of line-spacing.

704,480. CAR-TESTING MACHINE. GEORGE F. LESSER, Chicago, Ill., assignor of three-fourths to Louis Standtke, Chicago, Ill. Filed Oct. 4, 1901. Serial No. 77,980. (No model.)

Claim.—1. The combination with a carrier, a chute adapted to direct cans to said carrier, a driving-shaft connected with said carrier, and

2. The combination with a carrier, a chute adapted to direct cans to said carrier, a driving-shaft connected with said carrier, and clutch mechanism on said shaft, of pneumatically-operated mechanism for moving said clutch mechanism into engagement to drive said shaft and said carrier, a valve controlling said pneumatically-operated mechanism, and mechanism adapted by the contact of cans in said chute to open said valve and close the same automatically when not contacted by a can, substantially as described.

3. The combination with a carrier, a chute adapted to direct cans to said carrier, a driving-shaft connected with said carrier, and clutch mechanism on said shaft, of mechanism adapted to be operated by compressed air to throw said clutch mechanism into engagement to drive said shaft and said carrier, means controlled by cans in said chute to admit air under pressure to the mechanism which operates said clutch mechanism to throw said clutch mechanism into engagement, and means to automatically release said clutch mechanism when said can-controlled means is not contacted by a can in the chute, substantially as described.

4. The combination with a carrier, a chute adapted to direct cans to said carrier, a driving-shaft connected with said carrier, and clutch mechanism on said shaft, of mechanism operated by air-pressure to throw said clutch mechanism into engagement to drive said shaft and said carrier, a valve controlling the passage of compressed air to said clutch-moving mechanism, and mechanism adapted by the contact of cans in said chute to open said valve and close the same automatically when not contacted by a can, substantially as described.

5. The combination with a carrier, a chute adapted to direct cans to said carrier, a driving-shaft connected with said carrier, a driven pulley rotatably mounted on said shaft and having upon it one member of a clutch mechanism, and a second clutch member slidingly mounted on said shaft and adapted to engage with the clutch member on said pulley, of a cylinder, a piston mounted in said cylinder and connected with said second clutch member, a tube adapted to lead compressed air to said cylinder, a valve in said tube controlling the passage of compressed air therethrough, a valve-stem adapted to be contacted by cans in said chute and open said valve to permit of the passage of compressed air to said cylinder and to automatically close said valve when not contacted by a can in said chute, and springs adapted to normally hold said clutch members out of engagement, substantially as described.

Claim.—As a new article, a bucket, having its upper part made tapering and provided with internal horizontal rubbing-surfaces, its lower part being smooth and curved outward toward the base, to deflect the splashing water toward the center of the bucket, substantially as shown and for the purposes described.

704,482. BOTTLE OR JAR. EDWARD L. LIVINGSTON, New York, N. Y., assignor to Ralph W. Hare, trustee, Brooklyn, N. Y. Filed July 5, 1901. Serial No. 67,102. (No model.)

Claim.—1. The combination of two screw-threaded bodies having threads with substantially flat bearing-surfaces and intervening grooves materially greater in size than the said threads, as and for the purpose set forth.

2. The combination of two screw-threaded bodies having threads with substantially flat bearing-surfaces in cross-section and intervening grooves materially greater in size than the said threads, and an elastic body mounted between said bodies, as and for the purpose set forth.

3. A bottle or jar provided with an exteriorly-screw-threaded neck having an outwardly-beveled upper end, a screw-threaded cap or cover therefor having a corresponding beveled surface interiorly thereof the grooves intervening between the threads of said neck and of said cover being greater in size than the threads in cross-section, and an elastic body mounted between said beveled surfaces, as and for the purpose set forth.

4. A bottle or jar provided with a screw-threaded neck the thread of which is substantially flat on the lower surface thereof in cross-section, in combination with a screw cap or cover therefor the thread of which is substantially flat on the upper surface thereof in cross-section, said threads being so proportioned and disposed that when in engagement a space will intervene between the spirals forming the thread of the cap and the next lower spiral forming the thread of the bottle.

5. A bottle or jar provided with a screw-threaded neck the thread of which is substantially flat on the lower surface thereof in cross-section, and rounded on the upper surface thereof, in combination with a screw cap or cover the thread of which is substantially flat on the upper surface thereof in cross-section, and rounded on the lower surface thereof, the thread of both the bottle and cover being materially less in size than the groove intervening between the spirals, as and for the purpose set forth.

6. A bottle or jar provided with a neck having an outwardly-beveled upper end, a cap or cover therefor, in combination with a cup mounted in the mouth of the bottle or jar and adapted to yield under the pressure of the contents thereof, said cup having a flange adapted to engage said beveled end, and an elastic body mounted between said flange and said cover, as and for the purpose set forth.

9. A bottle or jar provided with a neck having an outwardly-beveled upper end, a cap or cover therefor having a corresponding beveled surface, in combination with a yielding cup having a flange adapted to engage the beveled surface of said neck, and an elastic body secured between said flange and said cover, as and for the purpose set forth.

704,483. BROOM-HEAD. WILLIAM HAMFIELD, Scranton, Miss., assignor of one-half to Charles S. Hartwother, Scranton, Miss. Filed Oct. 15, 1901. Serial No. 78,709. (No model.)

Claim.—1. A coupling for handles, comprising a tubular stem or shank member, a socket member to receive the shank member, both of the members being provided with corresponding openings, and a spring-catch carried by the interior of the stem and having its free end provided with a head to snap into the corresponding openings and detachably interlock the members.

2. A coupling, comprising a tubular shank or stem having a slot, a spring-catch carried by the interior of the stem and having its free end provided with a head which is projected outwardly through the slot, one end of the head being beveled and the opposite end presenting an abrupt shoulder, and a socket to receive the shank and provided with an opening for the detachable reception of the head, whereby the parts are held against independent rotation and endwise separation.

3. A coupling for handles, comprising a tubular shank or stem member having diametrically opposite openings, spring-catches secured to the interior of the shank and having their heads projected outwardly through the respective openings, and a socket to snugly receive the shank or stem and provided with diametrically opposite openings to register with the openings of the shank or stem and detachably receive the heads of the respective spring-catches.

704,484. SYSTEM OF ELECTRIC DISTRIBUTION. CARL J. A. MICHALKE, Charlottenburg, Germany, assignor to Siemens & Halske Electric Company of America, Chicago, Ill., a Corporation of Illinois. Original application filed Dec. 31, 1897, Serial No. 665,185. Divided and this application filed Mar. 10, 1900. Serial No. 8,201. (No model.)

Claim.—1. In combination, a dynamo-electric machine, one member of which is provided with a plurality of angularly-displaced windings, and means for inversely varying the supply of effective current from a single-phase source to said angularly-displaced windings.

2. In combination, a dynamo-electric machine, one member of which is provided with a plurality of angularly-displaced windings, the winding on the other member being adapted to be traversed by single-phase alternating currents, a subdivided source of single-phase alternating current, and a switching device interposed between said source and said angularly-displaced windings, the switching device being constructed and arranged to inversely vary the potentials at the terminals of the said windings.

3. In combination, a dynamo-electric machine, one member of which is provided with a plurality of angularly-displaced windings, the winding on the other member being short-circuited, a subdivided source of single-phase alternating current, and a switching device constructed and arranged to supply current from said source to said windings in such a manner as to produce a progressive shifting of the field produced by said windings.

4. In combination, a dynamo-electric machine, one member of which

is provided with a plurality of angularly-displaced windings, the winding on the other member being adapted to be traversed by single-phase alternating currents, a single-phase transforming device provided with a plurality of secondary terminals, and a switching device arranged to successively vary the connection between the terminals of the transforming device and the angularly-displaced windings of the receiving device in such a manner as to produce a progressive shifting of the field generated in the member on which the angularly-displaced windings are mounted.

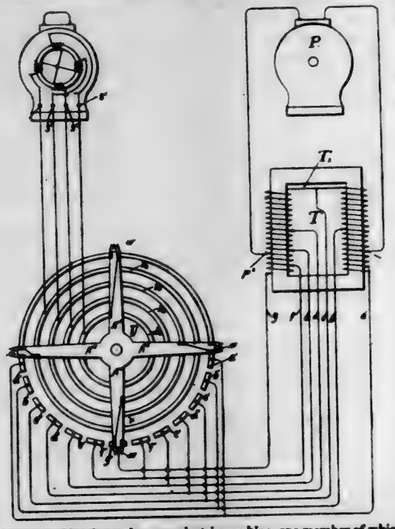

5. In combination, a dynamo-electric machine, one member of which is provided with a plurality of angularly-displaced windings, the winding on the other member being adapted to be traversed by single-phase alternating currents, a subdivided source of single-phase alternating current provided with a plurality of terminal leads, and a switching device arranged to successively vary the connection between the said leads and the angularly-displaced windings of the receiving device in such a manner as to produce a successive shifting of the field generated in the member upon which the angularly-displaced windings are mounted.

6. In combination, a dynamo-electric machine, one member of which is provided with a plurality of angularly-displaced windings, the winding on the other member being adapted to be traversed by single-phase alternating currents, a subdivided source of single-phase alternating electromotive force, and a switching device comprising two relatively movable sets of contacts, the contacts of one set being connected to said subdivided source, and the contacts of the other set to the angularly-displaced windings of the receiving device.

7. In an alternating-current system of distribution, the combination with a source of current, of a single-phase transformer provided with a winding adapted to be connected to said source, a switching means provided with contact-terminals, said contact-terminals being in electrical engagement with points of different potential upon the winding of the said transformer, a dynamo-electric machine, one of the members of which is provided with a plurality of angularly-displaced windings, and means for interconnecting the said windings with different contact-terminals of the said switching means, substantially as described.

8. In a system of distribution, the combination with a source of alternating current, of a single-phase transformer-winding, said winding being adapted for inclusion in circuit with the said source, contact-terminals, said contact-terminals being in electrical engagement with points of different potential upon the said winding, a dynamo-electric machine, one of the members of which is provided with a plurality of angularly-displaced windings, the other member being provided with a short-circuited winding, and means for interconnecting the said angularly-displaced windings with the said contact-terminals, substantially as described.

704,485. WEFT-REPLENISHING LOOM. WILLIAM H. HOOPER and FRANK R. CLARK, Augusta, Ga. Original application filed Apr. 3, 1900, Serial No. 11,518. Divided and this application filed July 27, 1902. Serial No. 29,020. (No model.)

Claim.—1. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit, the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, and an auxiliary circuit partially completed by change in the electric condition of the first-named circuit.

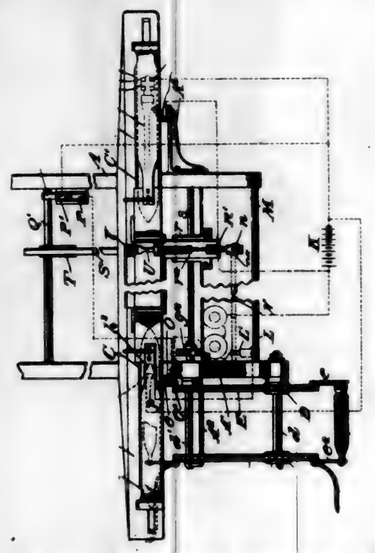

2. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit, the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, an auxiliary circuit partially completed by change in the electric condition of the first-named circuit, and subsequently operating means for wholly completing said auxiliary circuit.

3. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, and a second circuit completed by the said shuttle.

4. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, and a second circuit completed by the said shuttle when in the changing position.

5. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit, the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, an auxiliary circuit partially completed by change in the electric condition of the first-named circuit and wholly completed by the shuttle.

6. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit, the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, an auxiliary circuit partially completed by change in the electric condition of the first-named circuit and wholly completed by the shuttle when the said shuttle is in the changing position.

7. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit, the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, an auxiliary circuit partially completed by change in the electric condition of the first-named circuit, and means for completing said auxiliary circuit when the shuttle is in the changing position.

8. In a loom, the combination with the lay, shuttle-boxes, shuttle and filling-changing mechanism, of means for controlling the operation of said filling-changing mechanism including electric contacts carried by said shuttle-boxes, an electric circuit including a set of said contacts and having its electric condition changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, a second circuit, and means for completing the same through another set of said contacts when the shuttle is in the feeding position.

9. In a loom, the combination with the lay, shuttle-boxes, shuttle and filling-changing mechanism, of means for controlling the operation of said filling-changing mechanism, including electric contacts carried by said shuttle-boxes, an electric circuit including a set of said contacts and having its electric condition changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, and a second circuit completed by the closure of another set of contacts by the shuttle when it is in its changing position.

10. In a loom, the combination with an electromagnetically-operated changing mechanism, of means for controlling the operation thereof including an electric circuit, the electric condition of which is changed on the exhaustion of the filling to a predetermined amount, and an electromagnetic circuit making and breaking device in said circuit.

11. In a loom, the combination with an electromagnetically-operated filling-changing mechanism, of means for controlling the operation thereof including an electric circuit the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, and an auxiliary circuit governed by the change in the electric condition of the first-named circuit.

12. In a loom, the combination with an electromagnetically-operated filling-changing mechanism, of means for controlling the operation thereof including an electric circuit the electric condition of which is changed upon the exhaustion of the filling in an active shuttle to a predetermined amount, and a second circuit completed by the said shuttle.

13. In a loom, a bobbin-magazine for automatically supplying bobbins to the shuttle, bobbins carried by said magazine, electromagnets operating to bring the bobbins of said magazine successively into the feeding position, an electric circuit passing through the coils of said magnets, an electric circuit governing the operation of said magnet-circuit, and means for changing the electric condition of said governing-circuit upon the exhaustion of the filling in an active shuttle to a predetermined amount.

14. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit, and means operated upon the breaking of the active filling for initiating the completion of said circuit.

15. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof including an electric circuit, and means operated upon the breaking of the active filling for partially completing the said circuit.

16. In a loom, the combination with a filling-changing mechanism, of means controlling the operation thereof including an electric circuit, means operated upon the breaking of the active filling for initiating the completion of said circuit, a shuttle, and means operated by the shuttle when in the changing position for completing said circuit.

17. In a loom, the combination with a filling-changing mechanism, of means controlling the operation thereof, including an electric circuit, a filling-fork, and means operated by the filling-fork upon the breaking of the active filling for initiating the completion of said circuit.

18. In a loom, the combination with a filling-changing mechanism, of means for controlling the operation thereof, including an electric circuit, a filling-fork, means operated by the filling-fork upon the breaking of the active filling, and partially completing said circuit, a shuttle, and means operated by the shuttle for completing said circuit.

704,486. STEAM-ENGINE GOVERNOR. RALPH J. PATTERSON, Waterville, Me. Original application filed Apr. 13, 1901, Serial No. 55,603. Divided and this application filed Sept. 27, 1901. Serial No. 76,756. (No model.)

Claim.—1. In a steam-engine governor, a governor-spindle having centrifugal arms pivoted thereto, and an inertia device secured to each centrifugal arm at the pivotal point of the latter.

2. In a steam-engine governor, a governor-spindle having centrifugal arms pivoted thereto and an inertia device secured to each centrifugal arm at the pivotal point of the latter, the said inertia devices being independent from each other.

3. In a steam-engine governor, a governor-spindle having centrifugal arms pivoted thereto, and an inertia attachment for each centrifugal arm comprising an L-shaped arm having one end adapted to be detachably secured to the centrifugal arm and a weight at the other end.

4. In a steam-engine governor, a governor-spindle, arms pivoted thereto, a centrifugal weight attached to one end of said arms and an inertia device attached to the other end thereof.

5. In a steam-engine governor, a governor-spindle, centrifugal arms pivoted thereto, inertia-arms detachably secured to each centrifugal arm at the pivotal point of the latter, said inertia-arms each being bent to extend at right angles to the governor-spindle and carrying inertia-weights at their ends.

6. In a steam-engine governor, a governor-spindle, centrifugal arms pivoted thereto, an inertia-weight for each centrifugal arm, and means whereby each inertia-weight is carried entirely by its centrifugal arm.

7. In a steam-engine governor, a governor-spindle, centrifugal arms pivoted thereto, and L-shaped arms detachably secured to each of said centrifugal arms, one branch of said L-shaped arms extending in the direction of the centrifugal arms, and the other branch extending at right angles to the governor-spindle, and an inertia-weight secured to the end of each of said L-shaped arms.

8. In a steam-engine governor, a governor-spindle having centrifugal arms pivoted thereto, and an inertia device secured to each centrifugal arm, said inertia devices being independent from each other.

704,487. SPRING BUTT-HINGE. THOMAS H. PENTY and WILLIAM L. BELLARD, Cleveland, Ohio; said Penty assignor of one-half of his right to Albert B. Lynch and Charles H. Dorer, Cleveland, Ohio. Filed Oct. 9, 1901. Serial No. 78,066. (No model.)

Claim.—1. A spring butt-hinge having its leaves normally swung together and provided, at their inner side edges, with ears arranged in line longitudinally of the said edges; a torsional coiled spring interposed lengthwise between two of the said ears and having two arms projecting laterally of the same side of the spring and arranged with the leaves of the hinge between them and acting to hold the leaves swung together, and the axial pin arranged within the aforesaid ears and spring and withdrawable endwise, substantially as and for the purpose set forth.

2. A spring butt-hinge having its leaves normally swung together and provided, at their inner side edges, with ears arranged in line longitudinally of the said edges; a torsional coiled spring interposed lengthwise between two of the said ears and having two parallel or approximately parallel arms projecting laterally of the same side of the spring and arranged with the leaves of the hinge between them and acting to hold the leaves swung together, and the axial pin arranged within the aforesaid ears and spring and withdrawable endwise, substantially as and for the purpose set forth.

3. A spring butt-hinge having its leaves normally swung together and provided at their inner side edges, with ears arranged in line longitudinally of the said edges; a torsional coiled spring interposed lengthwise between and in line with two of the said ears and having two arms slid into the inner side of the different leaves, respectively, and acting to hold the leaves swung together, and the endwise-withdrawable axial pin extending through the coils of the spring and engaging the aforesaid ears interiorly, and the leaves having their inner sides grooved to accommodate the reception of the aforesaid arms of the spring.

4. A spring butt-hinge having its leaves normally swung together and provided at their inner side edges, with ears arranged in line longitudinally of the said edges, a torsional coiled spring interposed lengthwise between two of the said ears and normally under tension, which spring has its two end coils terminating in two arms projecting laterally of the same side of the spring and engaging the inner side of the different leaves, respectively, and converging from the said end coils when the spring is detached, and the endwise-withdrawable axial pin extending through the coils of the spring and engaging the aforesaid ears internally.

704,488. APPARATUS FOR THE MANUFACTURE OF MOLDED HOLLOW GLASS ARTICLES. PAUL T. SIEVERT, Dresden, Germany. Filed Jan. 28, 1902. Serial No. 91,544. (No model.)

Claim.—1. In an apparatus for the manufacture of molded hollow glass articles, the combination of an open mold and an undivided frame for holding a layer of plastic glass independently of the mold itself and

supporting the so-held layer on the margin of the mold while a portion of said layer within said frame sinks through said frame into the mold and molds itself therein by its own weight, substantially as herein described.

2. In an apparatus for the manufacture of molded hollow glass articles, the combination with an open mold, of an undivided and invertible frame for receiving and turning over a layer of plastic glass and supporting the so received and turned-over layer on a margin of the mold while a portion of said layer within said frame sinks through said frame into the mold and molds itself therein by its own weight, substantially as herein described.

704,489. CAR-COUPLING. JAMES R. THOMAS, St. Louis, Mo. Original application filed Mar. 5, 1901, Serial No. 50,384. Divided and this application filed Oct. 22, 1901. Serial No. 79,613. (No model.)

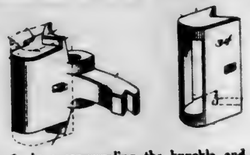

Claim.—1. In a car-coupling, the knuckle, and a protective cap-like wear-hood of an approximate U shape, and removably fitted over and housing therein the coupling-nose of the knuckle.

2. In a car-coupling, the knuckle, and a protective cap-like wear-hood, removably fitted over the nose of the knuckle, said hood having separate cheek portions, respectively facing the inner and outer sides of the knuckle-nose.

3. In a car-coupling, the knuckle, and a protective cap-like wear-hood removably fitted over and housing therein the coupling-nose of the knuckle, said hood being of an approximate U shape in cross-section and having inner and outer cheek members, and the coupling-nose and hood having flush-fitting and interlocking elements at the upper and lower sides of the knuckle.

4. In a car-coupling, the knuckle having its coupling-arm formed with flat side faces, a transverse shoulder on the outer side thereof, and offset angular abutments or lugs at the top and bottom edges, and a protective wear-hood of an approximate U shape, the same comprising opposite inner and outer cheek-plates, and upper and lower end pieces connecting said cheek-plates, and provided with angular engaging notches having a registering interlocking fit with said abutments or lugs, and fastening means for detachably holding the hood on the knuckle.

704,490. COMPOSITION FOR THE PRODUCTION OF VAPORS OF FORMALDEHYDE. JEAN J. A. TRILLAT, Paris, France, assignor, by mesne assignments, to Harold H. Fries and Albert Fries, constituting firm of Fries Bros., New York, N. Y. Original application filed Nov. 24, 1898, Serial No. 713,270. Divided and application filed Dec. 29, 1897, Serial No. 664,394. Again divided and this application filed June 27, 1900. Serial No. 21,756. (No specimens.)

Claim.—1. The improved composition of matter for producing formic-aldehyde vapors, comprising a substance containing formic aldehyde and a substance neutral to formic aldehyde and soluble in a solvent thereof, so that said composition in solution has a higher boiling-point than a simple formic-aldehyde solution, to the effect set forth.

2. The improved composition of matter for producing formic-aldehyde vapors, consisting of an aqueous solution containing formic aldehyde and a mineral substance neutral to formic aldehyde and soluble in a solvent thereof, so that the solution has a higher boiling-point than a simple aqueous formic-aldehyde solution, to the effect set forth.

3. The improved composition of matter for producing formic-aldehyde vapors, comprising a substance containing formic aldehyde and a neutral soluble salt of an alkali or alkaline earth, so that said composition in solution has a higher boiling-point than a simple formic-aldehyde solution, to the effect set forth.

4. The improved composition of matter for producing formic-aldehyde vapors comprising a neutral substance containing formic aldehyde and a soluble chlorid.

5. The improved composition of matter for producing formic-aldehyde vapors comprising a neutral mixture of a substance containing formic aldehyde and sodium chlorid.

6. The improved composition of matter for producing formic-aldehyde vapors consisting of a neutral solution of formic aldehyde, and a substance neutral to formic aldehyde, so that said solution has a higher boiling-point than a simple formic-aldehyde solution, to the effect set forth.

704,491. BRAKE-SHOE. GEORGE A. WOODMAN, Chicago, Ill., assignor of three-fourths to Thomas R. Kirby, Frederick W. Renshaw, and H. V. Kuhlman, Chicago, Ill. Filed Apr. 5, 1902. Serial No. 101,552. (No model.)

Claim.—1. A brake-shoe, having a back plate provided at its ends with guides for the brake-head.

2. A brake-shoe, having a back plate and guides for the brake-head formed out of the back plate.

3. A brake-shoe, having a back plate and guides for the brake-head formed out of the back plate inside of the end edges thereof.

4. A brake-shoe, having a back plate and outwardly-extending projections cut and stamped up from the plate to form guides for the brake-head, said projections leaving openings to receive the metal of which the body of the shoe is formed.

5. A brake-shoe, having an attaching-lug and a back plate, said plate being struck up beneath the lug to form the inner wall of the opening in the lug.

6. A brake-shoe, having an attaching-lug and a back plate, said plate being provided with a protuberance forming the inner wall of the opening in the lug.

7. A brake-shoe, having an attaching-lug and a back plate, said plate being provided beneath the lug with continuous side edges and inward projections within said side edges.

8. A brake-shoe, having an attaching-lug and a back plate, said plate being provided between its side edges beneath the lug with inward projections and an outward protuberance.

9. A brake-shoe, having an attaching-lug and a back plate, and projections cut and stamped up from the plate beneath the lug, said projections leaving openings inclosed by the side edges of the plate to receive the metal of which the body of the shoe is formed.

10. A brake-shoe, having an attaching-lug and a back plate, said plate being provided with a protuberance to form the inner wall of the opening in the lug and having inward projections at or about its center and outward projections at its ends stamped up therefrom and leaving openings to permit the metal of which the body of the shoe is formed to flow thereinto and form locking connection with the projections.

11. A brake-shoe having a back plate provided with oppositely-disposed inwardly-directed angular projections between its center and its ends.

12. A brake-shoe, having a back plate provided with inwardly-directed angular projections stamped out of the plate and permitting the metal of which the body of the shoe is formed to form locking engagement therewith.

REISSUES.

12,008. EYELET. JOHN C. RHODES, New Bedford, Mass., assignor, by mesne assignments, to J. C. Rhodes & Co., Incorporated, a Corporation of Maine. Filed Jan. 11, 1902. Serial No. 89,386. Original No. 565,091, dated Aug. 4, 1896.

Claim.—1. A coated eyelet, as described, consisting of a tubular body rolled outwardly and over at one end to form a flange, presenting within the same a smooth flaring entrance, the peripheral edge of the said flange being turned or bent abruptly at an angle to form a ring-like seat-lip outside the body, and adapted to rest upon the material in which the eyelet is set, to thereby receive the setting pressure and stiffen the eyelet-flange to prevent cracking of its surface or finishing coating, said eyelet also having a plurality of lines of weakness at its clenching end, substantially as described.

2. A coated eyelet as described, consisting of a tubular body, open at both ends and provided at one end with an outwardly-flaring face-flange having its outer or peripheral portion turned downwardly outside the body, said downwardly-turned portion resting upon the face of the material and provided with a laterally bent or turned strengthening-lip outside the body to hold the eyelet-face in proper form against the setting thrust and thereby prevent cracking of a hard surface-coating, substantially as described.

3. A coated eyelet as described consisting of an open tubular body, thinned at one end, and provided at the other with an outwardly-flaring face-flange having its outer or peripheral portion abruptly turned downwardly outside the body, said downwardly-turned portion seated upon the face of the material and provided with a laterally bent or turned strengthening-lip outside the body to hold the eyelet-face in proper form against the setting thrust and thereby prevent cracking of its hard surface-coating, substantially as described.

DESIGNS.

35,973. BADGE. AUGUSTUS R. LYON, Salt Lake City, Utah. Filed May 16, 1902. Serial No. 107,692. Term of patent 7 years.

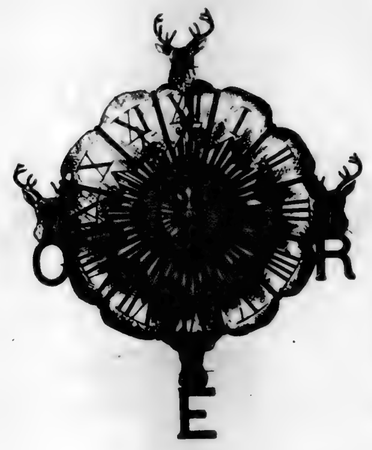

Claim.—The ornamental design for a badge, substantially as shown and described.

35,974. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. HENRIK HILLSON, Wallingford, Conn., assignor to R. Wallace & Sons Mfg. Co., Wallingford, Conn., a Corporation. Filed May 12, 1902. Serial No. 107,643. Term of patent 7 years.

Claim.—The ornamental design for a handle for a spoon, fork or similar article as herein shown and described.

35,975. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. HENRIK HILLSON, Wallingford, Conn., assignor to R. Wallace & Sons Mfg. Co., Wallingford, Conn., a Corporation. Filed May 12, 1902. Serial No. 107,644. Term of patent 7 years.

Claim.—The ornamental design for a handle for a spoon, fork or similar article as herein shown and described.

35,976. BOTTLE. WILLOUGHBY M. MCCORMICK, Baltimore, Md. Filed June 5, 1902. Serial No. 110,392. Term of patent 7 years.

Claim.—The ornamental design for a bottle herein shown and described.

35,977. PAPER BOX. PHINEAS B. MYERS, Morristown, N. J. Filed June 10, 1902. Serial No. 111,078. Term of patent 7 years.

Claim.—The ornamental design for a paper box, substantially as herein shown and described.

TRADE-MARKS

REGISTERED JULY 8, 1902.

38,564. CLOTHS AND STUFFS OF WOOL, WORSTED, OR HAIR. WM. FULTON & SONS, LTD., Paisley, Scotland. Filed May 22, 1902.

KEYMO

The word "KEYMO." Used since November, 1901.

38,565. SHEETINGS. SELTON MILLS, Belton, S. C. Filed May 27, 1902.

A representation of a Chinese school-master and two pupils, the school-master being seated in a chair before a table, while the pupils occupy seats upon the opposite side of the table. Used since January, 1902.

38,566. BOOTS AND SHOES. PERKINS, HARDY & CO., West Derry, N. H., and Boston, Mass. Filed Dec. 13, 1901.

The words "BIG RED APPLE" and the pictorial representation of an apple. Used since December 1, 1900.

38,567. BOOTS AND SHOES. UNITED WORKINGMEN'S BOOT AND SHOE COMPANY, San Francisco, Cal. Filed May 31, 1902.

ORO

The word "ORO." Used since December, 1901.

38,568. RUBBER HEELS FOR BOOTS AND SHOES. PLYMOUTH RUBBER CO., Stoughton, Mass. Filed June 4, 1902.

NERV-EZE

The hyphenated word "NERV-EZE." Used since May 12, 1902.

38,569. CERTAIN NAMED WALL HANGINGS AND COVERINGS. FREDK. WALTON & CO., LIMITED, Sunbury Common, England. Filed Feb. 26, 1902.

LINOID

The word "LINOID." Used since December, 1901.

38,570. HAIR, NAIL, TOOTH, AND FLESH BRUSHES. FLORENCE MANUFACTURING COMPANY, Northampton, Mass.; New York, N.Y., and Chicago, Ill. Filed Apr. 28, 1902.

The representation of a red Greek cross. Used since April 21, 1902.

38,571. HAIR, NAIL, TOOTH, AND FLESH BRUSHES. FLORENCE MANUFACTURING COMPANY, Northampton, Mass.; New York, N.Y., and Chicago, Ill. Filed Apr. 28, 1902.

PROPHYLACTIC

The word "PROPHYLACTIC." Used since 1885.

38,572. RUBBER TIRES. THE GOODYEAR TIRE AND RUBBER COMPANY, Akron, Ohio. Filed May 26, 1902.

THE BROADWAY

The words "THE BROADWAY." Used since September 24, 1901.

38,573. GLASS LAMP-CHIMNEYS, GLASS LANTERN-GLOBES, AND GLASS REFLECTORS. GILL BROTHERS COMPANY, Steubenville, Ohio. Filed June 9, 1902.

The representation of a coronet. Used since November, 1900.

38,574. GLASS LAMP-CHIMNEYS, GLASS LANTERN-GLOBES, AND GLASS REFLECTORS. GILL BROTHERS COMPANY, Steubenville, Ohio. Filed June 9, 1902.

CORONET

The word "CORONET." Used since November 1, 1900.

38,575. POULTRY. CLARINDA POULTRY, BUTTER & EGG CO., Clarinda, Iowa. Filed May 28, 1902.

GOLDEN

The word "GOLDEN." Used since October 1, 1900.

38,576. SOAP. SWIFT AND COMPANY, Chicago, Ill. Filed Oct. 4, 1901.

BANNER

The word "BANNER." Used since 1891.

38,577. GINGER-SNAPS. FRANK GOSS, Manchester, Conn. Filed Mar. 15, 1901.

The representation of a landscape with a house, a well-curb and sweep, and a tree in the background, a fence in the foreground, and a fence in the middle foreground. These pictorial representations are arranged within a circumscribing circle. Used since January 1, 1901.

38,578. PEPSIN CHEWING-GUM. FREEPORT NOVELTY COMPANY, Freeport, Ill. Filed June 9, 1902.

Goo-Goo

The hyphenated word "Goo-Goo." Used since February 3, 1902.

38,579. CHOCOLATE-COVERED MOLASSES CHIPS. WILLIAM SHERMAN TROWBRIDGE, Mendville, Pa. Filed Apr. 28, 1902.

38,579.

The words "THE TWENTIETH CENTURY," printed in red ink between the representation of two cocoa-trees. Used since October 20, 1901.

38,580. SMOKING-TOBACCO, CHEWING-TOBACCO, CIGARS, CHEROOTS, CIGARETTES, AND SNUFF. FRANCES ELIZABETH VAN RAALTE, London, England. Filed Dec. 31, 1901.

CAPITAN GENERAL

The words "CAPITAN GENERAL." Used since January, 1883.

38,581. COMPLEXION COMPOUNDS IN TABLET, SOAP, AND POWDER FORM. ROBERT HENRY SMITH, Los Angeles, Cal. Filed Mar. 17, 1902.

Klear Skin

The hyphenated word "KLEAR-SKIN." Used since October 1, 1901.

38,582. CERTAIN NAMED MEDICINES AND MEDICINAL PLASTERS. ALEX. SEIDLER, Newark, N. J. Filed Feb. 24, 1902.

Smith Sisters.

The portraits of the two Smith sisters, who are named, respectively, Alice E. Smith and Ethel F. Smith, standing at opposite sides of a table on which is placed a filtering apparatus. The Smith sister at the right of the table has in her hand a pestle, which is being operated in a mortar. The Smith sister to the left of the table is shown in the act of pouring a liquid from a graduate into a vessel which is standing on a gas-stove, and the term "SMITH SISTERS" is arranged above the picture. Used since January 1, 1902.

38,583. REMEDIES FOR NERVOUS DISEASES AND DISEASES OF THE STOMACH, LIVER, AND BOWELS. THE MURNA MEDICAL COMPANY, Winchester, Va. Filed May 3, 1902.

MURNA

The word "MURNA." Used since April 22, 1902.

38,584. INTERNAL REMEDIES FOR CERTAIN NAMED DISEASES. JOHN B. FLINT, Cleveland, Ohio. Filed Apr. 7, 1902.

M. M. Co.

The representation of St. Benedict and the letters "M. M. Co.," St. Benedict being shown as holding a crook or staff and also holding a chalice in one hand, from which a snake is emerging, and a book in the other hand. Used since July 15, 1901.

38,585. CERTAIN NAMED MEDICAL COMPOUNDS. AUSTIN V. H. SPRAGUE, New York, N. Y. Filed Apr. 16, 1902.

ST. LUKE

The abbreviation and word "ST. LUKE." Used since January 1 1902.

38,586. CARBONED PAPER. THE GENERAL MANIFOLD COMPANY, Franklin, Pa. Filed May 24, 1902.

A circular figure having superimposed thereon a triangular figure consisting of an interior solid triangle and an outer triangle, with the representation of quilled pens arranged within and adjacent to the inner periphery of the circle and the representation of an ink-bottle in the apex of the inner triangle. Used since May 10, 1902.

38,587. CERTAIN NAMED SPORTING GOODS. P. GOLDSMITH'S SONS, Cincinnati, Ohio. Filed Jan. 20, 1902.

Two concentric circles, between which is arranged a wreath, and within the inner circle is arranged a Maltese cross, from which lines radiate, giving somewhat of a sunburst effect, some of the radiating lines extending beyond the inner circle. Used since September 23, 1901.

38,588. LUBRICANT. WILLIAM F. DOWNS, Jersey City, N. J. Filed May 27, 1902.

LUBRIPHITE

The word "LUBRIPHITE." Used since May 8, 1902.

38,589. LUBRICATING-OILS. GALENA-SIGNAL OIL COMPANY, Franklin, Pa. Filed May 26, 1902.

The pictorial representation of a steam-railway locomotive. Used since 1873.

38,590. LUBRICATING-OILS. GALENA-SIGNAL OIL COMPANY, Franklin, Pa. Filed May 26, 1902.

GALENA G

The word "GALENA," together with the representation of a star inclosing the letter "G." Used since December, 1870.

38,591. SMALT. WEBSTER C. BEERS, New York, N. Y. Filed June 7, 1902.

OSMALTO

The word "OSMALTO." Used since May 21, 1902.

38,592. SMALT. WEBSTER C. BEERS, New York, N. Y. Filed June 7, 1902.

EXTROID

The word "EXTROID." Used since May 21, 1902.

38,593. MINERAL PAINTS. MOHAWK PAINT AND CHEMICAL CO., New York, N. Y. Filed May 27, 1902.

FEROX

The word "FEROX" inclosed within a diamond-shaped figure. Used since May 12, 1902.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C

LABELS

REGISTERED JULY 8, 1902.

9,275.—*Title:* "FREDERIC." (For Hats) CHARLES E. SACKETT, Danbury, Conn. Filed May 9, 1902.

9,276.—*Title:* "LUDS." (For Hats.) CHARLES E. SACKETT. Danbury, Conn. Filed May 14, 1902.

9,277.—*Title:* "TUFTED SILK." (For Neckwear.) ALBERT J. BENDIX and ABRAHAM L. EISENSTAEDT, New York, N. Y. Filed May 31, 1902.

9,278.—*Title:* "TETLOWS VIOLET BOQUET TALCUM POWDER." (For Talcum Powder.) TETLOW MFG. CO., Philadelphia, Pa. Filed June 11, 1902.

9,279.—*Title:* "DOME FIRE CLAY." (For Fire-Clay.) HILLSDALE FIRE BRICK AND CLAY COMPANY, Hillsdale, Ind., and Chicago, Ill. Filed September 25, 1901.

9,280.—*Title:* "ACME MINERAL WATER." (For Mineral Water.) ACME MINERAL WATER COMPANY, Camilla, Ga. Filed June 10, 1902.

9,281.—*Title:* "WINETTE." (For a Beverage.) G. EDWARD FULLER, New York, N. Y. Filed June 9, 1902.

9,282.—*Title:* "ONE-EIGHTY." (For Lager-Beer.) G. HEILEMAN BREWING COMPANY, La Crosse, Wis. Filed June 14, 1902.

9,283.—*Title:* "SPRING BANK LITHIA HIGH BALL SPLITS." (For High-Ball Splits.) WHALLEN BROS., Louisville, Ky. Filed June 5, 1902.

9,284.—*Title:* "SPRING BANK HIGH BALL SPLITS." (For High-Ball Splits.) WHALLEN BROS., Louisville, Ky. Filed June 5, 1902.

9,285.—*Title:* "PARAMOUNT PURE OLD RYE WHISKEY." (For Whisky.) HENRY C. BOHACK, Brooklyn, N. Y. Filed June 13, 1902.

9,286.—*Title:* "J. WILLIAMS & BROS. HAND MADE ORIGINAL MEYERSDALE SEED STOGIES." (For Cigars.) J. WILLIAMS & BROS., Meyersdale, Pa. Filed June 16, 1902.

9,287.—*Title:* "BELLE PEEP." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed June 12, 1902.

9,288.—*Title:* "FIT FOR A KING." (For Baking-Powder.) WABASH BAKING POWDER COMPANY, Wabash, Ind. Filed June 12, 1902.

9,289.—*Title:* "MEAT-OL." (For a Liquid Food or Tonic.) THE A. SPIEGEL CO., Milwaukee, Wis. Filed June 12, 1902.

9,290.—*Title:* "TURKISH NERVE BUILDER." (For a Medicine.) EDWIN A. SHOWALTER, Milwaukee, Wis. Filed March 25, 1902.

9,291.—*Title:* "GLYCOTONE COMP. D & D." (For Medicine.) DINET & DELPOSSE, Chicago, Ill. Filed June 12, 1902.

9,292.—*Title:* "CAMTHOL." (For Medicine.) TAZWELL L. ANDERSON, Savannah, Ga. Filed November 1, 1901.

9,293.—*Title:* "STEWART'S ODORLESS AND TASTELESS CASTOR OIL." (For Castor-Oil.) STEWART MANUFACTURING CO., Santa Rosa, Cal. Filed June 13, 1902.

9,294.—*Title:* "CAPILAUX." (For Hair-Tonic.) APOTHEKER BROS., New York, N. Y. Filed June 9, 1902.

9,295.—*Title:* "EMERALDS." (For Cigars.) R. H. BUETTNER, Chicago, Ill. Filed May 29, 1902. (REREGISTRATION.)

PRINTS

REGISTERED JULY 8, 1902.

530.—*Title:* "THE UNCLE SAM SHOE." (For Shoes.) UNCLE SAM SHOEMAKERS, Boston, Mass. Filed June 17, 1902.

531.—*Title:* "TROWBRIDGE'S CHOCOLATE CHIPS." (For Chocolate Chips.) TROWBRIDGE CHOCOLATE CHIP CO., Meadville, Pa. Filed June 11, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

READ v. SCOTT.

Decided June 20, 1902.

1. INTERFERENCE—PATENT AND APPLICATION—REISSUE APPLICATION—CLAIMS REJECTED AND CANCELED.

Where one interference is declared between a pending application of S. and a patent to R. and another interference is declared between the said pending application of S. and an application for a reissue of the patent to R., *Held* that on a consolidation of the two interferences the same will continue as to counts corresponding to claims in the patent, even though these claims were originally presented in the reissue application and subsequently canceled therefrom on reference to an English patent to S.

2. REISSUE APPLICATION—REJECTION OF CLAIMS CORRESPONDING TO THOSE IN ORIGINAL PATENT—EFFECT ON VALIDITY OF ORIGINAL PATENT.

The cancellation of claims in a reissue application which correspond to the claims of the patent which it is sought to reissue has no effect upon the claims in the patent while the reissue application is still pending in the Patent Office. (*The McCormick Harvesting Machine Co.* v. *Aultman & Co.*, 82 O. G., 1988.)

APPEAL on motion.

PRINTING AND FOLDING MACHINE.

Patent granted George F. Read December 26, 1899, No. 639,770. Application for reissue filed December 24, 1901, No. 87,137. Application of Walter Scott filed February 19, 1897, No. 624,266.

Messrs. Philipp, Sawyer, Rice & Kennedy for Read.

Mr. Richard W. Barkley for Scott.

ALLEN, *Commissioner:*

This is an appeal by Scott from the decision of the Examiner of Interferences denying his motion for judgment of priority of invention defined in counts 2 and 4 of the above-entitled interference.

The records show that this interference, No. 20,844, was originally declared between a patent, No. 639,770, to Read and an application of Scott, Serial No. 624,266, and that the issue included six counts. Subsequently Read filed an application for a reissue of his Patent No. 639,770, and another interference, No. 21,689, was declared between said reissue application of Read and the application of Scott already involved in the said prior interference. The issue in this second interference included two counts. The reissue application as originally filed contained a series of new claims, as well as the claims corresponding to the six counts of the interference in which his patent was involved. Before the second interference was declared Read canceled two of the claims from his reissue application, which corresponded to two of the counts of the prior interference, on a rejection of them by the Primary Examiner on an English patent to Scott, No. 7,860 of 1896.

It is upon these two counts that Scott now moves for an award to him of judgment of priority of invention. Scott contends that Read has conceded priority of invention to him as to these two counts by canceling the claims corresponding thereto from his reissue application after they had been rejected by the Primary Examiner on the English patent to Scott above referred to. Counsel for Read contends that no such assumption is warranted, which contention is a sound one.

The rules nowhere provide for a determination of an interference after it has been once declared on a mere cancellation of the claims. (Rules 107 and 125.) Moreover, a claim cannot be canceled from an application involved in an interference by the mere filing of an amendment to that effect. (Rule 130.) The two claims in question were canceled from the reissue application before said application was declared to be involved in an interference. This act of itself can have no effect upon the two claims which remain in the patent.

The two interferences have been consolidated under No. 20,844 on motion by Scott, which motion was concurred in by Read. The counts of the issue in the consolidated interference therefore correspond to two claims in Read's patent and six claims in his application for the reissue of said patent and the eight claims in Scott's application, which correspond, respectively, to the two claims in the patent to Read and the six claims in Read's reissue application.

That this must be so necessarily follows from what was said by the Supreme Court of the United States in *The McCormick Harvesting Machine Co.* v. *Aultman & Co.*, (82 O. G., 1988.) In this case the Court answered the following question, certified to it by the circuit court of appeals, in the negative:

If the owner of a patent applies to the Patent Office for a reissue of it, and includes among the claims in the application the same claims as those which were included in the old patent, and the Primary Examiner rejects some of such claims for want of patentable novelty, by reference to prior patents, and allows others, both old and new, does the owner of the patent, by taking no appeal and by abandoning his application for reissue, hold the original patent, the return of which he procures from the Patent Office, invalidated as to those of its claims which were disallowed for want of patentable novelty by the Primary Examiner in the proceeding for reissue?

In answering this question the Court said:

* * * Until the amended patent shall have been issued the original stands precisely as if a reissue had never been applied for, (*Allen* v. *Kulp*, C. D., 1897, 472; 79 O. G., 1523; 166 U. S., 501, 503,) and must be returned to the owner upon demand. * * * It is true that it was within his (the Examiner's) power to reject any claims contained in the application for a reissue which he judged to be invalid, whether contained in the original patent or not. It is also true that the reasons given for the rejection of such claims might apply equally to the same claims contained in the original patent; but with respect to such claims he was *functus officio*. * * *

Our conclusion upon the whole case is that, upon the issue of the original patent, the Patent Office had no power to revoke, cancel or annul it. It had lost jurisdiction over it, and did not regain such jurisdiction by the application for a reissue. Upon application being made for such reissue the Patent Office was authorized to deal with all its claims, the originals as well as those inserted first in the application, and might declare them to be invalid, but such action would not affect the claims of the original patent, which remained in full force, if the application for a reissue were rejected or abandoned.

It is held, therefore, that inasmuch as counts 2 and 4 correspond to claims in Read's patent they still constitute counts of this consolidated interference, notwithstanding the fact that they were again presented in Read's application for a reissue of his patent and canceled therefrom because they were rejected by the Examiner on reference to Scott's English patent.

The decision of the Examiner of Interferences is affirmed.

EX PARTE HOLOPHANE GLASS COMPANY.

Decided June 20, 1902.

1. TRADE-MARK—PATENTED ARTICLE—"HOLOPHANE"—NOT REGISTRABLE.

The word "Holophane" alone is not registrable as a trade-mark for prismatic glass, for the reason that it is the name of the patented article in connection with which the mark is used and for the further reason that the word is shown to have been used as the name of the article long prior to any date of use which is set up by the present applicant.

2. SAME—NAME AND ARBITRARY SYMBOL—NOT REGISTRABLE.

Where it appears that the word "Holophane" alone is not registrable, it cannot be made registrable by association with an arbitrary symbol. (*Ex parte Farnum and Company*, 18 O. G., 412.)

ON appeal.

TRADE-MARK FOR PRISMATIC GLASS.

Application filed December 21, 1901, No. 64,726.

Mr. Wallace A. Bartlett for the applicant.

ALLEN, *Commissioner:*

This is an appeal from an action of the Examiner of Trade-Marks refusing to register the word "Holophane" borne on the face of a seal or notched edged disk as a trade-mark for pressed glassware for illuminating purposes.

It appears that the word "Holophane" is the name of the patented article in connection with which the mark now under consideration is used. This word was used as the name of the article long prior to any date of use which is set up by the present applicant, as is shown by the French patent to Psaroudaki, No. 233,140, September 30, 1893. This word alone is not registrable to this applicant. See the decisions of the Supreme Court of the United States in *Singer Manufacturing Company* v. *June*, (75 O. G., 1703,) *The Holzapfel's Composition Company, Ltd.*, v. *Rahtjens American Composition Company*, (97 O. G., 958,) and the Commissioner's decision in *ex parte Velvril Company, Ltd.*, (84 O. G., 807.) Since, therefore, this word alone is not registrable, it cannot be made registrable by association with an arbitrary symbol. (*Ex parte Farnum and Company*, 18 O. G., 412.)

The mark as shown is not registrable. The action of the Examiner, therefore, refusing registration was right, and it is affirmed.

EX PARTE THE ALADDIN GAS LIGHT COMPANY.

Decided June 25, 1902.

TRADE-MARK—GOODS OF THE SAME CLASS—LAMPS AND BICYCLE-LAMPS.

A trade-mark for gas or vaporizing lamps, except bicycle-lamps, refused registration in view of substantially the same mark registered for bicycle-lamps, since the goods are of the same class and the use of the same mark by different owners will mislead the purchasing public.

ON appeal.

TRADE-MARK FOR LAMPS, ETC.

Application filed February 17, 1902, No. 65,126.

Mr. E. G. Siggers for the applicant.

ALLEN, *Commissioner:*

This is an appeal from an action of the Examiner of Trade-Marks refusing to register the word "Aladdin" as a trade-mark for gas or vaporizing lamps that generate gas or vapor from gasolene and similar hydrocarbons and burn the same; also, lighting systems in which the gas is generated from gasolene and similar hydrocarbons and having a plurality of burners at which said gas or vapor is burned to produce artificial light.

Registration has been refused in view of the prior registration to Eno, No. 27,581, December 31, 1895, of the words "Aladdin's Lamp" and a pictorial representation for bicycle-lamps.

Applicant expressly excludes bicycle-lamps from the goods to which his mark is applied.

The use of the word "Aladdin" alone in place of the registered mark above described on goods of the same class would tend to mislead and deceive the purchasing public, since the marks are so similar that it would be supposed that they designate goods of common origin. It is to be determined, therefore, whether or not bicycle-lamps are included in the same class of goods with lamps generally.

The word *class* as it is used in the statute relating to trade-marks means that—

genus which includes as species such goods as if exposed to the purchasing public side by side with the "particular" goods to which the trade-mark has been applied will result in the "deception" mentioned in section 8 of the statute, whereby the purchasing public, misled by the application of a single title to the various "particular" goods comprised within the class, will conclude that they have originated from the same source and will purchase one under the impression that it was made by the maker of the other. (*Ex parte Crown Distilleries Co.*, 98 O. G., 2590.)

Undoubtedly bicycle-lamps and lamps are goods of the same class as above defined. Bicycle-lamps are commonly made by makers of lamps generally, and the purchasing public seeing the same mark applied to each would naturally suppose them to be products of the same maker. A registration which will lead to this result should not be granted.

The action of the Examiner of Trade-Marks was right, and it is affirmed.

EX PARTE THE LAXAKOLA COMPANY.

Decided June 25, 1902.

TRADE-MARKS — ANTICIPATION — "DERMAKOLA" AND "DERMACURA."

The word "Dermakola" should not be refused registration upon the registered word "Dermacura" in view of the difference in the sound of the words and in view of the difference in appearance due to the style in which they are printed.

ON appeal.

TRADE-MARK FOR PROPRIETARY MEDICINES.

Application filed November 27, 1901, No. 64,578.

Mr. E. G. Siggers for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the word "Dermakola" as a trade-mark for an ointment for the skin. The word is shown in the facsimile and is described as printed in script type on a red band extending diagonally across a circular field, the upper and lower zones of the field being also red, leaving tapering white sections on opposite sides of the band.

Registration has been refused in view of the prior registration to Blackstone, No. 18,936, February 3, 1891, of the word "Dermacura," applied to an ointment.

The question presented in this case is: Does the mark for which registration is sought so nearly resemble the prior registered mark as to cause confusion or mistake in the mind of the public? In considering this question, as was stated in *ex parte Vogel and Son*, (99 O. G., 2321)—

* * * the appearance of the marks is as important as the sound of the words used therein when these words are spoken. Both senses are to be used in determining the question whether or not one mark so nearly resembles the other as to have the tendency to mislead and to cause confusion in the minds of the purchasing public.

In the case now under consideration the mark for which registration is sought has to the eye an appearance so decidedly different that no person of ordinary intelligence would mistake one for the other. The word "Dermakola" is believed to be so distinct in sound as well as in meaning from "Dermacura" that no one would mistake one for the other. This conclusion is strengthened by the fact that numerous registrations have been granted for compound words of this class in which the elements "cu'a," "kola," and "derma" appear. This class of words is therefore well known to the purchasing public, and the distinctions between them are recognized.

It is believed that there are differences between the registered mark and that presented in this case which are sufficient to warrant the grant of registration.

The action of the Examiner of Trade-Marks is reversed.

EX PARTE MAGNUS METAL COMPANY.

Decided June 25, 1902.

TRADE-MARK—"GALENA"—REGISTRABLE.

The word "Galena" as a trade-mark for manufactured metals *Held* to be registrable on the ground that while it has a limited geographical significance and is also descriptive of lead sulfid its arbitrary significance when used in connection with antifriction metals is so far predominating that it will be so understood by the public.

ON appeal.

TRADE-MARK FOR MANUFACTURED METALS.

Application filed January 17, 1902, No. 64,880.

Messrs. Peirce & Fisher for the applicant.

ALLEN, *Commissioner:*

This is an appeal from an action of the Examiner of Trade-Marks refusing to register as a trade-mark for an antifriction metal a mark described as consisting of—

the word "Galena" inclosed within a diamond-shaped border, this word being formed of letters of different heights so that the space covered by said letters shall be of a general diamond-shaped outline.

The Examiner has objected to the registration of the word "Galena" because, in his opinion, it is either descriptive of the goods to which it is applied or deceptive, and, further, because it is geographical.

It is true that the word "Galena" is the name of one of the principal lead ores—viz., lead sulfid. It is also true that some antifriction metals contain lead in their composition; but it is not believed that the purchasing public would ever take the word "Galena" as applied to antifriction metals as indicating that galena or lead sulfid forms a part thereof, because, as is well known, such lead sulfid is not suitable for such a use. The word, therefore, is not descriptive and necessarily not deceptive.

This word has also a geographical meaning. It is the name of a small town in the United States. It is not, however, one of those words which are used merely as designating locality. As used in connection with antifriction metals its arbitrary significance is predominating. The purchasing public would not understand it as indicating the place of origin, especially in view of the fact that applicants do not carry on their business at any place called "Galena," but at Buffalo, N. Y.

The decision of the Examiner of Trade-Marks is reversed.

BECK *v.* LONG.

Decided June 26, 1902.

1. APPEAL TO EXAMINERS-IN-CHIEF—MISTAKE—REQUEST TO TRANSFER THE APPEAL TO COMMISSIONER AFTER EXPIRATION OF LIMIT OF APPEAL REFUSED.

Where an appeal has been taken to the Examiners-in-Chief from the decision of the Examiner refusing to dissolve an interference and it appears that the appeal was taken by mistake, *Held* that said appeal cannot be transferred to the Commissioner's docket after the limit of appeal has expired, for such a proceeding would have the effect of permitting an appeal to the Commissioner after the limit of appeal has expired.

2. SAME—SAME—PRACTICE.

In the event that an appeal in an interference proceeding is taken by mistake to the Examiners-in-Chief and the mistake is not discovered until after the limit of appeal has expired, *Held* that the proper practice to pursue is to withdraw the appeal to the Examiners-in-Chief and to file an appeal to the Commissioner, at the same time requesting an extension of the limit of appeal to include the date of filing. The reasons should be set forth why the appeal was not taken to the Commissioner sooner, and a copy of the paper should be served upon the opponent.

ON request.

ACETYLENE-GENERATOR.

Application of Charles W. Beck filed September

21, 1896, No. 606,492. Application of David N. Long filed August 25, 1900, No. 28,068.

Messrs. Davis & Davis for Beck.

Mr. Ernest W. Bradford for Long.

ALLEN, *Commissioner:*

This is a request by Long that an appeal taken by him to the Examiners-in-Chief from a decision of the Primary Examiner denying his motion for a dissolution of the interference be transferred to the Commissioner's docket and considered as an appeal to the Commissioner.

No precedent for the action requested is cited and it would be wholly irregular at this time after the limit of appeal from the Examiner's decision has expired. Long seems to think now that he made a mistake in taking the appeal to the Examiners-in-Chief instead of to the Commissioner, and from an indorsement by the Examiners-in-Chief upon the present request it seems that they are of the same opinion, although the appeal has not been heard and disposed of by them. To now transfer the appeal to the Commissioner's docket would have the effect of permitting an appeal to the Commissioner after the limit of appeal has expired. Beck is entitled to a hearing upon the question whether this shall be done, and aside from other considerations the present request is irregular in that no notice of it was served upon him.

Long's proper course in order to make the proceedings regular would be to withdraw his appeal to the Examiners-in-Chief and to file an appeal to the Commissioner, at the same time requesting an extension of the limit of appeal to include the date of filing. He should set forth the reasons why the appeal was not taken to the Commissioner sooner and should serve a copy of the papers upon his opponent.

The request is denied.

EX PARTE BURROWES.

Decided June 27, 1902.

DIVISION—STAND FOR BILLIARD-TABLES—ADJUSTING DEVICE FOR LEVELING THE TOP OF THE TABLE.

Division should not be required between a claim for a stand for a billiard-table and a claim covering the stand in combination with the table-adjusting device.

ON petition.

GAME-BOARD STAND.

Application of Edward T. Burrowes filed February 7, 1902, No. 92,953.

Mr. L. S. Bacon for the applicant.

ALLEN, *Commissioner:*

This is a petition from a decision of the Examiner requiring division between the claims of the above-entitled application.

The invention covered by the claims is a folding stand for pool or billiard tables. The stand is provided with adjusting devices for leveling the top of the table upon which games are played.

Claims 1 to 5, inclusive, include the adjusting means as an element, in combination with the side bars, while claims 6 to 10, inclusive, cover the stand without the adjusting devices.

It is true that leveling devices alone for billiard-tables are classified separately from the table structure; but when the levelers are made a part of the combination, as in the case now under consideration, this combination is classified with the table structure and not with levelers.

In the present case there are no separate claims for the leveler which can be separated from the claims for the table structure. Hence division should not be required.

The petition is granted.

EX PARTE DAVIN.

Decided June 27, 1902.

1. DRAWING—RULE 50 DEFINED.

Where the specification describes the grain of wood as running lengthwise and this feature is included in the claims, the drawing should show the same, since the rules require that the drawing must show every feature of the invention covered by the claims. (Rule 50.)

2. DRAWING—RULE 50 DISTINGUISHED FROM RULE 51.

Where the grain of wood is an essential feature of the invention, the requirement that the drawing should show the same is not inconsistent with the requirement of the fourth section of Rule 51, which states that imitations of wood in surface-graining should not be attempted.

3. COMBINATION CLAIM—INTANGIBLE ELEMENT SHOULD NOT BE INCLUDED.

An "opening" should not be made a positive or direct element in combination claims, for the reason that an opening is not a tangible thing. It can exist only in connection with some other element. If it is desired to describe this element as provided with an opening, there is no objection to such a course.

ON petition.

BUSHINGS FOR WHEELS AND PULLEYS.

Application of Walter W. Davin filed March 25, 1902, No. 99,943.

Mr. Wallace A. Bartlett for the applicant.

ALLEN, *Commissioner:*

This is a petition from an action of the Examiner objecting to the drawing and claims of the above-entitled application.

The Examiner has required that the drawing be amended to show the grain of the wood running lengthwise. The specification so describes the grain, and this feature is included in the claims. It is therefore an essential feature of the invention that the grain shall run lengthwise.

The Examiner's requirement was right, since the rules require that—

> the drawing must show every feature of the invention covered by the claims. (Rule 50.)

The statement in the fourth section of Rule 51 that—

> imitations of wood or surface graining should not be attempted—

is in no way inconsistent with the requirement of Rule 50 that every feature covered by the claims be illustrated. Rule 51 does not absolutely prohibit the imitation of wood or surface graining where such imitation is necessary or desirable. The language of the rule is that these imitations *should* not be attempted, and the reason for this is found in the difficulty experienced by ordinary draftsmen in making such imitations in a satisfactory manner.

The Examiner has also required that the "opening" should not be made a positive or direct element in the claims. This requirement also is a proper one. An opening is not a tangible thing. It can exist only in connection with some other element. If it is desired to describe this element as provided with an opening, there is no objection to such a course. An opening, however, should not be included as an element by itself.

The petition is denied.

EX PARTE ADAMS.

Decided June 27, 1902.

DIVISION—LAWN-MOWER—CLUTCH.

Division was properly required between claims for a lawn-mower mechanism one of the elements of which is a clutch and the claims for the specific clutch construction. A clutch is a distinct and independent invention from the mechanism in which it is used as an element.

ON petition.

LAWN-MOWERS.

Application of Fred L. Adams filed January 22, 1902, No. 90,836.

Messrs. R. S. & A. B. Lacey for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner requiring division between claims 1 to 5, inclusive, and claims 6 to 14, inclusive, in the above-entitled application.

Claims 1 to 5, inclusive, cover a lawn-mower mechanism one of the elements of which is a clutch. Claims 6 to 14, inclusive, cover the specific clutch construction. A clutch is a distinct and independent invention from the mechanism in which it is used as an element. It is so recognized by inventors and manufacturers and by this Office in its scheme of classification.

Though claims 6 to 14, inclusive, begin with the phrase "In a rotary cutter," the particular clutch construction which is claimed therein is a separate subject-matter of invention from a cutter and is capable of separate use. It is immaterial as far as the clutch mechanism is concerned whether the shaft on which it is mounted carries a cutter or some other element.

Division was properly required, and the petition is denied.

LOCKWOOD v. SCHMIDT.

Decided June 28, 1902.

PRELIMINARY STATEMENT—AMENDMENT OF.

Where testimony has been taken by both parties, a motion for leave to amend a preliminary statement by changing the date of reduction to practice will not be granted where there is no showing that the utmost diligence in preparing the original statement had been used and when it does not appear that a mistake has been made in alleging the date of reduction to practice. (*McDermott* v. *Hildreth*, 98 O. G., 1282.)

APPEAL on motion.

DROVER'S WHIP.

Application of Charles R. Lockwood filed August 21, 1901, No. 72,813. Application of August J. Schmidt filed May 26, 1900, No. 18,035.

Messrs. Chamberlin & Wilkinson for Lockwood.

Messrs. Parker & Carter for Schmidt.

ALLEN, *Commissioner:*

This is an appeal by Schmidt from a decision of the Examiner of Interferences denying his motion to amend his preliminary statement by changing the date of his reduction to practice from March 1 to February 13, 1900.

Testimony has been taken by both parties and the case came before the Examiner of Interferences for final hearing May 27, 1900. At the hearing the motion now under consideration was filed by Schmidt.

The only showing in support of the motion is contained in a statement by Schmidt to the effect that—

> * * * the physical acts constituting the reduction to practice were performed in part by the said Charles R. Lockwood, as is shown by the record herein; that August J. Schmidt, at the time when he made his preliminary statement, was not able to fix the exact date of these acts and other associated acts which constituted such reduction to practice, but believed them to be about March 1st, 1900; that the testimony given by said Lockwood disclosed the fact that he, the said Lockwood, believed such acts to have been performed about the 13th of February, 1900.

In the statement quoted there is no showing that Schmidt used the utmost diligence in preparing his original statement; nor is it apparent that any mistake has been made in the date of the alleged reduction to practice. The Examiner of Interferences, therefore, properly denied the motion. As was said in *McDermott* v. *Hildreth*, (98 O. G., 1282:)

> If, however, the case has so far advanced that testimony has been taken, each party relying on the other's statement for the dates which must be overcome, an amendment to set back these dates is open to suspicion and will be received only upon a clear showing of mistake, and, further than this, the moving party must be free from negligence and must show the utmost diligence in seeking to correct this mistake. (*Henderson* v. *Noakes*, 99 O. G., 1431.)

The decision of the Examiner of Interferences is affirmed.

EX PARTE HOEGH.

Decided June 28, 1902.

1. AMENDMENT—NEW MATTER—NEW SPECIES OF INVENTION.

Where an application as filed discloses several specific forms of the same generic invention, *Held* that an amendment can not properly be made disclosing another specific form although it embodies the generic invention.

2. SAME—SAME—DISCLOSURE OF BEST FORM OF INVENTION.

The requirement of the statute that an applicant disclose the best mode of applying his invention does not warrant an amendment to an application disclosing a different form of the invention from that contained in the application as originally filed.

3. CLAIMS—MULTIPLICATION OF.

While all reasonable latitude should be allowed an applicant in presenting claims in order that the patent when issued may afford him full protection, an unreasonable and unnecessary multiplication of the claims will not be permitted.

ON petition.

TOOL-SUPPORT.

Application of Hans J. Hoegh filed July 31, 1901, No. 70,335.

Mr. Sidney I. Prescott for the applicant.

ALLEN, *Commissioner:*

This is a petition that the Examiner in charge of the above-entitled application—

* * * be advised that the claims involved do not involve new matter, that they are not meaningless, not indefinite, not unfounded in the disclosure, not substantially alike, not functional, that they do not obscure the invention, that they are not needlessly multiplied, that the new drawing does not show new matter, that it should be allowed to remain in the application; and directed to proceed accordingly.

This application as amended contains fifty-three claims. Of this number claims 46, 47, 48, 52, and 53 stand rejected on references and claims 49, 50, and 51 stand rejected on the ground that they include matter not disclosed in the original application when filed.

These matters relate to the merits, and appeal lies in the first instance to the Examiners-in-Chief. (Rule 133.)

So much of the petition as relates to the request that the Examiner "be advised that the claims involved do not involve new matter" and that they are "not unfounded in the disclosure" is therefore dismissed.

The remaining questions raised by the petition relate to objections made to claims 1 to 45, inclusive, and to the substitute drawing and description relating thereto.

The objections made to the substitute drawing and the description relating thereto will first be considered. It is held by the Examiner that the drawing discloses matter not supported by the original disclosure. The records show that the application as originally filed contained two sheets of drawings. It is apparent from a mere comparison of the substitute drawing with those originally filed that the objections to the substitute drawings are well taken.

The original drawings disclosed three specific forms of the same generic invention. The substitute sheet discloses one specific form of the invention totally different from two of the forms originally shown and described, and though similar in some respects to the third form originally disclosed it differs from the said original disclosure in many specific details of construction.

The applicant states in his brief—

that the original specification in this case would support a patent as contended by the Examiner is conceded, but it is believed that a patent issued on such a disclosure would be defective and void, the disclosure not being of the character contemplated by the statutes. * * *

It is believed that it is not sufficient for an applicant to show any means for applying the principle of his invention in order to comply with the requirements of the statutes, but he must disclose the best mode known to him. If for any reason he does not do so in the specification as filed, he must do so by amendment.

In this belief the applicant is in error. It is true that the statute (section 4888) requires that—

in case of a machine, he (the inventor) shall explain the principle thereof, and the best mode in which he has contemplated applying that principle—

but this must be done when the application is filed. It is not permissible for an inventor to file an application and then at some future date file an amendment disclosing what he then considers to be the best mode of applying the general principle of the invention when the same differs in construction from that which he originally described and claimed. There is no warrant in the original application for the specific disclosures in the substitute sheet of drawings and the description relating thereto. The Examiner has properly objected to the new disclosure on the ground that it contains new matter, for the reason that the new disclosure would support specific claims not warranted by the original disclosure.

In cases like the present one, where an applicant is dissatisfied with the original disclosure and desires to take out the patent based upon another disclosure which he considers to be a better mode of applying the principle of the invention, the proper course to pursue is to file a new application. The discrepancy in the original application cannot be cured by an amendment.

The objections to claims 1 to 45, inclusive, will now be considered.

Claims 1, 2, 3, 4, 5, and 6 are vague and indefinite by reason of the phrase "by the action thereof" which occurs in each of these claims. This phrase renders the claims vague and indefinite, because it is not clear as to what element the word "thereof" refers. The objection will be obviated by the cancellation of this phrase from these claims. All the remaining claims are sufficiently definite to comply with the requirements of the statute.

The objection to the claims as to multiplicity is well taken. This invention is a very simple one. It is impossible to draw fifty-three claims on the simple structure which is disclosed without making many duplicates. All reasonable latitude should be allowed an applicant in presenting claims in order that the patent when issued may afford him full protection. In this case, however, the large number of claims presented by the applicant is not only unnecessary, but unreasonable.

Claim 1 covers the combination, with the tool-support, of means for clamping a tool in said support. Claim 2 covers the same combination expressed in different words, in that the "means" for clamping the tool in claim 1 is defined in claim 2 as means for releasing the tool. If a tool is clamped to a support, it follows that if it is to be released from said support it must be unclamped.

Claims 1 and 2 therefore cover by means of different words the same construction, and but one of these claims should be presented. The same holding is made as to each of the groups composed of claims numbered 4, 5, 7, 8, 10, and 11; 3, 6, 9, and 12; 13 to 18, inclusive; 19 to 24, inclusive; 25 to 33, inclusive; 34 to 36, inclusive; 37 to 39, inclusive, and 40 to 45, inclusive.

The petition from the action of the Examiner that the claims are meaningless, indefinite, functional, and obscure is granted to the extent indicated.

The petition from his action that the claims are "needlessly multiplied" is denied.

Patents Nos. 704,492 to 705,009.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 3. TUESDAY, JULY 15, 1902. PRICE—$5 per year.

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Designs	1	No. 35,978.
Trade-Marks	45	No. 28,594 to No. 28,638, inclusive.
Labels	17	No. 9,296 to No. 9,312, inclusive.
Prints	4	No. 582 to No. 585, inclusive.
Reissues	6	No. 12,009 to No. 12,014, inclusive.
Total issue	591	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama			Nebraska	4	
Alaska Territory			Nevada		
Arizona Territory	2		New Hampshire	1	1
Arkansas	3		New Jersey	17	3
California	20	2	New Mexico Territ'y	2	
Colorado	9		New York	65	16
Connecticut	10	3	North Carolina	1	
Delaware	1	1	North Dakota	1	
District of Columbia	5		Ohio	43	
Florida	1		Oklahoma Territ'y	3	
Georgia	3		Oregon	4	
Hawaii Territory			Pennsylvania	51	8
Idaho	2		Rhode Island	1	
Illinois	43	5	South Carolina		1
Indian Territory			South Dakota	1	
Indiana	11	1	Tennessee	3	1
Iowa	11	1	Texas	8	2
Kansas	7	1	Utah	1	
Kentucky	3	1	Vermont		
Louisiana			Virginia	5	
Maine	8	1	Washington	4	
Maryland	8	1	West Virginia	2	
Massachusetts	23	3	Wisconsin	14	
Michigan	19	4	U. S. Navy		
Minnesota	4	2	U. S. Rev. Marine		
Mississippi	1		Total to citizens of the United States	438	60
Missouri	10	1			
Montana	1				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Austria-Hungary	3		Netherlands		
Barbadoes			Newfoundland		
Belgium	2		New South Wales	1	
Bermuda			New Zealand	1	
Brazil			Norway	2	
Canada	9	1	Peru		
Cape Colony			Portugal		
Chile			Roumania		
China	1		Russia		
Cocos Island			Scotland	1	
Colombia			South African Republic		
Cuba			South Australia		
Denmark	1		Spain		
Egypt			Sweden	1	
England	19	1	Switzerland	3	
France	11	4	Uruguay		
Germany	24		Victoria		
Gautemala			Western Australia		
India					
Ireland			Total to citizens of foreign countries	83	6
Italy	2				
Mexico	2				

Changes in Classification.

(ORDER No. 1,488.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 7, 1902.

The following changes in classification are directed:

In Division IX, class 137, Water Distribution, the subclasses in the group of Filters are abolished.

In Division VI, class 23, Chemicals, subclass 26, Purifying water, is abolished.

In Division XXXI, class 210, Water Purification, is established, with the following subclasses:

Filters—
2. Beer.
3. Cistern-cleaners.
4. Cistern-supply.
5. Decanters.
6. Faucet.
7. Filtering-faucets.
8. Granular-bed.
9. Materials.
10. Oil.

Filters—
11. Porous-wall.
12. Portable.
13. Pressure.
14. Rotary-bed.
15. Service-pipe.
16. Strainers.
17. Submerged.
18. Systems.
1. Miscellaneous.

F. I. ALLEN,
Commissioner.

Inks.

(ORDER No. 37.)

All applications, communications, and other instruments in writing or print, which should properly constitute a permanent record in this Office, must be prepared with a substantially permanent ink. Aniline and other perishable inks will not be accepted.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business July 8, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	In arrears—Under one month.			
217	XXXIII. *Designs, †Trade-Marks. ‡Labels and Prints, Optics, and Photography.	June 19	June 19	91
106	II. Farm Products, etc., Lubricators, Presses, etc.	June 18	June 17	210
263	X. Carriages and Wagons	June 16	June 26	71
246	I. Tillage, etc., and Fences	June 9	June 16	273
30	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	June 9	June 10	291
	Between one and two months.			
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	June 7	June 9	256
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	June 6	June 18	203
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	June 5	June 13	340
261	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	June 4	June 23	163
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 2	June 11	215
215	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	June 2	June 11	246
102	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 2	June 6	255
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	May 29	June 21	200
129	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	May 29	June 19	221
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	May 28	June 13	213
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	May 26	June 23	266
233	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	May 24	June 13	200
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	May 24	June 10	339
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	May 24	June 9	241
57	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	May 22	June 13	166
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	May 22	June 11	318
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	May 22	June 11	300
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	May 21	June 11	521
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	May 17	June 19	283
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	May 15	May 28	276
128	XXIX. Wood-Working Machines, Coopering and Roofing.	May 8	June 6	259
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	May 8	May 3	440

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	Between two and three months.			
220	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	May 7	May 14	327
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	May 3	May 21	458
93	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 1	May 1	465
248	XVIII. Steam-Engineering, etc	Apr. 24	May 8	449
148	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	Apr. 18	May 12	493
213	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	Apr. 14	Apr. 14	560
109	XXII. Fire-Arms, Ordnance, Navigation.	Apr. 12	May 28	235
91	XVI. Telegraphy and Telephony.	Apr. 9	Apr. 9	359
	Between three and four months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 13	May 19	464
222	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, Signaling.	.....	.....	....
122	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	.....	.....	....

Total number of applications awaiting action..... 10,736

Under one month.			
*Designs	June 25	June 28	71
†Trade-Marks	June 21	June 23	177
‡Labels and Prints	June 28	June 30	44

Photographic Copies of Drawings.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 1, 1902.

The Patent Office is now prepared to furnish black line on white ground copies of any unbound drawing, foreign or domestic, which may be in its possession, instead of the blue-prints heretofore furnished. Only the 7x11 (patent) size and the full or 10x15 size prints will hereafter be furnished, at 15 and 25 cents per sheet, respectively.

Copies of drawings of pending, abandoned, forfeited, or informal cases and of caveats may be had in either of the above-named sizes except when they are to be certified, in which case they must be the 10x15 size.

Copies of United States or foreign patent drawings will be made only in the 10x15 size.

When ordering copies of foreign patent drawings, either the serial number of the applications in which they were cited as references or the class and subclass where they may be found must be given. The title of the invention or the number of the division will not be sufficient. Bound volumes cannot be used for making prints. Failure to give the fullest data whereby the mounted drawing may be found will result in delay and unnecessary correspondence.

The work will be much facilitated if a separate order be made for each drawing. The Office will furnish, gratuitously, blanks for this purpose on request.

As a result of abolishing the small (5x8) size the requirement that duplicate prints must be ordered in certain cases will no longer be enforced. The requirement that less than all the sheets of a case will not be printed unless there is already a full set in the file will not be insisted upon; but applicants or attorneys are strongly urged to file a set of prints or order them to be made by the Office at the time of filing an application. Such procedure will save delay later if correction of the drawing is desired or required.

F. I. ALLEN,
Commissioner.

PATENTS

GRANTED JULY 15, 1902.

704,492. **DINNER PAIL AND HEATER.** Joseph H. Ahlet, Glennie, Mich. Filed Sept. 28, 1901. Serial No. 76,205. (No model.)

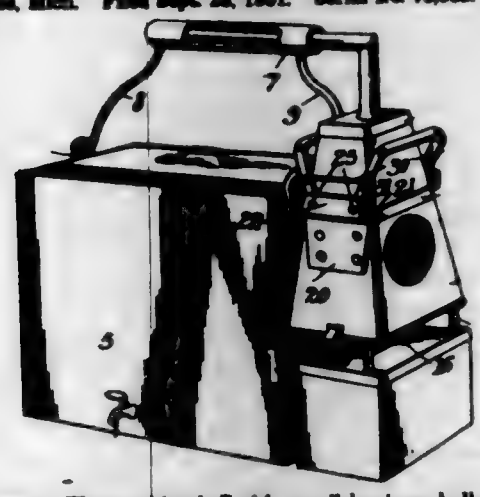

Claim.—1. The combination with a pail having a hollow handle, of an exteriorly-connected heater provided with a heat-pipe extending into said pail-handle and constructed and arranged to conduct heat from the heater thereto.

2. The combination with a pail having a hollow handle, of a heater removably connected to the pail and having a chimney and a removably-attached pipe leading through the handle to conduct heat thereto, said heater having a supporting-frame to support the pail when the heater is detached from the pail.

3. The combination with a pail having a pivoted bail including a hollow handle, of a heater removably connected to the exterior of the pail and including a chimney having a removable pipe extension leading to the handle to conduct heat thereto, and means connected with the pail for holding the bail against movement when the pipe is engaged with the handle.

4. The combination with a pail of a heater having a chimney provided with angular supporting-plates, a frame mounted in said plates and adapted to swing into open horizontal supporting position for receiving said pail, and means for detachably connecting said pail and heater.

704,498. **SEALING ATTACHMENT.** Charles C. Armstrong, Columbus, Ohio. Filed Mar. 5, 1901. Serial No. 49,813. (No model.)

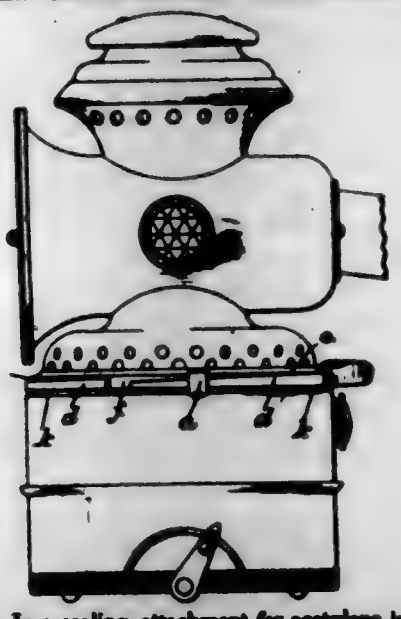

Claim.—1. In a sealing attachment for acetylene lamps, the combination with the gas-generator, of the gasket composed of suitable material; a cover or lid the flange or rim of which rests firmly but detachably on said gasket; a chimney-base, the head of which fits on the rim of said cover; a locking-ring provided with flanges; said flanges being adapted to operate in conjunction with suitably-arranged hooked arms attached to said gas-generator, so as to tighten or loosen the parts, thereby opening or hermetically closing said joint, substantially as described.

2. The combination in an acetylene-gas lamp with the generator, said generator being provided with means for securely connecting the parts, and formed with an annular beading; of a suitable gasket or packing; a cover or lid provided with a rim; a chimney the base of which is provided with a head adapted to rest on said rim; a locking-ring adapted to rest over and on the head of said chimney, said locking-ring being provided with flanges, and recesses, so that said ring is adapted in conjunction with the securing-arms of said generator, to operate in opening or hermetically closing or opening the joint of the gas-generator, substantially as described.

704,494. **DISH-WASHING MACHINE.** Cephas W. Arnot, Ypsilanti, Mich. Filed Apr. 20, 1901. Renewed May 23, 1902. Serial No. 108,681. (No model.)

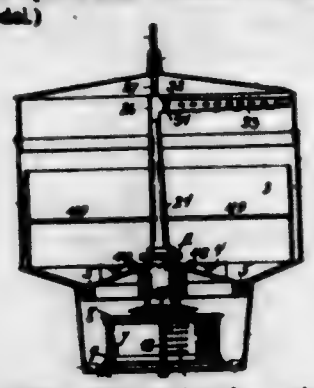

Claim.—1. In a dish-washing device, the combination of a water-receptacle, a dish-containing tray, a traveling pipe, or nozzle, adapted to eject water upon the dishes in the tray and means connected with and operated by a movement of said pipe, or nozzle, for forcing water therethrough upon the dishes.

2. In a dish-washing apparatus, the combination of a water-receptacle, a tray for containing dishes, a rotary stand-pipe having a horizontal nozzle-arm and means for forcing the water through said stand-pipe and nozzle-arm operated by a rotation of said stand-pipe, whereby the water is distributed over the dishes as the stand-pipe is rotated.

3. In a dish-washing machine, the combination of a water-receptacle, a dish-containing tray located therein above the water-line, a pump within the water-receptacle, a traveling perforated nozzle, adapted to distribute the water over the dishes in said tray and means connected with and actuated by a movement of said nozzle for operating said pump to force the water through said nozzle onto the dishes.

4. In a dish-washing machine, the combination of a water-receptacle, a pump in the bottom thereof, a stand-pipe extending from said pump and passing vertically through the center of said receptacle, a removable tray surrounding said stand-pipe within said receptacle, said stand-pipe being rotary and connected with said pump for the operation thereof, a crank for rotating said stand-pipe to force the water from the pump therethrough and a perforated nozzle-arm projecting from said stand-pipe adapted to distribute the water upon the dishes in the tray.

5. In a dish-washing machine, the combination of a suitable receptacle having a water-chamber in the bottom thereof and adapted to contain dishes above said water-chamber, a rotary stand-pipe having a horizontal nozzle-arm adapted to sweep the interior of the receptacle above the dishes, a pump connected with said stand-pipe whereby, by a rotation of said pipe the water is forced through the stand-pipe and nozzle-arm.

6. In a dish-washing machine, the combination of a dish-receptacle a water-chamber, a suitable nozzle for spraying the dishes within said receptacle, a pump adapted to force water through said nozzle, said pump comprising a cylinder, an annular casing located eccentrically therein, int-

eral blades projecting from said casing and held yieldingly in terminal contact with the wall of the cylinder and means for rotating said casing within the pump-cylinder to drive the water therefrom into said nozzle.

7. In a dish-washing machine, the combination of a dish-receptacle, a water-chamber, a pump located in said water-chamber, a hollow shaft, or stand-pipe connected with the pump-cylinder and adapted to receive the water therefrom as said shaft, or stand-pipe, is rotated to drive the pump, said pump comprising a cylinder with a detachable top and bottom, a circular rotary casing located eccentrically within the cylinder and adapted to be attached to said stand-pipe, said casing having laterally-projecting blades adapted to sweep the pump-chamber and hold in terminal contact with the wall of the cylinder and a water-chamber in the top of the cylinder communicating with said stand-pipe and the cylinder of the pump.

8. In a device for the purpose set forth, the combination of a suitable receptacle adapted to contain dishes, a pump, a rotary stand-pipe and nozzle-arm connected with said pump, said stand-pipe being removably attached to the pump and having a detachable coupling at its upper end, the nozzle-arm being detachably attached to said coupling and having a removable plug in the outer end thereof.

9. In a device for the purpose set forth, the combination with a water-pipe or spraying apparatus, of a pump connected therewith, said pump comprising a cylinder having a removable top and bottom and provided with means for detachably clamping said parts together, a rotary case within the pump-cylinder having blades, or paddles, adapted to work laterally therethrough and held by spring-pressure in terminal contact with the wall of the cylinder.

10. In a device for the purpose set forth, the combination with a water-pipe, or sprayer, a pump communicating with said pipe, said pump comprising a cylinder having a closed top and bottom, a rotary case within the pump-cylinder, laterally-projecting blades within said case whose inner ends overlap, a spring interposed between the overlapping ends of said blades whose ends engage the opposed blade ends so as to lock said blades together to cause them to move in unison and hold their outer ends in terminal contact with the wall of the cylinder.

704,495. ELECTRIC-ARC LAMP. ARTHUR M. ARTER, Hammersmith, England. Filed Jan. 12, 1899. Serial No. 702,009. (No model.)

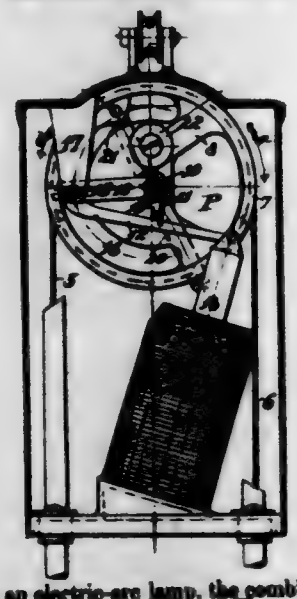

Claim.—1. In an electric-arc lamp, the combination of two carbon-holders, a wheel, a horizontal axle on which the said wheel is mounted, means for supporting the said axle elastically, a fixed support on the same side of the said axle as the said two carbon-holders, a link connecting the said axle to the said fixed support, means for connecting the said carbon-holders to the said wheel so that the rotation of the latter will move the said carbon-holders in opposite directions, a mechanical device adapted to decrease the distance between the said carbon-holders, and an electromagnetic device constructed and arranged to counterbalance, to overcome, and to fall short of the action of the said mechanical device in accordance respectively with the passage through the carbons of normal, more than normal, and less than normal current.

2. In an electric-arc lamp, the combination of two carbon-holders, a wheel having a horizontal axle carried by a yielding support, flexible connections passing from the said carbon-holders to opposite sides of and secured to the said wheel, a solenoid whose core is connected by a flexible connector to the same side of the said wheel as that to which the lower carbon holder is connected, and means for automatically moving the said carbon-holders toward each other on decrease of current passing through the carbons carried by the said carbon-holders.

3. In an electric-arc lamp, the combination of two carbon-holders, a fixed support, an arm pivoted to the said support, an axle secured to the outer end of the said arm and supported by spring force or gravity, a wheel mounted on the said axle, means for connecting the said carbon-holders to the said wheel so that the rotation of the latter will move them in opposite directions, a boss or portion of smaller diameter secured to the said wheel, a lever having a fixed pivot, a solenoid whose core is connected to the outer end of the said lever, a flexible connector secured to an intermediate point of the said lever and coiled around and attached to the said boss so that a pull thereon will tend to lower the said axle and to rotate the said wheel in the direction to move the said carbon-holders away from each other, and means for automatically moving the said carbon-holders toward each other on decrease of the current passing through the carbons carried by the said carbon-holders.

4. In an electric-arc lamp, the combination of two carbon-holders, a wheel having a horizontal axle, means for connecting the said carbon-holders to the said wheel so that rotation of the latter will move the said carbon-holders in opposite directions, a boss or portion of smaller diameter fixed to the said wheel, a solenoid whose core is connected to the said boss or portion of smaller diameter and is adapted to rotate the said wheel so as to move the carbon-holders away from each other on an increase of the current passing through the carbons carried by the said holders, and means for automatically moving the said carbon-holders toward each other on a decrease of the said current.

5. In an electric-arc lamp, the combination of two carbon-holders, a fixed support, an arm pivoted to said support, an axle secured to the outer end of the said arm, a wheel mounted on the said axle, means for connecting the said carbon-holders to the said wheel so that the rotation of the latter will move them in opposite directions, means for automatically and electrically lowering the said wheel and rotating it so as to cause the said carbon-holders to move away from each other on increase of the current passing through the carbons carried by the said holders, means for automatically moving the said carbon-holders toward each other on decrease of the current passing through the carbons carried by the said carbon-holders, and a spring supporting the said axle and arranged in an inclined position so as to give a more nearly uniform turning moment about the axis of the pivot of the said arm than would be the case with a vertical spring.

6. Apparatus for moving two bodies in opposite directions in accordance with divergences of an electrical current from the normal, comprising a wheel, a horizontal axle on which the said wheel is mounted, means for supporting the said axle elastically, a fixed support on the same side of the said axle as the said two bodies, a link connecting the said axle to the said fixed support, means for connecting the said two bodies to the said wheel so that rotation of the latter will move the bodies in opposite directions, a mechanical device adapted to move the said bodies in certain directions, and an electromagnetic device adapted to counterbalance, to overcome, and to fall short of the action of the said mechanical device in accordance respectively with the passage through the said electromagnetic device of normal current, more than normal current, and less than normal current.

7. Apparatus for moving two bodies in opposite directions in accordance with divergences of an electrical current from the normal, comprising a wheel, a horizontal axle on which the said wheel is mounted, means for supporting the said axle elastically, a fixed support on the same side of the said axle as the said two bodies, a link connecting the said axle to the said fixed support, means for connecting the said two bodies to the said wheel so that rotation of the latter will move the said bodies in opposite directions, a mechanical device adapted to move the said bodies in certain directions, and an electromagnetic device adapted to counterbalance, to overcome, and to fall short of the action of the said mechanical device in accordance respectively with the passage through the said electromagnetic device of normal current, more than normal current, and less than normal current, the said electromagnetic device including a lever having a fixed fulcrum, a connection from an intermediate point of the said lever to the said wheel, and a solenoid having a core connected to the outer end of the said lever.

8. An electric-arc lamp, comprising a rotatable body, carbons operatively connected with the said rotatable body to move in opposite directions when the said body is rotated, an electrically-controlled actuating means operatively connected with and adapted to rotate the said body in one direction, and mechanical means operatively connected with and adapted to rotate the said body in the opposite direction.

9. An electric-arc lamp comprising an elastically-supported rotatable body, carbons operatively connected with the said body and adapted to be moved thereby in opposite directions when the body is rotated, an electrically-controlled actuating means acting against the elastic support of the said body and operatively connected with the body to rotate it in one direction, and a mechanical means operatively connected with the said body and adapted to rotate it in the opposite direction, said mechanical means also acting against the said elastic support of the rotatable body.

10. An electric-arc lamp comprising an elastically-supported frame, a rotatable body journaled therein, an electrically-controlled actuating means operatively connected with the said rotatable body and adapted to rotate the same in one direction for separating the carbons, and a mechanically-controlled means operatively connected with the carbons and with the rotatable body and adapted to move the carbons and the rotatable body in opposition to the said electrically-controlled actuating means.

11. An electric-arc lamp comprising a rotatable body, two carbons, separate connections between the carbons at opposite sides of the axis of the said rotatable body, mechanical means for rotating the body in one direction for causing the carbons to approach, electrical means operatively connected with the rotatable body and adapted to rotate it in opposition to the said mechanical means, the rotatable body having a weight so disposed thereon as to act in opposition to the said mechanical means during the first portion of the consumption of the carbons, and acting in unison therewith during the consumption of the remaining portion of the carbons.

12. An electric-arc lamp comprising a rotatable body, carbons operatively connected with the said body at opposite sides of its axis, the connections extending thereabout in opposite directions, mechanical means operatively connected with the rotatable body for causing the said carbons to approach each other, electrical means operatively connected with the rotatable body to cause it to rotate in opposition to the mechanically-operating means, the said rotatable-body-carrying means compensating for the consumption of the said carbons.

704,496. AUTOMATIC CIRCUIT-BREAKER. BRIGHAM BALLANTYNE, Sumpter, Oreg. Filed Aug. 8, 1900. Serial No. 26,271. (No model.)

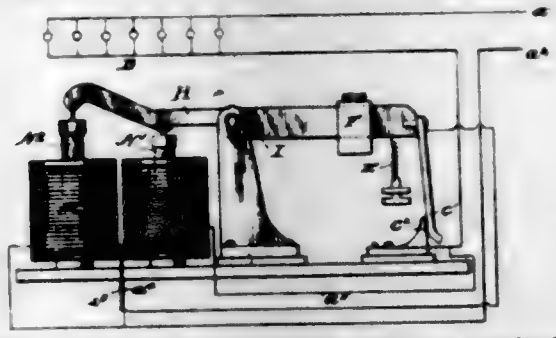

Claim.—1. In an automatic circuit-breaker, the combination with the conductors a' and a^2, of a stationary contact c^2, connected with said conductor a', a pivoted switch-lever having a contact c' normally in engagement with said stationary contact, a solenoid of low resistance electrically connected with said movable contact and with the conductor a^2, a core for said solenoid connected directly to said lever for positively operating the same to separate the contacts on the presence of an excess of current in the solenoid-coils, an independent solenoid of high resistance, a core therefor connected directly to said lever, said high-resistance solenoid-coil being in closed circuit with said conductors a' and a^2, substantially as described.

2. In combination with the main conductors a' and a^2, a stationary contact c^2 connected to said conductor a', a centrally-pivoted switch-lever carrying a contact c' on its front end, means whereby said lever is held with the front end normally depressed, a pair of solenoids arranged beneath the rear end of the lever, one of said solenoids being of low resistance and the other of high resistance, electrical connections from said low-resistance coil to the movable contact and to conductor a^2, electrical connections from the high-resistance solenoid to the conductors a' and a^2, and a core in each solenoid directly connected with the rear portion of the switch-lever, substantially as described.

704,497. MIRROR-ADJUSTER. ADAM J. BAKER, Norfolk, Va. Filed Mar. 6, 1902. Serial No. 96,912. (No model.)

Claim.—1. The combination of a pair of uprights, a mirror-frame pivotally mounted between the same, trunnion-plates secured to the mirror-frame, trunnion-brackets on the uprights, one of which brackets is slotted, a ratchet-wheel on one of the trunnions arranged in the slotted portion above the bracket, a pawl on one of the uprights engaging the ratchet-wheel, and a pawl-operating device operable from the front of the upright, substantially as described.

2. The combination of a pair of supporting-uprights, a mirror-frame pivotally mounted between the same, trunnions secured to the mirror-frame, trunnion-brackets on the uprights, a ratchet-wheel adjustable on one of the trunnions, means for fixing the adjustment of the ratchet-wheel, a pawl on one of the uprights engaging the ratchet-wheel, and a pawl-operating device on the same upright, substantially as described.

3. The combination of a supporting-frame comprising a pair of uprights, a mirror-frame pivotally mounted between the same, trunnions on the mirror-frame, trunnion-brackets on the uprights, one of said brackets being slotted, a ratchet-wheel laterally adjustable on one trunnion and received in the slotted portion of the bracket, means for setting the ratchet-wheel, a pawl engaging the ratchet-wheel, and a pawl-shifting device operable from the front of the supporting-frame, substantially as described.

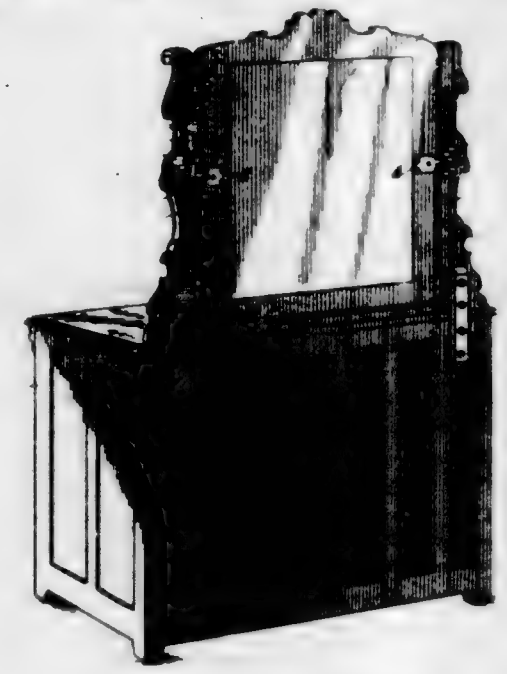

704,498. FOOT-REST AND PEDAL EXTENSION FOR PIANOS. ALONZA M. BATES, Chicago, Ill., assignor of one-half to E. A. Bates, Chicago, Ill. Filed Mar. 28, 1901. Serial No. 52,899. (No model.)

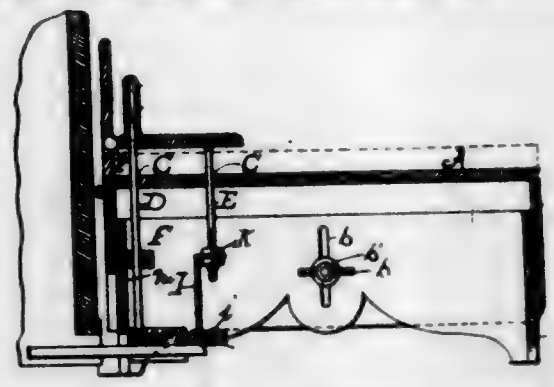

Claim.—1. In combination with a piano and the pedals thereof, a foot rest or stool, means for adjusting the upper portion thereof to varying heights, extension-pedals, pedal-engaging feet, rods supported by said stool to connect each of said feet to the extension-pedals, and means for adjusting the length of said rods, substantially as shown and described.

2. In a foot stool or rest for pianos having a base and top relatively adjustable to each other and adjustable pedal-moving mechanism mounted thereon, an opening in the rear of the stool-base and adjustable stops mounted on the base adapted to secure the same against side movement by contact with the piano-pedals, substantially as set forth.

3. In an adjustable foot rest or stool for pianos having pedal-engaging feet, and adjustable rods connected thereto and mounted on the foot-stool, an extension-pedal having a hollow toe-guard adapted to receive the upward extension of one of the said rods, substantially as shown and described.

4. A foot rest or stool for pianos comprising a top and base and means for giving relative vertical adjustment thereto, a pedal-engaging block, an extension-pedal with a hollow toe-guard above the stool and rods mounted on the stool to connect the said block to the said pedal, one of said rods being provided with an adjustable connection to the said block, and the other of said rods socketed at its upper end within the said hollow toe-guard, substantially as shown and described.

5. An adjustable foot-stool for pianos having a pedal-engaging block and an extension-pedal, means for connecting said block and pedal comprising a clip attached to the block, a rod attached to the extension-pedal, an internally-threaded nut having an externally-threaded nipple screwed on said rod, and a nut screwed on said nipple adapted to clamp the clip when the nipple is passed therethrough, substantially as shown and described.

704,499. TORPEDO-SETTING DEVICE. PETER BEATTIE, Lente Island, Conn. Filed Feb. 8, 1902. Serial No. 93,207. (No model.)

CLAIMS.—1. The combination with a torpedo-carrier; of one or more torpedoes connected therewith; means for intermittently rotating said carrier, said means being controlled by the movement of a car-wheel over the rail; and means whereby the said torpedoes will move in a path at substantially a right angle to said torpedo-carrier during the rotation thereof.

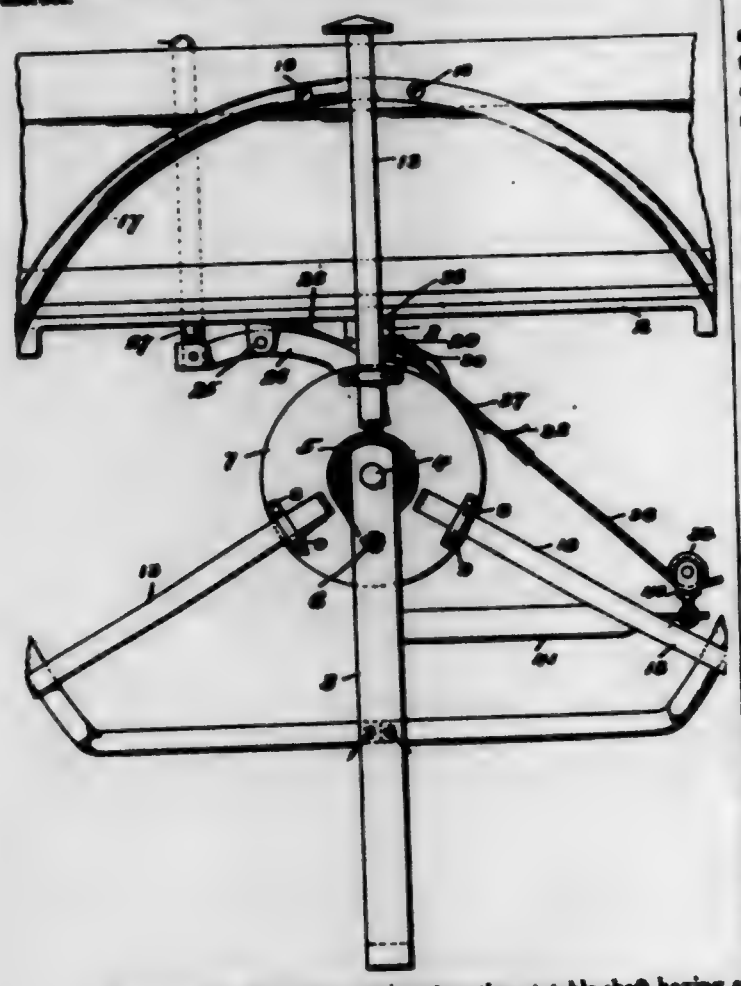

2. The combination with an intermittently-rotatable shaft having a plurality of stop-shoulders connected therewith; a pawl member arranged to engage said stop-shoulders; means for disengaging said pawl member from said stop-shoulders, said means being arranged so as to be actuated by the car-wheel; and a torpedo-carrier connected with said shaft.

3. The combination with a torpedo-carrier having torpedoes secured thereto; of a shaft having stop-shoulders connected therewith; a pawl member adapted to engage the said stop-shoulders and hold the said shaft against movement, the stop-shoulders being so arranged relatively to said torpedoes that when engaged by said pawl member a torpedo will be upon the car-rail; and a pawl-releasing member connected at one end with said pawl member, the other end of which projects into the path of the car-wheel and is actuated thereby.

4. The combination with a torpedo-carrier having torpedoes secured thereto; of a shaft having stop-shoulders connected therewith; a pawl member adapted to engage said stop-shoulders and hold the said shaft against movement, said stop-shoulders being so arranged relatively to said torpedoes that when engaged by said pawl member a torpedo will be upon the car-rail; mechanism for disengaging said pawl member from said stop-shoulders, said mechanism comprising a part connected with said pawl member and projecting into the path of movement of the car-wheel; and means for rotating said shaft when said pawl member is disengaged.

5. The combination with the torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member movable in and out of the path of said stop-shoulders for limiting the movement of said shaft in one direction; a dog adapted to engage said stop-shoulders; a connection between said dog and the semaphore whereby the movement of said semaphore will impart movement to said torpedo-carrier.

6. The combination with the torpedo-carrier; of a shaft having stop-shoulders connected therewith; spring mechanism for rotating said shaft, a pawl member movable in and out of the path of said stop-shoulders, and adapted to hold said shaft against movement in one direction; a dog adapted to engage said stop-shoulders and having connection with the semaphore whereby the shaft will be rotated against the action of said spring mechanism and the stop-shoulder with which said pawl member is engaged will be moved away from said pawl member by the movement of said semaphore in one direction.

7. The combination with the torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member movable in and out of the path of said stop-shoulders; a dog adapted to engage said stop-shoulders and having connection with the semaphore whereby the stop-shoulder with which said pawl member is engaged will be moved away from said pawl member by the movement of said semaphore in one direction; and means for rotating said shaft whereby the said stop-shoulder will again engage said pawl member when the semaphore is moved in the opposite direction.

8. The combination with the torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member movable in and out of the path of said stop-shoulders; a dog adapted to engage said stop-shoulder, said pawl member and dog being so arranged that both engage the same stop-shoulder at one and the same time.

9. The combination with the torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member movable in and out of the path of said stop-shoulders; a dog adapted to engage said stop-shoulders, said pawl member and dog being so arranged that both engage the same stop-shoulder at one and the same time; and means for disengaging said pawl member and dog from said stop-shoulders.

10. The combination with a torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member having a projecting lip thereon, movable in and out of the path of said stop-shoulders; a dog adapted to engage said stop-shoulder and while so engaged to rest upon said projecting lip; and means for disengaging said pawl member and dog from said stop-shoulders.

11. The combination with the torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member movable in and out of the path of said stop-shoulders; a dog-carrier movable about said shaft; a dog pivotally mounted on said dog-carrier and adapted to engage the said stop-shoulders; and a connection between said dog-carrier and the semaphore for moving said dog-carrier and dog in one direction.

12. The combination with a torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member movable in and out of the path of said stop-shoulders; a dog adapted to engage said stop-shoulder; means for disengaging said pawl member and dog from said stop-shoulders; and means for rigidly holding said dog out of engagement with said stop-shoulders.

13. The combination with a torpedo-carrier; of a shaft having stop-shoulders connected therewith; a pawl member movable in and out of the path of said stop-shoulders; a dog adapted to engage said stop-shoulders; means for disengaging said pawl member and dog from said stop-shoulders; and a spring-clip for engaging and retaining said dog after the same has been disengaged from said stop-shoulder.

14. The combination with the shaft; of a ratchet-disk fixed thereto; a pawl member; a trip-rod for actuating said pawl member; a dog-carrier rotatably mounted upon said shaft; a dog pivotally secured to said dog-carrier and normally bearing against said ratchet-disk; a torpedo-carrier fixed to said shaft; and means for intermittently rotating said shaft.

15. The combination with the shaft; of a ratchet-disk fixed thereto; a pawl member; a trip-rod for actuating said pawl member; a dog-carrier rotatably mounted upon said shaft; a dog pivotally secured to said dog-carrier and normally bearing against said ratchet-disk; a torpedo-carrier fixed to said shaft; a spring connected with said shaft for rotating the same; and a spring-clip to retain and hold said dog when disengaged from said ratchet-disk.

16. The combination with a spring-rotated shaft; of a torpedo-carrier having a plurality of torpedoes flexibly connected therewith; and a guide-bar for imparting a movement to said torpedoes during their rotation at a right angle to the path of movement of said carrier.

17. The combination with the shaft; of a ratchet-disk fixed thereto; a pawl member; a trip-rod for actuating said pawl member; a dog-carrier rotatably mounted upon said shaft; a dog pivotally secured to said dog-carrier and normally bearing against said ratchet-disk; a torpedo-carrier fixed to said shaft; means for intermittently rotating said shaft; and a guide-bar concentric with said shaft for moving said torpedoes laterally during their rotation.

18. The combination with the torpedo-disk having a recess in the face thereof; of a torpedo spring-bar, one end of which is angularly bent and inserted within said recess; and means for yieldingly securing said spring-bar laterally, said means comprising a plate, a rod passing therethrough and a spring for drawing said rod in one direction.

19. The combination with the shaft; of a ratchet-disk fixed thereon and having fixed stops upon the side thereof; a yielding stop-arm normally in the path of said stops; and movable wedge means for disengaging said stop-arms from said stops.

20. The combination with the shaft; of the ratchet-disk having fixed stops upon the side thereof; rigid spring-arms in the path of said stops; a rotatable member which engages said spring-arms and disengages the same from said stops; and means for rotating said rotatable member.

21. The combination with the shaft; of the ratchet-disk having fixed stops upon the side thereof; a rigid spring-arm in the path of said stops; a dog-carrier having a dog connected therewith which engages the teeth

of said ratchet-disk, said carrier having a beveled part thereon which engages said spring-arm and moves the same away from said stops.

22. The combination with the shaft; of a ratchet-disk fixed thereon and having a circular recess in either side thereof with fixed stops therein: rigid spring-arms having spring-fingers which enter said recesses and engage said stops; and a rotatable member having a beveled face thereon which engages said spring-fingers during its rotation and forces the same out of said recesses and out of the path of said stops.

23. The combination with a car-rail; of a bracket secured to the under side thereof; a shaft journaled in said bracket and at substantially a right angle to said car-rail; a spring for actuating said shaft; a ratchet-disk and coöperating pawl for limiting the movement of said shaft; a torpedo-carrier fixed to said shaft having flexible torpedo-bars connected therewith; and a guide-bar for determining the lateral movement of said torpedo-bars.

704,500. RIDING-HARROW. LEWIS P. BLOOD, Runnells, Iowa. Filed Sept. 28, 1901. Serial No. 76,691. (No model.)

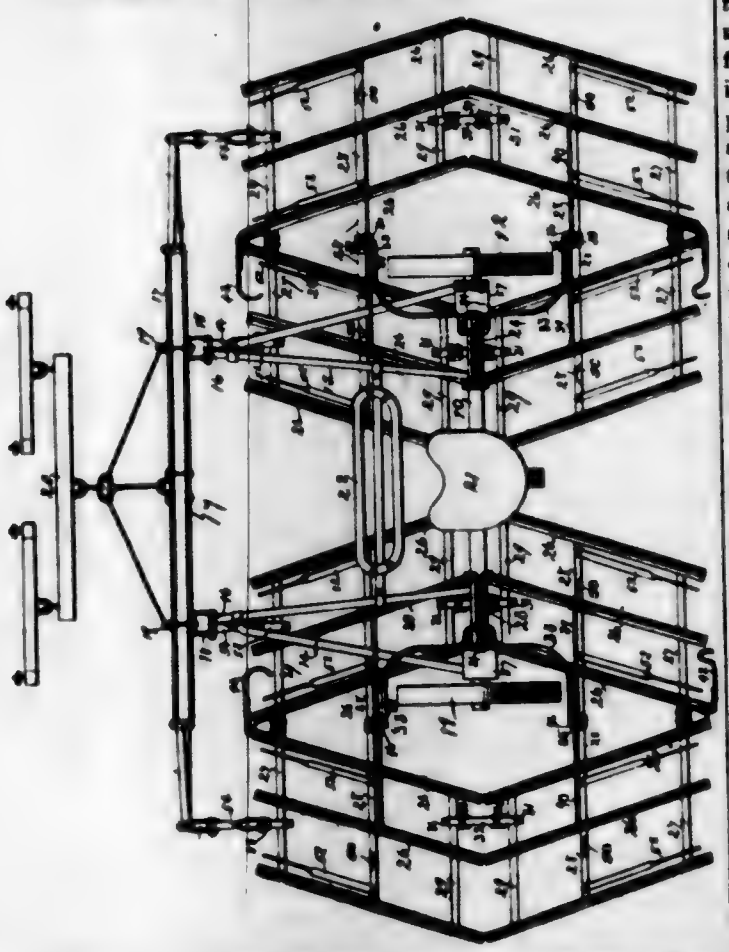

Claim.—1. In a riding-harrow, a carriage-axle, traction-wheels on the ends of the axle, frames extended forward from the end portions of the axle inside of the traction-wheels, a foot-rest fixed to the said frames, a seat fixed to the center of the axle, a drag-bar hinged to the front ends of said frames and hinged extensions at the ends of the drag-bar, arranged and combined to operate in the manner set forth for the purpose stated.

2. In a riding-harrow, a carriage-axle, traction-wheels on the ends of the axle, frames extended forward from the end portions of the axle inside of the traction-wheels, a foot-rest fixed to the said frames, a seat fixed to the center of the axle, a drag-bar hinged to the front ends of said frames, extensions hinged to the ends of the drag-bar and harrow-sections hinged to the drag-bar and to the ends of said extensions, arranged and combined to operate in the manner set forth for the purpose stated.

3. In a riding-harrow, a carriage-axle, a drag-bar connected with the axle, hinged extensions on the ends of the drag-bar, traction-wheels on the ends of the axle, frames fixed to the end portions of the axle inside of the traction-wheels to project upward, curved rock-shafts in bearings fixed to said frames, arms at the centers of said rock-shafts and harrow-sections connected with the ends of the rock-shafts and the ends of the drag-bar, arranged and combined to operate in the manner set forth for the purposes stated.

4. In a riding-harrow, a carriage-axle, traction-wheels on the ends of the axle, frames fixed to the axle to project forward, a drag-bar connected with the free ends of said frame, hinged extensions on the ends of the drag-bar, frames fixed to the end portions of the axle inside of the traction-wheels to project upward, curved rock-shafts in bearings fixed to said frames, arms at the centers of said rock-shafts, harrow-sections connected with the ends of the rock-shafts and the drag-bar, hand-levers fulcrumed to said frames and connected with the arms of the rock-shafts, arranged and combined to operate in the manner set forth for the purposes stated.

5. In a riding-harrow, a carriage-axle, traction-wheels on the ends of the axle, frames fixed to the axle to support a drag-bar, a drag-bar connected with said frame, hinged extensions at the ends of the drag-bar, frames fixed to the end portions of the axle inside of the traction-wheels to project upward, curved rock-shafts in bearings fixed to said frames, arms at the centers of said rock-shafts and harrow-sections connected with the ends of the rock-shafts, hand-levers fulcrumed to said frames and connected with the arms of the rock-shafts and means for locking the levers to the axle, arranged and combined to operate in the manner set forth for the purposes stated.

6. In a riding-harrow, a carriage-axle, traction-wheels on the ends of the axle, frames fixed to the axle to project forward, a drag-bar attached to the ends of said frame, extensions hinged to the end of the drag-bar, frames fixed to the end portions of the axle inside of the traction-wheels to project upward, curved rock-shafts in bearings fixed to said frames, arms at the centers of said rock-shafts and harrow-sections connected with the ends of the rock-shafts, hand-levers fulcrumed to said frames and connected with the arms of the rock-shafts, means for locking the levers to the axle, four harrow-sections hinged together in inclined positions relative to each other and the traction-wheels, two of them inside and two of them outside of said wheels, runners on the rear ends of the outside rear sections and runners on the front ends of the outside front sections, hangers on the ends of the arched rock-shafts hinged to extensions of cross-bars at the central portions of the harrow-sections and curved arms pivotally connected with the journals on the ends of the rock-shafts and the central portions of the center bars of the harrow-sections, arranged and combined to operate in the manner set forth for the purposes stated.

7. A riding-harrow comprising a carriage-axle, wheels on the ends of the axle, frames fixed to the end portions to extend forward, a seat on the center of the axle, a drag-bar connected with the front ends of said frames, extensions hinged to the ends of the drag-bar, frames fixed to the end portions of the axle to project upward, curved rock-shafts in bearings fixed to the said fixed frames that project upward, arms at the centers of the rock-shafts, hand-levers fulcrumed to the frames that project upward from the axle, links connecting the arms of the rock-shafts with the levers, means for locking the levers, four harrow-sections hinged together in inclined positions relative to each other and the traction-wheels of the carriage, two on the inside and two on the outside of each wheel, hangers on the ends of the arched rock-shafts hinged at their lower ends to harrow-sections, curved arms pivotally connected with the ends of the rock-shafts and cross-bars of the harrow-sections that are hinged together, means for retaining the harrow-sections on the outsides of the carriage-wheels in vertical planes, means for hinging the front ends of the front and inner harrow-sections to the drag-bar, means for connecting the front and outer harrow-sections to the hinged extensions at the ends of the drag-bar, and a driver's seat at the center of the carriage-axle midway between the said levers, all arranged and combined to operate in the manner set forth for the purposes stated.

704,501. BUTTON-HOLDER FOR UPHOLSTERING-MACHINES. PETER BOLLER, Chicago, Ill. Filed Oct. 29, 1901. Serial No. 80,404. (No model.)

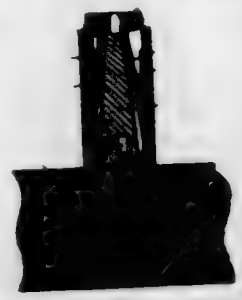

Claim.—1. In a button-holder for upholstering-machines, a button-clamp having a seat in its outer end for button-heads, and composed of a pair of oppositely-disposed yielding jaws, means to fasten the clamp in place, and an anvil between the jaws.

2. In a button-holder for upholstering-machines, a clamping-member having a seat in its outer end for button-heads, and comprising a pair of spring-jaws tapered upwardly, and a conical anvil between the jaws.

3. In a button-holder for upholstering-machines, a button-clamp having a seat in its outer end for button-heads, and composed of a pair of oppositely-disposed integral spring-arms, means to secure the clamp on the mold, and a conical anvil between the arms.

4. In an upholstering-machine, the combination with a mold having hollow tufters, of button-holders in the tufters, each holder comprising a

pair of opposite spring-arms fastened to the mold at one end and having lateral movement at their free ends to detachably seat a clench-button.

5. In an upholstering-machine, the combination with a mold having tubular tufters, of button-holders located in the tufters comprising a clamping member composed of opposite spring-arms providing a seat for button-heads, and a central plug or anvil.

704,502. DRILL-HOLDING CHUCK-BOLT FOR ROCK-DRILLS. OTTO H. BOSSERT, Denver, Colo. Filed Feb. 11, 1902. Serial No. 93,560. (No model.)

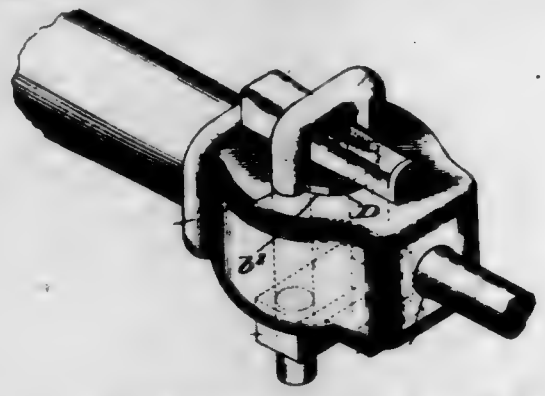

Claim.—1. In a drill-holder for rock-drills, the combination with a drill and drill-chuck, of a U-shaped bolt, the members of which pass through holes in the said chuck and are each provided with a notch or recess near their lower end; a yoke having holes through which the depending ends of the bolt are passed, and a keyway at right angles to the said holes, which intersects the same; a key which is passed through the keyway in said yoke and through the notch or recesses in the depending members of the bolt, so as to lock the said yoke upon the said bolt, and a wedge which lies between the connecting members of said U-shaped bolt and the top of the aforesaid clamp-block the said wedge being designed, when driven in one direction, to clamp the said block upon the aforesaid drill, so as to hold the same within the chuck, substantially as shown.

2. In a drill-holder, for rock-drills, the combination with a drill and drill-chuck, of a clamp-block which fits in a recess, in the said chuck, the said block being provided on its under side with a semicircular recess which overlies the end of the drill; a U-shaped bolt, which straddles the said block, the members thereof passing through the said chuck and each of said members being provided with a groove or recess near its lower end; a yoke having vertical holes and holes at right angles to the said vertical holes, which intersect the same, the said yoke being adapted to fit on the depending ends of the U-shaped bolt; pins which pass through the last-mentioned holes in the said yoke, and through the grooves or recesses in the ends of the said U-shaped bolt so as to lock the said yoke upon the said bolt, and a wedge which is driven between the connecting member of the U-shaped bolt and the top of the aforesaid clamping-block, so as to clamp the said block upon the end of the aforesaid drill, to retain the same within the said chuck, substantially as shown.

3. A clamping device for drills and the like, consisting of a U-shaped bolt, the members of which are each provided with a groove or recess near their lower end; a yoke, having holes through which the members of the bolt pass, and a keyway at right angles to said holes, which intersect the same; a key which is passed through the said keyway, and through the grooves or recesses in the members of the bolt, so as to lock the said yoke upon the said bolt a clamping-block, which lies upon the drill or a like object, and a wedge which is driven between the said block and the connecting member of the bolt, in combination with any suitable chuck or casing, substantially as shown.

704,503. MITTEN. ANDREW J BREDA, Chicago, Ill., assignor to the Standard Varnish Works, New York, N. Y., a Corporation of New York. Filed Dec. 17, 1900. Serial No. 40,171. (No model.)

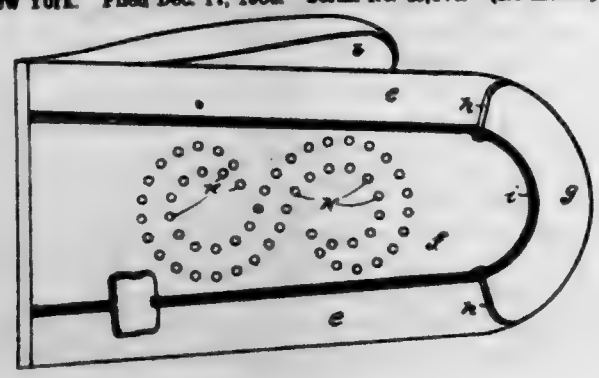

Claim.—As a new article of manufacture, a filler-mitt having its palm portion and a portion of its back along both longitudinal edges of the mitt formed in one integral piece, whereby the seams are removed from the longitudinal edges of the mitt to the back thereof, being thereby relieved of frictional contact, an insert *f* that completes the back portion of the mitt being united with the said integral piece by seams located upon the back of the mitt, a tip portion *g* united with the insert *f*, and a thumb-sheath for the mitt, a portion of the thumb-sheath being an outward continuation of the section of material that forms the bottom of the mitt, substantially as described.

704,504. RETORT GAS-FURNACE. FREDERICK BREDEL, Milwaukee, Wis. Filed Mar. 20, 1901. Serial No. 52,004. (No model.)

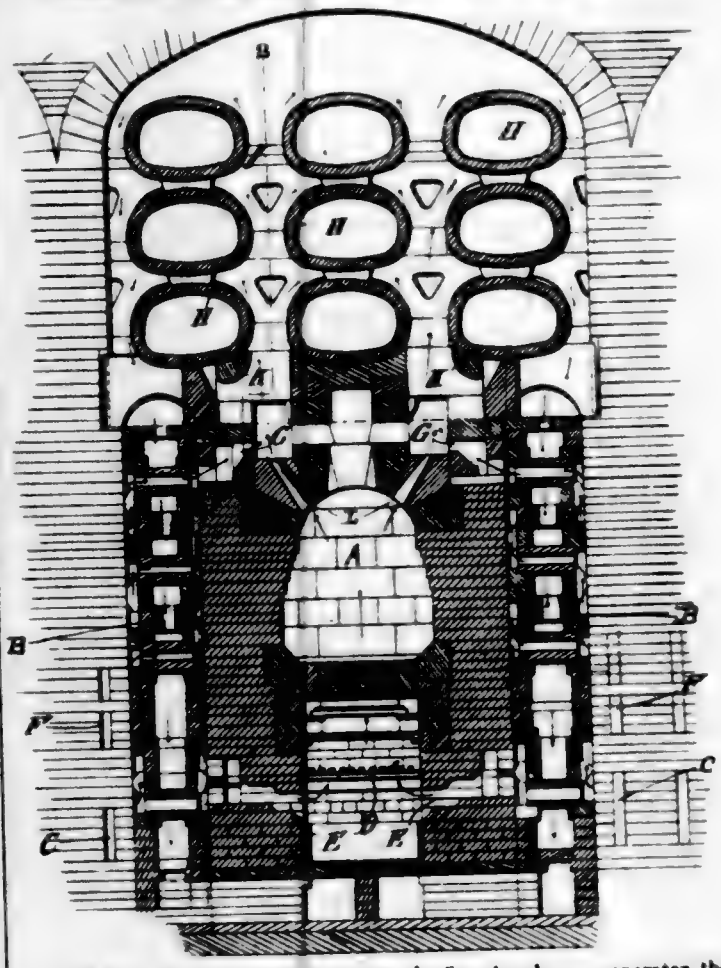

Claim.—In a recuperator-furnace, the fire-chamber or generator, the recuperator and the retort-chamber and retorts mounted therein, protecting-blocks for the retorts nearest the fire-chamber, a primary supply of air-ducts leading into the space below the grate of the furnace, a secondary air-supply through ducts G to form combustion and an auxiliary air-supply through ducts G' situated below and close to supporting-blocks R for the purpose of keeping said blocks R cool, as set forth.

704,505. HARNESS-SADDLE. JOHN BRONSBERG, Long Island City, N. Y. Filed July 8, 1901. Serial No. 67,305. (No model.)

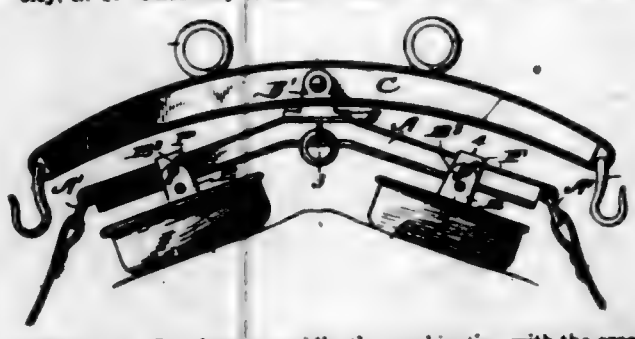

Claim.—1. In a harness-saddle, the combination with the cross-bar, having a pivot-bolt arranged centrally thereon and having ears extending therefrom, a bridge-piece pivotally held to the said bolt, a shield carried by the bridge, a rectangular-shaped member slidably positioned upon each end of the cross-bar, pads each carrying a coupling member that is designed to engage each of the said members on the cross-bar, and means for locking the said members together, substantially as shown and described.

2. In a harness-saddle, the combination with a cross-bar having loops arranged at the ends thereof, a pivot arranged centrally upon the

said bar, a bridge carrying hooks at its ends pivotally connected to the said pivot, rectangular-shaped members carried by the bars and having lugs projecting therefrom, couplings pivotally connected to the rectangular members, pads carried by the coupling members and means carried by the said coupling members for engaging the rectangular member and locking the said pad to its adjusted position, substantially as specified.

3. In a harness-saddle, the combination of a cross-bar having a pivot-bolt arranged thereon, a bridge carrying a shield, pivotally connected to the said pivot-bolt and having hooks arranged upon the ends thereof and rings positioned on the top rectangular-shaped members slidably held upon the cross-bar, a screw passing through said member and adapted for engagement with the cross-bar, said members having lugs projecting therefrom, coupling members pivotally connected to the said lugs, one side of each member projecting beyond the opposite side and having a threaded aperture arranged therein, a set-screw passing through said aperture and engaging the rectangular member, and loops arranged upon the ends of the cross-bar, substantially as and for the purpose set forth.

704,506. CAR-BRAKE. FRANK O. BROWN and EDWARD T. MOORE, Dallas, Tex. Filed Oct. 4, 1901. Serial No. 77,590. (No model.)

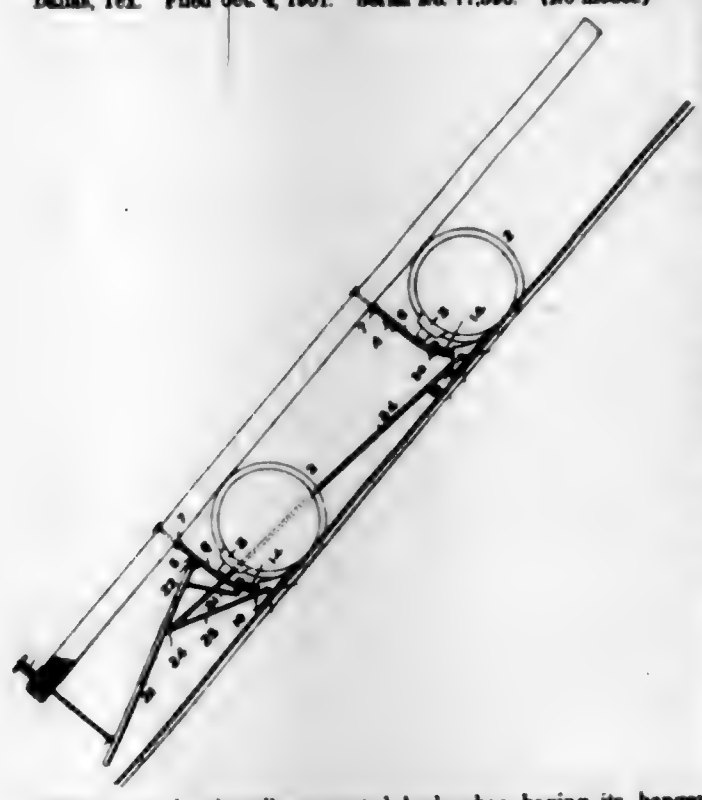

Claim.—1. A pivotally-supported brake-shoe having its hanger passed through a passage therein, rods connected thereto, a pivoted hanger having sliding connection with said hanger, and means for depressing the rods and forcing the shoe into engagement with the track, as set forth.

2. A pivotally-suspended brake-shoe having its hanger passed through a passage therein, means for forcing the same into contact with a track, a pivoted hanger having sliding connection with said hanger, and means for automatically applying sand from said shoe as the same is forced against the track, as set forth.

3. In a car-brake, a brake-shoe, formed with a sand-receiving chamber, and an automatically-actuated valve controlling the discharge therefrom, a pivoted hanger and a shoe-hanger having sliding connection with said hanger and detachably engaged in the shoe.

4. The combination with a brake-shoe having a passage therethrough for the passage of its hanger and a sand-receiving chamber with outlet at the bottom, and a two-part hanger carrying said shoe with a sliding connection between said two parts, of an automatic closure for said opening, adapted to be opened by contact with the rail as the shoe is forced into contact therewith.

5. A brake-shoe having curved front face with groove and a passage extending therethrough for the reception of its hanger, with its lower end enlarged and provided with an interior shoulder, as set forth.

6. A brake-shoe having an inclined front face, a passage for the reception of its hanger, and a sand-receiving chamber, as set forth.

7. A brake-shoe having a passage therethrough with offset near its lower end, as and for the purpose specified.

8. A brake-shoe having a passage therethrough with offset and shoulder near its lower end, combined with a hanger inserted in said passage and having a shoulder for engagement with the shoulder of said passage, as set forth.

9. A brake-shoe formed with an inclined front upper face with groove, a passage for its hanger, with offset and shoulder and a sand-receiving chamber with bottom outlet and a filling-aperture with removable closure, as set forth.

10. The combination with a hanger having a slot, of a shoe-hanger, means connecting the two and permitting of sliding movement of the one relatively to the other, and a shoe carried by the shoe-hanger and having a passage therethrough through which said hanger passes, as set forth.

11. The combination with a pivotally-supported hanger having a slot, of a shoe-hanger having sliding connection therewith, and a passage therethrough through which the hanger passes, a shoe carried by the shoe-hanger and a spring adapted to return the parts to their normal position, as set forth.

12. The combination with a pivotally-supported hanger, and a shoe-hanger connected therewith for sliding movement, and a shoe carried by the shoe-hanger, of a pivotally-supported rod connected with the said shoe, and means for operating said rod, as set forth.

13. The combination with a pivotally-supported brake-shoe and a hanger passed through a passage in said shoe, of a pivotally-mounted hanger having sliding connection with said hanger, a pivotally-supported fender, means connecting the fender and shoe and means for returning the parts to normal position, as set forth.

14. The combination with a pivotally-supported fender, and a pivotally-supported brake-shoe, of a pivotally-supported hanger slidingly connected with the shoe-hanger, pivotal connections between the fender and shoe, and a spring connecting the shoe-hanger with the fender, as set forth.

15. A pivotally-suspended brake-shoe, a pivotally-supported fender, a pivotally-supported hanger slidingly connected with the shoe-hanger, pivotal connections between the fender and shoe, means for returning the parts to normal position, and means whereby the shoe will be actuated by depression of the fender either by foot-power or by the meeting with an obstruction by the fender, as set forth.

16. The combination with front and rear brake-shoes having passages therethrough through which their hangers pass, and a pivotally-supported fender, of connections between the fender and all of the brake-shoes whereby the front and rear shoes are actuated simultaneously, as set forth.

17. A brake-shoe having an inclined passage therethrough and having a shoulder to receive and engage its hanger, said shoe being so shaped with its radius of movement so arranged that when depressed to its lowest point in the arc of a circle it will engage the top of the rail and the bottom of the wheel at the contact-point.

704,507. WINDMILL. RAPHAËL BRUNEAU, Oran, France. Filed Oct. 4, 1901. Serial No. 77,511. (No model.)

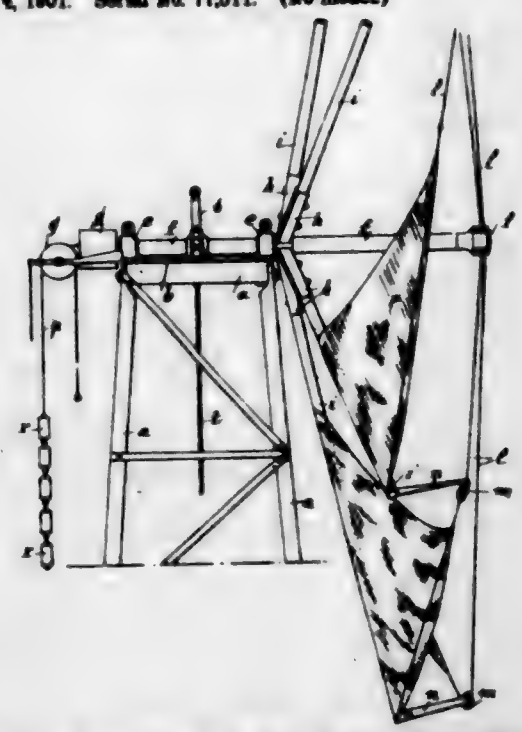

Claim.—The combination with a standard of a revolving platform supported upon antifriction-balls carried by the standard, a hollow shaft turning freely in two bearings fixed upon the platform, a hollow counterweight secured at one end of the hollow shaft, a center secured to the other end of the hollow shaft, sail-arms secured to the center, sails of flexible material secured to the arms at the base, stays and cords secured at one end to the points of the triangular sails passing thence over pulleys secured at the ends of rigid arms secured to the ends of the arms and extending outward therefrom at an angle and thence over other pulleys in the end of the hollow shaft, a swivel secured to the ends of the

stays or cords, a cord *p* secured to the swivel and passing thence out through the hollow shaft and counterweight and over a pulley carried by the hollow shaft, and a plurality of removable weights secured to the end of the cord *p*, substantially as shown and described.

704,508. CAR-BRAKE MECHANISM. GEORGE E. BURGESS, Buffalo, N. Y. Filed Apr. 18, 1902. Serial No. 103,484. (No model.)

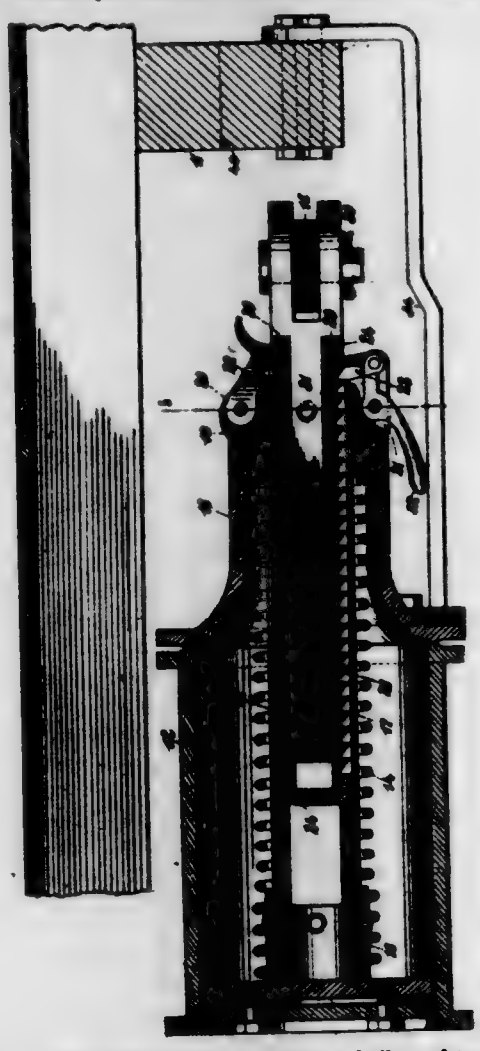

Claim.—1. The brake-cylinder having a hollow piston-rod, combined with the take-up bar therein, the push-rod supported within said take-up bar and connected at its outer end with a lever of the brake connections, a take-up pawl connected with the piston-rod for engaging said take-up bar and driving the same forward during the application of the brakes, a locking-pawl connected with said piston-rod for engaging said take-up bar and moving the same inward with said piston-rod, and means for freeing said locking-pawl when it is carried beyond a definite point during the outward stroke of the piston-rod and restoring it into engagement with the take-up bar upon said pawl being moved back along said point during the return stroke of said piston-rod, said take-up bar engaging said push-rod during its outward movement to apply the brakes and leaving said push-rod during its return movement; substantially as set forth.

2. The brake-cylinder having a hollow piston-rod, combined with the take-up bar therein, the push-rod supported within said take-up bar and connected at its outer end with a lever of the brake connections, a take-up pawl connected with the piston-rod for engaging said take-up bar and driving the same forward during the application of the brakes, a locking-pawl connected with said piston-rod for engaging said take-up bar and moving the same inward with said piston-rod, a lever-arm connected with said locking-pawl for actuating the same, and a projecting surface for acting upon said lever-arm to free said locking-pawl when it is carried beyond a definite point during the outward stroke of the piston-rod and restoring it into engagement with the take-up bar upon said pawl being moved back along said point during the return stroke of said piston-rod, said take-up bar engaging said push-rod during its outward movement to apply the brakes and leaving said push-rod during its return movement; substantially as set forth.

3. The brake-cylinder having a hollow piston-rod, combined with the take-up bar having the two series of oppositely-inclined and oppositely-arranged teeth and supported within said piston-rod, the push-rod supported within said take-up bar and connected at its outer end with a lever of the brake connections, a take-up pawl connected with the piston-rod for engaging said take-up bar and driving the same forward during the application of the brakes, a locking-pawl connected with said piston-rod for engaging said take-up bar and moving the same inward with said piston-rod, means for automatically freeing said locking-pawl when it is carried beyond a definite point during the outward stroke of the piston-rod and restoring it into engagement with said take-up bar at a definite point during the return stroke of the piston-rod, said take-up bar engaging said push-rod during its outward movement to apply the brakes and leaving said push-rod during its return movement; substantially as set forth.

4. The brake-cylinder having a hollow piston-rod, combined with the take-up bar therein, the push-rod supported within said take-up bar and connected at its outer end with a lever of the brake connections, a take-up pawl connected with the piston-rod for engaging said take-up bar and driving the same forward during the application of the brakes, and a locking-pawl connected with said piston-rod for engaging said take-up bar and moving the same inward with said piston-rod; substantially as set forth.

5. The brake-cylinder having a hollow piston-rod, combined with the take-up bar therein, the push-rod freely supported within said take-up bar and pivotally connected at its outer end with a lever of the brake connections, a take-up pawl connected with the piston-rod for engaging said take-up bar and driving the same forward during the application of the brakes, and a locking-pawl connected with said piston-rod for engaging said take-up bar and moving the same inward with said piston-rod, said take-up bar engaging said push-rod during its outward movement to apply the brakes and leaving said push-rod during its return movement; substantially as set forth.

6. The brake-cylinder having a hollow piston-rod, combined with the take-up bar therein, the push-rod freely supported within said take-up bar and pivotally connected at its outer end with a lever of the brake connections, a take-up means connected with the piston-rod for engaging said take-up bar and driving the same forward during the application of the brakes, a locking means connected with said piston-rod for engaging said take-up bar and moving the same inward with said piston-rod, and means for automatically freeing said locking means when the latter is carried beyond a definite point during the outward stroke of the piston-rod and then restoring the same into engagement with said take-up bar at a definite point during the return stroke of the piston-rod, said take-up bar being adapted to engage said push-rod during its outward movement and to leave said push-rod substantially free during its inward movement; substantially as set forth.

704,509. AUTOMATICALLY-INFLATED POLISHING-WHEEL. ISAAC P. GADBAR, Beloit, Wis. Filed Nov. 11, 1901. Serial No. 81,875. (No model.)

Claim.—1. A pneumatic polishing-wheel having an air-cushioned polishing-surface, a funnel for catching air as the wheel is rotated, an opening communicating between said funnel and the air-cushion, and an air-valve in said opening.

2. A pneumatic polishing-wheel having an air-cushioned peripheral polishing-surface, a funnel on the body of said wheel for catching air as the wheel is rotated, and an opening communicating between said funnel and the air-cushion.

3. A pneumatic polishing-wheel having an air-cushioned peripheral polishing-surface, a funnel for catching air as the wheel is rotated, an opening in the wheel for permitting a portion of the air caught by the funnel to escape, and an opening communicating between said funnel and said air-cushion.

4. A pneumatic polishing-wheel having an air-cushioned peripheral polishing-surface, a funnel on the side of the wheel for catching air as the wheel is rotated, a rib near the mouth of said funnel, an opening through the wheel near said rib, an opening communicating between said funnel and the air-cushion, and an air-valve in said last-mentioned opening.

5. A pneumatic polishing-wheel having an air-cushioned peripheral polishing-surface, a funnel on the side of the wheel for catching air as the wheel is rotated, a rib near the mouth of said funnel, an opening through the wheel near said rib, an air-pocket in said wheel, an air-port between the funnel and the air-pocket, an air-duct communicating between said pocket and the air-cushion, and an air-valve for said air-duct.

6. A pneumatic polishing-wheel having an air-cushioned peripheral polishing-surface, a funnel on the side of the wheel for catching air as the wheel is rotated, a rib near the mouth of said funnel, an opening through the wheel near said rib, an air-pocket in said wheel, an air-port communicating between the funnel and the air-pocket, a valve for said air-port in said air-pocket, an air-duct communicating between the air-pocket and the air-cushion, and an air-valve in said air-duct.

7. A pneumatic polishing-wheel having a hub, a rim and a web, said web having a circumferential groove, a cover for said groove, adapted to form an air-cushion, means for securing said cover in position, a funnel on the web of the wheel for catching air as the wheel is rotated, a rib near the mouth of said funnel, for dividing the current of air, an opening through the web of the wheel near said rib, an air-pocket on the web of the wheel substantially opposite the funnel, an air-port communicating between the funnel and the air-pocket, an air-valve in said pocket for said port, an air-duct communicating between said pocket and the groove in the periphery of said wheel, and an air-valve for said air-duct in said groove.

8. In a pneumatic polishing-wheel, in combination, a wheel having a peripheral rim; a peripheral rib at each side of said rim; a cover adapted to be secured over said ribs, to form an air-space between said cover and said rim; a funnel for catching air as the wheel is rotated; and an air-duct communicating between said funnel and said air-space.

9. In a pneumatic polishing-wheel, in combination, a wheel having a peripheral rim; a peripheral rib at each side of said rim; a cover adapted to be secured over said ribs, to form an air-space between said cover and said rim; a funnel on the body of said wheel, for catching air as the wheel is rotated; an air-duct communicating between said funnel and said air-space; and an air-valve for said air-duct.

704,510. LEATHER-STRETCHING DEVICE. JOHN CALDWELL, Minneapolis, Minn., assignor to W. S. Nott Company, Minneapolis, Minn., a Corporation. Original application filed Mar. 26, 1900, Serial No. 10,128. Renewed Dec. 17, 1900. Serial No. 40,215. Divided and this application filed Aug. 6, 1901. Serial No. 71,083. (No model.)

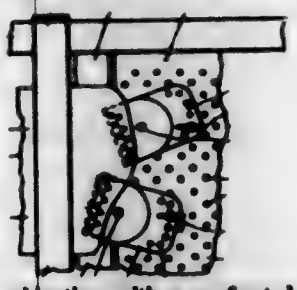

Claim.—The combination with a perforated stretcher-head, of a leather-holder consisting of a base-plate having in its rear portion a series of holes, and a second plate pivotally connected thereon and having a free swinging lateral movement with respect thereto under tension and provided with means for engaging the leather, and a pin or key inserted in selected holes in the base-plate and stretcher-head, for pivotally connecting the leather-holder to the stretcher-head, substantially as set forth.

704,511. SPLINT-BOXING MACHINERY. ALBERT B. CALKINS, Franklin, N. J., assignor to American Match Machine Company, New York, N. Y., a Corporation of New Jersey. Filed May 31, 1901. Serial No. 62,488. (No model.)

Claim.—1. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a reciprocating conveyor adapted to receive splints from the carriers, and in its movement to convey them to the box, and an expelling-plunger adapted to move within and across the space occupied by the splints when at rest within the conveyor, to forcibly expel the splints therefrom.

2. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a reciprocating conveyor adapted to receive splints from the carriers, and in its movement to convey them to the box, and an expelling-plunger, operated by the movement of the conveyor, adapted to move within and across the space occupied by the splints when at rest within the conveyor, to forcibly expel the splints therefrom.

3. In splint-boxing machinery, the combination with means for feeding forward splint-carriers and ejecting mechanism for ejecting splints therefrom, of an oscillatory conveyor and operating mechanism therefor arranged to move said conveyor from a receiving position adjacent to the path of said carriers to a discharging position during intervals between the ejection of said splints, and an expelling-plunger adapted to move within and across the space occupied by the splints when at rest within the conveyor, to forcibly expel the splints therefrom.

4. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a follower adapted to be moved across the said opening, to expel the splints therefrom, and means for causing the movement of the conveyor to so operate said follower.

5. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a follower adapted to be moved across the said opening, to expel the splints therefrom, and means for simultaneously moving the conveyer, and for so moving the follower relatively thereof.

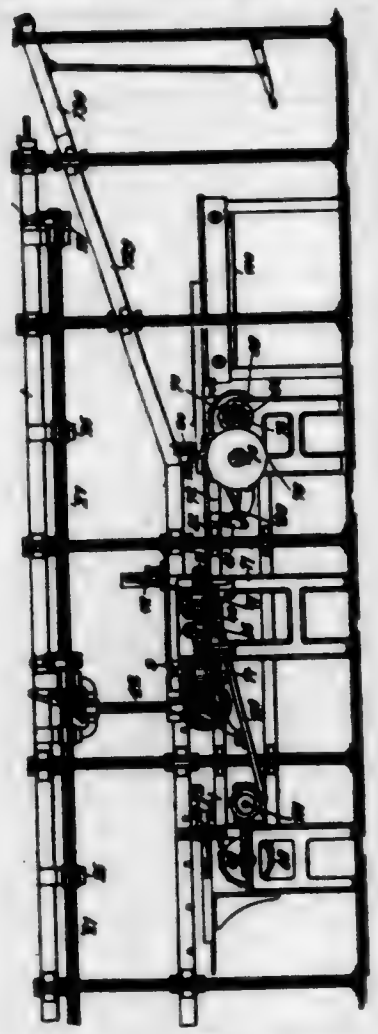

6. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey them to the box, a follower adapted to be moved across the said opening, to expel the splints therefrom, and means, operated by the movement of the conveyer, for so moving the follower.

7. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer, having a plurality of openings therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, and a follower adapted to be moved across the said openings, to expel the splints therefrom.

8. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a follower adapted to be moved across the said opening, to expel the splints therefrom, and a stationary cam arranged to move said follower outward to eject the splints during motion of the conveyer toward the box.

9. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a follower adapted to be moved across the said opening to expel the splints therefrom, a stationary cam, a lever in engagement with said stationary cam, and a link connection between said follower and said lever, said cam being arranged to be engaged by said lever during motion of the conveyer toward the box.

10. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a follower normally seated in a recess in the rear wall of said opening, and adapted to be moved across the said openings, to expel the splints therefrom, and a cam arranged to operate

said follower to expel the splints during motion of the conveyer to the discharging position.

11. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, of a conveyer movable in a curved path adapted to convey splints from the carriers to a discharging-point, means carried by the conveyer for preventing escape of splints from said conveyer, during the motion thereof, by reason of centrifugal action, and means, independent of the conveyer, for bringing boxes into position to be filled from said conveyer.

12. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, of a movable conveyer adapted to convey splints from the carriers to a discharging-point and having separate splint receiving and discharging openings, means carried by the conveyer for closing said receiving-opening during motion of the conveyer, and means, independent of the conveyer, for bringing boxes into position to be filled from said conveyer.

13. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, of a rotary conveyer adapted to convey splints from the carriers to a discharging-point and having separate splint receiving and discharging openings, means carried by the conveyer for closing said discharging-openings during motion of the conveyer, and means, independent of the conveyer, for bringing boxes into position to be filled from said conveyer.

14. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, of a movable conveyer adapted to convey splints from the carriers to a discharging-point and having separate splint receiving and discharging openings, means carried by said conveyer for closing said receiving and discharging openings independently during motion of the conveyer, and means, independent of the conveyer, for bringing boxes into position to be filled from said conveyer.

15. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, and means carried by the conveyer for closing the said opening during a movement of the conveyer.

16. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, and means, carried by the conveyer and operated thereby in its movement, for closing the said opening, during a portion of its said movement.

17. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the said opening, and means for closing said door during a movement of the conveyer.

18. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for said opening, and means operated by the conveyer, upon its movement for closing the said door.

19. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyer, and means for closing the said door during a movement of the conveyer.

20. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyer, and means, operated by the conveyer in its movement, for closing and opening the said door.

21. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, an ejecting device for said conveyer, a door for the discharge end of the opening in said conveyer, and means for closing the said door during a movement of the conveyer.

22. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a hinged door for the discharge end of the opening in the said conveyer, and means, operated by the conveyor in its movement, for closing and opening the said door.

23. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyer, another door for the discharge end thereof, and means for closing the said doors during a movement of the conveyer.

24. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyer, another door for the discharge end thereof, and means, operated by the conveyer in its movement, for closing and opening the said doors.

25. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyer, another door for the discharge end thereof, and means for opening the admission-door at one end of a stroke of the conveyer, and the discharge-door at the other end of such stroke, and for closing both doors in intermediate positions of the conveyer.

26. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a hinged door for the said opening, a pinion secured to said door, a gear-sector in gear with said pinion, and means whereby said sector may move with said conveyer, but is adapted to have a limited relative movement thereof.

27. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer, having a plurality of openings therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, of a plurality of hinged doors for the said openings, pinions secured to the said doors, a rack-bar in engagement with the said pinions, and means for operating the said rack-bar.

28. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having a plurality of openings therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, of a plurality of hinged doors for the said openings, pinions secured to the said doors, a rack-bar in engagement with the said pinions, and a cam for operating the said rack-bar.

29. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having a plurality of openings therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, of a plurality of hinged doors for the said openings, pinions secured to the said doors, a rack-bar in engagement with the said pinions, and two stationary cams, one at each end of the said rack-bar, and adapted to operate same.

30. In splint-boxing machinery, the combination with means for feeding forward splint-carriers, and means for supporting a box to receive splints therefrom, of a pivoted conveyer adapted to receive splints from said carriers and convey the same to boxes, and arranged tangentially with respect to its path of movement.

31. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of means for raising and lowering the level of said plates with respect to the conveyer.

32. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates, carried thereby, of means for inserting splints into boxes supported thereon, and means for raising the said plates with respect to the conveyer, after the said plates have traveled past the splint-inserting means.

33. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates, carried thereby, of a delivery-table, and means for raising the said plates when in proximity with the said delivery-table.

34. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates, carried thereby, of a cam for raising the said plates with respect to the conveyer.

35. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and means for raising the said plates to the level of the said delivery-table.

36. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and means for raising the said plates to the level of the said table.

37. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table, and means for raising the said plates when in proximity with the said delivery-table, and for delivering the boxes so raised to the delivery-table.

38. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and means for raising the said plates to the level of the said delivery-table and for delivering the boxes so raised to the delivery-table.

39. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and means for raising the said plates to the level of the said delivery-table, when in proximity thereto, and for lowering the said plates to permit them to pass beneath the said table.

40. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and means for raising the said plates to the level of the said delivery-table, when in proximity thereto, the front edges of the said plates, and the rear edge of the said table, being beveled.

41. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates, carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and a cam for raising the said plates to the level of the said delivery-table, the front edges of the said plates, and the rear edge of the said table, being beveled.

42. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates, carried thereby, of a delivery-table, means for raising the said plates when in proximity with the said delivery-table, and a pusher for delivering the boxes so raised to the delivery-table.

43. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates, carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising the said plates to the level of the said delivery-table, a pusher for delivering the boxes so raised to the delivery-table, and means for lowering the plates, after the boxes have been removed therefrom, to permit the said plates to pass beneath the said table.

44. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates, carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising the said plates to the level of the said delivery-table, and a pusher for delivering the boxes so raised to the delivery-table, the front edges of the said plates, and the rear edge of the said table, being beveled.

45. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table, means for raising the said plates when in proximity with the said delivery-table, and a presser-plate, arranged above the said supporting-plates when they are so raised.

46. In splint-boxing machinery, the combination with a traveling box-conveyer, having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table, means for raising the said plates when in proximity with the said delivery-table, and a spring-actuated presser-plate, arranged above the said supporting-plates when they are so raised.

47. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a delivery-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising the said plates to the level of the said delivery-table, a spring-actuated presser-plate thereabove, and means for delivering the boxes so raised to the delivery-table.

48. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a feed-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and means for raising said plates with respect to the conveyer, when in proximity to the end of the said table.

49. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a feed-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, and means for raising said plates to the level of the said feed-table.

50. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a feed-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising the said plates when in proximity to the end of the said table, and a reciprocating plunger arranged above the said plates, at the point at which they are raised.

51. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a feed-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising the said plates to the level of the said feed-table, and a reciprocating plunger arranged above the said plates, at the point at which they are raised.

52. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a feed-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising said plates when in proximity to the end of said table, means whereby a box may be introduced upon a plate when so raised, and means for depressing the said plate carrying the said box.

53. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a feed-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising said plates to the level of the said feed-table, means whereby a box may be introduced upon a plate when so raised, and a reciprocating plunger arranged above said plates, at the point at which they are raised, and adapted in its movement to lower the said plates.

54. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of relatively movable box-supporting plates carried thereby, of a feed-table arranged above the level of the said plates when in their lowered position with respect to the conveyer, a cam for raising the said plates, when in proximity to one end of said table, a reciprocating plunger arranged above said plates, at the point at which they are raised, and adapted in its movement to lower the said plates, and a cam for causing the reciprocation of the said plunger.

55. In splint-boxing machinery, the combination with a traveling box-conveyer having a plurality of box-supporting plates carried thereby, of a feed-table, and a delivery-table therefor, each arranged above the level of the said plates when in their lowered position with respect to the conveyer, means for raising said plates with respect to the conveyer, when in proximity with the said delivery-table and for lowering the said plates with respect to the conveyer when in proximity with the said feed-table.

56. In splint-boxing machinery, the combination with means for imparting a step-by-step movement to splint-carriers, a box-conveyer, and means for imparting a step-by-step movement thereto, of a splint-conveyer, movable in a curved path, adapted to receive splints from the carriers and in its movement to deliver same to the box, and means carried by the conveyer for preventing escape of splints from the conveyer during motion thereof toward the box, by reason of centrifugal action.

57. In splint-boxing machinery, the combination with means for imparting a step-by-step movement to splint-carriers, said splint-carriers provided with splint-locking plates, of a rock-shaft, a finger thereon adapted to engage said locking-plates, and a cam for operating said rock-shaft, said cam adapted to operate the said rock-shaft, intermediate of the step-by-step movements of the carriers.

58. In splint-boxing machinery, the combination with means for imparting a step-by-step movement to splint-carriers, said splint-carriers provided with splint-locking plates, of two rock-shafts, fingers thereon adapted to engage said locking-plates, and means for operating said rock-shafts intermediate of the step-by-step movements of the carriers.

59. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyer having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a follower adapted to be moved across the said opening, to expel the splints

therefrom, and means for causing the movement of the conveyor to so operate said follower.

60. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, and means carried by the conveyor for closing the said opening during a movement of the conveyor.

61. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, and means, carried by the conveyor and operated thereby in its movement, for closing the said opening, during a portion of its said movement.

62. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the said opening, and means for closing said door during a movement of the conveyor.

63. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for said opening, and means operated by the conveyor, upon its movement, for closing the said door.

64. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyor, and means for closing the said door during a movement of the conveyor.

65. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyor, another door for the discharge end thereof, and means for closing the said doors during a movement of the conveyor.

66. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a door for the admission end of the opening in said conveyor, another door for the discharge end thereof, and means for opening the admission-door at one end of a stroke of the conveyor, and the discharge-door at the other end of such stroke, and for closing both doors in intermediate positions of the conveyor.

67. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having an opening therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, a hinged door for the said opening, a pinion secured to said door, a gear-sector in gear with said pinion, and means whereby said sector may move with said conveyor, but is adapted to have a limited relative movement thereof.

68. In splint-boxing machinery, the combination with splint-carriers, and means for supporting a box to receive splints therefrom, of a movable conveyor having a plurality of openings therein for receiving splints from the carriers, and adapted in its movement to convey the said splints to the box, of a plurality of hinged doors for the said openings, pinions secured to the said doors, a rack-bar in engagement with the said pinions, and means for operating the said rack-bar.

704,512. HOOK AND EYE. MILTON R. CARPANY, Hamilton, Mich., assignor of one-half to Horace R. Peck, Kalamazoo, Mich. Filed July 2, 1902. Serial No. 113,211. (No model.)

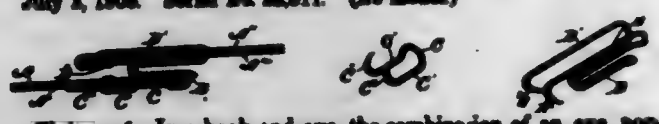

Claim.—1. In a hook and eye, the combination of an eye portion with an engaging portion O; parallel portions O', O' extending therefrom and terminating in attaching-hooks at the ends flattened to clench tightly; and a hook portion, the wires of which are extended and turned backwardly parallel with the shank of the hook at B', B', extending beyond the hook and terminating in flattened attaching-hooks turned toward the hook portion, the said hook and eye being inserted through the garment and hooked back into the fabric and clenched to engage the same as specified.

2. In a hook and eye, the combination of a hook portion, the wires of which are extended and turned backwardly parallel with the shank of the hook at B', B' extending beyond the hook and terminating in attaching-hooks turned toward the hook portion, the parts being inserted through the garment and hooked back and clenched into the fabric to engage the same as specified.

704,513. DISPLAY DEVICE. STEWART L. CAMPBELL, Kalamazoo, Mich. Filed Aug. 22, 1901. Serial No. 72,906. (No model.)

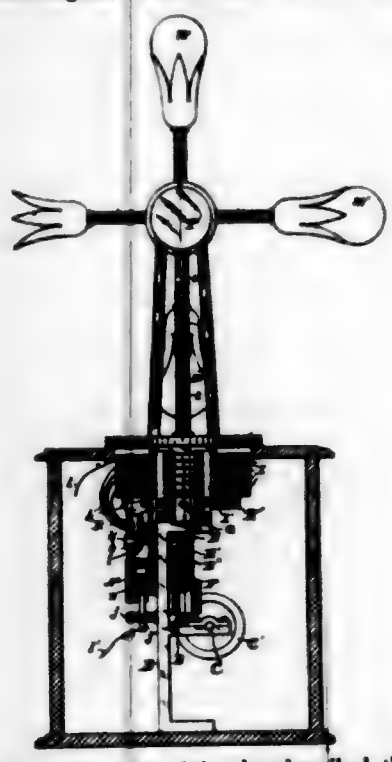

Claim.—1. In an apparatus of the class described, the combination of a suitable base; a vertical shaft therein; a turn-table on the top of said shaft; standards upward from said shaft; a hub with one or more radial arms transverse to said standard and supported in suitable bearing therein; a sleeve surrounding said shaft beneath the turn-table; a pulley on the said hub; a movable pulley on said sleeve; guide-pulleys for guiding the belt from the pulley on said sleeve to the pulley on said hub; a brake for controlling the motion of said sleeve; a lever connected to said brake; a cam connected to the moving part of said apparatus for acting on the said lever, whereby the brake is applied and removed automatically to induce a variable complex motion; electric lights carried by the radial arms on said hubs; independent connections to each of said lights; contact-rings carried by said hub; brushes adapted to bear on said contact-rings; wires extending from said brushes down the standards through the turn-table; fixed contact-rings with the said brushes; contact independent connections from each of said contact-rings to brushes; and the revolving contact device made up of insulated segments revolving in contact with said brushes to connect and disconnect the same successively and alternately, all coacting for the purpose specified.

2. In an apparatus of the class described, the combination of a suitable base; a vertical shaft therein; a turn-table on the top of said shaft; standards upward from said shaft; a hub with one or more radial arms transverse to said standard and supported in suitable bearings therein; a sleeve surrounding said shaft beneath the turn-table; a pulley on the said hub; a movable pulley on said sleeve; guide-pulleys for guiding the belt from the pulley on said sleeve to the pulley on said hub; a brake for controlling the motion of said sleeve; a lever connected to said brake; a cam connected to the moving part of said apparatus for acting on the said lever, whereby the brake is applied and removed automatically to induce a variable complex motion; electric lights on the ends of said radial arm or arms; suitable connections through the turn-table and hub for delivering the current to said radial arms, for the purpose specified.

3. In an apparatus of the class described, the combination of a suitable base; a vertical shaft therein; a turn-table on the top of said shaft; standards upward from said shaft; a hub with one or more radial arms transverse to said standard and supported in suitable bearings therein; a sleeve surrounding said shaft beneath the turn-table; a pulley on the said hub; and a movable pulley on said sleeve; guide-pulleys for guiding the belt from the pulley on said sleeve to the pulley on said hub; a brake for controlling the motion of said sleeve; a lever connected to said brake; a cam connected with a moving part of said apparatus for acting on the said lever whereby the brake is applied and removed automatically to induce a complex motion, coacting as specified.

4. In an apparatus of the class described, the combination of a suitable base; a vertical shaft therein; a turn-table on the top of said shaft;

standards upward from said shaft; a hub with one or more radial arms transverse to said standard and supported in suitable bearings therein; a sleeve surrounding said shaft beneath the turn-table; a pulley on the said hub; a movable pulley on said sleeve; guide-pulleys for guiding the belt from the pulley on said sleeve to the pulley on said hub; a brake for controlling the motion of said sleeve; electric lights on the ends of said radial arm or arms; suitable connections through the turn-table and hub for delivering the current to said radial arms, for the purpose specified.

5. In an apparatus of the class described, the combination of a suitable base; a vertical shaft therein; a turn-table on the top of said shaft; standards upward from said shaft; a hub with one or more radial arms transverse to said standard and supported in suitable bearings therein; a sleeve surrounding said shaft beneath the turn-table; pulley on the said hub; and a movable pulley on said sleeve; guide-pulleys for guiding the belt from the pulley on said sleeve to the pulley on said hub; a brake for controlling the motion of said sleeve, coacting as specified.

6. In an apparatus of the class described, the combination of a turn-table having a standard projecting therefrom; a hub with radial arms supported in the axial line of said turn-table on suitable bearings carried by said standard and transversely thereto; means of rotating said turn-table and revolving the hub with the radial arms at the same time to produce a complex movement.

7. In an apparatus of the class described, the combination of a turn-table having a standard projecting therefrom; a hub with radial arms supported on suitable bearings carried by said standard and transversely thereto; means of rotating said turn-table and revolving the hub with the radial arms at the same time to produce a complex movement and means of varying the relative speed of said turn-table and hub.

8. In an apparatus of the class described, the combination of a turn-table having a standard projecting therefrom; a hub with radial arms supported on suitable bearings carried by said standard transversely thereto; incandescent electric lights on the ends of said arms; and means of rotating said turn-table and revolving the hub with the radial arms at the same time, to produce a complex movement.

9. In an apparatus of the class described, the combination of a turn-table having a standard projecting therefrom; a hub with radial arms supported on suitable bearings carried on said standard transversely thereto; incandescent electric lights on the ends of said arms; means of rotating said turn-table and revolving the hub with the radial arms at the same time, to produce a complex movement; and means of varying the relative speeds of said turn-table and hub.

704,514. WEEDER. BENJAMIN F. CLARK and WILSON SMITH, Cambridge City, Ind., assignors to The National Drill Company, Cambridge City, Ind. Filed Sept. 27, 1901. Serial No. 76,734. (No model.)

Claim.—1. In a weeder, the frame composed of horizontal bars, teeth, clips adapted to take over said bars and the ends of said teeth, and means whereby the clips and the ends of the teeth are held in place, substantially in the manner and for the purpose described.

2. In a weeder, the frame composed of a pair of bars extending horizontally, one above the other, teeth, clips adapted to take about said bars and the teeth, and means for securing said clips to the bars, to retain the teeth in place, substantially as and for the purpose described.

3. In a weeder, the combination of horizontal bars, two of which are arranged in the same vertical plane, teeth whose upper ends are bent in a horizontal direction, with clips adapted to take about said bars and teeth, and means for securing said clips in place, substantially as shown and for the purpose described.

4. In a weeder, the frame comprising horizontal bars, teeth whose upper ends are bent to form hooks lying in a horizontal plane, and of a size to correspond with the width of the bars, clips composed of channel-iron and of a depth sufficient to take over said bars and the upper ends of the teeth, and means for securing said clips to the bars to retain the teeth in place, substantially as shown and for the purpose specified.

5. In a weeder, the frame comprising horizontal bars, teeth whose upper ends are adapted to fit against said horizontal portions, clips composed of channel-iron of a depth sufficient to take over said bars and the ends of said teeth, one flange of said clip provided with a slot for the passage of the teeth, and means for securing said clips to the bars to retain the teeth in place, substantially as shown and for the purpose specified.

6. In a weeder, the frame comprising horizontal bars, two of which are arranged in the same vertical plane, teeth whose upper ends are arranged and adapted to lie between said horizontal bars and clips arranged to take over said bars and provided with slots for the passage of the teeth, said bars, clips and ends of the teeth adapted to receive bolts, whereby the parts are held in place, substantially as shown and for the purpose described.

7. In a weeder or the like comprising a pair of horizontal bars arranged one above the other, teeth whose upper ends are bent laterally and adapted to lie between said bars, clips adapted to embrace said bars at the point where the teeth come between said bars, one flange of the clips provided with a slot for the passage of the teeth, said bars and clip provided with openings adapted to register, and bolts to be passed through said openings and the bent ends of the teeth, whereby the parts are clamped together, substantially as shown and for the purpose described.

704,515. SEAT FOR CULTIVATORS. BENJAMIN F. CLARK and WILSON SMITH, Cambridge City, Ind., assignors to The National Drill Company, Cambridge City, Ind. Filed Mar. 7, 1902. Serial No. 97,146. (No model.)

Claim.—1. As a means for supporting a seat, vertical arms rigidly connected to the frame of the machine and provided with notches, swinging arms pivoted to said vertical arms, a Y-shaped arm supporting the seat at the rear and having its forward ends engaging said swinging arms and provided with a horizontally-projecting plate adapted to engage the notches in said vertical arm, substantially as and for the purpose described.

2. As a means for supporting a seat, a vertical arm rigidly connected to the frame of the machine and provided with notches, a swinging arm pivoted to said vertical arm, a second arm supporting the seat at its rear end, and having its forward end engaging said swinging arm, and provided with a horizontally-projecting plate adapted to engage the notches in said vertical arm, substantially as and for the purpose described.

3. In combination, a vertical arm rigidly connected to a frame and provided with notches, a swinging arm pivoted to said vertical arm, a second arm supporting the seat at its rear end and having its forward end bent into hook form and engaging said swinging arm, and a horizontal projection on said second arm adapted to engage the notches in said vertical arm, substantially as and for the purpose described.

4. In combination, a vertical arm provided with notches and rigidly attached to the frame of the machine, a swinging arm pivoted to said vertical arm, a second arm provided with a seat at its rear end and with a vertical slot at its forward end through which passes the said swinging arm, and a horizontal projection on said second arm adapted to engage the notches in said vertical arm, substantially as and for the purpose described.

5. In a cultivator, vertical arms provided with notches and rigidly attached to the frame, swinging arms pivoted to said vertical arms, a Y-shaped arm carrying a seat at its rear end and having grooves at its forward ends in which are located the said swinging arms, and horizontal projections on the forward ends of said Y-shaped arm adapted to engage the notches in said vertical arm, substantially as and for the purpose described.

6. In a cultivator, vertical arms provided with notches and rigidly connected to the frame, swinging arms pivoted to said vertical arms, a Y-shaped arm having its forward ends located between said vertical arms and said swinging arms, and provided with angular extensions adapted to engage said swinging arms, angle-plates secured at the forward ends of said Y-shaped arm, with their horizontal legs in a position to engage notches on said vertical arms, plates forming a groove to receive said swinging arms and an adjustable seat mounted at the rear of said Y-shaped arm, substantially as and for the purpose described.

7. In a cultivator, vertical arms provided with notches, swinging arms pivoted to said vertical arms, a bifurcated arm carrying a seat at its rear end and provided with hooks at its forward ends which engage said swinging arms, and horizontal projections at the forward ends of the bifurcations which are adapted to engage the notches of said vertical arms, substantially as and for the purpose described.

8. In combination, a vertical arm provided with notches, a swinging arm pivoted to said vertical arm, a bar supporting a seat at its rear end and provided at its forward end with a slot by means of which it may slide on said swinging arms, and also provided with a horizontal projection adapted to engage the notches in said vertical arm, substantially as and for the purpose described.

704,516. STALK-RAKE. JOSEPH L. CLARK, Lebanon, Tex. Filed June 5, 1901. Serial No. 63,205. (No model.)

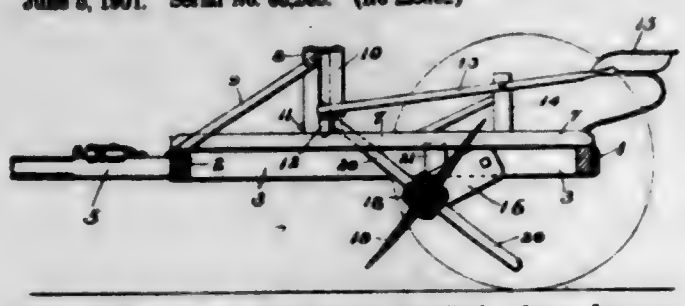

Claim.—In a rake of the character described, a frame, frame-sections 6 and 7 thereon, a bracket 8 on said frame-sections, a post 10 on one of said sections parallel with said bracket, a controlling-bar pivoted at one end to said bracket with its free end extended between the bracket and post, an operating-lever pivoted to the free end of said bar and to a support in proximity to the seat, brackets 16 and 17 pivotally mounted on opposite sides of the frame, a rake-shaft journaled in the lower ends of said brackets, teeth on said shaft, a locking member passed through the shaft at right angles to its length and extended upon both sides of said shaft, with one end adapted to engage said controlling-bar, and flexible members 21 depending from opposite sides of the frame with their upper ends embracing three sides of the side pieces of the frame and their lower ends connected to the lower ends of said brackets to limit the downward movement of the brackets 16 and 17, as set forth.

704,517. BUTCHER'S SAW-FRAME. DWIGHT S. COLE, Brooklyn, N. Y., assignor to the New York State Saw Filers Association, Brooklyn, N. Y., a Corporation of New York. Filed Oct. 8, 1901. Serial No. 77,957. (No model.)

Claim.—1. In a saw-frame a socket at the heel end of the frame having a cavity adapted to receive the end of the saw, a bolt adapted to work in the socket, a cross-pin on the bolt engaging with the socket to prevent rotation, a wing-nut to give tension to the bolt, a pin on the bolt, and a beveled surface at one side of the forward end of the bolt, for the purposes set forth.

2. In a saw-frame a slot at the front end of the toe of the frame, the plane whereof is at an angle relative to the general plane of the frame, and means to hold the front end of the saw within the slot, for the purposes set forth.

3. In a saw-frame a socket at the heel end of the frame having a substantially cylindrical opening, a slot above and below said opening adapted to receive the end of the saw-blade, a bolt having a beveled surface at one side of its front end and means for holding the saw, and a wing-nut threaded to the bolt.

4. In a saw-frame a socket at the heel end of the frame having a substantially cylindrical opening, a slot above and below said opening adapted to receive the end of the saw-blade, a bolt provided with a beveled surface at one side of its front end, means to hold the saw, and means to prevent rotation of the bolt, and a wing-nut threaded to the bolt.

5. In a saw-frame a socket for the heel of the saw made of a piece of strip-steel formed half and half substantially as shown in Fig. 8, then bent upon itself, whereby a central cylindrical recess with a slot above and below is produced without machine-work.

6. The combination of a saw-frame, devices at or near its ends for holding the saw in proper vertical alinement with the frame and for applying tension thereto, whereby when the tension is applied the saw automatically moves into rigid engagement with the sides of the saw-frame.

7. In a saw-frame a tension device embodying a threaded bolt, the bolt having a beveled surface at one side adapted to engage with one side of the socket in which it works, and a cavity in the socket adapted to receive the end of the saw whereby the saw-blade when under tension is crowded against the opposite side of said socket.

704,518. HAND CORN-PLANTER. FRED A. COLLYER, Victoria, Canada. Filed July 17, 1901. Serial No. 68,561. (No model.)

Claim.—1. A seed-planter comprising the handle-bars, a hopper, an imperforate hood secured to one handle-bar opposite to an opening therein, a conduit leading from the hood, a dropping-slide adapted to project into and to terminate within said hood, links pivoted to one handle-bar and embracing opposite sides of the two handle-bars, and a pivotal bolt connecting the other ends of said links and the dropping-slide together, substantially as described.

2. A seed-planter consisting of a pair of handle-bars pivoted together at their lower portion, a seed-hopper carried by one of said handle-bars and having a feed-opening in the lower side thereof, a closed imperforate channel or conduit leading from the feed-opening to the lower end of the planter, a slide with a feed-slot therein reciprocating in said feed-opening and projecting from the rear side of the hopper, and a pair of connecting link-rods pivotally connected to each side of the opposite handle-bar and to the outer rearwardly-extending end of said slide to reciprocate the latter, whereby said link-rods embrace the hopper and both handle-bars to form guides for the latter.

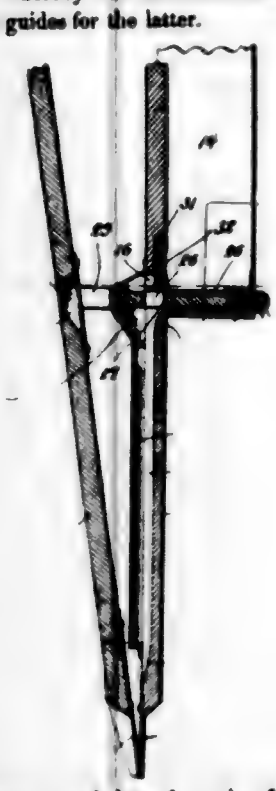

3. A seed-planter consisting of a pair of handle-bars pivoted together at their lower portion, a seed-hopper carried by one of said handle-bars and having a feed-opening in the lower side thereof, a closed imperforate channel or conduit leading from the feed-opening to the lower end of the planter, and means for feeding grain through said slot and channel, said means being operated by the opening and closing of the handle-bars.

4. A seed-planter consisting of a pair of handle-bars pivoted together at their lower portion, a seed-hopper carried by one of said handle-bars and having a feed-opening in the lower side thereof, a closed imperforate channel or conduit leading from the feed-opening to the lower end of the planter, a reciprocating slide operating in the feed-opening to measure grain, and means connected to said slide and to the opposite handle-bar to reciprocate the same by the opening and closing of the handle-bars to feed grain from the hopper, whereby no opening is left for the escape of grain between the hopper and the lower end of the conduit.

5. A seed-planter consisting of a pair of handle-bars pivoted together at their lower portion, a seed-hopper carried by one of said handle-bars and having a feed-opening in the lower portion thereof, a feed device operating in said feed-opening to measure out grain and extending rearwardly through an opening at the outer side of the hopper, and a pair of link-rods pivotally connected to said feed device at each side of the hopper and also pivotally connected to the opposite handle-bar, whereby to form at once a means for operating the feed device and to form guides for the handle-bars.

6. A seed-planter consisting of a pair of handle-bars pivoted together at their lower portion, a seed-hopper carried by one of said handle-bars and having a feed-opening in the lower side thereof, a closed imperforate channel or conduit leading from the feed-opening to the lower end of the planter, a slide with a feed-slot therein reciprocating in said feed-opening, means for operating said slide by the opening and closing of the handle-bars, an adjustable sliding plate projecting across the rear portion of said feed-slot and extending rearwardly flush with the reciprocating slide and having a longitudinal adjusting-slot therein projecting outside of the hopper when the handles are closed together, and a screw passing through said longitudinal slot and secured in the slide and also projecting outside the hopper when the handles are closed together, whereby the width of the feed-slot may be adjusted externally of the handle-bars.

704,519. POTATO-HARVESTER. DAYTON T. COLBERTSON, Milo, Iowa. Filed Apr. 30, 1901. Serial No. 58,177. (No model.)

Claim.—1. In a potato-harvester, a rotatable axle, a carriage-frame, traction-wheels fixed to the ends of the axle, arched hangers pivotally con-

nected with the carriage-frame, shakers and carriers composed of curved rods fixed at their front ends to straight bars and pivotally connected with the arched hangers, a crank-shaft at the front of the carriage-frame, rake-bars connected with the crank-shaft for moving vines in a plane above the shakers and carriers and means for simultaneously reciprocating the rake-bars and the suspended shakers and carriers, arranged and combined to operate in the manner set forth for the purposes stated.

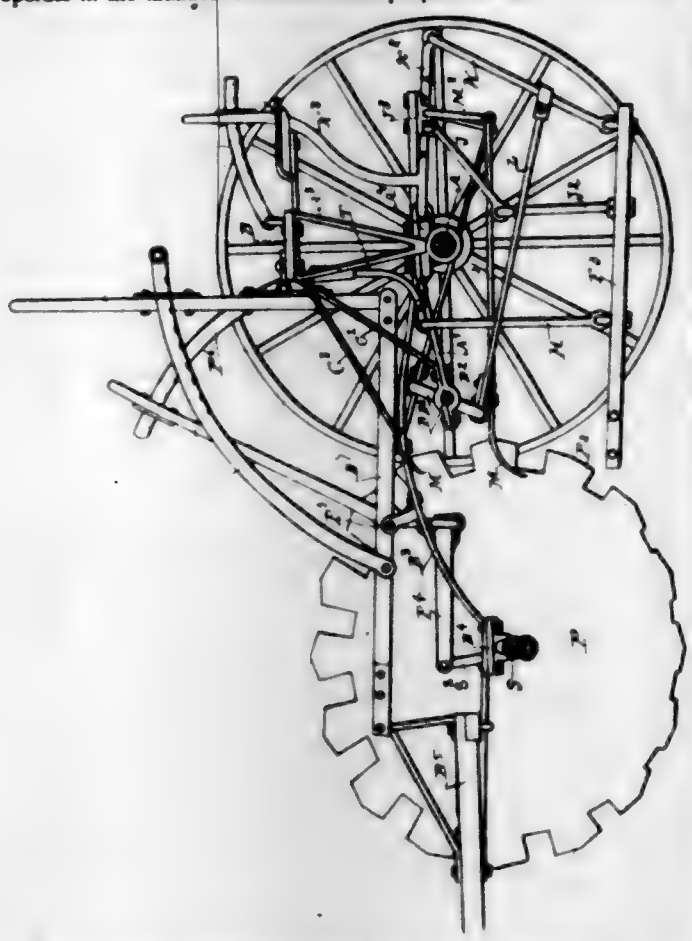

2. In a potato-harvester, shakers and carriers composed of a plurality of rods curved at their front ends and the front ends fixed to straight bars, arched hangers pivotally connected with the carriage-frame and also pivotally connected with the straight bars of the shakers and carriers, as shown and described for the purposes stated.

3. In a potato-harvester, shakers and carriers composed of a plurality of rods curved at their front ends and the front ends fixed to straight bars, arched hangers pivotally connected with the carriage-frame and also pivotally connected with the straight bars of the shakers and carriers, and means for imparting reciprocating motion to the shakers and carriers, as shown and described for the purposes stated.

4. In a potato-harvester, a carriage-frame on a rotatable axle, traction-wheels fixed to the ends of the axle, two arched hangers pivotally connected with the carriage-frame, reciprocating shakers and carriers pivotally connected with the said hangers, reciprocating rakes pivotally connected with the carriage, a third arched hanger pivotally connected with a central rear extension of the carriage-frame and also pivotally connected with the rear ends of the reciprocating shakers and carriers, a rotatable crank-shaft at the front end of the carriage-frame and rods connected with cranks on the end portions of said shafts and with said hangers and means for raising and lowering the suspended shakers and carriers, arranged and combined to operate in the manner set forth for the purposes stated.

5. In a potato-harvester, a carriage-frame on a rotatable axle having fixed traction-wheels on its ends, an auxiliary frame extended forward from the main frame and rigidly fixed thereto, a rotatable axle in bearings on the front end of the auxiliary frame, disk-shaped diggers fixed to the ends of said axle, a pole pivotally connected with the front end of the auxiliary frame, a lever fulcrumed to the main frame, a bar pivotally connected with the rear end of the pole and means for retaining the lever stationary, arranged and combined to operate in the manner set forth for the purposes stated.

6. In a potato-harvester, a carriage-frame on a rotatable axle having fixed traction-wheels on its ends, an auxiliary frame extended forward from the main frame and rigidly fixed thereto, a pole pivotally connected with the front end of the auxiliary frame, a lever fulcrumed to the main frame, a bar pivotally connected with the lever and also pivotally connected with the rear end of the pole and means for retaining the lever and pole stationary, an axle in bearings at the front end of the auxiliary frame and rotatable diggers in the form of disks having cutters extending radially from their circumferences on the ends of the axle, arranged and combined to operate in the manner set forth for the purposes stated.

7. A potato-harvester comprising a carriage-frame on a rotatable axle having fixed traction-wheels, reciprocating shakers and carriers suspended under the carriage-frame, reciprocating rakes in a plane above the said shakers and carriers, a crank-shaft at the front of the carriage-frame and connected with the rotatable axle by means of sprocket-wheels and a chain, means for reciprocating the rakes, means for adjusting the shakers and carriers, an auxiliary frame rigidly connected with the carriage-frame to extend forward therefrom, an axle having its ends inclined downward, diggers rotatably mounted on the inclined ends of said axle, a pole pivotally connected with the front end of the auxiliary frame, a lever fulcrumed to the carriage-frame and connected with the pole by means of a bar, all arranged and combined to operate in the manner set forth for the purposes stated.

704,520. TUBE CLAMPING, CUTTING, AND EXPANDING MACHINE. HARRY DEL MAR, New York, N. Y., assignor of one-half to Eugene Del Mar, New York, N. Y. Filed July 15, 1901. Serial No. 68,291. (No model.)

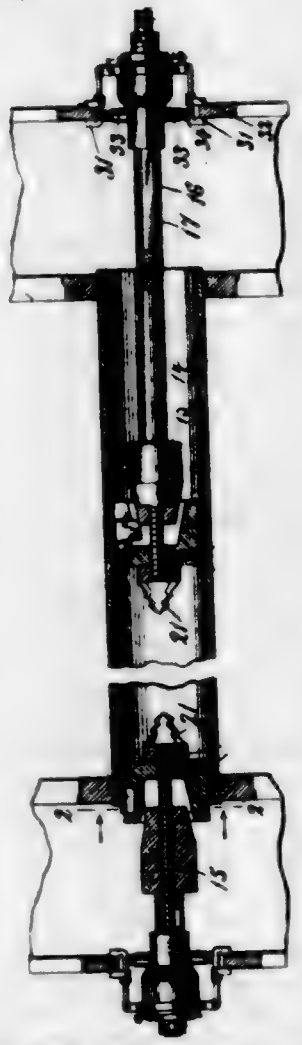

Claim.—1. In a device of the character described, a supporting-bracket, means for securing said bracket positively to the boiler head or plate, said securing means consisting of collapsible and expansible clamping devices, substantially as specified.

2. In a device of the character described, a supporting-bracket, means for positively securing said bracket to the boiler head or plate, said means consisting of collapsible and expansible clamping devices, and means for adjusting the operating devices relatively of the bracket, substantially as specified.

3. In a device of the character described, a supporting-bracket, means for securing said bracket positively to the boiler head or plate, means for adjusting the operating devices relatively of the bracket, and means for turning the operating devices in fixed position relatively to the supporting-bracket, substantially as specified.

4. In a device of the character described, a central rod, a tool at one end of said rod, a mandrel, a supporting-bracket, means for securing said bracket positively to the boiler head or plate, a connection between the supporting-bracket and the mandrel, and means for turning the tool and mandrel independently or in unison, substantially as specified.

5. In a device of the character described, a central rod, a tool located at one end of said rod and provided with expansible devices, a tapered mandrel projecting under said expansible devices, a supporting-bracket provided with adjustable clamping devices, a tube passing through said bracket and carrying at its opposite end a mandrel, and means for turning the central rod with the tool carried thereon and the tube carrying the mandrel independently or in unison, substantially as specified.

704,521. METAL-BENDING TOOL. JAMES J. DOLAN AND SERA HOYT, Sandwich, Ill. Filed June 6, 1902. Serial No. 110,473. (No model.)

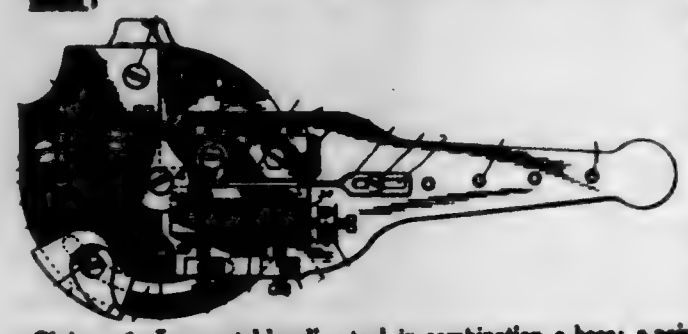

Claim.—1. In a metal-bending tool, in combination, a base; a pair of gripping-jaws and an abutment, one of such elements being pivoted and the other being fixed to the base; and connection between the top of the abutment and the compressing member of the pair of jaws.

2. In a metal-bending tool, in combination, a base-plate, an abutment fixed thereto and having a pair of angularly-disposed faces; a lever pivoted upon the base-plate, its center of oscillation being aligned with the angle of the abutment; a pair of clamping-jaws mounted upon the lever, the mouth between them being opposite the angle of the abutment; a hinge connection between the top of one of the jaws and the abutment; and a link connection between the two jaws.

3. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a lever pivoted to the base, a clamping-jaw secured on the lever, a hinge connection between the abutment and the jaw, a second jaw laterally and longitudinally adjustable on the lever, and an adjustable tie for securing the upper ends of the jaw together.

4. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a lever hinged to the base, a jaw secured thereon, a second jaw laterally and longitudinally adjustable on the lever and between which and the first-mentioned jaw the work is designed to be placed, and an adjustable tie for securing the upper ends of the jaws together.

5. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a vertically-adjustable plate secured to the said abutment, a lever hinged to the base, a jaw secured thereon, a vertically-adjustable plate secured to the said jaw, and a second jaw carried by the lever and being adjustable relatively to the first-mentioned jaw.

6. In a metal-bending tool, in combination, a base, an abutment fixed thereto and having a transverse recess, a plate located in the recess and having an outstanding flange at its lower edge and vertical slots, bolts passing through said slots for securing the plate, a lever pivoted to the base, a jaw secured thereon, a plate having vertical slots, bolts passing through said slots for securing the plate to the said jaw, and a second jaw secured to the lever and adjustable relatively to the first-mentioned jaw.

7. In a metal-bending tool, in combination, a base, an abutment fixed thereon, a lever hinged to the base, a jaw secured thereon, a hinge connection between the said abutment and jaw at the top thereof, a second jaw carried by the lever and being laterally and longitudinally adjustable thereon, adjustable positive stops for securing the latter jaw against movement, and an adjustable stop for limiting the movement of the lever.

8. In a metal-bending tool, in combination, a base, an abutment fixed thereto, a lever hinged to the base, a jaw secured thereon, a hinge connection between the said abutment and jaw at the top thereof, a second jaw on the lever parallel with the first-mentioned jaw and having longitudinal slots therein, slots in the lever transverse to the longitudinal slots, bolts passing through said longitudinal and transverse slots for securing the said jaw, set-screws forming positive stops for the jaws, an adjustable gage on the lever, a stop adjustable on the base for limiting the movement of the lever, a link secured at one end to one of the lever-jaws and having its other end threaded and passing through an aperture in the other lever-jaw, and a nut upon the said threaded end.

704,522. COCK OR FAUCET. WILLIAM H. DOUGLAS, Washington, D. C. Filed Oct. 17, 1901. Serial No. 78,991. (No model.)

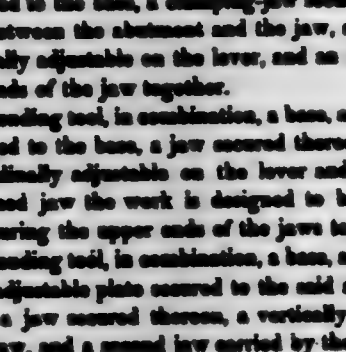

Claim.—1. A cock or faucet comprising a valve-chamber the bottom of which constitutes a valve-seat, said seat having an inlet-port at the edge thereof adjacent the faucet-inlet, and the wall of said chamber within the faucet having an outlet-port opposite said inlet-port; and a hollow rotatable valve completely filling said valve-chamber and formed in the bottom and side thereof respectively with ports corresponding to the ports first named, said valve constructed at its upper edge to overlap the upper edge of the wall of the chamber, and the meeting faces of such edges being beveled, as shown and for the purpose described.

2. A cock or faucet comprising a valve-chamber of equal diameter throughout its height, the bottom of said chamber constituting a valve-seat, said seat and the wall of the chamber being formed respectively, with inlet and outlet ports for a liquid or fluid; and a rotatable valve also of equal diameter throughout its height and snugly fitting said chamber, said valve having ports corresponding to those first named, and also having a bearing upon the upper edge of the wall of the chamber constructed to permit descent of the valve on occurrence of wear between the valve and its seat.

704,528. PORTABLE CHAIR-SWING. ASHFORD T. DOWDEN, Prairie City, Iowa, assignor to the Dowden Manufacturing Company, Prairie City, Iowa. Filed May 20, 1901. Serial No. 61,004. (No model.)

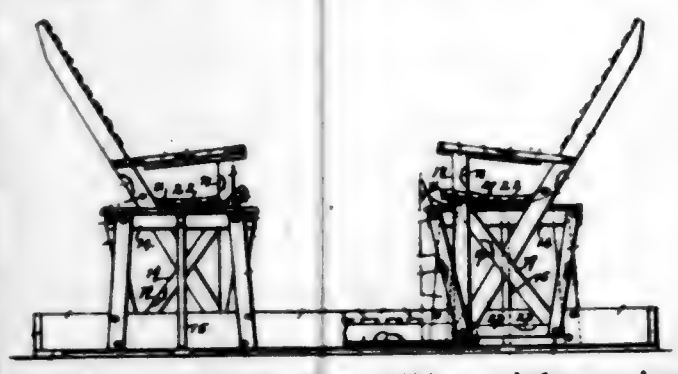

Claim.—1. In a chair-swing, a rigid base, a platform, two benches fixed to the base at each side and each end portion of the base, two hangers, two upright chair-legs, a chair-seat, two links and two side pieces of a chair-back jointly pivoted to each end portion of the platform arranged and combined to operate in the manner set forth for the purposes stated.

2. In a chair-swing, a rigid base, a platform, two benches fixed to the base at each side and each end portion of the base, two hangers, two upright chair-legs, two links and two side pieces of a chair-back jointly pivoted to each end portion of the platform, a chair-seat, two inclined chair-legs pivoted at their top ends to the upper portions of the upright front legs, two hangers pivoted to the benches at their top ends and jointly pivoted at their lower ends to the lower ends of the inclined legs and the ends of the two links, arranged and combined to operate in the manner set forth for the purposes stated.

3. In a chair-swing, a rigid base, a platform, two benches fixed to the base at each side and each end portion of the base, two hangers, two upright chair-legs, two links and two side pieces of a chair-back jointly pivoted to each end portion of the platform, two inclined chair-legs, pivoted at their top ends to the upper portions of the upright front legs, two hangers pivoted to the benches at their top ends and jointly pivoted at their lower ends to the lower ends of the inclined legs and the ends of the two links, a seat pivoted to the side pieces of the chair-backs and adjustably connected with the front upright chair-legs, arranged and combined to operate in the manner set forth for the purposes stated.

4. In a chair-swing, a chair composed of a seat and two mating upright front legs, two mating inclined rear legs pivoted at their top ends to the upper portions of the said upright front legs, links pivoted to the lower ends of the upright legs and the inclined legs, sides for a chair-back pivoted to the lower ends of the upright front legs, a rod extended through the upper end portions of the upright legs and through the upper ends of the inclined legs, a seat pivoted to the sides of the chair-back, means for adjustably fastening the seat to said rod, arms pivoted to the sides of the chair-back and means for adjustably connecting the front ends of the arms to the tops of the upright front chair-legs, and means for suspending the chair, arranged and combined to operate in the manner set forth for the purposes stated.

5. In a swing, a chair composed of two mating upright front legs, two mating inclined rear legs pivoted at their upper ends to the upper portions of the said upright front legs, links pivoted to the lower ends of the upright legs and the inclined legs, a chair-back pivoted to the lower ends of the upright legs, a seat pivoted to the sides of the chair-back, a rod extended through the upper end portions of the upright legs and also through the upper ends of the inclined legs, arms pivoted to the sides of the chair-back and means for adjustably fastening the front ends of the arms to the tops of the upright front chair-legs, arranged and combined to operate in the manner set forth for the purposes stated.

6. A portable swing comprising a rigid base composed of parallel side pieces and cross-pieces fixed thereto, benches fixed to the side pieces for supporting a platform and two chairs, a platform suspended between the side pieces of the base, hangers pivotally connected with the benches and the ends of the platform, chairs, each comprising mating side pieces of a chair-back, pivotally connected with the hangers and platform, chair-legs pivotally connected with the hangers and the platform, chair-seats pivotally connected with the side pieces of the chair-backs and chair-arms pivotally connected with the chair-backs and adjustably connected with the front chair-legs, arranged and combined to operate in the manner set forth for the purposes stated.

704,524. TREADLE-POWER STAND FOR SEWING-MACHINES. GEORGE M. RAMEY, Bridgeport, Conn., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed July 29, 1901. Serial No. 70,105. (No model.)

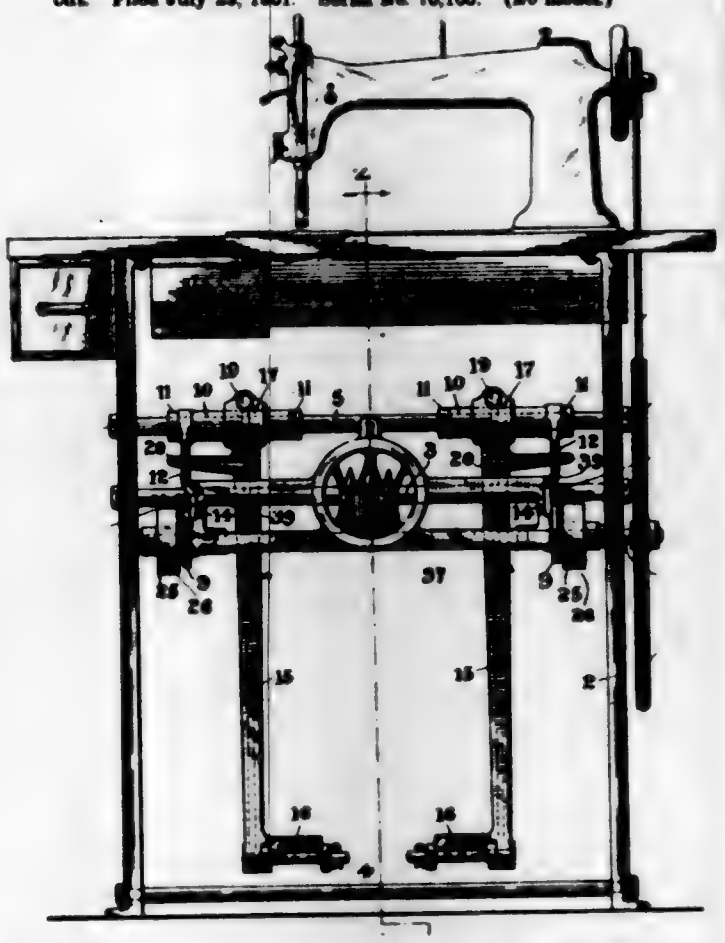

Claim.—1. In a foot-power stand for sewing-machines and the like, the combination of the driving-shaft suitably journaled and carrying a loose pinion, suitable clutch mechanism intermediate of said pinion and driving-shaft, a segment-gear provided with an elongated hub and pivoted around a spindle secured to the supporting-legs and a pendent treadle-lever secured upon the elongated hub of said segment-gear and provided with a lateral extension or finger 20 adapted to bear against one of the spokes of said segment-gear, substantially as and for the purpose set forth.

2. In a foot-power stand for sewing-machines and the like, the combination of the driving-shaft suitably journaled and carrying a loose pinion, suitable clutch mechanism intermediate of said pinion and driving-shaft, a segment-gear provided with an elongated hub and pivoted around a spindle secured to the supporting-legs and a pendent treadle-lever adjustably secured around the elongated hub of said segment-gear, whereby said treadle-lever is capable of lateral adjustment upon said hub, substantially as and for the purpose set forth.

704,525. FLANGER. MATTHIAS B. EATON, Boston, Mass. Filed Sept. 24, 1900. Serial No. 30,907. (No model.)

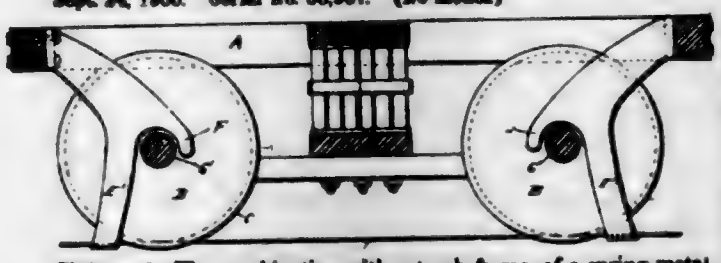

Claim.—1. The combination with a truck-frame, of a spring-metal flanger secured to said frame and extending down at the side of the wheel and terminating near the tread but slightly in front thereof, the lower end being free and inclined slightly into the path of the flange of the wheel, and adapted to yield transversely to the truck-frame.

2. The combination with a truck-frame, of a spring-metal flanger secured thereto extending downwardly by the side of the wheel, the lower extremity terminating below the horizontal plane of the track near but in front of the tread of the wheel, said lower end being inclined slightly toward or into the path of the flange of the wheel.

3. The combination with a truck-frame, of a flanger secured thereto and extending downwardly normally out of contact with the axle of the wheel, but when under tension adapted to engage the axle which then serves as a brace, the lower extremity of said flanger terminating in front of the tread of the wheel and inclined more or less into the path of the flange of the wheel.

704,526. ELECTRIC-ARC LAMP. HARRY BYRKBECK, McKeesport, Pa. Filed Dec. 30, 1901. Serial No. 87,708. (No model.)

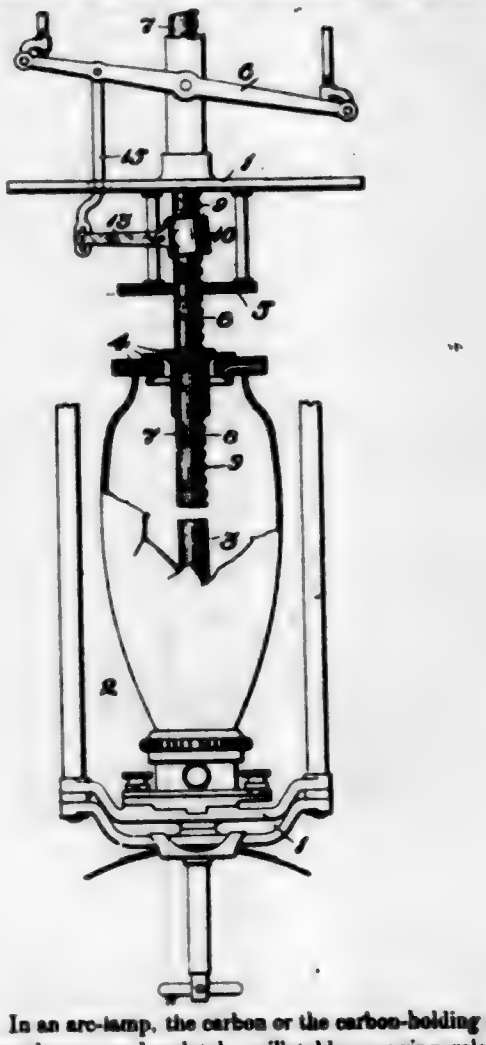

Claim.—1. In an arc-lamp, the carbon or the carbon-holding rod or tube having spaces thereon, and a clutch oscillatably engaging, releasing, and reëngaging therewith in and between said spaces.

2. In an arc-lamp, the carbon or the carbon-holding rod, or tube having spaces thereon, and a clutch oscillitably engaging, releasing, and reëngaging therewith and at points in and between said spaces.

3. In an arc-lamp, the carbon or the carbon-holding rod, or tube having equidistant spaces thereon, and an oscillating clutch having jaws engaging, releasing, and reëngaging therewith in and between said spaces.

4. In an arc-lamp, the carbon or the carbon-holding rod, or tube having equidistant spaces thereon, and an oscillating clutch having jaws engaging, releasing, and reëngaging therewith and alternately in and between said spaces.

5. In an arc-lamp, the carbon or the carbon-holding rod, or tube having spaces thereon, and an oscillating double-jawed clutch engaging, releasing and reëngaging therewith and with said jaws alternately at points in and between said spaces.

6. In an arc-lamp, the carbon or the carbon-holding rod, or tube having spaces thereon, an oscillating clutch engaging therewith in and between said spaces, a movable member to retain the same in its engaged position, and a trip to release said clutch and member.

7. In an arc-lamp, the carbon or carbon-holding rod, or tube having spaces thereon, an oscillatable double-jawed clutch engaging therewith in and between said spaces in alternate manner, a movable member to retain the same in its engaged position, and a trip to release said clutch and member.

8. In an arc-lamp the carbon, or carbon-holding rod, or tube having spaces thereon, an oscillatable double-jawed clutch engaging therewith in and between said spaces in alternate manner, a member pivoted to said

clutch to engage said spaced member and retain the clutch-jaws in their operative position, and a trip to release said clutch and member.

9. In an arc-lamp, the carbon or carbon-holding rod, or tube having spaces thereon, an oscillatable double-jawed clutch engaging therewith in and between said spaces in alternate manner, a member pivoted to said clutch at a point midway between said jaws to engage said spaced members and retain the clutch-jaws in their operative position, and a trip to release said clutch and member.

10. In an arc-lamp, the carbon or carbon-holding rod, or tube having spaces thereon, an oscillatable double-jawed clutch engaging therewith in and between said spaces in alternate manner, a jawed member pivoted to said clutch engaging the spaced member at a point opposite one of said clutch-jaws, retaining said clutch-jaws in operative position, and a trip to release said clutch and member.

11. In an arc-lamp, the carbon or carbon-holding rod, or tube having spaces thereon, an oscillatable clutch having fixed double jaws non-registerable with said spaces engaging said member each time in and between said spaces in alternate manner, a jawed member pivoted to said clutch engaging said spaced member at a point opposite one of said clutch-jaws, retaining said clutch-jaws in operative position, and a trip to release said clutch and member.

12. In an arc-lamp, the carbon or carbon-holding rod, or tube having spaces thereon, an oscillatable clutch having fixed double jaws non-registerable with said spaces engaging said member each time in and between said spaces in alternate manner, a jawed member pivoted to said clutch opposite the jaws and engaging said spaced member opposite one of said clutch-jaws, retaining said clutch-jaws in their operative position, and a trip to engage said clutch and release the same and said member.

704,527. GAS-PRODUCER. WILLIAM J. EVANS and FRANK KLEPETKA, Great Falls, Mont. Filed Nov. 13, 1897. Serial No. 658,330. (No model.)

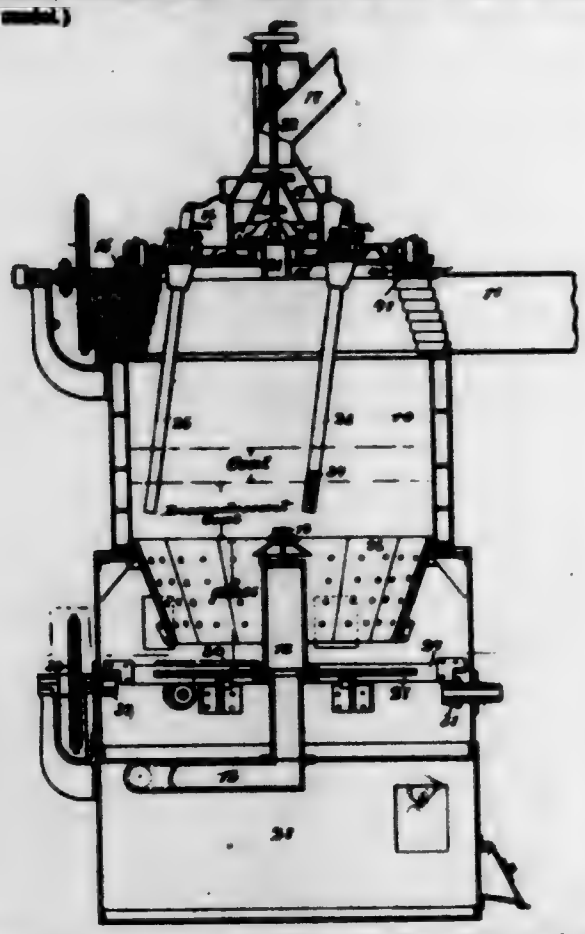

Claim.—1. In a gas-producer, the combination of the gas-chamber walls and top relatively rotary, a water seal between said walls and top, means for confining a body of water upon the said top, an overflow from the said top to the said seal, and an overflow device for the said seal, substantially as set forth.

2. In a gas-producer, the combination of the gas-chamber walls and top relatively rotary, a water seal between said walls and top, means for confining a body of water upon the said top, an overflow from the said top to the said seal, a mechanical stirrer or poker carried by the said top and provided with cooling-passages, and fluid connections supplying water thereto and discharging onto the said top, substantially as set forth.

3. In a gas-producer, the combination of the gas-chamber walls and top relatively rotary, a water seal between said walls and top, means for confining a body of water upon the said top, a mechanical stirrer or poker carried by the said top and provided with cooling-passages, fluid connections leading to said passages and delivering from said passages onto the said top, and an overflow from the said top to the said seal, substantially as set forth.

4. In combination in a gas-producer, the top thereof provided with stirrers or pokers having cooling-passages, coal-feeding mechanism carried by said top, a water-holding receptacle for cooling the said coal-feeding mechanism, and fluid connections leading therefrom to the cooling-passages of the said stirrers or pokers, substantially as set forth.

5. In combination in a gas-producer, a coal-feeding opening in the top thereof, means for delivering the coal around but not into the said opening, and coal-feeding arms feeding the coal in a centripetal direction to the said opening, substantially as set forth.

6. In combination in a gas-producer, a coal-feeding opening in the top thereof, means for delivering the coal around but not into the said opening, including a spreading cone which overhangs the said opening, and coal-feeding arms extending beneath the said cone feeding the coal in a centripetal direction to the said opening, substantially as set forth.

7. In combination in a gas-producer, a coal-feeding opening in the top thereof, means for delivering the coal around but not into the said opening, including a spreading device which overhangs the said opening, coal-feeding arms above said opening, and jet-producing mechanism directed downward from above the said opening, substantially as set forth.

8. In combination in apparatus for feeding coal to a gas-producer, an opening through which the coal is fed, means for producing dynamic counter-pressure in such opening in opposition to the static pressure without the producer, a spreading deflector above the said opening, means for delivering coal by gravity onto the said deflector, and mechanical means for feeding the coal from around the said deflector to said opening, substantially as described.

704,528. SELF-PROPELLING TRUCK AND MOTOR FOR THRESHING-MACHINES AND GRAIN-SEPARATORS. FRANK A. PENCOYAR, Blanchard, Iowa. Filed Apr. 24, 1901. Serial No. 57,288. (No model.)

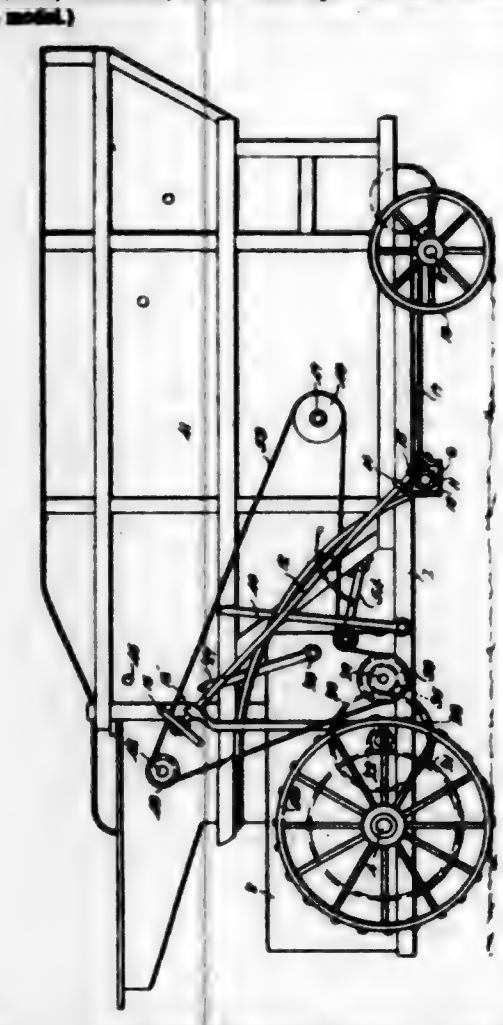

Claim.—1. A self-propelling truck having a power-shaft, in combination with the casing of a threshing-machine or the like, having a drive-shaft one or more, the said casing of said machine being detachably mounted on said truck and means to transmit power from said power-shaft to said drive-shaft, substantially as described.

2. In a self-propelling truck having an engine for propelling the same and also for furnishing power to a threshing-machine or the like carried on said truck, the combination of a traction-shaft, a counter-shaft geared thereto, a brake for said counter-shaft, an engine-shaft, a clutch thereon and gearing connecting said engine-shaft with said counter-shaft, the said gearing including a pinion on said engine-shaft adapted by the clutch to be locked to or released from said engine-shaft and means to

convey power from the engine-shaft to the said machine-driving element, substantially as described.

3. A self-propelling truck having a power-shaft with pulleys at both ends thereof, in combination with a machine of the class described detachably mounted on said truck and having counter-shafts provided with pulleys, slack belts connecting the pulleys of said counter-shafts to the pulleys of said power-shaft and means for tightening said slack belts, substantially as described.

4. A self-steering supporting-truck for a threshing-machine or the like, having a motor to propel the same, a pivoted axle, means to turn the same, and an inclined, upwardly-extending shaft geared to said axle-turning means and having means whereby it may be manually rotated, substantially as described.

5. In combination with a threshing-machine and grain-separator, having a cylinder, driving-shaft and a driving-shaft for the separating mechanism, each of said shafts having a pulley on the same side of the machine, an engine having a power-shaft provided with a pulley, and an endless belt connecting said pulleys of said power-shaft and cylinder and separating-machine drive-shafts, whereby the separator-machine drive-shaft is driven uniformly and is not affected by the variations in the speed of the cylinder, substantially as described.

704,529. **SAFETY DEVICE FOR STEAM-BOILERS.** FREDERICK FORKETT, San Antonio, Tex. Filed Nov. 23, 1901. Serial No. 83,406. (No model.)

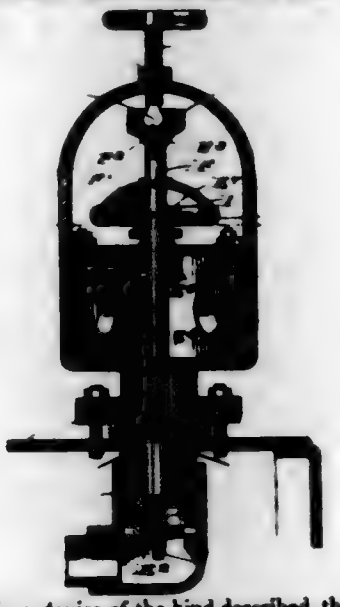

Claim.—1. In a device of the kind described, the combination with a valve, and its stem, of a presser-rod adapted to bear upon the valve-stem, said presser-rod being pivotally supported, whereby it can be swung by gravity away from the end of the valve-stem, substantially as described.

2. In a device of the kind described, the combination with a valve and its stem, of a presser-rod adapted to contact with the end of the valve-stem, said presser-rod having a screw-shaft movably connected thereto, whereby the presser-rod can be swung by gravity away from the valve-stem, substantially as described.

3. In a device of the kind described, the combination with a valve and its stem, of a presser-rod adapted to bear upon the said stem, said presser-rod having a disk attached thereto, said disk having a weighted periphery, said presser-rod being pivotally suspended or supported whereby it can be swung by gravity away from the end of the valve-stem, substantially as described.

4. In a device of the kind described, the combination with a valve and its stem, of a presser-rod adapted to bear upon the said stem, a disk attached to said presser-rod and having a weighted periphery, and a screw-shaft connected to the presser-rod, by means of a universal joint, whereby said presser-rod can be swung by gravity away from the valve-stem, substantially as described.

5. In a device of the kind described, the combination with a valve and its stem, of a presser-rod adapted to bear upon the end of the valve-stem, said presser-rod having a disk attached thereto, the periphery of said disk being weighted, a threaded shaft connected to the presser-rod by means of a universal joint, a yoke through which the screw-shaft works, and a jam-nut surrounding the screw-shaft and adapted to bear upon the top of the yoke, substantially as and for the purpose described.

704,580. **STOCK-FOOD AND PROCESS OF MAKING SAME.** SPENCER L. FRASER, Chicago, Ill., assignor of one-tenth to Sophronia Demarest Fraser, Chicago, Ill. Filed Apr. 26, 1899. Serial No. 714,515. (Specimens.)

Claim.—1. The process which consists in introducing molasses heated to approximately 180° to 230° Fahrenheit into finely-divided dry base material, stirring the mixture to thoroughly incorporate the molasses, and drying it at a low temperature, to produce a dry, pulverulent homogeneous feed containing solidified uncaramelized molasses.

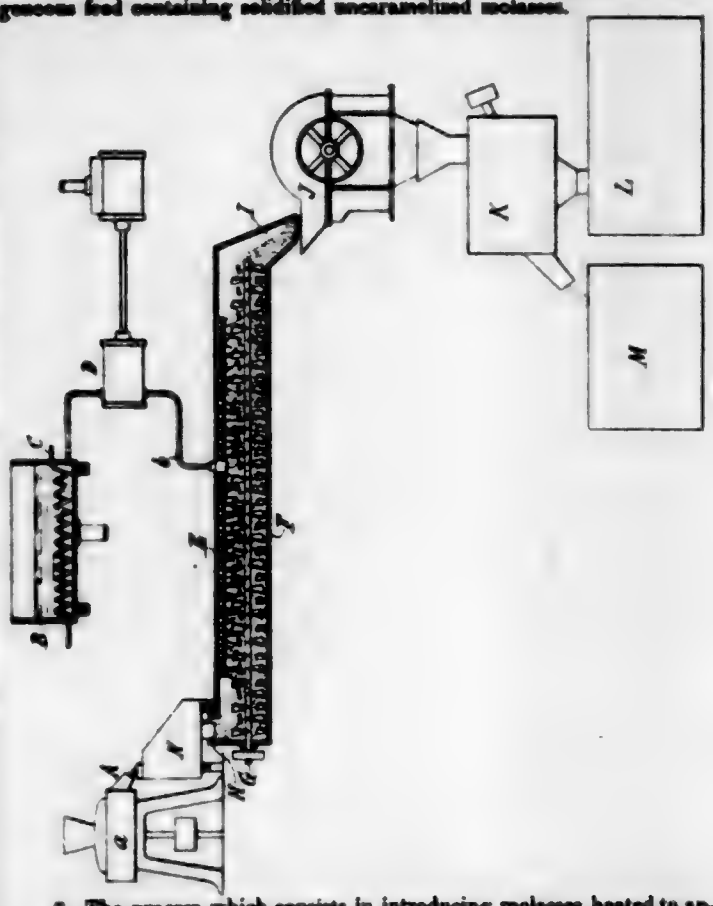

2. The process which consists in introducing molasses heated to approximately 180° to 230° Fahrenheit into finely-divided uncooked dry base material, stirring the mixture to thoroughly incorporate the molasses, and drying it at a low temperature, to produce a dry, pulverulent homogeneous feed containing solidified uncaramelized molasses.

3. The process which consists in introducing molasses heated to approximately 180° to 230° Fahrenheit into finely-divided dry base material, stirring the mixture to thoroughly incorporate the molasses, and then drying at a low temperature leaving the mass to cure for a sufficient time to cause the moisture to be absorbed and the molasses to solidify, whereby to produce a dry, pulverulent, homogeneous feed of wholesome and appetizing flavor.

4. A feed comprising a finely-divided fibrous or absorbent base material, and solidified cooked and uncaramelized molasses, the latter distributed homogeneously throughout the base, and the feed being dry, pulverulent, and of wholesome and appetizing flavor.

5. A feed comprising a finely-divided fibrous or absorbent uncooked alimentary base, and solidified uncaramelized molasses, the latter distributed homogeneously throughout the base and coated on or attached to the particles of the base, the feed being dry, pulverulent, and of wholesome and appetizing flavor.

6. A feed comprising a finely-divided fibrous or absorbent uncooked alimentary base, and ten per cent. or more solidified cooked molasses, the latter distributed homogeneously throughout the base, and the feed being dry, pulverulent, and of wholesome and appetizing flavor.

704,581. **MERCERIZING-MACHINE.** MAURICE PRINCE, Paris, France. Filed Dec. 11, 1900. Serial No. 39,541. (No model.)

Claim.—1. In a mercerizing-machine, an upper roller and driving means for the same, a lower stretching-roller over which the hanks pass from the driving-roller, a vat for containing mercerizing liquid, an operating-lever for lowering the stretching-roller into and elevating it from the vat, and counterbalancing means for the stretching-roller

2. In a mercerizing-machine, rollers over which the hanks are strung, a vat for containing mercerizing liquid, driving means for rotating the rollers and moving the hanks to carry them through the mercerizing liquid in the vat, an automatically-controlled mercerizing-liquid supply for the vat, an automatically-controlled mercerizing-liquid outlet for the vat, and an automatically-controlled rinsing-liquid inlet and outlet for discharging said liquid into and withdrawing it from the vat.

3. In a mercerizing-machine, a vat, a rinsing-liquid inlet for discharging said liquid into the vat, two vessels or a chamber for the rinsing liquid, and an automatically-controlled outlet for drawing part of the rinsing liquid from the vat into one of said vessels and part into the other.

4. In a mercerizing-machine, two rollers over which the hanks are strung, a vat, means for rotating the rollers to move the hanks through the vat, a tank for mercerizing liquid, automatically-controlled supply and return means for drawing mercerizing liquid from said tank into the vat and for returning it from the vat to the tank, automatically-operating rinsing means for subjecting the hanks to the action of a rinsing liquid after they have been subjected to the mercerizing liquid, two tanks or vessels for receiving the rinsing liquid, and an automatically-controlled outlet for withdrawing rinsing-liquid rich in mercerizing liquid into one tank and rinsing liquid free from mercerizing liquid into another tank.

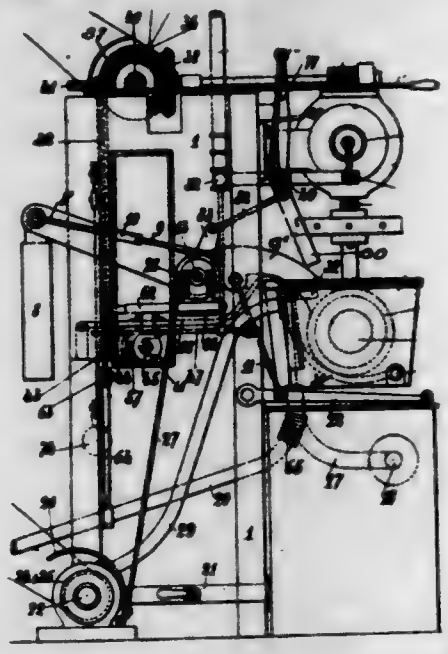

5. In a mercerizing-machine, a vat, feed mechanism for moving the hanks through a mercerizing solution in the vat, an automatically-controlled outlet for withdrawing the mercerizing solution from the vat, automatically-operating stopping means for arresting the hanks-feed mechanism to permit the hanks to drain, automatically-operated starting means for throwing the hanks-feed mechanism into operation after the mercerizing solution has been withdrawn from the vat, and rinsing means for the hanks.

6. In a mercerizing-machine, a vat, two rollers over which the hanks are adapted to be stretched, driving means for rotating one of the rollers to move the hanks, lowering and raising means for lowering one of the rollers into and elevating it from the vat, mercerizing-liquid-supply means, automatically-operated controlling means for said mercerizing-liquid-supply means whereby said liquid is supplied to the vat upon elevation of said roller and said supply stopped upon lowering of the roller, starting means for throwing the roller-driving means into operation, and automatically-operating stopping means for throwing the roller-driving means out of operation after a predetermined time.

7. In a mercerizing-machine, a vat, two rollers over which the hanks are adapted to be stretched, driving means for rotating one of the rollers to move the hanks, lowering and raising means for lowering one of the rollers into and elevating it from the vat, mercerizing-liquid-supply means automatically operating to supply said liquid to the vat upon the elevation of said roller, automatically-operating means for arresting the mercerizing-liquid-supply means to stop the supply of said liquid upon lowering of the roller, starting means for throwing the roller-driving means into operation, an automatically-controlled mercerizing-liquid outlet for the vat, stopping means for throwing the roller-driving means out of operation after a predetermined time, and rinsing means adapted to automatically rinse the hanks.

8. In a mercerizing-machine, a vat, two rollers over which the hanks are adapted to be stretched, driving means for rotating one of the rollers to move the hanks, lowering and raising means for lowering one of the rollers into and elevating it from the vat, mercerizing-liquid-supply means automatically operating to supply said liquid to the vat upon the elevation of said roller, automatically-operating means for arresting the mercerizing-liquid-supply means to stop the supply of said liquid upon the lowering of the roller, starting means for throwing the roller-driving means into operation, and automatically-controlled mercerizing-liquid outlet for the vat, automatically-operating spraying means for spraying the hanks with the rinsing liquid, and an automatically-controlled rinsing-liquid outlet for drawing said liquid from the vat.

9. In a mercerizing-machine, a vat, two rollers over which the hanks are adapted to be stretched, driving means for rotating one of the rollers to move the hanks, lowering and raising means for lowering one of the rollers into and for elevating it from the vat, mercerizing-liquid-supply means automatically operating to supply said liquid to the vat upon the elevation of said roller, automatically-operating means for arresting the mercerizing-liquid-supply means to stop the supply of said liquid upon the lowering of the roller, starting means for throwing the roller-rotating mechanism into operation, and automatically-controlled mercerizing-liquid outlet for the vat, stopping means for throwing the roller-driving means out of operation for a predetermined time, automatically-operating spraying means for spraying the hanks with a rinsing liquid, starting means for again throwing the roller-driving means into operation, and stopping means for arresting the operation of the entire machine.

704,532. WINDOW CURTAIN AND SHADE SUPPORT. JAMES GALE, San Francisco, Cal. Filed Jan. 22, 1901. Serial No. 44,326. (No model.)

Claim.—In a curtain and shade support, the combination of metallic arms provided with pivotal connections to be attached to the window-casing, sheet-metal brackets substantially triangular in form, fixedly secured in their upper ends to the upper ends of said arms, fasteners in the lower ends of the said brackets said fasteners comprising round central parts loosely surrounding said arms and prongs passed through and secured in rivet-holes in the lower ends of said brackets, and a curtain-pole carried by the upper sides of said brackets, substantially as described.

704,533. METHOD OF PREPARING SPARKLING WINES. PAUL GARRETT, Weldon, N. C. Filed Jan. 31, 1901. Serial No. 45,498. (No specimens.)

Claim.—A method of preparing sparkling wines in bulk, consisting in fermenting the material in a closed receptacle under pressure of the natural carbonic-acid gas given off during the fermentation stage, draw-

ing slowly the fermented wine from the said closed receptacle through a filter into a closed clarifying-tank where the wine is clarified, subjecting the fermented wine simultaneously with the drawing off thereof through the filter to pressure of natural carbonic-acid gas externally supplied to the closed receptacle, and then finally subjecting the wine in bulk during the clarification stage within the clarifying-tank to pressure of natural carbonic-acid gas externally supplied for retaining the carbonic-acid gas generated during the clarification stage within the wine thereby producing a finished product for bottling.

704,534. BRAKE MECHANISM. GEORGE W. GREENWOOD, Cleveland, Ohio. Filed Mar. 31, 1902. Serial No. 100,944. (No model.)

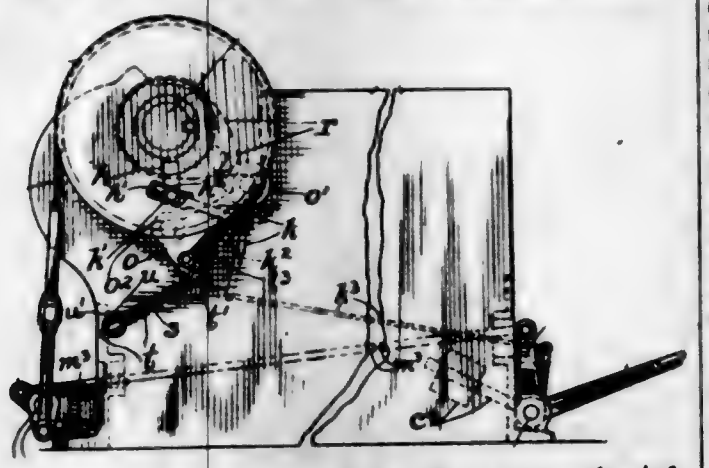

Claim.—1. The combination, with the stationary framework, a shaft, a brake-band-engaging wheel and a cam operatively connected with the said shaft, and a brake-band extending over and circumferentially of the said wheel, of lever mechanism operatively connected with one end portion of the band, a lever operatively connected with the other end portion of the band and arranged to be engaged and actuated by the cam during the rotation of the shaft, and means acting to retain the said lever in its normal position, and the arrangement of the parts and the trend of the cam being such that the brake-band is caused to powerfully engage the aforesaid wheel during the operation of the aforesaid lever by the cam, or is loosened to such an extent as to render it inoperative during the actuation of the cam-actuated lever, according as the aforesaid lever mechanism is actuated into the one or the other of its positions.

2. The combination, with the stationary framework, a shaft, a brake-band-engaging wheel and a cam operatively connected with the shaft, and a brake-band extending over and circumferentially of the said wheel, of lever mechanism operatively connected with one end portion of the band, a roller-bearing lever operatively connected with the other end portion of the band and arranged to be engaged and actuated by the cam during the rotation of the shaft, and a suitably-applied spring acting to retain the said lever in its normal position, and the arrangement of the parts and the trend of the cam being such that the brake-band, in the normal position of the aforesaid lever mechanism, is caused to powerfully engage the aforesaid wheel during the actuation of the aforesaid lever by the cam, and that the said band upon the operation of the said lever mechanism is loosened to such an extent as to render it inoperative during the actuation of the cam-actuated lever.

3. The combination, with the stationary framework, a shaft, a brake-band-engaging wheel and a cam operatively connected with the shaft, and a brake-band extending over and circumferentially of the said wheel, lever mechanism operatively connected with one end portion of the brake-band and operatively connected with the oscillating shaft, a lever operatively connected with the upper end portion of the brake-band, and normally arranged to be engaged and actuated by the said cam during the operation of the first-mentioned shaft, and means acting to retain the cam-actuated lever in its normal position, and the arrangement of the parts being such that the brake-band is caused to powerfully engage the brake-band-engaging wheel during the operation of the cam-actuated lever by the cam, or is loosened to such an extent as to render it inoperative during the said actuation of the cam-actuated lever, according as the aforesaid oscillating shaft is oscillated into the one or the other of its positions.

4. The combination, with the stationary framework; a shaft; a brake-band-engaging wheel and a cam operatively connected with the said shaft, and a brake-band extending over and circumferentially of the said wheel, of an oscillating shaft below the said wheel and having an arm or lever operatively connected with one end portion of the band, which shaft has another and normally depending arm or lever; another oscillating shaft having an arm or lever operatively connected with the aforesaid depending arm or lever of the first-mentioned oscillating shaft; means acting to retain the said oscillating shafts in their normal position; another lever arranged to be engaged by the aforesaid cam during the rotation of the first-mentioned shaft, and means acting to retain the said cam-actuated lever in its normal position, and the arrangement of the parts and the trend of the cam being such that the brake-band is caused to powerfully engage the aforesaid wheel during the operation of the cam-actuated lever by the cam, or is loosened to such an extent as to render it inoperative during the said actuation of the cam-actuated lever, according as the aforesaid oscillating shafts are actuated into the one or the other of their positions.

5. In combination, a stationary framework, a shaft, a brake-band-engaging wheel and a cam operatively connected with the shaft, a brake-band extending over and circumferentially of the said wheel, a power-transmitting wheel loosely mounted on the shaft, a clutch arranged to control operative connection between the last-mentioned wheel and the shaft, an oscillating shaft, lever mechanism adapted to render the clutch operative and operatively connected with the last-mentioned shaft, lever mechanism operatively connected with one end portion of the brake-band and operatively connected with the oscillating shaft, a lever operatively connected with the other end portion of the brake-band and normally arranged to be engaged and actuated by the said cam during the operation of the first-mentioned shaft, and means acting to retain the cam-actuated lever in its normal position, and the arrangement of the parts being such that the brake-band is caused to powerfully engage the brake-band-engaging wheel during the operation of the cam-actuated lever by the cam, or is loosened to such an extent as to render it inoperative during the said actuation of the cam-actuated lever, according as the aforesaid oscillating shaft is oscillated into the one or the other of its positions, and that the aforesaid clutch is rendered operative or inoperative according as the brake-band is rendered inoperative or operative.

704,535. TYPE-WRITER. JOHN D. GRIFFEN, New York, N. Y. Filed May 23, 1901. Serial No. 61,493. (No model.)

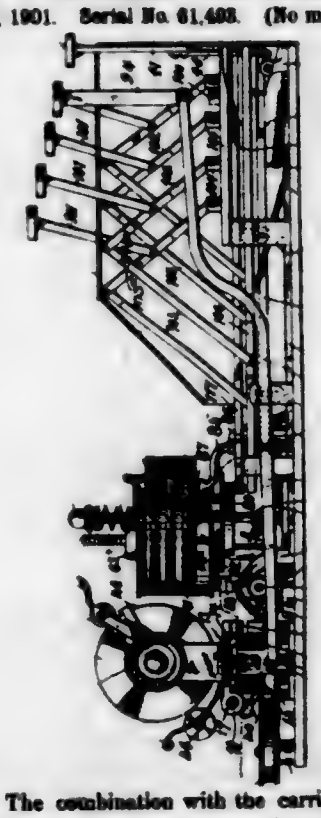

Claim.—1. The combination with the carriage having a rack-bar and escapement for releasing the carriage and rack-bar tooth by tooth, of the slide-block movable back and forth beneath the carriage and at right angles thereto, a direct connection between the slide-block and escapement, a key-operated printing device sliding bodily backward and forward in relation to the carriage, and means for moving the slide-block independently or by the advance of the printing device.

2. In a type-writer, the combination with the carriage having a suitable release or escapement, of a slide-block operating the escapement, independent means for operating the slide-block, a type-wheel movable back and forth in relation to the carriage, and means for moving the slide-block and operating the escapement by the advance of the type-wheel.

3. In a type-writer, the combination with the carriage having a suitable release or escapement, of a slide-block operating the release, a second slide-block abutting with and adapted to move the first slide-block, a type-wheel carried on the second slide-block, and means for moving the type-wheel back and forth.

4. In a type-writer, the combination with the carriage having a suitable release or escapement, of a slide or spacer block operating the escapement, key mechanism for moving the spacer-block, a second slide-block abutting with the spacer-block, a key mechanism for moving the second slide-block, and a type-wheel carried by the second slide-block.

5. The combination with the rotatable and horizontally and vertically movable type-wheel having its type arranged in a series of rows, of a vertically-sliding arm having its upper end abutting with the type-wheel so as to permit the type-wheel to slide horizontally in relation to the arm, tilting levers in engagement with the arm, the levers having a differential throw, and a key mechanism for operating the levers.

6. In a type-writer, the combination with the rotatable and vertically and horizontally movable type-wheel, of the laterally-arranged tilting levers, one having a greater throw than the other, a sliding arm supported on the levers and engaging the type-wheel so as to permit the type-wheel to slide horizontally in relation to the arm, and a key mechanism for tilting the levers.

7. In a type-writer, the combination with the rotatable and horizontally-reciprocating type-wheel, of key-operated slides arranged to move in succession and together, and an operative connection between the slides and the type-wheel whereby the movement of one slide turns the type-wheel, the movement of the second fixes its position, and the synchronous movement of the two advances the type-wheel for printing.

8. In a type-writer, the combination with the rotatable and horizontally-reciprocating type-wheel, of slides arranged one above the other adapted to move together or separately, the first slide being connected to the type-wheel so as to turn it, the second slide being arranged to fix the position of the type-wheel, and the movement of the two together being adapted to advance the type-wheel, and key-rods slidable parallel with the aforesaid slides and arranged to engage and move the slides.

9. In a type-writer, the combination with the rotatable and horizontally-reciprocating type-wheel and the reciprocating key-rods, of the sliding shifting rods pivotally connected to the type-wheel to turn it, means for moving the shifting rods by the movement of the key-rods, locking-rods connected to the type-wheel so as to fix its position, means for moving the locking-rods by the movement of the key-rods, and means for advancing the type-wheel by the further movement of the key-rods.

10. In a type-writer, the combination with the rotatable and horizontally-reciprocating type-wheel, of the shifting rods and locking-rods slidable in parallel relation, the shifting rods being pivoted to the type-wheel to turn it and the locking-rods having means for fixing the position of the type-wheel, and a key mechanism for moving the rods, said key mechanism being also arranged to advance the type-wheel bodily.

11. In a type-writer, the combination with the rotatable and horizontally-reciprocating type-wheel having pins or stops on the under side, of the shifting rods pivoted to the type-wheel so as to turn it, the sliding locking-rods to engage the aforesaid pins or stops to fix the position of the type-wheel, and a key mechanism for moving the shifting and locking rods.

12. In a type-writer, the combination with the rotatable and horizontally-movable type-wheel, of the slidable shifting rods pivotally connected to the type-wheel to turn it, the slidable locking-rods moving parallel with the shifting rods, stops on the type-wheel to engage the locking-rods, and freely-moving keys adapted in their movement to engage and operate the shifting and locking rods.

13. In a type-writer, the combination with the rotatable and horizontally-movable type-wheel, of the slides arranged one above the other, the shifting rods engaged and moved by the upper slides, said rods being pivotally connected to the type-wheel to turn it, the locking-rods moved by the lower slide, said rods being arranged to engage and lock the type-wheel from further rotation, the key-rods having means as the pins to cause them to engage the upper and lower slides, and means for operating the key-rods.

704,586. GOVERNOR-CONTROLLED VALVE-GEAR. JOHN A. GNOMMOS, New York, N. Y., assignor of one-half to Marshall T. Davidson, Brooklyn, N. Y. Filed Sept. 30, 1901. Serial No. 77,085. (No model.)

Claim.—1. The combination with the valve-gear of a steam pumping-engine, of a governor, a pivoted lever operatively connected with the valve-gear, connection between said governor and the lever, a pressure-governor and connection between it and the lever, and means for counterbalancing different pressures on the pressure-governor, substantially as described.

2. The combination with the valve-gear of a steam pumping-engine, of a speed-governor, a pivoted lever operatively connected with the valve-gear, connection between the speed-governor and the lever, a pressure-governor and connection between it and the lever at one side of the pivot, and means on the lever at the other side of the pivot for compensating for pressure on the pressure-governor, substantially as described.

3. The combination with the valve-gear of a steam pumping-engine, of a speed-governor, a pivoted lever operatively connected with the valve-gear, connection between the speed-governor and the lever at one side of the pivot, a pressure-governor and connection between it and the lever at the other side of the pivot, and means on the lever for compensating for pressure on the pressure-governor, substantially as described.

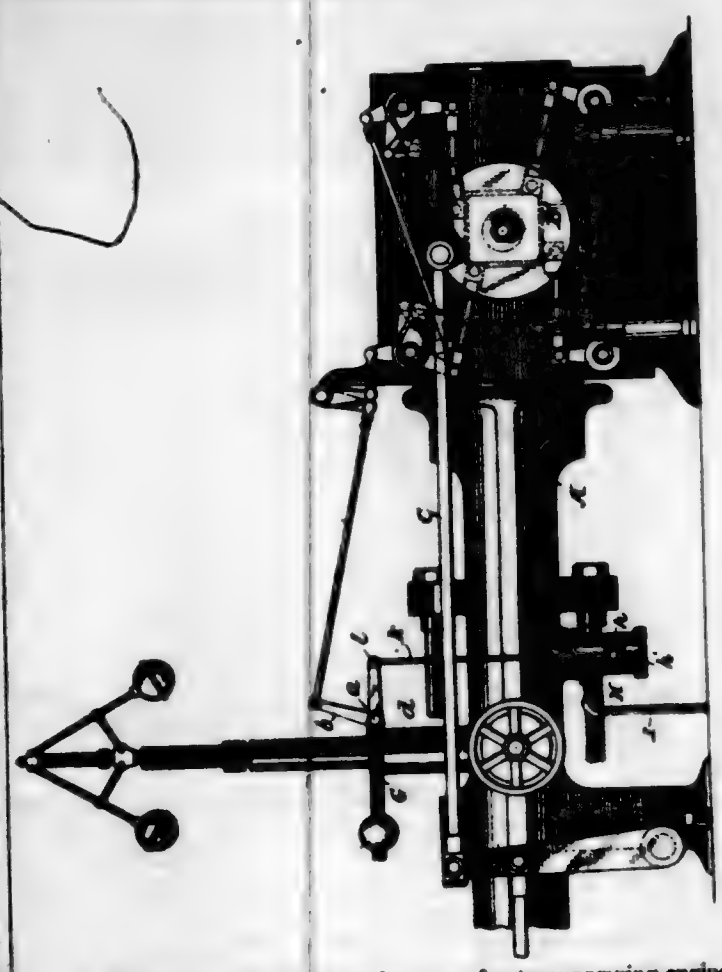

4. The combination with the valve-gear of a steam pumping-engine, of a speed-governor, a pivoted lever operatively connected with the valve-gear, connection between the speed-governor and the lever at one side of the pivot, a pressure-governor and connection between it and the lever at the other side of the pivot, and variable means for counterbalancing different pressures on the pressure-governor, substantially as described.

5. The combination with the valve-gear of a steam pumping-engine, of a speed-governor, a pivoted lever operatively connected with the valve-gear, connection between the speed-governor and the lever, a pressure-governor and connection between it and one end of the lever, and a weight on the other end of the lever compensating for pressure on the pressure-governor, substantially as described.

6. The combination with the valve-gear of a steam pumping-engine, of a speed-governor, a pressure-governor, and operative connections between the two and the valve-gear so arranged that the operation of the speed-governor is independent of the pressure-governor on a decrease of pressure but said speed-governor is controlled by the pressure-governor upon an increase of pressure, substantially as described.

7. The combination with the valve-gear of a steam pumping-engine, of a speed-governor, a pressure-governor, and operative connections between the two and the valve-gear so arranged that said governors act in conjunction to control the valve-gear on a decrease of pressure but act in opposition on an increase of pressure, substantially as described.

704,587. GARMENT-CLASP. MYRON B. HAMMOND, Bridgeport, Conn. Filed Mar. 26, 1902. Serial No. 100,087. (No model.)

Claim.—1. A garment-clasp comprising a button or stud, a metal loop having therein a pear-shaped opening, the upper ends of the side walls of said opening being notched, and a rubber element extending beyond the edges of said opening and with its ends lying within said notches, the edges of the loop being turned over and pinched firmly against the rubber throughout its length, substantially as set forth.

2. In a garment-clasp, the combination with the button or stud, of the loop having the upper ends of the side walls of its opening notched, and also having its side and bottom edges curled downwardly and thence brought into position in substantial coincidence with the side and bottom edges of said opening, and a section of rubber between said edges at the

sides and bottom only of said opening, the upper extremities of the rubber section abutted against and fitting within said notched portions, while the rubber itself projects beyond the edges of the loop into said opening and is clamped firmly by said edges throughout the bottom and sides only of said opening, substantially as set forth.

704,538. CULTIVATOR. ALONZO HARMON, Tecumseh, Nebr. Filed July 9, 1900. Serial No. 22,942. (No model.)

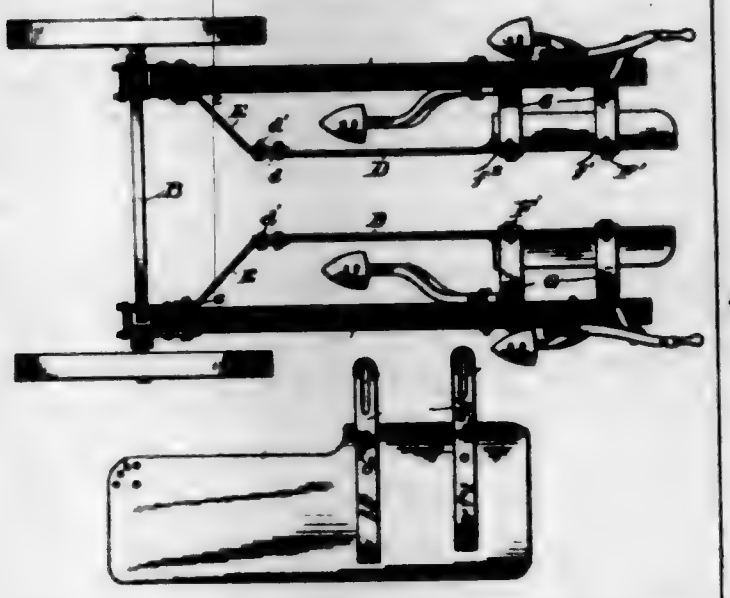

Claim.—The combination with a cultivator of a fender extending along the side of the cultivator and adapted to be interposed in use between the cultivator and growing plants, the fender having in its front portion a series of openings in different vertical planes, and having at its rear end an upward extension provided with elongated openings, a rigid support extending rearward and outward from the front of the beam of the cultivator and having in its rear end an opening receiving a bolt which also passes through one of the openings in the front portion of the fender, and a bracket attached to the beam of the cultivator adjacent to the extension from the fender, the bracket having a vertical portion provided with openings adapted to register with those in the extension from the fender, substantially as described.

704,539. TANK. EDWARD H. HARMON, Belvedere, Cal. Filed Dec. 13, 1901. Serial No. 85,814. (No model.)

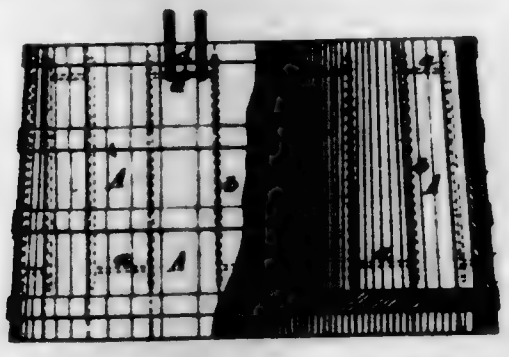

Claim.—1. A tank composed of staves, each having longitudinal edge grooves, and an intersecting passage connecting said grooves; said intersecting passages in adjoining staves being in different planes, and all the passages and grooves forming in series, a single continuous waterway.

2. A tank composed of staves having vertical grooves in their edges, and communicating horizontal passages, arranged alternately near the top and the bottom of adjacent staves.

704,540. CONVEYER. ROBERT S. HILL, Detroit, Mich. Filed Mar. 24, 1902. Serial No. 99,711. (No model.)

Claim.—1. In a conveyer in combination, a trough, guides thereon, sliding blocks embracing the guides, flights swingingly hung from the blocks, connecting-bars between the flights, and means to reciprocate the flights.

2. In a conveyer, in combination, a trough, guide-bars thereon, sliding blocks on the guide-bars, connected flights swingingly hung from the blocks, means to cause the flights to swing and slide, and a spring engaging a block and yieldingly holding the same against the sliding movement.

704,540.

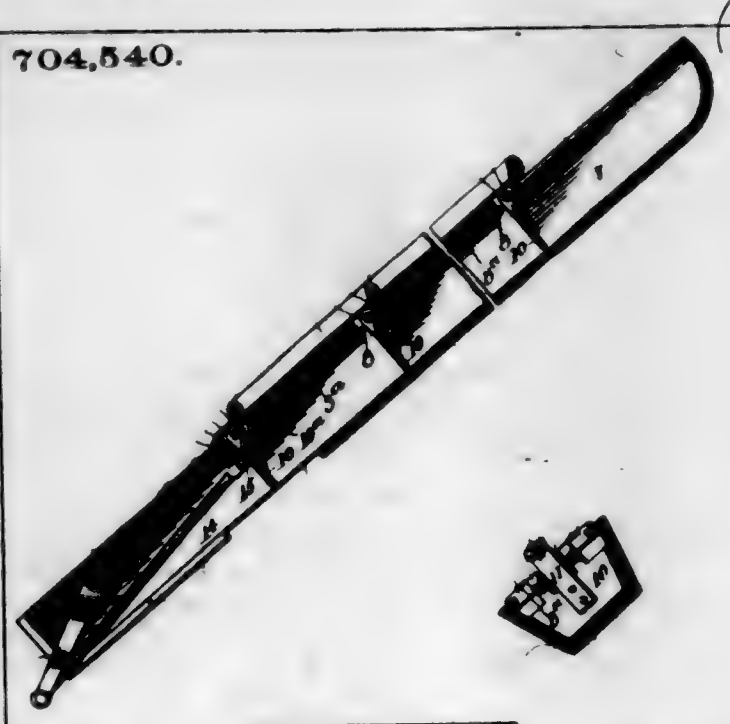

704,541. WINDOW-SASH HINGE. JOHN HOLT, Canton, Ohio. Filed Apr. 16, 1902. Serial No. 103,083. (No model.)

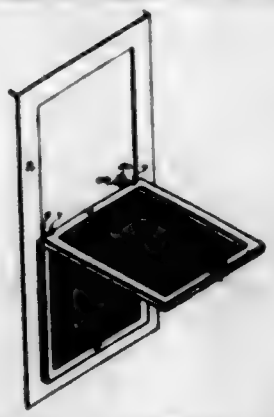

Claim.—1. The combination of a window-frame, sash located against the face of said frame, hinges connecting the abutting edges of said sash, the hinge-pins being located on the outer side of said sash, and means for detachably connecting said hinge-pins with the window-frame.

2. The combination of a window-frame, pins projecting from the inner sides of said frame, sash located against the face of said frame, hinges connecting the abutting edges of said sash, the hinge-pins being located on the outer side of said sash, and hooked hinge-pin extensions directed inward and adapted to engage said frame-pins.

704,542. CLIP FOR UPHOLSTERING PURPOSES. HENRY J. JACOBS, Buffalo, N. Y. Filed Jan. 10, 1902. Serial No. 88,314. (No model.)

Claim.—1. The herein-described means for securing upholstering and similar materials to wire or other framework, comprising the foundation material and covering, a staple-batten, and a wire body, in combination with a clip engaging over said wire, a loop on said clip engaging the legs of the batten, and legs on said clip which lie at right angles to the legs of said batten and between said wire and the head of the batten, substantially as and for the purposes set forth.

2. A clip for securing upholstery and similar uses, in combination with a spring, an edge wire, and a staple-batten, comprising a clip having a loop portion engaging the legs of the batten, a portion to engage transversely the spring and the edge wire, and a portion to engage between the edge wire and the batten-head, whereby the upholstery, the edge wire, and the spring are secured together, substantially as and for the purposes set forth.

704,543. ELECTRICAL MEASURING INSTRUMENT. EDWARD B. JACKSON, Pittsfield, Mass., assignor to Thor H. Nelson, Boston, Mass. Filed Feb. 11, 1902. Serial No. 93,697. (No model.)

Claim.—1. An instrument for measuring the intensity and potential of electric circuits and comprising a pair of electromagnets, the re-

spective circuits of which are connected at one end to a single terminal, and at the other end with an independent terminal.

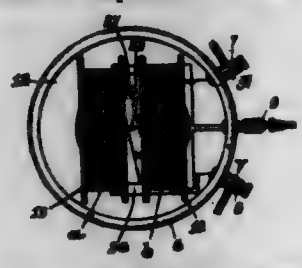

2. An instrument for measuring electrical current comprising the electromagnets *a* and *b*, constructed as described, and having the negative ends of their coils connected to a single terminal, and the positive ends of their coils connected to independent terminals.

704,544. WORKMAN'S TIME-RECORDER. GEORGE M. JAYNES, Detroit, Mich., and JOHN W. DEUBNER, Chicago, Ill., assignors, by mesne assignments, to International Time Recording Company, a Corporation of New Jersey. Filed May 24, 1901. Serial No. 17,794. (No model.)

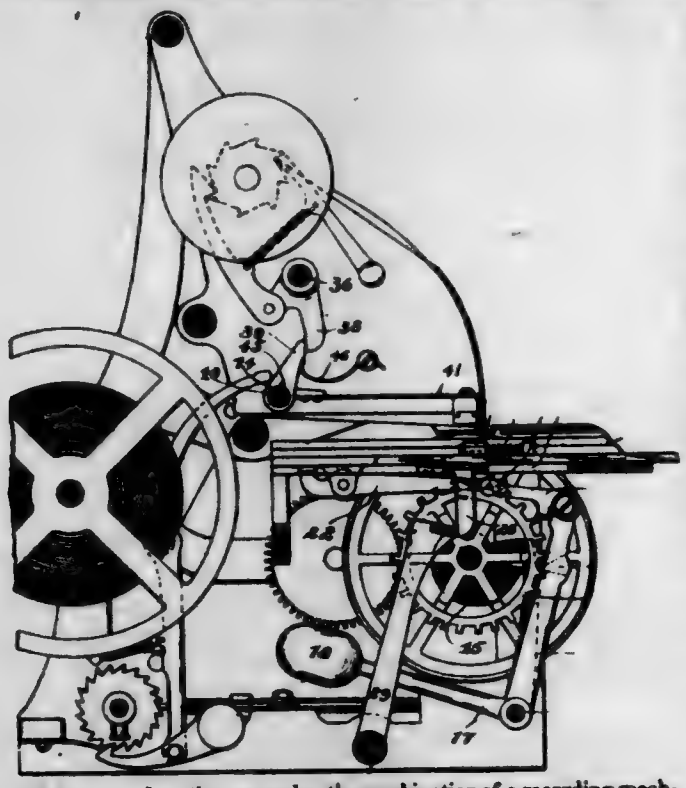

Claim.—1. In a time-recorder, the combination of a recording mechanism, a shiftable carrier adapted to be shifted by directly-applied manual pressure, and an individual workman's type-check, removable from the carrier, provided with printing characters and adapted to be carried by the carrier into position to bring its type characters into register with a printing-form of the recording mechanism, said recording mechanism including an automatically-operating impression device which is tripped by the movement of the carrier.

2. In a time-recorder, the combination of a recording mechanism, a shiftable carrier adapted to be shifted by the directly-applied pressure of the workman's hand moving with the carrier, an individual workman's type-check, provided with printing characters adapted to be carried into printing position by said carrier, and a stop arranged to arrest the movement of the type-check and hold it in printing position independently of the movement of the carrier.

3. In a time-recorder provided with an outer casing, the combination of a recording mechanism, a shiftable carrier adapted to be shifted by the directly-applied pressure of a workman's hand moving with the carrier and arranged to normally protrude from the casing, an individual workman's type-check, removable from the carrier, provided with printing characters and adapted to be supported by the carrier and carried by the latter into position to bring its printing characters into register with a printing-form within the machine, said recording mechanism including an automatically-operating impression device which is tripped by the movement of the carrier, and a spring acting upon the carrier to automatically return the latter to its protruding position when pressure thereon is removed.

4. In a time-recorder, the combination with a clock-actuated printing-form and a printing mechanism adapted to be operated by power applied manually during the recording operation, of a reciprocatory carrier adapted to be shifted by the directly-applied pressure of the workman's hand moving with the carrier, operative connections between said carrier and said printing mechanism whereby the shifting of the former operates the latter, said printing mechanism including an automatically-operating impression device which is tripped when the carrier reaches a predetermined position, a workman's individual type-check, removable from the carrier, adapted to be carried by the carrier into printing position and means acting upon said carrier to automatically return it, together with the type-check carried thereby, to its initial position.

5. In a machine of the character described, the combination with a type-check carrier adapted to carry a check into recording position, of means acting to automatically partially discharge the check from the carrier, for the purpose described.

6. In a machine of the character described, the combination with a type-check carrier adapted to be operated by the directly-applied pressure of the workman's hand, of a type-check adapted to be supported by, and to move with, the carrier, with a part in bearing with the operator's hand which bears on the carrier and a spring arranged to act upon said check when in position upon the carrier in a direction opposed to the pressure which operates the carrier, for the purpose described.

7. In a machine of the character described, the combination with a type-check carrier adapted to be operated by the directly-applied pressure of the workman's hand, of a type-check adapted to be supported by, and to move with, the carrier, with a part in bearing with the operator's hand which bears on the carrier, a stop upon a rigid part of the machine adapted to arrest the check before the carrier reaches the limit of its movement in one direction, and a spring arranged to act upon said check when in position upon the carrier in a direction opposed to the pressure which operates the carrier, for the purpose described.

8. In a time-recorder having an outer casing, the combination with suitable guideways, of a carrier-bar mounted to reciprocate in said ways and arranged to normally project at its outer end beyond and free from the casing, a recess in the outer end of the carrier, a type-check adapted to rest upon said carrier-bar and provided with a nib portion adapted to enter said recess, a spring-pressed plunger upon the carrier adapted to engage the opposite end of the type-check and tending to discharge the latter partially from the carrier, a stop upon a fixed part of the machine adapted to engage the type-check and arrest its inward movement with the carrier, a spring acting to hold the carrier normally projected and operative connections between the carrier and the recording mechanism whereby the pushing in of the carrier effects the complete recording operation.

9. In a time-recorder having an outer casing, the combination with suitable guideways, of a carrier-bar mounted to reciprocate in said ways and arranged to normally project at its outer end beyond and free from the casing, a recess in the outer end of the carrier, a type-check adapted to rest upon said carrier-bar and provided with a nib portion adapted to enter said recess, a spring-pressed plunger upon the carrier adapted to engage the check and tending to partially discharge the latter from the carrier, guides adapted to confine the type-check from lateral movement relatively to the carrier during its travel with the latter, a stop upon a fixed part of the machine adapted to engage the type-check and arrest its inward movement with the carrier, a spring acting to hold the carrier normally projected and operative connections between the carrier and the recording mechanism whereby the pushing in of the carrier effects the complete recording operation.

10. In a time-recorder, the combination with a clock-actuated printing-form and an impression mechanism adapted to be operated by power applied manually during the recording operation, of a workman's type-check carrying type adapted to be brought into printed alinement by direct inward movement of the check, and a thrust-operated reciprocatory operating member having operative engagement with the recording mechanism, located adjacent to the receiving-passage for the type-check and moving in lines parallel, or substantially parallel, with the movement of the type-check, whereby the operator may insert the type-check and simultaneously operate the thrust member by a substantially continuous inward thrust movement.

704,545. COUPLING DEVICE. JOHN G. KARGUES, Madison, Wis. Filed Aug. 20, 1901. Serial No. 73,718. (No model.)

Claim.—1. The combination with a pair of elements to be coupled, said elements being disposed in overlapping relation, of a coupler comprising a frame separate from the elements and a locking device movably mounted upon the frame and engaging the overlapping portions of both elements to secure them together, said device being movable out of engagement with one of the elements but remaining in engagement with the other and constituting means for securing the coupler upon said latter element.

2. The combination with a pair of elements to be coupled, said elements being disposed in overlapping relation, of a coupling comprising a yoke that embraces both elements, and a coupling-pin slidably mounted

upon the yoke and detachably engaging the overlapping portions of both elements to couple the same, said coupling-pin being movable out of engagement with one of the elements but remaining in engagement with the other and constituting means for securing the coupler upon said latter element.

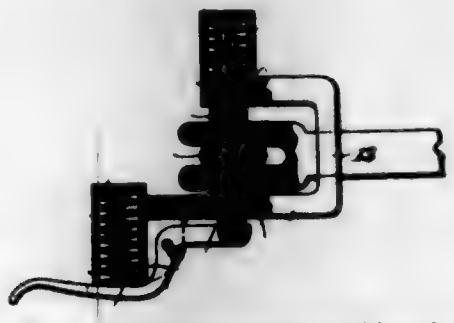

3. An attachment of the class described, comprising a frame having spaced arms arranged to embrace a plurality of elements, a locking device movably mounted on one arm and arranged to engage one of the elements and a coupling-pin slidably mounted on the other arm and adapted to detachably engage all of the elements to secure them together.

4. An attachment of the class described, comprising a yoke arranged to embrace a plurality of elements, a coupling-pin slidably mounted upon one arm of the yoke and movable into the space between both arms, said pin being arranged to engage the elements to couple them and when in retracted position having its inner end projecting into the space between the arms of the yoke to engage the outer element, thereby constituting locking means for holding the attachment on said element.

5. An attachment of the class described, comprising a frame having spaced arms arranged to embrace a plurality of elements, and a locking device carried by each arm, said devices being arranged in substantial alinement and movable toward and from each other.

6. An attachable coupling device of the class described, comprising a yoke adapted to embrace a plurality of elements, a locking-bolt carried by one arm of the yoke and arranged to engage one of the elements, and a coupling-pin carried by the other arm of the yoke and arranged to engage all of said elements to couple them.

7. An attachable coupling device, comprising a yoke adapted to embrace a plurality of elements, a locking-bolt carried by one arm of the yoke and arranged to engage one of the elements, a coupling-pin carried by the other arm of the yoke and arranged to engage all of said elements to couple them, and means for operating said coupling-pin.

8. An attachable coupling device, comprising a yoke adapted to embrace a plurality of elements, a locking-bolt carried by one arm of the yoke and arranged to engage one of the elements, a coupling-pin carried by the yoke and arranged to engage all of said elements to couple them, and means for holding the coupling-pin in retracted position.

9. An attachable coupling device of the class described, comprising a yoke, a spring-pressed locking-bolt carried by one of the arms and adapted to engage one of the elements to be coupled, a spring-pressed coupling-pin carried by the other arm and adapted to engage all the elements to couple them, an operating-lever connected to the coupling-pin, and a dog arranged to engage the lever to hold the coupling-pin in retracted position but in engagement with the same element engaged by the locking-bolt.

704,546. SPRING-ROLLER FOR FIREPROOF BLINDS. WILLIAM R. KIMBAR, Columbus, Ohio, assignor to the Kimbar Manufacturing Company, Columbus, Ohio, a Corporation of West Virginia. Filed Jan. 3, 1900. Serial No. 292. (No model.)

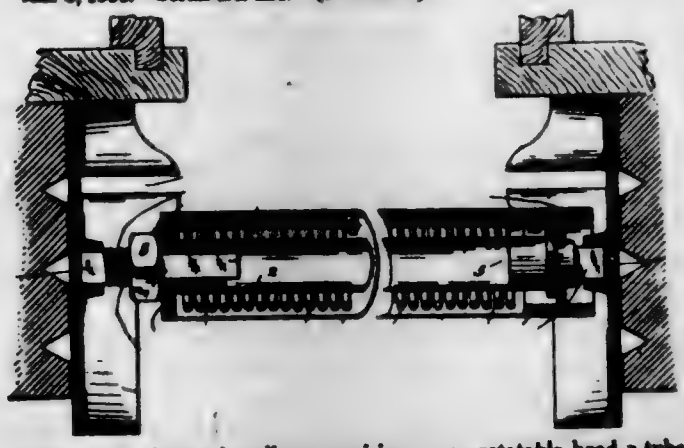

Claim.—1. A curtain-roller comprising a non-rotatable head, a tube one end of which fits thereon, a plug in the opposite end of said tube, a head rotatable on said plug, a spring connected to and between said heads, and a drum or cylinder carried by the rotatable head.

2. A curtain-roller comprising a head, a tube one end of which fits thereon, a plug having a shoulder in the opposite end of said tube, a head rotatable on said plug beyond said shoulder, a spring secured to and between said heads, and a drum carried by said head.

3. A curtain-roller comprising an inner tube, a shouldered plug in one end of said tube adapted to engage a seat at one side of the window-opening, a head turning on said plug, a drum carried thereby, and a head secured to the opposite end of said tube having a prismatic socket, a threaded pin having prismatic ends to engage respectively said socket and a seat at the other side of the window-opening, a nut turning on the thread of said pin, and a spring secured to and between the aforesaid heads, substantially as described.

4. A curtain-roller comprising in combination an inner tube, a plug in one end thereof adapted to engage a seat at one side of a window or door opening, a head having a prismatic socket in the opposite end of said tube, a threaded pin having a prismatic end to engage said socket and an end to engage a seat at the opposite side of the window or door opening, a nut on said pin adapted to bind the tube between the aforesaid plug and head, a head turning on said plug and a drum carried by said head, substantially as described.

5. A curtain-roller cylinder or drum of sheet metal formed with securing tongues and slots, combined with a metallic slat or curtain secured to said cylinder or drum with said tongues, substantially as described.

704,547. EXPANSIBLE BOLT. WILLIAM R. KIMBAR, Columbus, Ohio. Filed Jan. 10, 1902. Serial No. 89,155. (No model.)

Claim.—1. An expansible bolt device comprising a tube composed of semitubular shells, a wedging-nut longitudinally movable therein, one of said semitubular shells having a flexible tongue at one end to engage the other shell to hold the two together, and a transversely-extending flange at the other end of said tube to secure said nut within said tube, and a bolt to engage the said nut, substantially as described.

2. An expansible bolt device comprising a tube composed of semitubular parts, a portion of said parts being made thin and flexible and having outwardly-projecting spurs and an internally-threaded wedge-nut adapted to be engaged by a screw-bolt to operate said nut to expand said thin portion and spurs outwardly, substantially as described.

3. An expansible bolt device comprising a tube with a portion between its ends made thin and flexible and provided with outward projections, an internally-threaded wedge-nut within said tube, and a screw-bolt to engage said wedge-nut to expand said thin portion and spurs outwardly, substantially as described.

704,548. HOTEL-REGISTER. FREDERICK C. KLEE, Dubuque, Iowa, assignor to the National Hotel Register Company, Dubuque, Iowa. Filed Sept. 25, 1900. Serial No. 31,023. (No model.)

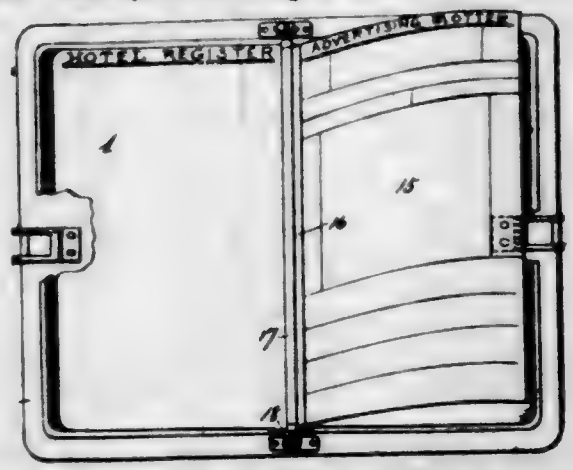

Claim.—1. The combination with a supporting plate or platform, of a rod having a pivotal connection at one end with the platform, a locking device carried by the platform and constructed to detachably lock the other end of the rod and means to permit the rod to have a yielding movement perpendicularly to the platform.

2. The combination with a supporting plate or platform, of a rod adapted to lie transversely across a book laid upon the platform, a short standard carried by the platform and to which one end of the rod is pivotally connected, a second short standard carried by the platform and constructed to detachably lock the other end of the rod, and a yielding connection between the said standards and the platform to permit the rod to have a yielding movement perpendicularly to the platform.

3. The combination with a supporting plate or platform, of a rod, a short standard carried by the platform and to which one end of the rod

is pivotally connected, a rotatable short standard carried by the platform and having its upper end constructed to form hooks for detachably locking the other end of the rod.

4. The combination with a supporting plate or platform, of a short standard, a rod having one end pivotally connected with the said standard, a spring arranged to act upon said standard to normally retract the same, a second short standard constructed to detachably engage and lock the other end of the rod, and a spring arranged to act upon the latter standard to normally retract the same.

5. The combination with a supporting plate or platform for a book, of plates secured thereto at opposite sides, the one having a round and the other a squared aperture, a sleeve carried by each plate and inserted within the platform, short standards, the one having a round shank and the other a squared shank with respective round and squared portions extending through the apertures and within the sleeves, one of said standards being constructed at its upper end with hooks, coiled springs arranged to normally retract the standards, and a rod pivoted at one end to one of the standards, and its other end adapted to be engaged by the hooks of the other standard.

6. The combination with a supporting plate or platform, of a rod having a pivotal connection at one end with the platform, means for detachably locking the other end of the rod, means to permit the rod to have a yielding movement perpendicularly to the platform, and a sheet provided at one edge with a loop or sleeve through which latter the rod loosely passes, said sleeve being adapted to slip endwise off the rod when the latter has been detached from the locking means and swung upon its pivot in the manner set forth.

704,549. **SAFETY-BOX.** MOSES KLEIN, Chicago, Ill., assignor to American Folding Box Company, Chicago, Ill., a Corporation of Illinois. Filed June 20, 1901. Serial No. 65,248. (No model.)

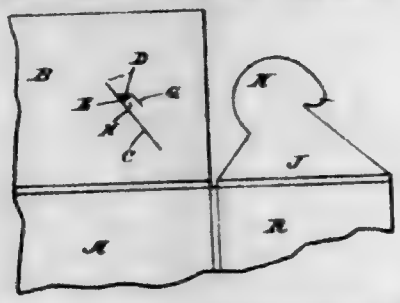

Claim.—1. In a safety-box, a corner-fastening consisting of a diagonally-arranged slot, having a lateral slit-like offset, on one part of the box, with a projecting part on the overlapping part of the box, adapted to enter such diagonal slot and provided with a lip shaped so as to enter and engage the slit-like offset, the lip underlying the fabric of the box between the lower end of the slot and the offset.

2. In a safety-box, a corner-fastening consisting of a diagonally-arranged slot, having a lateral slit-like offset, on one part of the box, with a projecting part on the overlapping part of the box, adapted to enter such diagonal slot and provided with a lip shaped so as to engage the slit-like offset, and a return incision to form a tongue, the lip underlying the fabric of the box between the lower end of the slot and the offset.

3. In a safety-box, a corner-fastening consisting of a slot, having a lateral slit-like offset, on one portion of the box, with a projecting part having a lip on the overlapping portion of the box and shaped so as to enter such slot and enter and engage the slit-like offset, and a return incision to form a tongue, the lip underlying the fabric of the box between the lower end of the slot and the slit-like offset.

704,550. **WIRE-COVERING MACHINE.** ANTON KREIDLER, Stuttgart, Germany. Filed Jan. 9, 1900. Serial No. 892. (No model.)

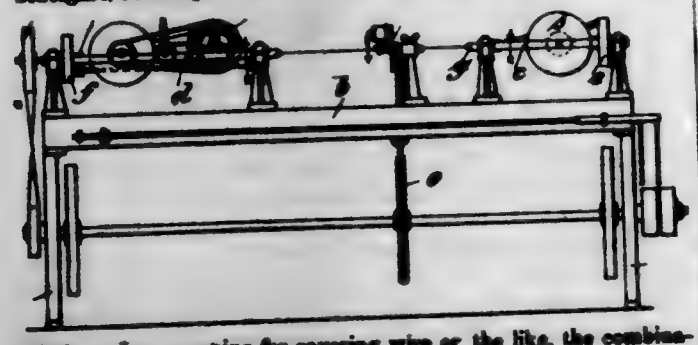

Claim.—In a machine for covering wire or the like, the combination of a feed device for the wire to be covered, a rotatable frame in which said feed device is mounted to turn, the axis of the feed device being transverse to that of the frame, another frame mounted to turn about an axis located in the continuation of the axis of the first-named frame, a take-up device mounted to turn in the second-named frame about an axis transverse to the axis of said frame, mechanism for rotating the two frames in the same direction and at the same rate of speed, guides located between the two frames and arranged to hold the wire in alinement with the axis about which said two frames rotate, means for covering the wire, said means being located between the two frames, and mechanism for rotating said means around the wire in the opposite direction to that in which the wire itself is rotated by the movement of said frames, whereby the wire will be fed longitudinally and at the same time rotated in one direction without being twisted, while the covering means will be rotated in the opposite direction.

704,551. **GLOVE.** EDOUARD LEBLANC, Grenoble, France. Filed Sept. 16, 1901. Serial No. 75,568. (No model.)

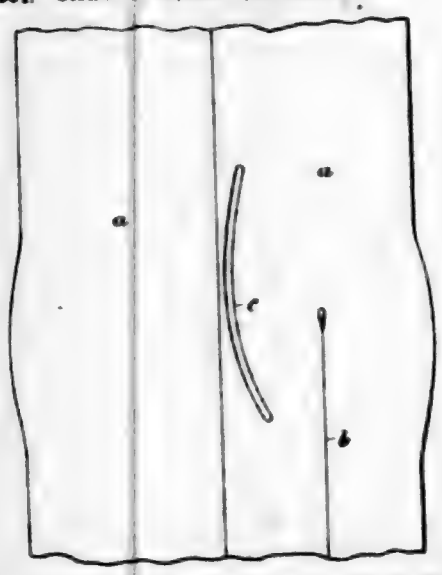

Claim.—1. A glove comprising a body-piece having in it a slit, substantially none of the material being cut away, whose edges form the entire thumb-opening and lie in the plane of the body-piece, and a thumb-piece the base edge of which is sewed to the edges of the slit.

2. A glove comprising a body-piece having in it a curved slit, substantially none of the material being cut away, whose edges form the entire separately-made completely-formed thumb-opening, and a thumb-piece the base edge of which is sewed to the edges of the slit.

3. A glove in which the thumb-opening in the body-piece is a slit, substantially none of the material being cut away, and in which there is a swelling at each side of the body-piece opposite the top of the button-slit.

4. A glove in which the thumb-opening in the body-piece is a curved slit whose edges form the entire thumb-opening and both the inside and outside edges of which are curved toward the palm of the hand.

5. A glove in which the thumb-opening in the body-piece is a curved slit both the inside and the outside edges of which are concave toward the palm of the hand and in which there is a swelling at each side of the body-piece opposite the top of the button-slit.

704,552. **EXTENSION-TABLE.** FRANK LIESER, Marquette, Mich. Filed Dec. 6, 1901. Serial No. 84,942. (No model.)

Claim.—1. An extension-table comprising stationary horizontal leaves, legs supporting the same, intermediate folding leaves hinged to the stationary leaves and adapted to swing inward wholly beneath the top of the table to permit the stationary leaves to be brought together, a connecting strip or section hinged to the adjacent edges of the folding leaves, and a locking device supported by the connecting strip or section and adapted to hold the folding leaves in a horizontal position, substantially as described.

2. An extension-table comprising fixed horizontal leaves, intermediate folding leaves hinged to the fixed leaves and adapted to swing downward wholly beneath the top of the table, a connecting strip or section hinged to the adjacent edges of the folding leaves, and a locking-bar mounted on and carried by the connecting strip or section and adapted to extend across the folding leaves to lock the same rigid with the fixed leaves, substantially as described.

3. An extension-table comprising fixed horizontal leaves or sections, legs supporting the same, the intermediate folding leaves hinged to the fixed leaves and arranged to swing downward, the connecting strip or section hinged to the adjacent edges of the folding leaves, a locking-bar pivoted to the connecting strip or section and arranged to extend across the folding leaves when the latter are arranged in a horizontal position, and means carried by the fixed leaves for engagement with the pivoted locking-bar, substantially as described.

4. An extension-table comprising the fixed horizontal leaf 1, a pair

of end blades supporting the same, the intermediate fixed leaf 2, a central leg supporting the intermediate leaf and having opposite shoulders spaced from the same to form recesses, a cleat mounted on the fixed section 1, the folding intermediate leaves hinged to the fixed leaves, the connecting strip or section hinged to the adjacent edges of the folding leaves, and a locking-bar pivoted to the connecting strip or leaf and arranged to engage the cleat, and the central leg, substantially as described.

5. An extension-table comprising fixed horizontal leaves, legs supporting the same, folding intermediate leaves, and locking mechanism for connecting the legs composed of a horizontal loop mounted on one leg, a vertically-swinging catch pivotally mounted on the opposite leg and provided above its pivot with a recess, and a coiled spring located in the recess and interposed between the catch and the leg and holding the said catch in engagement with the horizontal loop, substantially as described.

6. An extension-table comprising fixed horizontal leaves, folding leaves, blocks mounted on the fixed leaves, one of the blocks being provided with a socket, and an approximately U-shaped locking device consisting of an elongated pintle journaled on one block and slidably connected to the same, whereby the locking device is capable of swinging longitudinally of the table and of sliding transversely of the same, a short engaging portion for engaging the socket of the other block to lock the table in its folded position, and a connecting portion, substantially as described.

704,558. PEDESTAL-CLAMP. JOHN A. LINDERMUR, Richmond, Ind. Filed Nov. 25, 1901. Serial No. 83,572. (No model.)

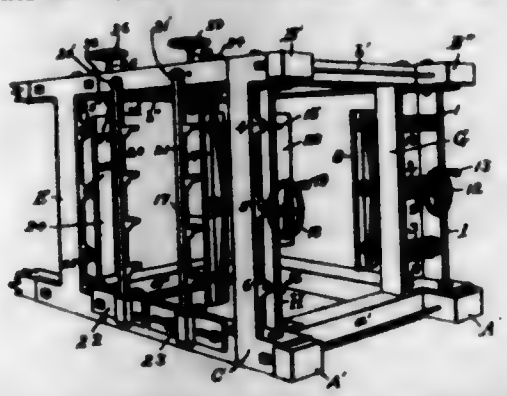

Claim.—1. In a pedestal-clamp, of a frame consisting of the parallel sills A′ and A″, the cross-sills *a′* and *a″*, the parallel beams B′ and B″, the cross-beams *b′* and *b″*, and the perpendicular posts C, D, E, and F; in combination with the clamping-plates 8, 14, 24 and 28 mounted therein and adapted to be operated laterally by means of threaded shafts and carried by suitable guides, all substantially as shown and described and for the purposes specified.

2. In a pedestal-clamping device, the combination of a frame, a plurality of clamping-plates slidably mounted therein and carried thereby; screw-shafts attached to each clamping-plate and crank-wheels adapted to revolve said shafts; guide-bars mounted on the back of each clamping-plate and passing through holes in the posts of the main frame; perpendicularly-mounted screw-shafts, mounted in the beam B′, each provided with hand-wheels on the upper ends and caps mounted on the lower ends thereof; spacing-bars 20 and 21 extending from the beam B′ and mounted in castings attached to the sill A′, all substantially as shown and described and for the purposes specified.

3. In a pedestal-clamp, the combination of a stationary framework, laterally-movable clamping-plates mounted therein and carried thereby; bars 20 and 21, perpendicularly secured to the framework, having brackets extending inwardly therefrom; the casting 32, secured on the under surface of B′, having threaded holes therein and threaded shafts 35 and 38 mounted therein, all substantially as shown and described and for the purposes set forth.

4. In a mechanism of the class described, the combination of a framework, substantially as shown; a pair of adjustably-mounted clamping-plates placed at right angles to the base and parallel with the perpendicular post of the framework; a pair of slidably-mounted clamping-plates, supported by guide-bars and carried laterally each by a single threaded shaft operated by hand-wheels; a pair of threaded shafts perpendicularly mounted in a suitable member 32 attached to the beam B′; bars, provided with inwardly-extending brackets, extending across the front of the framework, all substantially as shown and described and for the purposes set forth.

5. A pedestal-clamp, in combination with a framework, of two pairs of clamping-plates, adapted to approach and recede from each other by means of threaded shafts operated by crank-wheels; a pair of clamping-caps, 37 and 40, carried at right angles to said clamping-plates by the threaded shafts 35 and 38 respectively; and a pair of bars, 20 and 21, placed perpendicularly across the front of the framework carrying inwardly-projecting brackets, all substantially as shown and described and for the purposes set forth.

704,554. BACKING-PROTECTOR FOR BOOKS. STEFAN LEIWIK, Vienna, Austria-Hungary. Filed June 4, 1901. Serial No. 63,110. (No model.)

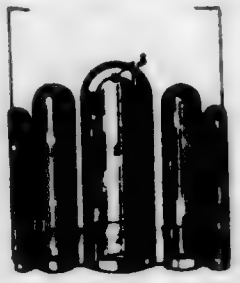

Claim.—1. In a device of the character described, the combination with the book-back, of a series of plates arranged longitudinally along a part of the exterior surface of the book-back and secured thereto parallel with each other, the exterior surface of said plates being rounded.

2. In a device of the character described, the combination with the book-back, of a series of plates arranged longitudinally along a part of the exterior surface of the book-back, each plate provided with an extension turned upward to straddle the edge of the back and secured to the inside of said back, and means traversing each plate and the book-back adapted to secure the plates to the exterior of said back.

704,555. LUBRICATING DEVICE. BRADFORD H. LOCKE, Denver, Colo. Filed Nov. 20, 1900. Serial No. 37,093. (No model.)

Claim.—1. In a motor, the combination of an outer sleeve or casing slotted or perforated circumferentially, an absorbent mass covering the circumferential series of slots or perforations, and a ring secured to the motor-shaft and adapted to throw outward against said absorbent mass any oil which may reach the same, substantially as shown and described.

2. In a motor, the combination of an outer sleeve or casing slotted or perforated circumferentially, an absorbent mass covering the circumferential series of slots or perforations, a ring secured to the motor-shaft

within said circumferential series of slots or perforations, and a tapered sleeve or ring secured to the motor-shaft and adapted to lead toward the first-named ring any oil which may reach said tapered sleeve or ring substantially as shown and described.

2. In a motor, the combination of an outer sleeve or casing slotted or perforated circumferentially, an absorbent mass covering the circumferential series of slots or perforations, a ring secured to the motor-shaft within said circumferential series of slots or perforations, and a dished ring secured in said outer sleeve or casing and directed toward the first-named ring, substantially as shown and described.

704,556. FURNACE-TOP DOWN-COMER AND EXPLOSION-PIPE.

PATRICK MEEHAN, Lowellville, Ohio. Filed Nov. 13, 1901. Serial No. 82,131. (No model.)

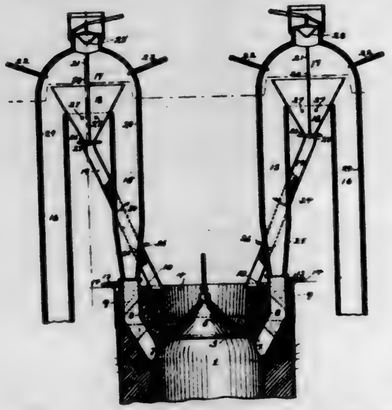

Claim.—1. A blast-furnace having a shaft and top provided with a gas-port leading from the furnace-chamber, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then leading downwardly, and a dust-pipe connected to said down-comer above the furnace-top and leading back to the stack.

2. A blast-furnace having a shaft and top provided with a gas-port leading from the furnace-chamber, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then leading downwardly and being enlarged above the furnace-top to form an expansion-chamber, and a dust-pipe leading from the expansion-chamber back to the stack.

3. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then leading downwardly, a dust-catcher in said down-comer above the furnace-top, and a dust-pipe connected to the dust-catcher and leading back to the stack.

4. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then making a sharp bend and leading downwardly, a funnel formed in the bottom of said bend, and a dust-pipe leading from said funnel back to the stack.

5. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer being enlarged to form an expansion-chamber, a transverse baffle-plate in said expansion-chamber, and a conduit connected to said expansion-chamber at the lower end of said baffle-plate and leading back to the stack.

6. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and being enlarged above the furnace-top to form an expansion-chamber, a transverse baffle-plate in said expansion-chamber, and a dust-pipe connected to said expansion-chamber at the lower end of said baffle-plate and leading back to the stack.

7. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then making a sharp bend and leading downwardly, a funnel formed in the bottom of said bend, a transverse baffle-plate in said bend and projecting downwardly into the funnel, and a dust-pipe leading from said funnel back to the stack.

8. A blast-furnace having a shaft and top provided with a gas-port leading from the furnace-chamber, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then leading downwardly and being enlarged to provide an expansion-chamber, a dust-pipe leading from said expansion-chamber back to the stack, a transverse baffle-plate in said expansion-chamber, and a blast pipe or pipes projecting inwardly into the chamber and directed toward the baffle-plate.

9. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then leading downwardly, a dust-pipe connected to said down-comer above the furnace-top and leading back to the stack, and valves in said dust-pipe.

10. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then leading downwardly, a dust-pipe connected to said down-comer above the furnace and leading back to the stack, and a spray-pipe for moistening the dust in said pipe.

11. A blast-furnace having a shaft and top provided with a gas-port, a down-comer connected to said gas-port, said down-comer projecting upwardly and extending above the furnace-top to a considerable distance and then making a sharp bend and leading downwardly, a funnel in the lower side of said bend, a dust-pipe connected to the funnel and leading back to the stack, and a spray-nozzle projecting into said funnel.

12. A blast-furnace having a shaft and top provided with a gas-port leading from the furnace-chamber, a pipe connected to said gas-port and projecting upwardly in a direct course, said pipe being enlarged to form an expansion-chamber, an explosion-valve at the upper end of said pipe, a down-comer connected to said pipe, and a dust-pipe leading from the expansion-chamber back to the furnace-top.

13. A blast-furnace having a masonry shaft, a feeding-hopper and bell in the top thereof, a gas-port extending through the masonry shaft with its inner end in position to receive the discharge of ore from the hopper, and a cast-metal thimble in said gas-port with its inner end projecting to the furnace-chamber, whereby the discharge of ore is prevented from wearing away the masonry.

14. A blast-furnace having a masonry shaft, a cast-metal thimble embedded in the masonry at the top of the shaft to form a down-comer, said thimble having its inner end provided with a cored-out flange, and water connections thereto to cool the same.

15. A blast-furnace having a masonry shaft, a thimble embedded in the masonry at the top of the shaft, brackets supported by the shaft and connected to the thimble to support the same, and a down-comer connected to said thimble.

16. A blast-furnace having a masonry shaft, a thimble embedded in the masonry at the top of the shaft and leading from the furnace-chamber out at the top of the shaft, brackets supported by the shaft and engaging shoulders on the thimble to support the same, said thimble being also provided with shoulders to support the hopper-ring, and a down-comer connected to said thimble.

704,557. CHECK-VALVE. WILLIAM B. MICHENER, Oakland, Cal.

Filed Jan. 17, 1902. Serial No. 90,153. (No model.)

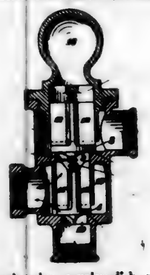

Claim.—1. In a check-valve, a valve-disk, a chamber above the same, closed at top, and a valve-stem secured to the disk, moving within the chamber, with means for guiding the stem parallelly therein, said disk being adapted to fit the mouth of the chamber and enter within it, and thus entrap and compress a portion of air at each rising, which by its resilience shall cushion the valve and obviate concussion and noise, substantially as specified.

2. In a check-valve, a chamber closed at top, a valve-seat below the chamber, a valve moving within the chamber, and means for guiding the valve parallelly therein, said valve having a valve-disk seating upon the said seat, of a size to fit the mouth of the chamber and enter the same at each upward movement, whereby a portion of air is entrapped and compressed at each rising, to cushion the valve, substantially as specified.

704,558. PACKAGE FOR CARBON OR OTHER THIN PAPER.

JAMES T. MILLER, Rochester, N. Y. Filed Mar. 17, 1902. Serial No. 98,432. (No model.)

Claim.—A package for carbon or other thin paper, said package comprising a box having a cover one end of which is hinged to the other end thereof, and a plurality of removable paper-sheet holders placed therein, each of which consists of a sheet of stiff paper folded upwardly and backwardly thereof at one end to form a flap, substantially as shown and described.

704,559. LIGHTING IMPLEMENT. CHARLES MOLITOR, Chicago, Ill. Filed Mar. 1, 1902. Serial No. 96,212. (No model.)

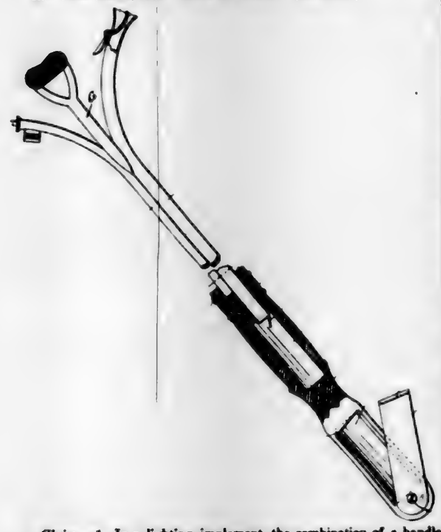

Claim.—1. In a lighting implement, the combination of a handle having a receptacle for burned matches, a tube leading from the said receptacle, and means borne by the tube at its mouth for holding a match-splint within the tube and for releasing the said splint within the tube, substantially as described.

2. In a lighting implement, the combination of a handle provided with a receptacle formed therein, a tube leading from the said receptacle, a clip arranged in the mouth of the tube for holding a match-splint within the tube and for releasing the splint within the tube, and a valve arranged within the said tube at its opening into the said receptacle, substantially as described.

3. In a lighting implement, the taper-slide and clip J, having a curved lower jaw provided near its end with a hole *j* formed with a ragged edge, and a curved upper jaw having its end bent downwardly and directed toward the said ragged hole in the lower jaw, substantially as described.

704,560. INCUBATOR. ANDREW J. MOORE, Lebanon, Pa. Filed Dec. 9, 1901. Serial No. 85,265. (No model.)

Claim.—1. An incubator having a hot-water chamber in the upper part of the hatching-chamber, means for heating the same, a condenser provided with means for supplying fresh air thereto and communicating with the lower part of the hatching-chamber and with the hot-water chamber.

2. An incubator provided with a lamp, and a combustion-chamber, a hot-air chamber in the hatching-chamber, means for supplying hot air to said hot-air chamber, a connection between the combustion-chamber and said hot-air chamber, and an exit-pipe in said hot-air chamber affording draft to the lamp and an exit for foul air from the hatching-chamber.

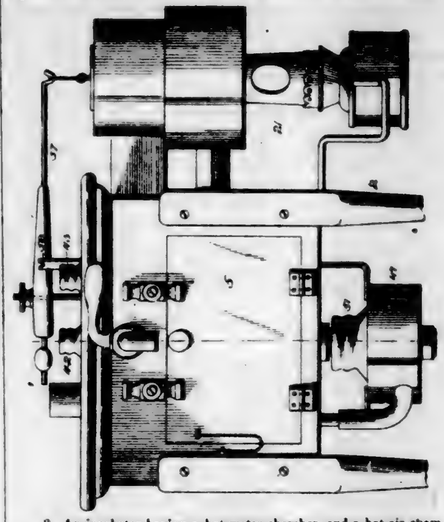

3. An incubator having a hot-water chamber, and a hot-air chamber in the upper part of the hatching-chamber, means for heating both of said chambers, an exit for foul air communicating with the hot-air chamber, and a condenser connected to the hot-water chamber and discharging into the hatching-chamber.

4. An incubator provided with a lamp, and a combustion-chamber, a hot-air chamber in the hatching-chamber and having perforations in its walls, means for supplying hot air to said hot-air chamber, a connection between the combustion-chamber and said hot-air chamber, and an exit-pipe in the hot-air chamber affording draft to the lamp and an exit for foul air from the hatching-chamber, and means for supplying fresh air to the hatching-chamber.

5. An incubator having a hot-water chamber, and a hot-air chamber in the upper part of the hatching-chamber, the hot-air chamber having perforations in its walls, means for heating both of said chambers, a foul-air-exit pipe extending into the hot-air chamber, means for supplying air to the hatching-chamber through the casing of the incubator, and a condenser connected to the water-chamber and discharging moistened air into the hatching-chamber.

6. An incubator having a heater provided with a combustion-chamber, a hot-water chamber, and a hot-air chamber in the upper end of the hatching-chamber, a pipe communicating with the combustion-chamber and the hot-air chamber and extending through the hot-water chamber, an air-heating chamber surrounding said combustion-chamber, an air-chamber between the casings of the incubator, a pipe communicating therewith and with said hot-air chamber, means for discharging foul air through said hot-air chamber, means for supplying fresh air, and a condenser connected to the hot-water chamber and to the hatching-chamber.

7. An incubator having a heater provided with a combustion-chamber, a fresh-air-heating chamber, and a dead-air chamber concentric therewith; a hot-water chamber, and a hot-air chamber in the hatching-chamber, an air-chamber between the casings of the incubator communicating respectively with the air-heating chamber and the dead-air chamber of the heater, an exit for foul air through the hot-air chamber in the hatching-chamber, and a condenser connected to the hot-water chamber and discharging into the hatching-chamber.

8. An incubator provided with a hot-water chamber, means for heating the water therein; a condenser having a fresh-air supply and communicating with the hatching-chamber below the egg-tray, and a connection between said hot-water chamber and said condenser.

9. An incubator provided with a hot-water chamber, means for heating the water therein, and a condenser connected with the hot-water chamber for supplying fresh and moistened air to the hatching-chamber.

10. An incubator provided with a hot-water chamber, means for heating the water therein, a condenser having an upper and a lower chamber, a perforated partition separating said chambers, a condensing medium in one of said chambers, an air-supply and an air-distributer, and means for connecting the hot-water chamber and the condenser.

11. An incubator having a hot-water chamber in the hatching-cham-

ber, means for heating the water, a condenser provided with means for supplying fresh air thereto, and a liquid-arrester above the condensing-chamber, and means for connecting said hot-water chamber and condenser.

13. An incubator having a hot-water chamber, and a hot-air chamber in the upper part of the hatching-chamber, a heater connected to said hot-water chamber and hot-air chamber, a condenser connected to the hot-water chamber and provided with means for supplying fresh air to the hatching-chamber through the condenser, an egg-tray between the heating-chambers and the condenser, and a foul-air exit for the hatching-chamber communicating with said hot-air chamber.

15. An incubator provided with a hot-water chamber, a condenser having a fresh-air supply and connected to the hot-water chamber for supplying moist air to the hatching-chamber, an egg-tray provided with means for distributing heat over the upper surface of the eggs and moist air over the lower surface thereof.

704,561. CLOTHES-DRIER. KINGMAN C. MOORE, Macon, Ga. Filed Jan. 3, 1901. Serial No. 41,951. (No model.)

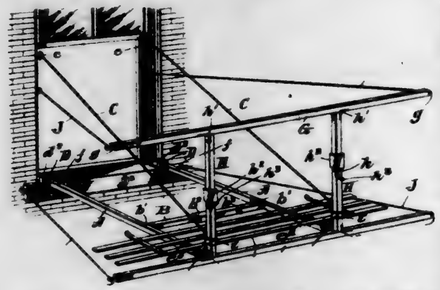

Claim.—1. In a clothes-drying frame of the character described, parallel rods or bars, and a foldable cross-bar, the latter comprising two parts of substantially equal length hinged at adjacent ends and foldable lengthwise upon each other in a plane at right angles to said parallel rods, said cross-bar being also hinged at opposite ends to the parallel rods and foldable lengthwise thereagainst in one direction only in a plane coincident with the latter, and means for preventing folding of said frame when in use, substantially as described.

2. In a clothes-drying frame of the character described, parallel rods or bars, and a foldable cross-bar comprising two parts of substantially equal length hinged at adjacent ends and foldable lengthwise upon each other in one direction only and in a plane perpendicular to said parallel rods, said cross-bar being also hinged at opposite ends to the two parallel rods and foldable lengthwise against each one thereof in a direction toward one end of the frame only and in a plane parallel with said rods; substantially as described.

3. In a device of the character described, the main frame in the nature of a window shelf or scaffold in combination with the auxiliary frame or rack attachment therefor, one of said frames being provided with outwardly-flaring and downwardly-increasing vertical ribs or projections and the other frame with correspondingly-shaped grooves adapted to fit and slide over said ribs, whereby said auxiliary frame may be readily attached to and detached from said main frame; substantially as described.

4. In combination with the main frame or window-scaffold, consisting of a pair of parallel rods or bars and a cross-bar, said parallel bars having brackets fitted to their outer or forward ends and provided with vertical outwardly-flaring and downwardly-increasing ribs, the auxiliary frame or rack consisting of a pair of parallel rods and a pair of parallel cross-bars, the latter being about the same distance apart as the parallel rods of the main frame and having secured to their sides sleeves corresponding in shape and adapted to slide down over the said ribs on the brackets of the main frame, whereby said auxiliary frame may be readily attached or detached; substantially as described.

5. In a device of the character described, a pair of parallel rods, and a cross-bar connecting the same, each of said parallel rods being provided at its outer end with a bracket having a socket in which said rod is fitted and having an upstanding arm at the extremity of said rod provided at its upper extremity with an eye for the fastening-wire, said brackets having also rearward hooks or lugs adjacent the rods, substantially as and for the purposes described.

6. A clothes-drier adapted for attachment to a support, and constructed of collapsible bars and a suspensory device, in combination with an auxiliary collapsible frame detachably mounted upright upon said collapsible bars; substantially as described.

704,562. CEILING-PLATE ATTACHMENT. ARTHUR H. MUNN, Southington, Conn., assignor to the Benton and Corbin Manufacturing Company, Southington, Conn. Filed May 16, 1900. Serial No. 16,886. (No model.)

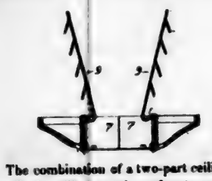

Claim.—1. The combination of a two-part ceiling-plate with a pair of the herein-described resilient retainers free to move laterally toward and from each other, each retainer having a pronged body, the said retainers being arranged with their prongs projecting outwardly from the outer sides of the said pair, while the retainers are adapted to spring outwardly away from each other, against the side of the hole through which the pipe passes, and have fastening devices for securing them to the inner edge of the ceiling-plate, substantially as described.

2. The combination of a ceiling-plate having a flange at its inner edge, with a pair of the herein-described attachments consisting of the resilient retainers, each having a pronged body, with hook-like shoulders near the lower end, and at the lower end a hook that confronts the said shoulder, the said retainers being detachably secured to the said ceiling-plate, with the said shoulder in engagement with the upper part of the said flange, and with the said hook in engagement with an opposing lower part of the said flange, substantially as described.

3. The combination of a ceiling-plate having a pipe-flange at its inner edge, with a pair of resilient retainers consisting of two independent arms, free to move laterally toward and from each other, and having at their lower ends interlocking devices for engaging the said pipe-flange, the said retainers being secured to the said flange by means of the said interlocking devices, the said retainers normally extending obliquely outwardly away from each other, and adapted when compressed, to spring outwardly against the side of the hole through which the pipe passes, and having on their bodies a series of prongs projecting from the outer sides of the said pair of retainers, whereby the ceiling-plate retains its position with reference to the ceiling, under varying expansions and contractions of the pipe, substantially as described.

4. An attachment for ceiling-plates consisting of the retainers having a pronged body with the hook-like shoulder at their lower end, and at their extreme lower end with a hook that confronts the said shoulder, in combination with a ceiling-plate having a supporting-wall at its inner edge upon which the lower ends of the said retainers are secured by the engagement of the said shoulder and hook, with the opposing end faces of the said supporting-wall, substantially as described.

5. The combination of a ceiling-plate with a pair of diametrically opposite resilient retainers secured thereto and having each a series of outwardly-projecting prongs, the said two series of prongs normally extending on outwardly-diverging oblique lines, substantially as described.

6. As an article of manufacture, a ceiling-plate having substantially the shape of an annulus and provided on its inner curved edge with a flange, in combination with a pair of retainers, each having a hook-like shoulder, resting on the said flange at its upper part, a portion extending downwardly from the said shoulder, along by the side of the said flange and with its lower end bent into a hook, acting in opposition to the said shoulder, whereby the retainers are secured to the ceiling-plate, substantially as described.

704,568. PACKAGE FOR LOBSTERS OR THE LIKE. ALBERT C. McLOON, Rockland, Me. Filed Apr. 8, 1902. Serial No. 101,939. (No model.)

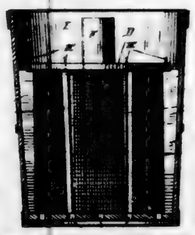

Claim.—1. In a package for shipping lobsters and the like, a wooden repository, pail shape and flaring upwardly, preferably, a lining of wire or other screening forming a cage at the bottom of and equidistant from the sides of the wooden repository leaving space between the cage and wooden repository both at the sides and at the top adapted to be filled with ice, means for supporting said cage and attaching same to a wooden repository and a cover overhanging said cage to support ice and carry away drainage therefrom, substantially as described.

2. A wooden repository, an inner cage of wire or other screening, means for supporting and holding same in position, a cover therefor overhanging said cage, ice-spaces around and above said cage, and means comprising a tube extending from an opening in the cover for causing a direct and rapid circulation of cool air through the package substantially as described.

704,564. PICTURE OR DESIGN AND METHOD OF MAKING SAME. CHARLES HAYLOR, Mexico, Mexico. Filed July 3, 1901. Serial No. 67,070. (No model.)

Claim.—1. A transferable picture, design or transparency consisting of a plurality of transparent sheets laid one behind or upon the other, each sheet having deposited thereon a different-colored insoluble translucent pigment, toned or blended by transmitted light into one image forming the picture, the said sheets being formed of soluble material whereby the picture is made transferable upon bringing the pigmented sides of the sheets into contact with the surfaces to which the colors are to be transferred, by dissolving and floating off the sheets and leaving the colors adhering to said surfaces, substantially as described.

2. The herein-described method of making pictures which are transferable for reproduction, which consists essentially in depositing separately upon different transparent soluble sheets different translucent insoluble colors forming parts of the picture, and assembling the sheets one behind or upon the other so that said colors will be toned or blended by transmitted light into one image forming the picture, substantially as described.

704,565. RECEPTACLE-FILLING DEVICE. NELSE D. NELSON, Ann Arbor, Mich. Filed Apr. 7, 1900. Serial No. 11,971. (No model.)

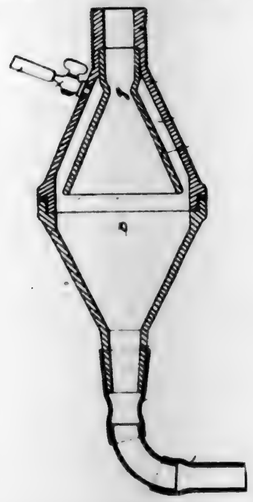

Claim.—1. A device for filling receptacles comprising a bulb or casing having an inlet and an outlet, and a flaring tubular structure having its smaller end secured to the inlet end of the casing and forming a continuation of the inlet of the casing, such tubular structure being extended into the chamber formed by the casing and terminating between the ends thereof so as to form between itself and the casing, a vacuum-chamber communicating with the interior of the latter.

2. The combination with a receptacle-filling device having a passage for the liquid, and also having a vacuum-chamber communicating with said passage, of means for producing a vacuum or partial vacuum, said means being connected with the receptacle-filling device so as to communicate with the vacuum-chamber thereof and arranged to draw the air out of said chamber in a direction opposite that in which the liquid passes through the device.

3. A bottle-filling device comprising a tubular casing having an inlet and an outlet, and made in two separable portions, screw-threaded together, said portions being largest at their meeting-points and tapering toward their ends; and a tubular flaring structure secured within the inlet end of one of said portions, and terminating near the large end of the same.

704,566. APPARATUS FOR PRODUCING FABRIC HAVING BIAS WEAVE. FRANK HEWELL, Lennia, N. J., assignor of three-fourths to Gilman S. Stanton and Frederick E. Stanton, New York, N. Y. Filed Nov. 14, 1901. Serial No. 82,234. (No model.)

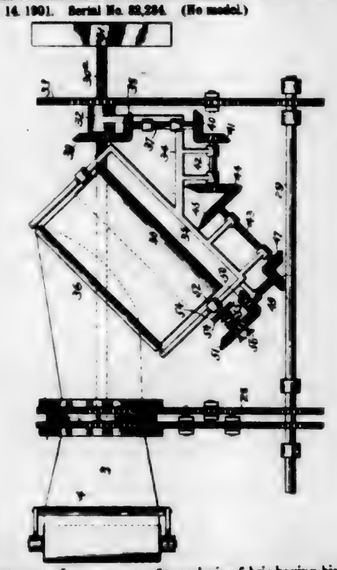

Claim.—1. In an apparatus for producing fabric having bias weave, the combination of means for feeding a tube of fabric longitudinally, and cutting mechanism adapted to rotate around the fabric and cut it spirally.

2. In an apparatus for producing fabric having bias weave, the combination of means for feeding a tube of fabric longitudinally and holding it distended, and cutting mechanism adapted to rotate about the tube of fabric and cut it spirally.

3. In an apparatus for producing fabric having bias weave, the combination of a spreader for distending a tube of fabric, means for feeding the fabric over the spreader, and cutting mechanism rotated about the fabric and adapted to cut the same spirally.

4. In an apparatus for producing fabric having bias weave, the combination of means for feeding a tube of fabric longitudinally, cutting mechanism adapted to rotate about the fabric and cut it spirally, and means for winding the strip cut from the tube.

5. In an apparatus for producing fabric having bias weave, the combination of means for feeding a tube of fabric longitudinally, cutting mechanism adapted to rotate about the fabric and cut it spirally, a drum adapted to wind thereon the strip of fabric cut from the tube, and means for moving the drum to maintain it at all times in the same relative position to the cutting mechanism.

6. In an apparatus for producing fabric having bias weave, the combination of means for feeding a tube of fabric longitudinally, a ring adapted to rotate about the fabric, cutters carried by the ring and disposed at an angle thereto, and means for operating the cutters to cut the fabric tube spirally.

7. In an apparatus for producing fabric having bias weave, the combination of a spreader, a series of rollers for drawing a tube of fabric over the same, a ring mounted to rotate about the tube of fabric and spreader, and operate said rollers, another ring adapted to rotate about the tube of fabric at the rear of the spreader, cutting-disks carried by the last-men-

osed at an angle thereto, and means for operating said the tube of fabric.

ratus for producing fabric having bias weave, the com-ler, a series of rollers for drawing a tubular woven , a ring mounted to rotate about the tube of fabric erate said rollers, another ring adapted to rotate about the rear of the spreader, cutting-disks carried by the and disposed at an angle thereto, a movable frame, rein to receive the strip of fabric cut from the tube, motion-transmitting mechanism between all of said the drive-shaft.

ratus for producing fabric having bias weave, the com-r moving a tube of fabric longitudinally, cutting mech-e moved around the tube of fabric to cut the same spi-ns for moving the frame to maintain it at all times in osition to the cutting mechanism, a drum carried by e the strip out from the tube, means for revolving the m to compensate for the increasing diameter of the is wound thereon.

paratus for producing fabric having bias weave, the ns for moving a tube of fabric longitudinally, cutting l to rotate about the tube and cut it spirally, a drum of bias fabric as it is cut, means for moving the drum times in the same position relative to the cutting mech-sk secured on the drum-carrying shaft, a similar fric-the shaft, a gear-wheel loose on the shaft, a spring con-heel and loose friction-disk, to hold the latter in fric-the other disk, means for adjusting the tension of said for transmitting motion to said gear-wheel.

DRILLING-MACHINE. THOMAS E. O'BRIEN, Narrabri outh Wales, Australia. Filed Oct. 25, 1901. Serial No. odel.)

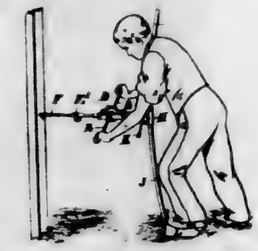

a drilling apparatus, the combination with the drill-frame cted therewith, an upright adjustably held in said sleeve ivotally connected to the lower end of said upright, the said upright extending up freely above the sleeve for shoulder of the operator, substantially as described.

. PACKING-RING. THOMAS OFFICER, Claremont, N. H., Sullivan Machinery Co., Chicago, Ill., a Corporation of New Filed Sept. 11, 1901. Serial No. 75,002. (No model.)

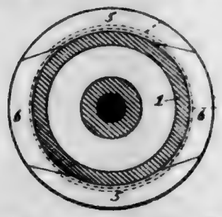

metallic piston-packing, comprising a plurality of seg-having inclined meeting faces, the end of alternate sec-g the ends of the adjacent sections, said sections having r inner faces, the grooves of the overlapping sections be-those in the other sections, and an annular spring-band rooves and tending to move said sections outward.

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9. NECKTIE. DAVID OPPENHEIMER, New York, N. Y., Louis Auerbach, New York, N. Y., Incorporated Stock Com-w York. Filed Feb. 4, 1901. Serial No. 45,945. (No model.)

1. A reversible necktie consisting of a main section folded ts opposite edges, the folds extending partially across the tie and a strip of material suitable for an exposed face of the tie to close the space between the edges of said folds, the opposite edges of the folds overlapping the opposite edges of said strip and being secured together, the exposed surface of said strip being of a color different from the exposed surfaces of said folds and said main section and strip each being of textile fabric.

2. A reversible necktie consisting of a main section folded on itself along its opposite edges, the folds extending partially across the tie and a strip of material suitable for an exposed face of the tie to close the space between the edges of said folds, the opposite edges of the folds overlapping those of said strip and being secured thereto and the exposed surface of the main section being of a uniform color and the exposed surface of said strip being also of uniform color but different from that of the main section and said main section and strip each being of textile fabric.

3. A reversible necktie consisting of a main section folded on itself along its opposite edges, the folds extending partially across the tie and a strip or auxiliary section of material suitable for an exposed face of the tie closing the space between the edges of said folds, the strip or auxiliary section extending partially across said necktie and being stitched to said folds, and being of a color different than the main section and both said sections being of textile fabric.

4. A reversible necktie consisting of a main section folded on itself along its opposite edges, the folds extending partially across the tie and a strip or auxiliary section of material suitable for an exposed face of the tie closing the space between the inner edges of the folds and the latter having inturned hems secured to the strip.

704,570. TUG-FASTENER. HENRY J. ORMSBY, Eureka, Kans. Filed Jan. 27, 1902. Serial No. 91,413. (No model.)

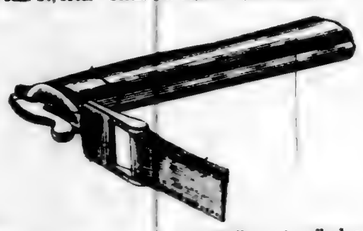

Claim.—1. A tug-fastener substantially as described comprising a spring plate or bar having its inner end perforated and its outer end terminating in an outwardly and inwardly bent portion, the extreme edge of the inwardly-bent portion being recessed and the body portion of the inwardly-bent section being concaved, substantially as shown.

2. In a tug-fastener, the combination of the whiffletree having its ends provided with hooks that are adapted to receive the loops of the tugs, spring guards or plates secured to the ends of the whiffletree, each of the said plates having its free end terminating in an outwardly and inwardly bent portion, the extreme end of the inwardly-bent portion being recessed and the body portion of the inwardly-bent section being concave, the said free end being adapted for engagement with its respective hook and loop, the said plates also engaging the said hook at a point where the said outwardly-bent portion connects with the body portion, substantially as and for the purpose specified.

704,571. STEAM-GENERATOR. ORIN D. ORVIS, New York, N. Y. Filed Feb. 26, 1902. Serial No. 95,679. (No model.)

Claim.—1. In a steam-generator, a furnace containing two bridge-walls, a continuous grate extending across the width of the front of the furnace, sets of water-tubes extending longitudinally from the front of the furnace to or beyond the second bridge-wall and inwardly from the opposite sides of the furnace forming an intermediate longitudinal space for the passage and direction of the greatest volume of flame and furnace-gases against the boiler; said sets of tubes being mantled over the chamber formed between the first bridge-wall and the second bridge-wall, and connections of said sets of water-tubes with the front and rear of the boiler for the purpose specified.

2. In a steam-generator, a furnace containing two bridge-walls, a continuous grate extending across the width of the front of the furnace, sets of water-tubes extending longitudinally from the front of the furnace to or beyond the second bridge-wall and inwardly from the opposite sides of the furnace forming an intermediate longitudinal space for the passage and direction of the greatest volume of the flame and furnace-gases against the boiler; said sets of water-tubes mantled over the chamber formed between the first bridge-wall and the second bridge-wall, headers

located at the front wall of the furnace connecting the front ends of said sets of water-tubes and connections between said headers and the water-space in the boiler, and headers located in a recess in or behind the second bridge-wall connecting the rear ends of said sets of water-tubes and bent or bowed tubular connections between said headers and the water-space in the boiler substantially as and for the purpose set forth.

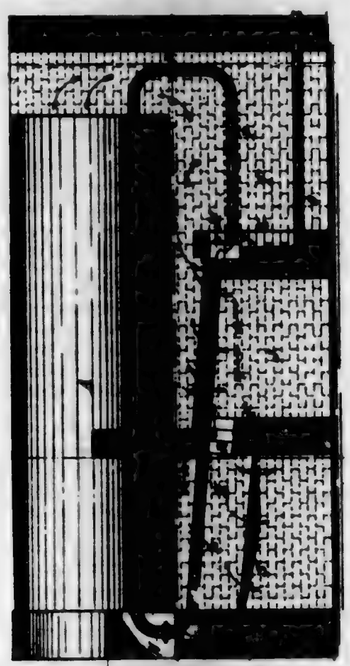

3. In a steam-generator, the combination of a furnace containing two bridge-walls, a continuous grate extending across the width of the front of the furnace, sets of water-tubes extending longitudinally from the front of the furnace to or beyond the second bridge-wall, means of support for said sets of water-tubes upon the first bridge-wall and connections of said sets of water-tubes with the front and rear of the boiler for establishing water circulation.

4. A steam-generator comprising a furnace containing two bridge-walls, a continuous grate extending across the width of the front of the furnace, sets of water-tubes extending longitudinally from the front of the furnace to or beyond the second bridge-wall, means of support for said sets of water-tubes upon the first bridge-wall, mantles or coverings upon said sets of water-tubes located over the chamber formed between the first bridge-wall and the second bridge-wall and connections of said sets of water-tubes with the front and rear of the boiler substantially as and for the purpose described and illustrated.

5. A steam-generator comprising a furnace containing two bridge-walls, a continuous grate extending across the width of the front of the furnace, sets of water-tubes extending longitudinally from the front of the furnace to or beyond the second bridge-wall, mantles or coverings upon said sets of water-tubes located over the chamber formed between the first bridge-wall and the second bridge-wall, means of support for said sets of water-tubes and their mantles upon the first bridge-wall, headers located at the front wall of the furnace connecting the front ends of said sets of water-tubes and headers located at the second bridge-wall connecting the rear ends of said sets of water-tubes and connection of said headers with the front and rear of the boiler substantially as described.

6. In a steam-generator, a furnace containing two bridge-walls, a continuous grate extending across the width of the front of the furnace, sets of water-tubes extending longitudinally from the front of the furnace to or beyond the second bridge-wall and inwardly from the opposite sides of the furnace forming an intermediate longitudinal flame-space, said sets of water-tubes mantled over the chamber formed between the first bridge-wall and the second bridge-wall, means of support for said sets of water-tubes upon the first bridge-wall, headers located at the front wall of the furnace connecting the front ends of said sets of water-tubes and connections between said headers and the water-space in the boiler and headers located at the second bridge-wall connecting the rear ends of said sets of water-tubes and bent or bowed tubular connections between said headers and the water-space in the boiler substantially as set forth.

704,572. PAPER-MAKING. ANDREW OUTERBRIDGE, Windsor Locks, Conn. Filed Nov. 20, 1901. Serial No. 83,063. (No specimens.)

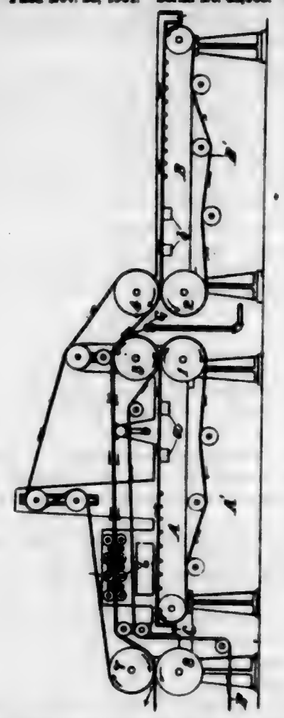

Claim.—The herein-described method of making paper with both sides having the same degree of finish, consisting of forming separate sheets on Fourdrinier machines arranged adjacent to one another with their delivery ends opposite to each other, delivering the sheets with their wire sides together to a carrier, spraying the sheets as they are delivered to the carrier, passing the sheets to primary pressure-rolls for uniting the wire sides of the sheets, and finally passing the united sheets to secondary pressure-rolls to further solidify and unite into a single sheet.

704,578. DEVICE FOR GENERATING ELECTRICITY ON RUNNING CARS. RICHARD PFITZNER, Berlin, Germany. Filed Nov. 14, 1901. Serial No. 82,178. (No model.)

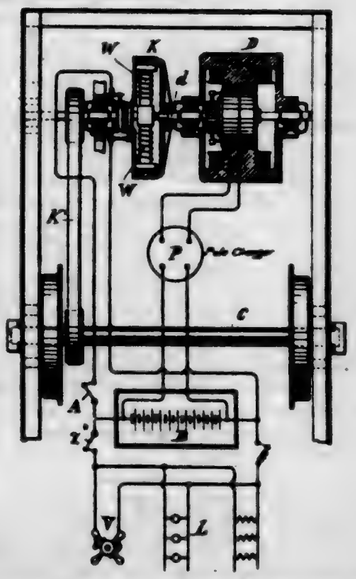

Claim.—1. In a plant in which power is transmitted from the running-gear of a car, to generate electricity, the combination of a power-

transmission train, an electromagnetic coupling interposed therein, an electric-current generator operated thereby, and a switch controlling the operation of said coupling, and, by means thereof, controlling the operation of said generator; all substantially as described and for the purpose specified.

2. In a plant in which power is transmitted from the running-gear of a car to operate mechanism mounted on said car, the combination of a power-transmission train, an electromagnetic coupling interposed therein, and an electric accumulator furnishing a current for energizing said coupling, with an automatic cut-out so operated as to prevent the electrical storage in the accumulator from falling below a tension sufficient for the purpose mentioned; all substantially as set forth and described.

704,574. POWER-TRANSMISSION REGULATOR FOR ELECTROMAGNETIC COUPLINGS. REINARD PFITSCH, Berlin, Germany. Filed Nov. 14, 1901. Serial No. 82,177. (No model.)

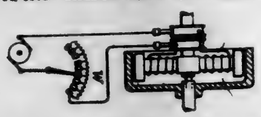

Claim.—1. In a magnetic transmission device, a permanently-energized member, an armature member and electromagnetic means for counteracting the magnetism of said permanently-energized member to a greater or lesser degree.

2. In a magnetic transmission device, a permanently-magnetized member, an armature member and electromagnetic means for counteracting the magnetism of said permanently-magnetized member to a greater or lesser degree.

3. In a magnetic transmission device, a permanently-energized electromagnetic field member, an armature member, and electromagnetic means for counteracting the magnetism of said electromagnetic field member to a greater or lesser degree.

4. In a magnetic transmission device a field member having two coils wound in opposite directions thereon, a slip-ring common to one terminal of each of said coils and separate slip-rings for the remaining terminals of said coils.

5. In a magnetic coupling comprising two members having a common magnetic field, the combination of means for varying the said magnetic field consisting of an auxiliary opposing electromagnetic field member and means for controlling the field of the same.

6. In a magnetic coupling comprising armature and field-producing members, the combination of an extra field-producing member and means for energizing the same to vary the whole magnetic field.

7. In a power-transmission controlling device, the combination with a generator and a driving member therefor, of a magnetic clutch intermediate said driving member and generator, a permanent field-producing agent and an electromagnetic field-producing member in said clutch, a source of exciting-current and a variable resistance in circuit with said electromagnetic field-producing member and electromagnetic means operated by the rise or fall of potential between the poles of said generator for actuating said variable resistance to create a resultant field varying in strength inversely as the pole tension of said generator.

8. In a magnetic power-transmission device, a permanent field-producing member, an armature member, and electromagnetic means for either augmenting or decreasing the strength of field of said permanent field-producing member.

9. In a magnetic power-transmission device, a permanently-energized field-producing member, an armature member and electromagnetic means for either augmenting or decreasing the strength of the field of said permanently-energized field-producing member.

10. In combination with a driven generator and driving means therefor of a magnetic power-transmission device between said driving means and generator consisting of a permanent field-producing member, an armature and an electromagnetic field-producing member and a variable-resistance device dependent for its operation upon the rise or fall of the pole tension of said generator for controlling the field strength of said electromagnetic field-producing member to modify the resultant field of said permanent and electromagnetic field-producing members inversely as the pole tension of said generator.

704,575. CENTRIFUGAL COUPLING. RICHARD PFITSCH, Berlin, Germany. Filed Nov. 14, 1901. Serial No. 82,178. (No model.)

Claim.—1. In a coupling the combination of a housing fast to the driving-shaft, a series of coupling-cheeks mounted to move radially within said housing, springs circumferentially surrounding said cheeks and resiliently maintaining contact between said cheeks and a driven member; a contact-board having two pairs of contacts a lever oscillatably mounted on the driven member and having contacts at either end, said lever-contacts being adapted to reverse the poles of the current on the reversal of the direction of rotation of the driving-shaft in the manner and for the purpose substantially as described.

2. In a coupling, the combination of a housing keyed to the driving-shaft; a series of cheeks forming radial segments of a cylinder and severally and collectively engaging a driven member; springs circumferentially surrounding said cheeks and causing their engagement with the driven member, substantially as herein shown and described.

3. In a coupling, the combination with an integral member, a series of segmental coupling-cheeks surrounding said integral member, and a resilient band or bands circumferentially surrounding and normally maintaining said segmental member in close contact with said integral member but designed to be enlarged by and when said cheeks are acted upon centrifugally at high speeds, allowing said cheeks to disengage said integral member.

4. In a coupling, a driving clutch member having a series of segmental coupling-cheeks, a driven member, and a resilient band or bands circumferentially surrounding said cheeks, said cheeks surrounding and held in contact with said driven member by said bands, and designed to release said driven member when centrifugally acted upon by the high speed of said driving member.

704,576. RAT-KILLER. JOHN T. FRIDE, Friars, Ga. Filed Dec. 10, 1901. Serial No. 85,608. (No model.)

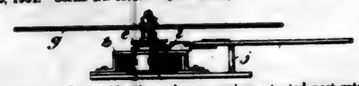

Claim.—1. In combination, a base, a spring actuated post rotatably supported thereon and carrying a killing arm or arms and also a circular plate provided with a spiral groove in its periphery, said groove being notched or shouldered at one or more points, a trigger having one end working in said groove and adapted to engage said notch or notches, and a death-board connected to said trigger and lying just under the path of the killing arm or arms, for the purpose set forth.

2. In combination, a base, a frame thereon, a spring-actuated rotatable post, a spirally-grooved nut or plate carried by said post, a killing-arm carried by said post and arranged horizontally, a trigger pivoted on the frame and engaging said spiral groove, and a spring-supported death-board connected to said trigger, for the purpose set forth.

704,577. BUTTONHOLE-MOISTENER. EDWARD PUFF, Montgomery, N. Y. Filed Nov. 23, 1901. Serial No. 84,084. (No model.)

Claim.—1. A buttonhole-moistener comprising a tube provided at one end with a head and having a reduced neck connecting the head with the tube and adapted to lie within a buttonhole during the moistening operation and provided with a perforation, and means for forcing a liquid through the perforation, substantially as described.

2. A buttonhole-moistener comprising a tube open at one end and provided at its other end with a reduced neck, an annular shoulder disposed between said neck and tube, and a wedge-shaped guide attached to said neck, said neck having peripheral perforations therein.

704,578. DUMP-CAR. EDGAR M. RAY and ROBERT B. MCCONNEY, Denver, Colo.; said McConney assignor of one-half of his right to said Ray. Filed Mar. 11, 1901. Serial No. 50,868. (No model.)

Claim.—1. In a car of the class described, the combination of a fixed frame portion, a plurality of transversely-extending saddles arranged rigidly thereon, a plurality of dumping portions vibratingly mounted upon and connected by such saddles, a rigid side portion of the fixed frame extending above and outside of the dumping portions and connecting the ends of the fixed frame, swinging doors mounted beneath and upon such rigid side portions adjacent to the outer sides of the dumping portions and dumping mechanism for dumping the dumping portions, substantially as described.

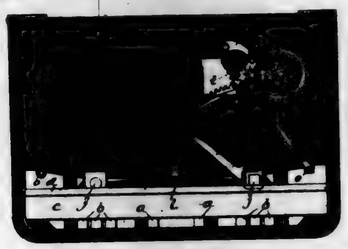

2. In a car of the class described, the combination of a fixed frame portion, a saddle mechanism mounted thereon, a plurality of dumping portions having inner inclosing sides and open outer sides and pivotally mounted upon and connected together by the saddle mechanism, a rigid side portion of the fixed frame extending above and outside of the dumping portions and connecting the ends of the fixed frame, swinging doors mounted beneath and upon such rigid side portions adjacent to the outer sides of the dumping portions and dumping mechanism for operating the dumping portions, substantially as described.

3. In a car of the class described, the combination of a fixed frame portion, a dumping portion having one side, a bottom portion and two ends vibratingly mounted thereon, longitudinal beams extending above the dumping portion and connecting the upper portions of the ends of the fixed frame, a swinging door pivotally mounted on the frame portion and forming the outer side of the dumping-box portion to provide means for carrying a load, and means for holding the parts in carrying position, substantially as described.

4. In a car of the class described, the combination of a fixed frame portion provided with side posts and open at its sides and top, a longitudinal tie-plate securing the upper portion of the side posts together, a dumping-box portion substantially L-shaped in cross-section and U-shaped in longitudinal section arranged longitudinally of the car with its open sides arranged adjacent to the open sides of the frame, rock-shafts vibratingly mounted in the frame portion and secured to the dumping-boxes for tilting the same, swinging doors pivotally secured to each side of the car to complete the closure of such side and the open side of the dumping-boxes, and means for locking the parts in carrying position, substantially as described.

5. In a car of the class described, the combination of a fixed frame portion provided with side posts and open at its sides and top, a longitudinal tie-plate securing the upper ends of the side posts together, a dumping-box portion substantially L-shaped in cross-section and U-shaped in longitudinal section arranged longitudinally of the car with their open sides arranged adjacent to the open sides of the frame, rock-shafts vibratingly mounted in the frame portion and secured to the dumping-boxes for tilting the same, swinging doors pivotally secured to the upper portion of each side of the car to complete the closure of such side and the open side of the dumping-boxes, and locking-plates pivotally secured to the lateral outer edge of the dumping-boxes and adapted to be engaged with the swinging sides of the car to lock such parts in carrying position, substantially as described.

6. In a car of the class described, the combination of a fixed frame portion provided with side and end parts rigidly secured together at their upper ends, dumping-boxes arranged on each side of the car longitudinally thereof and provided with an open top and an outer open side, rock-shafts pivotally mounted in the supporting-frame and secured to the dumping-boxes to tilt the same, longitudinal swinging doors pivotally mounted on the upper portion of each side frame of the car to complete the closure thereof and the closure of the dumping-boxes, a plate pivotally secured to the outer lateral edge of the dumping-boxes to engage the swinging door of the car-frame, means for holding the locking-plate in its locked position, and means for operating the rock-shaft to tilt the dumping-box from carrying to dumping position and vice versa, substantially as described.

7. In a car of the class described, the combination of a fixed frame portion formed of longitudinal sills and U-shaped transverse metal members which form tie-beams for the sills and side posts for the car, metallic members for tying the upper ends of the posts together, rock-shafts arranged longitudinally of the car, one at each side of the longitudinal center thereof, dumping-boxes L-shaped in cross-section and substantially U-shaped in longitudinal section secured to the rock-shafts so that they may be tilted to dumping positions, swinging doors pivotally secured to the sides of the car-frame at or near the upper portion thereof with their free edge at or near the lower side of the car to form a closure therefor and for the outer side of the dumping-boxes, hooked plates provided with rock-shafts pivotally secured to the outer lateral edge of the dumping-boxes adapted to engage with the free end of the swinging doors and hold the same in locked position, a lever for operating this rock-shaft and means for holding it in locked position, and means for holding and rocking the main rock-shafts and thereby tilting the dumping-boxes into carrying or dumping positions, substantially as described.

8. In a car of the class described, the combination of a fixed frame portion formed of longitudinal sills, side and end posts, tie-beams securing the upper ends of such posts rigidly together, dumping-boxes arranged at each side of the car having an open top and outer open side, rock-shafts pivotally mounted on the car-frame and secured to such dumping-boxes to tilt them into their different positions, swinging doors pivotally secured to the upper sides of the car-frame to form a closure therefor and for the open sides of the dumping-boxes, a hooked plate provided with a rock-shaft by which it is secured to the outer lateral edge of the dumping-boxes and adapted to engage the swinging doors and hold the same in locked carrying position, an operating-lever secured to the rock-shaft of the hooked locking-plate, means for holding this operating-lever in locked position, and gear mechanism for operating the rock-shaft upon which the dump-boxes are tiltingly mounted, substantially as described.

9. In a car of the class described, the combination of a fixed frame portion, a dumping portion vibratingly mounted therein having an inclosing inner side and an open outer side, a rigid side portion of the fixed frame extending above the dumping portion and connecting the ends of the fixed frame, a swinging door mounted beneath and upon the rigid side portion adjacent to the open side of the dumping portion and adapted to form an outer inclosing side adjacent to such dumping portion, means for dumping the dumping portion and means for holding it in carrying position, substantially as described.

10. In a car of the class described, the combination of a fixed frame portion, a dumping portion vibratingly mounted therein an upper rigid side portion of the fixed frame extending above the dumping portion and connecting the ends of the fixed frame, a swinging door mounted beneath the rigid side portion, an upward-extending portion on the inner side of the dumping portion adapted to contact the fixed frame when the dumping portion is in position to discharge its contents, and means for holding the dumping portion in carrying position, substantially as described.

11. In a car of the class described, the combination of a fixed frame portion provided with longitudinal sills, saddles provided with rock-shaft bearings arranged upon such sills, rock-shafts vibratingly mounted in the rock-shaft bearings and extending beneath and throughout the entire length of the dumping portions mounted thereon, a plurality of dumping-portions mounted upon such rock-shafts and connected together by the saddles, and means for holding the dumping portion in carrying position, substantially as described.

12. In a car of the class described, the combination of a fixed frame portion, a plurality of saddles arranged thereon, a plurality of dumping portions pivotally mounted upon and connected by such saddles, a rigid side portion of the fixed frame extending along each side thereof above the dumping portions and connecting the ends of the fixed frame, a swinging door mounted beneath and upon the rigid side portions of the fixed frame adjacent to the dumping portions, and dumping mechanism for operating the dumping portions, substantially as described.

13. In a car of the class described, the combination of a fixed frame portion, saddle mechanism arranged thereon and provided with rock-shaft bearings adapted to support longitudinally-extending rock-shafts, a plurality of dumping portions pivotally mounted upon the rock-shafts and connected together by the saddle mechanism, a rigid side portion of the fixed frame extending along each side thereof above the dumping portions and connecting the ends of the fixed frame, a swinging door mounted beneath and upon the rigid side portions of the fixed frame adjacent to the dumping portions, a swinging door mounted beneath and upon each rigid side portion of the fixed frame adapted to form a yielding side for the adjacent dumping portion, and dumping mechanism for operating the dumping portions, substantially as described.

704,579. GLOVE. MINNIE R. ROLLASON, Brooklyn, N. Y. Filed Oct. 10, 1901. Serial No. 78,334. (No model.)

Claim.—1. As an article of manufacture, a glove, comprising hand, wrist, forearm and upper-arm portions, and provided with groups of apertures, and flexible members secured upon the wrist portion and wound spirally around the glove in opposite directions so as to cross each other and threaded through said apertures at the points where said flexible members thus cross.

2. As an article of manufacture, a glove, comprising hand, wrist

forearm and upper-arm portions, the wrist portion being provided with an opening, and with buttonholes and buttons for closing the same, the forearm and upper-arm portions being provided with groups of apertures, flexible members permanently secured to each side of said opening and wound spirally around the glove in opposite directions, so as to cross each other at intervals, and threaded through said apertures at the points where the ribbons thus cross.

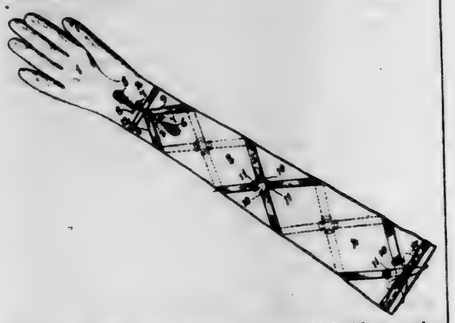

3. As an article of manufacture, a glove provided with an opening and with buttonholes and buttons for closing the same, and also provided with distinct groups of apertures said groups being spaced asunder at definite intervals, and a pair of flexible members permanently secured adjacent to said opening and provided with tags for threading said ribbons through said apertures, the arrangement being such that said ribbons may be disposed spirally around the glove.

704,580. SASH-FASTENER. WILLIAM RUSSELL, Plymouth, England. Filed Aug. 18, 1900. Serial No. 26,764. (No model.)

Claim.—The improved means for fastening window-sashes in their closed or partly-open position comprising the combination with the sashes of, locking-catches consisting of brackets, such as *f*, fixed to the upper sash at a suitable distance apart, and formed with a vertical bar *f'* and a horizontal arm *f''*, and a hooked locking-bar *c* engaging with one or other of the said catches, and provided with a tightening-screw, substantially as described.

704,581. MACHINE FOR TREATING TUBES. JAMES H. RUSSELL, Philadelphia, Pa. Filed Nov. 15, 1901. Serial No. 82,466. (No model.)

Claim.—1. A machine of the class specified comprising the combination of rolls for flattening the tube, an opener located to one side of said rolls for opening and smoothing the tube preparatory to its passing through the rolls, a trough-like guide for positioning the opener near to and on one side of the rolls, a shear-trimmer for receiving the smoothed and flattened tube from the opener and rolls and for cutting it into lengths, and means for operating said parts, substantially as described.

2. In a machine of the class specified the combination of rolls arranged to normally run in contact with each other for feeding the tube, and an opener wholly arranged to one side of said rolls which draw the tube over it and then between them, substantially as described.

3. A machine of the class specified comprising rolls, an opener, a trough-like guide for causing the opener to gravitate into contact with and remain to one side of the line of contact of said rolls, a cutter, a guide between the rolls and cutter, and means for operating the rolls and cutter, substantially as described.

4. In a machine of the class specified the combination of rolls, an opener, a guide for positioning the opener on one side of the rolls, a cutter, a guide between the rolls and cutter, and a blower arranged to discharge on the last-mentioned guide, substantially as described.

5. A machine of the class specified comprising rolls, an opener, a guide for causing the opener to gravitate to one side of the rolls, a cutter, a guide between the cutter and rolls, a blower arranged to discharge on the last-mentioned guide, an endless conveyor, and a guide from the cutter to the conveyor, substantially as described.

6. In a machine of the class specified the combination of rolls, a shear-cutter, a guide between the rolls and cutter, means for operating the rolls and shear-cutter, a pivotal stripper, and lost-motion connections between the stripper and movable blade of the cutter, substantially as described.

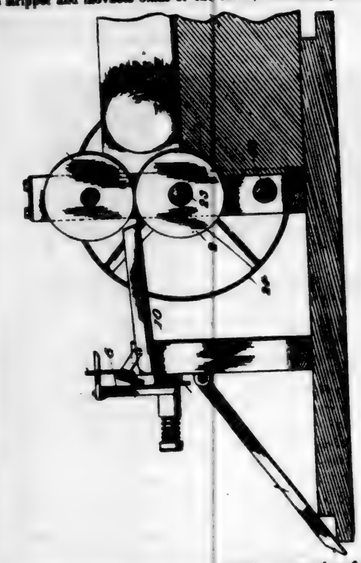

7. In a machine of the class specified the combination of rolls, a shear-cutter, a positively-driven shaft, a cutter-cam operatively connected with said shaft, mechanism between the cutter and the cutter-cam which is controlled by the latter, a clutch member of which one part is driven with said shaft and of which the other part is connected with said rolls, a clutch-cam driven from said shaft, and mechanism operated by the clutch-cam for positioning the clutch, substantially as described.

704,582. WRENCH. GEORGE SCHAUB, Lake Benton, Wis. Filed Dec. 12, 1901. Serial No. 85,562. (No model.)

Claim.—1. A wrench consisting of a rod having a yoke intermediate of its ends provided with a lateral arm, an arm and handle extending from opposite sides of the rod, crank and socket spindles having their bearings in the yoke and rod arms, and meshed gear-wheels fast on the spindles.

2. A wrench consisting of a rod having a yoke intermediate of its ends, annularly-bent arms extending laterally from the rod and yoke, a tang extending from that side of said rod farthest from its arm, a handle on the tang, crank and socket spindles having their bearings in the yoke and rod arms, and meshed bevel gear-wheels fast on the spindles.

704,588. HYDRAULIC MOTOR. CHARLES W. SCHINDLER and JOHN FREEMAN, New Albany, Ind. Filed July 15, 1901. Serial No. 68,407. (No model.)

Claim.—1. In a water-motor, the combination of a wheel, a vertical power-shaft turned thereby, a horizontal power-shaft turned by said vertical power-shaft, a clutch on said horizontal shaft, a connecting-shaft adapted to be operated by said horizontal power-shaft, bevel-gears on said connecting-shaft, clutches on said connecting-shaft, means for automatically operating said clutches, jacks adapted to raise or lower said water-wheel, and means for transmitting the motion of said beveled gears to said jacks, substantially as described.

2. In a water-motor, the combination of a water-wheel, bearings within which said wheel is journaled, jacks passing through said bearings, power-shafts turned by said wheel, a connecting-shaft turned by said

power-shafts, bevel-gears on said connecting-shaft, worm-screw shafts connected to said jacks and adapted to be turned by said beveled gears, and means for connecting either set of bevel-gears to said connecting-shaft for revolving said worm-screw shafts in either direction, substantially as described.

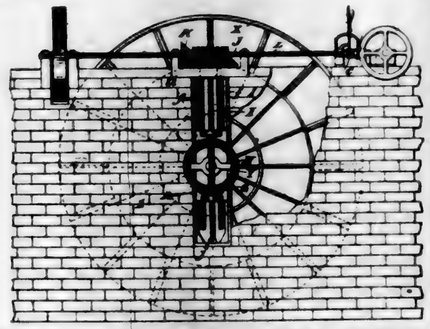

3. In a water-motor, the combination of a wheel, a main shaft, boxings for said shaft, power-shafts turned by said wheel, a connecting-shaft turned by said power-shafts, bevel-gears on said shaft, worm-screw shafts adapted to be turned by said bevel-gears, clutches on said connecting-shaft, a float adapted to operate said clutches whereby said bevel-gears alternately operate said worm-screw shafts, and jacks passing through and engaging said boxings and connected to said worm-shafts, substantially as described.

704,584. SKEWER FOR BOBBINS. ROBERT SCHOFIELD, New Bedford, Mass., assignor, by direct and mesne assignments, of two-thirds to Charles Burgess, New Bedford, Mass. Filed Oct. 26, 1901. Serial No. 79,894. (No model.)

Claim.—1. A skewer for bobbins provided at one end with two separate bearing-surfaces having different coefficients of friction, said bearing-surfaces being movable relative to each other, whereby either one may be brought into operative position to support the skewer.

2. A skewer for bobbins provided with two bearing-surfaces having different coefficients of friction, and means governed by the amount of material on the bobbin to determine which bearing-surface shall be brought into operative position.

3. A skewer for bobbins having a body portion and a tip portion adapted to be received in a step or cup bearing, the said tip portion having two bearing-surfaces of different coefficients of friction, and means governed by the amount of material on the bobbin to determine which bearing-surface shall have operative contact with the cup-bearing.

4. A skewer for bobbins having a body portion and a tip portion adapted to rest upon and engage a cup or step bearing, said tip portion being provided with two separate bearing-surfaces having different coefficients of friction.

5. A skewer for bobbins having a body portion and a tip portion adapted to rest upon and engage a cup or step bearing, said tip portion being provided with two separate bearing-surfaces having different coefficients of friction, and means to bring either of said bearing-surfaces into operative contact with the cup-bearing, the construction being such that when the bobbin is full the bearing-surface having the greater coefficient of friction is rendered operative to support the bobbin, while when the bobbin is partially empty the bearing-surface having the less coefficient of friction is brought into operative contact against the cup-bearing.

6. A skewer for bobbins having a tip portion provided with a wooden bearing-surface, and a supplemental metallic bearing-surface, and means governed by the amount of material on the bobbin to determine which bearing-surface the skewer shall rest upon.

7. A skewer for bobbins having a tip portion provided with a central metallic bearing-surface, and an annular wooden bearing-surface surrounding the metallic bearing-surface, and means governed by the amount of material on the bobbin to determine which bearing-surface shall be brought into operative position against the cup or step.

8. A skewer for bobbins having a tip portion adapted to rest in and be supported upon a cup-bearing, said tip portion having a central metallic wooden surface and an annular wooden bearing-surface, and means governed by the amount of material on the bobbin to determine which bearing-surface shall be brought into operative contact against the cup-bearing, the construction being such that when the bobbin is full the skewer is supported upon the wooden bearing-surface, while when the bobbin is partially empty the said skewer is supported on the metallic bearing-surface.

9. A skewer for bobbins having a wooden tip provided with a central bore, a metallic pin in said bore, and means tending normally to cause the pin to project beyond the end of said tip, said means acting with a force which is less than the weight of a full bobbin, the construction being such that the weight of a full bobbin causes the pin to retract and allows the wooden tip to engage the bearing-cup, while the weight of a partially-filled bobbin is overcome by said means and the pin is projected.

10. A skewer or spindle for bobbins having a wooden tip portion provided with a central bore, a metallic pin in said bore, a spring acting against the inner end of said pin and tending normally to force the point thereof beyond the tip with a pressure less than the weight of a filled bobbin, the construction being such that the weight of a filled bobbin compresses the spring and allows the wooden tip to engage the bearing-cup, while when the bobbin is partially empty the spring raises the bobbin and forces the pin outwardly, the said pin supporting the weight of a partially-empty bobbin.

704,585. INDUCTION-CONDENSER. LOUIS SCHUTTE, Philadelphia, Pa. Filed Sept. 28, 1901. Serial No. 76,497. (No model.)

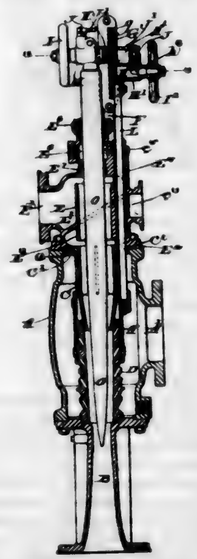

Claim.—1. In a condenser having a main body A with an opening *a* at its top, a combining-tube situated in said main body, an adjustable sleeve working over said combining-tube and a sleeve-adjusting rod extending from said tube, the combination with said parts of a nozzle C having a flange C' resting on the end of the opening *a* and having a perforation C² for the passage of the sleeve-adjusting rod, a head E angularly adjustable on the end of the main body and about the opening *a* said head being formed with a perforation E² for the sleeve-adjusting rod, a ram O extending through the head E and nozzle C into the combining-tube D and means for longitudinally adjusting the ram and sleeve-adjusting rod, said means being secured to the head F, all substantially as described and so that the head E and sleeve N can be adjusted in angular direction without interfering with the operativeness of the condenser.

2. In a condenser having an adjustable ram and sleeve, the combination with the condenser-body of racks G and G', bearings M and M' secured to the ram and sleeve-spindle and sliding on the racks, shafts H² H³ supported in said bearings and gear-wheels H H' secured to said shafts and engaging respectively the racks G and G'.

3. In a condenser having an adjustable ram and sleeve, the combination with the condenser-body of racks G and G' secured to said condenser-body by pivoted links F, bearings M and M' secured to the ram and sleeve-spindle and sliding on the racks, shafts H² H³ supported in

said bearings and gear-wheels H H' secured to said shafts and engaging respectively the racks G and G'.

4. In a condenser having an adjustable ram and sleeve, the combination with the condenser-body of racks G and G', bearings M and M' secured to the ram and sleeve-spindle and sliding on the racks, shafts H^2 H^2 supported in said bearings, gear-wheels H H' secured to said shafts and engaging respectively the racks G and G' and means for locking the shafts and gear-wheels in determined position.

5. In a condenser having an adjustable ram and sleeve the combination with the condenser-body of racks G and G' each having at top an extra-long tooth g, bearings M and M' secured to the ram and sleeve-spindle and sliding on the racks, shafts H^2 H^2 supported in said bearings and gear-wheels H H' secured to said shafts and engaging respectively the racks G and G', each of said gear-wheels having an extra-long space between teeth as h whereby the gears and racks are always engaged in the same way.

704,586. COFFEE-POT. MICHAEL H. SEXTON, Utica, N. Y. Filed Apr. 30, 1902. Serial No. 105,957. (No model.)

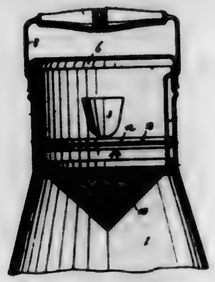

Claim.—1. The combination with a coffee-pot having a neck portion and a discharge-opening located in said neck portion, of a connected, removable cover and strainer, the strainer substantially fitting and being supported at such a distance below the cover as to take a position in the lower portion of said neck below the discharge-opening, substantially as set forth.

2. The combination of a coffee-pot having a neck portion, a discharge-opening in said neck portion, a cover, a lock or fastening for securing said cover, a strainer fitting said neck portion and supported from the cover at a point below the discharge-opening, and removable with the cover, substantially as set forth.

3. The combination of a coffee-pot having a cylindrical neck portion, a discharge-opening in said neck-portion, a cover, an inverted, cone-shaped strainer supported from and removable with the cover arranged to occupy a position with the larger end of the strainer fitting the lower end of said neck, substantially as set forth.

4. In a coffee-pot, the combination of the body having a neck portion with a discharge-opening therein, a set of removable strainers fitting the neck below the discharge-opening and a cover connected with, and removable with said strainers, substantially as set forth.

704,587. HARROW. CHARLES STARLEY, Wassington Springs, S. D. Filed Apr. 2, 1902. Serial No. 101,697. (No model.)

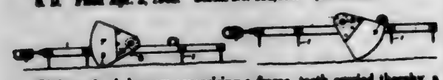

Claim.—1. A harrow comprising a frame, teeth carried thereby, a rotatable rod mounted on the frame, a series of ratchet-disks on said rod, a series of shoes mounted loosely on said rod adjacent to the ratchet-disks, a pawl carried by each shoe adapted to engage the ratchet-disks, means for rocking the rod and simultaneously swinging the shoes to bring the bases thereof to advance with the harrow, and cause the same to roll along the ground and elevate the frame, substantially as set forth.

2. In a harrow, a shoe having one end pivotally suspended to the harrow-frame, a curved base for the shoe, a depression formed along the upper edge of the shoe at a point contiguous with its junction with the curved base, and locking devices carried by the frame for engaging said depression and locking the shoes, substantially as set forth.

3. In a harrow, a frame, a swinging shoe adapted to be depressed below the frame, a series of loops carried by the frame, and a bar passed through said loops and held against the shoes while in their depressed position, substantially as set forth.

704,588. STEAM-BOILER. JOHN P. SIEBOHM, San Francisco, Cal. Filed Feb. 26, 1902. Serial No. 95,750. (No model.)

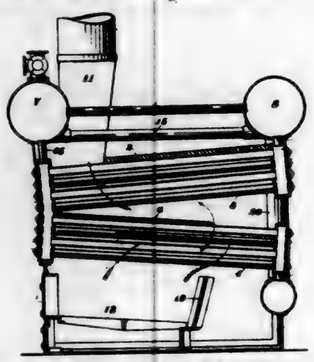

Claim.—In a steam-generator, an inclosing furnace, a header arranged at the front end thereof, and two headers, one above the other, arranged at the rear end thereof, superimposed groups of generating-tubes longitudinally arranged in said furnace and connecting said headers, said groups being set at oppositely-sloping angles, and steam-drums arranged at opposite ends of said furnace, directly connected with said headers at the water-spaces of said drums, substantially as specified.

704,589. SPARKING-COIL CASING. CHARLES F. SPLITDORF, New York, N. Y. Filed Apr. 30, 1902. Serial No. 105,307. (No model.)

Claim.—1. A sparking-coil casing comprising a shell composed of tough non-conducting material, and an inner lining therefor composed of material possessing the quality of non-conductivity to a higher degree.

2. In a sparking-coil casing, a cylinder composed of tough, non-conducting material, an inner lining therefor composed of a thin sheet of material rolled upon itself in several plies, and possessing the quality of non-conductivity to a higher degree, a cylinder-cap, an insulating-disk at its inner surface, and a body of plastic insulation interposed between said disk and the coil-winding.

3. In a sparking-coil casing having the usual terminal openings, an insulating-bushing within each of said openings, each of said bushings having an inward retaining-flange and an outwardly-projecting flexible extension.

704,590. PIELESS HINGE. DAVID S. STIMSON and AUGUSTUS STEVENSON, Kittery, Me. Filed Mar. 26, 1902. Serial No. 99,917. (No model.)

Claim.—1. A hinge comprising two members, one having a slotted curved extension and the other having a rounded end journaled in said curved extension, said rounded end being provided with a button engaging the slot of said extension and overlapping the edges thereof.

2. A hinge comprising two members, one having a slotted curved extension and the other having a rounded end journaled in said curved extension, said rounded end being provided with a button engaging the slot of said extension and overlapping the edges thereof, the overlapping edges of said button and said extension being rabbeted.

3. A hinge comprising two members, one having a depressed slotted curved extension and the other having a depressed rounded end journaled in said curved extension, said end being provided with a button engaging the slot of said curved extension and overlapping the edges thereof.

4. A hinge comprising two members, one of said members consisting of an attaching-plate and a fulcrum-plate at an angle thereto, said fulcrum-plate having a depressed slotted curved extension, and the other member having a depressed rounded end journaled in said curved extension, said rounded end being provided with a button engaging the slot of said curved extension and overlapping the edges thereof.

5. In a hinge the combination of a member comprising an attaching-plate and a fulcrum-plate, said fulcrum-plate having a slotted curved extension and a booked portion between said curved extension and attaching-plate, and a member provided with a rounded end journaled in said curved extension, said rounded end being provided with a button engaging the slot of said curved extension and overlapping the edges thereof.

6. In a hinge the combination of two members adapted to swing on each other and close at right angles, one of said members comprising an attaching-plate and a fulcrum-plate having a slotted curved extension, and the other member having a depressed rounded end journaled in said curved extension, said rounded end being provided with a button engaging the slot of said extension and overlapping the edges thereof, and said swinging member being provided with a stop for engaging the stationary member, whereby the parts are locked together when closed.

704,591. NECKTIE. HERBERT G. STRAAT, New York, N. Y. Filed Mar. 8, 1902. Serial No. 97,236. (No model.)

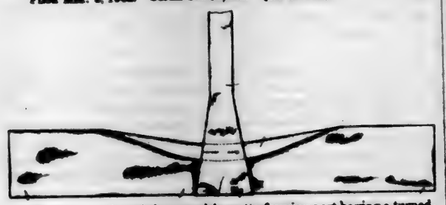

Claim.—1. A necktie comprising a tie-forming part having a turned-down upper edge, and a neckband detachably secured to the tie-forming part at a right angle thereto at approximately the center of such turned-down portion, as set forth.

2. A necktie comprising a tie-forming part having its ends folded toward its center and crossed, and a neckband secured in the fold of said tie-forming part and at a right angle to the top of the tie, as set forth.

3. A necktie comprising a tie-forming part having its ends folded toward its center as described, and a neckband detachably secured in the fold of said tie-forming part and at a right angle to the top of the tie, as set forth.

704,592. COATING-TRAY. PERCY B. TAYLOR, Newark, N. J., assignor to the Pure Food Company, a Corporation of New Jersey. Original application filed Nov. 2, 1899, Serial No. 736,244. Divided and this application filed Jan. 30, 1901. Serial No. 45,902. (No model.)

Claim.—1. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum and means for actuating the same, of a coating-tray, consisting, essentially, of a bottom and three inclosing sides, and open toward the drying-surface of said drum, and flexible contact-strips connected with the open edges of said tray for making a close contact between the tray and the drying-surface of said drum, substantially as and for the purposes set forth.

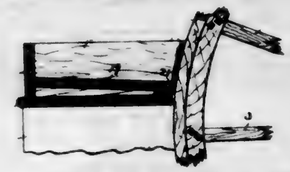

2. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum, means for actuating the same, and a support, of a coating-tray adjustably arranged on said support, consisting, essentially, of a bottom and three inclosing sides, and open toward the drying-surface of said drum, and flexible contact-strips connected with the open edges of said tray for making a close contact between the tray and the drying-surface of said drum, substantially as and for the purposes set forth.

3. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum, means for actuating the same, and a support, of a coating-tray arranged on said support, consisting, essentially, of a bottom and three inclosing sides, and open toward the drying-surface of said drum, flexible contact-strips connected with the open edges of said tray, brackets on each side of said tray provided with ribs, guide-plates on said support having ways in which said ribs are slidably arranged, and means connected with said brackets and said guide-plates for producing a close contact between said flexible strips of the tray and the drying-surface of said drum, substantially as and for the purposes set forth.

4. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum, means for actuating the same, and a support, of a coating-tray arranged on said support, consisting, essentially, of a bottom and three inclosing sides, and open toward the drying-surface of said drum, flexible contact-strips connected with the open edges of said tray, brackets on each side of said tray provided with ribs, guide-plates on said support having ways in which said ribs are slidably arranged, and means connected with said brackets and said guide-plates for producing a close contact between said flexible strips of the tray and the drying-surface of said drum, consisting, essentially, of screw-rods having one end attached to a part of the guide-plates and extending through perforated lugs on said brackets at the sides of the tray, and an adjusting-nut on each rod, and a spring encircling each rod, substantially as and for the purposes set forth.

5. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum, and means for actuating the same, of a support, guides on said support, having an upwardly-extending post on each guide, a coating-tray slidably arranged between said guides, and means connected with said posts on said guides and with the tray for causing a close contact between the tray and the drying-surface of the drum, substantially as and for the purposes set forth.

6. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum, and means for actuating the same, of a support, guides on said support, having an upwardly-extending post on each guide, a coating-tray slidably arranged between said guides, and means connected with said posts on said guides and with the tray for causing a close contact between the tray and the drying-surface of the drum, consisting, of a rod secured on each post of said guides, a perforated lug on each side of the tray, through which said rod is passed, an adjusting-nut on each rod, and a spring encircling each rod between the said nuts and the lugs on the tray, substantially as and for the purposes set forth.

7. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum, and means for actuating the same, of a support, guides on said support, having an upwardly-extending post on each guide, a coating-tray, brackets attached to the sides of said tray, a rib on each bracket slidably arranged in a way of each guide, a lug on each plate or bracket, and means connected with said posts of the guides and with said lugs of said brackets, for causing a close contact between the tray and the drying-surface of the drum, substantially as and for the purposes set forth.

8. In an apparatus for the desiccation of eggs, or other material, the combination, with a drying-drum, and means for actuating the same, of a support, guides on said support, having an upwardly-extending post on each guide, a coating-tray, brackets attached to the sides of said tray, a rib on each bracket slidably arranged in a way of each guide, a perforated lug on each plate or bracket, and means connected with said posts

of the guides and said perforated lugs of said brackets, for causing a close contact between the tray and the drying-surface of the drum, consisting, essentially, of a rod secured on each pair of said guides, said rods extending through said perforated lugs on said brackets, an adjusting-nut on each rod, and a spring encircling each rod on that portion between said adjusting-nuts and the said lugs, substantially as and for the purposes set forth.

704,598. APPARATUS FOR WASHING GASES. EDWARD THIESEN, Baden, Germany. Filed Oct. 26, 1900. Serial No. 734,738. (No model.)

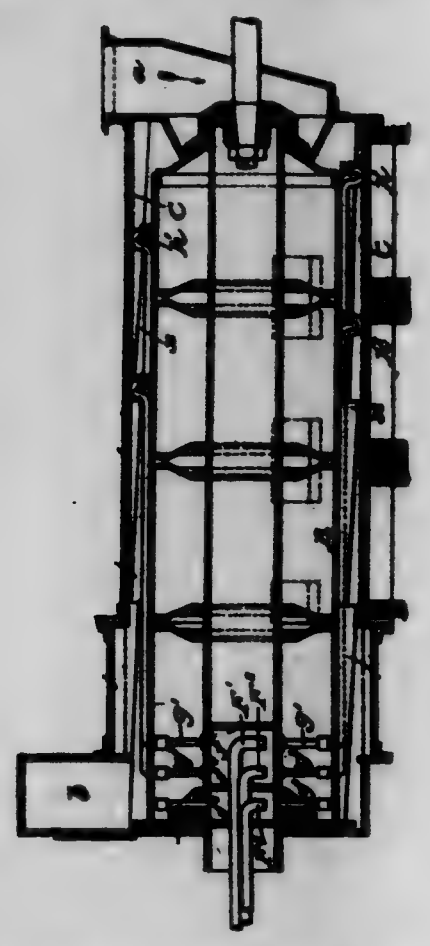

Claim.—1. In an apparatus for washing gases and removing impurities therefrom, the combination of a horizontally-arranged stationary casing having liquid receiving and discharge openings therein, a liquid-container over which the casing rests, said casing and container being so arranged with relation to each other that the mouths of the openings in the former will be submerged in the liquid in the container, a rotary horizontally-arranged externally-bladed cylinder contained within said casing for conveying liquid from the liquid-receiving opening in the casing to the discharge-opening therein and means carried by said cylinder for continually supplying to the apparatus a washing or absorbing liquid other than that taken from the container.

2. In an apparatus for washing gases and removing impurities therefrom, the combination of a horizontally-arranged casing having liquid receiving and discharge openings therein, a liquid-container over which the casing rests, said casing and container being so arranged with relation to each other that the mouths of the openings in the former will be submerged in the liquid in the container, a rotary horizontally-arranged bladed cylinder contained within said casing for conveying liquid from the liquid-receiving opening in the casing to the discharge-opening therein, one or more supply-pipes carried by said rotary cylinder and each carrying a spraying-nozzle, one or more chambers within the cylinder in communication with the supply-pipes and means for supplying said chamber or chambers with liquid.

3. The combination of a stationary casing with a rotary cylinder having obliquely-disposed exterior blades, means for causing gases to pass between the casing and the cylinder, and means for spraying liquid in said space between the rotary cylinder and the stationary casing, to cause said liquid to pass outwardly from the cylinder to the casing and to cause in close contact with the gases.

4. The combination of a stationary casing, a rotary cylinder located within the casing and provided with external oblique blades, means for passing a current of gas between the casing and the cylinder, and spraying-devices located at different points longitudinal of the cylinder for discharging a liquid into the space between the cylinder and the casing, causing said liquid to be thrown outward against the casing and to pass through the current of gas.

704,594. WAGON-RACK FOR HAY-LOADERS. ABRAHAM E. THOMAS, Wooster, Ohio. Filed May 19, 1902. Serial No. 108,102. (No model.)

Claim.—1. The combination with a wagon hay-rack, having longitudinal rails for track, secured thereon from end to end; of a shorter, superposed movable platform-rack mounted thereon to move back and forth along said track; a standard erected upon said platform-rack, a windlass fitted to operate upon said standard; and means for propelling said movable rack from said windlass, substantially as set forth and for the purpose specified.

2. The combination of a wagon hay-rack, having a superposed movable platform-rack mounted thereon to move longitudinally from end to end thereof; said platform-rack having a standard erected thereon; a windlass fitted to operate upon said standard; means for locking said windlass; and means for propelling said platform upon and along the upper surface of said wagon-rack by the action of said windlass, substantially as set forth and for the purpose specified.

3. The combination of a wagon hay-rack having a shorter, superposed platform-rack mounted thereon to move longitudinally from end to end thereof; standards erected upon said platform-rack; a windlass mounted and fitted to operate upon said standards; a rope and tackle connecting said windlass and said wagon-rack and said platform-rack to propel the same upon said wagon-rack, and means for locking said windlass, substantially as set forth and for the purpose specified.

4. The combination of a wagon hay-rack having a shorter, superposed detachable platform-rack mounted and fitted to move along and upon on the upper surface of said wagon-rack; standards erected at the front end of said movable platform; two separate windlass-axles mounted thereon one above the other, a sliding rod extending between said axles, and having projecting ends to engage the cranks of said axles respectively when shifted laterally; rope and tackle connecting the front end of wagon-rack and platform-rack and one of said axles; rope and tackle connecting the front end of said platform-rack and said wagon-rack back of its middle, and the other of said axles, to actuate said platform-rack back and forth, substantially as set forth and for the purpose specified.

5. The combination of a wagon hay-rack having a shorter superposed rack mounted thereon and fitted to move longitudinally from end to end of said wagon-rack; a separate windlass mounted upon said superposed rack connected by rope and tackle with said several racks to propel the said movable rack along the upper surface of said wagon-rack; a separate windlass mounted upon said superposed rack connected by rope and tackle with said several racks to propel said movable rack in the opposite direction, and means for locking said windlasses respectively, substantially as set forth and for the purpose specified.

704,595. THERMO-ELECTRIC ELEMENT. CHARLES B. TWINING, Galesburg, Ill., assignor to Louis S. Longville, New York, N. Y. Filed June 14, 1901. Serial No. 64,982. (No specimens.)

Claim.—1. A thermo-electric couple, the negative element of which consists of an alloy of nickel and copper of the composition Ni_2Cu_3.

2. A thermo-electric couple having iron as the positive element, and an alloy of nickel and copper of the composition Ni_2Cu_3 as the negative element.

704,596. THERMO-ELECTRIC GENERATOR. CHARLES B. TWINING, Syracuse, N. Y., assignor to Louis S. Longville, New York, N. Y. Filed Oct. 21, 1901. Serial No. 79,498. (No model.)

Claim.—1. In a thermo-electric generator, a casing open at top and bottom, a burner, a chimney for said burner, and thermo-electric couples the joints of which project into the path of the products of combustion from said burner, the major portions of the couples being located in the casing beyond the burner; substantially as described.

2. In a thermo-electric generator, a casing open at top and bottom, a longitudinal burner, a chimney for said burner, and thermo-electric couples on each side of said burner the joints of which project into the path of the products of combustion from said burner, the major portions of the couples being located in the casing outside the chimney; substantially as described.

3. In a thermo-electric generator, a burner, a casing, insulating-strips supported by the casing, and thermo-electric couples supported by said insulating-strips and having their joints to be located directly in the

path of the products of combustion from the burner; substantially as described.

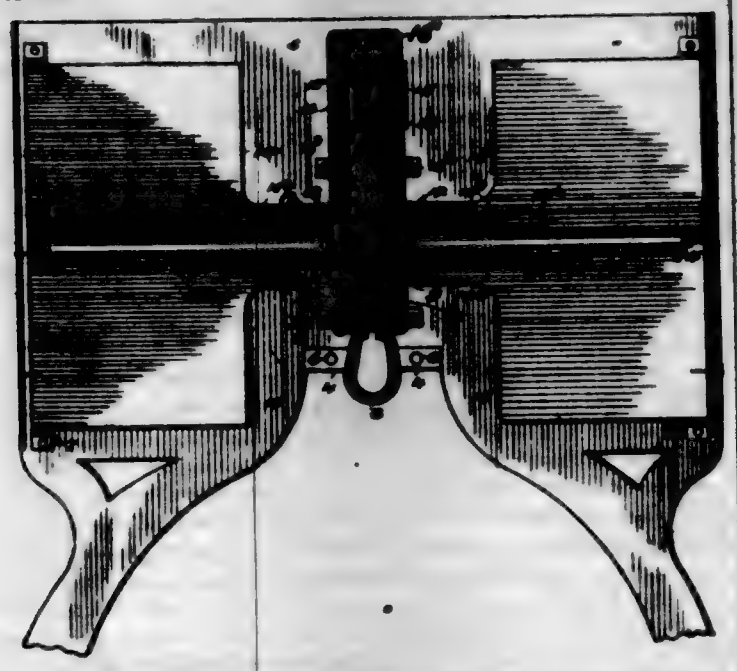

4. In a thermo-electric generator, a casing open at top and bottom, a longitudinal burner, a chimney for said burner, two sets of thermo-electric couples on each side of said burner, said sets having insulating-strips between their members and between each other, the strips, chimney and sides of the casing forming a heating-chamber above the burner, the joints of the couple to be heated projecting into said heating-chamber; substantially as described.

5. In a thermo-electric generator, a casing, a burner, a series of thermo-electric couples having their minor portions as to size constituting the joints to be heated projecting into the path of the products of combustion from said burner, and their major portions extending outwardly from and below the minor portions so as to constitute small compact heating-surfaces and wide extended cooling-surfaces; substantially as described.

6. In a thermo-electric generator, a casing, a burner, a series of thermo-electric couples having their minor portions as to size constituting the joints to be heated projecting into the path of the products of combustion from said burner, and their major portions extending outwardly from and below the minor portions, and a second series of couples similarly constructed arranged above said first series but reversely thereto, so as to constitute small compact heating-surfaces and wide extended cooling-surfaces; substantially as described.

7. In a thermo-electric generator, a casing, a longitudinal burner, a longitudinal series of thermo-electric couples arranged on each side of said burner and having their minor portions as to size constituting the joints to be heated projecting into the path of the products of combustion from the burner and their major portions extending outwardly from and below the minor portions, and two series of couples similarly constructed arranged above said first two series but reversely thereto, so as to constitute small compact heating-surfaces and wide extended cooling-surfaces; substantially as described.

8. In a thermo-electric generator, a lower series of couples the positive elements of which are in the form of wings projecting outwardly and downwardly from the joints to be heated, and an upper series of couples similarly shaped but reversely arranged with respect to the lower series, so as to constitute small compact heating-surfaces and wide extended cooling-surfaces; substantially as described.

9. In a thermo-electric couple, a metallic positive element, and a metallic negative element differing in composition from the positive element, the two elements being riveted and brazed together at the joint by brass or other copper alloy; substantially as described.

10. In combination, a thermo-electric couple having a slot in one of its elements, and a second couple having a portion of one of its elements interfitting with said slot, the two parts being brazed together at the joint; substantially as described.

11. In a thermo-electric generator, a couple having a heating-joint composed of positive and negative elements riveted to a connecting-piece; substantially as described.

12. In a thermo-electric generator, a couple having a heating-joint composed of positive and negative elements riveted and brazed to a connecting-piece; substantially as described.

13. In a thermo-electric generator, a thermo-electric couple, the positive element of which has a wide extended body or cooling portion and a narrow portion to be heated extending therefrom, said heating portion being provided with a groove or grooves adapted to fit over insulating-strips on the generator-casing; substantially as described.

14. In a thermo-electric generator, a casing open at top and bottom, a longitudinal burner, a chimney for said burner, and two sets of thermo-electric couples on each side of said burner, said sets having insulating-strips between their members and between each other, the strips, chimney, and sides of the casing forming a heating-chamber above the burner, said heating-chamber being lined with asbestos and the joints of said couples to be heated projecting into the chamber; substantially as described.

704,597. MALT-KILN. PETER G. TOEPPER, Milwaukee, Wis. Filed Mar. 10, 1902. Serial No. 97,861. (No model.)

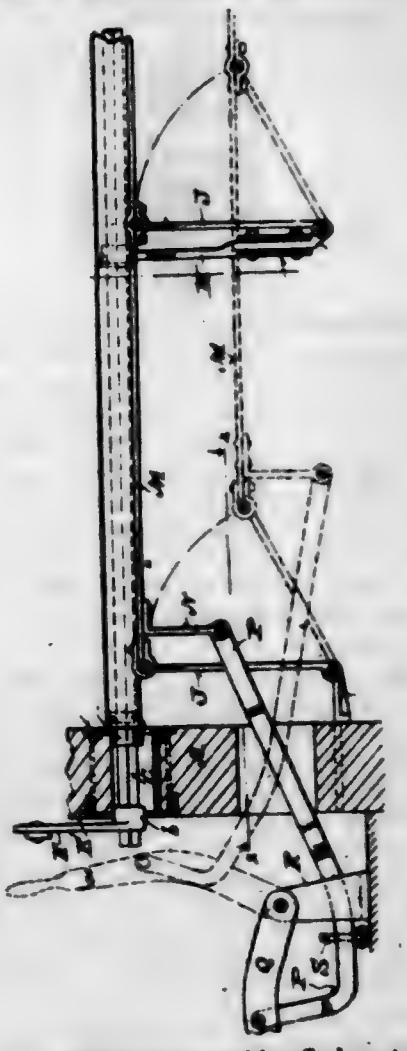

Claim.—1. A malt-kiln floor comprising tilt-dump trays, levers having transverse portions opposing under edges of frames constituting parts of the trays, a link-bar connecting the levers, and means for actuating the link-bar.

2. A malt-kiln floor comprising tilt-dump trays having shafts provided with journal-collars engaging vertically-elongated bearings, other collars rigid on the tray-shafts at intervals of the same, bearing-brackets stationary under the latter collars normally clear of the same, levers having transverse portions opposing under edges of frames constituting parts of the trays, a link-bar connecting the levers, and means for actuating the link-bar.

3. A malt-kiln floor comprising tilt-dump trays, levers having transverse portions opposing under edges of frames constituting parts of the trays, a link-bar connecting the levers, a bracket depending from the link-bar, a hand-lever in link connection with the bracket, and means for locking the trays in horizontal position.

4. A malt-kiln floor comprising tilt-dump trays having shafts provided with journal-collars and rounded end bosses of link-connected cranks engaging vertically-elongated bearings, other collars rigid on the tray-shafts at intervals of the same, bearing-brackets stationary under the latter collars normally clear of the same, levers having transverse portions opposing under edges of the frames constituting parts of the trays, a link-bar connecting the levers, and means for actuating the link-bar.

5. A malt-kiln floor comprising tilt-dump trays vertically adjustable in horizontal position to be dropped from their normal level preliminary to dumping operation so as to avoid obstructions.

704,598. ROD-PACKING. SYVERT USTRAB, Aurora, Ill. Filed Apr. 26, 1901. Renewed June 18, 1902. Serial No. 112,174. (No model.)

Claim.—1. A pliable metallic strip or ribbon for use in making packing-rings, the strip or ribbon having, first, an exterior face compris-

ing a centrally longitudinal ridge or apex and an inwardly-curved or concave surface on each side of the ridge or apex, each inwardly-curved or concave surface adapted to receive a portion of the curved exterior of a compressible or fibrous packing-ring, and having, second, an interior face comprising a central longitudinal channel or depression in line with the exterior ridge or apex and an outwardly-curved or convex surface on each side of the channel or depression forming a longitudinal groove or passage, with the outer concave and inner convex surfaces on different lines of curvature to give an increased thickness to the outer edge on each side and furnish a narrow flat bearing or contact face on the interior of the ring, when in place, without destroying the curvature of the faces, substantially as described.

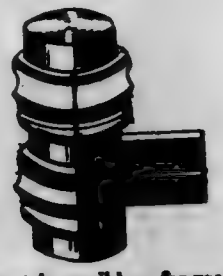

2. A pliable metallic strip or ribbon for use in making metallic packing-rings wound on itself into a roll and adapted to be unwound and cut into sections each section of a length for the diameter of ring desired, the strip or ribbon having, first, an exterior face comprising a central longitudinal ridge or apex and inwardly-curved or concave surfaces on each side of the ridge or apex and having, second, an interior surface comprising a central longitudinal channel or depression, and an outwardly-curved or convex surface on each side of the channel or depression forming a longitudinal groove or passage, with the concave and convex surfaces on different lines of curvature giving an increased edge thickness and furnishing on each side a flat narrow edge forming a bearing or contact face, substantially as described.

3. A pliable metallic strip or ribbon for use in making metallic packing-rings, the strip or ribbon having, first, an exterior face comprising a central longitudinal ridge or apex and an inwardly-curved or concave surface on each side of the ridge or apex and having, second, an interior face comprising a longitudinal channel or depression and an outwardly-curved or convex surface on each side of the channel or depression and forming a groove or passage in the inner face of the ring and having, third, a straight face on each side edge with a rounded corner at the juncture of each side edge face and the exterior curved surface leaving, when two rings abut each other on the side edge faces, a shallow channel or depression at the exterior corner edges, substantially as described.

4. A pliable metallic packing-ring having on its exterior two inwardly-curved or concave surfaces, one on each side of the transverse center, the curvature of the surfaces forming a central ridge or apex on the exterior face of the ring, and having on its interior face two outwardly-curved or convex surfaces, one on each side of the transverse center, the curvature of the surfaces forming a central channel or depression in the interior face of the ring, and having a straight face on each side edge when the ring is in place, said packing-ring being formed of a section cut from a continuous strip of pliable metal having an exterior and interior contour corresponding to the exterior and interior faces of the ring, substantially as described.

5. A series of pliable metallic packing-rings, each formed of a section cut from a continuous strip or ribbon of pliable metal and each having on its exterior two inwardly-curved or concave surfaces, one on each side of the transverse center, the curvature of the surfaces forming a central ridge or apex on the exterior face of each ring, and each having on its interior face two outwardly-curved surfaces, one on each side of the transverse center, the curvature of the two faces forming a central channel or depression on the interior face of each ring, the adjoining curved surfaces on the exterior of the rings forming between two rings a semicircular groove or recess and the curved surfaces on the interior face of each ring forming a groove or passage, in combination with a series of compressible or fibrous packing-rings, each ring having a curved exterior surface to enter and fit the semicircular groove or recess formed by the inwardly-curved or concave exterior surfaces of two abutting metal rings, for the compressible packing-ring to close the joint between the two metal rings, substantially as described.

6. A series of pliable metallic packing-rings, each having on its exterior face two inwardly-curved or concave surfaces, one on each side of the transverse center, the curvature of the faces forming a central ridge or apex on the exterior face of each ring and having on its interior face two outwardly-curved or convex surfaces, one on each side of the transverse center, the curvature of the two surfaces forming a central channel or depression on the interior face of each ring and having a straight face on each side edge of each ring, with a rounded corner at the juncture of each side edge face and the exterior curved surface, the exterior curved surfaces of two abutting rings forming a semicircular groove or channel and the curved surface on the interior of each ring forming a groove or passage, in combination with a compressible or fibrous packing-ring for each semicircular groove or recess, said ring having a curved exterior face fitting into the semicircular groove or recess of the exterior surfaces of two abutting metal rings and clearing the channel or depression formed by the rounded corner edges of the two rings, substantially as described.

7. A pliable metallic strip or ribbon for use in making half packing-rings, the strip or ribbon having an exterior face with a curved surface, a narrow face on one side edge, a wide face having a curved surface on the opposite side edge an interior face having a straight surface, and having, at the juncture of the curved surface of the exterior face and the curved surface of the wide edge side face, an apex or ridge, substantially as described.

8. A pliable metallic strip or ribbon for use in making half packing-rings wound on itself and adapted to be unwound and cut into sections each section of a length for the diameter of half-ring desired, the strip or ribbon having an exterior face with a curved surface, a narrow face on one side edge, a wide face having a curved surface on the opposite side edge, an interior face having a straight surface and having at the juncture of the curved surface of the exterior face and the curved surface of the wide edge side face, an apex or ridge, substantially as described.

9. A pliable metallic half packing-ring having an exterior face with an inwardly-curved or concave surface, a side edge face with a narrow surface, a side edge face with an outwardly-curved or convex wide surface and an interior face having a straight surface, and formed from a section cut from a continuous strip or ribbon of pliable metal having faces corresponding to the contour of the faces of the ring, substantially as described.

10. A pliable metallic strip or ribbon for use in making packing-rings wound on itself into a roll said ribbon or strip provided on its exterior face with a central ridge or apex and an inwardly-curved or concave surface on each side of the ridge or apex and provided on its interior face with a central longitudinal channel or depression and an outwardly-convex surface on each side of the channel or depression and provided on each side edge with a straight face, the side edges when the strip or ribbon is first formed having their faces oppositely inclined giving the inner face a spread or opening for the entrance of the exterior face, in winding the ribbon on itself, without disturbing the continuity of the surfaces, substantially as described.

704,599. SHUTTER-FASTENER. KARL UFFELBOMER, Grisz, Austria-Hungary. Filed May 4, 1901. Serial No. 58,756. (No model.)

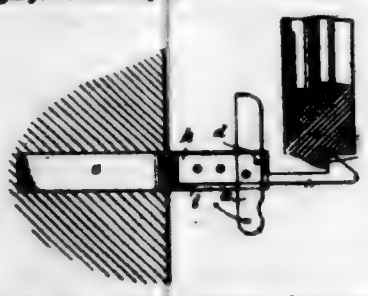

Claim.—Device for fastening windows, doors, sun-blinds, and the like, comprising in combination, a bar secured in a wall or the like; two arms connected together in the form of a cross, pivoted to said fixed bar, and adapted to assume such a position that one of the arms is normally horizontal and the other vertical; and a hook on the end of said horizontal arm adapted to automatically engage with the front of the window, or the like, on opening said window, the upper end of said vertical arm being adapted to strike against the frame of the window, or the like, when the lower end of said arm is turned to release the window, substantially as set forth.

704,600. APPARATUS FOR RAPIDLY HEATING LIQUIDS. HENRI VANDENBROEKE, Brussels, Belgium. Filed Dec. 10, 1901. Serial No. 85,294. (No model.)

Claim.—1. In a liquid-heating apparatus, the combination of a hollow casing having vertical, relatively close-spaced walls forming a liquid-receiving space having an inlet-opening at the bottom and an outlet-opening at the top, and a series of superposed spaced plates arranged substantially horizontally and fitting within said casing, said plates being imperforate in their central or body portions and having openings near their edge portions, substantially as described.

2. In apparatus of the kind described a circular or other shaped heating-plate adapted to fit the inner diameter of the double-walled casing and to rest upon flanges or projections therein said plate having a series of radial slots near its circumference and a series of intermediate channel-shaped bridges or parts substantially as described.

704,600.

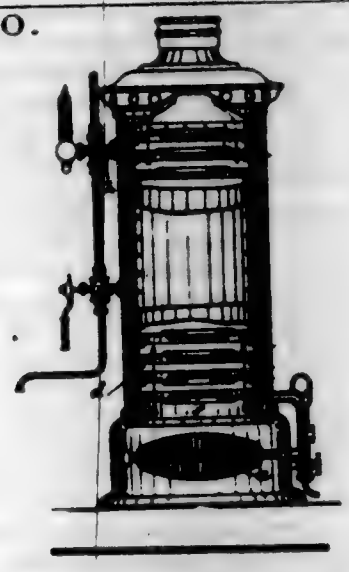

704,601. DENTAL CUSPIDOR. JOSEPH E. VAN HOUTAN, Canton, Ohio, assignor of one-half to Joseph J. Hahn, Canton, Ohio. Filed Dec. 21, 1900. Serial No. 40,632. (No model.)

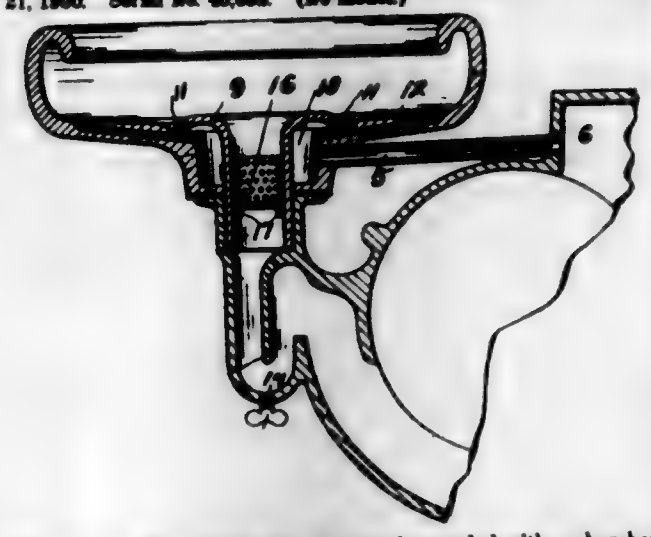

Claim.—1. The combination of a bowl provided with a chambered flange or base located upon the bottom or under side of the bowl, the chamber thereof communicating with the bowl, a supply-pipe leading into the chamber of the flange, a pipe 7 located in the chamber and supported in fixed position, said portion of the pipe located in the chamber formed of less diameter than the diameter of the chamber and its upper end provided with a curved flange, said curved flange located over a portion of the bottom of the bowl and provided with apertures communicating with the chamber in the flange and the chamber of the bowl, substantially as and for the purpose specified.

2. The combination of a bowl provided with a chambered flange or base, a supply-pipe leading into the chambered flange, a pipe 7 located in the chambered flange and provided with a curved top and the bottom of the bowl provided with passages extended from the chambered flange outward and communicating with the bottom of the bowl all arranged, substantially as and for the purpose specified.

704,602. GATE. RANDALL T. VAN VALKENBURG, Laporte, Ind., assignor of one-half to William E. Crichton, Laporte, Ind. Filed Sept. 20, 1901. Serial No. 75,822. (No model.)

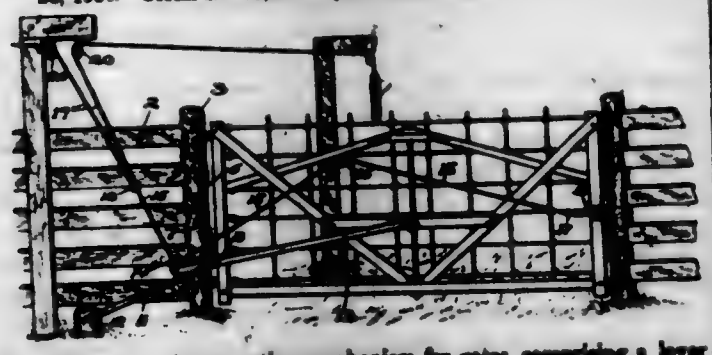

Claim.—1. An operating mechanism for gates comprising a lever pivotally secured at one end to the gate and having an extended free end for connection with an operating-rope, rods connected with the lever between its ends to form a toggle-joint connection to control the movements of said lever and gate, an adjustable latch on the gate and a rope connected to the free end of the lever and to the latch to operate both latch and lever simultaneously when the rope is pulled.

2. An operating mechanism for farm-gates comprising a lever pivotally secured at one end to the gate, a rod pivotally hung upon a post and carrying at its other end a bolt, a rod secured at one end to an anchor-post and its other end journaled to the bolt to form a toggle connection, said lever also journaled on the bolt, an adjustable spring-latch on the gate, a rope connected to the spring-latch and to the free end of the lever, bracket-posts positioned on each side of the gate opposite its hinges, a connection supported by the bracket-posts and secured to the rope for operating the latch, the lever, and the toggle connection simultaneously, and thereby open the gate, substantially as specified.

704,603. ADJUSTABLE STAND. GEORGE A. WADSWORTH, Montevideo, Minn. Filed Apr. 1, 1901. Serial No. 53,886. (No model.)

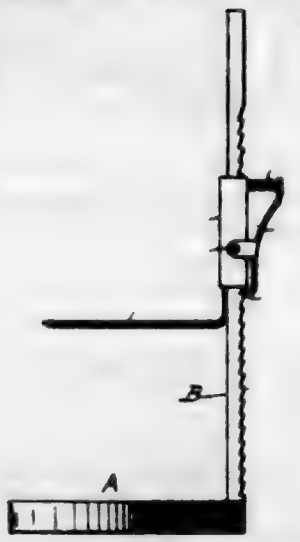

Claim.—1. In a supporting-stand of the class described, the combination with a vertical standard, of two telescoping rings, one carried by the bottom to serve as a base for said standard, and one slidable upon said standard, and means for holding said adjustable ring in adjusted position.

2. In a supporting-stand of the class described, the combination of a vertical standard, a ring carried by the bottom of, and forming a base for said standard, a casing inclosing said standard, a ring secured to said casing upon one side of said standard, serrations carried by the opposite side of said standard, a dog having fulcrum-support upon said standard, with an inwardly-turned lower end adapted to engage with said serrations, and a spring interposed between the upper end of said dog and said casing.

704,604. SPRING DRAFT ATTACHMENT. LORIN V. WARNER, Cassopolis, Mich. Filed Apr. 26, 1902. Serial No. 104,810. (No model.)

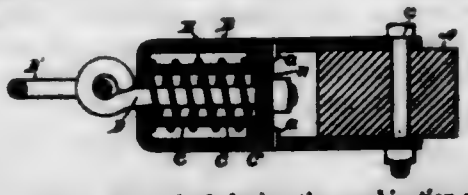

Claim.—1. In a spring draft device, the combination of a yoke B; a casing C arranged to reciprocate in said yoke and having a flange C' grooved to engage the arms of the yoke and be guided thereby; stops *a* on the said yoke; a coiled spring E about said casing adapted to engage said yoke; a bolt D adapted to reciprocate in said casing; a spring *e* about said bolt adapted to engage said casing, said springs E and *e* being of varying strength; all coacting for the purpose specified.

2. In a spring draft device, the combination of a yoke B; a casing C arranged to reciprocate in said yoke and having a flange C' grooved to engage the arms of the yoke and be guided thereby; stops *a* on said yoke; a coiled spring E about said casing adapted to engage said yoke; a bolt D adapted to reciprocate in said casing; a spring *e* about said bolt adapted to engage said casing, all coacting for the purpose specified.

3. In a spring draft device, the combination of a yoke; a casing arranged to reciprocate therein and be guided thereby; a coiled spring about said casing adapted to engage said yoke; a plunger adapted to reciprocate in said casing; a spring about said plunger adapted to engage said casing, said springs being of varying strength, all coacting for the purpose specified.

4. In a spring draft device, the combination of a yoke; a casing arranged to reciprocate therein and be guided thereby; a coiled spring about said casing adapted to engage said yoke; a plunger adapted to reciprocate in said casing; a spring about said plunger adapted to engage said casing, all coacting for the purpose specified.

704,605. NON-REFILLABLE BOTTLE. THOMAS P. WEIBLE, Columbus, Ohio. Filed June 22, 1901. Serial No. 65,557. (No model.)

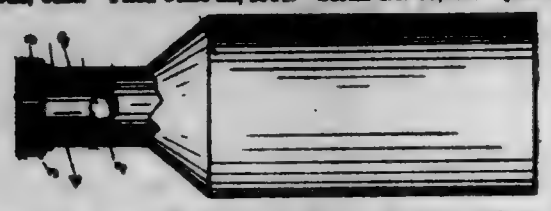

Claim.—In a non-refillable bottle, the combination with the bottle-body having its neck portion provided with a peripheral flange 3 at its outer end and a casing 4 depending within said bottle-neck, said casing having its outer end flanged to bear upon said shoulder portion 3 and having its inner end within the bottle-neck provided with a central opening, of a cap comprising a central cup-like portion extending within the mouth of the bottle-neck and an outwardly and downwardly extending portion embracing and clamped beneath said bottle-neck shoulder, said cup portion having openings therein and a ball within said bottle-neck adapted to close the inner end opening of the casing, substantially as specified.

704,606. BUILDING BLOCK AND WALL. CHARLES F. WHITTLESEY, Albuquerque, N. Mex. Filed Feb. 24, 1902. Serial No. 95,996. (No model.)

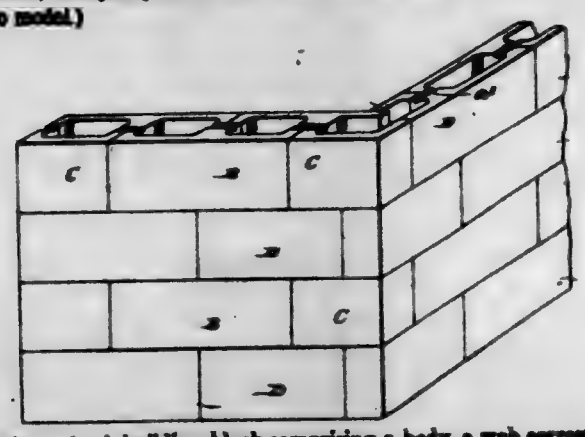

Claim.—1. A building-block comprising a body, a web corresponding in height to the body and extending at right angles from the middle thereof, and right-angle arms of a less length and half the width of the web extending from the ends of the body and in the same direction as the web.

2. A building-block comprising a body, a web corresponding in height to the body and extending at right angles from the middle thereof, and having longitudinal grooves in its upper and lower sides, and right-angle arms of a less length and half the width of the web extending from the ends of the body and in the same direction as the web.

3. A wall composed of building-blocks B having angular projections at their middles and ends, the building-blocks C having angular projections at their opposite ends, the building-blocks D having angular projections at an intermediate point of their length and at one of their ends, and the building-blocks E having angular projections at one end; the said blocks being arranged side by side in the courses of the wall with their projections extending inwardly and meeting each other, whereby a bond for all courses and finish for all corners is produced, the main portions of the blocks form the facings of the wall, and spaces are formed between the blocks.

704,607. PAPER-MAKING MACHINE. GEORGE E. WITHAM, Millinocket, Me. Filed Feb. 27, 1902. Serial No. 96,963. (No model.)

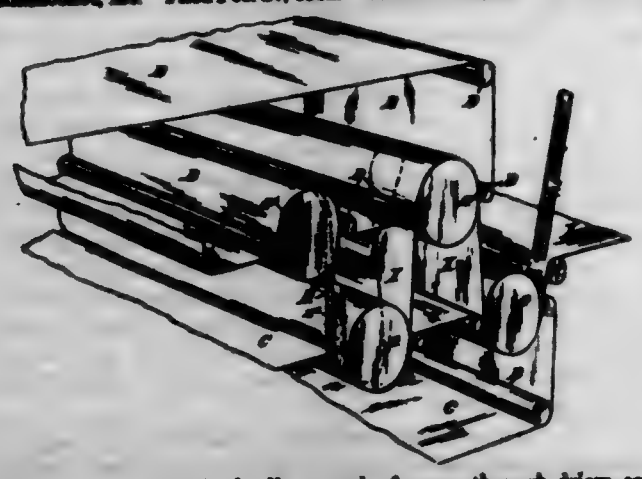

Claim.—1. A pilot for leading a web of paper through driers, consisting of a spring-metal plate adapted to reach from one drying-cylinder to another and having a device for engaging the end of the paper.

2. A pilot for leading a web of paper through driers, consisting of a spring-metal plate adapted to reach from one drying-cylinder to another, and having a lateral projection for engaging the end of the paper.

3. A pilot for leading a web of paper through driers consisting of a thin elastic plate or bar having smooth or rounded ends and a laterally-projecting arm between its ends for engaging the end of the paper.

4. A pilot for leading the web of paper through driers, consisting of two spring-metal plates adapted to reach from one drying-cylinder to another and having a cross-piece for engaging the end of the paper.

5. The combination with the upper and lower series of drying-cylinders and their felts, of a pilot for threading a web of paper therethrough, consisting of a thin spring-metal plate adapted to reach from one drying-cylinder to another, and having a device for engaging the end of the paper.

6. The combination with the upper and lower cylinders and their felts, of a pilot for leading a web of paper therethrough, consisting of a thin sheet-metal plate adapted to reach from one drying-cylinder to another and having a laterally-projecting arm for engaging the end of the paper.

7. The combination of the drying-cylinders and felts, of a pilot for the paper consisting of a spring-metal plate adapted to reach from one drying-cylinder to another and having a device for engaging the end of the paper, and a guide for supporting the pilot and directing it into engagement with the first drying-cylinder and its felt.

704,608. APPARATUS FOR RAISING WATER. GEORGE R. YOUNG, Ridgewood, N. J., and CLIFFORD SHAW, New York, N. Y., assignors to the Ingom Air Lift Company, a Corporation of New Jersey. Filed Nov. 23, 1898. Serial No. 697,262. (No model.)

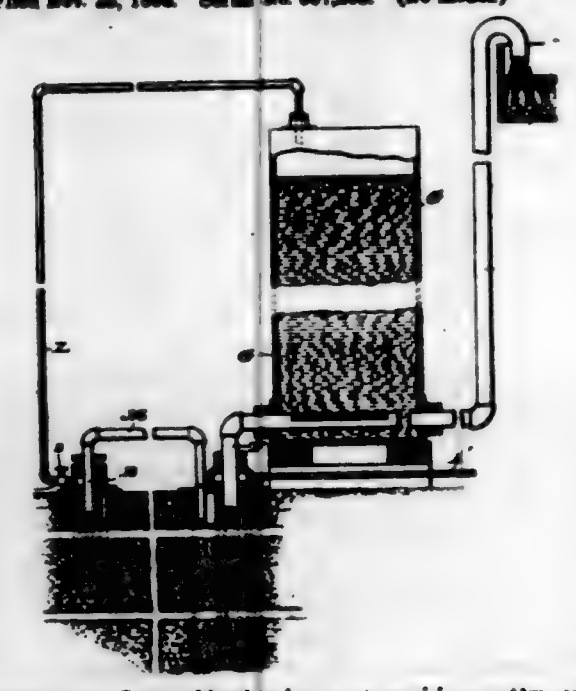

Claim.—1. In combination in a water-raising system, an air-lift well, an uptake therefor, means for aerating the column of water in the uptake to raise it, a separating vessel or tank to which the uptake delivers, a pipe for delivering water from the separating vessel or tank to a higher level without aeration, and means for discharging the air from the separating vessel or tank while maintaining the requisite pressure within the tank, the said separating vessel or tank being of such considerable height vertically as to act as a regulator or compensator as distinguished from a mere separating vessel or tank of height incapable of effecting such regulation or compensation, substantially as set forth.

2. In combination in a water-raising system, an air-lift reservoir-well, an uptake therefor, means for aerating the column of water in the uptake to raise it, a separating vessel or tank to which the uptake delivers, a pipe for delivering water from the separating vessel or tank to a higher level without aeration, an air-pipe delivering air from the said separating vessel or tank, one or more supply well or wells, an uptake for each, means for carrying water from such uptake or uptakes to the said reservoir-well, and connections from the said air-pipe for delivering air to the said uptake or uptakes of the supply well or wells to aerate and raise the water therein, substantially as set forth.

3. In combination in a water-raising system, an air-lift reservoir-well, an uptake therefor, means for aerating the column of water in the uptake to raise it, a separating vessel or tank to which the uptake delivers, a pipe for delivering water from the separating vessel or tank to a higher level without aeration, an air-pipe delivering air from the said separating vessel or tank, one or more supply well or wells, an uptake for each, means for carrying water from such uptake or uptakes to the said reservoir-well, and connections from the said air-pipe for delivering air to the said uptake

or uptakes of the supply well or wells to aerate and raise the water therein, the said separating vessel or tank being of considerable height to act as a regulator or compensator, for the system, substantially as set forth.

4. In combination in a water-raising system, a deeper air-lift well and a shallower air-lift well, an uptake in each, means for delivering compressed air to the uptake of the deeper well, means for separating the air from the water under pressure greater than the atmosphere, and means for delivering a portion at least of such air under pressure to the uptake of the shallower well, substantially as set forth.

5. In combination with a plurality of supply-wells, a relatively deeper reservoir-well, to which the said supply-wells deliver, an uptake for the reservoir-well and an air-pipe and connections delivering air under pressure to the uptake, a separating vessel or tank for separating under pressure the water and air delivered from such uptake, an uptake in each supply-well and air connections from the separating vessel or tank to such uptakes to aerate and raise the water therein, substantially as set forth.

6. In combination with a plurality of supply-wells, a relatively deeper reservoir-well, to which the said supply-wells deliver, an uptake for the reservoir-well, and an air-pipe and connections delivering air under pressure to the uptake, a separating vessel or tank for separating under pressure the water and air delivered from such uptake, an uptake in each supply-well, and air connections from the separating vessel or tank to such uptakes to aerate and raise the water therein, a connection from the first said air-pipe to the supply-wells, and regulating-valves for the several pipes and connections, substantially as set forth.

7. In combination with a plurality of supply-wells, a relatively deeper reservoir-well, to which the said supply-wells deliver, an uptake for the reservoir-well, and an air-pipe and connections delivering air under pressure to the uptake, a separating vessel or tank for separating under pressure the water and air delivered from such uptake, an uptake in each supply-well and air connections from the separating vessel or tank to such uptakes to aerate and raise the water therein, and regulating-valves for adjusting the supply-wells severally, substantially as set forth.

704,809. LACING-HOOK. WILLIAM P. BARTEL, Waltham, Mass. Filed Dec. 24, 1901. Serial No. 87,196. (No model.)

Claim.—1. A lacing-hook formed of a single piece of metal, comprising a shank, a neck extending therefrom, a head having corrugations extending over the entire upper and lower faces thereof, and a covering of plastic material molded around said head and entirely covering the same above and below.

2. A lacing-hook formed of a single piece of metal, comprising a shank a neck, a head having two sets of corrugations formed therein by two sets of parallel cuts intersecting each other at an angle and extending over the entire upper and lower faces thereof, and a covering of plastic material molded around said head and entirely covering the same above and below.

3. A lacing-hook formed of a single piece of metal, comprising a shank, a neck extending therefrom, a head having corrugations extending entirely over one face thereof, and a covering of plastic material molded around said head.

4. A lacing-hook formed of a single piece of metal, comprising a shank, a neck, a head, said neck bent upwardly to form a vertical shoulder near the line where said neck and head are joined together, said vertical shoulder extending transversely across said neck, and a covering of plastic material molded around said head and shoulder and entirely covering the same above and below.

5. A lacing-hook formed of a single piece of metal, comprising a shank, a neck, and a head, said head projecting beyond said neck and forming, at the line where said head and neck are joined together, two horizontal rearwardly-extended shoulders and a covering of plastic material molded around said head and shoulders.

6. A lacing-hook formed of a single piece of metal, comprising a shank, a neck, and a head, said neck bent upwardly to form a vertical shoulder near the line where said neck and head are joined together, said vertical shoulder extending transversely across said neck, and said head projecting beyond said neck and forming, at the line where said head and neck are joined together, two horizontal shoulders and a covering of plastic material molded around said head and shoulders.

7. A lacing-hook formed of a single piece of metal, comprising a shank, a neck, and a head, said neck bent upwardly to form a vertical shoulder near the line where said neck and head are joined together, said vertical shoulder extending transversely across said neck and said head projecting beyond said neck and forming, at the line where said neck and head are joined together, two horizontal rearwardly-extended shoulders and a covering of plastic material molded around said head and shoulders.

704,810. PROCESS OF TREATING BEET-SEED. ARNO E. BLACK, Lamar, Colo. Filed Mar. 27, 1902. Serial No. 100,235. (No specimens.)

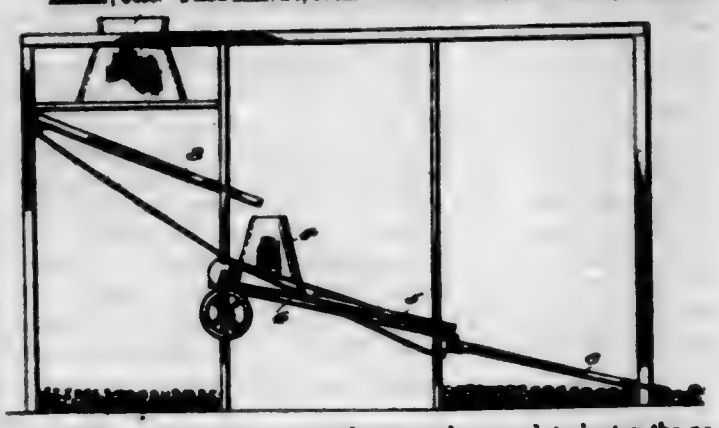

Claim.—The process of treating sugar-beet seed to hasten the period of germination and enable a seeder to drop and plant one seed at a time a given distance apart in the row, consisting of sizing and assorting the seed to render them approximately uniform in size and of an approximately round form, substantially as described.

704,811. LEVELING DEVICE. THOMAS E. BROWN, New York, N. Y. Filed Sept. 7, 1900. Serial No. 29,317. (No model.)

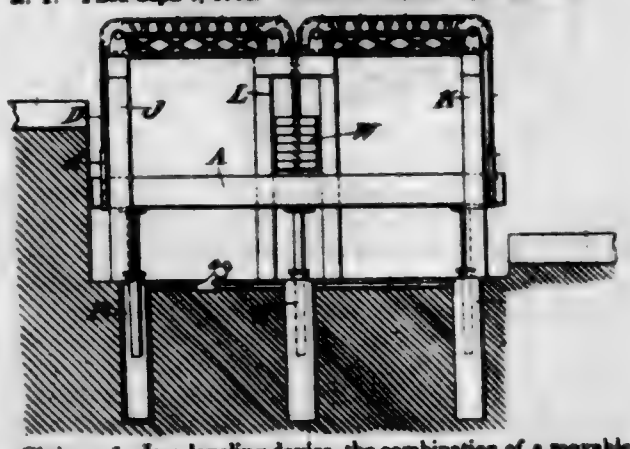

Claim.—1. In a leveling device, the combination of a movable platform, a weight, and a plurality of flexible connections connected at one end to the platform at opposing points with reference to the center of gravity thereof and at the other end to the weight at substantially the same point so that the preponderance of the weight tends to lift the low end of the platform, substantially as described.

2. In a leveling device, the combination of a movable platform, a plurality of weights, and a plurality of flexible connections operatively connecting each of said weights with said platform, and the connections which operatively connect the same weight and the platform being fastened at one end to points on said platform which are on opposite sides of the center of gravity thereof and at the other end to their respective weights, substantially as described.

3. In a leveling device, the combination of a movable platform, a weight, guide-sheaves above the platform, standards to support said sheaves, and a plurality of flexible connections guided over said sheaves and connected at one end to the platform at opposing points with reference to center of gravity thereof and at the other end to the weight at substantially the same point so that the preponderance of the weight tends to lift the low end of the platform, substantially as described.

4. In a leveling device, the combination of a movable platform, a plurality of weights, guide-sheaves above said platform and standards to support said sheaves, and a plurality of flexible connections operatively connecting said platform and each of said weights and guided over said sheaves, and the connections which operatively connect the same weight and the platform being fastened at one end to points on said platform which are on opposite sides of the center of gravity thereof and at the other end to their respective weight, substantially as described.

5. In a leveling device, the combination of a movable platform, one or more motors for raising and lowering the platform, a weight independent of said motors, and a plurality of flexible connections fastened at one end to points on said platform which are on opposite sides of the center of gravity thereof, and at the other end to the said weight, substantially as described.

6. In a leveling device, the combination of a movable platform, one

or more motors for raising and lowering the same, a plurality of weights, and a plurality of flexible connections operatively connecting the platform with each weight, and the flexible connections which connect the platform with the same weight being fastened at one end to points on said platform which are at opposite sides of the center of gravity thereof, and at the other end to their respective weight, substantially as described.

7. In a leveling device, the combination of a movable platform, a weight, a plurality of flexible connections fastened at one end to opposing points on said platform with reference to the center of gravity thereof and at the other end to said weight, and supports adapted to maintain in a substantially straight line those portions of said flexible connections which are not vertical, substantially as described.

8. In a leveling device, the combination of a movable platform, a plurality of weights, a plurality of flexible connections operatively connecting each of said weights with said platform, and the connections which operatively connect the same weight and platform being fastened at one end to opposing points on said platform with reference to the center of gravity thereof and at the other end to their respective weight, and supports adapted to maintain in a substantially straight line those portions of said flexible connections which are not vertical, substantially as described.

704,612. HAND-CART. BERT BUTLER, Kennett, Iowa. Filed Apr. 10, 1902. Serial No. 102,224. (No model.)

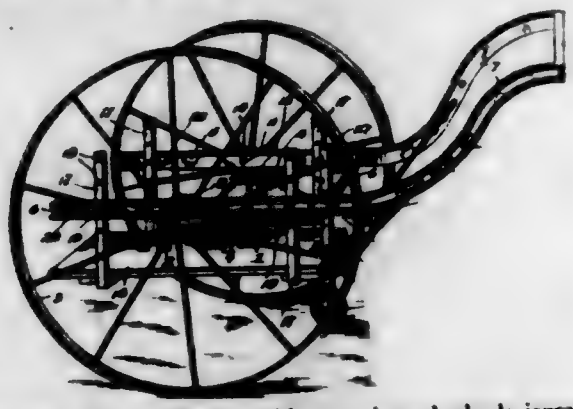

Claim.—1. The combination with an axle and wheels journaled thereon, of side bars fixed to said axle and extending in approximately the same horizontal plane, and a platform vertically and longitudinally adjustably connected to said side bars, substantially as set forth.

2. The combination with the axle and its supporting-wheels, of side bars connected to said axle, hangers adjustably connected to said side bars, a platform supported by said hangers, side-boards, and brackets adjustably connected to said side-boards for engaging the side bars and holding the side-boards in proper position, substantially as set forth.

3. The combination with a U-shaped axle lying in substantially a horizontal plane and provided with stubs at its ends, of wheels journaled on said ends, a loop or bail secured to the cross-piece of said axle, side bars fixed to said axle, a platform connected to said side bars, a bracket, a standard extending through said bracket and loop, a caster-wheel carried by the lower end of the standard, means for adjusting the platform, and means for locking it in adjusted position with respect to the standard, substantially as set forth.

704,613. NON-REFILLABLE BOTTLE. HENRY F. BUTTNER, Idaho Falls, Idaho. Filed Apr. 26, 1902. Serial No. 104,006. (No model.)

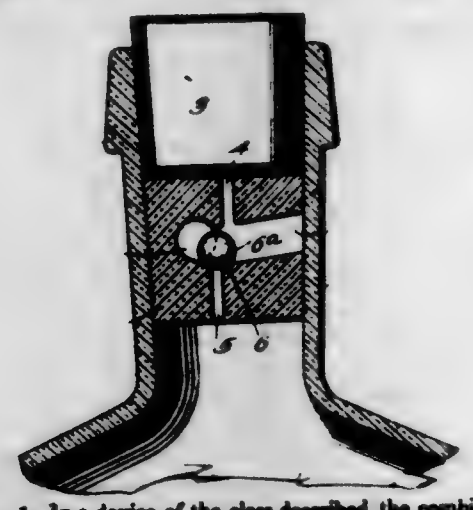

Claim.—1. In a device of the class described, the combination with a receptacle having a neck, of a plug or stopper provided with upper and lower passages and having an intermediate valve-seat, said plug or stopper being also provided with a transverse passage extending inward from one side of it to the valve-seat and closed by the neck of the receptacle when the stopper or plug is in position, and a valve arranged on the seat, substantially as described.

2. In a device of the class described, the combination with a receptacle having a neck, of a stopper or plug having upper and lower passages and provided with a valve-seat and having a recess located at one side of the valve-seat, said stopper or plug being also provided with a transverse passage extending inward from one side of the same, and a valve, substantially as described.

3. In a device of the class described, the combination with a receptacle having a neck, of a stopper or plug arranged in the lower portion of the neck and provided with upper and lower passages and having a transverse passage extending from the upright passages to one side of the stopper or plug, said upright passages being offset from and arranged out of alinement with each other, a ball-valve arranged within the stopper or plug and seated at the upper end of the lower upright passage, and a stopper arranged in the upper portion of the neck, substantially as described.

704,614. BEET-CULTURE IMPLEMENT. ARTHUR S. CAPPER, Detroit, Mich. Filed Apr. 28, 1902. Serial No. 104,960. (No model.)

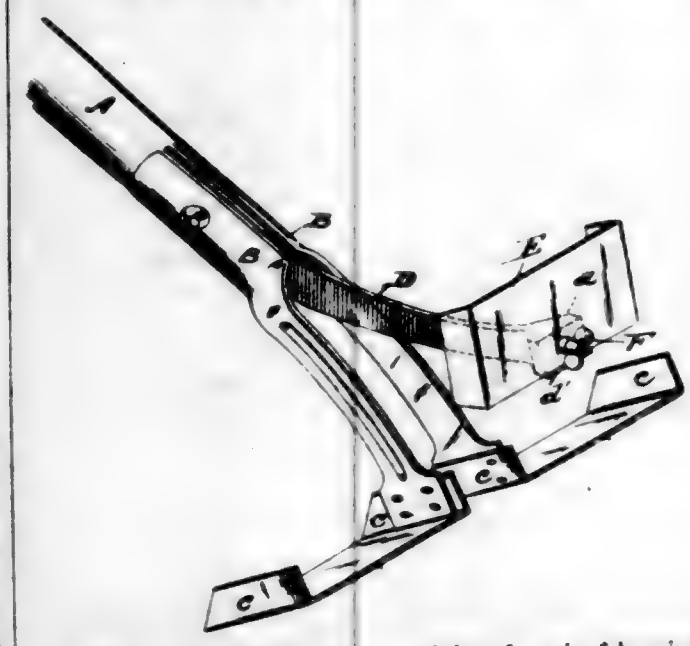

Claim.—A weeding implement consisting of a pair of hoes in line with but separated from each other, and a shank designed to support a removable tool, a shoulder on the forward end of the shank, a flange *d'* on said shoulder and a set-screw F to engage the removable tool to the shank, substantially as described.

704,615. CLOTH-CLEANING DEVICE. FRANK O. CARLSON and BRIGHT J. HAALAND, Valley City, N. D. Filed Nov. 12, 1900. Serial No. 36,255. (No model.)

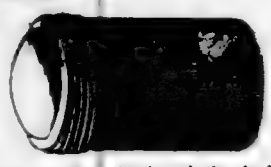

Claim.—In a cloth-cleaning device, hair-cloth and a layer of other fibrous material rolled together with their end edges coinciding, and secured as and for the purpose described.

704,616. SAFETY DEVICE FOR MOTOR-VEHICLES. HERMAN CHARLES, Koh, Ariz. Filed Feb. 7, 1901. Serial No. 46,408. (No model.)

Claim.—1. The combination with a seat of a motor-vehicle; of a safety attachment comprising a platform yieldingly supported upon said seat; a rod depending from the under side of said platform and extending through an opening in the seat; means carried by said rod for controlling the supply of motor-power to the vehicle; and means for locking said rod against movement.

2. The combination with the seat of a motor-vehicle; of a plurality of pins secured to the upper surface thereof; a platform formed with openings through which said pins extend; springs for supporting said platform; a rod depending from the under surface of the platform formed with annular grooves; means carried by said rod for controlling the supply of power to the vehicle; and a locking device for said rod.

3. The combination with the seat of a motor-vehicle; of a safety attachment comprising a platform yieldingly supported on said seat; a rod depending from said platform and extending through an opening in the seat; oppositely-disposed brackets secured to the under side of the seat; contacts carried by said brackets and a bridge-block adapted to span the space between said contacts.

4. The combination with a seat of a motor-vehicle; of a safety attachment comprising a platform yieldingly supported upon said seat; a rod depending from the under surface of the platform, extending through an opening in the seat and formed with parallel annular grooves; oppositely-disposed brackets secured to the under side of the seat; contacts carried by said brackets; a bridge-block carried by said rod; and means for locking the rod in either its elevated or depressed position, comprising a slide formed at its inner end with a fork to engage the grooves of the rod.

704,617. NUT-LOCK. GEORGE COLEMAN, Streator, Ill. Filed Apr. 28, 1902. Serial No. 105,993. (No model.)

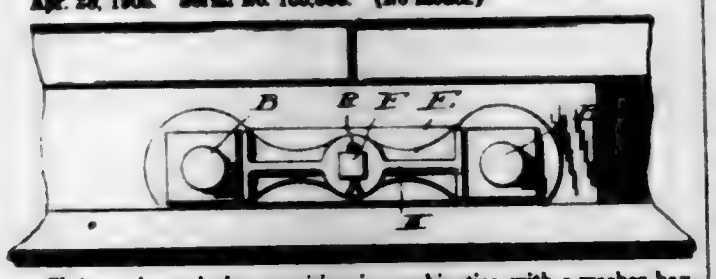

Claim.—A nut-lock comprising in combination with a washer having an integral lug projecting therefrom with apertured ends, and provided with a shoulder F', the under edge of said washer being cut away between its apertured ends, a locking-bar K mounted on said lug and designed to be held in contact with said shoulder and spaced from the outer face of said washer, as set forth.

704,618. STARTING DEVICE FOR EXPLOSIVE-ENGINES. CALEB F. COPE, Philadelphia, Pa. Filed Dec. 17, 1900. Serial No. 40,196. (No model.)

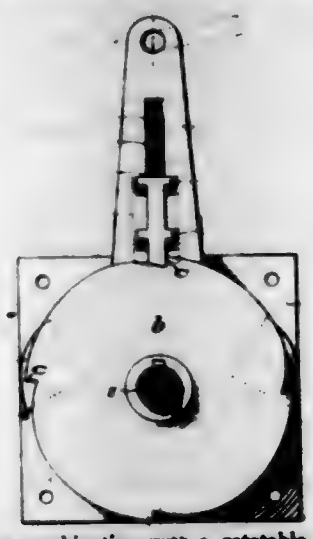

Claim.—1. In combination with a rotatable shaft of an explosive engine, a ratchet wheel, a device rotatable with respect to said wheel and adapted to be moved by the operator, a pawl mounted on said device and adapted to engage with said wheel, and two fixed trips arranged to be encountered by the pawl and located at different points in its path of movement, substantially as set forth.

2. In an explosive engine, in combination, a rotatable shaft, a ratchet wheel mounted thereon, two fixed cam surfaces arranged in proximity thereto, a crank arm, and a pawl mounted on said arm and free for sliding movement longitudinally thereof, and having one portion which overhangs the ratchet wheel and another portion which overhangs the cam surfaces, substantially as set forth.

3. In an explosive engine, in combination, a rotatable shaft, a ratchet wheel mounted on said shaft, a cam trip in adjacency thereto, a crank arm mounted for rotation in adjacency to said ratchet wheel, a slot formed in said crank arm, a pawl mounted in said slot and having a portion which overhangs the ratchet wheel and another portion which overhangs the cam trip, substantially as set forth.

4. In an explosive engine, in combination, a rotatable shaft, a ratchet wheel mounted thereon, a plate supported in adjacency thereto and provided with two fixed cam trips, a crank arm mounted free for rotation on said plate, a longitudinally extending slot with lateral notches formed in said crank arm, a pawl mounted in said slot, and having a lateral extension on one face, and lateral noses on the other face of the arm, substantially as set forth.

5. In an explosive engine, in combination, a rotatable shaft, a ratchet wheel mounted thereon, a plate supported in adjacency thereto and provided with two fixed cam trips, a crank arm mounted on said plate free for rotation, a longitudinally extending slot with lateral notches formed in said crank arm, a pawl mounted in said slot and having a lateral extension on one face, and lateral noses on the other face, of the arm, and a spring mounted on said arm, and bearing against the pawl, substantially as set forth.

6. In combination, in an explosive engine, a rotatable shaft, a ratchet wheel, a trip, a rotatable device having a slot with a lateral recess or extension, a pawl mounted in said slot and having a lateral extension on one face of said rotatable device, and a laterally extending projection or nose on the other face of said rotatable device, said pawl working in association with said ratchet wheel and said trip, substantially as set forth.

7. In combination with a rotatable shaft of an explosive engine, a ratchet wheel, a crank arm, a device mounted on said crank arm and adapted to engage with the ratchet wheel, and a pair of trips having curved acting faces eccentric with respect to the ratchet wheel, substantially as set forth.

8. In an explosive engine, a rotatable shaft, a ratchet wheel mounted on said shaft, a support independent of said shaft, a pawl carrying device mounted on said support and free for rotative movement on an axis coincident with that of the wheel, a pawl mounted on said pawl carrying device and adapted to engage said ratchet, and a fixed trip adapted to be encountered by said pawl to elevate it out of engagement with the ratchet upon the reverse rotation thereof, substantially as set forth.

9. In an explosive engine, a rotatable shaft, a ratchet wheel mounted on said shaft, an independent support, a pawl-carrying arm mounted on said support and free for rotative movement in an axis coincident with that of the wheel, a pawl mounted on said arm and adapted to engage said ratchet, a fixed trip adapted to be encountered by said pawl to elevate it out of engagement with the ratchet upon the reverse rotation thereof, and a link connected to said arm and extending to a point in the vicinity of the operator's station, substantially as set forth.

704,619. DOOR-FASTENER. GEORGE W. CRANER, Tivoli, Ill. Filed Nov. 10, 1900. Serial No. 36,014. (No model.)

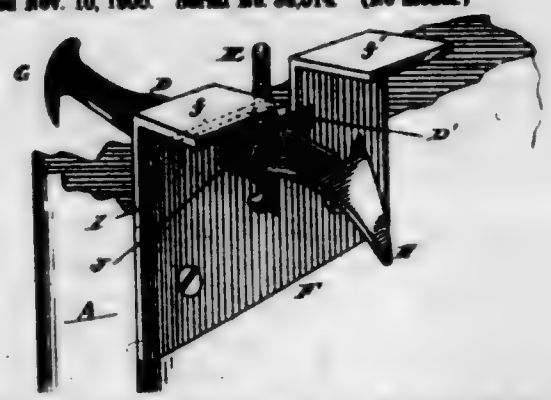

Claim.—In a fastener for doors, a supporting-plate for the fastener the same adapted for attachment to a door, a horizontal lug J formed therewith and extending at right angles away from the said plate, a vertical pin E entered through said lug and bent at its lower end and passed through the plate F and there fastened, the fastener D supported on the said pin E, the hooks G and H at its ends each extending in a direction opposite to the other, the spring I coiled around the pin E but removable

therefrom and reversible thereon, one end of such spring attached to the fastener, the other adapted to bear against the plate F and arranged whereby the hooks G and H are normally in position to engage the locking means therefor, a stop D′ on the fastener to limit the movement of the latter member and adapted to rest against the plate F, and the overhanging extremities *ff′* of the latter for holding the free end of the spring from rising, in combination with a staple on the door-jamb for engaging the hook H when the door is closed, and a staple for engaging the hook G when the door is open all as set forth and described.

704,620. SELF-WINDING ELECTRIC CLOCK. CHARLES M. CROOK, Bristol, Conn., assignor to Charles S. Burton, trustee. Filed Sept. 26, 1901. Renewed May 28, 1902. Serial No. 109,306. (No model.)

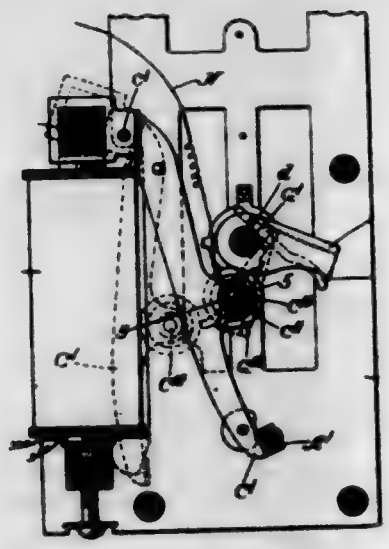

Claim.—1. In an automatically-wound clock-train, a rigid stud projecting from the frame; a sleeve mounted on the stud and connected to the motor-spring for winding the latter; the prime-wheel staff of the train journaled in the end of the stud and a two-part clutch structure adapted to communicate rotation in one direction only, one part of such clutch being on the sleeve and the other on the staff.

2. In an automatically-wound train, a rigid stud projecting from the frame and a sleeve mounted on the stud and connected to the train-motor for winding the same, the prime staff of the train journaled in one frame-plate and in the end of the stud which projects from the opposite plate; a pawl and a ratchet coöperating therewith, one of said elements being mounted on the sleeve and the other on the staff, and arranged to transmit rotation from the sleeve to the staff in the running-down movement only of the motor.

3. In an automatically-wound train, the combination with the prime-wheel shaft of the train of a winding element coaxial therewith which is rotated in the winding; a rigid stud projecting from one frame-plate toward the opposite plate, the prime shaft being journaled in the end of said stud and in said opposite plate, the winding element being journaled on the stud and coöperating clutch parts one on the prime shaft and the other on the winding element communicating motion in the opposite of the winding direction.

4. In an electrically-wound clock, in combination with a motor (as a spring or weight,) a winding-electromagnet; a magnet-actuated lever and a motor-actuated lever; a magnet-energizing circuit which is closed by the contact of the two levers, the latter lever being carried into contact with the other by the running down of the motor, and being connected so as to wind up the motor by reverse movement, the magnet-actuated lever having its movement under the magnet impulse, toward the other lever, and giving the latter said reverse or motor-winding movement.

5. In an electrically-wound clock, in combination with a motor (as a spring or weight,) a winding-electromagnet; a magnet-actuated lever and a motor-actuated lever; a magnet-energizing circuit which is closed by the contact of the two levers, the latter lever being carried into contact with the other by the running down of the motor, and being connected so as to wind up the motor by reverse movement, the magnet-actuated lever having its movement under the magnet impulse toward the other lever, and giving the latter said reverse or motor-winding movement; the said movement of the magnet-actuated lever being limited, and the other lever having a range of motor-winding movement beyond such limit of the movement of the first lever; whereby the momentum of the motor-winding lever carries it out of contact with the other lever, and breaks the circuit.

6. In an electrically-wound clock, in combination with a motor adapted to be wound up (as a spring or weight,) and an electromagnet for winding it, a magnet-actuated element and a motor-winding element having back-and-forth movement toward and from each other and adapted to come into contact in such movement; a magnet-energizing circuit which is closed by such contact; the magnet-forced movement of the first element being adapted to cause the motor-winding movement of the second element while the two are in contact, whereby the resistance of the motor to winding increases the pressure at the contact of the two elements where the circuit is closed, and the pressure necessary for such contact is a part of the force operative in the winding.

7. In an electrically-wound clock, in combination with the motor to be wound and an electromagnet for winding it, a magnet-actuated element and a motor-winding element, having back-and-forth movement toward and from each other and adapted to come into contact in such movement; a magnet-energizing circuit which is closed by such contact; the magnet-forced movement of the first element being adapted to cause the motor-winding movement of the second element; said movement of the first element being limited, the second element having a range of winding movement beyond the limit of movement of the first element, whereby the contact and circuit is broken by the momentum of the winding movement.

8. In an electrically-wound clock, in combination with the motor to be wound and an electromagnet for winding it, a lever connected with the motor adapted by movement in one direction to wind said motor and to be carried in the reverse direction by the running down of the same, said lever having pawl-and-ratchet connections with the train and constituting the medium by which the running down of the motor drives the train; a lever actuated by the magnet when energized, the magnet-forced movement of said lever and motor-forced movement of the first lever being toward each other, and adapted to bring them into contact; a magnet-energizing circuit which is closed by such contact; and means for breaking such contact at the limit of said magnet-actuated movement.

9. In an electrically-wound clock, in combination with an electromagnet and an element for winding it by movement in one direction, adapted to be moved in reverse direction by the running down of the spring, and in such reverse movement to come into contact with the magnet-actuated element, said latter element being adapted in its magnet-forced movement to give winding movement to the winding element; an electric circuit in which the magnet is energized, which is closed by the contact of said motor-winding and magnet-actuated elements; one of said elements having a yielding terminal by the contact of which with the other element the circuit is first established; whereby the initial movement of the magnet-actuated element is made against the slight resistance of said yielding terminal.

10. In an electrically-wound clock, in combination with the motor and a lever which winds it by movement in one direction and which is moved in reverse direction by the running down of the motor; an electromagnet and a lever actuated thereby; said lever in its magnet-forced movement being adapted to encounter the winding-lever and give the latter its winding movement; said magnet-actuated lever having an insulated terminal by which its contact with the winding-lever is made; an electric circuit in which the magnet is energized and which is closed by such contact, comprising an insulated wire connected to said insulated terminal.

704,621. PROCESS OF MANUFACTURING ARTIFICIAL MARBLE. JOHANN CERBAK, Duesseldorf, Germany. Filed Apr. 19, 1901. Serial No. 56,571. (No specimens.)

Claim.—The process of producing artificial marble which consists in forming a series of cracks through the entire thickness of a plastic body, filling said cracks with a differently-colored mass, allowing the mass to set, forming a second series of cracks in the plastic body, and filling said new cracks with a second differently-colored mass, substantially as specified.

704,622. CORN-PLANTER. ROBERT E. DIAL and MYLES E. GARWOOD, Pontanet, Ind.; said Garwood assignor to said Dial. Filed June 3, 1901. Serial No. 63,005. (No model.)

Claim.—1. In a corn-planter having a frame provided with shoes or furrow-openers, the combination with the supporting-wheels and the axle, of mechanism for feeding grain, a gear-wheel mounted on said axle, a small pinion meshing with said gear-wheel, a shaft carrying said small pinion for operating said feeding mechanism, and a cross-beam loosely mounted in said frame and carrying a bearing for said shaft, said beam being adapted to move said pinion in and out of contact with said gear-wheel, substantially as described.

2. In a corn-planter having a frame provided with shoes or furrow-openers, the combination with the supporting-wheels and the axle, of mechanism for feeding grain, a gear-wheel mounted on said axle, a small pinion meshing with said gear-wheel, a shaft carrying said small pinion for operating said grain-feeding mechanism, a cross-beam loosely mounted

in said frame, a cylindrical bearing in said cross-beam adapted to carry said shaft, said beam being adapted to move said pinion in and out of contact with said gear-wheel, substantially as described.

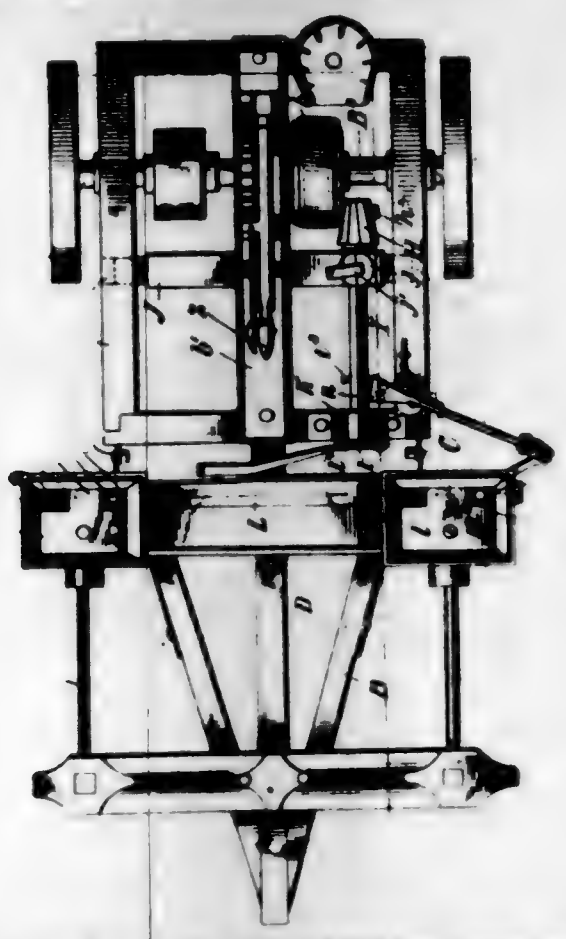

3. In a corn-planter having a frame divided into a front or runner section carrying shoes or furrow-openers and a rear or wheel section, the combination with the supporting-wheels and the axle, of mechanism for feeding grain, a gear-wheel mounted on said axle, a small pinion meshing with said gear-wheel, a shaft carrying said small pinion for operating said grain-feeding mechanism, and a cross-beam loosely mounted in the rear or wheel section of said frame and having a bearing therein for said shaft, said beam being adapted to move said pinion in and out of contact with said gear-wheel, substantially as described.

4. In corn-planter having a frame divided into a front or runner section carrying shoes or furrow-openers and a rear or wheel section, the combination with the supporting-wheels, of suitable mechanism for feeding grain, a gear-wheel mounted on said axle, a small pinion meshing with said gear-wheel, a shaft carrying said small pinion for operating the grain-feeding mechanism, a cross-beam loosely mounted in the rear or wheel section of said frame and carrying a bearing for said shaft, said beam being adapted to move said shaft with the pinion in and out of contact with said gear-wheel, a rearward extension or tongue rigidly secured to said front or runner section, an upwardly-extending arm secured to said extension or tongue and a cam provided on said arm for operating said cross-beam, substantially as described.

5. In a corn-planter having a frame divided into a front or runner section carrying shoes or furrow-openers and a rear or wheel section, the combination with the supporting-wheels, of suitable mechanism for feeding grain, a gear-wheel mounted on said axle, a small pinion meshing with said gear-wheel, a shaft carrying said small pinion and having connections with said grain-feeding mechanism, a cross-beam loosely mounted in the rear or wheel section of said frame and carrying a bearing for said shaft, said beam being adapted to move said pinion in and out of contact with said gear-wheel, a rearward extension or tongue rigidly secured to said front or runner section, an upwardly-extending arm rigidly secured to said extension or tongue, a cam provided on said arm for operating said cross-beam, and a resilient row-checking device, substantially as described.

704,623. STEAM-HEATING SYSTEM. HARRY A. R. DUTRIEUX, South Bethlehem, Pa. Filed Apr. 16, 1901. Serial No. 56,118. (No model.)

Claim.—1. In a steam-heating system, the combination of a boiler or generator, the supply and return pipes, a receiver located above the water-line of the boiler and connected with the return-pipes, a pipe extending from the receiver to the bottom of the boiler or generator a check-valve located at a point between the receiver and the boiler or generator in the pipe connecting the same, and a float located within the receiver and connected with and adapted to operate the check-valve, substantially as and for the purpose described.

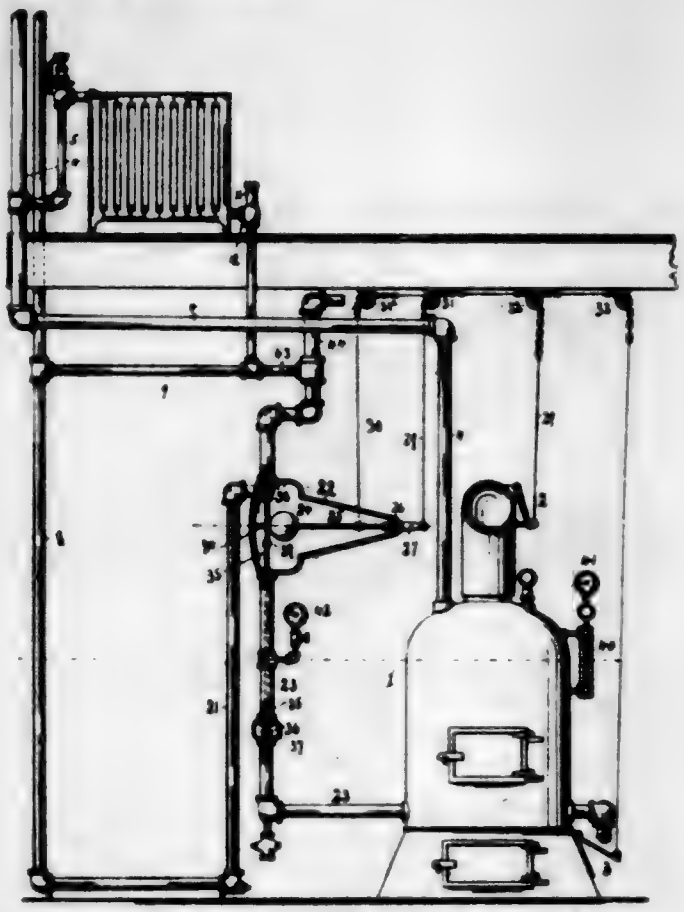

2. In a steam-heating system, the combination of a boiler or generator, supply and return pipes, a receiver located above the water-line of the boiler and connected with the return-pipes, a pipe or connection extending from the receiver to the bottom of the boiler or generator and provided with a check-valve, a float located within the receiver and connected with and adapted to operate the said valve, and a damper connected with and operated by the float, substantially as described.

3. In a steam-heating system, the combination of a boiler or generator, supply and return pipes, a receiver connected with the return-pipes and located above the water-line of the boiler, a connecting-pipe extending from the receiver to the bottom of the boiler and provided with a check-valve, a rod or stem extending from the check-valve and provided with stops or buttons, located within the receiver, an arm or lever provided with a float and arranged to engage the stops or buttons, and a damper connected with and operated by the arm or lever, substantially as described.

704,624. PRINTING-PRESS. JOSEPH L. FIRM, Chicago, Ill., assignor to the Goss Printing Press Company, Chicago, Ill. Filed June 25, 1901. Serial No. 65,903. (No model.)

Claim.—1. A printing-press having an impression-cylinder and a pair of form-cylinders of the same diameter as the impression-cylinder for printing one side of a web, each form-cylinder having forms secured thereto to cover longitudinal sections thereof comprising substantially half the surface of the cylinder, the forms of each form-cylinder being adapted to print upon the space left blank by the forms of the other form-cylinder.

2. A printing-press having a single impression-cylinder and two form-cylinders of the same diameter as the impression-cylinder for printing one side of a web, each of said form-cylinders having forms covering a longitudinal belt extending half about the cylinder, the two form-cylinders being timed to print on alternate sections of the web.

3. A printing-press having a single impression-cylinder and two form-cylinders placed on opposite sides thereof, forms arranged on each of said cylinders to print one-half only of the web, the forms of one cylinder printing in the spaces not printed by the other cylinder, means for presenting a half-width web to one end of the impression and form cylinders to print one side thereof, and means for turning and presenting the web to the other end of the said cylinders to print the other side thereof.

4. In a printing-press the combination with means for perfecting a web, of a plurality of carriers adapted to each receive in turn the successive sections of the web, a folding and conveying mechanism for each carrier, said conveying mechanisms all leading to and delivering their web-sections at a common point and being speeded to deliver the sections of each series synchronously and superposed.

5. In a printing-press the combination with means for perfecting a

web, of two rotary carriers adapted to receive the web between them and provided with web-cutting mechanisms, means whereby successive signatures are taken alternately by said carriers, two folding and conveying mechanisms receiving the signatures each from its respective carrier and delivering them at a common point, and means for driving one of said conveying mechanisms at a speed in excess of the other whereby the signature from one conveyer is delivered superposed on the other to form a single product.

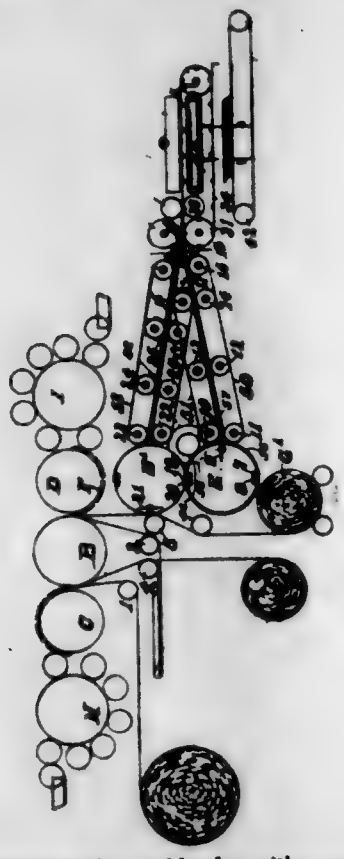

6. In a printing-press the combination with means for perfecting a web, of two rotary carriers adapted to receive the web between them and provided with web-cutting mechanisms, means whereby successive signatures are taken alternately by said carriers, a set of folding-rollers for each carrier adapted to receive the signatures therefrom, conveyers leading from said folding-rollers to a common delivery-point, and means for accelerating the passage of the signature through one conveyer whereby the signatures from both conveyers may be superposed to form a single product.

7. In a printing-press the combination with means for perfecting a web, of a plurality of primary folding mechanisms adapted to receive in turn the successive sections of the web, secondary folding mechanisms and means for simultaneously delivering in superposed position web-sections from all of the primary folding mechanisms to the secondary folding mechanisms to form a single product.

8. A paper-folding device comprising two rotary carriers having cooperating web-cutting members adapted to sever the web into semicircumferential sections or sheets, each carrier having sheet-holding and sheet-folding means, said carriers being timed so that the sheet-holding and sheet-folding means of the respective carriers alternately engage the successive semicircumferential web sections or sheets.

9. A paper-folding device comprising two rotary carriers having cooperating web-cutting members adapted to sever the web into semicircumferential sections or sheets, each carrier having sheet-holding means adjacent one of its cutting members, said carriers being timed so that the sheet-holding means of the respective carriers engage alternate sheets, a folding-blade upon each carrier located ninety degrees behind the sheet-holding means of the same carrier and folding-rolls receiving the sheets from said folding-blades.

10. In a printing-press the combination with two rollers adapted to receive the perfected web between them, and cutting mechanisms acting twice for each revolution of said rollers, of web retaining and folding mechanisms carried by said rollers and engaging alternate web-sections.

704,625. HOSPITAL-BED. WILLIAM H. FOX, Toronto, Canada, assignor to Harry L. Piper, Toronto, Canada. Filed Sept. 15, 1900. Serial No. 30,204. (No model.)

Claim.—A hospital-bed embracing in its construction a stationary bed-frame, vertical guides formed in the stationary bed-frame, a vertically-movable stretcher-frame supported above the stationary bed-frame, standards depending from the stretcher-frame movably held by the guides of the stationary bed-frame, a longitudinal shaft journaled in bearings connected to the stationary bed-frame intermediate the sides, winding-pulleys loosely mounted on the longitudinal shaft, idlers connected to the stationary bed-frame intermediate the longitudinal shaft and standards of the stretcher-frame, lifting-cords passing over the idlers and connected to the standards and winding-pulleys, clutch members on the side face of the winding-pulleys and movable clutch members mounted on and revoluble with the longitudinal shaft to engage with the clutch members of the winding-pulleys, substantially as specified.

704,626. PIVOTAL STAGE OR TURN-TABLE. AUSTIN FRYERS, Sydenham, England. Filed July 11, 1901. Serial No. 67,933. (No model.)

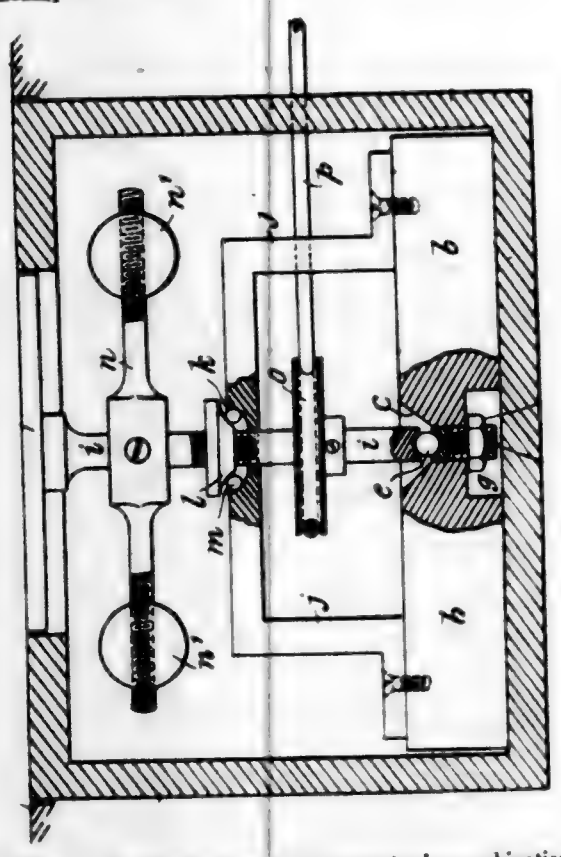

Claim.—In a pivotal stage or turn-table the combination of a platform carried by a vertical shaft, a base fitted with an adjustable bearing supporting the lower end of the shaft, a bridge-piece fixed to the base and fitted with a ball-race acting as a horizontal bearing to the shaft, a balance provided with adjustable weights and fitted to the shaft, a pulley also fixed to the shaft for operating the same, and an open-top box or case containing the apparatus, substantially as described.

704,627. APPARATUS FOR DECORATING SURFACES. WILLIAM E. GARD, New York, N. Y., assignor to Columbia Shade Cloth Company, New York, N. Y., a Corporation of New York. Filed Oct. 4, 1901. Serial No. 77,544. (No model.)

Claim.—1. In a decorating apparatus, the combination with a support having a yielding bed adapted to receive an object to be decorated, of a hinged pattern-frame which when in place on said support surrounds said yielding bed, said frame having a surface to which a flexible pattern may be secured, and which is below the face of an object on said bed when the frame is in place.

2. In a decorating apparatus, the combination with a support having a yielding bed adapted to receive an object to be decorated, of a hinged pattern-frame which when in place on said support surrounds said yielding bed, said frame having a section which is movable with respect to said frame and support and to which a pattern may be secured.

3. In a decorating apparatus, the combination, with a support for an object to be decorated, of a pattern-frame having a movable part to which a pattern may be secured, and eccentric mechanism for moving said part and the pattern carried thereby, relatively to the object to be decorated, for the purpose specified.

4. In a decorating apparatus, the combination with a yielding support for an object to be decorated, of a pattern-frame surrounding said support, and having a surface to which a flexible pattern may be secured, said surface being below the face of an object upon said support, when the frame is in place, whereby the pattern is held in contact with said object, and means for shifting a pattern carried by said frame.

5. In a decorating apparatus, the combination with a yielding support for an object to be decorated, of a pattern-frame surrounding said support and having a secondary frame movable with respect thereto in the plane of said frames, said secondary frame adapted to receive a flexible pattern and to hold the edges thereof below the face of an object on said support, whereby the pattern is held in contact with said object.

704,628. PROCESS OF SEPARATING SOLVENTS FROM NITRO COMPOUNDS. EMIL GATEHARS, Washington, D. C., assignor to George Whitman McMullen, Picton, Canada. Filed Apr. 12, 1902. Serial No. 102,496. (No specimens.)

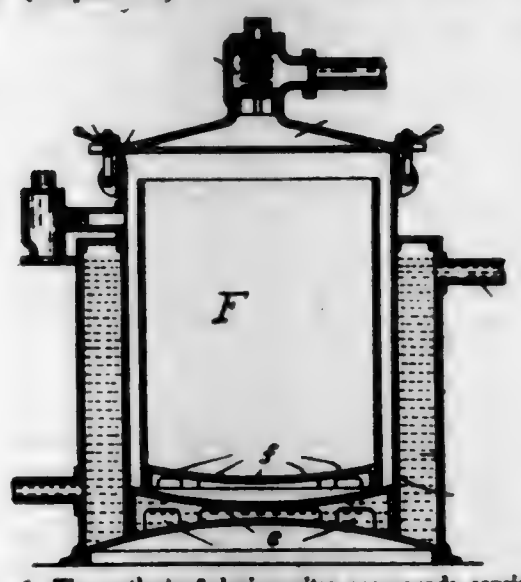

Claim.—1. The method of drying nitro compounds consisting in placing the compounds in a sealed vessel, heating and retaining the compound in the vessel in the presence of its solvent vapor until the solvent of the compound is practically completely liberated therefrom.

2. The method of drying nitro compounds consisting in subjecting the compound in a sealed vessel to the action of heat in the presence of a solvent, maintaining the compound in the presence of sufficient solvent vapor to keep it porous, and continuing the treatment until the compound is substantially dry.

3. The method of drying nitro compounds consisting in maintaining the compound in a bath of solvent vapor, applying heat, permitting portions of the vapor to escape, and adding additional solvent to maintain the porosity of the compound.

704,629. VETERINARY OBSTETRIC INSTRUMENT. CORNOO GILTZ, Lafargeville, N. Y. Filed Mar. 29, 1902. Serial No. 100,598. (No model.)

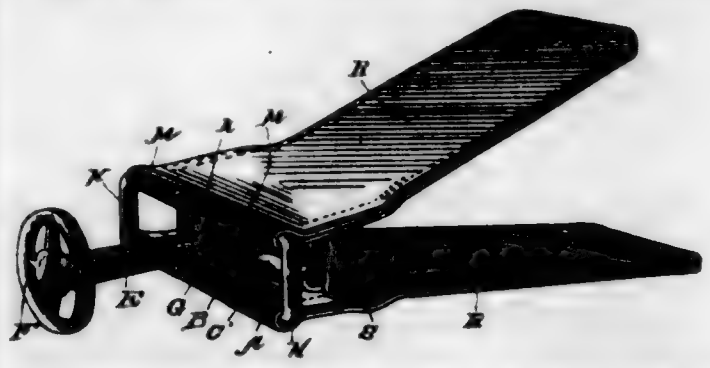

Claim.—1. A veterinary obstetric instrument, comprising two jaws hinged together, a plate having links secured thereto, a screw passing through a threaded aperture in said plate and having swivel connections with the hinged portions of said jaws, and a sheath for each of said jaws, and fastened to said loops, as set forth.

2. A veterinary obstetric instrument, comprising two jaws a plate to which said jaws are hinged, a plate having a threaded aperture therein, a screw swiveled to the plate to which said jaws are hinged and passing through the threaded aperture of the second plate, a sheath covering each of said jaws, a portion of each sheath sewed to form loops, links carried by the plate having a threaded aperture, about which links said loops are passed, and connections between said sheaths, as set forth.

3. A veterinary obstetric instrument, comprising a plate with central aperture therein, hinged jaws having integral arms, links carried by said plate to which arms are hinged, a plate K having a central threaded aperture a screw having swivel connection with the plate to which said jaws are hinged and passing through the threaded aperture of said plate K, a sheath for each of said jaws, each sheath having a strap bent to form a loop, links N carried by said plate K, and about which said loops pass, the inner faces of said sheaths made of a single piece of leather, as set forth.

704,630. CLOTHES-POUNDER. PATRICK F. GLYNN, Adrian, Minn. Filed Apr. 19, 1902. Serial No. 103,748. (No model.)

Claim.—1. In a clothes-pounder, an external shell having imperforate side walls and perforated top, an internal shell of less length than said outer shell and spaced therefrom, whereby an annular chamber is formed between said shells, an annular perforated diaphragm connecting said shells near the bottom, and an inverted conical diaphragm intermediately disposed within said inner shell, said inner shell having perforations near said intermediate diaphragm and leading into said annular chamber, substantially as described.

2. In a clothes-pounder, an external shell having imperforate side walls and perforated top, an internal shell of less length than said outer shell and spaced therefrom, whereby an annular chamber is formed between said shells, an annular perforated diaphragm connecting said shells near the bottom, an inverted conical diaphragm intermediately disposed within said inner shell, said inner shell having perforations near said in-

termediate diaphragm and leading into said annular chamber, and a handle-socket passing centrally through said shells and secured thereto and rigidly engaging said diaphragm, substantially as described.

704,681. TARGET. GEORGE S. GOODALE, Houghton, Mich. Filed Oct. 17, 1901. Serial No. 79,004. (No model.)

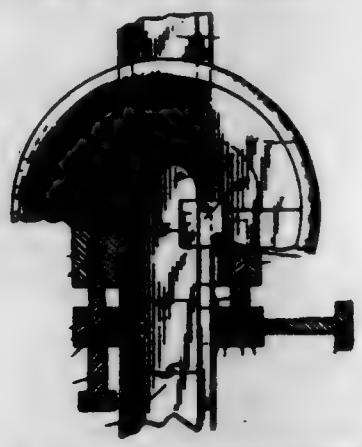

Claim.—1. The combination with the leveling-rod, of a target-disk provided with blocks or lugs and mounted to slide thereon, one lug having a smooth socket and the other a screw-threaded socket, a collar mounted to slide upon said rod and provided with a stud or post to engage the smooth socket, a set-screw engaged with said collar for clamping it in adjusted position to the leveling-rod, a spring-plate interposed between the leveling-rod and the collar and adapted to be engaged by the set-screw and forced against the leveling-rod, and a screw swiveled to said collar and engaging the screw-threaded socket aforesaid by means of which said target may be set to exact adjustment after having been set approximately by the movement of the collar upon said rod, substantially as set forth.

2. The combination with a leveling-rod; of a target-disk sliding directly on the rod and provided with lugs, one lug having a smooth socket and the other a screw-threaded socket, a collar sliding upon said rod below the target-disk and provided with an upwardly-extending stud or post to engage the smooth socket, means for locking said collar in adjusted position, and a screw swiveled to said collar and engaging the screw-threaded socket aforesaid, by means of which said target-disk may be set to exact adjustment after having been set approximately by the movement of the collar upon said rod, substantially as set forth.

704,682. MECHANISM FOR CHANGING THE ELEVATION OF HEADER-PLATFORMS. HENRY GREEN, Pekin, Ill., assignor to the Acme Harvester Company, Pekin, Ill., a Corporation of Illinois. Filed May 25, 1900. Serial No. 18,002. (No model.)

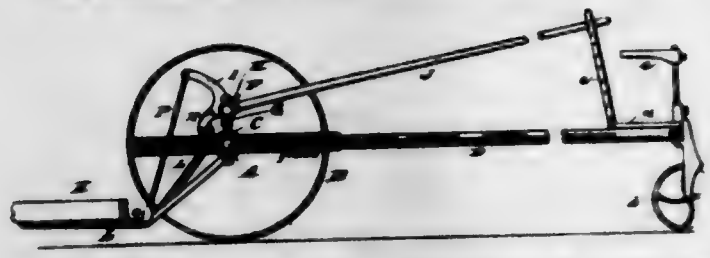

Claim.—1. In mechanism for changing the elevation of the platforms of headers, the arms for carrying said platform, upturned ends for such arms, the same extending upward and rearward from the horizontal portions thereof which carry the said platform, means for carrying the arms in pivotal manner at the bend in said arms immediately behind the platform, and means for supporting the upturned ends of the arms to limit the downward movement of the platform, said last-named means permitting the platform to swing upward on the pivots formed by the first-named means to permit the said platform to rise and fall when contacting with obstacles as set forth.

2. In combination with the axle and platform of a header, arms beneath the platform for supporting the same such arms projecting upward and rearward therefrom, pivotal means for pivotally supporting the arms immediately behind the platform, a stop for the upper free ends of the arms, a lever for raising and lowering the pivot-point of the arms, and rearwardly-extending arms pivoted at one of their ends to the arms carrying the platform and supported at the other beneath the axle of the machine for the purposes set forth.

3. In mechanism for changing the elevation of header-platforms, arms for carrying said platform the same extending rearwardly therefrom, and having upturned extensions, stops for receiving said upturned ends and permitting them to slide thereon, depending rods pivotally supporting the arms at a point immediately behind the platform, a lever for carrying the upper ends of the rods and rearwardly-extending braces pivotally attached at one end to the arms carrying the platform and supported at their other ends on the machine-frame and adapted to shift thereon substantially as set forth, and arranged substantially as described whereby a vertical movement of said lever will change the elevation of the platform.

4. In mechanism for changing the elevation of header-platforms, arms for carrying the platform horizontally, the same extending rearwardly from said platform and turned up behind the same a stop for the upturned ends, a lever mounted on the machine-frame, rods attached to such lever forward of its fulcrum and attached to the arms behind the platform, and arms having pivotal connection with the arms carrying the platform and having contact with the machine-frame to sustain the platform in its level working position.

5. In mechanism for changing the elevation of header-platforms, arms L carrying said platform and having upward and rearward extensions, stops on the machine against which the upward extremities are adapted to have slidable contact, a lever pivoted on the said machine having connection with the arms L at a point just behind the platform, rearwardly-projecting arms Q having connection with such arm at one end and resting on the machine at the other end for sustaining the platform in its working position all arranged substantially as described whereby a vertical movement of the lever will change the elevation of the platform for the purpose set forth and described.

6. In mechanism for changing the elevation of header-platforms, the combination with the carrying-wheels and axle of the header, of a horizontal tube supported above said axle and adapted to rock in its supports, a lever attached to said tube, arms I and N on the tube, arms L supporting the platform of the header and bent behind the latter to slidably engage the arm N, rods P hung from the arms I and connected pivotally with the arms L, and arms Q pivoted to the latter arms and resting against the machine-frame all for the purpose set forth.

7. The combination of the carrying-wheels B, the axle A, tongue D, support G on the axle, tube F loosely held in said support, the lever J on the tube, arms I and N secured to the tube portion the platform K, arms L passing thereunder and secured thereto and having the rear ends turned up to engage with the arms N, rods P attached to the said arm L at the rear of the platform and the arm I substantially as and for the purposes set forth.

8. In mechanism for changing the elevation of header-platforms, the combination with the platform having the usual canvas carriers and cutting apparatus, of arms supporting the same in a horizontal position, such arms having upturned rear extensions, stops for engaging the tops of the arms at the upturned ends for holding such arms at said upturned ends, a lever having arm extensions pivoted on the machine, supporting-rods pivoted at one end to the said arm extensions and pivotally connected at their lower ends to the arms carrying the platform, and arms pivoted to the latter arms at the pivotal point of the supporting-rods, the same extending backward and adapted to bear upon the machine-frame for preventing the rearward displacement of the platform substantially as set forth and described.

9. In mechanism for changing the elevation of header-platforms, the combination of the axle of the machine having the usual carrying-wheels, of a tube above said axle the same being carried in bearings and adapted to rock therein for the purposes described, a lever for rocking said tube, upwardly-extending arms on said tube, rods pivoted thereto, downwardly-extending arms beneath said arms, a friction-roller on each of said downwardly-extending arms, a platform having the usual canvas carriers and cutting apparatus, arms beneath attached to and adapted to carry said platform, said arms having upward and rearward extensions engaging the said friction-rollers, and having an upward pressure thereon substantially as set forth, pivotal connection between the arms and the rods which are connected to the upward-extending arms on the tube above the axle, such point of connection being immediately behind the platform, arms pivoted at one end to the arms which carry the platform, the opposite ends thereof bearing against the machine-frame and adapted to keep the said platform in its normal position for working all being arranged substantially as set forth and described.

10. In a mechanism for changing the elevation of header-platforms, the combination of the axle A, the pipe F above it adapted to rock in its supports, a lever J for rocking such pipe, arms I projecting forward of the pipe and adapted to move therewith, the depending short arms N adjacent to said arms I and adapted to move with them, rods P suspended from the free ends of the arms I, the arms L having the horizontal portions, the platform K carried on such horizontal portions, said arms L extending upward and rearward from the rear of the platform and pivotally supported at the bend by the said rods P, the upper ends of the arms being curved and supported in the hollow of said curves by the ends of the said depending arms N, the relation of the parts being such that by

raising and lowering the lever J the arms I and N are made to move about the center of the pipe F as a pivot to vertically move the arms L and platform K in a horizontal position as set forth.

11. In a mechanism for changing the elevation of header-platforms, the combination of the axle A, the pipe F above it adapted to rock in its supports, a lever J for rocking such pipe, arms I projecting forward of the pipe and adapted to move therewith, the depending short arms N adjacent to said arms I and adapted to move with them, a friction-roller M on the end of each arm N, rods P suspended from the free ends of the arms I, the arms L having the horizontal portions, the platform K carried on such horizontal portions, said arms L extending upward and rearward from the rear of the platform and pivotally supported at the bend by the said rods P, the upper ends of the arms being curved and supported in the hollow of said curves by the ends of the said depending arms N, the relation of the parts being such that by raising and lowering the lever J the arms I and N are made to move about the center of the pipe F as a pivot to vertically move the arms L and platform K in horizontal position as set forth.

12. In a mechanism for changing the elevation of header-platforms, the combination of the axle A, the pipe F above it adapted to rock in its supports, a lever J for rocking such pipe, arms I projecting forward of the pipe and adapted to move therewith, the depending short arms N adjacent to said arms I and adapted to move with them, rods P suspended from the free ends of the arms I, the arms L having the horizontal portions, the platform K carried on such horizontal portions, said arms L extending upward and rearward from the rear of the platform and pivotally supported at the bend by the said rods P, the upper ends of the arms being curved and supported in the hollow of said curves by the ends of the said depending arms N, the relation of the parts being such that by raising and lowering the lever J the arms I and N are made to move about the center of the pipe F as a pivot to vertically move the arms L and platform K in a horizontal position, and arms Q pivotally connected to the arms L at one end and bearing against the machine for a support at the other end for the purpose set forth.

704,633. NUT-LOCK. AUGUST GRUEBE, St. Louis, Mo. Filed July 1, 1901. Serial No. 66,644. (No model.)

Claim.—1. In a nut-lock, the combination with a fish-plate, of a rib carried by said fish-plate and forming an acute angle with the face thereof, an externally-screw-threaded member passing through an opening in said fish-plate, an internally-screw-threaded member, a locking-plate connected with one of said screw-threaded members to prevent its rotation, and a wing carried by said locking-plate and adapted to have its face bent into engagement with the edge of said rib and its edge bent into engagement with the face of said fish-plate.

2. In a nut-lock, the combination with a fish-plate, of a rib carried by said fish-plate and forming an acute angle with the face thereof, a bolt passing through an opening in said fish-plate, a nut for said bolt, a locking-plate provided with a recess to receive said nut, and a wing carried by said locking-plate and adapted to have its face bent into engagement with the edge of said rib and its edge bent into engagement with the face of said fish-plate.

704,634. DOOR-SECURER. GEORGE F. HAMILTON, Council Bluffs, Iowa. Filed Apr. 23, 1902. Serial No. 106,021. (No model.)

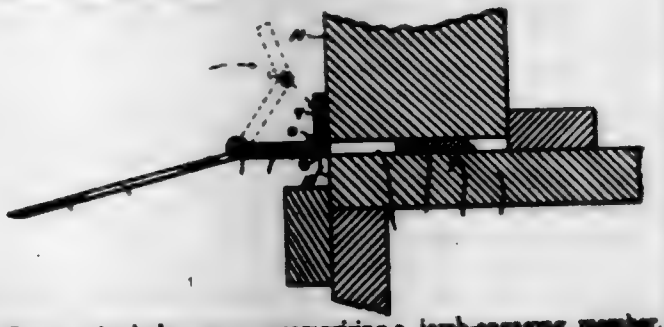

Claim.—1. A door-securer comprising a jamb-engaging member, wedge points and gage-blocks on one face of said member, an adjusting member hinged to the said jamb-engaging member and adapted to be folded thereon or spread away therefrom in order to fill varying openings between a door and the jamb therefor, and a door-engaging member hinged in common with the aforesaid jamb-engaging and adjusting members, having a portion adapted to lie in a plane parallel to said other members and an end thereon extending at substantially right angles thereto, substantially as described.

2. A door-securer comprising a flat jamb-engaging member, wedge points and gage-blocks on one face of said member, the adjacent faces of said wedge points and gage-blocks being parallel to each other and perpendicular to the face of said member, an adjusting member hinged to the jamb-engaging member and adapted to be folded against the same or spread away therefrom in order to fill varying spaces between the edge of a door and the jamb therefor, a door-engaging member hinged in common with the aforesaid jamb-engaging and adjusting members, a hinged end on the door-engaging member, said hinged end being adapted to fold down parallel with the other members or to be turned to substantially right angles thereto, and a check-lug on said hinged end to prevent the same from being turned to an angle smaller than a right angle with the said door-engaging member, substantially as described.

704,635. GAS-BURNER. JOHN HARRIS, Cleveland, Ohio. Filed Mar. 10, 1902. Serial No. 97,445. (No model.)

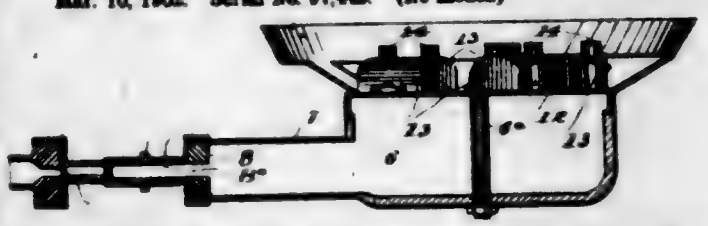

Claim.—1. The combination, in a gas-burner, of a mixing-chamber having discharge-openings in the top thereof, a slotted cover over each of said openings, and chambered caps fitted to the top of the mixing-chamber and entirely inclosing said covers, said caps having ignition-nipples spaced from the slotted covers.

2. The combination in a gas-burner, of a mixing-chamber having discharge-openings, covers having small apertures over said openings, and chambered caps inclosing each of said covers and having ignition-nipples.

704,636. CHECKREIN. CURTIS R. HENRY, Akron, Ohio, assignor of one-half to George H. Ellis and Albert E. Baker. Filed June 10, 1901. Serial No. 64,029. (No model.)

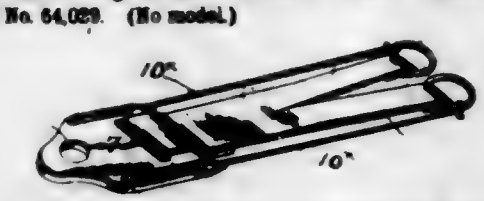

Claim.—A checkrein comprising an extensible body portion having its forward end centrally slitted, thereby providing two branches; a ring-section for each branch, and an anchoring device having an aperture in its end connected to the rear end of the extensible body and having openings, in combination with rods 10^x extending from said rings to said openings, and adapted to limit the extension of the elastic body and its branches, all combined substantially as specified and for the purpose set forth.

704,637. ROTARY ENGINE. HERBERT R. HODGENS, Norfolk, Va., assignor of one-half to Wm. W. Old, Norfolk, Va., executor of Henry D. Van Wyck, deceased. Filed July 27, 1900. Serial No. 25,009. (No model.)

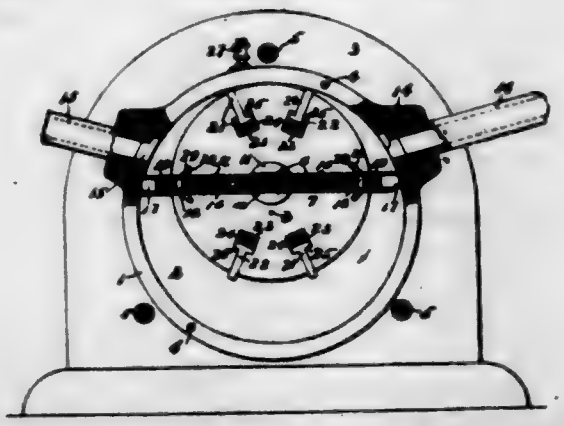

Claim.—1. In a rotary engine, the combination of a rotary guide, a piston transversely movable therein and an inclosing cylinder, said piston consisting of separate plates and means for holding said plates apart in directions transverse to the piston with a yielding pressure.

2. In a rotary engine, the combination of a rotary guide, separate piston-plates transversely and independently movable therein and extending to the surface of the cylinder, a packing-body between the said plates adapted to hold the latter against the sides of said guide, and an inclosing cylinder.

3. In a rotary engine, the combination of a rotary guide, a piston transversely movable therein and an inclosing cylinder by the action of which the piston is moved longitudinally in the guide, said piston consisting of separate plates movable independently of each other, and a yielding packing C between said plates.

4. In a rotary engine, the combination of a rotary guide, separate piston-plates movable independently of each other in said guide and engaging the same by sliding contact, means for holding said plates apart with yielding pressure toward and against the walls of said guide, and an inclosing cylinder.

5. In a rotary engine, the combination of a rotary guide, a piston transversely movable therein and an inclosing cylinder, said piston consisting of separate plates individually movable longitudinally and extending from side to side of the cylinder, and means for holding said plates apart in directions toward the engaging surfaces of said guide with a yielding pressure.

6. In a rotary engine, the combination of a rotary guide, a piston transversely movable therein and an inclosing cylinder by the action of which the piston is moved in the guide, said piston consisting of separate disconnected and individually-movable plates and a yielding packing-body between said plates adapted to hold the latter against the sides of said guide.

7. In a rotary engine, the combination of a rotary guide, piston-plates movable in said guide, a yielding packing between said plates, holding the latter in contact with the guide and furnishing a steam-tight packing along the edges of said plates at the heads of the cylinder, and an inclosing cylinder.

8. In a rotary engine, the combination of a rotary guide, a piston movable therein and an inclosing cylinder, said piston consisting of separate plates, means for holding said plates apart in directions transverse to the plates and in contact with the guide with a yielding pressure and endwise-movable packing-plates confined between the ends of said piston-plates.

9. In a rotary engine, the combination of a rotary guide, separate piston-plates individually movable therein, a packing-body between the said plates, endwise-movable packing-plates between the ends of said piston-plates, and an inclosing cylinder, said piston-plates extending from side to side of the cylinder, being movable relative to and adapted to engage the cylinder independently of said packing-plates.

10. In a rotary engine the combination of a rotary guide, a piston transversely movable therein and an inclosing cylinder by the action of which the piston is moved in said guide, said piston consisting of separate plates, a yielding packing C between said plates and endwise-movable packing-plates at the ends of the piston, said piston-plates extending from side to side of the cylinder, being movable relative to and adapted to engage the cylinder independently of said packing-plates.

11. In a rotary engine a piston composed of plates 16 adapted to engage a suitable guide, a packing C between said plates, blocks 18 at the ends of said packing, metal packings 17 between said plates and having lugs 20 and springs 19 between said lugs.

12. In a rotary engine, the combination of a rotary guide, a piston transversely movable therein and composed of separate plates adapted to slide longitudinally relatively to each other, each plate being substantially of a length equal to the operative diameter of the cylinder, extending from side to side of the latter and directly engaging the wall of the same, said plates being spaced apart, situated one at each side of the center of rotation and adapted to both engage the cylinder simultaneously at the same end of the piston and operate alternately as the steam-pressure-receiving means, substantially as set forth.

13. In a rotary engine, the combination with a cylinder, of a rotary guide, and a piston transversely movable therein comprising separate piston-plates extending from side to side of the cylinder and movable thereby, and packing-plates held and guided radially between the ends of said piston-plates, all of said plates being individually free and movable radially relative to each other.

14. In a rotary engine the combination with a cylinder, of a rotary guide, a piston transversely movable therein, comprising separate piston-plates extending from side to side of the cylinder and movable thereby, packing-plates held and guided radially between the ends of said piston-plates, all of said plates being individually free and movable radially relative to each other, and a packing carried by said guide intermediate of the ends of the piston and adapted to engage the cylinder.

15. In a rotary engine, a piston consisting of separate plates, a yielding packing-body between the same and springs acting inwardly on said packing-body whereby its outward pressure against said plates is maintained.

16. In a rotary engine, the combination, with a rotary-piston carrier and inclosing cylinder, of separate piston-plates mounted and freely and individually movable radially in said carrier, each plate being situated in a transverse plane outside the center of rotation and both plates being adapted to engage the cylinder simultaneously at the same end of the piston in each plane.

704,888. ROTARY ENGINE. HERBERT R. HODGSON, Norfolk, Va., assignor of one-half to Wm. W. Old, Norfolk, Va., executor of Henry D. Van Wyck, deceased. Filed May 8, 1901. Serial No. 59,374. (No model.)

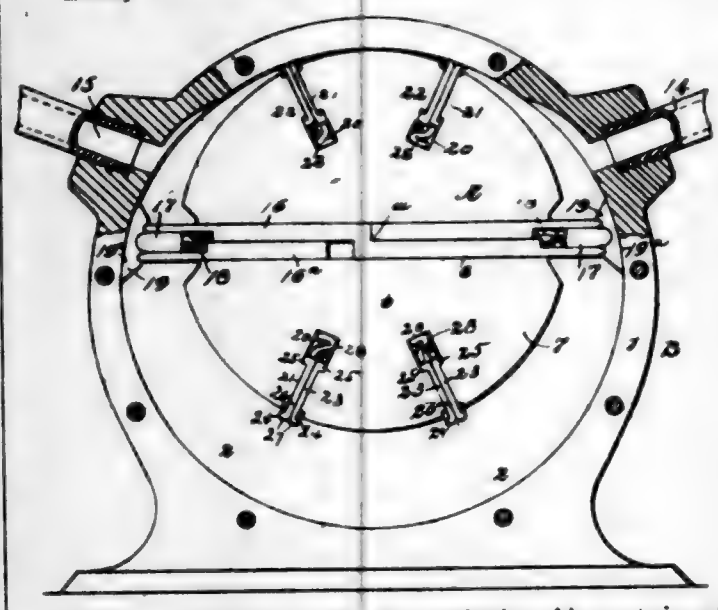

Claim.—1. In a rotary engine, the combination with an exterior cylinder, of a rotary piston-guide, and a piston transversely movable therein, consisting of separate plates each extending from side to side of the cylinder-wall and adapted to shorten one of the side faces of the piston while the other side face remains relatively longer, substantially as set forth.

2. In a rotary engine, the combination of a cylinder, a rotary piston-guide therein, and a piston transversely movable in the guide, said piston consisting of separate plates extending continuously from side to side of the cylinder-wall and adapted to shorten one face of the piston and simultaneously elongate the other face, substantially as set forth.

3. In a rotary engine, the combination of a cylinder, a rotary piston-guide therein, and a piston transversely movable in the guide, said piston consisting of two separate plates extending from side to side of the cylinder-wall and each lying partly above and partly below the other and movable oppositely to each other, substantially as set forth.

4. In a rotary engine, the combination of a cylinder, a rotary piston-guide therein, and a piston transversely movable in said guide, said piston consisting of separate parts each having two end parts of which one end part is offset relatively to the other a distance substantially equal to the thickness of the other piston-plate, and each plate lying partly above and partly below the other, substantially as set forth.

5. In a rotary engine, the combination of a cylinder, a rotary piston-guide and a piston transversely movable in the guide, said piston consisting of separate plates each extending from side to side of the cylinder-wall, each having one end part offset as to the other, each cut away at one edge, and each lying partly above and partly below the other, substantially as set forth.

6. In a rotary engine, the combination of a cylinder, a rotary piston-guide, a piston transversely movable in the guide, said piston consisting of separate plates movable longitudinally as to each other, and packing-shoes between the ends of the plates and the cylinder-wall, each packing-shoe having a loose bearing engagement with the end of each piston-plate, substantially as set forth.

7. In a rotary engine, the combination of a cylinder, a rotary piston-guide therein, a piston transversely movable in the guide, consisting of separate plates extending continuously from side to side of the cylinder and adapted to shorten one face of the piston relatively to the other, and an independent packing-piece yieldingly secured between the two ends of the piston-plates, substantially as set forth.

8. In a rotary engine, the combination of a cylinder, a rotary piston-guide therein, a piston transversely movable in the guide, and having two plates extending continuously from side to side of the cylinder, a packing-shoe between the plates and the cylinder-wall and having a loose rocking bearing upon both plates, and a packing-strip between the ends of the piston-plates and also having a loose bearing against the shoe, substantially as set forth.

9. In a rotary engine, the combination of a cylinder, a rotary piston supporting and guiding head, provided with a packing-groove and an enlarged aperture or socket at the inner end of the groove, and a packing having two sections, 23, 23, with steps engaging with the socket-shoulders and with rounded heads constructed substantially as set forth to provide two remote lines of contact with the cylinder-wall, substantially as set forth.

10. In a rotary engine, the combination of a cylinder and a piston having four edges directed toward the interior of the cylinder and operative in directions toward and from the surface of the latter, each of said edges being connected with the diagonally opposite edge to move therewith and the two pairs of edges so connected being independent of each other and separately movable.

704,689. LEACHING AND EXTRACTION OF METALS FROM THEIR ORES.

CARL HOEPFNER, Frankfort-on-the-Main, Germany; Henry Orth, Jr., administrator of said Hoepfner, deceased.

Filed Sept. 27, 1899. Serial No. 731,852. (No specimens.)

Claim.—1. The process of treating ores and metallic compounds containing copper, which consists in leaching the same with a cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, and electrolyzing the resulting cuprous-chlorid solution while mechanically separating the electrode solutions, thereby depositing metal at the cathode and converting the cuprous into cupric chlorid, substantially as described.

2. The process of treating ores and metallic compounds containing copper, which consists in leaching the same with a cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, precipitating from the solution so obtained cuprous chlorid, and electrolyzing a solution of the latter at the cathodes and the mother-liquor at the anodes while mechanically separating the electrode solutions, thereby depositing copper at the cathode and converting the cuprous into cupric chlorid, substantially as described.

3. The process of treating ores and metallic compounds containing copper, silver and lead, which consists in leaching the same with a warm or hot cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, precipitating lead and silver therefrom, recovering those metals, reconverting the cuprous into cupric chlorid and returning the latter for leaching similar materials, substantially as described.

4. The process of treating ores and metallic compounds containing copper and lead, which consists in leaching the same with a warm or hot cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, precipitating lead chlorid by refrigeration, converting the cuprous into cupric chlorid by chlorin, and returning the solution hot for further leaching of similar materials, substantially as described.

5. The process of treating ores and metallic compounds containing copper and lead, which consists in leaching the same with a warm or hot cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, precipitating the lead chlorid formed by refrigeration, reconverting the cuprous into cupric chlorid in the anode compartment of an electrolytic apparatus, and returning the solution hot for leaching similar materials, substantially as described.

6. The process of obtaining copper, which consists in leaching a suitable material with a hot cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, electrolyzing the resulting cuprous-chlorid solution while mechanically separating the electrode solutions, whereby metallic copper is deposited and the cuprous chlorid converted into cupric chlorid, and returning the latter into the cycle of operations, substantially as described.

7. The process of obtaining copper and silver, which consists in leaching a suitable material with a hot cupric-chlorid solution containing a solvent of cuprous chlorid less than is required for saturation, partially precipitating the cuprous chlorid from the resulting solution by refrigeration, and electrolyzing the remainder of the solution to recover the silver and copper while mechanically separating the electrode solutions, substantially as described.

8. The process of obtaining copper, which consists in leaching a suitable material containing those metals and iron with a hot cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, partially precipitating cuprous chlorid from the resulting solution, oxidizing the latter and using a sufficient quantity of the resulting product for precipitating iron from the solutions and recovering the copper from the remainder, and returning the resulting liquor into the cycle of operations, substantially as described.

9. In the extraction of copper and silver from their ores containing iron, the step which consists in precipitating cuprous chlorid from hot solutions thereof, oxidizing the precipitate by means of air or oxygen and returning sufficient of the resulting product to the cuprous-chlorid solution under treatment to precipitate iron that may be present, substantially as set forth.

10. The process of obtaining copper, which consists in leaching a suitable material with a hot cupric-chlorid solution containing a solvent of cuprous chlorid, partially precipitating the cuprous chlorid from the resulting solution by cooling and electrolyzing the remainder of the solution to recover copper while mechanically separating the electrode solutions, substantially as described.

11. In the extraction of copper, the step which consists in precipitating cuprous chlorid from hot solutions thereof by cooling, removing and dissolving the precipitate by a suitable solution, and recovering the copper from the resulting solution in the cathode-cell of a suitable apparatus also containing an anode-cell and suitable anode solution, substantially as described.

12. The process of treating ores and metallic compounds, which consists in leaching the same with a warm cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation, precipitating lead and part of the silver chlorid formed by refrigeration, reconverting the resulting solution into a cupric-chlorid solution, returning the same at a higher degree of temperature to the material treated, thereby dissolving copper, precipitating any excess of iron by an oxygen compound of copper, electrolyzing the solution to recover the copper and zinc, and returning the resulting electrolyte into the cycle of operations, substantially as described.

13. In the extraction of copper, the step which consists in precipitating cuprous chlorid from hot solutions thereof by refrigeration, oxidizing the resulting solution at the anodes, using a solution of the precipitate in the cathode-cell of a suitable apparatus and depositing the copper, substantially as described.

14. The process of extracting metals, which consists in leaching a suitable material containing copper, lead and silver, with a warm cupric-chlorid solution containing a solvent of cuprous chlorid in quantity less than is required for saturation thereby dissolving lead and silver chlorids, precipitating them, reconverting the solution into cupric chlorid, using the same for leaching fresh quantities of ore, leaching the residues with a similar hot solution more concentrated in cupric chlorid, thereby dissolving copper and recovering those metals therefrom, reconverting the resulting solution into cupric chlorid, and returning the latter into the cycle of operations, substantially as described.

704,640. PROCESS OF EXTRACTING COPPER AND NICKEL FROM SULFID COMPOUNDS.

CARL HOEPFNER, Frankfort-on-the-Main, Germany; Henry Orth, Jr., administrator of said Hoepfner, deceased.

Filed July 27, 1900. Serial No. 25,060. (No specimens.)

Claim.—1. The process, which consists in oxidizing roasting copper and nickel sulfid ores or mattes, leaching the sulfate of copper formed, converting this into cupric chlorid and then into cuprous chlorid, dissolving the nickel salts in the residue by said cuprous chlorid, precipitating cuprous chlorid from the solutions formed and returning the resulting solution containing some cuprous chlorid into the cycle of operations, substantially as described.

2. The process, which consists in oxidizing roasting copper and nickel sulfid ores or mattes, thereby forming sulfurous-acid gas and sulfate of copper, dissolving the sulfate and converting this into cupric chlorid by means of alkali-metal chlorid, treating the cupric chlorid by means of roasted material containing nickel sulfid and oxid, thereby converting the cupric chlorid into cuprous chlorid and dissolving nickel compounds, precipitating and removing cuprous chlorid from the solution and returning the remaining solution containing alkali-metal chlorid, and some cuprous chlorid to treat fresh quantities of material, substantially as described.

3. The process, which consists in oxidizing roasting copper and nickel sulfid ores or mattes, thereby forming sulfurous-acid gas and sulfate of copper, dissolving the latter and converting it into cupric chlorid by means of an alkali-metal chlorid, converting the cupric into cuprous chlorid by means of incompletely-roasted material and sulfurous acid, thereby dissolving nickel salts from said roasted material and the leached residues, removing cuprous chlorid from said solution and treating new quantities of ore with the resulting solution containing some alkali-metal chlorid and cuprous chlorid, substantially as described.

4. The process, which consists in oxidizing roasting copper and nickel sulfid ores or mattes, thereby forming sulfurous-acid gas and copper sulfate, dissolving the latter and converting it into cupric chlorid by means of an alkali-metal chlorid, treating the cupric chlorid by means of incompletely-roasted material, thereby converting it into cuprous chlorid and dissolving nickel compounds, precipitating cuprous chlorid and sulfate of soda by cooling them recovering the nickel, returning the solution resulting from this last operation and treating new quantities of raw material, substantially as described.

5. The process, which consists in oxidizing roasting copper and nickel sulfid ores or mattes, thereby forming sulfurous-acid gas and sulfate of copper, dissolving the latter and converting it into cupric chlorid by adding an alkali-metal chlorid, converting cupric into cuprous chlorid by means of incompletely-roasted material at a temperature above normal, thereby dissolving nickel salts, cooling the solution and thereby precipitating cuprous chlorid and alkali-metal sulfate, finally precipitating nickel as oxid from said solution, substantially as described.

6. The process, which consists in oxidizing roasting copper and nickel sulfid ores or mattes, thereby forming sulfurous-acid gas and sulfate of copper, dissolving the latter and forming cupric chlorid by the addition of sodium chlorid and simultaneously forming sodium sulfate, converting cupric into cuprous chlorid by means of sulfurous acid and incompletely-roasted material at a temperature above normal, thereby dissolving nickel compounds, suitably lowering the temperature to precipitate first cuprous chlorid and then sodium sulfate and finally precipitating nickel as oxid by means of lime, substantially as described.

704,641. PROCESS OF EXTRACTING ZINC OR OTHER METALS FROM THEIR ORES. CARL HOEPFNER, Frankfort-on-the-Main, Germany; Henry Orth, Jr., administrator of said Hoepfner, deceased. Filed July 27, 1900. Serial No. 25,051. (No specimens.)

Claim.—1. The process, which consists in reacting on a material containing an oxygen compound of metals insoluble in water and whose chlorids are soluble in a solution of alkali-metal chlorid, with sulfurous acid and an aqueous solution of alkali-metal chlorid, whereby a solution is formed containing a chlorid of a metal, substantially as set forth.

2. The process, which consists in reacting on a material containing an insoluble oxygen compound of zinc, with water and sulfurous acid, sufficient to form monosulfite of zinc, and an aqueous solution of a chlorid of a metal of the alkalies, whereby a solution is formed containing chlorid of zinc and sulfite of the alkali metal, substantially as set forth.

3. The process, which consists in reacting on an ore or material containing an insoluble oxygen compound of zinc, with water, sulfurous acid and such proportion of a chlorid of a metal of the alkalies as will result in a concentrated solution of the latter, thereby producing a solution containing chlorid of zinc, and precipitating part of the sulfite of alkali thus formed, substantially as set forth.

4. The process, which consists in reacting on an ore or material containing an insoluble oxygen compound of zinc, with water, sulfurous acid and such proportion of a chlorid of a metal of the alkalies as will result in a concentrated solution of the latter, thereby producing a solution containing chlorid of zinc and simultaneously precipitating part of the sulfite of alkali thus formed, and removing the sulfite remaining in the solution by a suitable precipitant, substantially as set forth.

5. The process, which consists in reacting on a material containing zinc, with sulfurous acid and an excess of chlorid of a metal of the alkalies at a temperature above normal, thereby producing a solution containing chlorid of zinc and precipitating nearly all of the sulfite of alkali thus formed, removing the remaining sulfite by a suitable precipitant and recovering the zinc, substantially as set forth.

6. The process, which consists in reacting on an ore of zinc with sulfurous acid and a solution of a chlorid of a metal of the alkalies, thereby producing chlorid of zinc and sulfite of alkali metal, concentrating the resulting solution, thus precipitating the greater part of the alkali-metal sulfite, and removing the remainder by a soluble salt of a metal capable of forming insoluble sulfites, recovering zinc and returning the resulting solution into the cycle of operations, substantially as set forth.

7. The process, which consists in reacting on an ore or material containing an oxygen compound of zinc, with sulfurous acid and a solution of an alkali-metal chlorid, thereby producing chlorid of zinc and alkali-metal sulfite, removing the alkali-metal sulfite, recovering zinc by precipitation with lime, and using the resulting solution thus obtained for double decomposition with sulfite of alkali metal previously obtained, thereby regenerating alkali-metal chlorid, and returning the latter into the cycle of operations, substantially as described.

8. The process, which consists in reacting on an ore or material containing an oxygen compound of zinc, copper, cadmium and nickel, with sulfurous-acid gas, water and an alkali-metal chlorid, thereby producing a solution containing metallic chlorids and alkali-metal sulfite, precipitating the latter as solid sulfite on the ore residue and removing and treating the solution to remove any remaining sulfite with a suitable precipitant, recovering the metals as oxids by means of lime, returning the resulting calcium-chlorid solution into the cycle of operations, and smelting the ore residue and sulfite for metal, substantially as set forth.

9. The process, which consists in reacting on oxygen compounds of those metals whose chlorids are soluble in solutions of alkali-metal chlorids, with soluble alkali-metal chlorid in the presence of water and sulfurous acid to form sulfites of the metals, thereby obtaining a solution containing chlorids of the metals and a precipitate of bisulfite of the alkali metal, sufficient sulfurous acid being used to form said bisulfite, substantially as set forth.

10. The process, which consists in reacting upon an oxygen compound of zinc with an alkali-metal chlorid in the presence of water and sulfurous acid to form sulfites of zinc, thereby obtaining a solution containing chlorid of zinc and precipitating bisulfite of a metal of the alkalies, sufficient sulfurous acid being used to form said bisulfite, substantially as set forth.

11. The process, which consists in reacting upon oxygen compound of zinc with alkali-metal chlorid in the presence of water and sulfurous acid to form sulfite of zinc, thereby obtaining a solution substantially concentrated in alkali-metal chlorid and containing zinc chlorid in solution and precipitating bisulfite of the metal of the alkalies, sufficient sulfurous acid being used to form said bisulfite, substantially as set forth.

12. The process, which consists in reacting on oxygen compounds of those metals whose chlorids are soluble in solutions of alkali-metal chlorids with sulfurous acid to form sulfites of the metals, adding a sufficient quantity of an aqueous solution of an alkali-metal chlorid, thereby forming a solution containing chlorids of metals and solid bisulfite of the alkali metal, substantially as set forth.

704,642. SHAKING-STRAP FOR LOOMS. OSWALD HOFFMANN, Neugersdorf, Germany. Filed July 22, 1900. Serial No. 24,593. (No model.)

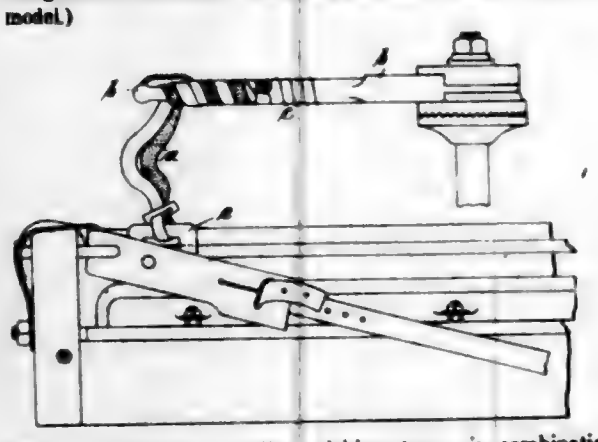

Claim.—In looms, an endless picking-strap *a* in combination with a picking-arm *b* around which the strap is wound several times, a picker *c* with which the strap engages and a cord *c* by means of which the strap is fastened to the picking-arm, substantially as described and for the purpose set forth.

704,643. CATTLE-STALL. GEORGE E. HOBB, Norway Lake, Me. Filed Mar. 21, 1902. Serial No. 99,383. (No model.)

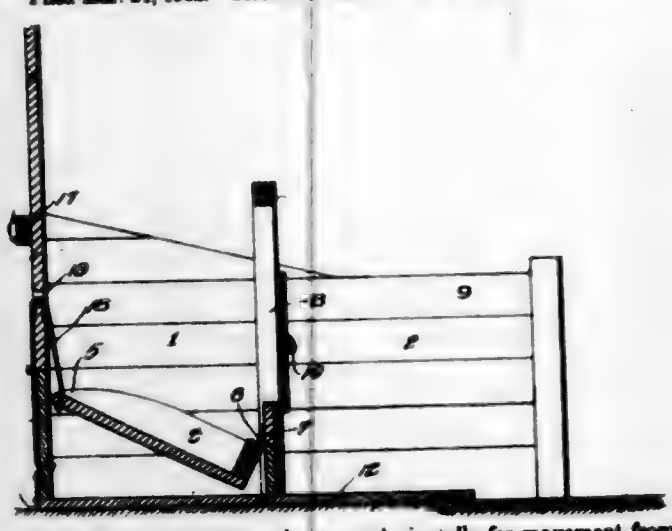

Claim.—1. A feed-trough mounted pivotally for movement from a horizontal to an inclined position, in combination with a door in a wall at the outer side of the trough and a connection between the door and trough, whereby the latter will be lowered when the door is opened and inclined when the door is closed, substantially as described.

2. A stall having a feed-trough in the head thereof mounted pivotally for movement from a horizontal to an inclined position, a door in the wall forming the head of the stall and a connection between the door and trough, whereby the latter will be lowered when the door is opened and inclined when the door is closed, substantially as described.

3. A stall having a cross-wall near its head whereby a crib is formed between said cross-wall and the head of the stall, the latter having an opening and a door to close the same, in combination with a feed-trough in said crib hinged to said cross-wall and a connection between the door

and trough whereby the latter will be turned to an inclined position with its hinged, inner side lowermost when the door is closed, substantially as described.

704,644. CUFF-HOLDER. CARL R. HULTQUIST, Rockford, Ill. Filed Aug. 13, 1901. Serial No. 71,821. (No model.)

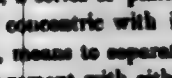

Claim.—In a cuff-holder, in combination, a pair of jaws pivoted together by a pintle, a roller, of rubber or other yielding material, mounted on the inside of one of said jaws and at right angles to said pintle, substantially as and for the purpose specified.

704,645. DIFFERENTIAL-SPEED MECHANISM. HERMAN R. ISLER, Hamilton, Ohio, assignor to Charles P. Hilker, Hamilton, Ohio. Filed Nov. 4, 1901. Serial No. 81,132. (No model.)

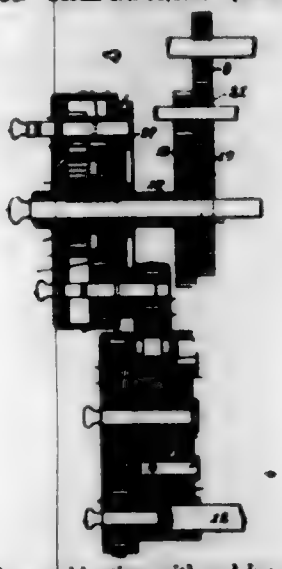

Claim.—1. The combination with a drive-gear and a driven gear, of a plural number of casings each being rotatively adjustable and overlapping at their edges, a series of pinions of different sizes mounted in each casing on a circle concentric with its axis, a clutch-face formed on one end of each pinion, means to separately move the pinions in one casing into clutching engagement with either of the pinions in the adjacent disk when adjusted into registration therewith, the said engaging pinions forming parts of a train of gears between the drive and driven gears.

2. In a train of gears between a drive and a driven gear, the combination with a primary and secondary series of pinions of different sizes each series mounted equidistant from a common center and the pinion of each series successively adjustable around said center to a fixed point common to both series, of clutches formed on the end of one series of pinions adapted to engage with clutches formed on the adjacent end of the pinions of the other series, and means arranged to move the pinions of one series separately into clutching engagement with either of the pinions of the other series when both are adjusted to register with said fixed point.

3. The combination with a drive-gear, and a driven gear formed with a clutch-face, of a series of idle pinions of different sizes mounted equidistant from a common center and adjustable around said center, each of said pinions being formed with a clutch-face on one end, and movable endwise into engagement with said drive-gear and simultaneously into clutching engagement with the driven gear.

4. The combination with a drive-gear, and a series of driven gears movable around a common center and each formed with a clutch-face, of a series of idle pinions each formed with a clutch-face and movable around a common center and into registration with a corresponding driven gear, and means arranged to move either of the pinions endwise into engagement with the drive-gear and simultaneously into clutching engagement with the corresponding driven gear.

5. The combination with a drive-gear, and a driven gear formed with a clutch-face, of a series of pinions of different sizes each formed with a clutch-face and movable around a common center into successive registration with the driven gear, said pinions being separately movable endwise into engagement with the drive-gear and simultaneously into clutching engagement with the driven gear

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704,646. CANE-GUN. FREDERICK H. JURY, New York, N. Y. Filed July 2, 1901. Serial No. 67,091. (No model.)

Claim.—1. The combination with a cane, of a plunger therein for ejecting a projectile, one end of said plunger constituting the tip or ferrule of the cane.

2. The combination with a tubular cane, of a spring-pressed plunger in said cane and normally projecting beyond one end thereof and means for holding the plunger in position to maintain the spring contracted.

3. The combination with a tubular cane, of a spring-pressed plunger in said cane and normally projecting beyond one end thereof, a catch carried by the plunger and adapted to hold the same in position to contract the spring, and a trigger for releasing said catch.

4. The combination with a tubular cane, of a plunger therein and normally projecting beyond one end thereof, a spring for forcing the plunger in one direction, a handle on one end of the plunger to limit its movement and serve as a handhold to draw the plunger outward and contract the spring, and means for locking said handle to the tubular cane and the plunger in its normal position.

5. The combination with a tubular cane, of a spring-pressed plunger in said cane and normally projecting beyond one end thereof, a handle for the cane comprising a handhold for the plunger, a pin or lug on the cane and an L.-shaped slot in a metal cup in the handle to receive the pin or lug and lock the handle against accidental movement and the plunger in its normal position.

6. The combination with a tube, of a spring-pressed plunger in said tube and normally projecting beyond one end thereof, a catch secured to the plunger adapted to hold the plunger in position to contract the spring and a trigger on the tube adapted to release said catch.

7. The combination with a tubular cane, and means therein for ejecting a projectile, of a frame adapted to be removably secured on the cane, a spool removably connected to the frame and of a general conical shape, a cord secured at one end to the spool, wound thereon, and a projectile secured to the other end of said cord.

8. The combination with a tubular cane, and means therein for ejecting a projectile, of a sleeve adapted to be slipped onto the cane, an outwardly-projecting arm on the sleeve, a conical spool having loops or eyes on its larger end to receive the arm, a cord secured at one end to the larger end of the spool and wound thereon toward the smaller end, and a projectile secured to the free end of the cord.

704,647. MACHINE FOR LAYING BRICKS FOR BUILDING PURPOSES. JOHN H. KNIGHT, Barfield, near Farnham, England. Filed June 17, 1901. Serial No. 64,946. (No model.)

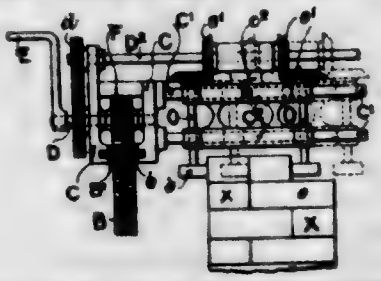

Claim.—1. A machine for laying bricks consisting of an adjustable guide-beam arranged parallel with and in close proximity to the position of the wall to be built, of a frame mounted on the said guide, of means to cause it to positively traverse the same including an axle carried by

the frame and rotated by a handle, and of brick-feeding rollers carried by a frame capable of independent transverse movement with respect to the traversing frame, as set forth.

2. A machine for laying bricks consisting of an adjustable guide-beam arranged parallel with and in close proximity to the position of wall to be built, of a frame mounted on the said guide, of means to cause it to positively traverse the same including an axle carried by the frame and rotated by a handle, of a secondary frame capable of independent transverse movement with respect to the traversing frame, and of feeding-rollers arranged in pairs carried by the frame and operated from the axle through gearing, as set forth.

3. In a machine for laying bricks the combination with a frame traversing an adjustable guide-beam arranged parallel with and in close proximity to the position of the wall to be built of brick-feeding rollers *o* carried by a frame capable of independent transverse movement with respect to the traversing frame, as and for the purpose set forth.

4. In a machine for laying bricks, the combination with a frame traversing a guide-beam parallel with and in close proximity to the position of the wall to be built, of brick-feeding rollers arranged in pairs on each side of the wall, of a secondary frame carrying the said rollers mounted on the main frame so that its transverse position may be varied, as and for the purpose set forth.

5. In a machine for laying bricks the combination of a guide-beam B, arranged parallel with and in close proximity to the position of the wall to be built of a frame C mounted to slide thereon, of means to cause the frame to positively traverse the guide B, of a secondary frame C^2 mounted so as to be transversely adjustable on the frame C, and of brick-feeding rollers *o* carried by the frame and operated from the axle through gearing, as set forth.

704,648. MACHINE FOR LAYING BRICKS FOR BUILDING PURPOSES. John H. Knight, Barfield, near Farnham, England. Filed Dec. 27, 1901. Serial No. 87,482. (No model.)

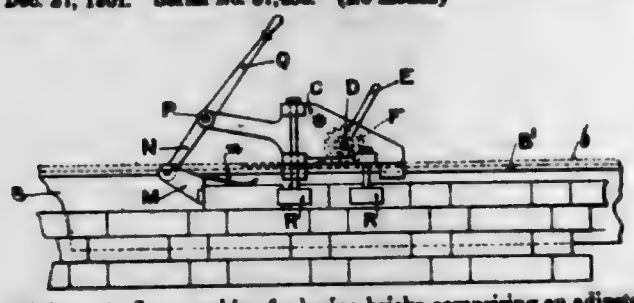

Claim.—1. In a machine for laying bricks comprising an adjustable guide arranged parallel with and in close proximity to the position of the wall to be built, a frame mounted on the said guide, and means to cause it to positively traverse the same including an axle carried by the frame and rotated by a handle, a brick-feeding device consisting of a presser pivoted to a lever carried by a rocking shaft mounted in bearings formed on or carried by an extension of the said traversing frame and a hand-lever for operating the same, the arrangement being such that the presser on the forward travel of the machine slides over and engages the brick or bricks fed to the machine and presses them against the last-laid brick or bricks, as set forth.

2. A machine for laying bricks consisting of an adjustable guide B arranged parallel with and in close proximity to the position of the wall to be built, of a frame C mounted on the said guide, of means to cause it to positively traverse the same including an axle D carried by the frame C and rotated by a handle E, of a brick-feeding device consisting of a presser M pivoted to a lever carried by a rocking shaft P mounted in bearings formed on or carried by an extension of the said traversing frame C and a hand-lever Q for operating the same, the arrangement being such that the presser on the forward travel of the machine slides over and engages the brick or bricks fed to the machine and presses them against the last-laid brick or bricks, and of side guides H^2 to keep the bricks square and level, as set forth.

704,649. ELECTRICAL FURNACE FOR TREATING HIGHLY-REFRACTORY SUBSTANCES. Hudson Maxim, Brooklyn, N. Y. Original application filed June 26, 1896, Serial No. 593,862. Divided and this application filed Oct. 30, 1901. Serial No. 80,532. (No model.)

Claim.—1. In an electrical apparatus for making calcium carbid, an electrical circuit, a carbid conductor included in said circuit, whereby said conductor is maintained incandescent, means delivering carbid-forming materials to the heating-field, and means uninterruptedly moving the calcium carbid from the heating-field as fast as formed.

2. In an electrical apparatus, for making calcium carbid, an electric circuit, a carbid conductor included in said circuit, whereby said conductor is maintained incandescent, and means moving the calcium carbid from the heating-field as fast as formed.

3. In an electrical apparatus for making calcium carbid, an electric circuit, a carbid conductor included in said circuit, whereby said conductor is maintained incandescent, and means continuously moving the calcium carbid from the heating-field as fast as formed.

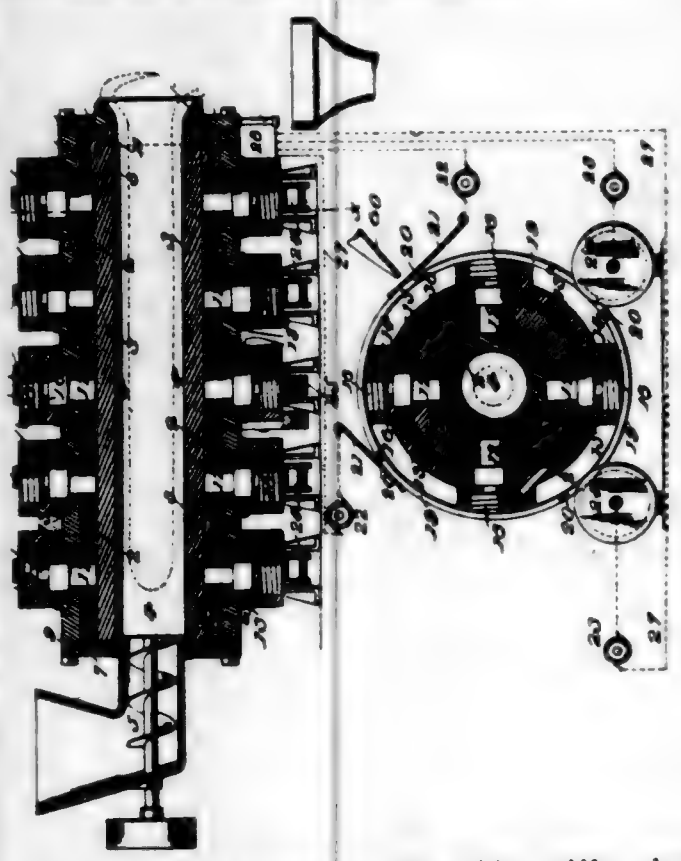

4. In an electrical apparatus for making calcium carbid, an electric circuit, a carbid conductor included in said circuit, whereby said conductor is maintained incandescent, means moving the calcium carbid from the heating-field as fast as formed, and means supplying carbid-forming materials to the heating-field.

5. In an electrical apparatus for making calcium carbid, an electric circuit, a carbid conductor included between opposed electrodes in said circuit, whereby said conductor is maintained incandescent, and means moving the calcium carbid from the heating-field as fast as formed, thereby maintaining the electrical resistance between the electrodes approximately uniform.

6. An electrical apparatus for making calcium carbid provided with an inlet for the carbid-forming materials and an outlet for the calcium carbid when formed, an electric circuit, a carbid conductor included in said circuit, and means continuously moving the calcium carbid from the heating-field to the outlet as formed.

7. In a rotatable electrical apparatus for making calcium carbid, an electric circuit, a carbid conductor included in said circuit, and means rotating the apparatus and removing the calcium carbid as formed from the heating-field of the apparatus.

8. In a rotatable electrical apparatus for making calcium carbid, an electric circuit, a carbid conductor included in said circuit, and means continuously rotating the apparatus and thereby continuously removing the calcium carbid from the heating-field of the apparatus as formed.

9. In an electrical apparatus for making calcium carbid, a carbid conductor, a plurality of electric circuits in each of which said conductor enters as an element, and means for moving the calcium carbid from the furnace as formed.

10. Apparatus for electrothermally treating materials, comprising a revolvable structure having peripheral electrodes, retainers therefor, and packings interposed between the electrodes and retainers whereby the packings are tightened by centrifugal force and outward pressure.

11. In apparatus for electrothermally treating materials, the combination, with the furnace-body and its peripheral electrodes, of one or more rings encircling the body and having collars admitting the electrodes, insulation interposed between the furnace-body and rings, retainers for the electrodes at the ring-collars, and current-conveying devices in contact with said retainers.

12. In apparatus for electrothermally treating materials, the combination, with the recessed electric furnace-body and its peripheral electrodes, of insulation in the body-recesses for the electrodes, one or more rings encircling the body and having collars admitting the electrodes, retainers for the electrodes at the collars, packings interposed between the electrodes and the retainers, and current-conveying devices in contact with said retainers.

13. Apparatus for electrothermally treating materials, comprising a

revolubie furnace-body, a refractory lining therein, a tubular fluid-bed within said lining constituting a common return-electrode, and peripheral electrodes fitted in the body and lining and in contact with the fluid-bed, whereby said bed is electrically energized for treatment of material passing through it.

14. Apparatus for electrothermally treating materials, provided with outer electrodes, an inner common electrode in circuit therewith, an interior open-ended conduit of low electrical conductivity within the inner electrode, and a layer of carbon or equivalent material having relatively higher electrical conductivity within the interior conduit.

15. Apparatus for electrothermally treating materials, comprising a revolubie structure provided with outer peripheral electrodes, an inner common electrode in circuit therewith, an interior conduit of low electrical conductivity within the inner electrode and a layer of carbon or equivalent material having relatively higher conductivity within the interior conduit.

16. Apparatus for electrothermally treating materials, provided with outer electrodes, an inner common electrode in circuit therewith, and an interior open-ended conduit of low electrical conductivity within the inner electrode and out of contact with the outer electrodes.

17. Apparatus for electrothermally treating materials, provided with outer electrodes, an inner common electrode in circuit therewith, an interior open-ended conduit of low electrical conductivity within the inner electrode and out of contact with the outer electrodes, and a layer of carbon or equivalent material having relatively higher conductivity within the interior conduit.

704,650. PULVERIZING-MILL. GEORGE S. MAXWELL, Madison, N. J., assignor of one-half to H. D. Crippen, New York, N. Y. Filed July 3, 1901. Serial No. 67,008. (No model.)

Claim.—1. In a mill, the combination with a free ring, of two rolls supporting said ring, a driving-roll engaging with said supporting-rolls, and means for rotating the driving-roll.

2. In a mill, the combination with a suitable case and a free ring supported therein, of two supporting-rolls carrying the ring, a driving-roll engaging the supporting-rolls, and means for driving the driving-roll.

3. In a mill, the combination with a suitable case and a free ring arranged therein, of two supporting-rolls journaled in the case and carrying the ring, a driving-roll also journaled in the case and engaging with both supporting-rolls, and means for rotating the driving-roll, a tension-roll journaled in the case in contact with the free ring, and means for regulating the pressure of the tension-roll on the ring.

4. In a mill, the combination with a suitable case provided with an opening at the top for the introduction of the material and an opening near the bottom for the outflow of the pulverized material, of a free ring arranged in the case, two supporting-rolls journaled in the case supporting the free ring, a driving-shaft journaled in the case, means for rotating the shaft, and a driving-roll on said shaft arranged in contact with the supporting-rolls.

5. In a mill, the combination with a suitable case and a free ring arranged therein, of three rolls journaled in the case and having their peripheries in contact with the inner surface of the ring, means for exerting a yielding pressure on one of said rolls to regulate the tension of the ring, and a fourth roll engaging with one or more of said rolls to rotate the rolls and the ring.

6. In a mill, the combination with a suitable case having openings for the inflow and outflow of the material, of a free ring arranged in said case, two supporting-rolls journaled in the case and arranged to carry the free ring, a tension-roll also journaled in the case and arranged with its periphery in contact with the inner surface of the ring, means for exerting a variable spring-pressure on said tension-roll to regulate the tension of the ring and the mesh of the material, and a fourth roll also journaled in the case engaging with both supporting-rolls to drive the ring and the rolls, and means for rotating the fourth roll.

7. In a pulverizing-mill, the combination with a suitable case, of two supporting-rolls journaled therein having cylindrical central portions or crushing-surfaces and tapering ends, a free ring supported on said rolls and correspondingly formed with an annular crushing-surface equal in width to the crushing-surface of said rolls and with sides inwardly inclined toward the center, substantially fitting the tapering ends of the rolls, a driving-roll also journaled in the case and arranged to rotate in contact with said supporting-rolls, and means for rotating the driving-roll.

8. In a mill, the combination with a suitable case, of two supporting-rolls journaled therein having a cylindrical central portion or crushing-surface and tapering ends, a free ring carried on said rolls and having its inner surface formed with an annular crushing-surface and inwardly-inclined sides to fit said rolls, a driving-roll also journaled in the case and having its periphery in contact with said supporting-rolls, and of a chute for the introduction of the material to be crushed extending from the outside of the case inwardly with a mouth of substantially the same width as the crushing-surface of said supporting-rolls and arranged adjacent to the driving-roll.

9. In a mill, the combination with a suitable case composed of corresponding side plates bolted together, said side plates having outwardly-inclined ways in their upper portion, of boxes arranged to slide in said ways, shafts journaled in the boxes, supporting-rolls on the shafts, a free ring carried on the supporting-rolls, a driving-roll journaled in the side plates and in contact with the supporting-rolls, and means to operate the drive-roll.

10. In a mill, the combination with a suitable case, of two supporting-rolls journaled in the case, a free ring carried on the supporting-rolls, a tension-shaft arranged near the bottom of the free ring and extending outwardly through openings in the case, a suitable support pivotally journaled at one end, boxes on said support forming journal-bearings for the shaft, a tension-roll journaled on the shaft within the case and in contact with the inner surface of the free ring, springs engaging the boxes and the support to force downwardly said tension-roll, means to regulate the tension of the springs and thereby of the pressure of the tension-roll on the inner surface of the ring, and means to rotate the rolls.

11. In a mill, the combination with a suitable case composed of corresponding side plates bolted together, said side plates having outwardly-inclined ways in their upper portion, of boxes arranged to slide in said ways, shafts journaled in the boxes, two supporting-rolls on the shafts, a free ring carried on the supporting-rolls, a tension-shaft arranged near the bottom of the free ring and extending outwardly through openings in the case, a suitable support pivotally journaled at one end, boxes on said support forming journal-bearings for the shaft, a tension-roll journaled on the shaft within the case and in contact with the inner surface of the free ring; springs engaging the boxes and the support to force downwardly said tension-roll, means to regulate the tension of the springs and thereby of the pressure of the tension-roll on the inner surface of the ring, a driving-roll journaled between the side plates and in contact with the supporting-rolls, and means to rotate the driving-roll.

12. In a mill, the combination with a suitable case, of two supporting-rolls journaled in the case, a free ring carried on said rolls, a driving-roll engaging the supporting-rolls, means for rotating the driving-roll; a single tension-roll arranged within the case in contact with the inner surface of the free ring near its lowest point, a shaft carrying said tension-roll, said shaft extending outwardly through openings in the sides of the case; a yoke pivotally supported on arms on the outside of the case near one edge by its free ends and extending around the other edge of the case, said yoke being formed with vertical ways, boxes arranged to slide in said ways and forming roller-bearings for the tension-roll shaft, springs arranged within said ways to force said boxes downwardly, and a single bolt and adjusting-nut engaging with the integral end of the yoke to regulate the tension of the springs and the pressure of the tension-roll on the inner surface of the free ring.

13. In a pulverizing-mill, the combination with a case having side plates, and formed with openings for the inflow and outflow of the material, a main shaft journaled between the side plates, a driving-roll arranged on said main shaft within the case; boxes fitted to upwardly and outwardly inclined ways in the side plates above the driving-roll, two supporting-roll shafts extending across the case and journaled in said boxes, supporting-rolls on said shafts in peripheral contact with the driving-roll, said supporting-rolls being formed with cylindrical centers and tapering ends; a free ring sustained on the supporting-rolls and correspondingly formed with an annular central portion and inclined sides inclined in toward the center to fit said supporting-rolls; a U-shaped yoke pivotally supported by its separated ends on integral arms arranged on the base of the case near one edge and extending around the other edge of the case, a single screw and nut secured to the base and engaging with the integral end of the yoke to adjust its position and the tension of the free ring on its rolls, integral upward extensions on the legs of the yoke, on each side, formed with ways, boxes fitted to said ways, springs arranged in said ways to bear downwardly on said boxes; a tension-roll shaft journaled in the boxes, a tension-roll on said tension-roll shaft arranged within the case and in contact with the inner surface of the free ring at its lowest

point, said tension-roll being of the same size and form as the supporting-rolls, and means to operate the driving-roll.

14. In a mill, the combination with a suitable case, of a free ring arranged in said case, of two supporting-rolls journaled in the case and carrying the ring, a driving-roll also journaled in the case and engaging the supporting-rolls, a yoke pivotally supported outside of the case by its free ends, a tension-roll arranged within the case in contact with the free ring and journaled in said yoke, and a single bolt and adjusting-nut engaging with the integral end of the yoke to regulate the pressure of the tension-roll on the free ring.

15. In a mill, the combination with a suitable case and free ring supported therein, of two supporting-rolls carrying the ring, a driving-roll engaging the supporting-rolls, means for driving the driving-roll, an external hopper for the material, and a chute extending from the hopper into the interior of the case and terminating in the open mouth arranged adjacent to the driving-roll, said mouth being extended outwardly and downwardly on one side in the direction of rotation of the driving-roll, substantially to fit the driving-roll and one of the supporting-rolls.

16. In a mill, the combination with a free ring, of a plurality of rolls supporting said ring, a driving-roll engaging with one or more of said supporting-rolls, and means for rotating the driving-roll.

704,651. DOOR-CATCH. CHARLES R. MERVIN, Mankato, Kans., assignor of one-half to J. M. Belt, Mankato, Kans. Filed July 6, 1901. Serial No. 67,330. (No model.)

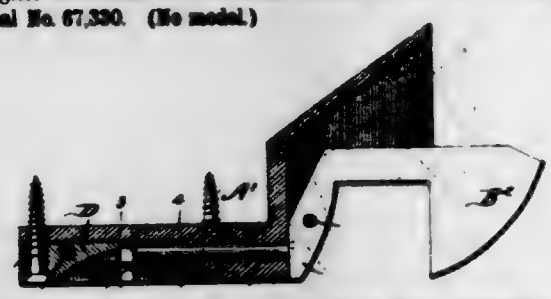

Claim.—In a device of the kind described, the combination with the housing, of the dog pivoted therein, said dog comprising the nose or head portion, the heel portion and intermediate or connecting portion, the push-rod having a dovetailed head, and the dovetailed stop-block located in the housing and adapted to limit the movement of the push-rod and head, substantially as shown and described.

704,652. TRACTION-ENGINE. GIDEON D. MILLER, Tub, Pa. Filed Nov. 30, 1901. Serial No. 84,176. (No model.)

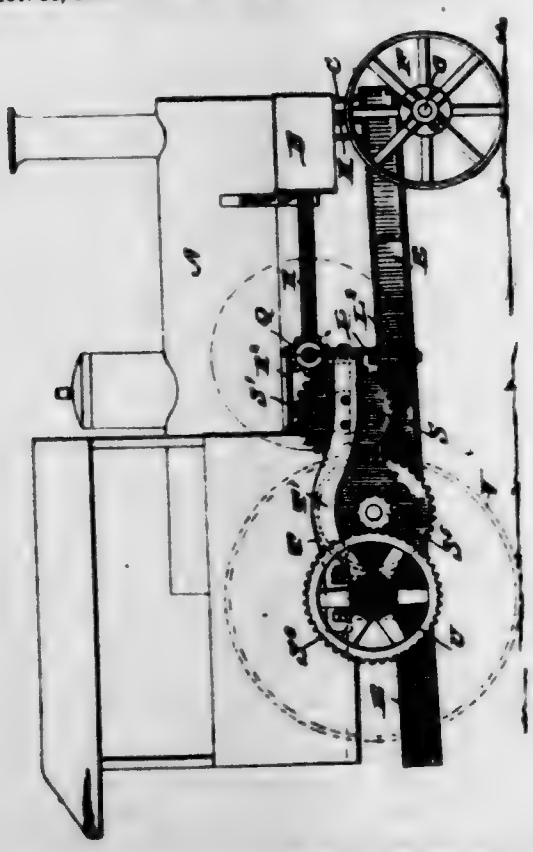

Claim.—1. In a traction-engine the longitudinal beams connected at their forward ends and carrying a supporting-yoke, a vertical post carried by the front axle and working in the supporting-yoke and a spring-pressed block against which the upper end of the post bears, said block being arranged within the yoke, substantially as set forth.

2. In a traction-engine, the combination with the longitudinal supporting-beams, of the connecting-plates connecting their forward ends, the supporting-yoke connected to the said plates, the block movable in the yoke and having a socket, a spring arranged within the yoke and bearing upon the block, and a vertical post having a ball at its upper end fitting into the socket, the lower end of said post being rigidly connected to the front axle, as set forth.

3. In a traction-engine the longitudinal beams having a cross-beam connected thereto, said cross-beam having bearing-brackets, and a power-shaft journaled in the said brackets, said power-shaft being connected with the pistons and imparting motion to the driving mechanism, as set forth.

4. In a traction-engine the combination with the longitudinal beams, of the cross-beam connected thereto and carrying the bearing-brackets, the power-shaft journaled in the said brackets, the operating-pitmen connected with the said power-shaft, the pinion carried by the said power-shaft, and the gearing mechanism driven from the said pinion, substantially as set forth.

5. In a traction-engine the combination with the cross-beam having the bearings M and N constructed as described, said bearing N having a semicylindrical extension at one side, the power-shaft journaled in the said bearings, the box-section, the semicylindrical extension N^3 and the pinion mounted upon the end of the power-shaft and turning upon the semicylindrical extension M^3 and N^3, as set forth.

6. In a traction-engine, the combination with the longitudinal supporting-beams having a supporting-yoke at its forward end, of the vertical post extending upwardly into the supporting-yoke, a spring-pressed block arranged within the yoke, the cross-beam attached to the longitudinal beams and having bearing-brackets arranged thereon, the power-shaft journaled in the said bearing-brackets, said power-shaft being connected to the driving-pitmen, the pinion carried from the end of the power-shaft, the idler with which said pinion meshes, parallel bars between which the idler is mounted, the forward ends of said bars being connected to the cross-beam, the traction-wheels, axle, gears and shaft whereby the motion of the power-shaft is transmitted to the traction-wheels substantially as set forth.

704,653. BURNER-CAP. WILLIAM H. MILLER and ROBERT W. MILLER, Henry Clay, Del. Filed May 7, 1901. Serial No. 59,170. (No model.)

Claim.—1. An attachment for gas or vapor burners, comprising a tube or nipple, and an inner conical ring having elongated lateral openings or spaces for the escape of gas or vapor against the inner surface of said nipple, the wider portion of the ring fitting the nipple snugly and the walls of said openings being beveled, substantially as described.

2. An attachment for gas or vapor burners, comprising a tube or nipple, and an inner conical ring closed at the top and having elongated lateral openings or spaces for the escape of gas or vapor against the inner surface of said nipple, the wider portion of the ring fitting the nipple snugly and the walls of said openings being beveled, substantially as described.

3. An attachment for gas or vapor burners, comprising a straight open-ended tube or nipple, an inner conical ring having vertically-elongated openings for the escape of gas or vapor against the inner surface of said nipple, and a deflector closing the upper end of the ring, the wider portion of the ring fitting the nipple snugly and the walls of said openings being beveled, substantially as described.

4. An attachment for gas or vapor burners, comprising a tube or nipple, and an inner conical ring closed at the top and provided with a depression or recess in the closure therefor, said ring also having elongated lateral openings the sides or walls of which are beveled, and the wider portion of the ring fitting the nipple snugly, substantially as described.

5. An attachment for gas or vapor burners, comprising a straight open-ended tube or nipple, and an inner conical ring, with the wider portion thereof snugly fitting said tube and formed with pendent ribs and intervening spaces, the vertical adjacent sides of said ribs being beveled inwardly, substantially as described.

6. An attachment for gas or vapor burners, comprising a straight open-ended tube or nipple, and an inner conical ring closed at the top and formed with pendent inclined ribs and intervening spaces, the vertical adjacent sides of said ribs being beveled inwardly and the closure for the ring being provided with a conical recess or depression in its upper surface, substantially as described.

7. An attachment for gas or vapor burners, comprising a tube or nipple, an inner conical ring with its under portion slidably fitting said tube, said ring having openings or spaces at the sides for the escape of gas or vapor against the inner surface of the tube, and a deflector closing the upper end of the ring and pendent within the latter, said deflector having in its upper part a recess or cavity.

8. An attachment for gas or vapor burners, comprising a tube or nipple, an inner ring having openings or spaces at the sides for the escape of gas or vapor against the inner surface of said tube, and a conical or tapering deflector closing the ring and pendent therein.

9. An attachment for gas or vapor burners, comprising a tube or nipple, an inner ring having openings or spaces at the sides for the escape of gas or vapor against the inner surface of said tube, and a conical or tapering deflector closing the ring and pendent therein, said deflector having a conical recess or cavity.

10. An attachment for gas or vapor burners, comprising a tube or nipple, a removable inner ring fitting therein and having oblique openings or spaces at the sides for the escape of gas or vapor against the inner surface of said nipple, and a deflector fitting within said ring.

11. An attachment for gas or vapor burners, comprising a tube or nipple, an inner ring having openings or spaces at the sides thereof for the escape of gas against the inner surface of said nipple, and provided interiorly with a flange, and a deflector within the ring against said flange.

12. An attachment for gas or vapor burners, comprising a tube or nipple, an inner ring having oblique openings or spaces at the sides thereof, and provided interiorly with a flange, and a conical deflector fitting within the ring against the flange, said deflector closing the upper end of said ring.

13. An attachment for gas or vapor burners, comprising a tube or nipple, a conical ring fitted therein having side openings or spaces for the escape of gas or vapor against the inner surface of said nipple, and means for closing the upper end of the ring.

14. An attachment for gas or vapor burners comprising a tube or nipple, an inner conical ring having oblique side openings or spaces for escape of the gas or vapor against the inner surface of said tube, and means for closing the upper end of said ring, substantially as described.

15. An attachment for gas or vapor burners comprising a tube or nipple, an inner conical ring having elongated inclined and oblique openings therein for escape of the gas or vapor against the inner surface of said tube, and means for closing the upper end of said ring, substantially as described.

16. An attachment for gas or vapor burners, comprising a tube or nipple, a conical ring therein having oblique openings or spaces in its sides for the escape of gas against the inner surface of said nipple, and a deflector within the ring.

17. An attachment for gas or vapor burners, comprising a tube or nipple, and a conical ring therein having a series of pendent fingers or ribs forming side openings or spaces, the sides of the said fingers or ribs being tangential to the ring and the ribs themselves being spirally disposed or circumferentially inclined with respect thereto.

18. An attachment for gas or vapor burners, comprising a tube or nipple, a conical ring therein having ribs or fingers forming openings or spaces, the sides of which are tangential to the ring, said ribs being spirally arranged or inclined circumferentially, and a deflector closing the upper end of the ring.

19. An attachment for gas or vapor burners, comprising a tube or nipple, a conical ring therein having fingers forming side openings or spaces of gradually-increasing width toward the bottom, the sides of said openings or spaces being tangential to the ring and said fingers being spirally disposed or inclined circumferentially, and means for closing the upper end of the ring, said means having a conical cavity or recess therein.

20. An attachment for gas or vapor burners, comprising a tube or nipple, a conical ring closely fitting therein and constructed circumferentially with pendent ribs or fingers having intervening spaces, and tapering toward their lower ends and beveled or tapered inwardly at the sides, and a deflector closing the upper end of the ring.

704,654. VALVE. SAMUEL B. MOFFITT and CHARLES O. WEINSHEIMER, Sharon, Pa. Filed Apr. 24, 1902. Serial No. 104,553. (No model.)

Claim.—A valve-casing, comprising concentric shells spaced apart to form an annular water-chamber and having a series of ports and transverse partitions located between said shells and forming a water-tight joint at the ports and coextensive with the length of the ports, heads secured to said shells and spaced apart to form water-chambers at the ends of the valve-casing, a pipe communicating with the upper portion of the water-chamber at one end of the valve-casing, a pipe communicating with the lower portion of the water-chamber at the same end of the valve-casing and with the lower portion of the annular water-chamber, a pipe communicating with the upper portion of the annular water-chamber at the opposite end of the valve-casing and with the upper portion of the water-chamber at the same end of the valve-casing, and an escape-pipe leading from the lower portion of the last-named water-chamber, substantially as set forth.

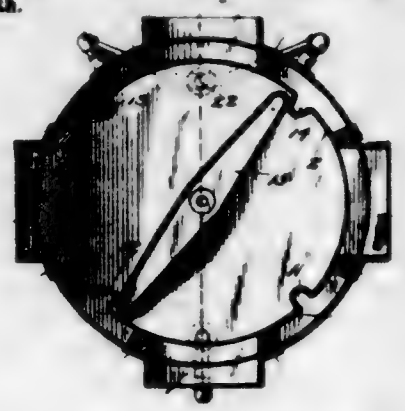

704,655. BICYCLE-LOCK. HENRY W. MORGAN, Lesterahire, N. Y. Filed Aug. 1, 1901. Serial No. 70,522. (No model.)

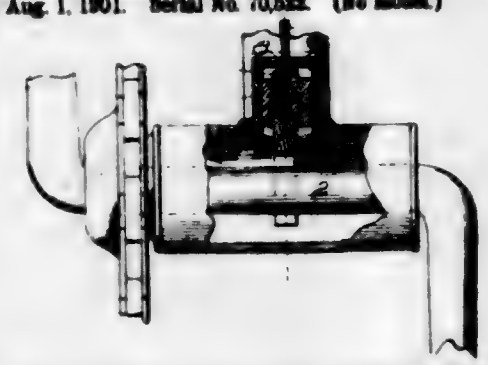

Claim.—In a bicycle or like machine, and in combination with the crank-hanger and crank-shaft, locking means located in the plane of the frame and comprising a pin fitted in a transverse opening of the crank-shaft and having its end portions extended, a casing secured to the crank-hanger in the angle formed between the front and rear reach-bars, an internally-threaded tube secured within the casing, a lock-bolt having screw-thread connection with the said tube, and a plate rotatably fitted in the outer end of the casing and having a keyhole in line with the said lock-bolt for the insertion of a key for projecting the lock-bolt into the path of an extended end of the aforesaid pin or for withdrawing said lock-bolt out of the path of the said pin, substantially as and for the purpose specified.

704,656. STOP-BOX. RANDOLF MCBEE, Washington, D. C. Filed Jan. 7, 1902. Serial No. 88,812. (No model.)

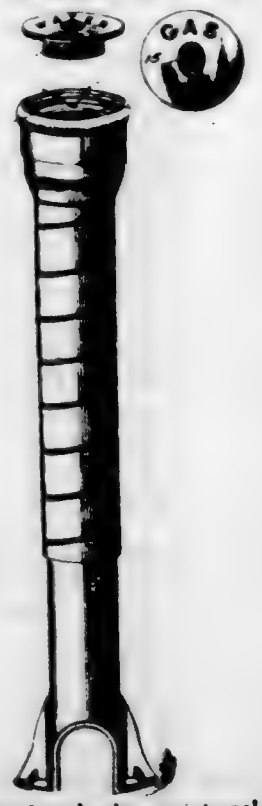

Claim.—1. A stop-box having an internal horizontal supporting-flange recessed upon its upper face, a ring removably supported in said recess against rotary and outward movement, and a cap having a depend-

ing screw-threaded portion screwed into said ring, substantially as described.

2. A stop-box having a flange with recess with enlargements, a ring independent of the box and having projections fitting said enlargements, means for detachably securing the ring in position, and a cap or cover having a depending screw-threaded portion to engage the threads of the ring, substantially as described.

3. As an improved article of manufacture, the stop-box herein described, the same comprising the box proper having enlargement at its outer end, an internal angular horizontal flange within said enlargement and having a recess upon its outer face with diametrically-disposed enlargements, a screw-threaded ring supported on said flange and having projections fitting said enlargements, means detachably securing said ring in position with its upper face flush with the upper face of the flange, and a cap or cover having screw-threaded depending portion engaged with the threads of the ring, the screw-threaded engaging portion, being of different metals, one of which is non-corrodible, substantially as described.

704,657. JOIST-BORING TOOL. STEPHEN MCCLELLAN, Brooklyn, N. Y. Filed Sept. 10, 1901. Serial No. 75,075. (No model.)

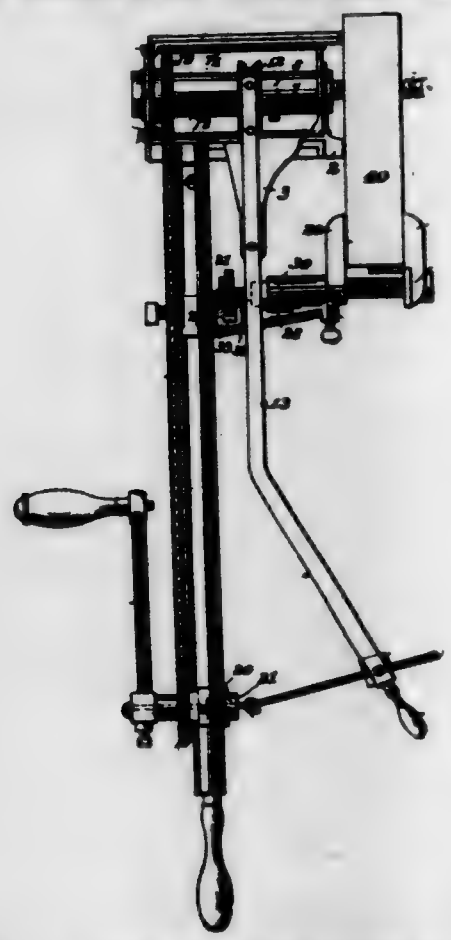

Claim.—1. A joist-boring machine, consisting of a rod; a rectangular frame secured on one end of said rod; said frame having through its end pieces perforations; a hollow slotted cylinder, journaled in the perforations of said end pieces; collars secured on said cylinder, preventing it from slipping to the right or left; a perforated grooved wheel encircling said cylinder and adapted to be moved longitudinally on said cylinder; a chuck situated inside of said cylinder, and adapted to be moved longitudinally therein, and to carry a boring device; screws passing through the perforations in the grooved wheel, through the slots in the slotted cylinder, and into the chuck, securing said chuck rigidly to said grooved wheel; fulcrum-arms secured to, and extending below the frame; a double lever fulcrumed to said arms, its upper ends, one passing up on one edge of said grooved wheel, and the other on the other edge thereof; pins secured in the upper ends of said double lever, and working in the groove of said wheel, the lower end of said lever extending downwardly and within reach of the operator; a sprocket-wheel rigidly secured on one end of said cylinder; a sleeve situated on said rod, near its lower end; a shaft journaled in said sleeve and rod; sprocket-wheel rigidly secured on said shaft; a sprocket-chain working on said sprocket-wheels; a crank-handle secured to the end of last-mentioned shaft, with means for securing the said machine to the joist, substantially as shown and described and for the purposes set forth.

2. A joist-boring machine, consisting of a rod; a rectangular frame secured on one end of said rod; said frame having through its end pieces perforations; a hollow slotted cylinder, journaled in the perforations of said end pieces; collars secured on said cylinder, preventing it from slipping to the right or left; a perforated grooved wheel encircling said cylinder and adapted to be moved longitudinally on said cylinder; a chuck situated inside of said cylinder, and adapted to be moved longitudinally therein, and to carry a boring device; screws passing through the perforations in the grooved wheel, through the slots in the slotted cylinder, and into the chuck, securing said chuck rigidly to said grooved wheel; fulcrum-arms secured to, and extending below the frame; a double lever fulcrumed to said arms, its upper ends, one passing up on one edge of said grooved wheel, and the other on the other edge thereof; pins secured in the upper ends of said double lever, and working in the groove of said wheel, the lower end of said lever extending downwardly and within reach of the operator, and adapted to be operated by any suitable means; a sprocket-wheel rigidly secured on one end of said cylinder; a sleeve situated on said rod, near its lower end; a shaft journaled in said sleeve and rod; sprocket-wheel rigidly secured on said shaft; a sprocket-chain working on said sprocket-wheels; a crank-handle secured to the end of last-mentioned shaft, with means for securing the said machine to the joist, substantially as shown and described and for the purposes set forth.

3. A joist-boring machine, consisting of a rod; a rectangular frame secured on one end of said rod; said frame having through its end perforations; a hollow slotted cylinder, journaled in the perforations of said end pieces; collars secured on said cylinder, preventing it from slipping to the right or left; a perforated grooved wheel encircling said cylinder and adapted to be moved longitudinally on said cylinder; a chuck situated inside of said cylinder, and adapted to be moved longitudinally therein, and to carry a boring device; screws passing through the perforations in the grooved wheel, through the slots in the slotted cylinder, and into the chuck, securing said chuck rigidly to said grooved wheel; fulcrum-arms secured to, and extending below the frame; a double lever fulcrumed to said arms, its upper ends, one passing up on one edge of said grooved wheel, and the other on the other edge thereof; pins secured in the upper ends of said double lever, and working in the groove of said wheel, the lower end of said lever extending downwardly and within reach of the operator, and a force-spring, adapted to feed the same; a sprocket-wheel rigidly secured on one end of said cylinder; a sleeve situated on said rod, near its lower end; a shaft journaled in said sleeve carrying a sprocket-wheel; a sprocket-chain working on said sprocket-wheels; a crank-handle secured to the end of the last-mentioned shaft, with means for securing the said machine to the joist, substantially as shown and described and for the purposes set forth.

4. In combination with a joist-boring machine, a sleeve vertically adjustably secured on the main rod below the boring device; an arm extending from said sleeve at right angle to said rod, and having a vertical projection extending from the outer end of said arm; an internally-threaded cylinder adapted to move back and forward in said arm, and having extending upwardly from its outer end a projection, corresponding to first-mentioned projection; said projections adapted to grasp and hold between them a joist; a threaded screw bearing a knurled nut journaled in the bearing of the first-mentioned arm, and turning in the cylinder; a thumb-screw working up through a threaded perforation in the first-mentioned arm, its point entering a longitudinal groove in last-mentioned cylinder, substantially as shown and described and for the purposes set forth.

5. In combination with a joist-boring machine, a sleeve vertically adjustably secured near the lower end of the rod; a shaft working horizontally through said sleeve; a threaded nut swiveled in the lower end of a double lever; a threaded rod working through said threaded nut, one end being swiveled to the adjacent end of the shaft; a ratchet-crank secured to the other end of said shaft, whereby said shaft and said last-mentioned rod may be rotated and the lower end of said double lever moved back or forward, substantially as shown and described and for the purposes set forth.

704,658. STILT. DENNISON MCDONOUGH, Eau Claire, Wis. Filed July 8, 1901. Serial No. 67,051. (No model.)

Claim.—1. A stilt comprising a standard, a step, and a resilient approximately U-shaped foot-engaging clip connected at its outer end to the step and curved upward and inward over the step and having its inner end free inclined downward and inward toward the inner end of the step and terminating at a point adjacent to the same in position for engaging the foot, substantially as described.

2. A stilt comprising a standard provided at intervals with recesses and having openings located between the ends of the same, a step having its inner end fitted in one of the recesses, said step being provided with a longitudinal bore registering with the adjacent opening of the standard, a foot-engaging clip having an opening arranged at the outer end of the bore of the step, and a continuous elongated bolt extending entirely through the bore of the step and passing through the openings of the clip and the standard and securing the step in its adjusted position to the standard and also fastening the clip to the step, substantially as described.

3. A stilt comprising a standard provided at intervals with horizon-

tal recesses and having openings, an adjustable step consisting of a horizontal bar provided with a longitudinal bore to register with the said openings and having its inner end enlarged and bifurcated vertically and recessed horizontally at the bottom of the bifurcation, said bifurcation forming parallel side flanges for embracing the sides of the standard and the recess at the bottom of the bifurcation forming shoulders for engaging the said standard, and a continuous elongated bolt passing entirely through the bore of the step and through one of the openings of the standard and holding the step interlocked with the standard, substantially as described.

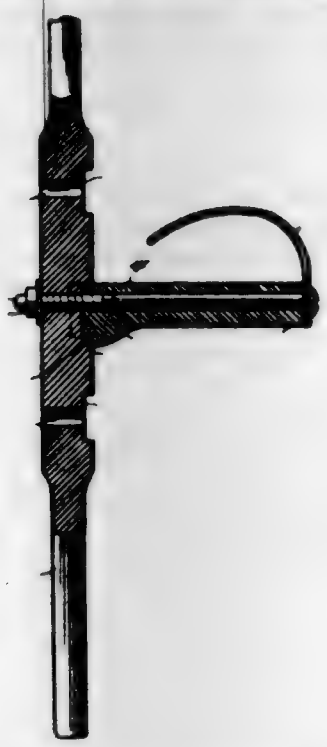

704,659. WRENCH. WALTER WELSON, Bridgeport, Conn. Filed Mar. 20, 1902. Serial No. 99,074. (No model.)

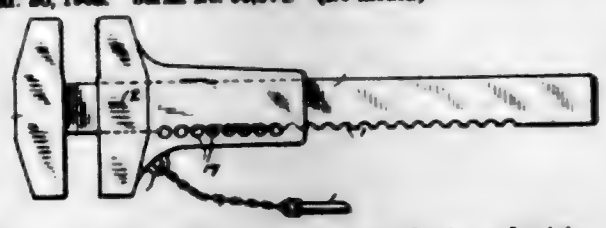

Claim.—1. A wrench comprising a shank having a fixed jaw and a series of recesses and a sliding jaw having a series of holes differing from the recesses in distance from center to center, either of said holes being adapted to register with one of the recesses.

2. A wrench comprising a shank having a fixed jaw and a series of recesses, and a sliding jaw having a series of holes, either of which is adapted to register with a recess, said recesses differing from the holes in distance from center to center.

3. A wrench comprising a shank having a fixed jaw and a series of recesses, a sliding jaw having a corresponding series of holes differing from the recesses in distance from center to center, and a pin adapted to register with either hole and either of the recesses.

704,660. PORTABLE BAKE-OVEN. JOHN HINTON, Tacoma, Wash. Filed July 29, 1901. Serial No. 70,175. (No model.)

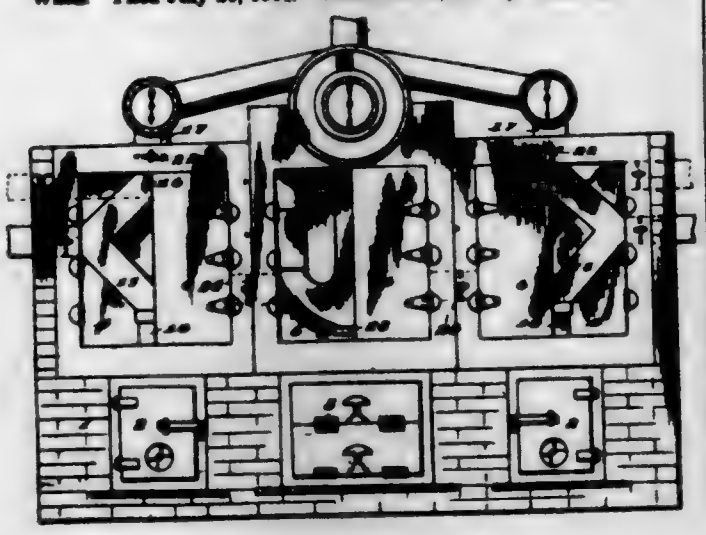

Claim.—1. An oven, comprising in its construction baking-compartments, mounted above suitable fire-boxes, a baking-compartment interposed between the compartments above the fire-boxes, means for permitting communication of heat directly between all of said compartments, and means for conducting products of combustion from said fire-boxes through the interposed baking-compartment, substantially as described.

2. In an oven, the combination with a suitable support, forming a fire-box, of a baking-compartment mounted above the same, a pipe for conducting the products of combustion leading from the fire-box into the baking-compartment, bifurcated and extending in divergent lines, and then converging and being reunited, and extending beyond the baking-compartment, a second baking-compartment arranged at the side of the first-mentioned compartment, and means for leading the products of combustion from said pipe through said last-mentioned compartment for heating the same, substantially as described.

3. In an oven, the combination with a suitable support, forming fire-boxes, of baking-compartments mounted above said fire-boxes, a baking-compartment interposed therebetween, pipes leading from said fire-boxes for conducting the products of combustion, extending into said first-mentioned baking-compartments, and then extending into said second-mentioned baking-compartment and converging into a single pipe and extending outside the same, substantially as described.

4. In an oven, the combination with a suitable support forming fire-boxes, baking-compartments formed above said fire-boxes, a baking-compartment interposed therebetween, a pipe leading from each of said fire-boxes into its respective baking-compartment, the said pipe continuing above said baking-compartment, a pipe leading from each of said combustion-directing pipes within the respective baking-compartments and into the interposed baking-compartment, and then extending beyond the same, dampers arranged in the pipes leading into said interposed baking-compartment, whereby the products of combustion may be directed through the pipes within the said interposed compartment or be prevented from passing therethrough, substantially as described.

5. In a baking-oven, the combination with a suitable support, and fire-boxes, of a baking-compartment arranged above each of the fire-boxes, a baking-compartment interposed therebetween, a pipe leading from each of said fire-boxes through its respective baking-compartment and beyond the same, for conducting the products of combustion, a damper arranged in said pipe, a pipe communicating with each of said combustion-conducting pipes below the damper thereof and leading into said interposed chamber, the last-mentioned pipes converging and extending outside said last-mentioned chamber, and a damper arranged in each of the said last-mentioned pipes, substantially as described.

6. In an oven, the combination with a suitable support and fire-boxes, of a warming-compartment arranged between said fire-boxes, a baking-compartment arranged above each of said fire-boxes, a combustion-conducting pipe leading from each of said fire-boxes to its respective baking-compartment, each of the said pipes being bifurcated and extending in diverging lines and again extending in converging lines and forming a single pipe leading outside its respective baking-compartment, whereby a rhombus or diamond-shaped structure is formed in the oven, a pipe extending laterally from the upper corner of each of said diamonds, a pipe extending laterally approximately from the central corner to each of said diamonds, the two pipes of each respective oven converging into a single pipe within the interposed oven and the two pipes formed thereby converged into a single pipe, said pipe leading outside the interposed oven, a damper arranged in the upper portion of the pipe of each of the first-mentioned baking-compartments above the diamond thereof, and a damper arranged in each of the laterally-extending pipes, substantially as described.

704,661. ARTICLE-LIFTING DEVICE. FRANK G. NEUHARD, Paterson, N. J. Filed Mar. 4, 1902. Serial No. 96,657. (No model.)

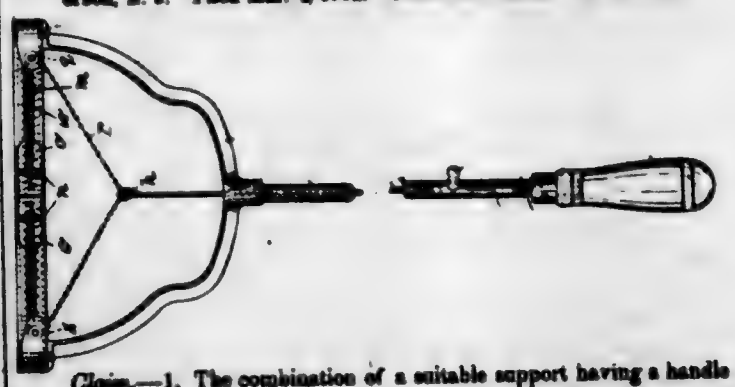

Claim.—1. The combination of a suitable support having a handle at one end thereof, a casing arranged near the other end of said support, clips arranged to slide in said casing toward each other, springs pressing said clips toward each other, and means for moving said clips against the tension of their springs, substantially as described.

2. The combination of a hollow staff or pole, a handle arranged at one end of said pole, a pair of clips movable toward each other, mounting means for the clips carried by said pole at the other end thereof, springs pressing said clips toward each other and carried by said mounting means, and means for moving said clips against the tension of their springs, said means comprising a slide arranged in said staff, substantially as described.

704,662. PROCESS OF PRODUCING OXIDIZED MILK-ALBUMEN. ERNESTON OPPENHEIMER, Berlin, Germany. Filed Dec. 26, 1901. Serial No. 87,253. (No specimens.)

Claim.—1. A process for making oxidized milk-albumen, which consists in treating casein with magnesium peroxid, substantially as set forth.

2. A process for making oxidized milk-albumen, which consists in mixing casein with water and then treating it with magnesium peroxid, substantially as set forth.

3. A process for making a preservative coating, which consists in treating casein with magnesium peroxid, and adding glycerin and cocoa-butter to render the coating more elastic, substantially as set forth.

704,663. TWO-SPEED DRIVING-GEAR FOR CYCLES. ALFRED PELLATT, London, England, assignor to The Hub Two Speed Gear Company, Limited, Salford, England. Filed June 28, 1901. Serial No. 66,088. (No model.)

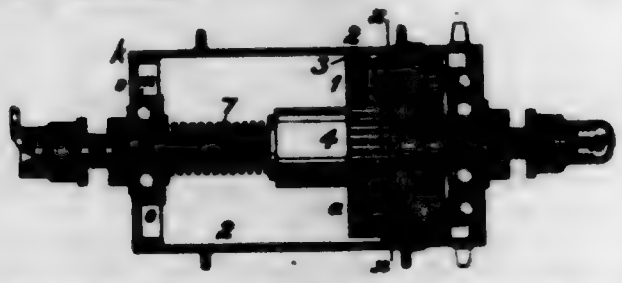

Claim.—In a two-speed gear for cycle-wheels the combination with the hub 2 provided with internal teeth 3, the spindle 7 provided with teeth 8, and the loose gear-pinion 6 on the spindle of the sliding clutch formed of two parts *a* and *b*, the outer ring *a* provided with external teeth engaging with teeth 3 on the hub, pawls *c* pivoted thereto, and the inner part *b* provided with external ratchet-teeth *d* with which the pawls engage and internal teeth to engage the pinion 6 or teeth 8 on the spindle and the sliding clutch-sleeve 4 substantially as described.

704,664. ACETYLENE-GAS GENERATOR. PAUL B. PERETTI, Los Angeles, Cal. Filed Apr. 26, 1901. Serial No. 57,575. (No model.)

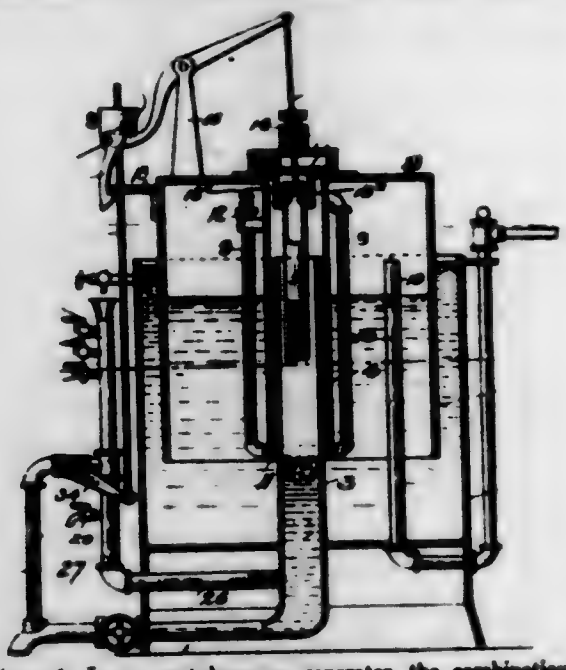

Claim.—1. In an acetylene-gas generator, the combination of a water-tank, a movable bell or gas-holder, telescoping tubes in the tank and gas-holder coöperating to form a generating-chamber, a lever mounted upon the bell, a carbid-holder suspended in the generating-chamber from said lever, a catch carried by the lever, a projection upon the bell adapted to be engaged by said catch, and means whereby upon the elevation of the bell to its extreme limit the lever is operated to raise the carbid-holder above the level of the water in the generating-chamber and to bring the catch into engagement with said projection to lock the lever to hold said carbid-holder raised, substantially as described.

2. In an acetylene-gas generator, the combination of a water-tank, a bell movably mounted therein, tubes arranged within the tank and bell and telescoping to form a generating-chamber, a valved draw-off pipe connected with the generating-chamber, a feed and discharge pipe also connected with the generator and having a valve therein, an emergency exhaust-pipe connected with said feed and discharge pipe, means for drawing water from the tank and supplying it to said feed and discharge pipe, a carbid-holder suspended within the generating-chamber, a lever pivoted to the bell and having a short arm connected with said holder, a catch upon the free end of the locking-arm of the lever to engage the bell when the latter moves to the limit of its upward movement, a rod connected with the valve in said discharge and feed pipe, and a contact-piece on said rod adapted to be engaged by the long arm of the lever, substantially as described.

704,665. CONTROLLING APPARATUS FOR ELECTRIC MOTORS. WALTER J. RICHARDS, Milwaukee, Wis., assignor to Niels A. Christensen, Milwaukee, Wis. Filed Nov. 16, 1901. Serial No. 82,518. (No model.)

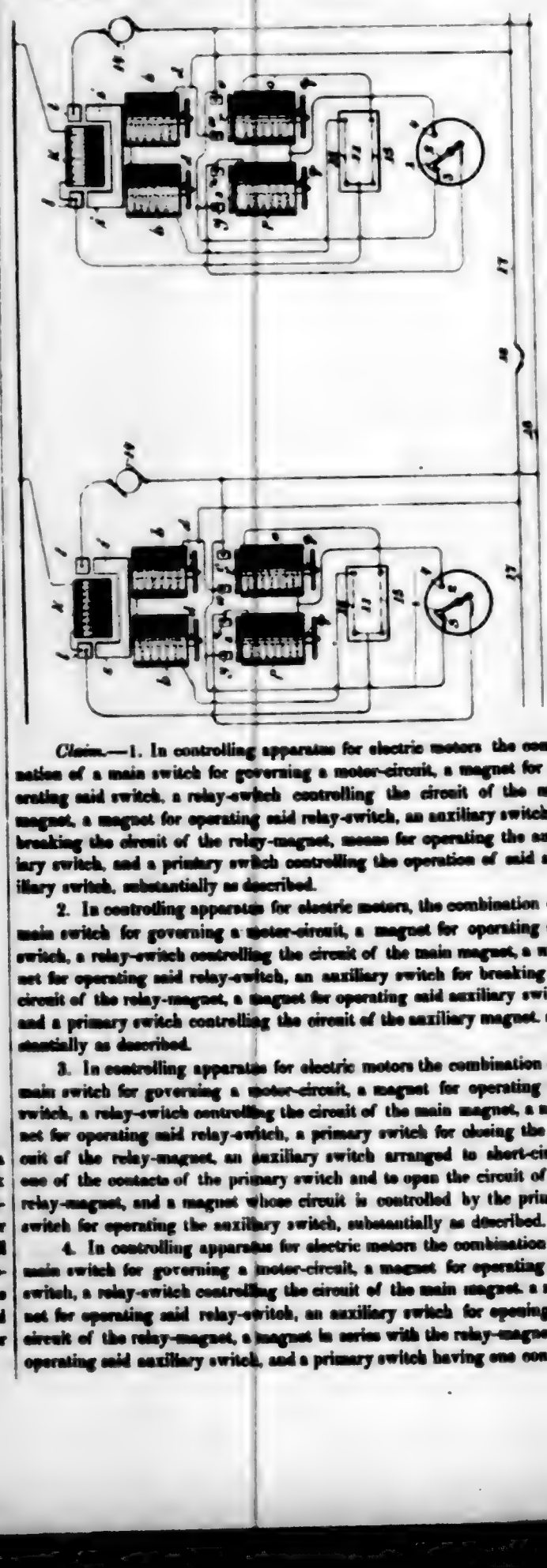

Claim.—1. In controlling apparatus for electric motors the combination of a main switch for governing a motor-circuit, a magnet for operating said switch, a relay-switch controlling the circuit of the main magnet, a magnet for operating said relay-switch, an auxiliary switch for breaking the circuit of the relay-magnet, means for operating the auxiliary switch, and a primary switch controlling the operation of said auxiliary switch, substantially as described.

2. In controlling apparatus for electric motors, the combination of a main switch for governing a motor-circuit, a magnet for operating said switch, a relay-switch controlling the circuit of the main magnet, a magnet for operating said relay-switch, an auxiliary switch for breaking the circuit of the relay-magnet, a magnet for operating said auxiliary switch, and a primary switch controlling the circuit of the auxiliary magnet, substantially as described.

3. In controlling apparatus for electric motors the combination of a main switch for governing a motor-circuit, a magnet for operating said switch, a relay-switch controlling the circuit of the main magnet, a magnet for operating said relay-switch, a primary switch for closing the circuit of the relay-magnet, an auxiliary switch arranged to short-circuit one of the contacts of the primary switch and to open the circuit of the relay-magnet, and a magnet whose circuit is controlled by the primary switch for operating the auxiliary switch, substantially as described.

4. In controlling apparatus for electric motors the combination of a main switch for governing a motor-circuit, a magnet for operating said switch, a relay-switch controlling the circuit of the main magnet, a magnet for operating said relay-switch, an auxiliary switch for opening the circuit of the relay-magnet, a magnet in series with the relay-magnet for operating said auxiliary switch, and a primary switch having one contact-

piece connected with the circuit between the auxiliary and relay magnets and another contact-piece connected with the other terminal of the auxiliary magnet for short-circuiting the auxiliary magnet, substantially as described.

5. In controlling apparatus for electric motors the combination of a main switch governing a motor-circuit, a magnet for operating said switch, a relay-switch controlling the circuit of the main magnet, a magnet for operating the relay-switch, a primary switch having minimum and maximum pressure contact-pieces, an auxiliary switch in a shunt or branch circuit in parallel with the minimum-pressure contact of the primary switch and in series with the relay-magnet, and a magnet controlled by the primary switch for operating the auxiliary switch, substantially as described.

6. In controlling apparatus for electric motors the combination of a main switch governing the motor-circuit, a magnet for operating said switch, a relay-switch controlling the circuit of the main magnet, a magnet for operating said relay-switch, a primary switch having minimum and maximum pressure contact-pieces, an auxiliary switch in a short circuit around the minimum-pressure contact-piece, and a magnet for operating said auxiliary switch in series with the relay-magnet, substantially as described.

7. In controlling apparatus for electric motors the combination of a main switch governing the motor-circuit, a magnet for operating said switch, a relay-switch controlling the circuit of the main magnet, a magnet for operating said relay-switch, an auxiliary switch, a magnet for operating said switch, and a primary switch provided with minimum and maximum pressure contact-pieces, one contact-piece of the auxiliary switch being connected with one of the main conductors and with the minimum-pressure contact-piece of the primary switch, another contact-piece of said auxiliary switch being connected with one terminal of the auxiliary magnet and with a third contact-piece of the primary switch, one terminal of the relay-magnet being connected with the other main conductor and the remaining terminals of the auxiliary and relay magnets being connected with each other and with the maximum-pressure contact-piece of the primary switch, substantially as described.

8. In controlling apparatus for electric motors arranged in a multiple-unit system the combination of main switches governing the several motor-circuits, magnets for operating said switches, relay-switches for controlling the circuits of the main magnets, magnets for operating said relay-switches, primary switches controlling the circuits of the relay-magnets, auxiliary switches for opening the circuits of the relay-magnets, magnets whose circuits are controlled by the primary switches for operating the auxiliary switches, and an equalizing-conductor connecting the several controllers of the system between the main magnets and one of the main conductors, substantially as described.

9. In controlling apparatus for electric motors the combination with a suitable support of two insulated contact-pieces yieldingly connected with said support, two electrically-connected contact-pieces carried by a lever which is fulcrumed to said support, a solenoid-magnet having a vertically-movable plunger connected with said lever and arranged to throw its contact-pieces into engagement with said yielding and insulated contact-pieces when said magnet is energized, relay and auxiliary plunger-magnets mounted on said support and having vertically-movable plungers provided with contact-plates, a pair of insulated contact-pieces yieldingly mounted in the path of each contact-plate, and a primary switch controlling said relay and auxiliary magnets, substantially as described.

10. In controlling apparatus for electric motors the combination with a suitable base or support of two insulated contact-pieces yieldingly connected with said support, two electrically-connected contact-pieces mounted on a lever which is fulcrumed to said support, a solenoid-magnet whose plunger is connected with said lever and adapted when the magnet is energized to carry the movable contact-pieces into engagement with the yielding contact-pieces, relay and auxiliary magnets mounted on said base or support and having plungers provided with contact-plates, a pair of insulated contact-pieces yieldingly connected with each of said magnets, and a primary switch also mounted on said base or support and comprising two insulated contact-pieces, a pivoted contact-arm, and a curved tube connected with said contact-arm and having a fluid-pressure connection, substantially as described.

11. In controlling apparatus for electric motors the combination with a suitable base of a blow-out magnet mounted thereon, a pair of insulated contact-pieces yieldingly mounted on said magnet adjacent to its poles, a forked lever fulcrumed to said base and provided with two electrically-connected contact-pieces which are adapted to be engaged with and disengaged from said yielding contact-pieces by the vertical movement of said lever, two solenoid-magnets mounted on said base and having vertically-movable plungers provided with spring-catches for detachable engagement with said lever, relay and auxiliary magnets also mounted on said base and having vertically-movable plungers which are provided with insulated contact-plates, spring-retracted insulated arms pivotally mounted in pairs on said relay and auxiliary magnets, contact-pieces carried by said arms in the paths of said plates, and a primary switch controlling said relay and auxiliary magnets, substantially as described.

12. In controlling apparatus for electric motors the combination with a suitable base of a blow-out magnet mounted thereon, a pair of insulated contact-pieces yieldingly mounted upon said magnet adjacent to its poles, a forked lever fulcrumed to said base and provided with two electrically-connected contact-pieces adapted to be engaged with said yielding contact-pieces, two magnets mounted on said base and having plungers provided with spring-catches for detachable engagement with the arms of said lever, relay and auxiliary magnets also mounted on said base and having plungers provided with insulated contact-plates, spring-retracted pivoted arms mounted upon said relay and auxiliary magnets and insulated from each other, contact-pieces carried by said arms in position to be electrically connected by said plates when said magnets are energized, and a primary switch mounted on said base and comprising insulated minimum and maximum pressure contact-pieces, a pivoted contact-arm and a curved spring-tube connected with said arm and provided with a fluid-pressure connection, substantially as described.

704,666. CAMERA-SUPPORT. JOHN R. STEPHENS, Portland, Oreg. Filed Nov. 15, 1901. Serial No. 82,487. (No model.)

Claim.—1. In a camera-support, a main frame, a folding member provided with a penetrative point, means for clamping and releasing said folding member, and means for securing, clamping and releasing a camera or like instrument to said frame, substantially as specified.

2. In a camera-support, a main frame, provided with elastic extensions 8, 9, a clamping-screw therethrough, a folding member provided with a penetrative point secured between said elastic extensions, and a clamping-screw for securing a camera or like instrument to said frame, substantially as specified.

3. In a camera-support, a main frame having its periphery of trough-like form in section, to reduce weight while retaining strength, the inturned edges thereby forming flat bearing-surfaces on both sides for supporting the instrument thereon, and provided with a folding member, having a penetrative point, with means for clamping and releasing said folding member, substantially as specified.

4. In a camera-support, a main frame having its periphery made trough-like in section and provided with elastic extensions, a folding member adjustably secured between said extensions, said folding member provided with means for securing it to a penetrable substance, such as wood, a revolvable stem 14 within said frame, and a clamping-screw for securing a camera or like instrument to the frame, held in said revolvable stem, whereby it is capable of being folded within the thickness of the frame when not in use, substantially as specified.

5. In a camera-support, a main frame, a revolvable stem fitted within said frame, having a squared section thereon, a clamping-screw held in the revolvable stem, for securing a camera or like instrument to the frame, and a spring pressing on the squared section of the revolvable stem, whereby the said clamping-screw is retained either in the erect position when in use, or in the folded position when not in use, substantially as specified.

704,667. HANGER FOR WINDOW-SCREENS. ARTHUR L. TABER, Corona, Cal. Filed Oct. 30, 1901. Serial No. 80,554. (No model.)

Claim.—The hanger comprising the longitudinally-adjustable threaded pintle provided with an upwardly-extending arm and adapted to be screwed into and out of a window to adjust the hanger, and the leaf or

plate provided at the top with an eye receiving the pintle, said leaf or plate being bent at the lower portion of the eye to outwardly offset the same from the body portion of the leaf or plate to enable a window-screen to fit within a window-frame and to prevent the leaf or plate from becoming accidentally disengaged from the pintle, substantially as and for the purpose described.

704,668. COMPUTING-SCALE. CORNELIUS T. TIPTON, Elizabethton, Tenn. Filed July 8, 1901. Serial No. 67,402. (No model.)

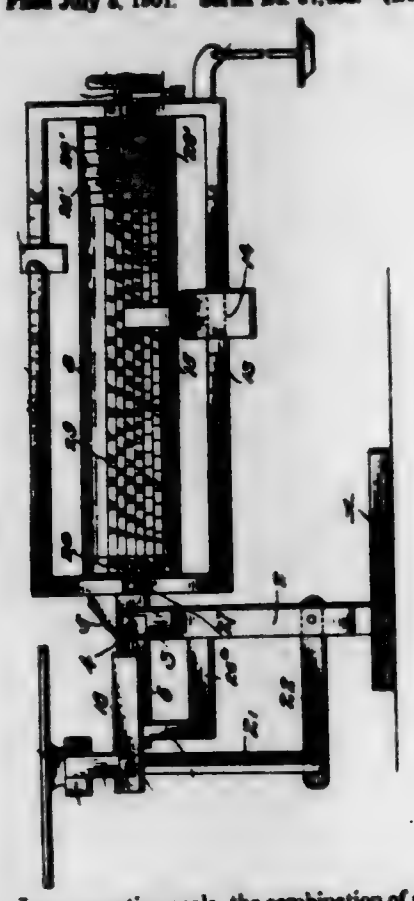

Claim.—1. In a computing-scale, the combination of a base, a standard rising therefrom and bifurcated at its upper end and carrying open bearings, an oscillating bar provided with trunnions mounted in said bearings, an open rectangular frame mounted upon the rear end of said bar and forming a scale-beam, a computing-cylinder mounted in said frame, a poise slidable on the frame, an indicator on the frame coöperating with the poise and the indice-numerals on the cylinder, an open horizontal supporting-frame upon the front end of the bar and provided with trunnions, a cross-bar provided with depending posts having open bearings to receive said trunnions, a pan-supporting rod provided at its upper end with a pin passing through said cross-bar, a scale pan or plate having a socket to receive said pin, and a link connecting the lower end of said rod to the standard, substantially as described.

2. In a computing-scale, the combination with a scale-beam, and a poise provided with a pointer, of a computing-cylinder rotatably mounted in said beam, and carrying a main computing-scale and an auxiliary computing-scale, the main computing-scale having price-per-pound numerals and cost-price numerals arranged in regular progression and within determined limits, and the auxiliary scale having price-per-pound numerals and cost-price numerals arranged in multiples in proper progression, a pointer on the beam coöperating with the poise and the main-scale numerals on the cylinder, and a bar carrying pound-indices supported by the beam and coöperating with the auxiliary scale, substantially as described.

704,669. CRUDE-OIL BURNER. HOLLINS G. TUCKER, Hereford, Tex., assignor of one-half to Reuben H. Berton, Hereford, Tex. Filed Jan. 31, 1902. Serial No. 92,063. (No model.)

Claim.—1. A crude-oil burner comprising a fire-pan forming a vessel to contain oil, having means to admit air thereto and an inturned flange extending around and partially covering the same, and a removable flame-spreader having downwardly-converging sides, said flame-spreader being supported in the said fire-pan, disposed within the opening formed by and with its sides in proximity to the inturned flange thereof and having supporting-legs which bear on the bottom of the fire-pan, substantially as described.

2. A crude-oil burner comprising a fire-pan forming a vessel to contain oil, having outwardly-flared sides, perforated for the admission of air, and an inturned flange extending inwardly from the flared sides of the pan, and partially covering the same, and a flame-spreader with downwardly-converging sides, supported in the fire-pan and extending through the opening formed by the inturned flange, and in proximity to said flange, substantially as described.

704,670. ELECTRICAL CONNECTOR. ALBERT J. WAYMAN, Dubois, Pa. Filed Jan. 16, 1902. Serial No. 89,984. (No model.)

Claim.—1. A device of the class described comprising a base having slots in its sides, clamping-plates each including spaced members and a connecting-web and having one member disposed in a slot and the other member disposed against the under face of the base, a retaining-screw passed through the base and engaged with both members of the plate, and means for holding a wire against the plate.

2. A device of the class described comprising a base, clamping-plates secured to the base and comprising spaced members and a connecting-web, one of said members having spaced openings and an intervening web, a clip including a hook having its stem passed through one of the openings and its bill engaged with the other opening, the bight of the hook lying transversely of the intervening web, and a clamping-screw passed through the second member and engaged with the hook for moving the bight of the hook toward the first member.

3. A device of the class described comprising a clamping-plate of spring metal including spaced members, one of said members having spaced openings and an intervening web, and a clip consisting of a hook having its stem engaged with one of the openings and its bill engaged with the other opening, the bight of the hook lying transversely of the web, and a screw passed through the second member and engaged with the hook to draw the bight in the direction of the web.

704,671. MOPPING DEVICE. HARMON F. ACKERMAN, Cleveland, Ohio. Original application filed May 13, 1901, Serial No. 60,104. Divided and this application filed Nov. 15, 1901. Serial No. 82,450. (No model.)

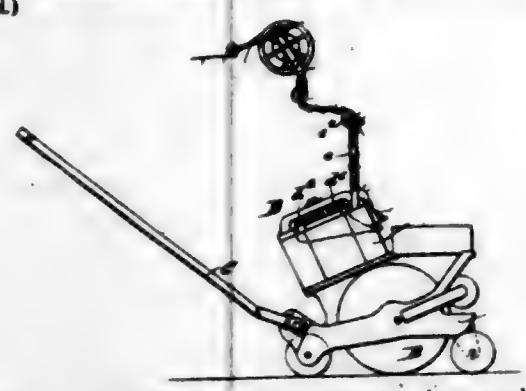

Claim.—1. In combination a reel adapted to have a cable coiled thereon, springs constraining said reel to coil said cable, and means for rotatably supporting said reel upon a vertical axis, substantially as set forth.

2. In combination, a reel adapted to have a cable coiled thereon, a bracket adapted to support said reel, springs constraining said reel so as to coil said cable, said bracket being supported upon a vertical axis and rotatable thereabout, substantially as set forth.

3. In combination, a standard, an arm rotatably mounted thereupon, a reel carried by said arm, and adapted to receive a cable, and a spring constraining said reel so as to coil said cable upon it, substantially as set forth.

4. In combination, a standard, an arm rotatable thereabout, a bracket rotatably mounted upon said arm, a reel rotatably mounted in said bracket, and adapted to carry a cable coiled thereon, and a spring constraining said reel so as to coil said cable, substantially as set forth.

5. In combination, a standard, a bracket carried thereby, and rotatable about a vertical axis, a reel carried by said bracket, said reel being adapted to have a cable led to and coiled thereon, a guide-bracket pivoted to said first bracket, and a guide-roller carried by said guide-bracket, substantially as set forth.

6. In combination, a standard, an arm rotatably mounted thereupon,

said arm having a collar adapted to be secured thereto, said standard and said collar having the one a stop and the other a finger adapted to contact therewith, substantially as set forth.

7. In mopping-machines, in combination, a movable and traveling mopping device, a motor supported thereby, a cable-reel carried thereon and rotatable in a vertical plane, automatic current-collecting devices interposed between said reel and motor, and a spring tending to coil said reel, substantially as set forth.

8. In an electrically-operated machine, a current-conductor reel, a standard therefor, a base-standard to receive the wheel-standard in pivoted relation thereto, and a movable stop secured to the wheel-standard, in combination with means on the base-standard for limiting the motion of the wheel-standard, substantially as set forth.

704,672. FOLDING RAILWAY-VELOCIPEDE. HENRY BARRY, San Francisco, Cal. Filed Sept. 26, 1901. Serial No. 76,473. (No model.)

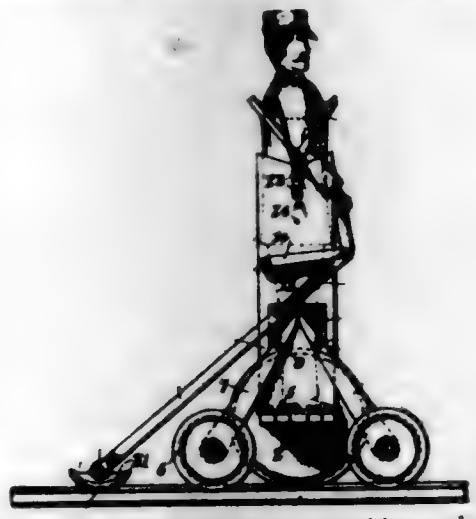

Claim.—1. A railway-velocipede, comprising a wheeled platform, a standard foldably connected to the platform, and operating means carried by the standard.

2. A railway-velocipede, comprising a wheeled platform, a standard hinged to one end of the platform and capable of being folded downwardly thereupon, and operating means carried by the standard.

3. A railway-velocipede, comprising a platform having a wheel at one end, a standard foldably connected to the opposite end of the platform, supporting-wheels carried by the standard, and operating means mounted upon the standard.

4. A railway-velocipede, comprising a platform, a supporting-wheel at one end thereof, a standard foldably connected to the opposite end of the platform, oppositely-inclined hangers pivotally connected to the standard, supporting-wheels carried by the hangers, and operating means mounted upon the standard.

5. A railway-velocipede, comprising a platform, a supporting-wheel at one end thereof, a standard foldably connected to the opposite end of the platform, a pair of forwardly and rearwardly inclined wheel-hangers pivoted intermediate of their ends to the standard, the upper ends of the hangers being constructed to mutually abut when the velocipede is set up for use, supporting-wheels carried by the hangers, and operating means mounted upon the standard.

6. A railway-velocipede, comprising a wheeled platform, a standard rising therefrom, operating means carried by the standard, and an arm-rest carried by the upper end of the standard.

7. A railway-velocipede, comprising a wheeled platform, a standard rising therefrom, operating means carried by the standard, and a forked arm-support upon the upper end of the standard and having a strap or bolt supported between the opposite members of the fork.

8. A railway-velocipede, comprising a wheeled platform, a standard rising therefrom, operating means, and an adjustable arm-rest carried by the standard.

9. A device of the character described, having an intermediately-pivoted endwise-movable push-rod, a link pivotally connected to the upper portion of the rod and also pivotally supported independently thereof, and a vertically-reciprocating operating device pivotally connected to the upper end of the push-rod.

10. In a railway-velocipede, the combination with a wheeled platform, of a standard rising therefrom, an endwise-movable push-rod inclined downwardly and rearwardly across the standard and provided with a longitudinal slot, a pivot carried by the standard and fitting loosely in the slot of the push-rod, a link having its rear end pivotally connected to the standard and its forward end pivotally connected to the upper end of the push-rod, and an upstanding handle pivotally connected to the push-rod at the point of connection thereof with the link.

11. In a railway-velocipede, the combination of a platform having a trunk-wheel at one end, a standard rising from the opposite end of the platform and hinged thereto, front and rear track-wheels carried by the standard, an endwise-movable and intermediately-pivoted push-rod carried by the standard and having its lower end provided with a friction-shoe, a vertically-reciprocating operating-handle connected to the upper end of the push-rod, and an arm-rest at the upper end of the standard.

704,678. CORDING-SEAL. EDWARD J. BROOKS, East Orange, N. J. Filed May 12, 1902. Serial No. 106,988. (No model.)

Claim.—1. A two-part seal-disk of sheet metal composed of a face-piece and a back piece, permanently united with each other by a circumferential joint, and constructed with inwardly-projecting prongs integral with said face-piece and back piece respectively, said back piece being further constructed with threading-holes arranged for the insertion therethrough of the ends of the sealing-cord between the prongs of the respective parts of the seal-disk.

2. The combination with a knotted sealing-cord of a two-part seal-disk composed of a face-piece and a back piece permanently united with each other by a circumferential joint and provided with threading-holes at opposite edges of the seal-disk, one of said threading-holes being common to both ends of the cord and adapted to admit the knot of the cord into the interior of the seal-disk, the seal-disk being further provided with inwardly-projecting prongs adapted to interlock with said knot of the cord when the seal-disk is press-fastened.

3. The combination with a knotted sealing-cord of a two-part seal-disk comprising a face-piece provided with permanent distinguishing marks and having inwardly-projecting prongs integral therewith, and a dome-shaped back piece having inwardly-projecting prongs integral therewith, a pair of threading-holes and internal tongues formed of the partially-severed metal punched from said threading-holes at one edge of the disk, and a single threading-hole common to both ends of the cord and adapted to admit the knot of the cord at the opposite edge of the disk, substantially as hereinbefore specified.

704,674. SPRING BED-BOTTOM. JOHN F. BROWN, Knoxville, Pa. Filed Feb. 13, 1902. Serial No. 93,994. (No model.)

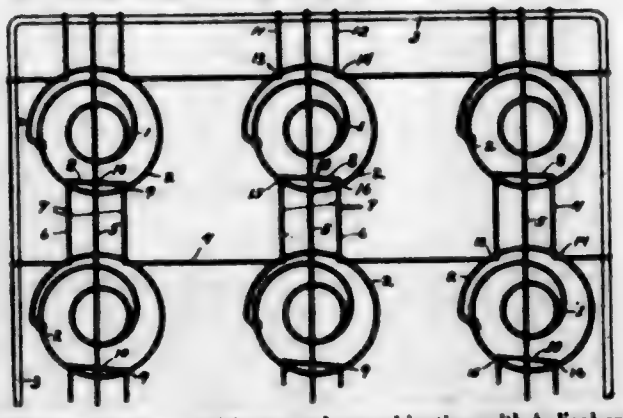

Claim.—1. In a bed-bottom, the combination with helical springs arranged in rows and having their ends formed into rings, tie-rods extending across said springs, said tie-rods being provided with laterally-extending loops having substantially parallel arms and a cross-bar uniting their outer ends, said cross-bar being provided with a bend or crimp near its middle and having straight portions on either side of said crimp, said loops extending through two adjacent springs and engaging each at two points, and key-rods arranged transversely to the tie-rods and extending along said springs and through said loops and being engaged by the crimp in the cross-bar.

2. In a bed-bottom, the combination with helical springs arranged in rows and having their ends formed into rings, tie-rods extending across said springs, said tie-rods being provided with laterally-extending loops having substantially parallel arms and a cross-bar uniting their outer ends, said loops extending through two adjacent springs and engaging each at two points and being provided with crimps or hooks near their outer ends where they engage the springs, and key-rods arranged transversely to the tie-rods and extending along said springs and through said loops.

3. In a bed-bottom, the combination with helical springs arranged in rows and having their ends formed into rings, tie-rods extending across said springs, said tie-rods being provided with laterally-extending loops

having substantially parallel arms and a cross-bar uniting their outer ends, said arms being provided near their outer ends with crimps or bends, and said cross-bar being also provided with a bend or crimp in the opposite direction, said loops extending through two adjacent springs and engaging each at two points and having the crimps near the outer ends of the arms engaging one of the springs, and key-rods arranged transversely to the tie-rods and extending along said springs and through said loops and being engaged by the bend or crimp in the cross-bar.

4. In a bed-bottom, the combination with helical springs arranged in rows and having their ends formed into rings, tie-rods extending across said springs, said tie-rods being provided with lateral loops extending through two adjacent springs and engaging each at two points and being provided with crimps or hooks near their outer ends where they engage the end rings of the springs, and key-rods arranged transversely to the tie-rods and extending along said springs and through said loops.

5. In a bed-bottom, the combination with helical springs arranged in rows and having their ends formed into rings, tie-rods extending across said springs, said tie-rods being provided with lateral loops extending through two adjacent springs and engaging each at two points and being provided with crimps or hooks near their outer ends where they engage the end rings of said springs, and key-rods arranged transversely to the tie-rods and extending over the end rings of the springs on one side thereof, under the same on the opposite side thereof and through said loops.

6. In a bed-bottom, the combination with helical springs arranged in rows and having both of their ends formed into rings, tie-rods extending across said springs both at the top and bottom thereof, said tie-rods being provided with lateral loops extending through two adjacent springs and engaging each at two points and being provided with crimps or hooks near their outer ends where they engage the end rings of the springs, and key-rods arranged transversely to the tie-rods both at the top and bottom of the springs and extending along said springs and through said loops.

704,675. PROCESS OF RECOVERING METALLIC TIN. DAVID H. BROWER, Cleveland, Ohio, and JAMES M. NEIL, Toronto, Canada. Filed July 27, 1901. Serial No. 69,914. (No specimens.)

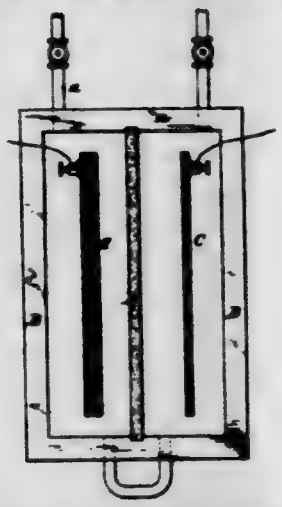

Claim.—1. The herein-described process of extracting tin from materials containing the same, which consists in subjecting the material to a solution of ferric chlorid, thereby forming a solution of chlorid of tin and ferrous chlorid, and precipitating the tin from such solution by an electric current passing between an insoluble anode and a suitable cathode, as set forth.

2. The herein-described process of extracting tin from materials containing the same, which consists in subjecting the material to an acidulated solution of ferric chlorid, thereby forming a solution of chlorid of tin and ferrous chlorid, and precipitating the tin from such solution by an electric current passing between an insoluble anode and a suitable cathode, as set forth.

3. The herein-described process of extracting tin from materials containing the same, which consists in subjecting the material to a heated solution of ferric chlorid, thereby forming a solution of chlorid of tin and ferrous chlorid, and precipitating the tin from such solution by an electric current passing between an insoluble anode and a suitable cathode, as set forth.

4. The herein-described process of extracting tin from materials containing the same, which consists in subjecting the material to a heated acidulated solution of ferric chlorid, thereby forming a solution of chlorid of tin and ferrous chlorid, and precipitating the tin from such solution by an electric current passing between an insoluble anode and a suitable cathode, as set forth.

5. The herein-described process of extracting tin from materials containing the same, which consists in subjecting the material to a solution of ferric chlorid, thereby forming a solution of chlorid of tin and ferrous chlorid and passing such solution successively past a suitable cathode to electrodeposit the tin, and an insoluble anode to regenerate the ferric-chlorid solution, as set forth.

6. The herein-described continuous process of extracting tin from materials containing the same, which consists in subjecting the material to a solution of ferric chlorid, thereby forming a solution of chlorid of tin and ferrous chlorid, passing such solution successively past a suitable cathode to electrodeposit the tin, and an insoluble anode to regenerate the ferric-chlorid solution, and returning such regenerated solution to the tin-bearing material, as set forth.

704,676. METALLIC CHEST FOR MOTOR-VEHICLES. FERDINAND CHARRON and LÉONCE GIRARDOT, Paris, France. Filed Apr. 22, 1902. Serial No. 104,082. (No model.)

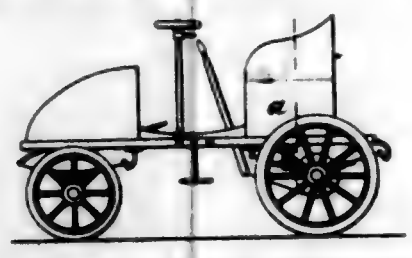

Claim.—A metallic wagon-chest for petroleum-motor road-vehicles formed of a sheet-metal plate cut out according to the contour 1, 2, 3, 16, the projecting portions of which are raised vertically and secured together by their adjacent edges, in combination with a second sheet-metal plate *f* which is horizontally secured to the walls of the chest thus formed so as to form a closed capacity of which three vertical walls extend above the top bottom, substantially as and for the purpose set forth.

704,677. PROCESS OF PURIFYING GUTTA-PERCHA. ADOLPHE COMBANAIRE and JEAN DE LA FRESNAYE, Paris, France. Filed Nov. 15, 1901. Serial No. 82,406. (No specimens.)

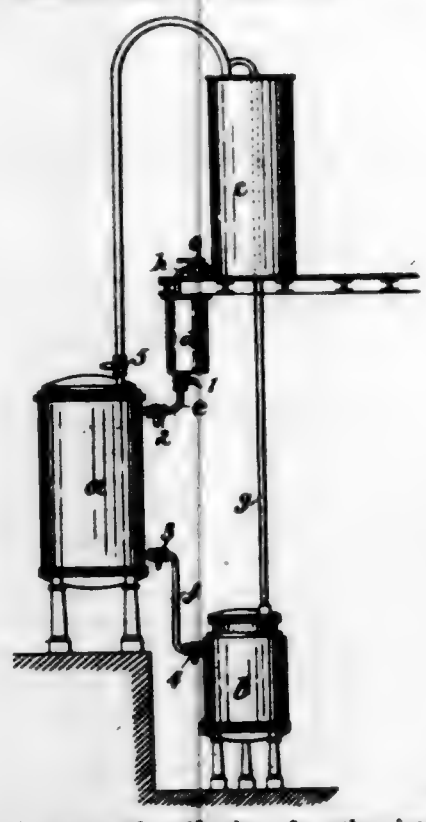

Claim.—A process of purification of, or the abstraction of resin from, gutta-percha, consisting of treating the gutta-percha previously reduced to fragments, in a solvent such as petroleum or one of its derivatives, at a temperature about 35° centigrade of stopping the operation before any coloration of the solvent takes place so that the resin only is dissolved and the cellular construction and principal essential components of the gutta are neither dissolved nor destroyed.

704,678. BY-PASS STOP-COCK FOR MULTIPLE-LIGHT GAS-BURNERS. WILHELM H. W. FAHRENHOLZ, Hamburg, Germany. Filed Nov. 26, 1901. Serial No. 83,553. (No model.)

Claim.—A casing arranged for attachment to a gas-supply pipe, and burner-supporting branches attached to said casing, each of said branches having a passage leading to the main jet and a second passage leading to

a pilot-jet, a plug within the casing arranged to leave a chamber therein, said plug having a central passage and an opening from said passage into said chamber, and said plug also having radial passages leading from said central passage, one for each branch connected to the casing, said radial passages terminating in ports in the side of the plug and said ports being of varying length, means to turn the plug in the casing, and means connecting the chamber in the casing with each of the secondary passages in the burner branches.

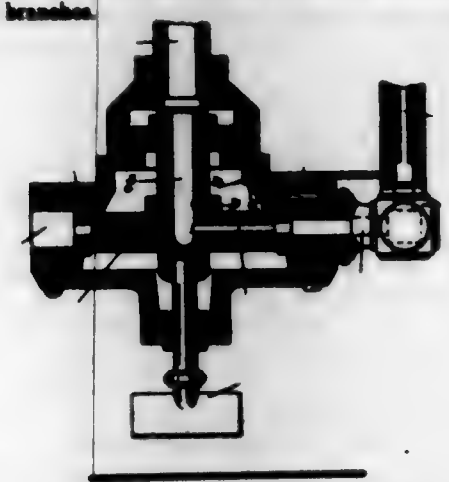

704,679. CANNING APPARATUS. JOHN T. GARREN, Grayrock, Tex. Filed Mar. 31, 1902. Serial No. 100,146. (No model.)

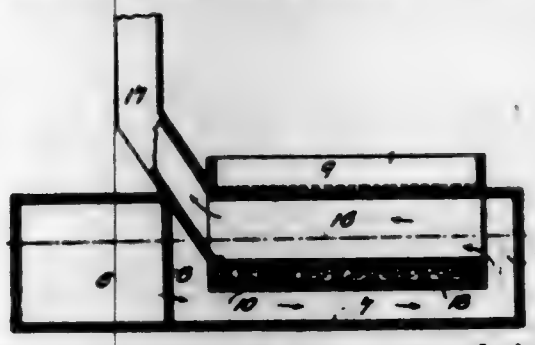

Claim.—1. In combination with a furnace having a fire-box and a heating-chamber in rear of and communicating therewith and having its upper side open, a boiler disposed in, closing the upper side of the heating-chamber and having an upper portion to overhang and bear upon the sides of the heating-chamber and thereby support the boiler, the latter being further provided with a lower portion of less length, breadth and depth than the corresponding dimensions of the heating-chamber, whereby flues are formed between the sides and bottoms of the lower portion of the boiler and the heating-chamber, the boiler being further provided with a return-flue extending therethrough and communicating with a smoke-exit, whereby a water-space is formed in the boiler around the said return-flue, substantially as described.

2. In combination with a furnace having a fire-box and a heating-chamber in rear of and communicating therewith and having its upper side open, a boiler disposed in the heating-chamber, closing the upper side thereof, having an upper portion forming a tray to overhang and bear upon the sides of the heating-chamber and thereby support the boiler, the latter being further provided with a lower portion of less length, breadth and depth than the corresponding dimensions of the heating-chamber, whereby flues are formed between the sides and bottoms of the lower portion of the boiler and the heating-chamber, the boiler being further provided with a return-flue extending therethrough and communicating with a smoke-exit, whereby a water-space is formed in the boiler around the said return-flue, substantially as described.

704,680. TWO-SPEED DRIVING-GEAR FOR BICYCLES. WALTER GOODMANS, Manchester, England. Filed Feb. 13, 1902. Serial No. 93,858. (No model.)

Claim.—1. In a hub two-speed gear the combination with the chain-wheel, planetary pinions, and stationary spindle, of a hub provided with a groove and pawls pivoted therein, and a sliding clutch provided externally with ratchet-teeth to engage the pawls, which when the chain-wheel is in action lock the mechanism through the medium of planetary pinions, and revolving hub, and prevent the rotation of the sliding clutch in relation to the hub, and which when the chain-wheel is out of action permit the hub to rotate around the clutch, substantially as described.

2. A hub two-speed gear comprising in its construction a chain-wheel with internal teeth, planetary pinions on the hub gearing therewith, a pinion loose on the spindle, engaging planetary pinions, a stationary spindle, on which the hub and loose pinions are placed, a clutch sliding on the spindle provided with external ratchet-teeth, a hub provided with a groove to carry the pawls, and pawls pivoted therein to engage the ratchet-teeth on the sleeve substantially as and for the purpose described.

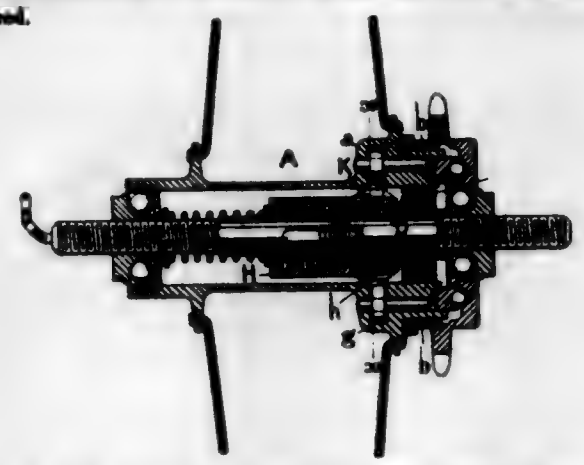

3. In a hub two-speed gear, the combination with the chain-wheel planetary pinions, engaging therewith, a stationary spindle and a hub, pawls pivoted to the said hub to which the planetary pinions are pivoted, of a clutch sliding on the spindle provided with external ratchet-teeth to engage the said pawls, and provided also with internal ratchet-teeth and a ratchet device inserted in a hole in the said spindle to engage the internal ratchet-teeth substantially as and for the purpose described.

704,681. FIRE-ALARM. CHARLES R. HARRIS, Williamsport, Pa., assignor to the Harris Safety Company, New York, N. Y. Filed May 2, 1898. Renewed Nov. 25, 1901. Serial No. 83,618. (No model.)

Claim.—As a new article of manufacture, an alarm device comprising a base, a striking mechanism secured thereto, a gong secured to the spring-shaft of said mechanism, a casing removably secured to the base and inclosing the striking mechanism and gong, a pivoted lever, an arm projecting from said lever and a cord or wire having a fusible section secured at one end to said lever and adapted to be secured to a fixed object at its other end to hold said arm of the lever against the escapement-verge with sufficient pressure to retain the striking mechanism normally at rest, said lever and its arm being so constructed and arranged that the verge will throw the latter out of its path of movement when the tension of the cord or wire is removed by the severance of the fusible section thereof.

704,682. AUTOMATIC FIRE-EXTINGUISHER. OTTO HOFFMANN, Withington, England. Filed July 16, 1901. Serial No. 68,780. (No model.)

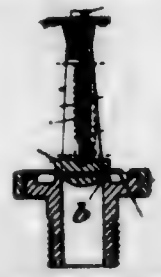

Claim.—In a strut for automatic sprinklers for fire-extinguishers to be placed between the valve and yoke of each sprinkler, the combination with a bar adapted to engage at one end one of said parts of the sprinkler, of a lever fulcrumed upon the other end of the bar and adapted to engage the other of said parts, said bar and lever being soldered to each other along their sides and having registering apertures near their ends opposite the fulcrum, a portion of the bar projecting into the aperture therein to form a fulcrum for a key, the key soldered to the face of the bar opposite the lever, the soldered portions of said lever and key ex-

tending substantially the same distances lengthwise of the bar and directly opposite each other, said key engaging said fulcrum therefor and having a forked and bent end passing through the apertures and engaging the outer surface of the lever.

704,683. LIFTING-JACK. JOHANN HÜPPI, Rümlang, near Zurich, Switzerland. Filed Nov. 27, 1900. Serial No. 37,921. (No model.)

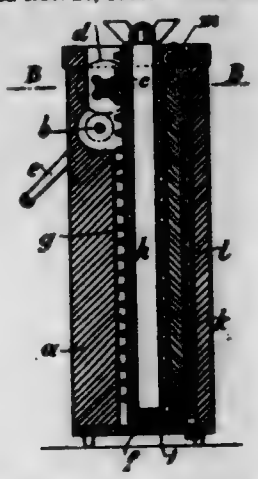

Claim.—In a lifting-jack, the jack-body *a*, the rack *g* and the bar *h* adapted to slide on each other, the pulley *m* mounted upon the top of the said rack and the chain *l* passing over the said pulley and having one end secured to the lower end of the said bar and the other end to the lower end of the said body, the pinion *c* mounted in the body *a* in gear with the said rack and means for rotating the said pinion by hand, all combined substantially as and for the purpose set forth.

704,684. ALARM DEVICE FOR BINDERS. HERBERT R. IRWIN, Galesburg, Ill. Filed Feb. 1, 1900. Serial No. 3,626. (No model.)

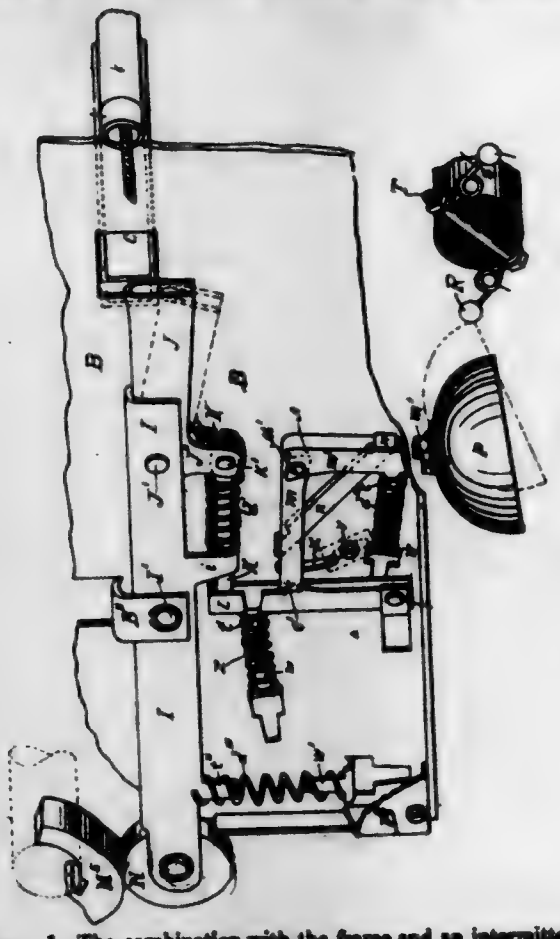

Claim.—1. The combination with the frame and an intermittently-movable part of the binding mechanism of a grain-binder, of an alarm mechanism, means for normally restraining the alarm mechanism, and means carried by the frame and under the joint control of said intermittently-movable part and the twine for releasing said restraining mechanism and permitting the alarm mechanism to be thrown into action, at a predetermined period in the binding operation whenever the twine is broken or the tension is removed from it, substantially as described.

2. In an alarm device for grain-binders, the combination with the frame and the needle-shaft, of an alarm mechanism supported by the frame, a movable part supported by the frame and deriving intermittent movement from the needle-shaft, a tripper independent of the needle, said tripper being supported by the frame and being under the control of the twine, and means supported by the frame and actuated by the coöperation of said movable part and tripper for conditioning the alarm to operate, substantially as described.

3. The combination with a revolving shaft of a grain-binder, of strikers carried by said shaft, a tripper device controlled by the tension of the twine, an arm having an oscillating movement, a movable support, a bell carried thereby, and a latch normally restraining said support, the said tripper device being adapted to coöperate with the oscillating arm, at a predetermined period, when the tension of the twine is removed, and cause the latch to release the bell-support and allow the bell to be moved into the path of the strikers substantially as described.

4. The combination with an intermittently-movable part of the binding mechanism of a grain-binder, of an alarm mechanism, means for normally restraining the alarm mechanism, a tripper engaged by the twine and thereby held out of operative position so long as the twine is under proper tension, means for moving the tripper into operative position when the tension of the twine is removed, and means deriving its movement from the intermittently-movable part aforesaid and coöperating with the tripper for releasing said restraining means whenever at a predetermined period in the movement of said intermittently-movable part the tripper is in operative position substantially as described.

5. The combination with an intermittently-movable part of the binding mechanism of a grain-binder, of an alarm mechanism, a tripper engaged by the twine and thereby held out of operative position so long as the twine is under proper tension, means for moving the tripper into operative position when the tension of the twine is removed and mechanism deriving its movement from the intermittently-movable part aforesaid and adapted to coöperate with said tripper when the latter is in operative position for conditioning the alarm to operate substantially as described.

6. The combination with an intermittently-movable part of the binding mechanism of a grain-binder, of an alarm mechanism, a tripper independent of the needle engaging the twine whereby it is held out of operative position when the twine is under proper tension, means for moving the tripper into operative position, and mechanism deriving its movement from the intermittently-movable part aforesaid, coöperating with the tripper, whenever, during a predetermined period in the movement of said part the tripper is in operative position, for conditioning the alarm to operate substantially as described.

7. The combination with an intermittently-movable part of the binding mechanism of a grain-binder, of an alarm mechanism, a movable part independent of the needle adapted to derive movement from said intermittently-movable part, and a tripper adapted to coöperate with the part last aforesaid for conditioning the alarm to operate whenever during a predetermined period in the movement of said part the tripper is in operative position, said tripper being under the control of the twine, substantially as described.

8. The combination with an intermittently-movable part of the binding mechanism of a grain-binder, of an alarm mechanism, a movable part independent of the needle adapted to derive movement from said intermittently-movable part and a tripper independent of the needle adapted to coöperate with the part last aforesaid for conditioning the alarm to operate whenever during a predetermined period in the movement of said part the tripper is in operative position, said tripper being under the control of the twine, substantially as described.

9. The combination with an intermittently-movable part of the binding mechanism of a grain-binder, of an alarm mechanism, a lever deriving its movement from said intermittently-movable part, a tripper independent of the needle under the control of the twine, and means actuated by the coöperation of said lever and tripper for conditioning the alarm to operate substantially as described.

10. The combination with a revolving shaft of a grain-binder, of strikers carried by said shaft, an alarm device movable into the path of said strikers, a tripper device normally restrained from operation by the tension of the twine and having an operative connection with and adapted to set the alarm device in motion, and an oscillating lever located between the alarm device and the tripper and carrying a pivoted arm adapted to engage the tripper, substantially as and for the purposes described.

11. The combination with a revolving shaft of a grain-binder, of strikers carried by said shaft, a bell normally out of the path of said strikers, a tripper device normally held in one position by the tension of the twine, a lever and means for oscillating the same, and a pivoted arm carried by said lever and adapted to be operated whenever the tension of the twine is removed to cause the bell to swing into the path of the strikers, substantially as described.

12. The combination with a revolving shaft of a grain-binder, of strikers carried by said shaft, a bell normally out of the path of said strikers, a movable support for said bell, a tripper device normally held in one position by the twine, a lever and means for oscillating the same, a pivoted arm carried by said lever and adapted to engage the tripper device when

the tension of the twine is removed to cause the bell-support to move the bell into the path of the strikers, substantially as described.

13. The combination with a revolving shaft of a grain-binder, of strikers carried by said shaft, a bell, a movable support for said bell, a tripper device normally held in one position by the twine, a latch device for holding the bell out of the path of the strikers, and devices for releasing said latch device when the tension of the twine is removed to cause the bell to move into the path of the strikers, substantially as described.

14. The combination with a revolving shaft of a grain-binder, of strikers carried by said shaft, a bell, a swinging support for said bell, a latch device normally locking said support to hold the bell out of the path of the strikers, an oscillating lever, a pivoted arm carried by said lever, a tripper normally held in one position by the twine and adapted to engage and limit the movement of the pivoted arm when the tension of the twine is removed to swing said arm on its pivot and thereby release the latch device and permit the support to swing the bell into the path of the strikers, substantially as described.

704,685. SAILING-BOAT. THOMAS JENSEN, Arendal, Norway. Filed Oct. 25, 1901. Serial No. 79,861. (No model.)

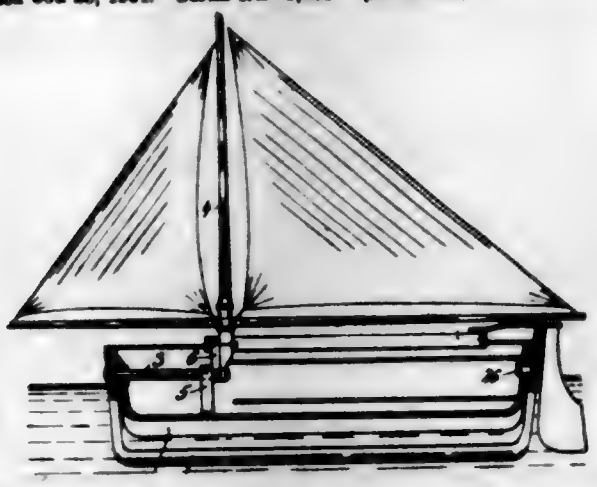

Claim.—1. In combination with the hull of the boat, a keel extending along the same and having upturned arms at its ends pivotally connected at the outer side of the bow and stern, a mast within the hull, a shaft 3 extending from the upturned arm of the keel at the bow to the mast and a bearing adjacent the mast for said shaft, substantially as described.

2. In sailing-boats of the kind described the combination with the hull, mast and pivoted ballast-keel of means whereby the mast can be adjusted and secured at the suitable angle with the ballast-keel in order that the reaction of the keel upon the mast can be regulated substantially as hereinbefore described.

3. In sailing-boats of the kind described the combination with the hull and pivoted ballast-keel and mast, of a shaft connected to said keel and rigidly connected at its inner end to a segment which, by means of pulleys and ropes, can be connected to the mast which loosely swivels upon the end of the shaft, the rope serving to turn the mast relatively with the segment and to secure the same in position, substantially as hereinbefore described.

704,686. ARMY-CANTEEN. THOMAS KEARNS and IRA C. COIN, Salt Lake City, Utah. Filed Sept. 16, 1901. Serial No. 75,566. (No model.)

Claim.—1. The combination with a canteen, of an interiorly-disposed suction device having its inlet end accessible from the exterior thereof.

2. The combination with a canteen, of an interiorly-disposed suction device having its inlet end projected outward therefrom.

3. The combination with a canteen, of an interiorly-disposed suction device and a filter, the suction device having its inlet end accessible from the exterior of the canteen.

4. The combination with a canteen, of an interiorly-disposed suction device having its inlet end accessible from the exterior thereof, and filtering means associated with the said end.

5. The combination with a canteen, of an interiorly-disposed suction device having its inlet end projecting outward therefrom, and filtering means associated with the said end.

6. The combination with a canteen, of an interiorly-disposed suction device having its inlet end accessible from the exterior thereof, and detachable filtering means associated with the said end.

7. The combination with a canteen, of an interiorly-disposed suction device having its inlet end projected outward therefrom, and detachable filtering means associated with the said end.

8. A canteen having an inclosed induction filling device comprising a suction-tube arranged within the canteen with its inlet end exposed at the surface thereof, and means for causing a suction in said tube.

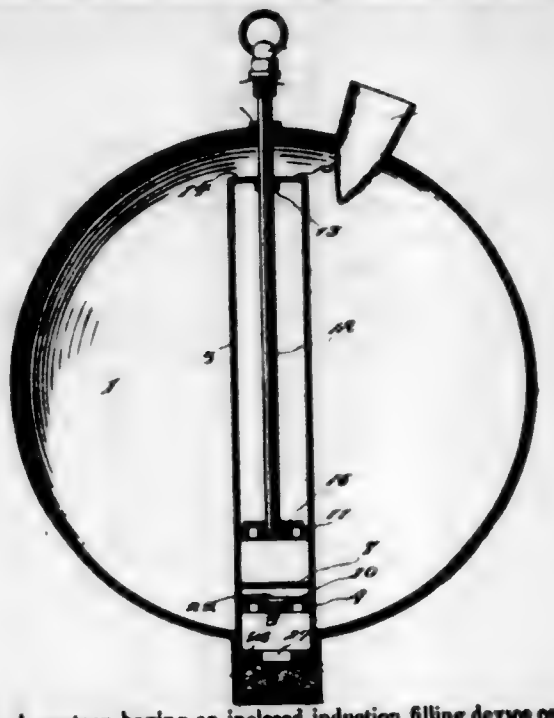

9. A canteen having an inclosed induction filling device comprising an inclosed suction-tube having its inlet end exposed at the surface of the canteen, and a reciprocatory suction-producing element coöperating with said tube and having a grip accessible at the surface of the canteen.

10. A canteen having an induction filling device comprising a cylinder or barrel and a piston arranged wholly within the contour of the canteen, with the inlet end of the cylinder or barrel, and the grip end of the piston exposed at the surface of the canteen.

11. A canteen having an induction filling device consisting of a pump having fixed and movable elements arranged wholly within the contour of the canteen, the fixed element having an exteriorly-exposed inlet, and the movable element having a grip or handle exposed at the surface of the canteen.

12. A canteen having an inclosed induction filling device comprising fixed and movable elements, and a canteen-supporting device mounted upon the movable element and having an interlocking engagement with the wall of the canteen to secure said supporting device and the movable element in a fixed position.

13. A canteen having an inclosed induction filling device comprising fixed and movable elements, and a canteen-supporting ring mounted upon the extremity of the movable element and having means for effecting an interlocking engagement with the wall of the canteen to secure the ring and said movable element in a fixed position.

14. A canteen having an inclosed induction filling device including a reciprocatory element, and a canteen-suspending device having a head swiveled on said reciprocatory element and provided with means for effecting an interlocking engagement with the wall of the canteen.

15. A canteen having an inclosed induction filling device including a reciprocatory element having a rod mounted for operation through a guide-opening in the wall of the canteen, and a canteen-suspending ring having a head swiveled upon said rod and provided with means for effecting an interlocking engagement with the wall of the canteen.

16. A canteen having an inclosed induction filling device including a reciprocatory member having a rod for operation through a guide-opening in the wall of the canteen, and the canteen being provided with a threaded socket concentric with said guide, and a canteen-suspending ring having a head swiveled on said rod and provided with a threaded portion for engagement with said socket.

17. The combination with a canteen, of a pump located therein and having an exteriorly-accessible piston-rod, a guide-collar in the canteen through which the piston-rod has movement, and a head swiveled on the piston-rod and adapted for engagement with said collar.

18. The combination with a canteen having an outlet-mouthpiece, of a pump attachment inclosed by and having one terminal exposed at the surface of the canteen, the said pump being located to one side of the outlet-mouthpiece for vertical disposition during the operation thereof.

19. The combination with a canteen, of a pump attachment having one terminal disposed at the surface of the canteen, and a filtering attachment connected with said terminal of the pump attachment and having a closure removably applied to the outer end thereof.

20. The combination with a canteen, of a pump attachment having one terminal disposed at the surface of the canteen, and a filtering attachment connected with said terminal of the pump attachment and having a disk nut removably fitted in the outer portion thereof.

21. The combination with a canteen, of a pump attachment inclosed therein and having one terminal exposed at the surface of the canteen, said pump attachment including a piston and piston-rod, of which the latter projects through a guide in the wall of the canteen, a closing device applied to the extremity of the piston-rod to close the portion of the canteen through which said rod extends, and means for closing the exposed terminal of the pump.

22. A canteen having an inclosed induction filling device comprising fixed and movable elements of which their opposite extremities are exposed at opposite openings in the wall of the canteen, and movable closures for said opening.

704,687. TRESTLE. WILLIAM A. KISER, Leavenworth, Kans. Filed Feb. 14, 1902. Serial No. 94,044. (No model.)

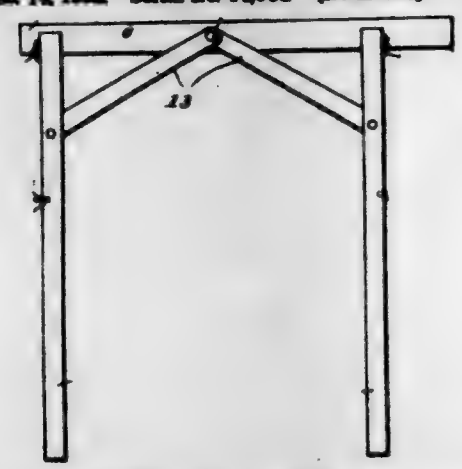

Claim.—1. A folding trestle comprising a beam, spreading legs having jaws at the upper ends thereof to clamp the beam, and pivoted crossed links connected to said legs and taking the weight of the beam.

2. A folding trestle comprising spreading legs having jaws at the upper ends thereof, a beam clamped in said jaws and having a notch in the lower edge thereof, and pivoted links connected to said legs and engaging in said notch.

3. A folding trestle comprising a beam, two pairs of spreading legs the upper ends of which have connecting-links and jaws to clamp the beam, and braces pivotally connected to the legs and opposite sides of the beam, said beam having a short end which will pass within the connecting-links of one pair of legs, whereby said pair may be folded around along the upper edge of the beam.

4. A folding trestle comprising a beam, spreading legs having pivoted connecting-links and jaws to clamp the beam, said legs and beam being foldable to parallelism, and braces pivoted to the inside of the legs and to opposite sides of the beam, so as to lie between the beam and the legs when folded.

704,688. FOLDING BED-LOUNGE. NATHE LEVINE, Boston, Mass. Filed Feb. 24, 1902. Serial No. 95,308. (No model.)
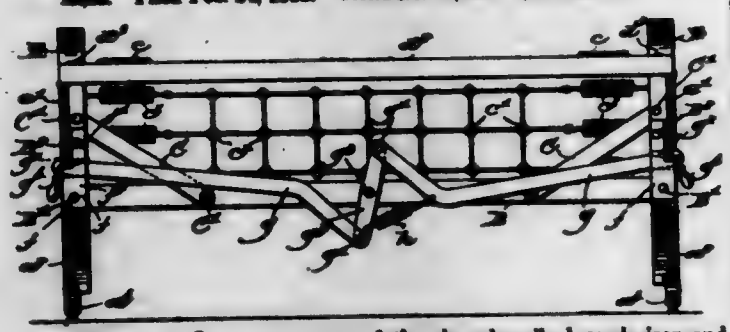
Claim.—1. In an apparatus of the class described, angle-iron end frames having in their side legs slots a^x, independent angle-iron bars sustained in said end frames and extended at their ends through said slots to the outer sides of said end frames, falls pivoted to the ends of said bars, the ends of said falls being composed of angle-iron bars, and mattress-supporting means sustained by said independent angle-bars and the angle-iron bars of the falls.

2. In apparatus of the class described, angle-iron end frames having in their side legs two slots a^x and a^s, independent angle-iron bars sustained in said end frames and extended at their ends through said slots to the outer sides of said end frames, falls pivoted to the ends of said bars, notched legs pivoted to said falls and free to be moved in slots a^s of the angle-iron end frames, said notches being in engagement with said bars serving to keep the falls elevated, and longitudinally-movable bars having inclines to act against said legs to release the legs from their engagement with the end frames when it is desired to lower the falls.

3. In a lounge-bed, angle-iron end frames, angle-iron bars connecting said end frames, independent angle-iron bars sustained in said end frames below their upper ends, falls connected with the said independent angle-iron bars, a wire fabric sustained by said independent angle-iron bars and the angle-iron end pieces of the falls, and notched legs pivoted to the opposite ends of said falls, means to limit the distance to which said falls may be lifted, and leg-disengaging means comprising a lever having bars connected to its opposite ends, and a spring to retain said bars in a position to enable the legs of the falls to engage a shoulder and keep the falls elevated, longitudinal movement of each bar against the stress of said spring acting to release the legs and permit the falls to drop.

4. In an apparatus of the class described, angle-iron end frames having at each side two slots a^x and a^s, and having one flange at each end of each end frame bent toward the other flange to constitute strong stiff legs, independent angle-iron bars extended through the slots a^x, falls having angle-iron ends pivoted to the ends of said independent angle-iron bars, notched legs pivoted to said falls and working in the slots a^s, the notches of the legs engaging the end frames and retaining the falls outstretched, and longitudinally-movable bars to effect the disengagement of said legs from the end frames to enable the falls to be lowered.

704,689. STEAM-GENERATOR. CHARLES MUSKER, ARTHUR MUSKER, and WILLIAM G. HAY, Liverpool, England. Filed Mar. 5, 1901. Serial No. 49,903. (No model.)

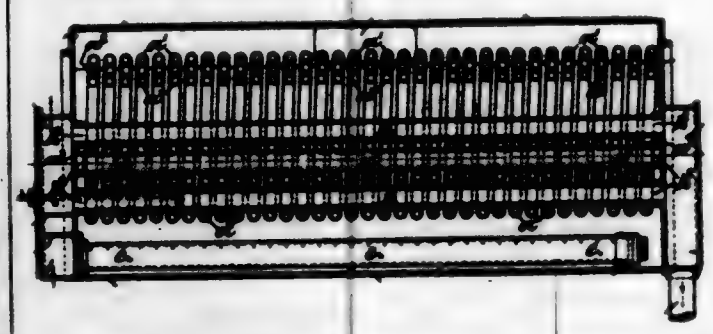

Claim.—The combination with a water-tube steam-generator, of an oil-vaporizing chamber at one end, an air-chamber at the opposite end with means for feeding air thereto, air-pipes extending from said air-chamber to said vaporizing-chamber and a burner-tube extending from said vaporizing-chamber beneath the air and water tubes, substantially as described.

704,690. AUTOMATIC THREAD-FEEDER FOR SEWING-MACHINES. JULES L. SAILLET, Paris, France. Filed June 7, 1901. Serial No. 63,645. (No model.)

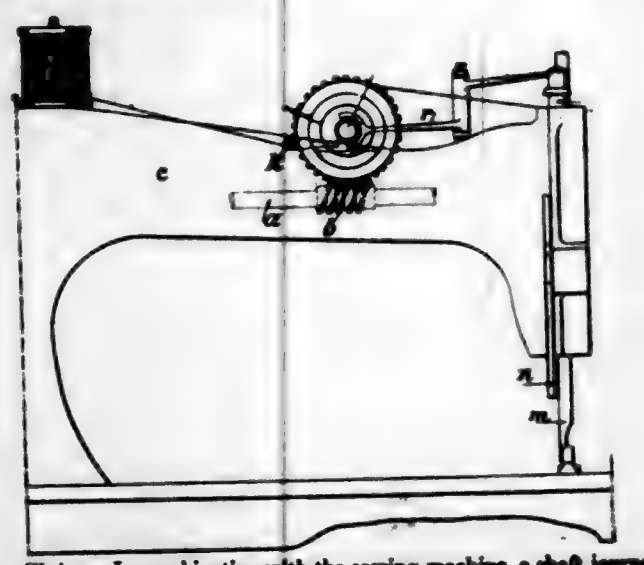

Claim.—In combination with the sewing-machine, a shaft journaled in the frame thereof, a worm-wheel and worm for driving the same, a stepped pulley loose on said shaft over which said thread passes, a clutch-face on said shaft, a spring pressing said pulley into engagement with said clutch-shaft, a bell-crank lever having one arm bearing against said pulley, and a cone on the claw-rod for contacting with the other arm, substantially as described.

704,691. FOUNTAIN-HOLDER FOR PENS. ABRAHAM L. BAER, Milwaukee, Wis. Filed Aug. 26, 1901. Serial No. 73,294. (No model.)

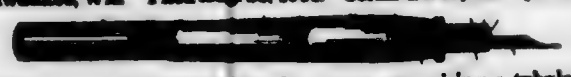

Claim.—1. A fountain-holder for a pen, comprising a tubular case having a lateral aperture, an elastic compressible ink-holding receptacle

in the case and accessible laterally through the aperture for pressure by the hand of the user, and a pen-holding plug inserted removably in the otherwise open end of the receptacle in the case and pressing the walls of the receptacle against the case thereby substantially closing the otherwise open end of the receptacle, the plug being provided with a duct longitudinally of the plug permitting the escape of ink limitedly through it from the receptacle to the pen.

2. In combination, a tubular case open at one end and having a lateral aperture at a little distance from the open end, an elastic compressible bag-like ink-receptacle in the case exposed at the lateral aperture permitting pressure thereof and fitting to the case near its open end, and a removable pen-holding plug in the open end of the receptacle in the case substantially closing the receptacle, the plug comprising a tubular shell and a therein-fitting cylindrical core split from its outer end a distance longitudinally and provided with an ink-duct longitudinally thereof adjacent to the shell and leading from the ink-reservoir to the inner concave surface of a pen when inserted in the plug.

3. In a fountain-holder for a pen, a tubular case open at its end, an elastic bag-like receptacle in the tubular case and provided with a terminal enlarged annular rib fitting against the open end of the case, and a pen-holding ink-discharging plug inserted removably in the open end of the case and within the open end of the bag-like receptacle substantially closing it.

704,692. **LIFTING DEVICE.** PETER BEIDER, Paterson, N. J. Filed Feb. 27, 1902. Serial No. 95,526. (No model.)

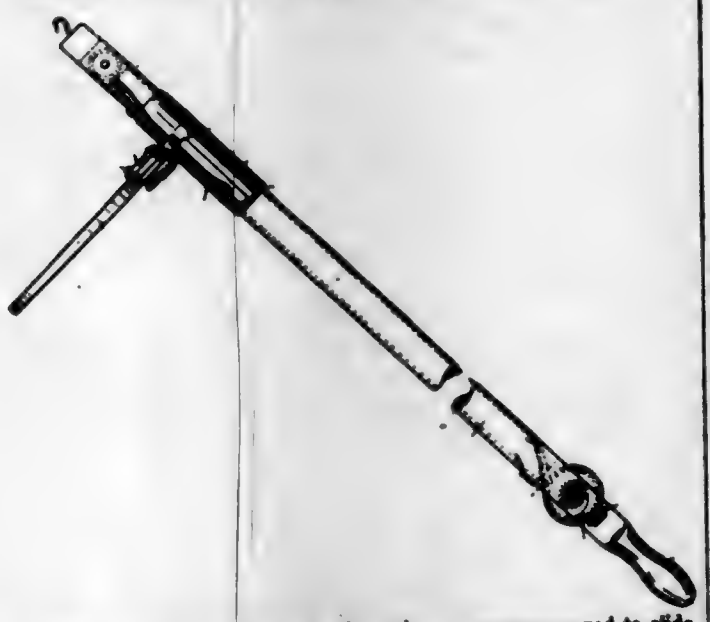

Claim.—1. The combination of a pole, a carrier arranged to slide on said pole, a reel journaled in said pole, and a flexible connection between said carrier and the reel, substantially as described.

2. The combination of a pole, a carrier guided on said pole, a spring-actuated reel journaled in said pole, a flexible connection between said carrier and the reel, and a brake for said reel, substantially as described.

3. The combination of a pole, a carrier arranged to slide on said pole, said carrier comprising arms one of which is pivoted, a spring pressing said pivoted arm toward the other arm, means for elevating said carrier, and means, carried by said pole, for moving said pivoted arm against the tension of its spring as the carrier assumes its extreme elevated position, substantially as described.

704,693. **REFINING-ENGINE.** EDWIN CHURCHILL, Jr., and EDEN A. HALL, Lawrence, Mass. Filed Mar. 17, 1902. Serial No. 98,559. (No model.)

Claim.—1. A machine of the character described comprising a shell, a longitudinally-adjustable grinding-shaft arranged therein, a driving-pulley which is slidably connected with said shaft, but held to turn therewith, a stationary bearing within which said shaft rotates, and a swiveled connection between said pulley and bearing for holding said pulley from axial movement in both directions, substantially as described.

2. A machine of the character described comprising a shell, a longitudinally-adjustable grinding-shaft arranged therein, a driving-pulley slidably connected therein but held to turn therewith, a stationary bearing within which said shaft rotates, a circumferential rib on said pulley which engages a corresponding groove in said bearing and holds said hub from axial movement in both directions, substantially as described.

3. A machine of the character described comprising a shell, a longitudinally-adjustable grinding-shaft arranged therein, a driving-pulley which is slidably connected with said shaft, but held to turn therewith, a stationary bearing, an axially-projecting hub on said pulley which is journaled in said bearing and surrounds said shaft, and a circumferential rib on said hub which engages a corresponding groove in said bearing and holds said hub from axial movement in both directions, substantially as described.

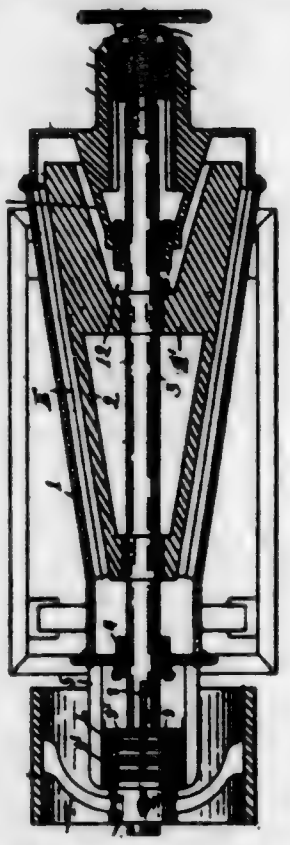

4. A machine of the character described comprising a shell, a longitudinally-adjustable grinding-shaft arranged therein, a driving-pulley which is slidably connected with said shaft, but held to turn therewith, a stationary bearing within which said shaft rotates, and a swiveled connection between said pulley and bearing for holding said pulley from axial movement in both directions, said pulley having arms which extend obliquely from the hub and having its rim encircling said bearing, substantially as described.

5. A refining-engine comprising a shell, a plug therein, a shaft to which said plug is rigidly attached, a driving-pulley having its axis in alinement with the axis of said shaft, the hub of said pulley being slidably connected with said shaft, but held to turn therewith, a stationary bearing in which the hub of said pulley is journaled, said bearing being adapted to permit rotation of said pulley therein, while holding the same against lateral movement in either direction, arms which extend obliquely from said hub, a rim which is secured to the outer ends thereof and is arranged with its face opposite said bearing, and means for adjusting said shaft longitudinally, substantially as described.

6. A machine of the character described comprising a suitably-supported shell, a longitudinally-adjustable grinding-shaft partly arranged in said shell, a bearing-support rigidly connected to said shell, a bearing secured to said support and within which said shaft rotates, a driving-pulley slidably connected with said shaft but held to turn therewith, and a swiveled connection between said pulley and shell holding said pulley from axial movement in both directions, substantially as described.

7. A refining-engine comprising a shell, a plug therein, a shaft to which said plug is rigidly attached, a driving-pulley having its axis in alinement with the axis of said shaft, the hub of said pulley being slidably connected with said shaft, but held to turn therewith, a bearing portion which is rigid with said hub and projects laterally therefrom, a rigid support which extends longitudinally from one end of said shell, a bearing which is secured thereto, and in which said laterally-projecting hub portion is journaled, said bearing being adapted to prevent rotation thereof while holding the same from longitudinal movement in either direction, and means for adjusting said shaft longitudinally, substantially as described.

8. A refining-engine comprising a shell, a conical-shaped plug which is located therein, an axially-arranged shaft to which said plug is secured, said plug being provided with a recess which extends inwardly from its base end, a head which is secured to the adjacent end of said shell and extends into said plug-recess, thereby forming an external recess which extends toward the apex end of the plug, and a bearing for said shaft adjustable in said external recess, substantially as described.

9. A refining-engine comprising a shell, a conical-shaped plug which is located therein, an axially-arranged shaft to which said plug is secured, said plug being provided with a recess which extends inwardly from its base end, a head which is secured to the adjacent end of said shell and

extends into said plug-recess, thereby forming an external recess which extends toward the apex end of the plug, a combined thrust and journal bearing in which said shaft is journaled, said bearing being adapted and arranged to be adjusted and held in said external recess, and means for moving said bearing toward the shell, substantially as described.

10. A machine of the character described comprising a longitudinally-adjustable grinding-shaft having an axial bore in one end, an adjustable thrust-bearing in which the bored end of said shaft is journaled, and an adjusting-screw for said bearing which is partly arranged in the bore of said shaft, substantially as described.

11. A refining-engine comprising a shell, a grinding means, and a shaft for operating the same, means for adjusting said shaft longitudinally, comprising an adjustable combined thrust and journal bearing in which one end of said shaft is journaled, a swiveled adjusting screw, a threaded connection between said bearing and screw, the journaled end portion of said shaft being axially bored and said adjusting-screw being partly located therein, the diameter of said bore being sufficient to permit said shaft to rotate independently of said screw, substantially as described.

12. A refining-engine comprising a shell, a conical-shaped plug which is located therein, an axially-arranged shaft to which said plug is secured, said plug being provided with a recess which extends inwardly from its base end, a head which is secured to the adjacent end of said shell, and extends inwardly into said recess thereby forming an external recess which extends toward the apex end of the plug, a longitudinally-extending bearing-support which is rigidly secured to said head and is provided with guideways which extend into said recess, a combined thrust and journal bearing which is slidably supported in said ways, and in which said shaft is journaled and held from longitudinal movement, means for adjusting said bearing within said external recess, and for holding it in its adjusted positions, substantially as described.

13. A refining-engine comprising a shell, a conical-shaped plug which is located therein, an axially-arranged shaft to which it is secured, said plug being provided with a conical-shaped recess which extends inwardly from its base end, a head which is secured to the adjacent end of said shell and is provided with a hollow frusto-conical portion which is located in said recess, a stuffing-box in the apex end of said frusto-conical portion through which said shaft passes, a combined thrust and journal bearing which is adapted and arranged to be adjustably supported within said frusto-conical portion, said shaft being journaled in said bearing, and means for holding said bearing in its adjusted positions, substantially as described.

704,694. SYSTEM OF DISTRIBUTION. JOHN L. CREVELING, New York, N. Y. Filed Sept. 11, 1901. Serial No. 75,015. (No model.)

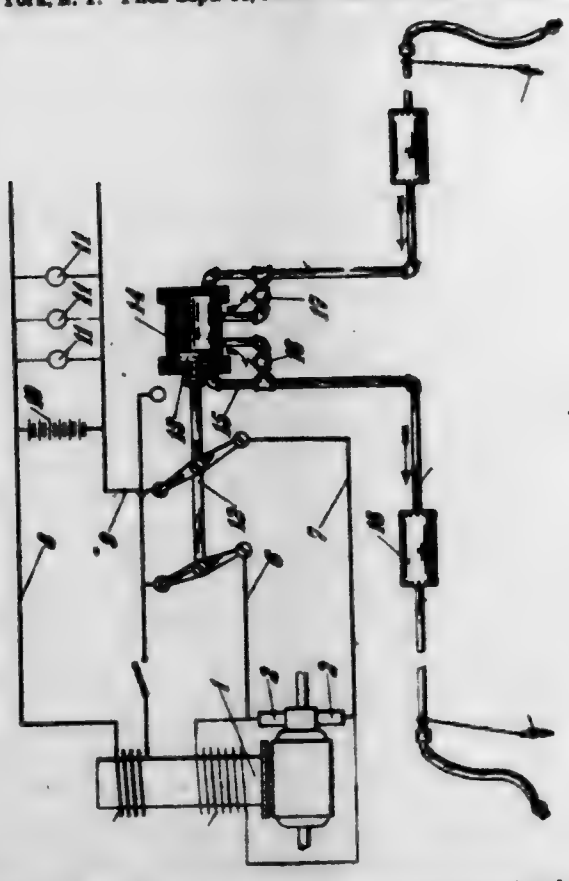

Claim.—1. In a system of distribution for railway-trains the combination of a generator and current-utilizing devices and a pneumatic device for affording delivery of current to the current-utilizing devices always in the same direction, the said pneumatic devices being actuated by a change in the direction of the pressure in a pneumatic system on the train.

2. In a system of distribution for railway-trains, the combination of a generator and current-utilizing devices and a pneumatic controlling device for effecting controlling functions in the system, the said pneumatic controlling device being controlled by changes in the direction of pressure in a pneumatic system on the train.

3. In a system of distribution for railway-trains, the combination of a generator and current-utilizing devices, with means for controlling the flow of current, comprising in its structure a pneumatically-actuated device governed by a change in the direction of the pressure in a pneumatic system on the train.

4. In a system of distribution for railway-trains, the combination of a pneumatic system, a pneumatic device under the control thereof, the said pneumatic device being actuated by the change in the direction of flow of air in the system and a connection between the said pneumatic device and other functionating apparatus on the train, whereby by the movement of the said pneumatic device functions and effects may be brought about other than the normal function and effect of the movement of the pneumatic device.

5. A system of distribution for railway-trains, and means for effecting functions therein comprising a single line of train-pipe, a reversible pneumatic device and means whereby the said reversible pneumatic device may be actuated by the change in the direction of flow of air in the single-train-pipe system.

6. In a system of distribution for railway-cars, the combination of an electric system, a pneumatic device for effecting functions therein, a single line of train-pipe and means whereby a reversal of the pneumatic device may be effected by the reversal of the direction of flow of air in the train-pipe system.

7. The combination with a fluid conduit or pipe system allowing the flow of fluid therethrough in either direction, of means for effecting a change in the flow of an electric current and a pneumatic device controlling the said means, the said pneumatic device responding to changes in the direction of flow of fluid in the said conduit or pipe system.

8. The combination with a fluid conduit or pipe system allowing a flow of fluid therethrough in either direction, of an electric switch and a pneumatic device responding to a change in the direction of flow of fluid in the said pipe system.

704,695. COMBINED ELECTRIC AND GAS CAR-LIGHTING SYSTEM. JOHN L. CREVELING, New York, N. Y., assignor to Safety Car Heating & Lighting Company, a Corporation of New Jersey. Filed Jan. 18, 1902. Serial No. 90,332. (No model.)

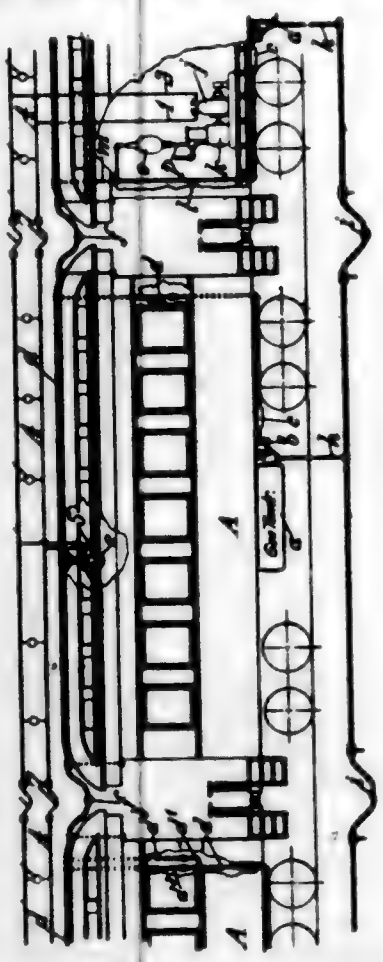

Claim.—1. A train-lighting system, comprising detachable cars, a gas-supply carried by the respective cars, a gas-lighting system in connection therewith, an electric system of distribution carried by the respective cars, and a gas-engine and dynamo, the dynamo being in elec-

trical communication with the systems of distribution of the respective cars and the gas-engine being in communication with the gas system of the respective cars.

2. A train system, comprising a series of cars carrying gas and electric lighting systems, and gas-storage reservoirs carried by the respective cars, the gas systems of the respective cars being in communication with each other through automatically-closing couplers, a gas-engine and dynamo, the dynamo being in electrical communication with the respective electric-lighting systems of the cars and the gas-engine being in communication with the gas systems of the respective cars.

3. A train-lighting system comprising in detachable cars, a series of gas-lighting systems, detachable one from the other and carried by the respective cars, electric-lighting systems for the respective cars, and a dynamo, driven from the gas system and supplying current to the electric system.

4. In a car-lighting system, the combination of a series of cars, gas-lighting systems carried by the respective cars, an electrical system of distribution carried by the respective cars, a dynamo, and a gas-engine fed by train-pipes in communication with the gas systems of the respective cars.

5. A series of train-lighting units, each comprising a mutually-independent gas and electric lighting system, and a gas-engine and dynamo forming a connection between the gas-lighting and electric-lighting systems whereby the same are rendered interdependent.

6. A train-lighting system, comprising a series of units in detachable connection with each other, each unit being provided with a gas-lighting system and a system of electrical distribution, mutually independent of each other, a generator for the systems of electrical distribution and a gas-motor for driving the generator, fed from gas-lighting systems of the respective units.

704,696. MEANS FOR REGULATING THE OUTPUT OF DYNAMO-ELECTRIC MACHINES. John L. Creveling, New York, N. Y. Filed June 12, 1901. Serial No. 64,300. (No model.)

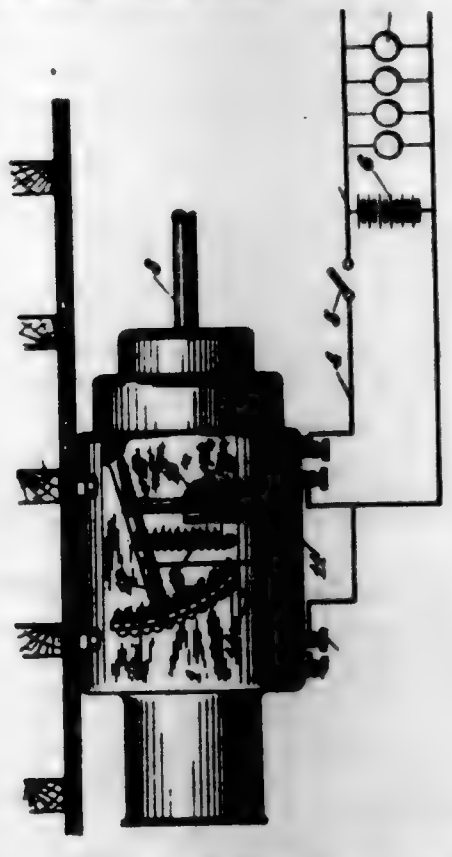

Claim.—1. A dynamo-electric machine combined with means for regulating its output comprised in part by a heat-influenced element in heat-receiving relation with the machine.

2. An electric generator combined with regulating means therefor, comprised in part by a movable element and means for moving said element under the influence of heat developed in operating the machine.

3. A dynamo-electric machine combined with a regulating device therefor, comprised in part by means for regulating the degree of field excitation by the degree of heat developed by the machine.

4. A shunt-wound dynamo combined with means for regulating the shunt-field by heat developed in the machine.

5. A generator provided with a heat-operated regulator in heat-conducting communication with the machine.

6. A generator combined with a heat-operated regulating-switch whose extent of operation is a function of the heat developed in the operation of the machine.

7. A dynamo-electric-machine regulator comprising a variable resistance in circuit with the machine and means for varying the resistance by the degree of heat developed in the operation of the machine.

704,697. TELEPHONE HOOK-SWITCH. William W. Dean, Chicago, Ill., assignor to Kellogg Switchboard and Supply Company, Chicago, Ill., a Corporation of Illinois. Filed May 9, 1901. Serial No. 59,474. (No model.)

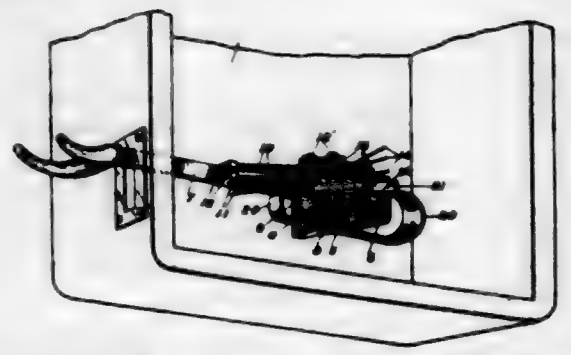

Claim.—1. In a telephone hook-switch, the combination with a single integral metallic support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support, and means for changing said springs from signaling position to talking position, and vice versa by the hook, substantially as described.

2. In a telephone hook-switch, the combination with a metallic supporting-standard, of a hook-lever pivoted upon said standard, a group of circuit-changing contact-springs and alternately-disposed insulating material, means for securing said group of springs together, said means also serving to clamp said group of springs to the support, one of said springs projecting beyond the others, and a lug upon the switch-hook to engage said projecting spring to change the set from signaling to talking position, and vice versa, in the operation of the hook, substantially as described.

3. In a telephone hook-switch, the combination with a metallic support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material, screws for securing said springs and strips together and to said support, said springs adapted to be operated by said hook-lever, and a lifting-spring for said hook-lever, the electric circuits being completed through said contact-springs independently of the lever and lifting-spring, substantially as described.

4. In a telephone hook-switch, the combination with a metallic support, provided with pivot-ears and a ledge at one side of said ears, of a hook-lever pivoted in said ears and carrying a slotted lug, switch-springs mounted upon said ledge parallel with said hook and having their free ends adjacent said lug, one of said springs being longer than the others and extending into the slot of said lug, whereby the springs are changed from signaling to talking positions, and vice versa, by the operation of the hook, substantially as described.

5. In a telephone hook-switch, the combination with a metallic support, of a hook-lever pivoted upon said support, a ledge on said support, a plurality of superimposed switch-contact springs, with insulating-strips therebetween mounted upon said ledge, a readily-removable means to clamp and bind said springs and strips in place whereby their number may be readily varied, one of said springs being extended to engage the telephone-hook to change them from signaling to talking position and vice versa in the operation of the hook, substantially as described.

6. In a telephone hook-switch, the combination with a metallic support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support, and adapted to be operated by the hook, and a lifting-spring secured to said support and adapted to lift the said hook-lever, substantially as described.

7. In a telephone hook-switch, the combination with a metallic support provided with ledges, of a hook-lever pivoted upon said support, a set of switch-springs mounted upon one of said ledges and adapted to lie alongside the hook-lever and to be operated thereby to change the circuits from talking to signaling positions, and vice versa, and a leaf-spring secured at one end to the other ledge and engaging the hook-lever with its free end to lift the same, substantially as described.

8. In a telephone hook-switch, the combination with a single integral metallic support, of a hook-lever mounted upon said support, a group of circuit-changing contact-springs also mounted upon said support, said lever being arranged to operate said springs from a point between the pivot and free end of the lever, substantially as described.

9. In a telephone hook-switch, the combination with a single integral support, of a hook-lever pivoted upon said support, a group of cir-

cuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support, said lever being arranged to operate said springs from a point between the pivot and free end of the lever, substantially as described.

10. In a telephone hook-switch, the combination with a single integral support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support and out of the plane of vibration of the hook-lever, and means for operating said springs by said hook-lever, substantially as described.

11. In a telephone hook-switch, the combination with a single integral metallic support, of a hook-lever pivoted thereto, a group of circuit-changing contact-springs also mounted upon said support and out of the plane of vibration of the hook-lever, and means for changing said springs from one position to another by the hook, substantially as described.

12. In a telephone hook-switch, the combination with a support, of a hook-lever pivoted thereto, a group of circuit-changing contact-springs mounted upon said support out of the plane of vibration of said lever, and means connected with the lever between its pivot and free end for operating said springs, substantially as described.

13. In a telephone hook-switch, the combination with a support, of a hook-lever pivoted thereto, a group of circuit-changing contact-springs mounted upon said support at the side of said lever and extending substantially parallel thereto, and means connected with the lever between its pivot and free end for operating said springs, substantially as described.

14. In a telephone hook-switch, the combination with a metallic support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support, and means for positively operating said springs in both directions by the hook, substantially as described.

15. In a telephone hook-switch, the combination with a metallic supporting-standard, of a hook-lever pivoted upon said standard, a group of circuit-changing contact-springs and alternately-disposed insulating material, means for securing said group of springs together, said means also serving to clamp said group of springs to the support, one of said springs projecting beyond the others and adapted to engage the switch-hook whereby the springs are positively moved from talking to signaling position, and vice versa, by the hook, substantially as described.

16. In a telephone hook-switch, the combination with a metallic supporting-standard, of a hook-lever pivoted upon said standard, a group of circuit-changing contact-springs and alternately-disposed insulating material, means for securing said group of springs together, said means also serving to clamp said group of springs to the support, one of said springs projecting beyond the others, said hook being adapted to transversely engage said projecting spring to change the group from one position to another in the operation of the hook, substantially as described.

17. In a telephone hook-switch, the combination with a single integral metallic support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support, and means for changing said springs from signaling position to talking position, and vice versa, controlled by the hook, substantially as described.

18. In a telephone hook-switch, the combination with a single integral metallic support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support, and means tending to cause said lever to rise, said springs being controlled by the hook, substantially as described.

19. In a telephone hook-switch, the combination with a metallic supporting-standard, of a hook-lever pivoted upon said standard, a group of circuit-changing contact-springs and alternately-disposed insulating material, means for securing said group of springs together, said means also serving to clamp said group of springs to the support, one of said springs projecting beyond the others, a projection upon the hook to engage said projecting spring to control the set in changing from signaling to talking position, and vice versa, and means to exert an upward spring-pressure upon the hook, substantially as described.

20. In a telephone hook-switch, the combination with a support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support and extending substantially parallel with the switch-hook lever, said group of springs being out of the plane of vibration of the hook-lever, and means for operating said springs by the hook-lever, substantially as described.

21. In a telephone hook-switch, the combination with a metallic support, of a hook-lever pivoted upon said support, a group of circuit-changing contact-springs and alternately-disposed insulating material directly mounted upon said support, and independent means tending to cause said lever to rise, said springs being controlled by the hook, substantially as described.

704,698. PROCESS OF TREATING FIBERS OF ANNUAL GROWTH FOR INDUSTRIAL PURPOSES. SIMEON O. EDISON, East Orange, N. J. Filed June 19, 1900. Serial No. 20,813. (No specimens.)

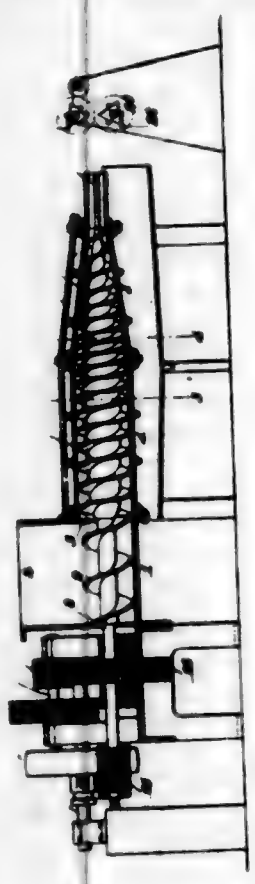

Claim.—1. The process of treating straw and other annual vegetable fibers for converting them into combustible briquets, consisting in cooking the fibers by subjecting them to the effect of a moist heat until the fibers are softened but have not entirely lost their identity, and finally in simultaneously expressing water from the mass and compressing the mass into combustible blocks, substantially as and for the purposes set forth.

2. The process of treating straw and other annual vegetable fibers for converting them into combustible briquets, consisting in cooking the fibers by subjecting them to the effect of a moist heat until the fibers are softened but have not entirely lost their identity, in simultaneously expressing water from the mass so treated and forming the mass into a continuous longitudinally-moving body, and in finally cutting such body by cross-cuts into blocks of the desired length, substantially as set forth.

704,699. TRANSMISSION-GEAR. DAVID FERGUSON, Buffalo, N. Y., assignor to the George N. Pierce Company, Buffalo, N. Y. Filed Apr. 17, 1902. Serial No. 103,201. (No model.)

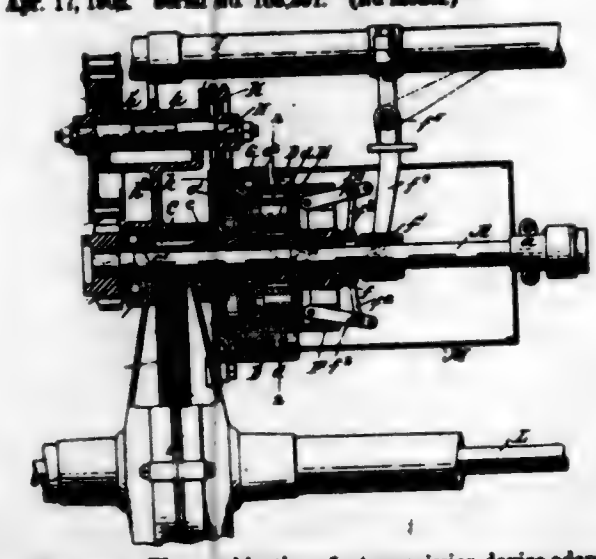

Claim.—1. The combination of a transmission device adapted to be rotated at a constant speed in one direction, a driven element, gearing between said transmission device and driven element and operated by the former for rotating said driven element in one direction at different speeds, a counter-shaft movable toward and from said transmission device and driven by the latter, and gearing between said counter-shaft and said driven element for rotating the latter in the opposite direction, substantially as set forth.

2. The combination of a transmission device adapted to be rotated at a constant speed in one direction, a driven element, gearing between said transmission device and driven element and operated by the former for causing said driven element to rotate in the same direction as said transmission device and at different speeds, a counter-shaft movable toward and from said transmission device and driven by the latter, and gearing between said counter-shaft and said driven element for rotating the latter in a direction opposite to the direction of rotation of said transmission device, substantially as set forth.

3. The combination of a transmission-shaft, a driven element, means operated by said shaft for causing the rotation of said driven element in one direction at different speeds, a counter-shaft movable toward and from said transmission-shaft and driven by the latter, and friction-gearing between said counter-shaft and said driven element for rotating the latter in the opposite direction, substantially as set forth.

4. The combination of a transmission-shaft, a driven pinion rotatable about the axis of said shaft, means for locking said pinion to said shaft and for rotating said pinion independently of said shaft, a counter-shaft, a bearing for said counter-shaft mounted eccentrically to the axis of said counter-shaft and adapted to be moved to move said counter-shaft toward and from said transmission-shaft, means for driving said counter-shaft from said transmission-shaft, and means for transmitting motion from said counter-shaft to said driven pinion, substantially as set forth.

5. The combination of a transmission-shaft, a driven pinion journaled to rotate about the axis of said shaft, means for locking said pinion to said shaft, means for driving said pinion independently of said shaft, a counter-shaft, a bearing for said counter-shaft arranged eccentrically to the axis thereof and adapted to be moved to move said counter-shaft toward and from said transmission-shaft, a sprocket-wheel fixed to said transmission-shaft, a sprocket-wheel fixed to said counter-shaft, a chain connecting said sprocket-wheels, a friction-wheel secured to said counter-shaft, and a friction-wheel fixed to said driven pinion and adapted to be engaged by said friction-wheel secured to said counter-shaft, substantially as set forth.

6. The combination of a transmission-shaft, a hollow shaft rotatable about the axis of said transmission-shaft, means operated by said transmission-shaft for rotating said hollow shaft at different speeds, a counter-shaft driven by said transmission-shaft, a gear-wheel carried by said hollow shaft, a gear-wheel connected to said counter-shaft, and means for moving one of said gear-wheels into operative relation with the other, substantially as set forth.

7. The combination of a transmission-shaft, a driving-pinion fixed on said shaft, a driven pinion journaled to rotate about the axis of said transmission-shaft, an internal gear surrounding said driving-pinion, planet-pinions journaled on a part fixed to said driven pinion and meshing with said driving-pinion and with said internal gear, means for locking said internal gear to said transmission-shaft, means for holding said internal gear from rotation, a reversing-shaft journaled parallel to said transmission-shaft and driven by the latter, means for moving the same toward and from the transmission-shaft, a friction-wheel secured to said driven pinion, and a friction-wheel secured to said reversing-shaft and adapted to be moved into frictional contact with said friction-wheel secured to said driven pinion, substantially as set forth.

704,700. CAN-BODY-FORMING MACHINE. JOHN G. ROGERS, Maywood, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Oct. 28, 1900. Serial No. 33,906. (No model.)

Claim.—1. In a can-body-forming machine, the combination with the horn, of a reciprocating can-body former D below the horn and provided with a central groove *d* therein, guides for supporting the blank below the horn and above said former, and a positively-operated independently-reciprocating clamp F within said groove in the former D for firmly and positively clamping the blank against the horn, the upper edges of said former D supporting the blank as it is lifted thereby against the horn, and said clamp F operating to clamp the blank against the horn before the blank is bent about the horn by the further upward movement of said former D, substantially as specified.

2. In a can-body-forming machine, the combination with the horn, of a reciprocating former D below the horn and provided with a central groove *d* therein, guides for supporting the blank below the horn and above the former, and an independently-reciprocating clamp F fitting within said groove in the former, and mechanism for positively operating the clamp to hold the blank rigidly and firmly against the horn, the upper edges of said former D supporting the blank as it is lifted thereby against the horn, and said clamp F operating to clamp the blank against the horn before the blank is bent about the horn by the further upward movement of said former D, substantially as specified.

3. In a can-body-forming machine, the combination with the horn, of a reciprocating body-former D below the horn provided with a central groove *d* therein, guides for supporting the blank below the horn and above the former, a cam and connecting mechanism for positively reciprocating the former, an independently-reciprocating clamp fitting within said groove in the former D for clamping the blank against the horn, and a cam and connecting mechanism for positively operating said clamp, the upper edges of said former D supporting the blank as it is lifted thereby against the horn, and said clamp F operating to clamp the blank against the horn before the blank is bent about the horn by the further upward movement of said former D, substantially as specified.

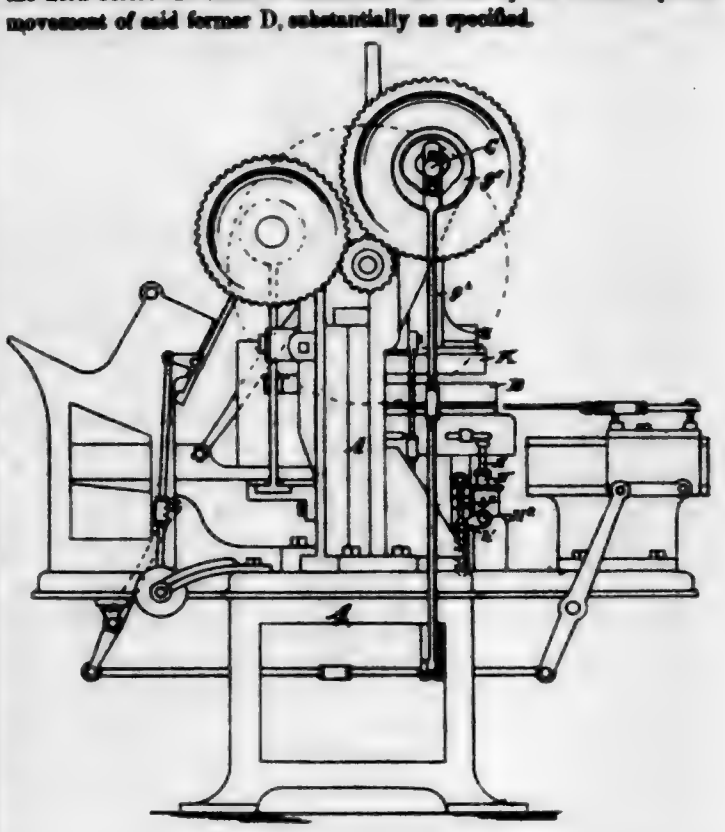

704,701. BOX. RAPHAEL JANSSEN, Allegheny, Pa. Filed Feb. 15, 1902. Serial No. 94,175. (No model.)

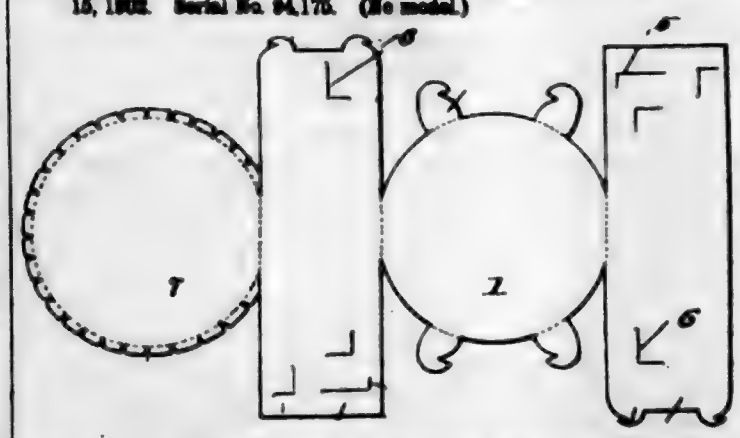

Claim.—In a device of the type set forth, the combination of a base carrying interlocking projections arranged in pairs upon its periphery diametrically opposite one another, sides formed integral with the base diametrically opposite one another, interlocking projections carried by one end of one of the sides and the opposite end of the other of the sides, with an angular slit 6 formed in the said ends of the sides and a series of angular slits 5 formed in the ends of the sides opposite to the ends carrying said projections, and an integral lid having scalloped edges formed integral with one of the sides at a point opposite to its connection with the base, substantially as described.

704,702. BEDSTEAD-FASTENING. BENJAMIN H. JOHNS, St. Louis, Mo., assignor of one-half to Smith & Davis Manufacturing Company, St. Louis, Mo., a Corporation of Missouri. Filed Jan. 20, 1902. Serial No. 90,255. (No model.)

Claim.—1. A bedstead-fastening or the like comprising a socket member having a socket and an opening through one of its plates and opening into said socket, a bracket member having a part adapted to enter said socket, said part having an opening which, when the said members are assembled, lies in substantial alinement with said opening in said socket member, a key movable in said openings and adapted to secure said fastening members together, and a lateral projection upon said key, the opening in said bracket-member part and the portion of said socket-

member opening adjacent said socket being sufficiently large to permit passage of said key and said projection, and the said opening in the said socket member having a contracted portion to prevent passage of said key and projection substantially as described.

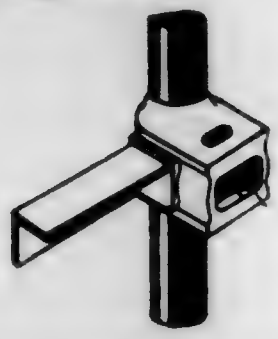

2. In a bedstead-fastening or the like, a socket member having a plate provided with an opening having walls upon all of its sides, a bracket member extending into said socket member, and a wedge-key fitting in said opening and engaging said socket member and said bracket member; substantially as described.

704,703. SCENERY-BRACE. FRANK T. LIPPINCOTT, Howard, Ohio. Filed Mar. 24, 1902. Serial No. 99,691. (No model.)

Claim.—1. In a scenery-brace, the combination with a brace-body, a pin 3 connected with said body and a scenery-frame-engaging hook with which said pin is pivotally connected, of a binding-disk 8 carried eccentrically on said pin and adapted to be projected within said hook-body and means for detachably connecting the lower end of said brace-body with a stage-floor.

2. In a scenery-brace, the combination of a brace-body, a spring-pressed pin 3 having a hinge connection with the upper portion of said body, a scenery-frame-engaging hook with which said pin is pivotally connected, a binding-disk 8 carried on said pin and adapted to be projected within said hook and means connected with the lower end of the brace-body for detachably engaging the same with a stage-floor, substantially as specified.

3. In a scenery-brace, the combination with a brace-body and a scenery-frame-engaging hook at its upper end, of an angular extension at the base of said brace, a fixed floor-engaging pointed projection 12 on said extension, a pivoted bar 14 having a floor-engaging point and a cam-lever pivoted in connection with said brace extension and adapted by depression to drive the point 14ª of said bar into engagement with a floor, substantially as specified.

4. In a scenery-brace, the combination with a brace-body comprising adjustably-connected upper and lower sections, a scenery-frame-engaging hook having a hinge connection with the upper end of the upper section and an eccentrically-mounted clamping-disk carried by one arm of said hook and adapted to be projected through an opening in said arm, of an angular extension 11 at the base of the lower brace-section, a fixed floor-engaging point and a pivoted point-carrying bar connected with said extension and a pivoted lever adapted to press the point of said pivoted bar into engagement with a floor, substantially as specified.

704,704. STOP-MOTION FOR DRAWING-MACHINES. JOHN T. HEATH and CHARLES R. McELWAIN, Taunton, Mass., assignors to Mason Machine Works, Taunton, Mass., a Corporation of Massachusetts. Filed Mar. 28, 1901. Serial No. 53,513. (No model.)

Claim.—1. In a drawing-frame, a stop-motion therefor, calender-rolls, the coiler, and controlling means for the stop-motion operative by downward pressure upon accumulation of sliver below the calender-rolls and upon said controlling means, and by upward pressure when the can is full.

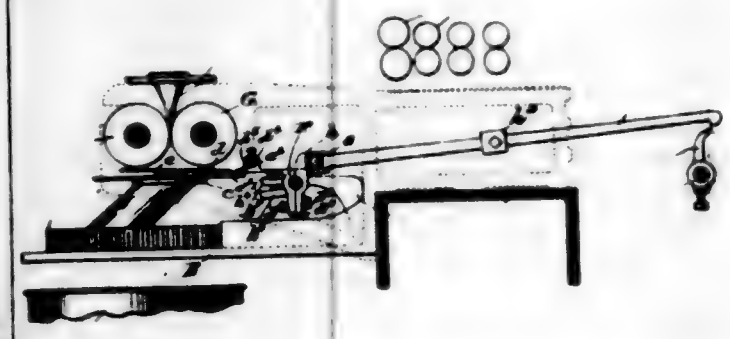

2. The combination, with the vibrator of a drawing-frame stop-motion, the calender-rolls and the coiler, of a pivoted stop-lever adapted to be rocked by or through the coiler when the can is full, to arrest the motion of the said vibrator, and an auxiliary lever having its free end interposed between the said rolls and the coiler and operative by downward pressure due to accumulation of sliver upon its free end to rock said stop-lever and effect its coöperation with the vibrator.

3. The combination, with the vibrator of a drawing-frame stop-motion, the calender-rolls and the coiler, of means interposed between the said rolls and the coiler, and operative by downward pressure, due to accumulation of sliver directly above said means, and by upward pressure from the coiler when the can is full, to arrest the motion of the vibrator.

4. In a drawing-frame, a stop-motion therefor, the coiler, calender-rolls, a pivotally-mounted full-can stop-lever movable by elevation of the coiler to effect the operation of the stop-motion, and an auxiliary lever connected with the stop-lever between its fulcrum and the coiler, and having its free end extended below the calender-rolls, accumulation of sliver upon the free end of said auxiliary lever acting to depress it and thereby to rock the stop-lever into position to effect the operation of the stop-motion.

5. In a drawing-frame, a stop-motion therefor, the coiler, calender-rolls, a stop-lever having a fixed fulcrum and having its outer end projecting in the upward path of movement of the coiler, and an auxiliary lever fulcrumed between its ends and pivotally connected at one end with the stop-lever near the fulcrum thereof, the outer end of the auxiliary lever extending beneath the calender-rolls, between the latter and the coiler, whereby upward movement of the coiler, or depression of the outer end of the auxiliary lever, by accumulation of sliver thereupon will operate to elevate the outer end of the stop-lever and thereby effect its coöperation with the stop-motion.

6. In a drawing-frame, the coiler, a stop-motion for the frame, and controlling means for the stop-motion, said means including two independently-fulcrumed levers pivotally connected between their fulcra, direct rocking of one of said levers, upon elevation of the coiler, or indirect rocking of such lever, due to rocking of the other lever by an accumulation of sliver above and upon the same, operating to effect the operation of the stop-motion.

7. In a drawing-frame, a stop-motion therefor, the coiler, and coiler-cover, a stop-lever adapted to be rocked to coöperate with said stop-motion, the outer end of the lever normally resting on the coiler-cover in the vertical path of the coiler, and an auxiliary lever fulcrumed on said coiler-cover and at one end pivotally connected with the stop-lever, the other end of the auxiliary lever being depressed by accumulation of sliver, to rock the stop-lever.

8. In a drawing-frame, the combination with the vibrator of a stop-motion, and a series of coilers, of a rock-shaft having a series of lever-arms each adapted to coöperate with and be lifted by upward movement of a coiler, a lever pivotally connected with each lever-arm and adapted when depressed at its free end to raise the outer end thereof, and rock said shaft upon accumulation of sliver above the coiler and upon the free end of the lever, and a hooked lever-arm mounted on said rock-shaft and brought into engagement with the vibrator to arrest the same when the rock-shaft is rocked.

9. The combination, with the front shaft and the vibrator of a drawing-frame stop-motion, and the coiler, of a hooked lever-arm loosely fulcrumed on the shaft and having a forwardly-extended toe, a finger fast on the shaft, an adjustable stop carried by the finger and engaging the toe, to regulate the setting of said lever-arm, and means to rock the shaft by upward pressure of the coiler, or by downward pressure due to sliver accumulation above the coiler, to effect coöperation of the lever-arm and the vibrator.

704,705. **WASTE-FIXTURE FOR BATH-TUBS OR THE LIKE.** FRANCIS T. MEYER, Montclair, N. J., assignor to The Meyer-Sniffen Company, Limited, New York, N. Y., a Corporation of New York. Filed Aug. 24, 1901. Serial No. 73,164. (No model.)

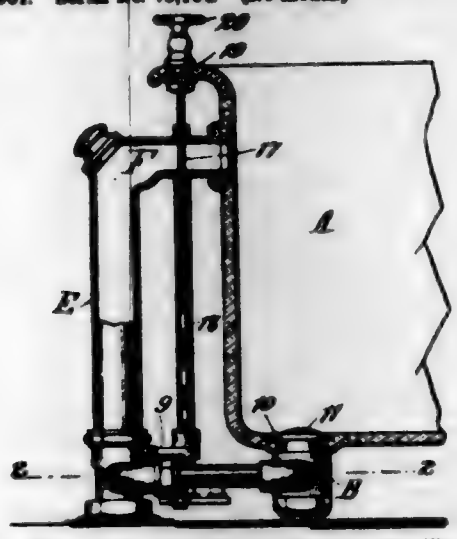

Claim.—1. The combination with a bath-tub or the like, of a waste connection including two horizontal waste-pipes connecting with the waste-outlet of the tub with a space between them, and waste-operating mechanism located between said pipes, substantially as described.

2. The combination with a bath-tub or the like, of a waste connection including two horizontal waste-pipes connecting with the waste-outlet of the tub with a space between them, waste-operating mechanism located between said pipes, and a vertical rod for operating the waste mechanism from above the waste-pipes, substantially as described.

3. The combination with a bath-tub or the like, of a waste connection including two horizontal waste-pipes connecting with the waste-outlet of the tub with a space between them, waste-operating mechanism located between said pipes, a horizontal overflow-pipe, and an operating-rod for the waste mechanism passing through the overflow-pipe, substantially as described.

4. The combination with the bath-tub A having the waste chamber or plug B, horizontal overflow-pipe F, stand-pipe E and waste D, of a plurality of horizontal waste-pipes C connecting the waste chamber or plug B with the waste D, and waste-operating mechanism between said pipes C, substantially as described.

5. The combination with a bath-tub or the like and its waste chamber or plug and the waste D, of waste-operating mechanism located between the waste-plug and waste, and a waste connection between said plug and waste offset from the waste-plug and waste to pass the waste connection, substantially as described.

704,706. **BALANCE-BOOK.** JAMES R. McCORD, Jr., St. Louis, Mo. Filed Jan. 17, 1902. Serial No. 90,121. (No model.)

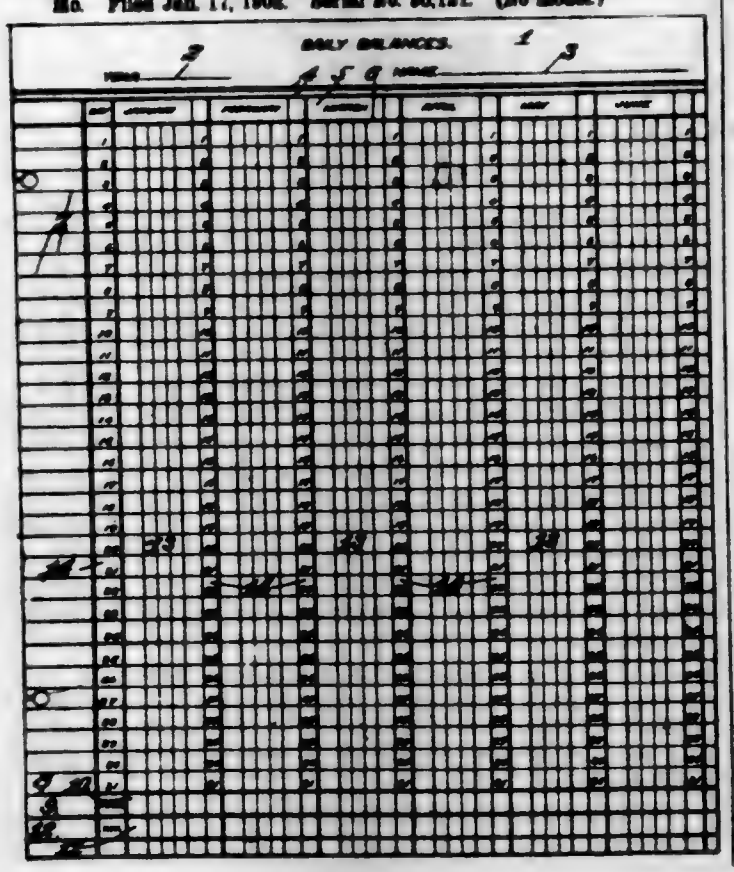

Claim.—1. A page of the character indicated having a single main line in combination with a plurality of vertical daily-balance columns arranged in proximity to each other, each of said daily-balance columns having a heading indicating a period of time, and each of said columns being provided with a vertical series of appropriately-designated daily-entry spaces; substantially as described.

2. A page of the character indicated having a single name-line in combination with a plurality of vertical daily-balance columns arranged in proximity to each other, each of said daily-balance columns having a heading indicating a period of time, and each of said columns being provided with a vertical series of appropriately-designated daily-entry spaces, each of said columns being also provided with an interest-space; substantially as described.

3. A page of the character indicated having a single name-line in combination with a plurality of vertical daily-balance columns arranged in proximity to each other, each of said daily-balance columns having a heading indicating a period of time, and a vertical index-column in series with said daily-balance columns, a series of horizontal daily-entry spaces extending across said columns and having in said index-column designations for the several days included in the period of time indicated by the headings of the respective daily-balance columns, and horizontal total and interest spaces extending across said daily-balance columns; substantially as described.

704,707. **LEATHER.** MENDEL PIANKO, Woodhaven, N. Y., assignor to North American Leather Company, a Corporation of New York. Filed Apr. 21, 1902. Serial No. 103,863. (No model.)

Claim.—1. As a new article of manufacture, a "pebbled" leather comprising a base or bottom layer or fabric, an intermediate layer consisting of leather pebbles of fanciful configuration, and a finishing or top layer, the whole being united by cement and "boarded."

2. As a new article of manufacture a "pebbled" leather comprising a base or bottom split of leather, leather pebbles of fanciful configuration secured upon the surface thereof, and a surface layer or fabric secured upon the base inclosing the pebbles, the whole being cemented and "boarded."

3. As a new article of manufacture, a "pebbled" leather consisting of pebbles secured between two layers of leather.

4. As a new article of manufacture, a "pebbled" leather consisting of pebbles secured between two splits of leather.

704,708. **PACKING AND DISPLAY BOX FOR STATIONERY.** WILLIAM A. PIKE, Pittsfield, Mass., assignor to Eaton-Hurlbut Paper Company, Portland, Me., and Pittsfield, Mass., a Corporation of Maine. Filed May 23, 1901. Serial No. 61,587. (No model.)

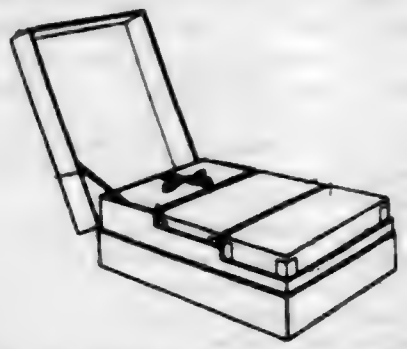

Claim.—1. As an improved article of manufacture a display-box for stationery divided into a plural number of compartments, each compartment being less in height, measuring from the bottom, than the one back of it, filling-pieces forming the bottom of certain of the compartments and filling-pieces for the tops of certain of the compartments arranged, when in place, with their tops in the same plane as the plane of the upper boundary of the highest compartment.

2. As an improved article of manufacture, a display-box for stationery divided into a plural number of compartments, each compartment be-

ing less in height, measuring from the bottom, than the one back of it, filling-pieces forming the bottom of the compartment, and filling-pieces for the tops of the compartments of lesser height.

704,709. DOUBLE-DECK CAR. WILLIAM R. SHARP, Chicago, Ill., assignor to Armour & Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 14, 1901. Serial No. 55,966. (No model.)

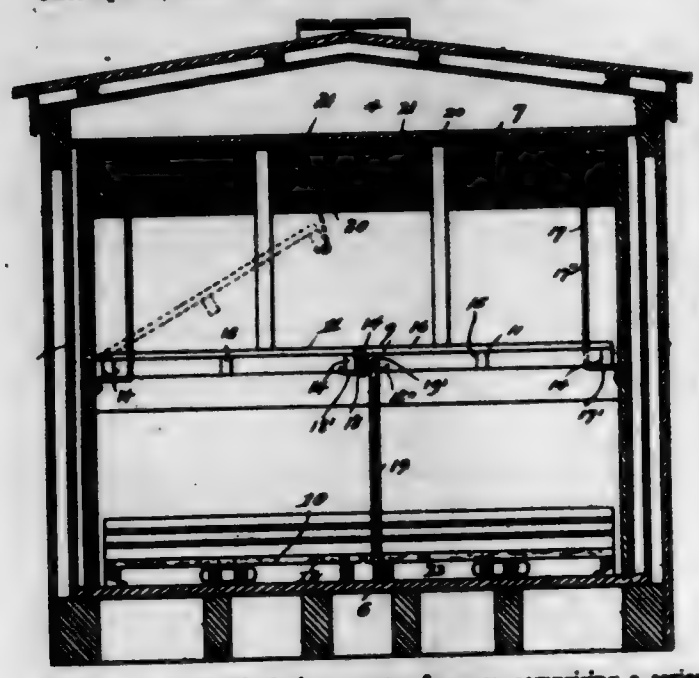

Claim.—1. A double-deck apparatus for cars, comprising a series of vertically-disposed guide-rods arranged adjacent to, but separated from, the side wall of the car, rack-sections at the lower ends of said guide-rods, a series of rack-sections of less width than the transverse width of the car, severally provided along their longitudinal edges next the wall of the car with longitudinally-extending supporting joint members adapted to rest upon said rack-supports between the said guide-rods and the wall of the car, the construction and relative arrangement of said joint and guide-rods being such as to permit the rack-sections to be swung into vertical position and shifted upwardly with their longitudinally-supporting joints between the guide-rods and wall of the car, means for supporting said rack-sections in said vertical and uplifted positions at a height above the floor of the car sufficient to accommodate a similar rack-section arranged in vertical position beneath the same and means for supporting the outer edges of the rack-sections to hold the same in horizontal position.

2. A double-deck apparatus, comprising a series of vertically-disposed guide-rods arranged adjacent to, but separated from, the side wall of the car, rack-sections at the lower ends of said guide-rods, a series of rack-sections of less width than the transverse width of the car, severally provided along their longitudinal edges next the wall of the car with longitudinally-extending supporting joint members adapted to rest upon said rack-supports between the said guide-rods and the wall of the car, the construction and relative arrangement of said joint and guide-rods being such as to permit the rack-sections to be swung into vertical position and shifted upwardly with their longitudinally-supporting joints between the guide-rods and wall of the car, means for supporting said rack-sections in said vertical and uplifted positions at a height above the floor of the car sufficient to accommodate a similar rack-section arranged in vertical position beneath the same and means for supporting the outer edges of the rack-sections to hold the same in horizontal position, and suspension-hooks secured to the ceiling of the car at points respectively above the several rack-sections and adapted to temporarily support the swinging end of the several rack-sections at a height intermediate their normal horizontal position and the ceiling of the car.

3. A double-deck apparatus for cars, comprising a series of vertically-disposed guide-rods arranged adjacent to, but at an interval from the side wall of the car, each guide-rod having at its lower end a horizontal extension extending outwardly to and connected with the side wall and forming a rack-support, a series of rack-sections of less width than the transverse width of the car, each comprising a longitudinally-disposed joint member adjacent to each side margin and a series of transverse slats secured to said joint members, the joint member at the outer edges of said rack-sections being arranged to extend between said guide-rods and the adjacent side wall of the car and adapted to rest upon the rack-supporting portions of said rods, and means for supporting the opposite edges of said rack-sections comprising one or more legs pivotally connected with one member of each pair of laterally opposite sections and respectively adapted to be folded upon the rack-sections when out of use, and projections upon the leg-supported sections adapted to engage and support the opposite meeting sections, substantially as described.

4. A double-deck apparatus for cars, comprising two series of vertically-disposed guide-rods arranged adjacent to, but at an interval from the respective side walls of the car, each guide-rod having at its lower end a horizontal extension extending outwardly to and connected with the side wall and forming a rack-support, two series of rack-sections connected with the respective series of supports, each rack-section of a width approximately equal to one-half the width of the car, and each comprising a longitudinally-disposed joint member adjacent to each side margin and a series of transverse slats secured to said joint members, the joint member at the outer edge of each rack-section being arranged to extend between a pair of said guide-rods and the adjacent side wall of the car and adapted to rest upon the rack-supporting portions of said rods, means for supporting the meeting edges of the said rack-sections comprising plate-like extensions secured to the under side of the joint at the meeting margins of one section and underlying the joint of the laterally opposite section and means for supporting said sections at their meeting margins comprising legs pivotally connected with said plate-like extensions, and adapted to be folded upon the racks when out of use, substantially as described.

704,710. BARBED-WIRE MACHINE. EDW. F. SHELLABERGER, DeKalb, Ill. Filed Mar. 27, 1902. Serial No. 100,322. (No model.)

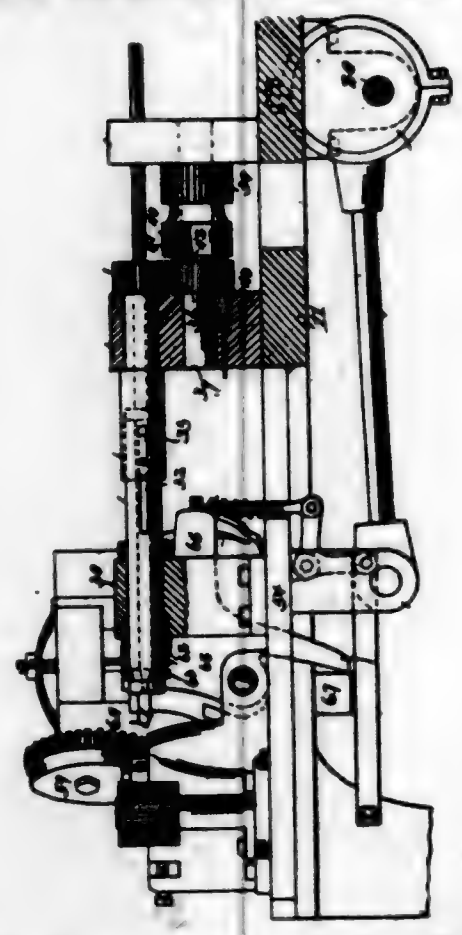

Claim.—1. In a barbed-wire machine the combination with a stationary frame, a table mounted to slide upon said frame, bearings on the frame and the table respectively, and a two-part spindle, one part of which is mounted in the bearing on the frame and the other in the bearing on the table, a driving-gear fixed on the non-sliding member of the spindle, means for sliding the table and gearing for imparting an intermittent rotary motion to the two-part spindle, substantially as described.

2. In a barbed-wire machine the combination with a two-part spindle the parts of which are connected for rotary movement but adapted to telescope or slide with reference to each other, a gear fixed upon one member of the spindle, a loose gear engaged therewith, a clutch for holding said loose gear against movement in one direction, and a rack and pinion whereby operative rotary movement is imparted to the spindle through the clutch in one direction of movement of the rack, and the loose gear is held against retrograde movement during the opposite movement of the rack.

3. In a barbed-wire machine the combination with an intermittently-rotating spindle, of a clutch-gear for driving said spindle, comprising a constantly-rotating clutch member having a spring-pin, and a cam on the loose gear, and adapted for automatic engagement and release, substantially as described.

4. In a barbed-wire machine the combination with an intermittently-driven spindle, of a loose driving-gear carrying a clutch member, a rec-

cent clutch member constantly driven, and a spring-actuated locking-pin for holding the loose gear against retrograde movement, substantially as described.

704,711. COMBINED REFLECTOR OR LAMP-SHADE AND COLLAR. JOHN A. CARLSHOT, Brooklyn, N. Y., assignor to George Frink Spencer, Newark, N. J. Filed July 28, 1900. Serial No. 25,073. (No model.)

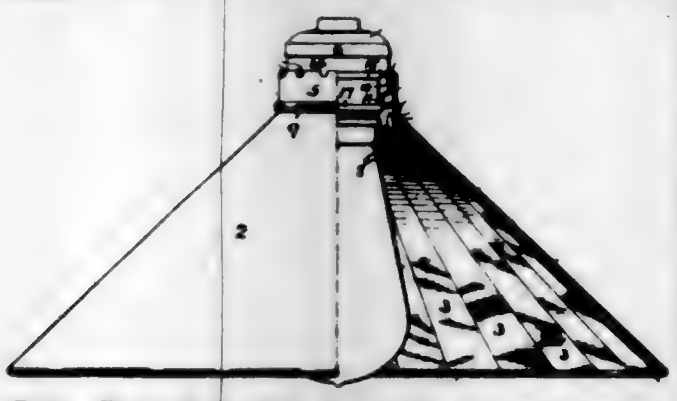

Claim.—The herein-described socket-receiving collar and lamp-shade support, consisting, essentially, of a cylindrical portion having inwardly and downwardly extending tongues 10, an upper and lower bearing portion on each tongue, the said collar being formed with an annular and outwardly-projecting head, and a means of ventilation between the said tongues, and clamping-tongues 8 on said collar, all arranged, substantially as and for the purposes set forth.

704,712. MOLDING-MACHINE. WILLIAM M. DUNCAN, Alton, Ill., assignor of one-half to James Duncan, Alton, Ill. Filed July 3, 1901. Serial No. 66,945. (No model.)

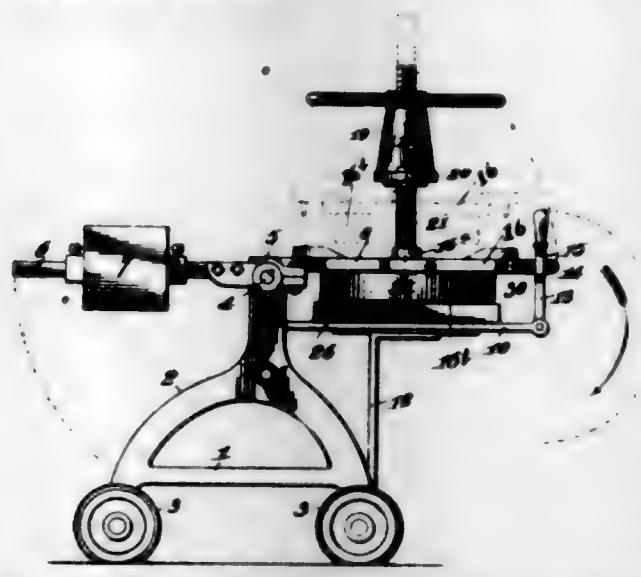

Claim.—1. In a molding-machine, the combination of a support, a counterbalanced shaft journaled in said support, a frame keyed at one side to said shaft, a hub having horizontally-extending arms, standards connecting the arms of the hub to the frame, a pattern-supporting plate carrying a pattern movable in the frame, and provided with perforations that receive the standards, a threaded rod extending from the frame, a sleeve held against movement by the hub, surrounding the threaded rod, a hand-wheel secured to the sleeve, a clamping-plate having a right-angled extension which is loosely pivoted to the counterbalanced shaft, and a bracket secured to the support at one side of the counterbalanced shaft and adapted to support the mold.

2. In a molding-machine the combination with a counterbalanced shaft, a frame keyed to said shaft, a locking projection on said frame and a pattern-supporting plate carrying a pattern adapted to fit in said frame, of a clamping-plate pivotally connected to said shaft, and a locking-handle pivoted to the outer end of the clamping-plate and provided with a slot which is adapted to engage the said projection on the frame; said clamping-plate being adapted to be reversed with the pattern and frame.

704,718. EXPLOSIVE-ENGINE. MATHIAS J. KLEIN, Baltimore, Md. Filed Jan. 17, 1901. Serial No. 43,650. (No model.)

Claim.—1. In an explosive-engine of the four-cycle type, the combination, of a single-acting cylinder, having on the compression side of the same an insulated cylinder extension, and on the other side of the cylinder a water-jacket, the highest point of the latter having communication with the atmosphere as described, said water-jacket being surrounded by air-ribs for cooling the water in the jacket, of a piston, having a hollow piston extension slightly smaller in diameter than the piston, in length equal to the piston-stroke or longer, and extending into the cylinder extension, the hollow space of the piston extension being closed to the atmosphere, for the purpose and substantially as shown and described.

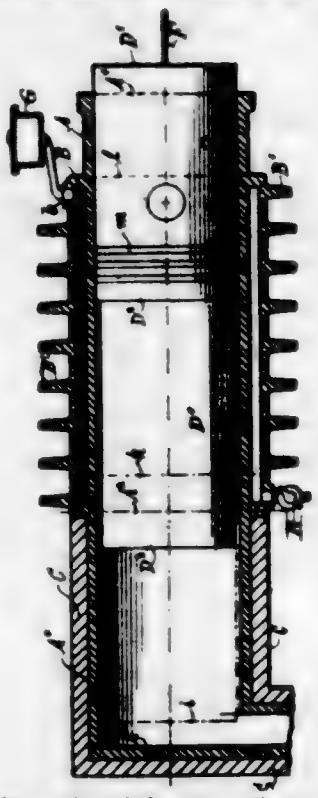

2. In an explosive-engine of the four-cycle type, the combination, of the single-acting cylinder A, having the cylinder extension A^6, the latter being surrounded by the removable insulation C, the other side of the cylinder having the water-jacket B, the latter, by means of opening *b*, being in communication with the atmosphere as described, and having the air-ribs B' for cooling the water in the jacket, of a piston D, having the hollow piston extension D^6, slightly smaller in diameter than piston D, its length D^3 D^5 being equal to the piston-stroke or longer and extending into the cylinder extension, the hollow space E of the piston extension being closed by the removable plate D^4, the whole constructed, to be operated and to work in the manner and for the purpose, substantially as described.

3. In an explosive-engine of the four-cycle type, the combination, of a single-acting cylinder, having on the compression side of the same a cylinder extension, and on the other side of the cylinder a water-jacket, the highest point of the latter having communication with the atmosphere as described, said water-jacket being surrounded by air-ribs for cooling the water in the jacket, of a piston, having a hollow piston extension slightly smaller in diameter than the piston, in length equal to the piston-stroke or longer, and extending into the cylinder extension, the hollow space of the piston extension being open to the atmosphere, for the purpose and substantially as shown and described.

704,714. ATTACHMENT FOR SPECTACLES. AUBIN A. LAPORTE, St. Louis, Mo. Filed Oct. 11, 1901. Serial No. 78,208. (No model.)

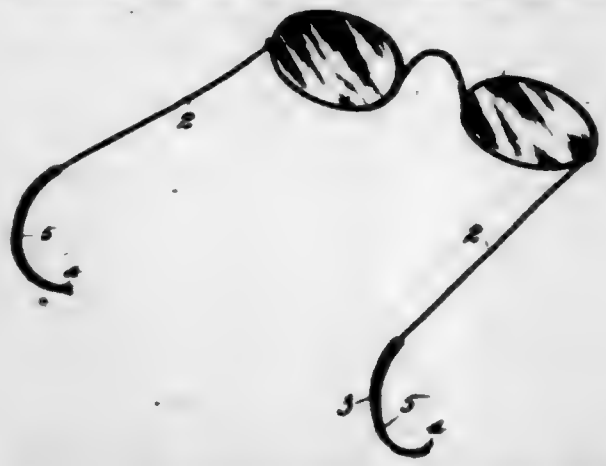

Claim.—1. The combination with a pair of spectacles having a temple provided with a hook, of an attachment comprising a flexible plate loosely threaded at both ends onto the hook of said temple and lying on the inside of the curve thereof, and free from engagement with said hook.

intermediate the ends of the plate, substantially as and for the purpose set forth.

2. The combination with a pair of spectacles having a temple provided with a hook, of an attachment comprising a channeled plate loosely threaded at both ends onto the hook of said temple and lying on the inside of the curve thereof, substantially as and for the purpose set forth.

3. The combination with a pair of spectacles having temples provided with hooks, of an attachment comprising a spring-strip threaded onto said temple-hooks at the insides thereof and so laterally connected to the hooks that lateral movement of the strips is provided with respect to said hooks, substantially as described.

704,715. THREAD-PARTER FOR LOOMS. EDWARD S. STIMPSON, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Jan. 16, 1902. Serial No. 90,014. (No model.)

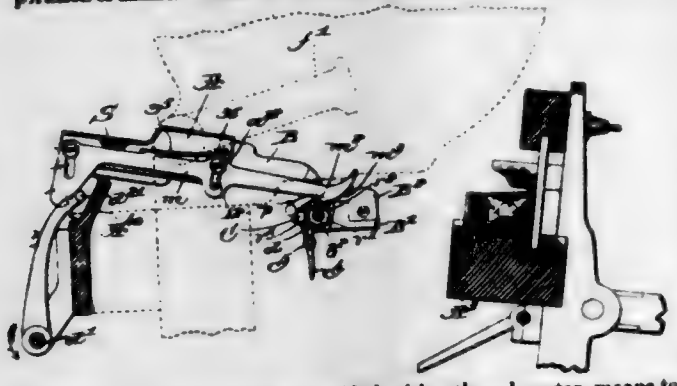

Claim.—1. A loom-temple provided with a thread-parter, means to actuate it and means to operatively position it, a detent to normally engage the latter means and maintain the thread-parter inoperative, a device to release such means, and means governed by a plurality of successive operations of the thread-parter to effect reëngagement of the positioning means and the detent.

2. A loom-temple provided with a thread-parter, means to actuate it and means to operatively position it, a rotatable detent to normally engage the latter means and maintain said thread-parter inoperative, a device to rotate the detent and release such means, and means governed by a plurality of successive actuations of the thread-parter to effect movement of the detent into reëngagement with the positioning means.

3. A loom-temple provided with a thread-parter, means to actuate it and a spring to operatively position it, a detent to normally engage the spring and maintain the thread-parter inoperative, a device to disengage the spring from the detent, and means actuated by a plurality of successive operations of the thread-parter to restore the spring to the control of the detent.

4. A loom-temple provided with a thread-parter, means to project it into operative position and means to retract and operate it, a detent to normally engage the projecting means and maintain the thread-parter retracted and inoperative, a device to disengage said means and the detent, and means governed by a plurality of successive retractive movements of the thread-parter to restore the projecting means to the control of the detent.

5. A reciprocating temple provided with a relatively movable thread-parter, actuating means therefor to part the filling end in advance of the outward stroke of the temple, a detent to normally maintain the thread-parter inoperative, a device operated by or through the inward stroke of the temple to release the thread-parter from the control of the detent, and means governed by a plurality of successive operations of the thread-parter to restore the same to the control of the detent.

6. A reciprocating temple provided with a relatively movable thread-parter, a spring to move it into operative position, a detent to engage the spring and maintain the thread-parter retracted, means to actuate the latter, a device fixed relatively to the temple, to effect disengagement of the detent and spring on the inward stroke of the temple, and means actuated by a plurality of successive operations of the thread-parter to effect reëngagement of the spring and detent.

7. A loom-temple provided with a relatively movable thread-parter, means to operatively position it, and means to actuate it, a rotatable ratchet mounted on the temple and having a detent to engage and maintain the positioning means inoperative, an actuating-pawl for the ratchet, moved at each operation of the thread-parter to rotate the ratchet step by step, and a device to effect initial relative movement of the ratchet to release the positioning means from the control of the detent, whereby the thread-parter is permitted to be moved into operative position, successive operations of the thread-parter thereafter by its actuating means effecting the rotation of the ratchet to again bring the detent into operative engagement with the positioning means to retain the thread-parter inoperative.

8. A loom-temple provided with a relatively movable thread-parter, a spring to operatively position it, a rotatable ratchet on the temple, an actuating-pawl therefor movable with the thread-parter, means governed by the ratchet to engage the spring and retain the thread-parter inoperative, means to actuate the latter when operatively positioned, a predetermined number of successive operations rotating the ratchet to effect engagement of the spring and the retaining means, to hold the thread-parter inoperative, and a device to engage and rotate the ratchet from normal position, to thereby release the spring and permit it to operatively position the thread-parter.

9. In a loom provided with filling-replenishing mechanism, a controller therefor, a thread-parter, a spring to operatively position it, means to normally engage the spring and maintain the thread-parter inoperative, a device rendered operative by or through the action of the controller, to disengage the spring and said means, and means to effect reëngagement of the spring, with the thread-parter inoperative, after a predetermined number of successive operations of the latter.

10. In a loom provided with filling-replenishing mechanism, a controller therefor, the lay, a thread-parter having a heel adapted when operatively positioned to be engaged by the lay, to operate the parter, means to operatively position the thread-parter, a detent to engage said means and normally maintain the parter inoperative, a device rendered operative by the controller upon filling replenishment to effect movement of the detent to release the positioning means, and means to restore the latter to the control of the detent after a predetermined number of operations of the thread-parter by the lay.

11. In a loom provided with filling-replenishing mechanism, a controller therefor, a reciprocating temple, its fixed stand, a thread-parter movable on the temple, to be engaged and actuated by a moving part of the loom, means to operatively position the thread-parter, a detent mounted on the temple to normally engage said means and retain the parter inoperative, a releasing device carried by the temple-stand and rendered operative by the controller upon filling replenishment, to effect disengagement of the positioning means and the detent by or through the inward stroke of the temple, and means to restore the positioning means to the control of the detent by or through a predetermined number of operations of the thread-parter.

12. In a loom provided with filling-replenishing mechanism, a reciprocating temple provided with a relatively movable thread-parter, a spring to move it into operative position, a temple-stand, a ratchet rotatably mounted on the temple and having an attached detent to engage the spring and lock the parter in inoperative position, an actuating-pawl for the ratchet, to rotate the same step by step when the thread-parter is operated, a predetermined number of successive operations by a moving part of the loom causing engagement of the spring by the detent, a lug on the ratchet, and a normally inoperative hooked arm on the temple-stand, rendered operative upon filling replenishment to engage the lug on the outward stroke of the temple, the return stroke of the latter causing rotation of the ratchet, through engagement of the arm and lug, to release the spring from the control of the detent.

13. In a loom provided with automatic filling-replenishing mechanism, a reciprocating temple provided with a slidably-mounted thread-parter having a heel adapted to be engaged and actuated by a moving part of the loom, a spring to operatively position the thread-parter, a detent movably mounted on the temple and normally engaging the spring, to retain the parter inoperative, means operated conjointly by the reciprocation of the temple and filling replenishment, to move the detent out of engagement with and release the spring, and means actuated by a plurality of successive operations of the thread-parter, to move the detent into reëngagement with the spring and retain the parter inoperative.

14. In a loom provided with automatic filling-replenishing mechanism, a reciprocating temple provided with a slidably-mounted spring-controlled thread-parter adapted, when operatively positioned, to be actuated by a moving part of the loom, a detent rotatably mounted on the temple and normally locking the parter from operation, a ratchet rotatable with the detent, an actuating-pawl operated by a plurality of successive operations of the parter to rotate the ratchet and effect the locking of the thread-parter by the detent, and means operated conjointly by filling replenishment and the reciprocation of the temple, to move the detent and unlock the thread-parter.

704,716. DRAFT-RIGGING FOR CARS. WILLIAM G. SWAN, Detroit, Mich. Filed Dec. 12, 1901. Serial No. 85,646. (No model.)

Claim.—1. A draft-rigging comprising the draw-bar and followers, in combination with a pair of draft-sills having separate independent follower confining and supporting members mounted opposite each other upon said sills, and a pair of draft-arms secured to the bottom of said sills having further separate and independent follower confining and supporting members secured oppositely thereto, substantially as described.

2. The draft-sill and draft-arm, in combination with an upper draw-

bar-follower-engaging member having lateral flanges adapted to rest between said sill and arm, a lower follower-engaging member bolted to said draft-arm, and an intermediate follower-engaged member embedded within and secured to said draft-arm, substantially as described.

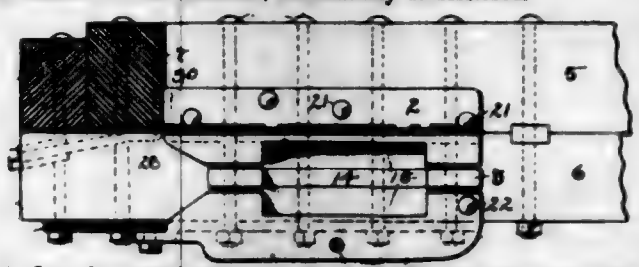

3. In a draft-rigging for cars, the draft-sills and draft-arms secured thereto, a draw-bar and followers and a support therefor comprising upper members having lateral flanges adapted to rest between each sill and arm, lower members mounted on said draft-arms, and a separate intermediate member embedded within each draft-arm, all of said members having follower and engaging and confining portions, substantially as described.

4. The draft-sills having draft-arms secured at their ends and bottom, an end sill connecting said sills and arms, a draft-rigging frame mounted on said draft sills and arms, and a tie-bolt mounted at the end of said draft-arms and having a vertical portion adapted to engage between the end sill and the end of the draft-sill, substantially as described.

5. The draft-sill, and the upper follower-engaging member mounted thereon having a vertical rib at its front end to engage the end of said sill, in combination with a separate lower follower-supporting member mounted beneath said sill and upper member, and a single cross-bolt 22 to pivotally support said lower member in relation to said upper member, substantially as described.

704,717. ARTIFICIAL FUEL AND METHOD OF PREPARING SAME. BERTRAND M. THOMAS, San Francisco, Cal. Filed Nov. 20, 1901. Serial No. 83,035. (No specimens.)

Claim.—1. An artificial fuel composed of tule peat and crude petroleum mixed with an alkali earth, substantially as set forth.

2. The method of preparing artificial fuel from tule peat which consists in first drying the peat, then saturating it with crude petroleum, then mixing it with alkali earth, and afterward pressing it into forms, substantially as set forth.

704,718. BALING-PRESS. LUTHER TRABUE, Girard, Ill., assignor to the Ohio Hay Press Company, Bellevue, Ohio, a Corporation. Filed Apr. 7, 1902. Serial No. 101,851. (No model.)

Claim.—1. In a baling-press, the combination of a plunger, a sectional pitman, an arm having a fixed pivot and which is connected to the pitman by means of links, a pivoted lever extending between said links and a cross-head adapted to engage said lever and said arm, substantially as set forth.

2. In a baling-press, the combination of a plunger, a sectional pitman, an arm having a fixed pivot and connected to said pitman by means of links, a pivoted lever extending between said links and having a shoulder adapted to engage a friction-roller on said pitman, and a cross-head adapted to engage said lever and said arm, substantially as set forth.

3. In a baling-press, the combination of a plunger, a sectional pitman, a pivoted arm, links connecting said arm to said pitman, a lever extending between said links and a cross-head having projections adapted to engage a projection on said arm and having cam-shoulders adapted to engage a projection on said lever, substantially as set forth.

4. In a baling-press, the combination of a plunger, a jointed pitman, a pivoted arm having a link connection with said pitman and which said arm has a slot-and-bolt connection, a pivoted lever fitting between said links, and a cross-head adapted to engage said lever and said arm, substantially as set forth.

5. In a baling-press, the combination of a plunger, a jointed pitman, a reach having strips to guide said pitman and a pivoted arm, a link connection between said arm and pitman, a pivoted lever and a cross-head having projections for engaging said arm and having cam-shoulders for engaging said lever, substantially as set forth.

6. In a baling-press, the combination of a plunger, a jointed pitman, a pivoted arm connected to said pitman, a pivoted lever engaging the connection between said arm and pitman, and a cross-head adapted to engage said lever and arm, substantially as and for the purpose set forth.

704,719. RAKE. CHARLES H. TRUMPLER, Brooklyn, N. Y. Filed Oct. 15, 1901. Serial No. 78,679. (No model.)

Claim.—1. A rake comprising a bar having depending teeth; and diverging sets of teeth removably secured to said bar.

2. A rake comprising a bar, having a set of depending rigid teeth; a set of laterally-diverging rigid teeth; and means for securing said diverging teeth in position.

3. A rake having depending and diverging teeth, one set thereof detachable; and means for attaching the detachable part of said teeth.

4. In an attachment for a rake, a set of divergent teeth, having means whereby they may be attached to an end of the tooth-bar of a hand-rake.

5. A hand-rake, comprising a single set of separated rigid teeth whose points lie in a long row; at one end of said set a small set of separated rigid teeth whose points lie in a short row which extends crosswise of said long row; so that the long row may be employed in ordinary use, and so that the short row may be brought into action by tilting the rake.

6. A hand-rake comprising a single set of separated rigid teeth, whose points lie in a long row; and at each end of said set a small set of separated rigid teeth, the points of each of said small sets lying in short rows which extend crosswise of said long row, so that the long row may be employed in ordinary use, and so that either of said short rows may be brought into action by tilting the rake one way or the other.

7. A hand-rake comprising a single set of separated teeth whose points lie in a long row; at one end of said set a small set of separated teeth whose points lie in a short row which extends crosswise of said long row; so that the long row may be employed in ordinary use, and so that the short row may be brought into action by tilting the rake; all of said teeth lying substantially in the same plane, thereby forming a substantially continuous set of teeth, and the teeth in the short row diverging from one another and from the teeth lying in the long row.

8. A hand-rake comprising a single set of separated teeth, whose points lie in a long row; and at each end of said set a small set of separated teeth; the points of each of said small sets lying in short rows which extend crosswise of said long row, so that the long row may be employed in ordinary use, and so that either of said short rows may be brought into action by tilting the rake one way or the other, all of said teeth lying in substantially the same plane, thereby forming a substantially continuous set of teeth, and the teeth of each of the short rows diverging from one another and from the teeth in the long row.

9. A hand-rake comprising, in combination, a bar, and a plurality of teeth extending therefrom at various angles; and said teeth terminating in a row which extends substantially at right angles to the several teeth.

10. A hand-rake comprising, in combination, a handle; a bar sub-

stantially at right angles thereto; a row of substantially parallel teeth depending from said bar and having an angular relation to said handle; and diverging teeth at one end of said row and lying in substantially the same plane as said row; said diverging teeth terminating at successively higher points than the teeth in said row.

11. A hand-rake comprising, in combination, a handle; a bar substantially at right angles thereto; a row of substantially parallel rigid teeth depending from said bar and having an angular relation to said handle; and a plurality of rigid teeth extending from an end of said bar at various angles with said bar and terminating at successively higher points than the teeth in said row.

704,720. RAILWAY-SIGNAL. WILLIS C. VAN DERLIP, Sr., Corning, N. Y. Filed Apr. 15, 1902. Serial No. 102,974. (No model.)

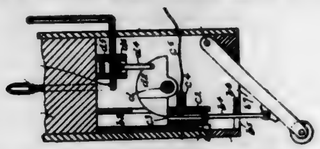

Claim.—1. A signal apparatus for railways comprising a casing secured to the engine and provided with a vertically-arranged piston-cylinder which opens downwardly, a piston mounted in said cylinder, a lever pivoted in the bottom of said casing and in operative connection with said piston, a steam-pipe passing through said casing and in connection with the boiler and devices for opening and closing said pipe, said devices being adapted to be operated by said piston, substantially as shown and described.

2. A signal apparatus for railways comprising a casing secured to the engine and provided with a vertically-arranged piston-cylinder which opens downwardly, a piston mounted in said cylinder, a lever pivoted in the bottom of said casing and in operative connection with said piston, a steam-pipe passing through said casing and in connection with the boiler and devices for opening and closing said pipe, said devices being adapted to be operated by said piston, and means adjacent to the track for operating said lever, substantially as shown and described.

3. A signal apparatus for railways comprising a casing secured to the engine and provided with a vertically-arranged piston-cylinder which opens downwardly, a piston mounted in said cylinder, a lever pivoted in the bottom of said casing and in operative connection with said piston, a steam-pipe passing through said casing and in connection with the boiler and devices for opening and closing said pipe, said devices being adapted to be operated by said piston, and means adjacent to the track for operating said lever, consisting of a box or casing, a lever pivoted therein, two pulleys mounted in said box or casing and geared in connection and one of which is in operative connection with said lever and adapted to raise it above said box or casing; and means for operating the other pulley, substantially as shown and described.

704,721. FRICTION-WHEEL GEARING. GUSTAV VOIGT, Berlin, Germany. Filed Dec. 13, 1901. Serial No. 85,907. (No model.)

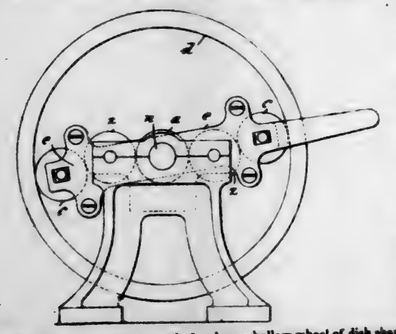

Claim.—In combination, a shaft, a larger hollow wheel of dish shape mounted on the end thereof, a second shaft axially in line therewith, a smaller wheel carried by said second shaft within the larger wheel, a pair of smaller wheels journaled in stationary bearings and having their peripheries in contact with said smaller wheel, and a reversing-frame and a pair of small rollers journaled thereon having their peripheries in contact with the inner circumference of the large wheel and designed to contact with said pair of smaller wheels, substantially as described.

704,722. STEAM-GENERATOR. JAMES C. WALKER, Waco, Tex. Filed Feb. 14, 1901. Serial No. 47,321. (No model.)

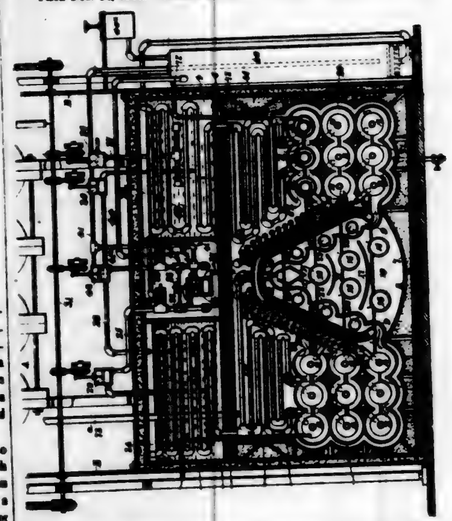

Claim.—1. In a generator of the instantaneous type, the combination with a generating-chamber and heating means therefor, of a source of water-supply removed from said chamber and in communication therewith, controlling means intermediate of the chamber and said source of supply and operated by the pressure of steam within the steam-space of the generator to effect the automatic control of the water-supply.

2. In a generator of the instantaneous type, the combination with a generating-chamber, heating means and a source of water-supply in communication with the chamber, of a controlling device disposed to control the flow of water from the source of supply to the generating-chamber, a regulating device operated by the steam-pressure within the steam-space of the generator and operatively related to the controlling means, whereby the steam-pressure within the generator is automatically regulated.

3. In a generator of the instantaneous type, the combination with a generating-chamber, heating means therefor and a source of water-supply in communication therewith, of a water-supply pipe leading from the source of supply to the generating-chamber, a regulating device controlled by the steam-pressure within the steam-space of the generator for regulating flow of water through said supply-pipe, and means for automatically returning the water from the supply-pipe to the source of supply when the regulator is operated to reduce or discontinue the supply of water to the generating-chamber.

4. In a generator of the instantaneous type, the combination with a generating-chamber, heating means therefor and a source of water-supply, of a supply-pipe leading from the source of supply to the chamber, a controlling-valve and a relief-valve in said pipe, a regulator operated by the steam-pressure within the steam-space of the generator to close the controlling-valve, and means for pumping water through the supply-pipe to the generating-chamber.

5. In a generator of the instantaneous type, the combination with a generating-chamber, heating means therefor and a water-tank removed from the generating-chamber, of means for heating the water in said tank, and means for leading the heated water from the tank and for delivering it in the form of saturated steam to the generating-chamber.

6. In a generator of the instantaneous type, the combination with a generating-chamber and burners therefor, of a water-supply tank removed from the generating-chamber, means for leading products of combustion from said burners through the water-supply tank to heat the water therein, and means for leading the water from said supply-tank to the generating-chamber.

7. In a generator of the instantaneous type, the combination with a generating-chamber, flashing-tubes therein and a heater disposed to heat the walls against which the saturated steam is projected from the flashing-tubes, of a source of supply removed from the generating-chamber and in

communication with the flashing-tubes, and means controlled by the steam-pressure within the generator for automatically regulating the supply of fluid to the flashing-tubes.

8. In a generator of the instantaneous type, the combination with a generating-chamber, flashing-tubes therein and heating means, of a water-supply tank removed from the generating-chamber and in communication with the flashing-tubes, means for heating the water in said tank, and a regulating device intermediate of the tank and tubes, said device being operated by the pressure of steam within the generator to control the supply of fluid to the tubes.

9. In a generator of the instantaneous type, the combination with a generating-chamber, flashing-tubes therein and burners disposed to heat the wall of said chamber against which the saturated steam is projected, a water-supply tank removed from the generator, a heating device arranged within the tank, means for leading the products of combustion from the generator-burners to said heater, a supply-pipe leading from the tank to the flashing-tubes, a controlling-valve in said pipe, and a regulating device disposed to operate said valve and operated by the steam-pressure within the generator.

10. In a generator of the instantaneous type, the combination with a generating-chamber, a burner disposed to heat the walls thereof, means for supplying water to the generating-chamber, means for supplying fuel to the burner, and means for automatically controlling the supply of both water and fuel.

11. In a generator of the instantaneous type, the combination with a generating-chamber, a burner, means for supplying water to the generating-chamber and means for supplying fuel to the burner, of means operated by the steam-pressure within the generator for controlling both the water and the fuel supply.

12. In a generator of the instantaneous type, the combination with a generating-chamber, a burner therefor, a source of water-supply in communication with the generating-chamber, a source of fuel-supply in communication with the burner, a controlling-valve intermediate of the generating-chamber and source of water-supply, a controlling-valve intermediate of the fuel-supply and burner, and a regulating device common to both of the controlling-valves and designed to be operated by excessive pressure of steam within the generator.

13. In a generator of the instantaneous type, the combination with a generating-chamber and burner therefor, of a source of water-supply, a source of fuel-supply, a water-pipe leading from the source of water-supply to the generator, a fuel-supply pipe leading from the source of fuel-supply to the burner, automatically-operated controlling-valves located in said pipes, means for forcing the water and fuel through said pipes, and automatically-operated relief devices disposed to effect the return of the water or fuel from the supply-pipes to the sources of supply when the controlling-valves are closed.

14. In a generator of the instantaneous type, the combination with a generating-chamber and burner, of flashing-tubes within the generating-chamber, a water-supply tank in communication with the flashing-tubes, a source of fuel-supply in communication with the burner, means for automatically regulating the supply of water and fuel to the tubes and burner, respectively, and means for heating the water within the supply-tank.

15. In a generator of the instantaneous type, the combination with a generating-chamber and burner, of means for supplying fuel to the burner, and a regulating device controlling the supply of fuel to the burner and operated by the pressure of steam within the generator.

16. In a generator of the instantaneous type, the combination with a generating-chamber and heating means therefor, of a source of water-supply in communication with the generating-chamber, a superheating-chamber in communication with the generating-chamber, and means for heating the superheating-chamber.

17. In a generator of the instantaneous type, the combination with a generating-chamber, heating means therefor and a source of water-supply in communication with the generating-chamber, of a superheating-chamber in communication with the generating-chamber and disposed to receive the steam therefrom, of a plurality of heating devices within the superheating-chamber, and means for leading the steam around said heating devices prior to its delivery to the motor.

18. In a generator of the instantaneous type, the combination with a generating-chamber, burners therefor and flashing-tubes within said chamber, of a source of water-supply in communication with said tubes, a superheating and drying chamber removed from but in communication with the generating-chamber, and separate means for heating the superheating-chamber.

19. In a generator of the instantaneous type, the combination with a generating-chamber, a series of burners disposed to heat the walls thereof, a series of flashing-tubes within the chamber, and a source of water-supply in communication with said tubes, of a circuitous superheating-chamber removed from but in communication with the generating-chamber, separate burners located within the superheating-chamber, and means for supplying fuel to the burners of the generator and superheater respectively.

20. In a generator of the instantaneous type, the combination with a generating-chamber and burners therefor, of a superheating-chamber, a plurality of burners therein, said superheating-chamber being in communication with the generating-chamber but removed therefrom, a water-supply tank in communication with the generating-chamber, and means for leading the products of combustion from both the generator and superheater burners through said tank.

21. In a generator of the instantaneous type, the combination with a generating-chamber and burners, of a superheating-chamber in communication with the generating-chamber, separate burners for the superheating-chamber, means for supplying water to the generating-chamber, means common to all of the burners for supplying fuel thereto, and means for automatically regulating the supply of water and fuel.

22. In a generator of the instantaneous type, the combination with a generating-chamber and heating means, of a plurality of water-heating chambers removed from the generating-chamber, means for heating said chambers, means for leading water to said chambers successively, and means for leading water from one of said chambers to the generating-chamber.

23. In a generator of the instantaneous type, the combination with a generating-chamber and heating means, of an initial water-heating chamber, a low-pressure chamber, means for heating said chambers in different degrees, means for leading water to said chambers successively, and means for leading water from the low-pressure chamber to the generating-chamber.

24. The combination with a generating-chamber, of an initial water-heating chamber, a low-pressure chamber, means for heating said chambers, means for leading water through said chambers successively and from the low-pressure chamber to the generating-chamber, automatically-operated controlling means for regulating the communication between the low-pressure chamber and generating-chamber, and means for directing the flow of water from the low-pressure back to the initial water-heating chamber.

25. In a generator of the instantaneous type, the combination with a generating-chamber, heating means therefor, a pair of superheating-chambers removed from but in communication with the generating-chamber, burners located within each of said superheating-chambers, a pair of water-heating chambers, means for leading water through said chambers successively and from one of said chambers to the generating-chamber, and heating devices for each of the water-heating chambers, said devices being provided with a heating agent by the burners of the superheating-chambers.

26. In a generator of the instantaneous type, the combination with a generating-chamber and heating means therefor, of a pair of superheating-chambers removed from but in communication with the generating-chamber, burners within each of the superheating-chambers, an initial water-heating chamber and low-pressure chamber in communication with the initial water-heating chamber, heaters within the initial water-heating chamber and low-pressure chamber, respectively, means for supplying a heating agent to said heaters from the burners of the superheating-chambers, and means for supplying the heater within the low-pressure chamber with the products of combustion from the heating devices of the generator.

27. In a generator of the instantaneous type, the combination with a generating-chamber, burners therefor and a jacket surrounding said chamber, of means for effecting the escape of the products of combustion from the burners through said jacket.

28. In a generator of the instantaneous type, the combination with a generating-chamber having its outer wall defined by a jacket, a partition within said jacket, ingress and egress openings in the wall of said jacket at opposite sides of the partition, and burners disposed to heat the inner walls of the generating-chamber and to supply heated products of combustion for circulation within the jacket and around the partition thereof.

29. In a generator of the instantaneous type, the combination with a generating-chamber having its outer wall defined by a jacket, flashing-tubes located within the generating-chamber, a source of water-supply in communication with said tubes, and burners disposed to heat the inner walls of the generating-chamber and to effect the circulation of the products of combustion within the jacket.

30. In a generator of the instantaneous type, the combination with a generating-chamber, burners therefor, superheating-chambers in communication with the generating-chamber, burners for the superheating-chambers, and heating-coils seated upon the generating-chamber and disposed to receive the products of combustion from the burners of the superheating-chambers.

31. In a generator of the instantaneous type, the combination with a generating-chamber provided with a hollow jacket and burners disposed

to heat the inner walls of the generating-chamber and to supply products of combustion for circulation through the jacket, superheating-chambers removed from or in communication with the generating-chamber, burners located within said superheating-chambers, heating-coils nested upon the jacket of the generating-chamber and disposed to receive products of combustion from certain of the burners of the superheating-chambers, heating-coils located within the steam-space of the generator and in communication with certain of the superheater-burners, a plurality of water-heating chambers, means for supplying a heating agent thereto from the heating-coils, means for leading water through said heating-chambers successively, and means for supplying water from one of said chambers to the generating-chamber.

32. In a generator of the instantaneous type, the combination with a generating-chamber and heating means, of a pair of water-heating chambers, means for pumping water or steam into one of said chambers, means for pumping water from one chamber into the other, a supply-pipe communicating with the last-named chamber and with the generator, means for pumping water through said pipe, a valve-controlled relief-pipe leading from the water-supply pipe back to the first chamber, a source of fuel-supply, a fuel-supply pipe leading therefrom to the burners, means for pumping the fuel through said supply-pipe, and a valve-controlled relief-pipe leading from the fuel-supply pipe back to the source of fuel-supply, whereby the several pumping means may be operated continuously without interfering with the automatic operation of the generator.

33. In a generator of the instantaneous type, the combination with a generating-chamber and burners, of a water-supply tank, means for leading water from said tank to the generating-chamber, a casing surmounting the generator, a motor mounted within the casing and exhausting therein, and means for leading the exhaust-steam or water of condensation from the interior of said casing to the water-supply tank.

34. In a generator of the instantaneous type, the combination with a generating-chamber and heating means, of a superheater communicating with the generating-chamber, a series of burner-casings disposed within the superheater, a burner within each of said burner-casings, and means for compelling the steam as it passes through the superheater to circulate around each of the burner-casings.

35. In a generator of the instantaneous type, the combination with the generating-chamber provided with a hollow jacket, and burners disposed to heat the inner walls of the generating-chamber and to supply products of combustion for circulation through the jacket, superheating-chambers removed from, but in combination with, the generating-chamber, burners located within the superheating-chambers, heating-coils nested upon the jacket of the generating-chamber and disposed to receive products of combustion from certain of the burners of the superheating-chambers, heating-coils located within the steam-space of the generator and in communication with certain of the superheating-burners, a plurality of water-heating chambers disposed to be heated by extensions of the heating-coils, and by a heating agent supplied to one of the water-chambers from the hollow jacket of the generating-chamber, means for leading water through the water-heating chambers successively and from one of the heating-chambers to the generating-chamber, flashing-tubes within the generating-chamber for effecting the instantaneous generation of steam, and means for regulating the supply of water to the generating-chamber, said regulating means being controlled by the pressure of steam within the steam-space of the generator.

704,723. BELT-CARRIER. JOHN WEIGHART, San Francisco, Cal. Filed Apr. 4, 1901. Serial No. 54,241. (No model.)

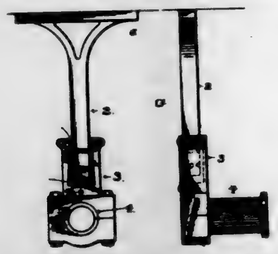

Claim.—1. A belt-carrier for a driving-pulley comprising a hanger composed of a fixed member having a top flange, a separable member having a box with an open top end to receive the end of the fixed member, in which said member is secured after adjustment by pouring molten metal into the box around the end of the fixed member, a two-part sleeve on the separable member divided longitudinally, means for securing the movable part of the sleeve to the box, and a belt-carrying pulley loosely mounted on the sleeve.

2. In a pulley-hanger the combination, of a fixed member having a top flange and provided with recesses in the surface at the lower end, a separable member having an open-end box, the opening in which is adapted to permit lateral as well as vertical adjustment of the end of the fixed member before it is secured thereon, said parts being united after adjustment by pouring molten metal into the space around the lower end of the fixed member and allowing it to set.

704,724. DUST-COLLECTOR. LEMUEL B. WHITNEY, Milwaukee, Wis. Filed Oct. 16, 1901. Serial No. 78,771. (No model.)

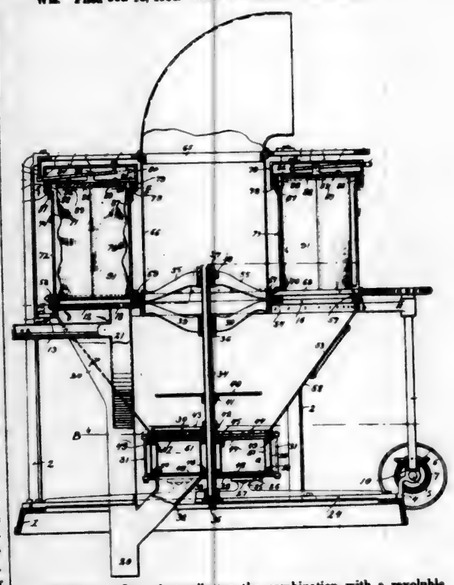

Claim.—1. In a dust-collector, the combination with a revoluble support, of a series of yielding screens supported thereby, and having pivotally-attached levers at their upper ends, and a suitable frame provided with a ring formed with a downward-depending flange having oblique-walled notches in its under side, in engagement with said levers, for depressing and collapsing said screens as they reach given points, and for restoring them to their normal positions after passing such points.

2. In a dust-collector, the combination with a suitable frame, of a revoluble plate supported thereby, and formed with an annular series of openings; an annular series of outer and inner supports rising from said plate, having offset slotted upper continuations; spring-actuated cross-bars movable in said slots; a flange having oblique-walled notches in its under side secured to said frame; levers pivotally attached to said movable cross-bars for engagement with said notched flange; and yielding bag-screens secured to said movable cross-bars, and to the revolving plate at the lines of the openings therein.

3. In a dust-collector, the combination with a suitable frame, of a revoluble plate supported thereby, and formed with a series of openings; a series of dust-collecting screens carried by said revoluble plate and communicating with said openings; a stationary drum or casing below said revolving plate having openings in its upper and lower plates; a vertical revoluble spindle extending through said drum or casing and secured to said revolving plate; a revoluble drum secured to said spindle within said stationary drum or casing, and formed with an annular series of open-ended buckets; an air-tight wall forming a closed chamber around the vertical spindle, between the revoluble plate and the stationary drum or casing; a brush secured to said spindle and in sweeping engagement with the upper plate of the stationary drum or casing; and a dust-discharge pipe leading from the opening in the lower plate of said drum or casing.

4. In a dust-collector, the combination with a suitable frame, of an annular stationary plate supported thereby said plate having a solid portion with a dust-discharge opening and a series of small openings therethrough, and the balance of said plate having a series of large air-inlet openings therethrough; a dust-discharge pipe leading from the dust-discharge opening in the solid portion of said plate, and a closed chamber beneath the small openings therein, adjacent to the dust-discharge pipe and having a swing-valve communication therewith; a suction-pipe leading from said closed chamber; an upper annular plate resting and revoluble on said stationary plate, and formed with an annular series of openings; an annular series of yielding bag-screens, supported on said annular revoluble plate and communicating with the openings therein; a closed chamber beneath the air-inlet openings in said stationary plate; an inlet for dust-laden air leading to said last-named closed chamber; and means for depressing and collapsing said screens as they reach given points, and for restoring them to their normal positions after passing such points.

704,725. COMBINED WRENCH AND TIRE-SETTER. MADISON WHITMIRE, Carrier, Okla. Filed Apr. 21, 1902. Serial No. 103,966. (No model.)

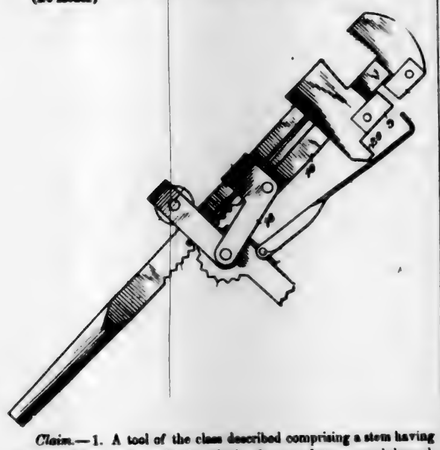

Claim.—1. A tool of the class described comprising a stem having a perforated head and a rack below the head, a second stem passed through the perforation and having a head for coöperation with the head of the first stem, a strap attached to the second stem and passed around the first stem and provided with spaced arms, a lever pivoted between the spaced arms and having a segmental gear movable into and out of engagement with the rack when the lever is rocked, a second strap connected to the arms at opposite sides of the segmental gear and passed around the first stem, and a bearing-roller mounted between the sides of the second strap and adapted for contact with the opposite face of the first stem from the lever.

2. A tool comprising a stem having a perforated head and a rack below the head a second stem passed through the perforation of the head, a lever pivotally connected with the second stem and having a gear engaged with the rack to reciprocate the second stem when the lever is rocked, a stop upon the second stem for contact with the head of the first stem to limit the movement of the lever in one direction, a lug upon the head of the first stem, and a plate pivoted to the lever and having a terminal jaw, said plate being adapted to lie with its jaw beyond the lug for movement of the jaw toward and away from the lug when the lever is rocked.

704,726. SPINDLE ATTACHMENT FOR LATHES OR OTHER TOOLS. ANDREW C. WITZEL, New York, N. Y. Filed Feb. 24, 1902. Serial No. 96,163. (No model.)

Claim.—1. An attachment for a revolving spindle provided with a screw-thread, said attachment consisting of a central longitudinal core-piece, a sleeve movable longitudinally thereon and levers connected with said core-piece and operated by said sleeve and provided with segmental nuts adapted to engage the thread of said spindle, substantially as shown and described.

2. An attachment for a rotatable spindle provided with a screw-thread at its outer end, comprising a central core-piece through which the spindle passes and provided with longitudinal grooves in the opposite sides thereof, pawl-levers pivoted in said grooves and provided at their outer ends with segmental nuts adapted to engage the thread of the spindle and a sleeve mounted on said core-piece and longitudinally movable thereon and adapted to engage said levers, substantially as shown and described.

704,727. TILE. CHARLES WORTH, Newark, N. J. Filed Apr. 3, 1902. Serial No. 101,173. (No model.)

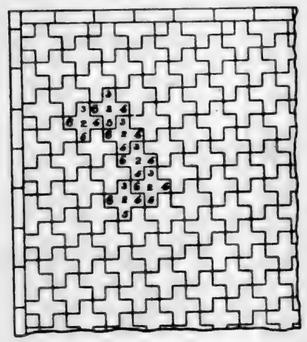

Claim.—1. A tile, comprising, a central and main body portion, and a set of members radiating in different directions from said main body, the surface area of each individual radiating member being equal to the surface area of said main body portion, the tile being of an approximately cross-shaped configuration, providing open spaces between each pair of adjacent radiating members, for the reception of a radiating member of another tile when laid in the cement of a flooring, substantially as and for the purpose set forth.

2. A tile, comprising, a central and main body portion, and a set of members radiating in different directions from said main body, the tile being of an approximately cross-shaped configuration, providing open spaces between each pair of adjacent radiating members, for the reception of a radiating member of another tile when laid in the cement of a flooring, each radiating member being provided in its rear surface with a cement-receiving depression or recess, substantially as and for the purpose set forth.

3. A tile, comprising, a central and main body portion and a set of members radiating in different directions from said main body, the tile being of an approximately cross-shaped configuration, providing open spaces between each pair of adjacent radiating members, for the reception of a radiating member of another tile when laid in the cement of a flooring, each radiating member being provided in its rear surface with a cement-receiving depression or recess, and the surface area of each individual radiating member being equal to the surface area of said main body portion, substantially as and for the purpose set forth.

4. A tile, comprising, a central and main body portion, and a set of members radiating in different directions from said main body, a reinforcing rib or projection connecting the rear of the said main body with the said radiating members, and each radiating member being provided in its rear with a cement-receiving depression or recess, substantially as and for the purpose set forth.

5. A tile, comprising, a central and main body portion, and a set of members radiating in different directions from said main body, a reinforcing rib or projection connecting the rear of the said main body with the said radiating members, and each radiating member being provided in its rear with a cement-receiving depression or recess, and the surface area of each individual radiating member being equal to the surface area of said main body portion, substantially as and for the purpose set forth.

704,728. PROCESS OF PACKING POWDERY SUBSTANCES. ADOLPH WULFER, Charlottenburg, Germany. Filed Nov. 13, 1900. Serial No. 36,201. (No specimens.)

Claim.—A process for packing powdery substances, consisting in rarefying the air held among the particles of the substances and then exposing the same to the atmospheric pressure, substantially as described and for the purpose set forth.

704,728.

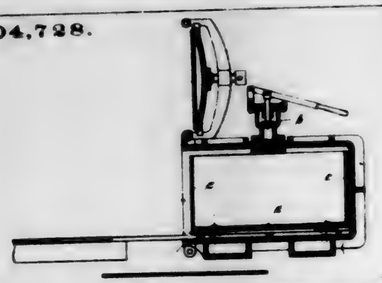

704,729. DEVICE FOR RETARDING THE SPEED OF VESSELS. AARON ROSEN, Philadelphia, Pa. Filed Nov. 21, 1901. Serial No. 83,122. (No model.)

Claim.—1. In a device of the character described, two shafts upon each side of the boat extending longitudinally of the boat and protruding from the rear thereof, two plates secured to the outer end of the shafts, said plates normally lying against the rear portion of the boat so as to present no resistance to the water, means located in the interior of the vessel for rotating the shafts so as to turn the plates outward beyond the sides of the vessel, substantially as and for the purpose specified.

2. In a device of the character described, two shafts extending from the interior of the vessel through the rear portion thereof, plates secured to the outer end of said shafts, said plates so formed as to normally lie against the rear portion of the vessel so as to present no resistance to the water, a gear-wheel secured upon the inner end of each of the shafts in the interior of the vessel, said gear-wheels being in mesh with one another, a beveled wheel secured to one of the gear-wheels, a second beveled wheel in mesh with the other, the upright shaft to which the latter beveled wheel is secured, substantially as and for the purpose set forth.

704,730. HITCHING-WEIGHT. ANTON ZEERLEYE, Grand Rapids, Mich. Filed July 26, 1901. Serial No. 69,814. (No model.)

Claim.—1. A device of the character specified, comprising a metallic body provided with means for connection with a hitching-strap, and a buffer and sound-deadener associated with and projecting beyond the lower portion of the body.

2. A device of the character specified, comprising a metallic body provided with means for connection with a hitching-strap, and a combined buffer and sound-deadener associated with the body and projecting beyond the bottom portion thereof.

3. A device of the character specified, comprising a metallic body, and a buffer and sound-deadener associated with the lower portion thereof and composed of soft metal.

4. A device of the character specified, comprising a metallic body provided with means for connection with a hitching-strap, and having its lower portion provided with a marginal recess, in combination with a buffer and sound-deadener held associated with the body by the said recess.

704,781. COIN-HOLDER. ALBERT ATTERBURY, Brooklyn, N. Y., assignor to Robert Henry McClelland and Leo Evans Sawrie, Nashville, Tenn. Filed Oct. 5, 1901. Serial No. 77,738. (No model.)

Claim.—1. A coin-holder comprising a two-part telescopic casing, means for holding the two portions of the casing in spread position, and means operable by the compression of the casing for ejecting a coin therefrom.

2. A coin-holder comprising a two-part telescopic casing, means for holding the two parts of the casing in spread position, a coin-ejector, and means operable by the compression of the casing for reciprocating said ejector.

3. A coin-holder comprising a two-part telescopic casing having a normally closed coin-discharging orifice, means for holding the two portions of the casing in extended or spread position, and means operable by the compression of the casing for effecting the opening of the discharge-orifice and the forcing of a coin therethrough.

4. A coin-holder comprising two telescoping cylinders each provided with a coin-discharge opening, a partition extending transversely of one of said cylinders and forming a coin-support, a spring adapted to force the coins against said partition, and an ejector operable by the compression of the casing for discharging the coin

5. A coin-holder comprising two telescoping cylinders each having a coin-discharge opening, a slotted partition arranged in one of said cylinders for the support of the coins, a discharge-finger extending through said slot, a slide carrying said finger, and mechanism operatively connecting said slide to the end of one of the cylinders.

6. A coin-holder comprising two telescoping cylinders each having a coin-discharge opening, a slotted partition arranged in one of said cylinders for the support of a coin, a spring-pressed follower disposed within said cylinder and adapted to force the coins against the partition, a slide mounted under the partition and having an ejecting-tongue, guideways for said slide, a spring normally holding said tongue from engagement with a coin, a bell-crank lever adapted to act on said slide, a rock-shaft carried by one of the cylinders and supporting said bell-crank lever, a link pivoted to the opposite cylinder and to said bell-crank lever, and a spring tending to keep said cylinders in extended or spread position, substantially as specified.

7. A coin-holder comprising a cylinder having a coin-slot at one side and an opening or recess at a diametrically opposite portion, a slotted partition disposed in said cylinder for the support of the coins, a spring-pressed follower adapted to force the coins into contact with said partition, guideways carried by said cylinder at a point under the partition, a slide adapted to said guideways, a finger carried by the slide and normally resting in the opening in said cylinder, a spring normally tending to hold said slide and finger in cooperative position, a bell-crank lever, a shaft carried by the cylinder and supporting said bell-crank lever, a second cylinder telescopically fitting over the first cylinder and provided at one side with a coin-opening and at the opposite side with a recess or opening for the admission of the coin-engaging finger, a spring tending to hold the two cylinders in extended or spread position, a link pivoted to said second cylinder and connected to one arm of said bell-crank lever, substantially as specified.

704,782. OIL AND AIR MIXING AND GAS-GENERATING APPARATUS. JOSEPH BENN, San Francisco, Cal. Filed Jan. 16, 1902. Serial No. 90,081. (No model.)

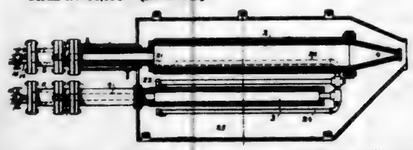

Claim.—1. The combination in an oil-burner of independent generating-chambers one located above the other and one of said chambers having a discharge-nozzle, a casing inclosing both chambers, means for admitting air and oil into each of said chambers and means for heating the chambers.

2. The combination in an oil-burner of independent generating-chambers and an exterior containing-casing, one of said chambers being located above the other and having a discharge-nozzle at the front, connections with the rear of said chambers, means for introducing air and oil to each of said connections, means for mixing the air and oil and delivering it into the generating-chambers and means for heating said chambers.

3. The combination in an oil-burning apparatus of independent superposed generating-chambers, an exterior casing within which they are contained, the uppermost of said chambers having a discharge-nozzle at the front, burner-openings and connections between the lowermost chamber and said openings through which gas is discharged and ignited whereby the chambers are continuously heated, and means for mixing oil and compressed air and supplying them to the generators.

4. The combination in an oil-burning apparatus of independent superposed generating-chambers, an exterior casing within which they are contained, means for mixing and supplying compressed air and oil to the rear of said chambers, the lowermost having burner-openings to serve as a heater for the upper ones, and means for protecting the mixing devices from the heat of the generator, including water-jackets surrounding the connecting-passages and inlet and outlet circulating-pipes therefor.

5. The combination in an oil-burning apparatus of generating-chambers and exterior casing, means for supplying oil and air to said chambers, consisting of sleeves, interior tubes each having a central opening and exterior channels within the sleeve, air-pipes connecting with the central space and oil-pipes with the exterior channels, and convergent tapering passages at the front connecting the channels with the chamber into which the air is discharged, and means therein for mixing the oil and air.

6. In an oil-burning apparatus, the generating-chambers the supply and mixing device consisting of sleeves, interior tubes with the rear of which the compressed air-pipes connect, said tubes having a passage between them and the exterior sleeves, oil-pipes delivering into said passage, conical convergent front ends with convergent channels formed upon the front of the tubes, a revolvable disk against which the compressed air and the oil are discharged, and by the rotation of which they are mixed.

7. In an oil-burning apparatus, a central tube, means for supplying compressed air thereto, exterior channels and means for supplying oil thereto, an opening at the front for the discharge of air and convergent tapering passages connecting the oil-channels with the air-receiving space, a propeller-wheel the shaft of which is journaled in said receiving-space, so that the passing air-jet will revolve the propeller and a disk carried by the propeller-shaft contiguous to the air and oil discharge passages and acting as a mixer thereby.

8. In an oil-burning apparatus, the generating-chambers and exterior containing casing, means for mixing air and oil and supplying it into said chambers consisting of a revolvable propeller-wheel located in the passage connecting with the generators, a disk carried upon the rear end of the shaft of said propeller, a tubular conductor through which compressed air is discharged against the disk, an annular chamber surrounding said conductor, means for delivering oil into said chamber and convergent tapering channels connecting said chamber with the space in which the revolvable disk is rotated whereby the oil is subdivided and mixed with the air before delivering into the generators.

704,783. ELECTRIC ALARM-CLOCK. WALTER C. BETHEL, Seattle, Wash. Filed Feb. 7, 1902. Serial No. 93,006. (No model.)

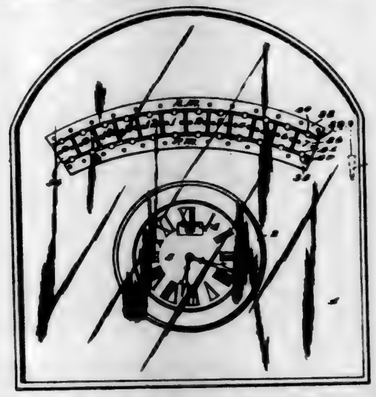

Claim.—1. In an electric alarm-clock, the combination with the hour-hand-operating means thereof, of an arm carried thereby, a contact-brush carried by said arm, contact-plates corresponding in number relative to the time indications on the dial of said clock designed to be contacted by said brush, and a wheel having radial arms for closing an electric circuit through said plates and brush and alarm mechanism to be operated, the arm of said wheel extending in the plane of movement of said arm substantially as described.

2. In an electrical alarm-clock, the combination with a suitable support, of an hour-hand-operating means carried thereby, a series of plates secured to said support, a second series of plates secured to said support, a plate spaced from said second series, and a wheel rotating in timed relation to the movement of said hour-hand-operating mechanism for alternately establishing electric communication through one of the first series of plates, and through one of the second series of plates, whereby when communication is established between said first-mentioned plate and one of the plates of one of said series relative to the position of said hour-hand-operating mechanism, electric communication will be established through said hour-hand-operating means, and through any suitable alarm device, substantially as described.

3. In an electric alarm-clock, the combination with a suitable hour-hand-operating mechanism, of an arm carried thereby, a plate representing the hours of the forenoon, a plate representing the hours of the afternoon, means operated by said arm for establishing electric communication with the respective forenoon or afternoon plates according to the position of the said hour-hand, and a contact-wheel rotating in timed relation to the movement of said hour-hand-operating mechanism for closing the electric circuit for passing the current through a suitable alarm mechanism at predetermined times, substantially as described.

4. In an alarm-clock, the combination with any suitable support, of a circuit-closing wheel mounted thereon, two plates carried by said support, means for moving said circuit-closing wheel for causing electric communication through one of said plates, and then through the other thereof relative to the position of the hands of said clock, and means for closing the circuit of electricity through either of said plates through any suitable alarm mechanism, substantially as described.

5. In an alarm-clock, the combination with a suitable support, of means carrying the hands of the clock supported thereby, a contact-wheel carried by said support, an arm carried by said hand-operating means designed to operate said contact-wheel, plates representing the forenoon and afternoon, means for establishing communication from said contact-wheel alternately with said plates relative to the position of the said hands, and means for establishing electric communication with any desired alarm mechanism, at a predetermined time through one of said plates, substantially as described.

6. In an alarm-clock, the combination with a suitable support, of clock-hand-operating means, an arm carried thereby, a contact-wheel carried by said support and provided with radially-extending arms designed to project into the path of movement of said first-mentioned arm, whereby said wheel will be rotated a quarter of a circle at each rotation of said first-mentioned arm, studs designed to contact with the alternate arms of said contact-wheel, plates carried by said support, means establishing electric communication between each of said contact-studs and one of said plates, and means for establishing electric communication through one of said plates and through any suitable alarm mechanism at predetermined times, substantially as described.

7. In an alarm-clock, the combination with a suitable support, of a contact-wheel mounted thereon, provided with radially-extending arms, contact-studs designed to contact alternately with the arms of said wheel as the same rotates, means for establishing electric communication through said wheel and one of said studs and through any suitable alarm mechanism, at a predetermined time, and means for rotating said wheel relative to the movement of the hands of said clock, substantially as described.

8. In an alarm-clock, the combination with a suitable support, of a contact-wheel mounted thereon and provided with radially-extending arms, each alternate arm being bent laterally in an opposite direction to the next succeeding arm, so that the said arms will move in different horizontal planes, studs mounted above and below said wheel and designed to contact with the respective alternate arms thereof, means for establishing electric communication through said wheel and one of said studs, through any suitable alarm mechanism at a predetermined time, and means for rotating said wheel relative to the movement of the hands of said clock, substantially as described.

9. In an alarm-clock, the combination with a suitable support provided with a dial and means for operating the clock-hands, the said dial being formed with an aperture, of a contact-wheel provided with radially-projecting arms designed to be moved successively in said aperture, means for establishing electric communication through one of the arms of said wheel, and through any desired form of alarm apparatus relative to the position of the respective arms of said wheel, and means for rotating said wheel corresponding to the movement of the hands of said clock, substantially as described.

10. In an alarm-clock, the combination with a suitable support, of a series of plates arranged on the rear face thereof, a corresponding series of plates secured upon said support, a comparatively long plate arranged above and a similar plate arranged below said second series of plates, means for establishing electric communication between said last-mentioned plates, means for establishing electric communication between each of said first-mentioned plates and its corresponding plate of the second-mentioned series of plates, and means for establishing electric communication through one of the first-mentioned series of plates, through its corresponding plate

of the second-mentioned series, and through an alarm device relative to the position of the hands of said clock, substantially as described.

11. In an alarm-clock, the combination with a suitable support, of means for operating the hands of said clock, a series of plates secured to said support, having insulating-strips beneath the same, a laterally-projecting lug formed upon each of said plates, extending beneath the insulating-strip of the preceding plate, a contact-brush, means for bringing the same successively into contact with each plates relative to the movement of the hand-operating means, and means for establishing electric communication through said plates and through a suitable alarm device at a predetermined time, substantially as described.

12. In an alarm-clock, the combination with a suitable support, of an hour-hand-operating means carried thereby, an arm carried by said operating means, a series of plates arranged in a circle on said support, each of said plates being provided with a lug extending beneath the next preceding plate and insulated therefrom, a brush carried by said arm and designed to contact with a portion of each of said lugs and each of said plates successively as the arm is moved with the movement of said hand-operating means, and means for establishing electric communication through said arm and brush, through the lug and plate contacted thereby, and through a suitable alarm device, substantially as described.

704,784. PAPER-HOLDER. ELIE BRUGEROLLES, Brassac-les-Mines, France. Filed June 9, 1896. Renewed June 16, 1902. Serial No. 111,997. (No model.)

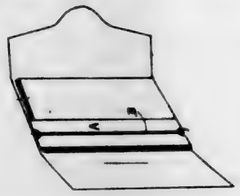

Claim.—A device for the purpose set forth consisting of a cardboard wrapper A, provided with incisions in its longitudinal edges where said wrapper is to be folded, an elastic band arranged transversely around the wrapper and lying within the incisions and adapted to grip a series of leaves inserted within the wrapper, and a cover C to which the wrapper is secured.

704,785. MACHINE FOR FASTENING THE BOTTOMS IN ANGULAR VESSELS OF SHEET METAL. WILHELM CARLUDE, Lund, Sweden, assignor to Aktiebolaget Blockvarufabriken I. Lund, Lund, Sweden. Filed Apr. 2, 1901. Serial No. 54,045. (No model.)

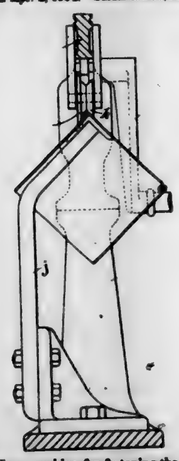

Claim.—1. In a machine for fastening the bottoms in angular cans, a support for the can having inclined faces corresponding to the plane of the bottom and side to be jointed and comprising a substantially angular bar to hold the bottom and side to be jointed in inclined position, and means having a groove therein complementary to the support, adapted to coöperate therewith to close the seam, the bisector of the angle formed by the inclined faces and that of the groove substantially in alinement, whereby the sides of said groove will exert a vertical pressure on the seam and bottom, substantially as described.

2. In a machine for fastening the bottoms in angular cans, a bar to support the can having two inclined faces having the same angular section as the bottom and side to be jointed to hold the bottom and side inclined, and a reciprocable roller having an angular groove therein complementary to the support and adapted to coöperate with the support to close the seam, the bisector of the angle formed by the inclined faces and that of the groove substantially in alinement, whereby a vertical pressure will be exerted on both the seam and the bottom of the can, substantially as described.

3. In a machine for fastening the bottoms in angular cans, a substantially V-shaped rail, the sides of which have the same angular relation as the side and bottom to be jointed, to hold the side and bottom of the can inclined, a reciprocable roller having a V-shaped groove therein to ride over the rail and an offset on one side of the roller substantially equal to the thickness of the metal turned over, whereby the interior of the can at the joint will have plane meeting surfaces, substantially as described.

4. In a machine for fastening the bottoms in angular cans, a substantially V-shaped rail shorter than the width of a side of the can, the medial line of the angle of said rail vertical and a roller having a complementary groove to roll on said rail and provided with an offset on one side substantially equal to the thickness of the metal turned over, whereby the interior meeting surfaces of the can are plane and the edges securely fastened, substantially as described.

704,786. ATTACHMENT FOR TRACTION-ENGINES. DANIEL W. COMBS, Keedmore, W. Va. Filed Apr. 16, 1902. Serial No. 103,185. (No model.)

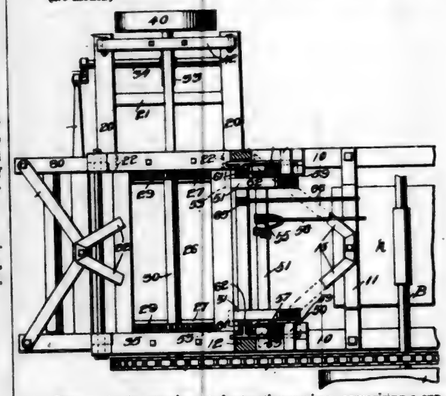

Claim.—1. An attachment for traction-engines, comprising a supporting-frame, a pair of shafts carried thereby, gearing connecting said shafts, a winding-drum carried by one of the shafts, a hauling-line connected to said drum, and means for moving one of said shafts toward and from the other to connect and disconnect the gearing.

2. An attachment for traction-engines, comprising a supporting-frame having a movable portion, a shaft carried by the stationary portion of the frame, a shaft carried by the movable portion of the frame, a winding-drum carried by one of said shafts, gearing connecting the shaft, and means for adjusting the movable portion of the frame to connect and disconnect said gearing.

3. An attachment for traction-engines, comprising a supporting-frame having a movable portion, a shaft carried by the stationary portion of the frame, a shaft carried by the movable portion of the frame, a winding-drum carried by one of said shafts, gearing connecting the shafts means for adjusting the movable portion of the frame to connect and disconnect said gearing, and means for locking said frame in either of its two positions.

4. An attachment for traction-engines, comprising a supporting-frame, a pair of shafts carried thereby, a winding-drum on one of said shafts, a power-transmitting wheel mounted on the second shaft, gearing connecting the shafts, means for connecting and disconnecting said gearing, a hauling-line connected to the winding-drum, a line-guide, means for supporting the same, an auxiliary shaft, a worm-wheel mounted thereon, a worm carried by the drum-shaft and intermeshing with said worm-wheel, a crank on the auxiliary shaft, and a rod connecting said crank the line-guide.

5. An attachment for traction-engines, comprising a supporting-frame, a pair of shafts carried thereby, a winding-drum on one of said shafts, a power-transmitting wheel mounted on the second shaft, gearing connecting the shafts means for connecting and disconnecting said gearing, a hauling-line connected to the winding-drum, a pair of transversely-disposed bars having guiding-slots, a frame guided in said slots, antifriction-rollers journaled in said frame and serving as guides for the hauling-line, a crank-shaft operatively connected to said frame, and worm-gearing connecting the crank-shaft to the drum-shaft.

6. An attachment for traction-engines, comprising a supporting-frame, a winding-drum mounted thereon, means for revolving said drum, a hauling-line connected to the drum, a pair of vertically-disposed antifriction-rollers mounted in front of and at each end of the drum, and a pair of horizontally-disposed antifriction-rollers arranged on lines parallel with the longitudinal axis of said drum.

7. An attachment for traction-engines, comprising a supporting-frame, a shaft carried thereby, a drum mounted on said shaft, gear-wheels secured to the shaft and drum, a pivoted frame, a shaft carried thereby, pinions mounted on said shaft and adapted to intermesh with the gear-wheels of the drum-shaft, a rock-shaft, notched cams thereon adapted to engage with and move the pivoted frame, and means for locking said frame in elevated or depressed position.

8. An attachment for traction-engines, comprising a supporting-frame, a drum-shaft carried thereby, a winding-drum and gear-wheels carried by said shaft, a pivoted frame, a shaft carried thereby, pinions carried by said shaft and adapted to intermesh with the gear-wheel, a rock-shaft, means for operating the same, notched disks carried by said shafts for actuating the frame, and means for simultaneously locking the frame and disks.

9. An attachment for traction-engines, comprising a stationary and a movable frame, shafts carried by each portion of the frame, a winding-drum carried by one of said shafts, gearing connecting the shaft, a rock-shaft, notched disks for engaging the movable frame and adjusting the position thereof, and spring-pressed locking-rods for locking said frame and disk.

10. An attachment for traction-engines, comprising a stationary frame, a pivoted frame carried thereby, shafts carried by each of said frames, a winding-drum carried by one of said shafts, gearing connecting the shafts, a rock-shaft, notched disks carried by the rock-shaft and adapted to engage with and adjust the position of the pivoted frame, spring-pressed locking rods for locking the pivoted frame in either depressed or elevated position, the rear ends of said rods having arms for engagement in notches in said disks.

11. An attachment for traction-engines, comprising a stationary frame, a pivoted frame carried thereby, shafts carried by each of said frames, a winding-drum carried by one of said shafts, gearing connecting the shafts, a pair of rock-shafts each having operating-levers, disks carried by one of said rock-shafts, each of said disks having a pair of locking-slots and being provided with a notched portion for engagement with the pivoted frame, a guided locking-rod adapted to engage both the pivoted frame and the slots of the disk, a pair of spring-pressed arms carried by the second rock-shaft, and arms carried by the locking-rods and connected to said spring-pressed arms.

12. An attachment for traction-engines, comprising a main supporting-frame having a pair of shafts, a winding-drum on one of said shafts, a power-transmitting wheel on the second shaft, a sprocket-wheel mounted on said second shaft and connected to the driving-engine, and an auxiliary frame adapted to be secured to either side of the main frame, said auxiliary frame having bearings for the support of the outer ends of said pair of shafts.

704,787. AIR-BRAKE APPARATUS. EDWARD F. DONNELLY, Boston, Mass. Filed Mar. 5, 1902. Serial No. 96,766. (No model.)

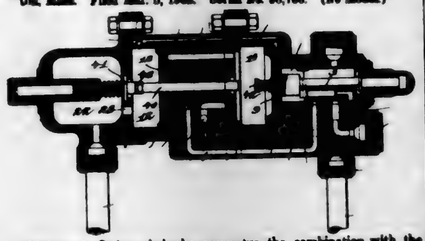

Claim.—1. In an air-brake apparatus, the combination with the usual triple valve, auxiliary reservoir, brake-cylinder, and main train-pipe, of a chamber having a movable partition therein, the chamber on one side of said partition having communication with the main train-pipe, means to vary the pressure on the other side of said partition independently of the train-pipe pressure, and a supplemental valve operated by the movements of the partition, said valve controlling the exhaust from the brake-cylinder.

2. The combination, with the usual triple valve, of a chamber having a movable partition therein, the chamber on one side of said partition having communication with the main train-pipe, means under the control of the engineer to vary the air-pressure on the other side of said partition independently of the train-pipe pressure, and a supplemental valve connected to and operated by the movements of the partition, said valve controlling the exhaust from the brake-cylinder.

3. A triple valve controlling communication between the auxiliary reservoir and brake-cylinder, a chamber having a piston therein, a supplemental valve operated by said piston and controlling the exhaust from the brake-cylinder, one side of said piston being subjected to the pressure in the train-pipe, and means to vary the pressure on the other side of said piston independently of the train-pipe pressure, whereby the supplemental valve may be operated independently of the triple valve.

4. A triple valve controlling communication between the auxiliary reservoir and brake-cylinder, a chamber having a piston therein, a supplemental valve operated by said piston and controlling the exhaust from the brake-cylinder, one side of said piston being subjected to the pressure in the train-pipe, and means under the control of the engineer to vary the air-pressure on the other side of said piston independently of the train-pipe pressure, whereby the supplemental valve may be operated independently of the triple valve.

5. In an air-brake apparatus, main and auxiliary train-pipes, a triple valve controlling the supply of air to the brake-cylinder and adapted to be operated by variations of pressure in the main train-pipe, a chamber having a movable partition therein, a chamber on one side of the partition being connected to the main train-pipe, and on the other side to the auxiliary train-pipe, a supplemental valve operated by movements of the partition, said valve controlling the exhaust from the brake-cylinder, and means to vary independently the pressure in the main and auxiliary train-pipes.

6. In an air-brake apparatus, main and auxiliary train-pipes, a triple valve, a chamber having a leak-groove in its side, a piston in said chamber, a supplemental valve controlling the exhaust from the brake-cylinder, said valve being connected to and operated by the piston, the chamber on one side of the piston having communication with the main train-pipe, and on the other side with the auxiliary train-pipe.

7. In an air-brake apparatus, main and auxiliary train-pipes, a triple valve controlled by the pressure in the main train-pipe, and a supplemental valve controlling the exhaust from the brake-cylinder, said supplemental valve being controlled by the difference in the pressure in the main and auxiliary train-pipes.

8. In an air-brake apparatus, main and auxiliary train-pipes, a triple valve controlled by the pressure in the main train-pipe, a chamber connected with both the main and auxiliary train-pipes, a piston in said chamber, a supplemental valve controlling the exhaust from the brake-cylinder and operated by said piston, and means for varying the air-pressure in the main and auxiliary train-pipes independently.

9. In an air-brake apparatus, main and auxiliary train-pipes, a triple valve controlled by the pressure in the main train-pipe, a chamber having communication with both the auxiliary and main train-pipes, a piston in said chamber, a supplemental valve controlling the exhaust from the brake-cylinder and operated by said piston, means for varying the air-pressure in the main and auxiliary train-pipes independently, and a by-pass connecting the said chamber with the brake-cylinder.

10. In an air-brake apparatus, a triple valve including a piston operating in a chamber, a supplemental chamber connected to said first-named chamber, a supplemental piston operating in said supplemental chamber, means operated by the supplemental piston to control the exhaust from the brake-cylinder, and means for controlling the air-pressure on the two sides of the supplemental piston independently.

11. In an air-brake apparatus, a triple valve including a piston operating in a chamber, a supplemental chamber having communication with the first-named chamber, a supplemental piston operating in said supplemental chamber, an exhaust-valve from the brake-cylinder controlled by the supplemental piston, a pin freely slidable through the latter, and a spring-stop adapted to be engaged by the pin, the construction being such that when the triple valve is operated its movement is controlled by the spring-stop through the said pin.

704,788. SHADE-ROLLER. OLIVER M. EDWARDS, Syracuse, N. Y. Filed Feb. 26, 1900. Serial No. 6,543. (No model.)

Claim.—1. In a shade-roller the combination, substantially as set

forth, of a barrel provided with a fixed abutting surface, a spindle provided with a fixed abutting surface arranged with a portion of such surface in a circle of greater diameter than the body of the spindle, a spring one end of which is connected with the barrel and the other is connected with the spindle, and means adapted to engage with the abutting surfaces, said means being employed solely for locking the spindle to the roller, and normally free from the locking position between the abutting surfaces but manually movable to such locking position.

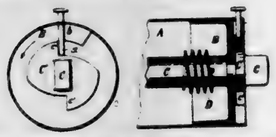

2. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface, a spindle provided with a fixed abutting surface arranged with a portion of such surface in a circle of greater diameter than the body of the spindle, one of which surfaces is undercut, a spring one end of which is connected with the barrel and the other is connected with the spindle, and means adapted to engage with the undercut surface, said means being employed solely for locking the spindle to the roller, and normally free from the locking position between the abutting surfaces but manually movable to such locking position.

3. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface, a spindle provided with a fixed abutting surface arranged with a portion of such surface in a circle of greater diameter than the body of the spindle, a spring one end of which is connected with the barrel and the other is connected with the spindle, and a device independent of the roller adapted to be manually inserted between the abutting surfaces, whereby the spindle and barrel may be locked together and thus be held until after the roller is placed in working position in its brackets.

4. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface, a spindle provided with a fixed abutting surface arranged with a portion of such surface in a circle of greater diameter than the body of the spindle, the two abutting surfaces being arranged in the same radial plane, a spring one end of which is connected with the barrel and the other is connected with the spindle, and a device independent of the roller adapted to be manually inserted between the abutting surfaces, whereby the spindle and barrel may be locked together and thus be held until after the roller has been placed in working position in its brackets.

5. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface, a spindle provided with a fixed abutting surface, arranged with a portion of such surface in a circle of greater diameter than the body of the spindle, the two abutting surfaces being arranged for one to pass in close proximity to the other, a spring one end of which is connected with the barrel and the other is connected with the spindle, and a device independent of the roller adapted to be manually inserted between the abutting surfaces, whereby the spindle and barrel may be locked together and be thus held until after the roller is placed in working position in its brackets.

6. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface, a spindle provided with a plurality of fixed abutting surfaces arranged with a portion of such surfaces in a circle of greater diameter than the body of the spindle, a spring one end of which is connected with the barrel and the other is connected with the spindle, and a device independent of the roller adapted to be manually inserted between the abutting surfaces, whereby the spindle and barrel may be locked together at different points on the spindle and thus be held until after the roller is placed in working position in its brackets.

7. In a shade-roller the combination, substantially as set forth, of a barrel provided with a plurality of fixed abutting surfaces, a spindle provided with a plurality of fixed abutting surfaces arranged with a portion of such surfaces in a circle of greater diameter than the body of the spindle, a spring one end of which is connected with the barrel and the other is connected with the spindle, and a device independent of the roller adapted to be manually inserted between any one of the abutting surfaces on the barrel and any one on the spindle, whereby the spindle and barrel may be locked together at different points on the spindle and of the revolution of the barrel and be thus held until after the roller is placed in working position in its brackets.

8. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface, a spindle provided with a fixed abutting surface arranged with a portion of such surface in a circle of greater diameter than the body of the spindle, the two abutting surfaces being arranged to frictionally hold a device independent of the roller adapted to be manually inserted between them, and a spring one end of which is connected with the barrel and the other is connected with the spindle whereby the spindle and barrel may be locked together by the manual insertion of a device independent of the roller between the abutting surfaces and be thus held until after the roller is placed in working position in its brackets.

9. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface, a spindle provided with a fixed abutting surface open or accessible from the end of the roller in a circle of greater diameter than the body of the spindle, a spring one end of which is connected with the barrel and the other with the spindle, and a device independent of the roller adapted to be manually inserted between the abutting surfaces from the end of the roller, whereby the spindle and barrel may be locked together by a device manually inserted between the surfaces from the end of the roller by the access given to that portion of the surface on the spindle which is thus open or accessible in a circle of greater diameter than the body of the spindle and is held locked until after the roller is placed in working position in its brackets.

10. In a shade-roller the combination, substantially as set forth, of a barrel provided with a fixed abutting surface open or accessible from the end of the roller in a circle of larger diameter than the body of the spindle, a spindle provided with a fixed abutting surface, a spring one end of which is connected with the barrel and the other is connected with the spindle, and a device independent of the roller adapted to be manually inserted between the abutting surfaces from the end of the roller, whereby the spindle and barrel may be locked together by a device manually inserted between the surfaces from the end of the roller by the access given to that portion of the surface on the barrel which is thus open or accessible and be held locked until after the roller is placed in working position in its brackets.

704,739. SECONDARY BATTERY. JUSTUS B. ENTZ, Philadelphia, Pa., assignor to the Electric Storage Battery Company, Philadelphia, Pa., a Corporation of New Jersey. Filed Oct. 3, 1900. Serial No. 31,908. (No model.)

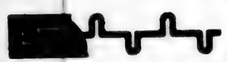

Claim.—1. A malleated antimonious-lead grid for a storage-battery plate, substantially as described.

2. A malleated antimonious-lead grid punctured to form tangs or keys for holding the active material or material to become active of a storage-battery plate, substantially as described.

3. A malleated antimonious-lead grid bent to form keys for holding the active material or material to become active of a storage-battery plate, substantially as described.

704,740. EXCAVATING AND LOADING APPARATUS. WASHINGTON FOGLESONG, Dayton, Ohio, assignor of one-half to John Collins, Dayton, Ohio. Filed Oct. 22, 1901. Serial No. 79,534. (No model.)

Claim.—1. In an excavating and loading apparatus, the combination with the main frame, of supporting and driving wheels therefor, a motor carried by said main frame and connected with the driving-wheel, a scoop-supporting frame pivotally mounted on said main frame, a scoop connected to said pivoted frame, a cam-shaft provided with cams for engaging said pivoted frame to raise and lower said scoop and connections between the motor and said cam-shaft, substantially as described.

2. In an excavating and loading apparatus, the combination with the main frame, of a scoop-supporting frame pivoted to the main frame, a scoop carried by said pivoted frame, mechanism for raising and lowering said pivoted frame, and mechanism for automatically maintaining said scoop always in a horizontal position, substantially as described.

3. In an excavating and loading apparatus, the combination with the main frame, of a scoop-supporting frame pivoted thereto, a scoop pivotally connected to said pivoted frame, a connection between said scoop and the main frame for maintaining the scoop continually in a horizontal position and mechanism for raising and lowering said pivoted frame, substantially as described.

4. In an excavating and loading apparatus, the combination with the main frame, of a pivoted scoop-supporting frame carried thereby, a scoop carried by said pivoted frame, a cam-shaft mounted on the main frame and provided with lifting-cams engaging said pivoted frame, and mechanism for imparting a half-revolution to said cam-shaft, substantially as described.

5. In an excavating and loading apparatus, the combination with the main frame, of a pivoted scoop-supporting frame carried thereby, a scoop carried by said pivoted frame, a cam-shaft mounted on the main frame and provided with lifting-cams engaging said pivoted frame, driving mechanism for said cam-shaft including a part loose on said shaft, and a part secured to said shaft, one of said parts being provided with a clutch-bolt, and the other with a recess to receive the same, a wedge secured to a stationary part and adapted to engage said bolt to withdraw the same from engagement with the recess of the other part, and means for moving said wedge into and out of the path of said bolt, substantially as described.

6. In an excavating and loading apparatus, the combination with the main frame, of a scoop-supporting frame pivoted thereto, a scoop carried by said pivoted frame and provided with a sliding end board, a crank carried by said pivoted frame, operative connections between said crank and said end board for dumping the contents of the scoop and mechanism for operating said crank, substantially as described.

7. In an excavating and loading apparatus, the combination with the main frame, of a scoop-supporting frame pivoted thereto, a scoop carried by said pivoted frame and provided with a sliding end board, devices carried by said pivoted frame for operating said end board, and mechanism carried by the main frame operatively connected with said end-board-operating devices, substantially as described.

8. In an excavating and loading apparatus, the combination with the main frame, of a scoop-supporting frame pivoted thereto, a scoop carried by said pivoted frame and provided with a sliding end board, a crank carried by said pivoted frame, operative connections between said crank and said end board, a motor carried by said main frame, connections between said motor and said crank including a clutch for imparting a single complete revolution to said crank, substantially as described.

9. In an excavating and loading apparatus, the combination with the main frame, and a power-shaft mounted thereon, of a scoop-supporting frame pivoted on said shaft, a scoop secured to said pivoted frame and provided with a movable end board, a crank carried by said pivoted frame and connected to said end board, a driving-gear connected to said crank, a driving-gear on said power-shaft engaging said first-mentioned gear, and mechanism for raising and lowering said pivoted frame, substantially as described.

10. In an excavating and loading apparatus, the combination with the main frame provided with supporting and driving wheels, a motor carried by said main frame, connected with the driving-wheel thereof, a pivoted scoop-supporting frame secured to said main frame, a scoop carried thereby, a cam-shaft mounted on said main frame and provided with cams for raising and lowering said pivoted frame and scoop, a crank on said pivoted frame, a movable end board in said scoop, connections between said end board and said crank and connections between said crank and said motor, substantially as described.

704,741. TRACE-FASTENER. SAMUEL E. FOREMAN, Paducah, Ky. Filed Nov. 22, 1901. Serial No. 83,291. (No model.)

Claim.—1. A trace-fastener comprising a slide adapted to the trace, a vertically-disposed eye formed at the rear end of said slide, a spring-wire bail pivotally mounted in said eye, and balls arranged at the ends of said wire bail and adapted for engagement with seating-recesses in the singletree.

2. A trace-fastener comprising a slide 8 adapted to be mounted on the trace and having side wings 9 adapted to embrace the edges of said trace, a vertically-disposed eye 10 formed at the rear of said slide, a spring-wire bail 11 centrally mounted in said eye, and balls arranged at the ends of said wire bail and adapted for engagement with seating-recesses formed in the opposite sides of the singletree, substantially as specified.

704,742. CIGAR-BUNCHING MACHINE. MICHAEL M. GARDNER, Edgewood, R. I. Filed Aug. 17, 1901. Serial No. 72,366. (No model.)

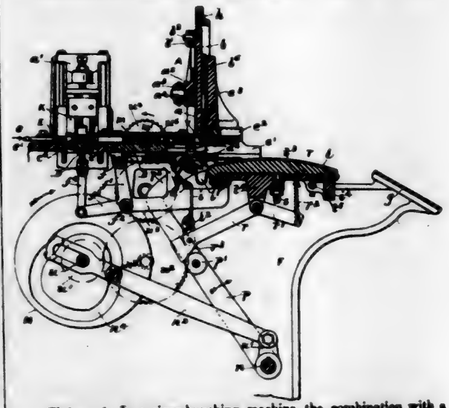

Claim.—1. In a cigar-bunching machine, the combination with a magazine for containing the suitably-prepared fillers and a charging-pocket in normal open communication therewith to receive fillers therefrom, of a mechanically-actuated knife interposed between the mouth of said magazine and pocket for severing the fillers into charges, a mechanically-slidable plate forming the lower side of the charging-pocket, and a vertically-actuated ejector consisting of two members having different degrees of movement arranged to discharge the filler-charge after the said bottom plate has uncovered the pocket, substantially as described.

2. In a cigar-bunching machine, the combination with a suitable magazine containing the previously-prepared tobacco or fillers adapted to be successively divided into charges and be converted into bunches, of a normally open separable pocket communicating with the magazine, a knife for severing the fillers contained in the pocket and at the same time closing the latter from the magazine, a plate forming the bottom of the pocket, an ejector consisting of two vertically-movable detachably-connected members forming the front and upper sides of the pocket, and mechanisms for actuating said knife, plate and ejector members.

3. In a cigar-bunching machine, the charge-severing knife *a*, an ejector located contiguous thereto consisting of independently-movable members, *b*, *b'*, and forming two sides of the normally open charging-pocket *v*, means for feeding the fillers of tobacco into said pocket, and mechanism for actuating said knife to sever the fillers thereby at the same time closing the adjacent side of the pocket, in combination with the mechanically-slidable bottom plate *v'* forming the lower side of the charging-pocket, and means for depressing the ejector and discharging the charge of fillers downwardly from said pocket after the bottom plate has uncovered the latter, substantially as described.

4. In a cigar-bunching machine, the combination with the charging-pocket arranged to receive the charge of fillers, and a mechanically-actuated charge-rolling apron *i* having an open bight therein arranged below and substantially in alinement with said pocket, of a binder-holding device, means for yieldingly retaining the binder in position thereby forming a bridge across the bight-opening, and means for opening said pocket and discharging the charge of fillers therefrom onto the apron, the action of this latter mechanism also being to force the material or to-

bacco against the binder, whereby an end of the latter is drawn out from the said retainer, the thus-released portion of the binder falling onto the apron substantially with or slightly in advance of the charge, substantially as described.

5. In a cigar-bunching machine, the combination of a mechanically-actuated charge-rolling device provided with an apron having an open bight, mechanism for discharging the suitably-prepared charge of fillers into the bight and a yielding binder-holding device, connected with and moving in unison with said charge-rolling means, frictionally retaining both ends of the binder, whereby the latter is maintained under suitable tension across the apron's bight until released by the action of said discharging mechanism, substantially as described.

6. In a cigar-bunching machine, the combination with a stationary table t^3, and a charge-rolling apron i supported by said table arranged to receive the charge of fillers in a bight formed therein, of a pair of vibrating levers p, a forming-roll mounted in and actuated by said levers and in engagement with the apron, and a drag-roll and clip also mounted in said levers and forming a binder-holding device, substantially as described.

7. In a cigar-bunching machine, a suitably-mounted charge-rolling apron i, means for actuating the apron, a binder-retaining device in frictional engagement with both ends of the binder, whereby the latter is maintained flatwise under suitable tension with respect to the apron, and means for discharging the charge of fillers onto the apron, in combination with a spring-pressed lever connected with one end of said apron, means for actuating the lever and a stop for limiting its angular movement, substantially as described and for the purpose hereinbefore set forth.

8. In a cigar-bunching machine, the combination of an apron i, a forming-roll in engagement with the apron, mechanically-actuated levers or arms carrying said roll, a spring-pressed lever r connected with the rear end of said apron, said lever r being actuated in one direction by the roll-carrying arms to temporarily slacken the apron to increase the depth of the bight, and a stop s for limiting the lever's movement in the other direction so as to control the normal depth of the bight, substantially as described.

9. In charge-rolling mechanism for cigar-bunching machines, the combination of an apron i, a forming-roll d^2 in engagement with the apron, means for actuating the roll to and fro, a binder-supporting plate p^3 arranged in front of and moving in unison with said roll, a clip for holding an end of the binder, a drag-roll for holding the other portion of the binder flatwise upon said plate p^3, and a stop or dog located in the path of the movable drag-roll, whereby the latter is automatically elevated so as to permit the introduction of a new binder, substantially as described.

10. In a cigar-bunching machine having a stationary rolling-table t^3 and an inclined binder-supporting table g at the front or delivery end of the machine, the combination therewith of the charge-rolling apron i, the oscillating lever p for actuating said apron having its upper portion provided with a plate p^3 adapted to pass between the said stationary tables t^3 and g, means consisting of a spring-clip l and drag-roll d^3 adapted to hold the binder between them, whereby after introducing the binder into the clip the rearward movement of the lever p uncovers the plate p^3 and at the same time permits the roll d^3 to frictionally engage the binder and draw it rearwardly from its table preliminary to returning the apron, to the normal position to receive the succeeding charge.

11. In a cigar-bunching machine, the combination with the magazine m containing the fillers, and a charging-pocket v communicating therewith and adapted to receive the fillers therefrom, of the charge-severing knife a, means for uncovering the lower side of said pocket, a reciprocating ejector b, the front plate b^2, mechanism for actuating said members b and b^2 for ejecting the charge of fillers from the pocket, means for stopping the downward movement of said plate while the ejector continues its downward action and means for detachably connecting the ejector and said plate whereby the same becomes automatically detached therefrom during such movement, substantially as described.

12. In a cigar-bunching machine, the combination with the filler-containing magazine, a charging-pocket v adapted to receive a charge of fillers therefrom, upper and lower shear-plates located at the mouth of said magazine, and an adjustably-secured front member or bracket c^3, of the reciprocating knife a arranged to coact with said shear-plates in severing the charge of fillers, an ejector interposed between said knife and bracket members having its lower portion adapted to form two sides of the charging-pocket, and means for opening the pocket and actuating said ejector whereby the fillers are discharged, substantially as described.

13. In a cigar-bunching machine, the combination of an ejector member, a front plate relatively movable longitudinally and detachably connected thereto and when in its normal position extending a short distance below the end of the ejector, a bottom plate, a knife a mounted contiguous to and capable of movement independently of said ejector, and mechanisms, substantially as described, for actuating all the said members in a predetermined order for the purpose hereinbefore set forth.

14. In a cigar-bunching machine, the combination with a magazine for containing the fillers of tobacco, and an endwise-movable plate member v' forming a continuation of the lower side of the magazine, of a filler-severing knife a arranged at right angles to said magazine, an ejector located contiguous to and parallel with the knife, a front plate relatively movable longitudinally and detachably connected to the corresponding face of the ejector, and mechanisms for actuating and controlling the movements of all the said members independently of one another and in a prearranged order, substantially as described.

15. In a cigar-bunching machine, the combination with a magazine for containing the fillers of tobacco and means for feeding the fillers therein, of the knife a, the ejector b, the front plate b^2 relatively movable longitudinally and detachably connected to said ejector, the bottom plate member v', the said members, a, b, b^2, v', forming a separable charging-pocket v in direct communication with the front end of the magazine, and mechanisms for actuating said members in a prearranged order, substantially as hereinbefore described and for the purpose set forth.

704,748. STEAM-GENERATOR. JOSEPH L. GIROUX, Jerome, Ariz. Filed Apr. 9, 1902. Serial No. 101,979. (No model.)

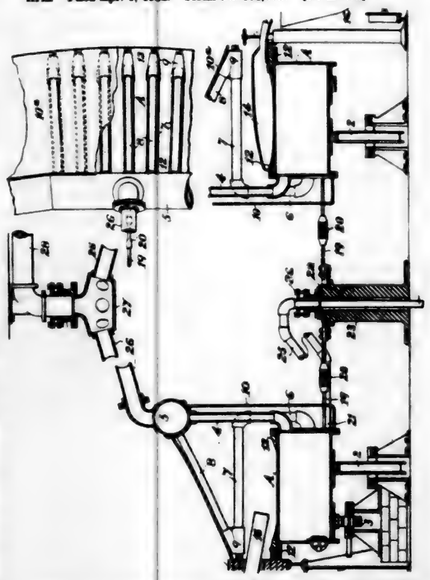

Claim.—1. A steam-generator consisting of a revolubly water-chamber, a steam-drum located above said chamber, circulating-pipes connecting the two, means for supplying water to and conducting steam from the apparatus, and means for applying heat thereto.

2. A steam-generator consisting of an annular revolubly water-chamber, an annular steam-drum located above said chamber, circulating and conducting pipes connecting the two, and a screen or housing inclosing said pipes and forming a heating-space above the water-chamber.

3. A steam-generator consisting of an annular horizontally-revolubly water-chamber and means for applying a heating medium thereto, an annular steam-drum located above said chamber, vertical circulating-pipes connecting the chamber and drum, other horizontal and diagonal connecting-pipes extending above the water-chamber and forming an intermediate heating-space, and vertical and diagonal shields inclosing said connecting-pipes.

4. A steam-generator consisting of an annular revolubly water-chamber having elevated annular rims around the inner and outer periphery, means for supplying fuel to the channel thus formed, an annular steam-drum located above and interior to the inner line of the water-chamber, vertical circulating-pipes connecting the water-chamber and steam-drum, horizontal and diagonal pipes extending above the fuel-space and connecting the water-chamber and steam-drum, and shields inclosing said pipes and forming a furnace-chamber.

5. A steam-generator consisting of a revolubly circular water-chamber rectangular in cross-section and having a fuel-space formed on the top, a circular steam-drum located above said chamber, vertical circulating-pipes connecting the chamber and drum, horizontal and diagonal connecting-pipes extending above the water-chamber with an inclosing shield or housing, and a fixed surrounding wall within which the outer periphery of the water-chamber and the top shield turn in close proximity.

704,744. ELECTRIC ACCUMULATOR. HERMANN HEINICKE, Schoeneberg, near Berlin, Germany. Filed Apr. 23, 1902. Serial No. 105,068. (No model.)

Claim.—An accumulator-electrode comprising a conducting-base presenting angular grooves extending from the top downward, and substantially horizontal strips, inclining inward and connecting the outer portions of each groove formed by adjacent walls, substantially as and for the purpose hereinbefore set forth.

704,745. GAS-BURNER. ASHLEY M. HEWETT, Chicago, Ill. Filed Aug. 26, 1901. Serial No. 73,330. (No model.)

Claim.—1. A burner comprising a stem A, provided with a rotatable valve E, having a ratchet-wheel F, secured thereto, in combination with a bell-crank lever G, insulated from the stem and pivotally supported thereon at a distance from the valve, one arm of the lever being provided with a pawl adapted to engage the ratchet F, and the other arm adapted in its movement to contact with the stem near the igniting-point, an electric circuit, the stem and lever being electrically connected to make and break the circuit as the lever is oscillated.

2. A burner comprising a stem A, provided with a rotatable valve E, constructed with alternate ports and walls, and having a ratchet-wheel F secured thereto, provided with teeth corresponding in number with the number of ports and walls, in combination with a bell-crank lever G, insulated from the stem and pivotally supported thereon at a distance from the valve, one arm of the lever being provided with a pawl arranged to engage the ratchet F, and the other arm adapted in its movement to contact with the stem near the igniting-point, an electric circuit, the stem and lever being electrically connected to make and break the circuit as the lever is oscillated.

704,746. AUTOMATIC LOCKING MECHANISM FOR SIDEWALK OR OTHER ELEVATOR DOORS. PETER H. JACKSON, San Francisco, Cal. Filed Feb. 3, 1902. Serial No. 92,344. (No model.)

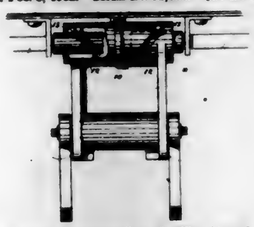

Claim.—1. In an elevator-well or the like, hinged doors and devices by which they are opened and closed in unison with the movements of the elevator-platform, oppositely-slidable bolts carried by one of the doors, a hollow sleeve having an annular guide-flange around its periphery, and a channel in which said flange is turnable to prevent end motion, diagonal slot-and-pin connections between the bolts and sleeve and means whereby the sleeve is turned in one direction when the doors are opened to withdraw the locking-bolts and allow it to turn in the opposite direction when the doors are closed to project the bolts and lock the doors.

2. The combination with bolts guided and slidable in line upon the edge of an elevator-hatchway door, of a guided revolubly sleeve of larger interior diameter than that of the bolts having diagonal slots through the periphery and into which the adjacent ends of the bolts extend, pins projecting from the bolts into said slots, a weighted arm projecting from the side of the sleeve, a bail carried by the elevator adapted to contact with said arm and turn the sleeve when the elevator rises whereby the bolts are drawn toward each other, said weight acting to revolve the sleeve in the opposite direction after the elevator has descended and the door is closed whereby the bolts are moved outwardly and the doors locked.

3. The combination with bolts slidable in guides upon a hatchway-door, of a sleeve into which the contiguous ends of the bolts enter, said sleeve having an interior diameter greater than that of the bolts, and inturned flanges at the ends forming bearings on which the sleeve is supported, a weight projecting from the side of the sleeve, means carried by the elevator-platform and adapted to turn the sleeve, said sleeve and bolts having pin-and-slot connections whereby the turning of the sleeve advances or retracts the bolts.

4. The combination with slidable bolts, and a turnable sleeve into which the ends of the bolts enter, said bolts and sleeve having pin-and-slot connections, of a weight projecting from one side of the sleeve, one or more supplemental weights loosely pivoted thereto, and stops by which the swing of said weights is limited.

5. An elevator-hatchway having doors hinged at opposite sides to close centrally, bolts guided and slidable parallel with and contiguous to the edge of one of the doors, a hollow sleeve into the ends of which the adjacent ends of the two bolts extend forming two members, said bolts and sleeve having pin-and-slot connections, an annular flange projecting around the periphery of the sleeve, lugs or channels upon the door between which said flange is guided and turnable, a weight fixed to and projecting from the sleeve at right angles with its axis of rotation, a supplemental weight projecting from the outer end of the first-named weight and turnable loosely with relation thereto, and stops by which the turning movement is arrested, and the weight caused to stand at an angle when the doors are opened.

704,747. FERTILIZER-DISTRIBUTER. CHARLES JOHNSON and OREN C. RAWLEY, Newark Valley, N. Y. Filed Feb. 20, 1902. Serial No. 94,966. (No model.)

Claim.—1. In a fertilizer-distributer, the combination with a wagon-body, of an endless feed-belt, an adjustable tail-gate, a distributing-drum in proximity to said tail-gate, means for rotating said drum, an eccentric mounted on the axle-shaft, a pivoted lever connected with said eccentric, and means connected with said lever for imparting rotation to said endless belt, substantially as described.

2. In a fertilizer-distributer, the combination with a wagon-body, of an endless feed-belt, an adjustable tail-gate, a distributing-drum in proximity to said tail-gate, means for rotating said drum, an eccentric mounted on the axle-shaft, a pivoted lever connected with said eccentric, a reciprocatory bar, connected to said lever for imparting rotation to said endless belt, substantially as described.

3. In a fertilizer-distributer, the combination with a wagon-body, of an endless feed-belt, a distributing-drum, means for rotating said drum, an eccentric mounted on the axle-shaft, a pivoted lever connected with said eccentric, a reciprocatory bar connected to said lever for imparting movement to said endless belt, and means controlled by the driver at his seat for limiting the movement of said reciprocatory bar whereby to regulate the speed of said endless belt, substantially as described.

4. In a fertilizer-distributer, the combination with a wagon-body, of rollers journaled in said wagon-body and an endless belt traveling around said rollers, a distributing-drum, a sprocket mounted on the axle-shaft and a chain connection between said sprocket, and a sprocket on said drum, an eccentric also mounted on said axle-shaft, a pivoted slotted lever connected with said eccentric, a reciprocatory bar having a lug engaging in said slot in said lever, and spring-constrained pawls carried by said re-

eipreentary bar for engaging a ratchet-wheel on the shaft of one of the rollers carrying the endless belt whereby to impart rotation to said rollers and thence to the endless belt, substantially as described.

5. In a fertilizer-distributer, the combination with a wagon-body, of the curved end-gate working in curved guides in the sides of the wagon-body, means for securing the end-gate in its adjusted position, the endless feed-belt, means for regulating the speed thereof, and the distributing-drum substantially as and for the purpose specified.

6. In a fertilizer-distributer, the combination with a wagon-body, rollers carrying an endless belt journaled in said body, a distributing-drum adjacent to the delivery of said endless belt, a sprocket mounted on the axle-shaft of said wagon, and a sprocket-chain passing around said sprocket and a sprocket on said distributing-drum, an eccentric also mounted on said axle-shaft, a strap on said eccentric, a slotted lever pivoted to the wagon-body and to said eccentric-strap, a reciprocatory bar having a lug engaging in said slot in said lever, pawls pivoted on said bar for rotating a ratchet-wheel on the shaft of one of the said rollers carrying the endless belt, a disk pivoted to said wagon having a strap connected with said reciprocatory bar, and a toothed periphery and a rack for rotating said disk whereby to limit the throw of said reciprocatory rod, and thereby the speed of said endless belt, substantially as described.

7. In a fertilizer-distributer, the combination with a suitable wagon, of an endless traveling belt, an eccentric mounted on an axle-shaft of said wagon, a slotted link pivoted to said eccentric, a reciprocating rod, one end of which is adapted to work in said slot, a ratchet-wheel secured at the other end of said rod, pawls pivoted to said rod and engaging opposite sides of said ratchet-wheel, a spring for holding said pawls in engagement with said ratchet-wheel, means for changing the throw of said rod, and means whereby rotation of the ratchet-wheel imparts movement to the belt.

704,748. PLAYING-BALL. REMBER KNEFFMALL, Boston, Mass. Filed Apr. 23, 1902. Serial No. 104,313. (No model.)

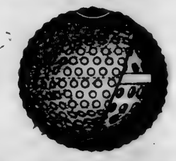

Claim.—1. A hollow playing-ball consisting entirely of two thin shells, whereof the inner shell is of hard, springy material, and the outer is thicker than the inner and consists of hard, plastic material reinforced by fibrous material; said inner shell having perforations through which the material of the outer shell protrudes.

2. A playing-ball consisting entirely of a thin, springy, perforated metal shell, and a thicker shell thereon formed of hard, springy, plastic material incorporated with fabric.

3. A playing-ball consisting entirely of a thin, springy, perforated metal shell, and a thicker shell thereon formed of hard, springy, plastic material and fabric, the fabric being in the form of a layer between two layers of the plastic material, and the material of the inner plastic layer protruding into the perforations in said metal shell.

4. A hollow playing-ball consisting wholly of two thin shells, whereof the inner is thinner than the outer, and consists of springy metal provided with perforations, said outer shell consisting of a plurality of layers of plastic material and a reinforcing layer of fabric; the material of said outer shell protruding into said perforations.

5. A playing-ball comprising a thin shell of springy metal, said shell being provided throughout with perforations, and a hard springy cover for said shell; said cover consisting of plastic material and fabric.

6. A playing-ball comprising a thin shell of metal provided with perforations, and a shell of celluloid and fabric composted upon said shell, portions of the celluloid protruding into said perforations.

7. A playing-ball comprising a complete shell having perforations, and a shell thereon consisting of segments of plastic material and fabric, said segments being welded together at their edges; portions of the plastic material entering said perforations and locking said shells together.

8. A playing-ball comprising a shell having barbs and a shell formed of joined segments, each consisting of plastic material and fabric; said barbs being embedded in said plastic material and preventing separation of said segments.

9. A playing-ball comprising a thin perforated metal shell having barbs, and a shell formed of welded segments of plastic material and fabric; said barbs being embedded in said plastic material, and preventing separation of said segments.

10. A playing-ball comprising a thin metal shell having struck-up barbs, and a shell formed of welded segments of plastic material and fabric; said barbs penetrating and preventing separation of said segments.

11. A playing-ball comprising a shell having barbs, and a shell formed of joined segments of plastic material and fabric; said barbs being embedded in said plastic material; the barbs in one hemisphere pointing toward those in the other hemisphere, thereby to clench said segments together.

704,749. TROLLEY-POLE ATTACHMENT. CHARLES P. LAPHAM, Houghton, N. Y. Filed Feb. 7, 1902. Serial No. 93,084. (No model.)

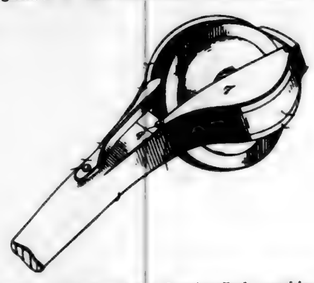

Claim.—1. A device of the class described comprising a frame or holder having an opening enlarged at the sides to form bearing-recesses and flared at the ends, upper and lower plates secured to the top and bottom of the frame or holder and provided with openings flared at the ends to conform to the configuration of the adjacent portions of the said opening, bearing-blocks arranged in the said recesses and located between the upper and lower plates, said bearing-blocks being capable of a limited oscillation, and a trolley-wheel arranged between and mounted on the blocks, substantially as described.

2. A device of the class described comprising a frame or holder having an opening enlarged at its sides to form bearing-recesses and flared at its ends, upper and lower plates arranged at the top and bottom of the frame or holder and coöperating with the same to form a casing and having longitudinal openings flared at the ends, bearing blocks or segments arranged in the said recesses between the upper and lower plates and provided at their inner faces with bearing-sockets, and a trolley-wheel provided at opposite sides with journals arranged in the said sockets and carried by the bearing blocks or segments, substantially as described.

3. A device of the class described comprising a frame or holder having an opening enlarged at opposite sides to form bearing-recesses, upper and lower plates mounted on the frame or holder and covering the recesses, bearing blocks or segments mounted in the recesses of the frame or holder and provided at their inner faces with bearing-sockets, and a trolley-wheel provided at opposite sides with journals fitting in the said bearing-sockets, substantially as described.

4. A device of the class described comprising a frame or holder, a grooved trolley-wheel mounted thereon and capable of a limited oscillatory movement, and a spring having a reduced intermediate portion and provided with a tapered head extending into the groove of the trolley-wheel and adapted to hold the latter normally in alinement with the trolley-wheel, substantially as described.

704,750. TANK FOR STORAGE BATTERIES. HUGH LESLEY, Philadelphia, Pa., assignor to the Electric Storage Battery Company, Philadelphia, Pa., a Corporation of New Jersey. Filed Feb. 8, 1902. Serial No. 93,118. (No model.)

Claim.—1. A lead-lined storage-battery tank having openings in its bottom which do not penetrate the lead lining, substantially as described.

2. A lead-lined storage-battery tank having channels between it and its lining and having an apertured bottom, substantially as described.

704,751. MANUFACTURE OF SECONDARY-BATTERY PLATES OF THE PLANTÉ TYPE. HAROLD M. MARSH, Philadelphia, Pa., assignor to the Electric Storage Battery Company, Philadelphia, Pa., a Corporation of New Jersey. Filed July 30, 1901. Serial No. 70,268. (No model.)

Claim.—1. In the rapid factory-formation process of making peroxid of lead on battery-plates which consists in subjecting the plates to an electrolyte capable of producing the rapid formation of peroxid from metallic lead, that improvement which consists in controlling the temperature of the electrolyte during the formation, substantially as described.

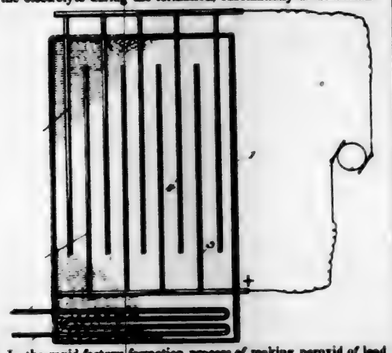

2. In the rapid factory-formation process of making peroxid of lead on storage-battery plates which consists in subjecting the plates to electrolytic action in an electrolyte capable of producing the rapid formation of peroxid from metallic lead, that improvement which consists in maintaining the electrolyte during the formation below 115° Fahrenheit by abstracting heat from it, substantially as described.

704,752. AUTOMATIC VENDING-MACHINE. SIGMUND MAYER, Chicago, Ill. Filed Oct. 1, 1901. Serial No. 77,195. (No model.)

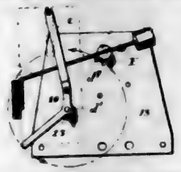

Claim.—1. In a vending-machine, the combination with mechanism for delivering articles to be dispensed, and a motor for imparting movement to said mechanism and for effecting the delivery of said articles, of coin-controlled mechanism for controlling the operation of said motor, said mechanism comprising a coin-shifted lever, and means whereby the coin will be held, and a revoluble arm connected directly with and shifted by the motor, and positioned to sweep over and engage a coin on said lever to remove said coin from said lever when said arm is shifted by said motor.

2. In a vending-machine, the combination with mechanism for delivering the articles to be dispensed, said mechanism comprising an ejector, and a motor, of an arm shifted by said motor, a pitman connecting said ejector and said arm, a pivotally-sustained lever, provided with a pocket for holding a coin, an arm connected directly with and shifted by the motor, and positioned to sweep the coin from said pocket, a motor-brake operated by said lever, and an operating-shaft whereto both of said arms are directly secured.

704,753. STEAM-BOILER. GIDEON D. MILLER, Tub, Pa. Filed Nov. 23, 1901. Serial No. 83,490. (No model.)

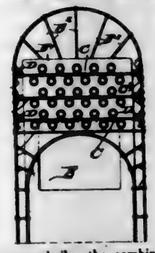

Claim.—1. In a steam-boiler, the combination of a boiler, having one end terminating in a fire-box, stay-plates connecting the sides of the boiler, the said plates having their opposite ends bent downwardly to form short flanges, and angle-plates having one edge held to the plate, the opposite end being arranged for engagement with the sides of the boiler, substantially as shown and described.

2. In a steam-boiler, the combination of a boiler having one end terminating in a fire-box, tubes arranged in the boiler, angle-plates arranged upon the inner surface of the casing and adjacent the tubes, plates interposed between the tubes and having their ends connected to the said angle-plates, and stay-bolts connecting the inner shell of the fire-box and the casing of the boiler, substantially as described.

704,754. MACHINE FOR MOLDING BRICKS. JULIUS MOHR, Brandenburg, Germany. Filed May 7, 1901. Serial No. 59,191. (No model.)

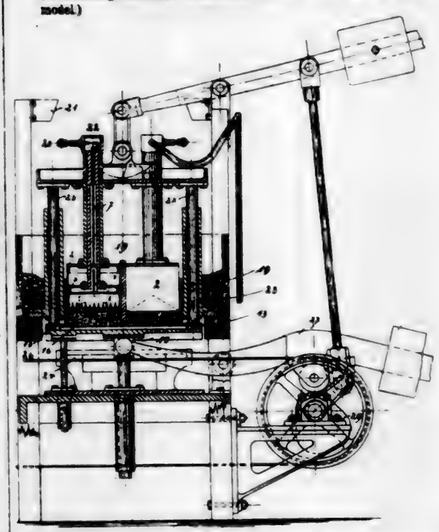

Claim.—1. In machines for molding bricks, the combination of a mold with a plunger, a webbing situated on the lower surface of said plunger, a frame provided with several ribs situated behind said webbing, a second plunger arranged within the first one also provided with several ribs, said ribs being adapted to fit between the ribs of the first plunger, as and for the purpose set forth.

2. In machines for molding bricks, the combination of a mold with a plunger, a webbing situated on the lower surface of said plunger, a frame provided with several ribs situated behind said webbing, a second plunger arranged within the first one also provided with several ribs, said ribs being adapted to fit between the ribs of the first plunger, and means for loading air and water to the webbing, as and for the purpose set forth.

3. In machines for molding bricks, the combination of a mold with a plunger, a webbing situated on the lower surface of said plunger, a frame provided with several ribs situated behind said webbing, a second plunger arranged within the first one also provided with several ribs, said ribs being adapted to fit between the ribs of the first plunger, and means for loading air and water to the webbing, said means consisting of two plates provided with perforations, as and for the purpose set forth.

4. In machines for molding bricks, the combination of a mold and a plunger for discharging the bricks from said mold with a molding-table movable upward and downward, said molding-table being provided with slide-rails for taking up the brick-boards, and with sliding springs for preventing the boards from being pushed too far, slides for pushing the brick-boards forward and transmitting the same to a traveling cloth and a traveling cloth for transmitting the bricks to the drying-sheds, as and for the purpose set forth.

704,755. AUTOMATIC SHUTTER-SETTING MECHANISM. GEORG OETE, Jena, Germany, assignor to The Firm Carl Zeiss, Jena, Germany. Filed Jan. 15, 1901. Serial No. 43,427. (No model.)

Claim.—1. The combination with a safety-shutter, of a mainspring, means for winding up this spring, a pawl-and-ratchet mechanism enabling the mainspring to be released and caught again after only a partial unwinding movement, a release member connected with the shutter

so as to move therewith and adapted to act on the release-pawl of the mainspring, when the shutter has done its exposure work, and a tappet device, which transmits the action of the mainspring to the shutter so as to set the same, essentially as described.

2. The combination with a safety-shutter of a mainspring, means for winding up this spring, a pawl-and-ratchet mechanism enabling the mainspring to be released and caught again after only a partial unwinding movement, a release member connected with the shutter so as to move therewith and adapted to act on the release-pawl of the mainspring, when the shutter has done its exposure work, a tappet device, which transmits the action of the mainspring to the shutter so as to set the same, a mechanism for changing the photographic surface and a connection between this mechanism and the mainspring securing the change of the said surface during each unwinding movement of the mainspring.

704,756. CENTRIFUGAL-PUMP RUNNER. FREDERICK RAY, San Francisco, Cal., assignor of one-half to James Speirs, Jr., San Francisco, Cal. Filed Aug. 3, 1901. Serial No. 70,729. (No model.)

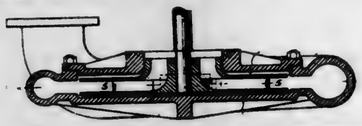

Claim.—1. The combination in a centrifugal pump of a runner composed of separated disks having a diameter approximately that of the interior of the casing within which they revolve and radial vanes fixed between said disks, said vanes being shorter than the distance from the center to the periphery of the disks.

2. The combination in a centrifugal pump of a casing with suction and discharge passages, a closed runner revolvable within said casing, said runner consisting of radial vanes of less peripheral diameter than the interior of the casing, and disks fixed in parallel planes upon each side of the vanes, said disks having a diameter equal to the interior diameter of the casing less clearance.

704,757. DEVICE FOR DELIVERING MAIL-POUCHES TO RAILWAY-CARS. JAMES W. REYNOLDS, Jacksonville, Fla. Filed Jan. 14, 1902. Serial No. 89,644. (No model.)

Claim.—1. In combination with a suitable support, of a pair of vertically-adjustable dead arms arranged one above the other, a horizontally-swinging live arm carried by the upper dead arm, and a vertically-swinging live arm carried by the lower dead arm.

2. In combination with a suitable support, of an upper dead arm, a horizontally-swinging disk carrying an arm mounted in said dead arm, means for holding the same to either side carried by the dead arm, and a lower dead arm carrying a vertically-swinging live arm.

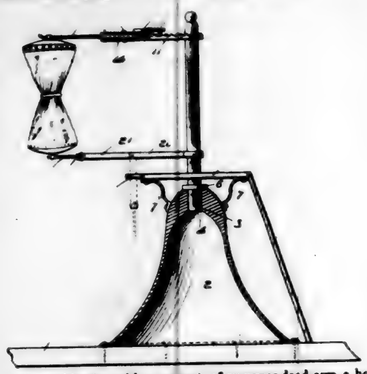

3. In combination with a support, of an upper dead arm, a horizontally-swinging live arm carried thereby, and a lower dead arm, having a vertically-swinging live arm, said live arm having a laterally-swinging trip-lever to engage the pouch.

4. In combination with a suitable support, of an upper dead arm, a horizontally-swinging disk carrying an arm mounted in said dead arm, means for holding the same to either side carried by the dead arm, a lower dead arm, a vertically-swinging live arm carried by said lower dead arm, and a laterally-swinging trip-lever carried by said lower live arm.

5. In combination with a bell-shaped base and a vertical post, of a pair of vertically-adjustable dead arms arranged one above the other, a horizontally-swinging live arm carried by the upper dead arm, and a vertically-swinging live arm carried by the lower dead arm.

6. In combination with a bell-shaped base and a vertical post, of an upper dead arm mounted on the post, a horizontally-swinging disk carrying an arm mounted in said dead arm, means for holding the same to either side carried by the dead arm, a lower dead arm mounted upon the post, and a vertically-swinging live arm carried by said lower dead arm.

7. In combination with a bell-shaped base and a vertical post, of an upper dead arm, a horizontally-swinging live arm carried thereby, a lower dead arm mounted on the post, a vertically-swinging live arm carried by the lower dead arm, and a laterally-swinging trip-lever carried by said lower live arm.

8. In combination with a bell-shaped base and a vertical post, of an upper dead arm, a horizontally-swinging disk carrying an arm mounted in said dead arm, means for holding the same to either side carried by the dead arm, a lower dead arm, a vertically-swinging live arm carried by said lower dead arm, and a laterally-swinging trip-lever carried by said lower live arm.

9. In combination with a bell-shaped base, a vertical post mounted therein, a platform surrounding said post, and brackets to secure the platform to the base and brace the post, of vertically-adjustable dead arms mounted upon said post, and swinging live arms carried by said dead arms for holding and delivering the mail-pouch.

10. In combination with a bell-shaped base, a vertical post mounted therein, a platform surrounding said post, and brackets to secure the platform to the base and brace the post, of a pair of vertically-adjustable dead arms arranged one above the other on the post, a horizontally-swinging live arm carried by the upper dead arm, and a vertically-swinging live arm carried by the lower dead arm.

11. In combination with a bell-shaped base, a vertical post mounted therein, a platform surrounding said post, and brackets to secure the platform to the base and brace the post, of an upper dead arm mounted on the post, a horizontally-swinging disk carrying an arm mounted in said dead arm, a lower dead arm mounted upon the post, and a vertically-swinging arm carried by said lower dead arm.

12. In combination with a bell-shaped base, a vertical post mounted therein, a platform surrounding the post, and brackets to secure the platform to the base and brace the post, of an upper dead arm mounted on the post, a horizontally-swinging live arm carried thereby, a lower dead arm mounted on the post, a vertically-swinging live arm carried by the lower dead arm, and a laterally-swinging trip-lever carried by said lower arm.

13. In combination with a bell-shaped base, a vertical post mounted therein, a platform surrounding said post, and brackets to secure the platform to the base and brace the post, of an upper dead arm mounted on the post, a horizontally-swinging disk carrying an arm mounted in said dead arm, a lower dead arm, a vertically-swinging live arm carried by said lower dead arm, and a laterally-swinging trip-lever carried by said lower live arm.

14. In combination with a bell-shaped base, a vertical post mounted therein, a platform surrounding said base, means to connect the platform and base and brace the post, and a spring-catch carried upon the forward part of the platform, of an upper dead arm carried by said post, a swinging live arm connected thereto, spring-catches for holding the live arm out of use, a lower dead arm mounted on the post, and a swinging live arm carried by the lower dead arm and adapted to be engaged by the spring-catch of the platform when the live arm is out of use.

704,758. PROCESS OF STERILIZING AND PRESERVING COCAINE. WILLIAM C. RILEY, San Francisco, Cal. Filed Mar. 2, 1901. Serial No. 49,580. (No specimens.)

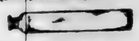

Claim.—1. The method of preparing and preserving cocaine, consisting in placing the dried cocaine in the vial or container; plugging the mouth of the vial or container with dry absorbent material, gradually heating for about fifteen (15) minutes or until the heat reaches approximately 145° centigrade; removing the absorbent plugs; and, finally, hermetically sealing the mouth of the vial or container.

2. The method of preparing and preserving cocaine consisting, essentially, in placing dry cocaine in a receptacle and plugging the mouth of the receptacle with dry sterilized absorbent material; then gradually heating the receptacle to a temperature approximating 145° centigrade (the absorbent plugs taking up any moisture, and preventing condensation in the receptacle;) then removing the absorbent material; and finally, hermetically sealing the receptacle.

704,759. STORAGE-BATTERY SEPARATOR. HUGH RODMAN, Philadelphia, Pa., assignor to the Electric Storage Battery Company, Philadelphia, Pa., a Corporation of New Jersey. Filed July 29, 1901. Serial No. 70,092. (No model.)

Claim.—In a secondary or storage battery the combination with the plates thereof of an imperforate wooden diaphragm between each pair of plates said diaphragm having acid-wells on both sides thereof, said wells substantially vertical and open to afford free circulation between each plate and the diaphragm in vertical direction.

704,760. MANUFACTURE OF GLASSWARE. HENRY SCHAUB, Mount Pleasant, Pa., assignor to Bryce Brothers Company, Mount Pleasant, Pa., a Corporation of Pennsylvania. Filed Feb. 1, 1902. Serial No. 92,185. (No specimens.)

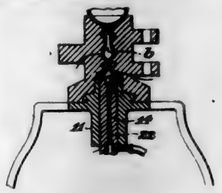

Claim.—1. The improvement in the manufacture of hollow-stemmed articles of glassware, which consists in blowing a body or bowl, forming a stem by pressing glass against the body or bowl, and blowing a longitudinal cavity in the stem.

2. The improvement in the manufacture of hollow-stemmed articles of glassware which consists in blowing a body or bowl, forming an integral stem and foot by pressing glass against the body or bowl, and blowing a longitudinal cavity in the stem.

3. The improvement in the manufacture of hollow-stemmed articles of glassware which consists in blowing a body or bowl, applying the body or bowl to the opening of a press-mold, forming a stem by pressing glass in the mold against the body or bowl, and blowing a longitudinal cavity in the stem.

4. The improvement in the manufacture of hollow-stemmed articles of glassware which consists in blowing a body or bowl, applying the body or bowl to the opening of a press-mold, forming an integral stem and foot by pressing glass in the mold against the body or bowl and blowing a longitudinal cavity in the stem.

704,761. APPARATUS FOR THE MANUFACTURE OF GLASSWARE. HENRY SCHAUB, Mount Pleasant, Pa., assignor to Bryce Brothers Company, Mount Pleasant, Pa., a Corporation of Pennsylvania. Filed Apr. 29, 1902. Serial No. 106,218. (No model.)

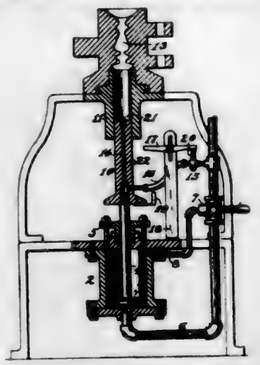

Claim.—1. In an apparatus for the manufacture of glassware, the combination of a fluid-pressure cylinder, a piston and rod working therein, a pressing-plunger connected with the piston-rod, a cylinder in which said plunger reciprocates, a partible press-mold communicating with said cylinder, and means for admitting an air-blast to the press-mold.

2. In an apparatus for the manufacture of glassware, the combination of a fluid-pressure cylinder, a piston and rod working therein, a pressing-plunger connected with the piston-rod, a cylinder in which said plunger reciprocates, a partible press-mold communicating with said cylinder, means for admitting an air-blast to the press-mold, and means for controlling the admission of the air-blast by the traverse of the plunger.

3. In an apparatus for the manufacture of glassware, the combination of a fluid-pressure cylinder, a piston and rod working therein, a pressing-plunger connected with the piston-rod, a cylinder in which said plunger reciprocates, a partible press-mold communicating with said cylinder, a passage extending through the plunger, a flexible air-supply conduit leading into said passage, an automatically-operating valve controlling communication between said conduit and the press-mold, an air-supply valve controlling the air-supply conduit, a valve-lever adapted to open said supply-valve, and a tappet fixed to the plunger, in position to actuate the valve-lever.

4. In an apparatus for the manufacture of glassware, the combination of a fluid-pressure cylinder, a piston and rod working therein, a pressing-plunger connected with the piston-rod and having a longitudinal air-passage, a cylinder in which said plunger reciprocates, a partible press-mold communicating with said cylinder, an automatically-operative valve seating in the air-passage of the plunger and controlling communication between said passage and the press-mold, a flexible air-supply conduit leading into said passage, an air-supply valve controlling said conduit, a valve-lever adapted to operate said supply-valve, and a tappet fixed to the plunger in position to actuate the valve-lever.

704,762. GAS AND AIR MIXER. JOHN SEYMOUR, Toronto, Canada. Filed Dec. 4, 1901. Serial No. 84,701. (No model.)

Claim.—1. In a machine of the class described, the combination of an outer casing providing a liquid-sealing chamber, a part rotatably mounted therein provided with a gas-supply chamber and having one or more air-measuring chambers arranged around the periphery of such chamber and through which air is fed for mixing with gas, and means for feeding gas to the machine to mix with the air during the operations of the same, substantially as described.

2. In a machine of the class described, the combination of a receptacle providing a liquid-sealing chamber, a movable part rotatably mounted in such chamber and provided with a gas-supply chamber and with a series of helical air-measuring chambers, and means for feeding gas into such air-measuring chambers to the air as it is measured by such chambers and during the rotation of the movable part, substantially as described.

3. In a machine of the class described, the combination of an outer casing, an inner movable part provided with a mixing-chamber therein an air-measuring chamber in such movable part communicating with such mixing-chamber, and means for feeding gas to the mixing-chamber during the operation of the movable part to thoroughly mix the gas and air, substantially as described.

4. In a machine of the class described, the combination of an exte-

rior casing providing an air-supply and liquid-sealing chamber, a rotatable part movably mounted in such sealing-chamber and provided with an air-measuring chamber or chambers, each of which is provided with a gas-inlet, and means for feeding gas into such air-measuring chambers during the rotation of the movable part, substantially as described.

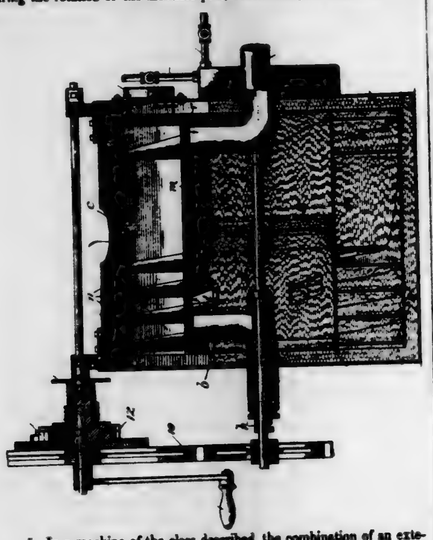

5. In a machine of the class described, the combination of an exterior casing providing an air-supply and liquid-sealing chamber, an interior rotatable part providing a gas-supply and liquid-sealing chamber on its interior and a series of air-measuring chambers each having an inlet-opening communicating with such gas-supply chamber, means by which such movable part may be rotated, and means for sealing and opening the inlet-openings of the air-measuring chambers as the parts rotate, substantially as described.

6. In a machine of the class described, the combination of an exterior casing providing an air-supply and water-sealing chamber, an interior cylindrical rotatable receptacle providing an axial gas-supply and water chamber and a series of air-measuring chambers, each connected with the interior gas and water chamber and open at one end thereof to the air-supply, means by which such interior part may be rotated, a gas-supply pipe and a mixture-exhaust pipe connected with the interior of the rotatable part, substantially as described.

7. In a machine of the class described, the combination of an exterior receptacle providing an air-supply, and liquid-sealing chamber, an interior cylindrical receptacle providing an axial gas-supply and water chamber at one end and an axial mixture-exhaust chamber at the other end and a plurality of peripheral helical air-measuring chambers communicating with the gas-supply chamber and open at one end to the air-chamber and at the other end to the mixture-exhaust chamber, a gas-supply pipe connected with the gas-supply and water chamber, a mixture-exhaust pipe connected with the exhaust mixture-chamber, and means by which the rotatable receptacle may be operated to mix the air and gas, substantially as described.

8. In a machine of the class described, the combination of an exterior receptacle providing an air-supply and liquid-sealing chamber, a rotatable cylinder located therein having an inner cylindrical wall providing an axial gas-supply chamber at one end and an axial exhaust-chamber at the other end, an outer cylindrical wall secured to the inner wall, a plurality of helical blades interposed between both of such cylindrical walls and forming a series of helical air-measuring chambers opening at one end into the air-supply chamber and at the other end into the mixture-exhaust chamber, a series of perforations extending through the inner cylindrical wall forming a communication between each of the air-measuring chambers and the gas-supply chamber, a fixed gas-supply pipe entering the gas-supply chamber with its outlet above the liquid seal therein, and a fixed exhaust-pipe entering the mixture-chamber above the liquid seal, substantially as described.

9. In a machine of the class described, the combination of an exterior receptacle providing an air-supply and liquid-sealing chamber, a rotatable cylinder located therein having an inner cylindrical wall providing an axial gas-supply chamber at one end and an axial exhaust-chamber at the other end, an outer cylindrical wall rigidly secured to the inner wall, a plurality of helical blades interposed between both of such cylindrical walls and forming a series of helical air-measuring chambers opening at one end into the air-supply chamber and at the other end into the mixture-exhaust chamber, a series of perforations extending through the inner cylindrical wall forming a communication between each of the air-measuring chambers and the gas-supply chamber, a fixed gas-supply pipe entering the gas-supply chamber with its outlet above the liquid seal therein, a fixed exhaust-pipe entering the mixture-chamber above the liquid seal, a water-box on the walls of the exterior casing communicating with the liquid portion of the chamber and provided with liquid supply and overflow pipes, substantially as described.

10. In a machine of the class described, the combination of an exterior casing providing an air-supply and liquid-sealing chamber, a rotating cylinder mounted therein and provided with axial gas-supply and mixture-exhaust chambers and a series of helical peripheral air-measuring chambers, each communicating with the air-supply gas-supply and mixture and exhaust chambers, a shaft upon which such rotatable cylinder is mounted and by which it is moved extending out through the exterior casing, a supply-pipe for the gas-supply chamber, an exhaust-pipe for the mixture-exhaust chamber, and gear and weight mechanism connected with the rotatable supporting-shaft for the same, substantially as described.

11. In a machine of the class described, the combination of an outer casing provided with an air-inlet opening, an inner rotatable part provided with a mixing-chamber therein, a series of air-measuring chambers in such inner rotatable part each having an inlet-opening communicating with the air-inlet of the outer casing and an outlet-opening communicating with the mixing-chamber in such rotatable part, means for sealing and opening the inlet-openings of the air-measuring chambers, and means for admitting gas to the mixing-chamber, substantially as described.

704,768. MACHINE FOR MIXING GAS AND AIR. JOHN SEYMOUR, Toronto, Canada. Filed Dec. 9, 1901. Serial No. 85,258. (No model.)

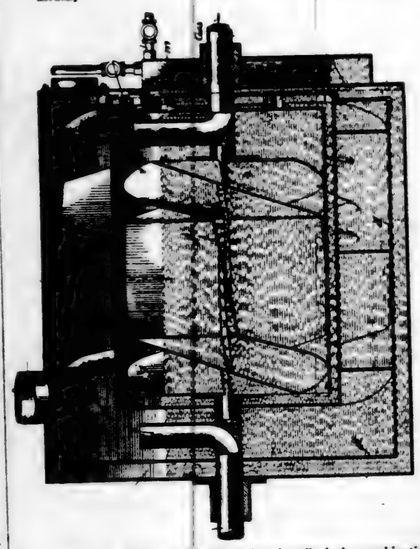

Claim.—1. In a machine of the class described, the combination of an outer casing, and two movable parts arranged therein and forming two chambers one within the other—one for measuring air and one for measuring gas, arranged by their coöperation to assist in thoroughly mixing the same, substantially as described.

2. In a machine of the class described, the combination of an outer casing provided with a liquid-sealing chamber, and two movable parts arranged therein and forming two chambers one within the other—one for measuring air and one for measuring gas, arranged by their coöperation to assist in thoroughly mixing the same, means for admitting gas under pressure into the chamber of one of such movable parts to measure such gas and cause such part to rotate, and means for connecting such two movable parts, whereby when one is rotated the other is operated, substantially as described.

3. In a machine of the class described, the combination of a receptacle providing a liquid-sealing chamber, and two concentric rotatable cylinders—one for measuring air and the other for measuring gas and arranged by their coöperation to assist in thoroughly mixing the gas, substantially as described.

4. In a machine of the class described, the combination of an exterior receptacle providing a mixture-exhaust and liquid-sealing chamber, and two interior concentric cylindrical receptacles arranged one within the other and provided with helical measuring-chambers—one for measuring air and the other for measuring gas and arranged by their coöperation to thoroughly mix such gases, substantially as described.

5. In a machine of the class described, the combination of an exterior receptacle providing a mixture-exhaust and liquid-sealing chamber, two concentric cylindrical receptacles provided with peripheral helical measuring-chambers geared together so as to rotate simultaneously to thoroughly mix air and gas during the coöperation of the parts, means for feeding air to the chambers of the exterior cylinder, and means for feeding gas to the chambers of the interior cylinder, substantially as described.

6. In a machine of the class described, the combination of an exterior casing providing a mixture-exhaust and liquid-sealing chamber, an outer cylindrical receptacle provided with a series of substantially helical measuring-chambers for air and communicating at one end with the exhaust-chamber, a concentric inner cylinder provided with a series of helical measuring-chambers open at one end to the exhaust-chamber, gear mechanism connecting both cylinders together, means for feeding gas to the inner cylinder to rotate the same and by which it is measured, and means for feeding air to the other or outer cylinder, the parts being arranged to coöperate and mix the two gases together, substantially as described.

7. In a machine of the class described, the combination of an exterior casing provided with a mixture-exhaust and liquid-sealing chamber, an outer cylinder having one closed end formed of two concentric walls between the ends of which is arranged an air and liquid sealing chamber and between the concentric walls of which is arranged a series of helical air-measuring chambers opening into the exhaust-chamber, an inner concentric cylinder provided with an outer cylindrical wall and closed at one end to form a gas-supply chamber and provided with a plurality of helical blades forming a series of helical measuring-chambers, a fixed pipe entering the air and liquid chamber above the liquid seal of the outer cylinder upon which one end of both cylinders is rotatably mounted, a fixed pipe entering the gas-supply chamber of the inner cylinder upon which the other end of the inner cylinder is loosely and rotatably mounted, and an exhaust-pipe for the exhaust-chamber of the outer receptacle substantially as described.

8. In a machine of the class described, the combination of an exterior casing provided with a mixture-exhaust and liquid-sealing chamber, an outer cylinder having one closed end and two concentric walls between the ends of which is arranged an air and liquid-sealing chamber and between the concentric walls of which is arranged a series of helical air-measuring chambers opening into the exhaust-chamber, an inner concentric cylinder provided with an outer cylindrical wall and closed at one end to form a gas-supply chamber and provided with a plurality of helical blades forming a series of helical measuring-chambers, a fixed pipe entering the air and liquid chamber above the liquid seal of the outer cylinder upon which one end of both cylinders is rotatably mounted, a fixed pipe entering the gas-supply chamber of the inner cylinder upon which the other end of the inner cylinder is loosely and rotatably mounted, an exhaust-pipe for the exhaust-chamber of the outer receptacle, a liquid-supply box secured to the main receptacle and having communication with the liquid-sealing portion thereof, and supply and overflow pipes on such box, substantially as described.

704,764. AIR AND GAS MIXER. JOHN SEYMOUR, Toronto, Canada. Filed Apr. 19, 1902. Serial No. 103,703. (No model.)

Claim.—1. In a machine of the class described, the combination of an outer casing forming a liquid-sealing chamber, a rotatable drum therein provided with a plurality of helical supply and mixing chambers arranged within the same, each provided with an air and a gas inlet, a supply-pipe for such rotatable drum, and a mixture-exhaust pipe for such inner drum, substantially as described.

2. In a machine of the class described, the combination of an exterior receptacle providing a fluid-supply and liquid-sealing chamber, a closed cylindrical drum rotatably mounted therein and provided with a plurality of fluid supply and mixing chambers connected with the fluid-supply chamber of the interior receptacle and each having an air-inlet, an axial fluid-supply pipe at one end of such chamber, and an axial mixture-exhaust pipe at the other end of each chamber, substantially as described.

3. In a machine of the class described, the combination of an exterior casing forming a gas-supply and liquid-sealing chamber, a closed cylinder rotatably mounted therein and provided with a plurality of perforations and a plurality of helical supply and mixing chambers therein, each chamber arranged to be connected by means of the perforations in the walls of the cylinder with the gas-supply chamber of the exterior receptacle, an axial air-supply pipe at one end of such rotatable cylinder communicating with the chambers therein, and an axial exhaust-pipe at the other end of such rotatable cylinder communicating with the other end of the chambers, substantially as described.

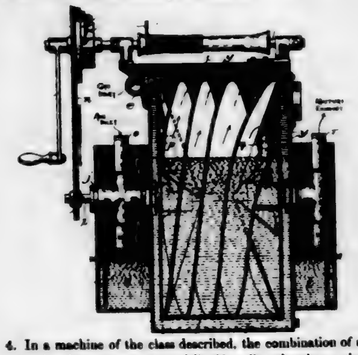

4. In a machine of the class described, the combination of an exterior casing forming a gas-supply and liquid-sealing chamber, a closed cylinder rotatably mounted therein provided with a multiplicity of perforations in the walls thereof, a plurality of helical blades mounted in the interior of such rotatable cylinder providing a plurality of air-supply and mixing chambers, each arranged opposite perforations in the wall of the cylinder to communicate with the gas-supply chamber of the exterior receptacle, a shaft upon which the blades and rotatable cylinder are mounted and rotated, an air-supply pipe communicating with the helical chambers of the rotatable cylinder above the water seal, and a mixture-exhaust pipe communicating with the helical chambers above the water seal, substantially as described.

5. In a machine of the class described, the combination of an exterior casing forming an air-supply and liquid-sealing chamber, a closed cylinder rotatably mounted therein and provided with perforations in the walls thereof, a plurality of helical blades arranged in such rotatable cylinder and at varying angles to form a plurality of helical air-supply and mixing chambers of increased size in cross-section at the discharge ends thereof and communicating by means of the perforations with the gas-supply chamber of the exterior receptacle, an axial air-supply pipe communicating with the helical chambers above the water seal at one end thereof, and a mixture-exhaust pipe communicating with the discharge ends of the mixing-chambers above the water seal, substantially as described.

6. In a machine of the class described, the combination of an exterior casing forming a gas-supply and liquid-sealing chamber, a closed cylinder rotatably mounted therein and provided with a plurality of perforations in its wall, a plurality of helical blades arranged in such cylinder at different angles and at different portions of their lengths to form a plurality of air-supply and mixing chambers of increased size in cross-section at their discharge ends and communicating with the gas-supply chamber of the exterior receptacle by means of the perforations in the walls of the cylinder, a shaft upon which such blades and rotatable cylinder are supported and rotated, an air-supply pipe at one end communicating with the helical chambers above the water seal, and a mixture-exhaust pipe at the other end communicating with the discharge end of the helical chambers above the water seal, substantially as described.

7. In a machine of the class described, the combination of an exterior casing forming a gas and liquid-sealing chamber, a rotatable cylinder mounted therein provided with a plurality of helical air-supply and mixing chambers communicating with the gas-supply chamber of the exterior receptacle, an axial air-supply pipe in one end of the cylinder communicating therewith above the water seal, a mixture-exhaust pipe at the other end of the cylinder communicating therewith above the water seal, a drip-box arranged under each of the supply and exhaust pipes and communicating therewith, and siphon overflow-pipes arranged in such drip-boxes, substantially as described.

704,765. CUFF-HOLDER. JOHN F. SMITH and JAMES S. HULL, New York, N. Y.; said Smith assignor to said Hull. Filed Oct. 30, 1901. Serial No. 80,822. (No model.)

Claim.—A fastener comprising a base having a tongue pressed outward therefrom, said base having its end portions bent upward and contracted for a short distance from their extremities to form tongues which are curved toward each other and have shoulders at their bases, toggle-jaws having slots near their outer ends to receive the said curved tongues, and having curved arms near their inner ends overlapped, the arm of one jaw being outermost at one side and an arm of the other jaw being outermost at the opposite side, the ends of the outermost arms being bent outward to form finger-pieces, and a pin pivotally connecting the said arms, substantially as specified.

704,766. TILE. WILL C. STAFF, Akron, Ohio, assignor to the Goodyear Tire and Rubber Company, Akron, Ohio. Filed May 5, 1902. Serial No. 106,025. (No model.)

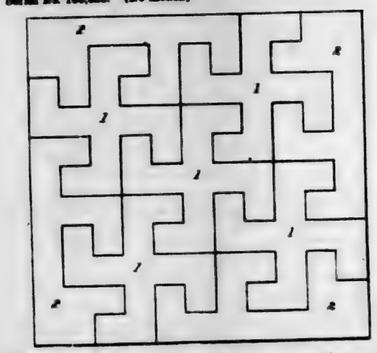

Claim.—1. An improved tile consisting of a rectangular cross with arms of like size and shape, the length of each arm being twice its width, and turned at a right angle in the same way from the center, at a point distant from the cross-arm equal to its width and for a like distance, substantially as shown and described.

2. An improved tiling consisting of blocks in form of a rectangular cross with arms of like size and shape, each arm being turned at a right angle at the same distance from the cross-arm, and for the same length, in combination with border-tile, each having one straight edge with a square corner, the other end and edge having a configuration to fit the adjacent inner tile, substantially as shown and described.

3. An improved corner and border tile for inner filling-tile in form of rectangular crosses with arms of like size and shape each turned at a right angle at the same distance from the cross-arm and for the same length; which consists of tile having a straight edge and end at a right angle, with the inner edge conformed to match and interlock with the adjacent arms of inner tile, substantially as shown and described.

4. An improved border-tile for inner filling-tile in form of rectangular crosses with arms of like size each turned at a right angle at the same distance from the cross-arm and for the same length; which consists of tile having a straight edge, with the other edge having a configuration to fit the adjacent inner tile, substantially as shown and described.

704,767. SECONDARY BATTERY. EDWARD G. STRAUSSER, Philadelphia, Pa., assignor to the Electric Storage Battery Company, Philadelphia, Pa., a Corporation of New Jersey. Filed Sept. 30, 1899. Serial No. 732,068. (No model.)

Claim.—1. Active material or material to become active consisting of a coherent mass of crystallized lead free from blow-holes, the crystals of said mass being interrelated according to their law of crystallization, substantially as described.

2. The process of producing active material or material to become active which consists in making an amorphous body of lead compound, and subjecting the compound as a cathode to electrolytic action in a bath in which the compound is soluble, thereby changing its structure into the form of a coherent crystalline mass, substantially as described.

3. The process of producing active material or material to become active which consists in making an amorphous body of chlorid of lead, and subjecting the body as a cathode to electrolytic action in a bath in which the chlorid of lead is soluble, thereby changing its structure into the form of a coherent crystalline mass, substantially as described.

704,767.

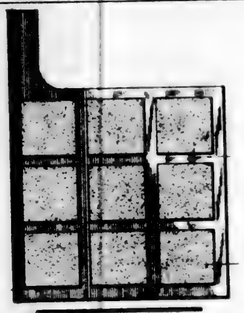

704,768. REFRIGERATOR, FREEZER, AND CHURN. SAMUEL SWEENEY, San Francisco, Cal. Filed Sept. 9, 1901. Serial No. 74,783. (No model.)

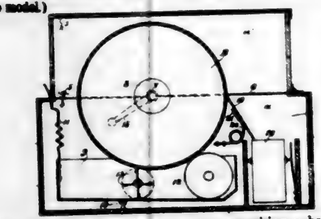

Claim.—1. A refrigerating apparatus comprising a box, a cover therefor, a horizontal partition in said box, an opening in said partition, a revolvable cylinder in said opening, said cylinder projecting into compartments above and below the partition and adapted to contain a freezing mixture, a containing-pan pivotally mounted in the box, a distributing-roller in said pan, and a means whereby said pan is oscillated to bring the roller and cylinder into contact when the cover is closed upon the box.

2. In a refrigerating apparatus, a box having openings at either end, closures for said openings, a hinged cover for said box, a horizontal partition in said box by which two compartments are formed therein when the cover is closed, an opening in said partition, a revolvable cylinder mounted in said opening and so as to occupy a portion of each compartment above and below the partition said cylinder adapted to contain a freezing mixture, and means whereby an article to be frozen may be submitted to the action of said mixture.

3. A refrigerating apparatus comprising a box, a cover therefor, a revolvable cylinder in said box, a containing-pan pivotally mounted in the box beneath said cylinder, a distributing-roller and an agitator mounted in said pan, a spring extension on the rear of said pan adapted to be engaged by the cover when the latter is closed so as to oscillate the pan and bring the agitator and roller into contact with the cylinder whereby the roller, agitator and cylinder are revolvable in unison.

4. In a refrigerating apparatus, the combination of a box, a revolvable cylinder in said box and adapted to contain a freezing mixture, a containing-pan pivotally mounted beneath said cylinder, a distributing-roller in said pan, a cover for said box and resilient connections between said cover and pan whereby the latter is tilted, when the former is closed, to cause the surfaces of said distributing-roller and cylinder to be brought into contact.

704,769. STAY FOR BUGGY-BEDS. WILLIAM B. WILLIAMSON Malvern, Kans., assignor of one-half to W. R. Myers, Powhattan, Kans. Filed Nov. 2, 1901. Serial No. 80,912. (No model.)

Claim.—1. In a device of the class described, the combination with a vehicle-body having a corner-post, of a stay comprising exterior sides arranged at right angles to each other to fit the corner of the vehicle-body and extending from the top to the bottom of the same and provided with exterior bracing devices formed integral with the sides, the inwardly-extending integral rectangular top and bottom plates entirely covering the space between the sides and connecting the latter and arranged on the corner-post and beneath the bottom of the sill of the vehicle-body and provided with perforations, and vertical fastening devices passing through the perforations and embedded in the corner-post, substantially as described.

2. In a device of the class described, the combination with a vehicle-body having a corner-post, of a stay comprising the vertically-disposed exterior sides conforming to the configuration of the corner of the vehicle-body and extending from the top to the bottom of the same and provided with integral exterior bracing devices extending across the sides, the inwardly-extending integral top and bottom plates arranged in the same plane as the corner-post, and fastening devices passing through the top and bottom plates and embedded in the post, whereby the stay is adapted to bind the side and end to the post, substantially as described.

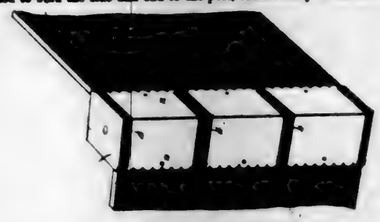

704,770. WELL-DRILLING MACHINE. MICHAEL WILLIAMS, Madison, Wis., assignor of one-third to William J. Schneider, Middletown, Wis. Filed Nov. 26, 1901. Serial No. 83,795. (No model.)

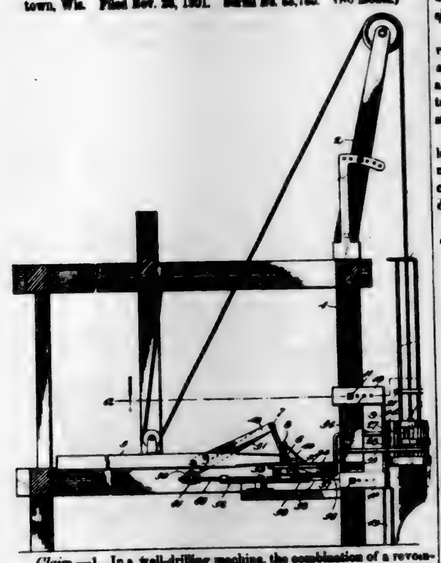

Claim.—1. In a well-drilling machine, the combination of a revolvable drill-rope guide having two series of reversely-disposed ratchet-teeth, one of said series being above the other, with pawls to engage said ratchet-teeth respectively, said pawls being disposed on opposite sides of said guide, means to operate said pawls, a shiftable support for said pawls and means to automatically operate said shiftable support and thereby successively engage the said pawls, to rotate said drill-rope guide alternately in reverse directions, substantially as described.

2. In a well-drilling machine, the combination of a revolvable drill-rope guide having two series of reversely-disposed ratchet-teeth, with pawls to engage said ratchet-teeth respectively, means to operate said pawls, means to successively shift them into engagement with the respective teeth of said drill-rope guide, and a brake for said drill-rope guide, substantially as described.

3. In a well-drilling machine, the combination of a revolvable drill-rope guide having two series of reversely-disposed ratchet-teeth, with pawls to engage said ratchet-teeth respectively, a pivoted support for said pawls, said pivoted support having a tappet, means to impart longitudinal motion to said pawls, a cam coacting with said tappet to shift said pivoted support and thereby shift the said pawls into engagement alternately with the ratchet-teeth of said drill-rope guide, and means to operate said cam, substantially as described.

4. In a well-drilling machine, the combination of a revolvable drill-rope guide having two series of reversely-disposed ratchet-teeth, pawls to engage said ratchet-teeth respectively, a lever to operate the drill-rope, a connection between said lever and said pawls whereby the latter are operated to rotate said drill-rope guide, a shiftable element connected to said pawls to successively shift them into engagement with the respective teeth of said drill-rope guide and means, including a step-by-step movement, operatively connected to said lever, to shift said shiftable element, substantially as described.

5. In a well-drilling machine, the combination of a revolvable drill-rope guide having two series of reversely-disposed ratchet-teeth with pawls to engage said ratchet-teeth respectively, a lever to operate the drill-rope, a connection between said pawls and said lever whereby said pawls are moved longitudinally, a shiftable element connected to said pawls to successively engage them with the respective teeth of said drill-rope guide, and a connection including a step-by-step mechanism between said shiftable element and said lever, to actuate said shiftable element, substantially as described.

6. In a well-drilling machine, the combination of a revolvable drill-rope guide having two series of reversely-disposed ratchet-teeth, pawls to engage said ratchet-teeth respectively, a drill-rope-operating lever, a rock-shaft, a lever 50 connected to the said pawls to move the latter longitudinally, a connection between said lever 50 and the rock-shaft, an operating connection between the latter and said drill-rope lever, whereby said rock-shaft is operated, a shiftable element connected to the pawls to successively shift them into engagement with the respective teeth of the drill-rope guide and a step-by-step mechanism actuated by said rock-shaft to operate said shiftable element, substantially as described.

7. In a well-drilling machine, the combination of a mast for the direction-sheave of the drill-rope, a support connected to the said mast and adjustable toward and from the same, a bearing carried by said support, a revolvable drill-rope guide journaled in said bearing and adjustable means to rotate the said drill-rope guide alternately in reverse directions, substantially as described.

8. In a well-drilling machine, the combination of a mast, a revolvable drill-rope guide, a bearing therefor, adjustable toward and from the mast, a drill-rope-operating lever and an adjustable element, operatively connected to said lever for rotating said drill-rope guide, substantially as described.

704,771. FIREPROOF BUILDING. THOMAS BAILEY, New York, N. Y. Filed June 22, 1901. Serial No. 65,541. (No model.)

Claim.—1. The improved dovetail corrugated sheet-metal building-sheets, having exterior rounded ribs and interior flat ribs with contracted interior plaster-holding grooves and wider exterior grooves, the wide ribs being flat on the top both outwardly and inwardly with acute angles at the junctions of the top and the sides, and the narrow grooves being rounded on the top both outwardly and inwardly and at the junctions with the sides.

2. The combination with the dovetail corrugated sheet-metal building-sheets having exterior rounded ribs and interior flat ribs with contracted interior plaster-holding grooves and wider exterior grooves, the wide ribs being flat on the top both outwardly and inwardly with acute angles at the junctions of the top and the sides, and the narrow grooves being rounded on the top both outwardly and inwardly and at the junctions with the sides, of hooks for securing bars to the flat ribs, each having a head insertible edgewise in the narrow interior plaster-holding grooves and securable therein by the broader flatwise dimensions set transversely to the groove in the adjustment of the hook after being inserted, for engaging the bar.

3. The combination with the dovetail corrugated sheet-metal building-sheets, having exterior rounded ribs, interior flat ribs and contracted interior plaster-holding grooves, of reinforcing-rods inserted in the plaster-holding grooves.

4. The combination with the dovetail corrugated sheet-metal building-sheets having exterior rounded ribs, interior flat ribs and interior contracted plaster-holding grooves, of the lateral stiffening-bars, and retaining-hooks therefor detachably secured in the plaster-retaining grooves and securing said stiffening-bars on the flat ribs.

5. The combination with the dovetail corrugated sheet-metal building-sheets having exterior rounded ribs, interior flat ribs and contracted interior plaster-holding grooves, of reinforcing-rods inserted in the plaster-retaining grooves, lateral stiffening-bars and retaining-hooks for said bars detachably secured in the plaster-retaining grooves.

6. The combination with the dovetail corrugated sheet-metal building-sheets having exterior ribs, interior flat ribs and contracted interior plaster-retaining grooves, of the lateral stiffening-bars and retaining-hooks for said bars, said hooks having disk heads insertible edgewise in the plaster-retaining grooves, and securable therein crosswise, and in the crosswise position securing the bars.

7. The combination with the dovetail corrugated sheet-metal building-sheets having exterior ribs and interior contracted plaster-holding grooves, of lateral stiffening-bars and retaining-hooks for securing said bars to the sheets, said hooks having a head insertible edgewise in the groove, but interlocking when turned sidewise, and a prong adapted to engage the bars when so turned, and the plaster fixing said bars and hooks in position.

704,772. **MANUFACTURING ARTIFICIAL ICE.** EDWARD BARRATT, Philadelphia, Pa., assignor of two-thirds to John J. Keller and Augustus Bettney, Philadelphia, Pa. Filed Dec. 6, 1901. Serial No. 84,865. (No model.)

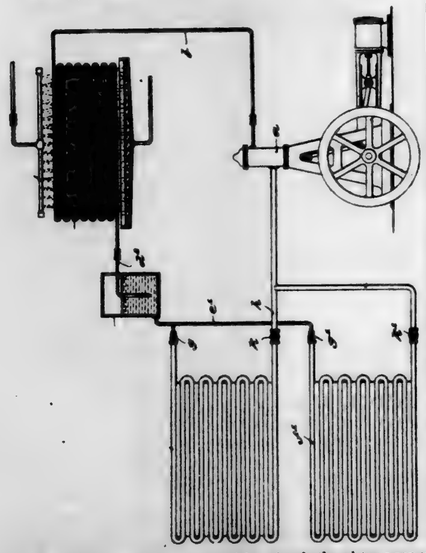

Claim.—1. In the manufacture of ice wherein the plate or pan is supplied with refrigerating liquid which expands in the plate or pan to cool the same, the method of releasing the ice from the plate or pan which consists in first preventing the expansion of the liquid in the plate or pan and thereafter continuing to supply to the plate or pan the liquid refrigerant whereby the pressure of the refrigerant liquid is gradually increased within the plate or pan and a gradual increase of the temperature of the plate or pan is secured.

2. In the manufacture of artificial ice, wherein a series of coils are supplied with the refrigerating liquid, said liquid being permitted to expand in said coils, the method of releasing the previously-formed ice from said coils, which consists in cutting out the required coil from the return to the pump which exhausts the refrigerant from the coil and maintaining the supply of liquid to the coil from the receiver or tank to thereby increase gradually the pressure of refrigerant liquid in the coil.

704,773. **TANK-HOOP LUG.** ALBERT J. BEHRENS, San Francisco, Cal. Filed Apr. 9, 1902. Serial No. 102,143. (No model.)

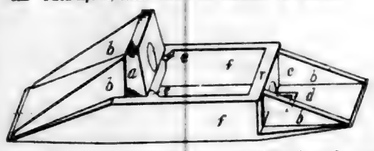

Claim.—1. The combination, in a tank-hoop lug, of a movable washer having a lip designed to fit beneath a projection on the body of the shoe and an opening to receive the threaded end of the hoop-rod, with a shoe having an opening to receive the hoop-rod and a projection designed to fit over a lip on the washer, all as described and for the purposes specified.

2. The combination, in a tank-hoop lug, of a movable washer having grooves designed to fit wings on the shoe and an opening designed to receive the threaded end of the hoop-rod, with a shoe having wings designed to fit grooves in the washer and having an opening designed to receive the hoop-rod, all as described and for the purposes specified.

3. The combination, in a tank-hoop lug, of a washer having its two faces at an angle with each other and having grooves designed to fit wings on the shoe and a lip designed to fit beneath a projection on the shoe, with a shoe having wings and a projection designed to fit grooves and a lip respectively on the washer and having an opening designed to receive the hoop-rod, all as described and for the purposes specified.

704,774. **COMBINED CRADLE AND BABY-JUMPER.** JOHN W. BLACKLEDGE, Chicago, Ill. Filed Mar. 8, 1900. Renewed Dec. 11, 1901. Serial No. 85,494. (No model.)

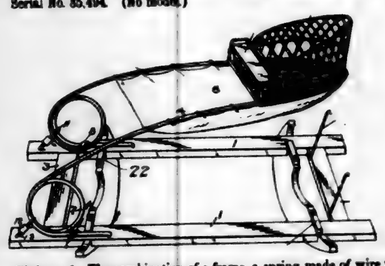

Claim.—1. The combination of a frame, a spring made of wire with the ends secured flatly on the frame then coiled and extended backward so as to be substantially horizontal when under strain, hooks that are caught over the coils and secured to the frame with their length adjustable whereby the resiliency of the spring may be regulated, and a child-support on the free end of the spring.

2. The combination of a frame, a spring secured at one end thereto with two arms or sides extending backward so as to be substantially horizontal when under strain, a seat detachably secured on the free end of the spring, and a hammock secured between the spring-arms.

3. The combination of a frame, rockers upon which the frame is detachably mounted, a spring made of wire secured at one end to said frame and extending backward so as to be substantially horizontal when under strain, a hammock suspended between the arms of said spring, and links connecting the free end of the spring and the frame whereby the spring is rendered stationary.

704,775. **SAD-IRON.** EWALD BLECHMANN, Seyenburg, Germany. Filed Mar. 6, 1902. Serial No. 96,910. (No model.)

Claim.—1. The combination, with a sad-iron having a projection on its top, said projection having similarly-disposed locking-lips, of a handle having a hollow base, a transverse locking-bolt mounted in said base, said locking-bolt being adapted to pass in one position between said locking-lips and to engage therewith in another position and means for operating said locking-bolt, substantially as set forth.

2. The combination, with a sad-iron having a projection at its upper part provided with a transverse recess, of a detachable handle provided with a hollow base, said base extending over the projection on the sad-iron, a transverse locking-bolt of segmental cross-section turning in said hollow base, and an exterior crank-handle attached to one end of said bolt and adapted to turn it on its axis for locking the handle to or detaching it from the sad-iron, substantially as set forth.

3. The combination, with a sad-iron provided with a segmental projection on its top part, said projection having a transverse recess, of a handle, a hollow base attached to the lower part of said handle, a transverse segmental bolt turning in said base, an exterior crank-handle attached to one end of the locking-bolt, and an exterior angular recess in the side wall of the hollow base adapted for limiting the movement of the handle and bolt, substantially as set forth.

704,776. **CAR-FENDER.** ELI A. BOOKER, Altoona, Pa. Filed Feb. 10, 1902. Serial No. 93,249. (No model.)

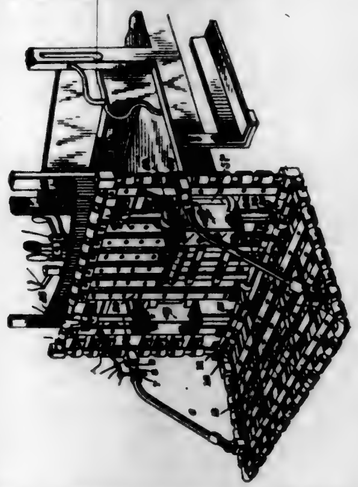

Claim.—1. In a car-fender, the combination with the car, of a fender comprising a lower frame and a vertical frame, a series of hinged doors carried by said frames, vertical shafts carried by the vertical frame, bearings carried by the bottom of the car, means for operating the fender in a vertical direction, means carried by the vertical frame and extending into the bearings, and means for operating said means whereby one or both sides of the fender may be extended outwardly, substantially as described.

2. In a car-fender, the combination with a car, of a vertical and a lower frame carried thereby, means for raising said fender in a vertical direction, means for returning said fender to its normal vertical position, and means secured to each side of the vertical frame for causing the same to move outwardly, substantially as described.

3. In a car-fender, the combination with a vertical frame and a lower frame pivotally mounted thereon, a rack-bar carried by said vertical frame, bearings carried by the bottom of the car and in which said rack-bars operate, said rack-bars being spring-pressed, and means for operating said rack-bars to cause the fender to move outwardly from the car, substantially as described.

4. In a car-fender, the combination with a car, of a fender comprising a vertical frame having a lower frame pivotally mounted thereon, a series of hinged doors carried by the said members of the fender, a spring-pressed connection formed between the said fender and the under face of the car, and means for operating said connection whereby the fender may be operated in a vertical direction, substantially as described.

5. In a car-fender, the combination with a car having a fender comprising a lower and a vertical frame secured thereto, of casings having guide-rollers mounted therein, a vertical frame carrying vertical shafts operating between said guide-rollers, the lower end of the vertical frame having rearwardly-extending spring-pressed rack-bars connected thereto, said rack-bars operating in bearings carried by the bottom of the car, and means for operating said rack-bars whereby the fender is moved in the outward position, substantially as described.

6. In a car-fender, the combination with a car having a vertical frame and a lower frame connected thereto, of casings having guide-rollers mounted therein connected to the vertical frame, hinged doors carried by the lower frame whereby the same may be swung backwardly to receive the said casings when the fender is in a folded position, a spring-pressed connection between the fender and the bottom of the car, means for operating said connection so as to cause the fender to move in a vertical direction, and means for actuating the fender in an outward direction from either one or both sides thereof, substantially as described.

704,777. **DISINFECTING DEVICE.** EDWARD L. BRIGGS, St. Louis, Mo. Filed Dec. 4, 1901. Serial No. 84,627. (No model.)

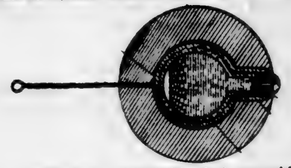

Claim.—A disinfecting and deodorizing device comprising a porous bottle; a neck formed integral with said bottle; a hanger formed by twisting a wire around said neck and around said bottle and extending from the bottle as required to suspend the bottle with the neck depending downwardly, said hanger also serving as a handle in filling the bottle; and a covering cast around said bottle with the neck extending through the covering, said hanger also extending through the covering.

704,778. **OPTICAL WIRE.** DANIEL V. BROWN, Philadelphia, Pa. Filed Jan. 9, 1902. Serial No. 88,968. (No model.)

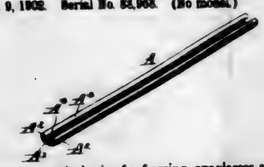

Claim.—1. An optical wire for framing eyeglasses and spectacles consisting of a thin metal plate having its central portion transversely curved into a trough-like section and its lateral edges curved inward toward the bottom of the central trough-like section to form a channel or groove of truncated-V shape between the elastic tongues formed by the said edges of the curved plate.

2. An optical wire for framing eyeglasses and spectacles consisting of a thin metal plate transversely curved to form a broad convex lower curve A' and relatively sharper lateral curves at A^2 A^2 with inwardly and downwardly extending edges A^3 A^3 forming a channel or groove bounded by the elastic edges of the curved plate.

704,779. **MOISTENING-MACHINE.** PEARL C. CRAWFORD, Salem, Ohio. Filed Apr. 5, 1902. Serial No. 101,627. (No model.)

Claim.—In a moistener, the combination of a liquid-receptacle having seats formed on its upper edges and shoulders formed by the seats, a semicylindrical casing seated in said seats and bearing against said shoul-

ders, with openings formed in said casing, a sleeve carrying a brush, a shaft mounted in said casing and receiving said sleeve with means for securing the sleeve to the shaft, one end of the shaft projecting without the casing and bent to form a crank whereby the brush may be rotated, the bristles of the brush bearing outwardly against the interior of the casing, whereby they may project through the casing when the brush is rotated, substantially as described.

704,780. ATOMIZER. ALLEN DE VILBISS, Toledo, Ohio. Filed Nov. 4, 1901. Serial No. 80,963. (No model.)

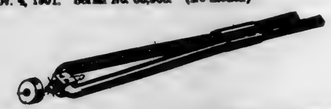

Claim.—1. In an atomizer, a head having two of its opposite sides formed with chambers therein, a pair of arms which enter and engage said chambers, a chambered cap adapted to engage said head and having a central orifice therethrough, a nozzle-point projecting into said orifice and connected with one of the chambers of said head, and connections between the other chamber of the head and the chamber of the cap.

2. In an atomizer, a head having two chambers therein, one of which has an air-supply connection, the other of which has a liquid-supply connection, a chambered cap detachably secured upon said head and having a central aperture, a spraying-point upon said head which enters said aperture and which has an axial passage connected with one of the chambers in said head, and connections between the chamber of the cap and the other chamber of the head.

704,781. PHOTOGRAPHIC SHUTTER. GILBERT S. DEY, Rochester, N. Y., assignor to the Gundlach Optical Company, Rochester, N. Y., a Corporation of New York. Filed July 30, 1900. Serial No. 25,210. (Model.)

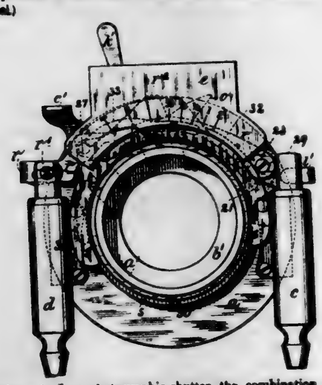

Claim.—1. In a photographic shutter, the combination with a device for actuating the shutter-blades and by which the same may be set without opening or moving the blades, of a cam-ring adjustable to the several positions of time, bulb and instantaneous, and means actuated thereby for controlling the mechanism actuating the shutter-blades, substantially as set forth.

2. In a photographic shutter, the combination with a device for actuating the shutter-blades and by which the said blades may be set without being moved, of a cam-ring adjustable to the several positions of time, bulb and instantaneous, devices placed intermediate of the hereinbefore-stated devices, the position of which is altered by the movement of the adjustable device, and a release-lever acting in connection with said intermediate devices, substantially as set forth.

3. In a photographic shutter, a device actuating the shutter-blades and by which they may be set without being moved, and which device is constructed to insure a full-open movement of the shutter-blades, in combination with an adjustable cam-ring adapted to be moved to the various positions of time, bulb and instantaneous, a release-lever operated by bulb-pressure and parts acting in connection therewith and the movement of which is controlled by the said annular adjustable device for controlling the said exposure, substantially as set forth.

4. In a photographic shutter, the combination with a spring-actuated operating-lever for moving the shutter-blades and by which the same may be set without being moved, of a release-lever, a lever pivoted to the release-lever, a lever pivoted to the case and acting in connection with the release-lever, and an adjustable cam-ring adapted to be set to the positions of time, bulb and instantaneous, whereby the aforesaid levers, independent of the release-lever, are actuated for controlling the various exposures, substantially as set forth.

5. In a photographic shutter, a spring-actuated operating-lever having a cam-slot with opposite inclined portions and an appreciable intermediate portion connecting the approaching ends of the inclined portions, substantially as set forth.

6. In a photographic shutter, a spring-actuated operating-lever having a cam-slot with opposite inclined portions and an appreciable intermediate portion connecting the approaching ends of the inclined portions and having a groove in the back face of said operating-lever connecting the extreme ends of said slot and which groove is varying in its depth and deepest adjacent to the end of said cam-slot and free end of said lever, substantially as and for the purposes set forth.

7. In a photographic shutter, a spring-actuated operating-lever having a cam-slot with opposite inclined portions and an appreciable intermediate portion connecting the approaching ends of the inclined portions and having a groove in the back face of said operating-lever connecting the extreme ends of said slot and which groove is varying in its depth and deepest adjacent to the end of the cam-slot and free end of said lever and a yoke-lever and a pin projecting from the yoke-lever and passing through the slot of the operating-lever, substantially as and for the purposes set forth.

8. In a photographic shutter, the combination with the back of the case and the shutter-blades and pivots for the said blades, of plates pivoted to the pivots of the shutter-blades and coming between the blades and the case and having upturned ends passing through holes in the shutter-blades, and means for engaging the upturned ends to operate the shutter-blades, substantially as set forth.

9. In a photographic shutter, the combination with the back of the case and the shutter-blades and pivots for the said blades, of plates pivoted to the pivots of the shutter-blades and coming between the blades and the case, and having upturned ends passing through holes in the shutter-blades, and a yoke-lever having slots for the pivots of the shutter-blades and for the upturned ends of the said plates, and means for engaging and moving the said yoke-lever for effecting the movements of the shutter-blades, substantially as set forth.

10. In a photographic shutter, the combination with the back of the case and the shutter-blades and pivots for the said blades, of plates pivoted to the pivots of the shutter-blades and coming between the blades and the case and having upturned ends passing through holes in the shutter-blades, a yoke-lever having slots for the pivots of the shutter-blades and for the upturned ends of the said plates, and a pin 13 projecting from one surface thereof and an operating-lever pivoted to the back of the case and spring-actuated and having a slot with opposite inclines and an intermediate portion approximately flat and concentric with the pivot of the said operating-lever, and through which slot the pin of the yoke-lever passes and a groove in the back of the operating-lever for the said pin to pass through in setting the operating-lever, substantially as set forth.

11. In a photographic shutter, the combination with the shutter-blades, means for moving the same and the operating-lever for engaging the said means and actuating the shutter, of a stop-pin 9 connected to and projecting from the said operating-lever, a release-lever and a bulb-lever pivoted to the case, a time-lever pivoted to the release-lever, springs for actuating the release and bulb levers and means substantially as specified, for controlling the respective positions of the bulb and time levers for effecting the movements of the shutter, substantially as set forth.

12. In a photographic shutter, the combination with the shutter-blades, means for moving the same and the operating-lever for engaging the said means and actuating the shutter, of a stop-pin 9 and a time-pin 10 connected to and projecting from the said operating-lever, a release-lever and a bulb-lever pivoted to the case, a time-lever pivoted to the release-lever, springs for actuating the release and bulb levers, and means substantially as specified for controlling the respective positions of the bulb and time levers for effecting the movements of the shutter, substantially as set forth.

13. In a photographic shutter, the combination with the shutter-blades, means for moving the same and the operating-lever for engaging the said means and actuating the shutter, of a stop-pin 9 and a time-pin 10 connected to and projecting from the said operating-lever, a release-lever pivoted to the case and having an end engaging the piston of the air-cylinder, a spring for drawing down said lever and a tooth projecting from the under surface of the lever and adapted to engage the said pin 9 and hold the shutter in a set position, a bulb-lever pivoted to the case and having a spring causing the same to move upward and having a hook at its free end to engage the said pin 9, substantially as set forth.

14. In a photographic shutter, the combination with the shutter-blades, means for moving the same and the operating-lever for engaging the said means and actuating the shutter, of a stop-pin 9 connected to and projecting from the said operating-lever, a release-lever pivoted to the case and connected to the dash-pot, a dash-pot lever pivoted to the case and having an end engaging the piston of the air-cylinder, a spring for drawing down said lever and a tooth projecting from the under surface of the lever and adapted to engage the said pin 9, and hold the shutter in a set position, a bulb-lever pivoted to the case and having a spring causing the same to move upward and having a notch at its free end to engage the said pin 9, and a time-lever pivoted to the release-lever and having a toothed end adapted to come into engagement with the said pin 9, and means substantially as set forth for moving the said time-lever in its relation to the release-lever so as to project or retract the said toothed end, substantially as set forth.

15. In a photographic shutter, the combination with means for actuating the shutter-blades, of a release-lever *l* pivoted to the case and having an end *l'* adapted to engage and be operated by the piston of the air-cylinder, a spring 17 for drawing down the release-lever, a tooth 18 integral with the said release-lever and projecting into the path of the shutter-blade-operating devices for engaging the same and locking the said blades in a set position, a bulb-lever in the same place as the release-lever, a pivot for connecting the same to the case, and a spring for moving the said bulb-lever upward, the said bulb-lever having a notch 22 at its free end and a projecting pin 21 at its other end, a time-lever pivoted to the release-lever, a pin connected to one end of the time-lever and having a tooth projection at its other end, and a cam-ring adapted to engage the pins of the bulb-lever and time-lever to hold the bulb-lever in a fixed position independent of the release-lever, and for moving the time-lever in its relation to the release-lever for the various exposures of the shutter, substantially as set forth.

16. In a photographic shutter, the combination with the shutter-blades and means, including an operating-lever, for actuating the same, of a time-pin 10 on the operating-lever, a dash-pot, a dash-pot lever pivoted to the case and connected to the dash-pot, a lifting-lever pivoted to the dash-pot lever, a projecting pin upon the lifting-lever, and means substantially as set forth for swinging the lifting-lever on its pivot and progressively elevating and holding the same in a predetermined position, whereby with the movement of the operating-lever the pin 10 engages the lifting-lever elevating the dash-pot lever for the various graduated predetermined time exposures, substantially as set forth.

17. In a photographic shutter, the combination with the shutter-blades and means, including an operating-lever, for actuating the same, of a time-pin 10 on the operating-lever, a dash-pot, a dash-pot lever pivoted to the case and connected to the dash-pot, a lifting-lever pivoted to the dash-pot lever, a projecting pin upon the lifting-lever, and an annular device adjustable to the various graduated predetermined time exposures, having a slot receiving the pin of the lifting-lever and adapted to progressively change the position thereof, substantially as and for the purposes set forth.

18. In a photographic shutter, the combination with the front case *a* of devices for actuating the shutter-blades, a pin 9 connected therewith and means for limiting the movement of the pin, devices connected to the back of the front case *a* and between the same and the shutter-actuating devices for engaging the pin of said devices, and means upon the front of the case *a* for effecting the position of the intermediate devices and controlling the exposures of the shutter, substantially as set forth.

19. In a photographic shutter, the combination with the front and back parts of the case, the shutter-blade-actuating devices connected to the back part of the case and the controlling devices connected to the front part of the case, of a hood above and extending over the parts of the case and covering some of the actuating devices and having on its face graduations for the time, bulb and instantaneous exposures and the graduated predetermined time exposures, substantially as set forth.

20. In a photographic shutter, the combination with the case and the barrel, of a cam-ring surrounding the barrel and rotatable thereon, and a ring upon the barrel for holding the said cam-ring in place, said cam-ring having a cam-slot 31 and cam edge 32 forming part of the cam-ring, and devices actuated thereby with the turning of the cam-ring for controlling the shutter-operating mechanism, substantially as set forth.

21. In a photographic shutter, the combination with the case and the barrel, of a cam-ring surrounding the barrel and rotatable thereon, and a ring upon the barrrel for holding the said cam-ring in place, said cam-ring having a cam-slot 31 and cam edge 32 and a cam-slot 33 forming part of the cam-ring and devices actuated thereby with the turning of the cam-ring for controlling the shutter-operating mechanism, substantially as set forth.

22. In a photographic shutter in which no head mechanism is employed, a device embracing in itself means for instantly opening and for instantly closing the shutter-blades and for intermediately holding the same open for a predetermined length of time, means for actuating such device, separate and independent means for controlling the length of time of the exposure and an annular rotatable device having a single pointer and acting upon the exposure mechanism and independent of the time mechanism, substantially as set forth.

23. In a photographic shutter in which no head mechanism is employed, a device embracing in itself means for instantly opening and for instantly closing the shutter-blades and for intermediately holding the same open for a predetermined length of time, means for actuating such device, separate and independent means for controlling the length of time of the exposure and an annular rotatable device having a single pointer and acting upon the exposure mechanism and independent of the time mechanism, substantially as set forth.

24. In a photographic shutter, the combination with a pneumatic dash-pot, of a dash-pot lever connected thereto and pivoted to the case, a spring for actuating the dash-pot lever, and a lip projection rising from and integral with the dash-pot lever, and a pin connected to the shutter-blade-operating devices coming against the lip projection of the dash-pot lever, substantially as and for the purposes set forth.

25. In a photographic shutter, the combination with a pneumatic dash-pot, of a dash-pot lever connected thereto and pivoted to the case, a spring for actuating the dash-pot lever, and a lip projection rising from and integral with the dash-pot lever, and a pin connected to the shutter-blade-operating devices coming against the lip projection of the dash-pot lever, and a device connected to the dash-pot lever, and means for altering the relation of the said device to the dash-pot lever whereby the position of the dash-pot lever and its downward movement are regulated and controlled to govern the exposure, substantially as set forth.

26. In a photographic shutter, the combination with the shutter-blade-operating mechanism, of a release-lever, a tooth projecting therefrom and adapted to engage a moving part of the shutter mechanism to hold the shutter set, a bulb-lever adapted to also engage the said moving part of the shutter mechanism, the parts being so constructed that the said bulb-lever is thrown out of the path of the said moving part of the shutter mechanism by the return of the release-lever to its normal position, substantially as set forth.

27. In a photographic shutter, the combination with the shutter-blade-operating mechanism, of a release-lever, a tooth projecting therefrom and adapted to engage a moving part of the shutter mechanism to hold the shutter set, a bulb-lever adapted to also engage the said moving part of the shutter mechanism, the parts being so constructed that the said bulb-lever is thrown out of the path of the said moving part of the shutter mechanism by the return movement of the release-lever to its normal position, and a second lip connected to the release-lever, and means for throwing the same in or out of the path of the moving part of the shutter-operating mechanism, substantially as set forth.

28. In a photographic shutter, the combination with the shutter-blade-operating mechanism, of mechanism for effecting the time, bulb and instantaneous exposures, an annular device surrounding the lens-barrel and to which a circular forward-and-backward movement may be imparted by hand, and means connected to said annular device for engaging the devices for effecting the time, bulb and instantaneous movements and controlling the same, substantially as specified.

29. In a photographic shutter, the combination with the shutter-blade-operating mechanism, of mechanism for effecting the time, bulb and instantaneous exposures and also the graduated predetermined time exposures, an annular device to which a forward-and-backward movement may be imparted around the lens-barrel, and means connected to said annular device for engaging the devices for effecting the time, bulb and instantaneous exposures and also the graduated, predetermined time exposures and controlling the same, substantially as set forth.

30. In a photographic shutter, the combination with the shutter-blades, and means for moving the same, of an operating-lever for moving the said exposure mechanism, the said operating-lever having a slot composed of three parts, that is, an upwardly-inclined portion, a downwardly-inclined portion and an intermediate portion formed substantially straight and upon the arc of a circle from the pivotal point of the said operating-lever, substantially as set forth.

31. In a photographic shutter, the combination with the shutter-blades, and means for moving the same, of an operating-lever for moving the said exposure mechanism, the said operating-lever having a slot composed of three parts or members, that is, an upwardly-inclined portion, a downwardly-inclined portion and an intermediate portion formed substantially straight and upon the arc of a circle from the pivotal point of the said operating-lever, and the extreme ends of the inclined portions of the slot connected by a groove in the back surface of the lever of varying depth providing for the return movement and the engagement by the device upon the shutter mechanism engaged by the operating-lever, substantially as set forth.

32. In a photographic shutter, the combination with spring-actuated operating and release levers and the parts connected thereby, of an independent finger-lever *c'* centrally pivoted at the back of and extending across the case and having a tail end coming beneath the end of the re-

lease-lever, and devices for limiting the movements thereof, whereby the parts may be operated by hand if desired, substantially as specified.

33. In a photographic shutter the combination with a spring-actuated operating-lever and a pin 10 thereon, of a dash-pot lever having a rising projection and lifting-lever pivoted together and means for determining the position of the lifting-lever whereby the pin 10 in the movement of the operating-lever comes against the lifting-lever and raises the dash-pot lever and the dash-pot lever arrests the movement of the operating-lever substantially as specified.

704,782. AIR-PRESSURE REGULATOR. JOSEPH H. DICKINSON, Detroit, Mich. Filed June 26, 1901. Serial No. 66,966. (No model.)

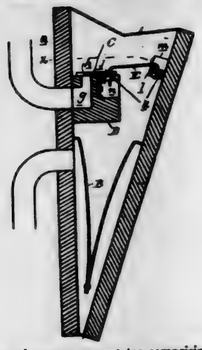

Claim.—1. An air-pressure regulator comprising a collapsible bellows having an elongated exhaust-port, a valve pivoted at one end adjacent to said port and a connection between the opposite end of said valve and the movable wall of the bellows adapted to cause the gradual closing of said port by the collapsing of the bellows.

2. An air-pressure regulator comprising collapsible bellows, a block arranged within said bellows and connected to the fixed wall thereof, said block having an elongated port therein, a valve resting upon said block and pivoted thereto at one end in such a position as to gradually open or close said elongated port, and a link directly connecting the other end of said valve with the movable wall of said bellows.

704,783. METALLIC RAILROAD-TIE AND FASTENER. WILLIAM S. DODD, Washington, Pa. Filed Dec. 3, 1901. Serial No. 84,511. (No model.)

Claim.—In a steel tie and fastener, a tie formed of a channel-bar, the upper portion of said tie having its ends extended and carrying lugs, said ends being turned up at right angles to the upper portion and having the lugs extending through openings provided therefor in the sides of the said channel-bar, a bar for said channel-bar carrying lugs on its ends and sides, said lugs adapted to be passed through openings provided therefor in the sides and ends of the channel-bars and secured to the latter, braces located within said channel-bar and carrying lugs extending through the upper portion and the sides thereof, said upper portion having a struck-up portion for engagement with the rail-base, and fastening means extending through the upper portion of the tie and secured thereto for engagement with the opposite side of the rail-base, substantially as described.

704,784. TRACK-SANDING APPARATUS. JOHN J. DOLAN, Jr., Baltimore, Md. Filed Apr. 26, 1902. Serial No. 104,788. (No model.)

Claim.—1. In a track-sanding apparatus, the combination with a sand-box having a discharge-opening, of a tubular casing detachably secured to the sand-box at said discharge-opening and provided with a fluid-pressure nozzle; and a shield provided with a sleeve extending inwardly from said discharge-opening, whereby said casing may be detached from the sand-box without danger of wasting the sand from the same, as set forth.

2. In a track-sanding apparatus, the combination with a sand-box having a discharge-opening, of a tubular casing secured in said opening and extending outwardly therefrom and provided with a tubular arm projecting into the sand-box; a nozzle for fluid-pressure adapted to discharge the sand through said arm and casing; and a sleeve surrounding said arm on the inside of the sand-box, as and for the purpose set forth.

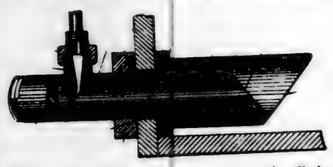

3. The combination of a sand-box provided with a discharge-opening; a shield secured on the inside of the sand-box at said discharge-opening and comprising an inwardly-extending sleeve provided with a downwardly-facing beveled end; and a sand-discharging apparatus provided with a tubular arm mounted in said sleeve, as and for the purpose set forth.

4. In a track-sanding apparatus, a sand-box provided with a discharge-opening, and a shield secured on its inside at said opening and having an inwardly-extending sleeve adapted to receive a sand-discharging tube, as set forth.

5. A track-sanding apparatus, comprising a sand-box provided with a discharge-opening; a tubular casing in said discharge-opening and projecting outwardly therefrom and provided at its outer end with two diverging branches adapted for attachment to sand-tubes intended to lead to the track-rails; and air or steam nozzles extending into said casing and pointing outwardly in the direction of said two branches, as and for the purpose set forth.

704,785. SANDPAPERING-MACHINE. CHARLES H. DRIVER, Racine, Wis. Filed Apr. 10, 1901. Serial No. 55,122. (No model.)

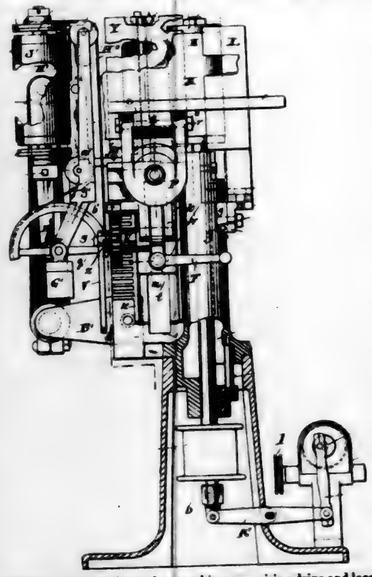

Claim.—1. A sandpapering-machine comprising drive and loose pulleys, an abrading-belt on the pulleys, means for imparting automatic positive reciprocation to the belt, and other means for limiting movement of said belt in both directions of its reciprocation.

2. A sandpapering-machine comprising drive and loose pulleys, an abrading-belt having variable tension arrangement on the pulleys, means for imparting automatic positive reciprocation to the belt, and other means for limiting movement of said belt in both directions of its reciprocation.

3. A sandpapering-machine comprising an abrading-belt, a positively-reciprocative drive-pulley for the belt, and a loose pulley for said belt reciprocative in synchrony with the same under friction thereof independent of the drive-pulley.

4. A sandpapering-machine comprising an abrading-belt, a positively-reciprocative drive-pulley for the belt, and an automatically-oscillative loose pulley for said belt reciprocative in synchrony with the same under friction thereof independent of the drive-pulley.

5. A sandpapering-machine comprising a base, a standard in swivel connection with the base, a pulley fast on a spindle engaging bearings with which the standard is provided, a loose pulley in oscillative connection with said standard, and an abrading-belt on the pulleys.

6. A sandpapering-machine comprising a base, a standard in swivel connection with the base, a pulley fast on a spindle engaging bearings with which the standard is provided, means for reciprocating the spindle, a loose pulley in oscillative connection with the standard, and an abrading-belt on the pulleys.

7. A sandpapering-machine comprising a standard, a bracket in connection with the standard, a yoke in pivotally-adjustable connection with the bracket, and a work-table having under side pivotally-adjustable connection with the yoke branches.

8. A sandpapering-machine comprising a standard, a bracket in vertically-adjustable connection with the standard, a yoke in pivotally-adjustable connection with the bracket, and a work-table having an under side block in like connection with the yoke branches.

9. A sandpapering-machine comprising a standard provided with a vertical rack, a bracket having sliding engagement with the standard, a clamp mechanism for the bracket, a loose pinion carried by said bracket in mesh with the rack portion thereof, a crank having ratchet-clutch connection with a side of the pinion, and a work-table in connection with the aforesaid bracket.

10. A sandpapering-machine comprising an abrading-belt and means for actuating same, a work-table, a pivotally-adjustable bracket, and a work-gage adjustable on the bracket in a direction transverse to the travel of the belt.

11. A sandpapering-machine comprising an abrading-belt, means for actuating same, and a belt-backing adjustable on lines at right angles to each other.

12. A sandpapering-machine comprising a drive-pulley, a pivotal hanger, a loose pulley having its spindle in connection with the hanger, an abrading-belt on the pulleys, and governor mechanism operative in conjunction with the belt and loose-pulley hanger.

13. A sandpapering-machine comprising a drive-pulley, a pivotal hanger, a spindle rigid with the hanger, a loose pulley counterbalanced on said spindle, an abrading-belt on the pulleys, governor mechanism operative in conjunction with said belt and hanger, and means for reciprocating the belt.

14. A sandpapering-machine comprising a drive-pulley, a pivotal hanger, a spindle rigid with the hanger, a pulley and disks of corresponding diameter loose on said spindle, the pulley being intermediate of the disks, an abrading-belt on the pulleys, a frame in pivotally-adjustable connection with the support for said hanger, sheaves carried by the frame, a counterweighted rocker suspended from said frame, in eccentric connection with said hanger, and flexible sheave-opposing runners in connection with said disks and rockers.

15. In a sandpapering-machine the combination of a drive-pulley, a pivotally-adjustable arm, a hanger in pivotal connection with the arm, a spindle rigid with the hanger, a pulley and disks of corresponding diameter loose on said spindle, the pulley being intermediate of the disks, an abrading-belt on the pulleys, a frame in pivotally-adjustable connection with said arm, sheaves carried by the frame, a counterweighted rocker suspended from said frame in eccentric connection with said hanger, and flexible sheave-opposing runners in connection with said disks and rockers.

16. In a sandpapering-machine, the combination of a drive-pulley, a pivotally-adjustable spring-controlled arm, a hanger in pivotal connection with the arm, a spindle rigid with the hanger, a pulley and disks loose on the spindle, the pulley being intermediate of the disks, an abrading-belt on the pulleys, a frame in pivotally-adjustable connection with said arm, sheaves carried by the frame, a counterweighted rocker suspended from said frame in eccentric connection with said hanger, and flexible sheave-opposing runners in connection with said disks and rockers.

17. A sandpapering-machine, comprising a base, a standard in swivel connection with the base, a spindle having its bearings in the base, means for reciprocating the spindle, a pulley fast on said spindle, a loose pulley having an oscillative hanger, an abrading-belt adjustable as to tension on the pulleys, an adjustable backing for the belt, and a universally-adjustable work-table.

18. A sandpapering-machine comprising a base, a standard in swivel connection with the base, a spindle having its bearings in the base, means for reciprocating the spindle, a pulley fast on said spindle, an oscillative loose pulley, an abrading-belt adjustable as to tension on the pulleys, an adjustable backing for the belt, a universally-adjustable work-table, and an adjustable work-gage.

704,786. TABLET PICKING UP AND DEPOSITING APPARATUS FOR USE ON SINGLE LINES OF RAILWAYS. WALTER DRUMMOND and GEORGE W. DRUMMOND, Govan, Scotland. Filed May 9, 1901. Serial No. 59,269. (No model.)

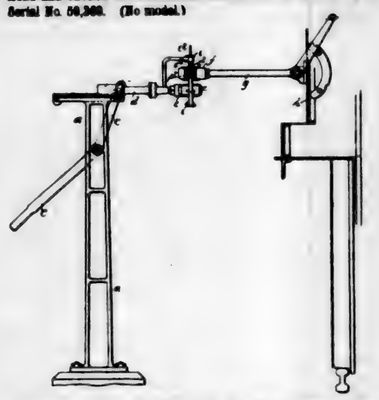

Claim.—1. Tablet picking up and depositing apparatus for use on single lines of railway comprising in combination a tablet-holder consisting of a pair of receiving and a pair of carrying jaws, a lever on a stationary standard located at the side of the line for effecting reciprocal movement of said tablet-holder, a traveling arm located on the cab of the locomotive containing a pair of carrying and a pair of receiving jaws and a hand-lever movable through a quadrant on the locomotive-cab for imparting rotation in a vertical plane to said arm substantially as set forth.

2. Tablet picking up and depositing apparatus for use on single lines of railway comprising in combination a tablet-holder consisting of a pair of receiving and a pair of carrying jaws, a lever on a stationary standard located at the side of the line for effecting reciprocal movement of said tablet-holder, a traveling arm located on the cab of the locomotive and containing a pair of carrying and a pair of receiving jaws pivotally mounted on an axis and stop devices holding said tablet-holder at positions diametrically opposite each other in the direction of motion of the train and a hand-lever movable through a quadrant on the locomotive-cab for imparting rotation to the said arm substantially as set forth.

704,787. GANG-SAW ATTACHMENT. JOSEPH E. DOCHARON, Cottonwood Falls, Kans. Filed Oct. 26, 1900. Serial No. 34,458. (No model.)

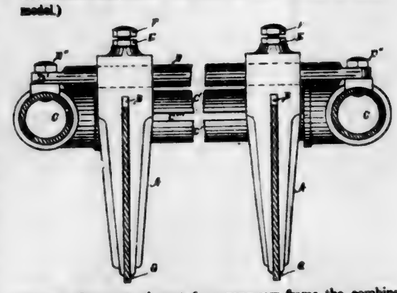

Claim.—In an attachment for a gang-saw frame the combination with the frame, a series of threaded holes in the upper sides of the side bars as shown, the cap-screws D″, D″; the round cross-bar D adjustably attached to said frame C by said cap-screws D″, D″, and said threaded holes C″, C″; a series of dogs or clamps A, A, each being of a single piece of cast iron or steel, and having round holes to fit onto said round bar D, and slots to receive the saws, and having in their upper ends the set-screws F, F, which are held in place by the jam-nuts E; and a series of saws G, G; substantially as described.

704,788. CABLE-HANGER. SILAS DU PERROW, Cleveland, Ohio. Filed May 23, 1902. Serial No. 109,368. (No model.)

Claim.—1. In a cable-hanger, means for engaging the cable, said means being provided with notches, and a suspending-hook having means for entering the said notches, for the purpose specified.

2. In a cable-hanger, means for engaging the cable, said means being provided with notches, and a wire hook that is bent back upon itself to form depending legs, said legs being adapted to engage in the notches, for the purpose specified.

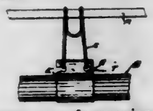

3. In a cable-hanger, means for engaging the cable, said means being provided with notches, a hook of resilient material that is bent back upon itself to form depending legs, and loops at the lower ends of the legs, said loops being adapted to engage with the notches and to be held normally in the same by the resiliency of the hook.

4. In a cable-hanger, a clamping-band for the cable, said band being provided at its ends with notches, a hook formed of resilient material that is bent back upon itself to form depending legs, and loops at the lower ends of the legs for engaging with the notches of the band, said loops being normally held within the notches by the resiliency of the hook.

5. In a cable-hanger, a clamping-band for the cable, said band being provided with the parts F, F that are notched and bent so as to lie face to face when the band is closed, a hook formed of resilient material that is bent back upon itself to form depending legs, loops at the lower ends of the legs for engaging with the notches of the parts F, F, and projections on one side of the notches to prevent the disengagement of the loops therefrom when the hook is moved along its messenger-wire.

6. In a cable-hanger, a clamping-band for the cable, said band being provided with the parts F, F that are notched and bent so as to lie face to face when the band is closed, a hook formed of resilient material that is bent back upon itself to form depending legs, loops at the lower ends of the legs for engaging with the notches of the parts F, and means connected with the parts F and engaging with the loops to prevent the band from opening while the loops are in the notches.

7. In a cable-hanger, a clamping-band for the cable, said band having the parts F, F and H, H, the former parts being provided with notches and being bent so as to lie together face to face when the band is closed, and the parts H, H being bent at an angle thereto, a hook formed of resilient material that is bent back upon itself to form depending legs, and loops at the lower ends of the legs for engaging with the notches of the parts F, F to support the band and cable, and engaging with the parts H, H to prevent the band from opening while the loops are in the notches.

8. In a cable-hanger, a clamping-band for the cable, said band having the parts F, F and H, H, the former parts being provided with notches at their ends and being bent so as to lie together face to face when the band is closed, and the parts H, H being bent at an angle thereto, a hook formed of resilient material that is bent back upon itself to form depending legs, loops at the lower ends of the legs for engaging with the notches of the parts F, F to support the band and cable and engaging with the parts H, H to prevent the band from opening while the loops are in the notches, and upwardly-extending projections on the lower sides of the notches to prevent the disengagement of the loops when the hook is moved along its messenger-wire.

704,789. POLISHING-WHEEL AND METHOD OF MANUFACTURING SAME. BENJAMIN F. ELSON, Brooklyn, N. Y. Filed Nov. 4, 1901. Serial No. 80,990. (No model.)

Claim.—1. As a new article of manufacture, a polishing-wheel composed of disks of a suitable fabric material held together by intervening gutta-percha, substantially as set forth.

2. The method herein specified of manufacturing polishing-wheels, the same consisting in building up layers of a suitable fabric material with intervening layers of gutta-percha, applying heat to the mass to soften the gutta-percha and pressure to consolidate the mass and cement the fabric-material layers together by the gutta-percha, substantially as set forth.

704,790. SNAP FOR FINISHING GLASSWARE. FREDERICK R. GILLINDER and KRAFT BOOTH, Philadelphia, Pa., assignors to Gillinder & Sons, Incorporated, a Corporation of Pennsylvania. Filed Nov. 12, 1901. Serial No. 81,967. (No model.)

Claim.—1. In a device of the character specified, a handle provided with a base having a face that is outwardly and downwardly inclined when the device is in an upright position, movable jaws upon said base adapted to open automatically and rest upon said inclined face to open the same, and a spring-actuated device for closing said jaw.

2. In a device of the character specified, a handle having a base, a groove in said base, a plurality of jaws having pivots secured in said groove, said jaws being adapted to automatically turn on said pivots to open the same, and a spring-actuated device for closing said jaws.

3. In a device of the character specified, a handle having a base, an annular groove in said base, a plurality of jaws having pivots secured within said annular groove, the weight of the outer end of said jaws being sufficient to cause the same to tilt and open, and a spring-actuated device for closing the same.

4. In a device of the character specified, a handle provided with a base having a face that is outwardly and downwardly inclined when the device is in an upright position, a plurality of jaws pivotally mounted upon said base and provided with inwardly-projecting lugs, a spring-actuated rod within said handle, said rod being provided with a head situated to engage said lugs and close the jaws, said jaws being adapted to open automatically and to rest upon said inclined face of the head.

5. In a device of the character specified, a handle provided with a head, an annular groove in said head, a radial groove extending outwardly from said annular groove, a plurality of jaws having pivots situated in said annular groove, a block situated in said radial groove, and means for closing said jaws, the latter being adapted to automatically open.

6. In a device of the character specified, a handle provided with a head, said head being provided with a central depressed portion, an annular groove surrounding the same, and a radial groove extending outwardly from said depressed portion, a plurality of jaws having pivots situated within said annular groove, the weight of the outer ends of said jaws being adapted to open the same, lugs on the inner ends of said jaws situated within said depressed portion, and a spring-actuated rod situated within said handle and provided with a head adapted to engage said lugs.

7. In a device of the character specified, a handle provided with a head having a base with a face that is outwardly and downwardly inclined when the device is in an upright position, a plurality of jaws pivoted upon the side of the base having said inclined face, said jaws being adapted to be tilted and thereby opened and closed.

704,791. MARKER-BAR FOR PLANTERS. WILLIAM H. GLOSSER, Forsyth, Ill., assignor of one-half to George L. Jones, Emery, Ill. Filed May 2, 1902. Serial No. 105,702. (No model.)

Claim.—1. A marker-bar pivotally connected with a planter-frame, a lift-bar pivotally connected with the planter-frame at a point below the pivot of the marker-bar and a link extending from the swinging end of the lift-frame to the marker-bar at a point near the weighted end thereof, the lift-bar and the link being sufficiently long to compensate for the lower position of the pivot of the lift-bar, so that the lift-bar and link will line up with the marker-bar when the marker-bar is in a vertical position and the swinging end of the lift-bar will extend above the marker-bar when the marker-bar is lowered, substantially as described.

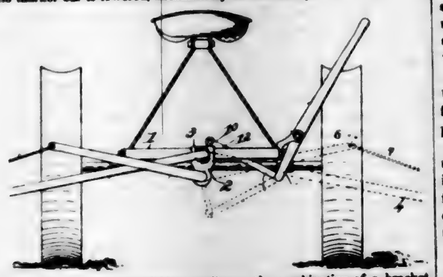

2. In a marker-bar-lifting appliance, the combination of a bracket attached to a planter-frame, a marker-bar pivotally connected with the bracket, a lift-bar having a tubular bearing-stem journaled in the bracket below the pivot of the marker-bar, a crank-bar extending into the tubular stem of the lift-bearing and adjustable lengthwise therein, means for rocking the crank to raise and lower the lift-bar and a link connecting the extended end of the lift-bar with the marker-bar, substantially as described.

3. In a marker-bar-lifting appliance, the combination of a bracket attached to a planter-frame and having a rearward extended sleeve, a lift-bar having a tubular bearing-stem extended through and beyond the sleeve of the bracket, a crank-bar extended into the tubular stem of the lift-bar, a collar fitting on that part of the stem that projects beyond the bracket and a set-screw extending through the collar and the stem into engagement with the crank, substantially as described.

4. In a lifting appliance for marker-bars, the combination of a bracket secured to a planter-frame, a marker-bar pivotally connected with the bracket, a lift-bar pivoted in the bracket below the pivot of the marker-bar, a link connecting the extended end of the lift-bar with the marker-bar, a crank connected with the lift-bar and extended at approximately right angles therewith, a lever fulcrumed to swing in a vertical plane toward and from the pivot of the lift-bar and a link connecting the lever with the crank of the lift-bar, substantially as described.

704,792. HOSE-COUPLING. EDWARD R. GOLD, New York, N. Y. Filed Apr. 23, 1902. Serial No. 105,194. (No model.)

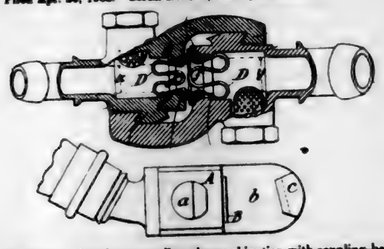

Claim.—1. In a hose-coupling, the combination with coupling-heads of different sizes adapted to intercouple, the said heads having normal seats of different sizes of opening, of a compromise seat adapted to replace one of said normal seats and adapted to conform to the face of the other seat to make a tight joint.

2. In a hose-coupling, two coupling-heads of different sizes adapted to intercouple, having abutting seats, the seat of the larger head contracted to substantially the opening of the smaller head whereby to engage substantially the full face of the seat thereof to make a tight joint.

3. In a hose-coupling, the combination with coupling-heads of different sizes adapted to intercouple, said heads having normal seats of different sizes of opening, of a compromise seat adapted to replace one of said normal seats and adapted to conform to the face of the other seat to make a tight joint, and said seats respectively adapted to be removable from the head to enable either to be replaced by the other.

4. In a hose-coupling, two coupling-heads of different sizes adapted to intercouple, having abutting seats, the seat of the larger head consisting of a segment of a sphere fitting in a spherical socket in said head and contracted to substantially the opening of the smaller head whereby to engage substantially the full face of the seat thereof to make a tight joint.

5. In a hose-coupling, the combination with coupling-heads of different sizes adapted to intercouple, the said heads having normal seats of different sizes of opening, of a compromise seat adapted to replace one of said normal seats and adapted to conform to the face of the other seat to make a tight joint, and said compromise seat having a flat unyielding seating face of metal adapted to engage either a hard or soft abutting seat without injury to the face of the latter.

6. A compromise seat for a hose-coupler, having the form of a normal seat of the larger size, and an internal flange extending its seating face inwardly, said flange adapted to be removed to convert the compromise seat into a larger normal seat.

7. A compromise seat for a hose-coupler having the form of a normal seat of the larger size with the addition of an internal flange extending its seating face inwardly, and a retaining-spring engaging the inner face of the seat behind said flange, so that said flange may be removed to convert the compromise seat into a larger normal seat without incapacitating said spring.

704,793. PLATING METAL. WILLIAM GRIFFITH, Pittsburg, Pa. Filed Sept. 23, 1901. Serial No. 76,274. (No model.)

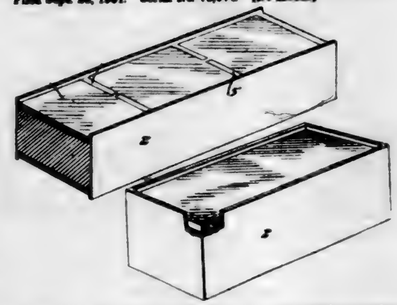

Claim.—1. The method of plating, iron, steel, and other metals with a different metal, such as copper or other metal or alloy, consisting in covering the surface of the metal to be plated with the coating metal or alloy in a pulverized condition, placing a plate of the coating metal on the pulverized metal, heating the metals, and subjecting them to pressure; substantially as described.

2. The method of plating a metal with another metal which fuses at a different degree of heat, consisting in first covering the surface of one of the metals with a layer of the other metal in a pulverulent condition, then heating the two metals when mechanically united into a pack to a temperature insufficient to fuse the more readily fusible metal, then covering the metal which fuses at the lower degree of heat, and subjecting the pack to a greater degree of heat; substantially as described.

704,794. PATTERN FOR DRESS-SKIRTS. HERMINE GUIDER, New York, N. Y. Filed Feb. 5, 1902. Serial No. 92,621. (No model.)

Claim.—A skirt-pattern having a body representing a dress-skirt divided longitudinally, and a flexible cord attached to the waist portion, said cord having its end looped to form handpiece extending outwardly

approximately in line with the upper edge of said body, substantially as set forth.

704,795. CASH REGISTER AND INDICATOR. HENRY S. HALLWOOD, Columbus, Ohio, assignor, by mesne assignments, to the Hallwood Cash Register Company, Columbus, Ohio, a Corporation of Ohio. Filed Feb. 7, 1898. Serial No. 669,359. (No model.)

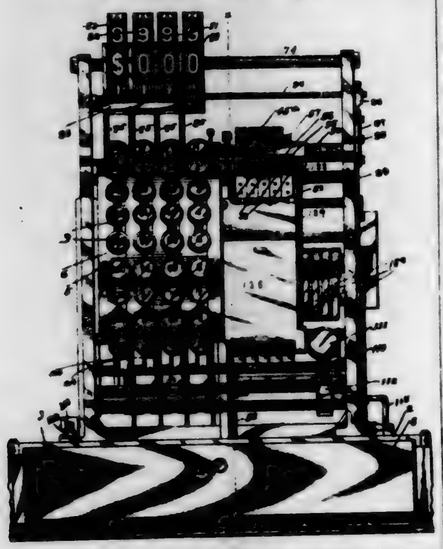

Claim.—1. In a registering-machine, the combination of a key, a lock-plate for holding said key when fully depressed, and a latch for normally holding said lock-plate out of operative position, said latch being adapted to be tripped by the key to permit the lock-plate to operate, substantially as described.

2. In a registering-machine, the combination of a key, a pivoted lock-plate for holding said key when fully depressed, and a pivoted latch-plate for normally holding the lock-plate out of operative position, said latch-plate being adapted to be tripped by the key to permit the lock-plate to operate, substantially as described.

3. In a cash-register, the combination with a registering mechanism, a set or series of amount-keys and means whereby the degree of movement of said registering mechanism is controlled by the key depressed, of a fulcrumed lock-plate adjacent to the stems of said keys, a fulcrumed latch-plate adjacent thereto and means whereby the contact of a depressed key or projection thereof with said latch-plate causes said lock-plate to lock said key when fully depressed, substantially as and for the purpose specified.

4. In a cash-register, the combination with a registering mechanism, a key-frame and a set or series of amount-keys arranged therein, and a fulcrumed lock-plate adjacent to said key-stems having projecting hook-fingers adapted to be engaged with projections on the adjacent key-stems when the latter are depressed and a pin 23 projecting from said lock-plate, of a fulcrumed latch-plate adjoining said lock-plate with which said key-stem projections are adapted to contact when the keys are depressed, a recess 26, a shoulder 27 in said latch-plate, said lock-plate pin 23 adapted to be disengaged from said shoulder 27 and engaged in the recess 26 by the depression of one of said keys, substantially as and for the purpose specified.

5. In a cash-register, the combination with a registering mechanism, a sliding cash-drawer, a set or series of amount-keys and means whereby the extent of operation of said registering mechanism is controlled by the key or keys depressed, a toothed or notched lock-plate fulcrumed adjacent to said key-stems and means for dropping the latter into engagement with said key-stems when the latter are depressed, of a hinged or fulcrumed lifting-frame 37, a lever-arm 36 connected with said lifting-frame and means whereby the closing of said drawer produces a depression of said lever-arm and a lifting or unlocking influence of the frame 37 on the previously-lowered lock-plate, substantially as and for the purpose specified.

6. In a cash-register, the combination with a registering mechanism, a cash-drawer, a set of amount-keys for controlling the degree of operation of said registering mechanism and a lock-plate and means for dropping the latter into engagement with a depressed key, of a fulcrumed lifting-frame beneath said lock-plates, a lever-arm connected therewith, a fulcrumed frame-yoke 41 adapted to be raised by the closing of said cash-drawer and adapted in raising to contact with said lever-arm and produce an elevation of said lock-plate, substantially as and for the purpose specified.

7. In a cash-register, the combination with a set of registering-wheels, a key-frame and a set or series of keys in said frame for each of said registering-wheels, a fulcrumed lock-plate adjacent to each set of key-stems, said lock-plate adapted to drop downward and engage with a depressed key, and a fulcrumed bell-crank 29 having one of its arms jointedly connected with the lowered lock-plate, and having its forward arm curved upward and provided in its inner end portion with a notch, of a fulcrumed frame for each of said key sets or series, each frame consisting of toothed segment portion having a laterally-projecting pin adapted to contact with the curved arm of said lever 29, and a yoke portion, said segment having its toothed portion on an arc eccentric with its shaft and normally prevented from movement by engagement with one arm of said bell-crank, and means whereby the dropping of said lock-plate releases said bell-crank arm from engagement with the segment, substantially as and for the purpose specified.

8. In a registering-machine, a registering-wheel, a pawl for turning said wheel, and means for operating said pawl, a stop-plate, and means for moving said stop-plate into the path of the pawl when said pawl-operating means approaches the limit of its movement, substantially as described.

9. In a cash-register, the combination with a set of toothed registering-wheels, a fulcrumed pawl engaging the teeth of each wheel, a cash-drawer, a yoke-frame 41 adapted to be swung upward by the closing of said drawer and means for dropping said pawls down over a predetermined number of registering-wheel teeth, of a fulcrumed stop-bar 67 and a finger extending therefrom, said stop-bar contacting with and limiting the upward movement of said pawls when the frame 41 is raised to contact with said finger, substantially as and for the purpose specified.

10. In a cash-register, the combination with a registering mechanism, a set of amount-keys for controlling the operation of said registering mechanism and a cash-drawer, the opening of which sets the registering mechanism for operation and the closing of which completes said operation, of a fulcrumed lever 42ᵇ, a lever-arm 50 fulcrumed thereto and normally bearing against the drawer and a spring 52 connecting said lever-arm with the machine-frame, substantially as and for the purpose specified.

11. In a cash-register, the combination with a set of toothed registering-wheels, amount-keys, a cash-drawer, an operating-pawl for each of said registering-wheels, a set of pawl-operating swinging frames 18ᶜ and means for controlling the degree of movement of the same, of a fulcrumed lever 42ᵇ normally supporting said frame 18ᶜ and a spring-actuated lever-arm 50 fulcrumed to said lever and exerting an opening pressure against said drawer, substantially as and for the purpose specified.

12. In a cash-register, the combination with a registering mechanism, a set of amount-keys for controlling the same, and a cash-drawer, of a fulcrumed lever 42ᵇ and a lever-arm 50 fulcrumed thereto, the latter normally exerting a pressure against the cash-drawer, a fulcrumed frame 41 supported upon said lever-arm and adapted to follow the same and a spring 52 connecting said lever-arm and machine-frame, substantially as and for the purpose specified.

13. In a cash-register, the combination with a set of toothed registering-wheels, amount-keys, cash-drawer, an operating-pawl for each of said wheels, a set of pawl-operating swinging frames 18ᶜ, a swinging frame 41 and means whereby the opening and closing of the cash-drawer produces a downward-and-upward swinging movement of said frames, of fulcrumed arms 29ᵃ adapted to lock said frames 18ᶜ when the drawer is closed and to disengage therefrom when the drawer is open and a trip-arm 36 adapted to contact with the frame 41 and move said arms 29ᵃ into locking engagement with the frames 18ᶜ, substantially as and for the purpose specified.

14. In a cash-register, the combination with the framework, a registering mechanism, a drawer and a drawer-releasing key, a latch-bar 113 adapted to engage the drawer when closed and having a spring-actuated arm 115, of a fulcrumed lever 107 disconnected from said latch-bar and having one of its arms in contact with said drawer-releasing key and its remaining arm adapted to raise the arm 115 of said latch-bar by contact with the latter when said key is depressed, substantially as and for the purpose specified.

15. In a cash-register, a key, means for locking said key, a cash-drawer, a register-wheel, means for turning said wheel, a lifting-frame for said locking means, and connections between said frame and drawer whereby the former is lifted to unlock the key when the drawer is pushed in and after the register-wheel has ceased turning, substantially as described.

16. In a cash-register, a key, means for locking said key, a cash-drawer, a register-wheel, a frame 18ᶜ controlled by the key for turning said wheel, a second frame 41, means for lifting said second frame when the drawer is pushed in, a device connected with said second frame for unlocking the key, and means for giving said second frame an excess of movement after the first frame and the register-wheel have come to rest for the purpose of unlocking the key, substantially as described.

17. In a cash-register, the combination with a pawl-operated registering mechanism, a set of pawl-operating frames 18ᶜ and a swinging frame 41, a cash-drawer, a fulcrumed lever 42 supporting said frames 18ᶜ, a lever-arm 50 pressing the drawer and fulcrumed to said lever 42ᵇ, an upper extension 51 on said lever-arm upon which said frame 42ᵇ rests and by means of which the frame 41 is lifted above the frames 18ᶜ when the drawer is closed, substantially as and for the purpose specified.

18. In a cash-register, a drawer, a key for releasing said drawer, a normally locked indicator, means for releasing the said indicator when the said key is depressed, and means for locking the indicator when the drawer is pushed inward, substantially as described.

19. In a cash-register, an indicator, means for setting said indicator, a drawer, a releasing device for said drawer, means controlled by the drawer for locking the indicator, and means controlled by the releasing device for unlocking the same, substantially as described.

20. In a cash-register, an indicator, means for setting said indicator, a spring-actuated rock-shaft, a device on said shaft for locking the indicator in its set position, a cash-drawer, means controlled by said drawer for rocking said shaft in one direction against the tension of its spring to lock the indicator, and a key for releasing said shaft to permit it to rock in the opposite direction so that the said device will unlock the indicator, substantially as described.

21. In a cash-register, the combination with a frame, a registering mechanism, cash-drawer, rotary indicator or target wheels, rack-bars for operating the same, swinging frames 18ᶜ, means for operating the latter by movement of the drawer and for contributing motion from said frames to said indicator-wheels through said rack-bars, of a hinged binding-strip 98 adjacent to said rack-bars, a drawer-releasing key and means whereby the operation of said key disengages the binding-strip and rack-bars and whereby the engagement is resumed by the closing movement of the drawer, substantially as and for the purpose specified.

22. In a cash-register, the combination with a frame, a registering mechanism, a cash-drawer, indicator-wheels, rack-bars for operating the same, swinging frames 18ᶜ, means for operating the latter by movement of the drawer and for contributing motion from said frames to said indicator-wheels through said rack-bars, of a hinged binding-strip adapted to contact with and lock said rack-bars, a fulcrumed lever 99, a jointed connection between the latter and said binding-strip, a trip-lever fulcrumed to said lever 99, a drawer-releasing key, a fulcrumed lever 107 contacting with the latter and means whereby the depression of said key and movement of said lever 107 produces a lifting movement of said trip-lever and a consequent movement of the lever 99 to throw the binding-strip out of contact with the rack-bars, substantially as and for the purpose specified.

23. In a cash-register, the combination with a frame, a registering mechanism, a cash-drawer, indicator-wheels, rack-bars for operating the latter, swinging frames 18ᶜ, means for operating the registering mechanism by movement of the drawer and for contributing motion from said frames to said indicator-wheels through said rack-bars, and a swinging frame 41 adapted to be moved with the drawer, of a binding-strip adapted to contact with and hold the rack-bars, a trip-lever having a shoulder 100ᵃ and adapted to control the engagement and disengagement of the binding-strip and rack-bars, said frame 41 adapted by contact with the trip-lever shoulder as the drawer is moved to a closed position and thereby cause a binding engagement of the binding-strip and rack-bars, substantially as and for the purpose specified.

24. In a cash-register, the combination of the registering mechanism, rotary indicators and means for normally holding the same against rotation, and a sliding cash-drawer, mechanism interposed between said indicators, and a cash-drawer whereby said indicators are released and operated at the opening of the drawer, said means whereby the indicators are held against rotation at the first movement of the closing of the drawer, substantially as and for the purpose specified.

25. In a cash-register, the combination of a registering mechanism, a set of amount-keys adapted to control the extent of operation of said registering mechanism, a sliding cash-drawer and means whereby the depression of a key of any set locks the remaining keys of said set against depression when the drawer is open, and connections between the parts whereby the depression of the keys of the remaining sets does not offset the registration when the drawer is open, substantially as and for the purpose specified.

26. In a registering-machine, two banks of keys, means for locking the keys in a bank when one is depressed, a drawer, and means controlled by the drawer by which the keys in the second bank remain unlocked and may be depressed but are rendered ineffectual while the said drawer is open, substantially as described.

27. The combination of cash-keys arranged in series, one series of keys for each denomination, a series of registering devices, also one for each denomination, intermediate connecting devices between each series of keys and the registering device of corresponding denomination, a common operating device adapted in its normal position to hold all the intermediate connecting devices, a locking device for each of said connecting devices adapted to be withdrawn by the operation of any key in a series when the common operating device is in its normal position, said locking device being held against disengagement when said common actuating device is moved to an unusual position whereby the cash-keys are free to move in either position of the common actuating device but offset the registering mechanism only when moved prior to the movement of the common actuating device, substantially as and for the purpose specified.

28. The combination with the registering-wheels and the cash-keys, and the intermediate yokes or bars controlled by the cash-keys and adapted to operate the registering-wheels, a common operating device for all of said yokes or bars, a lock for each of said yokes or bars adapted to be released by the action of any key in the series corresponding to said yoke or bar when the common actuating device is in a normal position, said lock being adapted to hold said yoke or bar independent of the action of said keys when the common actuating device is in an abnormal position, substantially as and for the purpose specified.

29. The combination with the cash-keys and locking device therefor, a series of registering devices and intermediate connections between the cash-keys and said registering devices, a common operating device for said intermediate connections, a connection between the common operating device and a locking device for the keys, and means, substantially as described, for imparting to said common operating device an auxiliary movement after the actuating connections have been brought to their normal position whereby the keys are released after all the other operations have been completed, substantially as specified.

30. A series of registering-wheels, pawl-levers therefor, and a common operating device for operating said pawl-levers, a stop-plate common to all of said pawl-levers, and means for moving said stop-plate into the path of the pawls of said pawl-levers when the common operating device approaches the limit of its movement, substantially as specified.

31. The combination with a series of registering-wheels, pawl-levers having pawls for operating the same, intermediate connecting devices for each of said pawl-levers, and a common actuating device for all of said connecting devices, a movable stop-plate arranged above said pawls, and means, substantially as described, for moving said stop-plate into the path of said pawls to form a stop therefor when the common actuating device approaches the limit of its stroke, substantially as specified.

32. The combination with the registers, the swinging actuating-yoke, an operating device, such as a cash-drawer, to move said yoke, and a lock for said cash-drawer, a yielding arm arranged in the path of said yoke, said arm being adapted to cushion the fall of said yoke and furnish the means for returning the locking device to its normal position as said yoke is moved, substantially as specified.

33. In a cash-register, an indicator, a swinging yoke for moving the same to its indicating position, means for locking the indicator, and a second swinging yoke for unlocking the same, substantially as described.

34. In a cash-register, a swinging actuating-yoke, a device for cushioning the downward movement of said yoke, an indicator, and means for locking the indicator, said means being operated by the cushioning device, substantially as described.

35. The combination with the registers and an intermediate actuating device such as a swinging yoke, a normally locked movable part such as a cash-drawer to act on said yoke, normally locked indicators, and a yielding arm in the path of said actuating-yoke and connected with the holding devices for said drawer and indicators, said arm being adapted to cushion the movement of said actuating-yoke and furnish the means for returning the holding devices for the drawer and indicator to their normal positions, substantially as specified.

36. In a cash-register, the combination with a registering mechanism, of transfer-pawls therefor, an angular plate adapted to lift said transfer-pawls, a movable lid for concealing the registering mechanism, and a spring-pressed rod connecting said lid and angular plate so that the latter is rocked to lift the transfer-pawls when the lid is opened, substantially as described.

37. In a registering-machine, a register-wheel, a movable pawl for turning said wheel, a rocking latch adjacent to the path of the pawl, and means for turning said latch to engage the pawl when it approaches the limit of its forward movement.

38. In a registering-machine, a drawer, a register-wheel, a pawl driven from said drawer for turning said wheel, and means operated by said drawer for locking the pawl to the wheel as the pawl approaches the limit of its forward movement.

30. In a registering-machine, a drawer, a registering-wheel, a pawl driven from said drawer for turning said wheel, a yoke operated by said drawer, and means operated by said yoke for locking the pawl to the wheel as the pawl approaches the limit of its forward movement.

40. In a registering-machine, a register-wheel, a movable pawl for turning the same, a swinging yoke for driving the pawl, a latch adjacent the path of the pawl, and a second yoke for moving the latch into the path of the pawl to lock the same to the wheel as it approaches the end of its movement.

41. In a registering-machine, a register-wheel, driving means for turning said wheel, a checking device for said driving means, and mechanism for moving said device into the path of the driving means as the latter approaches the limit of its movement.

704,796. CASH-REGISTER. HENRY S. HALLWOOD, Columbus, Ohio, assignor, by mesne assignments, to the Hallwood Cash Register Company, Columbus, Ohio, a Corporation of Ohio. Filed Jan. 3, 1899. Serial No. 700,933. (No model.)

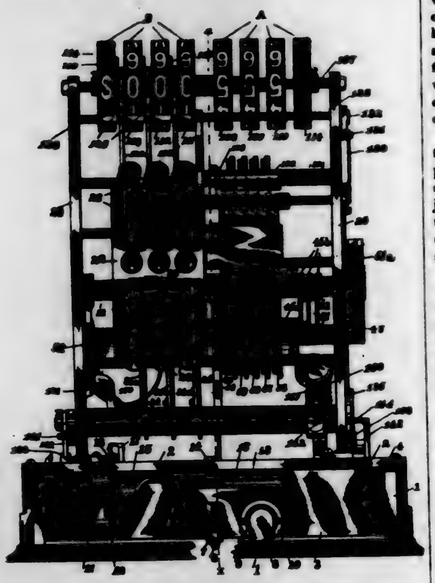

Claim.—1. In a cash-register, the combination with the framework, a reservedly-sliding drawer therein, and means for latching said drawer in a closed position, of a drawer-opening lever fulcrumed on the frame above the drawer and having one of its ends in contact with said drawer, a weighted arm 54 movably supported from the machine above said drawer, a link connecting said arm 54 and said lever-bar whereby the weight of the arm throws the drawer open when released and means for releasing said drawer, substantially as specified.

2. In a cash-register, the combination with the framework, a sliding drawer therein, a friction-roller journaled from said drawer, and means for latching the latter in a closed position, of a fulcrumed drawer-opening lever 13 having one of its ends in contact with said roller, a weighted arm 54 movably supported from the machine above said drawer, a jointed connection between said arm 54 and said lever-bar 13 whereby the weight of the arm throws the drawer open when released and means for releasing said drawer, substantially as specified.

3. In a cash-register, the combination with a frame, one or more registering-wheels journaled in said frame, a set of value-keys projecting from the front of said machine and mechanism between said value-keys and registering-wheels whereby the latter will register an amount corresponding with the value-keys depressed, of a sliding drawer and a latch therefor, an arm having a swinging support in said machine, a drawer-opening lever fulcrumed near its center to the frame above the drawer, and engaging therewith and connections between said arm and lever whereby the downward movement of the arm forces the drawer rearward when the same is released, substantially as specified.

4. In a cash-register, the combination with the framework, a sliding drawer therein and a fulcrumed latch-bar adapted to retain said drawer in a closed position, of a lever 149 journaled in the framework, said lever having forwardly and rearwardly extending arms and releasing-keys arranged respectively at the front and back of said machine and means whereby the depression of either of said keys results in a lifting contact of one arm of said lever 149 with said drawer latch-bar, substantially as specified.

5. In a cash-register, the combination with the framework, a sliding cash-drawer therein and a fulcrumed latch-bar adapted to engage said drawer to retain it in a closed position, of a two-arm lever 149 journaled in said framework, a pivoted lever 157, releasing-keys 151 and 155 arranged respectively at the front and back of the machine, one of said keys adapted to contact with one arm of the lever 149 and the remaining key adapted to contact with one arm of the lever 157, the remaining arm of the latter being beneath an arm of the lever 149 and means whereby the swinging of the lever 149 causes a lifting contact of one of its arms with said latch-bar, substantially as specified.

6. In a cash-register, the combination with the framework, a set of value-keys, a sliding cash-drawer, a registering mechanism and a fulcrumed lock-plate adapted to swing downward and retain one of said keys in a depressed position, of a lifting-frame 159 fulcrumed beneath and adapted to exert a lifting action on said lock-plate, a lifting-lever 162 fulcrumed to said framework, said lever being adapted to swing downward when the drawer is opened and to be forced upward by contact with said drawer when the latter is closed, said fulcrumed lifting-frame having its outer arm supported by said lever, substantially as specified.

7. In a cash-register, the combination with the framework, a registering mechanism, a set of value-keys adapted to be independently depressed, a sliding cash-drawer, and a fulcrumed lock-plate adapted to swing downward and temporarily lock a depressed key, of a lifting-frame journaled beneath said lock-plate, and a lifting-lever mounted to slide on the machine-frame and adapted to engage said drawer when it is closed and be moved longitudinally by the closing movement of said drawer, said lifting-lever engaging said lifting-frame, substantially as specified.

8. In a cash-register, the combination with the framework, a set of value-keys, a sliding cash-drawer, a catch-piece on said drawer, a registering mechanism and a fulcrumed lock-plate adapted to swing downward and retain one of said keys in a depressed position, of a lifting-frame 159 fulcrumed beneath and adapted to exert a lifting action on said lock-plate, a lifting-lever having a fulcrumed and sliding connection with the framework, said lever adapted to engage a catch-piece on said drawer when the latter is closed and adapted by contact with said drawer to be lifted during the closing action, notches 166 and 165 in said lifting-lever, one of which is adapted to receive an extension of said lifting-frame when the drawer is open and one of which is adapted to receive said lifting-frame extension when the drawer is closed, substantially as specified.

9. In a cash-register, the combination with the framework, a sliding drawer, a set of value-keys, a registering mechanism and a swinging frame-piece 45, the degree of movement of which is dependent on the value-key depressed, of a journaled indicator-wheel carrying a pinion, a rack-bar engaging said pinion, a fulcrumed lever-bar 122 having a jointed connection with said rack-bar, a weight-arm 125 swinging from said frame-piece 45 and having its upper portion engaging a projection of said lever-arm 122 and means whereby the depression of a value-key and the opening of the cash-drawer produces a downward swinging movement of said frame-piece 45 and whereby the closing of said drawer produces an upward movement thereof, substantially as specified.

10. In a cash-register, the combination with a frame, one or more registering-wheels journaled in said frame, a set of value-keys projecting from the front of said machine and mechanism between said value-keys and registering-wheels whereby the latter will register an amount corresponding with the value-keys depressed, of a sliding drawer and latch therefor, a swinging lever through which the movement of the drawer is communicated to the adding and indicating mechanism, and releasing-keys arranged respectively at the front and back of the machine so that either may be operated at will, substantially as specified.

704,797. RAILWAY HEATER SYSTEM. SAMUEL H. HARRINGTON, New York, N. Y. Filed Jan. 3, 1901. Serial No. 42,008. (No model.)

Claim.—In a railway system, a main source of electrical supply, a car having a motor for propelling the same and deriving its power from said source of electrical supply, an electric heater upon said car and deriving energy from said source of electrical supply, a switch controlling the circuit of said heater, brakes upon said car, brake-operating mechanism, and operative connection between said brake-operating mechanism and said switch whereby the latter is operated by the operation of the former; substantially as described.

704,797

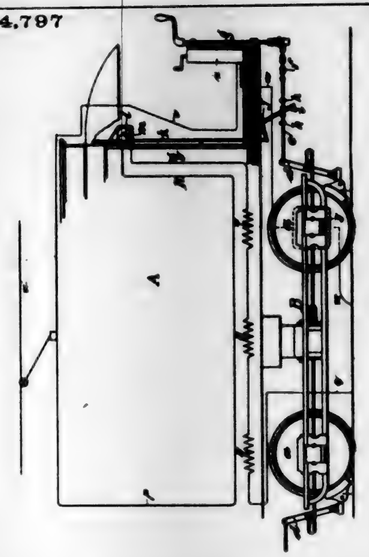

704,798. BLUE ANTHRAQUINONE DYE AND PROCESS OF MAKING SAME. CHRISTOPH HAUSSMANN, Höchst-on-the-Main, Germany, assignor to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany, a Corporation. Filed Jan. 27, 1902. Serial No. 91,519. (Specimens.)

Claim.—1. The process for the manufacture of new blue dyestuffs of the anthraquinone series, which consists in treating the herein-described tetraamidoanthraquinones, with formaldehyde and sulfurous acid, substantially as described.

2. The dyestuffs obtained by combining the herein-described tetraamidoanthraquinones, with formaldehyde and sulfurous acid, being dark-blue powders, soluble in concentrated sulfuric acid to a blue and in water to a green-blue solution, which does not change on addition of dilute acids or alkalies, dyeing wool greenish-blue shades.

704,799. ADJUSTABLE CHAIN-HEADING FOR CHAIN OR ROPE CURTAINS OR VALANCES. WILLIAM S. HEPNER and ALEXANDER G MORRISON, St. Louis, Mo. Filed Feb. 13, 1902. Serial No. 94,057. (No model.)

Claim.—1. An adjustable chain-heading for chain or rope curtains, comprising a pole or bar having a flat upper face and adapted to be adjustably secured to the lower face of the upper casing of the opening; clips or hangers slidingly mounted upon the pole or bar; a chain or rope connecting said clips or hangers together in series, said chain or rope being long enough to hang loosely between said clips or hangers; and loops connected to said chain or rope half-way between the clips or hangers and adapted to receive the hooks of the curtain; substantially as specified.

2. In a device of the class described, a pole or bar having a flat side, said flat side being adapted to engage the lower face of the casing of the opening; clips or hangers slidingly mounted upon said pole or bar; means of adjusting the pole or bar to grip the clips or hangers, as required to hold them rigidly in their adjusted positions; and a chain or cord connecting said clips or hangers; substantially as specified.

704,800. SIGNAL. REINHOLD RIEHAM, Crafton, Pa. Filed Oct 11, 1901. Serial No. 78,201. (No model.)

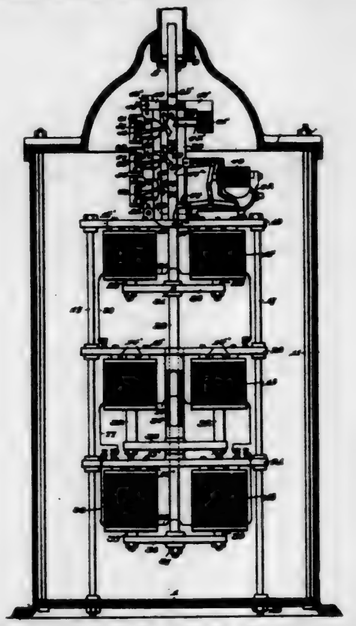

Claim.—1. In signals, the combination with the signal-arm automatically held in the danger position, of electrically-actuated shifting means to shift the signal-arm to caution and danger, with track-circuits controlled by train movements, and a separate circuit also controlled by train movements to act as a choke for the signal when shifted to caution or danger position.

2. In signals, the combination with the signal-arm automatically held in the danger position, of electrically-operated shifting means to shift the signal to caution and clear positions, with track-circuits controlled by train movements, with a circuit connected to the shifting means to act as a choke for the movement of the signal to certain positions.

3. In signals, the combination with the signal-arm movable to different positions, of electrically-operated shifting means with circuits connected thereto and controlled by train movements, a circuit-controller in said circuits, with a choke-circuit closed by the signal in its movement to certain positions.

4. In signals, the combination with the semaphore-arm, of electrically-operated shifting means with circuits controlled by train movements, and a circuit-controller in the circuit, said controller including spring-clips and contact-fingers which are moved into and out of engagement with said clips during the shifting of the signal to make and break the circuit.

5. In electrically-operated signals, a circuit-controller in the operating circuits and comprising spring-clips and contact-fingers which latter are movable into and out of engagement with the clips to make and break the circuit at predetermined times.

6. In signals, the combination with the signal-arm, of electrically-operated means for shifting the signal, a driving-rod connecting the signal-arm to the shifting means, a circuit-controller included in the circuit of the shifting means, and pins carried by the driving-rod to make and break the circuit in the circuit-controller at predetermined times.

7. In a signal, the combination of a signal-arm automatically held in the danger position, of electrically-operated shifting means controlled by train movements for shifting the signal to different positions, a driving-rod connecting the signal-arm to the shifting means, a circuit-controller in the circuit of the shifting means, means carried by the driving-rod for engagement with the circuit-controller to make and break the circuit at predetermined times, and an electric lock for holding the signal after the same is shifted into position.

8. In signals, the combination with the signal-arm automatically held in the danger position, of a series of electromagnets connected to the arm and constituting a means for operating the signal by the aid of circuits

controlled by train movements, and a choke-circuit controlled by an auxiliary relay for cushioning the signal when shifted to different positions.

9. In electrically-operated signals, a circuit-controller in the operating-circuits and comprising spring-clips and pivotal contact-fingers which latter are movable into and out of engagement with the spring-clips to make and break the circuit at predetermined times.

10. In signals, the combination with a signal, and electrically-operated shifting means therefor, of a box or casing for inclosing the shifting means, said box or casing comprising a base having a ledge with side and end walls fitted thereon, a cap-piece fitted on the side and end walls, a hollow cone carried by said cap-piece and provided with a downwardly-projecting tubular extension to receive the support for the signal-arm, and tie-bolts connecting the cap-piece and base, substantially as described.

11. The combination of a signal-arm, a driving-rod connected thereto, suitably-supported electromagnets having their cores connected to said driving-rod, with track-circuits connected to a track-relay and controlled by train movements, a circuit-controller connected to the circuits, and insulated pins carried by the drive-shaft to operate the circuit-controller to make and break the circuit at predetermined times, substantially as described.

12. In signals, the combination with the signal-arm, and the driving-rod connected thereto, of electrically-operated means for shifting the signal, a circuit-controller included in the circuit of the shifting means, and insulated pins carried by the driving-rod to actuate the circuit-controller to make and break the circuit at predetermined times.

13. In signals, the combination with the signal-arm, of electrically-operated means for shifting the signal, a driving-rod connecting the signal-arm to the shifting means, a circuit-controller in the circuit of the shifting means, and including spring-clips and pivoted contact-fingers, and means carried by the driving-rod to actuate said fingers to make and break the circuit in the controller at predetermined times.

14. In signals, the combination with the signal-arm, of electrically-operated means for shifting the signal, a driving-rod connecting the signal-arm to the shifting means, a circuit-controller included in the circuit of the shifting means, means carried by the driving-rod to make and break the circuit in the circuit-controller at predetermined times, and means for locking the signal after the same is shifted into position.

15. In signals, the combination with the signal-arm automatically held in the danger position and movable to caution and clear positions, of a series of electromagnets arranged in pairs and constituting the operating mechanism for shifting the signal to caution and clear positions, said magnets having their cores attached to the driving-rod of the signal, one pair of said magnets acting as the shifting means for the signal to the caution position and another pair of said magnets acting as the shifting means for the signal to the clear position.

16. In signals, the combination with the signal-arm automatically held in the danger position and movable to caution and clear positions, of a series of electromagnets arranged in pairs and constituting the operating mechanism for shifting the signal to caution and clear positions through track-circuits controlled by train movements, the cores of the said magnets attached to the driving-rod of the signal, one pair of said magnets acting as shifting means for the signal to caution position and another pair of said magnets acting to shift the signal to the clear position.

17. In signals, the combination with a signal-arm automatically held in the danger position and movable to caution and clear positions, of a series of electromagnets arranged in pairs and constituting means for shifting the signal to caution and clear positions through track-circuits controlled by train movements, one pair of said magnets acting as the means for shifting the signal to caution position, another pair of said magnets acting to shift the signal to the clear position, an auxiliary cut-out for said magnets, and an automatic lock for holding the signal at the caution and clear positions.

18. In an electric signal system for railroads, the combination with a signal-arm automatically held in the danger and caution positions, of electromagnets connected to a source of electric supply and constituting means for shifting the signal-arm in one direction to caution and clear positions, an auxiliary relay in the circuit with said electromagnets, a track-relay controlling the circuit of the auxiliary relay, said track-relay in circuit with track-circuits controlled by train movements in opposite running directions.

19. In signals, the combination with a signal-arm automatically held in the danger position and movable to caution and clear positions, of a series of electromagnets constituting the operating means for shifting the signal in one direction to caution and clear positions, a source of electric energy connected to said magnets through an auxiliary relay, and automatic cut-outs controlled through the track-relay connected to track-circuits, said track-circuits controlled by train movements in both running directions.

20. In an electric signal system for railroads, the combination of a signal-arm automatically held in the danger and caution positions and movable to caution and clear positions, and means for holding the signal-arm at caution and clear positions, said means operated through track-circuits controlled by train movements in opposite running directions.

21. In signals, the combination with the signal-arm automatically held in the danger position and electrically movable to caution and clear positions, and the driving-rod connected to said arm, of a series of cores attached to the driving-rod of the signal-arm, electromagnets arranged to energize said cores through circuits at predetermined times, substantially as and for the purpose set forth.

22. In signals, the combination with the signal-arm automatically held in the danger position and electrically movable to caution and clear positions, and a driving-rod connected to said signal-arm, of a series of armatures attached to said driving-rod, electromagnets arranged to energize said armatures through circuits at predetermined times, and track-circuits controlled by train movements in both running directions.

704,801. ICE-BREAKER. CHARLES HILBERT, Cincinnati, Ohio. Filed Feb. 24, 1902. Serial No. 95,296. (No model.)

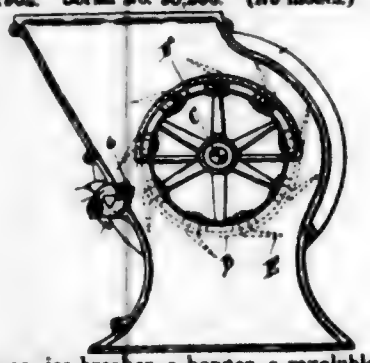

Claim.—1. In an ice-breaker, a hopper, a revoluble reducing-roll therein, means for rotating the same, a shaft having two or more lines of radial blades differently spaced horizontally, means for supporting the said shaft in the hopper in a fixed position with any one of said lines of blades projecting toward the armed roll and forming a stationary abutment for the ice, substantially as described.

2. In an ice-breaker, a hopper, a revoluble reducing-roll therein, means for rotating the same, a shaft having two or more lines of blades radially projected therefrom, the blades being differently spaced horizontally on the different lines, one end of said shaft being socketed whereby the shaft may be supported in fixed position with any one of said horizontal lines of blades projecting into the hopper toward the reducing-roll forming an opposing abutment therefor, substantially as described.

3. In an ice-breaker, a hopper, a revoluble reducing-roll therein, means for rotating the same, a shaft having two or more lines of blades radially projecting therefrom, the blades being differently spaced horizontally on the different lines, one end of said shaft being polygonal-shaped, a socket-plate therefor on the frame of the machine, and means for detaching said shaft from its socket whereby the shaft may be fixed in different positions with any selected one of the lines of blades projecting into the hopper toward the reducing-roll forming a stationary abutment therefor, substantially as described.

4. In an ice-breaker, a hopper, a revoluble reducing-roll therein, means for rotating the same, a shaft having two or more lines of blades radially projecting therefrom, the blades being differently spaced horizontally on the different lines, means outside of said hopper for supporting said shaft in different fixed positions and slots formed in the casing of the hopper through which the said blades project toward the reducing-roll forming a fixed opposing abutment therefor, substantially as described.

5. In an ice-breaker, a hopper, a revoluble reducing-roll therein, means for rotating the same, a shaft having two or more lines of blades radially projecting therefrom, the blades being differently spaced horizontally on the different lines, means outside of said hopper for supporting said shaft, a socket end formed on said shaft, a socket-plate supported on the hopper-casing, and slots in the hopper-casing for the projection of said blades into the hopper, and means for detaching said shaft from said socket-plate, whereby the shaft may be fixed in different positions with any selected one of said lines of blades projecting through the slots and forming a stationary opposing abutment to the reducing-roll, substantially as described.

6. In an ice-breaker, a hopper, a revoluble reducing-roll therein, means for rotating the same, a shaft having two or more lines of blades radially projecting therefrom, the blades being differently spaced horizontally on the different lines, a journal for one end of said shaft in the hopper-casing outside of the hopper, the other end of said shaft being socket-shaped, a socket-plate detachably secured to the other side of the hopper-casing, and slots in the intermediate hopper-casing through which the blades of any selected one of said lines project into the hopper and toward the reducing-roll forming a stationary opposing abutment therefor, substantially as described.

704,802. DRAFT-RIGGING FOR CARS. JAMES A. EIBSON, Chicago, Ill. Filed Nov. 22, 1901. Serial No. 83,217. (No model.)

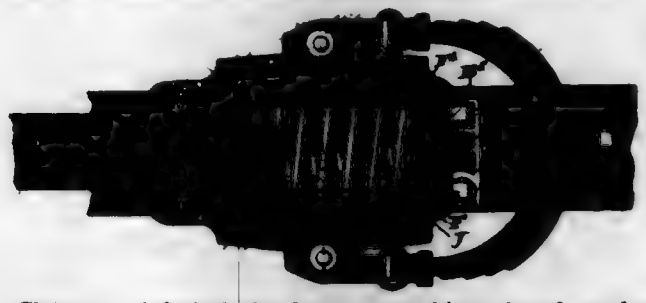

Claim.—1. A draft-rigging for cars, comprising a draw-bar, a draw-bar spring, a supplemental spring, means for placing said supplemental spring under stress in a direction transverse to the direction of compression of the draw-bar spring through longitudinal movement of the draw-bar, friction-producing means interposed between the draw-bar and said supplemental spring, and means acting to bring said friction-producing means into operation subsequently to the preliminary action of said supplemental spring and draw-bar spring.

2. A draft-rigging for cars, comprising a draw-bar, a draw-bar spring, a friction-block carried by the draw-bar, a complemental friction-block, a supplemental spring for holding said blocks pressed one against the other, and means acting to first place said supplemental and draw-bar springs under preliminary stress and to thereafter cause the draw-bar friction-block to move relatively to the other friction-block in the continued movement of the draw-bar.

3. A draft-rigging for cars, comprising a draw-bar, a draw-bar spring, a friction-block carried by the draw-bar, having reversely-inclined bearing-surfaces, a complemental friction-block, a supplemental spring for holding said blocks pressed one against the other, and means acting to first place said draw-bar and supplemental springs under preliminary stress and to thereafter cause the draw-bar friction-block to move relatively to the other friction-block in the continued movement of the draw-bar, the friction-blocks acting in such continued movement of the draw-bar to place the supplemental spring under stress.

4. A draft-rigging for cars, comprising a draw-bar, a draw-bar spring, a supplemental spring which acts transversely to the direction of compression of the draw-bar spring, a friction-block carried by the draw-bar, a complemental friction-block which is pressed against said draw-bar friction-block by said supplemental spring, both of said friction-blocks being movable with the draw-bar and relatively to the supplemental spring in the preliminary stress of the supplemental and draw-bar springs, coacting parts carried by said supplemental spring and one of the friction-blocks acting to place said spring under tension in the initial movement of the draw-bar, and stops acting to limit the movement of the last-mentioned friction-block subsequently to the preliminary stress of the said supplemental and draw-bar springs and to cause the draw-bar friction-block to move relatively to the complemental friction-block in the continued movement of the draw-bar.

5. A draft-rigging for cars comprising a draw-bar, a draw-bar spring a supplemental spring which acts transversely to the direction of compression of the draw-bar spring, a friction-block carried by the draw-bar, a complemental friction-block which is pressed against said draw-bar friction-block by said supplemental spring, both of said friction-blocks being movable with the draw-bar and relatively to the supplemental spring in the preliminary stress of the supplemental and draw-bar springs, coacting parts carried by said supplemental spring and one of the friction-blocks, consisting of a roller on one part and a reversely-inclined surface on the other part acting to place said supplemental spring under tension in the initial movement of the draw-bar, and stops acting to limit the movement of the last-mentioned friction-block subsequently to the preliminary stress of the supplemental and draw-bar springs, whereby the draw-bar friction-block is caused to move relatively to its complemental friction-block in the continued movement of the draw-bar.

6. A draft-rigging for cars comprising a draw-bar, a draw-bar spring, a supplemental spring which acts transverse to the direction of compression of the draw-bar spring, a bearing-block carried by said supplemental spring, a friction-block carried by the draw-bar, a complemental friction-block which is held pressed against said draw-bar friction-block by said supplemental spring, one of said parts, to wit, the bearing-block or said complemental friction-block being provided with a roller and the other part with reversely-inclined coacting surfaces, and stops on said bearing-block for limiting the movement of the roller and the friction-block carrying the same relatively to said supplemental spring.

7. A draft-rigging for cars, comprising a draw-bar, a draw-bar spring, supplemental springs on each side of the draw-bar which act transversely to the direction of compression of the draw-bar spring, friction-blocks one on each side of and carried by the draw-bar, complemental friction-blocks which are pressed against said draw-bar friction-blocks by said supplemental springs, both sets of said friction-blocks being movable with the draw-bar and relatively to the supplemental springs in the preliminary stress of the supplemental and draw-bar springs, coacting parts carried by said supplemental springs and one set of the friction-blocks acting to strain said supplemental springs in the initial movement of the draw-bar, and stops acting to limit the movement of the last-mentioned friction-blocks subsequently to the preliminary stress of the supplemental and draw-bar springs, whereby the draw-bar friction-blocks are caused to move relatively to their complemental friction-blocks in the continued movement of the draw-bar.

704,808. ELECTRIC CONTROLLER. ARTHUR E. HOSBEIN, Philadelphia, Pa. Filed Dec. 13, 1901. Serial No. 85,716. (No model.)

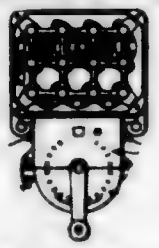

Claim.—1. In an electric controller, a housing or casing having a suitable cover, and a cylinder or barrel switch carried by said cover, substantially as described.

2. In an electric controller, a housing or casing, a cover hinged thereto, and a cylinder or barrel switch journaled in said cover, substantially as described.

3. In an electric controller, a housing or casing, a plurality of contact-fingers carried thereby, horizontal disks of fireproof insulating material interposed between said fingers, a hinged cover, and a cylinder or barrel switch carried thereby and coacting with said fingers, substantially as described.

4. In an electric controller, a casing or housing having a removable cover, a suitable cylinder or barrel switch carried by said cover, contact-fingers, carried by the case and rheostat-coils comprising each a metal tube carried by said housing, a coating of fireproof insulating material encircling said tube and helically-wound rheostat-coils encircling said insulating material, substantially as described.

704,804. PROCESS OF MAKING INDOXYL, &c. BRUNO HOMOLKA and OTTO LEMMERMOEHL, Frankfort-on-the-Main, Germany, assignors to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany, a Corporation of Germany. Filed Sept. 4, 1901. Serial No. 74,819. (No specimens.)

Claim.—1. The herein-described process of making indoxyl, which consists in causing sodium amid to act at a high temperature preferably with suitable diluents on phenylglycinphenylglycin (phenylglycinphenylglycid), substantially as set forth.

2. The herein-described process of making indoxyl, which consists in reacting with sodium amid at a high temperature on a homologous phenylglycinphenylglycid, substantially as set forth.

704,805. ELEVATOR-BIN. JAMES A. JAMIESON, Montreal, Canada. Filed Aug. 27, 1900. Serial No. 28,254. (No model.)

Claim.—1. A composite hopper of inverted pyramidal form the sides whereof consist of a series of metallic stays conforming to the contour of the bottom of said hopper and arranged parallel to one another; a second series of metallic stays also conforming to the contour of the bottom of said hopper and arranged parallel to one another and at right angles to said first-mentioned series of metallic stays, and a lining supported upon said two series of stays.

2. A composite hopper of inverted pyramidal form the sides whereof consist of a series of metallic stays conforming to the contour of the bottom of said hopper and arranged parallel to one another; a second series of metallic stays also conforming to the contour of the bottom of said hopper and arranged parallel to one another and at right angles to said first-mentioned series of metallic stays, and a concrete lining supported upon said two series of stays.

3. A composite hopper of inverted pyramidal form each side whereof consists of a series of metallic strips conforming to the contour of the bottom of said hopper and arranged parallel to one another and extending horizontally from side to side of said hopper, a second series of metallic strips also conforming to the contour of the bottom of said hopper and extending from bottom to top of the hopper and outside of said first-mentioned series of strips, means for connecting together the sides thus formed, and a concrete lining for said hopper, substantially as and for the purpose set forth.

4. A composite hopper of inverted pyramidal form and consisting

of four supporting-girders arranged in the form of a square; an open pyramidal casting; means for suspending said casting from said girders; a series of metallic strips conforming to the contour of the bottom of said hopper and each extending from one of said girders to the opposite girder, means for securing the ends of said strips to said girders, a second series of metallic strips also conforming to the contour of the bottom of said hopper and overlapping said first-mentioned series and extending from one of the other girders to that opposite thereto, means for connecting said last-mentioned series of strips to said last-mentioned girders, and a concrete lining for said hopper, substantially as described and for the purpose set forth.

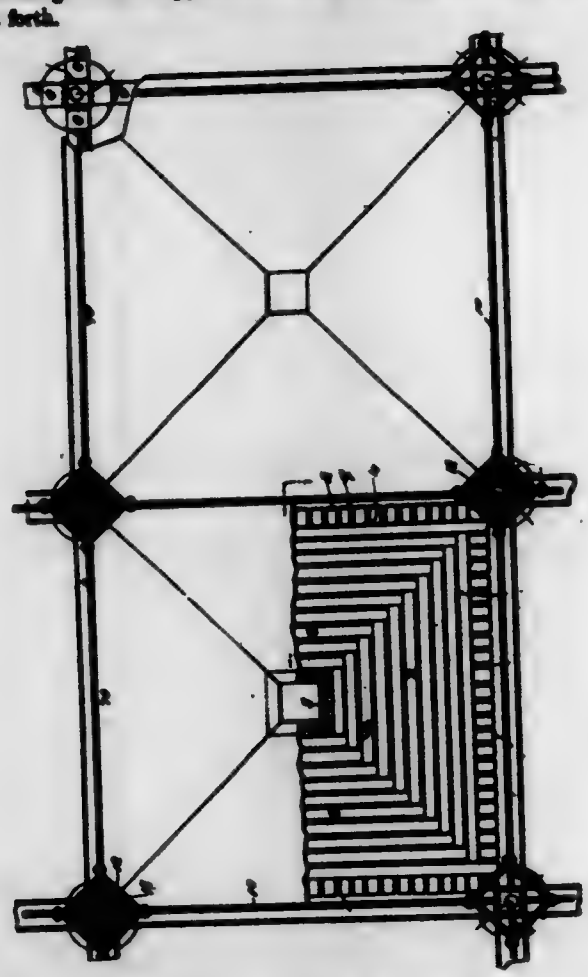

5. A hopper-bottom of inverted pyramidal form for a bin, consisting of four supporting-girders arranged in the form of a square and having flanges on their top sides; an open pyramidal casting; means for suspending said casting from said girders; a series of metallic strips conforming to the contour of the bottom of said hopper and each extending from one of said girders to the opposite girder; the ends of said strips being bent to hook over the flanges of said girders; a second series of metallic strips also conforming to the contour of the bottom of said hopper and overlapping said first-mentioned series and extending from one of the other girders to that opposite thereto; the ends of said last-mentioned series of strips being bent to hook over the flanges of said last-mentioned girders, a concrete lining for said hopper and means for retaining said hooked ends of the strips against displacement upon the flanges of said girders, substantially as described and for the purpose set forth.

6. A hopper-bottom for a bin, consisting of four supporting-girders arranged in the form of a square and having flanges on their top sides; an open pyramidal casting; means for suspending said casting from said girders consisting of a series of metallic strips having their lower ends riveted to said casting and their upper ends bent to form hooks to take over the adjacent portion of the flange upon said girders; a series of metallic strips conforming to the contour of the bottom of said hopper and each extending from one of said girders to the opposite girder; the ends of said strips being bent to hook over the flanges of said girders; a second series of metallic strips also conforming to the contour of the bottom of said hopper and overlapping said first-mentioned series and extending from one of the other girders to that opposite thereto; the ends of said last-mentioned series of strips being bent to hook over the said last-mentioned girders, a concrete lining for said hopper and means for retaining said hooked ends of the strips against displacement upon the flanges of said girders, substantially as described and for the purpose set forth.

7. The combination with a series of girders disposed to inclose a series of hoppers, a vertical flange located at each edge of the top of each girder, each hopper consisting of an open pyramidal casting; means for suspending said casting from said girders; a series of metallic strips conforming to the contour of the bottom of said hopper and each extending from one of the inclosing girders to the opposite inclosing girder; the ends of said strips being bent to hook over the flanges of said girders; a second series of metallic strips also conforming to the contour of the bottom of said hopper and overlapping said first-mentioned series and extending from one of the other inclosing girders to that opposite thereto; the ends of said last-mentioned series of strips being bent to hook over the flanges of said last-mentioned girders, a concrete lining for said hopper, a concrete packing for retaining said hooked ends of the strips against displacement upon the flanges of said girders and a series of bins supported with their walls upon said girders, substantially as described and for the purpose set forth.

8. A series of contiguous bins consisting of a series of supporting-girders disposed to form a series of squares, a series of bin-bottoms each located within and secured at its edges to the edges of one of said squares, a series of sheet-metal walls supported upon said girders, each of said walls being of less length than its supporting-girder, and the vertical edges thereof being a short distance from one another, a series of vertically-extending corner-plates, means for connecting the side edges of said corner-plates to said sheet-metal walls a short distance from the said vertical edges thereof, and a filling for the spaces inclosed by said corner-plates, substantially as described and for the purpose set forth.

9. The combination with a series of bins for grain-elevators or the like, of supporting-columns, located beneath said bins, the corners of the bins being located over said columns, said columns consisting of a tubular metallic casing, and a concrete filler, said concrete filler extending continuously in columnar form upwardly through the corners to the top of said bins, a metallic casing for said upwardly-extending concrete portion, and means for securing said last-mentioned casing to the walls of the bins, substantially as described and for the purpose set forth.

704,806. BIN. JAMES A. JAMIESON, Montreal, Canada. Filed Nov. 6, 1901. Serial No. 81,248. (No model.)

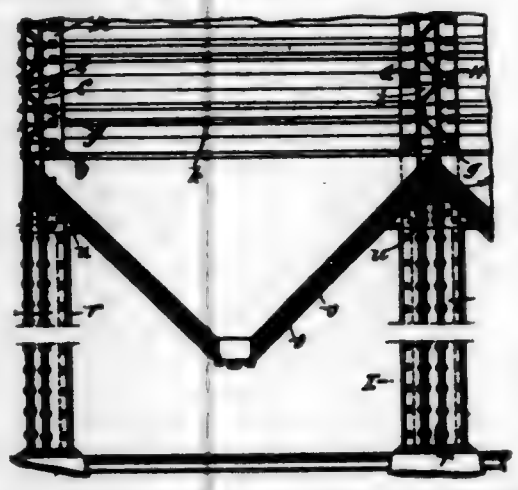

Claim.—1. A bin comprising corner-standards, a series of horizontal sections with recessed inner sides, said sections constituting the walls of said bin, and means for rigidly connecting said horizontal sections to said corner-standards for the purpose set forth.

2. A bin comprising corner-standards, a series of horizontal sections with recessed inner sides, said sections being independent of one another and constituting the walls of said bin, and means for rigidly connecting said horizontal sections to said corner-standards, for the purpose set forth.

3. A bin comprising composite corner-standards consisting of a concrete column and a metal stay, a series of horizontal sections independent of one another and constituting the walls of said bin, and means for rigidly connecting said horizontal sections to said corner-standards, for the purpose set forth.

4. A bin comprising composite corner-standards consisting of a concrete column and a metal stay, a series of horizontal sections with recessed inner sides, said sections being independent of one another and constituting the walls of said bin, and means for rigidly connecting said horizontal sections to said corner-standards, for the purpose set forth.

5. A bin comprising composite corner-standards consisting of a concrete column and a metal stay, a series of sections of greater horizontal length than height and extending from corner-standard to corner-standard and constituting the walls of said bin, and means for rigidly connecting said horizontal sections to said corner-standards, substantially as described and for the purpose set forth.

6. A bin comprising corner-standards consisting of one or more vertical angle-irons, a filler and means for binding said angle iron or irons and said filler together; a series of horizontal wall-sections; and means for connecting the ends of said wall-sections to said standards, substantially as described and for the purpose set forth.

7. A bin comprising corner-standards consisting of one or more vertical angle-irons, a filler and means for binding said angle iron or irons and

said filler together; a series of horizontal wall-sections arranged a short distance apart; means for connecting the ends of said wall-sections to said standards; and means for closing the space between said wall-sections, substantially as described and for the purpose set forth.

8. A bin comprising corner-standards consisting of one or more vertical angle-irons, a concrete column, and means for binding said angle iron or irons and said concrete column together; a series of horizontal wall-sections arranged a short distance apart; means for connecting the ends of said wall-sections to said standards; and means for closing the space between said wall-sections, substantially as described and for the purpose set forth.

9. A bin comprising corner-standards consisting of one or more vertical angle-irons, a concrete column, and means for binding said angle iron or irons and said concrete column together; a series of horizontal wall-sections of trough form arranged a short distance apart and with their recesses facing inwardly; means for connecting the ends of said wall-sections to said standards; and means for closing the space between said wall-sections, substantially as described and for the purpose set forth.

10. A bin comprising corner-standards consisting of one or more vertical angle-irons, a filler, and means for binding said angle iron or irons and said filler together; a series of horizontal wall-sections arranged a short distance apart; means for connecting the ends of said wall-sections to said standards; and a series of strips of H cross-section disposed with the spaces between their flanges receiving the adjacent edges of said horizontal wall-sections for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

11. A bin comprising corner-standards consisting of a series of vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column partially filling the space between said angle-irons; a series of horizontally-recessed wall-sections located with their opposite ends between the angle-irons of a pair of standards; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

12. A bin comprising corner-standards consisting of a series of four vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column filling the spaces between the apices of said angle-irons and partially filling the spaces between the adjacent angle-irons; a series of horizontally-recessed wall-sections located with their opposite ends between the angle-irons of a pair of standards; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

13. A bin comprising corner-standards consisting of a series of vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column partially filling the space between said angle-irons; a series of horizontal wall-sections in the form of trough-bed plates located with their opposite ends between the angle-irons of a pair of standards; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

14. A bin comprising corner-standards consisting of a series of vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column partially filling the space between said angle-irons; a series of horizontally-recessed wall-sections located with their opposite ends between the angle-irons of a pair of standards and with said ends embedded in said concrete; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

15. A bin comprising corner-standards consisting of a series of four vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column filling the spaces between the apices of said angle-irons and partially filling the spaces between the adjacent angle-irons; a series of horizontal wall-sections in the form of trough-bed plates located with their opposite ends between the angle-irons of a pair of standards; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

16. A bin comprising corner-standards consisting of a series of four vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column filling the spaces between the apices of said angle-irons and partially filling the spaces between the adjacent angle-irons; a series of horizontally-recessed wall-sections located with their opposite ends between the angle-irons of a pair of standards and with said ends embedded in said concrete; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

17. A bin comprising corner-standards consisting of a series of vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column partially filling the space between said angle-irons; a series of horizontal wall-sections in the form of trough-bed plates located with their opposite ends between the angle-irons of a pair of standards and with said ends embedded in said concrete; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

18. A bin comprising corner-standards, consisting of a series of four vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column filling the spaces between the apices of said angle-irons and partially filling the spaces between the adjacent angle-irons; a series of horizontal wall-sections in the form of trough-bed plates located with their opposite ends between the angle-irons of a pair of standards and with said ends embedded in said concrete; filler-blocks filling the recesses at the ends of said wall-sections between said angle-irons; means for fastening said wall-sections, and filler-blocks to said angle-irons, and means for closing the spaces between said wall-sections, substantially as described and for the purpose set forth.

19. A wall-bracing standard consisting of a series of four vertical angle-irons arranged a short distance apart with their apices toward a common center; a concrete column filling the spaces between the apices of said angle-irons and partially filling the spaces between the adjacent angle-irons; filler-blocks between said angle-irons, and means securing said angle-irons and filler-blocks together.

20. A corner-standard consisting of an angle-iron; an angle-plate arranged with its sides parallel to said angle-iron; filler-blocks partially filling the spaces between the corresponding sides of the angle-iron and angle-plate, a concrete filling for the space between said angle-iron, angle-plate and filler-blocks, and means for securing said angle-iron angle-plate and filler-blocks together, substantially as described and for the purpose set forth.

21. A bin structure comprising a series of standards, a bin supported at the upper ends of said standards a series of channel-irons set on edge at the bottom of the walls of said bin, a bin-bottom, and means for supporting said bin-bottom upon said channel-irons, substantially as described and for the purpose set forth.

22. A bin structure supported upon a base or foundation and comprising a series of standards each consisting of a series of supporting-irons of different lengths, and means for securing said supporting-irons together; a bin; the longer of said supporting-irons extending from said base or foundation to the top of the bin, and the shorter of said supporting-irons extending from the said base or foundation to the under side of the bin: and means for securing said bin to said longer supporting-irons, substantially as described and for the purpose set forth.

23. A bin structure supported upon a base or foundation and comprising a series of standards each consisting of a series of vertical angle-irons; a series of vertical channel-irons of less length than said angle-irons; and means for securing said angle and channel irons together; a bin; said angle-irons extending from said base or foundation to the top of the bin, and said channel-irons extending from the said base or foundation to the under side of the bin; and means for securing said bin to said angle-irons, substantially as described and for the purpose set forth.

24. A bin structure supported upon a base and comprising a series of standards each consisting of a series of vertical angle-irons, a series of vertical channel-irons of less height than said angle-irons, and means securing said angle and channel irons together; a bin consisting of walls and a hopper-shaped bottom; said angle-irons extending from said base or foundation to the top of the walls of said bins; means securing said bin-walls to the portions of said angle-irons above said channel-irons; a series of horizontal channel-irons resting upon the top of said vertical channel-irons; means securing the ends of said horizontal channel-irons to said vertical angle-irons; and means securing said bin-bottom to said horizontal channel-iron, substantially as described and for the purpose set forth.

704,807. PAPER-BAG-MAKING MACHINE. CHARLES F. KELLER, Philadelphia, Pa. Filed July 11, 1901. Serial No. 67,572. (No model.)

Claim.—1. In a machine for making paper bags, the combination of the rectangular former, means for turning a sheet or strip of paper

over and overlapping the margin of the same upon said former to form the sheet into a rectangular tube, means for applying paste to one of said margins before the same are overlapped, means for drawing forward the said paper tube upon the said former, means for severing the forward end of the said paper tube into suitable bag-blanks, devices for folding in the end portion of said blanks to form a bottom, means for pasting together the folds, and means for carrying the said blank from the former to the said folding and pasting devices, substantially as set forth.

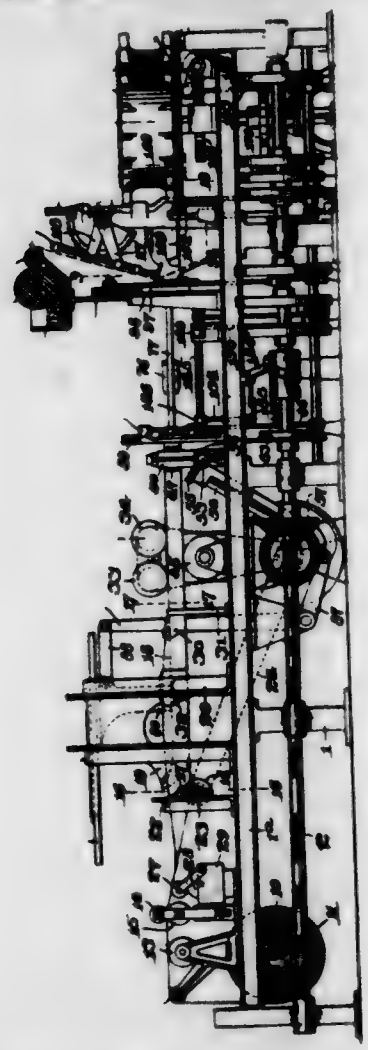

2. In a machine for making paper bags, the combination of the rectangular former, means for turning over a sheet or strip of paper and overlapping the margins of the same upon the former to impart to the sheet the form of a rectangular tube; means for applying paste to one of said margins before the same are overlapped, means for drawing forward the said tube of paper upon the former, means for severing the forward end of said tube into suitable bag-blanks, devices for folding in the forward end portion of said blanks to form the bag-bottom, means for pasting together the folds of the latter, the drum having the series of pockets in its periphery, means for imparting a predetermined intermittent rotation to said drum, the drying-pipes, or the like, beneath the said pockets, means for carrying forward the bag from the infolding and pasting devices to a pocket of said drum and means for upending the bag in said pocket, substantially as and for the purpose set forth.

3. In a machine for making paper bags, the combination of the rectangular former, means for turning a sheet or strip of paper and overlapping the margins thereof upon the said former, to impart to the sheet the form of a rectangular tube, means for applying paste to one of said margins before the same are overlapped, means for drawing forward the said paper tube upon the former, mechanism for severing the end portion of said tube into bag-blanks, the carrier for the latter, the folding devices, means for reciprocating said carrier with relation to the former and the folding devices, means respectively for collapsing and expanding said carrier at the predetermined times recited, means for applying paste to the folds of the bag-blank made by said folding devices, means for pressing together the pasted folds, and means for drying the paste thereon, substantially as set forth.

4. In a machine for making paper bags, the combination of the hollow rectangular former, devices for turning a sheet or strip of paper and overlapping the margins of the same upon said former to impart to the same the form of a rectangular tube, means for applying paste to one of said margins before the same are overlapped, means for drawing forward the said paper tube upon the former, the cutting-blades, and means for actuating the same at predetermined times to sever the forward end of the paper tube into bag-blanks, the rod extending within said former, the carrier connected to said rod, having the transversely-movable side bars, the bars upon which the same are adapted to slide, the cross-bars pivoted to the said rod and having their forward ends pivoted respectively to the said side bars of the carrier, the inclines adjacent to the forward end of the former against which the free ends of said cross-bars are adapted to ride, the knee-joint connection between said side bars of the carrier, consisting of the bars pivoted respectively to the latter and to the said rod, mechanism for imparting longitudinal reciprocations to said carrier, the series of folding-blades, and means for actuating the same at predetermined times, means for pasting together the folds made by said blades, devices for drying the paste, and means for carrying the bag from the pasting to the drying devices, substantially as set forth.

5. In a machine for making paper bags, the combination of the rectangular former, means for turning upwardly side portions of a sheet or strip of paper, consisting of the positively-driven roller, having the outwardly-beveled end flanges, located beneath and adjacent to the rear end of the former, and the superposed roller coacting with said first roller, the devices for turning over and overlapping the margins of the paper, means to the rear of said rollers, for applying a marginal line of paste to the said strip of paper, means in advance of said turn-over devices, for drawing forward the paper tube upon the former, means for cutting off the forward end of said tube to form bag-blanks, the folding devices for folding the forward end of the blank, the collapsible and expansible carrier, means for imparting longitudinal reciprocations of said carrier at predetermined times whereby the bag-blank is caused to be conveyed from the former into position to be operated upon by the folding devices, means for applying paste to the folds, the horizontal, intermittently-rotatable drum having the series of pockets in its periphery, steam drying-pipes or the like below and adjacent to said pockets, the rotatable plate located in advance of the folding and pasting devices, and means for actuating said plate to bring the same into a horizontal position to receive the folded and pasted bag and to upend the same within one of the pockets of said drum, together with means for carrying forward the bag into position to be received upon said plate, substantially as set forth.

704,808. SYSTEM FOR VENTILATING TUNNELS. JOHN KERR, New Rochelle, N. Y. Filed Dec. 4, 1901. Serial No. 84,082. (No model.)

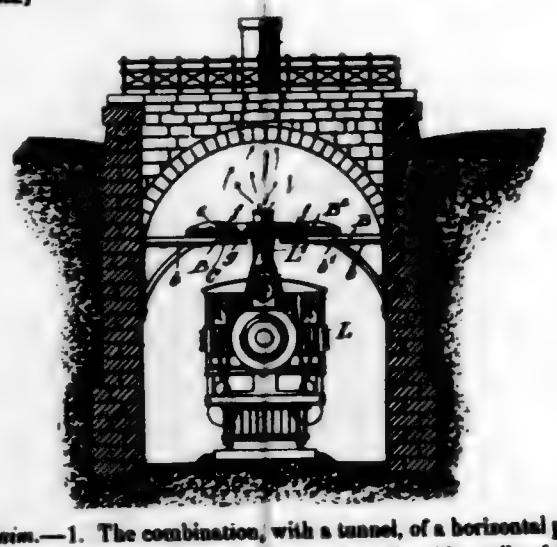

Claim.—1. The combination, with a tunnel, of a horizontal partition formed of stationary guide-plates supported on the side walls of the tunnel, auxiliary guide-plates, spring-cushioned slide-plates provided with upright contact plates or flanges at their adjacent longitudinal edges, and keepers for said slide-plates, substantially as set forth.

2. The combination, with a tunnel, of a horizontal partition located on the upper part of the same and composed of two longitudinal sections which are formed of stationary guide-plates, auxiliary guide-plates, spring-cushioned slide-plates guided by said auxiliary guide-plates, said slide-plates being provided with upright contact flanges or plates at their adjacent longitudinal edges, and keepers projecting from the upper auxiliary guide-plates over the spring-cushioned slide-plates, substantially as set forth.

3. The combination, with a tunnel provided with uptakes at a suitable distance from each other, of a horizontal partition formed of two longitudinal sections provided with guide-plates and spring-cushioned slide-plates, said slide-plates having upright contact plates or flanges at their adjacent longitudinal edges, and interlocking joints connecting the ends of said contact-plates, substantially as set forth.

4. In a system of ventilating tunnels, the combination, with brackets attached to the side walls of the tunnel, of horizontal main guide-plates attached to said brackets, auxiliary guide-plates supported on said main guide-plates and provided with inwardly-projecting slide-plates, and spring-cushioned slide-plates guided between the main and auxiliary

guide-plates, the adjacent edges of the side-plates being provided with upright contact flanges or plates, and interlocking joints at the adjacent ends of said contact-flanges, substantially as set forth.

704,809. AUTOMOBILE. ALVARO S. KNOX, Springfield, Ohio. Filed July 8, 1901. Serial No. 67,291. (No model.)

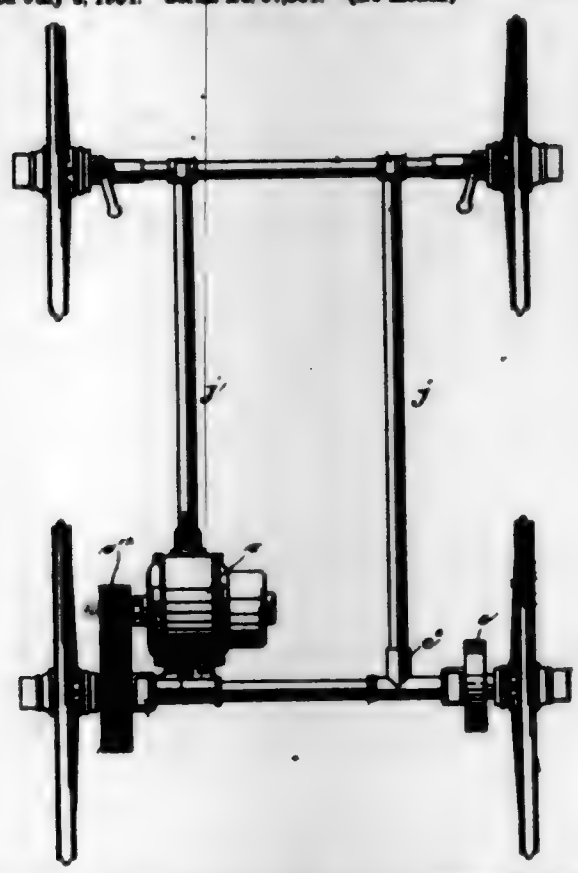

Claim.—1. The combination with the front and rear axles, side bars flexibly connected to said front axle, and a motor, of corner-pieces through which the rear axle extends, one of which carries said motor in connection with one of said side bars and the other rigidly attached to the other side bar, and a tube rigidly attached to said motor-carrying corner-piece and extending to and pivotally connected with the other corner-piece, substantially as and for the purpose specified.

2. The combination with the front and rear axles and side bars, body-spring couplings flexibly connecting said bars with the front axle, and a motor, of body-spring bearing corner-pieces through which the rear axle extends, one of said corner-pieces having a tube rigidly attached thereto extending to and pivotally connected with the other body-bearing corner-piece, the corner-piece having a tube attached, being pivotally attached to the side bar carrying said motor and the other being rigidly attached to the other side bar whereby the frame will adjust itself to the unevenness of the road without disturbing the adjustment of the motor, substantially as specified.

3. The combination with the front and rear axles, the motor and the frame having corner-pieces and a tube rigidly attached to one and pivotally connected to the other of said corner-pieces, as described, of antifriction-bearings on said rear axle in recesses formed in each of said corner-pieces, and a body-spring seat on each of said corner-pieces over said antifriction-bearings, substantially as specified.

4. The combination with the front and rear axles, the motor and the frame having the corner-pieces and the tube rigidly attached to one and pivotally connected to the other of said corner-pieces, as described, of antifriction-bearings on said rear axle in recesses formed in each of said corner-pieces, and a body-spring seat centrally located on each of said corner-pieces over said antifriction-bearings, said bearings being inclined toward each other, and means to tighten and adjust said bearings and tube, substantially as specified.

5. The combination with the front and rear axles and side bars flexibly connected to said front axle, and a motor, of corner-pieces through which the rear axle extends, one of which carries said motor in connection with one of said side bars, and the other rigidly attached to the other side bar, and the tube rigidly attached to said motor-carrying corner-piece and extending to and pivotally connected with the other corner-piece, supporting and holding-down springs engaging one end of said motor, said motor being pivotally connected at the other end, substantially as specified.

6. The combination with the front and rear axles and the side bars flexibly connected to the front axle and a motor connected to one of said side bars, of corner-pieces for said side bars through which the rear axle extends, to one of which said motor is rigidly attached, and a tube, also rigidly attached to said motor corner-piece, extending to and pivotally connected with the other side-bar corner-piece, said last-named corner-piece being rigidly attached to its side bar, whereby the motor-supporting corner-piece and side bar may vibrate independently of the other side bar and its corner-piece, substantially as and for the purpose specified.

7. The combination with the rear axle, of a differential gear, as described, mounted on said axle and adjacent to one of the rear wheels of the machine, one bevel-gear of said differential gear being keyed to said axle and the other bevel-gear of said differential being attached to said rear wheel, and a spring-supported motor pivoted to said axle having a driving-pinion for said differential gear, and a casing for said gears attached to the motor and its support, whereby said casing and pinion, under the vibration of the motor caused by uneven roads, are retained in their relative position, the pinion in proper mesh with said gear and the rear wheels of the machine operate independently of each other, substantially as specified.

8. The combination of the frame consisting of the front axle, the motor-carrying side bar, the motor and body supporting corner-piece with the rigidly-attached cross-tube, the opposite side bar and its body-supporting corner-piece pivotally connected to said tube, and the revolving rear axle journaled in said corner-pieces, said side bars being flexibly connected to the front axle and pivotally connected to the rear axle, substantially as and for the purpose specified.

9. The combination of the frame consisting of the front axle, the motor-carrying side bar, the motor and body supporting corner-piece with the rigidly-attached cross-tube, the opposite side bar and its body-supporting corner-piece pivotally connected to said tube, and the revolving rear axle journaled in said corner-pieces, said side bars being flexibly connected to the front axle and pivotally connected to the rear axle, and said motor being held in its normal position by holding-down and supporting springs, as described, whereby the motor vibrates independently of the vibration of its side bar, substantially as specified.

10. The combination with the front and rear axles, of side bars flexibly connected with said front axle and pivotally connected with said rear axle, said side bars also being pivotally connected, at their rear ends, with each other, by a tube through which said rear axle extends, substantially as specified.

11. The combination with the front and rear axles, of the side bars flexibly connected with said front axle and pivotally connected with said rear axle, said side bars also being pivotally connected, at their rear ends, with each other, independent of the rear axle, and a motor carried by one of said side bars and said pivoted connection, substantially as specified.

12. The combination with the front and rear axles, side bars flexibly connected with said front axle, and a motor, of corner-pieces pivoted to said rear axle, one of which carries said motor in connection with one of said side bars, and the other rigidly attached to the other side bar, said corner-pieces being pivotally connected with each other, independent of the rear axle substantially as specified.

13. The combination with the front and rear axles and side bars flexibly connected with said front axle, and a motor, of corner-pieces through which the rear axle extends, one of which carries said motor in connection with one of said side bars, said corner-pieces being pivotally connected, independent of the rear axle, supporting and holding-down springs engaging one end of said motor, said motor being pivotally connected at the other end, substantially as specified.

704,810. MECHANISM FOR CONVERTING ROTARY INTO RECIPROCATORY MOTION. BRADFORD H. LOCKE, Denver, Colo. Filed May 8, 1901. Renewed Jan. 27, 1902. Serial No. 91,409. (No model.)

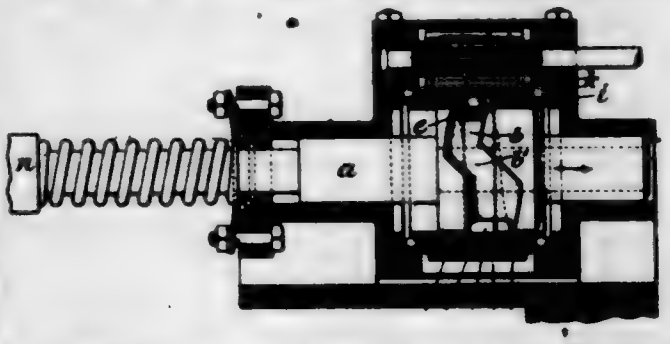

Claim.—1. A device for converting rotary into reciprocatory motion, comprising a sleeve, a shaft passing freely through the sleeve, one of said parts being arranged to rotate and the other of said parts being arranged to reciprocate, one of said parts having an inclined or spiral shoulder and the other of said parts having an annular shoulder, a rolling coupler for said parts engaging said shoulders to cause longitudinal movement of the reciprocating part in one direction, and a traveler having fric-

tional engagement with the rotating part and coming in contact with said coupler to cause the same to revolve with the rotating part.

2. A device for converting rotary into reciprocatory motion, comprising a sleeve, a shaft passing through the sleeve, one of said parts being arranged to rotate and the other of said parts being arranged to reciprocate, one of said parts having an inclined or spiral shoulder and the other of said parts having an annular shoulder, a rolling coupler for said parts engaging said shoulders to cause longitudinal movement of the reciprocating part in one direction, and a partial ring having frictional engagement with the rotating part and coming in contact with said coupler to cause same to revolve with the rotating part.

3. A device for converting rotary into reciprocatory motion, comprising a sleeve having an annular groove, a shaft passing freely through the sleeve and having an inclined or spiral shoulder, a rolling coupler for said sleeve and shaft engaging said groove and said shoulder, and a partial ring in said annular groove having frictional engagement with the walls thereof and coming in contact with said coupler to cause the same to revolve with said sleeve.

704,811. **TROUSERS-FORMER.** LOUIS F. ANDERSON, Quincy, Ill. Filed Oct. 29, 1901. Serial No. 80,422. (No model.)

Claim.—1. A trousers-shaper for insertion into a trousers-leg, comprising a front shank having a V-shaped outer side for engaging the front of the trousers-leg, a rear shank provided with an adjustable bar having a V-shaped outer side for engaging the rear of the trousers-leg, and means for adjustably connecting the shanks with each other to move the front shank and the bar of the rear shank firmly in engagement with the trousers-leg, as set forth.

2. A trousers-shaper for insertion into a trousers-leg, comprising a front shank having its outer side V-shaped to firmly engage the front of the trousers-leg, a rear shank, a crease-bar movably mounted on the rear shank and adapted to engage the rear of the trousers-leg, means for adjusting the crease-bar, to and from the shank and holding it in the adjusted position, and means for connecting the shanks with each other, as set forth.

3. A trousers-shaper for insertion in a trousers-leg, comprising a front shank for engaging the front of the trousers-leg, a rear shank for engaging the rear of the trousers-leg, and means for adjustably connecting the ends of the shanks with each other, each of the said means comprising brackets detachably and adjustably secured to the ends of the shanks to extend inwardly toward each other and each provided with a nut at its end, and a right and left hand screw-rod working in the nuts of the brackets, as set forth.

4. In a trousers-shaper, the combination with shanks adjustably connected together of a crease-bar movably mounted on one of the shanks, and means for adjusting the crease-bar toward and from the shank and holding it in the adjusted position, as set forth.

5. A trousers-shaper, comprising a front shank made in sections adapted to be folded, a rear shank made in sections and adapted to be folded, a crease-bar adjustably secured to the rear shank, means for adjustably connecting the shanks with each other and comprising removable brackets on the ends of the shanks, and a right and left hand screw-rod for engaging each pair of brackets at each end of the device, as set forth.

6. In a trousers-shaper, the combination with two members adjustably connected together, of a crease-bar having its ends engaging the rear member, and screws carried by the rear member intermediate of its ends and engaging the said bar, as set forth.

7. In a trousers-stretcher, the combination with two members adjustably connected together, of a crease-bar having one end loosely engaging the rear member and its other end adjustably secured to the said member, and means carried by said member intermediate of its ends for engaging said bar, as set forth.

8. In a trousers-shaper, the combination with two members adjustably connected together, of a crease-bar having a pin at one end loosely engaging the rear member and provided at its other end with a screw-rod working in an opening in the rear member, and engaged by a nut in said rear member, a plurality of screw-rods mounted in the rear member intermediate of its ends and engaging the said bar, and nuts in the member for adjusting said screw-rods, as set forth.

9. A trousers-shaper, comprising a front and rear shank, each formed of hinged sections, the front shank having a V-shaped outer edge, means for adjustably connecting the ends of the shanks together, a crease-bar having a V-shaped outer edge and movably mounted on the rear shank, and means for adjusting the crease-bar toward and from the shank and holding it in the adjusted position, as set forth.

704,812. **DASHBOARD.** GLENN C. BURRELL, Hartford, Ohio. Filed Dec. 2, 1901. Serial No. 84,428. (No model.)

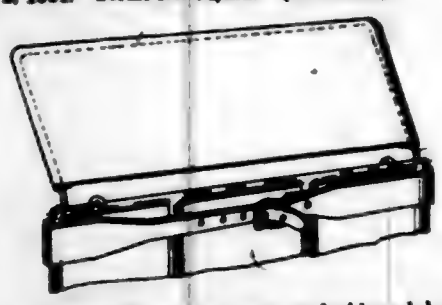

Claim.—1. A removable supplementary dashboard, having the angular elastic wire frame terminating in angular bracing extensions, the covering, and the fastening-straps connected to the bracing extensions, substantially as specified.

2. The combination with a fixed dashboard, of the removable supplemental dashboard consisting of the wire frame open at one side, its covering, and the securing-strap connected to the end portions of said frame, substantially as specified.

704,818. **SPRING-CUSHIONING DEVICE.** CLARENCE P. BYRNES, Pittsburg, Pa. Filed Mar. 5, 1901. Serial No. 49,915. (No model.)

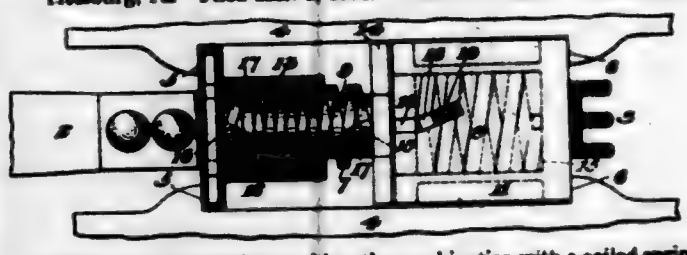

Claim.—1. In a spring-cushion, the combination with a coiled spring, of mechanism for changing the diameter of at least a part of the spring, and a friction device of which the spring is a member, said friction device being brought into action by changing the diameter of the spring; substantially as described.

2. In a spring-cushion, a coiled spring, a friction-surface adjacent thereto, and a connection with the compressing member for the spring arranged to change the diameter of the spring and force a friction device into contact with its coacting surface; substantially as described.

3. In a spring-cushion, a spiral spring, a friction-surface adjacent thereto, an endwise-movable member, and a connection between said member and the spring arranged to change the diameter of the spring and a friction-device arranged to be forced against the said friction-surface by the spring when its diameter is changed; substantially as described.

4. In a spring-cushion, a coiled spring, a diameter-changing device engaging the spring, and a friction-surface arranged to frictionally contact with the spring when its diameter is changed; substantially as described.

5. In a spring-cushion, a coiled spring arranged to force friction-sur-

faces together by changing its diameter, and mechanism for changing its diameter during at least one stroke thereof; substantially as described.

6. A spring-cushion containing a coiled spring, and an inner barrel, and mechanism for contracting the spring into frictional contact with said barrel as it is compressed; substantially as described.

7. A spring-cushion containing a spring, and an outer friction-surface, and mechanism for expanding the spring on at least one stroke thereof and forcing a friction device against such surface; substantially as described.

8. A spring-cushion containing a spiral spring, a friction device arranged to be brought into action by change in diameter of the spring, and a slot-and-lug connection arranged to change the diameter of the spring upon at least one stroke thereof; substantially as described.

9. In a spring-cushion, an armor-clad spring forming one member of a friction device; substantially as described.

10. In a spring-cushion, a spiral spring, mechanism for holding the same against rotation, a friction device arranged to frictionally engage the outer faces of the spring-coils, and mechanism for actuating the friction device during at least one stroke of the spring; substantially as described.

11. In a spring-cushion, a coiled spring, mechanism for preventing rotation thereof, mechanism for changing the diameter of the spring during at least one stroke thereof, and a friction device arranged to be brought into action by changing the diameter of the spring; substantially as described.

12. In a spring-cushion, a spring forming one member of a friction device, mechanism for changing the diameter of the spring, and thereby actuating the friction device during a stroke of the spring in one direction, and mechanism for reducing the amount of friction during the stroke in the opposite direction; substantially as described.

13. In a spring-cushion, a coiled spring, mechanism for changing the diameter of the same, and a friction device arranged to engage the outer faces of the coils on the recoil-stroke, and brought into action by the change in diameter; substantially as described.

14. A spring-cushion containing a coiled spring forming one member of a friction device, and mechanism for actuating the friction device during the recoil only of the spring; substantially as described.

15. In a spring-cushion a coiled spring arranged to force friction-surfaces together by a change in its diameter, and mechanism for changing the length of the spring and simultaneously changing its diameter; substantially as described.

16. In a spring-cushion, a coiled spring, means for changing the length of the spring, mechanism for changing the diameter of the spring on its recoil-stroke, and a friction device arranged to be brought into action by said change in diameter; substantially as described.

17. A spring-cushion having a coiled spring, a friction-surface extending longitudinally of the spring-axis, and mechanism for changing the diameter of the spring and thereby forcing a friction device against said surface; substantially as described.

18. A spring-cushion containing a coiled spring, a friction device of which the spring forms a member, and means for actuating the friction device on one stroke only of the spring, the other stroke being substantially free and unretarded; substantially as described.

19. A spring-cushion containing a coiled spring concentric with the axis of the cushion, a friction device of which the spring forms a member, mechanism for compressing the spring and thereby actuating the friction device, and means for increasing the amount of friction of the recoil-stroke over that of the compression-stroke; substantially as described.

20. A spring-cushion containing a coiled spring, a friction device of which the spring forms a member, mechanism for compressing the spring, and mechanism for simultaneously actuating the friction device, the amount of friction at any point of compression of the spring being independent of the endwise pressure exerted by the spring; substantially as described.

21. A spring-cushion containing a coiled spring, mechanism for compressing the spring, means for varying the diameter of the spring at one point of the compression from that at another point of compression, and a friction device brought into action by the change in diameter; substantially as described.

22. A draft-rigging containing a spring, a friction device arranged to engage the outer faces of the spring-coils, and mechanism for changing the length of the spring and actuating the friction device on both the pulling and buffing strains; substantially as described.

23. A draft-rigging containing a coiled spring, means for compressing the spring, a friction device extending longitudinally of the spring, and located exterior to its coils, and mechanism for actuating simultaneously the spring and friction device on both the pulling and buffing strain; substantially as described.

24. A draft-rigging containing a spiral spring, a friction device arranged to be actuated by changing the diameter of the spring, and means for actuating the spring and changing its diameter on either a pulling or a buffing strain; substantially as described.

25. A spring-cushion containing a spiral spring forming a member of the friction device, and a protective cover movable with said spring; substantially as described.

26. A spring-cushion containing a spiral spring, a friction member arranged concentrically with the spring, and an incline arranged to force one of said members toward the other; substantially as described.

27. A draft-rigging having a spiral spring concentric with its axis, a friction member arranged concentric with the spring, and inclines arranged to force one of said parts toward the other on both buffing and pulling strains; substantially as described.

28. A draft-rigging having a spiral spring concentric with its axis, a friction device within and at least partially inclosed by said spring, followers arranged to compress the spring on both buffing and pulling strains, and connections independent of the endwise pressure of the spring, said connections being arranged to actuate the said friction device simultaneously with compression of the spring in either direction; substantially as described.

29. A draft-rigging having a spiral spring, a friction device within the spring, and followers arranged to compress the spring on both buffing and pulling strains, and mechanism actuated by said followers and independent of the endwise pressure of the spring, said mechanism arranged to simultaneously actuate the friction device on compression of the spring in either buffing or pulling strains; substantially as described.

30. A spring-cushion having a coiled spring interposed between the elements to be cushioned, a friction device arranged to contact frictionally with the spring, and an incline arranged to force one of said parts toward the other; substantially as described.

31. A draft-rigging having a coiled spring, a friction device arranged to frictionally contact with the spring, and inclines arranged to force one of said parts toward the other on both buffing and pulling strains; substantially as described.

32. A draft-rigging containing a pair of spring-cushions, each containing a coiled spring, a friction device arranged to frictionally contact therewith, an incline arranged to force the parts of one cushion toward each other during buffing strain, and an incline arranged to force the parts of the other cushion toward each other during pulling strain; substantially as described.

33. A draft-rigging having a pair of spring-cushions each containing a spring concentric with the axis, and friction elements, one arranged around or including the other, an incline in one cushion arranged to move one of its friction elements radially during buffing, an incline for the other cushion arranged to move one of its friction elements radially during pulling, and followers for compressing the springs; substantially as described.

34. A spring-cushion having friction elements, one arranged around or including the other, one of said elements being concentric with the axis of the cushion, a spiral spring within the cushion, a follower arranged to compress the spring, and an incline arranged to move at least one of the friction elements radially when the spring is compressed by the follower; substantially as described.

35. A spring-cushion containing friction elements, one arranged around or including the other, at least one of said elements being concentric with the axis of the cushion, a spiral spring concentric with the said axis and arranged between the follower and one of the friction elements, and an incline arranged to move at least one of the friction elements radially when the spring is compressed; substantially as described.

36. A spring-cushion having a central longitudinal friction element, another friction element arranged around or including the same, and inclines arranged to force one of said elements radially; substantially as described.

37. A draft-rigging having a longitudinal friction element central of its axis, another friction element located around or including the first, and inclines arranged to force one of said elements radially on both buffing and pulling strains; substantially as described.

38. A spring-cushion having friction elements, one located around or including the other, one of said elements being concentric with the axis of the cushion, a spiral spring also concentric with the axis, and an incline arranged to move one of the friction devices radially; substantially as described.

39. A draft-rigging having friction elements, one located around or including the other, one of said elements being concentric with the axis of the rigging, a spiral spring also concentric with the axis, and inclines arranged to move at least one of the friction devices radially on both buffing and pulling strains; substantially as described.

40. A spring-cushion having friction elements, one located around or including the other, one of said elements being concentric with the axis of the cushion, an incline arranged to move one of the friction devices radially, a coil-spring concentric with the axis of the cushion, and a follower arranged to exert a force through the spring to actuate the friction device; substantially as described.

41. A spring-cushion having a central longitudinal stem, a spiral

spring around the stem, and forming part of an including friction device, and an incline arranged to force said friction device toward the axis of the draft-rigging; substantially as described.

42. A draft-rigging having a central longitudinal friction element, another friction element arranged around or including the same, mechanism for moving said elements longitudinally of each other, and an incline arranged to force at least one of the friction elements radially in contact with the other; substantially as described.

43. A draft-rigging having a longitudinal frictional element substantially concentric with the axis of the rigging, another friction element also concentrically arranged, one of said elements being arranged around or including the other, one of the elements being radially movable, and an incline arranged to force the movable friction element in a radial direction; substantially as described.

44. A draft-rigging having a longitudinal frictional element concentric with its axis, another friction element also concentrically arranged, one of said elements being located around or including the other, an incline arranged to move at least one of the elements in a radial direction, and a coiled spring forming a part of said system; substantially as described.

45. A draft-rigging having a main concentric coiled spring, a friction system arranged to be brought into action when said spring is compressed on buffing or pulling strain, and a device actuated by the pressure of said main draft-rigging spring, and arranged to relieve the friction device; substantially as described.

46. A draft-rigging containing a main coiled spring, and a friction system having moving parts, the said spring having a connection with one of the parts arranged to relieve the friction; substantially as described.

47. A spring-cushion containing a coiled spring, a friction device arranged to act simultaneously with the spring, and mechanism for increasing the amount of friction on the recoil-stroke over that of the strokes caused by external pressure applied to the spring; substantially as described.

48. A spring-cushion containing a main resisting coiled spring, and having also a friction system with moving parts arranged to act simultaneously with the spring, and a relief device for the friction system, said device being actuated by the endwise pressure of the main coiled spring; substantially as described.

704,814. DRYING-KILN. ARMER CAREY, Cairo, Ill. Filed Dec. 28, 1901. Serial No. 87,561. (No model.)

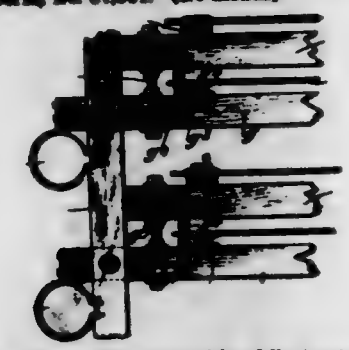

Claim.—1. The combination with a kiln having a series of openings in its end walls, of a plurality of horizontal shafts mounted adjacent to each end wall of the kiln, belt-wheels on the several shafts, carrier-belts passing around said belt-wheels, a vertical shaft at the discharge end of the kiln and geared with each of the horizontal shafts at that end of the kiln, clutches for connecting and disconnecting the gearing between said horizontal and vertical shafts, and operating means connected with each of the clutches and extending to the feed end of the kiln, as set forth.

2. The combination with a kiln having a series of openings in its end walls, of a plurality of horizontal shafts mounted adjacent to each end wall of the kiln, the shafts at the feed end being outside of the end wall and those at the discharge end being within the wall, sprocket-wheels on the several shafts, carrier-belts passing around said sprocket-wheels, a vertical shaft geared with each of the horizontal shafts at that end of the kiln, clutches for connecting and disconnecting the gearing between the said horizontal and vertical shafts, and operating-cords connected with the clutches and extending to the feed end of the kiln, a drive-shaft having a clutch connection with the vertical shaft, and means for operating said clutch, said means extending to the feed end of the kiln, as set forth.

3. A drying-kiln, having a plurality of endless belts running horizontally therethrough to receive the material at one end of the kiln and discharge it at the other end, and guide-racks for said belts, said guide-racks comprising upper and lower transverse beams, adjustable, relatively one to the other, and longitudinal track-rails on the said beams for the upper and lower runs of the carrier-belts, as set forth.

4. A drying-kiln, having a plurality of endless belts running horizontally therethrough to receive the material at one end of the kiln and discharge it at the other, and guide-racks for said belts, said guide-racks comprising upper and lower transverse beams respectively for the upper and lower runs of the carrier-belts, the upper transverse beams being adjustably sustained on the lower beams.

5. A drying-kiln, having a plurality of endless belts running horizontally therethrough to receive the material at one end of the kiln and discharge it at the other, and guide-racks for said belts, said guide-racks comprising upper and lower transverse beams and longitudinal track-rails on the said beams for the upper and lower runs of the carrier-belts, said beams having longitudinal guide-cleats on their adjacent faces, between which cleats the lower runs of the carrier-belts pass.

6. A drying-kiln, having a plurality of endless belts running horizontally therethrough to receive the material at one end of the kiln and discharge it at the other, and guide-racks for said belts, said guide-racks comprising upper and lower transverse beams and longitudinal track-rails on the beams for the upper and lower runs of the carrier-belts, the said transverse beams having longitudinal guide-cleats on their opposing faces and the carrier-belts being formed of chains with cross-bars connecting them, the chains running on the rails.

7. A drying-kiln, having means for carrying the material, and air-circulating devices in the kiln, comprising vertical conduits with horizontal distributing-tubes passing therefrom, the distributing-tubes having longitudinal openings along their inner sides.

704,815. FILTER. JULES E. CHARCH, Paris, France. Filed Dec. 11, 1900. Serial No. 39,599. (No model.)

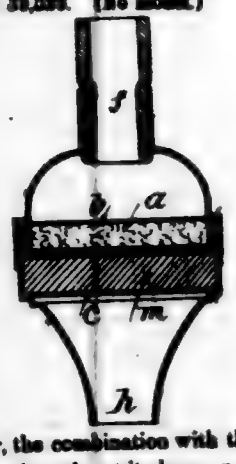

Claim.—In a filter, the combination with the casing, the lower section thereof having an outlet-tube at its lower portion, the upper portion of the section provided with a vertical upwardly-extended right-angular surrounding flange, a perforated grating mounted on one portion of said flange with a suitable packing arranged above the same and coacting therewith, a rubber ring interposed between one portion of the packing and the upwardly-extended wall of said lower section, and a perforated grating mounted on the surrounding upper-edge portion of said ring and the upper packing; of the upper section of the casing having an inlet-tube in line with the outlet-tube and the lower portion of said upper section having a downwardly-extended right-angular surrounding flange to coact with the vertical upwardly-extended flange and with the upper grating on the ring and upper packing whereby to press and hold the packings and gratings between the two sections of the casing, substantially as specified.

704,816. SHADE-FIXTURE. EMILE L. A. CHERAU, East Orange, N. J. Filed May 31, 1901. Serial No. 62,472. (No model.)

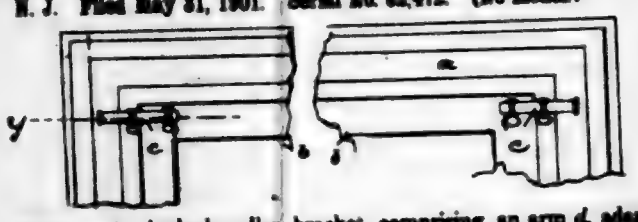

Claim.—1. A shade-roller bracket, comprising an arm *d*, adapted to project from the window-frame and providing a plate *f*, adapted to lie parallel to the window and having lugs at its upper and lower edges, a cam-roller pivoted in said lugs and forming with the plate *f*, a slideway, a slide *g*, in said slideway having one of its ends bent forward, perforated, and forming a shade-roller bearing, and an independently-adjustable shade-roller supported adjustably on the opposite end of the slide.

2. In a shade-roller bracket, the combination of a sheet-metal arm *d*, having its end bent at right angles and the opposite margins of said bent portions provided with forwardly-projecting lugs perforated to provide bearings to receive a cam-roller, said cam-roller pivoted in said lugs and having a finger-piece at one end, a strip of sheet metal adapted to slide between said cam-roller and bent portion of the stem *d*, and having one end bent and perforated to receive a shade-roller pivot, and an independ-

cast sheet-metal shade-roller support projecting from the sliding strip on the opposite side from the integral arm, said independent arm having a portion bent at right angles to lie against the sliding strip and provided with lugs reaching past the edges of said strip, and a cam-roller pivoted in said last-mentioned lugs.

704,817. RAILWAY-JOINT. SYLVESTER H. DEIHL, Altoona, Pa. Filed Jan. 7, 1902. Serial No. 88,709. (No model.)

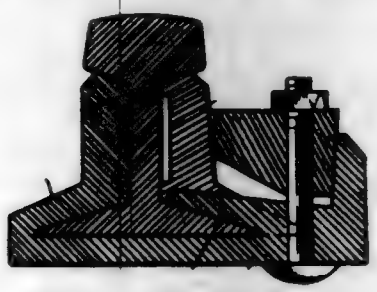

Claim.—A device of the class described comprising a base having flanges at its side edges, one of said flanges including a lower portion at an acute angle to the base and an upper portion at a right angle to the base, a lip on the base adjacent to the opposite flange, a plate including a lower portion adapted to lie flush with the under face of the lip and an upper portion for engagement with the web of a rail, said lower portion having a recess to receive the lip, a wedge-block adapted to engage between the plate and the adjacent flange of the base, and a bolt passed through the base and block and having a nut for engagement with the block to draw it downwardly, between the plate and flange.

704,818. TEMPERATURE-EXCHANGING APPARATUS. JOSEPH DESHAYOUX, Paris, France, assignor to Compagnie Générale Adroky-draulique, Paris, France. Filed Dec. 6, 1901. Serial No. 84,907. (No model.)

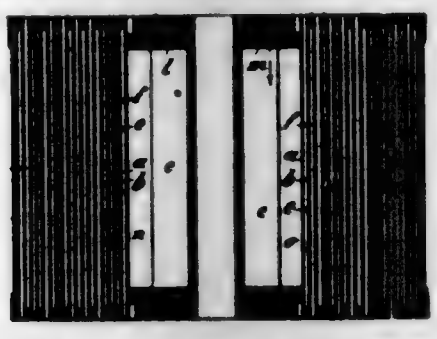

Claim.—1. A temperature-exchanging apparatus, comprising a cylindrical member provided with two non-communicating spirally-disposed passages, each of a width substantially commensurate with the length of said cylindrical member, one of said passages being normally open at one end of said cylindrical member and the other of said passages being normally open at the other end of said cylindrical member, detachable plates for engaging the ends of said cylindrical members, thereby closing said passages at said ends, and means for admitting fluids to said passages and and for permitting the escape of the same therefrom.

2. A temperature-exchanging device, comprising a cylindrical member provided with a plurality of spirally-disposed non-communicating passages, each of a width substantially commensurate with the length of said cylindrical member, one of said passages being normally open throughout its entire length at one end of said cylindrical member and the other of said passages being normally open throughout its entire length at the other end of said cylindrical member, detachable plates for engaging the ends of said cylindrical members, thereby closing said passages at said ends, and means for admitting fluids to said passages and for permitting the escape of the same.

3. A temperature-exchanging device, comprising a cylindrical member provided with a plurality of spirally-disposed non-communicating passages, each being of a width substantially commensurate with the length of said cylindrical member, one of said passages being normally open throughout its entire length at one end of said cylindrical member, and the other of said passages being normally open throughout its entire length at the other end of said cylindrical member, detachable plates for engaging the ends of said cylindrical members thereby and closing said passages at said ends, means for admitting fluids to said passages and for permitting the escape of the same, and a substantially cylindrical core coaxial with said cylindrical member and provided with two tubular passages parallel with the axis of said member, said tubular passages communicating separately with said spirally-disposed passages.

704,819. TOOL. JAMES W. EAST, Tate Springs, Tenn. Filed Apr. 14, 1902. Serial No. 102,795. (No model.)

Claim.—1. A tool-head having a handle-receiving eye and having projecting inside such eye longitudinal wedge-shaped fins tapering from one end of the eye toward the other, substantially as described.

2. A tool-head having a handle-receiving eye and having projecting inside such eye longitudinal wedge-shaped fins, substantially as specified.

3. A tool-head having a handle-receiving eye and having projecting inside such eye longitudinal wedge-shaped fins tapering from one end of the eye toward the other, in combination with a handle adapted to be forced into said eye and have its texture or fiber spread by the wedge-shaped fins to increase the frictional contact of the inclosed surface of the handle with the wall of the eye, substantially as and for the purpose set forth.

704,820. BOTTLE-STOPPER. ALEXANDER ERLUND, Attleboro, Mass. Filed Jan. 20, 1902. Serial No. 91,758. (No model.)

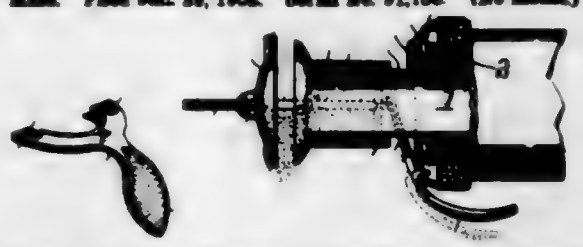

Claim.—1. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-cap pocket.

2. A bottle-stopper comprising a stopper-tube having a pocket formed at its upper end; a stopper-cap having a pocket formed on its inner face; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

3. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; means for closing said stopper-cap; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-cap pocket.

4. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; automatic means for closing said stopper-cap; means for moving said cap to open position; and means for vibrating said cap to discharge the contents of the stopper-cap pocket.

5. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; a spring for automatically closing said cap; an actuating-lever for moving said cap to open position; and means for vibrating said cap to discharge the contents of said stopper-cap pocket.

6. A bottle-stopper comprising a stopper-cap having a pocket formed on its inner face; a spring for closing said stopper-cap; an actuating-lever for moving said cap to open position; and means, carried by said lever, for vibrating said cap to discharge the contents of the stopper-cap pocket.

7. A bottle-stopper comprising a stopper-cap having a concave pocket formed on its inner face; a spring for closing said stopper-cap; an actuating-lever for moving said cap to open position; and means, carried by said lever, for vibrating said cap to discharge the contents of the stopper-cap pocket.

8. A bottle-stopper comprising a pivotally-pendent stopper-cap having a concave pocket formed on its inner face; a spring for closing said stopper-cap; an actuating-lever for moving said cap to open position; and means, carried by said lever, for vibrating said pivotally-pendent cap and discharging the contents of the stopper-cap pocket.

9. A bottle-stopper comprising a stopper-tube having a circumferential pocket formed at its upper end; a stopper-cap having a pocket formed on its inner face seated on said stopper-tube; means for moving said stopper-cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pocket.

10. A bottle-stopper comprising a stopper-tube having a concave circumferential pocket formed at its upper end; a stopper-cap having a

concave pocket formed on its inner face seated on said stopper-tube; means for moving said stopper-cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

11. A bottle-stopper comprising a stopper-tube having a concave circumferential pocket formed at its upper end; a pivotally-pendent stopper-cap having a concave pocket formed on its inner face seated on said stopper-tube; means for moving said stopper-cap to open position; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

12. A bottle-stopper comprising a stopper-tube having an outwardly-projecting concave flange at its upper end; a stopper-cap having a concave inner face seated on said flange; means for holding said cap normally in closed position; means for opening said cap; and means for vibrating said cap to discharge the contents of the stopper-tube and stopper-cap pockets.

13. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; and a stopper-cap pivotally pendent from said yoke.

14. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; a stopper-cap having a pocket formed on its inner face supported by said yoke; means for holding said cap normally in closed position; means for moving said sleeve and yoke and opening said cap; and means for vibrating said cap to discharge the contents of the pocket.

15. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; a stopper-cap having a concave pocket formed on its inner face pivotally pendent from said yoke; automatic means for holding said cap normally closed; means for moving said sleeve and yoke and opening said cap; and means for vibrating said cap to discharge the contents of the pocket.

16. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke carried by said sleeve; a stopper-cap pivotally pendent from said yoke to close said tube; and a stopper-cap-actuating lever pivoted to said tube and engaging said yoke.

17. A bottle-stopper comprising a movable supporting-yoke; a stopper-cap pivotally pendent from said yoke; and an actuating-lever engaging said movable yoke to open said stopper-cap.

18. A bottle-stopper comprising a stopper-tube; a sliding sleeve mounted thereon; a supporting-yoke the limbs of which are secured to said sleeve; a stopper-cap pivotally pendent from said yoke; a spring normally holding said sleeve, yoke, and cap in closed position; and a forked stopper-actuating lever pivoted to said stopper-tube and engaging the limbs of said yoke.

19. A bottle-stopper comprising a stopper-tube having a concave flange to form a circumferential pocket at its upper end; a sliding sleeve mounted on said tube; a supporting-yoke the limbs of which are secured to said sleeve; a stopper-cap having a concave inner face seated on said stopper-tube flange; a spring housed between said tube and sleeve to hold said cap normally closed; and a forked stopper-actuating and stopper-vibrating lever having serrated ends engaging said supporting-yoke.

704,821. PLUG AND COUPLING FOR WATER OR STEAM PIPES. ISAAC H. GLAUBER and JOSEPH H. GLAUBER, Cleveland, Ohio. Filed Jan 15, 1902. Serial No. 89,894. (No model.)

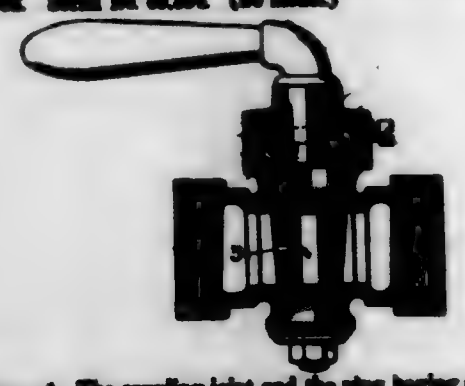

Claim.—1. The coupling-joint and the plug having an integral cap overhanging the plug-seat, a collar within said cap constructed to limit the rotation of the plug, a stop on the plug to engage said collar and means to lock said collar rotatably to said plug, substantially as described.

2. The coupling-joint and the plug, a collar engaged to rotate with the plug and the said collar and joint constructed to limit the rotation of the plug and the said plug having an integral cap, substantially as described.

3. The coupling-joint having a plug-seat and a shouldered projection at the top of said seat, a plug having an integral cap about its top and a collar within the cap constructed with a recess to engage said shouldered projection, and a pin through said cap and plug to engage said collar and limit the rotation of the plug, substantially as described.

4. The coupling-joint having a seat for a plug and an upward projection at the top of said seat, a plug in said joint and a free collar about the top thereof having a recess corresponding to said projection and provided with a notch on its top, and a threaded stop extending through the plug into engagement with said notch, substantially as described.

5. The coupling-joint and the plug therein, a collar constructed to have a limited rotation on said joint and having a set of notches on its top, and a screw engaged through the plug in one of said notches, and the said plug having an integral cap overlapping said collar, substantially as described.

704,822. COTTON-CHOPPER AND CLOD-CRUSHER. MARTIN B. GEORGE, Vicksburg, Miss. Filed Oct. 3, 1901. Serial No. 77,431. (No model.)

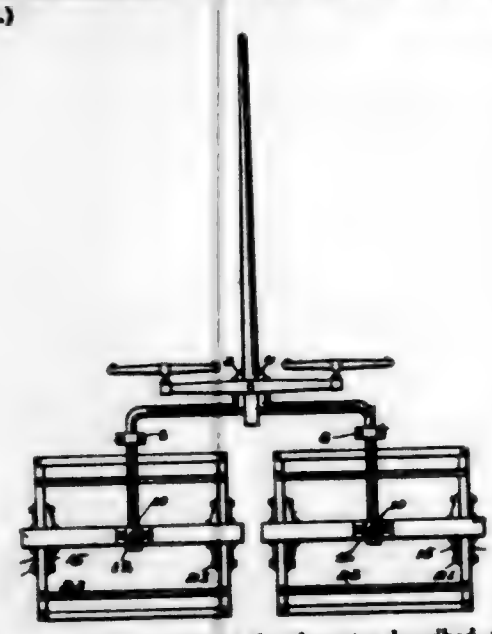

Claim.—1. In a machine of the character described, the combination with a hub-plate, a central annular lug integral with said plate, pins secured to the plate a short distance from the periphery of said lug, of spring-spokes bent at right angles at their lower ends, a loop formed in the extreme lower end of said spokes, whereby the spokes are secured to said pins.

2. In a device of the character described, the combination with a hub-plate, a central annular lug integral with said plate, pins secured to said plate a short distance from the periphery of the central annular lug, spring-spokes bent at right angles near their lower ends and secured at their extreme lower end to said pins, whereby the right-angled portion rests upon the periphery of the central annular lug, a second hub-plate bolted to the first-named hub-plate, and flat resilient steel knives secured to the outer ends of said spokes.

704,823. DRAPER. WALTER T. GORDON, Juniper, Oreg. Filed Apr. 22, 1902. Serial No. 104,103. (No model.)

Claim.—1. The combination of a bolt, a slot arranged on the bolt, and having an aperture extending from its outer to its inner side, and tapered or reduced in size to said inner side, a correspondingly-tapered connecting device arranged in said aperture, and extending throughout the thickness of the slat, and secured at its inner end to the bolt.

2. The combination of a bolt, a slat arranged on the bolt, and having an aperture extending from its outer to its inner side, and tapered or reduced in size to said inner side, and the connection comprising the hollow member exteriorly tapered to its inner end and open at its inner and outer ends; said hollow member being arranged in the said aperture of the slat and extending throughout the thickness of the latter, and a rivet having a head disposed at the inner side of the bolt, and a stem passed through the bolt and into the inner end of the hollow member, and secured in said inner end of the hollow member.

3. The combination in a draper or the like, of a run or runs, a bolt, slats arranged on the bolt so as to travel against the run or runs, and having apertures tapered or reduced in diameter toward the bolt, and correspondingly-tapered connecting devices arranged in said apertures of the slats and secured to the bolt.

704,824. MUFFLE-FURNACE FOR IRONS. HUGO KRETSCHY, Frankfort-on-the-Main, Germany. Filed Apr. 30, 1902. Serial No. 105,162. (No model.)

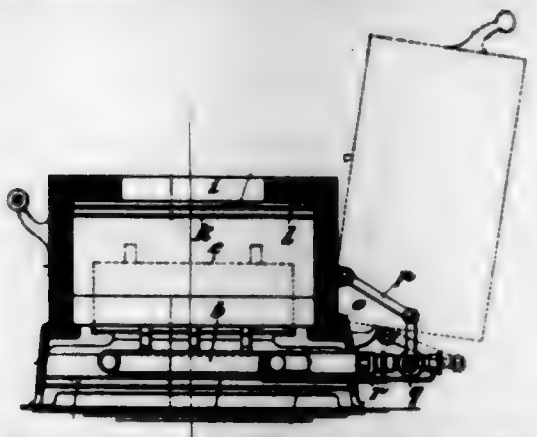

Claim.—1. A muffle-furnace comprising a muffle providing a combustion-chamber, a guiding-plate disposed within the muffle and spaced from the walls thereof; said guiding-plate being approximately arch-shaped in cross-section and provided with restricted outlet-apertures in the crown thereof, a burner situated underneath said guiding-plate, and means for supporting the article to be heated between the burner and the guiding-plate.

2. A muffle-furnace comprising a muffle having an aperture in the crown thereof and providing a combustion-chamber, an arched guiding-plate provided with restricted outlet-apertures in the crown thereof and disposed within the muffle and spaced from the walls thereof, a burner situated underneath said guiding-plate, means for supporting the article to be heated between the burner and the guiding-plate, and a baffle-plate situated between the guiding-plate and the aperture in the muffle.

3. A muffle-furnace comprising a muffle providing a combustion-chamber, an arched guiding-plate provided with restricted apertures in the crown thereof and disposed within the muffle and spaced from the walls thereof, a burner situated underneath said guiding-plate, means for supporting the article to be heated between the burner and the guiding-plate, a shutting-off plate having an aperture and located underneath the burner, and a guiding-plate underneath the shutting-off plate.

4. A muffle-furnace comprising a hinged muffle providing a combustion-chamber, a burner situated in the muffle, a supply-pipe leading to the burner and having a valve, and means for communicating motion from the muffle to the valve in the supply-pipe; said valve being open when the muffle is in operative relation with respect to the burner and closed when the muffle is moved away from the burner.

5. A muffle-furnace comprising a hinged muffle providing a combustion-chamber, a burner situated in the muffle, a supply-pipe leading to the burner and having a valve, means for communicating motion from the muffle to the valve in the supply-pipe, and a small tube extending from the supply-pipe in rear of the valve to the burner.

704,825. RED AZO DYE. WILHELM HERBERTZ and OTTO BERNERT, Berlin, Germany, assignors to Action Gesellschaft für Anilin Fabrikation, Berlin, Germany. Filed Mar. 3, 1902. Serial No. 96,442. (Specimens.)

Claim.—1. The herein-described new azo dyestuffs which are sodium salts of acids having the formula:

$$C_6H_2\begin{cases}(1)\ OH\\(2)\ N{=}N{-}C_6H_3\\(4)\ NO_2\\(6)\ COOH\end{cases}\qquad\begin{cases}(1)\ CH_3\\(2)\ NH_2\\(4)\ NH{-}SO_2{-}C_6H_4{-}CH_3\end{cases}$$

(in which X means a substituting group, and R and R' hydrogen atoms, which may be replaced by alkyl radicals) and which are obtained by combining diazotized para-nitro-ortho-amido-salicylic acid with a para-substituted meta-amido-alphyl-sulfamid; said dyestuffs forming in the dry state reddish-brown powders, readily soluble in warm water, forming reddish-brown solutions; the aqueous solutions turning deep red on addition of caustic-soda lye and assuming a light orange-red coloration on addition of hydrochloric acid; the dyestuff dissolving readily in concentrated sulfuric acid to dark yellowish-red solutions, and in alcohol to yellowish-red solutions; the dyes producing on wool with the aid of chromium mordants yellowish-red shades of great intensity and fastness.

2. The herein-described new dyestuff, which is a sodium salt of an acid having the formula:

$$C_6H_2\begin{cases}(1)\ OH\\(2)\ N{=}N{-}C_6H_3\\(4)\ NO_2\\(6)\ COOH\end{cases}\qquad\begin{cases}(1)\ CH_3\\(2)\ NH_2\\(4)\ NH{-}SO_2{-}C_6H_4{-}CH_3\end{cases}$$

and which is obtained by combining diazotized para-nitro-ortho-amido-salicylic acid with ortho-amido-para-toluol-para-sulfamido-toluol; said dye forming in the dry state a reddish-brown powder with metallic luster, readily soluble in warm water, forming a reddish-brown solution; the aqueous solution turning deep red on addition of caustic-soda lye and assuming a light orange-red coloration on addition of hydrochloric acid; the dyestuff dissolving readily in concentrated sulfuric acid to a dark yellowish-red solution, and in alcohol to a yellowish-red solution; the dye producing on wool with the aid of chromium mordants yellowish-red shades of great intensity and fastness.

704,826. RED AZO DYE. WILHELM HERBERTZ and OTTO BERNERT, Berlin, Germany, assignors to Action Gesellschaft für Anilin Fabrikation, Berlin, Germany. Filed Mar. 3, 1902. Serial No. 96,441. (Specimens.)

Claim.—1. The herein-described new azo dyestuffs which are sodium salts of acids having the formula:

$$C_6H_2\begin{cases}(1)\ OH\\(2)\ N{=}N{-}C_6H_3\\(4)\ NO_2\\(6)\ NO_2\end{cases}\qquad\begin{cases}(1)\ CH_3\\(2)\ NH_2\\(4)\ NH{-}SO_2{-}C_6H_4{-}CH_3\end{cases}$$

(in which Y means a hydrogen atom, which may be replaced by a nitro group, X a substituting group, and R and R' hydrogen atoms which may be replaced by alkyl radicals) and which are obtained by combining the diazo compound of a nitro derivative of ortho-amidophenol with a para-substituted meta-amido-alphyl-sulfamid; said dyestuffs forming in the dry state reddish-brown powders, soluble in water to orange-red solutions; the aqueous solutions turning somewhat more yellowish on addition of caustic-soda lye and separating red precipitates on the addition of mineral acids; the dyestuffs dissolving readily in concentrated sulfuric acid to yellow solutions and in alcohol to red solutions; the dyes producing on wool with the aid of chromium mordants bordeaux-red shades of great intensity and fastness.

2. The herein-described new dyestuff which is a sodium salt of an acid having the formula:

$$C_6H_2\begin{cases}(1)\ OH\\(2)\ N{=}N{-}C_6H_3\\(4)\ NO_2\\(6)\ NO_2\end{cases}\qquad\begin{cases}(1)\ CH_3\\(2)\ NH_2\\(4)\ NH{-}SO_2{-}C_6H_4{-}CH_3\end{cases}$$

and which is obtained by combining diazotized picramic acid with ortho-amido-para-toluol-para-sulfamido-toluol; said dye forming in the dry state a reddish-brown powder, which dissolves in water to an orange-red solution; the aqueous solution turning more yellowish on addition of caustic-soda lye and separating a red precipitate on the addition of a mineral acid; the dye dissolving easily in concentrated sulfuric acid forming a yellow solution; dissolving in alcohol to a red solution; the dye producing on wool with the aid of chromium mordants intense bordeaux-red shades of great intensity and fastness.

704,827. HAT-HOOK. ROBERT W. HIGGINS, Cortland, N. Y. Filed Aug. 17, 1901. Serial No. 72,370. (No model.)

Claim.—1. A hanger formed from a single piece of wire, one end of which is formed into a closed supporting-loop and the other end is formed into a clamp having two members, one member being a figure-8-shaped clamping member and the other clamping member being the straight portion of the wire below the supporting-loop, substantially as described.

2. A hanger formed from a single piece of wire, one end of which is formed into a supporting-loop, a straight portion below the loop, and two loops in the remaining portion of the wire, one upon each side of the straight portion, the portion of wire between said two loops crossing the straight portion at an angle and forming therewith a clamp for holding the article to be supported, substantially as described.

704,828. BOTTLE-WASHING BRUSH. ROBERT HOSKINS, Brooklyn, N. Y. Filed Dec. 17, 1901. Serial No. 86,226. (No model.)

Claim.—1. A bottle-washing brush comprising a brush portion, and a curved tubular and perforated body or back adapted to move to a position out of normal while entering it in a bottle, and to move to normal

position when inserted, to engage the brush material against the inner surface of the bottle-body, substantially as specified.

2. A bottle-washing brush having a tubular curved back or body portion consisting of two sections, and a flexible connection between the sections, substantially as specified.

3. A bottle-washing brush having a tubular and perforated curved back or body portion, consisting of two sections, and a spring arranged within the sections and having one end connected to one section and the other end connected to the other section, substantially as specified.

4. A bottle-washing brush having a tubular perforated back or body portion, consisting of two sections, ferrules secured to the sections, and a spring arranged within the ferrule portions and secured thereto, substantially as specified.

5. A bottle-washing brush having a tubular perforated back or body portion, consisting of two sections, a flexible connection between the sections, and metal straps having swinging connection with one of the sections and sliding and swinging connection with the other of the sections, substantially as specified.

6. A bottle-washing brush comprising a tubular body portion open at one side, and a rubber brush seated in said opening and having shoulders for engaging against the inner surface of the body and shoulders for engaging against the outer surface of the body, substantially as specified.

704,829. METAL FRAMEWORK FOR BUILDINGS. EDWARD HUBER, Marion, and ALFRED MILLIKEN, Toledo, Ohio. Filed Mar. 4, 1902. Serial No. 96,659. (No model.)

Claim.—1. In a metal framework for buildings, blocks fitted on the sides of the girders to form supports for columns between floors, substantially as shown and described.

2. In a metal framework for buildings, blocks fitted on the sides of the girders, and projecting flanges at the extremities of said blocks to form connecting-surfaces for the supporting-columns, substantially as shown and described.

3. In a metal framework for buildings, blocks fitted on and following the contour of the girders to form supports for the columns between floors, substantially as shown and described.

4. In a metal framework for buildings, blocks fitted on and following the contour of the girders, and flanges at the extremities of the blocks to form connecting-surfaces for the supporting-columns, substantially as shown and described.

5. In a metal framework for buildings, continuous I-beam girders, columns to support said girders intermediate of their ends, and blocks to fit on each side of said girders so formed as to provide supports for the crowns and bases of said columns, substantially as shown and described.

6. In a metal framework for buildings, continuous I-beam girders, columns to support said girders intermediate of their ends, blocks to fit on each side of said girders, and projecting flanges on said blocks to form surfaces to connect with the crown or base of said columns, substantially as shown and described.

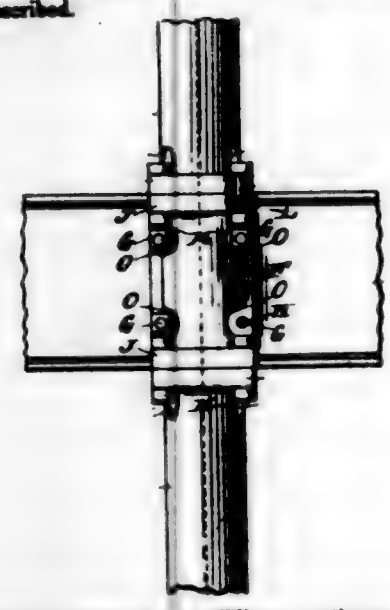

7. In a metal framework for buildings, continuous I-beam girders, blocks secured to each side of said girders, a projecting flange at each end of said block having a recess to receive the flange on one side of said I-beam, and a column secured to the flange on said block, substantially as shown and described.

8. In a metal framework for buildings, continuous I-beam girders, columns to support said girders, blocks to fit on each side of said girders shaped to represent continuations of said columns, and a projecting flange at each end of said block having a recess to receive the flange on said I-beam, the flanges on said blocks forming connecting-surfaces for said columns, substantially as shown and described.

704,880. CABLE MECHANISM FOR HAULING LOADS UP INCLINED SURFACES. WILLIAM J. JACKMAN, Cleveland, Ohio. Filed Mar. 11, 1902. Serial No. 97,707. (No model.)

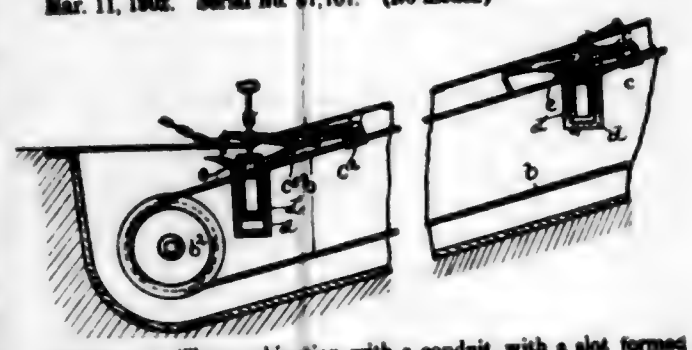

Claim.—1. The combination with a conduit, with a slot formed in its upper surface, a cable operatively mounted in said conduit, and means for operating said cable, of an arm pivotally secured on said cable, a gripping device arranged on one end of said arm, movable devices arranged within said conduit and lying without the path of said arm, means for causing said devices to come into engagement with said arm, so as to cause said gripping device to rise through the slot in said conduit, and stationary devices arranged in said conduit and lying without the path of said arm, when the said arm is in its normal position within the said conduit, and arranged to engage with said arm when said arm is in its raised position, for the purpose set forth.

2. The combination with a conduit, with a slot formed in its upper surface and extending longitudinally thereof, a cable operatively mounted in said conduit and means for operating said cable, of gripping devices permanently secured to said cable and normally lying entirely within said conduit, cam devices mounted within said conduit at predetermined points and arranged so that when the said gripping devices come in contact therewith the said gripping devices will rise through the slot in the said conduit, for the purpose set forth.

3. The combination with a conduit, with a slot formed in its upper surface and extending longitudinally thereof, a cable operatively mounted in said conduit and means for operating said cable, of gripping devices each of said gripping devices comprising a bracket extending longitudinally of the cable and rigidly secured thereto, a lever pivoted to the free end of said bracket, a hook formed on one end of said lever, and devices arranged at predetermined points within the conduit, and adapted to engage the said lever so as to cause the hook on the end thereof to rise through the slot in the said conduit, for the purpose set forth.

4. The combination with a conduit, with a slot formed in its upper surface and extending longitudinally of the said conduit, a cable operatively mounted in said conduit and means for operating said cable, of engaging or gripping devices permanently secured to said cable, each of said gripping devices comprising a bracket rigidly secured to said cable, a lever pivoted to said bracket, a hook formed on one end of said lever and a roller on the other end and cam devices arranged at predetermined points within said conduit and adapted to engage the said roller so as to depress the roller-carrying end of the lever and elevate the hook-carrying end of the said lever, substantially as described and for the purpose set forth.

5. The combination with a conduit, with a slot formed in its upper surface and extending longitudinally thereof, a cable operatively mounted in said conduit and means for operating said cable, of gripping devices each of said gripping devices comprising a bracket rigidly secured to said cable, a lever pivoted to the free end of the said bracket and a hook formed on one end of said lever, and cam devices located within said conduit and arranged below the path of said gripping devices and means for moving said cam devices into the path of the said gripping devices, substantially as described and for the purpose set forth.

6. The combination with a conduit, with a slot formed in the upper surface and extending longitudinally thereof, a cable operatively mounted in said conduit and means for operating said cable, of gripping devices each of said devices comprising a bracket rigidly secured to said cable, a lever pivoted on said bracket, a hook formed on one end of said lever, and a roller mounted on the other end of said lever, guideways located within said conduit, frames arranged in said guideways, cams secured to said frames and normally lying without the path of said roller on said lever, and means for lifting said frames in said guideways so as to bring said cams within the path of said roller, substantially as described and for the purpose set forth.

7. The combination with a conduit, with a slot formed in its upper surface and extending longitudinally thereof, a cable operatively mounted in said conduit and means for operating said cable, of gripping devices each of said devices comprising a bracket rigidly secured to said cable, a lever pivoted on said bracket, a hook formed on one end of said lever, and a roller mounted on the other end of said lever, vertical guideways located within said conduit, frames arranged in said guideways, cams secured to said frames and normally lying without the path of said roller on said lever, and a chain secured to said frames and adapted to lift said frames in the said guideways, substantially as described and for the purpose set forth.

8. The combination with a conduit, with a slot formed in its upper surface, a cable operatively mounted in said conduit and means for operating said cable, of gripping devices pivotally secured to said cable and normally lying entirely within said conduit, a movable cam arranged within said conduit and normally lying without the path of said gripping device, for causing said gripping device to rise through the slot in the said conduit when said cam is brought into the path of said gripping device, and a stationary device, for automatically disengaging said gripping device from a load, arranged within the conduit and lying without the path of the gripping device when in its normal position within the conduit, and lying within the path of and adapted to engage with said gripping device when said gripping device is in its raised position, for the purpose set forth.

9. The combination with a conduit, with a slot formed in its upper surface and extending longitudinally of said conduit, a cable operatively mounted in said conduit and means for operating said cable, of gripping devices normally lying entirely within said conduit, means for causing said gripping devices to rise through the slot in the said conduit so as to engage with a load above the said conduit, a stationary cam mounted within said conduit and arranged so as to lie below the horizontal frame of the said gripping device when in its normal position, and to contact with the said gripping device when the said gripping device is in engagement with a load, substantially as described and for the purpose set forth.

10. The combination with a conduit with a slot formed in its upper surface, a cable operatively mounted in said conduit, and means for operating said cable, of a gripping device pivotally secured to said cable and normally lying within said conduit, frames arranged within said conduit without the path of said gripping device, cams arranged on said frames, and means for actuating said frames, so as to cause the said cams to lie within the path of said gripping device, for the purpose set forth.

11. The combination with a conduit, a cable-slot formed in said conduit, a cable operatively mounted in said conduit and means for operating said cable, of a gripping device pivotally secured to said cable and normally lying within said conduit, a movable frame arranged within said conduit, without the path of the said gripping device, a cam arranged on said frame, means for actuating said frame so as to bring said cam within the path of the said gripping device, a stationary frame arranged within said conduit, a cam mounted on said frame and lying without the path of said gripping device, when said gripping device is in its normal position within the conduit, and arranged to engage with the said gripping device, when the said gripping device is in its raised position, for the purpose set forth.

704,881. PROCESS OF MANUFACTURING SULFURIC ACID FROM SULFUR DIOXID IN AQUEOUS SOLUTION BY ELECTROLYSIS. CHARLES R. JACOBS, East Orange, N. J., assignor to the Ampere Electro-Chemical Company, Jersey City, N. J., a Corporation of New Jersey. Filed June 1, 1901. Serial No. 62,711. (No specimens.)

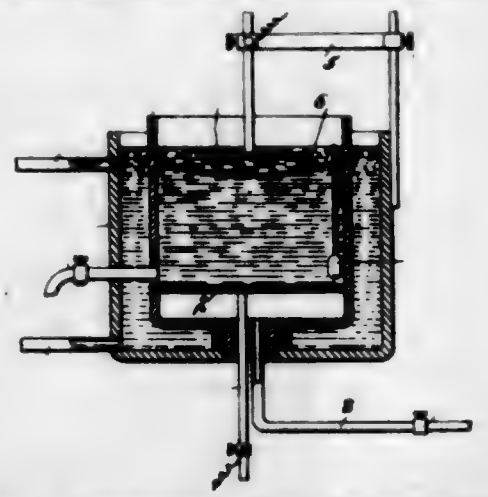

Claim.—1. The process of making sulfuric acid, which consists in passing sulfur dioxid through a porous anode and setting free the oxygen of water by electrolysis upon said anode.

2. The process of making sulfuric acid by electrolysis, which consists in setting free the oxygen of water upon a porous anode and forcing sulfur dioxid through said anode under pressure.

3. The process of making sulfuric acid which consists in supplying sulfur dioxid through the anode of an aqueous electrolytic bath, setting free the oxygen of the water at the anode by electrolysis of the bath, maintaining at the cathode of such bath a current density sufficient to prevent access of sulfur dioxid to the cathode, and causing the hydrogen to escape from the cathode without acting on the sulfur dioxid.

4. The process of producing sulfuric acid consisting in passing sulfur dioxid into an aqueous electrolytic bath, maintaining at the cathode of said bath in proximity to the anode a current density greater than the current density at the anode whereby rapid escape of hydrogen at the cathode is effected.

5. The process of producing sulfuric acid, which consists in supplying sulfur dioxid at the anode of an aqueous electrolytic bath, passing the electric current through said bath in an upward direction to oxidize the sulfur dioxid in the lower region of the bath and retain the product of oxidation remote from the cathode.

704,882. CHECK-LOCK FOR MINE-CARS. LEVI J. JONES, Meyersdale, Pa. Filed Mar. 3, 1902. Serial No. 96,468. (No model.)

Claim.—1. The combination with a car having an opening in its body portion above the floor thereof, of a check or similar token, a ring connected to the check or token and inserted through the opening in the side of the car, and a hook pivoted to the side of the car and swinging in a vertical plane downwardly to engage said ring and lock the same in place, substantially as described.

2. The combination with a car having an opening in its body portion above the floor of a check or token, and a fastening for uniting the check or token to the body of the car, said fastening consisting of two elements one of which projects through the opening in the body of the car and is connected to the check or token, and the other of which is separate and distinct from the first-named element to engage the same by downward movement and thus lock the check or token in place, substantially as and for the purpose set forth.

704,888. BAG-HOLDER. ARTHUR D. JOHNSON, Clare, Mich. Filed Nov. 21, 1901. Serial No. 83,142. (No model.)

Claim.—1. In a bag-holder, the combination with a suitable bag-

mouth-supporting frame, of jaws pivoted to said frame and adapted to engage the opposite sides thereof and clamp the neck of the bag thereto, each jaw being longitudinally expansible to compensate for the bunching of the necks of bags of different thicknesses of material of which the necks are formed, substantially as set forth.

2. In a bag-holder, the combination with a suitable bag-mouth-supporting frame, of jaws pivoted to said frame and adapted to engage the opposite sides thereof, said jaws being formed intermediate their pivoted ends with springs to permit of the expansion of said jaws and to serve the additional function of handles by means of which the jaws may be operated, substantially as set forth.

3. In a bag-holder, the combination with a suitable supporting-frame comprising two sets of hinged legs, of a bag-mouth-holding frame pivoted to and connecting the upper ends of the legs, and spring-jaws pivoted to the bag-mouth-holding frame and adapted to engage the opposite sides thereof, substantially as set forth.

704,834. FIRE-ESCAPE. GEORGE W. JONES and JAMES C. JONES, Scotland, Ark. Filed Dec. 31, 1901. Serial No. 87,944. (No model.)

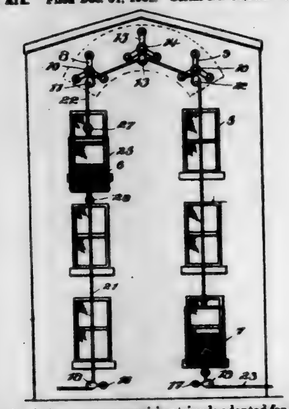

Claim.—1. A fire-escape comprising tripods adapted for attachment to the upper portion of a building above the windows having pulleys engaged therewith, additional pulleys adapted for attachment to the base of the building below the windows, a cable engaged with the first-named pulleys, baskets with which the ends of the said cable are engaged, and additional cables attached to the under sides of the baskets and passed around the second-named pulleys.

2. A fire-escape comprising a bail formed of an endless bar of metal including a bottom, sides and top, the sides being bent to form bearings, and the bottom and top being bent to form eyes, and a metal basket having trunnions at its upper edge pivotally engaged with the bearings, the upper and lower eyes being adapted for attachment of cables thereto.

704,835. IRONING-BOARD. GEORGE KABLER, Wymore, Nebr., assignor of one-half to Frank J. Uplinger, Wymore, Nebr. Filed Oct. 18, 1901. Serial No. 78,633. (No model.)

Claim.—1. The combination with a suitably-shaped board, a cleat thereon having a convex face, an abutment-bar bedded in the cleat, and a rest-block secured upon the board spaced from the cleat, of a spring-bar secured near one end on the cleat, and having contact with the abutment-bar, and a prop-leg hinged near one end thereof upon one springing end of the bar, said leg being held projected at a right angle from the board by the resilience of the spring-bar, and a lateral contact of one end upon a side edge of the rest-block.

2. The combination with a suitably-shaped board, a transversely-disposed cleat secured near one end thereon, a transverse rest-block secured on the board and spaced from the cleat, and a spring-bar secured near one of its ends upon the cleat so as to press toward the rest-block, of a prop-leg hinged near one of its ends upon an end of the spring-bar, and held at a right angle to the board in contact with the rest-block, by a keeper-block, said keeper-block comprising an oblong piece having two spaced angular slots in it, engaged by set-screws that may slide in longitudinal portions of the slots and interlock with lateral extensions thereof.

704,836. LIFTING-CRANE. THEODORE KAUFFMAN, Osborn, Ohio. Filed Dec. 2, 1901. Serial No. 84,428. (No model.)

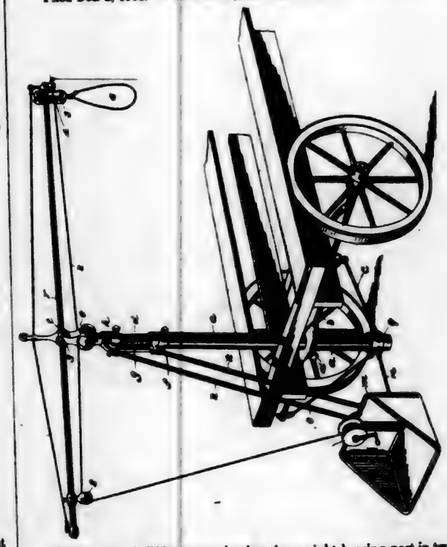

Claim.—1. A lifting-crane, having the upright bearing-post in two sections adjustable vertically, the counterbalance-platform, having bracing connections with said post, the winding-reel carried by said platform, the laterally-extending or horizontal crane-rod carried by said post, its pulleys, and the lifting-rope, substantially as specified.

2. In a lifting-crane, the combination with the upright post provided with wagon connections, and a laterally-extending rod or jib, of the counterbalance-platform adapted for the operator to stand therein, having a supporting-wheel resting upon the surface of the ground, and braced to said post, the winding-reel carried by said platform and the lifting-rope, substantially as specified.

3. The detachable crane comprising the crane-head, extension-rod, its movable pulleys, the bracket or frame, for connection to the bearing-post, the lifting-rope, the counterbalance-platform, the connections of the latter to said frame, the socket-foot, and the connection thereof to said platform, substantially as specified.

4. The combination with a wagon or rack, and its bearing-post and socket devices for holding said post, of the detachable crane-head, its extension-rod, and the pulleys thereon, the trip device, the bracket or frame secured to the crane-head, the counterbalance-platform connected to said frame, the reel, and lifting-rope, and the radial hook of the counterbalance-platform, substantially as specified.

704,837. SHINGLE-GAGE FOR HATCHETS. MILES M. KELLOGG, Boulder, Colo. Filed Mar. 27, 1902. Serial No. 100,270. (No model.)

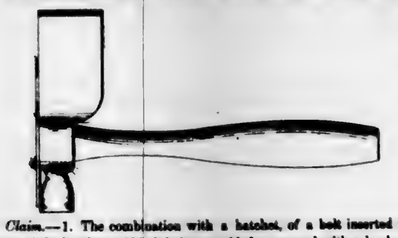

Claim.—1. The combination with a hatchet, of a bolt inserted in the eye of the hatchet, said bolt being provided at one end with a hook to engage the wall of the eye and screw-threaded at its outer end, a longitudinally-slotted gage-plate arranged upon the outer edge of the hatchet, said bolt projecting through said slot, a nut for clamping said plate in position, said plate being provided with arms projecting laterally in opposite directions beyond the plane of the hatchet-blade, substantially as set forth.

2. A gage for hatchets comprising a longitudinally-slotted gage-plate having at one end laterally-projecting arms, and a bolt having a hook at one end and a nut at the other, substantially as set forth.

704,838. PLAYING-BALL. ELEAZER KEMPSHALL, Boston, Mass. Filed May 3, 1902. Serial No. 105,732. (No model.)

Claim.—1. A hollow playing-ball consisting entirely of two thin shells, whereof the inner shell is of hard, springy material, and the outer is thicker than the inner and consists of hard, plastic material; said inner shell having perforations through which the material of the outer shell protrudes.

2. A playing-ball consisting entirely of a thin, springy perforated metal shell, and a thicker shell thereon formed of hard springy plastic material.

3. A playing-ball consisting entirely of a thin, springy perforated metal shell, and a thicker shell thereon formed of hard springy plastic material, the material of said outer shell protruding into said perforations.

4. A hollow playing-ball consisting wholly of two thin shells, whereof the inner is thinner than the outer and consists of springy metal provided with perforations, said outer shell consisting of plastic material, portions whereof protrude into the perforations.

5. A playing-ball comprising a thin shell of springy metal, said shell being provided throughout with perforations, and a hard springy cover upon said shell.

6. A playing-ball comprising a thin shell of metal provided with perforations, and a shell of celluloid compacted upon said shell, portions of the celluloid protruding into said perforations.

7. A playing-ball comprising a complete shell having perforations and a shell thereon consisting of segments of plastic material welded together at their edges; portions of the plastic material entering said perforations and locking said shells together, and thereby preventing rupture of said plastic shell at the weld.

8. A playing-ball comprising a shell having barbs and a shell formed of joined segments of plastic material; said barbs being embedded in said plastic material and preventing separation of said segments.

9. A playing-ball comprising a thin metal shell having barbs and a shell formed of welded segments of plastic material; said barbs being embedded in said plastic material and preventing separation of said segments.

10. A playing-ball comprising a thin metal shell having barbs, and a shell formed of joined segments of celluloid; said barbs being embedded in said celluloid and preventing separation of said segments.

11. A playing-ball comprising a thin perforated metal shell having barbs and a shell formed of welded segments of plastic material; said barbs being embedded in said plastic material and preventing separation of said segments.

12. A playing-ball comprising a thin metal shell having struck-up barbs and a shell formed of joined welded segments of plastic material; said barbs penetrating and preventing separation of said segments.

13. A playing-ball comprising a shell having barbs and a shell formed of joined segments of plastic material; said barbs being embedded in said plastic material, the barbs in one hemisphere pointing toward those in the other hemisphere, thereby to clench said segments together.

704,839. CORN HARVESTER AND SHOCKER. GRANGER G. KIRKELL, Farmer, Ohio. Filed May 13, 1901. Serial No. 60,052. (No model.)

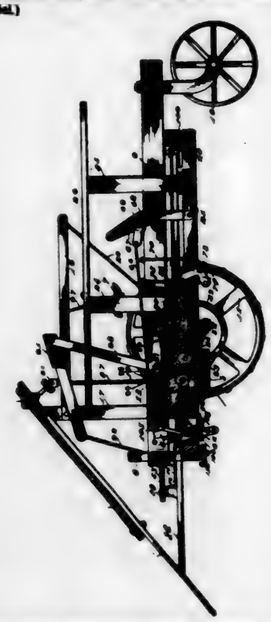

Claim.—1. In a corn harvester and shocker, the combination with a suitable frame and caster-wheel sills, the frame and sills having a hinged or pivotal connection with each other, of a tilting platform hinged to the frame, said platform carrying uprights which have sliding connection with the caster-wheel sills, whereby a lateral twisting of either is prevented and a central support secured on the upper ends of these uprights.

2. In a corn harvester and shocker, the combination with a suitable frame and caster-wheel sills, connected therewith, of a tilting platform hinged to the frame, said platform carrying uprights which have sliding connection with the caster-wheel sills, whereby a lateral twisting of either is prevented and a central support secured on the upper ends of these uprights.

3. In a corn harvester and shocker, the combination with a suitable frame and caster-wheel sills, connected therewith, of a tilting platform carrying uprights which have sliding connection with the caster-wheel sills, whereby a lateral twisting of either is prevented and a central support secured on the upper ends of these uprights.

4. The combination with a suitable frame and caster-wheel sills connected therewith, of a tilting platform and means for raising and lowering said platform, said means operating to automatically lock the platform when adjusted to its elevated position, and a spring suspensory device connected to the platform for assisting in raising it.

5. The combination with a suitable frame and a pair of caster-wheel sills suitably spaced apart and connected with the frame, of a tilting platform having uprights fitted and guided between the caster-wheel sills and adapted to be raised and lowered therebetween in the operations of moving the platform, whereby to prevent lateral motion of either of said parts with respect to the other, and a central support secured on the upper ends of said uprights.

6. The combination with a suitable frame and a pair of caster-wheel sills suitably spaced apart and connected with the frame, of a tilting platform having uprights fitted to and guided between the space intervening

between the caster-wheel sills and adapted to be raised and lowered therebetween in the operations of moving the platform, whereby to prevent lateral movement of either of said parts with respect to the other, a central support secured on the upper ends of said uprights, a bell-crank located on the sills, a curved link extending from one end of this bell-crank, between the sills, to the platform and means for rocking the bell-crank lever whereby to throw the bell-crank and link over the dead-center of the bell-crank and cause the platform to lock, and a spring suspensory device depending from the sills through the space between them, to the platform whereby to facilitate the raising of the latter.

7. The combination with a suitable frame and tilting platform hinged thereto, said platform having endless aprons arranged to traverse it, of sliding shoes adapted to hold the stalks that have accumulated when the platform is tilted downward and means connected with the platform and with the shoes for simultaneously reciprocating the latter with the movements of the platform.

8. The combination with a suitable frame, of a tilting platform having hinged connection therewith, endless aprons carried over said platform, a rock-shaft supported in boxes carried by the platform, said shaft having arms thereon one in the form of a bell-crank lever, a link connecting one end of this lever with a suitable stationary support, sliding shoes adapted to bridge the space between the frame and the adjacent ends of the platform and connecting-rods extending from the shoes to the arms on the rock-shaft.

9. The combination with a suitable frame, of a tilting platform having hinged connection therewith, endless aprons carried over said platform, a rock-shaft supported in boxes carried by the platform, said shaft having arms thereon, one in the form of a bell-crank lever, a link connecting one end of this lever with a suitable stationary support, sliding shoes adapted to bridge the space between the frame and the adjacent end of the platform, connecting-rods extending from the arms to the shoes and means for raising and lowering the platform with respect to the frame during the simultaneous sliding motions of the shoes.

10. The combination with a main frame, guide-frames and means for feeding cornstalks in standing position through the guide-frames and for cutting the stalks during their passage therethrough, of a tilting frame, endless aprons carried thereon, a central support connected with the platform, guide-bars, a cord extending from one guide-bar to the other, a packer for packing the stalks on either side of the central support against the cord and caster-wheel sills for guiding the tilting platform and preventing lateral movement thereof.

11. The combination with a suitable frame and tilting platform hinged thereto, said platform carrying endless aprons of a main shaft and a sprocket-wheel shaft carried by the main frame and intergeared with each other, a clutch for throwing these two shafts into or out of gear with each other and means driven by the main shaft for imparting a step-by-step movement to the sprocket-shaft.

12. The combination with a suitable frame and platform hinged thereto, said platform carrying endless aprons, of a drive-shaft, means for driving the latter, a gear-wheel loosely mounted on said shaft, a shipper for clutching it to the shaft, means for tilting the platform, said shipper in position to be operated by said means when the platform is thrown to one of its extreme positions, means for imparting a step-by-step motion to the endless-apron-driving shaft when the gear-wheel is released from the drive-shaft and means for adjusting the throw of said step-by-step driving mechanism.

13. The combination with a suitable frame, a tilting platform, said platform carrying an endless apron and means for raising and lowering and locking the platform, of a drive-shaft, an apron-driving shaft which receives motion from the main shaft when the tilting platform is in one of its positions and a step-by-step escapement mechanism for imparting intermittent motion to the apron when the platform is in its other extreme position.

14. The combination with a suitable frame, a tilting platform, said platform carrying an endless apron and means for raising and lowering and locking the platform, of a drive-shaft, an apron-driving shaft which receives motion from the main shaft when the tilting platform is in one of its positions, a step-by-step escapement mechanism for imparting intermittent motion to the apron when the platform is in its other extreme position, and means for adjusting the throw of the escapement mechanism.

15. The combination with a suitable frame and a platform having hinged connection therewith, of a main drive-shaft having a gear-wheel loosely mounted thereon, means for locking said gear-wheel to the shaft, means for tilting the platform and simultaneously causing the lock or release of the said gear-wheel, a shaft carrying sprocket-wheels and provided with a pinion adapted to be driven by the gear-wheel on the main shaft when said gear-wheel is locked to said main shaft, a ratchet-toothed wheel secured to the shaft which carries the sprocket-wheels, an eccentric carried by the main shaft, a rock-shaft having a bell-crank lever thereon, an eccentric-strap extending from the eccentric to a crank on the rock-shaft, a packer connected with the bell-crank lever and means for adjusting the throw of said packer.

16. The combination with a main frame, a main shaft revolubly supported therein, means for driving said shaft and a tilting platform having hinged connection with the main frame, said platform carrying endless aprons, of caster-wheel sills, a central support, uprights extending from the platform between the sills, to which the central support is secured, a shaft for driving the endless aprons, gearing for imparting a continuous motion to said apron-driving shaft when the tilting platform is in one of its positions, means for imparting a step-by-step motion to the endless aprons when the platform is in its other extreme position, a packer and guide-bars between which and the central support, the stalks are packed, a cord for receiving said stalks, guide-frames, cutters therein and feed mechanisms, substantially as described.

17. The combination with a frame, a platform, endless aprons, shaft for imparting motion to the latter, of a main drive-shaft having an eccentric thereon, a packer operated by the eccentric, and means extending from and supporting the packer for communicating motion to the apron-shaft.

18. The combination with a frame, a platform, endless aprons, shaft for imparting motion to the latter, of a main drive-shaft having an eccentric thereon, a packer operated by the eccentric, and means extending from and supporting the packer for communicating intermittent motion to the apron-shaft.

19. The combination with a frame, a platform connected therewith, endless aprons carried by the platform, a shaft for driving the aprons, said shaft having a ratchet-toothed wheel thereon, of a main drive-shaft, a packer driven thereby, a bell-crank lever supporting the packer, a lever having a pawl pivoted thereto adapted to engage the teeth of the ratchet-toothed wheel to impart intermittent impulses thereto, and a link connecting the two levers whereby motion is imparted form one lever to the other.

20. The combination with a frame, a platform connected therewith, endless aprons carried by the platform, a shaft for driving the aprons, said shaft having a ratchet-toothed wheel thereon, of a main drive-shaft, a packer driven thereby, a bell-crank lever supporting the packer, a lever having a pawl pivoted thereto adapted to engage the teeth of the ratchet-toothed wheel to impart intermittent impulses thereto, and a link connecting the two levers whereby motion is imparted from one lever to the other, and means for varying the adjustment of said link, whereby to increase or decrease the extent of vibratory movements of the lever which carries the pawl.

21. The combination with a frame, and a tilting platform, said platform carrying an endless apron, of a drive-shaft, an apron-driving shaft which receives motion from said shaft when the tilting platform is in one of its positions, and a step-by-step escapement mechanism for imparting intermittent motion to the apron when the platform is in its other extreme position.

704,840. EXERCISING-MACHINE. JOHN C. KORTH and AUGUST GARSEMBULLER, New York, N. Y. Filed Feb. 24, 1900. Serial No. 6,236. (No model.)

Claim.—1. In an exercising-machine, two elastic cords provided at one end with means for attachment to an elevated support, said cords extending normally downwardly from the support and parallel with each other, and each provided at its free end with a handle, and between its handle and point of support, with an eye adjustable thereon, and a link having a detachable engagement with the eyes of the cord, said eyes and link serving to tie the cords together at any desired point in their length, as and for the purpose set forth.

2. In an exercising-machine, two elastic cords provided at one end with means for attachment to a support, said cords normally extending downwardly from the support and parallel with each other, and each provided at its free end with a handle and intermediate of its ends with a ring secured thereto, and a split link engaging the rings of the said cords, substantially as described.

3. In an exercising-machine, two elastic cords provided at one end with means for attachment to an elevated support, said cords normally extending downwardly from the support parallel with each other, and each provided with a coupling at its lower end, eyes movable up and down on the cords between their point of support and their lower ends, means for connecting the eyes together to tie the cords together and hold them in close proximity to each other, and means for adjustably securing the said eyes on the cords whereby the cords can be tied together at any desired point in their length, substantially as described.

4. In an exercising-machine, two elastic cords each having one end fixedly secured to a device, by means of which the cords are connected with an elevated support, said cords normally extending downwardly parallel with each other and each provided with a coupling at its other end, and rings intermediate of the ends of the cords and adjustable up and down on said cords, as set forth.

5. In an exercising-machine, two elastic cords each having one end fixedly secured to a ring for engagement with an elevated support, said cords normally extending downwardly parallel with each other and each provided with a coupling at its other end, and intermediate of its ends with a ring adjustable thereon, as set forth.

6. In an exercising-machine, two elastic cords, each having one end fixedly secured to a support and provided at its other end with a coupling, said cords normally extending downwardly parallel with each other, rings movable up and down on the cords, and handles connected with said cords, substantially as herein shown and described.

7. In an exercising-machine, two elastic cords secured to a support so as to be independent of one another and extending downwardly parallel with each other, handles connected with the cords, and a connection between the cords intermediate of their ends, said connection being adjustable up and down on said cords, as set forth.

704,841. INCUBATOR. FRANK KRUPICKA, Milligan, Nebr. Filed Aug. 18, 1900. Serial No. 27,302. (No model.)

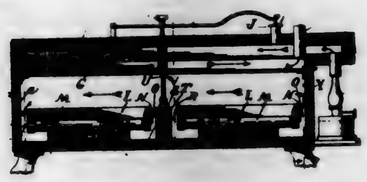

Claim.—1. An incubator comprising a casing, an egg-chamber in the lower part of the casing, said chamber having inlet and outlet openings in its opposite end walls, heating-chambers arranged in the upper part of the casing one above the other, and communicating with one another at one end, the upper chamber being provided at the end opposite that which communicates with the lower chamber with means for connection with a source of heat, a flue leading from the end of the lower chamber opposite that which communicates with the upper chamber, out through the upper chamber and the casing, a valved flue leading from the upper chamber out through the casing, and a thermostat arranged in the egg-chamber and operating the valve of said flue, as set forth.

2. An incubator comprising a casing having an extension at one end at the upper part thereof, an egg-chamber in the lower part of the casing and having inlet and outlet openings in its opposite end walls, heating-chambers arranged in the upper part of the casing one above the other, the upper chamber having one end extending into the extension of the casing and communicating with the lower chamber at its opposite end, a flue leading from the upper chamber out through the bottom of the extension and with which a source of heat is to be connected, a flue leading from the lower chamber at the end adjacent to the extension out through the upper chamber and the casing, a flue leading from the upper chamber out through the casing, a valve for controlling said flue, and a thermostat in the egg-chamber and controlling said valve, as set forth.

704,842. COMPOSITION FENCE-POST. DANIEL W. LARIMER and DAVID C. ELLIOTT, Goshen, Ind. Filed Jan. 23, 1902. Serial No. 91,627. (No model.)

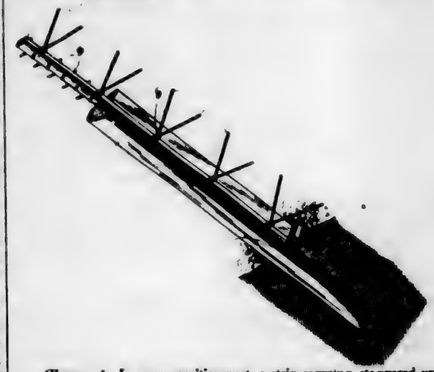

Claim.—1. In a composition post, a strip carrying staggered projections embedded in the post and having one of its faces exposed with means carried by said exposed face for engagement with the wires of the fence, and a protecting-strip formed integral with the post and secured over the lower portion of the first-named strip, substantially as described.

2. In a composition post, a strip carrying a series of staggered projections embedded in the post and having one of its faces exposed with a series of staples carried by the exposed face of the strip for engagement with the wires of the fence, a protecting-strip carried by the post and covering the lower portion of the strip, and a cap carried by the upper end of the post and secured over the upper end of said strip, substantially as described.

704,843. PROCESS OF MAKING EXTRACT DYES. ROBERTO LEPETIT and EZZERO TAGLIANI, Buss, Italy. Filed July 18, 1896. Serial No. 599,718. (No specimens.)

Claim.—1. The process of obtaining an improved dye from the natural dyewood extract, which consists in treating the extract with a salt of sulfurous acid, under the influence of heat and pressure.

2. The process of obtaining an improved dye from a natural dyewood extract, which consists in treating the extract with a sulfurous-acid salt of an alkali metal, under the influence of heat and pressure.

3. The process of obtaining a new dye from natural-color extracts, which consists in treating the natural extract with sodium bisulfite at a temperature of from 110° to 150° centigrade under pressure.

704,844. MANIFOLDING MEMORANDUM BOOK OR PAD. EDWARD E. LEWIS, Franklin, Pa., assignor to the General Manifold Company, Franklin, Pa., a Corporation of Pennsylvania. Filed Sept. 4, 1901. Serial No. 74,398. (No model.)

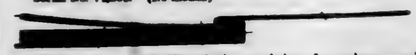

Claim.—1. A manifolding device consisting of a package provided with a series of separate stubs in combination with a series of writing and copying sheets, each sheet composed of two leaves, one leaf provided with a writing-surface on one side and a transfer-surface on its opposite side, and the other leaf provided with a transfer-receiving surface, said leaves separately and detachably secured at one end to the stubs along a weakened line and to each other at their opposite ends by a similar joint, substantially as described.

2. A manifolding device consisting of a package provided with separate stubs, in combination with an outside cover to which said stubs are connected and within which they are bound, each of said sheets composed of two leaves, each separately united at their upper ends to said stubs by covering-joints, and their lower ends united along a weakened line, one of said leaves provided with a writing-surface on one side and a transfer-surface on its opposite side, and the remaining leaf provided with a transfer-receiving surface, substantially as described.

704,845. CAMERA. HARVEY W. LOCKE, Rochester, N. Y., assignor to Century Camera Company, Rochester, N. Y., a Corporation of New York. Filed May 24, 1902. Serial No. 108,867. (No model.)

Claim.—1. In a camera, a bed having pairs of parallel slots on its side edges, two camera elements each movable on said bed and each hav-

ing a pair of plates adapted to slide in one pair of said slots, the side plates on said two elements being adapted to overlap when the two elements are brought close together.

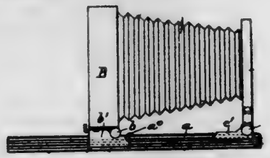

2. In a camera, a bed having pairs of parallel slots on its side edges, the upper slot in each edge being in a rabbeted portion of said edge, two camera elements each movable on said bed, one having a pair of plates adapted to slide in the pair of upper slots and the other element having a pair of plates adapted to slide in the pair of lower slots, the side plates on said two elements being adapted to overlap when the two elements are brought close together.

3. In a folding camera, a sectional bed composed of parts hinged together and having pairs of parallel continuous slots on its side edges, two camera elements each movable on said bed and each having a pair of plates adapted to slide in one pair of said slots, the side plates on one of said two elements being adapted to overlap when the two elements are brought close together, one of the parts of the bed being of suitable length to bear the camera-box and lens-frame and another part of said bed being adapted to fold upward against an outer face of one of said elements when the same are brought close together.

4. In a folding camera, a sectional bed composed of parts hinged together and having parallel continuous slots on its side edges, the upper slot in each edge being in a rabbeted portion of said edge, two camera elements having a pair of plates adapted to slide in the pair of upper slots, and the other element having a pair of plates adapted to slide in the pair of lower slots, the side plates of one of said elements being adapted to overlap when the two elements are brought together, and one of the parts of the bed being of suitable length to bear the said two elements and another part of said bed being adapted to fold upward against an outer face of the said elements when the same are brought close together.

5. In a folding camera, a sectional bed composed of parts hinged together and having pairs of parallel continuous slots on its side edges, two camera elements each movable on said bed and each having a pair of plates adapted to slide in one pair of said slots, the side plates on one of said two elements being adapted to overlap when the two elements are brought close together, one of the parts of the bed being of suitable length to bear the camera-box and lens-frame, and another part of said bed being adapted to fold upward against an outer face of one of said elements when the same are brought close together, and an automatic catch on said bed for engaging one of said elements and holding it in the position for folding the bed against said outer face.

6. In a folding camera, a sectional bed composed of parts hinged together and having parallel continuous slots on its side edges, the upper slot in each edge being in a rabbeted portion of said edge, two camera elements each movable on said bed and one element having a pair of plates adapted to slide in the pair of upper slots, and the other element having a pair of plates adapted to slide in the pair of lower slots, the side plates of one of said elements being adapted to overlap when the two elements are brought together and one of the parts of the bed being of suitable length to bear the said two elements and another part of said bed being adapted to fold upward against an outer face of the said elements when the same are brought close together, and an automatic catch on said bed for engaging one of said elements and holding it in the position for folding the bed against said outer face.

7. In a camera, a bed having pairs of parallel slots on its side edges, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together.

8. In a camera, a bed having pairs of parallel slots on its side edges, the upper slot of each pair being in a rabbeted portion of the edge of the bed, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together.

9. In a camera, a sectional bed composed of parts attached together and having pairs of parallel continuous slots on its side edges, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together.

10. In a camera, a sectional bed composed of parts attached together and having pairs of parallel continuous slots on its side edges, the upper slot of each pair being in a rabbeted portion of the edge of the bed, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together, one of the parts of the bed being of suitable length to bear the camera-box and lens-frame and another part of said bed being adapted to fold upward against an outer face of the said parts when the same are brought close together.

11. In a folding camera, a sectional folding bed composed of parts hinged together and having pairs of parallel continuous slots on its side edges, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together, one of the parts of the bed being of suitable length to bear the camera-box and lens-frame and another part of said bed being adapted to fold upward against an outer face of the said parts when the same are brought close together.

12. In a folding camera, a sectional folding bed composed of parts hinged together and having pairs of continuous parallel slots on its side edges, the upper slot of each pair being in a rabbeted portion of the edge of the bed, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together, one of the parts of the bed being of suitable length to bear the camera-box and lens-frame, and another part of said bed being adapted to fold upward against an outer face of the said parts when the same are brought close together.

13. In a camera, a sectional bed composed of parts attached together and having pairs of parallel continuous slots on its side edges, the upper slot of each pair being in a rabbeted portion of the edge of the bed, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together, and a catch on said bed for engaging the camera-box and holding it in the proper position for folding the camera.

14. In a folding camera, a sectional folding bed composed of parts hinged together and having pairs of parallel continuous slots on its side edges, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together, one of the parts of the bed being of suitable length to bear the camera-box and lens-frame and another part of said bed being adapted to fold upward against an outer face of the said parts when the same are brought close together, and a catch on said bed for engaging the camera-box and holding it in the proper position for folding the camera.

15. In a folding camera, a sectional folding bed composed of parts hinged together and having pairs of continuous parallel slots on its side edges, the upper slot of each pair being in a rabbeted portion of the edge of the bed, a camera-box having a plate on each side adapted to slide in one of said slots, a lens-frame having a plate on each side adapted to slide in the other of said slots, the side plates of the camera-box and of the lens-frame being adapted to overlap one over the other when the camera-box and lens-frame are brought close together, one of the parts of the bed being of suitable length to bear the camera-box and lens-frame and another part of said bed being adapted to fold upward against an outer face of the said parts when the same are brought close together, and a catch on said bed for engaging the camera-box and holding it in the proper position for folding the camera.

704,848. SLIDING DOOR. JOHN F. LYDON, Davenport, Iowa, assignor to the International Manufacturing Company, Davenport, Iowa, a Corporation of Iowa. Filed Oct. 19, 1900. Serial No. 33,541. (No model.)

Claim.—1. The combination of a wall having a doorway therein, the three vertically-disposed stripe c secured to the wall and extending outward therefrom, the strips being at uniform distances apart, and two of the strips being arranged adjacent to the opposite edges of the doorway in the wall, a track arranged above the doorway, a sliding door mounted upon the said track and arranged to travel in front of the intermediate strip, the said door being capable of a limited lateral movement while retaining its vertical position, and means for moving the door laterally inward toward the face of the wall between either pair of the said strips, substantially as set forth.

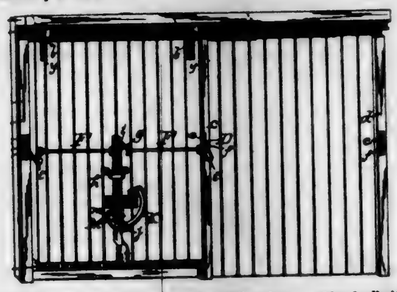

2. The combination of a suspended sliding door capable of a limited lateral movement, a track upon which the door is supported, a horizontally-disposed crank-shaft for locking the door, a lever mounted upon the door, and a connecting-link between the lever and the crank-shaft, these parts being disposed to have the arm of the lever to which the link is connected and the link in alinement when the rock-shaft is turned to locking position, substantially as set forth.

3. The combination with a wall having a doorway therein and lock counterparts on either side of the doorway, of a sliding door capable of a limited lateral movement, a crank-shaft having its ends formed to engage with the said lock counterparts, a lever supported by the door and arranged to move in a plane parallel with the face thereof, and a connecting-link between the lever and the crank-shaft, said link and the arm of the lever to which it is connected being arranged to be in alinement when the crank-shaft is turned into position to cause the locking of the door, substantially as set forth.

4. The combination with a wall having a doorway therein, a suspended sliding door capable of a limited lateral movement a rock-shaft carried by the door and having at its opposite ends hooks, and catches with which the said hooks are adapted to engage supported by the said wall, the said catches being set out from the face of the wall, whereby when the rock-shaft is moved to cause the engagement of its hooks with the said catches, the door is forced inward toward the face of the wall, substantially as set forth.

5. The combination with a wall having a suitable doorway therein and having lock counterparts on each side of said doorway, and a suspended sliding door capable of a limited lateral movement while retaining its vertical position, of a horizontal rock-shaft suitably journaled to said door which is provided with a crank mediate its length, hooks on the ends thereof adapted to engage said counterparts, a vertically-movable link engaging said crank, and lever connected to and actuating said link and means for locking said lever when it alines with said link.

6. The combination with a wall having a suitable doorway therein and having lock counterparts on each side of said doorway, and a suspended sliding door capable of a limited lateral movement while retaining its vertical position, of a horizontal rock-shaft suitably journaled to said door which is provided with a crank mediate its length, hooks on the ends thereof adapted to engage said counterparts, a vertically-movable link engaging said crank, and lever connected to and actuating said link and automatic means for locking said lever when it alines with said link.

7. A device for locking a sliding door, comprising a horizontal rock-shaft suitably journaled to said door and provided with a crank mediate its length, hooks on the ends thereof, a link engaging said crank, a lever connected to and actuating said link a segmental frame extending transversely through a guide-opening in said lever, and a longitudinally-reciprocal bolt adapted to shoot through said segmental frame when said lever alines with said link.

8. A device for locking a sliding door, comprising a horizontal rock-shaft suitably journaled to said door and provided with a crank mediate its length, hooks on the ends thereof, a link engaging said crank, a lever connected to and actuating said link, a segmental frame extending transversely through a guide-opening in said lever, and a longitudinally reciprocal bolt having a transverse opening therethrough adapted to shoot through said segmental frame when said lever alines with said link.

9. A locking device for a sliding door comprising a horizontally-disposed rock-shaft suitably journaled to said door which is provided with a crank mediate its length, and with hooks on the ends thereof, a vertically-movable link engaging said crank, a lever connected to and actuating said link, the arm of the lever to which the link is connected being arranged to be in alinement therewith when the parts are turned into locking position and a bolt for locking said lever when it alines with said link.

10. The combination with a suspended sliding door capable of a limited lateral movement, of a horizontal rock-shaft consisting of a continuous stretch of metal bar or rod, the ends of which extend beyond the sides of said door, and are bent so as to make an outward detour to form arms, and then bent back to form hooks on the side of the rock-shaft opposite the arms, and devices for operating said rock-shaft.

11. The combination with a suspended sliding door capable of a limited lateral movement, of a horizontal rock-shaft consisting of a continuous stretch of metal bar or rod, which is bent mediate its ends to form a crank and the ends of which extend beyond the sides of said door and are bent to make an outward detour to form arms, and are then bent back to form hooks on the side of the rock-shaft opposite from the arms, and devices for operating said rock-shaft.

704,847. APPARATUS FOR DESTROYING BUGS OR OTHER INSECTS INFESTING DWELLINGS OR LIKE PLACES. CONRADT MATTHEY-MEIER, Basle, Switzerland. Filed Mar. 1, 1902. Serial No. 96,219. (No model.)

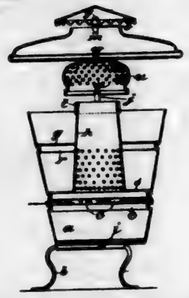

Claim.—1. An apparatus for destroying bugs and other insects infesting dwellings and the like by the combustion of sulfur or a mixture of sulfur and carbon or other combustible material capable of producing on combustion poisonous gases, consisting of an inferior pan, a truncated conical envelop of sheet metal put on the upper end of said pan, carrying an internal annular grate adapted to receive the combustible material to be burned and being provided on its lower part below the grate with downward-directed air-inlet channels, and an upright chimney connected to the grate and arranged within the said truncated conical envelop so as to extend upward above the said grate.

2. An apparatus for destroying bugs and other insects infesting dwellings and the like by the combustion of a combustible material capable of producing on combustion poisonous gases, consisting of an inferior pan, a truncated conical envelop of sheet metal put on the upper end of the pan, carrying two superposed internal annular grates the upper of which is designed to receive the combustible material to be burned, and being provided on its lower part with downward-directed air-inlet channels, and an upright chimney within the said envelop, connecting the two grates and arranged so as to extend upward above the upper grate, substantially as described.

3. An apparatus for destroying bugs and other insects infesting dwellings and the like by the combustion of a combustible material capable of producing on combustion poisonous gases, consisting of an inferior pan, a truncated conical envelop of sheet metal put on the upper end of the pan, carrying an internal annular grate to receive the combustible material and being provided on its lower part below the grate with downward-directed air-inlet channels, an upright chimney connected to the grate and arranged within the said truncated conical envelop so as to extend upward above the grate, a perforated cap on the chimney and an annular hood carried and held by the said envelop at a certain distance above this latter and surmounted by a cap so as to prevent the combustion-flame from attaining a dangerous height above the apparatus, substantially as described.

4. An apparatus for destroying bugs and other insects infesting dwellings and the like by the combustion of a combustible material capable of producing on combustion poisonous gases, consisting of an inferior pan, a truncated conical envelop of sheet metal put on the upper end of the pan, carrying two superposed internal annular grates the upper of which is designed to receive the combustible material to be burned and being provided on its lower part with downward-directed air-inlet channels, an upright chimney within the said envelop, connecting the two grates and arranged so as to extend upward above the upper grate, this chimney being perforated with holes around its circumference at that part situated between the said two grates, a perforated cap on the chimney and an an

nular hood carried and held by the said envelop at a certain distance above this latter and surmounted by a cap so as to prevent the combustion-flame from attaining a dangerous height above the apparatus, substantially as described.

5. An apparatus for destroying bugs and other insects infesting dwellings and the like by the combustion of a combustible material capable of producing on combustion poisonous gases, consisting of an inferior pan, a truncated conical envelop of sheet metal put on the upper end of the pan, carrying two superposed internal annular grates the upper of which is designed to receive the combustible material to be burned, an upright chimney within the said envelop, connecting the two grates and arranged so as to extend upward above the upper grate, this chimney being perforated with holes around its circumference at that part situated between the said two grates, and air-inlet apertures, below the lower grate, near the lower part of the said envelop.

704,848. **DEVICE FOR GATHERING BALLS.** FRANCIS MINTON, London, England, assignor to Charles Minton, London, England. Filed Mar. 14, 1902. Serial No. 98,255. (No model.)

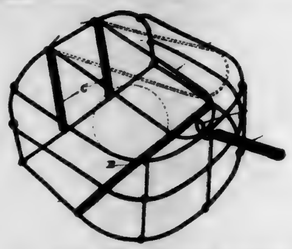

Claim.—1. A device for picking up balls, comprising a receptacle having one or more admission-openings and flexible retaining-strips across said openings, substantially as described.

2. A device for picking up balls comprising a receptacle having an admission-opening inclined so as to make an acute angle with one of the faces of said receptacle, and flexible strips across said opening.

3. A device for picking up balls comprising a receptacle having one or more admission-openings, a movable door for facilitating withdrawal of the balls and flexible strips across the admission-openings, substantially as described.

4. A device for picking up balls comprising a receptacle having one or more admission-openings and one or more elastic retaining-strips across each opening substantially as described.

5. A device for picking up balls comprising a wire framework open on one side at least and one or more spiral springs stretched across the opening to form a retaining-strip substantially as described.

6. A device for picking up balls comprising a wire framework open on two contiguous faces making other than a right angle with each other and spiral springs stretched across said openings, substantially as described.

7. A device for picking up balls comprising a wire framework open on one side at least for admission of a ball and having an opening for withdrawing the balls, one or more elastic retaining-strips across the admission-opening a door in said withdrawal-opening and means for fastening said door.

704,849. **CEMENT.** JAMES T. MCKIM, Thorntown, Ind., assignor of one-half to Lewis Miller, Thorntown, Ind. Filed Jan. 22, 1902. Serial No. 90,058. (No specimens.)

Claim.—1. A cement composed of Portland cement, sand, calcareous ocher, iron-ore paint and litharge.

2. A compound to be added to Portland or similar cement, consisting of calcareous ocher, iron-ore paint and litharge.

3. A compound to be added to Portland or similar cement, consisting of calcareous ocher, iron-ore paint and litharge in the proportions specified.

4. A compound to be added to Portland or similar cement, consisting of calcareous ocher, iron-ore paint and litharge thoroughly ground, subjected to a temperature of 160° Fahrenheit and then cooled.

5. A cement composed of approximately ten parts of a calcareous compound consisting of approximately forty-nine parts calcareous ocher, forty-nine parts iron-ore paint, and two parts litharge; approximately seventy parts of Portland or similar cement; and approximately seventy parts of clean sharp sand.

6. A cement composed of approximately ten parts of a calcareous compound consisting of approximately forty-nine parts calcareous ocher, forty-nine parts iron-ore paint, and two parts litharge, ground, subjected to 160° Fahrenheit and cooled; approximately seventy parts of Portland or similar cement; and approximately seventy parts of clean sharp sand.

704,850. **BURIAL-VAULT.** JAMES T. MCKIM and LEWIS MILLER, Thorntown, Ind. Filed Feb. 1, 1902. Serial No. 92,132. (No model.)

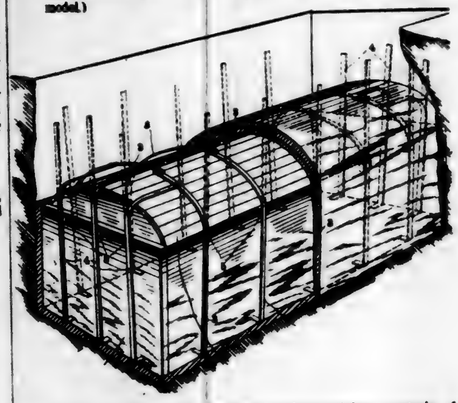

Claim.—1. The combination with a casket-receiving receptacle, of a plurality of strengthening-strips secured to said receptacle and having portions lying clear thereof, and a cement covering incasing the receptacle and embedding portions of said strips.

2. The combination with a casket-receiving box, of a plurality of strengthening-strips each secured at one of its ends to said box, said strips being adapted to be brought together in an arch over and free from the box-cover, the box-cover, and a cement covering incasing the box and embedding said strips.

3. The combination with a casket-receiving box, of a plurality of strengthening-strips each secured to the bottom of the box and extended up alongside the box free from the sides thereof and adapted to be arched thereover, a cover for the box, and a cement covering incasing the box and embedding the strips.

4. The combination with a casket-receiving box, of a plurality of strengthening-strips each secured to the bottom of the box, extended up alongside the box and adapted to be joined in pairs to form a series of arches over the cover of the box, the said cover, other strengthening-strips each secured at one end to the bottom of the box and at their free ends adapted to be secured to the adjacent strengthening-arch, and a cement covering incasing the box and embedding the strips.

704,851. **ELECTRIC LAMP.** HENRY W. HENNEL, Jr., Port Townsend, Wash. Filed Feb. 6, 1902. Serial No. 92,773. (No model.)

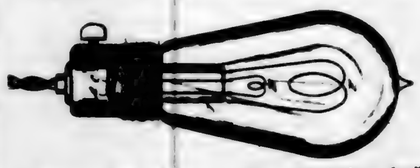

Claim.—1. An electric lamp comprising a globe having a plurality of filaments and a conducting screw-collar for the lamp-socket with one end of each filament connected to said screw-collar and separate insulated contacts arranged on the upper face of the neck of the globe and connected to the other ends of the filaments, said insulated contacts being made as cams having their upper faces inclined to correspond to the pitch of the screw-collar substantially as and for the purpose described.

2. An electric lamp comprising a globe having a plurality of filaments, and a conducting screw-collar for the lamp-socket with one end of each filament connected to said screw-collar, and separate insulated contacts arranged on the upper face of the neck of the globe, and connected to the other ends of the filaments, said contacts being made of different heights to cooperate separately or collectively with a yielding electrode in the lamp-socket substantially as and for the purpose described.

3. An electric lamp comprising a globe having a plurality of filaments and a conducting screw-collar for the lamp-socket with one end of each filament connected to said screw-collar, separate insulated contacts arranged on the upper face of the neck of the globe and connected to the other ends of the filaments and made of different height as described, and a lamp-socket screw-threaded to mesh with the collar of the globe and having a yielding electrode arranged to bear separately or collectively upon the globe-contacts substantially as described.

4. An electric lamp comprising a globe having a plurality of filaments, and a conducting screw-collar for the lamp-socket with one end of each filament connected to said screw-collar, separate insulated contacts arranged in the upper face of the neck of the globe and connected to the other ends of the filaments and made of different heights as described and a lamp-socket screw-threaded to mesh with the collar of the globe, and having a yielding electrode arranged to bear separately or collectively upon the globe-contacts, the said yielding electrode and globe-contacts being adapted as described to be brought into separate or collective contact by a rotation of the globe in its socket as described.

5. In an electric lamp of the kind described, a globe having a plurality of filaments with terminal insulated contacts made of different heights as described whereby the higher of said contacts is made to hold a yielding electrode away from and out of contact with the next adjacent and lower contact as described.

6. In an electric lamp of the kind described, a globe having a plurality of filaments with two terminal insulated contacts, one of said contacts being made relatively broad and low and the other one narrow and high in relation to each other substantially as described.

7. In an electric lamp of the kind described, a globe having a plurality of filaments with terminal insulated contacts having contacting faces inclined to form cams substantially as described.

704,852. **GRAPPLING DEVICE.** GEORGE F. BOLTZ, Fort Madison, Iowa. Filed Sept. 20, 1901. Serial No. 75,879. (No model.)

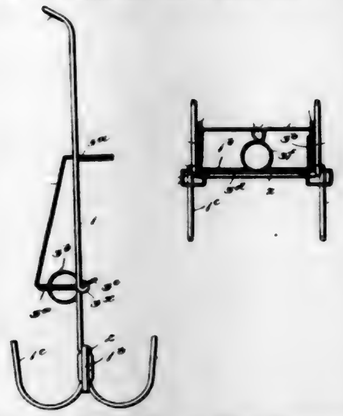

Claim.—1. The grapple having a loop member having hook terminals and a second member also having hook terminals fixed together, and means for lowering and raising the said grapple, substantially as set forth.

2. The grapple comprising a loop member having hook terminals and a second member having also hook terminals fixed together, a frame or third member pivoted to the first member, and means for the lowering and raising of the grapple, substantially as set forth.

3. The grapple comprising a loop member having hook terminals and a second member also having hook terminals fixed together, a member or frame having coincident springs, and means for lowering and raising the grapple, substantially as set forth.

4. The grapple comprising a loop member having hook terminals and a second member also having hook terminals fixed together, a pivoted right-angled member or frame having bent projections adapted to engage the first member, and coincident coiled springs with their forming-wires adapted to form stops, and means for lowering and raising said grapple, substantially as set forth.

5. The grapple comprising a loop member having hook terminals and a pivoted member having at its lower end, at the corners, loops adapted to serve as stops to hold off the hooks from the pump-stock and to retain the first-referred-to member in proper position in the movement upon the wire or cable applied to the pump-stock, substantially as set forth.

6. The grapple comprising a loop member having hook terminals and a pivoted member having at its lower end, at the corners, loops or stops, and a spring connected with, and possessing said stops with spring action, substantially as set forth.

7. The grapple comprising a loop member having hook terminals, and a pivoted member having lateral wires or portions bowed or extended beyond their connecting-wires toward the pump-stock, substantially as set forth.

704,853. **ORE-SAMPLER.** SIDNEY R. BRETHERTON, Denver, Colo. Filed Dec. 14, 1901. Serial No. 85,984. (No model.)

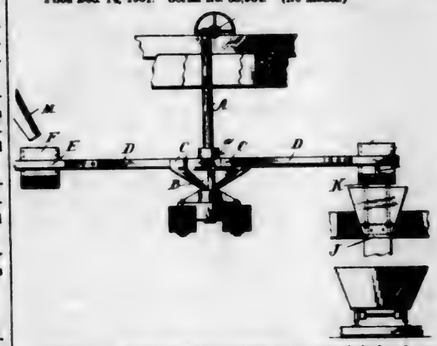

Claim.—1. An ore-sampler consisting of a vertical shaft and means for rotating it, a spider adjustable on the supporting-shaft and having radiating arms detachable therewith as specified, the said arms carrying at their free ends balanced buckets having projections for engaging a fixed tripper device dumping the buckets, and the buckets having a stop device permitting it to swing in one direction only beyond its balanced position as set forth.

2. In an ore-sampler employing a vertical shaft and horizontally-disposed arms fixedly secured to and radiating from said shaft, the combination therewith of buckets pivoted to the said arms and carried thereby, and means in the path traveled by the buckets adapted to tilt and dump them on their pivots, substantially as described.

3. In an ore-sampler, the combination with a supporting-shaft and detachable arms radiating from and horizontally supported on said shaft, pivots on the arms in alinement therewith, balanced buckets supported on the said pivots and a fixed tripper device in the path traveled by the buckets adapted to tilt and dump them, substantially as described.

704,854. **TIME-RECORDER FOR WORKMEN OR SERVANTS OR LIKE APPARATUS.** FRANK BROOK, Lindley, Huddersfield, England, assignor to Peter MacMaster, Hampstead, county of Middlesex, England. Filed Feb. 27, 1902. Serial No. 95,990. (No model.)

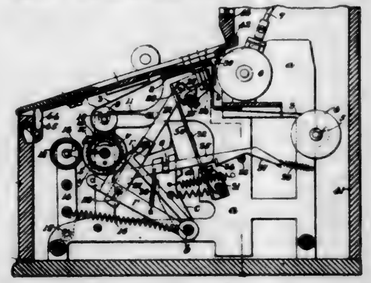

Claim.—1. The combination, in a time-recorder, of a frame, an actuating-shaft, a feed-roller pivotally mounted in said frame, a ratchet-wheel on said feed-roller, a feed-pawl engaging said ratchet-wheel, an oscillating pawl-carrier bearing said pawl, a wheel connected by a pin and slot to said pawl-carrier, and gearing connecting said wheel to the actuating-shaft of the apparatus, substantially as, and for the purpose, hereinbefore described.

2. The combination, in a time-recorder, of a frame, an actuating-shaft, a magazine-roller, a feed-roller pivotally mounted in said frame, a spring-pressed friction-roller bearing against said feed-roller, a ratchet-

wheel on said feed-roller, a feed-pawl engaging with said ratchet-wheel, an oscillating pawl-carrier bearing said pawl, a wheel connected by a pin and slot to said pawl-carrier, gearing connecting said wheel to the actuating-shaft of the mechanism, and a receiving-roller, substantially as, and for the purposes, hereinbefore described.

3. The combination, in a time-recorder, of a magazine-roller, time-printing wheels, inking mechanism, a printing-hammer, an actuating-shaft, gearing connecting said hammer and said actuating-shaft, a stationary writing-table arranged above said hammer, a feed-roller, gearing having lost motion connecting said feed-roller and said actuating-shaft, a friction-roller coacting with said feed-roller, and a receiving-roller coacting with said feed-roller, substantially as, and for the purposes, hereinbefore described.

4. The combination, in a time-recorder, of a writing-table, a cover having an aperture arranged above the said writing-table, guides on said writing-table, a shutter movable in said guides, forks on said shutter, pivotally-mounted cranks engaging said forks, an actuating-shaft, and gearing having lost motion connecting said cranks and said actuating-shaft, substantially as, and for the purposes, hereinbefore described.

5. The combination in a time-recorder, of a frame, an actuating-shaft, a feed-roller, rings having roughened peripheral surfaces and fitting on the said feed-roller, means for securing said rings on said feed-roller, a ratchet-wheel on said feed-roller, a feed-pawl engaging said ratchet-wheel, an oscillating pawl-carrier bearing said pawl, a wheel connected by a pin and slot to said pawl-carrier, and gearing connecting said wheel to the actuating-shaft, substantially as described.

6. The combination, in a time-recorder, of a frame, an actuating-shaft, a magazine-roller pivotally mounted in said frame, time-printing mechanism, inking mechanism, a stationary writing-table, a feed-roller, a spring-pressed friction-roller engaging with said feed-roller, a receiving-roller, a detachable cover, an aperture formed in said cover and registering with said writing-table, a rock-shaft pivotally mounted on said cover, an external handle on said rock-shaft, a crank-arm on said rock-shaft, and a forked lever mounted on said actuating-shaft and engaging said crank-arm, substantially as described.

7. The combination, in a time-recorder, of a frame, an actuating-shaft, a magazine-roller pivotally mounted in said frame, time-printing mechanism, inking mechanism, a stationary writing-table, a feed-roller, a spring-pressed friction-roller engaging said feed-roller, a receiving-roller, a detachable cover, an aperture formed in said cover and registering with said writing-table, a rock-shaft pivotally mounted on said cover, an external handle on said rock-shaft, a crank-arm on said rock-shaft, a forked lever mounted on said actuating-shaft and engaging said crank-arm, an arc-shaped rack on said rock-shaft, and a pivoted spring-controlled pawl coacting with said rack, substantially as described.

8. The combination, in a time-recorder, of a casing, an actuating-shaft, a detachable cover to said casing, a rock-shaft pivotally mounted on said cover, an external handle on said rock-shaft, an arc-shaped rack on said rock-shaft, a pivoted spring-controlled pawl coacting with said rack, an internal lever-arm on said rock-shaft, a lever-arm on said actuating-shaft, and a pin and interengaging fork on said lever-arms, substantially as, and for the purposes, hereinbefore described.

9. In a time-recorder, the combination of a frame, an actuating-shaft, a spring controlling said actuating-shaft, means for oscillating said actuating-shaft, a magazine-roller, time-printing wheels, inking mechanism, a pivoted spring-pressed printing-hammer, a spring-controlled bar, linkwork connecting said bar to said actuating-shaft, interengaging projections on said hammer and said bar, a cam on said bar for tripping said projections, a stationary writing-table, a feed-roller, gearing having lost motion connecting said feed-roller and said actuating-shaft, a spring-pressed friction-roller bearing against said feed-roller, a receiving-roller, a casing having an aperture arranged above said writing-table, a sliding shutter arranged beneath said aperture, guides for said shutter, and gearing having lost motion connecting said shutter and said actuating-shaft, substantially as described.

10. The combination, in a time-recorder, of a frame, a magazine-roller, time-printing wheels, a printing-hammer, inking mechanism, a writing-table rigidly fixed on said frame above said printing-hammer, a shutter mounted in guides over said table, a feed-roller, and friction and receiving rollers coacting with said feed-roller, the same being adapted to feed and print a recording-strip extending from said magazine-roller, between said time-printing wheels and said hammer, between said table and said shutter, over said friction-roller, between said friction-roller and said feed-roller, around said feed-roller and between said feed-roller and said receiving-roller, and onto said receiving-roller, substantially as described.

11. The combination, in a time-recorder, of a frame, an actuating-shaft, a feed-roller, rings having roughened peripheral surfaces and fitting onto said feed-roller, means for removably securing said rings on said feed-roller, and gearing connecting said actuating-shaft and said feed-roller, substantially as described.

704,855. DOOR-STOP. CHESTER C. BENNETT, Bayonne, N. J. Filed Nov. 26, 1901. Serial No. 83,868. (No model.)

Claim.—A door and a bar hinged at one end directly to the door and free at the other, with a guide-loop and a stop against which the bar strikes so as to rest thereon freely or without becoming attached so that the door can be closed without the bar having to be first disengaged from any holding device.

704,856. COUPON COLLECTION AND RECEIPT BOOK. WILLIAM S. CAPPELLER, Mansfield, Ohio, and CHARLES S. PATTERSON, New York, N. Y. Filed July 30, 1901. Serial No. 70,171. (No model.)

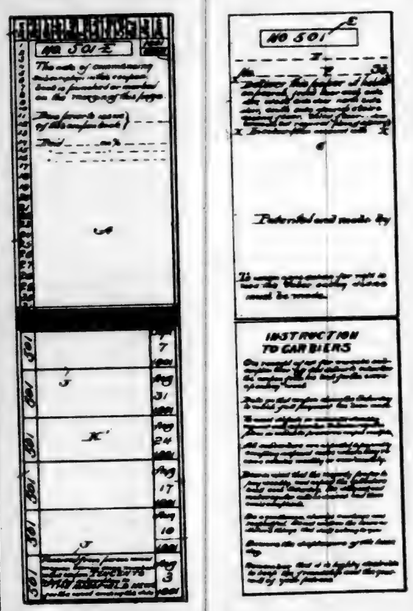

Claim.—A coupon collection and receipt book comprising covers, the outside face of the front cover provided with a designating-numeral, spaces for the reception of a name and place of residence, instructions as to the place of delivery of an article, and the name and address of the party with whom the account is opened, the inside face of the front cover provided with dats indicating the date on which the account was opened, a designating-numeral corresponding with the one on the outside face of the front cover, and appropriately-designated spaces for the entry of any amounts due prior to the issue of the book and for the entry of amounts paid on account of prior amounts due, the inside face of the back cover containing instructions to carriers, and a plurality of leaves bound with the covers, the leaves wholly consisting of a series of detachable coupons, each coupon bearing a date, a designating-numeral corresponding to the other designating-numerals heretofore mentioned, and a receipt signifying the amount paid, the article for which it was paid and the length of time during which the article paid for will be delivered, the date on the coupon corresponding with the date on which the subscription for the article ends, the coupons arranged in consecutive order from the bottom to the top of the leaf, each coupon being detachably secured to the one adjacent thereto and above it.

704,857. ROTARY APPARATUS OR PLOW FOR TREATMENT OF GROUND. ANDRÉ CASTELLIN, Paris, France, assignor to the Société Anonyme d'Études et d'Exploitation des Brevets A. Castelin pour Machines Agricoles Automobiles, Paris, France. Filed Jan. 9, 1902. Serial No. 89,086. (No model.)

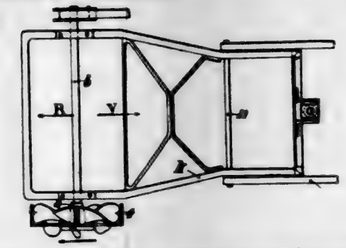

Claim.—1. A rotary plow comprising a hub, radial arms extending therefrom and bent at right angles near their ends, and approximately S-shaped hoes supported by said radial arms.

2. A rotary plow comprising an axis, a hub mounted thereon, radial arms extending from said hub, and bent at a right angle near their ends, and hoes attached to said radial arms and supported intermediate the points by such right-angular bends.

704,858. COUPLING FOR WAGONS. WILLIAM S. CHAPMAN, Kippen, Idaho, assignor of one-half to Andrew J. Erickson and Albert H. Peterson, Kippen, Idaho. Filed Apr. 19, 1902. Serial No. 103,692. (No model.)

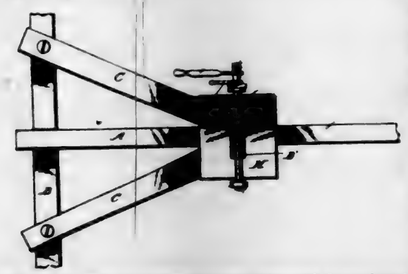

Claim.—In a wagon-coupling, the combination, with the rear bounds and the reach, of independently-movable gripping-jaws arranged on opposite sides of the reach and provided with extended lugs or heads at the opposite ends, a rigid metal casing applied to the ends of the bounds and extending over the reach and provided on the upper and under sides with guideways for reception of the said heads of the jaws, whereby the latter are adapted to slide laterally in the casing, a frame which surrounds the casing transversely, and the screw-clamp connected with the jaws and frame and adapted for adjusting the jaws relative to the reach, as shown and described.

704,859. ELECTRIC ACCUMULATOR-ELECTRODE. VICTOR CERVAL and JOSEPH LUDEMAN, Brussels, Belgium. Filed Nov. 21, 1901. Serial No. 83,103. (No model.)

Claim.—1. An improved electrode for accumulator-batteries comprising a mass of active material, a perforated envelop, inclosing the mass, and radial insulating-arms projecting from the envelop, substantially as described.

2. An improved electrode for accumulator-batteries, comprising a central conducting-rod, a mass of active material packed around it and a perforated envelop around the mass with radial insulating-arms secured to the envelop, said envelop being open at the top and bottom, substantially as described.

704,860. AUTOMOBILE. SAMUEL S. CONANT, Edgerton, Ohio. Filed Apr. 26, 1902. Serial No. 104,739. (No model.)

Claim.—1. The combination, with a vehicle-body and base-frame, of vertical guide-shafts, axle-hubs having gears connected therewith and both adapted to slide and rotate on said guides, spiral springs interposed between the hubs and the body of the vehicle and encircling the aforesaid guides, transverse shafts carrying worms that engage the said gears, a third shaft suitably geared with the said transverse shafts, and a hand-shaft geared with such third shaft and adapted to be operated from the seat of the vehicle for swinging the hubs and axles horizontally and thus guiding the vehicle, substantially as shown and described.

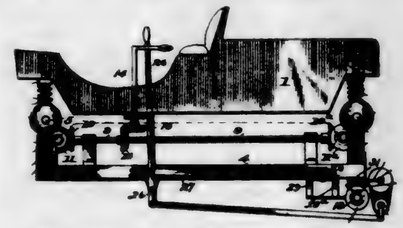

2. The combination, with a rigid frame and vertical guides arranged therein, of stub-axles having hubs adapted to slide and rotate on said guides, elongated spur-gears which are rigidly connected with said hubs and arranged slidably on the guide, a horizontal worm-shaft, a hand-crank shaft, and intermediate mechanism connecting it with the worm-shaft, whereby the operator is enabled to shift the axles of the running wheels at different angles to the body of the vehicle, substantially as shown and described.

3. The combination, with a vehicle-body, and base-frame, of vertical guides located at the corners of the frame and vehicle-body, hubs mounted slidably and rotatably on said guides and provided with stub-axles, elongated gears rigidly connected with the hubs and similarly mounted on the guides, springs applied to the guides above the hubs and elastically supporting the weight of the vehicle-body and attachments, transverse shafts carrying worms which engage the elongated gears, a shaft arranged longitudinally of the frame and geared with the worm-shaft, and a crank-shaft geared with such longitudinal shaft and projecting upward in proximity to the seat of the vehicle, substantially as shown and described.

4. The combination, with a suitable frame and vertical guides supported thereon, of axle-hubs and elongated gears connected and adapted to slide and rotate on said guides, and means for rotating the axles, the engagement therewith being maintained irrespective of the vertical oscillation of the axles and hubs, substantially as shown and described.

5. The combination with the vehicle-body, the rigid frame and vertical shafts journaled in the latter, of hubs arranged on the shafts, axles journaled in the hubs and geared with the shafts, the said hubs being provided with worm-wheels and adapted to slide vertically on the shafts, springs arranged between the hubs and the frame and pressing upon the hubs, a worm-shaft geared with the hubs, and means for rotating the vertical shafts and also for rotating the hubs for swinging the axles in the horizontal planes, substantially as shown and described.

6. The combination of the vehicle-frame and vertical shafts journaled therein, of hubs which are adapted to slide vertically on the shafts, axles held rotatably in the hubs and geared with said shafts, means for rotating the hubs and thereby swinging the axles horizontally, the drive-shaft and bevel-gearing adapted for driving the aforesaid shafts, clutches for locking the driving-gears with the drive-shaft, and lever mechanism for adjusting said clutches whereby the driving mechanism is thrown into and out of gear, substantially as shown and described.

7. The combination with the vehicle-frame and vertical shafts journaled therein, and axles and hubs arranged rotatably as described, of gearing adapted to be connected with the drive-shaft, clutches for throwing the gearing into and out of action, a brake mechanism comprising a friction device, a cylinder, a piston, and lever mechanism connecting it with the brake proper, a valve for regulating admission of steam to the cylinder, and lever mechanism connected with the clutches and also with the valve whereby the clutches are engaged or disengaged, and the valve simultaneously shifted, correspondingly, for applying or releasing the brake, substantially as shown and described.

8. The combination with the vehicle-frame, vertical shafts, hubs adapted to rotate horizontally thereon, and axles held in said hubs and geared with the said shafts, of means for rotating the hubs and thereby swinging the axle horizontally as required for guiding the vehicle, a drive-shaft and loose gears and clutches mounted thereon, a single and double clutch adapted to engage the same, and lever mechanism connected with the clutches whereby, when the driving-wheels are unlocked, a reversing-wheel, 30, may be brought into action for reversing the rotation of one of the running wheels, substantially as shown and described.

9. The combination with the vehicle-frame and vertical shafts journaled therein, of the front and rear hubs and axles adapted to swing horizontally on said shafts and provided with worm-wheels arranged below the hubs, the said hubs being adapted to slide vertically on the shafts, worm-shafts geared with said wheels, a longitudinal shaft geared with said worm-shaft, a crank-shaft geared with said longitudinal shaft and arranged in proximity to the vehicle-seat, spiral springs applied to the shafts between the vehicle-body and the axle-hubs, a drive-shaft, gears for operatively connecting it with the vertical shafts, clutch mechanism for engaging such gears with the drive-shaft, lever mechanism for adjusting the clutches, and a brake mechanism consisting of the friction-brake proper, a piston-cylinder, piston and rod connecting it with the brake, a valve and means for connecting it with the aforesaid lever mechanism, whereby the valve is operated simultaneously with the shifting of the remaining portion of the lever mechanism by which the driving mechanism is thrown into and out of gear, substantially as shown and described.

10. The combination with the vehicle-body, the rigid frame and shafts journaled vertically therein, of hubs adapted to slide and rotate on the said shafts and provided with axles, springs interposed between the hubs and the vehicle-body, axles secured in said hubs, the hubs having hollow, polygonal, downward extensions surrounding the shafts, worm-wheels applied to such extensions and adapted to rotate therewith, but permitting the extensions to slide vertically, a worm-shaft geared with the said wheel, and means for rotating the said worm-shaft for the purpose of shifting the axles in horizontal planes for guiding of the vehicle, the engagement with the hubs being maintained in any vertical adjustment of the latter, substantially as shown and described.

704,861. DUST-PAN. WILLIAM H. CORRELL, Holyoke, Colo. Filed Oct. 19, 1901. Serial No. 79,263. (No model.)

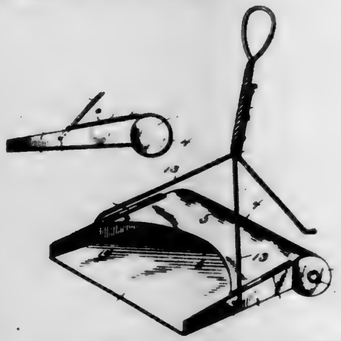

Claim.—1. The combination with a dust-pan, of a handle comprising a single wire bent centrally to form a loop and twisted upon itself below the said loop to form a grasp-coil, eyes in one of the strands of the said coil, and a brace-wire loosely mounted in the said eyes and having a stop at its upper end and a footpiece at its lower end.

2. The combination with a dust-pan, of a handle comprising a twisted wire formed with eyes, and a brace-wire extending through said eyes and having a stop at its upper end and a footpiece at its lower end.

704,862. LOCK. JAMES L. COULTER, Novina Center, N. Y. Filed Apr. 25, 1900. Renewed June 24, 1902. Serial No. 113,982. (No model.)

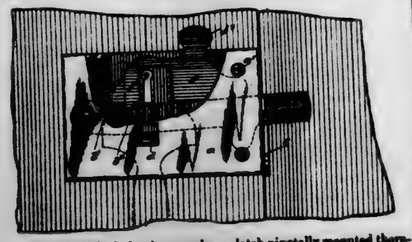

Claim.—1. A lock, having a casing, a latch pivotally mounted therein and formed with two indentations or recesses in its upper edge adjacent to its pivoted end, means for actuating the latch, and a tumbler capable of engagement at one end between the latch and a part of the casing to hold the latch in locked position, the forward portion of said tumbler being heavier than its rear portion and arranged to rest on the top of the latch, the tumbler having a rigid finger at its other end arranged to be lifted by a key to throw the tumbler, and the end of the finger bearing on the latch and being capable of engaging in either one of the recesses or indentations in the latch to hold the tumbler in active or inactive position.

2. A lock, comprising a casing, a latch pivoted at one end in said casing and formed with two indentations or recesses in its upper edge adjacent to its pivoted end, a thumb or finger plate for operating the latch, and a tumbler having a body portion resting on the top of the latch and provided with an extension at its forward end adapted to engage between the latch and a fixed part of the casing to hold the latch in locked position, an integral finger extending from the body portion of the tumbler at the opposite or rear end and having its lower end shaped to correspond with the recesses in the latch and arranged to engage either of said recesses to hold the latch in active or inactive position, the said finger end of the tumbler being adapted to be engaged by a key to lift the tumbler at said end and move the finger from one of said recesses to the other.

3. A lock, comprising a casing, a latch pivoted at one end in said casing and having two recesses therein adjacent to its pivoted end, means for operating the latch, and a tumbler resting on the latch and having an extension at one end adapted to engage between the latch and a stationary part of the casing to hold the latch in locked position, a finger at the other end of said tumbler and adapted to engage in either of said recesses in the latch, and an upward extension on said tumbler projecting through an opening in the top of the casing.

4. A lock, comprising a casing, a latch pivotally mounted in the casing, a tumbler working with said latch to hold it in locked position, and a thumb or finger plate for operating the latch, the said thumb or finger plate extending loosely through an opening in the casing and the door and having an upwardly-bent portion to prevent the turning of the thumb-plate in the opening in the door, and to hold the plate in position.

704,863. SYSTEM OF ELECTRICAL DISTRIBUTION. JOHN L. CREVELING, New York, N. Y. Filed Aug. 30, 1900. Serial No. 28,525. (No model.)

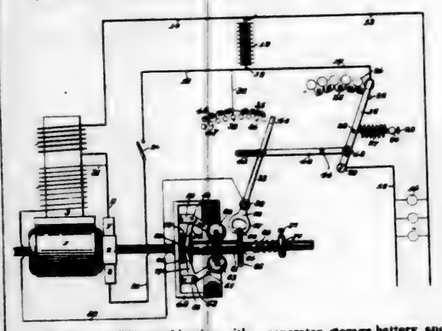

Claim.—1. The combination with a generator, storage battery, and translating device in electrical communication one with the other, of a resistance device and coöperative movable member in the work-circuit, and mechanical means for actuating said movable member proportionately to the rate of speed of the armature of the generator.

2. The combination with a generator, battery and translating devices, in electrical communication one with the other, of two variable resistances, one in the work-circuit and one in the field-circuit, movable members coöperative therewith, and mechanical means for actuating said members in proportion to the rate of speed of the generator.

3. The combination with a generator, battery and translating devices, in electrical communication one with the other, of variable resistances, one in the work-circuit and the other in the field-circuit, movable members coöperative with said resistances, respectively, and mechanical means for coregulating the currents in said circuits, respectively, by correlative movements of said members.

4. The combination with a generator, battery and translating devices, in operative communication one with the other, of a pair of variable resistances, one in the work-circuit and the other in the field-circuit, a pair of movable members coöperative with said resistances, respectively, an endwise-movable member operatively connected with said members, and centrifugally-actuated mechanism varying in speed with the armature-shaft of the generator, operatively connected with the endwise-movable member.

5. The combination with a generator, storage battery, and translating device in electrical communication one with the other, of a field-coil, variable resistances and movable members inserted respectively into the work or translating and field circuits, respectively, insulated, mechanical means uniting said movable members, and mechanical means for actuating said movable members relatively to the rate of speed of the armature of the generator.

6. The combination with a generator, storage battery and translating device, in electrical communication one with the other, of a field-coil, variable resistances and movable members inserted respectively, into the work or translating and field circuits, respectively, insulated mechanical means uniting said movable members, and mechanical means for actuating said movable members in successive order, relatively to the rate of speed of the armature of the generator.

7. The combination with a generator, storage battery, and translating device, in electrical communication one with the other, of a resistance device and coöperative movable member, inserted into the work-circuit, and centrifugally-actuated mechanism upon the armature-shaft of the generator, operatively connected with said movable member.

8. The combination with a generator, storage battery, and translating device, in electrical communication one with the other, and a field-coil, of resistance devices and mechanically-connected, but electrically-insulated, movable members, inserted, respectively, into said work or translating and field circuits, and centrifugally-actuated mechanism connected with the armature-shaft of the generator, operatively connected with said movable members.

9. The combination with a system of electrical distribution, comprising a generator, storage battery and translating devices, in electrical communication, and a field-coil, of mechanical means for coregulating the currents in the field and work circuits, relatively to the speed of rotation of the armature of the generator.

10. The combination with a system of electrical distribution comprising a generator, storage battery, and translating devices in electrical communication, and a field-coil, of resistance devices in the work and field circuits, respectively, and mechanical means of coregulating the currents in the field and work circuits through their respective resistances whereby the intensity of the translating devices may be held practically constant.

11. The combination with a generator, storage battery, and translating device, in electrical communication one with the other, and a battery field-coil, of a movable member intersecting the field-circuit, means for actuating said movable member relatively to the rate of speed of the armature-shaft of the generator, and a pair of variable resistances operatively disposed in the path of movement of the movable member, adapted respectively to diminish and increase the degree of resistance in the field-circuit through the continued movement of said movable member, substantially as and for the purpose specified.

12. The combination with a generator, storage battery and translating device, in electrical communication one with the other, of a battery field-coil, resistance devices and coöperative movable members inserted into the translating and field circuits, respectively, a transversely-insulated link, movably secured to one of said members, and loosely united to the other, whereby continued movement of one of said movable members will actuate the other in successive order, and centrifugally actuated mechanism connected with the armature-shaft of the generator, operatively connected with one of said movable members, substantially as and for the purpose specified.

13. The combination with a generator, storage battery and translating device, in electrical communication one with the other, and a battery field-coil, of resistance devices and movable members, coöperative in successive order, inserted respectively, into the translating and field circuits, a loose sleeve upon the armature-shaft of the generator, operatively connected with one of said movable members, an adjustably-fixed spring upon said shaft opposed to the movement of said sleeve, and centrifugally-actuated mechanism upon said shaft, operatively connected with said sleeve, substantially as and for the purpose specified.

14. The combination with a generator, storage battery and translating devices, in electrical communication one with the other, a battery lamp-circuit being defined between the battery and translating devices, of mechanical means for regulating the lamp-circuit by the speed of the generator, whereby the voltage of the lamp-circuit is kept practically constant, notwithstanding variations of the voltage in the generator and generator-circuit, due directly to the said variations in speed.

704,864. SYSTEM OF ELECTRICAL DISTRIBUTION. JOHN L. CREVELING, New York, N. Y. Filed Dec. 7, 1900. Serial No. 39,052. (No model.)

Claim.—1. The combination with a system of electrical distribution, comprising a generator, storage battery and translating devices in electrical communication through a main circuit, the battery dividing from the main circuit, in effect, a lamp-circuit deriving energy directly through the battery, of means for increasing or diminishing resistance in the lamp-circuit upon increase or decrease of battery-current to the field-circuit.

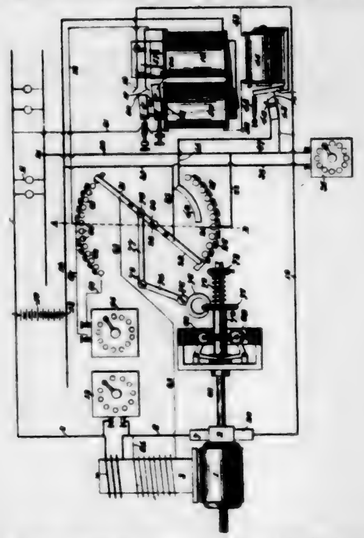

2. The combination with a system of electrical distribution, comprising a generator, storage battery, and translating devices, in electrical communication through a main circuit, and a field-coil, of resistance devices in the main and field circuits, respectively, means for coregulating the currents in the main and field circuits through their respective resistances, and an additional rheostat in shunt across the respective resistances.

3. The combination with a system of electrical distribution, comprising a generator, storage battery, and translating devices, in electrical communication through a main circuit, a field-coil, and means of coregulating the currents in the field and main circuits, respectively, proportionately to the rate of speed of the generator, of means for short-circuiting the variable-resistance main circuit, in case of failure of current in the generator main circuit.

704,865. SYSTEM OF ELECTRICAL DISTRIBUTION. JOHN L. CREVELING, New York, N. Y. Filed Dec. 7, 1900. Serial No. 39,050. (No model.)

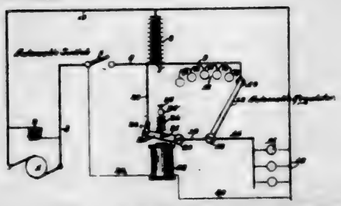

Claim.—1. The combination with a generator comprising a rotative member, a storage battery and a work or translating circuit, of a regulator in said circuit dependent upon the speed of rotation of said rotative member, and independent means of nullifying the effect of the regulator whenever the generator is ineffective.

2. The combination with a generator comprising a rotative member, a storage battery and a work or translating circuit, of a regulator in said circuit dependent upon the speed of rotation of said rotative member, and independent means of cutting out the regulator whenever the generator is ineffective.

3. The combination with a generator comprising a rotative member, a storage battery and a work or translating circuit, of a regulator in said circuit dependent upon the speed of rotation of said rotative member, independent means of cutting out the regulator whenever the generator is

ineffective, and electromagnetic means for inserting the regulator when the generator is in effective operation.

4. The combination with a generator comprising a rotative member, a storage battery and a work or translating circuit, of a regulator in said circuit dependent upon the speed of rotation of said rotative member, a shunt-circuit around the regulator, and independent automatic means for controlling said shunt-circuit.

704,866. **FIRING-GEAR FOR ORDNANCE.** KARL DEHELEIS, Pilsen, Austria-Hungary, assignor to Skodawerke Actiengesellschaft, in Pilsen, Pilsen, Austria-Hungary, a Firm. Filed Dec. 26, 1901. Serial No. 87,261. (No model.)

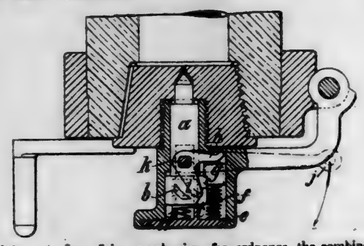

Claim.—1. In a firing mechanism for ordnance, the combination with a breech-block, of a striker arranged therein, a spring for operating said striker, a projection carried by the striker, a cocking device consisting of a bell-crank lever having one arm thereof during its passage in one direction engaging said projection to compress the spring to cause the operation of the striker when the said arm has passed out of engagement with said projection, means for oscillating said cocking device, a second projection carried by the striker and adapted to be engaged by the said arm in its passage in the opposite direction for returning the striker to its position of rest, and means engaging the cocking device for returning the same to its normal position and causing the said arm to engage with the said second projection.

2. In a firing mechanism for ordnance, the combination with a breech-block, of a striker arranged therein, a spring for operating said striker, a projection carried by the striker, a cocking device consisting of a bell-crank lever having one arm thereof during its passage in one direction engaging said projection to compress the spring to cause the operation of the striker when the said arm has passed out of engagement with said projection, means for oscillating said cocking device, a second projection carried by the striker and adapted to be engaged by the said arm in its passage in the opposite direction for returning the striker to its position of rest, means engaging the cocking device for returning the same to its normal position and causing the said arm to engage with the said second projection, and mechanism for preventing the operation of the striker until the breech-block is completely closed.

3. In a firing mechanism for ordnance, the combination with a breech-block, of a striker arranged therein, a spring for operating said striker, a projection carried by the striker, a cocking device engaging said projection during its passage in one direction and adapted to compress the said spring to cause the operation of the striker when the cocking device has passed out of engagement with the said projection, means for oscillating said cocking device, a second projection carried by the striker and adapted to be engaged by the cocking device in its passage in the opposite direction for withdrawing the striker and returning the same to its position of rest, and means engaging with the cocking device for returning it to its normal position and for causing the engagement of the cocking device with the second projection, substantially as described.

4. In a firing mechanism for ordnance, the combination with a breech-block, of a striker arranged therein, a spring for operating said striker, a projection carried by the striker, a cocking device engaging said projection during its passage in one direction and adapted to compress the said spring to cause the operation of the striker when the cocking device has passed out of engagement with the said projection, means for oscillating said cocking device, a second projection carried by the striker and adapted to be engaged by the cocking device in its passage in the opposite direction for withdrawing the striker and returning the same to its position of rest, means engaging with the cocking device for returning it to its normal position and for causing the engagement of the cocking device with the second projection, and mechanism for preventing the operation of the striker until the breech-block is completely closed, substantially as herein shown and described.

5. In a firing mechanism for ordnance, the combination with a breech-block, of a striker arranged therein, a guide for the said striker, a spring for operating said striker, a projection carried by the striker, a cocking device adapted to engage the said projection during its passage in one direction for compressing the spring to cause the operation of the striker when the cocking device has passed out of engagement with the said projection, a second projection carried by the striker, a spring arranged in the breech-block and adapted to be compressed during the operation of the cocking device in one direction and for causing the return of the cocking device to its normal position and for causing the cocking device to engage the second projection for withdrawing the striker to its position of rest, and means for operating said cocking device.

6. In a firing mechanism for ordnance, the combination with a breech-block, of a striker arranged therein, a guide for the said striker, a spring for operating said striker, a projection carried by the striker, a cocking device adapted to engage the said projection during its passage in one direction for compressing the spring to cause the operation of the striker when the cocking device has passed out of engagement with the said projection, a second projection carried by the striker, a spring arranged in the breech-block and adapted to be compressed during the operation of the cocking device in one direction and for causing the return of the cocking device to its normal position and for causing the cocking device to engage the second projection for withdrawing the striker to its position of rest, means for operating said cocking device, and mechanism for preventing the operation of the striker until the breech-block is completely closed.

704,867. **PILL-MAKING MACHINE.** JULIUS H. DEWS, Portsmouth, Va. Filed Dec. 7, 1901. Serial No. 85,011. (No model.)

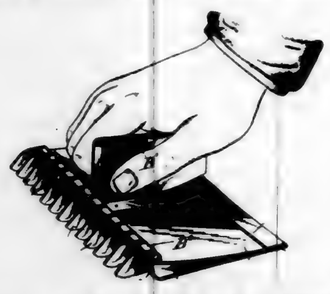

Claim.—1. The pill-making machine herein described consisting of the base-section composed of a plate provided at its front edge with tongues spaced apart for the cutters and at its rear edge with a returned portion forming a keeper and the cutter-section having its rear edge fitted detachably in the keeper of the base-plate and its front edge normally sprung apart from the base-plate and provided with blades operating between the tongues of the said base-plate substantially as set forth.

2. The combination in a pill-making machine of the base-section provided at its rear edge with a forwardly-opening keeper and the cutter-section fitted at its rear edge detachably in said keeper and provided at its front edge with blades for dividing the mass into sections substantially as set forth.

3. A pill-making machine comprising the base, the cutter-section held at its rear edge to the base and provided at its front edge with blades and sprung at its front edge normally away from the base and the handle secured at its front end to the cutter-section and elongated in the direction of the blades, and free at its rear end from the cutter-section whereby the said handle may operate with a lever action, substantially as set forth.

4. A pill-making machine consisting of the base provided at its front edge with a spaced-apart tongue and the cutter-section held at its rear edge to the base and provided with a transverse roll and with blades projecting therefrom at the front edge of the cutter-section substantially as set forth.

5. A pill-making machine consisting of the base-plate having a returned rear edge forming a keeper and provided at its front edge with the upwardly and forwardly projecting tongues spaced apart and the cutter-section fitting at its rear edge detachably in the keeper formed by the returned edge of the base-section and provided at its front edge with blades operating between the tongues of the base-section substantially as set forth.

6. A pill-making machine comprising a base-section and a cutter-section held together at their rear edges and sprung apart at their opposite edges and a handle secured at its front end to the cutter-section and having a rearward extension whereby it may operate with a lever action substantially as set forth.

7. A pill-making machine consisting of base and cutter sections, one

of said sections being provided at its rear edge with a forwardly-opening keeper for receiving the rear edge of the other section substantially as set forth.

704,868. **SHEET-DELIVERY APPARATUS FOR PRINTING PRESSES.** GEORGE P. PRESSEY, New London, Conn. Filed Jan. 2, 1902. Serial No. 88,167. (No model.)

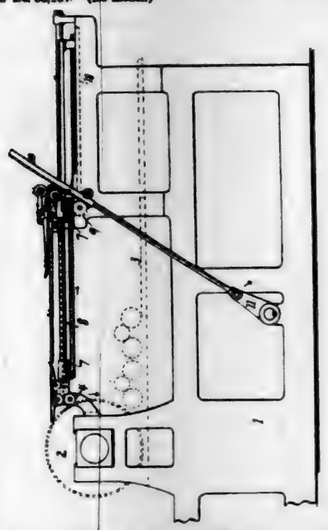

Claim.—1. A reciprocating carriage having a shaft, a curler and curler-roll mounted on the shaft, a driving-gear and rack for the curler-roll, a presser-roll, a supporting-arm for the presser-roll mounted on the carriage, and a lifting-arm and incline for the presser-roll substantially as described.

2. A delivery-tape, a reciprocating carriage made to take a sheet from the tape, a curler-shaft on the carriage, a curler-roll and curler on the shaft, a presser-roll, and a lifting-arm and incline for moving the presser-roll out of action, said presser and curler roll being made to feed a sheet to the curler for reversing or bending down the printed side of the sheet substantially as described.

3. A reciprocating carriage having a shaft with a curler, a curler-roll and curler-roll-driving gear all mounted on said shaft, said curler being removable or dismountable substantially as described.

4. A reciprocating carriage having a shaft with arms extended upward and forward therefrom, a front roller on the shaft, a cross-shaft on said arms, a curler on said cross-shaft made to clasp the upper and lower front portion of the front roller, and a gear for driving the front roller.

704,869. **COUPLING FOR WIRES, CONDUCTORS, OR THE LIKE.** JACOB FISCHER and HERMANN SCHNEIDER, Solothurn, Switzerland. Filed Jan. 22, 1902. Serial No. 90,741. (No model.)

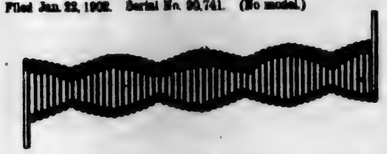

Claim.—A wire or conductor coupler consisting of a flexible sleeve of helically-wound wire the coils of which when in a free state form the walls of a spirally-shaped socket so that when the ends of this sleeve-coil are turned back the ends of the wires or conductors may be inserted into the interior of this sleeve-coil, the interior of which now forms an approximately straight bore, and by releasing the ends of the coil the ends of the wires or conductors are gripped and held fast in consequence of the torsion in the sleeve-coil.

704,870. **CAR-MOVER.** CHARLES D. FOX, Appleton, Wis. Filed Feb. 24, 1902. Serial No. 95,394. (No model.)

Claim.—1. A car-mover, comprising a base or shoe, a pinch-bar fulcrumed thereto, an operating-lever also fulcrumed thereto, a link pivotally connecting said pinch-bar with said operating-lever, and means for changing the point of pivotal connection of said link with said lever.

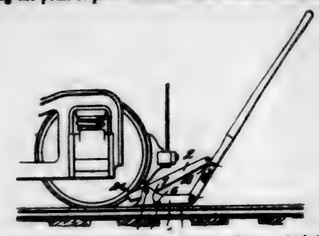

2. A car-mover, comprising a base or shoe, a pinch-bar fulcrumed thereto, an operating-lever also fulcrumed thereto having an elongated slot therein and a plurality of openings extending transversely of and intersecting said slot, a link pivoted to said pinch-bar fitting within said slot, and a removable pivot pin or bolt extending through one or the other of said openings, and through said link.

3. In a car-mover, a base or shoe having a plurality of separated arms, and a yieldingly-supported roller mounted in and movable between said arms and normally projecting below the lower surface of said shoe.

4. In a car-mover, a base or shoe having a plurality of separated arms, a roller bodily movable in and between said arms and normally projecting below the lower surface of said shoe, and a spring for resisting the upward movement of said roller.

5. In a car-mover, a base or shoe having a plurality of separated arms, a spur or projection on the under side thereof, and a yieldingly-supported roller mounted in and between said arms and normally projecting below the lower surface of said shoe.

6. In a car-mover, a base or shoe having a plurality of separated arms, a spur or projection on the under side thereof, a roller bodily movable in and between said arms and normally projecting below the lower surface of said shoe, and a spring for resisting the upward movement of said roller.

7. In a car-mover, a base or shoe having two parallel arms, a roller vertically movable between said arms and normally projecting below the lower surface of said shoe, and a spring secured to said shoe and acting upon said roller for resisting the upward movement thereof.

8. In a car-mover, a base or shoe having two parallel arms, a roller vertically movable between said arms and normally projecting below the lower surface of said shoe, a cross-bar connecting said arms, and a spring secured to said cross-bar and acting upon said roller for resisting the upward movement thereof.

9. In a car-mover, a base or shoe having two parallel arms provided with grooves along their inner surfaces, a roller normally projecting below the lower surface of said shoe and having its shaft or axis fitting within said grooves, and a spring acting upon said roller for resisting its upward movement.

10. In a car-mover, a base or shoe bifurcated or slotted to form two parallel, vertically-disposed arms, having grooves in the inner surfaces thereof terminating at their lower ends in shoulders, a roller normally projecting below the lower surface of said shoe and having its shaft or axis fitting within said grooves and adapted to engage said shoulders, a bearing-block for said roller movable in said grooves, and a spring acting upon the upper end of said bearing-block.

704,871. **BICYCLE ATTACHMENT.** JOHN B. DAVIS, Dayton, Ohio, assignor of one-half to W. J. Peters and H. B. Peters, Troy, Ohio. Filed Mar. 14, 1902. Serial No. 98,160. (No model.)

Claim.—1. In an attachment for loading bicycles in the rear of vehicles, the combination with the steering-fork of a bicycle, a horizontal fork having a connection with said steering-fork, a bow or yoke having

a pivotal connection with said horizontal fork, hooks or angular arms connected to the ends of said bow or yoke, said hooks or angular arms being adapted to inclose a vehicle-axle, a saddle adapted to inclose the upper portion of a vehicle-axle, and a spring connected to the median portion of said bow or yoke and to which said saddle is loosely connected the said spring serving to maintain said saddle in rigid contact with the vehicle-axle and to permit of the yielding motion of the attachment due to the moving vehicle, substantially as specified.

2. In a device for loading bicycles in the rear of vehicles, the combination with the steering-fork of a bicycle, a horizontal fork having a pivotal connection with said steering-fork, a yoke or bow having a pivotal connection with said horizontal fork, hooks or angular arms having swivel and spring-controlled connections with the ends of said bow or yoke, the said hooks or angular arms being adapted to be moved into two positions and to be locked in such positions, one of said positions securing the attachment to the rear axle of a vehicle, a saddle adapted to inclose the upper portion of said vehicle-axle between the said hooks or angular arms, a spring attached to the median portion of said bow or yoke, said spring having an extended portion to which the saddle is movably attached, and the said extended portion exerting pressure to maintain the saddle in rigid contact with the upper portion of the vehicle-axle, substantially as specified.

3. In a device for loading bicycles in the rear of vehicles, the combination of a fork adapted to be attached to the steering-fork of a bicycle, a bow having a spring-controlled and swivel connection with said fork, hooks or angular arms attached to the ends of said bow, a pin and slot on the adjacent ends of said bow and the angular arms by means of which said angular arms are locked in and out of operative positions, springs controlling said angular arms when in such locked positions, the said angular arms when in operative positions inclosing the rear axle of a vehicle and serving to prevent a disconnection of the attachment from the vehicle-axle when the vehicle is moving, a saddle inclosing the upper side of the vehicle-axle, a spring secured to the median portion of the bow, the said spring having an extended portion to which the saddle is loosely connected and by means of which the said saddle is maintained rigidly against the upper side of the vehicle-axle, substantially as specified.

704,872. **WIRE-BARBING MACHINE.** WILLIAM H. FARRELL, Donora, Pa. Filed Dec. 12, 1901. Serial No. 85,565. (No model.)

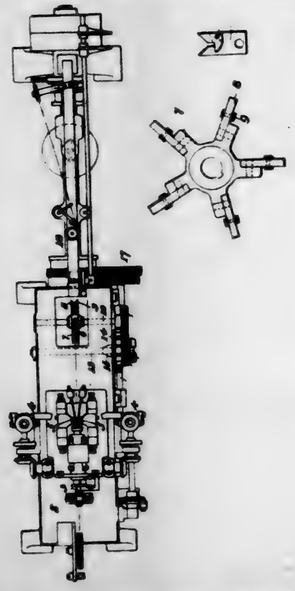

Claim.—1. In a wire-barbing machine, a pull-out wheel having grippers formed of two or more members, one of which at least is movable, the movable member or members being actuated to grip the wire by the pressure of the wire thereon caused by the tension on the wire.

2. In a wire-barbing machine, a pull-out device having grippers formed of two or more members, one of which at least is movable, the movable member or members being composed of a bell-crank lever or levers, one arm of such lever being adapted to have the wire rest thereon.

3. In a wire-barbing machine, a pull-out wheel having grippers formed of two or more members, one of which at least is movable, the movable member or members being actuated to grip the wire by the pressure of the wire thereon caused by the tension on the wire, a twister, and a yielding butterfly-wheel between the pull-out wheel and the twister.

704,873. **MEANS FOR CLOSING JARS.** GEORGE H. FOX, Bangor, Me. Filed Nov. 16, 1901. Serial No. 82,541. (No model.)

Claim.—1. The combination of a jar provided with openings at both ends, closures for said openings, and a locking device attached to and serving as a carrier for one of said closures and adapted to engage the other closure; said jar having a vertical notched flange which extends beyond the plane of the attached closure and serves to protect the latter and to hold the locking device in position on the jar.

2. The combination of a jar provided with openings at both ends, closures for said openings, and a locking device attached to and serving as a carrier for the bottom closure and adapted to engage the top closure; said jar having a vertical notched flange which extends beyond the plane of the attached closure and serves to protect the latter and to hold the locking device in position on the jar.

3. The combination of a jar provided with openings at both ends, closures for said openings, and an elastic locking device attached to and serving as a carrier for one of said closures and adapted to engage the other closure; said jar having a vertical notched flange which extends beyond the plane of the attached closure and serves to protect the latter and to hold the locking device in position on the jar.

4. The combination of a jar provided with openings at both ends and with a flange at one end having notches, closures for said openings, and a continuous bail engaging said notches and extending around said jar and over both closures, the lower closure being attached to said bail and carried thereby.

5. The combination of a jar provided with a top opening and with a bottom having a small opening, said jar being provided at its bottom with a downwardly-extending notched flange, a notched cover for said top opening, a stopper for the small bottom opening, the outer end of said stopper being above the plane of said flange, and a continuous bail for securing said cover and stopper extending around said jar and engaging said stopper and the notches of said flange and cover.

6. The combination of a jar provided with openings at both ends and having a downwardly-extending peripheral flange at the bottom thereof, said flange having oppositely-disposed notches therein, closures for said openings, and a bail attached to the bottom closure and adapted to extend over the top closure, said bail fitting in said notches.

7. A bail forming a complete circuit and adapted to extend around a jar, said bail having a handle at one end, a stopper independent of the circuit attached to the other end and spring-loops formed in said bail between said stopper and handle, whereby the bail is clamped around the jar.

8. A bail forming a complete circuit in one continuous piece and adapted to surround a jar, said bail having a loop in one end thereof adapted to serve as a handle, and having its terminal ends fastened together and provided with a stopper independent of the circuit.

9. A bail forming a complete circuit adapted to surround a jar, said bail having a loop-handle formed in one end, a stopper attached to the other end independent of said circuit and springs formed in said bail at opposite sides between said handle and stopper.

704,874. **ESCAPEMENT FOR ELECTROMAGNETICALLY-CONTROLLED CLOCKS.** HERBERT H. GRENFELL, London, England. Filed Feb. 5, 1902. Serial No. 92,687. (No model.)

Claim.—1. In an electromagnetically-controlled clock-movement, the combination, with an arbor of said movement, of a pin connected to said arbor, a slotted detent-bar forming a stop for said pin, but allowing the pin to pass through the slot as the said bar is moved to and fro, guides in which said bar can slide, a spring-controlled armature pivotally mounted between the poles of an electromagnet, and connected to the detent-bar, and said electromagnet, substantially as described.

2. In an electromagnetically-controlled clock-movement, an escapement consisting of a radial arm fixed on an arbor of said movement, a pin projecting from said arm substantially parallel to said arbor, a slotted detent-bar forming a stop for said pin, but allowing the pin to pass through the slot when the said bar is moved to and fro, guides in which said bar can slide, a spring-controlled armature pivotally mounted between the poles of an electromagnet and pivotally connected to the detent-bar, said electromagnet, and a stop for said armature, substantially as described.

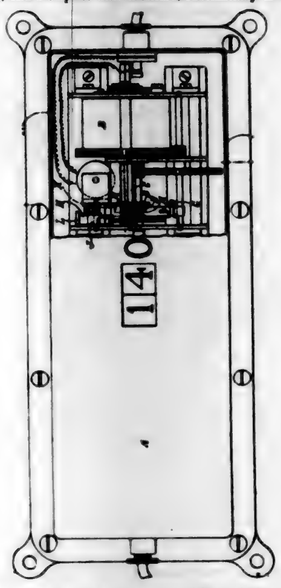

3. In a drum signaling device actuated by a clock-movement, the combination with the clock-movement and the drum-axle, of an electromagnetically-controlled escapement comprising an electromagnet, an armature pivoted between the poles of said magnet, a spring for controlling the armature, a stop to limit the turning movement of the armature in one direction, a slotted detent-bar pivotally connected to the armature, guides for said detent-bar, and a pin connected to one arbor of the clock-work-train and adapted to rest upon the detent-bar and to pass through the slot therein as said bar is moved to and fro, substantially as described and for the purpose specified.

704,875. **WIRE-STRETCHER.** WILLIAM M. HALPAIN, Hamilton, Tex. Filed Oct. 10, 1901. Serial No. 78,722. (No model.)

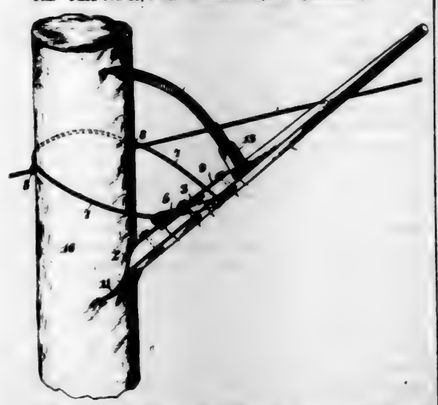

Claim.—1. A wire-stretcher, comprising a lever, a swinging cross-head disposed transversely of the lever and having an intermediate fulcrum connection therewith, whereby the cross-head is capable of swinging in a direction endwise of the lever, and wire-engaging links loosely carried by the opposite ends of the cross-head.

2. A wire-stretcher comprising a lever having a socket or recess formed in the upper side thereof, a cross-head mounted within the recess, a metal strap secured across the recess and projected at the adjacent end of the lever to form a fulcrum therefor, and wire-engaging hooks loosely connected to the outer ends of the cross-head.

3. A wire-stretcher comprising a lever having a beveled end and a recess formed adjacent to said end and in the upper face thereof, a cross-head mounted in the recess, a metal strap secured across the recess, conformed to the beveled end of the lever and projected beyond the latter to form a fulcrum-point, a pivot-bolt piercing the lever, the cross-head and the strap, and wire-engaging links loosely connected to the opposite ends of the cross-head.

4. A wire-stretcher, comprising a wooden lever having a beveled end and a recess formed adjacent to said end and in the upper face of the lever, a metal plate secured across the recess formed in the beveled end of the lever and having a projected bifurcated end to form a fulcrum, a cross-head fitted in the recess, a pivot piercing the lever, the cross-head and the metal strap, links loosely connected to the opposite ends of the cross-head and having outer terminal hooks, and a prop pivoted to the lever and located outwardly from the cross-head.

5. A wire-stretcher, comprising a lever, an intermediately-pivoted cross-head carried thereby, wire-engaging links connected to the opposite ends of the cross-head, and correspondingly-beveled stop-shoulders located at opposite sides of the cross-head and in the path of the swinging movement thereof.

6. A wire-stretcher, comprising a lever having a recess formed therein, the opposite ends of the recess being pointed to form correspondingly-beveled stop-shoulders, a cross-head pivoted intermediately in the recess and capable of contact with the corresponding stop-shoulders, and wire-engaging links carried by the opposite ends of the cross-head.

7. A wire-stretcher, comprising a lever having a recess formed therein, the opposite ends of the recess being pointed to form correspondingly stop-shoulders, a cross-head pivoted intermediately in the recess and capable of contact with the shoulders, and a metal strap secured across the recess and projected beyond the adjacent end of the lever to form a fulcrum therefor.

704,876. **MACHINE FOR REMOVING STONES FROM CHERRIES OR OTHER SINGLE-STONED FRUIT.** WILLIAM P. HARRIS, London, England, assignor to the Fruit Stoning and Preserving Syndicate, Limited, London, England. Filed Feb. 24, 1902. Serial No. 96,280. (No model.)

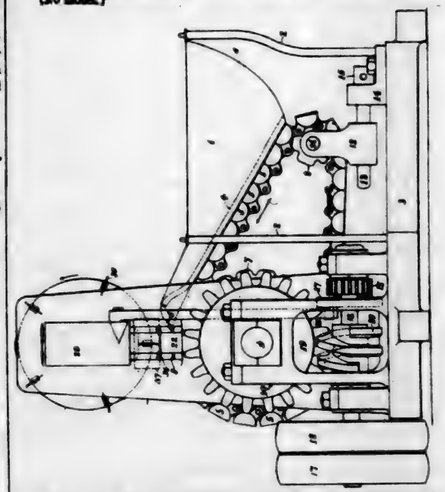

Claim.—1. The combination of a reciprocatory stone-extractor for entering and withdrawing the stone from the fruit and an extractor-clearer for freeing the withdrawn stone from the extractor.

2. The combination of a reciprocatory stone-extractor for withdrawing the stone and a fruit-retainer for the fruit to bear against during withdrawal of the stone therefrom and an extractor-clearer for freeing the withdrawn stone from the extractor.

3. The combination of a reciprocatory stone-extractor for withdrawing the stone and a fruit-retainer for the fruit to bear against during withdrawal of the stone therefrom and an extractor-clearer for freeing the withdrawn stone from the extractor and a rotary stone-discharger for removing the freed stone from the machine.

4. A reciprocatory stone-extractor provided with sharp edges partially for entering and cutting open the skin and pulp of the fruit at one side of the stone and partially for engaging with and withdrawing the stone through the opening cut.

5. A reciprocatory stone-extractor comprising spring-tongues for piercing the fruit and embracing the stone therein and projections on the said tongues for retaining the stone in the embrace of the extractor.

6. A reciprocatory stone-extractor comprising spring-tongues for piercing the fruit and embracing the stone therein and projections on the said tongues for retaining the stone in the embrace of the extractor and blades for cutting open the skin and pulp of the fruit between the spring-tongues and the stone to permit of exit of the stone with the extractor on withdrawal of the latter from the fruit.

7. An extractor-clearer for freeing withdrawn stones carried by a reciprocating stone-extractor such clearer consisting of a plate situated in the path of motion of the stone-extractor.

8. In a machine of the character described, the combination of a reciprocatory stone-extractor for partially entering and withdrawing the stone from the fruit, a conveyer for feeding the fruit to the extractor, a pair of sprocket-wheels for supporting the conveyer, said wheels of different diameters, a shaft for operating the sprocket-wheel of larger diameter, a peg-wheel for operating said shaft, means engaging with the said peg-wheel for intermittently operating it, means for operating the stone-extractor, and an extractor-clearer for freeing the withdrawn stone from the extractor.

9. In a machine of the character described, a reciprocatory stone-extractor comprising spring-tongues for piercing the fruit and embracing the stone therein and projections on the said tongues for retaining the stone in the embrace of the extractor, and an extractor-clearer for freeing the withdrawn stones from the extractor.

10. In a machine of the character described, a reciprocatory stone-extractor comprising spring-tongues for piercing the fruit and embracing the stone therein and projections on the said tongues for retaining the stone in the embrace of the extractor, an extractor-clearer for freeing the withdrawn stones from the extractor, and a rotary stone-discharger for removing the freed stone.

11. A reciprocatory stone-extractor comprising spring-tongues for piercing the fruit and embracing the stone therein and projections on the said tongues for retaining the stone in the embrace of the extractor and blades for cutting open the skin and pulp of the fruit between the spring-tongues and the stone to permit of exit of the stone with the extractor on withdrawal of the latter from the fruit, and an extractor-clearer for freeing the withdrawn stones from the extractor.

12. A reciprocatory stone-extractor comprising spring-tongues for piercing the fruit and embracing the stone therein and projections on the said tongues for retaining the stone in the embrace of the extractor and blades for cutting open the skin and pulp of the fruit between the spring-tongues and the stone to permit of exit of the stone with the extractor on withdrawal of the latter from the fruit, an extractor-clearer for freeing the withdrawn stones from the extractor, and a rotary stone-discharger for removing the freed stone.

13. In a machine of the character described, a standard, a rod carried thereby, a slide mounted upon the rod, guides for the said slide, means for imparting a vertical reciprocatory motion to said slide, a stone-extractor carried by the said slide and adapted to partially enter and withdraw the stone from the fruit, means for feeding the fruit to be stoned to the said extractor, and an extractor-clearer for freeing the withdrawn stone from the extractor.

14. In a machine of the character described, a standard, a rod carried thereby, a slide mounted upon the rod, guides for the said slide, means for imparting a vertical reciprocatory motion to said slide, a stone-extractor carried by the said slide and adapted to partially enter and withdraw the stone from the fruit, means for feeding the fruit to be stoned to the said extractor, an extractor-clearer for freeing the withdrawn stone from the extractor, and a rotary stone-discharger for removing a freed stone from the machine.

704,877. AUTOMATIC RAILWAY-SIGNAL. WALTER L. HARPER, Mena, Ark. Filed Feb. 25, 1902. Serial No. 95,567. (No model.)

Claim.—1. A device of the class described comprising a rotary signal designed to be mounted on a train, gearing for connecting the signal with one of the axles, and means for automatically rotating the signal when the train stops, whereby the signal will display its lights in a predetermined manner, substantially as described.

2. A device of the class described comprising a rotary signal designed to be mounted on a train and to be rotated when the train is in motion, and means for automatically actuating the signal when the train stops to display a danger-signal in a predetermined direction, substantially as described.

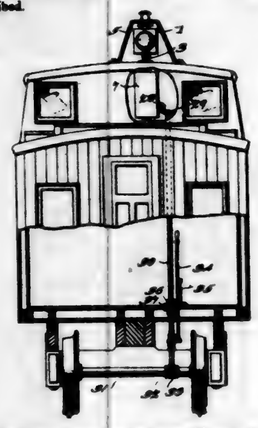

3. A device of the class described comprising a rotary signal, a shaft carrying the signal, a stationary gear-wheel, upright revolving gears offset from the shaft and meshing with the stationary gear, a rotary gear also meshing with the revolving gears, means for connecting the rotating gear with a car-axle, and a rotary weight connected with the said shaft and adapted to return the same to its initial position, substantially as and for the purpose described.

4. A device of the class described comprising a rotary signal designed to be mounted on a train and provided with a plurality of lights of different colors, gearing for rotating the signal while the train is in motion, and a rotating weight connected with the signal and adapted to return the same to its initial position when the train stops, substantially as described.

5. A device of the class described comprising a rotary signal having a plurality of different-colored lights, gearing for rotating the signal while the train is in motion, and a shaft having a weighted arm and connected with the said gearing, said weighted arm being adapted to return the signal to its initial position, substantially as described.

6. A device of the class described comprising a rotary globe or lantern-casing provided with a plurality of transparent panes or bull's-eyes of different colors, a stationary lighting device supported within the globe or casing, and means for rotating the globe or casing when a train is in motion, and for stopping the globe or lantern-casing in a predetermined position when the train stops, substantially as described.

7. A device of the class described comprising an upright signal-carrying shaft provided with arms, a stationary horizontal gear, a rotary horizontal gear designed to be connected with an axle of a train, whereby the device will be operated when the train is in motion, gears mounted on the arms, and meshing with the said horizontal gears, a horizontal shaft having a weighted arm, and gearing connecting the horizontal shaft with the upright shaft, substantially as described.

8. A device of the class described comprising an upright signal-carrying shaft carrying an arm, the stationary and rotary horizontal gears, gears mounted on the arm and meshing with the said gears, and means for returning the upright shaft to its initial position when the train stops, substantially as described.

9. A device of the class described comprising an upright shaft, a lantern globe or casing detachably interlocked with the shaft and provided with a plurality of transparent panes of different character, a bracket, a stationary lighting device supported by the bracket within the globe or casing, gearing for rotating the upright shaft when a train is in motion, and means for returning the globe or casing to its initial position when the train stops, substantially as described.

10. A device of the class described comprising an upright rotary-signal-carrying shaft, a signal mounted on the shaft, arms extending from the same, upright gears mounted on the arms, stationary and rotary horizontal gears meshing with the upright gears, a shaft 30 extending to the bottom of the car, gearing for connecting the shaft 30 with the rotary horizontal gear and with one of the axles, means for throwing the shaft 30 into and out of gear and means connected with the signal-carrying shaft for returning the signal to its initial position when the train stops, substantially as described.

11. A device of the class described comprising a signal-carrying shaft, a shaft 30 extending to the bottom of the car, gearing for connecting the shaft 30 with one of the axles and with the signal-carrying shaft, a bearing receiving the shaft and mounted on the car-body, and springs cushioning the bearing, substantially as described.

704,878. SHIP'S BERTH. ADDISON W. HITT, San Francisco, Cal., assignor of one-half to Charles B. Naylor, San Francisco, Cal. Filed Aug. 12, 1901. Serial No. 71,816. (No model.)

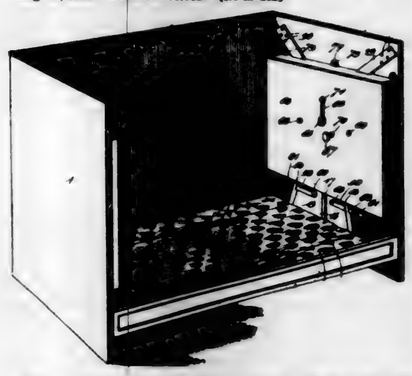

Claim.—1. The combination with a swinging berth, of pivoted buffers operatively connected with the berth-supports, and motion-controlling springs disposed for flexure in planes parallel with those of the buffers.

2. The combination with a swinging berth, of pivoted buffers operatively connected with the berth-supports, motion-controlling springs cooperating with the buffers, and means for increasing or diminishing the resistance to flexure of said springs.

3. The combination with a three-part bed-bottom frame, of braces secured to the center section thereof and having their upper ends supported for swinging movement, fixed extensions projecting beyond the braces, and swinging buffers pivotally connected with said extensions.

4. The combination with a three-part bed-bottom frame, of braces secured to the center section thereof and having their upper ends supported for swinging movement, fixed extensions projecting beyond the braces, swinging buffers pivotally connected with the said extensions, and motion-controlling springs cooperating with the braces.

5. The combination with a bed-bottom frame, of braces secured thereto and having their upper ends supported for swinging movement, fixed extensions projecting beyond the braces, swinging buffers pivotally connected with said extensions, motion-controlling springs cooperating with the braces, and means for increasing or diminishing the resistance to flexure of the said springs.

6. In a ship's berth, a bed-bottom comprising a frame composed of a fixed center section and hinged side sections, drop-rods rigidly associated with the center sections and pivotally associated with the side sections, a wire mattress suitably associated with the said sections, a three-part mattress supported upon the frame, head and foot boards associated with the center section of the frame and hung for swinging movement, gravity-catches carried by the head and foot boards and having means associated therewith for operating the same, and projections of the side pieces of the frame to engage with the gravity-catches to hold the side pieces turned at right angles to their normal positions.

7. In a ship's berth, a bed-bottom comprising a frame composed of a fixed center section and hinged side sections, drop-rods rigidly associated with the center section and pivotally associated with the side sections, a wire mattress suitably associated with the three sections, and a three-part mattress supported upon the wire mattress.

8. In a ship's berth, a bed-bottom frame supported for swinging movement and having foldable sides, in combination with means carried by the frame-support for engaging the sides to hold them turned at right angles to their normal positions.

704,879. FEED-WATER HEATER. RAYMOND H. HOUSEHOLDER, Canton, Ohio. Filed Mar. 27, 1902. Serial No. 100,231. (No model.)

Claim.—1. The combination, in a feed-water heater, of an outer casing having chambered heads, an inner casing containing a chamber having inlet and outlet and closed at its opposite ends by tube-sheets whereby said internal chamber is separated from the chambered heads of the casing, tubes connecting said sheets and passing through the chamber within the inner casing, and means whereby fluid is caused to flow through the chamber between the inner and outer casings and between the tube-sheets of the heater and through the tubes of the same, substantially as specified.

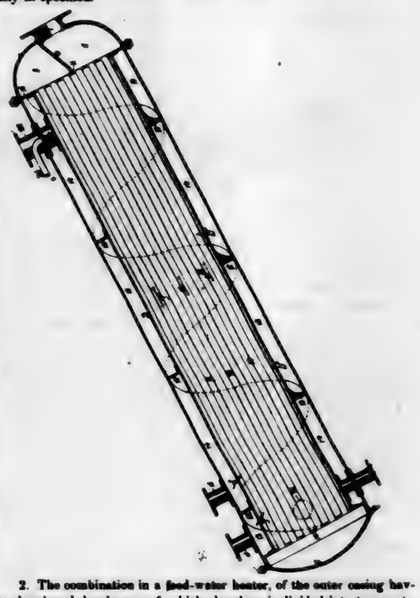

2. The combination in a feed-water heater, of the outer casing having chambered heads, one of which chambers is divided into two parts, an inner casing containing a chamber with inlet and outlet, tube-sheets closing the opposite ends of said inner casing, and separating the chamber within the same from the chambers within the heads of the outer casing, tubes extending through said internal chamber and connecting the opposite tube-sheets, both sets of tube-sheets communicating with the chamber in one of the heads, and each set of tubes communicating with its respective chamber in the other head, one of the latter chambers being in communication with the annular space between the inner and outer casings and between the tube-sheets of the heater, and the other being in communication with the supply or discharge branch, substantially as specified.

3. The combination in a feed-water heater, of an outer casing having chambered heads, an inner casing containing a chamber with inlet and outlet, tube-sheets closing the opposite ends of said casing, and separating the same from the heads of the outer casing, tubes connecting said tube-sheets, a helical partition whereby the annular chamber between the inner and outer casings is formed into a spiral passage, and communication between said passage and one of the chambered heads of the outer casing, substantially as specified.

4. The combination in a feed-water heater, of inner and outer casings, with a helical partition forming the annular chamber between said casings into a spiral passage, said partition consisting of an angular bar having one of its flanges secured to one of the casings, the other flange forming the partition, substantially as specified.

5. The combination in a feed-water heater, of inner and outer casings, with a helical partition forming the annular chamber between said casings into a spiral passage, said partition consisting of an angular bar having one of its flanges secured to the inner casing, substantially as specified.

6. The combination of a feed-water heater having steam and water passages therein, and a water-distributer located in the contracted steam-outlet branch whereby it provides for a condensation of the steam independently of that effected by contact of said steam with the casings of the passages through which the water flows, substantially as specified.

704,880. MECHANICAL STOKER. GEOFFREY HOWARD and GEO. GUNN, Bedford, England. Filed Jan. 18, 1902. Serial No. 90,266. (No model.)

Claim.—1. In a mechanical stoker, the combination with a fuel-

pressure cylinder, a ram worked thereby for supplying to the furnace the charges of fuel, and a valve for controlling the passage of the pressure fluid to and from said cylinder; of a cam-wheel for actuating the valve, and of means for imparting a step-by-step motion to said cam-wheel substantially as and for the purpose specified.

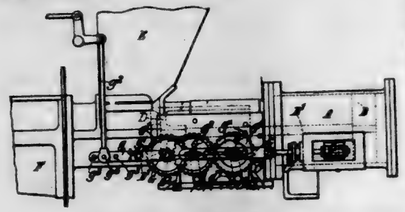

2. In a mechanical stoker, the combination with the fluid-pressure cylinder, the ram and the valve; of a cam-wheel for actuating the valve, of a pawl-and-ratchet device for imparting motion to said cam-wheel, of mechanical means for driving the pawl-and-ratchet device, and of means for imparting additional motion to said cam-wheel independently of the said pawl-and-ratchet device, substantially as and for the purpose specified.

3. In a mechanical stoker, the combination with the fluid-pressure cylinder, the ram and the valve; of a cam-wheel for actuating the valve, of a pawl-and-ratchet device for imparting motion to the cam-wheel, of mechanical means for driving the pawl-and-ratchet device, of an arm on the ram, of a movable bar provided with abutments lying in the path of said arm so as to be operated thereby as the said ram terminates its forward and rearward strokes for the purpose of actuating said movable bar, and of means whereby the movements of said bar are transmitted to said cam-wheel substantially as and for the purpose specified.

4. In a mechanical stoker, the combination with the fluid-pressure cylinder, the ram and the valve; of a cam-wheel for actuating the valve, of a pawl-and-ratchet device for imparting motion to the cam-wheel, of mechanical means for driving the pawl-and-ratchet device, of an arm on the ram, of a movable bar provided with adjustable abutments lying in the path of said arm so as to be operated thereby as said ram terminates its forward and rearward strokes for the purpose of actuating said movable bar, and of pawls connected with said movable bar and adapted to impart the movements of said bar to said cam-wheel substantially as and for the purpose specified.

5. In a mechanical stoker, the combination with the fluid-pressure cylinder, the ram and the valve; of a cam-wheel for actuating the valve, of a pawl-and-ratchet device for imparting motion to the cam-wheel, of mechanical means for driving the pawl-and-ratchet device, of an arm on the ram, of a rocking bar provided with adjustable abutments having inclined surfaces lying in the path of said arm so as to be operated thereby as said ram terminates its forward and rearward strokes for the purpose of actuating said rocking bar, and of two pawls carried by the rocking bar and engaging with the ratchet of the cam-wheel in opposite directions for imparting thereto the rocking movements of said bar substantially as and for the purpose specified.

6. In a mechanical stoker, the combination with the fluid-pressure cylinder, the ram and the valve; of a cam-wheel, a sliding bar connected with the valve, a projection on said sliding bar engaging with the cam-slot of said cam-wheel, a pawl-and-ratchet device for imparting motion to the cam-wheel, mechanical means for driving the pawl-and-ratchet device, an arm on the ram, a rocking bar provided with adjustable abutments having inclined surfaces lying in the path of the said arm so as to be operated thereby as said ram terminates its forward and rearward strokes for the purpose of actuating said rocking bar, and two pawls carried by the rocking bar and engaging with the ratchet of the cam-wheel in opposite directions for imparting thereto the rocking movements of said bar substantially as and for the purpose specified.

7. In a mechanical stoker, the combination with the fluid-pressure cylinder the ram and the valve; of a cam-wheel for actuating the valve, of a pawl-and-ratchet device for imparting motion to said cam-wheel, of an oscillatory arm carrying the pawl of said ratchet device, of mechanical means for oscillating said arm, and of means for varying the amplitude of the oscillations of said arm for the purpose specified.

8. In a mechanical stoker, the combination with the fluid-pressure cylinder the ram and the valve; of a cam-wheel for actuating the valve, of a pawl-and-ratchet device for imparting motion to said cam-wheel, of an oscillatory arm carrying the pawl of said ratchet device, of a lever pivoted to said oscillatory arm, of a stop-piece adapted to lie in the path of the free end of said lever, and of means for actuating said lever and, through it, the oscillatory arm substantially as and for the purpose specified.

9. In a mechanical stoker, the combination with the fluid-pressure cylinder the ram and the valve; of a cam-wheel for actuating the valve, of a pawl-and-ratchet device for imparting motion to said cam-wheel, of an oscillatory arm carrying the pawl of said ratchet device, of a bent lever pivoted to said oscillatory arm, of an adjustable stop adapted to lie in the path of the free end of said bent lever, of a crank-plate connected by a rod with the opposite end of said bent lever, and of a fluid-pressure motor for driving said crank-plate through suitable gearing substantially as and for the purpose specified.

704,881. PLAYING-BALL. ELEAZER KEMPSHALL, Boston, Mass., assignor to The Kempshall Manufacturing Company, a Corporation of New Jersey. Filed May 13, 1898. Serial No. 107,019. (No model.)

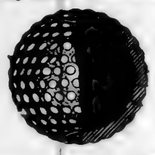

Claim.—1. A playing-ball comprising a yielding center piece, a series of independent, endless, broad, thin rubber bands independently tensioned thereon and forming a larger sphere, and a shell of plastic material upon said sphere.

2. A playing-ball comprising a yielding center piece, a series of independent, endless, broad, thin rubber bands independently tensioned thereon and forming a larger sphere, and a shell of plastic material holding said sphere under compression.

3. A playing-ball comprising a sphere of solid rubber; a succession of independent, endless, broad rubber bands independently tensioned thereon and forming a larger sphere; and a shell of plastic material upon said sphere.

4. A playing-ball comprising a sphere of solid rubber, a succession of independent, endless, broad bands of softer rubber independently tensioned thereon and forming a larger sphere, and a shell of plastic material upon said sphere.

704,882. PLAYING-BALL. ELEAZER KEMPSHALL, Boston, Mass. Filed May 13, 1902. Serial No. 107,018. (No model.)

Claim.—1. A playing-ball comprising a hard core; a soft-rubber layer thereon; said layer being inclosed by a hard shell of such thinness as to be highly resilient; and a layer of soft rubber covering said shell.

2. A playing-ball comprising a hard core; a soft-rubber layer thereon; a hard thin shell inclosing said layer and provided throughout with perforations; and a layer of soft rubber covering said shell.

3. A playing-ball comprising a celluloid shell provided throughout with perforations, a thin layer of soft rubber covering said shell, and a cover of wear-resisting material upon said rubber layer and close to said celluloid shell.

4. A playing-ball comprising a hard thin shell provided throughout with perforations, a springy core reinforcing said shell, a thin layer of soft rubber covering said shell, and a casing of plastic material holding said rubber layer under compression.

5. A playing-ball comprising a celluloid shell, a layer of soft rubber covering said shell, the latter being provided throughout with perforations, and a shell of celluloid upon said rubber layer.

6. A playing-ball comprising a thin perforated hard shell; a sphere of hard springy material within said shell; a layer of soft material between said sphere and said shell; and a layer or facing of springy material upon said shell.

7. A playing-ball comprising a hard thin shell lined with soft rubber and provided throughout with perforations; a hard center piece filling said lined shell; soft rubber forming a thin outer covering upon said shell; and a shell of plastic material holding said soft-rubber covering under compression.

8. A playing-ball comprising a hard flexible shell; a filling for said hard shell consisting of a sphere of hard material inclosed in soft rubber; a layer of soft rubber covering said shell; and a casing of plastic material holding said rubber covering under compression.

9. A playing-ball comprising a hard core; a soft-rubber layer thereon; a hard perforated shell upon said layer; a soft-rubber facing upon said shell; and a casing of plastic material upon said soft-rubber facing.

10. A playing-ball comprising a hard core; a soft-rubber layer thereon; a perforated celluloid shell upon said layer; a soft-rubber facing upon said shell; and a casing of plastic material holding said rubber facing under compression.

704,883. CLAW-BAR. WILLIAM W. KEYLER and EDWARD BRITTON, North Lawrence, Ohio. Filed Oct. 1, 1901. Serial No. 77,219. (No model.)

Claim.—1. A claw-bar, comprising a fulcrum-block, a claw pivotally connected thereto, and an operating-lever pivotally connected to the claw and having an intermediate fulcrum engagement with the block above the pivotal connection between the claw and the lever.

2. A claw-bar, comprising a fulcrum-block, a claw pivotally connected thereto by means which permit of the longitudinal extension of the claw therefrom, and an operating-lever pivotally connected to the claw and adapted to have an intermediate fulcrum engagement with the block.

3. A claw-bar, comprising a fulcrum-block, a claw having an endwise-slidable and pivotal connection with the block, and an operating-lever pivotally connected to the forward portion of the claw and having its intermediate portion constructed to bear against the block as a fulcrum-support.

4. A claw-bar, comprising a fulcrum-block, a slotted claw, a pivot-pin piercing the block and the slotted portion of the claw, and an operating-lever pivotally connected to the claw and having its intermediate portion constructed to have a fulcrum-bearing upon the block.

5. A claw-bar, comprising a fulcrum-block having opposite upstanding bearing-ears, a claw having a longitudinal-slotted shank portion received between the ears, a pivot-pin piercing the ears and passing through the slot of the shank, and a forked operating-lever straddling the claw and pivotally connected thereto, the intermediate portion of the lever being constructed to have a fulcrum-bearing upon the ears of the block.

6. A claw-bar, comprising a fulcrum-block, a claw, an operating-lever, and connecting means between these parts to shift the initial fulcrum-bearing of the lever upon the block to the connection between the claw and the block.

7. A claw-bar, comprising a fulcrum-block, a claw pivotally connected thereto, and an operating-lever having its lower end pivotally connected to the claw below the pivotal connection between the claw and the fulcrum-block, the latter having a portion rising above the pivotal connection between the claw and the lever and located in the path of the rearward movement of the lever to form a fulcrum-bearing thereof.

8. A claw-bar, comprising a fulcrum-block, a claw pivotally and adjustably connected thereto, and an operating-lever pivotally connected to the claw between the operative end of the latter and its pivotal connection with the block.

704,884. SCAFFOLD-SPLICER. JOHN LALLY, Waltham, Mass. Filed Nov. 25, 1901. Serial No. 83,636. (No model.)

Claim.—1. A scaffold-splicer in the form of an open-sided sleeve or frame adapted to embrace the adjacent ends of pole-sections, and retaining-pins removably inserted through eyes at the open side of the sleeve and adapted to form abutments for the adjacent sides of the pole-sections.

2. A pole-splicer in the form of an open-sided sleeve or frame adapted to receive the adjacent ends of pole-sections, a partition or shelf arranged intermediate the ends of the sleeve and forming an abutment for the extremities of the pole-sections, and detachable retaining-pins extending across the open side of said sleeve or frame.

3. A pole-splicer in the form of an open-sided sleeve or frame adapted to embrace the adjacent ends of pole-sections, a partition or shelf arranged intermediate the ends of the splicer and forming an abutment for the extremities of the pole-sections, detachable retaining-pins extending across the open side of the splicer at or near the opposite ends thereof, and an intermediate retaining-pin extending across the open side of the splicer and arranged to project above and below the partition so as to engage the extremities of the pole-sections.

4. A scaffold-splicer in the form of an open-sided frame provided intermediate its ends with a transverse partition and provided with a pair of log-opening extending through the rear wall thereof at one side of the partition, and detachable retaining-pins extending across the open side of the splicer for preventing lateral displacement of the pole-sections.

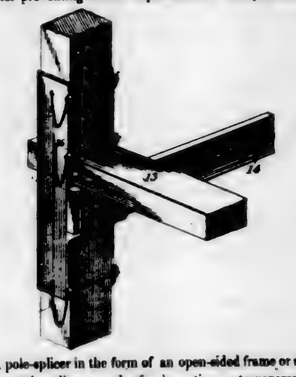

5. A pole-splicer in the form of an open-sided frame or sleeve adapted to embrace the adjacent ends of pole-sections, a transverse partition located intermediate the ends of the splicer and forming an abutment for the extremities of the pole-sections, detachable retaining-pins extending across the open side of the splicer, and a ledger-holder in the form of a hook located to one side of the plane of the partition.

6. A scaffold-splicer in the form of an open-sided frame or sleeve, a transverse partition located intermediate the ends of the splicer, detachable retaining-pins crossing the open side of the splicer at or near its opposite ends, and a ledger-holder extending across the open side of the splicer and forming an abutment for one of the pole-sections.

704,885. COMBINED MUD-GUARD, SUPPLEMENTAL SEAT, AND PARCEL-HOLDER FOR BICYCLES. HENRY M. LAMBERT and OREN H. JOY, Portland, Oreg. Filed July 12, 1901. Serial No. 68,073. (No model.)

Claim.—1. A bicycle attachment, comprising a combined seat and guard portion; two opposing members pivotally mounted on said seat and guard portion, said opposing members having clips to engage the diverging back bars of a bicycle-frame, and bracket members connected at their lower ends to said opposing members, and extending upwardly and rearwardly to loosely engage the seat and guard portion, as specified and for the purposes described.

2. A bicycle attachment, comprising a combined seat and guard member, adapted to be supported in a horizontal position over the rear wheel of a bicycle and two opposing brace members loosely connected at one end to the rear portion of said seat member and bent upwardly at their free ends, and formed into clips adapted to engage the diverging back bars of a bicycle-frame, and means carried by said upwardly-bent portions for also engaging the front end of the seat member, as set forth.

3. A bicycle attachment, comprising a combined seat and guard portion; two opposing and downwardly-extending members pivotally mounted at the front end of said seat portion, said members having clips to engage the diverging back bars of a bicycle-frame; and opposing brace members connecting the lower ends of the pivoted members with the rear end of the seat portion, for the purposes specified.

4. A bicycle attachment, comprising a luggage-carrying portion, a pair of opposing back-bar-gripping members, loosely connected to the said luggage-carrying portion, said gripping members having means at the upper and lower ends for clamping the back bars of the bicycle, and having their lower ends bent to form brackets to engage the luggage-carrying portion, for the purposes specified.

5. As an attachment for bicycles for the purposes described, comprising a seat-board, a bracket member on the under side, said member having a straight front plate, and clamp members pivotally secured to the outer face of said plate, whereby their lower ends will open laterally, said members having portions to grip the rear forks of a bicycle-frame, as set forth.

6. As a new article, a combined child's seat, luggage-carrier, and mud-guard for bicycles, comprising, in combination, a bracket 4, having a straight front face *b*, the upper end of which is bent back to form a flange *a*, its lower end bifurcated and terminating in rearwardly and upwardly extending arms *c*, the board 5, detachably secured upon the flange *a* and arms *c*, and the members 8, pivotally secured on the front face *b* of the bracket 4, each having inwardly-bent clamp members 8^a 8^a, on the front face to engage the rear fork bars of a bicycle, and inwardly-extending guide-flanges 8^b, on the rear face to close over the front face *b*, of the bracket 4, all being arranged substantially as shown and for the purposes described.

704,886. APPARATUS FOR DRYING AND DISTILLING WOOD, SAWDUST, PEAT, OR THE LIKE, AND FOR TREATING OTHER SUBSTANCES. EDUARD LARSEN, Copenhagen, Denmark. Filed Apr. 1, 1901. Serial No. 53,899. (No model.)

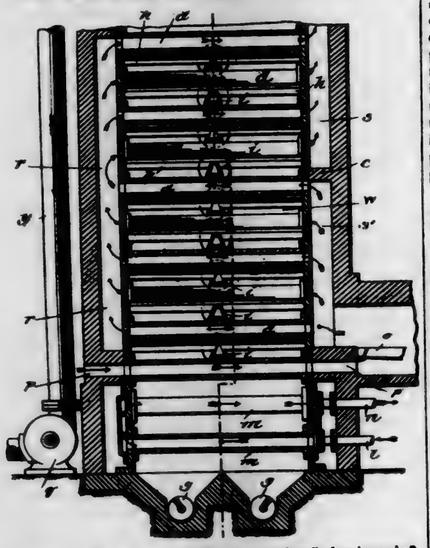

Claim.—1. In an apparatus of the character described, an inner shaft, an outer shaft surrounding said inner shaft, a drying-chamber arranged in the upper portion of said inner shaft, a distilling-chamber arranged in the lower portion of said inner shaft, a port-chamber interposed between said drying and distilling chambers, means for establishing communication between said port-chamber and said drying-chamber, and means for establishing communication between said distilling-chamber and said port-chamber, substantially as herein shown and described and for the purpose set forth.

2. In an apparatus of the character described, an outer shaft, an inner shaft arranged within said outer shaft, and of such size as to form on the two opposite sides thereof flues between the two shafts, partitions in the said flues, a drying-chamber in the upper portion of said inner flue, a distilling-chamber in the lower portion of said inner flue, and a port-chamber interposed between said drying and distilling chamber.

3. In an apparatus of the character described, an outer shaft, an inner shaft arranged within said outer shaft, and of such size as to form on the two opposite sides thereof flues between the two shafts, partitions in the said flues, a drying-chamber in the upper portion of said inner flue, a distilling-chamber in the lower portion of said inner flue, a port-chamber interposed between said drying and distilling chamber, means for establishing communication between said port-chamber and drying-chamber, and means for establishing communication between said distilling-chamber and said port-chamber.

4. In an apparatus of the character described, an outer shaft, an inner shaft arranged within said outer shaft, and of such size as to form on the two opposite sides thereof flues between the two shafts, a drying-chamber arranged in the upper portion of said inner shaft, a series of heating-flues in said drying-chamber and communicating with the flues at the opposite side of the inner shaft, a distilling-chamber in the lower portion of said inner shaft, a series of heating-pipes arranged in said distilling-chamber and communicating with the flues at the two opposite sides of said inner shaft, and an exhausting device in communication with said drying-chamber.

5. In an apparatus of the character described, an outer shaft, an inner shaft arranged within said outer shaft, and of such size as to form on the two opposite sides thereof flues between the two shafts, a drying-chamber arranged in the upper portion of said inner shaft, a series of heating-flues in said drying-chamber and communicating with the flues at the opposite side of the inner shaft, a distilling-chamber in the lower portion of said inner shaft, a series of heating-pipes arranged in said distilling-chamber and communicating with the flues at the two opposite sides of said inner shaft, an exhausting device in communication with said drying-chamber, a port-chamber interposed between said drying and distilling chambers, means for establishing communication between said port-chamber and said drying-chamber, and means for establishing communication between said port-chamber and said distilling-chamber.

6. In an apparatus of the class described, an inner and outer shaft arranged to form flues at two opposite sides of said inner shaft, a drying-chamber arranged in the upper portion of said inner shaft, a distilling-chamber in the lower portion of said inner shaft, a port-chamber interposed between the said drying and distilling chambers, separate means for establishing communication between said port-chamber and said drying and distilling chambers, a series of triangular-shaped heating-flues extending through said drying-chamber and communicating with flues at two opposite sides of said inner shaft, a series of heating-pipes arranged in said distilling-chamber and communicating with said flues at two opposite sides of said inner shaft, channels arranged below said heating-pipes, and a collecting-pipe in communication with the said channels.

7. In an apparatus for continuously drying and distilling wood, sawdust, peat and the like, an outer and inner shaft arranged to form flues at two opposite sides of said inner shaft, a drying-chamber arranged in the upper portion of said inner shaft and communicating with said flues, a distilling-chamber in the lower portion of said inner shaft, a series of heating-pipes arranged in said distilling-chamber, channels mounted below said heating-pipes, a collecting-pipe in suitable communication with said channels, a cooling means mounted in the lower portion of said distilling-chamber, and means at the lower portion of said distilling-chamber for conveying the material therefrom.

8. In an apparatus for continuously drying and distilling wood, sawdust, peat and the like, the combination of a rectangular upright shaft constructed of masonry or the like, a metallic shaft arranged in said upright shaft and forming flues at two opposite sides thereof between the two shafts, a drying-chamber on the upper portion of said metallic shaft suitably communicating with said flues, a port-chamber below the said drying-chamber and adapted to communicate therewith, a distilling-chamber below the said port-chamber and adapted to communicate therewith, a series of heating-pipes in said distilling-chamber, means for cooling the treated material arranged within said distilling-chamber, and means for conveying the treated material from said distilling-chamber arranged at the lower portion of the latter.

9. In an apparatus for continuously drying and distilling wood, sawdust, peat and the like, a substantially rectangular upright shaft constructed of masonry or the like, an iron shaft arranged within said upright shaft and forming flues at two opposite sides thereof between the shafts, partitions suitably arranged in the said flues, a drying-chamber in the upper portion of said iron shaft, a distilling-chamber at the lower portion of said iron shaft, a port-chamber interposed between the said drying and distilling chambers, a distilling means for establishing communication between said port and said drying chambers, means for establishing communication between said port and distilling chambers, a series of triangular shaped heating-flues arranged within said drying-chamber and communicating with the flues at two opposite sides of said iron shaft, a series of heating-pipes, mounted in said distilling-chamber and communicating with the flues at two opposite sides of said iron shaft, channels arranged below said heating-pipes, collecting-pipes suitably connected to said channels, means for cooling the material arranged in said distilling-chamber, means for conveying the material from said distilling-chamber, and exhausting means in communication with one of said flues at the side of the iron shaft.

10. In an apparatus for continuously drying and distilling wood, sawdust, peat and the like, the combination of an upright shaft B, a shaft A within said shaft B and forming flues at two opposite sides thereof between the said shafts, a heating-chamber in the upper portion of said shaft A and communicating with said flues, a distilling-chamber at the lower portion of said shaft A, heating-pipes extending through said distilling-chamber and communicating with said flues at two opposite sides of said shaft A, means arranged in the said distilling-chamber for collecting the products of distillation, means arranged in said distilling-chamber for cooling the material treated, means for conveying the treated material from the said distilling-chamber, a port-chamber arranged between said drying and distilling chamber, separate means for establishing communication between the said port-chamber and said drying and distilling chambers, and an exhausting device in communication with one of the flues at the sides of the said shaft A.

704,887. DOOR. FREDERIK F. LOW, Boston, Mass. Filed Apr. 22, 1901. Serial No. 56,678. (No model.)

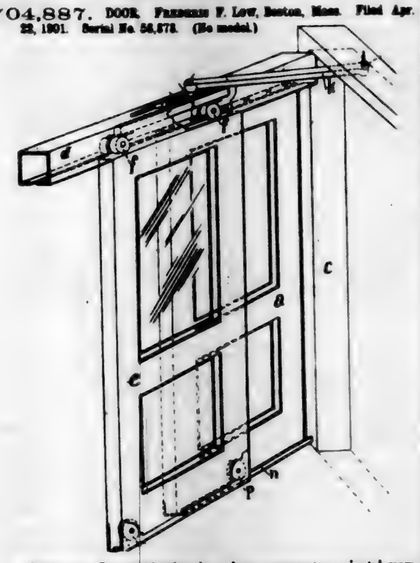

Claim.—1. In combination in a door, a support; a pivotal member; a slidable member; a pair of counting racks, one for said pivotal member and the other for said slidable member; and a toothed mechanism which engages and travels over one of said racks and communicates rectilinear motion to the other of said racks.

2. In combination in a door, a support; a pivotal member; a slidable member; a pair of counting racks, one for said pivotal member and the other for said slidable member; and a pinion which is mounted to swing about said support and which intermeshes with said racks.

3. In combination in a structure of the class described, a fixed support; a swinging support formed with a rack; a slidable rack; an arm pivoted on said fixed support; and a pinion carried by the free end of said arm, said pinion meshing with said racks.

4. In combination in a structure of the class described, a rotatable member formed with a rack; a support for said rotatable member; a slidable member formed with a rack; a pinion in mesh with said racks; and an arm pivoted in said support and carrying said pinion at its free end.

704,888. CAR-COUPLING. HENRY H. MARSHALL, Lincoln, Nebr. Filed Feb. 23, 1902. Serial No. 95,753. (No model.)

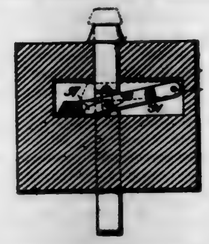

Claim.—1. The combination of a draw-head, a pivoted knuckle, a vertically-movable pin, a transversely-disposed block pivotally connected with the pin and arranged to swing upward and downward and adapted to engage the arm of the knuckle, and a pivoted supporting device arranged to swing transversely of the draw-head and adapted to hold the block in an elevated position and arranged to be engaged by the arm of the knuckle, substantially as described.

2. The combination of a draw-head, a pivoted knuckle, a vertically-movable pin, a transversely-disposed block arranged to swing upward and downward and adapted to engage the arm of the knuckle and provided with a slot, a supporting device adapted to hold the block in an elevated position and arranged to be engaged by the arm of the knuckle, and a pin pivoting the support in the slot of the block and connecting the latter to the vertically-movable pin, substantially as described.

3. The combination of a draw-head having a pivoted knuckle, a transverse block pivotally connected at one end with the draw-head and arranged to swing upward and downward and adapted to engage the arm of the knuckle, a support pivoted to the block and adapted to hold the latter in an elevated position and arranged to swing transversely of the draw-head and capable of swinging in either direction from a vertical position, and means for lifting the block, substantially as described.

4. The combination of a draw-head having a pivoted knuckle, a transversely-disposed locking-block engaging the knuckle and arranged to swing upward and downward, a vertically-movable pin connected with the block, and a supporting device pivoted to the block for holding the same in an elevated position, substantially as described.

704,889. HEATING-STOVE. CHARLES MATTHEWS, Columbia, Mo. Filed Apr. 14, 1902. Serial No. 102,743. (No model.)

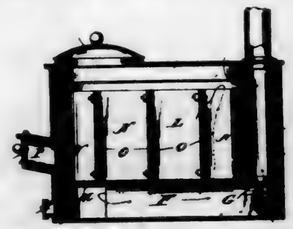

Claim.—1. In a heating-stove of the character described, the combination with a smoke-passage involving an open-ended and fixed compartment, substantially as described, secured to and of less width than the bottom of the stove and thereby forming side passage-ways, as shown, and a vertical flue connecting the rear end of the said compartment and extending up through the top of the stove, of a fire-box formed by a detachable closed bottom, and side walls ending short of the length of the stove forming passage-ways on both sides of the said vertical flue, said passage-ways connecting the passage-ways along the bottom of the stove, substantially as described.

2. The combination in a heating-stove, of a fire-pot of length shorter than the interior of the body of the stove, downward smoke-passages on both sides of a vertical smoke-pipe within the body of the stove and communicating with horizontal passage-ways on both sides of a fixed compartment located between the bottom of the fire-pot and the bottom of the body or outer shell of the stove, open communication at the forward end of said fixed compartment with the horizontal side passage-ways, and open communication at the rear of said fixed compartment with the vertical pipe located at the rear of the stove and between the walls of the fire-pot and shell or body portion, substantially as described.

3. The combination in a heating-stove, of a fire-box formed of a series of sections having abutting and connected inturned edges and a closed bottom as shown, and smoke-passages at the rear of the stove connecting the fire-pot through suitable horizontal passage-ways extending from rear to front along the bottom of the stove with a vertical uptake or smoke-pipe within the walls of the body portion, substantially as described.

704,890. FEED-TABLE MECHANISM. THOMAS MORRISON, Braddock, Pa. Filed June 23, 1901. Serial No. 66,422. (No model.)

Claim.—1. A rolling-mill feed-table having a selector arranged to engage a single article in a group of articles and separate and move it laterally from the group of articles, and mechanism for moving the selector transversely of the table, substantially as described.

2. A feed-table having a transversely-movable carrier and a selector connected to the carrier and having a movable part arranged to engage a single article in a group of articles on the table and separate and move it laterally from the group of articles; substantially as described.

3. A feed-table having a transversely-movable carrier, a pusher on

the carrier and arranged to move an article to a group of articles on the table, and a movable selector arranged to engage a single article in the group of articles and separate and move it laterally from the group; substantially as described.

4. A feed-table having transversely-movable carriers, and pivoted selectors connected to the carriers and having notched portions arranged to automatically engage a single article in a group of articles on the table and separate and move it laterally from the group; substantially as described.

5. A feed-table having transversely-movable carriers, pivoted selectors mounted on the carriers, and mechanism for pressing the selectors yieldingly toward articles on the table, the selectors being arranged to engage a single article in a group of articles and separate and move it laterally from such group of articles; substantially as described.

6. A rolling-mill feed-table having a transversely-movable carrier, a selector mounted on the carrier and arranged to engage a single article in a group of articles lying on the table and separate and move it laterally from such group of articles, and trip mechanism arranged to automatically disengage the selector from the article after it is separated from the group; substantially as described.

7. A rolling-mill feed-table having transversely-movable selectors arranged to engage a single article in a group of articles on the table and separate and move it laterally from the group, and controllable mechanism for preventing the normal action of one of said selectors; substantially as described.

8. A rolling-mill feed-table having a transversely-movable carrier, a pivoted pusher-dog connected to the carrier and arranged to feed an article sidewise on the table and means for feeding metal longitudinally of the table, the dog being normally out of the line of feed and having an inclined face toward the entrance side, arranged to be contacted with by the article when the article being fed accidentally strikes said dog; substantially as described.

704,891. MANIFOLD DEVICE. EMIL LEUBER, Chicago, Ill. Filed Oct 14, 1901. Serial No. 78,633. (No model.)

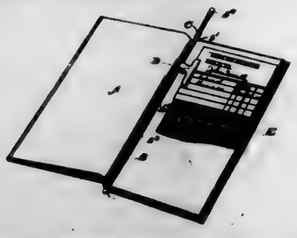

Claim.—1. A slotted tubular guide-rod having a scale thereon, springs for holding said rod, one of which is rigidly secured to one end thereof and the other secured to a sleeve thereon and a spring-clip for holding paper, having a cylindrical head fitting in said tubular guide.

2. A copying-book, a slotted tubular guide, springs for holding said guide in place, a spring-clip having a cylindrical head slidably fitting in said guide, and having a rubber facing on the engaging edge of the upper jaw thereof, substantially as described.

704,892. POOL OR BILLIARD APPARATUS. THOMAS R. LOWERRE, New York, N. Y. Filed Nov. 22, 1901. Serial No. 83,232. (No model.)

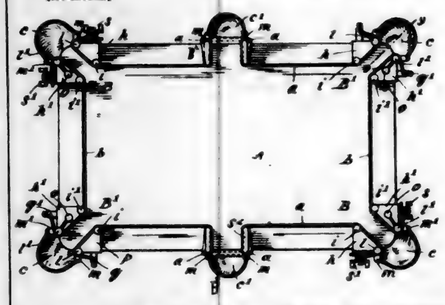

Claim.—1. The combination with a plain table, of detachably-connected corner-brackets having pockets and grooved cord-retaining posts, cords to be stretched on said posts suitably for cushioning pool and billiard balls, and means for fastening and stretching said cords, said posts comprising a system whereon the cushioning-cords also define passages conducting the balls into lateral pockets.

2. The combination with a plain table, of detachably-connected corner-brackets having grooved cord-retaining posts, cords to be stretched on said posts suitably for cushioning pool and billiard balls, and means for fastening and stretching said cords, said posts comprising a system whereon the cushioning-cords also define passages conducting the balls into lateral pockets, and other posts whereon together with a part of the posts of said system the cords cut off said passages.

3. The combination with a plain table, of detachably-connected corner-brackets having grooved cord-retaining posts, cords to be stretched on said posts suitably for cushioning pool and billiard balls, and means for fastening and stretching said cords, the means for fastening the cords being on opposite brackets of one diagonal line of the table, and the means for stretching the cords being on the opposite brackets of the other diagonal line of said table, and consisting of a winding-spool and retaining-ratchet each, for one side cord and one end cord respectively.

4. The combination with a plain table, of detachably-connected corner-brackets having grooved cord-retaining posts, adapted for stretching cords thereon for cushioning pool-balls, said cords, means for fastening and stretching them, and pockets suspended from the brackets for the balls, said cords also adapted for directing the balls into the pockets.

5. The combination with a plain table, of detachably-connected corner-brackets and side brackets having grooved cord-retaining posts adapted for stretching cords thereon for cushioning pool-balls, said cords, means on the corner-brackets for fastening and stretching the cords, and pockets suspended from the brackets for the balls, said cords adapted for directing the balls into the pockets.

6. The combination with a plain table, of detachably-connected corner-brackets and side brackets having grooved retaining-posts adapted for stretching cords thereon for cushioning pool-balls, said cords, means on the corner-brackets for fastening and stretching the cords, and pockets suspended from the brackets for the balls, said cords adapted for directing the balls into the pockets, and the cords connected with the side brackets extended from one to the other of the retaining-posts of said brackets under the mouths of said pockets.

7. The combination with a plain table, of the diagonally-placed detachably-connected brackets B, each having the cord-supporting posts *i i'*, *l*, *l'*, and *o*, and the stretching and retaining spools and ratchets; the conversely diagonally placed brackets B' each having like cord-supporting posts *i i'* and *l l'*, the cord-fastening studs *q*, *q'* and the cords *a*, *b*.

8. The combination with a plain table, of the diagonally-placed detachably-connected brackets B, each having the cord-supporting posts *i*, *i'* and *l*, *l'*, and the stretching and retaining spools and ratchets; the conversely diagonally placed detachably-connected brackets B' each having like cord-supporting posts *i*, *i'*, and *l*, *l'*, and the cord-fastening studs *q*, *q'*, the cords *a*, *b*, the side brackets B^2 and the pockets suspended from the brackets.

9. The combination with a plain table, of the diagonally-placed detachably-connected brackets B, each having the cord-supporting posts *i*, *i'*, and *l*, *l'*, and the stretching and retaining spools and ratchet; the conversely diagonally placed detachably-connected brackets B' each having like cord-supporting posts *i*, *i'*, and *l*, *l'*, and the cord-fastening studs *q*, *q'*, the cords *a*, *b*, the side brackets B^2, and the pockets suspended from the brackets, said side brackets consisting of the part *d'*, arms A^2 A^3, posts s^2 and the outwardly-projecting studs q^2.

10. The combination with the cord and pocket supporting brackets adapted for detachable application to a plain table each of the pocket-rim-supporting lugs, pocket-rim therein, and the pocket supported by said rim and adapted for use in connection with said table as a pocket for pool or billiard balls.

704,893. SAW. ROBERT A. MARTIN, Newark, N. J. Filed Mar 13, 1902. Serial No. 98,063. (No model.)

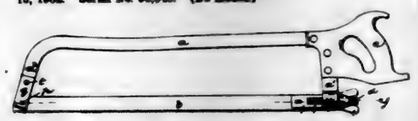

Claim.—1. The improved saw comprising a frame having at one end arms between which the end of the saw-blade may enter and having an open slot and a plate pivoted to said frame, said plate having a tongue with inclined surface adapted to engage the said arms to draw the same against the saw-blade, a saw-blade having a hole to receive the said tongue, and means for holding said saw-blade in said frame under tension, substantially as set forth.

2. The improved saw, comprising a frame having at one end arms between which the end of the saw-blade may enter and having on the outer side of said frame an open slot, a pivotal plate at one side of said frame and having a tongue adapted to enter said open slot, said tongue being provided with an incline to engage one of said arms and clamp the saw-blade against the other to prevent lateral looseness of the said blade, and a screw in connection with said frame and the opposite end of said saw-blade to hold said saw-blade under tension, substantially as set forth.

3. In a saw, the combination with the frame having the arms a^4, a^5, and pivotal plate having a tongue with opposite inclines, adapted to engage said arms and draw the same against the saw-blade when said blade is fastened under tension in said frame, of said saw-blade arranged on said tongue between said arms, substantially as set forth.

4. In a saw, the combination with a frame having arms of a plate pivoted on said frame adjacent to said arms and provided with a saw-blade-holding tongue having opposite inclines engaging said arms, and a blade and means for maintaining the blade in a state of tension and the arms in a clamped relation to the said blade, substantially as set forth.

5. In a saw the combination with the frame having extensions to support the opposite ends of a saw-blade, the extension *a'*, of which is provided with a cylindrical, slotted head, of a bolt and nut, and clamping-plates carried by said bolt, one of said plates being pivotal and slidably related to the other of said plates and carrying a blade-holding tongue which is inclined to engage the other of said plates and clamp the saw-blade between the two when the saw is held under tension between the extensions of the frame, and a saw-blade perforated to receive the holding-tongue, substantially as set forth.

6. In a saw, the combination with the frame and a saw-blade, of a bolt carrying two saw-blade-clamping plates, one of said plates being slidably and laterally movable in relation to the other and having an inclined tongue adapted to hold the saw-blade and engage the other plate to effect a clamping of said plates against the blade when tension is brought to bear on said tongue, substantially as set forth.

7. In a saw, the combination with the frame and bolt and two clamping-plates slidably arranged on said bolt one in relation to the other, and one of said plates being provided with a tongue inclined where it engages the other of said plates, of a saw-blade arranged on said tongue between said plates and adapted to be clamped therebetween when the tension of the saw is brought to bear on said tongue, substantially as set forth.

704,894. WINDOW-SHADE SUPPORT. WILL K. MARTIN, Washington, D. C. Filed July 3, 1901. Serial No. 67,000. (No model.)

Claim.—1. In a window-shade support, the combination with a window-casing, of arms secured thereto, brackets movably supported thereby and adapted to support the ends of a curtain or shade pole, and means for moving said brackets longitudinally of said arms, substantially as described.

2. A window-shade support comprising in its construction parallel arms pivotally supported, curtain or shade pole carrying means movable thereupon and carried thereby, and means for moving the same, substantially as described.

3. In a window-shade support, the combination with a window-casing, of arms pivoted at their inner ends to the said casing, bossings secured to said arms, curtain or shade pole carrying means movable within said bossings, and means for moving the same, substantially as described.

4. In a window-shade support, the combination with a window-casing, of parallel arms pivoted thereto, bossings secured to and extending longitudinally of said arms, brackets, adapted to support the ends of curtain or shade poles, movably supported by said bossings, and means for moving said brackets longitudinally of said bossings, substantially as described.

5. In a window-shade support, the combination with a window-casing, of parallel arms secured to said casing, bossings extending longitudinally of said arms and provided each with a longitudinal slot, a slidable block within each of said bossings, a flange upon each of said blocks and extending through its respective slot, a bracket carried by said flange, and means for moving said blocks longitudinally of the bossings, substantially as described.

6. In a curtain or shade support, the combination with suitable uprights, of arms pivoted thereto, slotted bossings extending longitudinally of said arms, a slidable block carried within each of said bossings and extending through said slot, a bracket pivotally supported by said block, and an endless cable adapted to move said block longitudinally of its bossing, substantially as described.

7. In a curtain or shade support, the combination with suitable uprights, of arms carried thereby, a block slidably supported by each of said arms, each of said blocks having an eye at either end, a cable having its ends secured to the said eyes, one part of the said cable passing longitudinally of its said arm, having its end secured to one of the said eyes, and about a pulley at the outer end thereof, then passed back for a part of the length of said arm and about a second pulley, thence downward about a pulley carried by said upright, and upward again, about another pulley and longitudinally of said arm and its opposite end secured to the opposite eye, whereby an endless-cable effect is produced, and a bracket carried by each of said blocks and adapted to support the ends of a curtain or shade pole, substantially as described.

8. In a window-shade support, the combination with a window-casing, of parallel arms pivotally secured thereto and extending at a right angle therefrom, a slotted bossing extending longitudinally of each of said arms, slidable blocks within said bossings, flanges upon said blocks extending through said slots, curtain or shade pole carrying brackets carried by said flanges, eyes formed upon either end of each of said blocks, and a cable secured to one of said eyes at one end of each of the said blocks, passed longitudinally of each of said bossings within the same, about antifriction means at one end thereof, over suitable antifriction means carried by the sides of said window-casing, longitudinally into said bossings, and secured at the opposite end to the opposite eye of the said block, substantially as described.

9. A window curtain or shade support comprising pivotally-supported, parallel arms, brackets supported by said arms and slidable longitudinally thereof, means for sliding said brackets longitudinally of said arms, and a pole provided with axes having heads at their outer ends,

whereby said axes may be applied laterally upon said brackets and cannot be removed longitudinally, substantially as described.

10. In a curtain or shade support, the combination with suitable uprights, of arms extending therefrom, brackets supported thereby and movable longitudinal thereof and designed to support a curtain or shade pole and flexible means operable below said arms for moving said brackets, substantially as described.

11. A window curtain or shade support, comprising arms pivotally supported to swing in the same horizontal plane, a curtain or shade pole pivotally attached to said arms, and means for moving said pole to various angles relative to said arms, substantially as described.

12. In a window curtain or shade support, the combination with a window-frame, of arms projecting at right angles thereto, curtain or shade pole carrying brackets movably supported thereby, and means for moving the same longitudinally of said arms, toward or from said window-frame, substantially as described.

13. In a curtain or shade support, the combination with suitable uprights, of pivotally-supported arms extending therefrom, in such manner that the same are adapted to be swung laterally in a horizontal plane, and brackets slidably mounted upon said arms for supporting a curtain or shade pole, substantially as described.

14. A curtain or shade support, comprising arms pivotally supported, a curtain or shade pole carried thereby, and means pivotally connecting the ends of said pole with said arms whereby the pole may assume a position at an acute angle to each of said arms, substantially as described.

15. A curtain or shade support, comprising arms pivotally supported, a curtain or shade pole carried thereby, in such manner as to be capable of assuming an acute angle with respect to each of said arms, and means for imparting a lateral movement to said pole, longitudinally of said arms, substantially as described.

704,895. HYDROCARBON-BURNER. HARRY C. MARTIN, Cincinnati, Ohio. Filed Aug. 3, 1901. Serial No. 70,811. (No model.)

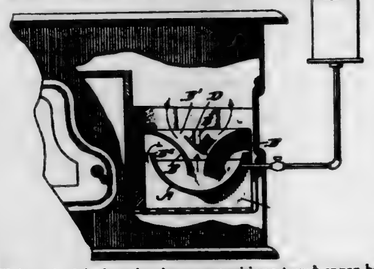

Claim.—1. A hydrocarbon-burner comprising a trough or pan having supporting-feet at each end, the curved deflector-plates connected at their ends by means of strips adapted to rest upon the trough, and the pivoted damper supported upon the end strips, substantially as shown and described.

2. A hydrocarbon-burner comprising a trough or pan having end supports, the curved deflector-plates arranged centrally and longitudinally of the said trough or pan, the end strips to which the deflector-plates are connected, said end strips being cut away at their lower corners and slotted centrally at their upper edges, and a V-shaped damper having the ends of its shaft journaled in the said vertical slots, substantially as and for the purpose described.

3. In a hydrocarbon-burner comprising a trough or pan, of curved deflector-plates arranged longitudinally of the said trough, the inner edges of said plates being arranged adjacent to each other and to the center of the trough, said plates being curved upwardly and outwardly away from each other and the strips connecting the ends of the plates and adapted to rest upon the sides of the trough, substantially as described.

704,896. WELL-INLET. DARBEY H. MAURY, Peoria, Ill. Filed May 13, 1901. Serial No. 60,067. (No model.)

Claim.—1. A well-inlet comprising an outer skeleton cylinder, removable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, and means for temporarily closing the perforations in the inner cylinder.

2. A well-inlet comprising an outer skeleton cylinder, longitudinally-slidable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, and means for temporarily closing the perforations in said inner cylinder.

3. A well-inlet comprising an outer skeleton cylinder, removable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, means for temporarily closing the perforations in said inner cylinder, and an annular filter-bed packed between the inner and outer cylinders.

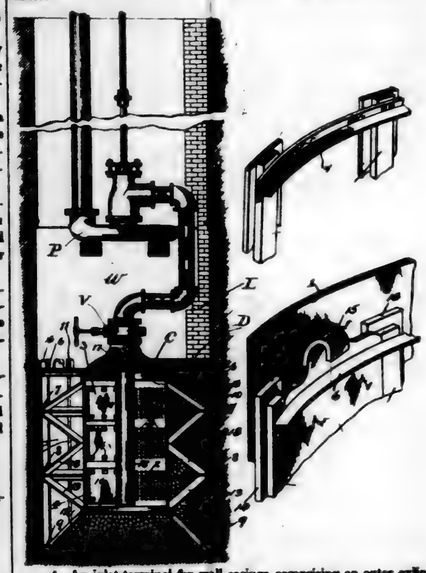

4. An inlet-terminal for well-casings comprising an outer cylinder, removable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, means for temporarily closing the perforations in said inner cylinder, and a perforated bottom in said inner cylinder.

5. An inlet-terminal for well-casings comprising an outer skeleton cylinder, removable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, means for temporarily closing the perforations in said inner cylinder, a perforated bottom in said inner cylinder, and a filter-bed packed around and beneath said inner cylinder.

6. The combination with a well-casing, of an inlet-terminal separated from the rest of the casing by a water-tight bulkhead, and comprising an apertured cylinder and a plurality of cover-plates removably bolted over the apertures in the cylinder on the interior thereof, and a suction-pipe leading from the cylinder up through the bulkhead.

7. The combination with a well-casing and pump, of an inlet-terminal separated from the rest of the casing by a water-tight bulkhead and comprising an outer skeleton cylinder, removable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, means for temporarily closing the perforations in the inner cylinder, and a suction-pipe leading to the pump from the inner cylinder.

8. The combination with a well-casing and pump, of an inlet-terminal separated from the rest of the casing by a water-tight bulkhead and comprising an outer skeleton cylinder, removable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, means for temporarily closing the perforations in the inner cylinder, a suction-pipe leading to the pump from the inner cylinder, and a filter-bed packed around the inner cylinder.

9. The combination with a well-casing and pump, of an inlet-terminal separated from the rest of the casing by a bulkhead and comprising an outer cylinder, removable sheeting temporarily closing said outer cylinder, a perforated inner cylinder, means for temporarily closing the perforations in the inner cylinder, a perforated bottom in said inner cylinder, a suction-pipe leading to the pump from the inner cylinder, and a filter-bed packed around and beneath the inner cylinder.

704,897. HARROW. EDGAR F. MAY, Washkomis, Okla. Filed Feb. 7, 1901. Serial No. 46,422. (No model.)

Claim.—A harrow comprising a carrying-frame, a front roller journaled in the frame and having a continuous rolling-surface, straight radial cutting-blades extending the length of the roller with spaces between them, straight rows of radial teeth disposed at intervals the length of the roller and between the cutting-blades, a rear roller journaled in the frame and having a continuous rolling-surface, cutting-blades spirally disposed on the face of the roller and extending longitudinally of the length thereof, and spirally-arranged rows of radially-extending teeth intermediate of the spirally-arranged cutting-blades.

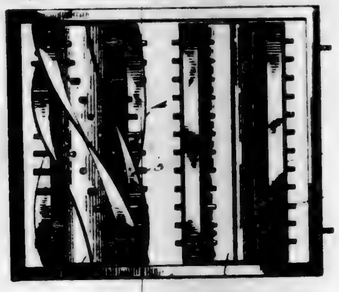

704,898. BREECH MECHANISM. JOHN F. HINES, South Bethlehem, and SIGARD A. S. HAMMAR, Bethlehem, Pa., assignors to the Bethlehem Steel Company, South Bethlehem, Pa., a Corporation of Pennsylvania. Filed July 31, 1900. Serial No. 25,496. (No model.)

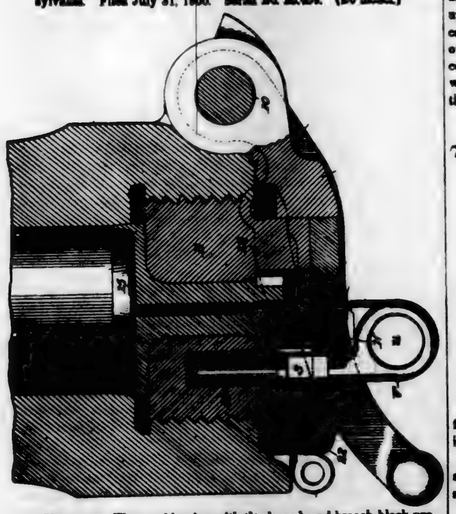

Claim.—1. The combination with the breech and breech-block provided with sectional threads or collars, of a frame carrying the breech-block and having a recess, a guide-rod extending along the recess, a rack-bar mounted to slide on the guide-rod, and a lever connected to operate the rack-bar, substantially as set forth.

2. The combination with the breech-block and the primer-opening, of a hammer provided with a stem sliding in the breech-block and with a head, and swinging on its stem to and from said opening, substantially as set forth.

3. The combination with the breech-block and primer-opening, of a hammer provided with a stem sliding in the breech-block and with a head, and swinging on its stem to and from said opening, and a vent-cover and firing-pin carried thereby connected to swing with the hammer over and from the opening, substantially as set forth.

4. The combination with the breech-block and primer-opening, of a hammer provided with a stem sliding in the breech-block and with a head, and swinging to and from said opening, a vent-cover and firing-pin carried thereby connected to swing over and from the opening, an extractor, and means for operating the same on the movement of the vent-cover, substantially as set forth.

5. The combination with the breech-block and primer-opening, of a hammer provided with a stem sliding in the breech-block and with a head, and swinging to and from said opening, and means for mechanically swinging the hammer on its stem into and out of position on the turning of the breech-block, substantially as set forth.

704,899. BURIAL-VAULT AND METHOD OF CONSTRUCTING SAME. LEWIS MILLER, Thorntown, Ind., assignor of one-half to James T. McKim, Thorntown, Ind. Filed Jan. 22, 1902. Serial No. 90,787. (No model.)

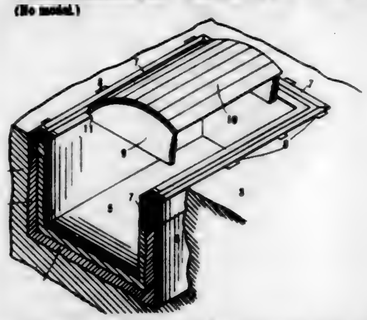

Claim.—A method of constructing burial-vaults which consists in laying a floor of green cement upon the bottom of the grave, placing the casket-box thereon in the grave, inserting green cement between the vertical walls of the casket-box and the walls of the grave so as to form a unit with the cement floor, inserting removable absorbent strips in the upper edges of the vertical cement walls, inserting the casket in the casket-box, removing the absorbent strips, placing a supporting-covering over the open upper end of the casket-box, and placing a layer of green cement upon said covering and extending from side to side of the vertical walls so as to unite therewith and extend into the recesses formed by the removal of the absorbent strips.

704,900. DUST-COLLECTOR. JOHN R. MITCHELL, St. Louis, Mo. Filed Dec. 9, 1901. Serial No. 85,258. (No model.)

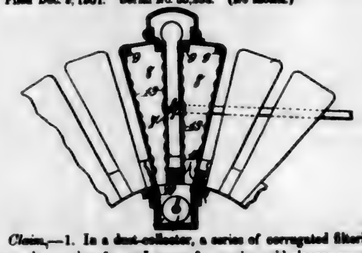

Claim.—1. In a dust-collector, a series of corrugated filtering-surfaces, a cleaner therefor, and means for moving said cleaner successively into contact with said surfaces.

2. In a dust-collector, a series of corrugated filtering-surfaces, a movable cleaner coöperating therewith, and means for moving said filtering-surfaces successively into the path of movement of said cleaner.

3. In a dust-collector, a series of corrugated filtering-surfaces, a cut-off chamber for successively cutting off said surfaces from access of dust-laden air, a cleaner for said filtering-surfaces, and means for moving said cleaner into contact with said filtering-surfaces as they are brought into communication with said cut-off chamber.

4. In a dust-collector, the combination with an intermittently-rotatable reel having a central drum therein into which dust-laden air is introduced, a cut-off chamber in said drum, and a rotary and bodily-movable cleaner, of a plurality of radially-arranged filtering-frames carried by said reel, each of said frames having the filtering-walls thereof provided with corrugated surfaces adapted to be engaged by said cleaner when said frames are in communication with said cut-off chamber.

5. In a dust-collector, the combination with an intermittently-rotatable reel having a central drum therein into which dust-laden air is introduced, and a cut-off chamber in said drum, of a series of radially-arranged filtering-frames carried by said reel, and communicating at their inner ends with the said drum, each of said frames having the filtering-walls thereof provided with auxiliary pockets, a plurality of said frames being adapted to be cut off from said drum by said cut-off chamber, and a cleaner acting upon the contiguous walls of two adjacent filtering-frames when the same are in communication with said cut-off chamber.

6. A filtering-frame for dust-collectors, comprising end pieces having corrugated side edges, strips connecting said end pieces, and a web of filtering-cloth passing around said strips and secured thereto and to the corrugated edges of said end pieces, as and for the purpose set forth.

704,901. BICYCLE. FERNANDO C. MOORE, San Bernardino, Cal. Filed Sept. 13, 1901. Serial No. 75,286. (No model.)

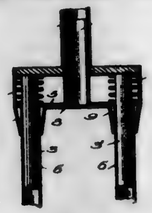

Claim.—A steering-fork, comprising a fork-crown, a tubular stem extending upward from the center thereof, studs pendent from the lower side of the crown, tubular fork-blades slidingly receiving said studs, a crown-plate serving as a yoke for the fork-blades, a tubular stub extending upward from the center of the crown-plate and slidingly fitting in the fork-stem, springs surrounding the pendent studs and interposed between the fork and fork-plate, and a jacket or casing connected with the fork-crown, and having a body portion, a bottom engaging the under side of the crown-plate whereby the upward movement of the studs within the fork-blades is limited, and pendent cuffs embracing the fork-blades.

704,902. MOISTURE-PROOF CIGAR-BOX. ALEXANDER MORTER, New York, N. Y. Filed Apr. 28, 1902. Serial No. 104,283. (No model.)

Claim.—A box for cigars and the like, comprising an outer lining of wood provided with a perforated bottom, a layer of fibrous material adjacent to said outer lining, and an inner lining of porous wood, said box being provided with a flat top consisting of upper and lower layers of porous wood between which is sandwiched a layer of fibrous material, the arrangement being such that the perforations of the bottom layer of the bottom of said box tend to compensate for the want of circulation of air through the bottom of the box due to the box resting upon an object.

704,903. MEANS FOR CHAINING LOGS. HUGH MCFADDEN, Rumford Falls, Me., assignor of one-half to Matthew McLeod, Rumford Falls, Me. Filed May 13, 1902. Serial No. 107,141. (No model.)

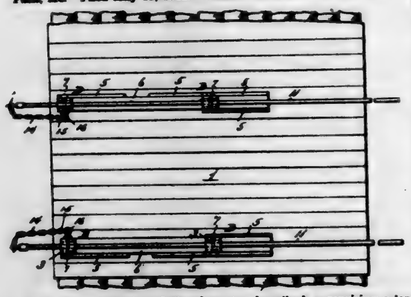

Claim.—1. A device of the character described, comprising a longitudinally-slidable rod, and a chain secured to the end of the rod and extensible by the movement of rod.

2. A device of the character described comprising suitable supports, a chain-carrying rod slidingly mounted in the supports, and a chain having one end detachably connected to the rod, and the other end detachably attached to a support.

3. A device of the character described, comprising a base, standards mounted on the base, upper and lower rollers journaled in the standards, a chain-carrying rod carried between the rollers, and a chain having one end detachably connected to the end of the rod and the other end detachably connected to one of the standards.

4. A device of the character described, comprising a supporting-base, pairs of standards secured in the base, rollers journaled in the standards, rods carried by the rollers, and chains having one end secured to the ends of the rods respectively, and the other ends secured to the standards.

704,904. MAIL-BAG CATCHER. CORWIN C. MCILVAR, Cambridge, Ohio. Filed Sept. 24, 1901. Serial No. 76,414. (No model.)

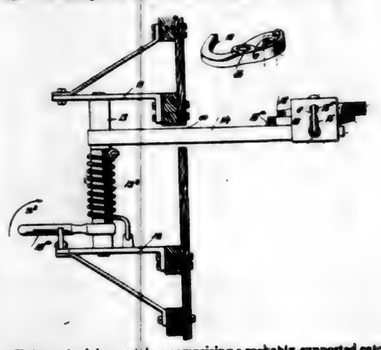

Claim.—1. A bag-catcher, comprising a rockably-supported catcher-arm, and catcher-jaws supported and pivoted so as to open and close on an end of the arm, each jaw having a buffer-limb and a hook member.

2. A bag-catcher, comprising a rockably-supported catcher-arm, a head-block on one end of the catcher-arm, two jaws held to rock on each other, each jaw having a buffer-limb and a hook member, and means to hold the hook members closed upon a mail-bag.

3. A bag-catcher, comprising a supported rock-shaft, spring-pressed to rock in one direction, a catcher-arm extended from the rock-shaft, a handle-lever on said shaft, a head-block on the free end of the catcher-arm, a slide-bar working through the head-block, two jaws held to rock on the head-block and adapted to slide the bar when they are rocked, each jaw comprising a buffer-limb and a hook member, and a device on the block and slide-bar adapted to detachably hold said bar retracted when moved by the jaws.

4. A bag catcher and deliverer, comprising a rockably-supported catcher-arm, a head-block on one end of the catcher-arm, a slide-bar having a forked end and occupying a longitudinal passage in the head-block, two lapped catcher-jaws pivoted on the head-block near one end and loosely connected with the fork-limbs of the slide-bar, each jaw consisting of a buffer-limb and a hook member, the hook members closing when the buffer-limbs are pressed apart, and a support for a mail-bag at the opposite end of the head-block, from which support said bag will be removed by pressure of the slide-bar thereon, effected when the hook members of the jaws grasp a bag.

5. In a device of the character described, a bracket-supported rock-shaft, a torsion-spring on said shaft adapted when under tension to rock the shaft in one direction, a handle-lever on the rock-shaft, a catcher-arm on the rock-shaft, a bag catcher and delivery device on the free end of said arm, and comprising catcher-jaws for a bag and a support for a bag to be delivered, a spring-controlled dog adapted to engage the handle-lever to hold the spring coiled under tension, and the catcher-arm outward, the said dog being arranged to be released by the impact of the mail-bag on the catcher-jaws, and means for moving the bag to be delivered from said support, the said means being also actuated by the impact of the mail-bag on the catcher-jaws.

6. In a mail-bag catcher, a supported rock-shaft, a spring on said shaft adapted to rock the shaft in one direction, means for rocking the shaft and holding the shaft rocked, a catcher-arm, a head-block, two lapped catcher-jaws pivoted on the head-block, a slide-bar forked at one end and loosely engaged at the ends of the fork-limbs with the members of the catcher-jaws, the rocking of the jaws to open and close them sliding the bar, a bent end on the slide-bar having an opening therein, a carrier-arm on the head-block adapted to receive and support a mail-bag, and a spring-pressed detent device for temporarily holding the bag engaged with the carrier-arm.

7. In a device of the character described, the pair of lapped and pivotally-supported catcher-jaws, each jaw consisting of a hollow hub, a convex-edged buffer-limb extended at one side of the hub, and a hook member curved laterally and forwardly from said hub at the opposite side from the buffer-limb.

8. In a device of the character described, the catcher device on a head-block, a rockably-supported catcher-arm, said arm having a journal-pin on one end whereon the head-block is held to rock.

9. In a device of the character described, the combination with an arm supported to swing outward on a car, a torsion-spring tending to rock the arm inward, means for holding the arm in the outward position against the tension of the spring, and a mail-bag catcher and delivery device carried on the outer end of said arm, the said torsion-spring being arranged to permit the arm to move back under the force of the impact of the mail-bag, thereby releasing the holding means, and allowing the spring to move the arm inward.

10. In a device of the character described, a rockably-supported catcher-arm mounted to swing outward on a car, a mail-bag catcher and delivery device carried on the outer end of said arm and comprising catcher-jaws, a support for a bag to be delivered and a sliding device actuated by the movement of the catcher-jaws for moving the bag from said support when the catcher-jaws grasp a bag.

11. In a mail-bag catcher, a bracket-supported rock-shaft, a torsion-spring on said shaft, adapted to rock the shaft in one direction, a handle-lever on the rock-shaft, a dog adapted to engage the lever and hold the spring coiled under tension, a catcher-arm on the rock-shaft and a bag-catcher device on the free end of said arm and comprising catcher-jaws pivoted to open and close and each having a buffer-limb and a hook member.

12. In a device of the character described, the combination with an arm supported to swing outward on a car, a mail-bag catcher and delivery device carried on the outer end of said arm, and comprising a support for a mail-bag, pivoted catcher-jaws, a slide-bar connected with the catcher-jaws and adapted to move the bag from said support when the catcher-jaws grasp a bag, and a torsion-spring tending to swing the arm inward.

704,905. APPARATUS FOR REPAIRING VESSELS AT SEA. NEIL J. MCLAUGHLIN, Boston, Mass. Filed Feb. 20, 1902. Serial No. 94,963. (No model.)

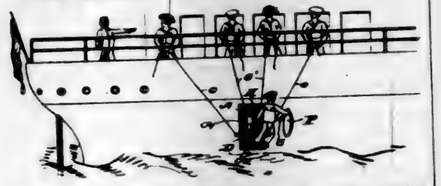

Claim.—1. A device of the kind described, comprising a pad, a rope or cable passing through said pad provided with a locking-bar at one end, and a winding mechanism at the opposite end, said winding mechanism being arranged at the exterior of the pad, as set forth.

2. A device of the kind described, comprising a plate provided with a pad, a rope or cable passing through said plate and pad, a locking-bar attached to one end of said rope or cable, and a winding mechanism arranged upon the metallic plate for the purpose of winding the said rope or cable, substantially as described.

3. A device of the kind described, comprising a metallic plate, a pad arranged upon the inner side of said plate, a rope passing through the pad and plate, a bar attached to the inner end of said rope, a casing arranged upon the exterior of the plate, a drum arranged within the casing, the opposite end of the rope being connected to said drum, a hand-wheel connected with the said drum and arranged upon the top of the casing, a ratchet-wheel arranged within the casing and connected to the drum, and a spring-actuated pawl adapted to engage said ratchet and provided with means for disengaging it from the said ratchet, substantially as specified.

4. In a device of the kind described, the combination with the plate slotted vertically and having a casing arranged upon the exterior thereof, the interior face of said plate being padded, of a winding-drum arranged within the casing, and having a rope attached thereto, and a hand-wheel arranged upon the exterior of the casing, a ratchet-wheel arranged upon the interior of the casing and connected with the drum, a spring-actuated pawl and means for releasing the same, the horizontal shelf arranged upon the exterior of the plate and adjacent to its lower end, the flexible bail or handle and the suspending and guy ropes, all arranged and adapted to operate, substantially as described.

704,906. WIND-STACKER. WILLIAM H. MCWILLIAMS, Watonga, Okla. Filed June 24, 1901. Serial No. 65,845. (No model.)

Claim.—A wind-stacker for threshing-machines, comprising a conveyer for carrying mixed grain and straw, a fan for separating said grain from said straw, a vertical shaft for supporting said fan, a substantially cylindrical casing surrounding said fan, a revoluble member journaled upon said casing and provided with gear-wheels, a pair of gear-wheels mounted upon said casing and operatively connected with said revoluble member, said gear-wheels being disposed oppositely to each other and upon opposite sides of said shaft supporting said fan, a cylindrical stacking-tube, an annular bevel-gear rigidly secured thereto and meshing with one of the gear-wheels upon said revoluble member, a clutch, and a lever for actuating said clutch.

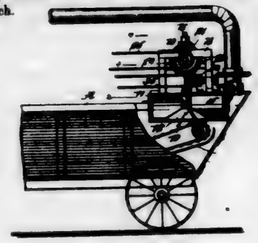

704,907. APPARATUS FOR GENERATING STEAM OR VAPOR. EDWARD C. NEWCOMB, Jamaica Plain, Mass., assignor of three-fifths to Philip Van Volkenburgh, New York, N. Y. Filed June 7, 1901. Serial No. 63,555. (No model.)

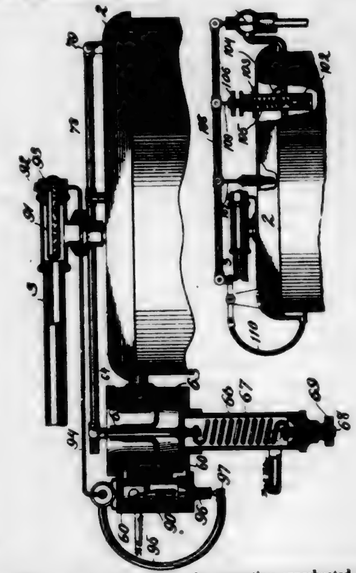

Claim.—1. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations.

2. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations of demand.

3. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fuel to the combustion-chamber, and means rendered operative

by variations in the condition as to pressure of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations of demand.

4. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

5. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated, for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

6. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition as to pressure of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations of demand.

7. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

8. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

9. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition as to pressure of the fluid being heated for varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand.

10. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations of demand.

11. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

12. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition as to pressure of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand.

13. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and means for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

14. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being rendered operative by variations in the condition of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations of demand, and means for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

15. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations of demand, and means for maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

16. In an apparatus for generating superheated-steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and means for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

17. In an apparatus for generating superheated-steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being rendered operative by variations in the condition of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and means for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

18. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and means for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

19. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and means rendered operative by variations in the condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

20. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of liquid in

substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

21. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations and means rendered operative by variations in the condition as to pressure of the fluid being heated for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

22. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and means for regulating the supply of the fuel in such manner that the effective supply of the fuel varies in substantial unison with the variations of supply of the liquid and in substantially the same degree with said variations of supply.

23. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and means rendered operative by variations in the condition of the fluid being heated for regulating the supply of the fuel in such manner that the effective supply of the fuel varies in substantial unison with the variations of supply of the liquid and in substantially the same degree with said variations of supply.

24. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and means rendered operative by variations in the condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for regulating the supply of the fuel in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

25. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and means rendered operative by variations in the differential pressure resulting from variations in the flow of the fluid through the generator for regulating the supply of the fuel in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

26. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated for automatically varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and means rendered operative by variations in the condition as to pressure of the fluid being heated for regulating the supply of the fuel in such manner that the effective supply of fuel varies in substantial unison with the variations of supply of the liquid and in substantially the same degree with said variations of supply.

27. In an apparatus for generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and means rendered operative by variations in a differential pressure resulting from variations in the flow of the fluid through the generator for regulating the supply of the fuel in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

28. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, means tending to maintain a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means for varying the relation between said supplies.

29. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and means rendered operative by variations in the condition of the fluid being heated for regulating the supply of the fuel in a manner tending to vary the supply of the fuel in substantial unison with the variations of supply of the liquid and according to a substantially predetermined quantitative relation to said variations of supply, and means for varying the relation between said supplies.

30. In an apparatus for generating steam or vapor and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, means tending to maintain a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means rendered operative by variations in the temperature of the steam or vapor for varying the relation between said supplies.

31. In an apparatus for generating steam or vapor and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow for said fluid for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means rendered operative by variations in the temperature of the steam or vapor for varying the relation between said supplies.

32. In an apparatus for generating steam or vapor and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, means tending to maintain a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means including a interated vapor-tension

thermostat operated by variations in the temperature of the steam or vapor for varying the relation between said supplies.

33. In an apparatus for generating steam or vapor and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator, said means being constructed to automatically vary the supply in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means including a saturated vapor-tension thermostat operated by variations in the temperature of the steam or vapor for varying the relation between said supplies.

34. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, means tending to maintain a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means rendered operative by variations in the temperature of the steam or vapor for varying the relation between said supplies.

35. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, means tending to maintain a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means including a saturated vapor-tension thermostat operated by variations in the temperature of the steam or vapor for varying the relation between said supplies.

36. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means including a saturated vapor-tension thermostat operated by variations in the temperature of the steam or vapor for varying the relation between said supplies.

37. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fuel to the combustion-chamber, means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel, and means including a saturated vapor-tension thermostat operated by variations in the temperature of the steam or vapor for varying the relation between said supplies.

38. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations, said generator being of a typein which only a small quantity of the liquid is maintained at the temperature of vaporization.

39. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations, said generator being of a type in which only a small quantity of the liquid is maintained at the temperature of vaporization.

40. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, said generator being of a type in which only a small portion of the liquid is maintained at the temperature of vaporization.

41. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, said generator being of a type in which only a small portion of the liquid is maintained at the temperature of vaporization.

42. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and at substantially the same degree with said variations and in substantially predetermined quantitative relations to said variations, said generator being of a type in which only a small portion of the liquid is maintained at the temperature of vaporization.

43. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, said generator being of a type in which only a small quantity of the liquid is maintained at the temperature of vaporization.

44. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to the temperature and pressure thereof, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by the variations in the condition of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, said generator being of a type in which only a small portion of the liquid is maintained at the temperature of vaporization.

45. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations and in substantially predetermined quantitative relations to said variations, said generator being of a type in which only a small portion of the liquid is maintained at the temperature of vaporization, said generator being so constructed and arranged with relation to the combustion-chamber that the rate of variation of the controlling condition of the fluid therein varies inversely as the quantity of liquid therein varies.

46. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations with said variations of demand, said generator being so constructed and arranged with relation to the combustion-chamber that the rate of variation of the controlling condition of the fluid therein varies inversely as the quantity of liquid therein varies.

47. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means rendered operative by the variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, said generator being so constructed and arranged with relation to the combustion-chamber that the rate of variation of the controlling condition of the fluid therein varies inversely as the quantity of liquid therein varies.

48. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to the temperature and pressure thereof, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fuel to the combustion-chamber, and means rendered operative by the variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, said generator being so constructed and arranged with relation to the combustion-chamber that the rate of variation of the controlling condition of the fluid therein varies inversely as the quantity of liquid therein varies.

49. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator so constructed and arranged with relation to the combustion-chamber that different portions of the generator are heated by the products of combustion to different temperatures, means for supplying a liquid to a cooler portion of the generator, means for supplying fuel to the combustion-chamber, and means for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

50. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator so constructed and arranged with relation to the combustion-chamber that different portions of the generator are heated by the products of combustion to different temperatures, means for supplying a liquid to a cooler portion of the generator, means for supplying fuel to the combustion-chamber, and means for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

51. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator so constructed and arranged with relation to the combustion-chamber that different portions of the generator are heated by the products of combustion to different temperatures, means for supplying a liquid to a cooler portion of the generator, means for supplying fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

52. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils connected together in series and located one within another around the combustion-chamber, means for supplying a liquid to the outer coil, means for supplying a fuel to the combustion-chamber, and means for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

53. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils connected together in series and located one within another around the combustion-chamber, of means for supplying a liquid to an outer coil, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

54. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils connected together in series and located one within another around the combustion-chamber, means for supplying a liquid to the outer coil, means for supplying a fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand.

55. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils connected together in series and located one within another around the combustion-chamber, means for supplying liquid to an outer coil at a substantially predetermined pressure, said means being rendered operative by variations in the condition of the fluid being heated to automatically vary the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations of demand, means for supplying a fuel to the combustion-chamber and means rendered operative by variations in the condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the supplies of the liquid and the fuel.

56. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils located one within another around the combustion-chamber, of means for supplying a liquid to an outer coil, means for supplying a fuel to the combustion-chamber, and means for automatically varying the effective supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations, said coils being so connected in series that the liquid is gradually heated and vaporized and is brought to the temperature of vaporization at a point where its flow is not appreciably affected by gravity.

57. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying a fuel to the combustion-chamber, and means for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, said generator having a vaporizing portion adapted to receive a small quantity of the liquid and vaporize it gradually.

58. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, said generator having a liquid-heating portion adapted to gradually heat the liquid to the temperature of vaporization, means for supplying the liquid to said generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying the effective supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in a substantially predetermined quantitative relation to said variations.

59. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying a liquid to the generator, means for supplying a fuel to the combustion-chamber, and means for automatically varying the supplies of the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, said generator having a liquid-heating portion in which the liquid is gradually heated to the temperature of vaporization, a vaporizing portion adapted to receive a small quantity of the liquid and vaporize it gradually and a superheating portion directly connected to and forming an extension of said vaporizing portion.

60. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fluid fuel to the combustion-chamber, means tending to maintain a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator, and means for automatically varying the relation between the flows of said fluids.

61. In an apparatus for generating steam or vaper, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator, and means for automatically varying the relation between the flows of said fluids.

62. In an apparatus for generating steam or vaper, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in said flow for regulating the flow of the fuel in such manner that the flow of the fuel varies in substantially the same degree and in substantial unison with the variations of the flow of fluid through the generator, and means acting on the flow of one of said fluids for varying the ratio between the flows of said fluids.

63. In an apparatus for generating steam or vaper, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in the pressure of the fluid flowing through the generator for regulating the flow of the fuel in such manner that the flow of the fuel varies in substantially the same degree and in substantial unison with the variations of the flow of fluid through the generator, and means acting on the flow of one of said fluids for varying the ratio between the flows of said fluids.

64. In an apparatus for generating steam or vaper and delivering the same in a substantially unvarying condition as to the temperature thereof, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in said flow for regulating the flow of the fuel in such manner that the flow of the fuel varies in substantially the same degree and in substantial unison with the variations of the flow of the fluid through the generator, and means acting on the flow of one of said fluids and rendered operative by variations in the temperature of the steam or vaper for varying the ratio between the flows of said fluids.

65. In an apparatus for generating steam or vaper and delivering the same in a substantially unvarying condition as to the temperature and pressure thereof, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in the pressure of the steam or vaper for regulating the flow of the fuel in such manner that the flow of the fuel varies in substantially the same degree and in substantial unison with the variations of the flow of fluid through the generator, and means acting on the flow of one of said fluids and rendered operative by variations in the temperature of the steam or vaper for varying the ratio between the flows of said fluids.

66. In an apparatus for generating steam or vaper and delivering the same in a substantially unvarying condition as to the temperature and pressure thereof, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in said flow for regulating the flow of the fuel in such manner that the flow of the fuel varies in substantially the same degree and in substantial unison with the variations of the flow of the fluid through the generator, and means acting on the flow of the liquid to the generator and rendered operative by variations in the temperature of the steam or vaper for varying the ratio between the flows of said fluids.

67. In an apparatus for heating fluids, the combination with a fluid-receptacle, of means for supplying a fluid to be heated to said receptacle, said means being constructed to vary the supply of the fluid in substantial unison with the variations of demand for fluid energy and in a definite quantitative relation to said variations, means for supplying a fluid-heating agent to said receptacle, means for maintaining a predetermined quantitative relation between the flow of the heating agent and the flow of fluid through the receptacle, and means for automatically varying the ratio between the flows of said fluids.

68. In an apparatus for heating fluids, the combination with a fluid-receptacle, of means for supplying a fluid to said receptacle, said means being rendered operative by variations in a condition of the fluid being heated to vary the supply of the fluid in substantial unison with the variations of demand for fluid energy and in a substantially definite quantitative relation to said variations, means for supplying a fluid-heating agent to said receptacle, means for regulating the flow of the heating agent by variations in the condition of the fluid being heated in such manner as to maintain a predetermined quantitative relation between the flow of the heating agent and the flow of the fluid through the receptacle, and means for automatically varying the ratio between the flows of said fluids.

69. In an apparatus for heating a fluid and delivering the same at a substantially unvarying temperature, the combination with a fluid-receptacle, of means for supplying the fluid to be heated to said receptacle, said means being rendered operative by variations in the condition of the fluid being heated to vary the supply of the fluid in substantial unison and in a substantially definite quantitative relation to said variations, means for supplying a fluid-heating agent to said receptacle, means for regulating the flow of the heating agent by variations in the condition of the fluid flowing through the receptacle resulting from variations in said flow for maintaining a substantially predetermined quantitative relation between the flows of said fluids and means rendered operative by variations in the temperature of the heated fluid for varying the relation between the flows of said fluids.

70. In an apparatus for heating a fluid, the combination with a fluid-receptacle, of means for supplying the fluid to be heated to said receptacle, means for supplying a fluid-heating agent to said receptacle, means for maintaining a predetermined relation between the flows of said fluids, and means whereby the relation between the flows of said fluids may be varied.

71. In an apparatus for heating a fluid, the combination with a fluid-receptacle, of means for supplying a fluid to be heated to said receptacle, means for supplying a fluid-heating agent to said receptacle, means rendered operative by variations in one condition of the fluid being heated for maintaining a predetermined relation between the flows of said fluids, and means rendered operative by variations in another condition of the fluid being heated for varying the relation between the flows of said fluids.

72. In an apparatus for heating a fluid, the combination with a fluid-receptacle, of means for supplying a fluid to be heated to said receptacle, means for supplying a fluid-heating agent to said receptacle, means rendered operative by variations in the condition of the fluid being heated for regulating the flow of the heating agent in such manner as to maintain a predetermined quantitative relation between the flow of the heating agent and the flow of the fluid through the receptacle, and means for automatically varying the ratio between the flows of said fluids.

73. In an apparatus for heating a fluid, the combination with a fluid-receptacle, of means for supplying the fluid to be heated to said receptacle, means for supplying a fluid-heating agent to said receptacle, means rendered operative by variations in a condition of the fluid flowing through the receptacle resulting from variations in the flow of said fluid for maintaining a predetermined quantitative relation between the flow of the heating agent and the flow of fluid through the receptacle, and means rendered operative by variations in the condition of the fluid for varying the ratio between the flows of said fluids.

74. In a device for maintaining a predetermined quantitative relation between the flows of two fluids, the combination with a motor constructed to be rendered operative by variations in a condition of one fluid resulting from variations in the flow thereof, of means operated by said motor for controlling the flow of the other fluid, and means acting on the flow of one of said fluids for so controlling the operation of said device that the relation between the flows of said fluids may be varied.

75. In a device for maintaining a predetermined quantitative relation between the flows of two fluids, the combination with a conduit for conveying one fluid, said conduit having a restricted passage, of a motor operated by the variations in pressure resulting from variations in the flow of fluid through said restricted passage, means operated by said motor for controlling the flow of the other fluid, and means whereby the relation between the flows of the fluids may be varied.

76. In a device for maintaining a predetermined quantitative relation between the flows of two fluids, the combination with a conduit for conveying one fluid, said conduit having a restricted passage, of a motor operated by the variations in pressure resulting from variations in the flow of fluid through said restricted passage, means operated by said motor for controlling the flow of the other fluid, and means for regulating the size of said restricted passage whereby the predetermined relation between the flows of the fluids may be varied.

77. In a device for maintaining a predetermined quantitative relation between the flows of two fluids, the combination with a motor constructed to be rendered operative by variations in a condition of one fluid resulting from variations in the flow of said fluid, of a valve for controlling the flow of the other fluid, and connections between the motor and one member of said valve, the members of said valves being so shaped

with relation to their relative movement that the flow of one fluid varies in the same degree and in substantial unison with the variations of the flow of the other fluid.

78. In a device for maintaining a predetermined quantitative relation between the flows of two fluids, the combination with conduits for conveying said fluids, one of said conduits having a restricted passage, of a motor communicating with the conduit having the restricted passage and at opposite sides of the restricted passage, a spring for moving said motor in one direction, a valve rendered operative by said motor for varying the size of the restricted passage and a valve rendered operative by said motor for controlling the flow of fluid through the other conduit, said valves being so shaped and proportioned as to maintain a predetermined quantitative relation between the flows of the fluids.

79. In a device for maintaining a predetermined quantitative relation between the flows of two fluids, the combination with two conduits for conveying said fluids, one of said conduits having a restricted passage, of a motor communicating with the conduit having the restricted passage and at opposite sides of the restricted passage, a spring for moving said motor in one direction, a valve rendered operative by said motor for varying the size of the restricted passage, a valve rendered operative by said motor for controlling the flow of fluid through the other conduit, said valves being so relatively shaped and proportioned as to maintain a predetermined quantitative relation between the flows of the fluids, and means for varying the relation between the flows of the fluids at will.

80. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same of means for supplying a fluid fuel to the combustion-chamber, means for supplying water to the generator, said means being rendered operative by variations in the condition of the fluid being heated to automatically vary the effective supply of the water in substantial unison with the variations of demand for steam energy and in a substantially definite quantitative relation to said variations of demand, and means rendered operative by variations in the condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for regulating the flow of fuel in such manner as to maintain a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator.

81. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, of means for supplying a fluid fuel to the combustion-chamber, means for supplying water to the generator, said means being rendered operative by variations in the condition of the fluid being heated to automatically vary the effective supply of the water in substantial unison with the variations of demand for steam energy and in a substantially definite quantitative relation to said variations of demand, and means rendered operative by variations in the condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for regulating the flow of fuel in such manner as to maintain a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator, and means for varying the relation between the flows of said fluids.

82. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a suitable generator arranged in coöperative relation with the same, means for supplying a fluid fuel to the combustion-chamber, means for supplying water to the generator, said means being constructed to automatically vary the supply of water in substantial unison with the variations of demand for steam energy and in a substantially definite quantitative relation to said variations, means rendered operative by variations in one condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator, and means rendered operative by another condition of the fluid being heated for varying the relation between the said flows.

83. In an apparatus for generating superheated steam and delivering the same at a substantially uniform temperature, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator, means for supplying fluid fuel to the combustion-chamber, means rendered operative by variations in one condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator, and means rendered operative by another condition of the fluid being heated for automatically varying the relation between the flows of said fluids.

84. In an apparatus for generating superheated steam and delivering the same at a substantially uniform temperature, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in one condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of fluid through the generator, and means rendered operative by variations in another condition of the fluid being heated and acting upon the supply of the water to the generator to vary the relation between the flows of said fluids.

85. In an apparatus for generating superheated steam, the combination with a combustion-chamber and generator having a single continuous passage so arranged with relation to the combustion-chamber that different portions of it are subjected to the action of products of combustion of different temperatures, means for supplying water to a cooler portion of the generator, means for supplying a fluid fuel to the combustion-chamber, and means for automatically varying the supplies of both the water and the fuel in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations.

86. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator having a single continuous passage so arranged with relation to the combustion-chamber that different portions of it are subjected to the action of products of combustion of different temperatures, means for supplying water to a cooler portion of the generator, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the water and the fuel in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations.

87. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator having a single continuous passage so arranged with relation to the combustion-chamber that different portions of it are subjected to the action of products of combustion of different temperatures, of means for supplying water to a cooler portion of the generator at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the condition as to pressure of the fluid being heated for automatically varying the supplies of both the water and the fuel in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations.

88. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator having a single continuous passage so arranged with relation to the combustion-chamber that different portions of it are subjected to the action of products of combustion of different temperatures, means for supplying water to the generator, said means being constructed to automatically vary the supply of water in substantial unison with the variations of demand for steam energy and in a definite quantitative relation to said variations, means for supplying a fluid fuel to the combustion-chamber and means for maintaining a predetermined quantitative relation between the flow of the fuel and the flow of fluid through the generator.

89. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator having a single continuous passage so arranged with relation to the combustion-chamber that different portions of it are subjected to the action of products of combustion of different temperatures, means for supplying water to a cooler portion of the generator, said means being rendered operative by variations in the condition of the fluid being heated for automatically varying the supply of water in substantially the same degree and in substantial unison with the variations of demand for steam energy, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for maintaining a predetermined quantitative relation between the flow of the fuel and the flow of fluid through the generator.

90. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator having a single continuous passage so arranged with relation to the combustion-chamber that different portions of it are subjected to the action of products of combustion of different temperatures, means for supplying water to a cooler portion of the generator, said means being rendered operative by variations in the condition of the fluid being heated for automatically varying the supply of water in substantially the same degree and in substantial unison with the variations of demand for steam energy, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for maintaining a predetermined qantitative relation between the flow of the fuel and the flow of fluid through the generator.

91. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator having a single continuous passage so arranged with relation to the combustion-chamber that different portions of it are subjected to the action of products of combustion of different temperatures, means for supplying water to a cooler portion of the generator at a substantially unvarying pressure, said means be-

ing rendered operative by variations in the condition as to pressure of the fluid being heated to automatically vary the supply of the liquid in substantially the same degree and in substantial unison with the variations of demand for steam energy, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in a differential pressure resulting from variations in the flow of fluid through the generator for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of fluid through the generator.

92. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying the supplies of both the water and the fuel in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations, said generator being of a type in which only a small quantity of the liquid is maintained at the temperature of vaporization.

93. In an apparatus for generating superheated steam and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations, said generator being of a type in which only a small quantity of the water is maintained at the temperature of vaporization.

94. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations of demand, said generator being so constructed and arranged with relation to the combustion-chamber that the rate of variation of the controlling condition of the fluid therein varies inversely as the quantity of water therein varies.

95. In an apparatus for generating superheated steam and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations of demand, said generator being so constructed and arranged with relation to the combustion-chamber that the rate of variation of the controlling condition of the fluid therein varies inversely as the quantity of liquid therein varies.

96. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils connected together in series and located one within another around the combustion-chamber, of means for supplying water to an outer coil at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying the supplies of both the water and the fuel in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations of demand.

97. In an apparatus for generating superheated steam and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils connected together in series and located one within another around the combustion-chamber, of means for supplying water to an outer coil at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations of demand.

98. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils connected together in series and located one within another around the combustion-chamber, means for supplying water to the outer coil at a substantially predetermined pressure, said means being rendered operative by variations in the pressure of the fluid being heated to automatically vary the supply of the water in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations of demand, means for supplying fuel to the combustion-chamber, and means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator.

99. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils located one within another around the combustion-chamber, means for supplying water to an outer coil, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of both the water and the fuel in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations of demand, said coils being so connected in series that the liquid is gradually heated and vaporized and is brought to the temperature of vaporization at a point where its flow is not appreciably affected by gravity.

100. In an apparatus for generating superheated steam and delivering the same in a substantially unvarying condition as to the energy thereof, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils located one within another around the combustion-chamber, means for supplying water to an outer coil, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the water and the fuel vary in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations, said coils being so connected in series that liquid is gradually heated and vaporized and is brought to the temperature of vaporization at a point where its flow is not appreciably affected by gravity.

101. In an apparatus for generating superheated steam and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator consisting of a plurality of pipe-coils located one within another around the combustion-chamber, of means for supplying water to the outer coil at a substantially predetermined pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the water and the fuel vary in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations of demand, said coils being so connected in series that the liquid is gradually heated and vaporized and is brought to the temperature of vaporization at a point where its flow is not appreciably affected by gravity.

102. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying water to the generator, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the condition of the fluid being heated for automatically varying the supplies of the liquid and the fuel in substantial unison with the variations of demand for steam energy and in substantially predetermined quantitative relations to said variations of demand, said generator having a water-heating portion in which the water is gradually heated to the temperature of vaporization, a vaporizing portion adapted to receive a small quantity of the water and vaporize it gradually, and a superheating portion directly connected to and forming an extension of said vaporizing portion.

103. In an apparatus for generating superheated steam, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying water to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in the condition of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the water and the fuel vary in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations, said generator having a water-heating portion in which the water is gradually heated to the temperature of vaporization, a vaporizing portion adapted to receive a small quantity of the liquid and vaporize it gradually, and a superheating portion directly connected to and forming an extension of said vaporizing portion.

104. In an apparatus for generating superheated steam and delivering it in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, means for supplying water to the generator at a substantially uniform pressure, means for supplying a fluid fuel to the combustion-chamber, and means rendered operative by variations in the pressure of the fluid being heated for automatically varying said supplies in such manner that the effective supplies of both the water and the fuel vary in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations, said generator having a heating portion in which the water is gradually heated to the temperature of vaporization, a vaporizing portion adapted to receive a small quantity of the water and vaporize it gradually and a superheating portion directly connected to and forming an extension of said vaporizing portion.

105. In an apparatus for generating superheated steam and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator, means for supplying a fluid fuel to the combustion-chamber, means tending to maintain a substantially predetermined quantitative relation between the flow of the fuel and the flow of fluid through the generator, and means for automatically varying the relation between the flows of said fluids, said generator being of a type in which only a small quantity of the water is maintained at the temperature of vaporization.

106. In an apparatus for generating superheated steam and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a generator arranged in coöperative relation to the same, means for supplying water to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in the condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator, and means for automatically varying the relation between the flows of said fluids.

107. In an apparatus for generating superheated steam and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in one condition of the fluid being heated for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator, and means rendered operative by variations in another condition of the fluid being heated for automatically varying the relation between the flows of said fluids.

108. In an apparatus for generating superheated steam and delivering the same at a substantially unvarying temperature, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying water to the generator, means for supplying a fluid fuel to the combustion-chamber, means rendered operative by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid for maintaining a substantially predetermined quantitative relation between the flow of the fuel and the flow of fluid through the generator, and means rendered operative by variations in the temperature of the superheated steam for automatically varying the relation between the flows of said fluids.

109. In an apparatus for generating steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying liquid to the generator, means for supplying a fluid fuel to the combustion-chamber at a substantially predetermined pressure, a nozzle for delivering the fuel to the combustion-chamber and means acting on the flow of the fuel at the nozzle for so regulating said flow that the flow of fuel varies in substantial unison with the variations of the flow of fluid through the generator and according to a substantially predetermined quantitative relation to said variations.

110. In an apparatus for generating steam or vapor, the combination with a generator and a burner arranged in coöperative relation with the same, of means for supplying liquid to the generator, means for supplying a fluid fuel to the combustion-chamber at a predetermined pressure, a nozzle for delivering the fuel to the combustion-chamber, and means rendered operative by variations in the fluid being heated and acting on the flow of fuel at the nozzle for so regulating said flow that it varies in substantial unison with the variations of the flow of fluid through the generator and according to a substantially predetermined quantitative relation to said variations.

111. In an apparatus for generating superheated steam or vapor, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying liquid to the said generator, said means being constructed to automatically vary the supply of liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, means for supplying a fluid fuel to the combustion-chamber at a predetermined pressure, a nozzle for delivering fuel to the combustion-chamber, and means controlled by variations in the condition of the fluid being heated and acting on the flow of the fuel at the nozzle for so regulating said flow as to maintain a substantially predetermined quantitative relation between the flow of the fuel and the flow of the fluid through the generator.

112. In an apparatus for generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, the combination with a combustion-chamber and a generator arranged in coöperative relation with the same, of means for supplying a liquid to the generator at a substantially predetermined pressure, said means being rendered operative by variations in the condition of the fluid being heated for automatically varying the supply of fuel in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, means for supplying a fluid fuel to the combustion-chamber at a predetermined pressure, a nozzle for delivering the fuel to the combustion-chamber, and means controlled by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid and acting on the flow of fuel at the nozzle for so regulating the flow of fuel as to maintain a substantially predetermined quantitative relation between the flow of fuel and the flow of fluid through the generator.

113. In an apparatus for superheating steam, the combination with a superheater, of means for supplying steam to the superheater, means for supplying a fluid-heating agent for heating the superheater, and means for automatically varying the effective supply of the heating agent in substantial unison with the variations of demand for superheated steam and in a substantially predetermined quantitative relation to said variations of demand.

114. In an apparatus for superheating steam, the combination with a superheater, of means for supplying steam to the superheater, means for supplying a fluid-heating agent for heating the superheater, and means rendered operative by variations in the condition of the fluid flowing through the superheater for automatically varying the effective supply of the heating agent in substantial unison with the variations in demand of superheated steam and in a substantially predetermined quantitative relation to said variations of demand.

115. In an apparatus for superheating steam, the combination with a superheater, of means for supplying steam to the superheater, means for supplying a fluid-heating agent for heating the superheater, and means rendered operative by variations in a condition of the fluid flowing through the superheater resulting from variations in said flow for automatically varying the effective supply of the heating agent in substantial unison with the variations of demand for superheated steam and in a substantially predetermined quantitative relation to said variations of demand.

116. In an apparatus for superheating steam, the combination with a superheater, of means for supplying steam to the superheater, means for supplying a fluid-heating agent for heating the superheater, and means for automatically varying the effective supply of the heating agent in the same degree and in substantial unison with the variations of demand for superheated steam.

117. In an apparatus for superheating steam, the combination with a superheater, of means for supplying steam to the superheater, means for supplying a fluid-heating agent for heating the superheater, and means rendered operative by variations in one condition of the fluid flowing through the superheater for automatically varying the effective supply of the heating agent in a substantially predetermined quantitative relation with and in substantial unison with the variations of demand for superheated steam, and means rendered operative by another condition of the said fluid for varying the relation between the supply of the heating agent and the demand for steam.

118. In an apparatus for superheating steam, the combination with a superheater, of means for supplying steam to the superheater, means for supplying a fluid-heating agent for heating the superheater, and means for automatically varying the effective supply of the heating agent in substantial unison with the variations of demand for superheated steam and in a substantially predetermined quantitative relation to said variations, and means rendered operative by variations of the temperature of the superheated steam for varying the relation between the supply of the heating agent and the demand for steam.

119. In an apparatus for superheating steam, the combination with a superheater, of means for supplying steam to the superheater, means for supplying the fluid-heating agent for heating the superheater, and means rendered operative by variations in a condition of the fluid flowing through the superheater resulting from variations in said flow for automatically varying the effective supply of the heating agent in substantial unison with the variations of demand for superheated steam and in a substantially predetermined quantitative relation to said variations of demand, and

means rendered operative by variations of the temperature of the superheated steam for varying the relation between the supply of the heating agent and the demand for steam.

120. In an apparatus for superheating steam, the combination with a superheater, the effective heating-surface of which is automatically varied inversely and in substantial unison with the variations of demand for superheated steam, means for supplying a fluid-heating agent for heating the superheater, and means for automatically varying the effective supply of the heating agent in substantial unison with the variations of demand for superheated steam and in a substantially predetermined quantitative relation to said variations of demand.

121. In an apparatus for superheating steam, the combination with a superheater, the effective heating-surface of which is automatically varied inversely and in substantial unison with the variations of demand for superheated steam, means for supplying a fluid-heating agent for heating the superheater, and means for automatically varying the effective supply of the heating agent in substantially the same degree and in substantial unison with the variations of demand for superheated steam.

122. In an apparatus for superheating steam, the combination with a superheater, the effective heating-surface of which is automatically varied inversely and in substantial unison with the variations of demand for superheated steam, means for supplying a fluid-heating agent for heating the superheater, means rendered operative by variations in the condition of the fluid flowing through the superheater for automatically varying the effective supply of the heating agent in substantial unison with the variations of demand for superheated steam and in a substantially predetermined quantitative relation to said variations of demand, and means rendered operative by variations in the temperature of the superheated steam for varying the relation between the supply of the heating agent and the demand for superheated steam.

704,908. ART OF GENERATING STEAM OR VAPOR. EDWARD C. HEWCOMB, Jamaica Plain, Mass. Original application filed June 7, 1901, Serial No. 63,565. Divided and this application filed Apr. 3, 1902. Serial No. 101,261. (No model.)

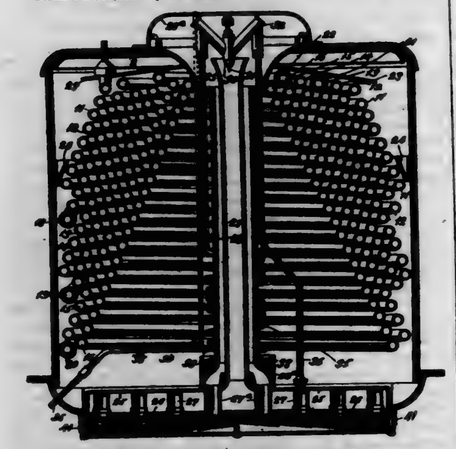

Claims.—1. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations.

2. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and by variations in the condition of the fluid being heated varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations of demand.

3. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, and by variations in the condition as to pressure of the fluid being heated varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations of demand.

4. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

5. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and varying said supplies by variations in the condition of the fluid being heated in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations of demand.

6. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, and varying said supplies by variations in the condition as to pressure of the fluid being heated in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations of demand.

7. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in the same degree with said variations.

8. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and by variations in the condition of the fluid being heated varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in the same degree with said variations.

9. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, and by variations in the condition as to pressure of the fuel being heated varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and in the same degree with said variations of demand.

10. The method of generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

11. The method of generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, and varying said supplies by variations in the condition of the fluid being heated in such a manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand.

12. The method of generating superheated steam or vapor and delivering same in a substantially unvarying condition as to temperature and pressure, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, and varying said supplies by variations in the condition as to pressure of the fluid being heated in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand.

13. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

14. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid by variations in the condition of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations of demand, and maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

15. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, varying the supply of the liquid by variations in the condition as to pressure of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations of demand, and maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

16. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

17. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid by variations in the condition of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

18. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, varying the supply of the liquid by variations in the condition as to pressure of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

19. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and regulating the supply of fuel by variations in the condition of the fluid flowing through the generator in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and according to a predetermined quantitative relation to said variations of flow.

20. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and regulating the supply of fuel by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and according to a predetermined quantitative relation to said variations of flow.

21. The method of generating superheated steam or vapor, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, varying the supply of the liquid by variations in the condition as to pressure of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations of demand, and regulating the supply of fuel by variations in the condition as to pressure of the fluid flowing through the generator in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and according to a predetermined quantitative relation to said variations of flow.

22. The method of generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and regulating the supply of fuel by variations in the condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

23. The method of generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and regulating the supply of fuel by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in such manner that the effective supply of fuel varies in substantial unison with the variations in the flow of fluid through the generator and in substantially the same degree with said variations of flow.

24. The method of generating superheated steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, said method consisting in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, and varying the supply of the liquid by variations in the condition as to pressure of the fluid being heated in such manner that the effective supply of liquid varies in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and regulating the supply of fuel by variations in the condition as to pressure of the fluid flowing through the generator in such manner that the effective supply of the fuel varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

25. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, establishing a predetermined quantitative relation between the supplies of the liquid and the fuel, and regulating the temperature of the steam or vapor by varying the relation between said supplies.

26. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, regulating the supply of fuel by variations in the condition of the fluid being heated in a manner tending to maintain a predetermined quantitative relation between the supplies of the liquid and the fuel, and regulating the temperature of the steam or vapor by varying the relation between said supplies.

27. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, establishing a predetermined relation between the supplies of the liquid and the fuel, and regulating the temperature of the steam or vapor by varying the relation between said supplies.

28. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, regulating the supply of fuel by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in a manner tending to maintain a predetermined quantitative relation between the supplies of the liquid and the fuel, and regulating the temperature of the steam or vapor by varying the relation between said supplies.

29. The method of generating steam or vapor, and delivering the same at a substantially uniform temperature, said method consisting in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, establishing a predetermined quantitative relation between the supplies of the liquid and the fuel, and varying the relation between said supplies by variations in the temperature of the steam or vapor.

30. The method of generating steam or vapor and delivering the same at a substantially unvarying temperature, said method consisting in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy in a substantially definite quantitative relation to said variations, regulating the supply of fuel by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in a manner tending to maintain a predetermined quantitative relation between the supplies of the liquid and the fuel, and varying the relation between said supplies by variations in the temperature of the steam or vapor.

31. The method of generating steam or vapor and delivering the same at a substantially unvarying temperature, said method consisting in supplying a liquid to a suitable generator, supplying a fuel for heating the

generator, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, establishing a predetermined quantitative relation between the supplies of the liquid and the fuel, and varying the relation between said supplies by variations in the temperature of the steam or vapor.

32. The method of generating steam or vapor and delivering the same at a substantially unvarying temperature and pressure, said method consisting in supplying a liquid to a suitable generator at a substantially predetermined pressure, supplying a fuel for heating the generator, varying the supply of the liquid by variations in the pressure of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, regulating the supply of the fuel by variations in a condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in a manner tending to maintain a predetermined quantitative relation between the supplies of the liquid and the fuel, and varying the relation between said supplies by variations in the temperature of the steam or vapor.

33. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supplies of both the liquid and the heat in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations.

34. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature or vaporization by variations in the condition of the fluid being heated, varying the supplies of both the liquid and the heat in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations.

35. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization by variations of the condition as to pressure of the fluid being heated, varying the supplies of both the liquid and the heat in substantial unison with the variations of demand for steam or vapor energy and in definite quantitative relations to said variations.

36. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supplies of both the liquid and the heat in such manner that the effective supplies of both vary in substantial unison with the variations in demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

37. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supplies of both the liquid and the heat by variations in the condition of the fluid being heated in such manner that the effective supplies of both vary in substantial unison with the variations in demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

38. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supplies of both the liquid and the heat by variations in the condition as to pressure of the fluid being heated in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam or vapor energy and in substantially definite quantitative relations to said variations.

39. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supplies of both the liquid and the heat in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

40. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization by variations in the condition of the fluid being heated, varying the supplies of both the liquid and the heat in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

41. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator at a substantially predetermined pressure, heating the generator in such manner that only a small portion of the liquid is maintained at the temperature of vaporization, and by variations in the condition as to pressure of the fluid being heated varying the supplies of both the liquid and the heat in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand.

42. The method of generating steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, and varying the supplies of both the liquid and the heat in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

43. The method of generating steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, and varying the supplies of both the liquid and the heat by variations in the condition of the fluid being heated in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

44. The method of generating steam or vapor and delivering the same in substantially an unvarying condition as to temperature and pressure, said method consisting in supplying a liquid to a suitable generator at a substantially predetermined pressure, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, and varying the supplies of both the liquid and the heat by variations in the condition as to pressure of the fluid being heated in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand.

45. The method of generating steam or vapor, which method consists in supplying the liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and maintaining a predetermined quantitative relation between the supplies of the liquid and the heat.

46. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid by variations in the condition of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in a substantially predetermined quantitative relation to said variations of demand, and maintaining a predetermined quantitative relation between the supplies of the liquid and the fuel.

47. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and maintaining a predetermined quantitative relation between the supplies of the liquid and the heat.

48. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and regulating the supply of heat by variations in the condition of the fluid being heated in such manner as to maintain a substantially predetermined quantitative relation between the supplies of the liquid and the heat.

49. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, and regulating the supply of heat by the condition of the fluid flowing through the generator resulting from the flow of said fluid in such manner as to maintain a substantially predetermined quantitative relation between the flow of the fluid and the supply of heat.

50. The method of generating steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, said method consisting in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and regulating the supply of heat in such manner that the effective supply of heat varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

51. The method of generating steam or vapor and delivering the same in a substantially unvarying condition as to the energy thereof, said method consisting in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid by variations in the condition of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and regulating the supply of heat by the condition of the fluid flowing through the generator resulting from the flow of said fluid in such manner that the effective supply of the heat varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

52. The method of generating steam or vapor and delivering the same in a substantially unvarying condition as to temperature and pressure, said method consisting in supplying a liquid to a suitable generator at a substantially predetermined pressure, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid by variations in the condition as to pressure of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, and regulating the supply of heat by a condition of the fluid flowing through the generator resulting from the flow of said fluid in such manner that the effective supply of the heat varies in substantial unison with the variations of the flow of fluid through the generator and in substantially the same degree with said variations of flow.

53. The method of generating steam or vapor and delivering the same in a substantially unvarying condition, said method consisting in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, establishing a predetermined quantitative relation between the supplies of the liquid and the heat, and regulating the temperature of the steam or vapor by varying the relation between said supplies.

54. The method of generating steam or vapor and delivering the same at a substantially unvarying temperature, which method consists in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the effective supply of the liquid in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, establishing a predetermined quantitative relation between the supplies of the liquid and the heat, and regulating the temperature of the steam or vapor by varying the relation between the said supplies.

55. The method of generating steam or vapor and delivering the same at a substantially unvarying temperature, said method consisting in supplying a liquid to a suitable generator, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid by variations in the condition of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in a substantially definite quantitative relation to said variations, regulating the supply of heat by variations in the condition of the fluid being heated in such manner as to maintain a substantially predetermined quantitative relation between the supplies of the liquid and the heat, and varying the relation between said supplies by variations in the temperature of the steam or vapor.

56. The method of generating steam or vapor and delivering the same at a substantially unvarying temperature and pressure, said method consisting in supplying a liquid to a suitable generator at a substantially predetermined pressure, heating the generator in such manner that only a small quantity of the liquid is maintained at the temperature of vaporization, varying the supply of the liquid by variations in the condition as to pressure of the fluid being heated in such manner that the effective supply of the liquid varies in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations of demand, regulating the supply of heat by variations in the condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in such manner that the effective supply of the heat varies in substantial unison with the variations in the flow of the fluid through the generator and in substantially the same degree with said variations of flow.

57. The method of generating steam or vapor, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying the supplies of both the liquid and the fuel in substantial unison with the variations of demand for steam or vapor energy and substantially according to predetermined quantitative relations to said variations, and maintaining an auxiliary supply of fuel to replace the heat lost by radiation.

58. The method of generating steam or vapor and delivering the same at a substantially unvarying temperature, which method consists in supplying a liquid to a suitable generator, supplying a fuel for heating the generator, varying said supplies in such manner that the effective supplies of both the liquid and the fuel vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations, and maintaining an auxiliary supply of fuel to replace the heat lost by radiation.

59. The method of generating superheated steam, which method consists in supplying water to a suitable generator and gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, and varying the supplies of both the water and the heat in substantial unison with the variations of demand for steam energy and substantially according to predetermined quantitative relations to said variations.

60. The method of generating superheated steam, which method consists in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, and varying the supplies of both the water and the heat in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam energy and substantially according to predetermined quantitative relations to said variations.

61. The method of generating superheated steam, which method consists in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, and varying the supply of both the water and the heat by variations in the condition of the fluid being heated in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam energy and substantially according to predetermined quantitative relations to said variations of demand.

62. The method of generating superheated steam, which method consists in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, and varying the supplies of both the water and the heat in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations.

63. The method of generating superheated steam and delivering the same in a substantially unvarying condition as to the energy thereof, said method consisting in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, and varying the supplies of both the water and the heat in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with said variations.

64. The method of generating superheated steam and delivering the same in a substantially unvarying condition as to the energy thereof, said method consisting in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, and varying the supplies of both the water and the heat by variations in the condition of the fluid being heated in such manner that the effective supplies of both vary in substantial unison with the variations of demand for steam or vapor energy and in substantially the same degree with the said variations of demand.

65. The method of generating superheated steam, which method consists in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, varying the supply of water in substantial unison with the variations of demand for steam energy and substantially according to a predetermined quantitative relation to said variations, and maintaining a substantially predetermined quantitative relation between the supplies of the water and the heat.

66. The method of generating superheated steam and delivering the same in a substantially unvarying condition as to the energy thereof, said method consisting in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water

is maintained at the temperature of vaporization, varying the supply of the water by variations in the condition of the fluid being heated in such manner that the effective supply of the water varies in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations of demand, and maintaining a substantially predetermined quantitative relation between the supplies of the water and the heat.

67. The method of generating superheated steam and delivering the same at a substantially unvarying temperature, said method consisting in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, varying the supply of water by variations in the condition of the fluid being heated in such manner that the effective supply of water varies in substantial unison with the variations of demand for steam energy and substantially according to a predetermined quantitative relation to said variations of demand, establishing a predetermined quantitative relation between the supplies of the water and the heat, and regulating the temperature of the steam by varying the relation between said supplies.

68. The method of generating superheated steam, which method consists in supplying water to a suitable generator, gradually heating the water in such manner that only a small quantity of the water is maintained at the temperature of vaporization, varying the supply of water by variations in the condition of the fluid being heated in such manner that the effective supply of water varies in substantial unison with the variations of demand for steam energy and substantially according to a predetermined quantitative relation to said variations of demand, regulating the supply of heat by variations in the condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in such manner that the effective supply of heat varies in substantial unison with the variations in the flow of fluid through the generator and substantially according to a predetermined quantitative relation to said variations of flow.

69. The method of generating superheated steam, which method consists in supplying water to a suitable generator, supplying a fluid fuel for heating the generator, and varying the supplies of both the water and the fuel in substantial unison with the variations of demand for steam energy and substantially according to predetermined quantitative relations to said variations.

70. The method of generating superheated steam, which method consists in supplying water to a suitable generator, supplying a fluid fuel for heating the generator, and varying said supplies in such manner that the effective supplies of both the water and the fuel vary in substantial unison with the variations of demand for steam energy and substantially according to predetermined quantitative relation to said variations.

71. The method of generating superheated steam, which method consists in supplying water to a suitable generator, supplying a fluid fuel for heating the generator, and varying said supplies by variations in the condition of the fluid being heated in such manner that the effective supplies of both the water and the fuel vary in substantial unison with the variations of demand for steam energy and substantially according to definite quantitative relations to said variations of demand.

72. The method of generating superheated steam, which method consists in supplying water to a suitable generator, supplying a fluid fuel for heating the generator, varying the supply of the water in substantial unison with the variations of demand for steam energy and substantially according to a predetermined quantitative relation to said variations, and maintaining a substantially predetermined quantitative relation between the supplies of the water and the fuel.

73. The method of generating superheated steam, which method consists in supplying water to a suitable generator, supplying a fluid fuel for heating the generator, varying the supply of the water by variations in the condition of the fluid being heated in such manner that the effective supply of the water varies in substantial unison with the variations of demand for steam energy and substantially according to a predetermined quantitative relation to said variations of demand, and maintaining a substantially predetermined quantitative relation between the supplies of the water and the fuel.

74. The method of generating superheated steam, which method consists in supplying water to a suitable generator, supplying a fluid fuel for heating the generator, varying the supply of the water by variations in the condition of the fluid being heated in such manner that the effective supply of the water varies in substantial unison with the variations of demand for steam energy and substantially according to a predetermined quantitative relation to said variations and regulating the flow of the fuel by variations in the condition of the fluid flowing through the generator resulting from variations in the flow of said fluid in such manner as to maintain a substantially predetermined quantitative relation between the flow of the fluid through the generator and the flow of the fuel.

75. The method of superheating steam or vapor, which method consists in supplying steam or vapor to a suitable superheater, supplying a heating agent for heating said superheater, and varying the supplies of both the steam or vapor and the heating agent in substantial unison with the variations of demand for steam energy and substantially according to predetermined quantitative relations to said variations.

76. The method of superheating steam or vapor, which method consists in supplying steam or vapor to a suitable superheater, supplying the heating agent for heating said superheater, and varying said supplies in such manner that the effective supplies of both the steam or vapor and the heating agent vary in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations.

77. The method of superheating steam or vapor and delivering the same at a substantially unvarying temperature, said method consisting in supplying steam or vapor to a suitable superheater, supplying a heating agent for heating said superheater, and varying said supplies in such manner that the effective supplies of both the steam or vapor and the heating agent vary in substantial unison with the variations of demand for steam energy and in substantially the same degree with said variations.

78. The method of superheating steam or vapor, which method consists in supplying steam or vapor to a suitable superheater, supplying the heating agent for heating said superheater, varying the supplies of both the steam or vapor and the heating agent in substantial unison with the variations of demand for steam energy and in substantially definite quantitative relations to said variations, and varying the effective heating-surface of said superheater inversely and in substantial unison with the variations of demand for steam energy.

704,909. PIPE-COUPLING. JOSEPH W. S. HYDE, Pittsburg, Pa. Filed Nov. 2, 1901. Serial No. 80,949. (No model.)

Claim.—In a pipe-coupling, the combination with the flared ends of the pipe-sections having a space therebetween, of a double-cone connecting member having an annular flange with a flat periphery provided on each side with an inwardly-extending groove forming a knife-edge at the upper face of said flange, said knife-edges engaging into the pipe-sections, said cone member being tapered from said flange and carrying a portion at each end of equal diameter throughout, said portion adapted to spread the ends of the pipe-sections, a sleeve mounted on one pipe-section and provided with an annular flange, a sleeve mounted on the opposite pipe-section and provided with an annular threaded flange, said annular flanges having a space therebetween adapted to be occupied by the lead cut by the said knife-edge of the connecting member, a ring-nut having its threads engaging with said threaded flange, a flange carried by said ring-nut for engagement with said first-named sleeve-flange, substantially as described.

704,910. RAT-TRAP. PETER OLAFFSEN, Tacoma, Wash. Filed Mar. 7, 1902. Serial No. 97,101. (No model.)

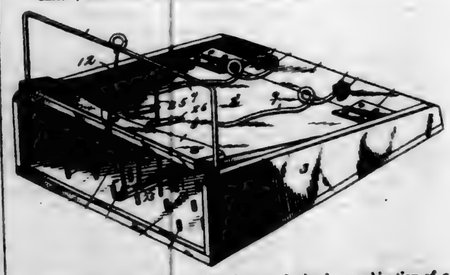

Claim.—1. In a trap of the class set forth, the combination of a body with closed sides and rear end, the sides being highest at the front, a spring-actuated trap-cover movably attached at its rear end to a portion of the main body of the trap, the bottom of the body and lower side of the cover having impaling-spurs projecting therefrom, a loosely-mounted bait-holding device, and a trip-rod to engage the bait-holding device and cover to set the trap.

2. In a trap of the class set forth, the combination of a body, a trap-cover cooperating therewith, a bait-holding device loosely connected at its rear end solely, and having a bait-holding pocket with a slide, and a projection at its free end, a rigid bail rising from the body above the trap-cover, and a trip-rod flexibly suspended from the bail and adapted to engage the cover and bait-holding device.

3. In a trap of the class set forth, the combination of a body, a trap-cover movably attached thereto, a bait-holding device extending longitudinally through the central portion of the body above the bottom of the latter, a centering loop for maintaining the bait-holding device in proper position, and a flexibly-suspended trip-rod adapted to engage the bait-holding device and trap-cover.

4. A holding device for a trap consisting of an elongated arm flexibly connected at its rear end and having a central enlargement with a pocket therein, and a slide to close the pocket and having an opening therethrough.

5. In a trap of the class set forth, the combination of a body having a spring-actuated trap-cover attached thereto and adapted to normally close downwardly thereover, a bait-holding device, and a flexibly-suspended trip-rod for interposition between the front end of the bait-holding device and the lid or cover.

704,911. FRICTION-CLUTCH. RASMUS R. OLSE, Detroit, Mich. Filed Feb. 25, 1902. Serial No. 96,612. (No model.)

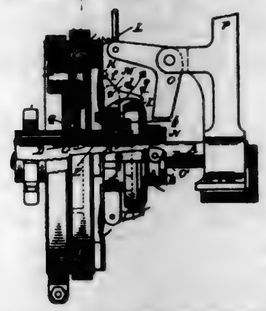

Claim.—1. In a transmission-gearing, the combination with a drive-shaft, of a head loose upon said shaft, a head secured to rotate with said shaft upon one side of said loose head, a spring-arm secured to the latter head having a friction-block at its outer end in close proximity to the face of said loose head and means for pressing against said spring-arm to yieldingly press said block in frictional contact with said loose head.

2. In a transmission-gearing, the combination with a drive-shaft, of a head loose upon said shaft, a head fixed upon said shaft beside said loose head, a plurality of radial arms secured to said fixed head flexible laterally but rigid in the plane of rotation, friction-blocks at the outer ends of said arms in close proximity to said loose head, dogs secured to said fixed head for bearing against said spring-arms and having operating-arms projecting laterally, and a cam-head longitudinally movable upon said shaft adapted to spread said operating-arms and cause said dogs to press against said flexible radial arms thereby pressing said blocks into frictional contact with said head.

3. In a transmission-gearing, the combination of the drive-shaft, a head loose on the shaft, a head fixed on the shaft beside the loose head, spring-arms secured to the latter head and adapted to bear against the loose head, dogs on the fixed head for flexing the springs and means for actuating said dogs.

4. In a transmission-gearing, the combination of the drive-shaft, a head loose on the shaft, a head fixed on the shaft beside the loose head, spring-arms secured to the latter, adapted to be pressed against the loose head by flexing the spring-arms, means for flexing the spring-arms, and for automatically locking said flexing means against accidental movement.

5. In a transmission-gearing, the combination of the drive-shaft, a head loose on the shaft, a head fixed on the shaft beside the loose head, spring-arms secured to the latter adapted to be pressed against the loose head by flexing the spring-arms, bell-crank levers for flexing the spring-arms, one arm thereof adapted to bear against the springs, a cam-head movable on the shaft for engagement with the other arm thereof, and a curved bearing on said arm with which the actuating-cam engages.

704,912. PNEUMATIC IMPACT-TOOL. SAMUEL GLIDDAN, Philadelphia, Pa. Filed Nov. 4, 1901. Serial No. 80,966. (No model.)

Claim.—1. In a pneumatic impact-tool, a cylinder, a piston or hammer adapted to reciprocate in said cylinder, a housing adapted to close

said cylinder at one end thereof, a chamber arranged in said housing transversely to said cylinder, a valve adapted to reciprocate in the chamber of said housing, means adapted to conduct live air or fluid to the interior of said valve, and means controlled by the movement of the piston for admitting live air or fluid to the valve-chamber in rear of said valve substantially as and for the purposes described.

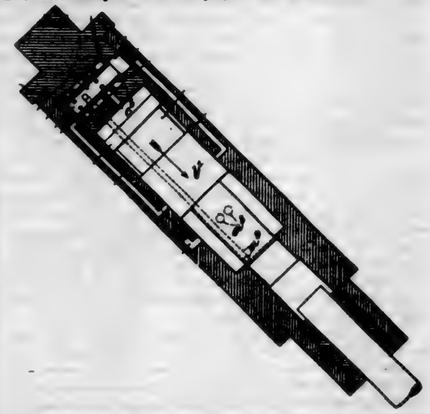

2. In a pneumatic impact-tool, a cylinder, a piston or hammer adapted to reciprocate in said cylinder, a housing adapted to close the upper end of said cylinder, a chamber arranged in said housing transversely of said cylinder, a hollow valve open at one end and adapted to reciprocate in said chamber, and means adapted to conduct live air or fluid directly and constantly into the interior of said valve and indirectly in rear of said valve, substantially as and for the purposes described.

3. In a pneumatic impact-tool, a cylinder, a piston or hammer adapted to reciprocate in a portion of said cylinder, a housing adapted to fill the upper portion of said cylinder to close the same at its upper end, a chamber arranged in said housing transversely of said cylinder, a tubular valve closed at one end and adapted to reciprocate in said chamber in a plane transversely to the reciprocation of said hammer or piston, means adapted to conduct live air or fluid into the valve to act constantly upon the interior of the closed end thereof, and means controlled by the piston or hammer adapted to alternately admit live air or fluid into said valve-chamber and to the rear of said valve, and to exhaust said live air from said chamber, substantially as and for the purposes described.

4. In a pneumatic impact-tool, a cylinder, a piston or hammer adapted to reciprocate in said cylinder, a housing adapted to close the upper end of said cylinder, a chamber arranged in said housing transversely of said cylinder, a hollow valve closed at one end and adapted to reciprocate in said chamber, an inlet port or conduit for live air or fluid arranged opposite said chamber and valve in said cylinder, ports or conduits leading from said inlet-port into said chamber to conduct live air or fluid thereto and an exhaust port or conduit of relatively large area connecting said valve-chamber with the open air, said ports connecting the valve-chamber with the live-air inlet being controlled directly by the piston or hammer independently of the valve in said chamber, substantially as and for the purposes described.

5. In a pneumatic impact-tool, a cylinder, a piston or hammer having a range of movement therein, a housing closing one end of said cylinder, a chamber arranged in said housing, a hollow valve closed at one end and located within the chamber of said housing, means adapted to move said valve slowly in one and quickly in the other direction, said means comprising a main inlet-port for live air or fluid centrally arranged opposite the open end of said hollow valve and conducting live air or fluid into the interior of said valve to act constantly upon the small head thereof, a branch inlet-port of small area leading from said main inlet-port and adapted to conduct live air or fluid into said chamber in rear end in front of the large head of said valve, and exhaust-ports of large area connecting said chamber with the atmosphere to permit of rapid discharge of live air or fluid from said chamber, substantially as and for the purposes described.

6. In a pneumatic impact-tool, a cylinder wherein the hammer or piston is adapted to reciprocate, a housing wherein a valve is adapted to reciprocate transversely to the reciprocation of said piston or hammer, said valve consisting of a hollow cylinder closed at one end and adapted to reciprocate in said housing, chambers arranged on the exterior of said valve, openings arranged in the body of said valve and adapted to communicate with the chambers located on the exterior of said valve, the

closed head of said valve and chambers controlling the actuation of the hammer or piston and the piston or hammer in conjunction with the closed end of the valve controlling the operation of said valve, substantially as and for the purposes described.

7. The combination, in a pneumatic impact-tool, of a cylinder, a piston reciprocable therein, a housing fixed in the upper end of said cylinder, a chamber arranged in said housing, passages for the motive fluid at the front and rear of said chamber, inlet and exhaust passages from each end of said cylinder and terminating and leading from said chamber, a valve having a range of movement within said housing, said piston adapted to permit of the entrance of live air or fluid in rear of said valve to cause the air or fluid to act on different areas of said valve at the same time, to retard the movement of said valve, and said valve adapted to centrally receive the motive fluid or air and to distribute the same from its center radially, substantially as and for the purposes described.

8. A pneumatic impact tool or hammer, comprising a cylinder, a piston reciprocable therein, a hollow valve, a valve-housing adapted to close the cylinder at its upper end, motive-fluid inlets opposite said hollow valve at either end of said housing in said cylinder and arranged at right angles to said valve, admission and exhaust ports and passages intermediate of said inlets in said housing, annular chambers in the exterior of said valve, openings in the body of said valve, a centrally-arranged chamber in the interior of said valve and said openings connecting said interior chamber with certain of the annular chambers of said valve, substantially as and for the purposes described.

9. In a pneumatic impact-tool, a cylinder, a piston or hammer adapted to reciprocate therein, a housing adapted to close the upper end of said cylinder, a hollow valve closed at one end and having a range of movement within said housing and with a centrally-arranged chamber in the interior and annular chambers in the exterior thereof, said valve-housing having two combined admission and exhaust ports and one exhaust-port, the said annular chambers adapted to be brought alternately into alinement with one of said admission and exhaust ports and the intermediate annular chamber adapted to constantly communicate with said exhaust-port and one of said combined admission and exhaust ports to move said piston or hammer slowly in one direction and quickly in the other direction, substantially as and for the purposes described.

10. The combination, in a pneumatic impact tool or hammer, of a cylinder, a piston reciprocable therein, a housing adapted to close said cylinder at one end thereof, a chamber arranged in said housing, a handle, a tubular extension of said handle adapted to engage the upper end of said cylinder, a shoulder arranged on said cylinder and having teeth on its entire periphery, a spring-controlled bolt arranged in the tubular extension of said handle and adapted to engage the teeth of said shoulder to lock and to prevent the disconnecting of said handle from said cylinder and to compensate for wear between said cylinder and handle.

704,913. ROTARY ENGINE. FREDERICK A. PALLS, New York, N. Y. Filed Jan. 11, 1902. Serial No. 89,262. (No model.)

Claim.—1. A rotary engine, comprising a cylinder, a piston eccentric therein and having recesses in its peripheral surface, the inner walls of the recesses being segmental, piston-heads having a segmental shape and mounted to swing in the said recesses and in sliding contact with the inner peripheral wall thereof, the said piston-heads having a sliding and interlocking engagement with the cylinder, as set forth.

2. A rotary engine comprising a cylinder having an inlet and an exhaust, a piston mounted to turn eccentrically in the said cylinder and having segmental recesses in its periphery, piston-heads mounted to swing on the said piston and in sliding contact with the peripheral wall of the recessed portions, and blocks mounted to slide in the cylinder and having a hinged connection with the said piston-heads, each of the blocks having its ends projecting into annular grooves formed in the cylinder-heads, as set forth.

3. A rotary engine comprising a cylinder, a piston mounted to turn concentrically in the said cylinder, and having cut-out portions in its peripheral surface, the inner walls of the cut-out portions being segmental, piston-heads having a segmental shape and mounted to swing in the cut-out portions and in sliding contact with the peripheral inner wall of the cut-out portions, each piston-head having side arms fulcrumed on the sides of the piston, and blocks mounted to slide on the inside of the rim of the cylinder, each block having a hinged connection with a corresponding piston-head, as set forth.

4. A rotary engine comprising a cylinder, a piston mounted to turn concentrically in the said cylinder, and having cut-out portions in its peripheral surface, the inner walls of the cut-out portions being segmental, piston-heads having a segmental shape and mounted to swing in the cut-out portions and in sliding contact with the peripheral inner wall of the cut-out portions, each piston-head having side arms fulcrumed on the sides of the piston, blocks mounted to slide on the inside of the rim of the cylinder, each block having a hinged connection with a corresponding piston-head, and means for controlling the inlet and exhaust of the motive agent to either side of the cylinder, as set forth.

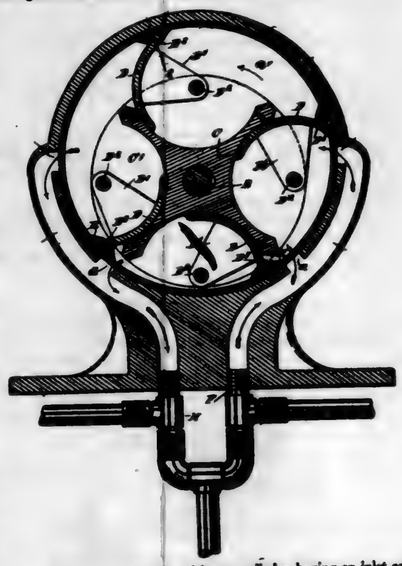

5. A rotary engine comprising a cylinder having an inlet and an exhaust, a piston eccentric in the cylinder, and having cut-out portions in its peripheral surface, the inner walls of the cut-out portions being segmental, piston-heads having a segmental shape and mounted to swing in the cut-out portions and in sliding contact with the peripheral inner wall of the cut-out portions, each piston-head having side arms fulcrumed on the sides of the piston near the periphery thereof and at the center of the cut-out portions, the piston-heads having a sliding connection with the cylinder, and blocks mounted to slide in the cylinder and having a hinged connection with the piston-heads, as set forth.

6. A rotary engine, comprising a cylinder, a piston mounted to turn eccentrically in the said cylinder, and having recesses in its peripheral surface, the inner walls of the recesses being segmental, piston-heads having a segmental shape and mounted to swing in the recesses of the piston and in sliding engagement with the peripheral inner wall of the recesses, each piston-head having side arms fulcrumed on the sides of the piston near the periphery thereof and at the center of the recesses, blocks mounted to slide on the inside of the rim of the cylinder, each block having a hinged connection with a corresponding piston-head, the said cylinder being provided with ports in its rim at opposite sides thereof, and channels leading from said ports, a pipe leading from each of said channels and connected with a supply-pipe, the said pipes being each provided with a valve, and exhaust-pipes each connected with one of the said pipes at a point between the valve and the connection of the pipe with the channel, the said exhaust-pipes being each provided with a valve, as set forth.

704,914. COMPRESSOR. FREDERICK W. PARSONS, Hooks, N. Y., assignor to Rand Drill Company, New York, N. Y., a Corporation of New York. Filed Apr. 16, 1901. Serial No. 56,108. (No model.)

Claim.—1. In a fluid-compressor, the combination with two power-cylinders arranged side by side, two compression-cylinders also arranged side by side, and each in line with one of the power cylinders, pistons for said cylinders, piston-rods connecting the pistons in opposite cylinders, and a sliding cross-head for each of said piston-rods, located between the corresponding cylinders, and each provided with an inwardly-projecting wrist-pin, of a cross-head guide for each of said cross-heads, having upper, side and lower bearing portions coacting with corresponding portions of the cross-head, whereby lateral strain upon the cross-head, in every direction, is resisted, a transverse crank-shaft intermediate of said cylinders, a fly-wheel thereon, and a connecting-rod connecting each said wrist-pin with said crank-shaft, said connecting-rods each arranged eccentrically of the axis of its corresponding pistons and piston-rod, and to have a path of movement to one side of the path of movement of the said piston-rod.

2. In a fluid-compressor, the combination with a suitable base, of a power-cylinder and a compression-cylinder arranged axially in line with each other, pistons within said cylinders, piston-rods connected to said pistons, a cross-head to which both said piston-rods are connected, said cross-head having a longitudinally-grooved shoe adapted to slide over a corresponding surface in a cross-head guide, of a cross-head guide comprising a longitudinally-tongued slipper adapted to receive the said cross-head shoe, and retaining-plates adapted to retain the said cross-head shoe in place; the said cross-head having a wrist-pin extending laterally upon one side thereof, and adapted to receive one end of a pitman or connecting-rod.

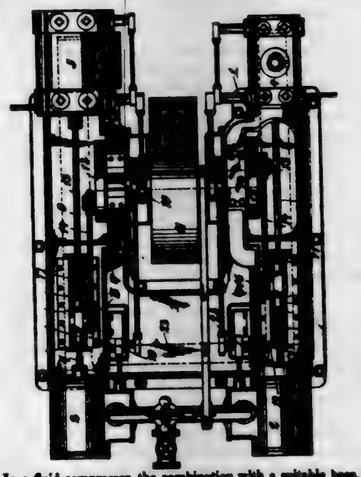

3. In a fluid-compressor, the combination with a suitable base, of a power-cylinder and a compression-cylinder arranged axially in line with each other, pistons within said cylinders, piston-rods connected to said pistons, a cross-head having a longitudinally-grooved shoe adapted to slide over a corresponding surface in a cross-head guide, of a cross-head guide comprising a guide-block secured to the base, a removable slipper supported thereon, and held in place thereby, said slipper longitudinally tongued and adapted to receive the said cross-head, and retaining-plates to retain the said cross-head shoe in place; the said cross-head having a wrist-pin extending laterally upon one side thereof, and adapted to receive one end of a pitman or connecting-rod.

4. In a fluid-compressor, the combination with two power-cylinders arranged side by side, two compression-cylinders also arranged side by side, and each in line with one of the said power-cylinders, pistons arranged in said cylinders, piston-rods connecting the pistons in opposite cylinders, cross-heads connected to said piston-rods, and a wrist-pin, for each cross-head, laterally projecting from the inner side thereof, said cross-heads having each a longitudinally-grooved shoe adapted to slide over a corresponding surface in a cross-head guide, of cross-head guides each comprising a longitudinally-tongued slipper adapted to receive one of the said cross-head shoes, and retaining-plates adapted to retain the said cross-head shoe in plain, a transverse shaft mounted intermediate of all of said cylinders, and in the plane of the piston-rods, and provided with crank-pins, a fly-wheel upon said shaft, and two connecting-rods, connecting said crank-pins and wrist-pins.

5. In a fluid-compressor, the combination with two power-cylinders arranged side by side, two compression-cylinders also arranged side by side, and each in line with one of the power-cylinders, pistons for said cylinders, sectional piston-rods connecting the pistons in opposite cylinders, one section of each such piston-rods being connected to one of said pistons, and the sections of said piston-rods being separable from each other, and a cross-head for each such piston-rod, located between the corresponding cylinders, and each provided with an inwardly-projecting wrist-pin, of a cross-head guide for each of said cross-heads having means for resisting lateral strain upon the cross-head, a transverse crank-shaft, intermediate of said cylinders, a fly-wheel thereon, and a connecting-rod connecting each said wrist-pin with said crank-shaft, said connecting-rods each arranged eccentrically of the axis of its corresponding pistons and piston-rod, and to have a path of movement to one side of the path of movement of the said piston-rod.

704,915. FENCE-POST. CHARLES O. PEAK, Jacksonville, Ill. Filed June 2, 1900. Serial No. 18,578. (No model.)

Claim.—1. The combination with a fence-post, of a rod having a loop at one end encircling the lower portion of said post and its opposite end threaded, a plate having a vertical flange the upper end of which is deflected outwardly, said vertical flange being perforated to receive said threaded end, a guide-eye located in advance of the said plate and embracing the said rod, nuts on the threaded end of the said rod on opposite sides of said flange, and a tie-wire connected to the post and also to the deflected portion of said flange.

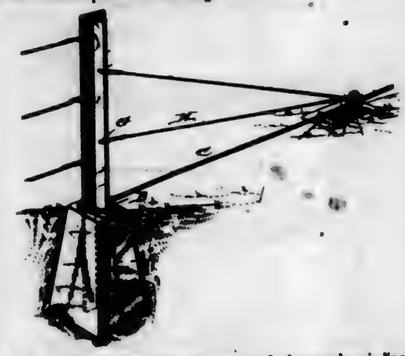

2. The combination with a fence-post, of a brace-rod encircling the lower portion of said post and having its opposite end threaded, and passing through a stationary guide-eye located in advance of said threaded portion, a brace-plate formed with a vertical flange and adjustably secured to said brace-rod, nuts on the threaded end of said rod and disposed on opposite sides of said flange and a deflected portion on said flange perforated to receive tie-wires, said wires extending at right angles from the said deflected portion and connected to the post.

3. The combination with a fence-post, of a brace-rod, the inner end of which encircles the lower portion of said post and having its opposite end threaded, an anchor-block arranged at a suitable distance from the post, a brace-plate formed with a vertical flange, said brace-plate adjustably secured to the brace-rod and adapted to rest on said anchor-block, a guide-eye rigidly secured to the anchor-block and adapted to embrace the outer end of the brace-rod, nuts on the threaded end and disposed on opposite sides of the said flange, said flange and deflected portion thereof having perforations adapted to receive respectively the brace-rod and tie-wires, said wires being connected to the post and arranged to pull at right angles to the deflected portion.

704,916. CALENDAR-CLOCK. JOHN I. PRATHER, Arlington, Mass. Filed May 3, 1901. Serial No. 58,005. (No model.)

Claim.—1. In a calendar, devices for indicating date, day and month divisions of a year, means for causing the movements of said devices, and a device having an axial and transverse rotary motion for governing the date changes, substantially as specified.

2. In a calendar, a motor, a rotary part for indicating dates operated by said motor, a wheel having an axial rotary motion and a transverse rotary motion, the said wheel being operated from the motor in its transverse rotation, lugs or projections on the opposite sides of said wheel, the said wheel having segmental slots in its periphery, bridges in the periphery opposite sundry of the projections of lugs, and means operated by the transverse rotary motion of said wheel for causing its axial rotary motion, substantially as specified.

3. In a calendar, a rotary part for indicating dates, a counter-shaft at the front of the machine, a motor for the counter-shaft, a driving connection between said counter-shaft and the rotary part, a day-cylinder, a ratchet-wheel on the shaft of said cylinder, a pawl engaging with said ratchet, a rod extended downward from the pawl, a cam on the shaft for engaging with said rod, and a locking device for the cylinder and moved to its releasing position by said shaft, substantially as specified.

4. In a calendar, a rotary part for indicating dates, a shaft having driving connection with said rotary part, a motor for operating the shaft, a day-cylinder, a ratchet-wheel on the shaft of said cylinder, an arm mounted to swing on said shaft, a pawl carried by the arm for engaging with the ratchet-wheel, a rod extended downward from the arm, a cam on the shaft for engaging with said rod, a stop or locking-wheel on the shaft of the cylinder, having notches in its periphery, a locking-dog for engaging in the notches, and a projection on the shaft for moving said dog to its releasing position, substantially as specified.

5. In a calendar, a rotary part for indicating dates, a motor for op-

erating said rotary part, a day-cylinder, a ratchet-wheel on the shaft of said cylinder, an arm mounted to swing on the shaft, a pawl carried by said arm for engaging the ratchet-wheel, means operated by the motor for causing the movements of said arm and pawl, a stop or locking disk on the shaft of the cylinder and having notches, the said disk being of larger diameter than the ratchet-wheel, and a stop or locking device for engaging in the notches of said disk and operated in one direction by the motor, substantially as specified.

6. In a calendar, a rotary part for indicating dates, a motor for imparting motion to said part, a day-cylinder, a month-cylinder, means operated by the motor for causing movements of the cylinders, means for preventing movement of the month-cylinder during certain movements of the day-cylinder and a part having a transverse and axial rotation for controlling the motor, substantially as specified.

7. In a calendar, a rotary part for indicating dates, a counter-shaft, a motor for operating said counter-shaft, a wheel having a transverse and an axial rotary motion for controlling the motor, a driving connection between said counter-shaft and said rotary part, a day-cylinder, a month-cylinder, a cam carried by the shaft for operating the day-cylinder, a cam carried by the shaft for operating the month-cylinder, and means operated by the shaft for preventing a movement of the month-cylinder during certain movements of the day-cylinder, substantially as specified.

8. In a calendar, a motor, a counter-shaft operated by said motor, a day-cylinder, means operated by the counter-shaft for imparting a step-by-step rotary motion to said cylinder, a month-cylinder, a ratchet-wheel on the shaft of said month-cylinder, a swinging arm on said shaft, a pawl carried by the arm for engaging with the ratchet-wheel, a rod extended downward from the arm, a cam on the shaft for engaging with said rod, a disk having an outwardly-opening notch, a gear connection between the shaft and said disk, a swinging arm or rod having connection with the rod extended from the arm, and a finger on said arm or rod for engaging on the periphery of the disk and adapted to drop into the notch thereof, substantially as specified.

9. In a calendar, a motor, a rotary part operated by the motor for indicating dates, rotary parts for indicating days and months and operated by the motor, a four-year wheel having an axial rotary motion and a transverse rotary motion, means for imparting said motions, a swinging rod, a hammer on the end of said rod for engaging with the four-year wheel, and means operated by an upward movement of said swinging rod for releasing the motor, substantially as specified.

10. In a calendar, a motor, a dial, a hand or pointer movable over said dial, a shaft on which the hand or pointer is mounted, a ratchet-wheel on said shaft, an arm mounted to swing on the shaft, a pawl carried by the arm for engaging with the ratchet-wheel, a draw-rod extended from the arm, a cam operated by the motor for moving said draw-rod upward, a stop-wheel on the shaft and having notches in its periphery, and a holding-bar for engaging in said notches, the said holding-bar being moved to its releasing position by a movement of the motor, substantially as specified.

11. In a calendar, a rotary part for indicating dates, a motor for causing movements of said rotary part, a frame to which rotary motion is imparted from the motor, a four-year wheel mounted to rotate axially in said frame, a fixed rack or gear, a worm-shaft, a pinion on said worm-shaft engaging with said fixed rack or gear, a worm on the shaft, said worm having a straight or inoperative portion, and teeth on the four-year wheel for engaging with said worm, substantially as specified.

12. In a calendar, a rotary part for indicating dates, a motor for imparting motion thereto, and a four-year wheel for governing the motions of said rotary part, the said four-year wheel having an axial rotary motion and a transverse rotary motion, the said wheel having segmental slots or channels in its periphery, bridge-blocks in the periphery of the wheel, a series of lugs extended outward from one face of the wheel at its periphery, and three lugs extended from the opposite face of the four-year wheel near its periphery, substantially as specified.

13. In a calendar, a train of driving-wheels, a spring for operating said wheels, a rock-shaft, a stop-arm extended from said rock-shaft, a pin on one of the train-wheels for engaging with said stop-rod, another rock-shaft, two arms or rods extended from said other rock-shaft, one adapted to engage with the stop arm or rod, and the other being adapted to be moved into line of movement of a pin on another of the driving train-wheels, means having connection with a clock mechanism for moving the last-named rock-shaft, a date-indicator operated by the train of gearing, a hammer carried by the first-named rock-shaft, and a four-year wheel adapted to be engaged by the hammer, the said four-year wheel having an axial rotary motion and a transverse rotary motion, substantially as specified.

14. In a calendar, a motor, a day-cylinder, a counter-shaft operated by the motor, means actuated by the counter-shaft for imparting motion to the cylinder, a rock-shaft having connection with said means, a curved arm extended from said rock-shaft, a curved cam or finger adapted to be engaged by said arm, a pinion on the shaft of said cam, a segmental rack engaging with the said pinion, and means for operating said segmental rack, substantially as specified.

15. In a calendar, a rotary part for indicating dates, a motor, a counter-shaft having driving connection with said motor, a shaft for moving the rotary part and operated from the motor, a worm-wheel shaft, a worm-wheel on said shaft, a worm on the first-named shaft for engaging with the worm-wheel, a frame carried by said worm-wheel shaft, a four-year wheel mounted to rotate in said frame, a fixed gear, a shaft having bearings in said frame, a pinion on the shaft and engaging with the fixed gear, a worm on said shaft, forty-eight teeth extended from one face of the wheel for engaging with said worm, and devices carried by the wheel for controlling the movements of said rotary part, substantially as specified.

16. In a calendar, a motor, a wheel having a transverse and axial motion for governing the motor, a counter-shaft operated by said motor, a day-cylinder arranged above the motor, a month-cylinder arranged above the motor, means operated from one end of the counter-shaft for imparting motion to the day-cylinder, means operated from the opposite end of said shaft for moving the month-cylinder, and means operated by the shaft for preventing movements of the month-cylinder until the change is made from one month to another, substantially as specified.

17. In a calendar, a motor, a date-indicating device operated by said motor, a four-year wheel having axial and transverse movements for controlling movements of said date-indicating device, a hammer for engaging with said wheel, a rock-shaft by which the hammer is carried, an arm extended from said rock-shaft, and a cam operated by the motor for causing vertical movements of said arm, substantially as specified.

704,917. TRANSMITTING APPARATUS FOR ELECTRIC TELEGRAPHS. THOMAS D. PENNIMAN and HENRY H. WIBBARD, Baltimore, Md., assignors to the Rowland Telegraphic Company, Baltimore, Md., a Corporation of New Jersey. Filed Feb. 18, 1902. Serial No. 94,681. (No model.)

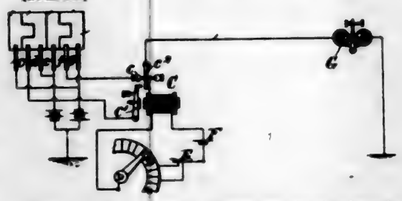

Claim.—1. In transmitting apparatus for electric telegraphs, the combination with a source of direct current, of a telegraph-line, a pole-changer connected in circuit with said line and source of current, the said pole-changer having terminals arranged in sets and acting normally to deliver to line through one set, a periodic current from said source, and a main-line transmitter adapted to shift the line connection from one set of said terminals to another, whereby an impulse of opposite polarity is sent to line than would have been sent had not the transmitter acted.

2. In transmitting apparatus for electric telegraphs, the combination with a source of electric current, of a telegraph-line, a pole-changer connected in circuit with said line and source of current, the said pole-changer having terminals arranged in sets and acting to normally transmit to line from said source electric impulses of alternate polarity, and means adapted to shift the line connection from one set of said terminals to another whereby an impulse of opposite polarity is sent to line than would have passed had the connection not been shifted.

3. In transmitting apparatus for electric telegraphs, the combination with a source of direct current, of a telegraph-line, a rotating pole-changer connected in circuit with said line and source of current, the said pole-changer having brushes arranged in sets and acting normally to deliver to line, through one set, a periodic current from said source, and a main-line transmitter adapted to shift the line connection from one set of said brushes to another, whereby an impulse of opposite polarity is sent to line than would have been sent had not the transmitter acted.

4. In transmitting apparatus for electric telegraphs, the combination with a source of electric current, of a telegraph-line, a rotating pole-changer connected in circuit with said line and source of current, the said pole-changer having brushes arranged in sets and acting to normally transmit to line from said source electric impulses of alternate polarity, and an electromagnetically-operated main-line transmitter adapted to shift the line connection from one set of said brushes to another whereby an impulse of opposite polarity is sent to line than would have passed had the connection not been shifted.

5. In transmitting apparatus for electric telegraphs, the combination with a main-line transmitter, having a contact-stop, a tongue normally in engagement with said stop, a striker adapted to engage said tongue and break the contact between said stop and tongue, and means for operating said striker; of a telegraph-line connected to the tongue of said transmitter, a pole-changer having two sets of terminals, one terminal of one set connected to the contact-stop of said transmitter and one of the other set connected to the striker thereof, and a source of direct current connected to the remaining brushes of both sets, the operation of said transmitter shifting the line connection from one set of pole-changer terminals to the other.

704,918. GALLEY-LOCK. ULYSSES S. G. PEOPLES and CHARLES F. WALTERS, Baltimore, Md. Filed Dec. 17, 1901. Serial No. 86,344. (No model.)

Claim.—1. The combination of a printer's type-galley; a sidestick adapted to wedge downwardly between one side bar of the galley and the type in the latter; and a presser device adapted to act inwardly against said sidestick at the open end of the galley whereby said sidestick will exert a greater pressure on the last line of type in the galley than on other lines, and will prevent said last line from toppling over.

2. The combination of a printer's type-galley having a closed end and an open end, and provided on the inner wall of its lock-up side bar and at its open end with an inwardly-acting presser device; and a sidestick one end only of which is adapted to be acted on by said presser device, whereby the last line of type in the galley is prevented from toppling over.

3. A galley-lock, comprising a galley; a yielding presser device secured to one side bar of the galley at the open end thereof; and a sidestick adapted to have one end flexed by said presser device.

4. A galley-lock, comprising a galley; a sidestick adapted to wedge downwardly between one side bar of said galley and the type in the latter; and a presser secured in said side bar at the open end of the galley and adapted to press against the adjacent end only of said wedging sidestick.

5. A galley-lock, comprising a galley provided with one closed end and one open end and two side bars, one of said side bars being beveled from top to bottom on its inner wall and provided with a socket opening inwardly through said beveled wall; a presser secured in said socket and protruding through said wall; and a beveled sidestick adapted to abut against the beveled wall of said side bar and wedge downwardly between it and the type in the galley, and adapted to be pressed inwardly at one end by said presser.

704,919. MITERING AND TOOL-GUIDING DEVICE. JOHN H. J. PERLAR, Victoria, Canada. Filed Mar. 11, 1901. Serial No. 50,741. (No model.)

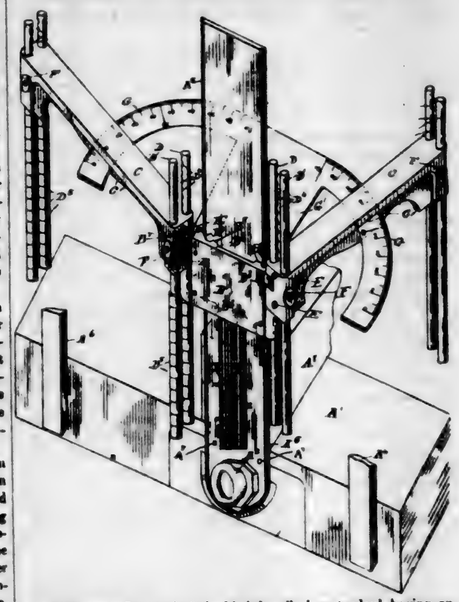

Claim.—1. In a tool of the kind described, a standard having an obliquely-slanting edge combined with a correspondingly-slanting grasping part, one or more tool-guides connected therewith, and means for drawing the grasping part against the standard in order to maintain it firm laterally and to compensate for wear by friction; substantially as set forth.

2. In a tool of the kind described a standard having a beveled surface; tool-guiding arms in hinge connection therewith; a collar having a face that fits and impinges against the beveled surface of the standard; this collar comprising a part that contains the means for said hinging of the arms to the standard, and another part adjustable toward it, these parts being on opposing sides of the standard; and means for effecting said adjustment; substantially as described.

3. In a bevel-indicating and tool-guiding device comprising graduated arcs; tool-guiding and angle-indicating arms hinged concentrically in relation thereto; a standard having an obliquely-slanting surface; a collar slidably connected with said standard having a part rigidly joined with the graduated arcs and also with the arm-hinging means, and an adjusting part having a slant that corresponds with the slanting surface of the standard; and means for actuating the adjustment of these parts of the collar to and against the standard and its slanting surface to preserve the collar laterally rigid with relation to the standard; vacant adjusting-space being left between the parts of the collar to admit of this adjustment; substantially as described.

4. In a tool of the kind described the combination of a standard having a beveled edge; one or more tool-guides connected therewith; and a divided collar adjustably securable on said standard, said collar bearing partly against the standard's surface and its beveled edges, substantially as set forth.

5. In a tool of the kind described the combination of a standard; one or more arms flexibly connected therewith; one or more pairs of tool-guides carried by each arm, one of which guides is to remain laterally parallel with the standard, longitudinally of the standard, and the other of which is adjustable to and from the former; means for adjustably varying the space between the members of each pair of guides, such space-varying means acting longitudinally of the respective arm; and means for pressing each adjustable guide against such space-varying means; substantially as set forth.

6. In a tool of the kind described the combination of a standard and one or more pairs of tool-guides flexibly connected therewith; one guide in each pair being rigid laterally, parallel with the standard longitudinally, and the other of which is movable from and toward the former, or rocked with relation to it so that it may be made parallel to or to converge toward

or diverge from the other and the standard (looking upward or downward), by means of a variable headed screw that operates between each such pair of guides, said movable guide being forced toward the other so as to tighten it against said screw, by a laterally-disposed retaining means: substantially as described.

7. In a tool of the kind described, the combination of a standard; one or more arms hinged thereto; one or more pairs of tool-guides slidable vertically with relation to such arm, the inner guide in each pair remaining parallel with the standard and the outer guide capable of lateral adjustment—parallel, convergently, or divergently—with relation to the other, and means for firmly securing said guides in said vertical and lateral adjustments: substantially as set forth.

8. In a tool of the kind described, a standard; an arm in hinge relation therewith; one or more pairs of tool-guides disposed transversely of the arm, and adjustable vertically and laterally with relation thereto; and means to effect these adjustments such as a screw acting longitudinally of the arm between each pair of guides; and a screw operating transversely of the arm and against one of the guides: substantially as set forth.

9. In such a tool the combination of a standard, having a rule impressed upon one face thereof for convenience in placing screws and bolt molding and shelter obliquely-disposed stock at the proper chest and elevation, while being operated upon; one or more arms flexibly connected with the standard; one or more pairs of tool-guides carried by such arm and vertically and horizontally adjustable thereon; means for effecting these adjustments and for moving and rocking one guide in each pair toward or away from the other in convergent, divergent, or parallel relation thereto; and an extractor for each rocking guide to bring and hold it in a required position against the rocking means, as well as to positively maintain both guides (of the pair) firm in their bifurcated adjustments: substantially as described.

10. In a tool of the kind described, the combination of a standard, an arm flexibly connected therewith, and a line of tool-guides carried by said arm, one or more guides in the line being movable to or away from the arm, transversely, substantially as described.

11. In a tool of the kind described, the combination of a standard, an arm flexibly connected therewith, two pairs of tool-guides carried by said arm, and means for rocking the pair of guides remote from the standard transversely, with relation to the arm, or, out of parallelism with the pair of guides adjacent to the standard, substantially as described.

12. In a tool of the kind described, the combination of a standard, an arm flexibly connected therewith, two or more pairs of tool-guides, a guide in each pair having depressions, a conical screw or wedge engaging said depressions, and means for pressing one guide toward the other and upon the intervening screws, substantially as described.

704,920. GROOVING-MOLD. BENNET L. POTTER, Philadelphia, Pa. Filed Apr. 7, 1902. Serial No. 101,715. (No model.)

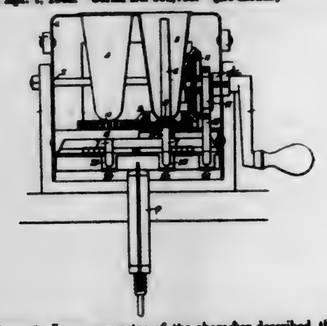

Claim.—1. In an apparatus of the character described, the combination of the mold, scraping means suitably arranged and adapted to act upon the surface of the mold, and means for rotating said scraping means and moving them in a longitudinal direction simultaneously.

2. In an apparatus of the character described, the combination of the frame, molds carried thereby, scraping-knives arranged within said molds, depending stems projecting through the bottoms of the molds, said knives being secured to the stems, means connecting said stems whereby the knives may be rotated simultaneously, and means for giving said knives longitudinal movement as they are rotated.

3. The combination in an apparatus of the character described, of the casing, molds carried thereby, scraping-knives arranged within said molds, depending stems carrying said knives and pinions carried by said stems and meshing together, a bevel-pinion meshing with one of the other pinions, and a crank-handle operatively connected to said bevel-pinion whereby movement may be imparted to the rotating knives.

4. The combination of the casing, the frame to which said casing is pivoted, molds carried by said casing, scraping-knives arranged within said molds, and means for simultaneously rotating and longitudinally moving said scraping-knives.

5. The combination in an apparatus of the character described, of the casing, molds carried thereby, scraping-knives arranged within said casing, depending stems carrying said knives, a rocking member secured to the casing to which said stems are connected, gearing connecting said stems whereby the knives may be rotated simultaneously, and means connecting the crank-shaft and the rocking member whereby the knives may be moved longitudinally as they are rotated.

6. The combination of the frame, a movable casing carried thereby, molds carried by said movable casing, scraping devices arranged within said molds, and means for giving said scraping devices movement in two directions.

7. The combination of the fixed frame, a movable casing carried thereby, molds carried by said movable casing, scraping-knives arranged in said molds, counting mechanism carried by said casing for rotating the knives and moving them longitudinally, and means for operating said mechanism.

8. The combination of the casing, the molds carried thereby, scraping-knives arranged in said molds, depending squared stems to which said knives are attached, a cross-bar carried by the frame, gear-wheels carried by said stems and meshing together whereby the knives may be driven simultaneously, and collars carried by said cross-bars and having squared openings for the passage of the stems, said stems passing freely through the gear-wheels and collars.

9. The combination of the mold, the scraping-knife carried thereby, a depending stem to which the knife is connected, a rocking member carried by the casing, and a connection between said rocking member and the stem whereby the knife may be raised and lowered.

10. The combination of the mold, the scraping-knife carried thereby, a depending stem to which the knife is connected, a rocking member carried by the casing, and a connection between said rocking member and the stem whereby the knife may be raised and lowered, and means for rotating said knife simultaneously with the raising and lowering of the same.

704,921. FILTER. WILLIAM R. POWELL, Wheeling, W. Va., assignor of one-half to Charles Wood, Wheeling, W. Va. Filed Nov. 27, 1901. Serial No. 83,842. (No model.)

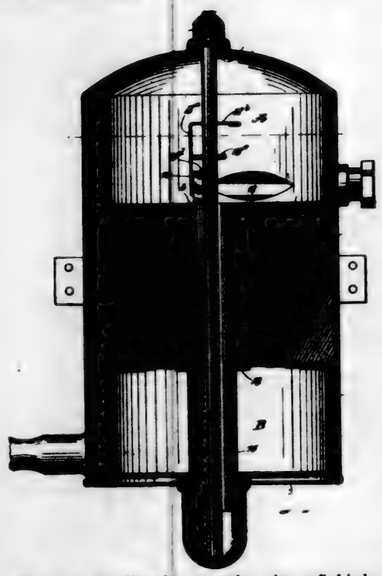

Claim.—1. In a filter, the combination, with a cylindrical casing, a removable bottom wall therefor, and a waste-liquid discharge-spigot, of a perous filtering-block secured in the casing between its ends and having a central passage therethrough, a nipple-tube extended from said central passage down through the bottom wall of the casing, a center shaft secured at its lower end to the waste-liquid discharge-spigot and at its upper end upon the top wall of the casing, a scraper device loosely mounted upon the shaft and contacting with the upper end of the perous block, a liquid-inlet pipe tapping the side of the casing and extended tangentially therefrom so as to direct a liquid-jet upon the ends of the scraper device for its rotation, and a spigot for drawing liquid from the lower portion of the casing.

2. In a filter, the combination, with a cylindrical casing, a removable bottom wall therefor, and a waste-liquid discharge-spigot, of a perous filtering-block secured in the casing between its ends and having a central passage therethrough, a nipple-tube extended from said central passage down through the bottom wall of the casing, a center shaft secured at its lower end to the waste-liquid discharge-spigot and at its upper end upon the top wall of the casing, a scraper device loosely mounted upon the shaft and contacting with the upper end of the perous block, a liquid-inlet pipe tapping the side of the casing and extended tangentially therefrom so as to direct a liquid-jet upon the ends of the scraper device for its rotation, and a spigot for drawing liquid from the lower portion of the casing.

3. In a filter of the character described, the scraper device, comprising a plate-metal body having two opened flanges projected at one side thereof, and a pair of scraper-blades clamped on the scraper-body at its lower edge, said scraper-blades being adapted to rotate and bear upon a filtering-block for removing sediment therefrom.

4. In a filter of the character described, the combination with a filtering-block held in a casing, of a shaft passing loosely through the filtering-block, and a scraper device comprising a laterally-flanged plate-metal body having perforations in the flanges for loosely receiving the shaft, and scraper-blades on the lower edge of the scraper-body, adapted for engaging the top of the filtering-block.

704,922. DRAFT DEVICE AND SPARK-ARRESTER. GEORGE B. RAFF, Sheldon, Iowa. Filed Sept. 20, 1901. Serial No. 75,670. (No model.)

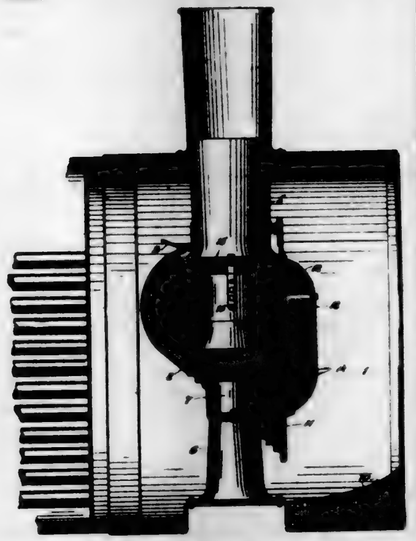

Claim.—1. In an engine, a substantially bell-shaped deflector arranged in the smoke-box of the engine and having its open end forward, the said deflector having communication at its upper portion with the smoke-stack and at its lower portion with the exhaust-pipe, and the said deflector having circumferential corrugations extending in vertical plane, substantially as specified.

2. In an engine, a substantially bell-shaped deflector arranged in the smoke-box and having its open end forward, the said deflector being provided with circumferentially-disposed corrugations extending in vertical plane, perforations being formed in the depressions of said corrugations, a smoke-stack extension communicating with the upper portion of the deflector, and an exhaust communicating with the lower portion of the deflector, substantially as specified.

3. In an engine, a substantially bell-shaped deflector arranged between the exhaust-pipe and the smoke-stack, and wing-like deflectors extended outward from the upper portion of said bell-shaped deflector, substantially as specified.

4. In a locomotive-engine, the combination with a smoke-pipe and an exhaust pipe or nozzle, of a substantially ball-shaped screen connected at its upper portion to the smoke-stack and at its lower portion to the exhaust, and a deflector in which the screen is arranged, the said deflector being open at the front and spaced from the screen, substantially as specified.

5. In a locomotive-engine, a substantially bell-shaped deflector supported by the smoke-stack and by the exhaust-pipe of the engine and having its mouth or open end forward, and a bulbous screen arranged in the deflector and spaced therefrom and projecting beyond the forward end thereof, substantially as specified.

6. In a locomotive-engine, a substantially bell-shaped deflector supported by the smoke-stack and by the exhaust-pipe of the engine and having its mouth or open end forward, and a bulbous screen arranged in the deflector and spaced therefrom and projecting beyond the forward end thereof, the said projection having a door, substantially as specified.

704,923. RING-SHUTTLE FOR SEWING-MACHINES. HERMANN RIEMENSCHEID, Kaiserslautern, Germany, assignor to Pfälzische Nähmaschinen & Fahrräder Fabrik, vormals Gebrüder Kayser, Kaiserslautern, Bavaria, Germany. Filed Oct. 18, 1901. Serial No. 79,089. (No model.)

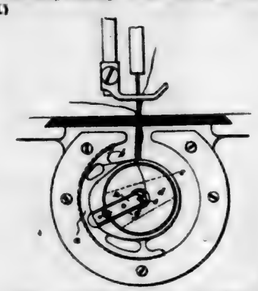

Claim.—1. The combination of the spool-casing *c* carried by the oscillating shuttle-segment *a;* the spool *d* mounted in said casing; the radially-arranged spring-pressed tongue *g* pivoted in the center of oscillation of the shuttle and confining the spool in the holder and having a guide-nick *m* near its outer end; and the guide-plate *n* carried by said tongue *g*, serving to guide the thread from the periphery of the spool toward the center and having an exit-opening *o* for the passage of the thread, substantially as shown and described.

2. The combination of the spool-casing *c* carried by the oscillating shuttle-segment *a;* the spool *d* mounted in said casing; the radially-arranged spring-pressed tongue *g*, pivoted in the center of oscillation of the shuttle, confining the spool in the holder and having a lateral guide-nick *m* near its outer end, and a recess *r* in its face; and the plate *n* having a nose *p* engaging with the recess *r* in the tongue *g* and an exit-opening *o* for the thread, and serving to guide the thread from the periphery of the spool to the exit-opening *o*, substantially as described.

704,924. ANIMAL-POKE. SILAS A. RITCHIE, North Middletown, Ky. Filed Mar. 28, 1902. Serial No. 99,443. (No model.)

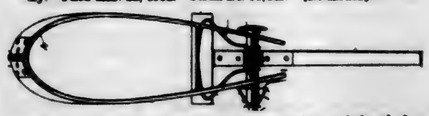

Claim.—1. An animal-poke, comprising a yoke, a tubular shaft extended through openings in the lower ends of the yoke, a spring-held push-rod movable in said shaft, spring-fingers carried by the shaft for engaging against the outer side of one portion of the yoke, a connection between said spring-fingers and the push-rod, whereby they may be drawn together, and a poke-stick mounted to swing on the shaft, substantially as specified.

2. An animal-poke comprising a yoke consisting of two hinged members, said members being provided with openings at the lower end, a tubular shaft for extending through said openings, a push-rod movable in said shaft, a spring in the shaft for holding the push-rod normally outward, spring-fingers on opposite sides of the shaft for engaging against the outer side of a member of the yoke, a connection between the ends of said spring-fingers, the said connection passing through openings in the shaft and through an opening in the push-rod, and a poke-stick mounted to swing on the shaft, substantially as specified.

3. An animal-poke comprising a yoke consisting of two hinged sec-

tions, the sections being provided at the lower ends with openings, a locking-shaft extended through said openings, a poke-stick mounted to swing on the shaft, wires mounted to swing on the shaft at opposite sides of the poke-stick, the upper ends of said wires being crossed and having rearwardly-extended pointed portions, and a cross-head on the upper end of the poke-stick and having openings to receive said rearwardly-extended portions, substantially as specified.

704,925. **RECORDER.** CHRISTOPHER J. ROACH, Hartford, Conn. Original application filed Oct. 2, 1901, Serial No. 77,323. Divided and this application filed Nov. 27, 1901. Serial No. 83,945. (No model.)

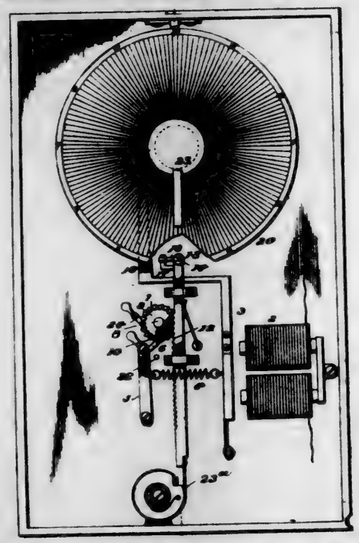

Claim.—1. The combination with a recorder having controlling mechanism, a series of locks, an electric circuit embracing all the locks and the recorder, said locks having controlling mechanisms so arranged relatively that each lock may be opened only in its successive order, means in each lock for breaking the circuit as its respective controlling mechanism is set to allow the lock to be manually operated, and means for closing the circuit as each lock is so operated so that the controlling mechanisms of all the locks and that of the recorder will be actuated, as set forth.

2. The combination of a recorder, a series of locks, such locks and recorder being electrically connected together, controlling mechanism in the several locks relatively arranged so that each lock can be opened only in its successive order, means for actuating the recorder and the controlling mechanism upon the closing of the circuit, means for breaking such circuit as the controlling mechanism of any one lock of the series is positioned to permit of the manual operation of such lock, and means for reëstablishing such circuit when such lock is so operated, the recorder being actuated upon the operation of each lock.

3. The combination of a time-recorder, a series of locks electrically connected together and with said recorder, controlling mechanism for the several locks relatively arranged so that upon the closing of the circuit the controlling mechanisms of all the locks will be actuated but that of only one lock at a time will be positioned to permit of the operation of such lock, means for breaking the circuit as the mechanism of one lock is so positioned, and an auxiliary circuit-closer for each lock designed to be actuated by the withdrawal of the bolt of any one lock, whereby the controlling mechanism of all the remaining locks will be actuated as will also the recording mechanism of the time-recorder, as set forth.

4. The combination of a series of locks and a time-recorder, said locks being electrically connected to each other and to the time-recorder, each lock having controlling mechanism and means to break the circuit as such mechanism of any one lock is positioned to permit of the withdrawal of the bolt thereof, means for closing such circuit by such withdrawal of the locking-bolt, said time-recorder having mechanism actuated upon the closing of the circuit in any one of the locks, a recording-dial, and a marker for indicating thereon when the circuit is closed by the withdrawal of the bolt of any one of the locks, as set forth.

5. The combination with a series of locks electrically connected together and having controlling mechanism operated in step-by-step order upon the closing of the circuit, means for breaking the circuit as the controlling mechanism of any lock is brought into position to permit of the withdrawal of the bolt thereof, the controlling mechanisms of the several locks being relatively arranged so that each lock may be opened only in its successive order, and means for reëstablishing the circuit upon the withdrawal of the bolt of any one lock, of a time-recorder in electric circuit with said locks having recording mechanism actuated as the circuit is reëstablished by the withdrawal of the bolt of any lock of the series, as set forth.

6. In combination with a series of locks electrically connected together and having controlling mechanism relatively arranged so that each lock may be opened only in its successive order, of a time-recorder in circuit with said locks, such recorder having controlling mechanism corresponding to that of the locks, means for actuating the controlling mechanism of the locks and recorder upon the closing of the circuit in the operation of any one of the locks, and means actuated by the controlling mechanism of the recorder for indicating the time at which any lock is manually operated, as set forth.

7. In a time-recorder, a dial, a marker, a longitudinally-movable rack-bar carrying the latter, a toothed pinion engaging the rack-bar, means for rotating such pinion, a magnet for actuating such means, and means for operating such marker, such latter means being also operated by the magnet, as set forth.

8. In a time-recorder, a dial, a marker, a longitudinally-movable rack-bar carrying the latter, a toothed pinion engaging the rack-bar, having a segmental toothless portion, means for rotating such pinion, a magnet for actuating such means, means for operating such marker also actuated by the magnet, and means for returning the rack-bar to its normal position when it is engaged by said segmental toothless portion, as set forth.

9. The combination, in a time-recorder, of a recording-dial, a magnet and its armature, a ratchet-wheel, a pawl engaging therewith, a lever carrying such pawl, said lever being connected to said armature, a gear-pinion carried by the ratchet-wheel, a rack-bar with which such pinion engages, a marker on said rack-bar, a lever engaging such marker and designed to be actuated by the armature, said pinion having a segmental toothless portion, and a spring connected to said rack-bar for returning the same to its normal position when the bar is engaged by said toothless portion, substantially as set forth.

704,926. **TOP-BOX FASTENER FOR WAGON-BODIES.** CHARLES A. ROBERTS, Rensselaer, Ind. Filed Mar. 31, 1902. Serial No. 100,781. (No model.)

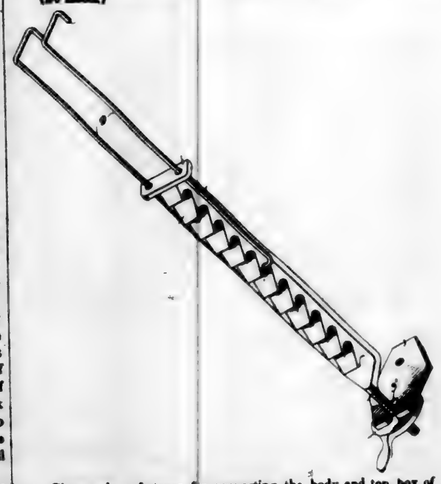

Claim.—In a fastener for connecting the body and top box of a wagon, the combination with a wagon-body and box resting thereon, of a bracket-plate secured to the under side of the wagon-body and having a projecting end bifurcated to form an open slot, a rack-bar extending vertically alongside the wagon-body and box and provided at its upper end with eyes and at its lower end with a threaded stem fitting in said slot, said stem being removable from the slot by a movement outwardly from the wagon-body, an adjusting-nut engaging the stem and bridging the slot and bearing against the under side of the bracket-plate, and a U-shaped bail sliding through the eyes and having its return portion adapted to engage the teeth on the rack-bar and having its arms provided at their free ends with hooks to take over the edge of the top box, whereby, upon elevating the bail and slackening the nut, the stem may be slid outward from the slot and the fastener removed, substantially as and for the purpose set forth.

704,927. **KEYBOARD FOR USE IN TELEGRAPHY.** HENRIETTA H. ROWLAND, Baltimore, Md., administratrix of Henry A. Rowland, deceased, assignor to Rowland Telegraphic Company, Baltimore, Md., a Corporation of New Jersey. Filed July 24, 1901. Serial No. 69,336. (No model.)

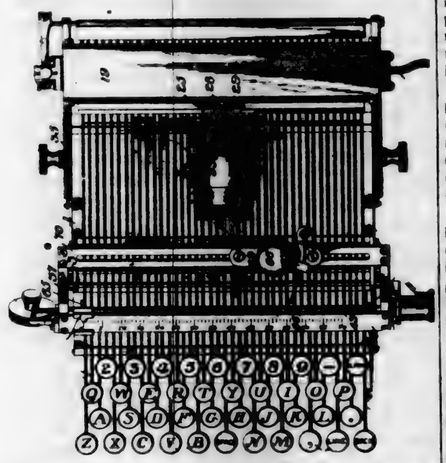

Claim.—1. In a transmitting-keyboard for electric telegraphs, the combination with a group of conductors leading into said keyboard, a series of electrical contacts of greater number than said conductors, said contacts electrically connected to said conductors in prearranged combinations, and means operating in conjunction with said contacts for operating circuits through said conductors and contacts.

2. In a transmitting-keyboard for electric telegraphs, the combination with a group of conductors leading into said keyboard, a series of electrical contacts of greater number than said conductors, permanent electrical connection between said contacts and said conductors by which said contacts and conductors are connected in prearranged combinations, and means for operating circuits through said conductors and sets of said contacts.

3. In a transmitting-keyboard for electric telegraphs, the combination with a group of conductors leading into said keyboard, a series of electrical contacts of greater number than said conductors, permanent electrical connection between said contacts and said conductors by which said contacts and conductors are connected in prearranged combinations, and means comprising a plurality of keys for operating circuits through said conductors and sets of said contacts.

4. In a transmitting-keyboard for electric telegraphs, the combination with a group of conductors leading into said keyboard, a series of fixed electrical contacts of greater number than said conductors, a series of movable contacts adapted to engage said fixed contacts and in permanent electrical connection therewith, permanent electrical connection between said fixed contacts and said conductors by which said contacts and conductors are connected in prearranged combinations, and means comprising a plurality of keys for making and breaking circuits from said conductors through sets of said contacts.

5. In a transmitting-keyboard, a series of rigid electrical contacts, a series of electrical conductors permanently connected to said contacts in combinations, a series of movable contacts comprising a series of pins, one of said pins adapted to reciprocate in each of said rigid contacts and permanently electrically connected thereto, a series of key-levers, each adapted when operated to engage a combination of said movable contacts, substantially as described.

6. In a transmitting-keyboard, a series of electrical contacts and a series of electrical conductors permanently connected to said contacts in combinations, an insulating-plate in which said contacts are rigidly mounted and through which they pass, a plate of insulating material mounted below said contacts, a series of contact-pins passing through said plate and adapted to reciprocate therein, each of said pins having an elongated stem adapted to reciprocate in one of said rigid contacts, a coil-spring surrounding the said portion of each of said pins and permanently connected electrically at its upper end to the rigid contact and at its lower end to the reciprocating pin-contact, and a series of key-levers each adapted to engage when operated a combination of said reciprocating contacts, substantially as described.

7. In a transmitting-keyboard, the combination with the key-levers, of the clapper-locking mechanism, comprising a pivoted rocking clapper-bar extending across the tops of the said key-levers, a series of lugs one upon each key-lever, adapted to be engaged by said clapper-bar, an upwardly-projecting tongue carried by said clapper-bar, a magnet-plunger normally abutting against said tongue, an iron-clad magnet into which said plunger is adapted to be drawn, springs connected to the clapper-bar and normally forcing the tongue of said clapper-bar against the plunger of said magnet, and tending to force the plunger out of said magnet, and a frame in which said magnet is rigidly mounted, substantially as described.

8. In a transmitting-keyboard, the combination with the keys and key-levers, of the counting mechanism comprising a scale, an indicator mounted to travel on said scale, an electromagnet, an auxiliary contact-maker completing a circuit through said magnet upon the operation of said keys and causing the said indicator to be advanced step by step over said scale, and means operated by one of said keys for returning said indicator to the initial position, substantially as described.

9. In a transmitting-keyboard, the combination with the keys and key-levers, of the counting mechanism, comprising a scale, an indicator mounted to travel over said scale, ratchets carried by said indicator, shifting rods adapted to be engaged by said ratchet, means for imparting longitudinal movement to one of said shifting rods, whereby step-by-step longitudinal movement is imparted to said indicator, and means for returning the indicator to its initial position by the rotation of said shifting rods.

10. In a transmitting-keyboard, the combination with the keys and key-levers, of a counting mechanism, comprising a scale, and an indicator mounted to travel over said scale, a pair of parallel shifting rods, extending longitudinally of said scale and each capable of rotation around its longitudinal axis, oppositely-disposed ratchets carried by said indicator, each one of said ratchets engaging one of said ratchet-rods, means for reciprocating one of said rods longitudinally, whereby step-by-step movement is imparted to said indicator, and means for rotating said shifting rods whereby the teeth thereof are disengaged from the pawls of said indicator, and means for returning said indicator to its initial position when its ratchets are thus disengaged from the teeth of said rods, substantially as described.

11. In a transmitting-keyboard, the combination with the keys and key-levers, of the counting mechanism, comprising a scale and an indicator mounted to travel over said scale, a pair of parallel shifting rods extending longitudinally of said scale and each capable of rotation around its longitudinal axis, oppositely-disposed ratchets carried by said indicator, each one of said ratchets engaging one of said shifting rods, a magnet-plunger connected to the end of one of said ratchets for reciprocating said rod, whereby step-by-step motion is imparted to said indicator, an electromagnet into which said plunger is adapted to operate, an auxiliary contact-maker adapted to complete the electric circuit through said magnet upon the operation of each of a series of the said keys, and means for rotating said shifting rods whereby the teeth thereof are disengaged from the pawls of said indicator, and means for returning said indicator to its initial position when its ratchets are thus disengaged from the teeth of said rods, substantially as described.

12. In a transmitting-keyboard, the combination with the keys and key-levers, of the counting mechanism, comprising a scale and an indicator mounted to travel over said scale, a pair of parallel shifting rods extending longitudinally of said scale and each capable of rotation around its longitudinal axis, oppositely-disposed ratchets carried by said indicator, each one of said ratchets engaging one of said shifting rods, means for reciprocating one of said bars whereby step-by-step motion is imparted to said indicator, a pinion mounted on each of said shifting rods, a rack engaging said pinions, operative connection between one of said key-levers and said rack, whereby the operation of said key-lever shifts said rack and rotates said shifting rods, thereby disengaging the teeth thereof from said ratchets, a spring-actuated wheel and flexible connection from said wheel to said indicator whereby said indicator is returned to its initial position after the disengagement of said ratchets with said teeth, substantially as described.

13. In a transmitting-keyboard, the combination with the keys and key-levers, of the counting mechanism, comprising a scale and an indicator mounted to travel over said scale, a pair of parallel shifting rods extending longitudinally of said scale, and each capable of rotation around its longitudinal axis, oppositely-disposed ratchets carried by said indicator, each one of said ratchets engaging one of said shifting rods, a magnet-

plunger connected to the end of one of said shifting rods for reciprocating the same, whereby step-by-step motion is imparted to said indicator, an iron-clad electromagnet into which said plunger is adapted to pass, an auxiliary contact-maker adapted to complete the electric circuit through said magnet upon the operation of each of a series of the said keys, and means for rotating said shifting rods whereby the teeth thereof are disengaged from the pawls of said indicator and means for returning said indicator to its initial position when its ratchets are thus disengaged from the teeth of said rods, substantially as described.

14. In a transmitting-keyboard, the following instrumentalities, viz: a series of key-levers, and keys carried thereby, a series of reciprocating electrical contacts, a series of electrical conductors connected to said contacts in combinations, combinations of said reciprocating contacts adapted to be engaged by said key-levers upon their operation, the clapper-locking mechanism and clapper-magnet operating the same, and the counting mechanism, substantially as described.

704,928. TELEGRAPHIC DISTRIBUTION. HESRIETTA H. ROWLAND, Baltimore, Md., administratrix of Henry A. Rowland, deceased, assignor to Rowland Telegraphic Company, Baltimore, Md., a Corporation of New Jersey. Filed July 24, 1901. Serial No. 69,538. (No model.)

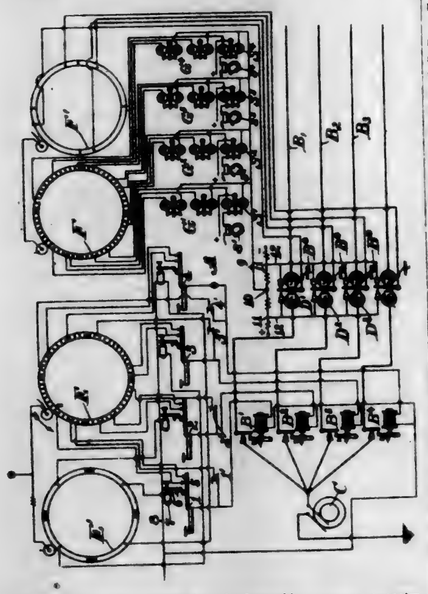

Claim.—1. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at the central station, telegraph-lines leading from said central station to said substations and supplied with current from the said source, main-line transmitting and receiving instruments located at the central station and at each of the substations, and means located at central and at each of the substations whereby the central and substations may be placed in communication with each other at rapidly-recurring periods, substantially as described.

2. In the distribution of telegraphic messages, a central station and a plurality of substations, an alternating-current dynamo located at the central station, telegraph-lines leading from said central station to said substations, and supplied with current from said dynamo, main-line receiving and transmitting instruments located at the central station and each of the substations, and means located at central and any of the substations whereby the central and substations may be placed in communication with each other at rapidly and regularly recurring periods of time, substantially as described.

3. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at the central station, telegraph-lines leading from said central station to said substations and supplied with current from said source, main-line transmitting and receiving instruments located at central and at each of the substations, current-distributors located at central and at the substations whereby the central and substations may be placed in communication with each other at regularly and rapidly recurring periods, substantially as described.

4. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at the central station, telegraph-lines leading from said central station to the substations, and supplied with current from said source, main-line transmitting and receiving instruments located at central and at each of the substations, synchronously-operated current-distributors located at central and at the substations whereby the central and substations may be placed in communication with each other at rapidly-recurring periods, circuit making and breaking devices operated by said current-distributors for impressing the characters upon the line-current, and local receiving apparatus operated by the main-line receiving instruments through the medium of said current-distributors, substantially as described.

5. In the distribution of telegraphic messages a central station and a plurality of substations, a source of alternating signaling-current located at the central station only, telegraph-lines leading from said central station to said substations and supplied with current from said source, main-line transmitting and receiving instruments located at central and at each of the substations continuously and synchronously rotating current-distributers located at central and at the substations whereby the central and substations may be placed in communication with each other at regular and rapidly recurring periods, substantially as described.

6. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of alternating signaling-current located at the central station, telegraph-lines leading from said central station to the substations, and supplied with current from said source, main-line transmitting and receiving instruments located at central and at each of the substations, synchronously and continuously operated current-distributers located at central and at the substations whereby the central and substations may be placed in communication with each other at rapidly-recurring periods, circuit making and breaking devices located in the circuits of said current-distributers for impressing the characters upon the line-current, and local receiving apparatus operated by the main-line receiving instruments through the medium of said current-distributers, substantially as described.

7. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at the central station, telegraph-lines leading from said central station to said substations and supplied with current from said source, main-line transmitting and receiving instruments located at central and at each of the substations, synchronously-operated current-distributers located at central and at the substations, means regulated by the signaling-current for maintaining the synchronism of said current-distributers at the substations, local transmitting and receiving apparatus located at the central station and at the substation and rendered operative at regularly-recurring periods by the said current-distributers, substantially as described.

8. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at the central station and at each of the substations, duplex telegraph-lines leading from said central station to said substations and supplied with current from said source, main-line transmitting and receiving instruments located at central and at each of the substations, synchronously-operated current-distributers located at central and at the substations, means regulated by the signaling-current for maintaining the synchronism of said current-distributers, local transmitting and receiving apparatus located at the central station and at the substations and rendered operative at regularly-recurring periods by the said current-distributers, substantially as described.

9. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at said central station telegraph-lines leading from the central station to said substations and supplied with current from said source, main-line transmitters and main-line receiving-relays located at the central station and at the substations, the line receiving-relay for each line located at central, being balanced and operated by the current reflected back from the substation to central, and means located at central and at the substations, whereby the central and substations may be placed in communication with each other at rapidly-recurring periods, substantially as described.

10. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of signaling-current located at the central station, telegraph-lines leading from said central station to said substations, and supplied with current from the said source, a main-line transmitter and a main-line receiving-relay at central for each of the lines, and a main-line transmitter and a main-line receiving-relay located at each of the substations, synchronously-operated current-distributers located at central and at the substations, means regulated by the signaling-current for maintaining the synchronism of said current-distributers at the substations, and allotting (for the transmission of signals), a fixed number of impulses of said periodic current to each of said lines in rapid succession, and local transmitting and receiving instruments operating in conjunction with said current-distributers, substantially as described.

11. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of alternating signaling-current located at the central station, telegraph-lines leading from said central station to said substations, and supplied with current from the said source, a main-line transmitter and a main-line receiving-relay at central for each of the lines, and a main-line transmitter and a main-line receiving-relay located at each substation for its respective line, synchronously-operated current-distributers located at the central station and at the substations and allotting a fixed number of impulses of said periodic current to each of said lines for signaling purposes in rapid succession, and local transmitting and receiving instruments operating in conjunction with said current-distributers, substantially as described.

12. In the distribution of telegraphic messages, a central station, at which is located a source of periodic signaling-current, a plurality of telegraph-lines supplied with current from said source, means for impressing the characters or signals upon said lines, and means for receiving the messages upon each line separately, current-distributers adapted to bring the said means for impressing the characters upon the lines and said means for receiving the messages into operation at rapidly-recurring periods, substantially as described.

13. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at the central station, telegraph-lines leading from the central station to said substations and supplied with current from said source, a main-line transmitter and a main-line receiving-relay located at central and at each of the substations, means located at central for allowing the transmitting instruments at the substations exclusive use of the receiving-relay at the central station successively and at rapidly-recurring periods, substantially as described.

14. In the distribution of telegraphic messages, a central station and a plurality of substations, a source of periodic signaling-current located at the central station, telegraph-lines leading from said central station to said substations and supplied with current from said source, a main-line transmitter and a main-line receiving-relay located at central, the said relay being balanced with respect to all of the lines, a main-line transmitter and receiving-relay at each of the substations, and means located at the central station for allowing the transmitters at the substations exclusive use of the main-line receiving-relay at central successively and at rapidly-recurring periods, substantially as described.

15. In the distribution of telegraphic messages, a plurality of substations, in combination with a central station comprising the following elements, viz., a source of periodic signaling-current, groups of telegraph-lines leading to groups of substations and supplied with current from the said source, main-line transmitters and main-line receiving-relays, one of each for each group of lines, synchronously-operated current-distributers, a series of local transmitting and receiving instruments operating in conjunction with the main-line instruments and rendered operative at rapidly-recurring intervals by said current-distributers, and switching devices for changing the local instruments from one to the other of said main-line instruments.

16. In the distribution of telegraphic messages, a plurality of substations, in combination with a central station comprising the following elements, viz., a source of alternating signaling and synchronizing current, groups of telegraph-lines leading to groups of substations, and supplied with current from the said source, main-line transmitters and main-line receiving-relays, one of each for each group of lines, synchronously-operated current-distributers, a series of local transmitting and receiving instruments operating in conjunction with the main-line instruments and rendered operative at rapidly-recurring intervals by said current-distributers, and switching devices for changing the local instruments from one to the other of said main-line instruments.

17. In the distribution of telegraphic messages, a plurality of substations in combination with a central station, comprising the following elements, viz., a source of periodic signaling-current, groups of telegraph-lines leading to groups of substations, and supplied with current from the said source, main-line receiving-relays at central, one for each group of lines, a local receiving-circuit relayed from the main line synchronously-operated current-distributers located in said local circuit, a series of local receiving instruments operating in conjunction with the main-line instruments and rendered operative at rapidly-recurring intervals by said current-distributers, and switching devices for changing the local instruments from one to the other of said main-line instruments, substantially as described.

18. In the distribution of telegraphic messages an alternating-current dynamo-electric machine, a plurality of telegraphic lines leading from one of the terminals of said dynamo, main-line transmitting instruments located at the dynamo ends of said lines, and at the distant ends thereof for impressing the messages upon the current carried by said lines, receiving instruments located at corresponding points, and means for allowing said instruments the use of their lines at rapidly-recurring periods, substantially as described.

19. In the distribution of telegraphic messages an alternating-current dynamo-electric machine, a plurality of telegraphic lines leading from one of the terminals of said dynamo, main-line transmitting instruments located at the dynamo ends of said lines, and at the distant ends thereof for impressing the messages upon the current carried by said lines, receiving main-line relays located at corresponding points, the relays at the dynamo ends of said lines being balanced and operated by the current reflected back from the distant ends, and means for allowing said instruments and relays the use of their lines at rapidly-recurring periods, substantially as described.

20. In the distribution of telegraphic messages, a central station comprising the following elements, viz., an alternating-current generator, a main local conductor supplied with current from said generator, a plurality of transmitters located in the circuit of said conductor, a series of branch telegraph-lines leading from each transmitter, local-current distributers, and a series of local transmitting instruments for operating the main-line instruments and rendered operative at rapidly-recurring intervals by said current-distributers and switching devices for interchanging said transmitters, substantially as described.

704,929. MEANS FOR PRODUCING AND MAINTAINING SYNCHRONOUS MOTION. HESRIETTA H. ROWLAND, Baltimore, Md., administratrix of Henry Augustus Rowland, deceased, assignor to Rowland Telegraphic Company, Baltimore, Md., a Corporation of New Jersey. Original application filed July 24, 1901, Serial No. 69,534. Divided and this application filed Dec. 11, 1901. Serial No. 85,519. (No model.)

Claim.—1. In a synchronous system, the combination with a dynamo-electric machine, of a body with which said dynamo is to be synchronized, a circuit-changer controlled by the said dynamo, and a circuit-changer controlled by said body, an electric circuit completed from the armature-coils of said dynamo through both of said circuit-changers at rapidly-recurring intervals, electric-energy-absorbing means included in said circuit and exerting a continuous synchronizing effect upon said dynamo, by varying the energy absorbed by said dynamo with every variation in the speed of the body with which synchronism is to be maintained.

2. In a synchronous system, the combination with a dynamo-electric machine, of a body with which said dynamo is to be synchronized, a circuit-changer controlled by the said dynamo, and a circuit-changer controlled by the said body, an electric circuit completed from the armature-coils of said dynamo through both of said circuit-changers at rapidly-recurring intervals, electric-energy-absorbing means included in said circuit and exerting a continuous synchronizing effect upon said dynamo, by varying the energy absorbed by said dynamo with every variation in the speed of the body with which synchronism is to be maintained, said synchronizing effect being independent of the polarity of the current in the energy-absorbing circuit.

3. In a synchronous system, the combination with the dynamo-electric machine, of a body with which said dynamo is to be synchronized, said dynamo having a normal tendency to accelerate its speed relative to that of said body, a circuit-changer controlled by the said dynamo, and a circuit-changer controlled by the said body, an electric circuit completed from the armature-coils by and through both of said circuit-changers at rapidly-recurring intervals, electric-energy-absorbing means included in said circuit, and exerting a continuous synchronizing effect by varying the energy absorbed by said dynamo with every variation in the speed of the body with which synchronism is to be maintained.

4. In a synchronous system, the combination with an electric dynamo or motor and a body with which said dynamo is to be synchronized, of means for exerting a continuous regulating effect upon said dynamo or motor, said effect being the integral effect of a series of rapidly-recurring loads thrown upon said dynamo or motor, the duration of each of said loads varying with every change of speed of the said body with which the dynamo or motor is being synchronized.

5. In a synchronizing system, the combination with an electric dynamo or motor and a body with which said dynamo or motor is to be synchronized, of means for exerting a continuous regulating effect upon said dynamo or motor, said effect being the integral effect of a series of rapidly-recurring loads thrown upon said dynamo or motor, the duration of each of said loads varying with every change of speed of the said body with which the dynamo or motor is being synchronized, said regulating effect being independent of the polarity of the current in either of the elements of the said dynamo or motor.

6. In a synchronous system, the combination with a body with which synchronism is to be maintained and an electric dynamo or motor to be synchronized, of a set of regulating-coils carried by said dynamo or motor, electrical-energy-absorbing means, an electric circuit including said energy-absorbing means, and the regulating-coils of said dynamo or motor, circuit-changing devices for continuously connecting said energy-absorbing means in circuit with said regulating-coils and disconnecting the same therefrom at rapidly-recurring intervals, the duration of said intervals changing as the said dynamo or motor varies its phase with respect to the body with which synchronism is to be maintained.

7. In a synchronous system, the combination with a body with which synchronism is to be maintained and an electric dynamo or motor to be synchronized, regulating-coils carried by said dynamo or motor, and continuously-acting automatic means for throwing an intermittent load upon the coils of said dynamo or motor, said load varying with every change in speed of the said body with which synchronism is to be maintained.

8. In a synchronous system, the combination with a body with which synchronism is to be maintained and an electric dynamo or motor to be synchronized, said dynamo or motor having a normal tendency to accelerate its speed relative to said body, electrical-energy-absorbing means adapted to exert a retarding effect on the speed of said dynamo or motor independent of the polarity of the current therethrough, and means for connecting said energy-absorbing means into the circuit of said dynamo or motor, and disconnecting the same therefrom at intervals varying in duration with the change of phase between the dynamo or motor and said body.

9. In a synchronous system, the following instrumentalities, viz., a body with which synchronism is to be maintained and a body to be synchronized, a moving contact-maker governed by the first-named body, and a moving contact-maker governed by the body to be synchronized, an electric circuit including both of said contact-makers, electrical-energy-absorbing means adapted to be connected in circuit with both of said contact-makers, and disconnected therefrom intermittently, and to accelerate a retarding effect upon the body to be synchronized independent of the polarity of the current in said circuit, said retarding effect being the continuous integral result of a series of rapidly-recurring loads thrown upon said body to be synchronized by said energy-absorbing means, the time for which said loads are on said body varying as the difference in phase between the two bodies varies.

10. In a synchronous system, the combination with a controlling line-circuit carrying a periodically-varying electric current, a moving contact-maker controlled by the current in said circuit, an electric dynamo or motor to be synchronized, a moving contact-maker controlled by said dynamo or motor, and an electric circuit including both of said contact-makers and the armature of said dynamo or motor, an electric-energy-absorbing means adapted to be connected in said circuit through the instrumentality of said contact-makers at regular and rapidly-recurring intervals, the duration of said intervals varying as the said dynamo or motor varies its phase with respect to the body with which synchronism is to be maintained.

11. In a synchronous system, the combination with a controlling line-circuit, of a dynamo-electric machine delivering a periodically-varying current thereto, a moving contact-maker controlled by the current in said circuit, a dynamo-electric machine to be synchronized, a moving contact-maker controlled thereby, electrical resistance connected to the armature of said last-named dynamo, and connected in circuit therewith and with both of said contact-makers and disconnected therefrom at regular intervals, the said intervals varying in duration with the change of phase between said dynamos, and exerting a continuous synchronizing effect upon the dynamo to be synchronized, independent of the polarity of the current in either of the elements of said dynamo.

12. In a synchronous system, the following instrumentalities, viz., a line carrying a controlling electric current, a synchronous motor governed by the said controlling-current, a moving contact-maker controlled by the said synchronous motor, a dynamo-electric machine or motor to be synchronized, a moving contact-maker controlled by said dynamo or motor, said dynamo or motor having a tendency to accelerate its speed with relation to the said synchronous motor, and means for retarding said acceleration, said means being electrical resistance connected in the circuit of said dynamo or motor at intervals varying in duration as the phase between the said motor or dynamo and said synchronous motor varies.

704,930. MEANS FOR IMPRESSING PERIODICALLY-VARYING ELECTRIC CURRENTS UPON TELEGRAPH OR OTHER CIRCUITS. HENRIETTA H. ROWLAND, Baltimore, Md., administratrix of HENRY AUGUSTUS ROWLAND, deceased, assignor to Rowland Telegraphic Company, Baltimore, Md., a Corporation of New Jersey. Original application filed July 26, 1901, Serial No. 69,894. Divided and this application filed Dec. 11, 1901. Serial No. 85,518. (No model.)

Claim.—1. The combination of a source of direct electric current and means for producing a periodically-varying current from said direct current, an electric circuit, and a transformer by which said periodically-varying current is impressed upon said electric circuit

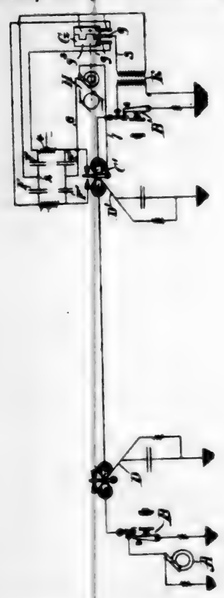

2. The combination with an electric circuit, of a source of periodically-varying electric current located at one end of said circuit and delivering thereto a normally continuous current, a source of direct current located at the other end of said circuit, a current-changing device operated in synchronism with the said periodically-varying current and producing a periodically-varying current from said source of direct current, and means for impressing the current derived from said source of direct current upon the said circuit.

3. In a telegraph-line, the combination of a transformer located in the main-line circuit, means for producing a periodically-varying current from a source of direct current connected to the primary of said transformer, and means for impressing said periodically-varying current upon the line.

4. In a duplex telegraph-line, the combination of a transformer located in the main-line circuit, means for producing a periodically-varying current from a source of direct current connected to the primary of said transformer, and means for impressing said periodically-varying current upon the duplex line.

5. The combination, in a duplex telegraph-line, of a source of direct electric current, means for producing a periodically-varying electric current from said direct current and a transformer by which said periodically-varying current is impressed upon the duplex line.

6. In a duplex line, the combination with an alternating-current dynamo located at one end of said line, and supplying current thereto, of a source of direct current located at the other end of said line, a pole-changer, a circuit in which the direction of the current is varied by said pole-changer and in which the current is derived from said source of direct current, and means for impressing the periodically-varying current produced by this device upon the main line.

7. In a duplex telegraph-line, the combination with a dynamo-electric machine located at one end of said line and delivering a normally continuous alternating current thereto, of a transformer located in the main-line circuit at the other end of said line, means for producing a periodically-varying electric current from a source of direct current connected to the primary of said transformer, and means for impressing said periodically-varying current upon the duplex line.

8. In a duplex telegraph-line, the combination with a dynamo-electric machine located at one end of said line and supplying current thereto, of a circuit located at the other end of said line in which a periodically-varying current is derived from a source of direct-current supply, a transformer receiving current from said circuit, and the said transformer impressing upon the said line the current induced in it from said circuit.

9. In a duplex telegraph-line, the combination with a source of periodically-varying electric current located at one end of said line, of a duplex transmitter located at the other end of said line, a transformer having its secondary connected in series with the main-line circuit, a source of direct current, a circuit in which a periodically-varying current is produced from said direct current, a current-changing device for producing said periodically-varying current, said circuit being connected to the primary of said transformer and a synchroniser operating in synchronism with the periodically-varying current from the other end of the line and driving said current-changing device.

10. In a duplex telegraph-line, the combination with an alternating-current dynamo-electric machine located at one end of said line and delivering current thereto, a source of direct current located at the other end of said line, a synchroniser rotating in synchronism with said dynamo-electric machine, a current-changing commutator driven by said synchroniser, a local circuit deriving current from said source of direct current and in which the direction of the current is periodically varied by said current-changer, and a transformer having its primary connected in the circuit of said current-changer and its secondary in the main line.

704,931. MEASURING-SCOOP. LEMOS M. REED, Cleveland, Ohio. Filed Apr. 7, 1902. Serial No. 101,753. (No model.)

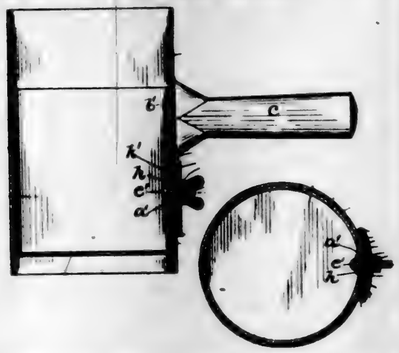

Claim.—A measuring-scoop comprising two telescopic sections and having the following: a bottom-forming head at one end and forming a part of one of the said sections; a slot formed in and longitudinally of one of the said sections and a perforation formed in the other section in registry with the said slot; a screw extending through the said slot and through the aforesaid perforation and arranged with its head interiorly of the inner section; a washer mounted upon the shank of the screw at the inner end of the nut externally of the outer section; a card-holder mounted upon the said screw between the said washer and the external surface of the outer section, and another washer interposed between the head of the screw and the interior surface of the inner section, substantially as and for the purpose set forth.

704,932. METAL RAILWAY-TIE. ALBERT J. REITZ, Portsmouth, Ohio, and JOSEPH H. LASER, Allegheny, Pa. Filed Dec. 23, 1901. Serial No. 86,962. (No model.)

Claim.—1. A metallic railroad-tie consisting of a plurality of connected tubular sections having corrugated walls.

2. A metallic railroad-tie consisting of a plurality of tubular sections connected by a rigid web and having corrugated walls.

3. A metallic railroad-tie consisting of a plurality of substantially rectangular tubular sections connected at their lower adjacent corners by a rigid web, said sections having their upright walls corrugated.

4. A metallic railroad-tie consisting of a plurality of connected tubular sections formed of a single continuous sheet or plate of metal and having corrugated walls.

5. A metallic railroad-tie consisting of a plurality of tubular substantially rectangular sections with their lateral walls corrugated and connected along their lower adjacent angles by a web, said web and sections being formed of a single continuous sheet or plate of metal.

6. The combination of a metallic railroad-tie consisting of a plurality of substantially rectangular tubular sections connected along their lower adjacent angles by a web, a bed-plate resting on said tubular sections, a rail resting on said bed-plate, a clamping-finger having a lip engaging the rail and a rib bearing on the plate, and a bolt passing through the clamping-finger, bed-plate and tie, whereby the rail is firmly secured in position.

704,982

704,933. BUILDING CONSTRUCTION. WILLIAM M. RILEY, Chicago, Ill. Filed Dec. 30, 1901. Serial No. 87,758. (No model.)

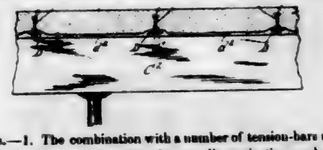

Claim.—1. The combination with a number of tension-bars suitably supported at their ends, of a series of upwardly-projecting anchors provided on their lower portions with nuts located above and below the tension-bars and at their upper ends with engaging means, wire-cloth located in a horizontal plane above the suspension-bars, and a mass of concrete or other plastic material embedding said bars, anchors, and wire-cloth, substantially as described.

2. The combination with a number of tension-bars suitably supported, of a series of upwardly-projecting anchors, a series of rods located in a plane parallel with the suspension-bars and engaged by the upper ends of said anchors, a mass of concrete or other plastic material embedding said bars, rods and anchors, substantially as described.

3. The combination with a number of tension-bars suitably supported, of a series of upwardly-projecting anchors, a number of rods located in a parallel plane with and above the suspension-bars and connected to the upper ends of the anchors, a mass of concrete or other plastic material embedding said bars, rods and anchors and formed with air-chambers, sheets of metal located in the upper portion of the air-chambers, substantially as described.

704,934. COMBINED WASHING AND WRINGING MACHINE. JOSEPH W. ROGERS, Montgomery, Pa. Filed Feb. 17, 1902. Serial No. 94,461. (No model.)

Claim.—1. In a combined washing and wringing machine, a suitable suds box or cylinder, a slidable tubular shaft located within the box or cylinder, suitable heads supported upon the tubular shaft and connected with each other, one of said heads rigidly connected to the shaft and carried thereby in its longitudinal movement, a rotatable driving-shaft extending through the tubular shaft and engaging therewith whereby a sliding and a rotating motion is imparted to said tubular shaft, substantially as and for the purpose set forth.

2. In a combined washing and wringing machine, a rotatable horizontal driving-shaft, a suitable suds box or cylinder through which the shaft extends, a slidable tubular threaded shaft located within the suds box or cylinder, a worm upon the driving-shaft engaging the threads of the tubular shaft, suitable heads located within the suds box or cylinder and connected by guide-rods, one of said heads being rigidly connected

to the slidable tubular threaded shaft and carried thereby, substantially as and for the purpose specified.

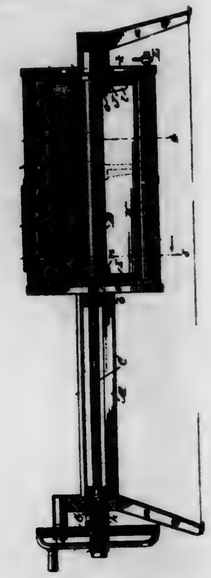

704,935. PAPER-FILE. EDGARD W. SAENGERET, Hankow, China. Filed Feb. 17, 1902. Serial No. 94,462. (No model.)

Claim.—1. A paper-file comprising two bars or rods, screws having rotary connection with one of the bars, and plates on the other of the bars and having tapped openings to receive the screws, the ends of the screws being made angular to receive a key the said ends being also pointed to puncture paper, substantially as specified.

2. A paper-file, comprising two bars, a plate connected to one of the bars, a screw having swivel connection with said plate, a plate secured to the other of the bars and having a tapped opening to receive the screw, the said other bar also having an outward opening into which the screw may pass, the screw end being angular and pointed, and a key for engaging said angular portion of the screw, substantially as specified.

3. A paper-file comprising two bars or rods, a plate attached to one of the bars or rods, a fastening-screw extended through an opening in said plate, a screw in the bar against which the head of the first-named screw engages, a plate attached to the other bar and having a tapped opening to receive the adjusting-screw, the said other bar also having an opening to receive the screw, and a key for engaging with the screw, substantially as specified.

704,936. ADJUSTABLE PIPE-ELBOW AND FASTENING MEANS THEREFOR. ALBERT G. SCHERER, Chicago, Ill. Filed Aug 3, 1901. Serial No. 70,712. (No model.)

Claim.—1. A stovepipe-elbow consisting of a series of substantially the same shaped sections each of which is provided with an annular upturned edge which is at right angles to the body of the section, and an annular groove provided in the body near the edge, said upturned edges of the section being adapted to lie flush together; and the split band substantially U-shaped in cross-section adapted to have its edges fit in the annular grooves of the section so that the groove portion of band will span the joint of the upturned edges; and two right-angled clamps or brackets, secured to the ends of the joints and adapted to be brought together to clamp the joint at the joint of the sections.

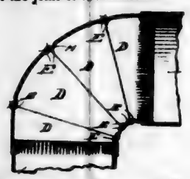

2. A section for a stovepipe-elbow, comprising a band substantially circular in cross-section and having its upper and lower edges converging so as to make the band higher on one side than the opposite side, said band being provided with a depressed groove in the body of the section parallel with the edges, and having upon each edge an outwardly-projecting rim, said rims' edges being flush with the outer surface of the section, substantially as specified.

704,937. DENTAL ENGINE. ADOLPH W. SCHRADER, Philadelphia, Pa., assignor to the Electro Dental Manufacturing Company, Camden, N. J., a Corporation of New Jersey. Filed Mar. 3, 1900. Serial No. 7,211. (No model.)

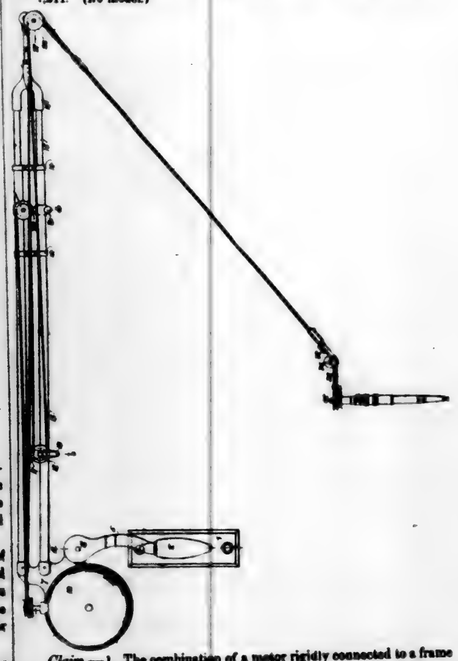

Claim.—1. The combination of a motor rigidly connected to a frame carrying operating mechanism, a support connected to said parts by a pivot allowing rotation of the same around a vertical axis, said axis passing between the centers of gravity of the motor and of the frame and its attached parts, substantially as described.

2. The combination of a motor rigidly connected to a frame carrying operating mechanism, a support connected to said parts by a pivot allowing rotation of the same around a vertical axis, a member connecting the motor and frame with the said support, the same being connected thereto by a horizontal pivot permitting motion of said parts in a vertical plane, both the said pivots being between the centers of gravity of the motor and of the frame, substantially as described.

3. The combination of a support, a frame pivoted thereto, and a motor carried by the frame, said support including a yoke through which said motor is free to swing, substantially as described.

4. The combination of a yoke having supporting means permitting motion around a vertical axis, a motor and frame connected to said yoke by a pivotal joint, means for imparting friction to said joint and thereby retaining the motor with its attached frame in any desired position, substantially as described.

5. The combination of a pivotal frame, a post to which the same is pivoted, a vertical socket and a rigid sleeve and elastic cushion interposed between said post and the socket, substantially as described.

6. In a device of the character described, the combination of a frame a plate pivotally carried thereby, a handpiece attached to said plate, mechanism, including a pulley, for operating a tool carried by said handpiece, and other pulleys carried on the plate, the latter pulleys being placed on said plate relatively to the pulley of the operating mechanism so that the distance from a fixed point on the frame around the pulleys on the plate to the pulley of the operating mechanism will remain substantially constant irrespective of the relative positions of the said handpiece, the plate and the frame, substantially as described.

704,938. ADDING-MACHINE. ALEXANDER G. SCHUMAN, Louisville, Ky., assignor to Spalding Coleman, Louisville, Ky. Filed Mar. 20, 1902. Serial No. 99,199. (No model.)

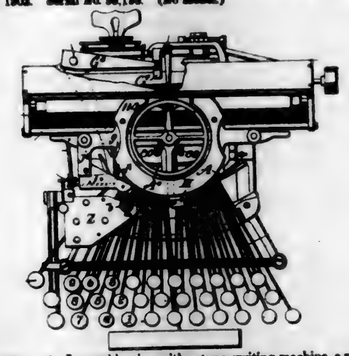

Claim.—1. In combination with a type-writing machine, a registering mechanism mounted in a movable support beside the type-writing machine, and a vibrating actuating device therefor operated by and from the ordinary numeral-keys of the type-writer, and adapted to engage the registering mechanism on one stroke and to be disengaged therefrom at the end of such stroke and during its return movement, substantially as described.

2. In combination with a type-writing machine, and a laterally-swinging and longitudinally-vibrating segment actuated from the numeral key-bars thereof, with an adding mechanism composed of a series of axially-alined registering-wheels, and means for bringing said wheels into position to be engaged by the segment, substantially as described.

3. In combination with a type-writing machine, a series of registering-wheels mounted in a movable support beside the same, and a swinging and reciprocating actuating device operated by the numeral-keys of the type-writing machine adapted to operate the registering-wheels on one stroke and be disengaged therefrom during its return stroke, said registering-wheels being bodily movable into or out of operative position at the will of the operator, substantially as described.

4. In combination with a "Hammond" type-writing machine having a vibrating driver-arm, a series of registering-wheels mounted in a movable support beside the type-writing machine, and a vibrating actuating device operated by and from the "driver-arm" of the machine adapted to engage any of the register-wheels at the will of the operator.

5. In combination with a type-writing machine, a series of registering-wheels mounted in a movable support beside the type-writing machine, a vibrating segment and actuating-key connections adapted to cause said segment to engage a register-wheel when a numeral-key is depressed and to disengage such wheel at the end of its forward stroke, substantially as described.

6. In combination with a type-writing machine, an adding mechanism comprising a series of registering-wheels mounted in a movable support, a single vibrating actuating device actuated from the ordinary numeral-keys of the type-writing machine, adapted to engage a registering-wheel on one stroke and to be disengaged therefrom before and during its return stroke, said support being movable at the will of the operator to bring any registering-wheel into engagement with the actuating device.

7. In combination a series of registering-wheels mounted in a vertically-movable support, and an actuating device adapted to operate the registering-wheels successively as the support rises, and means for resetting the wheels to "zero position" when the support is depressed.

8. In combination with a type-writing machine, a series of registering-wheels mounted in a vertically-movable support, and an actuating device operated by the numeral-keys of the type-writer adapted to operate the registering-wheels successively as the support rises, and means for resetting the wheels to "zero position" when the support is depressed.

9. In combination a series of registering-wheels mounted in a vertically-movable support, an actuating device adapted to engage and operate the disks successively, means for moving the support, and an escapement mechanism whereby the support is raised one step each time the actuating device is operated.

10. In combination a series of registering-wheels mounted in a movable support, an actuating device adapted to engage and operate the disks successively, means for moving the support past said device, and an escapement mechanism whereby the support is permitted to move one step each time the segment-actuating device is operated until the registration is finished, and means for automatically resetting the disks upon and during the return movement of the registering-wheels.

11. In combination with a type-writing machine, a series of registering-wheels mounted on a movable support, a swinging and reciprocating actuating device adapted to successively engage the registering-wheels, said device being operated from the ordinary numeral-wheels of the type-writing machine, and an escapement mechanism controlling the registering movements of said support; with means for resetting the registering-wheels each time the support is retracted, said registering mechanism being movable into or out of operative position at the will of the operator.

12. In combination with a type-writing machine, an adding mechanism adapted to be actuated by and from the ordinary numeral-key levers of the type-writing machine, and means for moving said adding mechanism into or out of operative position; with mechanism whereby upon the movement of the adding mechanism to operative position the type-writing carriage is simultaneously released and caused to move toward tabulating position, substantially as described.

13. In combination with a type-writing machine, a series of registering-wheels mounted in a movable support beside the same and independent thereof, and an actuating device operated by the numeral-keys of the type-writing machine adapted to operate the registering-wheels, said registering-wheels being bodily movable into or out of operative position at the will of the operator; with mechanism whereby when the registering-wheels are moved to operative position the type-writer carriage is automatically and simultaneously released and shifted toward tabulating position, substantially as described.

14. In combination with a type-writing machine, a series of registering-wheels mounted in a movable support beside the same, and an actuating device operated by the numeral-keys of the type-writing machine adapted to operate the registering-wheels, said registering-wheels being bodily movable into or out of operative position at the will of the operator, and mechanism actuated by the support whereby when the latter is depressed the type-writer carriage is released and to move toward tabulating position, substantially as described.

15. In combination with a type-writing machine, a series of registering-wheels mounted in a vertically-movable support, and an actuating device operated by the numeral-keys of the type-writer adapted to operate the registering-wheels successively as the support rises, and means for resetting the wheels to "zero position" when the support is depressed; and mechanism whereby when the registering-wheels are moved to operative position the type-writer-carriage escapement is simultaneously operated to move the carriage toward tabulating position, substantially as described.

16. In combination with a type-writing machine, a series of registering-wheels mounted in a vertically-movable support, and an actuating device operated by the numeral-keys of the type-writer adapted to operate the registering-wheels successively as the support rises, and means for resetting the wheels to "zero position" when the support is depressed, and mechanism connected with and actuated by the support whereby when the latter is depressed the type-writer carriage is permitted to move toward tabulating position, substantially as described.

17. In combination with a type-writing machine, a movable frame thereon carrying registering-wheels and a device actuated by the numeral-keys of the type-writing machine adapted to operate the registering-wheels; with an escapement mechanism controlling the movement of the registering-frame and comprising a fixed and movable ratchet, a vibrating dog engaging the ratchets alternately, an oscillating lever and connections for actuating said lever by and from the type-writer escapement mechanism, substantially as described.

18. In an adding-machine, the combination of a movable frame, a series of registering-wheels mounted therein, a series of carry-over levers in the frame beside the registering-wheels, a rotary shaft journaled in the frame and provided with arms adapted to actuate any displaced carry-over levers, and mechanism for rotating said shaft when the frame is depressed, substantially as described.

19. In an adding-machine, the combination of a vertically-movable frame, a series of registering-wheels therein, a series of carry-over levers beside the registering-wheels, a rotary shaft journaled in the frame and having arms adapted to engage displaced carry-over levers and spiral threads and means engaging the threads for causing the rotation of said shaft when the frame is depressed, substantially as described.

20. The combination with a type-writing machine, of a vibrating lever adapted to be actuated by the type-writing machine pusher-arms when the numeral-keys are depressed, and a segment pivotally attached to said lever; registering-wheels mounted in a movable support beside the vibrating segment, and means for throwing the segment into and out of mesh with the registering-wheels, substantially as described.

21. The combination with a type-writing machine, of a vibrating lever adapted to be actuated by the numeral-keys of the type-writing machine, a toothed segment pivoted to said lever, a support for the other end of the lever, a registering-wheel beside the segment, and means for moving said support so as to throw the segment into and out of mesh with the registering-wheels, substantially as described.

22. The combination with a type-writing machine of a vibrating lever adapted to be actuated by the numeral-keys of the type-writing machine, a toothed segment pivoted to said lever, a pivoted plate supporting the other end of the lever, a series of registering-wheels beside the segment, and means for rocking said plate so as to throw the segment properly into and out of mesh with the registering-wheels, substantially as described.

23. The combination with a type-writing machine, of a vibrating lever adapted to be actuated by the numeral-keys of the type-writing machine, a toothed segment pivoted to said lever, a support for the other end of the lever, a registering-wheel beside the segment, and means for moving said support so as to throw the segment into and out of mesh with the registering-wheels; with means for imparting a step-by-step movement to the series of register-wheels so as to bring them successively into position to mesh with the segment substantially as described, and means for resetting the registering-wheels to zero, substantially as described.

24. The combination with a type-writing machine, of a vibrating lever adapted to be actuated by the numeral-keys of the type-writing machine, a toothed segment pivoted to said lever, a pivoted plate supporting the other end of the lever, a series of registering-wheels beside the segment and means for rocking said plate so as to throw the segment properly into and out of mesh with the registering-wheels; with means for imparting a step-by-step movement to the series of registering-wheels so as to bring them successively into position to mesh with the segment, substantially as described, and means for resetting the registering-wheels to zero, substantially as described.

25. The combination with a type-writing machine, of a vibrating lever actuated by the numeral-keys of the type-writing machine, a toothed segment pivoted to said lever, a support for the other end of the lever, and means for moving said support so as to throw the segment into and out of mesh with the registering-wheels, a movable frame beside the segment, a series of registering-wheels in the frame, mechanism for moving the frame so as to bring the registering-wheels successively into position to be engaged by the segment, and means for "carrying over" when the frame is depressed, substantially as described.

26. The combination with a type-writing machine, of a vibrating lever actuated by the numeral-keys of the type-writing machine, a toothed segment pivoted to said lever, a pivoted plate supporting the other end of the lever, and mechanism for rocking said plate so as to throw the segment into and out of mesh with the registering-wheels, a movable frame beside the segment, a series of registering-wheels in the frame, mechanism for moving the frame upward step by step so as to bring the registering-wheels successively into position to be engaged by the segment, and means for causing the registering-wheels to "carry over" when the frame is depressed, substantially as described.

27. In combination with a type-writing machine, a movable series of registering-wheels, carry-over levers for actuating one wheel from another, a resetting-shaft provided with arms adapted to engage any displaced carry-over lever mechanism for rotating said shaft, and mechanism, actuated by and from the carriage escapement mechanism for moving said series of registering-wheels during the adding operation, a vibrating lever actuated by and from the numeral-keys of the type-writing machine, a segment pivoted to said lever and adapted to engage the registering-wheels, a movable support for the free end of said lever, and means, actuated by and from the numeral-keys of the type-writing machine for moving said support to throw the segment into mesh, and mechanism for throwing the segment out of mesh at the proper time, substantially as described.

28. In combination with a type-writing machine, a movable frame connected therewith, a series of registering-wheels mounted in said frame, carry-over levers for actuating one wheel from another, a resetting-shaft provided with arms adapted to engage any displaced carry-over lever, mechanism for rotating said shaft upon the depression of the frame, mechanism, actuated by and from the carriage escapement mechanism for moving said adding-frame step by step during the adding operations, a vibrating lever actuated by and from the numeral-keys of the type-writing machine, a segment pivoted to said lever and adapted to engage the registering-wheels, a vibrating plate supporting the free end of said lever, means actuated by and from the numeral-keys of the type-writing machine for rocking said plate to throw the segment into mesh, and mechanism for throwing the segment out of mesh at the proper time, all substantially as set forth.

29. In combination with a type-writing machine having a vibrating "driver-arm" for actuating its type-shuttle; a series of registering-wheels mounted on a movable support, an actuating device adapted to successively engage the registering-wheels, said device being operated from and by the "driver-arm," and an escapement mechanism controlling the registering movements of said support.

30. The combination of a movable frame carrying registering-wheels, and a vibrating actuating device beside the frame adapted to engage the several registering-wheels successively; with an escapement mechanism for controlling the movement of the frame, composed of a fixed and movable ratchet and a dog mounted on a vibrating support, a key and connections for actuating the escapement mechanism, and numeral-keys and connections for simultaneously operating the actuating device and escapement mechanism, substantially as described.

31. In combination of a "type-shuttle" type-writing machine having a vibrating "driver-arm," a movable frame carrying registering-wheels, and a device actuated by the "driver-arm" adapted to operate the registering-wheels; with an escapement mechanism controlling the movement of the registering-frame and actuated by and from the type-writer escapement, substantially as described.

704,939. COMPOSITION FOR OILING FIBER AND PROCESS OF MAKING SAME. CARLO BELLA, Biella, Italy. Filed Apr. 24, 1901. Serial No. 57,250. (No specimens.)

Claim.—1. A solution of soda soap of castor-oil in olein substantially in the proportions and for the purpose specified.

2. A solution of soda soap of castor-oil in olein treated with pure water substantially in the proportions and for the purpose specified.

3. The process described consisting in dissolving soda soap of castor-oil in olein, adding water or water and glycerin to this solution while agitating it, and subsequently adding pure water substantially in the proportions and for the purpose specified.

704,940. TROUSERS CLAMP AND HANGER. GEORGE W. SHELTON, Morrill, Kans. Filed May 25, 1901. Serial No. 61,919. (No model.)

Claim.—A garment-hanger comprising two plates each provided at both ends with a pair of cord-openings located one above the other, the openings of one plate registering with the openings in the other plate, and a single continuous cord forming two suspending-loops extending through the lower openings of both plates and upward transversely of the boards and crossed through the upper openings of both plates.

704,941. TRAVELING CUTTER MECHANISM. EDWIN E. SLICK, Pittsburg, Pa. Filed Feb. 1, 1902. Serial No. 92,162. (No model.)

Claim.—1. In apparatus for cutting traveling strips, a pair of cutters, movable supports therefor, crank mechanism arranged to impart a back-and-forth movement to both of said cutter-supports, and mechanical connections arranged to reciprocate at least one of the cutters, substantially as described.

2. In apparatus for cutting traveling strips, a pair of cutters, mechanism for oscillating both of said cutters at the same rate of speed as the strip, and separate power-actuated connections for reciprocating at least one of the cutters during this movement; substantially as described.

3. In apparatus for cutting traveling strips, a pair of cutters, supporting mechanism for imparting a back-and-forth movement to the cutters, and mechanism for reciprocating at least one of the cutters at intervals of more than one double stroke; substantially as described.

4. In traveling cutter mechanism, a fixed cutter mounted on an oscillatory carrier, connections arranged to oscillate said carrier, a traveling cutter secured to a carrier loosely guided on the oscillatory carrier, a swinging arm pivoted to the traveling cutter-carrier, mechanism for swinging the said arm, and mechanism for reciprocating the movable cutter during the oscillatory movement; substantially as described.

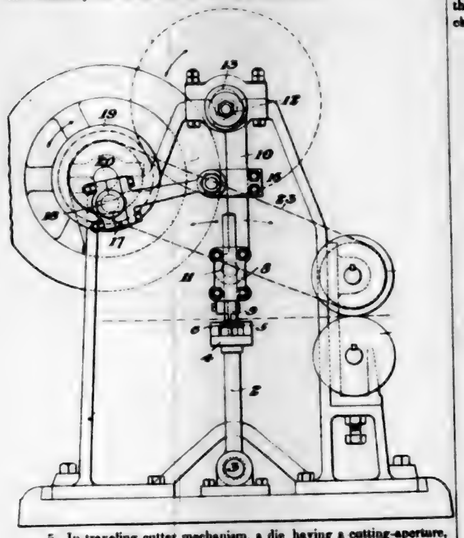

5. In traveling cutter mechanism, a die having a cutting-aperture, a cutter-die arranged to enter the aperture, mechanism for oscillating both of said dies at the speed of the traveling strip, and mechanism for simultaneously reciprocating at least one of said dies; substantially as described.

6. In traveling punch mechanism, a die mounted on an oscillatory carrier, a cross-head sliding on said carrier and having a movable die, an eccentric-rod pivoted to the cross-head, and mechanism for oscillating the eccentric-rod and actuating the eccentric; substantially as described.

7. In traveling cutter mechanism, a pair of cutters, mechanism for oscillating said cutters, and mechanism for reciprocating one of the cutters, the said reciprocating mechanism operating at intervals greater than each double oscillation; substantially as described.

8. In cutter mechanism, a pair of traveling cutters, mechanism arranged to impart a back-and-forth movement to both of said cutters at the speed of the traveling strip, and mechanism arranged to reciprocate one of the cutters; substantially as described.

704,942. OIL OR MOLASSES FAUCET. CHARLES F. SMITH, New Britain, Conn., assignor to Landers, Frary and Clark, New Britain, Conn. Filed Mar. 2, 1901. Serial No. 49,581. (No model.)

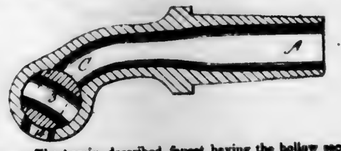

Claim.—The herein-described faucet having the hollow securing-stem A, the curved neck 6 of an oval form extending outwardly and downwardly from the said stem, a horizontally-depending head or barrel B, with a delivery-opening 14 elongated in the line of the barrel at both its influent and effluent ends, the effluent end terminating in the circular outer wall of the said barrel and an opening and closing plug C within the said barrel, substantially as described.

704,943. ROTARY MOTOR. DANIEL F. SMITH, New York, N. Y. Filed June 7, 1902. Serial No. 110,630. (No model.)

Claim.—1. A rotary engine comprising a piston traveling in an annular steam or pressure chamber and a movable abutment-ring eccentrically disposed so as to divide the piston-chamber into two parts and within which the axis of the piston-chamber is located, the abutment-ring and piston being so constructed and operated that the piston may pass across the ring at the required point.

2. A rotary engine comprising an annular pressure piston-chamber, a piston traveling therein, and a rotating eccentrically-disposed abutment-ring intersecting said chamber at two points and formed with a notch through which the piston passes, and within which the axis of the piston-chamber is located.

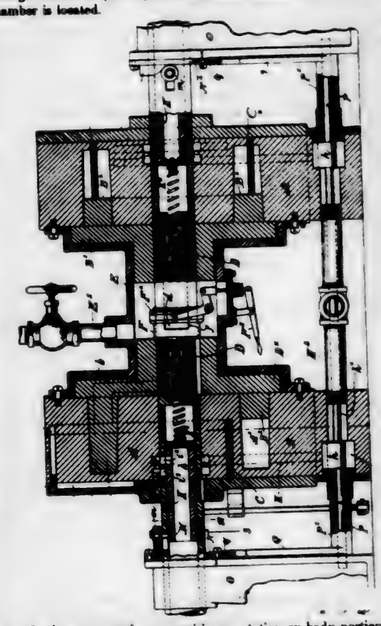

3. A rotary engine comprising a stationary body portion having therein an annular piston-chamber with converging side walls, a piston-carrying member having a correspondingly-tapered piston extending to the bottom of said chamber and a correspondingly-tapered flange extending partly into the chamber, an eccentrically-disposed notched abutment-ring traveling in a seat or bearing in the body portion and intersecting said chamber at two points, and means for rotating the abutment-ring in proper unison with the piston.

4. A rotary engine comprising a body-piece having an annular piston-chamber, a piston-carrying member having a piston occupying said chamber and a flange part closing the chamber and a notched eccentrically-disposed abutment-ring traveling in a seat in the body part and held in position by the face of the flange on the piston member and within which the axis of the piston-chamber is located, and means for rotating the abutment-ring in unison with the movement of the piston for the purpose described.

704,944. COMPOUND LUMBER. SETH H. SMITH, Hillsdale, Mich. Filed Dec. 5, 1901. Serial No. 84,833. (No model.)

Claim.—1. In an article of the class described, the combination with wooden sheets placed together with the grain of the wood disposed in intersecting planes, of a continuous line of fastening means passing through the sheets and securing them together, said fastening means extending in continuous lines along the outer faces of both sheets.

2. In an article of the class described, the combination with wooden sheets placed together with the grain of the wood disposed in intersecting planes, of a continuous line of fastening means passing through the sheets and securing them together, portions of said line of fastening means intersecting the grain of the wood of both sheets.

3. In an article of the class described, the combination with wooden sheets placed together with the grain of the wood disposed in intersecting planes, of a binder stitched through the sheets to secure them together, said binder extending in continuous lines over the outer faces of both sheets.

4. In an article of the class described, the combination with wooden sheets placed together with the grain of the wood disposed in intersecting planes, of a binder passing through the sheets and comprising a line of stitching, said line intersecting the grain of the wood of both sheets.

5. In compound lumber, circular sheets of veneer placed together with the grain of the wood disposed in intersecting planes, and a binder passing through the sheets and comprising a circular line of stitching that extends entirely around the lumber contiguous to the periphery thereof.

6. In compound lumber, facing sheets of veneer placed together with the grain of the wood disposed in intersecting planes, an intermediate strengthening-sheet located between the facing sheets and terminating short of the side edges thereof, and fastening devices passing through the facing sheets to fasten their edges together over the strengthening-sheet.

7. In compound lumber, a series of sheets of veneer placed together with the grain of the wood disposed in intersecting planes, and a binder passing through the sheets and comprising a circular line of stitching which intersects the grain of the wood of the several sheets.

704,945. ACETYLENE-GAS GENERATOR. CARL W. SÖDERBERG, Nordstrand, near Christiania, Norway. Filed July 11, 1899. Serial No. 723,488. (No model.)

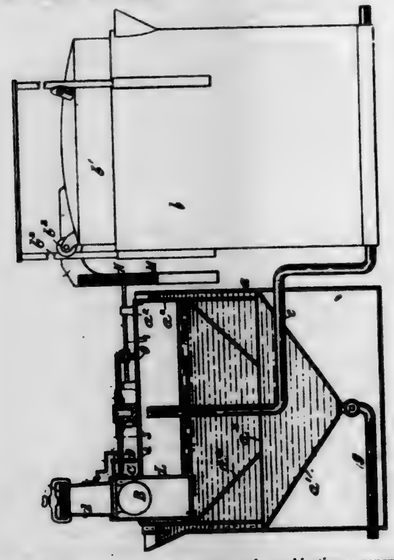

Claim.—In an acetylene-gas generator in combination, a generator-chamber, a fixed top or cover for the same, a circular row of fixed tubes passing through the said fixed top and dipping into the water of the generator-chamber, carbid-receptacles of less diameter than the said fixed tubes mounted on top of each tube and provided with air-tight covers at the top, throttle-valves mounted within said tubes and forming movable bottoms for the said receptacles, operating-shafts for holding the said bottoms up against the shoulders formed between the tubes and the receptacles, said operating-shafts having their operative ends placed outside the generator-chamber and means for operating the shafts substantially as described.

704,946. COMBINATION VEHICLE AND STATIONARY SCALE. LOUIS H. SOHR, St. Cloud, Wis. Filed Apr. 19, 1901. Serial No. 56,547. (No model.)

Claim.—1. In a combination portable and stationary scale having a rectangular box inclosing the latter, and interposed between the bolsters of a vehicle running-gear and the body thereof, adjustable brackets secured to the sides of said box and means for attaching the brackets to the bolster-stakes, when the scale-box is in position upon the vehicle running-gear, substantially as set forth.

2. In a combination portable and stationary scale having a rectangular box inclosing the latter, and interposed between the bolsters of a vehicle running-gear and the body thereof, a floor for said box upon which the body rests, bolts for locking said floor and box together whereby the former is rigid when the scale is not in use, adjustable brackets secured to the sides of the box, and means for detachably connecting the brackets to the bolster-stakes of a vehicle running-gear when the scale-box is in position upon the bolsters thereof, substantially as set forth.

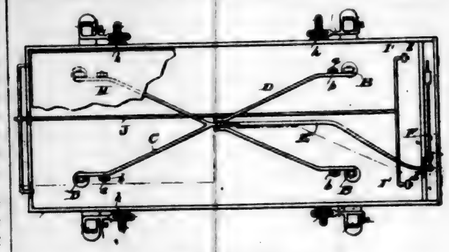

704,947. CORN-HARVESTER. HENRY R. SPANT and ALBERT W SPANT, Pattonsburg, and GUSTAVE SPANT, King City, Mo. Filed Feb. 19, 1902. Serial No. 94,745. (No model.)

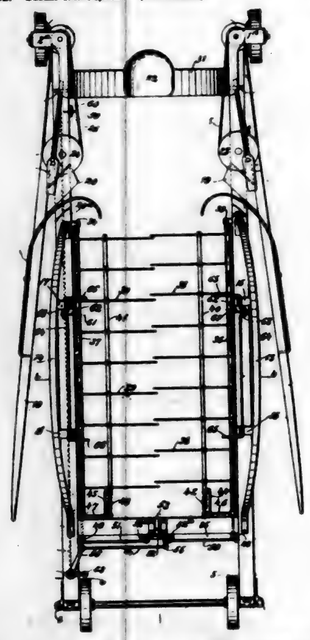

Claim.—1. A corn-harvester comprising a movable frame adapted to travel between rows of corn and provided with an arch for supporting a seat, means for severing stalks located upon both sides of said frame and for guiding the fall of said stalks, racks loosely mounted upon said frame and forming a tentative support disposed centrally thereof, said racks comprising fingers normally free to move radially downward for the purpose of dumping said stalks centrally of said frame and free to swing obliquely backward when engaged by the ground, means controllable at will for swinging said fingers radially downward, and means for automatically moving said fingers forward when the same are free from the ground.

2. A corn-harvester comprising a movable frame adapted to travel between corn-rows and provided with an arch for supporting a seat, means for severing cornstalks located upon both sides of said frame, and for guiding the fall of said stalks when severed, racks loosely mounted upon said frame and forming a tentative support disposed centrally thereof, said racks comprising fingers normally free to move radially downward for the purpose of dumping said stalks centrally of said frame, and free to swing obliquely backward when engaged by the ground, mechanism controllable at will for swinging said fingers radially downward, and means for automatically moving said fingers forward when the same are free from the ground, hooks for tentatively holding any stalks which

may be severed while the racks are dumping, and links connected with said racks and said hooks for actuating said hooks.

704,948. AUTOMATIC ELECTRICAL SIGNALING APPARATUS FOR RAILWAYS. JAMES R. SPAGNOLETTI, London, England, assignor to the Electric Railway Signalling Syndicate, Limited, London, England. Filed May 16, 1902. Serial No. 107,633. (No model.)

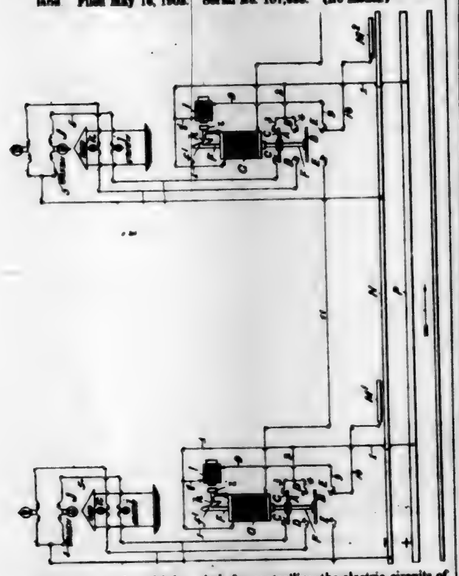

Claim.—1. A multiple switch for controlling the electric circuits of railway-signals, and consisting of a plurality of bridging contact-pieces carried by a vertically-guided rod adapted to be moved by gravity in the one, and by electromagnetic attraction in the other direction, pairs of contacts respectively connected to the members of the circuits to be controlled by the switch, electromagnetic means for raising the said rod contact-pieces so as to thereby cause bridging contact to be established between one pair of contacts, means of latching the rod in the raised position, and electromagnetic means of releasing the latching device so as to permit the rod and contact pieces carried thereby to fall and cause bridging contact to be broken between the one pair of contacts and to be established between the contacts of the other pairs.

2. A multiple switch for controlling the electric circuits of railway-signals, and consisting of a plurality of bridging contact-pieces carried by a vertically-guided rod, a solenoid the movable core of which is carried upon the said rod, a collar on the upper end of the said rod, a spring-actuated latch adapted for engagement with the collar so as to retain the rod in the raised position, and an electromagnet whereof the armature is connected to the latch so as to cause the latch to be retracted when the armature is attracted by the magnet.

704,949. GRAIN-DOOR. ALVA T. STARR, Geneva, N. Y. Filed Feb. 21, 1902. Serial No. 95,066. (No model.)

Claim.—1. A grain-door, comprising a door-section, a chain or other flexible structure mounted on the car, on which chain the door-section is adjustably carried, and means for releasably holding the chain taut.

2. A grain-door, comprising a door-section, a chain or other flexible structure mounted on the car, on which chain the door-section is carried, said chain extending alongside of the door, means for removably attaching the lower end of the chain to the car, and means for holding the door-section raised against the roof of the car.

3. A grain-door, comprising a plurality of door-sections, chains or other flexible structures mounted on the car at the sides of the door-opening, with which chains the door-sections have sliding connection, and means for releasably holding the chains taut.

4. A grain-door, comprising a door-section, a chain or other flexible structure mounted on the car, adjacent to the door-opening, with which chain the door-sections have sliding connection, a hook fastened to the lower part of the car releasably to hold the lower end of the chain, and means for holding the door-sections raised to the roof of the car.

5. A grain-door, comprising a plurality of sections, chains or other flexible structures with which the door-sections have sliding connection, said chains having their upper ends fastened permanently to the car and their lower ends removably connected thereto, and means adjacent to the roof of the car for holding the door-sections raised.

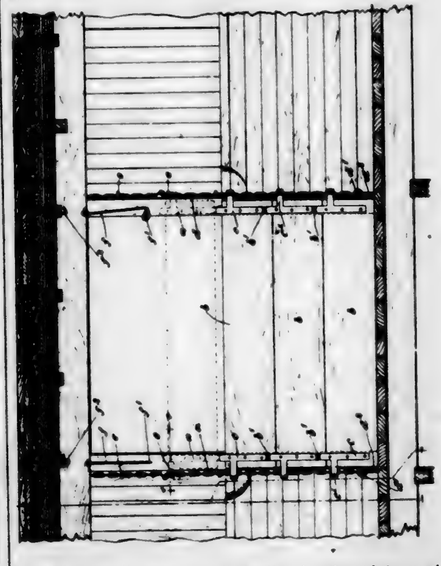

6. A grain-door, comprising a plurality of sections, chains or other flexible structures with which the door-sections have sliding connection, said chains having their upper ends fastened permanently to the car and their lower ends removably connected thereto, and means adjacent to the roof of the car for holding the door-sections raised, said means comprising an arm mounted to swing on the car and a hook in the roof of the car to be engaged by the arm.

7. A grain-door comprising a plurality of sections adapted to lie one above the other to form a complete door, chains or other flexible structures located one at each side of the door and having the door-sections independently slidable thereon, and means for varying the tension of the chains.

8. A grain-door, comprising a plurality of sections adapted to lie one above the other to form a complete door, chains or other flexible structures located one at each side of the door and having the door-sections independently slidable thereon, and means for holding the chains taut, said means comprising hooks fastened to the door-posts and adapted to have the chain drawn under one and engaged with the other.

9. A grain-door, comprising a plurality of sections adapted to lie one above the other to form a complete door, chains or other flexible structures located one at each side of the door and having the door-sections independently slidable thereon, means for holding the chains taut, said chains being permanently fastened at their upper ends and removably engaged with the car at their lower ends, and means at the top of the door for holding the door-sections raised, when desired.

10. A grain-door, comprising door-sections adapted to lie one above the other and having grooves therein, and lock-plates fitted in the grooves and projected beyond the sections, whereby said projected portions may be entered into the grooves of the adjacent sections.

11. A grain-door, comprising door-sections adapted to lie one above the other, lock-plates fastened to the door-sections and projected beyond the sections to receive between them the adjacent door-sections, guide-eyes attached to the lock-plates and projecting from the ends of the door-sections, and means loosely received in said guide-eyes, whereby to carry the door-sections.

12. A grain-door, comprising door-sections adapted to lie one above the other, lock-plates fastened to the door-sections and projected beyond the sections to receive between them the adjacent door-sections, guide-eyes attached to the lock-plates and projecting from the ends of the door-sections, means loosely received in said guide-eyes, whereby to carry the door-sections, said means consisting in chains located one at each side of the door, and means for removably holding the chains taut

704,950. **VALVE MECHANISM FOR COIN-CONTROLLED GAS-VENDING MACHINES.** WILLIAM J. SPROUL, Brooklyn, N. Y. Filed Nov. 2, 1901. Serial No. 80,382. (No model.)

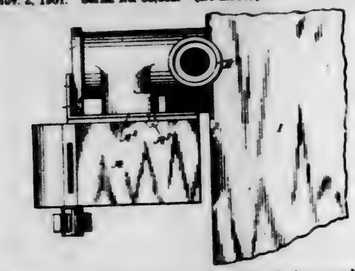

Claim.—1. A valve mechanism for coin-controlled gas-vending machines, comprising a valve-body having a gas-passage and adapted for connection at one end with a gas-supply pipe and at the other end with a meter, the said valve-body being provided with two valve-seats, a stem carrying a valve formed with two faces, the valve being located between the valve-seats, and the valve and valve-seats being in the gas-passage, the said valve-seats being formed with bearings for the stem to slide in, a spring coiled on the stem at one side of the valve and resting with one end on one of said bearings, the other end pressing on the valve to hold the same normally to its seat, a pin or screw secured to the other end of the valve-stem, a rock-shaft extending into the gas-passage, an arm arranged on the inner end of the rock-shaft within the gas-passage and having a fork at its free end engaging the said pin, and a coin-controlled mechanism for actuating the said arm to move the valve to open position against the tension of the spring, as set forth.

2. A valve mechanism for coin-controlled gas-vending machines, having a valve-body connected at one end with a gas-supply pipe and at the other end with a meter, a valve in the said valve-body, a coin-controlled mechanism for opening the said valve, and a cap on the said valve-body opposite the valve-seat and having an offset on its periphery abutting against the casing of the said coin-controlled mechanism, as set forth.

3. A valve mechanism for coin-controlled gas-vending machines, having a valve-body connected at one end with a gas-supply pipe and at the other end with a meter, a valve in the said valve-body, a coin-controlled mechanism for opening the said valve, a cap screwing into the said valve-body and having an offset on its periphery abutting against the casing of the said coin-controlled mechanism, and means for securing the said casing to the said valve-body from the inside of the casing, as set forth.

4. A valve mechanism for coin-controlled gas-vending machines, having a valve-body connected at one end with a gas-supply pipe and at the other end with a meter, a valve in the said valve-body, a coin-controlled mechanism for opening the said valve, a cap on the said valve body and having an offset abutting against the casing of the said coin controlled mechanism, and an angular flange on the said casing and projecting in front of the cap, as set forth.

5. A valve mechanism for coin-controlled gas-vending machines, having a valve-body connected at one end with a gas-supply pipe and at the other end with a meter, a valve in the said body, a coin-controlled mechanism for opening the said valve, a cap on the said valve-body and having an offset abutting against the back plate of the casing of said coin-controlled mechanism, the said back plate being provided with an angular flange projecting in front of the cap, and means for securing the said casing to the said valve-body from the inside of the casing, as set forth.

6. A valve mechanism for coin-controlled gas-vending machines, comprising a valve-body having a gas-passage formed therein, a cylindrical seat-body fitting in the gas-passage, and having its bore enlarged at its middle portion, the said cylindrical seat-body being provided with two valve-seats at the enlarged portion, and a bearing at each end, a valve-stem having its ends arranged to slide in the said bearings, a valve formed with two faces and carried by said stem, the valve being arranged in the enlarged portion of the bore of the cylindrical seat-body between the valve-seats, coin-controlled means for moving the valve into an open position, and a spring for holding the valve normally to its seat, the said spring pressing at one end on one face of the valve and engaging with its other end one of said bearings, as set forth.

704,951. **APPARATUS FOR FORMING SAND MOLDS.** STEPHEN J. ADAMS, Pittsburg, Pa., assignor to Marcellus C. Adams, Pittsburg, Pa. Filed May 11, 1901. Serial No. 610,246. (No model.)

Claim.—1. The combination with a table, of a flask or sand-holder resting thereon and a cutter having an irregular edge and adapted to slide over the sand-holder and cut or plane off the sand corresponding to said irregular edge, and a guideway supported on the table and in line with the flask edge to support the cutter in its movement, substantially as set forth.

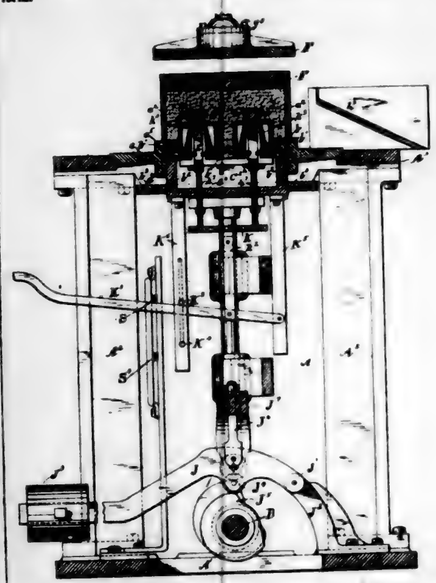

2. The combination with a flask or sand-holder having an irregular edge portion, of a cutter having an irregular edge corresponding to such edge portion and adapted to slide over the sand-holder and cut or plane off the sand corresponding to the edge thereof, substantially as set forth.

3. In sand-molding apparatus, the combination with a flask or sand-holder of irregular shape, of a sand-reservoir corresponding in shape to the sand-holder and sliding over the same so as to cut or plane off the sand to the shape of the flask, substantially as set forth.

4. The combination with a flask or sand-holder having an irregular edge, of a cutter having an irregular edge corresponding in shape to that edge, and having guides to hold it in line with the sand-holder said cutter adapted to slide over said flask and cut or plane off the sand to the shape of the edge thereof, substantially as set forth.

5. The combination with a table, a flask or sand-holder resting thereon having an edge of irregular shape, and a cutter adapted to slide over the sand-holder and cut or plane off the sand corresponding to said irregular edge, and a guideway supported on the table and in line with the flask edge to support the cutter in its movement, substantially as set forth.

6. In combination with the molding-table, a flask having its lower edge of irregular shape, a flask-supporting plate on the table having its face corresponding to the lower edge of the flask, and a pattern adapted to be forced into the flask, substantially as set forth.

7. The combination with a table, of a flask having its upper and lower edges of irregular shape, a flask-supporting plate on the table and having its face corresponding to the lower edge of the flask, a confining-plate on the flask having its inner face corresponding to the upper edge of the flask, and a pattern adapted to be forced into the flask, substantially as set forth.

8. The combination with a table, of a flask having its lower edge of irregular shape, a flask-supporting plate on the table and having its face corresponding to the lower edge of the flask, a confining-plate on the flask, a pattern adapted to be forced into the flask, and a stripping-plate fitting around the pattern and corresponding in shape to the lower edge of the flask, substantially as set forth.

9. The combination with a table, of a flask having its upper and lower edges of irregular shape, a flask-supporting plate on the table and having its face corresponding to the lower edge of the flask, a confining-plate on the flask, having its inner face corresponding to the upper edge of the flask, a pattern adapted to be forced into the flask, and a stripping-plate fitting around the pattern and corresponding in shape to the lower edge of the flask, substantially as set forth.

10. The combination of a table, a flask having its lower edge of irregular shape, a flask-supporting plate on the table and having its face corresponding in shape to the lower edge of the flask and having a flange depending from its inner edge and forming a pocket in the reservoir, a vertically-movable stripping-plate corresponding to the lower edge of the flask and fitting within the depending flange and forming the base of the reservoir and a vertically-movable pattern extending up within said stripping-plate, substantially as set forth.

11. The combination with a supporting-frame, a hollow pattern vertically movable therein, wing-patterns pivotally mounted in the hollow pattern and extending up through the top thereof and having inwardly-projecting lugs at their lower ends, and a pattern-block having recesses into which the said lugs extend, adapted to be raised to spread the wing-patterns, and hold them in molding position and to be drawn down and contact with the lugs and draw the wing-patterns together for the withdrawal of the pattern from the mold, substantially as set forth.

12. The combination with a supporting-frame, of hollow patterns vertically movable therein and carried by a pattern-frame, wing-patterns mounted in and extending up through the top of the hollow patterns, pattern-blocks sliding within the hollow patterns and adapted to be forced between the wing-patterns, and a plate below the pattern-frame connected by bars with the pattern-blocks and connected by a strap to a lever mounted on a bar depending from the pattern-frame, substantially as set forth.

13. The combination with a supporting-frame, of a hollow pattern vertically movable therein, and carried by a pattern-frame, wing-patterns, mounted in the hollow pattern and extending up through the top thereof, a pattern-block sliding in the hollow pattern and adapted to be forced between the wing-patterns to hold them in molding position, bars depending from the pattern-frame and having a lever mounted therein, a strap connecting said pattern-block with the lever, and stops on one of said bars depending from the pattern-frame limiting the movement of the lever, substantially as set forth.

14. The combination of a main frame, a vertically-moving pattern-frame mounted therein and carrying a pattern, cam mechanism engaging with said frame and adapted to raise the same and force the pattern into the sand within the flask, a weighted withdrawing-lever connected to said pattern-frame to insure the withdrawal of the pattern from the mold, and a separate cam controlling the movement of said weighted lever, substantially as set forth.

15. The combination of a main frame having a table, a hook on the top thereof, a flask resting on the same, a pattern entering the flask from below, a top confining-plate, a swinging frame adapted to engage with the top confining-plate and having a stirrup engaging with said hook, and a rocker on the table at the end of the flask adapted to direct the same over said hook when the flask is rocked over, substantially as set forth.

16. The combination of a main frame, a table, a flask resting thereon, a pattern entering the flask, a rocker on the table to support the flask as it is rocked over, and a guard-plate adapted to be placed upon the flask and having guiding-lips to hold the flask and guard-plate in line as it is rocked over, substantially as set forth.

17. The combination of a main frame, a vertically-movable pattern carried by a pattern-frame mounted therein, an arm or lever carried by said frame, an operating-shaft controlling the driving mechanism, said shaft having a locking-arm thereon, and a locking-bar with which the arm on the pattern-frame is adapted to contact to cause such locking-bar to engage with the locking-arm on the operating-lever, substantially as set forth.

18. The combination of a main frame, a vertically-movable pattern carried by a pattern-frame mounted therein, an arm or lever carried by said frame, an operating-lever controlling the driving mechanism, said lever having a locking-arm thereon, a locking-bar pivoted on the main frame in the course of the lever on the pattern-frame and having a lip in the course of the locking-arm on the operating-shaft, and a spring holding the locking-lip on said locking-bar out of the course of the locking-arm on the operating-lever, substantially as set forth.

19. The combination with a main frame, a vertically-movable pattern mounted therein operated by power connections, a supplementary pattern on the main pattern, a lever mounted on the pattern-frame and operating the supplementary pattern by the vertical movement of the lever, a shaft controlling the driving mechanism having the locking-arm thereon, and a locking-bar engaging with said locking-arm and extending in the course of the lever carried by the pattern-frame, substantially as set forth.

20. The combination of a main frame, a vertically-movable pattern carried by a pattern-frame mounted therein, an arm or lever carried by said frame, an operating-shaft controlling the driving mechanism, said shaft having a locking-arm thereon, a locking-bar with which the arm on the pattern-frame is adapted to contact, to cause such locking-bar to engage with the locking-arm on the operating-lever, and a spring connected to the locking-bar and holding it normally out of the course of the locking-arm, substantially as set forth.

21. The combination of a main frame, a pattern-frame mounted therein and carrying a pattern, driving mechanism for imparting vertical movement to the pattern-frame, a supplementary pattern mounted in the main pattern and connected to a lever mounted in the pattern-frame, an operating-lever controlling the movement of the driving mechanism and carrying the locking-arm, and two locking-bars extending one above and the other below the lever carried by the pattern-frame and held normally out of the course of the locking-arm on the operating-lever but adapted to be thrown into such course by said lever on the pattern-frame, substantially as set forth.

22. The combination of a main frame having a cam-shaft, a pattern carried by a frame operated by the cam on said shaft, an operating-shaft controlling the driving mechanism, a knocker on the cam-shaft, and a dog carried by the operating-lever extending in the course of the knocker on the cam-shaft, substantially as set forth.

23. The combination of a main frame having a cam-shaft, a pattern carried by a frame operated by the cam on said shaft, an operating-shaft controlling the driving mechanism, a knocker on the cam-shaft, and an arm carried by the operating-shaft, said arm having a movable dog extending in the course of the knocker on the cam-shaft substantially as set forth.

24. The combination of a main frame having a cam-shaft, a pattern carried by the frame operated by the cam on said shaft, an operating-shaft controlling the driving mechanism, a knocker on the cam-shaft an arm carried by the operating-shaft, said arm having a movable dog extending in the course of the knocker on the cam-shaft, and a trigger connected to said dog and adapted to withdraw the same from the course of the knocker, substantially as set forth.

25. The combination of the main frame having a cam-shaft D mounted therein and operating one or more patterns mounted in said frame and carrying the disk R having knockers r thereon, the vertical shaft L′ having the hand-lever L, the arm l' on said shaft L′ having the dog r^2 mounted thereon, and the trigger r^4 mounted on the hand-lever L connected to the dog, and the spring r^3 holding said dog normally in the course of the knockers on the disk, substantially as set forth.

26. The combination of a main frame having a pattern mounted therein, the driving-shaft M, and operating mechanism between the same and the pattern for moving the pattern a power-driven pulley on the driving-shaft, clutch mechanism connecting said shaft and the pulley, the operating-shaft L′ carrying the arm l, the lever N connected to the clutch, the strap N′ connecting said lever and the arm l on the vertical shaft L and knocking mechanism for turning the shaft L′ and freeing the clutch, substantially as set forth.

27. The combination of the main frame having a pattern mounted therein, a cam-shaft D operating said pattern and having knockers thereon, the driving-shaft M turning the cam-shaft, a power-driven pulley on said driving-shaft and clutch mechanism between the shaft and pulley, the operating-shaft L′ connected to the clutch, and a dog carried by the operating-shaft in the course of the knockers on the cam-shaft, substantially as set forth.

28. The combination of a main frame, a pattern therein, a cam-shaft for moving said pattern, a driving-shaft turning the cam-shaft, a power-driven pulley on said driving-shaft, clutch mechanism between the pulley and the shaft, a brake operating on said driving-shaft, and an operating-shaft having connections therefrom to the clutch mechanism and to the brake for applying the clutch and releasing the brake, or vice versa, substantially as set forth.

29. The combination of a main frame, a pattern mounted therein, mechanism for operating the pattern, a driving-shaft connected to said mechanism and carrying a friction-drum, a brake operating on said friction-drum, and an operating-lever controlling the movement of the driving-shaft, and connections from said operating-lever acting to withdraw the brake from the friction-drum, substantially as set forth.

30. The combination of the driving-shaft carrying the friction-drum P′, the weighted brake-bar pivoted in the frame and carrying the brake-shoe p^3, the sliding bar p^4 extending through a guide over the forward end of the brake-bar and having an inclined face thereon for forcing down that end of the brake-bar and so raising the shoe, and the operating-shaft L′ connected to said sliding bar p^4, substantially as set forth.

31. The combination of a main frame having a pattern mounted therein, the cam-shaft operating said pattern and having a knocker thereon, a driving-shaft turning the cam-shaft, clutch mechanism connecting a power-driven pulley with said driving-shaft, braking mechanism operating on said driving-shaft, and an operating-shaft controlling said clutch mechanism and braking mechanism and having a dog in the course of the knocker on the cam-shaft, substantially as set forth.

32. The combination of a series of flasks, each adapted to stand on one of its ends on the molding-floor and in contact with each other, said flasks each having supporting-bearings on only one side of the lower end thereof so as to cause each flask to swing or press against the adjoining flask, substantially as set forth.

33. In combination with the support, a flask having its lower edge of irregular shape, a flask-supporting plate on the support, having its face corresponding to the lower edge of the flask, and a pattern adapted to be forced into the flask.

704,952. METHOD OF FORMING SAND MOLDS. STEPHEN J. ADAMS, Pittsburg, Pa., assignor to Marcellin C. Adams, Pittsburg, Pa. Original application filed May 11, 1894, Serial No. 510,848. Divided and this application filed Feb. 1, 1901. Serial No. 45,591. (No model.)

Claim.—1. The herein-described method of making sand molds having irregular faces on both sides thereof each forming part of the walls of a mold-cavity, which consists in cutting or planing off one side of the sand to an irregular shape corresponding to the face to be formed on that side of the mold, confining the sand in that shape, applying pressure from the opposite side of the mold in such a way as to shape the irregular face on that side of the mold and to compact the mold, and then assembling two or more of such molds face to face to form the mold-cavity.

2. The herein-described method of forming sand molds having faces on both sides thereof each forming part of the walls of a mold-cavity, which consists in filling a flask with sand, then cutting or planing off one surface of said sand to an irregular shape corresponding to the face to be formed on that side of the mold, confining the sand in that shape, and then forcing a pattern from the opposite side of the mold toward the confining means to compact the mold and form the irregular mold-faces upon both sides thereof.

3. The herein-described method of forming sand molds having faces on both sides thereof each forming part of the walls of the mold-cavity, which consists in filling the space within a flask above the stripping-plate and around and above the pattern with sand, then cutting or planing off the top surface of the sand to an irregular shape corresponding to the face to be formed on that side of the mold, confining the sand in that shape and then forcing the pattern and stripping-plate upwardly toward the top confining means to compact the mold and form the irregular mold-faces upon both sides thereof.

704,953. RUBBER-TIRE SETTER. HUGH R. AULD, Boston, Mass., assignor, by mesne assignments, of one-half to John J. McGlinchy, Chelsea, Mass. Filed Oct. 16, 1901. Serial No. 78,847. (No model.)

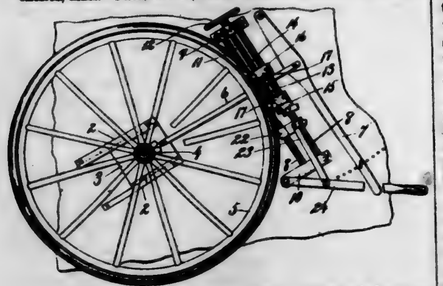

Claim.—1. A rubber-tire setter comprising a pair of guide-bars, two clamps guided and movable along said guide-bars to draw together the ends of the band or wire of the tire, means to move said clamps toward and from each other, an auxiliary clamp independently movable along said guide-bars to tighten said wire, and operating means to so move the said auxiliary clamp.

2. A rubber-tire setter comprising means to hold by one end a plurality of tire-wires, means to draw on the opposite ends of said wires, and a plurality of automatically-acting check-clamps adapted to hold the drawn ends of the individual wires independently of the drawing device.

3. A rubber-tire setter comprising a clamping device to secure the ends of a plurality of bands or wires of the tire, a compound clamping device movable toward and from the first said clamping device and consisting of a plurality of individual clamps provided with means for simultaneously adjusting them to grip the bands or wires, an independently-movable band or wire tightening device, and a plurality of independent automatic cam-clamps adapted to check the bands or wires.

704,954. COIN ALARM AND REGISTERING APPARATUS. ALBERT BARRETT, Kansas City, Mo. Filed Jan. 21, 1902. Serial No. 90,502. (No model.)

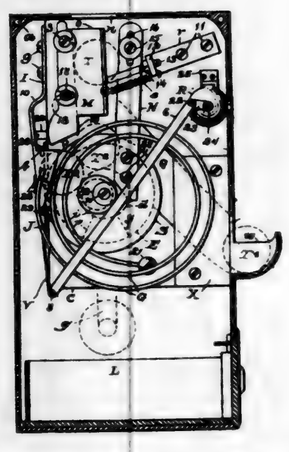

Claim.—1. A coin alarm and registering apparatus, consisting of a box, a coin-chute within the same whose opposite guiding adjustable edges are relatively movable and inclined toward each other at their lower ends, adapted to detain a coin inserted in the chute, a pocket to receive the coin from the chute, a coin-runway from the pocket to a coin-receptacle outside the box, a second coin-passage from the pocket normally obstructed, a gong at the exit of said passage, and means as described for directing the coin from the chute to the pocket and to the external coin-receptacle, or from the chute to the pocket through the second coin-passage and the exit thereof to the gong, as set forth.

2. A coin alarm and registering apparatus, consisting of a box, a coin-slot in a wall of the box adjacent to a coin-chute within the box whose edges are inclined toward each other and are relatively movable, a revolubie pocket provided with abutments, a coin-runway descending from the said pocket to a coin-receptacle outside the box, a second coin-passage normally blocked by a spring, a registering device operated by the said spring, a gong in proximity to the exit of the second coin-passage; with means for retaining a coin within the coin-chute, for causing the same to fall therefrom into said pocket, and for diverting the coin into the runway, or through the second coin-passage and against the gong, as set forth.

3. A coin alarm and registering apparatus, consisting of a box supported upon a base or back board, a coin-slot in a wall of the box opening to a coin-chute within the box, one edge and side of which are formed by a pivoted resilient member, the opposite edge consisting of a movable bar, the two edges normally inclining to each other, a revolubie pocket having abutments, a coin-runway descending from the said pocket to a coin-receptacle outside the walls of the box, a second coin-passage normally blocked by a flat spring, a gong in proximity to the exit of the second coin-passage, a registering device operated by the movement of the said flat spring; with means for retaining a coin within the coin-chute, for causing the same to fall therefrom into said pocket, and for diverting the coin into the runway or through the second coin-passage, and against the gong, as set forth.

4. A coin alarm and registering apparatus, consisting of a box, a block secured within the box adapted to support the operating parts, a drawer or coin-receiver; a coin-slot in the top of the box opening to a coin-chute within the box, the edges of the lower ends of which are inclined toward one another, and relatively movable, a rotative pocket having two abutments secured to a spindle projecting through the front wall of the box and having upon its end a crank-lever, a coin-runway descending from the said pocket to a coin-receptacle outside the box, a second coin-passage normally blocked by a resilient abutment and a spring, a registering device operative by the said spring, a gong in proximity to the exit of the second coin-passage, and an ejecting-lever; whereby when the said crank-lever is rotated in one direction, an inserted coin falls into said pocket and is carried to the said coin-receptacle, and when turned in the opposite direction the coin is carried through the second coin-passage and ejected against the gong, as set forth.

704,955. APPARATUS FOR LOADING ORDNANCE. RALPH T. BRANSTON, Newcastle-upon-Tyne, England, assignor to W. G. Armstrong, Whitworth & Company, Limited, Newcastle-upon-Tyne, England. Filed Jan. 25, 1902. Serial No. 91,233. (No model.)

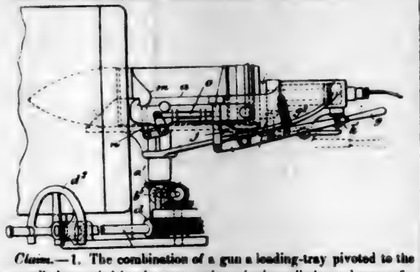

Claim.—1. The combination of a gun a loading-tray pivoted to the gun, a cylinder carried by the tray, a piston in the cylinder and means for admitting fluid to and allowing it to escape from the cylinder.

2. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, and admission and exhaust valves operated by the piston.

3. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston in one direction, and means for admitting fluid to and allowing it to escape from the cylinder.

4. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston in one direction, and admission and exhaust valves operated by the piston.

5. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston toward the rear end of the cylinder, admission and exhaust valves at the rear end of the cylinder, springs tending to close the valves, a stem to the admission-valve projecting into the cylinder in the path of the piston, a stem to the exhaust-valve projecting out of the cylinder, a lever pivoted to the cylinder the rear end of which bears on the stem of the exhaust-valve while its front end lies in the path of the piston, a second lever pivoted to the cylinder and a bolt carried by the second lever and engaging with the piston when in its rearmost position.

6. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, means for admitting fluid to and allowing it to escape from the cylinder, a bolt engaging with the piston when in its rearmost position, mechanism for locking the bolt when in engagement with the piston and means operated by the contact of the tray with the gun for freeing the locking mechanism.

7. The combination of a loading-tray, a cylinder carried by the tray, a piston in the cylinder, a spring tending to move the piston toward the rear end of the cylinder, admission and exhaust valves at the rear end of the cylinder, springs tending to close the valves, a stem to the admission-valve projecting into the cylinder in the path of the piston, a stem to the exhaust-valve projecting out of the cylinder, a lever pivoted to the cylinder the rear end of which bears on the stem of the exhaust-valve while its front end lies in the path of the piston, a second lever pivoted to the cylinder, a bolt carried by the second lever and engaging with the piston when in its rearmost position, mechanism for locking the bolt when in engagement with the piston and means operated by the contact of the tray with the gun for freeing the locking mechanism.

704,956. ELECTRIC GENERATOR. WALTER H. COTTON, Chicago, Ill., assignor of seventeen-twentieths to Harry L. Pock, Philip Hickley, and William P. Owens, Chicago, Ill. Filed Feb. 5, 1902. Serial No. 92,690. (No model.)

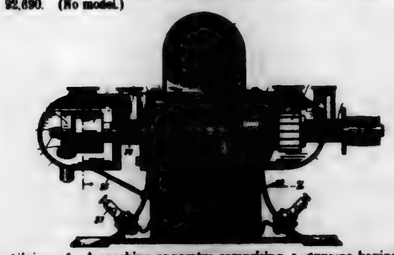

Claim.—1. A sparking apparatus comprising a dynamo having a working circuit through which passes all of the current generated, and a circuit-breaker constructed to break the circuit at periods when the generated current is at maximum potential.

2. In combination with an electric generator and its circuit, a circuit-breaker for opening the generator-circuit at the periods when the current generated is at maximum potential.

3. In an alternating electric generator, in combination, a field-magnet having poles, an armature movable in the magnetic field, a commutator having one of its rings divided into sections, alternate sections being respectively in and out of the armature-circuit, the parts being so disposed relatively that the commutator-brushes pass the division between such sections when the pole-pieces of the armature are at points in the magnetic field of the maximum magnetic force.

4. In a dynamo-electric generator, in combination, a generating-armature, a transformer the primary coil of which is in direct electrical connection with the generating-armature, and means in said connection for cutting out the coils of the generating-armature when the current generated thereby is at its maximum.

5. In a dynamo-electric generator, in combination, a generating-armature, a transformer the primary coil of which is in direct electrical connection with the generating-armature, and a cut-out in said connection for automatically cutting out the coils of the generating-armature when the current generated thereby is at maximum.

6. In a dynamo-electric generator, in combination, a generating-armature, a commutator mounted on and insulated from the armature-shaft and comprising a pair of rings one of which is composed of alternating conducting and non-conducting sections, one of the terminals of the armature being connected to the conducting-sections of the sectional ring and the other terminal to the other ring, a brush bearing on each ring, and a transformer, the primary coil of which is in electrical connection with the commutator-brushes.

7. In a dynamo-electric generator, in combination, a field-magnet, a shaft, an exciting-armature and a generating-armature on the shaft and within the field of the magnet, a transformer, the primary coil of which is in direct electrical connection with the generating-armature, and means in said connection for cutting out the coils of the generating-armature when the current generated thereby is at its maximum and cutting in the same when the current is at its minimum.

8. In a dynamo-electric generator, in combination, a field-magnet, a shaft, an exciting-armature and a generating-armature on the shaft and within the field of the magnet, a transformer, the primary coil of which is in direct electrical connection with the generating-armature, and an automatic cut-out in the connection for cutting out the coils of the generating-armature when the current generated thereby is at its maximum and cutting in the same when the current is at its minimum.

9. In a dynamo-electric generator, in combination, a hollow base, field-magnet pole-pieces extending above the base, a shaft mounted between the pole-pieces, an exciting-armature and a generating-armature fixed on the shaft, and within the common field of the pole-pieces, a transformer located in the hollow base and the primary coil of which is in direct electrical connection with the generating-armature, and a cut-out in the connection for cutting out the coils of the generating-armature when the current generated thereby is at its maximum.

10. In combination with a generator having a single working circuit, means for automatically breaking the circuit at periods when the current generated is at maximum potential.

704,957. BRACKET FOR SUBSIDIARY SHELVING. WILEY G. CROOM, Memphis, Tenn., assignor of one-half to William F. Kean, Memphis, Tenn. Filed Mar. 18, 1902. Serial No. 98,826. (No model.)

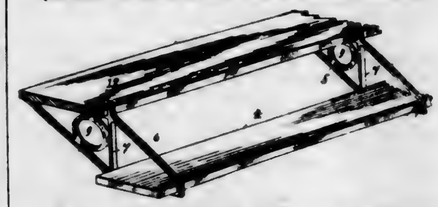

Claim.—A bracket to be used in subsidiary shelving, which consists of a horizontal bar adapted for application to the under side of a stationary or main shelf, provided with a supporting-lug which extends over the upper side of the said shelf, combined with a second horizontal bar situated below and forward of the first, to sustain a subsidiary shelf, angular bars which connect the rear and the forward ends, respectively, of the horizontal bars, and a vertical bar which unites the forward end of the upper horizontal bar with the rear end of the lower one, substantially as specified.

704,958. ROUND-BALE COMPRESS. FRED G. DIETERICH, Washington, D. C. Filed Nov. 20, 1901. Serial No. 84,249. (No model.)

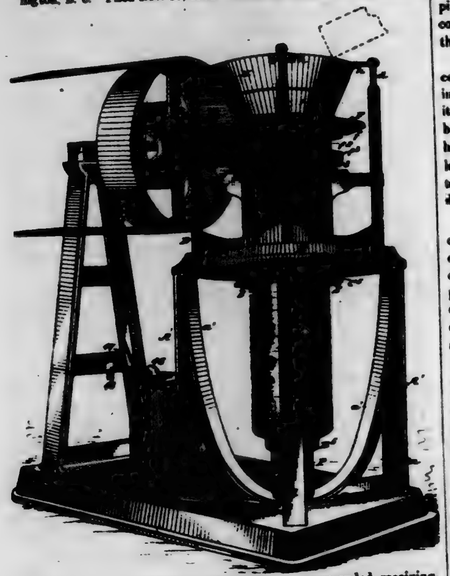

Claim.—1. In a cotton or other press, an open-ended receiving-chamber and a slotted head-plate, in combination with means for reducing the material into a thin bat or sheet, and simultaneously feeding it through the slotted head-plate into the receiving-chamber, and subjecting the same to pressure, said means including a pair of superposed rolls and a support therefor revolvable about the axis of the receiving-chamber, as set forth.

2. In a press of the character described, an open-ended receiving-chamber, a hopper having a radially-slotted bottom, and means mounted on said bottom to first compress the material into a thin sheet, and then feed the sheet through the slotted hopper-bottom, as described.

3. In a press as described, a press-chamber, a slotted head-plate therefor, a bat-forming means carried on the head-plate revolvable about the axis of the press-chamber, comprising superposed rolls and a conveyer for leading the loose material in the direction of the movement of the bat-forming rolls and between their compressing-surfaces, for the purposes described.

4. In a cotton-baling press of the character described, a revolvable hopper, a baling-chamber, a revolvable head in the entrant end of the said chamber, and a bat-forming means, comprising a pair of superposed rolls mounted on the head-plate, and disposed radially relatively to the baling-chamber, and means for imparting opposite rotation to the two rollers as they are horizontally revolved with the head-plate.

5. In a machine for compressing fibrous material, the combination with a slotted head-plate, a hopper over said plate, said hopper including a bottom centrally suspended and having inclined ways leading to the slots in the head-plate for guiding the material thereto.

6. In a machine for compressing fibrous material, substantially as described, the combination of a baling-chamber, a slotted head-plate, revolvable over the entrant end of said chamber, a hopper-section fixedly connected to and revolvable with the head-plate, said hopper including spiral ways inclined downward in the direction of revolution of the hopper and the head, for leading the loose material to the slots.

7. In a cotton or other press, means for reducing the loose material into a bat or sheet, and laying said sheet in spiral superimposed end laps, said means including a pair of superposed rolls, and means for rotating them relatively to each other and revolving both around a central axis, as set forth.

8. In a machine for compressing fibrous or other material, the combination with a receiving-chamber, and means for reducing the material to a bat, operative over the chamber, and adapted to lay the bat in superimposed layers therein; of an independently-supported hopper, and an independently-supported bottom therefor having guideways for leading the material to the bat-forming means, for the purposes specified.

9. In a machine for compressing fibrous material, the combination with a receiving-chamber for the compressed material; of a hopper revolubly over the entrant end of the receiving-chamber, said hopper having a slotted head-plate movable therewith, and a supplemental bottom pivotally mounted on the hopper, and having portions for directing and concentrating the fibrous material toward the slots in the head-plate, for the purposes specified.

10. In a press of the character described, in combination with a receiving-chamber, and means for feeding the material in superimposed laps into said chamber, said chamber having an annular surface surrounding its discharge end; of a series of combined severing and sustaining members pivotally mounted on the annular surface, adapted to sweep in a horizontal plane and penetrate the column at a point in line with the lower edge of the receiving-chamber, and means for imparting motion to said severing members, substantially as shown and for the purposes described.

11. In a machine of the character described, a severing mechanism, comprising in combination with the discharge end of the bale-receiving chamber; said chamber having an annular flange surrounding the discharge end, radially-disposed combined cutter and sustaining members pivotally mounted on the annular flange to sweep across the discharge end of the receiving-chamber, and a lever mechanism, rotatably mounted on the annular flange of the said chamber joined with the cutter-arms, and adapted to impart sweep movements thereto in unison, as set forth.

12. In a machine for compressing fibrous material, the combination with the stationary receiving-chamber, and the rotatable hopper-section, said section including the slotted head-plate or flotment; of the radially-disposed compressing-rolls mounted on the head-plate, and adapted to discharge the compressed bat or sheet into the slots of the head-plate, and an independently centrally supported hopper-bottom, having a separate guideway or incline for each set of rolls, adapted to lead the material to said rolls in independent batts, and mechanism for revolving the hopper with the bat-forming rolls about the axial center of the receiving-chamber and rotating the bat-forming rolls on their own axes, substantially as shown and described.

13. The combination with the stationary receiving-chamber C, having an annular cog-rim c^3, and radial roller-supports, the frame F revolvable over the upper end of the chamber C, having a pendent flange, adapted to rest and rotate upon the radial roller-supports, said frame F having a slotted bottom or head-plate, superposed compressing-rollers coöperating with the slots and adapted to reduce the material to a bat or sheet prior to its passage through the slots, and to feed said sheet or bat into the slots, the gear g, and drive-shaft for imparting rotation to the frame F, substantially as and for the purpose described.

14. The combination with the chamber C, and the fixedly-held hopper; of a supplemental hopper held between the fixed hopper and the entrant end of the chamber C, said hopper including a slotted bottom for opposing the entrant end of the chamber C, over which it has a radial sweep, bat-forming rolls mounted on said bottom to move therewith, means for imparting a rotary motion to the rolls as they move around with the hopper and a supplemental bottom loosely supported in the hopper to revolve therewith, said supplemental bottom having independent guideways inclined downwardly to the entrant edges of the bat-forming rolls, all being arranged substantially as shown and for the purposes described.

15. The combination with the receiving-chamber and the independently-supported hopper, having a radially-slotted bottom, and means for rotating the hopper about the axial center of the receiving-chamber; of a hopper-bottom loosely held on the hopper, means for pivotally supporting said hopper over the axial center of the head-plate, said bottom having independent guideways, leading toward the slots in the head-plate, as specified.

704,959. PAINT. GEORGE W. DOERR, Dover, Me., and ALLAN J. DOERR, Greene, Iowa; said Allan J. Doerr assignor to said George W. Doerr. Filed Feb. 27, 1901. Serial No. 49,073. (No specimens.)

Claim.—1. A paint compound having the ingredients and proportions substantially as follows, coal-tar fifty-two gallons, gasoline ten gallons, cement ten pounds, graphite five pounds, sodium chlorid five pounds, and sodium carbonate, two and one-half pounds.

2. The method of forming a paint compound, which consists in thoroughly mixing fifty-two gallons of coal-tar with ten gallons of gasoline, and then thoroughly mixing into the coal-tar and gasoline successively, ten pounds of cement, five pounds of graphite, five pounds of sodium chlorid and two and one-half pounds of sodium carbonate.

704,960. ROTARY CUTTER. JOEL ETTINGER, Chester, Pa., assignor to the Ettinger Machine Company, Limited, Chester, Pa., a Partnership. Filed Oct. 5, 1900. Serial No. 32,161. (No model.)

Claim.—1. A cutter-head comprising two members, one of which is provided with devices for securing one of the cutters in place, and the other of which is provided with independent devices for securing the other cutter in place, means for adjusting one member of the cutter-head toward and from the other, a circular cutter-disk arranged concentric with the axis of one member of the cutter-head formed integrally with a series of teeth on its periphery and directly secured to this member of the cutter-head, a similar circular cutter-disk arranged concentric with the axis of the other member of the cutter-head formed with a series of teeth on its periphery and connected directly to said other member of the cutter-head.

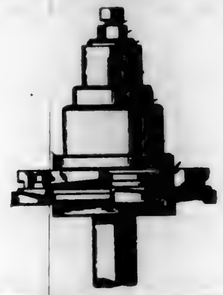

2. The combination of an expansible cutter-head and two opposing cutters, each comprising a disk formed integrally with a series of teeth on its periphery and each disk being arranged concentric with the axis of the cutter-head and movable toward and from each other coincidently with the movement of the two members of the cutter-head, said disks being also formed with projections which interlock, substantially as described.

3. The combination of a cutter-head member having a flanged screw-threaded portion, a circular cutter secured to such threaded portion, a second cutter-head member having a tapered flange, a circular cutter provided with a series of teeth on its periphery and having a tapered opening fitting the tapered flange, a clamping-collar for holding the cutter on the tapered flange, and means for adjusting the cutter-head members to move the cutters toward and from each other.

4. The combination of a cutter-head member consisting of a sleeve having a flanged end to receive a cutter, a second cutter-head member surrounding the sleeve of the first member and having a flanged end to receive another cutter, a screw-collar for clamping the cutter on the outer member of the cutter-head, a bolt extending through a threaded hole in the outer member of the cutter and through a slot in the sleeve of the inner member, a nut engaging a screw-threaded portion of the sleeve of the inner member of the cutter head, and connections between the nut and the outer member of the cutter-head.

5. The combination of a pair of cutters provided with teeth on their peripheries which interlock and which are provided with flanges to guard or cover the openings otherwise left between the body portions of the cutters.

704,961. GLOVE. STEPHEN M. GRIFFITHS, Philadelphia, Pa., assignor of one-half to Charles Pierson, Bala, Pa. Filed Mar. 7, 1902. Serial No. 97,042. (No model.)

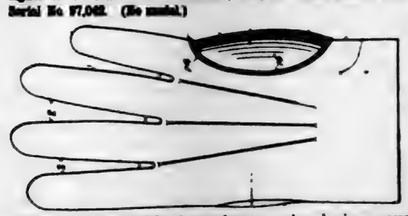

Claim.—1. As an article of manufacture, a glove having a gusset inserted in the edge thereof, opposite the thumb, and a rib formed around said gusset.

2. As an article of manufacture, a glove having a laterally-expanded gusset inserted in the edge of the glove, opposite the thumb, extending from adjacent the base of the little finger beyond the inner termination of the wrist slit or placket, and having an outwardly-extending rib formed at the meeting edges of the gusset and glove-body.

3. As an article of manufacture, a glove having a gusset formed in one edge thereof opposite the thumb, the seam between said gusset and glove forming a rib around the same.

4. As an article of manufacture, a glove having a gusset formed in one edge thereof, and an outwardly-turned seam around said gusset formed by the edges of said gusset and said glove being brought together.

5. As an article of manufacture, a glove, having a cut-away portion, and a gusset having a transverse fullness covering said cut-away portion, the meeting edges of said gusset and glove extending outwardly upon the outside surface of the glove, forming a rib.

6. As an article of manufacture, a glove having a portion of its edge opposite the thumb cut away, a gusset having a transverse fullness covering said opening, and a rib around said gusset, formed by the meeting edges of said gusset and glove extending outwardly from the surface of the glove.

7. As an article of manufacture, a glove having a gusset inserted in the edges thereof opposite the thumb, and extending inwardly from said edge on the palm and back of the glove, and a rib around the gusset.

8. As an article of manufacture, a glove having a rib extending from adjacent the base of the little finger and inwardly on the palm and back of said glove, and returning to the edge of said glove at a point beyond the inner termination of the wrist slit or placket.

704,962. GUN-BARREL. CLARENCE J. HAMILTON, Plymouth, Mich., assignor to C. J. Hamilton & Son, Plymouth, Mich., a Copartnership. Original application filed May 13, 1901, Serial No. 60,997. Divided and this application filed Jan. 8, 1902. Serial No. 88,895. (No model.)

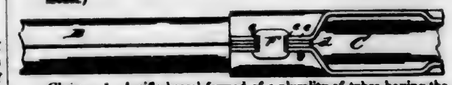

Claim.—1. A rifle-barrel formed of a plurality of tubes having the rear portion of one outset at the seam and a key for locking the outset edges, substantially as described.

2. The combination of the rifle-barrel formed of a plurality of tubes, one of said tubes provided with outset edges at the breech, the receiver provided with similar outset edges and means for engaging the rifle-barrel and receiver through the said edges, substantially as described.

3. A rifle-barrel formed of a plurality of tubes, one of said tubes having outset edges at the breech, said outset edges provided with a keyway and a key swaged in said keyway, substantially as described.

4. In gun construction, the combination of the barrel provided with the holding-rib at the rear, the receiver provided with outset edges, and means for locking the rib and edges together, substantially as described.

5. In gun construction, the inner barrel, the outer covering for the barrel formed from sheet metal with an open seam and means for clamping the covering to the barrel, substantially as described.

704,963. POULTRY-PERCH. ORRIAN L. HARMON, Bells Center, Ohio, assignor to Medicated Poultry Perch Company, Bells Center, Ohio. Filed June 24, 1901. Serial No. 65,963. (No model.)

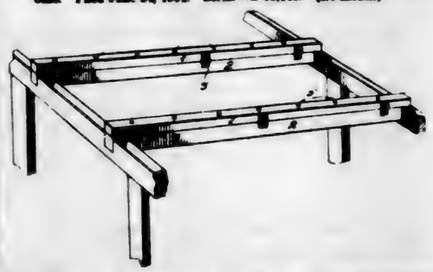

Claim.—1. A poultry-perch consisting of a hollow closed-ended structure composed of two parts hinged together, one of the parts being provided with perforations communicating with the interior of the perch.

2. A poultry-perch consisting of a hollow closed-ended structure composed of two parts hinged together and to contain a suitable insecticide in bulk, one of the parts being provided with perforations communicating with the interior of the perch, and fastening means for holding the parts assembled.

704,964. ANGLE-COCK. JAMES A. HELM, Newark, Ohio, assignor of one-half to Adam C. Wagner, Newark, Ohio. Filed Sept. 23, 1900. Serial No. 30,561. (No model.)

Claim.—1. In apparatus of the character described, the angle-cock having its plug provided with a return air-port and a by-pass adapted to communicate with a tortuous lateral channel or passage in the plug closure or casting, in turn communicating with a return-passage also in said plug closure or casting and a pipe adapted to connect with said return-

air-passage, said return air-port also communicating with said return air-passage, substantially as set forth.

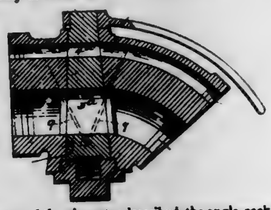

2. In apparatus of the character described, the angle-cock casting or closure having lateral passages or channels jointly of V shape, the angle-cock plug having a by-pass with its horizontal portion below the lower port of said plug and one extremity adapted to communicate with the apex of said lateral V-shaped channels communicating with a return air-passage in said plug-casting, and means connecting said return-passage to a signaling device in the engine-cab, substantially as set forth.

3. In apparatus of the character described, the angle-cock comprising a casting having a lateral V-shaped channel and a return air-passage, a plug having two ports, one adapted to communicate with said return air-passage, and a by-pass adapted to engage with said V-shaped channel, a pipe connecting said return-passage to a signaling device in the engine-cab, and a valve arranged in said return air-passage, under the angle-cock-plug lever, substantially as set forth.

4. In apparatus of the character described, the combination of an angle-cock having its casting or closure provided with a lateral passage and a return air-passage communicating with said lateral passage said angle-cock having its plug provided with a by-pass having vertical arms terminating in lateral extensions at their upper ends, communicating with the train brake-pipe, and with said lateral passage said plug also having a port communicating with said air-return passage, substantially as set forth.

5. In apparatus of the character described, the angle-cock having its plug provided with by-passes, with one arm of each adapted to communicate with the main air-passage of the train-pipe, said plug having its closure provided with circuitous passages or channels adapted to connect at a common point with said by-passes and with a return-passage in the plug-closure, substantially as set forth.

704,965. CAR CONSTRUCTION. HENRY C. HODGES and GUSTAVE A. BLUME, Detroit, Mich.; said Blume assignor to said Hodges. Filed May 4, 1901. Serial No. 58,701. (No model.)

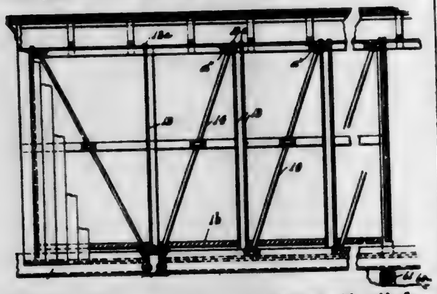

Claim.—1. In a frame for a car, in combination with a side floor-sill provided with a vertical web and a horizontal flange extending from the bottom of the web, pockets resting on the flange and secured to the sill, tubular compression members forming part of a truss-work, a top chord to said truss-work and tie-rods uniting the chord and the sill, substantially as described.

2. A car-framing having in combination center sills, metallic side sills provided with horizontal projecting flanges and vertical webs, pockets resting on the flange of said side sills adapted to receive the lower ends of tubular compression members, tubular compression members engaging in said pockets, and tie-rods engaging the sills and top chords and forming a completed metallic truss-work, substantially as described.

3. In car construction, in combination with center sills, and side sills provided with vertical webs and horizontally-projecting flanges, pocket-abutments secured above the flange and at the sides of the vertical web adapted to receive the ends of the tubular metallic compression members, tubular compression members forming part of a truss-work and tie-rods uniting the sills and top chords of said truss-work, substantially as described.

4. In car construction, the combination of a side sill provided with a vertical web, and a horizontal projecting flange, abutment-pockets secured with a side bearing on the web and under bearing on the flange and adapted to receive tubular compression members, tubular compression members of a truss-work engaging in said abutment-pockets, a top chord to said truss-work and tie-rods uniting the side sill and the chord, substantially as described.

5. In a composite car, in combination with a metallic side sill provided with a vertical web and a horizontal flange, a metallic truss-work composed of tubular compression members and tie-rods, and having an under bearing on the flange and a side bearing against the web of said sill, and a damper-timber extending in contact with the truss members and between the top and the bottom ends thereof and arranged to receive the truss members and having gains in said damper-timber, substantially as described.

6. In a composite car, in combination with a Z-shaped side bar arranged with its web vertical its upper flange directed toward the middle line of the car its lower flange directed outward, a truss-work bearing on the lower flange, a nailing-strip secured to the upper flange of the Z-bar inside the truss-work, substantially as described.

7. In a composite car, an abutment-pocket having in combination a part arranged to engage in the angle of a flanged sill, and a part arranged to engage at the side of and to partly overlap the first part, the two parts being concaved to form a pocket for a compression member and bored with registering holes to allow a tension member to engage through both parts, substantially as described.

8. In composite-car construction, an abutment-pocket arranged to receive the end of a compression member, against a shoulder therein and to receive the end of a tension member which traverses both pieces thereof, substantially as described.

9. In car construction, the combination of side beams of a Z form having one flange of the beam turned inward to support the floor and one flange of the beam turned outward to support abutment-pieces for a truss superstructure, a truss-work of tie-rods and tubular compression members, and abutment-pieces arranged to engage the compression members and support the end thrust thereof and to engage the tie-rods through perforations therein, substantially as described.

10. In car construction, the combination of a side sill of metal, a truss superstructure extending from each end of the car inward, the sill and top chord of said truss crossing the opening between the ends of the truss-work and a tie-plate located under said opening and fortifying the sill at said location, substantially as described.

11. In car construction, the combination of a side beam of metal, a metallic truss superstructure and abutments engaged against the vertical web of the beam, and bearing against a horizontal flange of the beam arranged to be tied by tension members, and provided with abutments to receive the ends of compression members, substantially as described.

12. In a composite car, the combination with side sills with projecting horizontal flanges in the substructure, angle-beams forming the top chord of the superstructure, a truss uniting the sill and the top chord and supported on the flange, an intermediate longitudinal beam of wood provided with gains in which the upright members engage and with binding-blocks set in the gains over the vertical members, substantially as described.

13. In a composite car, the combination with a metallic truss superstructure, a longitudinal beam of wood between the top and the bottom ends of the truss forming a damper, and having gains in which to engage and clamp the vertical members, substantially as described.

14. In car construction, in combination with top and bottom chords each of which has a vertical web and a horizontally-extending flange, compression members of tubular shape and means for securing the compression members to both the web and flange, substantially as described.

15. In car construction, in combination with side sills and top chord a truss-work having tubular compression members and metallic tension members, substantially as described.

704,966. MEANS FOR AUTOMATICALLY INDICATING CHANGES IN TEMPERATURE. RICHARD KETTS, Whangarei, New Zealand, assignor to Charles Ernest Randolph Mackesy, The Hill, Whangarei, Auckland, New Zealand. Filed May 20, 1902. Serial No. 108,280. (No model.)

Claim.—1. In means for indicating a change in temperature, a bell provided with a spring-actuated tongue, a collar upon a sliding spindle engaging with and holding the tongue from movement, and a capsule upon the end of the spindle composed of flexible walls and containing a fluid of a nature such that it will expand and contract when subjected to heat and cold, as herein specified.

2. In means for indicating a change in temperature, a bell provided with a spring-actuated tongue and mounted upon a suitable base secured to a frame by means of which it may be fixed in any desired position, a collar upon a spring-sliding spindle engaging with and holding the tongue, a capsule composed of flexible walls and containing a fluid susceptible to expansion and contraction by heat and cold which is secured to the end of the sliding spindle, and a regulating-screw within the frame, the end of which bears against the other side of the capsule, as herein set forth.

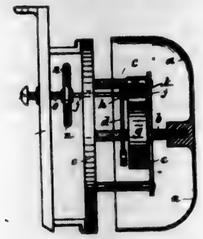

704,967. ACETYLENE-GAS GENERATOR. FRED L. KINCAID, Stockton, Cal., assignor to Pacific Acetylene Gas Company, San Francisco, Cal., a Corporation of California. Filed Nov. 2, 1898. Renewed Mar. 3, 1902. Serial No. 96,577. (No model.)

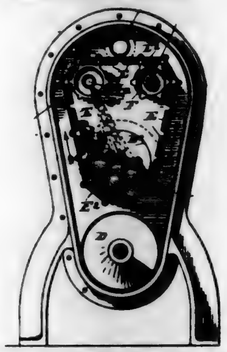

Claim.—1. A gas apparatus comprising a generator, a rotary shaft therein having suitable driving-wheels, a spray-pipe running parallel with said shaft in the generator and carrying driven wheels, a carrier composed of hinged slats hung on the driving and the driven wheels, and means to rotate said shaft, substantially as described.

2. A gas apparatus comprising a generator, a traveling carbid-carrier composed of hinged slats suspended at a suitable height therein, a spray device arranged to throw water upon the live carbid in the carrier, and a screw conveyor located beneath the carrier and adapted to remove from the generator the slaked carbid that falls through the spaces between the hinged slats of the carrier, substantially as described.

3. A gas apparatus comprising a generator, shafts placed parallel therein, sprocket-wheels fast on one of said shafts, sprocket-wheels loose on the other one of said shafts, a carbid-carrier composed of flexibly-connected slats hung on said sprocket-wheels, a gasometer, a pawl-and-ratchet mechanism connected with the shaft that carries the fixed sprocket-wheels, and connections between the gasometer and the pawl-and-ratchet mechanism whereby the latter is operated and the carrier turned while the gasometer moves, substantially as described.

4. A gas apparatus comprising a generator, a rotary shaft and a spray-pipe placed parallel therein, sprocket-wheels fast on said rotary shaft, sprocket-wheels loose on said spray-pipe, a carbid-carrier composed of flexibly-connected slats hung on said sprocket-wheels, a gasometer, a ratchet-wheel and pawl adapted to turn the rotary shaft, a water-cock controlling the flow of water to the spray-pipe, a lever arranged to work both the pawl and the water-cock, and means, such as a rod, to swing said lever through the rise and fall of the gasometer, substantially as described.

5. In a gas apparatus, the combination of a generator-casing, a shaft therein having driving-wheels, a spray-pipe parallel with said shaft and carrying driven wheels, a flexible carrier hung on said wheels, and means for operating said shaft, substantially as described.

704,968. HEADER FOR SECTIONAL STEAM-GENERATORS. JAMES H. ROSENTHAL, London, England, assignor to The Babcock & Wilcox Company, New York, N. Y. Filed Dec. 12, 1901. Serial No. 86,578. (No model.)

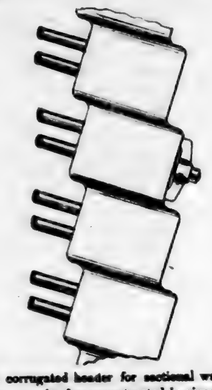

Claim.—A corrugated header for sectional water-tube steam-generators having its opposite faces constructed in zigzag or stepped form at each corrugation with surfaces at right angle with the line of the axis of the connected water-tubes, as set forth.

704,969. CRUPPER-DOCK-FORMING MACHINE. CHARLES H. RUDGE, Newark, N. J., assignor of one-half to Arthur E. Rudge, Newark, N. J. Filed Jan. 21, 1902. Serial No. 90,651. (No model.)

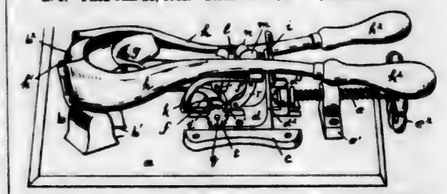

Claim.—1. A machine for bending crupper-docks, comprising a stationary member *b*, concaved in plan and adapted to fit against one side of the crupper-dock, a sliding member convexly curved in plan, and adapted to lie against the other side of the crupper-dock, means for forcing said sliding member toward the stationary member to grip a crupper-dock, and bending-levers pivoted at opposite ends of said stationary member to swing in horizontal plane.

2. The herein-described machine for bending crupper-docks, comprising adjustable clamping members concaved at their faces to grasp the crupper-dock and curved in plan to conform to its ultimate shape, said members being adapted to grasp a crupper-dock at its middle, and bending-levers pivoted at the ends of one of said members to swing in horizontal plane, and being adapted to bend the crupper-dock around the other member.

3. In a machine for bending crupper-docks, the combination of two curved clamping members adjustable in relation to each other, the one at the inner ends of the curve being extended rearwardly at its ends to constitute a former around which the crupper-dock may be bent, bending-levers pivoted at the ends of the outer clamping members adapted to swing in horizontal plane, and tilting gripping means adapted to grasp the ends of the crupper-dock, when brought together by the said forming means, and bend them out of the plane of the main portion of the crupper-dock.

4. In a machine for bending crupper-docks, the combination of a former having a side or face vertically concaved to fit a crupper-dock and being curved in plan to shape said crupper-dock, a clamping member having a similarly-concaved face adapted to coöperate with the former in gripping a crupper-dock, and clamping-levers pivoted to opposite ends of said clamping member and adapted to close around the former to press the crupper-dock thereagainst.

5. In a machine for bending crupper-docks, the combination of a former shaped in plan to give proper form to a crupper-dock and being vertically concaved at its edges to receive the crupper-dock, of curved bending-levers adapted to swing in the plane of the said former and close thereabout and a supporting member to which said bending-levers are pivoted.

6. The combination with the stationery member *b*, and bending-lever pivoted thereto, of a member *d*, adapted to slide toward and away from said stationery member and providing a former, and a screw for moving said sliding member.

7. The combination with the gripping members *b*, *d*, one comprising a former around which a crupper-dock may be bent, and bending-levers, of pivotal clamping-plates adapted to grasp the ends of the crupper-dock when brought together one of said plates providing a curved surface next to the crupper-dock and means for tilting said clamping-plates.

8. The combination with the gripping members *b*, *d*, one comprising a former around which the crupper-dock may be bent, of a pivotal plate at the rear of said former presenting a curved surface adapted to lie at one side of the plane of said bending, means for clamping the ends of the crupper-dock to said pivoted plate and means for tilting said plate and clamping means.

9. The combination of members *b*, *d*, adapted to grip a crupper-dock at its middle one of said members, constituting a former, bending-levers pivoted clamping means adapted to grasp the ends of the crupper-dock when bent, curved lips on said clamping means adapted to lie at one side of the plane of the crupper-dock, and means for tilting said pivoted clamping means, whereby the ends of the crupper-dock may be bent over the said curved lips.

704,970. SLACK-ADJUSTER. WILLIAM H. SARVAGE, Denver, Colo., assignor to Chrustus A. Tripp, Salt Lake City, Utah. Filed Oct 26, 1901. Serial No. 79,960. (No model.)

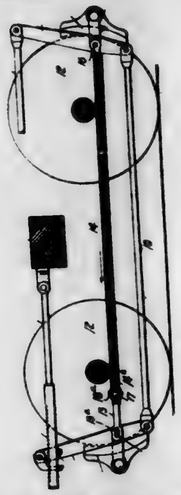

Claim.—1. The combination with brake mechanism, of means for automatically retaining the brake-shoes at a predetermined distance from the car-wheels, said means comprising a two-part frictionally-held connection between the brake-beams, a ratchet-bar mounted on a relatively stationary part of the car, and a dog mounted on the dead track-lever and engaging the teeth of the ratchet-bar, the arrangement being such that as the brakes are released, the dead track-lever is actuated to compensate for the limit of movement of the live track-lever, the dog engaging the ratchet-bar to hold the dead track-lever in the adjusted position.

2. In a slack-adjuster, the combination with a brake mechanism, of a two-part frictionally-held connection between the brake-beams, a ratchet-bar mounted on a relatively stationary part of the car and slotted to receive the dead track-lever which passes upwardly therethrough, and a dog mounted on the upper extremity of the said lever and adapted to engage the teeth of the ratchet-bar.

3. In an apparatus of the class described, the combination with brake mechanism, of a two-part frictionally-held connection between the brake-beams, a ratchet-bar mounted on a relatively stationary part of the car, and slotted to receive the dead track-lever which passes upwardly therethrough, a dog mounted on the upper extremity of the said lever and engaging the teeth of the ratchet-bar, the dog being provided with a pin projecting downwardly through the slot of the ratchet-bar, and a device attached to said pin below the bar to prevent displacement of the dog.

4. In a slack-adjuster for car-brakes, the combination with brake mechanism, of a two-part frictionally-held connection between the brake-beams, a ratchet-bar mounted on a relatively stationary part of the car and slotted to receive the dead track-lever which passes upwardly therethrough, the lever being provided with an antifrictional support for the ratchet-bar, and a dog mounted on the upper extremity of the said lever and adapted to engage the teeth of the ratchet-bar, substantially as described.

5. In a slack-adjuster, the combination with brake mechanism, of a two-part frictionally-held connection between the brake-beams, a ratchet-bar mounted on a relatively stationary part of the car and slotted to receive the dead track-lever which passes upwardly therethrough, a dog mounted on the upper extremity of the said lever and adapted to engage the teeth of the ratchet-bar, and means mounted on a relatively stationary part of the car, and engaging the levers of the air-brake system, to facilitate the prompt release of the brake-shoes and the necessary adjustment of the track-levers, to compensate for the changed relation of the parts incident to taking up the slack during the brake-setting operation.

704,971. FLUME-GATE. EPHRAIM CAMPBELL, Redlands, Cal. Filed Nov. 19, 1901. Serial No. 82,896. (No model.)

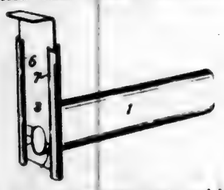

Claim.—1. A flume-gate comprising a tube oval in cross-section; a gate-holder fastened to the tube near the end thereof; and a gate held by said holder and sliding across the end of the tube and furnished in its lower end with a notch.

2. A plate having inbent edges and a perforation between said edges; a tube inserted through the perforation and fastened to the plate and terminating in a plane near the plane in which the inbent edges lie and being beyond the plate; and a sliding gate fitting between said tube end and said inbent edges.

3. A flume-gate comprising a perforated plate having inbent edges; a flattened tube fastened to the plate and extending through the perforation and terminating in a plane near the plane in which the inbent edges lie: the greater diameter of the tube extending lengthwise between said edges; and a sliding gate fitting between said inbent edges and the end of the tube, the lower end of said gate being notched to correspond with the opening through the tube.

4. A flume-gate comprising a tube to extend through a flume-wall, and a gate-holder fastened to the tube at a distance from the end thereof and extending beyond the end of said tube and terminating in two edges which lie in a plane that extends near the plane of the end of the tube; and a gate fitting against the end of the tube on the one side and against said edges on the other side.

704,972. TEMPERATURE-PRESERVING BOTTLE-COVER. FREDERICK T. GRIFFITH, Los Angeles, Cal. Filed July 5, 1901. Serial No. 67,240. (No model.)

Claim.—1. A bottle cover or casing comprising a cup-shaped body or lower portion, a pair of oppositely-arranged portions constituting the neck of the casing when together hinged to the top of the body upon opposite sides, and a removable cap adapted to cover and surround the upper ends of said portions when together.

2. A bottle cover or case, lined with a heat-non-conducting material and comprising a lower cup-shaped body a pair of portions constituting the neck of the case hinged upon opposite sides of the body and provided with flanges upon their lower edges to lap over the upper edge of the body, catches to hold the portions together, and a cap to fit over the upper ends of the portions.

3. A bottle cover or case, comprising a lower portion or body provided with a handle, a neck formed in two equal portions each of which are hinged upon opposite sides of the body and adapted to swing outward to admit a bottle to the body, said portions being provided with tongue-and-groove edges, catches to hold the portions together, and a cap to fit over them when together.

704,973. GARMENT-CLASP. SAMUEL KATZ, Des Moines, Iowa. Filed Feb. 3, 1902. Serial No. 92,265. (No model.)

Claim.—1. The garment-clasp, comprising a clasp-body made of spring metal doubled upon itself to form an eye and having its arms of approximately equal length and width extended from the eye in contiguity with each other, said arms curved in opposite directions and one of them offset near its central portion, one of the spring-arms of the clasp-body being formed with an aperture near its extremity, a stud on the opposite spring-arm arranged for traversing said aperture, which stud is of conical form with a rounded apex, a clamp slidingly mounted on the spring-arms and arranged to compress said arms in a forward movement of the clamp and a spring-tongue fixed to one face of one of the spring-arms and extended toward the opposite arm when the device is open, the end of said spring-tongue being back of and below the apex of said stud, said spring-tongue serving as an abutment to limit the entrance of a garment or fabric between the spring-arms.

2. The garment-clasp, comprising a clasp-body made of spring metal doubled upon itself to form an eye and having its arms of approximately equal length and width extended from the eye in contiguity with each other, said arms curved in opposite directions and one of them offset near its central portion, one of the spring-arms of the clasp-body being formed with an aperture near its extremity, an eyelet mounted for diametrical movement in said aperture, a stud on the opposite spring-arm arranged for traversing said opening of said eyelet, which stud is of conical form with a rounded apex, a clamp slidingly mounted on the spring-arms and arranged to compress said arms in a forward movement of the clamp and a spring-tongue fixed to one face of one of the spring-arms and extended toward the opposite arm when the device is open, the end of said spring-tongue being back of and below the apex of the stud, said spring-tongue serving as an abutment to limit the entrance of a garment or fabric between the spring-arms.

3. In a device of the class described, a spring-arm, an eyelet mounted for diametrical movement therein, another spring-arm, a stud mounted thereon and arranged to traverse the opening of said eyelet, and means for compressing said spring-arms together.

704,974. AUTOMATIC MAGNETIC CIRCUIT-BREAKER. WILLIAM M. SCOTT, Philadelphia, Pa., assignor to Cutter Electrical & Manufacturing Company, a Corporation of New Jersey. Original application filed Feb. 23, 1900, Serial No. 6,179. Divided and this application filed June 20, 1902. Serial No. 112,466. (No model.)

Claim.—1. The combination with a base, of a main terminal, a second main terminal vertically above said terminal, a laminated bridge member pivotally secured to the base and rotatably movable to and away from the main terminals in a plane parallel to a plane including said fixed terminals, and an actuating member having power-multiplying connection between the base and the laminated member.

2. The combination of a base, main fixed terminals in a vertical plane located thereon, a laminated bridge pivotally secured to said base, and having a rotatable movement to and away from the fixed terminals in a plane parallel to a plane including said fixed terminals, and an actuating member pivotally secured to the base and a power-multiplying connection with the laminated bridge.

3. In an electric switch, the combination of a base, main fixed terminals located thereon, one vertically above the other, and a laminated member pivotally secured to the base and rotatably movable in a plane parallel to a plane embracing or passing through the fixed terminals, to and away from said fixed terminals, and an actuating member having power-multiplying connection with the laminating member.

4. In an electric switch, a base, main fixed terminals located thereon, one vertically above the other, a laminated member pivotally secured to the base and having rotatable movement in a plane parallel to a plane embracing or passing through the fixed terminals to and away from the fixed terminals, and an actuating member pivotally secured to the base and a power-multiplying connection with the laminated member.

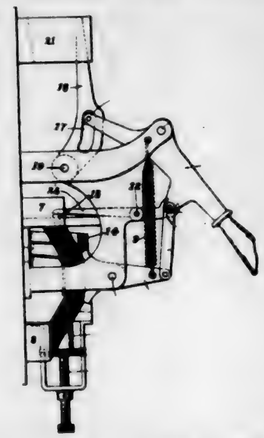

5. In an electric switch, the combination of a base, main fixed terminals located thereon, one vertically above the other, a movable laminated bridge coöperating with said terminals and pivotally secured to said base, a manually-operative actuating member, a toggle connection between said member and the bridge, spring means for actuating the bridge, latching means for normally restraining the switch in closed position and automatic magnetic means for actuating the restraining means.

6. In an electric switch, the combination of a base, main fixed terminals located thereon, one vertically above the other, the engaging face of one terminal being in a vertical plane, and the engaging face of the other terminal in a horizontal plane, a laminated bridging member pivoted to the base, an actuating member and toggle-lever connection between said actuating member and the bridging member.

7. In an electric switch, the combination of main fixed terminals, one vertically above the other, the engaging face of one terminal being in a vertical plane and the engaging face of the other terminal being in a horizontal plane, and a bridging member for said terminals.

8. In an electric switch, the combination of main fixed terminals, one terminal having its engaging face in a vertical plane, and the other terminal having its engaging face in a horizontal plane, and a bridging member for said terminals.

9. In an electric switch, the combination of main fixed terminals, one terminal having its engaging face in a vertical plane and the other terminal having its engaging face in a horizontal plane, a bridging member for said terminals, and supplemental contacts in shunt to said fixed terminals.

10. In an electric switch, the combination of main terminals, one vertically above the other, a laminated member for bridging said terminals pivoted to the base, an actuating member connected to said bridging member by means of toggle-levers a latch engaging with one of said toggle-levers, and electroresponsive means for operating the latch.

11. In an electric switch, the combination of main contact-blocks, one vertically above the other, a laminated member for bridging said blocks pivoted to the base, an actuating member connected to said bridging member by means of toggle-levers, a latch engaging with one of said toggle-levers, an electroresponsive means for operating the latch and shunt-contacts vertically above the main contacts also released by said electroresponsive means.

12. An electric switch comprising stationary contact-blocks in vertical alinement, a supporting-base therefor, a laminated member engaging with its beveled ends upon said blocks, a supporting-arm pivoted to said base and attached to the laminated member at substantially its middle, and an actuating-lever pivoted to the base and having operative connection with said supporting-arm.

13. In an automatic magnetic circuit-breaker, in combination with a base, stationary main terminals mounted thereon in vertical alinement and shunt-terminals mounted on said base above the main terminals, a laminated contact member pivoted to said base and movable in a vertical plane to and away from said main terminals, a movable shunt contact member, a toggle for operating the main contact member, means for locking the circuit-breaker in closed position, and a tripping device controlled by electroresponsive means.

14. In an automatic magnetic circuit-breaker, in combination with a base of stationary main terminals thereon in vertical alinement, and shunt-terminals mounted on said base above the main terminals, a laminated contact member pivoted to said base and movable in a vertical plane to and away from said main terminals, a movable shunt contact member, a toggle for operating the main contact member, means for operating the toggle and shunt contact member, means for locking the breaker in closed position, and a tripping device controlled by electro-responsive means.

15. In an electric switch, the combination of fixed terminals and a movable laminated bridge pivotally secured to the base on an axis parallel with the base, the bridge lamiuse having beveled ends engaging with said fixed terminals, and a manually-operative actuating-lever having a power-multiplying connection with the bridge.

16. In an electric switch, the combination of fixed terminals and a laminated bridge pivotally secured to the base on an axis parallel with the base and rotatably movable in a plane parallel to a plane including said fixed terminals to and away from said fixed terminals, and an actuating member having power-multiplying connection between the base and the laminated member.

17. In an electric switch, the combination of fixed terminals, a laminated bridge pivotally secured to the base on an axis parallel with the base and having a rotatable movement to and away from the fixed terminals in a plane parallel to a plane including said fixed terminals, and an actuating member pivotally secured to the base having power-multiplying connection with the laminated bridge.

18. In an electric switch, a combination of fixed terminals, a movable laminated bridge pivotally secured to the base on an axis parallel with the base, the bridge laminæ having beveled ends engaging with said fixed terminals, and a manually-operative actuating member having toggle-lever connection with the bridge.

19. In an automatic magnetic circuit-breaker, the combination of fixed terminals, and a movable laminated contact member pivotally secured to the base on an axis parallel with the base, the laminæ beveled at their ends and engaging with the fixed terminals, and a manually-operative actuating-lever having power-multiplying connection with the laminated member.

20. In an automatic magnetic circuit-breaker the combination of fixed terminals and a laminated member pivotally secured to the base on an axis parallel with the base and rotatably movable in a plane parallel to a plane embracing or passing through said fixed terminals to and away from said fixed terminals, and an actuating member having power-multiplying connection between the base and the laminated member.

21. In an automatic magnetic circuit-breaker, the combination of fixed terminals, a laminated member pivotally secured to the base on an axis parallel with the base, having rotatable movement in a plane parallel to a plane embracing or passing through the fixed terminals to and away from the fixed terminals, and an actuating member pivotally secured to the base and having power-multiplying connection with the laminating member.

22. In an electric switch, the combination of fixed terminals, a movable laminated bridge coöperating therewith and pivotally secured to the base on an axis parallel with the base, a manually-operative actuating member having toggle connection with the bridge, spring means for actuating the movable bridge, latching means for normally restraining said actuation and automatic magnetic means for actuating the restraining means.

23. In an electric switch, a base, contact-blocks mounted thereon, one vertically above the other, a bracket on said base, a laminated bridging member pivoted in said bracket on an axis parallel with the base, and rotatable in a plane at right angles to the plane of the base to and away from the main contact-blocks, and a power-multiplying connection with said bridging member.

704,975. ARMATURE. FRANK L. SIMMON, Oakpark, Ill., assignor to Siemens & Halske Electric Company of America, Chicago Ill., a Corporation of Illinois. Filed May 20, 1899. Renewed Mar. 24, 1902. Serial No. 100,982. (No model.)

Claim.—1. An armature comprising end spiders and an intermediate core and windings extending across the periphery of the core and spiders, and provided with ventilating air ducts or channels extending outwardly between the spiders and core and then laterally along the spiders beneath the windings, and an annular flange on the end of one spider for directing the air-currents outwardly against the surrounding portions of the machine, substantially as described.

2. The combination with the spiders A and A', core C and windings B, of the ribs a^3 and a^4 forming the air-ducts a^5 and a^6 between the spiders and core and beneath the windings, annular flange a^7 provided with an inturned lip a^8 and along the inner surface of which the air-ducts are continued, substantially as described.

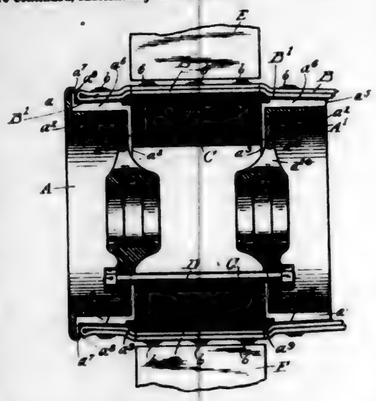

704,976. VEHICLE-DRAG. SIMON S. SEARLEY, Tyrone, Pa. Filed Apr. 7, 1902. Serial No. 101,808. (No model.)

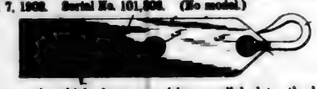

Claim.—A vehicle-drag comprising parallel plates the lower edges of which are sharpened and the upper edges of which are arranged in a horizontal plane throughout their entire lengths, said plates being pointed at one end, sleeves located between the plates, a checking device in the form of a hook made integral with one of said sleeves and bolts passed through said sleeves and provided with nuts, the nuts being adapted to clamp the plates to said sleeves and to hold the hook in its adjusted position, substantially as set forth.

704,977. APPARATUS FOR DESICCATING EGGS. PERCY R. TAYLOR, Newark, N. J., assignor to the Pure Food Company, a Corporation of New Jersey. Filed Nov. 5, 1898. Serial No. 736,344. (No model.)

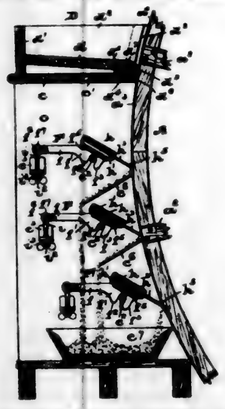

Claim.—1. In an apparatus for the desiccation of eggs, or other substances, the combination, with a drying drum or wheel, and means for actuating the same, of a frame or support, and a pivotally-arranged scraping device or devices in said frame or support, consisting, essentially of a pair of arms f, each arm having an angular portion f' and an open part or slot f^4 for pivotally arranging said scraping device or devices on a support in said frame, a pair of top pieces connected with said portions f', and spring fingers or blades between said top pieces in operative contact with the drying-surface of said drum or wheel, and means connected with said device or devices for regulating the pressure of said spring fingers or blades against said drying-surface, substantially as and for the purposes set forth.

2. In an apparatus for the desiccation of eggs, or other substances, the combination, with a drying drum or wheel, and means for actuating the same, of a frame or support, and a pivotally-arranged scraping device or devices in said frame or support, consisting, essentially of a pair of arms f, each arm having an angular portion f' and an open part or slot f^4 for pivotally arranging said scraping device or devices on a support in said frame, a pair of top pieces connected with said portions f', and spring fingers or blades between said top pieces in operative contact with the drying-surface of said drum or wheel, and means connected with said device or devices for regulating the pressure of said spring fingers or blades against said drying-surface, consisting, of plates or brackets attached to the sides of said frame or support, and a screw connection between said plates or brackets and the said arms f of the scraping device or devices, substantially as and for the purposes set forth.

3. In an apparatus for the desiccation of eggs, or other substances, the combination, with a drying drum or wheel, and means for actuating the same, of a frame or support C, and baffle-plates c^3 in said support, a scraping device or devices in said support, and spring-fingers on said scraping device or devices in operative contact with the drying-surface of said wheel or drum, substantially as and for the purposes set forth.

4. In an apparatus for the desiccation of eggs, or other substances, the combination, with a drying drum or wheel, and means for actuating the same, of a main frame or support, a pair of side pieces to said frame or support, a supporting-rod extending from side to side in said frame or support, and a scraping device on said supporting-rod, consisting, essentially, of a pair of arms provided with means for pivotally supporting said arms on said supporting-rod, a brace at the end of each arm, a pair of top pieces secured to said braces, and a number of spring-fingers secured between said top pieces, in such a manner, that intervening spaces will be formed between the adjacent fingers, and means connected with said arms for regulating the pressure of said spring-fingers against the surface of said drying drum or wheel, consisting, of brackets c^3 secured to the inner surfaces of the side pieces of the main frame or support, each bracket having a slotted portion, and an eyebolt connected with one end of each of said brace-carrying arms, said eyebolts being removably arranged in the slotted portions of said brackets c^3, and a thumb-screw on each eyebolt, all arranged, substantially as and for the purposes set forth.

704,978. SHUNTING-LEVER. WILLIAM TAYLOR, Sandhacre, England. Filed Dec. 23, 1901. Serial No. 87,019. (No model.)

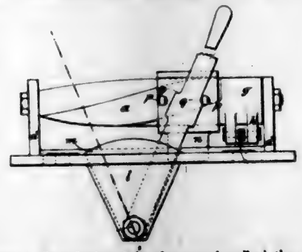

Claim.—1. In a device of the character described, the combination with a longitudinally-slotted bed-plate and a screw movably supported thereon, of a nut arranged on the screw, a lever pivoted at one end at a point below the bed-plate and passing through a slot in the latter, said lever loosely engaging one of said parts to turn the other, and a pitman connected to the part that is to be turned and arranged to be reciprocated by the turning movement of said part, substantially as described.

2. In a device of the character described, the combination with a bed-plate and a screw journaled in bearings thereon, of a nut movably fitted on said screw, a lever for reciprocating the nut, and projections on the nut between which said lever is disposed, said lever being provided with shoulders arranged to interlock with said projections, substantially as described.

3. In a device of the character described, the combination with a longitudinally-slotted bed-plate and a screw journaled in bearings thereon, of a nut movably fitted on said screw and provided with a rib movably fitted in said slot, and a lever for reciprocating the nut, substantially as described.

4. In a device of the character described, the combination with a longitudinally-slotted bed-plate and a screw journaled in bearings thereon, of a nut movably fitted on said screw, a lever pivoted at one end at a point below the bed-plate and provided at its opposite sides with shoulders, and projections on the nut between which said lever is movably disposed and with which said shoulders are adapted to interlock, substantially as described.

704,979. DEVICE FOR TEACHING ARITHMETIC. JOSÉ J. TERRAZAS, Mexico, Mexico. Filed June 3, 1901. Serial No. 62,972. (No model.)

Claim.—1. A table for teaching arithmetic, comprising a series of consecutive spaces which increase or decrease in value in fixed ratio and are distinguishable by contrasting colors.

2. A table for teaching arithmetic, comprising consecutive spaces disposed in columns and rows and subdivided into sections, the spaces of the consecutive sections being of higher value than those in the preceding section or sections.

3. A table for teaching arithmetic, comprising rows and columns of consecutive spaces disposed in parallel and intersecting order, said spaces being distinguishable by contrasting colors and the spaces being grouped into consecutive sections, the spaces of said consecutive sections being of higher value than the spaces of the preceding section or sections.

4. A table for teaching arithmetic, comprising a series of consecutive squares or spaces distinguishable by contrasting colors, the initial space of which bears the indication "0."

5. A table for teaching arithmetic, comprising consecutive number squares or spaces disposed in a plurality of intersecting series of parallel lines, said squares being of at least three colors or shades alternating in regular succession.

6. A table for teaching arithmetic, comprising consecutive number squares or spaces disposed in a plurality of intersecting series of parallel sets, and parallel lines separating sundry of the said sets at regular intervals, said lines being distinguished from each other in regular succession.

7. A table for teaching arithmetic, comprising a plurality of similar sections each having squares or spaces disposed in parallel series, the series of the sections alining with each other, or being located one in the continuation of the other, and each series of one section bearing the same numbers as that series of the adjacent section which is adjoining to the alining series of said section.

8. A table for teaching arithmetic, comprising a plurality of similar sections each having squares or spaces disposed in rows and columns, the rows of the sections alining with each other, and each row of one section bearing the same numbers as the next row above of an adjacent section.

9. A table for teaching arithmetic, comprising a plurality of similar sections each having consecutively-numbered squares or spaces disposed in rows and columns, the rows of the sections alining with each other, and each row of one section bearing the same numbers as the next row above of an adjacent section.

10. A table for teaching arithmetic, comprising a plurality of similar sections each having squares or spaces disposed in rows and columns, and of at least three colors and shades alternating in regular succession, the squares of the same color alining diagonally, the rows of the sections alining with each other and each row of one section bearing the same numbers as the next row above of an adjacent section.

11. A table for teaching arithmetic, comprising a plurality of similar sections each having squares or spaces disposed in rows and columns, and of at least three colors and shades alternating in regular succession, the squares of the same color alining diagonally, the rows of the sections alining with each other and each row of one section bearing the same numbers as the next row above of an adjacent section, and lines arranged

at regular intervals and separating the said rows and columns into groups, said lines being distinguished from each other in regular succession.

12. A table for teaching arithmetic, comprising a plurality of similar sections each having squares or spaces disposed in rows and columns, the rows of the sections alining with each other, and each row of one section bearing the same numbers as the next row above of an adjacent section, in combination with an auxiliary table consisting of a series of squares arranged like those of the initial column of one of the sections, and another series of squares bearing in regular repetition from a central starting-point, the same numbers as the initial row of one of the sections.

13. A table for teaching arithmetic, comprising a plurality of similar sections each having squares or spaces disposed in rows and columns, and of at least three colors or shades alternating in regular succession, the squares of the same color alining diagonally, the rows of the sections alining with each other and each row of one section bearing the same numbers as the next row above of an adjacent section, in combination with an auxiliary table consisting of a series of differently-colored squares arranged like those of the initial column of one of the sections, and another series of squares of different colors in regular succession and bearing in regular repetition in both directions from a central starting-point, the same numbers as the initial row of one of the sections.

704,980. SHOESTRING. JOHN T. THOMPSON, St. Paul, Minn. Filed June 4, 1901. Serial No. 62,119. (No model.)

Claim.—1. A shoe-lacing consisting of a hollow body, and a flat strip closely fitted within, and filling, said body.

2. A shoe-lacing consisting of a hollow body, and a strip fitting therein, said strip terminating short of those portions of the ends of the lacings which are ordinarily tied into a bow.

3. A shoe-lacing consisting of a hollow body, a strip fitted therein, said strip terminating short of those portions of the ends which are ordinarily tied into a bow, said strip having its ends gradually tapered.

704,981. BURGLAR-ALARM. WILLIAM B. THOMAS, Towns, Ga. Filed June 17, 1901. Serial No. 64,904. (No model.)

Claim.—1. In a burglar-alarm, the combination of an endwise-movable firearm, means operable by the opening of a closure for imparting endwise movement to the firearm to project the same into range with respect to the closure, and fixed means located in the path of the endwise movement of the firearm to effect explosion of the contained charge.

2. In a burglar-alarm, the combination of an endwise-movable firearm having firing mechanism, means operable by the opening of a closure to project the firearm forwardly and into range with respect to the closure, hammer-cocking means located in the path of a portion of the hammer of the firing mechanism to cock the hammer, and means carried by the firearm to trip the hammer-cocking means and thereby effect explosion of the contained charge.

3. In a burglar-alarm, the combination with a window-sash, of a burglar-alarm comprising a base secured adjacent to the sash, an endwise-movable firearm supported by the base, fixed hammer-cocking mechanism, means carried by the base to project the firearm, and a trip connection between the latter means and the window-sash.

4. A burglar-alarm comprising a base, a slide operatively connected therewith, a firearm supported by the slide, and a hammer carried by the firearm, hammer-cocking mechanism carried by the base and in operative relation to the hammer, and slide-actuating mechanism carried by the base.

5. A burglar-alarm comprising a fixed base, a slide operatively connected therewith and supporting a firearm, hammer-actuating mechanism carried by the base, an actuating-lever also carried by the base and having one arm in engagement with the slide, and means connecting with the other arm to effect operation of the device.

6. In a burglar-alarm, a base, a firearm supported thereby and comprising a breech and a barrel, a spring-pressed hammer housed in the breech, a relatively fixed arm carried by the base and having a scar engaging the hammer, a trigger carried by the breech, and means for projecting the firearm whereby to effect explosion of the contained charge.

7. A burglar-alarm comprising a base, a firearm supported thereby, a hammer carried by the firearm, an arm carried by the base and having a scar to engage the hammer, and means for projecting the firearm, said arm being adapted for limited movement before exerting any action on the hammer.

8. In a burglar-alarm, a firearm comprising a breech and a barrel suitably connected, the breech having a slot in one side thereof, a hammer mounted in the breech and having a firing-pin and a projection extending through the slot, a sliding arm having a scar to engage a depression in the hammer and to bear against the said projection, a trigger carried by the breech, and means for projecting the firearm to move the trigger into engagement in the sliding arm thus to release the hammer.

9. In a burglar-alarm, a base having a slide associated therewith and supporting a firearm and means carried by the base to operate the firing mechanism thereof, a trip-lever pivoted on the base to project the slide, and a stop on the base to limit the movement of the lever.

10. In a burglar-alarm, a firearm comprising a breech and a barrel, the breech being provided on one side with a slot, a hammer having a curved projection to cover the slot and provided with a pin to extend therethrough and with a recess adjacent to the pin, an arm having a scar to engage the recess in the hammer and to bear against the pin, and means for projecting the barrel.

11. In a burglar-alarm, a base have a slide associated therewith and supporting a firearm, a lever pivoted on the base and having one member connected with the slide, a stop on the base to limit the movement of the lever, and an arm connected with the other member of the lever and having its free end provided with means to engage a fixed object, the device, when so employed, constituting a window-lock.

704,982. HINGE. WILLIAM H. THEZ, Beaverdam, Wis. Filed Oct. 31, 1901. Serial No. 80,581. (No model.)

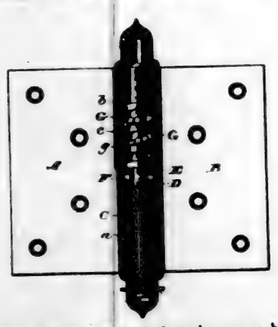

Claim.—1. A hinge composed of two leaves, one having a barrel with a plain bore and the other having a barrel with an internal spiral groove, a pin fitted to turn in both barrels and provided with spirally-arranged antifriction-rollers adapted to engage with said spiral groove, and means for locking at will said pin from turning in the barrel having a plain bore, substantially as described.

2. A hinge composed of two leaves, one having a barrel with a plain cylindrical bore and the other having an internal spiral groove in the bore of its barrel, a pin having a cylindrical portion fitted to turn in said plain bore in one leaf and spirally arranged antifriction-rollers adapted to engage said spiral groove in the other leaf, a nut threaded on the lower end of said pin and adapted when screwed up against the lower end of the barrel of the fixed leaf to prevent said pin from turning therein, substantially as described.

3. In a hinge the combination of a fixed leaf having a barrel with a plain cylindrical bore and roller-bearing, a movable leaf having a barrel with an internal spiral groove, a pin having a cylindrical lower portion fitted to turn in the barrel of the fixed leaf, spirally-arranged rollers adapted to engage the spiral groove in the movable leaf and an intermediate roller-bearing opposed to the roller-bearing in the barrel of the fixed leaf, rollers interposed between said bearings and means for locking said pin at will from turning in the barrel of the fixed leaf, substantially as described.

4. In a hinge the combination of a fixed leaf having a barrel with a plain cylindrical bore, a movable leaf having a barrel with an internal square spiral groove, a pin having a cylindrical part fitted to turn in the plain bore of the fixed leaf and provided with a square spiral corresponding with but narrower axially than said groove, and balls interposed between the upper face of the spiral on the pin and the upper opposing face of said groove, substantially as described.

5. In a hinge the combination of a fixed leaf having a barrel with a plain bore, a movable leaf having a barrel with an internal spiral groove, a pin having a cylindrical part fitted to turn in the plain bore of the fixed leaf, and a spiral adapted to engage the spiral groove in the movable leaf, rollers interposed between opposing bearings in the barrel of the fixed leaf and on the hinge-pin, and means for locking at will said hinge-pin in said fixed leaf, substantially as described.

6. In a hinge the combination of a fixed leaf having a barrel with a plain bore, a movable leaf having a barrel with an internal spiral groove, a pin having a cylindrical part fitted to turn in the plain bore of the fixed leaf, and a spiral adapted to engage with the spiral groove in the movable leaf, a nut threaded on the lower end of said pin, and a pin passing transversely through said nut and a circumferential groove in the hinge-pin, substantially as described.

7. In a hinge the combination of a fixed leaf having a barrel with a plain bore, a movable leaf having a barrel with an internal spiral groove, a pin having a cylindrical part fitted to turn in the plain bore of the fixed leaf, and a spiral adapted to engage with the spiral groove in the movable leaf, a nut threaded on the lower end of said pin and adapted to lock the same in the fixed leaf, and a nut threaded in the upper end of the barrel of the movable leaf and having an axial socket in which the upper end of the hinge-pin has a bearing, substantially as described.

704,983. FENCE-POST. JAMES W. TODD, Ossaburg, Ohio. Filed Nov. 22, 1901. Serial No. 83,234. (No model.)

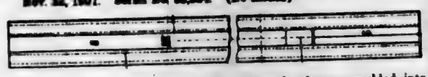

Claim.—1. A post composed of a mineral substance molded into form and provided with a longitudinal V-shaped groove the angle at the point of the V being a right angle, and having longitudinal retaining-lips at the outer edges of the groove; substantially as described.

2. A post composed of a mineral substance molded into form and provided with a central longitudinal opening and with a V-shaped longitudinal groove, the angle at the point of the V being a right angle, and having longitudinal retaining-lips at the outer edges of the groove: substantially as described.

3. A post composed of a mineral substance molded into form and provided with a longitudinal V-shaped groove in one of its surfaces, the angle at the point of the V being a right angle, and having longitudinal retaining-lips at the outer edges of the groove, and a step formed of the same material and constituting a homogeneous portion of the post inserted in the longitudinal groove near the base of the post, for supporting the fence-strip which said groove is adapted to contain; substantially as described.

704,984. DOOR-CLOSING APPARATUS. JACOB W. THIPP, New York, N. Y., assignor to Henry B. Newhall, Plainfield, N. J. Filed Feb. 15, 1902. Serial No. 94,218. (No model.)

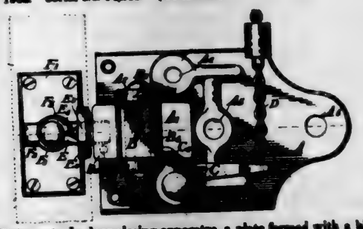

Claim.—1. In door-closing apparatus, a plate formed with a block-opening, trunnion-supports on either side of said opening, a trunnion-block pivoted to said supports to rotate in said opening, said trunnion-block being formed with a lip on its front edge, with a heel on its rear edge and with a side face substantially perpendicular to said heel, lever-bearings formed in said plate on either side of said opening, a symmetrical locking-lever formed with a toe to engage said trunnion-block to be pivotally mounted on either of said lever-bearings, a thermal releasing device including a weight connected with the free end of said locking-lever, said weight serving to disengage said locking-lever from said trunnion-block by impact, a latch pivoted to a latch-support, a spring tending to rotate said latch about its pivot, said latch having a tongue to engage the lip of said trunnion-block and a handle to manually operate said latch, said handle having locking-legs to engage the lip of said trunnion-block.

2. In a door-closing apparatus, a plate provided with a block-opening, a trunnion-block pivotally mounted to rotate in said opening, said trunnion-block being formed with a lip on the front edge of the same, said lip having a projection upon its under surface, said trunnion-block having a rib to engage said plate to maintain said lip in proper position, a locking-lever pivoted to said plate and provided with a toe to engage said trunnion-block, when the heel of said trunnion-block is engaged by said locking-lever, said trunnion-block having a side at an angle to the heel of the same to be engaged by the toe of said locking-lever to maintain the lip of said trunnion-block at an angle to said plate, a manually-movable latch to be secured to a door, said latch having a tongue and a handle at right angles to said tongue, said handle having locking-legs on its under surface.

3. In door-closing apparatus, a plate provided with a block-opening, a trunnion-block pivoted to rotate in said opening, said trunnion-block having a lip to be engaged by a latch, a locking-lever mounted on said plate to engage said trunnion-block and to rigidly hold the lip of said trunnion-block parallel to said plate or at an angle thereto and a manually-movable latch having projections to be engaged by said lip.

4. In door-closing apparatus, a plate provided with a block-opening, a trunnion-block movably mounted in said opening, said trunnion-block having a lip to be engaged by a latch, releasable means to hold the lip of said trunnion-block parallel to said plate or at an angle thereto and a manually-movable latch having projections to be engaged by said lip.

5. In door-closing apparatus, a plate, a trunnion-block mounted in said plate and having a lip to project adjacent to the path of travel of a door, a locking-lever mounted on said plate to engage said trunnion-block and hold said lip in position, a manually-movable latch to be secured to the edge of said door, said latch having a tongue to project beyond the line of travel of said door and into engagement with said lip, and a spring to move said tongue into the line of travel of said door.

6. In door-closing apparatus, a trunnion-block provided with a lip, means to mount said trunnion-block adjacent to the path of travel of a door, releasable means to hold said lip in position, a manually-movable latch to be mounted upon the edge of said door, said latch projecting beyond the line of travel of said door into engagement with said lip and means to move said latch into said line of travel.

7. In door-closing apparatus, releasable means mounted adjacent to the path of a self-closing door to hold said door in open position, a manually-movable latch secured to said door to project beyond the line of travel of said door into engagement with said means, said latch automatically moving when released into said line of travel.

8. In door-closing apparatus, a lip releasably held adjacent to the path of a self-closing door, manually-movable means mounted upon said door to project out of the line of travel of said door into engagement with said lip, said means automatically moving into the line of travel of said door when released from said lip.

9. In door-closing apparatus, a lip to be releasably held adjacent to the line of travel of a self-closing door and manually-movable means to be secured to a self-closing door to project out of the line of travel of said door into engagement with said lip.

10. In door-closing apparatus, a plate, a lip movably mounted on said plate, means to hold said lip rigidly parallel to said plate or perpendicular to the same, and a latch having projections thereon to engage said lip in either position.

704,985. AMMUNITION-HOIST FOR ORDNANCE. EUGÈNE TROCHAIN, Paris, France, assignor to Vickers Sons & Maxim, Limited, London, England, a Corporation of Great Britain. Filed Oct. 17, 1900. Serial No. 733,008. (No model.)

Claim.—1. In combination with the magazine and rotating firing-platform, of a hood arranged to rotate with said platform and having inclines, a trunk depending from said hood, a bracket located at the magazine, a distance-piece extending between the bracket and hood and dividing the trunk into two chambers, an endless connector traveling in said chambers, carriers pivoted to said connector and arranged to be tilted by said inclines, and means for operating said endless connector, substantially as described.

2. In combination with the magazine and rotating firing-platform, of a hood arranged to rotate with said platform and having inclines, a trunk depending from said hood, a revolvable hollow bracket located at the magazine, inclines carried by said bracket, a distance-piece extending between the bracket and hood and dividing the trunk into two chambers,

an endless connector traveling in said chambers, carriers pivoted to said connector, and arranged to be tilted by said inclines, and means for operating said endless connectors, substantially as described.

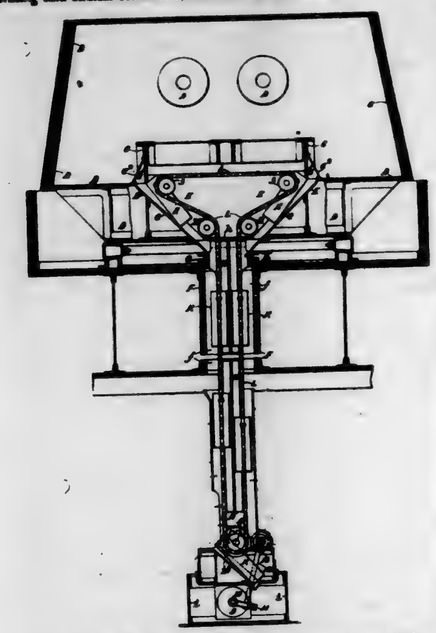

3. In combination with the magazine and rotating firing-platform, of a hood arranged to rotate with said platform, a trunk depending from said hood, a tubular bracket-carrier at the lower end of said trunk and forming a continuation thereof and revolvable therewith, said bracket being vertically movable in relation to the trunk, driving and guide sheaves carried by said hood and bracket, endless carriers traveling over said sheaves, and means for moving said bracket downward to tighten said endless carrier.

4. In combination, the hoist-trunk, the bracket forming a continuation thereof, and revolubly seated at the magazine, inclines carried thereby, and endless carriers in said trunk having buckets adapted to be tilted by said inclines, substantially as described.

5. In combination, the hood, the hoist-trunk, the bracket at the lower end of said trunk, the distance-piece within the trunk and united at its opposite ends to said hood and bracket and forming two chambers, and the endless carrier traveling in said compartments, substantially as described.

6. In combination, the hoist-trunk, the distance-piece therein dividing said trunk into two chambers, a revolvable bracket at the magazine and adapted to rotate with said trunk but movable axially thereof, and endless carrier-chains supported in said trunk and adapted to be tightened by the axial movement of said bracket, substantially as described.

704,986. TELEPHONE-BOOTH. FRANK L. TUPTS, New York, N. Y., assignor of one-third to Herschel C. Parker, New York, N. Y. Filed Nov. 5, 1901. Serial No. 81,222. (No model.)

Claim.—1. The combination of a plurality of telephone-booths placed in juxtaposition and provided with curved walls.

2. A group of independent telephone-booths, each provided with means of ingress and egress, and each provided with curved walls.

3. A group of telephone-booths, each booth being essentially cylindrical, and said booths being grouped.

4. A group of telephone-booths, each booth being essentially cylindrical, and the booths being placed back to back.

5. An improved telephone-booth for resisting sound-vibrations, said booth having a suitable door and constructed with its inner walls curved.

6. An improved telephone-booth constructed with curved walls, and with a sliding door conforming essentially to the curvature of the booth.

704,987. TELEPHONE-BOOTH. FRANK L. TUPTS, New York, N. Y., assignor of one-third to Herschel C. Parker, New York, N. Y. Filed Dec. 24, 1901. Serial No. 87,056. (No model.)

Claim.—1. A telephone-booth comprising an inner structure formed with curved walls, and an outer flat-sided structure inclosing the said inner structure.

2. The combination of a double-walled booth provided with suitable means of ingress and egress, the inner wall being curved and the outer walls being flat.

704,988. HEATER. WESLEY R. VANSTONE, New Westminster, Canada. Filed Sept. 25, 1901. Serial No. 76,572. (No model.)

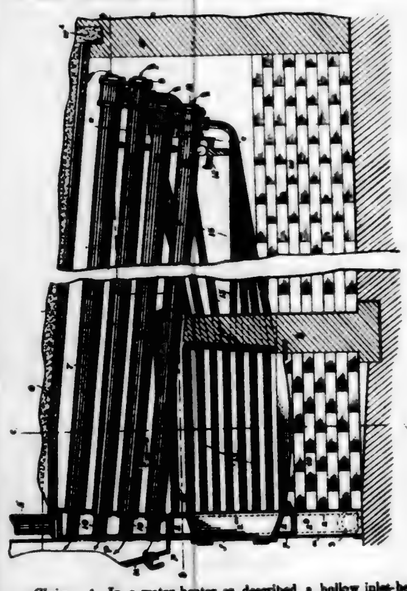

Claim.—1. In a water-heater as described, a hollow inlet-header forming the front of the furnace-chamber and having an inlet-pipe through which water is introduced; a similar outlet-header above and resting on the foregoing, provided externally with a smoke-uptake and having an outlet-pipe for the conveyance of the heated water; a flue-chamber, a series of water-jacketed flue-tubes communicating from the rearward end of the flue-chamber through the outlet-header to the uptake, the water-jackets being in connection with the water-space of the outlet-header; and means whereby each rearward end of the flue-tube water-jackets may be connected to the water-space of the inlet-header by pipes forming the sides and back of the furnace.

2. In a water-heater of the class described, having a furnace and flue chamber inclosed; a hollow inlet-header forming the front of the furnace and adapted to receive the return water; a similar outlet-header resting on the foregoing, adapted to receive the water when heated and deliver it to the exterior distributing-pipes; a series of flue-tubes adapted to convey the products of combustion from the rearward end of the flue-chamber through the outlet-header to the smoke-uptake; exterior tubes surrounding each flue-tube and forming a water-jacket therefor from the inner wall of the outlet-header to the rearward end of the flue-tube; a series of pipes fixed in the inner wall of the inlet-header on each side of the furnace-doorway, and passing along on each side of the furnace bent across each to the opposite side at the back of the furnace and thence proceeding and being connected to the rear end of the flue-tube jackets so that water may be continually circulated through furnace-tube and jacket from inlet to outlet header, and a return-bend pipe on each side from the upper part of the inlet to the lower part of the outlet headers, substantially as described.

3. In a heater as described having a hollow header from which project a series of jacketed flue-tubes to within the flue-chamber; a cross-beam below the farther end of such tubes; grooved rollers on such beam supporting the tubes, and intermediate rollers between each horizontal row of tubes, whereby the overhanging weight of the tubes is supported while they are free to expand and contract freely.

4. In a water-heater as described, in combination, the inlet-header 2, surrounding the furnace and ash-pit doorways and forming the front of the furnace; and the outlet-header 4 surmounting the same, the flue-tube 10, and the jacket-tube 7, the terminal T's 8; junction-sleeves 9, water-tubes 15, secured in the inlet-header and passing along the sides and across the back of the furnace, and thence to the terminal T of the jacket-tubes; junction-bushings 11, return-bends 16, connecting the upper side of the inlet with the lower side of the outlet headers on each side of the furnace, substantially as described.

704,989. PROCESS OF EXTRACTING OIL. LA FAYETTE D. VORCE, Chicago, Ill. Filed Oct. 29, 1900. Serial No. 34,688. (No specimens.)

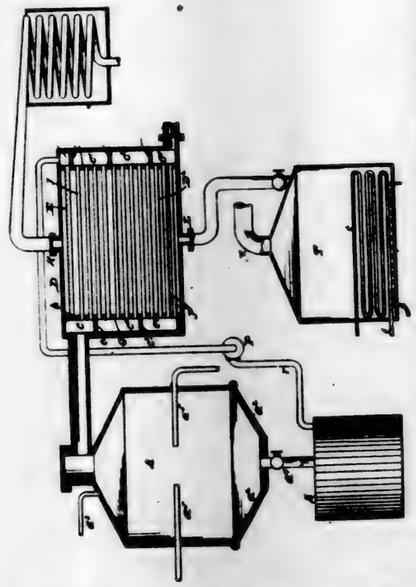

Claim.—1. The process of extracting and recovering soluble matters from material containing the same, which consists in subjecting the material in a closed extraction-chamber to the action of a volatile solvent, educting the solution thus obtained and subsequently passing it into a volatilizing-chamber, then passing into the exhausted material in the extraction-chamber a volatilizing agent, such as steam, and volatilizing the residual solvent left in the material, conducting said heating agent and vapor into the volatilizing-chamber and there utilizing their heat to volatilize more or less of said solvent from said solution, and conducting said partially-condensed vapors thence to a condenser or separator.

2. The process of extracting and recovering soluble matters from material containing the same, which consists in subjecting the material in a closed extraction-chamber to the action of a volatile solvent, educting the solution thus obtained, then passing into the exhausted material in the extraction-chamber a heated volatilizing agent, such as steam, and volatilizing the residual solvent in the mass, conducting the heating agent and vaporized solvent into a volatilizing-chamber and heating the same thereby, conducting the solution of solvent and extracted matter into the volatilizing-chamber and there exposing it to the heat of said vaporized solvent and heating agent, whereby more or less of the solvent is volatilized from said solution and said heating-vapors are partially or wholly condensed, conducting said partially-condensed vapors to a condenser or separater.

3. The process of extracting and recovering soluble matters from material containing the same, which consists in subjecting the material in a closed extraction-chamber to the action of a volatile solvent, educting the solution thus obtained and then passing into the exhausted material in the extraction-chamber a heated volatilizing agent, such as steam, and volatilizing the residual solvent left in the material, conducting said heating agent and vapors into a volatilizing-chamber through closed pipes, passing the educted solution into the volatilizing-chamber and causing the same to therein flow in thin layers over the pipes containing the heating agent and vapors, thereby more or less completely volatilizing the solvent from said solution and partially or completely condensing said heating agent and vapors, and conducting said partially-condensed vapors to a condenser or separator.

4. The process of extracting and recovering soluble matters from material containing the same, which consists in subjecting the material in a closed extraction-chamber to the action of a volatile solvent, educting the solution thus obtained and subsequently passing it into a volatilizing-chamber, then passing into the exhausted material in the extraction-chamber a volatilizing agent, such as steam, hot air, gas or other heating agent and volatilizing the residual solvent left in the material, conducting said heating agent and vapors into the volatilizing-chamber and there utilizing their heat to volatilize more or less of said solvent from said solution, conducting said partially-condensed vapors thence to a condenser or separator, and then completing the volatilization of the solvent from the solution by the application of heat from a different source.

5. The process of extracting and recovering soluble matters from material containing the same, which consists in subjecting the material in a closed extraction-chamber to the action of a volatile solvent, educting the solution thus obtained, then passing into the exhausted material in the extraction-chamber a heated volatilizing agent, such as steam, and volatilizing the residual solvent in the mass, conducting the heating agent and vaporized solvent into a volatilizing-chamber and heating the same thereby, conducting the solution of solvent and extracted matter into the volatilizing-chamber and there exposing it to the heat of said vaporized solvent and heating agent, whereby more or less of the solvent is volatilized from said solution and said heating-vapors are partially or wholly condensed, conducting said partially-condensed vapors to a condenser or separater, and then completing the volatilizing of the solvent from the solution by the application of heat from another source.

6. The process of extracting and recovering soluble matters from material containing the same, which consists in subjecting the material in a closed extraction-chamber to the action of a volatile solvent, educting the solution thus obtained and then passing into the exhausted material in the extraction-chamber a heated volatilizing agent, such as steam, and volatilizing the residual solvent left in the material, conducting said heating agent and vapors into a volatilizing-chamber through closed pipes, passing the educted solution into the volatilizing-chamber and causing the same to therein flow in thin layers over the pipes containing the heating agent and vapors, thereby more or less completely volatilizing the solvent from said solution and partially or completely condensing said heating agent and vapors, conducting said partially-condensed vapors to a condenser or separator, and then completing the volatilization of the solvent from the solution by the application thereto of heat from a different source.

704,990. APPARATUS FOR SEPARATING SOLVENT FROM OILS. LA FAYETTE D. VORCE, Chicago, Ill. Filed Oct. 31, 1900. Serial No. 35,007. (No model.)

Claim.—1. In an oil-extracting apparatus a percolating-tank and an oil and solvent tank open thereto, in combination with a separator connected with the top of said percolator, means to penetrate the percolator with steam to vaporize off the solvent to said separator, and a pump and connections between said oil and solvent tank and the separator.

2. In apparatus for the extraction of soluble matters by the aid of solvents the combination with the percolaters in which the extraction is conducted of a separator through which the steam and vaporized solvent from the percolators are passed, a spraying apparatus to which the solution of solvent and extracted matter from the percolators is conducted and by which the solution is caused to drip upon the condenser-coils, means for introducing the vapors from the percolater into the heating-tubes of the separator, and means for collecting the extracted matter and the volatilized solvent separately.

3. In apparatus for the extraction of oil, &c., by the aid of a solvent the combination with the percolaters in which the extraction is conducted of a separator comprising a closed chamber having therein pipes through which the steam and vaporized solvent from the percolaters are passed and a spraying device above said pipes to which the solution of oil and solvent from the percolators is conducted, means for introducing the va-

pors from the percolator into the heating-pipes of the separator, and means for collecting the extracted matter and the solvent separately, substantially as specified.

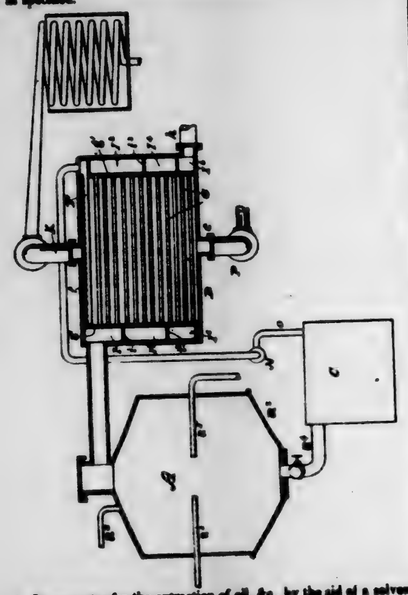

4. In apparatus for the extraction of oil, &c., by the aid of a solvent the combination with the percolator having steam-intromitting pipes, of a separator comprising a closed chamber having at the top a spraying device and beneath the same a series of separated pipes extending completely through the chamber, a connection from the top of the percolator to said pipes, a pipe for supplying the solution of extracted matter to said spraying device, separate outlets from said chamber for the extracted matter and the vaporized solvent, and means for collecting the condensed steam and solvent from said pipes, substantially as described.

5. In apparatus for the extraction of oil, &c., by aid of a solvent the combination with the percolators having steam-intromitting pipes of a separator comprising a closed chamber having at the top a spraying device and beneath the same a series of separated pipes extending completely through the chamber and opening into chambers which communicate with part only of said pipes, a connection from the top of the percolator to said pipes, a pipe for supplying the solution of extracted matter to said spraying device, separate outlets from said chamber for the extracted matter and the vaporized solvent, and means for collecting the condensed steam and solvent from said pipes, substantially as described.

6. In oil-extracting apparatus, a separator having a separated internal chamber and flues separated from each other leading therethrough and open at both ends into a space within the outer walls of the separator, and two sets of inlets and outlets to the separator, in combination with a percolator having steam-intromitting pipes, a vapor connection therefrom to one of the end spaces, and a connection from the inlet of the internal chamber to the supply of oil solution, substantially as described.

7. In oil-extracting apparatus, a separator having inlet and outlet openings, and an interior chamber with its own outlet and inlet openings, pipe connections to all said openings, a set of open-ended flues traversing the interior chamber and not connected together, a fluid-discharge pipe entering said interior chamber over said flues and connecting with the oil-solution supply, a percolator having steam-intromitting pipes, and a vapor-pipe connecting said separator with the percolator, substantially as described.

8. In an oil-extracting apparatus, a combined separator and condenser having an interior chamber with inlets and outlets through the walls thereof, a series of separate open-ended condenser-pipes extending through said interior chamber and open at both ends into a space within the outer walls of the separator, in combination with a percolator having steam-intromitting pipes, a vapor-pipe from said percolator to one of said end chambers of the separator, a receiving-tank, a pipe therefrom communicating with said interior chamber over the tubes therein, a pump in said pipe, and an outlet from one of said end chambers for the contents of said condenser-pipes, substantially as described.

9. The combined separator and condenser, comprising a central chamber having at its top a spraying device and at each end partitioned chambers inclosed within the outer shell, open-ended condenser-pipes separate from each other and extending through said central chamber into the end chambers, outlets at top and bottom of said central chamber, a vapor-inlet to one of said end chambers and a liquid-outlet from another, in combination with a percolator having steam-intromitting pipes, a vapor-pipe from said percolator to the vapor-inlet of the separator, a combined solvent and oil tank, a pipe from said tank to said spraying device, and a pump in said pipe, substantially as described.

704,991. FISHING-ROD HOLDER. BERNARD J. WARREN, Dover, Me. Filed Sept. 23, 1901. Serial No. 76,236. (No model.)

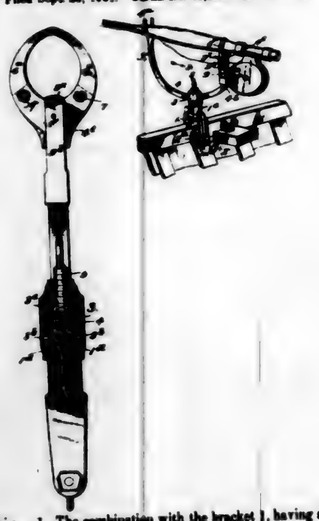

Claim.—1. The combination with the bracket 1, having a laterally-projecting hub, a headpiece rotatably mounted on the hub, said headpiece having slots extending from the lower end upward, and a transverse socket at a point above the hub-head; of the yoke-frame movable in the said transverse socket, adapted to be slipped up into the socket through the slots in the side of the head, said frame having rod-rests on the outer ends, and means on the head for clamping the frame against the hub-head, for the purposes described.

2. In a rod-holder of the character described, a supporting member, a yoke-frame having an inner and an outer rod-rest, one of said rests including jaws, automatically closable over the rod when seated therein, and finger-operated means for moving the jaws to an open position, as set forth.

3. In a rod-holder of the character described, a supporting member having a rod-rest, said rest including a pair of pivoted jaws, adapted to close over the rod-butt, and a slide-plate connecting with the jaws and adapted to move said jaws to their open or closed position by alternate movement, as set forth.

4. The combination with the frame 4, having a vertical arm 4^b, said arm having a vertical slot, in its upper end; of the jaws pivotally mounted on the arm 4^b, the lower ends of said jaws lapping each other and each having a slot extended diagonally to the slot in arm 4^b; of the vertically-shiftable member 9, having a stud-bolt 8, held to play in the slot in member 4^b, and the slots in the pivotal jaws, said member 9 having a lift-piece 9^x, all being arranged substantially as shown and for the purpose described.

704,992. WINDOW-SCREEN. CLAUDE R. WARNER, Avon, Ill. Filed Oct. 14, 1901. Serial No. 78,561. (No model.)

Claim.—1. A window-screen, comprising a rectangular piece of screen wire-cloth, and a sheet-metal border-frame therefor, each bar of said frame comprising two telescoping sections, substantially U-shaped in cross-section, one section having return-bent flanges extended inward and upward and embracing the edges of the other section that slides between them, said flanges also clamping upon an appropriate edge of the screen material.

2. A window-screen comprising a rectangular piece of screen wire-cloth, a border-frame of sheet metal, each side bar of the frame comprising two substantially U-shaped sections that slide one upon the other, a triangular corner-plate for each corner of the frame, secured between the screen-cloth and the lapped ends of the frame members, and means for securing said corner-plates to the frame members.

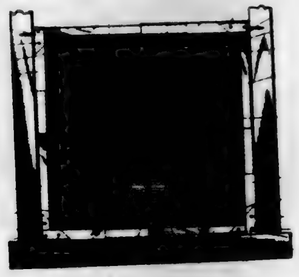

3. The combination with a window-screen, of a hand-hole closure therefor, comprising a rectangular box-like frame open on top and projected from the screen over a hand-hole, and a flap-door hinged at one edge on the frame so as to cover its opening when seated thereon.

704,993. ELECTRIC SMELTING-FURNACE. FREDERICK C. WEBER, Chicago, Ill. Filed Jan. 8, 1900. Renewed May 18, 1902. Serial No. 107,553. (No model.)

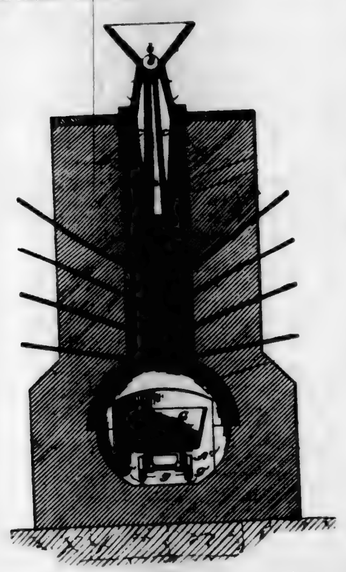

Claim.—1. In an electric smelting-furnace, the combination of a horizontally-elongated furnace-chamber, several superposed series of electrodes projected laterally into the furnace from opposite sides thereof, each series having a different angle of downward convergence in relation to the other series and toward a central space with an arcing space between the companion downward-converging electrodes of each series and forming an extended horizontal arcing space downwardly projected between the several superposed series of electrodes, and a feed or discharge for the material from above in direct line with the arcing space, substantially as described.

2. In an electric smelting-furnace, the combination of a horizontally-elongated furnace-chamber, several superposed series of electrodes projected laterally into the furnace-chamber from opposite sides thereof, each series having a downward convergence horizontally and an inward convergence at the ends of all the series with an arcing space between the companion electrodes of each series and forming an extended vertical arcing space between the several superposed series of electrodes having a downward and inward convergence toward a central space, and a feed or discharge for the material from above in direct line with the arcing space, substantially as described.

3. In an electric smelting-furnace, the combination of a furnace-chamber, several superposed series of electrodes laterally projected at different planes of inclination into the furnace-chamber from opposite sides thereof, with an arcing space between the companion electrodes of each series forming a vertical downwardly projected and extended unobstructed and continued smelting and arcing space between the superposed series of electrodes, and a feed or discharge for the material from above into the vertically-extended smelting and arcing space, substantially as described.

4. In an electric smelting-furnace, the combination of a furnace-chamber, several superposed series of electrodes each series projected laterally at different planes of inclination into the furnace-chamber from opposite sides thereof with an arcing space between the companion electrodes of a series forming a graded vertically extended and continued smelting and arcing space, means for producing a graduated voltage or temperature for each series of electrodes and a feed or discharge for the material from above into the arcing space, substantially as described.

5. In an electric smelting-furnace, the combination of a furnace-chamber, several superposed series of electrodes projected laterally into the furnace-chamber from opposite sides thereof at different planes of inclination, with an arcing space between the companion electrodes of each series for the superposed arcing space to form a graded vertical downwardly extended and continued smelting and arcing space, means for regulating and graduating the voltage or temperature of each separate series of electrodes, and a feed or delivery spout projected downwardly into the furnace-chamber in juxtaposition to the arcing and smelting space at the commencement thereof and having a central opening for discharge of the material in line with the smelting and arcing space for an initial subjection of the material to the heat as it is discharged and a final subjection of the material in its passage through the arcing space, substantially as described.

6. In an electric smelting-furnace, the combination of a furnace-chamber, several superposed series of electrodes projected laterally into the furnace-chamber from opposite sides thereof at different planes of inclination, with an arcing space between the companion electrodes of each series for the superposed arcing space to form a downwardly vertically extended and continued smelting and arcing space, means for regulating and graduating the voltage or temperature of each separate series of electrodes, and a feed or delivery spout projected downwardly into the furnace-chamber in juxtaposition to the arcing and smelting space and having a central opening for the passage of the material in line with the smelting and arcing space and having a surrounding chamber with inlet and outlet openings for the escape of the evolved gases, for such gases in their escape to impart heat to the delivery or feed spout, substantially as described.

7. In an electric smelting-furnace, the combination of an elongated furnace-chamber, several superposed series of electrodes having the electrodes of each series projected laterally into the furnace-chamber from opposite sides thereof with a downward and inward convergence and with an arcing space between the companion electrodes of each series for the several superposed arcing spaces to form a graded vertically extended and continued arcing space between the superposed series of electrodes, and means for producing different voltages or temperatures throughout the several series of electrodes, substantially as described.

704,994. NON-REFILLABLE BOTTLE. LOUIS C. WEBSTOTH, New York, N. Y. Filed Oct. 19, 1901. Serial No. 79,091. (No model.)

Claim.—1. In a non-refillable bottle, the combination with the bottle-neck having a tortuous outlet or channels and provided at its bottom with a concave valve-seat, of a ball arranged to fit said seat, a weight disposed in the bottle and provided with a stem, the upper end of said stem terminating in outwardly-spreading curved arms that clasp the ball and are firmly attached to the latter, and vertical ribs on the interior of the neck between which the said curved arms are longitudinally movable, substantially as described.

2. In a non-refillable bottle, the combination with the bottle-neck having a tortuous outlet or channels and provided at its bottom with a concave valve-seat, of a ball arranged to fit said seat, a weight disposed in the bottle and provided with a stem, the upper end of said stem terminating in outwardly-spreading curved arms that clasp the ball and are firmly attached to the latter, the said neck being provided with vertical internal ribs between which are disposed the said arms and which act as guides for the ball, the upper ends of the said ribs being contracted or curved inward to limit the movements of the ball, substantially as described.

704,994.

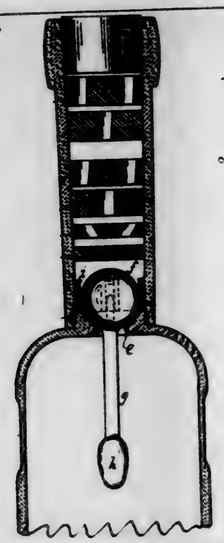

angular opening formed by the juncture of the plate and heel of the point to receive a corresponding projection on the landside of the plow whereby to prevent vertical play of the plow-point.

2. The combination, with a plowshare having a notch of special shape in its forward corner and a landside having a projection in its forward edge, of a plow-point having a perfectly flat lower surface provided with a heel adapted to receive the notch of the plowshare and whose triangular notch formed by the juncture of the heel and plate is adapted to receive and fit the projection on the forward edge of the landside, said plow share and point having holes therein and bolts adapted to pass through said holes thereby to secure the plow-point in position and complete the fastening.

704,995. EXPLOSIVE-ENGINE. CARL W. WEBB, New York, N. Y. Filed Jan. 15, 1900. Serial No. 1,474. (No model.)

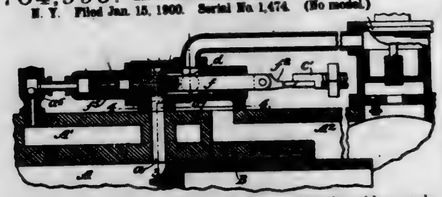

Claim.—1. In an explosive-engine, the combination with an explosion chamber or cylinder having a supply-port and an exhaust-port opened as the piston approaches the limit of its forward stroke, of means to introduce water into the chamber or cylinder as said ports open, whereby the water precedes the explosive charge.

2. In an explosive-engine, the combination with a cylinder having supply and exhaust ports opened by the piston as it approaches the forward limit of its stroke, and means to discharge water through said supply-port as it opens.

3. An explosion-engine having independent air and gas supply ports terminating in the inner surface of the cylinder-wall and means to close said ports at their extremities.

4. An explosive-engine having independent air and gas supply ports terminating separately in the inner surface of the cylinder-wall and uncovered by the piston in its forward movement.

704,996. DETACHABLE PLOW-POINT. CHARLES A. WEBBER, Carrollton, Ill. Filed Apr. 30, 1901. Serial No. 58,194. (No model.)

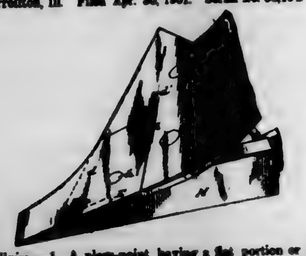

Claim.—1. A plow-point having a flat portion or plate with the heel forming the only elevation thereon, a plowshare with a special-shaped notch at the forward corner to fit against the heel and plate of the point to prevent lateral or side play, said plow-point also provided with a tri-

704,997. SWINGING SPRING-SEAT FOR CAR-BOLSTERS. CHARLES T. WHITLAKE, Granite City, Ill., assignor to Commonwealth Steel Company, St. Louis, Mo., a Corporation of New Jersey. Filed May 5, 1902. Serial No. 106,060. (No model.)

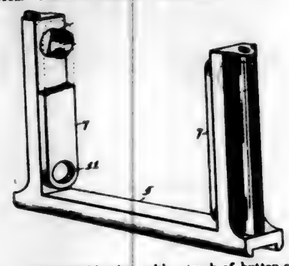

Claim.—1. The combination with a truck of button-shaped lugs; links having openings to receive said lugs; and a movable part of the truck connected to the said links, substantially as specified.

2. The combination with truck-columns of button-shaped lugs extending inwardly from near the upper ends of the truck-columns; links having button-openings to receive said lugs; and a spring-seat connected to the lower ends of said links, so as to allow the spring-seat to swing between the truck-columns, substantially as specified.

704,998. COTTON-COMPRESSOR. FRANK L. WHITE, Pine Bluff, Ark., assignor of one-half to William R. Howel, Pine Bluff, Ark. Filed Apr. 25, 1902. Serial No. 104,707. (No model.)

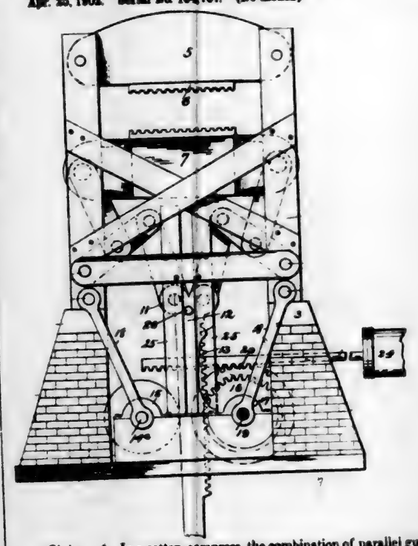

Claim.—1. In a cotton-compress, the combination of parallel guides, a head-block mounted intermediate said guides, a plunger slidingly mounted between said guides, knuckles mounted intermediate said guides, a rack-bar, toggles pivoted to said rack-bar and said knuckles, link-bars pivoted to said plunger and to one member of said toggles intermediate the ends

of said member, a shaft bearing a pinion located to mesh with said rack-bar, a pair of pinions keyed on said shaft, parallel racks meshing with said pair of pinions and connected by a cross-bar, guides for said racks, and a cylinder provided with a piston connected to said cross-bar, substantially as described.

2. In a cotton-compress, the combination of a plunger, a rack-bar, means for connecting said plunger and said rack-bar, a pinion engaging said rack-bar, a roller mounted to bear on said rack to hold it in engagement with said pinion, gears mounted to turn in unison with said pinion, racks engaging said gears, and a cylinder bearing a piston connected to said last-mentioned racks, substantially as described.

3. In a compress, the combination with a base, guides mounted on said base, a plunger slidingly mounted in said guides, a rack-bar, means for connecting said rack-bar and said plunger, a shaft journaled in said base, a roller keyed on said shaft and bearing on the back of said rack, a shaft bearing a gear meshing with said racks, a rack meshing with said gear, means for driving said rack to operate said plunger, diagonal brace-rods connected to the outer ends of said shafts and to said base, substantially as described.

704,999. CURBING AND PAVING. WILLIAM WHITE, Philadelphia, Pa. Filed June 24, 1901. Serial No. 65,747. (No model.)

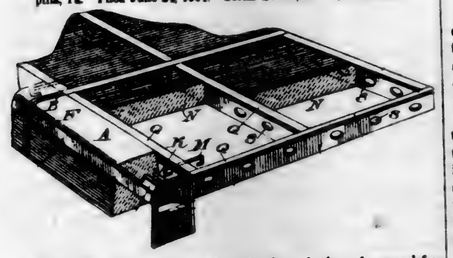

Claim.—1. In a curbstone, plates for the ends thereof, a guard for the face thereof situated between said plates, and a flange extending therefrom adapted to be embedded in the concrete and having notches for locking the same in position.

2. In a curbstone, plates on the ends thereof, and means situated entirely between said plates for holding the same together.

3. In a curbstone, plates for the ends thereof, a guard supported between said plates whereby the plates of adjacent curbstones can be placed in contact.

4. In a curbstone, plates for the ends thereof, a guard supported between said plates, and means between said plates and engaging therewith for locking the same together.

5. In a curbstone, plates for the ends thereof, anchors on the inner faces of said plates, and tie-rods adapted to engage with said anchors to lock said plates together.

6. In a curbstone, plates for the ends thereof, means on the inner faces of said plates for locking the same together, a guard for the face of said curbstone, and lugs on the inner faces of said plates adapted to support said guard.

7. In a curbstone, a concrete body, plates for the ends thereof, a guard for the face of said curbstone, having notches or recesses engaging with the concrete and locking said guard in position.

8. In a curbstone, formed of suitable material, plates for the ends thereof, anchors on said plates, rods engaging said anchors to lock said plates together, lugs on said plates, a guard supported by said lugs, and notches in said guard for locking the same in position.

9. The combination of a concrete curbstone and pavement, a plate between the same, and means for locking the curbstone and pavement together with the plate between.

705,000. PIANO-PLAYER. AUGA B. WHITEHEAD, Detroit, Mich., assignor to Farrand & Votey Organ Company, Detroit, Mich., a Corporation of Michigan. Filed May 18, 1901. Serial No. 60,982. (No model.)

Claim.—1. In a piano-player, a vertical case, an action-case arranged in the case below the top, a tracker-board box secured to the top of the action near the middle, a wind-trunk extending up from the action at one side, a horizontal wind-trunk extending across the top of the action behind the tracker-board box and the pneumatic-motor on the action beside the tracker-board box, to which the horizontal trunk connects.

2. In a piano-player, a case, an action arranged in the case below the top, a tracker-board box secured to the top of the action at one side near the middle line of the case, the motor on top of the action at the end of the tracker-board box, leaving the other side of the top of the action clear, and a movable fulcrum-bar having the playing-fingers pivoted thereon, adapted to be moved within the case above the action beside the tracker-board box and motor.

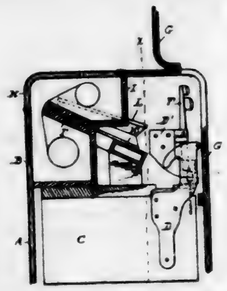

3. In a piano-player, a case, an action arranged in the case below the top, the tracker-board secured to the top of the action, a wind-trunk extending up at one end of the action, and a horizontal wind-trunk extending across the top thereof, a pressure-regulator on the top of the action at one end, connected to said wind-trunk as described, and a pneumatic-motor at the other end of the action, to which said trunk connects.

4. In a piano-player, a case, an action arranged in the case below the top, the tracker-board secured to the top of the action, a wind-trunk extending up at one end of the action and a horizontal wind-trunk extending longitudinally across the same, a regulating-bellows secured to the said trunk at one end, a valve-casing secured to the bellows and connected to the trunk on both sides of the regulating-bellows connection, a valve in said casing and a pneumatic-motor at the other end of the action into which said wind-trunk connects.

5. In a piano-player, the combination of a case, an action in the case, a fulcrum-bar, the playing-fingers pivoted therson, said bar being supported movably to withdraw the fingers in the case or to project them therefrom, of two doors for closing the aperture in the case through which the fingers are projected, one door extending down nearly to the upper face of the projecting portions, for the purpose described.

6. In a piano-player, a fulcrum-bar, having a series of vertical gains in its face, and a series of interposed strips or ribs formed between the gains, of fulcrum-blocks secured to said bar in the gains, other fulcrum-blocks secured on the outer faces of said ribs and projecting beyond the bar, and playing-fingers pivoted in such projections.

7. In a piano-player, a fulcrum-bar having a series of vertical gains in its outer face, and a series of interposed strips or ribs between the gains, of fulcrum-blocks *m* secured to said bar in the gains, other fulcrum-blocks secured on the outer faces of the ribs, the bifurcated portion *n* projecting below the bar and the shoulder *o* on the blocks bearing against the under face of the fulcrum-bar.

8. In a piano-player, the wind-trunk *k*, the regulating-bellows on one side thereof and the valve-case N on the other side, the wind-trunk K', the ports *a b* connecting the wind-trunks with the bellows, the valve *c* for the port *a*, the ports *h* and *i* connecting the wind-trunks with the valve-case, and the valve O for controlling the by-pass through the valve-case.

9. In a piano-player, a case, an action arranged in the case below the top, a pivoted fulcrum-bar having the playing-fingers pivoted thereon, movable to a position within the case above the action with the playing-fingers in a vertical position at the rear side of the casing, or into a horizontal position projecting without the case.

10. In a piano-player, a case, an action arranged in the case below the top, a movable fulcrum-bar having the playing-fingers pivoted thereon movable within the case to a vertical position above the rear side of the action, and the tracker-board, above the action at the forward side thereof.

11. In a mechanical playing attachment for keyboard musical instruments, the combination of a casing, a pneumatic-action therein, a series of vertically-movable push-rods operated by said action, a series of finger-levers arranged in their playing position, in a substantially horizontal plane with their key-actuating ends projecting without the casing and their inner ends in proximity respectively to said push-rods, a fulcrum-bar to which said levers are pivoted, and rocking brackets to which said bar is attached arranged laterally in the operating position of parts and adapted to be swung upward to carry said levers into a substantially vertical plane within the casing.

705,001. MOTOR. RALPH WIENER, Eagle, N. Mex. Filed Aug. 22, 1901. Serial No. 72,917. (No model.)

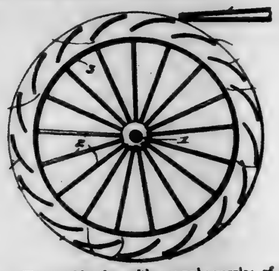

Claim.—The combination with a supply-nozzle; of a motor-wheel having a rim and outwardly-inclined sides forming an annular flaring channel, and arc-shaped vanes having their convex surfaces outermost and extending between the sides and to near the outer edges of said sides and separated from the rim, forming ports or passages for the circulation of the impelling agent between the pockets or spaces formed between the vanes, the curvature of the vanes causing the impelling fluid to be directed toward the rim and from one pocket to another, substantially in the manner specified.

705,002. PEDAL FOR SELF-PLAYING ATTACHMENTS FOR PIANOS. JOSEPH WIENER, Brooklyn, N. Y., assignor of one-half to Karl Fink, New York, N. Y. Filed Dec. 6, 1900. Renewed Nov. 14, 1901. Serial No. 82,220. (No model.)

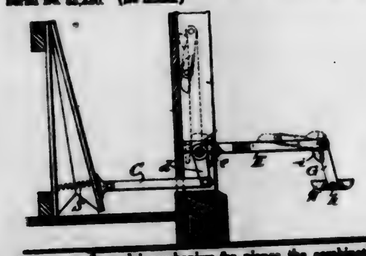

Claim.—1. In pedal mechanism for pianos, the combination of a set of lever members pivotally connected together whereby they are adapted to be folded, a pedal for said set of members, and means for imparting rigidity to the said set of members when depressing the pedal, substantially as set forth.

2. In pedal mechanism for pianos, the combination of two sets of lever members, arranged side by side, the members of each set being pivotally connected, a pedal for each set of members, and means for imparting rigidity to each set of members, when depressing the pedals, said sets of members being adapted to be separately folded, substantially as set forth.

3. In pedal mechanism for pianos, the combination of a set of members, comprising a pivoted lever, and a hanger pivoted to the same, means for imparting rigidity to the set of members, and a pedal pivoted to the hanger, said set of members and pedal being adapted to be folded together, substantially as set forth.

4. In pedal mechanism for pianos, the combination of a crank-shaft, a pivoted lever, hangers pivoted to the lever, a pedal pivoted to the said hangers, said lever, hangers and pedal being adapted to be folded, and means for imparting rigidity to the set of members comprising the lever and hangers, substantially as set forth.

5. In pedal mechanism for self-playing attachments for pianos, the combination, of a crank-shaft, a link for connecting the latter with the bellows, a lever pivoted to said shaft, hangers pivoted to the lever, a pedal pivoted to the hangers, and stop-shoulders on the hangers and lever, substantially as set forth.

705,003. MACHINERY FOR THE MANUFACTURE OF RIMMED WHEELS AND DISKS. EDWARD WILLIAMS, Birmingham, England. Filed Dec. 27, 1901. Serial No. 87,468. (No model.)

Claim.—1. In machines for the manufacture of rimmed wheels and disks from plain sheet-metal blanks of uniform thickness, the combination consisting of a fixed bed, a holding-down ram, a stem projecting above the said bed, a spur-wheel freely mounted on the said stem and engaging with a rotating pinion, a carrier in rigid attachment with the said spur-wheel, a slide mounted on the said carrier, a rim-forming roll rotatable upon the said slide, and slide-advancing mechanism operated from a spur-wheel fixed to the said bed projecting stem, substantially as set forth.

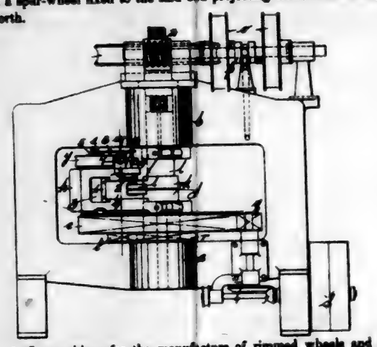

2. In machines for the manufacture of rimmed wheels and disks from plain sheet-metal blanks of uniform thickness, the combination with a carrier rotatable about the blank fixed to the machine, and a tool-slide mounted on the same carrier, of a cam engaging the outer end of the said slide, a worm-wheel fixed to the spindle of the said cam, a driving-worm mounted upon a spindle provided with a swiveling bearing at one end and a sliding bearing at the opposite end, a withdrawing-spring in attachment with the said sliding bearing, a pivoted step-piece, a step-piece knock-out lever, and a knock-out-lever-operating peg fixed upon and rotating with the said worm-wheel, substantially as set forth.

3. In machines for the manufacture of rimmed wheels and disks from plain sheet-metal blanks of uniform thickness, the combination with rim-forming mechanism rotating around a stem constituting a part of the fixed bed of the machine, of a holding-down ram having a screw-thread cut around its upper portion, a worm-wheel having an internally-threaded center mounted upon the said screwed portion of the ram, a worm engaging the said worm-wheel, a pair of belt-pulleys mounted freely upon the shaft of the said worm, and a clutch arranged between the said pulleys, substantially as set forth.

705,004. ROTARY ENGINE. WM D. WILLIAMS, Fredericksburg, Va. Filed Dec. 31, 1900. Serial No. 41,877. (No model.)

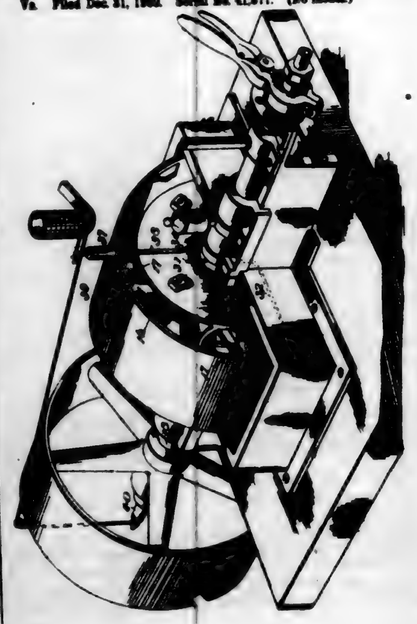

Claim.—1. In a multiple engine, a collar having a passage adapted to communicate with the series of engines, valved pipes in communication with opposite end portions of said passage, and an indicator adapted to be coupled to the upper valved pipe, substantially as specified.

2. In a multiple engine, a collar having two segment-passages adapted to communicate with the series of engines, and provided with two sets of valved pipes, and an indicator adapted to be attached to the collar so as to communicate with either passage thereof, substantially as specified.

3. In a multiple engine having ports, one for each engine, valves controlling the ports, a fixed part having a passage adapted to communicate with the ports of the engines, and an indicator mechanism adapted to be applied to the said fixed parts, substantially as set forth.

705,005. VENDING-MACHINE. ELMER A. WILCOX, Chicago, Ill., assignor, by direct and mesne assignments, to Standard Vending Company, Chicago, Ill., a Corporation of Illinois. Filed Oct. 18, 1901. Serial No. 79,055. (No model.)

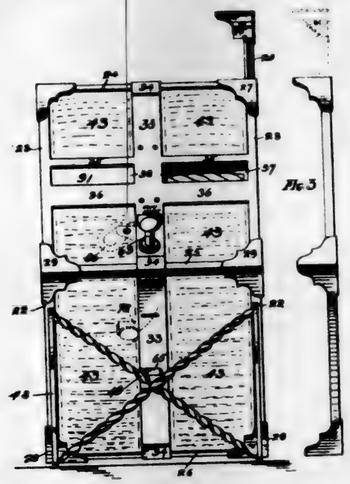

Fig. 3.

Claim.—1 The merchandise-vending machine having two movable pocketed carriers for the merchandise, each with its own delivery window or opening, coin mechanism controlling the movements of the carriers, independent shutters for said openings, and means whereby when one carrier is exhausted, the shutter of the other carrier will be opened, substantially as specified.

2. The merchandise-vending machine having two pocketed carriers for the merchandise movable by the purchaser, and each having its own delivery window or opening, coin mechanism controlling the movements of the carriers, independent shutters for said openings, and means whereby when one carrier is exhausted, the shutter of the other carrier will be opened, substantially as specified.

3. The cigar-vending machine having two movable cigar-holding devices, each with its own delivery-opening, coin mechanism controlling the movements of said devices, shutters for closing said delivery-openings, and means whereby said devices may cause the opening of either shutter, substantially as specified.

4. The cigar-vending machine having a coin mechanism, two movable cigar-holding devices mechanically connected so that they move together and each provided with its own delivery-opening, shutters for closing said openings, and means whereby said devices may, whenever the cigars are all sold from one device, cause the opening of the shutter of the other device, substantially as specified.

5. The coin-controlled cigar-vending machine, having two movable cigar-holding devices each with its own delivery-opening, shutters for closing said delivery-openings, and means whereby said cigar-holding devices may cause the opening of either of said shutters, substantially as specified.

6. The coin-controlled cigar-vending machine having two movable cigar-holding devices each with its own delivery-opening, shutters for closing said delivery-openings, springs for operating said shutters, means for holding the shutters in their closed positions, and means whereby said cigar-holding devices may cause the opening of either of said shutters, substantially as specified.

7. The merchandise-vending machine having two movable pocketed carriers for the merchandise, each with its own delivery window or opening, coin mechanism controlling the movements of the carriers, independent shutters for said openings, means whereby the carriers may cause the opening of either shutter, and means whereby the slot of the coin mechanism will be closed when all the merchandise is sold, substantially as specified.

8. The merchandise-vending machine having two movable pocketed carriers for the merchandise, each with its own delivery window or opening, coin mechanism controlling the movements of the carriers, independent shutters for said openings, and means whereby the slot of the coin mechanism will be closed when all the merchandise is sold, substantially as specified.

9. The vending-machine wherein are combined two rotatable merchandise-carriers, each having its own delivery-window, independent shutters controlling said windows, coin mechanism, and mechanism for controlling said shutters, the coin mechanism and the shutter mechanism being located in a plane between the carriers, substantially as specified.

10. The combination with the merchandise carriers or holders of a coin-controlled vending-machine, of a rotatable toothed wheel or rim 50 supporting said carriers, a surrounding casing having a separate merchandise-delivery window in front of each carrier, separate shutters for closing said windows, mechanism for controlling said shutters, and a cam carried by said rim and causing the operation of said shutter mechanism, substantially as specified.

11. The combination with the merchandise carriers or holders, of a rotatable toothed wheel or rim 50, supporting said carriers, mechanism for operating said rim, a surrounding casing having separate delivery-windows one in front of each carrier, spring-pressed shutters for closing said windows, mechanism for controlling said shutters, and a cam carried by said rim causing the operation of said shutter mechanism, substantially as specified.

12. The combination with the merchandise carriers or holders, of a rotatable toothed wheel or rim 50, supporting said carriers, mechanism embracing the deposited coin for operating said rim, a surrounding casing having a separate delivery-window in front of each carrier, spring-pressed shutters for closing said windows, mechanism for controlling said shutters, and a cam carried by said rim causing the operation of said shutter mechanism, substantially as specified.

13. The combination with the merchandise carriers or holders of a coin-controlled vending-machine, of a rotatable toothed wheel or rim 50, supporting said carriers, a surrounding casing having a window in front of each carrier, shutters for closing said windows, springs for opening said shutters, catches for holding the shutters closed, and a cam carried by said rim and causing the release of said catches, substantially as specified.

14. The combination in a vending-machine, of the shutters for closing the delivery-windows and the gate for closing the coin-slot, all mounted on sliding rods arranged parallel and close together, the rod of the gate having a top cross-bar engaged by the shutter-rods, springs on said rods, catches for holding the shutters closed and the gate open, and means for releasing said catches, substantially as specified.

15. The combination in a vending-machine, of two merchandise-carriers, each having its own delivery-window, coin mechanism for operating the carriers, shutters for said windows and a gate for the slot of the coin mechanism, parallel and adjacent rods supporting said shutters and gate, a controlling device for each rod, and means moving with the carriers for releasing said controlling devices, substantially as specified.

16. The combination in a vending-machine, of two merchandise-carriers, each having its own delivery-window, coin mechanism for operating the carriers, shutters for said windows and a gate for the slot of the coin mechanism, parallel and adjacent rods supporting said shutters and gate, said shutter-rods supporting the gate-rod when they are themselves raised, a catch for each rod, and means moving with the carriers for releasing said catches, substantially as specified.

17. The combination of the delivery-window shutters and their supporting-rods, with the coin-slot gate and the supporting-rod, and the catch by which the gate is controlled and the shutter-rods acting when in their raised positions to prevent the gate from closing, substantially as specified.

18. The combination with the delivery-window shutters and their supporting-rods, with the coin-slot gate, its supporting-rod, the catch by which the descent of the gate is controlled, and the cam releasing the catch, the shutter-rods also acting when in their raised positions to prevent any fall of the gate, substantially as specified.

19. A gate for closing the coin-slot, a spring for the gate, and a catch for holding the gate open, in combination with the shutter for closing the merchandise-delivery window, the catch controlling said shutter, and means for releasing both said catches, the gate-catch being operated in advance of the shutter-catch, whereby the coin-chute will always be closed when the merchandise is sold, substantially as specified.

705,006. BINDING-ENVELOP OR FILE. HENRY D. WESTON, Wellesley Hills, Mass. Filed Nov. 22, 1900. Serial No. 737,870. (No model.)

Claim.—1. As an improved article of manufacture, a filing-case or envelop having attached to it at or near its lower edge, a narrow flexible binding-strip running the length of said edge, a section of which extends from said edge and provides the means whereby the envelop or case may be united to others of its kind.

2. A filing-case or envelop having a narrow binding-strip attached to it and running the length of its lower edge, a section of which strip extends from said edge and is covered upon one surface with an adhesive composition, and is adapted to overlap and be attached to the lower edge of another filing-case or envelop.

3. A series of filing-cases or envelops united together by narrow binding-strips secured to the envelops or cases at or near their lower edges and which strips overlap one upon the other, are united one to another by an adhesive composition and form a flexible back for the bound envelops or cases.

705,007. COAT. HARRY WOLF, Chicago, Ill., assignor to R. Kuppenheimer & Co., Chicago, Ill. Filed May 17, 1901. Serial No. 60,686. (No model.)

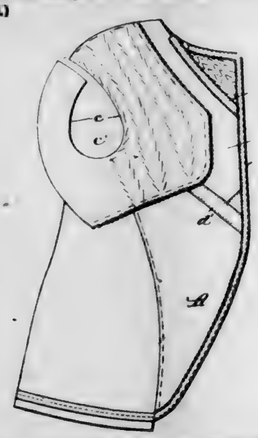

Claim.—1. A garment of the character described having applied to the body thereof a diagonally-extending piece of elastic cloth cut on the bias and extending from near the shoulder of the garment to the front edge of the garment beneath the lapel, said cloth having horizontally-disposed elastic hairs or strands, and a shoulder-pad applied to the inner side of said elastic cloth adjacent to the armhole of the garment.

2. A garment of the character described having applied to the breast portion thereof, a lining of dark cloth or the like, a diagonally-extending piece of elastic cloth cut on the bias and extending from near the shoulder of the garment to the front edge of the garment beneath the lapel, said cloth having horizontally-disposed elastic strands and secured to said lining, and a shoulder-pad applied to the inner side of said elastic cloth adjacent to the armhole of the garment.

705,008. COMBINATION RAKE AND FORK. AUGUST ZWICKER, Rusk, Tex. Filed Jan. 31, 1902. Serial No. 92,043. (No model.)

Claim.—1. An implement of the class set forth having a handle with a fork, and a rake attachment having a sliding connection with both the handle and the tines of the fork.

2. An implement of the class set forth comprising a fork having a handle, a rake attachment having slidable connections with both the handle and the tines of the fork, and a locking device carried by the rake attachment to engage a portion of the fork to hold said attachment in operative projected position.

3. An implement of the class set forth comprising a fork having a handle, and a rake attachment having forwardly-projecting guide-clips engaging the tines of the fork, and a sleeve movable on the handle.

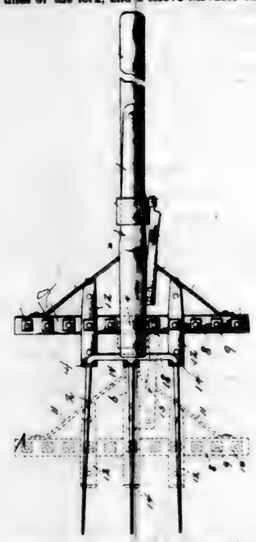

4. An implement of the class set forth, comprising a fork having a handle with a diametric reduction in rear of its forward extremity, a rake attachment provided with guide devices engaging the tines of the fork, and a sleeve movable on the handle, and a locking device carried by the attachment for engagment with a portion of the fork to maintain the said attachment in projected operative position.

5. An implement of the class set forth comprising a fork with a handle and a rake attachment having a series of forwardly-projecting guide-clips with upturned ends engaging the tines of the fork, and a sleeve slidably mounted on the handle.

705,009. CABINET FOR GRAPHOPHONES, GRAPHOPHONE-RECORDS, OR THE LIKE. WILLIAM J. MCDEVITT, Philadelphia, Pa. Filed Sept. 13, 1900. Serial No. 29,895. (No model.)

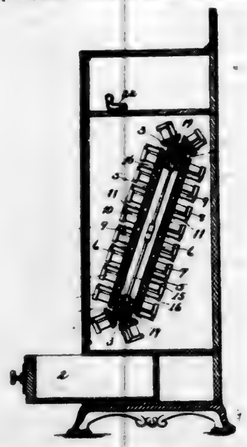

Claim.—1. A cabinet for the purposes described, having arranged therein a plurality of juxtaposed record-holders, each of said holders comprising a support secured at one end and a spring-pressed retainer mounted adjacent to the free end of the support, and means for moving said record-holders so as to bring the desired holder into position for removing or replacing a record.

2. A cabinet for the purposes described, having arranged therein a plurality of juxtaposed movable record-holders, comprising cylindrical supports having exposed or free outer ends, means for locking records on said holders, said means being mounted at one side of and adjacent to said holders, and means for moving said record-holders so as to bring the desired holder into position for removing or replacing a record.

3. A cabinet for the purposes described, having an endless belt adapted to move therein, a plurality of juxtaposed record-holders arranged on said belt, and comprising cylindrical supports having exposed or free outer ends, said means being mounted at one side of and adjacent to said holders, means for locking records on said holders, and means for moving said belt so as to bring the desired holder into position for removing or replacing a record.

REISSUES.

12,009. ENGINE. CHARLES H. BENTON, Cleveland, Ohio. Filed May 5, 1902. Serial No. 105,919. Original No. 667,780, dated Feb. 12, 1901.

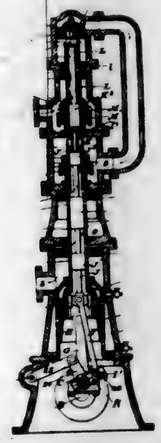

Claim.—1. An engine comprising a high-pressure and a low-pressure cylinder arranged in tandem, an independent piston in each cylinder, a pressure-inlet to the high-pressure cylinder, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, distribution-valves controlling the high and low pressure cylinders, a crank-shaft and crank, and separate means connecting each piston to said crank.

2. An engine comprising a high-pressure and a low-pressure cylinder arranged in tandem, an independent piston in each cylinder, a pressure-inlet to the high-pressure cylinder, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, central-distribution slide-valves controlling the high and low pressure cylinders, a crank-shaft and crank, and separate means connecting each piston to said crank.

3. An engine comprising a high-pressure and a low-pressure cylinder arranged in tandem, an independent piston in each cylinder, a pressure-inlet to the high-pressure cylinder, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, central-distribution slide-valves controlling the high and low pressure cylinders, the valve of each cylinder connected to the piston of the other cylinder, a crank-shaft and crank, and separate means connecting each piston to said crank.

4. An engine comprising a high-pressure and a low-pressure cylinder arranged in tandem, an independent piston in each cylinder, a pressure-inlet to the high-pressure cylinder, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, central-distribution slide-valves controlling the high and low pressure cylinders, an extension from the piston of each cylinder connected to the valve controlling the other cylinder, a crank-shaft and crank, and separate means connecting each piston to said crank.

5. An engine comprising a high-pressure and a low-pressure cylinder arranged in tandem, an independent piston in each cylinder, a pressure-inlet to the high-pressure cylinder, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, central-distribution slide-valves controlling the high and low pressure cylinders, independent valves controlling the inlets to the high and low pressure cylinders, a crank-shaft and crank, and separate means connecting each piston to said crank.

6. An engine comprising a high and a low pressure cylinder arranged in tandem, an independent piston in each cylinder, a steam-chest between the cylinders having a central sleeve with steam-ports, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, a central-distribution slide-valve controlling the high-pressure cylinder and arranged within said sleeve, an extension from the piston of the high-pressure cylinder arranged between said valve and sleeve and having ports in position to register with those of said sleeve, a cut-off valve in position to control the ports of said sleeve, a distribution-valve controlling the low-pressure cylinder, a crank-shaft and crank, and separate means connecting each piston to said crank.

7. An engine comprising a high and a low pressure cylinder arranged in tandem, an independent piston in each cylinder, a steam-chest between the cylinders, having a central sleeve with steam-ports, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, a central-distribution slide-valve controlling the high-pressure cylinder and arranged within said sleeve, an extension from the piston of the high-pressure cylinder arranged between said valve and sleeve and having ports in position to register with those of said sleeve, a cut-off valve in position to control the ports of said sleeve, a distribution-valve controlling the low-pressure cylinder, a separate valve controlling the inlet to the low-pressure cylinder, a crank-shaft and crank, and separate means connecting each piston to said crank.

8. An engine comprising a high and a low pressure cylinder arranged in tandem, an independent piston in each cylinder, a pair of steam-chests between the cylinders, each having a central sleeve with steam-ports, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the steam-chest of the low-pressure cylinder, central-distribution slide-valves controlling the high and low pressure cylinders and arranged within said sleeves, an extension from the piston of each cylinder arranged between the distribution-valve and sleeve of the corresponding steam-chest and having ports in position to register with those of said sleeve, separate cut-off valves in position to control the ports of said sleeves, a crank-shaft and crank, and separate means connecting each piston to said crank.

9. An engine comprising a high-pressure and a low-pressure cylinder arranged in tandem, an independent piston in each cylinder, a pressure-inlet to the high-pressure cylinder, an external passage leading from the exhaust end of the high-pressure cylinder and communicating with the inlet end of the low-pressure cylinder, central-distribution slide-valves controlling the high and low pressure cylinders, the valves of each cylinder connected to the piston of the other cylinder, a crank-shaft and crank, and separate means connecting each piston to said crank, arranged to give said pistons and valves a differential motion with respect to each other.

10. A steam-engine comprising a high-pressure and a low-pressure cylinder arranged in tandem, an independent piston in each cylinder, a steam-chest between said cylinders and in open communication with the high-pressure cylinder, whereby a constant steam-pressure is maintained on one face of the piston in the high-pressure cylinder, an air-cushion arranged in position to act as a buffer to the piston of the low-pressure cylinder, a crank-shaft and crank, and separate means connecting each piston to said crank.

11. In a multiple-piston engine, a series of cylinders arranged in axial relation to each other and a series of separate motive pistons of different areas therein arranged in oppositely-driving pairs, a series of distribution-valves connected in pairs and operating centrally as to said pistons and having a rigid connection with one pair of said pistons and an independent sliding contact within the other pair of pistons, substantially as described.

12. In a steam-engine a series of axially-alined cylinders having a set of high-pressure motive pistons and a set of low-pressure motive pistons therein, and a steam-passage from the high-pressure-piston cylinders to the low-pressure-piston cylinders, separate tubes rigidly connecting said pistons in oppositely-driving pairs and having steam inlets and outlets, and valves in pairs arranged to reciprocate within said tubes and control said inlets and outlets and having each pair of said valves connected rigidly with one set of said pistons to move in time therewith and independently of the other set of pistons and valves, substantially as described.

13. In a steam-engine, a series of cylinders and a series of motive pistons of different areas arranged in axial alinement and in pairs and a separate tube connecting each pair of pistons independently of the other pair, said tubes having steam-ducts on each side of each piston, valves in pairs for each pair of pistons connected with and operated by the opposite driving-pistons, and means for operating the pairs of valves having

differently-timed throws to open and close said steam-ducts, substantially as described.

14. In steam-engines of the multiple-piston type, a set of low-pressure motive pistons of different areas and a set of high-pressure pistons of different areas and separate cylinders therefor connected by a steam-passage, separate crank connections with differently-timed throws for said sets, valves centrally as to said pistons and the valves of one set having the same throw as the other set, said valves for the low-pressure pistons having a rigid operative connection with the high-pressure pistons and the valves for the high-pressure pistons having a rigid operative connection with the low-pressure pistons, substantially as described.

15. A steam-engine having a series of cylinders and pistons of different areas arranged in axial alinement and having said pistons connected in pairs to drive in opposite directions, one pair consisting of high-pressure pistons rigidly connected and the other of low-pressure pistons rigidly connected and valves carried by each pair of pistons to operate centrally in the connection of the opposite pair of pistons, and steam-inlets and governing mechanism for each pair of pistons independently of said valves, substantially as described.

16. In a steam-engine, a series of cylinders and pistons of different areas divided into pairs, each pair of pistons having valves connected therewith to operate centrally within the opposite pair of pistons, separate crank connections having differentially-arranged throws for each pair of pistons and valves, ducts to convey the steam from one piston to the other, and separate steam-inlet-governing mechanism for each pair of cylinders and its pistons, substantially as described.

17. A series of steam-cylinders axially arranged and having a set of connected high-pressure pistons and a set of connected low-pressure pistons therein, valves carried by each set of pistons to control the flow of steam between the pistons of the opposite driving set, a duct to lead the steam from one set of pistons to the other set whereby a direct action of the steam is obtained in opposite directions successively, and separate steam-governing mechanism at the inlets of each set of pistons, substantially as described.

18. In an engine as described, a set of cylinders and motive pistons of different areas, the smaller piston located to be subject to constant pressure from the boiler on its under side and the larger piston subject to pressure on its top from steam which has passed the smaller piston, crank connections having differently-timed throws for each piston, and a valve for each piston rigidly connected with and operated by the throw of the opposite moving piston, and separate steam-governing mechanism for said pistons, substantially as described.

19. In steam-engines, two sets of reciprocating motive pistons and cylinders therefor, one of which sets of pistons has a constant steam-cushion in one direction, and the other set a fluctuating air-cushion in the other direction, substantially as described.

20. In an engine, the axially-alined high-pressure and second expansion cylinders having pistons therein connected by a tube, low-pressure cylinders and the pistons therein, and a supporting-tube for said pistons having crank connections, steam-ducts in said tubes on each side of said pistons, valves on the upper part of the low-pressure-piston tube to control the flow of steam through said ducts about the high-pressure pistons, a tension-rod fixed to said high-pressure pistons having valves to control the flow of steam through the ducts about the low-pressure pistons, separate crank mechanism for said rod timed to work with the low-pressure-piston crank connections, a steam-passage from said second expansion-cylinder and piston to said low-pressure cylinder and pistons, and separate governing mechanism at the steam-inlets of the high and low pressure cylinders and pistons, substantially as described.

12,010. EXCAVATING-MACHINE. HANS J. BERTRAM, Chicago, Ill., assignor to Frederick Howard. Filed Mar. 8, 1902. Serial No. 97,376. Original No. 646,574, dated Apr. 3, 1900.

Claim.—1. In an excavating-machine, the combination with a shaft journaled in bearings on the frame of the machine and carrying parallel sprocket-wheels, of a frame swinging on an axis coincident with the axis of rotation of said shaft and adapted to depend therefrom, a shaft journaled in bearings on the free end of said frame, sprocket-wheels carried by said shaft, parallel sprocket-chains turned over said sprocket-wheels on both said shafts, scraper-plates carried by said chains, and an apron depending loosely from said frame of said machine and adapted to rest at its lower end upon the ground immediately in advance of the ditch, said apron being adapted to prevent the earth carried upwardly by said plates from leaving same at their point of exit from the ditch.

2. In an excavating-machine, the combination with a shaft carrying parallel sprocket-wheels and journaled in bearings upon the frame of the machine of a swinging frame swinging on an axis coincident with the axis of rotation of said shaft, a shaft journaled in bearings on the free end of said frame and carrying parallel sprocket-wheels, parallel sprocket-chains trained over said respective sprocket-wheels, scraper-plates extending between said chains and carried thereby, devices for depressing the free end of said swinging frame, a traveling carriage on the frame of said machine, a shaft carried thereby and provided with sprocket-wheels over which said sprocket-chains are trained, and means for locking said carriage against movement on said frame to hold sprocket-chains taut.

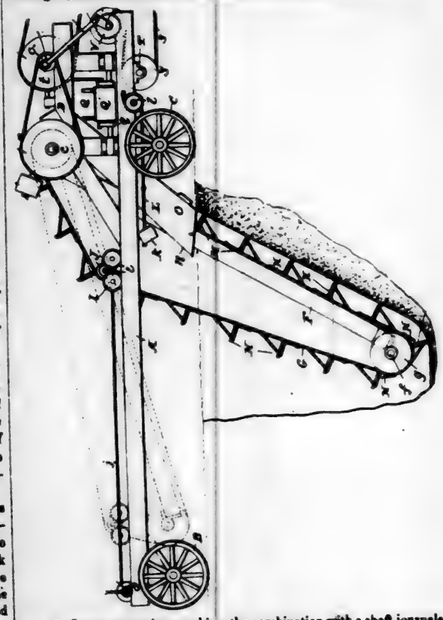

3. In an excavating-machine, the combination with a shaft journaled in bearings on the frame of the machine and carrying parallel sprocket-wheels, of a frame pivotally secured to said shaft and adapted to depend therefrom, a shaft journaled in bearings on the free end of said frame, sprocket-wheels carried by said shaft, parallel sprocket-chains trained over said sprocket-wheels on both said shafts, cutters carried by said sprocket-chains at intervals adapted to loosen the earth, plates alternated with said cutters and adapted to take the loosened earth, a scraper pivotally mounted upon the frame of the machine and adapted to be engaged by said plates to scrape the latter when they approach the upper limits of their motion.

4. In an excavating-machine, the combination with a shaft journaled in bearings on the frame of the machine and carrying parallel sprocket-wheels, of a frame pivotally secured to said shaft and adapted to depend therefrom, a shaft journaled in bearings on the free end of said frame, sprocket-wheels carried by said shaft, parallel sprocket-chains trained over said sprocket-wheels on both said shafts, cutters carried by said sprocket-chains at intervals adapted to loosen the earth, plates alternated with said cutters and adapted to take up the loosened earth, a swinging apron pivotally mounted upon the frame of the machine immediately in front of said sprocket-chains, a receptacle for earth in front of said apron, and a scraper pivotally mounted above said apron and adapted to engage said plates as they approach the upper limit of their movement to scrape the same and deliver the earth into said receptacle.

5. In an excavating-machine, the combination with a shaft journaled in bearings on the frame of the machine and carrying parallel sprocket-wheels, of a frame pivotally secured to said shaft and adapted to depend therefrom, a shaft journaled in bearings on the free end of said frame, sprocket-wheels carried by said shaft, parallel sprocket-chains trained over said sprocket-wheels on both said shafts, cutters carried by said sprocket-chains at intervals adapted to loosen the earth, plates alternated with said cutters and adapted to take up the loosened earth, a swinging apron pivotally mounted upon the frame of the machine immediately in front of said sprocket-chains, a receptacle for earth in front of said apron, conveyers leading from said receptacle, and a scraper pivotally mounted above said apron and adapted to engage said plates as they approach the upper limit of their motion to scrape the same and deliver the earth into said receptacle.

6. In an excavating-machine, the combination with a horizontal frame, drive-gear carried thereby, excavating devices geared to said drive-gear, and a swinging frame carrying said excavating devices and adapted to project above and below said horizontal frame, a windlass on the rear end of said horizontal frame connected with the free end of said swinging frame, a windlass at the forward end of said swinging frame, and a cross-beam connected therewith and adapted to be drawn tightly against the rear face of said swinging frame and the lower face of said horizontal frame, to hold said swinging frame in a lowered position.

7. In an excavating-machine, the combination with a windlass carried thereby and adapted to receive a rope secured at one end to a rigid device in the earth in the direction of motion of the machine, and a ratchet-wheel rigid relatively to said windlass, a lever pivoted concentric with said ratchet-wheel, and a pawl carried by said lever and adapted to engage said wheel, of a drive-shaft, and reciprocating devices actuated from said drive-shaft and connected with said lever for imparting a rocking motion thereto, whereby said machine is gradually advanced.

8. In an excavating-machine, the combination with a windlass carried thereby, and adapted to receive a rope secured at one end to a rigid device in the earth in the direction of motion of the machine, and a ratchet-wheel rigid relatively to said windlass, a lever pivoted concentric with said ratchet-wheel, and a pawl carried by said lever and adapted to engage said wheel, of a drive-shaft, an eccentric carried by said drive-shaft, and an eccentric-rod connected therewith at one end and at its other end with said lever for imparting a rocking motion thereto, whereby said machine is gradually advanced.

9. In an excavating-machine, the combination with excavating devices carried by a moving part of the machine and comprising flat plates extending practically transversely to their direction of motion, of a scraper situated in the path of said plates and adapted to be engaged thereby and forced out of their path, to scrape said plates, said scraper comprising a frame consisting of two parallel side plates pivoted at one end to said machine, a cross-piece mounted between the ends of said side plates and weights carried by the free ends of said side plates.

10. In an excavating-machine, the combination with excavating devices carried by a moving part of the machine and comprising flat plates extending practically transversely to their direction of motion, of a scraper situated in the path of said plates and adapted to be engaged thereby and forced out of their path, to scrape said plates, said scraper being mounted between parallel arms pivoted at one end to a part of the machine and normally held in the path of said plates by means of depressing devices engaging said frame.

11. In an excavating-machine, the combination with the drive-gear, a swinging frame pivotally mounted on same, and sprocket-chains carried by said frame, of excavating devices carried by said sprocket-chains and comprising flat plates extending practically transversely to said chains, plates lying against said chains forward of said first-named plates, and cutters mounted immediately behind each of said first-named plates and projecting beyond the edges of the latter for loosening earth to be taken up by the next succeeding plates.

12. In an excavating-machine, a shovel for receiving and elevating loosened earth and comprising a plate or apron forming an automatic cleaner or scraper and movably attached at a point outside the portion of the shovel which receives and carries the material.

13. A self-dumping elevating-shovel having a movable scraping or cleaning part arranged with one end in the portion of the shovel which carries the material, and attached at a point outside such portion of the shovel, and means for moving such scraping or cleaning part so as to force the material outwardly

14. An elevator comprising a flexible endless belt passing over suitable direction-changing devices, one or more self-cleaning shovels connected therewith, each shovel forming a receptacle connected to the belt, a movable scraping or cleaning part in the soil-carrying portion of the shovel and projecting therefrom, said cleaning part being attached to a section of the belt at a point beyond the soil-carrying part of the shovel and adapted to be moved when passing the direction-changing devices so as to force the material outwardly.

15. In an excavating-machine, an endless belt provided with a series of elevating-shovels each comprising a projecting blade and a plate or apron normally forming a back for the shovel, said plates or aprons thus normally forming backs for the shovels being attached to swing independently of the projecting blades, and means for causing such backs to automatically swing outwardly and upwardly in directions to eject material when the shovels are in position for dumping.

16. In an excavating-machine, a suitable body-frame; an elevator-frame supported to incline downwardly and rearwardly from the body-frame of the machine; an endless belt supported to traverse the elevator-frame; and a series of excavating-shovels arranged upon the endless belt and each comprising a projecting blade, and a swinging plate normally forming a back for the shovel, said plates being independent of the projecting blades.

17. In an excavating-machine an endless belt provided with a series of excavating-shovels each comprising a projecting blade and a swinging plate normally forming a back for the shovel, the plates being attached to link-sections of the belt which are jointed to the link-sections to which the projecting blades are attached.

18. In an excavating-machine provided with suitable framework and with a forwardly-inclined endless traveling belt provided with excavating and elevating shovels having swinging backs arranged to automatically swing outwardly when the shovels are right side up and in position to discharge.

19. In an excavating-machine, a swinging frame; sprockets at opposite ends of the swinging frame; endless chains trained over the sprockets; plates projecting outwardly from the endless chains; and plates attached to the endless chains at points between the said outwardly-projecting plates and forming in conjunction with the latter a series of elevating-shovels; the plates thus attached to the endless chains at points between the outwardly-projecting plates being parallel with the portions of the chains to which they are attached when such portions are between the sprockets on the swinging frame, and being arranged to swing outwardly from the sprocket-chains when said portions thereof pass about the upper sprocket on the swinging frame.

20. In an excavating-machine, a swinging frame arranged to incline downwardly and rearwardly; an endless belt trained over direction-changing devices such as sprockets at opposite ends of the swinging frame; and means for elevating the soil comprising a series of plates positioned at intervals upon and projecting outwardly from the endless belt, and plates attached to the endless belt at points between the outwardly-projecting plates and arranged to swing outwardly when passing about the direction-changing devices; the endless belt being constructed with links, and the outwardly-projecting and outwardly-swinging plates being attached to different links.

12,011. INDEX-CABINET. RICHARDSON W. LOCKERBON, Sioux Falls, S. D. Filed Nov. 4, 1901. Serial No. 81,634. Original No. 681,402, dated Aug. 27, 1901.

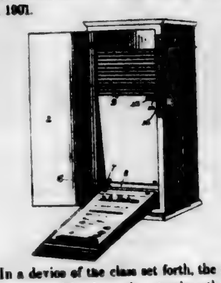

Claim.—1. In a device of the class set forth, the combination of a cabinet open at the front and having a door to close the same, the upper portion of one end of the cabinet near the one front edge being formed with a vertical slot, and said edge having letters thereon adjacent to said slot, a series of carriers movably attached at their lower ends within the lower portion of the cabinet, the upper end of each carrier, except the one in front, when in superior position, extending above that immediately in advance of it, and a combined index and holder slidingly mounted in the said slot.

2. In a device of the class set forth, the combination of a cabinet open at one side, the upper portion of the one edge of the latter side having letters thereon, a combined index and holder slidingly mounted in one end of the cabinet and having a portion movable over the said letters, and a plurality of carriers movably connected at their lower ends within the lower portion of the cabinet and gradually increasing in length from the front toward the rear one.

3. In a device of the class set forth, the combination of a cabinet open at one side, a plurality of carriers pivotally mounted therein to move outward and inward through the said open side, the one edge portion of the latter side having a series of letters thereon, the upper end of each carrier, except the one in front, when in superior position, extending above that immediately in advance of it, and a combined index and holder movably mounted in the end of the cabinet adjacent to the said letters.

4. In a device of the class set forth, the combination of a cabinet, a series of carriers, a carrier-holder, and means for supporting said holder in operative position; said carriers being so pivoted in the cabinet as to be inclined when supported by said holder, the upper end of each carrier, except the one in front, when in superior position extending above that immediately in advance of it, and said carrier-holder being movable vertically and adapted to coöperate with the extended ends of the carriers.

5. In a device of the class set forth, the combination of a cabinet

open in front, a series of carriers inclined forward and movably attached at their lower ends within the lower portion of the cabinet, the upper end of each carrier, except the one in front, when in superior position extending above that immediately in advance of it, a holder adapted to move over the upper ends of the carriers to liberate any desired carrier or group of carriers and to support the carriers when the cabinet is closed and an index for the carriers.

12,012. LASTING-MACHINE. MICHAEL F. KELLEY, Brockton, Mass., assignor to the United Shoe Machinery Company, Paterson, N. J., and Boston, Mass., a Corporation of New Jersey. Filed May 22, 1902. Serial No. 108,609. Original No. 693,720, dated Feb. 18, 1902.

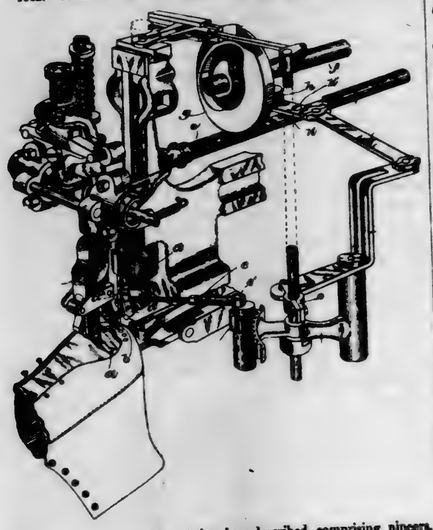

Claim.—1. A machine of the class described, comprising pincers, operating mechanism for moving the pincers longitudinally toward and from the inner sole and laterally toward and from the edge of the inner sole, and means for making said operating mechanism partially inoperative to prevent the pincers from grasping the upper.

2. A machine of the character referred to, comprising pincers, operating mechanism for moving the pincers longitudinally toward and from the insole as held by the operator and laterally toward and from the edge of the inner sole, and means for making said operating mechanism partially inoperative to discontinue one of said movements and prevent the pincers from grasping the upper.

3. A machine of the character referred to, comprising pincers, a two-part operating mechanism therefor, one of said parts moving the pincers longitudinally toward and from the insole as held by the operator, and the other to move the pincers laterally toward and from the edge of the insole, and means for making one of said parts inoperative, whereby the pincers are prevented from grasping the upper.

4. A machine of the character referred to, comprising pincers, a two-part operating mechanism therefor, one of said parts moving the pincers longitudinally toward and from the position in which the insole is held by the operator, while the other moves the pincers laterally toward and from the edge of the insole, and means for making the last-mentioned part inoperative to discontinue the lateral movement of the pincers without affecting their longitudinal movement.

5. A machine of the character referred to, comprising pincers reciprocated longitudinally toward and from the work, mechanism for moving the pincers laterally, and means for disconnecting the pincers from said mechanism without affecting the longitudinal movement of the pincers.

6. A machine of the character referred to, comprising pincers, a two-part operating mechanism therefor, one of said parts moving the pincers longitudinally while the other moves the pincers laterally, tacking mechanism organized to supply either longer or shorter tacks at will, and including a tack-feeding controller, and connections between said controller and a member of one of the parts of said operating mechanism, whereby one of the movements of the pincers is discontinued when the controller is operated to supply the shorter tacks, and resumed when the controller is operated to supply the longer tacks.

7. A machine of the character referred to, comprising pincers reciprocated toward and from the work, a reciprocatory shaft for moving said pincers laterally to engage the upper and draw it over on the insole, a rotary cam, a roll carried by said shaft, tacking mechanism including a tack-feed controller, and connections between said roll and controller, whereby the roll is moved into and out of engagement with the cam when said controller is operated.

8. A machine of the character referred to, comprising pincers reciprocated toward and from the work, a reciprocatory shaft for moving said pincers laterally to engage the upper and draw it over on the insole, a rotary cam, a movable lever on said shaft, a roll carried by said lever and movable thereby into and out of the path of the cam, tacking mechanism including a tack-feed controller, and connections between said lever and controller, whereby the roll is moved into and out of engagement with the cam when said controller is operated.

9. A machine of the character referred to, comprising pincers, a shaft c for actuating the pincers, a cam g, a lever A carried by the shaft c and normally parallel therewith, a roll A' movable into and out of the path of the cam g, and means for moving said roll, whereby said pincers may be entirely disconnected from said shaft.

10. A machine of the character referred to, comprising pincers, a shaft c for actuating the pincers, a cam g, a lever A carried by the shaft c and having a roll A' movable into and out of the path of the cam g, and a hand-lever connected to the said lever A for actuating it, whereby said roll may be moved out of the path of said cam to disconnect said pincers from said shaft c.

11. A machine of the class described, comprising pincers, operating mechanism for causing the pincers to pull the upper, tack-supplying mechanism organized to supply tacks of different sizes, and connections between said tack-supplying mechanism and the mechanism for operating the pincers, whereby when the size of tacks supplied is changed the pincers-operating mechanism is rendered partially inoperative to prevent the pincers from pulling the upper.

12. A machine of the character referred to, comprising pincers, operating mechanism for moving said pincers longitudinally and laterally to engage and pull the upper, tacking mechanism organized to supply either longer or shorter tacks at will and including a tack-controller, and connections between said controller and said operating mechanism, whereby one of the described movements of said pincers is discontinued when the controller is operated to supply the shorter tacks.

12,013. LACING-HOOK FOR FLAT LACES. WILLIAM A. KELLY, Mount Hope, Kans. Filed July 17, 1901. Serial No. 68,696. Original No. 667,393, dated Feb. 5, 1901.

Claim.—1. A lacing hook or stud comprising a straight bar recurved at both ends forming guards, and adapted to allow the lace to slide freely over the bar, the guard to the free end overlying the bar and lace, and the guard at the other end being provided with means for attaching the stud to a garment.

2. A lace hook or stud comprising a straight bar sharply recurved at both ends to form guards, leaving a space between each guard and the bar only equal to the thickness of the lace, the guard to the free end overlying the bar, and the guard to the other end being folded under the bar and provided with means for attaching it to the garment.

3. A lace hook or stud comprising a straight flat bar having recurved ends folded one over, one under the bar, the creases at the folds being oblique to the working edge of the bar and parallel to the edge of the lace when in use, whereby the lace is held flat and prevented from becoming frayed or rolled up at the edges.

4. A lacing hook or stud consisting of a piece of material adapted to be attached to a garment, and provided with slots, which have parallel side walls, for the reception of flat lacing, which slots have their entrances for said lacing equal at least to the full width of the slots, said entrances being located at opposite sides of said piece.

5. A lacing hook or stud consisting of a piece of material adapted to be attached to a garment, and provided with slots, which have parallel side walls, for the reception of flat lacing, which slots have their entrances for said lacing equal at least to the full width of the slots, said entrances being located at different sides of said piece.

6. A lacing hook or stud consisting of a piece of material adapted to be attached to a garment, and provided with a slot, which has parallel side walls, for the reception of flat lacing, which slot has its entrance for said lacing equal at least to the full width of the slot, and a guard for retaining the lacing in the slot, which guard is located at the opposite side of said piece from the slot.

7. A lacing hook or stud consisting of a piece of material adapted to be attached to a garment, and provided with a slot, which has parallel side walls, for the reception of flat lacing, which slot has its entrance for said lacing equal at least to the full width of the slot, and a guard for retaining the lacing in the slot, which guard is located at a different side of said piece from the slot.

8. A lacing hook or stud consisting of a piece of material adapted to be attached to a garment, and provided with a slot, which has parallel side walls, for the reception of flat lacing, which slot has its entrance for said lacing equal at least to the full width of the slot, and a guard for retaining the lacing in the slot.

12,014. DOOR-CHECK. CESAR TERRENY, New York, N. Y., assignor, by mesne assignments, to the Noiseless and Draughtless Door and Window Cushion Company, a Corporation of New York. Filed Jan. 21, 1902. Serial No. 90,724. Original No. 693,203, dated July 10, 1900.

Claim.—1. The combination of a door-frame provided with a groove that has different widths in cross-section, a strip adapted to be retained in said groove, said strip comprising a shank that extends into the narrow portion of the groove and one or more shoulders carried by the said shank, which under compression abut against the bottom of the wider portion of the groove, and a facing for said shoulders and a door mounted to abut against said facing.

2. In combination with a rabbet or member for door-frames and like uses, provided with a groove, a strip comprising a compressible or resilient shank adapted to approximately fit the said groove, one or more shoulders provided on the said shank, and a facing of felt or other soft material for the said shoulders, receiving the abutting surface of a door or other coöperating body, for substantially the purposes set forth.

3. The combination of the rabbet of a door or like frame provided with a groove which has different widths in cross-section, a strip adapted to be retained in said groove and comprising a shank which extends into the narrow portion of the groove, one or more shoulders carried by said shank which under pressure abut against the bottom of the wider portion of the groove and a facing of felt or other soft material for said shoulders against which the door abuts, and a door, substantially as described.

4. In combination with a rabbet or member for door-frames and like uses, provided with a groove, a strip comprising a compressible or resilient shank adapted to approximately fit the said groove, and one or more shoulders provided on said shank in position to normally leave an interval beneath them into which they are adapted to be forced back by an abutting surface, substantially as and for the purposes set forth.

5. The combination of the rabbet for a door-frame or the like provided with a groove which has different widths in cross-section, a strip adapted to be retained within said groove, said strip comprising a shank which extends into the narrower portion of the groove, and one or more shoulders provided on said shank which under pressure abut against the bottom of the wider portion of the groove, and a door, or other movable coöperating body which presses or abuts against said shoulders, for substantially the purposes set forth.

6. The combination with the separable parts of a structure, of a groove in one part having different widths in cross-section, and a compressible strip adapted to be retained in said groove, said strip having a resilient shank which renders the strip as a whole compressible and which extends into the narrower portion of the groove and one or more shoulders provided on said shank which under pressure abut against the bottom of the wider portion of the groove, substantially as described.

DESIGNS.

85,978. DRESSER. CLARA J. CLARKE, Fremont, Ohio. Filed Apr. 23, 1902. Serial No. 104,403. Term of patent 14 years.

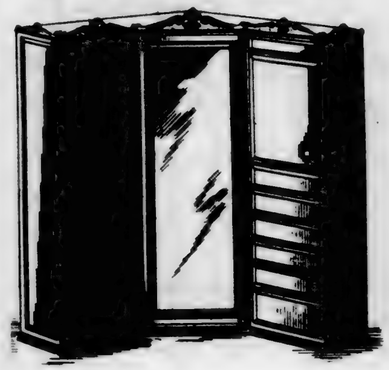

Claim.—The ornamental design for a dresser, as herein shown and described.

TRADE-MARKS

REGISTERED JULY 15, 1902.

38,594. SILK PIECE GOODS AND SILK RIBBONS. DREHAN & BYRNE, New York, N. Y. Filed Apr. 18, 1902.

ANTHEREA

The word "ANTHEREA." Used since September 15, 1901.

38,595. WITHDRAWN.

38,596. WITHDRAWN.

38,597. WITHDRAWN.

38,598. FABRICS FOR BOOT AND SHOE LININGS AND TRIMMINGS. FARNSWORTH, HOTT & CO., Boston, Mass. Filed May 20, 1902.

Rushur

The word "RUSHUR." Used since May 1, 1902.

38,599. DRESS-SHIELDS. THE CANFIELD RUBBER CO., Bridgeport, Conn., and New York, N. Y. Filed May 7, 1902.

The representation of a paper seal over or on a bow of ribbon and a dress-shield on the seal. Used since July 1, 1901.

38,600. TROUSERS. ROSENTHAL AND SOLOMON, Trenton, N. J. Filed June 17, 1902.

MAGNATE

The word "MAGNATE." Used since June 14, 1902.

38,601. UNDERSHIRTS. ATHENS KNITTING CO., Athens, N. Y. Filed June 3, 1902.

ARCTIC

The representation of a polar bear and the word "ARCTIC," the bear being represented as standing on all fours. Used since May 1, 1900.

38,602. HOSIERY. PILLING & HADELEY, Philadelphia, Pa. Filed Nov. 26, 1901.

Quaker

The word "QUAKER." Used since February, 1901.

38,603. CORSETS, CORSELETS, CORGETS, BELTS, BUST-HOLDERS, BUSKS, WHALEBONES OR STEELS, AND HOSE-SUPPORTERS. JULES LIEDAHER, Paris, France. Filed May 19, 1902.

The words "A LA PERSEPHONE" and the letters "I C" and the representation of a crowned goddess floating on the clouds and scattering flowers with one hand and holding lilies in the other. Used since 1881.

38,604. HOSE-SUPPORTERS. I. B. KLEINERT RUBBER COMPANY, New York, N. Y. Filed Dec. 16, 1899.

HOOKON

The word "HOOKON." Used since June 1, 1899.

38,605. HOOKS AND EYES. THE VICTOR G. MILLS CO., Wilmington, Del., and Chicago, Ill. Filed Mar. 26, 1902.

A word of the rebus style, comprising the letter "U," a pin, and the word "IT." Used since July 27, 1901.

38,606. CERTAIN NAMED CLOCKS. MYRON W. COLE, St. Paul, Minn. Filed Mar. 31, 1902.

The conventional representation of a bell swung slightly forward upon a horizontal support and having its hammer appearing vertically inside. Used since March 1, 1900.

38,607. CERTAIN NAMED HARDWARE. THE ACME M'F'G CO., Southington, Conn. Filed Dec. 18, 1901.

HURWOOD

The word "HURWOOD." Used since August 20, 1901.

38,608. WRITING-PAPER AND ENVELOPES. HENRY V. WARNER, New York, N. Y. Filed May 20, 1902.

ENVELNOTE

The word "ENVELNOTE." Used since May 1, 1902.

38,609. MEDICINAL PREPARATIONS IN LIQUID AND TABLET FORM FOR CURE OF CERTAIN NAMED DISEASES. THE S. H. WINSTEAD MEDICINE CO., Paducah, Ky. Filed May 19, 1902.

"LaX-Fos"

The likeness of Dr. S. H. Winstead, his facsimile signature, and the hyphenated word "LAX-FOS." Used since July 5, 1900.

38,610. CERTAIN NAMED MEDICAL COMPOUNDS AND PREPARATIONS. FLORENCE S. TUBB BULL, Chelsea, Mich. Filed May 31, 1902.

Vitalene

The word "VITALENE." Used since October 1, 1901.

38,611. BALMS FOR NASAL AND CATARRHAL AFFECTIONS. BROWN MANUFACTURING CO., Greeneville, Tenn. Filed Apr. 18, 1902.

Nosena

The word "NOSENA." Used since January 1, 1902.

38,612. SOOTHING-SYRUP. LOUIS H. MASSON, Montreal, Canada. Filed Mar. 20, 1902.

Dormol

The word "DORMAL." Used since July 5, 1895.

38,613. CHEMICAL PREPARATION FOR REMOVING SUPERFLUOUS HAIR. OTTO ERBERT, Rock Island, Ill. Filed Apr. 23, 1902.

RADIRINE

The word "RADIRINE." Used since January 1, 1902.

38,614. TONICS. H. K. MULFORD Co., Philadelphia, Pa. Filed May 24, 1902.

PROFERRIN

The word "PROFERRIN." Used since December 1, 1901.

38,615. DIURETICS. H. K. MULFORD Co., Philadelphia, Pa. Filed May 24, 1902.

MICTUROL

The word "MICTUROL." Used since December 1, 1901.

38,616. INTESTINAL ASTRINGENTS. H. K. MULFORD Co., Philadelphia, Pa. Filed May 24, 1902.

PROTAN

The word "PROTAN." Used since December 1, 1901.

38,617. SUPPOSITORIES FOR LOCAL TREATMENT OF INTERNAL ORGANS. HENRY R. COOMBS, Hanford, Cal. Filed June 2, 1902.

NON-CONS

The hyphenated word "NON-CONS." Used since December, 1899.

38,618. OINTMENT FOR ACHES AND PAINS. HENRY H. MCCURTAIN, Hammond, Ind. Filed May 26, 1902.

A bust portrait of the registrant and the hyphenated word "MEL-RON." Used since May 6, 1902.

38,619. HORSE REMEDIES. SILAS OMAR PARKER, Littleton, N. H. Filed Jan. 15, 1902.

COMFORT

The word "COMFORT." Used since July, 1900.

38,620. CHOCOLATE CANDY. FRED H. ROBERTS, Boston, Mass. Filed Feb. 28, 1901.

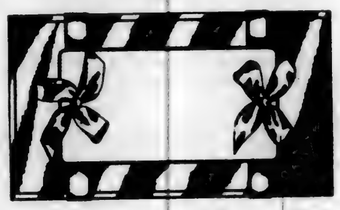

The representation of two ribbons attached to the representation of a card appearing upon a contrasting rectangular background, the ribbons being shown as extending through holes in the card and as formed into bows upon its outer surface. Used since March 6, 1899.

38,621. CONCENTRATED FLAVORING EXTRACT. CORRIGO EXTRACT COMPANY, Albany, N. Y. Filed June 9, 1902.

VANOLEUM

The word "VANOLEUM." Used since May 20, 1902.

38,622. CONDENSED MILK IN POWDERED FORM. CARNES COMPANY OF AMERICA, New York, N. Y. Filed June 13, 1902.

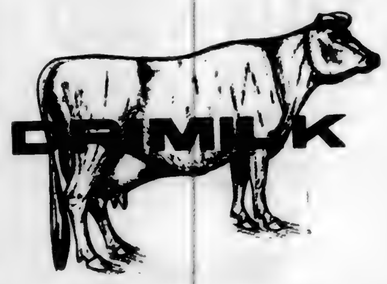

The representation of a cow with the word "DRIMILK" in bold letters across the cow's body. Used since May 26, 1902.

38,623. BAKING-SODA AND BAKING-POWDER. CHURCH & DWIGHT Co., New York, N. Y. Filed June 7, 1902.

The representation of a four-leafed clover. Used since May, 1889.

38,624. WHEAT-FLOUR. HAMILTON R. KEARNY, Minneapolis, Minn. Filed Feb. 24, 1902.

A diamond-shaped figure with the capital letter "K" arranged centrally thereon and with a band printed across the figure bearing the word "POPULAR." Used since November 1, 1901.

38,625. CANNED FANCY SUGAR-CORN. WARFIELD PRATT HOWELL Co., Des Moines, Iowa. Filed June 13, 1902.

The compound word "NORTH-WESTERN" arranged on a panel which overlies a circular field or background. Used since April 1, 1902.

38,626. SALT. DIAMOND CRYSTAL SALT COMPANY, St. Clair, Mich. Filed May 17, 1902.

The Salt
that's all salt

The words "THE SALT THAT'S ALL SALT." Used since May 1, 1895.

38,627. CERTAIN NAMED WASHING COMPOUNDS. NATIONAL SUPPLY Co., New York, N. Y. Filed June 6, 1902.

KOHINOOR

The word "KOHINOOR." Used since May 31, 1902.

38,628. DETERGENT COMPOUNDS USED AS AUXILIARIES TO SOAP. ELIZA WENDT, New York, N. Y. Filed Apr. 8, 1902.

BOILDERO

The word "BOILDERO." Used since February 15, 1902.

38,629. CALCIUM CARBID. ELECTRO LAMP Co., New York, N. Y. Filed Nov. 6, 1901.

Electrolite

The word "ELECTROLITE." Used since December, 1900.

38,630. ILLUMINATING-OILS. GALENA-SIGNAL OIL COMPANY, Franklin, Pa. Filed May 26, 1902.

The pictorial representation of a lantern. Used since 1873.

38,631. LUBRICATING-OILS. GALENA-SIGNAL OIL COMPANY, Franklin, Pa. Filed May 26, 1902.

GALENA

The word "GALENA." Used since December, 1870.

38,632. LUBRICATING-OILS. GALENA-SIGNAL OIL COMPANY, Franklin, Pa. Filed May 26, 1902.

The representation of a star inclosing the letter "G." Used since December, 1870.

38,683. INSULATING MATERIAL. AMERICAN HARD RUBBER CO. New York, N. Y. Filed Apr. 26, 1902.

SAMSOHM

The word "SAMSOHM." Used since April 11, 1902.

38,684. PORTLAND CEMENT. THE TEXAS PORTLAND CEMENT & LIME CO., Galveston, Tex. Filed May 5, 1902.

The words "LIVE OAK" and the representation of a star and surrounding wreath of live-oak leaves tied with a ribbon and interspersed therewith. Used since January, 1901.

38,685. APPLES, APPLE-TREES, SCIONS, CUTTINGS, GRAFTS, ROOTS, AND STOCKS. STARK BRO'S NURSERIES & ORCHARDS CO., Louisiana, Mo. Filed May 22, 1902.

COMMERCE

The word "COMMERCE." Used since November 11, 1895.

38,686. GAS-BURNERS. GEO. BRAY & CO., Leeds, England. Filed May 27, 1902.

LUTA

The word "LUTA." Used since November 15, 1901.

38,687. GAS-ENGINES. THE UNITED STATES GASOLINE ENGINE CO., Chicago, Ill. Filed May 30, 1902.

UNCLE SAM

The words "UNCLE SAM." Used since February, 1902.

38,688. MOWERS, REAPERS, BINDERS, AND PARTS THEREOF. THE JOHNSTON HARVESTER CO., Batavia, N. Y. Filed May 1, 1902.

A shield, a circular wreath arranged centrally on the shield, and a monogram composed of the letters "J H Co" arranged in the center of the wreath. Used since November 1, 1901.

THE NORRIS PETERS CO.

LABELS.

REGISTERED JULY 15, 1902.

9,296.—*Title:* "AMERICAN WIRE WEAVERS PROTECTIVE ASSOCIATION." (For Fourdrinier Wire-Cloth.) THE NEW JERSEY DIVISION OF THE AMERICAN WIRE WEAVERS PROTECTIVE ASSOCIATION, Belleville, N. J. Filed March 8, 1902.

9,297.—*Title:* "EGGINE BAKING POWDER." (For Baking-Powder.) HERMAN J. BRENNECKE, Chicago, Ill. Filed June 23, 1902.

9,298.—*Title:* "THE DIXIE CANDY BIN." (For Candy.) THE GEO. BLOME & SON CO., Baltimore, Md. Filed June 12, 1902.

9,299.—*Title:* "STAR OF EGYPT." (For Cigarettes.) MERRIS TOBACCO CO., New York, N. Y. Filed June 21, 1902.

9,300.—*Title:* "CORTEZ PORTUONDO." (For Cigars.) ISIDOR BLOCK, Dallas, Tex. Filed June 20, 1902.

9,301.—*Title:* "OUR CONGRESSMAN." (For Cigars.) F. HARTMANN & SON, Camden, N. J. Filed June 18, 1902.

9,302.—*Title:* "RED STAR CIGARS." (For Cigars.) WM. H. KLENKE, Saginaw, Mich. Filed May 19, 1902.

9,303.—*Title:* "THE ELK CIGAR." (For Cigars.) WM. H. KLENKE, Saginaw, Mich. Filed May 19, 1902.

9,304.—*Title:* "PURITAN BOY." (For Cigars.) LINCOLN, SEYMS & CO., Hartford, Conn. Filed June 21, 1902.

9,305.—*Title:* "ELKHORN." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed June 21, 1902.

9,306.—*Title:* "FOXY GRANDPA'S TONIC." (For a Tonic.) HERMAN E. EHRMAN, Chicago, Ill. Filed June 20, 1902.

9,307.—*Title:* "BORO SALICINE." (For a Medicine.) BORO-SALICINE CO., Shamokin, Pa. Filed April 25, 1902.

9,308.—*Title:* "DR. GOING'S CREOSOTE COMPOUND." (For a Medicine.) THE GOING CHEMICAL COMPANY, Union, S. C. Filed May 27, 1902.

9,309.—*Title:* "INDIAN HEAD POWDER." (For a Medicine.) JOHN H. GRASS, New Orleans, La. Filed June 7, 1902.

9,310.—*Title:* "AMBITION PILLS." (For Medicine.) SAMUEL B. LARNED and LOUIS J. BARKER, Syracuse, N. Y. Filed May 29, 1902.

9,311.—*Title:* "RENTON'S FUGA RHEUM." (For a Medicinal Oil.) H. T. RENTON, Oakland, Cal. Filed April 24, 1902.

9,312.—*Title:* "NAIL POWDER." (For Nail-Powder.) EMIL FORQUIGNON, New York, N. Y. Filed June 11, 1902.

PRINTS.

REGISTERED JULY 15, 1902.

532.—*Title:* "MEN'S APPAREL." (For Men's Apparel.) WM. C. BOTH, Chicago, Ill. Filed June 23, 1902.

533.—*Title:* "THE VICEREINE $2.50 SHOE." (For Shoes.) THE SHAW-GODING SHOE CO., Springvale, Me. Filed June 13, 1902.

534.—*Title:* "TEMPTATION." (For Cigars.) AMERICAN CIGAR CO., Westfield, Mass. Filed June 20, 1902.

535.—*Title:* "BOILED HAM." (For Boiled Ham.) ARMOUR PACKING COMPANY, Kansas City, Kans. Filed June 18, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE CUSHING.

Decided March 13, 1902.

DIVISION—PUMP AND MOTOR-GOVERNOR—COMBINATION CLAIMS.

Held that division should not be required between claims for the combination of a specific form of pump for pumping water and air with a closed receptacle and claims for the same combination with the addition thereto of a specific form of motor-governor where the combinations have not acquired a distinct status in the art.

ON petition.

AIR-PRESSURE WATERWORKS AND POWER-REGULATOR.

Application of Charles L. Cushing filed September 3, 1901, No. 74,184.

Mr. A. O. Behel for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division in the above-entitled application.

Division has been required between claims 1, 2, and 3 for the combination of a specific form of pump for pumping water and air with a closed receptacle and claims 4, 5, and 6, which are stated by the Examiner to cover the same receptacle, but in an entirely different relation—viz., as an element of and holder for a specific type of motor-governor, which governors have acquired a distinct status in the art and are separately classified.

An inspection of claims 4, 5, and 6 shows that they include more than the closed receptacle and the motor-governor—*i. e.*, means for supplying water and air to the receptacle. In other words, claims 4, 5, and 6 cover generally the same combination as claims 1, 2, and 3, with the addition thereto of a specific form of motor-governor. These claims are not, therefore, for a motor-governor alone, but are for a combination of which the motor-governor is one element.

Moreover, it does not appear that the combination covered by claims 1, 2, and 3 and that covered by claims 4, 5, and 6 are inventions which have acquired a distinct status in the art or in manufacture and sale. Division, therefore, should not be required.

The petition is granted.

EX PARTE COWPER-COLES.

Decided March 14, 1902.

DIVISION—PROCESS AND PRODUCT.

Held that division should not be required between claims to a process of depositing zinc on metallic surfaces and claims to the article produced where there is doubt as to the possibility of producing the article by any other process and the process will not produce any other article.

ON petition.

DEPOSITION OF METALS OR COMPOUNDS.

Application of Sherard Cowper-Coles filed July 24, 1901, No. 69,587.

Messrs. A. C. Fraser & Co. for the applicant.

ALLEN, *Commissioner:*

This is a petition that the Examiner be instructed to withdraw his requirement for division between the claims of the above-entitled application and that he be further instructed upon certain matters relating to the question of division generally.

Division has been required between claims 1 to 8, inclusive, covering a process of depositing zinc on metallic surfaces, and claim 9, which covers a product of this process—*i. e.*, a metallic object with its surface covered with zinc, said surface having certain specified characteristics. The Examiner bases his requirement upon the fact that when two of these characteristics only are considered the product may obviously be made by other processes—as, for example, by electrodeposition—and states that the two other features of difference are regarded "as devoid of significance other than as surplusage."

From this statement of the case it is evident that there is doubt as to the possibility of producing the product covered by claim 9 by any other process than that covered by the other claims, while it is very clear that the method will not produce any other product.

Under these circumstances division should not be insisted upon, and the Examiner is directed to withdraw his requirement.

To the extent indicated the petition is granted.

EX PARTE SCOTT.

Decided June 9, 1902.

1. EXAMINATION—PRACTICE—AMENDMENT NOT ENTERED.

Where the Examiner rejects the claims and in reply the applicant requests reconsideration and presents an argument responsive to the Examiner's action and at the same time presents as an amendment a new claim drawn to a different invention, *Held* that the amendment should not be entered, but that the Examiner should act upon the claims already in the case in view of the argument presented.

2. ABANDONMENT OF APPLICATION—RESPONSIVE ACTION.

Where within the time required by law an applicant takes an action which is completely responsive to the Examiner's action, *Held* that the case cannot properly be held to be abandoned.

ON petition.

ADJUSTABLE PULLEYS.

Application of Walter Scott filed March 26, 1901, No. 52,875.

Mr. Richard W. Barkley for the applicant.

ALLEN, *Commissioner.*

This is a petition from the action of the Primary Examiner refusing to enter an amendment filed April 15, 1902, and holding that the application is abandoned.

The three claims originally presented in this case were rejected by the Examiner on April 20, 1901, and on April 15, 1902, the applicant filed a request for reconsideration accompanied by an argument pointing out his reasons for regarding the claims as patentable over the references. This action was proper and was all that could be required of the applicant under the settled practice of the Office. Accompanying his argument, however, was an amendment making certain changes in the description, inserting a new claim, and adding a new figure to the drawings. The Examiner regarded the new claim as covering a different invention from that originally claimed and refused to admit it upon the ground that its entry would immediately necessitate a requirement for division. This was in accordance with the settled practice of the Office; but the Examiner in addition refused to give any action upon the merits of the case and held it abandoned through a lack of proper prosecution.

The applicant has done everything that could be required of him, and he should not be deprived of all consideration merely because he went further and presented an inadmissible amendment. That amendment, whether admitted or not, could not affect in any way the action which would be taken upon the claims already in the case, and there seems to be no good reason why the Examiner should not have given an action upon those claims, as requested, at the same time that he refused to enter the new claim. This case is different from one where an amendment is presented parts of which are admissible and parts inadmissible and where the action given necessarily depends upon the question whether the amendment is entered. In the present case the request for reconsideration and the amendment are separable things, which must receive independent action.

It is held that the argument filed on April 15, 1902, was sufficient to save the case from abandonment and that in response to it the Examiner should act upon the merits of the claims in the application.

An examination of the new claim presented shows that it is limited to a printing-press and covers a certain combination of parts in such a press. The other claims in the case are for an adjustable pulley, which is an independent invention from printing-presses. The adjustable pulley claimed in this case was upon the requirement of the Office divided out of a companion application claiming a printing-press. The Examiner was right in taking the position that this application should be limited to the pulley.

The new figure of the drawings which has been filed seems to be unnecessary and it is doubtful if it can properly be admitted, although the Examiner does not appear to have raised that question.

To the extent indicated the petition is granted.

EX PARTE WEST.

Decided June 20, 1902.

1. TRADE-MARK—THE WORD "BESTOFALL" NOT REGISTRABLE.

The word "Bestofall" not registrable as a trade-mark, as it indicates the quality of the goods in that they are the best of all in that class.

2. SAME—THE SINGLE WORD "BESTOFALL" NOT DIFFERENT FROM THE THREE WORDS "BEST OF ALL."

The single word "Bestofall" conveys the same idea as the three words "best of all." It cannot, therefore, in any true sense be said to be a coined word.

ON appeal.

TRADE-MARK FOR BAKERY PRODUCTS, ETC.

Application of Erik West filed April 9, 1902, No. 65,533.

Mr. Erik West pro se.

ALLEN, *Commissioner:*

This is an appeal from the refusal of the Examiner of Trade-Marks to register the word "Bestofall" as a trade-mark for bakery products.

The word "Bestofall" is descriptive of the quality or characteristic of the article to which it is applied. It is descriptive in that it indicates that the article to which it is applied is the best of all in that class. If this is not true, the word is deceptive. Either of these reasons constitutes a sufficient ground for the refusal of registration.

In *ex parte Miller* (95 O. G., 1452) the word "Fitmeeasy" was held to be—

> * * * descriptive and that it is not rendered the less so by the fact that it is made up of three words. It cannot in any true sense be said to constitute a coined or arbitrary word when it conveys the same idea whether read or pronounced as would the three words written separately. A mere change in the manner of writing the mark cannot be held to change its character so long as the impression conveyed by it is the same.

This reason is equally applicable to the word "Bestofall."

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE SWAN AND FINCH COMPANY.

Decided June 20, 1902.

TRADE-MARK—A "RED STAR REPRESENTED BY A WORD OR SYMBOL" NOT REGISTRABLE OVER A "STAR INCLOSING THE LETTER 'G.'"

A trade-mark consisting of a "red star represented by a word or symbol" *Held* not to be registrable in view of the registered mark which consists of a "star inclosing the letter 'G'" on the ground that there is such a resemblance between the two marks that the purchasing public would be deceived.

ON appeal.

TRADE-MARK FOR LUBRICATING-OILS.

Application filed November 22, 1900, No. 62,165.

Mr. E. G. Siggers for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner refusing to register as a trade-mark for engine-oil a mark described as a red star represented by word or symbol. The facsimile shows only the symbol.

Registration has been refused in view of the prior registration, No. 23,966, to the Galena Oil Works of a star inclosing the letter "G." In this registration it is stated that the letter "G" may be omitted. The registered mark may therefore consist of the representation of a star. It is clear that there is such a resemblance between the two marks that the purchasing public would be deceived. Registration, therefore, was properly refused.

The action of the Examiner of Trade-Marks is affirmed.

EX PARTE CASTLE BROOK CARBON BLACK COMPANY.

Decided June 30, 1902.

TRADE-MARK—THE WORD "NAPTHOL-METHANE" REGISTRABLE FOR CARBON-BLACK.

The compound word "Napthol-Methane" *Held* to be registrable as a trade-mark for carbon-black, for the reason that it is well known that this substance contains nothing but carbon. If these words are descriptive at all, they are not descriptive of this substance; neither are they deceptive, as they would never be understood as describing carbon-black.

ON appeal.

TRADE-MARK FOR CARBON-BLACK.

Application filed January 31, 1902, No. 64,980.

Mr. E. G. Siggers for the applicant.

ALLEN, *Commissioner:*

This is an appeal from an action of the Examiner of Trade-Marks refusing to register the word "Napthol-Methane" as a trade-mark for carbon-black.

This word is manifestly a compound of the two words "naphthol" and "methane," and registration has been refused because, in the opinion of the Examiner, it is either descriptive of the character or composition of the substance in connection with which it is used as stating that this substance contains naphthol and methane, or it is deceptive if the substance does not contain these elements.

It is to be observed that the trade-mark for which registration is sought is applied to carbon-black, which, as is well known, contains nothing but carbon. It is clear, therefore, that a substance containing naphthol and methane could not be carbon-black, and the word "Napthol-Methane" would never be understood as describing carbon-black. If they are descriptive at all, they are not descriptive of this substance.

Furthermore, it is believed that one wishing to purchase carbon-black would not be deceived by this trade-mark and suppose that the carbon-black contains naphthol and methane.

This mark is therefore registrable, and the action of the Examiner of Trade-Marks is reversed.

STORY *v.* CRISWELL.

Decided June 26, 1902.

1. INTERFERENCE—DISSOLUTION—RIGHT TO MAKE CLAIMS—APPEAL TO COMMISSIONER DIRECT DISMISSED.

Where the Examiner dissolves an interference on the ground that the respective parties thereto have no right to make the claims, no appeal from such a decision can be taken directly to the Commissioner, and such an appeal will be dismissed.

2. SAME—SAME—APPEAL—MOOT QUESTION.

Where the Examiner dissolves an interference because the parties thereto have no right to make the claims on the ground of inoperativeness and the limit of appeal from said decision having expired, *Held* that the question of interference in fact necessarily becomes a moot question, and an appeal from a decision involving the same will be dismissed.

APPEAL on motion.

MACHINE FOR MAKING MATCHES.

Application of Ward B. Story filed July 5, 1900, No. 22,515. Applications of James A. E. Criswell filed, respectively, March 20, 1901, and November 16, 1899, Nos. 52,005 and 737,186.

Mr. Edwin H. Brown for Story.

Mr. James A. E. Criswell pro se.

ALLEN, *Commissioner:*

This case comes up on appeals by both parties from a decision of the Primary Examiner upon a motion by Criswell to dissolve.

Criswell's motion was based upon the grounds:

1. That there has been such irregularity in declaring the interference as will preclude a proper determination of the question of priority.
2. That Story has no right to make the claims involved in the interference.
3. That Story has no right to make certain of the claims involved in the interference for the reason that his device is inoperative and incapable of performing any useful function.
4. Because no interference in fact exists between the applications involved in this interference.

The motion was denied as to counts 1, 3, 4, 7, and 8 of the issue and was granted as to counts 2, 5, and 6.

It appears that the existence of an interference in fact between the application, so far as counts 1, 3, 4, 7, and 8 are concerned, is not seriously questioned by Criswell; but he contends that there has been irregularity in the declaration because, in his opinion, Story's application does not disclose an operative device. The Examiner has found that Story does disclose an operative device. This is a matter which relates to Story's right to make the claims in issue, and no appeal lies from the Examiner's favorable holding thereon. In any case there is no direct appeal to the Commissioner upon such a question. Criswell's appeal is therefore dismissed.

Story appeals from the Examiner's decision dissolving the interference as to counts 2, 5, and 6.

The Examiner has granted Criswell's motion as to those counts upon all the grounds upon which that motion was based. He has dissolved it, therefore, because Story has no right to make the claims comprising these counts of the issue. From the decision on this ground appeal lies to the Examiners-in-Chief and not to the Commissioner. No such appeal has been taken, however, and the Examiner's decision on this ground has become final. The questions of interference in fact and irregularity, therefore, so far as these counts are concerned, are moot questions, which it is unnecessary now to decide.

Story's appeal is also dismissed.

ROBINSON *v.* TOWNSEND *v.* COPELAND.

Decided June 27, 1902.

1. INTERFERENCE—MOTION TO REOPEN—DILIGENCE IN FINDING NEW FACTS—WHAT CONSTITUTES.

Where a motion is brought to reopen an interference proceeding and take additional testimony and the facts in sup-

port of said motion are that a certain letter which is thought to be material to the case is subsequently found in an envelop placed among other papers, which papers were searched prior to and during the taking of the testimony, and the only reason for not primarily finding the said letter was that because of an indorsement on the envelop containing the same the contents of the envelop were not looked into, *Held* not to constitute sufficient ground for granting the motion.

2. SAME—SAME—REQUISITES OF.

Where a motion to reopen an interference to take further testimony does not set forth the facts to which the proposed witnesses will testify, *Held* that the motion will not be granted.

APPEAL on motion.

VEHICLE BRAKE AND COASTER.

Application of William Robinson filed September 18, 1899, No. 730,817. Application of H. P. Townsend filed October 10, 1898, No. 693,117. Application of James S. Copeland filed April 29, 1898, No. 679,185.

Mr. William Robinson pro se.

Messrs. Newell & Jennings and *Mr. T. Hart Anderson* for Townsend.

Messrs. Jenkins & Barker for Copeland.

ALLEN, *Commissioner:*

This is an appeal by Townsend from the decision of the Examiner of Interferences denying his motion to reopen this case and take additional testimony.

The showing in support of this motion consists of two affidavits, one by Albert F. Rockwell, secretary and general manager of The New Departure Manufacturing Company, of Bristol, Conn., the assignee of Townsend, and the other by T. H. Anderson, the attorney of record for Townsend.

It appears that the motion was brought because of the discovery of a certain letter which was inclosed in an envelop placed among other papers in the vaults of The New Departure Manufacturing Company. This letter is thought to be material to Townsend's case. It is desired to take the testimony of several enumerated witnesses with respect to the alleged disclosure of the invention by Townsend to Copeland and others of the Pope Manufacturing Company, the assignee of Copeland.

It is admitted by Rockwell that the vaults of his company had already been searched for evidence relating to this interference prior to and during the taking of the testimony. The envelop which contained the letter in question was found at that time; but because it had a certain indorsement placed upon it the contents of the envelop were allowed to remain undisturbed, and consequently the letter therein was not then discovered. In view of these facts Townsend cannot be held to have been sufficiently diligent in making his original search. The letter was in his possession all the time. The only reason that he did not find it was that he did not happen to look in the envelop in which it was inclosed when the envelop was before him.

As stated by the Examiner of Interferences, "there is no setting forth of facts to which the witnesses will testify."

The reasons set forth do not warrant the reopening of this case. (*Schmiedl* v. *Booth*, 57 O. G., 695; *Edison* v. *Maxim* v. *Swan*, 57 O. G., 696; *Sutter* v. *McDonnell* v. *Jolly* v. *Neff*, 98 O. G., 1484.)

The decision of the Examiner of Interferences is affirmed.

EX PARTE ASPEGREN AND COMPANY.

Decided June 28, 1902.

1. TRADE-MARK—THE WORD "AURORA" REGISTRABLE.

The word "Aurora" *Held* to be registrable as a trade-mark, as its fanciful or arbitrary meaning so predominates over its purely geographical significance that it would be understood by the purchasing public as an arbitrary word designating origin or ownership.

2. SAME—ARBITRARY WORDS—NAME OF LOCALITY.

Where a word having an arbitrary or fanciful meaning has been adopted as a name of locality, *Held* that the question whether or not it is registrable as a trade-mark depends upon the question whether or not its arbitrary meaning so far predominates over its geographical meaning that it will be so understood by the purchasing public.

3. SAME—REGISTRABLE MARKS—INDICATION OF ORIGIN OR OWNERSHIP.

Whether or not a word is registrable as a trade-mark depends upon the meaning which will be given to it by the purchasing public. If it will be understood as indicating origin or ownership, it is registrable.

ON appeal.

TRADE-MARK FOR PRODUCTS.

Application filed June 7, 1901, No. 63,534.

Messrs. Munn & Co. for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the word "Aurora" as a trade-mark for oils, lard, syrup, and honey.

It appears that this word is extensively used in this country in a geographical sense as the name of several cities and towns and of one county. The most important of these places is Aurora, Ill., a manufacturing city of some prominence. These cities and towns appear in the various States throughout the country from Maine to Oregon. This geographical meaning of the word, therefore, is in this country well understood.

On the other hand, it has mythological and other arbitrary meanings, as well known. In mythology it is the goddess of morning, or daybreak, and hence "Aurora" signifies the rising light of morning—the dawn of day. The phenomenon called the "aurora borealis" is commonly referred to as "the aurora."

The question presented, therefore, in view of these various significations is whether this word would be accepted by purchasers of the goods to which it is applied as arbitrary and fanciful or would be given its geographical meaning.

It was stated by the Supreme Court of the United States in *Columbia Mill Company* v. *Alcorn et al.* (65 O. G., 1916) that—

> * * * merely geographical names cannot be appropriated and made the subject of an exclusive property. They do not, in and of themselves, indicate anything in the nature of origin, manufacture, or ownership.

There is, however, as was pointed out in *ex parte Manogue-Pidgeon Iron Company*, (97 O. G., 2084,) in addition to those words, which have no other significance than a geographical one, a large class

of words which, though used to designate some town or locality, have also an arbitrary or fanciful meaning. The word "Aurora" is of this latter class.

Whether or not these words are registrable as trade-marks depends upon the meaning which will be given to them by the purchasing public. In some cases the arbitrary meaning would be accepted, and in such cases these words will truly indicate origin or ownership. (*Ex parte Manogue-Pidgeon Iron Company, supra; ex parte Huenefeld*, 98 O. G., 1968.) In other cases the geographical meaning is so well known as to be predominating. In this class of cases the geographical significance naturally follows from such use and they would not be understood in an arbitrary or fanciful sense.

The fanciful meaning of the word "Aurora" has undoubtedly led to its adoption as a name of locality in various parts of the country, and the fact that it has been so adopted in widely-separated places is evidence of the general understanding of this fanciful meaning and that this meaning is so pleasing to many persons as to suggest to them that the word is suitable as a designation of that locality in which they dwell. It is true that by this use the word has acquired a geographical significance of considerable extent; but it cannot be said that this geographical significance has divested it in any degree of its mythological or arbitrary meaning. On the contrary, this meaning is understood by a large part of the persons to whom its geographical significance is best known, while by a majority of the people in this country it is understood only in its arbitrary sense. The number of people, therefore, to whom it would be known only as a name of locality is necessarily small.

Taking all the facts into consideration, it cannot be said that this is one of those words in which the geographical meaning predominates. On the contrary, its arbitrary meaning is so prominent that it would be understood by the purchasing public as an arbitrary word designating origin or ownership, and this conclusion is rendered more certain by the fact that applicants' business is not located in any place called Aurora, but in New York city.

The decision of the Examiner of Trade-Marks that the word "Aurora" is unregistrable because geographical in meaning is reversed.

SEAMAN *v.* BROOKS.

Decided June 28, 1902.

1. INTERFERENCE—PRELIMINARY STATEMENT—PARTIAL DISSOLUTION—NEW STATEMENTS NOT PERMITTED.

Where preliminary statements have been filed in an interference proceeding and on motion the interference is subsequently dissolved as to one of the counts and continued as to others, this fact of itself does not warrant new times for filing preliminary statements being set, as such a proceeding would have the effect of permitting the amendment of the original statement.

2. SAME—SAME—MOTION TO FILE NEW STATEMENT—SHOWING REQUIRED.

Where the showing which accompanies a motion to file a new preliminary statement, which is in effect a motion to amend the original statement, merely states that additional facts have been discovered, without specifying said facts, and that the utmost diligence was exercised in making the discovery of the new facts, without stating what means were employed and the reasons why the same means could not have been earlier employed, *Held* not sufficient to warrant the grant of the motion. (*McDermott* v. *Hildreth*, 98 O. G., 1282.)

APPEAL on motion.

GARBAGE OR REFUSE CAN.

Application of Elizabeth C. Seaman filed February 19, 1901, No. 47,926. Patent granted James Brooks February 5, 1901, No. 667,422.

Messrs. Kenneson, Crain, Emley & Rubino, and *Mr. George E. Morse* for Seaman.

Mr. R. C. Mitchell for Brooks.

ALLEN, *Commissioner:*

This is an appeal by Seaman from the decision of the Examiner of Interferences denying her motion to set times for filing new preliminary statements.

The issue of the above-entitled interference as originally declared contained three counts.

After the preliminary statements had been received and approved a motion for dissolution was brought by Seaman, which motion was granted by the Examiner as to count 1 and denied as to counts 2 and 3. The Examiner of Interferences subsequently dissolved the interference as to count 1 and resumed proceedings as to counts 2 and 3 and reset times for taking testimony. Seaman thereupon filed the present motion that new times be set for filing preliminary statements. An affidavit of George E. Morse, one of the counsel for Seaman, accompanies said motion.

When the preliminary statements now on file were prepared, they were drawn up in view of the same two counts which comprise the present issue. The fact that the interference has been dissolved as to one of its original counts and resumed as to the remaining counts is no reason of itself for setting new times for filing preliminary statements, for the dissolution does not in any way affect the remaining counts. To set new times for filing preliminary statements would have the effect of permitting the amendment of the original statements.

In the decision of *McDermott* v. *Hildreth* (98 O. G., 1282) it was said that when—

> * * * one who has made a *bona fide* mistake in the preparation of his statement not due to his own negligence moves promptly to amend before testimony has been taken, if no additional burden or expense will be thrown upon the opposing party the amendment upon a proper showing of facts may be admitted. (*May* v. *Merker*, 85 O. G., 150.)

This rule was made on the broad ground that it is the duty of this Office to issue a patent to the applicant entitled thereto, and it is essential that the facts should be before the Office in order that it may be able to perform this duty.

In the present case it does not appear that the appellant has committed a *bona fide* mistake in the preparation of the original preliminary statement. The affidavit merely states that additional facts have been discovered by Seaman since the filing of the original statment which entitle her to allege an earlier date of invention and that these additional facts—

could not have been by the utmost diligence sooner discovered, and have now been brought forward with the utmost diligence.

It is not stated what the additional facts are; nor is it stated that the utmost diligence was exercised in making the discovery of the new and additional facts. The affidavit does not state the ways and means employed in finding the new facts; neither does it point out why the same ways and means could not have been earlier employed.

The showing is not sufficient to warrant the grant of this motion.

The decision of the Examiner of Interferences is affirmed.

EX PARTE TYLER.

Decided July 2, 1902.

1. DIVISION—GAS-ENGINE.

Held that division was properly required between claims to a sparking igniter, claims to a governor-valve, claims to a relief-valve, and claims to the general structure of a gas-engine. They cover separate and independent inventions.

2. SAME—SAME—PARTS SPECIALLY ADAPTED FOR USE TOGETHER.

Held that division should not be insisted upon between claims to the engine bed or frame and to the valve-gear and claims to the general engine structure where the combinations are specially adapted for use in the general engine structure.

ON petition.

GAS-ENGINES.

Application of Aaron J. Tyler filed May 1, 1900, No. 15,098.

Mr. Tyler pro se.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division between certain claims in the above-entitled application on the ground that they cover, respectively, independent inventions capable of separate use.

The invention relates to a gas-engine of special type. It is rightly held by the Examiner that claims 6, 7, 8, and 9 cover the general organization of the gas-engine.

The Examiner has required claim 1 to be divided from the remaining claims on the ground that it covers specifically the engine bed or frame. This claim does not cover an independent invention in the sense that it should be presented in a separate application from that containing the claim to the general gas-engine structure.

The same is true of the invention covered by claims 4, 11, and 12, which the Examiner has held should be divided from the remaining claims on the ground that they cover an engine valve-gear. These claims cover a valve-gear; but the combination covered by them is specially adapted for use in the general engine structure invented by the petitioner and may therefore be prosecuted in the same application with claims 1, 6, 7, 8, and 9.

Claims 2 and 3 cover a sparking igniter, claim 5 covers a governor-valve, and claim 11 covers a relief-valve. Each of these inventions is separate and independent from the special engine construction invented by the petitioner. They are recognized as separate and independent inventions by inventors and manufacturers, and they are separately sold and used. This Office has also recognized the fact that these inventions are separate and independent from each other in its scheme of classification. The requirement of division as to claims 2, 3, 5, and 11 is a proper one.

The petition is granted to the extent indicated.

Patents Nos. 705,010 to 705,547.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 4. TUESDAY, JULY 22, 1902. PRICE—$5 per year.

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Designs	8	No. 35,979 to No.	35,981, inclusive.
Trade-Marks	25	No. 38,639 to No.	38,663, inclusive.
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Prints	1	No. 536.	
Reissues	3	No. 12,015 to No.	12,017, inclusive.
Total issue	578		

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	1	----	Nebraska	6	----
Alaska Territory	----	----	New Hampshire	----	----
Arizona Territory	2	----	New Jersey	27	----
Arkansas	1	----	New Mexico Territ'y	1	----
California	14	----	New York	83	10
Colorado	10	----	North Carolina	2	----
Connecticut	12	1	North Dakota	----	----
Delaware	2	----	Ohio	47	1
District of Columbia	5	1	Oklahoma Territ'y	----	----
Florida	2	----	Oregon	2	----
Georgia	4	1	Pennsylvania	43	4
Hawaii Territory	----	----	Porto Rico	----	1
Idaho	1	----	Rhode Island	3	----
Illinois	42	----	South Carolina	1	----
Indian Territory	2	----	South Dakota	1	----
Indiana	12	----	Tennessee	7	----
Iowa	10	----	Texas	9	2
Kansas	5	----	Vermont	1	----
Kentucky	3	----	Virginia	2	1
Louisiana	2	----	Washington	5	----
Maine	5	----	West Virginia	5	----
Maryland	3	----	Wisconsin	12	2
Massachusetts	41	2	Wyoming	1	----
Michigan	19	3	U. S. Navy	----	----
Minnesota	14	2	U. S. Rev. Marine	----	----
Mississippi	2	----			
Missouri	19	1	Total to citizens of the United States	401	32
Montana	----	----			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Austria-Hungary	5	----	Netherlands	----	----
Barbadoes	----	----	Newfoundland	----	----
Belgium	2	----	New South Wales	2	----
Bermuda	----	----	New Zealand	----	----
Brazil	----	----	Norway	----	----
Canada	3	----	Peru	----	----
Cape Colony	----	----	Portugal	----	----
Chile	----	----	Roumania	----	----
China	1	----	Russia	----	----
Cocos Island	----	----	Scotland	1	----
Colombia	----	----	South African Republic	----	----
Cuba	----	----	South Australia	1	----
Denmark	----	----	Spain	----	----
Egypt	----	----	Sweden	3	----
England	16	1	Switzerland	1	----
France	3	----	Uruguay	----	----
Germany	9	----	Victoria	----	----
Gautemala	----	----	Western Australia	----	----
India	----	----			
Ireland	1	----	Total to citizens of foreign countries	50	2
Italy	1	----			
Mexico	1	1			

Patent and Trade-Mark Registration in Cuba.

[Translation.]

LEGATION OF CUBA,
Washington, D. C., July 5, 1902.

EXCELLENCY: In pursuance of instructions from my government, I have the honor to transmit to Your Excellency the communication addressed to the Department of State by the Department of Agriculture, Commerce and Industry under date of June 21 last, as follows:

SIR: I have, on this day, directed the announcement of the following decision. The military government of the United States in this Island having come to an end, and the circulars Nos. 12 and 21, respectively dated April 11 and June 1, 1899, issued by the Division of Customs and Insular Affairs of the War Department of Washington in respect to the registration of American trade-marks and patents having in consequence become void and null, by virtue of their text itself, since those circulars were issued for the territories subject to the military government of the military forces of the United States, I have decided that patents and trade-marks of all description, printed matter, titles and labels, duly registered in the Patent Office of the United States, for whose protection in this Island application shall hereafter be made, from this date, by filing the same, shall be registered in the department of which I have charge if admissible, upon observing the procedure followed for the registration of those of other countries and upon the payment of $25.00 currency for patents and of $12.50 currency for trade-marks, prints, etc., that is to say the same fees as are paid by the other foreign and national marks and patents, in lieu of the one peso, currency, indicated with regard to the American, in said circular No. 21.

I avail myself of this opportunity, etc.

GONZALO DE QUESADA.

To H. E. The Hon. JOHN HAY,
Secretary of State of the United States.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business July 15, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	In arrears—Under one month.			
917	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	July 1	June 26	92
106	II. Farm Products, etc., Lubricators, Presses, etc.	June 21	June 23	201
258	X. Carriages and Wagons	June 20	July 7	77
246	I. Tillage, etc., and Fences	June 16	June 18	296
30	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	June 16	June 16	304
	Between one and two months.			
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	June 14	June 18	231
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	June 13	June 27	273
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	June 9	June 26	267
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	June 7	June 26	166
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	June 7	June 23	167
218	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	June 6	June 21	278
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 6	June 11	257
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	June 5	June 20	352
228	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	June 4	June 20	173
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	June 2	June 19	237
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 2	June 19	263
108	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 2	June 6	274
260	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	May 31	June 13	423
128	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	May 29	June 19	248
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	May 28	June 17	312
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	May 24	June 16	281
137	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	May 24	June 10	359
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	May 23	June 18	306
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	May 23	June 18	309
193	XXIX. Wood-Working Machines, Coopering and Roofing.	May 19	June 6	229
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	May 17	June 19	291

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	Between two and three months.			
190	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	May 10	May 15	435
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	May 10	May 14	343
248	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	May 9	May 8	425
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 8	May 23	659
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 2	May 1	482
248	XVIII. Steam-Engineering, etc	May 1	May 19	436
109	XXII. Fire-Arms, Ordnance, Navigation.	Apr. 26	June 3	242
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	Apr. 26	May 12	510
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	Apr. 21	Apr. 21	549
91	XVI. Telegraphy and Telephony	Apr. 16	Apr. 24	344
	Between three and four months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 17	May 28	488
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.			

Total number of applications awaiting action..... 10,860

	Under one month.		
*Designs	July 2	June 28	90
†Trade-Marks	June 21	July 8	133
‡Labels and Prints	July 18	July 12	25

Photographic Copies of Drawings.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 1, 1902.

The Patent Office is now prepared to furnish black line on white ground copies of any unbound drawing, foreign or domestic, which may be in its possession, instead of the blue-prints heretofore furnished. Only the 7x11 (patent) size and the full or 10x15 size prints will hereafter be furnished, at 15 and 25 cents per sheet, respectively.

Copies of drawings of pending, abandoned, forfeited, or informal cases and of caveats may be had in either of the above-named sizes except when they are to be certified, in which case they must be the 10x15 size.

Copies of United States or foreign patent drawings will be made only in the 10x15 size.

When ordering copies of foreign patent drawings, either the serial number of the applications in which they were cited as references or the class and subclass where they may be found must be given. The title of the invention or the number of the division will not be sufficient. Bound volumes cannot be used for making prints. Failure to give the fullest data whereby the mounted drawing may be found will result in delay and unnecessary correspondence.

The work will be much facilitated if a separate order be made for each drawing. The Office will furnish, gratuitously, blanks for this purpose on request.

As a result of abolishing the small (5x8) size the requirement that duplicate prints must be ordered in certain cases will no longer be enforced. The requirement that less than all the sheets of a case will not be printed unless there is already a full set in the file will not be insisted upon; but applicants or attorneys are strongly urged to file a set of prints or order them to be made by the Office at the time of filing an application. Such procedure will save delay later if correction of the drawing is desired or required.

F. I. ALLEN,
Commissioner.

PATENTS

GRANTED JULY 22, 1902.

705,010. **SELF-ADJUSTING DUMB-WAITER GRIP AND FRICTION-ROLLER.** FRANK ACKERMAN, New York, N. Y. Filed Jan. 3, 1902. Serial No. 88,284. (No model.)

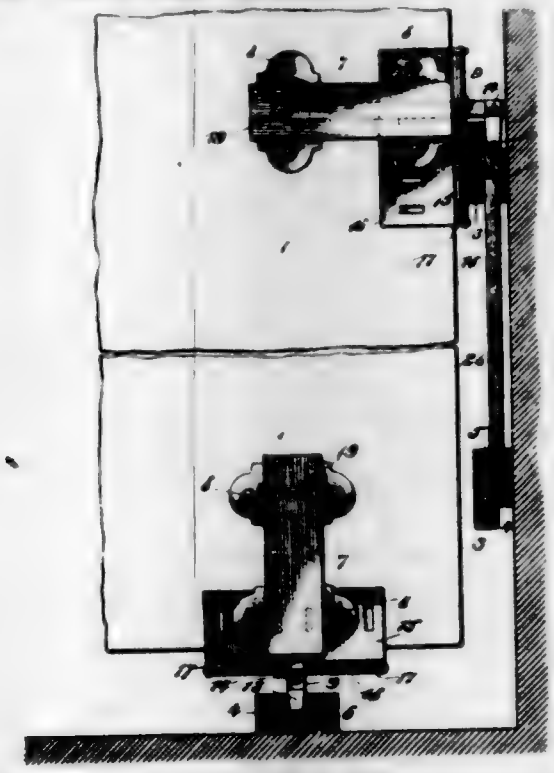

Claim.—1. A dumb-waiter grip in which is comprised a casing arranged for securing to a car, in combination with a spring-controlled bar or bolt provided at its outer extremity with a guide-tongue adapted and arranged to engage with a guide-strip, substantially as shown and described.

2. A dumb-waiter grip in which is comprised a casing arranged for securing to a car, in combination with a spring-actuated bar or bolt provided at its outer extremity with an adjustable guide-tongue adapted and arranged to engage with a guide-strip, substantially as shown and described.

3. A dumb-waiter guide and grip in which is comprised a casing arranged for securing to a car, in combination with a spring-actuated bar or bolt provided at its outer extremity with an adjustable guide-tongue adapted and arranged to engage with a guide-strip, and a friction-roller located at the front of the casing, substantially as shown and described.

705,011. **TYMPAN-SURFACE FOR PRINTING-PRESSES.** ARTHUR S. ALLEN, Boston, Mass. Filed Oct. 29, 1896. Serial No. 594,861. (No model.)

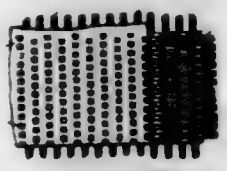

Claim.—1. A tympan containing sheet metal cut to form a spring, a series of such springs laid side by side, the projections of one spring entering the spaces of an adjacent spring, and a bracing applied to said springs and entering the interstices thereof.

2. A tympan composed of a series of sheet-metal springs presenting a series of slots and projections, the projections of one spring entering the spaces of an adjacent spring, to thereby bring the supporting portions of each projection at the surface of the tympan more closely together, and a bracing applied to said springs and entering the interstices thereof, substantially as described.

3. In a tympan, a series of sheet-metal springs having a series of slots and projections, the projections of one spring entering the slots of an adjacent spring, and a mesh-wire inserted longitudinally through a plurality of said springs, to thus lock them positively together, and a bracing applied to said springs, and filling the interstices thereof, substantially as described.

4. In a tympan, a series of sheet-metal springs having a series of slots and projections, said springs being laid side by side, the projections of one spring entering the slots of an adjacent spring, substantially as described.

5. In a tympan, a series of sheet-metal springs having a series of slots and projections, said springs being laid side by side, the projections of one spring entering the slots of an adjacent spring, and mesh-wires inserted longitudinally through a plurality of said springs, to lock them positively together, substantially as described.

705,012. **BED FOR TYMPAN-SURFACES.** ARTHUR S. ALLEN, Boston, Mass. Filed Jan. 19, 1899. Serial No. 702,694. (No model.)

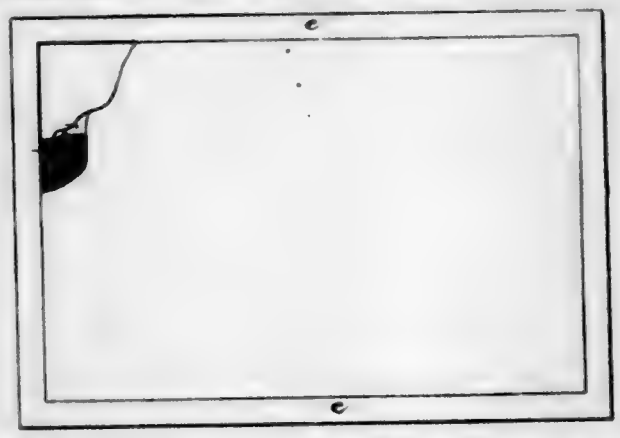

Claim.—1. A tympan-surface for use in connection with printing-presses, said tympan-surface comprising a metallic backing and spring-wire united to said metallic backing by a suitable binder, substantially as described.

2. A tympan-surface for use in connection with printing-presses, the same consisting of a metallic backing, and wire united thereto by solder or equivalent material, substantially as described.

3. A tympan-surface for use in connection with printing-presses, the same consisting of a backing, wire applied to the backing, and a binder capable of being softened by heat, said binder receiving the wire and when cooled holding the wire substantially fixedly in position upon the backing, substantially as described.

4. A tympan-surface for use in connection with printing-presses, the same composed of a metallic backing, a series of spring-coils laid side by side, the turns of the spring-coils being interlocked or passed one within the area described by the other, and solder in which part of the coils are embedded to hold the spring-coils in their locked positions on or with relation to the said backing, substantially as described.

5. A tympan-surface for use in connection with printing-presses, the same being composed of a backing, and spring-wire having coils or turns held fixedly in place on said backing by a binder in which part of said coils are embedded, and a leveling-sheet applied to the portions of the wire which extend above the backing and the binder, substantially as described.

6. In combination, a tympan-surface to be used as a surface in printing, said tympan-surface being composed of spring material bent to present turns or coils, a case composed of flexible material and having a pocket or space for holding the tympan-surface, the projecting face of the tympan-surface formed from said spring material being located at or near the upper edge of the said case, substantially as described.

705,018. **OIL-CAN.** JEROME A. BABUERLE, Kalamazoo, Mich. Filed Nov. 20, 1901. Serial No. 84,128. (No model.)

Claim.—1. In an oil-can, the combination of a body portion having an opening B and a spout C; caps B' and C' for said opening and spout; a coiled spring D embracing and secured to said spout; and said caps secured to the free ends of said springs whereby said caps will be held in an elevated position by said spring when they are released, as specified.

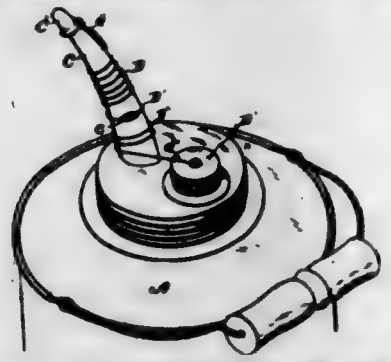

2. In an oil-can, the combination of a body portion having an opening B and a spout C; caps B' and C' for said opening and spout; a spring secured to said spout; and said caps secured to the free ends of said springs whereby said caps will be held in an elevated position by said spring when they are released, as specified.

3. In an oil-can the combination of a body portion having a spout; a coiled wire spring secured to and embracing said spout; a cap or closure for the said spout secured to the free end of said spring whereby said cap will be held on said spout by spring tension and held in an elevated position when released from said spout as specified.

4. In an oil-can the combination of a body portion; a coiled wire spring adapted to embrace and secured to the spout of said body portion; a cap or closure secured to the free end of said spring whereby said cap will be held in an elevated position when released from the said body portion.

705,014. SWING. JACOB HAHN, Sr., St. Henry, Ohio. Filed Aug. 15, 1901. Serial No. 72,123. (No model.)

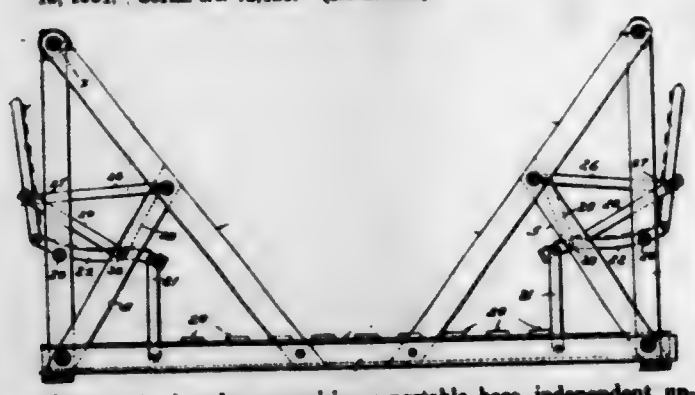

Claim.—1. A swing comprising a portable base, independent uprights at the corners of said base, swing supporting-bars pivotally suspended from each upright, rods connecting said bars in pairs at their lower ends and above the same, a platform notched to have a removable pivotal connection with the lower connecting-rods, a seat at each end of the platform notched to have a removable pivotal connection with the upper connecting-rod, and independent supports connected with and supporting the forward edge of each seat, said supports being parallel with the supporting-bars and pivotally connected at their ends to the seat and platform, substantially as described.

2. In a swing of the character described, the combination with a platform and pivotally-mounted bars whereby it is suspended, of a seat pivotally connected to the supporting-bars and having independent supports, parallel with the supporting-bars and pivotally connected at their ends to the seat and platform, a back pivotally connected with the seat, arms having pivotal connections with the back, at one end, pivoted links connecting the other end of the arms to the seats, and adjusting-braces pivoted to the seat at their forward ends by the same connections as the links, and having at their rear ends a plurality of apertures whereby they may be adjustably connected to the back by means of the same pivotal connections as the arms, substantially as described.

705,015. CONGEALING BODY OR PLATE FOR ICE-MAKING MACHINES. EDWARD BARRATH, Philadelphia, Pa., assignor of two-thirds to John J. Keller and Augustus Britney, Philadelphia, Pa. Filed Dec. 6, 1901. Serial No. 84,504. (No model.)

Claim.—1. A freezing plate or body, comprising a series of pipes of parallelogrammatic cross-section intermediate of their ends, said ends being rounded, a series of return-bends connecting the rounded ends of said pipes to form with the pipes a continuous coil for the passage of the freezing medium, and a series of solid metallic bars arranged between and separating adjacent pipes in the series of pipes, said bars being of a width corresponding to the depth of the parallelogrammatic pipes and having sides parallel to and abutting against the sides of the adjacent pipes and the freezing-surface of said bars being arranged in the plane of the freezing-surface of the pipes, substantially as and for the purposes described.

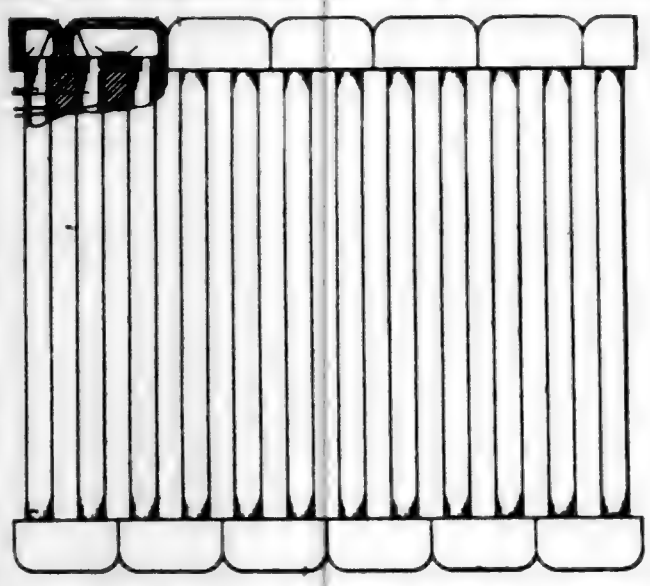

2. A freezing plate or body, comprising a series of pipes connected at their ends to form a coil, a series of metallic bars and insulating material interposed between the pipes, said pipes and bars having exposed freezing-faces in alinement, and the sides of the pipes abutting against and lying in planes parallel to the sides of the interposed bars and insulating material, the area of the freezing-face of the bar being coequal with the combined area of one side of the bar and of the side of the insulating material abutting against one side of an adjacent pipe.

705,016. TRAIN-CONTROL SYSTEM. CHARLES H. BARRY, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Dec. 16, 1896. Serial No. 616,409. (No model.)

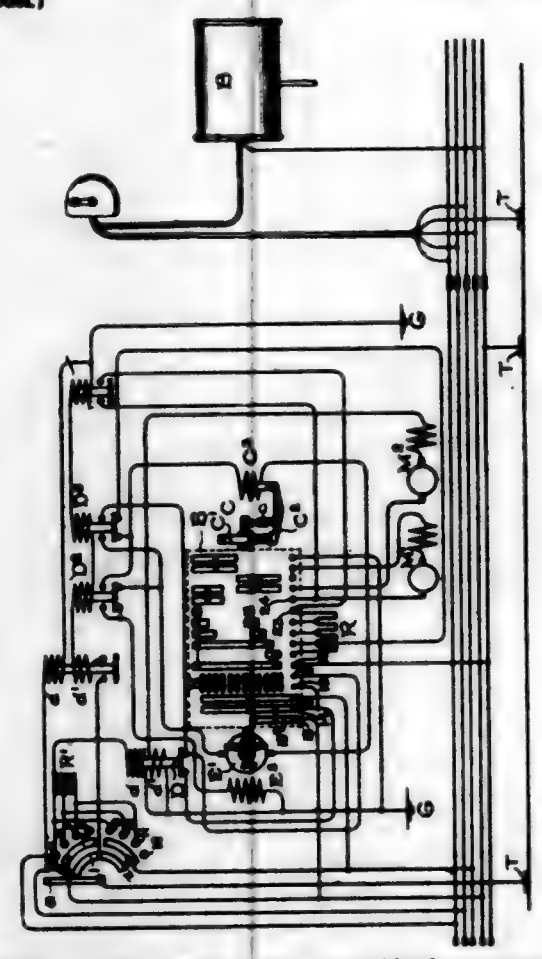

Claim.—1. In a motor system, in combination, a controller, automatic means for preventing the operation of the controller whenever the current in the motor-circuit rises above a predetermined value, and means for modifying the operation of said automatic means.

2. In a train-control system, in combination, automatic means for limiting the rate of acceleration to a predetermined value, and means for

modifying the operation of the said automatic means so as to change the limiting rate of acceleration to a different value.

3. In combination, a motor or motors, a motor-controller, actuating means for said controller, a master-controller, and means controlled in part by the current in the motor-circuit, and in part from the master-controller, for controlling the operation of said actuating means.

4. In combination, a motor or motors, a motor-controller, electromagnetic actuating means for said controller, a switch for opening the circuit of the electromagnetic actuating means, and actuating-winding therefor included in circuit with the motor or motors and arranged to open the switch whenever the current in the motor-circuit rises above a predetermined limit, a master-controller by means of which an operator may control the operation of the motor-controller, and means also under the control of the operator for changing the limit at which the said switch will be operated.

5. In a train-control system, motors and a motor-switch, a pilot-motor for actuating the said switch, means controlled by the current-flow in the main motors for opening the pilot-motor circuit, and means under the control of the motorman for retarding or accelerating the opening of the circuit so as to increase or decrease, as may be desired, the permitted main current, and thus correspondingly change the acceleration of the train.

6. The combination, with motors and a motor-switch, a pilot-motor actuating the switch, and a master-controller for the pilot-motor, of an open-circuiting device for the pilot-motor, and means controlled by the master-controller for modifying the action of the open-circuiting device.

7. The combination of motors and a motor-switch, a pilot-motor, and a master-controller, with a throttle for the pilot-motor circuit comprising a coil, means for varying the ampere-turns of the coil, and a part movable under the influence of the coil, actuating the switch controlling the pilot-motor circuit.

8. In an open-circuiting device for the pilot-motor of a train-control system, the combination of a coil the effect of which is regulated by the master-controller, with another coil in series in the motor-circuit, a part movable under the influence of the coils, and a switch operated by the moving part.

9. In a throttle or open-circuiting device for the pilot-motor of a train-control system, the combination of a coil, a regulable resistance in circuit with the coil, means on the master-controller for varying the regulating resistance, a second coil in circuit with the motors, and a switch controlled by the coils.

10. The combination with motors and a motor-controller, of a pilot-motor operating the controller, a throttle or open-circuiting device for the pilot-motor, and means upon the controller for bridging the throttle-contacts until the controller reaches certain predetermined positions.

11. The combination of motors and a motor-controller, with a pilot-motor actuating the controller, an open-circuiting device or throttle in the circuit of the pilot-motor and controlled by the current-flow in the motor-circuit, and bridging contacts operated by the controller, maintaining the circuit of the pilot-motor until the controller reaches certain definite positions.

12. The combination with the throttle or open-circuiting device for the pilot-motor of a train-control system, of fixed contacts in the motor-controller connected to those of the throttle, and moving contacts carried by the main motor-switch for bridging the fixed contacts at desired times.

13. The combination with the throttle or open-circuiting device for the pilot-motor of a train-control system, of means for short-circuiting said throttle to prevent its operation.

14. The combination with the throttle or open-circuiting device for the pilot-motor of a train-control system, of means located at the point from which the train is for the time being controlled for modifying the operation of said throttle.

15. The combination in a train system, of one or more motors, a controller therefor, a pilot-motor for operating said controller, a switch in the pilot-motor circuit, an actuating-winding for said switch arranged to open the pilot-motor circuit whenever the current in the motor-circuit rises above a predetermined limit, and means located at the point from which the train is for the time being controlled for increasing the limit at which the said switch will be operated.

705,017. COIN-CONTROLLED APPARATUS. ALBERT BAUMGARTEN, Freeport, Ill. Filed June 1, 1901. Serial No. 62,697. (No model.)

Claim.—1. In a vending-machine, the combination with a case provided with a storage-compartment, a hopper, and a slidable valve beneath said hopper, of mechanism for shifting said valve, said mechanism comprising a slidable coin-shifter, a crank-arm connected to said shifter, and an operating-handle, said valve and shifter having corresponding coin-slots so arranged that a deposited coin will cause the unison shift of the valve and shifter, a coin-support beneath said coin-slots and side frames in which said valve and said shifter are held, said side frames being secured to said hopper, said frames and hopper being removably held in said case.

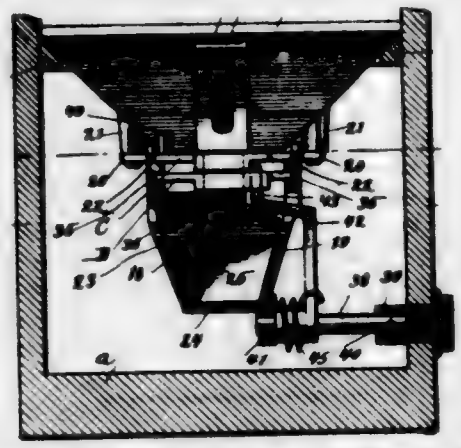

2. In a vending-machine, the combination with a case provided with a storage-chamber, a hopper and a slidable valve, of a slidable coin-shifter, vertically-extending side frames secured to said hopper, a horizontal guideway for said shifter, formed in each of said side frames, a horizontal guideway for the valve and formed in each of said side frames, said guideways for said valve and shifter being arranged one above the other and separated from each other, and an operating-handle suitably connected with said shifter, corresponding coin-slots in said valve and shifter arranged so a deposited coin will cause the unison shift of said slide and valve, and a coin-support beneath said slots.

3. In a vending-machine, the combination with a case provided with a storage-chamber, a hopper and a slidable valve, of a slidable coin-shifter, vertically-arranged side frames secured to said hopper, a guideway for the valve and formed in each of said side frames, a guideway for the shifter and formed in each of said side frames, and below said valve-guides and separated therefrom, said valve and shifter being provided with corresponding coin-slots arranged so that a deposited coin will cause the unison shift of said shifter and said valve, a slot extending vertically through said shifter, a crank-arm having its upper terminal extended in the direction of its length and through said slot, an operating-handle connected with said crank-arm and a coin-support beneath said coin-slot.

4. In a vending-machine, the combination with a case provided with a storage-compartment, a hopper and a slidable valve, of mechanism for shifting said valve, said mechanism comprising a slidable coin-shifter, a crank-arm connected to said slide, and an operating-handle, said valve and said shifter having coin-slots so arranged that a deposited coin will cause the shifter and valve to move in unison, side frames in which said slide and valve are held, and a fixed coin-support beneath coin-slots and integrally formed with one of the side frames.

5. In a vending-machine, the combination with a case provided with a storage-chamber, a hopper and a slidable valve, of mechanism for shifting said valve, said mechanism comprising a slidable coin-shifter, a crank-arm connected to said shifter and an operating-handle, said valve and said shifter having coin-slots so arranged that a deposited coin will cause the shifter and valve to move in unison, side frames in which said slide and valve are held, and a fixed and toothed coin-support beneath coin-slots and integrally formed with one of the side frames.

6. In a vending-machine, the combination with a case provided with a storage-chamber, a hopper and a slidable valve, of mechanism for shifting said valve, said mechanism comprising a slidable coin-shifter, a crank-arm connected to said slide, and an operating-handle, said valve and said shifter having coin-slots so arranged that a deposited coin will cause the shifter and valve to move in unison, side frames in which said slide and valve are held, a chute for directing the discharged material to outside of the case, said side frames being extended to form the side walls of said chute, and a fixed coin-support beneath said coin-slots.

7. In a vending-machine, the combination with a case provided with a storage-chamber, a hopper and a slidable valve, of mechanism for shifting said valve, said mechanism comprising a slidable coin-shifter, a crank-arm connected to said slide, and an operating-handle, said valve and said shifter having coin-slots so arranged that a deposited coin will cause the shifter and valve to move in unison, side frames in which said shifter and valve are held, a chute for directing the discharged material to outside of the case, said side frames being extended to form the side walls of said chute, and a fixed coin-support beneath said coin-slots, integrally formed with one of said side frames.

8. In a vending-machine, the combination with a storage-compartment, a hopper and a movable valve, of coin-controlled mechanism for shifting said valve, a coin-detector comprising a holder and an ejector provided with an inwardly-projecting cam, said ejector being arranged

to positively shift a coin from said holder, and a stud, on said valve and arranged to engage said cam and shift said ejector.

9. In a vending-machine, the combination with an inclosing case provided with a removable door, a storage-compartment, a hopper and a movable valve, of coin-controlled mechanism for shifting said valve, and a coin-detector carried by said door and comprising a holder and an ejector provided with an inwardly-projecting cam, said ejector being arranged to positively shift a coin from said holder, and a stud on said valve and arranged to engage said cam and shift said ejector.

10. In a vending-machine, the combination with an inclosing case provided with a removable door, a storage-compartment, a hopper, a slidable valve and coin-controlled mechanism for shifting said valve, of a coin-detector carried by said door, and comprising a coin-holder and an ejecter, pivotally sustained to swing parallel to the door-face, and provided with an inwardly-projecting cam, said ejector being arranged to positively shift a coin from said holder, and a stud on said valve and arranged to engage said cam to shift said holder, said valve being movable transversely to the travel of said ejector

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705,018. DROPPING ATTACHMENT FOR MEDICINE-BOTTLES. ABSOLOM C. BECKWITH, Brooklyn, N. Y. Filed Oct. 24 1901. Serial No. 79,796. (No model.)

Claim.—1. A dropping attachment for medicine-bottles, consisting of a tubular spout applied to the neck of the bottle, a valve for opening and closing said spout, a fulcrumed and spring-actuated lever for operating said valve, an air-tube arranged in said spout and communicating with an opening provided in the same adjacent the end thereof, a spoon-holding attachment formed with the spout so that the spoon can be adjusted in proper relative position to the end of the spout, substantially as set forth.

2. A dropping attachment for medicine-bottles, consisting of a tubular spout, a valve for opening and closing said spout, a fulcrumed and spring-actuated lever applied to one side of the spout and a spoon-clamping attachment at the opposite side so as to hold the bowl of the spoon in proper relative position to the spout, substantially as set forth.

3. A dropping attachment for medicine-bottles, consisting of a tubular spout applied to the neck of the bottle, an air-tube with closed upper end, an opening in the side of said spout communicating with said air-tube adjacent the closed end thereof, a spring-actuated lever having a valve for opening and closing said spout, said lever being fulcrumed to said spout and disposed parallel thereto, a supporting device for the spoon of U shape horizontal cross-section and being formed integral with the spout, and a clamping means provided therewith for adjustably securing the spoon in proper relation with the end of the spout, substantially as set forth.

705,019. PLANT-PROTECTOR. EDWARD C. H. BEERENS, Charleston, S. C. Filed Oct. 4, 1901. Serial No. 77,610. (No model.)

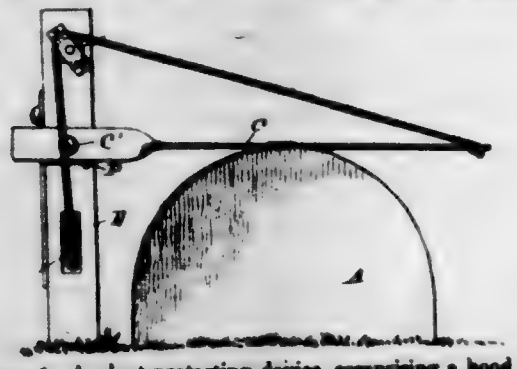

Claim.—1. A plant-protecting device comprising a hood, a series of posts, pivotal arms mounted, one on each post and each fastened to the hood, a rope fastened to the end of each arm and passing about suitable pulleys, locking means, and means for automatically operating the same, as set forth.

2. A plant-protecting device comprising a hood, a series of posts, an arm pivoted to each post and fastened to the hood, a rope passing about suitable pulleys on the post and connected at one end to said arm, a pivoted locking-plate mounted on each post, and having a projecting portion on one edge thereof, and means for throwing said plates out of the path of the rear ends of said arms, as set forth.

3. A plant-protecting device comprising a hood, posts, a pivotal arm carried by each post and fastened to the hood, a rope fastened to the outer end of each arm and passing about pulleys on the post, an adjustable plate pivotally mounted on each post and having a projecting portion adapted to form a stop to prevent the arm being thrown above a horizontal position, and means for throwing said plates out of the path of the rear ends of the arms as the ropes are drawn upon, as set forth.

4. A plant-protecting device comprising a hood, a series of ribs spaced apart, posts, an arm pivoted to each post, a rope fastened at one end to the said arm and passing about pulleys on the post, a plate pivoted to each post, a main operating-rope secured to each of said ropes which pass about said pulleys, collars on said main operating-rope, bracket-plates secured to the locking-plates, and against which bracket-plates said collars adapted to strike to throw the locking-plates so that projecting portions thereof will be out of the path of the pivotal ends of the arms, as set forth.

705,020. SAFETY CONTACT-INTERRUPTER FOR ELECTRIC WIRES. GASTON BELLANGÉ, Arcachon, France. Filed Sept. 9, 1901. Serial No. 74,755. (No model.)

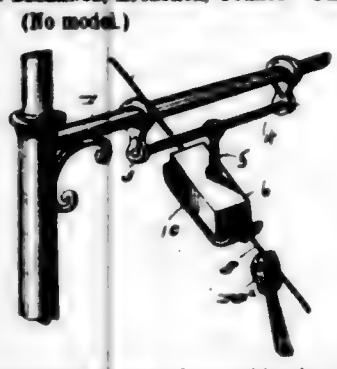

Claim.—In a contact-interrupter, the combination of a casing having a quantity of mercury therein, of a hanger centrally secured to said casing, conductor-wires extending entirely through the ends of said casing and engaging said mercury, a pair of suitably-mounted supports suitably spaced apart carrying a rod, the upper end of said hanger being centrally and movably mounted on said rod, and a plate carrying a V-shaped projection mounted on the under face of the said casing for engagement with the trolley-wheel, substantially as described.

705,021. CARBURETER. JAMES F. BENNETT and HEDLEY S. MOORWOOD, Sheffield, England. Filed Mar. 10, 1902. Serial No. 97,462. (No model.)

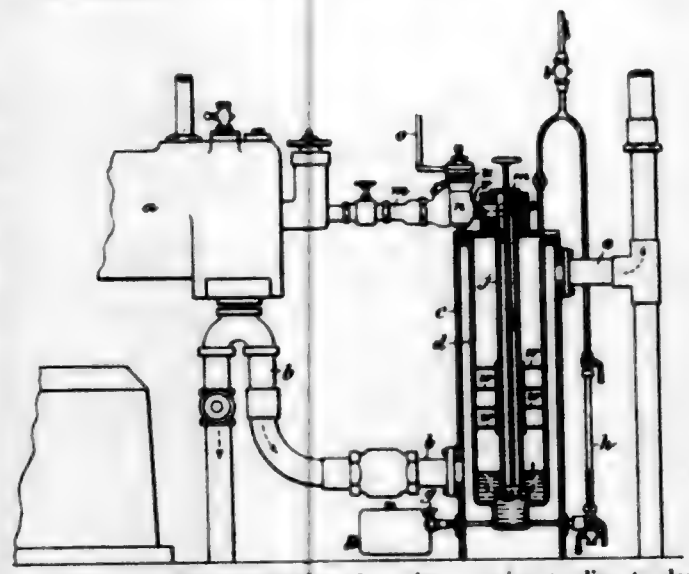

Claim.—1. The combination of a valve, a spring tending to close the valve, an oil-supply pipe leading to the valve, a reservoir for liquid hydrocarbon, a pipe connecting the valve and reservoir, means for admitting air into the pipe, and means for exhausting air and vapor from the reservoir.

2. The combination of a cylinder, means for admitting air to the cylinder, a piston in the cylinder, an oil-supply pipe leading into the cylinder, a valve on the piston controlling the oil-supply, a spring acting on the piston and tending to close the oil-supply, a pipe leading from the cylinder, means for admitting air into the pipe, a reservoir for liquid hy-

drocarbon into which the pipe dips and means for exhausting air and vapor from the reservoir.

705,022. EXPLOSIVE-ENGINE. WILHELM BERNHARDT, Vienna, Austria-Hungary. Filed Nov. 24, 1900. Serial No. 37,062. (No model.)

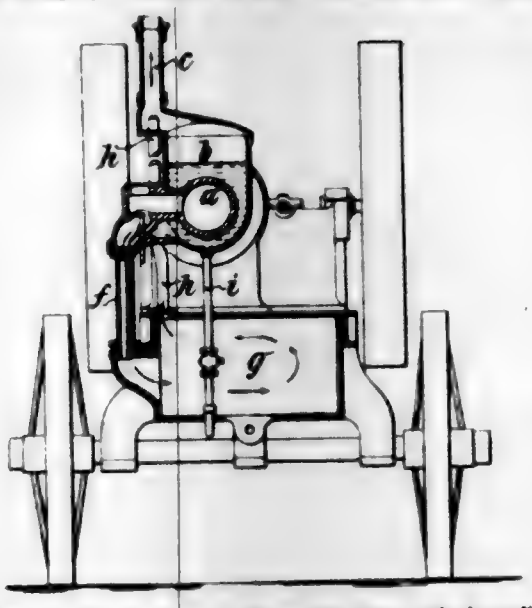

Claim.—1. In a gas-engine, the combination with the cylinder, of a chamber containing cooling liquid surrounding the same, an air inlet and outlet to said chamber both above the level of the liquid therein, and an exhaust-pipe from the engine arranged to exhaust gas into said air-outlet and thereby induce a current of air over the surface of the cooling liquid, substantially as described.

2. In a gas-engine, the combination with the cylinder, of a chamber containing liquid surrounding the same, an air-inlet to said chamber above the level of the liquid therein, and an injecter connected to the chamber and operated by exhaust-gases from the cylinder, whereby a current of air is created across the surface of the liquid in said chamber, substantially as described.

3. In a gas-engine, the combination with the cylinder, a chamber containing a cooling liquid surrounding the same, air inlet and outlet pipes for said cooling-chamber both above the level of the liquid therein, of an exhaust-chamber connected with the exhaust-valve, and an exhaust-pipe leading from said exhaust-chamber and leading into the air-outlet pipe of said chamber, substantially as described.

4. In a gas-engine, the combination with the cylinder, of a chamber containing a cooling liquid surrounding the same and provided with an air-space above the liquid, an air-inlet at one end and an air-outlet at the opposite end of said cooling-chamber, an exhaust-chamber, a pipe connecting the cylinder with the exhaust-chamber, and a pipe leading from the exhaust-chamber and terminating in the outlet-pipe, substantially as and for the purpose specified.

5. In a gas-engine, the combination with the cylinder, of a chamber containing a cooling liquid surrounding said cylinder and provided with an air-space above the liquid, means for automatically supplying said liquid to the chamber, an air-inlet mounted in one end of said cooling-chamber above the air-space, and an air-outlet mounted in the opposite end of said chamber, an exhaust-chamber, a pipe leading from the cylinder to the bottom of the exhaust-chamber, and a pipe leading from the top of said exhaust-chamber and terminating in the air-outlet, substantially as and for the purpose specified.

705,023. MUSIC-SHEET TURNER. CHARLES E. BERTOGLIATTI. New York, N. Y. Filed Mar. 15, 1902. Serial No. 98,300. (No model.)

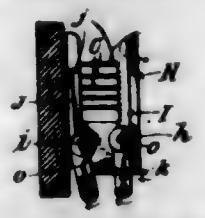

Claim.—In a leaf-turning device, a plurality of spring-actuated arms and means carried thereby which grasp in each instance a sheet of music in combination with two pawls I J, arranged on opposite sides of the said arms for holding the latter motionless against the stress of the said springs, and a lever having a bifurcated end for operating the said pawls alternately to release the said arms individually in succession after the manner of an anchor-escapement as the said lever is depressed substantially as set forth.

705,024. SUPPORT FOR LIMBS. MYRON H. BIGBEY, Kirksville, Mo. Filed May 20, 1901. Serial No. 61,059. (No model.)

Claim.—1. In a device for supporting limbs to be treated, the combination with a hook-body, a yoke-like head mounted thereon and a cam-body 14 eccentrically journaled in said head, of a bar 17 extending through said head in rear of the cam-body, said bar having its upper end provided with a yielding support, a strap depending between said cam-body and bar 17 and adapted to be clamped between said parts and means for supporting the upper portion of said strap above said head, substantially as specified.

2. In a device for supporting limbs to be treated, the combination with a hook-rod having a cushioned hook portion 2, a yoke-like head carried on the upper end of said rod and a locking-cam journaled in said head, of a spring-supported bar 17 depending in rear of said locking-cam, a binding-shoe 19 carried on said bar 17 and having inclined upper portions as described, adjustable screws 21 extending on opposite sides of the bar 17 and adapted to contact with said shoe and a suspending-strap supported from a point above the head 13 and passing between said shoe and cam-body, substantially as specified.

3. In a device for supporting limbs to be treated, the combination with a hook-body comprising a lower section 11 having a cushioned hook-termination and a hollow upper section 4 within which said lower section telescopes and means for detachably and adjustably connecting said sections, of a yoke-like head for said upper section, a locking-cam 14 journaled therein, a spring-supported bar 17 depending in rear of said cam and a suspending-strap supported from a point above said head and depending between said cam and bar, substantially as specified.

4. In a device for supporting limbs to be treated, the combination with a hook-body, a yoke-like head mounted thereon and a strap binding or clamping mechanism connected with said head, of a reel 24 journaled below said head, a spring connecting said body with a journaled rod or shaft and a strap adapted to wind on said reel by action of the spring and means for suspending the strap from a point above the head 13, substantially as specified.

705,025. SUPPORT FOR STEAM-TURBINE WHEELS. JOHAN A. BOMGREN, Stockholm, Sweden. Filed Apr. 8, 1902. Serial No. 101,870. (No model.)

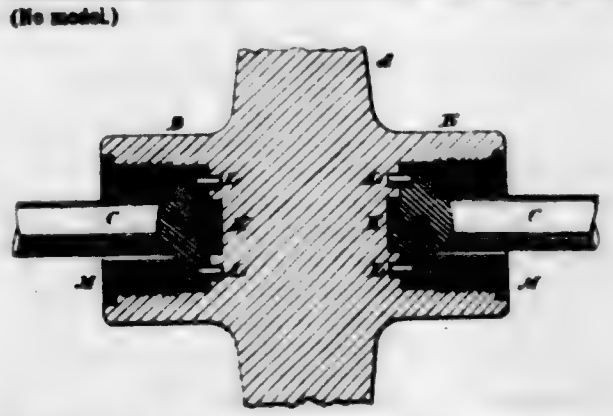

Claim.—1. The combination of a wheel having on opposite sides central internally-threaded sockets, supporting-shafts therefor having enlarged ends in said sockets, and screw-plugs surrounding said shafts and received in said sockets.

2. The combination of a wheel having on opposite sides central internally-threaded sockets, the said sockets in their bottoms having recesses, supporting-shafts for said wheel having enlarged ends to enter said sock-

ons and projections on said ends to enter said recesses, and screw-plugs surrounding said shafts and received in said sockets.

3. The combination of a wheel having on opposite sides internally-threaded sockets, the said sockets in their bottoms having recesses, supporting-shafts C for said wheel having enlarged ends F, G to enter said sockets and a central projection K and projections L to enter said recesses, and screw-plugs M surrounding said shafts and received in said sockets.

705,026. INTERIOR-CONDUIT OUTLET-BOX. WILLIAM F. BOSSERT, Utica, N. Y., assignor to the Bossert Electric Construction Company, Utica, N. Y. Filed May 8, 1902. Serial No. 106,409. (No model.)

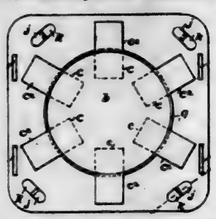

Claim.—1. A cover for an outlet-box, consisting of a base or rim provided with orifices for attachment to the box, an opening in the central part of said base surrounded by a collar, an outward extension or extensions from said collar, at a right angle thereto and parallel with the surface of the cover, as set forth.

2. A cover for an outlet-box consisting of a base or rim provided with orifices for attachment to the box, an opening in the central part of said base surrounded by an upright collar, and one or more outward extensions from the said collar at a right angle thereto and parallel with the surface of the cover, as set forth.

3. A cover for an outlet-box, stamped from a thin sheet of malleable metal into a dish shape, a portion of the central part cut out, and the remainder turned outward parallel with the surface of the cover, as set forth.

4. A cover for an outlet-box, stamped from a thin sheet of malleable metal into a shape having two parallel planes united by a collar, the central part of the upper plane cut out and the remainder turned outward parallel with the surface of the cover, as set forth.

5. A cover for an outlet-box, stamped from a thin sheet of malleable metal into a shape having two parallel planes united by a collar, holes cut in the lower plane for the ears of the box, the central part of the upper plane cut out and the remainder turned outward at a right angle to the collar and parallel with the surface of the cover, as set forth.

6. A cover for an outlet-box, provided upon its upper surface with hooks or fingers, as and for the purpose set forth.

7. A cover for an outlet-box having a central orifice, and provided upon its upper surface with hooks or fingers, as set forth.

8. A cover for an outlet-box having a central orifice, and holes for the box-ears, and provided upon its upper surface with hooks or fingers, as set forth.

705,027. SELF-CLEANING SIEVE. ALLEN C. BRADINGHAM, Toledo, Ohio, assignor to Hordyke & Marmon Company, Indianapolis Ind., a Corporation of Indiana. Filed Oct. 2, 1900. Serial No. 31,740. (No model.)

Claim.—1. In a shaking-screen, the combination, of the sieve-cloth, projections secured to and extending down from the under side of said cloth, a floor near thereto, and knockers mounted on and adapted to slide over said floor, which extend up to above the plane of the lower edge of said projections, whereby they are adapted, under the impulse of the movement of the screen, to strike said projections and dislodge adhering material, substantially as set forth.

2. In a shaking-screen, the combination, of the sieve-cloth, strips secured to and supported wholly by said cloth and projecting from its surface, a floor near said cloth, and knockers mounted to move on said floor and having parts which project to within the spaces between said strips and adapted to knock against the sides thereof in their movements under the impulse of the movement of the screen, substantially as set forth.

3. The combination, in a shaking screen or sieve, with the cloth thereof, of strips secured to said cloth, a floor beneath said cloth, and knockers composed of two parts one of which extends up on each side of a strip, said knockers being supported on the floor near said cloth and adapted under the impulse of the movement of the screen to hit said strips and dislodge material adhering to said cloth.

705,028. CAR-BRAKE. ABEL BROLASKA, Detroit, Mich. Filed May 12, 1902. Serial No. 106,801. (No model.)

Claim.—In a car-brake, the combination with the brake-shoes mounted on a movable brake-beam; of a casing carried by the car and having a guide, an upright shaft journaled in the casing and having a crank-handle at its upper end, a second shaft journaled in said casing, intermeshing gears fixed on said shafts, a toothed wheel fixed on the second shaft, a rack-bar having flanges above and below its teeth and sliding bodily in said guide while its teeth engage said toothed wheel, and a chain connecting said rack-bar and brake-beam.

705,029. RATCHET-TOOL. ELIJAH R. BROWN and THOMAS R. MCCALL, Cripplecreek, Colo. Filed Nov. 19, 1901. Serial No. 82,862. (No model.)

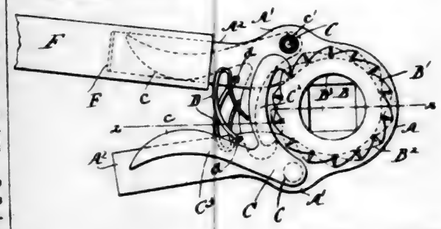

Claim.—1. In a ratchet-tool, the combination with a head having the stocks A^3, and ring-bearing portion, of a ring in the latter, having differential ratchet-teeth, and normally spring-engaged pawls for the latter, each having an arm contiguous to its stock to be held with the latter and be thrown out of engagement.

2. In a ratchet-tool, the combination with a head having the stocks A^3, and ring-bearing portion, of a ring in the latter having differential ratchet-teeth, and normally spring-engaged pawls for the latter each having an outwardly-tapering arm and cam-face c, said arm adapted to be held with its stock to retain its pawl out of engagement.

3. In a ratchet-tool, the combination with a head having the stocks A^3, and ring-bearing portion, of a ring in the latter having differential ratchet-teeth, and normally spring-engaged pawls for the latter, each presenting the extended elbow C', having the lateral stud-bearing in the head, curved ratchet-hook C^2, and outer curved arm C^3, the latter adapted to be held with its stock to retain its pawl out of engagement.

4. In a ratchet-tool, the combination with a head having the stocks A^3, and ring-bearing portion, of a ring in the latter having differential ratchet-teeth, and bell-crank pawls for the latter, including an outwardly-extending arm, of springs D, each having its secured and free ends contiguous and serving to normally hold its pawl engaged.

5. In a ratchet-tool, the combination with a head having the stocks A^3, and ring-bearing portion, of a ring in the latter having differential ratchet-teeth and bell-crank pawls each having a stud loosely bearing in the head and having its projecting portion embraced by a spring engaging both the stud and head, each of said pawls also having an outer tapering arm C^3, provided with a cam edge and contiguous to the stock.

6. The combination with a ratchet-tool provided with a head having the stocks A^3, ring-bearing portion, ring in the latter having differential bearing-teeth and normally spring-engaged pawls for the latter each having an arm contiguous to its stock, of an operating-handle having a socketed end designed to be slipped over either of the stocks and its pawl-arm to hold that particular pawl disengaged.

7. The combination with a ratchet-tool having the head with stocks

A^3, the bearing-ring, and ring in latter with differential ratchets, and pawls each with outer tapering arm provided with cam edge c, of an operating-handle having a socketed end designed to be slipped over either of the stocks and its pawl-arm to hold that particular pawl disengaged, the socket in the handle being of greater area horizontally than the stocks and tapered portion.

705,030. SHOE FOR GRAIN-DRILLS. WILLIAM F. BROWN, Dowagiac, Mich., assignor to the Dowagiac Manufacturing Company, Dowagiac, Mich. Filed May 10, 1901. Serial No. 59,588. (No model.)

Claim.—1. The combination of the boot A with a wedge-shaped portion A' at the lower end thereof having suitable shoulders A''' above and a vertical slot A'' therein; and a shoe B with a V-shaped opening between its side plates; and a bolt C with an eye C'' embracing a pivot C' through the shoe, the said eye C'' fitting the said slot closely said bolt extending upwardly through the part A' of the boot A.

2. The combination of a boot having a wedge-shaped portion at the bottom with a slot therein; a shoe with side plates forming a V-shaped opening above to embrace the wedge-shaped part of said boot; a bolt secured to a suitable pivot between the sides of the shoe and extending upwardly through the wedge-shaped part of the boot, for the purpose specified.

3. The combination of a boot with a suitable wedge-shaped portion at the bottom containing the vertical slot; and a shoe, the side plates of which form a V-shaped opening above to embrace the wedge-shaped portion of said boot, and a bolt connected with the shoe and extending upwardly for attaching the same to the boot, as specified.

4. The combination of a boot with a suitable wedge-shaped portion at the bottom; and a shoe, the side plates of which form a V-shaped opening above to embrace the wedge-shaped portion of said boot; and a bolt connected with the shoe and extending upwardly for attaching the same to the boot, as specified.

705,031. DEVICE FOR SPRING-ACTUATED SHADES. HOWARD T. BURROWS, Portland, Me., assignor to the Curtain Supply Company, Chicago, Ill., a Corporation of New Jersey. Filed Mar. 23, 1896. Serial No. 674,617. (No model.)

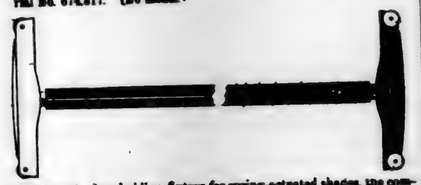

Claim.—1. In a holding-fixture for spring-actuated shades, the combination with a shade, of spring-pressed shoes carried thereby having elongated rocker-shaped friction engaging surfaces, substantially as described.

2. In a holding-fixture for spring-actuated shades, the combination with a shade, of a hollow stick carried thereby and spring-pressed shoes secured to the ends of the stick having elongated rocker-shaped friction engaging surfaces, substantially as described.

3. In a holding-fixture for spring-actuated shades, the combination with a shade, of spring-pressed shoes carried thereby having friction engaging members of elongated rocker shape and antifriction members above and below the rocker-shaped members, substantially as described.

4. In a shade-holding fixture, the combination with the shade, of spring-pressed friction devices carried by the shade located at the edges thereof, the same consisting of elongated shoes having elongated convex friction engaging surfaces between their ends and members of less holding power at opposite ends of the friction-surface and means for supporting the same on the curtain.

5. In a holding-fixture for spring-actuated shades, the combination with a shade, of a stick secured thereto, a friction-shoe at the outer end of the stick, means for securing the same to the stick comprising a rod located in the end of the stick, a spring on the rod for forcing the same outward, removable means at the end of the stick for limiting the outward movement of the rod, and means on the rod with which the limiting means engages.

6. In a holding-fixture for spring-actuated shades the combination with a shade, of spring-pressed shoes carried thereby having elongated friction engaging surfaces formed with outwardly-curved opposite portions extending from the center to the ends thereof.

7. In a holding-fixture for spring-actuated shades the combination with a hollow stick, of a friction-shoe at the end of the stick having a stem, a rod in the stick having a threaded engagement with the stem, a spring on the rod and means fixed in the stick for limiting the outward movement and preventing the turning of the rod; substantially as described.

8. In a holding-fixture for spring-actuated shades, the combination with a shade, of a stitch secured thereto, a friction-shoe at the outer end of the stick, a rod within the stick having a threaded engagement with the shoe, a spring on the rod, an abutment within the stick through which the rod passes and means on the rod engaging the abutment for preventing the turning of the rod, substantially as described.

9. The combination with a stick, of a spring-actuated rod therein, an oblong head at the end of the stick having an extension engaging the stick to prevent independent tilting, an oblong friction member in the head and means for moving the friction-surface independent of the head to vary the position of engaging surface relative to the head.

10. In a holding-fixture for spring-actuated shades, the combination with a shade, of spring-pressed shoes carried thereby having elongated oppositely-inclined friction engaging surfaces, substantially as described.

11. In a shade-fixture the combination with a hollow stick, of a friction-head at the end of the stick, an adjustable connection between the head and stick, an adjustable friction-block, and means for adjusting the block on the head.

12. In a frictional shade-holding device, the combination with a stick, of a head at the end thereof, a friction-surface carried by the head, and means for adjusting the friction-surface on the head, and securing the same in adjustable positions.

13. In a shade-holding device, the combination with a stick, of a spring-actuated rod therein, an oblong head at the end of the stick, an oblong friction member in the head and means for moving the friction member independent of the head to vary the position of its engaging surface relative to the head.

705,032. FIREMAN'S HAT. IRVING CAIRNS, Montclair, N. J. Filed May 9, 1902. Serial No. 106,513. (No model.)

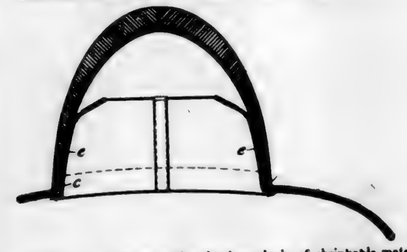

Claim.—1. A fireman's hat having a body of shrinkable material and an endless metal band extended upward within the body and flanged outwardly at its lower edge beneath the brim, substantially as described.

2. A fireman's hat having a body of shrinkable material, an endless metal band extended upward within the body and flanged outwardly at its lower edge beneath the brim, and a lining secured to said flange and extended upwardly within the band and to the hat-body, substantially as described.

705,033. RENDERING APPARATUS. DANIEL CAMERON, Kansas City, Mo., assignor to Cudahy Packing Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 10, 1902. Serial No. 93,420. (No model.)

Claim.—1. In an apparatus for separating grease or oils from materials containing the same, the combination with a hopper provided with means for heating the contents thereof, of a grinder adapted to receive and grind the contents of said hopper, a closed separator adapted to receive the subdivided material from the hopper, an agitator for stirring the contents of said separator, means for heating the contents of said separator and for creating a pressure therein, oil-eductious tubes associated with said separator, and a drier for drying the residue, substantially as described.

2. In an apparatus for separating grease or oils from materials containing the same, the combination with a hopper provided with means for heating the contents thereof, of a grinder adapted to receive and grind

the contents of said hopper, a closed separator adapted to receive the subdivided material from the hopper, an agitator for stirring the contents of said separator, means for heating the contents of said separator and for creating a pressure therein, oil-eduction tubes associated with said separator, a steam-jacketed drier for drying the residue, an agitator for said drier, and means for exhausting the air therefrom, substantially as described.

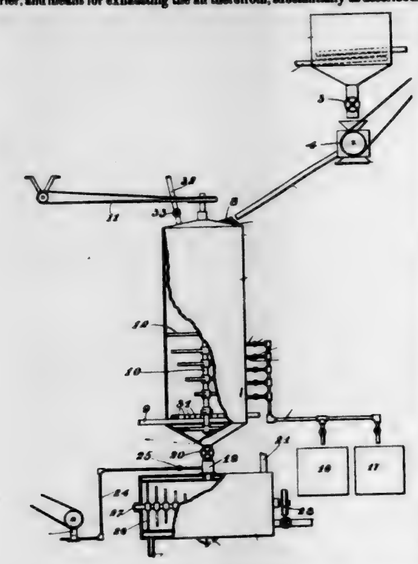

705,084. PROCESS OF EXTRACTING GREASE. DANIEL CARBON, Kansas City, Mo., assignor to Cudahy Packing Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 10, 1902. Serial No. 93,421. (No specimens.)

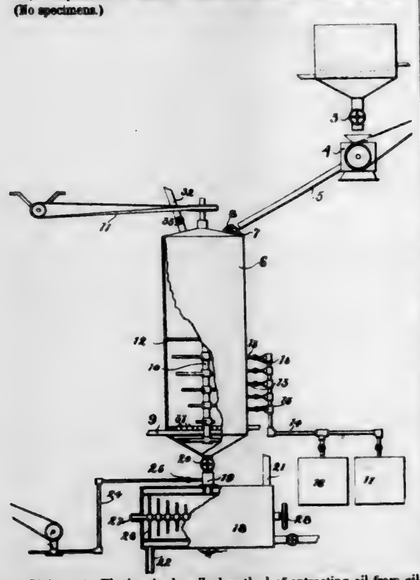

Claim.—1. The herein-described method of extracting oil from oil-bearing products containing a substantial quantity of non-oleaginous material, which consists in heating said oil-bearing products, thereafter passing the same through a grinder, where they are subdivided, then passing the products into a separator and subjecting them to heat and pressure, whereby the oils and grease are separated from the residue, withdrawing the lighter oil without adding water to the contents of the separator, and thereafter subjecting the residue to heat in a vacuum to dry the same, substantially as described.

2. The herein-described process of treating oil or grease carrying products containing a substantial quantity of non-oleaginous material, which consists in heating said products, then passing the same through a grinder to subdivide the same, thereafter subjecting said products to heat under pressure in a closed receptacle while agitating said products, thereby to separate the oil or grease from the residue, allowing the oil to rise and then withdrawing the same without adding water to the product, and thereafter subjecting the residue to heat in a closed receptacle, thereby to dry the same, substantially as described.

705,085. SLIP-LINK FOR TRACE-CHAINS. WILLIAM J. CASE, Hartland, Canada. Filed Mar. 17, 1902. Serial No. 98,494. (No model.)

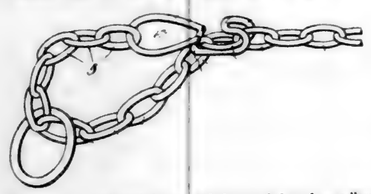

Claim.—1. A slip-link for trace-chains consisting of an endless metal bar having a loop in its rear end, a downwardly-bent heel formed at an intermediate point, and a hook formed at its front end coacting with said heel to retain a link of a trace-chain therein, in combination with a trace-chain attached to said slip-link and having links adapted to be seated and engaged between said hook and heel.

2. A slip-link for trace-chains, consisting of an endless metal bar having a loop in its rear end, a downwardly-bent heel formed at an intermediate point, and a hook formed at its front end coacting with said heel to retain a link of a trace-chain therein, the sides of the forward portion of the link being parallel and approximated to a distance slightly exceeding the thickness of the links of the trace-chain, in combination with a trace-chain attached to said slip-link and having links adapted to be seated and engaged between said hook and heel.

3. The combination of a trace-chain adapted to be passed through a ring or eye to attach it to a whiffletree and to be turned back and fastened to itself, and means for fastening the end of the chain to an intermediate link thereof comprising a slip-link in the form of an endless metal bar looped into the end of the chain and having its rear portion opened into a wide loop, its front portion bent into a hook, and the sides thereof brought together in parallel relation at a distance slightly exceeding the distance of the trace-links and having downwardly, backwardly and forwardly bent intermediate portions coacting with the hook.

4. The combination of a trace-chain adapted to be passed through a ring or eye to attach it to a whiffletree and to be turned back and fastened to itself, and means for fastening the end of the chain to an intermediate link thereof comprising a slip-link in the form of an endless metal bar looped into the end of the chain and having its rear portion opened into a wide loop, its front portion bent into a hook, and the sides thereof brought together in parallel relation at a distance slightly exceeding the thickness of the trace-links and having downwardly, backwardly and forwardly bent intermediate portions coacting with the hook, the distance between the inside of the hook and bend being approximately equal to the length of one of the trace-links, whereby the latter is adapted to be forced into and seated therein, the adjacent links passing through the slot formed between the two parallel sides of the link, substantially as described.

705,086. ENVELOP. CHARLES E. CATHER and LOUIS H. BUCKLEY, Worcester, Mass. Filed June 3, 1901. Serial No. 62,880. (No model.)

Claim.—1. A metallic fastener consisting of a sheet-metal plate provided at its corners with attaching-spurs adapted to pass through the body of the envelop and be bent over or clenched upon the inside of the envelop and a pair of bendable tongues integral with said plate and projecting therefrom upon opposite sides of said plate.

2. The combination with the body of an envelop, of a fastening device consisting of a plate provided with spurs for the attachment of the plate to the body of the envelop, and a pair of bendable tongues projecting from the opposite sides of said plate, and between said spurs, said plate being slit on opposite sides of said tongues on line parallel with said tongues, whereby the length of said tongues is increased.

3. In a merchandise-envelop, the fastening device consisting of a plate provided with attaching-spurs F, F and a pair of bendable tongues C, C said plate being slit on opposite sides of said tongues, on lines parallel with said tongues whereby said tongues are bendable on lines near the center of said plate and said attaching-spurs are bendable on lines farther from the center of said plate, substantially as described.

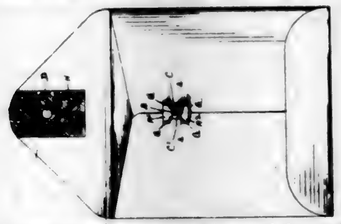

4. A metallic fastener consisting of a sheet-metal plate provided at its corners with attaching-spurs adapted to pass through the body of the envelop and be bent over or clenched upon the inside of the envelop and a pair of bendable tongues integral with said plate and projecting therefrom upon opposite sides of said plate, each of said tongues being placed midway between the attaching-spurs upon the same side of the plate.

5. A metallic fastener consisting of a sheet-metal plate provided with bendable tongues projecting in opposite directions from the sides of said plate and attaching-spurs formed on the ends of arms extending laterally from the sides of said plate, whereby the resistance offered by said attaching-spurs to the strain incident to the bending of said tongues is increased, substantially as described.

6. A metallic fastener composed of sheet metal, and comprising two cross-bars A', A^2, connected together at their central portions by a neck B, from the center of which and integral therewith are the bendable tongues C, C', of much less width than the length of the neck and capable of being bent so as to bring the tips C^3, near each other and in position to pass through the opening in the flap to be fastened, each cross-bar having a spur F at its outer ends adapted to pass through the body of the envelop and be bent over or clenched upon the inside of the envelop, whereby the envelop-fastener is securely attached to the body of the envelop.

705,087. MACHINE FOR BOXING MATCHES. CHARLES F. CHRIST, Detroit, Mich. Filed Aug. 12, 1901. Serial No. 71,693. (No model.)

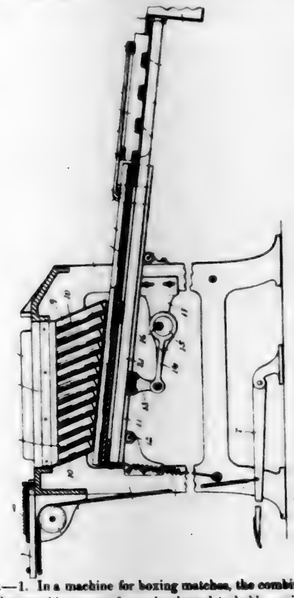

Claim.—1. In a machine for boxing matches, the combination with longitudinally-movable ways, of a rack adapted to hold a series of transverse rows of match-boxes all lying in the same horizontal plane, a frame provided with downwardly-projecting parallel partitions adapted to enter the match-boxes and divide the same into two parts, said partitions being cut away at their lower sides opposite the ends of the boxes adjacent to each other.

2. In a machine for boxing matches, the combination with means for conveying the matches to the boxes, of a rack for holding match-boxes provided with a series of rows of pockets to receive the boxes, each pocket being open at its top and bottom.

3. In a machine for boxing matches, the combination with ways for conveying the matches, of a rack consisting of a series of transverse bars secured at a distance apart equal to the length of a match-box by end bars, and spacing-strips extending from the edges of said transverse bars and adapted to project between the boxes to form pockets open at the top and bottom.

4. In a machine for boxing matches, in combination with the frame thereof, provided with an opening in its top, a hopper secured within the opening and formed of inclined chutes having concave lower sides, a reciprocating frame beneath said hopper, brackets on the machine-frame, rolls on said brackets to support said reciprocating frame, adjustable brackets in the machine-frame provided with bearings, a driving-shaft in said bearings, an eccentric in said shaft, a hanger on the lower side of said reciprocating frame, an eccentric-rod connecting said hanger and eccentric, a spring secured at one end to the machine-frame, and at the other end to the upper end of the reciprocating frame, an inclined feed-table having a corrugated top forming ways on said reciprocating frame, longitudinal bars secured to the reciprocating frame and extending beyond said feed-table, a tie-bar connecting the lower ends of said bars, a receptacle secured to said tie-bar, a removable box-holding rack having parallel bars and spacing-strips, and a frame pivoted to the reciprocating frame and provided with a series of parallel partitions cut away opposite the parallel bars of the rack to allow the same to enter the match-boxes.

705,088. VEHICLE-TIRE. JAMES CHRISTY, Jr., Washington, D. C. Filed Mar. 20, 1902. Serial No. 99,086. (No model.)

Claim.—The combination with a flanged rim, of a rubber tire thereon, tie-wires extending longitudinally around the tire on opposite sides thereof, and laterally-yielding bars embedded in and extending partly across the tire, said bars having beads forming retaining-hooks under the tie-wires and enlarged bearing-surfaces against and parallel to the inner face of the rim-flanges.

705,089. SAWMILL-DOG. DAVID L. COLE, Cedargrove, Mo. Filed Apr. 24, 1902. Serial No. 104,572. (No model.)

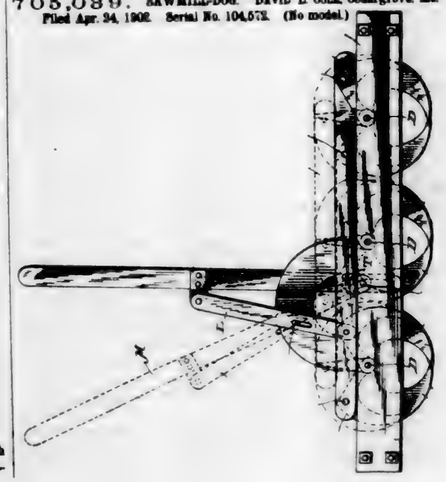

Claim.—A sawmill-dog comprising a rack having three parallel strips, spaced apart, the middle of said strips having a curved segment, a pin carried thereby, a series of pins carried by said middle strip and projecting from the opposite sides thereof, dogs pivotally mounted on said pins in pairs and in reverse directions, strips pivoted to the upper corners of said dogs on opposite sides of the middle strip, an operating-lever having a sliding pivotal connection with the middle strip, and the link having sliding pivotal connection with said segment projection and pivotally connected at one end to the operating-lever and at its other end to the outer one of said strips secured to the upper corners of the dogs, as shown and described.

705,040. **CRACKER-MACHINE.** ALEXANDER W. COPLAND, Cambridge, Mass. Filed Oct. 31, 1901. Serial No. 80,597. (No model.)

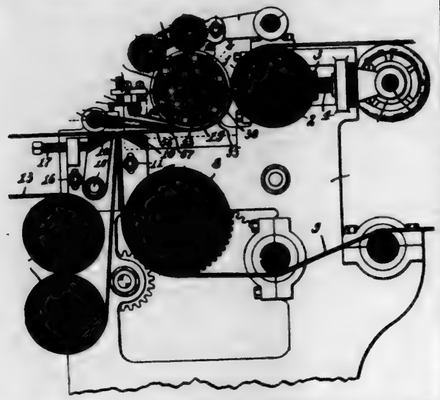

Claim.—1. In combination a cylindrical cutter whose cutting-ribs outline spaces thereon; an apron coacting therewith; and supports for that apron to hold the apron in wrapping circumferential contact with the cylindrical cutter.

2. In combination a cylindrical cutter whose cutting-ribs outline spaces thereon and an apron moving therewith and having wrapping contact about a portion of the periphery of the cylindrical cutter and acting to hold the material in the spaces outlined by the cutting-ribs.

3. In combination a cylindrical cutter; a traveling apron having wrapping contact with a portion of the periphery of that cutter; air-passages communicating with the spaces outlined by the cutting-ribs of the cylindrical cutter; and means for supplying compressed air to those spaces.

4. In combination a cylindrical cutter; a traveling apron having wrapping contact with a portion of the periphery of that cutter; air-passages communicating with the spaces outlined by the cutting-ribs of the cylindrical cutter; and means for supplying compressed air to those spaces when only partly covered by the apron.

5. In combination a rotary cutting-cylinder provided with cutting-ribs outlining spaces thereon and having compressed-air passages communicating with such spaces, a traveling apron having wrapping contact with a portion of the periphery of such cutting-cylinder and adapted to engage the outer surface of crackers while their inner surface is subjected to air-pressure, and mechanism for controlling the flow of air to said passages.

6. In combination a rotary cutting-cylinder provided with cutting-ribs outlining spaces thereon and having compressed-air passages communicating with such spaces, a coacting roll contiguous to such cutting-cylinder, a traveling apron passing between said roll and cutting-cylinder and then following in contact with the cutting-cylinder and then leaving the cutting-cylinder, and mechanism for controlling the flow of air to said passages.

7. In combination a rotary cutting-cylinder provided with cutting-ribs outlining cracker-spaces thereon and having compressed-air passages communicating with such spaces, a traveling apron having contact with the periphery of the cutting-cylinder for a distance equal to the circumferential dimension of one of said cracker-spaces and then leaving the cylinder, a conduit for conveying compressed air to said passages, and valvular mechanism for admitting compressed air to the cracker-spaces before the apron separates from the cutting-cylinder.

8. In combination, a cylindrical cutter provided with cutting-ribs outlining spaces thereon, a thin-edged support disposed near the periphery thereof in stripping position, and an endless apron traveling over said thin edge and having that portion of its surface nearest the cutter traveling in a direction opposite that of the contiguous portion of the cutter.

9. In combination a cylindrical cutter provided between its end portions with cutting-rib outlining spaces thereon; means for clearing the crackers from those spaces; and strippers presenting at the end portions of the cutter for stripping the side scrap from the ends thereof.

10. In combination, a cylindrical cutter provided with cutting-rib outlining spaces thereon, a rocking frame mounted on an axis of oscillation parallel with the axis of said cutter, and a cylindrical brush mounted in said rocking frame and engaging the periphery of said cutter.

11. In combination a cylindrical cutter with cutting-rib outlining spaces thereon; exhaust-passages communicating with one or more of said spaces; and means for controlling the flow of air from said spaces.

12. In combination a cylindrical cutter with cutting-rib outlining spaces thereon; air-passages leading to some of such spaces; a conduit adapted to place said air-passages in communication with air-exhausting means; a conduit adapted to place said air-passages in communication with a source of supply of air under pressure, and valvular mechanism adapted to place said air-passages in communication with said first-mentioned conduit and subsequently in communication with the last-mentioned conduit.

13. In combination a rotary cutting-cylinder provided with cutting-ribs outlining spaces thereon and having a cylindrical bore and having air-passages leading from said bore to said spaces, a fixed cylindrical core engaging said bore and having air-passages adapted to communicate with the air-passages in said cylinder as the cylinder turns, a moving surface coöperating with said cylinder to carry the sheet of dough to it and against which the cylinder does its cutting, and an exterior conduit communicating with the air-passages in said core.

14. In combination a rotary cutting-cylinder provided with cutting-ribs outlining spaces thereon and having air-passages communicating with such spaces and having a cylindrical bore, a longitudinally-grooved cylindrical core engaging said bore, a segment of said core disposed within said groove, springs within said core urging said segment outwardly against the bore of said cylinder, air-passages in said segment adapted to communicate with the air-passages in said cylinder as the cylinder turns, and an exterior conduit communicating with the air-passage in said core.

15. In a cracker-machine, a cylindrical cutter provided with cutting-ribs outlining spaces thereon and having a circumferential series of independent longitudinally-extending air-passages near its periphery and having radial passages extending outwardly from said longitudinal passages to said spaces, and a valvular device for controlling communication successively with a portion of each of said longitudinal passages.

16. In combination, a rotary cutter provided with ribs outlining cutting-spaces thereon, a support to retain the cut dough in said spaces, and means for loosening the cut dough in said spaces while retained therein by said support.

17. In combination, a rotary cutter provided with ribs outlining cutting-spaces thereon, an opposing agent against which said cutter may act in cutting dough to become lodged in said spaces, a support to retain the cut dough in said spaces, and pneumatic means for loosening the cut dough in said spaces while retained therein by said support.

18. In combination, a rotary cutter having ribs outlining cutting-spaces thereon, an opposing agent against which said cutter may act in cutting dough to become lodged in said spaces, air-passages communicating with the spaces behind the dough therein, means for exhausting the air beneath the dough in said spaces, and means for subsequently ejecting the dough from said spaces.

19. In combination, a rotary cutter provided with ribs outlining cutting-spaces thereon, an opposing agent against which the cutter may act in cutting dough to be lodged in said spaces, air-passages in the cutter leading to the spaces behind the dough, and valvular means for admitting the air-supply to different spaces at different points in the rotation of the cutter.

705,041. **CRACKER-MACHINE.** ALEXANDER W. COPLAND, Cambridge, Mass. Filed Oct. 31, 1901. Serial No. 80,598. (No model.)

Claim.—1. In combination a cylinder with cutting-rib outlining spaces thereon; an apron in circumferential wrapping contact therewith; and means to give a sharp turn to the apron at one limit of such circumferential contact.

2. In combination a cylinder with cutting-rib outlining spaces thereon; an apron in circumferential wrapping contact therewith; and means to give sharp turns to the apron at both limits of such circumferential contact.

3. In combination a cylinder with cutting-ribs outlining spaces thereon; a suction stripping-roll running in contact with said cylinder, and a cord-carrier the cords of which travel about the suction stripping-roll between it and said cylinder.

4. In combination a cylinder with cutting-rib outlining spaces thereon; a suction stripping-roll having circumferential grooves; and a cord-carrier whose cords travel in the groove of the suction stripping-roll.

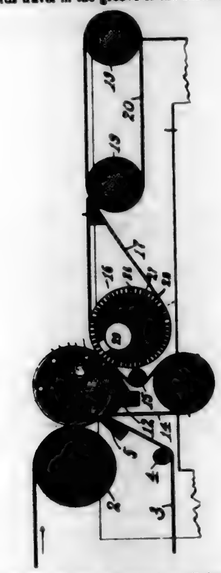

5. In combination a suction stripping-roll having circumferential grooves; a plurality of endless cords in those grooves; and a forward support for the cords about which they make a sharp turn.

6. In combination a cylinder with cutting-rib outlining spaces thereon, and with radial cylinders; pistons in the radial cylinders; to act as strippers; and means to admit compressed air to the inner ends of the radial cylinders.

7. In combination a cylinder with cutting-rib outlining spaces thereon; a traveling surface to feed the dough to that cylinder; means acting from within the cylinder to strip the cut dough from the spaces; and external suction stripping means acting in conjunction with the internal stripping means.

8. In combination, a rotary cutter provided with ribs outlining cutting-spaces thereon and provided with radial cylinders extending inwardly from said spaces, pistons in said cylinders, and means for moving said pistons outwardly to eject the dough from said spaces.

705,042. **FIRE-ESCAPE.** JOHN T. COWLES, Chicago, Ill. Filed Jan. 11, 1901. Serial No. 42,836. (No model.)

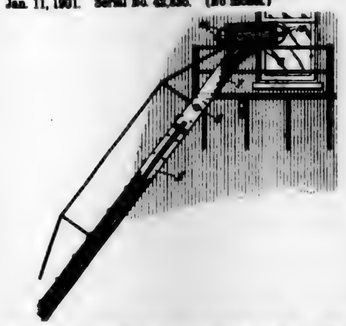

Claim.—1. A movable step or ladder having a pivotal support, means for holding up the free end of said movable step applied at one side thereof, a device for aiding in the support of the other side thereof, and mechanism coöperating with said last-mentioned supporting device for securing the same to that side of the ladder which is opposite the one which is to be supported by it, whereby the inner free end of the ladder is carried from the outer side, substantially as described.

2. A movable step or ladder provided with a pivotal support, means comprising an adjustable counterbalance for holding up the free end of said movable ladder applied at one side only thereof, a supporting device for the other side thereof secured to said counterbalanced side, by means, substantially as described, whereby the side opposite the counterbalanced side may be brought up, when the ladder stands in horizontal position, to the proper level, substantially as set forth.

3. A movable step or ladder carried by a pivotal support, a counterweight applied at one side only of said step, means for supporting the other side thereof, comprising a rod subject to torsional strain and arranged to extend longitudinally alongside of the counterweighted side of the step and inwardly to the opposite side near the bottom of the step, substantially as described.

4. A movable step or ladder carried upon a pivotal support, one side of said step being projected or extended beyond said pivotal support to form a counterbalance-arm, and provided with an automatically-shifting counterweight device, comprising a cylinder attached to said arm, a ball within said cylinder, means for retaining said ball within said cylinder, said cylinder being attached in a position such that when said step is in operative position the ball may roll toward the point of pivotal support, and when the step is partly raised the ball may roll away from the point of pivotal support, a device for aiding in the support of the unounterbalanced side of the step, and mechanism coöperating with said last-mentioned device for securing the same to that side of the ladder which is opposite the one which is to be supported by it, substantially as described.

705,043. **RACE-STARTING MACHINE.** CHARLES W. CROWLEY, St. Louis, Mo. Filed July 22, 1901. Serial No. 69,353. (No model.)

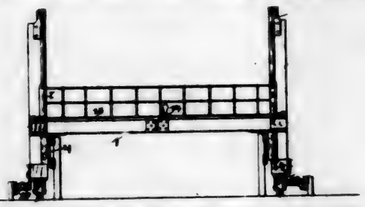

Claim.—1. A machine for starting race-horses, consisting of suitable frames mounted outside the fences at the sides of the track, an inclined front barrier, devices for steadying the frames when the barrier is released and guides outside the frames for holding them against the fences, substantially as specified.

2. In a machine for starting race-horses, having an inclined barrier, extending across the track, frames for supporting said barriers and operating outside the fences at the sides of the track, guides for holding the frames against the fences, suitable devices carried by said frames for operating against the fences to reduce the resistance, and means for moving the front barrier to permit the horses to pass out of the machine, substantially as specified.

3. A machine for starting race-horses, consisting of suitable barriers, side frames for supporting them, which frames are adapted to operate outside the fences at the sides of the track, rollers carried by said frames and operating against the frames, suitable guides mounted outside the said frames to hold them against the fences and connections between the said frames and the guides, substantially as specified.

4. A machine for starting race-horses, consisting of suitable barriers, side frames for supporting them, which frames are mounted outside the fences at the sides of the track, rollers carried by said frames and operating against the fences, and guide-strips outside the frames for holding them against the fences, rollers carried by the said frames and operating against the guide-strips, guide-ropes mounted outside the side frames, and connections between the said frames and the guide-ropes, whereby the machine will be steadied, substantially as specified.

705,044. **HYDROCARBON INCANDESCENT LAMP.** PHILIP B. CURRAN, Philadelphia, Pa., assignor to Kitsee Hydrocarbon Heating and Incandescent Lighting Company, a Corporation of West Virginia. Filed July 23, 1900. Serial No. 24,519. (No model.)

Claim.—1. The combination of a vaporizer having a jet and a peripherally-flanged member 25, a mixing-chamber arranged above said flanged member, the base of such chamber being secured to the flange and defining a separate chamber or reservoir 37, means for supplying air to the mixing-chamber, a burner-tube, and an inner-lying tube having its end partially closed to constitute a baffle for deflecting a portion of the gaseous fuel toward the reservoir, means providing a communication from the

reservoir to the interior of the burner-tube, as described, and an auxiliary heater arranged below and communicating with the reservoir

2. The combination of a vaporizer having a jet and a peripherally-flanged member 25, a mixing-chamber arranged above said flanged member the base of such chamber being secured to the flange and defining a separate chamber or reservoir 37, air-tubes for supplying air to the mixing-chamber, a burner-tube, and an inner-lying tube having its end partially closed to constitute a baffle for deflecting a portion of the gaseous fuel toward the reservoir, a plurality of tubes 34 penetrating the mixing-chamber and designed to convey the deflected fuel to the reservoir, and an auxiliary heater arranged below and communicating with said reservoir, substantially as described.

3. The combination of a hydrocarbon-liquid-fuel-supply pipe and a vaporizing-tube, of a coupling connecting the two, said coupling arranged for attachment to the ordinary gas-supply pipe and having a gas-space with suitable inlet and outlets, two or more Bunsen burners and a pilot-lighter connecting with the outlets and whereof the former are arranged to heat the vaporizing-tube, an auxiliary heater for the vaporizing-tube, and a baffle-plate interposed between said burners and auxiliary heater, substantially as described.

705,045. HAMPER. GEORGE M. DAVIDSON, Big Rapids, Mich. Filed Nov. 25, 1901. Serial No. 83,595. (No model.)

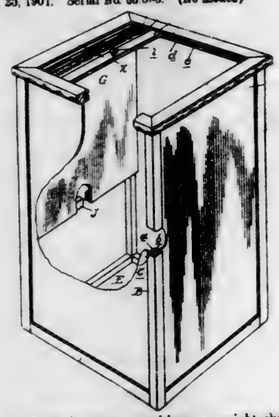

Claim.—A clothes-hamper, comprising an upright skeleton frame consisting of uprights, each provided with grooves *a* and *b*, and cross-bars connecting the lower ends of the uprights, a bottom member secured to the cross-rails and side members engaging the grooves within the uprights, a rectangular frame forming the hamper-top mounted upon the upper ends of said uprights and having the grooves or ways *c* formed in the inner faces of two of its opposite sides, a single plate or panel secured upon the inner faces of two of the uprights forming in connection with the adjoining side section a vertical pocket at one of the hamper sides intermediate of the ways in the top, convex guide-blocks at each side of the panel interposed between the upper edge of the latter and the grooved members of the rectangular frame, a flexible roll-cover within the pocket extending over the guide-blocks and adapted to travel within the ways in the hamper-top, and a horizontal bar interposed between the lower portion of the panel and the adjoining side section, adapted to limit the inward movement of the cover.

705,046. ROTARY PROPELLER-FAN AND PROPELLER FOR SHIPS. SAMUEL C. DAVIDSON, Belfast, Ireland. Filed Apr. 6, 1901. Serial No. 54,651. (No model.)

Claim.—1. A rotary propeller-fan or screw-propeller of the disclosed type, in which the intake and discharge edge portions of each blade are formed as oppositely-dished surfaces, from approximately the central part of the peripheral edge of the blade around the margin thereof toward the hub or axle, in such manner that the advancing surface of the blade is, at the intake edge portion, substantially concave, and at the discharge edge portion substantially convex, substantially as hereinbefore described.

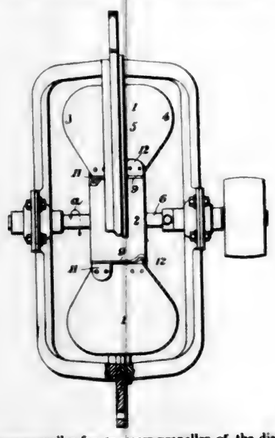

2. A rotary propeller-fan or screw-propeller of the disclosed type, in which the intake and discharge edges of each blade are formed as oppositely-dished surfaces, from approximately the central part of the peripheral edge of the blade around the margin thereof toward the hub or axle, the intervening central part of the blade having approximately a plane surface and the dished edge portions inclined toward it in directions approximately perpendicular to the edges of the blade, whereby the intake edge portion of each blade has a converging or focusing action on the fluid operated upon, from the intake edge toward the center of the blade, and the discharge edge portion thereof has a divergent or diffusive action thereon, from said center to its discharging edge, substantially as set forth.

3. A rotary propeller-fan or screw-propeller of the disclosed type, in which the intake and discharge edge portions of each blade are formed as oppositely-dished surfaces, from approximately the central part of the peripheral edge of the blade around the margin thereof toward the hub or axle, in such manner that the advancing surface of the blade is, at the intake edge portion, substantially concave, and at the discharge edge portion substantially convex, with the intervening central portion of the blade having an approximately plane surface, and the blades arranged with their central portions inclined to the plane of revolution, substantially as set forth.

4. A rotary propeller-fan or screw-propeller of the disclosed type, in which the intake and discharge edge portions of each blade are formed as oppositely-dished surfaces, from approximately the central part of the peripheral edge of the blade around the margin thereof toward the hub or axle, in such manner that the advancing surface of the blade is, at the intake edge portion, substantially concave, and at the discharge edge portion substantially convex, and said dished portions merging gradually into the intermediate central portion of the blade, their surfaces on lines radiating approximately from the center of the blade being curved so that the intake and discharge edge portions of the blade are of concavo-convex form or approximately spoon-shaped, substantially as set forth.

5. A rotary propeller-fan or screw-propeller of the disclosed type, in which the intake and discharge edge portions of each blade are formed as oppositely-dished surfaces, from approximately the central part of the peripheral edge of the blade around the margin thereof toward the hub or axle, in such manner that the advancing surface of the blade is, at the intake edge portion, substantially concave, and at the discharge edge portion substantially convex, and with the intervening central portion of the blade formed with an approximately plane surface, the blades being mounted in screw form around the hub with their intake and discharge edge portions directed at obtuse and substantially equal angles to the plane of revolution, whereby they will operate with approximately equal efficiency in either direction of revolution, substantially as set forth.

6. In screw-propellers and rotary propeller-fans, a hub formed as a cylinder upon which the blades are arranged diagonally, and a series of plates mounted upon said hub each having lugs projecting radially from it upon which the blades are mounted and are held by their inner ends at any required angular pitch or inclination to the plane of the fan's revolution, substantially as set forth.

7. In screw-propellers and rotary propeller-fans, the combination with a hub, and blades arranged diagonally on said hub, of blade-holders each consisting of a plate which is shaped to fit evenly upon a portion of the circumferential face of the hub, with lugs projecting radially therefrom, upon which each of the blades is mounted and is held by its inner end accurately at the required angular pitch or inclination to the plane of the fan's revolution, substantially as set forth.

705,047. PUMP. PHILIP H. DEER, Washington, D. C. Filed Apr. 5, 1902. Serial No. 101,455. (No model.)

Claim.—1. In a pump, the combination, with the main conducting-pipe for the liquid to be elevated and with reciprocating liquid-elevating means in said pipe, of a fluid-containing receptacle, a buoyant body normally sustained elevated by the fluid in said receptacle and connected with the liquid-elevating means for movement therewith, a pendulum, and operative connecting means between the pendulum and the liquid-elevating means, substantially as described.

2. In a pump, the combination, with the main conducting-pipe for the liquid to be elevated and with reciprocating liquid-elevating means in said pipe, of a fluid-containing receptacle, a buoyant body normally sustained elevated by the fluid in said receptacle, and a pendulum, said pendulum, said liquid-elevating means and the buoyant body being operatively connected together, substantially as described.

3. In a pump, the combination, with the main conducting-pipe for the liquid to be elevated and with reciprocating liquid-elevating means in said pipe, of a fluid-containing receptacle penetrated vertically by said pipe, a buoyant body surrounding said pipe and normally sustained elevated by the fluid in said receptacle, and a pendulum, said pendulum, the liquid-elevating means and the buoyant body being operatively connected together, substantially as described.

4. In a pump, the combination with the main conducting-pipe for the fluid to be elevated and with reciprocating liquid-elevating means in said pipe, of a fluid-containing receptacle having an opening in its bottom wall, said pipe extending vertically through said opening, a guiding-sleeve secured to the bottom of said receptacle about the opening and receiving said pipe, an annular float surrounding said sleeve and normally sustained elevated by the fluid in said receptacle, and a pendulum, said pendulum, the liquid-elevating means and the float being operatively connected together, substantially as described.

5. In a pump, the combination, with the main conducting-pipe for the liquid to be elevated and with reciprocating liquid-elevating means in said pipe, of a fluid-containing receptacle, a buoyant body normally sustained elevated by the fluid in said receptacle, a pendulum, said pendulum, said liquid-elevating means and the buoyant body being operatively connected together, and means for imparting periodic impulses to the pendulum, substantially as described.

6. In a pump, the combination, with the main conducting-pipe for the liquid to be elevated and with reciprocating liquid-elevating means in said pipe, of a fluid-containing receptacle, a buoyant body normally sustained elevated by the fluid in said receptacle, a pendulum, said pendulum, said liquid-elevating means and the buoyant body being operatively connected together, and electromagnetic means for imparting periodic impulses to the pendulum, substantially as described.

7. In a pump, the combination of the main conducting-pipe for the liquid to be elevated, liquid-elevating means in said pipe, a pendulum, operative connecting means between the pendulum and the liquid-elevating means, and electromagnetic means for imparting periodic impulses to the pendulum and comprising electrically-interconnected electromagnets, contact-points arranged in duplicate and electrically connected each with a magnet, a battery, a pivoted circuit maker and breaker adapted to be actuated by either of said magnets at a time and to engage either of said contact-points at a time, conductors connecting the battery with the said circuit maker and breaker and the battery with the electromagnets, armatures adapted to be attracted by said magnets and to move said circuit maker and breaker out of engagement with the adjacent contact-points, and operative connecting means between the pendulum and said armatures, substantially as described.

705,048. BUILDING-WALL. ALPHONSE DE MAS, New York, N. Y. Filed June 5, 1901. Serial No. 63,237. (No model.)

Claim.—1. A building-wall comprising a structural framework composed of vertical and horizontal connecting metallic beams leaving open panels between, small tension members extending across said open panel upon opposite sides of said framework and overlapping the latter and a cementitious filling embedding said structural and cross tension members.

2. A building-wall comprising a metallic structural framework composed of vertical columns and horizontal connecting-beams leaving open panels therebetween, a series of small metallic tension members extending across said open spaces on the outside of said framework and overlapping said vertical columns, a similar series of metallic tension members arranged in a different plane from the first series of tension members and overlapping said horizontal beams and a cementitious body filling said panel and embedding said tension members, said body being extended around said vertical columns and horizontal beams to embed these also.

3. A building-wall comprising a metallic structural framework forming open panels between the members thereof, small metallic tension members extending across said open panels at the side of said framework and overlapping the latter, a cementitious body filling said open panel and embedding said metallic tension members, and structural framework; coating of waterproof material outside of said cementitious filling and a facing of finishing material outside of said waterproof coating.

705,049. CAR-TRUCK. HENRY A. DORNER, Logansport, Ind., assignor to the Dorner Truck & Foundry Co., Logansport, Ind. Filed Nov. 18, 1901. Serial No. 82,811. (No model.)

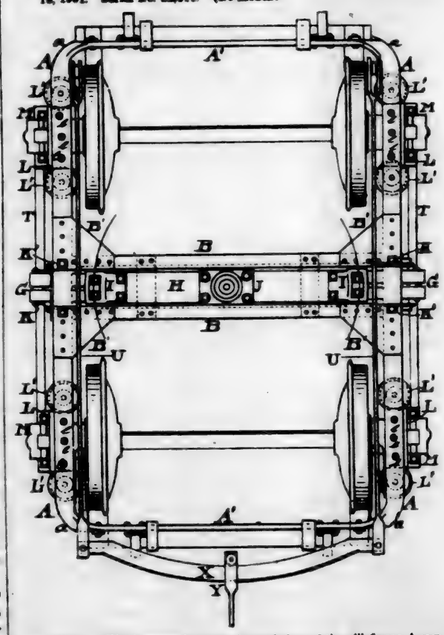

Claim.—The improved car-truck consisting of the sill-frame A consisting of a continuous flat bar having rounded corners and perpendicular

end bars A', in combination with the angle-piece cross-bars B B and plates B'' B'' secured to said cross-bars B B, the gusset-plates B' B' secured to the frame-bars A A and cross-bars B B, the brackets C C secured to the cross-bars B B and the gusset-plates B' B' and plates B'' B'', the arch brace-bars K K extending between the pedestals; the tubular projections C' on the brackets C C, bolts K' through the plates B' frame A, tubular projections and the arch-bars K, binding them together, the blocks E E supported on the arch-bars K K, the links D D suspended from the brackets C C by the bolts *d d*, and connected to the blocks E E by the bolts *e e*, and the lower cross-bar F supported on the blocks E E, the springs G G supported on the cross-bar F, and the bolster H supported on the springs G G, constructed and combined substantially as described.

705,050. COMPASS-LIGHT. OSCAR B. EATON, Boston, and FRANK C. BURRILL, Hull, Mass. Filed Feb. 20, 1902. Serial No. 94,908. (No model.)

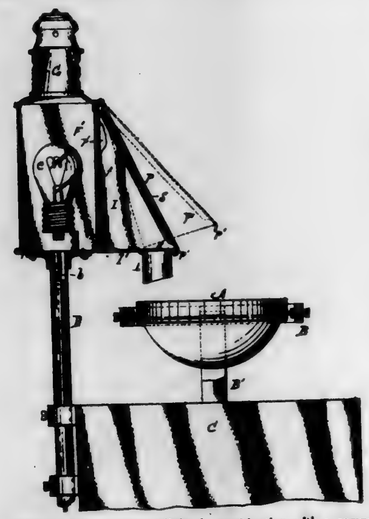

Claim.—1. In a compass-light, in combination with a compass; a lantern comprising a case and a cover swinging therefrom and adapted to close or open an opening sufficiently large to allow the light to illuminate the entire compass, said lantern being provided with a smaller aperture adapted to allow a small portion only of the compass to be illuminated, the lantern being so set with relation to the compass as to allow the light to be constantly shed thereon through the small aperture, substantially as set forth.

2. In a compass-light, in combination with a compass; a lantern comprising a case and a cover swinging therefrom and adapted to open or close an aperture large enough to allow the light to illuminate the entire compass, said lantern being provided with a smaller aperture adapted to allow only a limited portion of the compass to be illuminated; and a tube extending down from said aperture whereby the light is guided and confined to a limited portion of the surface of the compass, substantially as described.

705,051. CORN-PLANTER. DAVID ELEY, Lakefork, Ohio. Filed Apr. 12, 1901. Serial No. 56,391. (No model.)

Claim.—1. In a corn-planter, the combination with a hopper and a feed-chute below the hopper; of a hopper-bottom pivoted to the feed-chute and adapted to be tilted to expose the feed mechanism, said hopper-bottom being provided with an opening for the discharge of the seed, a shaft carrying a driving-gear and a knocker-block, a supporting-plate mounted upon the feed-chute and provided with a feed-hole, a rotary feed-plate mounted between the bottom of the hopper and the supporting-plate and provided with feed-holes and with a central opening having communicating notches, a coupling-plate fitted in said opening and provided with lugs or projections to engage said notches, a bolt or shaft projecting through the supporting-plate and coupling-plate, a drive-pinion having a journal fitted in the central opening in the supporting-plate and provided with projections removably engaging the coupling-plate, said pinion meshing with said driving-gear, an oscillating valve mounted in the bottom of the feed-chute and having a passage forming a pocket for the reception and discharge of the seed, a vibrating lever connected to the valve and adapted to be operated by the knocker-block to open said valve, a spring acting on the valve and lever for retracting the same to their normal positions, and controllable drive-gearing for imparting motion to the shaft, substantially as and for the purpose set forth.

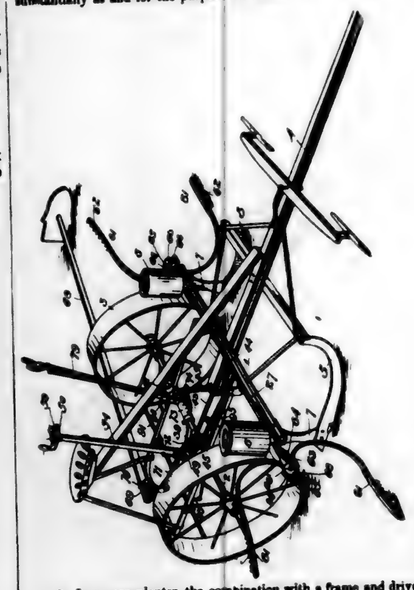

2. In a corn-planter, the combination with a frame and drive-shaft, of a feed hopper and chute, a rotary feed-disk within the hopper for controlling the passage of seed from the hopper to the chute, a shaft in gear with said feed-plate for operating the same, and means for communicating motion from the drive-shaft to the feed-disk-operating shaft, the same comprising a sleeve fixed to the drive-shaft and carrying revoluble bevel-pinions, a bevel gear-wheel loosely mounted upon the drive-shaft upon one side of said sleeve, connections between said bevel gear-wheel and the feed-disk-operating shaft, a double-bevel gear-wheel loosely mounted upon the drive-shaft upon the opposite side of said sleeve, and means for moving said double gear-wheel into engagement with the bevel-pinions, substantially as described.

3. In a corn-planter, the combination with a frame and drive-shaft, of a feed hopper and chute, a rotary feed-disk within the hopper for controlling the passage of seed from the hopper to the chute, a shaft in gear with said feed-plate for operating the same, means for communicating motion from the drive-shaft to the feed-disk-operating shaft, the same comprising a sleeve fixed to the drive-shaft and carrying revoluble bevel-pinions, a loose bevel gear-wheel mounted upon the drive-shaft upon one side of said pinions, gearing between said loose gear-wheel and the operating-shaft for the feed-disk, a double-bevel gear-wheel loose upon the drive-shaft upon the other side of said pinions, a controlling-rod vertically movable and provided with a bevel-pinion to engage the outer toothed face of the double-bevel gear, and means for raising and lowering said controlling-rod to bring the bevel-pinion thereon into and out of engagement with said double-bevel gear, substantially as described.

4. In a corn-planter, the combination with a frame and drive-shaft, of a feed hopper and chute, a rotary feed-disk within the hopper for controlling the passage of seed from the hopper to the chute, a shaft in gear with said feed-plate for operating the same, means for communicating motion from the drive-shaft to the feed-disk-operating shaft, the same comprising a sleeve fixed to the drive-shaft and carrying revoluble bevel-pinions, a loose bevel gear-wheel mounted upon the drive-shaft upon one side of said pinions, gearing between said loose gear-wheel and the operating-shaft for the feed-disk, a double-bevel gear-wheel loose upon the drive-shaft upon the other side of said pinions, a controlling-rod provided with a bevel-pinion to engage the outer toothed face of the double-bevel gear-wheel, and means for raising and lowering the controlling-rod and turning the same, substantially as described.

5. In a corn-planter, the combination with a frame and drive-shaft, of a feed hopper and chute, a rotary feed-disk within the hopper for controlling the passage of seed from the hopper to the chute, a shaft in gear with said feed-plate for operating the same, means for communicating motion from the drive-shaft to the feed-disk-operating shaft, the same comprising a sleeve fixed to the drive-shaft and carrying revoluble bevel-pinions, a loose bevel gear-wheel mounted upon the drive-shaft upon one side of said pinions, gearing between said loose gear-wheel and the operating-shaft for the feed-disk, a double-bevel gear-wheel loose upon the drive-shaft upon the other side of said pinions, a controlling-rod provided with a bevel-pinion to engage the outer toothed face of the double-bevel gear-wheel, a swinging bracket with which the controlling-rod is slidably engaged, a standard supported by the bracket, a plate connected to the standard and having an opening for the passage of the upper end of the controlling-rod and a series of teeth or notches, a lever pivoted to the upper end of the controlling-rod and adapted to bear against said plate to elevate the rod, and to be turned to rotate the rod, and means for holding the bracket fixed in adjusted position, substantially as described.

705,052. CORN-PLANTER. DAVID ELEY, Lakefork, Ohio. Original application filed Apr. 12, 1901, Serial No. 56,391. Divided and this application filed Dec. 19, 1901. Serial No. 86,546. (No model.)

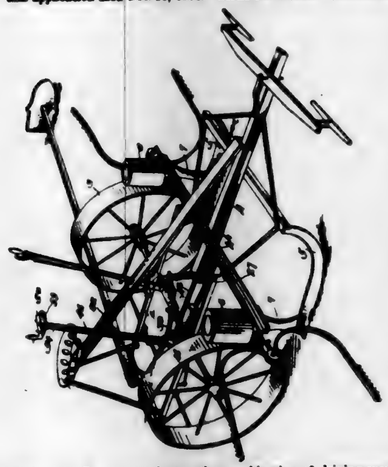

Claim.—1. In a corn-planter, the combination of driving means, dropper mechanism, compensating gearing between the driving means and dropper mechanism to throw the latter into and out of action and to operate the same at different rates of speed, and means for controlling said compensating gearing, substantially as described.

2. In a corn-planter, the combination of a drive-shaft, a driven shaft, dropper mechanism operated by the driven shaft, compensating gearing between the shafts and adjustable to stop the operation of the driven shaft and to drive said shaft at different rates of speed, and means for adjusting said compensating gearing, substantially as described.

3. In a corn-planter, the combination of a drive-shaft, a driven shaft, dropper mechanism operated by the driven shaft, compensating gearing between the shafts and adjustable to stop the operation of the driven shaft and to drive said shaft at different rates of speed, markers mounted upon the driven shaft, and means for adjusting said compensating gearing, substantially as described.

4. In a corn-planter, the combination of a drive-shaft, a driven shaft, dropper mechanism operated by the driven shaft, variable-speed gearing between the shafts and adjustable to stop the operation of the driven shaft and to drive said shaft at different rates of speed, said gearing including a pair of gear members loose on the drive-shaft, an intermediate gear fixed to turn with the drive-shaft and independently revolvable, said intermediate gear being normally in engagement with one of said pair of gear members, and means for moving the other gear member into engagement with said intermediate gear and for rotating said gear member to vary the speed of the gearing, substantially as set forth.

5. In a corn-planter, the combination of a drive-shaft, a driven shaft, dropper mechanism operated by the driven shaft, variable-speed gearing between the shafts and adjustable to stop the operation of the driven shaft and to drive said shaft at different rates of speed, said gearing including a pair of gear members loose on the drive-shaft, an intermediate gear fixed to turn with the drive-shaft and independently revolvable, said intermediate gear being normally in engagement with one of said pair of gear members, a shifting and driving device by which the other gear member may be shifted into engagement with said intermediate gear, and by which said gear member may also be rotated, and manually-operable means for actuating said shifting and driving device for performing the described functions, substantially as set forth.

6. In a corn-planter, the combination of a drive-shaft, a driven shaft, dropper mechanism operated by the driven shaft, variable-speed gearing between the shafts and adjustable to stop the operation of the driven shaft and to drive said shaft at different rates of speed, said gearing including a power-transmitting gear loose on the drive-shaft, a double shiftable speed-changing gear also loose on the drive-shaft, an intermediate gear normally in engagement with the power-transmitting gear, said intermediate gear being mounted to turn with the drive-shaft but independently revolvable in a plane at right angles to said shaft, a pinion for engaging one of the toothed faces of the double gear, and means for operating said pinion for shifting said double gear to bring its other toothed face into engagement with intermediate gear, and for rotating said double gear, substantially as set forth.

7. In a corn-planter, the combination of a drive-shaft, a driven shaft, dropper mechanism operated by the driven shaft, variable-speed gearing between the shafts and adjustable to stop the operation of the driven shaft and to drive said shaft at different rates of speed, said gearing including a power-transmitting gear loose on the drive-shaft, a double shiftable speed-changing gear also loose on the drive-shaft, an intermediate gear normally in engagement with the power-transmitting gear, said intermediate gear being mounted to turn with the drive-shaft but independently revolvable in a plane at right angles to said shaft, a pinion engaging one of the toothed faces of the double gear, a rod carrying the pinion, means for moving the rod vertically to move the pinion into and out of engagement with the double gear, thereby bringing said double gear into and out of engagement with the intermediate gear, and means for turning said rod for rotating the pinion and double gear, substantially as set forth.

8. In a corn-planter, the combination of a drive-shaft, a driven shaft, dropper mechanism operated by the driven shaft, variable-speed gearing between the shafts and adjustable to stop the operation of the driven shaft and to drive said shaft at different rates of speed, said gearing including a power-transmitting gear loose on the drive-shaft, a double shiftable speed-changing gear also loose on the drive-shaft, an intermediate gear normally in engagement with the power-transmitting gear, said intermediate gear being mounted to turn with the drive-shaft but independently revolvable in a plane at right angles to said shaft, a pinion 4 engaging one of the toothed faces of the double gear, a rod carrying the pinion, means for moving the rod vertically to move the pinion into and out of engagement with the double gear, thereby bringing said double gear into and out of engagement with the intermediate gear, means for turning said rod for rotating the pinion and double gear, and means for positively locking the rod in adjusted position, substantially as set forth.

705,053. CORN-PLANTER. DAVID ELEY, Lakefork, Ohio. Original application filed Apr. 12, 1901, Serial No. 56,391. Divided and this application filed Feb. 24, 1902. Serial No. 95,333. (No model.)

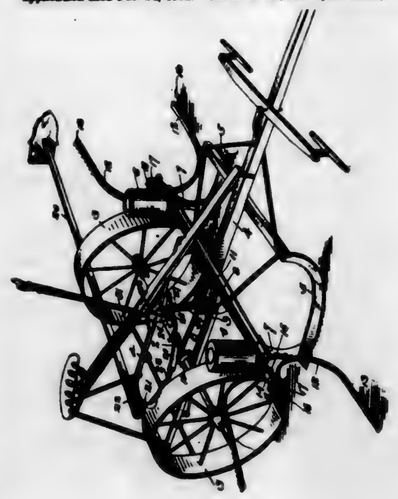

Claim.—1. In a corn-planter, markers coaxially arranged in pairs on opposite sides of the planter-frame, and means for adjusting the markers of each pair on their axes toward or away from each other to strike the ground with greater or less force, substantially as described.

2. In a corn-planter, the combination with the frame; of markers comprising curved spring-metal bars carrying marking devices at their free ends and adjustably connected at their inner ends to be moved toward and away from each other to strike the ground with greater or less force, substantially as described.

3. In a corn-planter, the combination with the frame and a shaft mounted transversely upon the frame, of markers mounted in pairs upon each end of the shaft, said markers comprising curved spring-metal bars provided at their inner ends with corrugated or serrated disks, a double corrugated or serrated disk upon the shaft end to engage the same, and means for connecting said disks to permit them to be adjusted to move the markers of each pair toward or away from each other to strike the ground with greater or less force, substantially as described.

4. In a corn-planter the combination with a frame having shoes, and a tongue adjustable vertically to regulate the depth of penetration of said shoes; of a guide and connecting piece upon the rear end of the tongue, a bar adapted to project laterally from the frame, a gage-runner carried by said bar for gaging the distance between rows, a double crank-shaft mounted upon the frame and to one of the arms of which the bar is connected, an oscillatory sleeve having front and rear arms, a flexible connection between the rear arm of the sleeve and other arm of the crank-shaft, the said front arm of the sleeve having a sliding engagement with said guide and connecting piece on the tongue, a coil-spring surrounding the guide and connecting piece and adapted to be compressed by the sliding sleeve-arm to force the shoes deeper into the soil, a lever for adjusting the sleeve, and means for locking the lever in adjusted position, substantially as and for the purpose set forth.

705,054. PIPE-WRENCH. WILLIAM H. EMERSON, Cambridge, Ohio, assignor of one-half to Thomas Minto, Cambridge, Ohio. Filed Oct. 5, 1901. Serial No. 77,717. (No model.)

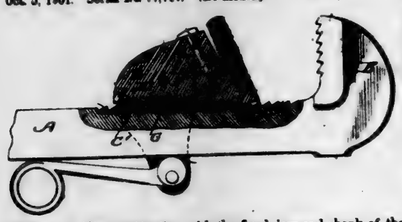

Claim.—1. The combination with the fixed jaw and shank of the movable head having a transverse groove, a rocking jaw having a rib adapted to fit in the said groove and means for locking the rocking jaw and head and means for locking the movable head and shank, substantially as described.

2. The combination with the fixed jaw and shank, of the movable head and means for locking the same, the forward end of the said head being cut away and grooved transversely a gripping-jaw adapted to fit into the cut-away portion and provided with a transverse rib having a central notch and a pin passing down through the head and engaging said notch to lock the rib in the groove, substantially as shown and described.

705,055. BRUSH-HOLDER. HERMANN F. T. ERBEN, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Dec. 20, 1900. Serial No. 40,512. (No model.)

Claim.—1. The combination with a holder, of a curved resilient arm, one end of which bears on the brush, and a pivot by which the other end of the arm is supported, and about which a portion of the arm is coiled in an inverse direction to said curve.

2. The combination with a holder, of a resilient arm, one end of which bears on the brush, and a bifurcated rotatable pivot to which the other end of the arm is fixed, whereby the arm can be revolved to permit the removal of the brush.

3. The combination with a holder, of a curved resilient arm, one end of which bears on the brush, and a rotatable pivot to which the other end of the arm is fixed, and about which a portion of the arm is coiled in an inverse direction to said curve.

4. The combination with a holder, of a resilient arm, one end of which bears on the brush, a bifurcated rotatable pivot to which the other end of the arm is fixed, and means for holding the pivot in various positions to vary the tension of the resilient arm.

5. The combination with a holder, of a curved resilient arm, one end of which bears on the brush, a rotatable pivot about which the other end of the arm is coiled in an inverse direction to said curve, suitable stops in the holder, and a device connected with the pivot which engages the stops, to hold the pivot in various positions.

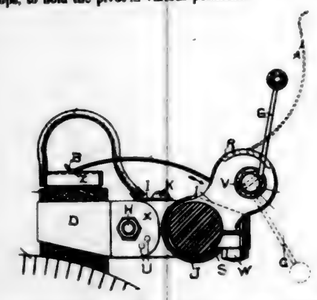

6. The combination with a holder, of a curved resilient arm, one end of which bears on the brush, and the other end of which is coiled in an inverse direction to said curve, a rotatable pivot which supports said coiled end of the arm, and means for holding the pivot in various positions.

7. The combination with a holder, of a resilient arm, one end of which bears on the top of the brush, and the other end of which is coiled, and a rotatable pivot which supports said coiled end, the arm having a curve intermediate its ends, whereby in all operative positions of the pivot and all positions of the brush, the free end of the arm bears always on the same portion of the top of the brush.

8. The combination with a holder, of a resilient arm, one end of which bears on the top of the brush, a suitable support for the other end of the arm, said arm intermediate its ends being curved, whereby the free end of the arm bears always upon the same portion of the top of the brush.

9. The combination with a holder, of a resilient arm, one end of which bears on the top of the brush, and the other end of which is coiled, a rotatable pivot which supports said coiled end of the arm, said arm being curved intermediate its ends so that when the pivot is rotated to tighten the coil, the curve of the arm is flattened, while the free end remains in contact with the same part of the top of the brush.

10. The combination with a holder, of a resilient arm, one end of which is suitably supported, and the other end of which bears always on the same portion of the top of the brush.

11. The combination with a holder, of a resilient arm, one end of which bears on the top of the brush, and means for varying the tension of said arm, the arm being curved whereby it always bears on the same part of the brush.

705,056. TONGUE-SWITCH. GEORGE M. ERVIN, Johnstown, Pa., assignor to the Lorain Steel Company, a Corporation of Pennsylvania. Filed Nov. 13, 1901. Serial No. 82,104. (No model.)

Claim.—1. In a tongue-switch, the combination with the continuous-rail member having a portion of its head removed, and the casting to which said rail member is secured, of a wear member forming a bed for the point end of the movable tongue and also having a portion which replaces the removed head of the rail member.

2. In a tongue-switch, the combination with the continuous-rail member, having a portion of its head removed, and the casting to which said rail is secured, and which is formed with a side flange opposite the rail member, of a wear member seated between the rail and the said flange and having a portion which replaces the removed portion of the rail-head, together with means for removably securing said rail member to its seat.

3. In a tongue-switch, the combination with the continuous rail, having a portion of its head removed, and the casting to which said rail is secured, and which is formed with a side flange, of the box-like wear member seated and secured between said flange and the web of the rail, the latter being bent inwardly to provide an overhanging side bearing for the wear member.

4. In a tongue-switch, the combination with the continuous curved rail having a portion of its head removed, and the casting to which said rail is secured, said casting having an under beveled side flange C', of the wear member D seated between said flange and the web of the rail, and having a portion replacing the removed head of said rail, and the removable keys or wedges which secure said member D to its seat.

5. In a tongue-switch, a rail member seated in the switch structure and having a depressed portion forming a bed for the movable switch-point, and a raised portion fitting over the web of the through-rail and replacing a portion of the head thereof, together with removable keys or wedges which secure said member in its seat.

6. In a tongue-switch, the combination of the through-rail, having a portion of its head removed, the casting to which said rail is secured having a side flange, the wear member seated between said flange and the web of the rail and forming a bed for the movable switch-tongue, said member also having a raised portion replacing the removed head of the rail, spelter or like material underneath and at the sides of said member, and removable fastening keys or wedges securing said member in its seat.

705,057. RAILWAY-TRACK STRUCTURE. GEORGE M. ERVIN, Johnstown, Pa., assignor to the Lorain Steel Company, a Corporation of Pennsylvania. Filed Nov. 13, 1901. Serial No. 82,103. (No model.)

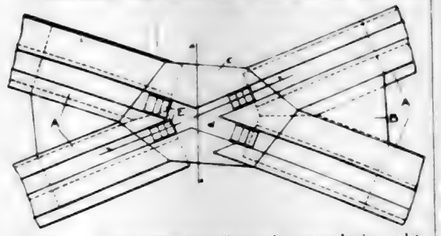

Claim.—1. The combination with a track structure having a plate seat or pocket, and a plate seated in the same, of one or more fastening devices or holding-down members extending through said plate and having a holding-down engagement with the plate and the body portion of the structure, together with means for effecting and releasing such engagement from the top of the structure, by lateral movement of said devices or members.

2. The combination in a track structure, of a body portion having a pocket or recess therein, a plate seated in said pocket or recess, and one or more holding-down members extending through said plate and having a holding-down engagement with the plate and the body portion of the structure, and a downwardly-seating wedge which secures said member or members in such engagement.

3. In a track structure, the combination with a body portion having a pocket or seat therein, a plate in said pocket or seat, said body portion and plate having registering apertures therein, one or more fastening members seated in said apertures, and having offset end portions engaging the walls of the same, and laterally-acting means for holding said member or members in such engagement.

4. In a track structure, the combination with a body portion having a seat or pocket therein formed with an aperture through its bottom, a plate in said seat or pocket having an aperture registering with that of said body portion, a fastening member extending through the said apertures and having headed ends engaging offset walls thereof, and a laterally-acting wedge for securing the member in engaging position.

5. In a track structure, the combination of a body portion to which the rail members are attached or secured, a wear-plate seated in a pocket or recess of said body portion, the body portion and plate formed with registering apertures therethrough having portions of their walls inclined or beveled, a pair of fastening members seated in each of said apertures and having headed portions engaging said beveled walls, and a removable wedge driven between the said members.

6. In a track structure, the combination with a body portion, and a wear-plate seated therein, of a fastening member seated in registering apertures of the body portion and plate, and a wedge removably driven in said aperture and securing said member.

7. In a track structure, the combination with a body portion, and a wear-plate seated therein, of a fastening member or members seated in registering apertures of said body and plate and having a holding-down engagement with the walls of said apertures, and a wedge seated in said apertures and securing the said members, and adapted to be freed by driving it through to the bottom of the structure.

8. In a track structure, the combination with a body portion, and a wear-plate seated therein, of fastening members seated in apertures of said body portion and plate, and a wedge seated against said member or members in said aperture, said member or members being arranged to free said wedge after it has been driven beyond a certain point.

9. In a track structure, the combination with a body portion, having a pocket or recess therein open at its sides, and a plate in said pocket or recess, of one or more fastening members which engage the said body portion through the plate and hold the same to its seat, and means for effecting and releasing such engagement from the top of the structure, by lateral movement of said members.

10. In a track structure, the combination with a body portion and a wear-plate seated therein, of one or more fastening members F seated in registering apertures and of said body portion and plate and engaging the same in the manner described, and the laterally-acting removable securing wedge or wedges H.

11. In a track structure, having a wear-plate seated therein, of means for holding said plate to its seat, comprising headed keys engaging registering apertures in said body portion and plate, and wedges securing said keys and capable of being seated and unseated from the top of the structure.

705,058. OPERATING MECHANISM FOR GAS-ENGINE VALVES, &c. JESS B. FENNER, Buffalo, N. Y., assignor to the J. W. Ruger Manufacturing Company, Buffalo, N. Y. Filed Mar. 21, 1900. Serial No. 9,536. (No model.)

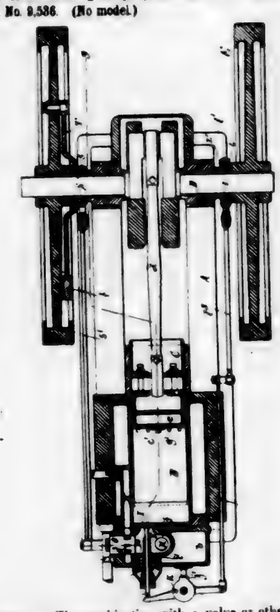

Claim.—1. The combination with a valve or other part to be actuated, of a rock-lever having an actuated section which is adapted to be connected with an actuating mechanism and a shifting section adapted to operate said valve, means whereby said sections are caused to move in unison while the shifting section is disengaged from the valve, and a stop device which causes the shifting section to move slower than the actuated section while the shifting section is in engagement with the valve, substantially as set forth.

2. In a gas-engine, the combination with the cylinder, the piston and the crank-shaft connected with the piston, of a valve which controls a port of the cylinder, an outer rock-arm which is actuated from the crank-shaft, an inner rock-arm which operates said valve and which is coupled with the outer arm, so as to move in unison with the same when free, and a stationary stop which is engaged by the inner arm and which causes the same to move slower than the outer arm, substantially as set forth.

3. In a gas-engine, the combination with the cylinder, the piston, and the crank-shaft connected with the piston, of a valve which controls a port of the cylinder, an outer rock-arm which is actuated from the crank-shaft and which is provided with an eccentric, an inner rock-arm which operates said valve and which embraces said eccentric, and a stationary stop which is engaged by the inner arm and whereby the same is caused to move slower than the outer arm, substantially as set forth.

4. In a gas-engine, the combination with the cylinder the piston and the crank-shaft connected with the piston, of a valve which controls

a part of the cylinder, an outer rock-arm which is actuated from the crank-shaft and provided with an eccentric, an inner rock-arm which operates said valve and which is provided with an eccentric-jaw embracing said eccentric, a stationary stop arranged in a slot in the inner arm, and cooperating shoulders arranged on the outer arm and the eccentric-jaw, substantially as set forth.

705,059. PLUMBER'S TESTING-PLUG. JOSEPH FLYNN, Boston, Mass. Filed Oct. 1, 1901. Serial No. 77,208. (No model.)

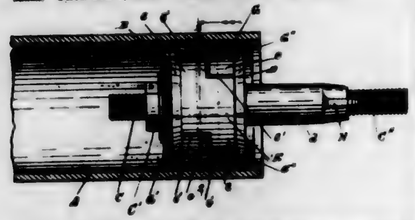

Claim.—The herein-described plumber's testing-plug, consisting in combination, an expansive rubber cylinder G, having in one end a closed portion G', and an annular lip G'', in its opposite end, and an expanding device arranged within said rubber cylinder consisting of a tapering disk B, a spindle C, and rubber cylinder G, a longitudinally-adjustable tapering disk D, a series of interlocking duplex tapering segmental plates E, E, E, E, and means for expanding the latter and the rubber cylinder so as to force the said rubber cylinder against the interior of the pipe to be tested, substantially as and for the purpose set forth.

705,060. PIPE-WRENCH. JAMES T. FORD, San Francisco, Cal. Filed Dec. 19, 1901. Serial No. 86,847. (No model.)

Claim.—1. The combination with a handle, of a jaw having a sliding engagement therewith in a direction diagonally to the length of the handle and formed with a bail extension, a jaw mounted to slide longitudinally with respect to the handle and adapted to coact with the first-named jaw and provided with ratchet-teeth, and a spring-actuated lever pivoted to said handle and having teeth to engage the ratchet-teeth, substantially as set forth.

2. The combination with a wrench-handle formed with inclined side lips at its outer end, of a jaw formed with a bail extension and with guide-flanges to engage said lips, whereby it is capable of moving diagonally with respect to the length of the handle, a second jaw formed with a shank which extends through the bail extension and is provided with teeth on its upper edge, and a spring-actuated bail-shaped lever pivoted to said handle and provided with teeth to engage the teeth of the shank, substantially as set forth.

705,061. WAGON-BRAKE. CHARLES A. FRENCH, South Bend, Ind. Filed Mar. 10, 1902. Serial No. 97,397. (No model.)

Claim.—1. In a braking mechanism for vehicles, a brake-shoe having spaced integral inclined faces located in opposed relation to the wheel being braked and adapted to form a frictional contact with the outer edges of the wheel-tire as pressure is applied, the face of the tire being free from contact with said shoe, the face of said shoe being flat and in parallelism with the face of the wheel.

2. A brake-shoe for vehicles comprising a supporting-plate having spaced integral forwardly-projecting flanges arranged at an angle to the face of said plate, said flanges being located in opposed relation to the wheel being braked, whereby a flared recess of fixed dimensions will be formed between said flanges for the reception of the wheel-tire, the face of the latter being free from contact with the shoe, the face of the said plate being flat and in parallelism with the face of the wheel-rim.

3. A brake-shoe for vehicles comprising a supporting-plate having integral forwardly-projecting flanges arranged at an angle to the face of said plate, as *a'*, whereby a flared recess of fixed dimensions will be formed between said flanges for the reception of the wheel-tire, the ends of said plate projecting beyond the flanges and being curved forwardly, to form clearers for the shoe.

705,062. FEEDING MECHANISM FOR SHOE-SEWING MACHINES. ZACHARY T. FRENCH and WILLIAM C. MEYER, Boston, Mass. Filed Nov. 23, 1899. Serial No. 737,965. (No model.)

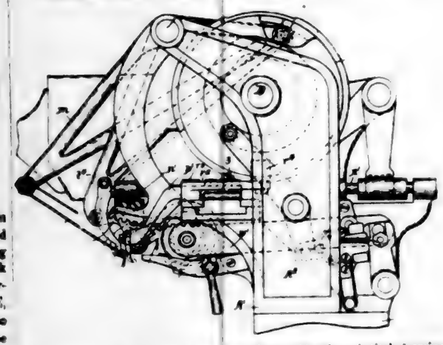

Claim.—1. In a sewing-machine, the combination of stitch-forming mechanism including a curved needle movable about an axis, a feeding-finger and means for moving it back and forth crosswise the path of movement of said needle from a point at one side of to a point at the other side of said needle, when the needle is in a remote position, substantially as described.

2. In a sewing-machine, the combination of stitch-forming mechanism including a curved needle movable about an axis, a feeding-finger and means for moving it back and forth crosswise the path of movement of said needle from a point at one side of to a point at the other side of said needle, when said needle is in a remote position, a back gage, and means for moving said back gage toward and from said feeding-finger, substantially as described.

3. In a sewing-machine, the combination of stitch-forming mechanism including a curved needle movable about an axis, a feeding-finger adapted to enter the channel of the sole and means for moving said feeding-finger back and forth across the path of movement of said needle from a point at one side of to a point at the other side of said needle, when said needle is in a remote position, substantially as described.

4. In a sewing-machine, stitch-forming mechanism, a feeding-finger against which the work is held pressed by the action of the needle-thread take-up and means for moving it across the path of movement of the needle while the work is so held, substantially as described.

5. In a sewing-machine, stitch-forming mechanism, a feeding-finger, means for moving it back and forth across the path of movement of the needle, a needle-thread take-up operating while drawing the needle-thread taut to hold the work in engagement with said feeding-finger while said feeding-finger operates to feed along the work, a back gage cooperating with said feeding-finger, and means for moving said back gage toward and from said feeding-finger, disengaging the work while said feeding-finger operates to feed the work along, substantially as described.

705,068. SHOE-SEWING MACHINE. ZACHARY T. FRENCH and WILLIAM C. MEYER, Boston, Mass. Filed Oct. 14, 1897. Serial No. 655,105. (No model.)

Claim.—1. In a lock-stitch sewing-machine, stitch-forming mechanism including a shuttle turning on a horizontal axis and adapted to contain a bobbin, a shuttle-carrier bearing said shuttle, means for moving said shuttle-carrier in a direction at right angles to the axis of said shuttle to bodily move the shuttle and bobbin a predetermined distance away from the work and thereby draw off the bobbin a quantity of shuttle-thread for the next stitch, and to thereafter move said shuttle-carrier in the opposite direction to deliver said shuttle-thread when the next stitch is being formed, and means for holding the needle-thread taut while the shuttle-carrier is moving away from the work, substantially as described.

2. In a lock-stitch sewing-machine, stitch-forming mechanism including shuttle turning on a horizontal axis and adapted to contain a bobbin, a shuttle-carrier bearing said shuttle means for moving said shuttle-carrier in a direction at right angles to the axis of said shuttle to bodily

move the shuttle and bobbin a predetermined distance away from the work and thereby draw off the bobbin a quantity of shuttle-thread for the next stitch, and to thereafter move said shuttle-carrier in the opposite direction to deliver said shuttle-thread when the next stitch is being formed, means for varying the extent of movement of said shuttle-carrier, and means for holding the needle-thread taut while the shuttle-carrier is moving away from the work, substantially as described.

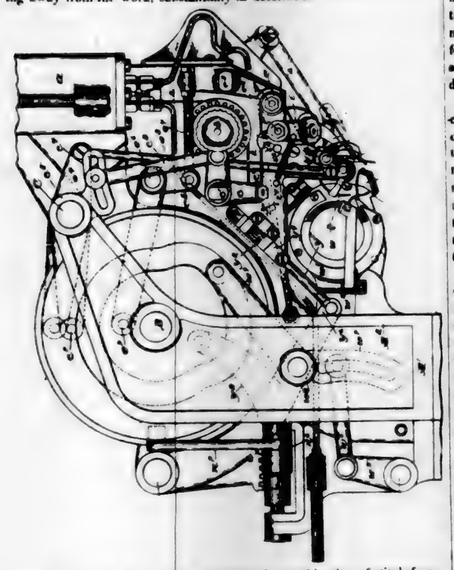

3. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including a needle, a reciprocating shuttle-carrier bearing an oscillating shuttle, means for moving said shuttle-carrier and shuttle away from the work to draw off a supply of shuttle-thread for the next stitch, an adjusting device for varying the extent of movement of said shuttle-carrier, and means for holding the needle-thread taut while the shuttle-carrier is moving away from the work, substantially as described.

4. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including a needle, a reciprocating shuttle-carrier bearing an oscillating shuttle, means for moving said shuttle-carrier and shuttle away from the work to draw off a supply of shuttle-thread for the next stitch, and means for holding the needle-thread taut while the shuttle-carrier is moved to draw off shuttle-thread, substantially as described.

5. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including a needle and a shuttle, a thread-clamp for positively clamping and thereby locking the needle-thread at a predetermined time, and means for moving the shuttle-carrier and shuttle away from the work to draw off a supply of shuttle-thread for the next stitch while the needle-thread is locked by said thread-clamp, substantially as described.

6. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including an oscillating shuttle containing a bobbin, a reciprocating shuttle-carrier bearing said oscillating shuttle, means including a thread-clamp for holding the needle-thread taut, and means for operating said shuttle-carrier to bodily move the shuttle and bobbin and thereby draw off the bobbin a quantity of shuttle-thread while the needle-thread is held taut, substantially as described.

7. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including an oscillating shuttle containing a bobbin, a reciprocating shuttle-carrier bearing said oscillating shuttle, means, including a thread-clamp, for holding the needle-thread taut, means for operating said shuttle-carrier to bodily move the shuttle and bobbin and thereby draw off the bobbin a quantity of shuttle-thread for the next stitch while the needle-thread is held taut, and an adjusting device for varying the distance said shuttle-carrier moves, substantially as described.

8. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including an oscillating shuttle containing a bobbin, a reciprocating shuttle-carrier bearing said oscillating shuttle, means, including a thread-clamp, for holding the needle-thread taut, and means for operating said shuttle-carrier, during the time the shuttle is not performing its regular functions, to bodily move the shuttle and bobbin and thereby draw off the bobbin a quantity of shuttle-thread for the next stitch while the needle-thread is held taut, and thereafter deliver said shuttle-thread when the next stitch is being formed, substantially as described.

9. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including an oscillating shuttle containing a bobbin, a reciprocating shuttle-carrier bearing said oscillating shuttle, means, including a thread-clamp, for holding the needle-thread taut, and means for moving said shuttle-carrier away from the work to thereby bodily move the shuttle and bobbin and draw off a quantity of shuttle-thread for the next stitch while the needle-thread is held taut by said thread-clamp, and for thereafter moving said shuttle-carrier toward the work to deliver up said shuttle-thread when the next stitch is being formed, substantially as described.

10. In a lock-stitch sewing-machine, stitch-forming mechanism including a needle turning on a horizontal axis, its segment and means for operating it, and shuttle turning on a horizontal axis in parallelism with the axis of said needle, a shuttle-carrier bearing said shuttle, means for moving said shuttle-carrier from and toward the needle, in a direction at right angles to the axis of said needle, to thereby draw off a measured quantity of shuttle-thread and thereafter deliver said shuttle-thread when the next stitch is being formed, and means for holding the needle-thread taut while the shuttle-carrier is moving away from the needle, substantially as described.

11. In a lock-stitch sewing-machine, stitch-forming mechanism including a needle, its segment and means for operating it and an oscillating shuttle, a shuttle-carrier bearing said oscillating shuttle, means for moving said shuttle-carrier rearward, away from the work, to thereby provide working space for the needle-segment and to draw off a supply of shuttle-thread for the next stitch, and for moving said shuttle-carrier forward, toward the work, to deliver up said shuttle-thread and to bring the beak of the shuttle into correct position to enter the loop of needle-thread, and means for holding the needle-thread taut while the shuttle-carrier is moving away from the work, substantially as described.

12. In a lock-stitch sewing-machine, stitch-forming mechanism including a shuttle oscillating on a horizontal axis, a sliding shuttle-carrier bearing said oscillating shuttle movable in a direction at right angles to the axis of oscillation of the shuttle, means for sliding said shuttle-carrier toward and from the work, and means for oscillating the said shuttle, substantially as described.

13. In a lock-stitch sewing-machine, stitch-forming mechanism including an oscillating shuttle, a sliding shuttle-carrier bearing said oscillating shuttle, means for sliding said shuttle-carrier toward and from the work, and means for oscillating said shuttle comprising a pinion and a vibrating sector, the sliding movement of the shuttle-carrier being substantially tangential to the arc of said sector, substantially as described.

14. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, means for drawing off a quantity of needle-thread for the next stitch operated independently of the stitch-forming mechanism in the performance of its regular functions and means for drawing off a quantity of shuttle-thread for the next stitch also operated independently of the stitch-forming mechanism in the performance of its regular functions, substantially as described.

15. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism including a needle, an oscillating shuttle and a stitch-setting device, means independent of the stitch-forming mechanism for drawing off a quantity of needle-thread for the next stitch, a shuttle-carrier bearing said oscillating shuttle, and means for moving said shuttle-carrier rearward to draw off a quantity of shuttle-thread for the next stitch while the needle-thread is held taut at the completion of the stitch by the stitch-setting device, substantially as described.

16. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, a pull-off for drawing off a measured quantity of needle-thread for the next stitch while the take-up rises which is afterward delivered upon the descent of said take-up, and means for drawing off a measured quantity of shuttle-thread for the next stitch while the take-up is holding the needle-thread taut at the completion of the stitch which is afterward delivered while the take-up descends, substantially as described.

17. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, a thread-clamp and pull-off for the needle-thread, the latter acting while the thread is clamped to draw a measured quantity of needle-thread off of its supply for the next stitch, a take-up for said needle-thread which operates to set the stitch, and means for drawing a measured quantity of shuttle-thread off of its supply while the needle-thread is held taut by said take-up at the completion of the stitch, and for thereafter delivering up said shuttle-thread for the next stitch, substantially as described.

18. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, a take-up for the needle-thread, a locking device for said thread, means for drawing off a measured quantity of needle-thread for the next stitch while the needle-thread is locked, and means for drawing

off a measured quantity of shuttle-thread for the next stitch also while the needle-thread is locked, substantially as described.

19. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, a thread-clamp, and pull-off for the needle-thread, the latter acting while the thread is clamped to draw a measured quantity of needle-thread off of its supply for the next stitch, means for taking up the needle-thread and for setting the stitch during which time the needle-thread is drawn taut, and means for drawing a measured quantity of shuttle-thread off of its supply while the needle-thread is thus held taut, substantially as described.

20. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, means independent of the stitch-forming mechanism for drawing off a supply of needle-thread for the next stitch, and means for drawing off a supply of shuttle-thread for the next stitch while the needle-thread is held taut at the completion of the stitch, substantially as described.

21. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, means independent of the stitch-forming mechanism for drawing off a supply of needle-thread for the next stitch, and means for drawing off a supply of shuttle-thread for the next stitch during the time the shuttle is not performing its regular functions, substantially as described.

22. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, a thread-clamp and pull-off for the needle-thread, the latter acting while the thread is clamped to draw a measured quantity of needle-thread off of its supply for the next stitch, a take-up for the needle-thread which operates to set the stitch while the needle-thread is held clamped, and means for drawing a measured quantity of shuttle-thread off of its supply for the next stitch while the needle-thread is held taut, and during the time the shuttle is not performing its regular functions, substantially as described.

23. In a lock-stitch sewing-machine, the combination of stitch-forming mechanism, a thread-clamp, and pull-off for the needle-thread, the latter acting while the thread is clamped to draw a measured quantity of needle-thread off of its supply for the next stitch, a take-up for the needle-thread which operates to set the stitch while the needle-thread is held clamped, and means for drawing off a measured quantity of shuttle-thread while the needle-thread is held clamped and the take-up is holding the needle-thread taut at the completion of the stitch, substantially as described.

24. In a lock-stitch sewing-machine, a needle and a shuttle oscillating on parallel axes, a shuttle-carrier for said shuttle, and means for moving it toward and from the needle in a direction at right angles to the axis of said needle, substantially as described.

25. In a lock-stitch sewing-machine, a needle and a shuttle turning on parallel axes, a shuttle-carrier bearing said shuttle and means for moving it away from the needle in a direction at right angles to the axis of said needle, to provide working space for the needle, and also to draw off a measured supply of shuttle-thread, and for moving it in the opposite direction, toward the needle, to deliver said shuttle-thread and to bring the beak of the shuttle in correct position to enter the loop of needle-thread, and means for holding the needle-thread taut while the shuttle-carrier is moving away from the work, substantially as described.

705,064. BRICK-EDGE-SMOOTHING BLADE. WILLIAM FREY, Canton, Ohio. Filed May 16, 1902. Serial No. 107,678. (No model.)

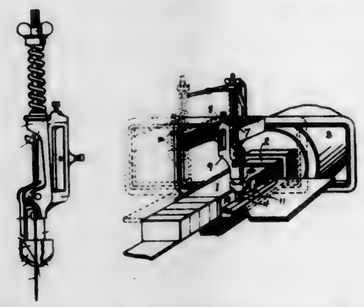

Claim.—1. In a brick-cut-off table, a cut-off frame, a wire attached in said frame, a blade attached to said frame, and a slot in said blade through which said wire is passed.

2. In a brick-cut-off table, a cut-off frame, a wire attached in said frame, a blade pivotally connected with said frame, and a slot in said blade through which said wire is passed.

3. In a brick-cut-off table, a cut-off frame, a wire attached in said frame, a blade pivotally connected with said frame, and a slot in said blade through which said wire is passed, said slot being longitudinally elongated in its upper part.

4. In a brick-cut-off table, a cut-off frame, a wire attached in said frame, a blade attached to said frame, a slot in said blade through which said wire is passed, and a diagonal slit in the side of the blade opening into said slot.

5. A brick-edge-smoothing blade having a cutting edge on one side, said cutting edge being curved at each end, and a slot in said blade from the cutting edge to the opposite side.

6. A brick-edge-smoothing blade having a cutting edge on one side, said edge being curved at each end to form acute bends on either side of the median line, and a slot in said blade from the middle of the cutting edge to the opposite side.

7. A brick-edge-smoothing blade having a cutting edge on one side, said edge being curved at each end, and a slot in said blade, said slot extending from a substantially round aperture in the cutting edge to an elongated opening in the opposite side.

8. A brick-edge-smoothing blade having a cutting edge on one side, said edge being curved at each end, a slot in said blade from the cutting edge to the opposite side, and a diagonal slit in one side of the blade opening into said slot.

705,065. APPAREL. JOHN C. FRIEDRICH, Bordentown, N. J. Filed Aug. 24, 1900. Serial No. 27,935. (No model.)

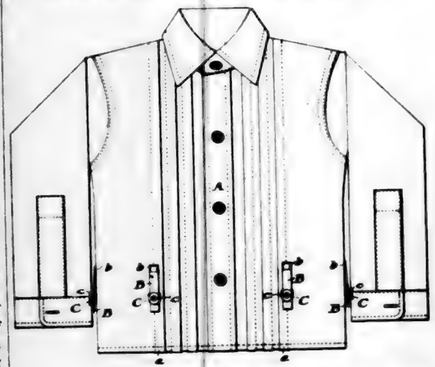

Claim.—1. In a boy's shirt-waist, the combination with a series of vertically-pending tabs respectively fixed at their upper extremities upon the exterior of the garment; of reinforces *a*, in registry with said tabs, and extending vertically therefrom to the top of the garment; a button upon each of said tabs; and, means connecting said buttons with said tabs, adjustable from the top to the bottom of the latter, substantially as set forth.

2. In a boy's shirt-waist, the combination with a series of tabs of equal width throughout their length, respectively fixed at their upper extremities upon the exterior of the garment; of reinforces *a*, in registry with said tabs and extending vertically therefrom to the top of the garment; a series of clasp-frames *c'*, respectively embracing the width of said tabs and adjustable from end to end thereof; a series of buttons *c*, respectively fixed upon said clasp-frames *c'*; and, a series of clasps c^2, respectively mounted in said clasp-frames and arranged to secure the latter in adjusted position upon said tabs, substantially as set forth.

705,066. CENTRIFUGAL SEPARATOR. CARL FRIEDLEBEN, Halle, Germany. Filed Aug. 2, 1901. Serial No. 70,664. (No model.)

Claim.—A continuous working centrifugal separator, consisting of a conical drum, rotated from the top, a conical filling-chamber on the top of the drum and communicating with the interior through openings, a spiral conveyer mounted vertically in the drum and adapted to convey the material to be separated from the top to the bottom of the same, a means for rotating the conveyer from the bottom, a collecting-dish for receiving the separated material as it falls from the conveyer, and provided with a chute, and a wheel with depending blades mounted above the collecting-dish and adapted to be rotated to force the separated material down the chute substantially as described.

705,066

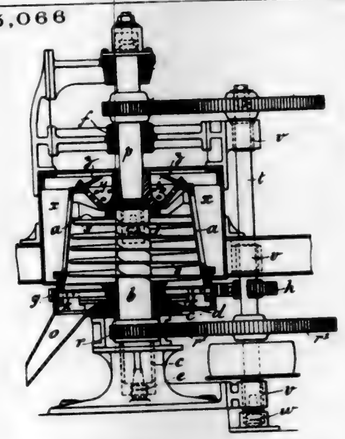

705,067. SOAP CUTTING AND SPREADING MACHINE. TIMOTHY GAYNOR, Jr., Indianapolis, Ind., assignor of four-fifths to Robert G. Haresnip and Solomon M. Gusdorf, Indianapolis, Ind. Filed Oct. 5, 1901. Serial No. 77,651. (No model.)

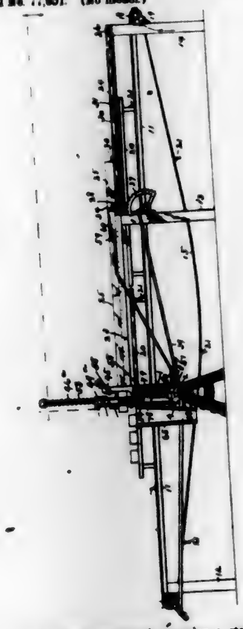

Claim.—1. In a soap cutter and spreader a stationary platform, means for moving slabs of soap in one direction over the platform with an intermittent movement, vertical wires in the path of the slabs for cutting the slabs longitudinally into bars and a horizontal wire reciprocating vertically at the end of the platform to cut the bars transversely into cakes, and a rack moving out from under the table at faster speed than the travel of the soap on the platform.

2. In a soap cutter and spreader a stationary platform over which slabs of soap are passed, means for cutting the slabs longitudinally into bars and transversely into cakes, an endless belt or apron upon which the slabs of soap are placed said apron having means to engage the slabs to cause them to travel therewith said apron traveling toward and delivering upon the platform and a rack passing under the delivery end of the platform at a faster speed than the travel of the apron, to receive the soap as it is cut into cakes.

3. In a soap cutter and spreader, a platform having vertical wire cutters and a vertically-reciprocating horizontal cutter, an endless carrier delivering upon said platform and a rack moving from under the platform to receive the soap as it is cut.

4. In a soap cutter and spreader, a table having a link belt moving longitudinally thereof, racks placed on the table and moved thereon by projections from the link belt, a platform above the table and of less length than said table, cutters adjacent to one end of the platform adapted to cut slabs of soap into longitudinal and transverse pieces when the soap is moved thereto over the platform and an endless moving apron to receive the soap to be cut said apron delivering the soap upon the platform by the action of projections therefrom to engage the soap.

5. In a soap-cutter a platform to receive the soap to be cut, means to compel the soap to travel in one direction over the platform and means while so traveling for cutting the soap parallel with the direction of travel and transversely thereto.

6. In a soap cutter and spreader, a platform, means for compelling slabs of soap to travel thereover, vertical wires in the path of the soap slabs to cut them into bars and a cutter reciprocating vertically and transversely of the platform adjacent to but beyond or outside of the end thereof and a rack moving from under the platform to receive the soap as it is cut.

7. A stationary platform, an endless belt or apron to receive slabs of soap and discharge them upon the platform, a rack adapted to move from under the platform at a faster rate of travel than that of the apron, vertical cutters to cut the soap into bars as it passes over the platform, a transverse horizontal cutter to cut the soap into cakes as it passes off of the platform said horizontal cutter being held normally above the platform, means for vertically reciprocating the horizontal cutter and means for moving the apron and rack intermittently said apron and rack movement alternating with the reciprocation of the horizontal cutter.

8. A stationary table having cutters, an endless belt to receive slabs of soap and deliver them to the table and force them through the cutters on the table, a shaft having a roller around which the belt travels, a cogged wheel loosely mounted on the shaft and having a pawl, a ratchet-wheel fixed on the shaft and engaged by the said pawl, a toothed segment engaging the cogged wheel, a transverse reciprocating cutter at the opposite end of the platform from the belt and means for rocking the toothed segment and reciprocating the transverse cutter at alternate periods.

9. A table, an endless link belt longitudinally thereof having means to engage a rack or racks placed on said table, a shaft having a sprocket-wheel around which the link belt passes, a lever loosely mounted on the shaft, said lever having a pawl, a ratchet-wheel mounted on the shaft and turning with it, said pawl engaging said ratchet-wheel, a revoluble shaft having a crank-wheel with a wrist-pin, a rod connecting the wrist-pin with the lever, racks moved along the table by the link belt, a platform over the table having soap-cutters and means for passing slabs of soap along the table through the cutters and depositing same upon said racks.

10. A platform having slabs of soap traveling in one direction thereon, and means for cutting the soap transversely of its direction of travel, consisting of vertical wires, heads sliding thereon, springs to elevate the heads, a frame secured to the heads and carrying a tant transverse cutting-wire, a revoluble shaft having wheels with side pins levers pivotally secured to each head depending therefrom and terminating opposite the hubs of the wheels and having notches to engage the pins in the wheels, fixed stop-pins and notches in the levers to engage the stop-pins.

11. In a soap-cutting machine, a main driving-shaft having a sliding clutch-half feathered to said shaft, a revoluble pulley loosely mounted on said shaft, a bell-crank, a rod connecting the sliding clutch-half with one of the arms of the bell-crank, an endless apron on which the soap is deposited and fed therefrom to the machine, projections from said apron and a push-bar in the path of said projections adapted to contact therewith, said push-bar being connected with the bell-crank.

705,068. APPAREL-CAP. CHARLES W. GORDON, St. Paul, Minn. Filed Apr. 8, 1902. Serial No. 101,866. (No model.)

Claim.—1. A cap of the class described, comprising a cap-body and its side wall, a flexible sweat-band formed of two plies of material having a lower part secured to the inside of the side wall and extending substantially to the lower edge thereof, and an unsecured upper part, and a head-protector extending around the sides and rear of the cap and secured along one edge to the unsecured edge of the sweat-band, and between the plies thereof, substantially as described.

2. The combination, with the side wall of a cap formed with an infolded lower portion 6, of a flexible sweat-band formed of two plies of material and secured to the infolded portion between the upper and lower

edges thereof, and a head-protecter secured to the free edge of the sweat-band and between the plies thereof, the free portion of the sweat-band being of sufficient width to allow the head-protector to stand in alinement with the side wall of the cap when turned down, and to stand in alinement with the infolded portion 6 when folded into the cap.

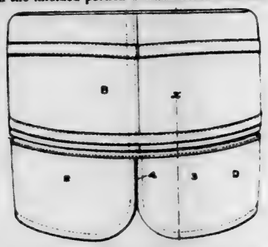

3. A cap of the class described, comprising a cap-body and a two-part head-protector foldably secured to the inside of the cap-body, the head-protector parts extending forwardly to the front of the cap-body and substantially meeting at their rear ends, the rear ends being flexibly connected along their adjacent edges and nearly to the bottom thereof so as to stand flush with each other, and having their lower parts below such point of union free and unconnected, substantially as and for the purpose described.

4. A cap comprising a cap-body and its side wall, the lower part of the side wall being turned inwardly and up on itself to form an infolded portion 6, a flexible sweat-band formed of two plies of material secured to said infolded portion from the lower edge thereof to approximately the middle point thereof, and having an unsecured portion of greater width than the secured portion, and a head-protector secured along one edge to the unsecured edge of the sweat-band and between the plies thereof, whereby the protector, when folded within the cap, will stand substantially in alinement with the infolded portion 6, and when turned down will swing out of the cap-body into alinement with the outer part of the side wall, substantially as described.

705,069. VAMP-SKIVER. JOSEPH G. GRALL, Detroit, Mich., assignor, by mesne assignments, to the Robert Mitchell Machinery Company, a Corporation of Michigan. Filed Dec. 27, 1898. Renewed Oct. 28, 1901. Serial No. 80,279. (No model.)

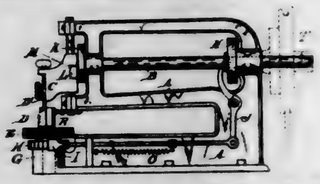

Claim.—1. In a leather-skiving machine, the combination with a supporting-frame, of a feed-table rotatably supported in the frame, a work-guide fixedly secured above the table independently thereof having a vertical slot through which the cutting edge of the knife projects and a vertically-reciprocating knife supported in the frame above the table having the horizontal cutting edge arranged radially with the table.

2. In a leather-skiving machine, the combination with a supporting-frame, of a circular feed-table means for intermittently turning the same on its vertical axis, a reciprocating knife in vertical guides above said table, and with its cutting edge in a plane radially with the table, and a work-guide supported above the table and independently thereof having a rounded face concentric with the table and a vertical slot through which the cutting edges of the knife project outwardly.

3. In a leather-skiving machine, the combination with the supporting-frame, of an intermittently-operated circular feed-table, a reciprocating knife in a radial plane with the table and having horizontal and vertical cutting edges, and a work-guide secured in relation to the knife having a rounded face concentric with the table and a slot in said face through which the cutting edges of the knife freely project.

4. In a leather-skiving machine, the rotary circular feed-table having a knurled rim in combination with the reciprocating knife vertically adjustably secured in the frame of the machine and the stationary work-guide, adjustably secured above the feed-table and independently thereof.

5. In a leather-skiving machine, the rotary circular feed-table having the knurled rim and the cutting-block centrally recessed in the table in combination with the reciprocating knife and stationary slotted work-guide, horizontally adjustable on the frame.

6. In a leather-skiving machine, the reciprocating knife having a shank and knife-blade formed with vertical and horizontal cutting edges thereon, in combination with the stationary tubular work-guide around the shank of the knife adjustably secured in relation thereto, and provided with a slot through which the knife-blade of the knife projects radially to said guide.

7. In a leather-skiving machine, the combination with the frame and drive-shaft, of the vertically-reciprocating cross-head arranged in vertical guides of the frame, the knife carried by said cross-head, the circular feed-table below the knife, the stem F carrying the table, the ratchet-wheel H secured upon said stem and having actuating connection with the drive-shaft for imparting intermittent motion to the feed-table, and the slotted tubular work-guide R stationarily mounted above the feed-table.

705,070. UNION GARMENT. WILLIAM A. GRAHAM, St. Joseph, Mo. Filed June 22, 1901. Serial No. 65,588. (No model.)

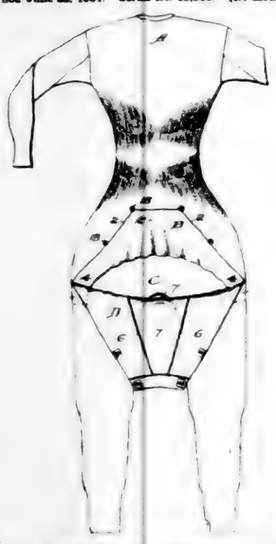

Claim.—1. In an undergarment having an opening in the back of the body of said garment extending downward approximately to the crotch of the garment, broad at the base and narrowing gradually upward, a curtain inserted therein, said curtain being curved on its lower edge to leave an opening and having extensions on each side connected to the edge of said opening and to the fabric below said edge, combined with a flap corresponding with said opening first named and fastening means, substantially as described.

2. In an undergarment, having an opening in the back, a flap to cover said opening, said flap being broader at its lower edge and narrowed gradually upward, and being formed of two side parts continuous with the fabric of the garment, and also of a separate central part connected to the part 6 and body of the garment which extends downward to form the crotch of the garment and upward in front whereby a central seam is avoided, all substantially as described.

705,071. MACHINE FOR FACING FRUIT FOR PACKING. LOZELLE F. GRAHAM, San Jose, Cal. Filed Jan. 9, 1902. Serial No. 88,971. (No model.)

Claim.—1. In a fruit-facing machine, the combination of opposing frames, one of which is adjustable in an arc of a circle to and from the other, a series of pairs of opposing cushioned pressure-rolls carried by said frames, said pairs being adapted by the adjustment of said frame to have their members separated by successively-decreasing distances from the first to the last pair, rigid backing-rolls carried by the frames for holding said pressure-rolls in place and means for feeding the fruit between said rolls in the direction of said decreasing distances.

2. In a fruit-facing machine, the combination of opposing pneumatic pressure-rolls between which the fruit is passed and rigid backing-rolls for said pneumatic rolls to hold them in place.

3. In a fruit-facing machine, the combination of opposing cushioned pressure-rolls, means for relatively adjusting said rolls, to vary their pressure, rigid backing-rolls for said pressure-rolls to hold them in place and endless traveling carriers arranged to carry the fruit between them through said rolls.

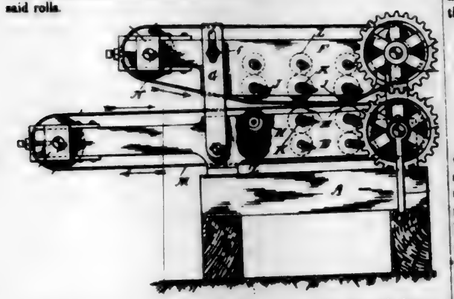

4. A fruit-facing machine consisting of relatively adjustable frames, cushioned pressure-rolls carried by said frames and disposed in superposed pairs, rigid backing-rolls carried by the frames for holding said pressure-rolls in place, terminal drums carried by the frames, endless carriers mounted on the drums and passing between the rolls, and suitable means for driving said carriers and rolls.

705,072. RUBBER TIRE. ARTHUR W. GRAFF, Springfield, Ohio, assignor to the Consolidated Rubber Tire Co., New York, N. Y., a Corporation of New Jersey. Filed Mar. 23, 1900. Serial No. 9,946. (No model.)

Claim.—1. In a vehicle-tire, the combination with a flat channelless metallic band having openings therein, of a rubber tire, flat on its base, to fit said metallic band, with projections thereon to fit in the openings in said band, and independent retaining-wires extending through said rubber, substantially as specified.

2. In a tire for vehicle-wheels, a rubber tire with a substantially flat base, having projections formed on said base, and flat metallic band having openings therein to receive the projections on the tire, the edges of said band being rounded, the rounded part extending beyond the tire and the felly on which it rests, and independent retaining-wires extending through the rubber on opposite sides of said projections, substantially as specified.

705,073. DEVICE FOR PREVENTING HUMMING OF TELEPHONE-WIRES. MAGGIE GROVER, Bidwell, Ohio. Filed Sept. 6, 1901. Serial No. 74,563. (No model.)

Claim.—1. A device of the class described comprising a split flexible body of dampering material having a passage to receive and hold a wire and with which the split communicates to permit of entrance of the wire to the passage, said body having a peripheral groove to receive an attaching-band.

2. A device of the class described comprising a body of rubber having a central axial passage to receive a wire, said body being split from the passage outwardly through its side and having a peripheral groove at a point between its ends to receive a compressing and attaching band.

705,074. ATOMIZER. JAMES G. HALAPLEN, Toledo, Ohio. Filed Dec. 31, 1901. Serial No. 87,921. (No model.)

Claim.—1. In an atomizer, the combination with a liquid-container provided with a spray-nozzle and with a liquid-tube communicating therewith, of a chambered cap for said liquid-container, a barrel connected to said liquid-container, a plunger arranged within said barrel, a spring located in the barrel for elevating said plunger, a plunger-rod connected to the plunger and provided with a head to close the chamber of said cap, and means for locking the plunger and head in depressed position against the action of the spring, substantially as set forth.

2. In an atomizer, the combination with a liquid-container provided with a spray-nozzle and with a liquid-tube communicating therewith, of a chambered cap for said liquid-container, a barrel connected to said liquid-container and provided with a cap having a central aperture and diametrically opposite slots, a plunger arranged within said barrel, a spring located within the barrel between said plunger and the bottom of the cap, a plunger-rod connected to the plunger, a head connected to the plunger-rod and of a diameter corresponding with the internal diameter of the container-cap, and a cross-pin carried by said rod and adapted to lock the rod in depressed position against the action of the spring, substantially as set forth.

3. In an atomizer, the combination of a liquid-container, of a spray-nozzle and tube connected therewith, a barrel, with an opening and a spirally-hung spring-valve at the lower end thereof opening outwardly therefrom, located within said liquid-container and protected by a cap with an orifice therein, and a plunger working in said barrel, and at the lower end of said plunger, an opening and a spirally-hung spring-valve, opening downward, substantially as set forth.

4. In an atomizer, the combination with a liquid-container provided with a spray-nozzle and with a liquid-tube communicating therewith, of a chambered cap for said liquid-container, a barrel connected to said liquid-container and provided with a cap having a central aperture and diametrically opposite slots, and a lower cap with opening, an outwardly-opening valve, a plunger arranged within said barrel, with opening therein, and a valve opening inwardly, a spring located in the barrel between said plunger and the bottom of the cap, a plunger-rod connected to the plunger, a head connected to the plunger-rod and of a diameter corresponding with the internal diameter of the container-cap, and a cross-pin carried by said rod and adapted to lock the rod in depressed position, substantially as set forth.

705,075. CAR-SEAT. HENRY S. HALE, Philadelphia, Pa. Filed Apr. 2, 1902. Serial No. 101,109. (No model.)

Claim.—1. A pedestal for a car-seat consisting of a flat vertical plate having its bottom flanged, combined with a second plate secured at its side edges to the corresponding edges of the flat plate and having its middle portion curved or bulged outward and its lower part curved outward into a flanged foot on a level with the bottom flange of the flat plate.

2. A pedestal for a car-seat consisting of a flat vertical plate having its top and bottom flanged, combined with a second plate secured at its side edges to the corresponding edges of the flat plate and having its middle portion curved or bulged outward and its lower part curved outward into a flanged foot on a level with the bottom flange of the flat plate.

3. A pedestal for a car-seat consisting of a flat vertical plate having its top and bottom flanged and also formed with hollow corner-ribs at the juncture of the body and top flange, combined with a second plate secured at its edges to the corresponding edges of the flat plate and having its middle portion curved or bulged outward and its lower part curved

outward into a flanged foot on a level with the bottom flange of the flat plate.

4. A pedestal for a car-seat consisting of a flat vertical plate having its top and bottom flanged, combined with a second plate secured at its edges to the corresponding edges of the flat plate and having its middle portion curved or bulged outward and its lower part curved outward into a flanged foot of semi-elliptical shape on the level with the bottom flange of the flat plate.

5. In a pedestal, the combination of the vertical flat plate A having the flange J at the top and foot K at the bottom and recessed on its edges as at i, a front plate M of corresponding shape but not so high curved or bulged at its middle and flanged at the bottom to form a flaring semi-elliptical base, and secured to the plate A at the side edges thereof.

6. In a pedestal, a rear flat plate having a flange at its top, combined with a front plate secured to the side edges of the flat plate and having its middle part rounded outward or bulged and its lower part flared into a semi-elliptical base.

7. A car-seat pedestal consisting of two sheet-steel plates secured together at their side edges one of which plates is flat and the other outwardly curved or bulged and flared at the bottom to form a spread or extended base.

8. A car-seat pedestal consisting of the combination of two plates of metal meeting at their side edges and separated in the middle and further united at their side edges by having the edge of one plate flanged over and clamped upon the edge of the other plate and also having the lower parts of these plates shaped to form a flaring base.

705,076. MANUFACTURE OF CARBON ELECTRODES. CHARLES M. HALL, Niagara Falls, N. Y. Filed Feb. 19, 1902. Serial No. 94,726. (No specimens.)

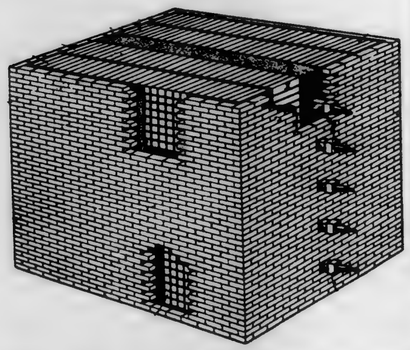

Claim.—1. The method herein described of baking carbon articles, which consists in placing them in proximity to a conducting path or core, insulating the articles or groups of articles, and passing a current through the core; substantially as described.

2. The method herein described of baking carbon electrodes, which consists in placing them in proximity to a conducting path or core, insulating the electrodes or groups of electrodes from each other, and passing a current through the core; substantially as described.

3. The method herein described of baking carbon electrodes, which consists in placing them in proximity to a conducting path or core, interposing refractory insulating material between the electrodes or groups of electrodes, and passing a current through the core; substantially as described.

4. The method herein described of baking carbon electrodes, which consists in placing them in proximity to a conducting path or core in piles transversely to the core with their ends in proximity thereto, insulating the electrodes or groups of electrodes, and passing a current through the core; substantially as described.

5. The method herein described of baking carbon electrodes, which consists in placing them in proximity to a conducting path or core, insulating the electrodes or groups of electrodes, piling other electrodes outside the first-named electrodes, heating the latter by heat transmitted through the inner electrodes, and subsequently placing them next to a core to receive final baking; substantially as described.

705,077. GAS-FURNACE. FRANK G. HAHN, Cincinnati, Ohio. Filed Nov. 17, 1900. Serial No. 36,502. (No model.)

Claim.—1. In a heating-furnace, the combination of an outer inclosure forming a heating-chamber within, a horizontally-disposed head 18 closing the upper part of this chamber by being supported all around on the outer inclosure, a smoke-chamber 26 above this head, smoke-flues passing through this latter and connecting the heating-chamber below it with the smoke-chamber above it, a horizontally-disposed hollow base 21 in the lower part of the heating-chamber arranged around the sides thereof, pipes 22 connecting this base with head 18 in a manner to leave a space between them, drop heating-tubes depending from head 18 filling this space and arranged in pairs by having the lower ends of two adjacent tubes connected for communication and one of the tubes in each pair being of larger diameter than the other tube thereof and a multiple gas-burner to supply heat to this furnace.

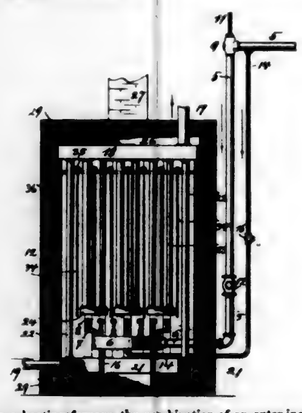

2. In a heating-furnace, the combination of an outer inclosure forming a heating-chamber within, a horizontally-disposed head 18 closing the upper part of this chamber by being supported all around on the outer inclosure, a smoke-chamber 26 above this head, smoke-flues passing through this latter and connecting the heating-chamber below it with the smoke-chamber above it, a horizontally-disposed hollow base 21 in the lower part of the heating-chamber arranged around the sides thereof, pipes 22 connecting this base with head 18 in a manner to leave a space between them, drop heating-tubes depending from head 18 filling this space and arranged in pairs by having the lower ends of two adjacent tubes connected for communication and one of the tubes in each pair being of larger diameter than the other tube thereof and means to supply heat to this furnace.

3. In a heating-furnace, the combination of an outer inclosure forming a heating-chamber within, a horizontally-disposed head 18 closing the upper part of this chamber by being supported all around on the outer inclosure, a smoke-chamber 26 above this head, smoke-flues passing through this latter and connecting the heating-chamber below it with the smoke-chamber above it, a horizontally-disposed hollow base 21 in the lower part of the heating-chamber arranged around the sides thereof, pipes 22 connecting this base with head 18 in a manner to leave a space between them, drop heating-tubes depending from head 18 filling this space and arranged in pairs, an independent joint 24, box-shaped and of copper which connects to the lower end of each pair, one of the tubes of each pair being of larger diameter than the other and means to supply heat to this furnace.

4. A gas-furnace having within its heating-chamber pipes and tubes intended to be heated and vertically arranged with spaces between them, rods 35, horizontally supported in a fixed position in the upper part of these spaces and sheets of non-combustible material also vertically arranged and suspended on these rods in a line parallel to the line of draft and adapted to absorb and retain the heat for radiation, substantially as shown and described.

705,078. ACETYLENE-GAS GENERATOR. WILLIAM S. HAHN and JOHN A. MOSHER, Chicago, Ill., assignors to the Adams & Westlake Company, a Corporation of Illinois. Filed Jan. 14, 1901. Serial No. 43,172. (No model.)

Claim.—1. The combination with an acetylene-generating chamber, of a water-passage leading thereto, and a spring-supported longitudinally-movable rod or spindle located within such passage, and of such size as to so restrict the passage that an excess of gas-pressure will stop the flow of water.

2. In a combined acetylene-generator and shipping-case, a tank having an attaching-nipple, means for hermetically sealing the tank when not in service, a carbid-container fixedly held within the tank and comprising a plurality of compartments each having a foraminous cover whereby water dripping from one compartment is distributed over the entire surface of the contents of the one next below.

3. In a combined acetylene-generator and shipping-case, a tank having a valve-controlled attaching-nipple, a carbid-container fixedly held within the tank and comprising a plurality of compartments each having a foraminous cover whereby water dripping from one compartment is distributed over the entire surface of the contents of the one next below.

4. In a combined acetylene-generator and shipping-case, a tank, a carbid-container comprising a plurality of compartments each having a foraminous cover whereby water dripping from one compartment is distributed over the surface of the contents of the one next below, a removable cover for the tank such cover having a valve-closed nipple and being adapted to engage the top of the carbid-container and fixedly secure the same.

705,079. ROTARY STEAM-ENGINE. JAMES T. HAYS and JOHN W. WILSON, Garland, Tex. Filed Mar. 12, 1901. Serial No. 50,671. (No model.)

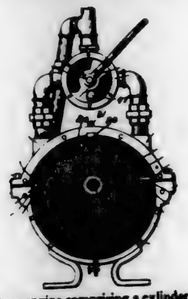

Claim.—1. A rotary engine comprising a cylinder divided in a plane parallel with and to one side of the axis of the cylinder, an arcuate plate disposed against the inner face of the minor section of the cylinder and having its ends turned outwardly and clamped between the sections, said plate having openings therein, ports in the cylinder leading to said openings, and a piston rotatably mounted in the cylinder eccentric to the cylinder and in contact with the plate, said piston having heads adapted for projection at diametrically opposite points of its periphery and in contact with the inner periphery of the cylinder.

2. In a rotary engine the combination with a cylinder having the rotatable piston therein provided with a shaft extending interiorly of the cylinder, said piston having heads and adapted for reverse rotation, of a throttle-valve including a casing, pipes connecting the casing with the cylinder and supporting the casing, a steam-feed pipe connected to the casing, a steam-exhaust pipe connected with the casing, a casing encircling the piston-shaft exteriorly to the cylinder and having ports in its opposite ends and with which casing the steam-feed pipe is connected at one of the ports to hold the casing against movement, a steam-supply pipe connected with the last-named casing at the second port thereof and a valve within the second casing fixed to and rotatable with the shaft for intermittently cutting off communication between the supply and feed pipes.

705,080. DOOR-HANGER. JOHN J. HENNESSEY, Milwaukee, Wis. Filed Sept. 20, 1901. Serial No. 75,938. (No model.)

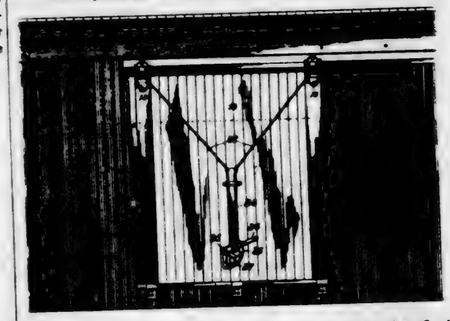

Claim.—1. A door-hanger comprising a bracket adapted for fixed attachment to a door, a hook portion attached to said bracket, a roller, a link carrying said roller, and a lift-lever, whereby the weight of the door is transferred from the hook portion to the roller, or vice versa, substantially as described.

2. A door-hanger comprising a bracket for fixed attachment to a door, a link secured thereto, means carried thereby for supporting the door therefrom in its open position, a lift-lever connecting said bracket and link, means for supporting the door in its closed position, and means for actuating said lift-lever, whereby the weight of the door is transferred from said link to said other supporting means, substantially as described.

3. A door-hanger comprising a bracket for fixed attachment to a door, a hook, a link secured to said bracket, means carried thereby for supporting the door in position to be opened, a lift-lever connecting said bracket and link and means for actuating said lift-lever to transfer the weight of the door from said hook to said link, or vice versa, substantially as described.

705,081. BRACKET FOR SLIDING DOORS. JOHN J. HENNESSEY, Milwaukee, Wis. Filed Oct. 14, 1901. Serial No. 78,572. (No model.)

Claim.—1. A door-bracket comprising the combination with a body portion, of a toe-piece constructed to swing about its point of support, substantially as described, and thereby exert pressure upon a door.

2. A door-bracket comprising a body portion constructed for attachment to the side of a car, a toe-piece constructed to exert pressure against a door tending to hold the same against the side of a car, when it is in closed position, and a pivotal support for said toe-piece upon said body portion, substantially as described.

3. A door-bracket comprising a body portion, a pivotally-mounted toe-piece, and shoulders whereby said toe-piece, when resting in outer or open position, is prevented from excessive pivotal movement, substantially as described.

705,082. SURFACE-CONTACT ELECTRIC RAILWAY. EDWARD M. HEWLETT, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Oct. 30, 1897. Serial No. 656,777. (No model.)

Claim.—1. In an electric switch, the combination with a contact, of a movable support, an electromagnet for moving said support toward the contact, and a second contact on the support, one of said contacts having a ball-and-socket joint, whereby it can adjust itself to the other contact when the magnet moves the support.

2. In an electric switch, the combination with a contact, of a movable support, an electromagnet for moving the latter toward said contact, and a contact which has a ball-and-socket joint with said support, whereby it can adjust itself to the first contact.

3. In an electric switch, the combination with a contact, of an electromagnet, a contact-support adapted to be moved toward said contact by the movable member of said magnet, and a contact having a ball-and-

socket joint with said support, whereby said contact can adjust itself with the first contact when caused by said magnet to engage therewith.

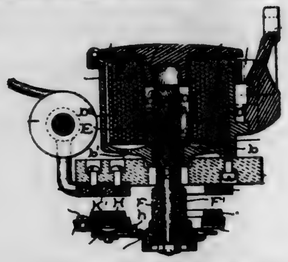

4. In an electric switch, the combination with the switch-contacts, of an electromagnet to bring said contacts into engagement, and means for permitting lateral play to at least one of said contacts, whereby it can adjust itself to the other when caused to engage therewith by the magnet.

5. In an electric switch, the combination with a contact, of a second contact normally held separated therefrom by gravity, one of said contacts being mounted to have lateral play, and an electromagnet for lifting the second contact into engagement with the first.

6. The combination with a fixed contact, of a support carrying a second contact, said support being movable to and from said fixed contact, and being normally held by gravity in such position that said contacts are separated, said second contact being adapted to adjust itself to said fixed contact when it is moved into engagement therewith, and a magnet-coil for raising said support.

7. The combination with a plurality of fixed contacts, of a plurality of contacts all normally separated from said fixed contacts, but adapted to be moved into engagement therewith, each being capable also of an independent movement.

8. The combination with a pluralisy of fixed contacts, of a support movable to and from said contacts, a plurality of contacts mounted on said support in ball-and-socket joints, and a coil for moving said support.

9. In an electric switch, the combination with a contact, of an electromagnet, a contact-support normally separated from said contact, but adapted to be moved theretoward by said magnet, and a contact so mounted on said support that it is adapted to adjust itself to the first contact by movement in the arc of a circle when it is moved into engagement therewith.

10. In an electromagnetic switch, the combination with a support of magnetic material, of an energizing-coil mounted on said support, fixed contacts insulated from said support, a movable core having one end which has a normal position beyond said support, a non-magnetic support inside the coil for the core, and contacts carried by the projecting end of the core which are adapted to engage with said fixed contacts.

11. An electric switch which comprises a support provided with hooks for suspension, an energizing-coil mounted on said support, fixed contacts mounted on the support, a movable core normally resting on the support and having a lower end which depends below the support, and contacts mounted on said lower end adapted to engage with said fixed contacts.

12. The combination with a casing of magnetic material, of a magnet-coil inclosed and supported by said casing, a movable core, passing through an opening in the bottom of said casing, and a hole in the bottom of the casing for the escape of condensed moisture.

13. The combination with a casing of magnetic material provided with holes in its bottom, of a magnet-coil mounted on an insulating-spool supported in a raised position in said casing, and a movable core passing through an opening in the bottom of said casing.

14. The combination with a casing of magnetic material, of a magnet-coil inclosed and supported by lugs on the inside of said casing, fixed contacts located outside said casing, and contacts mounted on the end of the core which is outside of the casing and adapted to engage with said fixed contacts.

15. In an electric switch, the combination with a contact, of an electromagnet, a conducting-support connected in circuit and adapted to be moved toward said contact by the magnet, a contact movably mounted on said support, whereby it can adjust itself to the first contact, and a flexible electric connection between said movably-mounted contact and its support.

16. In an electric switch, the combination with the contacts, of a support movable with respect thereto through different planes, a contact-holder movably mounted upon said support, and a contact secured in said holder.

17. In an electric switch, the combination with a contact, of a support movable with respect thereto, and a contact having a ball-and-socket joint with said support.

18. In an electric switch, the combination with an electromagnet, of a block of insulating material secured to the end of the movable core, a switch-piece support having a central hole fitting over said block, so that the support rests on the block, and a plurality of switch-contacts mounted on said support.

19. In an electric switch, the combination with an electromagnet, of a magnetic casing therefor having a hole through which the core of the magnet extends, switch-contacts carried by the core, and a non-magnetic sleeve arranged to prevent the core from sticking to the sides of the hole in the casing, said sleeve being of sufficient inner diameter to permit play for the core, whereby the switch-contacts can adjust themselves when they become worn by arcing.

20. In an electric switch, the combination with an electromagnet, of a casing therefor having a hole through which the magnet-core extends, and switch-contacts carried by the core, the hole in the casing being of sufficient diameter to permit play for the core, whereby the switch-contacts can adjust themselves when they become worn by arcing.

21. In an electric switch, the combination with an electromagnet having a movable core, of a support carried by the core, contact-holders mounted on said support, and clamps for holding the contacts in the holders.

22. In an electric switch, the combination with a support formed with depressions, of contact-holders having rounded portions fitting said depressions, to form ball-and-socket joints, and a flexible electric connection between said holders and the supports.

23. In an electric switch, the combination with a plurality of fixed contacts, of an electromagnet, a contact-support adapted to be moved toward said contacts by the movable member of said magnet, and a plurality of contacts each of which is independently and movably mounted on said support.

24. In an electrically-operated switch, the combination with the energizing-coil, of fixed contacts, a movable core for the coil, contacts carried by the core each non-concentric with the axis of the core, a stationary sleeve of non-magnetic material between the coil and core, a longitudinal slot in said sleeve, and a pin carried by the core and engaging in the slot in the sleeve to prevent rotation of the core.

25. An electric switch, which comprises a box of magnetic material provided with a hole, a coil inclosed and supported thereby, an insulating-base on which said box is mounted, said base being provided with a hole registering with the hole in the box, contacts on the side of the base opposite to the box, a core for the coil, which moves through the holes in the box and base, and contacts carried by the core to engage the contacts on the base.

705,088. ELECTRIC RAILWAY. FREDERIC W. HILD and SAMUEL B. STEWART, Jr., Schenectady, N. Y., assignors to General Electric Company, a Corporation of New York. Filed Nov. 30, 1900. Serial No. 38,133. (No model.)

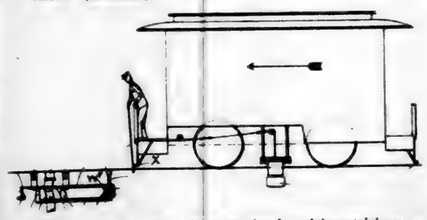

Claim.—1. In a railway having a closed conduit containing a conductor arranged to be engaged by a car-collector traveling through a comparatively narrow longitudinal slot, the combination with a cover for an opening into the conduit at a place where it is desired to remove the collector from the conduit, of underground mechanism connected with the cover, and constructed and arranged to be operated by the car to move said cover.

2. In a railway having a closed conduit containing a conductor arranged to be engaged by a car-collector traveling through a comparatively narrow longitudinal slot, the combination with a cover for an opening in the conduit at a place where it is desired to remove the collector from the conduit, of underground mechanism connected with the cover, and constructed and arranged to be operated by the car to move said cover to both open and close said opening.

3. In a railway having a closed conduit containing a conductor arranged to be engaged by a car-collector traveling through a comparatively narrow slot, the combination with a cover for an opening in the conduit at a place where it is desired to remove the collector from the conduit, of

underground mechanism connected with the cover and constructed and arranged to be operated by the wheels of a car to move said cover.

4. In a railway having a closed conduit containing a conductor arranged to be engaged by a car-collector traveling through a comparatively narrow slot, the combination with a cover for an opening in the conduit at a place where it is desired to remove the collector from the conduit, of underground mechanism connected with the cover and constructed and arranged to be operated by the wheels of a car to move said cover so as to both open and close said opening.

5. In a railway having a closed conduit containing a conductor arranged to be engaged by a collector traveling through a comparatively narrow slot, the combination with a cover for an opening in the conduit at a place where it is desired to remove the collector from the conduit, of mechanism beneath the surface of the roadway for moving said cover, and buttons arranged to be depressed by the wheels of a car to operate said mechanism.

6. The combination with a conduit-cover, of normally inoperative means which is operated by the car, for moving the cover, and means for rendering said means operative.

7. The combination with a conduit-cover, of normally inoperative means which is operated by the car, for moving the cover, and means controlled from the car for rendering said means operative.

8. The combination with a conduit-cover, of mechanism for operating the cover, a normally depressed button operated by a forward car-wheel to actuate the mechanism to open the cover, and a normally depressed button operated by a rear car-wheel to actuate the mechanism to close the cover.

9. The combination with a conduit-cover, of mechanism for operating the cover, an opening-button which is depressed by a forward car-wheel to actuate the mechanism to open the cover, and a normally depressed button which is raised when the opening-button is depressed and is then depressed by a rear car-wheel to close the cover.

10. The combination with a conduit-cover, of mechanism for operating said cover, a normally depressed opening-button adapted when raised to be depressed by a car, means for raising said button, means whereby when said button is depressed, it actuates said mechanism to open the cover, a normally depressed closing-button, and means whereby the actuation of said mechanism to open the cover, raises the closing-button, and whereby the depression of the latter actuates said mechanism to close the cover.

11. The combination with a conduit-cover, of mechanism for operating said cover, a normally depressed opening-button adapted when raised to be depressed by a car, two normally depressed closing-buttons, one in front and one in rear of the opening-button, each adapted when raised to be depressed by a car, and both being normally incapable of being raised, means controlled by a car moving in either direction, for raising the opening-button, and rendering the rear button with respect to the direction of movement of the car, capable of being raised, means whereby when the opening-button is depressed, it actuates the mechanism to open the cover, means whereby when said mechanism is so actuated, the rear opening-button is raised, and means whereby when the rear opening-button is depressed, it actuates said mechanism to close the cover.

12. The combination with a conduit-cover, of mechanism for operating the cover, a normally depressed opening-button, a toggle-support therefor, a toggle-rod for knuckling the toggle-support and thereby raising the button and means operated by a car moving in either direction to move the toggle-rod always in one direction.

13. The combination with a conduit-cover, of a button for opening the cover, a toggle-support therefor, a toggle-rod for knuckling the toggle and thereby raising the button, a reversing-lever connected to the toggle-rod, and a lever operated by a car moving in one direction to engage the toggle-lever and move it to knuckle the toggle, and operated by a car moving in the other direction to engage the reversing-lever to move the toggle-lever in the same direction as before to knuckle the toggle.

14. The combination with a conduit-cover, of a button which is depressed by a forward car-wheel to open the cover, independently-supported closing-buttons, one before and the other behind said button, means whereby the depression of the opening-button raises the closing-button which is to the rear with respect to the direction of motion of the car, so that it can be depressed by the rear car-wheel to close the cover, and means operated by the car for adapting said rear closing-button to be raised by the depression of the opening-button.

15. The combination with a conduit-cover, of mechanism for operating the cover, a button which is depressed by a forward car-wheel to actuate said mechanism to open the cover, independently-supported closing-buttons, one before and the other behind said button, a dog-rod for the closing-buttons which has connection with said mechanism, whereby the closing-button on the rear of the opening-button with respect to the motion of the car, is raised when the opening-button is depressed, and means operated by the car for preliminarily raising the opening-button and for moving the dog-rod to make said rear closing-button operative by said mechanism.

16. The combination with a conduit-cover, of mechanism for operating the cover, a button which is depressed by a forward car-wheel to actuate said mechanism to open the cover, means operated by the car for raising said button, and a button in the rear of the opening-button and having connection with said mechanism whereby it is raised when the opening-button is depressed, and whereby it actuates the mechanism to close the cover when it is depressed by a rear-car-wheel.

17. The combination with a conduit-cover, of mechanism for operating the cover, an opening-button which in being depressed, actuates said mechanism, a toggle-support for said button, means for knuckling the toggle to raise the opening-button, a closing-button which is raised by the depression of the opening-button through said mechanism, and is depressed to close the cover through said mechanism, an unknuckling toggle-rod, and means operated by the closing-button through said mechanism to actuate said unknuckling toggle-rod.

18. The combination with a conduit-cover, of a button, a toggle-support therefor, a plunger controlled by the button, a bell-crank lever operated by the plunger, and mechanism controlled by said lever for opening the cover.

19. The combination with a conduit-cover, of an opening-button, mechanism controlled thereby for operating the cover, a shaft which is rocked by the operation of said mechanism, arms carried by said shaft, a support carried by the arms, a dog reciprocally mounted on the support, and an independently-mounted closing-button which is raised by said dog.

20. The combination with a conduit-cover, an opening-button, a toggle-support therefor which is knuckled to raise the button, mechanism which is operated by the depression of the button to open the cover, a closing-button which is connected to the mechanism so as to be raised thereby, and to operate the mechanism to close the cover when the closing-button is in turn depressed, and a device operated by the mechanism when the latter is actuated by the depression of the closing-button, to unknuckle the toggle.

21. The combination with a conduit-cover, of a button, a toggle-support therefor, means for knuckling the toggle to raise the button, mechanism operated by the depression of the button to open the cover, means for actuating the mechanism to open the cover, a rock-shaft operated by said mechanism, an arm carried by the shaft, a link suspended from the arm and a bell-crank lever actuated by the link to unknuckle the toggle.

22. In a railway of the type described, the combination with a conduit-cover, of a button adapted to be depressed by a car-wheel, mechanism below the roadway for operating the cover, and operating connections between said button and mechanism.

23. In an electric railway of the type described and having an opening at the place desired for the vertical movement of the car-collector, the combination with a cover for the opening, and comprising two parts, of fixed supports, swinging levers pivoted to the cover parts and to said supports, and operating-lever connected to the respective parts of the cover, whereby the latter can be swung back and forth on the swinging levers to open and close the opening in the conduit.

705,084. STENCILING-MACHINE FOR BUTTONS. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 17, 1902. Serial No. 103,414. (No model.)

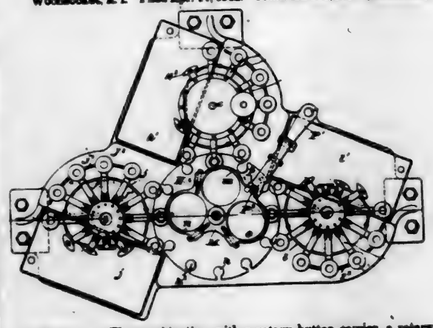

Claim.—1. The combination with a rotary button-carrier, a rotary stencil-carrier, and stencils thereon overlapping the edge of the button-carrier, of means for rotating the carriers in unison, and means for projecting liquid through the stencil when in position above a button in the button-carrier.

2. The combination with a button-carrier, and a stencil-carrier, of means for moving them intermittently in unison, and means for project-

ing liquid through the stencil when at rest in its position above the button in the carrier.

3. The combination with a button-carrier, and a stencil-carrier, of means for moving them intermittently in unison, a liquid-reservoir, and means for projecting liquid therefrom through the stencil when the stencil is in its position above the button in the reservoir.

4. The combination with a button-carrier, a stencil-carrier, and means for moving them intermittently in unison, of a liquid-reservoir, means for moving it into position over a stencil and button at rest in their carriers, and means for projecting liquid from the reservoir through the stencil in said position.

5. The combination with a button-carrier having button-seats near its edge, a stencil-carrier adjacent to the button-carrier, stencils attached to the carrier projecting over the button-seats, means for intermittently moving the stencils over the button-seats, a liquid-reservoir and means for projecting liquid therefrom through a stencil in position over a button-seat.

6. The combination with a button-carrier and a stencil-carrier secured to parallel shafts, of button-seats near the periphery of the button-carrier, stencils carried by their carrier and projecting over said button-seats, a liquid-reservoir and means for projecting liquid therefrom through a stencil when in position over a button in one of the seats.

7. The combination of a button-carrier, a stencil-carrier and means for causing them to move intermittently in unison to bring a stencil into position over a button, of means for projecting liquid through the stencil when in position and means for cleansing the stencil after each operation.

8. The combination of two parallel shafts, a button-carrier secured to one shaft, a stencil-carrier secured to the other shaft, means for causing the shafts to rotate intermittently in unison, means for holding the shafts at rest when a stencil is over a button, and means for projecting liquid through the stencil while at rest.

9. The combination with a button-carrier, and a plurality of stencil-carriers, of means for intermittently moving all the carriers in unison, a liquid-reservoir for each stencil-carrier, and means for projecting liquid from each reservoir through one of its stencils while in position over a button-carrier.

10. The combination with a button-carrier and a plurality of stencil-carriers, of means for intermittently moving all of the carriers in unison and simultaneously bringing a stencil of each carrier to rest over a button in the button-carrier.

11. The combination with a button-carrier and a plurality of stencil-carriers, of means for intermittently moving all of the carriers in unison and simultaneously bringing a stencil of each carrier to rest over a button in the button-carrier, a liquid-reservoir for each stencil-carrier, and means for simultaneously projecting liquid from the reservoir through each positioned stencil upon its button in the carrier.

12. The combination with a button-carrier provided with a button-seat and a plurality of stencils in line of movement of the seat, of means for intermittently moving the carrier to bring the seat into position consecutively under all of said stencils, and means for projecting liquid through each stencil when in position over a button in the seat.

13. The combination with a button-carrier provided with a button-seat and a plurality of stencils in line of movement of the seat, of means for intermittently moving the carrier and the stencils to bring the seat into position consecutively under all of said stencils, and means for projecting liquid through each stencil when in position over a button in the seat.

14. The combination with a vertical shaft, and a button-carrier secured thereto and having button-seats annularly located near its periphery, of a plurality of vertical shafts arranged around the button-carrier shaft, a stencil-carrier secured to each of the surrounding shafts, stencils attached to each carrier equal in number and spaced to correspond in position with the button-seats, means for rotating all the shafts in unison and causing a stencil of each carrier to simultaneously rest in position over a button-rest, and means for projecting liquid simultaneously through all of the resting stencils.

15. The combination with a vertical shaft, a button-carrier secured thereon, a parallel shaft, a stencil-carrier secured thereon, and a notched disk secured to each of said shafts, of a lever pivoted to the frame adjacent to each of said disks, a roller on each lever, springs for normally holding said rollers against the peripheries of the disks, means for intermittently rotating the shafts in unison and means for increasing the tension of the springs during each movement of the disks.

16. The combination with a vertical shaft, a button-carrier secured thereon, a parallel shaft, a stencil-carrier secured thereon, and a notched disk secured on each of said shafts, of a lever pivoted to the frame adjacent to each of said disks, a roller on each lever, springs for normally holding said rollers against the peripheries of the disks, gearing connecting the shafts, a ratchet-wheel on the button-carrier shaft, a pawl-lever pivoted to the frame, a pawl thereon engaging the ratchet-wheel, means for oscillating the pawl-lever, and a bar attached to the pawl-lever and connected to the springs.

705,085. STENCIL-CARRIER FOR BUTTON-STENCILING MACHINES. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 17, 1902. Serial No. 103,415. (No model.)

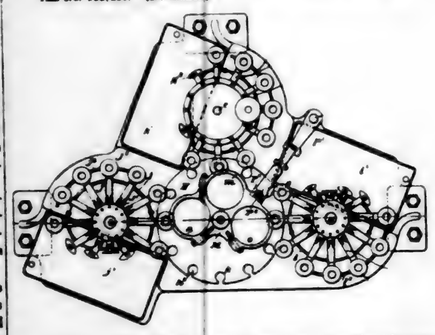

Claim.—1. In a button-stenciling machine, a stencil-carrier comprising a hub and radial arms or stencil-holders hinged thereto in combination with a button-carrier and a guide-bar for supporting the outer ends of the stencil-holders above the button-carriers.

2. In a button-stenciling machine, a stencil-carrier comprising a hub and radial arms or stencil-holders hinged thereto in combination with a button-carrier having button-seats, means for moving the carriers in unison to bring a stencil in a holder above a button in a seat in the carrier, and a guide-bar for supporting the holder above the button-carrier until the holder reaches a position above the button in the seat.

3. In a button-stenciling machine, a stencil-carrier comprising a hub and radial arms or stencil-holders hinged thereto in combination with a button-carrier having button-seats, means for moving the carriers in unison to bring a stencil in a holder above a button in a seat in the carrier, and a guide-bar for supporting the holder above the button-carrier until the holder reaches a position above the button in the seat, said guide-bar being provided with a notch into which the stencil-holder drops when that position is reached.

4. In a button-stenciling machine, a stencil-carrier comprising a hub, and radial arms or stencil-holders hinged thereto in combination with a button-carrier having button-seats, means for moving the carriers in unison to bring a stencil in a holder above a button in a seat in the carrier, and a guide-bar for supporting the holder above the button-carrier until the holder reaches a position above the button in the seat, said guide-bar being provided with a notch into which the stencil-holder drops when that position is reached, and means for raising the holder out of the notch at the end of its resting period.

5. In a button-stenciling machine, a stencil-carrier comprising a hub and radial arms or stencil-holders hinged thereto in combination with means for rotating the carrier, a guide-bar for supporting the holders during such rotation, said guide-bar being depressed for part of its extent, and a tank for containing liquid through which the stencil-holders travel while passing over the depressed portion of the guide-bar.

6. In a button-stenciling machine a stencil-carrier comprising a hub having radial openings in its periphery, plugs secured in said openings and stencil-holders consisting of metal plates pivoted on horizontal pins in the outer ends of the plugs, said plates being enlarged at their outer ends to support the stencils.

705,086. PIGMENT-SPRAYING MECHANISM FOR BUTTON-STENCILING MACHINES. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 17, 1902. Serial No. 103,416. (No model.)

Claim.—1. The combination with a button-carrier and a stencil-carrier, and means for rotating them intermittently in unison to bring the stencils above the buttons, of a pigment-reservoir, a carrier above the button-carrier supporting said reservoir, and mechanism whereby the pigment-reservoir carrier is oscillated during each movement and rest of the button-carrier.

2. The combination with a vertical shaft, a button-carrier secured thereto, and a pigment-carrier loosely journaled on the shaft above the button-carrier, of a vertical rock-shaft, a radial arm thereon engaging the pigment-carrier at its outer end, means for intermittently rotating the button-carrier shaft, and means for giving the rock-shaft and arm one complete oscillation during each movement of the button-carrier shaft.

3. The combination with a button-carrier, a stencil-carrier, and means for bringing a stencil in the stencil-carrier in position above a button in the button-carrier, of a pigment-reservoir above the stencil-carrier, means for moving it beyond the button before the stencil is positioned and into position over the stencil when at rest, and means for projecting pigment through the stencil upon the button.

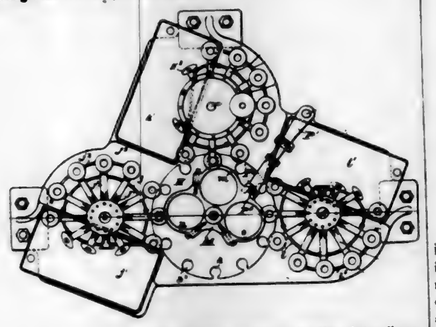

4. The combination with a button-carrier, a plurality of stencil-carriers, and means for positioning a stencil of each stencil-carrier over a button in the button-carrier, of a pigment-reservoir carrier above the button-carrier, means for moving the pigment-reservoirs beyond the button-seats before the stencils are positioned over them and back into position over the stencils when positioned over the button-seats, and means for simultaneously projecting pigment from all the reservoirs through the respective stencils upon the buttons.

5. The combination in a stenciling-machine of a pigment-reservoir in the form of an atomizer or sprayer, an inlet for an air-current thereto, intermittently-moving stencil and button carriers, and means for cutting off the air-current while the carriers are in motion.

6. The combination in a stenciling-machine of a shaft, means for intermittently rotating it, a stencil-carrier on the shaft, a spraying pigment-reservoir above the carrier, and means for bringing the sprayer into action when the stencil-carrier is at rest.

7. The combination in a stenciling-machine of a shaft, means for intermittently rotating it, a stencil-carrier on the shaft, a spraying pigment-reservoir above the carrier, an air-conduit leading to the reservoir, a normally closed escape-valve in said conduit, and a cam on the carrier-shaft timed to open said valve and permit the air to escape while the carrier is in motion.

705,087. WATER-WHEEL. JOHN W. HOUTS, Republic, Mo. Filed Mar. 29, 1902. Serial No. 100,563. (No model.)

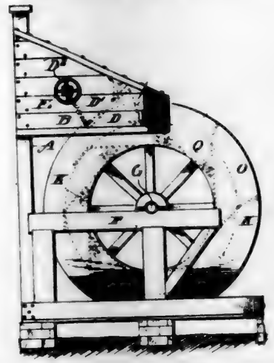

Claim.—1. An overshot water-wheel having a series of stationary buckets, tubular valves, one positioned in each bucket, and stops for retaining said valves in the buckets, as set forth.

2. An overshot water-wheel having a series of stationary buckets, a space intervening between the inner end of each bucket and the wall of an adjacent bucket, and a tubular valve positioned in each bucket and adapted to close said space while the bucket is being loaded with water, as set forth.

705,088. ENGINE VALVE-GEAR. OLE HOVE, Ripon, Wis. Filed May 6, 1901. Serial No. 58,884. (No model.)

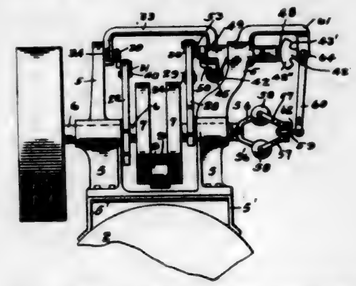

Claim.—1. The combination, with the engine provided with a cylinder, piston, crank-shaft and connecting members, said cylinder having independent inlet and exhaust valves, of a valve-gear comprising throw-rods 34 and 49, means connecting said throw-rods with said inlet and exhaust valves, a yoke connecting said throw-rods, an interposed resistance device, and a governor connected directly with the throw-rod that controls the steam-inlet valve, substantially as described.

2. The combination, with the engine provided with independent inlet and exhaust valves, of the reversing and throw-rod lever 34, the throw-rod 49, a yoke connecting said throw-rods, a governor positively connected with one of said throw-rods, and a resistance device interposed between said throw-rods, for the purpose set forth.

3. The combination, with the engine-boiler, of the cylinder, engine-frame and piston mounted upon said boiler, the center crank-shaft connected with the piston-rod of said engine, the throw-rods 34 and 49, one of said throw-rods being connected with the engine-reversing lever, means connecting said throw-rods through an interposed resistance device, a governor, and means connecting said governor with the throw-rod that controls the steam-inlet valve, for the purpose set forth.

4. The combination, with the engine, provided with a cylinder, piston, and piston-operating parts, and with independent inlet and exhaust valves, of a center crank-shaft, a governor driven by the engine, and variable throw-levers connected with the inlet and exhaust valves, substantially as described.

5. The combination, with the engine provided with the independent inlet and exhaust valves, of the crank-shaft, throw-levers arranged upon opposite sides of said crank, means connecting said throw-levers, and a governor connected with and controlling the lever that operates the inlet-valve, for the purpose set forth.

6. The combination, with the engine provided with independent inlet and exhaust valves, of the center crank-shaft, throw-levers arranged at opposite sides of said center crank, means for simultaneously operating both of said levers, and a governor connected with and adapted to operate independently the throw-rod that controls the inlet-valve, substantially as described.

7. The combination, with the engine provided with independent inlet and exhaust valves, of the center crank-shaft, throw-rods arranged upon opposite sides of said center crank and connected with said inlet and exhaust valves, a lever for operating or reversing simultaneously the position of both of said throw-levers, and a governor connected with and adapted to operate independently the throw-lever that controls the inlet-valve, for the purpose set forth.

8. The combination, with the engine, provided with independent inlet and exhaust valves, of the crank-shaft 6, the throw-levers 34 and 49, the yoke 33 connected with said levers, an interposed resistance device, and a governor connected with and arranged to operate the throw-lever that controls the inlet-valve, for the purpose set forth.

9. The combination, with the engine and the inlet and exhaust valves, of the throw-levers connected with said valves, the yoke 33 connecting said levers, the interposed resistance device, and a governor connected with the throw-lever that controls the inlet-valve, substantially as described.

10. The combination, with the engine, provided with the independent exhaust-valve, of the reversing and throw lever 34, the connecting-bar 39, the vertically-movable block 31, to which said bar 39 is connected, and the link or rod 40 connecting said block with the exhaust-valve rod, for the purpose set forth.

705,089. DUST-APPLICATOR. TILMAN H. HUNT, Albany, Mo. Filed Apr. 26, 1902. Serial No. 104,803. (No model.)

Claim.—1. The combination of a center board having a rigidly-attached block beneath its front end, a dust-retainer on the forward end thereof provided with an inlet and cap and a block-strip set vertically on its front, a separable sectional tube having connection with the retainer through said block-strip, a port in the front of the retainer near its base and its valve, a port set oppositely in the back of the retainer near its base and its valve, a bellows secured to the upper side of the rear end of the center board having communication with the interior of the retainer through the port at the rear end thereof, a bellows secured to the under side of the rear end of the center board and the portway forming connection between said bellows and the port in the front end of the retainer, the handle and its L pivoted to a side edge of the center board and the oppositely-extended arms having loose-joint connection with the end of said L, a side brace and the straps having loose-joint connection with the opposite ends of said arms and rigid connection with the ends of said brace, the curved metal straps forming connection between the upper rear corners of the retainer and the side edges of the center board, the corresponding openings therein and the handbold and its rod adapted to adjustment in said holes, substantially as described.

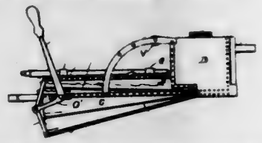

2. In a dust-applicator the combination with a center board and an upper and under bellows attached thereto, and the handle and connecting mechanism adapted to expand one bellows and simultaneously contract the other, of a dust-retainer on the forward end of the center board provided with an inlet for receiving and an outlet for expelling the dust, a port and valve at the rear end thereof in proximity to the base having connection with the upper bellows, a port and valve at the front end thereof also in proximity to its base, a downwardly and rearwardly extended portway forming connection beneath the retainer between said port and the under bellows, and a shield rigidly set within the retainer over each valve and back of its spring-arm, substantially as described.

3. In a dust-applicator the combination with the center board, a bellows attached on the top thereof and a bellows attached on the under side thereof, of a handle and an L thereon having pivotal connection at the L angle with an edge of the center board, the oppositely-extended arms having loose-joint connection with the end of the L, the strap across the top of the upper bellows and the strap beneath the bottom of the under bellows, each having loose connection with their respective arms, and the brace at the side of the bellows opposite said arms having rigid connection with the straps to secure opposite simultaneous expansion and contraction of the bellows as the handle is vibrated, substantially as shown and described.

4. The combination in a dust-applicator with the center board, the upper and under bellows and the retainer, of a port in the front end of the retainer near the bottom, the portway backward through the base of the retainer to a connection with the under bellows, a valve within the retainer, a spring-arm to hold said valve in position and close said port, and a shield set against the end of the retainer and above the valve to prevent the dust falling back of the valve into the port, substantially as described.

5. In a dust-applicator in combination with a center board provided with a lateral extension at the back end, concave at its rear edge, a dust-retainer at the front end of said board provided with inlet, outlet and valves, and the necessary manipulating mechanism, of a bellows attached centrally on said center board its base being on a horizontal with the base of the retainer and its front end connected with the back of the retainer its top spaced from said board, a bellows attached to the under side of said board its front end, projected, beneath the retainer and its base board spaced below said center board, and the guards extended longitudinally around each bellows to prevent the leather protruding when filled with air, substantially as described and shown.

6. In a dust-applicator the combination of a center board and a dust-retainer at one end thereof, a bellows on top and beneath said board each of greater width at its rear end than at its front and having valve connection, respectively, with the rear and front ends of said retainer close to the center board, the separable sectional tube for applying the dust, the holders provided for said tube-sections and the means for operating the bellows, substantially as described and shown.

705,090. ADVERTISING DEVICE. CHARLES E. JOHNSON, Malden, Mass. Filed Nov. 15, 1901. Serial No. 82,355. (No model.)

Claim.—1. An advertising device consisting of a flexible resilient board or card bearing upon its outward face the words of the advertising matter, with resonant appliances, as bells, secured on the face of said board or card, each bell provided with a shank and eye which extends through the board or card and secured by a dished disk and a spring-pin or ring, as set forth.

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2. An advertising device consisting of a resilient board or card bearing upon its outward face the words of the advertising matter, the said card attached to a suitable support, with resonant appliances, as bells, attached directly to the said board or card, each bell provided with a shank and eye which extends through the board or card, and secured by a resilient disk and a spring-pin or ring, as set forth.

3. An advertising device consisting of a resilient board or card bearing upon its outward face the advertising matter the said card attached to a suitable support, means for vibrating the board or card comprising an electrical circuit-breaker or buzzer upon the back of the board or card, with resonant appliances, as bells, rigidly attached to the said board or card, each bell provided with a shank and eye which extends through the board or card and secured by a resilient disk and a pin or ring, as set forth.

4. An advertising device consisting of a resilient board or card having upon its outward face the words of the advertising matter, the said card attached to a suitable support, means for vibrating the board or card comprising an electrical circuit-breaker or buzzer, with resonant appliances, as bells, rigidly attached to the said board or card, each provided with a shank and eye which extends through the board or card and secured by a resilient disk and a pin or ring, as set forth.

705,091. VALVE FOR WOOD-PULP DIGESTERS. JOSEPH JOULE, Belleville, N. J., assignor to Eastwood Wire Manufacturing Company, Belleville, N. J., a Corporation of New Jersey. Filed May 23, 1902. Serial No. 108,615. (No model.)

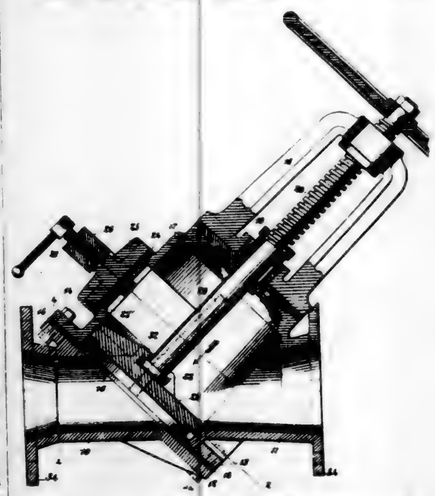

Claim.—1. The valve-casing comprising the sections 10 and 11 flanged at their meeting ends and forming the passage for the pulp, and the valve ring or seat 16 held between said flanges, said section 10 forming a horizontal oval in cross-section and at its inner end extending at an angle of about forty-five degrees to the longitudinal plane of said section, combined with the valve-disk and its operating-stem; substantially as and for the purposes set forth.

2. The valve-casing comprising the sections 10 and 11 flanged at their meeting ends and forming the passage for the pulp, and the valve ring or seat 16 held between said flanges, said section 10 forming a horizontal oval in cross-section and at its inner end extending at an angle of about forty-five degrees to the longitudinal plane of said section, and the said section 11 being formed with the section 17 constituting a chamber for the valve-disk and having the opening for the admission of said disk, combined with the valve-disk and its operating-stem; substantially as set forth.

3. The valve-casing comprising the sections 10 and 11 flanged at their meeting ends and forming the passage for the pulp, and the valve ring or seat 16 held between said flanges, said section 10 forming a horizontal oval in cross-section and at its inner end extending at an angle of about forty-five degrees to the longitudinal plane of said section, and the said section 11 being formed with the section 17 constituting a chamber for the valve-disk and having the opening 23 and flanges 27, combined with the plates 24, 25, for said opening, the hooked clamping-frame 26 to pass over said plates and engage said flanges, the binding-screw 28 carried by said frame, and the valve-disk and operating-screw; substantially as set forth.

4. The valve-casing comprising the sections 10 and 11 flanged at their meeting ends and forming the passage for the pulp, and the valve ring or seat 16 held between said flanges, said section 10 forming a horizontal oval in cross-section and at its inner end extending at an angle of about forty-five degrees to the longitudinal plane of said section, and said section 11 having the section 17 for the valve-disk and a circular outer end into which the inner surfaces of said section merge on diverging lines, combined with the valve-disk and its operating-screw; substantially as set forth.

5. The valve-casing comprising the sections 10 and 11 flanged at their meeting ends and forming the passage for the pulp, and the valve ring or seat 16 held between said flanges and being without said passage so as not to obstruct the same, the said section 11 being formed with the section 17 constituting a chamber for the valve-disk and having the opening 23 and closure therefor, combined with the valve-disk, the operating-screw therefor, and the frame mounted on said section 17 for said screw; substantially as set forth.

705,092. SUPERVISORY RELAY. WILLIAM KAISLING, Chicago, Ill., assignor to Kellogg Switchboard and Supply Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 4, 1901. Serial No. 45,984. (No model.)

Claim.—1. The combination with an electromagnet, of an armature situated opposite the pole thereof, and a mounting for said armature comprising a spring passing across the inner face of said armature and secured at one end to the armature and at the opposite end to a suitable support, substantially as described.

2. The combination with an electromagnet, of an armature situated opposite the pole thereof and adapted to occupy an upright position, of a mounting for said armature comprising a spring passing across the face of the armature and secured at one end to the lower edge of said armature and to a suitable support at the upper end, substantially as described.

3. The combination with an electromagnet and the core thereof, of an inclosing shell of magnetic material, an armature situated opposite the ends of said core and shell and a mounting for said armature comprising a spring passing between the poles of the magnet and the armature and secured at one end to the edge of said armature and at the other end to the end of said shell, substantially as described.

4. The combination with an electromagnet, of an armature situated opposite the pole thereof, and a mounting therefor comprising a spring located between the pole and the armature and having one end inserted in a slot provided near the edge of the armature and having the other end secured to a suitable support, substantially as described.

5. The combination with an electromagnet, of an armature situated opposite the pole thereof, and a mounting therefor comprising a spring placed between the pole and armature and having one end inserted in a slot provided near the edge of said armature the periphery of said armature being prick-punched in the vicinity of said inserted end to secure the same in position, the opposite end of said spring being mounted upon a suitable support, substantially as described.

6. The combination with an electromagnet, of an armature situated opposite the pole thereof, a mounting for said armature comprising a spring passing across the face thereof and secured at one end to the armature and at the opposite end to a suitable support and a pair of contacts one carried upon said armature and the other upon the end of the core of said electromagnet and adapted to be closed together when the armature is attracted, substantially as described.

7. The combination with an electromagnet, of an armature situated opposite the pole thereof, a mounting therefor comprising a spring secured at one end to the armature and at the other end to a suitable support, a pair of contacts one carried upon said armature and the other upon the end of said core, said spring being provided with an opening to permit said contacts to engage when the armature is attracted, substantially as described.

8. The combination with an electromagnet, of an insulating-block mounted upon the end of the core thereof, a contact mounted upon said block, an armature situated opposite the end of said core, a mounting for said armature comprising a spring passing across the face of the armature and secured at one end to the edge of said armature and at the other end to a suitable support and a contact carried upon said armature and adapted to engage the contact on the core when the armature is attracted, substantially as described.

9. The combination with the core of an electromagnet, of a winding mounted on the core, and an insulating-block surrounding the end of said core, an insulating-piece inserted in an opening in the end of said core, a spring secured at one end to said insulating-block and carrying a contact adapted to rest against said insulating-piece, a shell of magnetic material surrounding the winding of said electromagnet, an armature situated opposite the pole of said electromagnet and a mounting for said armature comprising a spring secured at one end to the edge of said armature and at the other end to the end of said shell, substantially as described.

10. The combination with an electromagnet, of an armature situated opposite the pole thereof, a mounting for said armature comprising a strip of metal located between the pole and armature and serving as a spring and secured at one end to the armature and at the opposite end to a suitable support, a contact carried upon said armature, and an electrical circuit adapted to include said contact, the metal of said armature and said spring, substantially as described.

11. The combination with an electromagnet, comprising a core and a winding surrounding the same and a shell of magnetic material surrounding said winding, of a contact carried upon the end of said core, an armature situated opposite the end of said core, a mounting therefor, comprising a spring passing across the face of the armature and secured at one end to the armature and at the other end to the end of said shell, a contact carried upon said armature and adapted to engage the contact on the end of said core, a leading-in conductor mounted upon and electrically connected with the rear end of said shell, and three leading-in conductors passing through and insulated from the end of said shell, two of the same being connected with opposite ends of the magnetic winding and the third being connected with the contact mounted upon the end of said core, substantially as described.

12. The combination with an electromagnet, of an armature situated opposite the pole thereof, and a mounting for said armature comprising a spring secured to said armature and to a suitable support and contained wholly within the periphery of the armature, substantially as described.

13. The combination with an electromagnet and the core thereof, of an inclosing shell therefor, an armature situated opposite the ends of the core and armature, a mounting for the armature comprising a spring-strip extending across the end of the magnet and between the poles thereof and the armature, said strip being confined within the limits of the armature and shell substantially as described.

14. The combination with an electromagnet and the core thereof, of an inclosing shell of magnetic material, an armature situated opposite the ends of said core and shell and a mounting for said armature comprising a spring secured at one end to the edge of said armature and at the other end to the end of said shell, substantially as described.

15. The combination with an electromagnet and the core thereof, of an inclosing shell, an armature situated opposite the ends of said core and shell, and means for permanently securing said armature directly to the shell, substantially as described.

16. The combination with an electromagnet, and a core therefor, of an inclosing shell of magnetic material forming a portion of the magnetic circuit of the magnet, an armature situated opposite the ends of said core and shell and adapted to be attracted thereby, said armature being permanently secured to said shell so as to be carried directly thereby, substantially as described.

17. The combination with an electromagnet and the core thereof, of an inclosing shell, an armature situated in front of the ends of said core and shell, a removable cap fitting upon the end of the shell and adapted to inclose the end of the same and the armature, said armature being mounted independently of the cap, whereby the latter is removable without disturbing the armature in its relation to the shell, substantially as described.

18. The combination with an electromagnet and the core thereof, of

an inclosing shell of magnetic material forming a part of the magnetic circuit, an armature situated opposite the ends of said core and shell, and a mounting for said armature adapted to permit it to move bodily in a right line opposite the poles of the magnet, substantially as described.

19. The combination with an electromagnet and a core therefor, of an inclosing shell of magnetic material, an armature situated opposite the ends of said core and shell and a mounting for said armature comprising a spring of non-magnetic material passing across the inner face of said armature and secured at one end to the armature and at the opposite end to a suitable support, substantially as described.

20. The combination with an electromagnet, of an armature situated opposite the pole thereof, and a mounting for said armature comprising a spring passing across the inner face of said armature and secured at the opposite end to a suitable support, substantially as described.

21. The combination with an electromagnet and the core thereof, of an inclosing shell, an armature situated in front of the ends of said core and shell, means for mounting said armature directly upon the shell, and a removable cap for closing the end of the shell and inclosing the armature, said cap being entirely independent and free from the armature, substantially as described.

22. The combination with an electromagnet and the core thereof, of an inclosing shell of magnetic material forming a portion of the magnetic circuit for the magnet, an armature situated opposite the ends of said core and shell and adapted to be attracted thereby, said armature being directly carried by the shell, and a removable cap for closing the end of the shell and inclosing said armature, said cap being entirely independent and free from the armature, substantially as described.

23. The combination with an electromagnet and the core thereof, of an inclosing shell, an armature situated in front of the ends of said core and shell, a removable cap fitting upon the end of the shell and adapted to inclose the end of the same and the armature, said armature being mounted independently of the cap, whereby the latter is removable without disturbing the armature in its relation to the shell, and an adjustable stop for the armature carried by the cap, substantially as described.

24. The combination with an electromagnet and the core thereof, of an inclosing shell of magnetic material forming a part of the magnetic circuit, an armature situated opposite the ends of said core and shell, a spring-mounting for said armature adapted to permit it to move bodily in a right line opposite the poles of the magnet, and a stop for the armature, substantially as described.

705,093. SET-SCREW PROTECTOR. THOMAS F. KELLEY, Ligonier, Ind. Filed Mar. 6, 1902. Serial No. 96,876. (No model.)

Claim.—1. A set-screw protector consisting of an internally-screw-threaded tubular sheath, open at its lower end and adapted to firmly inclose the protruding portion of said set-screw, and provided with a removable cap adapted to close the upper end of said sheath by a screw-threaded connection, as described.

2. In a set-screw protector, the combination of an internally-screw-threaded tubular sheath open at its lower end and having a flexible portion between the set-screw and the cap when in position, and a removable screw-threaded cap adapted to close the upper end of the sheath, as described.

3. A set-screw protector consisting of a tubular inclosing sheath internally screw-threaded for the purpose specified, and adapted to be secured in an upright position upon the protruding portion of the set-screw by its own elasticity, as described.

705,094. HEATING APPARATUS. JOSEPH A. KLOER, Piqua, Ohio. Filed Apr. 17, 1901. Serial No. 56,272. (No model.)

Claim.—1. In a heating apparatus of the class described, the combination with the inclosing jacket or casing having means for admitting air therein, of a heater arranged within the jacket or casing and comprising an upright body consisting of spaced upper and lower heating-drums, a plurality of circulating-flues connecting said drums, and a separate tubular fire-chamber communicating at its upper end with the interior of the upper drum and extending entirely through the lower drum, said fire-chamber having an open bottom extension projecting below the plane of the lower drum and receiving therein a burner, the said bottom extension having its lower end open and in direct communication with the interior of the jacket or casing, and also provided above the plane of its bottom opening with an auxiliary air-inlet port, and a fresh-air-supply pipe leading from the said air-inlet port to the outer air.

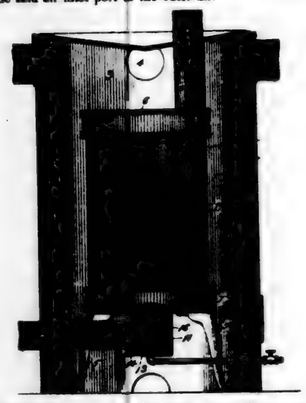

2. In a heating apparatus, the heater comprising upper and lower spaced drums, a plurality of circulating-flues connecting said drums, a separate central tubular fire-chamber connected at its upper end with the bottom of the upper drum and extending entirely through the lower drum, the lower projecting end of the fire-chamber forming a bottom extension for the fuel and provided with a bottom and side air-inlet openings, a vertically-arranged baffle-partition confined between the upper and lower sides of the upper heat-drum and disposed at one side of the vertical plane of the fire-chamber between opposite sets of the circulating-flues, and separate terminal fastenings detachably connecting diametrically opposite ends of the partition with the rim portion of the drum.

705,095. AMALGAMATOR. PAUL A. KNAPPE, Grantville, Ga., assignor, by mesne assignments, to American Amalgamating Company, a Corporation of Georgia. Filed Mar. 7, 1902. Serial No. 97,085. (No model.)

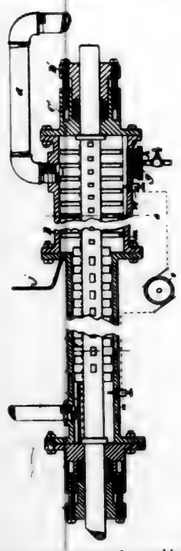

Claim.—1. In an amalgamator, the combination of a mixing-chamber having a pulp-inlet, means for intermingling the pulp and mercury

therein, a settling-chamber having a less restricted space than the mixing-chamber in communication therewith and adapted to receive the intermingled pulp and mercury therefrom, means in said settling-chamber for circulating and opening up said intermingled mass, a gangue-outlet therefrom and a settling-space therein out of the path of travel of the intermingled pulp and mercury.

2. In an amalgamator, the combination of a mixing-chamber, mixing means therein, a settling-chamber communicating with said mixing-chamber and having less restricted space than said mixing-chamber, so located as to receive the intermingled substances from said mixing-chamber, freeing means therein for aiding the free circulation of the particles of pulp, an outlet for said settling-chamber, said settling-chamber having a settling-space out of the path of travel of the intermingled pulp and mercury, and means to cause the passage of the pulp under pressure through said mixing-chamber, settling-chamber and outlet-passage.

3. In an amalgamator, the combination of a mixing-chamber having a pulp-inlet, mixing means therein, a settling-chamber communicating with said mixing-chamber having a less restricted space than said mixing-chamber and so located as to receive the intermingled pulp and mercury therefrom, said settling-chamber having a settling-space out of the path of travel of the intermingled pulp and mercury, and means for dilating the intermingled pulp and mercury during its passage through the amalgamator to aid the circulation of the same and the separation of the heavier from the lighter particles.

4. In an amalgamator, the combination of a mixing-chamber having a pulp-inlet, means for intermingling the pulp and mercury therein, a settling-chamber having a less restricted space than the mixing-chamber in communication therewith and adapted to receive the intermingled pulp and mercury therefrom, means in said settling-chamber for circulating and opening up said intermingled mass, a gangue-outlet therefrom, a settling-space therein out of the path of travel of the intermingled pulp and mercury, and a source of electricity connected with the interiors of said chambers to cause passage of the current through the intermingled pulp and mercury.

5. In an amalgamator, the combination of a mixing-chamber, mixing means therein, a pulp-inlet therefor, a substantially horizontal settling-chamber communicating therewith and having an outlet for the gangue at the other end thereof, said settling-chamber having a less restricted space than said mixing-chamber and having a settling-space outside the path of travel of the intermingled pulp and mercury and means to dilute the pulp during its passage through the amalgamator.

6. In an amalgamator, the combination of a cylinder, a pulp-inlet therefor, mixing means within said cylinder, a larger, substantially horizontal, stationary cylinder opening therefrom having unobstructed communication and being in substantial alinement therewith, freeing means therein, and an outlet-passage leading from said latter cylinder.

7. An amalgamator comprising distinct mixing and settling chambers in open communication, having respectively distinct mixing and freeing means therein, said settling-chamber having less restricted space than said mixing-chamber and having a settling-space out of the path of travel of the intermingled pulp and mercury, and means for causing the pulp to circulate through said chambers under pressure.

8. An amalgamator comprising distinct mixing and settling chambers in open communication, mixing means in said mixing-chamber, said settling-chamber having less restricted space than said mixing-chamber and having a settling-space out of the path of travel of the intermingled pulp and mercury, means for causing the pulp to circulate through said chambers under pressure, and means for diluting the pulp in its passage.

9. In an amalgamator, a closed amalgamating-receptacle having inlet and outlet passages and comprising a mixing-chamber with mixing means therein, and a settling-chamber, of less restricted space than said mixing-chamber, with settling or freeing means therein and having a settling-space out of the path of travel of the intermingled pulp and mercury.

10. In an amalgamator, an amalgamating-receptacle, comprising a substantial horizontal mixing-chamber having mixing means therein communicating with a substantially horizontal stationary settling-chamber, of less restricted space than said mixing-chamber, having settling means therein and a settling-space out of the path of travel of the intermingled pulp and mercury.

11. An amalgamator, comprising a mixing-chamber, a settling-chamber having a less restricted space than said mixing-chamber leading therefrom, and vehicle-fluid-inlet passage near the initial end of said settling-chamber, said settling-chamber having a settling-space outside the path of travel of the intermingled pulp and mercury.

12. In an amalgamator a mixing-chamber, a pulp-inlet therefor, mixing means therein, a horizontal chamber of less restricted space communicating therewith at one end and having an overflow-outlet at the other end, and having a settling-space out of the path of travel of the pulp between the inlet and outlet ends.

705,096. METHOD OF AMALGAMATING METALS. PAUL A. KNAPPE, Grantville, Ga., assignor, by mesne assignments, to American Amalgamating Company, a Corporation of Georgia. Filed Mar. 7, 1902. Serial No. 97,086. (No specimens.)

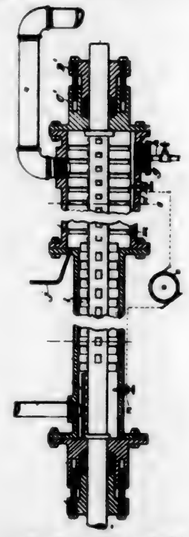

Claim.—1. The herein-described method for amalgamating metals, which consists in producing a pulp, bringing the same into contact with mercury, enforcing an intermingling of the mercury and the pulp, confining the mixed pulp and mercury within a restricted space during such intermingling, thereafter freeing the intermingled pulp and mercury from said restricted space, separating the heavier particles from the lighter by gravitation in a space less restricted for the circulation of the pulp particles, and preventing further intermingling.

2. The herein-described method for amalgamating metals, which consists in producing a pulp, filling a space with said pulp and with mercury in the presence of pressure, and enforcing an intermingling of the two, placing said filled space in communication with a second space, and permitting the latter to be filled with the intermingled pulp and mercury from the first, also in the presence of pressure, freeing the mixture in said second space from the mixture-enforcing action of the first space, settling the amalgam and mercury in said second space, and carrying off the lighter sand and gangue under the pressure therein.

3. The herein-described method for amalgamating metals which consists in producing a pulp, bringing the same into contact with mercury, intermingling the mercury and pulp within a confined space, freeing the intermingled pulp and mercury from said confined space, opening up and freeing the materials thereof in a space less restricted for the circulation of the pulp particles, separating the heavier particles from the lighter by gravitation, and preventing further intermingling.

4. The herein-described method for amalgamating metals which consists in producing a pulp, bringing the same into contact with mercury, enforcing an intermingling of the mercury and the pulp, confining the mixed pulp and mercury within a restricted space during such intermingling, freeing the intermingled pulp and mercury from said restricted space, diluting the same with liquid, separating the heavier particles from the lighter, and settling the same by gravitation, and preventing the reintermingling of the settled particles.

5. The herein-described method for amalgamating metals, which consists in producing a pulp, bringing the same into contact with mercury, intermingling the mercury and pulp within a confined space, freeing the intermingled mass from said confined space, diluting the intermingled pulp and mercury, opening up the materials in the mass thus freed in a less restricted space, separating the heavier particles thereof by gravitation, and preventing the reintermingling of the settled particles.

6. The herein-described method for amalgamating metals, which consists in producing a pulp, introducing the same into a space containing mercury, said space being such that a slight movement of the pulp particles in certain directions results in contact with the mercury, causing such movement of the pulp as to enforce an intermingling of the same with the mercury, passing the mixed pulp and mercury into a space such

that the pulp particles may move with relative freedom without contact with mercury, opening up the material of the mixture by disturbing the same while in this space, permitting the separation of the heavier particles therefrom by gravitation, and preventing further intermingling.

7. The process of amalgamating metals, which consists in forming a pulp, bringing the same into contact with mercury, enforcing an intermingling of the mercury and the pulp, confining the mixed pulp and mercury within a restricted space during such intermingling, thereafter freeing the mixed pulp and mercury from said restricted space, separating the heavier particles by gravitation in a less restricted space, and causing the passage of an electric current through the intermingled pulp and mercury.

8. The herein-described method for amalgamating metals, which consists in producing a pulp, bringing the same into contact with mercury, agitating the pulp and mercury within a confined space to thoroughly intermingle the same, freeing the intermingled pulp and mercury from said confined space, subjecting the mass to a milder form of agitation in a less restricted space, separating the heavier particles from the lighter by gravitation, and preventing further intermingling of the same.

9. The herein-described method of amalgamating metals, which consists in producing a pulp, passing the same through a confined space containing mercury, intermingling the mercury and the pulp therein, passing the intermingled mercury and the pulp through a less restricted space, opening up the materials thereof, separating by gravitation the heavier particles from the moving mass, and preventing the further intermingling of the same, said passage of the materials through the two spaces being continuous.

10. The herein-described method for amalgamating metals, which consists in producing a pulp, passing the same through a confined space containing mercury, enforcing an intermingling of the mercury and the pulp therein, passing the intermingled mercury and pulp through a less restricted space, separating therein the heavier particles from the lighter by gravitation, settling the same out of the path of the moving mass, and preventing further intermingling of the settled particles.

11. The herein-described method for amalgamating metals, which consists in passing pulp through a restricted space containing mercury, intermingling the two substances therein, passing the intermingled pulp and mercury to a less restricted space, diluting the same with liquid, separating the heavier particles from the lighter by gravitation, and settling said particles out of the line of flow of the moving mass.

12. The herein-described method for amalgamating metals, which consists in producing a pulp, bringing the same into contact with mercury, intermingling the mercury and pulp within a confined space, freeing the intermingled mass from said confined space, diluting the intermingled pulp and mercury with liquid, opening up the materials in the mass thus freed in a less restricted space, separating the heavier particles thereof by gravitation, and settling the same out of the line of flow of the moving mass.

13. The process of amalgamating metals, which consists in forming a pulp, bringing the same into contact with mercury, enforcing an intermingling of the mercury and the pulp, confining the mixed pulp and mercury within a restricted space during such intermingling, thereafter freeing the mixed pulp and mercury from said restricted space, separating the heavier particles by gravitation in a less restricted space, settling the same out of the line of flow of the moving mass, and causing the passage of an electric current through the intermingled pulp and mercury.

14. The herein-described method of amalgamating metals, which consists in producing a pulp, passing the same through a confined space containing mercury, intermingling the mercury and the pulp therein, causing the intermingled mass to travel in a substantially horizontal direction through a less restricted space, opening up the materials thereof during its passage through said less restricted space, and separating the heavier particles from the lighter by gravitation.

15. The herein-described method for amalgamating metals, which consists in producing a pulp, bringing the same into contact with mercury, enforcing an intermingling of the mercury and the pulp, confining the mixed pulp and mercury within a restricted space during such intermingling, causing the intermingled mass to travel in a substantially horizontal direction through a less restricted space, diluting the same with liquid, separating the heavier particles from the lighter by gravitation, and preventing the reintermingling of the settled particles.

16. The herein-described method of amalgamating metals, which consists in feeding a pulp by gravitation to a confined mercury-containing space, causing the passage of the pulp therethrough by the pressure of the incoming pulp alone, intermingling the pulp and mercury during the passage of the pulp, passing the mixture by the pressure of the incoming pulp through a less restricted space, opening up the materials thereof, separating the heavier particles therefrom, preventing further intermingling of the same, and causing the removal of the lighter sand and gangue by the pressure of the incoming pulp.

17. The herein-described method for amalgamating metals, which consists in causing pulp to travel in a substantially horizontal direction through a mercury-containing confined space, intermingling the pulp and mercury in said space, thereafter causing the intermingled pulp and mercury to travel in a like direction through a less restricted space, opening up the materials of said mixture in said less restricted space, separating the heavier particles from the lighter out of the path of travel by gravitation, and removing the lighter sand or gangue therefrom.

705,097. COPYING-PRESS. ERNEST E. KOKER, St. Louis, Mo. Filed July 30, 1901. Serial No. 69,070. (No model.)

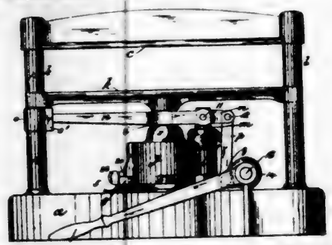

Claim.—1. In a copying-press of the class described, the combination of the base, a fixed platen, a tank containing liquid, a cylinder fixed on the base and containing a piston having its rod connected to the movable platen, a valve opening from the tank into a chamber and a valve opening from the chamber into the said cylinder, a cylinder containing a plunger and having an opening into the said chamber, a lever fulcrumed to a fixed part of the press and coupled to the said plunger, the said lever being adapted to bear against the movable platen, means for vibrating the said lever about its fulcrum, and means for returning the liquid from the cylinder containing the piston, into the tank, substantially as described.

2. In a copying-press of the class described, the combination of the base, a fixed platen, a tank containing liquid, a cylinder fixed to the base and containing a piston, a rod projecting from the piston and connected to the movable platen having the object to be pressed thereon, a valve opening from the tank into a chamber, and a valve opening from the chamber into the cylinder, a lever fulcrumed to a fixed part of the press and adapted to bear against the movable platen, and means for raising the said lever about its fulcrum, substantially as described and for the purpose set forth.

3. In a copying-press of the class described, the combination of a movable platen, a tank containing liquid, a cylinder containing a piston having its rod connected to the said platen, a lever fulcrumed to a fixed part of the press and adapted to raise the said platen, means for admitting the liquid to the cylinder, means for increasing the pressure of the liquid within the cylinder and for releasing the liquid therefrom, substantially as described.

4. In a copying-press of the class described, the combination of the base having a tank or well surrounding a valve-chamber, the said chamber having a removable cover, and a cylinder bearing upon the said cover and having a bottom flange fixed to, and forming a cover to the said tank, substantially as described.

5. In a copying-press of the class described, the combination with the lever *n* of a block *o*, having a projecting hollow portion *o'* and fixed to the upright rod *b*, a hole 16 through the wall of the said portion *o'*, and a spring 17 adapted to engage the said lever, substantially as described.

705,098. WINDOW. PATRICK LALOR, Denver, Colo., assignor of one-half to William T. Lawton, San Francisco, Cal. Filed June 20, 1901. Serial No. 65,220. (No model.)

Claim.—1. In a window, a frame having a guide-plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, pivoted in said side rails to turn horizontally, and means for spreading said side rails when the sash is slightly lifted, whereby one of said rails is forced into said recess, and the sash is free to turn on its pivots, substantially as specified.

2. In a window, a frame having a guide-plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, pivoted in said side rails to turn horizontally, a toothed rack on the side rail adjacent to the guide-plate, a balancing device engaging said toothed rack to counteract the weight of the sash and rails, and means for automatically spreading said side rails away from the sash both at top and bottom when the sash is slightly lifted, whereby one of said rails is forced into said recess, and the sash is free to turn on its pivots, substantially as specified.

3. In a window, a frame having a guide-plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, pivoted in said side rails to turn horizontally, a toothed rack on the side rail adjacent to the guide-plate, a balancing device engaging said toothed rack to counteract the weight of the sash and rails, downwardly-inclined hooks 32 on the sash, and slits 61 in the side rails, with which said hooks engage, whereby when the sash is slightly lifted the sash and rails are spread apart so that the sash is free to turn on its pivots, substantially as specified.

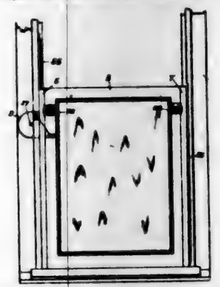

4. In a window, a frame having a guide-plate on one side and a longitudinal recess on the other side, side rails sliding on said guide-plate and in said recess respectively, a sash, tongued and grooved in said side rails and pivoted therein to turn horizontally, a toothed rack on the side rail adjacent to the guide-plate, a balancing device engaging said toothed rack to counteract the weight of the sash and rails, downwardly-inclined hooks on the sash, and slits in the side rails with which said hooks engage, whereby when the sash is slightly lifted the sash and rails are spread apart so that the sash is free to turn on its pivots, substantially as specified.

5. In a window, a pivoted sash and side rails 5 and 7 on which the sash is mounted, the guiding-rail 55 and the clips 54 to connect the side rail 5 to the guide 55 and to the window-frame and cause a true lineal movement thereof.

6. In a window, the combination of the sash 3, side rails 5 and 7, the fastening-hooks 32 to connect the sash and rails, a catch-bolt 45 to lock the sash from upward movement and the withdrawing-lever 49 to release the catch-bolt, operating in the manner described.

7. In a window, a sash pivoted between side rails that slide therewith, inclined hooks 32 to connect the sash and rails, pivots having downwardly-projecting flanges 40, and plates 42 provided with keyhole-shaped sockets 60 with which said pivots engage, whereby the sash is locked in its lower position, and may be turned and sustained in a slightly-raised position, substantially as specified.

8. In a window, a sash supported at the sides thereof by pivots having downwardly-projecting flanges 40, and plates 42 provided with keyhole-shaped sockets 60 with which said pivots engage, whereby the sash is locked in its lower position, and may be turned and sustained in a slightly-raised position, substantially as specified.

9. In a window, a sash pivoted between side rails that slide therewith, slotted plates 37 on said side rails, inclined hooks 32 to connect the sash and rails, said hooks engaging slots in plates 37, locking-bolts 45, having hook extensions 51, levers 49 engaging said hook extensions to withdraw bolt 45, and lifting-handles 52 on said levers, substantially as specified.

705,099. SECTIONAL HEATER. JAMES G. LAWSON, Newton, Mass. Filed Jan. 24, 1901. Serial No. 44,613. (No model.)

Claim.—1. In a vertical, sectional, water-heater, the combination of front, intermediate and rear tubular sections adapted when assembled and connected to provide a fire-pot and combustion-chamber at the bottom of the heater, a heat-chamber near the top of the heater, a series of vertical passages connecting said combustion and heat chambers and arranged in the longitudinal central plane of the heater, and circuitous passages extending downwardly from said heat-chamber on opposite sides of said central passages, and a smoke or escape flue communicating with the lower ends of said circuitous passages, whereby the products of combustion will be conducted on vertical lines directly to the heat-chamber near the top of the heater from all parts of the combustion-chamber and then downwardly and horizontally from said heat-chamber to the escape-flue.

2. In a vertical, sectional, water-heater, the combination of front, intermediate and rear tubular sections, each having a fire-pot section at its lower end and an enlarged heating-section at its upper end, said enlarged section being interiorly divided by suitable partitions into a central, upwardly-tapering, channel and a series of horizontal flues or chambers on opposite sides of and above said channel, the partitions forming the horizontal flues or chambers of the front and rear sections being out of alinement with each other but alining with the corresponding partitions of the adjacent intermediate section, whereby when the sections are assembled they form a fire-pot or combustion-chamber at the bottom of the heater, a heat-chamber near the top of the heater, a series of tapering flues extending from the fire-pot to said heat-chamber, and circuitous flues or passages extending downwardly from said heat-chamber on opposite sides of the said tapering flues, and an escape-flue communicating with the lower ends of said circuitous passages.

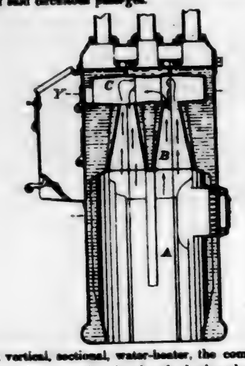

3. In a vertical, sectional, water-heater, the combination of a rear section having a lower portion, forming the back and part of the sides of the fire-pot or combustion-chamber, and an upper, enlarged portion, the interior of said enlarged portion being divided into an upper heat-chamber extending continuously across the section, a central flue or passage extending from the combustion-chamber to said heat-chamber, and chambers on both sides of said central flue, a casing secured to the back of said enlarged portion of the rear section and covering outlet-apertures in the rear walls of all of the chambers therein, said casing having an outlet or escape opening at its upper end and being provided with suitable doors through which access can be had to said casing and the interior passages and chambers of the heater, a front section having a lower portion, forming the front and part of the sides of the combustion-chamber, and an upper, enlarged portion which is interiorly divided to provide a central passage extending from the combustion-chamber to an upper chamber arranged in the plane of the heat-chamber of the rear section, and a series of chambers on both sides of said central passage, the horizontal partitions between said chambers being out of alinement with the horizontal partitions in the rear section, one or more intermediate sections having lower portions forming parts of the sides of the combustion-chamber and upper, enlarged, portions which are interiorly divided to provide in each a central flue or passage extending from the combustion-chamber to a flue connecting the upper chambers of the front and rear sections and a series of horizontal passages on both sides of said central passage, the partitions between said horizontal passages alining with partitions in both the front and rear sections, to provide circuitous passages from the upper heat-chamber to the lower chambers of the enlarged portion of the rear section, and dampers for closing the outlets of chambers in the rear section, the walls and partitions of said sections being hollow to provide a water-passage through the heater.

705,100. COMBINED HUB AND BRAKE FOR MOTOR-VEHICLES. FRANK LE FLEM, Philadelphia, Pa. Filed Feb. 28, 1901. Renewed Dec. 16, 1901. Serial No. 86,084. (No model.)

Claim.—1. In a motor-driven vehicle-hub, a stationary axle secured in the frame of the machine, a motor-driven sprocket-wheel journaled upon said stationary axle independent of the vehicle-wheel, a frictional surface formed upon the inner face of said motor-driven sprocket-wheel, a frictional surface secured rigidly to the opposite end of the stationary axle, a sleeve arranged upon the stationary axle, a barrel or outside shell of the hub journaled upon said sleeve, frictional surfaces formed upon each end of said barrel, and means under the control of the rider for causing said frictional surfaces upon the barrel to evolve in contact with either one of their opposed members, or to remain out of contact with both, substantially as described and for the purpose specified.

2. In a motor-vehicle hub, a stationary shaft secured in the framework of the machine, a motor-driven sprocket-wheel journaled upon said shaft, screw-threads formed upon said stationary shaft, a sleeve threaded upon said screw-threads, means under the control of the rider for revolv-

ing said sleeve, a barrel forming the outside shell of the hub journaled upon said sleeve, a flange secured to the stationary shaft, a flange secured to one end of the barrel and adapted to be brought into frictional contact with the stationary flange, a frictional surface formed upon the motor-driven sprocket-wheel, a flange formed upon the opposite end of the barrel and adapted to be brought in frictional contact with said sprocket-wheel, substantially as described and for the purpose specified.

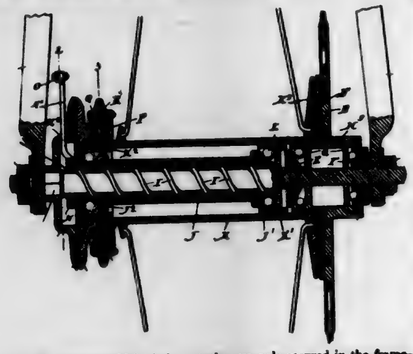

3. In a motor-vehicle hub, a stationary axle secured in the framework of the machine, a motor-driven sprocket-wheel journaled loosely upon the stationary axle, screw-threads formed upon said stationary axle, a sleeve threaded upon said screw-threads, a barrel constituting the outside shell of the hub, ball-bearings interposed between said barrel and sleeve, means for revolving said sleeve, a flange secured rigidly to the stationary axle, a frictional surface formed upon the inner face of the motor-driven sprocket-wheel, a flange formed upon each end of the barrel, one of said flanges adapted to be brought in frictional contact with the motor-driven sprocket-wheel when the sleeve is revolved in one direction, and the other flange adapted to be brought into frictional contact with the stationary flange upon the opposite end of the axle when the sleeve is revolved in the opposite direction, and the length of the barrel to be such that both of the flanges upon each of its ends can be held out of frictional contact with their opposed members when desired, and a sprocket-wheel adapted to be driven by foot-power secured to the said barrel, substantially as described and for the purpose specified.

4. In combination in a motor-vehicle hub, a stationary axle secured in the frame of the machine, a motor-driven sprocket-wheel journaled loosely upon said stationary axle, threads formed upon said stationary axle, a sleeve threaded upon said threads, a barrel or outside shell of the hub journaled upon said sleeve, a wrench secured to one end of said sleeve, an arm extending upward from said wrench, a connecting-rod secured to the upper end of said arm, by which the operator is adapted to rock said arm and wrench, and consequently revolve the sleeve in either direction, a friction-brake composed of a stationary and movable member, a stationary member adapted to be secured rigidly to the stationary axle, the movable member adapted to be secured to the barrel, a frictional surface formed upon the inner face of the motor-driven sprocket-wheel, a flange formed with the barrel of the hub and adapted to be brought into frictional contact with said sprocket-wheel, a sprocket-wheel arranged upon the barrel and adapted to be driven by foot-power, an automatic friction-clutch being interposed between said sprocket-wheel and barrel, substantially as described and for the purpose specified.

705,101. CLOTHES-LINE HOLDER. TIMOTHY LEMAIRE, Troy, N. Y., assignor of one-half to George H. Bell, Troy, N. Y. Filed June 24, 1901. Serial No. 65,762. (No model.)

Claim.—1. The combination in a clothes-line holder of a body part B, having the centrally-located and inwardly-extended bow-form projection B², provided with the centrally-located flat surface *b*², having integrally formed with the latter the rivets *d*, *d* and provided with the inwardly-bent ends E', and E², each having the recess R formed on its inner face; the pulley P, mounted to run on the shaft S², between the bent end E' and the body part thereto opposite; and the retaining-spring S', provided with the rivet-passages *n*, *n*, adapted to have entered therein the rivets *d*, *d*, with the latter headed to connect said spring and body part with the ends of the spring each located in one of the recesses R, substantially as, and for the purposes set forth.

2. In a clothes-line holder the combination of the body part B, provided with the centrally-located, inwardly-extended bow-form projection B², having the centrally-located flat surface *b*², provided with integrally-formed rivets *d*, *d*; the inwardly-bent ends E', and E², each having the recess R, on its inner face; the pulley P, mounted to run on the shaft S², between the bent end E', and the body part opposite thereto; the semicircular projections O', formed on the edges of the inwardly-bent end E' opposite the pulley P; the semicircular projections O², formed on the edges of the body part where opposite the pulley; the retaining-spring S', having the rivet-passages *n*, *n*, adapted to receive the rivets *d*, *d*, with the latter thereat headed to connect the spring to the body part, with each of the ends of the spring in one of the recesses R, of the body part, substantially as shown and described.

705,102. ELECTRIC-CIRCUIT BREAKER. HARRY W. LEONARD, New York, and HENRY P. BALL, Mount Vernon, N. Y., assignors, by mesne assignments, to H. Ward Leonard, Bronxville, N. Y. Filed April 4, 1898. Serial No. 676,411. (No model.)

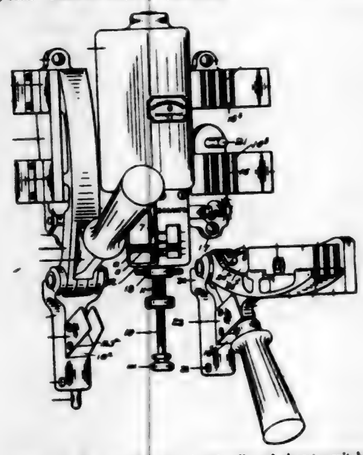

Claim.—1. The combination of a plurality of electric switches designed to be moved manually and independently into normal position, and a single controlling device for automatically controlling the movement of said switches after manual adjustment.

2. The combination of a plurality of electric switches designed to be moved manually and independently into normal position, and a single electroresponsive device for automatically controlling the movement of said switches after manual adjustment.

3. The combination of a plurality of electric switches designed to be moved manually and independently into normal position, and a single electroresponsive device for automatically controlling or effecting the simultaneous movement of said switches after manual adjustment.

4. The combination of a plurality of electric switches designed to be

moved manually and independently into normal position, means tending to open said switches, locking devices for holding said switches in their normal positions, and a single electroresponsive device for automatically releasing said switches.

5. The combination of a plurality of electric switches designed to be moved manually and independently into normal position, means tending to open said switches, locking devices for holding said switches in their normal positions, and a single electroresponsive device for automatically and simultaneously releasing said switches.

6. The combination of a plurality of electric switches, means tending to move same out of normal position, a locking device for holding each of said switches in normal position, an automatic controller for effecting the release of said switches, and means operating to impart a blow to said switches to start same when released.

7. The combination of a plurality of electric switches, means tending to move same independently out of normal position, a locking device for holding each of said switches in normal position, an automatic controller for effecting the release of said switches independently or simultaneously, and means operating to impart a blow to said switches to start same when released.

8. The combination of a plurality of electric switches, means tending to move same out of normal position, a locking device for holding each of said switches in normal position, an electroresponsive device for effecting the release of said switches, and means operating to impart a blow to said switches to start same when released.

9. The combination of a plurality of electric switches, means tending to move same independently out of normal position, a locking device for holding each of said switches in normal position, an electroresponsive device for effecting the release of said switches independently or simultaneously, and means operating to impart a blow to said switches to start same when released.

10. In a circuit-controller, the combination of a plurality of switches adapted to be connected in series in one side of an electrical circuit, means for operating said switches, and one electroresponsive device for controlling the operation of said switches.

11. In a circuit-controller, the combination of a plurality of switches adapted to be connected in series in one side of an electrical circuit, means for operating said switches, and one electroresponsive device for simultaneously controlling the operation of said switches.

12. In a circuit-controller, the combination of a plurality of switches adapted to be connected in series in one side of an electrical circuit, means for operating said switches, independent means for holding each switch closed under normal conditions, and one electroresponsive device operating under abnormal conditions to effect the release of said switches.

13. In a circuit-controller, the combination of a plurality of switches adapted to be connected in series in one side of an electrical circuit, means for operating said switches independently, and means common to each of said switches operating under abnormal conditions in the circuit to cause one or all of said switches when closed to open automatically upon the completion of the circuit.

14. In a circuit-controller, the combination of a plurality of switches adapted to be connected in series in one side of an electrical circuit, means for operating said switches independently, independent means for maintaining each switch closed under normal conditions, and an electroresponsive device operating under abnormal conditions in the circuit to cause the release of one or all of said switches when closed to open automatically upon the completion of the circuit.

15. In an automatic circuit-breaker, the combination of two independent switches electrically connected in series, and a single means opening both switches when the current in the circuit exceeds a predetermined maximum.

16. An electric-circuit breaker having in combination an arm carrying loosely-mounted contact-blades, a stationary slotted contact having rigid walls between which said blades are adapted to enter, said arm being actuated to fly forward through spring-pressure, a latch for holding said arm in the normal position, and means for releasing said latch.

17. An electric-circuit breaker having in combination an arm carrying loosely-mounted contact-blades, a stationary slotted contact having rigid walls between which said blades are adapted to enter, said arm being actuated to fly forward through spring-pressure, a latch for holding said arm in the normal position, and an electroresponsive device operating under abnormal conditions to disengage said latch.

18. An electric-circuit breaker having in combination an arm carrying loosely-mounted contact-blades, a stationary slotted contact having rigid walls between which said blades are adapted to enter, said arm being actuated to fly forward through spring-pressure, a latch for holding said arm in the normal position, a device for imparting a blow to said arm when the latch is disengaged, and an electroresponsive device operating under abnormal conditions to disengage said latch.

19. In an electric switch, the combination of a stationary slotted contact member, and a movable member having one or more blades adapted to enter said slots, each blade comprising a plurality of loosely-mounted contact-plates with spreading devices between them.

20. In an electric switch, the combination of a stationary slotted contact member, and a movable member having one or more blades adapted to enter said slots, each blade comprising a plurality of loosely-mounted flexible contact-plates with spreading devices between them.

21. In an electric switch, the combination of a stationary slotted contact member, and a movable member having one or more blades adapted to enter said slots, each blade comprising a pair of loosely-mounted contact-plates with a spreading device between each pair of plates.

22. In an electric switch, the combination of a stationary slotted contact member, and a movable member having one or more blades adapted to enter said slots, each blade comprising a pair of loosely-mounted flexible contact-plates with a spreading device between each pair of plates.

23. In an electric-circuit breaker such as described, the contact-making parts consisting of loosely-mounted blades with spreading devices between them, and slotted metal blocks for the blades to enter, in combination with an electroresponsive means to open said contacts.

24. The combination of arms having contact-blades loosely mounted thereon, the blades being arranged in pairs with spreading devices between them, slotted blocks or parts for the blades to enter, two blades in each slot, and automatic means for withdrawing the blades from the slots simultaneously, as described.

25. The combination of pivoted arms having contact-blades loosely mounted thereon, the blades being arranged in pairs with spreading devices between them, slotted blocks or parts for the blades to enter, two blades in each slot, and electroresponsive means controlling the withdrawal of the blades from the slots simultaneously, as described.

26. The combination of pivoted arms having contact-blades loosely mounted thereon, the blades being arranged in pairs with spreading devices between them, slotted blocks or parts for the blades to enter, two blades in each slot, and electromagnetic means controlling the withdrawal of the blades from the slots simultaneously, as described.

27. A circuit-breaker of the character herein described, consisting of three independent parts, namely, two independently-operated switches or switch members, and an electroresponsive device for controlling said switches simultaneously or independently of each other.

28. A circuit-breaker of the character herein described, consisting of three independent parts, namely, two independently-operated switches or switch members adapted to be connected in series between a source of energy and a translating device, and an electroresponsive device for controlling said switches simultaneously or independently of each other.

29. In an automatic circuit-breaker, the combination of one or more stationary contact members, a movable spring-actuated switch member, a spring-actuated operating-handle for closing the switch, a locking device for holding the operating-handle in the closed position of the switch, an electroresponsive device for controlling said locking device to release the operating-handle, and means on said operating-handle whereby upon its release a blow will be imparted to the switch to facilitate the opening movement of the switch.

30. In an automatic circuit-breaker, the combination with the stationary and movable contact members, of a pivoted and independently-movable operating-handle for moving the movable switch member to its closed position, a spring placed under tension by the closing movement of the operating-handle and tending to drive the operating-handle to its initial position, a catch for holding said operating-handle against the pressure of said spring, electroresponsive means for automatically releasing said operating-handle, and means on said operating-handle whereby when the handle is released the movement imparted to it by the spring will first impart a blow to the movable switch member and then effect the opening of the switch.

31. In an automatic circuit-breaker, the combination with the stationary and movable contact members, of a pivoted and independently-movable operating-handle for moving the movable switch member to its closed position, a spring placed under tension by the closing movement of the operating-handle and tending to drive the operating-handle to its initial position, a catch for holding said operating-handle against the pressure of said spring, a second spring placed under tension by the closing movement of the movable switch member and tending to drive said member away from the stationary contacts, electroresponsive means for automatically releasing said operating-handle, and means on said operating-handle whereby when the handle is released the movement imparted to it by its spring will first impart a blow to the movable switch and the combined action of both springs will effect the final opening of the switch.

32. A multipolar circuit-breaker, comprising a number of switches, each of which is capable of independent operation to open or close a circuit, and automatic means for opening all of the switches.

33. In a multipolar circuit-breaker, the combination of a number of switches, each of which is capable of independent operation to open or

close a circuit, with a common tripping device acting to open all of the circuits, and a coil controlling the action of the trip.

34. In a circuit-breaker, the combination of a number of switches in different leads or wires, each capable of independent operation, with an overload or series coil, an armature, and a device actuated by the armature for simultaneously releasing all of the switches to open their circuit, leaving them free to close the circuit successively or simultaneously, as may be desired.

35. In a double-pole circuit-breaker, the combination of two switches having no mechanical connection, one in each side of the circuit, automatic means for simultaneously opening the switches at desired times, and means permitting their closure successively or simultaneously.

36. The combination of two independently-operated switches in the two sides of a circuit, a tripping device for each switch, an armature for simultaneously actuating both tripping devices, and a series coil in one side only of the line.

37. The combination, with an electric circuit, of two circuit-breakers responsive to the same load connected with opposite sides of the circuit and located adjacent to one another, and magnetic means responsive to a predetermined variation of current strength, for opening the circuit at one circuit-breaker if a current variation exists when the other is closed.

38. In an automatic circuit-breaker, two circuit-interrupting devices in series relation, provided with independent means of operation and adapted for inclusion in an electric circuit so as to be under the control of the same operator, each circuit-interrupting device being automatically responsive to the same predetermined increase of current strength, whereby the circuit will be opened at one point if an overload exists when it is closed at the other point.

39. The combination with an electric circuit, of two automatic magnetic circuit-breakers connected in series relation, provided with independent closing means and placed in proximity to one another, each circuit-interrupting device being responsive to a determinate variation of current strength, whereby the circuit will be opened at the switch of the circuit-breaker if a determinate strength of current exists when the other is closed.

705,103. BOTTLE-CLOSURE. EDWARD A. LEVINE, Duryea, Pa., assignor of two-thirds to the Gunnerton Glass Mfg. Company. Filed July 16, 1901. Serial No. 68,493. (No model.)

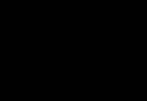

Claim.—1. In a bottle-closure of the kind described having a shank extending into the neck of the bottle, a projection above the neck of the bottle, a grasping-flange and gasket centrally located, and a central passage extending through lengthwise of the said closure, in combination with a stopper insertible and removable from the inner end of the central passage, and a curved spout insertible and removable from the outer end of said central passage, all arranged for joint operation, substantially as and for the purpose specified.

2. A bottle-closure of the kind described, comprising a threaded shank extending into the neck of the bottle, a spout projecting above the neck of the bottle, a grasping-flange and gasket centrally located, and a central passage extending through lengthwise of said closure, in combination with a stopper insertible and removable from the inner end of said central passage when the closure is removed, the central gasket arranged to complete the closure when the threaded shank is screwed into the neck of the bottle, substantially as specified.

705,104. ORE WASHER AND SEPARATOR. JAMES M. LOGSDON, Empire City, Kans., assignor of nine-sixteenths to E. V. Wyandotd, Joplin, Mo. Filed May 7, 1901. Serial No. 59,159. (No model.)

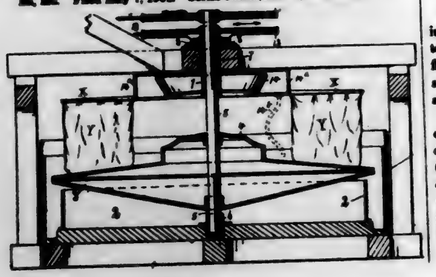

Claim.—1. In an ore washer and separator, the combination of a tank, a revolvable vertically-movable float-table therein, a drum on said table and means to discharge sludge onto said drum, substantially as described.

2. In an ore washer and separator, the combination of an outer tank of telescopic construction, and an inner tank therein, a vertically-movable revolvable float-table disposed in said tank and means to discharge sludge onto said float-table, substantially as described.

3. In an ore washer and separator, the combination of a tank, a revolvable vertically-movable float-table therein, a shaft carrying said table, a sleeve-bearing in which said shaft rotates and is adapted to move vertically, said sleeve-bearing being revolvable independently of said table, and a feed-hopper carried by said independently-revolvable sleeve-bearing, substantially as described.

4. In an ore washer and separator, the combination of a water-tank having a discharge-gate on one side, a revolvable vertically-movable float-table in said tank, a feed-hopper revolvable independently thereof, a sweep connected to and carried by said feed-hopper, said sweep being adapted to operate on said table, for the purpose set forth, means to raise and lower said sweep, and means to adjust the same, substantially as described.

705,105. CLAMP FOR LEATHER-SETTING FRAMES. JOSEPH T. LITZEN, Cramlynne, Pa. Filed Oct. 9, 1901. Serial No. 78,095. (No model.)

Claim.—1. In combination, constituting a "setting-frame" for enameling skins of leather, a skeleton frame, a series of adjustable clamp-holding devices secured to the frame edges, and a corresponding series of skin-clamping devices consisting essentially of a pair of normally open clamping members with means to cause said members to close upon each other on the application of a pulling force to one of them, said members being so arranged relatively to each other as to face outwardly whereby the bite on the edge of the skin will bring the clamping device wholly beneath the main body of the skin.

2. A "setting-frame" adapted to grasp the folded-under edge of a skin to be held taut, comprising in combination an adjustable skin-clamping device consisting of a pair of normally open clamping members constituting a pair of jaws facing outwardly, and adapted to close upon each other by an outward-sliding movement of one of them relatively to the other, an actuating-arm on the movable member, adjustable means for applying a moving force to said arm, and a skeleton frame to the edge of which said adjustable actuating means is secured.

3. An adjustable clamping-clip for a "setting-frame" of the character described, consisting of a member A composed of guiding portion *c*, *d*, and inclined face *f*, and member B adapted to slide in said guiding portion of the opposite member, said member B having a handle end inclined at *g*, and perforated at its extremity, substantially as described.

705,106. GEARING FOR BICYCLES. DONALD MACDONALD, Orroroo, South Australia, Australia. Filed Sept. 16, 1901. Serial No. 75,052. (No model.)

Claim.—1. The combination with a driven axle and a barrel forming the center of a wheel and having a flange intermediate its ends; of a toothed wheel-hub bearing on said axle and secured centrally of said flange, and planet-gear on each side of said hub driven by the axle and arranged to drive the hub and thereby drive the barrel and wheel, substantially as herein described.

2. The combination with a crank-axle, two saucer-shaped disks secured thereto, oppositely-situated planet-wheels revolubly mounted on each disk, a fixed crown-wheel on each end of the crank-axle in which the latter is revolubly supported, of a changeable wheel-hub between the disks on the axle and having a cog-wheel formed on each end, a pair of planet-wheels adapted to mesh with each cog and crown wheel, a barrel inclosing all of the aforesaid elements and a web centrally and rigidly connecting the hub and barrel, substantially as herein described.

3. The combination with a driven axle and a barrel forming the center of a wheel and having an internal flange intermediate its ends; of a removable, toothed wheel-hub having bearing on the axle and secured centrally of said flange, and planet-gear on each side of the web, driven by the axle and arranged to drive said hub and thereby drive the barrel and wheel, substantially as herein described.

705,107. HAT-FORMING MACHINE. JOHN MARSHALL, Fall River, Mass. Filed Apr. 24, 1901. Serial No. 57,220. (No model.)

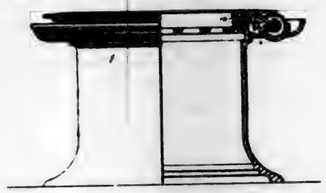

Claim.—1. In a hat-forming machine provided with a revolving turn-table, a supporting-frame and spherical balls operating in a circular annular channel between them to support said table and on which it revolves, the combination therewith of a worm-wheel bolted to the under side of the turn-table, and a worm attached to the supporting-frame for actuating said turn-table, and mechanism for operating the worm substantially as described and shown.

2. In a hat-forming machine the combination with a revolving turn-table and a supporting-frame having a circular annular passage arranged between them of a flange depending from the inner circle of the turn-table, and bearing against the inner face of the supporting-frame, assisting to preserve the registry of the two parts of the circular passage, and closing the horizontal aperture between them on the inner side of the machine, substantially as described and shown.

705,108. SPEED-CHANGING FRICTION-GEARING. OSCAR MARTH, Also Lieszko, Austria-Hungary. Filed Jan. 2, 1902. Serial No. 88,094. (No model.)

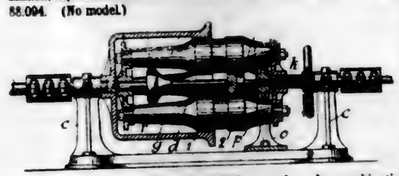

Claim.—1. In a speed-changing friction-gearing, the combination with the two shafts, arranged in a line, of an annular friction-wheel secured to the shaft which is to revolve slower, a solid friction-wheel, secured to the other shaft and located outside the plane of the annular wheel, a spheroidal roller journaled in the ends of the two shafts, a frame loosely surrounding the shafts, means for preventing the said frame from turning around the shafts, and a number of elongated rollers journaled in radial slots of the said frame, one of the two parts—frame or spheroidal roller—being endwise movable, and each of the rollers journaled in the frame having two cylindric working surfaces adapted to engage the annular and ordinary friction-wheels and a conical end adapted to engage the spheroidal roller, substantially as and for the purpose described.

2. In a speed-changing friction-gearing, the combination with the two shafts, arranged in line, of an annular friction-wheel secured to one shaft, a disk-shaped friction-wheel, secured to the other shaft, without the plane of the annular wheel, a spheroidal roller journaled in the ends of the two shafts, a frame in the shape of a lantern-wheel loosely mounted to the line of shafting and adapted to move endwise, means for preventing said frame from revolving, a tubular screw loosely mounted upon the shaft carrying the solid friction-wheel and engaging a tapped hole of the lantern-wheel-shaped frame, means for turning this screw in either direction, and a number of elongated rollers journaled in radial slots of the said frame, each roller having two cylindric working surfaces adapted to engage the annular and disk-shaped friction-wheels, and having a conical end adapted to engage the spheroidal roller, substantially as and for the purpose described.

705,109. METHOD OF REDUCING COPPER MATTE TO REFINED COPPER. GUSTAV HYBINETTE, Bisbee, Ariz. Filed Sept. 6, 1901. Serial No. 74,622. (No specimens.)

Claim.—1. The method of reducing copper matte to refined copper consisting in charging molten copper matte into a converter and blowing air through the charge until practically all of the iron in the charge has been converted into slag, removing the slag, then reblowing the charge and reducing it to metallic copper and continuing the blowing operation until the charge has been overblown sufficiently to produce a small percentage of suboxid of copper and approximating as nearly as is possible the amount required to prepare the copper for "poling," then charging the molten contents of the converter into a reverberatory furnace and subjecting it to the poling process, substantially as set forth.

2. The method of reducing copper matte to refined copper consisting in blowing copper matte in a converter until practically all the iron contained in the charge has been transformed into slag, removing the slag, then blowing the remaining charge until it has been reduced to metallic copper and continuing the blowing operation until the metallic copper has been sufficiently overblown to produce a small percentage of suboxid of copper and approximating as nearly as is possible the amount required to prepare the copper for "poling," pushing the tuyeres during the blowing of the charge to maintain a constant and practically uniform distribution of air throughout the charge; then charging the molten contents of the converter into a reverberatory furnace and subjecting it to the "poling" process, and finally casting the product into pigs, bars or anodes, substantially as set forth.

3. The method of reducing copper matte to refined copper consisting in reducing copper matte in a converter to metallic copper containing a small percentage of suboxid of copper and approximating as nearly as is possible the amount required to prepare the copper for "poling;" charging a reverberatory furnace with two or more of such converter charges and subjecting such mixed and accumulated charges to the poling process, substantially as set forth.

4. The method of reducing copper matte to refined copper consisting in blowing the copper matte in a converter and reducing it to metallic copper containing a small percentage of suboxid of copper, charging two or more such converter charges into a reverberatory furnace, and then adding to such accumulated charge, one or more additional converter charges blown to such a predetermined condition that when mixed with the accumulated charges they will cause the mass to contain the desired percentage of suboxid of copper and finally subjecting the entire charge to the poling process, substantially as set forth.

705,110. RADIATOR. EMIL MORITZ, LOUIS H. FRYMIRE, and SANFORD KOONS, Watsontown, Pa. Filed Aug. 6, 1901. Serial No. 71,099. (No model.)

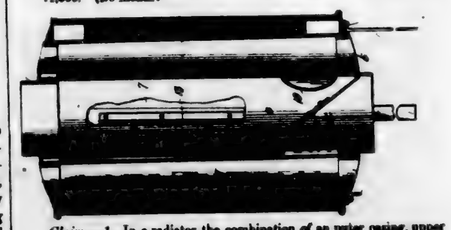

Claim.—1. In a radiator, the combination of an outer casing, upper and lower heads removably mounted therein and provided with circular lines of openings, the openings of the upper head being smaller than those of the lower head, thimbles fitted in and projecting inwardly from the openings of the said heads, vertically-disposed ducts removably engaging the inwardly-projecting thimbles and regularly converged their full lengths from the lower ends thereof to the top ends, an enlarged pipe-section vertically disposed in the center of the radiator and fully open at both ends, the lower portion of the said pipe-section having opposite diametrically-disposed, enlarged openings, an oval damper adjustably entering with said openings, and diametrically-disposed partitions in the radiator between the pipe-section and the casing, said partitions extending upwardly almost the full length of the radiator and dividing the latter into two halves.

2. In a radiator, the combination of an outer casing, upper and lower heads removably mounted therein, a centrally-disposed pipe-section opening through the heads and having lower openings therein and a damper, ducts vertically disposed in the casing and fully opening through the said heads, the said ducts being regularly converged their full lengths from the lower to the top ends thereof, all the ducts converging in the same direction and removably attached to said heads, and dividing-partitions in the device between the pipe-section and the casing.

3. In a radiator, the combination of an outer casing, a smoke-pipe extending through said casing and having oppositely-disposed openings in the lower end thereof, a damper disposed obliquely in the lower end of said pipe between said openings, and dividing-partitions disposed in

said casing at diametrically opposite points, said partitions extending from the bottom to a point near the top of the said casing.

4. In a radiator, the combination of an outer casing provided with a series of openings at its opposite ends, vertical pipes or flues disposed in said casing and adapted to register at their opposite ends with the openings in the end of said casing, dividing-partitions disposed in said casing between said pipes at diametrically opposite points, said partitions extending to a point near the top of said casing, a smoke-pipe extending through said casing and having oppositely-disposed openings in the lower end thereof, and a damper disposed obliquely in the lower end of said smoke-pipe between said openings, whereby the smoke-pipe may be alternately placed in communication with the casing on opposite sides thereof.

705,111. **ELECTRIC GAS-IGNITING DEVICE.** JOHN A. MOSHER, Chicago, Ill., assignor to the Adams & Westlake Company, a Corporation of Illinois. Filed July 23, 1901. Serial No. 69,468. (No model.)

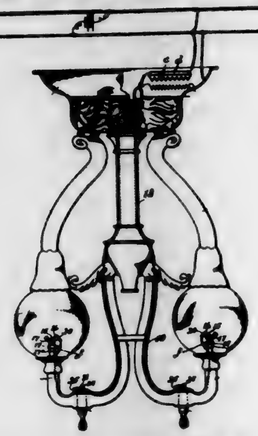

Claim.—1. In an electric gas-igniter, in combination, a pair of stationary electrodes, a contact-piece, a gas-cock, and a wiper moved by the cock for making and breaking an electric circuit with the contact-piece and inducing a spark at the electrodes, the engaging face of the wiper being beveled in order to facilitate its passage across the contact-plate.

2. In an electric gas-igniter, in combination, a pair of stationary electrodes, a contact-plate, a gas-cock, a wiper secured to and moved with the cock for making and breaking an electric circuit with the contact-plate and inducing a spark at the electrodes, and means for preventing the sparking of the igniter when the gas is being turned off.

3. In an electric gas-igniter, in combination, a burner-tip, a pair of stationary electrodes located adjacent to the gas-orifice of the burner-tip, a gas-cock, a curved contact-plate located in proximity to the cock and concentrically thereto, a wiper carried by the cock for making and breaking an electric circuit with the contact-plate and inducing a spark at the electrodes, and means for preventing the sparking of the igniter when the gas is being turned off.

4. In an electric gas-igniter, in combination, a burner-tip, a pair of stationary electrodes located adjacent to the gas-orifice of the burner-tip, a gas-cock, an insulated resilient contact-plate, a wiper carried by the cock, a projection of the contact-plate extending inwardly toward the cock and in the path of the wiper for making and breaking therewith an electric circuit and inducing a spark at the electrodes, and an insulating strip or block secured to the under face of the projection of the contact-plate against which the wiper is moved when the gas is being turned off.

5. In an electric gas-igniter, in combination, a pair of stationary electrodes, a contact-piece, a gas-cock, a wiper moved with the cock for making and breaking an electric circuit with the contact-piece and inducing a spark at the electrodes, and an insulating strip or block secured to the contact-piece and disposed in the path of the wiper and with which the wiper engages in closing the cock.

6. In an electric gas-igniter, in combination, a pair of stationary electrodes, a contact-plate, a gas-cock, a wiper actuated by the cock, a projection of the contact-plate in the path of the wiper for making and breaking therewith an electric circuit and inducing a spark at the electrodes, and an insulating strip or block secured to the under face of the projection of the contact-plate with which the wiper engages in closing the cock.

7. In an electric gas-igniter, in combination, a gas-burner, means located at the burner for igniting gas issuing therefrom, a contact-plate, a gas-cock, a wiper moved with the cock for making and breaking an electric circuit with the contact-plate, and an insulating-block secured to the contact-plate and disposed in the path of the wiper and with which the wiper solely engages in closing the cock.

8. In an electric gas-igniter, in combination, a gas-cock, an electric circuit, and a circuit-breaker actuated by the cock and comprising a movable member having faces oblique to its path and a resilient member having insulating material upon one face, and lying across the path of the movable member.

9. In an electric gas-igniter, in combination, a gas-cock, an electric circuit, and a circuit-breaker comprising two members, one being carried by the cock and the other being fixed and crossing the path of the movable member, one of said members being oblique to the path of the movable member, one of said members being resilient, and one of said members having one of its contact-faces formed of non-conductive material.

705,112. **RHEOSTAT.** JOHN A. MOSHER, Chicago, Ill. Filed Aug. 16, 1901. Serial No. 72,300. (No model.)

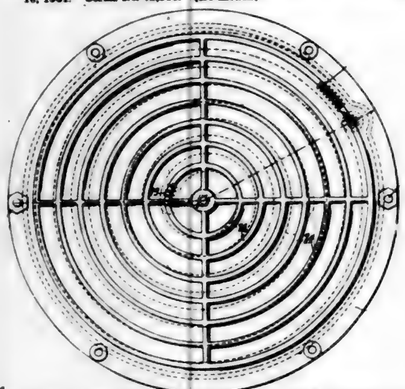

Claim.—1. In a rheostat, in combination, a plate having one face spirally grooved, a refractory lining for the groove, an electric conductor seated in the groove, a binding-post to which each end of the conductor is connected, a filling of non-conducting refractory material covering and submerging the conductor, and a covering-plate secured to the first-named plate.

2. In a rheostat, in combination, a plate having one face spirally grooved, a refractory lining for the groove, a spirally-wound electric conductor seated in the groove, a binding-post to which each end of the conductor is connected, a filling of non-conducting refractory material covering and submerging the conductor, and a covering-plate secured to the first-named plate.

705,118. **SAFETY DEVICE FOR WATER-GAGES.** JOHN A. MOSHER, Chicago, Ill., assignor to the Adams & Westlake Company, a Corporation of Illinois. Filed Oct. 25, 1901. Serial No. 79,857. (No model.)

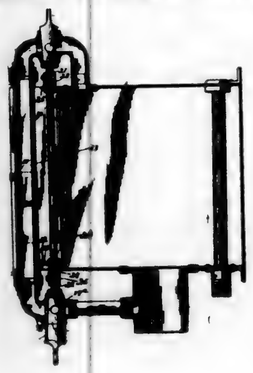

Claim.—1. In combination, a tank, a transparent gage-tube, means for obscuring the gage-tube and means for cutting it off from the tank, and means for simultaneously exposing the gage-tube to view and for opening its connection with the tank.

2. In a safety device for water-gages, in combination, a tank or other receptacle, a gage-glass, connection between the tank and the glass, a valve in the connection, an obscuring-shield in front of the glass, and means for moving the shield away from in front of the glass when the valve is opened.

3. In a safety device for water-gages, in combination, a tank or other receptacle, a gage-glass, connection between the tank and the glass, a valve in the connection, a shield in front of the gage-glass, connection between the valve and the shield, and means for holding the valve normally closed and the shield in front of the gage-glass.

4. In a safety device for water-gages, in combination, a tank or other receptacle, a gage-glass, connections between the gage-glass and the tank, a valve in each of said connections, means for moving the valves simultaneously, an obscuring-shield normally in front of the gage-glass, and means for moving the shield when the valves are opened.

5. In a safety device for water-gages, in combination, a tank or other receptacle, a gage-glass, connection between the upper and lower ends of the tank and the gage-glass, a valve in each of said connections, means for moving the valves simultaneously, a spring holding the valves normally closed, a shield in front of the gage-glass, and a connection between the valves and the shield.

6. In a safety device for water-gages, in combination, a tank or other receptacle, a gage-tube, connections between the upper and lower ends of the tank and the tube, a valve in each of said connections, a rod connecting the two valves, a spring holding the valves normally closed, an apertured tubular shield inclosing the gage-tube and comprising a pair of telescoping sections, and a gear connection between the rod and the shield.

7. In a safety device for water-gages, in combination, a tank or other receptacle, a gage-glass, connections between the upper and lower ends of the gage-glass and the tank, a valve in each of said connections, connection between the valves, and a spring for holding the valves normally closed.

8. In combination, a tank and a transparent gage-tube therefor, a shield, a valve for closing communication between the tank and the gage-tube, means for holding the shield so as to obscure the gage-tube and for holding the valve closed, and means for simultaneously moving the shield to bring the gage-tube into view and for opening the valve.

9. The combination with a transparent water-gage, of an obscuring-shield removably covering the gage, a valve for closing the gage, and operative connection between the valve and the shield.

705,114. **GAS-STORAGE TANK.** JOHN A MOSHER, Chicago, Ill., assignor to the Adams & Westlake Company, a Corporation of Illinois. Filed Oct. 25, 1901. Serial No. 79,868. (No model.)

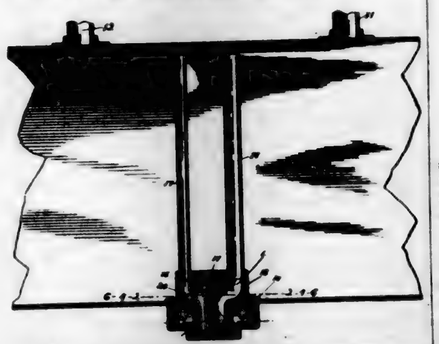

Claim.—1. In a valve, in combination, a valve-casing having a pair of ports, a valve-plug having a pair of ports so placed as to simultaneously communicate with the ports in the casing, a third port in the casing and which registers with one of the ports in the valve-plug when the latter port is out of communication with one of the pair of ports in the casing, and a cavity in the valve-plug designed to bring one of the pair of ports in the casing into communication with the said third port.

2. In a valve, in combination, a valve-casing having a pair of ports, a valve-plug having a pair of ports so placed as to simultaneously communicate with the ports in the valve-casing, and a third port in the casing so located as to register with one of the ports in the valve-plug when the latter is out of communication with one of the pair of ports in the casing.

3. In combination, a gas-tank having an induction-port, a valve-casing in the bottom of the tank and having a pair of ports leading to the top thereof and a second pair of ports opening at the bottom of and within the tank, and a rotatable valve-plug in the casing and having a pair of externally-opening ports so placed that their inner ends will register with either of said pairs of casing-ports.

4. In combination, a gas-tank having an induction-port, a valve-casing in the bottom of the tank and having a pair of ports leading to the top thereof and a second pair of ports opening at the bottom of and within the tank, and a rotatable valve-plug in the casing and having a pair of externally-opening ports so placed that their inner ends will register with either of said pairs of casing-ports, the valve-plug also having a pair of ports connecting adjacent casing-ports when the first-mentioned valve-plug ports are not in register therewith.

5. In combination, a gas-tank having an induction-port, a valve-casing in the bottom of the tank and having a pair of ports leading to the top thereof and a lateral port opening at the bottom of and within the tank, and a rotatable valve-plug in the casing and having a pair of externally-opening ports so placed that their inner ends will register with the pair of casing-ports or one of the valve-plug ports will register with the lateral casing-port.

6. In combination, a tank having an inlet-port 11, a valve-casing fixed in the bottom of the tank and having a pair of ports leading from the valve-seat through its inner end, a duct leading from one of such ports to the top of and opening within the tank, a second pair of ports located intermediate of the first pair and opening laterally through the walls of the valve-casing to the interior of the tank, an oscillating valve-plug seated within the casing and having a pair of ports opening through its outer end and through its side walls in line with the valve-plug ports, and segmental cavities of sufficient length to overlap adjacent casing-ports.

705,115. **ACETYLENE-GAS GENERATOR.** JOHN A. MOSHER, Chicago, Ill., assignor to the Adams & Westlake Company, a Corporation of Illinois. Filed Mar. 8, 1902. Serial No. 97,356. (No model.)

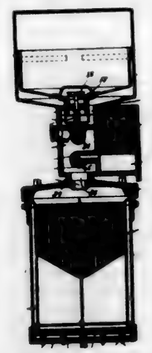

Claim.—1. In an acetylene-generator, in combination, a reservoir, a generating-cell, a receptacle into which the reservoir discharges, means for maintaining the water in the receptacle at a constant level, an intermediate chamber opening directly to the cell, and a conduit leading from the receptacle and entering the intermediate chamber at its bottom.

2. In an acetylene-generator, in combination, a reservoir, a generating-cell, a receptacle into which the reservoir discharges, means for maintaining the water in the receptacle at a constant level, an intermediate chamber opening directly to the cell, a conduit leading from the receptacle and entering the intermediate chamber at its bottom, and a vent-pipe communicating with the conduit.

3. In an acetylene-generator, in combination, a reservoir, a generating-cell, a cup into which the reservoir discharges, means for maintaining the water in the cup at a constant level, a supplemental reservoir opening into the cell, a feed-water pipe leading from the cup to the supplemental reservoir and extending in the form of a loop below the same, and a gas-passage leading from the generating-cell.

4. In an acetylene-generator, in combination, a reservoir, a generating-cell, a cup into which the reservoir discharges, means for maintaining the water in said cup at a constant level, a supplemental reservoir, a feed-water pipe leading from the cup to the supplemental reservoir and which is extended in the form of a loop below the same, an upwardly-ex-

tending vent-pipe communicating with the feed-water pipe, and a gas-passage leading from the generating-coil.

5. In an acetylene-generator, in combination, a reservoir, a generating-coil, a cup into which the reservoir discharges, means for maintaining the water in the cup at a constant level, a supplemental reservoir, a feed-water pipe leading from the cup to the supplemental reservoir and extending in the form of a loop below the same, communication between the supplemental reservoir and the generating-coil, and a vertical vent-pipe communicating with the feed-pipe near the supplemental reservoir and extending above the level of the water in the cup into which the reservoir discharges.

705,116. WASHBOARD. WILLIAM B. MURPHY, Lynn, Mass. Filed June 24, 1901. Serial No. 65,830. (No model.)

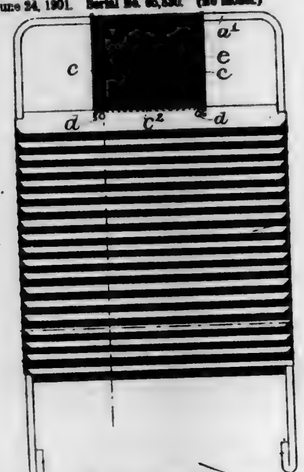

Claim.—1. A washboard comprising a rubbing-surface formed of a corrugated metallic plate, and a supporting-frame formed of a metallic rod bent to provide side bars and an end bar, the edges of said plate being bent around the side bars to secure them together, the corrugations of the plate extending crosswise of the washboard whereby the said plate and frame coact to secure sufficient rigidity without additional bracing.

2. A washboard comprising a frame formed of a metallic rod bent to provide side bars and an upper end bar, a corrugated plate having its side edges secured to the said side bars, and a soap-holder connecting the said plate to the said end bar.

3. A washboard comprising a frame formed of a metallic rod bent to provide side bars and an upper end bar, a corrugated plate having its side edges coiled or bent around the side bars, and its upper edge bent downwardly, and a soap-holder formed of metal and having its lower end interlocked with the upper edge of the plate and its upper end coiled or bent around the said end bar.

4. A washboard comprising a supporting-frame formed of a metallic rod bent to provide side bars and an end bar, and a rubbing-surface formed of a corrugated metallic plate having its edges bent around the side bars intermediate the upper and lower portions thereof, means being provided to prevent movement of the plate longitudinally of the side bars, the cross-bar of the frame forming the usual pressure-bearing and the lower ends of the side bars forming supporting-legs.

705,117. INHALER. CHARLES H. MYERS, South Bend, Ind. Filed Feb. 15, 1900. Serial No. 5,262. (No model.)

Claim.—1. An inhaler, the combination with a flask, of a tubular body, nostril projections on the upper end thereof, a part at its lower end adapted to engage over the flask-neck, a nozzle in the side of the body having an exhalation-port therein, a valve fitted to control the port, an inhalation-tube at its upper end fitted through said nozzle and valve and at its lower end extending into the flask.

2. An inhaler comprising a body having nostril projections thereon, an exhalation-valve and a neck at its lower end having a cover-flange projecting therein above the said neck, of an inhalation-tube extending from within the said body downwardly therefrom within said flange and a flask fitted upon said neck and receiving the lower end of the inhaler-tube, substantially as described.

3. An inhaler comprising a body having nostril projections thereon, an exhalation-valve, a neck at its lower end, a flask fitted to said neck, an inhalation-tube passing through the body and extending down into the flask, and a dash-plate secured to the inhalation-tube and extending outwardly therefrom at the top and nearly closing the neck of the flask, substantially as described.

4. An inhaler comprising a body having nostril projections thereon, an exhaust-valve and a neck at its lower end, a flask fitted to said neck, an inhalation-tube passing through the body and extending down into the flask, a cover-flange projecting from the top of the flask inwardly, and a dash-plate extending from the inhalation-tube outwardly, substantially as described.

705,118. SWINGING ANIMAL-CHUTE. EPHRAIM MYERS, Murray, Iowa, assignor of one-half to C. C. Bancroft, Barnby, Iowa. Filed Mar. 1, 1902. Serial No. 96,263. (No model.)

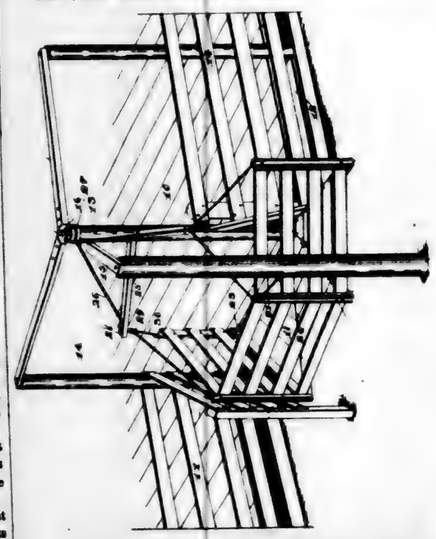

Claim.—1. An improved swinging animal-chute, comprising in combination a fence having an opening therein, the pivoted standard near one edge of the opening, a substantially semicircular platform fixed to the pivoted standard, a fence surrounding the periphery of the semicircular platform, said parts being so arranged and proportioned that in one position the opening through the fence will be closed by the fence on the swinging platform and in another position a passage-way will be provided over the platform and through the gate-opening.

2. An improved swinging animal-chute, comprising in combination a fence having a gate-opening therein, a sill resting on the ground-surface, an upright standard rotatively mounted upon the sill, means for pivotally supporting the upper end of the standard, a series of braces projecting radially from the lower portion of the standard, the straps for holding these braces to the standard, a semicircular platform mounted on said braces, uprights at the outer ends of the braces, a metal strap for each upright having its upper end perforated and having its body portion extended along the outer surface of the uprights and along the under surface of the braces, brace-straps for each upright fixed at one end to the upright and at its other end to the top of the platform, a number of arms fixed to the top portion of the standard and slotted at their outer ends, a collar fixed to the top of the standard, a number of rods fixed at their upper ends to the said collar passed through the slots in the arms and having loops at their lower ends, a number of rods hooked at their upper ends into said loops and connected at their lower ends with said perforated straps and means for securing the swinging platform to a stationary support to hold it in a fixed position.

705,119. TRANSFER SYSTEM. EDWARD W. MCKENNA, Chicago Ill. Filed Jan. 7, 1901. Serial No. 42,388. (No model.)

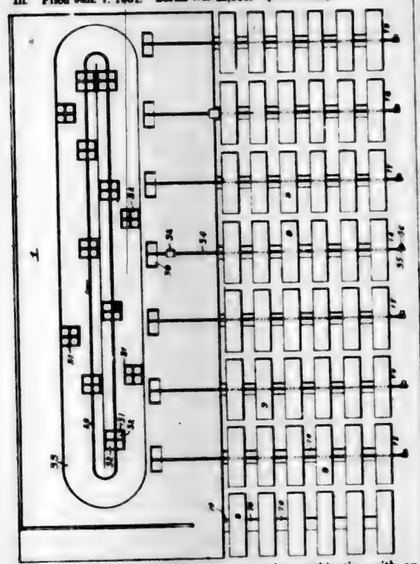

Claim.—1. In a freight-transfer system, the combination with an elevated track arranged in a looped path, of motor means adapted for operation upon said track, hoisting mechanism cooperatively associated with said track, trucks for supporting freight, and conveying-cages for said trucks, said conveying-cages being adapted, through the agency of said motor means and said hoisting mechanism, to be lifted and conveyed from place to place along said looped path, substantially as described.

2. In a freight-transfer system, the combination with an elevated track arranged in a looped path, of motor means adapted for operation upon said track, hoisting mechanism cooperatively associated with said track, trucks for supporting freight, conveying-cages for said trucks, said conveying-cages being adapted, through the agency of said motor means and said hoisting mechanism, to be lifted and conveyed from place to place along said looped path, and means for bringing the said conveying-cages, when not associated with said motor means and hoisting mechanism, out of the said looped path, substantially as described.

3. In a freight-transfer house, the combination with an elevated track within said freight-transfer house arranged in a looped path, of motor means adapted for operation upon said track, hoisting mechanism operatively associated with said track, freight-conveying cages adapted, through the agency of said motor means and said hoisting mechanism, to be lifted and conveyed from place to place along said looped path, the floor of the said freight-house declining outward from the center line of said looped path, for the purpose of bringing said freight-conveying cages out of said looped path when released by said hoisting mechanism, substantially as described.

4. In a freight-transfer system, the combination with an elevated track arranged in a looped path, of freight-supporting devices, means associated with said track for lifting and conveying said freight-conveying devices along said looped path, and means for bringing the said freight-supporting devices, when not associated with the first aforesaid means, laterally away from the said looped path, substantially as described.

5. In a freight-transfer system, the combination with an elevated track arranged in a looped path, of motor means adapted for operation upon said track, hoisting mechanism cooperatively associated with said track, trucks for supporting freight, conveying-cages for said trucks, said conveying-cages being adapted, through the agency of said motor means and said hoisting mechanism, to be lifted and conveyed from place to place along said looped path, and automatic means for bringing the said conveying-cages, when not associated with said motor means and hoisting mechanism, out of the said looped path, substantially as described.

6. In a freight-transfer house the combination with an elevated track within said freight-transfer house arranged in a looped path, of motor means adapted for operation upon said track, hoisting mechanism operatively associated with said track, freight-conveying trucks, cages adapted to carry said trucks and adapted, through the agency of said motor means and said hoisting mechanism, to be lifted and conveyed from place to place along said looped path, and a groove for said cages provided in the floor of said freight-house below said track, the surface of said groove declining outwardly from the center line thereof, the outermost portion of the said groove being of sufficient depth to permit the floor of the said cages to register with the normal level of the freight-house floor, substantially as described.

7. In a freight-transfer system, the combination with a transfer-house having a receiving and a discharging side, of a track in the form of a looped path interposed between the said sides of the transfer-house, a plurality of hand trucks or carriers for transferring freight from the receiving to the discharging side of the house, a plurality of conveyers moving upon the said track for picking up the trucks and moving them from the receiving to the discharging portions of the track, and means associated with each conveyer for lifting the truck carried thereby off the floor of the freight-house, substantially as described.

8. In a freight-transfer system, the combination with a transfer-house having a receiving side and a discharging side, of a track in the form of a looped path interposed between the receiving and discharging sides of the freight-house, hand trucks or carriers for conveying freight from the receiving side to the discharging side of the transfer-house, and conveying means moving upon the track for receiving the freight at the receiving side of the track and carrying the same to the discharging side of the track where the freight may be carried to the discharging side of the transfer-house, substantially as described.

705,120. NUT-LOCK. JOHN MCVEY, Longue Pointe, Canada. Filed July 17, 1901. Serial No. 68,569. (No model.)

Claim.—1. In a nut-lock, the combination with a bolt, of a nut provided with a groove which intersects with the threads in an opening thereof, said groove having an inclined bottom, and a tapering fastener fitted in said groove for an inclined edge of the fastener to engage with the corresponding bottom of the groove, the inner end of the fastener being extended beyond the inner face of the nut and the active edge of the fastener occupying opposing relation to the threads of the bolt, said inner end of the fastener and the active edge thereof being beveled, substantially as described.

2. In a nut-lock, the combination with a bolt, of a nut provided with a radial groove which has a sloping bottom, and a fastener fitted in said groove and having a beveled inner edge and an active edge which is beveled and is in opposing relation to the threads of the bolt, substantially as described.

3. In a nut-lock, the combination with a threaded bolt, of a nut provided with a radial groove having an inclined bottom and a wedge-like fastener seated in said groove with its inner end extending beyond the inner face of the nut, and having its active edge beveled and disposed in opposing relation to the threads of the bolt, substantially as described.

705,121. VEHICLE-WHEEL. NELSON A. NEWTON, Kalamazoo, Mich. Filed Mar. 20, 1902. Serial No. 98,114. (No model.)

Claim.—1. In a vehicle-wheel, the combination of the wood center portion A; bands having suitable perforated flanges or projections B', with suitable seats B'' therein; spokes C having their lower ends formed to extend through the perforations in the said hub-bands and screw-threaded to receive suitable nuts C''; plates E suitably perforated to receive the spokes C therethrough; a channeled rim D, to which said plates are secured; tension-plates E'', adapted to be inserted between said plates E and said channeled rim; and a suitable tire D' in said channeled rim, all coacting for the purpose specified.

2. In a vehicle-wheel, the combination of the wood center portion A; bands having suitable perforated flanges or projections B with suitable seats B'' therein; spokes C having their lower ends formed to extend through perforations in the said hub-bands and screw-threaded to receive suitable nuts C''; plates E suitably perforated to receive the spokes C therethrough; a channeled rim D to which said plates are secured in a manner to put tension on said spokes; and a suitable tire D' in said channeled rim, all coacting for the purpose specified.

3. In a vehicle-wheel, the combination of a hub; hub-bands with outwardly-projecting flanges or lugs; suitable seats therein to receive the spokes; spokes adapted to rest in said seats and engaging said flanges and threaded to receive suitable retaining-nuts; tire-plates with complemental perforations to receive heads on the outer ends of said spokes; a rim to which said plates are detachably secured; tension-plates adapted to be

inserted between said tire-plates and rim, to regulate the tension on the spokes, as specified.

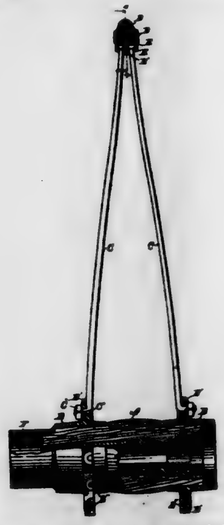

4. In a vehicle-wheel, the combination of a hub; hub-bands with outwardly-projecting flanges or lugs; suitable seats therein to receive the spokes; spokes adapted to rest in said seats and engaging said flanges and threaded to receive suitable retaining-nuts; tire-plates with countersunk perforations to receive heads on the outer ends of said spokes; a rim to which said tire-plates are detachably secured in a manner to put tension on said spokes, for the purpose specified.

5. In a vehicle-wheel, the combination of a hub; hub-bands with outwardly-projecting flanges having perforations to receive the spokes formed therein; metal spokes with heads at their outer ends; tire-plates with countersunk perforations to receive the heads on the outer ends of said spokes; a rim to which said tire-plates are detachably secured; tension-plates adapted to be inserted between said tire-plates and said rim, to regulate the tension on said spokes, for the purpose specified.

6. In a vehicle-wheel, the combination of a suitable hub; metal spokes with heads at their outer ends secured thereto; tire-plates with countersunk perforations to receive the heads on the outer ends of the said spokes; a rim to which said tire-plates are secured; and tension-plates adapted to be inserted between said rim and said tire-plates, for the purpose specified.

705,122. ELECTRIC-ARC LAMP. JOHN S. HOWOTHY, Madisonville, Ohio, assignor to General Electric Company, a Corporation of New York. Filed June 28, 1897. Serial No. 642,630. (No model.)

Claim.—1. In an electric-arc lamp, the combination of a carbon-holder, a tube which incloses the holder, an armature, a solenoid-magnet, a core which incloses the magnet, an extension on the core, and means for adjusting the armature so that its position with respect to the extension may be varied to compensate for different lengths of arc.

2. In an electric-arc lamp, the combination of a tube, stops formed thereon, a core embracing the tube, means engaging with the stops for adjusting the core, and a solenoid-magnet surrounding the core, the parts being so arranged that altering the position of the core on the tube varies the intensity of the magnetic field by changing the magnetic reluctance.

3. In an electric-arc lamp, the combination of a frame-tube which surrounds the carbon and passes through the solenoid, a solenoid, a core for the solenoid which engages with the tube, an armature located within the tube, a piston secured to the armature and arranged to work in the tube, the said piston and tube constituting a dash-pot, and a flexible connection between the armature and piston for compensating for inaccuracies in alinement.

4. In an arc-lamp, the combination of a drum composed of a main body and a detachable flange, bolts for securing the flange to the body, coils of resistance-wire encircling the drum and presenting parallel surfaces, means for connecting the coils at one end, means for connecting the opposite ends to terminals, and a connector which is circumferentially adjustable on the coils for varying the amount of resistance in circuit.

5. In combination with an arc striking and feeding mechanism, a rheostat comprising a support covered with insulating material, a body of resistance material, insulated clamps for securing the resistance-body to the support which are provided with curved inner faces, a two-part connector which engages with the resistance-body for cutting portions of it into and out of circuit, and means for clamping the two parts of the connector around the resistance material.

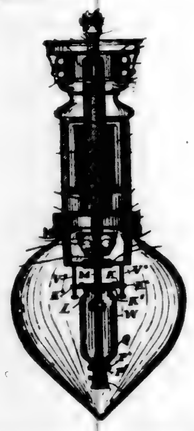

6. In an arc-lamp resistance, the combination of a cylindrical support, a body of resistance material mounted thereon, and a pair of flanges forming a part of the support and located above and below the said body for the purpose of protecting it.

7. In an arc-lamp, the combination of a cylinder-support, a flange formed integral therewith, a body of resistance material surrounding the support, a detachable flange located at one end of the support, and means for securing the flange to said support.

8. In an electric-arc lamp, the combination of a tubular frame, a resistance-supporting device secured to the frame, means for suspending the lamp, and a single means for securing the supporting device to the frame and also retaining the resistance-supporting device in place.

9. In combination, a support, a resistance-wire coiled around the support, means for securing the wire to the support, and means for cutting out more or less of the wire, which means is supported entirely by the said resistance-wire.

10. In an arc-lamp, the combination of a support, coiled resistance-wire wound thereon, the arrangement being such that one part of the wire is wound in a clockwise direction, the balance in an anticlockwise direction, means for holding the wire at the point of turning, means for holding the ends of the wire, and a contact arranged to bridge more or less of two turns.

11. In connection with an arc-lamp, a rheostat in the form of a drum composed of metal and carrying on its surface insulated coils of high-resistance material and attached thereto by means of clips with insulating material between the clips and coils, the said clips being attached to the drum by suitable means, the resistance spiral coils on the drum lying parallel to one another and encircling the drum, and a short-circuit strap attached to the spiral, and circumferentially adjustable thereon.

12. In an electric-arc lamp, the combination of a fixed frame-tube carrying a solenoid, a tube carrying the armature or core and located within the frame-tube, and movable therein under the influence of the current in the solenoid, a carbon-holder movable in the tube carrying the core, and a plate capable of moving edgewise to compensate for changes in alinement of the feeding carbon, which also acts as a stop for the carbon-holder.

13. In an electric-arc lamp, the combination of a fixed frame-tube carrying a solenoid-coil, an armature or core, a tube carrying the core and movable with it under the action of the current in the solenoid, a carbon-holder, a plate which is perforated to receive the feeding electrode and is free to move edgewise, the said plate also acting as a stop for the carbon-holder, a globe, and a support common to the plate and upper end of the globe.

14. In an electric-arc lamp, the combination of the fixed tube carrying a solenoid-coil, a core, a tube carrying the latter, and slidable with the core within the fixed tube, in accordance with changes in the strength of the current through the coil, a frictional carbon-holder slidable in said tube, a carbon-guide consisting of the depressed plate free to move edgewise thus permitting the carbon to remain in its straight line of descent, and also operating to duly stop the carbon-holder, and a disk supporting the guide, and having a depending flange within which is received the upper edge of the inner globe for holding the same in place.

15. In an electric-arc lamp, the combination of a slidable carbon, a frame, guide-rods secured thereto, a disk capable of moving on said rods, and having a flange for receiving the upper end of the arc-inclosing globe, a lower holder having a flange for receiving the globe, and a lower-carbon holder, both of said holders being mounted on the frame of the lamp.

16. In an electric-arc lamp, the combination of an arc-inclosing globe, a lower holder therefor having a screw-threaded portion and a flange for retaining the globe, a frame which is formed integral with the holder, means for holding the lower carbon which fits into the screw-threaded opening, and means for pressing the globe against the holder.

17. In an electric-arc lamp, the combination of an arc-inclosing globe, a holder in which the lower end of the globe rests, a frame for supporting the lower holder, a holder which engages the upper end of the globe and retains it in place by pressing it downward, and rods which limit the downward movement of the upper holder, and suspend the same when the globe is removed.

18. In an electric-arc lamp, the combination of an arc-inclosing globe, a support for the lower end in which the globe rests freely, a frame to which the support is secured, a support for the upper end which retains the globe in place, a gas-cap for restricting the admission of air to the globe and the exit of gas, and a pair of rods for limiting the downward movement of the gas-cap.

19. In an electric-arc lamp, the combination of an arc-inclosing globe, a support for the lower end thereof, a frame to which the support is secured, a support which engages with the upper end and retains the globe in place, and a guide for the upper support which permits it to be raised or lowered at will.

20. In an electric-arc lamp, the combination of an arc-inclosing globe, a support for the lower end thereof, a frame to which the support is secured, a support which has a flange that surrounds and engages the upper end of the globe, guide-rods on which the support is free to slide, and means for limiting the downward movement of the support.

21. In an electric-arc lamp, the combination of a frame having a slotted flange, a globe, a ring permanently secured to the globe, projections on the ring which enter the slots in the flange, swivel-hooks for retaining the pins within the slots, and means for limiting the angular movement of the hooks.

22. In an electric-arc lamp, the combination of a frame having a slotted flange, a globe, a ring permanently secured to the globe, projections on the ring which enter the slots in the flange, means for retaining the pins in the slots, and means for holding the globe in place when the retaining means are displaced.

23. In an electric-arc lamp, the combination of a frame having a downturned slotted flange, a ring having projections which enter the slots, pivoted latches arranged to engage with the projections, and set-screws which hold the latches in place and also enter holes in the ring and support it when the latches are displaced.

24. In an electric-arc lamp, the combination of a globe or cylinder which incloses the carbons, a cap which rests loosely on the top of the cylinder and prevents the free entrance of air into the cylinder, and means for retaining the cap within the lamp at or near its normal position when the cylinder is removed.

25. In an electric-arc lamp, the combination of a globe or cylinder which incloses the carbons, a cap which is arranged to close one end of the cylinder and rests loosely on the cylinder, and means for retaining the cap in place after the cylinder is removed.

705,123. SCRAPER OR CLEANER FOR WHEELS. WILLIAM C. OASTLER, New York, N. Y. Filed May 12, 1902. Serial No. 106,917. (No model.)

Claim.—1. The scraper for wheels comprising the frame having and carrying at its outer end the scraper-blade, and the bracket-rod supporting said frame and upon which the same is adapted to turn, combined with the opposing springs connected with and maintaining said frame and blade in operative position, and means for connecting said springs at one end to said rod; substantially as set forth.

2. The scraper for wheels comprising the frame having and carrying at its outer end the scraper-blade and provided at its inner end with the hubs 21, 22, and the bracket-rod passing through said hubs and upon which said frame is adapted to turn, combined with the collar on said rod, and the reversely-coiled springs connected at one end to said frame and at the other end to said collar; substantially as set forth.

3. The scraper for wheels comprising the frame having and carrying at its outer end the scraper-blade and provided at its inner end with the hubs 21, 22, and the bracket-rod passing through said hubs and upon which said frame is adapted to turn, combined with the collar on said rod, means for detachably securing said collar, and the reversely-coiled springs on said rod at opposite sides of said collar, said springs at their outer ends being connected with said frame and at their inner ends with said collar; substantially as set forth

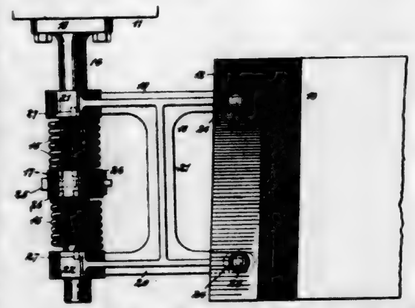

4. The scraper for wheels comprising the frame having and carrying at its outer end the scraper-blade and provided at its inner end with the hubs 21, 22, and the bracket-rod passing through said hubs and upon which said frame is adapted to turn, combined with the collar on said rod and having the series of apertures in its opposite sides, means for detachably securing said collar and the reversely-coiled independent springs on said rod at opposite sides of said collar, said springs at their outer ends being connected with said frame and at their inner ends held in said apertures; substantially as set forth.

5. The scraper for wheels comprising the frame, the reversible scraper-blade at the outer end thereof, means for detachably securing said blade in position, and the rod supporting said frame and upon which the same is adapted to turn, combined with the opposing springs connected with and maintaining said blade in operative position, and means for connecting said springs at one end to said rod: substantially as set forth.

705,124. APPARATUS FOR CONTROLLING THE SPEED OF STEAM-TURBINES. GUSTAF O. M. OLSSON, Stockholm, Sweden, assignor to De Laval Steam Turbine Company, a Corporation of New Jersey. Filed June 28, 1901. Serial No. 66,364. (No model.)

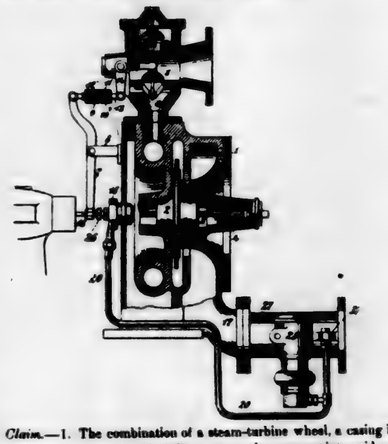

Claim.—1. The combination of a steam-turbine wheel, a casing inclosing the same, means for admitting steam under pressure into said casing, means for reducing atmospheric pressure existing within said casing, a valve constructed to cut off connection between said reducing means and said casing, and means for operating the said valve; whereby steam may be imprisoned in said casing and a resisting medium to the rotation of said wheel thus provided.

2. The combination of a steam-turbine wheel, a casing inclosing the same, means for admitting steam under pressure into said casing, means for reducing atmospheric pressure within said casing, a valve constructed to cut off connection between said reducing means and said casing, and

means automatically operating to close said valve when said wheel has attained a certain predetermined speed of revolution.

3. The combination of a steam-turbine wheel, a casing inclosing the same, means for admitting steam under pressure into said casing, means for reducing atmospheric pressure within said casing, a valve constructed to cut off connection between said reducing means and said casing, and means actuated by said wheel for closing said valve when said wheel shall have attained a certain predetermined speed of revolution.

4. The combination of a steam-turbine wheel, a vacuum-chamber inclosing the same having a steam-inlet and an outlet-conduit through which the atmosphere is exhausted from said chamber, a valve in said outlet-conduit a cylinder, a piston therein controlling said valve, a spring acting on one side of said piston, means for producing a vacuum on the same side of said piston and thereby causing the same to compress said spring and open said valve, and means for destroying said vacuum and causing said spring to act on said piston to close said valve; the said last-named means being actuated by said turbine wheel after it has attained a certain predetermined speed, substantially as described.

5. The combination with the steam-turbine wheel 2, casing 1, and pipe 27 of the air-valve 18, means for opening the same actuated by said turbine wheel after said wheel shall have attained a certain predetermined speed, cylinder 29, piston 30, valve 31 in said pipe 27, intermediate mechanism between said piston and valve, spring 35 bearing on said piston, and pipe 20 communicating with said pipe 27, and with said cylinder 29, substantially as described.

705,125. GAS-SERVICE SAFETY-VALVE. LATHAN M. OSBORNE, Apollo, Pa. Filed Nov. 30, 1901. Serial No. 84,255. (No model.)

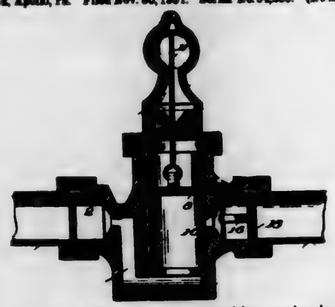

Claim.—A gas-service safety-valve comprising a casing having a vertical cylinder, offstanding coupling ends intermediate of the upper and lower ends of the cylinder, the inlet-coupling end having communication with the cylinder at a point between its ends, a passage connecting the outlet-coupling end with the bottom of the cylinder, a strainer located in the inlet-coupling end, a cover closing the upper end of the cylinder and having a vertically-apertured boss, the upper end of the opening being enlarged, a valve freely movable vertically within the cylinder and having its stem passing loosely through the opening of the cover, said valve being held above the inlet by the pressure of the gas and adapted to be held seated when closed by the same pressure, the inlet being wholly below the valve when the latter is open and entirely above the said valve when the latter is seated, and a cap fitted to the boss of the cover for inclosing the upper end of the valve-stem, substantially as specified.

705,126. HORN FOR SOUND RECORDING AND REPRODUCING APPARATUS. GEORGE OTIS and WILLIAM P. SPALDING, Denver, Colo. Filed June 27, 1901. Serial No. 66,301. (No model.)

Claim.—1. In sound recording and reproducing instruments, the combination of a multiple horn comprising a plurality of small horns separated from each other by a sounding-board, with a sound recorder or reproducer in communication with said multiple horn.

2. A multiple horn comprising a plurality of small horns separated from each other by a sounding-board and a common distributing chamber or mouth with which the small horns communicate at their smaller ends.

3. A multiple horn comprising a wooden body part divided interiorly into a plurality of small horns by a wooden sounding-board.

4. A horn comprising a plurality of small horns separated from each other by a sounding-board, a common distributing chamber or mouth with which the small horns communicate at their small ends, and a hood or bell common to all of the small horns and into which said small horns discharge or from which they receive the sounds at their larger ends.

5. A horn comprising a body part adapted to communicate at its small end with a recorder or reproducer, a lateral partition in the body part forming a mouth or distributing-chamber at the smaller end of the horn, and a longitudinally-extending sounding-board dividing the interior of the body part outside of the mouth into two small horns communicating with the mouth through openings in the lateral partition.

6. A horn comprising a body part adapted to communicate at its small end with a recorder or reproducer, a lateral partition in the body part forming a mouth or distributing-chamber at the smaller end of the horn, a longitudinally-extending sounding-board dividing the interior of the body part outside of the mouth into two small horns communicating with the mouth through openings in the lateral partition, and a hood or bell common to all of the small horns and into which said horns discharge or from which they receive the sounds at their larger ends.

7. A horn for use with apparatus for recording and reproducing sounds having a sounding-board longitudinally disposed therein.

8. A horn for use with apparatus for recording and reproducing sounds having a sounding-board longitudinally disposed therein and a sound-post interposed between the sounding-board and side wall of the horn.

9. A wooden horn for use with apparatus for recording and reproducing sounds having a wooden sounding-board longitudinally disposed therein and a sound-post interposed between the sounding-board and side wall of the horn.

705,127. BUILDING-SLAB AND MEANS FOR SUPPORTING SAME. THEODORE P. PAYNE, Irvington, N. J., assignor of one-half to Seymour H. Robinson, New Rochelle, N. Y. Filed Oct. 24, 1901. Serial No. 79,838. (No model.)

Claim.—1. A flat building-slab having a sheet of reticulated metal disposed flatwise in its body and bars of flat iron disposed edgewise in its body to stiffen the block against transverse strains.

2. A flat building-slab having a sheet of reticulated metal disposed flatwise in its body and bars of flat iron disposed edgewise in its body and threaded through the meshes of the reticulated metal so that both may lie substantially in the center of the body.

3. A building-slab having flat stiffening bars disposed edgewise in its body, and provided respectively at the opposite ends of such flat bars with a longitudinal tongue and groove and the bars notched at their ends to engage a pair of supporting rods or ropes.

4. A flat building-slab having a sheet of reticulated metal disposed flatwise in its body, bars of flat iron disposed edgewise in its body, and the block provided respectively at the opposite ends of such flat bars with a longitudinal tongue and groove, and the bars notched at their ends to engage a pair of supporting rods or ropes.

5. The combination, with flat building-slabs having flat iron bars disposed edgewise in their bodies and notched at the end, of a wire rope formed of two wires fixed at the ends and twisted to produce tension and engaged with the notches upon the said bars.

6. The combination, with the posts or rafters of a building, and a series of horizontally-disposed ropes formed of wires fixed at their ends and twisted to produce tension, of a series of flat slabs inserted between the several ropes and provided each upon the ends with a tongue and groove, and means in the groove for engaging each wire rope, whereby the slabs are held in a common plane by the series of ropes.

7. The combination, with the posts or rafters of a building, and a series of horizontally-disposed ropes formed of wire fixed at their ends and twisted to produce tension, and flat slabs provided respectively upon their opposite ends with tongue and groove, and having flat iron bars disposed edgewise in the slabs with their ends projected into the said tongue and groove and suitably notched to fit the wire ropes, whereby the slabs may be secured in horizontal series between the ropes and held in place by the engagement of the notched bars and the ropes.

705,128. PIPE-WRENCH. HARRISON PEASE, Giles, Nebr. Filed Nov. 12, 1901. Serial No. 82,066. (No model.)

Claim.—1. In a pipe-wrench, a handle, one end of which is provided with a rigid jaw, the outer surface of the jaw being cut away, a movable jaw, the outer end of which is curved to correspond with the rigid jaw and the rear end is recessed to fit upon the back of the rigid jaw, and two plates pivotally secured at their ends to said jaws, substantially as described.

2. A pipe-wrench comprising a shank, a fixed jaw, said fixed jaw being serrated and provided with a curved extension a movable jaw provided with serrations, and also having a curved extension adapted to overlap and rest upon the curved extension of the fixed jaw, and the curved plates connecting the fixed and movable jaws, as set forth.

3. A pipe-wrench comprising a shank, a fixed jaw, said fixed jaw being serrated and provided with a curved extension, a movable jaw provided with serrations and also having a curved extension adapted to overlap and rest upon the curved extension of the fixed jaw, and the curved plates connecting the fixed and movable jaws, said curved plates having their inner edges serrated, as set forth.

705,129. PULLEY. WILLIAM B. PEET, Lakemills, Wis., assignor to P. B. Pargo and Company, Lakemills, Wis., a Corporation of Wisconsin. Filed Oct. 18, 1901. Serial No. 79,202. (No model.)

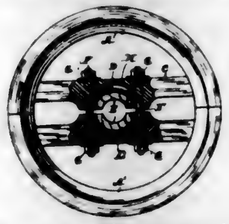

Claim.—A pulley, comprising two semicircular complementary members each composed of a rim, a cross-piece substantially diametrical of the rim and connecting the extremities of the rim the cross-piece having a concave axial recess, a metal semicylindrical bushing of anvarying size fitting into the axial recess of the cross-piece, and a wood semicylindrical bushing fitting into the metal bushing, and also U-shaped clips let into the cross-piece of one member about its metal and wood bushings, the legs of the clips extending through the cross-pieces of the complementary member, and nuts on the legs of the clips adapted to turn against the cross-piece of the complementary member.

705,130. HOOP-MAKING MACHINE. JOHN C. PERRY, Clinton, Mass. Filed Apr. 7, 1902. Serial No. 101,748. (No model.)

Claim.—1. A machine for making a series of independent hoops from a metallic strip of indeterminate length, said machine having provisions for cutting and bending successive lengths of said strip into predetermined shape with the ends in juxtaposition, and means for successively welding the meeting ends of the said lengths.

2. A machine for making a series of independent hoops from a metallic strip of indeterminate length, said machine having provisions for feeding, bending and cutting said strip into successive lengths with their ends in juxtaposition, and means for successively electrically welding the meeting ends of the said lengths.

3. A machine for making independent hoops comprising means for bending a metallic strip of indeterminate length to the required form, means for severing the strip at a predetermined point, and means for positioning and electrically welding the ends of the severed portion.

4. A machine for making successive independent hoops, comprising a "former," means for bending elongated metal about said "former," guides for receiving and holding said metal, and means for electrically welding the meeting ends of said metal to form an independent hoop or band.

5. A machine for making successive independent hoops comprising means for bending a metallic strip into a loop, means for positioning the ends of said loop in alinement, and means for electrically welding the said ends to form an endless band.

6. A machine for making independent hoops comprising the following instrumentalities, to wit: "forming" mechanism, severing mechanism, positioning mechanism, and welding mechanism, said instrumentalities operating to bend the end of a metallic strip into a loop, to sever said bent portion or loop, to position the ends of said severed portion, and to electrically weld the said ends to form a hoop.

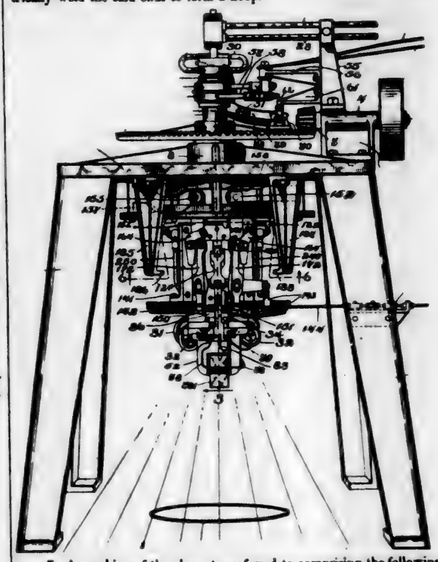

7. A machine of the character referred to comprising the following instrumentalities, to wit: a rotating "former" having means for clamping a metallic strip and forming a loop thereof, and electrical welding means rotatable with "former" for welding the ends of said loop.

8. A machine of the character referred to comprising the following instrumentalities, to wit: loop-forming mechanism, electric welding mechanism, and mechanism for independently discharging a formed and welded band.

9. A machine of the character referred to comprising the following instrumentalities, to wit: band-forming mechanism, severing mechanism and welding mechanism, said instrumentalities being arranged and operated whereby when the ends of one band are being welded, another independent band is being formed.

10. A machine of the character referred to comprising the following instrumentalities, to wit: mechanism for forming successively a plurality of loops, mechanism for severing the formed loops, mechanism for electrically welding the ends of the formed and severed loops, and mechanism for discharging the welded bands, the said instrumentalities operating to continuously form and weld independent bands from a metallic strip of indeterminate length.

11. A machine of the character referred to comprising the following instrumentalities, to wit: means including a "former" for bending the metallic strip into a loop around said "former" and severing the same, mechanism for loosening said loop on said "former," and means for electrically welding the ends of the loop to form an independent band.

12. A machine of the character referred to comprising the following instrumentalities, to wit: means including a "former" and clamping device thereon for bending a metallic strip into a loop, and welding mechanism including electrodes having independent clamping devices for moving the ends of the wire of one loop together during the welding thereof.

13. A machine of the character referred to comprising the following instrumentalities, to wit: mechanism including a rotating "former" with a feeding-clamp thereon for bending a metallic strip into a loop, welding mechanism having electrode-clamps for clamping the ends of the loop, and means whereby the ends of the loop are transferred from the feeding-clamps to the electrode-clamps.

14. A machine of the character referred to comprising the following instrumentalities, to wit: a support, means for winding the end of a metallic strip of indeterminate length around said support to form a loop, means for severing the said loop, and means for positioning and electrically welding the ends of one loop independently of the other loops.

15. A machine of the character referred to comprising the following instrumentalities, to wit: a support, means for bending a metallic strip of

indeterminate length into successive loops around said support, mechanism for severing and positioning the loops successively as they are formed, electrical welding devices for welding the ends of a loop, and mechanism for releasing or discharging the welded band.

16. A machine of the character referred to comprising the following instrumentalities, to wit: a support, means for feeding a metallic strip around said support to form a loop, means for severing the loop, means for moving said loop from the line of feed of the strip, and means for electrically welding the ends of the severed loop to form an independent endless band.

17. A machine of the character referred to comprising a continuously-rotating mandrel, means on said mandrel for clamping a metallic strip thereto and winding it thereabout, severing mechanism for cutting the said strip into lengths, and welding mechanism rotating with said mandrel for welding the ends of said lengths.

18. A machine of the character referred to, having a rotatable welding mechanism, and a detachable mandrel or former arranged to permit one mandrel to be substituted for another.

19. A machine of the character referred to comprising automatic loop-forming mechanism, electric welding mechanism for holding and uniting the ends of a loop to form an endless band, and an automatic device for controlling the electric current through the welding mechanism.

20. A machine of the character referred to comprising loop-forming mechanism, means for positioning and separating the ends of the loop while said ends are being brought into alinement, and means for electrically welding the ends of the loop together to form an independent hoop.

21. In a machine of the character referred to, means for forming and electrically welding a blank to form a hoop, said means including a cutter moving with the feeding-wire, whereby loops may be formed, severed and welded without stopping the machine.

22. In a machine of the character referred to, means for forming and electrically welding a blank to form a hoop, said means including a cutter arranged to sever the wire at a predetermined point to form a loop while the loop immediately following is being formed.

23. In a machine of the character referred to, means for forming and electrically welding a blank to form a hoop, said means including a cutter, one member of which is arranged to act as a temporary support for the wire while it is being fed in place.

24. In a machine of the character referred to, welding-clamps, and means for automatically placing and holding the ends of a blank in alinement, and means for causing the blank to be thereafter engaged by the welding-clamps.

25. In a machine of the character referred to, welding means, cutting means, and means for clamping and holding a blank arranged to hold the blank while it is being cut and thereafter to move the ends of the blank successively into position to be engaged by the welding means.

26. In a machine of the character referred to, a pair of clamps, and means for automatically operating the same to position the loop previous to welding, to loosen the loop on the mandrel, to remove the loop from its guide or "former" sufficiently to clear the next infeeding loop, and to insure the free discharge of the completed or welded loop.

27. In a machine of the character referred to, a pair of clamps, means for operating the same to clamp the wire and hold it between said clamps while it is being cut to form the blank, to translate the ends of the said wire successively in position for welding, the movement of translation of the clamps being such that they diverge as they approach the line of weld, thus giving clearness to the ends of the blank held by the clamps, and preventing interference as they are brought successively to the welding position.

28. In a machine of the character referred to, feeding-clamps in combination with welding-clamps, said feeding-clamps being adapted to place the ends of the blank into the welding-clamps, and immediately after the clamping of the welding-clamps and previous to the application of the welding-current to free themselves from the blank to permit the free action of the welding-clamps.

29. In a machine of the character referred to, a "former," adapted to receive and form a strip of metal to the desired shape and permit the electrical welding of said strip to take place while around said "former," and permit the free discharge of the completed hoop.

30. In a machine of the character referred to, a "former," electrical welding apparatus placed within said "former" and having its jaws arranged to protrude through said "former," whereby they may grasp the ends of the blank to weld the same, without interfering with the feed or other steps in the formation of the hoop.

31. In a machine of the character referred to, welding-jaws, a former or mandrel, a pair of clamps arranged within said former, projecting through the latter, said clamps being adapted to successively place the ends of a blank in position where they will be clamped by the welding-jaws without interfering with the feeding of the blank or the welding operation.

32. In a machine of the character referred to, means for welding the ends of a blank together to form a hoop while the welding device is in motion, together with the hoop, about the center of rotation of the hoop.

33. In a machine of the character referred to, welding means including welding-jaws, means for successively forming hoops of uniform size or diameter, said means including mechanism for automatically and positively placing the ends of the blanks into said welding-jaws with the same amount of projection for each succeeding hoop, said parts being timed to weld the ends of the blank when positioned.

34. In a machine of the character referred to, feeding means in combination with welding means, said feeding means being arranged to positively place the ends of the blank into the welding means, and thereafter previous to the application of the welding-current, free themselves from the blank to permit the free action of the welding means.

35. In a machine of the class described, a feeding-clamp, a cutter arranged in the path of the feed of the wire, and means for preventing the displacement of the wire relatively to the cutter, during the preliminary movements of the clamp.

36. In a machine of the character referred to, a former or mandrel, a forward feeding-clamp, a rear feeding-clamp provided with a displacing-bar, and means for giving the rear clamp its feeding motion, whereby a predetermined length of blank on the former will be displaced simultaneously with the portion carried by said rear clamp.

37. In a machine of the class described, two or more feeding-clamps each provided with a projecting jaw or ledge, adapted to receive the wire as it is wound upon the machine, said clamps being provided with movable jaws adapted to engage the wire at predetermined times.

38. In a machine of the character referred to, a former or mandrel, welding-jaws, feeding-clamps arranged to hold a blank fed upon the former, a cutting device arranged to sever the blank at a predetermined point, means for causing the clamps to present the blank to the welding-jaws after said cutting operation, and means for positively removing the welded hoops from the welding-jaws.

705,181. RAILWAY-TRACK STRUCTURE. JOHN H. PFLIEGER, Johnstown, Pa., assignor to the Lorain Steel Company, a Corporation of Pennsylvania. Filed Nov. 19, 1901. Serial No. 82,852. (No model.)

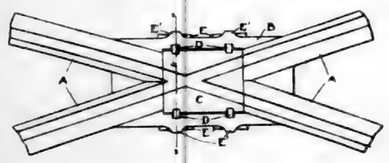

Claim.—1. In a track structure, the combination with a wear-plate seated in a pocket in the structure, of fastening members or keys arranged to grip the side portions of said plate and having arms extending outwardly through the side walls of the pocket, and wedges or the like engaging said arms and securing the said members or keys in gripping engagement with the plate.

2. In a track structure, the combination with a wear-plate seated in a pocket in the structure, of means for securing said plate in its seat, consisting of angular fastening members or keys engaging the plate and extending outwardly through the side walls of the pocket, and wedges driven between said members or keys and the body of the structure.

3. In a railway-track structure, the combination with a body portion having a pocket therein and apertures leading outwardly from the pocket through its side walls, of a wear-plate seated in said pocket, and approximately Z-shaped fastening members seated between the side of the plate and the walls of the pocket, with their upper arms engaging the plate and their lower arms extending outwardly through said apertures and secured by wedges.

4. In a railway-track structure, the combination with a wear-plate seated in a pocket in the body of the structure, of means for fastening said plate consisting of angular, approximately Z-shaped keys, whose upper arms grip the plate and whose lower arms extend outwardly through the side walls of the pocket and are turned upwardly at their ends, and wedges driven between said upturned ends and the body of the structure.

5. In a railway-track structure, the combination with the body portion having a pocket, and apertures leading outwardly from said pocket through its side walls, of a wear-plate seated in said pocket, and the fastening keys or members D having the arms *d* engaging the plate, the arms extending outwardly through said apertures and terminating in the upturned ends *d'*, and the wedges E driven between said upturned ends *d'* and the body of the structure.

705,182. PAPER-FILE. GEORGE A. PHILLIPS, Marion, Ind. Filed Apr. 28, 1902. Serial No. 104,989. (No model.)

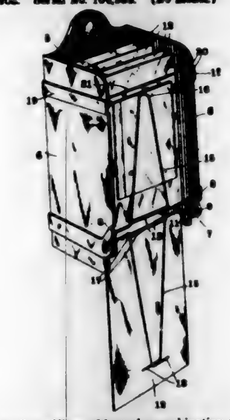

Claim.—1. In a filing-cabinet, the combination of a pair of opposed sides each having a runway formed therein, of a plurality of plates each having a cross-bar adapted to lie in said runway, and a spring-clip carried by each plate for holding papers and the like upon both sides of the plate.

2. In a filing-cabinet, the combination with a pair of opposed sides each having a substantially U-shaped runway formed therein, of a plurality of filing-plates each provided with a cross-bar adapted to lie in said runways, a spring filing-clip carried by each of said plates said clip consisting of a piece of wire doubled upon itself at 16, and the doubled portion again doubled upon itself at 17 17, substantially as and for the purpose set forth.

3. In a filing-cabinet, the combination with a pair of opposed sides 6 each having a depression 7 formed therein and a track 8 leading into said depression from the edge of the side, of a plate mounted in each of said depressions 7 so as to form a U-shaped runway 11, a plurality of filing-plates 12 each provided with a cross-bar 13 having heads 14, and a filing-clip carried by each of said plates, substantially as and for the purpose set forth.

705,183. CAN-WASHER. FRED T. PIERCE and ANVALD R. KOCHENDERFER, Geneva, Minn. Filed Feb. 21, 1902. Serial No. 95,026. (No model.)

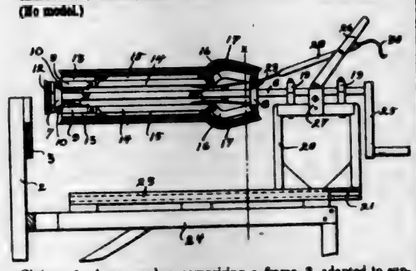

Claim.—1. A can-washer, comprising a frame 2 adapted to support a can in a horizontal position, a frame 20 provided near said frame 2, a rod substantially square in cross-section mounted on said frame 20, a fixed and a movable head provided on said rod, a collapsible frame pivotally connected with said heads and provided with a series of brushes, springs for normally holding said frame in its expanded position, means for revolving said rod and brush-frame, and a lever device provided on said frame 20 and having an arm to engage said sliding head to reciprocate it toward or from said fixed head, for the purpose specified.

2. The combination, with a suitable frame 2 adapted to support a milk-can in a horizontal position, of a frame 20 movable toward or from the open end of the can, guide-rails between which said frame 20 is slidable, a rod provided with a suitable crank and mounted in bearings on said frame 20 and adapted to be projected into the mouth of the can, fixed and movable heads provided on said rod, a collapsible brush-frame pivotally connected with said heads and provided with a series of brushes, a lever 26, and a hook 28 provided on said lever and adapted to engage said movable head to draw it lengthwise away from said fixed head when said lever is operated to collapse said brush-frame.

3. A can-washer, comprising a frame whereon the can is supported in a substantially horizontal position, a frame 20, guide-rails whereon said frame 20 is slidable toward or from the mouth of the can, a rod mounted in bearings on said frame 20, fixed and movable heads provided on said rod, a brush-frame provided with a series of brushes pivotally connected with said heads, springs for normally holding said brush-frame in its expanded position and allowing it to collapse and be removed from the can when said movable head is pushed or drawn away from said fixed head, substantially as described.

4. A can-washer, comprising a fixed frame adapted to support a can in a horizontal position, a sliding frame adapted to be moved toward or from the mouth of a can supported on said fixed frame, a rod mounted in bearings on said sliding frame, a fixed and a sliding head provided on said rod, a collapsible brush-frame pivotally connected with said heads and carrying a series of brushes, springs for normally holding said brush-frame in its expanded position, a crank provided on said rod for revolving the same, and means provided near said crank for drawing said movable head toward said sliding frame to collapse said brush-frame.

5. A can-washer, comprising a suitable frame adapted to support a can in a horizontal position, a rod, a fixed and a movable head provided on said rod, arms 9, 14 and 16 arranged in pairs and pivotally connected together and to said heads, brushes carried by said arms and adapted to engage the inner walls of the can, springs for normally holding said arms in their expanded position and permitting them to be drawn in toward said rod when said movable head is moved away from said fixed head, an adjustable support for said rod, and means for revolving said rod therein.

705,184. METHOD OF FORMING ELASTIC AND YIELDABLE MATERIAL IN BALES OF CUBIC OR SQUARE SHAPE. FREDERICK B. POPE, Augusta, Ga., and GILES D. MIMS, Parksville, S. C.; said Mims assignor to said Pope. Filed Oct. 14, 1899. Serial No. 733,589. (No model.)

Claim.—1. The method of compressing elastic and yieldable material in rectangular bales of high density, which consists in compressing the material under great pressure in a curved form having the top and bottom both curved in the same direction.

2. The method of compressing elastic and yieldable material in rectangular bales of high density, which consists in compressing the material under great pressure in a curved form having the top and bottom both curved in the same direction, and in tying or binding the bale while under pressure.

3. The method of compressing elastic and yieldable material in rectangular bales of high density, which consists in compressing the material in a bat or blanket, lapped under great pressure, in a curved form having the top and bottom both curved in the same direction.

4. The method of compressing elastic and yieldable material in rectangular bales of high density, which consists in compressing the material in a bat or blanket, lapped under great pressure, in a curved form having the top and bottom both curved in the same direction, and in tying or binding the bale while under pressure.

705,185. APPARATUS FOR MAKING CUBIC OR SQUARE BALES, &c. FREDERICK B. POPE, Augusta, Ga., and GILES D. MIMS, Parksville, S. C.; said Mims assignor to said Pope. Filed Oct. 14, 1899. Serial No. 733,590. (No model.)

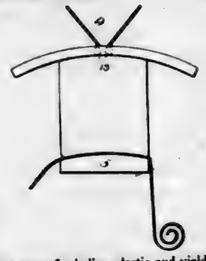

Claim.—1. In a press for baling elastic and yieldable material into rectangular bales, means consisting of two curved restraining-surfaces,

both being curved in the same direction, between which the bale is compressed.

2. In a press for baling elastic and yieldable material into rectangular bales, means consisting of two restraining, parallel surfaces of curved configuration, between which the bale is compressed.

3. In a press for baling elastic and yieldable material into rectangular bales, means consisting of two restraining, parallel surfaces of curved configuration, between which the bale is compressed, and means for introducing the material between said surfaces.

4. In a press for baling elastic and yieldable material into rectangular bales, two restraining, parallel surfaces of curved configuration, and means for introducing the material between said surfaces through one of said surfaces.

5. In a press for baling elastic and yieldable material into rectangular bales, two restraining, parallel surfaces of curved configuration, and means for oscillating one of said surfaces across the face of the other in a path of movement identical with the path of said surface.

6. In a press for baling elastic and yieldable material into rectangular bales, two restraining parallel surfaces of curved configuration, a pivot, and means for oscillating one of said surfaces upon the pivot across the face of the other in a path of movement identical with the path of said surface, substantially as set forth.

7. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame, a curved baling-platform, parallel thereto, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

8. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame, a curved baling-platform, both being curved in the same direction, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

9. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame formed of rolls, a curved baling-platform, both being curved in the same direction, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

10. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame formed of two series of rolls, a curved baling-platform, both being curved in the same direction, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

11. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame, a curved baling-platform, both being curved in the same direction, means for pressing said platform into engagement with said lapping-frame, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

12. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame formed of rolls, a curved baling-platform, both being curved in the same direction, means for pressing said platform into engagement with said lapping-frame, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

13. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame formed of two series of rolls, a curved baling-platform, both being curved in the same direction, means for pressing said platform into engagement with said lapping-frame, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

14. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame, a curved baling-platform, both being curved in the same direction, a hydraulic cylinder for pressing said platform into engagement with said lapping-frame, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

15. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame formed of rolls, a curved baling-platform, both being curved in the same direction, a hydraulic cylinder for pressing said platform into engagement with said lapping-frame, and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

16. In a press for baling elastic and yieldable material into rectangular bales, a curved lapping-frame formed of two series of rolls, a curved baling-platform, both being curved in the same direction, a hydraulic cylinder for pressing said platform into engagement with said lapping-frame and means for imparting relative oscillatory movement to said lapping-frame and baling-platform.

17. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, said baling-platform having a curved upper face, a curved lapping-frame, and means for oscillating said lapping-frame across the face of the baling-platform in a path parallel thereto, substantially as set forth.

18. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, said baling-platform having a curved upper face, a curved lapping-frame carrying baling means, and means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, substantially as set forth.

19. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform carried thereby, the working face of said platform being curved, a curved lapping-frame, and means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, substantially as set forth.

20. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform carried thereby, the working face of said platform being curved, a curved lapping-frame, a series of baling-rolls carried thereby, and means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, substantially as set forth.

21. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a pressure-cylinder therein carrying a piston, a baling-platform carried thereon, the said baling-platform having a curved upper face, a curved lapping-frame parallel thereto, and means for imparting oscillatory movement to said baling-platform and lapping-frame, substantially as set forth.

22. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a pressure-cylinder therein carrying a piston, a baling-platform carried thereon, the said baling-platform having a curved upper face, a curved lapping-frame parallel thereto, a series of rolls carried therein, and means for imparting relative oscillatory movement to said baling-platform and lapping-frame, substantially as set forth.

23. In a press for baling elastic and yieldable material into rectangular bales, a baling-platform, a lapping-frame, distance-bars connected with said lapping-frame and pivoted below said platform, and means for oscillating said lapping-frame across the face of the said baling-platform, substantially as set forth.

24. In a press for baling elastic and yieldable material into rectangular bales, a baling-platform, a lapping-frame, a series of baling-rolls carried thereby, distance-bars connected with said lapping-frame and pivoted below said platform, and means for oscillating said lapping-frame across the face of the said baling-platform, substantially as set forth.

25. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a pressure-cylinder therein carrying a piston, a baling-platform carried thereon, a lapping-frame and distance-bars connected to said lapping-frame and pivoted to the press-frame adjacent to the cylinder, substantially as set forth.

26. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, the said baling-platform having a curved upper face, a curved lapping-frame, distance-bars connected to said lapping-frame and pivoted to said press-frame, and means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, substantially as set forth.

27. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a pressure-cylinder carried therein, carrying a piston, a baling-platform carried thereon, the said baling-platform having a convexly-curved upper face, a curved lapping-frame parallel thereto, and distance-bars connected to said lapping-frame and pivoted to the press-frame adjacent to the cylinder, substantially as set forth.

28. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a curved baling-platform supported thereby, a curved lapping-frame, a series of baling-rolls carried thereby, means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, and means for positively rotating said rolls.

29. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a curved baling-platform supported thereby, a curved lapping-frame, a series of baling-rolls carried thereby, means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, and connections between said press-frame and rolls for positively rotating the latter.

30. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a curved baling-platform supported thereby, a curved lapping-frame, a series of baling-rolls carried thereby, means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, a toothed rack secured to the press-frame, and a series of gears or pinions secured to said rolls and engaging with said racks, whereby the said rolls will be positively rotated.

31. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, a lapping-frame having a slot therein, a tongue on each end of the press-frame and engaging with the lapping-frame, and means for oscillating said lapping-frame across the face of the platform in a path parallel thereto, whereby said slot will alternately engage with each tongue.

32. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, a lapping-frame having a slot therein, a spring-elevated tongue on each end of the press-frame and engaging with the lapping-frame, and means for oscillating said lapping-frame across the face of the said baling-platform, in a path parallel thereto, whereby the slot will alternately engage with each tongue.

33. In a press for baling elastic and yieldable material into rectangular bales, a lapping-frame therefor comprising two sets of pressing-rolls, and two parallel angle-bars between the sets, the said angle-bars having their sharp faces toward each other and separated to form a narrow slit between the same, substantially as set forth.

34. In a press for baling elastic and yieldable material into rectangular bales, a lapping-frame therefor comprising two sets of pressing-rolls, and two parallel angle-bars between the sets, the said angle-bars having their sharp faces toward each other and separated to form a narrow slit between the same, and a hopper arranged above the slit, substantially as set forth.

35. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, the said baling-platform having a curved upper face covered with an elastic, rough substance, a curved lapping-frame, distance-bars connected to said lapping-frame and pivoted to said press-frame, and means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, substantially as set forth.

36. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, the said baling-platform having a curved upper face covered with felt, a curved lapping-frame, distance-bars connected to said lapping-frame and pivoted to said press-frame, and means for oscillating the said lapping-frame across the face of the said baling-platform in a path parallel thereto, substantially as set forth.

37. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, the said baling-platform having a curved upper face, a forming-chamber surrounding said baling-platform and having separable sides and ends, a curved lapping-frame, distance-bars connected to said lapping-frame and pivoted to the press-frame, and means for oscillating said lapping-frame across the face of the said baling-platform in a path parallel thereto, substantially as set forth.

38. In a press for baling elastic and yieldable material into rectangular bales, a press-frame, a baling-platform supported thereby, the said baling-platform having a curved upper face, a curved lapping-frame, distance-bars connected to said lapping-frame and pivoted to the press-frame, pitmen for oscillating the said lapping-frame across the face of the said baling-platform in a path parallel thereto, a crank-shaft connected with said pitmen, supporting-boxes for the crank-shaft, and braces connecting said crank-shaft and the press-frame, adjacent to the lapping-frame, substantially as set forth.

39. In a press, the combination with a press-frame, a lapping-frame carried thereon, said lapping-frame being formed of a continuous series of closely-spaced rolls, with a narrow slot through which the cotton is fed, a pivot on the press-frame for supporting said lapping-frame, means for oscillating the frame on the pivot, a movable platen, and means for interposing an adequate resistance to the receding of the platen to effect the entire compression of the bale in increments as the cotton is fed within the press, and lapped between the lapping-frame and platen, substantially as described.

705,186. ELECTROMAGNETIC SWITCH FOR SURFACE-CONTACT ELECTRIC-RAILWAY SYSTEMS. WILLIAM B. POTTER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Oct. 11, 1897. Serial No. 654,798. (No model.)

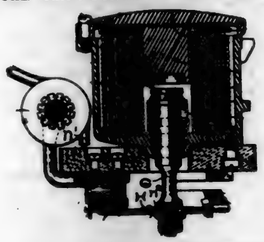

Claim.—1. The combination in a surface-contact electric-railway system, of electromagnetic switches for completing the circuit from the feeder to different surface contacts, consisting of three stationary and three moving contacts arranged at three corresponding points around a central core supporting the moving contacts, the moving and stationary contacts being free to adjust themselves and compensate for wear, and a magnet for lifting the moving contacts into engagement with the fixed contacts.

2. The combination in a surface-contact electric-railway system, of a feeder and surface contacts with electromagnetic switches for making the circuit connections between the feeder and surface contacts, comprising three fixed and three moving contacts angularly spaced around a center and free to adjust themselves so as to compensate for wear at the contact-points.

3. In an electric switch, the combination of a plurality of stationary contacts angularly displaced, a magnet, moving contacts for engagement with the stationary contacts, and a self-adjusting support for the moving contacts, which is actuated by the magnet.

4. In a surface-contact electric-railway system, the combination of stationary switch-contacts angularly displaced and connected to contacts located in the roadway and the source of supply, moving contacts also angularly displaced and adapted to complete the circuit through the stationary contacts, a self-adjusting support for the moving contacts, and a solenoid-magnet for moving the support.

5. In an electromagnetically-operated electric switch, the combination of a plurality of stationary contacts angularly displaced, a solenoid-magnet, moving contacts controlled by the solenoid, and a self-adjusting spring-support for the moving contacts.

6. In an electric switch, the combination of three stationary contacts angularly displaced, three moving contacts similarly displaced, a solenoid-magnet for actuating the moving contacts, a spring-support to which the moving contacts are secured, and a ball-and-socket joint between the support and the magnet-core.

7. In an electric switch, the combination of a base, contacts angularly displaced mounted thereon, an iron-clad solenoid-magnet also mounted on the base, a core for the solenoid, a spring-support carried by the core, and angularly-displaced contacts secured to the moving support for completing the circuit of the fixed contacts.

8. In an electric switch, the combination of a base, stationary contacts mounted on the base and angularly displaced, a solenoid-magnet, a sheet-metal support carried by the core, insulation between the core and the support, and contacts on the support adapted to engage with the stationary contacts.

9. As an article of manufacture, a support for a three-point switch, comprising a punching having three radially-extending arms with contact-clamps located at their outer ends.

10. As an article of manufacture, a support for a three-point switch, comprising a punching having strengthening-ribs, three radially-extending arms formed with contact-clamps at their outer ends, and a central rounded depression forming a portion of a ball-and-socket joint.

11. In a surface-contact electric railway, the combination of contacts located along the line of travel, a source of supply, electromagnetically-operated switches for closing and opening the circuit between the contacts and the source of supply, and a closed conductor surrounding the core of each switch-magnet to decrease the arcing at the surface contacts.

12. In a surface-contact electric-railway system, the combination of contacts located in the surface of the roadway, a source of supply, fixed and moving contacts for making and breaking the circuit between the surface contacts and the source of supply, an iron-clad magnet for actuating the moving contacts, and a closed copper band surrounding the core of the magnet to decrease the arcing at the surface contact when its circuit is interrupted.

13. In an electric railway, the combination with the feeder, of power-conductor sections, switches for connecting the latter with the former, electromagnets for actuating the switch-energizing conductor-sections, the coils of the magnets being connected with the latter sections, a contact-shoe carried by the car for engaging the latter sections to close the circuit through the coils, and a closed conductor in inductive relation to the electromagnet for decreasing the arcing between the switch-energizing sections and the contact-shoe.

14. In combination with a magnet-coil, a magnetic casing for the coil, a cover for the casing and formed integral with a fixed core, a movable core, and a cap of non-magnetic material interposed between said fixed and movable cores.

15. In combination with a magnet-coil, a magnetic casing for the coil, including an integral fixed core having a recessed end, a movable core having its end shaped to fit into said recess, and a cap of non-magnetic material interposed between said fixed and movable cores.

16. In combination, a fixed core, a movable core, an energizing-coil surrounding said cores, a casing of magnetic material inclosing said coil, a bushing of non-magnetic material surrounding said movable core, and a cap of non-magnetic material interposed between said fixed and movable cores.

17. In an electric switch, the combination with an insulating-base, of terminals secured to one side thereof, an electromagnet mounted on

the opposite side of the base, a perforation in the base through which the movable member of the magnet extends, and switch-contacts carried by the movable member of the magnet, which engage the terminals mounted on the base when the movable member is caused to be moved by the energizing of the magnet.

18. In an electromagnet, the combination with a central hollow support, of a coil mounted thereon, a cup-shaped case of magnetic material for the coil consisting of a single casting, a cover therefor of magnetic material which has an integral portion forming a stationary core extending within the hollow support, and a movable core extending within the hollow support and through a perforation in the bottom of the case.

19. In an electromagnetic switch, the combination with the electromagnet, of a magnetic casing surrounding said magnet, an insulating-base to which said casing is secured, fixed contacts secured to the opposite side of said base, a movable magnet member operating through said magnet-casing, movable contacts, and a resilient sheet-metal support which carries said contacts and is mounted on the movable magnet member, whereby the support will yield when the electromagnet draws the movable contacts against the fixed contacts.

20. In an electromagnetic switch, the combination with a perforated stationary support, of an electromagnet-coil mounted on one side of the support, contacts fixed on the other side of the support, a movable magnet-core which extends through the support and movable contacts, a resilient sheet-metal support which carries said contacts and is mounted on said core, whereby the support will yield when the electromagnet draws the movable contacts against the fixed contacts.

21. In an electromagnetic switch, the combination with the electromagnet, of fixed contacts, a movable magnet member, movable contacts, and a resilient sheet-metal punching provided with strengthening-ribs which carries said contacts and is mounted on said magnet member, whereby the resilient punching will yield when the electromagnet draws the movable contacts against the fixed contacts.

22. In an electromagnetic switch, the combination with the electromagnet, of fixed contacts, a movable magnet member, movable contacts, and a resilient punching provided with radial arms which carry said contacts, said punching being mounted on said movable magnet member, whereby the punching will yield when the electromagnet draws the movable contacts against the fixed contacts.

23. In combination, a fixed magnet-core, a movable magnet-core, an energizing-coil surrounding said cores, a casing of magnetic material surrounding said coil, and a bushing of non-magnetic material separating said movable core from said casing.

24. In an electromagnetic switch, the combination with the electromagnet, of fixed contacts, a movable magnet member, movable contacts, and a resilient punching having upturned portions for retaining said contacts and mounted on said movable magnet member, whereby the punching will yield when the electromagnet draws the movable contacts against the fixed contacts.

25. In an electromagnetic switch, the combination with the electromagnet, of one or more fixed metallic contacts, a movable magnet member, one or more movable contacts consisting of small blocks of carbon, and corresponding arms of resilient material suitably supported by the movable magnet member, said movable contacts being directly mounted on said resilient arms.

26. In an electromagnetic switch, the combination with a magnet-spool, of a magnet-coil wound thereon, a perforated cup-shaped magnetic casing, a cover therefor formed integral with a stationary core which extends inside the spool, fixed switch-contacts, a movable core which extends inside the spool through the perforation in the casing, and which carries the switch-contacts, and a non-magnetic bushing separating the movable core from the walls of the perforation in the magnetic casing, and extending inside the core to serve as a support for the movable core when the coil is not energized.

27. In an electromagnetic switch, the combination with a magnet-coil, of a magnetic casing therefor, a movable core extending into the coil through the casing, switch-contacts carried by the movable core, and a bushing of non-magnetic material for separating said core from the magnetic casing.

28. In an electromagnetic switch, the combination with the magnet-coil, of a plurality of fixed switch-contacts, a movable magnet member, a plurality of radial resilient arms supported directly upon said movable magnet member, and a plurality of switch-contacts mounted on said resilient arms to engage said fixed switch-contacts, whereby the resilient arms will yield to reduce the hammer-blow.

29. In an electromagnetic switch, the combination with the magnet-coil, of a fixed switch-contact, a movable magnet member, a resilient arm supported directly on said movable member, and a switch-contact mounted on said resilient arm to engage said fixed switch-contact, whereby the resilient arm will yield to reduce the hammer-blow.

30. In an electromagnetic switch, the combination with the electromagnet, of a suitably-supported switch-contact, a contact-support secured to the movable member of the magnet so as to have no independent longitudinal movement, a second switch-contact carried by said support and adapted to engage the first switch-contact, and means whereby a contact can yield when the contacts are caused to mutually engage.

31. In an electromagnetic switch, the combination with the electromagnet, of a suitably-supported switch-contact, a contact-support supported directly upon the movable member of the magnet, a second switch-contact carried by said support, and means between the second contact and the point of attachment of its support to the movable magnet member, whereby the second contact can yield when it engages the first.

32. In an electromagnetic switch, the combination with the electromagnet, of a suitably-supported switch-contact, a contact-support supported directly upon the movable magnet member, a second switch-contact carried by said support, and means between the second contact and the point where its support is mounted, whereby the second contact can yield when it engages the first.

705,137. ELECTRIC SWITCH. WILLIAM B. POTTER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed July 27, 1900. Renewed Apr. 28, 1902. Serial No. 104,321. (No model.)

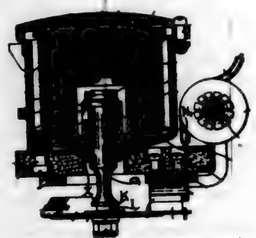

Claim.—1. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the movable switch portion, of an actuator therefor, having a lost-motion connection therewith, whereby in opening the switch the actuator can have a free movement at first, and will then, if the contacts are stuck together, impinge against the switch portion to positively force the switch-contacts apart, against their tendency to stick.

2. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the movable switch portion, of an actuator therefor, having a lost-motion connection therewith, and non-mechanical means for moving the switch portion and holding it in the position to which it may have been moved, to close the switch and maintain it closed, whereby when said means is made inoperative the actuator can have a free movement at first, and will then, in case they cohere, impinge against the switch portion to positively force the switch-contacts apart.

3. In an electric switch, the contacts of which are liable to cohere, owing to arcing, the combination with the movable switch portion, of an actuator therefor, having a lost-motion connection therewith, said actuator being normally maintained by gravity in a position to maintain the switch open, and means for lifting the actuator and switch portion and holding them in their raised position, to close the switch and maintain it closed, whereby, when said means is rendered inoperative, the actuator can move by gravity freely at first, and will then, if the contacts adhere, one to the other, impinge against the switch portion to positively open the switch.

4. In an electric switch, the contacts of which are liable to adhere, owing to arcing, the combination with the movable switch portion, of an electromagnet for moving the switch portion to close the switch, the movable portion of the magnet having a lost-motion connection with said movable switch portion, whereby, when the magnet-coil is open-circuited, the movable magnet portion can have a free movement at first, and will then, if one contact adheres to the other, impinge against the movable switch portion to open the switch, by forcing the contacts apart.

5. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the movable switch portion, normally maintained in its open position by gravity, of an electromagnet for lifting said portion to close the switch, the movable portion of the magnet having a lost-motion connection with the switch portion, whereby, when the magnet-coil is open-circuited, the movable magnet portion moves freely by gravity at first, and then, if the switch-contacts are stuck together, impinges against the movable switch portion to positively separate the contacts.

6. In an electric switch, the contacts of which are liable to be caused to cohere by arcing, the combination with the movable switch portion, of an electromagnet, the movable portion of which has a lost-motion connection with the switch portion, said magnet portion and switch portion being normally maintained by gravity in a position to maintain the switch open when the magnet-coil circuit is open, and non-magnetic material between the movable magnet portion and the other parts of the magnet, to prevent sticking of the movable magnet portion in its raised position after the magnet-coil is open-circuited, whereby it is certain that the movable magnet portion will descend by gravity, freely at first, owing to the lost-motion connection, and will then, in case the contacts are sticking, impinge upon the movable switch portion to positively separate the switch-contacts.

7. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the movable switch portion, of an actuator therefor having a lost-motion connection therewith in the direction of motion of the actuator, the switch portion being immovable except in the direction of the motion of the actuator.

8. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the movable switch portion, of an electromagnet, the movable portion of which has a lost-motion connection with the switch portion, the switch portion being immovable except in the direction of motion of the movable magnet portion, whereby, when the magnet-coil is open-circuited, the movable portion of the magnet can have a free movement at first, and will then, if the contacts stick, impinge against the movable switch portion to open the switch.

9. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the movable switch portion, of an electromagnet, the movable portion of which has a lost-motion connection with the switch portion, the switch portion being immovable except in the direction of motion of the movable magnet portion, and means for preventing any movement of the latter except back and forth in the path through which it is drawn by its coil, whereby, when the magnet-coil is open-circuited, the movable portion of the magnet can have a free movement at first, and will then, in case the contacts are stuck together, impinge against the movable switch portion to open the switch.

10. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with a movable switch portion made of resilient material, the resiliency of which prevents severe impact in closing, of an electromagnet, the movable portion of which has a lost-motion connection with the switch portion, whereby, when the magnet-coil is open-circuited, the movable magnet portion can have a free movement at first, and will then, if the contacts are stuck together, impinge against the resilient switch portion, to exert upon the sticking contacts strains both parallel and transverse to the direction of motion of the movable magnet portion.

11. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the line-terminals, of carbon switch-contacts, a resilient support therefor which yields in closing to prevent injury to the carbons, a support for the carbon contacts, and an electromagnet, the movable portion of which has a lost-motion connection with the support, whereby, when the magnet-coil is open-circuited, the movable magnet portion can have a free movement at first, and will then impinge against the resilient switch portion to force the carbons across and away from the surfaces of the line-terminals.

12. The combination with an electric switch, the contacts of which are liable to be caused by arcing to be stuck together, of means for opening the switch whereby, in case the contacts are stuck together, a hammer-blow is automatically delivered to separate them, but no blow is delivered in case the contacts are not stuck together.

13. The combination with an electric switch, of an electromagnet for closing the same, and a mass of magnetic material which falls by gravity against the switch when the magnet-coil is open-circuited, to force the switch open.

14. The combination with an electric switch, the contacts of which are liable to be caused by arcing to be stuck together, of an electromagnet for closing the same, and a magnetic hammer which falls by gravity when the magnet-coil is open-circuited, and impinges upon the switch to open the same, only in case the switch is held closed by the coherence of the contacts.

15. The combination with an electric switch, the contacts of which are liable to be caused by arcing to be stuck together, of an electromagnetic hammer which falls by gravity, and impinges upon the switch to open the same when the magnet-coil is open-circuited, and a step-rest for the hammer which permits the hammer to fall through and below the space occupied by the switch in its closed position.

16. In an electric switch, the contacts of which are liable to be caused by arcing to be stuck together, the combination with the movable switch portion, of an electromagnet, the movable portion of which is provided with a shoulder, and means for holding the movable switch-piece so that it can move freely on the movable magnet portion below the shoulder, whereby, when the magnet-coil is open-circuited, the magnet portion falls by gravity, and in case the contacts are stuck together its shoulder impinges upon the switch portion, to open the switch, and means for limiting the fall of the movable magnet portion.

17. In an electric switch, the contacts of which are liable to be caused by arcing to be stuck together, the combination with the movable switch portion, of an actuator therefor having a portion with a non-circular periphery, said switch portions fitting over said non-circular portion, to prevent rotation, and having a lost-motion connection with said actuator in the direction of motion of the latter, said actuator being normally maintained by gravity in a position to maintain the switch open, and means for lifting the actuator and switch portion and holding them in their raised position, to close the switch and maintain it closed, whereby, when said means is rendered inoperative, the actuator can gravitate freely at first, and will then, if the contacts are stuck together, impinge against the switch portion to positively open the switch.

18. In an electric switch, the contacts of which are liable to stick, owing to arcing, the combination with the movable switch portion, of means for delivering a hammer-blow thereto, to separate the sticking contacts, and an electromagnet for closing said switch and controlling said means, the latter being operative when the magnet-coil is open-circuited.

19. In an electric switch, the contacts of which are liable to stick together, owing to arcing, the combination with the movable switch portion normally held by gravity in its open position, of an electromagnet for raising the switch portion to close the switch, and means for delivering a hammer-blow to the movable switch portion when the magnet-coil is open-circuited.

20. In an electric switch, the contacts of which are liable to stick together, owing to arcing, the combination with the movable switch portion, of means for delivering a blow thereto to separate the contacts in case they are stuck together, and an electromagnet which controls said means and permits it to be operated when the magnet-coil is open-circuited, and the contacts are stuck together.

21. The combination with an electric switch, normally held in its open position by gravity, of means whereby, when the switch is closed, a hammer-blow is automatically, in case the contacts are stuck together, delivered to the switch to force it open.

22. In an electric railway, the combination with the feeder, of a sectional conductor, a connection between each such section and the feeder, a switch for each such connection, and a switch-actuating, electrically-controlled device mechanically connected to said switches by a lost-motion joint.

705,138. BLOW-OUT MAGNET. WILLIAM B. POTTER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Original application filed Oct. 11, 1897, Serial No. 654,793. Divided and this application filed Feb. 23, 1901. Renewed Apr. 23, 1902. Serial No. 104,322. (No model.)

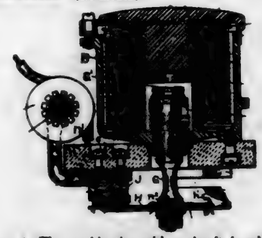

Claim.—1. The combination with a circuit in which the current strength is subject to considerable variance, of a switch therein, any arcing at which it may be highly desirable to avoid, a permanent magnet of hard iron having a large amount of residual magnetism and coercive force, and an energizing-coil for the magnet which is connected in the circuit, whereby the permanent magnet coöperates with the coil, to blow out small destructive arcs at the switch when a small current is flowing through the circuit.

2. In an electric railway, the combination with the feeder, of branch connections from the feeder, a sectional conductor having its sections connected to the feeder branches, electromagnetic switches in the branches, the current-flow through which switches varies considerably from various reasons, magnets having a large amount of residual magnetism and coercive force, to remain permanent under adverse service conditions, and energizing-coils for the magnets, which coils are connected in the feeder branches, whereby the permanent magnets coöperate with the coils, to blow out small destructive arcs at the switches when only a small current is flowing through the feeder branches.

3. In an electric switch, the combination of fixed and moving contacts with an arc-disruptive means, comprising a permanent blow-out

magnet having an energizing-coil, the arrangement being such that the field of the permanent magnet is employed to disrupt the arc formed at times when the current flowing in the energizing-coil is insufficient to create a strong field, and a combined field, due to the permanent magnet and energizing-coil, for disrupting the arc formed at times when larger currents are flowing in the system.

4. In a switch, the combination with an insulating-base, of a switch-contact secured to the lower side of the base, and a blow-out magnet supported above the base by its pole-pieces, which are extended around said base on opposite sides of said contact, and are secured to the lower side of the base.

5. In a switch, the combination with an insulating-base, of a switch-contact secured to the lower side of the base by a screw extending from the upper side of the base, and a blow-out magnet having one end of its coil adapted to be connected to said contact by said screw.

6. In a switch, the combination with an insulating-base, of a switch-contact secured to the lower side of the base, and a blow-out magnet supported above said base by its pole-pieces, which are extended around the base and secured thereto on opposite sides of said contact, said pole-pieces having depending projections which extend down below the contact.

7. In an electric railway, the combination with the feeder, of conductor-sections, electromagnetic switches which may have a variable flow of current from their coils, for connecting the feeder with said sections, magnets having a large amount of residual magnetism and coercive force, and energizing-coils for said magnets which are connected between the feeder and the feeder-contacts of said electromagnetic switches, said permanent magnets coöperating with said magnet-coils to blow out small destructive arcs at the switch-contacts when a relatively small current is flowing through the blow-out magnet-coils.

8. In an electromagnetically-operated switch, the combination of a magnet, fixed terminals angularly displaced, moving contacts similarly displaced, a support to which the moving contacts are secured controlled by the magnet, and a permanent magnet provided with an energizing-coil arranged to blow out the arcs formed at one pair of contacts.

705,139. COMPOSITION FOR REMOVING PAINT OR VARNISH. FREDERICK PRIESTMAN, Burlington, Iowa. Filed Oct. 14, 1901. Serial No. 78,582. (No specimens.)

Claim.—The herein-described composition of matter for removing paint and varnish, consisting of sal-soda, water, fusel-oil, kerosene and aqua-ammonia substantially as described.

705,140. MACHINE FOR DISINTEGRATING FIBROUS PLANTS. MANUEL PRIETO, Mexico, Mexico. Filed Feb. 7, 1901. Serial No. 46,350. (No model.)

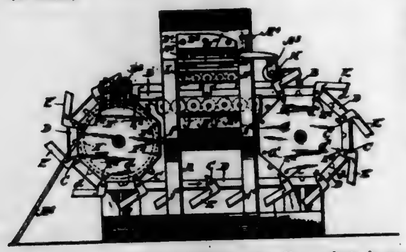

Claim.—1. In a machine for disintegrating fibrous plants, in combination with the scraping or beating mechanism thereof, an endless leaf-holding chain or carrier provided with a series of clamping-jaws hinged thereto and arranged to open and close by movements to and from the chain or carrier, a projection contacting with a portion of each jaw in a direction to hold the same open for the introduction of the leaves, and confining devices directly above and below the said chain or carrier and the said jaws, respectively, for keeping said jaws strongly closed while the leaves are carried past the said scraping or beating mechanism, substantially as described.

2. In a machine for disintegrating fibrous plants, in combination with the scraping or beating mechanism thereof, an endless leaf-holding chain or carrier provided on its periphery with a series of clamping-jaws hinged thereto by pivots transverse to the plane of motion of said chain or carrier and arranged to open and close by movements in said plane to and from the chain or carrier, a projection contacting with a portion of each jaw in a direction to hold the same open for the introduction of the leaves, and confining devices directly above and below the said chain or carrier and the said jaws, respectively, for keeping said jaws strongly closed while the leaves are carried past the said scraping or beating mechanism, substantially as described.

3. In a machine for disintegrating fibrous plants, in combination with a scraping or beating drum, and with its coöperating casing or bed, a pair of wheels mounted on shafts below the shaft of said drum and at right angles thereto, with the upper portions of said wheels about on a level with the said drum-shaft, an endless leaf-holding chain carried on said wheels, a series of clamping-jaws hinged to said chain by pivots transverse to the plane of the chain's motion so that said jaws open and close by movements in said plane to and from the chain, a device contacting with a portion of each jaw as the latter passes over the top of one of said wheels for holding the jaw open for the introduction of the leaves, and confining-devices directly above and below said chain and said jaws, respectively, for keeping said jaws strongly closed while the leaves are carried past the said drum and its said casing or bed, substantially as described.

4. The combination with means for scraping or beating, the endless leaf-holding chain, and the supporting-wheels, F and G, of the clamping-jaws, E, hinged to said chain and provided with horns E^3, and the projections or pins G^2 on the wheel G for holding the jaws open for the introduction of the leaves by contacting with the horns on said jaws, substantially as described.

5. The combination with the scraping or beating drum, its coöperating casing or bed, the side frames, the endless leaf-holding chain, and the opposing sets of confining devices mounted between said side frames, of the roller H independently mounted and arranged on the outer side of one of said frames in advance of both sets of said confining devices, substantially as described.

6. The combination with means for scraping or beating, and with the endless chain and its supporting-wheels F and G, of the clamping-jaws E hinged to said chain and provided with horns E^3, and the projections or pins F^3 on the wheel F for contacting with the horns on said jaws and thereby opening the jaws for the removal of the scraped or beaten leaves, substantially as described.

7. In a machine for disintegrating fibrous plants, in combination with a scraping or beating drum, and its coöperating casing or bed, a pair of wheels mounted on transverse shafts, an endless leaf-holding chain carried on said wheels with its upper portion about on a level with the axis of the said drum-shaft, a series of clamping-jaws hinged to said chain and provided with horns, projections or pins on each of said wheels for contacting with said horns in the direction for opening and holding open the jaws as the chain passes over the said wheels, respectively, and means for keeping the said jaws strongly closed while the leaves are carried past said drum and its said casing or bed, substantially as described.

8. In a machine for disintegrating fibrous plants, in combination with the scraping or beating mechanism thereof, an endless leaf-holding chain or carrier provided with a series of clamping-jaws hinged thereto and arranged to open and close by movements to and from the chain or carrier, devices contacting with portions of said jaws to open the same, respectively, before and after passing said scraping or beating mechanism, and confining devices directly above and below the said chain or carrier and the said jaws, respectively, for keeping said jaws strongly closed while the leaves are carried past the said scraping or beating mechanism, substantially as described.

705,141. FRUIT-PICKER. WILLIAM H. RAUCH, Wichita, Kans. Filed Dec. 21, 1901. Serial No. 86,540. (No model.)

Claim.—1. A fruit-picker comprising, a socket having upper and lower fixed apertured rings or collars on its outer side, a circularly-arranged series of outwardly-bowed spring-fingers having straight lower ends mounted in the apertures in both rings or collars and provided at their upper ends with eyes, and an operating-cord passed through said eyes to contract the fingers around the fruit, substantially as set forth.

2. A fruit-picker, comprising a shank or socket provided with apertured rings or flanges at its ends, and a circularly-arranged series of spring-fingers each formed of a single wire bent upon itself, formed with an eye in its bend and having its lower ends passed through and secured to said apertured rings, and an operating-cord connected to said eyes to contract the fingers around the fruit.

3. A fruit-picker, comprising a socket, a series of bowed spring-fingers secured to the socket and having eyes at their upper ends; one of said fingers being of heavier material than the other, a cord secured to said heavier finger, thence passed through the eyes of the other fingers and finally through the eye of the heavier finger down to the operator.

4. A fruit-picker, consisting in the shank or socket, the bowed spring-fingers having eyes at their upper ends, a ring connecting the fingers between their ends, a sack or pocket suspended from said ring within the series of fingers, and a cord connected to the said eyes for contracting or closing the fingers

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705,142. WEB-PRINTING MACHINE. GEORGE F. READ, New York, N. Y., assignor to Robert Hoe, New York, N. Y. Filed Nov. 27, 1901. Serial No. 83,632. (No model.)

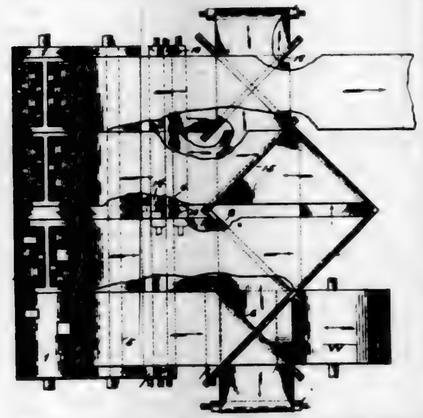

Claim.—1. In a printing-machine, the combination with a pair of double-wide cylinders, of means for leading a single-wide web twice between the cylinders at one end thereof and twice between the cylinders at the other end thereof, and means for leading a double-wide web once between the cylinders at each end, substantially as described.

2. In a printing-machine, the combination with a pair of double-wide cylinders, of means for leading a single-wide web twice between the cylinders at one end with the same side up and twice between the cylinders at the other end with the other side up, and means for leading a double-wide web once between the cylinders at each end, substantially as described.

3. In a printing-machine, the combination with a pair of double-wide cylinders, of means for leading a single-wide web twice between the cylinders at one end with the same side up, and twice between the cylinders at the other end with the other side up, and means for leading a double-wide web once between the cylinders at one end, reversing it and leading it between the cylinders at the other end, substantially as described.

4. In a printing-machine, the combination with a pair of double-wide cylinders, of web-guides coöperating with one end of the cylinders whereby a single-wide web may be led twice therethrough, web-guides coöperating with the other end of the cylinder whereby said web may be led twice therethrough, and directing means for guiding the web from one end of the cylinder to the other end, said directing means being constructed to also guide a double-wide web from one end of the cylinders to the other, substantially as described.

5. In a printing-machine, the combination with a pair of double-wide cylinders, of web-guides coöperating with one end of the cylinders, web-guides coöperating with the other end of the cylinders, and web-directing means operating to lead the web from one end of the cylinder to the other, the construction being such that a single-wide web may be led twice between the cylinders at one end and twice between the cylinders at the other end, or a double-wide web may be led by said web-directing means once between the cylinders at each end, substantially as described.

6. In a printing-machine, the combination with a pair of double-wide cylinders, of web-guides coöperating with one end of the cylinder and constructed to lead a web twice therethrough the same side up, of web-directing means for leading said web from one end of the cylinder to the other, and web-guides coöperating with the other end of the cylinders to lead said web twice therethrough the same side up, said web-directing means being constructed to also lead a double-wide web from one end of the cylinders to the other, substantially as described.

7. In a printing-machine, the combination with a pair of double-wide cylinders, of web-guides coöperating with one end of the cylinder and constructed to lead a web twice therethrough the same side up, of web-directing means for turning the web over and leading said web from one end of the cylinder to the other, and web-guides coöperating with the other end of the cylinders to lead said web twice therethrough the same side up, said web-directing means being constructed to also lead a double-wide web from one end of the cylinders to the other and turn it over between the ends of the cylinders, substantially as described.

8. The combination with a pair of double-wide cylinders, of a set of guides operating to receive a single-wide web from one end of the cylinders, transfer it laterally and deliver it to the same end of the cylinders with its printed side toward the form-carrying cylinder, a set of web-guides coöperating in the same manner with the other end of the cylinders, and a pair of angle-bars over which the web runs as it passes from one end of the cylinders to the other, said bars being constructed to also receive a double-wide web from one end of the cylinders, turn it over, and deliver it to the other end of the cylinders, substantially as described.

705,143. ARTIFICIAL TOOTH. JAMES J. REYNOLDS, Huntington, W. Va. Filed Oct. 5, 1901. Serial No. 77,725. (No model.)

Claim.—1. The combination of the anchor having a pin, and a laterally-extending base-flange adapted to be embedded in the supporting-plate; with a tooth having a socket to engage the pin and a recess to fit over the base-flange and prevent turning of the tooth on the pin, substantially as described.

2. An anchor for artificial teeth having a tooth-engaging pin and opposite base-flanges extending laterally beyond the base of the attached tooth and adapted to be embedded in the tooth-support; with a tooth having a socket to engage the pin, and a recess in its base to fit over the adjoining portions of the base-flanges, all substantially as described.

3. The combination of the support having a tooth-socket, an anchor in each socket having opposite laterally-extending base-flanges projecting beyond the socket and embedded in the material of the support; with a tooth having a socket to engage the anchor-pins and recesses to fit over the base-flanges; said tooth being fitted into the socket of the support and secured to the anchor-pin by cement, substantially as described.

4. The combination of an artificial plate; with an anchor having a pin, and a laterally-extending base-flange adapted to be embedded in the plate, said anchor projecting beyond the base of the attached tooth, and a tooth having a socket to engage the pin substantially as described.

5. The combination of the artificial plate having a tooth-socket, the anchor in said socket having a pin in the socket and a laterally-extending base-flange projecting beyond the socket, and secured to the plate; with a tooth having a socket to engage the pin and seated in the socket of the support and secured to the pin, substantially as and for the purpose described.

705,144. HORSESHOE. JOHN RICE, Fort Collins, Colo. Filed June 5, 1901. Serial No. 63,304. (No model.)

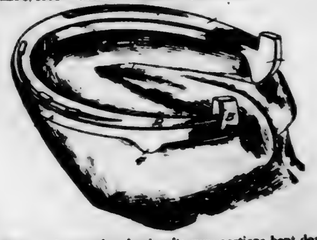

Claim.—A horseshoe having its rear portions bent downward from a point beginning approximately with the last nail-hole on each side of the shoe, thereby to hold the said portions normally out of engagement with the hoof of the animal when secured thereto, said portions being

provided with the usual hooks and with upward and inward inclined ears extending from the inner side edges of the heel portions, said ears converging toward each other and being approximately wedge-shaped in cross-section and adapted freely to move in the frog-crosses of the hoof when the shoe is applied, substantially as and for the purpose specified.

705,145. ENGINE. VIETTE L. REES, New York, N. Y., assignor, by mesne assignments, to C. J. Downing & Co., Inc. Filed Nov. 14, 1900. Serial No. 36,488. (No model.)

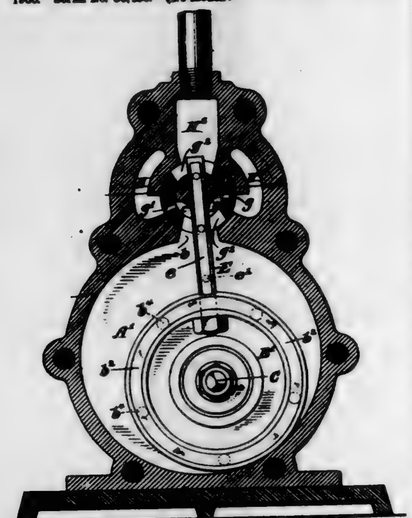

Claim.—1. The combination in an engine of side walls and a circumferential wall, the latter being provided with steam-chambers, a piston-chamber formed by said walls, a rotary piston in said piston-chamber, an admission-valve operated by said piston, a steam-chamber secured to one of said side walls and in communication with said steam-chambers, and an oscillating reversing-valve provided in said steam-chamber.

2. The combination in an engine of side walls and a circumferential wall, the latter being provided with live-steam chambers and an exhaust-chamber and one of said side walls being provided with openings which lead to said chambers, a steam-chamber inclosing said openings, an oscillating valve in said chamber which is movable over said openings and is provided with a channel which is adapted to be in communication with one or the other of said live-steam openings and the exhaust-opening, a rotary piston, and an admission-valve operated by said piston.

3. In an engine, the combination of a piston-cylinder, a steam-cut-off valve and an admission-valve therefor, a piston movable in the cylinder and mounted on a crank-pin, a shaft, and a crank-arm between said pin and shaft which is adjustable longitudinally, said crank comprising two parts dovetailed together so as to be movable one on the other and each provided with an opening, and a tapered key fitted in said openings.

705,146. BULLET-MOLD. HERMAN RICHTER, Cullman, Ala. Filed May 26 1902. Serial No. 109,035. (No model.)

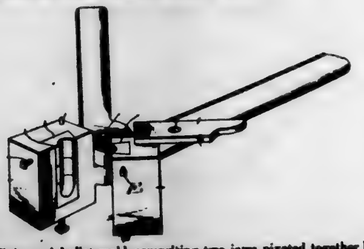

Claim.—A bullet-mold, comprising two jaws pivoted together having square-shaped heads having dovetailed grooves on their inner faces, guide-pins carried by one jaw and adapted to interpose in the face of the adjacent jaw, a plurality of matrix-blocks mounted in each groove, an adjusting-screw mounted in the face of each jaw and adapted to bear against one of said matrix-blocks, and said adjusting-screws, one carried by each jaw, and a pivotal locking-plate apertured to register with the bore of the mold, as set forth.

705,147. DOOR-OPENER. GEORGE RICHMULLER, San Francisco, Cal. Filed Nov. 4, 1901. Serial No. 81,001. (No model.)

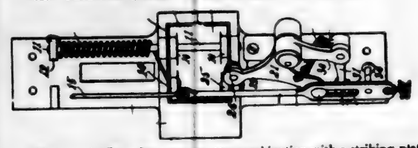

Claim.—1. In a door-opener, the combination with a striking-plate of a device movably supported thereon comprising a part arranged to engage the latch of the door and prevent inward movement thereof, and a part arranged to engage said door to swing the same on its hinges, and means for transmitting to said device from a distant point force applied at said distant point to withdraw the former part out of engagement with the latch and to press the latter part against the door to swing the same open, substantially as described.

2. In a door-opener, the combination with a striking-plate of a device movably attached thereto, comprising a part adapted to engage the latch of the door and prevent inward movement thereof, and a part arranged to engage the outer free edge of the door, and means for transmitting to said device from a distant point force applied at said distant point to withdraw the former part out of engagement with the latch and to press the latter part against the outer edge of the door to push the same open, substantially as described.

3. In a door-opener, the combination with the striking-plate of a door, of a dog pivotally mounted on said striking-plate, said dog having a lip arranged to engage the latch of the door when the door is closed, to prevent inward movement of the same, and having also an arm arranged to engage the outer free edge of the door, means for swinging said dog to remove said lip from engagement with the latch to release the latter and to press the arm against the outer free edge of the door to push the same open, and means for imparting to said swinging means from said distant point force applied at said distant point, substantially as described.

4. In a door-opener, the combination with the striking-plate of a door, of a dog having a lip arranged to engage the latch of the door, when the latter is closed, to prevent the opening of the door, a lever whereof an arm is attached to said dog to draw said lip away from said latch, and a wire extending to a distant point and suitably connected with said lever to actuate the dog to release said door, substantially as described.

5. In a door-opener, the combination with a striking-plate of a door, of a dog pivotally mounted thereon having a lip arranged to engage the latch of the door to prevent the opening of the door, and having also a device arranged to engage the door to thrust the same open when said dog is vibrated, a spring for normally throwing said dog inward toward said latch, a lever having an arm connected with said dog to swing the same upward, a locking-arm connected with another arm of said lever, said locking-arm engaging a suitable stop to prevent the outward swinging of said dog, and a link having a sliding connection with an arm of said lever and arranged first to operate said locking-arm to release the same and then to actuate said lever to swing said dog outwardly, substantially as described.

6. In a door-opener, the combination with a striking-plate of a door, of a dog pivoted thereon having a lip arranged to engage the latch of the door to prevent the opening of the door and having also a part arranged to engage said door to push the same open when the dog is moved, a lever, a link connecting one arm of said lever with said dog to swing the same, a locking-arm pivotally mounted upon another arm of said lever, a stop against which said locking-arm abuts to prevent the moving of said lever to swing the dog outwardly, and a vertically-moving link having a stud arranged to engage said locking-arm to withdraw the same and having also a slot to engage a stud on another arm of said lever, whereby, after a certain movement upward of said link, said link actuates said lever to release said dog from engagement with said latch, substantially as described.

705,148. ELECTRIC BATTERY. MARTIN W. ROBINSON, Medford, Mass. Filed May 11, 1901. Serial No. 59,775. (No model.)

Claim.—1. A cathode composed of a nickel-plated copper plate, having non-conducting buffers secured thereto in combination with intermediate zinc plates alternately arranged, substantially as described.

2. A cathode composed of perforated nickel-plated copper plates connected together by a binding-screw, and intermediate zinc plates, substantially as described.

3. A galvanic battery consisting of nickel-plated copper cathodes and zinc anodes immersed in a bath composed of bichromate of sodium and sulfuric acid, substantially as described.

4. A galvanic battery consisting of perforated nickel-plated copper cathodes, secured together by a binding-screw, and zinc anodes secured together by a separate screw and arranged intermediate the cathodes, said elements being immersed in a bath composed of bichromate of sodium and sulfuric acid, substantially as described.

5. The herein-described battery elements, consisting of perforated copper plates coated with nickel and secured together by a binding-screw, and zinc plates located intermediate the copper plates and connected by a screw, and non-conducting buffers for holding the plates apart, substantially as described.

705,149. DISPLAY-HOLDER FOR NECKTIES. HENRY REUTZ, Chicago, Ill. Filed Feb. 7, 1902. Serial No. 93,040. (No model.)

Claim.—The combination with a common support of a plurality of tie-holding devices, each consisting of a sheet-metal element having a base *b*, permanently attached to said support, a rigid rearwardly-inclined body portion *c*, and the parts *f*, *g*, bent downwardly and upwardly respectively in substantially parallel planes, whereby the space between the two may serve to engage the fastener of a necktie substantially as described.

705,150. STREET-CAR FENDER. HENRY J. SCHULDT, St. Paul, Minn., assignor to Philip W. Herzog, St. Paul, Minn. Filed Nov. 25, 1901. Serial No. 83,519. (No model.)

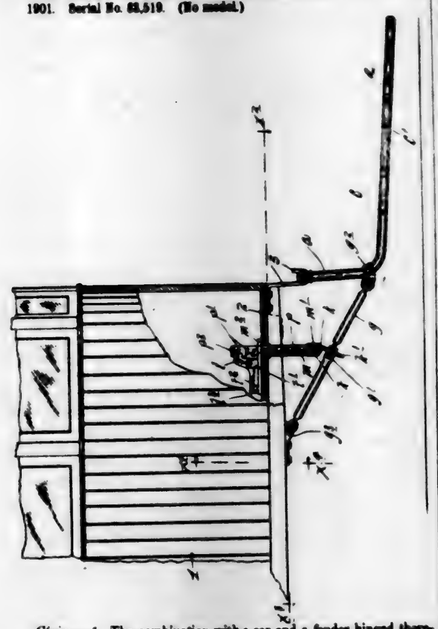

Claim.—1. The combination with a car and a fender hinged thereto, of a pair of toggle-levers for supporting said fender, and a combined trip and resetting device acting on said toggle-levers and involving a vertically-movable ratchet-plunger, and a cooperating lock-pawl, which pawl is released from the said plunger when stepped upon, and which plunger is adapted to be reset by the pressure of the foot, substantially as described.

2. The combination with a car and a fender hinged thereto, of a pair of toggle-levers for supporting said fender from the car-body, a pair of reversely-acting bell-crank levers pivotally connected to the car-body and connected, one to each of said toggle-levers, a vertically-movable ratchet-tooth plunger, working through the car platform or floor, and a cooperating lock-pawl, which pawl is adapted to be released from said plunger by the pressure of the foot, and which plunger is adapted to be pressed down, to raise the said fender, by the pressure of the foot, substantially as described.

3. A car-fender comprising the primary marginal frame or tube *a*, the secondary or inner marginal frame *b* following the interior of said tube or frame *a*, a filler secured to the said supplemental frame *b*, and the netted hooks or clamping-staples *c* engaging said frame *b* and passed through the said frame *a*, substantially as described.

705,151. THILL-COUPLING. CHARLES A. SMITH, Pinckney, Mich. Filed Aug. 28, 1901. Serial No. 73,388. (No model.)

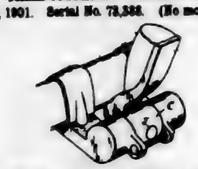

Claim.—1. A thill-coupling comprising a swivel-head having a socket formed centrally therethrough in the plane of the axis and a hook secured to the thill adapted to engage said socket.

2. A thill-coupling comprising a pair of cleats separately secured to the axle and having separate forwardly-projecting apertured arms, a socketed head having pintles engaging the apertures in said arms, a hook secured to the thill for engaging said socket and a clamping-bolt for drawing upon said arms to press the same against said swivel-head.

3. A thill-coupling comprising separated forwardly-projecting bearings clipped to the axle a rotary socketed head having pintles at opposite ends for engaging said bearings, a clamping-bolt for drawing said bearings together, a thill having a hook for engaging the socket in said head and a safety-strap secured to said thill and looping around said clamping-bolt.

705,152. METHOD OF MAKING SULPOCYANIDS FROM COAL GAS. HARRY W. SMITH, Sutton Coldfield, WILLIAM T. GIDDENS, Langley Green, near Birmingham, and ALFRED G. SALAMON, London, England, assignors to the British Cyanides Company, Limited, Oldbury, England. Filed Dec. 30, 1901. Serial No. 87,840. (No specimens.)

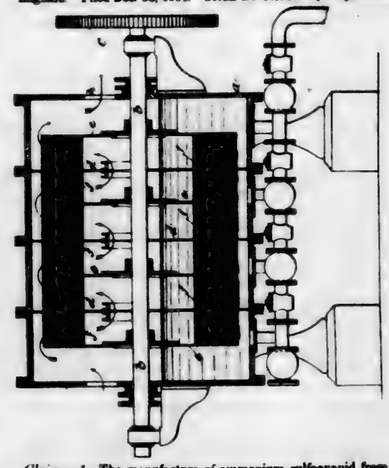

Claim.—1. The manufacture of ammonium sulfocyanid from coal-gas containing ammonia and cyanid compounds by washing the gas with water in the presence of sulfur and continuing the process with the same water after the said water has become fully saturated with ammonia.

2. The process consisting in scrubbing coal-gas containing ammonia and cyanogen compounds with water in the presence of sulfur to obtain a solution of ammonium sulfocyanid and then again scrubbing the gas

which has been so treated with a much larger quantity of water to absorb the ammonia.

3. The process consisting in scrubbing with water coal-gas containing ammonia and cyanid compounds successively in a number of scrubbers containing sulfur and again scrubbing the gas leaving the last scrubber of the series with a much larger quantity of water to absorb the ammonia, drawing off strong solution of ammonium sulfocyanid from time to time from the first scrubber simultaneously transferring liquor from each of the other scrubbers to the scrubber next before it and adding water to the last scrubber.

4. The process consisting in scrubbing coal-gas containing ammonia and cyanogen compounds with water having ammonia in solution in the presence of sulfur to obtain a solution of ammonium sulfocyanid and then again scrubbing the gas which has been so treated with a much larger quantity of water to absorb the ammonia.

705,153. DRAG DEVICE FOR BOBBINS OF DRAWING AND SPINNING FRAMES. SAMUEL SMITH, Lawrence, Mass., assignor of one-half to Anna A. Peabody, Lawrence, Mass. Filed Aug. 25, 1899. Serial No. 728,400. (No model.)

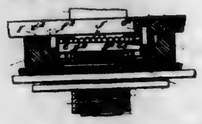

Claim.—1. The combination of a live-spindle, a flier, attached to and rotating with said spindle, a friction-plate, adapted to support a bobbin and to be rotated by the rotation of said bobbin, a friction device adapted to press upon said plate, and means of varying the pressure of said friction device upon said friction-plate without varying the height of said spindle and bobbin.

2. The combination of a live-spindle, a flier, attached thereto and rotating with said spindle, a lifter-plate, provided with a threaded hole, a tube, externally threaded and turning in said hole and provided with a flange, and a friction-plate, supported on said flange and adapted to support and positively engage a bobbin and to be rotated by the rotation thereof.

3. The combination of a lifter-plate, provided with a threaded hole, a tube, externally threaded and turning in said hole and provided with a flange, a friction-plate supported on said flange and adapted to support a bobbin and to be rotated by the rotation thereof, a friction-cup, having a central screw-threaded hole to engage the thread on said tube and a suitable pad, arranged in said cup below said friction-plate.

4. The combination of a tube, provided with a flange, an annular friction-plate, supported on said flange and having a downward extension which reaches below said flange, and locking means secured to said extension below said flange to retain said friction-plate on said flange.

5. The combination of a tube, provided with a flange, having an annular groove in its upper surface, antifriction-rolls, arranged in said groove, a friction-plate surrounding said tube and resting upon said rolls and adapted to support a bobbin and to be rotated by the rotation thereof, and means of preventing said friction-plate from being lifted off from said rolls.

6. The combination of a tube, provided with a flange, an annular friction-plate, mediately supported on said flange and having a downward extension, externally shaped like the frustum of an inverted cone, a cup, concentric with said tube and arranged below said friction-plate and adjustable on said tube, and a pad, arranged in said cup and internally shaped to fit said extension.

705,154. GRAIN-CLEANER. HENRICH SCHNEEFELD, Canton, Kans. Filed Apr. 5, 1901. Serial No. 54,546. (No model.)

Claim.—1. In a grain-cleaner, a hopper, a cut-off for increasing or diminishing the feed-opening therein, a screen swung beneath said feed-opening, arms projecting from one end of the screen, a rocker-shaft which is engaged by the arms, a loop secured to the screen at the opposite end from the arms, and a hook adapted to engage the loop, substantially as described.

2. In a grain-cleaner, a blower, a crank-shaft upon which it is rigidly mounted, an agitator, consisting of a journaled transverse bar terminating at one end in a crank, a rocker-shaft suitably mounted, and a connecting-bar secured at one end to the rocker-shaft and adapted to be secured either to the blower-shaft or the crank of the agitator, substantially as described.

3. In a grain-cleaner, a hopper, an agitator journaled in the opposite ends of the feed-opening therein, a screen consisting of a swinging outer frame, a transverse groove in the front portion thereof, an inner frame removably fitting in the outer one, a transverse tongue extending from the front end thereof and adapted to fit into the groove in the outer frame, suitable means for securing the rear end of the inner frame to the outer one, and an inclined chute located beneath the screen, for the purpose set forth and described.

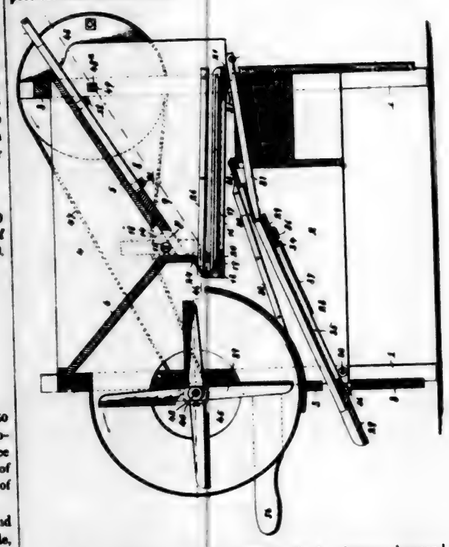

4. In a machine of the character described, a frame, a hopper located therein, a feed-opening at the bottom of the hopper, a screen suspended beneath the feed-opening, a rocker-shaft, arms projecting from the screen and engaging the rocker-shaft, another screen suspended beneath the first-mentioned one, an arm projecting therefrom and engaging the rocker-shaft, an upper apron secured to the rear of the screen, a lower apron secured in advance of the upper apron, and rollers for supporting the lower front portion of the screen, substantially as described.

5. In a grain-cleaner, a hopper, an adjustable cut-off located in the feed-opening thereof, a screen suspended beneath said feed-opening, a pair of arms projecting from the rear end of the screen and provided with notches at their outer terminals, a rocker-shaft engaged by the notched ends of the arms, and adapted to impart a swinging motion to the screen, a loop secured to the central part of the forward portion of the screen, and a depending hook adapted to engage the loop and support the forward end of the screen, substantially as described.

6. In a grain-cleaner, a hopper, a screen suspended beneath the feed-opening therein, two notched arms projecting from the rear end of the screen, a rocker-shaft engaged by the notched terminals of the shaft, and adapted to impart a swinging motion to the screen, a centrally-located loop secured to the forward portion of the screen, a depending hook which engages the loop, and a blower located at the rear end of the screen, substantially as described.

7. In a grain-cleaner, a blower-shaft having a crank formed integral with one end thereof, a depending rocker-shaft journaled at the opposite end of the machine, an arm formed integral with one end of the rocker-shaft and extending above the journal thereof, a connecting-rod for transmitting motion from the blower-shaft to the rocker-shaft, a sieve, a hook and loop for supporting the forward end thereof, and arms rigidly secured to the rear end of the sieve, and adapted to engage the rocker-shaft, substantially as described.

8. In a grain-cleaner, a hopper, an agitator journaled therein, consisting of a transverse bar, a pulley mounted on one end of said bar, a crank-arm formed integral with its opposite end, a connecting-bar adapted to be secured near its central portion to the crank-arm, a depending rocker-shaft, an arm formed integral with one end thereof and pivotally secured to one end of the connecting-bar, a sieve, a hook and loop for supporting its forward end, and arms rigidly secured to its rear end and adapted to engage the rocker-shaft, substantially as described.

705,155. GRADING-PLOW. JOHN SOWORDS, Denver, Mo. Filed Oct. 18, 1901. Serial No. 79,108. (No model.)

Claim.—The herein-described combined plow and grader comprising a suitable beam provided with a share and moldboard and a coöperating colter, a suitable seat secured to the beam, in combination with a regulating-bar 11 provided with the adjusting-lever 12 having means to hold said lever in the desired position and an auxiliary regulating gage-runner 16 and a lever 19 coöperating therewith whereby said gage-runner may be adjusted as desired all combined substantially in the manner specified and for the purpose set forth.

705,156. ARTIFICIAL-STONE FACING. CHARLES W. STEVENS, North Harvey, Ill. Filed Jan. 17, 1901. Serial No. 43,633. (No specimens.)

Claim.—An artificial-stone facing for attachment to surfaces, comprising a substantially rectangular block having its faces bounded in the same plane throughout, and a series of anchors having their ends upset and headed, with one of the headed ends embedded in the block and the other end projecting from one of the faces thereof, the surface to which the facing is to be applied being provided with projecting anchors in staggered relation to those carried by the blocks and received between those of the blocks, the blocks being entirely out of engagement with the surface throughout, and cement interposed between the surface and the said face of the block and engaging the latter throughout said face, substantially as described.

705,157. BREECH-LOADING ORDNANCE. JOHN W. STOCKETT, Washington, D. C. Filed Oct. 20, 1900. Serial No. 33,761. (No model.)

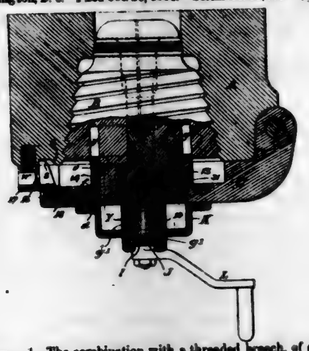

Claim.—1. The combination with a threaded breech, of a plug-carrier, a breech-plug having a continuous thread and supported to rotate and move longitudinally on the carrier and having a peripheral spiral cam of varying depth, a radially-moving bolt on the carrier to lock the carrier to the breech and to engage said cam whereby the bolt is gradually released as the plug is rotated to withdraw it from the breech and in closing the plug is fed forward by the bolt engaging the cam before the plug-threads engage those of the breech, and means for rotating the plug on the carrier, substantially as described.

2. The combination with a threaded breech, of a plug-carrier, a threaded breech-plug supported to rotate and move longitudinally on the carrier and having a spiral cam of varying depth and a locking-recess in said cam, a bolt on the carrier to engage said cam and locking-recess, and means for moving the plug on the carrier, substantially as described.

3. The combination with a threaded breech having a bolt-tripping recess provided with a bevel *t*, of a plug-carrier, a threaded breech-plug supported to rotate and move longitudinally on the carrier and having a spiral cam and a locking-recess, a bolt on the carrier, one end of which is provided with a bevel, adapted to engage the recess in the breech, and the inner end of the bolt adapted to engage said spiral cam and recess on the plug, and means for moving the plug on the carrier, substantially as described.

4. The combination with a threaded breech, of a plug-carrier, a threaded breech-plug supported to rotate and move longitudinally on the carrier and provided with teeth and having a spiral cam formed on the said teeth, a bolt on the carrier to engage said spiral cam, and a pinion mounted on the carrier engaging the teeth on the plug and provided with an operating-handle, substantially as described.

5. The combination with a threaded breech having a bolt-recess, of a swinging plug-carrier having an opening to receive the plug, a threaded breech-plug having a spiral cam terminating in a socket and supported to rotate and move longitudinally in the opening of the carrier, a movable bolt on the carrier, a spring on the bolt to cause one end to engage the cam and socket of the plug, an inclined face on the breech to release the bolt from the socket in the plug, and means for turning the plug, substantially as described.

6. The combination with a threaded breech, of a swinging breech-plug carrier, a threaded breech-plug mounted to rotate and move longitudinally on the carrier, teeth on the plug, a pinion turning on a bearing on the carrier and engaging the teeth on the plug, a handle swinging with the carrier for operating the pinion, means for locking the breech-plug and the carrier when the plug has completed its longitudinal movement in the carrier after the plug has been disengaged from the threads of the breech and for locking the handle in a position to exert the greatest leverage to turn the carrier on its hinge, substantially as described.

7. The combination with a threaded breech, of a threaded breech-plug, a plug-carrier, means for rotating and moving the plug longitudinally in the carrier, a spindle extending through the plug about which the plug can rotate, means for preventing the spindle from rotating, and a gas-check mounted on the inner end of the spindle, substantially as described.

8. The combination with a threaded breech, of a plug-carrier, a threaded breech-plug carried thereby and provided with a cylindrical toothed projection at its rear and having a spiral cam-groove of gradually-increasing depth in the teeth of said projection, and a locking-bolt mounted on the carrier and engaging said cam-groove, substantially as described.

9. The combination with a threaded breech, of a plug-carrier, a threaded breech-plug, a spindle about which the breech-plug revolves, having a firing-opening and provided with a head having flattened sides, a slide mounted on said head, and a cap-piece mounted on the carrier and provided with an opening engaging the flattened sides of the head whereby the spindle is prevented from turning when the plug is turned, substantially as described.

10. The combination with a threaded breech, of a plug-carrier, a threaded breech-plug, a spindle about which the breech-plug revolves having a head, a slide radially movable in said head, an ejector mounted on said head, a loose pin carried by said slide and engaging said ejector, and a cap-piece mounted on the carrier and adapted to prevent the spindle and attachments from turning while the plug is turned, substantially as described.

705,158. YARN-DRYING APPARATUS. GEORGE STONE, North Andover, Mass., assignor to M. T. Stevens and Sons, North Andover, Mass. Filed Aug. 15, 1901. Serial No. 72,168. (No model.)

Claim.—1. A yarn-drying apparatus comprising a casing, rolls located at opposite ends of the casing and arranged to conduct yarn therethrough in a sinuous course and in a series of stretches, means for forcing air under pressure into the casing at one side of the series of stretches, means for exhausting air from the casing at the opposite side of the series of stretches, and intermediate means between the stretches for distributing the air in its passage through the casing.

2. A yarn-drying apparatus comprising a casing, rolls located at

opposite ends of the casing and arranged to conduct yarn therethrough in a sinuous course and in a series of stretches, means for forcing air under pressure into the casing at one side of the series of stretches, means for exhausting air from the casing at the opposite side of the series of stretches, and fixed perforated partitions located in the casing substantially parallel with and between the said stretches, whereby the air is distributed.

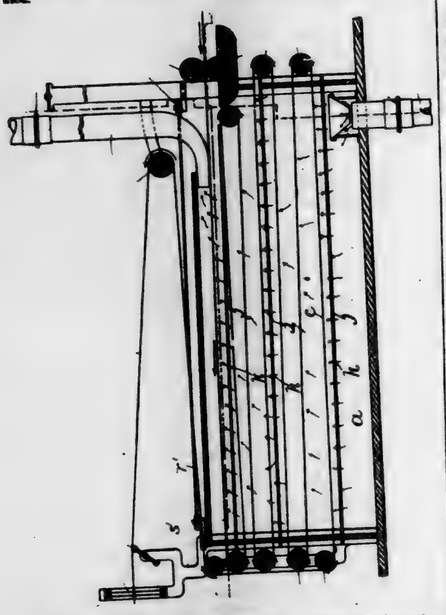

3. A yarn-drying apparatus comprising a casing, rolls located at opposite ends of the casing and arranged to conduct yarn in a sinuous course and in a series of stretches through the casing, perforated partitions located in the casing and extending substantially parallel with and between stretches of yarn therein, means for forcing air under pressure into the casing at one side of the series of stretches, and means for exhausting air from the casing at the opposite side of the series of stretches.

4. A yarn-drying apparatus comprising a casing, means for conducting yarn therethrough in a sinuous course and in a series of substantially parallel stretches, means for applying sizing to the yarn at or near the locality where it enters the casing, a blast-conduit arranged to deliver air under pressure to the casing at one side of the series of stretches, the air delivered by said conduit impinging first against the stretches which are farthest from the locality where the sizing is applied, and an exhaust-conduit arranged to draw air from the casing at the opposite side of the series of stretches, the receiving end of the exhaust-conduit being adjacent to the freshly-sized stretches.

5. A yarn-drying apparatus comprising a casing, means for conducting yarn therethrough in a sinuous course and in a series of stretches, a conduit for delivering air under pressure to said casing, and means for stopping and starting the movement of the yarn through the casing and for closing and opening said conduit simultaneously with the stopping and starting of the yarn, substantially as described.

6. A yarn-drying apparatus comprising a casing, means for conducting yarn therethrough in a sinuous course and in a series of stretches, a conduit for delivering air under pressure to said casing, an exhaust-conduit for removing air from the casing, and means for stopping and starting the movement of the yarn through the casing and for closing and opening said conduits simultaneously with the stopping and starting of the yarn, substantially as described.

7. A yarn-drying apparatus comprising a casing, means for conducting yarn therethrough in a sinuous course, an air-supply or blast conduit arranged to deliver air to the casing, a valve or damper in said conduit, yarn-impelling mechanism including a driving-shaft having a fast pulley and a loose pulley and a belt adapted to run on either of said pulleys, a shipper for said belt, and connections between said shipper and damper whereby the damper and shipper may be simultaneously operated.

8. A yarn-drying apparatus comprising a casing, means for conducting yarn in a sinuous course therethrough, an air-supply or blast conduit and an exhaust-conduit each communicating with the casing and each having a valve or damper, yarn-impelling mechanism including a driving-shaft having a fast pulley and a loose pulley, and a belt adapted to run on either pulley, a shipper for said belt and connections between said shipper and the dampers of said conduits whereby said dampers and shipper are simultaneously operated.

9. A yarn-drying apparatus comprising a casing, means for conducting yarn therethrough in a sinuous course, yarn-impelling mechanism including a driving-shaft having a fast pulley and a loose pulley and a belt adapted to run on either of said pulleys, a shipper for said belt, an air-supply or blast conduit arranged to deliver air to the casing, a valve or damper in said conduit, and a damper and shipper operating mechanism including an elongated flexible cord accessible at different points, and connections between said cord and the damper and shipper.

705,159. HOOK AND EYE. LUCY A. SUTHERLAND, Chicago, Ill. Filed Jan. 3, 1902. Serial No. 88,321. (No model.)

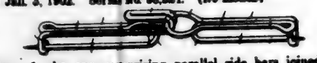

Claim.—1. An eye comprising parallel side bars joined at their front ends and formed into a loop, an intermediate bar connected to the rear end of one of said bars, said intermediate bar being parallel to and in the same plane as said side bars and bent downwardly at its front end to form an attaching-pin in a lower parallel plane, the other side bar being bent at its rear end to form a safety-catch for the end of the pin.

2. A hook comprising parallel side bars joined at their front ends and bent upwardly to form a bill, an intermediate bar connected to the rear end of one of said bars, said intermediate bar being parallel to and in the same plane as said side bars, and bent downwardly at its front end to form an attaching-pin in a lower parallel plane, the other side bar being bent at its rear end to form a safety-catch for the end of the pin.

705,160. OIL-CAN SPOUT. JOHN A. SWANSON, Auburn, Kans. Filed Mar. 4, 1902. Serial No. 96,601. (No model.)

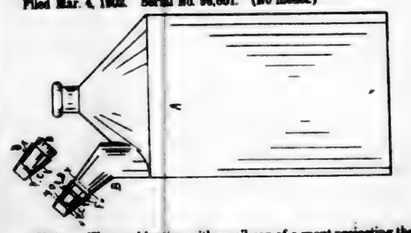

Claim.—The combination with an oil-can of a spout projecting therefrom provided with an attached transverse semicircular disk at its outer end, a cap fitting thereover and provided with an attached semicircular disk, the periphery of said cap extending beyond said disks, the pin or stud G on the spout, and the guide-slot F in the cap, the end of said slot being slightly elevated to hold said two semicircular disks firmly together when said spout is closed.

705,161. CONNECTING-PLUG FOR ELECTRICAL SWITCH-BOARDS. ARTHUR T. M. THOMSON, East Dulwich, England. Filed Dec 18, 1899. Serial No. 740,804. (No model.)

Claim.—A connecting-plug for an electrical switchboard within the casing of which, at the end projecting from the switchboard, is provided an electric lamp, which is connected by wires, inside the plug, to the casing of the plug and to the sleeve of the plug, which sleeve is also joined to one of the communication-wires of the plug, whereby a signal-current of electricity sent through that wire and the casing of the plug will cause the lamp to be illuminated and serve the purpose of a signal.

705,162. ANIMAL-POKE. CORNELIUS H. TROOIEN, Hendricks, Minn. Filed Dec. 31, 1901. Serial No. 87,923. (No model.)

Claim.—1. An animal-poke comprising a collar having a rearwardly-directed plate, a lever pivoted to the collar, a needle pivoted to the lever and passed rearwardly and downwardly through the plate, means for holding the lever yieldably with the needle retracted, and a guard connected to the lever and slidably connected with the plate, said guard extending above the needle.

2. An animal-poke comprising a collar having a rearwardly-directed portion, a bifurcated lever having its bifurcations pivoted to opposite sides of the collar, a needle pivoted to the lever and passed through the extension of the collar, a helical spring disposed upon the needle and bearing with its ends against the lever and the extension of the collar, respectively, and a guard disposed to protect the spring and needle, said guard being pivoted at one end to the lever and being slidably connected with the collar at its opposite end.

3. An animal-poke comprising a collar having a rearwardly-directed portion having a perforation therethrough and having parallel guides at opposite sides of the perforation, a lever pivoted to the collar, a needle pivoted to the lever and slidably engaged with the perforation, means for holding the needle normally retracted, and a guard attached to the lever above the needle and having its ends slidably engaged with the guides to permit of movement of the lever to project the needle through the perforation.

705,168. DRAFT-EQUALIZER. CORNELIUS H. TROOIEN, Hendricks, Minn. Filed Feb. 24, 1902. Serial No. 95,261. (No model.)

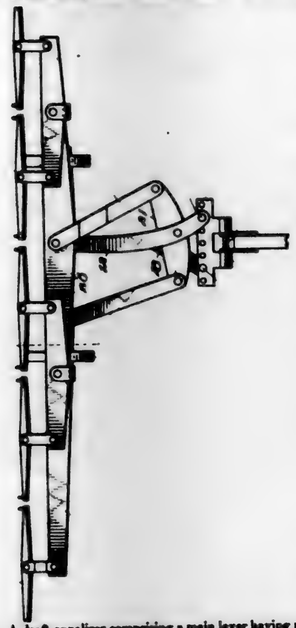

Claim.—1. A draft-equalizer comprising a main lever having means for hitching an animal at one end thereof, a draft-iron attached to the lever adjacent to its opposite end and having a lever pivoted thereto and extending at opposite sides thereof connections between the first lever and one end of the second lever, a doubletree connected with the opposite end of the second lever, and a link pivoted to the first-named lever and to the doubletree and extending normally longitudinally thereof.

2. A draft-equalizer comprising a main lever having a singletree connected at one end thereof, a draft-iron pivoted to the lever adjacent to the opposite end thereof and having a lever pivoted thereto and projecting at opposite sides of the iron, a link pivoted to the main lever and to one end of the second lever, a doubletree, a link pivoted to the doubletree and to the second end of the second lever, a link pivoted to the doubletree and to the end of the main lever opposite to the singletree, loops connected to and projecting laterally beyond the main lever, and cleats upon the doubletree and with which the loops are slidably engaged.

705,164. RAILWAY-SWITCH. ALEXANDER G. TURGOTTE, Holyoke, Mass., assignor to himself and Napoleon McClure, Hartford, Conn. Filed Jan. 27, 1902. Serial No. 91,439. (No model.)

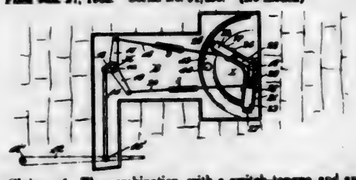

Claim.—1. The combination, with a switch-tongue, and an oscillatory member connected therewith; of a horizontally-shiftable device for operating said tongue and having its impact-point longitudinally movable relatively to the track; and a spring interposed between said member and said devices.

2. The combination, with a switch-tongue, and an oscillatory member connected therewith; of a pair of horizontally-movable devices for operating said tongue and having impact-points longitudinally movable relatively to the track; and a spring interposed between said member and said devices.

3. The combination, with a switch-tongue, and an oscillatory lever connected therewith; of a box; a cover having concentric slots; a rock-lever resiliently connected with said lever and having at its opposite ends devices, the impact-points of which normally project through said slots, and are longitudinally movable relatively to the track, for shifting said oscillatory lever.

4. The combination, with a switch-tongue, and a shiftable lever for operating said tongue; of devices mounted for yielding movement in a vertical plane and having their impact-points normally project through said slots, and longitudinally movable relatively to the track; and resilient connections between said lever and said device.

5. The combination, with a switch-tongue, of a rock-lever for operating said tongue and having at its opposite ends devices for operating said rock-lever in opposite directions, respectively; and a spring engaging both of said devices, and for permitting the same to yield downwardly.

6. The combination, with a switch-tongue, and a rock-lever connected therewith and having a substantially U-shaped cross-section; of spring-actuated dogs carried in the hollow portion of said rock-lever and for moving said lever in opposite directions, respectively.

7. The combination, with a switch-tongue, and a rock-lever connected therewith and having a substantially U-shaped cross-section; of spring-actuated dogs pivoted in the hollow portion of said rock-lever and for moving said lever in opposite directions, respectively.

705,165. HORN-SUPPORTING ARM FOR TALKING-MACHINES. LOUIS P. VALLIENT, New York, N. Y., assignor to Universal Talking Machine Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Mar. 19, 1902. Serial No. 98,925. (No model.)

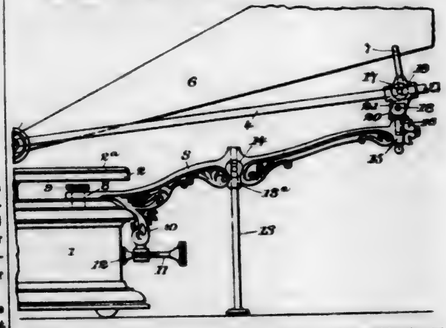

Claim.—1. In a sound-reproducing apparatus, the combination of the motor-casing, a bracket-arm having an eye formed in its inner ex-

trunnity and a downwardly-projecting lug thereunder, fastening means passing through the eye and engaging the upper part of the motor-casing, and an adjustable extension of the before-mentioned lug adapted to engage the side of the motor-casing.

2. In a sound-reproducing apparatus, the combination of the motor-casing, a bracket-arm having an eye formed in its inner extremity and a downwardly-projecting lug thereunder, fastening means passing through the eye and engaging the upper part of the motor-casing, and an adjustable extension of the before-mentioned lug adapted to engage the side of the motor-casing, together with a depending adjustable support for said bracket-arm.

3. In a sound-reproducing apparatus adapted to operate with a swinging reproducer and horn attached thereto, the combination of a motor-casing, a bracket-arm attached thereto, and means for pivoting thereto at various points in its length reproducer-arms of different radii together with a reproducer-arm whose effective length may be varied.

4. In a sound-reproducing apparatus adapted to operate with a swinging reproducer and horn attached thereto, the combination of a motor-casing, a bracket-arm attached thereto, and means for pivoting thereto at various points in its length reproducer-arms of different radii, together with a swinging reproducer-arm having a supporting-pivot adjustable lengthwise thereof.

5. In a sound-reproducing apparatus, the combination of the rotating record-carrying table, the reproducer, horn, and swinging arm therefor, the supporting-bracket, the vertical pivot-pin journaled therein, a hinged joint between said pivot-pin and arm having a horizontal axis, the intermeshing portions of said hinged joint being so shaped that the motion of the arm in a vertical plane is checked on either side, as the center of gravity of the horn and arm reaches a predetermined distance beyond a perpendicular line drawn through the pivot.

6. In a sound-reproducing apparatus, the combination of a motor-casing, a bracket-arm, means for fastening the inner end of said bracket-arm to the upper surface of the motor-casing, and a depending lug from said bracket engaging one of the sides of the motor-casing.

7. In a sound-reproducing apparatus adapted to operate with a swinging reproducer, the combination of a sliding block adjustable on said arm, and a pivot-pin hinged to said block.

705,166. ACETYLENE-GAS GENERATOR. DAVID J. VAN PRAAG, London, England. Filed Aug. 3, 1901. Serial No. 71,396. (No model.)

Claim.—1. The combination with the carbid-chamber and superposed water-chamber, of a plug seated in the bottom of the water-chamber, having a central passage flaring at its upper end, and a lateral port into the water-chamber, a tube extending upwardly from said plug through the water-chamber, a conical valve seated in the upper end of the plug and having a central bore and a tubular stem, said valve having a transverse passage from said bore, a glass or porcelain nipple in the lower end of the plug, and a wire plated with non-corrodible material extending through said valve and stem and through the nipple, substantially as described.

2. In an acetylene-gas apparatus, a carbid-container having a perforated top plate, means for supplying water thereto, a loose pressure-plate for supporting the carbid, and a plurality of springs supporting said plates at different points whereby all parts of the plate are forced upwardly irrespective of the distribution of the carbid upon the plate, substantially as described.

3. In an acetylene-gas apparatus, the combination with the generating-chamber and superposed water-chamber, of a valve in the bottom of said water-chamber, a cleaning-wire extending down through the valve, a removable carbid-container within the generating-chamber, and a guard depending below the lower end of said wire and serving as a stop to prevent contact of the carbid-container with said wire, substantially as described.

705,167. COMBINED SOLAR AND ARTIFICIAL HEAT WATER-HEATER. FRANK WALKER, Los Angeles, Cal. Filed Apr. 19, 1898. Serial No. 678,173. (No model.)

Claim.—1. In a water-heating apparatus, the combination of a water-receptacle; an insulating-case around such receptacle and having a transparent portion to admit the sun's rays to heat the receptacle; a circulating-pipe opening from the receptacle and extending thence outside the case, then returned upward and opening into the receptacle; and means for applying artificial heat to the return member of the circulating-pipe at a point below the solar heater.

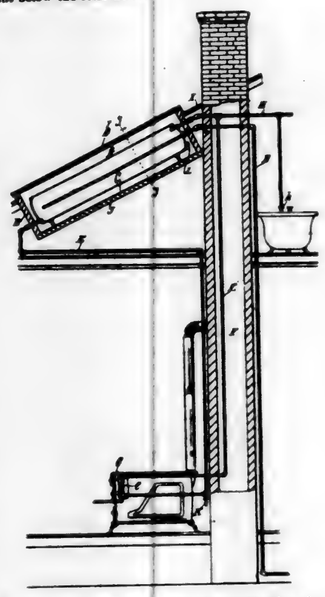

2. In a water-heating apparatus, the combination of a water-receptacle; an insulating-case around such receptacle and having a transparent portion to admit the sun's rays to heat the receptacle, and also having a reflector arranged at the sides of said receptacle and opposite to the transparent portion to direct the heat-rays to the receptacle; a supply-pipe to discharge into the receptacle; means for drawing hot water from the system; a circulating-pipe opening from the lower part of the receptacle and extending thence outside the case, then returned upward and connected with and discharging into the upper part of the receptacle; and means for applying artificial heat to the return member of the circulating-pipe at a point below the solar heater.

3. The combination of a water-heater boiler set at an inclination and blackened upon the outside; an insulating-case inclosing the boiler and provided upon one side with a transparent portion to admit the sun's rays to heat the boiler; a supply-pipe to discharge into the lower part of the boiler; a circulating-pipe opening from the lower part of the boiler, extending thence downward and bent at a lower level and led upward and discharging into the upper part of the boiler; means for supplying artificial heat to the return member of the pipe at a lower portion thereof; and a hot-water pipe leading from the return member of the circulating-pipe near the upper part of the boiler.

4. The combination with the roof of a house, of an insulated case set aslant into the roof and having its upper side transparent; a slanting water-boiler in the case; a supply-pipe to discharge into the lower part of the boiler; a circulating-pipe opening from the lower part of the boiler, extending thence downward and bent at a lower level and led upward and bent at its upper end and discharging into the upper part of the boiler; means for applying artificial heat to the return member of the circulating-pipe at a lower portion thereof; and a hot-water pipe leading from the upper part of the boiler.

5. The combination of the roof and chimney of a house, a slanting insulated case set in the roof of the house and having its upper side transparent; a water-boiler inside the case; a smoke-flue; a supply-pipe to discharge into the lower part of the boiler; a circulating-pipe opening from the lower part of the boiler, extending thence downward outside the smoke-flue and bent at a lower level and led upward through the smoke-flue and bent at its upper end and discharging into the upper part of the boiler; a heating appliance for heating the return member of the circulating-pipe at a lower portion thereof and arranged to discharge its surplus heat into the smoke-flue; and a hot-water pipe leading from the upper part of the boiler.

6. A water-heating system comprising a liquid-receptacle; a solar heater therefor; a circulating system connected to said receptacle; and an artificial heater located below the solar heater to heat the liquid and produce a circulation thereof through said system and receptacle.

7. A water-heating system for buildings comprising a closed receptacle arranged to absorb heat from the sun's rays and insulated to prevent the escape of heat; a cold-water-supply pipe opening into the receptacle; a hot-water-discharge pipe opening from the receptacle; a circulating-pipe leading from a lower part of the receptacle and returned to an upper part of the receptacle; and an artificial heater for heating the water in the return member of the circulating-pipe at a point below the solar heater.

8. A water-heating system for buildings, comprising the water-receptacle; means for supplying cold water to the receptacle; means for drawing heated water from the receptacle; the insulating-case around the water-receptacle and provided with a transparent portion to admit the sun's rays; reflectors arranged in the case and adapted to direct the sun's rays against the receptacle; a pipe connecting the lower end of the receptacle with an artificial heater at a point below such receptacle; such artificial heater; and a pipe connecting such artificial heater with the upper end of the receptacle; all arranged substantially as described whereby a circulation of water is induced through the pipes and receptacles when heat is applied at the artificial heater.

9. A water-heating system for buildings, comprising the water-receptacle arranged to absorb heat from the sun's rays and arranged in an insulated heat-retaining case; means for furnishing a supply of cold water to the bottom of the receptacle; means for drawing off heated water from the top of the receptacle; a pipe connecting with such receptacle at its lower end and passing downward to an artificial heater; such artificial heater; a return-pipe connecting at its lower end to the artificial heater and at its upper end to the water-receptacle; and means for heating the return-pipe above the artificial heater, whereby a rapid circulation and heating of the water in the receptacle and system are induced.

10. In a water-heating system for buildings, the combination with a receptacle, means for supplying cold water to the receptacle, and means for drawing the heated water from the receptacle; of a solar heater to heat the receptacle; an artificial heater located lower than the solar heater and receptacle; and a circulating-pipe, the ends of which connect with the receptacle and the lower portion of which pipe passes through the artificial heater.

11. In a water-heating system for buildings, the combination with an inclined receptacle, means for supplying the receptacle with cold water, and means for drawing the heated water from the receptacle; of a solar heater to heat the receptacle; a circulating-pipe, the ends of which communicate with the upper and lower ends of the receptacle respectively; and an artificial heater to heat the circulating-pipe at a point lower than the receptacle.

12. In a water-heating system for buildings, the combination of a house provided with a flue and the roof provided with an opening; of a heater communicating with the flue; an insulating-case in the roof, the top of which is open to the sun's rays, an inclined heat-absorbing receptacle provided with an inlet, and a reflector within the case, said receptacle being provided with a supply-pipe and with a circulating-pipe the ends of which communicate with the opposite ends of the receptacle respectively and the intermediate portion of which passes through the artificial heater, and a portion of the pipe between the artificial heater and the upper end of the receptacle lying within the flue; means for supplying water to the receptacle; and means for drawing the heated water from the receptacle.

13. A water-heating system for buildings comprising a hot-water receptacle arranged to absorb heat from the sun's rays; a heater arranged at a point below the hot-water receptacle and connected with the lower part of such receptacle; means connecting the heater with the top portion of the hot-water receptacle whereby the cold water of the receptacle is heated by the heater below the receptacle, and when thus heated, is mingled with the water that has been heated by the sun's rays.

14. The combination of a water-boiler in a solar heater and having one end higher than the other; a supply-pipe to discharge near the bottom of the boiler; a circulating-pipe opening from the bottom of the boiler, led downward therefrom and there bent and returned upward and ending in the boiler at the top portion thereof to form both an inlet and an outlet for hot water; a discharge-pipe leading from the upper part of said return-pipe and provided with a valve; and a heater at the lower portion of the return portion of the circulating-pipe to heat the same above the return-bend.

15. In a solar heater, the combination of an insulating-case provided with a curved reflector, and a top provided with two parallel transparent sheets with air-space between them; a cylindrical water-boiler in the case with air-space between it and the reflector; an inlet-pipe opening into the boiler at the lower portion thereof; a circulating-pipe leading from the lower portion of the boiler, extending thence downward and bent and then returned and opening into the upper portion of the boiler; a heater at the lower portion of the return-pipe to heat the same; and a draw-off valve connected with the return-pipe.

16. In a water-heating apparatus, the combination of a water-circuit including a water-reservoir, said reservoir located in one side of the circuit and near the top thereof; a solar heater arranged to heat the reservoir, and an artificial heater arranged to heat the water-circuit at substantially the lowest part thereof.

17. In a water-heating apparatus, the combination of a water-circuit, a solar heater in one side of said circuit and near the top thereof, an artificial heater in the other side of the circuit and near the bottom thereof, means for introducing water to the circuit at substantially the lowest part of the solar heater, and means for withdrawing the heated water at substantially the top of the circuit.

18. A source of liquid-supply, a solar water-heater, an artificial heater located below the solar heater, and a circulating system connected with the source of liquid-supply and connecting the solar and artificial heaters, substantially as described.

19. A liquid-receptacle, a solar heater therefor, a circulating system connected to said receptacle, and an artificial heater located below the solar heater to heat the liquid and produce a circulation thereof through said system and receptacle.

705,168. PROCESS OF PURIFYING HYDROCARBON OILS. JOHN W. WARREN, Omaha, Nebr. Filed Sept. 23, 1900. Serial No. 31,423. (No specimens.)

Claim.—1. The herein-described method of clarifying hydrocarbon oils, which consists in treating the same with a solution of sugar of lead; absorbing the water and any foreign substances resulting from such latter operation by an addition of clay of Wyoming-rock-clay constitution; drawing off the distillate; treating it with sulfuric acid; neutralizing the same by an addition of said clay; drawing off the distillate; treating it with caustic potash; allowing it to stand; re-treating the distillate with said clay; and, finally, when clear, drawing off the distillate.

2. The herein-described method of clarifying hydrocarbon oils, which consists in treating the same with a solution of sugar of lead, treating the distillate with sulfuric acid; and neutralizing the acid and clarifying the distillate by an application of clay of Wyoming-rock-clay constitution.

3. The herein-described method of clarifying hydrocarbon oils, which consists in treating the oil so as to dissolve, liberate and let fall the sulfur therein; drawing off the distillate; treating the distillate with sulfuric acid; treating the distillate to neutralize the sulfuric acid; drawing off the distillate; treating the same with caustic potash; permitting the distillate and potash to stand until the distillate is clear; and finally adding clay of Wyoming-rock-clay constitution.

4. The herein-described method of treating hydrocarbon oils, which consists in subjecting the oil to the action of a solution of sugar of lead; drawing off the distillate; treating the distillate with sulfuric acid; and, finally, letting fall through the distillate powdered Wyoming rock-clay.

705,169. DRAFT-RIGGING FOR ENGINES AND CARS. EDWIN C. WARBURG, Minneapolis, Minn. Filed Sept. 21, 1901. Serial No. 76,018. (No model.)

Claim.—1. The combination with a recessed draft-bar pivoted for lateral oscillations, of a coupler-head pivoted to the free end of said draft-bar, and provided with a projecting tailpiece that works in the recess of said bar, and a spring device applied to said draft-bar and to said tailpiece, said spring device working through the walls of said draft-bar and serving to yieldingly hold said draft-bar and coupler-head centered or in an intermediate normal position, substantially as described.

2. The combination with a recessed draft-bar pivoted for lateral oscillations, of a coupler-head pivoted to the free end of said draft-bar and provided with a tailpiece that works within the recess of said draft-bar, and spring devices comprising a pair of plungers or parts and springs acting thereon, which plungers work through the walls of the said draft-bar and by the coöperation therewith of said spring normally hold said draft-bar and said coupler in intermediate or centered positions, substantially as described.

3. The combination with a recessed draft-bar 14 pivoted at 11, of the coupler-head 20 formed with the lug 21 and tail extension 22, the pin 23 pivotally connecting said lug portion 21 to the free end of said draft-bar and engaging said tailpiece 22, the pair of plungers 30 working through the walls of said draft-bar, and a pair of springs, one operating on each of said plungers 30, substantially as described.

4. The combination with a bracket or support formed with the pair

of laterally-spaced spring-pockets 32, of the draft-bar 14 pivoted at 11, the coupler-head 20 pivoted to the free end of the said draft-bar and provided with the tailpiece 22, the pair of headed plungers 30 working through said draft-bar and operating on said tailpiece 22, and the spring device involving the springs 34 and caps 35, said parts 34, 35 working within said pockets 33, and operating upon said plungers 30, substantially as described.

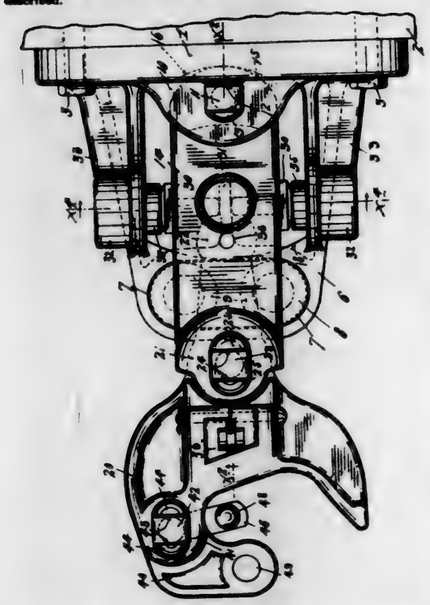

5. The combination with a bracket or support, of a draft-bar pivoted thereto, and a coupler-head pivoted to said draft-bar, the said three parts having coincident perforations or openings, which adapt them to be locked together, substantially as described.

6. A coupler-head pivoted for lateral oscillations and provided with a rearwardly-projected tail piece or portion, in combination with a spring applied entirely at the rear of the pivot of said coupler-head to press downward on said tailpiece, to thereby hold the coupler-head upward, substantially as described.

7. The combination with a recessed draft-bar pivoted for lateral oscillations, of a coupler-head pivoted to the free end of said draft-bar and provided with a tailpiece working within the recess thereof, and a spring applied between the upper wall of said draft-bar and the free end of said tailpiece, whereby said coupler-head is yieldingly held upward, substantially as described.

8. The combination with a draft-bar pivoted for lateral oscillations, and a coupler-head with projected tailpiece pivoted to said draft-bar, of a spring device applied to yieldingly hold upward said draft-bar, and another spring device applied between said draft-bar and said tailpiece for yieldingly holding upward said coupler-head, substantially as described.

9. The combination with a coupler-head of the Master Car-Builders' type having the pivoted knuckle with pin seat or passage 49, of the safety arm or projection carried by the coupler below the same and provided with a vertical lug or projection immediately below the seat or perforation 49, of an interlocking coupler, substantially as and for the purposes set forth.

10. The combination with the coupler of the Master Car-Builders' type, involving a knuckle pivoted to the coupler-head by a pintle or bolt 42 and having the pin seat or passage 49, of a safety-arm secured to the lower end of said pintle 42 and provided with the lug or vertical projection 48 positioned substantially as and for the purposes set forth.

11. The combination with a laterally-movable draft-bar and coupler-head pivoted thereto, of centering-springs applied one on each side of said bar and head, the arrangement being such that lateral movement of said bar against the spring on one side will not cause the spring on the other side to be compressed, substantially as described.

12. The combination with a laterally-movable draft-bar, of a coupler-head pivoted thereto and provided with a rearwardly-projecting tail-piece, and centering-springs acting on the opposite sides of said bar and tail of coupler-head, the arrangement being such that, under lateral movements of said bar and head, in one direction, the spring on the opposite side will not be compressed, substantially as described.

705,170. RAILROAD-RAIL JOINT. GEORGE A. WEBER, Stamford, Conn., assignor to the Weber Railway Joint Manufacturing Co., New York, N. Y., a Corporation of West Virginia. Filed Nov. 30, 1901. Serial No. 84,214. (No model.)

Claim.—1. In a railroad-rail joint the combination with rail-sections arranged in line, of a chair having a base and an upright, a fish-plate on one side, a fish-plate on the other side, a block of wood or similar compressible material fitting between the last-named fish-plate and the upright of the chair, and inclined downwardly away from the upright of the chair, and bolts for securing the parts together.

2. In a railroad-rail joint, the combination with rail-sections arranged in line, of a chair having a base and an upright, a fish-plate on one side of the rail-sections, a fish-plate or channel-bar having outwardly-extended upper and lower edges arranged on the other side of the rail-sections, a block of wood or similar compressible material fitting into the fish-plate or channel-bar last named and inclined downwardly away from the upright of the chair, and bolts for securing the parts together.

705,171. ADJUSTABLE-BACK CHAIR. JERROLD F. WALTON, Sturgis, Mich. Filed Sept. 24, 1901. Serial No. 76,536. (No model.)

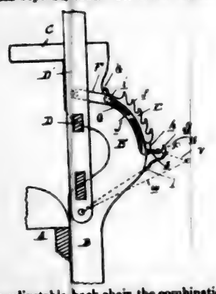

Claim.—1. In an adjustable-back chair, the combination with a seat-frame and a back-frame hinged thereto, of a dog secured to said back-frame, an inclined rack having a series of teeth with which said dog is adapted to successively engage in the upward movement of said back-frame, and an upward and rearward extension of said seat-frame to which said rack is secured having a groove therein forming a return-channel for said dog for carrying it from engagement with the highest to the lowest tooth of said rack.

2. In an adjustable-back chair, the combination of a seat-frame having an upwardly and rearwardly curved extension forming a portion of the arm-rest, a back-frame hinged to said seat-frame, a segmental rack secured to said curved extension of the seat-frame, and a dog carried by said back-frame adapted to successively engage the teeth of said rack in the upward movement of said frame; said curved extension being recessed to form a return-channel for said dog from the highest to the lowest tooth.

3. In an adjustable-back chair, the combination with the seat-frame provided with the upward and rearward curved extension B' having the rabbet *j* therein, of the rack E having the series of teeth *f*, and the slots *i* and *k* at the upper and lower end thereof, the back-frame hinged to said seat-frame, and the pivotal dog V secured to said back-frame having the laterally-extending pin *p* adapted to successively engage said teeth *f* in its upward movement and to return through the slots *i* and *k* and rabbet *j*.

4. In an adjustable-back chair, the combination with the seat and arm-rest, of a frame comprising a rear leg secured to said seat and arm-rest and having the portion therebetween extending rearward with an inclined rear face, a rack secured in rear of and separated from said inclined face to form a channel therebetween, a back-frame hinged to said seat-frame, and a dog secured to said back-frame adapted to successively engage with the teeth of said rack in the upward movement of the back and to return through said channel.

5. In an adjustable-back chair, the combination with the seat and arm-rest, of a frame comprising a rear leg secured to said seat and arm-rest, and having the portion therebetween extending rearward and having a segmental rear face, a rack secured to said leg in rear of and separated from said segmental face and forming a channel therebetween, said rack having hooked teeth upon its outer face and being partially cut away to form slots leading respectively from its lower and upper hooks into said channel, a back-frame hinged to said seat-frame, and a pivotal dog secured to said back-frame adapted to successively engage with said hooks, in the upward movement of said back and to return through said channel.

6. In an adjustable-back chair, the combination with the seat-frame and a back-frame hinged thereto, of an upward and rearward extension of said seat-frame, an inclined rack secured to said extension and separated therefrom to form a channel therebetween, a pendent dog pivoted to said back-frame and having at its free end a lateral projection for engaging said rack, said dog being adapted to automatically successively swing into engagement with the teeth of said rack in the upward movement of the back, engaging with said channel at the upper end and to automatically swing out of said channel at the lower end thereof into engagement with the lowest tooth of said rack.

7. In an adjustable-back chair, the combination with the seat-frame and a back-frame hinged thereto, of an inclined rack secured to said seat-frame, a pendent dog secured to said back-frame adapted to successively engage with the teeth of said rack in the upward movement of said back and to return on the opposite side of said bar to the lowest tooth, said dog being adapted to swing by gravity outward into engagement with said tooth when said back is lowered slowly, and means for arresting said dog and reversing it in position so as to suspend said back when lowered quickly.

705,172. DRAFT-RIGGING FOR RAILWAY-CARS. JAMES M. WAGER, Chicago, Ill. Filed Sept. 23, 1901. Serial No. 76,533. (No model.)

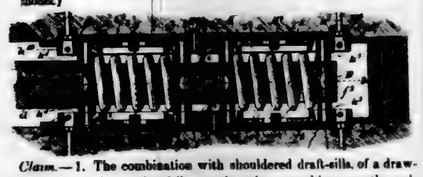

Claim.—1. The combination with shouldered draft-sills, of a draw-bar, a draw-bar spring, spring follower-plates interposed between the ends of said draw-bar spring and the draw-bar, and spacing-blocks separating the follower-plates at each end of the spring.

2. The combination with shouldered draft-sills, of a draw-bar, a draw-bar spring, follower-plates interposed between the ends of the draw-bar spring and the draw-bar, spacing-blocks separating the follower-plates, and movable abutment-plates located between the ends of said follower-plates.

3. The combination with shouldered draft-sills, of a draw-bar, a draw-bar spring, two sets of spring follower-plates located one at each end of the draw-bar spring, with the middle parts of the plates of each set in engagement with the draw-bar spring and draw-bar, spacing-blocks interposed between the middle parts of the plates of each set and acting to separate the ends of the said plates, and movable abutment-plates located between the ends of the sets of follower-plates, the outermost plate or plates of each set being adapted to bear against the shoulders of the draft-sills, and the innermost plate or plates of each set being adapted for contact with said abutment-plates.

4. The combination with shouldered draft-sills, a draw-bar, two tandem draw-bar springs, spring follower-plates located between the ends of said springs and the draw-bar, and movable abutment-plates adapted to transmit pressure from one to the other of the follower-plates severally associated with each of the draw-bar springs; the abutment-plates associated with the two draw-bar springs having their ends at different distances from the ends of the follower-plates which engage the same, so that the abutment-plates will come successively into action when the springs are compressed.

5. The combination with shouldered draft-sills, a draw-bar, two tandem draw-bar springs, sets of spring follower-plates located one set at each end of each draw-bar spring, the plates of each set being separated at their ends from each other and having their middle parts in engagement with the draw-bar spring and draw-bar, and movable abutment-plates located between the ends of the sets of follower-plates belonging to each spring, the outermost plate or plates of each set being adapted to bear against the shoulder on the draft-sills, and the innermost plate or plates of each set being adapted for contact with the abutment-plates, and the abutment-plates associated with the two draw-bar springs having their ends at different distances from the ends of the innermost plates which engage the same, so that the said abutment-plates will come successively into action when the springs are compressed.

6. The combination with shouldered sills, of a draw-bar, a draw-bar spring, spring follower-plates located one between each end of said spring and the draw-bar, movable abutment-plates located between the ends of the said follower-plates and adapted for contact at their ends with said follower-plates, and shorter spring follower-plates interposed between each end of the said spring and the main longer follower-plates, said abutment-plates being provided with shoulders at a shorter distance apart than the main and contact surfaces of the abutment-plates, and which are adapted for contact with the ends of said shorter follower-plates.

7. A recessed draft-iron for tandem-spring draft-rigging provided with an integral longitudinal top flange, a detachable, longitudinal bottom flange and with flanges at its ends affording inwardly-facing bearing-shoulders, and a vertical bar applied to the draft-iron between the end flanges to afford outwardly-facing bearing-shoulders, said bar being provided with transverse notches in its ends and the top and bottom flanges having transverse ribs which interlock with the notches to hold the bar from lateral movements in both directions, horizontal rivets securing the bar to the draft-iron, and a vertical bolt inserted through the top and bottom flanges and endwise through the bar.

8. The combination with recessed draft-irons provided with longitudinal top and bottom flanges, a draw-bar yoke, tandem draw-bar springs, a block rigidly secured between the upper and lower yoke members at a point between the springs, and spring follower-plates interposed between the ends of the springs and said block, the faces of said block which are in contact with the spring follower-plates being narrower than the space between the longitudinal flanges of the draft-irons, and said blocks having integral lugs which extend laterally and outwardly therefrom so as to occupy the spaces between the side edges of one of the yoke members and the adjacent longitudinal flanges of the draft-irons, said lugs being adapted for sliding contact with said flanges.

705,173. CLOSURE FOR BOTTLES, JARS, &c. ALFRED L. WEISENTHANNER, New York, N. Y. Filed Oct. 16, 1901. Serial No. 78,870. (No model.)

Claim.—1. In a closure for receptacles, a non-resilient sheet-metal cover or cap having an integral depending practically continuous flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being severed or divided at one or more places, and detachable connections between the severed portions rendering the flange practically continuous.

2. In a closure for receptacles, a non-resilient sheet-metal cover or cap having an integral depending practically continuous flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being severed or divided at one or more places, detachable connections between the severed portions rendering the flange practically continuous and means for disengaging the flange from the shoulder on the receptacle.

3. In a closure for receptacles, a non-resilient sheet-metal cover or cap having an integral depending practically continuous flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being severed or divided at one or more places, detachable connections between the severed portions rendering the flange practically continuous, and means for loosening said connections.

4. In a closure for receptacles, a non-resilient sheet-metal cover or cap having an integral depending practically continuous flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being severed or divided at one or more places, detachable connections between the severed portions rendering the flange practically continuous, and means connected to said cap for loosening said connections.

5. In a closure for receptacles, a non-resilient sheet-metal cover or cap having an integral depending practically continuous flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being severed or divided at one or more places, detachable connections between the severed portions rendering the flange practically continuous, and a tongue on the cap

associated with the connections between the severed portions and whereby said connections may be loosened and the flange disengaged from the shoulder or recess on the receptacle.

6. In a closure for receptacles, a non-resilient sheet-metal cover or cap having an integral depending practically continuous flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being severed or divided at one or more places, detachable connections between the severed portions rendering the flange practically continuous, and a tongue integral with the cap associated with the connections between the severed portions and whereby said connections may be loosened and the flange disengaged from the shoulder or recess on the receptacle.

7. In a closure for receptacles, a cover or cap of non-resilient sheet metal having an integral depending flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being severed or divided at one point and detachable connections between the severed portions.

8. In a closure for receptacles, a cover or cap of non-resilient sheet metal having an integral depending flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being divided at one point and a tongue integral with the cap whereby it may be disengaged from the receptacle.

9. In a closure for receptacles, a cover or cap of non-resilient sheet metal having an integral depending flange around its edge adapted to be bent into engagement with a shoulder or recess on the receptacle to secure the cap in place, said flange being divided at a plurality of points, and a detachable connection between parts of the flange at one of said points of division.

10. In a closure for receptacles, a cover or cap of non-resilient sheet metal having an integral depending flange around its edge adapted to be bent into engagement with the shoulder or recess on the receptacle to secure the cap in place, said flange being divided at a plurality of points, a detachable connection between parts of the flange, and a tongue integral with the cap and associated with said detachable connection whereby the latter may be loosened to disengage the cap from the receptacle.

705,174. LINK-MOTION FOR STEAM-ENGINES. MARION A. WHARFIELD, Toledo, Ohio, assignor of eight-fifteenths to Benson G. McMechen and Henry C. Wharfield, Toledo, Ohio. Filed Dec. 9, 1901. Serial No. 85,165. (No model.)

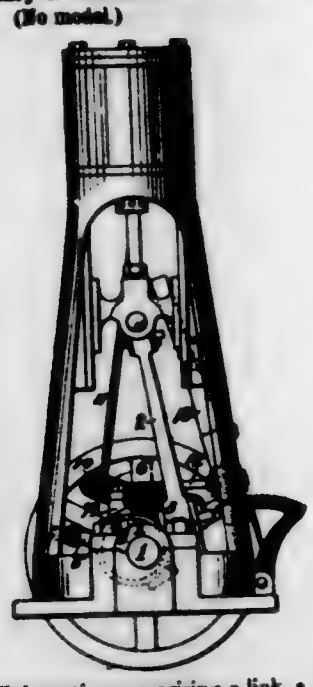

Claim.—1. A link-motion comprising a link, a shaft projecting laterally from one side of the link midway between the ends of the link, stationary bearings for said shaft, connections between the shaft of the engine and the link which connections give to the link a single uniform motion on its bearings in harmony with the movement of the engine-shaft, a block in the link connected with the engine-valve, and means for controlling the position of the block relatively to the link, the arrangement being such that the block may be moved into and out of coincidence with the axis of motion of said link.

2. A link, stationary bearings on which the link rocks midway of its length and width, a cam on the engine-shaft set oppositely to the engine-crank, a cam-strap on the cam, and pivotal connections between the cam-strap and the link which pivotal connections are disposed in a line at a right angle to the line of the axes of the link-bearings and the engine-shaft.

3. In a link-movement, a link, a shaft for said link projecting from one side thereof, the arrangement being such that the shaft's axial line, extended, passes through the longitudinal and transverse center of the link-opening, a stationary bearing for said shaft, a block slidably mounted in the link, and means for rocking the link on its shaft in harmony with the motion of the engine-shaft.

4. In a link-motion, a link, a shaft for said link midway of its length, a lever connected with said shaft and having two arms at substantially a right angle to each other and in a plane parallel to the link and having at the angle of the arms an elongated opening for the engine-shaft, said link, shaft and lever being integral.

705,175. VEHICLE-TIRE. CHARLES H. WHEELER and FRANKLIN W. KREMER, Akron, Ohio; said Wheeler assignor to the India Rubber Company, Akron, Ohio, a Corporation of Ohio. Filed July 19, 1901. Serial No. 68,896. (No model.)

Claim.—1. A rubber vehicle-tire having cross-pieces embedded in the base portion thereof, each cross-piece being provided with a head at one end only, the outer surface of the head being substantially flush with the side of the rubber tire; substantially as described.

2. A rubber vehicle-tire having cross-pieces embedded in the base portion thereof, each cross-piece provided with a head at one end only, the body of the head lying within the rubber of the tire; substantially as described.

3. A rubber vehicle-tire having cross-pieces embedded in the base portion thereof, each cross-piece provided with a head oblique to its body portion and its outer surface substantially flush with the side of the rubber tire; substantially as described.

4. A rubber vehicle-tire having cross-pieces embedded in the base portion thereof, each cross-piece provided with a head at one end only, the body of the head lying within the rubber of the tire, and a circumferential binding-wire located on each side of the tire; substantially as described.

5. A vehicle-tire provided with cross-pieces, said cross-pieces being located in the base of the tire, and each provided with a head at one end only, said head being oblique to the body of the cross-piece and parallel with the side wall of the tire, and a circumferential binding-wire on each side of the tire and located within the headed portion of the cross-pieces, substantially as specified.

705,176. VEHICLE-WHEEL. CHARLES H. WHEELER and FRANKLIN W. KREMER, Akron, Ohio; said Wheeler assignor to the India Rubber Company, Akron, Ohio, a Corporation of Ohio. Original application filed May 4, 1900, Serial No. 15,445. Divided and this application filed May 20, 1901. Renewed Apr. 23, 1902. Serial No. 106,003. (No model.)

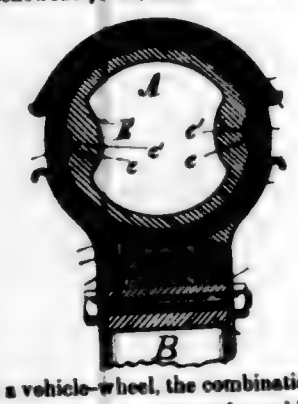

Claim.—1. In a vehicle-wheel, the combination of a rim, a tire provided with a base-piece, transverse recesses formed in said base-piece, corresponding transverse pieces engaging said recesses, a channel composed of two side members secured to the rim, each of said side members being provided with a shoulder engaging a corresponding groove formed in the tire, and transverse rods in the base-piece of the tire, the ends of said rods extending under the shoulders of the side members, substantially as specified.

2. In a vehicle-wheel, the combination of a rim, a tire provided with a base-piece, transverse recesses formed in said base-piece, corresponding transverse pieces engaging said recesses, a channel composed of two side members secured to the rim, each of said side members being provided with a shoulder engaging a corresponding groove formed in the tire, transverse rods in the base-piece of the tire, the ends of said rods extending under the shoulders of the side members, and an outside band or shoe, substantially as specified.

3. In a vehicle-wheel, the combination of a rim, a tire provided with

a base-piece, transverse recesses formed in said base-piece, corresponding lugs on the rim engaging said recesses, a channel composed of two side members secured to the rim, each of said side members being provided with a shoulder engaging a corresponding groove formed in the tire, transverse rods in the base-piece of the tire, the ends of said rods extending under the shoulders of the side members, the outer edges of the side members being turned over to form lips, substantially as specified.

4. In a vehicle-wheel, the combination of a channel, a pneumatic tire seated therein, an outside band or shoe, said pneumatic tire consisting of an air-tube having thickened side walls, and an outer envelop, and means for positively engaging the outer surface of the air-tube with the inner surface of the envelop, whereby, upon deflation, the air-tube will collapse inwardly, drawing with it the outer envelop, substantially as specified.

5. A pneumatic tire comprising an inner tube, an outer envelop cut circumferentially along the central line of the base, said outer envelop being provided with a fabric reinforcement secured to the said walls by stitching, substantially as specified.

705,177. VEHICLE-WHEEL. CHARLES H. WHEELER and FRANKLIN W. KREMER, Akron, Ohio; said Wheeler assignor to the India Rubber Company, Akron, Ohio, a Corporation of Ohio. Filed May 4, 1900. Renewed May 24, 1902. Serial No. 108,789. (No model.)

Claim.—1. In a vehicle-wheel, the combination of a rim, a tire, two side members secured to the rim, one on each side, and projecting beyond the periphery thereof to form a channel for the tire, an independent ring located in the tire above the base thereof, and transverse rods located in the tire below said ring, substantially as specified.

2. In a vehicle-wheel, the combination of a rim, a tire, two side members secured to the rim, one on each side, and projecting beyond the periphery thereof to form a channel for the tire, independent rings located in the tire above the base thereof, one on each side, and transverse rods located in the tire below said rings, substantially as specified.

3. In a vehicle-wheel, the combination of a rim, a tire, two side members secured to the rim, one on each side and projecting beyond the periphery thereof to form a channel for the tire, independent rings located in the tire above the base thereof, one on each side, transverse recesses formed in the tire and transverse pieces engaging therewith, substantially as specified.

4. In a vehicle-wheel, the combination of a rim, a tire, two side members secured to the rim, one on each side and projecting beyond the periphery thereof to form a channel for the tire, independent rings located in the tire above the base thereof, one on each side, transverse rods, the ends of which project beneath the said rings, transverse recesses formed in the base of the tire and transverse pieces engaging therewith, substantially as specified.

5. In a vehicle-wheel, the combination of a rim, a tire, a channel composed of two side members secured to the rim, a circumferential groove on each side of the tire, an engaging member seated in each of said grooves, and transverse rods passing through the tire and projecting beneath said engaging member, substantially as specified.

6. In a vehicle-wheel, the combination of a rim, a tire, a channel composed of two side members secured to the rim, a circumferential groove on each side of the tire, a metallic ring seated in each of said grooves, and transverse rods extending across the tire and projecting beneath said rings, substantially as specified.

7. In a vehicle-wheel, the combination of a rim, a tire, side members secured to the rim and projecting beyond the periphery thereof, one on each side, to constitute a channel, an independent ring, located in a circumferential groove in each side of the tire, transverse recesses formed in the tire and transverse pieces engaging therewith, and transverse rods, the ends of which project beneath the said engaging pieces, substantially as specified.

705,178. SOLID RUBBER TIRE. CHARLES H. WHEELER and FRANKLIN W. KREMER, Akron, Ohio; said Wheeler assignor to the India Rubber Company, Akron, Ohio, a Corporation of Ohio. Filed Oct. 23, 1900. Serial No. 34,033. (No model.)

Claim.—1. In a vehicle-wheel, a rubber tire in the form of an annulus, a rim, side flanges projecting beyond the periphery of the rim to form a tire-channel, one or more binding-rings located in the tire above the base thereof, an outer and an inner series of bolts, the outer series passing through the side flanges and the base of the tire immediately above the rim and below the binding-rings and the inner series passing through the flanges and the rim.

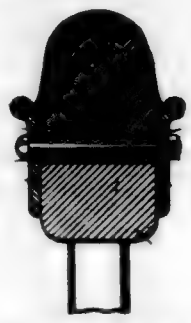

2. In a vehicle-wheel, a rubber tire in the form of an annulus, a rim, side flanges projecting beyond the periphery of the rim to form a tire-channel, binding-rings located in the tire above the base thereof, one on each side, transverse rods located in the tire below said rings, and two series of bolts, the outer series passing through the side flanges and the base of the tire immediately above the rim and below the binding-rings, and the inner series passing through the flanges and the rim, substantially as specified.

3. In a vehicle-wheel, a rubber tire in the form of an annulus, a rim, separable side flanges projecting beyond the periphery of the rim to form the tire-channel, and having divergent outer edges, and an outer and inner series of bolts, the outer series passing through the side flanges and the base of the rubber tire immediately above the rim of the wheel, and the inner series passing through the flanges and the rim, substantially as described.

4. In a vehicle-wheel, a rim, a rubber tire broader at the base than at the tread, and having sides inclined to the tread, said tire being in the form of an annulus, separable side flanges projecting beyond the rim to form the tire-channel and having divergent outer edges, and an outer and inner series of bolts, the outer series passing through the side flanges and the base of the rubber tire immediately above the rim of the wheel and the inner series passing through the flanges and the rim, substantially as described.

5. In a vehicle-wheel, a rubber tire in the form of an annulus, a rim, side flanges projecting beyond the periphery of the rim to form a tire-channel, means for binding the base of the tire down on the rim, and an outer and inner series of bolts, the outer series passing through the side flanges and the base of the rubber tire below the binding means, and the inner series passing through the flanges and the rim, substantially as described.

705,179. PUSH-POLE. HARVEY WHELER, Harrisburg, Pa. Filed May 15, 1902. Serial No. 107,519. (No model.)

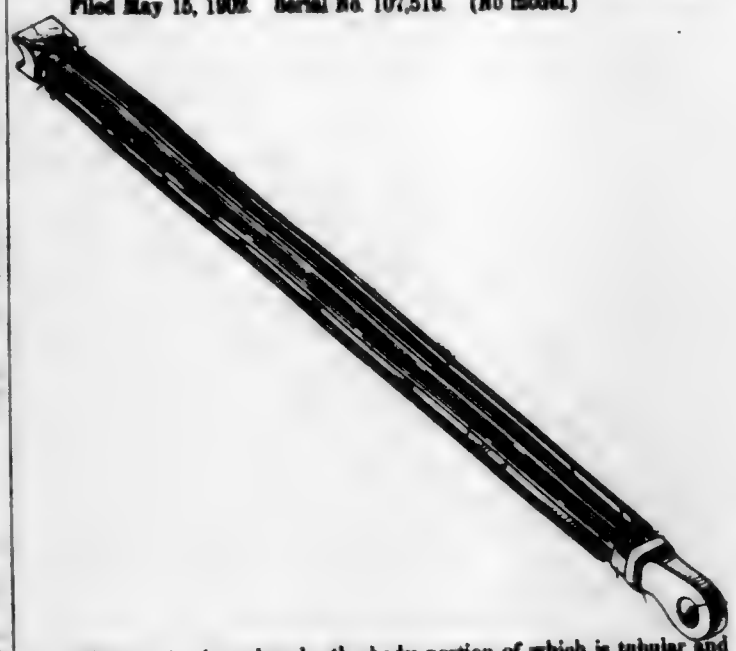

Claim.—1. A push-pole, the body portion of which is tubular and formed of a series of metal strips bolted or riveted together, and heads secured to the opposite ends of the pole, substantially as set forth.

2. A push-pole, the body portion of which is tubular and formed of a series of metal strips bolted or riveted together, heads secured at the opposite ends of the pole, and a cross-brace located within the tubular body portion and bolted or riveted in place, substantially as set forth.

3. A push-pole consisting of a tubular body portion composed of sections having flanges, a longitudinally-disposed cross-brace the edges of which project between said flanges, rivets or bolts for securing the flanges and the edges of the cross-brace in position, and heads located at the opposite ends of the pole, substantially as set forth.

4. A push-pole composed of a hollow body portion having cross-braces located therein and secured thereto, of heads having extensions formed with intersecting grooves or slots to receive the cross-braces and formed with recesses to receive the ends of the body portion, substantially as set forth.

705,180. PRINTING-MACHINE. JOSEPH WHITE, New York, N. Y., assignor to Robert Hoe, New York, N. Y. Filed Sept. 26, 1901. Serial No. 76,600. (No model.)

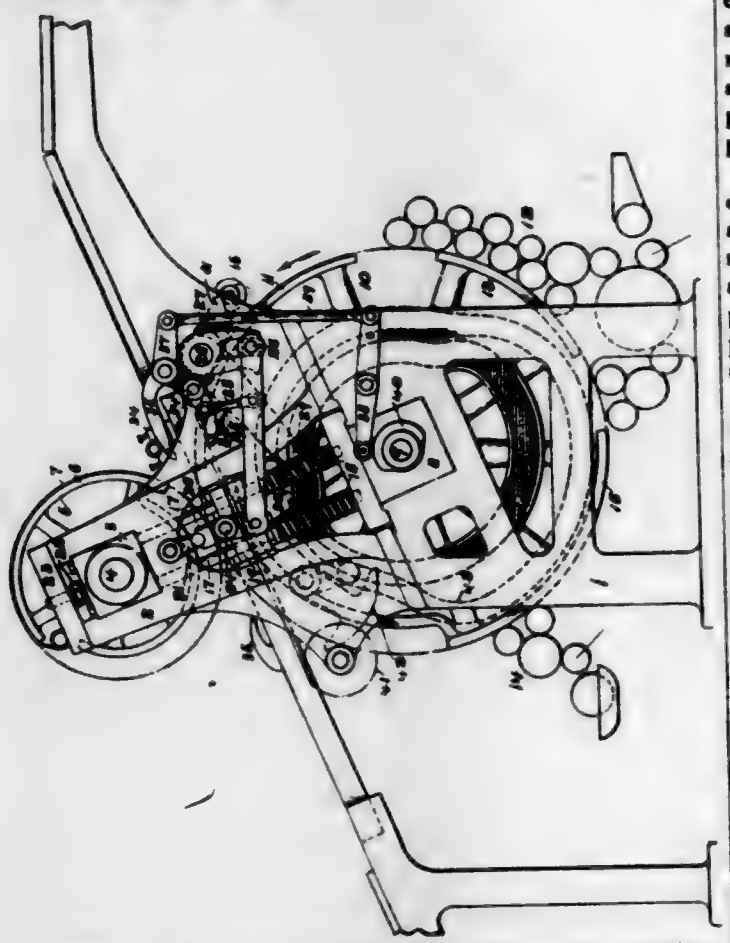

Claim.—1. In a printing-machine, the combination with a printing-couple comprising a member arranged to carry a transfer-surface, and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, substantially as described.

2. In a printing-machine, the combination with a printing-couple comprising a member arranged to carry a transfer-surface, and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, and means for controlling the amount of such separation, substantially as described.

3. In a printing-machine, the combination with a printing-couple comprising a cylinder arranged to carry a transfer-surface, and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, substantially as described.

4. In a printing-machine, the combination with a printing-couple comprising a cylinder arranged to carry a transfer-surface, and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, and means for controlling the amount of such separation, substantially as described.

5. In a printing-machine, the combination with a printing-couple comprising a member arranged to carry a transfer-surface, and a coöperating cylinder arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, substantially as described.

6. In a printing-machine, the combination with a printing-couple comprising a member arranged to carry a transfer-surface, and a coöperating cylinder arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, and means for controlling the amount of such separation, substantially as described.

7. In a printing-machine, the combination with a printing-couple comprising a cylinder arranged to carry a transfer-surface, and a coöperating cylinder arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, substantially as described.

8. In a printing-machine, the combination with a printing-couple comprising a cylinder arranged to carry a transfer-surface, and a coöperating cylinder arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of means for separating the members of the couple after the surface has delivered the printing medium to the transfer-surface and before the transfer and impression surfaces come into coöperative relation, and means for controlling the amount of such separation, substantially as described.

9. A printing-couple comprising a member arranged to carry a printing-surface and a coöperating member carrying an ink-applying means and a planographic impression-surface, substantially as described.

10. A printing-couple comprising a cylinder arranged to carry a printing-surface and a coöperating member carrying an ink-applying means and a planographic impression-surface, substantially as described.

11. A printing-couple comprising a member arranged to carry a printing-surface and a coöperating cylinder carrying an ink-applying means and a planographic impression-surface, substantially as described.

12. A printing-couple comprising a cylinder arranged to carry a printing-surface and a coöperating cylinder carrying an ink-applying means and a planographic impression-surface, substantially as described.

13. A printing-couple comprising a member arranged to carry a flexible printing-surface and a coöperating member carrying an ink-applying means and a planographic impression-surface, substantially as described.

14. A printing-couple comprising a cylinder arranged to carry a flexible printing-surface and a coöperating member carrying an ink-applying means and a planographic impression-surface, substantially as described.

15. A printing-couple comprising a member arranged to carry a flexible printing-surface and a coöperating cylinder carrying an ink-applying means and a planographic impression-surface, substantially as described.

16. A printing-couple comprising a cylinder arranged to carry a flexible printing-surface and a coöperating cylinder carrying an ink-applying means and a planographic impression-surface, substantially as described.

17. A printing-couple comprising a member arranged to carry a flexible printing-surface and a coöperating member carrying an ink-applying means and a planographic impression-surface, and means for separating the members of the couple, substantially as described.

18. A printing-couple comprising a cylinder arranged to carry a flexible printing-surface and a coöperating member carrying an ink-applying means and a planographic impression-surface, and means for separating the members of the couple, substantially as described.

19. A printing-couple comprising a member arranged to carry a flexible printing-surface and a coöperating cylinder carrying an ink-applying means and a planographic impression-surface, and means for separating the members of the couple, substantially as described.

20. A printing-couple comprising a cylinder arranged to carry a flexible printing-surface and a coöperating cylinder carrying an ink-applying means and a planographic impression-surface, and means for separating the cylinders, substantially as described.

21. The combination with a printing-couple comprising a member carrying a printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, substantially as described.

22. The combination with a printing-couple comprising a member carrying a printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, and a wiping mechanism for removing surplus moisture from the impression-surface, substantially as described.

23. The combination with a printing-couple comprising a member carrying a printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the

impression-surface, a wiping mechanism for removing surplus moisture from the impression-surface, and means for manipulating the wiping mechanism so as to keep it out of contact with the ink-applying surface, substantially as described.

24. The combination with a printing-couple comprising a cylinder carrying a printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, substantially as described.

25. The combination with a printing-couple comprising a cylinder carrying a printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, and a wiping mechanism for removing surplus moisture from the impression-surface, substantially as described.

26. The combination with a printing-couple comprising a cylinder carrying a printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, a wiping mechanism for removing surplus moisture from the impression-surface, and means for manipulating the wiping mechanism so as to keep it out of contact with the ink-applying surface, substantially as described.

27. The combination with a printing-couple comprising a cylinder carrying a printing-surface and a cylinder carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, substantially as described.

28. The combination with a printing-couple comprising a cylinder carrying a printing-surface and a cylinder carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, and a wiping mechanism for removing surplus moisture from the impression-surface, substantially as described.

29. The combination with a printing-couple comprising a cylinder carrying a printing-surface and a cylinder carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, a wiping mechanism for removing surplus moisture from the impression-surface, and means for manipulating the wiping mechanism so as to keep it out of contact with the ink-applying surface, substantially as described.

30. The combination with a printing-couple comprising a member carrying a yielding printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, substantially as described.

31. The combination with a printing-couple comprising a member carrying a yielding printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, and a wiping mechanism for removing surplus moisture from the impression-surface, substantially as described.

32. The combination with a printing-couple comprising a member carrying a yielding printing-surface and a member carrying an ink-applying surface and a planographic impression-surface, of means for dampening the impression-surface, a wiping mechanism for removing surplus moisture from the impression-surface, and means for manipulating the wiping mechanism so as to keep it out of contact with the ink-applying surface, substantially as described.

33. The combination with a printing-couple comprising a member carrying a transfer printing-surface and a member carrying a planographic ink-applying surface and a planographic impression-surface, of a dampening mechanism coöperating with both planographic surfaces, substantially as described.

34. The combination with a printing-couple comprising a member carrying a transfer printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of a dampening mechanism coöperating with both planographic surfaces, substantially as described.

35. The combination with a printing-couple comprising a cylinder carrying a transfer printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of a dampening mechanism coöperating with both planographic surfaces, substantially as described.

36. The combination with a printing-couple comprising a member carrying a transfer printing-surface and a member carrying a planographic ink-applying surface and a planographic impression-surface, of a dampening mechanism coöperating with both planographic surfaces, a wiping mechanism operating to remove surplus moisture from the impression-surface, and means for manipulating the wiping mechanism so as to keep it out of contact with the planographic ink-applying surface, substantially as described.

37. The combination with a printing-couple comprising a member carrying a transfer printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of a dampening mechanism coöperating with both planographic surfaces, a wiping mechanism operating to remove surplus moisture from the impression-surface, and means for manipulating the wiping mechanism so as to keep it out of contact with the planographic ink-applying surface, substantially as described.

38. The combination with a printing-couple comprising a cylinder carrying a transfer printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of a dampening mechanism coöperating with both planographic surfaces, a wiping mechanism operating to remove surplus moisture from the impression-surface, and means for manipulating the wiping mechanism so as to keep it out of contact with the planographic ink-applying surface, substantially as described.

39. The combination with a printing-couple comprising a cylinder having a printing-surface and a cylinder carrying an ink-applying surface and a planographic impression-surface, of means for separating the cylinders after the ink-applying surface has passed the printing-surface and before the printing and impression surfaces come into coöperative relation, substantially as described.

40. The combination with a printing-couple comprising a cylinder having a yielding printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of means for separating the cylinders after the ink-applying surface has passed the printing-surface and before the printing and impression surfaces come into coöperative relation, and a dampening mechanism coöperating with both planographic surfaces, substantially as described.

41. The combination with a printing-couple comprising a cylinder having a yielding printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of means for separating the cylinders after the ink-applying surface has passed the printing-surface and before the printing and impression surfaces come into coöperative relation, a dampening mechanism coöperating with both planographic surfaces, and means for varying the amount of separation between the cylinders, substantially as described.

42. The combination with a printing-couple comprising a cylinder having a yielding printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of means for separating the cylinders after the ink-applying surface has passed the printing-surface and before the printing and impression surfaces come into coöperative relation, a dampening mechanism coöperating with both planographic surfaces, a wiping mechanism, and means for manipulating the wiping mechanism so as to cause it to run in contact with the impression-surface and out of contact with the ink-applying surface, substantially as described.

43. The combination with a printing-couple comprising a cylinder having a yielding printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of means for separating the cylinders after the ink-applying surface has passed the printing-surface and before the printing and impression surfaces come into coöperative relation, a dampening mechanism coöperating with both planographic surfaces, a wiping mechanism, means for manipulating the wiping mechanism so as to cause it to run in contact with the impression-surface and out of contact with the ink-applying surface, and means for varying the amount of separation between the cylinders, substantially as described.

44. The combination with a printing-couple comprising a cylinder carrying a printing-surface and a cylinder carrying an ink-applying surface and a planographic impression-surface, means for dampening the impression-surface, means for separating the cylinders after the ink-applying surface has passed the printing-surface and before the printing-surface and planographic impression-surface have come into coöperative relation, and a wiping mechanism controlled by the separating means whereby said mechanism is caused to run in contact with the impression-surface and out of contact with the ink-applying surface, substantially as described.

45. The combination with a printing-couple comprising a cylinder carrying a transfer printing-surface and a cylinder carrying a planographic ink-applying surface and a planographic impression-surface, of a dampening mechanism coöperating with both planographic surfaces, means including a toggle mechanism for separating the cylinders after the ink-applying surface has passed the printing-surface and before the printing-surface and planographic impression-surface have come into coöperative relation, means for varying the amount of separation between the cylinders, and a wiping-roller connected with and operated by said separating means, whereby said roller is caused to run in contact with the impression-surface and out of contact with the ink-applying surface, substantially as described.

705,181. FEEDING MECHANISM FOR PRINTING-MACHINES. JOSEPH WHITE, New York, N. Y., assignor to Robert Hoe, New York, N. Y. Filed Sept. 26, 1901. Serial No. 76,569. (No model.)

Claim.—1. The combination with a printing-couple; of a carriage, sheet-holding devices mounted thereon said devices including a bar extending across the carriage and having its operating-face substantially flat

so that a sheet may be slid into position thereon, coöperating gripping means, gripper-operating means, said means including devices for operating the grippers while the carriage is at rest, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

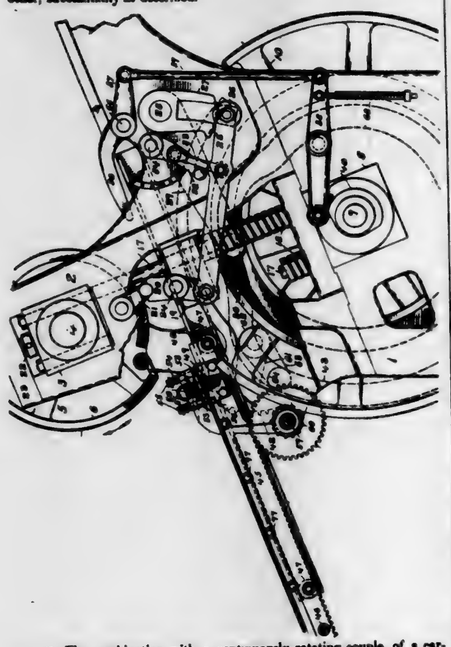

2. The combination with a continuously-rotating couple, of a carriage, sheet-holding devices mounted thereon said devices including a bar extending across the carriage and having its operating-face substantially flat so that a sheet may be slid into position thereon, coöperating gripping means, gripper-operating means, said means including devices for operating the grippers while the carriage is at rest, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

3. The combination with a printing-couple one or both members of which have portions cut away, of a carriage, sheet-holding devices mounted thereon said devices including a bar extending across the carriage and having its operating-face substantially flat so that a sheet may be slid into position thereon, coöperating gripping means, gripper-operating means, said means including devices for operating the grippers while the carriage is at rest, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

4. The combination with a continuously-rotating printing-couple one or both members of which have portions cut away, of a carriage, sheet-holding devices mounted thereon said devices including a bar extending across the carriage and having its operating-face substantially flat so that a sheet may be slid into position thereon, coöperating gripping means, gripper-operating means, said means including devices for operating the grippers while the carriage is at rest, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

5. In a printing-machine, the combination with a printing-couple comprising a member arranged to carry a transfer printing-surface and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of a carriage, sheet-holding devices mounted thereon, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

6. In a printing-machine, the combination with a continuously-rotating printing-couple comprising a member arranged to carry a transfer printing-surface and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, of a carriage, sheet-holding devices mounted thereon, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

7. In a printing-machine, the combination with a printing-couple comprising a member arranged to carry a transfer printing-surface and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, one or both members of the printing-couples having portions cut away, of a carriage, sheet-holding devices mounted thereon, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

8. In a printing-machine, the combination with a continuously-rotating printing-couple comprising a member arranged to carry a transfer printing-surface and a coöperating member arranged to carry a surface from which the transfer-surface receives its printing medium and an impression-surface, one or both members of the printing-couples having portions cut away, of a carriage, sheet-holding devices mounted thereon, and means for giving the carriage a reciprocating movement from one side of the couple to the other, substantially as described.

9. The combination with a printing-couple, of a carriage, gripping devices mounted on the carriage, means for opening and closing the gripping devices at the sheet-taking point, means for reciprocating the carriage to cause the sheet to pass between the members of the couple, and means for stopping the carriage and opening the gripping devices before the sheet has completed its forward movement whereby the sheet is allowed to pass onward between the members of the grippers, substantially as described.

10. The combination with a printing-couple, of a carriage, gripping devices mounted on the carriage, means for opening and closing the gripping devices at the sheet-taking point, means for reciprocating the carriage to cause the sheet to pass between the members of the couple and means for stopping the carriage and opening the gripping devices before the sheet is released by the printing-couple, substantially as described.

11. The combination with a continuously-rotating printing-couple, of a carriage, gripping devices mounted on the carriage, means for opening and closing the gripping devices at the sheet-taking point, means for reciprocating the carriage to cause the sheet to pass between the members of the couple, and means for stopping the carriage and opening the gripping devices before the sheet has completed its forward movement whereby the sheet is allowed to pass onward between the members of the grippers, substantially as described.

12. The combination with a continuously-rotating printing-couple, of a carriage, gripping devices mounted on the carriage, means for opening and closing the gripping devices at the sheet-taking point, means for reciprocating the carriage to cause the sheet to pass between the members of the couple, and means for stopping the carriage and opening the gripping devices before the sheet is released by the printing-couple, substantially as described.

13. The combination with a printing-couple, of a carriage, gripping devices, and sheet-stopping devices mounted on the carriage, and means for reciprocating the carriage from one side of the couple to the other to cause the sheet to pass between the members of the couple, substantially as described.

14. The combination with a printing-couple, of a carriage, gripping devices and sheet-stopping devices mounted on the carriage, and means for reciprocating the carriage from one side of the couple to the other in a plane at an angle to the horizontal, substantially as described.

15. The combination with a printing-couple, one or both members of the couple having portions cut away, of a carriage, gripping devices and sheet-stopping devices mounted on the carriage, and means for reciprocating the carriage from one side of the couple to the other to cause the sheet to pass between the members of the couple, substantially as described.

16. The combination with a printing-couple one or both members of the couple having portions cut away, of a carriage, gripping devices and sheet-stopping devices mounted on the carriage, and means for reciprocating the carriage from one side of the couple to the other in a plane at an angle to the horizontal, substantially as described.

17. The combination with a printing-couple, of a carriage, gripping devices mounted thereon, means for reciprocating the carriage at an angle to the horizontal and from one side of the couple to the other, means for opening and closing the gripping devices at the sheet-taking point, and means for opening the gripping devices before the sheet has completed its forward movement, whereby the sheet is caused to pass onward between the members of the grippers to the delivery-point, substantially as described.

18. The combination with a printing-couple, of a carriage, gripping devices and stopping devices mounted thereon, means for reciprocating the carriage from one side of the couple to the other in a plane at an angle to the horizontal, means for opening and closing the gripping devices at the sheet-taking point, and means for opening the gripping devices before the sheet has completed its forward movement, whereby the sheet is caused to pass onward between the members of the grippers to the delivery-point, substantially as described.

19. The combination with a printing-couple one or both members of the couple having portions cut away, of a carriage, gripping devices mounted thereon, means for reciprocating the carriage at an angle to the horizontal and from one side of the couple to the other, means for opening and closing the gripping devices at the sheet-taking point, and means for opening the gripping devices before the sheet has completed its forward movement whereby the sheet is caused to pass onward between the members of the grippers to the delivery-point, substantially as described.

20. The combination with a printing-couple one or both members of the couple having portions cut away, of a carriage, gripping devices and stopping devices mounted thereon, means for reciprocating the carriage from one side of the couple to the other in a plane at an angle to the horizontal, means for opening and closing the gripping devices at the sheet-taking point, and means for opening the gripping devices before the sheet has completed its forward movement, whereby the sheet is caused to pass onward between the members of the grippers to the delivery-point, substantially as described.

21. The combination with a printing-couple, of a carriage, gripping and sheet-stopping devices mounted on the carriage, a rack connected to the carriage, a pinion in engagement therewith, a cam, and suitable connections between the cam and the pinion whereby the carriage is caused to reciprocate from one side of the couple to the other, substantially as described.

22. The combination with a printing-couple, one or both members of the couple having portions cut away, of a carriage, gripping and sheet-stopping devices mounted on the carriage, a rack connected to the carriage, a pinion in engagement therewith, a cam, and suitable connections between the cam and the pinion whereby the carriage is caused to reciprocate from one side of the couple to the other, substantially as described.

23. The combination with a printing-couple, one or both of its members having portions cut away, of a carriage, gripping and stopping devices mounted on the carriage, tracks for the carriage arranged at an angle to the horizontal, means for opening and closing the grippers at the sheet-taking point, means for reciprocating the carriage, said means operating to bring the carriage to a stop before the sheet has completed its forward movement, and means for opening the grippers to allow the sheet to pass through them, substantially as described.

24. The combination with a printing-couple, of a carriage, gripping and stopping devices mounted thereon, means for opening and closing the gripping devices at the sheet-taking point, means for reciprocating the carriage, said means being constructed to cause a dwell in the movement of the carriage at the sheet-taking point and to bring the carriage to a stop before the sheet has completed its forward movement, whereby the sheet is caused to pass between the members of the grippers, and means for opening the grippers as the carriage is stopped, substantially as described.

25. The combination with a printing-couple, of a carriage, gripping and sheet-stopping devices mounted thereon, means for reciprocating the carriage to cause the sheet to pass between the members of the couple, said means being constructed to bring the carriage to a stop at the sheet-taking point, and gripper-operating devices, substantially as described.

26. The combination with a continuously-rotating printing-couple, of a carriage, gripping and sheet-stopping devices mounted thereon, means for reciprocating the carriage to cause the sheet to pass between the members of the couple, said means being constructed to bring the carriage to a stop at the sheet-taking point, and gripper-operating devices, substantially as described.

27. The combination with a continuously-rotating printing-couple, one or both members of the couple having portions cut away, of a carriage, gripping and sheet-stopping devices mounted thereon, means for reciprocating the carriage to cause the sheet to pass between the members of the couple, said means being constructed to bring the carriage to a stop at the sheet-taking point, and gripper-operating devices, substantially as described.

28. The combination with a printing-couple, of a carriage, gripping and stopping devices mounted thereon, means for reciprocating the carriage, said means being constructed to cause a dwell in the movement of the carriage at the sheet-taking and sheet-releasing points, means including an arm for controlling the opening of the grippers at the sheet-taking point, means for moving the arm, and means including a cam for opening the grippers at the sheet-releasing point, substantially as described.

29. The combination with a printing-couple, of a carriage, gripping and sheet-stopping devices mounted thereon, means for reciprocating the carriage at an angle to the horizontal to cause the sheet to pass between the members of the couple, said means being constructed to bring the carriage to a stop at the sheet-taking point, and gripper-operating devices, substantially as described.

30. The combination with a continuously-rotating printing-couple, of a carriage, gripping and sheet-stopping devices mounted thereon, means for reciprocating the carriage at an angle to the horizontal to cause the sheet to pass between the members of the couple, said means being constructed to bring the carriage to a stop at the sheet-taking point, and gripper-operating devices, substantially as described.

31. The combination with a continuously-rotating printing-couple one or both members of the couple having portions cut away, of a carriage, gripping and sheet-stopping devices mounted thereon, means for reciprocating the carriage at an angle to the horizontal to cause the sheet to pass between the members of the couple, said means being constructed to bring the carriage to a stop at the sheet-taking point, and gripper-operating devices, substantially as described.

32. The combination with a printing-couple, of a carriage, gripping and sheet-stopping devices mounted thereon, means for reciprocating the carriage at an angle to the horizontal, said means being constructed to cause a dwell in the movement of the carriage at the sheet-taking and sheet-releasing points, means including an arm for controlling the opening of the grippers at the sheet-taking point, means for moving the arm, and means including a cam for opening the grippers at the sheet-releasing point, substantially as described.

33. The combination with a printing-couple comprising a pair of rotating cylinders, of a carriage, gripping and stopping devices mounted thereon, means for reciprocating the carriage from one side of the couple to the other, and registering means between the carriage and the printing member of the couple, substantially as described.

34. The combination with a printing-couple comprising a pair of rotating cylinders, one or both of said cylinders having portions cut away, of a carriage, gripping and stopping devices mounted thereon, means for reciprocating the carriage from one side of the couple to the other, and registering means between the carriage and the printing member of the couple, substantially as described.

35. The combination with a printing-couple comprising a pair of rotating cylinders, of means for adjusting one member of the couple with respect to the other so as to vary the space between the members of the couple, whereby it is adapted to print upon material of different thicknesses, a carriage, gripping and stopping devices mounted on the carriage, means for reciprocating the carriage from one side of the couple to the other, registering means between the carriage and one member of the couple, and means for adjusting said registering means according to the position of the members of the couple, substantially as described.

36. The combination with a printing-couple comprising a pair of rotating cylinders, one or both of said cylinders having portions cut away, of means for adjusting one member of the couple with respect to the other so as to vary the space between the members of the couple, whereby it is adapted to print upon material of different thicknesses, a carriage, gripping and stopping devices mounted on the carriage, means for reciprocating the carriage from one side of the couple to the other, registering means between the carriage and one member of the couple, and means for adjusting said registering means according to the position of the members of the couple, substantially as described.

37. The combination with a printing-couple comprising a pair of rotating cylinders, one or both of said cylinders having portions cut away, of means for adjusting the printing member of the couple with respect to the other member, whereby the couple is adapted to print upon material of different thicknesses, a carriage, gripping and stopping devices mounted on the carriage, means for reciprocating the carriage from one side of the couple to the other, a registering mechanism between the carriage and the printing member, said mechanism including a rack and segment, and means for adjusting said registering mechanism in accordance with the position of the printing member, substantially as described.

38. The combination with a printing-couple comprising a pair of rotating cylinders, one or both cylinders having portions cut away, of means for varying the distance between the cylinders whereby the couple is adapted to print on material of different thicknesses, a carriage, gripping and stopping devices mounted on the carriage, means for reciprocating the carriage from one side of the couple to the other, means including a movable arm for opening and closing the gripping devices at the sheet-taking point, means including a stationary cam for opening the gripping devices at the sheet-releasing point, said means being arranged to operate upon the gripping devices before the sheet has reached the limit of its forward travel, a registering mechanism between one of the members of the couple and the carriage, and means for adjusting said mechanism according to the position of the members of the couple, substantially as described.

39. The combination with a printing-couple comprising a pair of rotating cylinders, one or both cylinders having portions cut away, of means for varying the distance between the cylinders whereby the couple is adapted to print on material of different thicknesses, a carriage, gripping and stopping devices mounted on the carriage, means for reciprocating the carriage from one side of the couple to the other at an angle to the horizontal, means including a movable arm for opening and closing the

gripping devices at the sheet-taking point, means including a stationary cam for opening the gripping devices at the sheet-releasing point, said means being arranged to operate upon the gripping devices before the sheet has reached the limit of its forward travel, a registering mechanism between one of the members of the couple and the carriage, and means for adjusting said mechanism according to the position of the members of the couple, substantially as described.

40. The combination with a printing-couple comprising a printing-cylinder having a transfer-surface and having a portion cut away, and a coöperating cylinder having an ink-applying surface and an impression-surface, said surfaces being spaced from each other whereby cut-away portions are provided, of a carriage, gripping and stopping devices mounted on the carriage, means for reciprocating the carriage from one side of the couple to the other, means for opening and closing the gripping devices at the sheet-taking point, means for opening the gripping devices at the sheet-releasing point, said last-named means being arranged to operate before the sheet has reached the limit of its forward movement, means for moving the printing-cylinder away from its companion cylinder after the ink has been applied thereto and before the printing and impression surfaces come into coöperative relation, means for varying the distance through which said printing-cylinder is moved, registering mechanism between the printing-cylinder and the carriage, and means for adjusting said registering mechanism according to the position of the printing-cylinder, substantially as described.

41. The combination with a printing-couple comprising a printing-cylinder having a transfer-surface and having a portion cut away, and a coöperating cylinder having an ink-applying surface and an impression-surface, said surfaces being spaced from each other whereby cut-away portions are provided, of a carriage, gripping and stopping devices mounted on the carriage, means for reciprocating the carriage from one side of the couple to the other at an angle to the horizontal, means for opening and closing the gripping devices at the sheet-taking point, means for opening the grippers at the sheet-releasing point, said last-named means being arranged to operate before the sheet has reached the limit of its forward movement, means for moving the printing-cylinder away from its companion cylinder after the ink has been applied thereto and before the printing and impression surfaces come into coöperative relation, means for varying the distance through which said printing-cylinder is moved, registering mechanism between the printing-cylinder and the carriage, and means for adjusting said registering mechanism according to the position of the printing-cylinder, substantially as described.

705,182. FRUIT-JAR. FREDERICK WIESE, Milwaukee, Wis. Filed Aug. 23, 1901. Serial No. 73,016. (No model.)

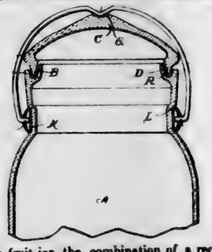

Claim.—In a fruit-jar, the combination of a receptacle having an annular trough-shaped channel surrounding the mouth thereof, adapted to receive and retain a quantity of heated wax in a liquid or semiliquid condition; a cover provided with an annular flange registering with, and adapted to rest in, said annular channel, said cover being uniformly tapered on all sides toward a crown having a central, downwardly-extending tapered socket; a spring-bow pivoted securely at the sides of the receptacle, and having a central, downwardly-extending bend, adapted to engage resiliently in the center of the cover-socket, whereby a central, downward pressure on the cover is secured, said cover being adapted to receive the bow from any direction.

705,183. STALK-CUTTER. MARK D. WILLIAMS, Sidney, Tex. Filed Oct. 15, 1901. Serial No. 78,739. (No model.)

Claim.—1. A stalk-cutter comprising three rectangular frames, adjustable means for uniting the said frames, the transverse rollers 16 and 27 journaled within the frames and provided with outwardly-extending cutter-blades, the weight-boxes 9, 24 and 25, adapted to receive weights for regulating the pressure of the cutting-blades, substantially as described.

2. A stalk-cutting machine, comprising three laterally-adjustable sections, a draft-beam carried by the middle section, a rotary cutter journaled in each section, a weight-box carried by each section, inwardly-extending cross-bars carried by the outer sections and having a series of transverse openings, bolts passing through said openings and the central section, bolts passing transversely through the side sections and the middle sections, bounds removably connected to the middle section, and their outer ends secured to the draft-beam, brace-rods bolted to the draft-beam, and means for adjustably securing the outer ends of said brace-rods to the side sections, substantially as described

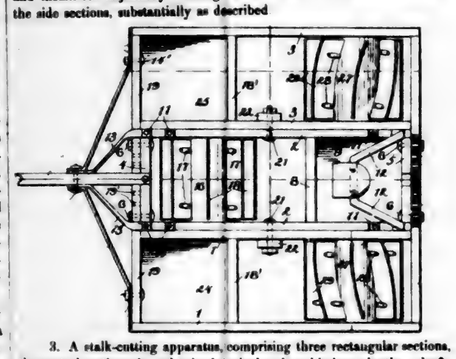

3. A stalk-cutting apparatus, comprising three rectangular sections, the central section adapted to be detached and used independently, a draft-beam adapted to be secured to either end of the central section, bounds having their outer ends secured to the draft-beam and their inner ends detachably secured to the central section, bearing-boxes secured to the under side of the three sections, rollers journaled therein, arms carried by said rollers, cutting-blades secured to the arms and extending longitudinally of the central rollers, spirally-arranged cutting-blades secured to the arms carried by the side rollers, inwardly-extending arms carried by the side sections and having a series of openings therein, bolts for securing said arms to the central section, brace-rods having their outer ends fastened to the draft-beam and their inner ends having a series of openings, and bolts passing through said openings and the side sections, and bolts passing through the side section and the central section for securing the same together, substantially as described.

4. A stalk-cutter comprising a central cutting-section, a draft-beam adapted to be secured to either end of said section, detachable side sections secured to the central section, and an adjustable connection between said side sections and the draft-beam, substantially as described.

5. A stalk-cutter comprising a central cutting-section, a draft-beam adapted to be secured to either end of said section, side sections on each side of said central sections, means for adjustably securing the side sections to or from the central section and adjustable connection between said side section and the draft-beam, substantially as described.

705,184. INKING APPARATUS. LESLIE R. WOODRUFF and FRED E. CATON, San Jose, Cal. Filed Mar. 12, 1902. Serial No. 97,806. (No model.)

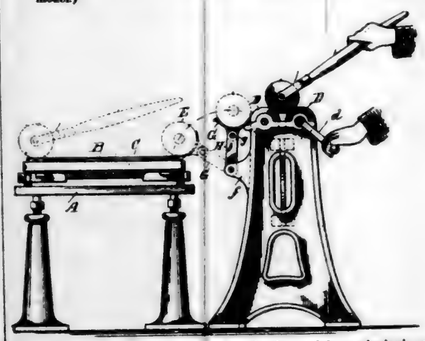

Claim.—1. In an inking apparatus having an ink-supply device and an independent, manually-operated form-inking roller, deriving its ink-supply by contact with said supply device, a movable carrier adapted to travel between the ink-supply device and the type-form, and disposed to receive the form-inking roller from the supply device and to transfer it under the guidance of the operator to the type-form and back again.

2. In an inking apparatus comprising a frame, an ink-supply device carried thereby, and an independent manually-operated form-inking roller deriving its ink-supply by contact with said supply device, a carrier movably connected with said frame and disposed to receive the form-inking roller from the supply device and to transfer it under the guidance of the operator to the type-form and back again.

3. In an inking apparatus comprising a frame, an ink-supply device carried thereby and an independent manually-operated form-inking roller deriving its ink-supply by contact with said supply device, a carrier pivotally connected with said frame adapting it to swing between the ink-supply device and the type-form and so disposed as to receive the form-inking roller from the ink-supply device and to transfer it under the guidance of the operator to the type-form and back again.

4. An inking apparatus comprising a frame, an ink-supply device carried thereby, an independent manually-operated form-inking roller deriving its ink-supply by contact with said supply device, a carrier adapted to receive the inking-roller from the supply device and pivoted arms connecting the carrier with the frame adapting said carrier to swing between the ink-supply device and the type-form, whereby said carrier is adapted to transfer the form-inking roller, under the guidance of the operator, from the ink-supply device to the type-form and back again.

5. An inking apparatus comprising a frame, an ink-supply device carried thereby and an independent manually-operated form-inking roller deriving its ink-supply by contact with said supply device and an adjustable carrier pivotally connected with said frame adapting it to swing between the ink-supply device and the type form and so disposed as to receive the form-inking roller from the supply device and to transfer it under the guidance of the operator to the type-form and back again.

6. An inking apparatus comprising a frame, an ink-supply device carried thereby, an independent manually-operated form-inking roller deriving its ink-supply by contact with said supply device, a carrier adapted to receive the inking-roller from the supply device, pivoted arms connecting the carrier with the frame and adapting said carrier to swing between the ink-supply device and the type-form whereby said carrier is adapted to transfer the form-inking roller, under the guidance of the operator, from the ink-supply device to the type-form and back again, and a connection between the carrier and said arms whereby the carrier can be adjusted relatively thereto.

705,185. HUB-ATTACHING DEVICE. ALFRED H. WORREST, Lancaster, Pa. Filed Jan. 7, 1901. Serial No. 42,304. (No model.)

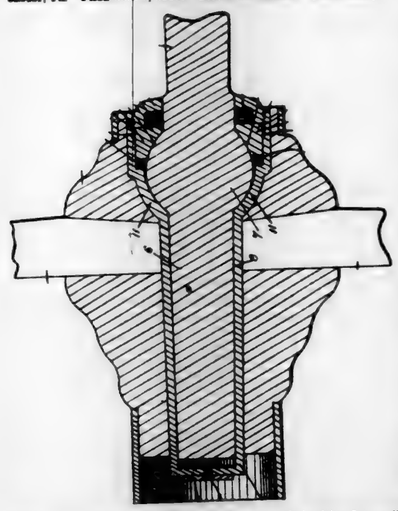

Claim.—1. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening, a spindle, a forwardly-extending convex boss on the spindle and adapted to enter said rear opening and engage the socket, and means for maintaining the boss in engagement with the socket, for the purpose specified.

2. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, a spindle, a forwardly-extending convex boss on the spindle and adapted to engage said socket, and means for maintaining the boss in engagement with the socket, for the purpose specified

3. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, the walls of said socket forming elliptical curves, a spindle, an elliptically-shaped-forwardly-extending convex boss on the spindle and adapted to engage said socket, and means for maintaining the boss in engagement with the socket, for the purpose specified.

4. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, a spindle, a forwardly-extending convex boss on the spindle and adapted to engage said socket, a bearing-ring in the axle-box and engaging the rear of the boss, and means for maintaining the pressure of said ring against the boss, for the purpose specified.

5. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, a spindle, a forwardly-extending convex boss on the spindle and adapted to engage said socket, a bearing-ring in the axle-box and engaging the rear of the boss, and a ring-nut on the axle-box, wherethrough the bearing-ring is pressed up to the boss, for the purpose specified.

6. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, a spindle, a forwardly-extending convex boss on the spindle and adapted to engage said socket, a bearing-ring in the axle-box and engaging the rear of the boss, a ring-nut screwed to the axle-box, and a resilient cushion between the ring-nut and the bearing-ring, for the purpose specified.

7. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, a spindle, a forwardly-extending convex boss on the spindle and adapted to engage said socket, a bearing-ring in the axle-box and engaging the rear of the boss, a ring-nut screwed to the axle-box, and a series of springs between the ring-nut and the bearing-ring for the purpose specified.

8. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, a spindle, a forwardly-extending convex boss on the spindle and adapted to engage said socket, a bearing-ring having a socket engaging the rear of the boss, a ring-nut screwed to the axle-box, and a resilient cushion between the ring-nut and the bearing-ring for the purpose specified.

9. In combination, an axle-box provided with a forwardly-extending concave socket having a rear opening as great as its own diameter, the walls of said socket forming elliptical curves, a spindle, an elliptically-shaped forwardly-extending convex boss on the spindle and adapted to engage said socket, a bearing-ring in a chamber behind the socket and engaging the rear of the boss, a ring-nut screwed to the axle-box, and a resilient cushion between the ring-nut and the bearing-ring, for the purpose specified.

705,186. GALVANOMETER. ANTHONY ZELENY, Minneapolis, Minn., assignor of one-half to C. E. Thayer, Minneapolis, Minn. Filed Jan. 20, 1902. Serial No. 90,401. (No model.)

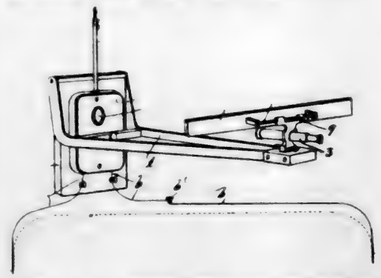

Claim.—1. The combination with a thermo-electric couple, of a galvanometer having a reading-scale graduated in degrees of temperature and set, when the circuit is open, so as to indicate the temperature of the "known-temperature junction," whereby, when the circuit is closed, the temperature of the opposing junction will be directly indicated, in degrees, on said scale.

2. The combination with a thermo-electric couple, of a galvanometer having a reading-scale and an indicator, one of which is adjustable with respect to the other, and which scale is graduated in degrees of temperature and, by said adjustment, is adapted to be set, when the circuit is open, to indicate the temperature of the "known-temperature junction," whereby, when the circuit is closed, the temperature of the opposing junction will be directly indicated, in degrees, on said scale.

3. The combination with a thermo-electric couple, of a galvanometer having a reading-scale variably graduated, each division thereof being equal to the deflection produced when the temperatures of the two op-

posing junctions are, respectively, those indicated by the numbers at the bounding-lines of that particular division, or by the numbers that said bounding-lines represent.

4. The combination with a thermo-electric couple, of a galvanometer having a reading-scale graduated in degrees of temperature, each division thereof being equal to the deflection produced when the temperatures of the two opposing junctions are, respectively, those indicated by the numbers at the bounding-lines of that particular division, or by the numbers that said bounding-lines represent.

5. The combination with a thermo-electric couple, of a galvanometer having a reading-scale variably graduated in degrees of temperature, each division thereof being equal to the deflection produced when the temperatures of the two opposing junctions are, respectively, those indicated by the numbers at the bounding-lines of that particular division, or by the numbers that said bounding-lines represent, whereby the said scale being set, when the circuit is open, to indicate the temperature of the "known-temperature junction," the temperature of the opposing junction will be directly indicated, in degrees, on said scale, when the circuit is closed.

705,187. **MULTIPLEX ELECTRIC THERMOMETER.** ANTHONY ZELENY, Minneapolis, Minn., assignor of one-half to C. E. Thayer, Minneapolis, Minn. Filed Jan. 20, 1902. Serial No. 90,402. (No model.)

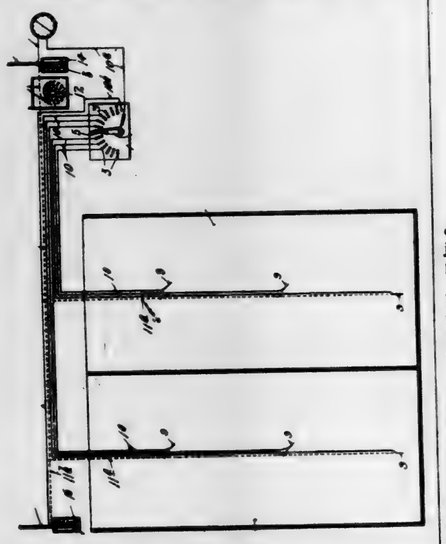

Claim.—1. The combination with a galvanometer and a switch, of a plurality of thermo-electric circuits having individual thermo-electric junctions and a common thermo-electric junction, which common junction, by said switch, may be connected with any opposing individual junction, to complete the thermo-electric circuit, substantially as described.

2. The combination with a plurality of thermo-electric couples having a common lead of a different metal than that of the individual leads, of a common galvanometer and a switch for closing any couple into circuit with said galvanometer, substantially as described.

3. The combination with a switch and a galvanometer, of a plurality of thermo-electric circuits having individual thermo-electric junctions and a common thermo-electric junction, which common junction is in one of the leads to said galvanometer and, by said switch, is adapted to be connected with any opposing individual junction, to complete the thermo-electric circuit, substantially as described.

4. The combination with a galvanometer and a switch, of a plurality of thermo-electric circuits having a common return-lead and provided with individual thermo-electric junctions and a common thermo-electric junction, which common junction, by said switch, may be connected with any opposing individual junction, to complete the thermo-electric circuit, substantially as described.

5. The combination with a galvanometer and a switch, of a plurality of thermo-electric circuits having individual thermo-electric junctions, a common thermo-electric junction, and a resistance coil or device in one of the leads to said common junction, which common junction, by said switch, may be connected with any opposing individual junction, to complete the thermo-electric circuit, substantially as described.

6. The combination with a galvanometer and a switch, of a plurality of thermo-electric circuits of different length and resistance, having individual thermo-electric junctions, a common thermo-electric junction and a common low-temperature-coefficient resistance-wire, which common junction, by said switch, may be connected with any opposing individual junction, to complete the thermo-electric circuit, substantially as described.

7. The combination with a plurality of thermo-electric circuits and a switch, of a common branch of high resistance including a galvanometer, which common branch, by said switch, is capable of being connected into any one of the thermo-electric circuits, whereby said circuits, when successively closed, have practically equal resistance enabling equal differences in temperature to produce, in the said various circuits, equal deflections on the common galvanometer, substantially as described.

705,188. **ANTICAPSIZING DEVICE FOR BOATS.** FREDERICK W. EINER, London, England. Filed Dec. 27, 1897. Renewal Feb. 15, 1902. Serial No. 94,311. (No model.)

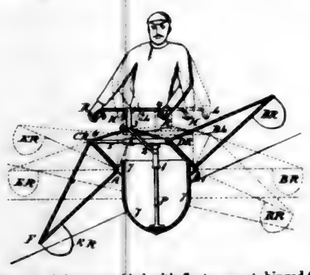

Claim.—1. A boat provided with float-supports hinged to the sides of same, a float carried by each of said supports, and a connecting-rod joining the float-support on one side of boat with the corresponding support on opposite side of boat, substantially as described.

2. In a non-capsizable boat, a float carried by a supporting-frame hinged to one side of the boat, a similar float carried by a frame hinged to the opposite side of the boat, a rod or bar connecting the two float-supporting frames, said rod or bar so constructed that it may be shortened or lengthened at will, substantially as described.

3. In a boat of the kind described, frames carrying floats, hinged connections between said frames and the sides of the boat, an adjustable connection between the frames on one side of boat and the corresponding frame on the opposite side of boat, a handle-bar suitably connected with each of the float-supporting frames, a suitable support attached to the boat and carrying a revolving collar, and a connection between said revolving collar and handle-bar, substantially as shown and described.

4. A boat provided with anticapsizing devices hinged to its sides and a connecting rod or bar between these anticapsizing devices, such rod or bar being so connected to the said devices that when one of said devices is moved upward the other will be forced downward, and vice versa, substantially as described.

5. A boat provided with anticapsizing devices hinged or movably attached to the sides of same and so connected with each other that the rising of the float on one side of the boat will lower the float on the other side, and vice versa, substantially as described.

705,189. **FOUR-HORSE EQUALIZER.** OSWALD ZOELLER and FREDERICK ZOELLER, Oakland, Iowa. Filed Jan. 21, 1902. Serial No. 90,646. (No model.)

Claim.—A four-horse equalizer comprising the combination of the following instrumentalities to wit, a main bar, a doubletree secured to said tree, singletrees secured to said doubletree, palleys secured to said main tree, a chain passing over said palleys, singletrees secured to the ends of said chain, an intermediate lever, links securing said intermediate lever to said main tree, guiding-pins secured to said main tree, a slidable collar upon said intermediate lever, a chain extending to said intermediate lever, a lever, said chain being secured to said lever, a chain connection extending from the remaining end of said lever and secured to said main tree, a vertical clamping-bar adapted to be secured to a plow-beam, said lever being secured to said vertical bar, an angle-iron one end passing between said guiding-pins, the remaining end passing through suitable holders adapted to be secured to the clevis of a suitable plow-beam and a push-bar extending from said vertical bar and secured to said holders securing said angle-iron, all arranged substantially as and for the purpose set forth.

705,189.

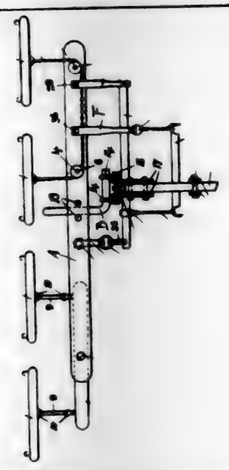

705,190. **COMBINED BADGE AND BOUQUET-HOLDING BUTTON.** GEORGE J. ALEXANDER, Philadelphia, Pa. Filed May 20, 1902. Serial No. 108,181. (No model.)

Claim.—1. A combined badge and bouquet-holding button, comprising a shank provided with an opening for the reception of a flower-stem and two heads connected with the shank, substantially as described.

2. A combined badge and bouquet-holding button, comprising a shank oblong in cross-section to properly hold it in a buttonhole, and provided with an opening for the reception of a flower-stem, and having two heads connected with the shank, whereof one is radially notched in continuation of the bore of said opening to accommodate the flower-stem, substantially as described.

3. A combined badge and bouquet-holding button, comprising a shank oblong in cross-section to properly hold it in a buttonhole, and provided with an inclined opening for the reception of a flower-stem and for properly positioning the flower, and two heads connected with the shank, whereof one is radially notched in continuation of the bore of said opening to accommodate the flower-stem, substantially as described.

705,191. **FURNACE-GRATE.** ALEXANDER G. ANDREW, Calumet, Mich. Filed Mar. 7, 1902. Serial No. 97,106. (No model.)

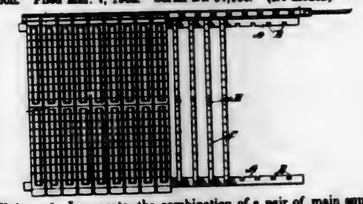

Claim.—1. In a grate, the combination of a pair of main supporting members; a series of cross-bars carried by said supporting members; a rocking bar carried by each of said cross-bars, the upper faces of the cross-bars and rocking bars lying in substantially the same horizontal plane; and means for actuating said rocking bars.

2. In a grate, the combination of a pair of main supporting members; a series of cross-bars interlocked with said supporting members; a series of rocking bars straddling said stationary cross-bars, the upper faces of the fixed and the rocking bars lying in substantially the same plane; and means for actuating said rocking bars.

3. In a grate, the combination of a pair of main supporting members; a series of cross-bars interlocked with said members; a series of rocking bars straddling said stationary bars and resting thereon at each end and at a point intermediate the end supports, the upper faces of said fixed and rocking bars lying in substantially the same plane; and means for rocking said rocking bars.

4. In a grate, the combination of a pair of main supporting members; a series of cross-bars interlocked with said members, said bars having reduced ends which extend over and bear upon said supporting members, each of said bars likewise having a seat or depression formed in its upper face; a series of rocking bars supported by said cross-bars, each rocking bar comprising two parallel members provided with a connecting member intermediate their ends, which member rests in the seat or depression formed in the upper face of the corresponding cross-bar, and with a bearing-plate J at each end which rests directly on the upper edges of the ends of the cross-bar; and means for actuating said rocking bars.

705,192. **WATER-GAGE.** FRANK M. ASHLEY, Brooklyn, N. Y. Filed Apr. 20, 1899. Serial No. 713,812. (No model.)

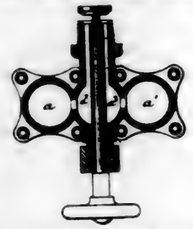

Claim.—1. In a double gage a fitting provided with a single pipe leading to the boiler and having two independent passages through it communicating respectively with the two gage-glasses, in combination with a single valve adapted to close automatically when a gage-glass breaks, and shut off the steam from both glasses and having a stem bearing in the partition separating the passages.

2. In a double gage a fitting provided with a single pipe leading to the boiler and having two independent passages through it communicating respectively with the two gage-glasses, in combination with a valve adapted to close automatically when a gage-glass breaks, and shut off the steam from both glasses, said valve being located at the inner end of said pipe, and having a stem bearing in the partition separating the passages, substantially as described.

705,198. **TOBACCO-PIPE.** HENRY L. AUSTWICK, Chicago, Ill. Filed Jan. 27, 1902. Serial No. 91,396. (No model.)

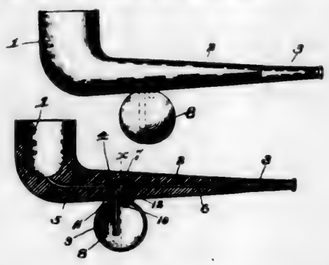

Claim.—1. A pipe having a stem provided upon its under side with a hole extending into the stem past the bore thereof, in combination with a water-holding reservoir 8 having a head rigidly secured to its upper end, said head being provided with bores and with pipe-sections 9 and 10, said bores being designed to be brought by the rotation of said head into or out of registration with the bore of the pipe-stem, all substantially as specified and for the purpose set forth.

2. A pipe having a stem provided upon one side with a valve-seat extending through the bore of the stem, in combination with a reservoir having a valve upon one end adapted to fit said seat and rotate therein as set forth.

705,194. **DRESS-CHART.** MARY L. AVERY, Oakland, Cal., assignor to Mabel Crowell, Oakland, Cal. Filed Oct. 12, 1901. Serial No. 78,416. (No model.)

Claim.—1. In a system for drafting skirts, a chart having a graduated hip-line as a basis, and scales extending upward therefrom to the waist-line and downward therefrom to the bottom.

2. In a system for drafting skirts, a chart having a basic hip-line having a scale to indicate the points of the longitudinal seams, and related

scales beginning at the hip-line and extending from each points upwardly to the waist-line and downwardly to the bottom line.

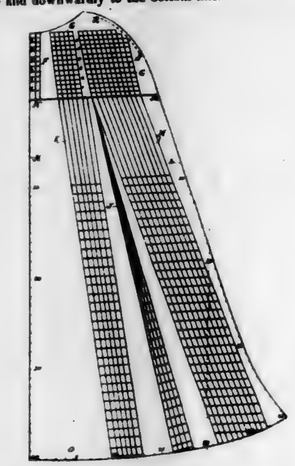

705,195. WIND-MOTOR. CHARLES F. BAMFORD, Bedford, England. Filed Sept. 18, 1901. Serial No. 75,591. (No model.)

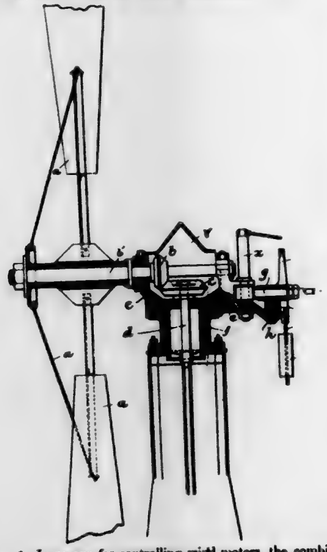

Claim.—1. In means for controlling wind-motors, the combination of a bevel-pinion fast to the wind-wheel spindle, of a bevel-wheel secured to the vertical driving-shaft and engaged by said wind-wheel pinion, so that the latter drives or can travel around said bevel-wheel, of a toothed extension from a rotatable bracket supporting said wind-wheel spindle, of a pinion mounted upon the vane-spindle so as to be revolvable around said vane-spindle and said pinion having a weighted lever-arm rising and falling at all times perpendicularly to the vane-spindle, substantially as described.

2. In means for controlling wind-motors, the combination with the vane-spindle and with a toothed extension from the rotatable bracket to which the vane-spindle is movably pivoted of a pinion mounted revolubly upon said vane-spindle and having a weighted lever-arm, and of a second arm projected from the pivot of said pinion and controlled by a cord, whereby the vane can be drawn around to a position at right angles to the plane of the wheel, substantially as described.

3. In wind-motors, a horizontally-rotatable bracket carrying the main spindle and provided with a toothed segment, a vane-spindle hinged to a vertical pivot on said bracket and capable of being swung horizontally, a pinion pivoted on said vane-spindle and traveling on said toothed segment, an arm fitted with a weight projecting from said pinion, a shorter arm connected by a cord with a friction-cone, and said cone being capable of being rotated frictionally with the main spindle, substantially as above described.

705,196. HANDKERCHIEF-HOLDER. NORA E. P. BERGMANN, New York, N. Y. Filed Jan. 30, 1902. Serial No. 91,902. (No model.)

Claim.—1. As a new article of manufacture, a handkerchief-holder consisting of a bracelet made of spring or resilient material bent into annular form to provide a plurality of coils or convolutions, the adjacent faces of said coils or convolutions being provided with interlocking grooves and projections in close parallel contact or spring-bearing with each other, except at the two free ends of the material from which the device is made, which ends are diverted from the adjacent coils to form open entrance-passages to the clamping-surfaces of the coils.

2. A bracelet adapted to serve as a handkerchief-holder, made of spring or resilient material bent into a plurality of coils or convolutions, said coils or convolutions being held in close contact with each other by reason of the resiliency of the material from which said bracelet is made and the adjacent or contacting surfaces of said coils being corrugated or provided with projections, which register one with another, and the end portions of the material from which the bracelet is made being bent out of contact with the adjacent coil so as to provide a jaw at each end of the bracelet.

705,197. BOX-SETTING-UP MACHINE. CHARLES W. H. BLOOD Boston, Mass., assignor to S. A. Woods Machine Company, Boston, Mass., a Corporation of Massachusetts. Filed Feb. 7, 1902. Serial No. 93,002. (No model.)

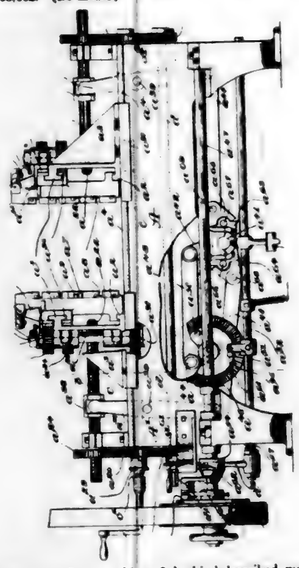

Claim.—1. In a machine of the kind described, means for supporting the boards which are to be forced together for forming a box, means for pressing said boards together, and means for automatically giving a second blow or setting squeeze.

2. In a machine of the kind described, means for supporting the boards which are to be forced together for forming a box, a yielding corner-aliner for holding adjacent boards at a corner with their inside corners or edges in substantial alinement, and squeezing means for forcing the boards together, said aliner yielding as the boards move toward each other.

3. In a machine of the kind described, means for supporting the boards which are to be forced together for forming a box, a corner-aliner constructed to engage the ends of the adjacent boards and hold said boards with their inside corners or edges in substantial alinement, squeezing means for forcing the boards together, and means for adjusting said aliner for different thicknesses of boards.

4. In a machine of the kind described, means for supporting the boards which are to be forced together for forming a box, a corner-aliner constructed to engage the ends of adjacent boards, and hold said boards with their inside corners or edges in substantial alinement, squeezing means for forcing the boards together, and means for adjusting said aliners vertically.

5. In a machine of the kind described, means for supporting the boards which are to be forced together for forming a box, a corner-aliner for holding adjacent boards at a corner with their inside corners or edges in substantial alinement, and squeezing means for forcing the boards together, said aliner having projections adapted to enter the spaces between the tongues of the respective boards at said corner in proper operative position.

6. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, and means adjacent the meeting ends of two boards at a corner of the box for entering the recesses between the tongues of said boards for bringing the said tongues into proper operative position for being squeezed into interlocking box formation.

7. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, and means adjacent the meeting ends of two boards at a corner of the box for entering the recesses between the tongues of said boards for bringing said tongues into proper operative position for being squeezed into interlocking box formation, said entering means being carried by said squeezing means and yielding relatively thereto upon operation of the squeezing means.

8. In a machine of the kind described, means for supporting the boards which are to be forced together for forming a box, corner pressers or jaws for engaging the box at each corner, supporting means on which the jaws are movable toward each other, mechanism for moving said supporting means forward, and mechanism for simultaneously moving said jaws on said supporting means toward each other.

9. In a machine of the kind described, corner pressers or jaws for engaging the box at each corner, means to move simultaneously any two adjacent jaws toward and from the other jaws, and means to move all of said jaws simultaneously toward a common center, said last-named means being operative in any position of the jaws.

10. In a machine of the kind described, four corner pressers or jaws for embracing the corner of a box, said jaws comprising a pair of front end jaws and a pair of rear end jaws, means for adjusting simultaneously the jaws of one pair toward and from those of the other, and means to move all of said jaws simultaneously toward a common center, said means being operative in any adjusted position of the jaws.

11. In a machine of the kind described, four corner pressers or jaws for embracing the corner of a box, said jaws comprising two pairs of side jaws, means to move the jaws of one pair toward and from the other, and means to move all of said jaws simultaneously toward a common center, said latter means being operative in any adjusted position of the jaws.

12. In a machine of the kind described, four corner pressers or jaws for embracing the corner of the box, adjustable supporting-ledges for supporting the box-boards at different heights with relation to said jaws, means to move any two adjacent jaws simultaneously toward and from the other jaws, and means to move all of said jaws simultaneously toward a common center, said latter means being operative in any adjusted position of the jaws.

13. In a machine of the kind described, a frame, slides supported thereon and movable toward and from each other longitudinally of the frame, a pair of corner jaws or pressers mounted on each slide, the jaws of each pair being movable toward and from each other on the slide, mechanism for moving said slides toward and from each other, and means for moving the jaws on each slide toward and from each other, means permitting the operator to move either the jaws on the slides or the slides on the frame at will, and power mechanism for automatically making both of said movements simultaneously.

14. In a machine of the kind described, four corner pressers or jaws, means for moving them in opposite pairs toward each other longitudinally of the machine, means for moving them in opposite pairs toward each other laterally of the machine in a direction at right angles to their longitudinal movement, and means permitting the operator to give them both or either of these movements at will.

15. In a machine of the kind described, four corner pressers or jaws, means for moving them in opposite pairs toward each other longitudinally of the machine, means for moving them in opposite pairs toward each other laterally of the machine in a direction at right angles to their longitudinal movement, and power mechanism for automatically effecting both of said movements simultaneously.

16. In a machine of the kind described, four corner pressers or jaws, means for moving them in opposite pairs toward each other longitudinally of the machine, means for moving them in opposite pairs toward each other laterally of the machine in a direction substantially at right angles to their longitudinal movement, hand-operated mechanism therefor, and automatic power mechanism therefor, said hand mechanism and power mechanism being capable of independent operation.

17. In a machine of the kind described, a frame, opposite pairs of jaws for holding and pressing together boards to form a box, each pair of jaws being movable longitudinally of said frame, a shaft connected to each of said pairs of jaws, said shafts being oppositely threaded, and means for simultaneously moving said shafts toward and from each other.

18. In a machine of the kind described, a frame, jaws for holding and pressing together boards to form a box, guides supporting said jaws in opposite pairs for moving together longitudinally of the machine, gearing movable with said guides for moving the jaws of the respective pairs toward and from each other laterally of the machine, opposite shafts connected respectively to said opposite pairs of jaws, means for simultaneously moving said shafts toward and from each other, rack-and-pinion mechanism automatically operated by said simultaneous movement for operating said gearing, thereby causing the jaws to move laterally at the same time they are moved longitudinally.

19. In a machine of the kind described, a frame, jaws for holding and pressing together boards to form a box, guides supporting said jaws in opposite pairs for moving together longitudinally of the machine, gearing movable with said guides for moving the jaws of the respective pairs toward and from each other laterally of the machine, opposite shafts connected respectively to said opposite pairs of jaws, means for simultaneously moving said shafts toward and from each other, worm and worm-wheel mechanism connected with said gearing, and means for rotating or holding stationary, as may be desired, the worm part of said mechanism when the longitudinal movement of said shafts takes place, whereby said worm and worm-wheel mechanism acts as a rack-and-pinion device when the worm is stationary, thereby causing lateral movement of the jaws at the same time with their longitudinal movement, and acts as a positive lock when the worm is rotated in unison with the longitudinal movement of said shafts.

20. In a machine of the kind described, a frame, jaws for holding and pressing together boards to form a box, guides supporting said jaws in opposite pairs for moving together longitudinally of the machine, gearing movable with said guides for moving the jaws of the respective pairs toward and from each other laterally of the machine, opposite shafts connected respectively to said opposite pairs of jaws, means for simultaneously moving said shafts toward and from each other, worm and worm-wheel mechanism connected with said gearing, and means for rotating said worm for the lateral adjustment of said jaws independently of their longitudinal adjustment.

21. In a machine of the kind described, a frame, jaws for holding and pressing together boards to form a box, guides supporting said jaws in opposite pairs for moving together longitudinally of the machine, gearing movable with said guides for moving the jaws of the respective pairs toward and from each other laterally of the machine, opposite threaded shafts connected respectively to said opposite pairs of jaws, means for simultaneously moving said shafts toward and from each other, worm and worm-wheel mechanism connected with said gearing, and means for rotating said threaded shafts and worm in unison or independently, as desired.

22. In a machine of the kind described, a frame having longitudinal ways, opposite slides mounted on said ways and provided with guides extending transversely of the machine, pairs of jaws mounted on said slides, automatic power mechanism for simultaneously moving said slides on said ways and said jaws on said guides, and hand mechanism for causing the same movement without disturbing said automatic power mechanism.

23. In a machine of the kind described, a frame having longitudinal ways, opposite slides mounted on said ways and provided with guides extending transversely of the machine, pairs of jaws mounted on said slides, automatic power mechanism for simultaneously moving said slides on said ways and said jaws on said guides, and hand mechanism, operating without disturbing said automatic power mechanism, for moving said slides on said ways.

24. In a machine of the kind described, a frame having longitudinal ways, opposite slides mounted on said ways and provided with guides extending transversely of the machine, pairs of jaws mounted on said slides, automatic power mechanism for simultaneously moving said slides on said ways and said jaws on said guides, and hand mechanism, operating without disturbing said automatic power mechanism, for moving said jaws on said guides.

25. In a machine of the kind described, a frame having longitudinal ways, opposite slides mounted on said ways and provided with guides extending transversely of the machine, pairs of jaws mounted on said slides, automatic power mechanism for simultaneously moving said slides on said ways and said jaws on said guides and including opposite shafts secured, respectively, to said opposite slides, opposite levers pivoted in

the frame of the machine and connected, respectively, to said opposite shafts, and a rock-shaft and crank for simultaneously operating said lever, and hand mechanism, operating without disturbing said automatic power mechanism, for moving said slides on said ways, and including threaded connections between said opposite levers and said shafts, and means for rotating said shafts, thereby permitting longitudinal movement of said shafts relatively to said levers without moving the levers.

26. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, said squeezing means including mechanism for bringing increasing squeezing pressure as the boards approach their final interlocking position, said means including pressing-levers, a rock-shaft connected thereto and provided with a crank, a second crank, and a link connecting the latter to the first crank for operating the same, said second crank being shorter than the first crank.

27. In a machine of the kind described, four corner-jaws for engaging the box at each corner, means to simultaneously adjust any two adjacent jaws toward and from the other jaws, power mechanism to move all of said jaws simultaneously toward a common center, and means for automatically stopping the jaws in closed position.

28. In a machine of the kind described, four corner-jaws for engaging the box at each corner, means to simultaneously adjust any two adjacent jaws toward and from the other jaws, power mechanism to move all of said jaws simultaneously toward a common center, and means for simultaneously stopping the jaws in open position.

29. In a machine of the kind described, four corner-jaws for engaging the box at each corner, means to simultaneously adjust any two adjacent jaws toward and from the other jaws, power mechanism to move all of said jaws simultaneously toward a common center, means for automatically stopping the jaws in either open or closed position, and manually-controlled means for determining in which position the jaws will be stopped.

30. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, said means including opposite levers movable toward each other for giving squeezing pressure, a rock-shaft connected to said levers and provided with means for moving said levers toward each other when the rock-shaft is rocked in one direction, and means for giving a second movement of the levers toward each other when the rock-shaft is rocked back in the opposite direction.

31. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, mechanism for automatically operating said squeezing means, said mechanism including means for giving two distinct pressure movements, the second movement bringing the squeezing means closer together than the first.

32. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, said mechanism including means for giving a first pressure movement, relieving said movement momentarily, and then giving a second pressure movement, all during the continuous rotation of the machine.

33. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, said means including opposite levers movable toward each other for giving squeezing pressure, a rock-shaft joined to said levers by a double-pivoted connection, the said two pivots being located respectively above and below alinement with the rock-shaft and the pivot connection with the lever, and means permitting a limited movement only of the connection on the pivot next the rock-shaft.

34. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, said means including opposite levers movable toward each other for giving squeezing pressure, a rock-shaft, a plate thereon extending rigidly in opposite directions, blocks pivoted at the free ends of said plate, said blocks being connected to said levers, and said plate and blocks having cooperating shouldered ends for giving limited pivotal movement with relation to each other, and means for swinging said blocks from one position to the other position, according to the direction of rotation of the rock-shaft.

35. In a machine of the kind described, means for squeezing the ends of the boards together to form a box, said means including opposite levers movable toward each other for giving squeezing pressure, a rock-shaft, pivotal crank-like connection between said rock-shaft and said levers for operating the latter, and means for automatically shortening and lengthening the crank movement as the rock-shaft reverses its motion after having given a first squeezing pressure.

705,198. SHEET-ALINER FOR PRINTING-PRESSES. OLIVER S. BOWMAN, Chicago, Ill. Filed May 6, 1899. Serial No. 715,782. (No model.)

Claim.—1. In a sheet-aliner for platen printing-presses, the combination with a table upon which the sheets are delivered and having two free edges, of moving alining-fingers arranged opposite said free edges, the rocking frame c^2, and adjustable connecting means between said frame c^2 and said alining-fingers whereby the alining-fingers are moved in unison with the rocking rod d and the amounts of movement of the fingers may be varied, substantially as described.

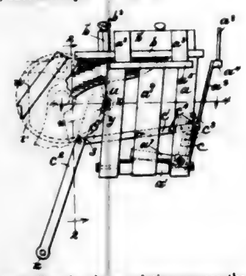

2. In a sheet-aliner for platen printing-presses, the combination with the feeding-table b having two free edges, of the adjustable plates at the remaining edges thereof, the moving or oscillating fingers arranged opposite the free edges of said table, the rocking frame c^2, and connecting means between said rocking frame c^2 and said oscillating alining-fingers, whereby the alining-fingers are moved in unison with said rocking frame, substantially as described.

3. In a sheet-aliner for platen printing-presses, the combination with a table upon which the sheets are adapted to be delivered, said table having two free edges, of moving or oscillating fingers arranged opposite and entirely outside the said free edges, a horizontal shaft or bar for the fingers at each said edge of the table, and upon which they are supported; an arm upon one such shaft or bar engaging a like arm upon the other shaft or bar, and a connection from a movable part of the printing-press to one of said shafts or bars, to rock it, whereby both sets of alining-fingers are operated, substantially as described.

705,199. VENTILATING-DAMPER FOR STOVEPIPES. GEORGE W. BOWEN, Louisville, Ohio. Filed Feb. 13, 1902. Serial No. 93,880. (No model.)

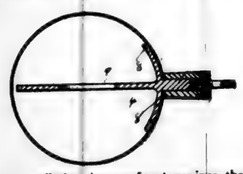

Claim.—In a ventilating-damper for stovepipes, the combination of a stovepipe-section, provided with a bearing-aperture and ventilating-apertures, said ventilating-apertures located in a different plane from that of the bearing-aperture, a damper-plate provided with a single bearing-shank, having angular and screw-threaded portions, and lateral flanges or wings extended substantially at right angles to the damper-plate, and curved to correspond substantially with the curvature of the stovepipe-section, said bearing-shank extending through the bearing-aperture, and a knob fitting over the angular portion of the damper-shank, and means for securing said knob on said shank adapted to draw the wings and knob into frictional engagement with the pipe, substantially as set forth.

705,200. CAR-STANDARD. ENOBY O. BRADLEY and MELVIN L. BRADLEY, Tacoma, Wash. Filed Mar. 10, 1902. Serial No. 97,553. (No model.)

Claim.—1. In combination with a pivoted standard, a detent movable into and out of engagement therewith, to secure said standard at any desired adjustment, and means to operate said detent, substantially as described.

2. In combination with a pivoted standard, a detent movable into and out of engagement therewith, and a revoluble cam to operate said detent, substantially as described.

3. In combination with a pivoted standard, a detent movable into and out of engagement therewith, a revoluble cam to operate said detent, an operating-rod, connected to the cam, to turn the latter, and means to lock the operating-rod, substantially as described.

4. A car having a plurality of pivoted standards, detents movable into and out of engagement with the standards, cams to operate said detents, an operating-rod connected to the cams, and means to lock the operating-rod, substantially as described.

705,200.

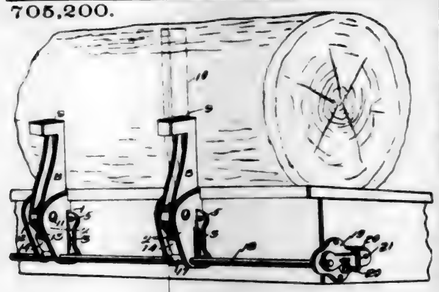

705,201. GAS-ENGINE. ALEXANDER T. BROWN, Syracuse, N. Y. Filed Nov. 13, 1897. Serial No. 658,383. (No model.)

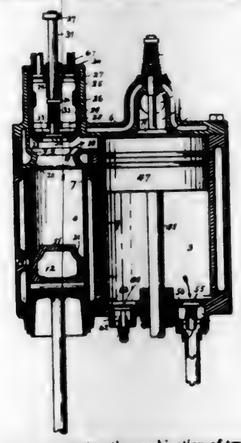

Claim.—1. In a gas-engine, the combination of two cylinders communicating with each other, two pistons connected together to traverse said cylinders, and an igniting device at substantially the end of the outward stroke of one of said pistons, a valve adapted to the head of one of said cylinders for opening and closing the passage-way between said cylinders, a supplemental valve for admitting under pressure a charge of the explosive mixture to the first cylinder when the main valve is seated, a source of fuel-supply connected to the main valve, and a compressed-air reservoir also connected to said main valve and to the second of said cylinders.

2. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of connected pistons adapted to traverse said cylinders, a hollow valve adapted to a seat at the head of the first cylinder, a supplemental valve carried by said main valve, a source of fuel-supply discharging into said hollow valve, and a source of compressed-air supply connected to said valve and to the second cylinder, and means for igniting the charge in the first cylinder after the compressed-air charge has driven its piston outwardly.

3. In a gas-engine, the combination of two cylinders communicating with each other, a pair of pistons connected together and adapted to traverse said cylinders, an igniting device connected to one of said cylinders, a hollow valve adapted to move to and from the head of the ignition-cylinder, a fresh-air inlet arranged at the outer end of the second cylinder, a compressed-air reservoir connected to the outer end of said second cylinder, and to the said hollow valve, and means for supplying fuel to said hollow valve.

4. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of connected pistons adapted to traverse said cylinders, an igniting device at the outer end of the stroke of the first piston, a hollow valve adapted to be forced to its seat at the head of the first cylinder by means of compressed air, a supplemental valve for admitting the charge into the first cylinder when said hollow valve is seated, a compressed-air reservoir connected to said hollow valve and to the second cylinder, and a suitable source of fuel-supply discharging into said hollow valve.

5. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of connected pistons adapted to traverse said cylinders, an igniting device at the first cylinder, means for compressing air and delivering it to the first cylinder, and for also delivering fuel thereto, a hollow valve adapted to receive the compressed air and the fuel and to close the communication between the said two cylinders at the time of the delivery of the charge and on the outward stroke of the first piston, and means for passing the charge from the hollow valve into the first cylinder.

6. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of pistons connected together and adapted to traverse said cylinders, an igniting device at the end of the outward stroke of the first piston, a valve-controlled inlet and a valve-controlled outlet at the outer end of the stroke of the second piston, a compressed-air reservoir connected to said second cylinder, a communication between said reservoir and the first cylinder, a valve for controlling the admission of compressed air and fuel to said cylinder, and a valve for closing the communication between the two cylinders.

7. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of pistons connected together and adapted to traverse said cylinders, an igniting device situated at the end of the outward stroke of the first piston and entering its cylinder, a valve-controlled inlet and a valve-controlled outlet at the outer end of the stroke of the second piston, a compressed-air reservoir connected to said second cylinder, a communication between said reservoir and the first cylinder, and valves for controlling the admission of the charge and for closing the communication between said cylinders.

8. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of connected pistons adapted to traverse said cylinders, an igniting device situated at the outer end of the stroke of the first piston and entering the cylinder thereof, a valve for controlling the passage-way between said two cylinders, and an exhaust-valve for the second cylinder.

9. In a gas-engine, the combination of two cylinders communicating with each other, a pair of pistons adapted to traverse said cylinders and connected to oppositely-disposed cranks, a valve for controlling the passage-way between said two cylinders, a supplemental or inlet valve for the first cylinder, an exhaust-valve, a fresh-air-inlet valve and a fresh-air-outlet valve for the second cylinder, a rocker-arm connected to the crank-shaft for operating the inlet or supplemental valve and also the exhaust-valve, a compressed-air reservoir connected to the first and second cylinders, a source of fuel-supply connected to discharge into the first cylinder, and a valve for controlling the supply of compressed air from the reservoir to the first cylinder.

10. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of connected pistons adapted to traverse said cylinders, the piston of the first cylinder having a tapered or concaved portion adapted to a tapered or convex ring at the head of its cylinder, a valve-seat on said ring and a valve adapted to close the passage-way between said two cylinders adapted to said valve-seat.

11. In a gas-engine, the combination of a pair of cylinders communicating with each other, a pair of pistons connected together and adapted to traverse the same, a ring at the head of the first cylinder provided with a valve-seat and with an interior convex portion adapted to receive the circular concaved portion of the head of the piston, and a valve adapted to said seat and operating to close the passage-way between said two cylinders.

12. In a gas-engine of the character specified, the combination of a ring at the head of the first cylinder, a hollow valve adapted to seat upon said ring and close the passage-way between said two cylinders, a supplemental valve carried by said hollow valve, a compressed-air inlet to the said hollow valve, and a fuel-inlet to said valve.

705,202. HOT-AIR REGISTER. JOHN BUCKMAN, St. Cloud, Minn. Filed Mar. 18, 1902. Serial No. 98,789. (No model.)

Claim.—1. A register consisting of a frame having a horizontal upper and lower plate having a convex edge, a series of shutters pivotally retained by said plates alongside of their convex edge, and means to partly rotate said shutters, substantially as described.

2. A register consisting of a frame, the lower plate of which has a convex edge, a series of shutters pivotally retained by said plate along-

side of its convex edge, pinions mounted upon the pivot of said shutters and a rack in engagement with said pinions, substantially as described.

705,203. KNITTING-MACHINE. DANIEL A. BOOKER, West Peabody, Mass. Filed Aug. 1, 1901. Serial No. 70,437. (No model.)

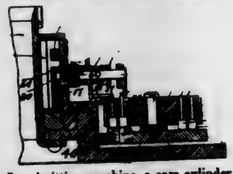

Claim.—1. In a knitting-machine, a cam-cylinder, a needle-elevating cam, an upwardly-inclined track, and a downwardly-inclined track, both of said tracks fast to said needle-elevating cam, the inner edge of said upwardly-inclined track being located nearer the center of said cam-cylinder than said downwardly-inclined track, and means to move said needle-elevating cam alternately toward and away from the center of said cam-cylinder.

2. In a knitting-machine, a needle-elevating cam, consisting of a plate having two inclined sides forming tracks converging toward one another, a lip flush with the working face of one of said tracks fast to said cam and projecting beyond the inner face of said plate, and means to move said needle-elevating cam alternately toward and away from the center of the cam-cylinder.

3. In a knitting-machine, a cam-cylinder, a needle-elevating cam, two tracks integral with said needle-elevating cam converging toward one another, the inner edge of one of said tracks being located nearer the center of said cam-cylinder than the inner edge of the other of said tracks, and means to move said needle-elevating cam alternately toward and away from the center of said cam-cylinder.

4. In a knitting-machine, a cam-cylinder, a needle-elevating cam carried by said cam-cylinder and radially movable thereon, a disk arranged to rotate around a stationary center bearing, projections upon said disk arranged to impart a radial movement to said needle-elevating cam with relation to said cam-cylinder, and mechanism to impart an intermittent rotary motion to said disk.

5. In a knitting-machine, a cam-cylinder, a needle-elevating cam carried by said cam-cylinder and radially movable thereon, a horizontal ratchet, projections upon said ratchet arranged to impart a radial movement to said needle-elevating cam with relation to said cam-cylinder, and means to raise and lower said projections with relation to the face of said ratchet and mechanism to impart an intermittent rotary motion to said ratchet.

6. In a knitting-machine, a cam-cylinder, a needle-elevating cam carried by said cam-cylinder and radially movable thereon, a rotatory disk, projections upon said disk arranged to impart an outward radial movement to said needle-elevating cam, a locking device to lock said needle-elevating cam in its outward position, a spring to carry said needle-elevating cam toward the center of said cam-cylinder, and mechanism to release said locking device.

7. In a knitting-machine, a cam-cylinder, a needle-elevating cam carried by said cam-cylinder and radially movable thereon, a horizontal ratchet, mechanism to impart an intermittent rotary motion to said ratchet, projections upon said ratchet arranged to impart an outward radial movement to said needle-elevating cam with relation to said cam-cylinder, means to raise and lower said projections with relation to the face of said ratchet, a locking device to lock said needle-elevating cam in its outward position, a spring to carry said needle-elevating cam toward the center of said cam-cylinder, and projections upon said ratchet to release said locking device.

8. In a knitting-machine, a cam-cylinder, an auxiliary needle-elevating cam carried by said cam-cylinder and movable radially thereon, a stitch-cam movable vertically of said cam-cylinder, and mechanism connecting said auxiliary and stitch cams, whereby when said auxiliary cam is moved radially away from the center of said cam-cylinder, said stitch-cam will be moved vertically downwardly thereon and vice versa.

705,204. SELF-HEATING SAD-IRON. WILLIAM G. BURNS, Boston, Mass., assignor to Boston Gas Iron Mfg. Co., Boston, Mass., a Corporation of Maine. Filed June 10, 1901. Serial No. 63,870. (No model.)

Claim.—1. In a sad-iron, an ironing-body comprising two sections, each having a smoothing-surface, an inwardly-disposed flange at each end of each section, the flanges at either end of the body overlapping, a handle having hangers provided with pivot portions, said pivot portions being integral with the hangers and passing through the overlapping flanges, to unite the two sections together and to support the ironing-body for turning movement.

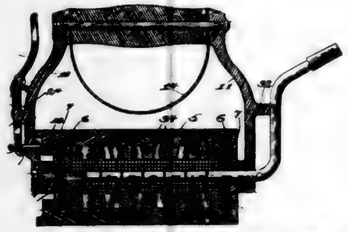

2. In a sad-iron, an ironing-body comprising two sections each having a smoothing-surface, an inwardly-disposed flange at each end of each section, the flanges on one section abutting at their inside edges the inside of the body of the other section, a handle having hangers, each hanger having integral therewith a pivot-bearing which extends through the adjacent overlapping flanges, said pivot-bearings serving to unite the two sections of the body and support the same for turning movement.

3. In a self-heating sad-iron, an ironing-body comprising two sections, each having a smoothing-surface, an inwardly-disposed flange at each end of each section, the flanges at each end of the body having overlapping portions, a handle having hangers each hanger having integral therewith a pivot-bearing which passes through the adjacent overlapping flanges, the said pivot-bearings operating to unite the two sections together and support the body for turning movement, and a burner projecting through one of said journals and extending lengthwise of the iron between the sections thereof, the end of said burner being supported by the other of said pivot-bearings.

4. In a self-heating sad-iron, an ironing-body comprising two sections, each having a smoothing-surface, an inwardly-disposed flange at each end of each section, the flanges at each end of the body overlapping each other throughout their entire extent, a handle including hangers having integral therewith pivot-bearings which pass through the overlapping flanges, the said pivot-bearings operating to unite the two sections and support the body for turning movement, and a burner projecting through one of said pivot-bearings and extending lengthwise of the iron between the sections thereof, the end of the burner being secured to the other of said pivot-bearings and the said burner having a portion projecting beyond the iron, one of said hangers having an arm shaped to form a seat to receive the projecting portion of the burner.

5. In a self-heating sad-iron, an ironing-body comprising two sections, each having a smoothing-surface and an inwardly-disposed flange at each end thereof, the flanges at each end of the body overlapping, a handle having hangers provided with pivot portions, said pivot portions being integral with the hangers and passing through the overlapping flanges, combined with a detachable burner located between the said sections.

6. In a self-heating sad-iron, an ironing-body having a plurality of smoothing-faces, a handle having hangers each provided with a pivot-bearing integral therewith, said pivot-bearings projecting through the ends of the iron-body and supporting the same for turning movement, a detachable burner-tube extending centrally through one of the pivot-bearings and lengthwise of the iron-body, means to adjustably connect the end of said burner-tube to the other pivot-bearing, that portion of the tube outside the iron-body being bent and engaging the outside of the adjacent hanger, whereby the burner-tube operates to tie together the lower ends of the hangers.

7. In a self-heating sad-iron, an ironing-body having a plurality of smoothing-faces, a handle having hangers provided with pivot-bearings, said pivot-bearings projecting through the ends of the iron-body and supporting the same for turning movement, a burner-tube extending centrally through one of the pivot-bearings and lengthwise of the iron-body, a screw passing through the other pivot-bearing and into the end of the burner-tube, that portion of the tube outside the iron-body being bent and engaging the outside of the adjacent hanger, whereby the burner-tube operates to tie together the lower ends of the hangers.

8. In a self-heating sad-iron, an ironing-body comprising two sections, each having a smoothing-face, an inwardly-disposed flange at each end of each section, the flanges at each end of the body having overlapping portions, a handle having hangers, said hangers having rigid therewith bearings which pass through the overlapping portions of said flanges, a removable burner-tube passing through one of said bearings and entering between the sections of the iron-body, a device carried by one of the hangers for holding the burner-tube normally in position, and a latch carried by the other hanger and engaging one section of the iron-body to normally hold the said body fixed with relation to said hangers.

9. In a self-heating sad-iron, an ironing-body having a plurality of smoothing-faces, a handle having hangers provided with pivot-bearings, said pivot-bearings projecting through the ends of the iron-body and supporting the same for turning movement, a burner-tube extending centrally through one of the pivot-bearings and lengthwise of the iron-body, the end of said burner being supported in an axial socket in the other pivot-bearing, a screw passing axially through the last-named pivot-bearing and into the end of the burner-tube, and adjustably securing the end of the burner-tube to said bearing, that portion of the tube outside the iron-body being bent and engaging the outside of the adjacent hanger, whereby the burner-tube operates to adjustably tie together the lower ends of the hangers.

10. In a self-heating sad-iron, a hollow ironing-body having a plurality of smoothing-faces, a handle having hangers adapted to support the ironing-body for turning movement, a burner-tube extending lengthwise of said ironing-body and passing through the lower end of one of said hangers, said burner-tube being detachably supported by said hanger and projecting outside thereof, said projecting end being constructed to have a gas-pipe connected thereto, and a screw passing through the other hanger and into the adjacent end of the burner-tube, said screw serving to rigidly tie the tube to the hanger, combined with means to lock the ironing-body in either of its adjusted positions.

705,205. SUSPENDERS. JOHN W. BURGETT, Guttenberg, N. J. Filed Oct. 9, 1901. Serial No. 78,052. (No model.)

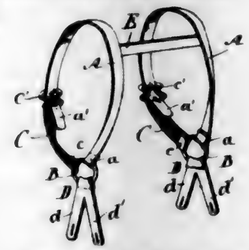

Claim.—1. The combination with the elastic shoulder-webs A, the elastic web-sections C, the buckles C', attached to said web-sections, and adjustably engaging said shoulder-webs; of the rings B, attached to the said web-sections by the loops *c*, and to said shoulder-webs by the loops *a*, of the inelastic band E, connecting said shoulder-webs; and means for connecting the rings B, with the suspender-buttons of trousers, all substantially as shown and specified.

2. The combination with the elastic shoulder-webs A; the elastic web-sections C; the buckles C', attached to said web-sections, and adjustably engaging the said shoulder-webs A; the rings B, attached to said web-sections by the loops *c*, and to the said shoulder-webs by the loops *a*; of the inelastic band E, connecting said shoulder-webs; and the button-straps D, formed with members *d*, and *d'*, and arranged to connect said ring B, with the suspender-buttons of trousers, all substantially as shown and specified.

705,206. BOX FOLDING AND PASTING MACHINE. ROY J. CARRIER and JOHN W. LOW, Chicago, Ill., assignors to Howe and Davidson Company, Chicago, Ill., a Corporation of New Jersey. Filed Dec. 23 1901. Serial No. 86,965. (No model.)

Claim.—1. A machine for folding and pasting box-blanks, comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, means for forcing said blanks into said chamber to fold upwardly the marginal parts of said blank, means for folding inwardly said marginal parts of the blank to bring the edges thereof together, and means acting in each operation of the folding devices for ejecting from the bottom of said chamber the folded and pasted blanks.

2. A machine for folding and pasting box-blanks, comprising feeding mechanism, pasting mechanism, a deep, open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, said chamber being adapted to contain a mass of blanks arranged in superposed relation, means for forcing the blanks into the top of said chamber upon said mass of blanks to fold upwardly the marginal parts of the blanks, means for folding inwardly the marginal parts of the blanks to bring the edges thereof together, and means acting in each operation of the folding devices for ejecting from the chamber the bottom blank of the mass

3. A machine for folding and pasting box-blanks, comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, means for forcing the blanks into said chamber to fold upwardly the marginal parts of the blanks, swinging folding-fingers adapted to project laterally into the top of said chamber, means for moving said fingers bodily toward and away from said chamber and for swinging the inner ends thereof downwardly to fold inwardly the marginal parts of the blanks, and means for ejecting from the bottom of said chamber the folded and pasted blanks.

4. A machine for folding and pasting box-blanks comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, a vertically-reciprocatory plunger for forcing said blanks into said chamber to fold upwardly the marginal parts of said blanks, swinging folding-fingers adapted to project laterally into the upper parts of said chamber, means for moving said fingers bodily toward and away from the chamber and for swinging the inner ends thereof downwardly to fold inwardly said marginal parts of the blank, and means for ejecting from the bottom of said chamber the folded and pasted blanks.

5. In a machine for the purpose set forth, the combination with the folding and pressing chamber, of a reciprocating plunger which enters the open end of said chamber, pivoted folding-fingers which are adapted to project laterally into said chamber near the open end thereof, and means for moving said folding-fingers laterally toward and from the chamber, and for swinging the inner ends thereof vertically.

6. In a machine for the purpose set forth, the combination with the folding and pressing chamber, of a plunger adapted to enter the open end of said chamber, vibratory folding-fingers adapted to be projected laterally into said chamber near the open end thereof, rock-shafts to which said fingers are attached, laterally-extending slotted bearings in which said rock-shafts are supported, means for moving said fingers toward and away from said chamber, and means for swinging said fingers on their axis of vibration.

7. A machine for folding and pasting box-blanks comprising folding mechanism, pasting mechanism, an open-topped folding and pressing chamber, over which the blanks are delivered by said feeding mechanism, a reciprocating plunger for forcing the blanks into the said chamber to fold the marginal parts thereof upwardly between said plunger and the side walls of the chamber, means adapted to engage the blanks to prevent withdrawal thereof from the chamber in the retraction of said plunger, means for folding inwardly said marginal parts of the blank and means for ejecting the blanks from the bottom of said chamber.

8. A machine for folding and pasting box-blanks, comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, a vertically-reciprocatory plunger for forcing the said blanks into the said chamber to fold upwardly the marginal parts thereof between said plunger and the side walls of the chamber, projections on the inner surfaces of the chamber-walls adapted to engage the upwardly-folded marginal parts of the blank to prevent withdrawal of the same in the retraction of

the plunger, means for folding inwardly said marginal parts of the blanks, and means for ejecting from the chamber the folded and pasted blanks.

9. A machine for folding and pasting box-blanks, comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, said chamber being adapted to contain a mass of blanks arranged in superposed relation, means for forcing said blanks into said chamber to fold upwardly the marginal parts of the blanks, means for folding inwardly said marginal parts of said blanks, means for folding inwardly said marginal parts of the blanks, and a horizontally-movable pusher-plate in the bottom of said chamber for ejecting the lowermost blank of the mass in each operation of the machine.

10. A machine for folding and pasting box-blanks, comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, said chamber being adapted to contain a mass of blanks arranged in superposed relation, means for forcing said blanks into said chamber to fold upwardly the marginal parts of said blanks, means for folding inwardly said marginal parts of the blanks, means located near the bottom of the side walls of the chamber for sustaining the mass of blanks therein independently of the bottom wall of the chamber, and a horizontally-movable pusher-plate in the bottom of said chamber for ejecting the lowermost blank of the mass in each operation of the machine.

11. A machine for folding and pasting box-blanks, comprising folding mechanism, pasting mechanism, a deep, open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, said chamber being provided with upright side walls and being adapted to contain a mass of blanks arranged in superposed relation, means for forcing blanks into the said chamber upon the mass of blanks therein to fold upwardly the marginal parts of the blanks, means for folding inwardly said marginal parts of the blanks, plates attached to the inner surfaces of said side walls of the chamber, the lower edges of which plates extend obliquely into the chamber, and means acting in each operation of the folding devices for ejecting from the chamber the bottom blank of said mass.

12. In a machine of the character set forth, the combination with the folding and pressing chamber adapted to contain a mass of blanks arranged in superposed relation, means for forcing said blanks into said chamber upon the mass of blanks therein and for folding and pressing said blanks, plates attached to the inner faces of the side walls of the chamber, the lower edges of which plates extend obliquely into the chamber, spring-pressed prongs on the lower parts of said plates which project into the chamber beyond the plates, and a horizontally-movable pusher-plate in the bottom of the chamber for ejecting in each operation of the machine the lowermost blank of the mass from said chamber.

13. In a machine for the purpose set forth the combination with a folding and pressing chamber adapted to contain a mass of blanks arranged in superposed relation, means for forcing said blanks into said chamber upon the mass of blanks therein, and for folding and pressing said blanks, plates attached to the inner faces of said side walls of the chamber, the lower edges of which plates extend obliquely into the chamber, each of said plates being provided near its lower edge with two or more inwardly-extending yielding prongs, the prongs of each set being located one above the other, and a horizontally-movable pusher-plate in the bottom of said chamber for ejecting in each operation of the machine the lowermost blank of the mass from the chamber.

14. In a machine for the purpose set forth the combination with the feeding and pressing chamber adapted to contain a mass of blanks arranged in superposed relation, means for forcing said blanks into said chamber upon the mass of blanks therein and for folding and pressing said blanks, plates attached to the inner faces of the side walls of the chamber, the lower edges of which extend obliquely into the chamber, means for moving the lower edges of said plates toward and from each other, and means acting in each operation of the machine for ejecting from the chamber the bottom blank of the mass.

15. A machine for folding and pasting box-blanks comprising folding mechanism, pasting mechanism, a deep open-topped folding and pressing chamber over which the blanks are delivered by said feeding mechanism, said chamber being adapted to contain a mass of blanks arranged in superposed relation, means for forcing said blanks into the chamber upon said mass of blanks there into fold upwardly the marginal parts of the blanks, means for folding inwardly said marginal parts of the blanks, a movable pusher-plate in the bottom of said chamber, and coacting rollers at the side of said chamber in front of the pusher-plate adapted to receive in each operation of the machine the bottom blank of said mass which is advanced toward the rollers by said pusher-plate.

16. In a machine for the purpose set forth the combination with the folding and pressing mechanism adapted to contain a mass of blanks arranged in superposed relation, of means for forcing said blanks into the chamber upon the mass of blanks therein and for folding and pressing said blanks, a horizontally-movable pusher-plate in the bottom of said chamber, and coacting rollers at the side of said chamber in front of the pusher-plate adapted to receive in each operation of the machine the bottom blank of said mass which is advanced toward the rollers by said pusher-plate.

17. In a machine for the purpose set forth the combination with the pressing and folding chamber which is adapted to contain a mass of superposed blanks, of means for forcing into said chamber the blanks and for folding and pressing said blanks, a pusher-plate in the bottom of said chamber, coacting rollers at the side of said chamber in front of the pusher-plate adapted to receive, in each operation of the machine, the bottom blank of said mass, which is advanced toward said rollers by the pusher-plate, and a releasing device at the rear of said rollers constructed to release a single blank at a time.

18. In a machine for the purpose set forth the combination with the folding and pressing chamber adapted to contain a mass of blanks in superposed relation, of means for forcing the blanks into said chamber and for folding and pressing said blanks, a pusher-plate located in the bottom of said chamber, coacting rollers at the side of said chamber in front of the pusher-plate adapted to receive, in each operation of the machine, the bottom blank of said mass which is advanced toward the rollers by said pusher-plate, a releasing device resting on the bottom of said chamber in the rear of said rollers comprising a vertically-movable block provided on its rear surface with an inclined face adapted to be engaged by the forward margins of said blanks and a stop for limiting the vertical movement of said block.

19. In a machine for the purpose set forth the combination with the folding and pressing chamber adapted to contain a mass of blanks in superposed relation, of means for forcing said blanks into said chamber and for folding and pressing said blanks, a pusher-plate in the bottom of said chamber, coacting rollers at the side of said chamber in front of the pusher-plate adapted to receive, in each operation of the machine, the bottom blank of said mass which is advanced toward the rollers by said pusher-plate, a releasing device in the rear of said rollers comprising a vertically-movable block resting on the bottom of said chamber and provided on its rear surface with an inclined face adapted to be engaged by the forward margins of said blanks, a stop for limiting the vertical movement of said block, and means for adjusting said stop to provide a greater or less extent of movement in the block.

20. In a machine for the purpose set forth, the combination with a folding and pressing chamber adapted to contain a mass of blanks in superposed relation, of means for forcing said blanks into the chamber and for folding and pressing said blanks, a pusher-plate in the bottom of said chamber, coacting rollers located at the side of the chamber in front of the pusher-plate and adapted to receive, in each operation of the machine, the bottom blank of said mass which is advanced toward the rollers by means of said pusher-plate, and a releasing device located in rear of said rollers comprising a vertically-movable block provided on its rear surface with an inclined surface adapted to be engaged by the forward margins of the blanks, a rod attached to said block and extending, through apertured lugs on the chamber-wall, a spring applied to said rod to force said block against the bottom of said chamber, and a stop adapted to limit the vertical movement of said block.

21. In a machine for the purpose set forth the combination with a folding and pressing chamber adapted to contain a mass of blanks in superposed relation, of means for forcing said blanks into said chamber upon the mass of blanks therein and to fold and press said blanks, a pusher-plate in the bottom of said chamber, coacting rollers at one side of said chamber in front of the pusher-plate, means for separately feeding the blanks from the bottom of said mass into the path of said pusher-plate, and a releasing device located in rear of said rollers constructed to release one blank at a time from said chamber as it is advanced toward the rollers by said pusher-plate.

22. In a machine for the purpose set forth the combination with the folding and pressing chamber, adapted to contain a mass of blanks arranged in superposed relation, means for folding the blanks therein, a pusher-plate located in the bottom of said chamber, and means for separately feeding the lowermost blank of the mass of said blanks into the path of the pusher-plate in each operation of the machine.

23. In a machine for the purpose set forth, the combination with the pressing and folding chamber adapted to contain a mass of blanks arranged in superposed relation, of means adapted to force the blanks into said chamber and fold the same, plates on the inner faces of the walls of said chamber the lower edges of which extend obliquely into the chamber and which are provided at their lower edges with spring-pressed prongs, and means located below said plates for ejecting from the bottom of said chamber, the lowermost blank of the mass after it is forced downwardly between said prongs.

24. A machine for folding and pasting box-blanks comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the said blanks are delivered by said feeding mechanism, means for forcing said blanks into said chamber and for folding and pressing the same therein, means for ejecting from the bottom of said chamber the folded and pasted blanks, a stop-plate located at the upper front part of the chamber against which the front margins of the blanks strike when delivered over the chamber, and means for adjusting said stop-plate in a direction from front to rear of the chamber.

25. A machine for folding and pasting box-blanks comprising feeding mechanism, pasting mechanism, an open-topped folding and pressing chamber over which the said blanks are delivered by said feeding mechanism, means for forcing said blanks into the chamber and for folding and pressing the blanks, means for ejecting from the bottom of said chamber the folded and pasted blanks, a stop-plate located at the upper front part of the chamber against which the front margins of the blanks strike when delivered over the chamber, means for adjusting said stop-plate in a direction from front to rear of the chamber, and depending bars attached at their upper ends to said stop-plates and extending across the front of the chamber.

26. In a machine for the purpose set forth, the combination with a folding and pressing chamber, of means for forcing the blanks into said chamber to fold upwardly the marginal parts of the blanks, vibratory folding-fingers adapted to project laterally into the said chamber and movable bodily toward and away from said chamber, actuating-rods operatively connected at their upper ends with said folding-fingers, and means for imparting both endwise and lateral movement to said actuating-rods.

27. In a machine for the purpose set forth, the combination with a folding and pressing chamber, of means for forcing the blanks into said chamber to fold upwardly the marginal parts of said blanks, vibratory folding-fingers adapted to project laterally into the top of said chamber and movable bodily toward and away from said chamber, actuating-rods operatively connected at their upper ends with said folding-fingers, rotative cams provided with cam-grooves in their peripheries and also on their side faces, horizontally-vibratory levers pivoted to the machine and provided with cam-studs adapted to engage the peripheral grooves of the cams, means for connecting said levers with said actuating-rods and parts to which said actuating-rods are pivoted at their lower ends provided with studs adapted to engage the cam-grooves in the side faces of the cams.

28. In a machine for the purpose set forth, the combination with an open-topped folding and pressing chamber having upright side walls over which the blanks are delivered, means for forcing the blanks into said chamber to fold upwardly the marginal parts thereof, vibratory folding-fingers adapted to project laterally into the top of said chamber and movable bodily toward and away from said chamber, actuating mechanism for said folding-fingers comprising rotative cams having cam-grooves in their peripheries and also in their side faces and actuating-rods operatively connected at their upper ends with said fingers and connected with parts at their lower ends having studs which engage said peripheral and side grooves of the cams, said side walls of the chamber being movable toward and away from each other to adjust the same to blanks of varying width, and the actuating mechanism for the fingers being connected and movable with said side walls.

29. The combination with a machine for folding and pressing box-blanks, of a movable receiving-table provided with a plurality of racks into which the blanks are deposited from the machine, actuating mechanism for said table, a discharging mechanism consisting of coacting rollers one of which is bodily movable each time a blank is discharged from the machine, and operative connections between the movable roller and the actuating mechanism for the table, embracing a counting device.

30. The combination with a machine for folding and pasting box-blanks provided with a discharging mechanism embracing coacting rollers, one of which is yielding to permit the blanks to pass therebetween, of a receiving-table provided with a plurality of racks into which the blanks are discharged in groups from the discharging mechanism of the machine, operative connections between said yielding roller and the actuating mechanism of the table, embracing a counting mechanism for advancing said table after each rack has been filled.

31. The combination with a machine for folding and pasting box-blanks having a discharging mechanism embracing coacting rollers, one of which is yielding to permit the blanks to pass therebetween, of a receiving-table provided with a plurality of racks into which the blanks are adapted to be deposited in groups, mechanism for turning or rotating said receiving-table, and means for setting said table-actuating mechanism into operation comprising a rotative wheel provided with an annular series of ratchet teeth or notches, means operatively connected with the movable roller for rotating the wheel step by step as the blanks are discharged between said rollers, and means on said wheel acting on the table-actuating mechanism to start said table-actuating means in operation.

32. The combination with a machine for folding and pasting box-blanks provided with a discharge mechanism having a part which is moved as each blank is discharged from the machine, of a receiving-table provided with a plurality of racks into which the blanks are deposited in groups, means for advancing said receiving-table embracing a pawl-and-ratchet mechanism, an endwise-movable bar operatively connected therewith, an oscillatory lever adapted for operative connection with said endwise-reciprocatory bar, means for holding said bar out of operative connection with said oscillatory lever and means for releasing said holding means to permit the bar to be operatively connected with said lever at determinate periods in the operation of the machine, embracing a counting device which is operatively connected with the movable part of the discharging mechanism.

33. The combination with a machine for folding and pasting box-blanks provided with a discharging mechanism, of a receiving-table provided with a plurality of racks into which the blanks are deposited from said machine, mechanism for actuating said table comprising a pawl-and-ratchet mechanism, an endwise-reciprocatory bar connected therewith, an oscillatory lever adapted at determinate periods in the operation of the machine for operative connection with said bar, means for holding said bar normally out of operative connection with said lever, a rotary wheel or disk, operative connections between said wheel or disk and the discharge mechanism of the machine, whereby said wheel or disk is rotated step by step as the blanks are discharged from the machine, and means on the disk for releasing the holding means for said bar to permit the latter to be operatively connected with said oscillatory lever.

34. The combination with a machine for folding and pasting box-blanks provided with a discharge mechanism, of a table provided with a plurality of racks in which the blanks are deposited, mechanism for turning said table embracing a pawl-and-ratchet mechanism, an endwise-reciprocatory bar connected at one end therewith, an oscillatory lever on the machine adapted to be operatively connected with said reciprocatory bar a swinging arm provided with a shoulder on which said bar normally rests and which holds said bar out of operative connection with said oscillatory lever, a rotative wheel or disk, operative connections between said wheel and the discharge mechanism of the machine whereby said wheel or disk is rotated step by step as the blanks are discharged from the machine, and means on said wheel or disk for swinging said holding-arm away from the reciprocatory bar to permit the latter to become operatively connected with said oscillatory lever.

35. The combination with a machine for folding and pasting box-blanks, of a revolving receiving-table provided with a plurality of racks into which the blanks are adapted to be deposited in groups, of mechanism for turning said table step by step comprising an annular ring attached to the lower side of the table, a swinging detent-lever provided with a pawl adapted to engage notches in said ring, a stop-dog actuated by a cam on said lever for stopping said table at the end of its step-by-step movement, and operative connections between said detent-lever and the discharge mechanism of the machine, whereby said lever is automatically operated to turn the table after a predetermined number of blanks have been deposited in each rack.

36. In a machine for the purpose set forth, the combination with the revolving receiving-table provided on its under surface with a concentric ring, a detent-lever pivoted concentrically with respect to said ring and provided with a pawl which is adapted to engage a series of notches in said ring, means for swinging said detent-lever, a tailpiece on said detent-lever, a stop-dog adapted to engage other notches in said ring, and a cam on said tailpiece adapted to act on said dog to free the same from said notches when the lever is swung to rotate the table, said cam being, in the continued movement thereof, released from the dog to permit the latter to engage one of said notches to arrest the movement of the table.

37. In a machine for the purpose set forth, the combination with the revolving receiving-table provided on its under surface with a concentric ring, a detent-lever pivoted concentrically with respect to said ring and provided with a pawl which is adapted to engage a series of notches in said ring, means for swinging said detent-lever, a tailpiece on said detent-lever, a stop-dog adapted to engage other notches in said ring, a cam on said tailpiece adapted to operate on said dog to free the same from the notches in said ring when the lever is swung to rotate the table, said cam in the continued movement thereof being released from the dog to permit the latter to engage one of said notches to arrest the movement of the table and means acting to prevent backward movement of the said table.

38. A machine for folding and pasting box-blanks comprising a folding and pressing chamber, means for folding and pressing said blanks in said chamber, intermittently-actuated forwarding mechanism for advancing the blanks to said folding and pressing chamber and means for detaining a blank in said forwarding mechanism while the folding and pressing mechanism is in operation.

39. A machine for folding and pasting box-blanks comprising folding and pressing mechanism and means for advancing the blanks to said folding and pressing mechanism comprising upper and lower carrier-belts

which frictionally engage the upper and lower surfaces of the margins of the blanks, means for arresting the blanks between said carrier-belts during the operation of the folding mechanism, means preventing the introduction of a blank to the carrier-belts when a blank is held or arrested between said belts, and pasting mechanism for applying paste to the blanks.

40. A machine for folding and pasting box-blanks comprising feeding mechanism, pasting mechanism, folding and pressing mechanism, stop-plates located one at the receiving end of the feeding mechanism and the other at the rear of the folding and pressing mechanism, and means for raising and lowering said stop-plates into and out of the path of said blanks.

41. A machine for folding and pasting box-blanks comprising feeding mechanism, pasting mechanism, mechanism for folding and pressing said blanks, a feed-board located at the rear of the feeding mechanism, stop-plates located one between said feed-board and the feeding mechanism and the other at the rear of the folding and pressing mechanism, oscillatory arms to which said stop-plates are attached, a rotary cam and operative connections between said rotary cam and oscillatory arm for raising and lowering said stop-plates into and out of the path of the blanks.

42. A machine for folding and pasting box-blanks comprising feeding mechanism, pasting mechanism, a folding and pressing chamber located in advance of the pasting mechanism, said feeding mechanism comprising upper and lower endless tapes, and said lower tapes extending on either side of said chamber, and the upper ones of which terminate in rear of said chamber, and stop-plates adapted to be moved upwardly between said tapes into the path of said blank, one of said stop-plates being located in rear of the feeding mechanism, and the other located between the upper belt of the feeding mechanism, and the said chamber.

43. A machine for folding and pasting box-blanks comprising feeding mechanism, pasting mechanism, a folding and pressing chamber located in advance of the pasting mechanism, said feeding mechanism comprising upper and lower endless tapes or belts, the adjacent laps of which coöperate to frictionally engage the blanks for carrying the same through the machine, said upper belts terminating in rear of said chamber, and the lower belts passing one on each side of said chamber to deliver the blanks over said chamber, a vertically-reciprocatory plunger for forcing the blanks into the chamber to fold the marginal parts thereof upwardly, and means for folding inwardly said marginal parts of the blanks.

44. A machine for folding and pasting box-blanks comprising folding and pressing mechanism, feeding mechanism for advancing the blanks to the folding and pressing mechanism, embracing upper and lower endless tapes which frictionally engage the upper and lower surfaces of the marginal parts of the blanks, guide-bars located outside of said tapes adapted for engagement with the margins of the blanks, means for moving said upper and lower tapes toward and from each other to adjust the same to varying widths of blanks and means for correspondingly varying the width of the space between said guide-bars.

45. A machine for folding and pasting box-blanks comprising pressing mechanism, feeding mechanism for advancing the blanks to the folding and pressing mechanism embracing upper and lower tapes adapted to frictionally engage the upper and lower surfaces of the marginal parts of the blanks, a rotary paste-disk located at one side of said upper and lower tapes for applying paste to the paste-flap of the blank, means for moving said tapes toward and away from each other to adjust the same to varying widths of blanks and for giving corresponding movement to said paste-wheel.

46. A machine for folding and pasting box-blanks comprising folding and pressing mechanism, feeding mechanism for advancing the blanks to the folding and pressing mechanism, embracing upper and lower endless tapes adapted to frictionally engage the upper and lower surfaces of the margins of the blank, the lower tapes extending one on each side of the folding and pressing mechanism, and the upper tapes terminating in rear of said folding and pressing mechanism, longitudinal guides located outside of said tapes and adapted to engage the side margins of the blanks, and downwardly-facing shoulders on said guides in front of said upper tapes, adapted to frictionally engage the upper surfaces of the blanks.

47. A machine for folding and pasting box-blanks comprising folding and pressing mechanism, feeding mechanism for advancing the blanks to the folding and pressing mechanism comprising upper and lower tapes which frictionally engage the upper surfaces of the blanks, rollers about which said tapes are trained, said lower tapes extending one on each side of the folding and pressing mechanism, and the upper tapes terminating in advance of said folding and pressing mechanism, longitudinal guide-bars arranged at each side of said tape adapted to engage the side margins of the blank, a transverse stop-bar at the front part of said folding and pressing mechanism, and a gage adapted to engage one corner of the blank and located just in rear of said transverse stop-bar.

48. In a machine for folding and pasting box-blanks, the combination with a folding and pressing chamber adapted to contain a mass of blanks in superposed relation, of means for forcing the blanks into said chamber upon said mass of blanks therein and for folding and pressing said blanks, a pusher-plate in the bottom of said chamber for separately ejecting the lowermost blank of the series from the chamber in each operation of the machine, and a jogging device at the rear of said chamber adapted to reciprocate toward and from the blanks and engage the rear margins thereof to maintain the rear end of said mass of blanks squared.

49. In a machine for folding and pasting box-blanks, the combination with a folding and pressing chamber adapted to contain a mass of blanks in superposed relation, of means for forcing the blanks into said chamber upon said mass of blanks therein and for folding and pressing said blanks, a pusher-plate in the bottom of said chamber for separately ejecting the lowermost blanks of the series from the chamber in each operation of the machine, and a jogging device at the rear of said chamber movable with said pusher-plate and adapted to reciprocate toward and from the blanks and engage the rear margins thereof to maintain the rear end of said mass of blanks squared.

50. In a machine for folding and pasting box-blanks the combination with a folding and pressing chamber, of means for forcing the blanks into said chamber upon the mass of blanks therein and for folding and pressing said blanks, a pusher-plate in the bottom of said chamber for separately ejecting the lowermost blank of the series from the chamber in each operation of the machine, and a stop located at one side of the pusher-plate and adapted for engagement with the rear margins of the lowermost blanks to prevent said plate from drawing the lowermost blank rearwardly out of the range of said pusher-plate.

705,207. SHEET-METAL SIDING. EDWIN G. CHARLESON, Watertown, N. Y. Filed Jan. 27, 1902. Serial No. 91,467. (No model.)

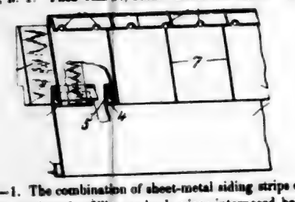

Claim.—1. The combination of sheet-metal siding strips or sections arranged end to end, and a filling or back piece interposed between the inner faces of the meeting ends of said strips or sections and the surface to which said strips or sections are secured for the purpose specified.

2. As a new article of manufacture a sheet-metal siding strip or section having its opposite longitudinal edges bent in opposite directions for forming interlocking flanges operating as described, one of said flanges having portions thereof cut away for forming cut-outs or recesses for permitting the insertion of the fastening members through the body of the strip or section.

3. As a new article of manufacture a sheet-metal siding strip or section having its opposite longitudinal edges provided with oppositely-turned flanges of unequal projection from the main body, said strips or sections being provided with transverse creases or scores for the purpose set forth, portions of the free edge of the upper flange being cut away at intervals to form recesses to receive the fastening members.

4. A sheet-metal siding strip or section having one of its longitudinal edges bent inwardly and upwardly and its other longitudinal edge bent outwardly and downwardly for forming opposite longitudinal flanges, the upturned edge of the former flange being separated a greater distance from the body of the strip or section than the free edge of the other flange.

705,208. CULTIVATOR. SAMUEL C. COES, Janesville, Wis., assignor to the Janesville Machine Company, Janesville, Wis., a Corporation of Wisconsin. Filed May 27, 1902. Serial No. 109,242. (No model.)

Claim.—1. In a wheel-cultivator, the combination of a cultivator-beam hinged at its forward end to swing vertically and horizontally, an arm pivoted vertically in the beam and extended horizontally and a lift-hitch connected with the swinging end of the arm.

2. In a wheel-cultivator, the combination of a cultivator-beam hinged at its forward end to swing vertically and horizontally, an arm pivoted vertically in the beam and extended horizontally and a yielding lift-hitch connected with the swinging end of the arm.

3. In a wheel-cultivator, the combination of a cultivator-beam hinged at its forward end to swing vertically and horizontally, an arm pivoted vertically in the beam and extended horizontally and a flexible, yielding lift-hitch connected with the swinging end of the arm.

4. In a wheel-cultivator, the combination of a cultivator-beam hinged at its forward end to swing vertically and horizontally, an arm pivoted vertically in the beam and extended horizontally, a lift-lever, and a yielding connection between the lift-lever and the swinging end of the arm.

5. In a wheel-cultivator, the combination of a cultivator-beam hinged at its forward end to swing vertically and horizontally, an arm pivoted vertically in the beam and extended horizontally, a lift-lever located above the beam in approximate alinement with the longitudinal center of the beam, when the beam is swung straight behind its pivot, an arm pivoted vertically in the beam and extended horizontally with its swinging end below the lift end of the lever, and a connection between the lever and the swing end of the arm.

705,209. VARIABLE-SPEED DEVICE. WALTER H. CRANE, Denver, Colo. Filed Nov. 24, 1900. Serial No. 37,085. (No model.)

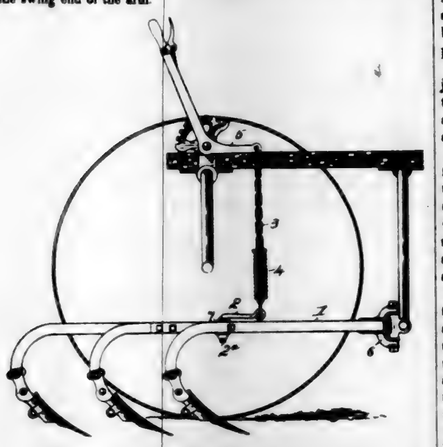

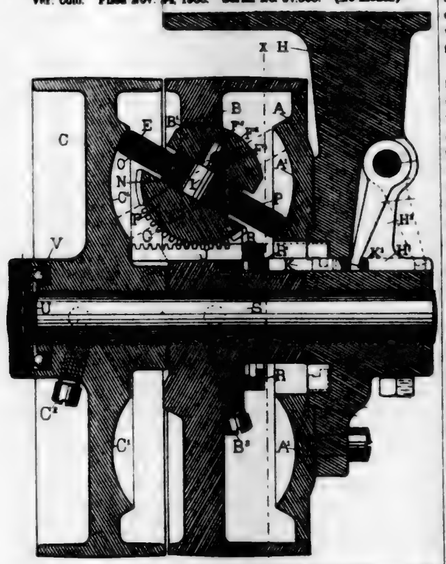

Claim.—1. In a device of the class specified, the combination, with a support for the device, embodying a retarding means, of a drive-pulley, and a driven pulley; and means upon one of the said pulleys for varying the relative speeds of the pulleys.

2. In a device of the class specified, the combination with a support for the device, embodying a fixed supporting-shaft and a concentric fixed retarding-disk, of two adjacent pulleys revolvable on said shaft, and variably revolvable with reference to each other, from connective engagement with said retarding-disk.

3. In a device of the class specified, the combination with a support for the device, embodying a fixed supporting-shaft and a concentric fixed retarding-disk, of a speed-wheel embodying a pulley, revolubly mounted on said shaft; and an intermediate variation-wheel embodying a pulley, and variably engaging said speed-wheel and retarding-disk, to give variable relative velocities to said pulleys.

4. In a device of the class specified, the combination with a support for the device, embodying a fixed supporting-shaft and a concentric fixed retarding-disk, of a speed-pulley and a multiplying-pulley revolvable on said shaft and engaging said retarding-disk, to give multiplied speeds of said speed-pulley relative to said multiplying-pulley as a driving member, or divided speeds of said multiplying-pulley relative to said speed-pulley as a driving member.

5. In a device of the class specified, the combination with two adjacent pulley members and a supporting member, of a retarding-disk fixed to said supporting member; a central shaft fixed in one of said members and revolvable in the other said members; and means substantially as described, for varying the relative rotative speeds of the said pulley members.

6. In a device of the class specified, the combination with a support for the device, embodying a supporting-shaft and a concentric fixed retarding-disk, of a speed-wheel pulley revolvable about the axis of said shaft; an intermediate multiplying-wheel embodying a drive-pulley revolvable on said shaft; and a series of adjustable transmission-wheels carried by said multiplying-wheel, in engagement with opposing concave annular friction-surfaces on said retarding-disk and speed-wheel, to give a multiplied speed to said speed-wheel.

7. In a device of the class specified, the combination, with a central shaft, of a stationary retarding means concentric with, and in a plane at right angles to the said shaft; a speed-wheel rotatably mounted upon the shaft at some distance from, and parallel with the said retarding means; and an intermediate member, rotatably mounted upon the said shaft, and carrying a series of adjustable transmission-wheels in operative engagement with the said retarding means and with the said speed-wheel.

8. In a device of the class specified, the combination with a rotatable speed means provided with an annular concave contact-surface, of a retarding means embodying an opposing similar contact-surface; a power means embodying a pulley and a series of oscillatable carriers having segment-sustaining surfaces; transmission-wheels revolubly mounted in said carriers intermediate said segment-surfaces; a fixed support for the device; and means on said support connected with said carriers to oscillate them in said power means.

9. In a device of the class specified, the combination with a support for the device, having a fixed protruding central shaft, of a retarding-disk secured to said support and having a concave annular contact-surface; a drive and a delivery wheel rotatably mounted concentric with said shaft, one of said wheels having an opposing concave annular contact-surface similar to, and with its center of curvature coincident with that of the concave surface of said retarding-disk; a series of oscillatable carriers mounted in the other of said wheels; and a like series of transmission-wheels revolubly mounted in said carriers, in position and adapted to engage at their opposite sides with different portions of said opposing concave surfaces.

10. In a device of the class specified, the combination with a revolubly-mounted drive-wheel and driven wheel, of a retarding-disk; a series of oscillatable carriers, mounted in and revolvable with one of the said wheels; transmission-wheels revolubly mounted in the said carriers, and engaging at their opposite sides with suitable contact-surfaces upon the other of said wheels and said retarding-disk; a series of slidable racks in operative engagement with the said oscillatable carriers; an annular controlling-ring secured to the said racks; and a controlling-slide in engagement with said ring.

11. In a device of the class specified, the combination, with a bodily-rotatable series of oscillatably-mounted transmission-wheels, of similar, opposing, concave surfaces in engagement with the opposite sides of said oscillatable transmission-wheels; a slidable, annular ring having longitudinal projections in operative engagement with the carriers of said oscillatable transmission-wheels; a longitudinal slide in operative engagement with said ring; and means in engagement with said slide for moving the same longitudinally, to oscillate the said transmission-wheels and bring their opposite sides into engagement with different diameters of the respective engaging surfaces.

12. In a device of the class specified, the combination with a drive-wheel and an adjacent driven wheel mounted for rotation about an axis common to both of said wheels, of a retarding-disk having an annular concave surface, a section of which has a common center or foci, with a similar surface on one of said wheels; a series of oscillatable carriers mounted in the other of said wheels, and rotatable therewith, the center of oscillation of the said carriers being coincident with the said foci; an annular controlling-ring having connections to the said oscillatable carriers; means in connection with said controlling-ring and with a controlling-shaft and lever, for the oscillation of the said carriers; and a series

of transmission-wheels revolubly mounted in the said carriers, and engaging with different portions of the said concave surfaces as the carriers are oscillated.

705,210. TRAIN-PIPE HOSE-COUPLING. ARCHER S. CUMMINS and ANDREW J. BLAND, Crewe, Va. Filed Jan. 20, 1902. Serial No. 91,906. (No model.)

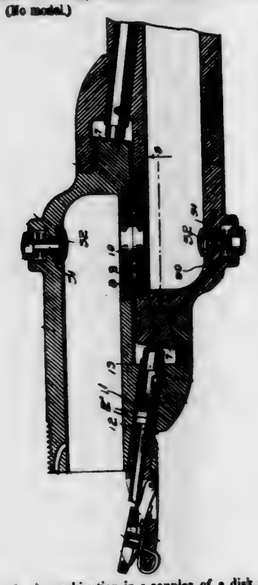

Claim.—1. A combination in a coupler, of a disk valve adapted to a seat at the inner portion of the coupler-head and fulcrumed at a point out of alinement with the air-passage, a spring for closing said valve, a pin adapted to engage with said valve to open the same, a spring normally tending to move the pin from contact with the valve, the head of said pin being disposed in the path of movement of a mating coupling, and a leakage-opening for permitting the reduction of the train-pipe pressure when the valve is closed.

2. The combination in a coupler, of a spring-pressed valve, a spring-pressed pin adapted to engage therewith, the head of said pin being disposed in the path of movement of a mating coupler, and means for limiting the movement of said pin.

3. The combination in a coupler, of a disk valve adapted to a seat at the inner portion of the coupling-head and fulcrumed at a point out of alinement with the air-passage, and a spring-pressed pin disposed in the path of movement of a mating coupler, and adapted to engage said valve.

4. The combination in a coupler, of the coupling-head, a bushing carried thereby, a pin guided in said bushing and having one end in the path of movement of a mating coupling, and a disk valve fulcrumed at a point to one side of the air-passage and adapted to be engaged by said pin.

5. The combination in a coupler, of the coupling-head, a bushing carried thereby, a pin guided in said bushing and having one end in the path of movement of a mating coupling, said pin having a locking-groove, a valve adapted to be acted upon by said pin, and a locking-pin carried by the coupling-head for engagement in said locking-groove thereby to lock the valve in open position.

6. The combination in a coupler having cam-flanges, of a protecting-cover forming part of one of said flanges and adapted to close the recess of a mating coupling, substantially as specified.

705,211. ALARM-LOCK. ANTHONY COYNE, Hartranft, Penn. Filed Aug. 28, 1901. Serial No. 73,590. (No model.)

Claim.—1. In an alarm-lock the combination with the lock mechanism of a gong; a post mounted in the casing of the lock; a spring-lever connected to said post and having a laterally-extending pivotal seat 17; a shaft pivotally connected to core on said lever and means to adjust the length of said shaft and an extension carried by said spring-lever designed to be engaged by the key when the latter is moved to throw the bolt of the lock into an unlocked position, all combined substantially as specified and for the purpose set forth.

2. In an alarm-lock, the combination with the lock mechanism, of a gong, a post mounted within the lock-casing, a spring-lever connected at one end to said post, a shaft pivotally mounted in the free end of said lever, means for the longitudinal adjustment of said shaft, a guide for the free end of the shaft, and an extension on the lever beyond its connection with the shaft, to be engaged by the key, as and for the purpose specified.

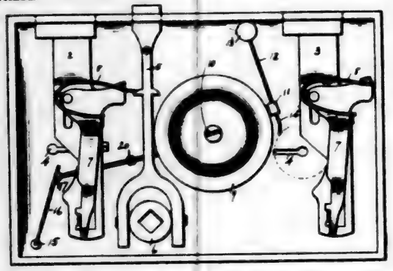

705,212. INTERLOCKING COLLAR-FASTENER. HERBERT DALGETT, New York, N. Y. Filed Apr. 24, 1900. Serial No. 14,145. (No model.)

Claim.—1. An interlocking collar-fastener comprising an integrant connection having a suitable opening, clasps movably mounted on said connection, at opposite points thereof, and adapted to be moved one into a plane substantially parallel with the plane of said connection at one side thereof, and the other into a plane substantially parallel with the plane of said connection at the opposite side thereof, and a stud carried by one of said clasps, the said stud being capable of extending through the opening of said connection and formed centrally so as to detachably engage said connection at the opening therein and the free end of said stud being formed so as to engage the opposite clasp, when said clasps are moved to the position stated, as herein specified.

2. A device of the class set forth comprising a body portion, members as 3 3', movably connected to said body at opposite points thereof and operating on opposite sides thereof, and a locking element borne by one of said members, as 3', the said element being adapted to extend beyond the body portion, lock thereto and lock to the opposite member, as 3.

3. A device of the class set forth comprising a body, neckband-engaging and collar-clamping members movably connected to said body portion at opposite portions thereof, the said neckband-engaging and collar-clamping members each being provided with a closure-plate, and a locking element borne by the closure-plate of the neckband-engaging member, the said locking element being adapted to extend beyond the body portion and lock to the closure-plate of the collar-clamping member.

4. A device of the class set forth comprising a body portion having an elongated opening, neckband-engaging and collar-clamping members movably connected to said body portion at opposite points thereof, the said neckband-engaging and collar-clamping members being each provided with a closure-plate and a rolled edge, a wire in the rolled edge of each of said members, and a locking element borne by the closure-plate of the neckband-engaging member, the said locking element being adapted to extend partially beyond the body portion by way of the opening therein, and lock to the closure-plate of the collar-clamping member.

5. A device of the class set forth, comprising a body member, and neckband-engaging and collar-clamping members movably connected to opposite portions of the body member, the neckband-engaging member having a buttonhole-penetrating element which is adapted to lock to the body member and a portion of the clamping member.

6. A device of the class set forth, comprising a body member with a slot and locking element, a neckband-engaging member having a tongue to pass through said slot and receive the said locking element, and a collar-clamping member to lock on the tongue.

7. A device of the class set forth comprising a body, a neckband-engaging member, and a collar-clamping member, said neckband-engaging member and collar-clamping member being movably connected to opposite extremities of the body and operating on opposite sides of the latter, the neckband-engaging member also being partially movable through the body and adapted to lock to the latter and to a portion of said clamping member.

8. A device of the class set forth comprising a body, and neckband-engaging and collar-clamping members movably connected to the body at opposite portions thereof, and a resilient locking element borne by the neckband-engaging member, the said locking element being adapted to extend beyond the body and lock thereto and to the collar-clamping member.

705,213. METHOD OF CARBONIZING ORGANIC MATERIALS. OSCAR DAUBE, New York, N. Y. Filed Oct. 25, 1901. Serial No. 79,997. (No specimens.)

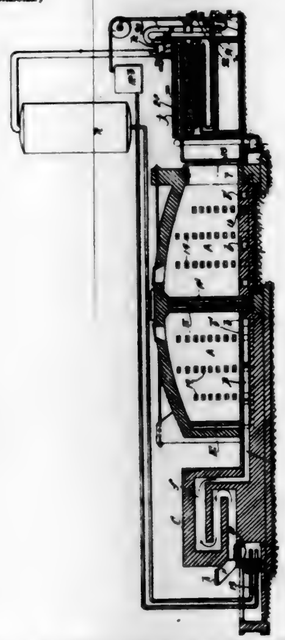

Claim.—1. The method of carbonizing organic material and material of organic origin which consists in mixing sixty-six and two-thirds per cent. air under a constant pressure of from five to eight pounds and thirty-three and one-third per cent. highly nitrogenous gas; passing the resultant gas through a coal fire; reducing the temperature of the gas issuing from the fire to from 400° to 600° Fahrenheit, subjecting the material to be carbonized to said last-mentioned gas at the said temperature of from 400° to 600° Fahrenheit and under the said pressure still constantly maintained and exhausting the gases emanating from said material during carbonization immediately they free themselves, substantially as set forth.

2. The method of carbonizing organic material and material of organic origin which consists in mixing sixty-six and two-thirds per cent. air under a constant pressure of from five to eight pounds and thirty-three and one-third per cent. highly nitrogenous gas recovered as by-product from carbonization of organic material, or material of organic origin or gases otherwise generated passing the resultant gas through a coal fire, reducing the temperature of the gas issuing from said fire to from 400° to 600° Fahrenheit, subjecting the material to be carbonized to said last-mentioned gas at the said temperature of from 400° to 600° Fahrenheit and under the said pressure still constantly maintained exhausting the gases emanating from said material during carbonization immediately they free themselves collecting and condensing the gases thus exhausted and collecting the by-products, substantially as set forth.

3. The method of carbonizing organic material and material of organic origin which consists in mixing sixty-six and two-thirds per cent. air and thirty-three and one-third per cent. highly nitrogenous gas recovered as by-products from carbonization of organic material or material of organic origin or like gases otherwise generated; passing the resultant gas through a coal fire, reducing the temperature of the gas issuing from said fire to from 400° to 600° Fahrenheit, preliminarily subjecting the material to be carbonized to said last-mentioned gas at the said temperature of from 400° to 600° Fahrenheit and under the said pressure still constantly maintained and simultaneously allowing the escape to the atmosphere of the vapors emanating from said material during said preliminary step, thus subjecting said material to be carbonized to said last-mentioned gas, cooling the carbonized material by subjecting same to the cooled gases emanating from the carbonizing process after they have been cooled in the condenser.

705,214. SUPPORT FOR AWNING-ROLLERS. LOUIS A. DAUB, Evansville, Ind. Filed Mar. 13, 1902. Serial No. 98,064. (No model.)

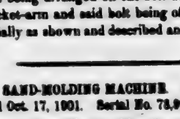

Claim.—1. In a device for supporting awning-rollers, the combination with a bracket-arm constructed to be rigidly secured in place intermediate the ends of the awning-roller, of a bolster pivoted to and universally movable on said bracket-arm, rigid spindles projecting laterally from the opposite sides of said roller-frame, and rollers journaled on said spindles and arranged to support the awning-roller between them, substantially as described.

2. In a device for supporting awning-rollers, the combination with a bracket-arm constructed to be rigidly secured in place intermediate the ends of and beneath the awning-roller, of a roller-frame loosely connected to and universally movable on said bracket-arm, four rigid spindles carried by said frame and projecting at right angles from the opposite sides of each end of said frame, and rollers journaled on said spindles and arranged to support the awning-roller between them, substantially as described.

3. In a device for supporting awning-rollers, the combination with a bracket-arm constructed to be rigidly secured in place intermediate the ends of the awning-roller, of a bolster pivoted to and universally movable on said bracket-arm, rigid spindles projecting laterally from the opposite sides of said roller-frame, rollers journaled on said spindles and arranged to support the awning-roller between them, and a bracket constructed to be rigidly fixed above the awning-roller and supporting a roller above and in front of the awning-roller, substantially as described.

4. In a device for supporting awning-rollers, the combination with a bracket-arm constructed to be rigidly secured in place intermediate the ends of the awning-roller, of a roller-frame loosely supported and universally movable on said bracket-arm, said frame comprising a bolster provided at each of its opposite ends with two laterally and oppositely projecting rigid spindles, means loosely connecting said bolster centrally to the end of the bracket-arm, and rollers journaled on said spindles, substantially as described.

5. In a device for supporting awning-rollers, the combination with a bracket-arm constructed to be rigidly secured in place intermediate the ends of the awning-roller, of a roller-frame loosely supported and universally movable on said bracket-arm, said frame comprising a bolster provided at each of its opposite ends with two laterally and oppositely projecting spindles formed integrally with said bolster, rollers journaled on said spindles, and a pivot-bolt loosely pivoting said bolster centrally to the end of the bracket-arm, substantially as described.

6. In a device for supporting awning-rollers, the combination with a bracket-arm constructed to be rigidly secured in place intermediate the ends of the awning-roller and having a bolt-hole in its outer end, of a roller-frame loosely seated and universally movable on said bracket-arm, said frame comprising a bolster provided centrally with a bolt-hole and provided at each of its opposite ends with two laterally and oppositely projecting integral spindles, rollers journaled on said spindles and a headed bolt loosely passing through said bolt-holes and provided on its lower end with a nut, said nut being arranged on the bolt at a point below the under side of the bracket-arm and said bolt being of less diameter than the bolt-holes, substantially as shown and described and for the purpose specified.

705,215. SAND-MOLDING MACHINE. JOHN R. DAVIS, Waukegan, Ill. Filed Oct. 17, 1901. Serial No. 78,978. (No model.)

Claim.—1. In a sand-molding machine, the combination with a frame, of a lower cylinder provided with a piston, a pattern-plate supported on said piston, an intermediate cylinder provided with a piston, an impression-plate supported on said last-named piston and opposed to the pattern-plate, an uppermost cylinder, a rod extending upward from said last-named piston and carrying at its upper end a piston movable in said uppermost cylinder, and fluid-pressure mechanism for actuating the pistons of the several cylinders, substantially as and for the purpose set forth.

2. A sand-molding machine comprising, in combination, a frame A formed of upright posts, a cylinder B supported on said frame and having a piston B', a pattern-plate E supported on said piston, a slot-plate D movably supported on the frame above said piston, a flask F carried

by said piston, a cylinder C supported on said frame and having a piston C' provided with a rod C^2, a cylinder G containing a piston C^3 on the upper end of said rod, and a fluid-pressure-supply pipe H for directing fluid-pressure against the several said pistons and provided with valves for controlling the direction of said pressure, substantially as and for the purpose set forth.

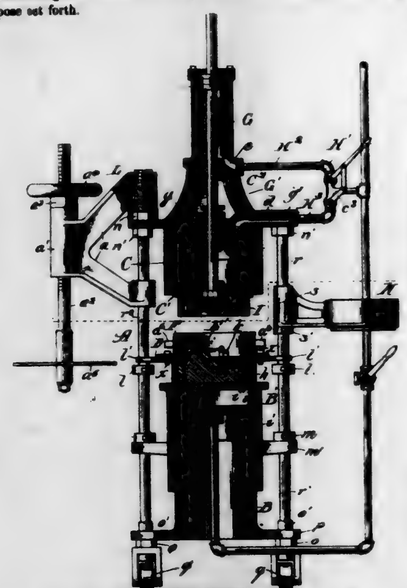

3. A sand-molding machine comprising, in combination with a frame, a lower cylinder B provided with a piston B', a pattern-plate E supported on said piston, an intermediate cylinder C, containing a piston C', an uppermost cylinder G containing a piston C^3, an impression-plate I on said piston C' opposed to the pattern-plate, a rod C^2 connecting said pistons C' and C^3, channels *d* and *e* leading, respectively, into the upper end of the cylinder C and into the lower end of the cylinder G, a fluid-pressure-supply pipe H containing a three-way valve *f* and leading through the lower cylinder to said piston, a coupling H' through which the said pipe is connected with said channels, and oppositely-arranged three-way valves *c* and *c'* in said coupling, the whole being constructed and arranged to operate substantially as and for the purpose set forth.

705,216. ARTIFICIAL FUEL. JOHN T. DAVIS, San Francisco, Cal. Filed Aug. 7, 1900. Serial No. 26,177. (No model.)

Claim.—1. A binder for artificial fuel composed of pitch, hardened and toughened by free carbonic-acid gas.

2. An artificial fuel composed of pitch hardened and toughened by free carbonic-acid gas, and carboniferous material in a divided condition, all mixed and incorporated in substantially the proportions specified.

3. The process of manufacturing artificial fuel, consisting of mixing pitch with a carbonate, applying heat to the mixture to obtain free carbonic-acid gas and adding a carboniferous material to the resulting mass, as and for the purpose specified.

4. The process of making artificial fuel, which consists in mixing approximately one hundred parts of pitch with approximately thirty parts of a carbonate, heating to obtain free carbonic-acid gas, and then adding to the resulting mass approximately one thousand parts of carboniferous material, as and for the purpose described.

5. The process of making artificial fuel, consisting of treating a mixture of from sixty to one hundred and eighty parts of pitch with thirteen to sixty parts of carbonic-acid gas, and adding one thousand parts, by weight, of carboniferous material, as and for the purpose specified.

6. An artificial fuel derived from substantially the following ingredients: sixty to one hundred and eighty parts pitch, thirteen to sixty parts carbonic acid, and one thousand parts carboniferous material.

705,217. HEATING-DRUM. CHARLES W. DAVIDSON, Tonti, Ill. Filed Aug. 31, 1901. Serial No. 74,023. (No model.)

Claim.—A combined heating stove and drum comprising a hollow base having air-ducts, a stove and drum mounted on said base, the drum comprising an inner and outer section, the inner being coupled to the exit-flue of the stove, a series of vertical air-flues open at both ends formed in the inner section of the drum and communicating at their bottom with the outer air through the ducts of the hollow base, a hood surmounting the series of air-flues, a series of flues and upper and lower chambers coupled together and collectively forming the outer drum-section, the products passing from the stove around the air-flues of the inner drum-section, to the bottom of the drum, thence upward through the lower chamber of the drum, the flues, and upper chamber respectively, and finally out into the atmosphere, substantially as set forth.

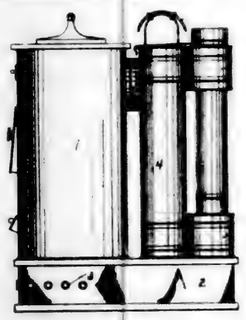

705,218. EAR-TRUMPET. EMILE DE MEULENEESTER, Brussels, Belgium. Filed Jan. 18, 1902. Serial No. 90,334. (No model.)

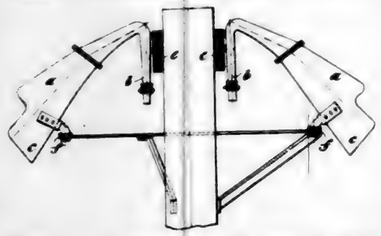

Claim.—1. A sound-receiving device comprising a suitably-supported trumpet, the open end or mouth of which trumpet is directed downwardly at a suitable angle, and the lower and lateral portions of the mouth of which trumpet extend beyond the upper portion of said mouth, the small end of said trumpet being adapted to be connected with a suitable means for receiving the sonorous waves collected by said trumpet.

2. A sound-receiving device comprising a trumpet, made in one or more parts, of any suitable material, said trumpet being fixed to a support and having its mouth or open end directed downwardly at a suitable angle, the lower and lateral portions of said mouth being extended beyond the upper portion of said mouth, and the small or inner end of said trumpet being connected with a suitable means for receiving the sonorous waves collected by said trumpet.

3. A sound-receiving device comprising a plurality of trumpets fixed to a suitable support, the mouth or open end of each of said trumpets being directed downwardly at a suitable angle and the lower and lateral portions of the mouth of each of said trumpets being extended beyond the upper portion of the mouth of each of said trumpets, the small end of each of said trumpets being connected with a suitable means for receiving the sonorous waves collected by said trumpet.

4. A sound-receiving device comprising a plurality of trumpets fixed to a suitable support, the open end or mouth of each of said trumpets being directed downwardly at a suitable angle and the upper portion of the mouth of each of said trumpets being cut away, so that the lower and lateral portions of the mouth of each of said trumpets extend beyond the upper portion of said mouth, the small end of each of said trumpets being connected with a suitable means for receiving the sonorous waves collected by said trumpet.

705,219. CHURN. JOHN DEMPSTER and WILLIAM S. BRADLEY, Knoxville, Tenn. Filed Nov. 4, 1901. Serial No. 81,135. (No model.)

Claim.—1. In a churn, the combination of an outer movable churn-body provided with inwardly-projecting blades, a second vessel suspended therein, revolving therewith and having a perforated bottom, means suspending said churn-body from a support, and a horizontally-revoluble balance or momentum wheel or disk below the churn-body and pivoted thereto at a point eccentric to said wheel or disk.

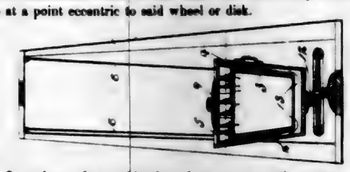

2. In a churn, the combination of an outer vessel, an inner vessel suspended therein and having a perforated bottom, approximately tangential wings or blades projecting outward from the top of the inner vessel, and a balance or momentum wheel to which the churn-body is eccentrically pivoted.

3. A churn-body, flexible rods supporting said body and a horizontally-revolubie balance or momentum wheel to which said churn-body is eccentrically connected.

4. A churn-body, a plurality of flexible rods projecting upward from a suitable base and then inward and downward, a balance or momentum wheel to which the body is eccentrically pivoted, and means securing said rods to said body, whereby they serve as a support therefor.

5. In a churn, the combination of an outer movable vessel or body, greater in diameter at the top than at its base and provided with inwardly-deflecting blades, a second vessel interposed in said outer vessel, revolving therewith and having perforations at its bottom, means for supporting said churn, a horizontal momentum-wheel, and means connecting said churn-body and wheel eccentric to the axis of said wheel.

6. In a churn, the combination of an outer vessel or churn-body, greater in diameter at the top than at the bottom, a second vessel interposed therein, stationary with respect to said outer vessel or body, removable therefrom, and provided with perforations or openings at or near its bottom, and with diverter blades or wings at its top, means flexibly supporting said churn-body, and a horizontal momentum or balance wheel eccentrically connected to said churn-body.

705,220. AUTOMATIC PROTECTOR FOR PRINTING-PRESSES, &c. TALBOT C. DEXTER, Pearl River, N. Y. Filed June 14, 1901. Serial No. 64,493. (No model.)

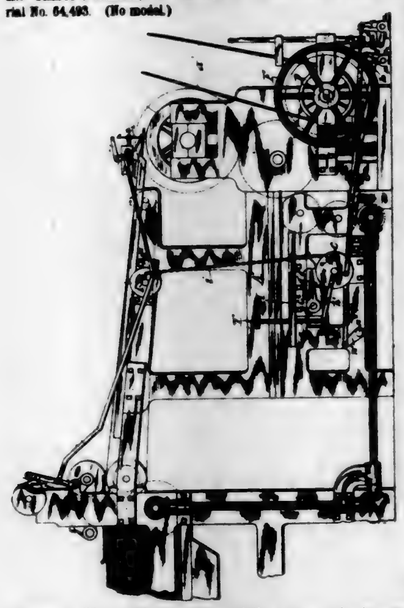

Claim.—1. The combination with a printing-press, mechanism supplying the paper to said press, and stop mechanism actuated to automatically arrest the action of the press, of a vertically-disposed pivoted disk, variable mechanism imparting different degrees of oscillations to said disk, a feeler actuated by the paper in transit to the press and controlling said variable mechanism, and a latch restraining the aforesaid stop mechanism and thrown from its restraining position by the increased motion of the aforesaid disk.

2. The combination with a machine designed to operate on paper passing through it, and stop mechanism actuated to automatically arrest the action of said machine, of a latch restraining the stop mechanism, a primary cam, a lever oscillated by said cam, a rock-shaft receiving motion from said lever, a feeler disposed to be actuated by the paper in transit to the aforesaid machine and controlling said rock-shaft to restrain the movement of the aforesaid lever to the primary cam, and a supplemental cam actuating the restrained lever to trip the latch from its operative position as set forth.

3. The combination with a machine designed to operate on paper passing through it, and stop mechanism actuated to automatically arrest the action of said machine, of a latch restraining the stop mechanism, a primary cam and a supplemental cam disposed with a path between them, a lever pivoted in position to be actuated by one of said cams at a time, and receive different degrees of thrust therefrom, a pivoted disk oscillated by said lever, a coupling between said disk and latch to trip said latch from operative position by the greater thrust of the lever, a rock-shaft moving in unison with said disk, a feeler disposed to be actuated by the paper in transit to the aforesaid machine and controlling the operative position of the aforesaid lever through the medium of the rock-shaft and disk as set forth.

4. The combination with a printing-press and its actuating mechanism, a vertically-disposed stop-disk connected to said actuating mechanism, a spring-pushed rod turning said disk to arrest the actuating mechanism, a lug projecting from said disk, a latch adapted to engage said lug, a lever for turning the disk in a direction to release the actuating mechanism and to a position to allow the latch to engage the lug, a pivoted tripper-disk coupled to said latch, a primary cam and a supplemental cam disposed with a path between them, a lever pivoted in position to be actuated by said cams one at a time and receive different degrees of thrusts therefrom, a rod transmitting motion from said lever to the tripper-disk, feelers disposed to be actuated by the paper in transit to the printing-press, a rock-shaft controlled by said feelers, and a rod transmitting motion from the tripper-disk to said rock-shaft as set forth.

5. The combination with a printing-press, its actuating mechanism, spring-actuated stop-disk connected to said mechanism, a latch restraining said stop-disk, feelers disposed to be actuated by the paper in transit to the press, a rock-shaft controlled by said feelers, a primary cam and a supplemental cam projecting different distances from their axis and disposed with a path between them, a lever having pivoted to it a roller adapted to pass through said path and to be traversed by either of the two cams, means for controlling said lever by the aforesaid rock-shaft, and a guard guiding the roller of the lever from the primary cam to the supplemental cam as set forth.

6. The combination of a primary cam and a supplemental cam revolving in unison about the same axis and disposed with a path between them, a lever having pivoted to it a roller adapted to pass through said path and to be traversed by either of the two cams, a wedge fastened to the side of the supplemental cam, a wedge attached to the lever beyond the roller thereof and pointing toward the wedge on the cam to guide the said roller from the primary cam to the supplemental cam, and mechanism controlling the position of the lever in relation to the cams as set forth.

705,221. ROTARY TAKE-UP DEVICE FOR SEWING-MACHINES. PHILIP DUBEL and MARTIN HENLES, Elizabeth, N. J., assignors to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Dec. 30, 1901. Serial No. 87,780. (No model.)

Claim.—1. In a sewing-machine, the combination with a rotary take-up comprising an arm on which the needle-thread can slide out and in from and toward the center of movement of said take-up, of an automatically-operated thread-detaining device mounted on said arm and serving to control the take-up and the cast-off or thread-slackening operations.

2. In a sewing-machine, the combination with a rotary take-up, of a cast-off-controlling device, a presser-foot, and connections between the said presser-foot and cast-off-controlling device; whereby the timing of the operation of the said cast-off-controlling device will be varied with the varying thickness of the work beneath the presser-foot.

3. In a sewing-machine, the combination with a rotary take-up comprising an arm extending outward from the center of movement of the take-up, and on which the needle-thread can slide in and out, of a lever providing a thread-detaining shoulder on said arm, and a normally stationary cam for operating said lever.

4. In a sewing-machine, the combination with a rotary take-up comprising an arm extending outward from the center of movement of the take-up, and on which the needle-thread can slide in and out, of a lever providing a thread-detaining shoulder on said arm, a normally stationary cam for operating said lever, a presser-foot, and connections between said presser-foot and said cam whereby the position of the latter will be varied to change its timing for different thicknesses of work.

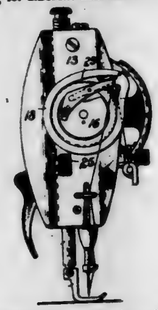

5. In a sewing-machine, the combination with a rotary take-up, of a normally stationary thread-controller having a cast-off part, a presser-bar, and connections between said presser-bar and said normally stationary thread-controller; whereby when the presser-foot is raised or lowered the position of the cast-off part of said normally stationary thread-controller will be correspondingly varied.

6. In a sewing-machine, the combination with a rotary take-up, of a thread-detaining and cast-off-controlling device movable and coöperating with said rotary take-up, and a normally stationary thread-controlling device adjacent to and also coöperating with said rotary take-up, and serving to control the slack thread first given up by said take-up after a stitch has been tightened.

7. In a sewing-machine, the combination with a presser-foot and a rotary take-up having an arm on which the thread can slide in and out, of a thread-detaining lever on said arm, a normally stationary cam for operating said lever, a normally stationary coöperating thread-controlling device having a cast-off part, and connections between said cam and said normally stationary thread-controlling device whereby the position of the latter and of the said cam will be automatically varied, to change the timing, with variations of the thickness of work.

8. In a sewing-machine, the combination with a rotary take-up comprising a take-up arm on which the thread can slide outward for take-up position and inward for thread-slackening position, and which arm consists of two separated parts or plates, of a thread-detaining and cast-off-controlling lever mounted between said separated parts of said arm, and a normally stationary cam for operating said lever.

9. In a sewing-machine, the combination with a rotary take-up comprising a take-up arm on which the thread can slide outward for take-up position and inward for thread-slackening position, and which arm consists of two separated parts or plates, of a thread-detaining and cast-off-controlling lever mounted between said separated parts of said arm, a normally stationary cam for operating said lever, and a coöperating normally stationary thread-controlling device.

10. In a sewing-machine, the combination with a rotary take-up comprising a take-up arm on which the thread can slide outward for take-up position and inward for thread-slackening position, and which arm consists of two separated parts or plates, of a thread-detaining and cast-off-controlling lever mounted between said separated parts of said arm, a normally stationary cam for operating said lever, a coöperating normally stationary thread-controlling device having a cast-off part, a presser-bar, and connections between said presser-bar and said cam and thread-controlling device; whereby the timing of the operation of said lever and thread-controller will be automatically varied for different thicknesses of work beneath the presser-foot.

705,222. FEED APPARATUS FOR WEBBING OR PACKAGING MACHINES. WILLIAM H. BUELL, Quincy, Mass., assignor to Pneumatic Seals Corporation, Portland, Me., a Corporation of Maine. Filed Feb. 14, 1902. Serial No. 94,077. (No model.)

Claim.—1. In combination with a chute or hopper, a rotary stirrer, a gate to the outlet beneath said stirrer having an opening therethrough and an upturned lip, substantially as described.

2. In combination with a chute or hopper, a gate to the outlet having an opening therethrough, a lip projecting upward from the edge of said opening, and a rotary stirrer whose axis of revolution is crosswise of the hopper above said gate and having stirrer-blades with recesses to permit clearance between the stirrer and said lip, substantially as described.

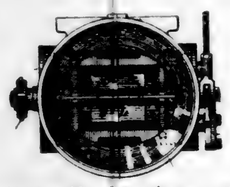

3. In combination with a chute or hopper, a gate to the outlet having an opening therethrough, means of adjusting the said gate to vary the size of opening, a lip projecting upward from at or near the edge of said opening and a rotary stirrer whose axis of revolution is crosswise of the hopper above said gate, substantially as described.

4. In combination with a chute or hopper, a rotary stirrer which rotates the goods in a cylindrical mass and a blade which engages the periphery of the rotating mass and separates fine portions thereof, substantially as described.

5. In combination with a chute or hopper, a stirrer, a gate to the outlet and a lip at the edge of the outlet extending into the path of rotation of the mass of material moved by the stirrer, substantially as described.

6. In combination with a chute or hopper, means for rotating the material in a cylindrical mass and a scraper which engages the periphery of the rotating mass and separates fine portions thereof, substantially as described.

7. In combination with a chute or hopper, means for rotating within the hopper the material fed therein, an inclined scraper which is adapted to remove from the revolving mass portions thereof, and an outlet-passage for the removed portions, substantially as described.

8. In combination with a chute or hopper, a stirrer-chamber in the lower part of the chute or hopper, a stirrer which rotates on a horizontal axis in said chamber, a valve beneath said stirrer having a graduated passage therethrough, a lip which extends up into the path of the radius of rotation of said stirrer and recesses formed in the stirrer-blades to afford clearance for the said lip, substantially as described.

9. In combination with a chute or hopper, a gate consisting of an adjustable plate or plates whereby a contracted passage may be produced, a revolving head carrying stirrer-blades which revolve in said hopper, a lip which projects upward from at or near the edge of the opening in said gate and recesses in the stirrer-blades to afford clearance for the said lip, substantially as described.

10. In combination with a chute or hopper, a gate having a narrow passage therethrough, a rotary stirrer above said gate, a lip which projects upward from at or near the edge of said passage, and a second valve below said first gate which can be entirely closed, substantially as described.

705,223. BOX OR CASE. ERNST DOERING, Berlin, Germany. Filed Feb. 13, 1901. Serial No. 47,115. (No model.)

Claim.—The combination with a box or case, having a socket or recess formed in the upper edge of one end wall, and a vertical pin or stud arranged within said socket, of a top or lid, a slotted plate secured against the under surface of the top or lid and adapted to extend through said socket in the end wall of the box and engage the pin therein when the lid is moved in one direction over the box, fastening means secured to the top for engaging others on the sides of the box as the lid is moved laterally as aforesaid, and supplemental means for preventing movement of the lid on the box in a direction to disengage said fastenings.

705,224. VALVE FOR ENGINES. ERNEST U. DOWS, Hoskins, Ohio, assignor of one-fourth to August C. Bell, Waterville, Ohio. Filed Jan. 11, 1902. Serial No. 89,236. (No model.)

Claim.—1. In an engine, the combination of the cylinder having a pair of steam-ports each terminating at the steam-chest end in a plurality of openings, a plate mounted above the ports and provided with openings alining with those of the steam-ports, a reversing-slide disposed below said plate and having ports or passages movable into alinement with either set of openings, and a hollow ported valve adapted to reciprocate on said plate.

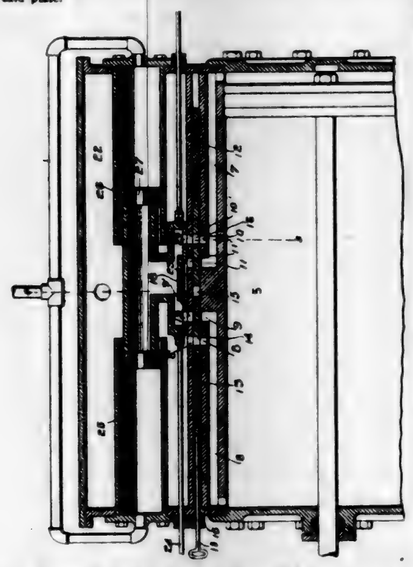

2. The combination in an engine, of the cylinder and steam-chest, cylinder-ports extending from each end of the cylinder to the steam-chest and terminating at the steam-chest end in a plurality of openings, a fixed plate arranged in the lower portion of the steam-chest and forming the valve-support, said plate having openings alining with those leading to the cylinder-ports, a reversing-slide disposed below the plate and having three ports movable into alinement with the said openings to change the direction of the flow of steam, and a hollow ported valve disposed on said plate and having an internal steam-supply, substantially as specified.

3. A valve comprising a hollow ported body having cylindrical extensions, a pair of open-ended cylinders into which said cylindrical extensions project, and loose pistons adapted to said cylinders, said pistons being pressed snugly against the ends of the valve by steam-pressure and permitting independent movement of the valve toward its seat.

4. The combination of the alining cylinders, loose pistons arranged in said cylinders and having steam-passages and a hollow ported valve having end portions in contact with the adjacent faces of said pistons.

5. The combination of the steam-chest, a pair of alining cylinders arranged therein, loose pistons adapted to said cylinders and provided with steam-passages, a ported valve having its body portion extending laterally into the respective cylinders and adapted for contact with the pistons therein, and means for reciprocating said valve.

6. The combination of the steam-chest having end openings, a pair of removable cylinders arranged therein and connected to a source of steam-supply, pistons adapted to said cylinders and provided with steam-passages, a ported valve having portions extending laterally into the respective cylinders and adapted for contact with the pistons therein, and exhaust-ports leading from the cylinder to the body of the steam-chest and entirely surrounding the cylinders, substantially as specified.

705,225. FORCED-DRAFT APPLIANCE FOR LOCOMOTIVES. JOSEPH A. ROSS, Rawlins, Wyo. Filed Dec. 7, 1901. Serial No. 85,191. (No model.)

Claim.—1. In combination with the exhaust-nozzle and petticoat arranged a predetermined distance apart within the smoke-box, and exhaust-tubes leading from the cylinders to the exhaust-nozzle, the stack provided with a gradually-tapering choke-ring terminating at, and contracting the final exit area of the smoke-stack, substantially as and for the purposes set forth.

2. In combination the stack having a choke-ring located within its exit, and with the nozzle-stand, nozzle-tip and petticoat within the smoke-box, the draft-plate L, with hinged section, M, and an operating-rod N, leading to the cab, substantially as and for the purpose set forth.

3. The combination and arrangement of the stack having a choke-ring within its exit, the petticoat, nozzle-tip and nozzle located within the smoke-box, and a diagonally-arranged draft-plate with hinged bottom section, provided with means for operating the same, an air-damper arranged in the stoking-door, and provided with a downwardly-inclined deflecting-wall, substantially as and for the purposes set forth.

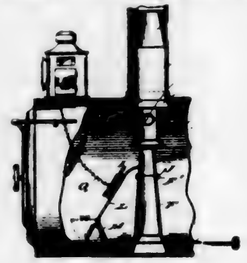

705,226. GRINDING-MACHINE. JOEL ETTINGER, Chester, Pa., assignor to the Ettinger Machine Company, Limited, Chester, Pa. Filed May 3, 1902. Serial No. 105,817. (No model.)

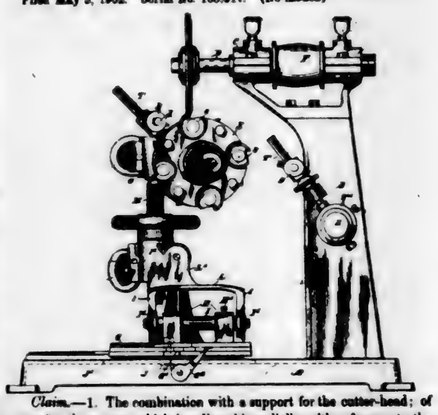

Claim.—1. The combination with a support for the cutter-head; of a gage for the cutters which is adjustable radially with reference to the axis of the cutter-head and also in a direction parallel with such axis.

2. The combination with a support for the cutter-head; of a gage for the cutters adjustable radially with reference to the axis of the cutter-head, and also in an arc about an axis parallel with the axis of the cutter head, but outside the arc in which the cutter moves.

3. The combination with a support for the cutter-head; of a gage for the cutters adjustable radially with reference to the axis of the cutter-head, and also in an arc outside of the plane of rotation of the cutters but struck from the axis of the cutter-head.

4. The combination with a support for a cutter-head; of a gage for the cutters adjustable radially with reference to the axis of the cutter-head in a direction parallel with said axis, in an arc about the axis of the cutter-head, and also about an axis perpendicular to the axis of the cutter-head.

5. The combination with a support for a cutter-head; of a gage-finger having an inclined edge or face next the cutters, and means for adjusting said gage-finger toward and from the axis of the cutter-head, and also in a direction parallel therewith.

6. The combination with a support for a cutter-head; of a collar surrounding the axis of the cutter-head; a rod projecting therefrom; an arm projecting laterally from said rod; a gage-finger carried by said arm; means for adjusting the collar about the axis of the cutter-head, and devices for adjusting the laterally-projecting arm on its supporting-rod.

7. The combination with a support for a cutter-head; of a rod projecting radially with reference to the axis of the cutter-head; a laterally-projecting arm on said rod; a sliding sleeve carried by said rod; devices for clamping the sleeve to the rod; a sliding sleeve on the rod to which the laterally-projecting arm is attached; a nut interposed between the two sleeves for adjusting the sleeve carrying the arm; and a gage-finger carried by the laterally-projecting arm.

8. The combination with a support for a cutter-head; of a rod projecting laterally with reference to the axis of the cutter-head; a laterally-projecting arm supported by said rod; a collar on said arm adjustable longitudinally thereon, and also about the axis thereof; and a gage-finger carried by said collar adjustable about an axis perpendicular to the axis of said collar-supporting arm, and also toward and from said arm.

9. In a grinding-machine the combination with a grinding-wheel and a support for the cutter-head; of means for adjusting the support for the cutter-head relatively to the grinding-wheel; and a gage for the cutters outside their path of rotation which is adjustable radially with reference to the axis of the cutter-head, and also in a direction parallel with said axis.

10. In a grinding-machine the combination of a grinding-wheel; a platform adjustable in a direction parallel with the axis of the grinding-wheel; a carriage mounted on the platform and movable thereon in a direction perpendicular to the axis of the grinding-wheel; a vertically-adjustable spindle carried by the carriage; means for holding the spindle in its adjusted position; a clamp-socket on the upper end of the spindle and adapted to turn thereon without moving the spindle; means for clamping the socket on the spindle; a casting carried by said clamp-socket and turning therewith, and an arbor carried by said casting.

11. In a grinding-machine the combination of a grinding-wheel; a platform adjustable relatively thereto; a guiding-standard rising from said platform; a carriage having an arm guided by said standard at one end; means for supporting and guiding the opposite end of the carriage; a vertically-adjustable spindle carried by the carriage; means for preventing the spindle from turning; devices for clamping the spindle in its adjusted position; a clamp-socket carried on the upper end of the spindle and adapted to turn thereon without moving the spindle, means for clamping the socket on the spindle, a casting carried by said clamp-socket and turning therewith, and an arbor carried by said casting.

12. In a grinding-machine the combination of a grinding-wheel; a platform; a carriage supported thereon and guided thereby; a socket-piece on the carriage; a vertically-adjustable spindle extending from said socket-piece; means for enlarging or decreasing the vertical opening in said socket-piece; a screw-threaded hand-wheel resting on the socket-piece and engaging the vertically-adjustable screw-threaded spindle; devices for preventing the spindle from rotating; means for clamping the spindle in its adjusted position; and an arbor for a cutter-head supported on the upper end of said spindle.

13. In a grinding-machine the combination of a grinding-wheel; a carriage movable transversely to the axis of the grinding-wheel; a vertically-adjustable spindle supported on the carriage; a clamp-socket adjustable about the axis of the spindle; a casting connected with said clamp-socket; an arbor for a cutter-head carried by said axis; and devices for tilting or adjusting the casting about an axis perpendicular to the axis of the vertically-adjustable spindle.

14. In a grinding-machine the combination of a grinding-wheel; a carriage movable in a direction perpendicular to the axis of the grinding-wheel; a vertically-adjustable spindle carried by the carriage; a clamp-socket carried by the spindle, and having a laterally-projecting arm; a casting supported on said arm; an arbor for a cutter-head carried by said casting, and means for adjusting the casting about the axis of its supporting-arm to a limited extent, and for clamping it securely to said arm.

15. In a grinding-machine the combination of a grinding-wheel; a carriage movable transversely with reference to the axis of the grinding-wheel; a vertically-adjustable spindle mounted on the carriage; a casting connected with and supported by said spindle and provided with a socket for one end of an arbor which supports a cutter-head; semicircular shoes entering recesses in that end of the arbor within the casting, and set-screws for preventing endwise movement of the shoes.

705,227. PRINTING-TELEGRAPH. THEODORE M. FOOTE, Brooklyn, N. Y., assignor to Western Telegraph Typewriting Machine Company, a Corporation of New Jersey. Filed Mar. 11, 1901. Serial No. 50,648. (No model.)

Claim.—1. In a printing-telegraph, printing mechanism mounted on a frame, means with the printing mechanism for connecting it electrically to another similar machine at a distant station, and a keyboard provided with a plurality of circuit-closing keys and with electric severed but connecting wiring connecting the keyboard detachably with the printing mechanism.

2. In a printing-telegraph, a frame, printing mechanism mounted in the frame, and electric conductors leading from the printing mechanism and having disconnecting-terminals, in combination with a keyboard provided with a plurality of movable circuit-closing keys, wires secured to the keyboard and having terminals adapted to be connected electrically by the keys to another electric conductor, said wires having disconnecting-terminals adapted to be connected electrically to the wires from the printing mechanism by placing the keyboard in a predetermined position alongside the printing mechanism.

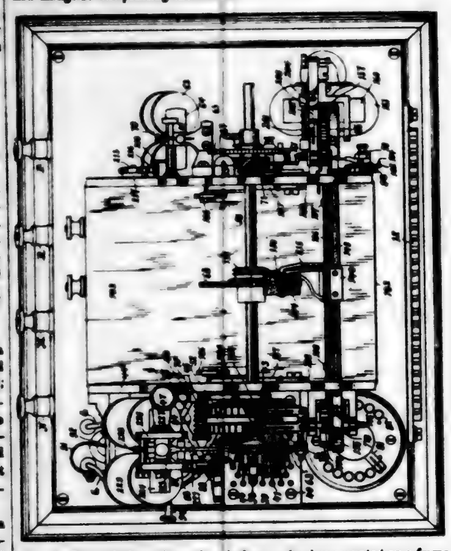

3. In a printing-telegraph, printing mechanism mounted on a frame, electric-wire terminals connected with the printing mechanism and provided with terminals having sockets arranged on and at one side of the frame, a detached keyboard-frame, electric wires on the keyboard-frame having pin-terminals projecting from the frame and disposed to register with and enter and contact electrically with the socketed terminals on the frame of the printing mechanism.

4. In combination in a printing-telegraph, a rotatable type wheel, a shaft on which the type-wheel is splined, a worm-wheel tight on the shaft, a second shaft provided with a worm meshing with said worm-wheel, a worm-wheel loose on said second shaft, means for clutching the loose worm-wheel yieldingly, to the shaft, and a driven shaft provided with a worm meshing with said worm-wheel.

5. In combination in a printing-telegraph, an electric circuit for transmitting and receiving messages, a rotatable type-wheel splined on a shaft, a worm-wheel on said shaft, a second shaft geared by a worm to said worm-wheel on the type-wheel shaft, an electric motor, a shaft connected to and driven by said motor, said motor-driven shaft having a worm gearing with a worm-wheel on said second shaft, and a motor electric circuit leading from said message transmitting and receiving circuit through said motor.

6. In combination in a printing-telegraph, an electric circuit for transmitting and receiving messages, a rotatable type-wheel splined on a shaft, a worm-wheel on said shaft, a second shaft, an electric motor having a shaft driven thereby and geared through said second shaft to the worm-wheel on the type-wheel shaft, a motor electric circuit leading from said message transmitting and receiving circuit through said motor, a circuit-breaker in said motor-circuit, and a governor on said motor-driven shaft adapted by the too-rapid rotation of said motor-shaft to open said circuit-breaker in the motor-circuit.

7. In combination in a printing-telegraph, a type-wheel shaft, an electric-motor-driven shaft geared to said type-wheel shaft, an electric circuit including said motor, a shunt electric circuit leading from and into said motor-circuit, separable terminals in said shunt-circuit, a governor on said motor-shaft, and means connecting said governor mechanically to one of said separable terminals whereby by the too-rapid rotation of the motor-shaft the shunt electric circuit is opened.

8. In combination in a printing-telegraph, a main message-transmitting electric line, a plurality of local electric lines in and forming part of said main line, a series of keys one in each local line adapted to close said line electrically, a series of local-line contact-pieces arranged alternately in series overlapping each other to which said local lines are severally connected, and a circuit-closer adapted to connect said contact-pieces severally with the main line.

9. In combination in a printing-telegraph, a main message-transmitting electric line, a plurality of local electric lines in and forming part of said main line, a series of keys one in each local line adapted to close said line electrically, two series of local-line contact-pieces arranged annularly the pieces alternating with and overlapping each other, a concentric adjacent electric ring connected electrically to the main line, and a circuit-closer adapted to revolve exteriorly about said local-line contact-pieces and said ring and to close the circuit between the ring and said local contact-pieces severally.

10. In a printing-telegraph a disk of insulating material, two series of insulated local-line contact-pieces arranged annularly alternately in and about the disk, a main-line contact-ring in and about the disk and a circuit-closer revoluble about the disk adapted to contact with said ring and severally with said local-line contact-pieces.

11. In a printing-telegraph, an insulating-disk, two series of local-line contact-pieces located alternately and overlapping circumferentially in the periphery of the disk concentrically, and in insulation, and a line contact-ring fixed in said disk also concentric and of equal diameter with said two series of local contact-pieces.

12. In combination in a printing-telegraph, a circular disk of insulating material, a series of electric contact-pieces arranged at a distance apart on the periphery of said disk, a second series of electric contact-pieces on the periphery of the disk alternating and overlapping circumferentially with the contact-pieces of the first series, an adjacent electric ring on and about said disk insulated from said contact-pieces and a circuit-closer revoluble about said disk so disposed as to contact with said ring and severally with said contact-pieces alternately in each series thereof.

13. In a printing-telegraph, a main message-transmitting electric line, a plurality of local lines in and forming a section of the main line, a series of local-line contact-pieces arranged annularly at a distance apart, an adjacent main-line contact-ring concentric with said annular contact-pieces and provided with an insulated section in its periphery, a circuit-closer adapted to revolve about the ring and said contact-pieces, the construction being such that at one point in its revolution the contact of the circuit-closer with the ring is broken by said ring-insulating section.

14. In combination in a printing-telegraph, a series of electric contact-pieces severally forming a part of an electric circuit, said contact-pieces being arranged in a fixed annular series, an adjacent electric ring of equal diameter with and separated from but in the electric circuit with said several contact-pieces, a rotatable shaft having a type-wheel thereon provided with a number of type equal in number to the said electric contact-pieces, said shaft and type-wheel being adapted to rotate continuously completely or through a movement equal to any portion of a complete revolution, and a circuit-closer revoluble exteriorly about the annularly-disposed contact-pieces and the contact-ring and adapted to close the electric circuit between said ring and a contact-piece.

15. In combination in a printing-telegraph, a series of fixed electric local contact-pieces arranged in two alternating overlapping annular series, a type-wheel provided with a number of type equal to the number of said contact-pieces, an electric-circuit closer fixed mechanically to and rotatable with said type-wheel about a common axis, said circuit-closer being adapted to contact peripherally and severally with said contact-pieces and connect each severally to the other section of said electric circuit, and a series of electric-circuit-closing keys in the local electric circuits leading from said fixed electric contact-pieces.

16. In combination in a printing-telegraph, a main electric message-transmitting line, a series of circuit-closing keys in local lines forming a section of said main line, electric contact-pieces of said local lines arranged annularly, an adjacent electric contact-ring, a circuit-closer revoluble about and in electric contact with said ring and said contact-pieces, means other than the main electric circuit for rotating the circuit-closer, a shunt-circuit, and means adapted to automatically close the main circuit and open the shunt-circuit and hold said circuit-closer against rotation.

17. In a printing-telegraph a main message-transmitting electric line, a plurality of local lines in and forming a section of the main line, a series of local-line contact-pieces on said local lines arranged annularly at a distance apart, a type-wheel on a shaft and having characters corresponding in number with said local-line contact-pieces, a circuit-closer on said shaft arranged to sweep over and contact intermittingly severally with said local contact-pieces, means other than the main electric circuit for rotating the circuit-closer, and a shunt unison electric line having terminals adapted to engage said circuit-closer in an interim of its contact with a local-line contact-piece.

18. In a printing-telegraph, a main message-transmitting electric line, a series of local-line insulated contact-pieces arranged annularly, an adjacent concentric line-ring provided with an insulating-section in its periphery, a circuit-closer revoluble about the ring and local contact-pieces arranged to contact with the ring and severally with said local contact-pieces and intermittingly with the insulating-section in the ring thereby breaking the main-line circuit, means other than the main electric circuit for rotating the circuit-closer, and a shunt synchronizing electric circuit having terminals adapted to contact with said circuit-closer when out of contact with said ring.

19. In a printing-telegraph a main message-transmitting electric line, a series of local-line insulated contact-pieces arranged annularly, an adjacent concentric line-ring provided with an insulating-section in its periphery, a circuit-closer revoluble about the ring and local contact-pieces arranged to contact with the ring and severally with said local contact-pieces and intermittingly with the insulating-section in the ring thereby breaking the main-line circuit, means other than the main electric circuit for rotating the circuit-closer, a shunt synchronizing electric circuit having terminals adapted to contact with said circuit-closer when out of contact with said ring, an electromagnet in the shunt-circuit, and means actuated mechanically thereby for releasing the circuit-closer revolubly.

20. In combination in a printing-telegraph, a main electric line, local electric lines forming a part of the main line, contact-pieces of the local lines arranged annularly at a distance apart, a concentric main-line ring contact-piece provided with a section of insulating material, a concentric shaft, a circuit-closer mounted on the shaft and sweeping over the contact-pieces and the ring, a unison shunt electric line having terminals in the arc of but insulated from the local contact-pieces, a divided metal band about a disk of insulating material on said shaft, terminals in the electric main line which terminals contact with said band and intermittingly with the insulating material in the break in the band concurrently with the contact of the revoluble circuit-closer with the unison line contact-pieces.

21. In a combination in a printing-telegraph, a shaft, a circuit-closer mounted on a radial arm on the shaft, means for rotating the shaft, an electromagnet, a spring-held armature mounted on a bell-crank opposite said electromagnet, a catch on the bell-crank, and a second radial arm on said shaft, said catch being normally in the path of said second radial arm.

22. In a printing-telegraph, a main message-transmitting electric circuit, a revoluble type-wheel, a circuit-closer fixed to and revoluble with the type-wheel adapted to close the main circuit, shunt electric line provided with terminals and with an electromagnet, a printing-pad actuated by said electromagnet when the shunt-line is in action, an electromagnet in the main line, and means actuated by said last-enumerated electromagnet adapted to contact said terminals and close the shunt-line and to hold the type-wheel intermittently against revolution.

23. In a printing-telegraph, a main electric circuit, a rotatable type-wheel, an electromagnet in the main line, a movable printing-pad, an electric shunt-line provided with terminals and arranged to actuate the printing-pad, and a pivoted lever provided with an armature actuated by said electromagnet adapted to lock temporarily the rotation of the type-wheel and to close said shunt-line.

24. In a printing-telegraph, a main electric circuit, an electromagnet in said circuit, a revoluble type-wheel, an adjacent printing electric circuit, terminals in said printing-circuit, an armature opposite said electromagnet fixed on a tiltable arm, and means mounted on said arm for stopping the rotation of the type-wheel and for closing the printing-circuit.

25. In a printing-telegraph, a main electric circuit, a motor-circuit a motor in said motor-circuit, a revoluble type-wheel connected to and rotated by said motor, terminals in said motor-circuit, a pivoted swinging lever provided with a terminal contactor and circuit-closer, a ratchet-wheel, provided with means for swinging said lever in one direction, and means actuated by the type-wheel shaft adapted to rotate the ratchet-wheel by intermitting movement.

26. In a printing-telegraph, a main electric circuit, a motor-circuit, a motor in said motor-circuit, a revoluble type-wheel connected to and rotated by said motor, means for automatically closing and opening said motor-circuit, comprising terminals in the motor-circuit, a swinging spring-actuated lever provided with a terminal contactor and circuit-closer, a ratchet-wheel provided with a device adapted by rotation of the wheel to engage and swing said lever, a swinging arm provided with a pawl engaging said ratchet-wheel, and a rod pivoted to the swinging arm and riding on an eccentric on the type-wheel shaft adapted to vibrate said arm and pawl.

27. In a printing-telegraph, a rotatable type-wheel, an electric motor connected to and adapted to rotate the type-wheel, a motor-driving electric circuit comprising a section in two lines, a controller-switch at the junction of the line with the two section-lines arranged to limit and control the electric current through the two-line section, a circuit-breaker in one of the section-lines, and a governor on the motor-shaft adapted automatically to open and close the circuit-breaker.

28. In a printing-telegraph, a main electric circuit, a revoluble type-wheel, type-wheel-shifting mechanism, an electric circuit adapted when closed to lock the type-wheel, an electromagnet in the latter circuit, a paper-feed electric circuit, an electromagnet in the paper-feed circuit, and means actuated by the electromagnet in the paper-feed circuit for opening the type-wheel-locking circuit.

29. In a printing-telegraph, a main electric circuit, a revoluble type-wheel, means for revolving the type-wheel, type-wheel-shifting mechanism, a type-wheel-locking electric circuit, an electromagnet in the latter circuit, a paper-feed circuit, terminals in the paper-feed circuit, and means actuated by the revolving type-wheel for opening and closing the paper-feed circuit through said terminals.

30. In a printing-telegraph, a main electric circuit, a revoluble type-wheel, means for revolving the type-wheel, mechanism for shifting the type-wheel, a type-wheel-locking electric circuit, an electromagnet in the latter circuit, a paper-feed circuit, electric terminals in the paper-feed circuit, and means actuated by the means that shift the type-wheel for opening and closing the paper-feed circuit through said terminals.

31. In a printing-telegraph, a main electric circuit, a paper-feed electric circuit, devices actuated by the paper-feed circuit for feeding the paper, devices actuated by a motor for automatically closing the paper-feed circuit, said motor connected electrically to said last-enumerated devices, a shunt-circuit in the paper-feed circuit, and a key for closing the shunt paper-feed circuit.

32. In a printing-telegraph, a type-wheel shaft, a type-wheel splined thereon, an independent electric motor geared to and rotating said shaft, means for shifting the type-wheel intermittingly on its shaft comprising a shaft parallel with the type-wheel shaft, a shiftable block on said parallel shaft and connected to the type-wheel, a strap attached to the block, a winding-up wheel, a ratchet-wheel rigid to the winding-up wheel, a pawl engaging the ratchet-wheel, an armature-arm on which the pawl is pivoted, and means for actuating the armature-arm.

33. In a printing-telegraph, the combination with a type-wheel shaft, a type-wheel splined thereon, and an independent motor geared to and rotating with said shaft, of means for shifting the type-wheel comprising, a shiftable block connected to the type-wheel, a strap attached to the block, a winding-up wheel, a ratchet-wheel rigid to the winding-up wheel, a pawl engaging the ratchet-wheel, a dog engaging the ratchet-wheel in one direction, a slidable rod adapted to engage the pawl and the dog and disengage them from the ratchet-wheel, and means for automatically actuating the disengaging-rod.

34. In a printing-telegraph, the combination with a type-wheel shaft, a type-wheel splined thereon and an independent motor geared to and rotating said shaft, of means for shifting a type-wheel comprising, a shiftable block connected to the type-wheel, a strap attached to the block, a winding-up wheel means for actuating the winding-up wheel, a second strap attached to the block and running in the opposite direction, a winding-up wheel on which said second strap runs, and means for rotating the latter winding-up wheel.

35. In a printing-telegraph, the combination with a type-wheel shaft, a type-wheel splined thereon, and an independent motor geared to and rotating said shaft, of mechanical means for shifting the type-wheel intermittingly in one direction, an electric type-wheel-shifting circuit employed in shifting the type-wheel intermittingly, means for retrieving the type-wheel, and means for automatically opening the type-wheel-shifting circuit comprising terminals in the circuit, a circuit-closer mounted on a shiftable rod, stops on the rod, and means shifting with the type-wheel adapted to engage a stop on said rod and shift the circuit-closer closing the electric circuit and releasing the mechanism that shifts the type-wheel intermittingly.

36. In a printing-telegraph, a shiftable type-wheel, a strap connected to the type-wheel, a winding-up wheel provided with a ratchet-wheel, a pawl engaging the ratchet-wheel and pivoted on an armature-arm provided with an armature, an electromagnet in a normally closed electric circuit opposite said armature, means for opening and closing the circuit, and a spring holding the armature normally away from the electromagnet.

37. In a printing-telegraph, a main electric line, a shaft, a type-wheel on and rotatable with the shaft, an electric motor independent of the main electric line geared to and for rotating said shaft, a motor electric circuit provided with terminals, a swinging circuit-breaker in said motor-circuit, and means actuated mechanically by said type-wheel shaft for automatically swinging said circuit-breaker.

38. In a printing-telegraph, a shaft, a type-wheel on and rotatable with the shaft, an electric motor geared to and for rotating said shaft, a motor electric circuit, a circuit-breaker in said motor-circuit, and means for automatically opening said motor-circuit comprising a ratchet-wheel a swinging arm provided with a pawl engaging said ratchet-wheel, a rod riding on an eccentric on the type-wheel shaft and connected to said swinging arm, a circuit-closer mounted on a swinging arm, and means by which said ratchet-wheel actuates the circuit-closer and swinging arm and throws the circuit-closer out of contact with terminals in said motor electric circuit.

39. In combination in a printing-telegraph, means for automatically opening a motor-circuit comprising a ratchet-wheel, a pawl mounted on a swinging arm adapted to rotate said ratchet-wheel, means for actuating the pawl, a swinging arm disposed to be engaged and actuated by a pin on the ratchet-wheel, a switch-arm pivoted concentrically with said swinging arm, a pin and a spring on said switch-arm holding the swinging arm thereto yieldingly, and a circuit-closer on the switch-arm contacting with terminals in the motor-circuit and adapted to be released therefrom breaking the circuit by the rotation of the ratchet-wheel in one direction.

40. In combination in a printing-telegraph, means for automatically opening and closing a motor-circuit comprising an oscillating ratchet-wheel a pawl mounted on a swinging arm adapted to rotate said ratchet-wheel in one direction, means for actuating the pawl, a spring secured to and adapted to retrieve the ratchet-wheel, a swinging arm disposed to be engaged and actuated by the ratchet-wheel, a switch-arm pivoted concentrically with said swinging arm, a pin and a spring on said switch-arm holding the swinging arm thereto yieldingly, and a circuit-closer on the switch-arm contacting with terminals in the motor-circuit and adapted to be released therefrom breaking the circuit by the rotation of the ratchet-wheel in one direction.

41. In a printing-telegraph, a revoluble ratchet-wheel, means including a reciprocating pawl for rotating the ratchet-wheel in one direction, a spring-actuated rock-shaft, a back-stop mounted on said rock-shaft and engaging said ratchet-wheel, a second rock-shaft provided with a radial arm engaging a radial arm on the first-enumerated rock-shaft, an armature mounted on a radial arm on said second rock-shaft, and an electromagnet in an electric circuit adapted when the circuit is closed to draw said armature thereto.

42. In a printing-telegraph, a type-wheel shaft, means rotating said shaft, a paper-feed electric circuit, a shunt in said circuit provided with normally open terminals, and means for automatically closing said shunt-circuit comprising a rotatable ratchet-wheel, means for rotating the ratchet-wheel, a radial arm fixed to the hub of the ratchet-wheel and provided with a finger tiltable in one direction only, a rock-shaft, an arm on the rock-shaft in the path of said finger, a spring-held circuit-closing lever, and a rod connecting the lever with a radial arm on said rock-shaft.

43. In a printing-telegraph, a paper-feed mechanism, comprising a rotatable shaft, spur-toothed wheels on said shaft, pressure-rolls opposite said spur-wheels, a fixed crown-toothed wheel on the shaft, a loose complementary crown-toothed wheel on the shaft and provided with a pinion, a swinging spring-actuated armature-arm provided with a segmental rack meshing with said pinion, an armature on the armature-arm, and an electromagnet in an electric circuit disposed to attract and hold said armature thereto against the pull of the spring when the electric circuit is closed through the electromagnet.

44. In a printing-telegraph, a main electric circuit, a paper-feed electric circuit, an electromagnet in the paper-feed circuit, an oscillating spring-held armature-arm provided with an armature adjacent to and actuated by said electromagnet and with a segmental rack, a shaft provided with spur-toothed paper-feed wheels, a pinion on said shaft in mesh with said segmental rack, and means connecting the pinion revolubly and slipably in one direction to said shaft.

45. In a printing-telegraph, a main electric circuit, a revoluble type-wheel, a motor connected mechanically to the type-wheel for rotating it, a motor electric circuit, a shunt electric circuit terminals in the shunt-circuit, a circuit-closer, and means on the motor-shaft adapted under rapid rotation of the motor-shaft to open the shunt-circuit.

46. In a printing-telegraph, a main electric circuit, a revoluble type-wheel, a motor connected mechanically to the type-wheel for rotating it, a motor electric circuit, terminals in the motor-circuit, a circuit-closer, a speed-actuated governor on the motor-shaft, a revoluble insulated metal disk fixed on a collar forming a part of and actuated by said governor and against which disk said terminals bear normally, and means for holding one of said terminals from following the disk when it is withdrawn by the governor, thus breaking the circuit.

47. In a printing-telegraph, an electric motor, a motor electric circuit, a speed-actuated governor on the motor-shaft, an insulated metal disk movable by said governor adapted to serve as an electric-circuit closer, terminals in said electric circuit, one of which terminals bears constantly against said disk, the other terminal being spring-held normally against said disk, and a finger adapted to serve as a stop to prevent said second terminal from following said disk when it is withdrawn from the governor thus breaking the electric circuit.

48. In a printing-telegraph, an electric motor, a motor electric circuit, a speed-actuated governor on the motor-shaft, an insulated metal disk movable by said governor adapted to serve as an electric-circuit closer, terminals in said electric circuit contacting normally with said disk and closing said circuit, a spring-arm bearing against the end of the motor-shaft and following its play and on which spring-arm one of said terminals is mounted elastically, a finger also mounted on said spring-arm adapted to engage the terminal and hold it back against the resiliency of its own spring, and means between said finger and said spring-arm for regulating the position of the finger relative thereto.

705,228. PRINTING-DIE. WILLIAM A. POSER, New York, N. Y. Filed Jan. 2, 1902. Serial No. 88,134. (No model.)

Claim.—1. A metallic handle for type-blocks provided with flanges, set in position to embrace a type-block, and adapted to be brought into rigid, unyielding engagement with the block when pressed together.

2. A metallic handle for type-blocks, provided with flanges, having gripping edges on their ends, the flanges being set in position to embrace a type-block and adapted to be brought into rigid, unyielding engagement with the block when pressed together.

3. The combination with a metallic handle, having flanges set in position to embrace a type-block and adapted to be brought into rigid, unyielding engagement with the type-block, when pressed together, of a type-block set between the flanges and secured to the handle by pressing the flanges together upon the type-block.

705,229. MACHINE FOR FILLING BOTTLES. BRUCE M. GLASGOW, New York, N. Y., assignor, by mesne assignments, to Emile Risser, New York, N. Y. Filed Sept. 16, 1897. Serial No. 651,520. (No model.)

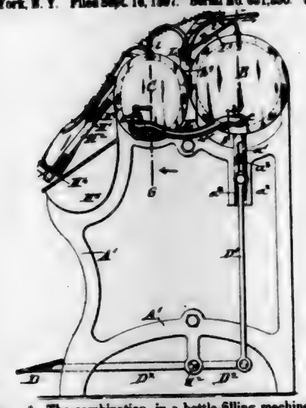

Claim.—1. The combination, in a bottle-filling machine, of a supporting-frame, a receiving-cylinder, a delivery-cylinder, a flexible pipe for connecting the receiving and delivery cylinders, and means for raising or lowering the receiving-cylinder relatively to the delivery-cylinder, substantially as set forth.

2. The combination, in a bottle-filling machine, of a supporting-frame, a vertically-guided receiving-cylinder, a delivery-cylinder, a flexible connecting-pipe between the receiving and delivery cylinders, and a treadle-operated lever mechanism adapted for adjusting the receiving-cylinder relatively to the delivery-cylinder, for increasing or decreasing the pressure of the liquid in the receiving-cylinder on the liquid in the delivery-cylinder, substantially as set forth.

3. In a bottle-filling machine, the combination of a supporting-frame, of a vertically-guided receiving-cylinder, a delivery-cylinder in front of the same, a flexible pipe connecting the receiving and delivery cylinders, means for raising and lowering the receiving-cylinder relatively to the delivery-cylinder, and means for clamping the receiving-cylinder into the position to which it is adjusted, substantially as described.

4. In a bottle-filling machine, the combination of a receiving-cylinder and a delivery-cylinder, a valved pipe connecting the receiving-cylinder with the delivery-cylinder, and a delivery-pipe extending through the delivery-cylinder near the bottom of the same and provided with a longitudinal slit in its lower part for supplying the liquid freely and without foaming to the delivery-cylinder, substantially as set forth.

5. In a bottle-filling machine, the combination, with a delivery-cylinder having a ledge at the lower part of the same and an inlet-pipe connected with a suitable supply and arranged just above said ledge and discharging the liquid away from the edge of the ledge, of oscillating siphon-tubes passing through the upper part of said cylinder, and a guide-strip on said ledge provided with as many recesses and cushion-blocks as there are siphon-tubes, for closing the lower ends of the siphon-tubes when they are pressed against the same, substantially as set forth.

6. In a bottle-filling machine, the combination, with a delivery-cylinder, of a siphon-tube passing through an enlarged opening in the cylinder, a plate secured to the cylinder, a gland for the tube, pivot-pins or trunnions for said gland, said pivot-pins being mounted adjustably in said plate, and an elastic gasket confined between said plate and cylinder for yieldingly supporting the gland and siphon-tube, substantially as set forth.

7. In a bottle-filling machine, the combination, with the delivery-cylinder having openings in its upper part, of oscillating siphon-tubes extending through said openings, gaskets placed over said openings, glands extending over gaskets, means for tightly applying the siphon-tubes to said glands, covering-plates provided with sockets at diametrically opposite points, and pivot-pins or trunnions passing through said sockets into the glands, substantially as set forth.

8. The combination of a receiving-cylinder, a supply-pipe connecting said cylinder with a barrel or cask, a delivery-cylinder, a flexible pipe between the receiving and delivery cylinders, said flexible pipe being of larger cross-sectional area than the supply-pipe, siphon-tubes fitted to the delivery-cylinder, and cocks in said supply and flexible tubes having bores or openings flaring in the direction of the flow of liquid, substantially as set forth.

9. The combination, of a receiving-cylinder, a supply-pipe connecting the same with a barrel or cask, a delivery-cylinder, a flexible pipe between the receiving and delivery cylinders, said pipe being of larger diameter than the supply-pipe, and a longitudinally-slotted delivery-pipe in said delivery-cylinder of larger size than the flexible pipe, substantially as set forth.

10. The combination, in a bottle-filling machine, of an upper receiving-cylinder, a lower delivery-cylinder provided with siphons, a valved connecting-pipe between the upper and lower cylinders, a gas-distributing cylinder connected with a source of carbonic-acid gas under pressure, a pipe connecting said gas-distributing cylinder with the keg or barrel the contents of which are to be bottled, valved pipes connecting the gas-distributing cylinder respectively with the receiving and delivery cylinders, and a vent device for each of said connecting-pipes, substantially as set forth.

705,280. PURLING DEVICE FOR OVEREDGE SEWING-MACHINES. JAMES G. GREENE, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Dec. 3 1901. Serial No. 84,553. (No model.)

Claim.—1. In a sewing-machine, the combination with an overseaming stitch-forming mechanism, of a purling device for producing a purl edge on the upper side of the work and consisting of a forked thread-carrying looper, and means for imparting longitudinal reciprocating and oscillating movements to said looper.

2. In a sewing-machine, the combination with an overseaming stitch-forming mechanism, of a purling device for producing a purl edge on the upper side of the work and consisting of a forked thread-carrying looper, means for imparting longitudinal reciprocating and oscillating movements to said looper, and a take-up device for the purling-thread.

3. In a sewing-machine, the combination with an overseaming stitch-forming mechanism, of a purling device for producing a purl edge on the upper side of the work and consisting of a forked thread-carrying looper, means for imparting longitudinal reciprocating and oscillating movements to said looper, and a detachable connection whereby the operating mechanism for said looper may be disconnected to render said looper inoperative, without requiring its removal from the sewing-machine.

4. In a sewing-machine, the combination with an overseaming stitch-forming mechanism, of a thread-carrying purling-looper above the work-plate of the machine, means for imparting longitudinal reciprocating and oscillating movements to said looper and means for disconnecting the operating mechanism so that the said looper may be rendered inoperative without requiring its removal from the sewing-machine.

5. In a sewing-machine, the combination with an overseaming stitch-forming mechanism, of a purling device consisting of a forked thread-carrying looper arranged above the work-plate of the machine, an inclined bar by which said looper is carried and means for imparting oscillating and longitudinally-reciprocating movements to said bar and to the looper mounted thereon.

6. In a sewing-machine, the combination with an overseaming stitch-forming mechanism, of a purling device consisting of a forked thread-carrying looper arranged above the work-plate of the machine, an inclined bar by which said looper is carried, means for imparting oscillating and longitudinally-reciprocating movements to said bar and to the looper mounted thereon, and a take-up device coöperating with said looper and serving to tighten the purling-loops.

7. In a sewing-machine, the combination with an overseaming stitch-forming mechanism, of an inclined bar located above the work-plate of the machine and provided at its lower end with a forked thread-carrying looper for laying loops of purling-thread around the overedge-bights of needle-thread, a pinion having a splined connection with said bar, a sector-gear engaging said pinion, means for vibrating said sector-gear and means for reciprocating said bar lengthwise through said pinion.

705,281. BOOT OR SHOE. JOHN B. HADAWAY, Brockton, Mass. Filed Nov. 16, 1901. Serial No. 82,543. (No model.)

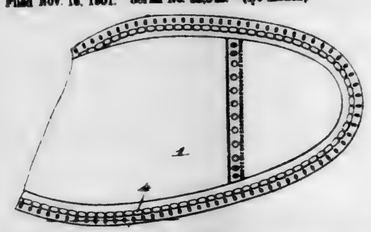

Claim.—An article of manufacture comprising a boot or shoe upper, a sole and a line of unseparated stitches appearing upon the upper surface of the projecting edge of the sole, the projecting edge of the sole being provided with a series of depressions located at varying distances apart corresponding to the varying lengths of the stitches for determining the location of the indentations during the stitch-separating operation, substantially as described.

705,282. SANDPAPERING-MACHINE. JOHN A. HALLDEN, Rockford, Ill., assignor of one-third to Enoch Carlson, Chicago, Ill. Filed Sept. 6, 1901. Serial No. 74,508. (No model.)

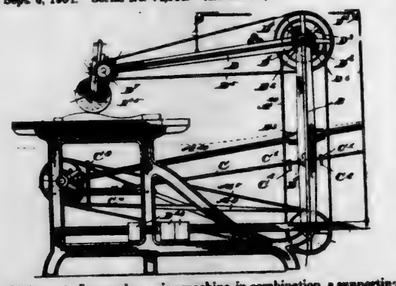

Claim.—1. In a sandpapering machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; a sandpapering device supported by said tilting frame; means for actuating said sandpapering device; a screw-threaded shaft having a connection with said tilting frame; and means for rotating said shaft to oscillate said frame and reciprocate the sanding device with relation to the supporting-frame.

2. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm having a pivotal connection with said tilting frame; a sandpapering device supported by said arm; means for actuating said sandpapering device; a screw-threaded shaft having a connection with said tilting frame; and means for rotating said shaft to oscillate said tilting frame and reciprocate the sanding device relatively to the supporting-frame.

3. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; a sandpapering device supported by said tilting frame; means for actuating said sandpapering device; a screw-threaded shaft having connection with said tilting frame; means for rotating said shaft in opposite directions; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said screw-threaded shaft.

4. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; a sandpapering device supported by said tilting frame; means for actuating said sandpapering device; a shaft having a screw-thread engagement with a portion of said tilting frame; means for rotating said shaft in opposite directions; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said shaft.

5. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device; means for supporting the sandpapering device; means for reciprocating the sandpapering device with relation to its supporting means; and means for reciprocating said supporting means with relation to the frame.

6. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device; an arm for supporting said sandpapering device; means for reciprocating said sandpapering device with relation to said arm; and means for reciprocating said arm with relation to said supporting-frame.

7. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device; an arm for supporting said sandpapering device; means for reciprocating the sandpapering device with relation to said arm; a tilting frame for reciprocating said arm with relation to the supporting-frame; and means for oscillating said tilting frame.

8. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device; an arm for supporting said sandpapering device; means for reciprocating said sandpapering device with relation to said arm; a tilting frame for reciprocating said arm with relation to the supporting-frame; a shaft having a screw-thread engagement with said tilting frame; and means for rotating said shaft in opposite directions.

9. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device; an arm for supporting said sandpapering device; means for reciprocating the sandpapering device with relation to the arm; a tilting frame for reciprocating said arm with relation to the supporting-frame; a shaft having a screw-thread engagement with said tilting frame; means for rotating said shaft; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said shaft.

10. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device having a plurality of independent abrading-surfaces; means for supporting the sandpapering device; means for reciprocating said independent abrading-surfaces in contrary directions with relation to each other; and means for reciprocating said supporting means with relation to the frame.

11. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device having a plurality of independent abrading-surfaces; an arm for supporting said sandpapering device; means for reciprocating said independent abrading-surfaces in contrary directions with relation to each other; a tilting frame for reciprocating said arm with relation to the supporting-frame; and means for oscillating said tilting frame.

12. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device having a plurality of independent abrading-surfaces; an arm for supporting said sandpapering device; means for reciprocating said independent abrading-surfaces in contrary directions with relation to each other; a tilting frame for reciprocating said arm with relation to the supporting-frame; a shaft having a screw-thread engagement with said tilting frame; and means for rotating said shaft in opposite directions.

13. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device having a plurality of independent abrading-surfaces; an arm for supporting said sandpapering device; means for reciprocating the independent abrading-surfaces in contrary directions with relation to each other; a tilting frame for reciprocating said arm with relation to the supporting-frame; a shaft having a screw-thread engagement with said tilting frame; means for rotating said shaft; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said shaft.

14. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device having a plurality of rubbing-blocks; an arm for supporting said sandpapering device; guides for said rubbing-blocks; means for moving said rubbing-blocks upon said guides in contrary directions with relation to each other; a tilting frame for reciprocating said arm with relation to the supporting-frame; a shaft having a screw-thread engagement with said tilting frame; means for rotating said shaft; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said shaft.

15. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device having a plurality of rubbing-blocks; an arm for supporting said sandpapering device; a guide-rod for each of said rubbing-blocks; two oppositely-extending eccentrics; eccentric-rods connecting said eccentrics with said rubbing-blocks; means for rotating said eccentrics to move said rubbing-blocks upon said guide-rods; a tilting frame for reciprocating said arm with relation to the supporting-frame; a shaft having a screw-thread engagement with said tilting frame; means for rotating said shaft; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said shaft.

16. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device comprising two rubbing-blocks; means for reciprocating said blocks in contrary directions with relation to each other; and means for bodily moving the sandpapering device forward and backward with relation to the supporting-frame.

17. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device comprising two rubbing-blocks, the adjacent edges of which rubbing-blocks are formed at an angle with the line of movement of said blocks; and means for reciprocating said blocks in contrary directions with relation to each other.

18. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device comprising two rubbing-blocks, the adjacent edges of which rubbing-blocks are formed at an angle with the line of movement of said blocks; guides for said rubbing-blocks; and means for moving said rubbing-blocks in opposite directions upon said guides.

19. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device comprising two rubbing-blocks, the adjacent edges of which rubbing-blocks are formed at an angle with the line of movement of said blocks; guides for said rubbing-blocks; means for moving said rubbing-blocks in opposite directions upon said guides; and means for reciprocating the sandpapering device bodily forward and backward.

20. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device comprising two rubbing-blocks, the adjacent edges of which are formed at angle with the line of movement of said blocks; an eccentric for reciprocating one of said rubbing-blocks; a tilting frame for moving said sandpapering device bodily forward and backward; means for rotating said eccentrics; and means for oscillating said tilting frame.

21. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; a sandpapering device supported by said tilting frame; means for actuating said sandpapering device; a counterbalance-lever for said sandpapering device; a shaft having a screw-thread engagement with a portion of said tilting frame; means for rotating said shaft in opposite directions; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said shaft.

22. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; a pivoted arm connected with said tilting frame; a sandpapering device mounted on said pivoted arm; an eccentric for actuating said sandpapering device; a shaft having a screw-thread engagement with a portion of said tilting frame; means for rotating said shaft in opposite directions; and means adapted to be operated by the movement of said tilting frame, for changing the rotative direction of said shaft.

23. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm pivotally connected with said tilting frame; a sandpapering device mounted on said arm; two eccentrics for actuating said sandpapering device; a counterbalance-lever for said sandpapering device; a connection between the pivoted arm and said counterbalance-lever; a shaft having a screw-thread engagement with a portion of said tilting frame; means for rotating said shaft in opposite directions; and means adapted to be operated by the movement of said tilting frame for changing the rotative direction of said shaft.

24. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; a sandpapering device supported by said tilting frame, which sandpapering device comprises two rubbing-blocks; means for reciprocating said rubbing-blocks in contrary directions with relation to each other; and means for oscillating said tilting frame to move the sandpapering device bodily forward and backward.

25. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm pivotally connected with said tilting frame; a sandpapering device supported by said arm, said sandpapering device comprising two rubbing-blocks; means for reciprocating said rubbing-blocks in contrary directions with relation to each other; a shaft having a screw-thread connection with said tilting frame; and means for rotating said shaft in opposite directions to oscillate said tilting frame and move said sandpapering device bodily forward and backward.

26. In a sandpapering-machine, in combination, a supporting-frame; a work-table thereon; a tilting frame pivotally mounted with relation to said supporting-frame; an arm pivotally connected with said tilting frame; a sandpapering device supported by said arm, which sandpapering device comprises two rubbing-blocks; means for reciprocating said rubbing-blocks in contrary directions with relation to each other; and a shaft having a screw-thread engagement with said tilting frame, which shaft is adapted to be rotated in opposite directions to oscillate said tilting frame and move said sandpapering device forward and backward over said work-table.

27. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm pivotally connected with said tilting frame; a sandpapering device supported by said arm, which sandpapering device comprises two rubbing-blocks; a shaft at the pivotal connection between the tilting frame and the arm pivotally mounted thereon; two eccentrics fixed on said shaft; eccentric-rods for connecting said eccentrics with said rubbing-blocks; a shaft having a screw-thread engagement with said tilting frame, which shaft is adapted to be rotated in opposite directions to oscillate said tilting frame and move said sandpapering device forward and backward over said supporting-frame.

28. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm pivotally connected with said tilting frame; a sandpapering device comprising two rubbing-blocks and a guide for each of said rubbing-blocks; a two-part shaft for pivotally connecting said sandpapering device to the free end of said pivoted arm; a weighted lever for counterbalancing the sandpapering device; a shaft mounted in the supporting-frame, having a screw-thread connection with said tilting frame; and means for rotating said shaft in opposite directions to oscillate said tilting frame and move the sandpapering device bodily forward and backward.

29. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm pivotally connected with said tilting frame; a sandpapering device supported by said arm, said sandpapering device comprising two rubbing-blocks and a guide-rod for each of said rubbing-blocks; a two-part shaft for pivotally connecting said sandpapering device to the free end of said pivoted arm; a shaft at the pivotal connection between the tilting frame and the arm pivotally mounted thereon; two oppositely-extending eccentrics fixed on said shaft; eccentric-rods connecting said eccentrics with said rubbing-blocks; a shaft mounted in the supporting-frame and having a screw-thread connection with said tilting frame; and a crossed belt and a straight belt adapted to rotate said shaft in opposite directions to oscillate said tilting frame and move the sandpapering device bodily forward and backward.

30. In a sandpapering-machine, in combination, a supporting-frame; a sandpapering device comprising a yoke, two guide-rods fixed in said yoke, and rubbing-blocks slidably mounted upon each of said guide-rods, the adjacent edges of said rubbing-blocks being formed at an angle with their line of movement, straps at the sides of each of said blocks for securing sandpaper upon the blocks, and rods for connecting said straps together at the ends of the latter; two eccentrics; an eccentric-rod extending between each of said eccentrics and one of said rubbing-blocks; a tilting frame for supporting the sandpapering device; means for rotating said eccentrics; and means for oscillating said tilting frame.

31. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm having a pivotal connection with said tilting frame; a sandpapering device supported by said arm; a weighted lever for counterbalancing the sandpapering device; a flexible connection extending between said pivoted arm and said weighted lever; a shaft mounted in said supporting-frame, having a screw-thread connection with said tilting frame; a straight and a crossed belt for rotating said shaft alternately in opposite directions; a shifting device for said belts; means on the tilting frame for operating said shifting device to change the rotative direction of said shaft; and means for actuating said sandpapering device.

32. In a sandpapering-machine, in combination, a supporting-frame; a tilting frame pivotally mounted with relation to said supporting-frame; an arm having a pivotal connection with said tilting frame; a sandpapering device supported by said arm, which sandpapering device comprises two rubbing-blocks adapted to be reciprocated in opposite directions and a guide for each of said rubbing-blocks; two oppositely-extending eccentrics for reciprocating said rubbing-blocks; an eccentric-rod connecting each of said eccentrics with one of said rubbing-blocks; a shaft rotatably mounted in said supporting-frame and having a screw-thread connection with said tilting frame; a straight and a crossed belt for rotating said shaft in contrary directions; a shifting device for said belts, the rod for operating said shifting device extending through a stud upon said tilting frame; and adjustable stops mounted on said rod and adapted to be engaged by said stud.

705,283. GARDEN IMPLEMENT. BYTA M. HARTELL, Brooklyn, N. Y. Filed Nov. 4, 1901. Serial No. 81,072. (No model.)

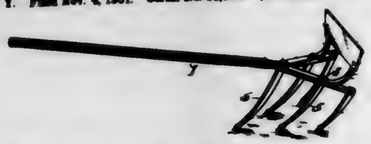

Claim.—1. An improved garden-tool, comprising a handle, a V-shaped frame secured at one end of such handle, teeth depending from said frame and provided with sharpened ends, arms rising from said frame near the open end oppositely to said teeth and a hoe-shaped blade carried by said arms.

2. An improved garden-tool, comprising a handle, a V-shaped frame secured at one end of such handle and provided with apertures, square in cross-section, in its apex and in each of its branches, teeth having their upper ends reduced in size forming shoulders abutting against the frame, portions adapted to fit the apertures and screw-threaded ends adapted to receive nuts adapted to be screwed on said ends, arms integral with said frame and rising from said frame near its open end, and a hoe-shaped blade secured to the ends of said arms.

3. An improved garden-tool, comprising a handle, a V-shaped frame secured at one end of said handle and provided with depending teeth and upwardly-projecting arms and a hoe-shaped blade carried by said arms.

4. An improved garden-tool, comprising a handle, a V-shaped frame secured to one end of said handle, forwardly-inclined teeth secured in said frame and provided with sharpened ends, said teeth decreasing in length from the one at the apex of said frame to those at the ends of its branches, arms secured to said frame near its open end and extending oppositely to said teeth, and a hoe-shaped blade secured to the ends of said arms.

5. An improved garden-tool, comprising a handle, a V-shaped frame secured at one end of said handle, forwardly-inclined teeth detachably secured in said frame and provided with sharpened points, said teeth decreasing in length from the one at the apex of said frame to those at the ends of the branches of said frame, arms detachably secured near the open end of said frame and extending oppositely to said teeth and a hoe-shaped blade secured to the ends of said arms.

6. An improved garden-tool, comprising a handle, a V-shaped frame secured at its closed end to one end of the handle and provided with perforations in its apex and in each of its branches, forwardly-inclined teeth provided with sharpened points and with reduced screw-threaded upper ends adapted to fit in said apertures and be secured therein by nuts, a U-shaped member provided with perforations at the ends of its base whereby it may be secured on the upper ends of a pair of the outer teeth, the arms of said member being turned up oppositely to the teeth, and a hoe-shaped blade secured to the ends of said arms.

705,284. FIREARM. WILFRID HARTLEY, Utica, and EUGENE D. RIVERS and EDWARD BEACH, Ilion, N. Y., assignors to Remington Arms Company, Ilion, N. Y. Filed Sept. 20, 1901. Serial No. 75,856. (No model.)

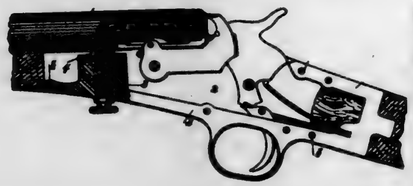

Claim.—1. The combination in a firearm of the barrel portion having grooves in its under side, a frame having side plates engaging in said grooves and means for securing the barrel portion and frame together, substantially as set forth.

2. The combination in a take-down firearm of the barrel having grooves in its under side and a depending lug or projection of a frame having side plates, the upper edges of which are received in said grooves, and having a recess to receive said lug or projection and means for securing the barrel and frame together, substantially as set forth.

3. A frame construction for a firearm consisting of the sheet-metal side plates and an intermediate skeleton-frame part including the trigger-guard and rivets passing transversely through the said side plates and skeleton frame securing them together, substantially as set forth.

4. A frame construction for a firearm consisting of the sheet-metal side plates, an intermediate skeleton-frame part and rivets passing through the said side plates and skeleton plates securing them together, substantially as set forth.

705,285. STREET-CAR AND RAILWAY INDICATOR. WILLIAM W. HARER and WILLIAM D. CREW, Eldorado, Ark. Filed Oct. 24, 1901. Serial No. 79,770. (No model.)

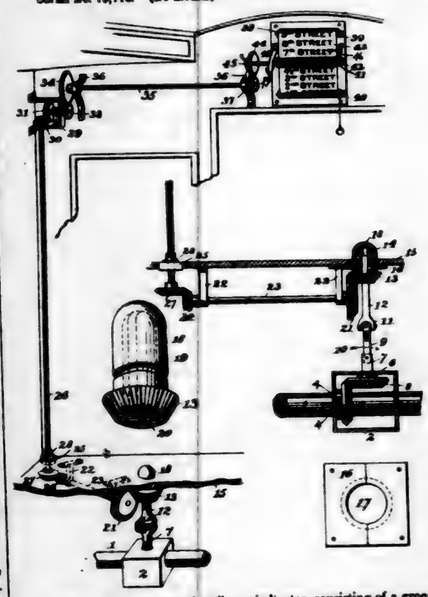

Claim.—1. An automatic railway-indicator, consisting of a grooved pulley, rigidly secured on one of the truck-axles; a horizontal shaft journaled in bearings beneath the car-floor, and having rigidly secured to one end a spool pulley-wheel; a spiral-spring belting passing around said pulleys; a beveled pinion cog-wheel rigidly secured to the other end of said shaft; a vertical shaft running up through the floor of the coach and borne in suitable bearing; a beveled wheel rigidly secured on its lower end, meshing with last-mentioned pinion-wheel; a pinion-wheel rigidly secured on the upper end of said vertical shaft; a shaft journaled in a bracket and having on one end a beveled cog-wheel meshing with last-mentioned beveled pinion-wheel, and on its other end a face pinion-wheel; a horizontal shaft journaled in brackets; a cog-wheel rigidly secured on one end of said shaft and meshing with the last-mentioned pinion-wheel; a pinion-wheel secured on the other end of said shaft; a board secured to the wall of the coach having a spring-actuated roller journaled in suitable brackets near its upper end; a spring-actuated roller journaled in brackets near the lower end of said board; said rollers adapted to be held at proper tension by ratchet-wheels, pawls and springs; rear and front center rollers journaled in suitable brackets; the front roller adapted to be pressed against the rear roller by springs; a cog-wheel loosely journaled on the shaft of the rear roller; a lock adapted to lock said wheel; an indicator-apron bearing on its face the names of stations, streets and depots, and having one end secured to the upper roller and the other to the lower roller; said apron adapted to be wound first on one roller and then on the other or partly on both, and being held in place by the two center rollers; and a pointer secured to the board, pointing out the names of the stations where the car stops, substantially as shown and described and for the purposes set forth.

2. A railway-indicator consisting of a board, brackets secured to said board near its center and its upper and lower ends; spring-actuated rollers journaled in the upper and lower brackets; ratchet-wheels, pawls, and springs secured to the ends of the upper and lower rollers and adapted to lock them; a rear and front roller journaled in the central brackets; an indicator-apron having one end secured to the upper roller, said apron passing down between the center rollers and its lower end secured to the lower roller; said rollers pulling against each other so as to keep the apron taut, said apron adapted to be wound on the upper or lower roller or partly on both; the front center roller held against the apron by springs; levers secured to said board and adapted to raise said springs; said indicator adapted to be operated by gear-wheels and shafts running back to an axle of the trucks; substantially as shown and described.

3. A railway-indicator consisting of a board, brackets secured to said board near its center and its upper and lower ends; spring-actuated rollers journaled in the upper and lower brackets; ratchet-wheels, pawls, and springs secured to the ends of the upper and lower rollers and adapted to lock them; a rear and front roller journaled in the central brackets; an indicator-apron having one end secured to the upper roller, said apron passing down between the center rollers and its lower end secured to the lower roller; said rollers pulling against each other so as to keep the apron taut; said apron adapted to be wound on the upper and lower roller or partly on both; springs for holding the front center roller against the apron; means for withdrawing said springs; manually-operated means for operating the lower one of the spring-actuated rollers, and gearing connections between said rear roller and an axle of the car, substantially as shown and described and for the purposes set forth.

4. In combination with a street-car indicator, a system of reversing-wheels consisting of bearing-plates 50, a series of cog-wheels journaled between said bearing-plates and adapted to run back or forward; a lever operating against a projection on one of the bearing-plates and adapted to throw one of the initial wheels in mesh with the driving-wheel; a spring-actuated locking-bar adapted to catch in recesses in the bearing-plates and thereby hold either initial wheel in mesh with the driving-wheel or both out of mesh therewith; said reversing device adapted to be secured on the axle of the rear center roller; substantially as shown and described.

705,286. DOOR-LOCK ATTACHMENT. ANDREW T. HATFILL and GEORGE B. LEE, Decorah, Idaho. Filed Sept. 20, 1901. Serial No. 75,864. (No model.)

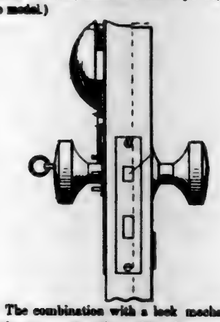

Claim.—1. The combination with a lock mechanism and a knob-spindle for operative connection therewith, of means for throwing the spindle into and out of operative relation to the lock mechanism, a striker carried by the spindle, a gong, a spring-plate projecting at one end into the path of the striker and fixed at its opposite end, and a clapper carried by the spring-plate, the gong being disposed for engagement by the clapper when the spring-plate is released by the striker.

2. The combination with a lock mechanism including a rocker, of a knob-spindle passed through the rocker, a feather carried by the spindle for engagement with the rocker to lock the latter thereto, means for holding the feather yieldably engaged with the rocker, means for holding the feather in disengaged position, a striker carried by the spindle, and a bell having a clapper disposed for operation by the striker.

3. The combination with a lock mechanism and a knob-spindle for operating it, of a striker carried by the spindle, a gong, a spring-plate fixed at one end and extending with its other end beneath the gong and into the path of the striker for operation thereby, stops at opposite sides of the spring-plate between the point of attachment of the end of the plate and the striker, and a clapper attached to the plate at a point between the stops and the attached end of the plate.

4. The combination with a lock mechanism including a spindle of means for throwing the spindle into and out of operative relation to the mechanism, a gong, a spring-plate attached at one end beneath the gong and projecting with its opposite free end therefrom, strikers carried by the spindle for engagement with the free end of the plate, stops at opposite sides of the plate at a point between its ends, and clappers carried by the plate at a point between the stops and the attached end of the plate for engagement with the gong.

705,287. TABLE-SERVER. ALBERT T. HAVEN, South Elgin, Ill. Filed Apr. 11, 1902. Serial No. 102,410. (No model.)

Claim.—1. In a table-server, the combination of a spider having a hub or body and arms radially extending, a top mounted on the spider, a circular groove or channel in the lower face of the hub or body, a supporting disk or plate having in its upper face a circular groove or channel coinciding with the groove or channel in the hub or body and forming therewith a runway, balls within the runway, a circular groove or channel in the lower face of the supporting disk or plate, a bearing disk or cup below the supporting disk or plate, a groove or channel in the upper face of the bearing disk or cup coinciding with the groove or channel in the lower face of the supporting disk or plate and a fixed connection between the hub of the spider and the bearing disk or cup, substantially as described.

2. In a table-server the combination of a spider having a hub of body and arms radially extending, a top mounted on the spider, a circular groove or channel in the lower face of the hub or body, a supporting disk or plate having in its upper face a circular groove or channel coinciding with the groove or channel in the hub or body and forming therewith a runway, balls within the runway, a circumferential rim or wall encircling the hub or body, a circular groove or channel in the lower face of the supporting disk or plate of greater diameter than the groove or channel in the upper face of the supporting disk or plate, a bearing disk or cup below the supporting disk or plate, a groove or channel in the upper face of the bearing disk or cup coinciding with the groove or channel in the lower face of the supporting disk or plate and a fixed connection between the hub of the spider and the bearing disk or cup, substantially as described.

3. In a table-server the combination of a spider having a hub or body and arms radially extending, a top mounted on the spider, a circular groove or channel in the lower face of the hub or body, a supporting disk or plate having in its upper face a circular groove or channel coinciding with the groove or channel in the hub or body and forming therewith a runway, balls within the runway, a circumferential rim or wall on the supporting disk or plate encircling the hub or body, a circular groove or channel in the lower face of the supporting disk or plate of greater diameter than the groove or channel in the upper face of the supporting disk or plate, a bearing disk or cup below the supporting disk or plate having an internally-screw-threaded hole extending therethrough, a groove or channel in the upper face of the bearing disk or cup coinciding with the groove or channel in the lower face of the supporting disk or plate, a circumferential rim or wall on the supporting disk or plate encircling the bearing disk or cup, a stud-screw threaded on its end fixedly attached to and extending down from the body or hub of the spider through a hole in the supporting disk or plate and through the hole in the bearing disk or cup to have its screw-threads engage with the screw-threads of the hole, a jam-nut screw-threaded onto the stud to contact with the outer face of the bearing disk or cup, and legs fixedly attached to the supporting disk or plate, substantially as described.

705,288. ELECTRICAL MACHINE. TRACY R. HATCH, Menomonie, Wis., assignor to Submerged Electric Motor Company, Menomonie, Wis., a Corporation of Wisconsin. Filed Nov. 15, 1901. Serial No. 82,877. (No model.)

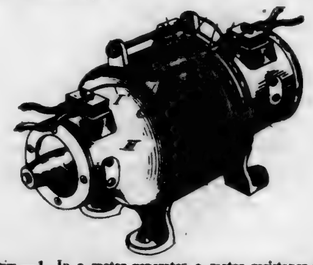

Claim.—1. In a motor-generator, a motor resistance-winding for high pressure wound about and exposed upon the frame of the machine, and a regulating-resistance low-pressure winding for the generator exposed upon the machine, and switch devices on the frame of the machine connected respectively with the motor and generator circuits and movable along the said resistance-windings, substantially as and for the purpose set forth.

2. In a motor-generator, constructed as shown and described, a re-

resistance-wire for the motor and a regulating resistance-wire for the generator, both wound about the field structure, and switch devices mounted upon the frame of the machine and movable along said resistance-windings, substantially as and for the purpose set forth.

705,289. FLUID-PRESSURE BRAKE SYSTEM. EDGAR J. HENDEE, Whitehaven, N. Y., assignor to Abraham R. Levy, New York, N. Y. Filed June 12, 1902. Serial No. 111,314. (No model.)

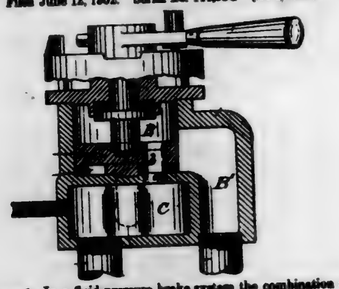

Claim.—1. In a fluid-pressure brake system the combination of an engineer's valve having ports for an application and release of the brakes, a spring-actuated recharging-valve, a port in the engineer's controlling-valve for regulating the admission of air to the port of the recharging-valve, all arranged so that when the engineer's valve is on "lap" the recharging-valve is receiving air-pressure and the brake application and release-ports in the engineer's valve will be blanked; a train-pipe in communication with the recharging-valve and with one or more triple valves, brake-cylinders and auxiliary reservoirs and a check-valve governing the flow of air to an auxiliary reservoir when the triple valve is in position to apply the brakes, the said check-valve being mechanically disconnected from the triple valve and in constant communication with the train-pipe.

2. In a fluid-pressure brake system, the combination of an engineer's valve having ports for an application and release of the brakes, a spring-actuated recharging-valve, a port in the engineer's valve for regulating the admission of air to the port of the recharging-valve, the recharging-valve receiving air only when the lever of the engineer's valve is in the lap position and the other ports are blanked, whereby equalization cannot be effected and consequently the brakes can be released by throwing the lever to the release position; a train-pipe in communication with the recharging-valve and with suitable brake apparatus embodying in its structure a check-valve mechanically disconnected from the triple valve and in constant communication with the train-pipe, said check-valve governing the influx of air to the auxiliary reservoir.

705,240. ROTARY TAKE-UP FOR SEWING-MACHINES. MARTIN HEBLER, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed May 7, 1901. Serial No. 59,111. (No model.)

Claim.—1. In a sewing-machine, the combination with a rotary take-up and its operating mechanism, of means for automatically clearing the needle-thread from the said take-up while the machine is running should the said thread be broken between the tension device and the work and thus become entangled with or wound up on the said take-up.

2. In a sewing-machine, the combination with a rotary take-up, of a stationary knife or thread-cutter arranged to automatically sever the needle-thread between two separated parts of the take-up and thus clear the thread from said take-up while the machine is running should the thread become entangled with or wound up on the said take-up.

3. In a sewing-machine, the combination with a rotary take-up and its operating mechanism, of a knife or thread-cutter arranged to automatically sever the needle-thread adjacent to said take-up should said thread be caught on or entangled with said take-up, and a guard or housing inclosing said knife or thread-cutter.

4. In a sewing-machine, the combination with a rotary take-up having a slit or recess in its peripheral portion, of means for operating said take-up, a stationary knife or thread-cutter arranged to extend into said slit or recess during some part of the rotation of said take-up to sever the needle-thread should the latter become caught on the take-up and thus be extended across the said slit or recess.

5. In a sewing-machine, the combination with a rotary take-up and its operating mechanism, of a stationary tool for automatically clearing the needle-thread from said take-up while the machine is running should said thread accidentally be broken between the tension device and the work and thus become entangled with or wound up on the said take-up.

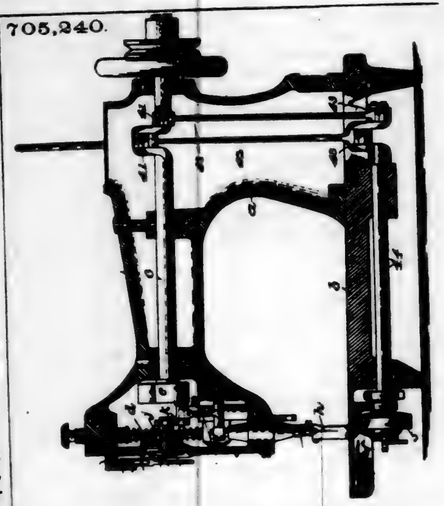

705,241. ELECTRIC CONTROLLER. JOHN C. HENRY, Denver, Colo.; Susie A. Henry, executrix of said John C. Henry, deceased, assignor to Stanley Electric Manufacturing Company, a Corporation of New Jersey. Filed Apr. 1, 1901. Serial No. 53,999. (No model.)

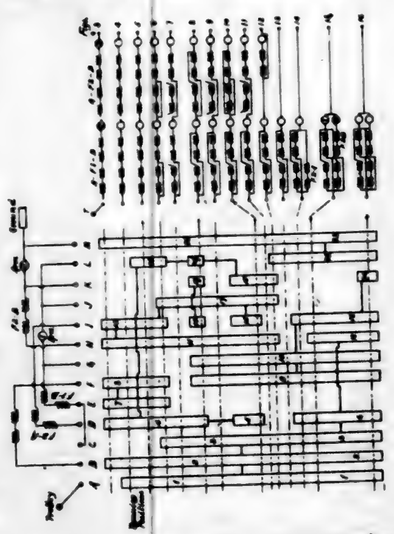

Claim.—1. The combination with an electric motor having a plurality of pairs of poles with magnetizing-coils connected in series, of a switch arranged to cut out a pair of said coils, thereby increasing the current through the other coils and changing the motor from an ordinary multipolar machine to a consequent-pole machine.

2. The combination with an electric motor having a plurality of pairs of poles with magnetizing-coils connected in series, of a switch having contacts and connections adapted and arranged to cut out a pair of said coils, thereby increasing the current through the other coils and then changing the field-coils from series to parallel relation.

3. The combination with a pair of electric motors having a plurality of pairs of poles with magnetizing-coils, of a switch having contacts and connections adapted and arranged to cut out a pair of the magnet-coils, reconnecting the coils in reverse manner to demagnetize the field, then short-circuiting the said motor and removing it from the circuit.

4. The combination with a motor having a plurality of pairs of poles with magnetizing-coils thereon, of a controller having contacts and connections adapted, in one position of the controller, to interrupt the circuit on one pair of said coils, allowing the corresponding pole series to act as consequent poles.

5. The combination with a motor having a plurality of pairs of field-magnet poles with magnetizing-coils thereon, of a controller having contacts and connections adapted and arranged in different positions of the controller to place the said field-magnet coils in series and in parallel relation, and in an intermediate position to interrupt the circuit on one pair of coils, allowing the corresponding pole-pieces to act as consequent poles.

6. The combination with an electric motor, of a controller having contacts and connections adapted and arranged to reverse a field-magnet coil of said motor and in a subsequent position, to place the said motor on short circuit.

7. The combination with an electric motor having a plurality of field-magnetizing coils, of a controller having contacts and connections adapted and arranged to reverse a part of the field-coils and to subsequently short-circuit the armature through another part of the field-coils.

8. In a series-parallel controller, a switch arranged to disconnect one of the motors from the circuit and to speed up the other motor by connecting a section of the fields of the idle motor in parallel with those of the other motor.

9. The combination with a plurality of motors, one at least of which has a plurality of field-coils, of a switch having contacts and connections adapted and arranged to disconnect one of the motors from the circuit and to speed up the other motor by connecting a part of the field-coils of the idle motor in parallel with those of the other motor.

10. In a series-parallel controller, a switch arranged to disconnect one of the motors from the circuit, and to excite a section of the field-coils of said idle motor, and then to connect the armature and balance of the field-coils of said motor to the line in parallel with the other motor.

11. In a series-parallel controller, a switch having contacts and connections adapted and arranged to disconnect one of the motors from the circuit and to then connect the idle motor to the circuit in parallel instepe substantially as follows, first connecting one section of the field-coils of said motor in parallel with the field-coils of the active motor, next connecting the balance of the field-coils and the armature of the idle motor, in parallel with the other motor, and finally establishing a cross connection between all of the field-coils and armatures.

12. The combination with a pair of electric motors, of a controller having contacts and connections adapted and arranged to disconnect one of the motors from the circuit, and to excite a section of the field-coils of said idle motor, and then to connect the armature and balance of the field-coils of said motor in parallel with the other motor.

705,242. SUPPORT FOR INCANDESCENT MANTLES. MAX HERSKOVITS, Chicago, Ill. Filed Nov. 4, 1901. Serial No. 81,082. (No model.)

Claim.—1. In a mantle-support, a cup having horizontal sockets on opposite sides, and a standard having horizontal, parallel feet extending through said sockets at right angles to the plane of the standa-

2. In a mantle-support, a standard having two legs terminating in parallel feet bent at right angles to the plane of the standard, and said bent portions doubled upon themselves, substantially in the manner described.

3. In a mantle-support, a standard having two legs with the end portions thereof bent to extend in opposite directions and at right angles to the plane of the legs, then bent inwardly toward each other, and terminating in portions lying parallel to each other and at right angles to the plane of the legs, as set forth.

705,248. BEER-COOLING APPARATUS. JOHN P. RICKEY, Washington, D. C. Filed Sept. 20, 1901. Serial No. 75,836. (No model.)

Claim.—1. In combination with a keg the heads whereof are each provided with an opening; a stay comprising two tubular members open at their ends, said members being secured in the openings in the heads of the keg and joined together at their adjacent ends within the keg, substantially as described.

2. In combination with a keg the heads whereof are each provided with an opening; a stay comprising two tubular members each provided with a shouldered head, the reduced portion of the head being threaded and said threaded sections being secured within the openings in the keg; and means for connecting the inner ends of said members, whereby the heads of the keg will be braced or held against separation and a continuous channel or passage will be formed through the stay.

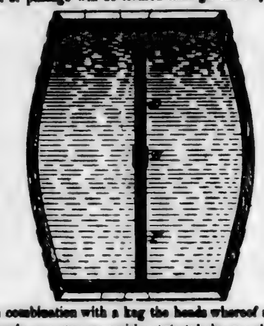

3. In combination with a keg the heads whereof are each provided with an opening; a stay comprising two tubular members each member being formed with a shouldered head the reduced portion whereof is threaded and secured within the openings in the heads of the keg; a threaded connection between the inner ends of the sections; and a thread extending throughout the inner face of the stay, substantially as described.

705,244. PROCESS OF MANUFACTURING IMPROVED CELLULOSE FABRICS. ALBERT J. HILL, Twickenham, England. Filed Apr. 21, 1902. Serial No. 104,049. (No specimens.)

Claim.—1. The process of producing a crimpable cellulose fabric consisting in coating the fibers of a hydrated cellulose fabric with a proteid in solution drying the fabric and applying to it a varnishing solution containing an insoluble formaldehyde compound.

2. A process of producing a crimpable cellulose fabric consisting in applying a solution of cellulose to the fibers of a hydrated cellulose fabric, precipitating the cellulose and washing out the solvent, and coating the fibers with a proteid in solution.

3. A process of producing a crimpable cellulose fabric consisting in first coating the fibers of a hydrated cellulose fabric with albumen in solution, drying the fabric and then applying to it a varnishing solution containing an insoluble formaldehyde compound.

4. A process of producing a crimpable cellulose fabric consisting in coating the fibers of a hydrated cellulose fabric with a proteid in solution.

5. A process of producing a crimpable cellulose fabric consisting in coating the fibers of a hydrated cellulose fabric with albumen in solution.

6. A hydrated cellulose fabric having a proteid coating thereon.

7. A hydrated cellulose fabric having a coating of albumen thereon.

705,245. MILK PASTEURIZER AND STERILIZER. CHARLES E. HINMAN, Council Bluffs, Iowa, assignor of one-half to William C. McPherson, Council Bluffs, Iowa. Filed Mar. 11, 1901. Serial No. 50,698. (No model.)

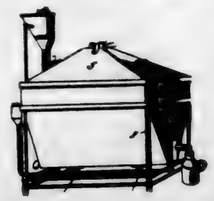

Claim.—1. In a pasteurizing and sterilizing apparatus, the combination of a feed-tank, a valve controlling the outlet therefrom, corrugated plates inclined downwardly from their upper ends toward each other to receive the liquid, and means disposed within the upper ends of said plates for dividing the flow of the liquid to distribute it to the inner faces of said plates, substantially as described.

2. In a pasteurizing and sterilizing apparatus, the combination of a feed-tank, a valve controlling the outlet therefrom, corrugated plates inclined downwardly from their upper ends toward each other to receive the liquid, and means disposed within the upper ends of said plates for dividing the flow of the liquid to distribute it to the inner faces of said plates, and a water-jacket within which said plates are disposed and heaters disposed beneath said jacket, substantially as described.

3. In a pasteurizing and sterilizing apparatus, the combination of a tank, a valve controlling the discharge therefrom, corrugated inclined planes, a water-jacket, means for heating the same, a cover and a suction-fan carried thereby, substantially as described.

4. In a pasteurizing and sterilizing apparatus, the combination of a tank, a regulating-valve having oppositely-disposed discharge-ways, oppositely-disposed corrugated inclined planes, inclined downward from their upper ends toward each other with an inclined delivery at the lower end, means interposed between said planes and the valve for dividing the liquid and directing it to opposite sides of said planes, and means for adjusting said valve and holding it in its adjusted position, substantially as described.

5. In a pasteurizing and sterilizing apparatus, the combination of a tank, a regulating-valve having oppositely-disposed discharge-ways, oppositely-disposed corrugated inclined planes, means interposed between said planes and the valve for dividing the liquid and directing it to both of said planes, a cover and a suction-fan carried thereby for removing the impurities arising from the liquid on said inclined planes, substantially as described.

6. In a pasteurizing and sterilizing apparatus, the combination of a receptacle, a water-jacket around the same, inclined corrugated planes, a cover for said receptacle, a suction-fan mounted thereon, a feed-tank and controlling-valve therefor, and an air-vent and discharge-pipe connected with the lowermost portion of said inclined planes, substantially as described.

705,246. FURNACE-FEEDING APPARATUS. WILLIAM H. HOWARD, Pueblo, Colo. Filed Aug. 7, 1901. Serial No. 71,212. (No model.)

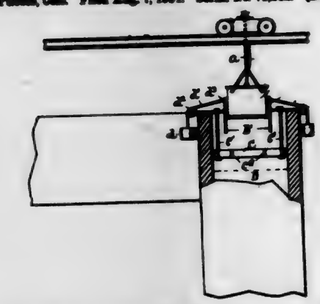

Claim.—1. The combination with a furnace having doors yieldingly held in closed position, of a feed-box, and means for lowering said box against said doors to open the same and enter said furnace when feeding the same, substantially as described.

2. The combination with a furnace having at each side of its top a downwardly-opening door, of a feed-box adapted to fit easily into the opening normally closed by said doors, and means for lowering said feed-box upon said doors.

3. The combination with a furnace having at each side of its top a downwardly-opening door, of a feed-box adapted to fit easily into the opening normally closed by said doors, means for lowering said feed-box upon said doors, and counterweights for holding said doors normally closed.

4. The combination with a furnace, of a feed-box therefor, means for moving said box to and away from said furnace, a cover for said box supported independently thereof, means for bringing said box against said cover after filling, and means for moving both box and cover into the feeding position.

5. The combination with a furnace, of a traveling crane, a feed-box supported and adapted to be raised into feeding position thereby, and a cover for said feed-box also supported by said crane and in the path of vertical movement of said box, the supports for said box being longer than those for the cover so that when the box is lowered to the filling position the cover will be arrested and held suspended before the box reaches its lowest point, substantially as described.

705,247. BEER-PIPE CLEANER. CLARENCE B. JOHNSON, Norfolk, Va., assignor of one-half to David B. Creecy, Jr., Norfolk, Va. Filed May 1, 1902. Serial No. 105,625. (No model.)

Claim.—1. In a cleaner for beer-coils, the combination with an upright steam-boiler, of a feed-tank having a burner connected thereto and located beneath the boiler, uprights connected to the feed-tank and having brackets on which the boiler rests, a ring on the uprights having projecting arms, and projections on the boiler removably coupled to said arms on the ring.

2. In a beer-pipe cleaner, the combination of the upright steam-boiler, the heater removably connected thereto, a cock forming a hot-water connection for a flexible hose and communicating with the boiler below the water-line, a similar cock forming steam connection above the water-line, and a second cock of larger size forming a second steam connection.

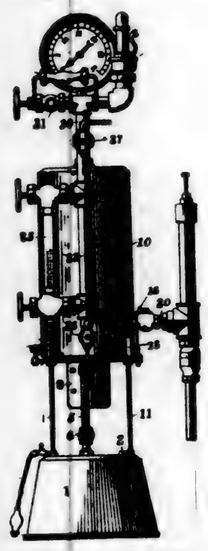

705,248. SMOOTHING-IRON. JOE JONES, Summit, Miss. Filed Sept. 20, 1901. Serial No. 75,793. (No model.)

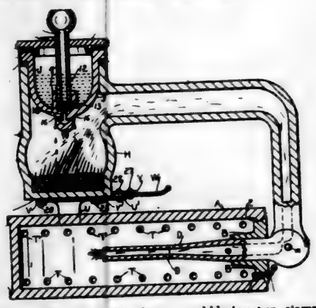

Claim.—1. In a smoothing-iron, a carbid-chamber, clamps on the base of the chamber, a bushing secured in the rear end of the iron, a gas-burner pipe in said iron and extending through said bushing, a handle communicating with the carbid-chamber and with the outer end of said pipe, and pivotally connected thereto, said iron capable of revolving on said pipe and means for contracting said clamps to the iron, substantially as described and set forth.

2. The combination of a carbid-chamber, clamps pivotally connected to the under side of said chamber, a reversible smoothing-iron, a bushing secured in the rear end of the iron, a gas-pipe in the iron and protruding through the rear end thereof, a handle with rear elbow extending from the carbid-chamber and pivotally connected to the protruding end of the gas-pipe, said iron capable of revolving on said gas-pipe and means for opening and closing said clamps, substantially as described and set forth.

705,249. PLAYING-BALL. ELEAZER KEMPSHALL, Boston, Mass. Filed June 14, 1902. Serial No. 111,775. (No model.)

Claim.—1. A playing-ball comprising a sphere of plastic material in which is embedded a perforated shell of metal; said shell being close to the periphery of said sphere, and also inclosing a portion of said sphere.

2. A playing-ball comprising a celluloid shell in which is embedded a perforated shell of metal; said shell being between the outer and inner sides of said celluloid shell, and the latter being provided with a filling.

3. A playing-ball comprising a celluloid shell in which is embedded a perforated shell of metal; said metal shell being between the outer and inner sides of said celluloid shell, and the latter being provided with a filling, and holding said filling under compression.

4. A playing-ball comprising a celluloid shell between whose outer and inner surfaces is embedded a shell of metal; said metal shell being close to the periphery of said celluloid shell, and the latter being also provided with fabric.

5. A playing-ball comprising a celluloid sphere in which is embedded a sphere of perforated metal; said metal sphere being close to the periphery of said celluloid sphere, and the latter being filled with a sphere of soft rubber which is held under compression by said celluloid shell.

6. A playing-ball comprising a shell of celluloid in which is embedded a shell of perforated metal; said metal shell being between an inner and an outer surface of said celluloid shell, and the latter being provided with a filling, and being also reinforced by a layer of fabric.

705,250. MEANS FOR OPERATING VALVES. CHARLES G. Y. KING, Chicago, Ill. Filed Nov. 14, 1901. Serial No. 82,196. (No model.)

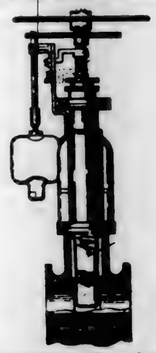

Claim.—1. The combination with a valve, a motor for actuating said valve, means for automatically arresting said motor before the valve reaches its final position in closing, and auxiliary means for completing the final movement of the valve, as and for the purpose set forth.

2. The combination with a valve, power mechanism for operating said valve, means for automatically arresting the power mechanism before the valve reaches its closed position, and manually-actuated devices for completing the closing movement of the valve, as and for the purpose set forth.

3. The combination with a valve and power mechanism for operating the same, of manually-actuated devices for imparting the initial movement to the valve in opening, as and for the purpose set forth.

4. The combination with a valve and power mechanism for operating the same, of manually-actuated devices for initially starting the valve toward open position, and means for automatically arresting the power mechanism when the valve reaches its completely open position, as and for the purpose set forth.

5. The combination with a valve, an electric motor for operating said valve, circuits for said motor, means for opening the circuit of said motor before the valve completes its movement toward closed position, and manual actuated devices for completing the closing movement of the valve, as and for the purpose set forth.

6. The combination with a valve and an electric motor for operating the same, circuits for said motor, of manually-actuated devices for initially starting the valve toward open position, and means for opening the circuit of said motor when the valve reaches the limit of its opening movement, as and for the purpose set forth.

7. The combination with a valve, a stem therefor, an operating hand-wheel connected to said stem, power mechanism, and gearing connected to said power mechanism and valve-stem, the initial movement of the valve in opening being imparted by the hand-wheel and the movement completed by the power mechanism, as and for the purpose set forth.

8. The combination with a valve, of manual actuating devices connected to said valve for imparting the initial movement to the valve in opening, and power mechanism also connected to said valve for completing the opening movement, as and for the purpose set forth.

9. The combination with a valve having a threaded stem, a motor geared to said valve-stem for actuating the same, a nut mounted upon said threaded stem and held against rotation, means actuated by the travel of said nut for automatically arresting said motor before the valve reaches the limit of its movement in closing, and auxiliary means for completing the closing movement of the valve, as and for the purpose set forth.

10. The combination with a valve having a threaded stem, an electric motor geared to said stem, circuits for said motor, a traveling nut mounted on said stem, means actuated by said traveling nut for automatically opening the circuits of said motor before said valve reaches the limits of its movement in closing, and auxiliary means for completing the closing movement of the valve, as and for the purpose set forth.

11. The combination with a valve having a threaded stem, a motor geared to said valve, circuits for said motor, a traveling nut mounted on said stem, a bar carried by said nut, and switch-levers arranged in the path of travel of said bar and arranged to be engaged thereby to be opened or closed, said switch-levers being arranged in the circuits of said motor, as and for the purpose set forth.

12. The combination with a valve having a threaded stem, a motor geared to said stem, a traveling nut mounted on said stem, a bar carried by said nut, switch-blocks arranged to be engaged by said bar at the limits of travel thereof, and switch-arms carried by said switch-blocks and operating to automatically open the motor-circuits to arrest the motor at the limits of travel of said bar, as and for the purpose set forth.

13. The combination with a valve having a threaded stem, of a motor geared to said valve-stem, a traveling nut mounted on said stem, a bar carried by said nut, oppositely-presented switch-blocks arranged respectively at the limits of travel of said nut to be engaged by said bar as it approaches the limits of its travel, whereby in the initial movement of said bar the adjacent switch-block is left in position to close a circuit of the motor, and in the final movement of said bar a switch-block is actuated to open the circuit of the motor, as and for the purpose set forth.

14. The combination with a valve, a threaded stem therefor, a nut mounted on said threaded stem, a hand-wheel connected to said stem, a motor geared to said stem, contacts arranged in the circuits of said motor and arranged to be engaged and actuated by said traveling nut to open and close the motor-circuits, said contacts being arranged to open the motor-circuits before the valve, in closing, reaches its final closing movement, as and for the purpose set forth.

705,251. APPARATUS FOR ADMINISTERING MEDICINES. WILLIAM P. KIRK and ELMER H. KIRK, Syracuse, N. Y. Filed July 31, 1901. Serial No. 70,417. (No model.)

Claim.—1. An apparatus for administering veterinary medicine, comprising a shell having end heads and transverse partitions dividing the shell into end and intermediate compartments having fixed relation to each other, said partitions having valved openings for the purpose specified, a piston movable in one of the end compartments to compress air in the intermediate compartment, and a conduit leading from a point in proximity to one of the partitions through the end head of the other compartment whereby medicine may be forced from said latter compartment through the conduit by air-pressure.

2. An apparatus for administering veterinary medicine, comprising a shell having a liquid-containing chamber provided with inlet and discharge openings in its opposite ends, a conduit leading from the inlet to a point in proximity to the opposite end of the liquid-chamber, a second conduit leading from a point in proximity to the end having the inlet through the outlet, and a powder-containing reservoir connected to the outer end of the second conduit.

3. An apparatus for administering veterinary medicines comprising

a cylinder having air and liquid containing chambers and a partition dividing said chambers, said partition having a passage connecting the chambers and formed with a valve-chamber connecting the passages, a valve movable in the valve-chamber and having an operating member projecting through the adjacent wall of the cylinder, a conduit leading from the passage to a point in proximity to the end head of the liquid-chamber, and an additional conduit leading from a point in proximity to the partition outwardly through said head.

4. An apparatus for administering veterinary medicines comprising a cylinder having air and liquid containing chambers and a partition dividing said chambers, said partition having a passage connecting the chambers and formed with a valve-chamber connecting the passages, a valve movable in the valve-chamber and having an operating member projecting through the adjacent wall of the cylinder, a conduit leading from the passage to a point in proximity to the end head of the liquid-chamber, and an additional conduit leading from a point in proximity to the partition outwardly through said head, and means for compressing air in the air-chamber.

5. An apparatus for administering veterinary medicines comprising a cylinder having air and liquid containing chambers and a partition dividing said chambers, said partition having a passage connecting the chambers and formed with a valve-chamber connecting the passages, a valve movable in the valve-chamber and having an operating member projecting through the adjacent wall of the cylinder, a conduit leading from the passage to a point in proximity to the end head of the liquid-chamber, and an additional conduit leading from a point in proximity to the partition outwardly through said head, a piston-chamber within the cylinder in fixed relation to the air-chamber, a partition dividing said piston and air chambers and provided with a connecting-passage and a valve, and a piston movable in the piston-chamber for the purpose set forth.

6. An apparatus for administering veterinary medicines comprising a cylinder having air and liquid containing chambers and a partition dividing said chambers, said partition having a passage connecting the chambers and formed with a valve-chamber connecting the passages, a valve movable in the valve-chamber and having an operating member projecting through the adjacent wall of the cylinder, a conduit leading from the passage to a point in proximity to the end head of the liquid-chamber, and an additional conduit leading from a point in proximity to the partition outwardly through said head and a powder-containing receptacle secured to the outer end of the additional conduit and receiving the liquid discharged therethrough.

705,252. TOP-SPINNING DEVICE. FREDERICK W. KRAHE, Minneapolis, Minn. Filed Aug. 5, 1901. Serial No. 70,875. (No model.)

Claim.—1. The combination with a top having a stem, of a spinning device comprising a strand of wire or the like lying substantially in the same plane throughout, having its one end bent into a semicircular portion adapted to engage said stem and lie upon the upper face of the top, the wire being looped intermediate of its ends and having its opposite end bent upwardly and contacting with the wire at the inner termination of the looped portion, the cord being received between said contacting portions of wire and retained by the tension of the last-named end, and wrapped around the stem above the first-named end of the wire, substantially as described.

2. The combination with a top having a stem, of a spinning device comprising a strand of wire lying substantially in the same plane throughout having an intermediate looped portion and an upwardly-bent portion on the termination of said looped portion contacting therewith, the opposite end of the wire being bent to engage the stem of the top and lie on the upper face of said top, the string being received between said contacting portions of the wire and retained by the tension of said first-named end of the wire, the cord being wrapped around said stem above the said last-named end of the wire, substantially as described.

705,253. METHOD OF REMOVING OIL FROM WATER. ARTHUR B. KRAMER, Jersey City, N. J. Filed May 23, 1901. Serial No. 61,518. (No specimens.)

Claim.—1. The herein-described process of extracting oil from water, which consists in mixing with the mixture of oil and water a magnesium body of the character described, that is, one that is insoluble or only sparingly soluble in water, thereby causing said substance to gather the oil particles by physical action, and finally separating said body and gathered oil from the water, substantially as set forth.

2. The herein-described process of extracting oil from water, which consists in mixing with the mixture of oil and water a finely-divided magnesium body of the character described, that is, one that is insoluble or only sparingly soluble in water, thereby causing said substance to gather the oil particles by physical action, and finally separating said body and gathered oil from the water, substantially as set forth.

3. The herein-described process of extracting oil from water, which consists in mixing serpentine with the mixture of oil and water, thereby causing the serpentine to gather the oil particles by physical action, and finally separating the serpentine and gathered oil from the water, substantially as set forth.

705,254. CONTROL-SHEET. MAX KUHR, New York, N. Y. Filed Nov. 22, 1901. Serial No. 83,287. (No model.)

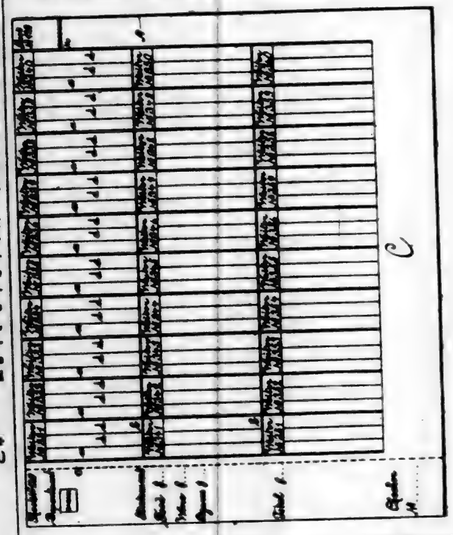

Claim.—1. A tally-sheet for hotels, restaurants, and the like establishments, comprising a sheet divided into two parts each part bearing the same number, and the designation of the checker using the tally-sheet; one part being divided by longitudinal and transverse lines into columns designated by numbers of the waiters employed in the department, where the tally-sheet is used, and subdivided into spaces for the entry of items of sales of different groups or classes of articles; and the other part being provided with a statement of names of the different groups and classes of articles corresponding to the subdivisions of the columns of the other part, and with a space thereunder for entering the total of all items of sales entered in the tally sheet.

2. A tally-sheet for hotels, restaurants, and the like establishments, comprising a body A and a stub B each having printed thereon the same number, and the designation of the checker using the tally-sheet; the body of the tally-sheet being divided by longitudinal and transverse lines into columns designated by the numbers of the waiters employed in the department where the tally-sheet is used, and subdivided into spaces for the entry of items of sales of different groups or classes of articles; and the stub being provided with a statement of names of the different groups and classes of articles corresponding to the subdivisions of the columns of the body of the tally-sheet, and with a space thereunder for entering the total of all items of sales entered in the tally-sheet.

705,255. CHECK OR CLACK VALVE. FRANK W. LEHRKNER, Marietta, Ohio. Filed Jan. 4, 1902. Serial No. 88,461. (No model.)

Claim.—1. The combination with a pipe-section having an obliquely-cut-off discharge end and a closed-in portion or bridge above said discharge, of lugs rising from said bridge and a valve or closure for the oblique discharge end having a stem engaging between said lugs and having bearings therein, substantially as set forth.

2. A pipe-section having its discharge end cut obliquely to its axis and having a closed-in portion or bridge above such oblique discharge, in combination with a valve seated upon the latter and having a stem seated between lugs upon the bridge-piece and having a transverse head or cross-piece engaging bearings in said lugs, the latter being beveled upon the front sides, substantially as set forth.

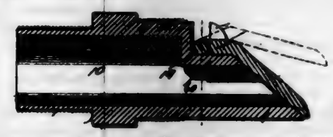

3. A pipe-section having an oblique discharge end and a closed-in portion forming a bridge above the same, lugs rising from said bridge and having beveled front sides and rounded edges corresponding with the contour of the pipe, one of said lugs being transversely perforated, and a transverse slot in the opposing lug, and a valve seated upon the oblique discharge end of the pipe and having a stem, engaging between the lugs rising from the bridge and provided with a cross-piece engaging the perforation and slot in said lugs, substantially as set forth.

705,256. BAR-STITCHING MACHINE. FRANCIS T. LEILICH, San Francisco, Cal., assignor of one-half to James G. Simonton, San Francisco, Cal. Filed Oct. 17, 1896. Serial No. 608,810. (No model.)

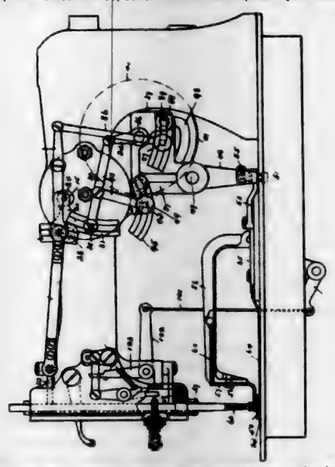

Claim.—1. In a sewing-machine, the combination of a laterally-vibrating needle-bar, a clamp for the work, a cam-wheel having a cam operatively connected with said clamp to shift the same, said cam having a series of undulations for shifting the clamp quickly through the full extent of its reciprocations, followed by an incline for shifting the clamp slowly, means for feeding said cam step by step and means for varying the extent of said feed, substantially as described.

2. In a sewing-machine, the combination of a laterally-vibrating needle-bar, a clamp for the work, a cam-wheel having a cam operatively connected with said clamp to shift the same, said cam having a series of undulations for shifting the clamp quickly through the full extent of its reciprocation, followed by an incline for shifting the clamp slowly, means for feeding said cam step by step and means for varying the extent of said feed, said means being operated by said cam in its revolution, substantially as described.

3. In a sewing-machine, the combination of a laterally-vibrating needle-bar, a clamp for the work, a cam-wheel having a cam operatively connected with said clamp to shift the same, said cam having a series of undulations for shifting the clamp quickly through the full extent of its reciprocation followed by an incline for shifting the clamp slowly, a pawl, and means connected with the driving-shaft for variably vibrating the same, said cam having two series of ratchet-teeth of different sizes, with which said pawl engages, to correspond with the variations in the vibrations of the pawl, substantially as described.

4. In a sewing-machine, the combination of a laterally-vibrated needle-bar, a clamp for the work, a cam-wheel having a cam operatively connected with said clamp to shift the same, a rock-shaft, a pawl vibrated thereby and feeding the cam-wheel, an arm carried by said rock-shaft, a link operatively connecting said arm with said pawl to impart its said vibrations thereto, the end of said link being movable along said arm, and means operated by said cam-wheel, for so moving said link to vary the feed, substantially as described.

5. In a sewing-machine the combination of a rock-shaft carrying a vibrating arm, a link having its end movable along a vibrating arm of the rock-shaft and operatively connected with the needle-bar to vary the same, a clamp for the work, a cam-wheel for shifting the same, a vibrating pawl-carrying arm for feeding said cam-wheel, a link having its end movable along a vibrating arm of the rock-shaft and operatively connected with the pawl-carrying arm to vibrate the latter, and means, operated by said cam-wheel, for independently shifting the end of each link along a vibrating arm on the rock-shaft, substantially as described.

6. In a sewing-machine the combination of a vibrating needle-bar, a clamp for the work, a cam-wheel for shifting the same, said cam-wheel having two series of teeth of different sizes, a vibrating pawl-carrying arm, said pawl engaging said teeth, means for vibrating said arm, and means, operated by said cam-wheel, for varying the extent of vibration of said pawl to correspond with the size of the teeth, substantially as described.

7. In a sewing-machine the combination of a needle-bar, means for vibrating the same, a clamp for the work, a cam-wheel for shifting the clamp, means for feeding the cam-wheel, means, operated by the cam-wheel, for varying the extent of vibration of the needle-bar, and means, operated by the cam-wheel, for varying the rapidity of feed of the cam-wheel, substantially as described.

8. In a sewing-machine, the combination of a transversely-vibrating needle-bar, a clamp for the work, means for longitudinally reciprocating said clamp quickly during a small number of vibrations of the needle-bar, and then slowly during a large number of said vibrations, a device carrying an independent cord, and means, coöperating with the clamp, for laying down said cord on the cloth in a line parallel with the reciprocation of the clamp, and centrally of the vibrations of the needle-bar, substantially as described.

9. In a sewing-machine, the combination of a needle-bar, a clamp for the work, means for reciprocating one of said elements transversely relatively to the other, means for longitudinally reciprocating said clamp quickly during a small number of said transverse reciprocations and then slowly during a large number thereof, a device carrying an independent cord, and means coöperating with the clamp, for laying down said cord on the cloth longitudinally of the clamp, substantially as described.

10. In a sewing-machine, the combination of a needle-bar, a clamp for the work, means for reciprocating one of said elements transversely relatively to the other, a device carrying an independent cord, and means for simultaneously reciprocating said clamp and device in opposite directions, substantially as described.

11. In a sewing-machine, the combination of a needle-bar, a clamp for the work, a rock-shaft, means, driven by said rock-shaft, for reciprocating one of said elements relatively to the other, a cam-wheel driven step by step by said rock-shaft, a device carrying an independent cord, said clamp and device being reciprocated simultaneously in opposite directions by said cam-wheel, and independent means actuated by said cam-wheel for shifting said device, substantially as described.

12. In a sewing-machine for forming a bar, in combination with a stitch-forming mechanism comprising a laterally-vibrated needle; of a driving mechanism; a clamp to hold the material in the vibratory path of the said needle; a feeding mechanism for the said clamp adapted to move the same over the entire length of the bar for a predetermined number of movements and then return the clamp across the path of the said needle slowly for the entire length of the bar to overstitch the bar-threads as laid in; a cord-guide pivotally mounted on the frame of the machine and adapted to vibrate across the vibratory path of the needle parallel to the movement of the said clamp; and a connecting mechanism to vibrate the said cord-guide, substantially as described.

705,257. BUTTONHOLE-SEWING MACHINE. FRANCIS T. LEILICH, San Francisco, Cal., assignor of one-half to James G. Simonton, San Francisco, Cal. Filed Sept. 14, 1896. Serial No. 605,826. (No model.)

Claim.—1. In a buttonhole-sewing machine, the combination of a cutter, a cam for operating the cutter, a stitch-forming mechanism, a power device transmitting motion alternately to said cam and mechanism, a device for clamping the work, a starting device, operated independently of the clamping device, and which, when moved in one direction, brings the cam into operative relation with the cutter, means whereby the reverse movement of said starting device interrupts said operative relation, a stop limiting the further movement, in the first direction, of said starting device, and means, operated by said cam at a predetermined point in its ef-

festive movement, for removing said stop, said starting device then, in its further movement, shifting said power device to operate the stitching mechanism, substantially as described.

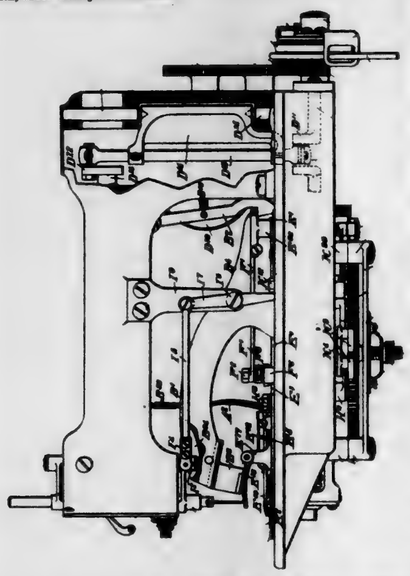

2. In a buttonhole-sewing machine, the combination of a cutter, a cam for operating the cutter, a stitch-forming mechanism, a power device transmitting motion alternately to said cam and mechanism, a starting device, which, when moved in one direction, brings the cam into operative relation with the cutter, means whereby the reverse movement of said starting device interrupts said operative relation, a stop limiting the further movement, in the first direction, of said starting device, and means, operated by said cam at a predetermined point in its effective movement, for removing said stop, said starting device then, in its further movement, shifting said power device to operate the stitching mechanism, substantially as described.

3. In a buttonhole-sewing machine, the combination of a cutter, a cutter-operating mechanism, a stitch-forming mechanism, a power device transmitting motion to said mechanisms alternately, a device for clamping the work, a starting device, operated independently of the clamping device, and which, when moved in one direction, brings the cutter-operating mechanism into operative relation with the cutter, means whereby the reverse movement of said starting device interrupts said operative relation, a stop limiting the further movement, in the first direction, of said starting device, and means, operated by said cutter-operating mechanism at a predetermined point in its effective movement, for removing said stop, said starting device then, in its further movement, shifting said power device to operate the stitching mechanism, substantially as described.

4. In a buttonhole-sewing machine, the combination of a cutter, a cutter-operating mechanism, a stitch-forming mechanism, a power device transmitting motion to said mechanism alternately, a starting device, which, when moved in one direction, brings the cutter-operating mechanism into operative relation with the cutter, means whereby the reverse movement of said starting device interrupts said operative relation, a stop limiting the further movement, in the first direction, of said starting device, and means, operated by said cutter-operating mechanism at a predetermined point in its effective movement, for removing said stop, said starting device then, in its further movement, shifting said power device to operate the stitching mechanism, substantially as described.

5. In a buttonhole-sewing machine, the combination of a cutter, a cutter-operating mechanism, a stitch-forming mechanism, a device for clamping the work, a starting device, operated independently of the clamping device, and which is reciprocated to render the cutter-operating mechanism effective or ineffective on the cutter, said starting device, in its further movement in the first direction of its reciprocation, bringing into operation the stitch-forming mechanism, the first part of its movement in said direction being controlled by the position of the stitch-forming mechanism, and the said further movement being controlled by the position of the cutter-operating mechanism, substantially as described.

6. In a buttonhole-sewing machine, the combination of a cutter, a cutter-operating mechanism, a stitch-forming mechanism, a starting device which is reciprocated to render the cutter-operating mechanism effective or ineffective on the cutter, said starting device, in its further movement in the first direction of its reciprocation, bringing into operation the stitch-forming mechanism, the first part of its movement in said direction being controlled by the position of the stitch-forming mechanism, and the said further movement being controlled by the position of the cutter-operating mechanism, substantially as described.

7. In a buttonhole-sewing machine the combination of a cutter, a cam for operating the cutter, a stitch-forming mechanism, a power device, a reciprocating starting device, which, when moved in one direction, brings the cam into operative relation with the cutter, means whereby the reverse movement of said starting device interrupts said operative relation, an obstruction limiting the further movement in the first direction of said starting device, a lever for removing said obstruction, means, adjustably carried by said cam for operating said lever, and a belt-shifter moved by said starting device in its further movement, to shift the belt to operate the stitching mechanism, substantially as described.

8. In a buttonhole-sewing machine the combination of a cutter, a cam for operating the cutter, a stitch-forming mechanism, a power device, a reciprocating starting device, which, when moved in one direction, brings the cam into operative relation with the cutter, means whereby the reverse movement of said starting device interrupts said operative relation, an obstruction limiting the further movement in the first direction of said starting device, a lever for removing said obstruction, means, carried by said cam for operating said lever, and a belt-shifter moved by said starting device in its further movement, to shift the belt to operate the stitching mechanism, substantially as described.

9. In a buttonhole-sewing machine, the combination of a cutter, a cam for operating the cutter, a stitch-forming mechanism, a power device transmitting motion alternately to said cam and mechanism, a reciprocating rod, a tilting lever swung by said rod, a hook, operated by said cam, and shifted by said lever into engagement with said rod, and means, operated with the movement of said cam, for tilting said lever and thereby freeing said rod from further movement said rod being connected with said power device to thereupon by said further movement shift the latter from the cam to the mechanism, substantially as described.

10. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle, means for imparting a transverse vibration to the needle, means for imparting a longitudinal reciprocation to the clamp, a bed-plate, four vertical rock-shafts pivotally mounted in said bed-plate, each carrying an arm above and an arm below said bed-plate, rollers on said lower arms, a horizontal rotating cam-wheel mounted below said bed-plate having in its upper surface four cam-grooves in which said rollers ride, and links extending from the upper arms, of which two are operatively connected with the clamp to reciprocate the same longitudinally and transversely respectively, and the other two are connected respectively with the aforesaid means, to control their operation, substantially as described.

11. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle, means for imparting a transverse reciprocation to one of said elements relatively to the other, means for imparting a longitudinal reciprocation to one of said elements relatively to the other, a bed-plate, four vertical rock-shafts pivotally mounted in said bed-plate, each carrying an arm above and an arm below said bed-plate, rollers on said lower arms, a horizontal rotating cam-wheel mounted below said bed-plate having in its upper surface four cam-grooves in which said rollers ride, and links extending from the upper arms, of which two are operatively connected with the clamp to reciprocate the same longitudinally and transversely respectively, and the other two are connected respectively with the aforesaid means, to control their operation, substantially as described.

12. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle, means for imparting a transverse vibration to the needle, means for imparting a longitudinal reciprocation to the clamp, a bed-plate, four vertical rock-shafts pivotally mounted in said bed-plate, each carrying an arm above and an arm below said bed-plate, rollers on said lower arms, a horizontal rotating cam-wheel mounted below said bed-plate having in its upper surface four cam-grooves in which said rollers ride, and links extending from the upper arms, and independently adjustable thereon, of which two are operatively connected with the clamp to reciprocate the same longitudinally and transversely respectively, and the other two are connected respectively with the aforesaid means, to control their operation, substantially as described.

13. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle, means for imparting a transverse reciprocation to one of said elements relatively to the other, means for imparting a longitudinal reciprocation to one of said elements relative to the other, a bed-plate, four vertical rock-shafts pivotally mounted in said bed-plate, each carrying an arm above and an arm below said bed-plate, rollers on said lower arms, a horizontal rotating cam-wheel mounted below said bed-plate having in its upper surface four cam-grooves in which said rollers ride, and links extending from the upper arms, and independently adjustable thereon, of which two are operatively connected with the clamp to reciprocate the same longitudinally and transversely respectively, and the other two are connected respectively with the aforesaid means, to control their operation, substantially as described.

14. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle-bar, a bracket having arms removably secured to the under side of the bed-plate of the machine, a suitably-driven horizontal cam-wheel revolubly supported on said bracket and having cam-grooves in its upper surface, mechanism operated thereby, extending through said bed-plate, for controlling the relative movements of the needle-bar and clamp, and means, carried by said arms, for accurately centering the cam-wheel in its revolution, substantially as described.

15. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle, means for imparting a transverse reciprocation to one of said elements relatively to the other, means for imparting a longitudinal reciprocation to one of said elements relatively to the other, a bracket having arms removably secured to the under side of the bed-plate of the machine, a suitably-driven horizontal cam-wheel revolubly supported on said bracket and having cam-grooves in its upper surface, mechanism operated thereby, extending through said bed-plate, for controlling the relative movements of the needle-bar and clamp, and means carried by said arms, for accurately centering the cam-wheel in its revolution, substantially as described.

16. In a sewing-machine, the combination, with the stitching mechanism, of a work-holding clamp, a clamp feed-plate, a lever operatively connected to said plate, whereby the rocking of the lever reciprocates the plate, said lever having two movable fulcra, a train of mechanism from the main driving-shaft to rock one of said fulcra synchronously with a predetermined number of stitches of the stitching mechanism to impart a short rapid reciprocation to said clamp, and a rotary cam-wheel having two cams, whereof one controls the action of said train of mechanism to increase or diminish the rocking of said fulcrum rocked thereby, and the other rocks the other fulcrum, to impart a longer slow reciprocation to said clamp, substantially as described.

17. In a sewing-machine, the combination, with the stitching mechanism, of a work-holding clamp, a clamp feed-plate extending from front to rear of the machine, a link pivotally connected at its rear end with the clamp feed-plate, a lever to which the front end of said link is adjustably connected, said lever having two movable fulcra, a train of mechanism from the main driving-shaft to rock one of said fulcra synchronously with a predetermined plurality of stitches of the stitching mechanism to impart a short rapid reciprocation to said clamp, and a rotary cam-wheel having two cams, whereof one controls the action of said train of mechanism to increase or diminish the rocking of said fulcrum rocked thereby, and the other rocks the other fulcrum, to impart a longer slow reciprocation to said clamp, substantially as described.

18. In a sewing-machine, the combination with the stitching mechanism, of a work-holding clamp, a clamp feed-plate extending from front to rear of the machine, a reciprocating guide-block to which the rear end of said plate is pivotally connected, a link pivotally connected and longitudinally adjustably connected at its rear end with the rear end of the clamp feed-plate, a lever to which the forward end of the link is adjustably connected, means for rocking said lever whereby a longitudinal reciprocation is imparted to the clamp, and independent means for transversely reciprocating said clamp, substantially as described.

19. In a buttonhole-sewing machine, the combination of a work-holding clamp, a vertically-reciprocating needle-bar, a link connected to one of said elements to rock the same transversely relatively to the other, a link connected to one of said elements to rock the same longitudinally relatively to the other, a lever for reciprocating said links arranged to make a complete reciprocation during three complete vertical reciprocations of the needle-bar, being at one end of its reciprocation during two of the complete reciprocations of the needle-bar, and at the other end during one, whereby two stitches are formed in the cut of the buttonhole and one stitch in the work during each complete reciprocation of said lever, and a cam driven step by step by said lever in its reciprocations, and having grooves controlling the action of said links, substantially as described.

20. In a buttonhole-sewing machine, the combination of a work-holding clamp, a vertically-reciprocating needle-bar, a link connected to one of said elements to rock the same transversely relatively to the other, a link connected to one of said elements to rock the same longitudinally relatively to the other, a cam for reciprocating said links arranged to make a complete revolution during three complete vertical reciprocations of the needle-bar, holding said links in one position of their reciprocation during two of the complete reciprocations of the needle-bar, and in the other position during one, whereby two stitches are formed in the cut of the buttonhole and one stitch in the work during each complete reciprocation of said lever, and a second cam driven step by step by said first cam in its revolutions and having grooves controlling the action of said links, substantially as described.

21. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle, means for imparting a transverse vibration to the needle, means for imparting a longitudinal reciprocation to the clamp, a rotary cam-plate having four cam-grooves in its face, rock-shafts having arms rocked by said cam-grooves, links reciprocated by the respective other arms of said shafts, and independent means for varying the extent of the reciprocations so produced, two of said links being connected with the work-holding clamp to feed the same longitudinally and transversely respectively, and the other two being connected, respectively, with the means for vibrating the needle and for reciprocating the clamp, to control the operation of said means, substantially as described.

22. In a sewing-machine, the combination of a reciprocating needle-bar and needle, a work-holding clamp, a cam making a complete revolution during a plurality of reciprocations of the needle-bar, a train of mechanism from said cam to the needle-bar to impart a transverse vibration thereto, a train of mechanism from the cam to the clamp to impart a longitudinal reciprocation thereto, a second cam, and controlling devices therefrom to the trains to render the latter operative or inoperative as desired at predetermined points in the revolution of the latter cam, said controlling devices comprising elements adjustably secured to each other, whereby the bite of the stitches formed by the vibration of the needle and the reciprocation of the clamp may be varied at pleasure, and suitable feed mechanism for advancing the work, substantially as described.

23. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle-bar, a rotary cam-plate, a vibrating lever, trains of mechanism from said lever to the needle-bar, the clamp, and the cam-plate to vibrate the needle-bar, reciprocate the clamp, and intermittently feed the cam-plate, all synchronously, rock-shaft arms rocked by cam-grooves in the face of the cam-plate, and links reciprocated by the respective other arms of said shafts, and connected to the trains of mechanisms to the needle-bar and clamp to control their movement, substantially as described.

24. In a sewing-machine, the combination of a work-holding clamp, a vertically-reciprocating needle-bar, a rotary cam-plate, a cam, trains of mechanisms from said cam to the needle-bar, the clamp, and the cam-plate to vibrate the needle-bar, reciprocate the clamp, and intermittently feed the cam-plate, all synchronously, rock-shafts having arms rocked by cam-grooves in the face of the cam-plate, and links reciprocated by the respective other arms of said shafts, and connected to the trains of mechanisms to the needle-bar and clamp to control their movement, substantially as described.

25. In a buttonhole-sewing machine, in combination with a stitch-forming mechanism comprising a laterally-vibrated needle; a clamp to hold the material in which the buttonhole is formed; a feeding mechanism to move the said clamp transversely across the vibratory path of the needle; a guiding mechanism for the movement of the said clamp adapted to shift the same at the ends of the buttonhole to present the material on the opposite sides of the buttonhole to the operation of the needle, and to vibrate the said clamp parallel with the vibration of the needle at the end of the buttonhole to produce a bar across the buttonhole; said feeding and guiding mechanism being operated by cams, a controlling mechanism for said feeding mechanism, also operated by a cam, all of said cams being on a pattern-plate revolubly below the bed of the table, substantially as described.

26. In a buttonhole-sewing machine, in combination with a stitch-forming mechanism comprising a laterally-vibrated needle; a driving mechanism; a clamp adapted to hold the material in which the buttonhole is formed; a feeding mechanism for the said clamp mechanism adapted to move the said clamp parallel with the cut of the buttonhole; a controlling mechanism adapted to supplement and modify the extent of the movement of the clamp by the feeding mechanism and to vibrate the clamp parallel to the cut of the buttonhole under the path of the needle; and a guiding mechanism adapted to control the path of the said clamp while being operated on by the said feeding and controlling mechanisms and to vibrate the clamp transversely across the path of the operation of the said feeding mechanism and controlling mechanism; and a connecting mechanism for the said feeding mechanism and said driving mechanisms, said feeding, controlling, guiding and connecting mechanisms being all operated by cams on a common revolvable plate, substantially as described.

27. In a buttonhole-sewing machine, in combination with a stitch-forming mechanism; a driving mechanism; a needle-vibrating mechanism adapted to laterally vibrate the needle; a connecting mechanism between the said needle-vibrating mechanism and the driving mechanism comprising means for producing two movements of the vibrating mechanism to three reciprocations of the needle, and an interposed rocking

member connected to the vibrating mechanism by means of a movable connection; and a controlling mechanism comprising a pattern-cam, and adapted to move the said movable connection on the said rocking member over, and to both sides of the rocking center, substantially as described, whereby there is produced a buttonhole-stitch consisting in a single stitch at one end of the lateral vibration of the needle and a double superimposed stitch at the other end of the lateral vibration and means for reversing the positions of the single and double superimposed stitches.

28. In a buttonhole-sewing machine, in combination with a stitch-forming mechanism; a driving mechanism; a clamp adapted to hold the material in which the buttonhole is to be formed; a feeding mechanism adapted to vibrate the clamp across the path of the needle parallel with the buttonhole cut; a connecting mechanism between the said feeding mechanism and driving mechanism adapted to produce two movements of the feeding mechanism to every three reciprocations of the needle, and comprising a rocking member; a connection between the said feeding mechanism movably secured to the said rocking member; and a controlling mechanism comprising a pattern-cam and adapted to move the said connection over the rocking center of the rocking member and to both sides thereof, substantially as described, whereby the said clamp may be brought to rest during two reciprocations of the needle at either end of the throw of the said feeding mechanism.

705,258. HYDROCARBON-VAPOR BURNER. EDOUARD LE PHILETIER, Vienna, Austria-Hungary. Filed Sept. 13, 1898. Serial No. 690,857. (No model.)

Claim.—In a vaporizing-burner for petroleum, the combination with a main tube having a double bend with the ends on each side thereof in axial alinement, of a supplemental vaporizing-tube communicating with the upper end of said main tube and extending downward therefrom, a vapor-jet nozzle or tip carried at the lower end of said supplemental tube and made in two parts screwed into one another, the lower one carrying a spindle for regulating the vapor-feed, a fusible metal in the vapor-tip closing the joint between the two parts of the tip, said burner-tip being in line with the alining ends of the main tube, and an outer burner-tube encircling the main tube and having a burner-gauze at its upper end, substantially as described.

705,259. WIRE-STRETCHER. CHARLES LIEBHARDT, Allport, Pa. Filed June 18, 1901. Serial No. 64,710. (No model.)

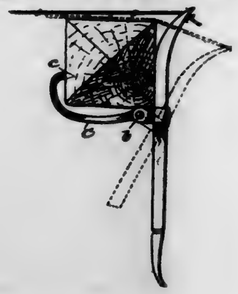

Claim.—A wire-stretcher comprising a bar or lever having one end curved outwardly and notched, a detachable sleeve slidably positioned upon the bar and having perforated ears formed integral therewith and a hook member pivotally held by the sleeve at one end and having its opposite end terminating in an inwardly-bent hook, substantially as shown and described.

705,260. SASH-FASTENER. JAMES G. LODOR, Wilmington, N. C. Filed Nov. 1, 1901. Serial No. 80,894. (No model.)

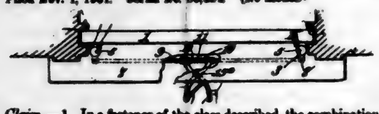

Claim.—1. In a fastener of the class described, the combination with a fixed and a sliding frame, of two rotatable cylindrical rods circumferentially corrugated and eccentrically mounted at their ends in bearings fixed to the opposite sides of one of said frames, said rods constituting cams or eccentrics, and each provided with a lateral projecting lug, two links each pivotally connected at its outer end to one of said lugs, a spring arranged between the adjacent ends of the links and operating to force the latter apart and rotate the rods to cause the latter to wedge against the other of said frames, and means for simultaneously drawing together said links to rotate the rods out of engagement, substantially as described.

2. In a fastener of the class described, the combination with a fixed and a sliding frame, of two rotatable rods eccentrically mounted at their ends in bearings fixed to the opposite sides of one of said frames and each provided with a laterally-projecting lug, two links each pivotally connected at its outer end to one of said lugs, a spring arranged between the adjacent ends of the links and operating to force apart the latter and rotate the rods to cause the latter to wedge against the other of said frames, and two crossed and pivoted levers loosely connected at their inner ends to the respective links and terminating at their outer ends in handles adapted to be grasped by the hand for simultaneously drawing together said links to turn the rods out of engagement, substantially as described.

3. In a fastener of the class described, the combination with a fixed and a sliding frame, of two rotatable rods eccentrically mounted at their ends in bearings fixed to the opposite sides of one of said frames and each provided with a laterally-projecting lug, two links each pivotally connected at its outer end to one of said lugs, a spring arranged between the adjacent ends of the links and operating to force apart the latter and rotate the rods to cause the latter to wedge against the other of said frames, means for simultaneously drawing said links together to rock the rods out of engagement, and locking device for positively locking said links apart, substantially as described.

4. In a fastener of the class described, the combination with a fixed and a sliding frame, of two rotatable rods eccentrically mounted at their ends in bearings fixed to the opposite sides of one of said frames and each provided with a laterally-projecting lug, two links each pivotally connected at its outer end to one of said lugs, a spring arranged between the adjacent ends of the links and operating to force apart the latter and throw the rods into engagement with the other of said frames, two crossed levers pivoted together at their intersection and each pivotally connected at one end to the inner end of one of said links, and a latch pivoted at one end to the free end of one of said levers and adapted to engage a notch in the free end of the other of said levers, substantially as described.

705,261. ACTUATING DEVICE FOR LIDS OR COVERS. JAMES C. LODOR, Wilmington, N. C. Filed Aug. 12, 1901. Serial No. 71,770. (No model.)

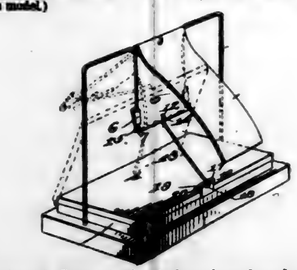

Claim.—1. In an actuating device, a frame formed of a single piece of material and having its top provided with a depressed portion, an operating-lever mounted thereon and formed of two sections, a pin extending through the top of the lever for securing it upon a frame, a cover, and means pivotally connected at one end to one end of one section of said lever and extending therefrom toward the free end of the other section of said lever and attached to the cover.

2. In an actuating device for lids or covers, a frame formed of a single piece of material and provided with a depressed portion, a lever mounted in said depressed portion, a pin extending through the lever for connecting the same to the frame, a bar, means for hinging the bar to the lever, and means for hinging the bar to the cover.

3. In an actuating device for lids or covers, a frame formed of a single piece of material and provided with a depressed portion, a lever mounted therein and comprising in its construction a weighted rear section, a bar arranged between the cover and lever, means for hinging one end of the bar to the weighted rear section of the lever, said means for hinging the other end of the bar to the cover.

705,262. DOOR-HANGER. JOHN F. LYDEN, Davenport, Iowa, assignor to the International Manufacturing Company, Davenport, Iowa, a Corporation of Iowa. Filed Jan. 28, 1901. Serial No. 44,800. (No model.)

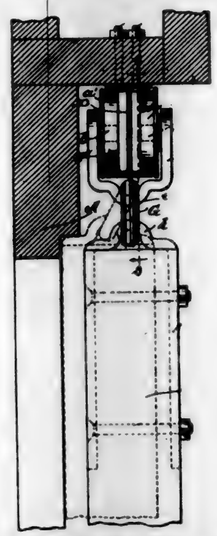

Claim.—1. The combination with a suitable overhead tram or track and a door carrier or track adapted to move thereon, of means suspending the door from said carrier adapted to allow lateral movement of the door, in planes parallel to its plane of rest substantially as described.

2. The combination with a suitable overhead tram or track, and a carrier or track adapted to move thereon, of a suspended door, and a laterally-movable link connecting said carrier and door, and articulated both at its point of connection with said door and said carrier substantially as described.

3. The combination with a suitable tram or track, a door carrier or track adapted to move thereon, and a door, of a link articulated in parallel planes to said door and said carrier, substantially as described.

4. The combination with a suitable overhead tram or track, of a carrier comprising a U-shaped yoke the bend of which is below and the legs of which pass on each side of the lower flanges of said tram or track and wheels journaled thereon, of a suspended door, knuckles secured to the upper edge thereof and a rectangular chain-link having the horizontal portions thereof seated in and articulating with the bend of said yoke and the said knuckles substantially as described.

705,263. DUST RING OR DISK FOR AXLE-BOXES. GOTTFRIED MAAS, Duisburg, Germany. Filed Mar. 12, 1902. Serial No. 97,574. (No model.)

Claim.—1. In a journal dust-guard, the combination, with a guard-plate formed of sections, of an inner lining-ring of flexible material which bears against the shaft and forms a hinge for the said sections, and a spring for contracting the said sections and lining-ring upon the shaft, substantially as set forth.

2. In a journal dust-guard, the combination, with a guard-plate formed of sections, said sections being provided with cover-plates *g* and *h* at one joint, of an inner lining-ring of flexible material which bears against the shaft and forms a hinge for the said sections, and a spring for contracting the said sections and lining-ring upon the shaft, substantially as set forth.

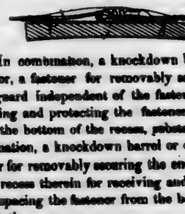

3. In a journal dust-guard, the combination, with a guard-plate formed of sections, one of the said sections being provided with a projecting joint-plate *n* which engages with a groove in the next adjacent section, of an inner lining-ring of flexible material which bears against the shaft and forms a hinge for the said sections, and a spring for contracting the said sections and lining-ring upon the shaft, substantially as set forth.

705,264. ELECTROLYTIC APPARATUS FOR THE PRODUCTION OF CHLORIN AND ALKALI. JAMES MACTEAR, Westminster, England. Filed Sept. 3, 1901. Serial No. 74,214. (No model.)

Claim.—1. In an electrolytic apparatus, a cathode-cell having a plate arranged therein to form a space between the same and the walls of said cell, said plate provided with a recess, a well, and a series of ducts for establishing communication between the said space and well, an anode-cell mounted upon said plate and engaging in said recess, a supply and overflow pipe for the anode-cell, a propeller mounted in said well and having a spindle extending through the anode-cell, a seal for the said spindle, a cathode for said cathode-cell, and an anode for said anode-cell.

2. In an electrolytic apparatus, a cathode-cell having a plate arranged therein to form a space between the same and the walls of said cell, said plate provided with a recess on its upper face, a centrally-arranged well and a series of ducts on its lower face for establishing communication between the said space and said well, an anode-cell mounted upon said plate and engaging in the said recess, a supply and overflow pipe for the anode-cell, a propeller mounted in said well and having a spindle extending through the anode-cell, a seal for the said spindle, a cathode for said cathode-cell, and an anode for said anode-cell.

3. In an apparatus of the character described, a cathode-cell provided with a plate having a space between the same and the walls of the cell, a well and a series of ducts for establishing communication between the space and the well, a layer of mercury in the said cathode-cell forming a cathode and adapted to fill the space, ducts and well, an anode-cell mounted in said cathode-cell, an anode in said anode-cell, and a propeller mounted in the said well, substantially as shown and for the purpose described.

705,265. KNOCKDOWN BARREL, CASK, &c. AMOS MALTBY, New York, N. Y. Filed May 18, 1901. Serial No. 60,806. (No model.)

Claim.—1. In combination, a knockdown barrel or other receptacle, a hoop therefor, a fastener for removably securing the ends of the hoop together, a guard independent of the fastener and having a recess therein for receiving and protecting the fastener and means for spacing the fastener from the bottom of the recess, substantially as set forth.

2. In combination, a knockdown barrel or other receptacle, a hoop therefor, a fastener for removably securing the ends of the hoop together, a guard having a recess therein for receiving and protecting the fastener and cross-ribs for spacing the fastener from the bottom of the recess, substantially as set forth.

3. In combination, a knockdown barrel or other receptacle, a hoop therefor, a locking-lever pivoted to one end and having a removable engagement with the other end of the hoop, a sliding clip arranged to engage and disengage the lever, a guard having a recess therein for receiving and protecting the fastener and means for spacing the end of the hoop which carries the clip away from the bottom of the recess for permitting the free sliding movement of the clip, substantially as set forth.

705,266. GYMNASTIC APPARATUS. DAVID G. MATTHIOS, Altona, Germany. Filed Feb. 26, 1902. Serial No. 95,619. (No model.)

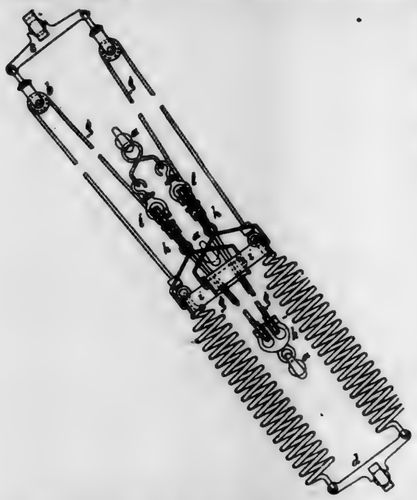

Claim.—1. A gymnastic apparatus composed of a pair of upper pulleys, two pair of lower pulleys arranged above one another, and a pair of cords that pass from the upper pulleys around the lowermost pulleys and thence around the intermediate pulleys, substantially as specified.

2. A gymnastic apparatus composed of a bail having pulleys, a pair of springs, a pair of upper pulley, a pair of lower pulleys, and a pair of cords that pass from the springs first over the bail-pulleys, then over the lower pulleys and then over the upper pulleys, substantially as specified.

705,267. WARMER. FRANZ J. MEIER, Weigand, Nebr. Filed Aug. 1, 1901. Serial No. 70,523. (No model.)

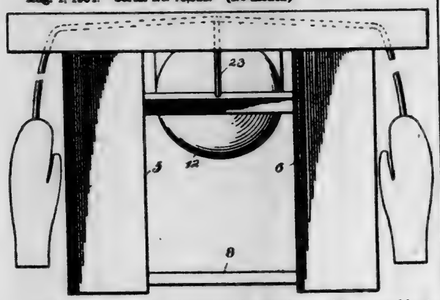

Claim.—1. A device of the class described comprising spaced heating-plates, means for heating the plates, and a flexible lap-covering comprising spaced fabrics and connections between the covering and the plates for conveying heated air from the plates to the covering.

2. A device of the class described comprising hollow heating boxes or plates having means for heating them and provided with tubular projections communicating therewith, of a lap-covering comprising spaced fabrics having a strip secured therebetween at one end of the fabrics, said strip having openings in which the tubular projections are received and perforations registering with the bores of the projections whereby heat may pass from the plates between the layers of fabric.

3. A device of the class described comprising spaced inclined boxes having their lower ends open, a flue connecting the boxes near to their upper ends, a lamp having a hood connected to the flue, flexible tubes connected with the flue and having hand-receiving mitts attached thereto to receive heat therefrom, and a covering device removably connected with the plates of which the boxes are formed.

4. A device of the class described comprising inclined boxes spaced laterally and having a flue connecting them, a lamp having a hood connected with the flue to supply heat therethrough to the boxes, projections at the upper ends of the boxes, and a flexible covering having a recessed plate at its edge for engagement with the projections to hold the covering in position to be stretched over the boxes.

5. A device of the class described comprising spaced heating-plates and having a flue connecting them adjacent to their upper ends, a lamp having a hood communicating with the flue, a pipe leading forwardly from the flue beyond the plates, flexible tubes connected with the pipe, and hand-receiving devices connected to the tubes, a flexible covering being connected to the upper and side edges of the plates.

705,268. ROTARY GROOVING-TOOL. ALBERT R. MEREDITH, Sacramento, Cal. Filed Apr. 10, 1902. Serial No. 102,181. (No model.)

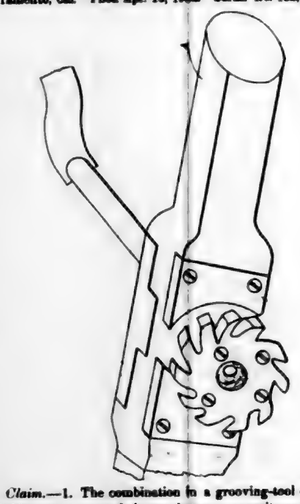

Claim.—1. The combination in a grooving-tool of a handle and a revoluble cutter mounted thereon between opposite ends and turnable in a plane parallel with the handle.

2. The combination in a grooving-tool of a handle adapted to be engaged at either end, a revoluble cutter turnable in a plane parallel with the handle, and transversely-extending means intermediate of its ends for supporting said cutter.

3. The combination in a grooving-tool of a handle, a transverse revoluble shaft supported intermediate of the ends of said handle, a cutter mounted on said shaft and turnable in a plane parallel with said handle, and means by which the space intermediate of the saw and handle may be varied.

4. The combination in a grooving-tool of a handle adapted to be grasped at either end, a cutter, a revoluble shaft disposed transversely of the handle, and having a flange to which said cutter is secured, antifrictional supporting means for said shaft and flexible connections between said shaft and a source of power.

705,269. PUZZLE OR GAME APPARATUS. ELIZABETH MEYER, Springfield, Vt. Filed Aug. 20, 1901. Serial No. 72,681. (No model.)

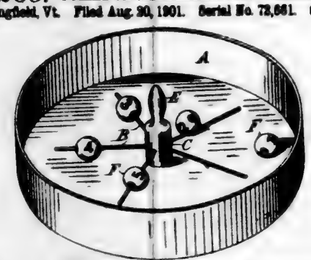

Claim.—1. In a puzzle or game apparatus, the combination of a receptacle, a series of pins extending radially from a hub pivoted on the floor of said receptacle, and a series of balls apertured to permit of their being strung on the ends of said pins by a movement of a ball along the floor, whereby a pin may be turned toward a ball and the inclining of the receptacle will cause such ball to roll down and engage the end of the pin and whereby a further inclination will cause such ball to engage the pin more securely, said pins being curved at their outer ends to facilitate their entering the aperture in a ball.

2. In a puzzle or game apparatus, the combination of a receptacle, a pivot D consisting of a short nail having its head below the floor and its body projecting upward from the floor of said receptacle, a hub C fitting loosely over said body and free to be lifted therefrom and replaced thereon, a series of pins extending radially from said hub, and a series of balls apertured to permit of their being strung on the ends of said pins by a movement of a ball along the floor, whereby a pin may be turned toward a ball and the inclining of the receptacle will cause such ball to roll down and engage the end of the pin, and whereby a further inclination will cause such ball to engage the pin more securely.

705,270. WINE-COOLER. JOHN H. MEYER, New York, N. Y. Filed Apr. 22, 1902. Serial No. 104,168. (No model.)

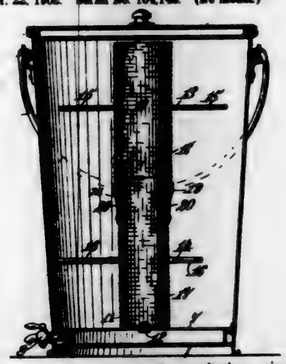

Claim.—1. In a wine-cooler, a body constituting an ice-receptacle, a perforated false bottom therein, a cylindrical foraminous bottle-chamber mounted for rotation within said receptacle on said false bottom, and means for drawing off the water from the space beneath said false bottom.

2. In a wine-cooler, a body constituting an ice-receptacle, a perforated false bottom therein, a cylindrical foraminous bottle-chamber having a swivel connection with said false bottom, and means for drawing off the water from the space beneath said false bottom.

3. In a wine-cooler, a body constituting an ice-receptacle, a perforated false bottom therein, a cylindrical perforated bottle-chamber mounted for rotation within said receptacle on said false bottom, rings surrounding said chamber at its upper and lower ends, and bracing-arms connecting said rings with said body.

4. In a wine-cooler, a body constituting an ice-receptacle, a perforated false bottom therein, a cylindrical, foraminous bottle-chamber within said receptacle having a swivel connection with said false bottom, guide-rings embracing said bottle-chamber at different points, and a drain-cock leading from the space beneath said false bottom.

5. In a wine-cooler, an ice-receptacle, and a cylindrical bottle-inclosing chamber therein made up of a plurality of telescoping sections.

6. In a wine-cooler, an ice-receptacle and a rotary foraminous bottle-chamber therein made up of a plurality of telescoping sections.

7. In a wine-cooler, an ice-receptacle, a cylindrical bottle-inclosing chamber therein made up of a plurality of telescoping sections, and spring-catches for preventing the collapse of said sections, when extended.

8. In a wine-cooler, an ice-receptacle, a cylindrical bottle-inclosing chamber therein made up of a plurality of telescoping sections, and outwardly-spring-pressed catches connected to one of said sections and adapted to engage the other for positively locking said sections against inward movement, and thereby preventing the collapse of said sections, when extended.

705,271. COMBINATION STOPPER AND BRUSH FOR BOTTLES. BENJAMIN F. MIXER, Montague, Mass. Filed Apr. 30, 1901. Serial No. 58,110. (No model.)

Claim.—1. A holder for liquid shoe-dressing and the like, comprising a bottle, and a closure device composed of an incasing cap having positive means of attachment to the said bottle, a vertically-elongated wooden block narrower than the bottle-mouth and rigidly secured centrally of and depending from the said cap, and a swab-rod having its upper end rigidly inserted in the lower end of the elongated block, and carrying the liquid swab or sponge.

2. A holder for liquid shoe-dressing and the like, comprising a bottle, an incasing cap provided with positive means for locking it to the bottle, an elongated block 10 of rigid material, and narrower than the mouth of the bottle, depending centrally from the said cap, a packing-disk intervening the same and the said cap and adapted to be brought down into compressible relation with the bottle-mouth by the locking of the cap, an adjustable fastening inserted through the top of said cap, through the packing-disk and into the elongated block 10, which connects the same rigidly to the cap and seals its connection thereto by the said disk, and a swab-rod having its upper end rigidly inserted into the lower end of the elongated block, and carrying the liquid swab or sponge.

3. A holder for liquid shoe-dressing and the like, comprising a bottle, and a closure device consisting of a cap having means for positively locking it to the bottle, an elongated wooden block 10 narrower than the mouth of the bottle and depending from the center of the cap, a packing-disk intervening the same and the cap, a swab-rod having its upper end driven into the lower end of the said block and carrying the liquid swab or sponge, and a screw inserted through the said cap and the packing-disk and into the elongated block to secure the same rigidly to the cap.

4. A holder for liquid shoe-dressing and the like, comprising a bottle, and a closure device consisting of a cap having means for positively locking it to the bottle, an elongated wooden block 10 narrower than the mouth of the bottle and depending from the center of the cap, a swab-rod having its upper end driven into the lower end of the said block and carrying the liquid swab or sponge, a handle or knob mounted upon the top of said cap, and a reversely-threaded screw inserted into the elongated block and into said handle or knob whereby the said block and knob may simultaneously be tightened upon the cap.

5. A holder for liquid shoe-dressing and the like, comprising a bottle formed with one or more angular or bayonet-shaped projections upon the outside thereof, and a closure device therefor consisting of an incasing cap formed with inwardly-directed lugs or projections adapted to operate in connection with the bayonet-shaped projections upon the bottle to effect a locking and tightening connection of the said cap therewith, an elongated conical wooden block centrally depending from the said cap and narrower than the bottle-neck whereby it is freely removable therefrom, a swab-rod having its upper end driven into the lower end of the said elongated wooden block whereby to have a rigid and immovable bearing therein, and carrying upon its lower end the liquid swab or sponge, a packing-disk inserted between the upper face of the block and the under or inner face of the cap, and adapted to bear upon the bottle-mouth and be compressed upon the same by the tightening of the cap thereon in its locking movement, and a screw inserted through the outside of the cap and through the packing-disk and into the top of the wooden block to adjustably join the said block rigidly to the said cap and in compressible relation with the said disk.

705,272. ACETYLENE-GAS GENERATOR. LEO MONTEL, New York, N. Y., assignor to Acetylene Manufacturing Company, New York, N. Y., and Jersey City, N. J., a Corporation of New Jersey. Filed Oct. 5, 1900. Serial No. 32,063. (No model.)

Claim.—1. In an acetylene-gas generator, the combination with the generating-chamber and the carbid-container, of a lifter fork or frame pivoted on the wall of the generating-chamber, a swinging bar secured to the arms of said fork or frame, and a lifting-rod engaging said bar.

2. In an acetylene-gas generator, the combination with a reservoir of a generating-chamber adapted to be placed in said reservoir and having a vent to permit the escape of entrapped air, and a valve to control said vent disposed between cooperating parts of the reservoir and chamber whereby it is pressed against the vent to close the same as the generating-chamber is placed within the reservoir.

3. In an acetylene-gas generator, the combination of a carbid-container, a scratcher for the carbid movably mounted in the container, and means secured to the body of the generator to engage said scratcher and hold the same from movement, whereby the carbid may be moved with the container and with respect to the scratcher.

4. In an acetylene-gas generator, the combination of a body, a shell rotatably supported by said body, a carbid-container held by said shell, a scratcher mounted rotatably in the end of said carbid-container and means secured to the body to engage said scratcher and hold the same from rotation as the shell and carbid-container are rotated.

5. In an acetylene-gas generator, the combination of a reservoir, a tube adapted to be supported within said reservoir, a carbid-container adapted to be placed within said tube and having a cap or head to close the lower end thereof, and means to raise and lower said container.

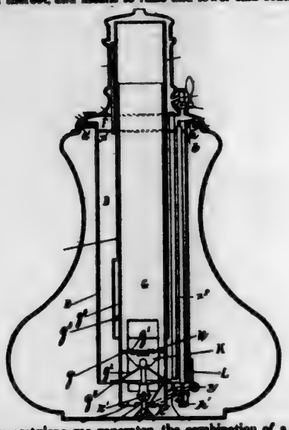

6. In an acetylene-gas generator, the combination of a reservoir, a shell adapted to be supported within said reservoir, a carbid-container within said shell and having at its lower end a ring slotted on its lower edge, and a pivoted lifter for said container having fingers to engage said slotted ring and prevent accidental separation of said container from the shell.

7. In an acetylene-gas generator, the combination with a carbid-container, of a lifter to engage the same, a rod to engage said lifter and having a pin, a tube slotted for the movement of said pin, and having a shoulder to engage the same as the rod is turned at the end of its movement, and means to raise and turn said rod.

8. In an acetylene-gas generator, the combination with a carbid-container, a lifter to engage the same, a rod engaging said lifter and having a pin, a guide for said rod, and a lever having a cam-slot with a locking projection to engage said pin and operate the rod, said projection engaging with the pin to prevent accidental movement of the rod.

9. In an acetylene-gas generator, the combination with a reservoir, a generating-chamber open at its bottom, a gas-receiving chamber connected with the generating-chamber through a stop-cock, and a blow-off pipe connected to the gas-receiving chamber and terminating within the generating-chamber with its end slightly above the lower edge of the generating-chamber, whereby gas generated after the stop-cock is closed is discharged through the blow-off pipe into the gas-receiving chamber and is prevented from escaping through the open bottom of the generating-chamber.

705,278. CLUTCH. HERMAN MOOR, Grove City, Pa. Filed Dec 31, 1901. Serial No. 87,004. (No model.)

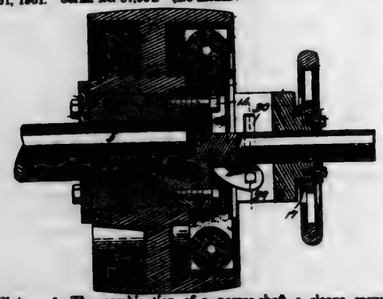

Claim.—1. The combination of a power-shaft, a sleeve secured thereon, a pulley loose on the said sleeve, and having an annular friction-flange, a spindle projecting outwardly from said sleeve, radially-movable friction-jaws adapted to engage the said pulley to clutch the same to said shaft, supports for the said jaws with which the said sleeve is provided, cams to move said jaws laterally, said cams having operating-arms, a head revolubly with and longitudinally movable on said spindle, connections between the said head and said operating-arms, and an operating element loose on the said head and revolubly independently thereof, substantially as described.

2. The combination of a power-shaft, a sleeve secured thereon, a pulley loose on the said sleeve and having an annular friction-flange, a spindle projecting from said sleeve, guides with which the latter is provided, radially-movable friction-jaws adapted to engage said flange of said pulley, said jaws having supporting elements engaging said guides, bars connected to the said friction-jaws, axles connecting the said friction-jaws together and disposed at the ends of said bars, oscillating cams on said axle, coacting cams with which the said bars are provided, a sliding head on said spindle and revolubly therewith, connections between the said sliding head and said oscillating cams, and means to operate the said sliding head, substantially as described.

3. The combination of a power-shaft, a sleeve secured thereon, a pulley loose on said sleeve and having an annular friction-flange, a spindle projecting from said sleeve, radially-movable friction-jaws, adapted to engage said flange of said pulley, and provided with cam elements, guides and supports for said jaws, carried by said sleeve, oscillating cams mounted between said jaws and having operating-arms, said oscillating cams and said cam elements of said jaws coacting, a head revolubly with and adapted to slide on said spindle, said head being connected to said oscillating cam-arms, and an operating element, loose on said head, to move the same longitudinally on said spindle, substantially as described.

4. The combination of a power-shaft, a loose pulley carried thereby and having a friction-flange, jaws having supports revolubly with the shaft, cams to move the jaws into contact with the friction-flange, a longitudinally-movable head, revolubly with the shaft, connections between the head and the cams whereby the latter may be operated, and means carried by and revolubly independently of the head to move the latter longitudinally of the shaft, and thereby operate said cams and jaws, substantially as described.

5. The combination of a shaft, a head mounted for movement longitudinally of the shaft and for revolution therewith, a loose pulley having a friction-flange, jaws and cams to move them into contact with said friction-flange, said jaws and cams revolving with the head and said cams being connected to the latter for operation thereby, and means, connected to and revolubly independently of the head, to move the latter longitudinally of the shaft and thereby operate said cams and jaws, substantially as described.

705,274. ROTARY ENGINE. CHARLES O. MORLEY, Brooklyn, N. Y., assignor of one-half to John J. May, Brooklyn, N. Y. Filed July 10, 1901. Serial No. 67,761. (No model.)

Claim.—1. In a rotary engine, a cylindrical casing, a cylindrical and rotatable piston mounted eccentrically therein and in contact with the bottom wall thereof, a slide member mounted radially in said piston longitudinally thereof, and provided at the opposite sides of said piston with pivoted vanes, a collar connected with one end of said piston, and communicating passages formed in the casing and in the collar, a steam-inlet in communication with the passages in the collar, a four-way cock controlling the communication between the passages in the casing, and the passages in the collar, and an exhaust and means for controlling the same.

2. In a rotary engine, a cylindrical casing, a cylindrical piston mounted eccentrically therein and in contact with the bottom wall thereof, ports or passages formed in said casing and communicating with the interior thereof at the opposite sides of the bottom portion thereof, exhaust ports or passages also communicating with said ports or passages at the opposite sides of the casing, a collar connected with one end of said piston and provided with a circular port or passage in communication with the first-named ports or passages and means for controlling the communication between the passage in the collar and said first-named ports or passages.

3. A rotary engine comprising a cylinder and a rotatable piston mounted therein and provided with vanes movably mounted relatively thereto and adapted to rotate the piston under steam-pressure within the cylinder, a collar provided with a circular passage and rotating with the said piston, a passage in the cylinder leading to the inside thereof, a steam-inlet connected to the circular passage of the collar, a four-way cock connecting the said circular passage to the passage of the cylinder, a similar cylinder-passage upon the opposite side thereof and an exhaust to which it is connected by the four-way cock.

705,275. CHANGEABLE DIRECTORY-BOARD. FRANK B. MOSHER, MICHAEL J. SOBEL, and EDWARD H. H. MARTINS, Cleveland, Ohio. Filed July 12, 1901. Serial No. 68,120. (No model.)

Claim.—The frame A having integral flange *a* and removable right-angled strips 2 about its inside, in combination with board B having a series of holes 5 scattered over its surface and fixed about its edge to said strips, and the glass G having metallic frame 4 about its edge and removably supported between flange *a* and strips 2, substantially as described.

705,276. FURNACE. THOMAS MURPHY, Detroit, Mich. Filed Apr. 26, 1900. Serial No. 14,392. (No model.)

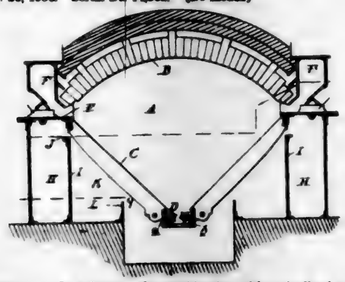

Claim.—1. In a furnace, the combination with an inclined grate, of inclosing walls forming an angular chamber beneath said grate, the wall adjacent to the upper edge of the grate being hollow and having connecting-apertures with the upper angle of the chamber beneath said grate whereby cool air may be introduced in the upper portion of said chamber through said hollow wall.

2. In a furnace, the combination with inclosing walls, a central grate-bearer and grates supported thereon inclining upward to the opposite side walls and forming angular air-chambers therebeneath, of means for introducing a cooling-current from one end of the furnace and distributing it along the opposite upper angles of said chambers beneath the grate.

3. In a furnace, the combination with an inclined grate and the inclosing walls forming an angular chamber beneath said grate of means for introducing a cooling-current into said chamber and distributing it along the upper edge of said grate, deflector for directing the downward current from said upper edge of the grate in an inclined course against said grate at a lower point in said chamber.

4. In a furnace, the combination with an inclined grate a fuel-shelf at the upper edge of said grate, and inclosing walls forming a chamber beneath said shelf and grate, of a division-wall or diaphragm dividing said chamber into two compartments; with a connecting-passage at the upper end of said diaphragm, and means for feeding air into the compartment beneath said shelf, and distributing it through said connecting passage beneath the upper end of the grate.

5. In a furnace, the combination with an inclined grate a fuel-feeding device at the upper end of said grate and walls inclosing a chamber beneath said feeding devices and grate, of diaphragms subdividing said chamber into three compartments formed respectively beneath said fuel-feed and an upper, and a lower portion of said grate said compartments constituting respectively a dust-pit, a screening-pit and ash-pit, and means for feeding air into said dust-pit and therefrom over said diaphragm into said screening and ash pits.

6. A furnace comprising a grate, fuel-feeding devices at one side thereof a wall or diaphragm between said feed devices and grates separating the space thereunder into a dust-pit and a screening and ash pit, a furnace-front having a single door-opening therein communicating with both pits, a door therefor and a second door or damper for shutting off said screening-pit.

7. A furnace comprising a grate, fuel-feeding devices at one side thereof, a furnace-front having a door-opening therein, and a door therefor, a wall or diaphragm between said feed device and grate dividing the space thereunder into a dust-pit and a screening and ash pit, said diaphragm being in line with and cut away or apertured opposite said door-openings, and a door or damper hinged to said diaphragm at the edge of said aperture adapted in one position to cut off said screening and ash pit.

8. A furnace comprising a grate, fuel-feeding devices at one side thereof, a wall or diaphragm between said feed devices and grate dividing the space thereunder into a dust-pit and a screening and ash pit, with an air-passage between said pits at the upper end of said diaphragm, a furnace-front having a single door-opening therein communicating with both of said pits, a dampered door for said opening and a second door or damper adapted in one position to cut off said screening and ash pit, for the purpose described.

9. In a furnace, the combination with an inclined grate and walls inclosing a chamber beneath said grate, of a wall or diaphragm dividing said chamber in two compartments with an air connecting-passage at the upper end of said wall and means for feeding air into the compartment beneath the highest point of the grates and distributing it through said passages into the other compartment and directing it against the under side of the grate.

705,277. BRICK-CARRIER. JOHN G. MCDOWELL, Pittsburg, Pa. Filed Mar. 22, 1902. Serial No. 99,487. (No model.)

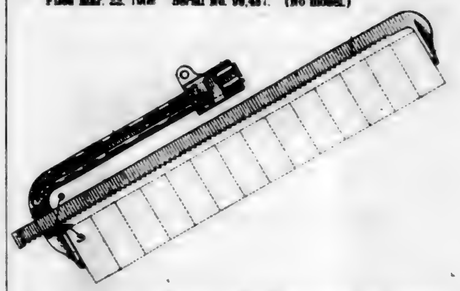

Claim.—1. A brick-carrier having two jaws, one of said jaws having a handle arranged to extend over the row of bricks, and a sliding support mounted on the handle; substantially as described.

2. A brick-carrier having a stationary jaw, a movable jaw connected therewith, a handle extending from the stationary jaw toward the movable jaw, and a supporting-slide movable along the handle; substantially as described.

3. A brick-carrier having a slotted stationary jaw with a tooth in the slot, a movable jaw having a toothed stem extending through the slot and engaging the teeth therein; substantially as described.

4. A brick-carrier having a slotted stationary jaw with a tooth in the slot, a movable jaw having a toothed stem extending through the slot and engaging the tooth therein, a handle extending from the stationary jaw toward the toothed jaw, and a slide movable along the handle; substantially as described.

5. A brick-carrier having jaws, one of the jaws being provided with an overhanging handle of about one-half the length of the carrier, and a slide adjustable along the handle; substantially as described.

6. A carrier having two jaws, one of said jaws having a connecting-bar extending over the bricks or material carried, the other jaw having a handle extending longitudinally over the connecting-bar, and a supporting device adjustable to different points along the said handle; substantially as described.

705,278. WINDOW-SCREEN. JOHN P. MCKEEVER, Wardensville, W. Va. Filed July 21, 1900. Serial No. 24,452. (No model.)

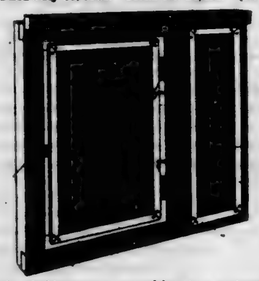

Claim.—A window-screen comprising two rectangular frames of unequal size hinged together along their vertical edges, the two frames,

when assembled, being of a width to extend from side to side of the window-casing and to project within the spaces between the parting-beads and the sash-strips and be held in position thereby, thus obviating the necessity of employment of supplemental fastening devices for the purpose, a permanent screen associated with the smaller frame, a supplemental frame hinged to the larger frame and carrying a screen, the smaller frame being adapted to move outward to permit placing the structure in position between the sides of the window-casing, and the supplemental frame being adapted to move inward to afford access to the exterior of the window, locking means carried by the larger frame to hold the supplemental frame normally closed, and marginal strips secured to the upper edges of the inner portions of the two frames to overlap the bottom rail of the window-sash and thus preclude entrance of insects, all substantially as and for the purpose specified.

705,279. APPARATUS FOR USE IN REFRIGERATING, HEATING, DRYING, IMPREGNATING, OR OTHERWISE TREATING GOODS. JAMES MCRAE, London, England, assignor of one-half to John Cooper Broadbent, Huddersfield, Yorkshire, England. Filed Mar. 5, 1901. Serial No. 49,889. (No model.)

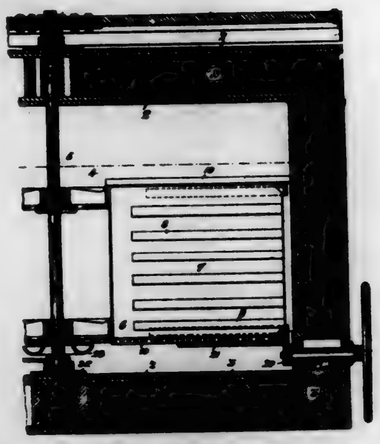

Claim.—1. The combination of a rotary holder comprising a plurality of radial compartments each open above and below, with a casing closed above and below and having a doorway in the side wall thereof, said casing closely surrounding said holder at the sides thereof but inclosing free spaces, above and below said holder, whereby free circulation of atmosphere is permitted within said casing vertically through said compartments, a door for closing said doorway and shutters above and below the rotary holder adjacent to the door of the casing, adapted to close above and below that compartment which is alined with the doorway when the door is opened for the purpose set forth.

2. The combination of a rotary holder comprising a plurality of radial compartments open above and below, with a casing closed above and below and having a doorway in the side wall thereof of a width and height equivalent to the width and height of each radial compartment, said casing closely surrounding said holder at the sides thereof but inclosing free spaces above and below said holder, a door for closing said doorway, shutters above and below the rotary holder adjacent to the door of the casing and means for operating said shutters to close above, and below that compartment which is alined with the doorway when the door is opened for the purpose set forth.

3. The combination of a rotary holder comprising a plurality of radial compartments each open above and below with a casing closed above and below and having a doorway in the side wall thereof of a width and height equivalent to the width and height of each radial compartment, said casing closely surrounding said holder at the sides thereof but inclosing free spaces above and below said holder, whereby free circulation of atmosphere is permitted within said casing vertically through said compartments, a door for closing said doorway, shutters above and below the rotary holder adjacent to the door of the casing, adapted to close above and below that compartment which is alined with the doorway when the door is opened, and means for cooling the atmosphere in said casing.

4. The combination of a rotary holder comprising a plurality of radial compartments open above and below and surrounding a central shaft, with a casing closed above and below and having a doorway in the side wall thereof of a width and height equivalent to the width and height of each radial compartment, said casing closely surrounding said holder at the sides thereof but inclosing free spaces above and below said holder, a door for closing said doorway, shutters above and below the rotary holder adjacent to the door of the casing, adapted to close above and below that compartment which is alined with the doorway when the door is opened for the purpose set forth, means for cooling the atmosphere in said casing in the space above the rotary holder and a fan for causing a circulation of said atmosphere in a direction upwardly centrally of said radial compartments into contact with said cooling means and downwardly through the compartments.

5. The combination of a rotary holder comprising a plurality of radial compartments open above and below and surrounding a central shaft with a casing closed above and below and having a doorway in the side wall thereof of a width and height equivalent to the width and height of each radial compartment, said casing closely surrounding said holder at the sides thereof but inclosing free spaces above and below said holder, a door for closing said doorway, shutters above and below the rotary holder adjacent to the door of the casing, means for operating said shutters to close above and below that compartment which is alined with the doorway when the door is opened for the purpose set forth, means for cooling the atmosphere in said casing comprising a series of refrigerating-pipes in the space above the rotary holder and a fan for causing a circulation of said atmosphere in a direction upwardly centrally of said radial compartments into contact with said cooling means and downwardly through the compartments.

6. The combination of a rotary holder comprising a plurality of radial compartments open above and below and surrounding a central shaft, with a casing closed above and below and having a doorway in the side wall thereof of a width and height equivalent to the width and height of each radial compartment, said casing closely surrounding said holder at the sides thereof but inclosing free spaces above and below said holder, a door for closing said doorway, shutters above and below the rotary holder adjacent to the door of the casing, adapted to close above and below that compartment which is alined with the doorway when the door is opened for the purpose set forth, refrigerators for cooling the atmosphere in said casing in the space above the rotary holder, means for draining the condensation products on said refrigerator through the central shaft and an outflow-pipe for said condensation products adapted to be sealed thereby.

705,280. SIGNAL-LAMP. THOMAS MCWATTERS, Swissvale, Pa., assignor of two-thirds to Joseph M. Flannery, Braddock, Pa., and Andrew H. McKim and Alexander McKim, Sr., Swissvale, Pa. Filed July 24, 1901. Serial No. 69,539. (No model.)

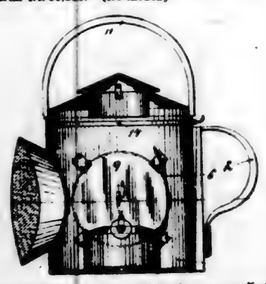

Claim.—In a signal-lamp, the combination of a cylinder closed at the bottom and provided with a lamp and having a circular aperture in the front thereof, an inner cylinder, adapted to be seated in said first-mentioned cylinder, having an annular recess near the top thereof, a spring-controlled trigger adapted to be seated and guided in said recess and to lock the said inner cylinder in any given position, and means to rotate said cylinder, substantially as described.

705,281. TYPE-WRITING MACHINE. JACOB E. HEARN, Buffalo, N. Y., assignor to The Wagner Typewriter Company, New York, N. Y., a Corporation of New York. Filed Mar. 27, 1901. Serial No. 53,053. (No model.)

Claim.—1. In a type-writing machine, the combination of a frame, a carriage, an auxiliary frame secured to the carriage to travel therewith, and paper-roll supports for the supply and take-off each of said supports being adjustable independently on the said auxiliary frame toward and from the other support.

2. In a type-writing machine, the combination of a stationary frame, a traveling carriage, an auxiliary frame connected with the carriage, a platen, a guide in the rear of the platen, another guide in front of the said guide, but at a higher level and in the rear of the platen, an endless copying-ribbon extending over said guides and platen, and means for guiding paper over said platen.

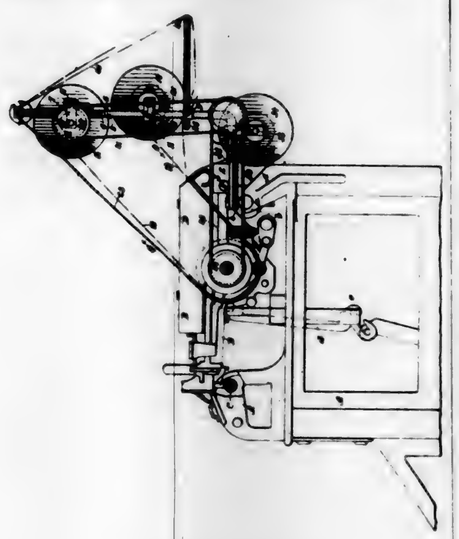

705,282. SASH-FASTENER. WILLIAM H. NELSON, Hazleton Iowa. Filed Jan. 11, 1902. Serial No. 89,281. (No model.)

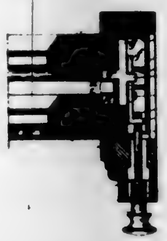

Claim.—1. A sash-fastener, consisting of the combination of window-sashes having a plurality of recesses on the inner corners of their vertical edges nearest the lock, with a lock having bolts arranged to engage the sides of said recesses, a recessed slide-piece adapted to actuate said bolts, springs to hold said bolts in engagement with said recesses in the sashes, a key having a slotted barrel and adjustable spindle, and a key-plate, substantially as shown and described.

2. A sash-fastener, consisting of the combination of a lock-casing, bolts movable in and through said casing, tension-springs for keeping said bolts in one position, a movable slide-piece for actuating said bolts, with a key having a slotted barrel and adjustable spindle having studs near its end on its opposite sides, and a key-plate, substantially as shown and described.

705,288. FLAT-IRON. WEBSTER NEGUS, Cleveland, Ohio. Filed Sept. 3, 1901. Serial No. 74,164. (No model.)

Claim.—A flat-iron heater comprising a combustion-chamber, a return generating-tube over said combustion-chamber, an entrance-tube into the combustion-chamber, a small tube supported in said entrance-tube providing an air-inlet space between said tubes, and a nozzle terminating said generating-tube having a vapor-jet orifice controlled by a needle-valve and arranged to discharge vapor into said small tube, in combination, substantially as described.

705,283.

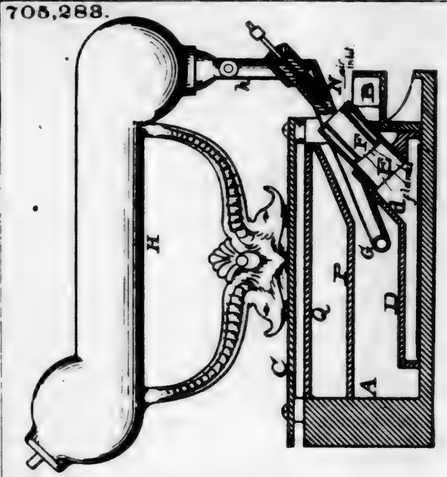

705,284. WASHBOARD. GEORGE W NEWSOM, Sachse, Tex. Filed Feb. 15, 1902. Serial No. 94,369. (No model.)

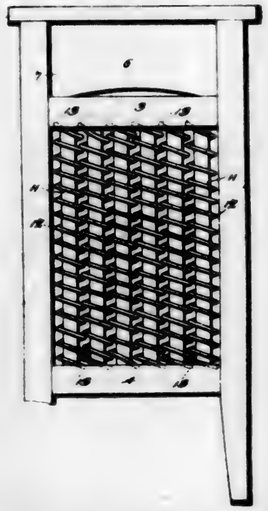

Claim.—1. A washboard comprising a frame, longitudinal supporting-bars angular in cross-section arranged within the frame, and coiled springs arranged on and supported by the said bars and provided with projecting portions, substantially as and for the purpose described.

2. A washboard comprising a frame, longitudinal supporting-bars angular in cross-section slidably mounted within the frame and capable of a limited movement transversely of the washboard, and coiled springs arranged on the supporting-bars and having projecting portions forming rubbing-surfaces, and spacing the supporting-bars, substantially as described.

3. A washboard comprising a frame provided with upper and lower bars having grooves, polygonal supporting-bars having their ends fitted in the grooves, and coiled springs disposed on the supporting-bars and having their terminals extended into the said grooves and abutting against the walls thereof, whereby the springs are held against rotary movement to prevent their ends from being exposed, substantially as described.

4. A washboard comprising a frame provided with upper and lower bars having grooves, polygonal supporting-bars having their ends fitted in the grooves and capable of a limited movement transversely of the washboard, and coiled springs disposed on the supporting-bars and having pro-

jecting portions forming rubbing-surfaces at both faces of the washboard and yieldably spacing the supporting-bars, substantially as described.

705,285. PESSARY. BENJAMIN F. OVERTON, Cuero, Tex. Filed Jan. 24, 1902. Serial No. 91,169. (No model.)

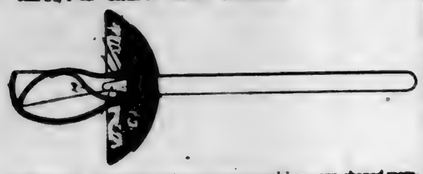

Claim.—1. An intra-uterine pessary comprising a cup-shaped member, a stem carrying said cup-shaped member and adapted to engage the inner walls of the uterus, said stem comprising a plurality of separate members, and an auxiliary spring having an inherent tendency to spread said members.

2. A pessary-support comprising two members arranged one partially within the other and a spring tending to separate said members.

3. A pessary comprising a cup-shaped member, a sectional stem one member of which is secured to the cup and the second member being arranged partly within the first, and a spring tending to separate said members.

4. An intra-uterine pessary comprising a metallic cup adapted to receive the os uteri, an expansible stem carrying said cup, a lower concaved disk and a yielding ring carried between the cup and disk and extending beyond the periphery thereof to protect the vaginal walls from contact with said cup.

5. A pessary comprising a cup-shaped member, an intra-uterine member secured thereto, a second movable intra-uterine member, a spring tending to separate said intra-uterine members and press the same into contact with the inner walls of the uterus, half-nuts carried by each of said members and an introducing-rod having a threaded portion to engage said half-nuts and thereby draw said members toward each other.

6. A pessary comprising a cup-shaped portion, a sectional stem one member of which is secured to the cup and the second member being arranged partly within the first, a spring tending to separate said members, and an introducing-rod adapted to engage with and contract said members against the spreading action of the spring.

705,286. EGG-CRATE. GEORGE B. PALMER and JOSEPH H. LAKE, Elmira, N. Y. Filed Oct. 15, 1900. Serial No. 32,967. (No model.)

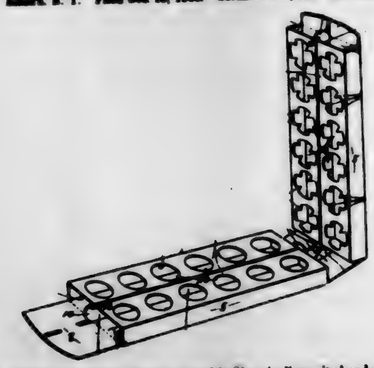

Claim.—1. An egg-crate comprising box-bodies united end to end, each having opposite lengthwise flaps provided with lengthwise rows of openings and adapted to be folded inwardly to form separate lengthwise compartments open from end to end, the box-bodies folding one over the other lengthwise of the compartments.

2. An egg-crate comprising box-bodies united end to end, each having opposite lengthwise flaps provided with lengthwise rows of openings and adapted to be folded inwardly to form separate lengthwise compartments open from end to end, the box-bodies folding one over the other lengthwise of the compartments and the free ends of each body having interlocking members integral therewith to hold the lengthwise flaps in their inwardly-folded position.

3. An egg-crate comprising box-bodies united end to end, each having opposite lengthwise flaps provided with lengthwise rows of openings and adapted to be folded inwardly to form separate lengthwise compartments open from end to end, the box-bodies folding one over the other lengthwise of the compartments and the opposite ends of each body having interlocking members formed integral therewith to hold the lengthwise flaps in their inwardly-folded position.

4. An egg-crate comprising box-bodies united end to end, each having opposite lengthwise flaps provided with lengthwise rows of openings and adapted to be folded inwardly to form separate lengthwise compartments open from end to end, the box-bodies folding one over the other lengthwise of the compartments and the opposite ends of each body having interlocking members formed integral therewith to hold the lengthwise flaps in their inwardly-folded position.

5. An egg-crate comprising box-bodies united end to end, each having opposite lengthwise flaps provided with lengthwise rows of openings and adapted to be folded inwardly to form separate lengthwise compartments open from end to end, the box-bodies folding one over the other lengthwise of the compartments and the free ends of the bodies having interlocking members.

6. An egg-crate comprising box-bodies united end to end, each having opposite lengthwise flaps provided with lengthwise rows of openings and adapted to be folded inwardly to form separate lengthwise compartments open from end to end, the box-bodies folding one over the other lengthwise of the compartments and the free ends of the bodies having interlocking members said members being arranged to hold the inner walls of the folded bodies separated one from the other.

7. A blank for forming the herein-described egg-crate consisting of a single piece of suitable material of sufficient length to form two similar hollow box-sections folding lengthwise one over the other, said blank having parallel scores forming the corners of the outer and side walls of each section, the central portions of the blank at opposite sides of said scores being cut away to form opposite similar flaps for each section, and the flaps are each provided with parallel scores and a row of openings lengthwise between the latter scores, said latter scores forming the corners of the inner and side walls and also the corners of the inner and central lengthwise wall or partitions.

8. A blank for forming the herein-described egg-crate consisting of a single piece of suitable material of sufficient length to form two similar hollow box-sections folding lengthwise one over the other, said blank having parallel scores forming the corners of the outer and side walls of each section, the central portions of the blank at opposite sides of said scores being cut away to form opposite similar flaps for each section, and the flaps are each provided with parallel scores and a row of openings lengthwise between the latter scores, said latter scores forming the corners of the inner and side walls and also the corners of the inner and central lengthwise wall or partitions, the adjacent ends of the lengthwise flaps being separated a distance greater than the distance between the scores forming the edges of the side walls.

9. A blank for forming the herein-described egg-crate consisting of a single piece of suitable material of sufficient length to form two similar hollow box-sections folding lengthwise one over the other, said blank having parallel scores forming the corners of the outer and side walls of each section, the central portions of the blank at opposite sides of said scores being cut away to form opposite similar flaps for each section, and the flaps are each provided with parallel scores and a row of openings lengthwise between the latter scores, said latter scores forming the corners of the inner and side walls and also the corners of the inner and central lengthwise wall or partitions, the adjacent ends of the lengthwise flaps being separated a distance greater than the distance between the scores forming the edges of the side walls and the blank having transverse scores alined with the adjacent ends of the flaps to form the corners of one end wall and the outer walls.

10. A blank for forming the herein-described egg-crate consisting of a single piece of suitable material of sufficient length to form two similar hollow box-sections folding lengthwise one over the other, said blank having parallel scores forming the corners of the outer and side walls of each section, the central portions of the blank at opposite sides of said scores being cut away to form opposite similar flaps for each section, and the flaps are each provided with parallel scores and a row of openings lengthwise between the latter scores, said latter scores forming the corners of the inner and side walls and also the corners of the inner and central lengthwise wall or partitions, the adjacent ends of the lengthwise flaps being separated a distance greater than the distance between the scores forming the edges of the side walls and the blank having transverse scores alined with the adjacent ends of the flaps to form the corners of one end wall and the outer walls, the portions forming said end wall and the adjacent ends of the flaps having interlocking members.

11. A blank for forming the herein-described egg-crate consisting of a single piece of suitable material of sufficient length to form two similar hollow box-sections folding lengthwise one over the other, said blank having parallel scores forming the corners of the outer and side walls of each section, the central portions of the blank at opposite sides of said scores being cut away to form opposite similar flaps for each section, and the flaps are each provided with parallel scores and a row of openings lengthwise between the latter scores, said latter scores forming the corners of the inner and side walls and also the corners of the inner and central lengthwise wall or partitions, the adjacent ends of the lengthwise flaps being separated a distance greater than the distance between the scores forming the edges of the side walls and the blank having transverse scores alined with the adjacent ends of the flaps to form the corners of one end wall and the outer walls, the portions forming said end wall and the adjacent ends of the flaps and also the extreme ends of the blank having interlocking members.

705,287. HEAT-DISTRIBUTING SYSTEM. WILLIAM H. PEARCE, Chicago, Ill. Filed July 27, 1901. Serial No. 70,001. (No model.)

Claim.—1. In a heat-distributing system, a service-main, a return-main, and drain-pipes connecting said service and return mains, said mains being in sections, and a connection for the adjacent ends of each of said sections comprising a sleeve, the ends of the main-sections operating loosely in the ends of said sleeves, means for anchoring said sleeves, and supports for said main-sections, said supports forming part of the anchoring means and embracing said sections to hold the same against lateral movement, as and for the purpose set forth.

2. In a heat-distributing system, a service-main made in sections, a coupling for the proximate ends of adjacent sections comprising a sleeve having an enlarged chamber centrally the length thereof, the ends of said main-sections operating loosely in the ends of said sleeve, supporting-seats arranged to receive and embrace the ends of said main-sections, said seats operating to hold the main-sections against lateral movement, and serving as a guide in the longitudinal expansion and contraction thereof, a return-pipe, and means for affording communication between the lowermost point of the enlarged chamber of said sleeve and said return-pipe, as and for the purpose set forth.

3. In a heat-distributing system, a service-main made in sections, a connection for the proximate ends of adjacent sections comprising a sleeve having an enlarged central chamber, both ends of said main-sections projecting loosely into the ends of said sleeve, a bracket or frame having seats arranged to embrace and support said main-sections and said sleeve, and serving to hold the same against lateral movement, while permitting longitudinal expansion and contraction thereof, means for anchoring said frame or bracket, a return-pipe, a drain-pipe communicating with the lowermost point of the enlarged chamber of said sleeve and delivering into said return-pipe, and a trap arranged in said drain-pipe, as and for the purpose set forth.

4. In a heat-distributing system, a service-main made in sections, means for connecting the proximate ends of adjacent sections including a sleeve having an enlarged central chamber, said sleeve provided with flanges or riffles on the interior surface thereof, the ends of said service-main sections operating freely through the ends of said sleeve, a return-pipe, and means for opening communication between said return-pipe and the lowermost point of said enlarged chamber, as and for the purpose set forth.

5. In a heat-distributing system, a service-main made in sections, means for connecting the proximate ends of adjacent sections including a sleeve having an enlarged chamber, the ends of said main-sections telescoping loosely into the ends of said sleeve, a return-pipe, means for connecting said return-pipe with the lowermost point of said enlarged chamber, and an anchor-plate having guiding-seats adapted to receive said sleeve, as and for the purpose set forth.

6. In a heat-distributing system, a service supply-main made in sections, means for coupling the proximate ends of adjacent sections including a sleeve, a return-pipe, also made in sections and arranged alongside of said supply-pipe, and a connecting-sleeve for the proximate ends of adjacent sections of said return-pipe, independent means for connecting branch pipes to said sleeves, said means being offset from each other or out of transverse alinement, and an anchor-plate having guiding-seats adapted to receive said sleeve, as and for the purpose set forth.

7. In a heat-distributing system, a service-main made in sections having means for coupling the proximate ends of adjacent sections including a sleeve rigidly mounted and anchored, a branch pipe connecting with said sleeve, the proximate ends of the sections of the main service-pipe operating loosely in the open ends of said sleeve, and means for supporting and guiding the ends of said service-main in true longitudinal relation with respect to said sleeve during expansion or contraction thereof, said means operating to prevent lateral movement of said section ends whereby the branch-pipe connection with said sleeve is relieved of any movement due to the endwise expansion of service-main sections, as and for the purpose set forth.

8. In a heat-distributing system, the combination of a service-main and a branch connection, an anchored sleeve to which said branch connection is connected, said service-main telescoping loosely into the ends of said sleeve, and means for supporting and guiding said service-main in true longitudinal relation with respect to said sleeve, said means operating to prevent lateral movement of the service-main, as and for the purpose set forth.

9. In a heat-distributing system, a service-main and a return-pipe, said main and pipe being made in sections, in combination with a sleeve interposed between the proximate ends of the adjacent sections of said main and provided with an enlarged chamber, said chamber having riffles upon the inner surface thereof, a drain-pipe communicating with said enlarged chamber, and delivering into said return-pipe, as and for the purpose set forth.

10. In a heat-distributing system, a service-main made in sections, a sleeve interposed between the proximate ends of the adjacent sections, an anchor-plate having seats arranged to receive said sleeve and also the said service-main sections, said seats constructed to embrace said sleeve and sections, respectively, whereby said sleeve and sections are held against lateral movement, but longitudinal movement, due to expansion and contraction, is permitted, and means for anchoring said anchor-plate, as and for the purpose set forth.

11. In a heat-distributing system, a service-main and a return-pipe, drain-pipes opening communication between said main and return-pipe, an anchor-plate having seats arranged to receive and embrace said main, said anchor-plate also provided with seats arranged to embrace and receive said return-pipe, and means for anchoring said plate, whereby said main and pipe are held against lateral movement but are permitted to expand or contract longitudinally, as and for the purpose set forth.

12. In a heat-distributing system, a service-main made in sections, a sleeve interposed between proximate ends of the adjacent sections, said sleeve provided with an enlarged chamber, a return-pipe, means for opening communication between said chamber and return-pipe, an anchor-plate having brackets or castings formed with seats adapted to receive and embrace said main sections, said anchor-plate also having brackets formed with seats adapted to receive and embrace said return-pipe, and means for anchoring said plate, as and for the purpose set forth.

13. In a heat-distributing system, a service-main made in sections, a sleeve arranged to receive freely in the ends thereof the proximate ends of adjacent main-sections, a packing interposed between said sleeve and main-sections, an anchor-plate having brackets or castings formed with seats arranged to receive and embrace said main-sections, said plate also provided with seats arranged to receive said sleeve, straps for binding said sleeve to said plate, and means for anchoring said plate, whereby said sleeve is rigidly held and said main-sections are supported and held against lateral movement but are permitted longitudinal movement for expansion or contraction, as and for the purpose set forth.

705,288. TENSION APPARATUS FOR STRINGS OF STRINGED MUSICAL INSTRUMENTS. PAUL PÉCHEMART, Bizaz, France. Filed June 16, 1900. Serial No. 20,567. (No model.)

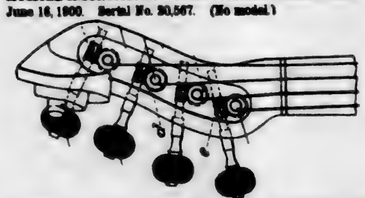

Claim.—1. A violin or like stringed instrument having a head and a neck provided with a finger-board, and tension-pegs all arranged longitudinally of said head and on one side only thereof, substantially as described.

2. A violin or like stringed instrument having a head and a neck provided with a finger-board, and tension-pegs with worm-gearing all arranged longitudinally of said head and on one side only thereof, substantially as described.

3. A violin or like stringed instrument having a head and a neck provided with a finger-board, spindles to which the strings are attached said spindles being arranged obliquely to the finger-board, and pegs for actuating the spindles by means of worm-gearing, the pegs being all arranged longitudinally of said head, and on one side only thereof, substantially as described.

705,289. CANDLE-MAKING MACHINE. ARTHUR B. PECK, Syracuse, N. Y. Filed Nov. 17, 1900. Serial No. 36,708. (No model.)

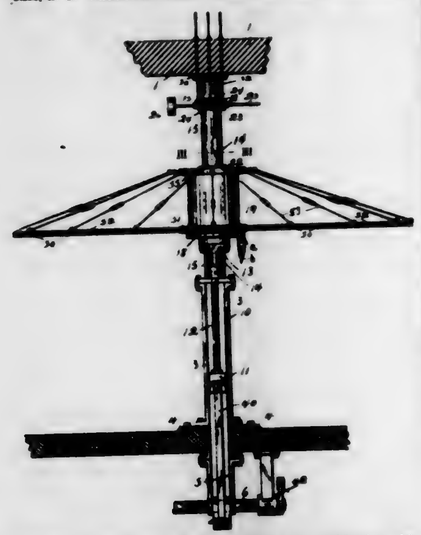

Claim.—1. In a candle-dipping machine, the combination with a suitable standard, of a wheel fitted thereto and rotating thereon to carry the wicks, means to secure the wicks on the wheel, rotating mechanism on the standard continuously rotated by power, connections between the wheel and the rotating mechanism, arms fitted to the standard to support the wheel in engagement with the rotating mechanism, and a hand-operated lever connected to said arms to elevate the wheel into engaging position, and to depress it periodically into dipping position.

2. In a candle-dipping machine, the combination with a hollow standard, of a rotating wheel fitted thereto, jointed connections fitted to the standard and connected to the wheel, rotating mechanism operated by power, teeth on the main wheel to engage with said rotating mechanism when the wheel is in elevated position, and a hand-operated lever connected to the jointed connections periodically to depress and elevate the wheel, substantially as described and shown.

3. In combination in a candle-dipping machine, upper and lower supports, a pedestal secured to the lower support, a piston fitting the pedestal and vertically reciprocating therein, a wheel carried on the piston, a ratchet on the wheel, a ratchet on the upper support, means for rotating the upper ratchet, and means for elevating the piston and wheel to bring the ratchets into engagement intermittingly.

4. In combination in a candle-dipping machine, upper and lower supports, a pedestal secured to the lower support, a piston fitting the pedestal and vertically reciprocating therein, a wheel carried on the piston, a ratchet on the wheel, a ratchet on the upper support, means for rotating the upper ratchet, means for elevating the piston and wheel to bring the ratchets into engagement intermittingly, and frames provided with means for the attachment of the wicks and with hooks for securing the respective frames on the wheel.

5. In combination in a candle-dipping machine, upper and lower supports, a pedestal secured on the lower support having depending arms, a piston fitted to the pedestal and vertically reciprocating therein, a shaft journaled in the lower arms, a compound lever connecting the shaft to the pedestal, a base-plate supported on the piston, an enlarged hub and wheel supported on the plate, antifriction-balls arranged between the hub and plate, a ratchet on the wheel-hub, an upper ratchet on the upper support, means for rotating the upper ratchet, and means for rotating the lower shaft periodically to elevate the piston and wheel to bring the two ratchets into engagement.

6. In combination in a candle-dipping machine, suitable upper and lower supports, a hollow pedestal on the lower support, lower arms depending from the pedestal, a shaft journaled in said arms, a block and piston fitted to the pedestal and reciprocating therein, a compound lever connecting the shaft to the block, a guide-tube supported on the pedestal formed with opposite guide-slots, a cross-arm on the upper end of the piston outwardly extending through the slots, a wheel base-plate supported on the cross-arm, an enlarged hub and wheel supported on said base-plate, antifriction-balls arranged between the wheel and the base-plate, a ratchet on the upper end of the hub, an upper ratchet supported by hangers below the upper support, a worm and gear, and means for rotating the worm to rotate the upper ratchet, means for rotating the shaft periodically to elevate the wheel, and detachable frames provided with means for attachment of the wicks, and with hooks for securing the frames to the wheel.

7. In combination in a candle-dipping machine, suitable upper and lower supports, a hollow pedestal on the lower support, lower arms depending from the pedestal, a shaft journaled in said arms, a block and piston fitted to the pedestal and reciprocating therein, a compound lever connecting the shaft to the block, a guide-tube supported on the pedestal formed with opposite guide-slots, a cross-arm on the upper end of the piston outwardly extending through the slots, a wheel base-plate supported on the cross-arm, an enlarged hub and wheel supported on said base-plate, antifriction-balls arranged between the wheel and the base-plate, a ratchet on the upper end of the hub, an upper ratchet supported by hangers below the upper support, a worm and gear, and means for rotating the worm to rotate the upper ratchet, means for rotating the shaft periodically to elevate the wheel-ratchet into engagement with the upper ratchet and turn the wheel, detachable frames provided with means for the attachment of the wicks and with hooks for securing the frames to the wheel, a latch on the base-plate having a beveled tip, and a spring for forcing it up into engagement with the hub.

705,290. ELEVATOR. STANTON B. PECK, Chicago, Ill., assignor to the Link Belt Machinery Company, Chicago, Ill., a Corporation of Illinois. Filed May 13, 1901. Serial No. 59,981. (No model.)

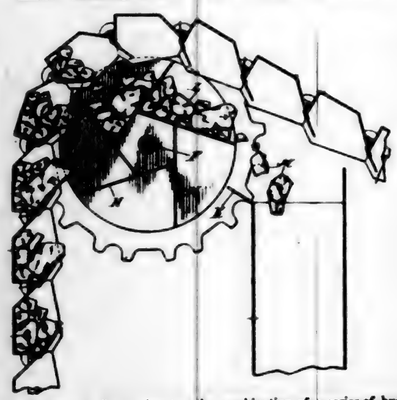

Claim.—1. In an elevator, the combination of a series of buckets, each opening inwardly and traveling about a certain axis of rotation, with a series of receiving-pockets rotating about said axis of rotation and formed by side flanges and two substantially flat plates set each at a tangent to an inner circle about the axis of rotation.

2. In an elevator, the combination of a series of buckets, each opening inwardly and traveling about a certain axis of rotation, with a series of deep and wide-mouthed receiving-pockets rotating about said axis of rotation, each provided with a bottom inclined so that when its outer edge has reached on its ascending motion the horizontal line through the axis of rotation, the bottom of each pocket is inclined inwardly to hold the load which falls into it from the bucket above.

3. In an elevator, the combination of the elevating chain and buckets with a series of rotating pockets, each composed of side walls and two substantially flat plates, which form respectively the top and bottom of each pocket and which are joined together near the axis of rotation of such pockets.

4. In an elevator, the combination of the elevating chain and buckets, adapted each to discharge its load inwardly as it ascends, with a series of rotating pockets, each composed of side walls and two substantially flat plates, which form respectively the top and bottom of each pocket and which are joined together near the axis of rotation of such pockets.

5. In an elevator, the combination of a suitable driving-chain with a series of contiguous buckets, opening at the side and which travel around a certain axis, with a series of pockets, rotating about the same axis and opening outwardly, with wide unobstructed mouths to receive the material which projects from the side openings of the buckets, said pockets formed by thin partitions and presenting to the buckets in the line of rotation only the sharp edges of such partitions.

6. In an elevator, the combination of a suitable driving-chain with a series of contiguous buckets, opening at the side and which travel around a certain axis, with a series of pockets, rotating about the same axis and opening outwardly, with wide unobstructed mouths to receive the material which projects from the side openings of the buckets, said pockets formed by thin partitions and presenting to the buckets in the line of rotation only the sharp edges of such partitions, said partitions placed tangentially so as to present an inwardly-inclined bottom when the outer edge is in the horizontal line on the ascending side.

7. In an elevator, the combination of an elevating-chain with a series of contiguous buckets thereto attached and opening inwardly toward the axis about which the chain and buckets travel, a series of pockets rotating about such axis and opening outwardly to receive the contents of the buckets, said chain and buckets departing from the pockets on the descending side and said pockets discharging beneath such chain and buckets on the descending side and at one side of the vertical line through the axis of rotation.

8. In an elevator, the combination of the elevating chain and buckets with a series of rotating pockets, each composed of side walls and two substantially flat plates, which form respectively the top and bottom of such pocket and which are joined together near the axis of rotation of such pockets, the receiving-bottom of each of such pockets placed tangentially so that when such pocket is on its ascending side, its bottom will have a downward and inward dip when its outer edge is in a horizontal line with the axis of rotation.

9. In an elevator, the combination of the elevating chain and buckets with a series of rotating pockets, each composed of side walls and two substantially flat plates, which form successively the receiving and discharging bottoms of such pocket and which are joined together near the axis of rotation of such pockets, the discharging-bottom of each of such pockets placed tangentially so that when such pocket is on its descending side, its bottom has an outward and downward dip when its outer edge is in a horizontal line with the axis of rotation.

10. In an elevator, the combination of the elevating chain and buckets, adapted each to discharge its load inwardly as it ascends, with a series of rotating pockets each composed of side walls and two substantially flat plates, which form respectively the top and bottom of such pocket and which are joined together near the axis of rotation of such pockets, the receiving-bottom of each of such pockets placed tangentially to a circle concentric with the axis of rotation.

11. In an elevator, the combination of the elevating chain and buckets, adapted each to discharge its load inwardly as it ascends, with a series of rotating pockets, each composed of side walls and two substantially flat plates, which form respectively the top and bottom of such pocket and which are joined together near the axis of rotation of such pockets, the discharging-bottom of each of such pockets placed tangentially to a circle concentric with the axis of rotation.

12. In an elevator, the combination of a series of contiguous ascending buckets adapted to travel around an axis of rotation at a certain point, with a series of carrying-pockets adapted to rotate about the same axis of rotation and receive the material from the ascending buckets.

13. In an elevator, the combination of a series of contiguous ascending buckets opening inwardly and adapted to travel around an axis of rotation at a certain point, with a series of carrying-pockets opening outwardly and adapted to rotate about the same axis of rotation and receive material from the ascending buckets.

14. In an elevator, the combination of a series of contiguous, continuously-traveling, carrying-buckets, with a series of continuously-rotating, carrying-pockets, the same associated so that the load of the buckets is discharged into the pockets while the buckets are ascending.

15. In an elevator, the combination of a series of contiguous, continuously-traveling carrying-buckets with a series of continuously-rotating carrying-pockets, the same associated so that the load of the carrying-buckets is discharged into the carrying-pockets, said carrying-pockets shaped so as to hold the load, carry it partially around the axis of rotation and discharge it.

16. In an elevator, the combination of a series of buckets, each opening inwardly and traveling about a certain axis of rotation, with a series of carrying-pockets rotating about said axis of rotation, opening outwardly, the inner edges of the buckets and the outer edges of the pockets traveling in substantially the same circle.

17. In an elevator, the combination of a series of buckets, each opening inwardly and traveling about a certain axis of rotation, with a series of carrying-pockets rotating about the same axis of rotation opening outwardly, the inner edges of the buckets and the outer edges of the pockets traveling in substantially the same circle, the inner edges of the buckets being somewhat in advance of the outer edges of the pockets in such circle.

18. In an elevator, the combination of a series of buckets, each opening inwardly and traveling about a certain axis of rotation, with a series of carrying-pockets rotating about said axis of rotation and opening outwardly, the inner edges of said buckets being somewhat in advance of the outer edges of the pockets in such circle.

19. In an elevator, the combination of a series of buckets, each opening inwardly and traveling about a certain axis of rotation, with a series of carrying-pockets rotating about said axis of rotation and opening outwardly, said buckets adapted to discharge their loads while ascending and said pockets adapted to discharge their loads while descending.

20. In an elevator, the combination of a series of contiguous, laterally-discharging elevator-buckets traveling about a certain axis of rotation, with a series of receiving-pockets rotating about such axis of rotation, the speed of such travel and rotation being such as to keep the buckets and the pockets in the same relative position while they are traveling about the same axis of rotation.

21. In an elevator, the combination of means for elevating the material vertically and discharging it laterally, with carrying-pockets adapted to receive the material from the means for elevating the same, said means for elevating the material and said rotating carrying-pockets adapted to retain their relative positions during the period of their travel about the same axis of rotation.

22. In an elevator, the combination of a series of laterally-discharging elevating-buckets, with a series of carrying-pockets, both traveling in the same direction for at least a portion of their travel and adapted to retain their relative positions during the period of such travel.

23. In an elevator device, the combination of a series of ascending carrying-buckets with a series of rotating carrying-pockets around which the buckets pass, each pocket triangular in cross-section and located so as to receive and hold its load while traveling upwardly and means for driving and rotating the buckets and pockets together.

24. In an elevator device, the combination of a series of ascending carrying-buckets with a series of rotating carrying-pockets, each pocket triangular in cross-section and located so as to receive and hold its load while traveling upwardly the pockets and buckets so spaced and timed that the bottom of the pocket follows at a greater or less interval the bottom of the bucket, and means for driving and rotating the buckets and pockets together, said carrying-pockets also shaped and located so as to carry the load over the axis of rotation and discharge it while such pockets are descending.

25. In an elevator, the combination of means for elevating material with rotating carrying-pockets around which the elevating device passes and adapted to receive and hold the material at one side of the axis of rotation, retain it until it has been carried across the axis of rotation and discharge it at the other side of the axis of rotation beyond the vertical tangent to the circle described by the outer edges of such pockets.

26. In an elevator, the combination with the elevating chain and buckets of a series of rotating carrying-pockets, around which the buckets pass and adapted to receive the contents of the buckets and carry it over a vertical line through the axis of rotation and to freely discharge the same to one side of the path of rotation of the pockets.

27. In an elevator, the combination with the elevating chain and buckets of a series of rotating carrying-pockets, around which the buckets pass and adapted to receive the contents of the buckets at one side of the path of rotation of the pockets and carry it over a vertical line through the axis of rotation and to freely discharge the same to the other side of the path of rotation of the pockets.

28. In an elevator, the combination with the elevating chain and buckets, adapted each to discharge its load inwardly as it ascends, of a series of rotating carrying-pockets, adapted to receive the contents of the buckets and carry it over a vertical line through the axis of rotation and to freely discharge the same to one side of the path of rotation of the pockets.

29. In an elevator, the combination with the elevating chain and buckets, adapted each to discharge its load inwardly as it ascends, of a series of rotating carrying-pockets, adapted to receive the contents of the buckets at one side of the path of rotation of the pockets and carry it over a vertical line through the axis of rotation and to freely discharge the same to the other side of the path of rotation of the pockets.

30. In an elevator, the combination of a suitable driving-chain with a series of contiguous buckets, opening at the side and which travel around a certain axis, with a series of carrying-pockets, rotating about the same axis and opening outwardly, with wide unobstructed mouths to receive the material which projects from the side openings of the buckets.

31. In an elevator, the combination of means for elevating the ma-

terial vertically and discharging it laterally, with carrying-pockets adapted to receive the material from the means for elevating the same, said means for elevating the material and said rotating carrying-pockets adapted to retain their relative positions during the period of their travel about the same axis of rotation, said carrying-pockets forming parts of the pulley over which the ascending carrying-buckets pass.

32. In an elevator, the combination of a series of laterally-discharging elevating-buckets, with a series of carrying-pockets, both traveling in the same direction for at least a portion of their travel and adapted to retain their relative positions during the period of such travel, said carrying-pockets forming parts of the pulley over which the ascending carrying-buckets pass.

33. In an elevator device, the combination of a series of ascending carrying buckets with a series of rotating carrying-pockets, each pocket triangular in cross-section and located so as to receive and hold its load while traveling upwardly, and means for driving and rotating the buckets and pockets together, said carrying-pockets forming parts of the pulley over which the ascending carrying-buckets pass.

34. In an elevator device, the combination of a series of ascending carrying-buckets with a series of rotating carrying-pockets, each pocket triangular in cross-section and located so as to receive and hold its load while traveling upwardly, and means for driving and rotating the buckets and pockets together, said carrying-pockets also shaped and located so as to carry the load over the axis of rotation and discharge it while such pockets are descending, said carrying-pockets forming parts of the pulley over which the ascending carrying-buckets pass.

35. In an elevator, the combination of means for elevating material with rotating carrying-pockets adapted to receive and hold the material at one side of the axis of rotation, retain it until it has been carried across the axis of rotation and discharge it at the other side of the axis of rotation beyond the vertical tangent to the circle described by the outer edges of such pockets, said carrying-pockets forming parts of the pulley over which the ascending carrying-buckets pass.

36. In an elevator, the combination with the elevating chain and buckets of a series of rotating carrying-pockets, adapted to receive the contents of the buckets and carry it over a vertical line through the axis of rotation and to freely discharge the same to one side of the path of rotation of the pockets, said carrying-pockets forming parts of the pulley over which the ascending carrying-buckets pass.

37. In an elevator, the combination with the elevating chain and buckets of a series of rotating carrying-pockets, adapted to receive the contents of the buckets at one side of the path of rotation of the pockets and carry it over a vertical line through the axis of rotation and to freely discharge the same to the other side of the path of rotation of the pockets, said carrying-pockets forming parts of the pulley over which the ascending carrying-buckets pass.

38. In an elevator, the combination of a series of elevating-buckets with a series of carrying-pockets, both traveling in the same direction for at least a portion of their travel, said carrying-pockets associated with a pulley over which the ascending carrying-buckets pass.

705,291. TRAIN-CONTROLLING APPARATUS. JONATHAN D. PRICE and ALEXANDER C. MILLER, Aurora, Ill. Filed Dec. 9, 1901. Serial No. 85,168. (No model.)

Claim.—1. In apparatus of the character described, the combination of a track having one electrically-continuous rail serving as a main and one rail electrically divided into sections corresponding to blocks, a third rail or conductor electrically divided into sections corresponding to blocks, a fourth rail or conductor which is electrically continuous and serves as a main, an electric generator connected with said first-named track-rail and said fourth rail, connections between said fourth rail and the sections of said third rail through which said sections are energized, instruments connected with both said track-rails and controlling said last-named connections, and connections for supplying current to said last-named instruments.

2. In apparatus of the character described, the combination of a track having one electrically-continuous rail and one rail having sections insulated from each other, a third rail or conductor having sections corresponding with said last-named sections, a fourth rail or conductor which is electrically continuous, a generator connected with said first-named rail and said last-named rail, conductors connecting said fourth rail with the several sections of said electrically-divided track-rail, conductors connecting said fourth rail with the several sections of said third rail and supplied with switches, and electromagnets controlling said switches and connected with both track-rails.

3. In apparatus of the character described, the combination of a track having one electrically-continuous rail and one rail having sections insulated from each other, a third rail or conductor having sections corresponding with said last-named sections, a fourth rail or conductor which is electrically continuous, a generator connected with said first-named rail and said last-named rail, conductors connecting said fourth rail with the several sections of said electrically-divided track-rail, and having in their courses suitable resistance-coils, conductors connecting said fourth rail with the several sections of said third rail and supplied with switches, and electromagnets controlling said switches and connected with both track-rails.

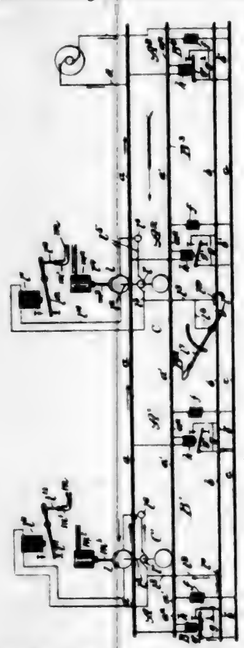

4. In apparatus of the character described, the combination of a track having one rail electrically divided into sections, a third rail electrically divided in corresponding sections, a fourth rail which is electrically continuous, resistance-coils connected with said fourth rail and with the sections of said electrically-divided track-rail, conductors connected with said fourth rail and with the advance ends of the sections of said third rail and supplied with switches, electromagnets controlling said switches and connected with said electrically-continuous track-rail and with the rear ends of the sections of said electrically-divided track-rail, and an electric generator connected with said electrically-continuous track-rail and with said fourth rail.

5. In apparatus of the character described, the combination of a track having an electrically-continuous rail, and a rail electrically divided into sections, a third rail electrically divided into corresponding sections, a fourth rail or conductor connected with the several sections of said electrically-divided track-rail, switch-supplied connections between said fourth rail and the several sections of said third rail, electromagnets controlling said switches and connected with both track-rails, train-carried mechanism having a conductor engaging said electrically-continuous track-rail and a conductor engaging said third rail, and a generator serving to energize said electrically-continuous track-rail and said fourth rail.

6. In apparatus of the character described, the combination of a track having an electrically-continuous rail, and a rail electrically divided into sections, a third rail electrically divided into corresponding sections, a fourth rail or conductor connected with the several sections of said electrically-divided track-rail, switch-supplied connections between said fourth rail and the several sections of said third rail, electromagnets controlling said switches and connected with both track-rails, a generator connected with said electrically-continuous track-rail and said fourth rail, and a train-carried electric motor having a conductor engaging said electrically-continuous track-rail and a conductor engaging said third rail.

7. In apparatus of the character described, the combination of a track having an electrically-continuous rail, and a rail electrically divided into sections, a third rail electrically divided into corresponding sections, a fourth rail or conductor connected with the several sections of said electrically-divided track-rail, switch-supplied connections between said fourth rail and the several sections of said third rail, last-named electromagnets controlling said switches and connected with both track-rails, a generator connected with said electrically-continuous rails, a train-carried electric motor, a train-carried brake mechanism, a magnet controlling said brake mechanism, conductors connecting said electric motor and said electromagnet with said electrically-continuous track-rail, and a conductor connecting said electromagnet and said electric motor with said third rail whereby said motor is deprived of current and the brakes applied simultaneously therewith when a deënergized third-rail section is encountered.

8. In apparatus of the character described, the combination of a track having an electrically-continuous rail, and a rail electrically divided into sections, a third rail electrically divided into corresponding sections, a fourth rail or conductor connected with the several sections of said electrically-divided track-rail, switch-supplied connections between said fourth rail and the several connections of said third rail, electromagnets controlling said switches and connected with both track-rails, a generator connected with said electrically-continuous rails, a train-carried electric motor having a conductor engaging said electric continuous track-rail and a conductor engaging said third rail, and a manually-controlled conductor connected with said electric motor and movable into contact with said fourth rail.

705,292. WINDOW-CLEANING CHAIR. SUSDEL RAMBOWITH, New York, N. Y. Filed Feb. 17, 1902. Serial No. 94,359. (No model.)

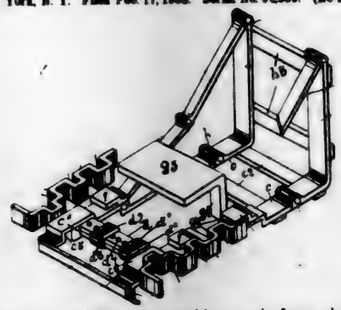

Claim.—1. A window-chair comprising a main frame adapted to engage the transverse members of the bottom of the window-frame, transversely-adjustable bars mounted in said main frame and provided with locking devices adapted to engage the beads or strips of the sides of the window-frame, a hinged member connected with the outer end of the main frame and adapted to be held in an upright position, side rods hinged to the top portion of the said hinged member and to the sides of the main frame and composed of separate parts hinged together, and a seat detachably connected with the main frame, substantially as shown and described.

2. A window-chair comprising a main frame adapted to engage the transverse members of the bottom of the window-frame transversely-adjustable bars mounted in said main frame and provided with locking devices adapted to engage the beads or strips of the sides of the window-frame, a hinged member connected with the outer end of the main frame and adapted to be held in an upright position, side rods hinged to the top portion of said hinged member and to the sides of the main frame and composed of separate parts hinged together, and a seat detachably connected with the main frame, said seat being so placed as to cover the transversely-adjustable bars, substantially as shown and described.

705,293. FEED-WATER HEATER. FRED W. RENCH, Tipton, Kans. Filed Mar. 27, 1902. Serial No. 100,856. (No model.)

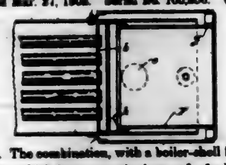

Claim.—1. The combination, with a boiler-shell having an end plate and a prolongation which forms a smoke-box; of a feed-water heater having an inner shell secured to the inside of the said prolongation at one end, and an outer shell secured to the outside of the boiler at the same end, thereby forming a water-space on each side of the said prolongation, and a ring connecting the said inner and outer shells together beyond the end of the said prolongation, substantially as set forth.

2. The combination, with a boiler-shell having an end plate and a prolongation which forms a smoke-box; of a feed-water heater having an inner shell and an outer shell, two flanged rings secured respectively between the said boiler and the outer shell and between the said prolongation and the inner shell, thereby forming a water-space on each side of the said prolongation, and a ring connecting the inner and outer shells together beyond the end of the said prolongation, substantially as set forth.

3. The combination, with a boiler-shell having an end plate and a prolongation which forms a smoke-box; of a feed-water heater having an inner shell secured to the inside of the said prolongation, and an outer shell secured to the outside of the boiler-shell at the same end, thereby forming a water-space on each side of the said prolongation, and a ring connecting the said inner and outer shells beyond the end of the said prolongation; and a smoke-pipe which passes through the said inner and outer shells and prolongation, substantially as set forth.

705,294. BLANKET FOR USE IN THE ART OF PRINTING. JOSEPH E. RHODES, Boston, Mass. Filed July 27, 1897. Serial No. 646,092. (No model.)

Claim.—1. A blanket adapted to be applied to a cylinder or platen of a printing press or machine, and consisting of a sheet of rubber or analogous material having a surface formed with numerous small integral points or projections larger at their bases than at their upper ends whereby the area of resistance in each projection is increased in proportion to the compression of said projection, each projection being independent of and close to the adjacent projections, substantially as set forth.

2. A blanket adapted to be applied to a cylinder or platen of a printing press or machine, and consisting of a sheet of rubber or analogous material having a surface formed with numerous small integral points or projections approximately conical or conoidal in shape, each independent of but near to the adjacent points or projections, substantially as described.

3. A blanket for the impression member of a printing-press composed of a flexible backing, and numerous closely-disposed elastic projections increasing in size toward their bases.

4. In a printing-press, the combination of impression-producing devices, and a blanket interposed between said devices and composed of a flexible backing and numerous closely-disposed elastic projections constituting an impression-surface having independently-yielding areas, said projections increasing in size toward their bases.

5. The herein-described printers' blanket composed of a soft rubber backing having a facing of closely-disposed projections increasing in size toward their bases, said backing and projections being integral one with the other, and the extremities of said projections constituting an impression-surface having independently-yielding areas.

6. A blanket for the impression member of a printing-press, composed of a flexible backing and numerous small and closely-disposed short and comparatively thick projections, made elastic and of such proportions as to expand transversely when pressure is applied longitudinally thereto, each projection being independent of and close to the adjacent projections.

7. A blanket for the impression member of a printing-press, composed of a soft rubber flexible backing and numerous small and closely-disposed short and comparatively thick integral soft-rubber projections, made elastic and of such proportions as to expand transversely when pressure is applied thereto longitudinally, each projection being independent of and close to the adjacent projection.

8. A blanket for the impression member of a printing-press, composed of a flexible backing and numerous small and closely-disposed projections, increasing in size toward their bases, and made elastic to expand transversely when pressure is applied longitudinally thereto, each projection being independent of and close to the adjacent projection.

9. A blanket for the impression member of a printing-press having a suitable support combined with numerous closely-disposed elastic rubber projections, each projection independent of the adjacent projections, and all so closely and uniformly disposed as that their ends constitute an impression-surface having a multiplicity of small independently-yielding areas.

10. A blanket for the impression member of a printing-press composed of a rubber support or base formed with numerous closely-disposed elastic rubber projections, each projection independent of the adjacent projections, and all so closely and uniformly disposed as that their ends constitute an impression-surface having a multiplicity of small independently-yielding areas.

11. A blanket for the impression member of a printing-press consisting of numerous closely-disposed elastic projections increasing in size toward their bases, combined with a suitable basic support.

12. A blanket for the impression member of a printing-press, composed of a flexible support and numerous small and closely-disposed short and comparatively thick projections made elastic and of such proportions to expand transversely when pressure is applied longitudinally thereto.

705,295. CLOTHES-DRYING ATTACHMENT FOR RANGE-BOILERS. SAMUEL L. RICHARDSON, New York, N. Y. Filed Apr. 13, 1901. Serial No. 55,670. (No model.)

Claim.—1. An improved clothes-drying attachment for range-boilers, comprising a body portion which is formed to fit the outer surface of the boiler, means for securing the same in operative position, and a bracket-arm adjustably carried by said body portion, said body portion being provided with a slidably-mounted keeper consisting of a metallic blank the end portions of which are folded inwardly about the body portion and the central portion of which is formed into a socket in which the inner end of the bracket-arm is fitted.

2. An improved clothes-drying attachment for range-boilers, comprising a body portion which is formed to fit the outer surface of the boiler and consists of a plurality of strips or bands provided with overlapping ends and with means for securing said overlapping ends in predetermined relation, means for securing said strips in position to clamp the body portion to the boiler, and a bracket-arm adjustably carried by the body portion, said body portion being provided with a slidably-mounted keeper consisting of a metallic blank the end portions of which are folded inwardly about the body portion and the central portion of which are formed into a socket in which the inner end of the bracket-arm is fitted.

705,296. CURTAIN-POLE. THOMAS C. RICHARDS, Winsted, Conn. Filed May 17, 1901. Serial No. 60,741. (No model.)

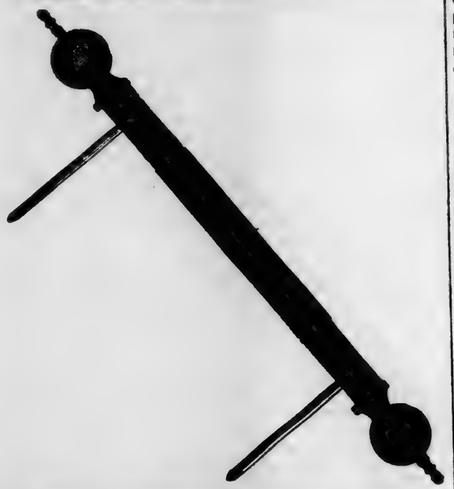

Claim.—1. The combination of a curtain-pole comprising three members, the central member made tubular and telescoping over the end members, and all of said members having alined flattened faces, the end sections having holes through the same parallel with said flat faces, and hooks having upright members at their free ends passing through said holes.

2. The combination of a series of pole-sections, each having longitudinal corrugations, the central section made of sheet metal and telescoping over the end sections, the end sections having alining flattened peripheral faces, and the central sheet-metal section having a portion of its corrugated periphery bent and made to extend across the flat faces of the end sections.

3. The combination of a series of pole-sections, the central section made of sheet metal and telescoping over the end sections, hook-brackets, each passing at one end through a hole in an end section, and spring-clips attached to said hook-brackets for retaining the pole in position relatively thereto.

705,297. EMBOSSING-MACHINE. HAMILTON RICE, Mystic, Conn. Filed Oct. 22, 1901. Serial No. 79,574. (No model.)

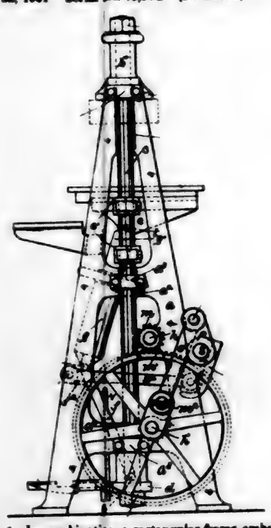

Claim.—1. In combination, a rectangular frame embodying a cross-head with fixed platen b^4, a bed-plate slidably mounted on said frame, a toggle as herein set forth for moving the said bed-plate, and means disposed substantially in vertical line with said platen, bed-plate and toggle for operating said toggle consisting of rock-shaft s and links s^2, and means for rocking shaft s consisting of a crank w^2 and a rod o connecting said crank with the said rock-shaft.

2. The combination of the driving-shaft, the fixed platen and the movable bed-plate, of toggle members connecting said bed-plate and a fixed portion of the frame for operating the bed-plate, a gear on said shaft, a shaft parallel with the driving-shaft, a gear thereon meshing with the gear on the driving-shaft disposed in vertical alinement with said platen, bed-plate and toggle members, a crank-pin on the last-mentioned gear, a link connected thereto, a crank and crank-pin connected to the other end of said link, a rock-shaft connected to said crank-pin and a connection between said rock-shaft and one of the toggle members, as set forth.

705,298. HARVESTING-MACHINE. BENJAMIN F. RIEKER, Moorsville, Ind. Filed Aug. 30, 1901. Serial No. 73,863. (No model.)

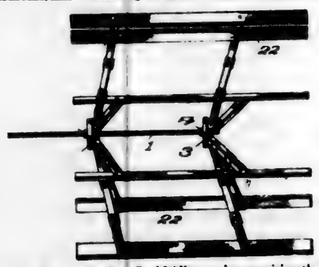

Claim.—The herein-described folding reel, comprising the main shaft 1 threaded at its inner and outer ends, combined with a pair of disks, one

for each threaded end of said threaded shaft and means to hold said disks in an adjusted position; suitable sockets formed upon each of said disks; folding arms comprising the members 6, 8 and 10; suitable hinges connecting said members and means, substantially as described, for reinforcing said hinges and enabling said members to be folded parallel with each other or extended, all combined substantially as specified and for the purpose set forth.

705,299. ADJUSTABLE BRAKE-HEAD. GILBERT P. RITTER, Chicago, Ill. Filed May 15, 1902. Serial No. 107,473. (No model.)

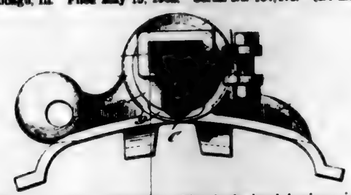

Claim.—1. The combination with a brake-head having a journal-opening for the reception of a journal on the end of a brake-beam, of a split-ring or strap clamp adapted to grip said journal and means for confining said clamp to the brake-head, substantially as and for the purposes specified.

2. The combination with a brake-head having a journal-opening, of a split-ring clamp which coincides with the journal-opening of the brake-head, substantially as and for the purposes specified.

3. The combination with a brake-head having a journal-opening and a lug or projection adjacent thereto, of a split-ring clamp having ears which engage the lug or projection on the brake-head, and means for confining the split ring thereto, substantially as and for the purposes specified.

4. The combination with a brake-head having a journal-opening, of a split-ring clamp, and means for confining the split-ring clamp to the brake-head and reducing the diameter of the split-ring clamp, substantially as and for the purposes specified.

5. The combination with a brake-head having a journal-opening and provided with a T-lug adjacent to said opening, of a split ring having perforate ears and a bolt and nut which engage the ears of the split ring, substantially as and for the purposes specified.

705,300. MACHINE FOR SORTING TOBACCO-LEAVES. ELMER A. ROLLMAN, West Manchester, Ohio. Filed Mar. 27, 1902. Serial No. 100,290. (No model.)

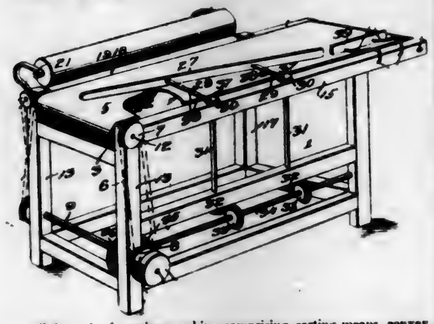

Claim.—1. A sorting-machine comprising sorting means, conveying mechanism, and feeding means having a reciprocatory movement with relation to the conveying mechanism.

2. A sorting-machine comprising sorting means, conveying mechanism, and feeding means obliquely disposed to the conveying mechanism and having a transverse movement with relation thereto.

3. A sorting-machine comprising sorting means, conveying mechanism, and feeding means obliquely disposed to the conveying mechanism and having an orbital movement with relation thereto.

4. A sorting-machine comprising sorting-rollers, conveying mechanism, and feeding means obliquely disposed to the conveying mechanism and having an orbital movement with relation thereto.

5. A sorting-machine comprising sorting-rollers, conveying mechanism, and adjustable feeding means obliquely disposed to the conveying mechanism and having an orbital movement with relation thereto.

6. A sorting-machine comprising sorting means, conveying mechanism, and feeding means having a movement transverse to that of the conveying mechanism.

7. In a sorting-machine, the combination with an endless conveyer and sorting means, of feeding means having a transverse movement with relation to the conveyer.

8. In a sorting-machine, the combination with an endless conveyer and sorting means, of feeding means obliquely disposed to the conveyer and having orbital movement with relation thereto.

9. A sorting-machine comprising sorting-rollers, conveying mechanism, feeding means having a reciprocatory movement with relation to the conveying mechanism, and a guide coacting with the feeding means.

10. A sorting-machine comprising sorting-rollers, conveying mechanism, adjustable feeding means having a reciprocatory movement with relation to the conveying mechanism, and an adjustable guide coacting with the said means.

11. A sorting-machine comprising sorting-rollers, conveying mechanism, and feeding means having a reciprocatory movement with relation to the conveying mechanism.

12. A sorting-machine comprising sorting-rollers, conveying mechanism, and reciprocatory feeding means disposed at an angle to the rollers.

705,301. LATCH. ELLIS J. ROOT, San Francisco, Cal. Filed Dec. 4, 1900. Serial No. 38,666. (No model.)

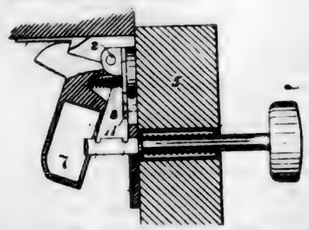

Claim.—1. In combination, a bell-crank latch, one of its arms adapted to engage with a suitable stop, the other provided with a contracted mouth-recess and a longitudinally-movable rod or bar having an enlarged end to engage with the contracted mouth of the recess suitably arranged whereby the latch is operated by motion in one direction only of the rod or bar, the latch being so connected that it may be operated from one side of the door independent of the movable rod or bar.

2. In combination, a bell-crank latch, one of its arms adapted to engage with a suitable stop, the other provided with a contracted mouth-recess and a longitudinally-movable rod or bar having an enlarged end to engage with the contracted mouth of the recess suitably arranged whereby the latch is operated by motion in one direction only of the rod or bar and a pivoted latch or pawl adapted to engage with the rod or bar whereby through such engagement longitudinal motion of the rod or bar is prevented.

3. In combination, a latch adapted to engage with a suitable stop, a longitudinally-movable device suitably arranged to operate said latch by its motion in one direction only and a pivoted latch or pawl adapted to engage with the operating device in two positions whereby through such engagement longitudinal motion of the operating device is prevented and the said device is secured at either end of its motion by the pivoted latch or pawl.

4. In combination, a latch adapted to engage with a suitable stop, a longitudinally-movable device suitably arranged to operate said latch by its motion in one direction only and a pivoted latch or pawl adapted to engage with the operating device whereby through such engagement longitudinal motion of the operating device is prevented, said rod or bar being provided with more than one catching device to provide for locking said rod or bar in different positions by engagement with the latch or pawl.

5. In combination, a latch adapted to engage with a suitable stop, a longitudinally-movable rod or bar suitably arranged to operate said latch by its motion in one direction only and a pivoted latch or pawl adapted to engage with the rod or bar whereby through such engagement longitudinal motion of the rod or bar is prevented said rod or bar being provided with more than one catching device to provide for locking said rod or bar in different positions by engagement with the latch or pawl.

6. In combination, a latch adapted to engage with a suitable stop, a longitudinally-movable rod or bar having a lost-motion connection with the latch whereby it operates said latch by its motion in one direction only and a pivoted latch or pawl adapted to engage with the rod or bar whereby through such engagement longitudinal motion of the rod or bar is prevented, said rod or bar being provided with more than one catch-

ing device to provide for locking said rod or bar in different positions by engagement with the latch or pawl.

7. In combination, a bell-crank latch, one of its arms adapted to engage with a suitable stop, the other provided with a contracted mouth or recess and a longitudinally-movable rod or bar having an enlarged end to engage with the contracted mouth of the recess suitably arranged whereby the latch is operated by the motion in one direction only of the rod or bar and a pivoted latch or pawl adapted to engage with the rod or bar whereby through such engagement longitudinal motion of the rod or bar is prevented, said rod or bar being provided with more than one catching device to provide for locking said bar in different positions by engagement with the latch or pawl.

705,802. CONTROLLING MECHANISM. HARRY ROSS, Utica, N. Y., assignor to Remington Automobile & Motor Company, Utica, N. Y. Filed Nov. 18, 1901. Serial No. 82,632. (No model.)

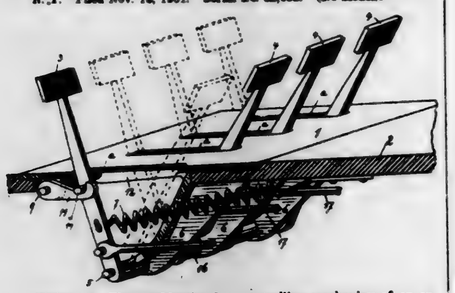

Claim.—1. The combination in a controlling mechanism of an operative controlling-lever, a spring for returning said lever to its inoperative position, a catch for securing said lever in operative position, a second adjacent controlling-lever, a spring for returning said second lever to its inoperative position and means cooperating with said second lever for releasing said catch, substantially as set forth.

2. The combination in a controlling mechanism of a set of controlling-levers operating in parallel planes and arranged adjacent to each other, a catch for securing one of said levers in operative position, means for cooperating with each of the other levers of the set for releasing said catch upon operating any of said other levers and springs for returning said several levers to their inoperative positions, substantially as set forth.

3. The combination in a controlling mechanism of a swinging lever, means for returning it to its inoperative position, a catch for securing it in its operative position, a second adjacent controlling-lever and means cooperating with said second adjacent controlling-lever for throwing out or disengaging said catch, substantially as set forth.

4. In a controlling mechanism, the combination of the base or plate, a series of controlling-levers pivotally supported beneath said base or plate and operating through slotted openings therein, means for returning each of said levers to their inoperative positions, a catch 11 for securing one of said levers in operative position, a rock-shaft on which said catch is mounted, angular levers 12 secured to said rock-shaft and means on the several other levers of said set for engaging with, or operating on said levers 12 whereby the catch is released, substantially as set forth.

705,808. WINDOW-VENTILATOR. JOHN A. RUSSELL, Rangeley, Me. Filed Mar. 11, 1901. Serial No. 50,550. (No model.)

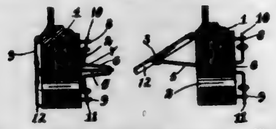

Claim.—1. In an apparatus of the character specified, having a perforated sash-bar and a shutter hinged to said sash-bar and adapted to cover the perforations in the same, means comprising a bell-crank lever having an arm 6 connected with the shutter by a link and constructed substantially as described to allow the said link to pass the fulcrum of the lever, a fulcrum advanced beyond the surface of the sash-bar, and a U-shaped arm 7 substantially at right angles to the said arm 6 and adapted to bear against the surface of the sash-bar, for operating the shutter and locking the same when closed and when opened to its fullest extent.

2. The combination with a perforated sash-bar, of a shutter hinged to the outer side of the bar and formed to cover the perforated portion thereof, and shutter-operating means comprising a bell-crank lever hinged to the inner side of the sash-bar, and a link connecting one arm of said lever with the shutter.

705,804. MOTOR-VEHICLE. CHARLES T. R. SABISTER, Birmingham, England. Filed Feb. 24, 1902. Serial No. 95,280. (No model.)

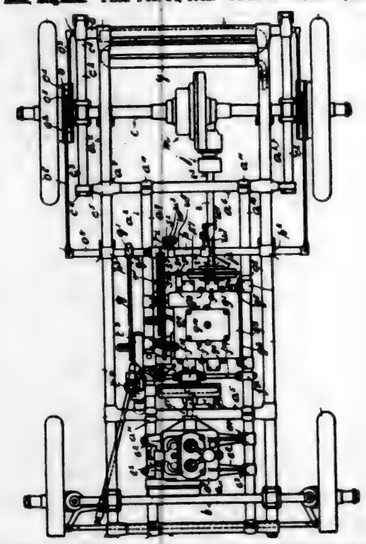

Claim.—1. In a motor-car, the combination with the main driving-clutch and the speed-change gear as set forth, of a shaft directed transversely across the framing of the car, a lever for controlling the main driving-clutch, pedal-levers for operating the back-axle and counter-shaft brakes, and a double-armed rocker for transmitting motion to the speed-change gear, said levers and the rocker being all mounted on said shaft, as set forth.

2. In a motor-car, a motor, a crank-shaft therefor, a speed-change-gear mechanism provided with a driving-shaft, a driving-clutch carried by the driving-shaft, and a detachable fork for connecting said clutch to the crank-shaft of the motor, said connection between said clutch and crank-shaft being such as to permit of the removal of the former independently of the latter.

3. In a motor-car, a speed-change-gear mechanism, a driving-shaft therefor, an outer drum mounted on said shaft, a motor provided with a crank-shaft, a fork connection for coupling said outer drum to said crank-shaft, an inner drum adapted to frictionally clutch said outer drum, a longitudinally-extending slidable sleeve connected to said inner drum and mounted upon said driven shaft, a sleeve connected with said inner drum and surrounding said slidable sleeve, a spring interposed between said sleeves, means for causing frictional engagement between said drums, and movement-transmitting devices connected with said speed-change-gear mechanism.

4. In a motor-car, a motor provided with a crank-shaft, a speed-gear driving-shaft, pinions carried thereby, a driven shaft, a slidable sleeve mounted upon said driven shaft, gear-wheels carried by said sleeve and adapted to suitably engage with and be operated by said pinions causing thereby the operation of said driven shaft, means connected with and adapted to shift said sleeve to cause the engagement of the pinions and gear-wheels, a driving-clutch carried by the speed-gear driving-shaft, and a fork connection for connecting said clutch to the crank-shaft of the motor.

5. In a motor-car, the combination with a motor and speed-change-gear mechanism suitably connected therewith and operated thereby, of a balance-gear, a driving counter-shaft, a pinion thereon operated by said mechanism, a driven toothed wheel adapted to mesh with said pinion to drive said balance-gear, and means to permit of adjusting laterally said driven wheel independent of the balance-gear.

6. In a motor-car, the combination with a motor and a speed-change-gear mechanism connected therewith and operated thereby, of an adjustable pinion connected with said speed-change-gear mechanism and operated thereby, a balance-gear connected with and operated by said pinion, a sectional rear axle operated by said balance-gear, adjustable bearings for said pinion, balance-gear and said rear axle, and means for releasing and relocking the said pinion, balance-gear and axle prior to and after adjustment, substantially as herein described.

7. In a motor-car, the combination of its frame, a motor supported by the frame, a speed-change-gear-reversing mechanism, a clutch connected with said mechanism and said motor for causing the operation of the former, a shaft extending transversely of the said frame, a lever mounted on said shaft for controlling the said clutch, a back axle connected with and operated by said speed-change-gear-reversing mechanism, counter-shaft brakes for said axle, and a pair of pedal-levers mounted on said shaft and adapted to operate the said brakes, substantially as described.

8. In a motor-car, a motor, a speed-change-gear mechanism, a driving-shaft for said mechanism, means for connecting said driving-shaft to said motor for operating said mechanism, an outer drum mounted on said shaft, an inner drum adapted to frictionally clutch said outer drum, a longitudinally-extending slidable sleeve connected to said inner drum and mounted upon said driving-shaft, a sleeve connected with said inner drum and surrounding said slidable sleeve, a spring interposed between the said sleeves, means for causing frictional engagement between the said drum, and movement-transmitting devices connected with said speed-change-gear mechanism.

9. In a motor-car, a motor, a speed-change-gear mechanism, a driving-shaft for said mechanism, means for connecting said driving-shaft to said motor for operating said mechanism, an outer drum mounted on said shaft, an inner drum adapted to frictionally clutch said outer drum, a longitudinally-extending slidable sleeve connected to said inner drum and mounted upon said driving-shaft, a sleeve connected with said inner drum and surrounding said slidable sleeve, a spring interposed between said sleeves, means for causing frictional engagement between the said drum, a counter-shaft suitably connected with said speed-change-gear mechanism, a bevel-pinion carried thereby, a sectional axle, a balance-gear for operating said axle, a bevel-wheel connected with said balance-gear and engaging said pinion to be operated thereby, and adjustable bearings for said pinion, balance-gear and axle.

705,805. AIR-EXHAUST FOR REVOLVING STEAM DRYING OR HEATING CYLINDERS. THOMAS H. SAVERY, Wilmington, Del. Filed Mar. 3, 1900. Serial No. 7,180. (No model.)

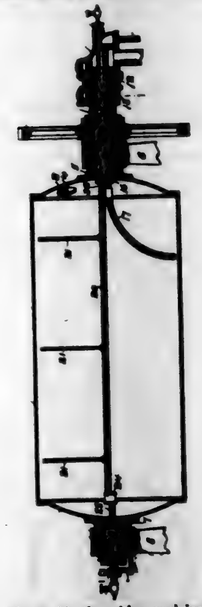

Claim.—1. The combination with a revolving steam drying or heating cylinder or drum, of means for admitting steam thereto, an air-outlet pipe extending substantially across the cylinder or drum, and a plurality of pipes connected therewith and extending toward the surface of the cylinder, substantially as described.

2. The combination with a revolving steam drying or heating cylinder or drum, of means for admitting steam thereto, an air-outlet pipe extending substantially across the cylinder or drum, means for supporting

said pipe near the axial center of the cylinder or drum, and a plurality of pipes connected to said outlet-pipe and extending toward the surface of the cylinder or drum, substantially as described.

3. The combination with a revolving steam drying or heating cylinder or drum, of means for admitting steam thereto, means for removing the water of condensation, an air-outlet pipe extending substantially across the cylinder or drum, and a plurality of pipes connected therewith and extending toward the surface of the cylinder or drum, substantially as described.

4. The combination with a revolving steam drying or heating cylinder or drum having a hollow journal, of means for admitting steam to the cylinder or drum, an air-outlet pipe, a pipe passing through the hollow journal to which one end of the outlet-pipe is connected by a sliding joint, and means for supporting the other end of the outlet-pipe, substantially as described.

5. The combination with a revolving steam drying or heating cylinder or drum having a hollow journal, of means for admitting steam to the cylinder or drum, an air-outlet pipe, a plurality of pipes extending from the air-outlet pipe toward the surface of the cylinder, a pipe passing through the hollow journal to which one end of the outlet-pipe is connected by a sliding joint, and means for supporting the other end of the outlet-pipe, substantially as described.

6. The combination with a revolving steam drying or heating cylinder or drum having a hollow journal, of a steam-inlet pipe passing through said journal, an air-outlet pipe extending substantially across the cylinder or drum, a pipe with which one end of the air-outlet pipe is connected by a sliding joint, said pipe passing through the steam-inlet pipe, and means for supporting the other end of the air-outlet pipe, substantially as described.

7. The combination with a revolving steam drying or heating cylinder or drum having a hollow journal, of a steam-inlet pipe passing through said journal, an air-outlet pipe extending substantially across the cylinder or drum, a pipe with which one end of the air-outlet pipe is connected by a sliding joint, said pipe passing through the steam-inlet pipe, means for supporting the other end of the air-outlet pipe, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

8. The combination with a revolving steam drying or heating cylinder or drum having a hollow journal, of a steam-inlet pipe passing through said journal, a pipe for removing the water of condensation extending through the steam-pipe, an air-outlet pipe extending substantially across the cylinder, a pipe with which one end of said air-outlet pipe is connected by a sliding joint, said pipe passing through the steam-pipe, means for supporting the other end of the air-outlet pipe, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

9. The combination with a revolving steam drying or heating cylinder or drum having a hollow journal, of a steam-inlet pipe passing through said journal, a pipe for removing the water of condensation extending through the steam-pipe, an air-outlet pipe extending substantially across the cylinder, a pipe with which one end of said air-outlet pipe is connected by a sliding joint, said pipe passing through the steam-pipe, means for supporting the other end of the air-outlet pipe, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

10. The combination with a revolving steam drying or heating cylinder or drum, of a steam-inlet pipe, an air-outlet pipe extending substantially across the cylinder or drum, and means whereby the air is permitted to escape from the air-outlet pipe at each end of the cylinder, substantially as described.

11. The combination with a revolving steam drying or heating cylinder or drum, of a steam-inlet pipe, an air-outlet pipe extending substantially across the cylinder or drum, and a pipe connected to each end of said air-outlet pipe and extending outside the cylinder or drum, the joint between one of said pipes and the air-outlet pipe being a sliding joint, substantially as described.

12. The combination with a revolving steam drying or heating cylinder or drum, of a steam-inlet pipe, an air-outlet pipe extending substantially across the cylinder or drum, a pipe connected to each end of said air-outlet pipe and extending outside the cylinder or drum, the joint between one of said pipes and the air-outlet pipe being a sliding joint, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

13. The combination with a revolving steam drying or heating cylinder or drum, of a steam-inlet pipe, an air-outlet pipe, a pipe to which one end of said air-outlet pipe is connected by a sliding joint, and means for supporting the other end of said outlet-pipe, substantially as described.

14. The combination with a revolving steam drying or heating cylinder or drum provided with journals, of a steam-inlet pipe, an air-outlet pipe, a pipe to which said air-outlet pipe is connected, said pipe passing through one of the journals, suitable packing whereby a tight joint is formed between the pipe and the journal, means for preventing said pipe

from turning with the journal, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

15. The combination with a revolving steam drying or heating cylinder or drum provided with journals, of a steam-inlet pipe, an air-outlet pipe, a pipe to which said air-outlet pipe is connected, said pipe passing through one of the journals, suitable packing whereby a tight joint is formed between the pipe and the journal, an arm secured to said pipe, and a projection on the journal-bearing with which the arm engages, substantially as described.

16. The combination with a revolving steam drying or heating cylinder or drum provided with journals, of a steam-inlet pipe, an air-outlet pipe, a pipe to which said air-outlet pipe is connected, said pipe passing through one of the journals, suitable packing whereby a tight joint is formed between the pipe and the journal, an arm secured to said pipe, a projection on the journal-bearing with which the arm engages, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

17. The combination with a revolving steam drying or heating cylinder or drum having journals, of a steam-inlet pipe, an air-outlet pipe, a pipe passing loosely through one of the journals, the air-outlet pipe being connected at one end with said pipe by a sliding joint, a pipe passing through the other journal with which the other end of said air-outlet pipe is connected, suitable packing for forming a tight joint between said pipe and the journal, and means for preventing said pipe from turning with the journal, substantially as described.

18. The combination with a revolving steam drying or heating cylinder or drum having journals, of a steam-inlet pipe, an air-outlet pipe, a pipe passing loosely through one of the journals, the air-outlet pipe being connected at one end with said pipe by a sliding joint, a pipe passing through the other journal with which the other end of said air-outlet pipe is connected, suitable packing for forming a tight joint between said pipe and the journal, means for preventing said pipe from turning with the journal and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

19. The combination with a revolving steam drying or heating cylinder or drum having journals, of a steam-inlet pipe passing through one of the journals, a support to which said pipe is connected, a yielding joint between said support and the journal, an air-outlet pipe extending substantially across the cylinder, a pipe passing through the support and the steam-pipe, said pipe being connected to the air-outlet pipe by a sliding joint, a pipe passing through the other journal, and a suitable connection between said pipe and the air-outlet pipe, substantially as described.

20. The combination with a revolving steam drying or heating cylinder or drum having journals, of a steam-inlet pipe passing through one of the journals, a support to which said pipe is connected, a yielding joint between said support and the journal, an air-outlet pipe extending substantially across the cylinder, a pipe passing through the support and the steam-pipe, said pipe being connected to the air-outlet pipe by a sliding joint, a pipe passing through the other journal, a suitable connection between said pipe and the air-outlet pipe, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

21. The combination with a revolving steam drying or heating cylinder or drum having journals, of a steam-inlet pipe passing through one of the journals, a support to which said pipe is connected, a yielding joint between said support and the journal, a pipe for removing water of condensation, said pipe passing through the steam-pipe and being connected to the stationary support, an air-outlet pipe extending substantially across the cylinder, a pipe passing through the stationary support and the steam-pipe, said pipe being connected to the air-outlet pipe by a sliding joint, a pipe passing through the other journal, and a suitable connection between said pipe and the air-outlet pipe, substantially as described.

22. The combination with a revolving steam drying or heating cylinder or drum having journals, of a steam-inlet pipe passing through one of the journals, a support to which said pipe is connected, a yielding joint between said support and the journal, a pipe for removing water of condensation, said pipe passing through the steam-pipe and being connected to the stationary support, an air-outlet pipe extending substantially across the cylinder, a pipe passing through the stationary support and the steam-pipe, said pipe being connected to the air-outlet pipe by a sliding joint, a pipe passing through the other journal, a suitable connection between said pipe and the air-outlet pipe, and a plurality of pipes connected to the air-outlet pipe and extending toward the surface of the cylinder, substantially as described.

705,806. PROCESS OF VAPOR GENERATION. ADOLF SCHARPFF, Tientsin, China. Filed Aug. 21, 1900. Serial No. 27,560. (No specimens.)

Claim.—1. The process of generating steam or gases for power hereinbefore set forth, and consisting in mixing a medium having a high boiling-point and which is heated to a temperature below that point with a small quantity of another medium which has a boiling-point below the temperature of the first-named medium just prior to the introduction of said media into the motor, thereby vaporizing the said last-named medium, then drawing the media into a motor and operating said motor by the pressure of the vaporized medium, and then returning the first-named media to the place of heating, and so on in continuous succession.

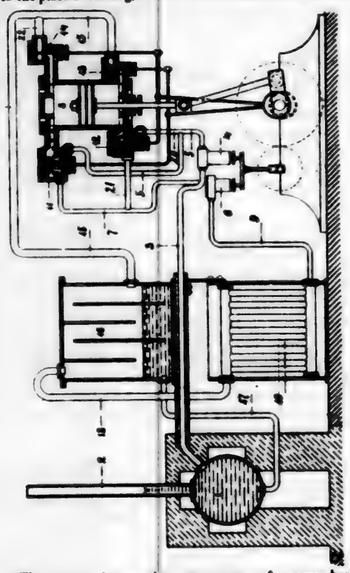

2. The process of generating steam or gases for power hereinbefore set forth, and consisting in mixing a medium having a high boiling-point and which is heated to a temperature below said boiling-point with a small quantity of a medium which has a boiling-point below the temperature of the first-named medium just prior to the introduction of said media into the motor, thereby vaporizing the said last-named medium, then drawing said last-named medium into a motor and there operating said motor by the pressure of the vaporized medium, then removing the last-named medium from the said motor, and so on in continuous succession.

705,807. ROTARY FAN-BLOWER. FRANCKLYNE B. SCHERMERHORN and GEORGE R. MOSPETT, Jarilla, N. Mex. Filed July 5, 1901. Serial No. 67,118. (No model.)

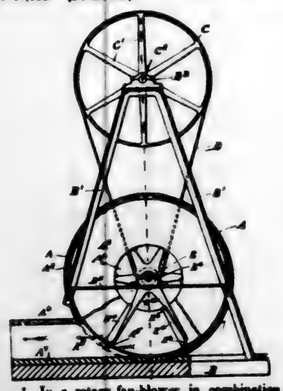

Claim.—1. In a rotary fan-blower, in combination with a closed cylindrical chamber, having central openings in the sides thereof, and a peripheral discharge-opening, a shaft extending through said central openings, supported in journals, and provided with radial arms within said cylindrical chamber, and means for rotating said shaft and arms, a series of fan-blades secured to said arms at a suitable distance from said shaft, the sides and outer margins of said fan-blades in close contiguity to the inside of said chamber, said fan-blades having their ends turned up at an angle to the plane of their surfaces, and in the direction of rotation of the same, substantially as and for the purposes described.

2. In a rotary fan-blower having a cylindrical chamber, closed around the same and at the sides thereof, except at the center of said sides, and at some point of the cylindrical periphery, a shaft and radial arms adapted to rotate together, said shaft journaled to extend through said openings in said sides, and said arms radially extended therefrom within said chamber, in combination therewith a series of transversely-flat fan-blades secured to said radial arms, each of which has its peripheral margin turned forward in the direction of its rotation, at a bevel or obtuse angle from the plane surface of the body of said blades, substantially as and for the purpose described.

3. In a rotary fan-blower of the construction substantially as described, in combination with a cylindrical chamber having central openings in the flat sides thereof, and an exit from the curved periphery of said cylinder, a journaled shaft extended through said central openings, and means for rotating the same, and radial arms secured to said shaft and rotating therewith, together with a series of transversely-flat fan-blades secured to said arms, at a distance from said shaft corresponding to said central openings, and having their inner margins, parallel with said shaft, bent upward in a bevel, or at an obtuse angle in the direction of rotation of the same, substantially as described.

4. In a rotary blower a cylindrical chamber, central holes in the sides thereof, a peripheral exit-opening from said cylinder, a journaled shaft and radial arms within said chamber, means for rotating the same, and transversely-flat fan-blades secured to said arms having their ends, and transverse margins parallel with said shaft, turned up in the direction of rotation of said fan-blades, substantially as described.

5. In combination with the cylindrical chamber, substantially as described, shaft and radial arms within the same, and means for operating the same, a series of substantially flat fan-blades secured to said arms, and having their margins turned up in the direction of rotation thereof, substantially as described.

6. In combination with cylindrical chamber A, having central openings A' A', shaft E, radial arms, F^2 F^2 F^2 F^2, the transversely-flat fan-blades, F^2 F^2, having their margins turned up forward at an angle to the surfaces thereof, substantially as and for the purpose described.

705,808. AUTOMATIC FEEDING MECHANISM FOR STAMPING-PRESSES OR THE LIKE. GODFREY P. SCHRIEVE, Brooklyn, N. Y. Filed Nov. 2, 1901. Serial No. 80,867. (No model.)

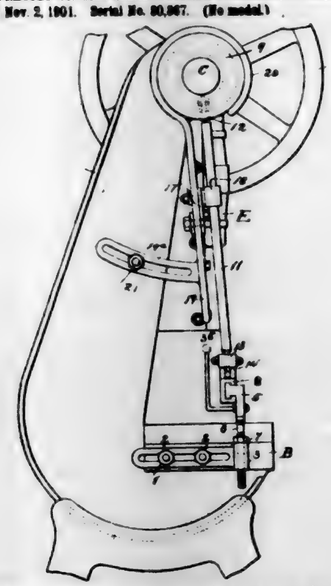

Claim.—1. In a feeder for sheet material to a press, the combination with a reciprocating gripper device for seizing and drawing in the sheet, and means for opening and closing said gripper, of a cam on an arbor of the press, an operating-lever actuated by said cam and coupled to the gripper-carriage, and means for adjusting the fulcrum of said lever for varying the extent of movements of the gripper-carriage with a constant-operating cam.

2. In a feeder for sheet material to a press, the combination with a reciprocating gripper device for seizing and drawing in the sheet, and means for opening and closing said gripper, of a grooved operating-cam on an arbor of the press, a lever having a bearing at one end in the groove of said cam, and a universal-joint connection with an arm on the gripper-carriage, the said arm, a slotted fulcrum-plate adjustable radially about the operating-cam, a fulcrum-block mounted adjustably in the said slotted plate, and an eye on said block which forms a bearing for the operating-lever.

3. In a device for the purpose set forth the combination with a gripper, its carriage, the trackway for said carriage, and the hollow, slotted operating-cam on the arbor of the press, of the operating-lever 11, the adjustable fulcrum-block therefor, the eye on said block through which the lever plays, the slotted sleeve 38 on the arbor within the cam, the pin 40 in the lever, engaging the curved slot in the cam.

4. In a device for the purpose set forth, the combination with the adjustably-mounted guide-bar, the gripper-carriage slidably mounted thereon, and means for imparting a reciprocating movement to said carriage, of the fixed gripper-jaw on said carriage, the movable gripper-jaw on said carriage, the spring-latch 31, adapted to engage the movable gripper-jaw and hold it closed, the closing-lever 25, the draw-bar coupling this lever to the movable jaw, an adjustable stud for actuating said closing-lever, an adjustable detent for actuating the spring-latch to unlock it, and the gripper-opening spring.

5. In a feeding device for the purpose set forth, the combination with a reciprocating gripper device for drawing in the sheet, and automatic means for operating said gripper device to open and close its jaws, of a guide for the sheet to be fed, and an automatic limiting-stop device for the sheet whereby the latter can only be fed in by hand to a certain point.

6. In a feeding device for the purpose set forth, the combination with a reciprocating gripper device for drawing in the sheet, and automatic means for operating said gripper device to open and close its jaws, of a guide for the sheet to be fed, and an automatic limiting-stop device for the sheet, said device comprising a rock-shaft 44 over said guide, the stop-arm 45 on said shaft and having a nose 46 to engage a recess in the bottom plate of the guide, and the releasing-arm 47 on said shaft, the end of which arm is in the path of a part of the gripper, whereby the shaft is rocked by the gripper when the latter moves out to grip the sheet.

7. In a device for the purpose specified, the combination with the bearers 1, having each a socket 3, of the supporting guide-bar 5, provided with screw-threaded pins 6, to engage the sockets 3, and nuts 7 to rest on the said sockets for vertical adjustment of the bar 5.

8. In a device for the purpose specified, the combination with a movable gripper device for feeding the sheet, and the rotating cam 9, of the slotted fulcrum-plate 19, having a bearing 20 on the said cam and a slotted arm 19^a, the fulcrum-block 17, mounted in the slot in the plate 19 and provided with an eye 18, and the operating-lever 11, connected below to the gripper device and engaging the cam 9 at its upper end.

705,809. NON-REFILLABLE BOTTLE. CHARLES P. STARLIN and DANIEL J. MINTON, Columbus, Ohio. Filed Oct. 10, 1901. Serial No. 78,164. (No model.)

Claim.—In a non-refillable bottle, the combination with a bottle-neck having external threads and recesses formed vertically therethrough and having an internal recess 2, of a threaded cap adapted to be screwed onto the threaded portion of the bottle-neck and to close the mouth of the latter and a central tubular cap projection having a lower end flange, said tubular projection being provided with an outlet-opening and adapted to be contracted to permit its insertion within the bottle-neck, substantially as specified.

705,810. PNEUMATIC CONVEYER. JOHN W. SCHIFFER, Waco, Tex., assignor of one-half to Louise Eitel, Waco, Tex. Filed July 6, 1901. Serial No. 67,290. (No model.)

Claim.—1. A pneumatic conveyer comprising an air-pipe, an independent send-pipe beneath said air-pipe and communicating therewith by a discharge-opening in its under face, a delivery-chamber disposed upon

said seed-pipe, a section or casing within said chamber beneath said discharge-opening open at each end and spaced from said chamber, and a transfer-pipe communicating with the lower portion of a compartment and with said seed-pipe; substantially as specified.

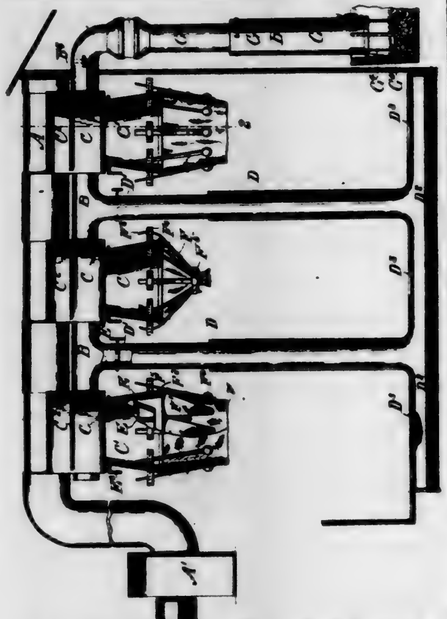

2. A pneumatic conveyer comprising an air-pipe, an independent seed-pipe beneath said air-pipe and communicating therewith by a discharge-opening in its under face, a delivery-chamber disposed upon said seed-pipe, a section or casing within said chamber beneath said discharge-opening open at each end and spaced from said chamber, a transfer-pipe communicating with the lower portion of a compartment and with said seed-pipe, a cut-off valve at the upper portion of said transfer-pipe, and a valved inlet between said compartment and transfer-pipe; substantially as specified.

3. A pneumatic conveyer comprising an air-pipe, an independent seed-pipe beneath said air-pipe and communicating therewith by a discharge-opening in its under face, a delivery-chamber disposed upon said seed-pipe, a section or casing within said chamber beneath said discharge-opening open at each end and spaced from said chamber, a transfer-pipe communicating with the lower portion of a compartment, and with said seed-pipe, a cut-off valve at the upper portion of said transfer-pipe, a valved inlet between said compartment and transfer-pipe, a valved telescoping connection communicating with said seed-pipe, and a cut-off between said seed and air pipes; substantially as specified.

4. In a pneumatic conveyer, the combination with a compartment, of an air-pipe at the upper portion thereof, an independent seed-pipe beneath said air-pipe and communicating with said air-pipe by a discharge-opening in its under face, a delivery-chamber at the upper portion of said compartment communicating with said seed-pipe, a section or casing within said chamber beneath said discharge-opening open at each end and spaced from the chamber, a transferring-pipe extending beneath said compartment and having a valved opening communicating therewith, and a valved transfer-pipe connecting said seed-pipe with the pipe beneath said compartment; substantially as specified.

5. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a seed-pipe communicating with said receptacle by a discharge opening downward away from said air-pipe, and a section within said receptacle beneath the opening in said seed-pipe open at its upper and lower ends and spaced therefrom to permit the escape of air to said air-pipe; substantially as specified.

6. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicatingtherewith, a seed-pipe communicating with said receptacle by a discharge opening downward away from said air-pipe, a tapering section within said receptacle beneath the opening in said seed-pipe open at its upper and lower ends and spaced therefrom to permit the escape of air to said air-pipe, and a vertical partition in said section; substantially as specified.

7. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a seed-pipe communicating with said receptacle by a discharge opening downward away from said air-pipe, a tapering section within said receptacle beneath the opening in said seed-pipe open at its upper and lower ends and spaced therefrom to permit the escape of air to said air-pipe, a vertical partition in said section, a cut-off valve between said seed-pipe and section; substantially as specified.

8. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a seed-pipe communicating with said receptacle by a discharge opening downward away from said air-pipe, a tapering section within said receptacle beneath the opening in said seed-pipe open at its upper and lower ends and spaced therefrom to permit the escape of air to said air-pipe, a vertical partition in said section, a cut-off valve between said seed-pipe and section, and a cut-off valve between said seed and air pipes; substantially as specified.

9. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, an independent seed-pipe communicating with said receptacle by a discharge opening downward away from said air-pipe, a tapering section within said receptacle beneath the opening in said seed-pipe open at its upper and lower ends and spaced therefrom to permit the escape of air to said air-pipe, a vertical partition in said section, a cut-off valve between said seed-pipe and section, a cut-off valve between said seed and air pipes, a flexible valve supported at the lower end of said delivery-receptacle; substantially as specified.

10. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a seed-pipe communicating with said receptacle and said air-pipe, a tapering section beneath said seed-pipe open at its upper and lower ends to permit the escape of air to said air-pipe, a vertical partition in said section, a cut-off valve between said seed-pipe and section, a cut-off valve between said seed and air pipes, a flexible valve supported at the lower end of said delivery-receptacle, and a series of tapering metallic sections secured to the inner face of said flexible valve; substantially as specified.

11. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a seed-pipe communicating with said receptacle and said air-pipe, a tapering section beneath said seed-pipe open at its upper and lower ends to permit the escape of air to said air-pipe, a vertical partition in said section, a cut-off valve between said seed-pipe and section, a cut-off valve between said seed and air pipes, a flexible valve supported at the lower end of said delivery-receptacle, a series of tapering metallic sections secured to the inner face of said flexible valve, an opening device for said flexible valve placed under tension in the closing of the valve; substantially as specified.

12. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a seed-pipe communicating with said receptacle and said air-pipe, a tapering section beneath said seed-pipe open at its upper and lower ends to permit the escape of air to said air-pipe, a vertical partition in said section, a cut-off valve between said seed-pipe and section, a cut-off valve between said seed and air pipes, a flexible valve supported at the lower end of said delivery-receptacle, a series of tapering metallic sections secured to the inner face of said flexible valve, a spring-arm extending upwardly from said flexible valve, and means supported by said receptacle for adjustably holding the upper end of said arm; substantially as specified.

13. In a pneumatic conveyer, a delivery-receptacle having an air-pipe communicating with the upper portion thereof, a seed-pipe beneath said air-pipe, and a series of tapering sections located beneath said seed-pipe and each other; substantially as specified.

14. In a pneumatic conveyer, a delivery-receptacle having an air-pipe communicating with the upper portion thereof, a seed-pipe beneath said air-pipe, a series of tapering sections located beneath said seed-pipe and each other, and a series of vertical partitions extending vertically through said tapering sections; substantially as specified.

15. In a pneumatic conveyer, a delivery-receptacle having an air-pipe communicating with the upper portion thereof, a seed-pipe beneath said air-pipe, a series of tapering sections located beneath said seed-pipe and each other, a series of vertical partitions extending vertically through said tapering sections, and a sectional valve located between said partitions and the delivery-opening from the seed-pipe; substantially as specified.

16. In a pneumatic conveyer, a delivery-receptacle having an air-pipe communicating with the upper portion thereof, a seed-pipe beneath said air-pipe, a series of tapering sections located beneath said seed-pipe and each other, a series of vertical partitions extending vertically through said tapering sections, a sectional valve located between said partitions and the delivery-opening from the seed-pipe, a slide-valve between said air and seed pipes, and a series of separate lugs for supporting and guiding said slide-valve; substantially as specified.

17. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a seed-pipe within said receptacle and communicating with said air-pipe, and a series of overlapping sections located beneath the discharge from said seed-pipe and spaced therefrom and from each other to provide openings at their upper and lower ends for the escape of air; substantially as specified.

18. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a flexible valve supported at the lower end of said receptacle, and a series of metallic plates secured to the inner face of said valve to form a substantially continuous metallic surface when the valve is closed; substantially as specified.

19. In a pneumatic conveyer, a delivery-receptacle, an air-pipe communicating therewith, a flexible valve supported at the lower end of said receptacle, a series of tapering metallic plates secured to the inner face of said valve to form a substantially continuous metallic surface when the valve is closed, and spring-plates extending from said valve to said receptacle and placed under tension in the closing of the valve; substantially as specified.

705,311. CORN-HUSKING AND FODDER-SHREDDING MACHINE.

JOHN I. ALEXANDER and WILLIAM R. ALEXANDER, Hasselrigg, Ind., assignors of one-half to Edward T. Kenney, Indianapolis, Ind.

Filed May 22, 1901. Serial No. 61,329. (No model.)

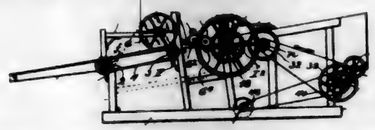

Claim.—1. Two pairs of snapping-rolls, one pair mounted in a plane below that of the other pair, each pair comprising two rolls rotating in opposite directions, one roll of the upper pair, and one roll of the lower pair being mounted in movable bearings, and the other rolls in fixed or rigid bearings, and feeding devices having the range of the two pairs of snapping-rolls.

2. Two pairs of snapping-rolls, one pair mounted in a plane below that of the other pair, each pair comprising two rolls rotating in opposite directions, the upper one of the upper pair, and the lower one of the lower pair being mounted in movable bearings, and the other rolls in fixed or rigid bearings, and feeding devices having the range of the lower portion of one of the snapping-rolls in the fixed bearings and also having the range of the upper portion of the other one of the snapping-rolls in the fixed bearings.

3. Two pairs of snapping-rolls, one pair mounted in a plane below that of the other pair, each pair comprising two rolls rotating in opposite directions, one roll of the upper pair, and one roll of the lower pair being mounted in movable bearings, and the other rolls in fixed or rigid bearings, feeding devices having the range of the two pairs of snapping-rolls, and pulling-rolls in range of the two pairs of snapping-rolls.

4. A plurality of pairs of snapping-rolls mounted in different vertically-disposed planes, a pair of rolls in each plane in the rear of another plane, each pair comprising two rolls rotative in opposite directions, one roll of each pair being mounted in movable bearings, and feeding devices having the range of the plurality of pairs of snapping-rolls collectively.

5. Two pairs of snapping-rolls, one pair mounted in a plane below that of the other pair, each pair comprising two rolls rotative in opposite directions, one roll of the upper pair and one roll of the lower pair being mounted in movable bearings, a flexible feeding-apron mounted adjustably to the planes of the two pairs of snapping-rolls, and a feed-roller mounted above the feeding-apron whereby the apron and portions of the stalks thereon may be flexed and the stalks spread toward the two pairs of snapping-rolls.

6. Feeding apparatus comprising a flexible feeding-apron mounted adjustably in a longitudinal direction or forward and backward, a feed-roller mounted above and normally upon the flexible apron whereby the apron and stalks thereon may be flexed and the stalks thereby forced in their passage, and snapping-rolls mounted near the feed-roller and the delivery portion of the flexible feeding-apron.

7. Two pairs of snapping-rolls, one pair mounted in a plane below that of the other pair, each pair comprising two rolls rotating in opposite directions, one roll of the upper pair and one roll of the lower pair being mounted in movable bearings, and the other rolls in fixed or rigid bearings, a feeding apparatus comprising a pivoted frame having its range adjustable as between the two pairs of snapping-rolls, rollers mounted in the frame, a feed-apron mounted upon the rollers, and a feed-roller mounted above the feed-apron.

8. Feeding apparatus comprising a pivoted frame supported movably in a longitudinal direction, rollers mounted in the frame, a feed-apron mounted on the rollers, a feed-roller mounted above the feed-apron, and snapping-rolls mounted near the feed-roller and the rear end of the pivoted frame.

9. The combination of a feeding-apron, a frame supporting the apron and pivotally mounted in movable bearings whereby the frame may be moved longitudinally and also be elevated and depressed at its rear end, a movable feeding member mounted above the feed-apron, snapping-rolls mounted at the rear end of said frame, and shredders, with a combined carrier and separater whereby the fodder from the shredders and the loose grains from the corncobs may be cleaned and separated.

10. In a fodder-shredding machine, a carrier comprising an upper floor, grate-bars extending from the upper floor, a screen situated below the grate-bars, a lower floor extending from the screen, carrier-belts, driving and carrying rollers for the belts, and flights attached to the belts and sliding upon the upper floor and thence upon the grate-bars and also upon the screen and thence upon the lower floor, in combination with shredders mounted above the carrier, snapping-rolls, and feeding apparatus mounted near the snapping-rolls.

11. In a fodder-shredding machine, a carrier comprising an upper floor, grate-bars extending from the upper floor, a screen situated below the grate-bars, a lower floor extending from the screen, carrier-belts, driving and carrying rollers for the belts, flights attached to the belts and sliding upon the upper floor and thence upon the grate-bars and also upon the screen and thence upon the lower floor, an inclined floor situated below the screen, and a fan-blower projecting its blast above the inclined floor and against the under side of the screen, in combination with shredders mounted above the carrier, snapping-rolls, and feeding apparatus mounted near the snapping-rolls.

12. In a fodder-shredding machine, a pulling-roll mounted in stationary bearings, a companion pulling-roll mounted in movable bearings, a movable feeding apparatus, a lower snapping roll mounted substantially in range of the feeding apparatus between the same and the pulling-rolls and having its axis below a median line drawn between the pulling-rolls to the operative plane of the feeding apparatus, a lower companion snapping-roll mounted below the lower snapping-roll, an upper snapping-roll mounted substantially in range of the feeding apparatus and having its axis above each median line, and an upper companion snapping-roll mounted above the upper snapping-roll, in combination with shredders mounted at the sides of the pulling-rolls opposite the snapping-rolls.

13. In a fodder-shredding machine, the combination of a positive-feed pulling-roll mounted in stationary bearings, a companion pulling-roll mounted in movable bearings, a toothed driving-wheel attached to the shaft of the positive-feed pulling-roll, a lower positive-feed snapping-roll mounted in fixed bearings, a lower companion snapping-roll mounted in movable bearings, a toothed wheel attached to the lower positive-feed snapping-roll and driven by the said driving-wheel, a sprocket-wheel attached to the shaft of the positive-feed pulling-roll, a sprocket-wheel attached to the lower companion snapping-roll, a sprocket-chain connecting the said two sprocket-wheels, means whereby the two pulling-rolls may be driven in unison, an upper positive-feed snapping-roll mounted in fixed bearings in a plane above that of the lower positive-feed snapping-roll, an upper companion snapping-roll mounted in movable bearings, a toothed wheel attached to the upper positive-feed snapping-roll and meshing with the toothed wheel attached to the lower positive-feed snapping-roll, a sprocket-wheel attached to the shaft of the companion pulling-roll, a sprocket-wheel attached to the upper companion snapping-roll, and a sprocket-chain connecting said two last-described sprocket-wheels, with shredders mounted adjacently to the said pulling-rolls, and feeding apparatus mounted adjacently to said snapping-rolls opposite to said pulling-rolls.

14. In a fodder-shredding machine, the combination of a pulling-roll mounted in stationary bearings, a pulling-roll mounted in movable bearings, a rotative shaft mounted in fixed bearings, a toothed wheel secured to the rotating shaft, a toothed wheel connected operatively with the pulling-roll that is mounted in the fixed bearings and driving said wheel on said shaft, a shaft having the universal joints and connected with said rotative shaft and also with the pulling-roll that is mounted in the movable bearings, feeding apparatus, shredders mounted adjacent to the pulling-rolls, and snapping-rolls mounted adjacent to the pulling-rolls between the same and the feeding apparatus, with a main frame supporting the feeding apparatus, supplemental supports for the snapping-rolls and the pulling-rolls, and a housing for the shaft having the universal joints.

15. The combination of the main frame, the frame-bars secured to the main frame, an upper snapping-roll journaled at the tops of said bars in fixed bearings, a lower snapping-roll journaled at the lower sides of said bars in fixed bearings, a plurality of snapping-rolls journaled in movable bearings, one above the upper snapping-roll and counting therewith, and one below the lower snapping-roll and counting therewith, with feeding apparatus having the range of said counting rolls.

16. The combination, with a main frame, and snapping-rolls suitably mounted in the main frame, of a feed-apron frame mounted in the

main frame and movable longitudinally toward and from the snapping-rolls, rollers mounted in the feed-apron frame, a feed-apron mounted on the rollers, a feed-roll frame, and a feed-roll mounted in the feed-roll frame and normally riding upon the feed-apron between two of the rollers.

17. The combination, with the feeding apparatus, and the snapping-rolls comprising two pairs of rolls, one pair mounted in a plane below that of the other pair, of fluted pulling-rolls mounted at the rear of the two pairs of snapping-rolls or side opposite to the feeding apparatus, whereby the stalks may be gathered from the two planes of the snapping-rolls into one plane, with the shredders mounted at the rear of the pulling-rolls or side opposite to the snapping-rolls.

18. The combination of the fluted pulling-roll having the extended shaft, the toothed gear-wheel secured to the end of said shaft, the fluted pulling-roll having the flexible shaft, the toothed wheel secured to said flexible shaft and meshing with said toothed wheel on said extended shaft, the snapping-rolls mounted at the front of said pulling-rolls, and the shredders mounted at the rear of said pulling-rolls, with feeding apparatus having the range of the snapping-rolls and also of the said pulling-rolls, and means whereby the rolls may be driven.

19. The combination of the feed-apron frame pivoted between the ends thereof, the driving-shaft coinciding with the pivot for said frame, the feed-apron mounted on said frame, the feed-roll frame pivoted substantially on said driving-shaft, the feed-roll mounted in said feed-roll frame and connected with said driving-shaft, and locking devices for said apron-frame, with snapping-rolls, and means whereby said feed-apron and said shaft may be driven.

20. A combined carrier and separator comprising an upper floor, grate-bars extending from the upper floor, a screen situated below the grate-bars, a lower floor extending from the screen, carrier-belts, driving and carrying rollers for the belts, flights attached to the belts and moving in operation upon the upper floor and thence upon the grate-bars and returning upon the screen and thence upon the lower floor, an inclined floor situated below the screen, and a fan-blower having its blast-orifice directed between the inclined floor and the screen.

21. The combination of two pairs of snapping-rolls, one pair mounted in a plane below that of the other pair, each pair comprising two rolls rotating in opposite directions, one roll of each pair being mounted in movable bearings, feeding devices having the range of the two pairs of snapping-rolls, pulling-rolls in range of the two pairs of snapping-rolls, shredders mounted in range of the pulling-rolls, a combined carrier and separator beneath the shredders and comprising an upper floor, grate-bars extending from the upper floor, a screen situated below the grate-bars, a lower floor extending from the screen, carrier-belts, driving and carrying rollers for the belts, flights attached to the belts and moving in operation upon the upper floor and thence upon the grate-bars and returning upon the screen and thence upon the lower floor, an inclined floor situated below the screen, and a fan-blower having its blast-orifice directed between the inclined floor and the screen, with means whereby the husks and the accidentally-loosened grains of corn separated from the ears may be delivered together upon the upper floor of the combined carrier and separator, whereby the fodder and the husks and the loose grains may be cleaned and separated at one operation, the shredded stalks and the husks being discharged together at the ends of the grate-bars, and the loose grains discharged from the inclined floor.

705,812. FURNACE OR FORGE. JOHN ARMSTRONG, London, England. Filed May 28, 1901. Serial No. 62,271. (No model.)

Claim.—1. The apparatus for heating metallic objects, consisting of a deep fire-box having a grate; a closed chamber below the grate; a device for passing a blast of air into said chamber below said grate; working or heating hearths very considerably above the grate having openings therein just big enough to comfortably admit the articles to be heated; and means for supplying fuel to the fuel-chamber without admitting air to the working chamber, whereby a deep layer of fuel can be used and there is always a pressure above that of the atmosphere in the furnace and thus the products of combustion pass out through the working holes when they are opened, instead of allowing air to enter thereat.

2. The combination of a deep combustion-chamber for fuel, a grate below same, means below the grate for supplying a strong draft through the grate, but at no other point, exit-passages from the combustion-chamber from the upper portion thereof into which articles to be heated can be inserted, means for dampening or plugging these passages, and means for supplying fuel to the fuel-chamber without admitting air to the working chamber, substantially as described, whereby a current of reducing-gas containing no free oxygen passes around the article to be heated.

3. The combination in a reheating-furnace, of a grate, a closed chamber below the grate, a device for supplying air under pressure into this closed chamber, with no escape therefrom but up through the fuel; a working chamber in the upper part; openings for admitting articles to be reheated and for drawing off the fumes at such openings; and means for supplying fuel to the fuel-chamber without admitting air to the working chamber and for maintaining a great depth of fuel above the grate, substantially as described, whereby a current of reducing-gas containing no free oxygen passes around the articles to be heated.

4. The combination with a portable reheating-furnace of downwardly-projecting flanges all around the furnace, and a tray with deep sides below and surrounding said flanges, the said flanges having parts cut away near the bottom for water to pass, and a blast-tube passing through said tray, whereby a water seal can be produced, and a blast admitted between the water and the grate, and thus the grate is kept cool and the complete furnace can be lifted out of the water seal when ashes are to be cleaned out.

705,818. RAILWAY-SIGNAL. WILLIAM S. BENNETT, New York, N. Y. Filed Apr. 2, 1902. Serial No. 101,124. (No model.)

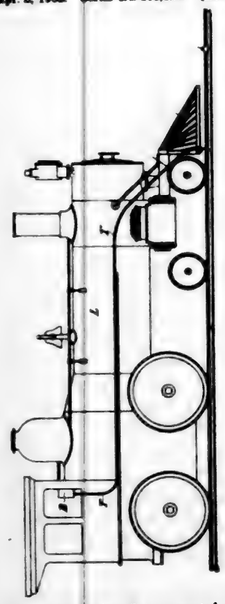

Claim.—1. A signal-actuating clip constructed of thin sheet metal and a mass of soft metal inclosed thereby, said clip having extensions or arms for securing it to a railway-rail, substantially as described.

2. A signal-actuating clip constructed of thin sheet metal and a mass of soft metal inclosed thereby; said clip having extensions or arms for securing it to a railway-rail and inclined surfaces at its opposite sides, substantially as described.

3. A signal located in the cab of a locomotive; in combination with a flexible connection extending to the pilot of the locomotive and operatively connected with a releasing device carried by said pilot; together with a signal-actuating clip constructed of thin sheet metal, inclosing a mass of soft metal and provided with extensions or arms which secure it to the track in the path of the releasing device, all of said parts acting substantially as and for the purpose described.

4. A signal located on a locomotive or car; a flexible connection between the signal, and a pivoted releasing device located beneath the locomotive or car; a protecting-tube which surrounds the flexible connection; in combination with a stationary releasing device located in or near the road-bed and in the path of the pivoted releasing device.

5. A signal located in the cab of a locomotive; a flexible connection, as a chain or cord extending from the signal to a point beneath the locomotive; a tube which surrounds and protects the flexible connection; a pivoted releasing device attached to the flexible connection, said pivoted releasing device being adjustable with relation to the signal so as to vary the tension of the flexible connection; in combination with a clip adapted to be attached to one of the rails, said clip being located in the path of the releasing device, substantially as described.

6. A signal located in the cab of a locomotive; a flexible connection extending from the signal to a point beneath the locomotive; a tube which surrounds and protects said flexible connection; a pivoted releasing device provided with adjustable means operatively attached to said flexible connection; in combination with a signal-actuating clip secured to the track and located in the path of the releasing device, substantially as described.

7. A signal located in the cab of a locomotive; a flexible connection extending from the signal to a point beneath the locomotive; a tube which surrounds said flexible connection; a pivoted operating device operatively connected to said flexible connection and means carried by the pivoted operating device for normally closing the end of the tube, substantially as described.

705,814. CARBURETER. FRANCIS C. BLAKE, London, England. Filed Nov. 5, 1901. Serial No. 81,270. (No model.)

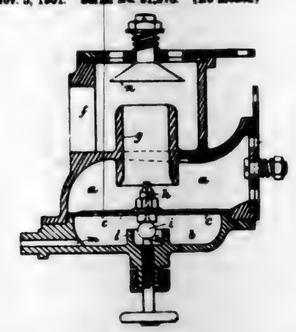

Claim.—1. A double-acting feed device for use in petrol-engines comprising a flexible diaphragm forming the bottom of the suction-chamber and having a spout, petrol being intermittently fed into the suction-chamber first during the lift of the diaphragm and by reason of the suction action of the piston, and secondly by the return of the diaphragm to its original position as the suction action ceases.

2. A petrol-feed device, consisting of a flexible diaphragm forming the base of a suction-chamber and the cover for a petrol-chamber, said diaphragm having a spout delivering from the petrol-chamber into the suction-chamber, a valve located within said petrol-chamber and arranged to close said spout from underneath, said valve being mounted upon a screwed rod and adjustable from the exterior of the device, and said petrol-chamber being supplied from the petrol-tank.

3. In a petrol-feed device having a flexible diaphragm fitted with a jet, a hollow conical plug balanced loosely upon a rod adjustable from the exterior of the apparatus and arranged to close the jet.

4. A petrol-feed device, comprising a flexible diaphragm forming a cover for a petrol-chamber and fitted with a spout, a plug or valve arranged to be guided by entering the said spout from underneath and to close an adjustable hollowed rod communicating with the petrol-inlet, said plug allowing at all times access from the petrol-chamber to the jet and being mounted upon a spring within the petrol-chamber, and arranged to follow the rise and fall of the jet.

705,815. SAFETY ATTACHMENT FOR GAS-BURNERS. STEPHEN H. BLODGETT, Lincoln, Mass. Filed June 24, 1901. Serial No. 65,756. (No model.)

Claim.—1. The combination with a gas-burner provided with a valve controlling the flow of gas, of an arm loosely mounted on said valve, means to turn said valve in one direction and move said arm, a thermostat, a lever operated by said thermostat and provided with holding-fingers, one of which acts to hold said arm from closing the valve while the gas is being lighted and the other of which engages said arm after it is released from the first-mentioned finger and holds the said arm from closing the valve while the gas remains lighted, means to release said arm from said second finger when the gas-flame is extinguished, and means to return said arm to its normal position, substantially as described.

2. The combination with a gas-burner provided with a valve controlling the flow of the gas, of an arm loosely mounted on said valve, means to turn said valve in one direction and move said arm, a thermostat, a lever operated by said thermostat and moved into engaging position with said arm to hold the latter from returning to its normal position until released, means to disengage said lever from said arm when the gas-flame is extinguished, and means to return said arm to its normal position, substantially as described.

3. The combination with a gas-burner provided with a valve controlling the flow of gas from said burner, of means for automatically closing said valve, comprising a thermostat, a valve-actuating device operatively connected with said valve to move therewith in one direction when the valve is opened and to permit said valve to be moved in the opposite direction without corresponding movement of said actuating device, and means coöperating with said thermostat and with said valve-actuating device to hold said device while the gas is being lighted and to release said device and again engage it when the gas is lighted, substantially as described.

4. The combination with a gas-burner provided with a valve controlling the flow of the gas, a sleeve loosely mounted on said valve and provided with an arm, a thermostat, a lever actuated in one direction by said thermostat to place said lever into engaging position with said arms to hold the latter from moving in a reverse direction with said valve, and means independent of the thermostat for disengaging said lever from said arm, substantially as described.

5. The combination with a gas-burner provided with a valve for controlling the flow of gas, of an arm loose on said valve, means to turn said valve in one direction and move said arm, a thermostat, a substantially vertical lever pivoted at its upper end and acted upon by said thermostat to move the lower end of said lever into engaging position with the said arm, substantially as described.

6. A gas-burner having in combination a valve, a pin *l* on said valve, an arm *k* coöperating with said pin, a spring *m* to move said arm in a direction to close said valve, a lever 10 coöperating with said arm to hold it against the action of said spring, and a thermostat controlling the movements of said lever and effecting the disengagement of the said lever from said arm, substantially as described.

705,816. FOUNTAIN-PEN. JOHN BOVILL, Chicago, Ill. Filed Mar. 24, 1902. Serial No. 99,569. (No model.)

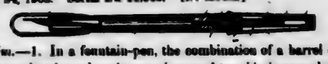

Claim.—1. In a fountain-pen, the combination of a barrel or fountain, a piston therein and a piston-rod secured to said piston and comprising two sections permanently connected together and relatively extensible, substantially as set forth.

2. In a fountain-pen, the combination of a barrel or fountain, a piston therein, and a piston-rod secured to said piston and comprising two sections having means at their meeting ends for holding them from being entirely separated, said sections being relatively extensible, substantially as set forth.

3. In a fountain-pen the combination of a barrel or fountain, a piston therein, a bushing secured in one end of said barrel, and a piston-rod passing through said bushing and comprising two sections permanently connected together and relatively extensible, substantially as set forth.

4. In a fountain-pen the combination of a barrel or fountain, a piston therein, and a piston-rod secured to said piston and comprising two telescoped sections permanently connected together and relatively extensible, the inner one of said sections having screw-threads at its outer end and the outer one of said sections having internal screw-threads at its inner end adapted to engage said first screw-threads, substantially as set forth.

705,817. EXCAVATING AND HOISTING APPARATUS. EARL H. BROWNING, Cleveland, Ohio. Filed July 23, 1900. Renewed Sept. 6, 1901. Serial No. 74,578. (No model.)

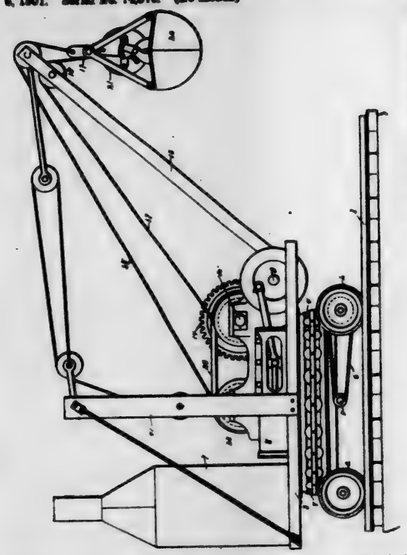

Claim.—1. In a device of the character described, a rotatable shaft, a drum normally loose on said shaft so that either may turn relatively to the other, means for locking the shaft and the drum together after a relative rotation of a predetermined amount, a clutch through which power is transmitted to the shaft to turn it and the drum in one direction, and means for applying power to the drum to turn it and the shaft in the opposite direction when the clutch is released.

2. In a device of the character described, a rotatable shaft having a threaded portion, a closed drum normally loose on said shaft so that either may turn relatively to the other, said drum surrounding the threaded portion of the shaft, a nut engaging said threaded portion and turning with the drum whereby the nut is caused to travel longitudinally of the shaft within the drum when there is relative rotation between the drum and the shaft, and stops formed on the drum to limit the travel of the nut and thus prevent further relative rotation between the drum and the shaft.

3. In a device of the character described, a pair of drums, means for driving one of the drums, and means controlled by said driven drum for first permitting the remaining drum to remain stationary and then turning the same after the driven drum has been turned a predetermined amount.

4. In a device of the character described, a bucket, a closing-drum for the bucket, a shaft to which said drum is secured, a dumping-drum for the bucket, a shaft upon which said dumping-drum is loosely mounted, means connecting said shafts to drive the same together, and means for connecting the dumping-drum and its shaft so that one is driven after the other has turned a predetermined amount.

5. In a device of the character described, a bucket, a closing-drum for the bucket, a shaft to which said drum is secured, a dumping-drum for the bucket, a shaft upon which said dumping-drum is loosely mounted, said shaft being threaded for a portion of its length, a nut upon said threaded portion of the shaft and loosely engaging with the drum to cause the nut to travel back and forth upon the shaft, means for driving said shafts together, and means for holding the dumping-drum while its shaft rotates until the nut moves into contact with the end of the drum to lock the drum to the shaft.

705,818. CELLULAR PRIMER-TRAY. HENRY S. BURNS and THOMAS G. REMBERT, New Haven, Conn., assignors to Winchester Repeating Arms Co., New Haven, Conn. Filed Mar. 24, 1902. Serial No. 99,776. (No model.)

Claim.—1. In a cellular primer-tray, the combination with a sheet-metal top plate formed with a plurality of cells each of which is downwardly extended by integral leaves which increase the isolation between the primers in the cells, and having its edges turned downward at a right angle to form side and end flanges, and a bottom plate located entirely within the said side and end flanges in position to prevent the primers from dropping through the said cells in the top plate.

2. In a cellular primer-tray, the combination with a sheet-metal top plate having its body portion formed with a plurality of cells and its edges turned downward to form side and end flanges the edges of which are provided with retaining-tongues, of a bottom plate located within the said side and end flanges and having the said tongues turned under its lower face whereby it is held in place.

3. As a new article of manufacture, a cellular primer-tray having a top plate formed with a plurality of cells and having its edges turned downward to form side and end flanges, and the said tray also having a bottom plate secured to the top plate in position to prevent the primers from dropping through the cells which are arranged in a plane at a right angle to the plane of the tray, in combination with a paper case receiving the tray and preventing the primers from dropping out of the upper open ends of the cells.

705,819. WATER-CLOSET BOWL. HIRAM T. BUSH, Detroit, Mich. Filed Oct. 12, 1899. Renewed May 17, 1902. Serial No. 107,636. (No model.)

Claim.—1. A water-closet bowl having a channeled flushing-rim equipped with large ports near the fluid-entrance to said rim for discharging cleansing fluid upon the rear wall of the bowl, smaller ports located at intervals around said rim, partition at the end of the channel in the rim and a large port adjacent to said partition.

2. A water-closet bowl having a passage for communicating with the pressure-pipe, said passage terminating in a channeled rim having a series of large ports near the inlet end; for discharging a large quantity of water upon the rear wall of the bowl; a series of small ports around the circumference of said rim; and a partition dividing the inlet and discharge ends of said rim.

3. A water-closet bowl consisting of a hopper-shaped receptacle having a flushing-rim at its top, said rim being provided with a series of large ports or openings located near the inlet end of said rim for discharging a large quantity of water upon the rear wall of the bowl; a large port or opening located adjacent to the partition dividing the inlet and delivery portions of said rim and through which water passes to cleanse said partition; and a series of small ports or openings intermediate the large ports, or openings.

4. In combination, with a flushing-tank, a water-closet bowl having a rim provided with a circular channel or passage equipped with ports on its lower side; a partition located between the inlet and final discharge openings on said rim; and a series of large ports and small ports disposed substantially as set forth throughout said rim.

5. The herein-described water-closet bowl, having a rim or channel divided by a partition as set forth, said rim or channel being provided with a series of large ports having inclined walls; two series of small ports also having inclined walls; an intermediate large port or opening with inclined walls; and a large port with inclined walls located adjacent to the partition dividing the inlet and discharge ends of said channel.

705,820. DENTAL FORCEPS. SEABURD H. B. COCHRANE, Canal Winchester, Ohio. Filed Apr. 19, 1902. Serial No. 103,894. (No model.)

Claim.—1. In a dental forceps, the combination of two pivoted members bearing handles, of a fulcrum-jaw formed on one of said members and comprising two prongs constructed to be set astride the jaw, and a lifting-jaw formed on the other of said members and comprising a single prong constructed to engage a tooth, substantially as described.

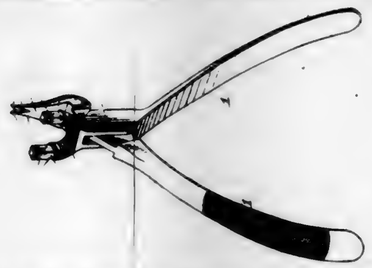

2. In a dental forceps, the combination of two members pivoted together and shaped to form handles, a fulcrum-jaw formed on one of said members and comprising two prongs constructed to be set astride the jaw, a flexible covering for said prongs, and a lifting-jaw consisting of a single prong constructed to engage a tooth-root, substantially as described.

705,821. ART OF CONDENSING STEAM OR COOLING FLUIDS. THOMAS M. COLWELL, Chicago, Ill.; Edward S. Colwell administrator of said Thomas M. Colwell, deceased. Filed Apr. 8, 1901. Serial No. 54,827. (No specimens.)

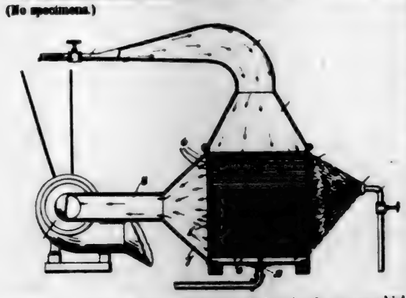

Claim.—1. The herein-described method of condensing steam which consists in introducing aqueous vapor at atmospheric pressure without compression into close propinquity to but separated from the steam or other body from which the heat is to be extracted, moistening the atmosphere containing said aqueous vapor prior to its introduction, reducing the atmospheric pressure of said aqueous vapor after introduction and finally rapidly removing the heat-laden aqueous vapor, substantially as set forth.

2. The method of condensing or cooling a fluid which consists in forming aqueous vapor and passing the same in a rapidly-flowing current into close propinquity to but separated from the fluid to be cooled or condensed and simultaneously expanding and rarefying said current and conducting away the heat-laden vapor, substantially as set forth.

3. The method of condensing or cooling a fluid which consists in forming aqueous vapor and passing the same in a rapidly-flowing current in close propinquity to but separated from the fluid to be cooled or condensed and simultaneously expanding the fluid to be cooled or condensed and the aqueous vapor and finally rapidly removing the heat-laden vapor from the presence of said fluid, substantially as set forth.

705,822. PENCIL-SHARPENER. FRANK A. CURTIS, Meriden, Conn. Filed Dec. 15, 1900. Serial No. 40,009. (No model.)

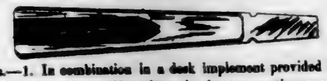

Claim.—1. In combination in a desk implement provided with a recess of V shape having a ridge along the bottom portion, removable plates with file-surfaces located opposite to each other on the walls of the recess, all substantially as described.

2. In combination in a desk implement provided with a recess of V shape having a ridge along the bottom portion, removable plates with file-surfaces located opposite to each other on the walls of the recess and less in length than the recess, all substantially as described.

3. In a desk implement provided with a recess of V shape which has means at the bottom thereof for the support of plates, plates with file-surfaces located opposite to each other on the walls of the recess and supported at the bottom thereof.

705,823. PULVERIZER. ROBERT CRUMBAUM, Brooklyn, N. Y. Filed May 11, 1896. Serial No. 591,042. (No model.)

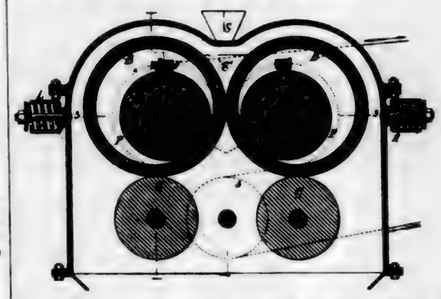

Claim.—1. In a pulverizer, a crushing-ring and a crushing-roll within the ring adapted to revolve in touch with each other as described; yielding bearings for the shaft of said roll, a spring adapted to hold said roll in contact with said ring, suitable supporting means adapted to support said ring in the plane of its rotation, but leaving it free to move laterally, a casing inclosing the said roll and ring, and guide-collars arranged to act solely against the flanks of said ring upon opposite sides thereof, to limit the lateral displacement of the ring, and return it in correct relation to the casing.

2. In a pulverizer, two revolubly crushing-rings in peripheral contact with each other; a crushing-roll within each of said rings; yielding bearings to the shafts thereof; springs tending to hold said rolls in forcible contact with said rings; supporting-rollers under said rings and a casing inclosing said crushing rolls and rings, in combination with guide-rollers for said rings arranged to bear solely upon their flanks, upon opposite sides, to limit the lateral displacement of the rings and retain them in correct relation to the casing, substantially as shown and described.

3. In a pulverizer, the combination with a crushing-ring, a crushing-roll within the ring, and means for pressing the roll against the ring, of, two exterior supports for the ring making contact with it at points on opposite sides of its contact with the crushing-roll, consisting of a roller underneath the ring supporting its weight, and of a revolving surface bearing upon the periphery of the ring at a point above the internal point of contact of the ring with the crushing-roll.

4. In a pulverizer, the combination with two crushing-rings in peripheral contact with each other, crushing-rolls within the respective rings making contact therewith below the point of mutual contact of the rings, means for pressing each roll against its ring and thereby forcing the rings into contact, and supporting-rollers for the respective rings making contact therewith below their contact with the crushing-rolls, whereby each ring is confined at three points in the plane of its rotation, namely, by its contact with the other ring above, with the supporting-roller below, and with its crushing-roll between the other two.

5. In a pulverizer, the combination with a crushing-ring, a crushing-roll within the ring, and means for pressing the roll against the ring, of two exterior supports for the ring making contact with it at points on opposite sides of its contact with the crushing-roll, consisting of a roller underneath the ring supporting its weight, and a revolving surface bearing upon the periphery of the ring at a point above the internal point of contact of the ring with the crushing-roll, whereby the ring is confined at three points in the plane of its rotation, and lateral guides for the ring consisting of guide-rollers arranged to act against the flanks of said ring.

6. In a pulverizer, the combination with two crushing-rings in peripheral contact with each other, crushing-rolls within the respective rings making contact therewith below the point of mutual contact of the rings, means for pressing each roll against its ring and thereby forcing the rings into contact, and supporting-rollers for the respective rings making contact therewith below their contact with the crushing-rolls, whereby each ring is confined at three points in the plane of its rotation, namely, by its contact with the other ring above, with the supporting-roller below, and with its crushing-roll between the other two, and lateral guides for each of said rings, consisting of pairs of guide-rollers arranged to act against the flanks of said ring.

7. In a pulverizer, the combination with a crushing-ring, a crushing-roll within the ring, and means for pressing the roll against the ring, of an exterior support for the ring consisting of a roller in continuous peripheral contact therewith, mounted on a shaft having fixed bearings, said roller having a yielding material incorporated in it, adapted to cushion the vibration of the ring.

8. In a pulverizer, the combination with a crushing-ring, a crushing-roll within the ring, and means for pressing the roll against the ring, of an exterior support for the ring consisting of a yielding roller in continuous peripheral contact with the ring and constructed with a tread of compressible elastic material, adapted to cushion the vibration of the ring.

9. In a pulverizer, the combination with a crushing roll and ring, and a main casing inclosing them, of lateral guides for said ring consisting of guide-rollers arranged to roll against the flanks of said ring, projecting through slots in said casing, and bearings and casings for said lateral rollers located outside said main casing.

10. In a pulverizer, the combination with a crushing roll and ring, and a main casing inclosing them, of lateral guides for said ring consisting of guide-rollers arranged to roll against the flanks of said ring, projecting through slots in said casing, bearings for the journals of said rollers, and intervening dust-intercepting stuffing-boxes.

11. In a pulverizer, the combination with a crushing roll and ring, and a main casing inclosing them, of lateral guides for said ring consisting of guide-rollers arranged to roll against the flanks of said ring, projecting through slots in said casing, and casings for said guide-rollers formed in sections, including bearings for the journals thereof, and adapted to be bolted together and to be fastened to said main casing to close said slots.

12. In a pulverizer, the combination with a crushing-ring, a crushing-roll within the ring, and means for pressing the roll against the ring, means for supporting the ring against the pressure of said roll, and means for laterally guiding the ring, consisting of lateral rollers arranged to roll against the flanks of said ring, and constructed with a yielding tread adapted to elastically resist lateral displacement of the ring.

13. In a pulverizer, the combination of a crushing-ring, a crushing-roll within the ring, a casing inclosing them, a shaft for said roll, yielding bearings for said shaft, a frame connecting said bearings and including a cross-yoke having its ends free of springs, and a spring bearing upon said cross-yoke and arranged to press the crushing-roll against the ring, and means for directly regulating the tension of such spring, substantially as shown and described, whereby an equal pressure is brought to bear upon the respective bearings of said shaft, tending to preserve parallelism.

14. In a pulverizer, the combination of a crushing-ring, a crushing-roll within the ring, a casing inclosing them, a shaft for said roll, yielding bearings for said shaft, longitudinal slides for said bearings, a transverse yoke free of springs upon its ends rigidly connecting said slides, and a spring-bearing upon said yoke approximately in the direction of the crushing strain, and means for directly regulating the tension of such spring, substantially as shown and described, whereby the two ends of the crushing-roll shaft are caused to yield equally, and parallelism in its journals is maintained.

15. In a pulverizer, the combination of a crushing-ring, a crushing-roll within the ring, a casing inclosing them, a shaft for said roll, yielding bearings for said shaft, a frame connecting said bearings comprising slide-frames on each side formed rigidly with the bearings, a transverse yoke free of springs upon its ends, connecting said slide-frames; and a spring adapted to bear centrally upon said yoke; and means for directly regulating the tension of such spring, substantially as shown and described, whereby an equal pressure is brought to bear upon the respective journals of said shaft, and its parallelism is maintained.

16. In a pulverizer, the combination of a revoluble crushing-ring; a cylindrical crushing-roll within said ring; a continuous shaft to said crushing-roll; bearings for said shaft adapted to yield in unison radially to the roll; a metal hub unyieldingly attached to said shaft, a metal-working rim to said roll; and a rubber fabric or other elastic medium connecting said hub and said working rim; whereby the rim may yield both radially and circumferentially with relation to the shaft.

17. In a pulverizer, the combination of a revoluble ring, and a crushing-roll within said ring having a shaft, and constructed with a metal rim, an elastic yielding material embodied in its web, constructed of rings of such material applied from opposite sides, with holding-rings of rigid material sunk into the outer faces of said elastic rings, and fastening-bolts passed through from one rigid ring to the other to draw them together and thereby expand the elastic rings.

18. In a pulverizer, the combination of a revoluble crushing-ring, a crushing-roll within said ring, yielding bearings for the shaft of said roll, a casing inclosing said ring and roll, a feed-hopper with its spout extending into the upper space between the said ring and roll, and a shield mounted in said space and adapted to prevent the material from passing backwardly over the roll, the shield being formed integrally with the hopper-cast W and feed-channel V.

19. In a pulverizer, a revoluble ring, a crushing-roll within it, yielding bearings for the shaft of said roll, a casing inclosing said ring and roll, a feed-hopper adapted to deliver the material to be crushed into the space between said ring and roll, guard-plates flanking said space and extending between the spout of the hopper and the crushing-point between the ring and roll, adapted to prevent the spilling of the material outside the ring before it has acquired centrifugal force, said guard-plates formed with flanges fastened exteriorly to the casing, whereby the casing is narrowed, and the guard-plates rendered easy of access.

20. In a pulverizer, a revolving ring, a crushing-roll within it, a casing inclosing them, guard-plates flanking the spaces between said roll and ring wherein the crushing is effected adapted to be introduced through openings in the sides of the casing, and for attachment to the exterior of the casing, and the casing constructed with such openings and means for attachment.

21. The combination in a pulverizer embracing two crushing members, a casing within which they are mounted, guard-plates located to flank the junction of said crushing members where the feed for the same is delivered, a slot in the casing adapted to admit of the passage of such guard-plate from the outside to the inside of the casing, flanges upon said guard-plate adapted to remain outside of the casing, and seats for said flanges upon the outside of the casing.

22. In a pulverizer, a revolving ring, a crushing-roll within said ring mounted upon a shaft, guard-plates flanking the feed-spaces between said roll and said ring, a casing inclosing said parts, open at the top and bottom, and having openings and external seats for said guard-plates, a cap-piece closing the casing at the top, yielding bearings for said shaft, a supporting-roller for said ring, and bearings for said parts upon the outside of said casing and cap, whereby the inside of the casing and cap require no finish, and their construction with only one joint between them is attained.

23. In a pulverizer, the combination of a crushing-roll and its shaft, a casing, bearings for said shaft, means for guiding said bearings, a yoke connecting the two bearings, a single spring bearing centrally upon said yoke, a central spindle attached to said casing and passing through said yoke and spring, and a nut upon said spindle confining the spring, and whereby the tension of the spring is adjusted, and an equal pressure is exerted upon the respective bearings of said shaft.

24. In a pulverizer comprising a casing and crushing mechanism within it, the combination of a shaft extending through the casing, a bearing therefor outside the casing, and a stuffing-box around said shaft between said bearing and the inside of the casing, adapted to prevent access of dust to said bearing, and having openings through which to insert and remove the packing material.

25. In a pulverizer comprising a casing and crushing mechanism within it, the combination of a shaft extending through the casing, a bearing therefor outside the casing, an annular collar upon said shaft between the casing and bearing, and a stuffing-box around said shaft embracing said collar, and filled with cotton-waste or like material, whereby the dust is prevented from passing along the shaft beyond said collar.

26. In a pulverizer, a revolving cylindrical crushing-roll, combined with a reciprocal revolving part between which and said roll the crushing is effected, a continuous shaft fixedly attached to said roll, bearings for said shaft adapted to yield in unison radially to the shaft, a metal cylindrical hub fixed upon said shaft, a metal working rim to said roll, and a rubber fabric or other elastic medium connecting said hub and said working rim, whereby the rim may yield both radially and circumferentially with relation to the shaft.

27. In a pulverizer, a revolving crushing-roll, a yielding shaft upon which the roll is mounted, a metal hub upon said shaft, a metal crushing-rim for said roll, said hub and rim having coned faces, a rubber fabric connecting said hub with said rim, formed of two conical disks, and means for forcing said coned rubber-fabric disks into the space between said rim and hub, whereby the rim is mounted to yield circumferentially as well as radially.

28. In a pulverizer, a revolving crushing-roll, a yielding shaft upon which the roll is mounted, a metal hub upon said shaft having a coned and ribbed outer side, a metal crushing-rim for said roll having a coned and ribbed inner side, and a rubber fabric connecting said hub with said rim, formed of two conical disks, and means for forcing said coned rubber-fabric disks into the space between said rim and hub, whereby the rim is mounted to yield circumferentially as well as radially.

29. In a pulverizer comprising a crushing-roll and ring, a casing inclosing them, and means for lifting said ring consisting of a shaft insertible through said casing just within the upper part of the ring, and an eccentric portion adapted when the shaft is turned to engage and lift the ring.

30. The combination with a pulverizer of a feeding device comprising a chambered rotative cylinder, a hopper above said cylinder, the side wall *t* of which over the descending side of the cylinder terminates some distance above the cylinder to leave a free intervening space through

which pieces of stone may gravitate, and a yielding partition *t'* arranged lower down and adjacent to the descending side of the cylinder, adapted to limit the descent of the gravitating stone, and to yield when pieces of stone lodged in the cylinder project beyond its periphery.

31. The combination with a pulverizer of a feeding device comprising a chambered rotative cylinder, a hopper above said cylinder, the side of which on the ascending side of the cylinder is extended to form a shield over the latter covering its chambers and preventing entrance of stone thereinto until they have reached approximately the uppermost position, thereby avoiding the falling of stone into the ascending chambers of said cylinder, and the consequent necessity of lifting the weight of such stone, and said hopper formed with its side over the descending side of the cylinder, inclined toward the middle and terminating some distance above the cylinder to prevent the stone crowding upon the cylinder.

32. The combination with a pulverizer of a feeding-hopper; a chambered rotative cylinder adapted to receive the stone from the hopper; a shield over the rising side of said cylinder, preventing the stone from impeding its rotation; a shield over the descending side of said cylinder, and a yielding side to the cylinder-casing adjacent to the descending side of the cylinder, whereby the descending stone is prevented from jamming between the cylinder and its casing.

33. The combination with a pulverizer of a feed-hopper, a chambered rotative cylinder adapted to receive the stone from said hopper, and mounted in a dust-proof casing, a shield over the rising side and a shield over the descending side of said cylinder, together with the end aprons which prevent the jamming of grit and stone between the ends of the cylinder and its casing.

705,824. WOOD-CUTTING MACHINE. JOSEPH A. CRISMORE, Chicago, Ill. Filed Mar. 7, 1902. Serial No. 97,127. (No model.)

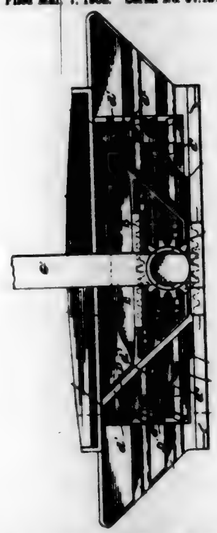

Claim.—1. In a machine for simultaneously forming miter and coping cuts, the combination with a cutting-blade conforming to the contour of the surface of a molding, of a base upon which the blade is guided having a vertical face adjacent to the path of movement of the blade corresponding to the cutting-surface of the blade, means for reciprocating said blade, and means for supporting the molding in the path of the blade.

2. In a machine for simultaneously forming miter and coping cuts, the combination with a horizontally-reciprocating cutting-blade having cutting edges at each end thereof conforming to the contour of the surface of a molding, of a support to which the blade is rigidly secured, a base upon which said support is guided, means for reciprocating said support, and adjustable means for supporting the molding in the path of the blade.

3. In a machine for simultaneously forming miter and coping cuts, an integral cutting-blade comprising vertically-alined portions conforming to the contour of the surfaces of a plurality of moldings.

4. In a machine for simultaneously forming miter and coping cuts, the combination with a cutting-blade comprising vertically-alined portions conforming to the contour of the surfaces of a plurality of moldings, of a support to which said blade is rigidly secured, means for horizontally reciprocating said support, and means for supporting the molding in the path of the blade.

5. In a machine for simultaneously forming miter and coping cuts, the combination with a cutting-blade comprising portions conforming to the contour of the surfaces of a plurality of moldings, of a support to which said blade is rigidly secured, means for horizontally reciprocating said support, and means for supporting a molding in different horizontal planes in the path of the blade.

6. In a machine for simultaneously forming miter and coping cuts, the combination with a cutting-blade comprising portions conforming to the contour of the surfaces of a plurality of moldings, of a base upon which the blade is guided having a vertical face adjacent to the path of movement of the blade corresponding to the cutting-surface of the blade, means for reciprocating said blade, and means for supporting a molding in the path of movement of the blade.

7. In a machine for simultaneously forming miter and coping cuts, the combination with a cutting-blade comprising portions conforming to the contour of the surfaces of a plurality of moldings, of a base upon which the blade is guided having a vertical face adjacent to the path of movement of the blade corresponding to the cutting-surface of the blade, means for reciprocating said blade, a pivoted support swinging about a vertical axis adjacent to the plane of movement of the blade, and a plurality of seats carried by said support in different horizontal planes to receive a molding and locate the same in the desired vertical relation to the blade.

705,825. BLIND-STITCH SEWING-MACHINE. CHARLES A. DEARBORN, New York, N. Y., assignor, by mesne assignments, to Frederick W. Loroh. Original application filed Mar. 21, 1900, Serial No. 9,500. Divided and this application filed Nov. 26, 1900. Serial No. 37,745. (No model.)

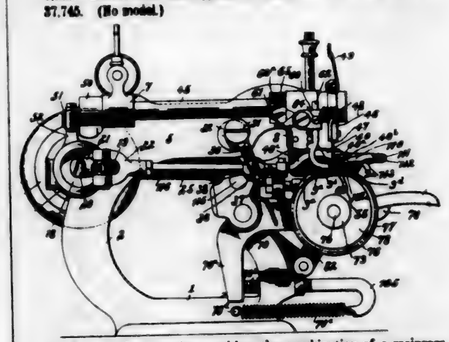

Claim.—1. In a sewing-machine, the combination of a reciprocatory needle, suitable feed mechanism, and means for operating the needle and feed, with a looper-rod carrying a looper which cooperates with the needle, means for imparting a longitudinal reciprocatory movement and an axial oscillatory movement to said looper rod, a suspended rock-arm supported at a point above the horizontal plane of the looper-rod and capable of swinging toward and away from the path of the needle under the action of the looper-rod, and a universal-joint bearing connecting the looper-rod with the lower end of said rock-arm, substantially as set forth.

2. In a sewing-machine, the combination of a reciprocatory needle, suitable feed mechanism, and means for operating the needle and feed, with a looper-rod carrying a looper which cooperates with the needle, means for imparting a longitudinal reciprocatory movement and an axial oscillatory movement to said looper-rod, a rock-arm journaled upon the machine-frame and capable of swinging toward and away from the path of the needle, means for adjusting the journal of said rock-arm, and a universal-joint bearing connecting the looper-rod with said rock-arm, substantially as set forth.

3. In a sewing-machine, the combination of suitable feed mechanism, a reciprocatory needle arranged to reciprocate transversely to the line of feed, and means for operating the needle and feed, with a looper-rod arranged with its longitudinal axis approximately parallel with the line of feed, a looper carried by the looper-rod and adapted to cooperate with the needle, means for imparting a longitudinal movement and an axial oscillatory movement to said looper-rod, a rock-arm suspended from a point above the horizontal plane of the looper-rod and capable of swinging toward and away from the path of the needle under the action of the looper-rod, and a universal-joint bearing connecting the looper-rod with the lower end of said rock-arm, substantially as set forth.

4. In a sewing-machine, the combination of suitable feed mechanism, a needle arranged to reciprocate transversely to the line of feed, and means for operating the needle and feed, with a looper-rod carrying at its forward end a looper which coöperates with said needle, an eccentric rotating device having a double-joint connection with the rear end of said looper-rod for operating it, a rock-arm suspended from a point above the horizontal plane of the looper-rod and capable of swinging toward and away from the path of the needle under the action of the looper-rod, and a universal-joint bearing connecting the looper-rod with the lower end of said rock-arm, substantially as set forth.

5. In a sewing-machine, the combination of suitable feed mechanism, with suitable stitch-forming mechanism including a needle rock-shaft, means for operating the rock-shaft, a rock-arm upon said rock-shaft, a needle mounted upon said rock-arm, an oscillatory needle-guide, and means operated by the needle rock-shaft for moving the needle-guide into and out of operative relation with the needle, substantially as set forth.

6. In a sewing-machine, the combination of suitable work-feeding mechanism, a needle, and a looper, with a loop-guiding part supported above the work adjacent to the path of the needle and adapted to engage the lower thread of the loop which is thrown over by the looper and cause said lower thread to move forward of the path of the needle and thereby insure the passage of the needle through the loop, substantially as set forth.

7. In a sewing-machine, the combination of a reciprocatory needle, and a combined reciprocatory and oscillatory looper, with a feed-finger 110 engaging the work upon its exposed surface adjacent to the path of the needle and having a loop-guiding upper surface over which the lower thread of the loop upon the looper slides to a position in front of the path of the needle, thereby insuring the passage of the needle through the loop, substantially as set forth.

705,326. **FEEDING MECHANISM FOR SEWING-MACHINES.** CHARLES A. DEARBORN, New York, N. Y., assignor, by mesne assignments, to Frederick W. Lorch. Filed Mar. 21, 1900. Serial No. 9,500 (No model.)

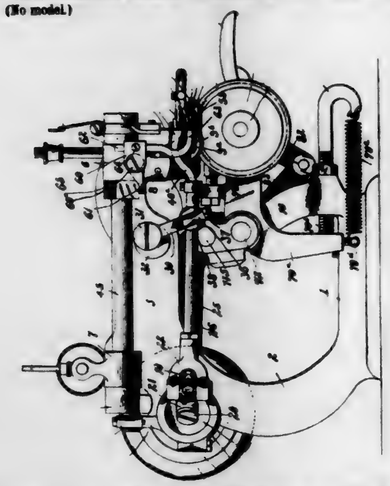

Claim.—1. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism including a needle, a stationary presser-foot, and suitable feed mechanism, of a yieldingly-mounted ridge-forming rib engaging the work beneath the presser-foot and over which the work is fed, and a spring device engaging the work directly above said ridge-forming rib adjacent to the path of the needle, substantially as set forth.

2. In a blind-stitch sewing-machine, the combination of a suitable stitch-forming mechanism, including a needle, a stationary presser-foot, and suitable feed mechanism, of a yieldingly-mounted ridge-forming rib engaging the work beneath the presser-foot and over which the work is fed, and a spring-finger formed with a needle guide or gate and engaging the work directly above the ridge-forming rib adjacent to the path of the needle, substantially as set forth.

3. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism, and a stationary presser-foot, with a ridge-forming rib constructed and arranged to engage the work beneath the presser-foot, and an upper feed device constructed and arranged to engage the upper exposed face of the work adjacent to said ridge-forming rib, substantially as set forth.

4. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism including a needle, and suitable feed mechanism, of a ridge-forming rib over which the work is fed, a spring-finger engaging the work directly over said ridge-forming rib adjacent to the path of the needle, and a movable support carrying said spring-finger and causing it to move forward intermittently in engagement with the work and in unison with the feed, substantially as and for the purpose set forth.

5. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism, with the upper and lower feed devices constructed and arranged to engage the work upon its upper and lower exposed faces respectively, a ridge-forming rib over which the work is fed, and a spring-finger mounted upon the upper feed device and engaging the work above the ridge-forming rib adjacent to the path of the needle, substantially as set forth.

6. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism, with the upper and lower feed devices constructed and arranged to engage the work upon its upper and lower exposed faces respectively, a ridge-forming rib over which the work is fed, a spring-finger mounted upon the upper feed device so as to engage the work above said rib adjacent to the path of the needle, and a needle guide or gate in said spring-finger through which the needle is projected into the work, substantially as set forth.

7. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism including a needle, a ridge-forming rib over which the work is fed, and suitable feed mechanism constructed and arranged to feed the work over said rib transversely to the path of the needle, a spring-finger, and a support for the finger, said spring-finger extending from its support in the direction of feed and engaging the work directly above the said rib adjacent to the path of the needle, substantially as set forth.

8 In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism including a needle, a ridge-forming rib over which the work is fed, and suitable feed mechanism constructed and arranged to feed the work over said rib transversely to the path of the needle, a spring-finger, and a support for the spring-finger, said spring-finger extending from its support in the direction of feed and engaging the work above the said rib adjacent to the path of the needle, and a needle guide or gate formed in said spring-finger through which the needle is projected into the work, substantially as set forth.

9. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism, with a lower rotary feed device engaging the work upon its under exposed face, a ridge-forming rib over which the work is fed, an upper reciprocatory feed device engaging the upper exposed face of the work, and a spring-finger mounted upon the upper feed device, and engaging the work above said rib adjacent to the path of the needle, substantially as set forth.

10. In a blind-stitch sewing-machine, the combination of suitable stitch-forming mechanism including a reciprocatory needle arranged to operate in a path transverse to the direction of movement of the work, a lower feed device engaging the under exposed face of the work, a ridge-forming rib over which the cloth is fed, an upper reciprocatory feed device engaging the upper exposed face of the work and operating across the path of the needle, a spring-finger mounted upon the upper feed device and formed with a transverse needle guide or gate, said spring-finger extending from its support in the direction of feed and engaging the work above the ridge-forming rib adjacent to the path of the needle, and means for operating the upper and lower feed devices in unison, substantially as set forth.

11. In a sewing-machine, the combination of a machine-frame, suitable stitch-forming mechanism, a rigid presser-foot, a main rotary under feed device arranged to engage the under face of the work, a shaft upon which said under feed device is mounted, and an intermittent rotary feed mechanism upon said feed-shaft, with a reciprocatory feed-finger adapted to engage the upper exposed face of the work, a rocking frame upon which said feed-finger is mounted, means for operating said rocking frame, and means operatively connecting said rocking frame with said intermittent rotary feed mechanism, whereby the latter is operated by and in unison with the former, substantially as set forth.

12. In a sewing-machine, the combination of a machine-frame, suitable stitch-forming mechanism, a rigid presser-foot, a main rotary under feed device arranged to engage the under face of the work, a shaft upon which said under feed device is mounted, and an intermittent rotary feed mechanism upon said feed-shaft, with a suitable reciprocatory upper feed device, and operating mechanism operatively connected with the upper feed device and the intermittent rotary feed mechanism of the under feed device, whereby said feed devices will be operated in unison, substantially as set forth.

13. In a sewing-machine, the combination of suitable stitch-forming mechanism, with a stationary presser-foot, a yieldingly-mounted ridge-forming rib adapted to engage the work beneath the presser-foot, and a yieldingly-mounted feed device independent of the ridge-forming rib and arranged to engage the work beneath the presser-foot adjacent to the ridge-forming rib, substantially as set forth.

14. In a sewing-machine, the combination of suitable stitch-forming mechanism, and a rigidly-mounted presser-foot, with a ridge-forming rib arranged to engage the work beneath the presser-foot, a yieldingly-mounted feed device, arranged to engage the work beneath the presser-foot at one side of the ridge-forming rib, and an independent yieldingly-mounted work-supporting device engaging the work beneath the presser-foot at the opposite side of the ridge-forming rib, substantially as set forth.

15. In a sewing-machine, the combination of suitable stitch-forming mechanism, and a rigidly-mounted presser-foot, with a ridge-forming rib arranged to engage the work beneath the presser-foot, a yieldingly-mounted lower feed device arranged to engage the work beneath the presser-foot at one side of the ridge-forming rib, an independent yieldingly-mounted work-supporting device engaging the work beneath the presser-foot at the opposite side of the ridge-forming rib, and an upper feed device arranged to engage the work upon its upper face, substantially as and for the purpose set forth.

16. In a sewing-machine, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with two independently-yielding feed devices arranged to engage the work beneath the presser-foot, and a feed device arranged to engage the work upon its upper face, substantially as set forth.

17. In a sewing-machine, the combination of suitable stitch-forming mechanism, and a rigidly-mounted presser-foot, with a yieldingly-mounted lower feed device arranged to engage the work beneath the presser-foot at one side of the line of stitching, an independent yieldingly-mounted work-supporting device arranged to engage and support the work beneath the presser-foot at the other side of the line of stitching, and a suitable upper feed device arranged to engage the work upon its upper face, substantially as and for the purpose set forth.

18. In a sewing-machine, the combination of suitable stitch-forming mechanism, and a rigidly-mounted presser-foot, with yieldingly-mounted lower feed device arranged to engage the work beneath the presser-foot at one side of the line of stitching, an independent yieldingly-mounted work-supporting device arranged to engage and support the work beneath the presser-foot at the other side of the line of stitching, and a suitable upper feed device arranged to engage the work upon its upper face directly above the said yielding work-supporting device and upon the opposite side of the line of stitching from the lower feed device, substantially as and for the purpose set forth.

19. In a sewing-machine, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a spring-supported main feed-frame, a main feed device carried thereby and arranged to engage the work beneath the presser-foot, of an auxiliary spring-supported frame, an auxiliary feed device carried thereby and arranged to engage the work beneath the presser-foot adjacent to the main feed device, and means for operating the main and auxiliary feed devices, substantially as set forth.

20. In a sewing-machine, the combination of suitable stitch-forming mechanism, with a spring-supported feed-frame, suitable main feed mechanism mounted upon said frame, an auxiliary spring-supported frame journaled upon said main feed-frame, an auxiliary feed device mounted upon said auxiliary frame, and means for operating said main and auxiliary feed devices, substantially as set forth.

21. In a sewing-machine, the combination of suitable stitch-forming mechanism, a rigid presser-foot, a yieldingly-mounted ridge-forming rib, a feed-shaft pivotally mounted at or near one end independently of the ridge-forming rib, a feed-roll mounted upon said feed-shaft, and a yielding support for the opposite end of said feed-shaft, substantially as set forth.

22. In a sewing-machine, the combination of suitable stitch-forming mechanism, and a rigidly-mounted presser-foot, with a yieldingly-mounted ridge-forming rib engaging the work beneath the presser-foot, a yieldingly-mounted work supporting and feeding device arranged upon one side of the ridge-forming rib beneath the presser-foot and adapted to yield with the ridge-forming rib, and another yieldingly-mounted work supporting and feeding device arranged beneath the presser-foot upon the opposite side of said rib and adapted to yield independently of the rib and the first-named work supporting and feeding device, substantially as set forth.

23. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a yieldingly-mounted ridge-forming rib or plate, and two independently-yielding feed devices arranged upon opposite sides of the ridge-forming rib or plate, said rib or plate and the two feed devices being arranged to engage the work beneath the presser-foot, and means for operating the feed devices, substantially as set forth.

24. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a yieldingly-mounted ridge-forming rib or plate, and two independently-yielding feed devices arranged upon opposite sides of the ridge-forming rib or plate, said rib or plate and the two feed devices being arranged to engage the work beneath the presser-foot, an upper feed device engaging the work above one of the yielding supported under feeding devices to one side of the ridge-forming rib, substantially as set forth.

25. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a yieldingly-mounted ridge-forming rib or plate, and two independently-yielding feed devices arranged upon opposite sides of the ridge-forming rib or plate, said rib or plate and the two feed devices being arranged to engage the work beneath the presser-foot, a spring device engaging the work above one of the yieldingly-mounted lower feed devices to one side of the ridge-forming rib, and an upper feed device engaging the work above the other yieldingly-mounted lower feed device on the other side of the ridge-forming rib, substantially as set forth.

26. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a yieldingly-mounted ridge-forming rib or plate, and two independently-yielding feed devices arranged upon opposite sides of the ridge-forming rib or plate, said rib or plate and the two feed devices being arranged to engage the work beneath the presser-foot, a spring device engaging the work above one of the yieldingly-mounted under feed members, another spring device engaging the work above the ridge-forming rib, and an upper feed device engaging the work above the other yieldingly-mounted under feed member, substantially as set forth.

27. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a yieldingly-mounted ridge-forming rib or plate, and two independently-yielding feed devices arranged upon opposite sides of the ridge-forming rib or plate, said rib or plate and the two feed devices being arranged to engage the work beneath the presser-foot, two spring devices engaging the upper exposed face of the work, one of said spring devices being arranged above one of the yieldingly-mounted feed devices, and the other spring device being arranged above the ridge-forming rib or plate, substantially as set forth.

28. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a spring-supported feed-frame, a feed-shaft journaled in said feed-frame, means for operating said shaft, a ridge-forming disk or circular plate secured to said shaft, a feed disk or wheel also secured to said shaft alongside of said ridge-forming disk or plate, said ridge-forming disk and feed disk or wheel being arranged to engage the work beneath the presser-foot, and an independently-yielding feed device arranged to engage the work beneath the presser-foot adjacent to said ridge-forming disk or plate, substantially as set forth.

29. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a spring-supported main feed-frame, a feed-shaft journaled in said feed-frame, means for operating said feed-shaft, a ridge-forming rib or plate mounted upon said shaft, a feed disk or wheel also mounted upon said shaft, an auxiliary spring-supported feed-frame mounted upon the main feed-frame, an auxiliary feed-shaft journaled in said auxiliary frame, a feed-wheel mounted upon said auxiliary shaft and supported adjacent to the ridge-forming rib or plate, and suitable gearing between the main feed-shaft and auxiliary feed-shaft, substantially as set forth.

30. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a spring-supported main feed-frame, a main feed-shaft journaled in said feed-frame and carrying an internal gear, means for operating said feed-shaft, a ridge-forming rib or plate mounted upon said shaft, a feed-disk or wheel also mounted upon said shaft, an auxiliary spring-supported feed-frame mounted upon the main feed-frame, an auxiliary feed-shaft journaled in said auxiliary frame, a feed-wheel mounted upon said auxiliary shaft and supported adjacent to the ridge-forming rib or plate, and a gear keyed to the auxiliary feed-shaft meshing with said internal gear of the main feed-shaft, substantially as and for the purpose set forth.

31. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a spring-supported main feed-frame, a feed-shaft journaled in said feed-frame, means for operating said feed-shaft, a ridge-forming rib or plate mounted upon said shaft, a feed disk or wheel also mounted upon said shaft, an auxiliary spring-supported feed-frame extending approximately parallel to the main feed-frame and pivotally mounted adjacent to one of its ends to the main feed-frame, a feed-wheel mounted upon the free end of said shaft adjacent to the ridge-forming rib or plate, a gear keyed to the opposite end of said auxiliary feed-shaft, and an internal gear keyed to the main feed-shaft adjacent to the pivotal support of the auxiliary feed-frame, said internal gear meshing with the gear on the auxiliary feed-shaft, substantially as and for the purpose set forth.

32. In a sewing-machine for blindstitching, the combination of suit-

able stitch-forming mechanism, and a rigid presser-foot, with a yieldingly-mounted ridge-forming rib or plate, and two independently-yielding feed devices arranged upon opposite sides of the ridge-forming rib or plate, said rib or plate and the two feed devices being arranged to engage the work beneath the presser-foot, one of said yieldingly-supported feed devices being formed of relatively high and low portions, the high portion of which engages the work adjacent to the ridge-forming rib or plate, substantially as and for the purpose set forth.

33. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism, and a rigid presser-foot, with a yieldingly-mounted ridge-forming rib or plate, a yieldingly-supported main feed wheel or roll engaging the work beneath the presser-foot at one side of the ridge-forming rib or plate, and a yieldingly-supported auxiliary feed wheel or roll engaging the work beneath the presser-foot on the other side of the ridge-forming rib or plate, said auxiliary feed wheel or roll comprising a relatively high conoidal part which engages the work adjacent to the ridge-forming rib or plate and a relatively low cylindrical part which engages the work adjacent thereto, substantially as set forth.

34. In a sewing-machine for blindstitching, the combination of suitable stitch-forming mechanism including a curved needle and operating mechanism to reciprocate it in an arc, a rigid presser-foot formed with an elongated opening in it, a ridge-forming rib or plate constructed and arranged to engage the work beneath the presser-foot and form a ridge in the work within the opening in the presser-foot, and a yieldingly-supported feed wheel or roll consisting of a relatively high conoidal portion and a relatively low cylindrical portion, the conoidal portion of said feed-roll engaging the work adjacent to the ridge-forming rib or plate under the opening in the presser-foot and the cylindrical portion of said feed-roll engaging the work under the presser-foot adjacent to its opening, substantially as set forth.

705,327. ROTARY TAKE-UP FOR SEWING-MACHINES. PHILIP DIEHL and MARTIN HEHLER, Elizabeth, N. J., assignors to The Singer Manufacturing Company, a Corporation of New Jersey. Filed May 7, 1901. Serial No. 59,119. (No model.)

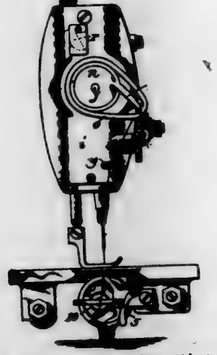

Claim.—1. In a sewing-machine, the combination with a needle and its operating mechanism, of a revolving loop-taker, a rotary take-up, and means for imparting a regular or uniform rotary motion to said loop-taker and an irregular or differential rotary motion to said take-up.

2. In a sewing-machine, the combination with a needle and its operating mechanism, of a rotary loop-taker, a rotary take-up, and means for imparting a single rotation to said loop-taker at a regular or uniform speed and a single rotation to said take-up at an irregular or differential speed to each reciprocation of said needle.

3. In a sewing-machine, the combination with the stitch-forming devices thereof, of a rotary take-up comprising a take-up shaft mounted in the head of the machine and operatively connected with the needle-bar shaft, a disk or hub on said take-up shaft, a ring or guard offset from said disk or hub and of irregular oval form, and a take-up arm joining said ring or guard with said disk or hub.

4. In a sewing-machine, the combination with a needle and its operating mechanism, of a continuously-revolving hook, a thread-case supported by and arranged eccentric to the axis of said hook, a rotary take-up, and means for imparting a single rotation to said hook at a regular or uniform speed and a single rotation to said take-up at an irregular or differential speed to each reciprocation of said needle.

5. In a sewing-machine, the combination with a needle and its operating mechanism, of a rotary take-up comprising a rotary shaft and a take-up arm extending outward from the axis of said shaft and affording a longitudinal slideway or cast-off for the thread and on which arm the thread is in an outer position when the take-up action occurs and from which outer position the thread moves inward, and then again outward, when the said arm is reversed, during the thread-slackening operation.

6. In a sewing-machine, the combination with a needle and its operating mechanism, of a rotary take-up comprising a rotary shaft and a take-up arm extending outward from the axis of said shaft and affording a longitudinal slideway or cast-off for the thread, and on which arm the thread is in an outer position when the take-up action occurs and from which outer position the thread moves inward and then again outward, when the said arm is reversed, during the thread-slackening operation, and a thread-guard surrounding said take-up arm.

7. In a sewing-machine, the combination with a needle and its operating mechanism, of a rotary take-up comprising a rotary shaft and a take-up arm extending outward from the axis of said shaft and affording a longitudinal slideway or cast-off for the thread, and on which arm the thread is in an outer position when the take-up action occurs and from which outer position the thread moves inward and then again outward on said arm, when the latter is reversed, during the thread-slackening operation, and a rotary guard fixed upon and supported by the outer end of said take-up arm.

8. In a sewing-machine, the combination with a needle and its operating mechanism, of a rotary shaft, two thread-eyes arranged adjacent thereto, a take-up arm extending outward from said shaft and located substantially in the plane of said thread-eyes and affording a longitudinal or in-and-out slideway for the thread and on which arm the thread is in an outer position when the take-up action occurs, and from which outer position the thread moves inward and then outward, when the arm is reversed, during the thread-slackening operation.

9. In a sewing-machine, the combination with a needle and its operating mechanism, of a rotary shaft, a take-up arm extending outward from said shaft and affording a longitudinal or in-and-out slideway for the thread, and on which arm the thread is in an outer position when the take-up action occurs, and from which outer position the thread moves inward and then outward, when the arm is reversed, during the thread-slackening operation, and means for maintaining the thread constantly around or on said take-up arm throughout each complete rotation of the same, while permitting it to slide freely lengthwise thereof.

705,328. TAKE-UP DEVICE FOR SEWING-MACHINES. PHILIP DIEHL, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed June 26, 1901. Serial No. 66,063. (No model.)

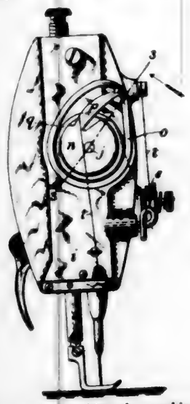

Claim.—1. In a sewing-machine, the combination with a rotary take-up, of a stationary device arranged and operating out of the normal path of movement of the thread and adapted to catch, without severing, the loose end of the needle-thread as it is carried around by the take-up after accidental breakage between the tension and the work, thereby preventing the entangling of the thread with the take-up, and means for guiding the thread to said stationary device and take-up.

2. In a sewing-machine, the combination with a rotary take-up, of a thread-guard device for withdrawing or unthreading the needle-thread from the said take-up when the said thread accidentally breaks between the take-up and the work, and means for guiding the thread to said thread-guard device and take-up.

3. In a sewing-machine, the combination with a rotary take-up, of a stationary thread-guard located adjacent to said take-up and a thread-guide so arranged relative to said thread-guard and take-up that when the needle-thread accidentally breaks the loose end thereof will be wound up on said thread-guard.

4. In a sewing-machine, the combination with a rotary take-up comprising a take-up arm on which the thread can slide out and in for the take-up and thread-slackening operations, of a stationary thread-controller serving to take up or control a part of the slack thread given up by the said take-up arm during the early part of the thread-slackening operation and during the time the needle is descending to enter the work.

5. In a sewing-machine, the combination with a rotary take-up, of a thread-guard ring or hub located adjacent to said take-up and outside or beyond the periphery of which said take-up extends, and thread-guiding means for directing the thread to the take-up and guard ring or hub, so that a loose end of needle-thread will be wrapped about said guard ring or hub and thus be withdrawn from said take-up to prevent its entanglement therewith.

6. In a sewing-machine, the combination with a rotary take-up comprising the ring or guard *o* and take-up arm *p*, of a thread-guard ring or hub *q* adjacent to said rotary take-up and outside or beyond the periphery of which a portion of said take-up arm extends.

7. In a sewing-machine, the combination with a rotary take-up comprising a take-up arm on which the thread can slide out and in for the take-up or stitch-tightening and the thread-slackening operations, of a stationary thread-guard hub adjacent to the path of movement of said take-up arm and which is arranged so as to control slack thread given up by or released from said take-up arm at the thread-slackening operation.

705,329. AUTOMATIC CUT-OFF FOR GAS-BURNERS. LOUIS F. DUCKER, Boston, Mass., assignor, by direct and mesne assignments, to Ducker Automatic Gas Cut-Off Company, Boston, Mass., a Corporation of Maine. Filed Apr. 24, 1902. Serial No. 104,475. (No model.)

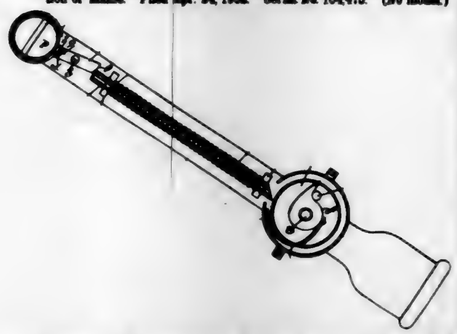

Claim.—1. The combination with a gas bracket or arm provided with a valve controlling the flow of gas to the burner, a dog or arm loose on said valve, means on said valve to engage said dog or arm, a spring to move said dog or arm, of a thermostatically-operated sliding bolt to engage said dog or arm, and means to withdraw said sliding bolt from engagement with said dog or arm, substantially as described.

2. The combination with a gas bracket or arm provided with a valve controlling the flow of gas to the burner, a dog or arm loose on said valve, means on said valve to engage said dog or arm, a spring to move said dog or arm, of a sliding bolt to engage said dog or arm, a lever provided with a cam-shaped surface coöperating with said bolt, thermostatic means to turn said lever and move the bolt into the path of movement of the arm or dog, and means to withdraw the said bolt from the path of movement of said dog or arm, substantially as described.

3. The combination with a gas bracket or arm provided with a valve controlling the flow of gas to the burner, a dog or arm loose on said valve, means on said valve to engage said dog or arm, a spring to move said dog or arm, of a sliding bolt to engage said dog or arm, a cam-lever coöperating with said bolt, a second lever in engagement with said cam-lever, a thermostat to act on said second lever, and means to withdraw the sliding bolt from the path of movement of the dog or arm, substantially as described.

4. The combination with a gas-burner provided with a valve controlling the supply of gas to the burner, of a device movable in one direction with said valve and independent thereof to permit the valve to be moved in the opposite direction without moving said device, a sliding bolt coöperating with said device, a thermostat to effect movement of said bolt into the path of movement of said device, and means to move said bolt in the opposite direction, substantially as described.

5. The combination with a gas-burner provided with a valve controlling the supply of gas to the burner, means to automatically return said valve from its open to its closed position, a sliding bolt coöperating with said means, and a thermostat to effect movement of said bolt to engage said means, substantially as described.

6. The combination with a gas-burner provided with a valve controlling the supply of gas to the burner, means to automatically return said valve from its open to its closed position, a sliding bolt coöperating with said means, a cam-lever to actuate said bolt, and a thermostat to actuate said cam-lever, substantially as described.

705,330. TREATMENT OF STEEL INGOTS FOR FORGING. CHARLES T. DUDLEY, Golden, Colo., assignor of one-fourth to William W. Dudley, Frank L. Browne, and William T. Norton, Washington, D. C. Filed Feb. 10, 1902. Serial No. 93,341. (No specimens.)

Claim.—The process of treating cast-steel ingots and the like previous to forging, which consists in cooling the cast ingot to a temperature below 550° centigrade, reheating the cooled ingot to a temperature between 750° centigrade and 850° centigrade, maintaining said reheating temperature for a period of from thirty to forty-five hours, and finally heating the ingot to forging temperature.

705,331. WIRE TWISTING AND REELING MACHINE. WILBER EMERY, Ashland, Ky. Filed Mar. 22, 1902. Serial No. 99,517. (No model.)

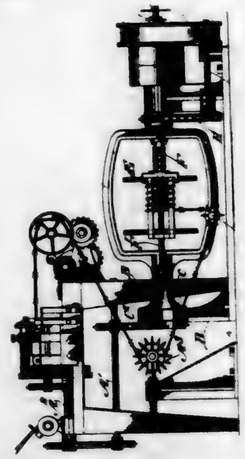

Claim.—1. In a twisting and reeling mechanism, the combination with a reel and a continuously-revolving twister around which the wire is passed on its way to the reel, of slipping driving connections between the twister and the reel, arranged to rotate the reel at a speed different from that required for take-up, so as to resist the pull of the wire, and adapted to slip as the tension attains a certain limit; substantially as described.

2. In a twisting and reeling mechanism, the combination with a reel and a continuously-revolving twister around which the wire is passed on its way to the reel, of driving and driven friction-pulleys suitably connected respectively with the twister and reel, and a belt passing around said pulleys adapted to drive the reel to take up or receive the wire with uniform tension and to slip as the tension attains a certain limit; substantially as described.

3. In a twisting and reeling mechanism, the combination with a reel and a continuously-revolving twister, of a driving-shaft having a friction-pulley thereon, a friction-pulley suitably connected with and driving the reel, and a belt passing around said pulleys adapted to drive the reel to take up or receive the wire with uniform tension and to slip as the tension attains a certain limit; substantially as described.

4. In a twisting and reeling mechanism, a reel, a continuously-revolving twister around which the wire is passed on its way to the reel, means for distributing the wire evenly on the reel actuated by a differential rotation of the reel and twister, and differential slipping driving connections between the twister and the reel; substantially as described.

5. In combination with a reel and a continuously-revolving spooler adapted to wind the wire thereon, slipping driving connections between

the spooler and the reel adapted to rotate the latter at a speed different from winding-speed and adapted to slip to permit independent action of the reel when the tension of the wire attains a certain limit; substantially as described.

6. In combination with a reel and a revolving spooler adapted to wind the wire thereon, a driving-shaft having a friction-pulley thereon, a friction-pulley suitably connected with the reel, and a belt passing around said pulleys, the arrangement being such that the reel is driven thereby at less than winding-speed, whereby the reel is continuously turned independently by pull of the wire and the belt caused to slip; substantially as described.

7. In combination with a reel and a continuously-revolving spooler carried by coaxial shafts, a counter-shaft driven from the spooler-shaft, and frictional connections between said counter-shaft and the reel-shaft driving the latter at less than winding-speed and slipping to permit independent turning of the reel by pull of the wire; substantially as described.

8. In combination with a reel and a continuously-revolving spooler carried by coaxial shafts, a counter-shaft driven from the spooler-shaft and having a friction-pulley thereon, a second friction-pulley on the reel-shaft, and a belt passing around said pulleys adapted to rotate the reel to take up the wire with uniform tension and to slip to permit independent action of the reel when the tension attains a certain limit; substantially as described.

9. In a reeling mechanism, a rotary reel and a continuously-revolving spooler having coaxial shafts, connections between said shafts for reciprocating the reel when the shafts are differently rotated, and differential driving connections between said shafts; substantially as described.

10. In a reeling mechanism, a rotary reel and a continuously-revolving spooler having coaxial shafts, connections between said shafts for reciprocating the reel when the shafts are rotated at different speeds, and differential slipping driving connections between said shafts normally rotating the reel-shaft at a different speed from that required for take-up and slipping to permit independent action of the reel to take up the wire with uniform tension; substantially as described.

11. In a reeling mechanism, a rotary reel and a continuously-revolving spooler having coaxial shafts, connection between said shafts for reciprocating the reel when the shafts are rotated at different speeds, a counter-shaft driven from the spooler-shaft having a friction-pulley thereon, a friction-pulley connected to the reel-shaft, said pulleys being in a different ratio from the driving connections between the spooler-shaft and counter-shaft, and a belt passing around said pulleys adapted to turn the reel to take up the wire with uniform tension and to slip to permit independent action of the reel when the tension attains a certain limit; substantially as described.

12. In a reeling mechanism, a rotary sleeve or hollow shaft carrying a revolving spooler, a reel-shaft journaled within said sleeve carrying a reel in proper relation to the spooler, connection between said sleeve and shaft for reciprocating the reel when the shafts are rotated at different speeds, a counter-shaft driven by suitable connections with the spooler-shaft, friction-pulleys on the reel-shaft and counter-shaft in a different ratio from that of the driving connections between the spooler-shaft and counter-shaft, the reel-shaft pulley being slidably but non-rotatably secured thereon and having a journal in the outer sleeve or spooler-shaft, and a belt passing around said pulleys driving the reel to take up the wire with uniform tension and slipping to permit independent action of the reel as the tension attains a certain limit; substantially as described.

705,882. MACHINE FOR MAKING MATS FOR BOTTLE-COVERS, &c. VALENTINE FLOCKENSTEIN, St. Paul, Minn., assignor to the Northwestern Grass Twine Company, St. Paul, Minn., a Corporation of Iowa. Filed Oct. 22, 1900. Serial No. 33,910. (No model.)

Claim.—1. In a bottle-cover machine, the combination with feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, of a cord-puller comprising a vibratory arm, a finger yieldingly connected thereto, and means for vibrating said arm, as and for the purpose set forth.

2. In a bottle-cover machine, the combination with feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, of a cord-puller comprising a vibratory arm, a finger yieldingly connected thereto, a guide for said finger, and means for vibrating said arm, as and for the purpose set forth.

3. In a bottle-cover-making machine, a cord-puller comprising a vibratory arm, a hooked finger, means for yieldingly connecting said finger to said arm, and means for vibrating said arm, in combination with stitch-forming mechanism and a cord clamp or holder, as and for the purpose set forth.

4. In a bottle-cover-making machine, a cord-puller comprising a vibratory arm having a shoulder, a finger pivotally connected to said arm, a spring arranged to maintain said finger in engagement with said shoulder, and means for vibrating said arm, in combination with stitch-forming mechanism and a cord clamp or holder, as and for the purpose set forth.

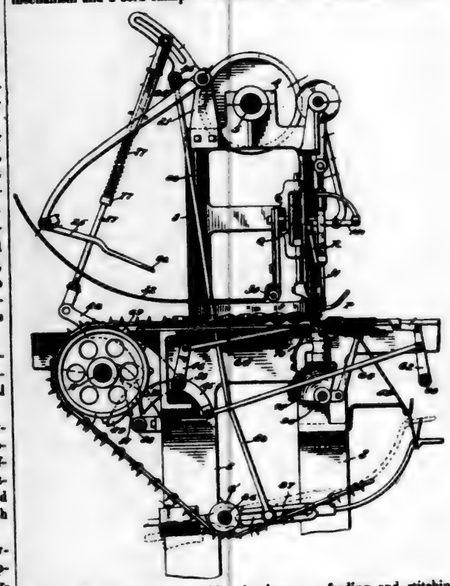

5. In a machine for making bottle-covers, feeding and stitching mechanism, and means for actuating the same, in combination with a rock-shaft, a crank-arm for rocking the same, a pivotally-mounted arm, means for periodically rocking the same, a tube connected to said crank-arm and provided with a transverse slot, a rod connected to said pivoted arm and arranged to telescope into said tube and having a pin operating in said slot, a spring interposed between said rod and tube, and a cord-puller actuated by said rock-shaft, as and for the purpose set forth.

6. In a machine for making bottle-covers, feeding and stitching mechanism, and means for actuating the same, in combination with a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, a rock-shaft, a cord-puller, a vibratory arm for providing slack in the cord between the cord-clamp and the cord-supply, and connections between said arm and shaft, whereby when the latter is rocked to advance the cord-puller to engage the slack portion of the cord and vibratory arm is also actuated, as and for the purpose set forth.

7. In a machine for making bottle-covers, feeding and stitching mechanism, and means for actuating the same, in combination with a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, a counterbalanced vibratory arm arranged to engage the cord at a point intermediate the cord-clamp and cord-supply to provide slack therein, a cord-puller, and connections intermediate said cord-puller and arm to vibrate the latter, as and for the purpose set forth.

8. In a machine for making bottle-covers, feeding and stitching devices, and means for actuating the same, in combination with a cord-clamp, a pivotally-mounted arm arranged to engage the cord, a cord-puller, a rock-shaft therefor, a crank-arm for rocking said shaft, and a rod connected to said crank and pivoted arms, said rod having loose connection to permit of movement thereof relative to said arms, as and for the purpose set forth.

9. In a machine for making bottle-covers, feeding and stitching devices, and means for actuating the same, in combination with a cord-clamp, a pivotally-mounted arm arranged to engage the cord, a cord-puller, a rock-shaft for actuating the same, a crank-arm mounted on said shaft and provided with a pin or projection, a rod having an elongated slot in which said pin or projection is received, said rod being connected at its other end to said pivoted arm, as and for the purpose set forth.

10. In a machine for making bottle-covers, feeding and stitching devices, and means for actuating the same, in combination with a cord-clamp, a pivotally-mounted arm arranged to engage the cord, a cord-puller, actuating means therefor, and a rod connected at one end to the cord-puller-actuating means and adjustably connected at the other end to said pivoted arm, as and for the purpose set forth.

11. In a machine of the class described, a rock-shaft, a spring arranged to exert its tension to rock said shaft in one direction, a stop for locking said shaft against rotation under the influence of said spring, stitch-forming mechanism, a cord-clamp, means actuated by said shaft for operating said clamp, and means for tripping said stop, as and for the purpose set forth.

12. In a machine of the class described, a rock-shaft, means normally tending to rock said shaft in one direction, a stop for restraining the rocking of said shaft, stitch-forming mechanism, a cord clamp and cutter, a crank-arm carried by said shaft and connected to said cord clamp and cutter, and means for tripping said stop, as and for the purpose set forth.

13. In a machine of the class described, a rock-shaft, means normally tending to rock said shaft in one direction, an arm mounted on said shaft and provided with a pin, a holding-arm adapted to engage said pin to lock said shaft against rotative movement, stitch-forming mechanism, a cord clamp and cutter, means operated by said shaft for actuating said clamp and cutter, and means for releasing said holding-arm from engaging relation with respect to said pin, as and for the purpose set forth.

14. In a machine of the class described, a rock-shaft, a cord-clamp, means actuated by said shaft for opening and closing said clamp, means normally tending to rock said shaft in a direction to close said clamp, a trip for locking said shaft in position to hold said clamp open, and means for releasing said trip, in combination with stitch-forming mechanism, as and for the purpose set forth.

15. In a machine of the class described, a rock-shaft, a cord-clamp, means actuated by said shaft for opening and closing said clamp, means normally tending to rock said shaft in a direction to close said clamp, a trip for locking said shaft in position to hold said clamp open, means for releasing said trip, and means for positively forcing said clamp to extreme closed position, in combination with stitch-forming mechanism, as and for the purpose set forth.

16. In a machine of the class described, a rock-shaft, a cord-clamp, means actuated by said shaft for opening and closing said clamp, means for positively rocking said shaft in a direction to close said clamp, a spring arranged to oppose said rocking means, a trip for holding said shaft against the action of said spring, means for releasing said trip, and means for positively rocking said shaft to the limit of its movement to close said clamp, in combination with stitch-forming mechanism, as and for the purpose set forth.

17. In a machine of the class described, a cord clamp and cutter, a cord-puller, a rotating shaft, means actuated therefrom for operating said clamp and cutter, and means actuated by said rotating shaft for rocking said rock-shaft, in combination with stitch-forming mechanism, as and for the purpose set forth.

18. In a machine of the class described, a rotating shaft, a wheel mounted thereon, a pin or projection carried by said wheel, a cam-arm arranged to be engaged and rocked by said pin or projection, a rock-shaft, a coöperating cam-arm mounted thereon, a cord-clamp, and connections operated by said rock-shaft for actuating said cord clamp and cutter, in combination with stitch-forming mechanism, as and for the purpose set forth.

19. In a bottle-cover-making machine, feeding and stitching devices, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, in combination with a rock-shaft, a cord-puller connected thereto and operated therefrom and arranged to engage the cord at a point between the cord-clamp and the cord-supply, an arm also connected to said rock-shaft, a cam-shaft, a pivotally-mounted arm arranged to be engaged by a cam on said shaft whereby it is periodically rocked, and connections between said pivotally-mounted arm and the arm on said rock-shaft for rocking the latter to actuate said cord-puller, as for the purpose set forth.

20. In a bottle-cover-making machine, feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, in combination with a cord-puller arranged to engage the cord at a point between the cord-clamp and the cord-supply, a rock-shaft having an arm, to which said cord-puller is connected, a cam-shaft, a pivotally-mounted forked arm, the cam on said cam-shaft operating within the fork of said arm whereby said arm is positively rocked in both directions, and connections between said arm and rock-shaft for rocking the latter to operate the cord-puller, as and for the purpose set forth.

21. In a bottle-cover-making machine, feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, in combination with a cord-puller operating to engage the cord at a point between said cord-clamp and the cord-supply, a rock-shaft having an arm to which said cord-puller is connected, a cam-shaft, a pivotally-mounted forked arm, a cam on said shaft operating within the fork of said arm, and yielding connections between said arm and rock-shaft, as and for the purpose set forth.

22. In a bottle-cover-making machine, feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, in combination with a rock-shaft having an arm, a cord-puller connected to said arm and arranged to engage the cord at a point between the cord-clamp and cord-supply, a cam-shaft, means for rotatively actuating the same, a pivotally-mounted arm arranged to be periodically engaged and rocked by a cam on said shaft, and yielding connections between said pivoted arm and rock-shaft for rocking the latter to operate the cord-puller, as and for the purpose set forth.

23. In a machine for making bottle-covers, feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, in combination with a cord-puller arranged to engage the cord at a point between the cord-clamp and the cord-supply, a main drive-shaft for actuating said stitching and feeding mechanism, a counter-shaft rotatively actuated from said main drive-shaft, a rock-shaft having an arm to which said cord-puller is connected, a cam-wheel mounted upon said counter-shaft, said cam-wheel provided with cam projections, a pivotally-mounted forked arm, the cam projections upon said wheel operating within the fork of said arm to positively rock the same to the extreme limits of its movement in both directions, and connections between said pivoted arm and said rock-shaft for rocking the latter to operate the cord-puller, as and for the purpose set forth.

24. In a machine for making bottle-covers, feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, in combination with a cord-puller arranged to engage the cord at a point between the cord-clamp and the cord-supply, and means for vibrating said cord-puller and operating to actuate said cord-puller in advance of the operation of the stitching mechanism, and means interposed between the cord-supply and the cord-puller for providing slack in the cord to be yielded up to said cord-puller, as and for the purpose set forth.

25. In a machine for making bottle-covers, feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, in combination with a rock-shaft, a cord-puller connected to said shaft and arranged to engage the cord at a point between the cord-clamp and the cord-supply, a vibrating arm also arranged to engage the cord at a point between the cord-clamp and cord-supply, connections between said vibrating arm and said rock-shaft for actuating the former to provide a slack in the cord to be taken up by the cord-puller, and means for rocking said shaft, as and for the purpose set forth.

26. In a machine for making bottle-covers, feeding and stitching mechanism and means for actuating the same, in combination with a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, an arm arranged to engage the cord at a point between said clamp and the cord-supply to provide slack in the cord, a rock-shaft, connections between said shaft and arm for vibrating the latter, a cord-puller also connected to said rock-shaft and operating to engage the slack portion of the cord to form a loose end therein in advance of the operation of the stitching mechanism, and means for operating said rock-shaft, as and for the purpose set forth.

27. In a machine for making bottle-covers, feeding and stitching devices and means for actuating the same, in combination with a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, an arm arranged to engage the cord at a point between said clamp and the cord-supply, a rock-shaft having a crank, a rod respectively connected to said crank and arm for vibrating the latter, whereby when said rock-shaft is rocked said arm is vibrated to provide slack in the cord, a cord-puller also connected to said rock-shaft and arranged to engage the slack portion of the cord to draw the same out in position to form a free end, and means for rocking said rock-shaft, as and for the purpose set forth.

28. In a machine for making bottle-covers, a cord-clamp comprising a stationary guide having a finger or projection extending laterally from the end thereof, and a slide having a hook formed in the plane of the body thereof and operating in a plane parallel with the plane of said finger or projection, said hook projecting in the opposite direction with respect to said finger, and means for reciprocating said slide, whereby said hook is drawn past said finger to clamp the cord between said guide-finger and the hook of said slide, as and for the purpose set forth.

29. In a machine for making bottle-covers, a cord-clamp comprising a stationary guide having a lateral finger extending from the end thereof, a cutter pivotally mounted on said guide, and a reciprocatory slide operating in a plane parallel with respect to the plane of said finger and provided with a hook projecting in a direction opposite to the direction of said finger, said slide also provided with pins or projections arranged to engage said cutter to rock the same, and means for moving said slide whereby the cord is engaged by the hook therein and is drawn

under said finger and clamped and said cutter is rocked to sever the cord as and for the purpose set forth.

30. In a bottle-cover-making machine, the combination with feeding and stitching mechanism, means for actuating the same, and a cord-clamp arranged to hold the cord in position to be engaged by the stitching mechanism, of a cord-puller arranged to engage the cord at a point between said clamp and the cord-supply, and means operating in advance of the actuation of the stitching mechanism for moving said cord-puller to pull out a portion of the cord to form a loose end, as and for the purpose set forth.

705,333. MACHINE FOR MAKING MATS FOR BOTTLE-COVERS, &c. VALENTINE FLECKENSTEIN, St. Paul, Minn., assignor to the Northwestern Grass Twine Company, St. Paul, Minn., a Corporation of Iowa.

Filed Apr. 5, 1898. Serial No. 711,329. (No model.)

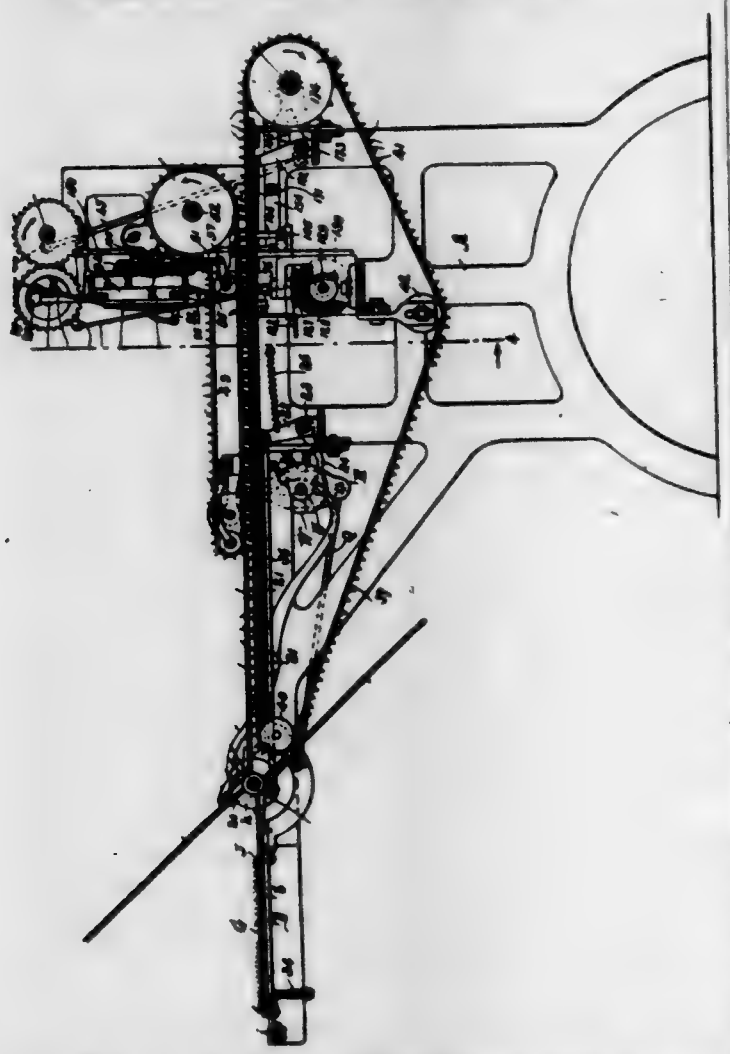

Claim.—1. In a machine for making packing covers, mats and the like, the combination with the stitching mechanism and the feeding devices, of a stationary table adapted to receive the material in sufficient quantity to form a single cover or mat, means for clamping such material, and means for moving said clamp to transfer the clamped material to said feeding devices, and means for releasing said clamp to deposit the material upon the feeding devices, as and for the purpose set forth.

2. In a machine for making packing-covers and the like, the combination with the stitching mechanism and feeding devices, of a table adapted to receive the material in the form of a single mat, pivotally-mounted and relatively movable clamping-arms for grasping such mat, means for moving said arms relatively to each other to clamp such mat, means for swinging said arms about their pivotal support to transfer such mat to the feeding devices, and means for releasing said clamping-arms to deposit the mat upon the feeding devices, as and for the purpose set forth.

3. In a machine for making packing-covers and the like, the combination with the stitching and feeding devices, of a table adapted to receive a sufficient quantity of the material in the form of a mat to form a single cover, adjustable stops for regulating the width of such mat, and means for bodily transferring such mat to and depositing the same upon the feeding devices, as and for the purpose set forth.

4. In a machine for making packing-covers and the like, the combination with the stitching and feeding devices, of a series of slats arranged to form a table for receiving and supporting a sufficient quantity of the material to form a single cover in the form of a mat of uniform thickness and suitable width, clamping-arms arranged to operate between said slats for clamping said mat, and means for rocking said arms, whereby the said mat is transferred to the feeding devices, and means for releasing said clamping-arms to deposit the mat upon said feeding devices, as and for the purpose set forth.

5. In a machine for making packing-covers and the like, the combination with the stitching and feeding devices, of a table adapted to receive the material in sufficient quantity to form a single cover in the form of a mat, a rock-shaft journaled adjacent to said table, clamp-arms arranged in coöperating pairs and mounted thereon and adapted to clamp said mat, and means for rocking said shaft whereby the mat is bodily transferred to said feeding devices, and means for opening and closing said coöperating pairs of clamp-arms to clamp and release the mat, as and for the purpose set forth.

6. In a machine of the class described, a table adapted to receive the material in sufficient quantity to form a single mat, a stitching mechanism and feeding devices, in combination with a transferring device for the material, comprising a rock-shaft, clamping-arms mounted thereon in coöperating pairs, means for relatively moving the members of the pairs of clamping-arms to clamp and release the material, and means for periodically rocking said shaft to effect the transfer and delivery of the material, whereby each mat is separately clamped and transferred from said table to said feeding devices and deposited thereon for presentation to the stitching devices, as and for the purpose set forth.

7. The combination with stitching and feeding devices, and a table adapted to receive the material in sufficient quantity to form a single mat, of a transferring mechanism including a rock-shaft, hubs mounted thereon to rotate therewith, each carrying a clamping-arm, coöperating hubs loosely mounted on said shaft and carrying coöperating clamping-arms, means for rotarily displacing said loosely-mounted hubs to open and close said clamping-arms, and means for rocking said shaft whereby such mat is clamped and transferred from said table to said feeding devices and deposited thereon for presentation to the stitching devices, as and for the purpose set forth.

8. The combination with stitching and feeding devices, and a table adapted to receive the material in sufficient quantity to form a single mat, of a transferring mechanism including a rock-shaft, a series of clamping-arms mounted thereon to rotate therewith, a coöperating series of clamping-arms loosely mounted on said shaft for independent rotative movement thereon relative to said first-mentioned series of arms, means for moving said loosely-mounted arms to close upon and to open with respect to said first-mentioned arms, and means for rocking said shaft whereby such mat is clamped and transferred from said table to said feeding devices and deposited thereon for presentation to the stitching devices, as and for the purpose set forth.

9. The combination with stitching and feeding devices, and a table adapted to receive the material in sufficient quantity to form a single mat, of a transferring mechanism including a rock-shaft, a series of clamping-arms mounted thereon to rotate therewith, a coöperating series of clamp-arms loosely mounted on said shaft, means normally tending to close said loosely-mounted arms upon the first-mentioned arms, a stop-catch for holding said loosely-mounted arms in open position, means for releasing the same, and means for rotating said shaft whereby such mat is clamped and transferred from said table to said feeding devices and deposited thereon for presentation to the stitching devices, as and for the purpose set forth.

10. The combination with stitch-forming mechanism and feeding mechanism of a transferring-shaft, hubs mounted thereon to rotate therewith, and carrying clamp-arms, coöperating hubs loosely mounted upon said shaft and carrying coöperating arms, springs arranged to normally act to close said loosely-mounted arms upon the first-mentioned arms, a stop for maintaining said loosely-mounted arms in open position, means for releasing said stop, and means for rotating said shaft, as and for the purpose set forth.

11. The combination with stitch-forming mechanism and feeding mechanism of a transferring-shaft, clamp-arms carried thereby to rotate therewith, coöperating clamp-arms loosely mounted on said shaft, a rod connected to move with said shaft and arranged to engage said loosely-mounted arms, a spring connected to said rod and normally acting to close said loosely-mounted arms upon the first-mentioned arms, a stop for maintaining said rod in retracted position, means for releasing said stop, and means for rocking said shaft, as and for the purpose set forth.

12. The combination with a table adapted to receive the material in sufficient quantity to form a single mat, a stitching mechanism, feeding devices for presenting the material to said stitching mechanism, and a transferring-shaft, of a series of stationary, and a coöperating series of relatively movable, clamp-arms, carried by said shaft, springs normally acting to close said movable arms upon the relatively stationary arms, a stop for holding said arms in open position, a cam for periodically releasing said stop, and means for relatively moving said shaft, whereby each mat is clamped and transferred from said shaft to said feeding devices and deposited thereon for presentation to the stitching mechanism, as and for the purpose set forth.

13. The combination with stitch-forming mechanism and feeding mechanism of a transferring-shaft, a series of stationary clamp-arms and a coöperating series of relatively movable clamp-arms carried by said shaft, a rod connected to said movable clamp-arms, a disk mounted on said shaft and connected to said rod, and provided with a shoulder, a spring operating upon said rod to close said movable arms upon said relatively stationary arms, a pawl arranged to engage said shoulder, a lever for operating said pawl, a cam for actuating said lever, and means for rocking said shaft, as and for the purpose set forth.

14. The combination with a table adapted to receive the material in sufficient quantity to form a single mat, a stitching mechanism, feeding devices for presenting the material to said stitching mechanism, and a transferring-shaft, of a series of stationary clamp-arms, and a coöperating series of relatively movable clamp-arms carried by said shaft, means for periodically opening and closing said movable arms relative to said stationary arms, means for locking said shaft against rotation while said clamp-arms are in open position, and means for rotating said shaft when said arms are closed, whereby such mat is clamped and transferred from said table to said feeding devices and deposited thereon for presentation to the stitching mechanism, as and for the purpose set forth.

15. The combination with stitch-forming mechanism and feeding mechanism of a transferring-shaft, a series of stationary hubs and a coöperating series of relatively movable hubs mounted on said shaft, a pair of oppositely-projecting clamp-arms carried by each hub, said hubs being arranged in coöperating pairs, means for holding the hubs of each pair rotatively displaced against a tension, whereby the clamp-arms of one hub are in open position relative to the arms of the other hub, means for periodically releasing said holding means, and means for rotating said shaft a half-revolution when said holding means are released, as and for the purpose set forth.

16. In a machine of the class described, stitch-forming mechanism and feeding mechanism, in combination with a transferring mechanism including a shaft, clamp-arms carried thereby, means for rotatively moving said shaft, and a support for the arms when in position to receive the material to be clamped, said support being yieldingly mounted to permit the arms to pass by it, as and for the purpose set forth.

17. In a machine of the class described, stitch-forming mechanism and feeding mechanism, in combination with a transferring mechanism including a shaft, clamp-arms carried thereby, means for rotatively moving said shaft, a lever arranged to project into the path of said arms, and a spring for yieldingly holding said lever in position, whereby said arms are permitted to pass by said lever and then to be supported thereby, as and for the purpose set forth.

18. In a machine of the class described, a table adapted to receive the material to be operated on, a pivotally-mounted clamp having clamping-arms arranged to grasp a sufficient amount of the material to form a single mat, an endless feed-carrier, means for moving said clamp-arms into position to transfer the mass of material bodily to, and to deliver the same upon, said carrier, a stitching mechanism, a main drive-shaft, and means actuated from said main drive-shaft for operating these several parts, as and for the purpose set forth.

19. In a machine of the class described, a main drive-shaft, a counter-shaft having sprocket-gears thereon, means for imparting a step-by-step rotation to said counter-shaft from the main drive-shaft, feed-carriers arranged to be engaged and actuated by said sprocket-gears, an auxiliary counter-shaft carrying sprocket-gears, auxiliary feed-carriers actuated thereby and arranged over and coöperating with said first-mentioned carriers to feed the material, and gearing actuated by said first-mentioned counter-shaft for actuating said auxiliary counter-shaft, in combination with clamping-arms arranged to receive the material in sufficient quantity to form a single mat, means for actuating said clamping-arms to transfer such material to and deposit the same upon said carrier, and stitch-forming mechanism past which the carrier operates, as and for the purpose set forth.

20. In a machine of the class described, a stitching mechanism and a clamping and transferring mechanism arranged to successively receive and transfer the material, in sufficient quantities to form single mats or covers, to feed devices for presentation to said stitching mechanism, in combination with feed devices comprising a feed-carrier, a coöperating auxiliary carrier, said carriers adapted to engage and feed the material between them, and a presser-roll arranged to hold said carriers steadily to their work adjacent to the stitching mechanism, and means for actuating said carriers, as and for the purpose set forth.

21. In a machine of the class described, a stitching mechanism comprising a reciprocating frame, a needle carried thereby, in combination with a pin or rod, a support therefor, said support also connected to said frame, a link connected to said support and pin or rod, means for reciprocating said frame, and means connected to said link for relatively reciprocating said pin or rod, as and for the purpose set forth.

22. In a machine of the class described, a stitching mechanism including a reciprocating frame, a needle mounted thereon and having an inclined opening through the shank thereof, a pin or rod arranged to operate through said opening, a pivoted link connected to said pin or rod, said link being pivotally mounted upon said frame, means for reciprocating said frame, and independent means for rocking said link, as and for the purpose set forth.

23. In a machine of the class described, a stitching mechanism including a needle having a hooked end, and an inclined opening through the shank thereof, a pin operating through said opening, a frame carrying said needle and pin, a crank-arm for reciprocating said frame, and a rod having a slot engaging said crank-arm, said rod connected to said pin, whereby relative movement is imparted to said needle and pin, as and for the purpose set forth.

24. In a machine of the class described and in combination with stitch-forming mechanism, a reciprocating frame, a needle carried thereby, an arm supported on said frame, a lever connected to said arm, a pin carried by said lever and arranged to coöperate with the needle, a driving-crank for said frame, and a rod having a slot engaging said crank, said rod connected to said pin-supporting lever, as and for the purpose set forth.

25. In a machine of the class described, a reciprocating frame, a series of needles carried thereby, a series of arms also supported on said frame, a lever connected to each arm, a pin supported by each lever and arranged to coöperate with its corresponding needle, a rod connecting all of said levers, a driving-crank for said frame, and a pitman having slotted connection with said driving-crank and connected to said rod, as and for the purpose set forth.

26. In an apparatus of the class described, a main shaft, a counter-shaft, gearing for actuating the latter from the former, comprising a loose gear mounted on said counter-shaft and provided in the hub thereof with a pocket or recess, a wheel mounted on to rotate with said counter-shaft, and a clutch-lever carried by said wheel, said lever carrying a pin adapted to be received in said pocket, whereby said gearing is clutched to rotate with said counter-shaft, said lever provided with a tailpiece whereby it may be rocked into and out of position for the pin thereon to enter said pocket, a lever for engaging said tailpiece, said lever provided with a stop arranged to engage said wheel, whereby when said lever is actuated said gear is unclutched and said wheel is coincidently arrested, a stitching mechanism actuated from said counter-shaft, and means for actuating said lever, as and for the purpose set forth.

27. In an apparatus of the class described, a stitching mechanism, a shaft for actuating the same, a main drive-shaft for rotating said first-mentioned shaft, including a loosely-mounted gear having a pocket in the hub thereof, a wheel fixed upon said shaft, said wheel provided with a shoulder, a clutch-lever pivoted upon said wheel and having a pin adapted to be received in said pocket, a lever arranged when actuated to disengage said clutch-lever from said pocket, said lever provided with a projection arranged to engage the shoulder on said wheel, whereby, simultaneously with the disengagement of said clutch-lever, said wheel is arrested, and means for actuating said lever, as and for the purpose set forth.

28. In an apparatus of the class described, a stitching mechanism, actuating mechanism therefor including a clutch, a spring normally acting to release said clutch, a lever, a stop arranged to support said lever in position to hold said spring retracted, a stitching-thread-severing mechanism, means normally acting to move said severing mechanism to sever the thread, a latch for maintaining said severing mechanism in retracted position, means for releasing said stop, whereby said clutch is unclutched, and means actuated by the movement of said lever, when released, for releasing said latch, whereby said severing mechanism is actuated, and means for restoring all these parts to their initial positions, as and for the purpose set forth.

29. In a machine of the class described, the combination with a table arranged to receive thereon the material to be operated on, a clamping and transferring device comprising coöperating clamping-arms arranged to receive therebetween from the table a sufficient quantity of material to form a single mat, an endless carrier, means for revolving said clamping-arms to bodily transfer the mass of material to form a single mat from the table and deliver the same onto said carrier, a stitching mechanism, means for actuating the same, and means for imparting a step-by-step feed to said carrier to present the material to the action of said stitching mechanism, as and for the purpose set forth.

30. The combination with coöperating clamp-arms adapted to receive therebetween the material in sufficient quantity to form a single mat, a carrier, means for moving said clamp-arms to transfer said material to said carrier, means for opening and closing said clamp-arms to clamp and release said material, means for holding said clamp-arms in stationary position and against movement during the initial movement of said carrier to enable said carrier to properly receive said material, a stitching mechanism past which said carrier operates, and means for actuating these several parts, as and for the purpose set forth.

31. The combination with clamping-arms arranged in coöperating pairs, means for opening and closing the coöperating members of said pairs of arms to receive and clamp therebetween the material in sufficient quantity to form a single mat, a feed-carrier having projecting pins, means for moving said pairs of clamping-arms, with the material clamped therebetween, into position for the pins on said carrier to engage said material, means for holding said clamping-arms in stationary position during the initial movement of said carrier, a stitching mechanism past which said carrier operates, and means for actuating these several parts, as and for the purpose set forth.

32. The combination with clamping-arms arranged in coöperating pairs, a shaft upon which said arms are mounted, means for relatively moving the members of said pairs of arms to open and close the same, means for rocking said shaft to swing said clamping-arms into position to deposit the material clamped therebetween, a carrier to which said arms deliver, means for holding said clamping-arms in delivering position during the initial movement of said carrier, an auxiliary carrier arranged in parallel relation with respect to and over and above said first-mentioned carrier, said carriers forming a passage therebetween to receive the material, a stitching mechanism to which said carriers deliver, and means for actuating the several parts, as and for the purpose set forth.

33. The combination with a feed-carrier, of an auxiliary carrier arranged in parallel relation with respect thereto, and over said first-mentioned carrier, thereby forming a passage between said carriers, clamping-arms adapted to receive and clamp therebetween a sufficient quantity of the material to form a single mat, means for actuating said clamping-arms to deliver the material clamped therebetween upon the upper surface of said carrier and at a point in advance of said auxiliary carrier, means for holding said clamping-arms in delivering position during the initial movement of said carrier, a stitching mechanism to which said carrier delivers, and means for actuating these several parts, as and for the purpose set forth.

34. The combination with stitching and feeding devices, of a transferring mechanism comprising coöperating clamping-arms adapted to receive therebetween the material in sufficient quantity to form a single cover, a shaft upon which said clamp-arms are mounted, means for relatively moving said clamp-arms to open and close the same, a drive-gear mounted on said shaft, a pawl for actuating said drive-gear, means for actuating said pawl to impart periodic rotation through definite distances to said shaft, whereby said clamp-arms are successively moved to receiving and delivering positions, a carrier to which said arms deliver, and a stitching mechanism past which said carrier operates, as and for the purpose set forth.

705,384. APPARATUS FOR COLORING YARNS. ALFRED FORHANDER, New York, N. Y., assignor to the Carpet Yarn Printing Company, a Corporation of New York. Filed Feb. 14, 1902. Serial No. 93,969. (No model.)

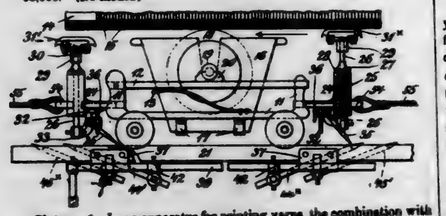

Claim.—1. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, a spring having a seat stationary with reference to the color-carriage for forcing the scraper toward the drum, and means for withdrawing the scraper from the drum and thereby increasing the strain upon the spring.

2. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, a spring having a seat stationary with reference to the color-carriage for confining the scraper in contact with the yarn on the drum, and means for holding the scraper at a distance from the yarn on the drum and for simultaneously holding said spring under greater strain than is imparted to it while confining the scraper in contact with the yarn.

3. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, a spring having a seat stationary with reference to the color-carriage for forcing the scraper toward the drum, means for withdrawing the scraper from the drum and thereby increasing the strain upon the spring, and means for adjusting such strain upon the spring.

4. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color wheel, of a scraper, a spring for forcing the scraper toward the drum, means for holding the scraper at a distance from the yarn on the drum and for simultaneously holding said spring under greater strain than is imparted to it while so confining the scraper in contact with the yarn, and appliances for releasing said spring from such increased strain after the scraper has passed underneath the drum.

5. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, means for placing said scraper in a position lower than the yarn on the drum while said scraper is ahead of the color-wheel and for so maintaining it on its return trip until after it passes underneath said drum, and mechanism for forcing the scraper upward and against the yarn after it has passed underneath the drum.

6. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, means for holding said scraper in an elevated position while it travels behind the color-wheel and underneath the drum and for afterward maintaining it in an elevated position until after the direction of the travel of the carriage has been reversed and said scraper has thereby been placed ahead of the color-wheel, and mechanism for lowering said scraper after such reversal.

7. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, a post upon which it is mounted, a spring placed around said post and adapted to actuate the same, a casing surrounding said spring and a portion of said post, and a cap fitted around said post and tightly secured to the upper portion of said casing and serving as a guide for said post.

8. In an apparatus for printing yarns, the combination with the yarn-drum the color-carriage and the color-wheel, of a bracket on the carriage, a scraper, a support for the same movably mounted upon said bracket, a lever for actuating said support, and means for confining said lever in contact with the under side of the bracket in two different positions corresponding with the operative and a non-operative position of the scraper.

9. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, a support for the same, a guide along which said support slides, a rocking lever for raising and lowering the support, a tripper for actuating said lever, and a spring for enforcing operative contact between the lever and the tripper.

10. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, a support for the same, a guide along which said support slides, a rocking lever for raising and lowering the support, a tripper for actuating said lever, and a spring for enforcing operative contact between the scraper and the yarn, and between the lever and the trippers.

11. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of bracket 24, a scraper, post 26 supporting the same, spring 25, stud 32, link 33, lever 35 and means for actuating said lever, substantially as specified.

12. In an apparatus for printing yarns, the combination with the yarn-drum the color-carriage and the color-wheel, of a scraper, a support for the same adapted to be raised and lowered, and a stationary tripping device, and a movable tripping device, one for raising the scraper and the other for lowering said scraper, and elastic means for permitting said support to engage with one of said tripping devices while moving in one direction without actuating the scraper, and for enforcing movement of the scraper as said support engages with said tripping device while moving in the opposite direction.

13. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, a support for the same adapted to be raised and lowered, and a tripping device, and means for permitting said support to engage with said tripping device while moving in one direction without actuating the scraper and for enforcing movement of the scraper as said support engages with said tripping device while moving in the opposite direction.

14. In an apparatus for printing yarns, the combination with the yarn-drum, the color-carriage and the color-wheel, of a scraper, means mounted upon the carriage for raising and lowering the same, a shaft revolubly mounted placed along the track, a cross-bar attached to said shaft, and an inclined tripper for actuating the means for raising the scraper attached to said cross-bar, and treadle mechanism for revolving said shaft and for placing said actuating device in an inoperative position.

705,385. WATER-HEATER. JOSEPH FOSTER, Brooklyn, N. Y. Filed Jan. 23, 1902. Serial No. 90,742. (No model.)

Claim.—1. In a water-heater, a circular mixing-chamber having oppositely-arranged inlet and outlet, a deflecting-plate parallel to the wall of said mixing-chamber opposite said inlet, curved guiding-plates extending outward from the wall of said mixing-chamber on either side of said outlet, said guiding-plates extending around the ends of said deflecting-plate to cause impingement of water against said deflecting-plate, an injector connected with the inlet of said mixing-chamber and provided with a heating-nozzle in line with said inlet to discharge water against said deflecting-plate, a curved water-passage communicating with said heating-nozzle, and interlocking water and heating valves controlling the supply of fluids to said injector.

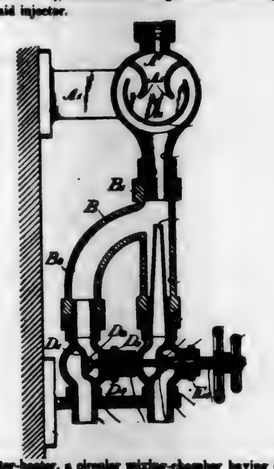

2. In a water-heater, a circular mixing-chamber having diametrically-arranged inlet and outlet, a deflecting-plate concentric with the wall of said mixing-chamber opposite said inlet, curved guiding-plates extending outward from the wall of said mixing-chamber on either side of the outlet of the same, said guiding-plates extending around the ends of said deflecting-plate to cause impingement of the water against said deflecting-plate, an injector connected with the inlet of said mixing-chamber and interlocking valves to govern the admission of water and heating fluid to said injector.

3. In a water-heater, a circular mixing-chamber having diametrically-arranged inlet and outlet, there being a concentric deflecting-plate in said mixing-chamber opposite said inlet and curved guiding-plates extending from the wall of said mixing-chamber around the ends of said deflecting-plate, a water-valve and a heating-valve connected to said mixing-chamber and an interlocking water-handle and heating-handle to govern said valves.

4. In a water-heater a circular mixing-chamber having a concentric deflecting-plate opposite the inlet of said chamber and guiding-plates extending out from the wall of said mixing-chamber around the ends of said deflecting-plate to cause eddies in the space between said guiding-plates, the outlet of said mixing-chamber being situated between said guiding-plates and an injector connected with the inlet of said mixing-chamber and provided with a heating-nozzle in line with said inlet.

5. In a water-heater, a mixing-chamber, an injector in line with the inlet of said mixing-chamber and interlocking apparatus for the admission of fluids to said injector in varying proportions.

6. In a water-heater a circular mixing-chamber having diametrically-arranged inlet and outlet, a deflecting-plate concentric with the wall of said mixing-chamber opposite said inlet, curved guiding-plates extending outward from the wall of said mixing-chamber on either side of the outlet of the same, said guiding-plates extending around the ends of said deflecting-plate to cause impingement of water against said deflecting-plate and an injector connected with the inlet of said mixing-chamber the heating-nozzle of said injector being in line with said inlet.

7. In a water-heater, a mixing-chamber provided with an inlet and an outlet, an injector connected with the inlet of said mixing-chamber and provided with a heating-nozzle in line with said inlet, adjustable valves to control the supply of fluids to said injector, an incurved deflecting-plate opposite the inlet of said mixing-chamber against which the fluid from said injector impinges and guiding-plates extending around the ends of said deflecting-plate to cause eddies in the space between said guiding-plates to thoroughly mix the fluid issuing from the outlet of said mixing-chamber.

8. In a water-heater, a mixing-chamber having an inlet and outlet, an injector connected to said inlet and having a heating-nozzle in line with the same, an incurved deflecting-plate opposite the inlet in said mixing-chamber against which fluid from said injector impinges and guiding-plates extending around the ends of said deflecting-plate to thoroughly mix the fluid issuing from the outlet of said mixing-chamber.

9. In a water-heater, a mixing-chamber having an inlet, a curved deflecting-plate opposite said inlet and guiding-plates coöperating with said deflecting-plate to produce eddies in said mixing-chamber, an injector connected to said inlet and having a steam-nozzle in line with the same to cause hot water to impinge upon said deflecting-plate, and interlocking valves to control the supply of steam and water to said injector.

705,386. DISPENSING-CAN. FREDERICK M. FURBER, Haverhill, Mass. Filed Apr. 17, 1902. Serial No. 103,336. (No model.)

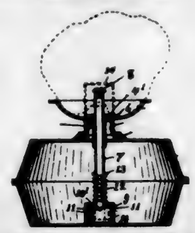

Claim.—1. A device for the purpose described comprising a closed can, a liquid-receiving cup above said can, a reciprocating tubular nozzle in said can the discharge end of which extends through the bottom of said cup, means operated upon reciprocation of said nozzle for expelling the liquid therethrough, and a discharge-passage leading from the bottom of said cup to the can, substantially as described.

2. A device for the purpose described comprising a closed can, a reciprocating tubular nozzle which extends through the top thereof, a piston secured to the lower end of said nozzle, a relatively fixed cylinder in which said piston is located having an unobstructed inlet thereto at its upper end, and being closed at its lower end, a spring which is interposed between said piston and cylinder and normally holds said piston above said inlet, substantially as described.

3. A device for the purpose described comprising the closed can, a spring-pressed tubular nozzle which is adapted to reciprocate through the top of said can, a liquid-expelling device which is connected to the lower end of said nozzle, a cup which is arranged on the upper end of said can, and through the bottom of which said nozzle protrudes, and a liquid-tight connection between the bottom of said cup and the top of the can which completely encircles the aperture through which said nozzle passes, substantially as described.

4. A device for the purpose described comprising the closed can, a spring-pressed tubular nozzle which is adapted to reciprocate through the top of said can, a liquid-expelling device which is connected to the lower end of said nozzle, a circular cup which is arranged on the upper end of said can and through the middle of the bottom of which said nozzle extends, a liquid-tight connection between the bottom of said cup and the top of the can which encircles the aperture through which the nozzle passes, and a discharge-passage which leads from the bottom of said cup to said can within said connection, substantially as described.

5. A device for the purpose described comprising a can, a screw-cap for closing the top thereof, a cup which is secured to the top of said cap, a tubular guide which is secured to and passes through said cup, a spring-pressed tubular nozzle which is arranged in said guide, the upper end of the nozzle being located in said cup and the lower end in said can and a liquid-expelling device which is connected to the lower end of said nozzle, substantially as described.

6. A device for the purpose described comprising the closed can, a tubular nozzle which passes through the top of said can and is guided to reciprocate in an upright position therein, a cylinder which rests on the bottom of said can, said cylinder being closed at its lower end and provided with a spring-support and inlets to the can at its upper end, a piston in said cylinder, said nozzle extending through said support and piston and being secured to the latter, a stop on said nozzle and a spring interposed between said stop and said spring-support, substantially as described.

705,387. MOTOR-PLOW. RICHARD J. GATLING, St. Louis, Mo. Filed Sept. 6, 1901. Serial No. 74,580. (No model.)

Claim.—1. In an agricultural implement of the character described, the combination of a drag member, a series of plows independently connected to said drag member, journals on which said plows are mounted, oil-wells carried by said journals, and weights mounted on said oil-wells adapted to hold said plows depressed, substantially as described.

2. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods independently connected to said drag member, a guide-bar in which said draw-rods are ar-

ranged to move vertically, and disk plows carried by said draw-rods independently of each other, whereby said plows are rendered capable of individual vertical movement, substantially as described.

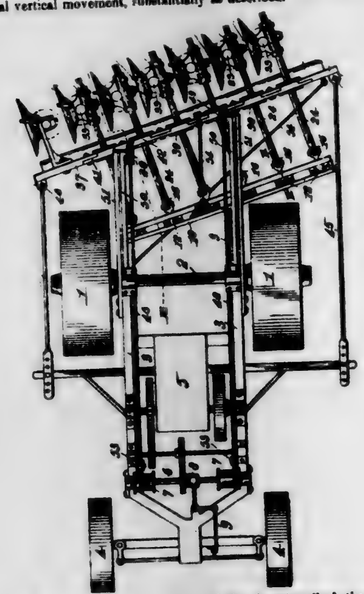

3. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods, plows carried by said draw-rods independent of each other, a guide-plate, and vertically-movable slide-boxes arranged in said guide-plate and in which said draw-rods are seated for vertical movement independent of each other, substantially as described.

4. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods independently connected to said drag member, a series of plows independently connected to said draw-rods, a slotted guide-plate, slide-boxes loosely seated in the slots in said plate and adapted for vertical movement therein, said slide-boxes being arranged to receive and guide said draw-rods and permit the vertical movement of said plows, substantially as described.

5. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods connected to said member, plows carried by said draw-rods, a guide-plate, slide-boxes in said guide-plate in which said draw-rods are seated, and weights supported by said plows adapted to depress the plows into the ground, substantially as described.

6. In an agricultural implement of the class described, the combination with a drag member, of a series of draw-rods, plows carried by said rods, a guide-plate in which said draw-rods are mounted, and a deflector carried by said guide-plate, substantially as described.

7. In an agricultural implement of the class described, the combination of a drag member, a series of journal-boxes mounted on said drag member, swivels having stems mounted in said journal-boxes, arms carried by said swivels, an adjustable slide mounted on said journal-boxes and provised with sockets adapted to receive said swivel-arms, draw-rods connected to said swivels, and plows carried by said draw-rods, substantially as described.

8. In a motor-driven implement, the combination of a motor for propelling the same, of a drag member, of a series of earth-engaging implements carried by said drag member, weights for depressing said drag member and means operated by said motor for raising said member.

9. In a motor-plow, the combination of a motor, of a drag member, of a series of plows carried by said drag member, of weights carried by each of said plows for depressing the same, of ropes for raising said plows, and drums operated by said motor, said drums adapted to wind said ropes and raise said plows.

705,888. ELEVATOR. EDWIN R. GILL, New York, N. Y., assignor, by mesne assignments, to Otis Elevator Company, a Corporation of New Jersey. Filed Dec. 16, 1899. Serial No. 740,522. (No model.)

Claim.—1. In an elevator apparatus, a driving mechanism comprising two expansible pulleys, each of which comprises a driving-disk, a bearing-disk divided into sectors sliding radially on said driving-disk, and an independently-rotatable brake-disk operating to change the diameter of said bearing-disk; in combination with an endless driving-cable arranged in two bights, each bight embracing one of said driving-pulleys.

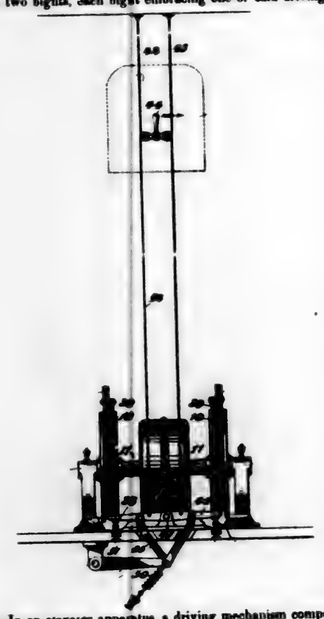

2. In an elevator apparatus, a driving mechanism composed of two expandible pulleys, each comprising a bearing member and an independently-rotating brake member operating to contact said bearing member when retarded; in combination with gearing connecting said brake members for opposite movement and means for applying retarding pressure to one or the other brake member at will.

3. In an elevator apparatus, a driving-motor having a rotating member and attached main driving-shaft, a two-part driving-pulley having one part expandible, two brake-disks sleeved on said shaft, which operate the expanding part of said pulley, gearing on the rotating part of said motor joining said sleeves for independent contrary rotation thereon, and means for operating said brake-disks.

4. In an elevator, a driving mechanism, comprising two pulleys one of which is expandible and comprises a brake-disk for controlling its effective diameter; in combination with brake mechanism, and means operated by said expandible part for relieving the pressure on said brake.

5. In an elevator, a driving mechanism, comprising two pulleys one of which is expandible and comprises a brake-disk for controlling its effective diameter; in combination with a brake mechanism, an operating-lever adapted to apply pressure thereto, a disk moving in and out with the periphery of the expanding pulley, and means controlled by said disk for relieving the pressure on said brake.

6. In an elevator, a driving mechanism, comprising two pulleys one of which is expandible and comprises a brake-disk for controlling its effective diameter; in combination with a brake shoe and lever, an operating-lever therefor having a movable fulcrum, a support for said fulcrum and a disk moving in and out with the periphery of the expanding pulley affording an abutment for said support.

7. In an elevator, a driving mechanism comprising two pulleys each of which is expandible and comprises a brake-disk for controlling its effective diameter, and gearing between said disks insuring opposite movement thereof; in combination with a brake for each brake-disk, a brake-lever for operating each brake, and a tipping bar adapted to press on both levers and arranged to depress one lever while permitting the other to rise.

705,839. ROLLER-BRACKET FOR WINDOW SHADES AND CURTAINS. FRANCIS A. CRONESO, Baltimore, Md., assignor of one-half to Charles B. Houghton, Baltimore, Md. Filed Nov. 23, 1901. Serial No. 83,536. (No model.)

Claim.—1. In a bracket for shade and curtain rollers, the combination with a jaw carrying a threaded horizontal rod of a second jaw sliding freely on said rod, an adjusting-nut outside of said second jaw and in threaded engagement with the rod for causing the jaws to clamp the guide-strip of a window-frame, and a journal-bearing having a portion in threaded engagement with the rod to horizontally adjust the bearing along the same.

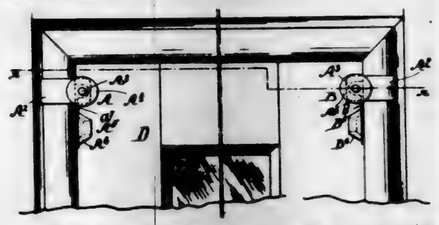

2. In a bracket for shade and curtain rollers, the combination with a jaw carrying a threaded horizontal rod, of a second jaw sliding freely on the latter, an adjusting-nut outside of said second jaw and in threaded engagement with the rod, for causing the jaws to clamp the guide-strip of a window-frame, a head in threaded engagement with the rod for adjustment along the same and suspending a bearing-box.

3. In a bracket for shade and curtain rollers, the combination with an angular jaw comprising portions a, a', toothed or serrated at their inner sides, an outer ear integrally projecting from the portion a, a threaded horizontal rod connected with said ear, a second jaw comprising portions a^{10}, a^{11}, correspondingly toothed or serrated, said second jaw having a similarly-projecting ear through which the rod freely passes, and a nut for causing the portions a, a^{10}, to clamp the guide-strip and inwardly move the portions a', a^{11}, to do likewise.

705,840. TIRE-HEATER. JACOB GOSS, Toledo, Ohio. Filed Mar. 26, 1902. Serial No. 100,102. (No model.)

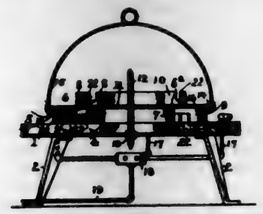

Claim.—1. In a tire-heater, the combination with a table or hearth for supporting the tire, of a reversible cover having in its opposite faces annular heating-channels adapted for closely confining the heat around tires on the hearth, and means for heating the channels and tires, substantially as described.

2. In a tire-heater, the combination with a table or hearth for supporting the tire, of a reversible cover having in its opposite faces heating-channels of different diameters adapted for closely confining the heat around tires of different diameters and means for heating the tires and channels, substantially as described.

3. In a tire-heater, the combination with a table or hearth for supporting the tire, of a reversible cover having in its opposite faces annular heating-channels, a swinging bale pivotally connected with said cover and means for centering the cover and holding it in place on the hearth, substantially as described.

4. In a tire-heater, the combination with a table or hearth for supporting the tire, of a cover having annular heating-channels and a spindle secured centrally thereto for engagement with a central opening in the table, substantially as described.

5. In a tire-heater, the combination with a table or hearth for supporting the tire, of a removable cover having annular heating-channels of different diameters adapted for closely confining the heat around tires of different diameters and means for heating said channels, substantially as described.

6. In a tire-heater, the combination with a table or hearth for supporting the tire and containing heat-retaining material, of a removable cover having annular heating-channels of different diameters adapted for closely confining the heat around tires of different diameters and means for heating said channels, substantially as described.

705,841. TYPE CASTING AND SETTING MACHINE. GEORGE A. GOODSON, Minneapolis, Minn. Filed Nov. 23, 1901. Serial No. 83,360. (No model.)

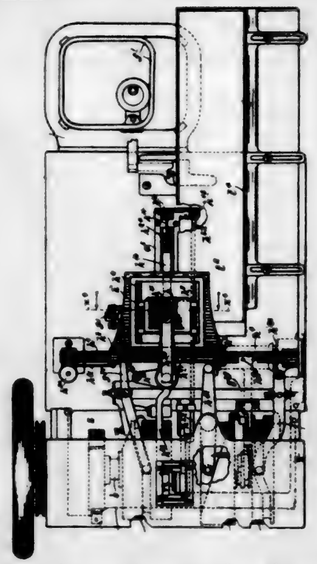

Claim.—1. A representative pattern or dummy for controlling the actions of a type casting or setting machine, which pattern contains normal representations for the normal selections of character-type and, when necessary for the given composition, also contains the representation of a shift-action for coöperation to secure a different selection of character-type, substantially as described.

2. In a type casting or setting machine, the combination with a die-selecting carriage, of a bank or set of stops, for variably intercepting said carriage to make the desired selection, and a shift-action device operative to shift said bank of stops for multiplying the stopping positions available to said carriage from said bank of stops, substantially as described.

3. In an automatic type casting or setting machine, controlled by a pattern or dummy representing the desired composition, the combination with a die-selecting carriage, of a bank or set of stops under the control of said pattern, for variably intercepting said carriage to make the desired selection, and a shift-action device also controlled by said pattern and operative to shift said bank of stops for multiplying the stopping actions available to the carriage from said stops, substantially as described.

4. In a type casting or setting machine, the combination with a two-way movable die-carriage having the dies thereon arranged in rows in two directions, of two corresponding banks or sets of stops, for variably intercepting said carriage, one set of stops serving to select the row, and the other set thereof serving to select the individual die of the row, and shift-action mechanism operative to shift at least one of said banks of stops, for multiplying the stopping positions available to said carriage from said stops, substantially as described.

5. In an automatic type casting and setting machine controlled by a pattern or dummy representing the desired composition, the combination with a two-way movable matrix-carriage, having the matrices arranged thereon in rows in two directions, of two corresponding banks or sets of stops under the control of said pattern, for variably intercepting said carriage to select the desired matrix, and a shift-action device also controlled by said pattern and operative to shift at least one of said banks of stops, for multiplying the stopping positions available to said carriage from said stops, substantially as described.

6. The combination with a bank of magnets and armature-levers, of a bank of stops including movable members subject to said armature-levers, and a shift-action device operative to shift the position of said bank of stops relative to said armature-levers but maintaining the same subject thereto in both of the shift positions substantially as described.

705,842. CONSTRUCTION OF SHIPS. RICHARD T. GREEN, Everett, Mass. Filed Feb. 1, 1902. Serial No. 92,095. (No model.)

Claim.—1. In a vessel, the combination of a floor composed of lon-

gitudinal parallel floor-timbers and an outer planking or skin, chime-legs at the bilge edges of the floor, substantially parallel with the floor-timbers in the middle body of the vessel and curved inward at the bow, the ends of the floor-timbers being secured to the chime-legs when the latter curve inward, side trusses, mounted on the chime-legs and extending upward to the deck-frames, deck-frames, knees secured to the stanchions of the side trusses to the floor and deck-frames and side planking secured to the said side trusses.

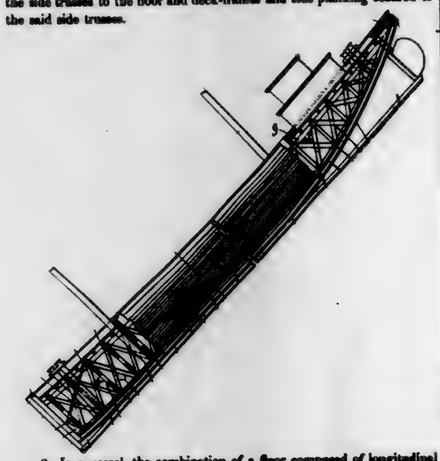

2. In a vessel, the combination of a floor composed of longitudinal parallel floor-timbers and an outer planking or skin, chime-legs at the bilge edges of the floor, substantially parallel with the floor-timbers in the middle body of the vessel and curved inward at the bow, the ends of the floor-timbers being secured to the chime-legs when the latter curve inward, side trusses, mounted on the chime-legs and extending upward to the deck-frames, deck-frames, and side planking secured to the said side frames.

3. In a vessel, the combination of a floor composed of parallel longitudinal floor-timbers, an outer skin secured to the floor-timbers, vertical longitudinal side trusses, side planking secured thereto, and an external stem and an after dead-wood secured to the outside of the vessel independently of the water-excluding skin or planking.

4. In a vessel, the combination of parallel longitudinal floor-timbers, chime-legs, substantially parallel to the floor-timbers in the middle body of the vessel, and bent inward to a stemson, and the chime-legs secured to the stemson, substantially as described.

705,843. CARD-INDEX. GEORGE G. HAKES, Ilion, N. Y. Filed June 19, 1901. Serial No. 65,215. (No model.)

Claim.—1. A card-index comprising a frame having a series of parallel rods pivotally mounted one above the other, spring-clamps carried by said rods, removable index-cards longitudinally mounted in said clamps, a finger carried by the lower rod and means to normally hold said finger upon the back of the cards, substantially as described.

2. A card-index, consisting of a frame, a series of parallel rods mounted one above the other in said frame, card-holding devices carried by the rods, cards removably mounted in said devices, a finger carried by the lower rod to normally engage the cards' backs, and a spring connected to said finger and to the frame to hold the finger in the proper position.

705,844. AUTOMATIC VALVE. CHARLES W. HALL, Jr., and BENNET J. BERWALD, Bradford, Pa. Filed Oct. 23, 1901. Serial No. 80,327. (No model.)

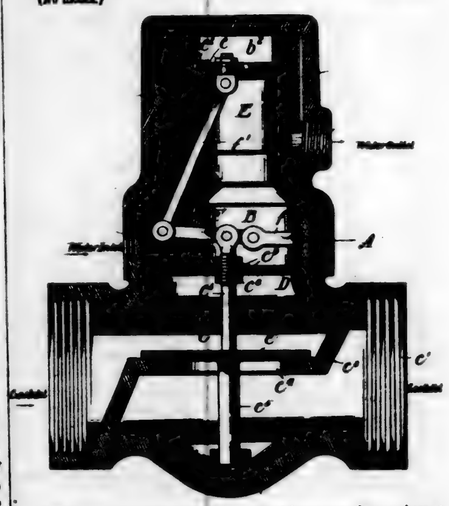

Claim.—1. An automatic valve comprising among its members, a water-chamber, a gas-chamber, a diaphragm separating said chambers, said water-chamber being provided with an inlet and outlet, a piston working in said chamber and adapted to normally close said outlet, when at one extreme of movement, and to be moved to open said outlet by the pressure of water in the chamber, said gas-chamber being provided with an inlet, an outlet, and a controlling-valve connected to said diaphragm adapted to be held in closed position by the pressure of gas in said chamber, and the pressure of water on said diaphragm, and connections from said piston to said gas-controlling valve, substantially as described.

2. An automatic valve comprising among its members, a water-chamber, a gas-chamber, a diaphragm separating said chambers, said water-chamber being provided with an inlet and outlet, a piston working in said chamber and adapted to normally close said outlet, when at one extreme of movement, and to be moved to open said outlet by the pressure of water in the chamber, said chamber having an auxiliary passage from the outlet to the side of the piston opposite that exposed to the water-pressure and a relief-vent in said piston adapted to communicate with said passage, said gas-chamber being provided with an inlet, an outlet and a controlling-valve connected with said diaphragm and held normally in closed position by the gas-pressure in said chamber and the pressure of water on said diaphragm, and connections between said piston and said gas-valve, substantially as described.

3. An automatic valve comprising among its members a water-chamber, provided with an inlet and outlet, a piston in said chamber normally closing said outlet, and adapted to be moved by the pressure of water below the piston to open said outlet, said chamber being provided with an auxiliary passage from the other side of the piston to said outlet, a normally open relief-valve in said piston, adapted to be closed by the pressure of water below the piston, a gas-chamber, a diaphragm separating the gas-chamber from the water-chamber, a gas-controlling valve in the gas-chamber connected with said diaphragm and held normally closed by the pressure of the gas from the main and the pressure of water on said diaphragm, and connections between said gas-valve and the piston in the water-chamber for opening the gas-valve, and a connection between said diaphragm and said gas-valve, substantially as described.

4. An automatic valve comprising among its members, a water-chamber and a gas-chamber each provided with independent inlets and outlets and a diaphragm separating said chambers, said water-chamber having a cylinder, a piston working therein and arranged to close the outlet when at one extreme of movement, said water-chamber having an auxiliary passage from said cylinder, above the piston, to said outlet, a relief-valve in said piston held normally open by its weight and adapted to be closed by pressure of water in the chamber, a gas-valve in said gas-chamber normally held closed by the gas-pressure in said chamber and the pressure of water on said diaphragm, a lever connected to said gas-valve, and also connected to said piston, and connections between said diaphragm and the gas-valve, substantially as described.

705,845. RAIL-JOINT. GEORGE L. HALL, Brooklyn, N. Y. Filed Feb. 14, 1902. Serial No. 94,001. (No model.)

Claim.—1. An insulated rail-joint, comprising a rail-chair having a bridge-plate and a bolt-plate, insulating material between the rail ends and said bridge-plate, a metal band separate from said chair and opposing said bolt-plate and extending across the joint, two insulating-blocks one between said bolt-plate and the rail ends and the other between said band and the rail ends and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from both said bolt-plate and said band, and means for maintaining the rail ends from contact with each other.

2. An insulated rail-joint comprising a rail-chair having a spike-plate for spiking said chair to the tie, a bridge-plate and a bolt-plate, insulating material between the rail ends and said bridge-plate, a metal band separate from said chair and opposing said bolt-plate and extending across the joint, two insulating-blocks one between said bolt-plate and the rail ends and the other between said band and the rail ends and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from both said bolt-plate and said band, and means for maintaining the rail ends from contact with each other.

3. An insulated rail-joint comprising a rail-chair having a bridge-plate and a bolt-plate, insulating material between the rail ends and said bridge-plate, means for holding said insulating material in proper position on said bridge-plate independent of the other parts of the joint, a metal band separate from said chair and opposing said bolt-plate and extending across the joint, two insulating-blocks one between said bolt-plate and the rail ends and the other between said band and the rail ends and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from both said bolt-plate and said band, and means for maintaining the rail ends from contact with each other.

4. An insulated rail-joint comprising a rail-chair having a spike-plate for spiking said chair to the tie, a bridge-plate and a bolt-plate, insulating material between the rail ends and said bridge-plate, means for holding said insulating material in proper position on said bridge-plate independent of the other parts of the joint, a metal band separate from said chair and opposing said bolt-plate and extending across the joint, two insulating-blocks one between said bolt-plate and the rail ends and the other between said band and the rail ends and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from both said bolt-plate and said band, and means for maintaining the rail ends from contact with each other.

5. An insulated rail-joint comprising a rail-chair having a bridge-plate and a bolt-plate, insulating material between the rail ends and said bridge-plate, means for holding said insulating material in proper position consisting of a tongue of the same adapted to be inserted in a mouth in the bridge-plate, a metal band separate from said chair and opposing said bolt-plate and extending across the joint, two insulating-blocks one between said bolt-plate and rail ends and the other between said band and the rail ends, and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulated bushings adapted to insulate every of said bolts passing through one of the rail ends from both said bolt-plate and said band, and means for maintaining the rail ends from contact with each other.

6. An insulated rail-joint comprising a rail-chair having a spike-plate for spiking said chair to the tie, a bridge-plate and a bolt-plate, insulating material between the rail ends and said bridge-plate, means for holding said insulating material in proper position consisting of a tongue of the same adapted to be inserted in a mouth in the bridge-plate, a metal band separate from said chair and opposing said bolt-plate and extending across the joint, two insulating-blocks, one between said bolt-plate and the rail ends and the other between said band and the rail ends, and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from both said bolt-plate and said band, and means for maintaining the rail ends from contact with each other.

705,846. DILATOR. JONATHAN B. HAMILTON, Sioux Falls, S. D. Filed Nov. 2, 1901. Serial No. 80,868. (No model.)

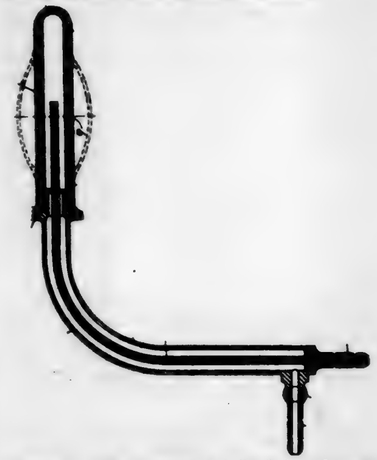

Claim.—1. A dilator comprising a hollow body, an inner open-end tube, an extension-barrel detachably secured to said body, said barrel being formed with openings intermediate of its extremities, a flexible cover or sleeve for said barrel, and an inelastic insertion in said sleeve adjacent to its ends.

2. A dilator, comprising a hollow body portion, an inner hollow end tube, an extension-tube detachably secured to said body portion, said tube being provided with side openings, an elastic sleeve inclosing said extension-tube, inelastic portions adjacent to the ends of said tube, a circumferential flange upon said body adjacent to the inner end of said sleeve, and an outturned portion upon the end of said sleeve bearing against said flange.

705,847. CENTRIFUGAL PUMP. ELIJO G. HARRIS, Rolla, Mo. Filed Aug. 17, 1900. Serial No. 27,167. (No model.)

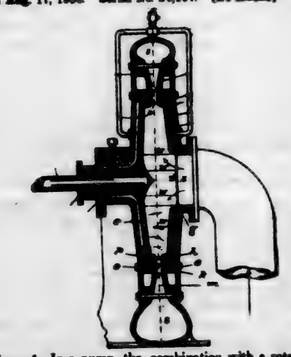

Claim.—1. In a pump, the combination with a rotary propelling-wheel having a central inlet and a contracted annular discharge-outlet, of a casing therefor, said casing inclosing a chamber between itself and the said propelling-wheel, which chamber is normally closed against the admission of fluid thereto, but into which chamber a passage leads from the said propelling-wheel contracted discharge-outlet, whereby, when the pump is operating, the pressure in said chamber may be maintained, at or below atmospheric pressure.

2. In a pump, the combination with a rotary propelling-wheel having a central inlet and a contracted annular discharge-outlet, of a casing therefor, said casing inclosing a chamber between itself and the said propelling-wheel, which chamber is normally closed against the admission of fluid thereto, and said casing having an outwardly-flaring receiving-throat opposite the discharge-outlet; the said pump having means therein for producing a rarefied condition of the fluid within said inclosed chamber.

3. In a pump, the combination with a rotary propelling-wheel having a central inlet, and an annular discharge-outlet so contracted that the velocity-head at the point of delivery will be not less than the head at the discharge-outlet against which the pump works, of a casing therefor, said casing inclosing a chamber between itself and the said propelling-wheel, which chamber is normally closed against the admission of fluid thereto, but into which chamber a passage leads from the said propelling-wheel contracted discharge-outlet, whereby, when the pump is operating, the pressure in said chamber may be maintained, at or below atmospheric pressure.

4. In a pump, the combination with a rotary propelling-wheel having a central inlet, and an annular discharge-outlet so contracted that the velocity-head at the point of delivery will be greater than the head at the discharge-outlet against which the pump works, of a casing therefor, said casing inclosing a chamber between itself and the said propelling-wheel which chamber is normally closed against the admission of fluid thereto, but into which chamber a passage leads from the said propelling-wheel contracted discharge-outlet, whereby, when the pump is operating, the pressure in said chamber may be maintained, by eduction, below atmospheric pressure.

5. In a pump, the combination with a rotary propelling-wheel having a central inlet and a contracted annular discharge-outlet, of a casing therefor, said casing inclosing a chamber between itself and the said propelling-wheel, which chamber is normally closed against the admission of fluid thereto, and said casing having an outwardly-flaring receiving-throat opposite the said discharge-outlet; and a valved inlet to said chamber.

6. In a pump, the combination with a rotary propelling-wheel having a central inlet, a contracted discharge-outlet, vanes, and a passage of undiminished cross-sectional area from its inner to its outer end, leading from the inner limits of the vanes to the line of discharge, of a casing for said wheel.

7. In a pump, the combination with a rotary propelling-wheel having a central inlet, a contracted discharge-outlet, and vanes, and provided with a passage leading from the inner limit of the vanes to the line of discharge, having substantially the same cross-sectional area throughout, of a casing for said wheel.

8. In a pump, the combination with a rotary propelling-wheel having a central inlet, a contracted annular discharge-outlet, and vanes, and provided with a passage leading from within the inner limits of the vanes to the line of discharge, having substantially the same cross-sectional area throughout, of a casing for said wheel having an outwardly-flaring receiving-throat opposite the discharge-outlet of the wheel, the contraction of said outlet being so proportioned that the velocity-head at the point of delivery will be not less than the head at the discharge-outlet against which the pump works.

9. In a pump, the combination with a rotary propelling-wheel having a central inlet and a contracted discharge-outlet, of a casing therefor, and a tube, as shown, leading from the interior of the wheel to the line of discharge.

10. A pump, comprising an inclosing casing and a rotary propelling-wheel therein, said wheel having a central inlet, vanes and a contracted annular outlet formed of two detachable rings set on the wheel, and the casing having an outwardly-flaring annular throat, substantially as described.

705,848. OSCILLATING PROPELLER. CHRISTOPHER HAYES, Junee, New South Wales, Australia. Filed Nov. 23, 1901. Serial No. 83,611. (No model.)

Claim.—1. Propelling mechanism for life-boats or the like consisting of a fan composed of springy cores, a sheathing on either side of the same, having a space or opening between the plates thereof, a propeller-post, a double-looped piece secured thereto, and carrying said fan, spring-buffers on either side of said fan, a band encircling said spring-buffers and carried in said looped pieces, a mechanism for operating said fan, substantially as described.

2. Propelling mechanism for life-boats or the like consisting of a fan of a springy core, a sheathing on either side thereof having a space or opening between the plates of said sheathing, a propeller-post supporting said fan, spring-buffers secured on either side of said fan, and mechanism for operating said fan, substantially as described.

3. Propelling mechanism for life-boats or the like consisting of a fan composed of a springy core, a sheathing on either side thereof having a space or opening between the plates of said sheathing, means for supporting said fan, and means for operating the same, substantially as described.

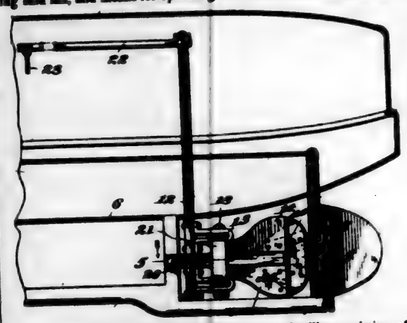

4. Propelling mechanism for life-boats or the like consisting of a fan composed of a springy core, a sheathing on either side of said core, having a space or opening between the plates of said sheathing, and means for operating said fan, substantially as described.

5. Propelling mechanism for boats consisting of a fan, a propeller-post, a propeller-post lever secured thereto, a cable secured to said lever, a drum adapted to wind and unwind said cable, a shaft carrying said drum, partially-toothed cog-wheels carried on said shaft, a power-shaft above said drum, partially-toothed cogs carried on said shaft, substantially as described.

6. Propelling mechanism for boats consisting of a fan, a propeller-post, means for rocking the same consisting of a drum and cable, a shaft carrying said drum, a large and small cog-wheel having teeth on half their peripheries, a power-shaft above said drum, a large and small cog-wheel carried on said shaft and having teeth on half their peripheries, a pinion-wheel interposed between the two smaller cog-wheels, the whole arranged whereby the drum is rocked, substantially as described.

705,849. PAINTER'S TOOL. GUSTAV HENDERSON, Woodside, N. Y. Filed Mar. 28, 1902. Serial No. 100,037. (No model.)

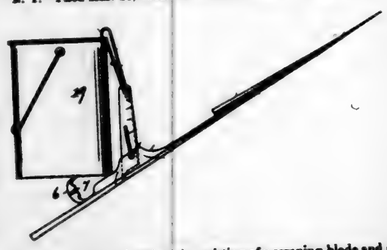

Claim.—1. A painter's tool consisting of a scraping-blade and a handle therefor terminating in a transverse handhold provided with lateral bifurcations forming extracting-claws.

2. A painter's tool consisting of a scraping-blade a handle therefor and a hinged upwardly-projecting member provided with a hook at its upper end forming a pot-holder.

3. A painter's tool consisting of a scraping-blade, a handle therefor, a hinged upwardly-projecting member provided with a hook at its upper end forming a pot-holder and means for raising or lowering the hook.

4. A painter's tool consisting of a scraping-blade, a handle therefor, a hinged upwardly-projecting member provided with a hook at its upper end forming a pot-holder, and means for preventing the rotation of the pot-holder when in an upright position.

5. A painter's tool consisting of a scraping-blade, a handle therefor terminating in a transverse handhold provided with lateral bifurcations forming extracting-claws and a hinged upwardly-extending pot-holder.

6. A painter's tool consisting of a scraping-blade, a handle therefor terminating in a transverse handhold provided with lateral bifurcations forming extracting-claws, a hinged upwardly-extending pot-holder and means for raising or lowering the latter.

7. A painter's tool consisting of a scraping-blade, a handle therefor terminating in a transverse handhold provided with lateral bifurcations forming extracting-claws, a hinged upwardly-extending pot-holder and means for preventing the rotation of the pot-holder when in an upright position.

8. A painter's tool consisting of a scraping-blade, a handle therefor terminating in a transverse handhold, an upwardly-extending pot-holder and a sheath for the latter when not in use.

9. A painter's tool consisting of a scraping-blade, a handle therefor a hinged pot-holder extending upwardly therefrom, and means for maintaining the pot-holder in an upright position.

705,850. SOLAR HEATER. PHILIP G. HUBERT New York, N. Y. Filed Sept. 24, 1901. Serial No. 76,422. (No model.)

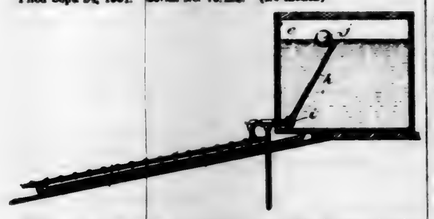

Claim.—A solar heater comprising a broad thin heating-chamber having its top and bottom plates so spaced as to spread the water therein into a thin film, thereby causing the entire amount of water to come into close proximity to the one or the other of the plates, a tank, a pipe leading from the lower portion of the tank to the heating-chamber, a pipe leading from the heating-chamber to the upper portion of the liquid in the tank, and a draw-off pipe connected with the pipe leading from the heating-chamber to the tank, the said pipe leading from the heating-chamber to the tank being provided with a swing-section supported by a float within the tank.

705,851. PUMP. WILL J. HUGHES, St. Louis, Mo. Filed July 13, 1901. Serial No. 68,153. (No model.)

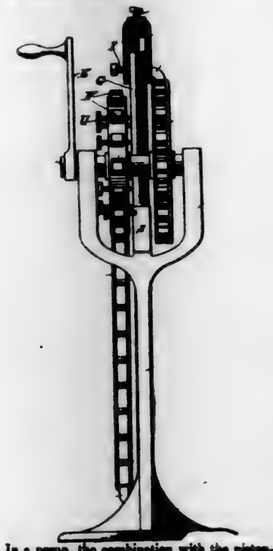

Claim.—1. In a pump, the combination with the piston-rod, of an operating-shaft, a sprocket-wheel carried thereby, a chain attached to said wheel and to the piston-rod, a stop disposed adjacent to said wheel, and a plurality of independently-adjustable pins carried by the wheel and adapted to be adjusted to contact with the stop and limit the rotation of the shaft, substantially as described.

2. In a pump, the combination with the piston-rod, of an operating-shaft, a cap upon the end of the said rod, an adjusting-screw carried by said cap, a clamping-screw carried thereby, a collar adjustable upon said rod, a clamping-screw carried by said rod, and flexible connections between said collar and cap and the shaft, said connections being adapted to be reversely wound upon said shaft, when the latter is rotated, substantially as described.

3. In a pump, the combination with the piston-rod, of an operating-shaft, an operative connection between said shaft and said piston, a wedge-shaped stop mounted independently of the shaft and adjustable relatively thereto, and a member carried by the shaft and adapted to contact with said stop to limit the rotation of the shaft, substantially as described.

4. In a pump, the combination with the piston-rod, of an operating-shaft, a sprocket-wheel carried thereby, a chain attached to said wheel and to the piston-rod, a stop disposed adjacent to said wheel, and a plurality of independently-adjustable pins carried by the wheel and adapted to be adjusted to contact with the stop and limit the rotation of the shaft, substantially as described.

5. The combination of a forked standard, an operating-shaft journaled in both arms of said fork, fixed sprocket-wheels on said shaft, a piston operated by said sprockets, adjustable pins borne by said sprocket-wheels, and an upright portion of said standard between the arms of said fork with which said pins are adapted to engage, substantially as described.

705,852. ROLLER COPYING-PRESS. DAVID B. HUSTER, Cambridge, Mass., assignor to Library Bureau, Boston, Mass., a Corporation of Massachusetts. Filed Oct. 8, 1901. Serial No. 77,953. (No model.)

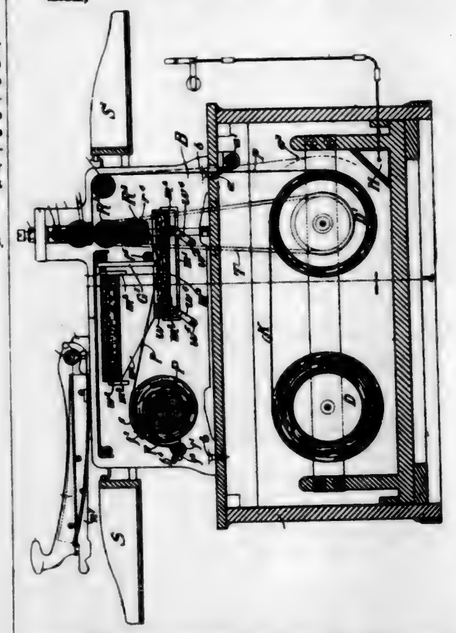

Claim.—1. In a copying-press, the combination with a paper-roll and copying-rolls, of a water-pan, a closed tank supported over the pan, and a water-supply pipe depending from the tank into the pan.

2. In a copying-press, the combination with a paper-roll and copying-rolls, of a water-pan, a movable support therefor, whereby the pan may be vertically shifted, a closed tank, supported on and over the pan and movable therewith, and a water-supply pipe depending from the tank into the pan.

3. In a copying-press, the combination with a paper-roll and copying-rolls, of a water-pan, a supporting-frame therefor, consisting of rocker-arms whereon the tank rests, rock-shafts for the said arms, parallel cranks and an operating-rod, whereby the pan may be vertically shifted.

4. In a copying-press, the combination with a paper-roll and copying-rolls, of a water-pan, a supporting-frame therefor consisting of rocker-arms, slide connections between the rocker-arms and the pan, a bracket whereon the pan rests when lowered, vertical guides for the pan, and connections whereby the rocker-arms may be actuated to raise or lower the pan in its guides.

5. In a copying-press, the combination with a paper-roll and copying-rolls, of a water-pan, and an immersing-guide consisting of a rod provided with resilient arms, and supports for the said arms whereby the guide is held by the spring-pressure of the said arms.

6. In a copying-press, the combination of a paper-roll and copying-rolls, of a water-pan and an immersing-guide consisting of a U-shaped

resilient wire with a straight lower portion, and supports for the arms of the U whereby the guide is held by the spring-pressure of the said arms.

7. In a copying-press, the combination with a paper-roll and copying-rolls, of a water-pan, an immersing-guide consisting of a rod provided with resilient arms and supports for the said arms whereby the guide is held by the spring-pressure of the said arms, and a back-stop for the guide.

8. The combination in a copying-press, of a water-pan, supports thereon for a supply-tank, the supply-tank, a water-passage, open at the bottom extending downward from the supply-tank to a point within the water-pan.

9. The combination in a copying-press, of a water-pan, supports thereon for a supply-tank, the supply-tank, a water-passage, open at the bottom, extending downward from the supply-tank to a point within the water-pan and a valve, secured to the supply-tank, normally spring-pressed to a position of closure against the water-passage opening, substantially as described.

10. The combination in a copying-press, of a water-pan, a supply-tank supported thereby, a water-passage from the tank to the pan, a vertically-movable support for the pan, means for moving said support vertically, a valve for the water-passage, normally spring-pressed to a position of closure, and means whereby the said valve is opened against its spring-pressure upon lifting the water-pan.

11. The combination in a copying-press, of a paper-roll, copying-rolls, a water-pan, an immersing-guide for the paper suspended over the water-pan, and means for vertically changing the relative positions of the water-pan and immersing-guide whereby the pan and paper may be made to coact, or not, at will.

12. The combination in a copying-press, of a paper-roll, copying-rolls, a water-pan, a supply-tank carried thereby, a water-passage from the tank to the pan, a valve, controlling the water-passage, and normally spring-pressed toward a position of closure, an immersing-guide, means for vertically changing the relative positions of the water-pan and immersing-guide, and means, correlated with the said relative vertical movement, whereby the water-passage valve is opened as the pan and immersing-guide approach each other, substantially as described.

705,858. CASH-REGISTER. OSCAR W. EDWARDS, St. Louis, Mo. Filed Oct. 22, 1900. Serial No. 33,804. (No model.)

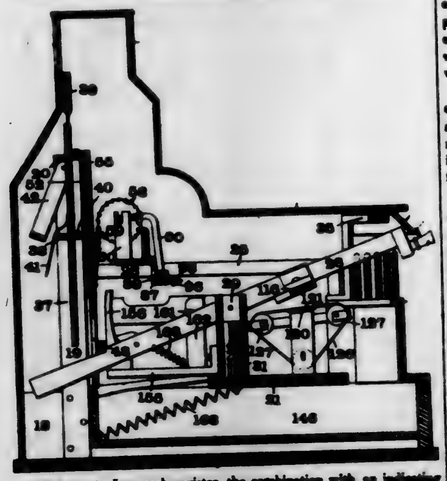

Claim.—1. In a cash-register, the combination with an indicating device, of a lever for actuating said indicating device, a sliding member provided with notches of varying length coöperating with said lever, adding mechanism actuated by said sliding member, and an arm carried by said sliding member and adapted to engage with said lever to return said sliding member to its normal position.

2. In a cash-register, the combination with indicating devices, of a lever actuating said indicating devices, a sliding member provided with notches varying in length and coöperating with said lever, adding mechanism, and a toothed member carried by said sliding member and engaging with said adding mechanism.

3. In a cash-register, the combination with indicating devices, of a lever actuating said indicating devices, a sliding member provided with notches of varying length coöperating with said lever, adding mechanism, and a toothed member pivotally mounted on said sliding member and engaging with said adding mechanism.

4. In a cash-register or the like, the combination with a plurality of adding-wheels, of a pivoted lever adapted to actuate said adding-wheels, a pawl engaging with one of said adding-wheels, carrying mechanism for transferring the amount to be carried, and means operated by said transferring mechanism for actuating said pawl.

5. In a cash-register or the like, the combination with adding mechanism, of a plurality of adding-wheels, a pivoted lever actuating said adding-wheels, a pawl for one of said adding-wheels, carrying mechanism for transferring from one of said adding-wheels to another, means operated by said carrying mechanism for actuating said pawl, and connections for actuating said pawl by the movement of said lever.

6. In a cash-register, the combination with a plurality of indicators arranged in groups, of a pivoted lever adapted to move in one direction to determine the indicator to be displayed and in another direction to operate and display said indicator, and a printing device carried by said lever and provided with characters arranged in groups corresponding to said groups of indicators.

7. In a cash-register, the combination with adding mechanism, of a plurality of movable members adapted to actuate said adding mechanism, a pivoted lever movable in one direction to determine the amount to be added and in another direction to operate one of said movable members, and a printing device carried by said lever and provided with groups of characters corresponding to the movable members.

8. In a cash-register, the combination with a plurality of indicators arranged in groups, of an adding mechanism, a plurality of movable members adapted to actuate said adding mechanism, a pivoted lever movable in one direction to determine the indicator to be displayed and the amount to be added and in another direction to display said indicator and operate one of said movable members, and a printing device carried by said lever and provided with groups of characters corresponding to the indicators and movable members.

9. In a cash-register, the combination with a plurality of indicators, of operating means for actuating said indicators, a cash-drawer, a lever for releasing said cash-drawer, locking mechanism for said lever, and connections actuated by said operating means for releasing said locking mechanism.

10. In a cash-register, the combination with a plurality of indicators, of a lever movable in one direction to determine the indicator to be displayed and in another direction to operate and display said indicator, a cash-drawer, a lever for releasing said cash-drawer, locking devices for said latter-named lever, and connections actuated by said first-named lever for releasing said locking devices.

11. In a cash-register, the combination with a plurality of indicators, of a movable member adapted to actuate any desired indicator, a movable frame actuated by said movable member, a detent for locking said movable frame, means for releasing said detent, a printing device including paper-feeding mechanism, and connections for actuating said paper-feeding mechanism through the movement of said frame.

12. In a cash-register, the combination with a plurality of indicators of a movable member adapted to actuate any desired indicator, a movable frame actuated by said movable member, a detent for locking said movable frame, means for releasing said detent, a printing device including an inking-ribbon, and connections for feeding said inking-ribbon through the movement of said frame.

13. In a cash-register, the combination with a plurality of indicators, of a movable member adapted to actuate any desired indicator, a movable frame actuated by said movable member, a detent for locking said movable frame, means for releasing said detent, a printing device including paper-feeding mechanism and inking-ribbon, and connections for actuating said paper-feeding mechanism and inking-ribbon through the movement of said frame.

14. In a cash-register, the combination with an indicating device, of operating means for actuating said indicating device, a cash-drawer, a lever for releasing said cash-drawer, locking mechanism for said lever, and means carried by said drawer for releasing said locking mechanism.

15. In a cash-register, the combination with an indicating device, of operating means for actuating said indicating device, a cash-drawer, a lever for releasing said cash-drawer, locking mechanism for said lever, connections actuated by said operating means for releasing said locking mechanism, and means carried by said cash-drawer for releasing said locking mechanism.

705,854. ATTACHMENT-HOLDER FOR SEWING-MACHINES. FREDERICK JACOB, Jr., Newark, N. J. Filed Apr. 18, 1902. Serial No. 103,503. (No model.)

Claim.—1. A clamping device comprising a socket provided with a diametrical slot, a screw arranged transversely to the slot and provided with a tapered inner end adapted to cross said slot, and an attachment-piece formed to enter said slot in the socket and provided with a tapered recess adapted to be engaged by the tapered end of the screw; all for the purpose of drawing the attachment-piece upwardly within the slot and forcing the same against the wall of the socket laterally, substantially as described.

2. A clamping device comprising a socket provided with a diametrical slot and with a longitudinal bore, a screw arranged at right angles to the slot and provided with a tapered inner end adapted to cross said slot, and an attachment-piece provided with a tapered recess adapted to be engaged by the tapered end of the screw and with a curved contact-surface adapted to engage with the wall of the socket; all for the purpose of drawing the attachment-piece upwardly within the slot and forcing the same against the wall of the socket laterally, substantially as described.

3. A clamping device comprising a socket provided with a diametrical slot and with a longitudinal bore, a screw arranged at right angles to the slot and provided with a tapered inner end adapted to cross said slot, and an attachment-piece provided with a tapered recess adapted to be engaged by the tapered end of the screw and with a curved contact-surface diverging from its top and adapted to engage with the wall of the socket; all for the purpose of drawing the attachment-piece upwardly within the slot and forcing the same against the wall of the socket laterally, substantially as described.

4. A clamping device comprising a socket provided with a diametrical slot and with a longitudinal bore, a screw arranged at right angles to the slot and provided with a tapered inner end adapted to cross said slot, and an attachment-piece provided with a tapered recess adapted to be engaged by the tapered end of the screw and with one or more inclined contact-surfaces adapted to engage with the wall of the socket, substantially as and for the purpose set forth.

705,855. AUTOMATIC DOOR OPENING OR CLOSING APPARATUS. JOSEPH S. JOHNSON, New York, N. Y. Filed Oct. 17, 1901. Serial No. 79,098. (No model.)

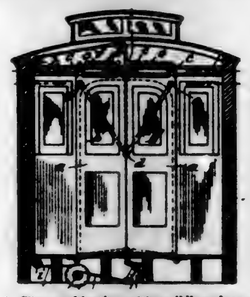

Claim.—1. The combination with a sliding door, of a toggle-joint device for opening said door, foot-pedals and a bell-crank subject to the tread of persons passing through the door, a motion-multiplying drum connected with said bell-crank, and a cord and guide-pulleys therefor, said cord connecting said drum and the toggle-joint device for operating it, and means for automatically closing the door and resetting the pedals.

2. The combination with a pair of sliding doors, of a pair of toggle-joint rods respectively fulcrumed on the doors for opening them, foot-pedals and a bell-crank subject to the tread of persons passing through the doors, a motion-multiplying drum connected with the bell-crank, a cord and guide-pulleys therefor, said cord connecting said drum and toggle-joint device for operating it, and means for automatically closing the doors and resetting the pedals.

3. The combination with a pair of sliding doors, of a pair of toggle-joint rods respectively fulcrumed on the doors within interior spaces of the upper portions of said doors for opening them, foot-pedals and a bell-crank subject to the tread of persons passing through the doors, a motion-multiplying drum connected with the bell-crank, a cord and guide-pulleys therefor, said cord connecting said drum and toggle-jointed arms for operating them, and means for automatically closing the doors and resetting the pedals.

4. The combination with a pair of sliding doors, of a pair of toggle-joint rods respectively fulcrumed on the doors within interior spaces of the upper portions of said doors for opening them, foot-pedals and a bell-crank subject to the tread of persons passing through the doors, a motion-multiplying drum connected with the bell-crank, a cord and guide-pulleys therefor, said cord connecting said drum and toggle-jointed arms for operating them, and means for automatically closing the doors and resetting the pedals, said means consisting of coiled springs located at the upper ends of the doors and suitably connected for closing them.

705,856. SHOE-FASTENER. ALBERTO T. JORDAN, Portland, Me., assignor of one-half to George W. Brown, Cape Elizabeth, Me. Filed Nov. 16, 1901. Serial No. 82,489. (No model.)

Claim.—1. In a shoe-fastener, a series of lace-holders permanently secured to one side of the shoe, a series of eyelets permanently secured to the other side of the shoe and a series of lace-holders having the same general configuration as said eyelets and adapted to be detachably secured in said eyelets.

2. In a shoe-fastener, a series of lace-holders permanently secured to one side of the shoe and a series of lace-holders adapted to be detachably secured to the other side, a plurality of the detachable holders being united by a rigid bond.

3. In a shoe-fastener, a series of lace-holders permanently secured to one side of the shoe, a series of eyelets secured to the other side of the shoe and a series of lace-holders having the same general configuration as said eyelets and having a prong adapted to engage the under edge of said eyelets, whereby said holders are detachably secured in said eyelets.

705,857. COMBINED MUFFLE AND MUD-GUARD FOR MOTOR-VEHICLES. ROBERT M. KEATING, Middletown, Conn., assignor to the R. M. Keating Motor Company, Middletown, Conn., a Corporation. Filed Dec. 23, 1901. Serial No. 86,837. (No model.)

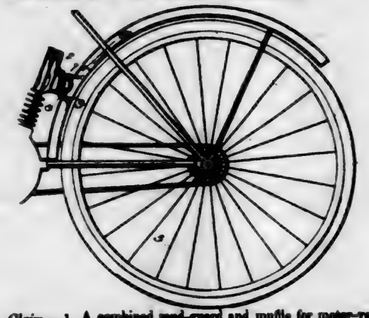

Claim.—1. A combined mud-guard and muffle for motor-vehicles, composed of a front section consisting of a hollow cast-metal tube provided with means for attachment to the frame and for coupling to the engine-exhaust, and a rear section consisting of a curved sheet-metal tube connected to the front tube by a suitable joint, substantially as described.

2. A combined mud-guard and muffle for motor-vehicles, consisting of a front section in form of a cast-metal tube with interior baffle-plates extending from the sides, and a rear section in form of a sheet-metal tube, substantially crescent-shaped in cross-section, and having internal baffle-plates extending across the tube and provided with perforations.

3. The combination of the mud-guard muffle having a projecting socket, with the engine-exhaust having a threaded opening, and a screw-threaded joint-coupling tube extending both into the muffle and the exhaust-pipe.

4. The combination with the engine having a threaded exhaust-pipe, and the hollow mud-guard muffle having a projecting socket, of a nut attachable to such socket, and a threaded joint-coupling tube engaging with the exhaust of the engine and the socket of the muffle.

5. In a muffle and mud-guard, a sheet-metal tube, crescent-shaped in cross-section, and having perforated internal baffle-plates extending across the tube.

6. The sheet-metal mud-guard and baffle-plate, composed of perforated cross-partitions in outline substantially of the form of the completed tube, and the tube-plates surrounding such partitions and having a lap-joint at the edges.

705,858. TRUCK-BOLSTER. HERBERT R. KETTELEY, Buffalo, N. Y. Filed Apr. 11, 1902. Serial No. 102,426. (No model.)

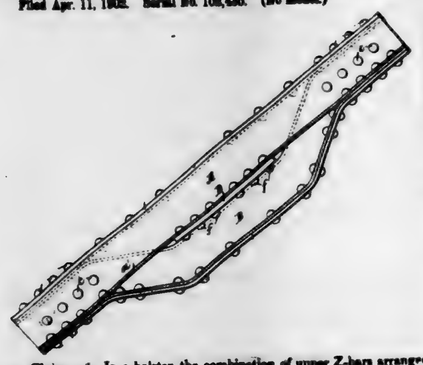

Claim.—1. In a bolster, the combination of upper Z-bars arranged with their webs vertically, lower Z-bars arranged with their webs vertically, the flanges of said upper and lower Z-bars being superposed at the ends of the bolster, and upper and lower tie-plates, substantially as set forth.

2. In a bolster, the combination of upper Z-bars arranged with their webs vertically, lower Z-bars arranged with their webs vertically and beside the webs of the upper Z-bars at the ends of the bolster, the flanges of said upper and lower Z-bars being superposed at the ends of the bolster, rivets or the like connecting the webs and the flanges of said Z-bars at the ends of the bolster, and upper and lower tie-plates, substantially as set forth.

3. In a bolster, the combination of upper Z-bars arranged with their webs vertically and their upper flanges extending toward each other, lower Z-bars arranged with their webs vertically and beside the webs of the upper Z-bars and with their upper flanges extending toward each other beneath the upper flanges of the upper Z-bars at the ends of the bolster, and upper and lower tie-plates, substantially as set forth.

4. In a bolster, the combination of upper Z-bars arranged with their webs vertically, lower Z-bars arranged with their webs vertically, the flanges of said upper and lower Z-bars being superposed at the ends of the bolster, upper and lower tie-plates, and a plate arranged between the upper and lower Z-bars at the center of the bolster, substantially as set forth.

705,859. PLAYING-BALL. ELIAKIM KENDRALL, Boston, Mass. Filed May 9, 1902. Serial No. 106,549. (No model.)

Claim.—1. A playing-ball comprising a hard thin shell provided throughout with perforations, a thin skin of soft rubber covering said shell, and a cover of wear-resisting material upon said rubber layer, said hard shell being close to the periphery of the ball.

2. A playing-ball comprising a hard thin shell provided throughout with perforations, a thin skin of soft rubber covering said shell, and a casing of gutta-percha holding said rubber layer under compression, said hard shell being close to the periphery of the ball.

3. A playing-ball comprising a thin tempered-steel shell, a thin skin of soft rubber covering said shell, the latter being provided throughout with perforations, and a shell of gutta-percha upon said rubber layer, said steel shell being close to the periphery of the ball.

4. A playing-ball comprising a hard thin shell provided throughout with perforations; soft rubber forming a thin covering upon said shell and extending into said perforations; and a shell of gutta-percha holding said rubber layer under compression.

5. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell.

6. A playing-ball comprising a soft-rubber sphere around which is embedded a thin perforated metal shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; all of said rubber being integral.

7. A playing-ball comprising a perforated tempered steel shell; a soft rubber filling therein; and a soft-rubber facing for said shell.

8. A playing-ball comprising a thin tempered-steel shell provided with perforations; a filling therein consisting of springy solid material; and a facing or layer of soft rubber upon said shell; portions of at least one of said filling and facing elements entering said perforations.

9. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; and a casing of gutta-percha upon said soft-rubber facing.

10. A playing-ball comprising a soft-rubber sphere around which is embedded a metal perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; and a shell of hard material holding said rubber facing under compression.

11. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations, and the rubber also forming a facing for said shell; and a shell of plastic material holding said layer under compression.

12. A playing-ball comprising a hard shell provided throughout with perforations; and springy material filling said shell and extending through said perforations and also forming a facing upon said shell; said facing being integral with the filling.

13. A playing-ball comprising a soft-rubber sphere around which is embedded a hard perforated shell; portions of the rubber passing through the perforations and also forming a facing for said shell; and a casing of gutta-percha holding said facing under compression.

14. A playing-ball comprising a sphere of soft rubber, and a perforated metal shell embedded around said sphere at the peripheral portion thereof.

15. A playing-ball comprising a solid sphere of soft rubber, and a perforated metal shell embedded within the surface of said sphere and close to said surface.

705,860. FIREPROOF FLOOR CONSTRUCTION. GEORGE R. KING, New Brighton, N. Y. Filed May 8, 1901. Serial No. 59,212. (No model.)

Claim.—1. A lintel for fireproof building construction embodying a metallic part having a metallic web and two horizontal webs fastened together, the whole incased in cement-like material, the upper edge of the lintel being on a line with the floor and its under edge on a line with the ceiling and having shoulders on its sides for the support of the filling-blocks.

2. A lintel for fireproof building construction embodying a metallic truss incased in cement-like material, the truss embodying a vertical web having a metallic rod incorporated in it, and two horizontal webs attached to the sides of the vertical web, whereby the metal at about the central portion of the vertical web is made of triple thickness, each of the horizontal webs having a metallic rod incorporated in it.

3. In fireproof building construction the combination of lintels extending from floor-beam to floor-beam, having shoulders at their upper edges, and blocks of fireproof material of the same depth as the lintels, having surfaces at their upper ends adapted to rest upon said shoulders, whereby the upper surface of the blocks and lintels and floor-beams will all be on the line of the floor-surface, and the under edges of the lintels and blocks on the line with the ceiling.

4. In fireproof building construction the combination of lintels projecting from floor-beam to floor-beam, their lower edges having projecting ledges or parts, fireproof blocks held against the under edges of the floor-beams by said projecting parts of the lintels, blocks made of fireproof material adapted to fill the space from lintel to lintel and be supported by them, the blocks which are next to the floor-beams having one end shaped to engage with the main floor-beams and fill the space between their flanges, and having also a projecting ledge or tongue adapted to hold the said blocks or plate against the under edge of the floor-beams.

5. In fireproof building construction, in combination with the main floor-beams, lintels spanning the space between them, and one-piece blocks adapted to be supported on the lintels and to fill the entire space from one to the other, said blocks having the same depth as the lintels so that their upper surfaces form the floor-line and their lower surfaces the ceiling-line.

6. In fireproof building construction the combination with the main floor-beams of lintels embodying a metallic truss incased in cement-like material, and blocks made of fireproof material supported on the lintels and extending from top to bottom thereof so that the upper surfaces of the blocks and lintels are on a line with the floor, and their under surfaces on a line with the ceiling.

7. The combination, in fireproof building construction, of lintels connecting the main floor-beams, and fireproof blocks supported upon the lintels, each extending from lintel to lintel and from its upper to its lower edge or side.

705,861. CREAM-SEPARATOR AND CHURN. JOSEPH KLEIN, Cass City, Mich., assignor of one-half to William Ferguson, Cass City, Mich. Filed May 24, 1902. Serial No. 108,894. (No model.)

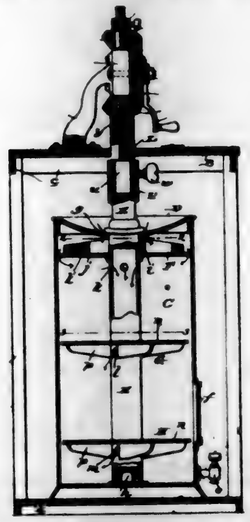

Claim.—1. In an apparatus for the purpose described, the combination of a can having a cover provided with an opening for the admission of air, an upright, hollow shaft arranged in the can, and having an opening adjacent to the cover for the admission of air and an opening, below said inlet-opening, for the exit of air, a damper arranged on said shaft above the air-inlet opening thereof, and comprising a flat horizontal disk, and curvilinear blades on the upper side of the same, and a damper arranged on the shaft adjacent to the air-exit opening, and comprising a flat, horizontal disk, and curvilinear blades on the under side of the same.

2. In an apparatus for the purpose described, the combination of a can having a cover provided with an opening for the admission of air, an upright hollow shaft arranged in the can, and having an opening adjacent to the cover for the admission of air, and an opening, below said inlet-opening, for the exit of air, a combined damper and air-suction device arranged on said shaft above the air-inlet opening thereof and below the air-inlet opening in the can-cover, and a combined damper and air-suction device arranged on the shaft adjacent to the air-exit opening thereof.

705,862. COIN-CONTROLLED DEVICE. JOHN D. KESSELER, Sioux City, Iowa, assignor of one-half to Burt Cronk, Sioux City, Iowa. Filed Oct. 5, 1901. Serial No. 77,962. (No model.)

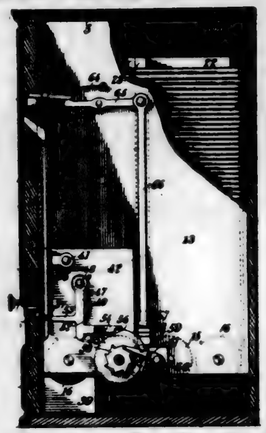

Claim.—1. In a package-vending machine, package-delivery mechanism embodying a feed-roll, and actuating means therefor, in combination with a locking-dog engaging the feed-roll, and a coin-chute comprising a hinged section adapted to be operated upon by the coin and to swing the locking-dog out of engagement with the feed-roll, substantially as described.

2. In a package-vending machine, package-delivery mechanism embodying a feed-roll, and actuating means therefor, in combination with a spring-pressed locking-dog engaging the feed-roll, a coin-chute comprising a hinged section adapted to swing the locking-dog out of engagement with the feed-roll, and means for pressing a coin against the hinged section of the coin-chute for the purpose of swinging the latter and causing it to operate the locking-dog, substantially as described.

3. In a package-vending machine, package-delivery mechanism embodying a feed-roll, and actuating means therefor, in combination with a pivoted arm having an extension constituting a locking-dog engaging the feed-roll and another extension projecting toward the coin-chute, a coin-chute comprising a hinged section operatively engaged with one of the extensions of the pivoted arm, a spring for urging the pivoted arm toward the coin-chute and holding the locking-dog in engagement with the feed-roll, and a push-button arranged to press a coin against the hinged section of the coin-chute, for the purpose specified, substantially as described.

705,863. BOOK-SEWING MACHINE. FRIEDRICH KOHLER, Frauenfeld, Switzerland, assignor to Actiengesellschaft, vormals F. Martini & Co., Frauenfeld, Switzerland, a Firm. Filed Feb. 19, 1900. Serial No. 5,718. (No model.)

Claim.—1. In a book-sewing machine, the combination with a book-needle, a thread-supporting device, and a gripper, of means for operating the book-needle and the gripper so that the gripper takes from the needle the thread-loop formed by said needle and draws the same up and over the thread-supporting-device, a second gripper, mechanism for moving the same against the first gripper whereby the standing parts of the thread are pushed between the loop drawn up by the first gripper and a double loop is formed, means for drawing down a locking-thread, and means for passing the locking-thread through the said double loop.

2. In a book-sewing machine, the combination with the needle mechanism, of two grippers, and a toothed segment upon which one of the grippers is secured, of a pinion engaging said segment, to which pinion the other gripper is secured, and means for moving said segment about its axis, whereby the grippers are moved in opposition to each other to form a double loop, and means for drawing the thread through said double loop, substantially as described.

3. In a book-sewing machine, the combination with a book-needle, means for drawing down a locking-thread, a thread-supporting device, two grippers, and means for moving the grippers in opposition to each other and reciprocating the book-needle to form a double loop around the thread-supporting device, of means for withdrawing the thread-supporting device from the loop, whereby the latter is set free, and means for simultaneously drawing the locking-thread through the loop.

4. In a book-sewing machine, the combination with the thread-supporting device, a book-needle, means for taking the thread from the book-

needle and winding it around the thread-supporting device to form a double loop, means for drawing down a locking-thread, a gripper-needle, and means for moving the latter to and fro through said double loop, of a bolt on which the thread-supporting device is mounted, plate-springs on the bolt in frictional contact with the gripper-needle, whereby the movement of said needle tends to cause a movement of the bolt, and stop devices for limiting such movement of the bolt.

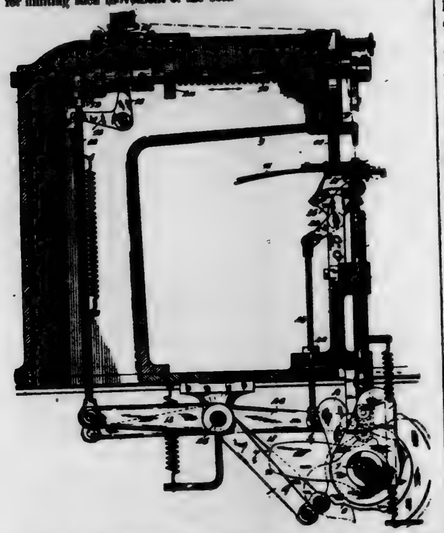

5. In a book-sewing machine, the combination with a needle mechanism, a thread-supporting device, and a gripper with a hook on its end and projections at each side of the same, of means for moving the needle and the gripper so that the projections of the gripper will take up the end of the loop from the needle and draw the same around the thread-supporting device to form a double loop and will cause the hook of the gripper to draw back the loop and upon the completion of the knot formation and means to draw a locking-thread through the double loop.

6. In a book-sewing machine, the combination with a knot-forming device, a rotatable carrier for the thread-spool, and a tension-spring adapted to bear on said carrier to hold the same stationary, of a slide adapted to engage under the end of the spring to lift it from the carrier, and means actuated by the knot-forming device to operate said slide.

7. In a book-sewing machine, the combination with a knot-forming device, a rotatable carrier for the thread-spool, a tension-spring for said spool-carrier, a slide having two studs, a shaft, a disk on the shaft and projecting between the two studs, and means actuated by the knot-forming device for moving said shaft axially, whereby the slide releases the spring from the rotatable carrier.

705,864. **STRAINER FOR MINE-PUMPS.** JACOB RUHL, Greensburg, Pa. Filed Apr. 26, 1902. Serial No. 104,534. (No model.)

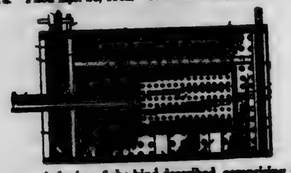

Claim.—1. A device of the kind described, comprising a perforated box or casing having guideways formed in the ends thereof, a sliding door arranged in one end thereof and having a series of apertures produced therein, a strainer arranged within the casing, a hose or pipe connected to the strainer, and means arranged in the forward end of the box or casing for firmly clamping the hose in position, substantially as shown and described.

2. In a device of the kind described, the combination of a box or casing having its sides provided with apertures, a strainer arranged within the said box or casing, hooks arranged within the box and adapted for engagement with the said strainer, legs arranged within the casing upon which is adapted to rest the said strainer, the sliding door arranged in one end of the casing and having a series of perforations formed therein, a hose connected to the strainer, a stationary block held in the forward end of the casing, a sliding block arranged above the said stationary block and adapted for engagement with the hose, and a screw arranged in the top of the casing and adapted for engagement with the block, and means for holding the said screw in its adjusted position, substantially as shown and described.

3. An improved strainer attachment for suction-pumps comprising a box or casing having its sides perforated, a strainer held within said box or casing, a door slidably retained in one end of the casing and having a series of apertures produced therein, a hose connected to the said strainer, a block arranged in the forward end of the box and having a recess produced in the upper face thereof, guides arranged adjacent the said block, a movable block held in the said guides and having a recess produced in the lower face thereof which is adapted to register with the recess in the first-named block, a screw operating in the said box or casing and adapted for engagement with the said movable block, arms carried by the screw and a pin arranged upon the casing and adapted for engagement by one of the said arms of the screw, and means arranged within the box or casing for holding the said strainer in position, substantially as shown and described.

4. A device of the kind described, the combination of a box or casing, a strainer held therein, a hose connected to the strainer, a clamp carried by the box or casing and engaging the said hose, a sliding door arranged in the casing opposite the said clamp and a prop or brace engaging the said casing and mine for holding the said casing in position, substantially as shown and described.

705,865. **CHUTE.** CHARLES LAW, Pittston, Pa. Filed Nov. 27, 1901. Serial No. 83,897. (No model.)

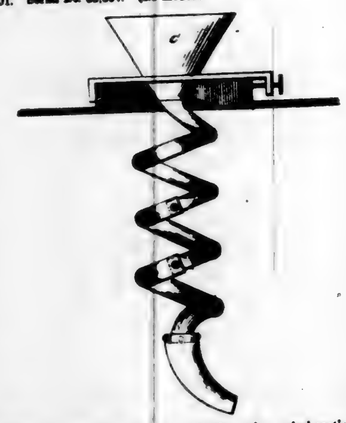

Claim.—1. In a chute, a series of telescoping spiral sections, substantially as shown and described.

2. In a chute, a hopper, a series of telescoping cylindrical spiral sections and a revolving spout, substantially as shown and described.

3. In a chute, a hopper connected to a series of telescoping cylindrical spiral sections and a revolving spout upon the free end of the last section, substantially as shown and described.

4. In a chute, a breech supporting a hopper, the said hopper communicating with a series of cylindrical telescoping spiral sections, set-screws for locking the said sections together, and a revolving spout mounted upon the end of the chute, substantially as shown and for the purpose set forth.

705,866. **SHAFT-COUPLING.** ISADOR LEHMAN, Cleveland, Ohio. Filed Dec. 30, 1901. Serial No. 87,049. (No model.)

Claim.—1. The combination, of a casing or shell c made in sections and having two internal walls 20 and 21 arranged in different planes, respectively, at right angles to each other and extending partially around the center of the said shell, which shell is provided, in each of the said walls, with a slot 22 extending along the wall; means for holding the sections of the shell or casing together, and two shaft-sections extending through the slot 22 in the different aforesaid walls, respectively, and provided, respectively, with a head 15 contained within the aforesaid shell, and a shoulder 16 extending along and affording bearing for the wall through which the respective shaft-section extends, and the head of one of the shaft-sections having its inner end shaped as required to form the segment of a ball whose center is coincident with the center of the aforesaid shell, and the head of the other shaft-section having a cavity or recess 14 open at the sides of the head and having its wall 13 arranged concentrically of the center of the shell and engaged by the aforesaid segment of a ball, substantially as and for the purpose set forth.

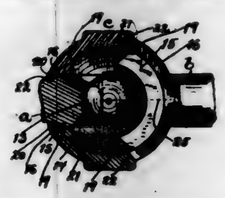

2. The combination, with two shaft-sections a and b having their adjacent ends provided with heads 15, of a casing or shell c embracing and having bearing upon the said heads and establishing operative connection between the said shaft-sections and composed of two halves or sections, and each half or section having a pair of registering ears 12 at one side of the shell and a single ear 10 at the opposite side of the shell with the last-mentioned ear of the said half or section interposed between and registering with the ears of the pair of ears of the other half or section, and means for securing the registering ears together.

3. The combination, with two shaft-sections a and b having their adjacent ends provided with heads 15, of a casing or shell c embracing and having bearing upon the said heads and establishing operative connection between the said shaft-sections and composed of two halves or sections, and each shell-section having a pair of registering internally-screw-threaded ears 12 at one side of the shell and a single internally-threaded ear at the opposite side of the shell, with the last-mentioned ear of the said shell-section interposed between and registering with the ears of the pair of ears of the other shell-section, a screw extending into and engaging the registering ears of the shell-sections at each side of the shell, and another screw engaging a correspondingly-threaded hole formed partially in the first-mentioned screw and partially in one of the ears engaged by the said first-mentioned screw, substantially as and for the purpose set forth.

705,867. **APPARATUS FOR CURING MEAT.** JOHN C. LINCOLN, Cleveland, Ohio, assignor to B. B. Gaines, Cleveland, Ohio. Filed Dec. 20, 1901. Serial No. 86,684. (No model.)

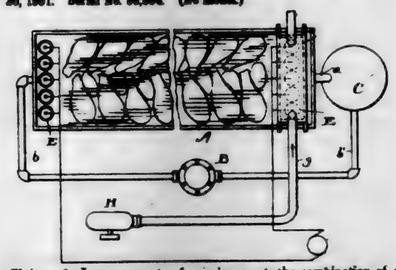

Claim.—1. In an apparatus for curing meat, the combination of a tank containing a brine curing solution, negative electrodes immersed in the brine at one end of the tank and suitably connected with one pole of an electric generator, positive electrodes immersed in the brine near the opposite end of the tank and suitably connected with the other pole of the generator, with a gas-tight box open at its lower side which is placed over the upper ends of said positive electrodes with its lower edge immersed in the brine and thereby sealed, inlet and outlet pipes connected with said box, and means for creating a forced circulation of air through said box.

2. In an apparatus for curing meat, the combination of a tank, negative electrodes immersed in the brine at one end of the tank and suitably connected with one pole of an electric generator, porous cups immersed in the brine at the other end of the tank, and positive electrodes in said porous cups electrically connected with the other pole of the generator, with a gas-tight box open on its lower side which is placed over the upper ends of said positive electrodes and the porous cups in which they are contained with its lower edges immersed in the brine and thereby sealed, inlet and outlet pipes connected with said box, and means for creating a forced circulation of air through said box.

3. In an apparatus for curing meat, a tank having inlet and outlet pipes by means of which the brine may be caused to circulate through said tank, negative electrodes immersed in the brine at one end of the tank and suitably connected with one pole of an electric generator, porous cups in the other end of the tank, positive electrodes in said porous cups, electrically connected with the other pole of the generator, and a gas-tight box open on its lower side placed over the upper ends of said positive electrodes and the porous cups in which they are contained and having its edges immersed in the brine and thereby sealed, inlet and outlet pipes connected with said box and a blower connected with the inlet-pipe.

705,868. **KEY-RING.** JOHN R. LOMAS, Westhaven, Conn. Filed Mar. 24, 1902. Serial No. 99,702. (No model.)

Claim.—1. In a key-ring, the combination with a bail, of a sheet-metal housing for the reception of the ends of the bail, one end of which is pivoted to the plates, and a manually-operable lever located within the said housing and coacting with the inner edge of the free end of the bail for forcing the same into its locked position in which it engages with a fixed point within the housing.

2. In a key-ring, the combination with a bail, of two plates together constituting a housing and receiving the ends of the bail one end of which is pivoted to them and the other notched, a lever located within the housing and coacting with the free end of the bail, and a retaining or locking pin mounted in the said plates and engaged by the notched end of the bail when the same is sprung into position for such engagement by the said lever.

3. In a key-ring, the combination with a bail having its ends separated from each other, of a sheet-metal housing exposing two large plane surfaces for the application of advertising or other kindred matter, the said housing being adapted to receive the ends of the bail one end of which is pivoted to it; and a manually-operable lever located within the said housing and coacting with the inner edge of the free end of the bail for forcing the same into its locked position in which it engages with a fixed point within the housing.

705,869. **SAFETY DEVICE FOR STEAM-BOILERS.** FREDERICK J. MANLEY, Allegheny, Pa. Filed Nov. 30, 1901. Serial No. 84,259. (No model.)
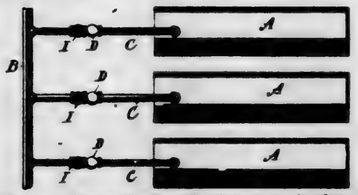
Claim.—1. The combination with a battery or series of steam-boilers, of separate pipes communicating with a main steam-line and automatically-operating check-valves on the boiler-pipes constructed and adapted to allow the passage of steam to the main under ordinary conditions and to automatically close under back pressure from the main when the pressure from the boiler ceases, said check-valves being provided with means for manually closing them against their seats, substantially as described.

2. The herein-described combined automatic, and hand-operable, shut-off steam-valve comprising the valve-casing D, having partition E, formed with the opening F, and valve-seat F' of the check-valve, having upwardly and downwardly extending guided stems, and an adjusting-screw, whereby the valve may be positively closed, regardless of the direction of the steam-pressure, substantially as described.

705,870. **HORSE-CANOPY.** ANDREW J. MAPES, Paris, Ill. Filed Mar. 14, 1902. Serial No. 98,167. (No model.)

Claim.—1. The combination, in a canopy for horses, of the standards carrying the main frame-bar, said frame-bar having a block A at each extremity, provided with lateral extensions, with arms B pivoted intermediate their ends to said extensions, springs D attached at one end to one end of said arms and at the other end to the blocks A, cords E

attached to the other ends of said arms, and means for guiding and fastening said cords, as set forth.

2. In a canopy-support, the frame carrying pivoted arms to which the canopy is attached, springs for throwing said arms normally outward, means for controlling the outward movement of said arms and holding the same in a closed position upon the frame, and means for supporting the frame upon a vehicle above the horse, whereby the action of the animal under the cover will give resilient motion to the spring-supported canopy thereby creating a constant air movement beneath the canopy, as set forth.

705,871. VAGINAL INJECTOR. ANDREAS ANDERSON and MARTIN R. S. R. PACKNESS, Denver, Colo. Filed Feb. 16, 1901. Renewed Apr. 3, 1902. Serial No. 101,222. (No model.)

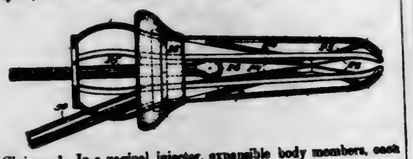

Claim.—1. In a vaginal injector, expansible body members, each having its forward portions formed of an inner and outer section, the inner section being formed with inclined planes, a tie member for the outer portions of the body members, an irrigating or injecting tube slidable in the tie member, and an expanding member carried by the said tube and arranged for engagement with the inclined planes of the inner sections of the body members, for the purpose specified.

2. In a vaginal injector, expansible body members having their extremities curved inwardly and each provided with an inwardly-extending member having oppositely-inclined inner surfaces, spaced tie members to which the inner ends of the body members are rigidly secured, an irrigating or injecting tube slidable in the tie members, and an expanding member carried by the tube and adapted for engagement with the rear inclined surfaces of the body members, as set forth.

3. A vaginal injector, consisting of tie members, body members secured at their outer ends in the said tie members, and having their extremities curved inwardly, each of the said members having their forward portions formed of an inner and outer section, the inner sections having oppositely-inclined surfaces at their inner portions, an injector or irrigating-tube held to slide through the tie members, the said tube being provided with a spray-nozzle at its forward end, and a disk carried by said tube, adapted for engagement with the inclined portions of the body members, as described.

4. A vaginal injector, consisting of tie members, body members secured at their outer ends in the said tie members, the forward ends of the said body members being free and their extremities curved inwardly, the said body members at their free portions having oppositely-inclined surfaces at their inner portions, an injector or irrigating-tube held to slide through the tie members, the said tube being provided with a spray-nozzle at its forward end, a disk carried by said tube, adapted for engagement with the inclined portions of the body members, a stop limiting the forward movement of the said tube, a conical pad extending across the outer faces of the body members adjacent to the forward or inner tie member, the said pad and forward or inner tie member constituting a receptacle for liquid, and an outlet-tube connected with the inner or forward tie member, through which the liquid introduced by the device may be discharged, for the purpose set forth.

5. In a vaginal injector, the combination, with an outer tie member and an inner tie member, the outer tie member being provided with a series of peripheral openings and a hub, the inner or forward tie member having also peripheral openings and a band which covers the openings, together with a central opening and a side opening, and a series of body members having their outer ends secured in the peripheral apertures of the outer tie member, which body members also enter the peripheral openings in the inner or forward tie member and are held in position by the band portion of said member, the body members being outwardly arched between the outer and inner or forward tie member, the free ends of the body members having their forward extremities downwardly and inwardly curved and provided at their inner portions with oppositely-directed inclined planes, of a tube held to slide in the tie members, terminating at its forward end in a sprinkling-nozzle, a disk carried by the forward portion of the tube, adapted to engage with the inclined walls of the body members at their front portions, and an outlet-tube for liquid connected with the inner or forward tie member, extending downward and outward between the body members, for the purpose set forth.

705,872. PRISM-GLASS FOR SKYLIGHTS. GEORGE E. ANDROVETTE, Brooklyn, N. Y. Filed Mar. 20, 1902. Serial No. 99,061. (No model.)

Claim.—1. Prism-plates provided with flat marginal surfaces on their prism-faces, and grooves in said prism-faces between the flat marginal surfaces and adjacent prisms, and a channel-plate the side members of which enter grooves in adjacent prism-plates, said channel-plate being adapted to be cemented to the prism-plates, as set forth.

2. As an improved article of manufacture, a prism-plate having a flat marginal surface at is prism-face, and grooves in said prism-face at opposite sides and located between the flat marginal surfaces and adjacent prisms, said plate being also provided with flanges upon its smooth face at opposite edges, which flanges are at right angles to the groove and incline from their outer edges downward to meet the plain smooth face of the panel, as described.

3. The combination with prism-plates having a flat marginal surface at their prism-faces, and grooves in said prism-faces adjacent to the flat marginal surfaces, the said plates being also provided with tapering edges and with flanges upon their smooth faces at opposite edges, inclining from said edges downward to the smooth faces of the plates, which flanges are at right angles to the said grooves, of inverted-T beams, the webs of which extend upward between the flanged edges of opposing prism-plates, a packing within the spaces between the edges of the prism-plates and the webs of the beams, extending to the tops of said webs and to an engagement with said flanges, a channel-plate, the side members of which enter the grooves in adjacent prism-plates, and packing in the spaces between the grooved edges of the prism-plates, which packing extends to the channel-plates, as set forth.

705,873. ELECTRIC RAILWAY. WALTER BERENS and JEAN P. TIBON, Paris, France. Filed Oct. 10, 1901. Serial No. 78,247. (No model.)

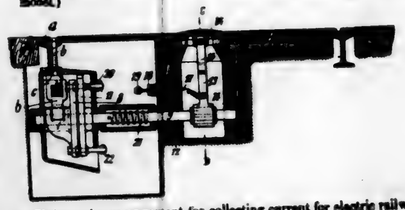

Claim.—An arrangement for collecting current for electric railways comprising a plurality of depressible spring-pedals *b*, contact-breaking commutators, shafts 9 carrying the same, disks mounted on said shafts and adapted to be operated by said pedals, a two-armed spring-pressed lever having a projection or pawl at one end adapted to engage each disk, a connection from one arm of each lever to the preceding disk and a connection from the other arm to the succeeding disk whereby the placing in circuit of one commutator involves the placing out of circuit of the preceding and succeeding commutators, substantially as described.

705,874. COTTON ELEVATOR AND SEPARATOR. CRADDOCK R. BENEFIELD, Alpika, Miss. Filed Mar. 5, 1901. Serial No. 49,851. (No model.)

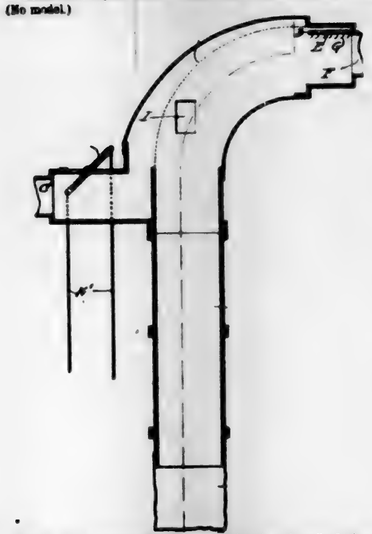

Claim.—In a pneumatic elevator of the class described, the combination with the chute, a screen, a cotton-receiving pipe, of a series of bars arranged horizontally and with their inner ends diverging, the same being provided with hooks, substantially as shown and described, whereby the cotton is spread laterally and distributed in the manner specified.

705,875. CUSPIDOR. JACOB BOOTH, Reynoldsville, Pa. Filed Sept. 3, 1901. Serial No. 74,169. (No model.)

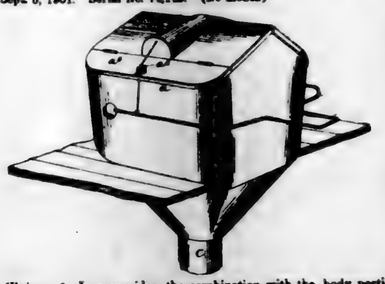

Claim.—1. In a cuspidor, the combination with the body portion, having the rectangular cut-away portion at the top, and provided with lateral upwardly-inclined seats meeting at the center, of the twin covers having the straight rear edges hinged to the edges of said cut-away portion, and resting upon said seats when closed, said covers when open having inwardly-inclined walls converging toward the hinged rear edges thereof, a bifurcated operating-lever pivoted at its inner end to one end portion of the cuspidor, and having a forward treadle extension at the opposite end portion of the cuspidor, and short chains or cords connecting raised portions of said covers with intermediate portions of the branches of said lever, substantially as specified.

2. In a cuspidor, the combination with the body, of the rectangular twin covers hinged thereto, the bifurcated operating-lever having lateral parallel arms embracing said body, and pivoted at their free ends at one end of the body, and the pedal extension of said lever projecting beyond the other end of said body, closing-springs, and chains or cords connecting said arms and covers, substantially as specified.

3. A cuspidor having a base provided with a recess, in which it is seated, means for raising the cuspidor out of such recess, and for returning it to normal position, substantially as specified.

4. A cuspidor having a base provided with a recess, in which it is seated, a lever, and means for raising the cuspidor from such recess upon operation of said lever, substantially as specified.

5. A cuspidor having a base provided with a recess, in which it is seated, a lever having a cord connection with the cuspidor, and arranged to raise the same from the recess upon operation thereof, substantially as specified.

6. A cuspidor having a base provided with a recess, in which it is seated, a lever having a cord connection with the cuspidor, and arranged to raise the same from said recess upon operation thereof, the cover for the cuspidor, and means for automatically opening the same upon raising of the cuspidor, substantially as specified.

7. A cuspidor having a base provided with a recess, in which it is seated, a lever having a cord connection with the cuspidor, and arranged to raise the same from its recess upon operation thereof, the cover for the cuspidor, the lever having a limiting cord attachment, and a cord connection with said cover, and arranged to open said cover upon raising of the cuspidor, substantially as specified.

705,876. WATER-COOLER. GEORGE W. BOLE, Grayadar, W. Va. Filed Mar. 3, 1902. Serial No. 96,434. (No model.)

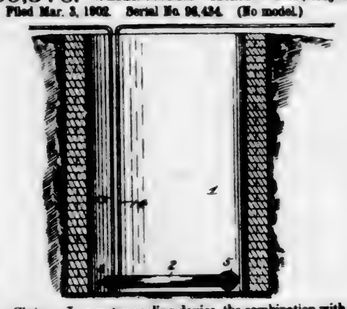

Claim.—In a water-cooling device, the combination with supply and discharge pipes; of an open-center chambered body formed of sections and adapted to be submerged in the water of a cistern or well, said sections having at their opposite ends connecting flanges and lugs, and water inlet and discharge nipples adjacent to the lugs and connecting with said pipes, a partition-plate interposed between the ends of the sections provided with the lugs and provided with connecting lugs, and bolts passing through the flanges and lugs and connecting the parts together, substantially as described.

705,877. DIE OR STAMP HOLDER. WILLIAM J. BUCHANAN, Huntington, Ind. Filed Mar. 19, 1902. Serial No. 99,011. (No model.)

Claim.—1. In a die or stamp holder, the combination with the holder adapted to carry the stamp or die; of a handle provided with a ball-seat, and a contractible ball carried by said holder adapted to enter said ball-seat, and means for normally retaining said handle in an upright position.

2. In a die or stamp holder, the combination with the holder carrying the die or stamp; of a handle provided with a vertical bore, and a ball-seating, at its lower end, a plug carried by said holder having a contractible ball adapted to enter said ball-seat, and a spring adapted to enter the bore of said handle adapted to normally retain said handle in a vertical position.

3. In a die or stamp holder, the combination with the holder carrying the die or stamp, and a ball carried by said holder; of a handle provided with a vertical bore, a ball-seating at its lower end to receive said ball, and a spring carried by said holder, adapted to enter said bore and normally retain said handle in a vertical position.

4. In a die or stamp holder, the combination with the holder carrying the die or stamp, and a ball carried by said holder provided with a vertical slot to allow said ball to contract; of a handle provided with a ball-seat upon its lower end to receive said ball, and means for normally retaining said handle in a vertical position.

5. In a die or stamp holder, the combination with the holder carrying the die or stamp, and a ball carried by said holder provided with a

vertical slot to allow said ball to contract; of a handle provided with a ball seat upon its lower end to receive said ball, and a spring secured in a perforation in said ball, and extending upwardly into the bore of said handle to normally retain the same in a vertical position.

6. In a die or stamp holder, the combination with the holder carrying the stamp or die, and a ball carried by said holder provided with a vertical slot, allowing the sides of said ball to contract; of a handle provided with a vertical bore, a ball-seat formed at the bottom of said bore, provided with a contracted opening through which said contractible ball is adapted to pass, and a spring secured in said ball, and having an enlarged end extending up into said bore to normally retain said handle in a vertical position.

705,378. PROFILE-TOOL FOR MAKING PIPE-MOLDS. FRANZ BENEDIKT, Bulmke, Germany. Filed Feb. 26, 1902. Serial No. 96,610. (No model.)

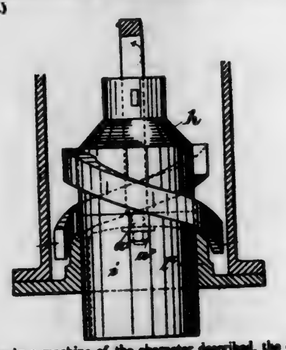

Claim.—In a machine of the character described, the combination with a flask having a ring-shaped guide, a non-rotary mold-block movable through the guide, a pressing-block surrounding and having a rotary connection with the mold-block and movable up and down therewith, and spirally-disposed strips secured to the pressing-block, each strip embracing about one-half the diameter of the block and spaced therefrom throughout the greater portion of its length.

705,379. THERMOSTATIC CIRCUIT-CLOSER. ALBERT H. BOYD, Oakpark, Ill. Filed Feb. 5, 1902. Serial No. 92,748. (No model.)

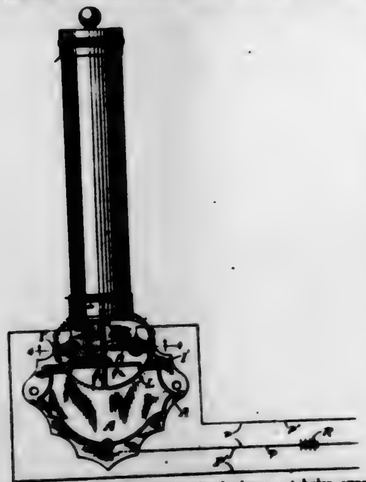

Claim.—1. In a thermostatic circuit-closer a tubular expansible member, a base to which the expansible member is secured, an expansible member consisting of a compound bar within the tubular expansible member, an L-shaped base to the compound bar, an additional base on which said L-shaped base is movably mounted, such additional base attached to the tubular expansible member to be moved by the expansion and contraction of such member, electric terminals, a circuit-closer between the electric terminals, such circuit-closer attached to the compound bar, means to yieldingly maintain the circuit-closer in electrical contact with one of the terminals, and means to adjust and to indicate the adjustment of the compound bar and circuit-closer attached thereto; substantially as described.

2. In a thermostatic circuit-closer, a tubular expansible member, a base to which the expansible member is secured, an expansible member consisting of a compound bar within the tubular expansible member, an L-shaped base to the compound bar, an additional base on which such L-shaped base is movably mounted, such additional base attached to the tubular expansible member to be moved by the expansion and contraction of such member, electric terminals, a circuit-closer between the electric terminals, such circuit-closer attached to the compound bar, an adjustable sleeve in the base of the tubular expansible member, a temperature-adjusting arm one end whereof is screw-threaded, such screw-threaded end fitting into corresponding screw-threads in the adjustable sleeve, and a rod fitting loosely at the lower end thereof in the adjustable sleeve to rest on the temperature-adjusting arm and at the upper end thereof attached to one arm of the L-shaped base of the compound bar; substantially as described.

3. In a thermostatic circuit-closer, a tubular expansible member, a base to which the expansible member is secured, an expansible member consisting of a compound bar within the tubular expansible member, an L-shaped base to the compound bar, an additional base on which such L-shaped base is movably mounted, such additional base attached to the tubular expansible member to be moved by the expansion and contraction of such member, electric terminals, a circuit-closer between the electric terminals, such circuit-closer attached to the compound bar, an adjustable sleeve in the base of the tubular expansible member, a temperature-adjusting arm one end whereof is screw-threaded, such screw-threaded end fitting into corresponding screw-threads in the adjustable sleeve, and a rod fitting loosely at the lower end thereof in the adjustable sleeve to rest on the temperature-adjusting arm and at the upper end thereof adjustably attached to one arm of the L-shaped base of the compound bar, and a collar provided with marks thereon at the lower end of the tubular expansible member; substantially as described.

705,380. ROTARY ENGINE. GEORGE CARBADY, Vancouver, Canada. Filed May 17, 1902. Serial No. 107,529. (No model.)

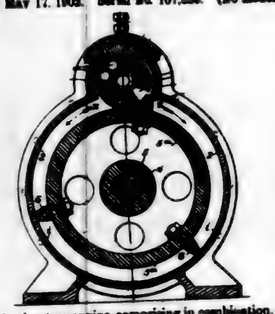

Claim.—1. A rotary engine, comprising in combination, a cylindrical casing, a piston-wheel rotatable therein, having radial piston-blades, a tubular rotary valve member, adapted to roll on the periphery of the piston-wheel, said valve member having a socket for receiving and coöperating with the piston-blades, a hollow spindle connected with the steam-supply, upon which the aforesaid valve is rotatably mounted, said spindle having a rotary motion independent of the movement of the valve, and having a port for communicating with the socket in the said valve, a closing-piece bearing on the valve opposite its line of contact with the piston-wheel, exhausts in the piston-chamber, one at each side of the rotary valve, a casing common to both exhausts, and a shiftable valve within the casing for controlling the two exhausts to open and close them alternately.

2. In an engine of the class described, having a valve through which steam is admitted rotatable on the periphery of the bladed wheel; a closing-piece on the valve opposite the line of contact; a dovetailed recess in the casing adapted to receive such closing-piece; strips of lead or similar joint material in the edges of such closing-piece; and means whereby the closing-piece may be tightened down on its edge joints and on the valve.

3. In an engine as described having a valve rotatable on its own axis on the bladed operative wheel and means for imparting rotation thereto from the operative shaft; a hollow spindle through which steam may be admitted to the valve; a steam connection on the spindle to which the steam-supply pipe is connected; a lever by means of which such spindle may be turned to direct its internal steam-port; a nut on the spindle whereby the joints of the steam connection may be drawn close; and a collar on the spindle to oppose the pull of the nut.

4. In an engine as described, the combination with the annular steam-casing, the piston-wheel, carrying radially-projected piston-blades, a valve rotatable upon its own axis, and rotatably engaging the periphery of the piston-wheel, means for imparting rotation to the valve from the drive-shaft, said valve having a socket for coöperating with the piston-blades, and for feeding live steam into the piston-chamber, a hollow steam-feed spindle, upon which the socketed valve is rotated, said spindle having a port adapted to coöperate with the socket in the valve, said spindle having rotary motion independent of the valve, and a lever means for adjusting the said spindle, all being arranged substantially as shown and described.

705,381. SALT-MAKING APPARATUS. JOHN S. CLARKE, St. Clair, Mich., assignor of one-half to Maria Josephine Clarke, St. Clair, Mich. Filed Oct. 2, 1901. Serial No. 77,296. (No model.)

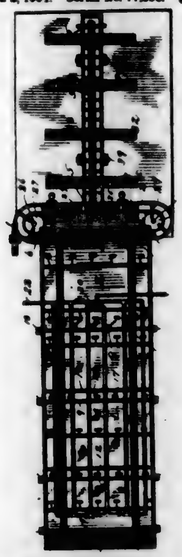

Claim.—1. A salt-drainer comprising a pan, an inclined drain-board at one end thereof, an endless chain, a transversely-disposed rake attached to the chain and adapted to bear upon the pan and the board, and an agitating device flexibly secured to the rake.

2. A salt-grainer comprising a pan having its rear end inclined to form a draining-board; transverse shafts supported in bearings outside of the pan and above the top edges thereof, sprocket-wheels on said shafts, endless chains passing around said sprocket-wheels, transversely-disposed rakes attached to said chains, and loosely-depending agitating devices attached to the rakes.

3. In a salt-grainer, the combination with a pan provided with an upwardly-inclined draining-board, transverse shafts supported in bearings outside of the pan and above the top edges thereof, transversely-disposed rakes slotted at their lower edges, agitating devices loosely depending from the rakes, a transversely-arranged receptacle to receive the salt from the draining-board, a conveyer within said receptacle, a receiving-bin below said receptacle divided into independent compartments, and a longitudinally-disposed conveyer above said bin.

4. The combination in a salt-grainer, of a brine-pan, a rake therefor having its upper and lower edges slotted, means for operating the rake, hooks mounted in the slots in the upper edge of the rake, and adapted to engage the operating means to secure the rake thereto, agitating devices flexibly connected to the rake, a receptacle to receive the salt from the brine-pan, a conveyer within the receptacle, a receiving-bin below the receptacle, and a movable conveyer mounted upon the receiving-bin to deposit the salt at different points therein.

5. In a salt-grainer, the combination with a pan provided with an inclined draining-board; of transverse shafts, endless chains mounted thereon, transversely-disposed rakes secured to said chains, an agitating device flexibly connected to the rakes, a transversely-arranged receptacle to receive the salt from the draining-board, a conveyer within said receptacle, a receiving-bin below the receptacle and divided into independent compartments, and a laterally-movable, longitudinally-disposed conveyer mounted upon the bin and adapted to convey the salt from said receptacle to the bin-compartments.

6. In a salt-grainer, the combination with a brine-pan, of a rake therefor having the lower edge thereof slotted, agitating devices flexibly connected to the rake near the lower edge thereof and intermediate the slots, means for operating the rake, and means for securing the rake to the operating means.

7. In a salt-grainer, a rake therefor having its lower and upper edges slotted, agitating devices connected with the rake, and securing-hooks in the slots on the upper edge of the rake.

8. The combination in a salt-grainer, of a brine-pan, a rake therefor having its upper and lower edges slotted, means for operating the rake, hooks mounted in the slots in the upper edge of the rake, and adapted to engage the operating means to secure the rake thereto, agitating devices flexibly connected to the rake, a receptacle to receive the salt from the brine-pan, and provided with a plurality of discharge-openings, a conveyer within the receptacle, a deflector interposed between the receptacle and the brine-pan, a receiving-bin below the receptacle, and a movable conveyer mounted upon the receiving-bin to deposit the salt at different points therein.

705,382. NECKTIE-FASTENER. JAMES A. CLINTON, Brooklyn, N. Y. Filed Apr. 8, 1902. Serial No. 101,872. (No model.)

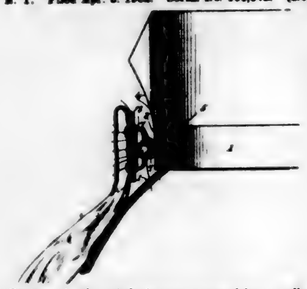

Claim.—1. A necktie-fastener, comprising a collar-button provided with a boss, and a member provided with fastenings, whereby it may be secured upon the necktie, said member consisting of a flat plate surmounted by an annular dome, and a spring-plate provided centrally with a hollow bulb for engaging said boss, said spring-plate being mounted upon said dome, and said bulb constituting a concavity therein, said spring-plate being further provided with slots radiating from said bulb for the purpose of yielding slightly when said boss is forced into said concavity.

2. A necktie-fastener, comprising a collar-button provided with a boss, a member provided with fastenings whereby it may be secured upon the necktie, said member consisting of a flat plate surmounted by an annular dome, a spring-plate provided centrally with a hollow bulb for engaging said boss, said spring-plate being mounted upon said dome, said bulb constituting a concavity therein, said spring-plate being further provided with slots radiating from said bulb for the purpose of yielding slightly when said boss is forced into said concavity, and a resilient washer disposed between said spring-plate and said dome.

705,388. CARRIER. JUDSON G. COFFAN, Compton, Cal. Filed Apr. 25, 1902. Serial No. 104,636. (No model.)

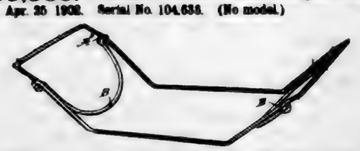

Claim.—1. A carrier having a frame, consisting of spaced side rails having straight bottom portions, upwardly and outwardly extending end portions, and cross-bars integrally connecting the side rails with each other at the ends, to form handles for the frame, as set forth.

2. A carrier, having a frame, consisting of spaced side rails having straight bottom portions, upwardly and outwardly extending end portions, cross-bars integrally connecting the side rails with each other at the ends, to form handles for the frame, and bails provided on the end portions of the side rails, as set forth.

3. A carrier, having a frame, consisting of spaced side rails having straight bottom portions, upwardly and outwardly extending end portions, cross-bars integrally connecting the side rails with each other at the ends, to form handles for the frame, and bails provided on the end portions of the side rails, adapted to swing between the side rails to an inner or outer position relative to the frame, as set forth.

4. A carrier, having a frame, consisting of spaced side rails having straight bottom portions, upwardly and outwardly extending end portions, cross-bars integrally connecting the side rails with each other at the ends, to form handles for the frame, bails provided on the end portions of the side rails, adapted to swing between the side rails to an inner or an outer position relative to the frame, and means on the bail-bearings, engaged by the bails, for holding the latter locked in a folded position, as set forth.

705,884. BED-SLAT HOLDING MEANS. ALEXANDER R. COOPER, Milam, Tex. Filed Jan. 2, 1902. Serial No. 88,198. (No model.)

Claim.—The combination of side rails of a bedstead having inner ledges with sockets and vertical slots communicating with the said sockets, slotted metallic members fitted over portions of the ledges and in the sockets and having tongues secured against the under edges of the ledges and rails, and slats having metallic plates secured to the under sides of the opposite extremities thereof and provided with downwardly-extending tongues flush with the ends of the slats to removably engage the slots in the ledges communicating with the sockets.

705,885. END-GATE FOR WAGONS. GIDEON S. COOVER, Bournesville, Ohio. Filed Mar. 20, 1902. Serial No. 99,127. (No model.)

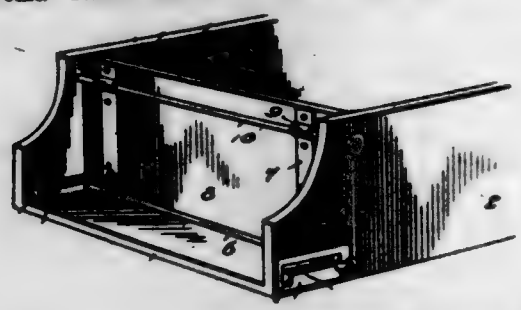

Claim.—1. The combination of a wagon-body having horizontal slots in its sides terminating in front and rear recesses, an end-gate, a removable rod engaging the body, sides, and the gate, a rod adjustably mounted in the said slots and serving as a pivot for the end-gate, said latter rod normally resting in a recess of each slot, and wings for the end-gate.

2. The combination of a wagon-body having horizontal slots in its sides provided with enlarged terminal recesses, an end-gate, and a rod adjustably mounted in the slots of the body and serving as a pivot for the gate, said rod normally resting in a recess in each slot.

3. The combination of a wagon-body having horizontal slots in the rear terminals of the sides thereof provided with end recesses, an end-gate having straps secured thereon, a rod engaging the said straps and serving as a pivot for the gate, said rod normally engaging a recess in each slot in the sides, a securing-rod also removably engaging the straps and the sides, and a supporting-chain secured to the gate and adapted to be adjustably held by the body.

705,886. ALINING MECHANISM FOR LINOTYPE-MACHINES. ALFRED H. CHURCHMAN, London, England, assignor to the Mergenthaler Linotype Company, New York, N. Y. Filed Feb. 28, 1902. Serial No. 96,726. (No model.)

Claim.—1. The combination with the detent, detent-disengager and disengager-rod of the first elevator of a Mergenthaler linotype-machine, of a cam-surface incorporated with the cam that raises the first elevator; push-rod actuated thereby; and finger held by the disengager-rod in position to be rocked by the push-rod when the latter is actuated by the said cam-surface.

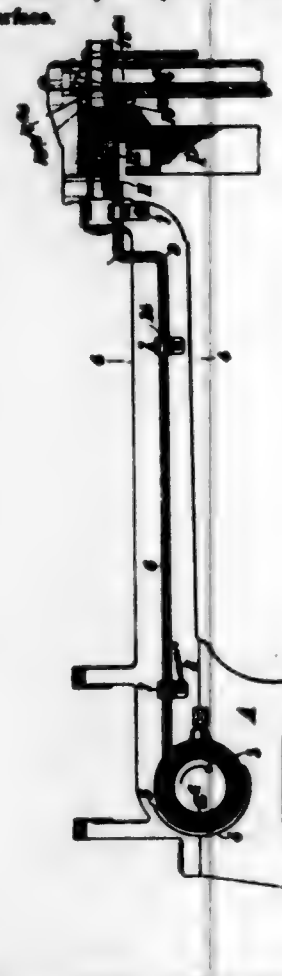

2. The combination with the detent, detent-disengager and disengager-rod of the first elevator of a Mergenthaler linotype-machine, of a cam-surface incorporated with the cam that raises the first elevator; main push-rod actuated thereby; front portion of push-rod supported by the vise-frame; and finger held by the disengager-rod in position to be rocked by the front portion of the push-rod when the main portion of it is actuated by the cam-surface.

3. In a linotype-machine, the first elevator, a device for locking the same down momentarily to relieve the matrix-cam from friction during the justifying action, and a positively-acting device independent of the justifying mechanism to effect the disengagement of said detent after the justifying action.

4. In a linotype-machine, the combination of the first elevator for supporting the line of matrices, a locking device x^{61} to hold the elevator down during the action of the justifying devices, a cam 4 and connections from said cam to positively disengage the locking device.

705,887. COMBINED LOCK AND LATCH. JAMES B. COX, Canton, N. Y. Filed Sept. 6, 1901. Serial No. 74,565. (No model.)

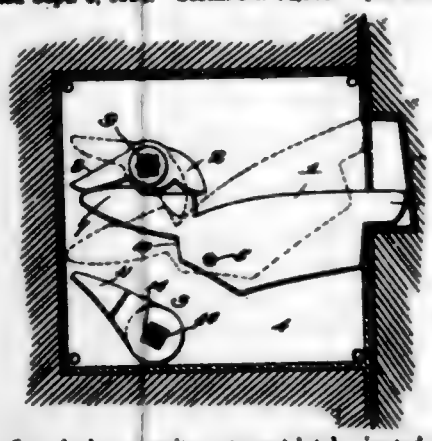

Claim.—In a lock, a gravity-actuated latch pivoted intermediate of its ends for rocking movement, and provided at one end with an enlarged counterweight terminating in a bolt and at its other end with an arm or projection provided on its upper side with a curved bearing-surface terminating in a square shoulder, and on its under side with a curved bearing-surface also terminating in a square shoulder disposed back of the shoulder of the upper surface, a two-arm latch-lifter having cam projections coacting with the curved upper surface and with the square shoulder of the latch whereby to rock the same in either direction, and a single

locking-tumbler to engage with the square shoulder of the said arm or projection, the tumbler being provided with spindles which project through the lock-casing, each of the spindles being formed with means to be engaged by a key, substantially as and for the purpose specified.

705,888. APPARATUS FOR REMOVING ROLLS OF MATERIAL FROM PAPER-MACHINES. MARK A. CRAFT, Lincoln, Me., assignor of one-half to Nathaniel M. Jones, Lincoln, Me. Filed Nov. 23, 1901. Serial No. 84,060. (No model.)

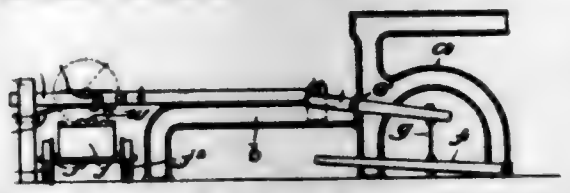

Claim.—1. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, and means for raising the mandrel from its bearings to permit the transference of the mandrel to the tracks, the said tracks being separated by a space adapted to receive a roll of paper wound upon the mandrel.

2. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, and levers fulcrumed near said bearings and extending under the end portions of the mandrel when the latter is supported by said bearings, said levers being movable to raise the mandrel from the bearings and permit its transference to said tracks.

3. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, levers fulcrumed near said bearings and extending under the end portions of the mandrel when the latter is supported by said bearings, and means for moving said levers to raise the mandrel from the bearings and permit its transference to the tracks.

4. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, primary levers fulcrumed near said bearings and having shorter arms extending under the end portions of the mandrel, and secondary levers fulcrumed below said primary levers and connected with the longer arms thereof.

5. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of a mandrel and a roll wound thereon, a locking device at the end of one of said tracks adapted to engage one of the end portions of the mandrel, and means for removing said roll endwise from the mandrel.

6. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, and a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel.

7. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, means for locking a mandrel contained in a roll supported by said carriage, and means for moving the carriage endwise to withdraw the roll from the locked mandrel.

8. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, means for locking a mandrel contained in a roll supported by the carriage, and power mechanism for moving the carriage and roll away from the locked mandrel, said mechanism comprising a power-driven shaft, normally inoperative connections between said shaft and the carriage, and means for making said connections operative to move the carriage.

9. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, means for locking a mandrel contained in a roll supported by the carriage, and power mechanism for moving the carriage and roll away from the locked mandrel, said mechanism comprising a power-driven shaft having a friction member, a winding-drum having a complemental friction member, means for engaging and separating said friction members, a rope engaged with said drum and with the carriage, and suitable guiding means for said rope.

10. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of a mandrel and a roll wound thereon, a locking device at the end of one of said tracks adapted to engage one of the end portions of the mandrel, and means for removing said roll endwise from the mandrel, said locking device having provisions for automatically conforming to the height of the mandrel, and means for moving the carriage to withdraw the roll from the engaged mandrel.

11. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, an extension of one of said tracks, said extension having a recess formed to engage a shoulder on one of the end portions of the mandrel, and means for moving the carriage to withdraw the roll from the engaged mandrel.

12. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, a hinged extension of one of said tracks, said extension having a recess formed to engage a shoulder on one of the end portions of the mandrel, means for yieldingly supporting said hinged extension to enable it to conform automatically to the height of the mandrel, and means for moving the carriage to withdraw the roll from the engaged mandrel.

705,889. FURNITURE FOR FORMING PAPER-BOX BLANKS. JOSEPH T. CRAW, Jersey City, N. J., and FREDERICK SCHLEY, Brooklyn, N. Y. Filed Jan. 17, 1902. Serial No. 90,143. (No model.)

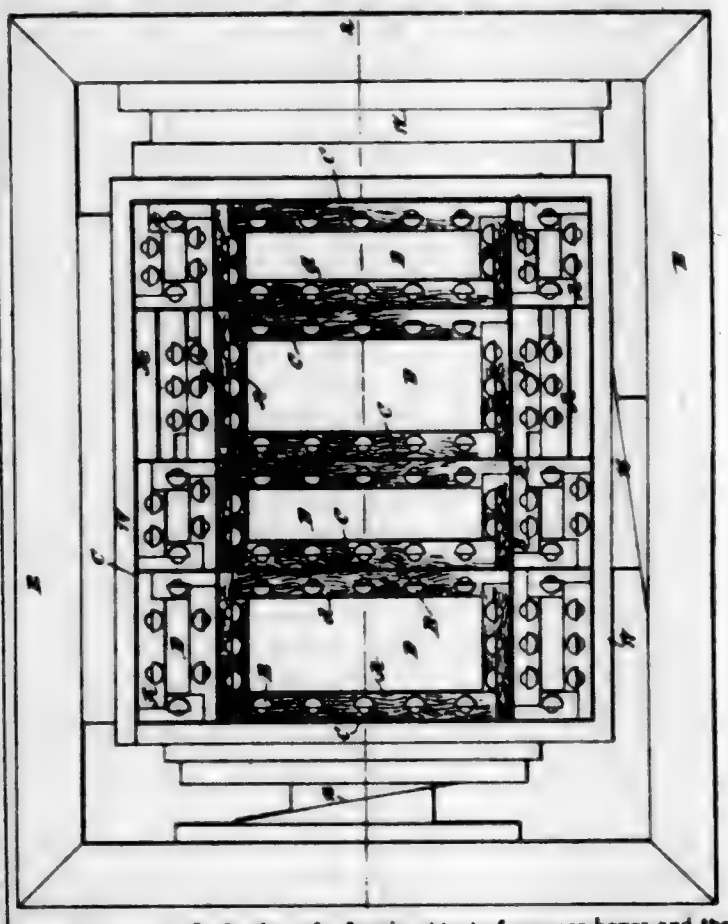

Claim.—1. In furniture for forming blanks for paper boxes and the like, a form, comprising four rectangular wooden pieces, each apertured and having one end straight and its other end recessed on its inner face, metal bushings in the apertures of the pieces, cork releasing devices having tapering heads and fitting in the apertures of the pieces, and a score rule or knife secured to the outer face of each piece with one end flush with the straight end of the piece, and its other end projecting beyond the recessed end of said piece, the pieces being arranged with the straight end of one piece entering the recess of the adjacent piece, whereby the pieces are prevented from splitting or warping and the rules or knives will be brought together at the corners forming well-defined angular interlocking corners, as set forth.

2. In furniture for forming blanks for paper boxes and the like, a

form, comprising four rectangular pieces each apertured and having one end straight and its other end recessed on its inner face, cork releasing devices having tapering heads and fitting in the apertures of the pieces, and a score rule or knife secured to the outer face of each piece with one end flush with the straight end of the piece and its other end projecting beyond the recessed end of said piece, the pieces being arranged with the straight end of one piece entering the recess of the adjacent piece, as set forth.

3. In furniture for forming blanks for paper boxes and the like, a form, comprising four rectangular pieces, each provided with apertures, cork releasing devices having tapering heads and fitting in the apertures of the pieces, and a score rule or knife secured to the outer face of each piece with one end flush with one end of the piece and its other end projecting beyond the other end of said piece, as set forth.

4. In furniture for forming blanks for paper boxes and the like, a form, comprising four rectangular pieces, each provided with apertures, yielding releasing devices in the apertures of the pieces, and a score rule or knife adjustably secured to the outer face of each piece, one end of the rule or knife being flush with one end of the piece and its other end projecting beyond the other end of said piece, as set forth.

5. Furniture for forming blanks for paper boxes and the like, comprising a frame, and a plurality of rectangular forms clamped in the frame, each form comprising rectangular pieces each apertured and having one end straight and its other end recessed on its inner face, cork releasing devices having tapering heads and fitting in the apertures of the pieces, and score rules or knives at the sides of the pieces, the rules or knives, each having one end flush with the straight end of the piece and its other end projecting beyond the recessed end of said piece, as set forth.

6. In furniture for forming blanks for paper boxes and the like, the combination with a form having score rules or knives and provided with apertures, of cork releasing devices in the apertures of the form, said releasing devices being semicircular in cross-section and having tapering heads, as set forth.

705,890. FRICTIONAL GEARING. WILLIAM D. DAILEY, Parkersburg, W. Va. Filed Mar. 22, 1902. Serial No. 99,434. (No model.)

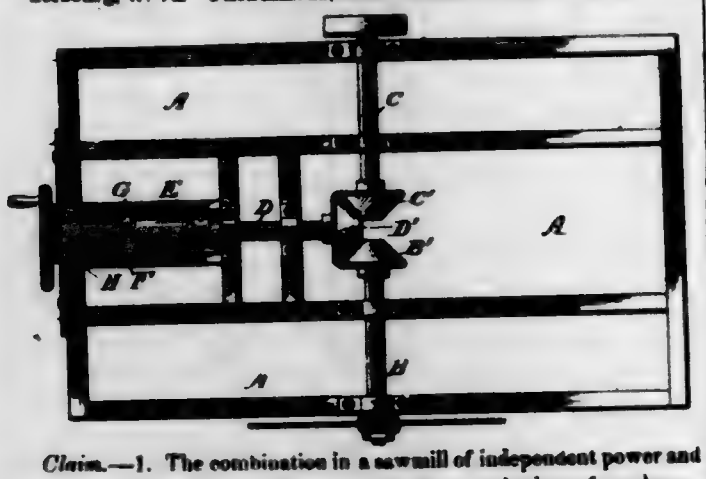

Claim.—1. The combination in a sawmill of independent power and driven shafts having frictional gears at the inner ends thereof as shown, an intermediate similar gear adapted to connect the power-shaft and driven shaft and means for adjusting the intermediate gear into and out of operative connection with the power-shaft and driven shaft, substantially as described.

2. In a mill of the character stated independent power and driven shafts having at their ends frictional gears as stated, a right-angle shaft, an intermediate similar gear supported by and rigid with the right-angle shaft, a fixed screw and means connecting it with the right-angle shaft, said means being adapted in operation to adjust the said right-angle shaft and its gear out of and into operative connection with the gearing on the power and driven shafts, substantially as described.

3. The combination with two independent shafts having gearing as specified, of a right-angle shaft and an intermediate gear supported at the end of said right-angle shaft as shown, the latter resting in bearings permitting endwise movement of the said shaft as specified, a sliding box having permanent but loose connection with one end of the right-angle shaft, a fixed screw adapted to enter a threaded opening in the said box, means for locking the screw against turning in either direction and a hand-wheel at the outer end of the screw all substantially as shown and for the purpose set forth.

705,891. CABLE-CLIP. EUGENE R. DAVIS, Cardington, Ohio. Filed June 2, 1902. Serial No. 110,991. (No model.)

Claim.—1. A cable-grip, consisting of a link, a strap and a lever-cam hook, substantially as specified.

2. The combination with a cable and strap of a link, and a lever-cam hook, substantially as specified.

3. The combination with a spring-link, of a lever-cam hook, and a strap forming a cable-grip, substantially as specified.

4. The combination with a link, a strap and a lever-cam hook, having cam heads, connected by a bearing-bar, and adapted to engage said link, and lock the same upon the strap end, substantially as specified.

705,892. PESSARY. DAYTE B. DE WALTOFF, Brooklyn, N. Y. Filed Jan. 5, 1901. Serial No. 42,305. (No model.)

Claim.—1. A surgical appliance, comprising a rigid, central cup-shaped body portion surrounded by a rigid, closed, hollow rim of substantially circular cross-section, joining the body in an easy curve on one face and at an obtuse angle on the opposite face, and of such cross-section as to afford a broad circumferential bearing-surface.

2. A surgical appliance, comprising a rigid, central cup-shaped body portion surrounded by a rigid, closed, hollow rim of substantially circular cross-section, joining the body portion in an easy curve, the central cup-shaped portion being perforated and the hollow rim being of such cross-section as to afford a broad bearing-surface, substantially as described.

705,893. CANE-SLING. JAMES M. DODGE, Philadelphia, Pa., assignor to the Link Belt Engineering Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Aug. 29, 1901. Serial No. 73,723. (No model.)

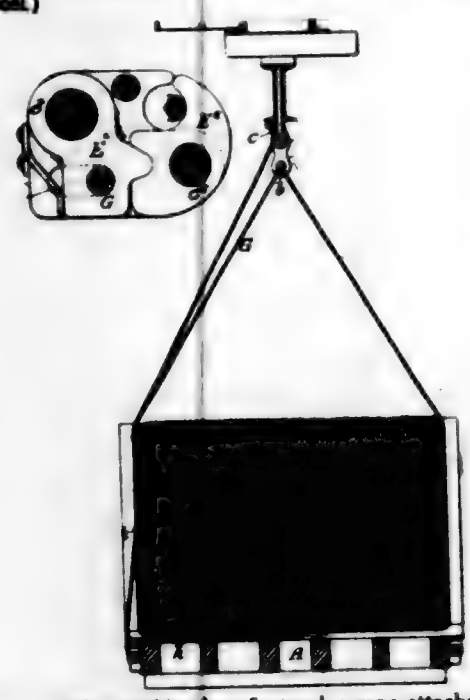

Claim.—1. The combination of a head, a rope attached to said head and having an eye, a shaft on said head, an arm on said shaft, a rope on said arm having a hook at its opposite end arranged to engage with the eye of the other rope, a trip-rope secured to said head and to the hook, said trip-rope being of such a length that it will be slack while the sling is carrying the load, and on the release of the shaft it will be drawn taut so as to trip the hook and release the load, substantially as described.

2. The combination of a head, a series of blocks carried by the head, a shaft, a series of arms on the shaft, a sling-rope attached to each block, and a second sling-rope attached to each arm of the shaft, hooks connecting the sling-ropes, trip-ropes hung from the blocks and connected to the hooks, and trip mechanism for the shaft, substantially as described.

705,894. BARBED-WIRE MACHINE. WILBUR EMERY, Ashland, Ky. Filed Mar. 22, 1902. Serial No. 99,518. (No model.)

Claim.—1. In a barbed-wire machine, the combination with means for intermittently feeding a pair of strand-wires, of means for simultaneously feeding a pair of barbing-wires from opposite directions and directing their ends between said strand-wires, and means for coiling the ex-

tremities of said barbing-wires around the strands and severing said coiled extremities during the intervening periods of rest; substantially as described.

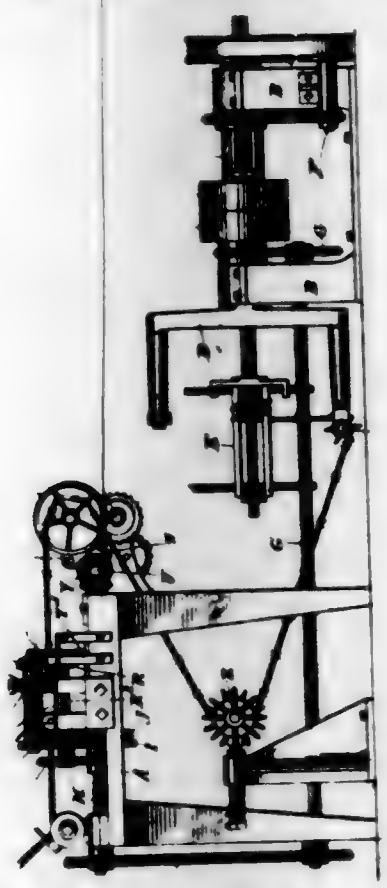

2. In a barbed-wire machine, the combination with means for intermittently feeding a strand-wire, and mechanism for successively advancing the extremity of a barbing-wire across the same as previously advanced portions thereof are severed, of a continuously-rotating member carrying a pivoted coiling-finger, means for moving and maintaining said finger at proper intervals in position to engage and wrap said extremity around the strand-wire, means for severing the barb, and means for periodically releasing said finger to disengage and escape the points of the barb; substantially as described.

3. In a barbed-wire machine, the combination with means for supporting a strand-wire, of a rotary coiling-head carrying a pivoted finger, and means for moving and maintaining said finger at intervals in position to engage and coil the barbs about the strand-wire and for periodically moving said finger outward to disengage the finished barbs; substantially as described.

4. In a barbed-wire machine, a rotary coiling-head having an axial bore for the strand wire or wires, a pivoted finger carried by said head having its point adapted to engage and coil the barbs around the strand or strands, and a cam engaging said finger maintaining it at intervals in position to coil the barbs and periodically releasing the same to escape the finished barbs; substantially as described.

5. In a barbed-wire machine, a rotary coiling-head having an axial opening for the strand wire or wires and longitudinally slotted, a coiling-finger pivoted in said slot having its forward point projecting beyond the face of the head for engaging the barbing-wire, and a cam in contact with the base of said finger maintaining its point inward for intervals to coil the barbs and periodically releasing the seam to disengage and escape the barbs; substantially as described.

6. In a barbed-wire machine, the combination with means for supporting a strand-wire, of a continuously-rotating coiling-head, a pivoted oscillatory finger carried thereby, means for maintaining said finger pressed inward at intervals to engage and coil the barbs around the strand, and means for periodically permitting said finger to swing outward by centrifugal force to disengage and escape the barbs; substantially as described.

7. In a barbed-wire machine, a coiling-head and an adjacent cam-wheel adapted to rotate at different speeds, said head carrying a pivoted oscillatory coiling-finger engaged by the cam and periodically moved inward to coil the barbing-wire around the strand and outward to escape the barbs; substantially as described.

8. In a barbed-wire machine, a coiling-head and an adjacent cam-wheel adapted to rotate continuously at different speeds, and a pivoted oscillatory coiling-finger carried by said head, said finger being periodically engaged by the cam and pressed inward to coil the barbing-wire around the strand and periodically released to disengage and escape the points of the barbs; substantially as described.

9. In a barbed-wire machine, the combination with means for intermittently feeding the strand wire or wires and advancing in opposite directions across the same the extremities of a pair of barbing-wires, of a rotary coiling-head having an axial strand-wire opening, oppositely-pivoted coiling-fingers carried thereby, and means for periodically moving said fingers inward to wrap said extremities about the strand wire or wires and outward to disengage and escape the points of the barbs; substantially as described.

10. In a barbed-wire machine, the combination with means for intermittently feeding the strand wire or wires and advancing in opposite directions across the same the extremities of a pair of barbing-wires, of a coiling-head and an adjacent cam through which the strands are axially threaded, said head and cam being continuously rotatable at different speeds, and a pair of oscillatory coiling-fingers pivoted in said head at opposite sides of its axis, said fingers being engaged by said cam and periodically moved inward to coil the barbing-wires around the strand or strands and outward to escape the barbs; substantially as described.

11. In a barbed-wire machine, the combination with means for intermittently feeding the strand wire or wires and advancing in opposite directions across the same the extremities of a pair of barbing-wires, of a coiling-head and an adjacent cam through which the strands are axially threaded, said head and cam being continuously rotatable at different speeds, and a pair of oscillatory coiling-fingers carried by said head, said fingers being periodically engaged by the cam and pressed inward to coil the barbing-wires around the strand or strands and periodically released and permitted to move outward by centrifugal force to escape the barbs; substantially as described.

12. In a barbed-wire machine, a rotatable coiling-head having an axial bore to receive the strand wire or wires, and a pair of oscillatory coiling-pins secured on removable pivots; substantially as and for the purpose described.

13. In a barbed-wire machine, a guide for the strand wire or wires, an inner rotatable sleeve inclosing the same carrying a coiling-head through which the strand wire or wires are threaded, an outer sleeve rotatable at a different speed from the other carrying an annular cam in proximity to the head, and a coiling-finger pivoted in said head, said finger being periodically engaged by the cam to maintain its forward extremity in engagement with the barbing-wire and periodically released to disengage the finished barb; substantially as described.

14. In a barbed-wire machine, the combination with means for intermittently feeding the strand wire or wires and advancing a pair of barbing-wires across the same from opposite sides of the machine, and mechanism for coiling the successively-advanced extremities of the barbing-wires around the strand wire or wires during the intervening intervals of rest, of the shearing mechanism comprising upper fixed knives and lower coöperating movable knives between which the barbing-wires are guided, a slide secured to said movable knives for operating them simultaneously, and a cam upon which said slide is supported adapted to reciprocate said slide; substantially as described.

15. In a barbed-wire machine, the combination with means for intermittently feeding the strand-wire, the barbing mechanism, and means for intermittently feeding a barbing-wire, of a clamping device distinct from said feeding mechanism adapted to positively grip and hold the barbing-wire against movement in either forward or backward direction during the coiling operation; substantially as described.

16. In a barbed-wire machine, the combination with strand-wire feeding and barbing mechanism, and means for intermittently feeding the barbing-wire, of means distinct from but actuated by the devices for stopping the barbing-wire feed for positively clamping said barbing-wire during the intervals of rest to prevent its displacement by the barbing mechanism or movement in either direction during such intervals; substantially as described.

17. In a barbed-wire machine, a pair of oppositely-rotating rollers between which the barbing-wire is gripped and fed into the machine, means for separating said rollers at intervals so as to feed the wire intermittently, and a clamping device actuated simultaneously with separation of the rollers for holding the barbing-wire in rigid position during the barbing operation; substantially as described.

18. In a barbed-wire machine, a pair of oppositely-rotating rollers between which the barbing-wire is gripped and fed into the machine, means for separating said rollers at intervals so as to feed the wire intermittently, and a clamping device actuated by separation of the rollers for holding the wire rigidly during the barbing operation; substantially as described.

19. In a barbed-wire machine, a pair of oppositely-rotating rollers between which a wire is gripped and fed into the machine, means for separating said rollers at intervals to feed the wire intermittently, gripping members between which the wire is guided, and a suitable connection between one of said members and one of said rollers whereby when the rollers are separated said members are caused to grip and hold the wire; substantially as described.

20. In a barbed-wire machine, a pair of oppositely-rotating rollers between which a wire is gripped and fed into the machine, one of said rollers having a segmental peripheral shoulder for separating the rollers at intervals and thus feeding the wire intermittently, gripping members between which the wire is guided, and suitable connections between said members and rollers whereby when the latter are separated said members are caused to grip the wire; substantially as described.

21. In a barbed-wire machine, a pair of oppositely-rotating rollers which grip and feed a wire into the machine, means for separating said rollers at intervals to feed the wire intermittently, a strap passing over one of said rollers having its ends spring-actuated to force the rollers together, and gripping members between which the wire is guided, one of which is connected with said strap so as to be forced toward the other to grip the wire when the rollers are separated; substantially as described.

22. In a barbed-wire machine, a pair of oppositely-rotating wire-feeding rollers, means for separating them at intervals to feed the wire intermittently, gripping members between which the wire is guided, and suitable connections between said rollers and members whereby when the former are separated the latter are forced together to grip and hold the wire, substantially as described.

23. In a barbed-wire machine, a pair of oppositely-rotating wire-feeding rollers, one of which is fixed and the other adapted to be separated therefrom, means for separating the latter at intervals to feed the wire intermittently, and fixed and movable clamping members between which the wire is guided, the movable member being connected with the movable roller so as to move toward the fixed member when the rollers are separated and clamp the wire, substantially as described.

705,895. GATE. WILLIAM FULLER, Sowerville, Ind. Filed Nov 25, 1901. Serial No. 83,698. (No model.)

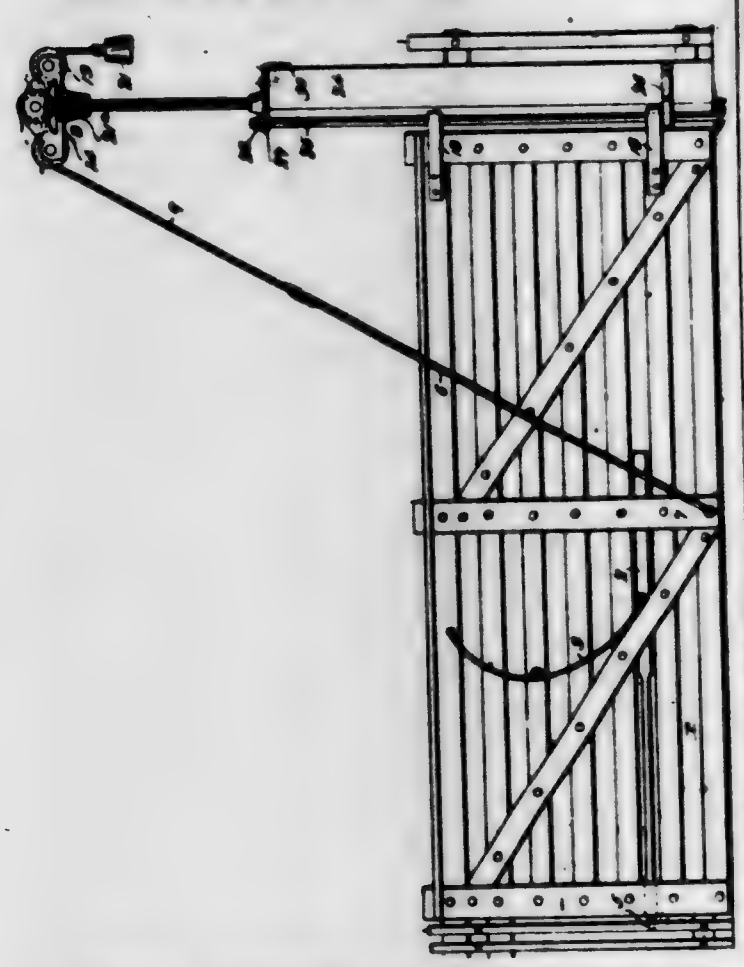

Claim.—1. The combination with a vertically-movable gate, and a post arranged adjacent thereto and supporting a head bearing friction devices, of a weight-bearing flexible connection associated with the gate and engaging the said devices in reversely-disposed loops the exective relation between the friction devices and the flexible connection being such that with a counterpoise of less weight than the gate, the latter may be held at any desired vertical adjustment.

2. The combination with a vertically-adjustable gate, and a post arranged adjacent thereto and supporting a horizontally-movable head bearing a plurality of rotatable friction devices, of a weight-bearing flexible connection associated with the gate and engaging by reversely-disposed loops with the said devices.

3. The combination with a gate, and a post arranged adjacent thereto and supporting a horizontally-movable head bearing a plurality of rotatable friction devices, of a bail pivotally connected to the gate, and a weight-bearing flexible connection associated with the bail and engaging by reversely-disposed loops with the said devices.

4. The combination with a gate, and a post arranged adjacent thereto and supporting a head bearing a plurality of sheaves, of a bail pivotally connected to the gate, and a weight-bearing flexible connection secured to the bail and passed in reversely-disposed loops around the sheaves.

5. The combination with a gate, and a post arranged adjacent thereto and supporting a swiveled head bearing a plurality of sheaves, of a bail pivotally connected to the lower portion of the gate near the center thereof, and a weight-bearing flexible connection secured to the bail and passed in reversely-disposed loops around the sheaves.

6. The combination with a gate, of a post, a head carried by the upper portion thereof and adapted for movement in a horizontal plane about a vertical axis, a plurality of sheaves carried by the head, a pivoted bail carried by the gate, and a weight-bearing flexible connection secured to the bail and passed in reversely-disposed loops around the sheaves.

7. The combination with a post, of a cap-plate supporting an upright, a head carried by the upper portion of the upright and movable thereon in a horizontal plane, said head bearing a plurality of rotatable friction devices, a gate-support disposed in parallel relation to the post and rigidly secured to the cap-plate, a gate mounted for sliding movement on the said support, a pivoted bail carried by the gate, and a weight-bearing flexible connection secured to the bail and passed in reversely-disposed loops around the friction devices.

705,896. GUN-CLEANER. GEORGE H. GARRISON, Bucoda, Wash. Filed Dec. 28, 1901. Serial No. 87,584. (No model.)

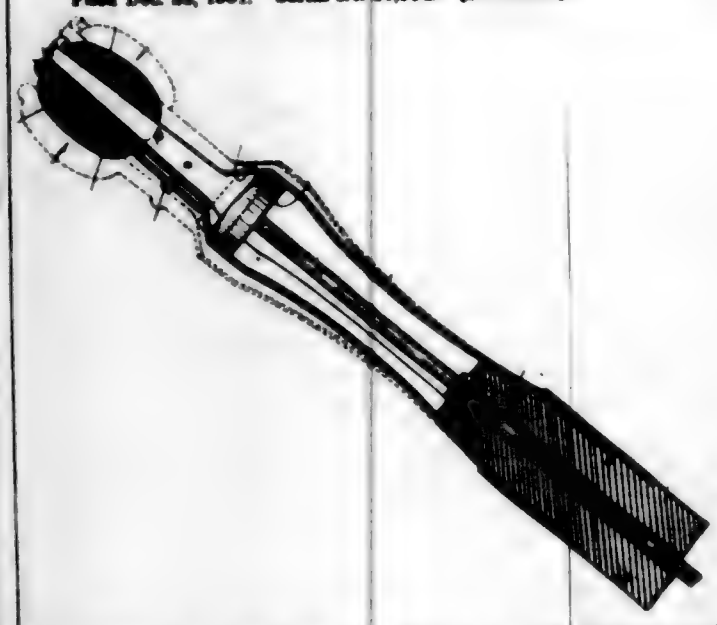

Claim.—1. A gun-cleaner comprising a rod, spring-fingers on said rod, means for forcing the spring-fingers outward, pad-sections consisting of layers of material pressed together, a holder for each section, consisting of a plate having a tongue portion formed in the plate for engaging with one edge of the material and a reduced tongue portion at the end for engaging at the opposite edge of the material, and means for securing the holding-plate to its spring-finger, substantially as specified.

2. A gun-cleaner comprising a rod, spring-fingers on the end of said rod, the said spring-fingers having hook ends, pad-sections consisting of layers of wire-cloth, and a holder for each section, consisting of a plate having tongue members for engaging opposite edges of the material, the end of said plate being adapted to engage with the hook of the spring-finger, and a screw passing through the shank of the plate and engaging with the finger, substantially as specified.

705,897. PADDLE-WHEEL. JOHN J. GRAHAM, Imperial, Pa. Filed Mar. 15, 1902. Serial No. 98,333. (No model.)

Claim.—1. The combination in a paddle-wheel substantially as described, of the shaft, the arms provided at their outer ends with the bearing-plates, the adjusting-wheels arranged to turn freely on the shaft, the paddle-blades, the triangular rocking blocks secured at their bases to the paddle-blades and provided in their apices with sockets or mortises, bands passed around said blocks and lying in the base of the said sockets and extending beyond the inner ends of the blocks, the links connecting such extensions of the bands with the adjusting-wheels, the clips passed beneath the bands at the base of the sockets in the rocking blocks and provided with perforated ears, and the clasps embracing the arms and bearing-plates and having lugs pivotally connected with the lugs of the clips, all substantially as and for the purpose set forth.

2. The combination in a paddle-wheel with the arms and the blades having a rocking connection therewith, of the swinging connecting-links jointed at one end to the paddle-blades, and the keeper-bails secured on the arms and engaged by the other ends of the swinging connecting-links, substantially as set forth.

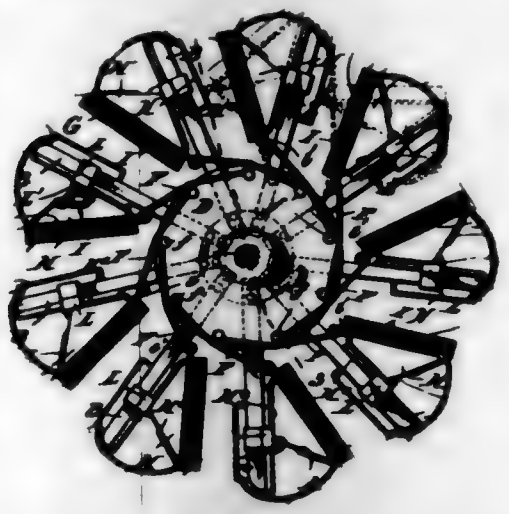

3. The combination with the arms and the paddle-blades, of the rocking blocks having their broad sides secured to the paddle-blades and pivoted at their apices in connection with their respective arms and having their faces adjacent to their apices arranged to abut the arms in the different adjustments of the blades, and connecting devices whereby the adjustment of one blade will effect a corresponding adjustment of the other blades, substantially as set forth.

4. The combination with the paddle-blades and the rocking blocks, made triangular and provided in their apices with sockets or mortises, straps passed around the said blocks and lying in the base of said mortises, the clips secured by said straps within the base of the mortises, the arms and the clasps embracing said arms and pivoted to the clips, substantially as set forth.

5. The combination with the arms, and the bearing-plates thereon, of the paddle-blades, the rocking blocks made triangular and provided in their apices with sockets or mortises, and pivotal connections between the socket-blocks and the arms and arranged in the sockets or mortises of the rocking blocks, substantially as set forth.

705,898. TOY HORN. FRANKLIN J. GUSTINE, New Orleans, La. Filed Dec. 20, 1901. Serial No. 86,696. (No model.)

Claim.—1. In a device of the character described, the combination, with the body of the horn, of a diaphragm, a movable mouthpiece and a screen or netting attached to said body and adapted to press said diaphragm with spring-pressure against said mouthpiece.

2. In a device of the character described, the combination, with the body of the horn, of a diaphragm, a screen or netting attached to said body behind said diaphragm and bent on itself to form a spring and a mouthpiece in proximity to said screen.

3. In a device of the character described, the combination with the body of the horn, of a screen or netting fastened at one end to said body and bent upon itself to form a spring, a mouthpiece and a diaphragm yieldably held against the end of said mouthpiece by said screen.

4. In a device of the character described, the combination with the body of the horn, of a screen or netting fastened at one end to said body and bent on itself to form a spring, a movable mouthpiece, means to limit the amount of its movement and a diaphragm held by said screen against said mouthpiece.

5. In a device of the character described, the combination with the body of the horn, of a screen or netting attached thereto, a movable hollow mouthpiece cut away at one end and a diaphragm yieldingly held by said screen against one end of said mouthpiece.

6. In a device of the character described, the combination with the body of the horn, bell-shaped at one end and provided with an open-ended perforated enlargement at the other end, a cap for closing the open end of said enlargement, a mouthpiece movably mounted in said cap and provided with means for limiting the extent of the movement of said mouthpiece, said mouthpiece being hollow and cut away at one end and enlarged at the other end, a screen or netting attached at one end to said body and bent upon itself to form a spring and a diaphragm yieldably held between said screen and one end of said mouthpiece.

705,899. FAN ATTACHMENT FOR ROCKING-CHAIRS. EDGAR O. M. HAMBRACKER, Altoona, Pa. Filed Nov. 16, 1901. Serial No. 82,531. (No model.)

Claim.—1. The combination in a fan attachment for chairs, of supporting and holding means between the fan and its driving devices, the said means involving a telescoping rod having a flexible section as shown, fan-holding means telescoping as stated and adapted to be revolved around the fan-support, a motor employing a spiral spring having one end fixedly connected with the fan-support and the other end adapted to be wound through clutches connecting it with driving devices, and means such as a rigid rod extending from the floor with yielding bearings thereon substantially as described.

2. The combination in a fan attachment for chairs of adjustable supporting and holding means substantially as shown, the supporting means adapted to be rotated, as stated, and the holding means adapted to be revolved around the supporting means as described, a motor employing a spiral spring, the latter connecting the driving devices and the fan-supporting devices as specified, means such as clutch devices between the lower end of the spring and its driving devices, one of said clutch devices being adapted to wind the lower end of the spring and another to hold it against unwinding, while the upper end of the spring rigid with the fan-supporting devices is permitted continuous rotary motion substantially as described.

3. The combination in a fan attachment for chairs of a motor employing a spiral spring, means such as clutches, one for winding the spring and the other for holding it against unwinding, and a pivoted locking device adapted to be adjusted into engagement with driving means holding it against operation substantially as described.

4. The combination in a fan attachment for chairs, of a motor employing a spiral spring, means for winding the spring and holding it against unwinding substantially as described, a tubular case inclosing the spring and having hinged and pivotal connection at its lower end with the chair, said hinged and pivotal connection of the case adapting it to be adjusted from an operative or vertical position to an inclined or folded position as set forth.

5. A fan-motor employing a spiral spring, one end of which is connected with fan-supporting devices, and the other end connected with winding mechanism, consisting of a spiral rod having means for rotating it, and a clutch device adapted for intermittent connection of the spring and spiral rod as set forth.

6. The combination in a fan attachment, of a motor employing a clutch device and spiral spring as stated, a tubular inclosing case as shown, adjusting means connecting the case at its lower end with the chair, and means for securing the case in an operative or vertical position substantially as described.

7. The combination in a fan attachment for chairs, of a motor employing a clutch device and spiral spring, a tubular inclosing case as shown, adjusting means connecting the lower end of the case and chair, and a rest device at the back of the chair for supporting the case when in an inoperative position as set forth.

8. The combination with a motor device employing a spiral spring and driving means as described, of upper and lower clutch devices between the driving means and spring, the upper clutch device consisting of two members in which one member is rigid with the spring and having winding motion thereon while the other member is fixed and adapted to hold the spring as wound, and the lower clutch device consisting of separable members, one member rigid with the lower member of the upper clutch device and the other member rigid with and supported by peculiar driving means extending to the floor, the said driving means being adapted in operation to move the lower member of said lower clutch device into and out of engagement with its upper member, substantially as described, and for the purpose set forth.

9. In a fan device for chairs, the combination with a motor supported

and inclosed as shown, and motor-driving devices operated by a rocking motion of the chair substantially as described, of a rotatable tube projecting into the motor-case, a fan-supporting rod telescoping into the said tube, and means on the tube for forming a rigid connection with the fan-supporting rod substantially as described.

10. In combination with a motor mechanism substantially as described, a telescoping fan-carrying rod having at its upper end a flexible section permitting of deflection of said upper end, and a holding-rod having a hinged and swiveled connection with said telescoping rod above the flexible section thereof as set forth.

11. In a fan-motor, a casing having a hinge-support at its lower end and a detachable support at its upper end, the said casing provided with end castings closing the same, and with an intermediate casting which, with the end castings, forms a support for the motor mechanism as set forth.

12. In a fan attachment, the combination of a fan, a carrying-rod, a supporting-rod having a hinged and swiveled connection with the fan-carrying rod, a spiral rod, a power-spring, clutch mechanism for connecting said spring and spiral rod, and means for operating the latter as set forth.

13. A fan attachment for chairs, consisting of a casing supported at the top and lower ends as set forth, a motor inclosed by said casing, said motor consisting of a spiral rod, clutch mechanism connecting the latter with a power-spring, means for operating the spiral rod, and means such as a rod adapted to be adjusted for holding the fan-rod to an adjusted position as set forth.

14. In a fan-motor substantially as described, the combination with the driving and driven devices, of a bracket, consisting of a casting E having at its upper end a disk *q* adapted to support the power-spring and clutch mechanism, and which, with a lower casting, forms a support for a driving spiral, its clutch member and a sliding block, the latter adapted to be moved up and down by mechanism substantially as described.

705,400. BARREL. OTTO P. HALLOCK, Mattituck, N. Y. Filed Aug. 28, 1901. Serial No. 73,518. (No model.)

Claim.—As an improved article of manufacture, the barrel herein described composed of a series of flat staves having straight side edges, and tapered from the top down, the bottom having a flat edge surrounded by the staves, each of which is secured to its edge by a single nail, and a series of flexible connections for the staves, consisting of two strands of wire which are arranged as shown and crossed between adjacent staves, in the manner shown.

705,401. SWINGING GATE. SEPTIMA HAMILTON, Endicott, Wash. Filed Apr. 18, 1902. Serial No. 103,509. (No model.)

Claim.—1. In a swinging gate, the combination with the gate members having latches and keepers, and provided at their upper ends with the inwardly-extending heads, of a centrally-fulcrumed lever having suitable means for operating the same, links pivoted to the lever and having sliding engagement with the heads of the gate members, and connections between the individual links and the latches on the separate gate members, whereby the sliding movement of the links will be first communicated to the latches in order to raise the latter, and the links will thereafter operate the members of the gate.

2. In a swinging gate, the combination with hinge-posts united by a cross-bar, and gate members hinged to said posts and provided with latches and keepers, of the arms or heads attached to the members of the gate, a double-armed lever pivoted centrally on said cross-bar of the hinge-posts, slotted links pivoted to the end portions of the lever and extending loosely across the heads of the gate members, studs fastened to the heads of the gate members and fitting loosely in the slots of the links, wires or cables attached to the latches and having branch connections with the links, and operating wires or cables attached to the double-armed lever.

705,401

705,402. MOTOR-CAR. WILLIAM C. HOLLOWAY, Westminster, England. Filed Apr. 18, 1902. Serial No. 103,606. (No model.)

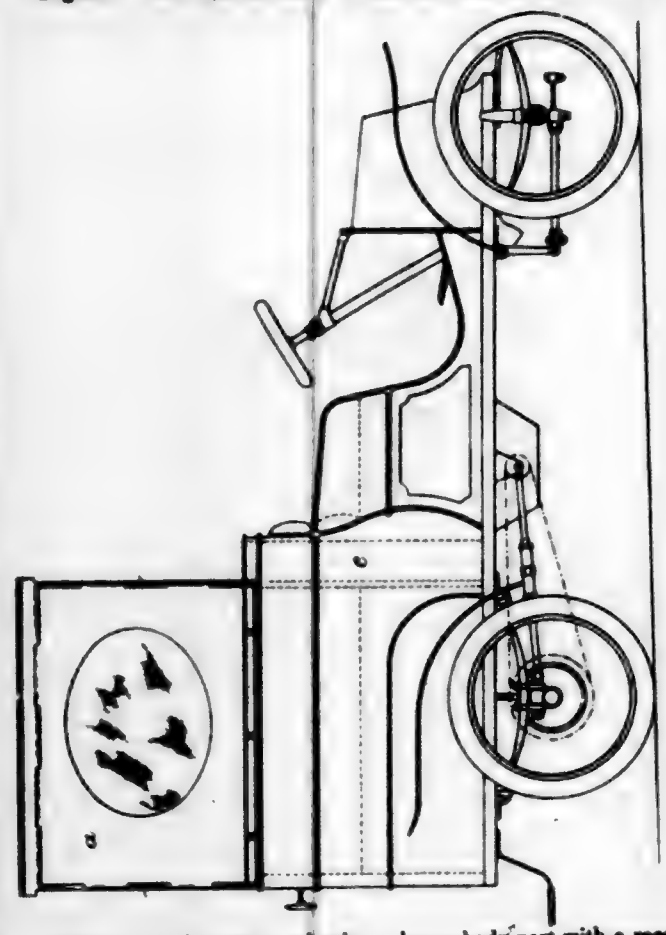

Claim.—1. A motor-car having a lower body part with a recess or recesses and an upper part which is composed of portions adapted to be folded flat upon each other, and as thus folded to be lowered into such recess or recesses, substantially as described.

2. A motor-car having a lower body part with a recess or recesses and an upper part consisting of roof and wall portions connected together and adapted to be folded flat upon each other and as thus folded to be lowered in such recess or recesses, substantially as described.

3. A motor-car having a lower body part with a recess or recesses and an upper part composed of a roof portion and wall portions provided with windows, said portions being adapted to be folded flat upon each other and as thus folded to be lowered into such recess or recesses, substantially as described.

705,408. SEPARABLE SQUARE. CHARLES L. F. HOOKER and MARTIN C. HOOKER, Boca, Cal. Filed Oct. 9, 1901. Serial No. 78,068. (No model.)

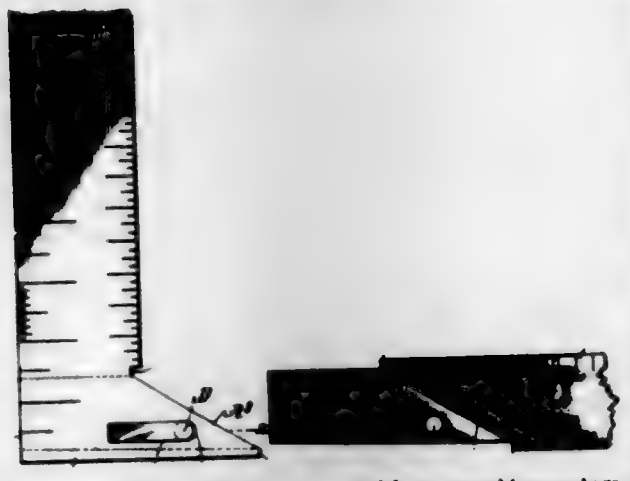

Claim.—1. A separable square, comprising separable members, of which one is formed with a socket and the other with a tenon for engaging the socket, the members having registering apertures formed in the socket and tenon and a locking device comprising a spring secured in a recess on the outer face of the socket, and a lug on the free end of the spring adapted to pass into the registering apertures, the said lug having a beveled portion for the purpose set forth.

2. A separable square having separable members, of which one is formed with a socket having an extension formed with a beveled top, and the other member having a tenon for engaging the socket, the inner end of the tenon member being beveled to be seated on the beveled top of the extension, the said tenon member having a shoulder for engaging a recess in the inner end of the socket member, and a shoulder adapted to abut against the end of the extension of the socket member, and a locking device for locking the tenon in position in the socket, as set forth.

3. A separable square having separable members, of which one is formed with a socket having an extension formed with a beveled top, and the other member having a tenon for engaging the socket, the inner end of the tenon member being beveled to be seated on the beveled top of the extension, the said members having registering apertures formed in the socket and the tenon and a flat spring secured at one end in a recess on the outer face of the socket member, and provided at its free end with a lug adapted to engage said registering apertures, the said lug being beveled at its forward end, as set forth.

705,404. MILK-CAN. CHARLES M. HOPKINS, Union City, and EDWARD H. DORR, Spartanburg, Pa. Filed May 24, 1901. Serial No. 61,749. (No model.)

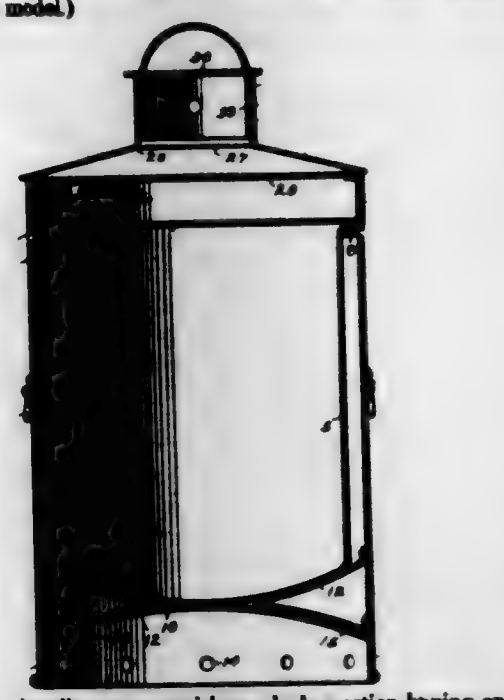

Claim.—1. A milk-can comprising a body portion having an outwardly-extending flange at its upper end, a casing inclosing the body portion and extending thereabove, an internal flange upon the casing upon which the flange of the body rests, and a closure for the body engaged with the casing.

2. A milk-can comprising a body portion having an outwardly-extending flange at its upper end, a casing inclosing the body portion and extending thereabove, and separated from the body at its sides to form an interspace, said casing having an inwardly-directed projection upon which the flange of the body rests, and a closure for the body engaged with the upper end of the casing.

3. A milk-can comprising a body portion, a casing for the body portion separated therefrom by an interspace and having an internal flange engaged with a flange on the body, said body having a downwardly-extending convex bottom below which the casing extends, and a dished disk secured at its center to the bottom of the body and having its periphery secured to the casing below the bottom of the body.

4. A milk-can comprising a body portion having a downwardly-projecting convex bottom and an annular flange at its upper end, a casing extending above and below the body portion and having an interior flange upon which the flange of the body is secured, a dished disk secured at its central portion against the under face of the bottom of the body and having its periphery secured to the inner face of the casing below its center, the casing having perforations below the disk, and the disk having perforations, and a closure for the body.

5. A milk-can comprising a body portion having a downwardly-projecting convex bottom, a casing for the body extending below the bottom of the body and secured to the upper portion of the body, a dished disk secured at its central portion against the under face of the bottom of the body and having its periphery secured to the inner face of the casing below the center of the disk, and V-shaped plates disposed between the disk and the bottom of the body and secured at their ends to the casing.

6. A milk-can comprising a body portion and a closure, said closure including a top having a flange for engagement with the body and a central screen-covered opening, lugs upon the interior of the flange, a notched disk removably disposed upon the lugs and having a central screen-covered opening, a flange encircling the opening in the top and having perforations, and a cap-plate for the flange having a perforated flange for engagement with the flange surrounding the opening of the top, said perforations of the flanges being adapted to aline.

7. A milk-can having a casing and a body or receptacle provided with a downwardly-convexed bottom located above the plane of the lower side of the casing to provide a downwardly-extending wall portion, and an upwardly-convexed bracing-disk arranged within said downwardly projecting wall portion, in contact at its center with the center of the bottom of the receptacle and secured at its periphery to the wall portion, the casing being spaced from the receptacle to permit circulation of air between the parts, and the casing and disk being provided with perforations, substantially as and for the purpose specified.

705,405. WINDOW-OPENER. JOHN HORSFIELD, Chicago, Ill. Filed Apr. 3, 1902. Serial No. 101,337. (No model.)

Claim.—1. A frame a bracket on said frame, a cross-arm pivoted to said bracket, a sash pivoted in said frame, a rod secured to said sash coacting with said cross-arm, a spring to be given a tension by the movement of said rod in the opening of the sash, and a catch coacting with said rod to lock the sash.

2. In combination with a frame and pivot-window, a bracket on said frame, a cross-arm pivoted to said bracket, a rod slidably engaging lugs or bearings on said arm and secured to said window-sash by a ball-and-socket hinge, a spring on said rod engaging one of the bearings on said arm and an adjustable pin or stop on said rod, a spring-pressed catch in one of said lugs adapted to engage notches on said rod, and a bell-crank on said rod.

3. In combination, a frame, a pivoted sash in said frame, a bracket on said frame, a cross-arm, provided at its ends with bearings, pivoted to

said bracket, a rod, secured to said sash by a universal-joint hinge, adapted to engage with said bearings on the cross-arm, a spring engaging with said rod and said cross-arm, a fusible metal catch or pin adapted to hold said rod in adjustable positions, arms on said rod and cords secured to said arms whereby said rod may be turned to operate the catch and drawn down to open the window.

705,406. WHEELBARROW. WILL A. HOUSE and WILLIAM F. HOUSER, Covington, Ky. Filed Nov. 18, 1901. Serial No. 82,858. (No model.)

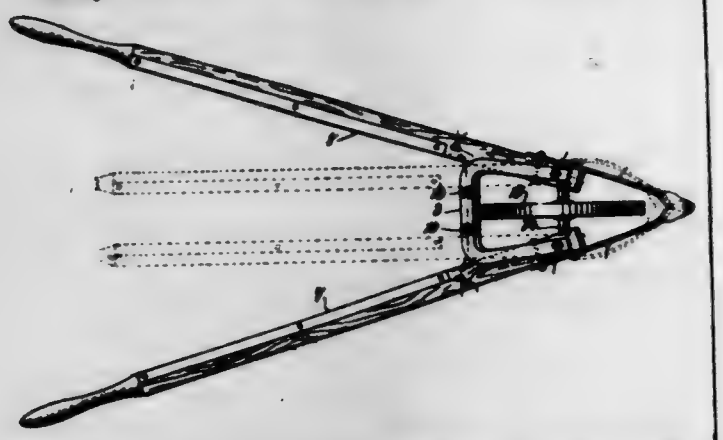

Claim.—1. A wheelbarrow, comprising handles, a yoke-plate, pivot-bolts passing through said yoke-plate and through the handles, eyes formed on the ends of said bolts, a wheel having its axle-bearings in said eyes, and a spring-yielding connection between the forward ends of the handles, substantially as specified.

2. A wheelbarrow, comprising handles, a yoke-plate, pivot-bolts passing through said yoke-plate and through the handles, eyes formed on the ends of said bolts, a wheel having its axle-bearings in said eyes, spring-plates extended forward from the handles, and pivotal connections between said plates, substantially as specified.

3. A wheelbarrow, comprising handles, spring-yielding connections between the forward ends of the handles, yoke-plates engaging against the upper and lower sides thereof, said plates being bolted together, pivot-bolts passing through the handles and through said plates, eyes on said bolts, and a wheel having its axle-bearings in said eyes, substantially as specified.

4. A wheelbarrow, comprising handles, yoke-plates engaging against the upper and lower sides thereof at the forward ends, bolts passing through openings in the cross-bars of said yoke-plates, tubes or sleeves surrounding the bolts between the plates, pivot-bolts passing through said yoke-plates and through the handles, eyes on said pivot-bolts, a spring-yielding connection between the forward ends of the handles and a wheel having its axle-bearings in said eyes, substantially as specified.

5. A wheelbarrow comprising a wheel, handles supported by the wheel and arranged to move toward and from each other, and a spring connection between the forward ends of the handles for moving them in one direction, substantially as specified.

705,407. PNEUMATIC STACKER. EDWARD HUBER and JACOB W. MILLER, Marion, Ohio. Filed Apr. 12, 1902. Serial No. 102,630. (No model.)

Claim.—1. In a pneumatic stacker, telescoping tubes and a boxing on the slidable tube to cover the means for operating the movable tube, substantially as shown and described.

2. In a pneumatic stacker, a tube connected to a threshing-machine or other suitable machinery, a tube surrounding said tube and adapted for longitudinal adjustment thereon, means to actuate said adjustable tube, and a boxing on said movable tube to cover said actuating means, substantially as shown and described.

3. In a pneumatic stacker, a hood hinged to the delivery end thereof, and a coil-spring wrapped around the pintle of the hinge and having its free ends secured to the hood and delivery end respectively, substantially as shown and described.

4. In a pneumatic stacker, telescoping tubes, a boxing on the slidable tube to cover the means for operating the movable tube, a hood hinged to the delivery end of said movable tube, and means to normally hold said hood thrown back from the mouth of said delivery end, substantially as shown and described.

5. In a pneumatic stacker, a tube connected to a threshing-machine, a tube surrounding said tube and adapted for longitudinal adjustment thereon, means to actuate said adjustable tube, a boxing on said movable tube to cover said actuating means, a hood hinged to the delivery end of said outer tube, and a coil-spring wrapped around the pintle of the hinge and having its free ends secured to the hood and delivery end respectively, substantially as shown and described.

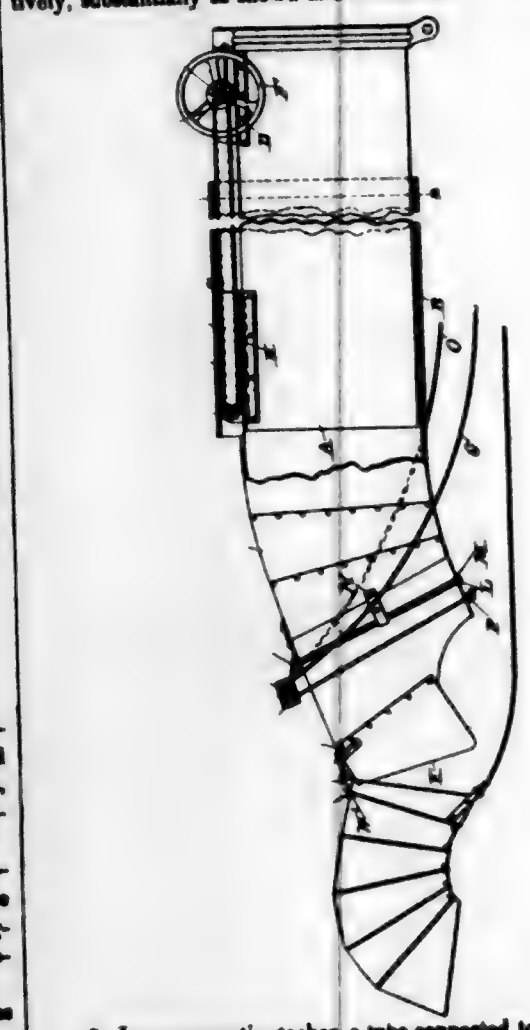

6. In a pneumatic stacker, a tube connected to a threshing-machine, a tube surrounding said tube and adapted for longitudinal adjustment thereon, brackets mounted at the ends of said stationary tube, a sprocket-wheel journaled in each bracket, an endless chain running around said sprocket-wheels, means to actuate said chain, a boxing on said movable tube to inclose said chain, a belt connecting a link in said chain with said boxing, the delivery end of said movable tube formed separate from said tube and adapted to swing thereon, a hood hinged to said delivery end, and a coil-spring wrapped around the pintle of the hinge and having its free ends secured to the hood and delivery end respectively, substantially as shown and described.

705,408. MAGAZINE-CAMERA. CHARLES R. HUTCHINS, JOHN A. ROBERTSON, and ALBERT MUTSCHLER, Rochester, N. Y., assignors to Rochester Optical and Camera Company, Rochester, N. Y., a Corporation of New York. Filed Apr. 4, 1902. Serial No. 101,393. (No model.)

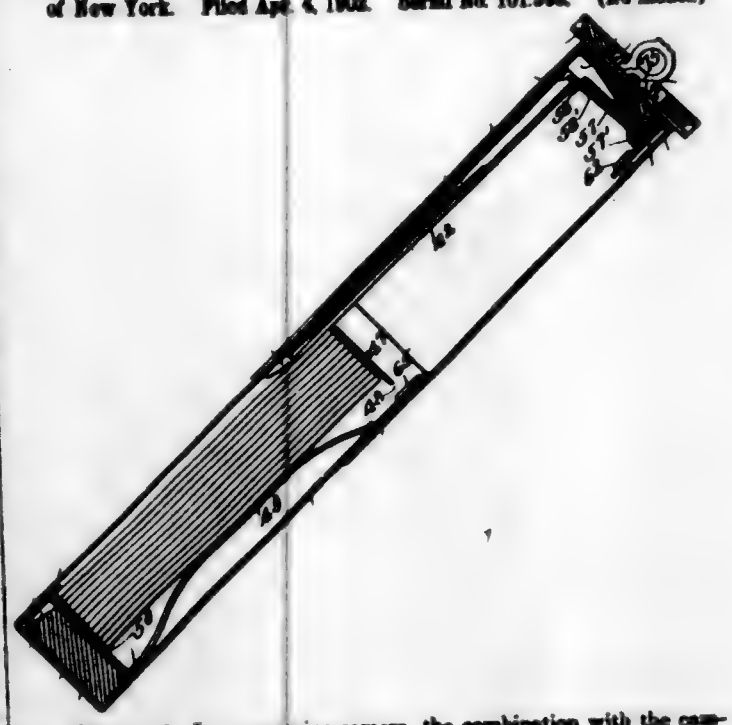

Claim.—1. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-

casing slidably arranged in said chamber and open at one end only, a stationary exposing-tray removably arranged in said chamber and within the magazine-casing, a plate-holder carrier slidably arranged in the exposing-tray and movable with the magazine-casing, and means for transferring a plate-holder from the front of the carrier to the rear of the exposing-tray when the magazine-casing and carrier are drawn out from the magazine-chamber, substantially as described.

2. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray removably arranged in said chamber and within the magazine-casing, a plate-holder carrier slidably arranged in the exposing-tray and movable with the magazine-casing, means for transferring a plate-holder from the front of the carrier to the rear of the exposing-tray when the magazine-casing and carrier are drawn out from the magazine-chamber, and means for introducing said plate-holder into the rear part of the plate holder carrier when the latter is moved back into the magazine-chamber, substantially as described.

3. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray removably arranged in said chamber and within the magazine-casing, a plate-holder carrier slidably arranged in the exposing-tray, means for detachably locking the carrier to the magazine-casing, and means for transferring a plate-holder from the front of the carrier to the rear of the exposing-tray when the magazine-casing and carrier are drawn out from the magazine-chamber, substantially as described.

4. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray removably arranged in said chamber and within the magazine-casing, a plate-holder carrier slidably arranged in the exposing-tray and movable with the magazine-casing, means for locking the exposing-tray in the magazine-chamber, and means for transferring a plate-holder from the front of the carrier to the rear of the exposing-tray when the magazine-casing and carrier are drawn out from the magazine-chamber, substantially as described.

5. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray removably arranged in said chamber and within the magazine-casing, a plate-holder carrier slidably arranged in the exposing-tray and movable with the magazine-casing, a removable cover detachably connected to the plate-holder carrier and slidably arranged in the front of the exposing-tray, and means for transferring a plate-holder from the front of the carrier to the rear of the exposing-tray when the magazine-casing and carrier are drawn out from the magazine-chamber, substantially as described.

6. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray removably arranged in said chamber and within the magazine-casing, a plate-holder carrier slidably arranged in the exposing-tray, means for locking said carrier to the magazine-casing, means for locking the exposing-tray in the magazine-chamber, a cover detachably connected to the plate-holder carrier and slidably arranged in the front of the exposing-tray, and means for transferring a plate-holder from the front of the carrier to the rear of the exposing-tray when the magazine-casing and carrier are drawn out from the magazine-chamber, substantially as described.

7. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray open at its front and at its outer end, a removable sliding cover normally closing the open front of said tray, said tray being removable from the magazine-chamber, a plate-holder carrier open at its front and slidably arranged in the exposing-tray, means for locking the carrier to the magazine-casing, means for locking the said cover to the carrier, means for retaining a plate-holder in the front of the exposing-tray when the magazine-casing and the carrier are drawn out, means for automatically releasing said plate-holder and moving it bodily to the rear of the exposing-tray when the carrier is withdrawn from the tray, and means for transferring said plate-holder to the rear of the carrier when the latter is returned to the tray, substantially as described.

8. In a camera the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray removably arranged in said chamber and within the magazine-casing, a plate-holder carrier slidably arranged in the exposing-tray and movable with the magazine-casing, means for transferring a plate-holder from the front of the carrier to the rear of the exposing-tray when the magazine-casing and carrier are drawn out, an indicator, and means carried by said magazine-casing for controlling the indicator, substantially as described.

9. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a magazine-casing slidably arranged in said chamber and open at its inner end only, a stationary exposing-tray open at its front and at its outer end, a removable sliding cover normally closing the open front of said tray, said tray being removable from the magazine-chamber, a plate-holder carrier open at its front and slidably arranged in the exposing-tray, means for locking the exposing-tray to the magazine-casing, means for locking the said cover to the carrier, means for retaining a plate-holder in the front of the exposing-tray until the magazine-casing and the carrier are drawn out, means for automatically releasing said plate-holder and moving it bodily to the rear of the exposing-tray when the carrier is drawn out from the tray, means for transferring said plate-holder to the rear of the carrier when the latter is returned to the tray, and means for preventing the entire withdrawal of the magazine-casing from the magazine-chamber, substantially as described.

10. In a magazine-camera, the combination with the camera-casing having a transverse magazine-chamber therein, of a stationary exposing-tray removably arranged in said chamber and comprising a casing open at its front and at one end, a plate-holder carrier comprising a casing having an open front, a cover normally closing said front and slidably arranged in the front of the exposing-tray, the said carrier being slidably arranged in the exposing-tray, means for drawing out said carrier from the tray, means for retaining a plate-holder in the front of the exposing-tray until the carrier is drawn out, means for shifting said plate-holder to the rear of the exposing-tray when said carrier is drawn out, and means for transferring said plate-holder to the rear of the carrier when the latter is returned to the tray, substantially as described.

11. In a magazine for cameras, the combination with an exposing-tray comprising a rectangular casing open at its front and one end, of a correspondingly-shaped plate-holder carrier slidably arranged in said tray and comprising a rectangular casing open at its front and provided at its inner end with an aperture for the passage therethrough of a plate-holder, a cover attached to the carrier and covering the front thereof, said carrier and cover being slidably arranged in the exposing-tray, means for retaining a plate-holder in the front of the exposing-tray until the carrier is drawn out, means for shifting said plate to the rear of the tray when the carrier is drawn out, and means for pushing the plate-holder into the rear of the carrier through said aperture when the carrier is returned to the exposing-tray, substantially as described.

12. In a magazine for cameras, the combination with an outer rectangular casing forming an exposing-tray and open at the front and one end, of a plate-holder carrier comprising a rectangular casing having a plate-holder aperture in its inner end, said carrier being slidably arranged in the exposing-tray, and means on the closed end of the exposing-tray for temporarily supporting the inner end of the foremost plate-holder while the plate-holder carrier is being withdrawn from the tray, substantially as described.

13. In a magazine for cameras, the combination with an outer rectangular casing forming an exposing-tray and open at the front and one end, of a plate-holder comprising a rectangular casing having a plate-holder aperture in its inner end, said carrier being slidably arranged in the exposing-tray and spring-fingers on the closed end of the exposing-tray arranged to project between the foremost plate-holder and the plate-holders in rear thereof as the carrier is withdrawn from the exposing-tray and hold said foremost plate-holder, substantially as described.

14. In a magazine for cameras, the combination with a rectangular outer casing forming an exposing-tray and open at the front and one end, of a plate-holder carrier comprising a rectangular casing having a plate-holder aperture in its inner end, said carrier being slidably arranged in the exposing-tray and spring-fingers on the closed end of the exposing-tray arranged to project between the foremost plate-holder and the plate-holders in rear thereof as the carrier is withdrawn from the exposing-tray, and means for automatically forcing said plate-holder out of engagement with said fingers when the carrier is fully drawn out of the exposing-tray, substantially as described.

15. In a magazine for cameras, the combination with a rectangular outer casing forming an exposing-tray and open at the front and one end, of a plate-holder carrier comprising a rectangular casing having a plate-holder aperture in its inner end, said carrier being slidably arranged in the exposing-tray, spring-fingers on the closed end of the exposing-tray arranged to project between the foremost plate-holder and the plate-holders in rear thereof as the carrier is withdrawn from the exposing-tray, and a spring for automatically forcing said plate-holder out of engagement with said fingers when the carrier is fully drawn out of the exposing-tray, substantially as described.

16. In a magazine for cameras, the combination with a rectangular

outer casing forming an exposing-tray and open at the front and one end, of a plate-holder carrier comprising a rectangular casing having a plate-holder aperture in its inner end, said carrier being slidably arranged in the exposing-tray, spring-fingers attached to the closed end of the exposing-tray and arranged to project between the foremost plate-holder and the plate-holders in rear thereof as the carrier is withdrawn from the exposing-tray and hold said foremost plate-holder, and springs arranged to force said plate-holder out of engagement with the lug when the carrier is drawn out of the exposing-tray, substantially as described.

17. In a magazine for cameras, the combination with a rectangular outer casing forming an exposing-tray and open at the front and one end, of a plate-holder carrier comprising a rectangular casing having a plate-holder apertured in its inner end, said carrier being slidably arranged in the exposing-tray, two spring-fingers on the closed end of the exposing-tray arranged to project between the foremost plate-holder and the plate-holders in rear thereof as the carrier is withdrawn from the exposing-tray, and springs attached to said closed end between said fingers and constructed to force said plate-holder out of engagement with the fingers when the carrier is drawn out of the exposing-tray, substantially as described.

18. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open at the front and at one end, of a plate-holder carrier comprising a casing having a plate-holder aperture in its inner end said carrier being slidably arranged in the exposing-tray, two spring-fingers on the closed end of the exposing-tray arranged to project between the foremost plate-holder and the plate-holders in rear thereof as the carrier is withdrawn from the exposing-tray, springs attached to said closed end and constructed to force the plate-holder out of engagement with the fingers when the carrier is drawn out of the exposing-tray, and offset portions at the rear ends of the spring-fingers, substantially as described.

19. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open at the front and one end, said casing having inwardly-projecting flanges at its top and bottom and an open front, and provided with projections on the under side of said flanges near the open end of said casing, spring-fingers on the closed end of the exposing-tray arranged to project between the foremost plate-holder and those in rear thereof as the carrier is withdrawn from the tray, a plate-holder carrier comprising a casing having a plate-holder aperture in its inner end, said carrier being slidably arranged in the exposing-tray, springs for feeding the plate-holders forward in the carrier, springs for forcing the plate-holders out of engagement with said projection, and springs for forcing the plate-holder to the rear of the exposing-tray when the carrier is drawn out, substantially as described.

20. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open in front and at one end, of an inner casing forming a plate-holder carrier and having a plate-holder aperture in its inner end, said carrier being slidably arranged in the tray, means for transferring the plate-holders, one at a time, from the front of the carrier to the rear of the tray and from the latter to the rear of the carrier, and guide-strips projecting beyond the inner face of the outer end of the plate-holder carrier, substantially as and for the purpose specified.

21. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open in front and at one end, of an inner casing forming a plate-holder-carrier aperture in its inner end, said carrier being slidably arranged in said tray, means for transferring the plate-holders, one at a time, from the front of the carrier to the rear of the tray and from the latter to the rear of the carrier, and spring-fingers attached to the closed end of the tray and projecting in front of the back of the latter and in proximity thereto, substantially as and for the purpose specified.

22. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open in front and at one end, of an inner casing forming a plate-holder carrier and having a plate-holder aperture in its inner end, the said carrier being slidably arranged in said tray, means for transferring the plate-holders, one at a time, from the front of the carrier to the rear of the tray and from the latter to the rear of the carrier, and a spring-plate projecting inwardly from the edge of the outer end of the plate-holder carrier, substantially as and for the purpose specified.

23. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open in front and at one end, of an inner casing forming a plate-holder carrier and having a plate-holder aperture in its inner end, said carrier being slidably arranged in said tray, means for transferring the plate-holders, one at a time, from the front of the carrier to the rear of the tray and from the latter to the rear of the carrier, spring-fingers attached to the closed end of the tray and projecting in front of the back of the latter and in proximity thereto and projections formed on the back of the carrier near the edge of its open end, substantially as and for the purpose specified.

24. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open in front and at one end, of an inner casing forming a plate-holder carrier, and having a plate-holder aperture in its inner end, said carrier being slidably arranged in said tray, means for transferring the plate-holders, one at a time, from the front of the carrier to the rear of the tray and from the latter to the rear of the carrier, an inclosing casing open at one end only and slidably arranged over the tray, and carrier, and means for locking the carrier to the inclosing tray, substantially as described.

25. In a magazine for cameras, the combination with an outer casing forming an exposing-tray and open in front and at one end, of an inner casing forming a plate-holder-carrier aperture in its inner end, said carrier being slidably arranged in said tray, means for transferring the plate-holders, one at a time, from the front of the carrier to the rear of the tray and from the latter to the rear of the carrier, an inclosing casing open at one end only and slidably arranged over the tray-carrier, a cover slidably connected to the outer end of the inclosing casing and projecting laterally in rear to the outer end of the latter, and a bolt carried by said laterally-projecting portion of said plate and projecting into the interior of the inclosing casing, said bolt being adapted to be projected into a perforation in the back of the carrier, to lock the latter to the inclosing casing, substantially as described.

26. In a magazine-camera, the combination with an outer casing forming an exposing-tray and open in front and at one end, of an inner casing forming a plate-holder carrier and slidably arranged in said tray, springs arranged to move the plate-holders forward in the carrier, springs for moving the plate-holders, one at a time, rearward in the exposing-tray, means for retaining the foremost plate-holder in the front portion of the tray until the carrier has been drawn out, a cover slidably arranged in the front of the tray, and means for locking said cover to the outer end of the carrier, substantially as described.

705,409. ACCOUNTING ATTACHMENT FOR TYPE-WRITING MACHINES. OSCAR L. INGRAM, Walla Walla, Wash. Filed Dec. 12, 1901. Serial No. 85,601. (No model.)

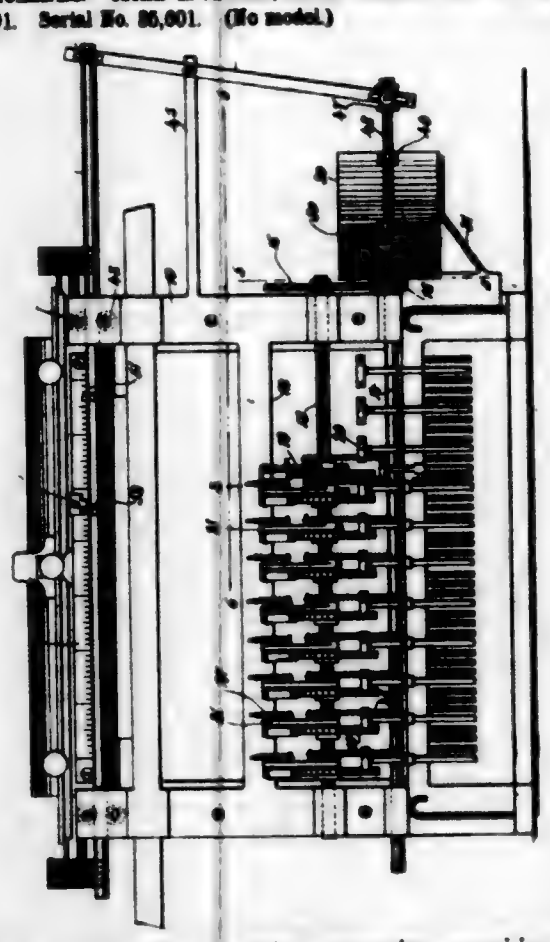

Claim.—1. An attachment for a type-writer, comprising a series of numeral-disks, a shaft on which said disks are loosely mounted, a device carried by the shaft for engaging with any one of said disks to cause a rotary motion of the same, actuating devices having connection with the type-writer finger-levers for imparting rotary motion to said shaft, and means carried by the type-writer carriage for causing a longitudinal movement of the shaft, the carriage also having a longitudinal movement independently of the shaft.

2. An attachment for a type-writing machine, comprising a series of numeral-disks, a shaft having rotary and longitudinal movement relatively to said disk, each of said disks having a series of notches radiating from the shaft, a single lug on the shaft for engaging in any one of the notches of a disk, a driving-shaft, a gear connection between the driving-shaft

and the first-named shaft, actuating connections between said driving-shaft and the finger-levers of the type-writing machine, and means controlled by the machine-carriage for moving the first-named shaft longitudinally to carry the lug from one end to the other of the series of disks.

3. An attachment for a type-writing machine comprising a frame attached to the machine, an actuating-shaft mounted in said frame, a stop-bar on said frame, a series of ratchet-wheels attached to the shaft, angle-arms mounted to swing on the shaft adjacent to the ratchet-wheels, pawls carried by said angle-arms for engaging with the ratchet-wheels, the said angle-arms having rearward extensions arranged consecutively in different horizontal planes for engaging with the rear side of the stop-bar and having upper projections for engaging with the front of the stop-bar, spring connections between the arms and the stop-bar, finger-levers, connections between the arms and the finger-levers, a shaft mounted to rotate and to move longitudinally in the frame, gear-wheel connections between the two shafts, numeral-disks loosely mounted on the last-named shaft, and means carried by the shaft for causing rotary movements of the disks, substantially as specified.

4. An attachment for a type-writing machine, comprising a frame attached to the machine, an actuating-shaft mounted in said frame, a stop-bar on said frame, a series of ratchet-wheels attached to the shaft, angle-arms mounted to swing on the shaft adjacent to the ratchet-wheels, pawls carried by angle-arms for engaging with the ratchet-wheels, the said angle-arms having rearward extensions arranged consecutively on different horizontal planes for engaging with the rear side of the stop-bar and having upper projections for engaging with the front of the stop-bar, spring connections between the arms and the stop-bar, finger-levers, spring connections between the arms and the finger-levers, the last-named springs being stronger than the first-named springs, a shaft mounted to rotate and to move longitudinally in the frame, gear-wheel connections between the two shafts, numeral-disks loosely mounted on the last-named shaft, each numeral-disk having a series of notches radiating from the shaft, a lug carried by the shaft for engaging in any one of the notches in the disk, and means for moving said shaft longitudinally.

5. An attachment for a type-writer, comprising a shaft mounted on the type-writer frame, means actuated by a finger-lever of the type-writer for rotating said shaft, the said means permitting a further downward movement of the lever after the stopping of the shaft upon its complete movement, a series of numeral-disks loosely mounted on the shaft, means for causing a movement of any one of the disks with the shaft, and retarding devices for the disks.

6. An attachment for a type-writing machine, comprising a shaft supported on the machine-frame and having a longitudinal movement, means actuated by the finger-levers of the machine for rotating said shaft, a series of numeral-disks mounted loosely on the shaft, each of said numeral-disks having a series of notches radiating from the shaft, a lug on the shaft for engaging a notch in the disk, ratchet-wheels carried by certain of the disks, arms mounted to swing on the shaft adjacent to the disks, pawls carried by the arms for engaging with the ratchet-wheels, cam-lugs on the arms, and a pin carried by each disk for engaging with the cam-lug connecting with the next disk of the series.

7. An attachment for a type-writing machine, comprising a shaft having a longitudinal movement on the frame of the machine, means actuated by the finger-levers of the machine for rotating said shaft, a draw-bar movable on the upper portion of the frame, lugs adjustable on said bar, a lug attached to the machine-frame and with which said first-named lugs are designed to engage, a lever connecting said rod with said shaft, and a series of numeral-disks mounted on the shaft and actuated thereby.

8. An attachment for a type-writing machine, comprising a shaft mounted to move longitudinally on the machine-frame, means actuated by the finger-levers of the machine for imparting rotary motion to the shaft, a casing, a series of numeral-disks mounted loosely on the shaft within the casing, means for causing a rotary movement of the disks, one independently of another, by said shaft, a cross-head with which said shaft has rotary connection, guide-arms extended from the ends of said cross-head through guides on the casing, a lever connecting with the said cross-head, a bar movable lengthwise at the upper portion of the machine-frame, and with which the upper end of the lever connects, lugs adjustable on said rod, and a lug on the machine-frame adapted to be engaged by the first-named lugs.

9. An attachment for a type-writing machine, comprising a shaft having a longitudinal movement in the frame, a pinion through which said shaft may move, the shaft being also adapted to rotate with the pinion, an actuating-shaft, a gear-wheel on said actuating-shaft and engaging with the pinion, means for connecting the finger-levers of the machine for causing varying degrees of rotary movement to the actuating-shaft, numeral-disks mounted loosely on the longitudinally-movable shaft, each of said disks having a series of notches radiating from the shaft, a lug on the shaft for engaging in a notch in a disk, a cross-head with which said shaft has rotary connection, guide-rods extending from said cross-head, a casing in which the numeral-disks are arranged, guides on said casing for the guide-rods, a finger carried by one of the guide-rods, the said finger being opposite the lug on the shaft, and means controlled by a movement of the machine-carriage for moving the shaft longitudinally.

705,410. **BUR FOR MILLS.** JOSEPH JOSEPHSON, Omaha, Nebr. Filed May 20, 1901. Serial No. 61,957. (No model.)

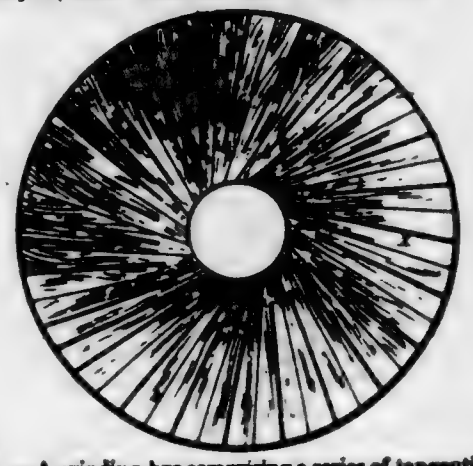

Claim.—A grinding-bar comprising a series of tangentially-arranged sector-shaped sections having inclined grooves extending inwardly from the periphery to a point near the axis of the bar, plates carried in said grooves whereby their upper edges are presented to form ribs, a binding-ring holding said ribs and sections in place, and nibs projecting from the outer ends and lower edges of said ribs to hold said binding-ring in place.

705,411. **NECK-YOKE.** EDWARD D. JURY, Clearfield, Pa. Filed Mar. 3, 1902. Serial No. 96,437. (No model.)

Claim.—1. A neck-yoke comprising a bar having diagonally-projecting arms formed with coacting hooks at their inner ends to produce a lap-ring, substantially as set forth.

2. A neck-yoke comprising a bar, the ends of which are bent to form eyes and diagonally-projecting underlying arms, the ends of said arms being formed with opposing hooks which overlap each other to form a lap-ring, substantially as set forth.

3. A neck-yoke comprising a bar having diagonally projecting and yielding arms provided with coacting members to engage a ring, said members being separable by the yielding action of the arms, substantially as and for the purpose set forth.

705,412. **FASTENING DEVICE FOR ACCOUNT OR SALES BOOKS.** LOREN A. KEITH, Mansfield, Ohio. Filed Mar. 13, 1901. Serial No. 50,973. (No model.)

Claim.—1. The combination with a sales or account book, of a pair of holders having their outer terminals pivoted in lines parallel with the sides of the back portion of the said book and transversely foldable inwardly over the book and outwardly from the latter.

2. The combination with a sales or account book, of a pair of movably-mounted holders having their outer terminals pivoted in lines parallel

with the side edges of the back portion of the book and transversely foldable inwardly over and outwardly from said book to terminally engage the leaves of the latter, the inner free terminals of the holders having direct contact with the leaves and provided with extremities of loop form.

3. The combination with a sales or account book, of a pair of holders each pivotally connected with the book at its outer extremity and both transversely foldable inwardly over and outwardly from the face of the book in arcs of circles which are described in planes at right angles to the said face of the book and provided with bearing-terminals to bear on a portion of the book.

4. The combination with a sales or account book, of a plate removably applied to one end of the book, and resilient holders pivotally connected at their outer terminals to the plates and having their pivots parallel with the sides of the book, whereby they are adapted to swing transversely thereof, said holders being detachably interlocked with the plate at points between their ends, substantially as described.

5. The combination with a sales or account book, of a supporting device removably applied to one end thereof and independent of the back portion of the book, and resilient holders movable inwardly over and outwardly from the book in arcs of circles at an angle to the latter, the outer terminals of the holders being pivoted to the said device, whereby the device and holders may be simultaneously applied to and removed from the book.

6. The combination with a sales or account book, of a supporting device removably applied to the back portion of the book at one end and provided with outwardly-extending projections, and resilient holders movably attached at their outer terminals to the said supporting device and adapted to have their inner free terminals removably engage the said projections.

7. The combination with a sales or account book, of a pair of loop resilient wire-holders having their outer terminals pivoted adjacent to the side edges and their free portions movable inwardly over and outwardly from the face of the book in arcs of circles at an angle to the latter.

8. The combination with a sales or account book, of a pair of resilient wire-holders which are looped and have their outer terminals pivotally connected adjacent to the side edges of the book and the opposite terminals bent to provide extended bearing means, the said holders being movable inwardly toward and outwardly from the face of the book in arcs of circles at an angle to the latter.

9. The combination with a sales or account book, of supporting means removably applied to the back portion thereof and having projecting tongues at the center, and a pair of yielding holders having their outer terminals pivoted to the said means adjacent to side edges of the book and comprising resilient loops to lock over the said tongues, the terminals of the holders opposite to those forming the pivot means being arranged to clamp the leaves of the book.

10. The combination with a supporting-back or analogous device, of a pad composed of separable leaves, a manifolding-sheet, the ends of the pad and one end of said sheet being formed with opposite perforations therethrough, studs or posts held by the back or analogous device and with which the perforated portions of the leaves and sheet engage, and a pair of holders having their outer terminals pivoted in a plane parallel with the longitudinal plane of the back or analogous device and transversely foldable inwardly toward and outwardly from the sheet and leaves in arcs of circles at an angle to the plane of the latter.

705,418. OIL-BURNER. JOHN W. LEWELLEN, Philadelphia, Pa. Filed Dec. 14, 1901. Serial No. 85,905. (No model.)

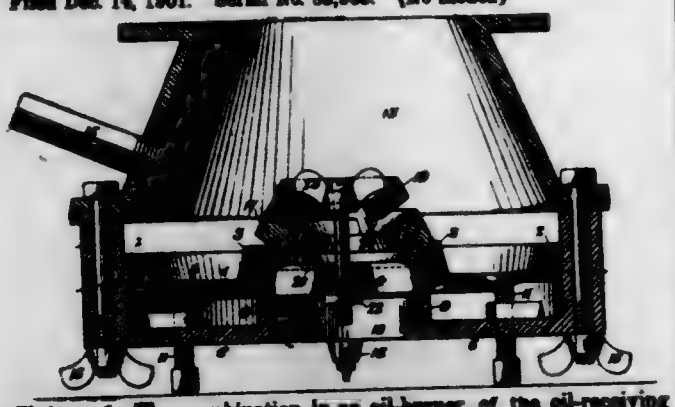

Claim.—1. The combination in an oil-burner, of the oil-receiving pan having a central opening for the passage of air, with a casing containing said pan and also having a central air-passage, said casing forming, beneath the pan, a dead-air chamber, substantially as specified.

2. An oil-burner having an oil-receiving pan with inner and outer raised rims, the inner rim surrounding an air-passage, a deflecting ring or rings mounted above the inner rim of the pan and serving to direct the air outwardly into the burning vapor arising from the oil in the pan, and a hood mounted above the pan and providing between its lower edge and the top of the pan an opening for the inflow of air, substantially as specified.

3. The combination in an oil-burner, of an oil-receiving pan having a central air-passage through it, a casing for said pan also having a central air-passage and forming a dead-air chamber beneath the pan, and a hood mounted on said casing so that its lower edge is above the top of the pan and provides a space for the inflow of air, substantially as specified.

4. The combination in an oil-burner, of an oil-receiving pan having an inner rim surrounding an air-passage, and one or more deflecting-rings mounted above said rim so as to provide spaces for the outflow of air from the central passage, the supporting-legs being tapered at their outer portions so as to permit a flow of air around the entire circumference of the rim, substantially as specified.

705,414. VALVE-GEAR. ROBERT T. LOVE, Stewarton, Scotland. Filed Dec. 27, 1901. Serial No. 87,411. (No model.)

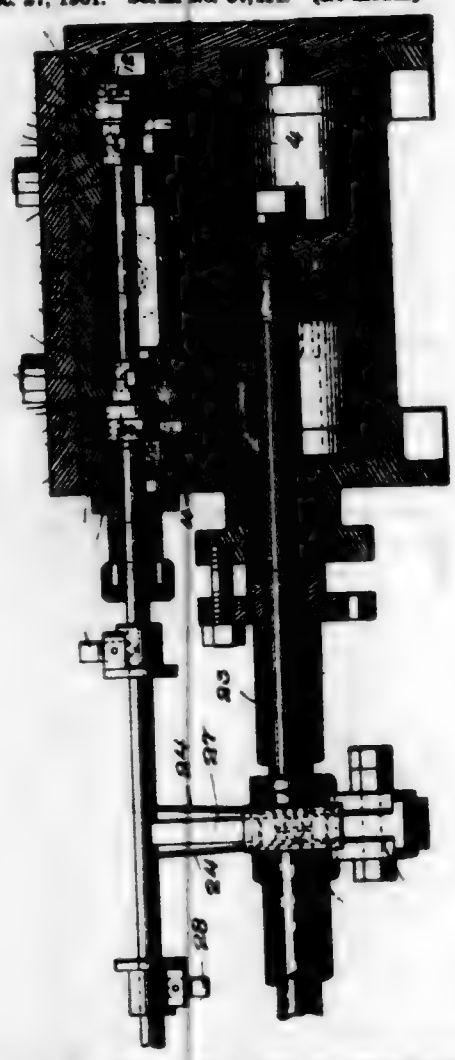

Claim.—1. In a direct-acting engine, a cylinder provided with ports and a valve-casing having steam inlet and exhaust ports, a valve of two different diameters at each port for controlling the entrance of a motive power to and its exit from the cylinder, a smaller portion of each valve communicating with the inlet and the larger portion with the exhaust, and means for operating the valves.

2. In a direct-acting engine, a cylinder provided with ports and a valve-casing having steam inlet and exhaust ports, a valve of two different diameters at each port for controlling the entrance of a motive force to and its exit from the cylinder, a smaller portion of each valve communicating with the inlet and the larger portion with the exhaust, means for operating said valves, and means for balancing them during a portion of said operation.

3. In a direct-acting engine, a cylinder provided with ports and a valve-casing having steam inlet and exhaust ports, a valve of two different diameters at each port for controlling the entrance of a motive force to and its exit from the cylinder, a smaller portion of each valve communicating with the inlet and the larger portion with the exhaust, and yielding means for operating said valves.

4. In a direct-acting engine, a cylinder provided with ports and a valve-casing having steam inlet and exhaust ports, a valve of two different diameters at each port for controlling the entrance of a motive force to and its exit from the cylinder, a smaller portion of each valve communicating with the inlet and the larger portion with the exhaust, means for mechanically moving said valves a portion of their length and the rest of their length by said motive force.

5. In a direct-acting engine, a cylinder provided with ports and a valve-casing having steam inlet and exhaust ports, a valve of two different diameters at each port, and springs for operating the valves, said valves each having its smaller portion communicating with the inlet and the larger portion communicating with the exhaust and being balanced during a portion of their operation.

6. In a direct-acting engine, a cylinder provided with ports and a valve-casing having steam inlet and exhaust ports, a valve of two different diameters at each port, and adjustable means for yieldingly operating said valves, each having its smaller portion communicating with the inlet and the larger portion communicating with the exhaust.

7. In a direct-acting engine, a cylinder provided with ports, a valve of two diameters for each port, the smaller portion of each valve communicating with the inlet and the larger portion communicating with the exhaust, and means for operating said valves.

8. In a direct-acting engine, a cylinder provided with ports, a cylindrical valve for each port, each valve being of two diameters and having ports in its periphery which communicate with the opposite ends, respectively, of the valve, and means for reciprocating said valves over the ports so as to admit a motive force to and permit its escape from the cylinder.

9. In a direct-acting engine, a cylinder provided with ports, a piston therein, the rod of which is provided with a cross-head, springs on the cross-head, a valve of two diameters for each port, a rod connected with said valves, and stops adjustably secured to said valve-rod on opposite sides of and in position to be engaged by said springs.

10. In a direct-acting engine, a cylinder provided with ports, a steam-chest communicating with said ports and a valve-casing having steam inlet and exhaust ports, two valves each of two different diameters in said chest, one for each port, each having its smaller portion communicating with the inlet and the larger portion communicating with the exhaust, and means for operating the valves.

11. In a direct-acting engine, a cylinder provided with ports, a valve-chamber provided with a steam-chest and two supplemental steam-chests, one for each port, a valve of two different diameters for each supplemental chest, each valve being provided with means for controlling the entrance of steam to and its exit from the cylinder, and means for operating said valves.

12. In a direct-acting engine, a cylinder provided with ports, a valve-chamber provided with a steam-inlet, exhaust, a steam-chamber and two supplemental steam-chests, and a channel for establishing communication between said steam-chests, the ports and the exhaust, a valve in each channel at each supplemental chest provided with ports for communicating with the inlet and exhaust, yielding means for operating the valves and balancing them during a portion of their movement.

705,415. **AIR-BRAKE ATTACHMENT.** THOMAS C. MAHON, Lake Charles, La., assignor of two-thirds to Charles Smith and Archie Pierce Sale, Lake Charles, La. Filed Feb. 19, 1901. Serial No. 47,981. (No model.)

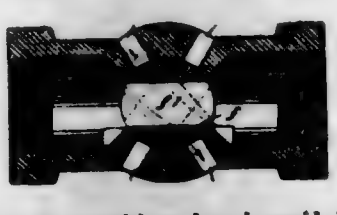

Claim.—1. A cock, comprising a barrel provided with two ports at each side of the longitudinal axis of the cock, and a plug mounted in the barrel and provided with a single port adapted when the plug is turned in one direction to close the ports of the barrel and establish communication between opposite ends of the barrel, and when turned in another direction to establish communication between both ends of the barrel and two opposite ports of the barrel, as set forth.

2. In an air-brake system, the combination with a truck, and a train-pipe, of a cock arranged in the train-pipe and comprising a barrel having two openings on each side, and a plug mounted in the barrel and provided with a single transverse port, a cross-arm connected with the plug, and a flexible connection between the ends of the arms and the truck, as set forth.

705,416. **BRICK-HANDLER.** JULIUS H. MARTIN and GEORGE P. MARTIN, David City, Nebr. Filed Nov. 16, 1901. Serial No. 82,603. (No model.)

Claim.—1. A brick-handler comprising a main plate having depending ears at each end thereof, a member pivoted between the ears at each end of the plate and having their inner ends disposed mutually adjacent, a cam mechanism for moving the members pivotally, and jaws adjustably connected with the members for movement with respect thereto toward and away from each other depending from the members in the plane of pivotal movement thereof for movement therewith toward and away from each other as the members are correspondingly moved pivotally.

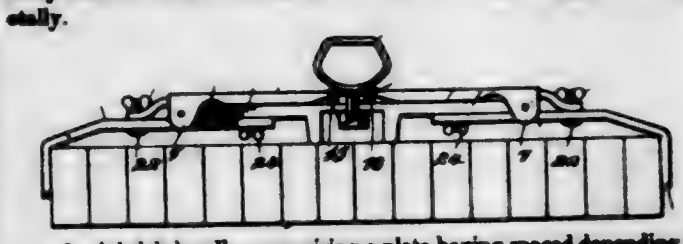

2. A brick-handler comprising a plate having spaced depending ears at each end thereof, latches pivoted between the ears and having their inner ends mutually adjacent, a shaft passed through the plate and having a head provided with cam-faces against which the inner ends of the latches rest for movement thereby when the shaft is rotated, jaws having stems adjustably connected against the under sides of the latches, and plates disposed between the latches and the first-named plate and having their outer ends adjustably connected with the corresponding jaw-stems.

3. A brick-handler comprising a main plate, separate members pivoted to the main plate for movement in a common plane, said members having depending jaws at their outer ends projecting in the plane of pivotal movement of the members, and a cam mechanism mounted upon the main plate and operatively connected with the members for moving them pivotally.

705,417. **GOVERNOR FOR PROPELLER-SHAFTS.** WILLIAM R. MAY, Newton, Mass. Filed Oct. 7, 1901. Serial No. 77,765. (No model.)

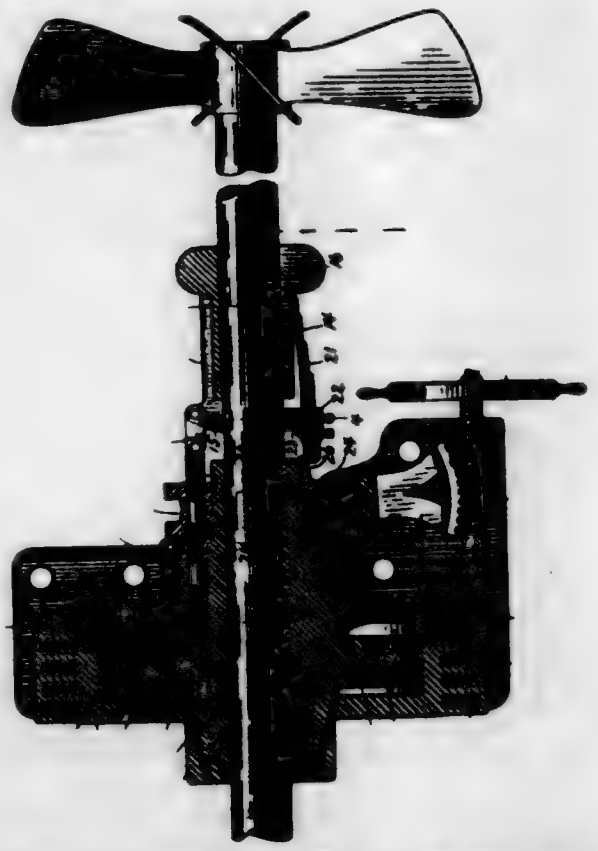

Claim.—1. The combination with a propeller-shaft, of a friction-clutch adapted to resist the rotation of the shaft and comprising a fixed member having an internal friction-face surrounding the shaft, and a movable member connected with the shaft and surrounded by the fixed member, and clutch-operating mechanism actuated by the rotation of the shaft.

2. The combination with a propeller-shaft, of a fixed friction-clutch member having an internal friction-face surrounding the shaft, a movable clutch member connected with the shaft, and comprising oscillatory levers having friction-faces, and centrifugal connections between the said shaft and levers.

3. The combination with a propeller-shaft, of a fixed casing surrounding the shaft and having an internal friction-face substantially concentric with the shaft, and a liquid-circulating conduit adjacent to said internal face, said conduit having an inlet and an outlet, a movable clutch member within the casing adapted to frictionally engage said internal face, and centrifugal connections between the shaft and the movable clutch member.

4. The combination with a propeller-shaft, of a friction-clutch adapted to resist the rotation of the shaft, connections between the shaft and the clutch mechanism comprising centrifugally-controlled members, and

means for preventing centrifugal movement of said members whereby said connections may be made inoperative.

5. The combination with a propeller-shaft, of a friction-clutch comprising a fixed outer member and an inner member which is movable with the shaft, a governor-shaft geared to the propeller-shaft, centrifugal governor-arms pivoted to said shaft, and connections between said arms and the inner clutch member.

6. The combination with a propeller-shaft, of a friction-clutch comprising a fixed outer member and an inner member which is movable with the shaft, a governor-shaft adjacent to the propeller-shaft, a movable yoke or frame supporting the governor-shaft, gearing connecting the governor-shaft with the propeller-shaft, said gearing including two friction members, one mounted on the propeller-shaft and the other on the movable frame, said members being separable by a movement of the frame, means for moving the frame, centrifugal governor-arms pivoted to the governor-shaft, and connections between said arms and the inner clutch member.

705,418. BURNER FOR THE REMOVAL OF HARDENED MASSES IN FURNACES OR THE LIKE. HERMANN A. R. MEISEL, Crousthal, Germany, assignor to Otto-Müssener Bergwerks Actien Verein, Crousthal, Westphalia, Germany. Filed Apr. 14, 1902. Serial No. 102,886. (No model.)

Claim.—1. In a burner, the combination of concentric pipes for conveying fuel and oxygen, yielding material surrounding the outer pipe at its delivery end, and a covering of hard refractory non-conducting material surrounding said yielding material, substantially as described.

2. In a burner, the combination of concentric pipes for conveying fuel and oxygen, means for centering the inner pipe in the outer pipe, a circular layer of yielding material surrounding the delivery end of the outer pipe and a circular covering of hard refractory non-conducting material surrounding said yielding material, substantially as described.

705,419. SAFETY ATTACHMENT FOR GAS-COCKS. ALVA M. MERRILL, Brooklyn, N. Y. Filed Nov. 1, 1901. Serial No. 80,512. (No model.)

Claim.—1. The combination with a gas-fitting, provided with the usual valve-seat and having stop-shoulders at the lower end thereof, and a notch or opening opposite one of said shoulders, of a plug-cock fitted to turn in the seat and provided with a hole and a spring-actuated bolt having sliding connection in the hole in the plug-cock in position to simultaneously engage one stop-shoulder and enter the notch or opening.

2. The combination with a gas-fitting, having the valve-seat therein, and provided with stop-shoulders, and a notch or opening adjacent to the valve-seat and in alinement with one shoulder, of a plug-cock fitted to the seat, said cock having a barrel therein and a hole extending therethrough parallel with the barrel and in a plane with the stop-shoulders, a U-shaped bolt extending through the barrel and hole, one end of the bolt having a push-button thereon, a spring in the barrel arranged to force the bolt outwardly when not hindered by the wall of the valve-seat, the opposite end of the bolt being adapted to enter the notch or opening in the fitting in alinement with one of the shoulders and the U-shaped end to engage one of the stop-shoulders when the cock is closed whereby to lock it against accidental turning.

705,420. NUT-LOCK. RICHARD HUGHES and JOHN BWELL, Jr., Denver, Colo. Filed Nov. 2, 1901. Serial No. 80,943. (No model.)

Claim.—1. A nut-lock, comprising a pawl having a yielding head formed by bending the metal of the pawl in substantially U shape, and then bending the same at right angles to the tongue of the pawl, the said pawl being seated in a recess corresponding in shape thereto formed in a nut so as to project inwardly therefrom and engage the threads of a bolt, the said threads being provided with notches, the said pawl engaging the notches and locking the nut when it is screwed into place but being capable of yielding without breaking when the nut is forcefully turned for unscrewing it, substantially as described.

2. A nut-lock, comprising a pawl made of flat metal and having a doubled portion at one end for forming a yielding head, the said pawl and head engaging a recess formed of corresponding shape in the nut to be locked, the said recess also having a flaring portion at its inner end to accommodate the point of the lock when folded one way or the other, the structure being such that the lock may engage notches on the threads of a bolt for locking the nut in place but the said nut can be removed by force, the yielding head of the lock permitting of necessary longitudinal movement thereof in its socket, and the flaring inner end of the socket or recess permitting of the doubling back of the pawl, substantially as described.

3. A nut-locking mechanism, comprising a nut having a recess formed therein with an enlarged end and a flaring end, a pawl having a yielding head and adapted to fit into said recess, the construction being such that longitudinal movement of the pawl in the recess, away from the periphery of the bolt, is permitted, the said head occupying the enlarged portion of the recess, and a bolt provided with a series of notches on the periphery of its threads, the structure being such that the pawl will lock the nut in position but will yield under force for removing the same, the flaring end of the recess in the nut accommodating the folding back of the pawl due to such an operation, substantially as described.

705,421. WATER-LEVEL-TESTING DEVICE FOR BOILERS. HERMAN MOORE, Moundsville, W. Va. Filed Dec. 9, 1901. Serial No. 85,963. (No model.)

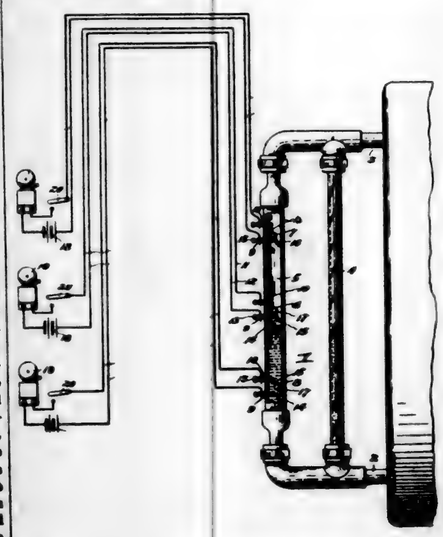

Claim.—1. In a device of the character described, the combination with a gage-tube; of local-circuit-closing connections attached thereto and comprising plugs having binding-posts for the attachment of the circuit-wires, one of said plugs being provided with a contact-piece forming a guide and the other with a pivoted contact-piece carrying a float, an electric circuit including the conducting-wires connected with said plugs, a bell in said circuit, and a normally open switch also in said circuit, substantially as specified.

2. In a device of the character described, the combination of a main gage-tube, an auxiliary gage-tube, connections between said tubes, local-circuit-closing devices mounted upon the auxiliary tube and having contacts thrown into and out of engagement by the rise and fall of the water in said tube, an electric circuit in which the said local-circuit-closing devices are included, a bell also included in said circuit, and a switch which is normally open and which is adapted to be closed to indicate by the sounding or non-sounding of the bell the position of the said local-circuit-closing devices and the level of the water within said tube, substantially as described.

3. In a water-level-testing appliance for steam-boilers, the combination with a gage-tube; of local-circuit-closing connections attached thereto and comprising plugs, one of said plugs having a contact-piece carrying a float and movable toward and from the other plug, an electric circuit in which the said local-circuit-closing devices are included, a bell in said circuit, and a switch also in said circuit and adapted to be closed to indicate by the sounding or non-sounding of the bell the position of the local-circuit-contact connections and the level of the water in the tube, substantially as specified.

705,422. HOT-AIR HEATER. MOSES B. MOORE, Pennington, N. J., and GEORGE W. LENDON, Philadelphia, Pa., assignors to the Pennington Foundry and Heater Company, Pennington, N. J., a Corporation of New Jersey. Filed Mar. 15, 1902. Serial No. 98,872. (No model.)

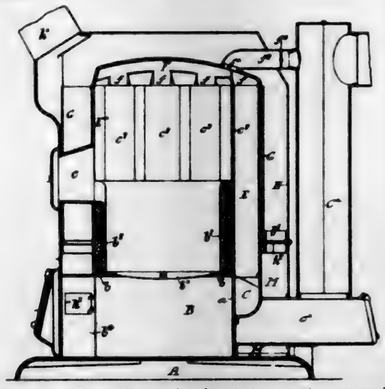

Claim.—1. The combination in a hot-air furnace, of a rectangular fire-box having sides formed of corrugations of different sizes, a cover for the same, a smoke-flue, a substantially circular casing closely surrounding the fire-box the external contour of the corrugated sides of the fire-box conforming to the shape of said casing and forming air-passages therewith, a stack connected with the smoke-flue, and a third casing surrounding the whole, the same having an inlet and an outlet for air to be used for heating, substantially as described.

2. The combination of a casing of polygonal section having corrugations upon its sides, the same forming alternate smoke and air passages, a conduit communicating with said smoke-passages, certain of said corrugations being of different size and shape from the others and arranged so that the casing as a whole is of substantially cylindrical form, with a second casing also of cylindrical form closely surrounding the first casing and its corrugations, substantially as described.

3. In a hot-air furnace, the combination of a fire-box having corrugated sides, a cover therefor having corrugated edges, plates covering certain of the corrugations in the sides of said fire-box and thereby forming flues, the corrugations of the cover registering with the corrugations of the fire-box and providing openings therefrom, a smoke-stack a smoke-flue extending around the lower part of the said fire-box and connected to passages therein, a second casing around the fire-box forming air-passages with certain others of the corrugations of the same and a third casing surrounding the whole and provided with an inlet for cold air and an outlet for the heated air, substantially as described.

4. In a hot-air furnace, the combination of an ash-box, a smoke-flue extending around the top thereof, a single casing having corrugated sides forming the fire-box and a cover supported by said fire-box, certain of the corrugations being constructed to form smoke-passages, the same being in communication with the interior of the casing and with the smoke-flue, a stack connected to said flue, a second casing surrounding the fire-box and forming air-passages with certain others of the corrugations of the sides thereof and a third casing surrounding the whole and having an inlet and an outlet for the air, substantially as described.

705,428. TYPE-WRITING MACHINE. WILLIAM W. MORRISON, Ellsworth, Me., assignor to the Wagner Typewriter Company, New York, N. Y., a Corporation of New York. Filed Dec. 17, 1900. Serial No. 40,099. (No model.)

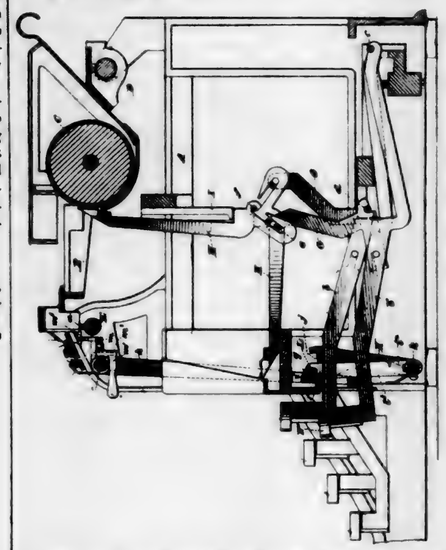

Claim.—1. In a type-writing machine the combination of a movable carriage and the framing of the machine, with a stop and a trip element mounted on one of said parts, and located at different distances from the side of the machine, a stop element located on the other part and arranged to come into successive engagement with the trip and stop on the first-named part, one of the said elements being movable relatively to the part on which it is mounted, type-carriers, a locking mechanism for locking certain of said carriers while leaving others free to be operated, and an operative connection from the said movable element to the locking mechanism to bring the latter into action before the carriage is stopped positively.

2. In a type-writing machine the combination of a movable carriage and the framing of the machine, with a stop and a trip element on one of the said parts, a stop element on the other part arranged to come into engagement successively with the trip element and the stop of the other part at the end of a line, one of the said elements being movable on the part which carries it by the engagement of the said elements with each other, type-carriers, mechanism for locking certain of said carriers while leaving others free to be operated, and an operative connection from said movable element to the locking mechanism to bring the latter into action before the carriage is stopped positively.

3. In a type-writing machine, the combination with a movable carriage of a series of type-carriers, an adjustable line-stop for limiting the movement of said carriage, a scale cooperating with said line-stop and means controlled by said line-stop for automatically locking certain of said type-carriers out of action and leaving certain of said type-carriers free to be operated when the others are locked.

4. In a type-writing machine, the combination with a movable carriage of a series of type-carriers, an adjustable line-stop for limiting the movement of said carriage, means controlled by said line-stop for automatically locking certain of said type-carriers out of action and leaving certain of said carriers free to be operated when the other carriers are locked and hand-operated means for releasing the locked carriers without moving the carriage.

5. In a type-writing machine, the combination with a movable carriage of a series of type-carriers, an adjustable line-stop carried at the front of the machine for limiting the movement of said carriage, a scale cooperating with said line-stop, said scale being carried at the front of the machine, and means controlled by said line-stop for automatically locking certain of said type-carriers out of action and leaving certain of said type-carriers free to be operated when the others are locked.

6. In a type-writing machine, the combination of a movable carriage, an adjustable line-stop, means for locking certain of said type-carriers out of action and for permitting certain others to remain unlocked when the first-mentioned carriers are locked, intermediate mechanism between the

line-stop and the locking means for automatically operating the locking means when the carriage reaches the stop and for releasing the locked carriers when the carriage is moved away from the stop and hand-operated means for releasing the locking means without moving the carriage.

7. In a type-writing machine, the combination of a movable carriage, a series of type key-levers some of which have locking abutments thereon and others being devoid of such abutments, a line-stop, a locking-bar adapted to engage the abutments on the type key-levers to maintain the same against movement and intermediate mechanism between the line-stop and the locking-bar for automatically operating the locking-bar when the carriage reaches the line-stop.

8. In a type-writing machine, the combination of a movable carriage, a series of type key-levers some of which have locking-abutments thereon and others being devoid of such abutments, a line-stop, a locking-bar adapted to engage the abutments on the type key-levers to maintain the same against movement and hand-operated means for releasing the locking-bar from engagement with the type key-levers.

9. In a type-writing machine, the combination with a movable carriage, of two coöperating parts, viz; a stop and a trip, one of the said last-mentioned parts being adjustably relatively to the other and one of them being carried on the carriage while the other is carried by the framing of the machine, and one of said parts being movable relatively to its support and being provided with a cam or engaging portion arranged to be engaged by the other part before the movement of the carriage is positively stopped, such engagement being effective to move said part relatively to its support, type-carriers, a locking mechanism for locking certain of said carriers while leaving others free to be operated, and an operative connection from said movable part to the locking mechanism to bring the latter into action before the carriage is stopped positively.

10. In a type-writing machine the combination of two component portions, viz; a movable carriage and the framing of the machine, with type-carriers, mechanism for locking certain of said carriers while leaving others free to be operated, coöperating parts on the framing of the machine and on the carriage to positively stop the latter, a trip element located on one of the said portions, a coöperating element on the other portion, one of the said elements being movable on the portion carrying it when the said elements engage each other before the carriage is positively stopped, and an operative connection from said movable element to locking mechanism, to bring the latter into action before the carriage is stopped positively.

11. In a type-writing machine the combination of a movable carriage and the framing of the machine, with type-carriers, mechanism for locking certain of said carriers while leaving others free to be operated, coöperating elements located respectively on the carriage and on the framing and operatively connected with the locking mechanism to bring the latter into action before the end of a line, and means for positively arresting the carriage after the locking mechanism has been operated.

705,424. ELECTRICAL-PANEL-BOARD ATTACHMENT. ERNST W. MÜLLER, Brooklyn, N. Y., assignor to Hubert Krantz, Brooklyn, N. Y. Filed Mar. 12, 1902. Serial No. 97,851. (No model.)

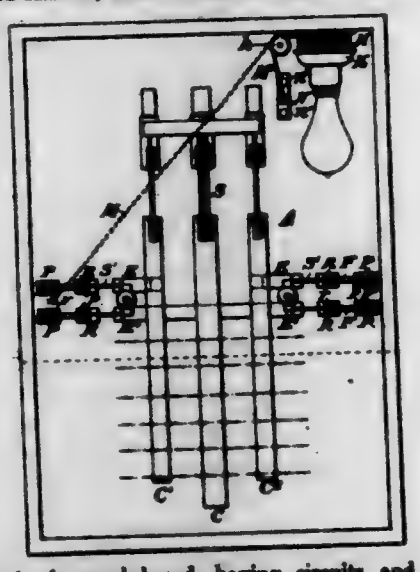

Claim.—1. A panel-board, having circuits and concealed fuses therein with an electric lamp, flexible conductors therefrom and a contact-plug on the conductors, adapted to be applied to the binding-posts of the said circuits to test the fuses, substantially as described.

2. A panel-board, having bus-bars, cross-bars, switches and concealed fuses in the cross-bar circuits with an electric lamp, flexible conductors therefrom and a contact-plug adapted to contact with exposed parts of the branch circuits beyond the fuses, substantially as described.

3. A panel-board having concealed fuses in its branch circuits and binding-posts in the circuits beyond the fuses, with a lamp fixed to the panel-board, flexible conductors connected up to the lamp-terminals and having at their other ends a contact-plug adapted to fit over the binding-posts in any of the branch circuits.

4. A panel-board having concealed fuses in its branch circuits with a lamp fixed to the panel, a spring-drum, flexible conductors wound on the drum and in connection with the lamp-terminals, a contact-plug connected to the other ends of the conductors and adapted to contact with exposed parts of the branch circuits beyond the fuses, substantially as described.

705,425. PUMP-ACTUATING MECHANISM. BENJAMIN MOORE, New Whatcom, Wash. Filed Sept. 20, 1901. Serial No. 75,973. (No model.)

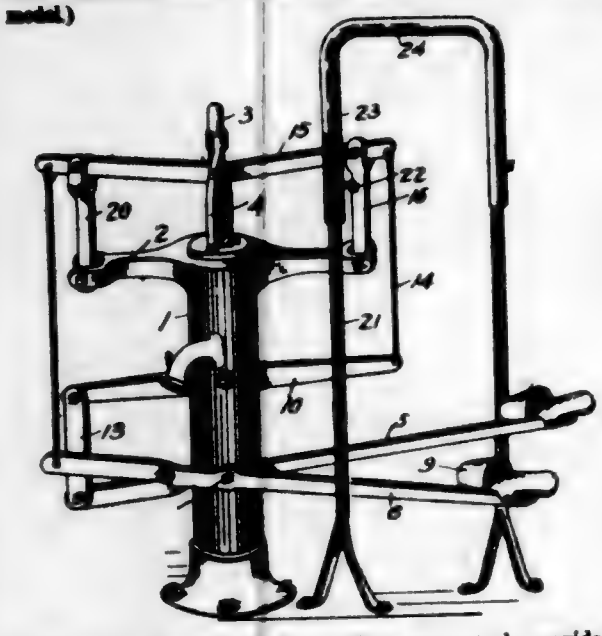

Claim.—1. The combination with a pump-stock provided with a cross-head and a pump-rod, of pedal-levers pivoted to the pump-stock, levers pivotally connected to the cross-head and to the pump-rod, an intermediate lever, a link connecting one end of the intermediate with one of the pedal-levers, a second link connecting the other end of the intermediate lever to one of the levers connected to the pump-rod, and a third link for connecting the end of the other pedal-lever to the other lever which is connected to the pump-rod, substantially as set forth.

2. The combination with a pump-rod; of levers suitably fulcrumed and pivoted to the rod, pedal-levers, an intermediate lever, a link connecting one end of the intermediate lever with one of the pedal-levers, a second link connecting the other end of the intermediate lever to one of the levers pivoted to the pump-rod, and a third link connecting the other pedal-lever to the other lever pivoted to the pump-rod, substantially as specified.

705,426. DISPLAY-LIGHT. OTIS A. MYGATT, New York, N. Y. Filed Mar. 7, 1901. Serial No. 50,226. (No model.)

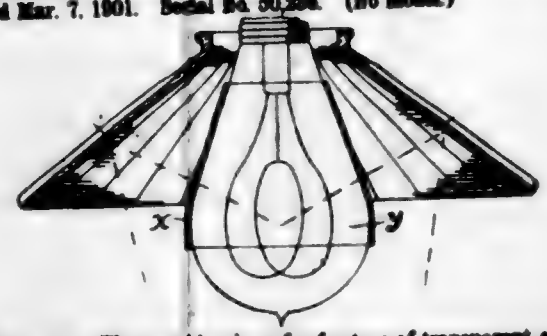

Claim.—1. The combination of a frustum of transparent glass having a smooth inner face and reflecting-facets on its outer face, an inner source of light, and an interposed colored stratum permeable to light, substantially as described.

2. The combination with a frustum of transparent glass having reflecting-facets on its outer face, of a light within said reflector, and an interposed stratum, permeable to light, and colored with a plurality of transparent colors.

3. The combination with a frustum of transparent glass having reflecting-facets on its outer face, of an inclosed artificial light, and a removable interposed cup of colored glass.

705,427. TUBULAR POLE OR SHAFT FOR VEHICLES. HARRY MCLOUGHLIN, Stapleton, N. Y., assignor to Barton E. Kingman, New York, N. Y. Filed Oct. 25, 1901. Serial No. 79,995. (No model.)

Claim.—1. The combination with the tubular shafts of a vehicle, each of which is made in two parts which taper in opposite directions, and a tubular cross-bar between said shafts, of tubular coupling-pieces for connecting the two parts of each of said shafts to each other and to said cross-bar, each of said coupling-pieces having a series of tongues or projections thereon integral with the body thereof and of smaller diameter than said body, one of said tongues or projections fitting within and secured to the forward part of one of said shafts, another of said tongues or projections fitting within and secured to the rear part of said shaft and the third of said tongues or projections fitting within and secured to the adjacent end of said cross-bar.

2. The combination with the tubular shafts of a vehicle, each of which is made in two parts which taper in opposite directions, and a tubular cross-bar between said shafts, of tubular coupling-pieces for connecting the two parts of each of said shafts to each other and to said cross-bar, each of said coupling-pieces having a series of contracted tongues or projections thereon integral with the body of the coupling-piece and forming a series of shoulders, one of said tongues or projections fitting within and secured to the forward part of one of said shafts, another of said tongues or projections fitting within and secured to the rear part of said shaft and the third of said tongues or projections fitting within and secured to the adjacent end of said cross-bar, each of the ends of the two parts of said shaft and the end of said cross-bar which is adjacent to said coupling-piece bearing against said shoulders.

3. The combination with the tubular shafts of a vehicle, each of which is made in two parts which taper in opposite directions, and a tubular cross-bar between said shafts, of tubular coupling-pieces for connecting the two parts of each of said shafts to each other and to said cross-bar, each of said coupling-pieces having a series of contracted tongues or projections thereon integral with the body of the coupling-piece and forming a series of shoulders, one of said tongues or projections fitting within and secured to the forward part of one of said shafts, another of said tongues or projections fitting within and secured to the rear part of said shaft and the third of said tongues or projections fitting within and secured to the adjacent end of said cross-bar, each of the ends of the two parts of said shaft and the end of said cross-bar which is adjacent to said coupling-piece bearing against said shoulders and the outer surfaces of the two parts of said shaft and of said cross-bar lying flush with the outer exposed surfaces of said coupling-piece.

4. The combination of two tubular parts, and a pivotal connection between the same, the said pivotal connection comprising a thimble extending through an opening in one wall of one of said parts, having a flange thereon outside said wall and bearing at its opposite end against the inner surface of the other wall of said part, a thimble extending through an opening in one wall of the other of said parts, having a flange thereon bearing against the flange on the other of said thimbles and bearing at its opposite end against the inner surface of the other wall of said part, a bolt connecting said parts and passing through said thimbles, and a nut upon one end of said bolt, as and for the purpose set forth.

5. The combination of a tubular cross-bar connecting a pair of vehicle-shafts, a tubular whiffletree, and a pivotal connection between said parts, the same comprising a thimble extending through an opening in the upper wall of said cross-bar, having a flange outside said wall and bearing at its opposite end against the inner surface of the lower wall of said cross-bar, a thimble extending through an opening in the lower wall of said whiffletree, having a base-flange thereon bearing against the flange on the other thimble and bearing at its opposite end against the inner surface of the upper wall of said whiffletree, the adjacent surfaces of the flanges on said thimbles being provided with counterpart ribs and grooves, a bolt extending through said thimbles, and a clamping-nut upon one end of said bolt, as and for the purpose set forth.

705,428. NECK-YOKE. FRANK A. HAGUE and BENTON SMITH, Clearfield, Pa. Filed Apr. 3, 1902. Serial No. 101,944. (No model.)

Claim.—1. A neck-yoke comprising a bar having diagonally-projecting arms formed with coacting hooks at their inner ends to produce a lap-ring, means for limiting the outward movement of said arms to prevent separation of the hooks, substantially as and for the purpose set forth.

2. A neck-yoke comprising a bar, the ends of which are twisted to form eyes and coacting abutting shoulders and thence extended to provide diagonally-projecting arms, the ends of said arms being formed with opposing hooks which overlap each other to form a lap-ring, said shoulders acting to limit the outward movement of said arms, substantially as described.

3. A neck-yoke comprising a bar having diagonally-projecting arms formed with coacting hooks at their inner ends to produce a lap-ring, said hooks having ends arranged to abut to limit the outward movement of said arms, substantially as specified.

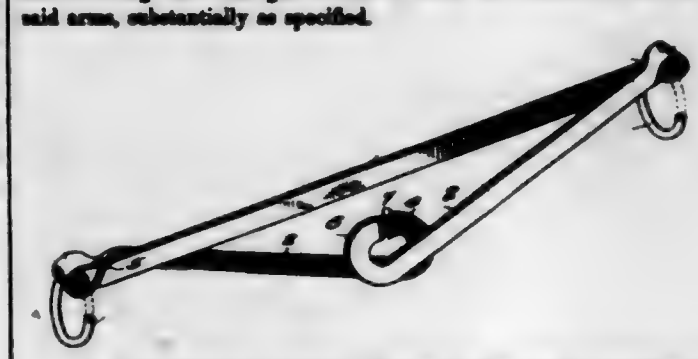

4. A neck-yoke comprising a bar having diagonally-projecting arms formed with coacting hooks at their inner ends to produce a lap-ring, the ends of the bar being twisted to form eyes and coacting stop-shoulders, and the hooks having abutting ends coacting with said shoulders to limit the outward movement of said arms, substantially as set forth.

5. A neck-yoke comprising a bar having diagonally-projecting arms yieldable toward and from the bar and also laterally thereof, said arms being formed with coacting hooks at their inner ends to produce a lap-ring, substantially as set forth.

705,429. ELECTRIC-LIGHT SIGN. MORTIMER HORDEN, New York, N. Y., assignor to the Horden-Ritzner Electric Company, New York, N. Y., a Corporation of New York. Filed Apr. 14, 1902. Serial No. 102,926. (No model.)

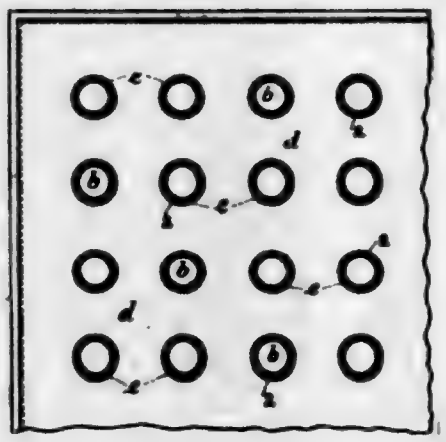

Claim.—1. In an electric-light sign, the combination with a base or support and a series of lamp-sockets secured thereto, of a plate adapted to be connected to said base and having a series of apertures coinciding in position axially with said sockets, and tube-sections secured at one end to said plate concentric to the openings and receiving and surrounding the electric-lamp bulbs as secured to the sockets, substantially as specified.

2. In an electric-light sign, the combination with a base or support and a series of lamp-sockets secured thereto, of a plate adapted to be connected to said base in a plane parallel therewith and having a series of circular apertures coinciding in position axially with said sockets and cylindrical tube-sections secured at one end to said plate concentric to the openings and receiving and surrounding the electric-lamp bulbs as secured to the sockets, substantially as specified.

3. In an electric light sign, the combination with a base or support, a series of lamp-sockets secured thereto and a series of electric-lamp bulbs therein, of a plate adapted to be connected to said base in a plane parallel therewith and about on line with the ends of the lamp-bulbs and having therein a series of apertures coinciding in position axially with said sockets, and tube-sections secured at one end to the under surface of said plate concentric to the openings and receiving end of a length to entirely surround the electric-lamp bulbs as secured to the sockets, substantially as specified.

705,430. BOTTLE-WASHING MACHINE. JOHN H. W. OETMANN and CARL W. HEINEY, Hamburg, Germany. Filed Feb. 17, 1902. Serial No. 94,509. (No model.)

Claim.—In a bottle-washing machine, the combination with the vat, a rotary frame mounted therein having receptacles for the bottles, a slide-carriage, a guideway for imparting a forward-and-backward movement to the slide-carriage of a rinsing apparatus, a valve connected with a water-supply pipe, a lever coacting with the valve, and the said slide-carriage coacting with the valve to open and close the same, substantially as specified.

705,430.

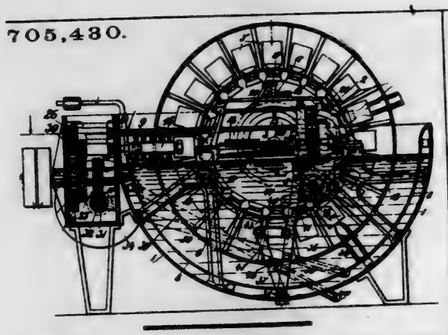

705,431. VEHICLE-BRAKE. JEAN OSTEIG, Tempe, Ariz. Filed Nov. 7, 1901. Serial No. 81,480. (No model.)

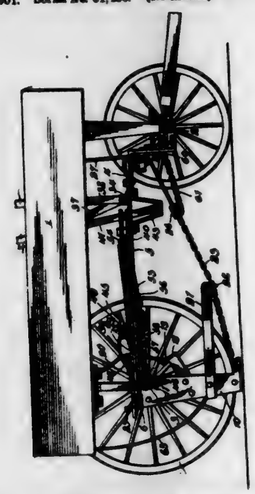

Claim.—1. In a vehicle-brake, the combination with a running-gear, of a vertically-swinging brake-standard carried thereby and having a foot for engagement with the ground, independent controlling-levers having connections, respectively, with the outer free end of the standard and an intermediate point thereof, means for locking the standard in both its operative and inoperative positions, and a controlling-lever for the locking means.

2. In a vehicle-brake, the combination with a running-gear, of a vertically-swinging brake-standard having a foot for engagement with the ground, means for raising and lowering the standard, a locking-head carried by said standard, and a slidable locking-fork to engage the head and lock the standard.

3. In a vehicle-brake, the combination with a running-gear, of a vertically-swinging brake-standard having a foot for engagement with the ground, and also provided at its upper end with a substantially T-shaped locking-head, means for raising and lowering the standard, a spring-actuated locking-slide mounted upon the running-gear and having a fork to engage the T-shaped head, and a controlling device for the locking-slide.

4. In a vehicle-brake, the combination with a running-gear, of opposite vertically-swinging brake-standards having a cross-bar connecting the same and also provided with a foot for engagement with the ground, means for raising and lowering the standards, a slidable locking device mounted upon the running-gear and constructed to engage the cross-bar to hold the standards elevated, and controlling means for the locking-slide.

5. In a vehicle-brake, the combination with a running-gear, of opposite vertically swinging brake-standards having a cross-bar connecting the same, and also provided with feet for engagement with the ground, means for raising and lowering the standards, a forked spring-actuated locking-slide mounted upon the running-gear and constructed to be slid under the cross-bar and thereby support the standards in an elevated position, and a controlling device for the slide.

6. In a vehicle-brake, the combination with a running-gear, of opposite vertically-swinging brake-standards having a cross-bar connecting the same, and also provided with feet for engagement with the ground, means for raising and lowering the standards, a locking-head carried by the standards, a spring-actuated locking-slide mounted upon the running-gear and constructed for alternate engagement with the locking-head and the cross-bar to lock the standards in their operative and inoperative positions, and means for controlling the locking-slide.

7. In a vehicle-brake, the combination with a running-gear, of opposite swinging standards having feet for engagement with the ground, and also having a cross-bar connecting the same, and a T-shaped locking-head, means for raising and lowering the standards, a spring-actuated locking-slide mounted upon the running-gear and having a rear fork to engage the T-shaped head and lock the standards in their operative positions, and also provided with an intermediate forked portion to engage beneath the cross-bar of the standards and lock the same in an elevated position, and means for controlling the locking-slide.

8. In a vehicle-brake, the combination with a running-gear, of opposite vertically-swinging brake-standards having feet for engagement with the ground, a cross-bar connecting the standards, a T-shaped locking-head carried by the standards, a spring-actuated locking-slide mounted upon the running-gear, and provided with a rear forked end to engage the T-shaped slide and lock the standards in their operative position, and also provided with intermediate fork members to be slid under the cross-bar and lock the standards in an elevated position, and means for controlling the slide.

9. In a vehicle-brake, the combination with a vehicle-body, and the running-gear thereof, of a vertically-swinging brake-frame having feet for engagement with the ground, elevating-levers upon the body, flexible connections between the lower end of the brake-frame and one of the levers, and also between an intermediate portion of the frame and the other lever, slidable means for locking the brake-frame in its operative and inoperative positions, and a lever for controlling said locking means.

10. In a vehicle-brake, the combination with a vehicle-body and the running-gear thereof, of a vertically-swinging brake-frame having feet for engagement with the ground, a pulley mounted upon the forward portion of the running-gear, a corresponding pulley mounted in a slot in the bottom of the vehicle-body, a lever upon the body, a flexible connection extending between the lever and the free portion of the brake-frame, the intermediate portion of the connection being reeved through the pulleys, another lever upon the body, a guide-pulley mounted in a slot in the rear portion of the bottom of the vehicle, a flexible connection between an intermediate portion of the brake-frame and the second-mentioned lever, the intermediate portion of the connection running over the pulley at the rear of the vehicle, spring-actuated means for locking the brake-frame in its operative and inoperative positions, a controlling-lever for the locking means, and means for holding the lever at one limit to support the locking means out of engagement with the brake-frame.

11. In a vehicle-brake, the combination with a wagon-body, and the running-gear thereof, of a brake-frame swung from the rear axle and comprising opposite standards having lower terminal feet for engagement with the ground, cross-bars connecting the standards, a yoke-shaped cross-bar projecting in front of the standards, arms extended forwardly from each standard and having outer terminal guide-eyes, a T-shaped locking-head projected above the frame, a pair of elevating-levers fulcrumed upon the running-gear and working in corresponding slots in the bottom of the vehicle-body, corresponding guide-pulleys carried by the running-gear and in a slot in the bottom of the body, a flexible connection extending from one of the levers and reeved through the pulleys, and opposite flexible connections extending from the free ends of the respective standards through the guide-eyes at the outer ends of the arms thereof and connected to the first-mentioned flexible connection, a guide-pulley mounted in the slot in the rear portion of the bottom of the body, a flexible connection between the yoke-shaped cross-bar of the brake-frame and the other lever, the intermediate portion of the connection being reeved through the last-mentioned pulley, a locking-slide mounted upon the running-gear and comprising upper and lower members, the upper member having a forked rear end to engage the T-shaped locking-head of the brake-frame, a coiled spring embracing said upper member and connected at the opposite ends to the member and a portion of the running-gear, the lower member having a fork, the members of which are constructed to engage the under side of the yoke-shaped cross-bar of the brake-frame and support the same in an elevated position, and a lever fulcrumed upon the running-gear, working in a slot in the bottom of the vehicle and also connected to the locking-slide.

12. In a brake, the combination with the running-gear of a vehicle, of a vertically-swinging brake-standard mounted thereon and provided at its free end with a foot for engagement with the ground, means for supporting the standard in an inoperative position, means connected to the free end of the brake-standard for elevating the same, a guide located in rear of the brake-standard, and a rope or cable having one end connected to the brake-standard, its opposite end located in reach of the driver of the vehicle, and the intermediate portion of the rope or cable working through the guide to draw the standard downwardly and engage the foot with the ground.

705,432. PASSENGER-CAR. JAMES M. OSGOOD, Boston, Mass. Filed Nov. 18, 1897. Serial No. 658,884. (No model.)

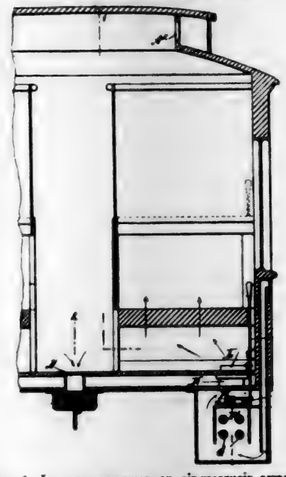

Claim.—1. In a passenger-car, an air-reservoir arranged beneath the car and communicating with the outer air, a valved flue leading from the top of the reservoir into the car, a hot-air chamber arranged in the reservoir with its top and sides spaced from the top and sides of the reservoir and communicating with the same at its bottom, said chamber being provided with an opening in its top beneath the said flue, and a valve operated from the interior of the car, for controlling the said opening of the hot-air chamber, substantially as described.

2. In a passenger-car, an air-reservoir arranged beneath the car and communicating with the outer air, a flue leading from the top of the reservoir into the car, a register in said flue, a hot-air chamber arranged in the reservoir with its top and sides spaced from the top and sides of the reservoir and communicating with the same at its bottom, said chamber being provided with an opening in its top beneath the said flue, a valve for controlling the opening of the hot-air chamber, and means for operating the said valve from the interior of the car, substantially as described.

3. In a passenger-car, an air-reservoir arranged beneath the car and communicating with the outer air, a flue leading from the top of the reservoir into the car, a register in the flue, a hot-air chamber arranged in the reservoir with its top and sides spaced from the top and sides of the reservoir and communicating with the same at its bottom, said chamber being provided with an opening in its top beneath the said flue, a sliding valve between the tops of the reservoir and chamber for controlling the opening of the hot-air chamber, and means for operating the valve from the interior of the car, substantially as described.

4. In a passenger-car, an air-reservoir arranged beneath the car and communicating with the outer air, a flue leading from the top of the reservoir into the car, a register in the flue, a hot-air chamber arranged in the reservoir with its top and sides spaced from the top and sides of the reservoir and communicating with the same at its bottom, said chamber being provided with an opening in its top beneath the said flue, a valve for controlling the opening of the hot-air chamber, and means for operating the valve and register, substantially as described.

5. The combination with a passenger-car provided with a series of compartments, of an air-reservoir arranged beneath the car and divided into a series of sections corresponding to the compartments of the car, said reservoir communicating with the outer air, a flue connecting each section of the reservoir with a compartment of a car, registers in the said flues, a hot-air chamber in each section of the reservoir with its top and sides spaced from the reservoir and communicating with the same at its bottom, said chamber being provided with an opening in its top beneath the said flue, and a valve operated from the interior of the car, for controlling the opening of the said chamber, substantially as described.

6. The combination with a passenger-car provided with berths, each having an independent compartment, the upper berth being arranged with its head portion projecting over the foot portion of the lower berth, of a reservoir beneath the car and communicating with the outer air, and a valved flue leading from the reservoir to each berth-compartment below the berths, whereby the air will be made to pass over the occupants of the berths, substantially as described.

7. The combination with a passenger-car provided with berths each having an independent compartment, the upper berth being arranged with its head portion projecting over the foot portion of the lower berth, of a compartment-reservoir beneath the car and communicating with the outer air, a flue leading from each compartment of the reservoir to the berth-compartments below the berths, a register in the said flues, a hot-air chamber in each compartment of the reservoir, said chambers being each open at its bottom and provided with an opening in its top, valves for the openings of the said chambers, and means for operating said valves, substantially as described.

8. In combination with a parlor and sleeping car divided into sections for night use, with an upper and lower berth in each section overlapping each other, the lower berth projecting beyond the upper, providing a free space to the top of the car, with intermediate partitions between the two berths, giving to each berth an independent compartment within the section; an outer reservoir placed beneath the car containing an inner hot-air chamber with a free circulation of air, both divided into compartments, each compartment independently connected with the corresponding compartment in the car above, the air for the heat and ventilation circulating either around or through the hot-air chamber, or both at the same time, being controlled by slides, dampers or registers as it passes through the apertures of the hot-air chamber and through the registers of the car into the corresponding compartment above, the register of the lower berth being below the bed and connected by a lever for the use of the occupant of the berth, the air from the register flowing up between, around or through the vertical support of the upper berth and the foot of the lower berth, passing directly over the passenger through the space between the lower berth and the top of the car into the monitor and out into the external air; the register for the upper berth being placed below it, the air passing around it up into the monitor and out into the external air in the same manner as in the lower berth, all of the valves pertaining to heat and ventilation being under the control of the occupant of the berth, substantially as described.

9. In combination with a parlor and sleeping car divided into sections for night use, with an upper and lower berth in each section overlapping with each other, the lower berth projecting beyond the upper, providing a free space to the top of the car, each berth being an independent compartment within the section; the car being provided with an outer reservoir containing an inner hot-air chamber with a free circulation of air either around or through the hot-air chamber, or both at the same time, being controlled by slides, dampers or registers as it passes through the apertures of the hot-air chamber through the register of the outer reservoir into the car, flowing through, around or up between the vertical support of the upper berth and the foot of the lower berth, passing directly over the passenger through the space between the lower berth and the top of the car into the monitor out into the external air; the register of the upper berth being placed beneath it, the air passing around it up into the monitor out into the external air in the same manner as in the lower berth, substantially as described.

705,433. STAPLE FORMING AND DRIVING MACHINE. GEORGE W. PACKER, Chicago, Ill., assignor to the Deering Harvester Company, Chicago, Ill. Filed Oct. 19, 1900. Serial No. 33,595. (No model.)

Claim.—1. In a stapling-machine, the combination of a supporting-frame having a beveled-face guiding-groove in its face and a wire-guiding slot terminating in said beveled face, a recessed cutting and forming slide operating in said guiding-groove, said slide having a coöperating beveled cutting-face and a grooved forming-fork, a driving-slide mounted in the recess in said forming-slide and having a rearwardly-projecting ribbed hammer-head operating in said grooved fork, a pin-and-slot connection between said forming and driving slides, a pivoted dog carried by the driving-slide and adapted to be engaged with and disengaged from said forming-slide, an anvil-bar pivoted in said frame and having a toe projecting in the path of said forming-fork, coöperating lugs on the forming-fork and anvil-bar to retract the latter when the staple has been formed, and operating means connected with the driving-slide whereby the several parts are successively operated to cut the wire, form the staple and drive the latter when formed, substantially as described.

2. In a stapling-machine, the combination of a supporting-frame having a beveled-face guiding-groove, a recessed cutting and forming slide opening in said groove, said slide having a forming-fork and a beveled cutting-face coöperating with the beveled face of the groove, a driving-slide mounted in the recess in said forming-slide and having a rearwardly-projecting hammer-head provided with lateral ribs engaging correspond-

ing slots in said forming-fork, an anvil-bar pivoted to said frame and adapted to engage the throat of said forming-fork, coöperating lugs on said forming-slide and anvil-bar to retract the latter from engagement with the fork, means to actuate the driving-slide, means to successively connect and disconnect the driving and forming slides, and a wire-feeding device operated by the slide-actuating means, substantially as described.

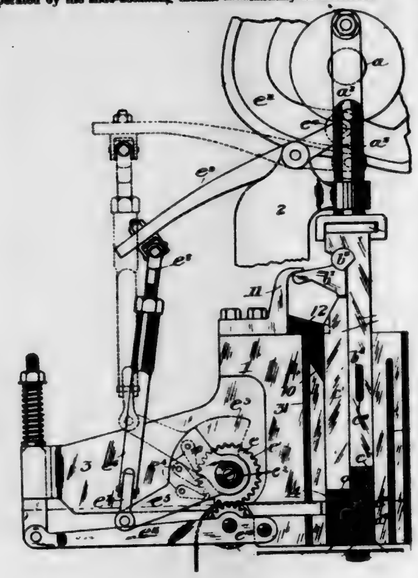

705,484. SLAT-FORMING MACHINE. GEORGE W. PACKER, Chicago, Ill., assignor to Deering Harvester Company, Chicago, Ill. Filed Feb. 5, 1900. Serial No. 4,089. (No model.)

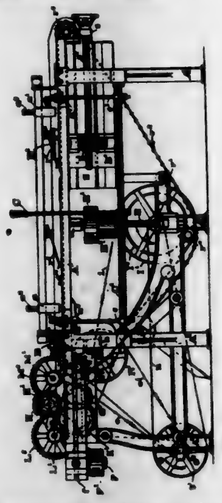

Claim.—1. In a machine for producing a number of finished slats from a single piece of stock, the combination of a transversely-slotted bed or table, a cutter-head arranged to act upon the edge of said stock, manually-operated feeding means movable in the slots of the bed or table for presenting the material to said head, guides on the bed or table for directing the material into proper relation to the cutter-head as it is fed by the manually-operated means, pairs of cutters acting on opposite surfaces of the stock in the direction of its length, saws arranged to sever the stock on lines substantially parallel with and between the lines of separation made by the cutters, feeding mechanism for directing the stock to the cutters and saws, and devices separate from and actuated by the manually-operated feeding means for engaging the stock after it has been fed past the cutter-heads and delivering it to the said feeding mechanism.

2. In a machine for producing a number of finished slats from a single piece of stock, the combination of a transversely-slotted bed or table, a cutter-head arranged to act upon the edge of the stock, manually-operated feeding means reciprocal in the transverse slots of the bed or table for presenting the material to said cutter-head, pairs of cutters acting on opposite surfaces of the stock in the direction of its length, saws arranged to sever the stock on lines substantially parallel and between the lines of separation made by the cutters, feeding mechanism for directing the stock to the cutters and saws, transferring devices separate from and actuated by the manually-operated feeding means to deliver the stock to said feeding mechanism, and instrumentalities for elastically holding the stock upon the bed or table while being acted upon by the manually-operated feeding means and the transferring devices.

3. In a machine for producing a number of finished slats from a single piece of stock, the combination of a bed or table provided with transverse slots, cutter-heads arranged on said bed or table to act upon the ends of the stock slides movable transversely of said bed or table in said slots and provided at different points in their length with separate feeding and transferring devices, pairs of cutters disposed to act upon opposite surfaces of the stock lengthwise thereof, and feeding mechanism for directing the stock between said cutters, the separate feeding devices carried by the slides acting to pass the stock between the cutter-heads, and the transferring devices, adapted to engage said stock after it has passed the cutter-heads and transfer the stock to the said feeding mechanism.

4. In a machine for producing a number of finished slats from a single piece of stock, the combination of a bed or table, cutter-heads arranged thereon to act upon the ends of the stock, guides upon said bed for directing the stock to and past the heads, means for elastically holding the stock down upon the bed, a rock-shaft C' having an operating-lever C, reciprocating feed-bars sliding in grooves in the bed, and provided with fixed teeth c^3, c^3, and yielding teeth c^4, c^4, and arms c, c', projecting from the rock-shaft and connected to the feed-bars.

5. In a machine for producing a number of finished slats from a single stock, the combination of a bed or table, cutter-heads arranged thereon to act upon the ends of the stock, guides upon said bed for directing the stock to and past the heads, a rock-shaft C', having an operating-lever C, guides c^6, c^7 projecting from the bed, reciprocating feed-bars sliding in grooves in the bed, arms c, c' projecting from the rock-shaft and having slotted upper ends, and lugs c^4, c^4 on the feed-bars sliding in the guides c^6, c^7.

705,485. DUST-GUARD. JAMES S. PAYNE, Baltimore, Md., assignor to Metal Dust Guard Company of Baltimore City, a Corporation. Filed Dec. 26, 1901. Serial No. 87,274. (No model.)

Claim.—1. The improved dust-guard herein described, consisting of the packing-section having a circular opening, and the brace applied to the face of said section between the inner and outer edges thereof and having the central circular opening, and composed of segmental sections each made wider at one end than at the other and united together at their meeting ends with wide end to wide end and narrow end to narrow end, substantially as set forth.

2. The dust-guard herein described, comprising the packing-section and the frame or brace applied to the face thereof and composed of segmental sections connected to form a ring-like brace, substantially as set forth.

3. A dust-guard comprising a packing-section and a ring-like brace applied to the face of said section and composed of segmental sections overlapped at their ends and united together and to the packing-section, and corrugated longitudinally and provided at their inner and outer edges with portions projecting into the packing-section, whereby to compress the same, substantially as set forth.

4. A dust-guard comprising the packing-section, a brace applied to the face thereof and composed of segmental sections overlapping each other at their ends, and the rivets passing through said overlapping ends and through the packing-section, substantially as set forth.

5. A dust-guard having a packing-section and the brace applied to the face of said packing-section and composed of segmental sections corrugated longitudinally and united at their ends, substantially as set forth.

6. A dust-guard comprising a ring-like packing-section and the brace applied to the face of the packing-section and provided at its edge with an inwardly-curving portion by which to compress the packing-section, substantially as set forth.

7. A dust-guard comprising a ring-like packing-section, and ring-like brace-frame applied to the opposite faces thereof and having flaring flanges or wings at their inner ends forming tapering recesses for the inner edges of the packing, substantially as set forth.

8. A dust-guard composed of the packing-section, and the ring-like brace or frame applied to the faces of the packing-section and composed of sections united together at their ends and made wider at one end than at the other and corrugated longitudinally, substantially as set forth.

705,486. AIR-TOOL. NINO PECORARO, Spezia, Italy. Filed Aug. 24, 1901. Serial No. 73,181. (No model.)

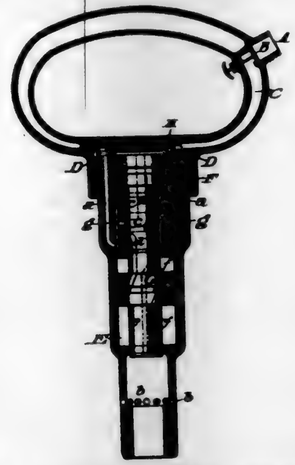

Claim.—1. In a pneumatic tool, a cylinder, a piston therein, shoulders upon the extremities of said piston, a valve movable on said piston, between said shoulders and provided with ports extending therethrough, inlet-ports in said cylinder, an inlet-passage *c* in said piston leading upwardly therethrough, an inlet-passage *d* therein leading downwardly therethrough, an exhaust-passage in said piston extending to the end thereof and having the ports *m* and *n* and an inlet-passage *f* in said piston for enabling said valve to be operated.

2. In a pneumatic tool, a cylinder, a piston therein, shoulders upon the extremities of said piston, one of said shoulders being integral with said piston, and the other of said shoulders in threaded engagement therewith, a locking-screw H holding said shoulder in position, a valve movable on said piston between said shoulders and provided with ports, inlet-ports in said cylinder, an inlet-passage *c* in said piston leading upwardly, an inlet-passage *d* therein leading downwardly, an exhaust-passage in said piston extending to the end thereof and having the ports *m* and *n*, and an inlet-passage *f* in said piston for enabling said valve to be operated, in combination with an extension on the extremity of said piston of reduced diameter and a flange projecting inwardly from said cylinder through which said extension passes.

3. In a pneumatic tool, a cylinder, a piston therein, enlarged shoulders upon the extremities of said piston, an extension on the lower shoulder of the latter adapted to impact with the shank of the tool employed, an inwardly-projecting wall through which said extension passes, a valve movable on said piston between said shoulders and provided with ports extending therethrough, said valve having an annular passage between it and the bore of said cylinder, an inlet-passage *c* in said piston leading upwardly, an inlet-passage *d* therein leading in an opposite direction, an exhaust-passage in said piston extending through the extension thereof and having the ports *m* and *n* and an inlet-passage located for a portion of its length in said extension for enabling said valve to be operated.

4. In a pneumatic tool, a cylinder, a piston therein, shoulders upon the extremities of said piston, one of said shoulders being integral with said piston, and the other of said shoulders in threaded engagement therewith, a locking-screw H holding said shoulder in position, a valve movable on said piston between said shoulders and provided with ports in said cylinder, an inlet-passage *c* in said piston leading upwardly, an inlet-passage *d* therein leading downwardly, an exhaust-passage in said piston extending to the end thereof and having the ports *m* and *n*, and an inlet-passage *f* in said piston for enabling said valve to be operated, in combination with an extension on the extremity of said piston of reduced diameter and a flange projecting inwardly from said cylinder through which said extension passes.

5. In a pneumatic tool, a cylinder, a piston therein, shoulders upon the extremities of said piston, one of said shoulders being integral with said piston, and the other of said shoulders in threaded engagement therewith, a locking-screw H holding said shoulder in position, a valve movable on said piston between said shoulders and provided with ports in said cylinder, an inlet-passage *c* in said piston leading upwardly, an inlet-passage *d* therein leading downwardly, an exhaust-passage in said piston extending to the end thereof and having the ports *m* and *n*, and an inlet-passage *f* in said piston for enabling said valve to be operated, the lower portion of said cylinder having the exhaust-ports *b* therein.

6. In a pneumatic tool, a cylinder, a piston therein, shoulders upon the extremities of said piston, the latter being of reduced diameter between said shoulders, a valve mounted on said piston between said shoulders and having a plurality of ports therethrough, the outer intermediate portion of said valve being of reduced diameter and said valve having a plurality of recesses between its inner periphery and the outer periphery of said piston, an inlet-passage *c* in said piston leading to one end thereof and another inlet-passage in said piston leading to the opposite end thereof, an exhaust-passage in said piston extending toward the extremity thereof and having the ports *m* and *n*, and an inlet-passage *f* in said piston for enabling said valve to be operated.

705,487. WIRE-PRESS. LOUIS PEROTTI, Newark, N. J. Filed Oct. 8, 1901. Serial No. 77,943. (No model.)

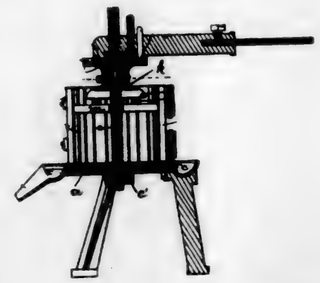

Claim.—1. In a press, the combination with a threaded stud, a nut or head screwing on said stud and having an upper horizontal surface provided with concentric series of ratchet-teeth, the teeth of one series being oppositely directed from those of the other, a lever or handle centrally pivoted on the said nut or head, and pawl means upon said lever to engage said ratchet-teeth.

2. In a press, the combination with a threaded stud *a*, a nut or head screwing on said stud and having an upper horizontal surface in which are formed concentric series of recesses constituting ratchet-teeth, the teeth of one series being oppositely directed from those of the other, a lever or handle centrally pivoted upon the said nut or head and having upright perforations back from its end adapted to register one with each series of recesses or ratchet-teeth, and a pawl-pin interchangeable from one perforation to another to engage either series of teeth.

3. In a press, the combination with a threaded stud, of a nut or head screwing on said stud and having at its top a stem surrounded by a horizontal flange provided with concentric oppositely-directed series of ratchet-recesses, a radial lever or handle loosely receiving said stem as a pivot and having sockets registering one with each series of recesses, and a pawl-pin adapted to fit in each socket and engage the nut or head.

705,438. TELESCOPIC TRAVELING-BAG. EDWIN U. PHILLIPS and FRANCIS J. MCHENRY, Portland, Oreg., assignors to Modern Telescope Company, Portland, Oreg., a Corporation of Oregon. Filed Mar. 25, 1902. Serial No. 99,912. (No model.)

Claim.—1. In a telescopic bag of the character stated; an outer telescope-section, comprising a front and end portions rigidly joined, a body consisting of a back portion secured to the end portions, a top section having side and front extensions bent to lap over the end and front portions of the outer telescopic section, the end flanges being slitted vertically near their rear ends, and a reinforce member secured to the under side of the top at a point in front of the slits in the ends, and extended under the rear portion of the top, substantially as shown and for the purposes described.

2. In a telescopic trunk or bag of the character stated, an outer telescope-section, comprising a front and end portions, rigidly joined, a body consisting of back portions secured to the ends, a top section having pendent flanges at the ends and front to lap the ends and front portion of the said outer telescopic section, the end flanges being slit vertically near their rear ends, flexible reinforce members secured on the top adjacent said vertical slits, and a reinforced member secured to the under side of the top at a point in front of the slit ends and extended under the rear or stationary portion of the top, all being arranged substantially as shown and for the purposes described.

3. As a new article, a telescope of the character described, comprising in combination, a lower section, and an upper section, slidable over the lower section, said upper section consisting of front and end portions rivoted at their meeting ends, a body portion including a back having flanges for joining with the ends and a top section b^{14}, said top section having a front flange to lap over the front of the said section, and end portions to lap over the ends thereof, said end flanges being cut vertically whereby to produce a crossing-line for the top b^{14}, the rear portions of the end flanges being rigidly secured to the ends of the section, leather or hinge members, secured to the top b^{14}, to straddle the slit or crossing line of the top, a cleat secured to the under side of the loose part of the top, and having a portion to extend under the crossing or hinge line of the top, and binding-straps and a handle connected to the lift or loose part of the top, all being arranged substantially as shown and for the purposes described.

705,439. DEVICE FOR CARRYING PACKAGES. STANISLAS DE PLEIN POL, Laeken-Bruxelles, Belgium. Filed Feb. 20, 1902. Serial No. 95,541. (No model.)

Claim.—1. A device for carrying packages comprising a plate provided at each extremity with opposite lateral extensions, one of each of said extensions at each end being slotted, and the transversely opposite extension being in the form of a hook, a handle secured to the plate, and ribbons provided with loop and hook end fixtures for engaging respectively the hooks and loops of the lateral extensions of the plate, substantially as described.

2. A device for carrying packages comprising a plate provided at each extremity with opposite lateral extensions, one of each of said extensions at each end being slotted, and the transversely opposite extension being in the form of a hook, a handle, chains connecting the handle and plate, and extensible ribbons provided with loop and hook end fixtures for engaging respectively the hooks and loops of the lateral extensions of the plate, substantially as described.

705,440. APPARATUS FOR CARRYING MAIL-MATTER. GEORGE S. POTTER, Dallas Center, Iowa. Filed Mar. 17, 1902. Serial No. 98,480. (No model.)

Claim.—1. In an apparatus for carrying mail-matter, a box holder and carrier consisting of a straight bar bent at right angles at its lower end to support a box placed thereon, a box-fastening device fixed to the bar to detachably fix the box in the angle of the bar and a pulley mounted at the top of the bar, and an endless cable or carrier, fixed to the bottom of the box-carrier, arranged and combined to operate in the manner set forth for the purposes stated.

2. In an apparatus for carrying mail-matter, a fixed post, a pulley mounted at the side of the top portion of the post, a trip device arched over the pulley and pivoted to the axle of the pulley and a roller mounted in the vertical plane of the pulley on a bearer fixed to a lower portion of the post to project horizontally for supporting an endless carrier in the manner set forth for the purposes stated.

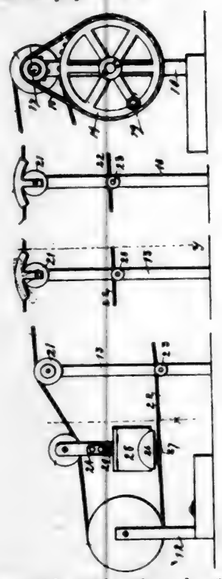

3. An apparatus for carrying a box and mail-matter comprising a line of fixed posts, pulleys at their tops, rollers extending horizontally from their central portions, covers and trip devices pivoted over the pulleys, a fixed post at one end of the line, a roller mounted at its top, a fixed sprocket-wheel on the end of the axle of the roller, a larger sprocket-wheel mounted on a lower portion of the post, a chain on said sprocket-wheels, a fixed post at the other end of the line, a sheave mounted at the top of the post, a box-carrier having a pulley at its top and a box-support at its bottom, means for fastening a box to the box-carrier, a mail-box, a cable coiled around the roller and extended over the pulleys at the tops of the line of posts, under the pulley at the top of the box-carrier, over the rollers extending horizontally from the posts and fixed to the box-carrier, arranged and combined to operate in the manner set forth for the purposes stated.

705,441. KNIFE. NEWTON E. POTTER, Southbridge, Mass. Filed Mar. 15, 1902. Serial No. 98,324. (No model.)

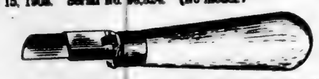

Claim.—1. A knife, comprising a handle, a blade fixed therein, a sheath for the blade, having an integral tubular extension mounted to slide in the said handle, a spring-catch for locking the sheath in position at the time the knife-blade is exposed, and a spring pressing the sheath, to move the same over the blade, for concealing the latter at the time the said spring-catch is unlocked, as set forth.

2. A knife, comprising a handle, a blade fixed therein, a sheath for the blade, having an integral tubular extension mounted to slide in the said handle, a spring-catch for locking the sheath in position at the time the knife-blade is exposed, a spring pressing the sheath, to move the same over the blade, for concealing the latter at the time the said spring-catch is unlocked, and a finger-piece on the sheath, located on the side opposite the one engaged by the said spring-catch, to allow the operator to press the finger-piece with one finger of the hand having hold of the handle, while the spring-catch is manipulated by another finger of the same hand, as set forth.

3. A knife, comprising a handle having a recess, a pin extending transversely through the recess, a tubular lining fitted in the said recess and held on the said pin, a sheath having a tubular extension mounted to slide in the said lining, a spring pressing the said sheath extension, and a spring-catch carried on the shank of the blade, adapted to engage the said sheath extension, to lock the latter in position against the tension of the spring, as set forth.

4. A knife, comprising a handle having a recess, a pin extending transversely through the recess, a tubular lining fitted in the said recess and held on the said pin, a sheath having a tubular extension mounted to slide in the said lining, a spring pressing the said sheath extension, a spring-catch carried on the shank of the blade, adapted to engage the said sheath extension, to lock the latter in position against the tension of the spring, the said spring-catch extending through an opening in the said sheath extension, and a finger-piece on the said sheath extension, located on the side opposite the one engaged by the said spring-catch, as set forth.

705,442. TIMBER-DRAG FOR SAWING CROOKED TIMBER. POSTEN M. GYARMERSTÄD, Stockholm, Sweden. Filed Apr. 12, 1902. Serial No. 103,643. (No model.)

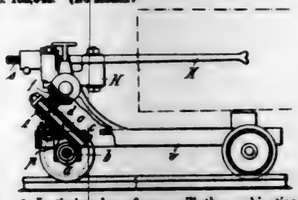

Claim.—1. In timber-drags for sawmills the combination of a wheel-shaft *b* of the drag, provided with threads *a* gearing with a shaft *d*, a pinion *e* on said shaft *d*, and a toothed rack *f* engaging with said pinion and mounted on a sleeve H arranged to be shifted crosswise to the drag, said sleeve carrying the jaws K by means of which the root end of the timber is retained in place while sawing is going on.

2. In timber-drags for sawmills, the combination of a wheel-shaft *b* of the drag provided with threads *a* gearing with a shaft *d*, journaled in a holder *o*, movable on a horizontal pin *p* and acted upon by a spring *m* or similar device, a pinion *e* on said shaft *d*, and a toothed rack *f* engaging with said pinion and mounted on a sleeve H, arranged to be shifted crosswise to the drag, said sleeve carrying the jaws K, by means of which the root end of the timber is retained in place while the sawing is going on.

705,443. SUCKER-ROD STUB. ISAAC KALLSTON, New Bethlehem, Pa., assignor of one-half to Thomas Spillane, New Bethlehem, Pa. Filed Jan. 13, 1902. Serial No. 90,295. (No model.)

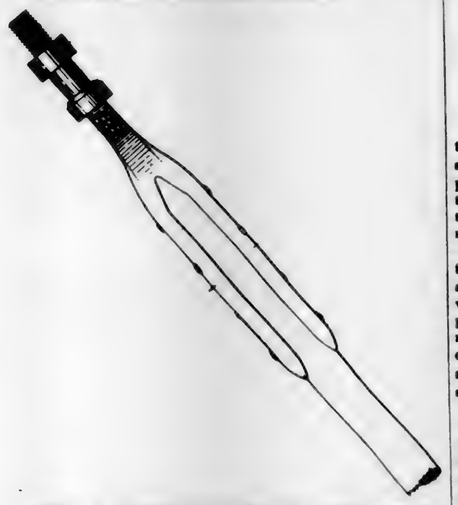

Claim.—1. A sucker-rod stub having a ring or collar portion with a cylindrical portion below it, and a squared wrench portion below the cylindrical portion; substantially as described.

2. A sucker-rod stub having two rings or collars with a substantially cylindrical portion between them and a squared wrench portion below the lower collar; substantially as described.

3. A sucker-rod stub having an upper screw-threaded portion with a collar at its lower end, a cylindrical portion, below the collar, another collar below the cylindrical portion, and a squared portion below the lower collar; substantially as described.

705,444. SHEARS. WILLIAM RICHARD, Bloomville, Ohio, assignor of one-half to Alvin S. Prouse, Bloomville, Ohio. Filed Apr. 1, 1902. Serial No. 100,986. (No model.)

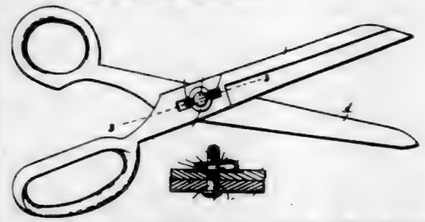

Claim.—1. In a pair of shears, the combination with a pair of apertured blades, one of said blades having a groove thereon extending transversely the aperture therein, of a bolt passing through said aperture, said bolt having a slotted shank bearing a pawl, and a V-shaped spring bearing a rack and mounted to engage said pawl and said groove, substantially as described.

2. In a pair of shears, the combination with two apertured blades, of a bolt passing through said apertures, said bolt having a slotted shank bearing a pawl, and a V-shaped spring bearing a rack engaged by said pawl, substantially as described.

705,445. CAMERA. ALEXANDER H. RIETHMÜLL, Munich, Germany. Filed July 11, 1898. Serial No. 723,507. (No model.)

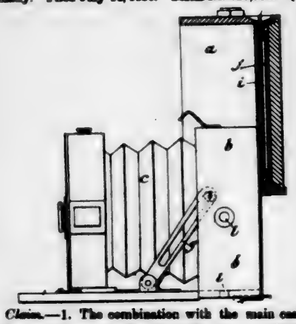

Claim.—1. The combination with the main casing having a rectangular central recess and end chambers to contain the film-rolls and a suitable frame and slide at the back of such recess in front of the back proper between which the film passes, of a supplemental casing carrying the focusing apparatus and means for holding such casing within the rectangular recess, so that the front face is flush with the front face of the main portion of the casing as and for the purpose specified.

2. The combination with the main casing having a rectangular central recess and end chambers to contain the film-rolls and a suitable frame and slide at the back of such recess in front of the back proper, behind which the film passes, of a supplemental casing carrying the focusing apparatus, means for holding the casing to the back within the rectangular recess, and the bolt in the front casing or portion designed to fit into a corresponding socket or recess in the back of the main portion, so as to securely hold the parts from vertical displacement as and for the purpose specified.

3. The combination with the casing carrying the film-rolls, having a central recessed portion and grooves at the back of the recess, of a supplemental casing fitted to the recess, said supplemental portion carrying ribs adapted to interlock with said grooves, said ribs also providing guides adapted to receive a plate when the supplemental portion is used independently of the film-holding portion substantially as described.

705,446. COKE-OVEN. MATHEW B. ROTHERMEL, Lebanon, Pa. Filed Feb. 6, 1902. Serial No. 92,849. (No model.)

Claim.—1. In adjacent coking-ovens, a hollow longitudinal wall separating the oven-chambers, and longitudinal deflecting-partitions form-

ing heating or combustion flues in the cavity or chamber of said wall, and a vertical hot-air flue at the outer ends of said combustion-flues, the inner wall of which air-flue is pierced for passage of air to the combustion-flues, substantially as specified.

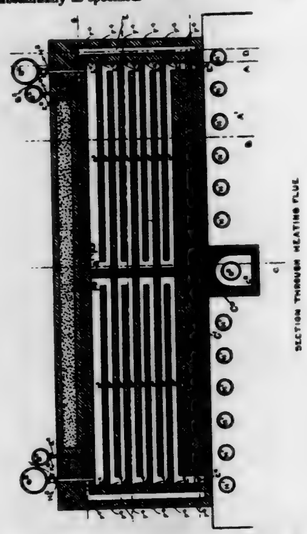

2. In adjacent coking-ovens, a hollow longitudinal wall, separating the oven-chambers, longitudinal deflecting-partitions forming heating or combustion flues in the cavity or chamber of said wall, said ovens having a chamber thereunder, and a series of transverse deflecting-partitions in said chamber forming reverting-flues leading to the draft-flue, and connecting with said longitudinal flues, substantially as specified.

3. In adjacent coking-ovens, a hollow longitudinal wall separating the oven-chambers, longitudinal deflecting-partitions forming heating or combustion flues in the cavity or chamber of said wall, a hot-air flue located above the oven, and communicating with a vertical flue at the end of the combustion-flues, said vertical flue having communication with the combustion-flues, and said hot-air flue connecting with a hot-air pipe located in the draft-flue, substantially as specified.

4. In adjacent coking-ovens, a hollow longitudinal wall separating the oven-chambers, longitudinal deflecting-partitions forming heating or combustion flues in the cavity or chamber of said wall, a hot-air flue located above the oven-chambers, and communicating with said combustion-flues, and with a hot-air pipe located in the draft-flue, substantially as specified.

5. The adjacent coking-ovens, having the vertically-separated horizontal longitudinal flue-compartments between the oven-chambers, communicating with transverse flues underneath said chambers, the deflecting air-flue above the level of the oven-chambers, and vertical air-flues communicating with said deflecting air-flues and the horizontal flue-compartments, substantially as specified.

6. In a coking-oven, the combination with adjacent open-end coking-chambers, of a hollow intervening longitudinal wall, a vertical central transverse partition in said wall, horizontal longitudinal deflecting-flues in the compartments formed by said partition, transverse flues underneath the coking-chambers leading to the draft-flue, deflecting air-flues in the upper part of the structure, vertical air-flues in the front of the same, means of supplying fuel and air, and devices for regulating the supply of fuel and of air, and for regulating the draft, substantially as specified.

705,447. FILTER. WILLIAM H. SARGENT, Cambridge, Mass. Filed Oct. 2, 1901. Serial No. 77,206. (No model.)

Claim.—1. A filter comprising an outer casing, a perforated filtering-chamber formed with annular grooves above and below its perforations, a fabric covering for said perforations, devices fitting said grooves for detachably securing the fabric in position, and an annular chemical-containing pocket formed by said fabric at one end thereof and arranged outside the filtering-chamber.

2. A filter comprising a casing having an inlet and an outlet, a perforated casing therein forming a filtering-chamber, a screen interposed between the outlets of the chamber and casing, filtering material supported upon said screen, a fabric covering for the perforated casing, a pocket formed thereby at one end and adapted to hold a chemical, said pocket being within the outer casing and outside the perforated casing, and means for detachably securing said fabric to the perforated casing, the upper end of said casing being depressed at a point below the inlet to the outer casing.

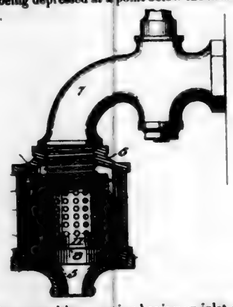

3. A filter comprising a casing having an inlet and an outlet, a perforated casing therein forming a filtering-chamber, a fabric covering for the perforated casing, a pocket formed thereby at one end and adapted to hold a chemical, said pocket being within the outer casing and outside the perforated casing, and means for detachably securing said fabric to the perforated casing, the upper end of said casing being depressed at a point below the inlet to the outer casing.

705,448. HAY AND STOCK RACK. CHARLES SCAFE, Burns, Wis. Filed Dec. 4, 1901. Serial No. 84,690. (No model.)

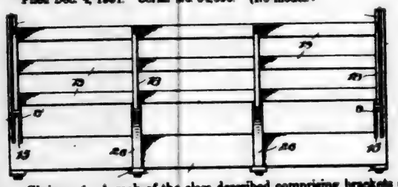

Claim.—1. A rack of the class described comprising brackets each including spaced members and a connecting attaching-leg, posts pivotally and slidably mounted between the members, for movement into and out of engagement with the sides, and connections between the posts.

2. A rack of the class described comprising brackets and adjustable side members, each bracket comprising spaced members having a connecting attaching-leg and adapted to rest against the side of a wagon-body, and having stops connecting the members, each adjustable side member of the rack including posts pivotally mounted between the members of the brackets for movement into and out of engagement with the stops, and slidably mounted for movement into and out of engagement with the sides of the body.

3. A rack of the class described comprising brackets each including spaced arcuate members, an attaching-leg connecting the members and stops connecting the members, posts pivotally and slidably mounted between the members of the brackets, and connections between the posts at each side of the rack.

705,449. CIGAR-BUNCHING MACHINE. JULIUS H. SCHEIDT, Bayonne, N. J., assignor to William E. Sharpe, trustee, Philadelphia, Pa. Filed May 29, 1901. Serial No. 62,367. (No model.)

Claim.—1. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, and the charge-carrier below said hopper and having the pocket to receive a charge of filler-tobacco from said hopper for a bunch, said charge-carrier being adapted to be moved to carry said pocket from below said hopper and to a position to discharge the said charge of filler-tobacco, combined with means for actuating said charge-carrier, means for ejecting the charge of filler-tobacco therefrom when said pocket is moved from below said hoppor, the plunger for pressing the filler-tobacco into said pocket, and means operable from the driving-shaft for imparting to said plunger a plurality of movements against the filler-tobacco for pressing the charge of the same into said pocket; substantially as set forth.

2. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, and the charge-carrier below said hopper and having the pocket to receive a charge of filler-tobacco from said hopper for a bunch, said charge-carrier being adapted to be moved to carry said pocket from below said hopper and to a position to discharge the said charge of filler-tobacco, combined with means for actuating said charge-carrier, means for ejecting the charge of filler-tobacco therefrom when said pocket is moved from below said hopper, the plunger for pressing the filler-tobacco into said pocket, the springs for affording a yielding resistance to said plunger, agitators for acting upon the tobacco within said hopper, means operable from the driving-shaft for imparting motion to said agitators, and means operable from the driving-shaft for imparting to said plunger a plurality of movements against the filler-tobacco for pressing the charge of the same into said pocket; substantially as set forth.

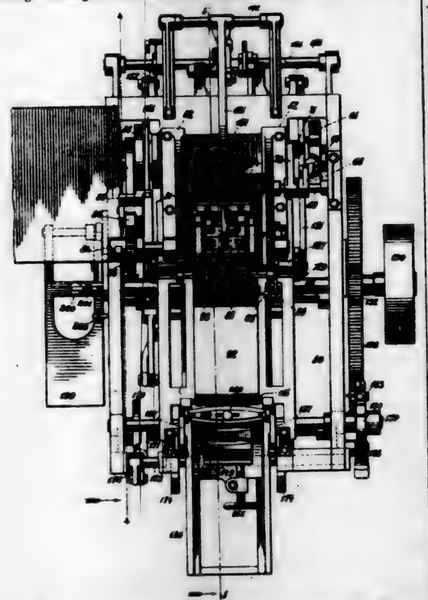

3. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, and the charge-carrier below said hopper and having the pocket to receive a charge of filler-tobacco from said hopper for a bunch, said charge-carrier being adapted to be moved to carry said pocket from below said hopper and to a position to discharge the said charge of filler-tobacco, combined with means for actuating said charge-carrier, means for ejecting the charge of filler-tobacco therefrom when said pocket is moved from below said hopper, the plunger for pressing the filler-tobacco into said pocket, the slide 54 against the wall of said hopper and carrying the agitator-pins 55 for agitating the filler-tobacco within said hopper, and means operable from the driving-shaft for imparting vertical reciprocation to said slide, agitator-pins and plunger, whereby the filler-tobacco is prevented from packing and a proper charge therefor is pressed into said pocket by said plunger; substantially as set forth.

4. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, and the charge-carrier below said hopper and having the pocket to receive a charge of filler-tobacco from said hopper for a bunch, said charge-carrier being adapted to be moved to carry said pocket from below said hopper and to a position to discharge the said charge of filler-tobacco, combined with means for actuating said charge-carrier, means for ejecting the charge of filler-tobacco therefrom when said pocket is moved from below said hopper, the plunger for pressing the filler-tobacco into said pocket, and means operable from the driving-shaft for actuating said plunger to move against the filler-tobacco for pressing the charge of the same into said pocket, the mechanism being so timed that the said plunger will make a plurality of movements against the filler-tobacco and then remain in its lower position while said charge-carrier is moving to carry its said pocket from below said hopper to the point of discharging; substantially as set forth.

5. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, the oscillatory charge-carrier 53 below said hopper and having the pocket 57 to receive a charge of filler-tobacco for a bunch, the movable bottom 77 for said pocket 57, means for turning said charge-carrier to move said pocket from below said hopper to its discharging position, means for moving said bottom 77 to eject the charge of filler-tobacco when said carrier is turned to carry said pocket from below said hopper, and the wiper 73 for preventing an excess of tobacco from being moved outward by said charge-carrier, combined with the yielding plunger 56 within said hopper for pressing the filler-tobacco into said pocket, and means for operating said plunger; substantially as set forth.

6. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, the side brackets 52 sustaining said hopper above the bed-frame of the machine and having the cheek-pieces 74 below the lower end of said hopper, the oscillatory charge-carrier 53 mounted between said cheek-pieces and directly below the lower end of said hopper and having the pocket 57 to receive a charge of filler-tobacco for a bunch, the movable bottom 77 for said pocket, the plunger within the hopper for pressing the filler-tobacco into said pocket, and the wiper 73 for preventing an excess of tobacco from being carried from said hopper by said charge-carrier, combined with means for turning said charge-carrier to move said pocket 57 to its discharging position, and means for causing said bottom 77 to eject the charge of filler-tobacco from said pocket when the latter is in its discharging position; substantially as set forth.

7. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, the charge-carrier below said hopper and having the pocket to receive a charge of filler-tobacco from said hopper for a bunch, means for actuating said charge-carrier to move said pocket from below said hopper, and means for ejecting the charge of filler-tobacco from said pocket, combined with the receiver 83 for receiving the charge of filler-tobacco from said pocket and conveying the same to said bunch-rolling mechanism, means for moving said receiver 83 from its upper position where it receives the charge of filler-tobacco to its lower position where it delivers said charge to the rolling mechanism, and means for opening the lower end of said receiver for permitting the discharge of tobacco, said receiver having the converging front and rear walls, and the hinged door for permitting, when opened, the escape of filler-tobacco to the bunch-rolling mechanism; substantially as set forth.

8. In a cigar-machine, the bunch-rolling mechanism, the elevated hopper for filler-tobacco, the charge-carrier below said hopper and having the pocket to receive a charge of filler-tobacco from said hopper for a bunch, means for actuating said charge-carrier to move said pocket from below said hopper, and means for ejecting the charge of filler-tobacco from said pocket, combined with the receiver 83 for receiving the charge of filler-tobacco from said pocket and conveying the same to said bunch-rolling mechanism, means for moving said receiver 83 from its upper position where it receives the charge of filler-tobacco to its lower position where it delivers said charge to the rolling mechanism, and means for opening the lower end of said receiver for permitting the discharge of the tobacco therefrom, said receiver having the front and rear walls, the hinged door for permitting, when opened, the escape of the filler-tobacco to the bunch-rolling mechanism, and the spring for normally retaining said door in its closed position, the hinge for said door being about on a line with the upper edge of the rear wall of said receiver, and the front wall of said receiver extending above the horizontal plane of the rear wall thereof; substantially as set forth.

9. In a cigar-machine, the rolling-apron held at its opposite ends and normally slack, a bed supporting said apron and having a recess 90 below said apron, the roller 127 for coöperating with said apron in rolling the bunch, the elevated hopper for filler-tobacco, the charge-carrier below said hopper and having the pocket to receive a charge of the filler-tobacco from said hopper for a bunch, means for actuating said charge-carrier to move said pocket from below said hopper, and means for ejecting the charge of filler-tobacco from said pocket when the latter is in its discharging position, combined with the receiver 83 for receiving the charge of filler-tobacco from said pocket and conveying the same to said apron, means for moving said receiver from its upper position where it receives the charge of filler-tobacco to its lower position where it delivers said charge to said apron and then back to its upper position, the frame 100 carried by and projecting downward below the said receiver to precede the latter and form the pocket 93 by pushing the slack of the apron 92 into said recess 90, and means for opening the lower end of said receiver for permitting the escape of the tobacco into said pocket 93; substantially as set forth.

10. In a cigar-machine, the rolling-apron 92 held at its opposite ends and being normally slack so as to permit the formation therein of the pocket 93 to receive a charge of filler-tobacco, the bed-frame below said apron and having adjacent to one end of the latter the recess 90 through which the slack of the apron may be pressed to form said pocket, the roller 127 for coöperating with said apron in rolling the bunch, and means for reciprocating said roller, combined with the slide 137 in the rear of said recess 90, and means for moving said slide to close the pocket in the rolling-apron prior to the advance of said roller 127, and then withdrawing said slide to release said pocket when said roller 127 is in position with respect to said pocket to roll the bunch; substantially as set forth.

11. In a cigar-machine, the rolling-apron 92 held at its opposite ends and being normally slack so as to permit the formation therein of the pocket 93 to receive a charge of the filler-tobacco, the bed-frame below said apron and having adjacent to one end of the latter the recess 90 through which the slack of the apron may be pressed to form said pocket, the roller 127 for coöperating with said apron in rolling the bunch, and means for reciprocating said roller, combined with the slide-plate 137 mounted on said bed-frame in the rear of said recess 90 and having its upper surface about on the same horizontal plane with the upper surface of the bed supporting said apron, and means for moving said sliding plate 137 against the pocket in said apron to close said pocket against the rear edge of said bed in advance of the roller 127 and thereafter withdrawing said sliding plate 137 after said roller 127 has advanced sufficiently to effect the rolling of the bunch; substantially as set forth.

12. In a cigar-machine, the rolling-apron 92 held at its opposite ends and normally slack to permit of the formation of the pocket 93 therein to receive the charge of filler-tobacco for a bunch, the roller 127 for coöperating with said apron in rolling the bunch, and means for operating said roller, combined with the rolling-bed 125 below said apron and over which the bunch is rolled, said rolling-bed 125 being of thin sheet-steel yieldingly held at its opposite edges, whereby said bed 125 is enabled to yield to a limited extent under the pressure of the bunch being rolled; substantially as set forth.

13. In a cigar-machine, the bunch-rolling mechanism, the funnel 145 at the front end of the rolling-bed to receive the bunch from said rolling mechanism, the tramway-frame 150 below said rolling-bed and being pivotally secured at its rear end, the cams 174 engaging said frame 150 and supporting the same at its front end, means operable from the driving-shaft for actuating said cams 174 to elevate the front portion of said frame 150 at the proper time, the sliding frame 149 resting upon and guided by said frame 150, the mold-board 148 detachably secured upon said sliding frame 149, the rack 176 loosely connected with said frame 149, the pinion 178 in engagement with said rack, and means operable from the said driving-shaft for imparting through said pinion and rack an intermittent or step-by-step movement to said frame 149 and mold-board 148 upon said tramway-frame 150, combined with the plunger 146 for pressing the rolled bunch through said funnel 145 and into one of the molds of said mold-board 148, and means operable from the driving-shaft for moving said plunger 146 downward through said funnel and then back to its upward position, the timing of the mechanism being such that said tramway-frame 150 will elevate the mold-board 148 to the lower end of said funnel at the proper period to receive the bunch pressed through said funnel by means of said plunger; substantially as set forth.

14. In a cigar-machine, the bunch-rolling mechanism, the funnel 145 at the front end of the rolling-bed to receive the bunch from said rolling mechanism, the tramway-frame 150 below said rolling-bed and being pivotally secured at its rear end, the cams engaging and supporting said frame 150 at its front end, means operable from the driving-shaft for actuating said cams to elevate the front portion of said frame 150 at the proper time, the sliding frame 149 resting upon and guided by said frame 150, the mold-board 148 detachably secured upon said sliding frame 149, the rack 176 loosely connected with said frame 149, the pinion 178 in engagement with said rack, the strap 180 passing over the upper edge of said rack 176 and holding said rack in fixed relation to said pinion 178, and means operable from the driving-shaft for imparting through said pinion and rack an intermittent or step-by-step movement to said frame 149 and mold-board 148 upon said tramway 150, combined with the plunger 146 for pressing the rolled bunch through said funnel 145 and into one of the molds of said mold-board 148 and means operable from the driving-shaft for moving said plunger 146 downward through said funnel and then back to its upward position, the timing of the mechanism being such that said tramway-frame 150 will elevate the mold-board 148 to the lower end of said funnel at the proper period to receive the bunch pressed through said funnel by means of said plunger, substantially as set forth.

15. In a cigar-machine, the bunch-rolling mechanism, the funnel 145 at the front end of the rolling-bed to receive the bunch from said rolling mechanism, the tramway-frame 150 below said rolling-bed and pivotally secured at its rear end, the cams engaging and supporting said frame 150 at its front end, means operable from the driving-shaft for actuating said cams to elevate the front portion of said frame 150 at the proper time, the sliding frame 149 resting upon and guided by said frame 150 and having the raised rear end 167 and front clamping-screw 168, the mold-board 148 detachably secured upon said sliding frame 149 by means of the said screw 168, the rack 176 loosely connected with said sliding frame 149, the pinion 178 in engagement with said rack, and means operable from the driving-shaft for imparting through said pinion and rack an intermittent or step-by-step movement to said frame 149 and mold-board 148 upon said tramway-frame 150, combined with the plunger 146 for pressing the rolled bunch through said funnel 145 and into one of the molds of said board 148, and means operable from the driving-shaft for moving said plunger 146 downward through said funnel and then back to its upward position, the timing of the mechanism being such that said tramway-frame 150 will elevate the mold-board 148 to the lower end of said funnel at the proper period to receive the bunch pressed through said funnel by means of said plunger, substantially as set forth.

705,450. NAIL-MACHINE. EMERICH SCHWARZ, Chicago, Ill. Filed Mar. 22, 1902. Serial No. 99,547. (No model.)

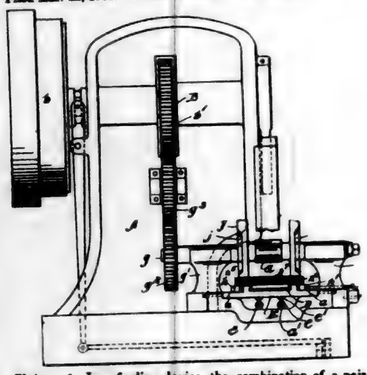

Claim.—1. In a feeding device, the combination of a pair of pivoted levers, stock-gripping jaws at the ends of said levers, means for operating said levers to cause the jaws to engage the stock, a spring holding the jaws normally disengaged, a carriage upon which said levers are pivoted and means for reciprocating said carriage.

2. In a stock-feeding device, the combination of a reciprocating carriage, levers pivoted to said carriage provided with adjustable stock-gripping jaws at one end, rollers on said levers, a pair of cams mounted on a revoluble shaft and adapted to engage said rollers, and means for reciprocating said carriage.

3. In a stock-feeding device, the combination of a reciprocating carriage, a spring tending to hold said carriage in a normally retracted position, standards on said carriage carrying a roller, a cam mounted on a revoluble shaft held in relatively fixed bearings and adapted to engage said roller to move the carriage forward, and stock-gripping mechanism on said carriage.

4. In a feeding device the combination of a frame, a reciprocating carriage mounted in said frame, a spring holding said carriage in a normally retracted position, a pair of levers pivoted on said frame, adjustable stock-gripping jaws on said levers, rollers on said levers, a spring connecting the ends of said levers, standards on said carriage carrying a roller, a shaft mounted over said carriage in bearings on said frame, a pair of cams on said shaft engaging the rollers on said levers, a third cam on said shaft engaging said roller on the reciprocating frame, means for turning said shaft, and a spring-pressed clamp forward of said feeding apparatus adapted to engage the stock substantially as described.

705,451. WRENCH-HANDLE. EDWARD H. SEARS, Collinsville, Conn., assignor to the Collins Co., Collinsville, Conn., a Corporation of Connecticut. Filed May 9, 1902. Serial No. 106,568. (No model.)

Claim.—1. In combination, the non-metallic handle interiorly larger than the shank, the shank inserted through the handle, the collars on the shank at the two ends of the handle, and the soft metal or other material making contact with the exterior of the shank and the interior of the handle.

2. In combination, the hollow wooden handle interiorly non-cylindrical, the non-cylindrical shank inserted through the handle, and the soft metal or other material making contact with the exterior of the shank and the interior of the handle.

3. In combination, the shank having flattened sides, the ferrule-collar on the shank embracing the upper end of the handle, the nut-collar on the shank centering the lower end of the handle, the interiorly-grooved handle, and the soft metal or other material making contact with the exterior of the shank and the interior of the handle.

705,452. METALLIC RAILWAY-TIE. STEPHEN A. SHARUM, Bob, Ind. Ter. Filed Nov. 19, 1901. Serial No. 82,941. (No model.)

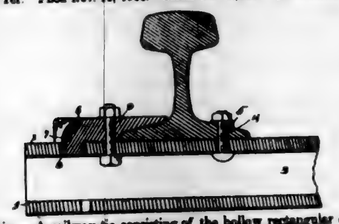

Claim.—A railway-tie consisting of the hollow rectangular casting having the bottom 1, and the parallel top 2 connected to the bottom by means of the integral vertical sides 3, 3, said casting being open at the ends; the clamp 6, having an integral tongue 7 which projects into an opening in the top 2; and a bolt inserted through said top and through the lower flange of the rail; a bolt inserted through said top and through said clamp, substantially as specified.

705,453. HERNIAL TRUSS. JOHN H. SHERMAN, Beaverdam, Wis. Filed Mar. 18, 1902. Serial No. 98,581. (No model.)

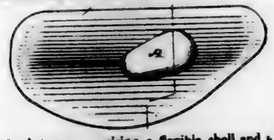

Claim.—1. A truss comprising a flexible shell and a knob within the shell, this shell being adhesive under atmospheric pressure when moistened upon its inner face and pressed against the body of a ruptured person to expel air from between the two.

2. A truss comprising a flexible shell and a knob therein of molded and vulcanized rubber material in one piece, the device as a whole being outwardly convex and having the shell portion thereof inwardly concave.

705,454. SAW-TOOTH WRENCH. GEORGE H. SHELLABERGER, Barlow, Fla. Filed Apr. 7, 1902. Serial No. 101,789. (No model.)

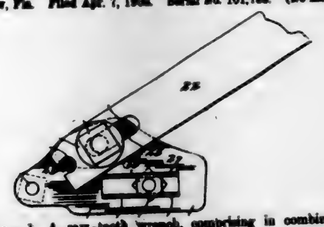

Claim.—1. A saw-tooth wrench, comprising in combination a wrench-head provided with a plurality of tooth-engaging devices thereon, and an operating-arm connected with said head and removably engaging one of said tooth-engaging devices on the opposite side of the tooth, substantially as described.

2. A saw-tooth wrench, comprising in combination a wrench-head provided with a pair of tooth-engaging devices at longitudinally-separated points thereon, and an operating-arm connected with said head and removably engaging one of said tooth-engaging devices on the opposite side of the tooth, substantially as described.

3. A saw-tooth wrench, comprising in combination a wrench-head provided with a pair of tooth-engaging devices at longitudinally-separated points thereon, and an operating-arm slidably secured to said head and removably engaging one of said tooth-engaging devices on the opposite side of the tooth, substantially as described.

4. A saw-tooth wrench, comprising in combination a wrench-head provided with a pair of tooth-engaging devices at longitudinally-separated points thereon, one of which is adjustable, and an operating-arm slidably secured to said head and removably engaging one of said tooth-engaging devices on the opposite side of the tooth, substantially as described.

5. A saw-tooth wrench, comprising in combination a wrench-head provided with a pair of laterally-extending tooth-engaging pins at longitudinally-separated points thereon, the foremost of which is fixed and the rearmost of which is adjustable, and an operating-arm slidably secured to said head and adapted to removably engage the foremost of said pins on the opposite side of the tooth, substantially as described.

6. A saw-tooth wrench, comprising in combination a wrench-head provided with a pair of laterally-extending tooth-engaging pins at longitudinally-separated points thereon, and an operating-arm slidably secured to said head and provided with a notch adapted to removably engage one of said tooth-engaging pins on the opposite side of the tooth, substantially as described.

7. A saw-tooth wrench, comprising in combination a wrench-head provided with a pair of laterally-extending tooth-engaging pins at longitudinally-separated points thereon, and an operating-arm slidably secured to said head and provided in its forward end with a notch adapted to removably engage the foremost of said tooth-engaging pins on the opposite side of the tooth, substantially as described.

8. A saw-tooth wrench, comprising in combination a wrench-head provided with a pair of laterally-extending tooth-engaging pins at longitudinally-separated points thereon, the foremost of which is fixed and the rearmost of which is adjustable, and further provided with a third laterally-extending pin located above and between said tooth-engaging pins, and a slotted operating-arm mounted on said last-named pin and provided in its forward end with a notch adapted to removably engage the foremost of said tooth-engaging pins on the opposite side of the tooth, substantially as described.

705,455. CLOSURE AND FEEDER FOR BAGS. CHARLES R. SIEGEL, St. Louis, Mo., assignor to the Peerless Pouch Company, a Corporation of Delaware. Filed Mar. 19, 1902. Serial No. 98,912. (No model.)

Claim.—1. A bag having a spring closure device and holding-pockets formed in the bag which serve to firmly hold the ends of said spring-closure in place without auxiliary securing means, substantially as described.

2. A bag having a closure device for the mouth thereof, a pocket formed in the bag at each end of the mouth, said bag having a contracted portion below said pockets, substantially as described.

3. A bag having a closure device for the mouth thereof, and having portions, projecting inwardly above and below the closure device and flaps extending along the mouth, the flaps of the bag and said projecting portions forming pockets to receive the ends of the closure device, substantially as described.

4. A bag having a closure-spring for the mouth thereof, and having a contracted neck below the mouth, said bag having means to surround and embrace the ends of said spring above said contracted neck, said means consisting of the turned-in joined edges of the bag and joined flaps extending along the mouth, between which edges and flaps each end of the spring is confined, whereby said spring is held by the formation of said bag independent of other means of fastening, substantially as described.

5. A bag having a closure-spring and having a contracted neck and pockets in which the ends of the spring are held, and means to protect the bag against chafing from the edge of the spring, substantially as described.

6. A bag having a closure-spring and ears forming pockets for the ends of the spring and protecting-flaps extending from said ears along the edge of said spring, substantially as described.

7. A bag having a closure-spring for the mouth thereof and having a contracted neck below the mouth, and means to hold the ends of said spring in said bag above said contracted neck, substantially as described.

705,456. IRIDESCENT COATING OF COPPER, BRONZE, OR LIKE SURFACES. DUNCAN SINCLAIR, Coalbrookdale, England. Filed Dec. 31, 1900. Serial No. 41,649. (No specimens.)

Claim.—1. As a new article of manufacture, an article having a metallic surface of copper, bronze or brass, coated with an iridescent layer of oxid of lead containing copper, substantially as described.

2. As a new article of manufacture, an article of metal having an

electrodeposited film of copper deposited thereon and an iridescent coating over this consisting of oxygen, lead and copper.

3. As a new article of manufacture, a metallic surface coated with an iridescent coating of oxid of lead and copper of different thicknesses in different parts arranged in a pattern, substantially as described.

4. The process of coating articles having a surface of copper or of its alloys which consists in thoroughly cleaning the surface, immersing it in an electrolytic tank containing alkali, bleaching and water, and covering certain portions of the plate with a varnish resist during portions of the period of immersion, afterward removing the resist and polishing, whereby a variegated iridescent pattern is formed on the surface.

5. The process of coating articles having a surface of copper or its alloys which consists in thoroughly cleaning the surface, immersing it in an electrolytic tank containing alkali, oxid of lead, water and a little electropapering solution, and passing an electric current through, and then quickly drying and heating, substantially as described.

6. The process of coating articles having a surface of copper or its alloys, which consists in thoroughly cleaning the surface, immersing it in an electrolytic tank containing alkali, oxid of lead, water, and electropapering solution, passing an electric current through, and during part of the time preceding these parts of the surface with a resist of varnish, drying and rapidly heating, substantially as described.

7. In a process for coating articles with an iridescent coating by electrolysis, exposing the article at the anode in the solution to an electric current, and during portions of the time during which the article is so exposed, covering portions of the pattern with a varnish resist not acted upon by the solution whereby the depth of coating, and consequently the color is varied according to the time that the various parts have been exposed unprotected in the solution to the current.

705,457. ROTARY ENGINE. Gust. J. Stowell, Edgerville, Wis. Filed Mar. 20, 1902. Serial No. 98,311. (No model.)

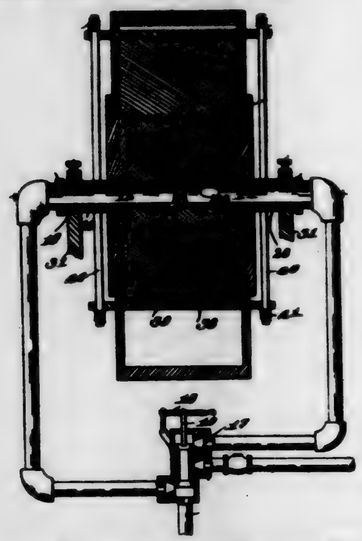

Claim.—1. A motor having a cylinder, a drum in said cylinder, and the periphery of the drum being in contact with the inner surface of the cylinder, and the drum having ports in communication with the interior of the cylinder, pistons adapted to project through slots in the cylinder, cross-bars connected with the pistons and having their outer ends perforated, rods passing through the perforations of said cross-bars, and springs carried by the rods and bearing against the cross-bars.

2. A motor of the class described having a cylinder, a drum in said cylinder and the periphery of the drum being in contact with the inner surface of the cylinder, a stationary shaft passing through said drum and having independent compartments, ports arranged in series and the respective series communicating with said compartments, bushings fitted in the ends of the cylinder and surrounding said shaft, pistons extending through slots in the periphery of the cylinder, a fly-wheel surrounding the piston and having guides for said pistons and means for holding the inner ends of the pistons in contact with the periphery of said drum.

3. A motor of the class described having a cylinder, a drum in said cylinder and the periphery of the drum being in contact with the inner surface of the cylinder, a fixed shaft passing through the drum and having independent compartments, ports arranged in series and the respective series being in communication with the said compartments, bushings fitted in the ends of the cylinder and surrounding said shaft, a two-part fly-wheel surrounding the cylinder and provided with ribs mating with each other and having guideways, pistons slidable in said guideways and adapted to project through slots in the cylinder and means rotative with the fly-wheel for holding the inner ends of the pistons in contact with the periphery of the drum.

705,458. DRAFT-EVENER. Milton W. Sleight, Denton, Tex., assignor of one-half to Joseph D. Moore, Matagorda county, Tex. Filed Mar. 15, 1902. Serial No. 98,315. (No model.)

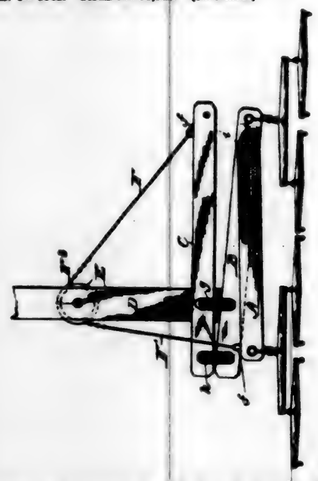

Claim.—1. In combination with the subtongue D, pulley E, journaled to the lower face of said subtongue; lever C, bolted to said tongue, near its right-hand end; lever B, hinged to the right-hand end of said lever C, and also bolted to said subtongue D; lever A, having one end bolted near the left-hand end of lever B; clevises *f*, one secured to the left-hand end of lever C, and the other to the right-hand end of lever A; a chain F^2, passing around pulley E; a rod F, having one end secured to the clevis *f*, secured to the beam C, and the other to one end of the chain F^2; a rod F', having one end secured to the clevis *f*, secured to the right-hand end of lever A, and its other end to the chain F^2, substantially as shown and described and for the purposes set forth.

2. In combination with the subtongue D, pulley E, journaled to the lower face of said subtongue; lever C, bolted to said tongue, near its right-hand end; lever B, hinged to the right-hand end of said lever C, and also bolted to said subtongue D; lever A, having one end bolted near the left-hand end of lever B; clevises *f*, one secured to the left-hand end of lever C, and the other to the right-hand end of lever A; a chain F^2, passing around pulley E; a rod F, having one end secured to the clevis *f*, secured to the beam C, and the other to one end of the chain F^2; a rod F', having one end secured to the clevis *f*, secured to the right-hand end of lever A, and its other to the other end of the chain F^2; doubletrees, one secured to the right-hand end of lever A, and the other to the left-hand end of lever B, substantially as shown and described and for the purposes set forth.

705,459. VAPOR-BURNER. Walter J. Shaft, Orange, N. J. Filed Jan. 16, 1900. Serial No. 702,276. (No model.)

Claim.—1. The combination of a vaporizer, a valve for regulating the discharge therefrom, a shell or casing disposed exteriorly of the vaporizer and provided with openings for the admission of air, means for delivering a liquid hydrocarbon to the vaporizer, a gas-inlet tube communicating with the interior space of the shell or casing, and an independent support for attaching the parts to a gas-outlet.

2. The combination of a vaporizer, a shell or casing surrounding the same and having openings for the admission of air, a cup for absorbent material open to the interior of the shell, and a receptacle exterior to the shell and communicating with the cup.

3. The combination of a vaporizer, a shell or casing surrounding the same and having openings for the admission of air, a cup for absorbent material open to the interior of the shell, a receptacle exterior to the shell and communicating with the cup, and a support for attaching the parts in place.

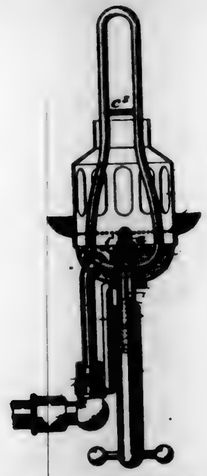

4. A vaporizer flattened in form and provided with a succession of channels intermediate its inlet and outlet openings, each of said intermediate channels communicating at its ends with the adjacent channel on one side and at a point between its ends with the adjacent channel on the other side.

5. A vaporizer comprising an inlet and an outlet tube, in combination with a connecting part, flattened or disk-like in form, and provided with a succession of channels intermediate its inlet and outlet openings, each of said intermediate channels communicating at its ends with the adjacent channel on one side and at a point between its ends with the adjacent channel on the other side.

6. The combination of a vaporizer, a shell or casing within which the vaporizer is located and which is provided with openings for the admission of air and has its outlet-passage restricted, means for delivering a liquid hydrocarbon to the vaporizer, a gas-inlet tube communicating with the interior space of said apron or shell and an independent support for attaching the parts in place.

7. The combination with a vaporizer flattened in form and provided between the inlet and outlet openings with a succession of channels connected with each other alternately at their end and middle portions, of a shell or casing within which the vaporizer is located and which is provided with openings for the admission of air and means for delivering a liquid hydrocarbon to the vaporizer.

705,460. AUTOMATIC REGULATOR FOR HYDRAULIC AIR-COMPRESSORS. Charles M. W. Smith, Cambridge, Mass. Filed Mar. 20, 1901. Serial No. 52,099. (No model.)

Claim.—1. In a hydraulic air-compressor, a regulating device consisting of a constantly-loaded movable part, actuated by air-pressure from the main reservoir thereof, operatively connected by links and levers to a controlling-valve, alternately admitting and allowing the escape of pressure to and from plungers operatively connected to means for varying the area of the water-inlet passage thereby controlling the quantity of water admitted into the compressor, substantially as described.

2. In a hydraulic air-compressor, a regulating device consisting of a constantly-loaded movable part actuated by air-pressure from the main reservoir thereof, operatively connected by links and levers to a controlling-valve, alternately admitting and allowing the escape of pressure to and from plungers operatively connected to an adjustable throat-piece for controlling the amount of water admitted into the compressor, by varying the area of the water-inlet passage thereof, substantially as described.

3. In a hydraulic air-compressor, a regulating device consisting of a constantly-loaded movable part under pressure from the main reservoir thereof, operatively connected to a controlling-valve, controlling the pressure in a secondary reservoir containing a non-compressible liquid, which in turn operates plungers operatively connected to means for varying the area of the water-inlet passage, substantially as described.

4. In a hydraulic air-compressor, a regulating device consisting of a constantly-loaded movable part under pressure from the main reservoir thereof operatively connected to a controlling-valve controlling the pressure in a secondary reservoir containing a non-compressible liquid, which in turn operates plungers operatively connected to means for varying the area of the water-inlet passage, also causing the controlling mechanism to come to a state of rest under a constant pressure, substantially as described.

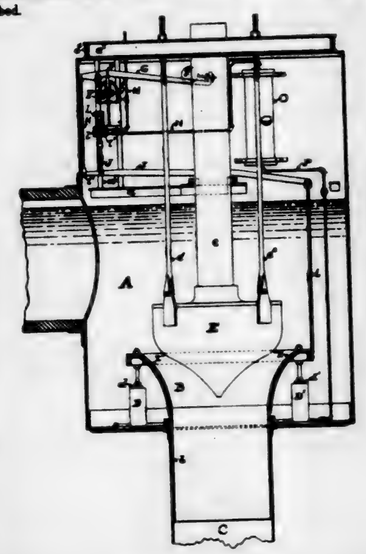

705,461. SPARK ARRESTING AND DISCHARGING DEVICE. Edward J. Smith, High Springs, Fla. Filed May 1, 1902. Serial No. 105,503. (No model.)

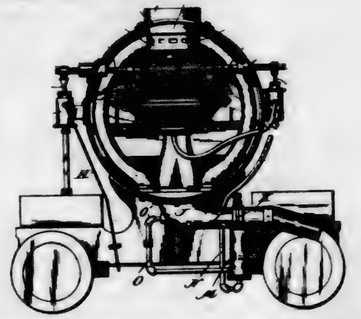

Claim.—1. The combination substantially as herein described of the smoke-box, the stack-saddle and the cylindrical flange depending within the smoke-box, the spark-arresting screen or cage operating in the smoke-box and provided at its upper end with the cylindrical cap operating in the flange of the stack-saddle and provided with slots which may be adjusted into and below the cylindrical flange, and means for operating the screen or cage into the closed position and to permit it to drop to open position substantially as and for the purposes set forth.

2. A spark-arresting screen or cage for locomotives provided at its upper end with a cylindrical cap having numerous slots and a cylindrical flange in which said cap operates and means whereby the screen or cage may be raised and lowered, substantially as set forth.

3. The combination with the locomotive smoke-box of the spark-discharging tube connected therewith, a valve in said tube, a steam-pipe for discharging the sparks from said tube when the valve is opened, and steam-operated means for opening the valve and for permitting the passage of pressure to the spark-discharging steam-pipe, substantially as set forth.

4. The combination of the smoke-box, the spark-discharging tube leading therefrom, a valve in said tube, a cylinder having the piston-rod and devices whereby the movements of said rod operate the valve or gate, a pressure-pipe leading to said cylinder for operating its piston, and a pipe leading from said cylinder to the spark-discharging tube and arranged to be opened to the pressure after the valve has been opened by the travel of the piston in said cylinder substantially as and for the purposes set forth.

5. The combination of the smoke-box, the pipe I, the valve K, the lever connected with said valve, the cylinder M, the supply-pipe N leading to the lower end of said cylinder, the pipe O leading from said cylinder above its lower end, and the piston-rod extending from said cylinder and connected with the lever for operating the valve K, substantially as and for the purposes set forth.

705,462. FERTILIZER AND METHOD OF MAKING SAME. GEORGE H. SMITH, New York, N. Y. Filed Dec. 16, 1901. Serial No. 86,072. (No specimens.)

Claim.—1. The process of making fertilizer, consisting in mixing night-soil, phenol, calcium carbonate and alumina silicate in about the proportions specified, then slowly drying the mixture by air-exposure and then grinding the same to a fine powder, substantially as described.

2. A fertilizer consisting of dried and ground night-soil, phenol, calcium carbonate and alumina silicate in about the proportions specified.

705,468. PLACKET-FASTENER. JOSEPH R. SMITH, Waterbury Conn., assignor to the Waterbury Button Company, Waterbury, Conn. a Corporation. Filed Mar. 8, 1902. Serial No. 97,394. (No model.)

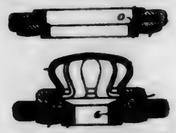

Claim.—1. In a placket-fastener, the combination with the stud or socket members thereof, of a non-metallic flange projecting beyond the edge thereof, substantially as described.

2. In a placket-fastener, the combination with the stud and socket members, of a fabric disk secured thereto, the edges of the disk inclosed within the parts of the respective members, substantially as described.

3. In a placket-fastener, the combination with the stud member comprising an eyelet member and a washer, a socket member also comprising an eyelet member and a washer, of fabric disks having their edges secured between the eyelet members and said washers and so as to project beyond said washers forming a non-metallic flange therefor, substantially as described.

705,464. WOVEN FABRIC. WILLIAM T. SMITH, Philadelphia, Pa. Filed Feb. 17, 1902. Serial No. 94,403. (No specimens.)

Claim.—1. A woven fabric in which are combined party-colored chenille face weft-threads, back weft-threads of mottled or variegated spun yarn, and binder warp-threads tying together the face and back weft-threads, portions of the party-colored chenille face weft-threads projecting between the back weft-threads so as to produce, upon the back of the fabric, a pattern composed in part of those projecting portions of the party-colored chenille face weft-threads and in part of the mottled or variegated yarn constituting the back weft-threads, substantially as specified.

2. A woven fabric in which are combined party-colored chenille face weft-threads, back weft-threads of mottled or variegated yarn, stuffer warp-threads separating the face and back weft-threads, and binder warp-threads tying together the face and back weft-threads, portions of the party-colored chenille face weft-threads projecting between the back weft-threads so as to produce upon the back of the fabric a pattern composed in part of those projecting portions of the party-colored chenille face-threads and in part of the mottled or variegated yarn constituting the back weft-threads, substantially as specified.

705,465. LOG-RELEASING DEVICE FOR BOOMS. ERNEST W. SPENCER, Portland, Oreg. Filed Feb. 24, 1902. Serial No. 96,204. (No model.)

Claim.—1. In a device for unloading logs, a suitable base, inclined trusses mounted on said base, chock-blocks movably held on and adjacent to the outer end of said trusses, cables or equivalent means secured at one end to the chock-blocks and detachably held at the other end to releasing mechanism, and means for operating said releasing mechanism.

2. In a device for unloading logs, a suitable base transverse double-inclined trusses mounted on said base, a longitudinal shaft mounted on said base, chock-blocks movably held on said trusses adjacent to ends thereof, and intermediate releasing mechanism between the shaft and the chock-blocks.

3. In a device for unloading logs, the combination with a base, of inclined log-supports, chock-blocks movably held adjacent to the ends of said log-support, a longitudinal shaft mounted on the said base, releasing mechanism secured to said shaft, cables or equivalent means connected to said chock-blocks and to said releasing mechanism, and means for longitudinally moving said shaft whereby the releasing mechanism is unlocked, to release the cable and allow the chock-blocks to move over and beyond the ends of the inclined log-supports.

4. In a device for unloading logs, the combination with a base, of inclined log-supports or trusses, a longitudinal shaft suitably mounted on said base, and screw-threaded at its ends, keepers secured to the said shaft, pivoted bolts secured to the base, chock-blocks movably held on and adjacent to the ends of the inclined trusses, cables or equivalent means secured to the chock-blocks at one end and engaging the pivoted bolts at the other end, and an internally-threaded hand wheel or nut mounted on the threaded ends of the shaft and adapted to have a bearing against the base, whereby when the said hand wheel or nut is rotated the shaft is longitudinally moved carrying the keeper out of locking engagement with the said swinging bolts, releasing the cable and allowing the chock-blocks to be moved outwardly over the ends of the inclined log-supports or trusses by the weight of the logs bearing against the said chock-blocks.

5. In a device for unloading logs, the combination with a suitable base, of inclined trusses, a longitudinal shaft held in bearings on said base and in said base, and threaded at each end, main keepers having openings therein and secured to said shaft, auxiliary keepers loosely mounted on said shaft and provided with holes, pivoted bolts secured to the base between the said main keepers and auxiliary keepers, a projection or boss on the end of said bolt adjacent to the auxiliary keeper, and in alinement with main portion of the said bolts, the said projection or boss adapted to engage the opening in the auxiliary keepers, chock-blocks movably held on and adjacent to the ends of the inclined trusses, cables or equivalent means pivotally secured at one end to the chock-blocks, and at the other end engaging loosely with the pivoted bolt, hand wheels or nuts engaging the threaded ends of the shaft and adapted to have a face bearing against the end bearings supporting the shaft, whereby when the said hand-wheels are screwed up against the end shaft-bearings, the shaft is caused to be moved longitudinally and carry the main keepers out of engagement with the pivoted bolts permitting them to swing and release one end of the cable and allow the chock-blocks to be moved outwardly over the ends of the inclined trusses by the weight of the logs against them.

6. In a device for unloading logs, the combination of a base, double-inclined trusses mounted thereon, a longitudinal shaft, suitably mounted on said base, and threaded at each end, bearings secured at each end of said base and supporting said shaft, main keepers secured to the shaft at suitable intervals having side extensions provided with openings, longitudinal pins secured to said main keepers between the shaft and the openings in said main keepers, auxiliary keepers mounted to slide on said shaft and separated from the main keepers by the pins secured to said main keepers, and having side extensions provided with holes in alinement with the holes of the main keepers, bolts pivotally secured to the base opposite the holes in the main and auxiliary keepers, and consisting of a main portion and a projection or boss, chock-blocks movably mounted on and adjacent to the ends of the inclined trusses, cables or equivalent means pivotally secured at one end to the chock-blocks and provided with an eye at the other end adapted to engage the pivoted bolts, a stop interposed between the ends of the cable through which said cable is adapted to pass, and internally-threaded hand wheels or nuts engaging the threaded ends of the shaft, having a face bearing against the end shaft-bearings, whereby when the said hand-wheels are alternately screwed up against the said end bearings the shaft is caused to move longitudinally and cause the main keepers to release or lock all of the pivoted bolts simultaneously.

7. In a device for unloading logs, a suitable base, inclined trusses mounted on said base, chock-blocks movably held on and adjacent to the outer end of said trusses, cables, or equivalent means pivotally secured at one end to the chock-blocks, and detachably held at the other end to releasing mechanism, means for operating the releasing mechanism, and a ledge or shelf secured to the sides of the base below the lower end of the inclined trusses, whereby when the chock-blocks are released and turn over the ends of the trusses they rest upon the said ledges or shelves and form a continuation of the said inclined trusses.

705,466. STREET-CAR FENDER. OTTO SPILLER-SPITZER, Brunnersdorf, near Kaaden, Austria-Hungary. Filed Apr. 5, 1902. Serial No. 101,555. (No model.)

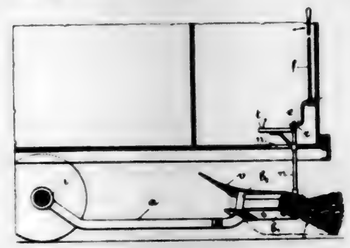

Claim.—1. In a street-car fender, the combination of a frame, pivotally suspended with its rear end below the car-body, angular or curved clamping-jaws forming the front end of the said frame, bunches of twigs clamped between the said jaws, and means for temporarily suspending the front end of the said frame, substantially as and for the purpose set forth.

2. In a street-car fender, the combination of a frame pivoted at the rear end to the car, clamping-jaws forming the front part of the said frame, bunches of twigs clamped between the said jaws, a rod secured to the upper jaw and extending through an aperture in the car-bottom, a foot-rest pivoted to the upper slotted end of the said rod, a double-armed lever fulcrumed at the car-wall and adapted to temporarily engage the slotted end of the said rod, and a net back of the said brushes, the parts being constructed, arranged and working substantially as and for the purpose specified.

705,467. TRACK-INDICATOR. STEPHEN A. STARGE, Hutchins, near Mattoon, Wis. Filed Oct. 14, 1901. Serial No. 78,580. (No model.)

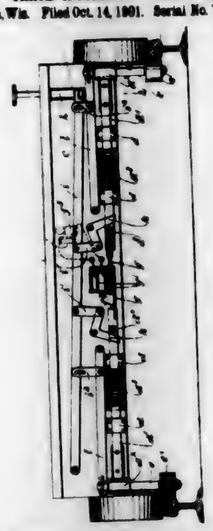

Claim.—1. The combination of members adapted to engage the track-trails, means pressing each of said members into active position, extensions connected with said members, the extensions being crossed and projected past each other, contact devices carried on the ends of the extensions and engaged together by a spreading movement of said yielding members, and an electrical indicating device controlled by the contact device.

2. The combination of a slidable member, an axle slidable therein and carried thereby, a wheel on the axle, means for simultaneously sliding the said slidable member and the axle, and an indicating device actuated from the said sliding member.

3. The combination of a slidable member, an axle slidable transversely therein and carried thereby, a wheel on the axle, means for sliding the said slidable member and the axle, and an indicating device actuated from the said sliding member.

4. The combination of a slidable member, an axle carried slidably thereby and transversely thereto, a wheel on the axle, an indicating device controlled from the said slidable member, levers connected respectively to the axle and slidable member, and means for throwing the levers, for the purpose specified.

5. The combination of a slidable member, an axle carried slidably thereby and transversely thereto, a wheel on the axle, an indicating device controlled from the said slidable member, levers connected respectively to the axle and slidable member, a third lever, links connecting the third lever with the first two levers, and means for operating the third lever.

6. The combination of a slidable member, an axle carried slidably thereby and transversely thereto, a wheel on the axle, an indicating device controlled from the said slidable member, levers connected respectively to the axle and slidable member, a third lever, links connecting the third lever with the first two levers, and means for operating the third lever, said means comprising a push-rod connected with the third lever and a dog for holding the push-rod.

7. The combination of two yielding members adapted to be actuated by inequalities in track-rails, extensions on said members, said extensions being crossed and projected past each other, a blade hung between the extensions, and an electrical signaling device comprising contacts adapted to be connected by the blade when moved to engage them.

8. The combination of a slidable member, an axle slidably carried therein, a connection between the slidable member and the axle whereby they may be moved in unison in and out of operative position, means exerting a constant pressure on the said slidable member, and an indicating device actuated from the slidable member.

705,468. SOOT OR ASH PAN. THOMAS K. STANTON, Tolula, Ind. Ter. Filed Feb. 11, 1902. Serial No. 93,584. (No model.)

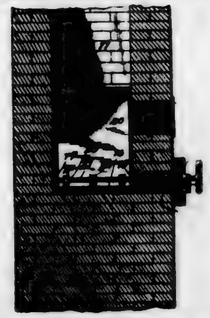

Claim.—1. The combination with a chimney having a flue and an opening in the chimney-wall communicating with the flue, of a soot-receptacle removably mounted in the flue, said receptacle having a bottom and a front wall that closes the opening, and an intermediate partition spaced from the front wall and above the bottom, said partition extending across the inner portion of the chimney-opening, whereby a dead-air space is formed in said opening.

2. A soot or ash receptacle comprising a drawer, said drawer having front, rear and side walls, and an intermediate transverse partition, a cover for that portion of the drawer between the partition and the rear wall, said cover being movably mounted upon the drawer, and operating means for the cover connected thereto and mounted upon the drawer.

3. A soot or ash receptacle comprising a drawer, a cover extending across the drawer, and a rock-shaft journaled to the drawer contiguous to one side thereof and projecting through the front wall of said drawer, said rock-shaft extending longitudinally along one end of the cover and being secured thereto.

4. A soot or ash receptacle, comprising a drawer constructed to be inserted in a chimney, said drawer having front, rear, and side walls, and an intermediate transverse partition, a rock-shaft journaled on the drawer contiguous to one side thereof and projecting through the front wall, said projecting end having a handle, and a cover for that portion of the drawer between the partition and the rear wall, said cover being attached to and movable with the rock-shaft.

705,469. DUPLICATE-WRIST TRAY. ROBERT B. STARKWEATHER, Hartford, Conn. Filed Jan. 3, 1902. Serial No. 88,041. (No model.)

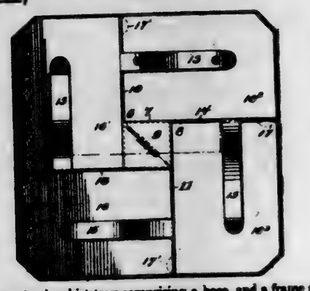

Claim.—1. A whist-tray comprising a base, and a frame secured to the base, and composed of plates, which, when assembled, form a central portion; arms projecting from said central portion and dividing the base into compartments, and card-clamping devices carried by said arms.

2. A whist-tray comprising a base, and a frame composed of interlocking sheet-metal sections, said frame having a central portion and arms dividing the base into compartments projecting from the central portion, and springs projecting from the arms, said springs serving to clamp the cards upon the base.

3. A whist-tray consisting of a base; a frame composed of sheet-metal plates, which, when assembled, constitute a central portion; arms projecting from said central portion, and serving to divide the base into compartments; means for securing the arms to the base; and springs projecting from the arms.

4. The combination, with a base, of a frame composed of interlocking sheet-metal sections; arms projecting from said sections, each arm having a lug inserted in an opening of the base; and springs projecting from the arms.

5. In a whist-tray, the combination, with a base, of a plate having projecting arms; a plate covering the first-named plate and also having projecting arms, the arms of said plates dividing the base into compartments; and springs carried by the arms and serving to secure the cards upon the base.

6. In a whist-tray, the combination, with a base, of a plate having arms projecting from its diagonally opposite corners; means for securing said arms to the base; springs projecting from said arms; a cover-plate fitted over the first-named plate; arms projecting from two of the corners of said cover-plate; springs carried by said arms; and means for securing the arms of the cover-plate to the base.

7. In a whist-tray, the combination, with a base, of a plate having flanged sides and open ends; arms projecting from the plate; springs projecting from the arms; a cover-plate having flanges adapted to inclose the open ends of the other plate; arms projecting from the cover-plate; and springs carried by said arms.

705,470. MEANS FOR DETECTING TAMPERING WITH SEALED ENVELOPS. HARRY G. STARRER, Newark, N. J., assignor of one-half to Herman R. L. Beyer, Newark, N. J. Filed June 4, 1901. Serial No. 63,076. (No model.)

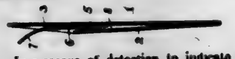

Claim.—1. In a means of detection to indicate that a sealed envelop has been tampered with, the combination, with the body of the envelop and its gummed flap, of a piece of thin material arranged within a part of the said body and having a portion of said thin material extending beyond the mouth of said body, said material having a marginal edge 7 made to conform with the contour of the marginal and gummed edge of the said flap, but being slightly smaller than said gummed edge, all being adapted to be folded and arranged between said body and the gummed flap and sealed in place when the flap is sealed against said body of the envelop, said thin material being prepared with a solutive coloring-matter, substantially as and for the purposes set forth.

2. In a means of detection to indicate that a sealed envelop has been tampered with, the combination, with the body of the envelop and its gummed flap, of a piece of stiff material 5 arranged within the body of the envelop and a piece of tissue-paper attached to said piece of stiff material extending beyond the mouth of the envelop, said piece of tissue-paper having a marginal edge 7 made to conform with the contour of the marginal and gummed edge of the said flap, but being slightly smaller than said gummed edge, all being adapted to be folded and secured between the body of the envelop and the flap when the latter is sealed against the said body of the envelop, substantially as and for the purposes set forth.

3. In a means of detection to indicate that a sealed envelop has been tampered with, the combination, with the body of the envelop and its gummed flap, of a piece of stiff material 5 arranged within the body of the envelop and a piece of tissue-paper attached to said piece of stiff material extending beyond the mouth of the envelop, said piece of tissue-paper having a marginal edge 7 made to conform with the contour of the marginal and gummed edge of the said flap, but being slightly smaller than said gummed edge, all being adapted to be folded and secured between the body of the envelop and the flap when the latter is sealed against the said body of the envelop, the said piece of tissue-paper being prepared with a solutive coloring-matter, substantially as and for the purposes set forth.

705,471. TUCK-CREASER FOR SEWING-MACHINES. HIRAM P. STEWARD, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Dec. 3, 1901. Serial No. 84,563. (No model.)

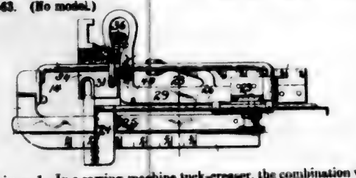

Claim.—1. In a sewing-machine tuck-creaser, the combination with a creaser-frame consisting of a plate composed of two right-angular parts one of which forms an upturned flange and which parts afford a creaser-frame of L-shaped cross-section, of connected upper and lower creasing members and operating means supported by said frame.

2. In a sewing-machine tuck-creaser, the combination with a creaser-frame consisting of a plate composed of two right-angular parts one of which forms an upturned flange and which parts afford a creaser-frame of L-shaped cross-section, of a clamping saddle-piece adjustably mounted on said flange, upper and lower creasing devices both connected with said saddle-piece, and a yielding device through which the upper creasing member is to be operated.

3. In a sewing-machine tuck-creaser, the combination with a creaser-frame consisting of a plate composed of two right-angular parts one of which forms an upturned flange and which parts afford a creaser-frame of L-shaped cross-section, of a clamping saddle-piece adjustably mounted on said flange, upper and lower creasing devices both connected with said saddle-piece, a yielding device through which the upper creasing member is to be operated, and an adjustable edge-guide held in place by said saddle-piece when the latter is clamped to the said flange.

4. In a sewing-machine tuck-creaser, the combination with the creaser-frame, of creasing devices adjustably supported on said frame and comprising a vibratory creasing-lever, of a spring having a forked arm for lifting said lever and an arm overlying said lever having an upwardly-bent extension to be engaged by a projection or part on the needle-bar of a sewing-machine.

705,472. ATTACHMENT-HOLDER FOR SEWING-MACHINES. HIRAM P. STEWARD, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Filed Dec. 3, 1901. Serial No. 84,562. (No model.)

Claim.—1. The combination with a sewing-machine presser-foot having a horizontal groove or recess extending lengthwise or from front to rear thereof, and the bottom wall of which groove or recess is above the bottom of said foot, and said foot having a vertical pin or stop fixed in and crossing said groove or recess, of a sewing-machine attachment having a forwardly-extending tongue closely fitting between a wall of said groove or recess and said pin or stop.

2. The combination with a sewing-machine presser-foot having a horizontal groove or recess extending lengthwise or from front to rear thereof, and having a vertical pin or stop in said groove or recess, of a sewing-machine attachment having a forwardly-extending tongue closely fitting between a wall of said groove or recess and said pin or stop.

3. The combination with a sewing-machine attachment provided with a tongue, of a presser-foot grooved or recessed for the reception of said tongue, and a spring-catch mounted on the attachment and having a shoulder or portion to engage a part of the said presser-foot to positively lock the attachment to the said presser-foot.

4. The combination with a sewing-machine attachment having a tongue, of a presser-foot having a horizontal groove, a fixed pin crossing said groove vertically and between which pin and the inner wall of said groove said tongue closely fits, and a spring-catch having a shoulder or portion to engage a part of said presser-foot to lock the attachment to the said presser-foot.

705,473. PARALLEL-RULER. JULIUS STERNFELD, New York, N. Y. Filed Sept. 30, 1901. Serial No. 77,081. (No model.)

Claim.—A parallel-ruler comprising a ruler proper, a shaft having rollers and journaled on the ruler, a ratchet-wheel having teeth of a pitch varying according to a predetermined law and rotating with the shaft and rollers, and a pawl carried by the ruler and engaging the said ratchet-wheel, as set forth.

705,474. CONVEYER. HENRY L. ST. JAMES, Marshall, Tex. Filed Feb. 11, 1902. Serial No. 93,894. (No model.)

Claim.—1. In a conveyer the combination with the body and chain-sprockets, of a conveyer-chain, conveyer-slats adapted to be carried thereon, threaded bolts passing through the horizontal links of said chain and passing through and secured to said slats, substantially as described.

2. In a conveyer the combination with a body of a conveyer-chain and conveyer-slats, T-bolts securing said slats to said chain, chain-sprockets having grooves therein for the vertical links of said chain, recesses for the horizontal links, recesses for the bolt-heads, and means for revolving said sprockets, substantially as described.

3. In a conveyer the combination with a body, of a conveyer-chain, and means for driving the same, conveyer-slats, bolts securing said slats to said chain, chain-sprockets having grooves therein for the reception of the vertical links of said chain, and recesses for the horizontal links, substantially as described.

4. In a conveyer the combination with the body, of a conveyer-chain and slats secured thereto, hooked supports transversely bolted to said slats, and arranged so that the center of gravity of the load is forward of the center of the slats, substantially as described.

5. In a conveyer the combination with the body, of a conveyer-chain and slats secured thereto, hooked supports secured to said slats, and arranged so that the center of gravity of the load is forward of the center of the slats, and vertical pins secured in said slats, substantially as described.

705,474. [illegible]

705,475. STEP-LADDER. VOLNEY B. ST. JOHN, Erie, Pa. Filed Oct. 24, 1901. Serial No. 79,853. (No model.)

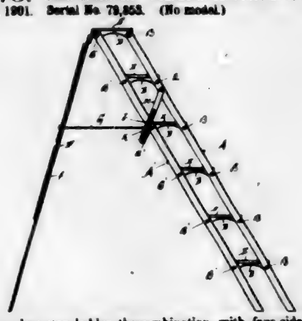

Claim.—In a step-ladder, the combination, with four side bars A A A′ A′ arranged in pairs, of a series of steps E each step being pivotally connected with the four side bars, a rear leg or brace F pivotally connected with the top of the rear side bars A′ and provided with a projecting pin *f*, a pin *b* projecting from one of the rear side bars A′, and a locking-brace H pivoted to one of the front side bars A and provided with a longitudinal series of holes for engaging with the pins *f* and *b*, substantially as set forth.

705,476. SEPARABLE GARMENT-SUPPORTING BUTTON ATTACHMENT. HENRY F. STOWELL, Rochester, N. Y. Filed Sept. 26, 1901. Serial No. 76,658. (No model.)

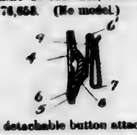

Claim.—1. The detachable button attachment for supporting nether undergarments from an outer garment, said attachment having means for making connection directly with a button at the outer part of the latter and outside the connection of the button and said outer garment.

2. The detachable button attachment for supporting nether undergarments from an outer garment, said attachment having means for making connection directly with a button, and adapted for application to the button after the latter is fixed upon a garment.

3. The detachable button attachment for supporting nether undergarments from an outer garment, said attachment having an opening to

receive the connection of the button and garment and having means distinct from said opening for making connection directly with a button, and a hook to receive a tape.

4. A detachable garment-supporting device provided with means for fixing it on the edge of a button, said device comprising an offset to be in contact with the button, and a hook to receive a tape.

5. The sheet-metal blank 1 having an opening 2 to receive a button, and an extension 3 for fixing the same to the button.

705,477. COIN-CONTROLLED VENDING-MACHINE. DAVID K. BYERS and WILLIAM W. HEALY, Bloomingdale, Mich. Filed Mar. 21, 1902. Serial No. 99,256. (No model.)

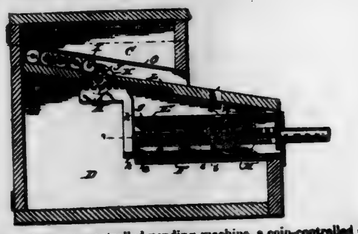

Claim.—In a coin-controlled vending-machine, a coin-controlled operating mechanism comprising a supporting-frame provided with guide-grooves upon its sides and an opening through which the coin may pass, a slidable yoke engaging the grooves and having inwardly-extending arms, a slidable carrier-frame consisting of two horizontal and parallel plates joined at one end by a vertical end plate having a central opening, the inwardly-extending arms of the yoke loosely engaging the end plate to return the carrier-frame to its normal position, and a spring-actuated push-rod for operating the yoke, and suitable vending mechanism connecting with the coin-controlled operating mechanism, substantially as and for the purpose set forth.

705,478. COMBINED ROAD-CLEANER, ELEVATOR, AND DIRT-CART. MATTHEW STOBBS and JOHN S. THOMPSON, Sydney, New South Wales, Australia. Filed Dec. 26, 1900. Serial No. 741,501. (No model.)

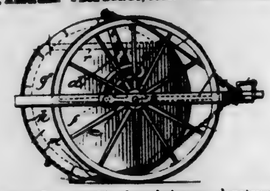

Claim.—1. In a combined road-cleaner, elevator and dirt-cart, an outer stationary casing supported in proximity to the ground and having an open lower portion, an inner stationary receiver arranged concentric therewith forming an annular space between, said receiver having an open upper side, radially-arranged blades located in said annular space, and means for causing said blades to travel through said space, substantially as described.

2. In combination, an outer stationary casing having an open lower side supported in proximity to the ground, an inner stationary receiver arranged concentric therewith with an annular space between, and spaces at the ends, said receiver having an open upper portion, heads or plates journaled in the spaces between the ends of said casing and receiver, and radially-arranged blades carried by said heads and fitting said annular space, substantially as described.

3. In combination, an outer stationary casing having an open lower side supported in proximity to the ground, an inner stationary receiver arranged concentric therewith with an annular space between, and spaces at the ends, said receiver having an open upper portion, heads or plates journaled in the spaces between the ends of said casing and receiver, and radially-arranged blades carried by said heads and fitting said annular space and means for raising said casings from the ground, substantially as described.

4. In combination, a frame, supporting-wheels journaled therein, angle-levers pivotally mounted in said frame, an axle carried by said angle-levers, a stationary cylindrical casing carried by said axle having an open lower side, a cylindrical receptacle within the casing also carried by said axle having an open upper side, heads or plates journaled on the axle between the ends of the casing and receptacle and projecting through the open side of the casing for contact with the ground, radial blades carried by said heads and fitting the annular space between the peripheral walls of the casing and receptacle, and means for rocking said angle-levers, substantially as described.

705,479. SAFETY DEVICE FOR ELEVATORS. SAMUEL D. STROHM, Philadelphia, Pa., assignor to Strohm Elevator Safety Device Company, Philadelphia, Pa., a Corporation of New Jersey. Filed Apr. 4, 1896. Serial No. 586,212. (No model.)

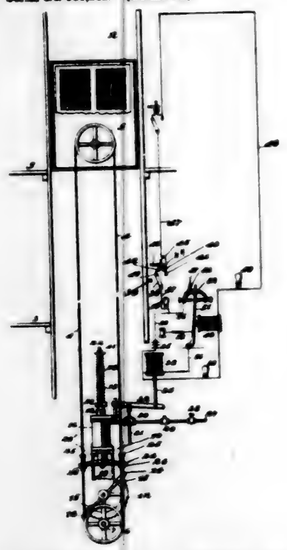

Claim.—1. The combination of an elevator-car and a door, with means for locking said car by fluid-pressure when said door is open.

2. The combination of an elevator-car and a door with means for controlling the power-operating mechanism of said car by fluid-pressure by the opening and closing of said door.

3. A safety device for elevators, comprising a cylinder and a piston therein connecting with the elevator-controlling mechanism, so as to be adapted to move the latter to an inactive position, a valve for said cylinder, and connections between said valve, and a door adjacent to the elevator-shaft, whereby when said door is put in an unsafe or insecure condition, the said valve will be operated, substantially as set forth.

4. A safety device for elevators, comprising a cylinder, a piston therein, a cross-head connected with said piston normally retracted from the elevator-controlling mechanism, but adapted to engage and force the same to an inactive position, a valve for said cylinder, and connections between said valve, and a door adjacent to the elevator-shaft, whereby when said door is put in an unsafe or insecure condition, the valve will be operated, substantially as set forth.

5. A safety device for elevators, comprising a pulley connected with and operating the elevator-valve, a controlling-rope connected to said pulley, two stop-plates connected with said pulley adapted to be brought to a horizontal position so as to turn said pulley to close the elevator-valve, a cylinder mounted above said stop-plates, a piston in said cylinder, a cross-head connected with said piston, normally disengaged from said stop-plates, but adapted to engage the same, a valve for said cylinder, and connections between said valve, and a door opening upon the elevator-shaft, substantially as set forth.

6. In a safety device for elevators, the combination of a pulley 6 connected to and operating the elevator-valve, a controlling-rope for said pulley, a pinion 13 on the pulley-shaft, a semicircular rack 12 engaging with said pinion, cam-plates 14, 14, secured to said rack, a cylinder 16, a piston 17 in said cylinder, a cross-head 24 connected to said piston, adjusting-screws 25, 25, on said cross-head, adapted to engage with said cam-plates 14, a valve 30 for said cylinder, and connections between said valve, and a door opening upon the elevator-shaft, substantially as set forth.

7. In a safety device for elevators, the combination of a pulley 6 connected to and operating the elevator-valve, a controlling-rope for said pulley, a pinion 13 on the pulley-shaft, a semicircular rack 12 engaging with said pinion, cam-plates 14, 14; carried by said semicircular rack, each cam-plate having a recess 15, a cylinder 16, a piston in said cylinder, a cross-head 24 connected to said piston, adjusting-screws 25, 25, on said cross-head, normally disengaged from said cam-plates, but adapted to engage the same, a valve 30 for said cylinder, and connections between said valve, and a door opening upon the elevator-shaft, substantially as set forth.

8. In a safety device for elevators, the combination of a pulley 6 connected to and operating the elevator-valve, a controlling-rope for said pulley, a pinion 13 on the pulley-shaft, a semicircular rack 12 engaging with said pinion, cam-plates 14 carried by said rack, a cylinder 16, a piston in said cylinder, a cross-head 24 carried by said piston, but adapted to engage said cam-plates 14, a spring 23 normally keeping said piston in one position of its travel, a valve 30 for said cylinder, and connections between said valve, and a door opening upon the elevator-shaft, substantially as set forth.

705,480. SAFETY DEVICE FOR ELEVATORS. SAMUEL D. STROHM, Philadelphia, Pa., assignor to Strohm Elevator Safety Device Company, Philadelphia, Pa., a Corporation of New Jersey. Filed Apr. 4, 1896. Serial No. 586,214. (No model.)

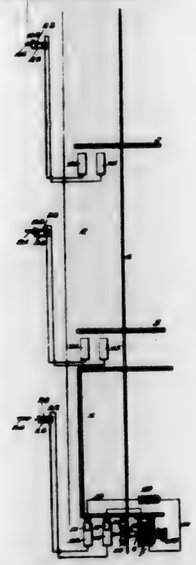

Claim.—1. In a safety device for elevators, the combination of an elevator-car, a controlling-rope for operating the controlling mechanism of said car, a clamping or locking device on the car normally out of engagement with said controlling-rope, a solenoid or magnet for operating said locking or clamping device, a partial or incomplete circuit carried on the car, a series of corrider-doors, a separate partial electric circuit for each of said doors, a closer in each of said circuits operated by the corresponding door, and means whereby the partial circuit on the car will connect with the partial door-circuits when adjacent to the latter, substantially as described.

2. In a safety device for elevators, the combination of an elevator-car, a controlling-rope for operating the controlling mechanism of said car, a clamping or locking device on the car normally out of engagement with said controlling-rope, a solenoid or magnet for operating said locking or clamping device, a partial or incomplete circuit carried on the car, the contacts 16, 17, thereon, a series of corrider-doors, a separate partial electric circuit for each of said doors, a closer in each of said circuits operated by the corresponding doors, and the contacts 14, 15, whereby the partial circuits of the car will connect with the partial door-circuits, when adjacent to the latter, substantially as described.

705,481. NON-REFILLABLE BOTTLE. JOHN TARBOX, Paterson, N. J. Filed Aug. 22, 1901. Serial No. 73,876. (No model.)

Claim.—The combination of a bottle, an annular valve-seat fitted into the neck of said bottle, said valve-seat and the surrounding portion of the bottle having opposed grooves, a valve-seat-retaining ring fitted into said grooves, an outwardly-opening disk-like valve pivoted in said valve-seat, and a cup-shaped guard also arranged in said bottle-neck above the valve and having its lower end spaced from the same a distance slightly greater than the thickness of said valve, said guard having openings in its side wall, substantially as described.

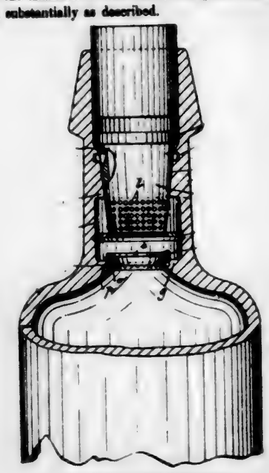

705,482. SYSTEM OF AND APPARATUS FOR TRANSMITTING MOVEMENTS AND INDICATING THE POSITION OF INDICATORS OR THE LIKE. WILHELM A. THEBRATH, Hanover, Germany. Filed Nov. 12, 1901. Serial No. 82,089. (No model.)

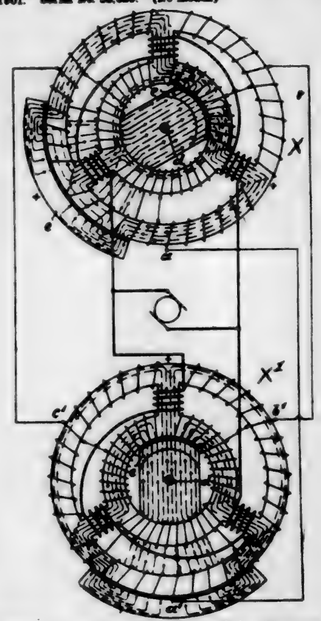

Claim.—1. In a system for the transmission of movements and positions of indicators by means of electric currents, the combination of apparatuses, each consisting of a bipolar rotor, having no coils, and of a stator, having primary and secondary coils, the primary coils of the stators being connected with one another and also to a source of electricity, while the secondary windings of all stators are connected at corresponding points, substantially as shown and described.

2. In a system for the transmission of movements and positions of indicators by means of electric currents, the combination of apparatuses, each consisting of a bipolar rotor, having no coils, and of a stator, having

primary and secondary coils, the primary coils of the stators being connected with one another and also to a source of electricity, while the secondary windings of all stators are connected at corresponding points each apparatus being provided with a bell, which sounds only when compensating currents occur and which stops ringing, when the rotor is adjusted substantially as shown and described.

705,488. MACHINE FOR GROOVING ASSEMBLED STOCK.

MARCUS B. TIDEY, Belleville, N. J.; Sarah B. Tidey and Lillie V. Tidey executrices of said Marcus B. Tidey, deceased. Filed Mar. 7, 1901 Serial No. 50,199. (No model.)

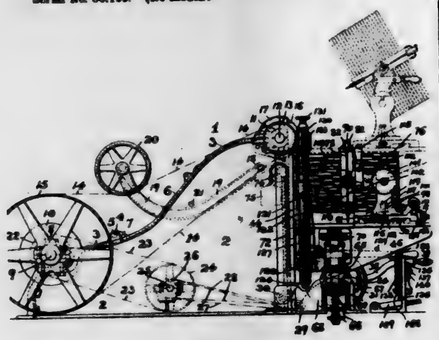

Claims.—1. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a vertically-rotatable stock-holder in which the assembled stock is held, and means connected with the said stock-holder arranged and constructed for the alternate presentation of the ends of the stock to the cutters of the machine for the grooving of said ends, substantially as and for the purposes set forth.

2. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, a lock-frame in which the assembled stock is held, and means for mounting said lock-frame so that either end of the assembled stock is presented to the cutters of the machine to be worked, substantially as and for the purposes set forth.

3. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, a rotatably-arranged lock-frame in which the assembled stock is held, and means for the presentation of either end of the stock to the cutters of the machine to be worked, substantially as and for the purposes set forth.

4. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, standards on said table, a lock-frame rotatably arranged in said standards, the assembled stock being held in said frame for presentation to the cutters of the machine and the stock worked at either end by revolving the charge in the lock-frame in said standards, substantially as and for the purposes set forth.

5. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, standards on said table, jaw members pivotally connected with each standard, means for closing said jaw members and providing bearings, a lock-frame rotatably arranged in said bearings, the assembled stock being held in said frame for the presentation to the cutters and the stock being worked at either end by revolving the charge in the lock-frame in said bearings substantially as and for the purposes set forth.

6. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, standards on said table, jaw members pivotally connected with each standard, means for closing said jaw members and providing bearings, a lock-frame consisting of stock-holding strips, means for retaining said strips about the assembled stock, and presser-cams connected with said stock-holder, trunnions for rotatively piecing said stock-holder and assembled stock in the bearings of said jaw members for presentation to the cutters and the stock to be worked at either end by revolving the charge in the lock-frame in said bearings, substantially as and for the purposes set forth.

7. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a vertically-moving supporting-table, a lock-frame in which the assembled stock is held, means for mounting said lock-frame on said table, so that either end of the assembled stock is presented to the cutters of the machine, and mechanism for producing alternate upward and downward movements of the supporting-table for the cutting of the presented end of the assembled stock during either vertical movement of the supporting-table, substantially as and for the purposes set forth.

8. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, comprising a vertically-moving frame, a longitudinally-moving lower platen on said frame, a laterally-moving upper platen, and means for adjustment of the said platens, a lock-frame in which the assembled stock is held arranged upon the upper platen, and mechanism for producing alternate upward and downward movements of said supporting-table, for the cutting of the stock during either vertical movement of the supporting-table, substantially as and for the purposes set forth.

9. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a vertically-moving supporting-table, laterally-adjustable standards on said table, a lock-frame rotatably arranged in said standards, the assembled stock being held in said frame for presentation to the cutters of the machine, and mechanism for producing alternate upward and downward movements of the supporting-table for the cutting of the stock during either vertical movement of the supporting-table, substantially as and for the purposes set forth.

10. In a woodworking-machine for the purpose of grooving the ends of the assembled stock, the combination, with a gang of cutters, of a supporting-table comprising a vertically-moving frame, a longitudinally-moving lower platen on said frame, a laterally-moving upper platen, and means for adjustment of said platens, of a pair of laterally-adjustable standards on said upper platen, a lock-frame rotatably arranged in said standards, the assembled stock being held in said frame for presentation to the cutters of the machine, and mechanism for producing alternate upward and downward movements of the supporting-table for the cutting of the stock during either vertical movement of the supporting-table, substantially as and for the purposes set forth.

11. In a woodworking-machine for the purpose of grooving the assembled stock, the combination, with a gang of cutters, of a vertically-moving supporting-table, a pair of laterally-adjustable standards on said table, jaw members pivotally connected with each standard, means for closing said jaw members and providing bearings, a lock-frame rotatably arranged in said bearings, the assembled stock being held in said frame for presentation to the cutters of the machine, and mechanism for producing alternate upward and downward movements of the supporting-table for the cutting of the stock during either vertical movement of the supporting-table, substantially as and for the purposes set forth.

12. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, comprising a vertically-moving frame, a longitudinally-moving lower platen on said frame, a laterally-moving upper platen, and means for adjustment of said platens, a pair of laterally-adjustable standards on said upper platen, jaw members pivotally connected with each standard, means for closing said jaw members and providing bearings, a lock-frame rotatably arranged in said bearings, the assembled stock being held in said frame for presentation to the cutters of the machine, and mechanism for producing alternate upward and downward movements of the supporting-table for the cutting of the stock during either vertical movement of the supporting-table, substantially as and for the purposes set forth.

13. In a woodworking-machine for the purpose of grooving the ends of assembled stock, a stock-supporting table, means for causing reciprocatory vertical movements of said table, comprising a shaft, a pair of friction devices on said shaft, means for causing the rotation of said devices in opposite directions, means for engaging and disengaging said friction devices, consisting, of a pivoted lever 38, a sleeve 36 with which said lever is connected, and friction-disks 42 and 43 on said sleeve, and means for actuating the said lever 38, consisting, of a standard 135, having depressions 136, 137 and 138, a V-shaped member 134 on said lever adapted to be arranged in said depressions, foot-treadles for forcing said member from the central depression 136 into either of said depressions 137 and 138, and means actuated from the moving table for forcing said member 134 from either depression 137 or 138 back to the central depression 136, substantially as and for the purposes set forth.

14. In a woodworking-machine for the purpose of grooving the ends of assembled stock, a stock-supporting table, means for causing reciprocatory vertical movements of said table, comprising a shaft, a pair of friction devices on said shaft, means for causing the rotation of said devices in opposite directions, means for engaging and disengaging said friction devices, consisting, of a pivoted lever 38, a sleeve 36 with which said lever is connected, and friction-disks 42 and 43 on said sleeve, and means for actuating the said lever 38, consisting, of a standard 135, having depressions 136, 137 and 139, a V-shaped member 134 on said lever adapted to be arranged in said depressions, foot-treadles for forcing said member from the central depression 136 into either of said depressions 137 and 139, spring 138 for drawing member 134 into depression 136, and means actuated from the moving table for lifting said member 134 from either depression 137 or 139 back to the central depression 136, consisting, essentially, of a sector 140 pivotally connected with said standard 135, a pair of horns on said sector adapted to engage said V-shaped member 134, an arm 158, a pair of spring-actuated disks connected with the vertically-moving table, a flexible connection reeled on one of said disks and attached to said arm 158, for forcing the member 134 from the depression 137 during the completed upward movement of the table, and a stud or projection on said table adapted to engage one of the horns of said sector 140, and force the member 134 from the depression 139 during the completed downward movement of the table, substantially as and for the purposes set forth.

15. In a woodworking-machine for the purpose of grooving the ends of assembled stock, a platen 50 provided with a lug 190, a second laterally-moving platen 61 on said platen 50, said platen 61 having a groove, a pair of dogs slidably arranged in said groove, means for securing said dogs in their adjusted positions and a connecting-latch between one of said dogs and said lug 190 substantially as and for the purposes set forth.

16. In a woodworking-machine for the purpose of grooving the ends of assembled stock, a platen 50 provided with a lug 190, a second laterally-moving platen 61 on said platen 50, said platen 61 having a groove, a pair of dogs 181 and 182 slidably arranged in said groove, a right and left threaded screw-bolt connected with said dogs, a set-screw connected with each dog for securing it in its adjusted position, an apron 187 on said dog 181, and a spring-actuated latch connected with said apron and adapted to be brought in holding engagement with the said lug 190, substantially as and for the purposes set forth.

17. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with a gang of cutters, of a supporting-table, a supporting means on said table, a rotatable stock-holder supported by said means, and mechanism for moving said stock-holder and supporting means in a lateral direction, for shifting the charge in the periphery of the cutters and thereby work a greater width of stock than the maximum capacity of the cutters, substantially as set forth.

18. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with the frame-pieces 46 and platen thereon, a screw 52 and nut 51 for moving said platen in a longitudinal direction, and means connected with said frame and said screw, arranged and constructed to cause a forwardly-sliding motion of said screw-platen, consisting, of a crank-shaft and crank member, a collar on said screw, a pair of connecting-links between said crank member and collar, and springs, all arranged, substantially as and for the purposes set forth.

19. In a woodworking-machine for the purpose of grooving the ends of assembled stock, the combination, with the frame-pieces 46 and platen thereon, a screw 52 and nut 51 for moving said platen in a longitudinal direction and means connected with said frame and said screw, arranged and constructed to cause a forwardly-sliding motion of said screw and platen, consisting of a crank-shaft and crank member, a collar on said screw, a pair of connecting-links between said crank member and collar, and springs, a lever 174, gears 175 and 176, sector 179, stopping-post 177 and slot 178, all arranged, substantially as and for the purposes set forth.

705,484. DARNING-LAST.

MARY G. TILNEY, Orange, N. J. Filed Apr. 24, 1902. Serial No. 104,607. (No model.)

Claim.—1. A cup-shaped darning-last, a frame for holding the material to be darned thereon and a removable cover for the last, substantially as specified.

2. A cup-shaped darning-last substantially ovate in contour, a clamping-frame for engaging therewith, and a holding-strap attached to the frame, substantially as specified.

3. A cup-shaped darning-last having a shoulder at its upper portion, a frame adapted to engage around the last over said shoulder, a flexible strap attached at one end to the frame, and a hook on the other end of the strap for engaging with the frame, substantially as specified.

4. A cup-shaped darning-last having a shoulder at its upper portion, a frame for engaging around the last over said shoulder, a holding-strap attached to said frame, and a cover for the last, substantially as specified.

5. A cup-shaped darning-last having a shoulder at its upper portion, a frame for engaging around the last over said shoulder, a tubular handle for said frame, a removable cap on the end of the handle, and a holding-strap attached to the frame, substantially as specified.

705,485. INK-WELL.

GEORGE H. TEUE, East Oakland, Cal. Filed Feb. 19, 1902. Serial No. 94,746. (No model.)

Claim.—1. The combination of a containing-well having a horizontal flange and a vertical cylindrical wall of less diameter extending above and having an opening therethrough a cap having a corresponding opening on one side fitting over the cylindrical extension and a clamp by which the cap is held in place and revolvable in a horizontal plane, said clamps normally extending across the top of the cap, and thence down the sides and said well having vertical channels to receive the extending portions of the clamp.

2. An open-topped ink-well having a flange surrounding it, said flange having notches made in opposite sides, a cap covering the open top extending downwardly and having a flange resting upon the flange of the well, said cap-flange having cut-away portions upon opposite sides, a clamp extending across the top of the cap having the vertical sides engaging the grooves of the well-flange and forming a stop against which the ends of the cut-away portion of the cap-flange contact to limit its revolution.

3. An ink-well consisting of a body having an open top, a peripheral flange around the upper part, a side opening above and extending into the top of the flange, a cap turnable about the upper part of the well having an opening adapted to register with that in the side of the well, said cap having an annular flange around the bottom resting upon the flange of the well and having cut-away portions upon opposite sides, a clamp having vertical sides extending through the cut-away portions of the cap-flange and engaging notches or grooves in the well-flange whereby it is held stationary, the upper part of said clamp engaging the top of the cap whereby the latter is held in place and allowed to revolve so as to close or open the passage into the well.

4. An ink-well and a holder or socket therefor, said well having an annular ledge or shoulder below the top and an opening through the side and shoulder, a cap having a corresponding opening and resting upon the ledge, a stationary clamp normally extending across the top of the cap with lugs upon each side and securing means, said lugs extending parallel with the outer wall of the well and lugs or stops to limit the turning movement of the cap.

705,486. BLIND-STITCH OVERSEAMING-MACHINE.

BENJAMIN W. TUCKER, Newark, N. J., assignor, by mesne assignments, to Charles C. Gill, New York, N. Y. Filed Mar. 22, 1900. Serial No. 9,054. (No model.)

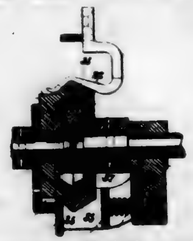

Claim.—1. In a sewing-machine having a needle, looper and presser-foot, the hinged front plate, the spring pressing said plate toward the presser-foot, and the feed-shaft carried by said plate, combined with the feed-wheel on said shaft to coöperate with and press the fabric against said foot, said wheel comprising sections one of which is rigid on said shaft and yielding therewith and the other of which is adapted to yield independently thereby to compensate for inequalities in the thickness of the fabric supplied to the machine; substantially as set forth.

2. In a sewing-machine having a needle, looper and presser-foot, the hinged front plate, the spring pressing said plate toward the presser-foot, and the feed-shaft carried by said plate, combined with the feed-wheel on said shaft to coöperate with said foot and having the outwardly-projecting annular formation on its periphery to correspond with the form of the lower surface of said foot, said wheel comprising sections meeting at the center of said annular formation and one of which is adapted to yield independently of the other to compensate for inequalities in the thickness of the fabric supplied to the machine; substantially as set forth.

3. In a sewing-machine, the yielding feed-shaft, and the coöperating rotatable wheel-sections thereon and adapted to rotate therewith, one of

said sections being capable of independent yielding action while performing its rotation; substantially as set forth.

4. In a sewing-machine, the yielding feed-shaft, and the coöperating rotatable wheel-sections thereon and adapted to rotate therewith, combined with the hinged shoe engaging one of said sections, the spring acting against said shoe, and the slidable slotted block intermediate said sections and engaging parallel shoulders on said section acted upon by said shoe; substantially as set forth.

5. In a sewing-machine, the needle, looper and presser-foot, the latter being recessed upon its operative surface, combined with the yielding feed mechanism comprising sections or parts one of which is adapted to yield independently of the other section or part and which sections at their meeting edges conform to the said operative surface of said foot; substantially as set forth.

6. In a sewing-machine, the needle, looper and presser-foot, the latter being recessed upon its operative surface, combined with yieldingly-supported feed mechanism conforming to said foot and comprising rotatable sections or parts one of which is capable of independent yielding action; substantially as set forth.

705,487. AUTOMATIC DYNAMO-REGULATOR. WILLIAM A. TURBAYNE, Buffalo, N. Y., assignor to Charles M. Gould, New York, N. Y. Filed Jan. 13, 1902. Serial No. 89,413. (No model.)

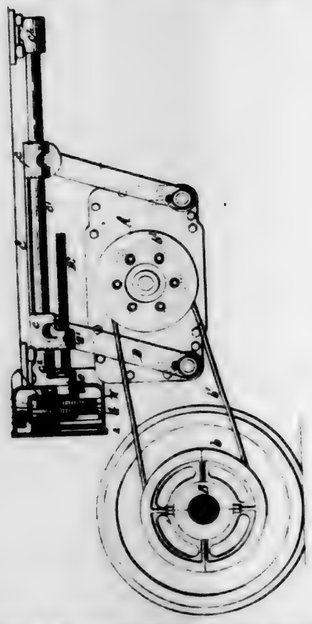

Claim.—1. The combination of a driving element, a generator mounted to move relative to said driving element, drive connections between said driving element and the generator, means for moving said generator, and electrically-controlled mechanism for actuating said moving means and which operates upon a variation of the speed of said generator, substantially as set forth.

2. The combination of a driving element, a generator mounted to move relative to said driving element, drive connections between said driving element and the generator, a motor and connections for moving said generator, and electrically-controlled means for operatively connecting said motor with said generator for moving the same and which operates upon a variation of the speed of said generator, substantially as set forth.

3. The combination of a driving element, a generator mounted to move relative to said driving element, drive connections between said driving element and the generator, an electric motor for moving the generator, an electromagnetic device operatively connecting said motor with the generator for moving the same, said electromagnetic device being controlled by the speed of said generator, substantially as set forth.

4. The combination of a driving element, a generator mounted to move relative to said driving element, drive connections between said driving element and the generator, an electric motor for moving the generator, an electromagnetic device for operatively connecting said motor with the generator for moving the same, a governor operated by the generator, and electrical connections for said electromagnetic device controlled by said governor, substantially as set forth.

5. The combination of a driving element, a generator mounted to move relative to said driving element, drive connections between said driving element and the generator, an electric motor for moving the generator, an electromagnetic device for operatively connecting said motor with the generator for moving the same, a governor actuated by the generator, and electrical connections for said electromagnetic device and said motor controlled by said governor, substantially as set forth.

6. The combination of a driving element, a generator mounted to move relative to said driving element, drive connections between said driving element and the generator, a device for moving the generator toward and from said driving element, an electric motor, connections between the same and said device whereby the latter can be moved in one or the other direction, an electromagnetic device controlling said connections, whereby the direction of movement of said device is determined, a governor operated by the generator, and electrical connections for said electromagnetic device controlled by said governor, substantially as set forth.

7. The combination of a driving element, a generator, mounted to move toward and from said driving element, drive connections between said driving element and the generator, a screw for moving said generator toward and from said driving element, an electric motor, a ratchet-and-pawl mechanism between said motor and screw whereby the same can be rotated in either direction, an electromagnetic device controlling said ratchet-and-pawl mechanism, a governor actuated by the generator, and electrical connections for said electromagnetic device controlled by said governor, substantially as set forth.

8. The combination of a driving element, a generator mounted to move toward and from said driving element, drive connections between said driving element and the generator, a screw for moving said generator toward and from said driving element, an electric motor, ratchet-wheels connected to said screw, an oscillating lever operated by said motor, pawls carried by said lever and coöperating with said ratchet-wheels, an electromagnetic device for moving one or the other of said pawls into engagement with the teeth of its ratchet-wheel, a governor actuated by the generator, and electrical connections for said electromagnetic device controlled by said governor, substantially as set forth.

705,488. CONSTRUCTION OF METAL FURNITURE. JOSEPH F. L. UHL, Toledo, Ohio. Filed May 5, 1902. Serial No. 105,879. (No model.)

Claim.—1. The improvement in the construction of metal furniture, comprising a table-section, metal standards having a U-shaped cross-section for supporting the table-section, a brace formed from a single length of strap metal bent at suitable points to fit the interior of the U-shaped standards, the ends of the strap forming the brace meeting in one of the standards, and screws for securing the brace in position between the standards.

2. The herein-described improvement in the construction of metal furniture, comprising a table-section, castings secured upon the table-section, provided with downwardly-extending lugs adapted to fit within the standards, the sheet-metal standards having a U-shaped cross-section for supporting the table-section, a brace for the standards formed from a single piece of strap metal bent at suitable points to fit the interior of the standards, the ends of the strap meeting in one of the standards, and screws for securing the lugs and the brace in their respective positions, as set forth

3. A chair having a seat-section, castings provided upon the bottom thereof, sheet-metal standards having a U-shaped cross-section secured at their upper ends to the castings, a sheet-metal chair-back having a U-shaped cross-section, secured at its ends to two of the castings upon the chair-seat, a brace formed from a single piece of strap metal bent at suitable points to fit within the U-shaped standards, screws for securing the back and the standards to the castings and also the brace within the standards, and metal straps secured at their lower ends to the chair-seat and provided with a return-bend at their upper ends to fit within the U-shaped back, and screws for securing the straps to the back-section, as described.

705,489. MOTOR. JOHN ULRICH, Columbus, Ohio. Filed Oct. 28, 1901. Serial No. 80,250. (No model.)

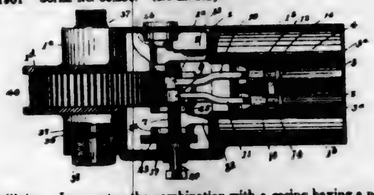

Claim.—In a motor, the combination with a casing having a pair of power-cylinders and a pair of valve-cylinders, the former provided with a central fixed partition and ports on each side of said partition connecting the valve-cylinders with the corresponding power-cylinders and each of said valve-cylinders having an exhaust-port 36 and an inlet-air port connecting with both said valve-cylinders, of a journaled shaft 7, valves 12 and 13 working in said valve-cylinders and having peripheral recesses 14, arms 10 and 11 eccentrically connecting said valves with said shaft 7, a journaled crank-shaft having a gear connection with said shaft 7 and provided with two cranks, a piston within each of the cylinders 2, said piston carrying a head on opposite sides of the central partition and driving-arms connecting said pistons with said cranks, a rotatably-mounted tool carrying shaft 37 in the forward portion of said casing, a gear-wheel carried on said shaft and a pinion-wheel on said crank-shaft gearing therewith, substantially as specified.

705,490. MEANS FOR DISSIPATING STATIC ELECTRICITY. ROBERT O. VANDERCOOK, Evanston, Ill. Filed Mar. 13, 1901. Serial No. 50,936. (No model.)
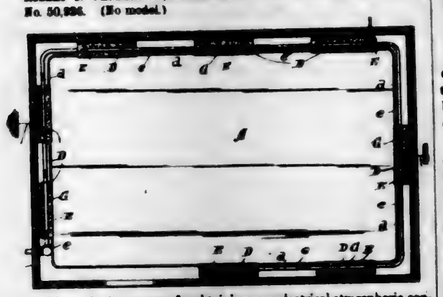
Claim.—1. As a means for obtaining non-electrical atmospheric conditions in a press-room or apartment for like uses, cooling means at the top of the said room or apartment and means for introducing water-vapor into the room or apartment at a point distant from the cooling means, said cooling means being disposed uniformly throughout the area over the space to be maintained in non-electrical condition.

2. As a means for obtaining non-electrical atmospheric conditions in a press-room or apartment for like uses, means located at the bottom of the room or apartment for evaporating water to produce water-vapor, and cooling means at the top of said room or apartment, said cooling means being disposed uniformly throughout the area over the space to be maintained in a non-electrical condition.

3. As a means of obtaining non-electrical atmospheric conditions in a press-room or apartment for like uses, means for introducing water-vapor therein cooling means at the top of the room, and grounded electric conductors in said room.

705,491. GLAZED ROOF OR STRUCTURE. EZEKIEL VAN HOOGENS, Boston, Mass. Filed Feb. 13, 1902. Serial No. 93,833. (No model.)

Claim.—1. In a glazed structure, the combination of the channel-bars, panes of glass having edges which rest thereon, integral ears upon the inner sides of the walls of the said channel-bars, clips bearing against the said ears, caps covering the joints between contiguous panes of glass, and bolts extending from the clips to the caps tying them together and the panes of glass to the channel-bars.

2. The combination of channel-bars having integral ears extending inward from their sides and provided with seats upon their under surfaces, downwardly-arched clips having ends held against said ear-seats, panes of glass supported by the channel-bars, caps covering the joints between them, and bolts extending from the clips through the caps and serving to hold the clips against the ears with their ends in the ear-seats, the caps against the outer surface of the glass panes and the panes upon the channel-bars.

3. The channel-bars having cross-recesses, cross-channel supports extending from said recesses and supported by the channel-bars, the said supports having outwardly-turned flanges from the edge of their upper and lower sides, the flanges from the edge of the lower side being adapted to laterally support the upper edge of the glass panes, while the flange from the upper edge is turned away to afford opportunity for the passing of drip upon the under surface of said panes to the channel, and independent clips bearing upon the bottom of the supports, having upon one side seats for panes of glass and extending between the panes and forming the outer down-holes for panes.

705,492. GEARING. WILLIAM L. VOSS, Harvey, Ill. Filed July 2, 1901. Serial No. 66,818. (No model.)

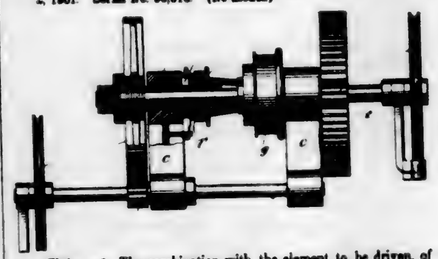

Claim.—1. The combination with the element to be driven, of a drive-shaft geared directly thereto, a second drive-shaft independent of the first, and gearing connecting the two drive-shafts, said gearing embodying a clutch automatically operative upon the movement of the second shaft, whereby to connect or disconnect the shafts.

2. The combination of a rotary shaft, a sleeve mounted loosely thereon, a rotary member threaded on the sleeve and capable of movement to bind itself and the sleeve between two parts on the shaft, and means for driving said rotary member.

3. The combination of a revolvible shaft, a sleeve mounted loosely thereon, collars fastened to the shaft and between which collars the sleeve is located, a rotary member threaded on the sleeve, and means for driving the rotary member.

4. The combination with an element to be driven, of a shaft fastened thereto, a second shaft geared with the first-named shaft, a sleeve mounted loosely on the second shaft, collars fastened to the second shaft and between which collars the sleeve is located, a gear threaded on the sleeve at one end thereof, and a rotary driving member transmitting movement to the gear.

5. The combination with the element to be driven of a drive-shaft geared directly thereto, a second drive-shaft independent of the first, and gearing for transmitting from the second to the first drive-shaft, said gearing embodying a threaded member operative by the turning of the second drive-shaft and forming a clutch for completing the connection between the two shafts.

705,493. MECHANICAL MOVEMENT. ADOLPH WAHLE, Davenport, Iowa. Filed July 10, 1901. Serial No. 67,746. (No model.)

Claim.—1. A drive-shaft having continuous rotary motion, a rotary reciprocal shaft at right angles thereto, a bevel-gear secured to said drive-shaft, bevel-pinions in mesh with said gear at opposite points of engage-

ment, loosely revolving on said rotary reciprocal shaft and a sleeve rotating with and having sliding engagement on said rotary reciprocal shaft and adapted to engage either of said pinions and said sleeve having a groove in the periphery thereof in the form of a closed loop having curved ends, the end of said drive-shaft having engagement in and traversing said groove and means on said drive-shaft to bring said sleeve into engagement alternately with said gears.

2. A drive-shaft having continuous rotary motion, a rotary reciprocal shaft, at right angles thereto, a bevel-gear secured to said drive-shaft, bevel-pinions in mesh with said gear at opposite points of engagement loosely revolving on said rotary reciprocal shaft, and a sleeve rotating with and having sliding engagement on said rotary reciprocal shaft and adapted to engage either of said pinions, and said sleeve having a groove on the periphery thereof in the form of a loop having curved ends, the end of said shaft having engagement in and traversing said groove, a radially-projecting stud secured in said sleeve at the radial center of each of said curved loop ends, and a star-wheel secured on said drive-shaft adapted to alternately engage said studs and throw said sleeve into engagement alternately with said pinions.

3. The combination with a main frame and a continuously-revolving drive-shaft secured in bearings in said frame, of a rotary reciprocal shaft secured at right angles to said drive-shaft, in bearings in said frame, a bevel-gear secured to said drive-shaft, bevel-pinions in mesh with said gear at opposite points of engagement loosely revolving on said rotary reciprocal shaft, a sleeve rotating with and having sliding engagement on said spindle between said pinions, adapted to engage either of said pinions and said sleeve having a groove on the periphery thereof in the form of a closed elliptical loop, radially-projecting studs secured to said sleeve at the radial center of each of said curved ends of the loop, the end of said drive-shaft being adapted to have engagement with and traverse said loop, a star-wheel on said drive-shaft alternately engaging said studs and a spherical casing extending from the bearings of said spindle and inclosing said pinions and gears.

4. A drive-shaft having continuous rotary motion, a rotary reciprocal shaft at right angles thereto, a beveled gear secured to said drive-shaft, bevel-pinions loose on said rotary reciprocal shaft in mesh with said gear at opposite points of engagement, and a sleeve rotating with and having sliding engagement on said rotary reciprocal shaft, and adapted to engage either of said pinions, and said sleeve having an endless loop-shaped groove, and means to bring said sleeve into engagement alternately with said pinions.

705,494. CHECKING-MACHINE. FRANK B. WAINWRIGHT, Jersey City, N. J. Filed Aug. 27, 1901. Serial No. 73,445. (No model.)

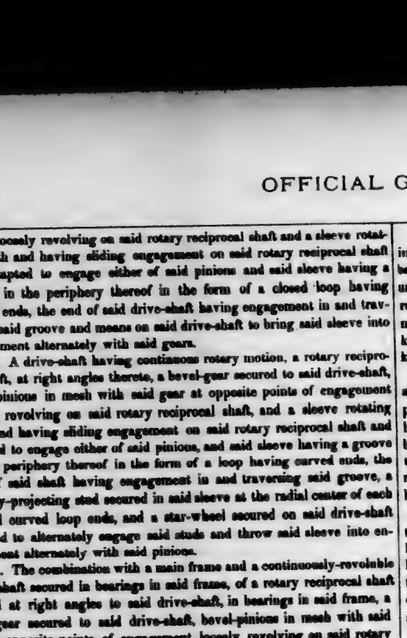

Claim.—1. A checking-machine having a roller-platen, a line-spacing mechanism, for moving the roller-platen bodily, a set of units type-bars, a set of tens type-bars, a set of hundreds type-bars, the said sets of units, tens and hundreds type-bars being arranged to print longitudinal rows of figures on the check held on the roller-platen, the said spacing mechanism remaining dormant while printing a row of figures, sets of keys for the corresponding sets of type-bars, and a connection between a key and its type-bar, as set forth.

2. A checking-machine having a roller-platen, a line-spacing mechanism for moving the roller-platen bodily, a set of units type-bars for printing units on the check held on the roller-platen and for actuating the line-spacing mechanism, a set of tens type-bars, a set of hundreds type-bars, the said sets of units, tens and hundreds type-bars being arranged to print longitudinal rows of figures on the check, sets of keys for the corresponding sets of type-bars and a connection between a key and its type-bar, as set forth.

3 A checking-machine, comprising a roller-platen mounted to slide transversely, a set of units type-bars, a set of tens type-bars and a set of hundreds type-bars, for printing longitudinal rows of figures on a check held over said platen, keys connected with said type-bars for operating the individual type-bars in said sets, and means for passing a duplicate continuous strip superimposed on a transfer-strip over said roller-platen, as set forth.

4. A checking-machine, comprising a roller-platen mounted to slide transversely, a set of units type-bars, a set of tens type-bars and a set of hundreds type-bars, for printing longitudinal rows of figures on a check held over said platen, keys connected with said type-bars for operating the individual type-bars in said sets, and means for imparting a traveling motion to a duplicate continuous strip superimposed on a transfer-strip and passing over said roller-platen, and impartine a rotary motion to the said roller-platen, as set forth.

5. A checking-machine, comprising a roller-platen mounted to slide transversely, a set of units type-bars, a set of tens type-bars and a set of hundreds type-bars, for printing longitudinal rows of figures on a check held over said platen, keys connected with said type-bars for operating the individual type-bars in said sets, and means for imparting a traveling motion to a duplicate continuous strip superimposed on a transfer-strip and passing over said roller-platen, and imparting a rotary motion to the said roller-platen, said means being actuated upon moving the roller-platen into a return position, as set forth.

6. A checking-machine, comprising a roller-platen mounted to slide transversely, a set of units type-bars, a set of tens type-bars and a set of hundreds type-bars, for printing longitudinal rows of figures on a check held over said platen, keys connected with said type-bars, for operating the individual type-bars in said sets, means for imparting a return sliding motion to the roller-platen, and means for automatically turning the roller-platen at the time it reaches a final return position, as set forth.

7. A checking-machine having a spacing mechanism for the carriage of a roller-platen, comprising a rack-bar on the carriage, a gear-wheel in mesh with the rack-bar, a ratchet-wheel on the shaft of said gear-wheel, a pawl engaging said ratchet-wheel, a spring-pressed trip for engaging said pawl, and a rock-shaft controlled by a key and pressed on by a spring, the rock-shaft having an arm on which said trip is fulcrumed, as set forth.

705,495. LOCK. ALLEN B. WALLACE, Newcastle, Pa. Filed Jan. 31, 1902. Serial No. 91,864. (No model.)

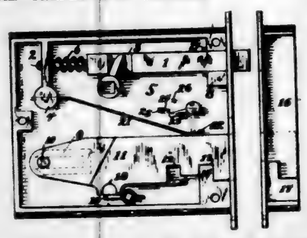

Claim.—1. The combination with the lock-casing having a projection therein through which operates the spring-pressed latch, of a lock-bolt secured in the casing and carrying a pin, a guide in which the pin operates, the under face of the front end of the lock-bolt having recesses formed therein, a lug secured in the casing and normally engaging in one of said recesses, the lower end of the said projection having a flat spring rigidly secured therein, the free end of the spring extending downwardly and engaging the upper face of the lock-bolt, with a lug carried by the said end, means pivotally secured in the casing for engagement with said spring, whereby the lock-bolt is held in an inoperative position, and means for operating the lock-bolt, substantially as described.

2. The combination with the lock-casing having the latch-bolt therein, of a lock-bolt mounted so as to have a pivotal and longitudinal movement, means for operating the lock-bolt, the free end of said lock-bolt having recesses therein, a lug secured in the casing and engaging in said recesses, a spring having its one end rigidly secured in the casing and its free end engaging the upper face of the lock-bolt, means in the casing for engaging said spring whereby movement of the lock-bolt is prevented, means for supporting said means, and means for limiting the movement of said first-named means, substantially as described.

705,496. COMBINED TABLE-SPREAD AND NAPKIN-HOLDER. CORNELIUS M. WALSH, Guntown, Miss. Filed May 16, 1902. Serial No. 107,662. (No model.)

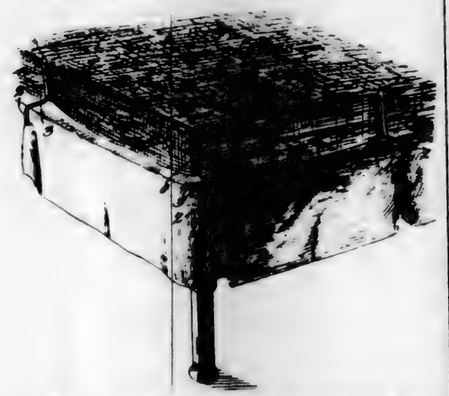

Claim.—1. In a device of the class described, a horizontally-disposed book combined with a vertical stem bent upon itself twice to form a pair of vertically-disposed oppositely-facing hooks, substantially as set forth.

2. In a device of the class described, a hook adapted to engage the edge of a table and to hold the cloth upon the same by frictional contact, combined with a pair of oppositely-facing auxiliary hooks or clamps to receive the edges of the table-cloth and of an auxiliary cover, substantially as set forth

3. The herein-described holder and clamping device comprising an approximately horizontal hook member and two approximately vertical clamping members or oppositely-facing hooks, all bent or formed from a single piece of wire, substantially as set forth.

705,497. SEEDING ATTACHMENT FOR GRAIN-DRILLS. HERBERT O. WALTON, Bates county, Mo. Filed Mar. 31, 1902. Serial No. 100,736. (No model.)

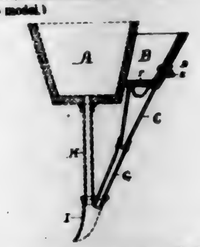

Claim.—1. In a seeding attachment for grain-drills, the combination of a seedbox B secured to the grain-box of a grain-drill, a spout secured by a bolt E with the loop D in the rear of the seedbox, said spout being located underneath and opposite the holes in the bottom of the seedbox with a hose G leading downward from the lower extremity of the spout C, all substantially as shown and described.

2. In a seeding attachment for grain-drills, the combination of the following elements: the auxiliary seedbox B, secured to the grain-box A; holes F through the bottom of the seedbox; the spout C held against the under side of the bottom of B and secured to the side of B by a bolt passing through a loop extending upward from the top of the spout C; all substantially as shown and described.

705,498. WIRE-FENCE STRETCHER. ISAAC H. WARNER, Union City, Mich., assignor to Frank C. Boise, Union City, Mich. Filed Sept. 6, 1901. Serial No. 74,552. (No model.)

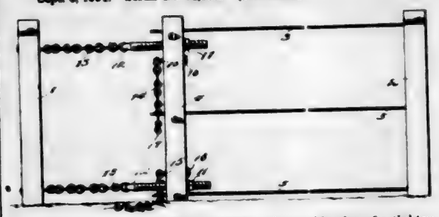

Claim.—1. In a wire-fence stretcher, the combination of a tightening connecting element attached to a fixed point, a stretcher-bar having means to secure runner-wires thereto, a tightening-screw attached to and movable axially with reference to the stretcher-bar, means to adjustably connect the tightening-screw to the tightening connecting element, a holding connecting element carried by the stretcher-bar and means to adjustably connect the holding connecting element to the tightening connecting element, prior to disconnecting the latter from the axially-movable tightening-screw, substantially as described.

2. In a wire-fence stretcher, the combination of a tightening connecting element attached to a fixed point, a stretcher-bar having means to secure runner-wires thereto, a tightening-screw, attached to and movable axially with reference to the stretcher-bar, an adjusting-nut bearing against the bar and engaging the screw, to adjust the latter axially, means to adjustably connect the tightening-screw to the tightening connecting element, a holding connecting element carried by the stretcher-bar, and means to adjustably connect the same to the tightening connecting element prior to disconnecting the latter from the axially-movable tightening-screw, substantially as described.

3. A wire-fence stretcher comprising a two-part stretcher-bar, nut-bearing screws carried thereby, tightening-chains associated with the screws, and stretcher-bar-holding chains carried by the said bar.

705,499. MECHANICAL MOVEMENT FOR CONVERTING MOTION. JOHN T. WATTS, Crookston, Minn. Filed Apr. 12, 1902. Serial No. 102,604. (No model.)

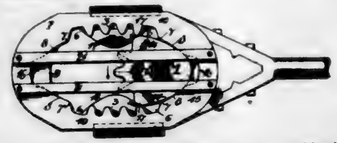

Claim.—1. In a device for converting motion, the combination of a reciprocating frame having an opening the opposite sides of which are provided with racks of cogs, a shaft, a cogged sector thereon the cogs on each side of the middle cog standing obliquely away from the middle cog at angles not radial with the center of the shaft, whereby to render certain the engagement of the sector with the racks of cogs and to prevent cramping and striking in such engagement.

2. In a device for converting motion, the combination of a reciprocating frame having an opening the sides of which are provided with cog-racks, cams projecting into said opening adjacent to each rack and cams at the ends of the opening, a shaft, and a cogged sector thereon adapted to engage the racks, and provided with a cam adapted to engage the frame-cams, for the purpose stated.

3. In a device for converting motion, the combination of a reciprocating frame having an opening the sides of which are provided with cog-racks, cams projecting into said opening adjacent to each rack on one side of the frame, a shaft and a cogged sector thereon adapted to engage the racks and having a cam adapted to engage the frame-cams, and guides or ways on the other side of said frame, whereby the frame is prevented from lateral cramping on the shaft.

4. In a converting-motion device, a reciprocating frame having an opening the sides of which are provided with cog-racks, and formed with elliptical side walls 8 8 which are contracted to form dead spaces at the ends of said opening, frame-cams projecting into said opening adjacent each rack, a cam at each end of said frame-opening overhanging the said dead spaces, a shaft, and a cogged sector thereon adapted to engage the racks and the elliptical side walls 8, and having a cam adapted to engage the aforesaid frame-cams, for the purpose stated.

5. In a device for converting motion, the combination of a reciprocating frame having an opening the longitudinal sides of which are pro-

vided with cog-racks, and with cams extending into the opening at one side of and beyond the cogs, a shaft, and a cogged sector thereon adapted to engage the racks and to lap with the side cams in passing them, and provided with a cam adapted to engage the inner edges of the said side cams, for the purpose stated.

705,500. WIRE-FENCE MACHINE. GEORGE P. A. WEISENBORN, Clarence, Mo. Filed Feb. 15, 1902. Serial No. 94,164. (No model.)

Claim.—1. A wire-fence machine including a frame, twisting-heads, means for operating the twisting-heads, a plurality of spreaders, one for each twisting-head, and a plurality of couplers for the spreaders, one for each spreader connected with the spreader and also with a twisting-head and rotative therewith.

2. In a wire-fence machine, the combination of a main frame member, a pair of combined gage and frame members, frame-arms extending from the main frame member to and beyond the combined gage and frame members, twisting-heads mounted at the extremities of the frame-arms, a drive-chain, and driving mechanism.

3. In a wire-fence machine, the combination of a main frame member, a driving-wheel, a plurality of frame-arms having the gage-holes therein, a pair of combined gage and frame members having the gage-holes therein, twisting-heads mounted in the frame-arms at the sides of the combined gage and frame members opposite to the main frame member, deflecting-rolls, a drive-chain, a slack-adjuster, and the bolts extending through the gage-holes in the frame-arms and the combined gage and frame members.

4. In a wire-fence machine, the combination of a main frame member, a pair of combined gage and frame members parallel to the main frame member, a series of frame-arms extending from the main frame member to and beyond the combined gage and frame members, twisting-heads mounted at the extremities of the frame-arms and supported in their positions axially by said combined gage and frame members, a drive-chain connecting the twisting-heads, an auxiliary frame, and twisting-heads in the auxiliary frame, substantially as set forth.

5. In a wire-fence machine, the combination of a frame comprising a main member, a series of frame-arms adjustably attached to the main member, a pair of parallel members situated parallel to the main member and adjustably secured to the arms, a drive-wheel, and a deflecting-roll at either side of the drive-wheel, in combination with a series of twisting-heads mounted at the extremities of the frame-arms and supported in their positions axially by said combined gage and frame members, a drive-chain connecting the twisting-heads, an auxiliary frame, and twisting-heads in the auxiliary frame, substantially as set forth.

6. In a wire-fence machine, the combination with a frame, a series of twisting-heads, a drive-chain, a drive-wheel, guide-rods, and a guide-head, of spreaders each comprising a frame-plate, a pair of opposing rollers, and a pair of opposing guide members at the end of the frame opposite to the rollers, substantially as set forth.

7. In a wire-fence machine, the combination of the spreader consisting of the frame-plate having the portion bent over and forming the companion plate, the rollers mounted between the main plate and the companion plate, and the loops bent over and forming guide members at the end of the main plate opposite to the rollers, substantially as set forth.

8. In a wire-fence machine, the combination of the frame, the twisting-heads having the apertures in the side walls thereof, the spreaders having the aperture in the frame thereof, a spreader-coupler engaging the apertures in said heads and also the aperture in said spreader, and the driving mechanism, substantially as set forth.

9. In a wire-fence machine, the combination with the main frame member and the series of twisting-heads, of the series of arms supporting the twisting-heads and having the holes therein whereby the slack-adjuster roll-shafts may be supported and also having the bolt-holes adjacent to the twisting-heads, the pair of parallel frame members situated adjacent to the twisting-heads and having the bolt-holes therein, the bolts securing said parallel members to said arms, the drive-chain, and the drive-wheel, substantially as set forth.

10. In a wire-fence machine, the combination with the main frame member having the perforations transversely therein, the twisting-heads having their axes at right angles to the perforations, and the guide-head, of the guide-rods having the short ends bent at right angles to the main portions thereof and extending through the perforations in said member, and the nuts on said short ends, the guide-rods being connected to the guide-head, as set forth.

11. In a wire-fence machine, the combination of the main frame member, the frame-arms, the parallel frame members having the bolt gage-holes therein and secured to the arms, the drive shaft and wheel situated between two of said arms, the slack-adjusters situated between said main frame member and said parallel frame members, the twisting-heads mounted in the heads of said arms opposite said parallel members from said main member, the auxiliary frame, the twisting-heads in said auxiliary frame, and the drive-chain, substantially as set forth.

12. In a wire-fence machine, the combination of the main frame member, the pair of parallel frame members having the gage-holes therein, the two-part frame-arms having the binding-bolts therein extending through said gage-holes, the slack-adjusting wheels mounted in said arms between said main frame member and said parallel frame members, the twisting-heads mounted in said arms at the sides of said parallel frame members opposite said main frame member, the drive-wheel, and the drive-chain, substantially as set forth.

13. In a wire-fence machine, the combination of the main frame member, the pair of parallel frame members extending parallel to the main frame member, the frame arms having the heads at the sides of the parallel frame members opposite to the main frame member, the twisting-heads in said heads, the auxiliary frame secured to said main frame member and having the bars in alinement with said parallel frame members and also having the heads adjacent to said bars, the twisting-heads in said last-described heads, the drive-chain, the driving-gears, the truss-rod attached to said main frame member, the guide-rods, the guide-head, and the spreaders, substantially as set forth.

705,501. NECKTIE-FASTENER. JOSEPH WEIL, New York, N. Y. Filed Mar. 28, 1902. Serial No. 100,380. (No model.)

Claim.—1. A neckwear-fastener made of a single and continuous piece of wire, bent to form an open spring-eye, a spring-tongue behind said eye and a laterally-extending arm at each side of the tongue and eye, said arm being formed by a continuation of the outermost part of the wire forming the eye and extending outward from the eye, at a point at about one-half the height of the eye, returning upon itself at its outer end, the two members of the arm thus formed being in the same plane throughout, substantially as set forth.

2. A neckwear-fastener made of a single and continuous piece of wire, bent to form a spring-eye, a spring-tongue behind said eye, an arm at each side of the tongue and eye, said arm extending in the direction from the top toward the bottom of the fastener, a U-shaped outwardly-projecting lateral arm formed at the lower end of each of said arms, that extend in the direction from top toward bottom of the shield, and said lateral arm located at about midway of the height of the fastener, the wire of said lateral arm being bent at its free end to form a clenching-arm, substantially as set forth.

3. The combination with a neckwear-shield having two holes, of a neckwear-fastener located between the holes, and made of a single and continuous piece of wire, with a spring-tongue and open spring-eye in front of said tongue, a lateral arm at each side of said tongue and eye, formed by the outer end part of the wire forming the eye, said arms extending laterally from the fastener midway of the height of the same, the wire forming said arms being returned upon itself, and both shanks of the arm thus formed being in the same plane and resting snugly on the one surface of the shield, the end of the wire of each lateral arm being passed through one of the holes in the shield and folded down on that face of the shield opposite the one on which the fastener rests, substantially as set forth.

705,502. SPECTACLE OR EYEGLASS CASE. CHARLES M. WELLS, Southbridge, Mass. Filed Jan. 16, 1902. Serial No. 89,962. (No model.)

Claim.—1. As an improved article of manufacture, a spectacle or eyeglass case comprising a bottom piece and a top or front piece forming with the bottom piece a pocket, a flange projecting from the edge of the bottom piece opposite the mouth of said pocket to form in conjunction with said bottom piece a holding-receptacle for the eyeglasses, and a lid for the eyeglass-case hinged to the projecting edge of said flange, and a covering for said case and lid.

2. As an improved article of manufacture, a case for spectacles or eyeglasses comprising a body portion having a plain flat bottom, a straight back or flange projecting from said bottom, ends extending up from said bottom, and a bowed or curved front forming with the bottom and the flange a receptacle for eyeglasses, and a lid extending along and hinged to the top edge of the back of flange for its full length, an outside covering and an inside lining for the case and lid, substantially as described.

705,503. AUTOMATIC CHEMICAL FIRE-EXTINGUISHER. LOUIS WERLÉE, Elsmere, Del. Filed Jan. 20, 1902. Serial No. 90,413. (No model.)

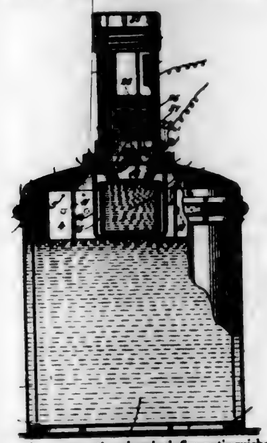

Claim.—1. An automatic chemical fire-extinguisher, comprising separate receptacles for holding liquids to be used in generating a gas fatal to combustion, a substance tentatively held adjacent to one of said receptacles, heat-controlled mechanism for precipitating said substance into said receptacle adjacent thereto for the purpose of displacing the liquid into either receptacle, and means for distributing the gas thus formed.

2. An automatic chemical fire-extinguisher, comprising separate receptacles for holding liquids to be used in generating a gas fatal to combustion, a substance tentatively held adjacent to one of said receptacles, heat-controlled mechanism for simultaneously actuating an electric alarm and precipitating said substance into said receptacle adjacent thereto for the purpose of displacing liquid into either receptacle, and means for distributing the gas thus generated.

3. An automatic chemical fire-extinguisher, comprising separate receptacles for holding liquids to be used in generating a gas fatal to combustion, a receptacle for tentatively holding a material for displacing one of said liquids and provided with movable doors for supporting said substance, and a heat-controlled mechanism for automatically controlling said doors for the purpose of precipitating said substance.

4. An automatic chemical fire-extinguisher, comprising separate receptacles for holding liquids to be used in generating a gas fatal to combustion, a receptacle for tentatively holding a material for displacing one of said liquids and provided with movable doors for supporting said substance, said doors being capable of conducting an electrical current, electrical contacts to be engaged by said doors for the purpose of actuating an electric alarm, and a heat-controlled mechanism for automatically controlling said doors.

5. An automatic chemical fire-extinguisher, comprising separate receptacles for holding liquids to be used in generating a gas fatal to combustion, a receptacle for holding a material for displacing one of said liquids and provided with swinging members for tentatively supporting said substance, rods provided with hooks for normally supporting said doors, and bodies of fusible material for normally supporting said rods.

6. An automatic chemical fire-extinguisher, comprising separate receptacles for holding liquids to be used in generating a gas fatal to combustion, a receptacle for holding a material for displacing one of said liquids and provided with swinging members for tentatively supporting said substance, said members having electrical conductors, electrical contacts to be engaged by said members for the purpose of actuating an electric alarm, rods provided with hooks for normally supporting said doors, and bodies of fusible material for normally supporting said rods.

7. An automatic chemical fire-extinguisher, comprising a flask provided with a circle of holes, an annular member encircling said flask adjacent to said holes and provided with perforations, said holes and perforations being for the purpose of distributing an agent used in extinguishing fires, and means for automatically forcing said agent through said holes and said perforations.

705,504. WIRE-FENCE TOOL. CHARLES WHIPPLE, Ashley, Ohio. Filed Apr. 29, 1902. Serial No. 105,188. (No model.)

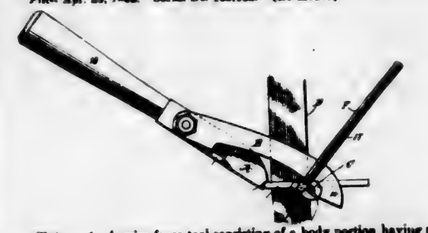

Claim.—1. A wire-fence tool consisting of a body portion having a handle at its rear end, projections from the side portions of the said body, and clamping-arms pivotally attached to the sides of the body, which clamping-arms extend over the projections and beyond the forward end of the body, the forward ends of the clamping-arms being downwardly curved and terminating in heads, which heads when the arms rest upon the projections are beyond the plane of the under surface of the body, as set forth.

2. A wire-fence tool consisting of a body-section having a handle at its rear end and its forward end concaved, projections from the side portions of the body, clamping-arms pivoted to the sides of the body, being adapted in one position to rest on the said projections, which clamping-arms extend beyond the forward end of the body and are downwardly curved at their forward ends, terminating in heads having recesses in their inner edges, the recesses and the heads being below the plane of the under surface of the said body, as set forth.

3. In a wire-fence tool, a body-section having a handle at its rear end, its upper surface at its forward end being downwardly-inclined and its forward end being provided with horizontal slots at its side portions, projections from the sides of the body, clamping-arms pivoted to said side portions of the body, which arms in one position rest upon the said projections, the said arms extending beyond the forward end of the body, the projecting portions of the arms being downwardly and forwardly curved and provided with recesses in their inner edges near their forward terminals, as and for the purpose specified.

705,505. CIRCULAR SPRING-NEEDLE KNITTING-MACHINE. FRANK WILCOX, Norristown, Pa. Filed Aug. 7, 1900. Serial No. 26,157. (No model.)

Claim.—1. In a circular-rib-knitting machine, in combination the two rows of needles, means for making one row inoperative automatically, a series of web-holders and automatic means for making them operative and inoperative, substantially as described.

2. In a circular spring-needle, rib-knitting machine, with the two rows of needles, means for making one row inoperative automatically, web-holders arranged within the needle-row and having hooks pointing toward their stems and automatic means for making the web-holders inoperative.

3. In combination in a circular-knitting machine, a series of needles having sets of long and short shanks, an advancing-cam for operating the needles for the formation of the loops with means for operating the same out of the path of both sets of needles to make the whole series inoperative, said cam having a step-by-step action, first out of line with the short-shanked needle and then out of line with all the needles.

4. In combination, in a circular-knitting machine, the long and short shanked needles, the cam for operating them for the formation of the loops and means for adjusting the cam laterally automatically step by step, substantially as described.

5. In combination in a circular-rib-knitting machine adapted to make a welt and comprising the two rows of needles, one row of needles being arranged in two sets with long and short laterally-projecting shanks, the laterally-movable cam with means for operating the same laterally step by step for throwing the circle of needles into and out of operation beginning and leaving off with one needle, the entire circle being out of operation when the throwing-out action is completed, substantially as described.

6. In combination, in a circular-knitting machine, the long and short shanked needles, the cam adjustable laterally in respect to the set of needles, the block carrying the cam, the cam-ring in which the block is guided

the ring having the stepped cam-slots and the connections for operating the ring.

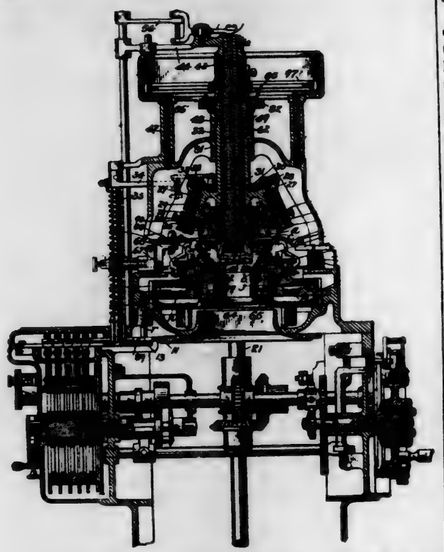

7. In combination in a circular-rib-knitting machine with the two rows of needles, means for throwing one set of needles out of action automatically, the sinkers for feeding yarn to the operative set of needles, means for automatically adjusting the sinker-cam when one set of needles is thrown out of action to form the welt and means for adjusting the drawing-in cam of the operative needles, substantially as described.

8. In combination in a circular-rib-knitting machine, with the two rows of needles, sinkers or thread-measurers with operating means therefor for sinking the yarn across the stems of the needles, means for throwing one set of needles out of operation automatically and means for adjusting automatically the cam of the operative needles to take up the slack thread measured off by the sinkers or thread-measurers; substantially as described.

9. In combination, in a circular-knitting machine with the pivoted sinkers, the cam having its face extending at an acute angle to the stem of the sinker to have a contact movable longitudinally of the sinker.

10. In combination, in a circular-knitting machine, the sinkers with the adjustable cam and means for adjusting the sinker-cam automatically, comprising the screwed spindle, the nut thereon, a ring movable circumferentially for operating the nut and means for operating the ring, substantially as described.

11. In combination, in a circular-knitting machine, the sinkers, the cam therefor, the screwed spindle, the nut engaging the same, means for operating the nut automatically, means for turning the spindle by hand and a support for the sinker-cam carried by the screwed spindle, substantially as described.

12. In combination in a circular-rib-knitting machine, means for throwing out of action one set of needles, and means for adjusting the drawing-in cam of the other set, said means comprising the screwed spindle connected with the cam, the pinion on the screwed spindle, the geared ring meshing with the pinion and means for moving the geared ring circumferentially, substantially as described.

13. In combination, in a circular-rib-knitting machine, two rows of independently-operated needles, a single row of pivoted sinkers cooperating with the two rows of needles, a series of web-holders, the sinker-cam, means for throwing out of operation the second set of needles, means for adjusting in unison the sinker-cam and the drawing-in cam of the operating set of needles and means for automatically throwing the web-holders into operation, substantially as described.

14. In combination, in a circular-knitting machine, a rotary bed for the needles, a cap or cover for said bed, having a hollow stem through which the shaft of the bed passes, the ring surrounding the stem and supported by the cover, a nut operated by said ring, the drawing-in cam and the spindle connected therewith and with the nut, substantially as described.

15. In combination, with the drawing-in cam, the spindle connected therewith, a nut screwed on the spindle with means for operating the nut automatically and means whereby the spindle may be adjusted by hand, substantially as described.

16. In combination, in a rib-knitting machine, means for throwing one set of needles into and out of operation, web-holders arranged within the circle of the other set of needles, and means for throwing the said web-holders into and out of operation, said means extending down through the needle-bed of the operative set of needles, substantially as described.

17. In combination, the two rows of needles, of a rib-knitting machine, means for throwing one set of needles out of operation, a series of web-holders arranged within the circle of the operative needles, the needle-bed of said needles having a hollow shaft, the fixed sleeve extending down within the hollow shaft, the bed for the web-holders supported on the lower end of said sleeve, the cam for operating the web-holders and the rod extending down through the fixed sleeve and connected with the cam for operating the same, substantially as described.

18. In combination, the two rows of needles, the web-holders arranged within the needle-circle, the fixed bed for the web-holders within the needle-circle, the needle-bed, the hollow shaft, the rod extending down through the same, the cam for the web-holders and the bell-crank levers between the rod and the cam, substantially as described.

19. In combination, the needles, the web-holders arranged within the circle of the needles, the rod extending down through the needle-bed to operate the web-holders and the cam for pressing the rod down with connections for operating the cam, substantially as described.

20. In combination, the inclined adjustable cam, the cam-ring having an inclined surface for guiding the cam in its adjustment, means for adjusting the same and the loose connection between the adjusting means and the cam.

21. In combination, the inclined adjustable cam, the cam-ring having an inclined surface for guiding the cam in its adjustment, the vertically-movable part for adjusting the same and the loose connection between said part and the inclined cam.

22. In combination, the two rows of needles, the knock-off cam for one row of needles and a cam operating upon the needles of the other row for advancing them during the knock-off movement.

23. In combination, a plurality of presser-wheels adapted to be thrown out of action, and means for automatically moving them in succession out of operation, the one first thrown out being maintained inoperative when the other or others are rendered inoperative.

24. In combination, a plurality of presser-wheels and means for throwing them out of operation, said means being arranged to have either entire or partial or full movement to throw one or more presser-wheels out, substantially as described.

25. In combination, the plurality of presser-wheels, the supports therefor, connections for throwing the presser-wheels out of action, said connections including means for providing lost motion at one or more of the presser-wheels whereby the presser-wheels will be rendered inoperative in succession, substantially as described.

26. In combination, the presser-wheels, the supports therefor, the sleeves on the supports adapted to make contact and move the different presser-wheels at different times and means for operating the sleeves, substantially as described.

27. In combination, the thread-carrier finger pivotally supported to be moved in a vertical plane and an arm pivoted to swing horizontally and carrying the finger.

28. In combination, the two rows of needles, the knock-off cam for one row of needles, and a cam operating upon the needles of the other row for advancing them during the knock-off movement, said rows of needles being at an obtuse angle to each other, substantially as described.

29. In combination, the two rows of needles, the web-holders arranged within the needle-circle, the fixed bed for the web-holders within the needle-circle, the needle-bed, the hollow shaft, the rod extending down through the same, the cam for the web-holders and operating means between the rod and the cam, substantially as described.

30. In combination, the adjustable cam and means for adjusting the same having a loose connection therewith, said cam and means being arranged at different angles and moving in different planes, substantially as described.

31. In combination in a circular-rib-knitting machine, the two rows of needles and means for throwing the entire circle of needles into and out of operation beginning and leaving off with a single needle, the throwing-in of the needles taking place only from the retracted position of the needles and the needles being thrown out of action only after they have been returned to their retracted position, substantially as described.

32. In a circular-rib-knitting machine, in combination the two rows of needles, means for making one row inoperative automatically, a series of web-holders arranged within the needle-circle and means for making them operative and inoperative, substantially as described.

33. In a circular-rib-knitting machine, in combination, the two rows of needles, means for making one row inoperative, a series of web-holders within the needle-circle, means for making them operative and inoperative and a row of sinkers encircling the needles, substantially as described.

705,506. GARMENT-SUPPORTER. JESSIE WILKINSON, Cleveland, Ohio. Filed Mar. 11, 1901. Serial No. 50,533. (No model.)

Claim.—1. A garment-supporter comprising a flexible metallic waist-band having its end portions extended at an angle to its body portion, and means for securing said end portions together to make the waistband extend from the waist-line at the back down and around the abdomen in front, substantially as described.

2. A metallic waist-belt comprising two sections provided with means for adjustment at the back, the front ends of said sections being extended downward and provided with fastening means, said belt when in use extending from the line of the waist at the back around the abdomen in front, substantially as described.

3. A metallic waist-belt provided with downwardly-extending front ends having fasteners thereon, means for adjusting the belt at the back, hooks at intervals around the belt, and points or prongs on the lower edge of the belt at the back, substantially as described.

705,507. STOVEPIPE. BERT A. WILLIAMSON, Maitland, Mo. Filed Jan. 24, 1902. Serial No. 91,126. (No model.)

Claim.—The combination with a stovepipe having upper and lower inclosures forming chambers, of a drum terminally secured to the said inclosures and having a clear flue-space extending vertically through the center thereof, the said drum being also formed with inwardly-projecting radially-arranged ducts of alternate long and shorter extent, the said ducts extending completely in a vertical direction from the lower to the upper end of the drum and opening out through the periphery of the latter, the alternate long and shorter arrangement of the ducts preventing clogging of the throats between the latter communicating with the central flue-space, the upper and lower terminals of the ducts being closed and the spaces between said ducts opening into the upper and lower chambers.

705,508. BOILER-FURNACE. THOMAS YORK, Portsmouth, Ohio. Filed Nov. 13, 1901. Serial No. 82,142. (No model.)

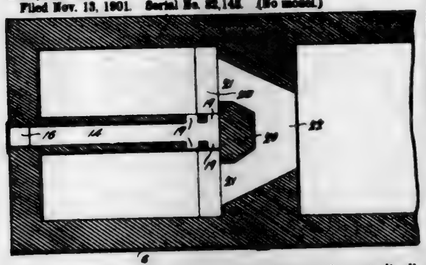

Claim.—1. The combination in a boiler-furnace, of a centrally-disposed longitudinal wall dividing the ash-pit and combustion-chamber into two sections, said wall being built solidly to a point above the level of the grates and being provided with an air duct or passage having communication at one end with an air-supply and having at its rear end side ducts or passages opening into the rear of the combustion-chamber, and a bridge-wall having an opening leading from each of the combustion-chambers, and a rear escape-opening connecting with the combustion-chamber openings to form a passage for the products of combustion.

2. The combination in a steam-boiler furnace, of a centrally-disposed longitudinal wall dividing the fire-pot and combustion-chamber into two sections, said wall having an air duct or passage extending longitudinally thereof, at a point above the grate-surface and having at its outer end a valved passage in communication with an air-supply, there being at the rear end of said wall side ducts or openings to permit of the passage of air to the rear of the combustion-chambers, a lateral bridge-wall having an opening leading from each of the combustion-chambers at a point above and to the rear of the rear ends of the grate-bars and in horizontal alinement with the air duct or passage of the longitudinal wall, substantially as specified.

3. The combination in a boiler-furnace, of the ash-pit and combustion-chamber, the centrally-disposed longitudinal wall 12 formed of ordinary fire-brick and built solidly up to a point above the level of the fuel-grate and being provided with a longitudinally-disposed air duct or passage 14 having communication with a vertically-disposed air duct or passage 16, a damper 18 disposed in said passage 16, said longitudinal duct 14 being provided at its rear end with side ducts or openings 19 opening into the two divisions of the combustion-chamber, and a bridge-wall having a centrally-disposed longitudinal passage 22 located above the rear ends of the grates and having tapering side walls, there being a flue or passage 21 leading from each of the combustion-chambers and merging into the passage 22, substantially as specified.

705,509. TYPE-WRITER CABINET. JOHN B. ANDERSON, Muskegon, Mich., assignor of one-half to Ulrich J. Beumee, Muskegon, Mich. Filed July 3, 1901. Serial No. 67,465. (No model.)

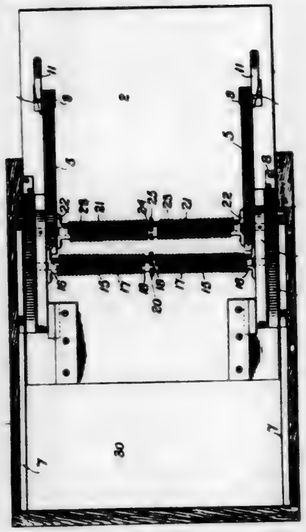

Claim.—1. In a type-writer desk, the combination with the table, of lifting apparatus consisting essentially of interpivoted levers, and a tension device arranged horizontally between said levers and consisting essentially of reversely-coiled springs that apply their power against the levers, and means for regulating the tension of said springs.

2. In a type-writer desk, the combination with the table, of lifting means therefor comprising levers, springs coiled between said levers, and tightening devices for regulating the tension of the springs, consisting of a rotary sleeve to which the springs are connected and a rod passing through the springs and the sleeve, and means whereby the sleeve and rod are engaged.

3. In a type-writer desk, the combination with the table, of lifting means comprising interpivoted levers, spring devices between the levers for lifting the latter, and means for regulating the tension of the springs, consisting essentially of a rotary sleeve to which the springs are connected, together with a rod passing through the springs and the sleeve.

and means for causing the sleeve to be engaged with the rod, together with the levers for supporting the shelf after it has been raised.

4. In a type-writer desk, the combination with the table, of interpivoted levers, one of which is hinged to the table and both of which have rollers, for engaging the desk-frame, tension-springs arranged horizontally between the levers, forward supporting-levers that engage and uphold the shelf after it has been lifted, and disengaging devices for said supporting-levers.

5. The combination with the table, and interpivoted levers arranged beneath it, of tension devices for said levers consisting of reversely-coiled springs, a central rotary sleeve to which said springs are connected, a rod running through the springs and the rotary sleeve and supported at its ends by attachment to the outer of the levers, and a pin passing through a perforation in the sleeve and engaging the inner rod, substantially as described.

705,510. REFRIGERATOR. FRANCIS B. BEAL, Northville, Mich. Filed Jan. 11, 1901. Serial No. 43,523. (No model.)

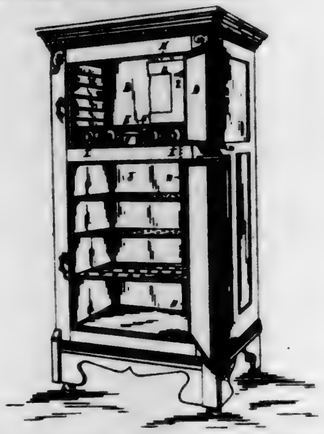

Claim.—1. In a refrigerator the combination with an ice-chamber, of an upright front door adjacent to the ice-chamber, a separate inner upright door in front of said ice-chamber and controlling access to the ice-chamber, said inner door spaced from the outer door, said inner door also spaced at its upper edge from adjacent portions of the refrigerator to permit an air circulation.

2. In a refrigerator, the combination of an ice-chamber a cooling-chamber therebelow, an ice-rack at the base of the ice-chamber, an outer upright door in front of said chambers, a separate inner upright door in front of the ice-chamber between the ice-chamber and said outer door and spaced from the outer door to protect the ice in the ice-chamber from the air when the outer door is open and controlling access to the ice-chamber.

3. In a refrigerator, the combination with an ice-chamber, of an upright outer door adjacent to said chamber, an ice-rack at the base of the ice-chamber, a cooling-compartment underneath the ice-rack communicating through the ice-rack with the ice-chamber, a separate upright inner door above the cooling-chamber to protect the ice-chamber and controlling access to the ice-chamber, and a drip-pan at the base of the cooling-compartment to receive the water from the ice, said drip-pan formed with an opening therethrough and with an upright flange about said opening for the purpose described.

4. In a refrigerator, the combination with an ice-chamber, of an outer upright door adjacent to said chamber, a separate inner upright door to protect the ice-chamber and controlling access to the ice-chamber, a provision-chamber, and a cooling-compartment between the provision-chamber and the ice-chamber, said inner door spaced from said outer door and from the adjacent portions of the refrigerator at the upper edge of the inner door, the cooling-compartment communicating with the ice-chamber and with the provision-chamber, and whereby an air circulation is afforded through the ice-chamber, the cooling-compartment and the provision-chamber, and between the outer and inner doors.

5. In a refrigerator, the combination of an ice-chamber at the top of the refrigerator provided with an open ice-rack at the base thereof, a provision-chamber at the base of the refrigerator, a cooling-compartment between the provision-chamber and the ice-chamber communicating with both the ice-chamber above and with the provision-chamber beneath, and a drip-pan at the base of said cooling-chamber separating the provision-chamber from the cooling-compartment, said drip-pan provided with a waste-pipe, and with an opening through which the cooling-compartment communicates with the provision-chamber therebeneath, and means above the openiag in the drip-pan to prevent water from the ice-chamber passing through said opening.

6. In a refrigerator, an ice-chamber at the top of the refrigerator, a provision-chamber at the base of the refrigerator, a cooling-compartment located between the ice-chamber and the provision-chamber provided with a waste-pipe, an ice-rack provided with openings therethrough at the base of the ice-chamber through which the ice-chamber communicates with the cooling-chamber whereby the drip from the ice-chamber may be utilized for cooling articles in the cooling-compartment, a drip-pan at the base of the cooling-chamber provided with an opening in the base thereof through which the cooling-compartment communicates with the provision-chamber, said drip-pan having an upwardly-projecting flange about said opening to prevent water from the cooling-compartment overflowing through said opening into the provision-chamber, said ice-rack constructed to prevent any drip passing therethrough into said opening in the drip-pan.

7. In a refrigerator, the combination of an ice-chamber a cooling-chamber therebelow, an ice-rack at the base of the ice-chamber, an outer upright door in front of said chambers, a separate inner upright door in front of the ice-chamber, between the ice-chamber and said outer door and spaced from the outer door to protect the ice in the ice-chamber from the air when the outer door is open and controlling access to the ice-chamber.

705,511. MULTIPLEX TELEGRAPH. WILLIAM S. BURNETT and WILLIAM H. GOODALL, Milwaukee, Wis. Filed Apr. 6, 1900. Serial No. 11,791. (No model.)

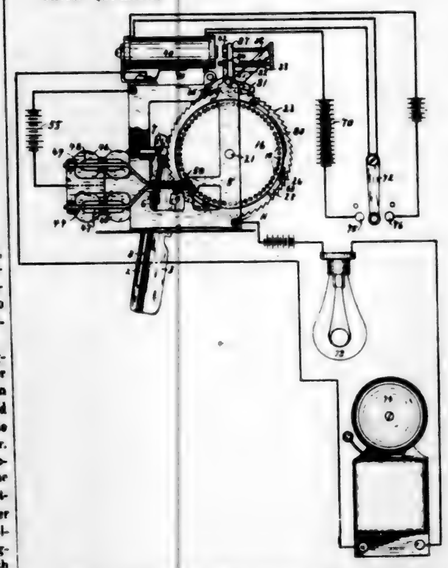

Claim.—1. In a circuit-closing mechanism for electrical stations, the combination of a circuit-closer at each station having individual characteristics; a carrier located at each station and provided with a series of elements adapted to be adjusted in accordance with the individual characteristics of the circuit-closer at such station; an electromagnetic device controlling the movement of the carrier; and means for definitely limiting the length of the carrier movement for any one electrical impulse.

2. In a circuit-closing mechanism for electrical stations, a carrier at each station provided with differentiating elements; a plurality of devices for mechanically limiting the movement of the carrier; and electromagnetic means for independently operating said devices, whereby the movement of the carrier may be divided into fixed differential distances of either equal, or unequal length.

3. In a circuit-closing mechanism for electrical stations, a carrier at each station provided with differentiating elements; and electrically-controlled mechanism for holding said carrier and permitting its movement at fixed distances of equal, or unequal length, according to the will of the operator.

4. In a circuit-closing mechanism for electrical stations, a carrier at each station provided with differentiating elements; means for driving the carrier; stopping devices adapted to move with the carrier, but capable, respectively, of differently-limited independent movement; and electrically-controlled mechanism for alternately engaging the carrier, and any one or more of the stopping devices, at the selection of the operator.

5. In a circuit-closing mechanism for electrical stations, a carrier at each station provided with differentiating elements; means for driving the carrier; stopping devices adapted to move with the carrier, but capable respectively, of differently-limited independent movement; means for restoring the stopping devices to their original position after such independent movement; and electrically-controlled mechanism for alternately engaging the carrier and any one or more of the stopping devices, at the selection of the operator.

6. In a circuit-closing mechanism for electrical stations, a carrier at each station provided with differentiating elements; electrically-controlled mechanism for holding said carrier and permitting its movement at fixed distances of equal, or unequal length, according to the will of the operator; and similarly-controlled mechanism arranged to operate concurrently with the holding mechanism for adjusting the differentiating elements in position for contact with the circuit-closer.

7. In an electrical circuit connected with a plurality of stations, the combination of circuit-closing keys for the stations, having characteristics different from the keys of other stations; carriers provided with a series of key-actuating elements; electromagnets controlling the movement of said carriers; and electromagnetic means for adjusting said elements in any carrier to fit the individual characteristics of its respective key.

8. In an electrical circuit connected with a plurality of stations, the combination of a circuit-closing key for each station, having characteristics different from the keys of other stations; a carrier provided with a multiple series of key-actuating elements; electromagnets controlling the movement of said carrier; and electromagnetic means for adjusting said elements to fit the individual characteristics of any one of said keys; together with means for actuating the carrier and the key-actuating elements.

9. In an electrical circuit connected with a plurality of stations, the combination of keys for the stations, each having characteristics different from the keys of other stations; key-actuating devices at the stations, adapted to be adjusted to the individual characteristics of one of the keys; means for actuating said devices; and electromagnetic means for adjusting the key-actuating devices, said devices being ineffective to move a key into operative position except when adjusted to the individual characteristics of such key.

10. In an electrical circuit connected with a plurality of stations, the combination of keys for the stations having characteristics different from the keys of other stations; key-actuating devices at the stations, adapted to be adjusted to the individual characteristics of the keys; means for actuating said devices; electromagnets controlling the movement of the key-actuating devices; electromagnets for adjusting the key-actuating devices to the individual characteristics of its respective key; and means for energizing certain of said controlling and adjusting electromagnets concurrently; said key-actuating devices being ineffective to move a key into operative position, except when adjusted to the individual characteristics of such key.

11. In an electrical circuit connected with a plurality of stations, the combination of circuit-closing keys for the stations having characteristics different from the keys of the other stations; key-actuating devices at the stations, adapted to be adjusted to the individual characteristics of the keys at such stations; means for actuating said devices; electromagnets for adjusting the key-actuating devices to the individual characteristics of the keys at such stations; means for energizing certain of the adjusting and controlling magnets concurrently; and means for readjusting the key-actuating devices to an inoperative position, except when adjusted to the individual characteristics of such key.

12. In an electrical circuit connected with a plurality of stations, the combination of circuit-closing keys for the stations, each having characteristics different from the keys of other stations; key-actuating devices adapted to be adjusted to the individual characteristics of the keys; means for actuating said devices; electromagnets controlling the movements of said devices; electromagnets for adjusting said devices to the individual characteristics of the keys; said devices being ineffective to move a key into operative position, unless adjusted to the individual characteristics thereof; together with means for communicating motion from said devices to restore the keys to their initial position.

13. In an electrical circuit connected with a plurality of stations, the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating the carrier; electromagnetic means for controlling the movement thereof; electromagnetic means for adjusting the key-actuating elements of the carrier to register with the individual characteristics of their respective keys; and key-supporting devices adapted to release the respective keys and permit them to return to their initial position, when the adjusting actuating elements of the carrier fail to register with the individual characteristics of such keys.

14. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating said carrier; electromagnetic means for adjusting the key-actuating elements of the carriers to register with the individual characteristics of their respective keys.

15. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating said carrier; and electromagnetic means for controlling the movement of the carrier.

16. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating said carrier; electromagnetic means for controlling the movement of the carrier; and means for restoring the keys to their initial positions.

17. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating said carrier; electromagnetic means for adjusting the key-actuating elements of the carriers to register with the individual characteristics of their respective keys; and means for automatically restoring the key-actuating elements to an inoperative position, after said elements have actuated the key.

18. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating said carrier; electromagnetic means for adjusting the key-actuating elements of the carriers to register with the individual characteristics of their respective keys; and means for restoring the keys to their initial positions.

19. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating the carrier; a plurality of sliding connections mounted on said carrier; stops for limiting the movement of said connections, arranged to allow each such connection a different movement from the other; holding devices for said carrier; and sliding connections, and electromagnetic means for releasing said holding devices interchangeably, whereby the movement of the carrier is controlled.

20. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a carrier at each station, provided with a series of key-actuating elements; means for actuating the carrier; a plurality of sliding connections mounted on said carrier; stops for limiting the movement of said connections, arranged to allow each such connection a different movement from the other; holding devices for said carrier; and sliding connections, and electromagnetic means for releasing said holding devices interchangeably, whereby the movement of the carrier is controlled; electromagnets arranged to be switched into and out of circuit with a source of electrical current by said sliding connections; and levers adapted to be actuated by such magnets to adjust the key-actuating elements with reference to the individual characteristics of the keys.

21. In an electrical circuit connected with a plurality of stations; the combination of circuit-closing keys for the stations, each having characteristics different from the keys of the other stations; a rotary disk-carrier at each station; means for driving said carrier; a series of key-actuating elements adjustably connected with said carrier; electromagnetic means for controlling the movement of said carrier; electromagnetic means for adjusting said key-actuating devices into registry with a key; and means for securing a concurrent action of the carrier-controlling and the adjusting magnets.

22. In a circuit-closing mechanism for electrical stations, a carrier at each station; differentiating elements adapted to be supported thereby; and means, controlled by electrical impulses of variable character for regulating the carrier movement in correspondence with the character of the impulse transmitted, whereby the movement of the carrier is controlled independently of the duration of the transmitted impulses.

23. In a circuit-closing mechanism for electrical stations, a series of differentiating elements mounted in a suitable support at each station; and means, controlled by electrical impulses of variable character, for adjusting the differentiating elements of any one series to the desired operative, or inoperative, position, whereby such adjustment may be effected, independently of the duration of the transmitted impulses.

705,512. JACK FOR SLUGGING AND NAILING MACHINES. LOUIS A. CASGRAIN, Winchester, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed June 10, 1898. Serial No. 683,119. (No model.)

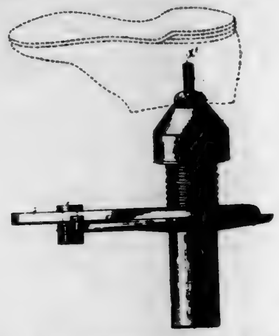

Claim.—1. A universally-tipable last-holding pin, combined with a yielding support for said pin and locking means to hold said pin in any position in which it may be put by the requirements of the work, said locking means retaining said pin in locked position only while a slug or nail is being driven.

2. A universally-tipable last-holding pin, a support for the same, and locking means for said pin operative only when a slug or nail is being driven to lock said pin in the position it should occupy according to the requirements of the work to be nailed.

3. A jack presenting a yielding curb, means to support and direct said curb in its yielding movement, a tipable last-pin mounted in said curb loosely and capable of adapting itself to the requirements of the last, and means acting during the yielding movement of said curb to lock the last-pin in the position occupied by it when the work was put into the position required for nailing.

4. A yielding spring-supported curb having a cup-shaped seat, a last-pin presenting a spherical enlargement resting and movable in said seat, and a slide-plate with which said pin is loosely connected, combined with a toothed plate, and a toothed locking-plate between which said slide is located, change in the position of the toothed plate and toothed locking-plate confining the slide and last-pin in fixed position.

5. A yielding spring-supported curb having a cup-shaped seat, a last-pin presenting a spherical enlargement resting and movable in said seat, and a slide-plate with which said pin is loosely connected, combined with a toothed plate, and a toothed locking-plate between which said slide is located, change in the position of the toothed plate and toothed locking-plate confining the slide and last-pin in fixed position, and a spring connected with said toothed plate and embracing the slide-plate.

6. A jack containing a last-holding pin provided with a ball or sphere like portion whereby said last-pin may have a substantially universal movement, a yielding seat for said ball or sphere, and means to lock and hold said pin during the driving of a slug or nail in the position in which the said pin may have been made to occupy by placing the last on said pin and putting the sole in its proper position preparatory to driving a slug or nail.

7. In a jack, a last-holding pin provided with a partial ball or sphere, a curb having a seat for said ball or sphere, and a movable nut to keep the ball or sphere seated in said seat, substantially as described.

8. In a jack, a last-holding pin provided with a partial ball or sphere, a curb having a seat for said ball or sphere, and a movable nut to aid in keeping the ball or sphere seated in said seat, a slide made movable with said pin, and a toothed plate coöperating with said slide, a relative change of position of said toothed plate and slide being effected preparatory to driving a slug or nail, to then lock said slide and pin in position temporarily, substantially as described.

9. In a jack, a hub, a plate having a shank guided by said hub and provided with an attached curb having a ball-seat, a spring to separate the plate carrying said curb and the said hub for a defined distance, a toothed locking-plate mounted loosely in said curb and sustained by suitable pins extended outwardly through the plate carrying the curb, a toothed plate fixed in said curb, and a toothed slide mounted between said toothed locking-plate and said toothed plate, combined with a last-holding pin provided with a ball or sphere entering said seat and actuating said slide, and means to keep said ball or sphere in operative position in said seat, substantially as described.

10. In a jack, the curb having the seat described, and a fixed toothed plate, a movable toothed slide, and a last-holding pin having a ball-like or spherical portion entering said seat, and a toothed slide adapted to be moved with said pin, combined with a toothed locking-plate which, by a change of position of said curb with relation to said toothed locking-plate, causes the latter to engage said slide, clamping it firmly between itself and the said toothed plate, thereby effectually locking the last-holding pin temporarily in a defined position according to the requirements of the work, substantially as described.

11. A plate adapted to be sustained by a horn-shank, a swing-plate movable freely thereon and provided with a hub, a plate having a shank inserted in said hub and provided with a curb having a concaved seat, a spring to normally keep said plate and curb in its elevated position, a last-pin having a ball-like or spherical portion mounted in said seat, means to retain said ball-like or spherical portion in said seat yet permit it to be moved freely therein, combined with locking means coöperating with the lower end of said pin to lock it whenever the relative positions of the said plate and its attached curb are changed with relation to the said hub, to thereby temporarily lock the last-holding pin in any desired position for the driving of a slug or nail, substantially as described.

12. The swing-plate, a support for it, a guided shank vertically movable with relation to said swing-plate, combined with a last-holding pin supported by and universally movable with relation to said shank, and means to lock said last-pin in any position in which it may be put, while a nail or slug is being driven, substantially as described.

13. A universally-tipable work-support and means to lock said work-support against tipping, said locking means being operative only when the work is under pressure.

14. A universally-tipable work-support and means to lock said work-support against tipping, said locking means being automatically operative when the work is under pressure.

705,513. BOX FOR CIGARETTES, MATCHES, OR THE LIKE. JOHN E. CLARK, New York, N. Y., assignor to Nelly M. Clark, New York, N. Y. Filed Aug. 20, 1901. Serial No. 72,719. (No model.)

Claim.—1. In a box, a flame-guard having an opening in a broad side and having one of its broad sides shortened, a receptacle slidably fitted in the flame-guard and having a loose end provided with a flap to extend over an end portion of the receptacle and come opposite the shortened side of the flame guard, and a case having the flame-guard and receptacle independently slidable therein and adapted to close the opening in the broad side of the flame-guard and to confine the aforesaid flap, substantially as described.

2. In a box, a flame-guard having an end portion cut away from its narrow sides, a receptacle slidable within the flame-guard, and a case to receive the flame-guard and receptacle and having a portion cut away at one end of its narrow sides to register with the cut-away portions of the flame-guard to admit of gripping the aforesaid receptacle, substantially as described.

3. In combination with a flame-guard having a broad side extended and having an opening therein, a receptacle slidable within the flame-guard and adapted to close the side opening thereof and having a flap coextensive with the end cut-away portion of the broad side of the flame-guard, substantially as described.

4. A box comprising a receptacle having a loose end and a flap at the extremity of the said end, a flame-guard for the receptacle to slide into and having a side opening and an extension, and a case to receive the flame-guard and receptacle to hide the opening and the cut-away portions of the flame-guard and to confine the flap of the receptacle, and having an end of its narrow sides notched, substantially as and for the purpose described.

705,514. SPEED-GAGE. HENRY S. CRESLENBAUGH, New Carlisle Ohio. Filed July 15, 1901. Serial No. 68,422. (No model.)

Claim.—1. In a speed-indicating gage, the combination of a dial having two reading-scales, one of which to indicate the various speeds at

which a vehicle is driven, and the other of which to indicate the maximum speed at which such vehicle may be driven, a sleeve geared to the hand of the pointer which indicates the first-named speeds, a rotating shaft driven from a rotating part of a vehicle, centrifugal devices connecting said sleeve and shaft and whereby a rotary and vertically-reciprocating movement is imparted to said sleeve, alarm devices adapted to indicate the maximum speed as indicated on the dial, electrical connections between said alarm devices and said sleeve, a circuit-closer under the control of said sleeve and whereby the said circuit-closer is closed upon an elevation of said sleeve, and the alarm is sounded when the vehicle has attained its maximum or prescribed limit of speed, substantially as and for the purpose specified.

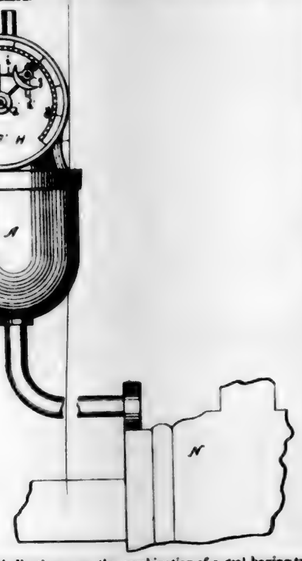

2. In a speed-indicating gage, the combination of a dial having two reading-scales, one of which indicates the various speeds at which a vehicle is driven, and the other of which indicates the maximum speed at which such vehicle may be driven, a sleeve geared to the hand of the pointer which indicates the first-named speeds, said sleeve having an enlargement or projection above the toothed portion, centrifugal devices through which said sleeve is given a rotary and a vertical movement, alarm mechanism, electrical connections between said alarm mechanism and said sleeve, and an adjustable contact with which the enlarged portion of said sleeve connects when the maximum speed of the vehicle is attained, and whereby the circuit is closed and the alarm is sounded simultaneously with the indication of maximum speed on the dial, substantially as and for the purpose specified.

3. In an indicating-gage for indicating the speed of a vehicle, the combination of a shaft adapted to rotary motion, means for driving said shaft from a rotating portion of a vehicle, a sleeve loosely connected to said shaft and subjected to a rotary motion therewith, and also to a vertically-reciprocating movement, centrifugal devices connecting said sleeve with the shaft, a series of annular projections on said sleeve, an enlargement on said sleeve above said annular projections, a dial bearing indications denoting the speeds at which the shaft and the sleeve are rotated, and likewise the speed at which the vehicle is driven, a pinion geared to said annular projections, a pointer movable by said pinion to positions to indicate such speeds on the dial, an alarm device adapted to sound an alarm when the speed of the vehicle reaches a prescribed limit, electrical connections between said alarm device and said sleeve, a circuit-closer actuated by the enlarged portion of said sleeve, and whereby the circuit is closed when said sleeve is lowered to a predetermined point and an alarm is sounded, substantially as and for the purpose specified.

705,515. JOINT FOR USE IN PNEUMATIC APPARATUS. CHAS. L. DAVIS, Chicago, Ill., assignor, by direct and mesne assignments, to Engelina Honer, William H. Honer, and A. Miller Baldwin, Chicago, Ill. Filed Apr. 30, 1900. Serial No. 14,976. (No model.)

Claim.—1. In a pneumatic apparatus, the combination of a metallic pipe having its end provided with a laterally-projecting lip or flange, a support or holder for said pipe, the said support or holder being composed of wood, and the pipe or tube being fitted into the same, so that the lip or flange overlaps the surface of the wood, and a member having a port or passage adapted to form a continuation of the bore of the said pipe or tube, the said member being fitted against the wooden support or holder for the pipe or tube, so that the port or passage in the member registers with the bore of the pipe or tube and also so that the rim of said port or passage abuts against the lip or flange which overlaps the surface of the support or holder, and which thus lies and fits closely between the abutting surfaces of said support and said member, substantially as set forth.

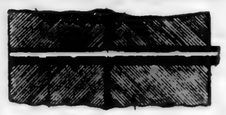

2. In a pneumatic apparatus, the combination of a metallic pipe having its end provided with a laterally-projecting lip or flange whose outer edge is bent backwardly, a support or holder for said pipe, the said support or holder being composed of wood and the pipe or tube being fitted into the same, so that the lip or flange overlaps the surface of the wood, and a wooden member having a port or passage adapted to form a continuation of the bore of the said pipe or tube, the said wooden member being fitted against the wooden support or holder for the pipe or tube so that the port or passage in the member registers with the bore of the pipe or tube, and also so that the rim of said port or passage abuts against the lip or flange which overlaps the surface of the support or holder and which thus lies and fits closely between the abutting wooden surfaces of said support and said member, substantially as set forth.

3. In a pneumatic apparatus, the combination of a metallic pipe having its end provided with a laterally-projecting lip or flange, a support or holder for said pipe, the said support or holder being composed of wood and the pipe or tube being fitted into the same so that the lip or flange overlaps the surface of the wood, a wooden member having a port or passage adapted to form a continuation of the bore of the said pipe or tube, the said wooden member being fitted against the wooden support or holder for the pipe or tube, so that the port or passage in the member registers with the bore of the pipe or tube and also so that the rim of said port or passage abuts against the lip or flange which overlaps the surface of the support or holder and which thus lies and fits closely between the abutting wooden surfaces of said support and said member, and a layer of felt interposed between the abutting surfaces of the holder and member, so as to fit against the lip or flange on said pipe or tube, substantially as described.

705,516. BAND-CUTTER AND FEEDER. JOHN B. DENLINGER, Union City, Ind., assignor of one-half to Benjamin E. Denlinger, Union City, Ind. Filed Mar. 5, 1901. Serial No. 49,858. (No model.)

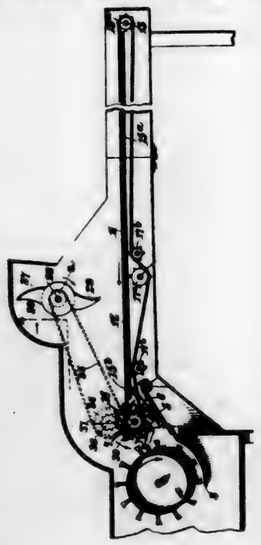

Claim.—1. The combination with an endless bundle-carrier, a rotary shaft, a series of distributing-fingers mounted thereon, and a grain-return board, of a series of clearers or guard-fingers supported in advance of the shaft and extending under and to the rear thereof, said clearers or guard-fingers forming at their rear edges abutments for doffing the straw from the distributing-fingers.

2. In a bund-cutter and feeder, the combination with the endless bundle carrier, a series of rotary distributers disposed at one end of the upper run thereof, a return-board located below the distributers, a table disposed below the upper run of the bundle-carrier, and a supporting-bar for said table, of a series of longitudinally-curved and tapering distributer clearers or guards secured at their front ends to said supporting-bar and extended between the distributers immediately above the return-board, said guards being arranged in pairs, each of which pairs is arranged for the reception of a distributer, the rear vertically-disposed end edges of the guards being disposed to form abutments against which the straw is caught and detached from the distributers.

3. In a bund-cutter and feeder, the combination with an endless bundle-carrier, a distributer-shaft located at one end thereof, distributers carried by said shaft, a carrier-shaft geared directly to the bundle-carrier at a point intermediate the ends of the latter, a power-transmitting shaft geared to the carrier-shaft, a shiftable pinion mounted upon the power-transmitting shaft, a friction-disk carried by the distributer-shaft and having its outer face entirely unobstructed, movable journal-boxes supporting the inner end of the power-transmitting shaft and located at opposite sides of the friction-disk, springs disposed to urge the journal-boxes to maintain the contact between the friction-pinion and the disk, and means for regulating the tension of said springs.

4. In a bund-cutter and feeder, the combination with a bundle-carrier, a distributer-shaft, and a threshing-cylinder disposed beyond the distributer-shaft, of a series of rotary distributers supported by the shaft and comprising longitudinally-curved fingers rotated in a direction to present their convex edges to the straw to distribute the same to the cylinder, and having their concaved edges sharpened, whereby straw tangled around the fingers will be drawn against the sharpened edges of the latter and severed as the straw is carried down by the threshing-cylinder.

5. In a bund-cutter and feeder, the combination with an endless bundle-carrier, a series of rotary distributers disposed at one end of the upper run thereof, of a series of longitudinally curved and tapered distributer clearers or guards secured at their front ends and extended between the distributers, said guards being arranged in pairs, each of which pairs is arranged for the reception of a distributer, and vertically-disposed shields secured to and extending between the rear end edges of opposed guards of adjacent pairs.

6. In a bund-cutter and feeder, the combination with an endless bundle-carrier, a distributer-shaft, a series of rotary distributers, and a return-board, of a series of distributer clearers or guards supported in front of the distributer and extended rearwardly under and beyond the distributer-shaft, said clearers or guards being of increasing width toward their rear ends which are vertically disposed to constitute abutments facilitating the removal of the straw from the clearers.

705,517. SEWING-MACHINE RUFFLER. PHILIP DEBUS, Elizabeth, N. J. Filed Oct. 26, 1901. Serial No. 80,169. (No model.)

Claim.—1. In combination, a seam-forming mechanism, a ruffler-blade, reciprocating mechanism for the same, said mechanisms being so combined that the engagement of one with the other forces said ruffler-blade in one direction, a spring adapted when compressed to force said blade in the opposite direction, and a manually-operated lever whereby said spring is compressed, substantially as described.

2. In combination, sewing mechanism, a tool operating upon the material being sewed, means for actuating the said tool, a manually-operated member, and a spring interposed between said tool and said member, which spring is so disposed as to be subjected to compressive against or in opposition to said member by the action of said actuating means when said tool is thrown into action, and which spring is also so disposed as to permit said tool to be thrown out of action by its actuating means when said member is released; whereby the intermittent operation of said tool upon the material being sewed may be controlled by the operator.

3. A sewing-machine ruffling or guthering attachment provided with a manual device or lever and a movable ruffling-blade carrier, combined with a spring connecting said manual device or lever and said blade-carrier and which spring is so arranged as to be compressed by said manual device or lever when the ruffling-blade is to be thrown into action, and said spring being also so disposed as to throw the ruffling-blade out of action when the manual pressure on said device or lever is released.

4. In a ruffling or gathering device adapted for operative attachment to a sewing-machine, the combination with a movable blade-carrier, of a normally stationary, manual device or lever, of the needle-bar of the machine, and by which the said blade-carrier may be instantaneously thrown into action without retarding or arresting the stitch-forming operation of the machine, and a spring connecting said manual device or lever with said blade-carrier, so that the latter is shifted to operative position by the compression of said spring, the tension of said spring being relaxed when the manual pressure on said device or lever is released.

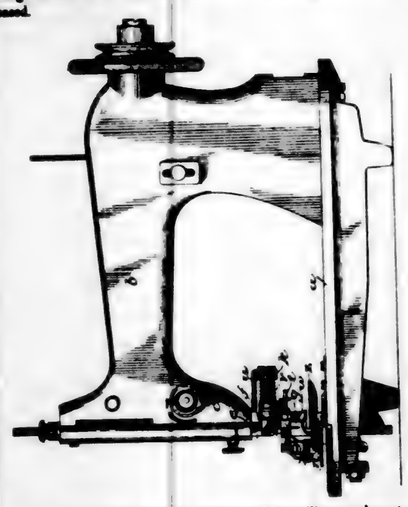

5. The combination with a sewing-machine ruffling attachment, comprising a stationary frame and a movable ruffling-blade carrier, of a pin or bolt fixed to said frame, a manual lever for throwing said blade-carrier into action and which is pivotally mounted on said pin or bolt, and a torsional spring encircling said pin or bolt and connecting said manual lever with said blade-carrier.

705,518. MACHINE FOR FORMING WHEEL-HUBS FROM TUBULAR BLANKS. EGIL REPPLIER, Davenport, Iowa, assignor to Bettendorf Metal Wheel Company, a Corporation of Illinois. Filed Oct. 18, 1901. Serial No. 79,131. (No model.)

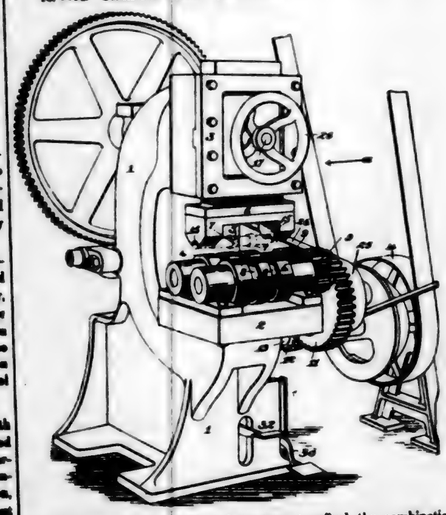

Claim.—1. In a machine of the type described, the combination with the supporting-rolls, of driving mechanism therefor, a vertically-moving pressure-head, a mandrel adapted to be carried by the head into active relation to the supporting-rolls, mechanism for moving the head vertically, and operative connections between the same and the driving mechanism of the supporting-rolls.

2. In a machine of the type described, the combination with the supporting-rolls, of driving mechanism therefor, a pulley 25 connected with said driving mechanism, a vertically-movable pressure-head, mechanism for operating the same, a worm-wheel connected therewith, a worm engaging the worm-wheel, a pulley on the worm, and a belt connecting said pulley with pulley 25.

3. In combination with the supporting-rolls, a pressure-head movable to and from the same and adapted to afford a bearing for a mandrel a crank-stud engaging the head, a rotary shaft connected with the stud and means for rotating the shaft, the relation of the crank-stud and head being such that when the head presents the mandrel in active relation to the rolls the crank-stud will be at its lowest point.

4. In combination with the supporting-rolls, a mandrel-carrying head movable to and from the same, a horizontal slot in the head, a crank-stud mounted in the slot, a shaft connected with the stud, and means for rotating the shaft.

5. In combination with the supporting-rolls, a mandrel-carrying pressure-head, operating mechanism therefor, means for connecting and disconnecting the mechanism with the head, and means for manually moving the head when the operating mechanism is disconnected.

6. In combination with the supporting rolls, a mandrel-carrying head movable to and from the same, an operating-shaft operatively connected with the head, power-driven means for rotating the shaft, and a hand-wheel connected with the shaft, and serving as a means for rotating the shaft independently of the power-driven mechanism; whereby the power-driven mechanism may be disconnected from the head and the latter operated by hand.

7. In combination with the supporting-rolls, a vertically-movable mandrel-carrying head, a horizontal shaft, a crank-stud on the shaft engaging the head, a hand-wheel on the stud, a worm-wheel on the shaft, a worm adapted to be engaged or disengaged with the wheel, and means for driving the worm.

8. In combination with the supporting-rolls, a vertically-movable mandrel-carrying head, operating mechanism therefor, a worm-wheel connected with said operating mechanism, a rocking frame, a worm mounted in the frame, means for rocking the frame to engage and disengage the worm with the worm-wheel, and means for driving the worm.

9. In a machine of the type described the combination with the vertically-movable pressure-head and the worm-wheel for operating the same, of a rocking frame, a worm mounted therein, means for driving said worm, an arm depending from the rocking frame, toggle-links connected with the arm and with the frame of the machine, a foot-lever, and connections between the same and the toggle-links.

10. In a machine of the type described, the combination with the pressure-head and the worm-wheel operatively connected therewith, of a rocking frame, a worm mounted therein below the worm-wheel and movable to and from the same, a foot-lever operatively connected with the rocking frame and adapted when depressed to rock the same and lower the worm out of engagement with the worm-wheel, and a second lever engaging the first and adapted when depressed to elevate the first lever and engage the worm with the worm-wheel.

11. In a machine of the type described, the combination with the supporting-rolls adapted to support the blank under treatment, of a vertically-movable pressure-head formed with open bearings adapted when the head is moved toward the supporting-rolls to loosely engage the ends of a portable mandrel.

12. In a machine of the type described, the combination with the supporting-rolls adapted to support the blank under treatment, of a portable mandrel adapted to be inserted within the blank with its ends projecting beyond the ends of the blank, and a vertically-movable pressure-head adapted to engage the ends of the mandrel and apply pressure thereto and formed to afford a bearing therefor; whereby as pressure is applied to the mandrel by the head the former may be rotated freely.

13. In a machine of the type described, the combination with the supporting-rolls, of a vertically-moving head provided in its lower end with opposing open bearing-slots, and a portable mandrel having its ends in the form of journals adapted to extend in said slot.

14. In a machine for forming grooved hubs from tubular blanks, the combination with grooved supporting-rolls, of a ribbed expanding-mandrel adapted to extend within the blank, a vertically-movable pressure-head adapted to be engaged with the mandrel and to present the same with the blank in active relation to the supporting-rolls, and power-driven mechanism so connected with the pressure-head that the latter will approach the supporting-rolls with a gradually-decreasing speed; whereby the formation of the grooves is initiated by a comparatively rapid approach of the mandrel, and the speed of the latter decreased as the resistance offered by the deepening of the grooves becomes greater.

705,519. HOSE-SUPPORTER. MORRIS H. RIESMAN, Chicago, Ill., assignor of one-half to Louis Rosse, Jr. Filed Apr. 22, 1902. Serial No. 104,083. (No model.)

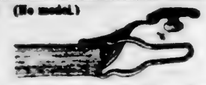

Claim.—1. A combined button and plate for a garment-supporter, comprising, in combination, a button having a soft-rubber head, and a plate having a button-receiving opening of smaller diameter than that of said head, and through which said button-head is inserted, substantially as and for the purpose set forth.

2. A combined button and plate for a garment-supporter, comprising, in combination, a button having its head and a shoulder both formed of soft rubber, and a plate having a button-receiving opening of smaller diameter than that of either said head or shoulder, and through which said button-head is inserted, substantially as and for the purpose set forth.

3. A combined button and plate for a garment-supporter, comprising, in combination, a button formed entirely of soft rubber and having a head, a shoulder and a base, and a plate having a button-receiving opening of smaller diameter than that of either said head or shoulder and through which said button-head is inserted, substantially as and for the purpose set forth.

4. In a garment-supporter, the combination of a plate having an eye at each end and an intermediate button-opening and a button having a soft-rubber head of greater diameter than said opening and inserted therethrough, and the loop-carrying strap passed through said eyes and folded on the plate to cover its entire back surface and the base of the button and clamp between portions of the strap its end and thereby secure it to the plate without stitching, substantially as described.

5. In a garment-supporter, the combination of a plate having an eye at each end and an intermediate button-opening, a button having its head and a shoulder both formed of soft rubber and each of greater diameter than said plate-opening, through which opening the button-head is inserted, and the loop-carrying strap passed through said eyes and folded on the plate to cover its entire back surface and the base of the button and clamp between portions of the strap its end and thereby secure it to the plate without stitching, substantially as described.

6. In a garment-supporter, the combination of a plate having an eye at each end and an intermediate button-opening, a soft-rubber button having a head and a shoulder each of greater diameter than said plate-opening through which the button-head is inserted and in which said shoulder is confined, and the loop-carrying strap passed from the face of said plate through one of its eyes thence over the back of the plate and the button-base through the other eye and folded over the adjacent plate edge backward over the back of the plate and over its opposite edge and passed at its end through the first eye between the adjacent strap-folds which clamp the strap end in place, as and for the purpose set forth.

705,520. DRAFT-RIGGING. WILLIAM H. EMERICK, Chicago, Ill. Filed Apr. 16, 1902. Serial No. 103,119. (No model.)

Claim.—1. A draft-rigging including draft-rods mounted for relative longitudinal movement, a draft-spring associated with each draft-rod, each draft-rod arranged to engage the draft-spring upon the other rod,

whereby said draft-springs operate in opposition to each other, as and for the purpose set forth.

2. A draft-rigging comprising draft-rods, a follower mounted on each draft-rod, draft-springs mounted on each draft-rod, each draft-spring being arranged between the follower of the draft-rod upon which said spring is mounted and the end of the other draft-rod, whereby in compression or expansion said springs operate in opposition to each other, as and for the purpose set forth.

3. A draft-rigging comprising draft-rods, a follower carried by each draft-rod, a compression-washer loosely mounted upon each rod, a spring interposed between each follower and its coöperating compression-washer, the adjacent ends of said compression-rods, respectively, engaging the compression-washer upon the other rod; all combined and arranged as and for the purpose set forth.

4. A draft-rigging comprising draft-rods arranged in alinement with each other, a follower mounted upon opposite ends of said rods, and springs interposed between each follower and the adjacent end of the other rod; all combined and arranged as and for the purpose set forth.

5. A draft-rigging comprising draft-rods having forked ends and arranged in alinement with each other, said forked ends straddling each other, followers mounted upon the other ends of said rods, and springs interposed between each follower and the adjacent end of the other rod, as and for the purpose set forth.

6. A draft-rigging comprising draft-rods, a follower mounted upon opposite ends of said rods, compression-washers loosely mounted upon each rod, a spring interposed between each follower and its coöperating compression-washer, the compression-washer upon one rod being engaged by and bearing against the proximate end of the other rod; all combined and arranged as and for the purpose set forth.

7. A draft-rigging comprising draft-rods, means for supporting the same, followers mounted upon opposite ends, respectively, of said draft-rods, a spring interposed between each follower and the proximate end of the other rod, a strap straddling said rods and operating over said followers, and a draw-bar connected to said strap and arranged to form a bearing against the follower upon one of said rods, as and for the purpose set forth.

8. A draft-rigging including draft-rods, followers mounted upon the opposite ends, respectively, of said rods, guides for said followers, a spring interposed between each follower and the proximate end of the other rod, and a limit-stop for said followers; all combined and arranged as and for the purpose set forth.

9. In a draft-rigging, draft-rods, a supporting-casting therefor provided with pockets or recesses, followers mounted on said rods and guided in said pockets or recesses, and springs interposed between the follower on one of said rods and the proximate end of the other of said rods, as and for the purpose set forth.

10. In a draft-rigging, draft-rods having forked ends, said rods arranged in longitudinal relation with respect to each other, the forked ends straddling each other, followers mounted upon the opposite ends, respectively, of each of said rods, a spring interposed between the follower of one rod and the adjacent end of the other rod, means for centering said rods in longitudinal relation, and a supporting-casting having guides for said followers; all combined and arranged as and for the purpose set forth.

11. In a draft-rigging, supporting-sills, castings arranged on the opposed faces of said sills and provided with pockets, draft-rods arranged between said castings and in longitudinal relation with respect to each other, followers mounted upon the opposite ends, respectively, of said rods, said followers being guided in said pockets, a spring interposed between the follower on each rod and the proximate end of the other rod, a bearing shoulder or abutment for each follower, a limit-stop for each follower, a strap for said rods and followers, and a coupling-arm connected to said strap; all combined and arranged as and for the purpose set forth.

12. A draft-rigging including draft-rods arranged in longitudinal relation with respect to each other, a follower carried by the opposite ends, respectively, of said rods, a compression-washer loosely mounted upon each rod, a spring interposed between each follower and its coöperating compression-washer, said compression-washers being counterbored, the adjacent ends of said rods being reduced to form a shoulder, the reduced or shouldered end of one rod arranged to be received in the counterbore of the compression-washer upon the other rod; all combined and arranged as and for the purpose set forth.

705,521. PLATEN FOR TYPE-WRITING MACHINES. ROBERT J. FISHER, Athens, Tenn., assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed June 21, 1901. Serial No. 65,402. (No model.)

Claim.—1. In a type-writing machine, the combination with a flat platen to support the work-sheet, of work-holding means comprising transverse and longitudinal rigid plates disposed above the platen and movable in unison toward and from the same, said plates being individually adjustable longitudinally and transversely, respectively, of the platen.

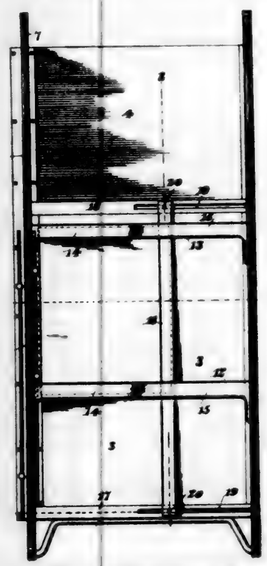

2. In a type-writing machine, the combination with a flat platen to support the work-sheet, of a vertically-movable frame disposed over the platen, and a plurality of individually-adjustable work-holding members movable in unison with the frame and disposed transversely and longitudinally of the platen, said members having the form of rigid plates or webs.

3. In a type-writing machine, the combination with a flat platen to support the work-sheet, of a vertically-movable machine-supporting frame carried by and disposed over the platen, and an individually-adjustable work holding or guarding member disposed longitudinally of the platen and supported wholly by said frame between the opposite sides thereof for movement therewith away from the writing-surface.

4. In a type-writing machine, the combination with a flat platen to support the work-sheet, of a vertically-movable machine-supporting frame disposed thereover, and individually-adjustable transverse and longitudinal work holding or guarding members supported wholly by the frame for movement therewith away from the writing-surface.

5. In a type-writing machine, the combination with the flat platen to support the work-sheet, of the vertically-movable main tracks or guides, a pair of transverse supporting-bars carried by the vertically-movable tracks or guides, and disposed normally below the plane of the writing-surface, and a work holding and guarding member adjustably supported at its opposite ends by the supporting-bars and disposed longitudinally over the writing-surface.

6. In a type-writing machine, the combination with a flat platen to support the work-sheet, of the vertically-movable main tracks or guides for the traveling printing mechanism, a plurality of transverse work holding and guarding members slidably engaging said tracks or guides, a plurality of supporting-bars rigidly secured to said tracks or guides, and a longitudinal work holding and guarding member adjustably carried by said supporting-bars.

7. In a type-writing machine, the combination with a flat platen to support the work-sheet, of work holding and guarding means comprising members disposed substantially at right angles to each other, one of said members having a slightly-elevated portion to accommodate the subjacent member.

8. In a type-writing machine, the combination with a flat platen to support the work-sheet, of a work holding and guarding member disposed over the platen, said member being formed with portions thereof located in different planes, and a second holding and guarding member disposed under the elevated portion of the first-named member.

9. In a type-writing machine, the combination with a flat platen, and the main tracks or guides, of transverse work holding and guarding members slidably engaging said tracks or guides, supporting-bars connected to the tracks or guides, and a longitudinal work holding and guarding member adjustably supported by the bars, said transverse members having elevated portions to accommodate the movement of the subjacent longitudinal member.

10. In a type-writing machine, the combination with a flat platen to support the work-sheet, and the main tracks or guides, of slotted transverse supporting-bars carried by the tracks or guides, a work holding and guarding member supported by said bars, and adjusting devices connected to said member and movable in the slots of the supporting-bars.

705,522. TALLY-SHEET ATTACHMENT FOR BILLING-PLATENS. ROBERT J. FISHER, Athens, Tenn., assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed May 18, 1901. Serial No. 60,908. (No model.)

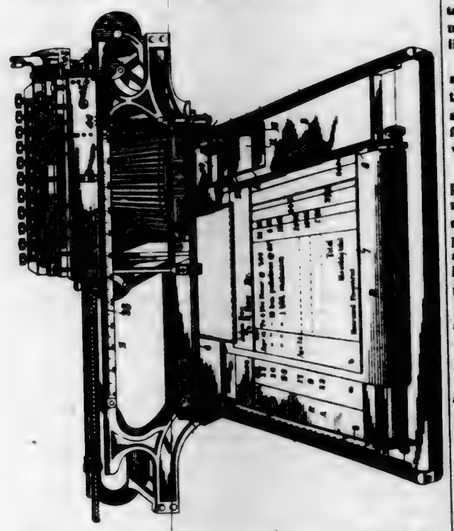

Claim.—1. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of means for retaining a plurality of separated work elements or sheets in position to be operated upon directly by the printing mechanism, only one of said work-sheets being movable in the direction of line-spacing.

2. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of means for retaining a work-sheet at rest opposite the platen within the printing area thereof, and for retaining a supplemental work-sheet in position to be operated upon by the printing mechanism, said supplemental work-sheet being movable independently of the printing mechanism and the primary work-sheet.

3. In a type-writing machine, the combination with the platen and printing mechanism, of a primary work-holder disposed opposite the platen to retain a primary work-sheet, and a supplemental work-holder disposed to retain a supplemental work-sheet in position to be printed upon, said work-holders being carried by the platen.

4. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a primary work-holder, and a relatively movable supplemental work-holder both carried by the platen, said work-holders being disposed to retain primary and supplemental work-sheets in position to be printed upon.

5. In a type-writing machine, the combination with the flat platen and the tracks or guides for the traveling machine, of a primary work-holder disposed to retain a primary work-sheet opposite the platen, and a supplemental work-holder movable independently of the primary work-holder and of the platen, one of said work-holders being mounted on the platen.

6. In a type-writing machine, the combination with a platen and printing mechanism, of a primary work-holder disposed to retain a primary work-sheet opposite the platen, a supplemental work-holder carried by the platen to support the supplemental work-sheet, and means for moving the supplemental work-sheet to effect the line-spacing thereof.

7. In a type-writing machine, the combination with the platen and printing mechanism, of a primary work-holder for the primary work-sheet, a supplemental holder carried by the platen to support the supplemental work-sheet, and means for imparting a step-by-step movement to the supplemental work-holder.

8. In a type-writing machine, the combination with the platen and printing mechanism, of a primary work-holder carried by the platen, a separate supplemental work-holder disposed to retain a supplemental work-sheet and movable independently of the platen in the direction of line-spacing, and means for imparting a step-by-step movement to the supplemental work-holder.

9. In a type-writing machine, the combination with the flat platen, printing mechanism, and a primary work-holder movable toward and away from the writing-surface, of a supplemental work-holder for retaining a work-sheet in the printing position, and means for moving said work-sheet in the direction of line-spacing independently of the primary work-holder.

10. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a plurality of work-holders for retaining a plurality of separate work-sheets in the printing position, and means for automatically advancing one of said sheets in the direction of line-spacing independently of the other.

11. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a primary work-holder mounted on the platen and disposed to retain a primary work-sheet opposite the platen, a supplemental work-holder for a supplemental work-sheet, and means for moving the supplemental work-sheet independently of the primary work-sheet in the direction of line-spacing.

12. In a type-writing machine, the combination with the platen and printing mechanism, of a primary work-holder disposed to retain a primary work-sheet opposite the platen, a supplemental work-holder designed for the retention of a supplemental work-sheet and movable independently of the platen in the direction of line-spacing, and means for automatically advancing the supplemental work-holder in the direction of line-spacing through the relative movement of the platen and printing mechanism.

13. In a type-writing machine, the combination with the flat platen and the traveling printing mechanism, of a plurality of relatively movable work-holders carried thereby for retaining a plurality of work-sheets in the printing position at different points on the platen.

14. In a type-writing machine, the combination with the flat platen and the main tracks or guides for the traveling machine, of a primary work-holder, and a tally-sheet holder, both carried by the platen and disposed within the printing area thereof.

15. In a type-writing machine, the combination with the platen, of a plurality of work-holders carried thereby, one of said work-holders being independently movable in the direction of line-spacing.

16. In a type-writing machine, the combination with the platen, of a plurality of separate work-holders carried thereby, one of said work-holders being independently movable in the direction of line-spacing, and means for advancing said movable work-holder to effect the line-spacing thereof.

17. In a type-writing machine, the combination with the platen, of a plurality of work-holders carried thereby, one of said work-holders being independently movable in the direction of line-spacing, and means for automatically advancing the said last-named work-holder to effect the line-spacing thereof.

18. In a type-writing machine, the combination with the platen, of a work-holder and a tally-sheet holder carried thereby, to retain a work-sheet and a tally-sheet at different points on the platen, said tally-sheet holder comprising delivering and receiving members for the tally-sheet.

19. In a type-writing machine, the combination with the platen, of a work-holder and a tally-sheet holder carried thereby to retain a work-sheet and a tally-sheet at different points, said tally-sheet holder comprising rotary delivering and receiving members for the tally-sheet.

20. In a type-writing machine, the combination with the platen, of a work-holder and a tally-sheet holder disposed at different points on the platen, said tally-sheet holder comprising movable delivering and receiving members for the tally-sheet, and means for operating said members to effect a transfer of the tally-sheet from one member to the other.

21. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a primary work-holder and a tally-sheet holder, said tally-sheet holder comprising delivering and receiving members for the tally-sheet, and means for automatically operating said members independently of the primary work-holder to effect the line-spacing of the tally-sheet.

22. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a work-holder and a tally-sheet holder, said tally-sheet holder comprising a delivering member and a rotary receiving member for the tally-sheet, and means for imparting a step-by-step rotation to said rotary receiving member through the movement of the printing mechanism to effect the line-spacing of the tally-sheet.

23. In a type-writing machine, the combination with the platen pre-

vided with a supplemental platen, of means for retaining separate work-sheets opposite said platens.

24. In a type-writing machine, the combination with the platen provided with a supplemental platen, of separate work-holders for retaining separate work-sheets opposite said platens.

25. In a type-writing machine, the combination with the platen provided with a supplemental platen, of separate work-holders for retaining primary and supplemental work-sheets opposite said platens, and means for imparting movement to the supplemental work-sheet in the direction of line-spacing.

26. In a type-writing machine, the combination with the stationary flat platen, and the tracks or guides for the traveling machine, of an independently-movable tally-sheet holder comprising delivering and receiving members, and an intermediate supplemental or tally-sheet platen.

27. In a type-writing machine, the combination with a stationary platen, of a tally-sheet holder comprising movable delivering and receiving members, and an intermediate movable tally-sheet platen, and means independent of the platens for imparting intermittent movement to one of said members to advance the tally-sheet in the direction of line-spacing.

28. In a type-writing machine, the combination with the flat platen and the tracks or guides for the traveling machine, of a tally-sheet holder comprising delivering and receiving rolls, an intermediate platen-roll and means independent of the platen for operating said holder.

29. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a tally-sheet holder comprising delivering and receiving members for the tally-sheet, and a line-spacing lever operatively related to one of said members to operate the same in the direction of line-spacing.

30. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a tally-sheet holder comprising delivering and receiving rolls for the tally-sheet, and a line-spacing lever operatively related to the receiving member to impart a step-by-step advance thereto in the direction of line-spacing.

31. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a tally-sheet holder carried by the platen and disposed below the writing-surface thereof.

32. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a tally-sheet holder carried by the platen and disposed below the writing-surface thereof for the reception of the tally-sheet, and line-spacing mechanism for said sheet.

33. In a type-writing machine, the combination with the platen, of a tally-sheet holder disposed below the writing-surface thereof for the reception of the tally-sheet, and tally-sheet line-spacing mechanism extended above the platen for actuation.

34. In a type-writing machine, the combination with the platen, of a tally-sheet holder disposed below the writing-surface thereof for the reception of the tally-sheet, and tally-sheet line-spacing mechanism comprising a line-spacing lever extended above the platen for actuation.

35. In a type-writing machine, the combination with the flat platen and traveling printing mechanism, of a work-holder carried by the platen to retain a work-sheet in the printing position, and line-spacing mechanism for said work-sheet, said line-spacing mechanism being extended beyond the writing-surface of the platen and into operative relation with the printing mechanism whereby the relative movement of the platen and printing mechanism will cause the actuation of the line-spacing mechanism to advance the work-sheet.

36. In a type-writing machine, the combination with the platen and printing mechanism, of a primary work-holder, and a supplemental work-holder located at different points thereof, one of said work-holders being movable in the direction of line-spacing, and line-spacing mechanism for the movable work-holder, said line-spacing mechanism being disposed above the platen for engagement with the printing mechanism.

37. In a type-writing machine, the combination with the platen and printing mechanism movable thereover, of a work-holder movably carried by the platen, and line-spacing mechanism operatively related to said work-holder and extended above the platen and into the path of the printing mechanism for actuation thereby.

38. In a type-writing machine, the combination with the stationary platen and the printing mechanism movable thereover, of a work-holder movable in the direction of line-spacing, and line-spacing mechanism for said holder comprising a line-spacing lever extended through the platen and into the path of the printing mechanism.

39. In a type-writing machine, the combination with the stationary platen and the printing mechanism movable thereover, of a work-holder carried by the platen and comprising movable delivering and receiving members, and line-spacing mechanism operatively related to one of said members and extended into the path of the printing mechanism for actuation thereby.

40. In a type-writing machine, the combination with the stationary platen, and the printing mechanism movable thereover, of a work-holder comprising delivering and receiving rolls, and a line-spacing lever operatively related to one of said rolls and extended into the path of the printing mechanism for actuation thereby.

41. In a type-writing machine, the combination with the flat platen and the main tracks or guides for the traveling printing mechanism, of a plurality of work-holders mounted on the platen and retaining a plurality of separate work-sheets.

42. In a type-writing machine, the combination with a flat platen, traveling printing mechanism and the main tracks or guides for the traveling printing mechanism, of a tally-sheet holder carried by the platen between said tracks or guides and movable in the direction of line-spacing by the longitudinal movement of the traveling printing mechanism over the platen.

43. In a type-writing machine, the combination with the flat platen and the main tracks or guides for the traveling printing mechanism, of a primary work-holder, and a supplemental tally-sheet holder, both carried by the platen between the main tracks or guides and arranged to retain a primary work-sheet and a supplemental work-sheet at separated points, the tally-sheet holder being movable with respect to the platen in the direction of line-spacing.

44. In a type-writing machine, the combination with the stationary flat platen provided with a tally-opening, and with the main tracks or guides for the traveling printing mechanism, of a tally-sheet holder disposed to hold a tally-sheet exposed at said opening.

45. In a type-writing machine, the combination with the flat platen and the main tracks or guides, of a machine-frame movable upon said tracks or guides, and a type-carriage movable upon the frame, said frame and carriage constituting members of the traveling printing mechanism, and a stop device for arresting the movement of one of said members, said stop device being effective only in a predetermined position of the other member.

46. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of the machine-frame movable thereon, a type-carriage movable on the frame, and a stop device for limiting the movement of the frame, said stop device being disposed for control by the carriage.

47. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of a machine-frame movable thereon, a type-carriage movable on the machine-frame, a stop device for the frame, said stop device being arranged to be set in its effective position by the carriage, and a second stop device disposed to arrest the carriage in position to set the first-named stop device.

48. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of the machine-frame movable thereon, a type-carriage movable on the frame, a fixed stop member on the platen, and a movable stop member mounted on the machine-frame and arranged to be moved into and out of a path obstructed by the fixed stop member to arrest the frame at the fixed stop or to permit its movement therebeyond, as desired.

49. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of the machine-frame movable thereon, a type-carriage movable on the frame, a fixed stop member and a movable stop member carried by the platen and frame respectively, and a trip device operated by the carriage to throw the movable stop member into position for engagement with the fixed stop member.

50. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of the machine-frame movable thereon, a type-carriage movable on the frame, a fixed stop member on the platen, a pivoted stop member on the machine-frame, and a trip-head movable with the type-carriage and disposed to move the pivoted stop member into its effective position.

51. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of the machine-frame movable thereon, a type-carriage movable on the frame, a fixed stop member, a movable stop member for arresting the machine-frame, and normally disposed in an ineffective position, and a trip device operated by the carriage to throw the movable stop member to its effective position and to permit said movable stop member to return to its ineffective position, whereby the carriage by its movement to a given position on the frame will position the stop members to arrest the frame and by further movement will release the frame for movement beyond the stop.

52. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of the movable machine-frame, stop mechanism therefor, and a type-carriage on the frame, said type-carriage being operatively related to the stop mechanism to effect the arrest or release of the frame.

53. In a type-writing machine, the combination with the flat platen having the main tracks or guides, of the machine-frame movable thereon, a type-carriage movable on the frame, and means for automatically effecting the arrest or release of the machine-frame through the movement of the type-carriage.

54. In a type-writing machine, the combination with a flat platen having the main tracks or guides, of means for retaining primary and supplemental work-sheets at different points on the platen, printing mechanism mounted to travel laterally and longitudinally over the platen, and separate stop devices for limiting the lateral and longitudinal movements of the printing mechanism to insure the accurate location of the latter over the supplemental work-sheet, one of said stop devices being automatically released when an entry or item is printed on the supplemental work-sheet.

55. In a type-writing machine, the combination with a flat platen having the main tracks or guides, of means for retaining a primary work-sheet and a tally-sheet at different points on the platen, a machine-frame mounted to travel on said tracks or guides, a traveling type-carriage on the frame, a carriage stop device for arresting the movement of the carriage on the frame, a machine stop device for arresting the movement of the machine-frame over the platen to accurately position the type-carriage over the tally-sheet, and means for automatically releasing the machine stop device by the movement of the carriage incidental to the printing of an entry or item on the tally-sheet.

56. A type-writing machine provided with a plurality of platens disposed to retain primary and supplemental work-sheets in position to be printed upon alternately by the same printing mechanism, one of said platens being stationary and flat.

57. A type-writing machine having a plurality of platens for primary and supplemental work-sheets respectively, said platens being relatively movable and carried one by the other.

58. A type-writing machine having stationary and movable platens disposed to retain separate work-sheets in position to be printed upon.

59. The combination with a stationary primary platen, and a movable supplemental platen, of traveling printing mechanism movable over said platens.

60. In a type-writing machine, the combination with a platen and printing mechanism, of a primary work-holder carried by the platen, and a separate supplemental work-holder disposed to retain a supplemental work-sheet, and movable independently of the platen in the direction of line-spacing.

61. A type-writing-machine platen provided with a supplemental platen carried thereby and with main tracks or guides for the traveling machine.

62. In a type-writing machine, the combination with a platen, of the tally-sheet holder for the reception of the tally-sheet, and tally-sheet line-spacing mechanism extended above the platen from below the writing-surface thereof for actuation.

63. In a type-writing machine, the combination with a stationary flat platen provided with a tally-opening and the tracks or guides for the traveling machine, of a tally-sheet holder disposed to hold the tally-sheet exposed at said opening.

64. In a type-writing machine, the combination with a flat platen having the main tracks or guides, of means for retaining primary and supplemental work-sheets at different points on the platen, printing mechanism mounted to travel laterally and longitudinally over the platen, and separate stop devices for limiting the lateral and longitudinal movement of the printing mechanism to insure the accurate location of the latter over the supplemental work-sheet.

65. In a type-writing machine, the combination with a stationary flat platen and printing mechanism mounted to travel thereover, of means for retaining a plurality of separated work-sheets in position to be operated upon directly by said printing mechanism.

66. In a type-writing machine, the combination with a stationary flat platen, and the main tracks or guides for the traveling printing mechanism, of a work-holder including a roll, and means for effecting the automatic actuation of the roll to feed the work-sheet with respect to the platen.

67. In a type-writing machine, the combination with a stationary flat platen, and the tracks or guides for the traveling machine, of a primary work-holder movable toward and away from the platen, and a supplemental work-holder independently movable in the direction of line-spacing only.

68. In a type-writing machine, the combination with the flat stationary platen, and the traveling printing mechanism, of a primary work-holder disposed opposite the platen to retain a primary work-sheet, and a tally-sheet holder disposed to retain a tally-sheet in position to be printed upon, said tally-sheet being movable longitudinally of the platen.

69. In a type-writing machine, the combination with the flat stationary platen, and the traveling printing mechanism, of a primary work-holder disposed to retain a primary work-sheet over the platen, and a tally-sheet holder disposed to retain a tally-sheet in position to be printed upon at one side of the primary work-sheet, said tally-sheet being movable longitudinally of the platen.

70. In a type-writing machine, the combination with the flat stationary platen, and printing mechanism mounted to travel thereover, of means for retaining a primary work-sheet and a tally-sheet at different points of the platen so as to be in position to be operated upon directly by said printing mechanism at different periods of the movement of the latter.

705,528. RIBBON-FEEDING MECHANISM FOR TYPE-WRITING MACHINES. ROBERT J. FISHER, Athens, Tenn., assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed June 21, 1901. Serial No. 65,465. (No model.)

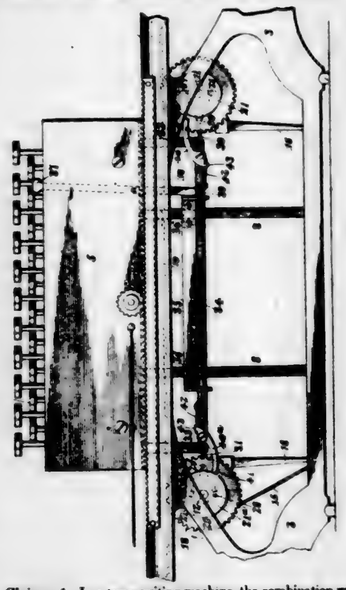

Claim.—1. In a type-writing machine, the combination with a traveling carriage, of a rack mounted independently thereof and arranged parallel with the line of writing, ribbon-spool shafts arranged at each side of the carriage and terminating adjacent to the rack, separate gearing for connecting each shaft independently to the rack, pinions constituting elements of said separate gearing, and means for throwing said pinions out of gear with the shafts.

2. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, ribbon-spools and spool-pinions mounted on said shafts, said pinions being constantly in direct engagement with the rack, and means for alternately effecting the operative connection of said pinions with their shafts, and their disconnection from said shafts.

3. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being constantly and directly geared to the rack, and shifting mechanism movable with the carriage and disposed to alternately connect the pinions with their shafts.

4. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being directly geared to the rack, releasing means for releasing the pinions from their shafts, and shifting mechanism for operating the releasing means to release the pinions.

5. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being directly geared to the rack, separate releasing devices for releasing the pinions from their shafts, and shifting mechanism mounted on the carriage and arranged to shift the positions of the releasing devices to release the pinions alternately from their shafts.

6. In a type-writing machine, the combination with a traveling car-

riage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, pawl-and-ratchet mechanism disposed to connect each pinion with its shaft, and shifting mechanism disposed to move said pawls out of their engaging positions.

7. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, a pawl and a ratchet-wheel constituting means for operatively connecting each pinion to its shaft, and shifting mechanism for moving the pawls to their disengaging positions, said shifting mechanism being effective in any position of the pawls.

8. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, a ratchet-wheel fixed on each shaft, a pawl mounted on each pinion to engage the adjacent ratchet-wheel, disks shiftably mounted on the shafts and disposed to move the pawls out of engagement with their ratchet-wheels, and means for operating said disks.

9. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, a ratchet-wheel fixed on each shaft, a pawl mounted on each pinion to engage the adjacent ratchet-wheel, beveled disks shiftably mounted on the shafts and disposed to move the pawls out of engagement with their ratchet-wheels, and means for operating said disks.

10. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being geared to the rack, a ratchet-wheel on each shaft, a pawl on each pinion to engage the adjacent ratchet-wheel, disks shiftably mounted on the shafts to move the pawls out of engagement with the ratchet-wheels, and means for shifting said disks simultaneously in opposite directions.

11. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool, a spool-pinion and a ratchet-wheel mounted on each shaft, a pawl on each pinion to engage the adjacent ratchet-wheel, beveled disks shiftably mounted on the shafts to move the pawls out of engagement with the ratchet-wheels, and means for shifting said beveled disks simultaneously in opposite directions.

12. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, releasing mechanism for effecting the release of each pinion from its shaft, a reciprocatory shift-bar mounted on the carriage and connected to said releasing mechanism, and means for reciprocating said shift-bar.

13. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, separate releasing devices for effecting the release of the pinions from their shafts, a shifting-lever connected to each releasing device, and a shift-bar connected to both of said levers to effect their simultaneous movement in opposite directions.

14. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, pawl-and-ratchet mechanism for connecting each pinion to its shaft beveled disks arranged to shift the positions of the pawls and having grooved hubs, bell-crank shifting-levers engaging the grooved hubs of the disks, a shift-bar connected to both of said bell-crank levers, and a lever operatively connected to the shift-bar to actuate the same.

15. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of ribbon-spools movable with the carriage, spool-pinions operatively related to the rack and arranged to rotate the spools in a given direction, and means for positively locking the spools against rotation in a direction to slacken the ribbon.

16. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of ribbon-spools movable with the carriage, spool-pinions operatively related to the rack, mechanism for connecting each pinion to its spool to cause the rotation of the spool in one direction and to permit the pinion to rotate idly in the opposite direction, and locking means for preventing either spool from rotating during the idle movement of its pinion.

17. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, a check-wheel and a ratchet-wheel fixed upon each spool-shaft, a pawl mounted on each pinion and disposed to engage the ratchet-wheel, and restraining-dogs disposed to alternately engage the check-wheels to prevent rotation of the spool-shaft whose pawl is moving idly over the ratchet-teeth of the adjacent ratchet-wheel.

18. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, shifting mechanism for effecting the alternate engagement and disengagement of the pinions to and from their shafts, and restraining mechanism for said shafts, said restraining mechanism being controlled by the shifting mechanism.

19. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool, a spool-pinion, a ratchet-wheel and a check-wheel mounted upon each spool-shaft, a pawl mounted upon each pinion to engage the adjacent ratchet-wheel, a shift-bar mounted upon the carriage, restraining-dogs carried by said shift-bar and designed for presentation to the check-wheels, and means connected with said shift-bar for throwing the pawls out of engagement with their ratchet-wheels.

20. In a type-writing machine, the combination with a suitable support, of a spool-shaft, a ribbon-spool carried by said shaft, a spool-pinion loosely mounted on the shaft and provided with a pawl, a ratchet-wheel mounted to rotate with the shaft and disposed for engagement by the pinion, a beveled disk shiftably mounted in operative relation to the pawl to urge the same out of engagement with the ratchet-wheel, and means for shifting said beveled disk.

21. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool, and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, pawl-and-ratchet mechanism disposed to connect each pinion with its shaft, and shifting mechanism disposed to move said pawls out of their engaging positions.

22. In a type-writing machine, the combination with a traveling carriage, and a stationary rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool, and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, a ratchet-wheel on each shaft, a pawl on each pinion to engage the adjacent ratchet-wheel, disks shiftably mounted on the shafts to move the pawls out of engagement with the ratchet-wheels, and means for shifting said disks simultaneously.

23. In a type-writing machine, the combination with a traveling carriage, and a stationary rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool, a spool-pinion, and a ratchet-wheel mounted on each shaft, a pawl on each pinion to engage the adjacent ratchet-wheel, beveled disks shiftably mounted on the shafts to move the pawls out of engagement with the ratchet-wheels, and means for shifting said beveled disks simultaneously.

24. In a type-writing machine, the combination with a traveling carriage, and a rack mounted independently thereof, of spool-shafts movable with the carriage, a ribbon-spool and a spool-pinion mounted on each shaft, said pinions being operatively related to the rack, shifting mechanism for effecting the alternate feeding of the ribbon from one spool to the other, and restraining mechanism for said shafts, said restraining mechanism being controlled by the shifting mechanism.

25. In a type-writing machine, the combination with the traveling carriage, of a rack mounted independently thereof and arranged parallel with the lines of writing, ribbon-spool shafts arranged at each side of the carriage and terminating adjacent to the rack, and separate gearing for connecting each shaft independently to the rack, said gearing having means for releasing the connection at will.

26. In a type-writing machine, the combination with the traveling carriage, of a rack mounted independently thereof and arranged parallel with the line of writing, ribbon-spool shafts arranged at each side of the carriage and terminating adjacent to the rack, separate gearing for connecting each shaft independently to the rack, pinions constituting elements of each independent gearing, and means for simultaneously throwing one of the pinions into gear with its shaft and the other pinion out of gear with its shaft.

705,524. CARBON-ROLL BILLING-PLATEN FOR TYPE-WRITING MACHINES. ROBERT J. FISHER, Athens, Tenn., and RALPH D. STACKPOLE, Chicago, Ill., assignors to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed May 23, 1901. Serial No. 61,565. (No model.)

Claim.—1. In a type-writing machine, the combination with a flat platen, of the main tracks or guides, and a work-holder movable independently thereof toward and away from the writing-surface and having supporting means for the sheet to be printed on and also for the carbon element or web.

2. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a work-holder movable independently thereof toward and away from the writing-surface and having supporting and guiding means for a work-sheet and for a carbon-web, and shiftable supporting means for said carbon-web.

3. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a work-holder movable independently thereof and having means for supporting a folded sheet and a carbon-web disposed between the leaves of said sheet.

4. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a support for the edge of the carbon element or web, said support being disposed above the platen to form an abutment for the folded edge or bight of the bill or sheet, and mounted for movement independently of the main tracks or guides.

5. In a type-writing machine, the combination with the flat platen and the tracks or guides, of a substantially counterbalanced work-holder mounted to sustain a work-sheet over the platen and movable away from the writing-surface independently of the tracks or guides.

6. In a type-writing machine, the combination with the flat platen, of a substantially counterbalanced work-holder disposed thereover and having supporting means for the sheet to be written upon and also for the carbon element or web.

7. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a substantially counterbalanced work-holder mounted between said tracks or guides and movable independently thereof.

8. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a substantially counterbalanced work-holder mounted between said tracks or guides and movable independently thereof, said work-holder having supporting means for the sheet to be printed on and also for the carbon element or web.

9. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a vertically-swinging work-holder adapted to occupy a position beneath the printing mechanism and movable independently of said main tracks or guides, said work-holder being provided with means for supporting and guiding the work-sheet and the shiftable carbon-web.

10. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a work-holder movable independently of said main tracks or guides and arranged over the platen to position both a work-sheet and a carbon-sheet thereon, said work-holder having means for aligning one of said sheets and means for guiding the other sheet.

11. In a type-writing machine, the combination with the flat platen, and the main tracks or guides for the traveling machine, of a swinging work-holder frame disposed over the platen between said tracks or guides and comprising a pair of work-holding members connected at or adjacent to their outer ends and movable vertically independently of the main tracks or guides.

12. In a type-writing machine, the combination with the flat platen, and the main tracks or guides, of a substantially counterbalanced swinging work-holder movable independently of said tracks or guides and comprising a pair of work-holding members, one of which is provided with means for guiding the edge of the carbon sheet or web.

13. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a work-holder movable independently of said tracks or guides and comprising a support, an alinement-guide, and means for supporting the edge of the carbon-web.

14. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a work-holder movable independently of said tracks or guides and comprising a guide-strip having a laterally-disposed abutment for the edge of the sheet.

15. In a type-writing machine, the combination with the flat platen, and the main tracks or guides, of a spring-balanced work-holder located between the tracks and movable independently thereof.

16. In a type-writing machine, the combination with the flat platen, and the main tracks or guides, of a substantially counterbalanced work-holding frame located between said tracks or guides and movable independently thereof, and means for retaining the work-holding frame in its depressed position.

17. In a type-writing machine, the combination with the flat platen, and the main tracks or guides, of a work-holding frame comprising work-holding members connected for movement in unison transversely of the platen, and means for moving the members laterally to effect the lateral adjustment of the frame.

18. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a work-holder movable independently thereof, and arranged over the platen to position both a work-sheet and a carbon-sheet thereover, said work-holder having means for alining one sheet and means for guiding the other sheet, and means for effecting the lateral adjustment of said work-holder to correspond with various type-writing machines.

19. In a type-writing machine, the combination with the flat platen, of a work-holder disposed thereover and having a hinged mounting located below the writing-surface within the limits of the platen, and means for moving the work-holder laterally to effect its lateral adjustment to correspond with various type-writing machines.

20. In a type-writing machine, the combination with the flat platen, of a work-holder, a rock-shaft therefor, and means for moving said shaft to effect the endwise adjustment thereof.

21. In a type-writing machine, the combination with a flat platen, of a swinging work-holder disposed thereabove, a rock-shaft for said work-holder, and a rotary adjusting member having a threaded connection with the shaft to effect the endwise adjustment thereof and the lateral adjustment of the work-holder.

22. In a type-writing machine, the combination with the flat platen of a swinging work-holder comprising holding members disposed over the platen, and supporting-arms therefor extending under the platen, said members and arms being connected in a rigid organization.

23. In a type-writing machine, the combination with the flat platen, of a work-holding frame having a pivotal mounting below the plane of the writing-surface and comprising holding members above the platen, supporting-arms below the platen, and means for connecting the arms and holding members in a rigid organization or frame.

24. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a work-holder provided with an upstanding flange disposed longitudinally of the platen for contact with the machine-frame mounted to travel over said flange.

25. In a type-writing machine, the combination with the main tracks or guides for the printing mechanism, of a work-holder vertically movable independently of the tracks or guides and disposed above the platen, and a carbon-carrier operatively related to said frame for movement therewith.

26. In a type-writing machine, the combination with the flat platen, of the tracks or guides for the printing mechanism, a work-holding frame vertically movable independently of the tracks or guides, and a carbon-carrier supported by the frame for movement therewith.

27. In a type-writing machine, the combination with the flat platen, and the main tracks or guides, of a vertically-movable work-holding frame independent of the tracks or guides, a carbon-carrier supported by said frame for movement therewith, and means for retaining the end of the carbon at a point removed from said carrier.

28. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a vertically-movable work-holding frame disposed to retain a work-sheet upon the platen, and a plurality of carbon-carriers carried by and movable with said frame.

29. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a vertically-movable work-holding frame disposed over the platen and having supporting and guiding means for the edge of the carbon sheet or web, and carbon-carriers movable with

said work-holding frame and constituting delivering and receiving members for the carbon.

30. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a work-holding frame disposed between and vertically movable independently of said main tracks or guides, and a plurality of carbon-carriers supported by and movable with the work-holding frame.

31. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, a vertically-movable work-holding frame having means for supporting the edge of the carbon-sheet, and carbon-carriers supported by and movable with the frame, said carbon-carriers being located beyond the opposite ends of said carbon-supporting means.

32. In a type-writing machine, the combination with a flat platen, of a pivotally-mounted work-holder, and carbon-carriers supported by said work-holder at opposite sides of its pivot.

33. In a type-writing machine, the combination with the flat platen, and a movable work-holder disposed thereover, of carbon-carriers located beyond the opposite ends of the printing area of the platen, and means for moving said carriers in opposite directions to prevent slacking of the carbon when the work-holder is moved.

34. In a type-writing machine, the combination with the flat platen having pockets at the opposite ends of the printing area, of a carbon-carrier mounted in each pocket, said carriers being normally disposed in a plane below the writing-surface.

35. In a type-writing machine, the combination with the flat platen having pockets at the opposite ends of the printing area, of a work-holding frame disposed to retain a work-sheet upon the platen, and carbon-carriers supported by and movable with the work-holding frame and normally located in said pockets.

36. In a type-writing machine, the combination with the flat platen, and a swinging work-holding frame disposed to retain a work-sheet thereover, of a carbon-carrier supported at the front end of the frame, and a shield for said carrier.

37. In a type-writing machine, the combination with a flat platen, and a laterally-adjustable swinging work-holding frame, of a frame-guide carried by the platen adjacent to the free end of the frame, and means for adjusting said guide.

38. In a type-writing machine, the combination with the flat platen, of a vertically-movable work-holding frame comprising supporting members and work-holding members disposed respectively above and below the platen, and coöperating stop devices carried by the supporting members and platen respectively to relieve the holding members of the weight of the frame.

39. In a type-writing machine, the combination with the flat platen, of an envelop-retaining clip carried thereby, and a clamp-plate disposed to compress the clip upon the work and to also engage the work to assist in its retention.

40. In a type-writing machine, the combination with the flat platen, of an envelop-retaining clip, a gage device to facilitate the positioning of the envelop, and a clamp-plate coöperating with said clip and gage device and disposed to compress the clip upon the work and to also engage the work to assist in its retention.

41. In a type-writing machine, the combination with the flat platen formed with a pocket, of a cover-plate disposed over the pocket and having gage projections and work-retaining springs carried by the plate and designed to locate and retain an envelop in the printing position and a clamp-plate arranged to depress the springs upon the work.

42. In a type-writing machine, the combination with the flat platen, of a cover-plate having alined gage projections, and work-retaining springs adjacent to said projections, and a swinging clamp-plate disposed above the cover-plate and provided with openings for the reception of the gage projections.

43. In a type-writing machine, the combination with the flat platen having the work-retaining springs mounted thereon, of the swinging clamp-plate adapted to compress the springs upon the work and to also engage the work to assist in its retention.

44. In a type-writing machine, the combination with the flat platen, and a swinging work-holding frame arranged thereover and projecting at one end beyond the platen, of a carbon-carrier supported on the extended end of the frame, and a pocket in which the carbon-carrier fits when the parts are in their normal positions.

45. In a type-writing machine, the combination with the flat platen, and a swinging work-holding frame arranged thereover and provided with a plurality of carbon-carriers, and means for guiding and protecting the edge of the carbon-web.

46. In a type-writing machine, the combination with the platen, the swinging work-holder comprising an upper section made up of a pair of longitudinal side frames rigidly connected and held in spaced relation and constituting holding and guiding means for the work, and a lower section formed of longitudinal bars arranged below the platen and disposed in similar spaced relation to the frames, both the frames and the bars being connected so as to move in unison.

47. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a work-holder movable independently thereof and having means for supporting the sheet to be printed on and also for protecting the edge of the carbon element or web.

48. In a type-writing machine, the combination with the flat platen, of the main tracks or guides, and a work-holder movable independently thereof and having means for supporting a folded sheet and for protecting the edge of a carbon-web disposed between the leaves of said sheet.

49. In a type-writing machine, the combination with the flat platen, and the main tracks or guides, of a work-holder movable independently thereof and comprising a strip designed to constitute protecting means for the edge of the carbon element or web, and means for supporting said carbon element or web in proximity to said strip.

705,525. TYPE CASTING AND SETTING MACHINE. JOSEPH C. FOWLER and JOSEPH C. FOWLER, Jr., Baltimore, Md., assignors to Typographic Development Company, Chicago, Ill., a Corporation of Illinois.

Filed Aug. 16, 1901. Serial No. 72,248. (No model.)

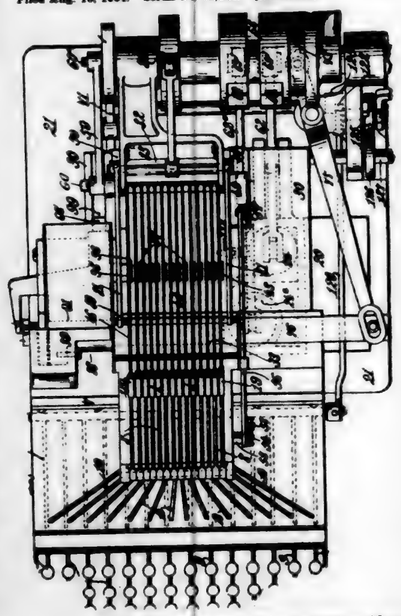

Claim.—1. In a type-casting machine, the combination with a series of matrices, keepers pivoted at one end, engaging the matrices at their free ends and resting loosely on the keeper-releasers, the keeper-releasers and finger-key mechanism for lifting the keeper-releasers, substantially as described.

2. In a type-casting machine, the combination with a series of matrices, of a series of pivoted keepers engaging the matrices at their free ends and resting loosely on the keeper-releasers, a series of bodily-movable keeper-releasers, and finger-key mechanism engaged with said keeper-releasers for actuating the same, substantially as described.

3. In a type-casting machine, the combination of a series of matrix-keepers, pivoted at one end, engaging the matrices at their free ends and resting loosely on the keeper-releasers, a series of keeper-releasers provided with lateral pins, and finger-key mechanism for actuating the keeper-releasers, substantially as described.

4. In a type-casting machine, the combination with a series of matrix-keepers pivoted at one end, free at their other ends, and finger-key mechanism, of a series of keeper-releasers interposed between the keepers and finger-key mechanism and upon which the keepers rest loosely, substantially as described.

5. The combination with a series of matrix-keepers and finger-key mechanism, of a series of keeper-releasers interposed between the keepers and the key mechanism and provided with a series of lateral pins resting upon the finger-keys, substantially as described.

6. In a type-casting machine, the combination with a series of matrix-keepers and a series of matrix-arresters, of finger-key mechanism, a series of keeper-releasers engaging the keepers and having lateral pins engaging the finger-keys, and a series of levers engaging the matrix-arresters and the finger-keys, substantially as described.

7. In a type-casting machine a melting-pot having a series of ducts, having their discharge in a common line and a series of duct-cut-off gates, substantially as described.

8. In a type-casting machine, a melting-pot having series of ducts, a series of duct-cut-off gates, and means for automatically operating said gates.

9. In a type-casting machine, a melting-pot provided with a type-metal compartment and a spacer-metal compartment, a series of ducts in communication with the type-metal compartment, and duct-cut-off gates arranged in said compartment, substantially as described.

10. In a type-casting machine, a melting-pot having a type-metal compartment and a spacer-metal compartment, plunger-chambers arranged in said compartments, a canal leading from the plunger-chamber of the type-metal compartment to a series of ducts, and a duct in communication with the plunger-chamber of the spacer-metal compartment, substantially as described.

11. In a type-casting machine, a mold comprising a bottom plate which rests upon the melting-pot, and is constructed with a series of grooves and mold-closing and type-extracting slides arranged to operate with said grooves, and means for introducing casting material into said grooves.

12. In a type-casting machine, a mold comprising a bottom plate provided with a type-race, means for introducing casting material into said mold, means for withdrawing type cast in said mold and means for pushing the type along the race.

13. In a type-casting machine, a mold comprising a bottom plate provided with slide-grooves and a type-race intersecting said grooves, in combination with mold-closing and type-extracting slides, means for introducing casting material into said grooves, and a type-pusher operating in the type-race.

14. In a type-casting machine, the combination with a melting-pot provided with a series of ducts, of a mold the bottom plate of which rests on said melting-pot and is provided with openings registering with the ducts of the melting-pot, substantially as described.

15. A mold the bottom plate of which rests upon the melting-pot and is provided with a waste-metal slot, substantially as described.

16. In a type-casting machine, the combination with a mold, of a slide provided with means to close an end of the mold and having a part to enter the mold, which part is provided with means to extract a type therefrom, substantially as described.

17. In a type-casting machine, a mold, and a slide constructed to enter the mold, close one end thereof and constitute the bottom of the casting-space thereof, substantially as described.

18. In a type-casting machine, a mold-closing and type-extracting slide provided with a reduced forward portion to enter the mold, a shoulder to close the end of the mold, and means for extracting the type, substantially as described.

19. In a type-casting machine, a mold-closing and type-extracting slide provided with a reduced forward portion to enter the mold, a shoulder to close the end of the mold, and means for extracting the type, and an abutment for engagement with a slide-retracting device.

20. In a type-casting machine, a mold-closing and type-extracting slide provided with a reduced forward portion to enter the mold, a shoulder to close the end of the mold, means for extracting the type, and a nozzle, substantially as described.

21. In a type-casting machine, a mold having a movable casting-space bottom provided with type-extracting means, substantially as described.

22. In a type-casting machine, the combination with a mold, of a mold-closing and type-extracting slide provided with a guide and a movable abutment arranged thereon, means for operating said abutment and means for operating said slide, substantially as described.

23. In a type-casting machine, the combination with a mold, of a mold-closing and type-extracting slide having a reduced forward portion to enter the mold, a shoulder to close the end of the mold, a nozzle leading to the casting-space of the mold, means for extracting the type, a guide, and a movable abutment arranged in said guide, means for operating said abutment, means for operating said slide, a type-metal pot, and means for introducing type-metal into the mold substantially as described.

24. In a type-casting machine, the combination with a mold, of a mold-closing and type-extracting slide provided with a portion to enter the mold, having a nozzle leading to the casting-space of the mold, type-extracting means, a guide, a movable abutment arranged thereon, and a depending ear, means for operating said abutment, means for operating said slide, a type-metal pot, and means connected to said ear and operated by the movement of the slide to permit metal to be introduced into the mold, substantially as described.

25. In a type-casting-machine, the combination with a mold, of a slide coöstructed to enter the mold and close the rear end thereof and provided with type-extracting means, substantially as described.

26. In a type-casting machine, the combination with a mold, of a mold-closing and type-extracting slide provided with a movable abutment and a depending ear, means for operating said abutment, means for operating said slide, and means connected with said ear and operated by the movement of the slide to permit type-metal to be introduced into the mold.

27. In a type-casting machine, the combination with a melting-pot and a mold, of a mold-closing and type-extracting slide provided with a nozzle for the passage of molten metal into the casting-space of the mold, substantially as described.

28. In a type-casting machine, the combination with a melting-pot having a series of ducts, of gates arranged in said ducts, a mold, mold-closing and type-extracting slides and mechanism connected with said slides for operating the gates, substantially as described.

29. In a type-casting machine, the combination with a mold, of a melting-pot having a series of ducts and gates for opening and closing said ducts, and slides constructed to enter and close the mold and provided with means for actuating said gates, substantially as described.

30. In a type-casting machine, the combination with a mold, of slides arranged to move in said mold, and a slide-retracting hand provided with a series of fingers, substantially as described.

31. In a type-casting machine, the combination of a mold, a matrix-aligning blade arranged in cooperative relation thereto, slides arranged to move in said mold, a slide-operating hand provided with a series of fingers and means for attachment of the matrix-aligning-blade-operating arm, and means for introducing type-metal into said mold.

32. In a type-casting machine, the combination with a mold and mold-closing and type-extracting slides, of a slide-operating hand having a series of fingers which overlie the slides, substantially as described.

33. In a type-casting machine, the combination with a mold, of a mold-closing and type-extracting slide having a movable abutment, and an arm arranged to rest at its free end on a matrix and connected to said abutment, substantially as described.

34. In a type-casting machine, the combination with a melting-pot provided with a series of ducts, of gates for opening and closing said ducts, a mold having a series of channels, mold-closing and type-extracting slides provided with movable abutments, connections between said slides and said gates, arms adapted to rest at their free ends on matrices and connected to said movable abutments, and a fingered hand for operating said slide, substantially as described.

35. In a type-casting machine, the combination with a mold and mold-closing and type-extracting slides provided with nozzles, of a nozzle-clearing comb, substantially as described.

36. In a type-casting machine, the combination with a mold and mold-closing and type-extracting slides provided with nozzles, of a nozzle-clearing device consisting of a plate provided with a series of teeth adapted to enter and clear the nozzles, substantially as described.

37. In a type-casting machine, the combination with a mold and mold-closing and type-extracting slides, of a nozzle-clearing device provided with a series of pins, and means for projecting said pins into said nozzles when the slides are in retracted position, substantially as described.

38. In a type-casting machine, the combination with a melting-pot, a plunger arranged in the melting-pot, a pedestal, a spring-pressed cap loosely mounted thereon, and a lever connected to said plunger and cap.

39. In a type-casting machine, the combination with a mold, of a type-race, a composing-box at its end, means for bringing type and compressible spaces from the mold to the race, a pusher reciprocating in said type-race, and means for operating said pusher to convey the type to the composing-box and justify the line of type therein, substantially as described.

40. In a type-casting machine, the combination with casting mechanism, a composing-box, and means for assembling the cast type and spaces into a line, of a line-ejector slide provided with a movable abutment and a blade to enter the composing-box and eject the line of type therefrom, means for operating the slide, and means brought into action by finger-key mechanism to cause the abutment to engage the slide-operating means, substantially as described.

41. In a type-casting machine, the combination of casting mechanism, a composing-box, means for conveying cast type and spaces to said box, a line-transferrer and a line-ejector having a blade to enter the composing-box and an arm for operating the line-transferrer, substantially as described.

42. In a type-casting machine, the combination of casting mechanism, a composing-box, and means for conveying cast type and spaces to said box, a slide and a line-ejecting blade carried thereby, a movable abutment connected to said a fixed abutment on said slide and a slide-operating hand arranged to engage said abutment, substantially as described.

43. In a type casting and composing machine, the combination with casting mechanism, a composing-box, and means for conveying cast type to said composing-box, of a swinging line-transferrer provided with a fork, a line-ejecting blade having a part to engage said fork and means for operating said line-ejecting blade.

44. In a type-casting machine, the combination of a pivoted line-transferrer arranged in coöperative relation to the composing-box, a fork connected to said line-transferrer, a line-ejecting blade, and means carried thereby for engaging the fork to operate the line-transferrer.

45. In a type-casting machine, a line-transferrer having a removable floor-section, substantially as described.

46. In a type-casting machine, the combination with a composing-box, of a filling-block and means for securing the latter in said box, substantially as described.

47. In a type-casting machine, the combination with a composing-box, a line-transferrer open at one end, and a yielding line-abutment closing the open end of the line-transferrer, substantially as described.

48. In a type-casting machine, a matrix-alining blade, a rocking trigger provided with a cam to operate said blade, and means for actuating said trigger to cause the cam to project the alining-blade into engagement with a matrix, substantially as described.

49. In a type-casting machine, the combination with a matrix-alining blade, a trigger provided with a cam arranged in operative relation to said blade, the fingered hand, an arm connected with said hand and having a pin engaging said trigger, substantially as described.

50. In a type-casting machine, the combination with a mold having a channel for casting spacers, of a slide constructed to enter and close said channel and constitute the bottom of the casting-space thereof, and provided with a plurality of projections and a nozzle, substantially as described.

51. In a type-casting machine, the combination with a melting-pot having a spacer-metal compartment, a duct leading therefrom, a gate for opening and closing said duct, a plunger therein, a mold having a spacer-casting channel, a slide coöperating with said channel, means connecting said slide with said gate comprising a link having a fork, a plunger-lever, and an abutment engaging said fork and adapted to be engaged with said lever to prevent the action of the plunger, substantially as described.

52. In a type-casting machine, the combination with a matrix; a mold, and means operated by finger-keys for releasing and positioning said matrix in front of the mold, of a mold-closing and type-extracting slide, means for projecting said slide into and withdrawing the same from the mold, and means for injecting metal into the mold, substantially as described.

53. In a type-casting machine, the combination with a matrix, a mold, and means operated by finger-keys for releasing and positioning said matrix in front of the mold, of a mold-closing and type-extracting slide, means for projecting said slide into and withdrawing the same from the mold, means for injecting metal into the mold, and means for releasing the cast type from the slide, substantially as described.

54. In a type-casting machine, the combination with matrices, a mold having a series of channels, means operated by finger-keys for selectively releasing and presenting the matrices to the mold, a melting-pot having a series of ducts, gates for said ducts, mold-closing and type-extracting slides connected to said gates, means for operating said slides, and means for injecting metal into the mold, substantially as described.

55. In a type-casting machine the combination with finger-key-released matrices, of a mold having a series of channels, a series of mold-closing and type-extracting slides adapted to said mold-channels, means for operating said slides and means brought into action by the fall of a matrix whereby the coöperating slide is made active, substantially as described.

56. In a type-casting machine the combination with finger-key-released matrices, of a mold having a series of channels, a series of independent mold-closing and type-extracting slides, movable abutments connected to said slides normally held out of action by the matrices and brought into action by the fall of the coöperating matrix, and means for engaging said abutment to project the slide into a mold-channel, substantially as described.

57. In a type-casting machine, the combination with a mold, matrices and means for presenting them to the mold, of a melting-pot, a mold-closing and type-extracting slide, having a nozzle adapted to communicate at the proper time with the melting-pot, means for projecting metal through said nozzle, means for releasing the cast type from the slide, and means for cleaning the nozzle, substantially as described.

58. In a machine for casting and composing individual type, the combination of a series of movable matrices bearing a plurality of characters, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the corresponding channel of the mold, casting mechanism, means for extracting the cast type, means for composing and justifying the type, and means for transferring the composed and justified line to a galley, substantially as described.

59. In a machine for casting and composing individual type, the combination of a series of independent matrices bearing a plurality of characters, finger-key-actuated matrix keepers, releasers and arresters, a mold, having a series of channels, a melting-pot having a series of ducts, a series of mold-closing and type-extracting slides, means actuated thereby for opening and closing the mold-ducts, means for projecting metal into the mold, and means for composing and justifying the type in a line, substantially as described.

60. In a machine for casting and composing individual type, the combination of a series of independent matrices bearing a plurality of characters, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, casting mechanism, means for conveying and composing the individual type into a line, a line-transferrer, and a line-ejector for depositing the composed line thereon, substantially as described.

61. In a machine for casting and composing individual type, the combination of a series of independent movable matrices bearing a plurality of characters, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, casting mechanism and means for composing the individual type into a line, substantially as described.

62. In a machine for casting individual type, the combination of a series of independent movable matrices bearing a plurality of characters, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, casting mechanism comprising a pot having a series of normally-closed ducts leading to the several mold-channels, a metal projector and means for opening one of the ducts while the others remain closed, substantially as described.

63. In a machine for casting individual type, the combination of a series of independent movable matrices bearing a plurality of characters, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, casting mechanism comprising a pot with a series of normally-closed ducts, and means brought into action by the movement of the selected matrix for opening the proper duct, substantially as described.

64. In a machine for casting individual type the combination of a series of independent movable matrices bearing a plurality of characters, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, a melting-pot having a series of normally gate-closed ducts, a metal-projector plunger, mold-closing and type-extracting slides, connected to the duct-gates, and means for operating said gates, substantially as described.

65. In a type-casting machine, the combination of a series of matrices, a mold having a series of channels, means for selectively presenting the matrices to the mold, mold-closing and type-extracting slides, a molten-metal pot having a series of ducts, gates for said ducts connected to and operated by said slides, a fingered slide-operating hand, and movable abutments connected to the slides, pivoted arms connected to said abutments and resting on the matrices, a plunger in the molten-metal pot, and means for operating the slide-operating hand and the plunger, substantially as described.

66. In a type casting and composing machine, the combination of a series of matrices, a mold having a series of channels, means for selectively presenting the matrices to the mold, mold-closing and type-extracting slides, a molten-metal pot having a series of ducts, a metal-projecting plunger in said pot, gates for said ducts connected to and operated by said slides, a composing-box, means for conveying the cast type thereto, a line-ejector, a fingered hand for operating the slides and line-ejector, movable abutments connected to the slides and line-ejector, pivoted arms connected to said abutments and resting on the matrices, and means for operating said slides, plunger and line-ejector, substantially as described.

67. In a machine for casting and composing individual type, a line-ejector, a dummy matrix coöperating therewith, means for projecting the line-ejector, finger-key-actuated device for releasing the dummy matrix, and means made active by the movement of the dummy matrix for subjecting the line-ejector to the action of the projecting means, substantially as described.

68. In a casting-machine, a series of movable matrices bearing a plurality of characters, a mold having a series of channels, in alinement with said matrices, finger-key mechanism for selectively presenting the matrices to the mold, and casting mechanism, substantially as described.

69. In a machine for casting and composing individual type, the combination of a series of independent movable matrices bearing a plurality of characters, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, casting mechanism and means for extracting the cast type from the mold, substantially as described.

70. In a type-casting machine, the combination of a series of matrices, a mold, finger-key mechanism for selectively presenting the matrices to the mold, casting mechanism, a matrix-returning shoe, and mechanism set in operation by the actuation of the finger-key mechanism in selecting a matrix for actuating said shoe at the conclusion of each cycle of operation.

71. In a type-casting machine, the combination of a series of movable matrices each bearing a plurality of characters, a mold having a series of channels in alinement with said matrices, finger-key mechanism for selectively presenting the matrices to said mold, casting mechanism, means for extracting the cast type from the mold, a matrix-returning shoe, and mechanism set in operation by the actuation of the finger-key mechanism in selecting a matrix for actuating said shoe at the conclusion of each cycle of operation.

72. In a type-casting machine, the combination of a series of movable matrices each bearing a plurality of characters, a mold having a series of channels in alinement with said matrices, finger-key mechanism for selectively presenting the matrices to the mold, casting mechanism, means for extracting the cast type from the mold, and means for returning the matrices to normal position.

73. In a type-casting machine, the combination of a series of movable matrices each bearing a plurality of characters, a mold having a series of channels in alinement with said matrices, finger-key mechanism for selectively presenting the matrices to the mold, casting mechanism, means for extracting the cast type from the mold, and a matrix-returning shoe

74. A matrix for type-casting machines provided with a plurality of series of characters of different font.

75. In a type-casting machine, a series of matrices bearing a plurality of series of characters of different font, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, and a casting mechanism, substantially as describbed.

76. In a type-casting machine, a series of matrices bearing a plurality of series of characters of different font, a shiftable carrier therefor, a mold having a series of channels, finger-key-actuated mechanism for selectively presenting the matrices to the mold, and a casting mechanism.

77. In a type-casting machine a series of matrices bearing a plurality of series of characters of different font, a mold having a series of channels, means for shifting the matrices to bring either font of characters into operative relation to the mold, finger-key-actuated mechanism for selectively presenting the matrices to the mold, and a casting mechanism, substantially as described.

78. In a type-casting machine a series of matrices, bearing a plurality of characters, a mold having a series of channels in alinement with said matrices, finger-keys for selectively releasing the matrices, and individual matrix-arresters connected to and operated by its respective key, substantially as described.

79. In a type-casting machine, the combination with a driving-shaft, a normally loose pulley thereon, of an automatically-actuated pulley-engaging clutch, a clutch-arm engaging the clutch to hold it normally out of engagement with the pulley, a release-arm, finger-key mechanism, means arranged to be operated by any key of the mechanism to actuate the release-arm, and means operating to withdraw the clutch-arm from engagement with the clutch when the release-arm is actuated, substantially as described.

80. In a type-casting machine, a driving-shaft, a normally loose pulley thereon, of a clutch, and mechanism to permit the clutch to act comprising a clutch-arm engaging and normally holding the clutch inactive, a rock-shaft, a release-arm carried thereby, means for withdrawing the clutch-arm when the release-arm is actuated, trip-arms carried by the rock-shaft, finger-key mechanism and connections between the trip-arms and the finger-keys whereby the release-arm is actuated, substantially as described.

81. In a type-casting machine, the combination with releasably-stored matrices and means for casting type therefrom, of a driving-shaft, a normally loose pulley thereon, an automatic clutch, releasable means for normally holding the clutch from engagement with the pulley, finger-key mechanism, and matrix-release and clutch-holder-release connections operated by the finger-keys, substantially as described.

82. In a type-casting machine, a machine-starting mechanism comprising a clutch-arm, a weighted disk, a mutilated friction-disk operatively connected to said weighted disk, a cam also operably connected to and partaking of the movement of said weighted disk and adapted to engage and operate the clutch-arm, means for imparting motion to the mutilated friction-disk, means for holding the weighted disk from operation and connections actuated by depression of finger-key mechanism for releasing the weighted disk from the holding means, substantially as described.

83. In a type-casting machine, a machine-starting mechanism comprising a weighted disk provided with a beak-rib, a release-arm normally holding said disk inactive, means actuated by a finger-key for withdrawing said arm from engagement with the disk, a clutch-arm, and means actuated by said weighted disk for withdrawing such clutch-arm, substantially as described.

84. In a type-casting machine, a machine-starting mechanism comprising a clutch-arm, a friction-transmitting disk, a mutilated disk, a weighted disk for bringing said mutilated disk into frictional engagement with the transmitting-disk, a cam operatively connected to and partaking of the movement of said weighted disk to engage and withdraw the clutch-arm, a release-arm for holding said weighted disk inactive, and finger-key mechanism for withdrawing the release-arm and permitting operation of the weighted disk, substantially as described.

85. In a type-casting machine, the combination with independent, releasably-stored matrices, mechanism for casting therefrom, driving mechanism, finger-key mechanism for releasing the matrices and presenting the same in casting position and connections between said finger-key mechanism and the driving mechanism whereby the latter is made active on the actuation of any key of the mechanism, substantially as described.

705,526. SAFETY HOISTING-HOOK FOR ORE-BUCKETS, &c. HIRAM B. GRAY, Conneaut, Ohio, assignor of one-half to V. J. Craytor, Conneaut, Ohio. Filed Feb. 23, 1902. Serial No. 96,170. (No model.)

Claims.—1. A hook for hoisting buckets and other articles, provided with a safety-guard, adapted to move to and from the point of the hook, and a pawl and ratchet, arranged to lock the said safety-guard in contact with the said hook substantially as set forth.

2. A hook for hoisting buckets and other articles, provided with a safety-guard, having a V-shaped notch in its end and adapted to move to and from the point of the hook, and a pawl and ratchet, arranged to lock the said safety-guard in contact with the said hook, the said notch receiving the point of the latter substantially as set forth.

3. In a hook for hoisting buckets and other articles, the shank having a middle opening, and having two corresponding curved slots in its sides and the hook proper integral with it, in combination with a safety-guard adapted to fit on the said point and provided with a ratchet and gudgeons, and a pawl pivoted within the said opening and arranged to engage the said ratchet when the shank of the hook tilts forward, for the purpose of holding the safety-guard on the hook-point substantially as set forth.

4. In combination with a hook, a pivoted safety-guard ratchet and handle in one piece and a pawl adapted to automatically engage the said ratchet thereby locking the safety-guard on the hook-point and the handle against the back of the hook substantially as set forth.

5. In combination with a hook and a handle movable with respect thereto, but curved to fit close against the back of the hook in its closed position, means for automatically locking the said handle in such position, when the top of the shank tilts forward substantially as set forth.

6. In combination with a slotted hook, a movable piece provided with gudgeons adapted to slide in said slots and a pawl arranged to engage a ratchet on said piece for locking it in closed position, the said piece comprising a safety-guard adapted to fit on the point of the hook and a handle carved to fit against the back of the hook substantially as set forth.

7. A hook having a pair of pawls pivoted in its shank, in combination with a safety-guard having successive teeth engaged respectively by said pawls, to lock the said guard on the point of the hook substantially as set forth.

705,527. WORK-GAGE ATTACHMENT FOR TYPE-WRITING MACHINES. HIRAM J. HALLE, Cleveland, Ohio, assignor to the Phelps Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed Dec. 13, 1900. Serial No. 39,730. (No model.)

Claims.—1. In a type-writing machine, the combination with a flat platen and the main tracks or guides for the traveling printing mechanism, of an adjustable work-gage disconnected from but coöperating with a track or guide to aline and hold the work.

2. In a type-writing machine, the combination with a flat platen and the main tracks or guides for the traveling printing mechanism, of a work-gage adjustable longitudinally of the platen and disposed to coöperate with a track or guide to aline and hold the work.

3. In a type-writing machine, the combination with a flat platen and the main tracks or guides for the traveling machine, of a work-gage comprising a plurality of independently-adjustable-gage members designed to be adjusted to register with the file-holes in a work-sheet or bill to retain said sheet or bill in the printing position.

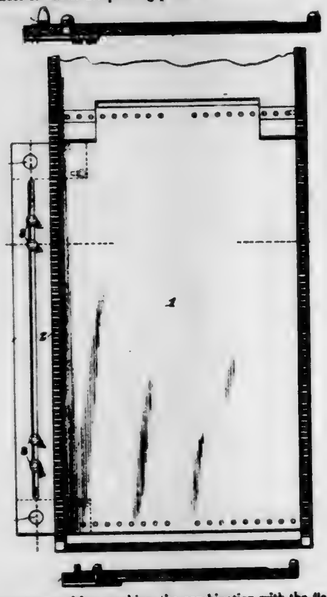

4. In a type-writing machine, the combination with the flat platen, and the machine rails or guides, of a work-gage arranged to lie outside of the vertical plane of a track or guide and adjustable to different positions to accommodate different work-sheets.

5. In a type-writing machine, the combination with the flat platen, and the movable main tracks or guides for the traveling printing mechanism, of a work-gage arranged to lie in a plane at one side of a track or guide, said track or guides and said work-gage being disposed to cooperate to hold and aline the work.

6. In a type-writing machine, the combination with the platen and the movable tracks or guides for the traveling printing mechanism, of a work-gage arranged to lie outside of a track or guide and to aline a work-sheet held by said track or guide.

7. In a type-writing machine, the combination with the platen, and the rails or guides for the traveling printing mechanism, of a work-gage having a support distinct from the platen and arranged to lie outside of the vertical plane of a rail or guide.

8. In a type-writing machine, the combination with the platen, and the rails or guides disposed thereon for the traveling printing mechanism, of a work-registering gage attachment having a gage proper or gage-abutment located outside of the vertical plane of a rail or guide and independent of the latter.

9. In a type-writing machine, the combination with the flat platen, and the tracks or guides for the traveling printing mechanism, of a work-registering gage attachment having a gage proper arranged longitudinally of the platen, at one edge thereof and outside of the vertical plane of a track or guide, the gage proper and a track or guide being disposed in cooperative relation to aline and hold a work-sheet.

10. In a type-writing machine, the combination with the flat platen, and the rails or guides disposed thereon for the traveling printing mechanism, of a gage attachment arranged longitudinally of the platen at one edge thereof, and having a gage proper or gage-abutment located outside of the vertical plane of a rail or guide for interlocking engagement with a work-sheet.

11. In a type-writing machine, the combination with the platen, and the machine rails or guides arranged thereover, of a work-gage detachably supported by the platen outside of the vertical plane of a machine rail or guide, and arranged to prevent the shifting of the work-sheet in any horizontal direction.

12. In a type-writing machine, the combination with the platen and the machine rails or guides arranged thereover, of a work-gage detachably and adjustably supported by the platen outside of the vertical plane of a machine rail or guide, and cooperating therewith.

13. In a type-writing machine, the combination with the platen, of a work-gage detachably attached to the platen and arranged longitudinally at one side edge thereof, outside of a machine rail or guide, and disposed to cooperate therewith to aline and hold the work.

14. In a type-writing machine, the combination with the flat platen and the rails or guides, of a work-gage attachment detachably and adjustably fitted to the platen at one side thereof, and provided with a gage proper or gage-abutment located outside of a rail or guide and arranged to have interlocking engagement with the work.

15. The combination with a type-writing-machine platen, and the rails or guides, of a supporting member distinct from the platen and having a gage or gage-abutment lying in a plane outside of the vertical plane of a rail or guide and arranged for interlocking engagement with the work to prevent the shifting of the latter in any horizontal direction.

16. A work-gage for type-writing machines comprising an adjustable element or elements arranged outside of the vertical plane of a machine rail or guide to have interlocking engagement with a work-sheet.

17. A work-gage attachment for type-writing machines arranged to lie outside of the vertical plane of a machine rail or guide and adjacent to one longitudinal edge of the platen, said gage attachment comprising a supporting member distinct from the platen, and an adjustable gage proper or gage-abutment carried by said member and arranged to engage the work-sheet to prevent the shifting thereof in any horizontal direction.

18. A work-gage for type-writing machines arranged to lie without the plane of a machine rail or guide, said gage comprising a plurality of adjustable projections.

19. A work-gage attachment for type-writing machines arranged to lie outside of the vertical plane of a machine rail or guide, said gage attachment comprising a supporting member, and a plurality of alined pins detachably carried by said member.

20. A work-gage attachment for type-writing machines arranged to lie outside of the vertical plane of a machine rail or guide, said attachment comprising a supporting member, and a plurality of alined pins detachably and adjustably carried by said member.

21. A work-gage attachment for type-writing machines arranged to lie outside of the vertical plane of a machine rail or guide, said attachment comprising a supporting member having a longitudinal guide or slot, a plurality of detachable and adjustable pins, and fastening means extending from said guide or slot and engaging with the pin.

22. In a type-writing machine, the combination with the platen and the rails or guides, of a supporting member detachably fitted to the platen at one side edge, and a plurality of alined pins adjustable longitudinally of said supporting member and detachably fitted thereto.

23. In a type-writing machine, the combination with the flat platen, and the rails or guides, of a separate and complete work-gage attachment for the platen, arranged to lie outside of the vertical plane of a track or guide and comprising a work-gage cooperating with a track or guide to aline and hold the work.

24. A work-gage attachment for type-writing machines arranged to lie outside of the vertical plane of a machine rail or guide and comprising a supporting member, and a plurality of alined pins adjustable longitudinally of said supporting member in parallelism with the said rail or guide.

25. In a type-writing machine, the combination with the flat platen, and the machine rails or guides, of a work-gage arranged to lie outside of the vertical plane of a track or guide, and comprising a holding-pin to engage the work.

26. In a type-writing machine, the combination with the flat platen, and the machine rails or guides, of a work-gage arranged to lie outside of the vertical plane of a track or guide, and comprising an adjustable holding-pin to engage the work.

27. In a type-writing machine, the combination with the flat platen, and the machine rails or guides, of a work-gage arranged to lie outside of the vertical plane of a track or guide, and comprising an adjustable holding-pin to engage the work, said pin being adjustable in the direction of the length of the track or guide.

28. In a type-writing machine, the combination with the flat platen and the main tracks or guides, of a work-gage disposed outside of the vertical plane of a track or guide and adjustable both laterally and longitudinally of the platen.

29. In a type-writing machine, the combination with the flat platen and the tracks or guides for the traveling machine, of a work-gage attachment comprising a supporting member adjustable laterally, and gage-pins adjustable longitudinally along said member.

30. In a type-writing machine, the combination with a platen, and the main tracks or guides, of a work-gage attachment comprising a support and a plurality of gage-pins, the latter being located outside of the vertical plane of a track or guide to engage the work.

705,528. RADDLE FOR STRAW-CARRIERS. MARTIN HEBNER, Springfield, Ill., assignor to Sattley Manufacturing Company, Springfield, Ill., a Corporation of Illinois. Filed Apr. 14, 1902. Serial No. 103,915. (No model.)

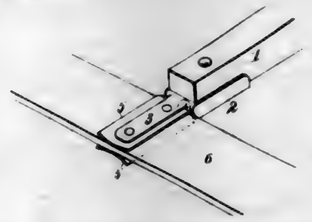

Claim.—1. In a raddle-clip the combination of a raddle-slat, a belt, a metal clip secured to the slat, an extension of the clip secured to the belt crosswise thereof, a separate metal plate secured to the belt crosswise thereof and on the opposite side from the clip, and a strip of flexible material secured between the belt and the clip extension and secured between the belt and the separate metal plate, substantially as described.

2. In a raddle, the combination of a raddle-slat, a belt, a metal clip secured to the raddle-slat, an extension of the clip secured to the belt crosswise thereof, and a strip of flexible material, secured between the belt and the clip extension, substantially as described.

3. In a raddle, the combination of a raddle-slat, a belt, a metal clip secured to the raddle-slat, an extension of the clip secured to the belt crosswise thereof, and a strip of flexible material, wider than the clip extension, secured between the belt and the clip extension, substantially as described.

4. In a raddle, the combination of a raddle-slat, a belt, a metal clip secured to the raddle-slat, an extension of the clip secured to the belt crosswise thereof, and a strip of flexible and yielding material, wider than the clip extension, secured between the belt and the clip extension with its edges projecting beyond the edges of the clip extension, substantially as described.

705,529. SLIDING-DOOR FASTENER. JOHN T. HICKS, Boston, Mass. Filed Nov. 13, 1901. Serial No. 82,082. (No model.)

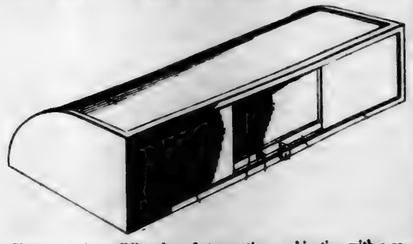

Claim.—1. In a sliding-door fastener, the combination with a series of doors, of a removable fastening-pin for the middle one of the series, said pin having means for securing it to said door, a bar for engaging said pin and adapted to have its ends engage the opposing edges of the other doors, together with means for securing the bar upon the pin.

2. In a sliding-door fastener, the combination with a series of doors, the middle one of which is provided with a transverse passage, of a sleeve or bushing therein, a pin adapted to be inserted into the said passage, said pin having means for securing it to the door, a locking-bar having a slot or opening designed to engage an angular portion of the said pin and means for fastening the pin and bar together.

3. In a sliding-door fastener, the combination with a series of doors, the middle one of which is provided with a transverse passage, of a sleeve or bushing in said passage, a pin having lugs thereon designed to engage the opposite faces of the door when the pin is in the said passage, said pin having also an angular portion and a slotted end, a locking-bar having an opening adapted to engage the angular portion of the pin, and a padlock for engaging the slotted end of the pin after the bar has been located on the pin.

4. In a sliding-door fastener, the combination with a series of doors, of a removable fastening-pin for the middle one of the series, said pin being adapted to be inserted into a transverse passage in the door and having lugs thereon designed to engage the opposite faces of the door when the pin is in the passage, a locking-bar for engaging said pin, together with means for securing the bar upon the pin.

705,530. HYDROCARBON-BURNER. JAMES F. HIGGINS, Corsicana, Tex. Filed July 30, 1901. Serial No. 70,308. (No model.)

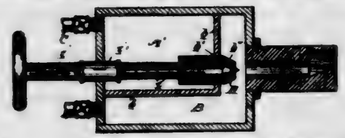

Claim.—1. In a burner of the character described, the combination with a casing, of a nozzle at one end of the casing, an angular partition in said casing constituting with the walls thereof an oil-chamber, an inlet through the end wall of the casing to said oil-chamber, a valved outlet from the oil-chamber at the lower end portion of the partition and in substantial alinement with the nozzle, a steam-chamber between the bottom of the casing and the oil-chamber and extending around the end of said oil-chamber, and an inlet through the end wall of the casing to said steam-chamber.

2. An atomizing-nozzle of substantially the character described, formed at its inner end with a passage constituting a mixing-chamber and at its discharge end with an inclined portion projecting into the path of the discharge from said passage.

3. An atomizing-nozzle of substantially the character described, formed at its inner end with a straight longitudinally-disposed passage constituting a mixing-chamber and at its discharge end with an upwardly-inclined portion projecting into the path of the discharge from said passage.

4. An atomizing-nozzle of substantially the character described, provided at its inner end with a longitudinally-disposed passage E and at its discharge end with an upwardly-inclined portion projecting into the path of the discharge from said passage, and a hood G arranged above said inclined portion and out of the path of said discharge from said passage, said hood being adapted to atomize the oil deflected thereagainst from said inclined portion.

705,531. ENVELOP MOISTENER AND SEALER. FRANK A. JOHNS, Omaha, Nebr., assignor of one-half to Edward M. Wilcox, Omaha, Nebr. Filed Apr. 4, 1901. Serial No. 54,305. (No model.)

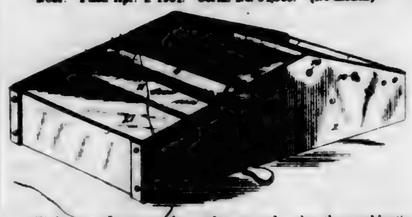

Claim.—1. In an envelop moistener and sealer, the combination of means for moistening envelop-flaps while they are open, means for feeding envelops to and from the moistening means with the flaps open and in advance, and means for applying pressure to the flaps to seal the same after they have passed beyond the moistening means but before the bodies of the envelops have cleared said means.

2. In an envelop moistener and sealer, the combination of an endless feed-belt, a moistening device cooperating transversely with the belt and at least equal in length to the length of an envelop-flap, and a pressure device cooperating transversely with the belt to seal envelop-flaps, and at least equal in length to the length of an envelop-flap, the moistening device and the pressure device being spaced at a distance less than the width of an envelop and more than the width of an envelop-flap.

3. In an envelop moistener and sealer, the combination with an endless belt, of a moistening-roller disposed transversely in frictional engagement with the belt and extending for substantially the width thereof, and a pressure-roller disposed transversely in frictional engagement with the belt and extending substantially for the width thereof, the distance between the two rollers being less than the width of an envelop and more than the width of the sealing-flap thereof, whereby the forward edge of an envelop is engaged between the pressure-roller and the belt before the rear edge thereof has become disengaged from between the moistening-roller and the belt.

4. In an envelop moistener and sealer, the combination with a back, of an endless conveyor-belt traveling across the back, a moistening-roller in frictional engagement with the front end portion of the belt and extended transversely for substantially the width thereof, and a pressure-roller extending transversely in frictional engagement with the belt and for substantially the entire width thereof, the pressure-roller being located

in rear of the moistening-roller at a distance less than the width of an envelop and more than the width of the sealing-flap thereof, whereby the forward edge of an envelop is engaged between the pressure roller and the belt before the rear edge thereof has become disengaged from between the moistening-roller and the belt.

5. An envelop moistener and sealer comprising a frame or casing carrying a bed-plate, a moistening-roller, the journals of which are mounted in slots arranged at an upward inclined angle to the bed-plate, a sealing-roller the journals of which are mounted in vertical slots, said rollers being separated by a space which is less than the width of an envelop, two-armed springs secured to the sides of the casing and bearing upon the journals of the two rollers, two drive-rollers journaled contiguous to the ends of the bed-plate, an endless belt passing over the bed-plate and around the drive-rollers, and means for imparting motion to one of the drive-rollers.

6. An envelop moistener and sealer comprising a frame or casing carrying a bed-plate, a moistening-roller having its journals mounted in slots arranged at an upward angle to the bed-plate, the journals of the roller, when in operation, occupying the lowest portion of the slots, and when out of operation, the highest portion of the slots, thereby to lift the moistening-roller above the plane of the bed-plate, a sealing-roller the journals of which are mounted in vertical slots in the frame or casing, said rollers being separated by a space which is less than the width of an envelop, springs for exerting downward pressure on the journals of the two rollers, driving-rollers journaled contiguous to the ends of the bed-plate, an endless belt passing over the bed-plate and around the rollers, and means for imparting motion to one of the rollers.

705,532. **MOUNT FOR ARTIFICIAL TEETH.** HENRY D. JUNE, Philadelphia, Pa. Filed Jan. 16, 1902. Serial No. 89,999. (No model.)

Claim.—1. In a mount for artificial teeth, a base having a surface of penetrable material, and an angular arm of pliable material, the vertical limb of which is anchored in said base and the horizontal limb thereof is elevated over said material and having its outer end free.

2. In a mount for artificial teeth, a base having a surface of penetrable material, and an angular-shaped arm of pliable material, the vertical limb of which is flattened and anchored in said base and the horizontal limb extends above said surface and has its outer end free.

3. A mount for artificial teeth, consisting of a base having a surface of penetrable material, an angular-shaped arm having a vertical limb anchored in said base, and a horizontal limb elevated above said base and having its outer end free, said base being adapted to have the teeth which are strung upon said horizontal limb engaged with said penetrable material.

705,533. **STEAM-GENERATOR.** CHARLES A. KITTS, Oswego, N. Y.; Harriet W. Kitts, administratrix of Charles A. Kitts, deceased, assignor to Steam Carriage Motor Company, Oswego, N. Y., a Corporation of New York. Filed Mar. 8, 1901. Renewed Apr. 3, 1902. Serial No. 101,233. (No model.)

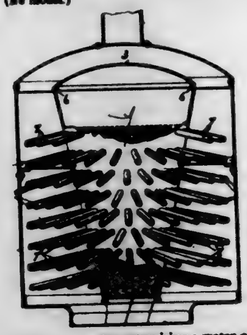

Claim.—1. A steam-generator comprising a water-containing shell having inclined side walls, and a series of water-tubes projecting from said side walls at substantially right angles thereto and having their outer ends extended substantially equal distances from the center of the shell and closed.

2. A steam-generator consisting of a tapering water-containing shell having a series of water-tubes arranged in rows one above the other and inclining outwardly and downwardly therefrom, the tubes of each row being gradually reduced in length from the bottom row upwardly.

3. The combination with a burner and a heater-jacket, of an inverted truncated conical shell having a series of radial water-tubes extended outwardly from and at right angles to the side walls of the shell and closed at their outer ends, said outer ends being substantially equal distances from the center of the shell and disposed in a cylindrical plane parallel with the jacket.

705,534. **BRUSH.** CHARLES KLAUBERG, Hartford, Conn., assignor to Meinecke & Company, New York, N. Y., a Corporation of New Jersey. Filed Aug. 31, 1901. Serial No. 73,753. (No model.)

Claim.—1. In a brush, the combination of a wire bristle-retaining member; and a wire handle bent upon itself and extending along said member to reinforce the same.

2. In a brush, the combination of a bristle-retaining member; bristles retained thereby; and a handle having a part extending along said member to reinforce the same and having a bight for the securement of bristles retained by the bristle-retaining member.

3. A brush comprising a bristle-retaining member constructed of wires twisted together, and a spring-handle formed with bights a suitable distance apart, said handle having a portion extending alongside said member to reinforce the same, and said member being secured in place by having the ends thereof bent or turned into the bights.

4. A brush comprising a pair of twisted wires; bristles held therebetween; a wire handle having extensions; and two bights; said extension serving to shape and reinforce said twisted wires, and said bights to retain same.

5. A brush comprising a pair of twisted wires; bristles held therebetween; a wire handle reinforcing said wires; and bights in the end of said handle securing said wires and effective to embrace some of the bristles and form an end tuft.

6. In a brush, the combination of a wire bent to form a handle, and having rigid extensions, said extensions being constructed with bights a suitable distance apart, bristle-carrying members alongside the extensions having their ends bent or passed into said bights, bristles secured to said members throughout their length, and also to the bent portions thereof passing into the bights, said bights thereby embracing the end bristles and maintaining them in tufts.

7. In a brush, the combination of a wire handle having a spring at one end, and oppositely-disposed brushes on the other end; and reinforcing extensions on said handle effective to maintain and reinforce said brush portions, said extensions commencing in bights, each of which is effective to contact with the opposite side of the handle.

8. In a brush, the combination of a wire handle having a spring at one end, and oppositely-disposed brushes secured to the other end; reinforcing extensions on said handle effective to maintain and reinforce said brush portions, said extensions commencing in bights, each of which is effective to contact with the opposite side of the handle, and bights at the free ends effective to overlap.

9. In a brush, the combination of a wire handle having a spring at one end, and brushes secured to the other end; and reinforcing extensions on said handle effective to maintain and reinforce said brush portions, said extensions having bights at the free ends thereof effective to overlap under the influence of the spring.

705,535. **TYPE-WRITING MACHINE.** CHARLES F. LAGANKE, Cleveland, Ohio, assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed Dec. 31, 1900. Serial No. 41,708. (No model.)

Claim.—1. In a type-writing machine, the combination with the machine-support, and a work-holder adapted to occupy a position thereon beneath the printing mechanism, of a movable platen, and means for automatically moving the platen from the writing plane.

2. In a type-writing machine, the combination with the machine-support, and a work-holder adapted to occupy a position thereon beneath the printing mechanism, of a movable platen, and means for automatically moving the said platen to and from the writing plane.

3. In a type-writing machine, the combination with the machine-support, and a work-holder adapted to occupy a position thereon beneath the printing mechanism, of a movable flat platen, means for holding the platen in the printing plane, and means, controlled by the movement of the machine, for causing the platen to move from the writing plane.

4. In a type-writing machine, the combination with the machine-support, and a work-holder adapted to occupy a position thereon beneath the printing mechanism, of a movable platen, yielding means for normally elevating the platen, and means, operated by the movement of the machine, for automatically depressing the platen.

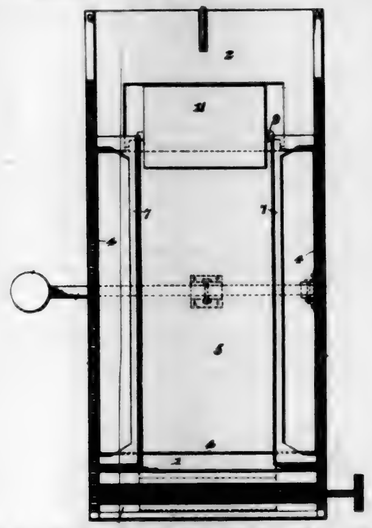

5. In a type-writing machine, the combination with the machine-support, and a work-holder adapted to occupy a position thereon beneath the printing mechanism, of a movable flat platen, means for holding the flat platen in an operative position, and means for automatically depressing the platen when the machine or printing mechanism is moved beyond the plane thereof.

6. In a type-writing machine, the combination with the machine-support, and a relatively fixed work-holder adapted to occupy a position beneath the printing mechanism, of a movable platen located below the work-holder, yielding means for normally elevating the platen, and independent means for depressing the platen.

7. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism and disposed in the same horizontal plane, of a fixedly-positioned work-holder disposed in a plane between said tracks or guides, and a platen located below the work-holder and movable toward and from the writing plane.

8. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism, of a fixedly-positioned work-holder disposed in a plane intermediate of said tracks or guides and arranged to support the work, and a platen located below the work-holder and movable to and from the writing plane.

9. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism and located in the same horizontal plane, of a fixedly-positioned work-holder disposed between and substantially in the horizontal plane of said tracks or guides, and a platen normally located immediately under the work-holder and depressible to a plane below said tracks or guides.

10. In a type-writing machine, the combination with fixedly-positioned main tracks or guides for the traveling printing mechanism, of a fixedly-positioned work-holder extending inwardly from said tracks or guides, and a depressible platen disposed immediately under the work-holder for presentation to the sheet held thereby.

11. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism and located in the same horizontal plane, of a fixedly-positioned work-holder disposed in a plane intermediate of said tracks or guides, and a depressible platen located below the work-holder and movable to the writing plane to engage a work-sheet held by the work-holder.

12. In a type-writing machine, the combination with the main tracks or guides disposed in the same horizontal plane for the support of the traveling machine, of a work-holder located between the vertical planes of the tracks or guides, and a spring-supported platen disposed below the work-holder and depressible from the writing plane.

13. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism, of a flat stationary work-holder disposed between said tracks or guides to support the work-sheet, and a platen located below said work-holder, said platen being movable toward the holder to engage the sheet and depressible from the writing plane.

14. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism, of a stationary work-holder extending horizontally from a track or guide, and a platen located below the work-holder, said platen being movable toward and depressible from the writing plane.

15. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism, of a horizontal stationary work-holder comprising members extended inwardly from the tracks or guides, and a platen located below the work-holder, said platen being movable toward and depressible from the writing plane.

16. In a type-writing machine, the combination with the main tracks or guides for the traveling printing mechanism, of a flat work-holder located in a plane wholly below the upper edges of the tracks or guides to permit the machine to travel freely thereover, and a platen disposed immediately below the work-holder, said platen being movable to and depressible from the writing plane.

17. In a type-writing machine, the combination with the flat platen, the traveling machine, and the main tracks or guides, of a work-holder interposed in a plane between the machine and the writing-surface of the platen and having holding and aligning means for the work, said platen being depressible from the writing-surface.

18. In a type-writing machine, the combination with the tracks or guides for the traveling machine, of a platen depressible from the writing plane, and a work-holder located above the platen and arranged to sustain a work-sheet in the printing position.

19. In a type-writing machine, the combination with the main tracks or guides disposed in the same horizontal plane for the support of the traveling printing mechanism, of a work-holder disposed between said tracks or guides, and a platen located below the work-holder and movable toward and depressible from the writing plane, said work-holder being sustained independently of the platen.

705,536. **WORK GAGE AND CLAMP FOR TYPE-WRITING MACHINES.** CHARLES F. LAGANKE, Cleveland, Ohio, assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed Mar. 21, 1901. Serial No. 52,231. (No model.)

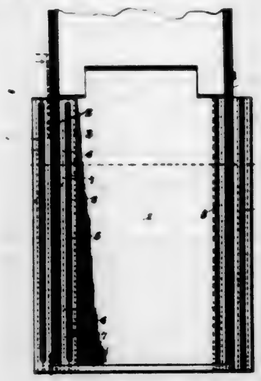

Claim.—1. In a type-writing machine, the combination with the flat platen, the tracks or guides, and a work-gage, of a clamp member distinct from the rails and disposed to coöperate with the work-gage.

2. In a type-writing machine, the combination with the flat platen, tracks or guides, and a work-gage, of a clamp-plate disposed at one side of a track or guide and in coöperative relation with the work-gage.

3. In a type-writing machine, the combination with the flat platen, the tracks or guides, and a work-gage, of a clamp-plate distinct from the rails or guides and movable toward and away from the platen, said clamp-plate being disposed in coöperative relation with the work-gage.

4. In a type-writing machine, the combination with the flat platen, a work-gage, and the machine-rails, of a clamp-plate coöperating with the rails and gage to aline and hold the work.

5. In a type-writing machine, the combination with the platen, the machine-rails and work-gage, of a clamp-plate carried by one of the rails and coöperating with the work-gage to hold the work.

6. In a type-writing machine, the combination with a flat platen, a track or guide, and a clamp-plate connected to one of said elements for

movement toward and away from the platen, of a work-gage disposed in coöperative relation with said platen.

7. In a type-writing machine, the combination with the flat platen, a track or guide, and a clamp-plate having hinged connection with one of said elements, of a work-gage disposed in coöperative relation with the clamp-plate.

8. In a type-writing machine, the combination with the flat platen, the track or guides, and the work-gage, of a clamp-plate distinct from the tracks or guides and disposed directly over the work-gage to clamp and protect the edge of the sheet alined by said gage.

9. In a type-writing machine, the combination with the flat platen, the track or guides, and a work-gage carried by the platen, of a clamp member arranged without the plane of a track or guide and designed to have interlocking engagement with the work-gage.

10. In a type-writing machine, the combination with the flat platen, and the tracks or guides, of a work-clamp distinct from but associated with one of said tracks.

11. In a type-writing machine, the combination with the flat platen, and the tracks or guides, of a clamp-plate disposed intermediate of the platen and one of said tracks.

12. In a type-writing machine, the combination with the flat platen, and the swinging tracks or guides, of a work-clamp directly carried by one of said tracks and extended outside the vertical plane thereof.

13. In a type-writing machine, the combination with the tracks or guides, a work-gage, and a platen provided with means for retaining the work-gage upon the platen at either side of said track, of a clamp arranged to coöperate with the work-gage in either position of the latter.

14. In a type-writing machine, the combination with the flat platen, a track or guide, and a work-gage designed to be located upon the platen at either side of said track, of a clamp extended beyond both sides of the track for coöperation with the work-gage in either position of said gage.

15. In a type-writing machine, the combination with the tracks or guides, a work-gage, and a platen provided with means for locating the work-gage upon said platen adjacent to either side edge of the latter, of a clamp designed to be located in coöperative relation with the work-gage in either position of the latter.

16. In a type-writing machine, the combination with a flat platen, and an adjustable work-gage disposed longitudinally of the platen, of a clamp arranged to coöperate directly with the work-gage in any position of the latter.

17. In a type-writing machine, the combination with a flat platen, and a work-gage member, of a clamp provided with a slot for the reception of the gage member.

18. In a type-writing machine, the combination with a flat platen, and a work-gage adjustable thereon, of a clamp movable toward and away from the platen and provided with a slot designed to receive the gage and to accommodate the adjustment thereof.

19. In a type-writing machine, the combination with a flat platen, and a work-gage composed of a series of alined pins, of a clamp provided with a slot to receive said pins.

20. In a type-writing machine, the combination with the flat platen, and a work-gage composed of a series of alined individually-adjustable pins, of a clamp provided with a slot to receive said pins.

21. In a type-writing machine, the combination with the flat platen, and a work-gage composed of an alined series of pins individually adjustable upon the platen, of tracks or guides for the machine-frame, and a clamp carried by one of said tracks and provided with a slot to receive said pins.

22. In a type-writing machine, the combination with a platen, of an adjustable work-gage consisting of an alined series of pins, and supporting and guiding means for said pins, said supporting and guiding means being formed as a permanent part of the platen.

23. In a type-writing machine, the combination with a flat platen and the tracks or guides for the traveling machine, of a work-gage comprising gage-pins adjustable longitudinally of the platen, and supporting and guiding means for said pins, said supporting and guiding means being formed as a permanent part of the platen.

24. In a type-writing machine, the combination with a platen, and a track or guide, of a work-gage carried directly by the platen outside of the vertical plane of said track or guide and adapted to be arranged on either side thereof.

25. In a type-writing machine, the combination with a platen, of a work-gage comprising a plurality of alined gage members mounted directly upon the platen and individually adjustable to conform to the positions of the file-holes in the margins of the work-sheet, and adapted to be arranged on either side of the platen.

26. In a type-writing machine, the combination with the platen formed with a guide-groove and the main tracks or guides for the support of the traveling machine, of a gage-pin supported and guided within said groove.

27. In a type-writing machine, the combination with a platen formed with a guide-groove and the main tracks or guides disposed longitudinally of the platen for the support of the traveling machine, of a work-gage comprising an alined series of individually-adjustable pins supported and guided within said groove.

28. In a type-writing machine, the combination with a platen formed with a guide-groove and the main tracks or guides for the traveling machine, of a work-gage comprising a plurality of separate gage-blocks slidable within the groove, and gage-pins carried by said blocks and extended above the writing-surface of the platen.

29. In a type-writing machine, the combination with a platen provided with a groove and the main tracks or guides for the traveling machine, of a work-gage comprising a gage-block slidably mounted within the groove, and a gage-pin carried by and having an adjustable connection with the gage-block, whereby the pin and block may be caused to bind against oppositely-disposed faces of the platen to retain the gage in its adjusted positions.

30. In a type-writing machine, the combination with a platen formed with a plurality of parallel guide-grooves, of a track or guide disposed above the platen intermediate of said grooves, and a work-gage designed to be supported and guided within either of the grooves in the platen.

705,537. WORK-GAGE FOR TYPE-WRITING MACHINES. CHARLES F. LAGARDE, Cleveland, Ohio, assignor to the Fisher Type-writer Company, of Tennessee. Filed Aug. 29, 1900. Serial No. 28,441. (No model.)

Claim.—1. In a type-writing machine, the combination with the flat platen, and the main tracks or guides, of a work-gage arranged to lie in a plane beneath a track or guide and longitudinally thereof.

2. In a type-writing machine, the combination with the platen, and the tracks or guides, of a gage-abutment disposed longitudinally of the platen and arranged to lie beneath a track or guide.

3. In a type-writing machine, the combination with the platen, and the tracks or guides, of a gage-abutment, and means for covering the gage-abutment upon the lowering of the tracks or guides upon the platen.

4. In a type-writing machine, the combination with the flat platen, and the tracks or guides, of a work-gage abutment arranged beneath a track or guide, and means for covering the abutment upon the lowering of the track or guide onto the platen.

5. In a type-writing machine, the combination with the platen, and the tracks or guides for the printing mechanism, of a work-gage arranged parallel with a track or guide and consisting of an alined series of projections coöperating with a track or guide.

6. In a type-writing machine, the combination with the platen, and the tracks or guides, of a work-gage abutment consisting of a series of pins or projections arranged beneath a track or guide, and coöperating therewith.

7. In a type-writing machine, the combination with the platen, and the tracks or guides, of a work-gage abutment consisting of an alined series of pins or projections arranged beneath a track or guide, and means for covering the pins or projections upon the lowering of the tracks or guides onto the platen.

8. In a type-writing machine, the combination with the platen, and the tracks or guides for the printing mechanism, of a yielding gage-abutment for the work and coöperating with a track or guide.

9. In a type-writing machine, the combination with the platen, and the tracks or guides, of a disappearing gage-abutment coöperating with a track or guide.

10. In a type-writing machine, the combination with the platen, and the tracks or guides, of a yieldingly-projected gage-abutment, and means for causing the gage-abutment to recede upon the lowering of the tracks or guides onto the platen.

11. In a type-writing machine, the combination with the platen and the tracks or guides, of a work-gage consisting of a series of longitudinally-alined pins or projections arranged upon the platen in the vertical plane of a track or guide, and adapted to be entirely covered by the latter upon the lowering thereof.

12. In a type-writing machine, the combination with the platen, and the tracks or guides, of a work-gage consisting of a series of alined and spaced pins loosely mounted in the platen in the vertical plane of a track or guide, and spring-supports for yieldingly projecting the said pins through the top surface of the platen.

13. In a type-writing machine, the combination with the flat platen, and the movable tracks or guides for the printing mechanism, of a work-gage disposed in a plane between a track or guide and the platen and coöperating therewith.

14. In a type-writing machine, the combination with the flat platen, and the tracks or guides for the traveling printing mechanism, of a work-gage disposed longitudinally of the platen coöperating with a track or guide to aline and hold the work.

15. In a type-writing machine, the combination with the flat platen, and the movable tracks or guides for the printing mechanism, of a work-gage coöperating with a track or guide to aline and hold the work, said gage consisting of a series of pins or projections.

16. In a type-writing machine, the combination with the flat platen, and the movable tracks or guides for the printing mechanism, of a work-gage coöperating with a track or guide to aline and hold the work, said gage consisting of a series of yielding pins or projections.

17. In a type-writing machine, the combination with the flat platen, and the movable tracks or guides for the traveling printing mechanism, of a work-gage located within the limits of the platen and coöperating with a track or guide to aline and hold the sheet.

18. In a type-writing machine, the combination with the flat platen, and the movable tracks or guides for the traveling printing mechanism, of a work-gage supported on the platen and arranged in parallelism with a track or guide and coöperating therewith to aline and hold the work.

19. A platen having gage-pins mounted thereon and projecting above the writing-surface thereof, in combination with a clamping member arranged to hold the work on the pins.

20. In a type-writing machine, the combination with a flat platen, of a work-gage, and a clamping member disposed directly over the gage and arranged to coöperate therewith to hold and aline the work.

21. In a type-writing machine, the combination with a flat platen and a clamping member, of a work-gage arranged to lie wholly beneath said member.

22. In a type-writing machine, the combination with a flat platen, of a hinged clamping member, and a work-gage arranged in coöperative relation therewith and disposed longitudinally of the platen.

23. In a type-writing machine, the combination with a flat platen and a clamping member having hinged connection therewith, of a work-gage arranged to lie in a plane entirely beneath said hinged clamping member.

24. In a type-writing machine, the combination with a flat platen and the movable tracks or guides, of a gage device arranged for release by the movement of a rail or guide.

25. The combination with a flat platen and a movable rail or guide disposed for relative movement, of a gage device arranged for release from one of said elements by their relative movement.

705,588. SCREW-CUTTING MACHINE. DAVID LAKE and EDWIN W. CRELLIN, Philadelphia, Pa., assignors of one-half to Alvan Markle and John W. Griffin, Manayunk, Pa. Filed Aug. 6, 1901. Serial No. 70,973. (No model.)

Claim.—1. The combination in a screw-cutting machine, of a bed, a slideway thereon, a carriage mounted on said slideway, a chuck-spindle on the carriage in which the work is secured, a longitudinally-arranged lead-screw on the bed, a clutch on the carriage engaging said lead-screw, a sleeve on the screw and carried by the carriage, said sleeve having a key entering a spline in the lead-screw and geared to the chuck-spindle, and a cutter mounted to cut a thread on the rod as it is fed forward by the lead-screw, substantially as described.

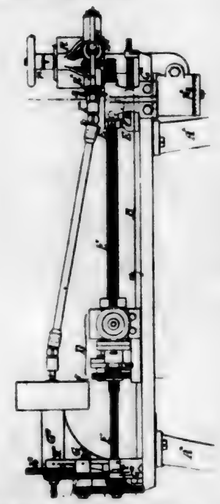

2. The combination in a screw-cutting machine, of a bed, a longitudinal keyway thereon, a longitudinal lead-screw parallel thereto, gearing for driving said lead-screw, a carriage and a chuck-spindle both driven by said lead-screw, a carrier pivoted to the bed, a cutter-shaft mounted on the carrier, a cutter mounted on said shaft in the pivotal line of the carrier, a stud upon which the carrier is mounted, and means for driving the cutter-shaft, substantially as described.

3. The combination of a bed, a carrier pivoted to one end of the bed, a cutter-shaft having its bearings in said carrier, a cutter thereon, a hollow driving-shaft at the opposite end of the bed, a splined driving-rod mounted in the hollow shaft and keyed thereto, a universal coupling connecting the said driving-rod to the cutter-shaft, a carriage, a lead-screw, gearing by which the lead-screw is driven from the driving-shaft, and gearing by which the chuck-spindle on the carriage is driven from the lead-screw, substantially as described.

4. The combination in a screw-cutting machine of means for feeding a rod, a pivoted carrier, a cutter-shaft mounted in bearings in said carrier, a cutter on said shaft, means connected to the shaft for driving said cutter, said carrier being capable of adjustment on its pivot so that the cutter-shaft will be at right angles to the line of the work, and auxiliary mechanism for coupling said cutter-shaft to the driving mechanism when said shaft is in its adjusted position, substantially as described.

5. The combination of a bed, a pivoted carrier mounted on one end of the bed, a head, means for vertically adjusting said head, a cutter-shaft on said head, a cutter, driving mechanism at the opposite end of the machine, the driving mechanism consisting of three rods coupled together by universal joints, one of said rods being connected to the cutter-shaft, and means for feeding the work to the cutter, substantially as described.

6. The combination of a bed, a frame at one end of the bed, a driving-shaft mounted in said frame, a carrier pivoted to the opposite end of said bed, a cutter-shaft mounted on the carrier, a cutter thereon, a longitudinal guideway, a longitudinal lead-screw, said screw being mounted in a bearing on one end of the machine and in the frame at the opposite end of the machine, a train of change-gears by which the lead-screw is driven from the driving-shaft, a carriage on the guideway, a chuck on the carriage engaging the lead-screw and by which the carriage is moved toward or from the work, a hollow spindle on the carriage to which the work is chucked, and change-gearing by which a rotary motion is imparted to the spindle from the lead-screw, substantially as described.

7. The combination in a screw-cutting machine, of a bed, a longitudinal lead-screw, means for turning said lead-screw, a carriage operated by the lead-screw, a chuck on the carriage to hold the work, a stud projecting from the under side of the bed, a carrier pivoted to said stud, means for clamping the carrier thereto, a head, and a cutter carried by

said head, said cutter being mounted in line with the pivot of the carrier, substantially as described.

705,539. LACE-MAKING MACHINE. ADOLF MATTHEUS, Vienna, Austria-Hungary. Filed Oct. 31, 1901. Serial No. 80,668. (No model.)

Claim.—1. In a lace-loom, the combination of sets of pushers and needles, slides connected thereto, pawls connected to some of the sets of slides, sets of lifting-bars each of which is provided with a series of projections adapted to come into contact with and lift the slides and pawls corresponding thereto, and a jacquard to which each lifting-bar is connected to be moved laterally thereby, and means for raising and lowering the said lifting-bars.

2. In a lace-loom, the combination of three groups of needles one of them jacquard-controlled vertically, of which two groups adjust the threads for the correct insertion of the jacquard-controlled group of needles, which raises the twists and threads to the various heights required by the pattern.

3. In a lace-loom, a set of needles simultaneously movable at one side of the lace, a set of needles simultaneously rotatable between threads on the other side of the lace and needles jacquard-controlled vertically above the latter to lift the lace, substantially as described.

4. In a lace-loom, a set of lace-lifting needles having two arms at an angle to one another, a jacquard-controlled slide to reciprocate one of said arms, a reciprocable slide connected to the other arm, a jacquard-controlled stopped pawl pivoted to said slide and a bar connecting therewith, whereby the extent of movement of said bar and the vertical movement of the needle are selectively determined, substantially as described.

5. In a lace-loom, three combs arranged in the same arc of a circle, two of said combs laterally movable, thread-carriages, jacquard-controlled means for moving the carriages from one comb into another and for holding the carriages in the comb, a set of needles simultaneously movable, a set of needles to separate and position the carriage-threads and a serrated reciprocable bar to hold the carriage-threads in alinement, and a set of jacquard-controlled independently-movable needles to lift and hold the lace, substantially as described.

6. In a lace-loom, a central stationary, and a front and a back comb laterally movable and on the same arc of a circle, thread-carriages, jacquard-controlled means to move in the carriages from one comb to another, a set of needles movable into the lace from the front, a set of rotatable needles arranged to take between the carriage-threads to aline them and laterally movable with the back comb, a serrated reciprocable bar on the last set of needles to hold the carriage-threads in alinement, a set of needles each needle independently operated and jacquard-controlled means for lifting the needles, and jacquard-controlled means to selectively move them into and out of the lace, substantially as described.

7. In a lace-making machine, a stationary comb, laterally-movable front and back combs in the same arc of a circle, carriages therein and jacquard-controlled shifting means in each comb-slot of each comb to move the carriages, the shifting means in the slots of the stationary comb timed to move twice to one movement of the means in either of the other comb-slots, needles, jacquard-controlled means longitudinally reciprocable to raise and lower the needles and jacquard-controlled means longitudinally movable to withdraw the needles from and insert them into the lace, substantially as described.

8. In a lace-making machine, needles for supporting the lace comprising two arms at an angle to each other, a jacquard-controlled longitudinal slide connected to one arm of each needle to raise and lower it, a jacquard-controlled slide connected to each needle to withdraw it from and insert it into the lace, substantially as described.

9. In a lace-making machine, needles for supporting the lace comprising two arms at an angle to each other, a jacquard-controlled longitudinal slide to raise and lower each needle, a jacquard-controlled longitudinal slide connected to each needle to withdraw it from and insert it into the lace and means connecting the slides of each needle, whereby the former can be reciprocated simultaneously with the latter, substantially as described.

10. In a lace-making machine, needles for supporting the lace, each comprising a bell-crank lever, one arm of each needle rotatably secured to a longitudinally-reciprocable jacquard-controlled slide, means for locking the slide in several positions, a slide to which each needle is rotatably secured near the bell-crank angle, said slide jacquard-controlled to withdraw the needle from and insert into the lace, means connecting the two slides of each needle, whereby the first slide will be moved simultaneously with the second and at the same time unlocked preparatory to being lifted, substantially as described.

11. In a lace-making machine, needles for supporting the lace, each comprising a bell-crank lever, an upper slide having a serrated edge, one arm of each needle rotatably connected to one of said slides, a jacquard-controlled pawl having a stepped tail connected to each slide, a longitudinal reciprocable bar common to all the pawls to move them back to raise the needles, a stationary bar to engage the serrated edges of the slides to lock them, a lower jacquard-controlled slide secured to each needle near the angle of the bell-crank lever, a rod to connect the lower and upper slides of each needle, whereby when the lower slide is operated the upper slide is unlocked and both moved simultaneously, and means common to all the pawls to cause them to be positively moved down preparatory to withdrawing the needles, substantially as described.

12. In a lace-making machine, needles for supporting the lace, each comprising a bell-crank lever, an upper slide having a serrated edge, one arm of each needle connected to one of said slides, pawls having stepped tails connected to the slides, bars transverse to said pawls and a dropper-bar jacquard to selectively position the bars to move the pawls, a rail common to all the pawls to move them, a locking-rail common to all the upper slides to engage the serrated edges, a lower slide having a projection and connected to each bell-crank near its angle, a group of transverse slides, each slide having a projection, a bottom-bar jacquard to selectively position the transverse slides to cause their projections to aline with them on the lower slides, lifting-bars to move the transverse slides toward the lower slides, and a vertical rod to transmit the lift of the lower to the upper slide, substantially as described.

13. In a lace-loom, the combination with a stationary comb, a laterally-movable front and back comb, and carriages movable from one comb to another, with a rod and pushers for the stationary comb detachably mounted thereon, a front rod laterally movable with the front comb, pushers for the front comb detachably mounted thereon, a back rod and pushers for the back comb detachably mounted thereon, jacquard-controlled means for lifting the slides of the pushers of the front and back combs, and two pawls connected to each slide of the pushers of the middle comb, bars to longitudinally move the slides and pawls, and jacquard-controlled devices to move each pawl and slide into the path of its actuating-bar, substantially as described.

14. In a lace-loom, a laterally-movable comb adapted to receive thread-carriages, a second comb below it movable therewith and having perforated slotted teeth, a rod having a flat side adapted to pass through the slots in said teeth into the perforations and when partially rotated to be held therein, pushers one for each comb-slot cooperating with the first comb, detachably mounted on said rod and in the slots of the second comb, a slide having an upper and lower projection and detachably connected to each pusher, a bar common to all the slides movable below them, jacquard-controlled mechanism to selectively lift the slides, said slides being held lifted by said bar moving under their lower projections, two reciprocable bars connected together one on each side of the upper projections of the slides and arranged to engage them when lifted, substantially as described.

15. In a lace-loom, a comb adapted to receive thread-carriages, a second comb below it having perforated slotted teeth, a rod having a flat side adapted to pass through the slots into the perforations and be held thereon when partially rotated, pushers cooperating with the first comb, a pusher in each comb-slot, said pushers detachably connected to said rod in a corresponding comb-slot of the second comb, a slide detachably connected to each pusher, two pawls each having two upper and a lower projection connected to each slide, jacquard-controlled mechanism to lift the pawls, a bar movable under each of the lower projections of said pawls when lifted, two connected reciprocable bars to engage the upper projections of the lifted pawls to selectively reciprocate the slide, substantially as described.

16. In a machine for the manufacture of pillow-lace, the combination of three combs which are arranged on the same arc of a circle and of which the two outer ones (the front and back combs) are movable laterally, pushers and a toothed driving-rod for moving carriages in slots of the said combs, a set of needles for lifting the twists, a back set and a front set of needles for separating threads to facilitate the insertion of the first-mentioned set of needles, slides connected to the said pushers and to the needles for lifting the twists (there being one set of slides for raising and lowering the twist-lifting needles and another set of slides for inserting and withdrawing the same), pawls (of which there are two for each slide) pivotally mounted on the slides for pushers of the middle comb, bottom-bar jacquards, thin longitudinal or lifting bars connected with the slides of the bottom-bar jacquards and adapted to operate the first-mentioned slides—through the said pawls in the ears of the slides of the pushers of the middle comb—means for moving the first-mentioned slides longitudinally when operated by the said longitudinal or lifting bars, and a toothed bar for separating threads and adapted to prevent a lateral movement of the threads of the carriages in the back comb after the insertion of the separating-needles, substantially as described.

17. In a machine for the manufacture of pillow-lace, the combination of three combs which are arranged on the same arc of a circle and of which the two outer ones (the front and back combs) are movable laterally, pushers and a toothed driving-rod for moving carriages in slots of the said combs, a set of needles for lifting the twists, a back set and a front set of needles for separating threads to facilitate the insertion of the first-mentioned set of needles, slides connected to the said pushers and to the needles for lifting the twists (there being one set of slides for raising and lowering the twist-lifting needles, and another set of slides for inserting and withdrawing the same), pawls (of which there are two for each slide) pivotally mounted on the slides for pushers of the middle comb, thin longitudinal or lifting bars connected with the slides of bottom-bar jacquards and adapted to operate the first-mentioned slides—through the said pawls in the ears of the slides of the pushers of the middle comb—means for moving the first-mentioned slides longitudinally when operated by the said longitudinal or lifting bars, and a toothed bar for separating threads and adapted to prevent a lateral movement of the threads of the carriages in the back comb after the insertion of the separating-needles, the blades of each comb being embedded at each of their ends in cast metal so as to render them immovable in relation to one another, substantially as described.

18. In a machine for the manufacture of pillow-lace, the combination of three combs, which are arranged on the same arc of a circle and of which the two outer ones (the front and back combs) are movable laterally, pushers and a toothed driving-rod for moving carriages in slots of the said combs, a set of needles for lifting the twists, a back set and a front set of needles for separating threads to facilitate the insertion of the first-mentioned set of needles, slides connected to the said pushers and to the needles for lifting the twists (there being one set of slides for raising and lowering the twist-lifting needles and another set of slides for inserting and withdrawing the same), pawls (of which there are two for each slide) pivotally mounted on the slides for pushers of the middle comb, thin longitudinal or lifting bars connected with the slides of the bottom-bar jacquards and adapted to operate the first-mentioned slides through the said pawls in the ears of the slides of the pushers of the middle comb—means for moving the first-mentioned slides longitudinally when operated by the said longitudinal or lifting bars—and a toothed bar for separating threads and adapted to prevent a lateral movement of the threads of the carriages in the back comb after the insertion of the separating-needles, the pushers and the twist-lifting needles being connected with their slides by means of rounded end portions located in slots formed by the slides for the purpose of enabling the pushers and the twist-lifting needles to be easily removed singly, substantially as described.

19. In a machine for the manufacture of pillow-lace, the combination of three combs, which are arranged on the same arc of a circle and of which the two outer ones (the front and back combs) are movable laterally, pushers and a toothed driving-rod for moving carriages in slots of the said combs, a set of needles for lifting the twists, a back set and a front set of needles for separating threads to facilitate the insertion of the first-mentioned needles, slides connected to the said pushers and to the needles for lifting the twists (there being one set of slides for raising and lowering the twist-lifting needles and another set of slides for inserting and withdrawing the same), pawls (of which there are two for each slide) pivotally mounted on the slides for pushers of the middle comb, bottom-bar jacquards, thin longitudinal or lifting bars connected with the slides of bottom-bar jacquards and adapted to operate the first-mentioned slides—through the said pawls in the ears of the slides of the pushers of the middle comb—means for moving the first-mentioned slides longitudinally when operated by the said longitudinal or lifting bars, and a toothed bar for separating threads and adapted to prevent a lateral movement of the threads of the carriages in the back comb after the insertion of the separating-needles, pawls which are mounted on the said slides for raising the twist-lifting needles and are provided with stepped projections, and means for moving the slides last mentioned longitudinally by acting upon the steps of the said projections, for the purpose of enabling each of the twist-lifting needles to be raised by a single operation of a jacquard to any one of several different positions and held therein by means of a single jacquard-slide.

705,540. ADJUSTABLE PLANER-BED. GILBERT S. MYRICK, Philadelphia, Pa., assignor to Cresswell & Waters Co., a Corporation of Pennsylvania. Filed Jan. 13, 1902. Serial No. 89,590. (No model.)

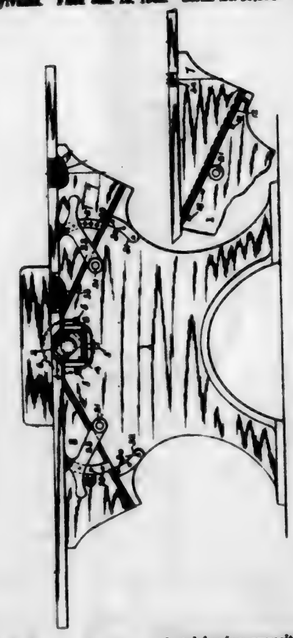

Claim.—1. In a jointer, a pedestal having oppositely-sloping inclines at its top, a cutter-head and cutters, a pulley upon the cutter-head, wedge-supports upon the inclines, level tables upon the supports, shafts, pinions and racks for moving the wedge-supports upon the inclines, levers upon the shafts, eccentrically-curved seats upon the wedge-supports, and means upon the levers whereby the eccentrically-curved seats are engaged by said means to secure the wedge-supports in different positions upon the inclines.

2. In a jointer, a pedestal, a cutter-head adjustably mounted thereon, and means for its rotation, oppositely-sloping downward inclines upon the pedestal-top, supports upon the inclines, tables upon the supports, racks upon the supports, shafts journaled upon the pedestal and having gears thereon which engage the racks aforesaid, adjusting-levers upon the shafts, eccentrically-curved seats upon the supports, concentrically-curved seats upon the pedestal, holes in the seats, spring-actuated pins in the adjusting-levers and adapted to enter the holes, and means also upon the levers whereby the pins are disengaged from the holes aforesaid.

3. In a jointer, a pedestal having a reversely-inclined top, wedge-supports upon the inclines and having their tops level, a table upon each support, transversely-operating means for one of the tables whereby its support, transversely-operating means for one of the tables whereby its outer end may be adjusted so that the table-top will be at an angle to the other table-top, and means to secure the adjustment, exterior to the table-top, for the purpose and in the manner substantially as set forth.

4. In a jointer, a pedestal having reverse inclines at its top, a wedge-

support upon each incline, a table upon each wedge-support, one of the tables being provided upon its under side with transversely-inclined seats a bar inserted between the table and its support and having inclined seats adapted to engage the inclined seats of the support, and when moved thereon place the table out of parallel alinement with the other table, means to adjust the bar for the purpose described, and means to lock the bar when adjusted.

705,541. ELECTRIC-ARC LAMP. JOHN S. HOWDEY, Madisonville, Ohio, assignor to General Electric Company, a Corporation of New York. Filed Nov. 20, 1897. Serial No. 659,698. (No model.)

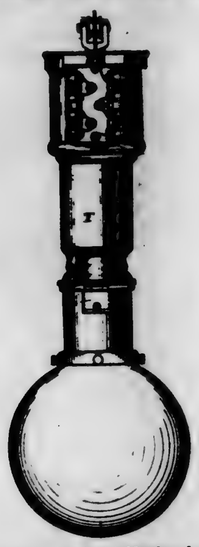

Claim.—1. In an arc-lamp, the combination of a clutch for holding and feeding the upper carbon, a cylinder, a piston therefor, elastic material forming the peripheral portion of the piston and adapted to yield laterally, means for adjusting the diameter of said piston, a connection between the clutch and the piston, and a holder for the upper carbon.

2. In an arc-lamp, the combination of a clutch for holding and feeding the upper carbon and keeping its lower end in alinement with the lower carbon, a cylinder located above the clutch, a piston therein, elastic asbestos forming the peripheral portion thereof adapted to yield laterally, a connection between the clutch and piston, a guide for said connection, a nut for slightly adjusting the diameter of the piston, and a holder for the upper carbon.

3. In an electric-arc lamp, the combination of a tube, a second tube surrounding the first and forming the body portion of a piston, a piston-body for the second tube, and a flexible connection between the tubes which permits of a limited amount of independent movement.

4. In a feeding device for an arc-lamp, the combination of a dash-pot, a tube forming a support for the piston, a piston having an outer surface adapted to slide within the dash-pot, a head for the piston, an asbestos disk, and means for uniting the head and disk.

5. In a feeding device for an arc-lamp carbon, the combination of a device for grappling the carbon at suitable times, a dash-pot having a piston provided with an outer cylindrical portion made of asbestos and graphite, a tube or cylinder, a head for the tube, an asbestos disk for the head, and a clamping device for uniting the parts.

6. In an arc-lamp, the combination of a fixed solenoid-magnet, a reciprocating inhaler device for guiding the carbon and containing it, and a downward extension from the core extending below the magnet and provided with a device within easy reach for setting the position of the core relative to the magnet-coil without disconnecting the lamp.

7. The combination of the carbon, a slidable carbon-holder, a tubular device in which the carbon-holder slides, a magnetic solenoid-coil, an iron sheath or magnet-core located within the coil and accompanying the tube, and adjustable vertically relatively to the tube, the adjustment to be accomplished by an operator outside of the lamp and without dismounting the latter.

8. In an electric lamp, the combination of a dash-pot having a piston carrying a cylindrical frame, annular rings comprising asbestos and graphite, which rings are wedge-shaped and laid upon one another, a nut for varying the compression of the rings, a magnet-core, a tube, a head for the tube, an asbestos disk, and a screw for connecting the parts.

9. The combination of a carbon, a slidable carbon-holder, a tubular device in which the carbon-holder slides, a solenoid-coil, an iron sheath or core located within the coil and accompanying the tube, the core being adjustable vertically relatively to the tube, and an extension for the core having a set-screw or setting device for holding it in a fixed and desired position relative to the magnet-coil.

10. The combination of the carbon, a slidable carbon-holder, a tubular device in which the carbon-holder slides, a solenoid-coil, an iron sheath or core located within the coil and accompanying the tube, the core being adjustable vertically relatively to the tube, a piece attached to the core and provided with a set-screw or setting device for holding it in a fixed and desired position relative to the magnet-coil, a cover for inclosing the same, which is provided with an opening to permit the adjustment of the parts, and a door for said opening.

11. In an electric-arc lamp, the combination of a cylindrical magnetic shield, a winding therefor, a cap having a cylindrical wall formed thereon which extends into the shield, a shoulder formed between the shield and wall which acts as a support, and a frame-tube which is connected to the wall and passes through the winding.

12. In an arc-lamp, the combination of a frame-tube, a dash-pot, a carbon-containing tube, a core mounted thereon and located within the frame-tube, a magnet-coil embracing the frame-tube, a cylindrical magnetic shield for the coil having an apertured annular lower end, a shoulder formed on the shield, and a wall engaging with the shoulder for supporting the shield.

13. In an electric lamp; the combination of a piston, a carbon-holder, a magnet-coil, a cylindrical core for the magnet, a shield for the magnet which embraces the coil and is provided with an extension that projects upwardly, the said projection having a bore of such diameter that the core can pass through it, and a tube which forms the cylinder of the dash-pot and also passes through the extension and the coil.

14. In an electric-arc lamp, the combination of a magnet, an iron sheath or core, a non-magnetic extension secured thereto, and a setting device carried by the extension for shifting the position of the magnetic core in the field of force for the purpose of varying the resistance of the arc.

15. In an electric-arc lamp, the combination of a solenoid or hollow magnet surrounded by an iron magnetic yoke with an extension or annular iron ring formed integral therewith at its top, a magnetic core located within the coil and attached to a tube, a clutch-chamber secured to the tube and containing two or more balls which surround and clutch the upper carbon, the said carbon passing up through the tube and being surrounded by said solenoid magnetic coil, the magnet-core being also located within the coil and surrounding the tube containing the carbon and adjustable vertically on said tube for the purpose of shifting its position into a field of more or less density and also to vary the resistance of the arc according to the relative position of the magnet-core in a magnetic field by reason of the greater or less movement of the carbon under the action of the clutch.

16. In an electric-arc lamp, the combination of a solenoid-magnet, a yoke for said magnet, a dash-pot cylinder, a movable tube mounted within the magnet, an armature adjustably mounted on the tube so that the extent of movement from an extreme position to one of magnetic equilibrium can be changed, and means for connecting the magnet-winding in such manner that the resistance in one case is approximately one-half what it is in another case, thereby adapting the lamp to work on circuits of a given voltage or on those of approximately double the voltage.

17. In an electric-arc lamp, a rheostat constructed in the form of a drum, its outer surface being insulated and having attached to it a continuous spiral composed of resistance-wire and arranged in the form of loops surrounding the drum and held in position by means of slips insulated from said resistance-wire, and connections arranged so as to throw the loops of resistance-wire into series or parallel with the arc, for the purpose of increasing or decreasing the length of the resistance-wire and diminishing or increasing its cross-section as the case may be, the purpose being to operate the lamp on a given voltage or on double that voltage.

18. In combination with an electric-arc lamp, a compound magnet-coil made up of separate coils surrounding each other with terminal endings so arranged that the coils can be connected in series with one another and work in harmony, means for changing the connections whereby the coils can be connected in parallel with one another, the coils in both cases uniting so as to form one compound coil for the purpose of maintaining an electric arc in the lamp when connected on lines of a higher or lower potential, and mechanism for enabling the lamp, when the coils are connected in parallel with one another to operate on the lower-tension circuits, and when the coils are connected in series with one another to operate on higher-tension circuits.

19. In an electric-arc lamp, the combination of a magnet-coil having two windings acting to produce corresponding poles, and means for connecting the coils in series or in parallel to enable the lamp to be operated on high or low potential circuits.

20. In an electric-arc lamp, the combination of a magnet comprising two distinct windings acting to produce corresponding poles at the ends, means for connecting the windings in series to operate on circuits of high potential, means for connecting the coils in parallel to operate on circuits of low potential, and a feeding mechanism correspondingly acted upon by the windings to feed the carbon.

21. In an electric-arc lamp, the combination of a resistance, means for causing the current to pass through the coils in series or parallel, magnet-windings, means for connecting the magnet-windings in series or parallel relation with each other and in series with the resistance, and carbon-feeding mechanism which is under control of the magnets.

22. In an arc-lamp, the combination of a rheostat comprising a body of conducting material of high resistance and arranged to work in the same circuit with the arc, the rheostat having two paths for the current, connections so arranged that all of the current can be directed through one path by including all of the resistance-wire in series, and connections so arranged that the two paths through the resistance material can be thrown into parallel relation, thereby affording double the length of conductor with half the cross-section in one case, or double the cross-section with half the length of conductor, in the other case.

23. In an electric-arc lamp, the combination of a resistance-support, a coil of resistance material mounted thereon, means for retaining the coil in place, a connection leading from an intermediate portion of the coil, and other connections for uniting the portions of resistance material in series or parallel relation.

24. In an electric-arc lamp, the combination of a cylinder, a piston mounted therein which is composed of a sleeve having an elastic covering, and a carbon-containing tube secured to the sleeve by means of a flexible connection.

25. In an electric-arc lamp, the combination of a dash-pot cylinder, a piston therefor comprising a sleeve with a covering of asbestos rings, a carbon-containing tube mounted within the sleeve and slightly separated therefrom on the sides, a mechanical connection between the upper end of the sleeve and the tube, and flexible disks which form a part of said connection, thereby permitting the tube to have a slight movement independent of the sleeve.

705,542. PLASTER COMPOSITION. HERMAN T. J. OTTO, Allentown, Pa. Filed Sept. 26, 1901. Serial No. 76,288. (No specimens.)

Claim.—1. A plaster, comprising hydraulic cement two parts, powder silicate of aluminium one part and powdered carbonate of lime one part, all of the said substances being admixed together.

2. A plaster, comprising powdered hydraulic cement two parts, powdered silicate of aluminium one part, and powdered carbonate of lime one part, said silicate of aluminium and carbonate of lime being in a raw state saturated with water, and all of said powdered substances being admixed together.

705,543. BUTTER-CUTTER. HERMAN H. PHILLIPS, East Congress, N. Y., assignor of one-half to John Henry Phillips, East Congress, N. Y. Filed May 24, 1901. Serial No. 61,982. (No model.)

Claim.—1. A machine for cutting masses of butter into smaller blocks or forms, provided with two sets of cutters, the planes of the two sets being arranged transversely to each other, and the cutters of one set crossing each other, and the plane of said set being substantially parallel with the cutters of the other set, a support for the butter, means for moving said support transversely to the cutters of one set, and means for causing transverse movement relatively to each other of said support and the other set of cutters, whereby the mass can be forced through the sets of cutters, or the cutters forced through the mass, thereby dividing the entire mass by transverse cuts.

2. A machine for cutting masses of butter into smaller blocks or forms, provided with two sets of cutters, the planes of the two sets being arranged transversely to each other, and the cutters of one set crossing each other, and the plane of said set being substantially parallel with the cutters of the other set, a support for the butter, means for moving said support transversely to the cutters of one set, and means for moving the other set of cutters in a direction transverse to the movement of the support, whereby the mass can be forced through the sets of cutters, or the cutters forced through the mass, thereby dividing the entire mass by transverse cuts.

3. A machine for cutting masses of butter into smaller blocks or forms, provided with two sets of cutters, those of one set being substantially parallel, the planes of the two sets being arranged transversely to each other, and the cutters of one set crossing each other, and the plane said set being substantially parallel with the cutters of the other set, a support for the butter, and means for causing transverse movement relatively to each other of said support, and each set of cutters, whereby the mass can be forced through the sets of cutters, or the cutters forced through the mass, thereby dividing the entire mass by transverse cuts.

705,544. AUTOMATIC ALARM-VALVE FOR FIRE-EXTINGUISHING APPARATUS. CAMPBELL B. SHAW, Kirkwood, Mo., assignor to Shaw Manufacturing Company, St. Louis, Mo., a Corporation. Filed May 24, 1901. Serial No. 61,995. (No model.)

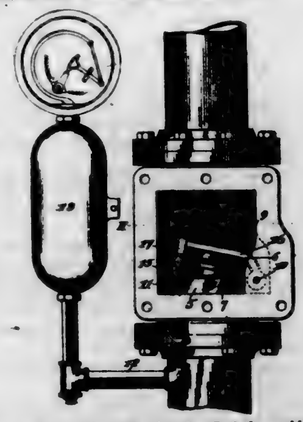

Claim.—1. In a device of the class described, the combination of a housing having inlet, outlet and auxiliary openings, a valve-seat for the inlet-opening, a valve-seat for the auxiliary opening approximately in a plane with the inlet-valve seat, a rock-shaft mounted within the housing, and valves connected to said rock-shaft for simultaneously controlling the passage of fluid through both openings.

2. In a valve of the class described, the combination of a housing, a removable plate for the housing, a main nipple communicating with an inlet-opening, an auxiliary nipple communicating with alarm mechanism, valve-seats for the nipples, approximately in the same plane, a rock-shaft mounted within the housing, and valves connected to said rock-shaft for simultaneously controlling the passage of fluid through both nipples.

705,545. CINEOL ARSENATE AND PROCESS OF MAKING SAME. WATSON SMITH, London, England, assignor to Louis Merck, R. A. Merck, Willy Merck, and C. R. Merck, copartners as the firm of E. Merck, Darmstadt, Germany. Filed Sept. 27 1901. Serial No. 76,743. (Specimens.)

Claim.—1. The process of obtaining a compound of arsenic acid and cineol (eucalyptol), which consists in treating cineol with arsenic acid.

2. The process of obtaining a compound of arsenic acid and cineol, which consists in treating cineol, contained in a liquid, with arsenic acid.

3. The process of obtaining a compound of arsenic acid and cineol, which consists in treating cineol, contained in a liquid, with a solution of arsenic acid.

4. The process of obtaining a compound of arsenic acid and cineol, which consists in mixing eucalyptus oil containing cineol with an aqueous solution of arsenic acid.

5. The process of separating cineol from a compound, which consists in bringing an arsenic-acid-cineol compound in contact with water.

6. The process of obtaining cineol from a liquid in which it is contained, which consists in preparing from said liquid a chemical compound of arsenic acid with cineol, and splitting up said compound by bringing it in contact with water.

7. A chemical compound, consisting of arsenic acid and cineol, and characterized (when freshly prepared) as a solid, of white color and crystalline form; melting, when slowly heated, at about 95° centigrade; soluble in alcohol and in ether; and which, on contact with water, is decomposed into its components, arsenic acid and cineol.

8. The process of obtaining a natural ingredient of an essential oil which consists in treating the oil with arsenic acid, thereby forming a compound of said natural ingredient with said acid, separating said compound from the residual liquid mass, and splitting up the compound, thereby setting free the desired natural ingredient of the oil treated.

9. The process of obtaining cineol which consists in treating eucalyptus oil containing cineol with arsenic acid, thereby forming an arsenic-acid-cineol compound, isolating said compound, and splitting up said compound by bringing said compound in contact with water.

705,546. ARTIFICIAL TOOTH. THOMAS STEELE, Redbank, N. J. Filed Nov. 14, 1901. Serial No. 82,316. (No model.)

Claim.—1. An artificial tooth, comprising a front having a recess extending from the cervix toward the cutting edge, a backing having an integral inlay for engaging the said recess, and means for expanding the inlay in the recess, as set forth.

2. An artificial tooth, comprising a front having a recess extending from the cervix toward the cutting edge, a backing having an integral inlay engaging the said recess, the inlay having a tubular portion, and means for expanding the tubular portion in the recess, as set forth.

3. An artificial tooth, comprising a front having a recess, a backing fitting the said front, a hollow inlay for engaging the recess and expanded therein, and a tapering pin in the expanded inlay to hold the latter expanded, as set forth.

4. An artificial tooth, comprising a front having a recess, a backing, a tubular inlay on the backing, having longitudinal and transverse cuts and fitting the said recess, and a cement in the recess to engage the said cuts, as set forth.

5. An artificial tooth, comprising a front having a recess, a backing, an inlay on the backing, having longitudinal and transverse cuts and fitting the said recess, a cement in the recess to engage the said cuts, and a pin inserted in the said inlay to keep it expanded in the recess, as set forth.

6. An artificial tooth, having a tubular inlay formed with cuts to allow expansion of the inlay, as set forth.

7. An artificial tooth, having a tubular inlay formed with longitudinal and transverse cuts, as set forth.

8. An artificial tooth, having a backing, and an inlay consisting of a shank integral with the backing, and a tubular portion on the shank, as set forth.

9. An artificial tooth, having a backing, and an inlay consisting of a shank integral with the backing, and a tubular portion on the shank, the said tubular portion having longitudinal and transverse cuts, as set forth.

705,547. WIRE-STRETCHER. JOHN STEVENSON, Detroit, Mich. Filed July 23, 1901. Serial No. 69,209. (No model.)

Claim.—1. In a wire-tightener, the combination with a frame comprising parallel arms and a cross member connecting the arms, of a winding-spool flanged at each end and journaled between the arm ends for rotary movement, a ratchet-wheel upon one end of the spool intermediate the flange and the adjacent arm of the frame, and a double pivotal pawl for the ratchet-wheel comprising a flat oblong plate arranged to swing freely between one of the spool-flanges and the adjoining frame-arm with its longitudinal axis and opposite sides extending in a plane parallel with the arm, said plate terminating at its inner end in a shank engaging loosely within an aperture formed within the cross member, and having its outer end concaved to embrace the ratchet-wheel, substantially as shown and described.

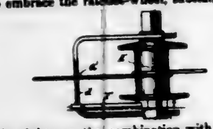

2. In a wire-tightener, the combination with a frame comprising parallel arms and a cross member connecting the arms, of a winding-spool flanged at one end and journaled between the arms for rotary movement, a ratchet-wheel fixed to the spool between the flange and the adjacent frame-arm, and a double pivotal pawl for the ratchet, comprising an elongated plate carrying a shank at one end engaging loosely within an aperture formed within the cross member and having its opposite end concaved and embracing the ratchet-wheel, said plate extending parallel with the frame-arm adjoining the ratchet and adapted to swing freely about its fulcrum between said frame-arm and the spool-flange.

REISSUES.

12,015. TOLL-COLLECTING AND CALL-RECORDING DEVICE FOR TELEPHONE SYSTEMS. JAMES R. GILL, San Francisco, Cal. Filed Sept. 6, 1900. Serial No. 29,151. Original No. 636,378, dated Oct. 24, 1899.

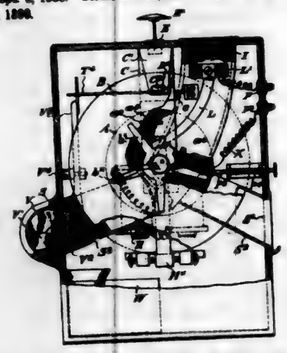

Claim.—1. A recording mechanism including a rotatable record-card, a marking device, means projecting said marking device against the face of the card, means for moving the card to space the markings, means for setting and locking the marking device for action, and means for releasing the marking device at will to impinge against the card.

2. A recording mechanism including a rotatable record-card, a marking device movable in a plane perpendicular to the face of said card, means for projecting the marking device against the card, means for setting and locking the marking device for such movement, means for releasing the marking device, and means for simultaneously rotating the card with the marking thereof.

3. A recording mechanism including a rotatable record-card, a marking device movable in a plane perpendicular to the face of the card, means for projecting the marking device against the card, means for drawing back and setting the marking device for such movement, means rotating said card and simultaneously imparting rectilinear movement thereto in a plane coincident with the plane of its rotation to space the markings, and a releasing device to set free the marking device.

4. The combination of a rotatable record-card, means for imparting a combined rotative movement and rectilinear movement in a plane coincident with the plane of rotation, a marking device operating in a plane perpendicular to the face of the record-card, means for drawing back and projecting said marking device against the face of the card, and means for locking and tripping the said marking device.

5. The rotatable disk having its center of rotation adapted to move in a right line coincident with the plane of rotation and having a spiral groove in one face, a fixed pin engaging said spiral, and means for imparting rotative movement to the disk; in combination with a marking device operating in a plane perpendicular to the face of the disk and adapted to impinge against the face thereof, whereby the movements of the marking device are recorded in a continuous spiral line on the disk, means for drawing back and setting the marking device for such movement, and a releasing device to set free the marking device.

6. A recording mechanism including a rotatable record-card, a marking device movable in a plane perpendicular to the face of the record-card, means for projecting the marking device against the record-card, means whereby the marking device will rotate the card to space the markings, means for setting and locking the marking device for said movement against the card, a releasing device, and means for operating the releasing device consisting of a relay in an open circuit in which is included a circuit-closing device and an armature adapted by its vibrations when the relay is energized to operate the releasing device.

7. In a recording mechanism a rotatable disk, a clamping device adapted to hold a record-card on the disk, a puncturing device, means for projecting the puncturing device against the card and means for moving the puncturing device laterally during its penetration of the card, to rotate the latter, means for drawing back and setting the marking device for such movement, and a releasing device.

8. In a recording mechanism, a rotatable record-card, means for moving said card in a plane coincident with the plane of rotation and simultaneous with such rotation, a puncturing device movable at right angles to the card, means for projecting the puncturing device against the face of the card, means for imparting lateral movement to the puncturing device during its penetration of the card, means for drawing back and setting the marking device for such movement, and a releasing device.

9. A recording mechanism including a record-card mounted for rotation on an axis, a puncturing device having a movement perpendicular to the face of the card to engage the card, and a lateral movement to rotate the card, means for setting and locking the marking device for such movement, and means for releasing the marking device.

10. The combination of a rotatable record-card, a puncturing device operating in a plane perpendicular to the face of the record-card, means for drawing back and locking the marking device, means for releasing and projecting said marking device against the face of the card, and means for moving the puncturing device laterally during its penetration of the card to rotate the latter.

11. A coin-controlled recording mechanism for telephone systems, including a record-card, a marking device, means projecting the marking device against the face of the card, means for moving the card to space the markings thereon, means for setting and locking the marking device for action, and coin-controlled means whereby the marking device is released by a current from the central station at the will of the operator.

12. A coin-controlled recording mechanism for telephone systems, including a record-card, a marking device, means projecting said marking device against the face of the card, means for moving the card to space the markings thereon, means for setting and locking said marking device for action, means whereby the marking device is released by a current from the line-circuit, and coin-controlled means whereby the circuit normally open at the recording mechanism is restored by the inserted coin.

13. A coin-controlled recording mechanism, including a rotatable record-card, a marking device movable in a plane perpendicular to the face of the card, means projecting the marking device against the card, means for moving back and locking the marking device in position for action, means for rotating the card, and coin-controlled means whereby the marking device is released by a current from the central station.

14. A recording mechanism, including a rotatable record-card, a marking device movable in a plane perpendicular to the card, means for projecting the marking device against the record-card, means for setting the marking device for said movement, an electrically-controlled releasing device in an open circuit in which is included a circuit-closing device, and coin-controlled means for closing said circuit to operate the releasing device.

15. A recording mechanism including a rotatable record-card, a marking device movable in a plane perpendicular to the card, means for projecting said marking device against the face of the card, means for imparting lateral movement to the marking device in its forward throw at the time of its contact with the card to turn the card on its center of rotation, means for drawing back and setting the marking device, a releasing device and means for operating said releasing device adapted to be set in operative condition by the insertion of a coin therein.

16. In a coin-controlled recording mechanism the combination, with a rotatable record-card, reciprocating marking device, means for projecting the same against the face of the card, a push-button and means connecting the same with the marking device to draw back and set the latter for operation, a coin-controlled releasing device adapted to release the operative means that projects the marking device against the record-card, and means for imparting limited rotative movement to the record-card at each operation of the marking device.

17. The combination of the rotatable disk, means for attaching a record-card thereto, a marking device operating in a plane perpendicular to the record-card to impinge against the face thereof, means for drawing back and setting the marking device for operation, means for projecting the latter against the card, a releasing means consisting of a locking-lever, an electromagnet in an open circuit in which are included circuit-closing contacts, an armature adapted by the attraction of the magnet to trip the locking-lever and release the marking device, means for closing said magnet-circuit comprising a coin-chute, a device interposed in the path of the coin by engagement therewith to close the electrical contacts in the magnet-circuit, and means for energizing the magnet at will after the circuit thereof is closed by the coin.

18. In a coin-controlled mechanism the combination with the coin-chute I, of the push-rod T, push-button E', means connecting the latter with the rod, and the lever N having one arm engaging a pin on the push-rod and another arm adapted to work through a slot in the bank of the coin-chute and to engage the edge of the deposited coin from above.

12,016. DOUBLE MULTIPRESS. HENRY A. W. WOOD, New York, N. Y. Filed June 6, 1902. Serial No. 110,484. Original No. 701,130, dated May 27, 1902.

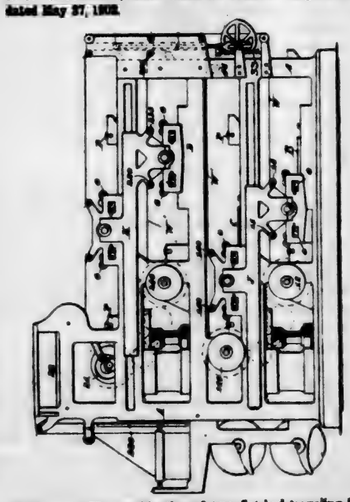

Claim.—1. The combination of two flat-bed traveling impression-cylinder web-perfecting printing-presses arranged one over the other, web-guides arranged so that two webs can be led through the mechanism, and devices for associating the two webs after they are perfected.

2. The combination of two side frames, four form-beds mounted therein in different horizontal planes, two sets of carriers fitted to said frames, each set carrying two impression-cylinders and web-guides, mechanism for reciprocating the two sets of carriers, web-guides for leading two webs through the machine, and manipulating devices for shifting said webs around the cylinders during the non-impression periods.

3. The combination in a web-perfecting printing-press of four form-beds arranged in different horizontal planes, a traveling impression-cylinder coöperating with each form-bed, web-guides arranged so that a web may be led around the lower and upper cylinders, and another web around the second and third cylinders, and a suitable web-manipulating device for each web.

4. The combination in a web-perfecting printing-press of four form-beds arranged in different horizontal planes, a traveling impression-cylinder coöperating with each form-bed, web-guides arranged so that a web may be led around the lower and upper cylinders, and another web around the second and third cylinders, whereby the last-named web is substantially within the loop of the first-named web, a suitable web-manipulating device for each web, and devices for associating the two webs.

5. The combination of two flat-bed traveling impression-cylinder web-perfecting printing-presses arranged one over the other, web-guides arranged so that one or two webs can be led through the mechanism, and means whereby one or both presses may be operated.

6. The combination in a web-perfecting printing-press of four form-beds arranged in different horizontal planes, a traveling impression-cylinder coöperating with each form-bed, web-guides arranged so that one

or two webs may be led through the mechanism, two driving mechanisms, one arranged to reciprocate the two lower and the other the two upper cylinders, and connections whereby one driving mechanism can be thrown out of operation.

7. The combination in a web-perfecting printing-press, of four form-beds arranged in different horizontal planes, two sets of carriers, each set carrying two impression-cylinders, a driving mechanism for each set of carriers, web-guides arranged so that one or two webs may be led through the mechanism, web-manipulating mechanisms, and connections whereby only one set of carriers can be operated.

8. The combination in a web-perfecting printing-press of four form-beds arranged in different horizontal planes, a traveling impression-cylinder coacting with each form-bed, web-guides arranged so that a web may be led around the lower and upper cylinders, and another web around the second and third cylinders, a feeding-in and feeding-out device for each of these webs, and means whereby the feeding-in device for the second web may be used at the feeding-out device when only one web is run through the machine, whereby the two lower impression-cylinders may be used for handling a single web.

9. The combination of four form-beds, two sets of carriers, two impression-cylinders journaled in each set of carriers, and a driving mechanism for each set of carriers, said driving mechanisms being set substantially quartering relatively to each other.

10. The combination of four form-beds, four impression-cylinders, web-guides and web-manipulating mechanisms arranged so that two webs can be printed, and two driving mechanisms, each driving mechanism being connected to reciprocate two cylinders, said two driving mechanisms being set substantially quartering relatively to each other, whereby two cylinders will be in impression or printing while the other two cylinders are reversing and vice versa.

11. The combination of four form-beds arranged in different horizontal planes, an impression-cylinder coöperating with each form-bed, a driving mechanism for the two lower impression-cylinders, a driving mechanism for the two upper impression-cylinders, said two driving mechanisms being set quartering relatively to each other, web-guides for leading a web around the lower and upper impression-cylinders, web-guides for leading another web around the second and third impression-cylinders, a feeding-in and feeding-out device for each web, and a compensating looping mechanism for the webs arranged so that the feed of each web will take place only around one cylinder at a time.

12. The combination of four form-beds arranged in different horizontal planes, an impression-cylinder coöperating with each bed, a driving mechanism for the two lower impression-cylinders, a driving mechanism for the two upper impression-cylinders, said driving mechanisms being set quartering relatively to each other, web-guides for leading a web around the lower and upper impression-cylinders, web-guides for leading another web around the second and third impression-cylinders, a feeding-in and a feeding-out device for each web, and a compensating looping mechanism for the webs, consisting of cam-actuated frames carrying a looping-roller for each web arranged so that the feed of each web will take place only around one cylinder at a time.

12,017. METAL-PUMP FOR TYPE-CASTING. FREDERICK WISER, Esher, England. Filed June 11, 1902. Serial No. 111,203. Original No. 669,695, dated Mar. 5, 1901.

Claim.—1. In a type-casting apparatus, the combination with a melting-pot, of a pump-cylinder provided with a reciprocating piston, having inlet and outlet ports, each provided with valves adapted to close the ports alternately, the inlet-port being located a substantial distance from the end of the cylinder, whereby the piston, after having made a stroke, on its return will create a positive vacuum below it before the inlet-port is passed and opened.

2. In a type-casting apparatus, the combination with the melting-pot, of a pump-cylinder located therein and having a passage leading from the pot into the cylinder, a peripherally-notched disk valve controlling said passage, a plunger operating in the cylinder and provided with a cavity in its operating end for the purpose specified, a nozzle for discharging the fluid metal, communicating with the interior of the cylinder, a peripherally-notched disk valve controlling the said passage, and a relief-valve communicating by a port or passage with said last-named passage, substantially as described.

3. In a type-casting apparatus, the combination with the melting-pot, of a pump-cylinder located therein and having a port or passage communicating with the pot, a disk valve controlling the flow of metal through said port or passage, an eccentrically-arranged projecting rib on said valve for the purpose specified, a plunger operating in the cylinder and provided with a cavity in its operating end, a nozzle for conducting the molten metal to the type-mold, a port or passage leading from the cylinder and communicating with said nozzle, a disk valve controlling said port or passage, an eccentrically-arranged rib on the face of said valve and a relief-valve communicating with the port or passage leading to the nozzle, substantially as and for the purpose specified.

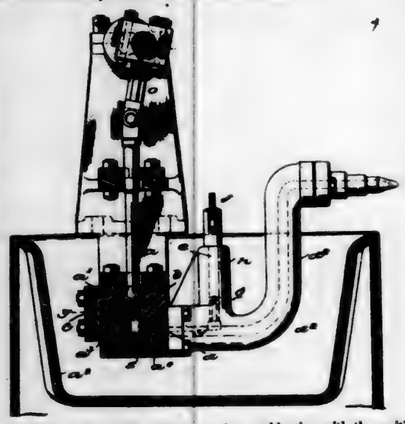

4. In a type-casting apparatus, the combination with the melting-pot, of a pump-cylinder located therein and having a passage communicating with the melting-pot, a disk valve controlling said passage, a plunger operating in said cylinder and having a cavity in its operating end, a nozzle communicating by a port or passage with the interior of the cylinder, a disk valve controlling said port or passage, and a relief-valve arranged in the said port or passage communicating with the nozzle, substantially as described.

5. In a type-casting apparatus, the combination with the melting pot, of a pump-cylinder located therein and having a valve-controlled inlet-passage, a plunger operating in said cylinder, and having a cavity in its operating end, a nozzle communicating by a valve-controlled port or passage with the interior of the cylinder, and a relief-valve communicating with said last-named port or passage, said relief-valve comprising a cylinder having a lateral port and a weighted plunger operating in said cylinder, said plunger being provided with a central bore and a side port which communicate with the lateral port in the cylinder when the plunger is raised, substantially as described.

6. In a type-casting apparatus, the combination with the melting-pot, of a plurality of cylinders located therein and each having a passage leading into the pot, a disk valve controlling each passage, a plurality of plungers operating in said cylinders and each having a cavity in its lower end for the purpose specified outlet-passages for the cylinders, a nozzle for discharging the fluid metal, communicating with said outlet-passages, a disk valve controlling each outlet-passage, and a relief-valve communicating with the discharge-nozzle, substantially as described.

7. In a type-casting apparatus, the combination with the melting-pot, of a plurality of cylinders located therein and each having a passage leading into the pot, a disk valve controlling each passage, a plurality of plungers operating in said cylinder and each having a cavity in its operating end for the purpose specified, outlet-passages for the cylinders, a nozzle for discharging the fluid metal, communicating with said outlet-passages, and a disk valve controlling each outlet-passage, substantially as described.

8. In a type-casting apparatus, the combination with the melting-pot of a pump-cylinder located therein and having a passage leading from the pot into the cylinder, a valve controlling said passage, a plunger operating in the cylinder, a nozzle for discharging the fluid metal communicating with the interior of the cylinder, a valve controlling the said passage and a relief-valve communicating by a port or passage with said last-named passage, substantially as described.

9. In a type-casting apparatus, the combination with the melting pot of a pump-cylinder located therein and having a passage leading from the pot into the cylinder, a valve controlling said passage having spiral peripheral notches, a plunger operating in the cylinder, a nozzle for discharging the fluid metal communicating with the interior of the cylinder, a valve having spiral peripheral notches controlling said passage and a relief-valve communicating by a port or passage with said last-named passage.

10. In a type-casting apparatus, the combination with the melting-pot, of a pump-cylinder located therein and having a port or passage communicating with the pot, a disk valve controlling the flow of metal through said port or passage, an eccentrically-arranged projecting rib on said valve for the purpose specified, a plunger operating in the cylinder and a nozzle for conducting the molten metal to the type-mold, a port or passage leading from the cylinder and communicating with said nozzle, a disk valve controlling said port or passage, an eccentrically-arranged rib on the face of said valve and a relief-valve communicating with the port or passage leading to the nozzle, substantially as and for the purpose specified.

11. In a type-casting apparatus, the combination with the melting-pot, of a pump-cylinder located therein and having a passage communicating with the melting-pot, a disk valve controlling said passage, a plunger operating in said cylinder, a nozzle communicating by a port or passage with the interior of the cylinder, a disk valve controlling said port or passage, and a relief-valve arranged in said port or passage communicating with the nozzle, substantially as described.

12. In a type-casting apparatus, the combination with the melting-pot, of a pump-cylinder located therein and having a valve-controlled inlet-passage, a plunger operating in said cylinder, and a nozzle communicating by a valve-controlled port or passage with the interior of the cylinder, and a relief-valve communicating with said last-named port or passage, said relief-valve comprising a cylinder having a lateral port and a weighted plunger operating in said cylinder, said plunger being provided with a central bore and a side port which communicate with the lateral port in the cylinder when the plunger is raised, substantially as described.

13. In a type-casting apparatus, the combination with the melting-pot, of a plurality of cylinders located therein and each having a passage leading into the pot, a disk valve controlling each passage, a plurality of plungers operating in said cylinders and outlet-passages for the cylinders, a nozzle for discharging the fluid metal, communicating with said outlet-passages, a disk valve controlling each outlet-passage, and a relief-valve communicating with the discharge-nozzle, substantially as described.

14. In a type-casting apparatus, the combination with the melting-pot of a plurality of cylinders located therein and each having a passage leading into the pot, a disk valve controlling each passage, a plurality of plungers operating in said cylinders and outlet-passages for the cylinders, a nozzle for discharging the fluid metal, communicating with said outlet-passages, and a disk valve controlling each outlet-passage, substantially as described.

15. In a type-casting apparatus, the combination with a melting-pot, of a pump-cylinder located therein and having a passage leading from the pot into the cylinder, a valve controlling said passage, a plunger operating in the cylinder, a nozzle for discharging the fluid metal communicating with the interior of the cylinder, a valve controlling the said passage, and a relief-valve communicating by a port or passage with said last-named passage, said valve being so constructed as to allow a portion of the metal to pass it, substantially as described.

16. In a type-casting apparatus, the combination with a melting-pot, of a pump-cylinder located therein and having a passage leading from the pot into the cylinder, a valve controlling said passage, a plunger operating in the cylinder, a nozzle for discharging the fluid metal communicating with the interior of the cylinder, a valve controlling the said passage, and a hollow relief-valve communicating by a port or passage with said last-named passage, substantially as described.

DESIGNS.

85,979. BADGE OR SIMILAR ARTICLE. JAMES L. EWIN, Washington, D. C., assignor to Luther B. Wilson, trustee, Washington, D. C. Filed Apr. 19, 1902. Serial No. 103,203. Term of patent 7 years.

Claim.—The ornamental design for a badge, or similar article, substantially as herein shown and described.

85,980. METAL BADGE. EDWARD R. SARGENT, New Haven, Conn., assignor to Sargent and Company, New Haven, Conn., a Corporation of Connecticut. Filed May 23, 1902. Serial No. 108,760. Term of patent 14 years.

Claim.—The ornamental design for a badge, as herein shown and described.

85,981. PEDESTAL-PINCUSHION. LILLIAN A. BARTHOLOMEW, New York, N. Y. Filed Mar. 18, 1902. Serial No. 98,844. Term of patent 3½ years.

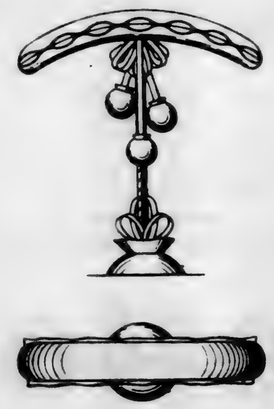

Claim.—The ornamental design for a pedestal-pincushion, as herein shown and described.

TRADE-MARKS

REGISTERED JULY 22, 1902.

38,639. RECORDS FOR DISK TALKING-MACHINES. WILBERT V. F. BRADLEY, Toledo, Ohio. Filed May 5, 1902.

The word "MONOGRAM" and the letters "O T M Co" in monogram form. Used since January 2, 1902.

38,640. MOUTH-HARMONICAS. A. VOEHER & Co., New York, N. Y. Filed May 22, 1902.

MELOPHONE

The word "MELOPHONE." Used since January 1, 1902.

38,641. COTTON PIECE GOODS. J. & J. M. WORRALL, LIMITED, Salford, England. Filed Feb. 17, 1902.

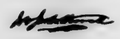

The facsimile-signature of the firm "JAS. & JNO. M. WORRALL." Used since April, 1884.

38,642. SKIRTS. MISSOURI CLOTHING Co., Louis, Mich. Filed Feb. 10, 1902.

SOROSIS

The word "SOROSIS." Used since June 1, 1901.

38,643. CORSETS. FELIX E. MESTROT, Galveston, Tex. Filed Apr. 19, 1902.

The words "QUEEN REGENT" and the bust representation of a female figure wearing a crown and corsets, the neck and arms being exposed, the latter being raised in the act of tightening the corset-laces held in the hands. Used since October, 1899.

38,644. HATS. SANGER BROS., Dallas and Waco, Tex. Filed Mar. 6, 1902.

The words "THE BLACK DIAMOND," together with a representation of a black diamond-shaped figure. Used since July 16, 1894.

38,645. TOOTH-POWDER AND TOOTH-PASTE. JOHN H. COYLE, Thomasville, Ga. Filed June 20, 1902.

MAGIC

The word "MAGIC." Used since April 1, 1902.

38,646. OINTMENT FOR THE SKIN. THE LAXAKOLA COMPANY, New York, N. Y. Filed Nov. 27, 1901.

The word "DERMAKOLA" printed in script type on a red band that extends diagonally across a circular field, the upper and lower zones of said field being also red, leaving tapering sections that are located on opposite sides of the band. Used since June 15, 1901.

38,647. REMEDIES FOR HEADACHE, NERVOUS COMPLAINTS, AND GENERAL DEBILITY. THE JACK DRUG Co., New York, N. Y. Filed June 16, 1902.

BRACE-ME-UP

The hyphenated phrase "BRACE-ME-UP." Used since June 9, 1902.

38,648. MEDICINE FOR THE BLOOD, KIDNEYS, AND LIVER. CHARLES W. JOHNSON, Minneapolis, Minn. Filed May 19, 1902.

A representation of Cardinal Richelieu in a standing position with the right arm raised and the first two fingers of the right hand upraised and extended. Used since December 25, 1901.

38,649. PILLS FOR BLOOD TONIC. ADELARD JOSEPH PLAMONDON, Lowell, Mass. Filed Feb. 13, 1902.

The representation of a woman seated in a chair and a cupid or other winged figure descending into the room partially enveloped in a cloud and bearing in one hand a representation of a bee. This representation is surrounded by a circular border upon which are arranged two representations of a full-blown rose, and in the center of each rose is a representation of a human face. Used since January, 1901.

38,650. TONIC. ADOLPHE H. HOPKINS, Brooklyn, N. Y. Filed June 21, 1902.

Itsa-winna

The hyphenated word "ITSA-WINNA." Used since June 15, 1901.

38,651. BEER. ASHLAND BREWING Co., Ashland, Wis. Filed June 5, 1902.

WHITE RIBBON

The words "WHITE RIBBON." Used since July 1, 1901.

38,652. LAGER-BEER. THE CONSUMERS PARK BREWING COMPANY, Brooklyn, N. Y. Filed Apr. 4, 1902.

The representation of an imperial crown having streamers depending therefrom and a rosette located below said crown. Used since January 1, 1902.

38,653. SODA-WATER AND COMPOUNDS AND EXTRACTS FOR FLAVORING SAME. HANCE BROS. & WHITE, Philadelphia, Pa. Filed June 21, 1902.

AUTO

The word "AUTO." Used since June 1, 1902.

38,654. SODA-WATER AND COMPOUNDS AND EXTRACTS FOR FLAVORING SAME. HANCE BROS. & WHITE, Philadelphia, Pa. Filed June 21, 1902.

RIPE

The word "RIPE." Used since January 1, 1893.

38,655. GREEN COFFEE. BRYAN B. TOMLIN, Cordova, Mexico. Filed May 2, 1902.

ORO

The word "ORO." Used since March, 1897.

38,656. GRAIN. Gay Hermon Bean, Aguadilla, Porto Rico. Filed Apr. 11, 1902.

The words "LA FAVORITA" and the pictorial representation of a woman dressed in Turkish costume reclining upon the floor, with a cornet at her feet and a Turkish pipe and utensils at her side. In the background appears the representation of the sea with sailing vessels thereon, and behind the figure of the woman is a curtain, from which rises a column supporting a vase. The figure of a nude child is shown in the act of lifting the curtain. In the foreground appear flowers and medals. Used since January 9, 1899.

38,657. PEANUTS. THE GWALTNEY-DUDLEY PEANUT CO., Smithfield, Va. Filed June 26, 1902.

BON TON BURT UN

The compound word "BON-TON." Used since August, 1896.

38,658. FOOD PRODUCTS MADE FROM VEGETABLES AND CEREALS. DANIEL T. WILSON, Battlecreek, Mich. Filed June 16, 1902.

MALT-A-BAKE

The hyphenated word "MALT-A-BAKE." Used since January 1, 1902.

38,659. SALT. Gustave H. Stamm, Detroit, Mich. Filed June 6, 1902.

38,659.

An elliptical band inclosing the representation of two pairs of outstretched hands and the words "IN UNION THERE IS STRENGTH," and at opposite ends of the band are represented two female figures with the arms stretched outward toward each other. Used since May 30, 1901.

38,660. BOILER FLUIDS FOR PREVENTION OF SCALE. VALVOLINE OIL CO., New York, N. Y., and Liverpool, England. Filed June 19, 1902.

UCALYPSUM

The word "UCALYPSUM." Used since October 1, 1898.

38,661. ANTIFRICTION-METAL. MAGNUS METAL COMPANY, Buffalo, N. Y. Filed Jan. 17, 1902.

GALENA

The word "GALENA," inclosed within a diamond-shaped border, this word being formed of letters of different heights, so that the space covered by said letters shall be of a general diamond-shaped outline. Used since December 30, 1901.

38,662. PORTLAND CEMENT. DEXTER PORTLAND CEMENT CO., Nazareth, Pa. Filed June 13, 1902.

DEXTER

The word "DEXTER." Used since January, 1900.

38,663. CHEMICAL FIRE-EXTINGUISHERS. THE LITTLE GIANT FIRE EXTINGUISHER CO., New York, N. Y. Filed June 6, 1902.

THE LITTLE GIANT

The words "THE LITTLE GIANT." Used since December 1 1895.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

LABELS

REGISTERED JULY 22, 1902.

9,313.—*Title:* "RANDOLF MAKER." (For Hats.) CHARLES E. SACKETT, Danbury, Conn. Filed May 26, 1902.

9,314.—*Title:* "BROMINT." (For Headache Cure.) KOEHLER & HINRICHS, St. Paul, Minn. Filed June 19, 1902.

9,315.—*Title:* "DR. FRANZ HELDENBERG PURIFIER." (For Medicines.) WM. H. GRABE, St. Louis, Mo. Filed May 14, 1902.

9,316.—*Title:* "PISO'S TABLETS FOR THE CURE OF DISEASES OF WOMEN." (For Medicines.) THE PISO COMPANY, Warren, Pa. Filed June 26, 1902.

9,317.—*Title:* "THE EAGLE PLASTER." (For Plasters.) ALLCOCK MANUFACTURING CO., Boston, Mass. Filed February 7, 1902.

9,318.—*Title:* "BOB WHITE." (For Whisky.) WILLIAM J. VONDERHEIDE, Washington, D. C. Filed June 25, 1902.

9,319.—*Title:* "LIQUID GLASS." (For Cement.) J. E. ULRICH & CO., Winneconne, Wis. Filed June 27, 1902.

9,320.—*Title:* "PROVIDER BROOMS BRUSHES." (For Brooms and Brushes.) ALFRED B. LEHMAN, Johnstown, N. Y. Filed June 28, 1902.

PRINTS

REGISTERED JULY 22, 1902.

536.—*Title:* "DR. PIERCE'S FAVORITE PRESCRIPTION." (For Medicine and Soda.) WORLD'S DISPENSARY MEDICAL ASSOCIATION, Buffalo, N. Y. Filed June 26, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

PUPIN *v.* HUTIN AND LEBLANC *v.* STONE.

Decided July 11, 1901.

1. INTERFERENCE—DISCLOSURE OF INVENTION.

A disclosure of the invention to a party skilled in the art to which the invention belongs is sufficient to be regarded as a disclosure in the sense of the patent law.

2. SAME—SAME.

When the testimony of the principal is worthy of belief and his testimony is corroborated by one credible witness, *Held* sufficient to establish a conception and a reduction to practice of the invention.

3. SAME—SAME.

Where the contents of a written report made by an inventor stands without sufficient corroboration as to time, this report cannot be considered as sufficient to establish a date of conception of the invention, even though it did in fact describe the invention.

4. SAME—DISCLOSURE IN FOREIGN PUBLICATION—WHAT NECESSARY.

A description of an invention in a foreign publication in order to defeat a patent in this country must be so clear as to enable persons "skilled in the art" to make the invention.

5. SAME—SAME—SAME.

The words "skilled in the art" include *careful workmen* who are skilful in the particular line of business in which they are engaged. The law does not warrant a construction of these words which includes only persons of high scientific attainments.

APPEAL from Examiners-in-Chief.

MULTIPLE TELEGRAPHY.

Application of Michael I. Pupin filed February 23, 1894, No. 501,092. Application of Maurice Hutin and Maurice Leblanc filed May 9, 1894, No. 510,658. Application of John S. Stone filed April 4, 1894, No. 506,316.

Mr. Thos. Ewing and *Mr. Vernon M. Dorsey* for Pupin.

Messrs. Lyons & Bissing for Hutin and Leblanc.

Messrs. Pollok & Mauro for Stone. (*Mr. W. W. Swan* of counsel.)

MOORE, *Acting Commissioner:*

This is an appeal by Hutin and Leblanc and Stone from the decision of the Examiners-in-Chief awarding priority of invention to Pupin on the following issue:

1. The method of distributing the electrical energy of periodic currents which consists in developing a number of effective currents of different frequencies independently upon a single line and conveying the several energies of these currents each selectively to a separate electrical translating device.

2. A system of distribution of electrical energy comprising a main line, means for independently developing effective electromotive forces of different frequencies thereon, branch lines connected with the main line each having its self-induction and capacity so related as to be permeable to alternating currents of a given frequency, and an electrical receiving device in each branch line.

Pupin was the first of the parties to file his application. Though made the junior party when this interference was declared, he is in fact under the present practice the senior party.

The right of Pupin to make the claims of the issue has been questioned. It is contended that Pupin's original specification is ambiguous in that it contains passages which conflict in statement. Some of these passages, it is admitted, tend to show that the invention of the issues was sought to be patented, while other passages, together with the statements of the original claims, tend to negative that fact.

It is urged, with much apparent reason, that the original claims are in fact drawn to cover a system of electrical signaling in which the *entire* circuits are "tuned from end to end," which system is said to be inoperative, and not that in which the "tuning" is confined to each separate receiving-circuit, in order that each "tuned" circuit will separately receive from the main line its own current of a certain predetermined periodicity, which is independently developed at the transmitting end of the main line, to the exclusion of all currents of different periodicities which may also be developed upon the main line, and this whether they are developed simultaneously or not.

Each of these receiving-circuits is provided with a coil of fixed self-induction and a condenser of fixed capacity capable of adjustment relatively to each other. Each branch or receiving circuit is "tuned" or "adjusted in resonance" by relatively adjusting its capacity and induction so that each receiving-circuit will be affected by a current of a certain periodicity which may be developed at the transmitting end of the main line. Transmitters are then adjusted so that they will each respectively develop upon the main line currents of different predetermined periodicities. These currents will then be separately selected each by its own receiving-circuit to the exclusion of all the other currents of different periodicities.

The Examiners-in-Chief have quoted quite fully from Pupin's original specification, and it is therefore unnecessary to again quote all of this matter at this time. They find Pupin's contentions to be well founded that there is a sufficient description

in his original specification which would enable any one skilled in the art by following this description to make and use the invention. With this view I agree. Pupin originally described the arrangement of the apparatus as follows:

I proceed to explain the operation of any branch at the receiving end by any branch at the transmitting end. Say it is required to send a message from transmitter 4 to branch *a*. It is to be understood that what follows is also true of any other branch, as *b* or *c*. The coil L has a fixed self-induction, and the condenser O has a fixed capacity. This branch is supposed to work with frequency C. Hence the operator at 4 will use a fork of frequency C, and then adjust auxiliary coil Z until the electrical periodicity of circuit Z, *z*, 1, 10, L, O, *a* G^2 is C. The operator at 4 can tell when this frequency is reached by the sound in the telephone T^2. This telephone is acted upon inductively by coil Z or any other convenient part of the circuit at the transmitting end. The sound of the telephone R calls the attention of the operator in the branch circuit *a*. This telephone is operated similarly to T^2. He answers the call by means of breaking the circuit several times in quick succession with the key 19^2. He then closes the battery-circuit which works the receiving-transmitter *r*, and the receiving instrument *u* is then ready to receive the electrical impulses from the line.

In this description the statement "Hence the operator at 4 will use a fork of frequency C, and then adjust auxiliary coil Z until the electrical periodicity of circuit Z, *z*, 1, 10, L, O, *a* G^2 is C," is pointed out and commented upon by opposing counsel. It is urged that in this is the description of tuning the *entire* circuit from end to end. I do not think that this contention is founded upon good and sufficient reason. As I read this statement it means simply that the transmitter and the receiving-circuit must be in perfect adjustment with each other. That they must be so is evident. The word "tuned" has been used in this statement and in the original claim as though it had reference to the main line; but from the description as a whole I think that it was not used in this quotation in its technical sense, nor was it used advisedly. It is urged by opposing counsel that a meaning should be placed upon this short paragraph referred to which cannot be gathered from the remaining description or showing in the drawing. The drawing does not show "tuning" means in the main line; nor is such a thing described or hinted at except in a vague way in this short passage referred to. As I have said above, I am convinced that the true meaning of this passage when taken together with the other passages of the specification and the showing of the drawing is that the transmitters and the branch receiving-circuits which respectively belong to them must be perfectly related one to the other.

In view of the fact that the larger part of the specification clearly describes the invention of the issue, it follows and I so hold that the description and showing in Pupin's case as originally filed are sufficient to support the claim of the issue and that Pupin is entitled to his date of filing—namely, February 23, 1894—as his date of constructive reduction to practice.

Pupin in his preliminary statement alleges conception of both issues in July or August, but prior to August 15, 1890, making drawings of the system at the same time, explaining the invention to others about October, 1890. Late in October or early in November, 1890, he embodied his invention in a system in which the instruments were full-sized machines, completed the same at that time, and operated it successfully in his laboratory at Columbia College, New York city, N. Y. This system determined the feasibility of the method of the interference, but did not carry out the exact method. In January, 1891, he completed a system which carried out the exact method of the interference and demonstrated that fact in that same month by successfully operating and practicing his invention in his said laboratory.

Stone in his preliminary statement alleges conception November 15, 1891; disclosure to others between November 15 and November 25, 1891, and again on November 25, 1891, and from time to time thereafter; made drawings illustrating the invention on November 25, 1891; reduced the invention to practice by setting up and operating apparatus sufficiently to show the practicability of the invention about December, 1892, and subsequently—to wit, January 14, 1893, and February 7, 1893—by another person under his direction.

Hutin and Leblanc are citizens of the Republic of France. They allege in their preliminary statements that they disclosed the invention at issue in an article published in a scientific periodical known as *La Lumière Electrique* in May 9, 1891, and in a book entitled *Etude sur les Courants Alternatifs et Leurs Applications Industrielles* in February, 1891. They also allege disclosures of the invention in patents obtained as follows: France, No. 215,901, September 3, 1891; Great Britain, No. 23,892, December 27, 1892; France, No. 234,783, December 13, 1893, and that a knowledge of said invention was introduced into the United States on January 24, 1893, by an application made by them for a United States patent on an application filed January 31, 1893, Serial No. 460,318; that knowledge of said invention was also introduced into the United States when the application involved in this interference was received by the attorney, Mr. Joseph Lyons, of Washington, D. C., some time during the second week of January, 1894.

Pupin testifies that he studied the investigations of the late Prof. Heinrich Hertz when in Yonkers, N. Y., in July or August, 1890, previous to a trip made by him during that summer and fall to Saratoga through northern New York to Montreal, and from that study he was led to conceive the invention. At that time he did not disclose it to any one. He had no opportunity to give an experimental test to these ideas until his return in October, 1890, to Columbia College, at which institution he is the professor of mechanics.

Upon his return he set about constructing and providing pieces of apparatus with which to set up a system. These acts were performed in October and November, 1890. He found that the theory underlying his conception was correct, but the result was not altogether satisfactory. In operating this system he used as transmitting means one "alternating-current machine" and one "rotating current-interrupter." The latter proved unsatisfactory, but was used at that time because he did not have two "alternating-current machines." The "rotating current-interrupter" proved so unsatisfactory in its results that another "alternating-current machine, was ordered by him and was received in January, 1891. The experiments were then continued, which were much more satisfactory.

Pupin states that he was assisted in setting up this system and providing the various apparatus to be used by one Michael J. O'Connor. He further states that he was always reluctant to speak about the invention to anybody until he had become convinced of its commercial value. He therefore did not say anything to O'Connor other than to give him directions as to setting up the apparatus. Pupin also says that though he did not tell O'Connor what his invention was or what he "was driving at" the secret could not be kept from O'Connor, as the latter in a very short time learned for himself what the invention was designed to accomplish. Pupin makes a sketch from memory (Pupin's Exhibit No. 1) and offers it in evidence. It is stated by him, to show a diagram of the system which was conceived by him in August, 1890. This sketch is a disclosure of the invention in issue. The original sketches were destroyed, as is his custom. O'Connor makes a sketch from memory, showing how the apparatus was set up by him under the direction of Pupin in October, 1890, and January, 1891. This is in evidence. Pupin's Exhibit No. 4; O'Connor diagram, March 23, 1896.) This sketch shows the invention of the issue and is quite similar to that shown in Pupin's Exhibit No. 1.

Pieces of the apparatus which were used in the original system as constructed by Pupin with the help of his assistants, O'Connor and Farrington, are in evidence and have been properly identified.

It has been stated by counsel for Hutin and Leblanc that these pieces of apparatus do not prove anything, as they are what may be found in any electrical laboratory. True, but they are the very pieces of electrical apparatus needful to construct a system as covered in count 2 of the issue by means of which the method of count 1 may be carried out.

An apparatus was set up in the room in which the testimony was taken (as per Pupin's Exhibit No. 12, O'Connor sketch No. 2) and was stated by Pupin and by O'Connor to be in all essential details like that used by them in October, 1890, to January, 1891. It differs in that an additional coil (marked S) was inserted by O'Connor of his own accord. O'Connor states of this apparatus in answer to cross-question 145 that "it works." The original apparatus set up in Professor Pupin's laboratory also was operative. The two apparatus were common, then, in the respect that they operated to the extent that each showed that the issue of the interference was covered by them.

As to the insertion of the coil S, O'Connor testifies:

Cross-question 106. Was such a coil always used when the apparatus was working?

Answer. I cannot remember whether we had an extra coil in there, or had a larger coil in place of one of the others.

In view of the fact that this coil seems necessary in order that the apparatus should "work" and that the original apparatus "worked," the reason above given by O'Connor for this apparent change seems to be a reasonable one.

Attention is called to the fact that in the apparatus used by Pupin the receiving-telephones differ very materially in size and in other respects. It is therefore contended that they were specially constructed to respond to one note stronger than to another note, and this would be the effect whether the receiving-circuits were resonant or not. This reasoning is well enough as far as it goes, but it does not go far enough. Pupin's record shows, if it shows anything, that the receiving-circuits were capable of being "tuned" or "adjusted to resonance" and that they were so "tuned" or "adjusted to resonance" as to be responsive to a current of a certain periodicity. This is the invention, and the method and system defined by the issues which cover the invention are shown to be operative if these conditions be present, the size of the telephone-receivers to the contrary notwithstanding. I am therefore of the opinion that the fact that the telephone-receivers differ in size does not show that the system operated by Pupin is devoid of the invention.

The Examiners-in-Chief have quoted quite largely from O'Connor's deposition on pages 9, 10, and 11 of their decision. It is unnecessary to repeat the same here. Suffice it to say that it is clear to me that O'Connor sufficiently corroborates the statements made by Pupin in all essential details to establish Pupin's dates of conception, disclosure, and actual reduction to practice. Pupin's evidence uncorroborated is of course insufficient, and therefore the credibility of O'Connor in this case should be carefully inquired into. If O'Connor is shown to have been incapable of observing or understanding the invention, his testimony is of no value to Pupin, whereas if he is capable it is of vital importance to Pupin in order to establish his alleged dates of conception, disclosure, and reduction to practice as early as the fall and winter of 1890–1891.

O'Connor testifies:

Cross-question 54. What was your occupation immediately before you became the assistant of Doctor Pupin?

Answer. Electrician of the college.

Cross-question 55. How long had you been the electrician for the college?

Answer. About three years electrician.

Cross-question 56. What were your duties as electrician for the college?

Answer. To see that all the lamp-circuits were in repair all through the building, battery-circuits, bell-circuits, clock-circuits for observatory and lecture-rooms.

Cross-question 57. Wherefrom did the college during that period receive its current for lighting?

Answer. Their own dynamos, and at nights from the street.

Cross-question 58. Were you in charge of the dynamos?

Answer. No.

Cross-question 59. What was your occupation immediately before you became electrician for the college?

Answer. Janitor for the college.

Cross-question 60. As assistant of Professor Pupin, were you an employee of the college, or were you paid by Professor Pupin?

Answer. An employee of the college up to July, 1891, and I was paid by Doctor Pupin after that.

O'Connor then goes on to state the manner in which he performed his duties. He shows himself to have been skilful in their performance. He was also present to assist Professor Pupin at all lectures. (Cross-question 160.)

He further testifies:

Cross-question 69. When and where did you acquire the knowledge requisite for repairing circuits in the manner you have described?

Answer. With different firms in New York city, in 1882 and 1883—parts of 1882 and 1883—and 1885.

Cross-question 70. What was the business of those firms, and in what capacity were you employed by them?

Answer. In 1882 and 1883, bell-wiring; 1885, electric-light wiring.

Cross-question 71. Are you still an employee of Columbia College?

Answer. No.

Cross-question 72. When did you leave Columbia College?

Answer. I left the employ of the college in July, 1891.

Cross-question 73. And did you since that time remain in the employ of Doctor Pupin?

Answer. No.

Cross-question 74. When did you leave the employ of Doctor Pupin?

Answer. November, 1892. I'll make that the first week in December. I worked off and on with him since that time.

He goes on to say that he knew nothing about periodicities or their effect in 1890. He further testifies:

Cross-question 111. How early did you learn about periodicities and their effects?

Answer. In 1891 I took the one-year course in Columbia College in electrical engineering. I commenced it in the fall of 1891.

Cross-question 112. And finished it?

Answer. In June, 1892.

Question 52. Did you learn for what purpose Professor Pupin thought to use the apparatus about which you have testified?

Answer. I thought it was for mutiplex telegraphy, but he did not tell me so at the time. I found that out myself.

Question 53. How early did you find it out?

Answer. In two or three weeks after the apparatus had been working, which was in 1890.

Cross-question 146. Did Professor Pupin at any time tell you that the apparatus which you had set up for him in 1890, and afterward changed in 1891, was meant to illustrate a multiplex telegraph.

Answer. Professor Pupin did not tell me during 1890 or 1891—or up to the latter part of 1891—that the apparatus was intended to illustrate multiplex telegraphy. I found that out myself; but later on—I believe it was 1892 or 1893—he told me then that the apparatus was meant for multiplex telegraphy.

Cross-question 147. How did you find out yourself, before Professor Pupin told you, that the apparatus was intended to illustrate a multiplex telegraph?

Answer. During my year's course at Columbia College we had lectures from Professor Crocker on telegraphy, and then it occurred to me why this apparatus that Professor Pupin had set up would not answer for that purpose. I spoke to one or two of my classmates about the matter, and told them that I thought it would be a good idea to use it for that purpose; but when I explained to them how it worked, they told me I was behind the times; that Professor Pupin evidently had that in mind when he had that apparatus made. So I never said anything to the professor about it until later—I cannot remember the date.

Cross-question 148. About what time during your course in electrical engineering, which, as I understand it, began in October, 1891, and terminated in June, 1892, did you, as you say, speak with your classmates about this matter?

Answer. I think it was during February or March, 1892, that I spoke to my classmates about the matter.

He explains apparent contradiction in answer to cross-question 149 that—

I stated in question 52 that I found out for myself that the apparatus was for multiplex telegraphy. I meant that as far as I was considered myself. I thought it would do for that purpose, but not knowing much about the subject, and not placing any reliance in what I thought about it personally, I did not mention it to anybody, and it was only after I heard the lectures from Professor Crocker, that I felt confident that my first thoughts about the apparatus was confirmed, and I felt safe in mentioning the subject to others, without being laughed at for my pains.

I am convinced by the above testimony that O'Connor has clearly shown that his evidence in this case is entirely credible. He was not a novice in matters pertaining to practical electricity. If he was, it is inconceivable that he could have given satisfaction to the college authorities or to Professor Pupin. He assisted Pupin in rigging apparatus in his laboratory work and also in his lectures, of which he delivered many. At a lecture an assistant must be quick-witted and have a considerable degree of skill in operating the apparatus used.

It is not fair to brand O'Connor by the simple title "janitor." He did not hold that position in the fall and winter of 1890–1891. He had proven himself capable of performing a higher class of work. Besides all this I am of the opinion, and very strongly so, that the fact that O'Connor took the course in electrical engineering in Columbia College during the year of 1891–1892 malces his testimony as to what he learned and observed as to the apparatus upon which he was employed by Professor Pupin in 1890–1891 credible to a high degree. It is very reasonable, and I have no doubt that it is often the case, that a person may at a certain time observe phenomena of which he is largely ignorant at the time of its observance and which he does not well understand and after a period of study into those matters his mind will be enlightened so that it then becomes evident to him that such and such phenomena which he had previously observed and about which he knew little was in fact the very thing about which he subsequently had learned. The fact that O'Connor became a different man mentally after the completion of his course in electricity at Columbia College did not change one iota the invention made by Pupin in 1890–1891 and which he (O'Connor) had then seen and "worked." O'Connor because of his better education was then able to more thoroughly appreciate and to understand an invention which he did not at first fully comprehend.

O'Connor is far above the class of witnesses upon whom it was necessary to rely for disclosure and whose testimony for that purpose was rejected by the court of appeals in *Eastman* v. *Houston*, (95 O. G., 2064.)

The testimony of Pupin is worthy of belief. It is corroborated by the testimony of O'Connor, which is entirely credible.

I read Pupin's record as proving for him a date of conception not later than November, 1890, and a reduction to practice not later than January, 1891. Witnesses Wetzler, Farrington, and Chapman also corroborate the testimony of Pupin as to his further experiments pertaining to matters relating to the invention at issue and to its further practical operation. Wetzler, the editor of the *Electrical Engineer*, witnessed the operation of the systems at Columbia College in company with others on June 4, 1894, and described the same and published it in an article in the *Electrical Engineer* on June 13, 1894. A copy of said article is in evidence.

Stone states, as does Pupin, that his attention was first attracted to the subject of electrical resonance through the researches of Doctor Hartz. He testifies that he was led to conceive the invention on learning the contents of a letter written on November 15, 1891, by Mr. Gardiner S. Hubbard, of Washington, D. C., to his sister, Miss Stone. This letter, with the postmarked envelop used, is in evidence and is properly identified. Stone states that it was not much more than a day after its receipt that he conceived the invention—namely, on or about November 16, 1891.

Stone then states that on November 25, 1901, he wrote a letter to Mr. Hubbard and inclosed a report, each disclosing the invention. A letter from Mr. Hubbard, properly identified, acknowledging the receipt of this letter and report is in evidence.

The letter and report to Hubbard could not be found; but the "original draft" of the report has been placed in evidence, as is also a report made by Stone to Mr. H. V. Hayes, the electrical engineer of the American Bell Telephone Company. This report to Hayes is properly identified.

I am of the opinion that the report of Stone to Hayes, dated January 2, 1893, discloses the invention of the issue.

It is contended that it does not describe the invention, for the reason, as stated by Doctor Kennelly, that the feature of "simultaneous generation" and "simultaneous transmission of multiperiodic currents on the line" is not to be found therein.

As I read the deposition of Doctor Kennelly he admits that the purpose of the invention disclosed in the report is for the selective transmission of call-signals one at a time, but insists that it is not for the selective transmission of call-signals simultaneously.

I am of the opinion that the issues are not limited to "simultaneous generation" or "simultaneous transmission." This opinion is strengthened by the depositions of Pupin and Doctor Cross. Stone certainly describes a system in which are several receiving-circuits, and therefore inasmuch as he distinctly describes and shows how a receiving-circuit may be "tuned" in order that it will separate from the main line and receive a current of a certain periodicity it follows that more than one tuned receiving-circuit was contemplated by Stone in these reports.

The report to Hayes of January 2, 1893, being fully identified, is sufficient to show a conception and disclosure to others on the part of Stone not later than January 2, 1893. After very carefully considering the history of the "original draft" of Stone's report to Hubbard, November 25, 1891, I am constrained to hold that it cannot be admitted for the purpose of evidence in this interference. The disclosure of this "original draft" in 1891 depends, in my opinion, wholly upon the unsupported testimony of the writer, Stone. This being the case, it cannot be considered. The "original draft" and its contents have not been satisfactorily identified by any witness. Its authenticity rests wholly upon the unsupported testimony of Stone.

I have carefully considered the deposition of Mr. Hubbard, who is the only corroborating witness for Stone, as to the nature of the contents of the report sent by Stone to Hubbard in 1891. As I read his testimony I am constrained to hold that it is not sufficient to properly support Stone's testimony as to what said report of 1891 disclosed. It is true that in the report to Hayes the letter and report to Hubbard of November, 1891, are referred to, and it is argued by counsel for Stone that it is inconceivable that Stone would make false quotations. It is argued that the report to Hayes was made more than a year after his communications to Hubbard, with necessarily no knowledge of this interference, as additional reasons why false quotations could not have been made.

That it is inconceivable that Stone would make false quotations in his report to Hayes is admitted; but nevertheless, though unfortunately for Stone his testimony as to the contents of the report of November 28, 1891, stands without sufficient corroboration. The contents of this report are known to the world only upon Stone's, the writer's, unsupported testimony. To consider this report as an evidence of disclosure, if it did in fact disclose the invention, would be contrary to the rules of evidence, and it must therefore be disregarded.

Stone made another report to Mr. Hayes on May 17, 1893, marked "Stone's Exhibit Report to Hayes, May 17, 1893." This is in evidence. This report discloses the invention. Following this report came his suggestions for the specification, dated June 26 and July 8, 1893. These were sent by Stone to Hayes and by Hayes to one Lockwood, who used them in drawing up the specification to file with the application for a patent. The application was filed April 4, 1894.

From Stone's record of work and from the nature of the invention I do not think that he can be successfully charged with lack of diligence in filing his application. As I view it, however, this question is unimportant. My conclusions from Stone's proofs are that his proved date of conception and disclosure is not later that January 2, 1893, that he never actually reduced the invention to practice, and that he was diligent in making a constructive reduction to practice by filing his application on April 4, 1894.

The earliest date of disclosure alleged by Hutin and Leblanc is February, 1891; but I find nothing in the record to support the same. The next alleged date is May 9, 1891. In support of this contention there is placed in evidence an "Exhibit Translation of a portion of Hutin & Leblanc's Article of May 9, 1891," which was published by them in the periodical entitled *La Lumière Electrique*. This article points out the analogy between the science of acoustics and of electricity as to resonance. It contains certain formulæ. It then describes a main circuit A, arranged in the neighborhood of which are several branch circuits B_1 B_2 to B_n. Each of these branch circuits is described as having a coefficient of self-induction L_1 L_2 to L_n, and in each of which are placed condensers of certain capacities c_1 c_2 to c_n. It is then stated that a current of a certain intensity is caused to pass through the circuit A. The article then concludes with the following statement:

We may undertake to so arrange matters that the waves of the period T be transmitted to the circuit B_1, the waves of the period T/k to the circuit B_2. * * *

For this purpose we have only to arrange the capacities c_1 c_2, &c., in such manner that we have

$$c_1 = \frac{T^2}{4\pi^2 L_1},\quad c_2 = \frac{T^2}{4\pi^2 k^2 L_2},\quad c_3 = \frac{T^2}{4\pi^2 k^4 L_3}\quad * * *$$

This is a property of which we shall study the applications to the simultaneous transmission of selective signals over the same line.

The fact that the means that can be used for developing currents of different periodicities and the receiving devices (telephone-receivers) are not shown or mentioned in this article I do not think is important, for the reason that each of these devices was well known long before 1891 in the art and could be easily supplied by one skilled in the art. The fact that it is said that currents of certain periodicity are developed is enough. This statement, to my mind, is sufficient, and the objection that no *means* are shown is not well taken.

This article is insufficient to be relied upon for a disclosure and completion of this invention, for the reason that it lacks the necessary information for one skilled in the art to have in order that he might make and use a system such as defined in the issues. It is not stated how Hutin and Leblanc were to "arrange matters." How the matters were to be arranged is the key to this invention.

This article has been explained by Doctor Kennelly. A drawing is in evidence which is made by Doctor Kennelly from his understanding of the article. It is clear, however, leaving out of consideration altogether that Doctor Kennelly knew of the invention when he made the sketch, that he has read into the article certain vital features which he says necessarily must be implied, but which he constructively admits are not explicitly and distinctly described in the article.

The article may very easily be deemed sufficient for a man like Doctor Kennelly after studying the same to make the invention. Pupin only needed a study of Doctor Hertz's researches. Stone needed only the same study and the letter from Mr. Hubbard. So, too, Doctor Kennelly only needed this little article to enable him to conceive and complete the invention.

The law on the sufficiency of disclosure of patents and printed publications is well settled.

As stated by Commissioner Mitchell in *Deprez and Carpentier* v. *Bernstein* v. *Hunter* v. *Gaulard and Gibbs*, (54 O. G., 1711:)

If a patent or printed publication, foreign or domestic, were evidence of conception only, the law would extend to it that tolerance and generosity which are extended to private drawings and descriptions representing the inceptive stages of an invention. It is because a patent or a printed publication is evidence, when it is evidence at all, of a perfected invention, that it is required to speak in unequivocal language, and fully, clearly, and exactly describe the invention against which it is urged, whether as a bar to a patent granted or as a basis for a patent asked.

In *Woven Wire Mattress Company* v. *Whittlesey* (8 Biss., 23,) it is said:

There is one further objection that is urged to the foreign testimony which I ought to notice, and that is, that the law requires that the description in foreign publications in order to defeat a patent in this country should be sufficiently definite so that a person of ordinary skill could construct the machine from the descriptions in the foreign publications.

The words "skilled in the art" in my opinion include *careful workmen* who are skilful in the particular line of business in which they are engaged. I do not think the law warrants a construction of those words which includes only persons of high scientific attainments.

In *Plimpton* v. *Malcolmson*, 1876, (L. R. 3 Ch., 531,) and *Jessel*, (M. R., 568,) cited in *Robinson on Patents*, (Vol. II, p. 78,) it is said:

Now what is the meaning of it being a sufficient specification? Upon that there has been a very great deal of authority. Judges have stated it in different ways, no doubt, but I do not think there is much difference in substance. In the first place, it is plain that the specification of a patent is not addressed to people who are ignorant of the subject-matter. It is addressed to people who know something about it. But then there are various kinds of people who know something about it. If it is a mechanical invention, as this is, you have, first of all, scientific mechanicians of the first class—eminent engineers; then you have scientific mechanicians of the second class—managers of great manufactories, great employers of labor, persons who have studied mechanics—not to the same extent as the first class, the scientific engineers, but still to a great extent—for the purpose of conducting manufactories of complicated and unusual machines, and who therefore must have made the subject a matter of very considerable study; and in this class I should include foremen, being men of superior intelligence, who like their masters would be capable of invention, and like the scientific engineers would be able to find out what was meant even from slight hints, and still more from imperfect descriptions, and would be able to supplement, so as to succeed even from a defective description, and even more than that, would be able to correct an erroneous description. That is what I would say of the two first classes, which I will call the scientific classes. The other class consists of the ordinary workman, using that amount of skill and intelligence which is fairly to be expected from him—not a careless man, but a careful man, though not possessing that great scientific knowledge or power of invention which would enable him, unaided, to supplement a defective description or correct an erroneous description. Now, as I understand, to be a good specification it must be intelligible to the third class I have mentioned, and that is the result of the law. It will be a bad specification if the first two classes only understand it, and if the third class do not. I do not think, when the cases come to be examined, there is really any difference between the judges on this point. Their language differs, but I do not think the cases differ.

I do not think the disclosure in the *La Lumière Electrique* article measures up to the standard required by the law. Hutin and Leblanc explicitly state in their last paragraph that "this is a property of which we *shall study* the application, etc."

For the same reasons above stated I am of the opinion that the French patent of 1891 to Hutin and Leblanc is defective in order to give a disclosure of the invention of the issue. This patent was cited by the Examiner during his *ex parte* consideration of the application of Stone and Pupin against the claims of the issue in their application and was formally withdrawn by him as a reference, "for the reason that it does not *show* a condenser in the receiving branches."

This action of the Examiner was deliberately made after a consideration for a period of some twenty-four days of the French patent as to whether or not it disclosed the invention of the issue claimed by Stone and Pupin. Counsel for Hutin and Leblanc say with respect to this action of the Examiner:

That it does not *show* condensers in the receiving branches is quite evident; a glance at the drawing will prove this; but that for that reason there are no condensers in the receiving branches does not logically follow. The Examiner evidently looked at *the drawing* of the French patent *and did not look* at the description; for he withdrew the French patent as a reference and said that it had no selective action because it did "*show*" a condenser in the receiving branches.

Because the Examiner in his letters to Stone and to Pupin used only the word "show" is no reason to my mind for charging the Examiner, the expert of this Office, with neglect of duty. It is inconceivable that the Examiner could have done nothing but *look* at the drawing for a period of twenty-four days to discover that a condenser was not in the receiving-circuit when from a mere glance this fact is apparent. The Examiner took time (twenty-four days) to make up his mind. He undoubtedly studied the description carefully. It would have been neglect of his plain duty if he had not done so. I see no force in this contention. Doctor Kennelly admits that if there was nothing in the French patent but the drawing he would say that the system therein cannot work selectively. Doctor Kennelly contends that this patent has a system which demands condensers for the receiving-circuits, and therefore they must be there.

Here, as with the article of May 9, 1891, Doctor Kennelly gathers enough to be able to invent the subject-matter of the issue; but I am of the opinion that neither disclosure is sufficient under the law. A person of ordinary skill in the art could not from the description in *La Lumière Electrique* or in the French patent of 1891 construct a system such as is covered in count 3 to carry out the method of count 1.

In answer to interrogatory 5 Maurice Leblanc makes answer as follows:

The opinion of Doctor Cross is erroneous. Our invention was not at all to have different specifications than the French patent. I only gave in the English patent new details of construction, and Mr. Hutin and I knew after the English patent was given that there was a difference, but it was too late to change it. Neither I or Mr. Hutin understood English. It was a patent agent who took the English patent, and the difference was only noticed when it was too late—when it was already perfected. I state that the whole technique of the invention is given in the French paper *La Lumière Electrique*. I do not remember the date exactly, but I believe it was in May, 1891. Our idea and plan of the invention is in that paper much more than the French patent, and certainly more than the English patent.

It is stated with reference to this answer by the counsel for Hutin and Leblanc:

From this it appears that Hutin and Leblanc did not consider the English patent to be a correct representation of what they intended it should represent. * * * They recognized that the English patent did not represent their invention.

It will be noticed that in the last sentence of the first paragraph Leblanc puts the *French patent* under the same ban as the *English patent*, though possibly to a lesser degree.

It is the opinion of the lower tribunals that the French patent to Hutin and Leblanc of March 5, 1894, is a full and complete disclosure of the invention at issue, and with this opinion I concur.

To recapitulate, I find that Pupin has proved conception and disclosure not later than November, 1890, actual reduction to practice not later than January, 1891. Pupin was the first to file, February 23, 1894. Stone has proved conception and disclosure not later than January 2, 1893. He never made an actual reduction to practice, and he was the second to file on April 4, 1894, and was diligent in so doing.

Hutin and Leblanc have proved completion of invention and disclosure no earlier than March 5, 1894. They were the last to file.

I agree with the finding of the Examiners-in-Chief that Pupin was the "first to conceive the invention, the first to constructively reduce it to practice, and the only one to actually reduce it to practice." Priority of invention is therefore awarded to Pupin.

The decision of the Examiners-in-Chief is affirmed.

Patents Nos. 705,548 to 706,001.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 5. TUESDAY, JULY 29, 1902. PRICE—$5 per year.

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Patents	454—No.	705,548 to No. 706,001, inclusive.
Designs	8—No.	35,982 to No. 35,994, inclusive.
Trade-Marks	39—No.	28,664 to No. 28,702, inclusive.
Labels	20—No.	9,821 to No. 9,840, inclusive.
Prints	1—No.	557.
Reissues	1—No.	12,018.
Total issue	518	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	4		Nebraska	4	
Alaska Territory			New Hampshire	1	
Arizona Territory			New Jersey	18	6
Arkansas	1		New Mexico Territ'y	1	
California	8	1	New York	74	21
Colorado	7	1	North Carolina	2	
Connecticut	9	5	North Dakota	1	
Delaware			Ohio	35	5
District of Columbia	5		Oklahoma Territ'y		
Florida	1		Oregon	5	
Georgia	6		Pennsylvania	53	
Hawaii Territory			Porto Rico		
Idaho	1		Rhode Island	5	
Illinois	21	4	South Carolina		
Indian Territory	1		South Dakota		
Indiana	14		Tennessee	1	1
Iowa	8	1	Texas	4	1
Kansas	5	1	Utah	2	
Kentucky	3		Vermont		
Louisiana	3		Virginia	3	
Maine	4		Washington	3	
Maryland	5	1	West Virginia	4	
Massachusetts	31	4	Wisconsin	8	
Michigan	10		U. S. Navy		
Minnesota	3	2	U. S. Rev. Marine		
Mississippi	1				
Missouri	11	2	Total to citizens of the United States	325	56
Montana	2				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Austria-Hungary	1		Netherlands	1	1
Barbadoes			Newfoundland		
Belgium			New South Wales		
Bermuda			New Zealand	1	
Brazil	3		Norway		
Canada			Peru		
Cape Colony			Portugal		
Chile			Russia	2	
China			Santo Domingo	1	
Cocos Island			Scotland	1	
Colombia			South African Republic		
Cuba			South Australia		
Denmark	1		Spain		
Egypt			Sweden		
England	17	1	Switzerland	3	
France	5		Uruguay		
Germany	23	2	Victoria	1	
Gautemala			Western Australia		
India					
Ireland			Total to citizens of foreign countries	62	4
Italy	1				
Japan	1				

Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 21, 1902.

This Office has been advised by the Secretary of the Interior of the disbarment of the following attorneys from practice before the Department or any Bureau thereof:

Americus V. Spalding, Burlington, Vt., June 18, 1902; Jacob R. Deckard, Sandusky, Ohio, July 15, 1902; George W. Grim, Cleveland, Ohio, July 17, 1902.

C. M. IRELAN,
Chief Clerk.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 21, 1902.

This Office has been advised by the Secretary of the Interior that the following Department orders were rescinded July 19, 1902:

November 9, 1901, disbarring Benjamin C. Girdler, of Grand Rapids, Mich.; December 17, 1901, disbarring William M. Duffy, of Point Pleasant, W. Va.; January 28, 1902, disbarring Frederick T. R. Gruett, of Newark, N. J.; May 10, 1902, disbarring John Wainwright, of Wilmington, Del.

C. M. IRELAN,
Chief Clerk.

Money by Mail.

Money sent by mail to the Patent Office will be at the risk of the sender. Letters containing money should be registered.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business July 22, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	In arrears—Under one month.			
253	X. Carriages and Wagons	July 3	July 10	73
105	II. Farm Products, etc., Lubricators, Presses, etc.	July 2	July 7	186
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	July 1	July 7	81
245	I. Tillage, etc., and Fences	June 23	June 24	298
90	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	June 23	June 18	353
	Between one and two months.			
281	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	June 16	June 26	366
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	June 16	June 23	247
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	June 13	July 3	259
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	June 12	June 23	171
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	June 11	July 9	161
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc	June 10	June 28	314
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	June 9	July 5	300
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 9	July 1	250
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 9	June 23	241
260	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	June 9	June 20	460
218	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	June 7	June 24	257
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	June 6	June 27	244
253	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	June 4	July 8	189
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	June 2	June 23	259
102	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 2	June 12	304
128	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	May 31	June 24	221
123	XXIX. Wood-Working Machines, Coopering and Roofing.	May 29	June 12	230
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	May 28	June 18	210
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	May 27	June 19	323
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	May 26	June 21	356
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	May 26	June 10	378

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	Between two and three months.			
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	May 20	May 14	356
245	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	May 17	May 17	447
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	May 12	May 21	423
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 8	May 23	750
248	XVIII. Steam-Engineering, etc	May 7	May 20	455
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 6	May 1	508
109	XXII. Fire-Arms, Ordnance, Navigation.	May 1	June 9	211
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	Apr. 26	May 16	519
	Between three and four months.			
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	Apr. 21	Apr. 21	618
91	XVI. Telegraphy and Telephony	Apr. 19	Apr. 28	325
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	Apr. 12	Apr. 15	622
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 28	June 9	497

Total number of applications awaiting action.....11,856

Under one month.			
*Designs	July 11	July 16	40
†Trade-Marks	June 27	July 18	130
‡Labels and Prints	July 17	July 19	12

Photographic Copies of Drawings.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 1, 1902.

The Patent Office is now prepared to furnish black line on white ground copies of any unbound drawing, foreign or domestic, which may be in its possession, instead of the blue-prints heretofore furnished. Only the 7x11 (patent) size and the full or 10x15 size prints will hereafter be furnished, at 15 and 25 cents per sheet, respectively.

Copies of drawings of pending, abandoned, forfeited, or informal cases and of caveats may be had in either of the above-named sizes except when they are to be certified, in which case they must be the 10x15 size.

Copies of United States or foreign patent drawings will be made only in the 10x15 size.

When ordering copies of foreign patent drawings, either the serial number of the applications in which they were cited as references or the class and subclass where they may be found must be given. The title of the invention or the number of the division will not be sufficient. Bound volumes cannot be used for making prints. Failure to give the fullest data whereby the mounted drawing may be found will result in delay and unnecessary correspondence.

The work will be much facilitated if a separate order be made for each drawing. The Office will furnish, gratuitously, blanks for this purpose on request.

As a result of abolishing the small (5x8) size the requirement that duplicate prints must be ordered in certain cases will no longer be enforced. The requirement that less than all the sheets of a case will not be printed unless there is already a full set in the file will not be insisted upon; but applicants or attorneys are strongly urged to file a set of prints or order them to be made by the Office at the time of filing an application. Such procedure will save delay later if correction of the drawing is desired or required.

F. I. ALLEN,
Commissioner.

PATENTS

GRANTED JULY 29, 1902.

705,548. ADJUSTABLE WINDOW-SHADE AND CURTAIN-POLE HOLDER. GEORGE T. ASHTON and JESSE P. BAINTER, Pittsburg, Pa. Filed Aug. 11, 1900. Serial No. 26,608. (No model.)

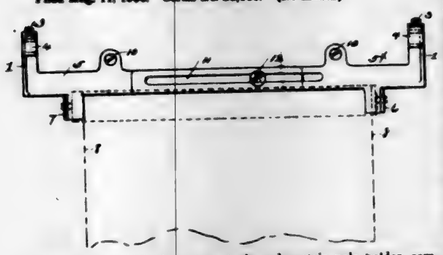

Claim.—A combined window-shade and curtain-pole holder, comprising the supporting-brackets 1 with adjustable strips held thereon, and integral extension 5ˣ on one of said brackets and an extension 5 on the other, which is adjustably held against the face of an offset portion of said extension 5ˣ, which offset portion 5' terminates in a shoulder 14, the outer face of the extension 5 being flush with the outer face of the portion of the extension between said shoulder and the bracket 1, and integral shade-holding brackets 6 on the extensions, as set forth.

705,549. SIGNAL DEVICE. HERBERT S. BALLEY, Bethlehem, Pa. Filed Apr. 10, 1902. Serial No. 102,161. (No model.)

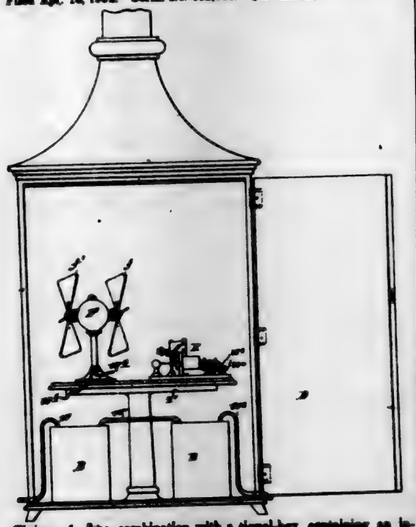

Claim.—1. The combination with a signal-box, containing an instrument of a signaling system, of means for producing a current of air, located and arranged, substantially as described, whereby said current of air will be caused to circulate over and about said instrument.

2. The combination with a signal-box, containing an instrument of a signaling system, of means for producing a current of air, located within the signal-box, and arranged substantially as described, whereby said current of air will be caused to circulate over and about said instrument.

3. The combination with a signal-box, containing an instrument of a signaling system, of a fan and means for operating it located and arranged substantially as described, whereby said current of air will be caused to circulate over and about said instrument.

4. The combination with a signal-box, containing an instrument of a signaling system, of a fan and means for operating it, located within the signal-box, and arranged substantially as described, whereby said current of air will be caused to circulate over and about said instrument.

5. The combination with a signal-box, containing an instrument of a signaling system, of an electric motor-fan located and arranged as described, together with means for operating it located and arranged substantially as described, whereby said current of air will be caused to circulate over and about said instrument.

6. The combination with a signal-box, containing an instrument of a signaling system, of an electric motor-fan located in the signal-box with said instrument, and arranged as described, together with means for operating it located and arranged substantially as described, whereby said current of air will be caused to circulate over and about said instrument.

7. A semaphore signaling device composed of a post and signal-box provided with signaling devices, in combination with an electric fan-motor, located within said signal-box and arranged as described, together with suitable connections and energizing apparatus, all arranged and combined substantially as and for the purpose set forth.

705,550. POLISHING-MACHINE. MILTON H. BALLARD, Lynn, Mass., assignor to George W. Emerson & Co., Lynn, Mass. Filed Jan. 13, 1902. Serial No. 89,435. (No model.)

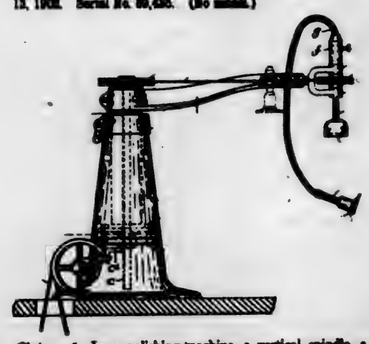

Claim.—1. In a polishing-machine, a vertical spindle, a support therefor, and means for revolving it, combined with a flexible shaft, clutch mechanism interposed between said spindle and shaft, and a polishing tool or pad connected to the extremity of said flexible shaft, substantially as described.

2. In a polishing-machine, a vertical spindle, a support therefor, and means for revolving it, combined with a flexible shaft, a slip-clutch mechanism interposed between said spindle and shaft composed of two crown ratchet-toothed members, one of which is connected to the spindle and the other to the shaft, a spring for holding said members in engagement and means for disengaging them, and a polishing tool or pad connected to the extremity of said flexible shaft, substantially as described.

3. In a polishing-machine, a vertical spindle, a support therefor and means for revolving it, combined with a flexible shaft, a clutch mechanism interposed between said spindle and shaft comprising two crown ratchet-toothed members, one of which has an annular flange, an eccentric-pin

engaging said flange and means for turning it, and a polishing tool or pad connected to the extremity of said flexible shaft, substantially as described.

4. In a polishing-machine, a vertical spindle, a support therefor, and means for revolving it, combined with a flexible shaft, a flexible tube inclosing it, a tubular case attached to the end of said flexible inclosing tube, a spindle contained in said tubular case, which is connected to said flexible shaft, said spindle projecting from said case, and a polishing tool or pad mounted on the projecting end of said spindle, substantially as described.

5. In a polishing-machine, a vertical spindle bearing a belt-pulley, an arm bearing said spindle, a vertically adjustable and rotatable bar to which said arm is secured, a stand or support for said bar, a shaft passing centrally through said bar having a spineway, a belt-pulley to which said shaft is spined, a belt-pulley secured to the upper end of said shaft which occupies a position in a horizontal plane with the belt-pulley on said vertical spindle, a flexible shaft connected to said vertical spindle, and a polishing tool or pad connected to the extremity of said flexible shaft, substantially as described.

6. A polishing tool or pad consisting of a circular base, a tubular spindle to which it is attached, a sixteen headed screw for holding the polishing-disk in position on said base, having a socket formed with an offset portion, to receive a pin having a corresponding offset portion by which said screw is turned, substantially as described.

705,551. ICE-CREAM CAN. RICHARD BAUER, Johnstown, Pa. Filed Feb. 5, 1902. Serial No. 92,672. (No model.)

Claim.—In a device of the character described, the combination with an outer receptacle, of an inner receptacle comprising a series of vertically-arranged standards, the two rear standards being right angular in cross-section, a bottom, a series of shelves and a top, said bottom, shelves and top being of the same form and having turned edges to which are secured the said standards, a series of drawers slidably mounted on said shelves and having its rearward movement limited by the rear standards, said drawers being of less height than the spaces between said shelves to form an air-passage therebetween, substantially as described.

705,552. CASH-REGISTER. WALTER H. BELL, Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company Jersey City, N. J., a Corporation of New Jersey. Filed July 30, 1898. Serial No. 687,261. (No model.)

Claim.—1. In a cash-register, the combination with a series of keys, of a series of indicators, a key-coupler, two movable yokes and connections coöperating with the key-coupler so as to be simultaneously moved thereby and guard-plates connecting the arms of said yokes so as to extend upon both sides of the indicators to conceal the same until the operation of the keys is completed.

2. In a cash-register, the combination with a series of keys, of a series of indicators, a frame arranged to be operated by any one of said keys, levers pivoted independently of said frame but arranged to be engaged and positively operated by the same in both directions, and an indicator-guard mounted independently of said levers but arranged to be operated by the same.

3. In a cash-register, the combination with a series of operating-keys, of a key-coupler coöperating therewith, indicators, pivoted levers mounted independently of the coupler but connected thereto so as to move positively therewith and a flash arranged to be operated by said levers to hide the said indicators while the keys are being operated.

4. In a cash-register, the combination with a series of operating-keys, of a key-coupler arranged to engage and hold said keys to simultaneous movement, a series of indicators, an indicator-flash arranged to hide both sides of said indicators during the operation of the keys, and pivoted levers for operating said flash mounted independently of the coupler but coupled thereto so as to be moved positively therewith in both directions.

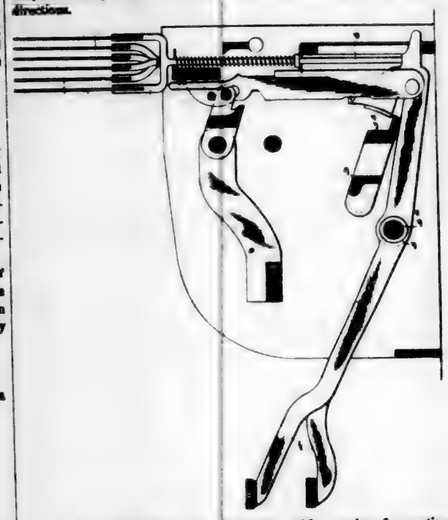

5. In a cash-register the combination with a series of operating-keys, of a series of indicators for said keys, a movable frame arranged to be coupled to said keys, two movable yokes coöperating with said frame and guard-plates connecting the arms of said yokes so as to extend both in front and back of the indicators and hide the same during the operation of the keys.

705,553. FLEXIBLE DOOR. JOSEPH S. BLAKE, Worcester, Mass., assignor to Flexible Door and Shutter Company, Worcester, Mass., a Corporation of Maine. Filed May 6, 1901. Serial No. 59,051. (No model.)

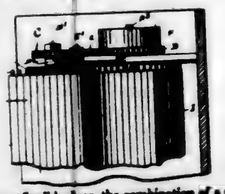

Claim.—1. In a flexible door, the combination of a shaft or spindle, a series of leaves hinged together and forming the body of the door having one edge of said door-body connected with said shaft, whereby said leaves are wound into a coil by the rotation of said shaft, of a toothed wheel, means carried by said hinged leaves for engaging said toothed wheel and rotating the same as the door is opened or closed, and an intermediate connecting mechanism between said toothed wheel and said shaft comprising a yielding member, whereby the rotation of said shaft in winding said door-body may be varied relatively to the rotation of said toothed wheel, substantially as described.

2. The combination with a shaft and a flexible door attached to said shaft, of a coiled spring having one end connected with said shaft and having its opposite end operatively connected with said door, whereby the operation of unwinding the door from said shaft will cause said spring to be wound with a uniform movement, substantially as described.

3. The combination with a shaft and a flexible door attached to said shaft, of a coiled spring carried by a wheel or drum and having one end attached thereto and having its opposite end attached to said shaft, means operated by the door in the operation of opening and closing the same for rotating said wheel or drum, substantially as described.

4. The combination of a shaft, a flexible door attached to said shaft, a coiled spring attached at one end to said shaft, a wheel or drum rotating concentrically with said shaft and attached to the opposite end of said coiled spring, and means for rotating said wheel or drum operated by the movement of the door in opening or closing the same, substantially as described.

5. The combination of a door-body composed of a series of leaves hinged together, a shaft upon which said door-body is wound, pins projecting from said leaves, a toothed wheel engaged by said pins, a pinion attached to said toothed wheel, a gear-wheel driven by said pinion and concentric with the shaft upon which the door is wound, and a yielding connection between said gear and shaft, substantially as described.

705,554. TACK-PULLER. THOMAS G. BLAKE, Vandergrift, Pa. Filed Oct. 8, 1901. Serial No. 78,013. (No model.)

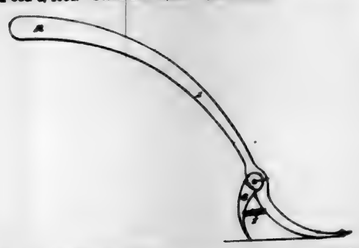

Claim.—A tack-puller which comprises a lever having an arc-shaped handle at one end thereof, and an arc-shaped portion carrying claws at its opposite end, the radius of the last-named arc being less than that of the first-named one, an arc-shaped dog formed of flat sheet metal carrying a pair of spaced lugs engaging said lever at the inner termination of the smaller arc and having a pin passed therethrough and permanently secured to said lugs, said arc-shaped dog being of such radius as will cause its free end to engage the body in which the tack is secured and have its engaging point located to the rear of the point of pivot when the claws are in engagement with the tack, and a spring secured to the said dog and the smaller arc-shaped portion of the lever, the lever moving about the said point and simultaneously therewith having a rearward movement whereby a direct vertical pull is exerted upon the tack, substantially as described.

705,555. WIRE-STRETCHER. ROBERT F. BOATRIGHT, Ex, Va. Filed July 10, 1900. Serial No. 23,147. (No model.)

Claim.—1. A wire-stretcher comprising an open hook including a stem and bill having a connecting-web, the inner faces of the stem and bill being recessed and the connecting-web being arched transversely on its inner face, and a facing including spaced members and an arched connecting-web, said facing being disposed with its spaced members in the recesses of the stem and bill and with its arched web fitted upon the arched face of the web of the hook, whereby the face is held immovably.

2. A wire-stretcher comprising a lever having a laterally-turned end adapted to engage a post and a wire-grip mounted upon the lever and comprising an open hook projecting at the same side with the laterally-turned end said hook including a stem and a bill having a connecting-web the inner face of which latter is arched from one side to the other, and a facing set into and fitting the inner faces of the stem, bill and web of the hook.

705,556. HOPPLE OR PASTURE-HALTER. HENRY A. BERTHEL, Spokane, Wash., assignor of one-half to George Lawrence Company, Portland, Oreg., a Corporation of Oregon. Filed Apr. 10, 1902. Serial No. 12,920. (No model.)

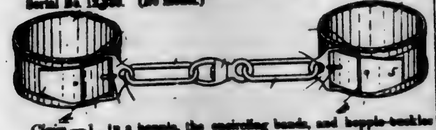

Claim.—1. In a hopple, the encircling bands, and hopple-buckles secured thereto comprising a frame-section and a tongue which passes through the free end of the encircling band, said frame-sections having formed upon their outer edges the D's in which the ends of the links are made to catch, combined with the links which unite the bands, and the swivel placed midway between the bands, and which serves to unite the inner ends of the links, substantially as shown and described.

2. In a hopple, the combination of the encircling band open at one side with the ends abutting, a buckle secured thereabout and comprising a frame with integral extension having an aperture, an anchoring device 4, secured to one end of said band, a strap secured to the other end of said band and entirely surrounding said band and engaging the tongue of the buckle, a link secured in the aperture of the extension, and a swivel connected to the said link, all substantially as herein shown and described.

705,557. ROTARY WHEEL-HARROW. ERNST BRÜCKER, Rochester, N. Y. Filed Sept. 26, 1901. Serial No. 76,663. (No model.)

Claim.—1. In a wheeled harrow, an axle, a roller-carrying frame loosely supported on the axle, a toothed roller having journals in the rear end of the frame, and means for raising the frame to lift the said roller above the ground, said means comprising a rotatable roller-shaft having bearings in arms pendent from said frame and situated in front of the toothed roller.

2. In a wheeled harrow, an axle, a roller-carrying frame loosely supported on the axle, a toothed roller having journals in the rear end of the frame, means for raising the frame to lift the said roller above the ground, said means comprising a rotatable roller-shaft having bearings in arms pendent from said frame and situated in front of the toothed roller, and the links, lever and holding-pawl situated immediately over the said roller-shaft.

3. In a wheeled harrow, an axle, a toothed roller, a roller-carrying frame loosely supported on the axle, and means for raising the frame to lift the said roller above the ground, said means comprising a rotatable roller-shaft having bearings in arms pendent from said frame, and the links, lever and holding-pawl, one of said links passing through the frame and limited as to its forward movement thereby.

4. In a wheeled harrow, the axle, the toothed roller, the roller-frame having side members loosely sleeved on the axle, the shield pivotally supported on said members, and the stops 30 to limit the fall of the shield.

5. In a wheeled harrow, the axle, the toothed roller, the roller-frame loosely supported on the axle and having side members, a bar joining said members, a gear on the axle, a gear on the roller, an intermediate gear, a case for the gears, and a stud in the case to rotatably support said intermediate gear.

6. In a wheeled harrow, the axle, the roller-frame having the side members, the rear-frame, the axle-wheels, and the gears on the axles, said frames having sleeves which together with the wheel-hubs cover the axle between its gears.

705,558. ELECTRIC CLOCK. JOSEPH BOTHNER, New York, N. Y., assignor to Simeon H. Putnam, Jersey City, N. J. Filed Oct. 16, 1901. Serial No. 78,726. (No model.)

Claim.—1. In an electric clock of the character described, the combination with the movable armature and the weighted pawl-lever, of a flexible connecter which couples them together, and a contact device actuated to close the operating-circuit by the straightening of the connecter when the said weighted arm descends.

2. In an electric clock of the character described, the combination with the movable armature and the weighted pawl-lever, of a flexible connecter which couples them together, and means for completing the operating-circuit through said magnet when the weighted lever shall have descended and straightened the connecter, whereby the retraction of the armature throws up said weighted lever.

3. In an electric clock, of the character described, the combination of the movable armature, the weighted pawl-lever, and the flexible connecter which couples the armature with that arm of said lever opposite to the weight, of the fixed contact in the operating-circuit, the movable contact in said circuit, said movable contact having a pin which is in the path of the straightened connecter, and the said circuit including a generator and electromagnet.

4. In an electric clock, the combination with the hour-arbor, the driving-arbor, the connecting-train, the ratchet-wheel on the driving-arbor, the pawl-lever and its weight, the pawl on said lever and engaging the teeth of the ratchet-wheel, the electromagnet, its movable armature, the operating-circuit including a generator and the coils of said magnet, and

the fixed and movable contacts forming terminals at a break in said circuit, of the ribbon 24, coupling together the said armature and the arm of the pawl-lever opposite to its weight, said movable contact having a part projecting into the path of said ribbon as it straightens under the influence of the descending weight of the pawl-lever.

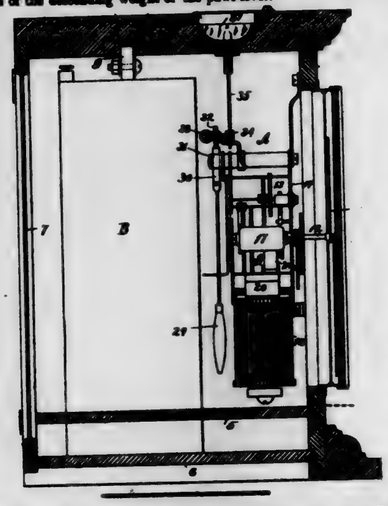

705,559. TYPE-WRITING MACHINE. THADDEUS CAHILL, New York, N. Y., assignor to James B. Lumble, B. Hilton Jackson, George Frederick Cahill, and Arthur T. Cahill, trustees. Filed Oct. 26, 1899. Serial No. 734,894. (No model.)

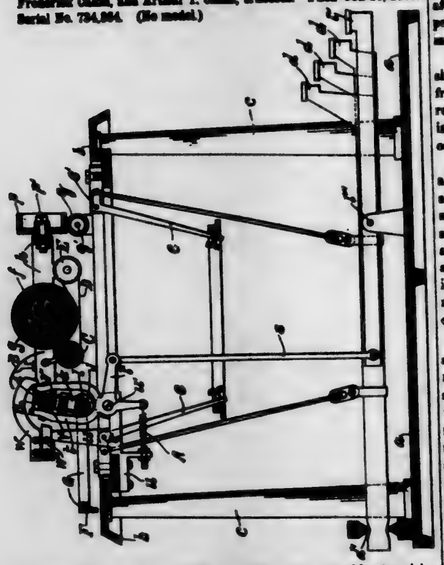

Claim.—1. In a type-writing machine and in combination, (*a*) a hinge and guide rod; (*b*) a yoke, pivoted on said hinge and guide rod, and mounted to travel longitudinally thereon; (*c*) a platen; and (*d*) a platen-carrier, pivotally connected with the yoke aforesaid, and traveling longitudinally therewith.

2. In a type-writing machine and in combination, (*a*) a hinge and guide rod; (*b*) a yoke, pivoted on said hinge and guide rod, and mounted to travel longitudinally thereon; (*c*) a platen; and (*d*) a platen-carrier, pivotally connected with the yoke aforesaid, and traveling longitudinally therewith; the whole being constructed and arranged in such a manner that the yoke aforesaid supports the platen-carrier and affords facility to the platen-carrier to shift transversely to the line of printing, and also maintains the platen constantly in the same position of substantial parallelism with the hinge and guide rod aforesaid, upon which the yoke aforesaid and the platen-carrier connected therewith, travel.

3. In a type-writing machine and in combination, (*a*) a hinge and guide rod; (*b*) a yoke, pivoted on said hinge and guide rod, and mounted to travel longitudinally thereon; (*c*) a platen; (*d*) a platen-carrier, pivotally connected with the yoke aforesaid, and traveling longitudinally therewith; (*e*) a key at the keyboard; and (*f*) means operated by said key for shifting the platen aforesaid from one printing position to another.

4. In a type-writing machine and in combination, (*a*) a platen; (*b*) a shifting, longitudinally-traveling platen-carrier, wherein said platen is mounted to rotate; (*c*) a rod mounted in the framework of the machine to lie parallel with the line of printing; (*d*) a member pivoted upon the rod aforesaid, and mounted to travel longitudinally thereon, said member being also pivotally connected with the platen-carrier, aforesaid, and serving both to permit the shifting of said platen and platen-carrier, and to maintain said platen in a position of substantial parallelism with the rod aforesaid.

5. In a type-writing machine and in combination, (*a*) a platen; (*b*) a shifting, longitudinally-traveling platen-carrier, wherein said platen is mounted to rotate; (*c*) a rod mounted in the framework of the machine to lie parallel with the line of printing; (*d*) a member pivoted upon the rod aforesaid, and mounted to travel longitudinally thereon; said member being also pivotally connected with the platen-carrier, aforesaid, and serving both to permit the shifting of said platen and platen-carrier, and to maintain said platen in a position of substantial parallelism with the rod aforesaid; and (*e*) a shifter operating to shift the platen aforesaid from one printing position to another.

6. In a type-writing machine and in combination, (*a*) a platen; (*b*) a shifting, longitudinally-traveling platen-carrier, wherein said platen is mounted to rotate; (*c*) a rod mounted in the framework of the machine to lie parallel with the line of printing; (*d*) a member pivoted upon the rod aforesaid, and mounted to travel longitudinally thereon, said member being also pivotally connected with the platen-carrier, aforesaid, and serving both to permit the shifting of said platen and platen-carrier, and to maintain said platen in a position of substantial parallelism with the rod aforesaid; (*e*) a shifter operating to shift the platen aforesaid from one printing position to another; and (*f*) a key at the keyboard controlling said shifter.

7. In a type-writing machine, the combination with a platen and a shifting, platen-carrying frame of a wheel, pivoted to the platen-carrying frame toward the front; and a longitudinal roller, whereon said wheel runs; said roller lying parallel, or nearly parallel, with the line of printing, and being mounted to turn upon its axis as the platen is shifted from one printing position to another.

8. In a type-writing machine, and in combination, (*a*) a platen; (*b*) a hinge and guide rod; (*c*) a yoke, pivoted upon the hinge and guide rod aforesaid, and traveling longitudinally thereon; (*d*) a shifting, longitudinally-traveling, carriage-frame, pivotally connected with the yoke aforesaid, and furnished with a supporting-wheel on the side opposite the yoke aforesaid; and (*e*) a roller, mounted in the framework of the machine, and having its length parallel, or nearly parallel, with the line of printing; the wheel before mentioned running upon said roller as the carriage moves longitudinally; and the roller aforesaid turning on its axis as the carriage and platen shift from one printing position to another.

9. In a type-writing machine, and in combination, (*a*) a platen, (*b*) a shifting, longitudinally-traveling, carriage-frame wherein said platen is mounted; (*c*) an oscillating member, connected to support one side of said carriage-frame, and to travel longitudinally therewith; (*d*) a rod whereby said oscillating member is pivoted, and whereon said oscillating member travels with the carriage, when the carriage moves longitudinally; (*e*) a wheel connected to the opposite side of the carriage-frame aforesaid to support the same; (*f*) a roller pivoted in the framework of the machine; said wheel running upon said roller when the carriage moves longitudinally; said roller being arranged to turn upon its axis as the carriage shifts from one printing position to another; (*g*) a key at the keyboard; and (*h*) means controlled thereby for shifting the carriage aforesaid from one printing position to another.

10. In a type-writing machine, the combination with a hinge and guide rod and a platen-carrying frame, of a yoke *k* pivoted upon said hinge and guide rod and traveling thereon; the platen-carrying frame being pivoted to said yoke.

11. In a type-writing machine, the combination, with a hinge and guide rod, of a platen-carrying frame and a yoke pivoted upon said hinge and guide rod; said yoke being pivoted to the platen-carrying frame aforesaid, and being furnished with wheels to ride upon the hinge and guide rod aforesaid.

12. In a type-writing machine, the combination, with a hinge and guide rod, of a platen-carrying frame and a yoke pivoted upon said hinge and guide rod; said yoke being pivoted to the platen-carrying frame aforesaid, and being furnished with wheels to ride upon the hinge and guide rod aforesaid; said platen-carrying frame having a wheel connected with it to support its weight in front.

13. In a type-writing machine, the combination, with a hinge and guide rod, of a platen-carrying frame and a yoke pivoted upon said hinge and guide rod; said yoke being pivoted to the platen-carrying frame aforesaid, and being furnished with wheels to ride upon the hinge and guide rod aforesaid; said platen-carrying frame having a wheel connected with it to support its weight in front; and a roller whereon the wheel last mentioned runs; said roller being pivoted in the framework of the machine with its length parallel, or nearly parallel, with the line of printing.

14. In a type-writing machine, the combination with a hinge and guide rod and a platen-carrying frame, of a yoke *k* pivoted upon said hinge and guide rod and traveling thereon; the platen-carrying frame being pivoted to said yoke; and a shifter engaging the rear of the platen-carrying frame aforesaid, to shift the platen from one printing position to another.

15. In a type-writing machine, the combination with a hinge and guide rod and a platen-carrying frame, of a yoke *k* pivoted upon said hinge and guide rod and traveling thereon; the platen-carrying frame being pivoted to said yoke; a shift-lever engaging the platen-carrying frame aforesaid to shift the platen from one printing position to another; and a key at the keyboard for controlling said shift-lever.

16. In a type-writing machine, the combination, with a hinge and guide rod, of a platen-carrying frame and a yoke pivoted upon said hinge and guide rod; said yoke being pivoted to the platen-carrying frame aforesaid, and being furnished with wheels to ride upon the hinge and guide rod aforesaid; a shift-lever lying transverse to the platen, and acting on the platen-carrying frame aforesaid, to shift the platen from one printing position aforesaid to another; and a key at the keyboard controlling said lever.

17. In a type-writing machine and in combination, (*a*) a platen; (*b*) type-bars disposed about an arc or a circle below the platen, and striking upward toward the platen to print; some, or all, of said type-bars carrying a plurality of types; (*c*) a shifting, longitudinally-traveling platen-carrier, wherein the platen aforesaid is mounted to rotate; (*d*) a rod, mounted in the framework of the machine to lie parallel with the line of printing; (*e*) a member pivoted upon the rod aforesaid, and mounted to travel longitudinally thereon, said member being also pivotally connected with the platen-carrier, aforesaid, and serving both to permit the shifting of said platen and platen-carrier, and to maintain said platen in a position of substantial parallelism with the rod aforesaid.

18. In a type-writing machine and in combination, (*a*) a platen; (*b*) type-bars disposed about an arc or a circle below the platen, and striking upward toward the platen to print, some, or all, of said type-bars carrying a plurality of types; (*c*) a shifting, longitudinally-traveling platen-carrier, wherein said platen is mounted to rotate; (*d*) a rod mounted in the framework of the machine to lie parallel with the line of printing; (*e*) a member pivoted upon the rod aforesaid, and mounted to travel longitudinally thereon; said member being also pivotally connected with the platen-carrier, aforesaid, and serving both to permit the shifting of said platen and platen-carrier, and to maintain said platen in a position of substantial parallelism with the rod aforesaid; and (*f*) a shifter operating to shift the platen aforesaid from one printing position to another.

19. In a type-writing machine and in combination, (*a*) a platen; (*b*) type-bars disposed about an arc or a circle below the platen, and striking upward toward the platen to print; some, or all, of said type-bars carrying a plurality of types; (*c*) a shifting, longitudinally-traveling platen-carrier, wherein the platen aforesaid is mounted to rotate; (*d*) a rod mounted in the framework of the machine to lie parallel with the line of printing; (*e*) a member pivoted upon the rod aforesaid, and mounted to travel longitudinally thereon, said member being also pivotally connected with the platen-carrier, aforesaid, and serving both to permit the shifting of said platen and platen-carrier, and to maintain said platen in a position of substantial parallelism with the rod aforesaid; (*f*) a shifter operating to shift the platen aforesaid from one printing position to another; and (*g*) a key at the keyboard controlling said shifter.

705,560. WARDROBE-TRUNK. JOHN J. CARMAN, Rochester, N. Y., assignor to Henry Lilly & Company, Rochester, N. Y., a Corporation of New York. Filed Feb. 8, 1901. Serial No. 46,499. (No model.)

Claim.—1. In a trunk, the combination with a casing having a bank and a top portion, a bar extending beyond the forward edge of the top, side portions extending outwardly at their lower ends and a front panel arranged at the outer edge of the base and extending between the projecting edges of the side portions, of a lid or door consisting of a panel having a top and side portions equal in width to the extensions on the sides and base of the casing and adapted when in the closed position to form a flat surface in the plane of the front panel of the casing and hinges between the door and one side of the casing arranged with their pintles extending in rear of the projecting edge of the base and perpendicular thereto.

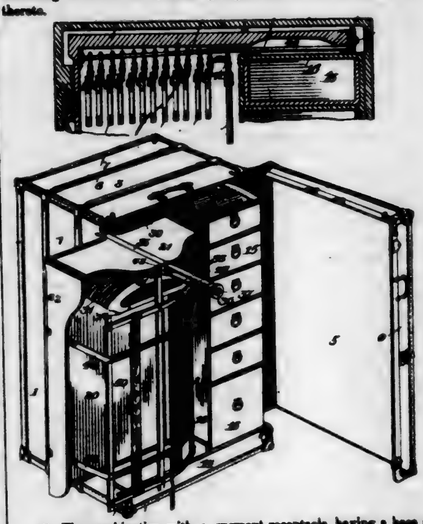

2. The combination with a garment-receptacle having a base and the side portions and open at the front and guides on one of the sides of the receptacle, of a carriage movable on the guides, a casing pivoted to the carriage and capable of swinging outwardly through the front of the receptacle when the carriage is moved forwardly on the guides and a door on the receptacle engaging the casing when the latter is in closed position.

3. The combination with a garment-receptacle having the open front, guides on one of the sides of the receptacle and a movable carriage supported on the guides, an inner casing arranged in the receptacle and pivotally mounted on the carriage and means for limiting the swinging movement of the casing.

4. The combination with a garment-receptacle having the open front, guides on one of the sides of the receptacle and a movable carriage supported on the guides, of a casing arranged upon the interior of the receptacle, pivotal connections between the casing and carriage, and means engaging the guides to prevent the swinging of the casing excepting when the latter is moved out of the receptacle.

5. The combination with a garment-receptacle having the open front, guides on one of the sides of the receptacle, a carriage movably mounted on the guides, and ways coöperating with the guides and hinged to the carriage, of an inner casing supported on the ways, and a stop arranged to limit the outward movement of the casing after the ways have left the guides.

6. In a trunk the combination with an exterior casing, and an interior shell or casing, of guides arranged upon one of the parts, a carriage mounted in the guides having the hinged extensions operating in said guides and connected with the opposite part, whereby the casing may be revolved when the carriage is drawn forward on the guides.

7. In a trunk the combination with an exterior casing or body, an interior shell or casing provided with ways, and guides arranged upon the body, of a carriage movable in the guides, a stop for limiting the outward movement of the carriage, and a hinged connection between the ways and the carriage, said ways being adapted to coöperate with the guides when the carriage is moved inwardly, and means for limiting the swinging movement of the casing on its hinge.

8. In a garment-receptacle the combination with an exterior casing or body, of an interior shell or casing having a bank, movable connections between the latter and one side of the outer casing, of a bar connected to the inner casing and a series of garment-supports arranged beneath the bar.

9. In a garment-receptacle the combination with an exterior casing or body, a shell or casing having the bank, and movable connections between the latter and one side of the body, of a bar extending from the bank, a support for the end of the bar arranged upon the opposite side of the body, a series of garment-supports suspended from the bar and movable longitudinally thereof, a movable frame, and means for adjusting it toward the bank to compress the garments against the latter.

10. In a garment-receptacle the combination with a casing or body, an inner shell having a bank and guides between the latter and one of the sides of the body, a bar extending from the upper end of the bank

and a support for the outer end of the bar arranged upon the opposite side of the casing, of a separate supporting-rod arranged below the bar, a series of garment-supports mounted on the rod, a movable frame carried on the rod and means for adjusting the latter to compress the garments against the back of the shell.

11. In a garment-receptacle the combination with a casing or body, an inner frame having a back, movable and hinged connections between the back and one side of the casing, of a support extending from the back, a series of garment-hangers thereon and a compressing-frame movably mounted on the support and curved inwardly at its rear edge, and means for moving the frame relative the back to compress the garments.

12. In a garment-receptacle the combination with a body, an inner frame having a back, movable connections between the back and one side of the body, and a separate compartment on the opposite side of the body, of a bar arranged upon the back of the shell and having its end guided on the top of the compartment, garment-hangers mounted on the bar and means for securing the garments in the frame.

13. In a trunk the combination with a body, a frame therein having the back, and movable hinged connections between the shell and the side of the trunk, a separate compartment secured upon the opposite side of the trunk-body, of the bar secured to the shell and extending over the compartment having the support upon its lower side, the garment-hangers movably suspended on the support, and the frame curved upon its inner side and adapted to engage over the garments and means for operating the frame to compress the garments in the shell.

14. In a trunk the combination with a body, a frame movable therein having the back, and movable and hinged connections between the shell and the side of the trunk, a separate compartment arranged upon the opposite side of the body, and a bar secured to the back of the frame and extending over the compartment, when in the normal position and having the rod or support arranged on its lower side and connected at its outer end to the end of the bar, of a series of garment-supports mounted on the rod and movable longitudinally thereon, a compressing-frame suspended on the rod and a follower connecting the rod to the bar intermediate the frame and end of the bar.

15. In a trunk the combination with a body or receptacle having a back and provided with a top and bottom portion connected thereto, the latter being extended upon its forward edge beyond the corresponding edge of the top portion, the side portions extended to meet the forward edge of the bottom, and the front panel joining said extensions on the side portions, the door embodying the panel and having top and side portions thereon, of a casing mounted in the body at one side thereof, drawers therein having their faces in line with the inner side of the front panel, a separate frame or casing movably mounted in the body having its edge also arranged in line with the inner side of the front panel, and hinge connections between the door and the body, whereby as the latter is moved into a closed position, the panel thereof will be brought into line with the front panel and engage the faces of the drawers and the edge of the movable casing to secure them against movement.

16. In a wardrobe-trunk the combination with the main casing or receptacle, of a carriage movable within the casing and a garment-supporting frame pivoted to the carriage and adapted to be swung laterally when the carriage is moved outwardly.

17. In a wardrobe-trunk the combination with the main casing or receptacle, having the guides at one side and a lid or door, of a carriage movable on the guides and a garment-supporting frame pivoted to the carriage and adapted to be swung laterally of the guides when the carriage is moved outwardly.

18. In a wardrobe-trunk the combination with the main casing or receptacle, having the guides and a lid or door, of a garment-supporting frame movable longitudinally of the guides and capable of swinging laterally of the guides when moved out of the casing.

19. In a wardrobe-trunk the combination with the main casing or receptacle having guides therein and a lid or door, of a garment-supporting frame movable longitudinally of the guides and capable of swinging laterally thereof when moved out of the casing.

20. In a wardrobe-trunk the combination with a main casing or receptacle having a lid or door, of a garment-frame supported at one end in the casing and movable in and out of the same and pivotally supported to swing laterally thereof.

705,561. REHOSTAT. WILLIAM H. CHAPMAN, Portland, Me. Filed Dec. 14, 1901. Serial No. 86,872. (No model.)

Claim.—In a rheostat, the combination of a swinging arm, a spring-pressed contact on said arm, a series of thin segment-plates on which said contact is adapted to travel, insulating-plates between said segment-plates, said segment-plates being closely clamped together at their front ends and spread apart at their rear ends, the upper half of the rear portion of every other plate and the lower half of the balance of the plates being cut away so that the rear ends of adjacent plates may be swung over each other.

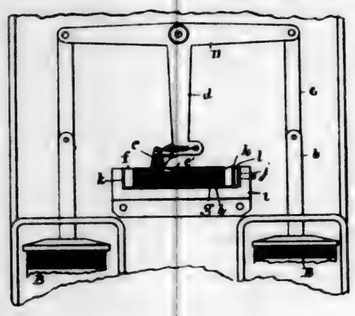

705,562. LACING-HOOK. GARDNER W. CHIPLEY, Chicago, Ill. Filed Mar. 25, 1902. Serial No. 99,573. (No model.)

Claim.—1. A lacing-hook secured to and lying in substantially the same plane as the material to be laced and within the edge thereof; substantially as described.

2. A lacing-hook comprising a plate secured to the material to be laced and lying in substantially the same plane, said plate being provided with an opening which receives the lacing and enters within the edge of the material; substantially as described.

3. A lacing-hook comprising a plate secured to and lying in substantially the same plane as the material to be laced and provided with a curved opening entering an edge of the plate; substantially as described.

4. A lacing-hook comprising a plate lying in substantially the same plane as the material to be laced and having a spiral opening forming a hook-shaped portion 9 arranged within the line of the edge of the material; substantially as described.

5. A lacing-hook comprising a plate secured to and lying in substantially the same plane as the material to be laced and provided with an upwardly-extending spiral opening which receives the lacing and is located within the line of the edge of the material; substantially as described.

6. A lacing-hook comprising a plate having an opening whose portions on either side of a dividing-line are similar, said plate being adapted to be bent or folded over the edge of the material to be laced; substantially as described.

7. A lacing-hook comprising a plate secured to the material to be laced and having an opening 2, which, when the plate is folded has along the folded edge an entrance 6 for the lacing; substantially as described.

8. A lacing-hook comprising a plate to be secured to the material to be laced and having an opening which is longitudinal as to its middle portion and similarly upturned and curved as to its ends whereby when the plate is folded over said ends will register and an entrance will be formed at the folded edge for the lacing.

9. A lacing-hook comprising a plate to be secured to the material to be laced and having a substantially longitudinal opening with annular spiral-shaped ends, whereby when the plate is folded over at substantially its middle said ends will register, the middle portion of each opening being slightly enlarged to provide an enlarged opening 6 at the folded edge of the plate; substantially as described.

10. A lacing-hook comprising a plate 1 having an opening 2 and

adapted to be bent transversely along the line 3 and teeth 4, 5, for securing the plate to the material to be laced; substantially as described.

11. A lacing hook comprising a plate adapted to be folded over an edge of the material to be laced and provided with an opening or passage for the lacing.

705,563. METALLIC TIE AND RAIL-JOINT. JOHN F. CLEARY, Hoytdale, Pa. Filed Apr. 7, 1902. Serial No. 101,601. (No model.)

Claim.—In a device of the character described, the combination of a metallic tie carrying at one end integral fish-plates, rails secured in said fish-plates, bolts extending through said fish-plates and webs of the rails, nuts secured to said bolts, the other end of the tie having formed therein a recess, an integral fish-plate formed on the outer end of the tie, a rail, a removable clamp provided at its outer end with an integral fish-plate and having a recess formed therein and carrying a downward extension seated in said recess formed in said tie, one edge of said extension being rounded to conform to the base of the rail, a flange formed on the inner edge of said clamp and engaging the upper face of the tie, and a securing-bolt extending through said clamp and engaging said tie, substantially as described and for the purpose set forth.

705,564. MACHINE FOR SEALING BOTTLES. WILLIAM H. DORMAN, New York, N. Y. Filed Sept. 5, 1901. Serial No. 74,383. (No model.)

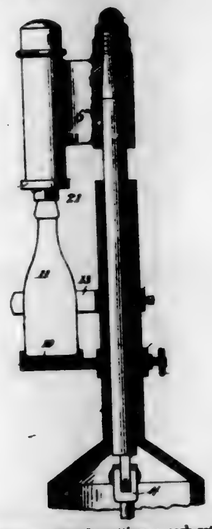

Claim.—1. In a machine for setting a cork-retaining ring in the mouth of a bottle, a sliding retaining-ring holder depending from and slidably disposed in the hollow head and formed with a tapering chamber in its lower end to receive the said ring, and means for pushing the ring down through the chamber into the mouth of the bottle, substantially as described.

2. In a machine for setting a cork-retaining ring in the mouth of a bottle, a sliding retaining-ring holder depending from and slidably disposed in the hollow head and formed with a tapering chamber in its lower portion to receive the ring and a transverse slot through which the ring is passed into the chamber, and a reciprocating plunger to push the ring through the chamber into the mouth of a bottle, substantially as described.

3. In a machine for setting a cork-retaining ring in the mouth of a bottle, the combination with a reciprocating casing, of a yieldingly-held plunger in the casing, and a retaining-ring holder through which the plunger passes, said holder being formed with a tapering retaining-ring chamber and a transverse slot through which the ring is entered.

4. In a machine for setting a retaining-ring in the mouth of a bottle, the combination with a reciprocating casing, of a yieldingly-supported plunger in the casing formed with a recess at its lower end and a vertical clearance-groove leading therefrom, and a retaining-holder slidingly arranged in the lower end of the casing through which the plunger passes and formed with a tapering retaining-ring chamber, a transverse slot in the holder through which the ring is inserted and a vertical slot through which the stem of the ring descends, substantially as described.

5. A mechanism for setting a cork-retaining ring in the mouth of a bottle, comprising a reciprocating casing, a plunger in the casing formed with an annular collar, a spiral spring on the plunger above the collar, and a retaining-ring holder through which the plunger passes, formed with a tapering chamber, a transverse slot and a vertical slot intersecting each other substantially as described.

6. A mechanism for setting a cork-retaining ring in the mouth of a bottle, comprising a reciprocating casing, a yielding plunger in the casing formed with a shouldered lower end to fit in the retaining-ring and a recess and vertical groove, and a retaining-ring holder through which the plunger passes formed with a tapering retaining-ring chamber and transverse and vertical slots opening into the said chamber, and provided with an elastic gasket on its lower end, substantially as described.

7. In a machine for sealing bottles, the combination with the reciprocating hollow head having an internal annular flange at its lower end, the plunger and the spring on the plunger, of a depending ring-retaining sleeve having an external annular flange to ledge on the internal flange of the head and loosely depending from and slidably disposed in the lower end portion of the hollow head.

705,565. OIL-FUEL GENERATOR. WILLIAM H. DYE, Indianapolis, Ind., assignor of one-half to John M. Wharton, Indianapolis, Ind. Filed July 13, 1901. Serial No. 68,151. (No model.)

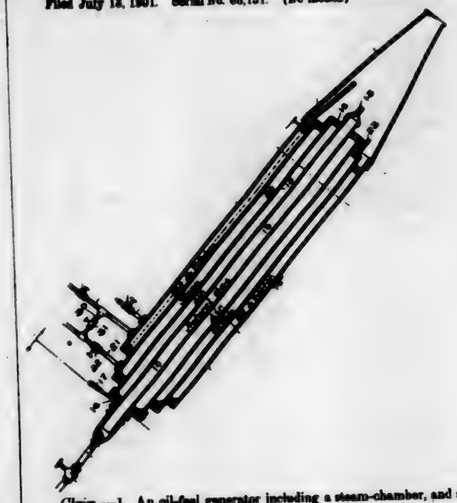

Claim.—1. An oil-fuel generator including a steam-chamber, and a water-and-oil chamber into which the steam-chamber extends for heating the contents thereof, the outlet from the water-and-oil chamber being at a higher point than the steam-chamber, whereby the water will envelop the steam-chamber and support the oil above and out of contact with the steam-chamber.

2. An oil-fuel generator including a cylindrical steam-chamber, a cylindrical water-and-oil chamber surrounding the steam-chamber, means for supplying steam to the steam-chamber, means for supplying oil to the water-and-oil chamber at one end, an outlet from the water-and-oil chamber above the steam-chamber at the other end, and an outlet from the steam-chamber at the same end near the bottom.

3. An oil-fuel generator including an air-chamber open at both ends, a steam-chamber surrounding the air-chamber, a water-and-oil chamber surrounding the steam-chamber, means at one end for supplying steam to the steam-chamber and oil to the oil-chamber, an outlet at the other end from the water-and-oil chamber near its top, and an outlet from the steam-chamber near its bottom.

4. An oil-fuel generator consisting of a natural-gas chamber, a pipe leading thereto to supply the same, an air-chamber surrounding the natural-gas chamber and held in place by perforated end caps that screw upon the natural-gas chamber, a steam-chamber surrounding the air-chamber and which screws upon the same at each end and provided with an outlet-opening near its bottom at one end and a steam-inlet opening near its top at the other end, a water-and-oil chamber surrounding the steam-

chamber, a steam-pipe and also an oil-pipe entering one end of said chamber near its top, and an outlet-opening at the other end of said chamber at a point above the steam-chamber, and a conical nozzle that screws upon the outlet end of said water-and-oil chamber, substantially as set forth.

705,566. RAIL-JOINT. CHARLES B. EDWARDS, Pittsburg, Pa. Filed Mar. 10, 1902. Serial No. 97,463. (No model.)

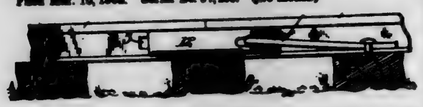

Claim.—1. In a rail-joint, the combination of fish-plates, one fish-plate carrying a projecting arm and having an aperture therein, and a fish-plate having apertures therein, said projecting arm extending through one of the apertures of the last-named fish-plate, and a locking-lever having one end of its ends projecting through the other apertures of the fish-plates for securing the same together, substantially as described.

2. In a rail-joint, the combination with the rails having apertures therein, of fish-plates arranged on opposite sides of the rails, one of said fish-plates carrying a projecting arm and provided in its opposite end with an aperture, the other fish-plate having an aperture therein and formed on its outer face with a raised portion, said projecting arm passing through one of the apertures in the rail and the adjacent fish-plate, a locking-lever in engagement with the other aperture of the fish-plates, and means for securing said locking-lever in a locked position, substantially as described.

3. In a rail-joint, the combination of a rail having an aperture therein, a fish-plate carrying a projecting arm and having an aperture therein, a fish-plate having apertures therein, said fish-plate carrying on its outer edge a raised portion, said raised portion performing a function of a wedge, a locking-lever, said locking-lever carrying a curved portion bent substantially at a right angle and having its end slightly inclined upwardly, and means for securing said locking-lever and fish-plates together, all parts being arranged and operating substantially as described.

705,567. WHEEL. ELLSWORTH J. EDWARDS, Aspen, Colo. Filed May 11, 1901. Serial No. 59,941. (No model.)

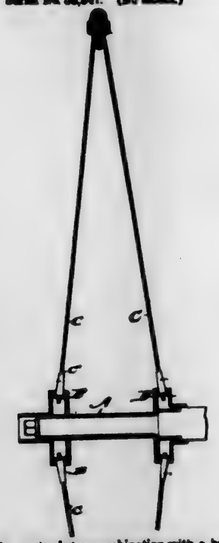

Claim.—1. In a wheel, the combination with a hub having flanged collars, of spokes having their ends extending through the said flanged collars, the tapering sleeves or nipples having flanges or collars, secured upon the ends of the spokes, and springs interposed between the flanged collars of the hub and the flanges or collars of the sleeves or nipples, substantially as set forth.

2. In a wheel, the combination with a hub having flanged collars, of the spokes having threaded ends passing through the said flanged collars, the tapering sleeves or nipples having flanges or collars, screwed upon the ends of the spokes and extending through the collar of the hub, the springs arranged between the hub-collar and the flanges or collars upon the sleeves or nipples, said sleeves or nipples passing through the said spring substantially as described.

3. In a wheel, the combination with a rim, of an internally-threaded sleeve arranged in said rim and having an eye at its end, a screw passing through the rim from the outside and arranged in the threaded sleeve and a U-shaped spoke passing through the eye of said sleeve, substantially as described.

705,568. RAILWAY-RAIL JOINT. JACOB C. FAIR, West Monterey, Pa. Filed Mar. 24, 1902. Serial No. 99,819. (No model.)

Claim.—A railway-rail joint comprising, in combination with the web of a rail having apertures therein, fish-plates with integral tapering lugs adapted to be inserted in the apertures in said web from opposite directions, a channeled bed-plate on which said rail and fish-plates rest, a wedge-shaped block having a series of ratchet-teeth on its outer wall, said block adapted to be inserted between one of said fish-plates and the wall of the channeled portion of the bed-plate, the upper inclined end of said wedge-block adapted to be held in contact with the overhanging wall of the channeled portion of the bed-plate, a spring fastened at one end in a recess in the channeled portion of the bed-plate, and having its free end disposed in the path of said ratchet-teeth, whereby the wedge-block is held in contact with the fish-plate, the free end of said spring adapted to be held out of the path of said ratchet-teeth by inserting a rod in an aperture in the bed-plate against the spring, as set forth.

705,569. STITCH-FORMING MECHANISM FOR SEWING-MACHINES. HENRY H. PEPEL, New York, N. Y., assignor, by mesne assignments, to New-York-Pittsburgh Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Aug. 23, 1901. Serial No. 73,581. (No model.)

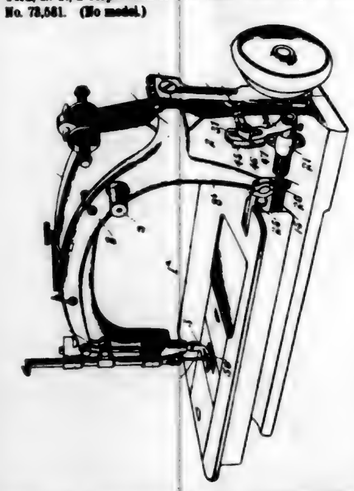

Claim.—1. In a sewing-machine, the combination of suitable stitch-forming mechanism including a needle and a looper, a driving-shaft, a cam or eccentric on said shaft, and suitable operating connections between said cam or eccentric and the needle and looper, whereby the needle will be reciprocated and the looper will be oscillated and reciprocated by said cam, substantially as set forth.

2. In a sewing-machine, the combination of suitable stitch-forming mechanism including a needle and a looper, a rock-shaft upon which the looper is mounted, a needle-operating rocker-arm, and connection between said needle-operating rocker-arm and the looper for causing the looper to reciprocate upon its rock-shaft, a driving-shaft, a cam or eccentric mounted upon said driving-shaft, a link connected with said needle-operating rocker-arm and engaged and operated by said cam or eccentric, and suitable connections between said link and the looper rock-shaft, substantially as set forth.

3. In a sewing-machine, the combination of suitable stitch-forming mechanism including a needle and a looper, a needle-operating locker-arm, a driving-shaft carrying a cam or eccentric, a link operated by said cam or eccentric and suitably connected with the needle-operating rocker-arm, a rock-shaft upon which the looper is mounted and by which it is oscillated, a rock-arm mounted upon said rock-shaft, suitable adjustable means connecting said rock-arm to said link, and an independent connection between the needle-operating rocker-arm and the looper for causing the looper to reciprocate upon its rock-shaft, substantially as set forth.

4. In a sewing-machine, the combination of suitable stitch-forming mechanism including a needle and a looper, a driving-shaft carrying a cam or eccentric, a link operated by said cam or eccentric and suitably connected with the needle for operating it, a rock-shaft upon which the looper is mounted and by which it is oscillated, means for reciprocating the looper upon its rock-shaft, a slotted rock-arm mounted upon said rock-shaft, and a rod connected with said link at one end and carrying at its other end a pin which is adjustably mounted in the slot of said rock-arm, and means for clamping the pin of said rod in the desired adjusted position upon the rock-arm, substantially as set forth.

705,570. APPARATUS FOR GENERATING CARBONIC-ACID GAS. FELIX A. FELDKAMP, Newark, N. J. Filed Oct. 5, 1901. Serial No. 77,650. (No model.)

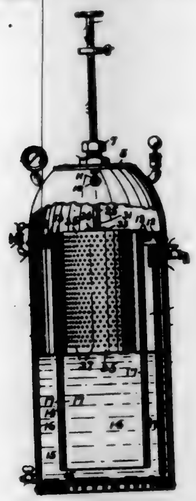

Claim.—1. An apparatus for generating carbonic-acid gas, comprising an outer and an inner cylinder, a closing means between the upper and outer portions of said inner cylinder and the interior surface of the outer cylinder, forming an annular chamber between the outer surface of the inner cylinder and the interior surface of the outer cylinder, the said inner cylinder having an opening in communication with the said annular chamber, whereby, under normal conditions, an active liquid in both said cylinders will be at the same level, a carbonate-containing receptacle in said inner cylinder, consisting, essentially, of a cylinder having perforated sides and a closed top and open bottom, and means for slidably supporting the said carbonate-containing receptacle at different points within the said inner cylinder, comprising, a supporting-rod passing through a perforated plate secured to the top of said carbonate-containing receptacle, a slotted tube through which the said rod extends, said tube being secured within said receptacle, a bottom disk within the said carbonate-containing receptacle, and means for securing said disk in position to the lower end of the said supporting-rod, substantially as and for the purposes set forth.

2. In an apparatus for generating carbonic-acid gas, the combination, with a pair of concentric cylinders, having an open communication and an air-compression chamber, one of the said cylinders being provided with a removable closure, a supporting-rod extending through an opening in said closure and being slidably arranged therein, a carbonate-containing receptacle, a perforated plate secured to the top of said carbonate-containing receptacle through which the said supporting-rod passes, a slotted tube through which the said rod extends, said tube being secured within said receptacle, a bottom disk within the said receptacle, and means for securing said disk in position on the lower end of the said supporting-rod, substantially as and for the purposes set forth.

3. In an apparatus for generating carbonic-acid gas, the combination, with a chamber adapted to contain an active liquid, of a carbonate-containing receptacle, and means connected with said receptacle for setting said receptacle at different positions within said chamber, according to a predetermined pressure of the carbonic-acid gas to be produced, said means consisting, essentially, of a rod provided with graduations, a stop adjustably arranged on said rod, a perforated plate secured to said carbonate-containing receptacle through which said rod extends, a slotted tube within said receptacle secured to said plate, a bottom disk within said carbonate-containing receptacle, and means for securing the said disk in position to the lower end of the said supporting-rod, substantially as and for the purposes set forth.

4. In an apparatus for generating carbonic-acid gas, the combination, with a cylinder adapted to receive an active liquid, of a carbonate-containing receptacle, a rod for supporting said receptacle in said cylinder, a slotted tube on the lower end of said rod, a bottom disk encircling said tube, and means for attaching said disk to said rod, substantially as and for the purposes set forth.

5. In an apparatus for generating carbonic-acid gas, the combination, with a cylinder, a suspension-rod in said cylinder, and a bottom disk on said rod, of a slotted tube, and a receptacle adapted to receive a charge of carbonate, said tube and receptacle being slidably arranged upon said suspension-rod and acting by gravity on said charge of carbonate to constantly force the same down upon the said bottom disk, substantially as and for the purposes set forth.

705,571. LOCKING DEVICE FOR BOLTS. DAVID FERGUSON, Pittsburg, Pa., assignor of one-half to Jennie F. Wood, Pittsburg, Pa. Filed Dec. 14, 1901. Serial No. 86,080. (No model.)

Claim.—1. In a locking device for bolts, a threadless bolt having substantially a uniform body, a threadless nut having a bore adjacent to the bolt, and a wedging device having bolt-engaging serrations and adapted to be inserted in said bore when both nut and bolt are stationary, the nut having a portion displaced to prevent the retreat of the wedging device.

2. In a locking device for bolts, a threadless bolt having substantially a uniform body, a nut having a bore adjacent to the bolt, and wedging devices having bolt-engaging serrations and interlocking teeth, the nut having a portion displaced to prevent the retreat of the said devices.

705,572. SAFETY-VALVE. WILLIAM C. FIELD, Decatur, Ill., assignor of three-fifths to William T. Deinhardt and William A. Shorb, Decatur, Ill. Filed Mar. 31, 1902. Serial No. 100,881. (No model.)

Claim.—1. The combination with a safety-valve, of a spring for closing said valve, a protruding valve-stem, a disk of fusible solder located outside of said valve to serve as a rest for said valve-stem for holding the valve normally open against the action of said spring, and non-conducting material interposed between said disk and the metal with which it would otherwise be brought into contact, whereby the cooling action of the adjacent metal upon said disk may be obviated, substantially as described.

2. The combination with a safety-valve of a spring for closing said valve, a protruding valve-stem, a disk of fusible solder located outside of

said valve to serve as a rest for said valve-stem for holding the valve normally open against the action of said spring, rings of non-conducting material located upon opposite sides of said disk to separate the same from its metallic support and non-conducting material interposed between said disk and valve-stem, substantially as and for the purpose specified.

705,573. SAD-IRON. GEORGE FIFE, Newark, N. J. Filed Dec. 4, 1901. Serial No. 84,602. (No model.)

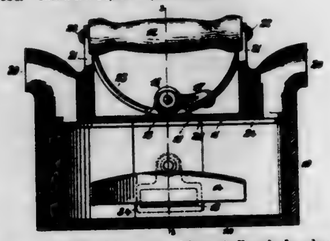

Claim.—1. The sad-iron comprising a hollow body adapted to receive combustible material, the detachable cover, and the handle, said body being pointed at both ends and having the rigidly-fixed interior downwardly-extending elongated side flanges 14, the draft-apertures and gates at its opposite sides in line with the air-spaces formed between the inner sides of said body and said flanges, and the fixed flues 20, 20, extending upward from both ends of said body and being at opposite ends of said handle; substantially as set forth.

2. The sad-iron comprising the hollow body adapted to receive combustible material, the detachable cover, and the handle, said body having integral therewith the rigid interior downwardly-extending elongated side flanges 14, the draft-apertures at its opposite sides in line with the air-spaces formed between the inner sides of said body and said flanges, the exterior gates 34 applied upon the opposite sides of the iron for controlling the said draft-apertures, and the upwardly-extending flues 20, 20, at the opposite ends of said body and communicating with the hollow interior thereof, the said cover closing the upper end of said body except at said flues 20; substantially as set forth.

3. The sad-iron comprising the hollow body adapted to receive combustible material, said body having at its opposite sides the vertical standards 15 at whose rear edges, at their base, are formed the shoulders 18, combined with the eccentrics 16 pivotally secured to the inner vertical sides of said standards and having operating-handles 17, and the removable cover, for said body, carrying the handle and having at its opposite side edges shoulders 26, to contact with the said shoulders 18, said cover with the handle thereon being adapted to be moved to position lengthwise of said body and below said eccentrics 16 until said shoulders 26 contact with and are arrested by said shoulders 18; whereupon said cover may be locked in position by means of said eccentrics; substantially as set forth.

4. The sad-iron comprising the hollow body adapted to receive combustible material and having integral therewith the rigid interior downwardly-extending elongated side flanges 14, the draft-apertures at its opposite sides in line with the air-spaces formed between the inner sides of said body and said flanges, the exterior gates upon the opposite sides of said body for controlling said draft-apertures, the vertical standards 15 extending upward from the opposite sides of said body and having at their rear edges the shoulders 18, and the eccentrics 16 pivotally secured upon the inner vertical faces of said standards and having the operating-handles 17, combined with the cover 11 adapted to fit upon the upper end of said body and having at its opposite ends the upwardly and outwardly extending flues 20 and standards 21, the handle 12 secured between said standards, and the shoulders 26 formed on the opposite side edges of said cover for engagement with the said shoulders 18, the said standards being integral with the said flues 20 and the said cover being adapted to pass lengthwise of said body to its proper position below said eccentrics until arrested by the contact of said shoulders 26 with said shoulders 18, whereupon the said cover may be secured in position by means of said eccentrics; substantially as set forth.

5. The sad-iron comprising the body having the standards 15, eccentrics 16, and side draft apertures and gates, said body being pointed at both ends and of flat formation at its opposite sides from its base to the top of said standards, whereby said standards become parallel with each other and said gates may lie close to the sides of the iron, combined with the removable cover carrying the handle and adapted to fit upon said body between said standards and below said eccentrics, said cover at its opposite edges adjacent to said standards being also of flat formation; substantially as set forth.

705,574. LAST. ANDS G. FITS, Auburn, Me. Filed Oct. 2, 1901. Serial No. 77,289. (No model.)

Claim.—In a divided last, vertical kerfs in the adjacent ends, a union inserted in said kerfs to bind the parts together, a rivet passing through the wood of the last and the union, the wood of the last being pressed against the sides of the union in the region of the rivet and the rivet headed upon the wood thus compressed.

705,575. RAIL-JOINT. WILLIAM FLOEE, Meadow Lands, Pa. Filed May 2, 1902. Serial No. 105,641. (No model.)

Claim.—1. In a rail-joint, the combination with the rails having thickened web portions at the ends thereof, said web portions being cut away in their upper faces and provided with recesses and vertical grooves, of a cap-rail comprising a tread and depending fish-plates to fit in the cut-away portion of the rail ends and having interior ribs to engage in the recesses and vertical grooves of said thickened rail ends, substantially as described.

2. In a rail-joint, the combination with the rails having thickened web portions provided in one side with vertical grooves and in the upper faces with recesses, of a cap-rail fitting over said thickened portions and having interior ribs to fit in the recesses and grooves in said thickened portions, and securing-lugs carried by said cap-rail, substantially as described.

3. In a rail-joint, the combination with the rail ends having thickened portions provided with vertical grooves and recesses, and having stepped shoulders along one edge, of a cap-rail having stepped shoulders to match with the stepped shoulders on the rails, and interior ribs carried by the said cap-rail to engage in the grooves and recesses of the rails, substantially as described.

705,576. OVAL-CUTTING MACHINE. WILLIAM H. FORKER, Meadville, Pa. Filed Oct. 16, 1901. Serial No. 78,777. (No model.)

Claim.—An oval-cutting machine, comprising in combination with the base, the pivotal pin 2, the plate 5 having an elliptical groove, a handle 29 pivotally mounted on said pin, a movable guide mounted on said handle, a pivoted bar carried by said guide, a pin passing through the latter and traveling in the elliptical groove in plate 5, a bar 15 adjustably held on said pivoted bar, a knife-holder clamped to the lower end of bar 15, a knife and rack-bar secured to the face thereof, a pinion in engagement with the teeth of said rack-bar, a worm-wheel mounted in said holder, and in engagement with the teeth of said pinion-wheel, the rod 27, the link 25 connected to one end of said rod, with its other end mounted on the top of the pin, working in said elliptical groove, a collar carried by said pivoted bar, and through which the rod 28 passes, as set forth.

705,577. FEEDING MECHANISM FOR SEWING-MACHINES. CHARLES H. FOSTER, New York, N. Y., assignor to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Nov. 9, 1901. Serial No. 81,686. (No model.)

Claim.—1. In a sewing-machine, the combination with the four-motion feed, of a feeding presser-foot opposed to the feed-dog and vibrated from the actuating mechanism thereof, a vertically-reciprocating needle presser-foot to one side of the feed-dog and serving to hold down the work and strip the needle, a vertically-reciprocating shaft parallel with the needle presser-foot bar and to which the upper end of the feeding presser-foot bar is pivoted, a bell-crank lever mounted at the upper end of said reciprocating shaft and pivotally connected with the needle presser-foot bar whereby said presser-foot bars are reciprocated vertically alternately in opposite directions, and mechanism connecting said bell-crank lever with the main shaft of the machine; substantially as described.

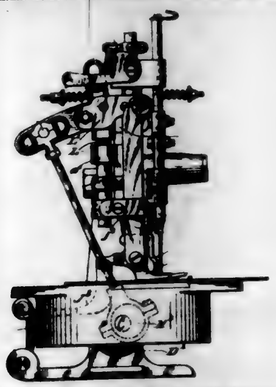

2. In a sewing-machine, the combination with the four-motion feed, of a feeding presser-foot opposed to the feed-dog and vibrated from the actuating mechanism thereof, a vertically-reciprocating spring-depressed needle presser-foot to one side of the feed-dog and serving to hold down the work and strip the needle, a vertically-reciprocating shaft parallel with the needle presser-foot bar and to the upper end of which the upper end of the feeding presser-foot bar is pivotally connected to receive its up-and-down motion, a bell-crank lever pivoted at its angle to the upper end of said vertically-reciprocating shaft, a sliding and pivotal connection between one arm of said bell-crank and the needle presser-foot bar, a line-shaft rocked from the main shaft and provided with a crank-arm and a sliding and pivotal connection between said crank-arm and the other arm of the bell-crank lever; substantially as described.

705,578. MATCH-BOX. JOHN B. FREDERICK, New Kensington, Pa. Filed Dec. 11, 1901. Serial No. 85,432. (No model.)

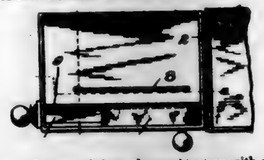

Claim.—1. In a match-box, the combination with a receptacle having a partition therein, secured to the ends thereof, with a space between the lower edge of the partition and the bottom of the receptacle, a spring-actuated guide comprising a casing, one side of which has an elongated slot therein, with a lug carried by one side of the receptacle, and being received in said slot, the other side of said casing engaging the one side of the partition with the top of the casing engaging the upper end of the partition, the rear edge of the casing carrying a lug for engagement with a single match, the end of the receptacle having an opening therein, for the passage of a match, an extension carried by the front end of the casing and operating through the said end of the receptacle, and carrying a knob for operating the guide-casing, substantially as described.

2. In a match-box, the combination with a receptacle having a partition secured therein, with a space between its lower edge and the bottom of the receptacle, a spring-actuated guide comprising a casing carrying an extension on its one end operating through an opening provided therefor, in the end of the receptacle and carrying a knob for operating the guide, the guide-casing engaging the partition, and means carried by the guide-casing for engagement with a match to eject the latter when the knob is operated, substantially as described.

3. In a match-box, the combination with a receptacle having a partition secured by its ends to the ends of the receptacle and having a space between its lower edge and the bottom of the receptacle, a guide comprising a casing carrying an extension operating through the front end of the box in an opening provided therefor, the casing having a top with walls on each side thereof engaging the inner face of one side of the casing, and the one side of the partition, a spring secured to the end of the box and the one wall of the casing, the front end of said extension carrying means for operating the casing and for closing the opening provided for the ejection of the match, and a lug for engagement with the match to eject the same, substantially as described.

705,579. EDUCATIONAL CARD. JOHAN GIBSON, Partridge, Ill. Filed June 3, 1901. Serial No. 62,914. (No model.)

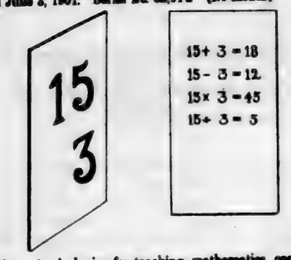

Claim.—1. A device for teaching mathematics, comprising a card bearing on one face numbers suggestive of certain mathematical combinations, and on the opposite face bearing data representing such combinations and the correct answer thereto, said data including the numbers on the first-mentioned face.

2. An educational device for the teaching of mathematics comprising a card having its opposite faces each provided with two numbers, the numbers on each face being similar to those of the opposing face, one of said faces having said numbers arranged to visually indicate mathematical problems and the results obtained in the working of said problems.

705,580. FIRE-ESCAPE. RICHARD HAMBERLY, New York, N. Y. Filed May 2, 1902. Serial No. 105,573. (No model.)

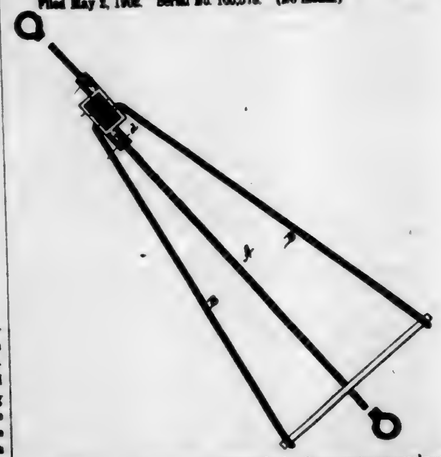

Claim.—1. A fire-escape composed of a frame, a transversely-extending tube, a weight-containing rope passing through the tube, a suspending-rope coiled around the tube, rope-guides at opposite ends of the frame, and brakes within said guides, substantially as specified.

2. A fire-escape composed of a frame, a transversely-extending tube, a weight-containing rope passing through the tube, a suspending-rope coiled around the tube, perforated tubular rope-guides at opposite ends of the frame, removable brake-shoes having laterally-extending pins engaging the rope-guide perforations, and set-screws engaging the shoes, substantially as specified.

705,581. GAS-BURNER. FRANK HARPER, Beverly, Ohio. Filed July 18, 1901. Serial No. 68,533. (No model.)

Claim.—1. A burner having a plurality of compartments, each having a gas-outlet, a supply-pipe, fittings in the length of the supply-pipe, one of the fittings constituting a valve-casing and having an extension formed with a series of passages, one for each compartment of the burner, a valve in said fitting for establishing communication between the said passages and pipe, the valve-stem passing through the other fitting and provided with operating means, a graduated disk, and a pointer secured

to the valve-stem and coöperating with the graduations of the said disk to indicate the position of the valve, substantially as set forth.

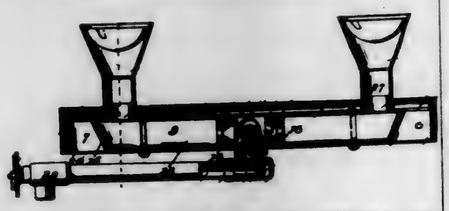

2. A burner having a mixing-chamber and a plurality of compartments grouped about the mixing-chamber and in communication therewith, air-inlets at opposite ends of the burner and in communication with the mixing-chamber, and means for admitting gas into the mixing-chamber in jets for any one or all of the aforesaid compartments, substantially as described.

3. A burner having compartments, a mixing-chamber in communication with each of the compartments, means for supplying air to the mixing-chamber, a pipe for supplying gas and having a portion extending into the mixing-chamber and provided with outlets directly opposite openings between the mixing-chamber and the said compartments of the burner, and a valve for controlling the said outlets to admit gas to any one or all of them, substantially as set forth.

4. A burner having compartments, a mixing-chamber, and having tapering openings establishing communication between the mixing-chamber and compartments, means for supplying air to the mixing-chamber, a feed-pipe having a portion entering the mixing-chamber and provided with outlets terminating opposite the openings between the mixing-chamber and compartments, and a valve for controlling the said outlets to admit gas to any one or all of them, substantially as set forth.

5. A burner comprising a centrally-disposed mixing-chamber and compartments at the ends and sides of and in communication with the said mixing-chamber, and independent means for supplying air and gas to the mixing-chamber, the gas-supplying means having a portion formed with outlets opposite the openings between the mixing-chamber and the respective compartments and including a valve for admitting gas to any one or all of the said outlets, substantially as set forth.

6. A burner subdivided by longitudinal and transverse partitions into a mixing-chamber and compartments, each of the latter having an outlet for the gas and a valve having a portion extended into the mixing-chamber and provided with an outlet for each compartment, the valve controlling the supply of gas to any one or all of the said compartments, substantially as set forth.

7. A burner subdivided by longitudinal and inner and outer transverse partitions into a mixing-chamber and compartments, the latter having an outlet for the gas, the inner transverse partitions being thickened and the middle portion of the longitudinal partitions being correspondingly thickened, the last-mentioned parts forming walls of the mixing-chamber and the said walls having outwardly-tapering openings, substantially as set forth.

8. In a burner, a base or body portion subdivided into compartments, a diaphragm closing said compartments and securely fastened to the base or body, a cap arranged over the diaphragm and spaced therefrom, and tips secured to the diaphragm and having portions to overlap and engage with the cap and hold it in place, substantially as set forth.

9. In a burner, a base or body having a mixing-chamber and compartments in communication therewith and having air-inlets, a diaphragm closing the top side of the said compartments and set away opposite the mixing-chamber and air-inlets, and a cap arranged over the diaphragm and spaced therefrom, said space establishing communication between the mixing-chamber and air-inlets, substantially as set forth.

705,582. HYDROCARBON-LAMP. WILLIAM HAVEL, Chicago, Ill., assignor to Chicago Solar Light Company, Chicago, Ill., a Corporation of Illinois. Filed Oct. 17, 1899. Serial No. 33,370. (No model.)

Claim.—In a hydrocarbon-lamp, in combination, a needle-valve casing having a gearing-sleeve; a needle-valve stem fitting said sleeve snugly and being screw-threaded to form a channel for the passage of the hydrocarbon and gas within said sleeve, said stem being provided with a wire point of uniform diameter; a mixing-tube; and a mixing-ball provided with a perforated forward face having a central opening to receive the end of the needle-valve casing, the rear face of said ball being provided with a collar having a screw-thread connection with mixing-tube, to provide for an adjustment of said ball to and from the valve-casing.

705,582.

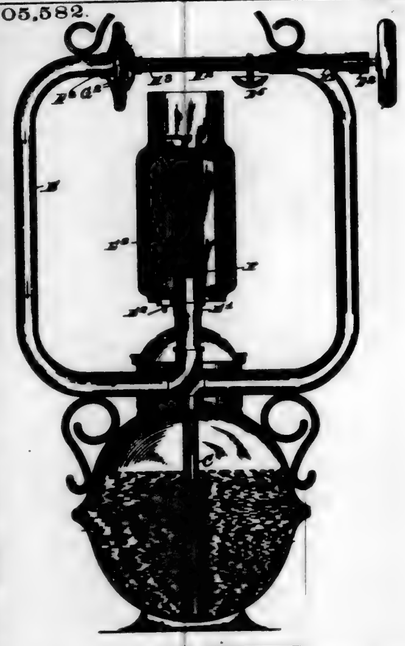

705,583. ELECTRIC SIGNAL. ARTHUR J. HATOUX, Mansfield, Ohio. Filed Apr. 10, 1902. Serial No. 102,936. (No model.)

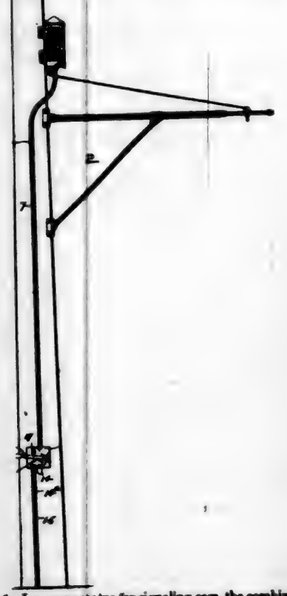

Claim.—1. In an apparatus for signaling cars, the combination with a line conductor, of a signal-box, a lamp located in said signal-box and having one terminal permanently connected with the line conductor, a switch-box, a switch-lever pivoted therein, a conductor permanently connecting the other terminal of the lamp with said switch-lever, a contact-block in the switch-box to coöperate with said switch-lever, a conductor connecting said contact-block with the ground, and means for normally holding the switch-lever away from the contact-block to maintain the lamp-circuit normally open.

2. In an apparatus for signaling cars, the combination with a casing having windows and an electric lamp in said casing, of a switch-box to be located in proximity to the road-bed, a pipe connecting said switch-box with said casing, a switch within said switch-box, a pipe connecting said switch-box with the ground, a feed-wire for the lamp in the casing, a wire extending through the first-mentioned pipe and connecting the lamp with the switch in the switch-box, and another wire extending through the pipe below the switch-box and connecting the switch with the ground.

3. In an apparatus for signaling cars on an electric railroad, the combination with the trolley-wire, of an electric lamp, a casing for inclosing said lamp, a feed-wire connected with the trolley-wire and a terminal of the lamp, a switch connected with the other terminal of the lamp and with the ground, and a spring connected with said switch for opening said switch and maintaining it normally open.

705,584. SIGNAL MECHANISM. REINHOLD HERMAN, Crofton, Pa. Filed Oct. 25, 1901. Serial No. 79,977. (No model.)

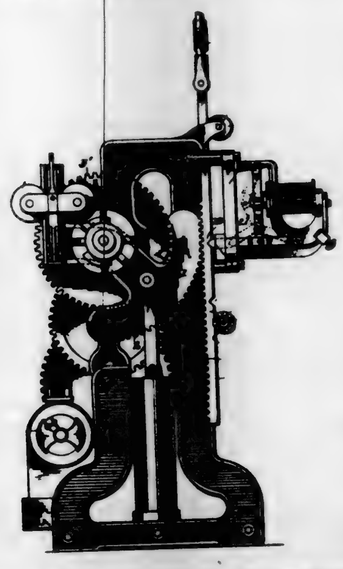

Claim.—1. In electrically-operated signals, the combination with a pair of supporting-standards, a drive-shaft journaled therein, and a toothed sector carried by the drive-shaft, of a rack-bar engaged by the sector and operated thereby in a vertical line, a signal-operating rod to which the upper end of the rack-bar is attached, and a lock for engagement with the rack-bar to hold the same in the position to which it is moved by the sector, substantially as described.

2. In electrically-operated signals, the combination with a drive-shaft, and a toothed sector carried by the drive-shaft, of a signal-operating rod, a vertically-disposed rack-bar connected to the signal-operating rod and in continuous engagement with the sector, said sector when rotated moving said rack-bar and signal-operating rod in a vertical line, and means for direct locking engagement with the rack-bar to hold the latter and the signal-operating rod in the position to which they have been moved, substantially as described.

3. In signals, the combination with the supporting-standards, a drive-shaft journaled therein, and a toothed sector carried by said drive-shaft, of a signal-operating rod, a vertically-disposed rack-bar attached at its upper end to said rod and having notches in its rear face, said rack-bar in continuous engagement with the sector and moved thereby in a vertical line, means for guiding said rack-bar in its vertical movement, and a locking device for engagement with the notches in the rear face of said bar to hold the same in the position to which it has been shifted, substantially as described.

705,585. PNEUMATIC DUST-COLLECTOR AND SWEEPER. JNO. T. HOPE, Kansas City, Mo. Filed July 20, 1901. Serial No. 68,801. (No model.)

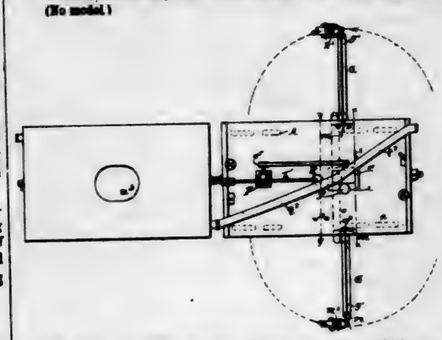

Claim.—1. A pneumatic dust-collector comprising a vehicle, a motor, a suction and blast apparatus upon said vehicle, actuated by said motor, a transversely-extended air-suction and vacuum-forming dust-receiver having a longitudinal opening upon its under side for the entrance of the dust and movable upon the surface of the ground, conductors for the dust connected with said receiver and also connected with the induction-opening to the said suction and blast apparatus having swivel-joints, and aprons hinged to the said receivers, means for vibrating the receiver laterally in position on the side of the vehicle and elevating devices connected with said hinged aprons and adapted to raise and lower said aprons alternately.

2. A pneumatic dust-collector and sweeper, comprising a vehicle, a motor, a suction and blast apparatus upon said vehicle actuated by said motor, a transversely-extended air-suction and vacuum-forming dust-receiver having a longitudinal opening upon the under side for the entrance of dust, movable upon the surface of the ground, conductors for the dust connected with said receivers and also connected with the induction-opening to the suction and blast apparatus, having swivel-joint combined dust-brushes and aprons hinged at said receivers, means for vibrating said receivers laterally in position to the side of the vehicle, and elevating devices connected with the hinged brushes and aprons.

3. A pneumatic dust-collector and sweeper for streets comprising a vehicle, a motor, a suction and blast apparatus upon said vehicle actuated by said motor, a transversely-extended air-suction and vacuum-forming dust-collecting receiver upon the side of said vehicle and the surface of the street, having longitudinal openings upon its under side, a conductor for the dust connected with said receiver and also connected with the induction-opening to the suction and blast apparatus, combined brushes and aprons upon opposite sides of said receivers, hinged thereto, and means for raising and lowering the combined brushes and aprons upon opposite sides of the receiver alternately.

4. A pneumatic dust-collector comprising a vehicle, a motor, a suction and blast apparatus upon said vehicle actuated by said motor having induction and eduction openings and an air-suction and vacuum-forming receiver movable upon the surface of the street and conductors for the dust connected with said receiver and also connected with the induction-opening to the suction and blast apparatus, a receptacle for the dust having an opening in its top and oppositely-extended dust-conducting pipes connected with the eduction-opening to the suction and blast apparatus one of which pipes is connected with one side and end of the dust-receptacle and suitable valves in said pipes.

5. A dust-collector consisting of a longitudinally-extended receiver having an opening upon its under side for the reception of the dust, traveling supports for said receiver, flexible conductor connected with said receiver, an air-suction apparatus connected with said conductor, a hinged support upon said receiver and dust-collecting fibers upon said support, and an apron, substantially as described.

6. A dust-collector consisting of a longitudinally-extended receiver, having an opening upon its under side for the reception of the dust, traveling supports for said receiver, flexible conductor connected with said receiver, a receptacle for the collected dust, an air-suction apparatus connected with said conductor and a conductor leading from said apparatus to said dust-receptacle, a hinged support upon said receiver and dust-collecting fibers upon said support, and an apron, and means for raising and lowering said fibers and apron.

7. In a pneumatic dust-collector and sweeper, a vehicle, a motor, a suction and blast apparatus upon said vehicle, having induction and eduction openings, actuated by said motor, a longitudinally-extended, air-suction and vacuum-forming receiver upon the side of the vehicle and the surface of the ground, having a traveling support for the outer end thereof

and a conductor connected therewith and a conductor connected with the said receiver and also connected with the induction-opening to the suction and blast apparatus, having swivel and socket joints, of a crank-rod on the said vehicle, and a longitudinal rod connected with the outer end of said dust-receiver, and a hinged joint connecting said crank-rod with the rod on said receiver.

8. In a pneumatic dust-collector, a vehicle, suction and blast apparatus having induction and eduction openings, upon the platform of said vehicle, a motor actuating said suction and blast apparatus, a tube beneath the said platform, extending transversely thereto, and a conductor connected with said tube and the induction-opening to the suction and blast apparatus, elbows upon the ends of said tube and pivoted socket-joints connecting the said elbows and said tube, air-suction and vacuum-forming receivers on each side of said vehicle and swivel-joints connecting the said elbows with said receivers, means for operating said receivers on the swivel-joints, and a receiver beneath the said platform, and a conductor connected rigidly with said receiver and said tube beneath the platform, and hinged brushes and aprons upon said receivers, and devices upon the platform of said vehicle for operating the hinged brushes and aprons.

705,586. **PILE-DRIVER.** JOHN H. HAWKINS, Pennsylvania Way, Pa. Filed Oct. 22, 1901. Serial No. 79,497. (No model.)

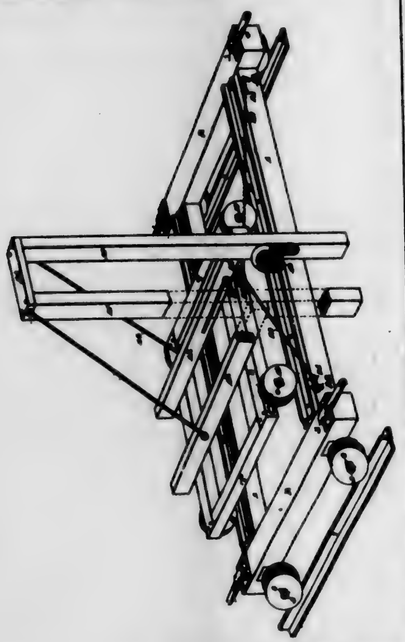

Claim.—1. In a device of the character described, the combination of a main truck having supplementary axles to receive the wheels of said trucks whereby the truck may be moved longitudinally or transversely, of an auxiliary truck mounted upon said main truck, pulleys carried by said auxiliary truck, and a rope or the like passing over said pulleys and secured to said main truck whereby the auxiliary truck may be moved independently of the main truck, substantially as described.

2. In a pile-driver, a main truck having axles carrying wheels secured thereto, supplementary axles secured to said main truck transverse to said first-named axles, whereby the said wheels may be removed from said first-named axles and secured to said supplementary axles to enable the truck to move in a transverse direction, a supplementary truck movably mounted on said main truck, and a rope or the like engaging the said supplementary truck and secured to said main truck whereby the supplementary truck may be moved independently of the main truck, substantially as described.

705,587. **TYPE-WRITING MACHINE.** CHARLES W. HOWELL, Jr., Newark, N. J. Filed July 19, 1900. Serial No. 24,168. (No model.)

Claim.—1. In a type-writing machine; a type-carrier having rotating and nutating movements; rotating means therefor; means including a spindle and pinion to enable rotation of said type-carrier; and an independent selecting-lever to actuate said rotating means, and jointed thereto by a loosely-moving intermediate connecting device in such a manner as to permit free nutative movement of said type-carrier.

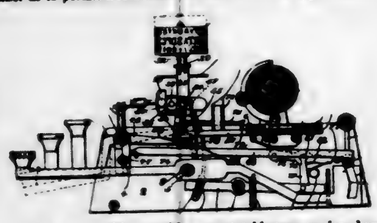

2. In a type-writing machine; a rotatable type-carrier; key-levers provided with selecting devices; a selecting-lever operable by said key-levers through the medium of said selecting devices; and a rack-and-pinion connection intermediate said type-carrier and selecting-lever said rack and pinion being respectively movable relatively to each other and to said selecting-lever, to enable imprint.

3. In a type-writing machine; a rotatable type-carrier; a nutating rocker therefor; a selecting-lever; and a rack-and-pinion device movable with said carrier and connected with said type-carrier, said device having a guide projecting into the path of said lever and coöperating therewith to enable rotation of said type-carrier by said lever and to permit free nutative movement of said rocker at varying positions of said lever.

4. In a type-writing machine, the combination of a rotary type-carrier supported in a nutating frame or rocker, with a selecting-lever terminating in a ball and constructed to rotate the type-carrier.

5. In a type-writing machine; a rotatable type-carrier; a series of key-levers each having individual cam-slots to rotate the type-carrier positively to the desired character and positively back to normal position; vibrating members to be vibrated by the wall of the cam-slots; and latches operating independently of the key-returning means to hold the vibrating members positively in a normal position of rest.

6. In a type-writing machine; a rotatable type-carrier mounted in a rocker; a rack-and-pinion rotating device having on one side a rack, and on the other side a slot, groove or guideway; a selecting-lever having at its free end a ball or rounded surface entering or positioned coöperatively with respect to said slot, groove or guideway, to rotate the type-carrier through the rack-and-pinion rotating device and maintain same in selected rotative position during nutation for imprint.

7. In a machine of the class described; a frame, and a selecting-lever supported thereby, said lever comprising an upright member rotatable about its longitudinal axis and an arm extended therefrom and moving in a horizontal path; means to permit adjustment of said arm upon said upright; and a head member connected with said arm and adjustable relatively thereto.

8. In a machine of the class described; a type-carrier having rotating and nutating movements; rotating mechanism for said type-carrier, including a member provided with a guide device; and a selecting-lever presenting toward, and to be embraced by, said guide device, a rounded member to actuate said type-carrier rotatively, and permitting free, nutative movement of said type-carrier.

9. In a machine of the class described; a type-carrier rotatable upon an upright spindle mounted in a nutating rocker; a rack mounted slidingly on said rocker intermeshing with a pinion on said spindle, and presenting a guide device to move in a horizontal path; and a selecting-lever rotatable about an upright axis adjacent said rack, and presenting a rounded end to coöperate with said guide device.

10. In a machine of the class described; a type-carrier; a selecting-lever; and operating connections therebetween, including a guide device having a plurality of parallel, upright guide members, and a ball-ended arm on said lever to enter between said guide members and engage the same universally, substantially as described.

11. In a machine of the class described; selecting devices; a vibrating member to coöperate therewith; means tending normally to return said vibrating member to a position adjacent said selecting devices; and means independent of said returning means to maintain said vibrating member, when inoperative, in position for immediate coöperative engagement by said selecting devices respectively, substantially as described.

12. The combination with a vibrating member; of a latch device comprising a pivoted latch member having a portion to engage and hold said vibrating member; an operating device for said vibrating member; and means intermediate said latch and operating members to enable release of the former by the latter, said means acting to permit return of said latch to position for engagement of said vibrating member before normal return of said vibrating member to position for such engagement.

13. In a machine of the class described; a vibrating member; a key member; a latch for said vibrating member; and means to operate said latch by said key member, to release said vibrating member, including a movable strut device arranged to permit escape of said latch from its operative connection with said key member before normal return of the latter.

14. In a machine of the class described; a type-carrier and its nutating rocker having a throw approximating 60° (sixty degrees), key-levers; a pitman depending from said rocker at a point near the axis of the latter; an intermediate lever arranged to be operated by said key-levers at a point of wide arc of movement, and having its short arm connected with said pitman, to enable said rocker to be nutated or rocked by said key-levers and given a high momentum to secure distinct imprint of the characters presented by said type-carrier.

15. In a type-writing machine; a rotatable type-carrier mounted in a nutating frame or rocker; a plurality of pitmen or links having slots at their lower ends and operatively connected to said rocker; a plurality of universal bars or frames having at their shorter or forward ends studs engaging with said slots and operated by key members to nutate the rocker and type-carrier for imprint.

16. In a type-writing machine; a rotatable type-carrier; a selecting-lever mounted rotatively adjacent, and jointed to said type-carrier through the medium of a rack-and-pinion connection, to position said type-carrier rotatively; key-levers provided with selecting devices; a vibrating device adjacent and operable by, said selecting devices, respectively; and connections intermediate said vibrating device and selecting-lever to permit individual selective actuation of the latter by said key-levers respectively.

17. In a machine of the class described, a type-wheel mounted upon a spindle shiftable longitudinally in its bearings and having a nutative movement; and a key device provided with an arm projecting into the path of said spindle and movable to engage and shift said spindle in said path, said spindle having a segmental foot of a radius proportioned to the arc of nutative movement to be engaged by said operating-arm; and an antifriction device intermediate said arm and foot.

18. In a machine of the class described, a type-carrier mounted upon a spindle shiftable longitudinally in its bearings and nutatable; key devices arranged respectively to control said spindle in different longitudinal positions; and connections intermediate said key devices and spindle, to shift the latter longitudinally, said connections including arms adjacent the path of said spindle member and a plurality of segmental members connected with said spindle and proportioned to different arcs of nutation thereof, to be engaged by said arms respectively to hold said spindle in selected longitudinal position regardless of the nutative position thereof.

705,588. **COMPENSATING GEARING.** EDWARD HUBER, Marion, Ohio. Filed Jan. 13, 1902. Serial No. 89,301. (No model.)

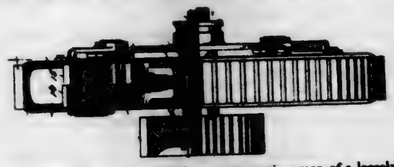

Claim.—1. The combination, in a compensating gear, of a loosely-mounted main driving gear-wheel, a relatively large gear-wheel adapted to be operatively connected with one driving-wheel, a relatively small gear-wheel adapted to be operatively connected with the other driving-wheel, a relatively large pinion carried by the main driving gear-wheel and meshing with the larger gear-wheel, a relatively small pinion also carried by the main driving gear-wheel, meshing with the smaller gear-wheel, and bearing the same proportion thereto as does the larger pinion to the gear-wheel with which it meshes, and a third pinion meshing with the smaller pinion and united with the larger pinion to rotate in unison therewith, substantially as described.

2. The combination, in a compensating gear, of a loosely-mounted main driving gear-wheel having diametrically opposite systems of gears journaled thereon near its periphery, each system consisting of two pinions of different sizes so united as to rotate in unison, and a third pinion of the same size as the smaller of the two other pinions, and meshing therewith, a large gear-wheel meshing with the two larger pinions, and a smaller gear-wheel meshing with the third pinion of each system, and bearing the same relation thereto as does the larger gear-wheel to the pinion with which it meshes, said gear-wheels being respectively adapted to be connected to the two driving-wheels, substantially as described.

705,589. **APPARATUS FOR PRECIPITATING GOLD AND SILVER FROM THEIR SOLUTIONS.** ALFRED JAMES, London, England. Filed Mar. 10, 1900. Serial No. 8,256. (No model.)

Claim.—1. A metallurgical filter for separating precious metal from a solution containing said metal consisting of an iron vessel cast in one piece having an integral partition at one end thereof extending to a point near the bottom, said vessel and partition being provided with an inner coating of cement, an extension at the top of said vessel opposite said partition forming a chamber, and a spout leading from said chamber.

2. A metallurgical filter for separating precious metal from a solution containing said metal consisting of an iron vessel cast in one piece and having an integral partition extending to a point near the bottom thereof, said vessel and partition being provided with an inner coating of cement, said vessel being widened at one side near the top thereof and having an integral partition extending upward from said vessel and forming a chamber, said partition being lower than the tank and permitting the liquid to flow over the top thereof into said chamber, and a spout leading from said chamber.

705,590. **METHOD OF TRANSFERRING DESIGNS.** CHARLES KRAFT, Chicago, Ill. Filed Jan. 30, 1902. Serial No. 91,921. (No specimens.)

Claim.—1. The method of transferring designs consisting in applying the design to paper in a substance soluble in water, saturating the parts of the paper not covered by the design with a substance which will render the paper impervious to water, applying the desired colors to the design, coating the design with an adhesive substance, applying the same to the surface to be decorated, and wetting and removing the paper.

2. The method of preparing designs for transferring consisting in rendering a suitable backing impervious to water except where it receives the design, applying colors to the design, and coating the same with an adhesive.

3. The method of preparing designs on paper for transferring, consisting in applying the design to the paper in a substance soluble in water but which renders the paper impervious to wet, saturating the remainder of the paper with wax, applying the desired colors to the design, and coating the same with an adhesive.

705,591. **MACHINE FOR MAKING INDIVIDUAL CIGARETTES.** FRANK J. LEMERTON, Waterbury, Conn. Filed Aug. 31, 1901. Serial No. 73,980. (No model.)

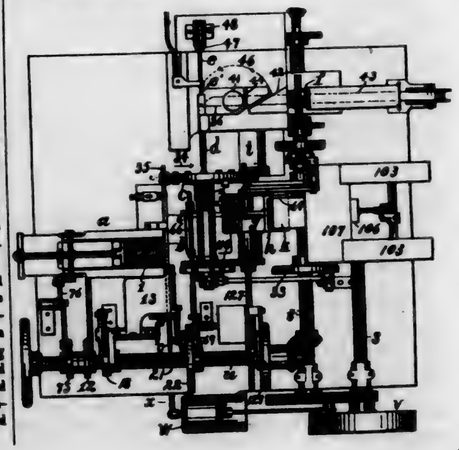

Claim.—1. In a machine for making individual cigarettes, a magazine having a stock of the cut blanks supported therein, a pusher operated to move the stock of blanks forward, an arbor for winding the blanks, means for seaming the edges of the blanks, and a crimping-mandrel and a crimping-roll for crimping the edges of the seamed blanks without pasting the same, substantially as herein set forth.

2. In a machine for making individual cigarettes, a magazine containing the blanks set on edge with a pusher to move the blanks forward, a winding-arbor having vacuum-ports to draw one blank from the magazine and wind it, a crimping-mandrel in line with the arbor with seaming-tube 24 adapted to seam the blank and rolls to crimp the seam, and means to shift the winding-blank to the crimping-tools.

3. In a machine for making individual cigarettes, a magazine containing the blanks set on edge with a pusher to move the blanks forward, a winding-arbor having vacuum-ports to draw one blank from the magazine and wind it, a crimping-mandrel in line with the arbor with seaming-tube 24 adapted to seam the blank and rolls to crimp the seam, a shifter embracing the arbor to push the blank forward, and a semicircular former 24ª to give a trough shape to the blank when wound by the arbor.

4. In a machine for making individual cigarettes, a magazine containing the blanks, a winding-arbor having vacuum-ports to draw one blank from the magazine and wind it, a crimping-mandrel in line with the arbor, a roll within the forward end of the mandrel, an adjacent roll adjustable to and from the mandrel, a former 24ª sustained at the side of the arbor, and a shifter embracing the arbor and operated to push the wound blanks through the seaming and crimping tools.

5. In a machine for making individual cigarettes, a magazine containing the blanks, a winding-arbor having vacuum-ports to draw one blank from the magazine and wind it, a crimping-mandrel in line with the arbor, with a seaming-tube 24 to seam the blank and rolls to crimp the seam, a carrier-disk with transverse holes to receive the shells, means for adjusting the holes successively in line with the crimping-mandrel, means to force the shells from the winding and crimping device into the said holes, means for molding the tobacco filler, such means being provided with a nozzle, means to discharge the filler from the nozzle, and means for shifting the carrier-disk to bring the shells successively to such nozzle.

6. In a machine for making individual cigarettes, the combination, with means for molding the tobacco filler and having a nozzle as set forth to discharge the fillers to the shells, of the carrier-disk having transverse holes, means for supplying the cigarette-shells to the holes, means for shifting the carrier-disk to bring the shells successively in line with the nozzle, a locator for pushing the shells successively upon the nozzle, means operating to retract the locator after pushing each shell, and means for forcing the filler into the shell with its outer end projected beyond the shell sufficiently to be trimmed.

7. In a machine for making individual cigarettes, the combination, with means for molding the tobacco filler and having a nozzle as set forth to discharge the filler to the shells, of the carrier-disk having transverse holes, means for supplying the cigarette-shells to the holes, means for shifting the carrier-disk to bring the shells successively in line with the nozzle, a locator for pushing the shells successively upon the nozzle, means operating to retract the locator after pushing each shell, means for forcing the filler through the shell to project it beyond the end of the shell, means for trimming such projecting end of the filler while the shell is upon the nozzle, and means for again forcing the filler outward to discharge the shell and the filler from the nozzle.

8. In a machine for making individual cigarettes, the combination with means for molding the tobacco filler and having a nozzle as set forth to discharge the filler to the shells, of the carrier-disk having transverse holes, means for supplying the cigarette-shells to the holes, means for shifting the carrier-disk to bring the shells successively in line with the nozzle, a locator for pushing the shells successively upon the nozzle, means operating to retract the locator after pushing each shell, means for forcing the filler through the shell with the filler projecting from both ends of the shell, means for trimming the outer end of the filler while the shell is upon the nozzle, means for again forcing the filler outward to discharge the shell and the filler from the nozzle, and means for shifting the carrier-disk past a cutter to trim the inner end of the filler.

9. In a machine for making individual cigarettes, the combination, with the carrier-disk having transverse holes, of means for supplying cigarette-shells to such holes, means to form the tobacco filler and insert the same in the shell, a cutter operating flush with the face of the carrier-disk, a locator for setting the end of the shell flush with the carrier-disk, and means for moving the cutter past the carrier-disk to trim the tobacco from the end of the shell.

10. In a machine for making individual cigarettes, the combination, with the carrier-disk having transverse holes, of means for supplying cigarette-shells to such holes, means to form the tobacco filler and insert the same in the shell, locators to set the ends of the filled shell alternately flush with the carrier-disk, and means operating flush with the carrier-disk for successively trimming the tobacco from such ends.

11. In a machine for making individual cigarettes, a filler-molding device embracing a drum with longitudinal peripheral grooves, a casing provided with inlet and outlet apertures, means for pressing a charge of tobacco through an inlet into one of the grooves, means for shifting such groove to the outlet, means for maintaining the compression of the tobacco in the groove, and means for discharging the filler longitudinally from the groove.

12. In a machine for making individual cigarettes, a filler-molding device embracing a drum with longitudinal peripheral grooves, a casing provided with inlet and outlet apertures, a shelf adjacent to the inlet-aperture, a tobacco-feeder above the shelf, a presser to crowd the tobacco toward the casing, a slide to compress the charge of tobacco upon the shelf, and a punch to crowd the charge through the inlet into one of the grooves, means to shift the drum to bring such groove to the outlet, and means for discharging the filler longitudinally from the grooves.

13. In a machine for making individual cigarettes, a filler-molding device embracing a drum with longitudinal peripheral grooves, a casing provided with inlet and outlet apertures, a shelf 111 adjacent to the inlet-aperture, a tobacco-feeder above the shelf, a punch *k* movable through the inlet, a presser 108 to crowd the tobacco upon the shelf toward the casing, means for retracting the punch flush with the presser, a slide *h* operating between the presser and casing to compact the tobacco, means for advancing the punch to force the charge through the inlet into one of the grooves, means for shifting such grooves to the outlet, and means for discharging the filler therefrom.

14. In a machine for making individual cigarettes, a filler-molding device embracing the drum having peripheral grooves, the casing provided with apertures forming an inlet and an outlet corresponding to the grooves, and discharge-nozzle upon the outlet-aperture, a shelf below the lateral or inlet aperture with vertical slide over the same, a punch movable through such inlet, a feeder for discharging tobacco upon the surface of the shelf, the presser 108 to crowd the tobacco upon the shelf toward the casing, means for retracting the punch flush with the presser, a slider 105 moving the presser and punch to compact the tobacco at the end of the punch, means for advancing the punch to force the charge through the inlet into one of the grooves, such punch and groove being shaped to form a cylindrical filler, means to shift the drum to bring the groove to the discharge-outlet, molding-jaws operating upon the drum over each groove to compress the filler, means for slightly retracting such jaws to release the filler, and means for discharging the filler from the groove.

15. In a machine for making individual cigarettes, a filler-molding device embracing a drum with longitudinal peripheral grooves, a casing provided with inlet and outlet apertures, means adjacent to the inlet for compacting a charge of tobacco laterally and vertically, and forcing it into the groove and simultaneously giving it a cylindrical shape, means for shifting the drum to bring the groove to the outlet, means for retaining the tobacco in cylindrical form in the groove, and means for discharging the tobacco from the groove.

16. In a machine for making individual cigarettes, a filler-molding device embracing a drum with longitudinal peripheral grooves, a casing provided with inlet and outlet apertures, means adjacent to the inlet for compacting a charge of tobacco laterally and vertically, and forcing it into the groove and simultaneously giving it a cylindrical shape, dies movable upon the drum adjacent to the groove and shaped to hold the tobacco in cylindrical form, means for shifting the drum to bring the groove to the outlet, means for slightly separating the dies, and a filler-punch to force the tobacco from the groove into the shell.

17. In a machine for making individual cigarettes, a filler-molding device embracing a drum with longitudinal peripheral grooves, a casing provided with inlet and outlet apertures, means adjacent to the inlet for compacting a charge of tobacco laterally and vertically, and forcing it into the groove and simultaneously giving it a cylindrical shape, segmental dies movable upon the drum at opposite sides of the groove, arms extended from each die to the center of the drum and pivoted upon a stud thereat, means for pressing the dies normally together, means for shifting the drum to bring the groove to the outlet, means for slightly separating the dies, and a filler-punch to force the tobacco from the groove into the shell.

19. In a machine for making individual cigarettes, the combination, with means for forming a cylindrical shell and inserting a mouthpiece therein, of the mouthpiece appliance comprising a winding-spindle with fork to engage the end of the blank, a bed extended laterally from the spindle with transverse and oblique cutters operated thereon, means for alternately operating the cutters, and for reversing the cut blank after each actuation of the oblique cutter.

19. In a machine for making individual cigarettes, the combination, with means for forming a cylindrical shell and inserting a mouthpiece therein, of the mouthpiece appliance comprising a winding-spindle with fork to engage the end of the blank, a bed extended laterally from the spindle with transverse and oblique cutters operated thereon, means for feeding the blank a distance exceeding its length past the oblique cutter, means for then operating the transverse cutter and rotating the spindle to wind the blank, means then operating for feeding the blank less than its own length, and for then operating the oblique cutter and reversing the blank to present its point to the winding-spindle, substantially as herein set forth.

20. In a machine for making individual cigarettes, the combination, with means for forming a cylindrical shell and inserting a mouthpiece therein, of the mouthpiece appliance comprising a winding-spindle with fork to engage the end of the blank, a bed extended laterally from the spindle with transverse and oblique cutters operated thereon, means between the transverse cutter and the winding-spindle for reversing the alternate blanks, feed-rolls for feeding the blank and geared to a ratchet-wheel having long and short teeth disposed as set forth, and means for actuating the ratchet, the cutters, and the winding-spindle successively, substantially as herein set forth.

21. In a machine for making individual cigarettes, the combination, with means for forming a cylindrical shell and containing it to receive a mouthpiece, of a mouthpiece winding-spindle with a stripping-sleeve fitted movably upon its shank, a guide-tube embracing the point of the spindle for receiving the coiled mouthpieces, means for cutting blanks with acute points and advancing them to the spindle, and the spindle and guide-tube being slotted to admit the point of the blank, means for advancing the stripper to force the coiled blank from the spindle within the guide-tube, and means for advancing the mouthpieces within the guide-tube to discharge them to the cigarette-shells.

22. In a machine for making individual cigarettes, the combination, with means for forming a cylindrical shell and containing it to receive a mouthpiece, of a mouthpiece winding-spindle with a stripping-sleeve fitted movably upon its shank, a guide-tube embracing the point of the spindle for receiving the coiled mouthpieces, means for reciprocating the spindle within the guide-tube to embrace the blank, means for cutting blanks with acute points and advancing them to the spindle, and the spindle and guide-tube being slotted laterally to admit the point of the blank, means for advancing the stripper to force the coiled blank from the spindle within the guide-tube, and means for discharging the mouthpieces successively from the guide-tube.

23. In a machine for making individual cigarettes, the combination, with means for forming a cylindrical shell and containing it to receive a mouthpiece, of a mouthpiece winding-spindle with a stripping-sleeve fitted movably upon its shank, a guide-tube embracing the point of the spindle for receiving the coiled mouthpieces, and slotted upon one side for the passage of fingers, means for feeding blanks to such spindle, means for advancing the stripper to discharge the mouthpieces when coiled from the spindle, and a finger-plate having lateral and longitudinal movements with fingers inserted successively behind such mouthpieces for moving them forward into the shells, substantially as herein set forth.

24. In a machine for making individual cigarettes, the winding-spindle *c* with fork to engage the end of the blank, a guide-tube embracing the end of the spindle and slotted to admit the blank, means for feeding the blank transversely to such spindle, means for advancing the fork of the spindle upon the point of the blank, means for rotating the spindle to wind the blank, means for reversing the rotation of the spindle to free the blank, and a stripping-sleeve fitted to the shank of the spindle and actuated, upon such reversal of the spindle, to strip the finished mouthpiece from the spindle, substantially as herein set forth.

25. In a machine for making individual cigarettes, the means for making the mouthpieces, comprising the mouthpiece winding-spindle *a* splined to the gear 47, the gear-segment 58 with connection to crank-pin 59 for reversibly rotating the gear 47, means for feeding a blank to such spindle, and lever and cam with connections to the winding-spindle for advancing the spindle upon the point of the blank, and the stripping-sleeve *c'* with means for reciprocating the same at the close of the winding operation to strip the mouthpieces from the spindle.

26. In a machine for making individual cigarettes, the means for making the mouthpieces comprising mouthpiece winding-spindle *a* with the stripping-sleeve *c'* fitted movably upon its shank, the guide-tube *d* embracing the point of the spindle for receiving the coiled mouthpieces and slotted upon one side for the passage of fingers, means for feeding blanks to such spindle, the slide 51 with connection to the stripping-sleeve *c'*, the finger-plate 54 having slot-and-pin connection to the slide 51 and fingers 57 movable within the guide-tube *d*, and means for reciprocating the slide 51 at the close of the winding operation to strip the mouthpieces successively from the winding-spindle and force them into the shells.

27. In a machine for making individual cigarettes, the combination, with a winding-spindle having a fork to engage the end of the blank, a bed extended laterally from the spindle with transverse and oblique cutters thereon, means for feeding a strip to the cutters and operated first to feed the strip a distance exceeding the length of one blank past the oblique cutter, means for then operating the transverse cutter and rotating the spindle to wind the blank, and means then operating for feeding the strip less than the length of one blank and for then operating the oblique cutter, of the reversing-disk arranged between the transverse cutter and the winding-spindle, and provided with a presser to grip the blank, and means for rotating the reversing-disk to reverse the blank and for lifting the presser to disengage the strip, substantially as herein set forth.

28. In a machine for making individual cigarettes, the combination, with means for forming the shells and delivering them to a carrier-disk *c*, of the filler-molding device embracing the drum 100 having peripheral grooves, the casing *g* provided with outlet-nozzle *j*, means for forming the fillers in the grooves and discharging them from the nozzle, the carrier-disk *c* intermediate to the shell-forming device and the filler-molding device, and provided with ratchet mechanism for turning the dial-plate intermittently and gearing connecting the dial-plate and the grooved molding-drum to turn the drum intermittently to bring the grooves successively in line with the nozzle *j* and holes in the dial-plate.

29. In a machine for making individual cigarettes, the means for trimming the cigarettes consisting of a carrier, as the carrier-disk *c*, with transverse holes to carry the shells with their contained fillers, two locators adapted to set the shells longitudinally in the holes in the carrier-disk, the revolving cutters 60 and 61 supported upon the arms 135 attached to the shaft 134, and means for actuating the carrier, the locators and the arms for the cutters at intervals to trim the opposite ends of the cigarettes successively.

30. In a machine for making individual cigarettes, the cutting mechanism for trimming the opposite ends of the cigarettes, comprising the two arms 135, the shaft 134 attached to the arms, and oscillated by the arm 136 and cam 137, the cutters 60 and 61 mounted in bearings upon the outer ends of the arms, and the gears 139½, 95 and 96 for rotating the cutters, the whole arranged to operate successively upon the opposite ends of the cigarettes, substantially as herein set forth.

31. In a machine for making individual cigarettes, the combination, with means for molding the tobacco filler and having a nozzle as set forth to discharge the fillers to the shells, of the carrier-disk having bushings to receive the cigarette-shells, means for supplying the cigarette-shells to the bushings, means for shifting the carrier-disk to bring the shells successively in line with the nozzle, a locator for pushing the shells successively upon the nozzle, means for adjusting the carrier-disk axially to and from the nozzle to set the outer end of the bushing flush with the outer end of the shell when the shell is upon the nozzle, a cutter movable transverse to the bushing to trim the filler, and means for adjusting the cutter to move close to the end of the bushing, substantially as herein set forth.

32. In a machine for making individual cigarettes, the combination, with means for molding the tobacco filler and having a nozzle as set forth to discharge the fillers to the shells, of the carrier-disk having bushings to receive the cigarette-shells, means for supplying the cigarette-shells to the bushings, means for shifting the carrier-disk to bring the shells successively in line with the nozzle, a locator for pushing the shells successively upon the nozzle, means for adjusting the carrier-disk axially to and from the nozzle to set the outer end of the bushing flush with the outer end of the shell when the shell is upon the nozzle, means for supplying the cigarette-shells to the holes, and means for adjusting the carrier-disk axially to and from the nozzle to vary the relation of the shells to the dial-plate when fitted to the nozzle.

33. In a machine for making individual cigarettes, the combination, with means for molding the tobacco filler and having a nozzle as set forth to discharge the fillers to the shells, of the carrier-disk having bushings to receive the cigarette-shells, means for supplying the cigarette-shells to the bushings, means for shifting the carrier-disk to bring the shells successively in line with the nozzle, a locator for pushing the shells successively upon the nozzle, means for adjusting the carrier-disk axially to and from the nozzle to set the outer end of the bushing flush with the outer end of the shell when the shell is upon the nozzle, a cutter movable transverse to the bushing to trim the filler, and means for adjusting the cutter to move close to the end of the bushing, substantially as herein set forth.

705,592. AIR-BRAKE SYSTEM. WILLIAM G. MACLAUGHLIN, Windsor, Canada, assignor to the MacLaughlin Railway Brake Company, Detroit, Mich., a Corporation of Michigan. Filed May 11, 1901. Serial No. 60,741. (No model.)

Claim.—1. In a brake mechanism, the combination of a brake-cylinder having a piston therein connected with a brake mechanism, a train-pipe connected with the forward end of the brake-cylinder upon one side of the piston therein, an auxiliary reservoir connected with the rear of the brake-cylinder upon the opposite side of the piston, a main reservoir connected with the train-pipe and adapted to carry pressure equal to the train-pipe pressure, means connecting the auxiliary reservoir with the main reservoir to reduce the pressure in said auxiliary and maintain it normally below that of the train-pipe, means for reducing the train-pipe pressure

below that of the auxiliary reservoir and means for restoring the train-pipe pressure to a point in excess of the pressure of said auxiliary.

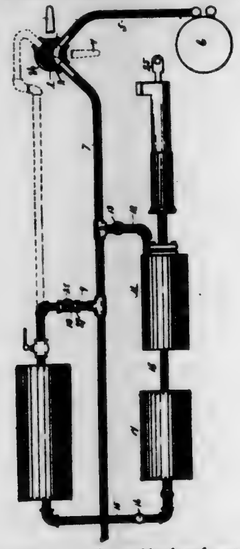

2. In an air-brake system the combination of a main reservoir, a brake-cylinder, a piston in said cylinder connected with a brake mechanism, an air-pipe adapted to contain a relatively high pressure connected with the forward end of the brake-cylinder, an auxiliary reservoir adapted to normally contain a relatively low pressure connected to the opposite ends of the brake-cylinder by a pipe of comparatively small area, said auxiliary reservoir being also connected with the high-pressure pipe by way of the main reservoir, means for reducing the pressure in said air-pipe below that of the auxiliary reservoir and restore said pressure to the normal above that of the auxiliary.

3. In an air-brake system, the combination of the brake-cylinder having a piston therein connected with a brake mechanism, a train-pipe connected with the brake-cylinder on one side of said piston, a main reservoir connected with the train-pipe by a pipe containing a valve which allows the air to flow from the train-pipe into said main reservoir, but prevents the flow of air from the main reservoir to the train-pipe, an auxiliary reservoir connected to the brake-cylinder on the side of the piston opposite to that of the train-pipe connection, means for connecting the main reservoir with the auxiliary reservoir adapted to allow of the passage of air into said auxiliary reservoir at a pressure below that of the main reservoir and the train-pipe, and means for alternately reducing the train-pipe pressure below that of the auxiliary and increasing it to a point above the auxiliary pressure.

4. In an air-brake system, the combination of a main reservoir, a brake-cylinder, a piston therein connected by a piston-rod with a brake mechanism, a train-pipe containing air-pressure connected with the brake-cylinder on one side of said piston and an auxiliary reservoir, normally containing a pressure below that of the train-pipe, means for reducing and restoring the pressure of the train-pipe, a pipe connecting the auxiliary reservoir to the train-pipe through the main reservoir and a pipe connecting the auxiliary reservoir to the brake-cylinder of a relatively small diameter to prevent a sudden expansion of the air in the rear of the brake-cylinder when the pressure in the forward end thereof is reduced.

5. In an air-brake the combination of a brake-cylinder having a piston therein, a main reservoir, a primary air system containing a relatively high pressure connected with the main reservoir, a closed secondary air system containing a relatively low pressure indirectly connected to the primary system through said main reservoir, means directly connecting said systems with the cylinder, the piston in the cylinder being interposed between said air systems, and means for varying the pressure in the primary air system without affecting the pressure in the secondary system.

705,598. GRINDING AND POLISHING MACHINE. CHARLES MALDANER, Chicago, Ill., assignor to Chicago Handle Bar Co., a Corporation of Illinois. Filed Aug. 12, 1901. Serial No. 73,009. (No model.)

Claim.—1. In a tube-polishing machine, a pair of polishing-wheels mounted in a common plane and spaced apart to receive a tube between them, means for rotating the wheels in the same direction, and a mandrel projecting between the wheels upon which the tube may slide and turn.

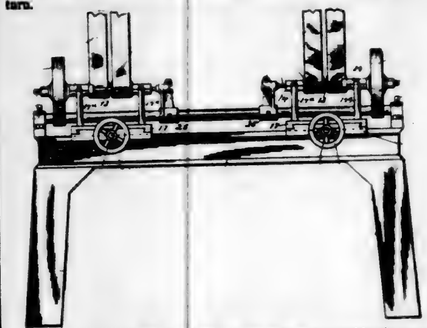

2. In a tube grinding and polishing machine, in combination, a pair of polishing-wheels, means for rotating the wheels in the same direction, and a longitudinally-movable mandrel projecting between the wheels to receive a tube held in the hands of the operator.

3. In a tube grinding and polishing machine, in combination, a pair of adjustable polishing-wheels, means for rotating the wheels in the same direction, an adjustable bracket, a removable mandrel carried by the bracket and projecting between the wheels to receive a tube held in the hands of the operator, and means for adjusting the wheels.

4. In a tube grinding and polishing machine, in combination, a supporting-table, a pair of polishing-wheels supported from the table and adapted to be so driven that their adjacent faces travel in opposite directions, a bracket, and a mandrel carried by the bracket and projecting between the wheels, the mandrel being designed to receive a tube held in the hands of the operator to be acted upon by the wheels.

5. In a tube grinding and polishing machine, in combination, a supporting-table, a pair of polishing-wheels adjustably supported from the table and adapted to be so driven that their adjacent faces travel in opposite directions, a bracket, and a mandrel carried by the bracket and projecting between the wheels, the mandrel being designed to receive a tube held in the hands of the operator to be acted upon by the wheels.

6. In a tube grinding and polishing machine, in combination, a supporting-table, a pair of polishing-wheels supported from the table and adapted to be so driven that their adjacent faces travel in opposite directions, a rod mounted on the table, a bracket carried by the rod, and a mandrel held by the bracket and projecting between the wheels, the mandrel being designed to receive a tube held in the hands of the operator to be acted upon by the wheels.

7. In a tube grinding and polishing machine, in combination, a supporting-table, a pair of polishing-wheels adjustably supported from the table and adapted to be so driven that their adjacent faces travel in opposite directions, a bracket, and a mandrel held by the bracket and projecting between and extending beyond the wheels, the mandrel being designed to receive a tube held in the hands of the operator to be acted upon by the wheels.

8. In a tube-polishing machine, a pair of polishing-wheels mounted in a common plane and spaced apart to receive a tube between them, means for rotating the wheels in the same direction, and a telescopically-extensible mandrel projecting between the wheels upon which the tube may slide and turn.

9. In a tube grinding and polishing machine, in combination, a pair of polishing-wheels adapted to be so driven that their adjacent faces travel in opposite directions, a bracket, and a yielding mandrel carried by the bracket and projecting between the wheels, the mandrel being designed to receive a tube held in the hands of the operator to be acted upon by the wheels.

10. In a tube grinding and polishing machine, in combination, a supporting-table, a pair of polishing-wheels supported from the table, means for rotating the wheels in the same direction, a bracket carried by the table, a tubular mandrel-holder held by the bracket, a mandrel, having sliding engagement with the tubular holder, projecting between the wheels, and a spring located in the tubular holder and adapted to force the mandrel normally outward.

705,594. SHADE-ROLLER AND FIXTURE. GEORGE C. MATHERS, Indianapolis, Ind., assignor of one-third to Frank R. Wolf, Indianapolis, Ind. Filed Jan. 23, 1902. Serial No. 91,755. (No model.)

Claim.—A shade-roller consisting of a main body portion of cylindrical and usual form, a plate 10 secured directly to one end of said roller, the said plate having a socket 12 formed in its inner end, a pin 15 journaled in plate 10 and provided with an enlarged head 16 lying within the socket 12 so that the adjacent end of the roller is supported by and journaled upon said pin, a pawl 22 carried by plate 10 and adapted to engage a groove 23 formed in pin 15, a polygonal end 17 forming a part of pin 15; and a plate 7 provided with an extended pintle 8, said plate 7 being secured directly to that end of the roller 5 opposite to the end to which plate 10 is secured.

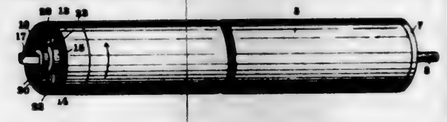

705,595. WINDOW-SHADE SUPPORT. FRANK R. MEARS, Freeport, Ill. Filed Sept. 30, 1901. Serial No. 77,108. (No model.)

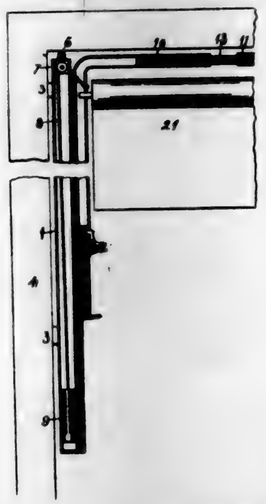

Claim.—1. A window-shade support comprising two vertical guideways, tubular supports for the guideways, a frame formed with guides, a weight located within each tubular support, a roller for each tubular support, a connection between the weights and frame passing over the rollers and extensions for the frame having a movable connection therewith.

2. A window-shade support comprising two vertical guideways, tubular supports for the guideways permitting an oscillatory movement of the guideways, a frame formed with guides, a weight located within each tubular support, a roller for each support, and a connection between the weights and frame passing over the rollers.

3. A window-shade support comprising two vertical guideways, tubular supports for the guideways, a frame formed with guides, a weight located within each tubular support, a removable cap for each tubular support each supporting a roller, and a connection between the weights and frame.

705,596. PIPE-WRENCH. JOSEPH G. MORITZ, Buffalo, N. Y. Filed Nov. 2, 1901. Serial No. 80,943. (No model.)

Claim.—1. In a pipe-wrench, the combination with a handle provided with a pipe-seat, of a flexible gripping-strap attached at its inner end to the handle near said pipe-seat and having its free portion provided with a longitudinal row of openings, and a tightening-lever pivoted to the handle in rear of said pipe-seat and provided with a stud adapted to engage with one of the strap-openings, substantially as set forth.

2. In a pipe-wrench, the combination with a handle composed of a pair of parallel side bars provided in one of their side edges with pipe-seats and connected adjacent to said seats by a transverse bolt, of a flexible gripping-strap attached at its inner end to said connecting-bolt and provided in its free portion with a longitudinal row of openings, and a tightening-lever pivoted between the side bars of the handle in rear of said pipe-seats and having its front arm provided with a stud adapted to engage with one of the strap-openings, substantially as set forth.

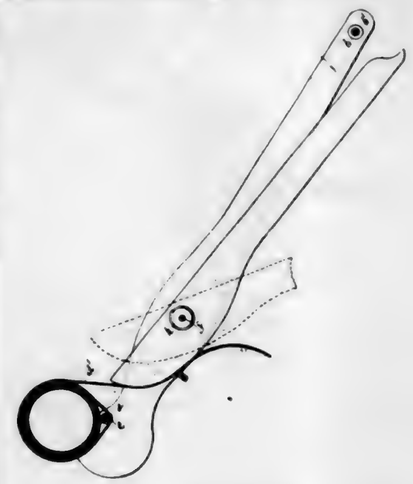

705,597. ELECTRIC SIGN. THOMAS R. MURRAY, New York, N. Y. Filed Feb. 11, 1902. Serial No. 93,590. (No model.)

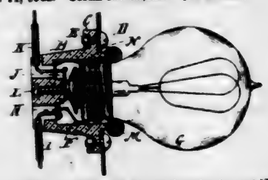

Claim.—1. The combination in an electric sign of the type herein specified, of a lamp-socket support formed integrally of a thin plate in the shape of a letter or character, a glow-lamp socket having an annular projection entering said opening and a flange, and means for detachably securing said flange to said plate, substantially as described.

2. In an electric sign of the type herein specified, the combination of a letter-plate of metal, a glow-lamp socket of insulating material disposed in and extending through an opening in said plate, a flange on said socket, and means for detachably connecting said flange to said plate, substantially as described.

3. In an electric sign of the type herein specified, the combination of a letter-plate, a glow-lamp socket disposed in an opening in said plate and detachably secured to said plate and having within its recess a threaded lining *Y*, the curved contact-plate H disposed in the bottom of said recess and communicating with said lining, the contact-plate J also disposed in the bottom of said recess and between the arms of said U-shaped contact-plate H, and circuit-terminals connected to said contact-plates, substantially as described.

4. In an electric sign of the type herein specified, the combination with the letter-plate A of the cylindrical lamp-socket H having projection N entering an opening in said plate, flange C, contact-plates within said socket and circuit-terminals extending from said contact-plates through the wall of said socket and means for connecting said flange C to said plate, substantially as described.

5. In an electric sign of the type herein specified, the combination with a letter-plate, of a cylindrical glow-lamp socket attached on one side of said plate and having an annular projection extending through said plate, and means for securing said lamp in said socket so that the bulb of said lamp shall be surrounded and supported by said annular projection, substantially as described.

6. In an electric sign of the type herein specified, the combination with a letter-plate of a cylindrical glow-lamp socket attached on one side of said plate and having a projection extending through said plate, and an annular elastic cushion carried on the protruding end of said projection; the said cushion being constructed and arranged to inclose and support the lamp-bulb, substantially as described

705,598. COTTON-PLANTER. JOHN A. MCCAIN, Atlanta, Ga. Filed Nov. 16, 1901. Serial No. 83,557. (No model.)

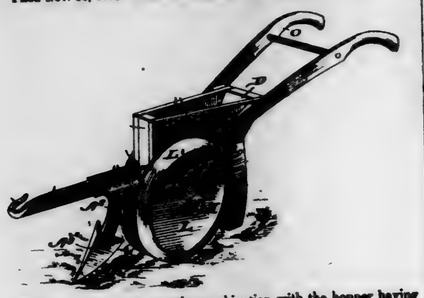

Claim.—1. In a planter, the combination with the hopper having converging sides, axles journaled in the said sides and carrying ground-wheels at their outer ends, and the stirrer-wheels arranged upon the inner ends of said axles, substantially as described.

2. In a planter the combination with a hopper having converging sides, the rear end of said hopper being wider than the front end, stub-axles journaled in the converging sides, the ground-wheels rigidly mounted upon the outer ends of said axles, a corrugated disk mounted upon the inner end of one axle, and a tooth-disk arranged upon the inner end of the other axle, substantially as described.

3. In a planter, the combination with a hopper having converging sides, ground-wheels having their axles journaled in the said converging sides, a stationary plate arranged upon the bottom of one side piece of the hopper, and an adjustable plate arranged upon the bottom of the other side piece of the hopper, said hopper being broader at its rear end than at the forward end, substantially as described.

4. The combination with a main beam having a standard attached thereto, the hopper-supporting beams attached to the main beam, the front and rear ends of the hopper arranged between the said hopper-supporting beams, the rear end of the hopper being broader than the forward end, and also arranged at an angle, the upper side pieces of the hopper arranged substantially parallel to each other, the lower side pieces of the hopper converging at their lower end, stub-axles journaled in the said lower side pieces of the hopper, the ground-wheels mounted upon the outer end of said stub-axles, and the stirrer-wheels arranged upon the inner ends of said stub-axles, substantially as set forth.

705,599. STOKING MECHANISM FOR FURNACES. WILLIAM MCCLAVE, Scranton, Pa., assignor to McClave-Brooks Company, Scranton, Pa., a Corporation of Pennsylvania. Filed Dec. 26, 1901. Serial No. 87,615. (No model.)

Claim.—1. A stoking mechanism, comprising a rock-shaft, a pusher operating in the fuel-hopper, means for reciprocating the same, comprising a rocking sleeve on said shaft, means projecting from the rock-shaft and directly engaging the rocking sleeve, and means for adjusting the rocking sleeve with respect to the said projection for altering the throw of said sleeve and thereby the extent of the movement of the pusher, substantially as described.

2. A stoking mechanism for furnaces, comprising a reciprocating pusher adapted to feed fuel upon a grate, a power-shaft, an actuating projection thereon, a rocking-sleeve journaled on said shaft and connected with the said pusher, means upon the said shaft for adjusting the sleeve with respect to the said projection for varying the amount of movement imparted by the rock-shaft to the said rocking sleeve, substantially as described.

3. A stoking mechanism, comprising a reciprocating pusher operating in connection with a fuel-hopper, a rock-shaft, and a rocking member, comprising a sleeve journaled on said shaft, pitmen connecting said sleeve with the pusher, and longitudinally-adjustable means on the rock-shaft for varying the amount of movement imparted to said sleeve and thereby the throw of the pusher, substantially as described.

4. A stoking mechanism, comprising a pusher operating in connection with a fuel-hopper, a rock-shaft for imparting movement thereto, a rocking member journaled upon the said rock-shaft, comprising a sleeve having arms projecting therefrom, wrist-pins carried by the said arms, pitmen connecting the wrist-pins with the pusher, and means adjustable longitudinally of the rock-shaft for altering the amount of movement received by the sleeve from the rock-shaft in accordance with the extent to which it is desired to operate the pusher, substantially as described.

5. A stoking mechanism, comprising a pusher operating in connection with a fuel-hopper, a rock-shaft for actuating the same, a rocking sleeve provided with a recess and adjustable longitudinally on said shaft and having end bearings journaled thereon, arms springing from said sleeve and extending parallel with the rock-shaft, wrist-pins carried by the ends of said arms and having comparatively long bearings formed thereon, pitmen connecting the said wrist-pins with the said pusher at a plurality of points, a collar upon the rock-shaft having a lug adapted to engage a recess formed in said sleeve, and means limiting the longitudinal movement of the sleeve on the rock-shaft for regulating the extent to which said recessed sleeve engages said lug for controlling the extent of the reciprocation of the said pusher, substantially as described.

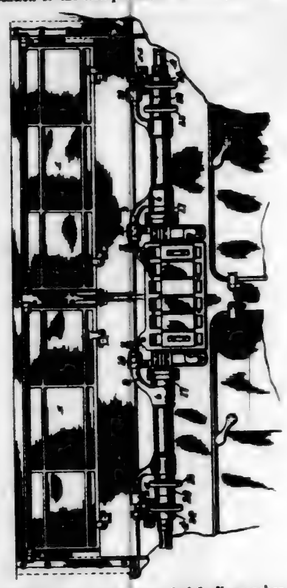

6. A stoking means, comprising a fuel-feeding pusher, a rock-shaft for actuating the same, adjusting mechanism interposed between the rock-shaft and the pusher, comprising a sleeve journaled on the rock-shaft, pitmen connecting the sleeve with the pusher, a lug carried by the said rock-shaft having a tapering contour, the said sleeve having a recess of correspondingly-tapering shape, and adjusting-nuts for holding the sleeve in engagement with the said lug, the movement received by the said sleeve corresponding to the extent to which the same is forced against the said lug, substantially as described.

7. A stoking means, comprising a reciprocating pusher operating in a fuel-supply mechanism, a rock-shaft, a sleeve journaled upon and capable of moving longitudinally thereon, pitmen connected at one end with the pusher and at their outer ends with the rocking sleeve, brackets on the furnace-front for holding the pitmen in position, and means for limiting the longitudinal movement of the sleeve on the rock-shaft to regulate the movement of the pusher, the said brackets preventing the pitmen from being moved sidewise out of proper alinement when the sleeve is adjusted, substantially as described.

8. A stoking mechanism, comprising fuel-feed pushers, a rock-shaft for moving the same, sleeves journaled upon the rock-shaft opposite each pusher, means connecting the sleeves and the pushers, means for connecting the sleeves so that they will operate simultaneously, and means for limiting the longitudinal movement of one of the sleeves upon the rock-shaft with the same or a less movement than the movement of the rock-shaft, for operating both sleeves and varying the throw of the pusher, substantially as described.

9. A stoking mechanism, comprising stoking-pushers, a rock-shaft for moving them, sleeves, journaled on the rock-shaft opposite each pusher, means connecting the said sleeves, journals formed in the metal in said connecting means, pitmen engaging said journals and connecting them with the pushers, and means for actuating one of the sleeves from the rock-shaft, so that both will be operated to move the pushers, substantially as described.

705,600. VEHICLE-AXLE. JAMES A. MCLAUGHLIN, Statesboro, Ga., assignor of two-thirds to Leonard Carter and Walter P. Darough, Valdosta, Ga. Filed May 28, 1902. Serial No. 109,068. (No model.)

Claim.—1. In a vehicle-axle a collar at the base of the spindle, a pin thereon, a sleeve adapted to rest against said collar, and a hole in said sleeve to engage said pin for the purpose specified.

2. In a vehicle-axle a sleeve having oblique, slanting, terminal slits, extending inwardly, in the direction of the revolution of the hub, and into the oil-chamber, for the purposes specified.

3. In a vehicle-axle a collar at the base of the spindle, an extension on said collar of reduced diameter, a sleeve resting against said extension, a washer on said extension, a pin on the collar at the base of the spindle, a hole in the sleeve to engage said pin, an oil-chamber in said sleeve and slits in the ends of the sleeve to enter said chamber substantially as herein set forth.

705,601. FLEXIBLE METAL FLOOR-MAT. GEORGE W. MCNEELY and HENRY MCNEELY, Marshalltown, Iowa. Filed Dec. 13, 1901. Serial No. 85,786. (No model.)

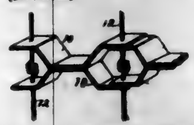

Claim.—1. In a flexible metal mat a plurality of transverse rows of short pieces of flat metal bent laterally at their central portions and perforated at their ends and the contiguous rows pivotally connected by a plurality of short wires linked together to produce flexure along lines extending at right angles to the wires for the purposes stated.

2. In a flexible metal mat, a binding-plate made of sheet metal and the parallel edges doubled inward twice to produce three overlying portions at each edge of the plate and then doubled along a longitudinal central line to produce six overlying portions at the outer edge of the finished binding-plate and provided with a plurality of transverse slots in the inner edge of the plate and adapted to be pivotally connected with the ends of an end row of short pieces of flat metal bent laterally at their centers and perforated at their ends in the manner set forth for the purpose stated.

3. An improved flexible metal floor-mat comprising parallel transverse rows of short pieces of flat metal bent laterally at their center portions and perforated at their ends, a plurality of straight pieces of wire extended through the overlying perforated ends of the short metal pieces bent laterally at their central portions and the contiguous ends of the wires linked together and binding-plates made of sheet metal having six overlying parts at their outer edges and transverse slots at their inner edges pivotally connected with the ends of the mat, arranged and combined to operate in the manner set forth for the purposes stated.

705,602. BROOM. KIRBY WELLER, Cleveland, Ohio, assignor to the Osborn Manufacturing Company, Cleveland, Ohio, a Corporation of Ohio. Filed Nov. 26, 1900. Serial No. 238,542. (No model.)

Claim.—A broom consisting of a handle provided near one end with two holes piercing it transversely, two staples passing respectively from each side through said holes and secured, bent bristles passing through said staples and bound intermediately of their bent portions and ends, substantially as set forth.

705,603. REVERSING MECHANISM. STEPHEN FURLONG, Brooklyn, N. Y. Filed Feb. 14, 1902. Serial No. 94,026. (No model.)

Claim.—1. In a reversing mechanism, the combination of a driving-wheel as 3 rotating constantly in one direction, a friction-clutch as 10 normally in engagement therewith and driven thereby, a friction-wheel as 7 also constantly driven with the first-mentioned wheel, a friction-wheel as 13 adapted to be driven always with the friction-clutch, a friction-wheel as 17 normally disengaged from the wheel 7 but adapted to be driven thereby, a friction-wheel as 16 adapted to be driven with the wheel 17 and normally disengaged from the wheel 13 but adapted to drive the same and the clutch 10, and means for disengaging the clutch 10 from the wheel 3 and causing engagement between the wheels 13 and 16 and the wheels 17 and 7.

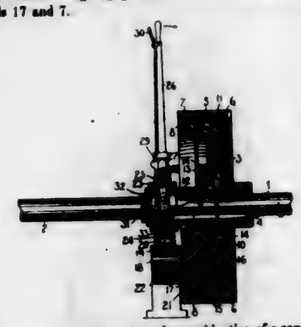

2. In a reversing mechanism, the combination of a constantly-driven wheel as 3, a friction-clutch as 10, a spring for holding said clutch normally in engagement with the wheel 3, a friction-wheel as 13 connected with the clutch 10, a friction-wheel as 7 connected with the wheel 3, a friction-wheel 17 adapted to engage with the wheel 7, a friction-wheel as 16 adapted to engage with the wheel 13, and a lever for breaking the engagement between the clutch 10 and wheel 3 and causing engagement in succession between the wheels 13 and 16 and the wheels 17 and 7.

3. In a reversing mechanism, the combination of a driving-shaft, a wheel 3 secured thereon to revolve always therewith, a driven shaft 2, a friction-clutch connected to revolve said shaft and also to slide thereon and arranged normally to frictionally engage said wheel 3, a friction-wheel as 7 connected to the wheel 3, a friction-wheel as 17 mounted on a stud or axle, a friction-wheel as 16 connected to said wheel 17, a friction-wheel as 13 connected with the friction-clutch 10, and means for moving the clutch 10 on its shaft to disengage it from the wheel 3 and cause frictional engagement between the wheels 13 and 16 and the wheels 7 and 17 so as to reverse the motion of the shaft 2.

4. In a reversing-gear, the combination of a constantly-driven shaft, a wheel 3 having an interior beveled surface, a friction-clutch 10 having a beveled periphery to match said interior beveled surface and normally in engagement therewith, a driven shaft 2 upon which said clutch 10 is secured and upon which it is adapted to slide, a spring for maintaining the surfaces of the clutch 10 and wheel 3 normally in engagement, a ring 7 connected to the wheel 3 and having an interior surface beveled in a direction opposite to that of the wheel 3, a wheel 17 having its periphery beveled to match that of the ring 7, a boss 16 having a beveled periphery, and a boss 13 on the clutch 10 having a beveled periphery to match that of the boss 16, and means for sliding the clutch 10 on its shaft and breaking the frictional engagement thereof with the wheel 3 and causing frictional engagement between the bosses 13 and 16 and the wheel 17 and the ring 7.

5. In a reversing mechanism, the combination of a constantly-driven shaft having secured thereto a wheel 3 having an interior beveled friction-surface, a ring 7 secured to said wheel and having an interior friction-surface beveled in the opposite direction, a stud or axle, a wheel 17 on said stud or axle and having its periphery beveled to match the interior bevel of said ring, a boss 16 on said wheel 17 and having a beveled periphery, a spring for said wheel 17, a clutch 10 having a beveled periphery to match that of the wheel 3 and having a boss 13 with a beveled periphery to match that of the boss 16, a shaft 2 upon which said clutch 10 is mounted, a hub or sleeve connected to said clutch 10, a spring within said hub or sleeve for holding said clutch normally in frictional engagement with the wheel 3, and a lever mechanism connected to said hub or sleeve for moving said wheel against the tension of its spring and to disengage it from the wheel 3 and cause frictional engagement between the bosses 13 and 16 and the ring 7 and wheel 17.

705,604. FEEDING MECHANISM FOR SEWING-MACHINES. LARKIN GREENWOOD and ARTHUR A. MERRITT, New York, N. Y., assignors to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Nov. 5, 1901. Serial No. 81,799. (No model.)

Claim.—1. In a sewing-machine, the combination with the two independently-operating presser-feet bars, means for imparting vertical

movement to the bars alternately in opposite directions and means for oscillating one of the bars, of a stop device to limit the downward movement of both presser-bars to prevent the presser-feet from contacting with the parts of the machine beneath them; substantially as described.

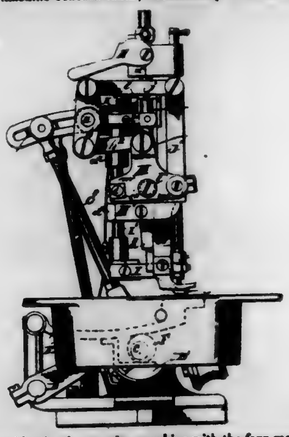

2. The combination in a sewing-machine with the four-motion feed, of a vertically-reciprocating spring-depressed shaft or rod on the machine-head, a vertically-rocking lever pivoted to the said vertically-reciprocating shaft and operatively connected above the pivot to the main shaft of the machine, a vertically-reciprocating needle presser bar pivotally connected to said vertically-rocking lever in rear of its axis for operation thereby and provided with a presser-foot to hold the work down on the throat-plate and strip the needle, a feeding presser-bar pivoted to said vertically-rocking lever in front of the axis thereof for vertical reciprocation thereby toward and from the feed-dog, and operative connections between the feeding presser-foot bar and the feed mechanism; substantially as described.

3. The combination in a sewing-machine with the four-motion feed, of a vertically-reciprocating spring-depressed shaft or rod on the machine-head, a vertically-rocking lever pivoted to the said vertically-reciprocating shaft and operatively connected above the pivot to the main shaft of the machine, a vertically-reciprocating needle presser-bar pivotally connected to said vertically-rocking lever in rear of its axis for operation thereby and provided with a presser-foot to hold the work down on the throat-plate and strip the needle, a four-motion feeding presser-bar pivoted between its ends to said vertically-rocking lever in front of the axis thereof for vertical reciprocation thereby toward and from the feed-dog, and operative connections between the upper end of the feeding presser-foot bar and the feed mechanism; substantially as described.

4. In a sewing-machine, the combination with the four-motion feed, of a vertically-reciprocating spring-depressed shaft or bar mounted on the machine-head, a rocking lever pivoted to said shaft or bar and actuated above its axis from the main shaft, a vertically-reciprocating needle presser-foot bar pivotally connected to said rocking lever in rear of the axis thereof and provided with a presser-foot to hold the work down on the throat-plate and strip the needle, a four-motion feeding presser-foot bar pivoted between its ends to the said rocking lever in front of the axis thereof for vertical movement thereby, and provided at its lower end with a presser-foot opposed to the upper face of the feed-dog to clamp and feed the work operative connections between the rocking lever above its axis, and the feed-dog-operating mechanism, and a horizontal stop secured to the head under the lower horizontal edge of said rocking lever to limit the downward movement of said lever and the presser-feet bars pivoted thereto; substantially as described.

5. In a sewing-machine, the combination with the four-motion feed including a rock-shaft actuated from the main shaft, and two upper rock-shafts along the rear of the gooseneck; one of said shafts being rocked from the first rocker-shaft and the other from the main shaft, of a vertically-reciprocating spring-depressed shaft or bar on the machine-head, a vertically-rocking lever pivoted to said shaft and linked above the axis to the outer cranked end of that rock-shaft which is actuated from the main shaft, a vertically-reciprocating needle presser-foot bar pivotally connected to the vertically-rocking lever in rear of the axis thereof and provided with a presser-foot to hold the work down on the throat-plate and strip the needle, a four-motion feeding presser-foot bar pivoted between its ends to the rocking lever in front of the axis thereof and provided with a presser-foot opposed to the upper face of the feed-dog to clamp the work thereon and feed it positively, a link connecting the upper end of the feeding presser-foot bar with the cranked outer end of the other of said two upper rock-shafts for oscillation from the feed-dog rock-shaft, and a lifting-cam adapted to engage a projection on said vertically-reciprocating shaft and simultaneously raise the rocking lever and the two presser-bars connected therewith; substantially as described.

705,605. FEEDING MECHANISM FOR SEWING-MACHINES.

LAMBERT ONDERDONK, New York, N. Y., assignor to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Nov. 9, 1901. Serial No. 81,764. (No model.)

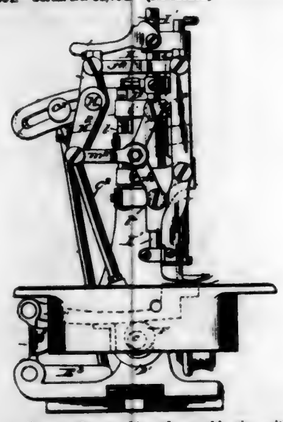

Claim.—1. In a sewing-machine, the combination with the stitch-forming mechanism, of a vertically-reciprocating cross-head, a vertically-reciprocating needle presser-foot to hold the work on the throat-plate around the needle and strip the needle, a feeding presser-bar pivoted to the cross-head for vertical movement thereby and having a presser-foot on its lower end, mechanism for positively vibrating the said feeding presser-bar in both directions, a rock-shaft actuated from the main shaft of the machine, and operative connections between the said rock-shaft, the cross-head and the needle presser-bar; substantially as described.

2. The combination, in a sewing-machine, with the stitch-forming mechanism, of a vertically-reciprocating cross-head, a vertically-reciprocating needle presser-foot to hold the work on the throat-plate around the needle and strip the needle, a feeding presser-bar pivoted between its ends to the cross-head and having a presser-foot at its lower end, means for vibrating the feeding presser-bar, a rock-shaft actuated from the main shaft of the machine, and a toggle-lever connecting said rock-shaft with the said cross-head and needle presser-bar; substantially as described.

3. The combination, in a sewing-machine, with the four-motion feed including a rock-shaft having a rocker-arm to impart the throw to the feed-dog and actuated from the main shaft, a rock-shaft along the gooseneck and actuated from the first-named rock-shaft, a second rock-shaft along the gooseneck and actuated from the main shaft, a vertically-reciprocating needle presser-bar having a foot to hold the work at the needle, a vertically-reciprocating cross-head on the machine-head, a three-link toggle-lever connecting the last-named rock-shaft to the cross-head and the needle presser-bar to move them alternately in opposite directions, a four-motion feeding presser-bar pivoted between its ends to said cross-head and at its upper end linked to the second-named rock-shaft to operate in unison with the feed-dog, and provided at its lower end with a foot opposed to said feed-dog; substantially as described.

4. The combination, in a sewing-machine, with the four-motion feed including a rocker, of a four-motion presser-bar having a presser-foot opposed to the feed-dog to cooperate therewith, means for oscillating the said presser-bar positively in both directions from the feed-rocker, including an adjustable member for changing the throw of the said feeding presser-bar, a needle presser-bar having a foot to hold the work to the throat-plate at the needle-opening therein; and means for imparting vertical movement to said presser-bars alternately in opposite directions; substantially as described.

5. In a sewing-machine, the combination with the four-motion feed, of a four-motion presser-bar oscillated positively in both directions from the feed mechanism and provided with a foot opposed to feed-dog to cooperate therewith in feeding the work, a vertically-reciprocating needle presser-bar having a foot to hold the goods to the throat-plate at the needle-opening therein, operative connections between the two presser-bars for reciprocating them alternately up and down in opposite directions, a rock-shaft for actuating said operative connections, and adjustable connection between the main shaft and the said rock-shaft to increase or diminish the movement thereof, whereby the vertical movement of said two presser-bars may be adjusted for different grades of work; substantially as described.

6. In a sewing-machine, the combination with a four-motion feed, of a vertically-reciprocating needle presser-foot bar having a presser-foot to hold the work down on the throat-plate and strip the needle, a four-motion feeding presser-foot bar, connections between the bars for reciprocating them vertically and alternately in opposite directions, means for imparting a positive oscillating movement to the feeding presser-bar in both directions from the four-motion feed, and a cam-lever for simultaneously raising both presser-foot bars without affecting their relative arrangement; substantially as described.

705,606. PAPER-DRYING MACHINE.

ANDREW G. PAUL and HERBERT A. JOSLIN, Boston, Mass.; said Joslin assignor to said Paul. Filed June 15, 1898. Serial No. 477,626. (No model.)

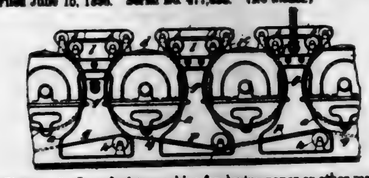

Claim.—1. In a drying-machine for drying paper or other material, in combination with revolving drying-cylinders and an ironing-belt moving with the cylinders and suitable means for supporting the material to be dried and the ironer between the drying-cylinders so as to separate them between the cylinders, an air-circulating device for producing a circulation of air close to the ironing-belt whereby the vapor or moisture that rises from the ironing-belt while it is passing between the cylinders is prevented from coming into contact with the material to be dried and the ironing-belt is more thoroughly dried, substantially as set forth.

2. In a drying-machine for drying paper or other material, in combination with revolving drying-cylinders and an ironing-belt moving with the cylinders and suitable means for supporting the material to be dried and the ironing belt between the drying-cylinders so as to separate them between the cylinders, an exhausting device for producing a circulation of air close to the ironing-belt whereby the vapor or moisture that rises from the ironing-belt while it is passing between the cylinders is prevented from coming into contact with the material to be dried and the ironing-belt is more thoroughly dried, substantially as set forth.

3. In a drying-machine for drying paper or other material, in combination with revolving drying-cylinders and an ironer moving with the cylinders below the material to be dried and suitable means for supporting the material to be dried and the ironer between the drying-cylinders so as to separate them between the cylinders, a box or chamber inclosing or covering the ironer between the cylinders, an exhaust-pipe leading from the box or chamber, and an exhausting device connected with the exhaust-pipe, substantially as set forth.

4. In a drying-machine for drying paper or other material, in combination with revolving drying-cylinders and an ironer moving with the cylinders below the material to be dried and suitable means for supporting the material to be dried and the ironer between the drying-cylinders so as to keep them separate between the cylinders, a box or chamber inclosing or covering the ironer between and upon the cylinders, an exhaust-pipe leading from the box or chamber, and an exhausting device connected with the exhaust-pipe, substantially as set forth.

705,607. COLLECTION-CALENDAR.

EDWIN O. PETERSON, Elgin, Nebr. Filed Dec. 11, 1901. Serial No. 85,695. (No model.)

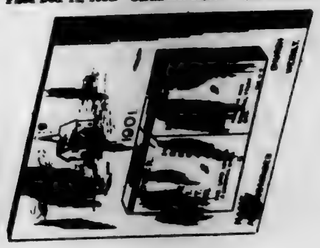

Claim.—A collection-calendar as an improved article of manufacture, the same consisting of a base or card suitably inscribed, a pile of envelops or like receptacles bound together and attached to said base and having their open ends uppermost and unobstructed, the envelops bearing upon their front sides the name of the month, the days of the week and the numerals corresponding to the days of the month, each envelop being adapted to be detached and to have its contents sealed, substantially as set forth.

705,608. LUBRICATOR.

JOHN M. PFAUDLER, Rochester, N. Y. Filed Jan. 6, 1902. Serial No. 88,566. (No model.)

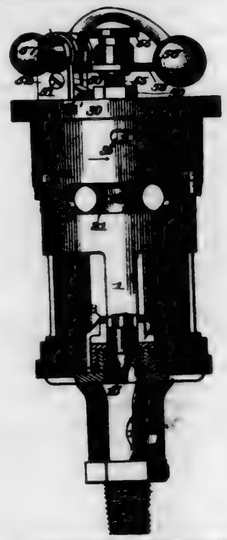

Claim.—1. In a lubricator the combination with a cup having an exit-passage provided with two separate valve-seats, a valve-head engaging one of the seats to normally close the exit-passage when the cup is not in operation, of a closure on the cup, connections between the closure and valve-head whereby the latter may be operated relative to one of the valve-seats to open the exit-passage when the cup is in operation and engaged with the other seat to close said passage when the cup is opened.

2. In a lubricator the combination with a cup, having an exit-passage provided with a valve-seat, a non-rotatable valve-head normally engaging therewith to close the passage when the cup is not in operation, a second valve-seat arranged above the head, and means for operating the valve-head relative to the first-mentioned seat, of a closure for the cup, and connections between the closure and valve-head operating to move the head into engagement with the second valve-seat when the cup is opened.

3. In a lubricator the combination with a cup having an exit-passage, a valve-seat and a valve-head engaging therewith to normally close the passage, and a second valve-seat located above the head, of an operating mechanism for adjusting the head relative to the first-mentioned seat, a closure movable vertically on the cup to open it, a connection between the closure and the valve-head and means for supporting the closure in open position with the head in engagement with the second seat to close the exit-passage.

4. In a lubricator the combination with a cup having an exit-passage, a valve-seat therein and a valve-stem having the head lying beyond the seat, of a closure movable longitudinally on the cup, connections between the closure and valve-stem, means for retaining the closure in the open position with the head in engagement with the valve-seat, and operating devices tending to move the head to its normal position out of engagement with the valve-seat and to return the closure when the latter is released.

5. In a lubricator the combination with a cup having an exit-passage provided with a valve-seat, a stem having the head engaging the seat to normally close the passage, and a guide having a step, of a step on the stem cooperating with that on the guide to limit the closing movement of the stem, one of said steps being capable of adjustment relative to the valve-seat, and an operating mechanism for moving the stem to open the valve.

6. In a lubricator, the combination with a cup having vertically-extending sides provided with an aperture located near its upper edge, of a cap having the depending flange normally covering said aperture and movable vertically on the cup, said flange being provided with recesses extending from the lower edge toward the upper edge of the flange and having horizontally-extending portions at their ends, and said cup being provided with pins lying in the recesses and supporting the flange above the aperture in the cup when engaged by the lower horizontal portions of the recesses.

7. In a lubricator, the combination with a cup having vertically-extending sides provided with an aperture, of a cap having the depending flange normally extending over the aperture and provided with recesses, pins on the cup having the ends lying in the recesses, and a shoulder on the cup arranged below the aperture and adapted to be engaged by the end of the flange when the cap is in the closed position.

8. In a lubricator, the combination with a body having apertures, a shoulder arranged upon the interior of the body above the apertures, a head removably secured to the body below said apertures, and a shell of transparent material arranged in the body and secured between the shoulder and head, of a cap mounted upon the upper end of the body having the depending flange extending into the latter, and means for causing the flange to normally engage the annular shoulder to close the body.

9. In a lubricator, the combination with a cup having an exit-passage, a valve-seat, and a valve-stem having the end engaging therewith to normally close the passage, and a spring operating the stem toward the seat, of a lever pivoted at one side of the stem having the end engaging the stem, and a latch for securing the lever in the operative position against the tension of the spring to hold the valve-stem out of engagement with the valve-seat.

10. In a lubricator, the combination with a cup having an exit-passage, a valve-seat, and a valve-stem cooperating therewith to normally close the passage, of a lever pivoted on the cup, adjustable connections between the lever and stem to regulate the movement of the latter relative to the valve-seat and a latch operating automatically to engage the lever and support the stem out of engagement with its seat.

11. In a lubricator, the combination with a cup having an exit-passage, a valve-seat, and a valve-stem having the end engaging therewith, of an adjustable nut on the stem, an operating-lever pivoted to the cup at one side having the end extending beneath the nut, and a latch device engaging the lever to hold the valve-stem in operative position.

12. In a lubricator, the combination with an oil-cup having the exit-passage, a valve-seat in said passage and a stem having the end engaging therewith, and a spring tending to move the stem toward the valve-seat, of a bell-crank lever pivoted on the cup having one end extending over the stem and the other engaging therewith when moved in one direction, and a latch device for holding the lever in operative position against the action of the spring on the stem.

13. In a lubricator, the combination with an oil-cup having the bottom provided with an exit-passage, and a valve-seat, a stem having the end engaging therewith to close the passage, and a support having the cup adjustable thereon relative to the valve-seat and surrounding the stem forming a guide therefor, of a spring arranged beneath the cup and engaging the stem to operate it toward its seat, a stop on the stem engaging the cup, and an adjustable projection on the outer end of the stem, a lever pivoted to the cup having the end lying beneath the projection, and a latch engaging the lever to hold the valve-stem elevated from its seat against the tension of the spring.

14. In a lubricator, the combination with an oil-cup having exit-passages in the bottom, a valve-seat and a valve-stem having the end engaging the seat and provided with a valve-head, and a second valve-seat arranged above the first, both seats being below said passages, of a movable closure for the cup, connections between the closure and stem to cause the head thereon to move into engagement with the second valve-seat, and a lever pivoted on the closure and connected to the stem to move it relative to the first valve-seat independently of the movement of the closure.

15. In a lubricator, the combination with an oil-cup having the bottom provided with a valve-seat therein, a valve-stem having a head, a support forming a guide for the stem having the end forming a valve-seat arranged above the head, and a spring operating to hold the latter normally in engagement with the first-mentioned seat, of a closure movably mounted on the cap, connections between the closure and stem for operating the head on the latter into engagement with the second valve-seat when the closure is opened, a projection on the valve-stem, and a lever pivoted on the closure having the end engaging therewith to move the stem relative to the first seat independently of the movement of the closure.

16. In a lubricator, the combination with a cylindrical body having the bottom provided with a valve-seat, a second valve-seat arranged above the latter, a valve-head adapted to engage either of said seats, and a rim on the body, a closure on the upper end of the body movable vertically relative thereto, and a depending flange on the closure, of a guide within the body, a stem movable in the guide and attached to said valve-head and having its end extending through the closure and engaging the outer side thereof, whereby the valve-head is moved into engagement with the second seat when the closure is opened, an adjustable projection on the stem, a lever pivoted on the closure having the end engaging the projection to adjust the valve-head relative to the first valve-seat, and a spring operating to return the movable parts to their normal position and to hold the depending flange of the closure in engagement with the rim on the body.

17. In a lubricator, the combination with the body having the exit-passage, a valve-seat surrounding the latter, and a movable cap for the upper end of the body, of a valve-stem engaging the cap and having a head for closing the exit-passage and a spring operating on the stem to hold the valve on its seat and to hold the cap on the body.

705,609. HOT-AIR WALL-REGISTER. JESSE H. POST, Toledo, Ohio, assignor of one-third to Daniel W. Miller, Toledo, Ohio. Filed Mar. 22, 1902. Serial No. 100,401. (No model.)

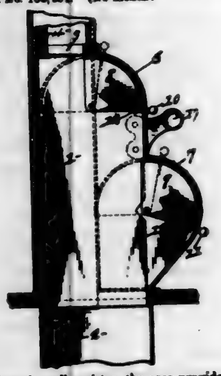

Claim.—In a hot-air wall-register, the case provided with an open bottom and the top opening 3, the front for the case having the upper slotted arc-shaped portion 6, and the lower slotted arc-shaped portion 7, the pivoted deflector 8, adapted to control the passage of hot air through the portion 6 and the opening 3, the pivoted deflector 9 adapted to control the passage of hot air through the portion 7, and means for adjusting the deflectors, as set forth.

705,610. INK-PAD BOX. JAMES GRANT, Jr., Boston, Mass., assignor to F. S. Webster Company, Boston, Mass.; New York, N. Y.; Chicago, Ill., and London, England, a Corporation of Maine. Filed Mar. 24, 1902. Serial No. 99,602. (No model.)

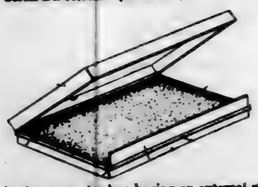

Claim.—1. A rectangular box having an external stop at its upper edge, a correspondingly-shaped sheet-metal lid hinged to the box and adapted to rest at its free edge upon the stop when the lid is shut, an ink-pad secured in the box and leaving a clearance between its front side and the adjacent wall of the box, and a support temporarily inserted in the clearance between the top of the lid and the bottom of the box when the lid is shut, to limit closing movement of the lid and prevent collapsing thereof upon the box or pad.

2. A rectangular box having an external stop at its upper edge, a correspondingly-shaped sheet-metal lid hinged to the box and adapted to rest at its free edge upon the stop when the lid is shut, an ink-pad secured in the box and leaving a clearance between its front side and the adjacent wall of the box, and a longitudinal support equal in depth to the distance between the bottom of the box and the top of the lid when shut, said support entering the clearance and limiting the closing movement of the lid independently of the stop on the box or pad.

705,611. ADJUSTABLE BRAKE-HEAD. GILBERT P. RITTER, Chicago, Ill. Filed May 15, 1902. Serial No. 107,478. (No model.)

Claim.—1. The combination with a brake-head having a journal-opening, of a strap grip-tongue coincident with the journal-opening and anchored to the brake-head, substantially as and for the purposes specified.

2. The combination with a brake-head having a journal opening, of a curved spring grip-tongue coincident with the journal-opening and anchored to the brake-head, substantially as and for the purposes specified.

3. The combination with a brake-head having a journal-opening of a grip-tongue coincident with the journal-opening, and a set-screw which bears on the grip-tongue, substantially as and for the purposes specified.

4. The combination with a brake-head of a curved spring grip-tongue having its curve coincident with the journal-opening, and a set-screw which bears on the curved spring grip-tongue, substantially as and for the purposes specified.

705,612. NUT-LOCK FOR RAIL-JOINTS. CHARLES W. ROBINSON, Sharpsville, Pa. Filed Dec. 18, 1901. Serial No. 86,206. (No model.)

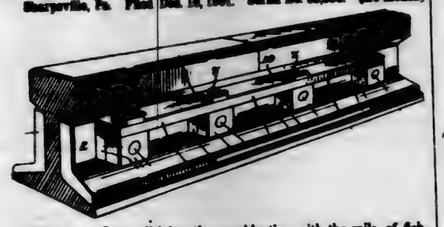

Claim.—1. In a rail-joint, the combination with the rails, of fish-plates, bolts secured in said fish-plates, nuts secured to said bolts, locking-nuts secured on said bolts carrying screw-threaded shanks, a locking-plate secured upon said nuts and controlling said shanks, and securing-nuts arranged on the upper portion of said shanks, substantially as described.

2. In a device of the character described, the combination of the rails, fish-plates, bolts extending through said rails and fish-plates, locking-nuts carrying screw-threaded shanks, a locking-plate through which said shanks extend, and securing-nuts engaging said shanks and the upper face of said locking-plate, substantially as described, and for the purpose specified.

705,613. TEMPERATURE-REGULATOR. ALFRED ROSSER, Bridgeport, Conn., assignor to Davis & Rosser Temperature Controlling Company, New York, N. Y., a Corporation of New Jersey. Filed Mar. 14, 1900. Serial No. 8,869. (No model.)

Claim.—1. In a temperature-regulator, the combination with the base having a primary and a secondary chamber therein, a duct leading from said primary chamber to said secondary chamber and therefrom to exhaust, and another duct leading from said primary chamber and adapted to connect with the actuating means of a heat-controller, and therefrom to exhaust, the said primary chamber in open communication with a source of fluid-pressure supply, of a primary and a secondary lever supported upon said base, a thermostatic device for controlling the movements of the primary lever, a diaphragm in communication with said secondary chamber, for controlling the movements of said secondary lever, two spring-actuated inlet-valves within said primary chamber, one for each duct leading therefrom, an exhaust-valve carried by each of the said levers, and stems between the said inlet and exhaust valves, whereby the valves for said first-mentioned duct are controlled by the movements of the primary lever, and the valves for the second-mentioned duct are controlled by the movements of the secondary lever, substantially as set forth.

2. In a temperature-regulator, the combination with a base having a primary and a secondary chamber therein, two ducts leading from within the said chamber to exhaust, one of the said ducts being of larger size than the other, a branch duct leading from the smaller of said ducts to the secondary air-chamber, and a branch duct leading from the larger of said ducts and adapted to connect with the actuating means of a heat-controller, the said primary chamber in open communication with a source of fluid-pressure supply, of a primary lever supported upon said base, a thermostatic device for controlling the movements of the said lever, a secondary lever supported upon said base, a diaphragm, in communication with said secondary chamber, for controlling the movements of said secondary lever, and inlet and exhaust valves arranged at opposite ends of both of the two first-mentioned ducts, the valves for the smaller duct controlled by the primary lever, and the valves for the larger duct controlled by the secondary lever.

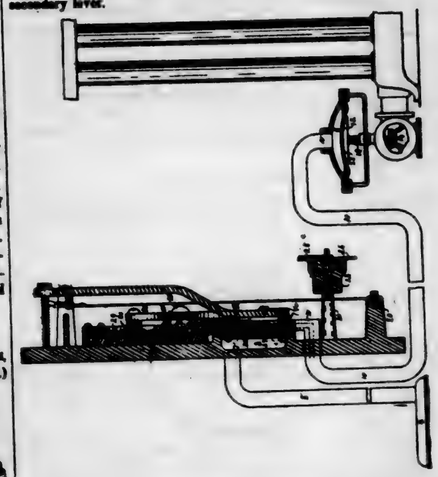

705,614. RADIATOR. CHARLES W. ROGERS, Chicago, Ill., assignor of twelve twenty-fifths to Julius W. Matzke and Eugene Worthing, Chicago, Ill. Filed Mar. 1, 1901. Serial No. 49,431. (No model.)

Claim.—1. A radiator or the like, comprising a pair of metal sheets attached together at their ends or borders, one of said sheets being formed with an attaching-border, and a corrugated main body the corrugations of which are at right angles to the direction of the longest dimension of the body and lie wholly to one side of the sheet, the other of said sheets being formed with an attaching border portion and a main body portion disposed in a plane away from such border portion, substantially as set forth.

2. A radiator or the like, comprising a pair of metal sheets attached together at their ends or borders and rolled or shaped into a convolute or helicoidal form, one of said sheets being formed with an attaching-border and a corrugated main body the corrugations of which are at right angles to the direction of the longest dimension of the body and lie wholly to one side of the sheet, substantially as set forth.

3. A radiator or the like, comprising a pair of metal sheets attached together at their ends or borders and rolled or shaped into a convolute or helicoidal form, one of said sheets being formed with an attaching-border and a corrugated main body the corrugations of which are at right angles to the direction of the longest dimension of the body, and lie wholly to one side of the sheet, the other of said sheets being formed with an attaching-border and a main body disposed in a plane away from such border, substantially as set forth.

4. A radiator or the like, comprising a pair of metal sheets attached

together at their ends or borders, one of said sheets being formed with an attaching-border, and a corrugated main body the corrugations of which are at right angles to the direction of the longest dimension of the body, and lie wholly to one side of the sheet, the other of said sheets being formed with an attaching-border and a main body disposed in a plane away from such border, and a bushing arranged in depressions in said borders to constitute an outlet for the radiator, substantially as set forth.

5. A radiator or the like, comprising a pair of metal sheets attached together at their ends or borders and rolled or shaped into a convolute or helicoidal form, one of said sheets being formed with an attaching-border and a corrugated main body the corrugations of which are at right angles to the direction of the longest dimensions of the body and lie wholly to one side of the sheet, the other of said sheets being formed with an attaching-border and a main body disposed in a plane away from such border, and a series of bushings arranged in depressions in said borders, to constitute outlets from the different convolutions of the radiator, substantially as set forth.

705,615. YIELDING HOOF-PAD. THOMAS RYAN, Germantown, Pa. Filed Apr. 4, 1902. Serial No. 101,234. (No model.)

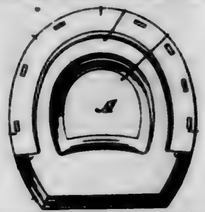

Claim.—A horse-hoof pad, whereof one surface is provided with a recessed projection and solid heel portion and whereof the other surface is provided with a flat face merging into a wide chamber having end-contracted extensions and a combined inlet and outlet passage in the wall of said heel portion, in combination with a leather strip applied to one face of said pad, and a metal shoe in position bearing on the projection of said pad and leather strip beyond the periphery of said pad, substantially as and for the purposes described.

705,616. GALVANIC BATTERY. CHARLES B. SHERRERMAN, Waterbury, Conn. Filed Dec. 1, 1900. Serial No. 38,324. (No model.)

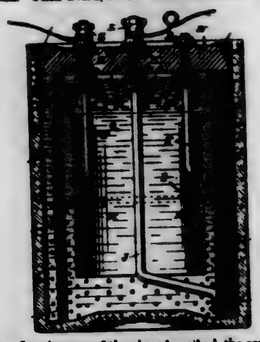

Claim.—1. In a battery of the class described, the combination with a jar, of perforated sheet-metal tubes located therein to form a receptacle for a depolarizer, an expansible wire interior of said part or parts adapted to force them outward and retain them rigidly against the jar, a zinc located interior of said depolarizer and means for the attachment of a wire to each of said elements, substantially as shown and described.

2. The combination with a battery-jar, of an expansible corrugated sheet-metal tube arranged interior thereof, an expansible perforated sheet-metal tube interior of said corrugated tube and an expanding device interior of the inner tube to force both of said tubes outward against the jar to insure their snugly engaging the same and being retained in position, a depolarizer arranged within the corrugations of the outer tube and a zinc central of said parts.

3. In a battery, the combination with a corrugated tube adapted to fit into a jar, of a perforated sheet-metal expansible tube inside of the corrugated tube and an expansible device interior of said inner tube adapted to force the same snugly against the corrugated tube.

4. The combination with a battery-jar, of an expansible tube located therein forming a pocket or pockets intermediate of it and the jar, an expanding device interior of the tube to insure its snugly impinging against the jar in a manner to prevent its displacement, substantially as described.

5. The combination with a jar, of an expansible tube interior thereof, a depolarizer intermediate of the tube and jar, an expanding device interior of the tube to force the latter outward against the depolarizer, and means for suitably inclosing and sealing the jar.

6. In a battery of the class described, the combination with the other parts of an annular depolarizer-receptacle having a detachable adjustable interior wall, an expansible wire ring adapted to fit against said adjustable wall in a manner to force the same outward, as, and for the purpose set forth.

7. The combination in a galvanic battery, of a negative element comprising a series of vertical pockets, an oxid-of-copper element within said pockets, connections therefrom for the field-wire, a positive element interior of the said negative element, a cover supported upon said negative element and supporting the positive element, and means for sealing the cover to the jar, substantially as shown and described.

705,617. METALLIC TIE AND RAIL-FASTENER. AUGUST SCHOLER, Pittsburg, Pa. Filed Mar. 3, 1902. Serial No. 96,443. (No model.)

Claim.—1. In a metallic tie and rail-fastener, the combination of the rails, a metallic tie having tapering openings formed therein, a locking-plate rigidly secured to the under face of the tie having openings formed therein corresponding with said openings formed in the tie, said locking-plate being recessed and having seats formed therein transversely to said openings, and a fastener carrying a shank to be seated in said seats, substantially as shown and described.

2. In a metallic tie and rail-fastener, the combination of the rails, a hollow metallic tie having openings formed therein, a recessed locking-plate having openings formed therein corresponding with said openings formed in the tie, a rivet to secure said locking-plate to the tie, said locking-plate having seats formed therein extending transversely to the openings, and a fastener adapted to be seated in said seats, substantially as described.

705,618. VALVE FOR HEATING-FURNACES. WILLIAM F. BURNS, ROBERT J. LEHMAN, and ISAAC J. WALKER, Duquesne, Pa. Filed Apr. 28, 1902. Serial No. 104,595. (No model.)

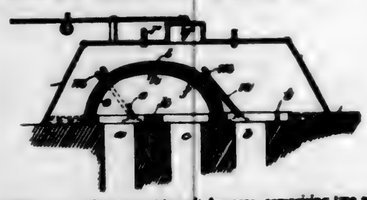

Claim.—A valve for seating-pit furnaces, comprising two semicircular castings with a water-space therebetween, the outer casing having an opening in its top, cross-bars at the top and bottom of said casing for spacing the same apart, and means connected to the outer casing for sliding the valve longitudinally, substantially as described.

705,619. CASH-REGISTER. ELMER S. SMITH, Boundbrook, and CARL A. SMESTAD, South Boundbrook, N. J., assignors to Ideal Cash Register Company, New Boundbrook, N. J., a Corporation of New Jersey. Filed May 16, 1902. Serial No. 107,871. (No model.)

Claim.—1. In a cash-register comprising the indicating-cylinders, a movable frame whose position governs the concealment or exposure of said cylinders, and the series of setting-levers 16, the rock-shaft 33 carrying the pawl-arm 28 for engaging said frame and supporting it in one of its positions, the rock-shaft 29 having the crank-arms 30 corresponding in number with said levers, means connecting said shafts 29, 33, for communicating motion from one to the other thereof, and means for effecting the engagement of said pawl-arm 28 with said frame, combined with means for actuating said crank-arms 30 from said setting-levers upon the movement of the latter for removing said pawl-arm from said frame and allowing the latter to move to its other position; substantially as set forth.

2. In a cash-register comprising the indicating-cylinders, a movable frame whose position governs the concealment or exposure of said cylinders, and series of setting-levers 16, the rock-shaft 33 carrying the pawl-arm 28 for engaging said frame and supporting it in one of its positions, the rock-shaft 29 having the crank-arms 30 corresponding in number with said levers, the crank-arm 31 on said shaft 29, the crank-arm 32 on said shaft 33, the rod 34 connecting said crank-arms 31, 32, for communicating motion from one of said rock-shafts to the other thereof, and means for effecting the engagement of said pawl-arm 28 with said frame, combined with means for actuating said crank-arms 30 from said setting-levers upon the movement of the latter for removing said pawl-arm from said frame and allowing the latter to move to its other position; substantially as set forth.

3. In a cash-register comprising the vertically-movable frame carrying the indicating-cylinders 19, series of setting-levers 16 having the toothed bars 17, and series of locking-dogs 18 engaging said bars 17, the rock-shaft 33 carrying the pawl-arm 28 for engaging said frame and supporting it in its upper position, the rock-shaft 29 having the crank-arms 30 in position to be acted upon by said dogs when the latter are moved by said bars 17, and means connecting said shafts 29, 33, for communicating motion from one to the other thereof, combined with means for effecting the engagement of said pawl-arm 28 with said frame, the movement of said crank-arms 30 under the action of said dogs serving to trip said pawl-arm from said frame for allowing the indicating-cylinders to descend to their concealed position; substantially as set forth.

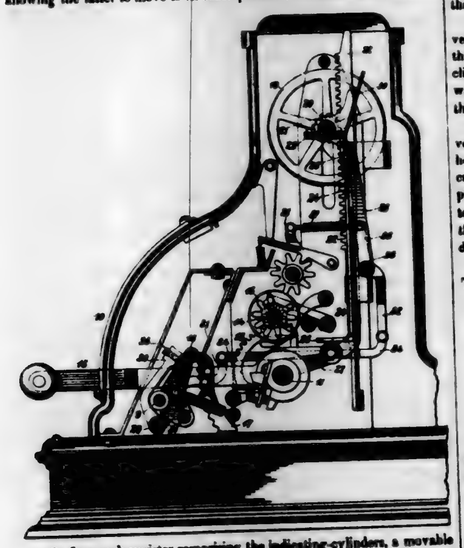

705,620. BUCKLE. ROBERT T. STREET, Chicago, Ill., assignor of one-half to Ernest A. Eastman, Chicago, Ill. Filed Jan. 2, 1902. Serial No. 88,101. (No model.)

Claim.—1. A buckle adapted to coöperate with a strap and consisting of the vertical sides connected by the three horizontal cross-pieces forming two horizontal slots between them, the upper edge of the middle cross-piece being inclined outwardly, and the lower edge of the top cross-piece being inclined inwardly and having the central portion thereof extending farther down than the ends thereof so as to reduce the width of the upper slot in its central portion; substantially as and for the purpose described.

2. A buckle adapted to coöperate with a strap and consisting of the vertical sides having the inwardly-turned edges connected by the three horizontal cross-pieces, the edges of the middle cross-piece being inclined outwardly, and the lower edge of the top cross-piece being inclined inwardly and having the central portion thereof extending farther down than the ends; substantially as and for the purpose described.

3. A buckle adapted to coöperate with a strap and consisting of the vertical sides provided with strengthening means and connected by the three horizontal cross-pieces, the edges of the middle cross-piece being inclined outwardly, and the edge of the top cross-piece being inclined inwardly and having the central portion thereof extending farther down than its ends; substantially as and for the purpose described.

4. A buckle adapted to coöperate with a strap and consisting of the vertical sides connected by the three horizontal cross-pieces forming two horizontal slots between them, the upper and lower edges of the middle cross-piece being inclined outwardly, and the lower edge of the top cross-piece being inclined inwardly and having the central portion thereof extending farther down than the ends thereof so as to reduce the width of the upper slot in its central portion; substantially as and for the purpose described.

705,621. CAST-OFF CONNECTION FOR SUSPENDERS. ROBERT T. STREET, Chicago, Ill., assignor of one-half to Ernest A. Eastman, Chicago, Ill. Filed Mar. 11, 1902. Serial No. 97,750. (No model.)

Claim.—1. In a device of the class described, the combination with the main strap and the tab, of the cast-off connection therefor consisting of the single rigid metallic member having the elongated transverse opening at the top for the main strap and the opening beneath it for the eyelet and terminating in the hook, together with the strap having the fastener-cap therein, the fastener-head, and the eyelet connecting the parts substantially as described.

2. In a device of the class described, the cast off connection consisting of the single rigid metallic member having the elongated transverse opening at the top and the opening beneath it for the eyelet and terminating in the hook, together with the strap having the two openings therein and the fastener-cap at one end thereof, the fastener-head, and the eyelet passing through the lower opening in the metallic member, the two openings in the strap and coöperating with the fastener-head to secure the parts substantially as and for the purpose described.

3. In a device of the class described, the cast-off connection therefor consisting of the single rigid metallic member formed of a wire rod bent into shape to form the elongated transverse opening at the top and the smaller opening beneath it and terminating in the hook, together with the strap having the openings *a* and *c* therein and the fastener-cap at the bottom thereof, the fastener-head, and the eyelet *k* adapted to pass through the openings in the strap and the lower opening in the metallic member and coöperating with the fastener-head to secure the parts together substantially as described.

4. In a device of the class described, the cast-off connection consisting of the single rigid metallic member formed of the wire rod bent into shape to have the elongated transverse opening at the top with the lower portion thereof narrowed by the offsets *f*, and with the smaller opening beneath the transverse opening and terminating in the flattened hook *l*, together with the strap *h* having the openings *a* and *c* therein and the fastener-cap in the bottom thereof, the fastener-head having the flange *q*, and the eyelet *k* passing through the openings *a* and *c* in the strap and the smaller opening in the metallic member, and having the flange *r* coöperating with the flange *q* to clamp the parts together substantially as shown and described.

5. In a device of the class described, the combination with the main strap and the tab, of the cast-off connection therefor consisting of the single rigid metallic member made of wire having the elongated transverse opening at the top for the main strap and the opening beneath it for the eyelet and terminating in the hook, the bushing about said hook, together with the strap having the fastener-cap therein, the fastener-head, and the eyelet connecting the parts substantially as described.

705,622. CAST-OFF. ROBERT T. STREET, Chicago, Ill., assignor of one-half to Ernest A. Eastman, Chicago, Ill. Filed Jan. 2, 1902. Serial No. 88,100. (No model.)

Claim.—1. In a device of the class described, the combination with the main-strap connection and the tab connection, of a resilient integral

cast-off clip between them having a loop embracing one connection and a pair of jaws the other, said connections and cast-off being so shaped that any pull on the connections tends to cause the jaws to hold the connection which they embrace more firmly.

2. In a device of the class described, the combination with the main-strap connection and the tab connection, of a resilient integral cast-off clip between them having an angular loop embracing one connection and a pair of crossed jaws embracing the other connection, the operation of a pull between the connections being to cause the connection in the loop to expand the clip to bring the jaws more firmly together upon the other connection.

3. In a device of the class described, the combination with the main-strap connection and the tab connection, of a resilient integral cast-off clip between them having the loop *j* embracing the upper cross-piece of the tab connection and having the jaws *k* separated by the recess *l* through which the jaw *m* passes, the said jaws embracing the lower cross-piece of the main-strap connection; substantially as described.

4. In a device of the class described, the combination with the main-strap connection and the tab connection, of a resilient integral cast-off clip between them having a loop embracing one connection and a pair of crossed jaws the other connection, one of said connections being provided with the slot *o'* into which the end of the jaw *m'* is adapted to pass; substantially as and for the purpose described.

705,623. **BRAKE.** GEORGE W. STEVENS, Boston, Mass. Filed Dec. 5, 1901. Serial No. 84,782. (No model.)

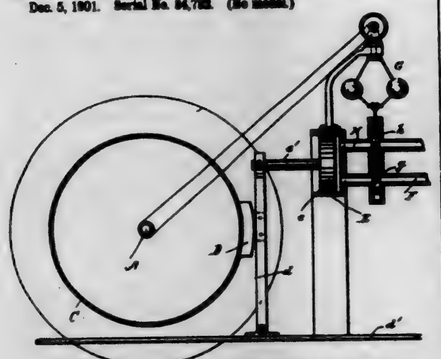

Claim.—The combination, with a brake-wheel, and a pivoted brake-lever provided with a brake for bearing against the said brake-wheel; of a cylinder provided with a piston and a piston-rod for operating the brake-lever, an inlet-valve and an outlet-valve connected with the said cylinder, and a speed-governor operatively connected with the said brake-wheel and operating to open the inlet-valve and close the outlet-valve when the brake-wheel is revolved too quickly, substantially as set forth.

705,624. **MOTION-TRANSMITTING DEVICE.** CHARLES F. STOKES, Chicago, Ill., and CHARLES B. MCELHENNY, Highlandville, Mass.; said McElhenny assignor to said Stokes. Filed Nov. 9, 1899. Serial No. 736,402. (Model.)

Claim.—1. In angle-gearing, the combination of the drive-gear having curved interdental spaces and teeth of greater length at the base than at the extremity, and a driven gear having rounded teeth extending at an angle from the center of rotation, substantially as described.

2. In angle-gearing, the combination of a drive-gear having the drive-teeth and curved interdental spaces, and having the sides of the interdental spaces formed to maintain line-contact with the driven-gear teeth, and a driven gear having teeth extending at an angle from the center of rotation and adapted to be engaged by the drive-teeth at the extremity of both, such engagement being in line-contact and gradually moving radially of both teeth, substantially as described, whereby the operation of the gears is effected with the most advantageous leverage, as set forth.

3. In angle-gearing, the combination with the driven gear having round-faced teeth extending at an angle from the center of rotation, of a driving-gear frusto-conical in form with curved interdental spaces, the bases of which are substantially parallel with the drive-shaft, the parts being arranged substantially as described, whereby the drive-teeth engage the driven teeth in a line changing gradually in a spiral centripetal direction, substantially as set forth.

4. In angle-gearing, the combination with a driven gear having rotatory teeth extending at an angle from the center of rotation, of a frusto-conical drive-gear having outward-extending conical teeth and curved interdental spaces, the bases of which present a line substantially parallel with the drive-shaft, the parts being arranged to operate substantially as described, whereby the pressure-contact between the teeth is on a spirally-varying line leading toward the center of the driven gear and sliding friction is reduced, substantially as set forth.

5. In angle-gearing, the combination with the driven gear having round-faced teeth, of a drive-gear frusto-conical in shape and having bevel-teeth and curved interdental spaces, said interdental spaces being warped at their rear extremities to afford freedom of movement of the extremity of the driven-gear teeth in its movement through its arc, substantially as described.

6. In angle-gearing, the combination with the driven gear having the round-faced radially-extending teeth, of a drive-gear frusto-conical in shape and presenting interdental spaces of greater expanse at the rear than at the forward end and having the edges of the teeth at the front rounded to permit ready withdrawal of the teeth extremities from between the driven teeth in the movement of the gear, substantially as described.

7. In angle-gearing, the combination of a frusto-conical drive-gear having peripheral interdental spaces cut transversely of the gear-body on a line substantially parallel with the drive-shaft, whereby the depth of the interdental space is greater at the face of the gear than at the heel, and a driven gear having radially-projecting rotatory teeth supported substantially as described.

8. In angle-gearing, the combination of a frusto-conical drive-gear having peripheral interdental spaces cut transversely of the gear-body on a line substantially parallel with the drive-shaft, whereby the depth of the interdental surface is greater at the face of the gear than at the heel, and a driven gear having radially-projecting rotatory frusto-conical teeth supported substantially as described.

9. In angle-gearing, the combination with the driven gear having radially-projecting frusto-conical teeth supported at both ends, of a drive-gear frusto-conical in form with curved interdental peripheral spaces cut transversely of the gear-body on a line substantially parallel with the drive-shaft, whereby the interdental space is deeper at the outer than at the inner end thereof relative to the teeth, the said teeth being of a length to engage the surface of the driven teeth without shock between the gear members, and in the driving operation the driving-teeth move in a line spirally upon the driven teeth and toward the center of the driven gear, and friction is reduced by the rotation of the driven-gear teeth on their axes, all as set forth.

10. In angle-gearing, the combination with a driven gear having round-faced teeth projecting at an angle from the center of rotation, of a drive-gear having radially-projecting teeth and interdental spaces, the sides of which are formed to conform to the opposing face of the driven-gear teeth during driving engagement in their movement through their arc of rotation to preserve line-contact during said engagement, substantially as described.

11. In angle-gearing, the combination with the driven gear having round-faced outward-extending teeth supported at opposite ends as described, of a drive-gear frusto-conical in shape with curved interdental spaces the bases of which are parallel with the driven-gear teeth at the moment of most intimate meshing of the gears, and the sides of which are formed to maintain line-contact with the driven-gear teeth throughout the period of the application of driving power, substantially as described.

705,625. **MOISTURE-PROOF COATING FOR BRICK OR STONE.** WILLIAM A. THEISS, Terre Haute, Ind., assignor of one-half to WILLIAM B. ADAMS, Clarksdale, Ind. Filed Apr. 7, 1902. Serial No. 101,805. (No specimens.)

Claim.—A moisture-proof coating for brick and stone consisting of beeswax, paraffin, Venice turpentine, gine, linseed-oil, and cosi-oil, substantially in the proportions specified.

705,626. **METALLIC STRAP.** BENNIE H. VOSS, Brooklyn, N. Y. Filed Mar. 17, 1902. Serial No. 98,855. (No model.)

Claim.—1. A strap of sheet metal formed with split barbs cut and stamped from the body of the strap, the halves of said split barbs having their adjacent sides parallel and in close proximity to each other at their junction with the body of the strap being formed with diverging points, substantially as and for the purpose described.

2. A strap of sheet metal formed with split barbs and with V-teeth cut and stamped from the body of the strap, the halves of the split barbs being formed with diverging points, and the V-teeth being opposed to the barbs, substantially as and for the purpose set forth.

3. A strap of sheet metal formed with split barbs cut and stamped from the body of the strap, the halves of the said split barbs being formed with diverging points and the adjacent barbs being formed out of line with each other laterally to insure contact with different portions of the grain of the wood substantially as set forth.

4. A strap of sheet metal formed with split barbs cut and stamped from the body of the strap, the halves of said split barbs being formed with diverging points, and the split between them extending into the body of the strap, substantially as and for the purpose described.

705,627. **DISK PLOW.** LEWIS R. WATERMAN, Rockford, Ill., assignor to Emerson Manufacturing Company, Rockford, Ill. Filed July 6, 1900. Serial No. 22,754. (No model.)

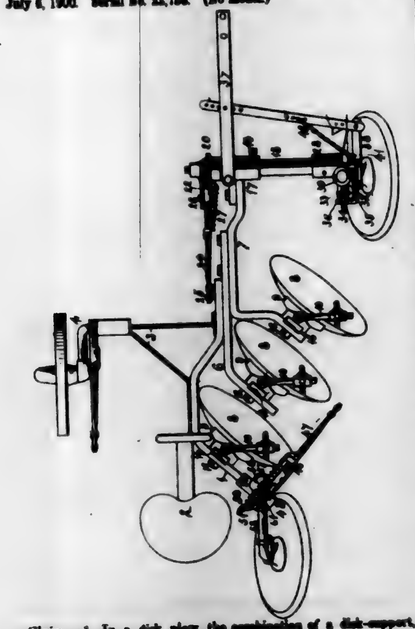

Claim.—1. In a disk plow, the combination of a disk-support, a disk, and a wedge-shaped block located between the disk and its support, the block having a curved face and the disk made adjustable in connection with the curved face.

2. In a disk plow, the combination of a transverse support, a hollow shaft adjustable in the support, a furrow-wheel supported by one end of the shaft and an adjusting-lever supported by the other end of the shaft.

3. In a disk plow, the combination of a transverse support, a hollow shaft adjustable in the support, a rod located within the shaft, a furrow-wheel supported by the shaft in a vertical adjustable manner, a connection between the furrow-wheel support and rod, a hand-lever having a connection with the rod, and a toothed segment for the hand-lever supported by the shaft.

4. In a disk plow, the combination of a furrow-wheel, an overner-support, a link connection between them, and a stop supported by the link.

5. In a disk plow, the combination of a furrow-wheel, an overner-support, a link connection between them and a chain connecting the furrow-wheel and link.

6. In a disk plow, the combination of a main frame, a sleeve loosely mounted thereon, a segment secured to the main frame, a hand-lever having a pivotal connection with the segment, and a connection with the sleeve, a caster-wheel, and a caster-wheel support having a pivotal connection with the sleeve.

705,628. **WHEELED PLOW.** LEWIS R. WATERMAN, Rockford, Ill., assignor to Emerson Manufacturing Company, Rockford, Ill. Filed Oct. 13, 1900. Serial No. 32,936. (No model.)

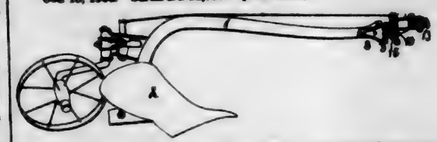

Claim.—In a wheeled plow, the combination of a plow-beam, a caster-wheel, means for holding the caster-wheel, in proper position for plowing, an overner-clevis having a connection with the plow-beam, a yoke pivotally supported by the overner-clevis and a connection between the yoke and the holding means of the caster-wheel.

705,629. **SAFETY HITCHING DEVICE.** LESLIE R. ABNER, Denver, Colo. Filed Nov. 12, 1901. Serial No. 82,049. (No model.)

Claim.—1. A hitching or holding device comprising a body part having a base-plate, provided with two downwardly-inclined apertured extensions located at the front and rear respectively, two separated upright parts having openings in their upper extremities, a fulcrum-pin engaging said openings, and a cam-lever mounted on the arm and provided with two separated parts having openings through which the pin passes, the space between the upright parts being closed in front and at the bottom, the front of the cam being provided with an upwardly-projecting thumb-piece, and a spring coiled around the pin and connected with the body part at one extremity and the cam at the opposite extremity.

2. A hitching device comprising a body part having a base-plate, and apertured extensions below the base-plate to receive the strap, and two separated upright parts, a fulcrum-pin mounted on said parts, a cam-lever mounted on the pin, a spring coiled around the pin and connected with the body part at one extremity, and the cam at the opposite extremity, the spring being arranged to form a stop against the movement of the cam rearwardly farther than is necessary, substantially as described.

3. In a device of the class described, the combination of a body part having a base-plate, and apertured extensions below the base-plate and located at its opposite extremities, the said plate being provided with upright parts or projections, a spring-held cam-lever mounted on said projections and arranged to engage a strap passed above the base-plate, the said cam-lever being provided with an extension forming a thumb-piece, substantially as described and for the purpose set forth.

705,630. **SEPARATOR FOR ELECTRIC ACCUMULATOR-PLATES.** RICHARD ALEXANDER-KANN, Berlin, Germany. Filed Oct. 18, 1901. Serial No. 78,185. (No model.)

Claim.—1. A non-conducting separator for electric accumulator-plates comprising in combination two wide-meshed gratings, wherein the intersections of the one cross the open spaces of the other, the outer edges of said gratings all being in the same plane.

2. A non-conducting separator for electric accumulator-plates comprising in combination marginal bars and two wide-meshed gratings where-

of the intersections of the one cross the open spaces of the other, the outer edges of said gratings all being in the same plane and flush with surfaces of the marginal bars.

3. A non-conducting separator for electric accumulator-plates comprising in combination two wide-meshed gratings, whereof the intersections of the one cross the open spaces of the other, the outer edges of said gratings all being in the same plane, and being made integral with one another.

4. A non-conducting separator for electric accumulator-plates comprising in combination marginal bars and two wide-meshed gratings whereof the intersections of the one cross the open spaces of the other, the outer edges of said gratings all being in the same plane and flush with surfaces of the marginal bars, and being made integral with one another and with the marginal bars.

5. A non-conducting separator for electric accumulator-plates comprising in combination two wide-meshed gratings, whereof the intersections of the one cross the open spaces of the other, the outer edges of said gratings all being in the same plane, and terminating at their meeting surfaces in a plane.

6. A non-conducting separator for electric accumulator-plates comprising in combination marginal bars and two wide-meshed gratings whereof the intersections of the one cross the open spaces of the other, the outer edges of said gratings all being in the same plane and flush with surfaces of the marginal bars, and terminating at their meeting surfaces in a plane bisecting said marginal bars.

705,631. **PRINTING-PRESS.** MARK ANTHONY, New York, N. Y., assignor, by mesne assignments, to the Diamond Match Company, a Corporation of Illinois. Filed May 11, 1897. Serial No. 635,993. (No model.)

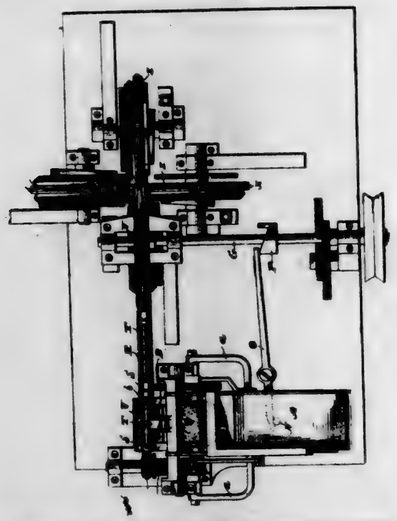

Claim.—1. The combination of printing mechanism for printing on splints and the like, a carrier that delivers splints endwise thereto, a hopper for splints and a drum adapted to support splints with their lengths parallel with the axis of the drum, said drum receiving splints from the hopper and delivering them to said carrier, the axis of the drum being parallel with the direction of travel of the carrier, whereby splints are delivered from the drum thereto, with their lengths extending in the direction of travel of said carrier, substantially as described.

2. The combination of printing mechanism for printing on splints and the like, a feeding belt or apron that delivers splints endwise thereto, a hopper for splints, a drum having longitudinal, peripheral grooves, whose axis extends in the direction of the line of travel of the belt, substantially as and for the purpose described.

3. The combination of a splint-containing hopper, means for vibrating the same, a plate that has contact with the splints that control the outlet from the hopper, and means to vibrate said plate, independent of the hopper, substantially as and for the purpose described.

4. The combination of a hopper for splints having a bottom provided with surfaces in different planes, from the higher to the lower one of which splints move, and a piece that is reciprocable over such surfaces, that extends sufficiently close to the higher surface, to prevent the passage of splints between it and the surface, when it is over the latter, but not close enough to the lower surface, to prevent the passage of splints between the same and the piece, substantially as and for the purpose described.

5. The combination of a hopper for splints, having a bottom provided with surfaces in different planes, from the higher to the lower one of which, splints move, and a piece that is movable to and fro from over one surface to the other, that extends sufficiently close to the higher surface to prevent the passage of splints between it and the surface, when it is over the latter, but not close enough to the lower surface, to prevent the passage of splints between the same and the piece, substantially as and for the purpose described.

6. The combination of a hopper for splints, a carrier that receives splints from the hopper, a wheel to brush back from the carrier, irregularly-placed splints, and a vibrating plate interposed between the mass of splints in the hopper and the brush-wheel substantially as and for the purpose described.

7. The combination of a hopper for splints, a carrier that receives splints from the hopper, a plate within the hopper, a slide to which said plate is attached, grooved to fit over the edge of a side of the hopper, and means to reciprocate said slide, substantially as and for the purpose described.

8. The combination of printing mechanism, including a type-wheel, a guide for the object to be printed, and a dog movably mounted on the type-wheel, so as to normally project beyond the periphery thereof, said dog being interposed in the path of the object to be printed, when it comes from said guide, substantially as described.

705,632. **TOY GAME.** RAFFAELLO ASTARITA, New York, N. Y. Filed Aug. 31, 1901. Serial No. 73,917. (No model.)

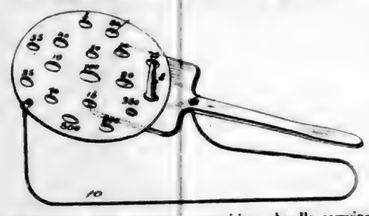

Claim.—A game apparatus, comprising a handle carrying a platform with a pin rising from it, a disk containing a plurality of numbered perforations whereby said disk is adapted to be caught on said pin, with the plane of the disk at right angles to the axis of the pin and a cord connecting said disk and said handle.

705,688. **FEED MECHANISM FOR SEWING-MACHINES.** JOHN A. BATCHELOR and FRANCIS R. HALL, London, England. Filed Dec. 16, 1899. Serial No. 740,546. (No model.)

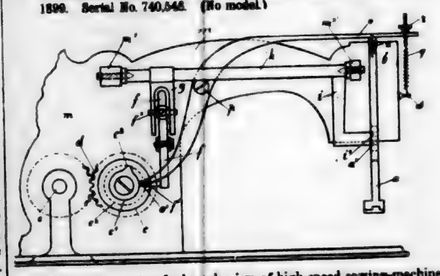

Claim.—1. In top-feed mechanism of high-speed sewing-machines having a horizontal rear driving-shaft, a vertically and horizontally movable presser, a rocking shaft together with a cam-and-lever mechanism situated between the driving-shaft and the presser, the combination of the said driving-shaft with a vertically and horizontally movable presser, means for imparting to it a vertical motion, a grooved cam adapted to receive continuous rotary motion from the driving-shaft, a rocking shaft situated between the presser and the driving-shaft and adapted to turn in bearings secured to the machine-frame, and adjustable lever mechanism adapted to transmit motion from the grooved cam to the rocking shaft and from the rocking-shaft to the presser both forward and backward at an adjustable rate of transmission, without the aid of a spring, substantially as described and for the purpose specified.

2. In top-feed mechanism of high-speed sewing-machines having a horizontal rear driving-shaft, a vertically and horizontally movable presser, a rocking shaft together with a cam-and-lever mechanism situated between the driving-shaft and the presser, the combination of the driving-shaft, rocking shaft and presser, with means for imparting to the presser a vertical motion, a grooved cam adapted to receive continuous rotary motion from the driving-shaft, a one-armed lever mounted on the rear end of the rocking shaft, a two-armed lever adapted to receive motion from the grooved cam at one end, and to transmit it to the said rear lever at the other end by means of an adjustable pin and a slot adapted to vary the rate of transmission, and a one-armed lever mounted on the front end of the rocking shaft and connected with the presser by means of a pin and slot, adapted to produce the forward and backward motion of the same, substantially as described and for the purpose specified.

3. In top-feed mechanism of high-speed sewing-machines having a horizontal rear driving-shaft, a vertically and horizontally movable presser, and a rocking shaft together with cam-and-lever mechanism situated between the driving-shaft and the presser, the combination of the driving-shaft *e*, rocking shaft A and presser *a*, with means for imparting to the presser a vertical motion, a grooved cam *c* geared together with the driving-shaft, a slotted lever *g* mounted on the rear end of the rocking shaft, a lever *f* having on one arm a roller running in the groove of the cam *c* and on the other arm an adjustable block *f'* connected with the slotted lever *g*, and a lever *i* mounted on the front end of the rocking shaft A and connected with the presser by means of a pin *i'* and a slot a^3, substantially as described and for the purpose specified.

705,684. **WIRE-STRETCHER.** SAMUEL BATES, North Liberty, Ind. Filed Apr. 24, 1902. Serial No. 104,504. (No model.)

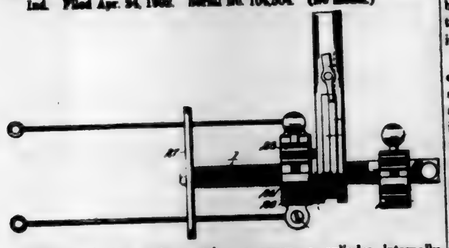

Claim.—1. In a wire-stretcher, a screw, a cylinder internally threaded to engage the screw, a yoke swiveled on the cylinder, a lever pivoted on the cylinder, pawls carried thereby, teeth on the cylinder engaged by the pawls, a clamp on the screw and a clamp on the yoke as and for the purpose described.

2. In a wire-stretcher, a screw, a cylinder internally threaded to engage the screw, a yoke swiveled on the cylinder, a lever pivoted on the cylinder, pawls carried thereby, teeth on the cylinder engaged by the pawls, rods extending from the yoke and a guide on the end of the screw through which the rods extend.

3. In a wire-stretcher, a screw, a clamp secured thereto, a cylinder threaded on the screw, means for rotating the cylinder, a yoke on the cylinder, a clamp carried by the yoke, and rods extending from the yoke.

4. In a wire-stretcher, a screw, a clamp secured thereto, a cylinder threaded on the screw, means for rotating the cylinder, a yoke comprising two sections embracing the cylinder and loosely connected therewith, rods connected to the yoke, a guide on the end of the screw having slots through which the rods extend.

705,685. **DEVICE FOR PROMOTING AND CONTROLLING COMBUSTION.** ERNEST RAMSBOTTOM, Fairview, Pa. Filed Jan. 7, 1902. Serial No. 88,739. (No model.)

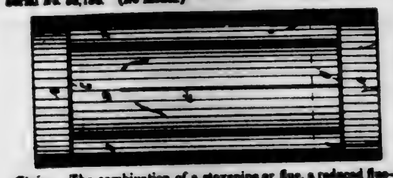

Claim.—The combination of a stovepipe or flue, a reduced flue-section inserted therein, annular collars on the upper and lower ends of said reduced flue-section fitting the inside of the pipe or flue in which it is inserted, vertical partitions at each side of the reduced flue extending from the lower collar nearly to the upper collar thereon, an air-inlet opening or openings in the front of the pipe or flue, communicating with the space between the reduced flue-section and the outer flue at one side of said partitions, and an air-discharge opening or openings, through the lower collar at the rear of the flue, on the opposite side of said partitions, substantially as and for the purpose set forth.

705,686. **DRIVING MECHANISM FOR ROTARY GRAMOPHONE TURN OR SUPPORTING PLATES.** THEODORE BERNAUR, Berlin, Germany. Filed Oct. 18, 1901. Serial No. 79,251. (No model.)

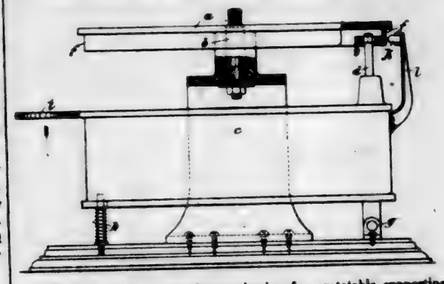

Claim.—1. In an actuating mechanism for a rotatable supporting plate, the combination with such plate, of a casing pivotally supported at one side, a driven shaft *d* journaled in the casing, a friction-disk carried by the shaft and adapted to engage the plate, and a spring-support for the casing opposite its pivotal support normally tending to force the disk into engagement with the plate, substantially as set forth.

2. In an actuating mechanism for a rotatable supporting-plate, the combination with such plate, of a casing pivotally supported at one side, a driven shaft *d* journaled in the casing, a friction-disk carried by the shaft and adapted to engage the plate, a spring-support for the casing opposite its pivotal support normally tending to force the disk into engagement with the plate, and a brake-shoe carried by the casing and normally out of engagement with said plate, said brake-shoe being supported to engage the plate when the casing is rocked on its pivot to disengage the disk from the plate, substantially as set forth.

705,687. **MEANS APPLICABLE FOR USE IN TRANSPORTING FRUIT.** RICHARD R. BLANDY, Kensington, England. Filed Apr. 15, 1901. Serial No. 55,962. (No model.)

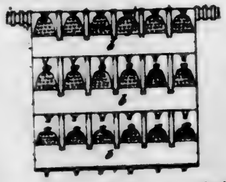

Claim.—1. For use in transporting oranges and other kinds of fresh fruit, a sheet of fabric furnished with series of pockets or troughs comprising horizontal strips of fabric severally connected along their upper edges to the sheet by means of tapes and having their lower edges and extremities also attached to the sheet whereby the pockets are adapted to receive and support the fruits arranged singly, and to prevent their being subjected to pressure.

2. For use in transporting oranges and other kinds of fresh fruit, a carrier consisting of a sheet of fabric to which a number of horizontal strips of fabric are severally attached one above another by stitching the inner or lower edge and the extremities of each strip to the sheet and tapes connecting the outer edge of each strip with the sheet, thus constituting troughs or pockets, and a pole or bar to which the sheet is attached for the purpose of supporting the fruit while in course of transportation, substantially as herein described.

705,688. **GLYCOSURIA ANTIDOTE AND PROCESS OF PRODUCING SAME.** FERDINAND BLUM, Frankfort-on-the-Main, Germany, assignor to Firm of E. Merck, Darmstadt, Hessen, Germany. Filed Apr. 24, 1902. Serial No. 104,594. (No specimens.)

Claim.—1. The process of producing an antidote or antitoxin for the treatment of diseases due to the faulty or imperfect action of the suprarenal glands, which consists in injecting subcutaneously into an animal the

juice of suprarenal glands, thereafter drawing blood from the animal, and obtaining the serum thereof; substantially as described.

2. The process of producing an antidote or antitoxin for the treatment of diseases due to the faulty or imperfect action of the suprarenal glands, which consists in injecting subcutaneously into an animal successively-increasing doses of the juice of suprarenal glands, thereafter drawing blood from the animal, and obtaining the serum thereof; substantially as described.

3. As a new substance, glycocoarin antidote or antitoxin, consisting of the serum of the blood of an animal into whose veins has been injected the juice of suprarenal glands; substantially as described.

705,639. WIND-WHEEL. ANDREW J. BOLTON, Pleasant Site, Ala. Filed May 14, 1902. Serial No. 107,314. (No model.)

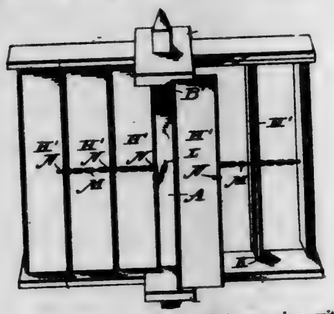

Claim.—A wind-wheel comprising a shaft, cross-pieces with shoulders arranged in reverse order on the opposite ends of said cross-pieces, blades having integral pivotal pins along their inner marginal edge journaled in apertures adjacent to said shoulders, and a chain anchored at its inner end to said shaft and having connection with the swinging edges of said blades to limit their outer throw, as shown and described.

705,640. HOT-BLAST FURNACE. EDWARD T. BRADFORD, Denver, Colo.; Mary C. G. Bradford, administratrix of said Edward T. Bradford, deceased, assignor to Standard Smelter Company, Denver, Colo., a Corporation of Colorado. Filed July 7, 1900. Serial No. 22,811. (No model.)

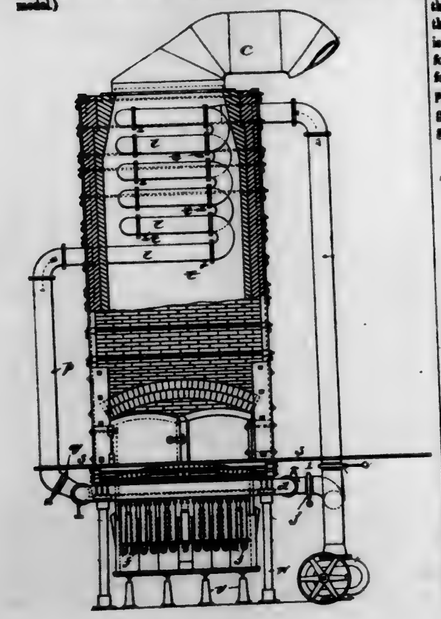

Claim.—1. A hot-blast furnace, provided with blast-heating pipes, located within the furnace and arranged to conduct the blast from the upper and cooler to the lower and hotter portions of said pipes, and twyers connected to the hotter end of the said heating-pipes, a portion of said heating-pipes consisting of pairs of horizontal pipe-sections supported on transverse supports, said pairs being arranged in zigzag order, so as to economize space and more effectually intercept the rising products of combustion, and a series of U-sections secured to the said straight pipe-sections to complete the system, substantially as described.

2. A hot-blast furnace, provided with blast-heating pipes located within the furnace and adapted to conduct the blast from the upper and cooler to the lower and hotter portions of said pipes, twyers connected to the hotter end of the said heating-pipes, blower mechanism for supplying air to the cooler end of said heating-pipes, and a non-conducting refractory lining in the portion of the furnace surrounding the heating-pipes, a portion of the said heating-pipes within the said refractory lining consisting of series of horizontal pipe-sections arranged in zigzag order and supported on transverse supports, and a series of substantially similar U-sections provided with flanges and secured to the said horizontal sections at the said flanges; substantially as described.

3. A hot-blast furnace provided with blast-heating pipes located within the furnace and adapted to conduct the blast from the upper and cooler to the lower and hotter portions of said pipes, twyers connected to the hotter end of said heating-pipes, said pipes consisting of a series of separable horizontal flanged sections supported in pairs, flanged U-shaped connections horizontally connecting said sections in pairs at one end, and other U-shaped connections at the opposite ends of the horizontal sections connecting said horizontal sections with those above or below, the elements of said pipe structure mutually supporting each other throughout, and means for suspending the entire pipe structure within the path of the products of combustion of the furnace; substantially as described.

705,641. CORSET-FASTENER. JAMES BETTRELL, High Wycombe, England. Filed Apr. 22, 1901. Serial No. 56,966. (No model.)
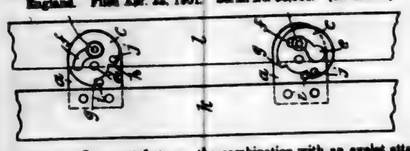
Claim.—In corset-fasteners the combination with an eyelet attachment on one of the busks of a disk pivoted thereto and whose pivotal axis is eccentric with the center of the hole in the eyelet, a hole in said disk the same size as the eyelet-hole, a curved slot extending from one side of the hole in the disk but of lesser width than said hole and whose radius is struck from the pivotal axis of the disk, two notches or projections formed on the disk, for engaging with a stud or stop on the eyelet-plate, for limiting its motion to its locked and unlocked positions, and a stud or pin on the disk for operating the same, a stud on the opposite busk engaging with the hole and slot in the disk for fastening the two busks together, substantially as described.

705,642. MILK-PAIL. SALOMON BRUCKMANN, Crefeld, Germany. Filed Oct. 3, 1901. Serial No. 77,455. (No model.)

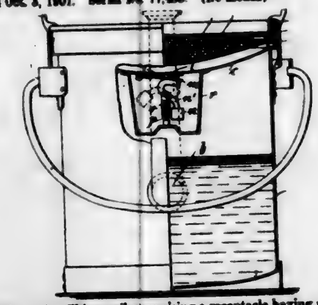

Claim.—A milking-pail comprising a receptacle having a perforated funnel located at the top, a hinged flap controlling the communication between funnel and receptacle, and a device for automatically closing said flap on the pail being overturned, consisting of a stirrup secured to the bottom of said funnel and provided with a vertical pin, a sleeve turning and sliding on said pin, and a weighted double-armed lever pivoted to said sleeve and in its normal position supporting the flap in open condition, all substantially as described.

705,648. CASEIN PHOTOGRAPHIC FILM AND PROCESS OF MAKING SAME. OTTO DOBE, Rheinfelden, Switzerland. Filed Nov. 26, 1901. Serial No. 83,316. (No specimens.)

Claim.—1. The process of producing actinic films, which consists in forming a solution of casein, coating a suitable support therewith, rendering the casein film substantially insoluble and then sensitizing the film, substantially as described.

2. The process of producing actinic films, which consists in forming a solution of casein, coating a suitable support therewith, rendering the casein substantially insoluble by a solution of a metallic salt free from silver, and then sensitizing the coating, substantially as described.

3. The process of producing actinic films, which consists in forming a solution of casein, adding thereto a softening agent, coating a suitable support therewith, rendering the casein substantially insoluble, and then sensitizing the coating, substantially as described.

4. The process of producing actinic films, which consists in producing a solution of casein with an organic acid, adding thereto glycerin, coating a suitable support therewith, rendering the casein substantially insoluble by means of a solution of a haloid salt free from silver, and then sensitizing the coating, substantially as described.

5. An actinic layer for photographic purposes, consisting of free casein and a sensitizing medium, substantially as and for the purpose set forth.

6. An actinic layer for photographic purposes consisting of free casein removed substantially insoluble and a sensitizing medium, substantially as and for the purpose set forth.

7. An actinic layer for photographic purposes consisting of substantially insoluble free casein, a softening agent and a sensitizing medium, substantially as described.

8. An actinic layer for photographic purposes consisting of substantially insoluble free casein, glycerin and a sensitizing medium, substantially as described.

705,644. ROTARY ENGINE. JULIAN H. CARY, San Francisco, Cal. Filed Dec. 20, 1900. Serial No. 40,583. (No model.)

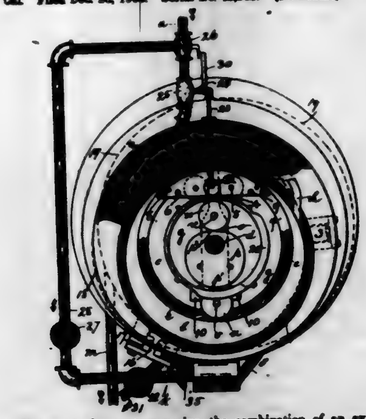

Claim.—1. In a rotary engine, the combination of an expansion-chamber, a revolving body, a shaft and rotating piston, said piston comprising a head and extension-arm, said head containing thin laminations and a flexible material supporting said laminations and enabling them to act independently, a roller for actuating said extension-arm longitudinally and an eccentric cam for controlling said roller, substantially as described.

2. In a rotary engine, an expansion-chamber, a revolving body, a shaft supporting said body, a rotary piston, which comprises a head and a lever-arm, said head being provided with thin laminations and an individual yielding mechanical support therefor, said lever-arm being elongated sufficiently to be used in transmitting propelling power at points on opposite sides of the shaft, substantially as described.

3. In a rotary engine, the combination of an expansion-chamber, a shaft, a revolving body, a piston which comprises a head and extension-arm, said head being provided with laminations having individual independent supports, said extension-arm passing beyond the axis of motion, a roller-bearing near the piston-head through which propelling power is transmitted to the revolving body, and a bearing on the opposite side of the center of motion through which a reciprocal propelling power is transmitted from the extension-arm of the piston, substantially as described.

4. In a rotary engine, the combination of an annular cylinder having an eccentric wall, a piston, rollers carried thereby at a fixed distance from each other, and a cam between said rollers for reciprocating said piston through the medium of said rollers, said cam being suitably shaped to permit both of said rollers to remain in contact with said cam throughout the entire revolution of the piston, thus providing a positive control of the piston in both directions by the cam, substantially as described.

5. In a rotary engine, the combination of an annular cylinder having an eccentric wall, a rotating piston, rollers carried thereby substantially at a fixed distance from each other, and a cam between said rollers for reciprocating said piston through the medium of said rollers, said cam being suitably shaped to permit both of said rollers to remain in contact with said cam substantially on opposite sides of the cam in the revolution of the piston, thus providing a positive control of the piston in both directions by the cam, substantially as described.

6. In a rotary engine, the combination of a cylinder having an inlet and an outlet, a rotating shaft extending longitudinally through the cylinder, a wheel secured to, and rotating with said shaft, having a wide rim and a thin web, said wheel having a radial cut therein, straps secured to the sides of the rim, rollers axially mounted in said straps on both sides of said web and adjacent to said cut, a piston reciprocating in said cut and bearing against said rollers, and a cam for reciprocating said piston, substantially as described.

7. In a rotary engine, an annular expansion-chamber, with an inlet and an outlet, a shaft, a rotary piston, a revolving wheel or drum whose periphery forms a wall of said chamber, said wall being provided with pockets and being suitably removed from the inlet that the jet of steam may have an uninterrupted flow thereby and also give a free discharge of steam from the pocket at the beginning of the impact in said pocket for the purpose of giving clearance, substantially as described.

8. In a rotary engine, a cylinder, an expansion-chamber with inlet and outlet contained therein, a piston, a revolving body whose periphery forms a wall of the expansion-chamber, impact-pockets, said revolving body being suitably disposed in said cylinder so that when in rotation the jet of the motive fluid from the inlet shall have a free admission into said expansion-chamber independently of the position or operation of the pockets, as shown and described.

9. An engine with an annular expansion-chamber, a revolving body, a piston supported by said body, a shaft on which said body is mounted, an inlet and an outlet in combination with a series of impact-pockets arranged along the periphery of the revolving body in said chamber, said pockets having their front and rear walls alined with the inflowing jet of steam for the purpose of obtaining the full force of the impact in the direction of rotation, as shown and described.

10. In a rotary engine, an expansion-chamber having an inlet and an outlet, a rotating piston, a shaft, a revolving body mounted upon said shaft, whose periphery forms the convex wall of said expansion-chamber, said convex wall being provided with a series of impact-pockets conformed with their front and rear walls at an angle corresponding in pitch with that of the inflowing jet of motive fluid, as shown and specified.

11. In a rotary engine, an annular expansion-chamber having an inlet and an outlet, a rotating wheel whose periphery forms a wall of said chamber, a shaft supporting said wheel, a piston carried thereby, a resiliently-yielding gate, and means operating at each revolution of the shaft for depressing the gate while the piston passes from any desired point between the outlet and gate to any desired point at or near the inlet, to open a steamway and permit the escape of the residual steam in a forward direction thereby avoiding back pressure due to the compression of residual steam, substantially as described.

12. In a rotary engine, a cylinder having an inlet and an outlet, a wheel rotating in the cylinder eccentric with respect thereto and having a point of closure therewith, a shaft supporting said wheel, a piston carried thereby, and means operating at each revolution of the shaft for separating, from contact with each other, the concave wall of the cylinder and the corresponding face of the piston-head while the piston passes a portion of the cylinder adjacent to the closure whereby free circulation of the steam at that part is permitted and back pressure due to compression or vacuum is avoided, substantially as described.

13. In a rotary engine an annular expansion-chamber having an inlet and an outlet, a revolving wall which constitutes a wall of the said chamber, a piston moving with said wall, a shaft supporting said wall in combination with a resiliently-yielding gate, and means operating at each revolution of the shaft for depressing said gate for the purpose of obtaining an unobstructed passage of the steam and piston, substantially as described.

14. In a rotary engine the combination of an annular expansion-chamber having an inlet and an outlet, a rotating piston, a revolving body moved by said piston, a shaft supporting said revolving body with a gate

applied so as to close the recess between the outlet and inlet and means for holding said gate open while the piston passes from the gate or a point near thereto, to the inlet or a point near thereto for the purpose of overcoming vacuum, substantially as described.

15. In a rotary engine an expansion-chamber having an inlet and an outlet, a point of closure between said inlet and outlet, a rotating piston, a revolving body supporting said piston, a shaft on which said revolving body is mounted, the walls of said expansion-chamber being suitably conformed and the piston suitably operated so that an escape for the back pressure of the motive fluid shall be provided as the piston passes from the outlet toward the point of closure, substantially as described.

16. In a rotary engine the combination of an expansion-chamber having an inlet and an outlet, a means for establishing a closure in said expansion-chamber between said inlet and outlet, a rotating piston, a revolving body supporting said piston, a shaft supporting said revolving body, and means provided whereby the motive fluid or air may freely pass between the piston-head and the walls of the expansion-chamber as said piston passes from the point of closure toward the inlet, for the purpose of overcoming vacuum, substantially as described.

17. A rotary engine having two or more annular cylinders having a common shaft and operated only by party-walls thus forming one compact body, said cylinders being connected to be operated in series as a compound engine, being provided with means for dividing the series to form two primary or high-pressure cylinders, an independent cut-off valve for each primary cylinder, and valve-actuating mechanism suitably arranged for controlling said valves to unison and operative when the series of engines is divided, substantially as described.

18. In a rotary engine two or more circular expansion-cylinders with suitable inlets and outlets, the necessary rotating pistons, a shaft arranged in common for the rotating pistons, means for rotating said pistons with said shaft, two of said cylinders being contained between their vertical walls to form a compact body, said cylinders being connected so as to be operated in series as a compound engine and means for disconnecting said series when desired, a primary live-steam way connecting with the high-pressure chamber of the said series and a second live-steam way connected to a second of the chambers of the series, and a cam device, arranged, when the said series are disconnected, to control the passage of the motive fluid through each of the said steamways simultaneously, substantially as described.

19. In a rotary engine, the combination of an annular expansion-chamber, a rotating piston supported by a shaft and rotating in said chamber, the head of said piston carrying thin laminations and individual metallic springs for pressing said laminations outwardly against the concave wall of the chamber, substantially as described.

20. In a rotary engine, comprising an annular cylinder having an inlet and an outlet, a shaft and a piston rotating on said shaft, the head of the piston comprising a block, a spring for pressing outwardly said block, thin plates of metal and individual springs interposed between said blocks and plates, substantially as described.

21. A rotary engine comprising two cylinders contained between three vertical walls, each cylinder being provided with concave and convex annular walls, and all constituting one compact body, with a horizontal shaft common to the cylinders, said cylinders being provided with the necessary pistons and being connected in series so as to be operated as a compound engine, and means for disconnecting when desired, having also an auxiliary live-steam way to a low-pressure cylinder and a cam on the common shaft for controlling the passage of steam in the latter steamway and in the steamway to the original high-pressure cylinder in unison, substantially as described.

705,645. SPRAYING APPARATUS. MYRON J. CASWELL, Sandusky, Ohio, assignor to Latham & Company, Sandusky, Ohio, a Firm. Filed Aug. 8, 1901. Serial No. 70,935. (No model.)

Claim.—1. In a spraying apparatus, a cylinder, a valve in the bottom of said cylinder, a hollow plunger-rod, a piston-head on the lower end of said rod, a valve to close the lower end of said rod, oppositely-extended branches forming a T at the upper end of said rod and forming a place of attachment for a hose, a divided handle embracing the rod and having openings to receive the branch pipes of the T, and a stand to which said handle is pivoted.

2. In a spraying apparatus, in combination with a receptacle for liquid, a cylinder having an upper open end extending into the receptacle, a pipe secured in the bottom of said cylinder and extending into the bottom of the receptacle, a valve in the bottom of the cylinder, a hollow plunger-rod, a piston-head on the lower end of said rod within said cylinder, a valve to close the lower end of said rod, a branch pipe at the upper end of said rod for the attachment of a hose, a handle mounted on said branch and free to turn thereon, and a stand to which the handle is pivoted.

3. In a spraying apparatus, in combination with a receptacle for liquid, a casting secured to the top of the receptacle and having an opening therein, and a stand provided with openings to receive the pivot-pin of the pump-handle, extending upward therefrom, a cylinder having an upper open end secured within said opening in said casing, a valve in the lower end of said cylinder, a hollow plunger-rod, a piston-head on said rod, a valve within said piston-head to close the lower end of said hollow rod, a T at the upper end of the hollow rod, a divided handle embracing the rod and said stand and pivoted to the former by being provided with openings to receive the branches of the T and to the latter by a pivot-pin adapted to engage the openings in the stand, said openings being arranged one nearer the top of the stand and farther from the plunger-rod than the other whereby the pivotal point of said handle may be changed when the length of the stroke is varied.

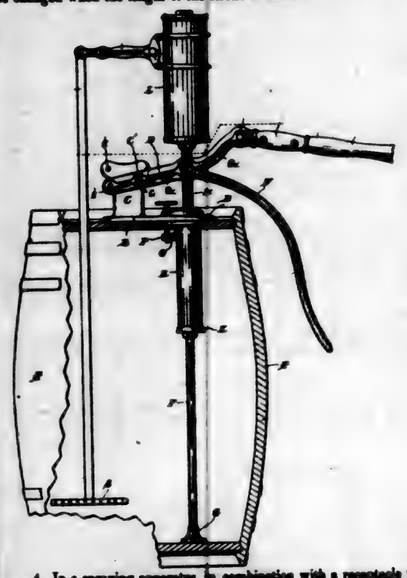

4. In a spraying apparatus, in combination with a receptacle for a liquid, a casting secured to the top of said receptacle and provided with an opening, a cylinder having an upper open end secured within said opening and extending into the receptacle and provided with lateral openings near its upper end, a pipe secured to the lower end of the cylinder, a valve to close the upper end of said pipe, a hollow plunger, a piston-head on said plunger, a valve to close the lower end of said plunger, an air-chamber on the upper end of said plunger, branch pipes forming a T near the upper end of the plunger, a hose attached to one of said branches and a cap for the opposite branch, a casting forming a portion of the pump-handle and made in halves to embrace the plunger and stand on which it is fulcrumed and provided with openings to receive the branch pipes of the plunger, a stand for said pump-handle extended longitudinally thereof and provided with bearings for the same, one nearer the top of the stand and farther from the plunger than the other, and a grip bantion of the handle adjustably secured to the divided portion of the handle.

5. In a spraying apparatus, in combination with a receptacle for the liquid, a cylinder within said receptacle having an upper open end projecting through the top of the receptacle and an opening in its side within the receptacle, a cap to cover the said opening, means for adjusting and holding said cap over the opening, a hollow plunger, a piston-head on said plunger within the cylinder, and a valve to close the lower end of said plunger.

6. In a spraying apparatus, in combination with a receptacle for liquid; a casting having an opening secured to the top of the receptacle; a cylinder having an upper open end secured in said casting and extending into the receptacle and provided with lateral openings near its upper end; a cap to cover said openings; a thumb-screw journaled in said casting and engaging a screw-threaded opening in said cap to adjust the same; a pipe secured in the bottom of said cylinder; a strainer-casting on the bottom of said pipe; a valve-seat formed in the bottom of said cylinder above said pipe; a valve on said seat; an apertured cap for said valve; a hollow plunger having an enlarged lower end and externally screw-threaded to engage a sleeve and internally screw-threaded to engage a cap having a central opening and openings around the same for the passage of the liquid; flanges on said sleeve and cap; a packing-ring engaged and held by said flanges; a valve-seat formed on said cap; a valve engaging the seat and provided with a stem to engage the central opening in the cap; a T near the upper end of said hollow plunger; hose attached to said T; a stand provided with pivots for the pump-handle; a pump-handle consisting of two parts, a grip portion provided with a head and a divided portion to embrace the stand, the plunger and the head of the grip portion; a pivot-pin to engage the openings in the stand; a bolt to secure the head between the parts of the divided handle portion; and an air-chamber on the upper end of the plunger.

705,646. SEWER-DREDGE. ISRAELIS CRAQUETTE, New Rochelle, N. Y. Filed Jan. 29, 1902. Serial No. 91,761. (No model.)

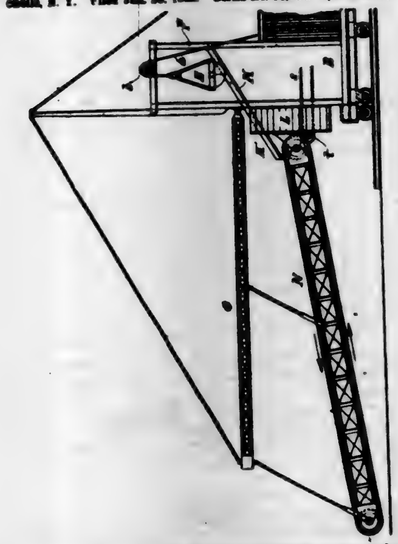

Claim.—1. The above-described dredge for laying sewers and other pipes which consists of a car, a dredge-frame mounted thereon, a dredge adapted to rise and fall through said frame, a main receiving-trough, a diverging trough whereby the excavated material is delivered at the sides of said car, and an apron whereby the excavated material may be delivered at a suitable distance behind said car for refilling the trench.

2. A dredge for laying sewers and other pipes which is provided with a building-box suspended from a suitable frame, mechanism whereby said box is driven into the ground surrounding the dredge as the same is cut away, mechanism whereby shoring-planks are driven into the ground to support the sides of the trench thus formed and means for lifting said box away from said trench for the next operation, substantially as shown and described.

705,647. CONICAL PENDULUM. FRANK M. CLARK, Tilton, N. H., assignor to George L. Clark, Worcester, Mass. Filed Feb. 19, 1901. Serial No. 47,971. (No model.)

Claim.—1. In a clock a conical spring arranged with its base-coil horizontally nearer the clock-base than is its apex; a conically-moving pendulum supported from the apex of said spring; and devices for driving said pendulum from its upper end substantially as described.

2. In a clock a conical spring arranged with its base-coil horizontally nearer the clock-base than is its apex; a conically-moving pendulum supported from the apex of said spring; a worm driven by the escapewheel of said clock and a crank connection between the upper end of said pendulum and said worm whereby the pendulum may be guided positively above its point of suspension substantially as specified.

3. In a clock the pendulum, C, in combination with the spiral, z, supporting said pendulum; the escape-wheel, D, and mechanism actuated by said wheel for guiding the end of said pendulum above its fulcrum-point in a circle.

4. In a clock provided with a conically-moving pendulum the cam in combination with the crank-actuated disk disposed in position to contact the pendulum-weight when at rest.

5. In a clock of the class described the case; the crank-actuated disk; 18; and the encircling guard, 19, arranged as specified.

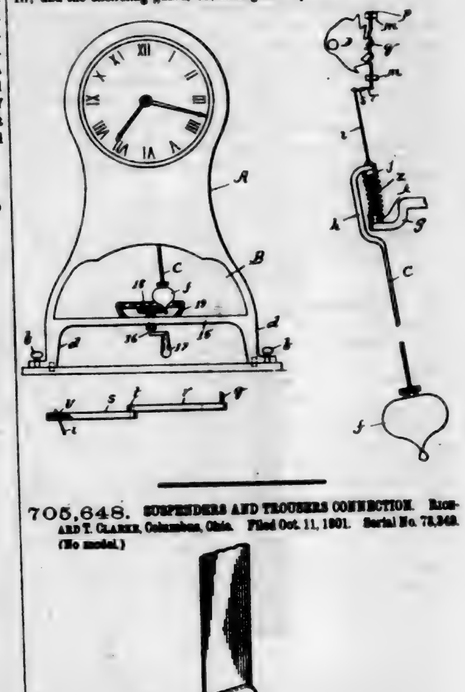

705,648. SUSPENDERS AND TROUSERS CONNECTION. RICHARD T. CLARKE, Columbus, Ohio. Filed Oct. 11, 1901. Serial No. 78,349. (No model.)

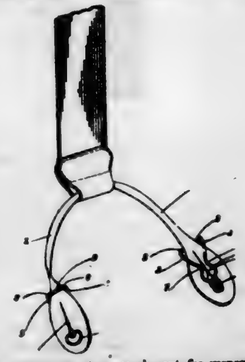

Claim.—In a button-engaging attachment for suspender-ends, the combination with the suspender-end having a buttonhole or other opening therein, of a button-engaging device comprising a centrally-doubled body S having its doubled end portion formed with an upwardly and downwardly bent termination, a socket formed above said terminal portion and an upper flaring portion receiving as described a suspender-end, substantially as specified.

705,649. LOOM. DRAKE F. CONKLIN and TRESCHEL G. SUSSEX, Hoboken, N. J. Filed Mar. 1, 1901. Serial No. 49,650. (No model.)

Claim.—1. In a loom for vertical weaving, the loom-frame, having bars running lengthwise of the loom, provided with an arched portion having a vertical groove to permit the free passage of the vertical needle and filling, in combination with double-pointed shuttles having a flat face, and adapted to traverse said arched portion of said bars, a rocking shaft, rocking arms secured thereto, cradles pivoted in said rocking arms, and adapted to hold said shuttles with their flat faces toward said arched bars, springs secured to said rocking arms, and adapted to restrict or limit the pivotal movement of said cradles and to maintain loosely, but in proper position, said shuttles, the main driving-shaft of the loom, and connections between said driving-shaft and said rocking shaft, to cause said shuttles to travel back and forth, describing an arc in passing the vertical slots in said arched bars, substantially as set forth.

2. The combination with the loom-frame and means thereon adapted to carry a number of sets of warp lengthwise of the loom on edge, one thread above the other in each set of warp, the sets of warp being par-

allel with, and in close proximity to, each other, of a series of heddles adapted to have a traverse motion, crosswise of the loom, to form and control simultaneously the sheds of the various sets of warp, means for thus operating said heddles, a reed movable lengthwise of the loom having dents arranged horizontally therein, one above the other, and adapted to receive the threads of the various sets of warp, and to beat the weft up to the fell the loom-shaft and operative connections between the reed and loom-shaft, a series of vertically-operated weft-needles adapted to carry the weft through the sheds so formed and to form loops of weft below them, a series of selvage-thread shuttles, means for thus operating said needles, and means for propelling said shuttles through the successive loops of weft, so formed below the warps, at each movement of the shuttles, substantially as set forth.

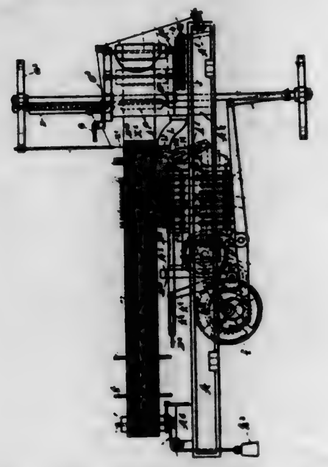

3. The combination with the loom-frame, and means thereon adapted to carry a number of sets of warp lengthwise of the loom one thread above the other in each set of warp, the sets of warp being parallel with each other, of a series of heddles adapted to have a traverse motion crosswise of the loom, means for thus operating said heddles, a reed or reeds movable lengthwise of the loom and means for operating the same, a series of vertically-arranged weft-needles adapted to carry the weft through the sheds so formed and to form loops of weft, and means to engage said loops, substantially as described.

705,650. ARTIFICIAL STONE. VALENTIN COSTI, GEORGE DE GENFOT, and GUSTAVE LE GALL, DE TENTZ, Paris, France. Filed Oct. 22, 1901. Serial No. 79,567. (No specimens.)

Claim.—An artificial stone, cement or similar product, consisting of the following elements combined in substantially the weight proportions named, viz: sulfate of aluminium fifteen parts; pulverized kieselguhr fifteen parts; calcinated magnesia fifty parts; chlorid of magnesium twenty-five parts; sulfate of magnesium seventy-five parts, and inert matter, as described, to give the required density and specific gravity, substantially as set forth.

705,651. REDUCTION OF METALS FROM THEIR ORES, &c., IN ELECTRICALLY-HEATED FURNACES. RAOUL C. COUTARDO, Sèvres, France. Filed Dec. 1, 1897. Serial No. 660,604. (No specimens.)

Claim.—1. The process of obtaining metal direct from the ore consisting in subjecting the lower end of a descending column of ore to a high temperature by a voltaic arc set in physical contact with the ore, and simultaneously causing a current of heated reducing-gas to flow upwardly through the column of ore, substantially as set forth.

2. The process herein described of obtaining metal direct from the ore, which consists in subjecting the ore to a high temperature solely by radiation and convection from a voltaic arc, and simultaneously causing a current of reducing-gas containing a carburizing agent to flow through the ore, whereby approximately the exact amount of carbon desired may be combined with the iron.

3. The process herein described of obtaining metal direct from the ore which consists in heating the ore solely by radiation and convection from a voltaic arc, whereby a temperature sufficiently high is obtained to fuse ores more refractory than iron ore, and causing a current of heated reducing-gas to flow upwardly through the ore.

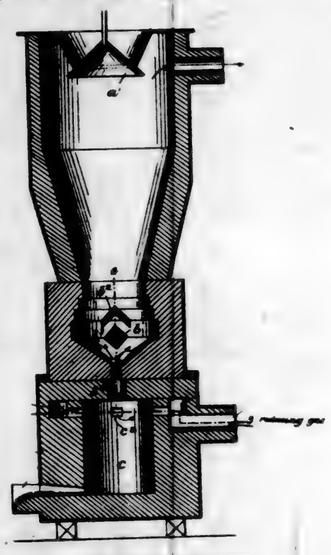

705,652. UNION GARMENT. GERALDINE O. COOK, Boston, Mass. Filed May 31, 1898. Serial No. 682,103. (No model.)

Claim.—1. A union garment having a back extended substantially to the top of the shoulder and a front or bust-covering portion connected with the back at substantially the bottom of the arm-eyes to have an opening extending from the shoulder of the garment to the bottom of each arm-eye, and wings coöperating with the bust-covering portion to close the said opening, said wings being freely elastic in lateral direction, and means to detachably unite the wings to the bust-covering portion of the garment in substantially parallel vertical lines, leaving the front portion of the garment free to yield and conform to the contour of the bust.

2. A union garment having a back extended substantially to the top of the shoulder, and a front or bust-covering portion connected with the back at substantially the bottom of the arm-eyes only, the front portion being shorter than the back and presenting a transverse upper edge a' and downwardly-divergent free side edges a^2 leading therefrom to the bottom of the arm-eyes, sleeves having wings extended from their front portions and joined to the back at the top of the shoulder, said wings coöperating with the bust-covering portion to close the shoulder-openings, at each side of the neck-opening, and being freely elastic in lateral direction, whereby the entire front of the garment from one to the other arm-eye is free to yield and conform to the contour of the bust, and means to detachably unite the wings and bust-covering portion in substantially

parallel vertical lines at a distance each side of the center line of the front portion.

3. A union garment presenting at its upper portion a back part, and a shorter front part, the front part covering the bust and having a top edge and inclined free side edges unattached to the back or sleeve of the garment to form shoulder-openings at each side of the neck-opening, said front covering the bust, sleeves having attached wings integral therewith and freely elastic in lateral direction, the sleeves being attached to the back of the garment from the bottom of the arm-eye to the top of the shoulder, the lateral edge of said wing being attached to the top edge of the back at the top of the shoulder, leaving the said wing and front free to overlap at the front of the shoulder, and close the shoulder-openings, said wings covering only a part of the bust next the shoulder, leaving a considerable portion of the upper edge of the front part of single thickness to cross the bust, said front being unrestrained against distension, between the arm-eyes, whereby it may yield and freely adapt itself to the contour of the bust, and suitable fastening devices located in substantially parallel lines to unite the free vertical edges of the said wings to the front of the garment, substantially as described.

4. A union garment presenting a back and a front united thereto substantially at the bottom of the arm-eyes, the top of said front being prolonged by knitted fabric presenting a top edge a' with side edges a^2, the said prolongation being knitted with a double-rib stitch or elastic knitted wales standing vertically with relation to the body of the garment, sleeves having attached wings freely elastic in lateral direction, and united to the back of the garment from the bottom of the arm-eye to the shoulder, and along the top of the shoulder to the neck, leaving two free parallel and substantially vertical edges of said wings to partially overlap the top edge of the front of the sleeves with the body, and fastenings arranged in parallel, substantially vertical lines to secure said wings at a considerable distance apart to the front of the garment, leaving the vertical wales at the top of the front entirely uncovered, in order that the front of the garment may freely adapt itself to the bust of the wearer, substantially as described.

5. A union garment having a back extended substantially to the top of the shoulder, a sleeve, a wing connected with the front half of the sleeve and attached at its upper edge to the back at the shoulder, the wing overlapping part of the bust, a front or bust-covering portion connected only with the back of the garment at substantially the bottom of the arm-eye, said front portion being unconnected with the front of the sleeve and said wing, providing an opening from the shoulder to the bottom of the arm-eye.

705,653. LEG OR STANDARD FOR FURNITURE, &c. WILBER G. DAVIS, Newton Center, Mass., assignor to Mellen Bray, Newton, Mass. Filed Oct. 7, 1901. Serial No. 77,762. (No model.)

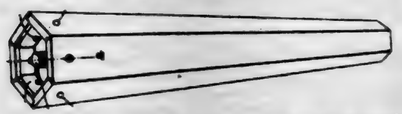

Claim.—1. A leg or standard comprising a plurality of tapering stripe united at their edges to form a hollow tapering structure or shell which is polygonal in cross-section, and a spider having a flange to which said stripe are attached, and an attaching-screw carried by said spider within said structure at the center of its larger end, said screw being below the said larger end and separated from the surrounding walls of the structure by a space formed to receive a projecting socket on a body to be supported.

2. A leg or standard comprising a plurality of tapering stripe united at their edges to form a hollow tapering structure or shell which is polygonal in cross-section, a spider seated on the interior of said structure below its larger end and having a flange to which said stripe are attached, and an attaching-screw affixed to the center of the spider and projecting outwardly therefrom.

3. A leg or standard comprising a plurality of tapering stripe united at their edges to form a hollow tapering structure or shell which is polygonal in cross-section, a spider seated on the interior of said structure below its larger end and having a flange to which said stripe are attached, and an attaching-screw affixed to the center of the spider and projecting outwardly therefrom, said screw being separated from the surrounding walls of the structure by a space formed to receive a projecting socket on a body to be supported.

4. A leg or standard comprising a plurality of tapering stripe united at their edges to form a hollow tapering structure or shell which is polygonal in cross-section, a spider having on its margin a tapering polygonal flange seated on the interior of said structure below its larger end, said flange projecting outwardly from the spider, and at its center an inwardly projecting tubular boss and an attaching-screw inserted in and secured to said boss and projecting outwardly from the spider.

5. A leg or standard comprising a plurality of tapering stripe united at their edges to form a hollow tapering structure or shell which is polygonal in cross-section, a spider seated on the interior of said structure below its larger end and having a flange to which said stripe are attached, and a terminal secured to the lower end of said structure.

705,654. ROLLING-PIN. BERTHA DIUP, Stambaugh, Mich. Filed Mar. 13, 1902. Serial No. 97,979. (No model.)

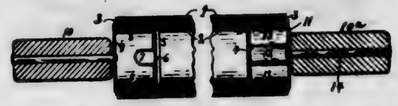

Claim.—1. In a rolling-pin the combination with a hollow cylindrical body, of the internal removable cover 6 securable some distance inside the end of the roller, a sleeve 4 secured some distance in from the other end of the roller, and two handles 10 and 10^a having each a cylindrical portion adapted to be inserted and friction-held in the ends of the cylindrical body outside of said sleeve and cover 6.

2. In a rolling-pin the combination with a hollow cylindrical body, of the internal removable cover 6 securable some distance inside the end of the roller a sleeve 4 secured some distance in from the other end of the roller and two handles 10 and 10^a, having each a cylindrical portion adapted to be inserted and friction-held in the ends of the cylindrical body outside of said sleeve and cover 6, said cylindrical portions of the handles being formed one into a doughnut-cutter and the other into a biscuit-cutter.

705,655. GRAIN-DOOR ATTACHMENT. GABRIEL T. DOUTHIT, Vanwinkle, Ga. Filed Apr. 27, 1901. Serial No. 57,770. (No model.)

Claim.—1. In a device of the kind described, the combination with the door, of a perforated angle-plate, the forked hinge-like locking member having hooked ends to engage the perforations in the angle-plate, and means for attaching said locking member to the door, substantially as described.

2. The combination with the door, of the perforated angle-plate, the forked hinge-like locking member having hooked ends, the opposite end of said locking member being slotted, the eyebolt or staple over which the slotted end fits, the guide-eyes upon which the forks of the locking member rest, and the locking-pins passing through the eyes and connecting the door and member, substantially as described.

705,656. MEANS FOR CHARGING GAS-RETORTS. EDUARD DIETZ, Berlin, Germany. Filed May 3, 1902. Serial No. 105,515. (No model.)

Claim.—1. The combination with furnaces arranged to have a clear space between them, independent roof structures, posts to support the roof structures, beams connecting the posts supporting the independent roof structures and coal-bins supported on said beams within the free space between the roof structures, substantially as described.

2. The combination with rows of furnaces arranged to have a clear space between them, independent roof structures, posts to support the roof structures, simple beams connecting the posts supporting the roof structures, coal-bins supported on said beams between the posts of adjacent roof structures and within the clear space and having inclined bottoms, coal-chutes forming a continuation of the inclined bottoms projecting within the building and cantilevers to support said coal-chutes, substantially as described.

3. The combination with furnaces arranged to have a clear space between them, independent roof structures, posts to support the roof structures independent of the furnaces, simple built-up beams connecting posts

supporting opposite roof structures, coal-bins supported on said beams between posts and within the clear space and having inclined bottoms, coal-chutes forming continuations of the inclined bottoms projecting within the building, cantilevers to support said chutes and a track supported on the under side of the cantilevers and below the ends of said chutes, substantially as described.

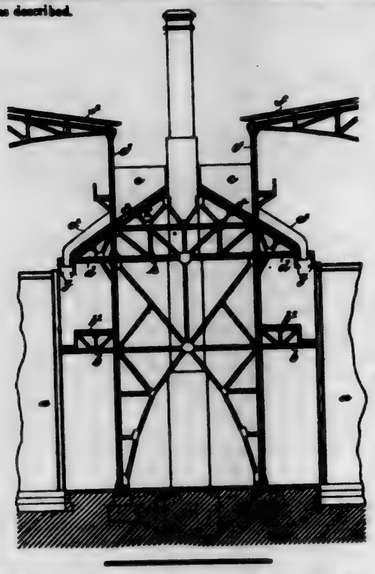

705,657. DOWELING-MACHINE. WILLIAM J. EDWARDS and WILLIAM H. WALTERS, Bayonne, N. J. Filed Mar. 14, 1902. Serial No. 98,178. (No model.)

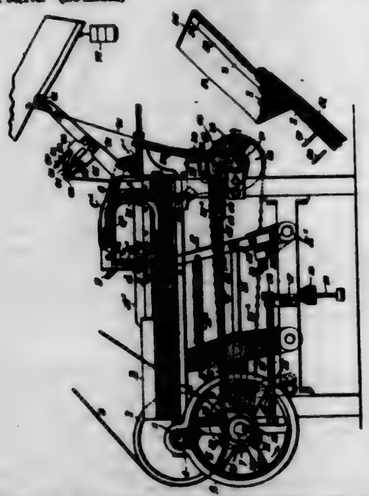

Claim.—1. In a doweling-machine, the combination of a dowel-holder adapted to detachably hold a dowel, a fixed table upon which the boards to be doweled may be placed on opposite sides of the dowel-holder, means for pressing the edges of the boards together within the dowel entered therein, and means for automatically placing a dowel in the holder after each operation.

2. In a doweling-machine, a fixed table to receive the boards, a dowel-holder adapted to detachably hold a dowel and free to move longitudinally of the table, means for pressing the edges of the boards together to cause the dowel to enter them, and means for automatically placing a dowel in the holder after each operation.

3. In a doweling-machine, the combination of a table or support for the boards, a dowel-holder mounted to move longitudinally of the table and adapted to detachably hold the dowel, means for pressing the edges of the boards together to cause the dowel to enter them, a dowel-receptacle, a dowel-hopper, means for automatically transferring dowels from the hopper to the receptacle and means for transferring a dowel from the receptacle to the holder after each operation.

4. In a doweling-machine, the combination of a feed table or support for the boards, a dowel-holder free to move longitudinally of the table, adapted to detachably hold a dowel and be moved out of the path of the boards, a movable board-pressing member on one side of the dowel-holder, an abutment on the other, a dowel-receptacle and means for automatically introducing a dowel into the holder after each operation.

5. In a doweling-machine, the combination of a dowel-holder comprising opposed members whose opposite edges are formed with convergent bevels and between the faces of which a dowel may be detachably held, a feed-table upon which the boards may be placed on opposite sides of the dowel-holder and means for pressing the edges of the boards together to cause them to engage the dowel and move the dowel-holder out of the way.

6. In a doweling-machine, the combination of a dowel-holder comprising opposite members whose opposite edges are formed with convergent bevels and between the faces of which a dowel may be clamped, springs which force the two faces of the dowel-holder together to clamp a dowel between them, a feed-table upon which the boards may be placed on opposite sides of the dowel-holder and means for pressing the edges of the boards together to engage the dowels and displace the members of the dowel-holder.

7. In a doweling-machine, the combination of a feed-table upon which the boards to be doweled may be placed, a dowel-holder mounted to slide or move longitudinally of the feed-table from its normal central position and constructed to removably hold a dowel and to be pressed by the edges of the board out of the way, a sliding head at one end of the feed-table and an abutment at the other between which two members the boards are pressed to cause their edges to engage the dowel and move the dowel-holder out of the way and means for automatically placing a dowel in the dowel-holder after each operation.

8. In a doweling-machine, the combination of a feed-table upon which the boards to be doweled may be placed, a dowel-holder mounted to slide or move longitudinally of the feed-table from its normal central position and constructed to removably hold a dowel and to be pressed by the edges of the boards out of the way, a sliding head at one end of the feed-table and an abutment at the other between which two members the boards are pressed to cause their edges to engage the dowel and move the dowel-holder out of the way, means, acting after the doweling of two boards, to move the dowel-holder to and from the abutment and means for supplying the holder with another dowel while the holder is adjacent the abutment.

9. In a doweling-machine, the combination of a feed-table, a sliding head mounted at one end of the feed-table, an abutment and dowel-receptacle located at the other end of the table, a dowel-holder constructed and adapted to removably hold a dowel and be moved out of the way by pressure of the edges of the boards, means, acting after the doweling of two boards, for moving the dowel-holder into operative relation with the dowel-receptacle, means for then ejecting a dowel from the receptacle into the holder, and means for then returning the dowel-holder to its normal position.

10. In a doweling-machine, the combination of a feed-table, a sliding head mounted at one end of the feed-table, an abutment and dowel-receptacle located at the other end of the table, a dowel-holder constructed and adapted to removably hold a dowel and be moved out of the way by pressure of the edges of the boards, means, acting after the doweling of two boards, for moving the dowel-holder into operative relation with the dowel-receptacle, means for then ejecting a dowel from the receptacle into the holder, means for then returning the dowel-holder to its normal position, and means for automatically supplying the dowel-receptacle with dowels.

11. In a doweling-machine, the combination of a dowel-holder comprising opposed members whose opposite edges are formed with convergent bevels and between the faces of which a dowel may be detachably held, a feed-table upon which the abutment may be placed on opposite sides of the dowel-holder, a presser bearing upon the boards and holding them flat upon the feed-table while their edges are being forced together and means for pressing the edges of the boards together to engage the dowel and move the dowel-holder out of the way.

12. In a doweling-machine, the combination of a dowel-holder comprising opposite members whose opposite edges are formed with convergent bevels and between the faces of which a dowel may be clamped, springs which force the two faces of the dowel-holder together to clamp a dowel between them, a feed-table upon which the boards may be placed on opposite sides of the dowel-holder, a presser bearing upon the boards and holding them flat upon the feed-table while their edges are being forced together and means for pressing the edges of the boards together to engage the dowels and displace the members of the dowel-holder.

13. In a doweling-machine, the combination of a feed-table upon which the boards to be doweled may be placed, a presser bearing upon the boards and holding them flat upon the feed-table while their edges are being forced together, a dowel-holder mounted to slide or move longitudinally of the feed-table from its normal central position and constructed to removably hold a dowel and to be pressed by the edges of the boards out of the way, a sliding head at one end of the feed-table and an abutment at the other between which two members the boards are pressed to cause their edges to engage the dowel and move the dowel-holder out of the way and means for automatically placing a dowel in the dowel-holder after each operation.

14. In a doweling-machine, the combination of a feed-table upon which the boards to be doweled may be placed, a presser bearing upon the boards and holding them flat upon the feed-table while their edges are being forced together, a dowel-holder mounted to slide or move longitudinally of the feed-table from its normal central position and constructed to removably hold a dowel and to be pressed by the edges of the boards out of the way, a sliding head at one end of the feed-table and an abutment at the other between which two members the boards are pressed to cause their edges to engage the dowel and move the dowel-holder out of the way, means, acting after the doweling of two boards, to move the dowel-holder to and from the abutment and means for supplying the holder with another dowel while the holder is adjacent the abutment.

15. In a doweling-machine, the combination of a feed-table, a presser bearing upon the boards and holding them flat upon the feed-table while their edges are being forced together, a sliding head mounted at one end of the feed-table, an abutment and dowel-receptacle located at the other end of the table, a dowel-holder constructed and adapted to removably hold a dowel and to be moved out of the way by pressure of the edges of the boards, means, acting after the doweling of two boards, for moving the dowel-holder into operative relation with the dowel-receptacle, means for then ejecting a dowel from the receptacle into the holder, and means for then returning the dowel-holder to its normal position.

16. In a doweling-machine, the combination of a feed-table, a presser bearing upon the boards and holding them flat upon the feed-table while their edges are being forced together, a sliding head mounted at one end of the feed-table, an abutment and dowel-receptacle located at the other end of the table, a dowel-holder constructed and adapted to removably hold a dowel and be moved out of the way by pressure of the edges of the boards, means, acting after the doweling of two boards, for moving the dowel-holder into operative relation with the dowel-receptacle, means for then ejecting a dowel from the receptacle into the holder, means for then returning the dowel-holder to its normal position, and means for automatically supplying the dowel-receptacle with dowels.

17. In a doweling-machine, comprising a feed-table, a sliding plunger at one end thereof, an abutment and a dowel-receptacle at the other end thereof, a dowel-holder adapted to removably hold a dowel and be forced out of the way by the edges of the boards, a dowel-holder frame slidable or movable longitudinally of the table to and from the dowel-receptacle and a feed device for ejecting a dowel from the receptacle and delivering it to the dowel-holder, the combination of a continuously-driven driving-shaft, an intermittently-driven main shaft and mechanism for respectively operating the sliding head, the dowel-holder and the dowel-feed devices for the purposes herein set forth.

18. In a doweling-machine comprising a feed-table, a sliding plunger at one end thereof, an abutment and a dowel-receptacle at the other end thereof, a dowel-holder adapted to removably hold a dowel and be forced out of the way by the edges of the boards, a dowel-holder frame slidable or movable longitudinally of the table to and from the dowel-receptacle, a feed device for ejecting a dowel from the receptacle and delivering it to the dowel-holder and a presser-plate for holding boards against the table, the combination of a continuously-driven driving-shaft, an intermittently-driven main shaft and mechanism for respectively operating the sliding head, the dowel-holder and the dowel-feed devices for the purposes herein set forth and for raising and lowering the presser-plate.

19. In a doweling-machine comprising a feed-table, a sliding plunger at one end thereof, an abutment and a dowel-receptacle at the other end thereof, a dowel-holder adapted to removably hold a dowel and be forced out of the way by the edges of the boards, a dowel-holder frame slidable or movable longitudinally of the table to and from the dowel-receptacle, a feed device for ejecting a dowel from the receptacle and delivering it to the dowel-holder, a dowel-hopper and means for automatically delivering dowels from the hopper to the dowel-receptacle, the combination of a continuously-driven driving-shaft, an intermittently-driven main shaft and mechanism for respectively operating the sliding head, the dowel-holder and the dowel-feed devices for the purposes herein set forth and for automatically transferring dowels from the hopper to the dowel-receptacle.

20. In a doweling-machine, the combination of a feed-table, a sliding head at one end thereof, an abutment at the other, a pair of dowel-holders independently movable longitudinally of the table and constructed and adapted to removably hold dowels and to be moved out of the way by the pressure of the edges of the boards and means for automatically supplying each holder with a dowel after each operation.

21. In a doweling-machine, the combination of a feed-table, a sliding head mounted at one end thereof, at the other end thereof an abutment and two dowel-receptacles, a pair of dowel-holders independently movable longitudinally of the table and each constructed to removably hold a dowel and be pressed out of the way by the edges of the boards, means, acting after the doweling of the two boards, for moving the two dowel-holders into operative relation to the respective dowel-receptacles, means for then transferring a dowel from each receptacle to its corresponding dowel-holder and means for returning the dowel-holders to their normal position.

22. In a doweling-machine, the combination of a feed-table, a sliding head at one end thereof, at the other end thereof an abutment and two dowel-receptacles, a pair of dowel-holders independently movable longitudinally of the table and each constructed to removably hold a dowel and be pressed out of the way by the edges of the boards, means, acting after the doweling of the two boards, for moving the two dowel-holders into operative relation to the respective dowel-receptacles, means for then transferring a dowel from each receptacle to its corresponding dowel-holder, means for returning the dowel-holders to their normal position and means for automatically supplying dowels to the dowel-receptacle.

23. In a doweling-machine, the combination of a feed-table, a presser-plate for holding the boards against the table while being doweled, a sliding head mounted at one end of the table, at the other end thereof an abutment and two dowel-receptacles, a pair of dowel-holders independently movable longitudinally of the table and each constructed to removably hold a dowel and be moved out of the way by the edges of the boards, means, acting after the doweling of the two boards, for moving the two dowel-holders into operative relation to the respective dowel-receptacles, means for then transferring a dowel from each receptacle to its corresponding dowel-holder and means for returning the dowel-holders to their normal position.

24. In a doweling-machine, the combination of a feed-table, a sliding head mounted at one end thereof and an abutment at the other, dowel-holders mounted at the front and rear edges of the table and constructed to slide independently of each other, toward the abutment end of the table, under the stress of the advancing board and each constructed to removably hold a dowel and be pressed out of the way by the edges of the board, dowel-receptacles at the abutment end of the table arranged respectively in line with the dowel-holders, means for positively moving the dowel-holders into operative relation to each receptacles, means for then delivering a dowel from each receptacle to its corresponding dowel-holder and means for returning the dowel-holders to their normal position.

25. In a doweling-machine, the combination of a feed-table, a sliding head mounted at one end thereof and an abutment at the other, dowel-holders mounted at the front and rear edges of the table and constructed to slide independently of each other, toward the abutment end of the table, under the stress of the advancing board, and each constructed to removably hold a dowel and be pressed out of the way by the edges of the board, dowel-receptacles at the abutment end of the table arranged respectively in line with the dowel-holders, means for positively moving the dowel-holders into operative relation to each receptacles, means for then delivering a dowel from each receptacle to its corresponding dowel-holder, means for returning the dowel-holders to their normal position, a dowel-hopper and means for automatically feeding dowels from the hopper to the dowel-receptacles.

26. In a doweling-machine, the combination with a feed-table, sliding head, dowel-holder, and dowel-receptacle, of a part or bracket having a dowel-channel communicating with the receptacle, an oscillating dowel-hopper mounted at the upper end thereof and comprising a bottom with inclined convergent parts with a slot at the line of intersection thereof and a channeled piece located below the slot and registering with the dowel-channel before mentioned when the hopper is in one of the positions into which it may be oscillated.

27. In a doweling-machine, the combination with a feed-table, sliding head, dowel-holder and dowel-receptacle, of a part of bracket having a dowel-channel communicating with the receptacle, an oscillating dowel hopper mounted at the upper end thereof and comprising a bottom with inclined convergent parts with a slot at the line of intersection thereof, a channeled piece located below the slot and registering with the dowel-

channel before mentioned when the hopper is in one of the positions into which it may be oscillated, and means, acting upon the dowels in the last-named dowel-channel, for permitting them to slide one by one into the dowel-receptacle.

20. The combination with the dowel-receptacle of a part or bracket, as 52, having therein an inclined dowel-channel opening to the receptacle at its lower end, an oscillating hopper mounted at the upper end of said channel and comprising a bottom portion formed by the convergent parts with a slot at the intersection of said parts and in rear of the axis of oscillation and a channeled piece arranged below the slots and communicating with the channel 52 when the hopper is in one of the positions into which it may be oscillated.

20. The combination with the dowel-receptacle of a part or bracket, as 52, having therein an inclined dowel-channel opening to the receptacle at its lower end, an oscillating hopper mounted at the upper end of said channel and comprising a bottom portion formed by convergent parts with a slot at the intersection of said parts and in rear of the axis of oscillation, a channeled piece arranged below the slots and communicating with the channel 52 when the hopper is in one of the positions into which it may be oscillated, and final devices acting upon the dowels in the channel of part 53 to permit them to slide, one by one, into the dowel-receptacle.

705,658. MACHINE FOR DRILLING EDGES OF BOARDS. WILLIAM J. EDWARDS and WILLIAM H. WALTERS, Bayonne, N. J. Filed Mar. 14, 1902. Serial No. 98,171. (No model.)

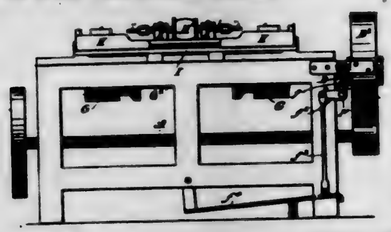

Claim.—1. The combination of a main frame, parallel drill-spindles mounted in bearings thereon and adapted to move freely endwise in their bearings and each equipped with right and left hand drills at their opposite ends, carriages mounted opposite the ends of the spindles and means for simultaneously advancing the carriages toward the drills and then retracting them.

2. The combination of a main frame, a drill-spindle mounted in bearings thereon and adapted to move freely endwise in its bearings and equipped with right and left hand drills at its opposite ends, carriages mounted opposite the ends of the spindle and means for simultaneously advancing the carriages toward the drills and then retracting them.

3. The combination of a main frame, a continuously-rotated driving-shaft mounted in bearings thereon, a pinion on the shaft, a normally stationary main shaft, a gear loosely mounted thereon and engaging the pinion, clutch devices between the normally stationary shaft and the gear thereon whereby at the will of the operator the normally stationary shaft may be driven through one revolution, cams sliding on the normally stationary shaft and connected to move together, carriages mounted to slide toward and from each other during each revolution of the normally stationary shaft, means for so actuating them from the cams, and parallel drill-spindles, mounted in bearings between the carriages, adapted to move freely endwise and each equipped, with a driving-pulley located between its bearings and with right and left hand drills at its opposite ends.

4. The combination of a main frame, a drill-spindle mounted in bearings thereon, adapted to move freely endwise in its bearings and equipped with right and left hand drills at its opposite ends, carriages mounted opposite the ends of the spindle, cams coupled to slide together on their driving-shaft parallel with the drill-spindle and connections between the cams and carriages for simultaneously advancing the latter toward the drills and then retracting them.

5. The combination of a main frame, a drill-spindle mounted in bearings thereon, adapted to move freely endwise in its bearings and equipped with right and left hand drills at its opposite ends, carriages mounted opposite the ends of the spindle and mechanism, for simultaneously advancing the carriages toward the drills and then retracting them, comprising driven mounted to move together in a direction parallel with the line of motion of the carriages for the purpose set forth.

705,659. WOOD-SPLITTING MACHINE. OMAR S. BALDWIN, Aiken, Pa. Filed Aug. 6, 1901. Serial No. 70,995. (No model.)

Claim.—1. A machine for splitting wood or other material having stationary splitting mechanism, mechanism adapted to support the wood or other material while it is being split and mechanism adapted to drive the wood or other material against the splitting mechanism.

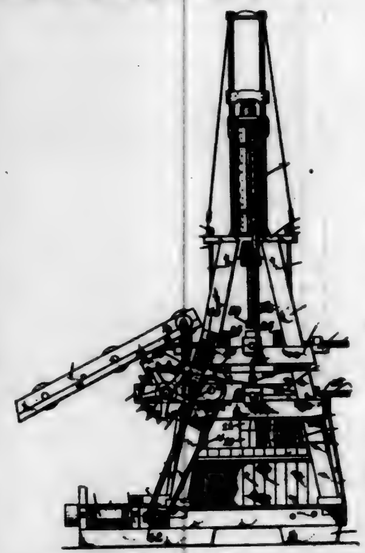

2. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame, gripping mechanism above the splitting mechanism, and a hammer device above the gripping mechanism adapted to drive a log in the gripping mechanism upon the splitting mechanism.

3. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame having a plurality of splitting devices each having a different number of blades, gripping mechanism, means for driving a log in the gripping mechanism upon the splitting mechanism and means for adjusting the splitting mechanism to arrange the desired splitting device beneath the gripping mechanism.

4. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame, a hammer device, gripping mechanism between the splitting mechanism and the hammer device; said hammer device being adapted to drive a log in the gripping mechanism against the splitting mechanism.

5. A machine for splitting wood or other material comprising a frame, splitting mechanism in said frame having a plurality of splitting devices each having a different number of blades, gripping mechanism, means for driving a log in the gripping mechanism against the splitting mechanism and means for adjusting the splitting mechanism to operatively arrange the desired splitting device with respect to the gripping mechanism.

6. A machine for splitting wood comprising splitting mechanism, gripping mechanism above the splitting mechanism, hammer mechanism above the gripping mechanism, side conveying mechanism on each side of the splitting mechanism and end conveying mechanism transverse to the side conveying mechanism.

7. A machine for splitting wood comprising splitting mechanism having a lateral adjusting movement only, hammer mechanism having a path of movement toward or from the splitting mechanism; gripping mechanism between the splitting mechanism and the hammer mechanism and mechanism for shifting the splitting mechanism.

8. A machine for splitting wood comprising splitting mechanism gripping mechanism above the splitting mechanism, hammer mechanism above the gripping mechanism adapted to drive the wood or other material to be split against the splitting mechanism and conveying mechanism.

9. In a splitting-machine, a splitting device comprising a plurality of independent portions and each portion having a different number of splitting-blades, means for laterally adjusting said splitting device, hammer mechanism, and gripping mechanism between the splitting device and hammer mechanism.

10. In a splitting-machine, the combination of splitting mechanism, hammer mechanism and gripping mechanism between the splitting mechanism and hammer mechanism comprising a series of movable gripping-blocks.

11. In a splitting-machine, the combination of splitting mechanism, hammer mechanism having a path of movement toward or from the splitting mechanism, and gripping mechanism adapted to hold a log or other article in position between the splitting mechanism and hammer mechanism.

705,660. LOCK. ALAN R. FERGUSON, New York, N. Y. Filed Apr. 24, 1901. Serial No. 57,177. (No model.)

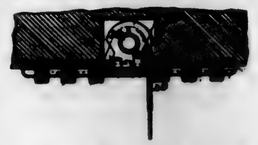

Claim.—1. In a lock mechanism, the combination of a bolt, means for controlling said bolt and adapted to be shifted by a key; means adapted to engage and positively prevent movement of said controlling means except when operated by its key; and push devices for controlling said preventing means.

2. In a lock mechanism, organized to be operated by a key or by independent means, the combination of a bolt, means adapted to be engaged and actuated by a key for shifting said bolt; and push devices for controlling the operation of said means independent of said key.

3. In a lock mechanism, the combination of a bolt; rotary means having peripheral key-engaging projections for controlling said bolt and adapted to be shifted by a key; means for preventing movement of said controlling means; and means for controlling said preventing means; the organization being such that the preventing means is ineffective to prevent the operation of said bolt by the proper key, but is effective to prevent the operation of such bolt in the absence of such key until the proper manipulation of the combination.

4. In a lock mechanism, the combination of a bolt; key-operated means for controlling the bolt; means engaging and locking the controlling means; and one or more push devices operative to release said locking means.

5. In a lock mechanism, the combination of a rotary bolt adapted to be shifted by a key; rotary means having peripheral key-engaging projections for controlling it; locking means for said rotary means; and push-buttons for controlling said locking means.

6. In a lock mechanism, the combination of a rotary bolt adapted to be shifted by a key; rotary means having peripheral key-engaging projections for controlling it; locking means for said rotary means; push-buttons for controlling said locking means; and means for shifting said controlling means after it is unlocked.

7. In a lock mechanism, the combination of a rotary bolt adapted to be shifted by a key; rotary means for controlling it; locking means for said rotary means; push devices for controlling said locking means; and means embodying gearing for shifting said controlling means after it is unlocked.

8. In a lock mechanism, the combination of a bolt; a tumbler adapted to be actuated by a key; means for locking each tumbler against movement; and a plurality of push-buttons for controlling the operation of said locking means.

9. In a lock mechanism, the combination of a bolt maintained in its locking position by a spring and shiftable by a key against the action of such spring, means for controlling the movement of said bolt independently of the key, and comprising a plurality of push devices, a part thereof being assembled in combination, whereby on the operation of the proper devices the bolt may be withdrawn from its locking position and on the operation of any part of such devices not comprised in the combination the bolt is more positively locked in its locking position.

10. In a lock mechanism, the combination of a bolt adapted to be shifted by a key, means for controlling the movement of said bolt independently of the key, and comprising a plurality of push devices, a part thereof being assembled in combination whereby on the operation of the proper devices the bolt may be withdrawn from its locking position and on the operation of any part of such devices not in the combination the bolt is thereby more positively locked in its locking position, the organization being such that the key may operate the bolt independently of any previous manipulation of the push devices.

11. In a lock, the combination of a bolt automatically shiftable under certain conditions into its unlocking position and also shiftable into its unlocking position by a key; and means for preventing the automatic operation of said bolt and controlled by combination means.

12. In a lock mechanism organized to be operated by a key or by independent means, the combination of a rotary bolt; means engaged and actuated by a key for rotating said bolt into its unlocking position on the insertion of such key; and push-buttons for controlling the operation of said bolt independently of said key.

13. In a lock mechanism organized to be operated by a key or by independent means, the combination of a rotary bolt; means having key-engaging projections for rotating said bolt on the insertion of the proper key; and for controlling said bolt independently of said key.

14. In a lock mechanism organized to be operated by a key or by independent means, the combination, with a rotary and oscillatory bolt, of means having key-engaging projections for rotating said bolt on the insertion of the proper key, and means for controlling said bolt independently of said key.

15. In a lock, the combination of a bolt; means for automatically shifting said bolt under certain conditions into its unlocking position, said bolt also shiftable into its unlocking position by a key; and means for preventing the automatic operation of said bolt and controlled by push devices.

16. In a lock mechanism, the combination of a bolt; means for automatically shifting said bolt under certain conditions into its unlocking position, said bolt also shiftable into its unlocking position by a key; means for preventing the automatic operation of said bolt and controlled by push devices, the improper manipulation of which will more positively lock the bolt against automatic movement.

17. In a lock, the combination of a bolt; means for shifting said bolt in one direction into its unlocking position under certain conditions, said bolt also shiftable in another direction into its unlocking position by a key, and combination means for controlling its movement in the first-mentioned direction.

18. In a lock, the combination of a bolt, means for automatically shifting said bolt in one direction into its unlocking position under certain conditions, said bolt also shiftable in another direction into its unlocking position by a key; and one or more push devices for controlling the automatic operation of said bolt.

19. In a lock mechanism, the combination of a bolt adapted to be operated by a key; push-button mechanism for controlling the operation of said bolt independently of said key and comprising a bar having notches; and means coöperating with the bolt for preventing its movement except when shifted by the key, and push devices having parts projecting into the notches of said bar for preventing the movement of such bar.

20. In a lock mechanism, the combination with a spring-controlled bolt operative by a key under certain conditions, of means for locking said bolt against movement except when operated by the key; and means for controlling said locking means and comprising a plurality of push-buttons, a part thereof being assembled in combination whereby on the operation of the proper buttons the unlocking of the bolt is effected, and on the operation of any part of such buttons not in the combination the bolt is maintained in its locking position.

21. In a lock mechanism, the combination, with a spring-actuated rotary bolt, of rotary means for controlling it; and means in engagement with said rotary means for preventing the rotation thereof and embodying a plurality of push-pins.

22. In a lock mechanism, the combination, with a bolt, of means adapted to be actuated by a key for controlling it; means for locking said means against movement and comprising a device having a part thereof in engagement with said controlling means; and a push-pin for releasing said device.

23. In a lock mechanism, the combination, with a spring-actuated bolt, of a tumbler connected therewith and adapted to be shifted by a key to shift said bolt; means for preventing the movement of said tumbler in the absence of a key and comprising a member in engagement with said tumbler and having a plurality of recesses; and a plurality of push-pins having projections entering said recesses, the organization being such that on the release of said push-pins from said recessed member the bolt will be shifted.

24. In a lock mechanism, the combination, with a spring-actuated rotary bolt, of a tumbler connected therewith and adapted to be shifted by a key to shift said bolt; means for preventing the movement of said tumbler in the absence of the key and comprising a sliding member in engagement with said tumbler and having a plurality of recesses; and a plurality of push-pins having projections entering said recesses, the organization being such that on the release of said push-pins from said recessed member the bolt will be shifted.

25. In a lock mechanism, the combination, with a spring-actuated bolt, of a tumbler connected therewith and adapted to be shifted by a key; means for preventing movement of the bolt in the absence of a key and comprising a shiftable member having a series of recesses; and a plurality of push pins or buttons having projections in engagement with said shiftable member, the organization being such that on the release of certain of the push-buttons from the shiftable member the bolt will be

shifted into its unlocking position, and on the manipulation of certain of the push-buttons the bolt will be further locked against movement.

26. In a lock mechanism, the combination, with a spring-actuated rotary bolt, of a tumbler connected therewith and having one or more projections thereon and adapted to be operated in one direction by a key having recesses corresponding with said projections; means for preventing the movement of said bolt in an opposite direction and comprising a sliding bar having a plurality of recesses; and push-pins having projections in engagement with said recesses, the organization being such that on the release of the projections from the bar the bolt is shifted by its spring into an unlocking position.

27. In a lock mechanism, the combination with a bolt, of a spring-actuated tumbler for controlling it; shiftable means in engagement with the tumbler for preventing the movement of said tumbler; and combination-operated means effective to release said shiftable means and thereby permit the operation of the tumbler.

28. In a lock mechanism, the combination, of a bolt adapted to be operated by a key, a tumbler; and means for controlling the movement of said tumbler independently of the key and comprising a plurality of push pins or buttons and means connected therewith and with said tumbler and effective to lock the tumbler against movement until the proper manipulation of the push-buttons.

705,661. CARBONATOR. GUSTAV A. FLEISCH, Brooklyn, and HERBY A. HALL, New York, N. Y., and JOHN DOHERTY, Ashbrook, N. J., assignors to the American Soda Fountain Company, Boston, Mass., a Corporation of New Jersey. Filed Mar. 7, 1901. Serial No. 50,306. (No model.)

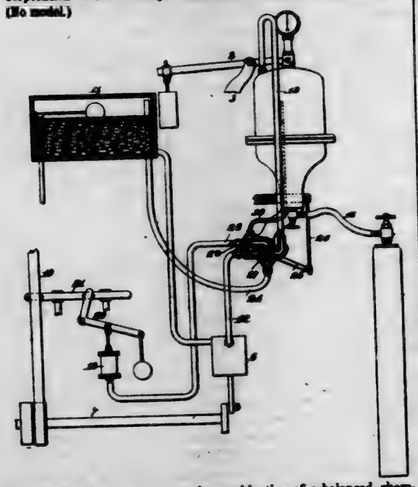

Claim.—1. In a carbonator, the combination of a balanced chamber for containing carbonated liquid, a pump for supplying liquid to said chamber, a controlling-cylinder for starting and stopping the pump, a regulating-valve between the pump and said chamber, said valve also normally providing an exhaust from said cylinder, means for operating said valve by vertical movements of the chamber, a passage connecting the pump with said cylinder, and a relief-valve in said passage, substantially as and for the purposes set forth.

2. In a carbonator, the combination of a balanced chamber for containing carbonated liquid, a pump for supplying liquid to said chamber, a controlling-cylinder for starting and stopping the pump, a regulating-valve between the pump and said chamber, said valve also normally providing an exhaust from said cylinder, means for operating said valve by vertical movements of the chamber, a passage connecting the pump with said cylinder, and an overbalanced relief-valve in said passage, substantially as and for the purposes set forth.

3. In a carbonator, the combination of a balanced chamber for containing carbonated liquid, a pump for supplying liquid to said chamber, a controlling-cylinder for starting and stopping the pump, a regulating-valve between the pump and said chamber, said valve also normally providing an exhaust from said cylinder, means for operating said valve by vertical movements of the chamber, a passage connecting the pump with said cylinder, an overbalanced relief-valve in said passage, and a pipe connecting the space above said relief-valve with the interior of the chamber, substantially as and for the purposes set forth.

705,662. ELECTRIC SIGNAL FOR RAILWAY-CARS. JOSEPH W. PRICE, Washington, D. C. Filed Jan. 28, 1902. Serial No. 91,182. (No model.)

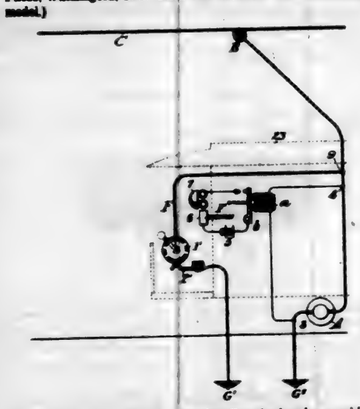

Claim.—1. In an electric cab-signaling device the combination of the stationary generator D, the line C, contact traveler B, and motor A, with a signaling-magnet included in a shunt around the said motor and a transmitting device at a distant station included in the circuit of the generator substantially as described.

2. In an electric signaling device the combination of a stationary generator D, the line C carrying a current from the said generator, a contact traveler, and a cab-motor receiving its current from the line through the said contact traveler, with a comparatively high-resistance receiving device included in a shunt around the said motor, all at one station, and a transmitting device at another station on the line of the said conductor and connected with the same, substantially as described.

3. In an electric cab-signaling device the combination of the stationary generator D, the line C, contact traveler B, and motor A, with a relay-magnet of high resistance included in a shunt around the said motor, said relay controlling a local circuit, and a definite and distinctive signal-transmitting device at a distant station controlling the circuit of the generator, substantially as described.

4. In an electric cab-signaling device the combination of the stationary generator D, the line C, contact traveler B, and motor A, with a receiving device included in a shunt around the said motor, a transmitting device, also in a shunt around the said motor, and duplicate apparatus at a second station, substantially as described.

5. In an electric signaling device the combination of a stationary generator D, line C, contact traveler B and motor A, with a receiving-magnet of comparatively high resistance included in a shunt around the said motor, a definite signal-transmitting device, also included in a shunt around the motor, at one moving station, and a definite signal-transmitting device at a ground-station controlling the circuit of the line C, together with a shunt around the said transmitting device, including a receiving-magnet, substantially as described.

6. In an electric signal device, the combination of a stationary generator D, the line C carrying a current from the said generator, a contact traveler, and a cab-motor receiving its current from the line through the said contact traveler, with a comparatively high resistance receiving-magnet included in a shunt around the said motor, all at one station, and a transmitting device at another station on the line of the said conductor and connected with the same, substantially as described.

7. In an electric cab-signaling device, the combination of the stationary generator D, the line C, contact traveler B and motor A, with a signal-receiving device between the said contact traveler and the ground or common return, and a distinct signal-transmitting device at another station controlling the said receiving device and connected to said line C, substantially as described.

8. The combination of the definite and distinctive transmitting device and the generator D, both at one station; the line C and the contact traveler B; together with the motor A and a definite and distinctive signal-transmitting device and a receiving device both in the motor branch between the said contact traveler and the common return, at a second station, substantially as described.

705,663. GUIDE FOR SEWING-MACHINES. FRANK W. GERLACH and FRANK W. MOORE, Keeton, Ohio. Filed Feb. 6, 1902. Serial No. 92,826. (No model.)

Claim.—1. The combination with a gage, of a plate adapted to be attached to the arm of a sewing-machine, an extension hinged to said plate by a transverse pivot, a vertical pivot for hinging the upper end of said gage to the outer end of said extension, and means for holding the gage in elevated position under the arm of the sewing-machine, said means consisting of a catch-hook projecting from said plate, substantially as set forth.

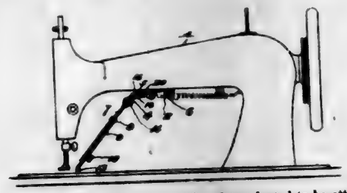

2. The combination with a gage, of a plate adapted to be attached to the arm of a sewing-machine, an extension hinged to said plate by a transverse pivot, a vertical pivot for hinging the upper end of said gage to the outer end of said extension, means for holding the gage in elevated position under the arm of the sewing-machine, and means for limiting the outward movement of the gage with respect to the extension, said means consisting of a stop-lip projecting downwardly from the gage and adapted to abut against the extension, substantially as set forth.

705,664. BICYCLE ATTACHMENT. FRANK GOSCH, Shelburn Oreg. Filed Feb. 24, 1902. Serial No. 95,894. (No model.)

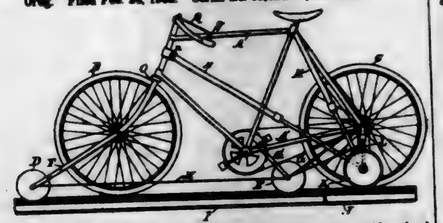

Claim.—1. The combination with a bicycle, of a flanged guide-wheel in front of each bicycle-wheel, the forks F G G', which respectively connect the guide-wheels D E with the axles of the front and rear wheels of the bicycle and with the fork A', rods H H, unflanged wheel K and lateral brace-rods L M N, as and for the purpose set forth.

2. The fork G' combined with the guide-wheel E and the bicycle-fork A' as shown and described.

3. The fork Q having the arms q q at one end and clamped at the other to the handle-bar, for the purpose set forth.

705,665. CORE-OVEN. THOMAS L. GRIFFITH, Cincinnati, Ohio. Filed May 27, 1901. Serial No. 62,047. (No model.)

Claim.—1. In a core-oven the front frames having shelf-openings and perforated bosses arranged centrally on dividing cross-rails, the rear shell secured to the front frame, the bottom perforated to receive the heated gases from the furnace and the top perforated to allow the escape of the gases and vapors from the oven, the door for closing the front openings having centrally-perforated bosses in alinement with the bosses on the cross-rails of the front frame, the rod or shaft passing through said bosses centrally pivoting the doors to the front frame, the semicircular shelves secured to the inside of the doors, and the furnace for heating the oven, substantially as shown and described.

2. The herein-before-described front for core-ovens consisting of the metal frame having openings to receive the core-supporting shelves, the cross-rails of said frame having centrally-arranged perforated bosses, the doors for closing the openings in the frames having also centrally-perforated bosses in alinement with the bosses on the cross-rails of the frame, the vertical rod or shaft pivoting the doors to the front frame, and the semicircular shelves secured to the inside faces of the door.

3. In a portable core-oven the combination of the oven-body semicircular in cross-section the front of which has shelf-openings, the top perforated to permit the escape of gases and vapors, the bottom plate perforated to admit the gases from the furnace and having guides on its under side parallel with the side of said opening to receive the outwardly-turned flanges of the furnace, the doors for closing the front of the furnace centrally pivoted between the cross-rails of the furnace-front, the semicircular shelves secured to the inner faces of the doors, the furnace comprising the fire-chamber, ash-pit and suitable doors for the same, the top of the fire-chamber having lateral flanges to slide in the guides on the bottom of the oven, and the legs to support the oven-body, substantially as hereinbefore set forth.

4. In a core-oven the combination substantially as hereinbefore set forth of the oven-body, the removable legs supporting it above the floor, the bottom of said oven-body having a rectangular perforation of substantially the size of the fire-chamber of the furnace, guides on the bottom of the oven to receive flanges projecting laterally from the top of the furnace, the furnace secured in said flanges, the centrally-pivoted doors in front of the oven-body, the semicircular shelves secured to the inner faces of said doors, the escape-opening in the top of the oven and the perforated plate larger than the opening in the bottom of the oven and having legs at its corners to rest upon the bottom of the oven whereby the gases arising from the furnace are evenly distributed through the oven-body and core-shelves before reaching the escape or pipe at the top of the oven.

705,666. COLLAR TURNING AND IRONING MACHINE. CHAS. C. GRIDLEY, Columbus, Ohio. Filed Sept. 5, 1900. Serial No. 29,624. (No model.)

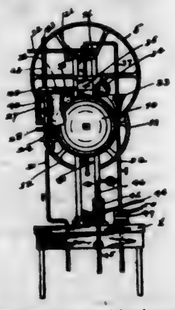

Claim.—1. In a collar turning and ironing machine, the combination with a framework, a curved turner-head 33 having a steam-passage therethrough, a rotating grooved collar-guide wheel 34 adjacent to said turner-head and a fixed hollow ironing-head 35 having an under side groove and having a steam-pipe connection therewith, of a rotating disk 10 having its edge portion adapted to turn through the groove of said ironing-head, substantially as specified.

2. In a collar turning and ironing machine, the combination with a framework, a curved turner-head 33 having a steam-passage therethrough, a rotating grooved guide-wheel 34 adjacent to said turner-head, a fixed hollow steam-supplied ironing-head 35 having a grooved under side and rotating concave-convex disk 10 having its edge running through said ironing-head groove, of a steam-heated journaled cylinder 30 and a rotating cloth-covered roll adjacent thereto, substantially as specified.

705,667. PROCESS OF SOLIDIFYING FORMALDEHYDE. ROBERT GRIFFIN, Berlin, Germany. Filed Aug. 3, 1901. Serial No. 70,253. (No specimens.)

Claim.—The process for the manufacture of solidified solutions of formaldehyde which consists in mixing small quantities of sodium soap with an aqueous solution of formaldehyde and dissolving the soap in the formaldehyde solution with the application of a gentle heat.

705,668. ELECTRIC HEATER. WILLIAM S. HADAWAY, Jr., New York, N. Y. Filed Sept. 24, 1898. Serial No. 691,703. (No model.)

Claim.—1. In an electric heater, an outer shell having an upturned edge narrowing upward, a resistance within said shell, a layer of mica under pressure on each side of said resistance, a compression-plate, and a ring between said plate and said narrowed edge.

2. In an electric heater, an outer shell having an upturned edge narrowing upward, a heat-producing agent and a diffusion agent both within said shell, a compression-plate for closing said shell and a ring of metal cast between the narrowed portion of said upturned edge and said compression-plate.

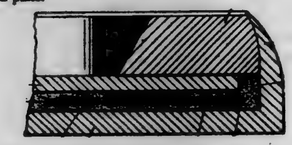

705,669. LIQUID-SEPARATOR. SOREN C. HANSEN Copenhagen Denmark. Filed Jan. 15, 1902. Serial No. 43,261. (No model.)

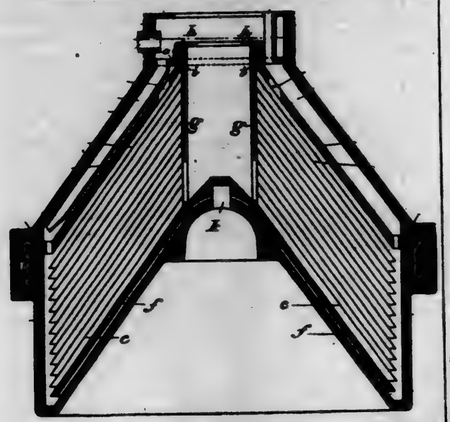

Claim.—1. In a separator of the character herein set forth, in combination, a two-part outer drum, an inner conical plate, and conical partitions attached to said plate, the lower margin of the said plate being clamped between the upper and lower parts of the drum, substantially as and for the purposes explained.

2. In a separator of the character herein set forth, in combination, a two-part outer drum, an inner conical plate of which the lower margin is clamped between the two parts of the drum, conical partitions, a second conical plate within the drum, a central feed-pipe, a nut upon the top of the latter, and a gudgeon fixed to the bottom of the drum and projecting into a cavity in the second conical plate, the parts being arranged substantially as and for the purposes explained.

705,670. PUMP. ROBERT T. HERRON, Atlica, Kans. Filed Mar. 21, 1902. Serial No. 98,203. (No model.)

Claim.—1. A pump comprising a stationary shaft having a rigid arm, a cylinder mounted to oscillate upon the shaft and housing and having a water-tight joint with said arm, and provided with a radial partition or piston having a water-tight joint with said shaft, couplings secured to said cylinder at equal distances from said piston, valves in the lower ends of said couplings to admit water alternately to the cylinder, valves in the upper ends of said couplings to alternately permit water to mount them and pass upward, vertical pipes communicating by a pivotal or swivel relation with said couplings above the last-named valves, and a lever suitably fulcrumed and having a pin-and-slot connection with said pipes.

2. A pump comprising a stationary shaft having a rigid arm, a cylinder mounted to oscillate upon the shaft and housing and having a water-tight joint with said arm, and provided with a radial partition or piston having a water-tight joint with said shaft, couplings secured to said cylinder at equal distances from said piston, valves in the lower ends of said couplings to admit water alternately to the cylinder, valves in the upper ends of said couplings to alternately permit water to mount them and pass upward, vertical pipes communicating by a pivotal or swivel relation with said couplings above the last-named valves, a lever suitably fulcrumed and having a pin-and-slot connection with said pipes, a housing for the upper portion of said pipes, provided with a water-chamber in which said pipes discharge, a discharge-spout for said chamber, and slide-plates closing the openings of the housing through which said pipes extend, and fitting slidingly on said pipes.

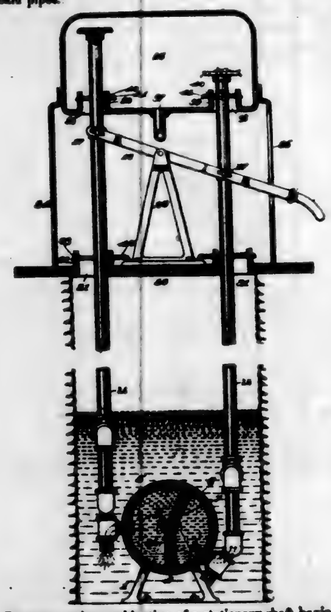

3. In a pump, the combination of a stationary shaft having an arm, a cylinder journaled on said shaft and having a water-tight joint with said arm, and provided with an arm or piston having a water-tight joint with said shaft, couplings secured to and communicating with the cylinder and provided at their lower ends with valves which open alternately to admit water to the cylinder, and at their upper ends with valves which alternately open to permit water to be expelled from the cylinder, a pair of vertical discharge-pipes, a pair of sleeves connected to the lower ends of said discharge-pipes, T-pipes having their heads swiveled in said sleeves and their stems connected to said couplings, and a lever having a pin-and-slot connection with said pipes 26, and fulcrumed midway between them.

705,671. DIFFERENTIAL GEAR FOR SELF-PROPELLING VEHICLES. ARTHUR HERRMANN, New York, N. Y. Filed June 21, 1901. Serial No. 65,267. (No model.)

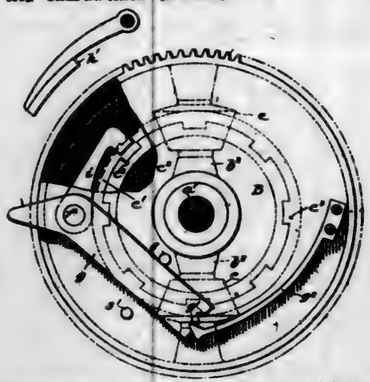

Claim.—1. In a vehicle, the combination of a shaft in two parts, two traction-wheels driven respectively by the said parts, a compensating gear interposed between the parts, means for locking the parts of the compensating gear together to thereby destroy its compensating function and means for controlling said locking means from a distance.

2. The combination of a shaft in two parts, a bevel-gear fixed upon each part, a concentric drum adapted to be driven, a radial shaft supported by said drum, a pinion on said radial shaft said pinion being in mesh with both of said bevel-gears, one of said bevel-gears having a notched flange, a pawl carried by the drum and means for causing said pawl to engage and disengage the notches in said gear.

3. The combination of a shaft in two parts, a bevel-gear fixed upon each part, a concentric drum adapted to be driven, a radial shaft supported by said drum, a pinion on said radial shaft said pinion being in mesh with both of said bevel-gears, one of said bevel-gears having a notched flange, a shaft mounted in said drum, a pawl on said shaft adapted to engage with said flange, a lever on said shaft and means for throwing the lever, for the purpose set forth.

705,672. ASH OR GARBAGE RECEPTACLE. THOMAS W. HUGHES, Trenton, N. J., assignor of two-thirds to L. H. Clayton and A. Bugbee, Trenton, N. J. Filed May 5, 1902. Serial No. 105,996. (No model.)

Claim.—1. The combination with a receptacle provided with a hinge-pin; of a cover for said receptacle having a bail on its lower side to engage said hinge-pin and permit of a sliding movement of said cover across the top of the receptacle and a swinging movement of the cover to a position parallel with the sides of the receptacle, and guard-plate secured to the receptacle and spaced apart, two of said plate adapted to receive between them when the cover is in a vertical position the lower end of the bail and act as a stop against lateral movement of the cover with respect to the receptacle, substantially as specified.

2. The combination with a receptacle provided with a hinge-pin; of a cover for said receptacle having a bail on its lower side to engage said hinge-pin and permit of a sliding movement of said cover across the top of the receptacle and a swinging movement of the cover to a position parallel with the sides of the receptacle, a handle secured to the top, and a handle secured to the lower end of the receptacle beneath the handle of the top when said top is in a vertical position, substantially as and for the purpose set forth.

705,673. IGNITER. ALFRED H. HUMPHREY, Kalamazoo, Mich. Filed June 26, 1900. Serial No. 21,033. (No model.)

Claim.—1. In an igniter for a cluster of gas-burners, the combination of a coupling C for insertion into the gas-supply passage; an upwardly-extending pipe C' therefrom; the Bunsen burner; a valve held normally closed by a spring; a chain or connection J for opening the same; a tube E' extending up within the Bunsen burner to deliver a jet of undiluted gas; a tube or holder H and an igniter composed I supported within the tube or holder in the jet of undiluted gas; a head F embracing the top of said Bunsen burner having radiating tubes or passages F' therefrom with restricted passages along the top thereof to carry the flame out to the ends of the same and deliver it in jets at each burner of the cluster, all coacting substantially as described for the purpose specified.

2. In an igniter for chandeliers or a cluster of burners, the combination of a central Bunsen burner; a passage for undiluted gas; an igniter material supported within such undiluted-gas jet; and tubes leading from the central Bunsen burner laterally toward the burners of the cluster or group and containing restricted apertures along the same to carry the flame outwardly to the ends to ignite the burners of the group, for the purpose specified.

3. In an igniter for chandeliers or cluster-burners, the combination of a central auxiliary burner; an igniter material supported within the jet of said auxiliary burner; and tubes leading from the auxiliary burner laterally toward the burners of the cluster or group, the said tubes containing restricted apertures to carry the flame outwardly to ignite the burners of the group, as specified.

4. In an igniter for chandeliers or cluster-burners, the combination of a central auxiliary burner; an igniting means for each burner; tubes leading from the auxiliary burner laterally toward the several burners of the cluster or group, the said tubes containing restricted apertures to carry the flame outward to ignite the burners of the group.

705,674. SPINDLE-BEARING FOR ENGRAVING-MACHINES. GERHARD B. JAY, Leipsic, Germany. Filed Jan. 20, 1902. Serial No. 90,220. (No model.)

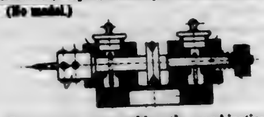

Claim.—In an engraving-machine, the combination of a rest having a pair of bearings and a front socket, with a headed tool-spindle mounted in the bearings, a nut and disk mounted upon the rear end of the spindle, and a spring between the nut and disk which is adapted to draw the tool-head against the base of the front socket, substantially as specified.

705,675. STOPPER-FASTENER. JOHN A. JOHN, New York, N. Y. Filed Feb. 19, 1901. Serial No. 47,904. (No model.)

Claim.—1. The combination with a bottle-neck adapted to receive a stopper and having internal projecting holding means and a seat, of a flexible stopper, and a substantially flat peripherally-corrugated wire stopper-fastener in engagement with the under side of said holding means and with the outer end of said stopper and expansile and contractile substantially in its own flatwise plane and having a multiplicity of deep corrugations forming a circuit of deep salient bends disposed close together and a circuit of deep reëntrant bends alternating with said salient bends said circuits of bends constituting a pressure-resisting and pressure-exerting element extending over the major portion of the outer end of the stopper and serving to hold the stopper in position under all conditions of pressure.

2. The combination with a bottle-neck adapted to receive a flexible stopper and having an internal retaining-groove and a seat, of a stopper, and a substantially flat peripherally-corrugated wire stopper-fastener seated in said groove and in engagement with the outer end of said stopper and expansile and contractile substantially in its own flatwise plane and having a multiplicity of deep corrugations forming a circuit of deep salient bends disposed close together and a circuit of deep reëntrant bends alternating with said salient bends said circuits of bends constituting a pressure-resisting and pressure-exerting element extending over the major portion of the outer end of the stopper and serving to hold the stopper in position under all conditions of pressure.

3. The combination with a bottle-neck adapted to receive a stopper and having internal holding means and a seat, of a substantially flat peripherally-corrugated wire stopper-fastener in engagement with the under side of said holding means and with the outer end of the stopper and expansile and contractile substantially in its own flatwise plane and adapted to compress and hold the stopper in position under all conditions of pressure, and a flexible stopper between and in engagement with the stopper-fastener and said seat.

4. The combination with a bottle-neck adapted to receive a stopper and having an internal retaining-groove and a seat, of a substantially flat peripherally-corrugated wire stopper-fastener seated in said groove and in engagement with the outer end of the stopper and expansile and contractile substantially in its own flatwise plane and adapted to compress and hold the stopper in position under all conditions of pressure, and a flexible stopper between and in engagement with the stopper-fastener and said seat.

5. The combination with a bottle-neck adapted to receive a stopper and having a short stopper-receiving bore with an annular groove at the upper end and a seat at the lower end thereof, of a substantially flat removable annular stopper-fastener seated in said groove and expansile and contractile substantially in its own flatwise plane and adapted to compress

and hold the stopper down against its seat under all conditions of pressure, and a short expansible stopper filling said bore and located below said groove and held in place between said stopper-fastener and said seat.

6. The combination with a bottle-neck adapted to receive a stopper and having a short tapered stopper-receiving bore with an annular groove at the upper end and a seat at the lower end thereof, of a substantially flat removable annular stopper-fastener seated in said groove and expansible and contractile substantially in its own flatwise plane and adapted to compress and hold a stopper down against its seat under all conditions of pressure, and a short expansible stopper filling said tapered bore and located below said groove and compressed in place between the stopper-fastener and said seat.

7. The combination with a bottle-neck adapted to receive a stopper and having a short stopper-receiving bore with an annular groove at the upper end and a seat at the lower end thereof, of a substantially flat removable internal stopper-fastener seated in said groove and expansible and contractile substantially in its own flatwise plane and having a circuit of holding members in engagement with the stopper and with the walls of said groove and adapted to compress and hold the stopper down against its seat under all conditions of pressure, and a short expansible stopper filling said stopper-receiving bore and located below said groove and compressed in place between the stopper-fastener and said seat.

8. The combination with a bottle-neck adapted to receive a stopper and having a short stopper-receiving bore with an annular groove at the upper end and a seat at the lower end thereof, of a substantially flat removable internal wire stopper-fastener seated in said groove and expansible and contractile substantially in its own flatwise plane and having two circuits of holding members one engaging the walls of said groove and the other engaging the stopper and adapted to compress and hold the stopper down against its seat under all conditions of pressure, and a short expansible stopper filling said stopper-receiving bore and located below said groove and compressed in place between the stopper-fastener and said seat.

705,676. MACHINE FOR MIXING CONCRETE OR THE LIKE.

WILLIAM J. JUDD, New York, N. Y., assignor to Frederick C. Austin, Chicago, Ill. Filed Apr. 15, 1902. Serial No. 102,960. (No model.)

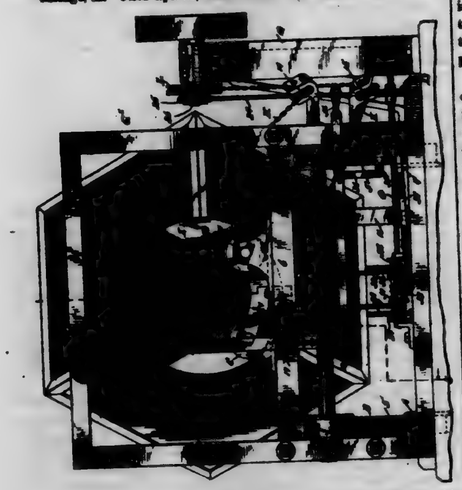

Claim.—1. In a mixing-machine for concrete and the like, a cubiform rotary mixing-receptacle provided at diagonally opposite corner portions with charging and discharge openings respectively for receiving a batch of materials, and for discharging the mixed-up batch, said mixing-receptacle being arranged to revolve about a tilting axis which can be tilted in opposite directions for the purposes set forth.

2. In a mixing-machine for concrete and the like, a rotary cubiform mixing-receptacle arranged to revolve about a tilting axis passing through diagonally opposite corner portions, and provided at such corner portions with oppositely-positioned charging and discharge openings adapted respectively receiving a batch of materials and for discharging the mixed-up batch; and a tilting support for the rotary, cubiform mixing-receptacle arranged to tilt in opposite directions about an axis transverse to the axis of rotation of said mixing-receptacle.

3. In a batch-mixing machine for concrete and the like, a polyhedric mixing-receptacle arranged to revolve about a tilting axis passing through opposite corners or vertices formed by intersecting planes, and provided at such portions with oppositely-positioned charging and discharge openings adapted for respectively receiving a batch of materials and discharging the mixed-up batch; and a tilting support for the rotary, polyhedric mixing-receptacle arranged to tilt about an axis transverse to the axis of rotation of said mixing-receptacle and relatively between the charging and discharge openings of the latter.

4. In a mixing-machine for concrete and the like, a rotary, cubiform mixing-receptacle provided at diagonally opposite corner portions with hollow journals forming charging and discharge openings adapted for respectively receiving and discharging a batch; and a tilting support for said mixing-receptacle provided with bearings for the hollow journals of the latter and arranged to tilt about an axis transverse to the axis of rotation of the rotary, cubiform mixing-receptacle and relatively between the hollow journals of such mixing-receptacle.

5. In a batch-mixing machine for concrete and the like, a rotary cubiform mixing-receptacle provided at diagonally opposite corner portions with hollow journals forming charging and discharge openings adapted for respectively receiving and discharging a batch; a tilting support for said mixing-receptacle provided with bearings for the hollow journals thereof and arranged to tilt about an axis relatively between such hollow journals and transverse to the axis about which the mixing-receptacle revolves; power-transmitting mechanism for continuously rotating the mixing-receptacle whereby it can be revolved while receiving, mixing, and discharging; and mechanism for operating the tilting support so as to tilt the axis of rotation of the mixing-receptacle.

6. In a batch-mixing machine for concrete and the like, a substantially cubiform, rotary mixing-receptacle provided at diagonally opposite corner portions with hollow journals forming charging and discharge passages or openings adapted for respectively receiving and discharging a batch; a tilting support for the mixing-receptacle having antifriction-rolls which engage the hollow journals; mechanism for tilting said support; mechanism for rotating the mixing-receptacle; and means for applying the driving power to the mechanism employed for tilting the support.

7. In a machine for mixing concrete and the like, a substantially cubiform rotary mixing-receptacle having charging and discharge openings at diagonally opposite corner portions; a tilting support for the rotary mixing-receptacle; mechanism for applying the driving power to the rotary mixing-receptacle; and mechanism for applying the driving power to the tilting support so as to tilt the same.

8. In a machine for mixing concrete and the like, a substantially cubiform, rotary mixing-receptacle having charging and discharge openings at diagonally opposite corner portions; a tilting support for the rotary mixing-receptacle; mechanism for tilting said support in opposite directions; mechanism for arresting the tilting action of the support; and mechanism for applying the driving power to actuate the mechanism for tilting the support.

9. In a machine for mixing concrete and the like, a substantially cubiform, rotary mixing-receptacle having charging and discharge openings at diagonally opposite corners; power-actuated mechanism respectively for rotating the mixing-receptacle and tilting the support therefor; mechanism involving a clutch for applying and disconnecting the power to and from the tilting support so as to tilt the latter when the power is thus applied, and arrest the tilting action of such support when the power is disconnected therefrom.

10. In a machine for mixing concrete and the like, a rotary, polyhedric mixing-receptacle substantially as set forth provided at opposite corner portions vertices with hollow journals forming charging and discharge passages; a tilting support for the polyhedric mixing-receptacle; and a movable hopper having a discharge-neck adapted to couple with and uncouple from one of the said hollow journals.

11. In a machine for mixing concrete and the like, a rotary mixing-receptacle; and a tilting support for the rotary mixing-receptacle having a curved bearing portion arranged to traverse a rotary bearing so as to tilt the rotary mixing-receptacle.

12. In a machine for mixing concrete and the like, a rotary mixing-receptacle having oppositely-arranged charging and discharge openings and arranged to revolve about an axis extending through its charging and discharge openings; a tilting support for the rotary mixing-receptacle consisting of a frame having a segmental base; and rotary bearings forming a way along which the segmental base is arranged to move in a curvilinear path.

13. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a support for the rotary mixing-receptacle comprising a tilting frame having a curved base; and antifriction-rolls engaging said curved base and supporting the tilting frame; the curved base and the supporting-rolls being relatively arranged to permit the tilting frame to turn about an axis transverse to the axis about which the mixing-receptacle revolves and to thereby tilt such axis.

14. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a support for the rotary mixing-receptacle arranged to turn about an axis transverse to the axis about which the mixing-receptacle revolves; rotary bearings upon which the support for the mixing-receptacle moves in direction to tilt the latter; and mechanism for rotating the mixing-receptacle while the support thereof is being turned and tilted.

15. In a machine for mixing concrete and the like, a tilting frame having segmental bearing portions; a rotary mixing-receptacle journaled at opposite ends of the tilting frame which latter turns about an axis transverse to the axis about which the mixing-receptacle revolves; rotary bearings upon which the tilting support is arranged to move; mechanism for revolving the mixing-receptacle while it is being tilted; and mechanism for arresting the tilting motion of the support for the mixing-receptacle.

16. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; and power-transmitting connection for operating the rotary mixing-receptacle comprising a power-driven endless chain or belt passing about pulleys respectively connected with the rotary mixing-receptacle and the tilting support thereof so as to maintain an invariable relationship.

17. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing receptacle; a driving-pulley positioned to rotate about an axis transverse to the axis of revolution of the mixing-receptacle, the said pulley and the tilting support being arranged to operate about an axis common to both of them; a pulley fixed on the rotary mixing-receptacle; guide-pulleys arranged upon the tilting support; and an endless chain or belt arranged to pass about all of said pulleys.

18. In a mixing-machine for concrete and the like; a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; a rotary winding-drum; a chain or cable passing about the rotary winding-drum and connected with opposite end portions of the tilting support; and a clutch device for connecting and disconnecting the winding-drum with and from suitable driving power.

19. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; a pair of loosely-mounted winding-drums; chains or cables passing about the winding-drums respectively in reverse directions and connected with opposite end portions of the tilting support; and a clutch device alternately connecting the winding-drums with suitably-applied driving power.

20. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; two loosely-mounted winding-drums; chains or cables passing about the winding-drums respectively in reverse directions and connected with opposite end portions of the tilting support; a clutch device for alternately connecting the winding-drums with the driving power; a step on one of the chains or cable; and a clutch-shifting device which is actuated by said step when the tilting support reaches either end of its required movement.

21. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; mechanism for applying the driving power to the tilting support so as to tilt the same in either direction; and means for reversing the driving power thus applied to the tilting support, and comprising a rotary power-driven shaft, a double clutch device, and a clutch-shifting lever.

22. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; and mechanism for reversibly applying the driving power to the tilting support so as to tilt the latter alternately in opposite directions, and involving a vibratory controlling-lever.

23. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; mechanism for reversibly applying the driving power to the tilting support so as to tilt the latter alternately in opposite directions; and an automatic stop device applied to automatically disconnect the driving power from the tilting support.

24. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; mechanism for reversibly applying the driving power to the tilting support so as to tilt the same alternately in opposite directions; a starting-lever M, and power-transmitting connection between said lever and the mechanism for reversibly applying the driving power to the tilting support.

25. In a machine for mixing concrete and the like, a rotary tilting mixing-receptacle provided with charging and discharge openings; and a movable hopper arranged to couple with the charging-opening of the rotary mixing-receptacle, the hopper being supported for movement in directions to permit it to couple with the charging-opening of the rotary mixing-receptacle, when the latter is in receiving and mixing position, and to uncouple and move away from the rotary mixing-receptacle in order to permit the latter to tilt.

26. In a machine for mixing concrete and the like, a rotary, tilting mixing-receptacle provided with charging and discharge openings; and a vibratory, pendent hopper adapted and arranged for coupling with and uncoupling from the charging-opening of the rotary, tilting mixing-receptacle when the latter is in receiving and mixing position.

27. In a machine for mixing concrete and the like, a rotary, tilting mixing-receptacle provided with oppositely-arranged charging and discharge openings and having its charging-opening formed or extended through a hollow neck; and a movable hopper having its discharge-opening through a hollow neck adapted to telescope with said hollow neck of the rotary mixing-receptacle, the hopper being movable in directions to couple with and uncouple from the rotary mixing-receptacle.

28. In a machine for mixing concrete and the like, a rotary, tilting mixing-receptacle; and a vibratory hopper arranged to automatically couple with the rotary mixing-receptacle when the latter is tilted into position for receiving and mixing.

29. In a machine for mixing concrete and the like, a rotary mixing-receptacle provided with oppositely-arranged hollow journals respectively forming charging and discharge passages; a tilting support for the rotary mixing-receptacle provided with antifriction-rolls forming bearings for the hollow journals of the rotary mixing-receptacle; and a pendent, swinging hopper having a hollow neck or short spout adapted to couple with and uncouple from one of the hollow journals of the rotary mixing-receptacle.

30. In a machine for mixing concrete and the like, a rotary mixing-receptacle provided with oppositely-arranged charging and discharge openings; a tilting-support for the rotary mixing-receptacle; a movable hopper which is normally in position to connect with and discharge into the rotary mixing-receptacle; and a stop device for automatically stopping the tilting support when the latter is brought into position to place the charging-opening of the rotary receptacle in register with the discharge-opening of the hopper.

31. In a machine for mixing concrete and the like, a rotary, tilting mixing-receptacle having oppositely-arranged charging and discharge openings; a movable hopper having a laterally-arranged discharge-opening, and normally in position to place its discharge-opening in alinement with the charging-opening of the rotary mixing-receptacle when the latter is in mixing and receiving position.

32. In a machine for mixing concrete and the like, a rotary mixing-receptacle; a tilting support for the rotary mixing-receptacle; a vibratory hopper; a stop device for stopping the tilting support when the rotary mixing-receptacle is in position to connect a movable member arranged for swinging the hopper away from the mixing-receptacle and tilting support therefor.

33. In a machine for mixing concrete and the like, a rotary mixing-receptacle having charging and discharge apertures; a tilting support for the rotary mixing-receptacle; and a valve or door hung upon the tilting support and arranged for automatically opening and closing the discharge-aperture of the rotary mixing-receptacle according to the directions in which such receptacle is tilted.

34. In a machine for mixing concrete and the like, a rotary mixing-receptacle having charging and discharge apertures; a tilting support for the rotary mixing-receptacle; and a gravity valve or door H hinge-supported upon the tilting support and arranged for opening and closing the discharge-aperture of the rotary mixing-receptacle, said valve or door being hung so that when the mixing-receptacle is tilted into position for discharging its contents, its discharge-aperture will relatively move away from the suspended valve or door and thereby open to permit the discharge.

35. In a machine for mixing concrete and the like, a rotary, polyhedric mixing-receptacle supported to revolve about a tilting axis, and having oppositely-arranged charging and discharge openings respectively adapted to receive the materials for a batch, and for discharging the mixed-up batch, the charging and discharge openings being formed at opposite corners or vertices formed by the planes of the sides of the receptacle, and the latter being supported to permit its axis of revolution to be tilted into an inclined position so as to depress the discharge-opening and allow the mixed-up batch to discharge through the same.

705,677. WHEEL-MAKING MACHINE.

VOLNEY P. KELLER, Waynesville, N. C. Filed Oct. 5, 1901. Serial No. 77,889. (No model.)

Claim.—1. In a machine of the class described, a rotary reciprocatory stem, combined with a movable face-plate, and a reciprocatory carriage carrying said face-plate, fictional means engaging said plate for rotating the same as set forth.

2. In a machine of the class described, a rotary reciprocatory stem, a rotary face-plate, and a reciprocatory carriage carrying the face-plate, fictional means engaging said plate for rotating the same as set forth.

3. In a machine of the class described, a rotary reciprocatory stem, means for reciprocating the same, a rotary face-plate, and a reciprocatory carriage carrying the same, fictional means engaging said plate for rotating the same as set forth.

4. In a machine of the class described, a rotary stem, means for reciprocating the same, a rotary face-plate, a carriage on which the same is rotatably held, and means for adjusting the carriage to adjust the face-plate to its work, frictional means engaging said plate for rotating the same as set forth.

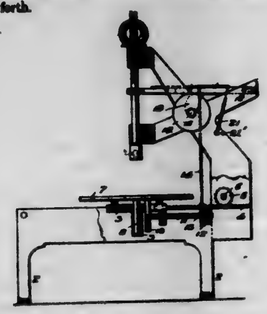

5. In a machine of the class described a rotary face-plate, a rotary stem, a lever adapted to move the same vertically, a driving-shaft and a cam on said shaft adapted to engage said lever, frictional means engaging said plate for rotating the same as set forth.

6. In a machine of the class described a rotary face-plate, a rotary stem, a lever by which it is moved vertically, a driving-shaft, a cam thereon adapted to engage said lever, and means for adjusting the pressure or force given the blow by the dropping of said stem, frictional means engaging said plate for rotating the same as set forth.

7. In a machine of the class described, a rotary stem, means for reciprocating the same, a rotary face-plate, a sliding carriage, a friction-wheel for rotating the face-plate, a driving-shaft, a cam thereon, and a connection between said cam and the friction-wheel, all as and for the purpose specified.

705,678. MILK-PAIL. JOHN H. KING, Garrity, Ala. Filed Apr. 10, 1902. Serial No. 102,515. (No model.)

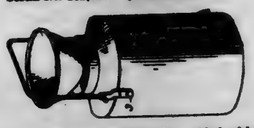

Claim.—In a non-spillable milk-pail provided with a neck, in combination with a cover having a depending outer flange to engage the neck, a depending inner flange, and an aperture surrounded by the said inner flange, a strainer secured across the opening to said inner flange, a receiving-bowl having a depending flange to engage the inner flange and provided with an opening, an inverted cup-shaped strainer covering said opening, and a valve located between said strainers and of a diameter greater than said opening, substantially as set forth.

705,679. VAULT-COVER. PARK S. KNAPP and JACOB STEINBERG, McKeesport, Pa. Filed Oct. 8, 1901. Serial No. 77,988. (No model.)

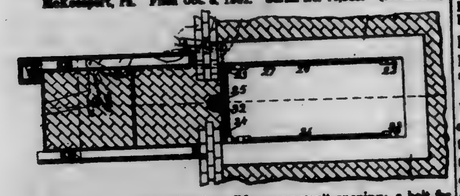

Claim.—1. A cover fitted to slide over a vault-opening; a bolt for locking the cover; a key provided with a crank and journaled to rotate in fixed bearings, and a lever connecting the said bolt and crank, substantially as described.

2. In vault-covers; a frame having ways extending along at the sides of the opening and beyond the end thereof; a cover fitted to travel upon the said ways and having a stud projecting from its lower face; guards journaled in bearings along the sides of the opening below the path of the said cover and adapted to be swung up above the face of the frame and having operating-arms; an elbow-lever pivoted to the frame and having one arm slotted to be engaged by the aforesaid stud and connections between its other arm and the said guard-operating arms, substantially as described.

705,680 WITHDRAWN.

705,681. PROCESS OF MAKING THE INTERIOR OF COKE-OVENS OR OTHER KILNS TIGHT. RUDOLF KEIL, Bruch, Germany. Filed Apr. 15, 1902. Serial No. 103,008. (No specimens.)

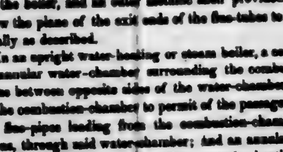

Claim.—A process of making the interior of coke-ovens and other kilns tight which consists in mixing fine ore-dust with fine-ground coke or other dusty material and then blowing the mixture into the hot chamber, the walls or sides of which are intended to be tightened, the effect being that the dust will keep floating for a while and then settle by degrees in the pores and cracks and thereby make the walls perfectly tight.

705,682. STEAM-GENERATING AND WATER-HEATING BOILER. FERDINAND LOGAN, Phoenixville, Pa. Filed May 11, 1901. Serial No. 60,803. (No model.)

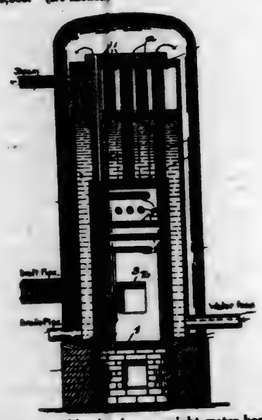

Claim.—1. The combination in an upright water-heating or steam boiler, of an inner boiler-cylinder having a combustion-chamber, a plurality of water-tubes across the interior of the cylinder in the combustion-chamber, arranged in parallel planes of different heights and at different planes in relation to the axis of the boiler whereby each layer or series of water-tubes intersect interstices between adjacent series, an outer boiler-shell forming a water-space between the two shells or cylinders, a plurality of vertical flue-tubes extending from the crown of the inner boiler-shell through the head of the outer boiler-shell, inlet and outlet pipes for the boiler, and an outer metallic shell provided with an outlet-pipe below the plane of the exit ends of the flue-tubes to direct the draft, substantially as described.

2. In an upright water-heating or steam boiler, a combustion-chamber; an annular water-chamber surrounding the combustion-chamber; connections between opposite sides of the water-chamber and extending through the combustion-chamber to permit of the passage of water therethrough; flue-pipes leading from the combustion-chamber, above said connections, through said water-chamber; and an annular draft-flue surrounding said water-chamber to provide an exterior heating to the water-chamber, substantially as described.

3. The combination in an upright water-heating boiler, of an inner boiler-cylinder having a combustion-chamber, a plurality of water-tubes disposed across the combustion-chamber arranged in parallel planes at different heights, and in different planes in lateral relation to each other, whereby each layer or series intersect interstices between adjacent series, an outer boiler-shell longer and of greater diameter than the inner one, a water-space being formed between the two boiler-shells, a plurality of vertical pipe-flues extending from the crown of the combustion-chamber through the head of the outer boiler-shell, inlet and outlet pipes for the boiler, and an outer inclosing metal shell covering the boiler and arranged to form an annular draft-space surrounding the boiler between its inner face and the outer face of the boiler and provided with a draft-pipe adjacent to its lower end, substantially as described.

4. The combination in an upright water-heating or steam boiler, of an inner boiler-cylinder formed with an annular base-flange, an outer boiler-cylinder of greater diameter than the inner cylinder and formed with an annular base-flange adapted to set upon the base-flange of the inner cylinder, fastening-bolts extending through the superimposed base-flanges, and vertical fire-tubes extending between and connecting the crown of the inner boiler-cylinder and the head of the outer cylinder whereby said inner and outer cylinders will form a unitary structure secured at the base thereof, substantially as described.

5. The combination in an upright water-heating or steam boiler, of an inner boiler-cylinder formed with an annular base-flange, an outer boiler-cylinder over the inner cylinder and formed with an annular base-flange adapted to set upon the base-flange of the inner cylinder, fastenings securing the superimposed flanges together, water-tubes across the interior of the inner boiler-cylinder arranged in parallel planes at different heights and at different planes in relation to the axis of the boiler whereby each layer or series of water-tubes intersect interstices of adjacent series, and fire-tubes opening from the crown of the inner cylinder and extending through the head of the outer cylinder, whereby said inner and outer cylinders will form a unitary structure secured at the base thereof, substantially as described.

6. The combination in an upright water-heater and steam-boiler, of an inner boiler-cylinder formed with an annular base-flange, an outer boiler-cylinder over the inner cylinder and formed with an annular base-flange to set upon the flange of the inner cylinder, fastening-bolts through the superimposed base-flanges, water-tubes across the interior of the inner boiler-cylinder arranged in parallel planes at different heights and at different planes in relation to the axis of the boiler, so that each layer of the series intersect the interstices of adjacent series, fire-tubes opening from the crown of the inner cylinder and extending through the head of the outer cylinder, a feed-pipe to conduct water to the boiler, a steam-pipe to convey steam from the boiler, and a pipe to discharge water from the boiler, an outer inclosing case covering the boiler and arranged to form an annular draft-space between its inner face and the outer face of the boiler, and a draft-pipe adjacent to its lower end, substantially as specified.

705,683. BOLSTER-ROLL. JOHN R. LEES, Chillicothe, Ohio. Filed June 18, 1901. Serial No. 64,909. (No model.)

Claim.—A knockdown bolster-roll, comprising opposite heads 7, having corresponding marginal notches 8, pins 10 carried by the heads of the notches and wholly within the same, a rigid arcuate brace situated midway between the two heads and provided also with notches aligning with those of the head, turn-buttons 12 mounted on pivots upon the marginal edges of the heads, each button being located adjacent to one of the notches and of a length to overlap the same, a single-piece flexible body adapted to embrace the marginal edges of the heads and an arcuate brace and provided with central and marginal stiffening-strips, the ends of said strips being constructed to be seated within the corresponding notches of the brace and the heads, and said strips having on their inner faces sockets for the reception of the pins 10, the opposite edges of the body terminating at the notches having the turn-buttons, substantially as specified.

705,684. SUCTION-BOX FOR PAPER-MAKING MACHINES. JOHN B. LYNDE, South Glens Falls, N. Y. Filed Sept. 21, 1901. Serial No. 76,092. (No model.)

Claim.—1. A suction-box for paper-making machines comprising a body portion having an open top, and a series of short sections of wood arranged transversely across said top, said sections being separated to form the opening in the box and having the grain of the wood running transverse to said box.

2. A suction-box for paper-making machines comprising a body portion having an open top, a series of short sections of wood arranged transversely across said top with the grain of the wood also running transversely, and means for supporting the inner ends of said sections, the latter being separated to form a central elongated opening.

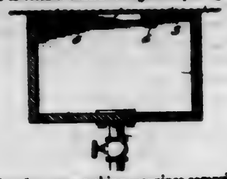

3. A suction-box for paper-making machines comprising a body portion having an open top, longitudinal supporting-bars mounted in the ends of said box, and a series of short sections of wood having their inner ends supported by said bars and arranged with the grain running transversely of said top, the inner ends of said sections being separated to form an elongated opening.

4. A suction-box for paper-making machines, comprising, a body portion having a top consisting of a series of short sections of wood arranged transversely across said body portion and having their grain disposed transverse thereto.

705,685. TELEPHONY. JOSEPH LYNN, Chestnut, Pa., assignor to American Telephone and Telegraph Company, a Corporation of New York. Filed Sept. 3, 1900. Serial No. 728,969. (No model.)

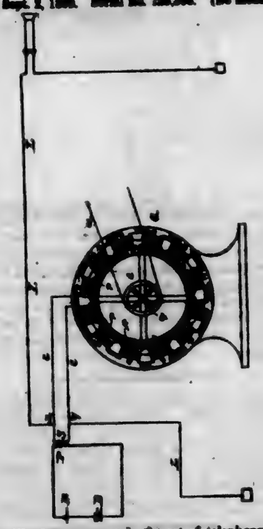

Claim.—1. The improvement in the art of telephony, which consists in causing telephone-currents produced upon a line to establish an initial magnetic field or fields the lines of force of which intersect circuits closed upon themselves, and producing a relative movement between the field structure and closed circuits with a speed exceeding the number of periods of the telephone-current of highest frequency divided by half the number of poles of the field, substantially as described.

2. The method of telephoning telephone-currents upon a line, by causing such currents to produce an initial magnetic field, and rotating within the latter a closed electric circuit or circuits, with a speed exceeding the number of periods of the telephone-current of highest frequency, divided by half the number of poles of the field, substantially as described.

3. The method of telephoning telephone-currents upon a line, by causing such currents to produce an oscillating magnetic field of force, and rotating within the latter a circuit or circuits of low resistance, closed upon themselves, with a speed exceeding the number of periods of the current impulses of highest frequency, divided by half the number of poles of the field, substantially as described.

705,686. TELEPHONY. JOSEPH LYNN, Washington, D. C., assignor to American Telephone and Telegraph Company, a Corporation of New York. Original application filed Sept. 3, 1900, Serial No. 728,969. Divided and this application filed Apr. 23, 1902. Serial No. 104,004. (No model.)

Claim.—1. A system of telephony comprising a line upon which telephone-currents are impressed, a field magnet or magnets charged by currents from the line, and an armature composed of circuits closed upon themselves, capable of being rotated within the field thus produced, with a speed exceeding the number of periods of the currents of highest frequency on the line, divided by half the number of poles of the field, substantially as described.

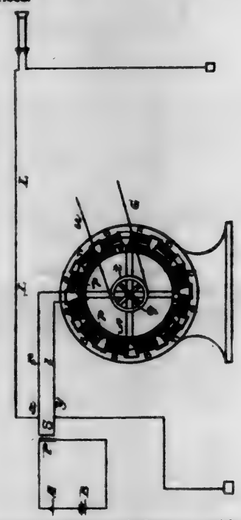

2. A system of long-distance telephony, comprising a transmitter, a receiver, and a line composed of two or more sections that are inductively connected together; with a field magnet or magnets for each section of the line, charged by currents from the same, and a circuit or circuits of low resistance closed upon themselves, for each field-magnet or system of field-magnets, and means for rotating each circuit or system of circuits within the corresponding field, each with a speed exceeding the number of periods of the telephone-currents of highest frequency, divided by half the number of poles of the corresponding field, substantially as described.

705,687. PROCESS OF PRODUCING VEGETABLE PARCHMENT FREE FROM GERMS. ALBERT HAGENMEIER, Darmstadt, Germany. Filed Nov. 30, 1901. Serial No. 84,260. (No specimens.)

Claim.—The process of treating vegetable parchment, which consists in dissolving boracic acid in boiling glycerin, cooling the mixture to form a wax-like mass, dissolving said mass in a glycerin-bath, and drawing the parchment through said bath, substantially as specified.

705,688. TENSION DEVICE FOR BARBED-WIRE MACHINES. PETERSON W. HACKE and MATTHEW MILLER, Kokomo, Ind. Filed Oct. 26, 1901. Serial No. 80,126. (No model.)

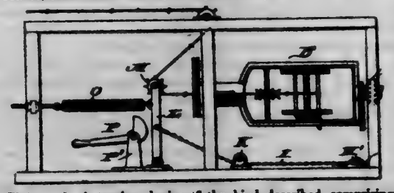

Claim.—1. A tension device of the kind described, comprising a spring-yoke carrying brake-blocks, a spring-actuated lever carrying an idler at its upper end, and means for connecting the said lever and spring-yoke, substantially as shown and described.

2. In a tension device of the kind described, the combination with a lever carrying an idler at its upper end, of a spring connected to the said lever and a cam-pressing lever arranged adjacent to the first-mentioned lever and adapted to operate thereon to distend the spring, substantially as shown and described.

3. In a tension device of the kind described, the combination with the spring-yoke carrying brake-blocks, of the spring-actuated lever carrying idler at its upper end, the chain connected to said lever, the elbow-lever connected to the opposite end of said chain, and the adjustable hook-rod connecting one end of the spring-yoke, and the elbow-lever, substantially as described.

705,689. ADJUSTABLE HANDLE FOR GARDEN-TOOLS. WILLIAM V. MAGEE, Harvey, N. D., assignor of one-half to Robert J. Pratt, Harvey, N. D. Filed Mar. 15, 1902. Serial No. 98,205. (No model.)

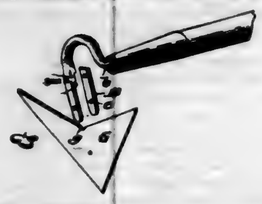

Claim.—1. A garden-tool, comprising a handle having a head connected therewith, the said head having a shoulder formed thereon, a spring-bar connected to the head adjacent to the shoulder, a blade having a notch in which the said shoulder fits, and means for clamping the blade to the head, substantially as shown and described.

2. A garden-tool comprising a handle, having a head connected therewith, the said head comprising a shank member and an upwardly and downwardly projecting portion, the said downwardly-projecting portion being cut out upon its rear surface to provide a shoulder and a seat portion respectively, a spring-bar held to the said seat portion, a blade arranged between the said downwardly-projecting portion and spring-bar and having a notch formed therein that is adapted to be engaged by the said shoulder, and a screw for engaging the said downwardly-projecting portion, blade and spring-bar, substantially as shown and for the purpose described.

3. The combination with a shank having a depending portion, the inner face of which is cut away providing a shoulder and a seat, of a clamping-plate secured at its upper end upon the seat, a tool-blade adapted to be inserted between the depending portion of the shank and the clamping-plate, and having a notch in its upper edge adapted to engage the shoulder, and means for securing the said tool between the downwardly-projecting portion of the shank and bar, substantially as shown and described.

705,690. GARMENT-SUPPORTER AND WAIST-ADJUSTER. ADDIE L. MATLACK, Chestnut Hill, Pa. Filed Oct. 26, 1901. Serial No. 80,115. (No model.)
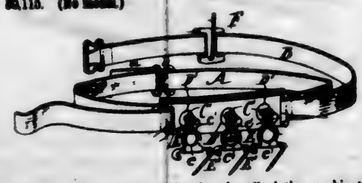
Claim.—1. In a device of the class described, the combination of a supporting provision carrying studs at the waist rear and a perforated plate adapted to fit over said studs.

2. In a device of the class described, the combination with a supporting provision carrying at the waist rear headed studs, of a perforated plate adapted to fit over said studs whereby the headed portions of the latter will project through the perforations in the plate.

3. In a device of the class described, the combination with a supporting provision carrying at the waist rear headed studs, of a perforated plate adapted for the passage of the studs, and loops for engaging said studs and provided with skirt-engaging means.

4. In a device of the class described, the combination with a supporting provision carrying at the waist rear headed studs, of a perforated plate adapted for the passage of the studs, skirt-engaging provision, and means F at the waist front having a hook beneath which the skirt-waistband engages.

5. In a device of the class described, the combination with a supporting provision carrying at the waist rear headed studs, of a perforated plate adapted for the passage of the studs, depending loops engaging said studs and having safety-pins for engaging the skirt.

6. In a device of the class described, the combination with an inner waist-tape having a buckle connection, and carrying at its rear headed studs, of an outer waist-tape having a buckle connection and provided with a rear perforated plate adapted for the passage of the studs.

7. In a device of the class described, the combination with an inner waist-tape having a buckle connection and carrying at its rear headed studs, of an outer waist-tape having a buckle connection and provided with a rear perforated plate adapted for the passage of the studs, and skirt-engaging provision depending from said studs.

8. In a device of the class described, the combination with an inner waist-tape having a buckle connection and a rear metal slide provided with headed studs, of an inner waist-tape having a buckle connection and a perforated plate through which the studs are adapted to project.

705,691. METHOD OF DISPERSING FLUIDS. WILLIAM J. MORTON, New York, N. Y. Filed Feb. 20, 1900. Serial No. 5,905. (No specimens.)

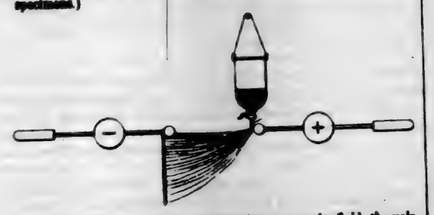

Claim.—1. The process of separating from composite fluids the volatile component and breaking up the fixed component thereof, which consists in delivering the fluid into the path of a convective discharge of high-tension electricity, disrupting the composite fluid, thereby evaporating the volatile component and simultaneously solidifying the fixed component, substantially as described.

2. The process of separating from composite fluids the volatile component and fibering the fixed component thereof, which consists in delivering the fluid in a viscous condition into the path of a convective discharge of high-tension electricity, breaking up or disrupting the viscous composite fluid thereby, and solidifying the fixed component into multiple fibers, substantially as described.

3. The process of separating from composite fluids the volatile component and fibering the fixed component thereof, which consists in delivering the fluid in a viscous condition into the path of a convective discharge of high-tension electricity, breaking up or disrupting the viscous composite fluid thereby, evaporating the volatile component, and simultaneously solidifying the fixed component into multiple fibers, substantially as described.

4. The process of separating the volatile liquid component from the component of fixed substances in composite fluids composed thereof, which consists in conducting a supply of composite fluid to a field of convective action of high-tension electricity, causing a delivery of the said composite fluid in a free and attenuated form therein, thus disrupting the composite fluid thereby, and collecting the separated product of the fixed substances resulting from the disruptive action of the convective field upon the composite fluid, substantially as described.

5. The process of separating the volatile liquid component from the component of fixed substances in composite fluids composed thereof, which consists in conducting a supply of the composite fluid to a field of convective action of high-tension electricity, causing a delivery of the said composite fluid in a free and attenuated form therein, thus disrupting the composite fluid thereby, simultaneously volatilizing the volatile liquid component and setting the component of fixed substances while in a filamentous condition, and collecting the separated filamentous products of the fixed substances, substantially as described.

6. The process of separating the volatile liquid component from the component of fixed substances in composite fluids composed thereof, which consists in conducting a supply of the composite fluid to a field of convective action of high-tension electricity, causing a delivery of the said fluid in a free and attenuated form therein, thus disrupting the composite fluid thereby, simultaneously volatilizing the volatile liquid component and fibering the component of fixed substances into multiple fibers and causing the same to set while still in a fibrous condition, and collecting the fibrous products of the fixed substances, substantially as described.

705,692. COMPOUND LOCOMOTIVE-ENGINE. CHARLES H. HUSTON, Philadelphia, Pa. Filed Mar. 20, 1901. Serial No. 52,023. (No model.)

Claim.—1. In a compound locomotive-engine the combination of high and low pressure cylinders, a single valve-chamber common to both cylinders, a single steam-distribution valve common to both cylinders and which always prevents the passage directly through itself of steam from the high to the low pressure cylinder, an intercepting-valve chamber, a steam-inlet to the valve-chamber, a steam-exhaust from the valve-chamber, passages from the valve-chamber to the high-pressure cylinder and to the intercepting-valve chamber and to the low-pressure cylinder and to exhaust whereby a path is established for steam to pass to the high-pressure cylinder and thence to the intercepting-valve chamber by way of the valve-chamber, and an intercepting-valve for passing steam received from the high-pressure cylinder directly to exhaust or low-pressure cylinder by way of the valve-chamber so that the engine can run either single or compound, substantially as described.

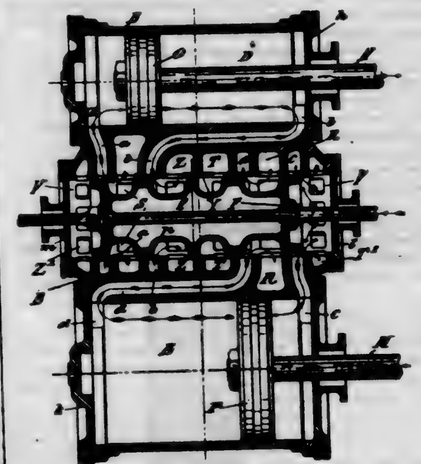

2. In a compound locomotive-engine the combination of high and low pressure cylinders, a single valve-chamber common to both cylinders, a single steam-distribution valve common to both cylinders and which always prevents the passage directly through itself of steam from the high to the low pressure cylinder, an intercepting-valve chamber, a steam-inlet to the valve-chamber, a steam-exhaust from the valve-chamber, passages from the valve-chamber to the high-pressure cylinder and to the intercepting-valve chamber and to the low-pressure cylinder and to exhaust, whereby a path is established for steam to pass to the high-pressure cylinder and thence in the intercepting-valve chamber by way of the valve-chamber, an intercepting-valve for passing steam received from the high-pressure cylinder to exhaust or low-pressure cylinder by way of the valve-chamber, and means for introducing live steam to low-pressure cylinder by way of its ports in the distribution-valve to run both cylinders single expansion, substantially as described.

3. The combination of the described cylinder structure comprising high and low pressure cylinders, and steam-passages and admission-passages and a main exhaust, a steam-valve, an intercepting-valve consisting of a cylinder open at one end and having three openings cut on its circular surface and so arranged with respect to the steam-passages in the cylinder structure that by a turn of said intercepting-valve the high-pressure exhaust will either communicate with the admission-passages of low-pressure cylinder or with the main exhaust-passage from low-pressure cylinder to stack, thus enabling the engineer to change the working of the engine from compound into single expansion, and vice versa, substantially as described.

4. The combination in a cylinder structure for compound locomotive-engines, of passages T T' for admitting steam from the distribution-valve to the low-pressure cylinder and a passage W communicating with both passages T and T' and whereby live steam is introduced into these passages, high and low pressure cylinders, a steam-distribution valve common to both cylinders and having its low-pressure-cylinder ports communicating with the passages T T', a distribution-valve having provisions for always preventing direct communication through it between the two cylinders, and a steam-pipe X, substantially as described.

5. The combination in a compound locomotive, of a high-pressure cylinder, a low-pressure cylinder, a single steam-distribution valve common to both cylinders and having provisions for the independent admission and exhaust to both cylinders and having provisions for always preventing direct communication through it between the two cylinders, an intercepting-valve for directing exhaust-steam from the high-pressure

cylinder directly to the admission portions of said distribution-valve that appertain to the low-pressure cylinder or directly to the exhaust provisions of said distribution-valve, and a steam-supply to the admission portions of said distribution-valve that appertain to the low-pressure cylinder, substantially as described.

6. The combination with a compound locomotive having high and low pressure cylinders and their complemental single steam-distribution valve having provisions for always preventing direct communication through it between the two cylinders, of an intercepting-valve and its connections for receiving the exhaust from the high-pressure cylinder by way of the distribution-valve and passing it directly to the main exhaust or directly to the parts of said distribution-valve that appertain to the low-pressure cylinder, whereby the engine may be run either single or compound, substantially as described.

7. The combination with a compound locomotive having high and low pressure cylinders and the single steam-distribution valve common to both and having provisions for always preventing direct communication through it between the two cylinders, of a steam-admission pipe X and proper connections to the boiler for admitting steam to the parts of the distribution-valve which appertain to the low-pressure cylinder, and means for causing exhaust direct from the high-pressure cylinder, whereby the low-pressure cylinder can be run with live steam, substantially as described.

705,698. MECHANISM FOR JUSTIFYING LINES COMPOSED OF TYPES OR MATRICES. HERMANN HELLEBRANDT, Berlin, Germany. Filed Jan. 28, 1899. Serial No. 703,262. (No model.)

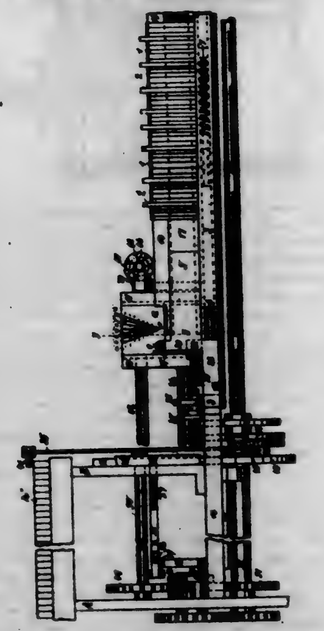

Claim.—1. A type-justifying mechanism comprising, in combination, means operating to measure a line of type independently for each justifying-space to be elevated, a contact-piece having space-value-determining surfaces, and an element cooperating with said contact-piece the relative positions of said element and contact-piece being separately determined by each measurement of the line.

2. A justifying mechanism comprising, in combination, spacing mechanism for inserting justifying-spaces in a line, a movable line-holder adapted to carry a line of type to the spacing mechanism, and space-value-determining devices movable with the line under justification, and comprising a contact-piece having space-value-determining elements and a part cooperating with said contact-piece.

3. A justifying mechanism comprising, in combination, spacing mechanism for inserting justifying-spaces in a line, a movable line-holder adapted to carry a line of type to the spacing mechanism, and space-value-determining devices movable with the line under justification, and comprising line-measuring devices having two relatively movable parts engaging the ends of the line.

4. A justifying mechanism comprising, in combination, spacing mechanism for inserting justifying-spaces in a line in lieu of temporary spaces, means for moving a line of type intermittently relatively to said spacing mechanism, measuring devices including two relatively movable parts engaging the ends of the line for measuring the line prior to the insertion of each space, and means controlled by said measurement for selecting the proper justifying-space to be inserted after each measurement.

5. A justifying mechanism comprising, in combination, spacing mechanism for inserting justifying-spaces in a line in lieu of separators, means for moving a line of type and separators past said spacing mechanism, means for intercepting the movement of the line each time a separator reaches the spacing mechanism, means independent of the separators for measuring the line before each separator is removed, and space-value-determining devices controlled by the successive measurements thereof, said devices in turn controlling the selection of the justifying-spaces to be inserted in lieu of the separators.

6. A justifying mechanism comprising, in combination, means for moving a line of type and separators to a spacing mechanism, means for stopping the line as each separator reaches the spacing mechanism, means independent of the separators for measuring the line as many times as there are separators therein, and space-value-determining devices controlled by said measurements, each measurement controlling the selection of a suitable justifying-space to be inserted in lieu of one of the separators.

7. A justifying mechanism comprising, in combination, means for ejecting separators from a line and inserting justifying spaces, means for moving the line to said spacing mechanism, and space-value-determining elements movable with the line, said elements consisting of a measuring device, a contact-piece having space-value-determining surfaces, and a part adapted to cooperate with one or other of said surfaces as may be determined by the measurement of a line.

8. A justifying mechanism comprising, in combination, a movable type-line holder, space-value-determining elements having a relative movement depending upon the measurement of a line of type under justification and a bodily movement with the line-holder, said elements consisting of a contact-piece having space-value-determining surfaces, and a pin movable into contact with one or other of said surfaces, depending upon the measurement of the line.

9. A justifying mechanism comprising, in combination, a contact-piece having a series of angular space-determining surfaces, a contact-point movable to register with any one of said surfaces, and means for controlling the relative adjustment of said contact-piece and pin by the length of the line under justification.

10. A justifying mechanism comprising, in combination, a contact-piece having a series of space-value-determining devices, said devices being triangular in outline and converging to a common center, means for adjusting said contact-piece according to the number of separators in a line to be justified, a contact-point cooperating with said contact-piece, and means for adjusting said contact-point relatively to the contact-piece in accordance with the measurement of a line.

11. A justifying mechanism comprising, in combination, a contact-piece having a series of stepped space-value-determining surfaces, a contact-point movable to engage one or other of said surfaces, means for adjusting the point relatively to the contact-piece in accordance with the measurement of a line, and means for selecting justifying-spaces controlled in accordance with the amount of movement required to bring said point into contact with the opposing step of the contact-piece.

12. A justifying mechanism comprising, in combination, a contact-piece having a series of space-value-determining surfaces, means for moving a line of type and projecting separators, means operated by the projecting separators for adjusting the contact-piece in accordance with the number thereof, a contact-point cooperating with the contact-piece, and means for adjusting the contact-point in accordance with the measurement of the line, said contact piece and point operating to determine the values of justifying-spaces for the line.

13. A justifying mechanism comprising, in combination, a contact-piece having a series of angular stepped surfaces radiating from a common center, and means for adjusting said contact-piece in accordance with the number of separators in a line to be justified.

14. A justifying mechanism comprising, in combination, a contact-piece having a series of space-value-determining surfaces, a contact-point cooperating with said surfaces, means for moving a line of type and separators to a spacing mechanism, means for moving said contact-piece and contact-point with the line, means for counting the separators as the line is moved to the spacing mechanism, means for adjusting the contact-piece in accordance with the number of word-spaces, and means for adjusting the contact-point by the measurement of the line, and for readjusting said point by a remeasurement of the line after each separator is substituted by a justifying-space.

15. A justifying mechanism comprising, in combination, a contact-piece having a series of space-value-determining surfaces, a contact-point cooperating with said surfaces, means for measuring a line of type to be justified, and means for moving said contact-point relatively to the contact-piece a multiple of the movement of the measuring device.

16. In a justifying mechanism, means for spacing a line of type composed with separators, comprising a wedge-shaped piece movable through the line and adapted to remove the separator and open the line, and a pusher arranged to insert a justifying-space in the opening in combination with mechanism constructed to predetermine the space-values of justifying-spaces and deliver such spaces to the pusher.

17. In a justifying mechanism, means for spacing a line of type composed with separators, comprising a wedge-shaped piece movable through the line and adapted to remove a separator and open the line, and an independently-movable pusher arranged to insert a justifying-space in the opening so created in the line.

18. In a justifying mechanism, means for spacing a line of type composed with separators comprising a wedge-shaped piece, means for moving the same through a line with the thin edge foremost whereby the separator is removed and the line opened to receive a justifying-space, and a pusher arranged to move a justifying-space into the opening, said pusher being timed to enter the justifying-space in the line before the wedge-piece leaves the same in combination with mechanism constructed to predetermine the space-values of justifying-spaces and deliver such spaces to the pusher.

19. In a mechanism for justifying lines of type composed with separators, a wedge-piece movable through the line to remove a separator, said piece being arranged to always enter the line at one side and leave it at the other, and means for pushing a justifying-space into the line in the rear of the wedge-piece.

20. In a mechanism for justifying lines of type composed with separators, a segmental wedge-piece mounted on an intermittently-rotating shaft, said wedge-piece being adapted to remove separators and open the line to receive justifying-spaces and an independently-movable pusher arranged to insert justifying-spaces in the openings so created.

21. In mechanism for justifying lines of type composed with separators, in combination, a rotating segmental wedge-piece adapted to remove separators, and a reciprocating pusher adapted to thrust justifying-spaces into the line in the rear of the wedge-piece.

22. A justifying mechanism comprising, in combination, a series of channels for justifying-spaces, a space-ejecting element, two links connected to and supporting said element, a cam and connections for moving one of said links to bring said ejecting element into register with the proper space-channel, and a second cam and connections for moving the other link to cause said element to eject a selected space.

23. A justifying mechanism comprising, in combination, a series of channels for justifying-spaces, a space-ejecting element, two links connected to and supporting said element, a cam and connections for moving one of said links to bring said ejecting element into register with the proper space-channel, a second cam and connections for moving the other link to cause said element to eject a selected space, a common shaft upon which said cams are mounted, and means for rotating said shaft intermittently.

24. A justifying mechanism comprising, in combination, a series of channels for justifying-spaces, a space-ejecting element, a space-pusher to which the ejected spaces are delivered, a wedge-piece adapted to move through the line to open the same, means for feeding the line intermittently to the spacing mechanism, space-value-determining means movable with the line, and a sliding connection between said space-value-determining means and said spacing means whereby the latter may be operated by the former at any position of the line under justification.

25. A justifying mechanism comprising, in combination, a series of channels for justifying-spaces, a space-ejecting device including a rock-shaft and a bell rigidly carried by said rock-shaft, means for feeding a line of type and separators intermittently, means movable with the line of type and adapted to determine the values of justifying-spaces required for the line, and a sliding connection between said space-determining means and said rock-shaft bell whereby the space-ejector may be adjusted at any position of the moving line.

26. In a justifying apparatus, the combination of a line-carrier provided with a fixed abutment for one end of the line and with a movable abutment to bear against the other end of the line, a pin connected with one of the abutments, a contact-piece connected with the other abutment to cooperate with the said pin and provided with triangle-shaped sections converging toward a common center and corresponding each to a certain value of spaces, means for adjusting the pin and contact-piece to each other in accordance with the number of intervals contained in the line, means for successively readjusting the pin and contact-piece in conformity with the insertion of the spaces, means for releasing the spaces and means for controlling the releasing of the spaces by the cooperation of the said pin and contact-piece.

27. In a justifying apparatus, the combination of a line-carrier provided with a fixed abutment for one end of the line and with a movable abutment to bear against the other end of the line, a pin connected with one of the abutments, a contact-piece connected with the other abutment to cooperate with the said pin and provided with triangle-shaped sections converging toward a common center and corresponding each to a certain value of spaces, means for adjusting the pin and contact-piece to each other in accordance with the number of intervals contained in the line, means for successively readjusting the pin and contact-piece in conformity with the insertion of the spaces, means for releasing the spaces and means for controlling the releasing of the spaces by the cooperation of the said pin and contact-piece.

28. In a justifying apparatus, the combination of a movable line-carrier, a guideway for the traveling line-carrier provided with opposite openings for removing separators from and inserting justifying-spaces into the line respectively, a rotary wedge-shaped ejector to remove the separators and at the same time enlarge the opening of the line to the extent of the thickest justifying-space, a reciprocating pusher to insert the justifying-spaces, and means for successively stopping the line-carrier with the separators in line with the said openings and at the same time rotating the ejector and the pusher to perform one revolution and reciprocation respectively.

29. In a justifying apparatus, the combination of a line-carrier provided with a fixed abutment for one end of the line and with a movable abutment to bear against the other end of the line, a pin connected with one of the abutments, a contact-piece connected with the other abutment to cooperate with the said pin and provided with sections corresponding each to a certain value of justifying-space, a cam-shaft, a lever-and-rod system controlled by the same of the cam-shaft and connected with the said pin, a pusher for ejecting justifying-spaces connected to the said lever-and-rod system, and means for temporarily releasing the cam-shaft to perform one revolution.

30. In a mechanism for justifying a line of type composed with separators having parallel sides, devices operating to measure the length of the line as many times as there are separators in the line, in combination with means, controlled by said devices in accordance with the respective measurements, for determining the respective spaces for justifying the line.

31. In a mechanism for justifying a line of type composed with separators, devices operating to measure the length of the line as many times as there are separators in the line, said devices comprising relatively movable parts engaging the ends of the line, in combination with means controlled by said devices, in accordance with the respective measurements, for selecting the respective spaces for justifying the line.

32. In a mechanism for justifying a line of type composed with separators, devices operating to measure the line as many times as there are separators in it, means for counting the separators, means controlled by the successive measurements and by the number of separators for selecting the respective spaces for justifying the line.

33. In a mechanism for justifying a line of type composed with separators, devices operating to measure the line as many times as there are separators in it, means for counting the separators, means controlled by the successive measurements and by the number of separators for selecting the respective spaces for justifying the line, and means for replacing the separators with the selected justifying-spaces.

705,694. FRAMEWORK FOR SPRING SEATS OR BEDS. WILLIAM A. MURRAY, Cincinnati, Ohio. Filed Mar. 10, 1902. Serial No. 97,620. (No model.)

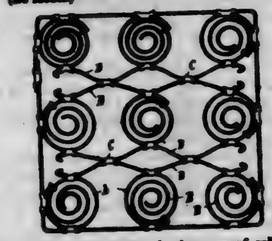

Claim.—1. In a spring-bottom having rows of coiled springs, the combination of two oppositely-curved wires between the rows coupled side by side at intervals and sinuous thereto diverging to points alongside of the top loops of the springs in the adjacent row and there coupled to the springs, substantially as shown and described.

2. In a spring-bottom having rows of coiled springs the combination of two oppositely-curved wires between the rows lying side by side at intervals and sinuous thereto diverging to points alongside of the top loops of the springs, and clips coupling the wires to one another and to the top loops of the coils at the meeting-points, substantially as shown and described.

705,695. TOOL FOR CUTTING METAL. OLEF McKOEN and DANIEL J. HEATH, county of Surrey, England. Filed Feb. 27, 1902. Serial No. 96,091. (No model.)

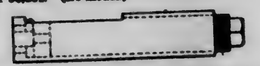

Claim.—1. A cutter for cutting cylindrical lengths consisting of a segment of a metal ring, the front or working end of which has an outer surface lying in a plane at right angles to the axis of the cutter, and having also a curved recess the inner surface of which gradually deepens as it extends around the axis, the inner portion of one of the radial edges of the segment forming the cutting edge, while the similar inner portion of the other radial edge is at the inner end of the gradually-deepening recess in rear of the cutting edge.

2. The combination of a cutter for cutting cylindrical lengths of metal consisting of a segment of a metal ring the inner portion of one of the radial edges forming the cutting edge while the similar inner portion of the other radial edge is not in the same plane with it a gradually-deepening recess being formed in the face of the segment with a tubular holder one end of which has an inwardly-projecting flange and in which a portion of the side is cut away and means for holding the cutter stationary within the tubular holder.

3. The combination of two or more cutters for cutting cylindrical lengths of metal each consisting of a segment of a metal ring the inner portion of one of the radial edges forming the cutting edge while the similar inner portion of the other radial edge is not in the same plane with it a gradually-deepening recess being formed in the face of the segment, and a distance-piece inserted between said cutters, with a tubular holder one end of which has an inwardly-projecting flange and in which a portion of the side is cut away and means for holding the cutters stationary within the tubular holder.

4. The combination of a cutter for cutting cylindrical lengths of metal consisting of a segment of a metal ring the inner portion of one of the radial edges forming the cutting edge while the similar inner portion of the other radial edge is not in the same plane with it a gradually-deepening recess being formed in the face of the segment, and a cutter for pointing the end of the metal length, with a tubular holder one end of which has an inwardly-projecting flange and in which a portion of the side is cut away and means for holding the cutters stationary within the tubular holder.

5. The combination of two or more cutters for cutting cylindrical lengths of metal each consisting of a segment of a metal ring the inner portion of one of the radial edges forming the cutting edge while the similar inner portion of the other radial edge is not in the same plane with it a gradually-deepening recess being formed in the face of the segment, a distance-piece inserted between said cutters, and a cutter for pointing the end of the metal length, with a tubular holder one end of which has an inwardly-projecting flange and in which a portion of the side is cut away and means for holding the cutters stationary within the tubular holder.

705,696. WATER-FILTER. ADOLPH G. HAAS, Cleveland, Ohio. Filed Aug. 5, 1901. Serial No. 70,911. (No model.)

Claim.—1. A filter-casing and a filtering-block therein, in combination with a ring confining said block, a cloth and loose filtering material over the outside of said block and a removable ring engaging the edge of the cloth and locked on the ring which confines said block, substantially as described.

2. A filter having a suitable filtering block or stone and a ring to confine the same, a loose filtering material over said block or stone and a cloth spread over the same, and a ring with a handle adapted to be rotated and serving to press against the edge of the cloth and fasten it in place, substantially as described.

3. A filter comprising a casing having an inwardly-extending ring at its center, in combination with a pair of filtering-blocks resting against the sides of said ring, means to confine each block in place, a head on each end of the casing set apart from said blocks to have the fluid-space between them, and means to reverse the flow of water through said blocks, said means comprising channel 6 open to each end of the casing, fluid-inlet chamber 4 and a fluid-passage therefrom into said channel, duct 7 from said chamber into the casing between the filtering-blocks, and means in said chamber to control the flow of fluid into the said casing, substantially as described.

4. A filter-casing having open ends and inclosing heads therefor and constructed to support a filter block or stone in each end, and having in its bottom a water-channel leading to each end and a separate walled water-chamber lengthwise outside said channel, said outer water-chamber connected by a fixed duct with the interior of the casing and by an opening with said water-channel, substantially as described.

5. The filter-casing open at both ends, and inclosing heads therefor, and adapted to receive separate filtering-stones in each end with a fresh-water outlet between them, a water-channel on the bottom of said casing open to both its ends and a tubular chamber outside said channel and in communication therewith by an opening, a water-supply connection with said chamber and a valved water-outlet therefrom, a duct connecting the interior of the said casing with said chamber and mechanism in said chamber adapted to slide therein and change the direction of flow of water through the filter, substantially as described.

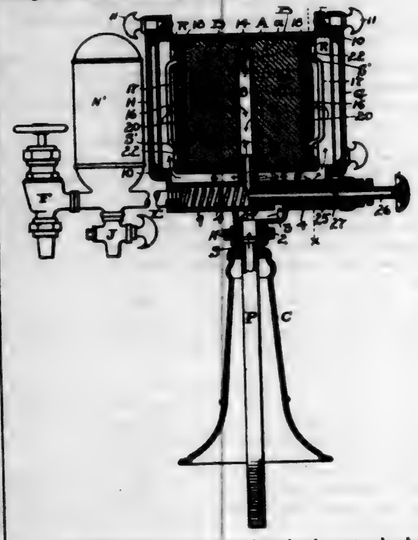

6. The filter-casing and a water-channel and a water-chamber, respectively, at its bottom, a duct 5 connecting said chamber and channel, a duct 7 from said chamber into the casing, and ducts at the ends of said channel into the ends of the casing, and a double slidable valve in said chamber constructed to change the direction of the flow of water therethrough, substantially as described.

7. A filter constructed to be cleansed by flowing the pressure-water through the same in a reverse direction, and having an inclosing cylinder, in combination with a water-inlet chamber and openings therefrom into both the ends and the center of the said cylinder, a tubular valve-stem and a pair of valves thereon in said chamber controlling said openings, said stem having a passage through the same from its inner end, and a spring pressing against the inner end of said stem, substantially as described.

705,697. STREET-RECEIVER. THOMAS J. O'BRIEN, Buffalo, N. Y. Filed July 15, 1901. Serial No. 68,202. (No model.)

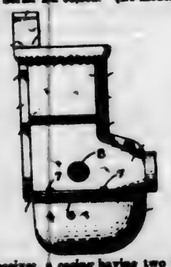

Claim.—1. In a receiver, a casing having two interior opposite diagonally-extending flanges provided with pivot-seats, and a pivotal valve-plate having a portion wider than the distance between the flanges, a portion narrower than the distance between the flanges, oppositely-disposed lugs projecting laterally from the narrower portion and pivot-pins adapted to rest in the pivot-seats in the flanges secured rigidly in the lugs, substantially as set forth.

2. A receiver having a curb-casing provided with oppositely-extending flanges provided with beveled edges converging toward each other from the rear to the front, substantially as set forth.

705,698. CYANID PROCESS OF WORKING GOLD, SILVER, OR OTHER ORES. ROBERT H. OPPERS, JAMES W. HILL, JOSEPH E. BENSHER, and FRANK H. OPPERS, Salt Lake City, Utah. Filed June 10, 1901. Serial No. 63,890. (No specimens.)

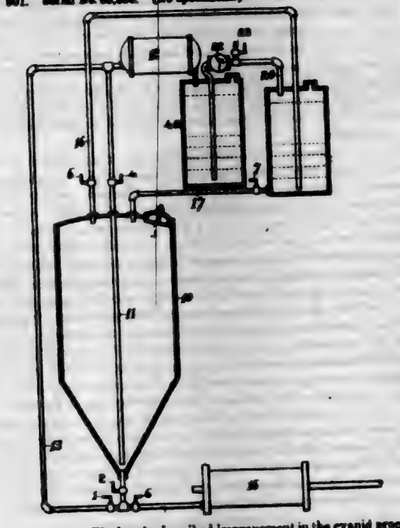

Claim.—1. The herein-described improvement in the cyanid process of recovering precious metals from ores, slimes, tailings or concentrates consisting in treating the ore, slime, tailings or concentrates with a suitable cyanogen compound and passing the hydrocyanic-acid gas set free by such treatment through a regenerating caustic solution, as and for the purpose described.

2. The herein-described improvement in treating the foul or spent solution resulting from the cyanid process of extracting gold and silver from ores, consisting in passing sulfurous-acid gas through said solution and then filtering and washing to recover the metals precipitated by the acidification.

3. The herein described improvement in treating ores by the cyanid process consisting in agitating the pulp containing the cyanid solution by a suitable gas under pressure, passing the gas and the hydrocyanic-acid gas liberated from the solution through a regenerating solution and using the gas after passing through said regenerating solution to agitate a fresh quantity of pulp.

705,699. AUTOMATIC FIRE-PROTECTING SHUTTER. TADASHI OSHIO, Takagi, Japan. Filed Jan. 17, 1902. Serial No. 89,158. (No model.)

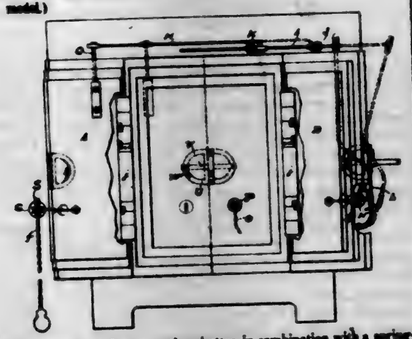

Claim.—1. A fire-protecting shutter, in combination with a spring-inclosing hinge upon which it opens against the stress of the spring, an eye projecting from the outer side of said shutter, an easily-fusible ring connected to said eye, a link connected to the ring, and an eye secured to the exterior wall of the building, to which said link is hinged, whereby the shutter is held open by connection with the wall until released by the fusing of the ring and then closed by the action of its spring-hinge.

2. A fire-protecting shutter, in combination with a spring-inclosing hinge upon which it opens against the stress of the spring, an eye projecting from the outer side of said shutter, an easily-fusible ring connected to said eye, a link connected with said ring, an eye secured to the exterior wall of the building, and a readily-removable pin connecting the link to said eye, whereby the door may be released by hand, and allowed to close without destruction of said ring.

3. In automatic fire-protecting apparatus, the combination of two counting door-wings or shutters opening upon spring-inclosing hinges against the stress of said springs, a connection readily destructible by heat holding one of said shutters open, and connections between said shutter and the other whereby the latter is concurrently held open, said connections being actuated by the first shutter in its closing movement to release the other and permit it to close immediately following the first.

4. In automatic fire-protecting apparatus, the combination of two counting door-wings or shutters opening upon spring-inclosing hinges and against the stress of the springs therein, a connection readily destructible by heat holding one of said shutters open, a locking-pin holding the second shutter open, connections between the first shutter and said pin, actuated by said shutter in its closing movement to withdraw said pin and cause the second shutter to close immediately following the first, a catch upon the outer face of the first shutter and a latch-bar upon the outer face of the second shutter, whereby the shutters are latched as they close.

5. In an automatic fire-protecting apparatus, the combination of the shutters A and B, their spring-hinges, the fusible ring D, the eyebolt E on shutter A, the link F, the forked eyebolt G connected to the wall, coupling-pin S uniting said link and bolt, standard Q, rods H and K, lever L, locking-pin M jointed to said lever, the forked eyebolt N into which the locking-pin takes, the link O matching into said latter eyebolt and coupled thereto by the locking-pin and the forked eyebolt P on shutter B, and to which the other end of said link O is hinged.

705,700. APPARATUS FOR EQUALIZING, CONTROLLING, AND STORING POWER. LAFAYETTE H. OSTRUM, Springvalley, Minn. Filed June 20, 1901. Serial No. 65,378. (No model.)

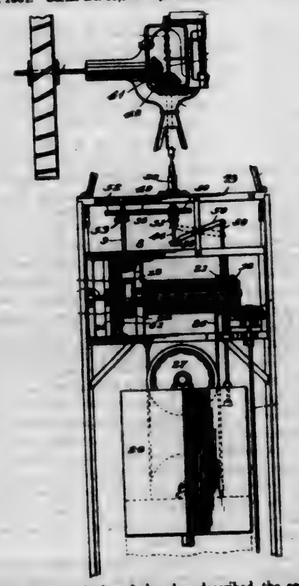

Claim.—1. In a device of the class described, the combination of the inner and outer concentric shafts, a main gear, a central gear or pinion mounted on the inner shaft, and an intermediate gear or pinion connected with the outer shaft and meshing with the said gears and adapted to communicate motion from the main gear to the central gear and capable also of revolving around the latter in either direction, substantially as and for the purpose described.

2. In a device of the class described, the combination of the inner and outer concentric shafts, a main gear, a central gear connected with the inner shaft, and a pair of intermediate gears arranged at opposite sides

of and connected with the outer shaft and meshing with the said gears and adapted to communicate motion from the main gear to the central gear and capable of revolving backward and forward around the latter, substantially as described.

2. In a device of the class described, the combination of an inner shaft designed to be connected with the device to be operated, an outer shaft, a main gear designed to be connected with the power, a central gear connected with the inner shaft, an intermediate gear meshing with the central gear and with the main gear and connected with the outer shaft, and capable of revolving around the central gear in either direction and means connected with the outer shaft for resisting the movement of the intermediate gear around the central gear for controlling the application of the power and for storing any excess of power, substantially as and for the purpose described.

4. In a device of the class described, the combination of an inner shaft designed to be connected with the device to be operated, an outer shaft, a main gear, a central gear connected with the inner shaft, an intermediate gear meshing with the said gears and connected with the outer shaft and capable of moving around the central gear in either direction, and a weight also connected with the outer shaft, substantially as and for the purpose described.

5. In a device of the class described, the combination of a main gear designed to be connected with the power, an inner shaft, an outer shaft, a central gear connected with the inner shaft, the intermediate gears meshing with the said gears and connected with and located at opposite sides of the outer shaft and mounted independently of the main gear, whereby it is adapted to move freely around the central gear in either direction, a flexible connection arranged to be wound up by the rotation of the outer shaft, and a weight supported by the flexible connection, substantially as described.

6. In a device of the class described, the combination of an inner shaft, a main gear, a central pinion connected with the inner shaft, an outer shaft, intermediate gears connected with the outer shaft and meshing with the main gear and with the central pinion and capable of moving around the latter in either direction independently of the main gear, a drum carried by the outer shaft, a weight, and a flexible connection supporting the weight and connected with the drum, substantially as described.

7. In a device of the class described, the combination of inner and outer shafts, a main gear-wheel provided with internal and external teeth, a central pinion mounted on the inner shaft, intermediate gears meshing with the central pinion and with the internal teeth of the main gear and connected with the outer shaft, a drum carried by the outer shaft, a flexible connection attached to and adapted to be wound around the drum, a weight supported by the flexible connection, the shaft 9 designed to be connected with the motive power and provided with a pinion meshing with the external teeth of the main gear, and gearing for connecting the inner shaft to the device to be operated, substantially as described.

8. In a device of the class described, the combination of the inner and outer shaft, a central pinion connected with the inner shaft, a main gear having ratchet-teeth, intermediate gears connected with the outer shaft and meshing with the central pinion and with the main gear and capable of revolving around the central pinion in either direction independently, a weight connected with the outer shaft, and a pawl mounted independently of the support of the intermediate gears and adapted to engage the ratchet-teeth of the main gear to lock the same against backward movement, substantially as and for the purpose described.

9. In a device of the class described, the combination of inner and outer shafts, a main gear-wheel provided with internal and external teeth and having a ratchet, a central pinion mounted on the inner shaft, intermediate gears meshing with the central pinion and with the internal teeth of the main gear and connected with the outer shaft, a drum carried by the outer shaft, a flexible connection attached to and adapted to be wound up by the drum, a weight supported by the flexible connection, the shaft 9 designed to be connected with the motive power and having a pinion meshing with the external teeth of the main gear, gearing for connecting the inner shaft with the device to be operated, and a pawl for engaging the ratchet, substantially as described.

10. In a device of the class described, the combination of a main gear having internal and external teeth, a central gear designed to be connected with the device to be operated, an intermediate gear meshing with the central gear and with the internal teeth of the main gear and adapted to communicate motion from the latter to the former and capable of revolving around the central gear, and means for resisting the movement of the intermediate gear around the central gear, substantially as described.

11. In a device of the class described, the combination of a main gear, a central gear designed to be connected with the machine or device to be operated, means for connecting the main gear with the motive power, a pair of intermediate gears located at opposite sides of the central gear and meshing with the same and with the main gear and capable of revolving around the central gear in either direction, and means for resisting the movement of the intermediate gears around the central gear, substantially as and for the purpose described.

12. In a device of the class described, the combination with a windmill provided with means for drawing the wind-wheel out of the wind, a main gear, a central gear, intermediate gears meshing with the main gear and with the central gear and adapted to communicate motion to the latter and to revolve around the same, a weight connected with the intermediate gears, a lifting-rod arranged in the path of the weight and connected with the means for drawing the wind-wheel out of the wind, and gearing for connecting the main gear with the windmill, substantially as described.

13. In a device of the class described, the combination with a windmill provided with a hinged vane, and having means for swinging the same, of a main gear, a central gear, intermediate gears meshing with the main gear and with the central gear and arranged to revolve around the latter, a weight connected with the intermediate gears, gearing for connecting the main gear with the windmill, a clutch for coupling said gearing to the windmill, a lever arranged to operate the clutch and to actuate the means for swinging the vane, and a lifting-rod connected with the lever and arranged in the path of the weight, substantially as described.

14. In a device of the class described, the combination with a source of power and a machine or device to be operated, of a vertically-movable weight, and gearing connecting the weight with the source of power and with the machine or device, said gearing being provided with an element capable of moving backward and forward independently of either the source of power or the machine or device, substantially as described.

15. In a device of the class described, the combination with a source of power, and a machine or device to be operated, of a vertically-movable weight, a drum, a flexible connection connecting the weight with the drum, and gearing connecting the drum with the source of power and with the machine or device to be operated, and adapted to permit the weight to operate independently of the former to actuate the latter and equalize the former, and also to store energy, substantially as described.

705,701. CAM MECHANISM. GERRAY B. FRENCH, Philadelphia, Pa., assignor to the Southwark Foundry & Machine Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed July 31, 1897. Serial No. 646,622. (No model.)

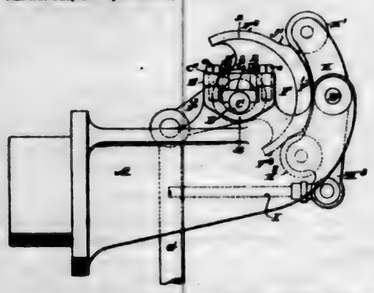

Claim.—1. Cam mechanism consisting of a pivoted cam having a segmental elevated face F' connected by symmetrical inclines f' at each end with depressed segmental faces F² in combination with a rock-lever as H having cam-contacting faces or rollers H' H² arranged at equal distances from the pivotal center of the lever and at a distance apart which will maintain both rolls always in contact with the cam-face while permitting them to pass alternately from the elevated to the depressed or from the depressed to the elevated cam-faces and means for adjusting the cam and rock-lever pivots to and from each other to maintain a close fit between the cam-face and rollers.

2. Cam mechanism consisting of a pivoted cam having a segmental elevated face F' connected by segmental inclines f' at each end with depressed segmental faces F² in combination with a rock-lever as H having cam-contacting faces or rollers H' H² arranged at equal distances from the pivotal center of the lever and at a distance apart which will maintain both rolls always in contact with the cam-face while permitting them to pass alternately from the elevated to the depressed or from the depressed to the elevated cam-faces and means for adjusting the cam-pivot to and from the pivot of the rock-lever to maintain a close fit between the cam-face and rollers.

3. Cam mechanism consisting of a pivoted cam having a segmental elevated face F' connected by symmetrical inclines f' at each end with depressed segmental faces F² in combination with a rock-lever as H having cam-contacting faces or rollers H' H² arranged at equal distances from the pivotal center of the lever and at a distance apart which will maintain both rolls always in contact with the cam-face while permitting them to pass alternately from the elevated to the depressed or from the depressed to the elevated cam-faces, an eccentric pivot-bearing for the cam and means for shifting said eccentric and clamping it in position to adjust the cam to the lever-rollers.

705,702. COLLIMATOR-GYROSCOPE FOR OBTAINING ARTIFICIAL HORIZONS. PROSPER PETITJEAN and LÉON THÉODORE, Paris, France. Filed Mar. 11, 1902. Serial No. 97,727. (No model.)

Claim.—1. In a collimator-gyroscope operating in vacuum for obtaining an artificial horizon, a cylindrical horizontal case provided with two diametrically opposite windows, one of the windows of the said horizontal case being closed by a transparent pane, the other window being closed by a roughened glass, the window with the transparent pane being placed at the front extremity of the collimator, a cock placed at the center of the horizontal case upon which the gyroscope is mounted, the gyroscope being provided at the middle of its periphery with vanes opposite which are two horizontal conduits pierced obliquely in the wall of the horizontal case, the gyroscope being provided with a chamber, the said chamber being pierced with two diametrically opposite windows of which the axis is in the same horizontal plane as that of the windows of the horizontal case, a lens located opposite one of the windows of the chamber surrounding the gyroscope, and a blackened pane upon which are traced transparent lines placed opposite the other window and at the focus of the lens, substantially as described.

2. In a collimator-gyroscope operating in vacuum for obtaining an artificial horizon, a cylindrical horizontal case provided with two diametrically opposite windows, a cock placed at the center of the horizontal case upon which the gyroscope is mounted, the gyroscope being provided with vanes at the middle of its periphery opposite which are two horizontal conduits pierced obliquely in the wall of the horizontal case, two vertical conduits pierced in the wall of the horizontal case in connection at their upper extremities with the horizontal conduits pierced obliquely in the wall of the horizontal case and at their lower extremities with a conduit pierced horizontally in the enlargement of the base of the horizontal case, a conduit pierced horizontally in the enlargement of the base and in perpendicular connection at one of its extremities with the one already in connection with the two vertical conduits and in connection at its other extremity with a conduit pierced perpendicularly in the base of the horizontal case and upon which is disposed a cock, a conduit pierced perpendicularly in the base of the horizontal case in connection with the interior of said case, a cock located in this conduit and an air-tube mounted upon the said cock, substantially as described.

3. In a collimator-gyroscope operating in vacuum for obtaining an artificial horizon, a cylindrical horizontal case provided with two diametrically opposite windows, one of the windows of the said horizontal case being closed by a transparent pane and the other by a roughened pane, the window with the transparent pane being placed at the front extremity of the collimator, a cock placed at the center of the horizontal case upon which the gyroscope is mounted, the gyroscope being provided at the middle of its periphery with vanes opposite which are two horizontal conduits pierced obliquely in the wall of the horizontal case, the gyroscope being provided with a chamber, the said chamber being pierced with two diametrically opposite windows of which the axis is in the same horizontal plane as that of the windows in the horizontal case, one of the windows being opposite a blackened glass at the focus of the lens placed opposite the other window, and an electric lamp inserted in a tube and placed in the focus of the lens located upon the same line as the center of the window of the horizontal chamber closed by roughened glass, substantially as described.

4. In a collimator-gyroscope operating in vacuum for obtaining an artificial horizon, a cylindrical horizontal case provided with two diametrically opposite windows, one of the windows of the said horizontal case being closed by a transparent pane and the other by a roughened glass, the window having the transparent pane being placed at the front extremity of the collimator, a cock placed at the center of the horizontal case upon which the gyroscope is mounted, the gyroscope being provided at the middle of its periphery with vanes opposite which are two horizontal conduits pierced obliquely in the wall of the horizontal case, the gyroscope being provided with a chamber, the said chamber being pierced with two diametrically opposite windows of which the axis is in the same horizontal plane as that of the windows of the horizontal case, one of the windows being opposite a blackened glass in the focus of the lens located opposite the other window, the blackened glass, an electric lamp inclosed in a tube and placed in the focus of a lens located in the same line as the center of the window of the horizontal chamber which is closed by a roughened glass, an axle carried by the tube which contains the electric lamp and, articulated upon the said axle, panes of various colored glasses adapted to be placed one on the other between the roughened glass of the horizontal cylindrical case and the lens at the focus of which the electric lamp is placed, substantially as described.

5. In a collimator-gyroscope operating in vacuum for obtaining an artificial horizon, a cylindrical horizontal case provided with two diametrically opposite windows, one of the windows of the said horizontal case being closed by a transparent pane, the other window being closed by a roughened glass, the window with the transparent pane being placed at the front extremity of the collimator, a cock placed at the center of the horizontal case upon which the gyroscope is mounted, the gyroscope being provided with vanes at the middle of its periphery opposite which are two horizontal conduits pierced obliquely in the wall of the horizontal case, the gyroscope being provided with a chamber, the said chamber being pierced with two diametrically opposite windows of which the axis is in the same horizontal plane as that of the windows in the horizontal case, a lens placed opposite one of the windows of the chamber surrounding the gyroscope, a blackened glass upon which are traced transparent lines located opposite the other window and at the focus of the lens, an axle journaled in the lower part of the cylindrical horizontal case, this axle being furnished with a central journal located in the wall of the horizontal case which it crosses, the larger base of the central journal being on the exterior of the case while the other cylindrical journal of said axle is located in a cavity in the wall of the horizontal case, an operating-lever keyed upon the squared end of the axle adjacent to the central journal, and a fork and a bent wire fixed upon the axle with two journals, substantially as described.

6. In a collimator-gyroscope operating in vacuum for obtaining an artificial horizon, a cylindrical horizontal case provided with two diametrically opposite windows, a chamber placed at the center of the horizontal case upon which the gyroscope is mounted, the gyroscope being provided with vanes at the middle of its periphery opposite which are two horizontal conduits pierced obliquely in the wall of the horizontal case, two vertical conduits pierced in the wall of the horizontal case in connection at their upper extremity with the horizontal conduits pierced obliquely in the wall of the horizontal case and at their lower extremity with a conduit pierced horizontally in the base of the horizontal case, a conduit pierced horizontally in the base and in perpendicular connection by one of its extremities with the one already in connection with the two vertical conduits, and in connection at its other extremity with a conduit pierced perpendicularly in the base of the horizontal case and upon which a cock is mounted, a conduit pierced perpendicularly in the base of the horizontal case in connection with the interior of this case, a cock located upon this conduit and an air-tube mounted upon the said cock, the gyroscope being provided with a chamber mounted upon the upper part of the horizontal case in communication with the interior of the latter, and a vacuum-indicator placed on the interior of the said chamber, substantially as described.

705,708. STEM-WINDING WATCH. WILLIAM S. PORTER, New Haven, Conn., assignor to the New Haven Clock Company, New Haven, Conn., a Corporation of Connecticut. Filed Jan. 28, 1902. Serial No. 91,722. (No model.)

Claim.—1. In a watch, the combination with the movement-supporting plate, having a slot extending to its periphery; of a wheel mounted on a post, which post is adapted to fit within said slot, and is prevented from longitudinal withdrawal therefrom; and a spring closing the open end of said slot, and normally tending to force said post toward the closed end of said slot, substantially as described.

2. In a watch, the combination with a movement or supporting plate, having a slot extending to its periphery; of a winding-train mounted on said plate; a rotary stem; a wheel mounted on a post, and when in position actuated by said stem, said post being adapted to fit within said slot, and being prevented from longitudinal withdrawal therefrom;

and a spring closing the open end of said slot, and yieldingly holding said wheel in engagement with said winding-train, substantially as described.

705,704. WATER-SEALED AIR-PUMP. HERMAN PONTHIER, Amsterdam, Netherlands. Filed Nov. 8, 1901. Serial No. 81,551. (No model.)

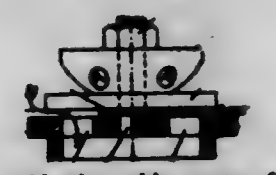

Claim.—1. The combination with a valve for water-sealed air-pumps of a metal flap located against the face of the valve and covering a portion only of the same and adapted to momentarily hold a part of the valve away from its seat when the valve begins to close substantially as described.

2. A valve for water-sealed air-pumps consisting of a leather or rubber disk, a guard-plate, and a metal flap located against the face of the disk between the disk and valve-casting, and adapted to cover a portion of the valve-casting and to momentarily hold a part of the valve off the seat when the valve begins to close substantially as described.

3. A valve for water-sealed air-pumps consisting of a leather or rubber disk, a guard-plate, and an adjustable metal flap located against the face of the disk between the disk and valve-casting and adapted to cover different portions of the valve-seat and to momentarily hold a part of the valve off the seat when the valve begins to close, substantially as described.

705,705. SAFETY ATTACHMENT FOR TROLLEY-CAR VESTIBULES. SAMUEL H. PRESSLAND, Toledo, Ohio. Filed May 5, 1902. Serial No. 105,949. (No model.)

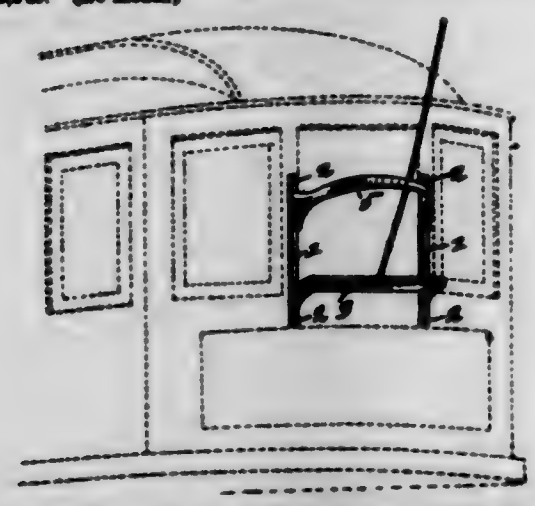

Claim.—1. In a safety device for trolley-car vestibules, the combination with the window-frame of a car-vestibule, of an outwardly-extending curved back bar provided with tapered attaching-grooves, and tapered tongues secured upon the side frames of the vestibule-window adapted to coöperate with the tapered grooves in the back bar to permit attachment or detachment of the back bar.

2. In a safety device for trolley-car vestibules, the combination with the window-frame of a car-vestibule, of side bars secured to the side frames of the vestibule-window, the seat supported at the lower ends of the side bars, tapered tongues provided upon the side bars, and an outwardly-extending curved back bar provided with tapered grooves adapted to engage the tapered tongues upon the side bars to permit the attachment or detachment of the back bar, as set forth.

705,706. STEREOSCOPE. HENRY E. RIEMENSCHNEIDER, Westwood, N. J. Filed Nov. 4, 1901. Serial No. 81,078. (No model.)

Claim.—1. In a stereoscope, a lens-frame holder, a ring having an inwardly-projecting part or flange against which the lens may rest, a mat for holding the lens in place, a projection in the ring for holding the mat in place, and an outwardly-projecting flange on the ring resting against the holder.

2. A stereoscope lens-frame, consisting of a ring having an inwardly-projecting part or flange against which a lens may rest, means for holding the lens in place, and another ring over one end of the first-mentioned ring.

3. A stereoscope lens-frame consisting of a ring having an inwardly-projecting flange against which the lens may rest, a mat for holding the lens in place, and another ring surrounding the first-mentioned ring.

4. In a stereoscope, a lens-frame holder having an opening therein, a ring having an inwardly-projecting flange against which the lens may rest, a mat for securing the lens in place, an outwardly-projecting integral flange on the ring resting against the outer face of the holder, and means for securing the ring within the holder.

5. In a stereoscope, a lens-frame holder having an opening therein, a ring in the holder having an inwardly-projecting flange against which the lens may rest, a mat in the ring to hold the lens in place, outwardly-projecting flanges on the ring resting against the outer face of the lens-frame holder, an outer ring surrounding the first-mentioned ring and having an outwardly-projecting flange, the said outer ring adapted to hold the inner ring in place in the lens-frame.

6. In a stereoscope, a lens-frame holder having an opening therein, an inner ring adapted to be secured in the opening in said holder, said ring having an inwardly-projecting flange against which one face of a lens may rest, a mat adapted to press upon the other face of the lens and hold the lens in place, inner projections on the ring to hold the mat in place, an outwardly-projecting flange on said ring adapted to rest against the outer face of the frame-holder, an outer ring fitting tightly over the inner ring and having a flange adapted to rest against the inner face of the holder and hold the inner ring in place in the holder.

7. In a stereoscope, a lens-frame holder having an opening therein, a tapered ring in the holder having an inwardly-projecting flange against which the lens may rest, a mat in the ring to hold the lens in place, outwardly-projecting flanges on the ring resting against the outer face of the lens-frame holder, the outer ring surrounding the first ring and having an outwardly-projecting flange, the said outer ring adapted to hold the inner ring in place in the frame.

705,707. ADJUSTABLE BRACE OR SUPPORT FOR MOVABLE STRUCTURES. JAMES G. ROSSMAN, Boston, Mass. Filed Nov. 7, 1901. Serial No. 81,462. (No model.)

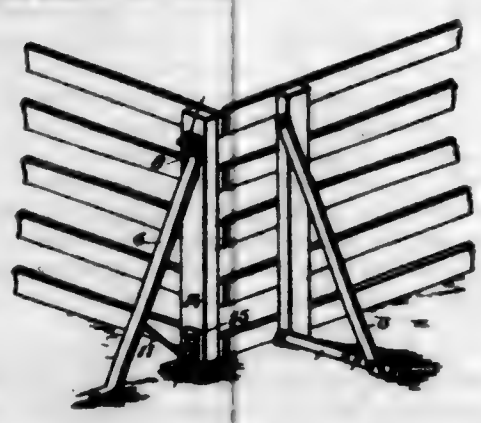

Claim.—A brace for portable objects comprising a main brace with bent ends, each having a hole, the body of said brace having a series of holes in combination with an auxiliary brace having ends bent at right angles, and a base for attachment to the lower end of the portable structure and connected by the auxiliary brace with the main brace, as set forth.

705,708. VENEER-DRYING MACHINE. MARTIN ROSSOW, Duesseldorf, Germany. Filed Nov. 4, 1901. Serial No. 81,092. (No model.)

Claim.—1. In a machine for drying veneer, a number of pairs of heater-drums, pairs of carrier-belts passing around both drums of a pair and carrying the veneer between them, each pair of belts arranged to deliver the veneer between the pair of belts of the succeeding pair of drums, substantially as described.

2. In a machine for drying veneer, a number of pairs of heater-drums, pairs of carrier-belts passing around both drums of a pair to carry the veneer between them, each pair of belts arranged to deliver the veneer between descending portions of the next pair of belts and said drums distanced from one another to heat the veneer first on one side and then on the other during its passage through the machine.

3. In a machine for drying veneer, a number of pairs of superposed heater-drums, an upper and a lower carrier-belt to contact with each pair of drums and carry the veneer between them, and deliver it in a downward direction between downwardly-traveling portions of the next succeeding pair of belts at the lower one of the next succeeding pair of

drums, means for driving all the lower drums and a gear on each lower and each upper drum, whereby the drums of a pair are geared together.

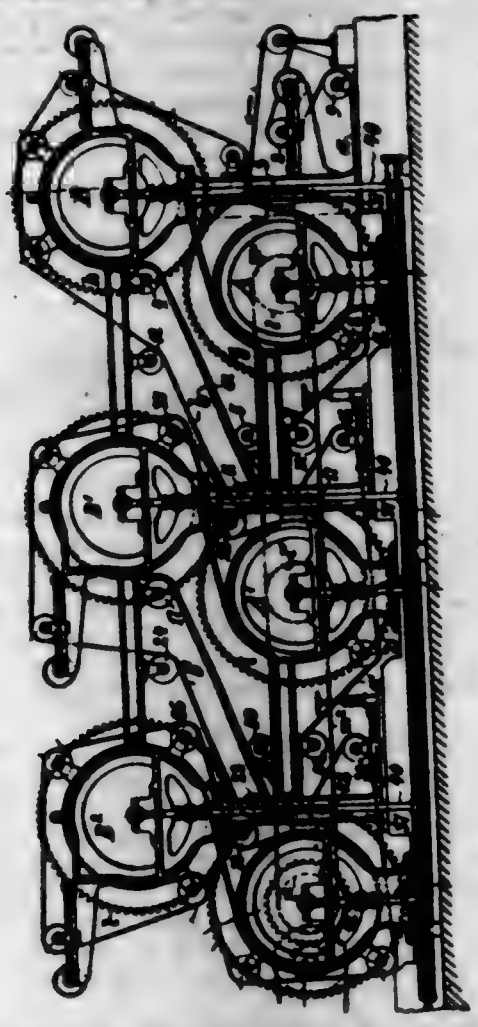

4. In a machine for drying veneer, a number of pairs of superposed heater-drums, an upper and a lower belt passing around each pair of drums, a portion of the lower carrier-belt of the first pair of drums arranged to receive the veneer before meeting the down-coming portion of the upper belt, all the pairs of carrier-belts arranged to deliver the veneer between the down-coming portions of the next pair of belts, said drums distanced from one another to heat the veneer first on one side and then on the other, means for driving the lower drums, a gear on each of the lower drums and a gear on each upper drum driven by that on the lower one of a pair of drums, substantially as described.

705,709. TYPE-WRITER OR ANALOGOUS KEY CAP. WILLIAM B. SAVELL, Newark, N. J. Filed Feb. 17, 1902. Serial No. 94,496. (No model.)

Claim.—1. A key-cap having a reversible teeth member supported above the top of the key when in use.

2. A key-cap having a reversible teeth member supported above the top of the key when in use said teeth member capable of reversal to bring either side uppermost, and provided with a designating symbol.

3. A key-cap having a teeth member supported above the top of the key when in use said member capable of reversal to bring either side uppermost and both of said sides having a designating character.

4. A key-cap having a reversible teeth member supported above the key when in use and having a designating character in each side, one of said characters being different from the other.

5. In a device of the character described, the combination of a member, as a rim or band, a reversible teeth member of yielding material, one of said members having a peripheral groove and the other member having a projection or flange to detachably engage said groove, and means for elevating the under side of the teeth member above the top surface of the key.

705,710. COMBINED FIRE-ESCAPE AND WATER-TOWER. CARL SEWARD, Quincy township, and WILLIAM C. BRYANT, Franklin township, Houghton county, Mich. Filed Feb. 7, 1902. Serial No. 93,078. (No model.)

Claim.—1. In a fire-escape, a wheeled truck, a tower-supporting frame or platform centrally pivoted upon said truck, cam-plates pivotally secured to said truck upon opposite sides of the pivotal point of said engaging said tower-supporting frame or platform, and means for moving said cam-plates to thereby adjust said tower-supporting frame or platform, substantially as described.

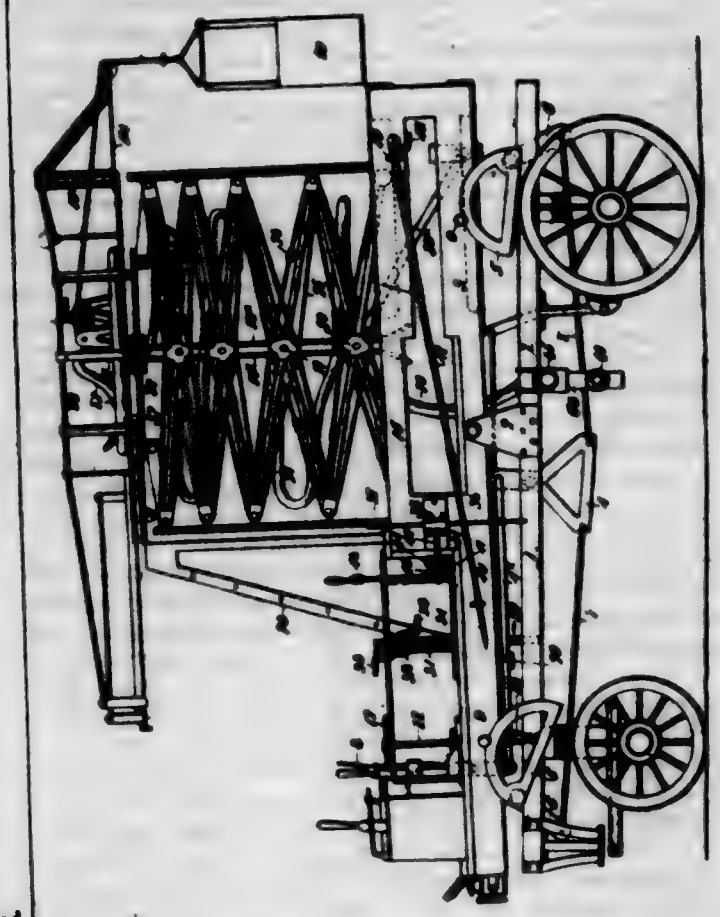

2. In a fire-escape, a wheeled truck, a tower-supporting frame or platform centrally pivoted upon said truck, cam-plates arranged upon opposite sides of the pivotal point of said frame or platform and supporting the same, and means for moving said cam-plates to thereby adjust said tower-supporting frame or platform, substantially as described.

3. In a fire-escape, a wheeled truck, a tower-supporting frame or platform pivotally mounted upon said truck, cam-plates also pivotally secured to said truck and engaging said tower-supporting frame or platform, a bell-crank lever arranged upon said truck, connections between said cam-plates and bell-crank lever, and a handle or lever pivoted in said tower-supporting frame or platform and connected with said bell-crank lever, whereby said cam-plates may be shifted to adjust said tower-supporting frame or platform, substantially as described.

4. In a fire-escape, the combination with a wheeled truck, a tower-supporting frame or platform pivotally mounted upon said truck and adapted to be adjusted with relation thereto, of a locking-plate secured to said truck, and means for binding said plate against said tower-supporting frame or platform to retain it in adjusted position, substantially as described.

5. In a fire-escape, the combination with a wheeled truck, a tower-supporting frame or platform pivotally mounted upon said truck, and means for adjusting said tower-supporting frame or platform with relation to said truck, of a locking-plate secured to said truck, a hand-wheel and staff mounted in said frame or platform, and a connection between said staff and locking-plate, whereby said locking-plate may be drawn tight against said frame or platform to lock it in adjusted position, substantially as described.

6. In a fire-escape, a wheeled truck and an extension hay-tongs tower supported thereupon, each member of said hay-tongs tower comprising a one-piece central socket-piece having lateral lugs, bars secured in said socket-piece, socket-pieces secured to the ends of said bars, and a brace wire or rod secured to said end sockets and engaging the lateral lugs of said central socket-piece, the said socket-pieces having holes or perforations to receive the connecting pivots or bars, substantially as described.

7. In a fire-escape, an extension hay-tongs tower, each member of which comprises a one-piece central socket-piece having notched lateral lugs, tubular bars secured in said socket-piece, socket-pieces secured to the ends of said bars, brace wires or rods fitted to said end sockets and engaging the notches of the lateral lugs of said central socket-piece, the said socket-pieces having holes or perforations to receive the connecting pivots

or bars, and turn-buckles applied to said wires or rods, substantially as and for the purpose described.

8. In a fire-escape, a wheeled truck, a tower-supporting frame or platform mounted upon said truck, an extension lazy-tongs tower provided with central cross-bars and having one end fixed to said frame or platform, a bar fitted to slide in said frame or platform, and connected with the other end of said lazy-tongs tower, an independent cross-bar also fitted to slide in said frame or platform, rods or links connecting said independent cross-bar with the lower central pivot-bar of said lazy-tongs tower, a screw-shaft engaging said independent cross-bar, and means for rotating said screw-shaft, whereby said tower may be raised or lowered, substantially as described.

9. In a fire-escape, a wheeled truck, a tower-supporting frame or platform mounted upon said truck, an extension lazy-tongs tower provided with central cross-bars and having one end fixed to said frame or platform, a bar fitted to slide in said frame or platform, and connected with the other end of said lazy-tongs tower, an independent cross-bar also fitted to slide in said frame or platform, rods or links connecting said independent cross-bar with the lower central pivot-bar of said lazy-tongs tower, a screw shaft engaging said independent cross-bar, means for rotating said screw-shaft, comprising a crank-shaft mounted upon said frame or platform, and gearing connecting said crank-shaft with said screw-shaft, whereby said tower may be raised or lowered, substantially as described.

10. In a fire-escape, a wheeled truck, a tower-supporting frame or platform mounted upon said truck, an extension lazy-tongs tower provided with central cross-bars, a platform supported upon said tower, means for raising and lowering said tower, and downwardly-extending bars or rods secured to said tower-platform having their lower ends bent outwardly and arranged and adapted to pass upon opposite sides of the central cross-bars of said tower, substantially as and for the purpose described.

11. In a fire-escape, the combination with a wheeled truck, a tower-supporting frame mounted upon said truck, an extension lazy-tongs tower mounted thereupon, and means for raising and lowering said tower, of means for locking said tower comprising a bracket secured to said frame or platform, an arm or plate carried by said tower, and means for forcibly engaging said arm or plate with the bracket, substantially as described.

12. In a fire-escape, the combination with a wheeled truck, a tower-supporting frame or platform mounted upon said truck, an extension lazy-tongs tower carried by said frame or platform, and means for raising said tower, of means for locking said tower in its raised position, comprising a slotted bracket fixed to said frame or platform, a segmental arm or plate pivotally hung to and carried by one of the members of said lazy-tongs tower and passing through said slotted bracket, a cam or eccentric arranged in said bracket and engaging said arm or plate with the bracket, substantially as described.

13. In a fire-escape, the combination with a wheeled truck, a tower-supporting frame or platform mounted upon said truck, an extension lazy-tongs tower carried by said frame or platform, and means for raising said tower, of means for locking said tower in its raised position, comprising slotted brackets arranged upon opposite sides of the frame or platform, segmental arms pivotally hung to and carried by one of the members of the lazy-tongs tower and passing through said slotted brackets, cams or eccentrics arranged in said slotted brackets and engaging said arms, a rock-shaft and handle therefor mounted upon said frame or platform, and connections between said rock-shaft and cams or eccentrics to move said cams or eccentrics to forcibly engage said arms with the brackets, substantially as described.

14. In a fire-escape, an extension-tower, a turn-table supported upon the upper end of said tower, a crane hinged to said turn-table and provided with a sheave or pulley, a salvage-basket, and a rope or chain for supporting said basket passing over said sheave or pulley, a windlass mounted upon said turn-table and receiving said rope or chain, and a button or enlargement on said rope between said basket and sheave and adapted to engage said sheave to raise said crane, to thereby bring the basket in proximity to the turn-table, substantially as described.

15. In a fire-escape and water-tower, an extension lazy-tongs tower provided with central cross-bars, combined with a hose-pipe carried by said tower and arranged alternately upon opposite sides of adjacent central cross-bars, substantially as and for the purpose described.

16. In a combined fire-escape and water-tower, the combination with a wheeled truck, a tower-supporting frame mounted upon said truck, and an extension lazy-tongs tower mounted upon said frame and provided with central cross-bars, of a valved hose connection secured to said truck and provided with a valved drain-pipe, a section of hose-pipe connected with said hose connection and extending upwardly through said tower and arranged upon alternate or opposite sides of adjacent central cross-bars thereof, and a connection for said hose-pipe at the upper end of said tower, substantially as described.

17. In a fire-escape, an extension-tower, a turn-table supported upon the upper end of said tower, a crane hinged to said turn-table and provided with a sheave or pulley, a salvage-basket, and a rope or chain for supporting said basket passing over said sheave or pulley, a windlass mounted upon said turn-table and receiving said rope or chain, and a button or enlargement on said rope between said basket and sheave and adapted to engage said sheave to raise said crane, to thereby bring the basket in proximity to the turn-table, substantially as described.

18. In a fire-escape, the combination with a wheeled truck, a tower-supporting frame or platform mounted upon said truck, an extension lazy-tongs tower carried by said frame or platform, and means for raising said tower, of means for locking said tower in its raised position, comprising slotted brackets arranged upon opposite sides of the frame or platform, segmental arms pivotally hung to and carried by one of the members of the lazy-tongs tower and passing through said slotted brackets, cams or eccentrics arranged in said slotted brackets and engaging said arms, a rock-shaft and handle therefor mounted upon said frame or platform, and connections between said rock-shaft and cams or eccentrics to move said cams or eccentrics to forcibly engage said arms with the brackets, substantially as described.

14. In a fire-escape, an extension-tower, a turn-table supported upon the upper end of said tower, a crane hinged to said turn-table and provided with a sheave or pulley, a salvage-basket, and a rope or chain for supporting said basket passing over said sheave or pulley, a windlass mounted upon said turn-table and receiving said rope or chain, and a button or enlargement on said rope between said basket and sheave and adapted to engage said sheave to raise said crane, to thereby bring the basket in proximity to the turn-table, substantially as described.

15. In a fire-escape and water-tower, an extension lazy-tongs tower provided with central cross-bars, combined with a hose-pipe carried by said tower and arranged alternately upon opposite sides of adjacent central cross-bars, substantially as and for the purpose described.

16. In a combined fire-escape and water-tower, the combination with a wheeled truck, a tower-supporting frame mounted upon said truck, and an extension lazy-tongs tower mounted upon said frame and provided with central cross-bars, of a valved hose connection secured to said truck and provided with a valved drain-pipe, a section of hose-pipe connected with said hose connection and extending upwardly through said tower and arranged upon alternate or opposite sides of adjacent central cross-bars thereof, and a connection for said hose-pipe at the upper end of said tower, substantially as described.

17. In a fire-escape, an extension-tower, a turn-table supported upon the upper end of said tower, a crane hinged to said turn-table and provided with a sheave or pulley, a salvage-basket, and a rope or chain for supporting said basket passing over said sheave or pulley, a windlass mounted upon said turn-table and receiving said rope or chain, and a button or enlargement on said rope between said basket and sheave and adapted to engage said sheave to raise said crane, to thereby bring the basket in proximity to the turn-table, substantially as described.

705,711. EXTENSION-TABLE. HENRY C. SETTERDEN, North Bellingham, Wash. Filed Mar. 27, 1901. Serial No. 53,094. (No model.)

Claim.—1. In a table, the combination of a table-top; apertured plates connected therewith, with an intervening space between the plate and table-top; legs having their upper ends fitted to said plates; slotted bolts, round in cross-section, extending longitudinally from the legs and adapted to project through the apertures in the plates; and tapered keys adapted to enter the slots in said bolts above the plates, with their lower edges bearing on the latter, whereby the legs may be rigidly secured in position.

2. In an extension-table, the combination with a table-top; of leg-supporting-brackets secured thereto comprising a central of dependent arms 3 and leg-receiving plates 4, with a central aperture 5 in each leg-receiving plate; legs provided with slotted bolts projecting longitudinally from their upper ends, and adapted to enter said apertured bracket-plates; and keys adapted to be inserted between the arms 3 of the brackets, and to fit in the bolt-slots, said keys being wedge-shaped in form with a maximum width greater than the length of the bolt-slots, whereby, when forced into position in said slots, the legs are securely bound to the bracket-plates 4.

3. In a table, the combination of a table-top; apertured plates connected therewith, with an intervening space between the plate and top; legs having their upper ends fitted to said plates; slotted bolts extending longitudinally from the legs and adapted to project through the apertures in the plates; and tapered keys adapted to enter the slots in said bolts, above the plates, with their lower edges bearing on the latter; said apertures in the plates being adapted to permit the bolts to turn freely after their insertion, whereby the legs may be adjusted to any desired position.

705,712. APPARATUS FOR REFINING GLYCERIN. HERMAN I. SCHMIDT, Cincinnati, Ohio, and OMAR T. JOHLIN, New York, N. Y. Filed Apr. 9, 1897. Serial No. 631,988. (No model.)

Claim.—1. In a still the combination of the outer case, a drum mounted to revolve therein, said drum having hollow journals extending to the outside of the case to receive and pass the heating medium for said drum, the heating-coil, pipes from said heating-coil to convey the heating medium to and from said drum, a pump interposed in one of said pipes to cause the heating medium to circulate through the drum and heating-coil, a pipe to convey the liquid to be distilled to the bottom of the case and in contact with the revolving drum, and a pipe to convey the distillate from the case, whereby a thin film of the liquid is taken up by the drum, distilled by its heating, and the distillate passed from the case, substantially as shown and described.

2. In a still the combination of the outer case, an interior case forming a jacketed space between the outer and inner cases, partitions for dividing the jacket into two chambers, the upper one to receive the heating medium and the lower one to exclude the heating medium from that portion of the case which contains the liquid to be distilled, a drum mounted to revolve in the case said drum having hollow journals to receive and pass the heating medium into and from said drum, a heating-coil, pipes from the terminal of said coil, one of said pipes to connect with one of the hollow journals of the revolving drum and the opposite coil to connect with the jacketed space surrounding the upper part of the drum, a pipe to connect the opposite hollow journal with the said jacketed chamber, a pump interposed in the supply-pipe for the drum to create a circulation for the heating medium through the drum and chamber, pipes to convey the liquid to be distilled to the bottom of the case and in contact with the revolving drum and discharge the distillate from the case, substantially as shown and described.

3. In a still the combination of the outer case, an interior case forming a jacketed space between the outer and inner cases, partitions for dividing the jacket into two chambers, the upper one to receive the heating medium and the lower one to exclude the heating medium from that portion of the case which contains the liquid to be distilled, a drum mounted to revolve in the case said drum having hollow journals to receive and pass the heating medium into and from said drum, a heating-coil, pipes from the terminal of said coil, one of said pipes to connect with one of the hollow journals of the revolving drum and the opposite coil to connect with the jacketed space surrounding the upper part of the drum, a pipe to connect the opposite hollow journal with the said jacketed chamber, a pump interposed in the supply-pipe for the drum to create a circulation for the heating medium through the drum and chamber, pipes to convey the liquid to be distilled to the bottom of the case and in contact with the revolving drum and discharge the distillate from the case, a coil for superheated steam, and a pipe from said coil passing into the case and across the case parallel with the revolving drum, said pipe being perforated its entire length within the case to discharge jets of superheated steam above the liquid to be distilled and against the drum, substantially as shown and described.

ing medium and the lower one to exclude the heating medium from that portion of the case which contains the liquid to be distilled, a drum mounted to revolve in the case said drum having hollow journals to receive and pass the heating medium into and from said drum, a heating-coil, pipes from the terminal of said coil, one of said pipes to connect with one of the hollow journals of the revolving drum and the opposite coil to connect with the jacketed space surrounding the upper part of the drum, a pipe to connect the opposite hollow journal with the said jacketed chamber, a pump interposed in the supply-pipe for the drum to create a circulation for the heating medium through the drum and chamber, pipes to convey the liquid to be distilled to the bottom of the case and in contact with the revolving drum and discharge the distillate from the case, a coil for superheated steam, and a pipe from said coil passing into the case and across the case parallel with the revolving drum, said pipe being perforated its entire length within the case to discharge jets of superheated steam above the liquid to be distilled and against the drum, substantially as shown and described.

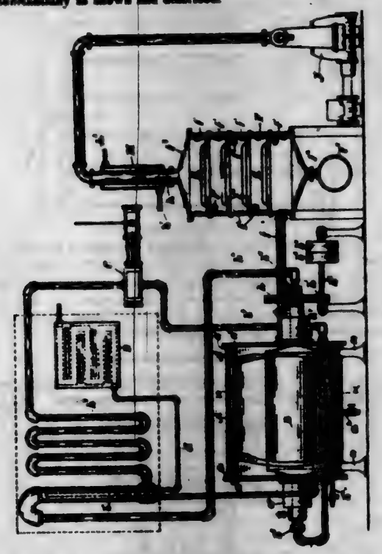

4. In a still the combination of the outer case, an interior case forming a jacketed space between the outer and inner cases, partitions for dividing the jacket into two chambers, the upper one to receive the heating medium and the lower one to exclude the heating medium from that portion of the case which contains the liquid to be distilled, a drum mounted to revolve in the case said drum having hollow journals to receive and pass the heating medium into and from said drum, a heating-coil, pipes from the terminal of said coil, one of said pipes to connect with one of the hollow journals of the revolving drum and the opposite coil to connect with the jacketed space surrounding the upper part of the drum, a pipe to connect the opposite hollow journal with the said jacketed chamber, a pump interposed in the supply-pipe for the drum to create a circulation for the heating medium through the drum and chamber, pipes to convey the liquid to be distilled to the bottom of the case and in contact with the revolving drum and discharge the distillate from the case, a coil for superheated steam, and a pipe from said coil passing into the case and across the case parallel with the revolving drum, said pipe being perforated its entire length within the case to discharge jets of superheated steam above the liquid to be distilled and against the drum, and a scraper to bear against the periphery of the drum for preventing the formation of coats or sediment on the surface of the drum, substantially as shown and described.

5. In a still the combination of the outer case, an interior case forming a jacketed space between the outer and inner cases, partitions for dividing the jacket into two chambers, the upper one to receive the heating medium and the lower one to exclude the heating medium from that portion of the case which contains the liquid to be distilled, a drum mounted to revolve in the case said drum having hollow journals to receive and pass the heating medium into and from said drum, a heating-coil, pipes from the terminal of said coil, one of said pipes to connect with one of the hollow journals of the revolving drum and the opposite coil to connect with the jacketed space surrounding the upper part of the drum, a pipe to connect the opposite hollow journal with the said jacketed chamber, a pump interposed in the supply-pipe for the drum to create a circulation for the heating medium through the drum and chamber, pipes to convey the liquid to be distilled to the bottom of the case and in contact with the revolving drum and discharge the distillate from the case, a coil for superheated steam, and a pipe from said coil passing into the case and across the case parallel with the revolving drum, said pipe being perforated its entire length within the case to discharge jets of superheated steam above the liquid to be distilled and against the drum, and baffle-plates extending toward from the case to interrupt the current of the steam and deflect it against the periphery of the revolving drum, substantially as shown and described.

6. The combination of the separating vessel composed of a series of flanged sections having inwardly-projecting flanged troughs, said sections being secured together one above the other, heads covering the top and bottom of the sections, caps extending over the flanged uppermost inner edges of the gutters and supported above the bottom or shelf of the gutter, pipes passing through the troughs, extending up into them and having their lower ends bent to prevent the vapors passing through said pipes and receiving vessel of the separator, an exhaust-pipe for the superheated steam at the top thereof, a cooling-chamber surrounding said pipe and having inlet and outlet pipes for the cooling-water to condense a portion of the steam and prevent the escape of glycerin, and an inlet-pipe for the heated vapors in the lower section of said separator, substantially as shown and described.

7. A plant for purifying glycerin consisting of a still in which the vapor of glycerin is mingled with superheated steam, coils for heating the medium and superheating the steam which passes into the still, a separator to separate the vapors of glycerin and steam, and the pipe connecting the vapor-chamber of the still with the lower part of the separator, substantially as shown and described.

705,718. EXHAUST APPARATUS. JOHN Y. SMITH, Doylestown, Pa., assignor, by direct and mesne assignments, to William B. Dewey trustee, Boston, Mass. Filed Mar. 7, 1902. Serial No. 97,049. (No model.)

Claim.—1. An apparatus of the character specified, comprising a stack or conduit, and an annular exhaust-nozzle within the conduit, said nozzle having in its upper side a series of outlets arranged to deliver a series of jets surrounding the central portion of the conduit, and an exhaust-pipe entering one side of said nozzle and arranged to deliver steam horizontally therein, the bottom of the nozzle being inclined relatively to the top, whereby the pressure of the steam at the several outlets is substantially equalized.

2. An apparatus of the character specified, comprising a stack or conduit, an annular exhaust-nozzle in said conduit having in its upper side a series of outlets arranged to deliver a series of jets surrounding the central portion of the stack, an exhaust-pipe communicating with the nozzle, a supplemental conduit surrounded by said nozzle, and a series of passages between the nozzle and supplemental conduit, whereby a series of induced jets of air from the smoke-chamber may be admitted to the stack.

3. An apparatus of the character specified, comprising a stack or conduit, an annular exhaust-nozzle in said conduit having in its upper side a series of outlets arranged to deliver a series of jets surrounding the central portion of the stack, and a series of projections on its inner side, an exhaust-pipe communicating with the nozzle, and a supplemental conduit surrounded by the nozzle, said pipe and the projections on the nozzle forming a series of passages for the delivery of induced jets of air to the stack.

4. An apparatus of the character specified, comprising a stack or conduit, an annular exhaust-nozzle in said conduit having in its upper side a series of outlets arranged to deliver a series of jets surrounding the central portion of the stack, an exhaust-pipe communicating with the nozzle, a supplemental conduit surrounded by said nozzle, a series of passages between the nozzle and supplemental conduit, whereby a series of induced jets of air from the smoke-chamber may be admitted to the stack, and a

nozzle connected with a constant source of steam-supply and adapted to direct steam under boiler-pressure upwardly through the supplemental pipe into the stack.

705,714. FRICTIONAL GEARING. SIMEON W. STEBBINS, Shreve, Ohio. Filed Nov. 14, 1901. Serial No. 82,216. (No model.)

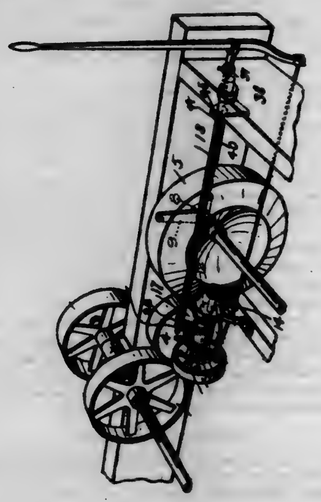

Claim.—1. The combination of a train of friction-wheels, an eccentrically-journaled shaft, a friction-wheel slidably mounted upon the shaft, a rotatable head, carrying the shaft provided with the sliding friction-wheel, and provided with a toothed segment, a toothed segment to mesh with the segment of the head, said segment fixed to a shaft, the shaft provided with an operating-lever, the operating-lever extended below its pivotal point, and a rod connected to the lower end of the operating-lever, a link connected to the rod and to an arm, said arm fixed to the head and said head located around the hub of the sliding friction-wheel, a beveled friction-wheel mounted upon the eccentrically-journaled shaft, and one of the train of friction-wheels provided with a beveled side face, substantially as and for the purpose specified.

2. The combination of a driving-shaft, a train of friction-wheels, one of the train mounted upon the driving-shaft, a shaft for the intermediate wheel of the train, and the other wheel of the train provided with a beveled side, a beveled friction-wheel located adjacent to the beveled side of one of the train of wheels, a rotatable head, and a shaft, eccentrically journaled in the head, a slidable friction-wheel mounted upon the eccentrically-journaled shaft and located opposite the intermediate wheel, means for sliding the slidable friction-wheel and means for rotating the head carrying the eccentrically-journaled shaft, substantially as and for the purpose set forth.

3. The combination of a driving-shaft, a friction-wheel mounted thereon, an intermediate friction-wheel located in contact with the friction-wheel upon the driving-shaft, a feed-wheel and shaft, the shaft of the feed-wheel journaled in a swinging bearing, and the feed-wheel provided with a beveled face located upon its side, a beveled friction-wheel located adjacent to the beveled side of the feed-wheel, an eccentrically-journaled shaft, a sliding friction-wheel located upon the eccentrically-journaled shaft, a rotatable head carrying the eccentrically-journaled shaft, means for rotating said head, and means for sliding the friction-wheel back and forth upon its shaft, substantially as and for the purpose specified.

4. The combination of a driving-shaft, a train of friction-wheels, one of said wheels mounted upon the driving-shaft, a swinging shaft and an arm, a feed-wheel constituting one of the train, mounted upon the swinging shaft, a shaft provided with an operating-lever, a grooved pulley fixed to the shaft having the operating-lever, a chain secured to the grooved pulley and to an arm, the arm fixed to the shaft 66, and the said shaft connected at one end, to the bearing of the swinging shaft, a cam fixed to the shaft provided with the grooved pulley, and a fixed cam located adjacent to the cam upon the shaft 66, a sliding friction-wheel located adjacent to the face of the intermediate friction-wheel and an eccentrically-journaled shaft, substantially as and for the purpose set forth.

705,715. PROCESS OF INTENSIFYING THE LUSTER OF SILK FIBER. CHARLES STUART, Paterson, N. J. Filed Jan. 17, 1902. Serial No. 90,133. (No specimens.)

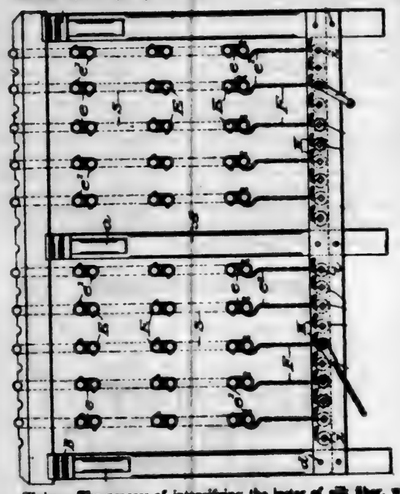

Claim.—The process of intensifying the luster of silk fiber, which consists in taking the skeins directly from the hydro-extractor after dyeing, and, while still damp stretching them and simultaneously maintaining them in a stretched condition and subjecting them in a closed chamber to dry air at a temperature of about 120° Fahrenheit, thereby preventing shrinking during the drying, as set forth.

705,716. MACHINE FOR LUSTERING SILK. CHARLES STUART, Paterson, N. J. Filed Jan. 20, 1902. Serial No. 90,397. (No model.)

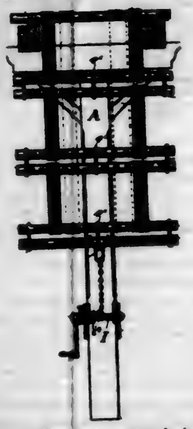

Claim.—1. In a machine for increasing the luster of silk, the combination of a frame, means for suspending therefrom a series of interdependent skeins of wet silk, flexible means connecting each series with a mechanism located in the lower portion of the frame, and which is adapted to stretch the silk, and to maintain it in a stretched condition while being dried to prevent shrinkage, substantially as set forth.

2. In a device for increasing the luster of silk, the combination of a frame, a series of horizontal rods suitably connected and depending from said frame, said rods being adapted to hold skeins of silk stretched between each pair, flexible means connected to the lower portion of the frame, and to the lowest rod of each series for stretching the wet skeins and for preventing the contraction of the same while drying, and rotating means for holding the said flexible means, as set forth.

3. In a device for increasing the luster of silk after it is dyed, the combination of a frame, horizontal rods suitably connected and depending from said frame, said rods being adapted to hold skeins of wet silk stretched around each pair, flexible means connecting the lowest rod with a mechanism in the lower portion of the frame, and such a mechanism for stretching the wet skeins and for preventing the contraction thereof while drying, substantially as set forth.

705,717. SIEVE. ALBERT TIEDEMANN, Pforzenwalde, Germany. Filed June 10, 1901. Serial No. 64,602. (No model.)

Claim.—A sieve for sifting and analogous machines, consisting of a hot-pressed perforated sheet of vulcanized fiber, substantially as and for the purposes set forth.

705,718. GARBAGE-RECEPTACLE AND MEANS FOR HANDLING SAME. JOSEPHINE THIELE, St. Louis, Mo. Filed Feb. 20, 1902. Serial No. 94,868. (No model.)

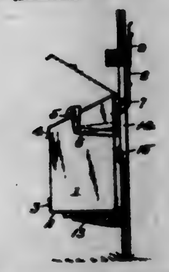

Claim.—1. The combination of a receptacle having a hinge-cover and an offset shield extending backward and upward for covering the opening in the partition through which the receptacle is drawn, and means connected to said shield for raising said receptacle and at the same time locking the cover of the receptacle; substantially as described.

2. The combination of a receptacle having a hinge-bottom and a hinge-cover, a vertically-sliding handle, hooks for locking the hinge-cover and connected to said handle, and a derrick mounted on a suitable wagon provided with means for lifting said receptacle by said sliding handle and moving said receptacle to a position to discharge the contents thereof into the wagon; substantially as described.

3. The combination of a receptacle 1 provided with a hinge-bottom 2 and the hinge-cover 4 having hooks 6 mounted on the sides, a vertically-sliding handle 9 secured to operate said hooks 6 and cause them to lock the hinge-cover 4 in its closed position when the handle 9 is raised; substantially as described.

705,719. TRACE-FASTENER. WILLIAM H. TRESCOTT, Marinette, Wis., assignor of one-half to Joseph B. Reynolds, Marinette, Wis. Filed Feb. 25, 1902. Serial No. 95,501. (No model.)

Claim.—1. A trace-fastener having a transverse aperture for the reception of a trace, and a pivoted lever mounted within the aperture with its pivotal point adjacent to one wall thereof and having a stud extending toward and terminating short of the opposite wall of the aperture to engage a perforation in a trace, and also having an arm extending rearwardly from the stud to bear laterally against a trace engaged by the stud and force it into frictional contact with the wall of the aperture.

2. A trace-fastener having a transverse aperture for the reception of a trace, and a lever pivoted for swinging movement within said aperture with its pivotal point adjacent to one wall of the aperture, said lever having a stud extending toward and terminating short of the opposite wall of the aperture to engage a perforation in a trace, and also having an arm extending rearwardly from the stud and projecting beyond the aperture to bear laterally against a trace in rear of the rear edge of the aperture-wall to hold the trace laterally in rear of the aperture.

3. A trace-fastener having an aperture for the reception of a trace, and a lever pivoted for swinging movement within the aperture with its pivotal point adjacent to the inner wall of the aperture and having an outwardly-extending stud swinging out of contact with the outer wall of the aperture to engage an opening in a trace and having an arm extending diagonally rearward and outward from the stud to bear terminally against a trace in rear of said outer wall of the aperture to deflect a trace laterally in rear of the rear edge of said wall.

4. In a trace-fastener, the combination with a whiffletree, of sockets upon its extremities with transverse apertures therethrough, levers pivotally supported in said apertures, and with studs upon their outer free ends, springs disposed to yieldably retain said lever projected or withdrawn, bearing-surfaces projecting from said levers and extending in the rear of said sockets and inclined outwardly and rearwardly, and traces having opened perforations and adapted to pass through said apertures with one of its perforations engaged by said stud, and with the rear end of said bearing-surface engaging the trace in the rear of the socket, substantially as described.

705,720. MACHINE FOR REPAIRING SAWS. WILLIAM TRAVIS, Ludington, Mich., assignee of two-thirds to Alvah J. Carson, Kalamazoo, Mich. Filed Nov. 6, 1901. Serial No. 81,589. (No model.)

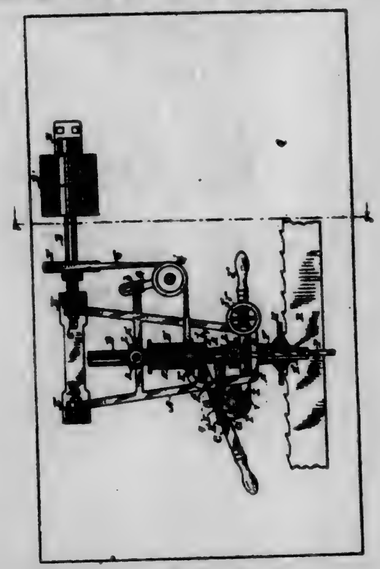

Claim.—1. In a machine of the class described, the combination of a table Q; a driving-shaft D supported in suitable bearings thereon; a frame A supported on trunnions in line with the said shaft D; a shaft B at right angles to the said trunnions and supported in suitable bearings on the frame A and adapted to reciprocate in said bearings; an elongated pulley B' on the said shaft; a driving-belt G'' from the driving-pulley F on the driving-shaft to said pulley B'; a shipper-lever connected to said shaft by a suitable collar B'' to reciprocate the same; an adjustable screw-stop J' in the frame A for regulating the height of the frame; a rock-shaft N' supported in suitable bearings above the shaft B; brackets on the shaft with adjustable slides thereon; a bar P carried by the said adjustable slides and extending forwardly and provided with a clamp to retain a strip of steel to form a patch for a saw, counting for the purpose specified.

2. In a machine of the class described, the combination of a table Q; a driving-shaft D supported in suitable bearings thereon; a frame A supported on trunnions in line with the said shaft D; a shaft B at right angles to the said trunnions and supported in suitable bearings on the frame A and adapted to reciprocate in said bearings; an elongated pulley B' on the said shaft; a driving-belt G'' from the driving-pulley F on the driving-shaft to said pulley B'; a shipper-lever connected to said shaft by a suitable collar B'' to reciprocate the same; an adjustable screw-stop J' in the frame A for regulating the height of the frame, counting for the purpose specified.

3. In a saw-repairing machine, the combination of a vibrator frame with transverse bar supporting it; a shaft at right angles to the said transverse adapted to reciprocate back and forth in its bearings; a grinding-wheel on the end of said shaft and means for controlling the elevation of the same whereby a curved cut can be cut in the side of the saw, as specified.

4. In a saw-repairing device, the combination with the grinding-wheel; a frame supported on a rock-shaft in line with the shaft of said grinding-wheel; a clamp for supporting a strip of steel on said frame whereby the same can be swung back and forth and be ground in the saw of the chain in said grinding-wheel, for the purpose specified.

705,721. APPARATUS FOR CASTING INGOTS IN CUTTING-OFF LEAD LININGS. JAMES S. THOMS, Worcester, Mass. Filed Apr. 23, 1902. Serial No. 104,703. (No model.)

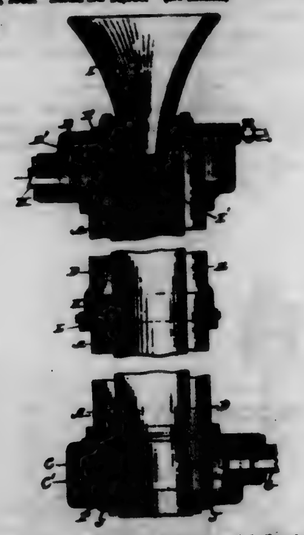

Claim.—1. The combination of jacket A, and hollow heads B, C, the latter fastened to the ends of said jacket and having supply and discharge pipes, also having opposite openings to receive and hold the ends of the ingot-mold D, with said ingot-mold, the latter held rigid at the upper end in head B, fitted loose at its lower end in head C, and whose inner surface is polished straight and smooth, and the funnel I, said funnel having the downward extension I' into the ingot-mold, and fastened to head B, substantially as and for the purpose set forth.

2. The jacket A and hollow heads B, C, the latter fastened to the ends of said jacket and having supply and discharge pipes, also having opposite openings to receive and hold the ends of the ingot-mold D, the latter being held rigid in the upper end in head B, fitted loose at its lower end in head C, and whose inner surface is polished straight and smooth, and the funnel I, said funnel having the downward extension I' into the ingot-mold, and fastened to head B, in combination with means for supporting the molten metal in the ingot-mold until properly cooled to draw, for conducting it to the rolls of the rolling-mill, and said rolls; said means for supporting and conducting the metal comprising the vertically-operating plates M, connecting-rod N and head O, substantially as and for the purpose set forth.

705,722. VEHICLE. LOUIS S. THOMAS, Tonawanda, N. Y. Filed Mar. 14, 1902. Serial No. 98,210. (No model.)

Claim.—1. In a vehicle of the class described, the combination of a vehicle-body, a single supporting-axle for said body, a pair of shafts, supporting devices for the vehicle-body disposed one in front and one in rear of the vehicle-body directly connecting the shafts and vehicle-body and constituting the sole connection of the shafts with the vehicle, the supporting devices in front of the vehicle-body comprising a transverse spring having an upward-bowed central portion, the ends of the spring being carried to the line of the shafts and turned at substantially right angles to the transverse spring and lengthwise of the shafts and connected directly thereto, the supporting devices at the rear of the vehicle-body comprising a bracket having an adjustable connection with ends of the shafts.

2. In a vehicle of the class described, the combination of a vehicle-body, a single supporting-axle for said body, a pair of shafts, supporting devices for the vehicle-body disposed one in front and one in rear of the vehicle-body directly connecting the shafts and vehicle-body and constituting the sole connection of the shafts with the vehicle, the supporting devices in front of the vehicle-body comprising a transverse spring having an upward-bowed central portion, the ends of the spring being carried to the line of the shafts and turned at substantially right angles to the transverse spring and lengthwise of the shafts and connected directly thereto, the supporting devices at the rear of the vehicle-body comprising corner-irons having a closed socket-piece to receive the ends of the shafts.

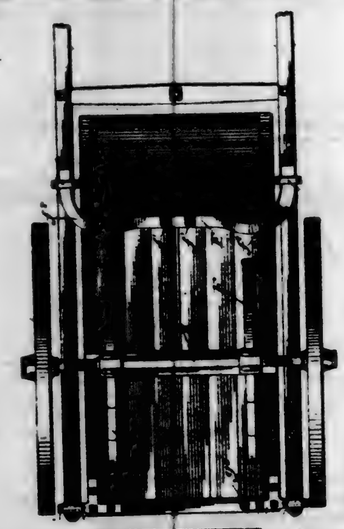

705,723. PROCESS OF VARNISHING. GUSTAV THIELE, Odessa, Russia. Filed Dec. 16, 1901. Serial No. 86,066. (No specimens.)

Claim.—The process of varnishing or coating surfaces which consists in applying to the same in a heated condition a varnish composed of one thousand grams of white lead, fifteen hundred grams of water, one to two grams of yellow oxalin, and one hundred and twenty-five grams of stick Russian glue, substantially as described.

705,724. PIPE HOLDER OR CLUTCH. DELEVAN P. UPDIKE, Jonesville, Fla. Filed May 9, 1902. Serial No. 106,662. (No model.)

Claim.—1. In an implement of the character described, an inclosing shell having longitudinal apertures, a cylinder revolubly mounted in said shell and having longitudinally-disposed cam-surfaces, and grip-bars extending through said apertures and in operative engagement with said cam-surfaces, and means for revolving said cam-cylinder within said shell, substantially as set forth.

2. In an implement of the character described, an inclosing shell having longitudinal apertures, a cylinder revolubly mounted within said shell and having tangentially-disposed exterior surfaces, grip-bars extending through said apertures and in operative engagement with said tangential surfaces, and means for revolving said cylinder within said shell, substantially as set forth.

3. In an implement of the class described, an inclosing shell having longitudinal apertures, a cylinder within said shell having longitudinally-

disposed cam-surfaces, caps engaging the ends of said cylinder within said shell, grip-bars extending through said apertures and in operative engagement with said cam-surfaces, and means for revolving said cylinder and caps within said shell, substantially as set forth.

4. In an implement of the character described, an inclosing shell having longitudinal apertures, a cylinder within said shell and having longitudinally-disposed exterior cam-surfaces, caps engaging the ends of said cylinder and the interior of said shell and adapted to support the cylinder within said shell, slots within said caps and paralleling said cam-surfaces, grip-bars extending through said apertures in said shell and in operative engagement with said cam-surfaces and with studs engaging said slots, and means for revolving said cylinder and caps, substantially as set forth.

5. In an implement of the character described, an inclosing shell having longitudinal apertures and with a sleeve extending centrally from one end, a cylinder inclosed by said shell and with longitudinally-disposed exterior cam-surfaces and with a stud engaging said sleeve, an operating-handle upon said stud outside of said sleeve, and grip-bars extending through said apertures and in operative engagement with said cam-surfaces, substantially as set forth.

705,725. CORSET-COVER. JOHN M. VAN ORDEN, Newark, N. J. Filed May 14, 1902. Serial No. 107,304. (No model.)

Claim.—1. A corset-cover composed of an upper section having forwardly-extending flaps that are adapted to be connected over the bust, and of a lower section having rearwardly-extending flaps that are adapted to be connected at the bust, substantially as specified.

2. A corset-cover composed of an upper section having forwardly-extending flaps adapted to be interconnected over the bust, a lower section having rearwardly-extending flaps, means for adjustably connecting said rearwardly-extending flaps at the bust, and means for connecting the upper section with the lower section, substantially as specified.

705,726. FILTER-BED. JAMES C. WALLACE, Colorado City, Colo. Filed May 5, 1902. Serial No. 105,977. (No model.)

Claim.—1. In a filter-bed a lead filter sheet, blanket or sieve formed in a series of corrugations with the crowns of each corrugated arch inverted or dipping downward and having a number of small drain-holes perforated through the lower area of said corrugations.

2. In a filter-bed a series of metal lead-covered strips or bars bent or formed into lateral corrugations adapted to receive and support a filter sheet or blanket superimposed thereon.

3. In a filter-bed a series of metal lead-covered binding strips or bars having lateral corrugations adapted to fit over and upon a filter sheet or blanket, and having a portion of the under surface of each end channeled or recessed laterally to receive a perpendicularly-placed bar.

4. In a filter-bed a side binding strip or bar, having bridges at intervals and recessed thereunder to receive the ends of transverse bars.

5. In a filter-bed the combination of a corrugated filter sheet or blanket having numerous perforations through the lower area of said corrugations; a series of transverse supporting-bars formed to fit under and receive the corrugated contour of said filter-sheet; a series of superimposed binding-strips or bars with transverse corrugations and slotted ends; two longitudinal side binding-strips or bars; and bolts adapted to holding the several members together and in place within a filter barrel or tank.

705,727. METHOD OF TREATING METALLIC OXIDS IN THE PRODUCTION OF METALS AND ALLOYS. FREDERIC C. WEBER, Chicago, Ill. Filed Apr. 14, 1901. Serial No. 55,503. (No specimens.)

Claim.—1. The method of treating metallic oxids with aluminium in the production of metals, metalloids and alloys and their compounds, which consists in subjecting the entire charge, comprising aluminium in admixture with a metallic oxid reducible by aluminium, to a drying and preparatory treatment by heat, whereby the charge is brought into a condition for reaction by eliminating all the moisture, rendering the charge wholly anhydrous, and thereafter subjecting the mixture to a temperature sufficient to effect reaction, substantially as described.

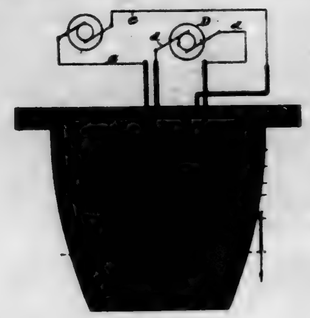

2. The method of treating metallic oxids with aluminium in the production of metals and alloys which consists in placing the to-be-treated charge, comprising aluminium in admixture with a metallic oxid reducible by aluminium, in a crucible, subjecting the same therein to a drying and preparatory treatment by electric heat at the time the reaction is to be undergone, for the preparatory treatment to eliminate moisture, break up the molecules containing water of crystallization and drive off the water of crystallization and bring the charge into a condition for reaction, then raising the temperature to a degree sufficient to effect reaction and adding to the intensity of the reaction temperature the temperature of the preparatory heating, thereby increasing the effective heat by the added calorie of the preparatory treatment, substantially as described.

3. The method of treating metallic oxids with aluminium in the production of metals and alloys which consists in placing a charge, comprising aluminium in admixture with coarsely-powdered metallic oxid reducible by aluminium, in a crucible, subjecting the charge in the crucible to a drying and preparatory treatment by electric heat for the preparatory treatment to eliminate the moisture, break up the molecules containing water of crystallization and drive off the water of crystallization and bring the charge into a condition for reaction and then igniting the charge by electric heat to cause reaction and have the intensity of the reaction heat increased by the added calorie of the preparatory treatment, substantially as described.

4. The method of treating metallic oxids with aluminium in the production of metals and alloys which consists in placing the to-be-treated charge, comprising aluminium in admixture with a metallic oxid reducible by aluminium, in a crucible, subjecting the charge therein to an electric heat and a preparatory treatment for drying the oxid, breaking up the molecules containing water of crystallization, driving off the water of crystallization, eliminating all moisture and bringing the charge into a condition for reaction and then igniting the charge by electric heat and increasing the intensity of the heat by the added calorie of the preparatory heat giving an increased heat for the production of chemical compounds, substantially as described.

5. The method of treating metallic oxids with aluminium in the production of metals and alloys and their compounds which consists in placing a quantity of finely-powdered oxid reducible by aluminium in the bottom of a crucible with a small coil of aluminium wire and passing an electric current through the wire of sufficient intensity to melt the aluminium wire and produce a reaction with the finely-powdered oxid, substantially as described.

6. The method of treating metallic oxids with aluminium in the production of metals and alloys which consists in placing a charge of finely-powdered oxid reducible by aluminium in the bottom of a crucible with a small coil of aluminium wire, placing the to-be-treated charge, comprising aluminium in admixture with a metallic oxid reducible by aluminium, around an upper coil or helix of aluminium wire, passing an electric current through the upper coil or helix of aluminium wire to dry and raise the temperature of the charge and add additional calorie to the heat of the reaction and then passing an electric current through the lower coil of sufficient intensity to melt the coil and produce a reaction with the finely-powdered oxid for such reaction to transmit reaction to the dried and prepared charge which is to be reduced, substantially as described.

705,728. MANUFACTURE OF BITUMINOUS PAVING. WALTER S. WILKINSON, Baltimore, Md. Filed Dec. 31, 1901. Serial No. 87,260. (No specimens.)

Claim.—1. That improvement in the manufacture of bituminous paving or pavement mixtures or compositions which consists in first producing a fluxe-impregnated cement by mixing bituminous cement and fluxe; dry-mixing by agitating the remaining body material, and then, while the latter is in agitation, mixing therewith said fluxe-impregnated cement.

2. That improvement in the manufacture of bituminous paving or pavement mixtures or composition which consists in impregnating the bituminous cement with as much of the fluxe as may be added thereto while still preserving the necessary liquidity of the cement, agitating the remaining body material, and, while the latter is in agitation, mixing therewith said fluxe-impregnated cement.

3. That improvement in the manufacture of bituminous pavements which consists in producing a fluxe-impregnated cement consisting of bituminous cement fluxed with fluxe, agitating the remaining body material, and, while in agitation, mixing therewith the fluxe-impregnated cement, subjecting the resultant mixture to heavy compression in a mold and subjecting the compressed body to the action of a cooling agent, to set it to preserve its shape.

705,729. STOCK-GUARD FOR RAILROADS. GEORGE A. WILLIAMS and JAMES O. MCCALL, Dougherty, Ind. Ter. Filed Oct. 9, 1901. Serial No. 78,057. (No model.)

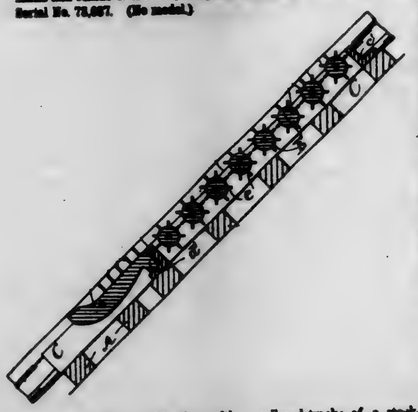

Claim.—1. The combination with a railroad-track; of a stock-guard, comprising frames, spiked plates pivoted in said frames, and spiked, revolvable rollers mounted in said frames, and all adapted to be laid in and by said railroad-track; all substantially as and for the purpose set forth.

2. In a stock-guard for railroads, the combination with frames, adapted to be laid in and by a railroad-track; of plates pivoted in said frames, and a plurality of revolvable rollers mounted in said frames; all substantially as and for the purpose set forth.

3. In a stock-guard for railroads, the combination with supporting-frames, adapted to be laid in and by a railroad-track; of plates having on their surfaces a plurality of spikes, and pivoted in said frames and a plurality of revolvable rollers, having each on its surface a plurality of spikes, and mounted in said frames; all substantially as and for the purpose set forth.

4. In a stock-guard for railroads, the combination, with supporting-frames, adapted to be laid in and by a railroad-track; of spiked plates in said frames; said plates connected to the frames by pivots in front of their centers of gravity so that the weight of said plates will hold them in normal position; and a plurality of spiked rollers also mounted in said frames, all substantially as and for the purpose set forth.

705,730. BALANCED SLIDE-VALVE. JOHN T. WILSON, Jersey Shore, Pa. Filed July 13, 1901. Serial No. 66,195. (No model.)

Claim.—1. The combination with a steam-chest having a ported seat, sides, and a cover; of a valve; and a balancing-plate; said valve adapted to reciprocate between the valve-seat and the lower surface of the balancing-plate; and said balancing-plate having an area or areas closed to the admission of motive fluid and adapted to move vertically and also to have a slight rocking motion so as to automatically take up the wear of the frictional surfaces.

2. The combination within a steam-chest, of a ported valve-seat; a reciprocating valve; and a balancing-plate; said balancing-plate being located between the valve and the steam-chest cover and provided with a permanent inclosed balancing area and with an inclosed area to which motive fluid is alternately admitted and exhausted by the valve at different portions of its travel.

3. The combination within a steam-chest, of a ported valve-seat; a reciprocating valve; and a balancing-plate located between the valve and the steam-chest cover, said balancing-plate being provided at its back with a permanent inclosed balancing space and also with two inclosed areas at opposite sides of the plate and to which motive fluid is admitted and exhausted.

4. The combination within a steam-chest, of a ported valve-seat; a reciprocating valve; and a balancing-plate; said balancing-plate being adapted to permanently hold the valve to its seat, and having two inclosed areas in line with the ports and to which areas motive fluid is alternately admitted and exhausted.

5. The combination within a steam-chest, of a ported valve-seat; a movable valve; a balancing-plate; and means for permanently balancing the valve; said balancing-plate having two inclosed areas, and the parts being so arranged that when motive fluid is admitted to a port it is simultaneously admitted to an inclosed area and when motive fluid is exhausted from the port it is simultaneously exhausted from the inclosed area.

6. The combination within a steam-chest, of a ported valve-seat; a movable valve; a balancing-plate; and means for permanently balancing the valve; said balancing-plate having inclosed areas at its back communicating with the live steam and exhaust, and said valve being slotted; whereby the valve is balanced at all points of its travel and a double admission and double exhaust is secured.

7. The combination within a steam-chest, of a ported seat; a movable valve; a balancing-plate; adapted to hold the valve between the balancing-plate and seat to form steam-tight joints; and inclosed areas or an inclosed area in communication with the ports or a port at all portions of the valve's travel.

8. The combination in a steam-chest, of a ported seat; a movable valve; a balancing-plate; adapted to hold the valve between the balancing-plate and seat to form a steam-tight joint; and a plurality of inclosed areas at the back of the plate; the said valve-seat being raised and the under surface of the balancing-plate being formed with a downwardly-extending portion corresponding to the valve-seat.

9. The combination within a steam-chest, of a ported valve-seat; a movable valve; a balancing-plate having inclosed areas; and means for effecting a permanent balance of the valve; the said plate being retained by lugs which prevent the lateral or longitudinal movement of the same.

10. The combination within a steam-chest of a seat; a valve; and a balancing-plate, constructed and operated substantially as set forth; the said balancing-plate having inclosed areas and pockets corresponding to the ports, and openings from the pockets to the inclosed areas.

11. The combination within a steam-chest, of a ported seat; a movable valve; and a balancing-plate located beneath the steam-chest cover; means for effecting a permanent balance of the valve; and means for counterbalancing the valve when subjected to upward pressure by the motive fluid within the ports.

12. The combination within a steam-chest, of a ported seat; a movable valve; a balancing-plate; adapted to effect a permanent pressure upon the valve; and means for balancing opposite edges of the plate when said edges become unbalanced.

705,731. MEANS FOR KEEPING MOVING OBJECTS IN HORIZONTAL POSITIONS. HARDEN ACH, Göttingen, Germany. Filed Feb. 13, 1902. Serial No. 94,701. (No model.)

Claim.—1. In an apparatus for maintaining movable objects in a horizontal plane, the combination with such object, of a support to which the object is pivotally connected, cylinders rigidly connected to said support, pistons in said cylinders connected to said object on opposite sides of its pivot, valves for controlling admission of fluid-pressure to the cylinders, and means actuated by the movement of said object for controlling the said valves, substantially as set forth.

2. In an apparatus for maintaining movable objects in a horizontal plane, the combination with such object, of a support to which the object is pivotally connected, cylinders rigidly connected to said support, pistons in said cylinders connected to said object on opposite sides of its pivot, valves for controlling the admission of fluid-pressure to said cylinders, devices adapted to be electrically controlled for actuating the valves, and circuit-closing devices operated by the movement of said object for controlling the currents of electricity for said actuating devices, substantially as set forth.

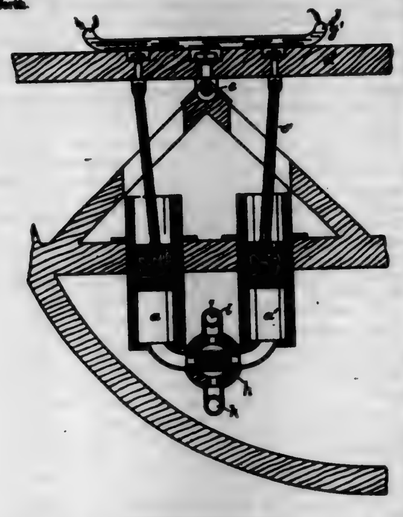

705,732. RETAINING-WALL. FRANK A. BOSE, Lebanon, Ohio. Filed Apr. 21, 1902. Serial No. 103,893. (No model.)

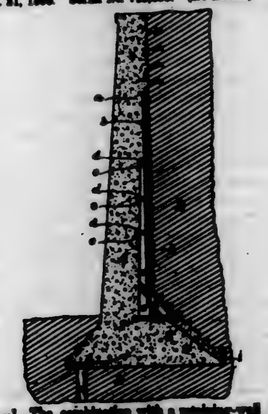

Claim.—1. The combination with a retaining-wall having a heel, of a metal structure embedded vertically in said wall and obliquely in said heel, so that the weight of the retained material upon the heel of the metal structure will operate to retain the wall in vertical position.

2. In retaining-walls the combination with a wall of masonry, a series of tapering upright bents or members of metal braces embedded within the interior of said masonry at the back part, only, of the vertical portion and continuing down along the upper part of the heel of said wall to the back part thereof, substantially as and for the purposes set forth.

3. The combination with a retaining-wall having an inclined heel, of a metal structure embedded within said wall and heel, consisting of upright bents at the back part of the vertical wall and continuing down along the upper part of the heel of said wall to the back part thereof, in such a manner that the weight of the retained material upon the heel of the metal structure will operate to maintain the wall in vertical position.

4. A retaining-wall having a heel (strengthened by metal within and connected with braces in the wall by suitable brace-rods extending in the rear of the heel, upon which the retained material rests and acts by gravity to keep said wall in its normal position, substantially as described.

5. The combination with a retaining-wall having a heel, of a metal structure embedded within said wall and heel, consisting of upright bents at the back part of the vertical wall and continuing down along the upper part of the heel of said wall to the back part thereof in an inclined direction, whereby the weight of the retained material upon the heel of the metal structure will operate to maintain the wall in a vertical position, as set forth.

6. In a retaining-wall, a series of tapering bents embedded in said wall composed of the upright member *a*, base *g* and tie-brace *f* in combination with the masonry substantially as described.

7. In a retaining-wall, a series of bents of metal in the back part of said wall extending down along the upper part of the heel, and a series of strengthening-rods *k* provided with enlarged ends and embedded in the lower part of the toe of said wall, in combination with the masonry of said wall, substantially as described.

8. In retaining-walls a series of bents composed of the tapering upright member *a* having flanges *b*, the tie-brace *f* and base-brackets *g* in combination with the masonry, substantially as and for the purpose set forth.

9. In retaining-walls, a series of upright bents tapering in size and strength from the base to the top, angle-rods *i* and braces *f* between said rods and said bents, in combination with the masonry, substantially as described and for the purpose set forth.

10. In a retaining-wall, the combination with the masonry thereof, of upright bents having their lower ends suitably anchored and braced, and provided with suitable angle-plates and brackets, said angle-plates and brackets being adapted to be so held in said masonry that any vertical or lateral slipping or movement of said plates or brackets independent of the movement of the upright bents and the wall will be prevented.

11. In retaining-walls the anchor-bars *d* attached to the bracket *c* in combination with the upright member *a* and wall A substantially as and for the purposes set forth.

12. In a retaining-wall, the beam *i* attached to the brace *f* in combination with the masonry A, substantially as and for the purpose set forth.

13. In a retaining-wall the combination of the metal framework consisting of the longitudinal bars *a* and *i* and a series of tapering upright bents and braces between said bents and the bars *i*, with a wall of masonry inclosing said framework substantially as and for the purposes set forth.

14. In retaining-walls, the brackets A attached to the brace *f* in combination with the masonry A for the purpose set forth.

15. In a retaining-wall, the base *g* in combination with the upright member *a*, tie *f* and masonry A, substantially as described.

16. The combination with a retaining-wall having a heel and a toe at opposite sides thereof, said toe having an independent metal structure embedded therein, of a metal structure embedded within said wall and heel, said structure consisting of upright bents at the back part of the vertical wall and continuing down along the upper part of the heel of said wall to the back part thereof, so that the weight of the retained material upon the heel of the metal structure will operate to maintain the wall in a vertical position.

17. The combination with a retaining-wall having an inclined heel and a toe at opposite sides thereof, of a metal structure embedded within said wall and heel, said structure consisting of upright bents at the back part of the vertical wall and continuing down along the upper part of the heel of said wall to the back part thereof, whereby by reason of the toe and the heel the weight of the retained material upon the heel of the metal structure will operate to maintain the wall in a vertical position.

705,733. YARN-SPINNING APPARATUS. JOHN BOOTH, Central Falls, R. I. Filed Jan. 28, 1902. Serial No. 91,847. (No model.)

Claim.—1. A spinning-ring, a fixed support upon which the ring is directly mounted, and connecting means for said parts having provisions for permitting free limited edgewise or horizontal movements of the ring and for preventing its rotation.

2. A spinning-ring, a fixed support upon which the ring is directly mounted, and connecting means for said parts having provisions for permitting free limited horizontal and limited vertical movements of the ring, and for preventing its rotation.

3. A spinning-ring support having a substantially horizontal ring-

cent, a ring resting directly and loosely thereon, and connecting means for said parts having provisions for permitting a free limited movement of the ring in any direction parallel with said seat, and for preventing rotation of the ring.

4. A spinning-ring support having a substantially horizontal ring-seat, a ring resting directly and loosely thereon, and connecting means for said parts having provisions for permitting a free limited movement of the ring in any direction parallel with said seat, and a free limited movement toward and from the seat, and for preventing rotation of the ring.

5. A spinning-ring support having a substantially horizontal ring-seat, a ring resting directly and loosely thereon, and couplings loosely engaged with the support and ring whereby the ring is permitted to have free limited horizontal and free limited vertical movements and is prevented from rotating.

705,784. MAGAZINE PLATE-HOLDER. ARTHUR A. BROWN and GEORGE A. WATSON, Liverpool, England. Filed Apr. 24, 1901. Serial No. 57,377. (No model.)

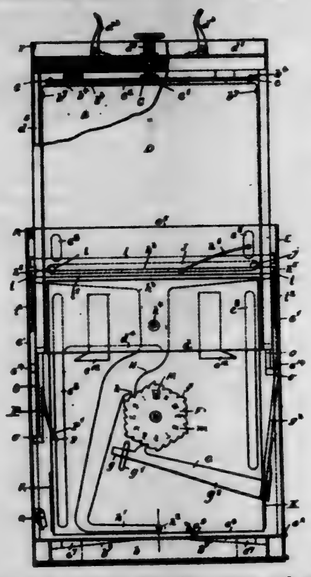

Claim.—1. In a magazine plate-holder, an exposure-frame consisting of a casing, a hollow slide therein adapted to contain sensitized films or plates, said casing having an exposure-aperture in the front side thereof, means for exposing a film at said aperture, and means for restoring said film to the interior of the hollow slide when the slide is withdrawn and pushed back.

2. In a magazine plate-holder, an exposure-frame consisting of a casing having an exposure-aperture, a hollow slide therein adapted to contain sensitized films or plates, means for extracting a film from the slide on its withdrawal, and means for pressing said film against the exposure-aperture upon its return movement.

3. In a magazine plate-holder, an exposure-frame consisting of a casing having an exposure-aperture, a hollow slide therein adapted to contain sensitized films or plates, means for extracting a film from the slide upon its withdrawal, means for pressing said film against the exposure-aperture upon its return movement, and means for reinserting the film in the slide upon its second withdrawal and return movement.

4. In a magazine plate-holder, an exposure-frame consisting of a casing having an exposure-aperture, a hollow slide therein adapted to contain sensitized films, means for withdrawing a film at the back of the slide upon the withdrawal thereof, means for pressing the film against the exposure-aperture upon the reinsertion of the slide in the casing, and means for pressing the upper edge of the film inwardly upon the second withdrawal of the slide, so that upon its second return movement the exposed film reënters the hollow slide at the front.

5. In a magazine plate-holder, a combined exposure-frame and change-box, consisting of a casing, a hollow slide therein, a film-case having an open end, a cover adapted to close said open end, means upon the hollow slide for drawing the film-case into the casing, and means for detaining the cover in the external casing and thereby stripping it from the film-case when the latter is drawn into the hollow slide

6. In a magazine plate-holder, a combined exposure-frame and change-box consisting of a casing, a hollow slide therein, a film-case closed at the top and sides and adapted to hold a number of sensitized films or plates, a cover adapted to close the open end of the film-case, a screw detachably connected to the top end of the film-case, a nut revolubly fixed to the top of the hollow slide and adapted to engage the said screw, and stops upon said casing adapted to detain the said cover when the film-case is drawn into the hollow slide.

7. In a magazine plate-holder, the combination with an outer casing and a hollow slide therein open at the bottom, of a film-case closed at the top and sides and adapted to hold sensitized films, perforated lugs attached to the top of the film-case, a bar adapted to engage in the perforations of said lugs, a screw fixed to the said bar and a spring adapted to hold said screw in the plane of the film-case, and a nut revolubly fixed to the top of the hollow slide and adapted to engage with the said screw.

8. A combined exposure frame and change-box for photographic cameras consisting of a casing, a hollow slide therein open at the bottom, a film-case fitting into the said hollow slide, a cover for the film-case, means upon said casing for detaining the cover in the casing, means for drawing the film-case into the hollow slide so as to strip off the cover, means operated by the withdrawal and reinsertion of the hollow slide for withdrawing a film from the case, pressing it against the exposure-aperture, returning it again to the film-case, and means for pushing the film-case back into its cover and releasing it from the hollow slide.

9. A combination exposure-frame and change-box for a camera, consisting of a casing having an exposure-aperture, a hollow slide therein open at the bottom, a film-case fitting into the said hollow slide, a cover for the film-case, means upon the casing for detaining the cover in said casing, means for drawing the film-case into the hollow slide so as to strip off the cover therefrom, means for withdrawing a film from the film-case upon the withdrawal of the hollow slide, means for pressing a film against the exposure aperture upon the reinsertion of the slide, means for causing a film to reënter the film-case upon the second withdrawal and reinsertion of the slide, and means for pushing the film-case again into its cover and releasing it from the slide.

10. A combined exposure-frame and change-box for a camera, consisting of a casing having an exposure-aperture, a hollow slide therein open at the bottom, a film-case adapted to contain sensitized films or plates and fitting into said hollow slide, a lever attached to the casing having a springing stud adapted to enter non-central holes in the films, and means operated by the withdrawal and reinsertion of the slide whereby said lever is moved so that said stud alternately engages with one of the non-central holes and is disengaged therefrom at each insertion of the slide.

11. A combined exposure-frame and change-box for a camera consisting of a casing, a hollow slide therein open at the bottom, a film-case having an unattached cover and adapted to contain sensitized films and fitting into said hollow slide, a cover for the film-case, means for drawing the film-case into the slide and stripping off its cover, a lever fulcrumed on said casing and having a springing stud adapted to enter a non-central hole in the sensitized films contained in the film-case, mechanism operated by the drawing out and pushing in of the said hollow slide and adapted to actuate said lever so as to move it at each alternate inpush of the slide into a position in which the stud can engage the hole of one of the films and hold it while the slide is drawn out, while by the intermediate inpush the lever is moved so that the stud will not engage a film, a spring-pressed cross-bar mounted on a pivot and having a projecting flange adapted to push inwardly the top of the film, a two-armed extension on said lever above the fulcrum, with notched ends adapted by the movement of the lever to arrest said cross-bar when the slide is drawn out for the extraction of a film from the case and to liberate said cross-bar when the slide is drawn out to return the film to the case after exposure.

12. A combined exposure-frame and change-box for a camera, consisting of a casing having an exposure-aperture, a hollow slide therein open at the bottom, a film-case adapted to contain sensitized films or plates and fitting into said hollow slide, a projecting cover for the film-case, stops to hold the cover in the casing so as to strip it from the film-case when the latter is drawn into the hollow slide, means for drawing the film-case into the hollow slide, a lever attached to the casing having a springing stud adapted to enter non-central holes in the films, means operated by the withdrawal and reinsertion of the slide, whereby said lever is moved so that the stud engages one of the non-central holes at each alternate inpush of the slide, and means consisting of resilient projections upon the inside of the film-case adapted to engage corresponding notches in the films, so as to prevent more than one film from being detached and withdrawn from the case at one time.

13. An exposure-frame for photographic cameras having a hollow slide therein adapted to hold sensitized films, mechanism actuated by the said slide in sliding in and out for withdrawing the films from the slide and guiding them in again one by one before and after exposure, guide-bars adapted to slide in pockets formed in the said slide and having projections at their ends adapted to slide in grooves of the exposure-frame, substantially as described.

14. In a magazine plate-holder, a combined exposure-frame and change-box consisting of a casing having an exposure-aperture adapted to receive a sensitized film, and a hollow slide in the casing open at its bottom side and having a revolubly-fixed nut upon its top side, a film-case having an open bottom adapted to contain a number of sensitized films and to fit inside said slide and having a detachably-connected screwed stud upon its top side adapted to engage with said revolubly-fixed nut, and a light-proof cap with prominent edges to fit over its open bottom before it is pushed home in the slide, stops in the bottom of the casing adapted to bear against the prominent edges of the cap, a sliding plate in the casing above said stops, a light-proof door in the bottom of the casing adapted to cover the film-case and cap, a transverse bar hinged to the casing near the upper end and having a flange adapted to press inwardly the top edge of the film, mechanism operated by the sliding in and out of the said slide consisting of a lever pivoted to the casing and having a springing stud adapted to enter non-central holes in the bottom edges of the films, an extension upon the lever above the fulcrum with notched ends adapted to support and free said hinged transverse bar, a revolubly-fixed polygonal toothed cam, a pawl carried by a depending springing bar arranged in the path of the slide to engage the teeth of the cam and turn it, and a nose upon the lever acting as a pawl to engage the cam-teeth, whereby the lever is moved step by step backward and forward by the polygonal face of the cam, so that upon alternate depressions of the slide the stud enters a film, and upon the intermediate withdrawal strokes of the slide the lever releases the transverse bar, which then presses in the top end of the film, and the following depression takes it into the film-case again, substantially as set forth.

15. In a magazine plate-holder, a combined exposure-frame and change-box, consisting of a casing having a hollow slide therein adapted to contain a number of sensitized films, a toothed cam-wheel rotatably mounted in the back of the casing, a pawl adapted to engage the toothed cam-wheel, a depending swinging strip fixed to one side of the casing in a groove therein and carrying a pawl and outwardly pressed into the path of the said slide so as to be operated thereby on its descent to turn the cam-wheel, a lever fulcrumed to the back of the casing above the cam-wheel and having an outwardly-projecting end carrying a springing stud upon its face adapted to engage the films, and lever having also a nose bearing against the toothed cam-wheel against which it is resiliently held, and a two-armed extension above its fulcrum, each arm of which terminates in a notched upturned end, a transverse rocking bar pivoted at its ends to the slide, and provided with an inwardly-projecting flange, and end fingers adapted to bear against and to be supported by the notched upturned ends of the lever extension, and a longitudinal spring fixed to the side of the casing above said transverse rocking bar and carrying studs at its ends which project through holes in the rocking bar and bear against the slide

16. An exposure-frame and change-box for a camera consisting of an internal casing having a rabbeted opening c^4 upon its front side adapted to receive a sensitized film for exposure, a closed hollow slide D sliding therein and having an open bottom d' and bearing a revolubly-fixed nut d^3 in its top side, a film-case B open at the bottom and adapted to contain sensitized films and to fit inside the hollow slide D and bearing a detachably-connected screwed stud f adapted to engage with the nut d^3, a cap b adapted to cover the open end of the said film-case and having overlapping edges b^2, a light-proof door c^2 covering the lower end of the exposure-frame, a cross-slide c^{11} in the lower part of the casing at a distance above said door c^2 to admit said cap b, stops c^7 upon the side of the casing adapted to engage the edges b^2 of the cap b and detain the cap in the outer compartment, plate-springs c^{10} adapted to press the film toward the exposure-aperture c^4, a toothed hexagonal cam-wheel F rotatably mounted in the back of the casing, a pendulous springing bar g^6 fixed by its upper end in a groove of the casing and in the path of the slide D and bearing at its lower end a pawl G engaging the teeth of the said cam-wheel, a lever H fulcrumed upon the back of the casing above the said cam-wheel and bearing a nose h which is pressed against the cam-wheel by the spring h^6, said lever H having also an outwardly-extending arm with a springing tip h' and an upstanding stud h^3 thereon, said lever H having further a two-armed extension h^2 above said fulcrum with notched upturned ends h^5, and a transverse bar I pivoted at its ends to the sides of the casing, and having fingers i adapted to rest upon the ends h^5 of the lever H and engage in the depressions therein, substantially as set forth.

17. In a combined exposure-frame and change-box adapted to contain a number of sensitized films or plates and expose them successively to the action of light, the combination of a casing, a hollow sliding member D therein adapted to contain the films or plates, means for withdrawing the films from the sliding member, and mechanism for preventing the withdrawal of the sliding member after all the films have been exposed, consisting of a bar O sliding in a longitudinal cavity in the slide D, a spring P fixed at one end upon the bar O and carrying at its other end a projection p which is normally held by the spring P at a distance from the bar O but is adapted to fold against the said bar O when the latter slides into the cavity within the slide D, and a stop p' adapted to engage said projection p so as to prevent the withdrawal of the slide D, whereby when a film is withdrawn from the slide D it will keep the projection p pressed inwardly and out of the way of the stop p', but when there is no film withdrawn from the slide D said projection p will engage the stop p' and prevent the withdrawal of the slide D.

18. In a combined exposure-frame and change-box adapted to hold a number of sensitized films or plates and expose them successively to the action of light, the combination of a casing, a hollow sliding member D therein adapted to contain the films or plates, means for withdrawing the films successively from the slide D, and mechanism for preventing the withdrawal of the sliding member after all the films have been exposed, consisting of a bar O sliding in a longitudinal cavity in the slide D, a spring P fixed at one end upon the bar O and carrying at its other end a projection p which is normally held by the spring P away from the bar O but is adapted to be folded against the bar O when the latter slides into the cavity within the slide D, a stop p' adapted to engage said projection p so as to prevent the withdrawal of the slide D, and a second stop Q carried by the casing below the stop p' to engage the projection p when the latter is drawn within the cavity of the slide D and pressed against the bar O, so as to insure the withdrawal of the said bar O from the cavity at the first outward movement of the slide D.

19. A film-case adapted for use in a combined exposure-frame and change-box consisting of a case open at the bottom and having resilient internal projections b^5 adapted to engage the edges of the films and prevent their withdrawal except individually.

20. A film-case adapted for use in a combined exposure-frame and change-box consisting of a case open at the bottom and having internal swellings b^6 adapted to press upon the first side of the films so as to leave a space between the uppermost film and the side of the case.

21. A film-case adapted for use in a combined exposure-frame and change-box consisting of a case open at the bottom and having a resilient internal projection b^5 adapted to engage the edges of the films and prevent them from being withdrawn except individually, and one or more internal swellings b^6 near the lower open end of the said case adapted to press upon the uppermost film so as to leave a space between it and the said case.

22. A film-case adapted for use in a combined exposure-frame and change-box consisting of a box having a lower open end covered by a light-proof cap and ears formed upon its upper end whereby it may be drawn into the exposure-frame.

705,785. UNCOUPLING DEVICE. HENRY BROWN, St. Louis, Mo. Filed Apr. 9, 1901. Serial No. 54,017. (No model.)

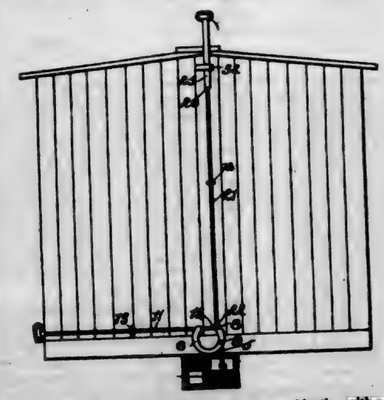

Claim.—1. In an uncoupling device, the combination with a rocker resting upon the draw-head and connected with the lock of an automatic coupler; of a substantially horizontal rod pivoted to and leading from the rocker loosely through an eye in the end of the car and laterally outward to a handle, an upright rod pivoted to and leading also from the rocker to a handle, an upright rod pivoted to and leading also from the rocker loosely through an eye in the end of the car and upward to a handle, and means for permitting vertical and lateral movements of the upper end of

this rod and for detachably holding it in elevated position, all substantially as described.

2. In an uncoupling device, the combination with a rocker connected with the lock of an automatic coupler; of a rod extending from the rocker loosely through an eye in the end of the car-body and having a handle at its upper end, the body of the rod just beneath said handle being enlarged so as to form a shoulder, and a plate carried by the car and having a keyhole-opening whose larger and smaller portions respectively loosely receive the larger and smaller portions of said rod, and a notch leading from the larger portion out through the edge of the plate, said notch standing oblique to a vertical line, substantially as described.

3. In an uncoupling device, the combination with a rocker resting upon the draw-head and connected with the lock of an automatic coupler; of a rod pivoted to and extending from the rocker loosely through an eye in the end of the car-body and having a handle at its upper end, the body of the rod just beneath said handle being enlarged so as to form a shoulder, and a plate carried by the car and having a keyhole-opening whose larger and smaller portions respectively loosely receive the larger and smaller portions of said rod, and a second rod pivoted to and leading from said rocker through an eye in the car-body located to that side of the upright rod and plate which is adjacent the smaller end of the opening in the latter, this second rod having a handle at its outer end, all substantially as described.

705,786. RIFLE. JOHN H. GAIL, Olivy, Cal., assignor of one-half to Thomas Harris, Olivy, Cal. Filed Oct. 3, 1901. Serial No. 77,635. (No model.)

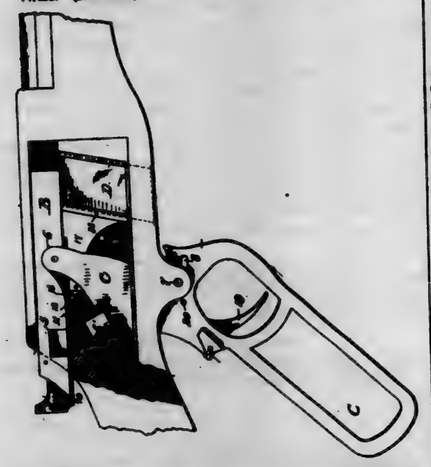

Claim.—1. The combination in a gun of a frame, a breech-bolt reciprocable therein, a piece rigid with the frame, a sear fulcrumed to the piece and having the form of a bell-crank lever the upper arm of which is substantially horizontal and has a point adapted to engage a cocking-piece, a horizontally-disposed spring above the upper arm of the sear and fixed to the frame, and adapted to bear upon the sear in front of its fulcrum-point, a spring-actuated firing-pin slidable in the breech-bolt, a cocking-piece fixed to the firing-pin and having an under surface provided with notches, to be engaged by the point of the sear, a fulcrumed guard-lever having its front end forked and connected to the outer sides of the breech-bolt, a trigger carried by the guard-lever, and a means carried by the lever adapted to lock the trigger when the guard-lever is open and to lock said lever to the frame when the lever is closed.

2. In a gun the combination with complementary firing mechanism including a firing-pin, sear and trigger, of a fulcrumed guard-lever carrying said trigger, and a pivoted lever also carried by the guard-lever and directly engaging the trigger and capable of locking the trigger against movement when the guard-lever is open, said second lever engaging the breech-frame and locking the guard-lever in place when said lever is closed.

3. In a gun, the combination of a frame, a breech-bolt slidable therein, a pivoted sear, a combined firing and locking piece, said cocking-piece connected in a slot in the breech-bolt and having notches in its under side to be engaged by said sear, a fulcrumed guard-lever formed of a single piece having its front forked to straddle the lower part of the breech-bolt so as to be connected to the outer sides of the breech-bolt, a trigger mounted in and carried by said guard-lever, and a trigger-safety consisting of a lever fulcrumed in and carried by the trigger-guard, having one arm to engage a notch in the trigger, when the guard-lever is open, to lock the trigger, and said safety provided with a second arm having a hook, said frame having a projection to be engaged by said hook when the guard-lever is closed.

4. In a gun, the combination of a frame, a reciprocable breech-bolt, a firing-pin, a sear fulcrumed below the firing-pin and adapted to engage the same, a guard-lever fulcrumed between its ends and having its front end connected to the breech-bolt, a trigger fulcrumed in and carried by the guard-lever and provided with a notch, and a safety-lever, spring-actuated and also carried by the guard-lever in rear of the trigger said safety-lever fulcrumed between its ends, having one end to engage the notch in the trigger and the other end provided with a hook, said frame having a projection engaged by the hook of the safety-lever when the guard-lever is closed.

5. In a gun, the combination with a frame, and a firing mechanism including a breech-bolt, firing-pin and trigger, of a guard-lever having its front end forked to embrace the breech-bolt and having locking-lugs located in rear of said front ends, said bolt having mortises for the front ends of the lever and also for the locking-lugs and said frame also having its walls provided with channels or grooves for the lugs.

705,787. WOODEN PANEL, LINING, CEILING, AND FLOOR FOR BUILDINGS, &c., AND PAVING FOR STREETS. WALTER T. CREESE, county of Middlesex, England. Filed Aug. 3, 1901. Serial No. 70,793. (No model.)

Claim.—1. Two sets of laths, the laths in one set having longitudinal dovetail grooves and the laths in the other set having transverse dovetail grooves, the dovetails on two adjacent laths of one set fitting into a dovetail groove of a lath of the other set.

2. Two sets of laths, the laths in each set arranged side by side and abutting against one another, the laths in one set having longitudinal dovetail grooves and the laths in the other set having transverse dovetail grooves, the dovetails on two adjacent laths of one set fitting into a dovetail groove of a lath of the other set.

3. Two sets of laths, the laths in each set arranged side by side, a tongue on one lath fitting into a groove on the adjacent lath, the laths in one set having longitudinal dovetail grooves and the laths in the other set having transverse dovetail grooves, the dovetails on two adjacent laths of one set fitting into a dovetail groove of a lath of the other set.

705,788. MACHINE FOR TRUING PISTON-RING BUSHINGS. ABRAHAM R. DAVIS, Topeka, Kans. Filed Mar. 24, 1902. Serial No. 99,782. (No model.)

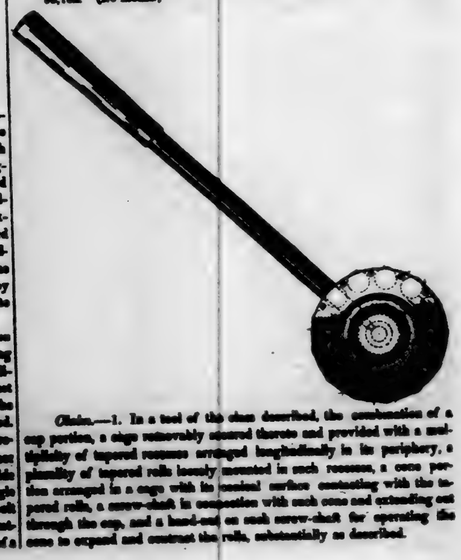

Claim.—1. In a tool of the class described, the combination of a cup portion, a cage removably secured thereto and provided with a multiplicity of tapered recesses arranged longitudinally in its periphery, a plurality of tapered rolls loosely mounted in such recesses, a cone portion arranged in a cage with its conical surface contacting with the tapered rolls, a screw-shaft in connection with such cone and extending out through the cup, and a hand-nut on such screw-shaft for operating the cone to expand and contract the rolls, substantially as described.

2. In a tool of the class described, the combination of a cup portion, a cage removably secured thereto and provided with a multiplicity of tapered recesses arranged longitudinally in its periphery, a plurality of tapered rolls loosely mounted in such recesses, a cone portion arranged in a cage with its conical surface contacting with the tapered rolls, a screw-shaft in connection with such cone and extending out through the cup, a hand-nut on such screw-shaft for operating the cone to expand and contract the rolls, and spring mechanism located between the hand-nut and the cone to assist in the retraction of the cone, substantially as described.

3. In a tool of the class described, the combination of a cup portion, a cage removably secured thereto provided with a multiplicity of tapered openings arranged longitudinally in its peripheral surface, a plurality of tapered rolls loosely mounted in such recesses, a movable cone arranged in the cage with its conical surface contacting with the tapered rolls, a shaft engaging such cone and provided with a threaded end extending out through the cup and a central longitudinal bore, a hand-nut on the threaded end of the shaft, and spring mechanism in the axial bore of the screw-shaft and bearing against the inner surface of the hand-nut to assist in the retraction of the cone, substantially as described.

4. In a tool of the class described, the combination of a cup portion, a cage portion removably secured thereto and provided with a multiplicity of tapered recesses arranged longitudinally in its periphery, a plurality of tapered rolls loosely arranged in such recesses, a movable cone arranged in the cage with its cone surface contacting with the tapered rolls, a headed shaft engaging such cone provided with a threaded end extending out through the cup, a central longitudinal bore and a transverse opening, a hand-nut engaging the threaded end of the shaft, a pin extending through the transverse opening of the shaft, a ring in engagement with the cone bearing against the transverse pin, and a spring bearing against such pin and the hand-nut, substantially as described.

5. In a tool of the class described, the combination of a cup portion, a cage removably secured thereto and provided with a multiplicity of tapered recesses arranged longitudinally thereof, the larger diameters of such recesses being arranged adjacent to the cup portion, a plurality of tapered rolls arranged in such recesses, a movable cone arranged in the cage with its conical surface contacting with the tapered rolls, a headed shaft engaging the cone and provided with a threaded end extending out through the cup with a central longitudinal bore a transverse perforation and a radial slot, a hand-nut engaging the threaded end of such shaft, a pin passed through the transverse perforation of such shaft, a ring intermediate such pin and the cone, a spring intermediate the hand-nut and the transverse pin, a second spring intermediate the cup and the cone, and a set-screw or similar element passed through the cup and engaging the radial slot of such shaft, substantially as described.

6. In a tool of the class described, the combination of a cup portion, a cage removably secured thereto and provided with a multiplicity of tapered recesses arranged longitudinally thereof, the larger diameters of such recesses being arranged adjacent to the cup portion, a plurality of tapered rolls arranged in such recesses, a movable cone arranged in the cage with its conical surface contacting with the tapered rolls, a headed shaft engaging the cone and provided with a threaded end extending out through the cup with a central longitudinal bore a transverse perforation and a radial slot, a hand-nut engaging the threaded end of such shaft, a pin passed through the transverse perforation of such shaft, a ring intermediate such pin and the cone, a spring intermediate the hand-nut and the transverse pin, a second spring intermediate the cup and the cone, a set-screw or similar element passed through the cup and engaging the radial slot of such shaft, and a hand-lever engaging the cup for operating the tool, substantially as described.

705,789. ACETYLENE-GAS GENERATOR. ARTHUR DAVIS, Chicago, Ill., and FRED L. DAVIS, Marquette, Mich. Filed Apr. 16, 1900. Serial No. 13,101. (No model.)

Claim.—1. The combination with a stationary casing having an open upper end and a peripheral annular water-chamber, of a carbid-receptacle removably seated in said stationary casing, said receptacle having an open discharge-mouth at its lower end, a cap or bell the top whereof constitutes a cover for the carbid-receptacle and the depending walls whereof enter the annular water-chamber of the casing to constitute therewith a water seal, a horizontal feed-plate located below the mouth of the carbid-receptacle, a vertical driving-shaft extending therefrom upwardly through said receptacle and the top of said cap, and means for imparting a rotary motion to said feed-plate through said shaft, substantially as described.

2. The combination with a stationary casing having an open upper end and a peripheral annular water-chamber, of a carbid-receptacle removably seated in said stationary casing, said receptacle having an open discharge-mouth at its lower end, a cap or bell the top whereof constitutes a cover for the carbid-receptacle and the depending walls whereof enter the annular water-chamber of the casing to constitute therewith a water seal, a horizontal feed-plate located below the mouth of the carbid-receptacle, a vertical driving-shaft extending therefrom upwardly through said receptacle and the top of said cap, a coupling connecting separated ends of said shaft within said carbid-receptacle, and means for imparting a rotary motion to said feed-plate through said shaft and its coupling member, substantially as described.

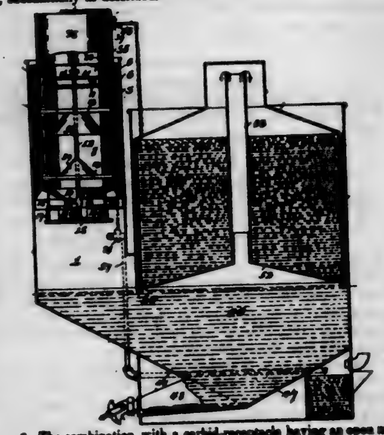

3. The combination, with a carbid-receptacle having an open mouth at its lower end, of a horizontal feed-plate located below said mouth, a universally-yieldable sweep or scraper flexibly suspended over said feed-plate, and means for rotating said feed-plate, substantially as described.

4. The combination, with a carbid-receptacle having an open discharge-mouth at its lower end, of a horizontal feed-plate located below said mouth, a plurality of universally-yieldable sweeps or scrapers flexibly suspended over said feed-plate, and means for rotating said feed-plate, substantially as described.

5. The combination, with a carbid-receptacle having an open discharge-mouth in its lower portion, of a horizontal feed-plate located below said mouth, means for rotating said feed-plate, and an annular flexibly suspended over said feed-plate and provided with one or more sweeps or scrapers, extending diagonally over said plate, substantially as described.

6. The combination, with a vertical carbid-receptacle having an open discharge-mouth in its lower portion, of conical baffle-plates located within said receptacle, said plates being oval in peripheral contour and having their longest diameter disposed at an angle to each other.

7. The combination, with a carbid-receptacle having a contracted open discharge-mouth at its lower end, and a horizontal rotary feed-plate located below said mouth, of conical baffle-plates within the carbid-receptacle, said plates being oval in peripheral contour and asymmetrical relatively to each other and having their longer diameters arranged at an angle to each other, substantially as described.

8. The combination, with a carbid-receptacle having a contracted open mouth in its lower end, of a horizontal feed-plate located below said mouth, and a vertical shaft carrying said plate, extending upward through the receptacle and having that portion which lies within the discharge-mouth fluttered, substantially as described.

9. The combination, with a carbid-receptacle having an open discharge-mouth in its lower end, and a horizontal feed-plate located below said mouth and provided with a vertical shaft extending upwardly through the receptacle, of an independent motor connected with the upper end of said shaft, and means controlled by the variations in volume of the generated gas for stopping and starting said motor, substantially as described.

10. The combination, with a carbid-receptacle having an open discharge-mouth in its lower portion, of a horizontal feed-plate located below said mouth, an independent motor connected with said feed-plate to rotate the same, a brake normally holding said motor stationary, and means controlled by the variations in volume of the generated gas for releasing said brake, substantially as described.

11. The combination with an open-topped generating-chamber provided about its periphery with an annular sealing-chamber, of a carbid-receptacle provided with feed devices and removably located within the receptacle provided with feed devices and removably located within the generating-chamber, a removable cap entering said sealing-chamber and constituting therewith a water seal, the top of said cap resting on and forming a cover for the carbid-receptacle, and an independent motor for the feed devices carried on the top of said cap and removable therewith, substantially as described.

12. The combination with an open-topped generating-chamber provided about its periphery with an annular sealing-chamber, of a carbid-receptacle provided with feed devices and removably located within the generating-chamber, a removable cap entering said sealing-chamber and constituting therewith a water seal, the top of said cap resting on and forming a cover for the carbid-receptacle, an independent motor for the feed devices carried on the top of said cap and removable therewith, and means for locking said cap against vertical movement, substantially as described.

705,740. PROCESS OF PROTECTING EXPOSED FILTERS OR OTHER CONFINED LIQUID BODIES FROM FREEZING. LEWIS K. DAVIS, Indianapolis, Ind. Filed Mar. 5, 1900. Renewed Jan. 14, 1902. Serial No. 89,730. (No specimens.)

Claim.—1. The improvement in the art of preventing exposed filters and other confined liquid bodies from freezing, which consists in supplying heat beneath the surface at or near the vertical confining-walls and causing a circulation of the relatively heated water from such points, whereby the marginal portions of the liquid are prevented from freezing, and the more central open surface protected thereby.

2. The improvement in the art of preventing exposed filters and other confined liquid bodies from freezing, which consists in heating marginal portions of the liquid and causing a circulation to take place from such marginal portions and toward the center, substantially as and for the purposes set forth.

3. The improvement in the art of preventing exposed filters and other confined liquid bodies from freezing, which consists in supplying heat in an annular line beneath the surface of the liquid and substantially at its margin, for the purposes set forth.

705,741. ADJUSTABLE CRUTCH. WARREN F. DREW, Sacramento, Cal., assignor of one-half to Frank G. Snook, Sacramento, Cal. Filed Nov. 4, 1901. Serial No. 81,012. (No model.)

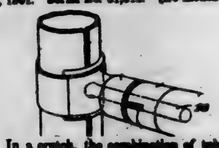

Claim.—1. In a crutch, the combination of tubular telescopic leg portions, the outer of said portions being longitudinally slotted, a handhold extending transversely between the legs and having terminal bands inclosing said slotted portions, and clamping mechanism carried by said handhold by which the said slotted portions are contracted and locked upon its respective slidable part.

2. In a crutch of the character described, upper and lower members slidably movable to lengthen or shorten the structure, hand grips and clamps controlled thereby to lock the parts together, and locking devices to prevent the clamps being turned backward.

705,742. PIPE-WRENCH. CHARLES L. DURHAM, Centerview, Ohio. Filed Nov. 23, 1901. Serial No. 84,082. (No model.)

Claim.—In a pipe-wrench, the same comprising a fixed and a movable jaw, the two parts pivoted to one another at the upper end of the sections and above the horizontal line of the gripping-jaws and in rear thereof substantially as described.

705,743. NUT-LOCK. CHARLES L. DURHAM, Centerview, Ohio. Filed Nov. 20, 1901. Serial No. 84,021. (No model.)

Claim.—1. The within-described nut-lock, comprising two sections, one section having an inward-projecting lug and the other section being provided with a recess, having shoulders at each end thereof, said sections having adjacent inclined faces, said inclinations extending in a straight plane from one side of the nut to the opposite side, substantially as described.

2. A nut applicable to screw-threaded bolts, the same being divided about its center in a diagonal plane, forming two sections, the adjacent faces thereof presenting straight flat surfaces, one section provided with a lug and the opposite section provided with a recess, having shoulders or stops, whereby the movement of the locking-section is controlled in manipulating the nut, substantially as described.

705,744. DEVICE FOR RAISING OR LOWERING AWNINGS. GEORGE H. ESSERS, Cincinnati, Ohio. Filed Mar. 31, 1902. Serial No. 100,673. (No model.)

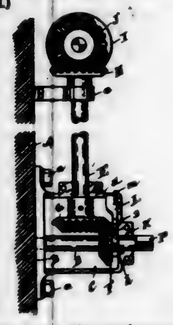

Claim.—1. A device for operating awnings consisting of a casing made in two sections, a base B formed integral with one of said sections, a driving-shaft D journaled to said base and casing provided with bevel-gear F, a driven shaft journaled in said casing, a bevel-gear on said shaft meshing with the bevel-gear on the driving-shaft, fastening-flanges on said casing which form the bearings of the said shafts, and fastening-bolts fastening through said flanges upon each side of respective shafts, substantially as specified.

2. In a device for operating awnings the combination with a casing adapted to be anchored to the walls of a building, a slotted cap for the casing, a driving-shaft and driven shaft journaled in said casing, a ratchet-gear inclosed within said casing, a pawl-lever hinged within the casing and having an arm projecting through said slot in the casing-cap, a projection on the casing coincident with the said projecting arm when the parts are in their position, substantially as specified.

705,745. APPARATUS FOR HEATING LIQUIDS. JOSEF FLIEGEL, Mallmitz, Germany. Filed Aug. 22, 1901. Serial No. 72,902. (No model.)

Claim.—1. In combination, an outer vessel 1 having the annular piece 18 extending up therefrom, a cylinder 4 extending down into the vessel 1 and having chambers 17, the walls of which fit over the annular piece 18, an agitator having downwardly-extending annular pieces 7 extending between the walls of the chambers 17, a heating-body 16, a centrally-arranged receiving-chamber 21 connected with the passage formed between the walls of the chambers 17 and the depending pieces 7 of the agitator, said receiving-chamber having an outlet connecting with the passage formed between the walls of the chambers 17 and the annular pieces 18 of the vessel 1, said agitator having a horizontal diaphragm or top whereby the milk is directed to the passage between the chambers 17 and the agitator, the said vessel 1 having an outlet for the milk and means for rotating the agitator, substantially as described.

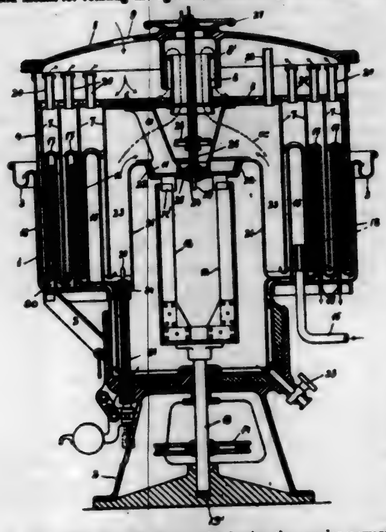

2. In combination with the vessel 1 having the annular upwardly-extending piece 18, a cylinder 4 having the annular chambers 17, the walls of which fit over the annular piece 18 to form a circuitous milk-passage, agitator means and air-exhaust pipe 19 open at a point above the upper edge of the piece 18 within the said circuitous passage, substantially as described.

705,746. CUTTER-CHOPPER. JOHN H. FORSTER, Evelyn, Tex., assignor of one-half to James H. Hobbs. Filed Nov. 6, 1901. Serial No. 81,808. (No model.)

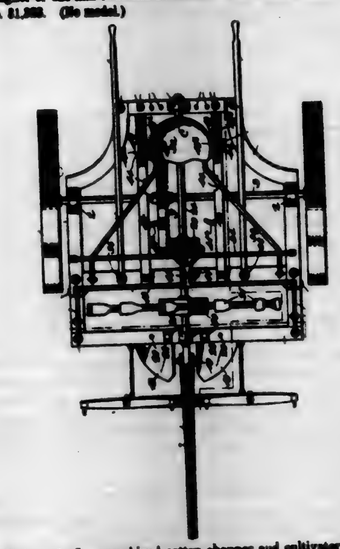

Claim.—1. In a combined cotton chopper and cultivator, the combination of a main frame, a supporting-axle therefor, a front section flexibly connected to the said main frame, a tongue attached to the said front section, plows carried by the latter, a longitudinally-disposed shaft having its bearings on said front section and at the rear side of said main section, a revolvable chopping element carried by said shaft, connections between said axle and said shaft, to rotate the latter, a handle attached to the said front section, and a support on said main frame, to which said handle is adjustably connected, whereby said plows and said chopping element may be raised and lowered, substantially as described.

2. In a combined cotton chopper and cultivator, the combination of a main frame, a supporting-axle therefor, a front section flexibly connected to the said main frame, a tongue attached to the said front section, plows carried by the latter, a longitudinally-disposed shaft having its bearings on said front section and at the rear side of said main section, a revolvable chopping element carried by said shaft, connections between said axle and said shaft, to rotate the latter, a handle attached to the said front section, spring connections between said handle and said front section, and a support on said main frame, to which said handle is adjustably connected, whereby said plows and said chopping element may be raised and lowered, substantially as described.

3. In a combined cotton chopper and cultivator, the combination of a frame, a pair of scraping-plows at the front end thereof, a revolvable chopping element in rear of said scraping-plows, a pair of longitudinally-disposed bars, flexibly connected at their front ends, to said frame and having cultivating-plows at their rear ends, in rear of said chopping element, levers connected to said bars, to raise and lower said cultivating-plows, and fulcrum-supports on which said levers are shiftable, longitudinally of the said frame, the latter having a seat, and rearwardly-extending handles, whereby said levers may be shifted for operation either from said seat, or from the rear of the machine, substantially as described.

4. In a combined cotton chopper and cultivator, the combination of a frame, a pair of scraping-plows at the front end thereof, a revolvable chopping element in rear of said scraping-plows, a pair of longitudinally-disposed bars, flexibly connected at their front ends to said frame and having cultivating-plows at their rear ends, in rear of said chopping element, levers connected to said bars, to raise and lower said cultivating-plows, and spring connections between said levers and said bars, substantially as described.

705,747. SUGAR-BEET HARVESTER. RUSSELL H. FRASER, Norfolk, Nebr. Filed Mar. 6, 1899. Serial No. 708,080. (No model.)

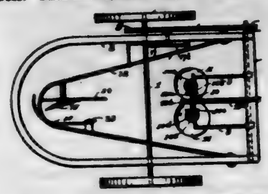

Claim.—1. In a machine of the character described, topping mechanism composed of rotating disks, shafts supporting and rotating said disks, means for rotating said shafts operable from the ground-wheels of the machine, shoe-gage hung in front of said disks, in combination with a digging mechanism consisting of colters angularly disposed to each other, a landside and means for separating the dirt from the roots unearthed, substantially as set forth.

2. In a machine of the character described, topping mechanism composed of horizontally-disposed disks, shafts supporting and rotating said disks, means for rotating said shafts operable from the ground-wheels, shoe-gage hung in front of said disks, in combination with digging mechanism consisting of a standing colter, a rolling colter set at an angle to the standing colter, means for supporting said rolling colter, a landside, means for separating the dirt and the roots dug, a pivoted frame supporting said digging mechanism and means for raising and lowering said frame, substantially as described.

705,748. MANUFACTURE OF CELLULOSE PRODUCTS. MAX FREIBERG and JOHANNES URBAN, Oberbruch, near Aachen, Germany. Filed May 5, 1900. Serial No. 15,043. (No specimens.)

Claim.—1. In the washing of cellulose products resulting from the precipitation or coagulation of cellulose solutions, the method of facilitating and securing the elimination of metallic compound remaining within the said cellulose products, which method consists in causing water containing a substance capable of converting the said metallic compounds into soluble salts to slowly flow from above onto the said products while coiled up, substantially as set forth.

2. In the washing of cellulose products resulting from the precipitation or coagulation of cellulose solutions, the method of facilitating and securing the elimination of metallic compound remaining within the said cellulose products, which method consists in causing water containing a substance capable of converting the said metallic compounds into soluble salts to slowly flow from above onto the said products while coiled up

and then causing pure water to likewise flow from above on the said products, substantially as set forth.

3. In the washing of cellulose products resulting from the precipitation or coagulation of cellulose solutions, the method of facilitating and securing the elimination of metallic compounds remaining within the said cellulose products, which method consists in causing water containing an acid to slowly flow from above onto the said products while called up, substantially as set forth.

705,749. CURTAIN ROLL. ALBERT J. GUNN, Chicago, Ill., assignor to Allis-Chalmers Company, Jersey City, N. J., a Corporation of New Jersey. Filed July 30, 1901. Serial No. 70,059. (No model.)

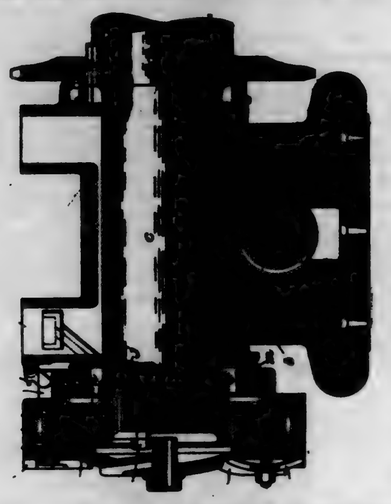

Claim.—1. In a Cornish roll, the combination of a shaft, a thrust-collar secured thereto at or near one end thereof, a ring-nut in engagement with the journal-box of the shaft and means for holding the thrust-collar rotatably in engagement with the ring-nut to take up the thrust thereof, whereby as such ring-nut is rotated and moved inwardly and outwardly the thrust-collar is likewise moved, carrying with it the shaft and roll, substantially as described.

2. In a Cornish roll, the combination of a roll-shaft, a thrust-collar engaged therewith, a ring-nut surrounding the thrust-collar and having screw-threaded engagement with the frame of the machine, means for locking and holding the thrust-collar in rotatable engagement with the ring-nut used to sustain the thrust thereof, and means for locking and holding the ring-nut in desired engagement with the frame, substantially as described.

3. In a Cornish roll, the combination of a roll-shaft, a thrust-collar in engagement with one end thereof and provided with an annular flange, a ring-nut in threaded engagement with the frame of the machine and surrounding the thrust-collar, and a plate-nut in engagement with the other end of the ring-nut and forming in connection therewith a closure that holds the thrust-collar rotatably in position, substantially as described.

4. In a Cornish roll, the combination of a roll-shaft, a thrust-collar provided with an annular flange in engagement with one end of each roll-shaft, a ring-nut having one end in threaded engagement with the frame of the machine and upon which it is rotated and adjusted, a plate-nut adjustably mounted in engagement with the other end of the ring-nut for confining and forming a closure for the thrust-collar, means for holding the plate-nut in adjusted position, and wearing-rings interposed between the plate and ring-nuts and the flange of the thrust-collar, substantially as described.

5. In a Cornish roll the combination of a roll-shaft, a thrust-collar provided with an annular flange in engagement with one end of each roll-shaft, a ring-nut surrounding the thrust-collar having one end in threaded engagement with the frame of the machine and upon which it is rotated and adjusted, a plate-nut adjustably mounted in engagement with the other end of the ring-nut for confining and forming a closure for the thrust-collar to confine it therein and sustain the thrust thereof, means for holding the plate-nut in adjusted position, wearing-rings interposed between the plate and flange of ring-nut and the flange of the thrust-collar, and means for locking the ring-nut in adjusted engagement with the frame, substantially as described.

6. In a Cornish roll, the combination of a roll-shaft, a thrust-collar provided with an annular flange in threaded engagement with one end thereof, a gib-key engaging a slot formed by end in the threaded portions of the roll-shaft and thrust-collar for holding such parts in the desired position, a ring-nut surrounding the thrust-collar having one end in threaded engagement with the frame of the machine for the adjustment thereof, a plate-nut in threaded engagement with the other end of the ring-nut to complete the closure for and confine the thrust-ring, means for holding the plate-nut in adjustable engagement with the ring-nut, means for holding the ring-nut in adjustable engagement with the frame, a wearing-ring interposed between the ring-nut and the annular flange of the thrust-collar, and a wearing-ring interposed between the plate-nut and the annular flange of the thrust-collar, substantially as described.

705,750. FISH TRAP-HOOK. HOMER GRIER, Atlanta, Ga., assignor to the Grier Lever Fish Hook Company, Atlanta, Ga. Filed Feb. 14, 1902. Serial No. 94,047. (No model.)

Claim.—1. In a fish trap-hook, the combination with a forked stem, a plurality of striking-hooks loosely hung from said stem, a spring-clamp on the stem adapted to engage and hold said hooks in perpendicular position, of a bait-hook having double diverging shanks slidably connected to said striking-hooks.

2. In a fish trap-hook, the combination with a forked stem, a plurality of striking-hooks pivoted thereto, a spring-clamp on said stem adapted to engage and hold said hooks in perpendicular position, said hooks being provided with elongated slots in their upper ends, of a bait-hook having double diverging shanks, bearings secured on the ends of said shanks and adapted to be secured and operated in the slots of the striking-hooks.

3. In a fish trap-hook, the combination with a forked stem, a plurality of striking-hooks, a spring-clamp on said stem adapted to engage and hold said hooks in perpendicular position, each of said hooks being provided with an eye on its inner end, by which it is pivoted to said stem, an elongated slot extending from said eye to an intermediate portion of the hook, of a bait-hook having double diverging shanks, eyes in the upper ends of said shanks, and studs secured in said eyes, said studs operating in said slots.

705,751. APPARATUS FOR STERILIZING WATER, &c. DAVID GROVE, Berlin, Germany. Filed Sept. 3, 1900. Serial No. 29,022. (No model.)

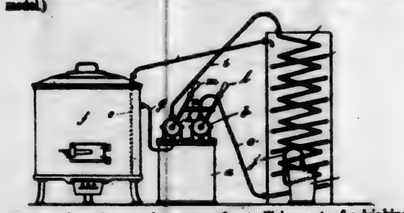

Claim.—In an improved apparatus for sterilizing water for drinking purposes, the combination with a tank for the water and an open heater containing primary and secondary coils, of an initial supply-pump connected to said primary coil, pipe connections from said primary coil to the heater, a second pump connected to the heater and a connection from said second pump to the secondary coil, said secondary coil having an outlet for the sterilized water.

705,752. SOLDERING-IRON. GEORGE GUTH, Brooklyn, N. Y. Filed Dec. 5, 1901. Serial No. 84,783. (No model.)

Claim.—1. In a soldering-iron, the combination, with a removable head provided with a socket which has tapering sides and is broadest at its end next to the head, said socket being open on top and at its narrow end, of a shank provided with a plate which fits the said socket, and a fastening device which secures the said plate in the said socket, substantially as set forth.

2. In a soldering-iron, the combination, with a shank provided with a head at one end and a series of projections struck up from its sides, of a handle which abuts against the said projections, and means for securing the said handle on the shank, substantially as set forth.

3. In a soldering-iron, the combination, with a shank, of a handle provided with an air-chamber around the shank, a collar of non-heat-conducting material encircling the shank and inserted in one end of the said chamber, and means for securing the shank in the handle, substantially as set forth.

4. In a soldering-iron, the combination, with a shank having a step for the handle, of a handle provided with an air-chamber around the shank, a collar of non-heat-conducting material inserted in one end of the said chamber and provided with a flange, a ferrule which bears against the said step and incloses the said flange, and means for securing the shank to the handle, substantially as set forth.

705,753. FLUE-CLEANER. THOMAS J. HART, Buffalo, N. Y., assignor to Sherwood Manufacturing Company, Buffalo, N. Y. Filed Oct. 26, 1900. Serial No. 34,426. (No model.)

Claim.—1. The combination with the hollow case of a tube-cleaner adapted to receive a pressure fluid, and the cutter medium mounted on the case, of centering-arms arranged on the outer side of said case, and plungers which are guided in said case and engage with said arms and are pressed outwardly by the pressure fluid, substantially as set forth.

2. The combination with the hollow case of a tube-cleaner adapted to receive a pressure fluid, and the cutter medium mounted on the case, of centering-arms pivoted on the outer side of the case, plungers which engage with said arms and are pressed outward by the pressure fluid, and stops whereby the inward and outward movement of the arms and plungers is limited, substantially as set forth.

3. The combination with the hollow case of a tube-cleaner adapted to receive a pressure medium, and a rotary cutter mounted on the case, of centering-arms arranged longitudinally on the outer side of the case and pivoted at one end to the same while the opposite end is provided with a roller which is adapted to bear against the inner side of the tube to be cleaned, centering-plungers guided in the hollow case and projecting with their inner ends into the interior of the case while their outer ends bear against the centering-arms, stops arranged on the centering-arms and adapted to engage the case for limiting the outward movement of the arms and plungers, and stops arranged on the plungers and adapted to engage the case for limiting the inward movement of the arms and plungers, substantially as set forth.

705,754. FUSELE. CHARLES B. HAZEN, Williamsport, Pa., assignor to the Harris Safety Company, New York, N. Y. Filed Oct. 13, 1900. Renewed Nov. 25, 1901. Serial No. 83,089. (No model.)

Claim.—1. The combination with a coupling and an integral chuck-tang frame within said coupling, of a nozzle threaded and entering said coupling and having a valve-seat near its outlet, a valve-stem secured to the integral frame in the coupling and a valve at the forward end of said stem and adapted to coöperate with said valve-seat.

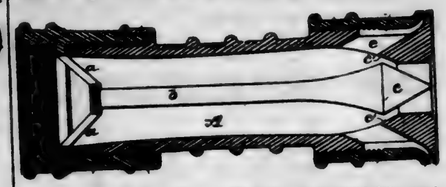

2. The combination with a coupling, of a nozzle threaded for attachment thereto, a flange on the nozzle and overhanging the end of the coupling, packing disposed between said flange and the outer face of the coupling, and a valve secured to the coupling for controlling the outlet of water when the nozzle is adjusted relatively to the coupling.

3. The combination with a coupling, of a nozzle adjustably attached thereto, said nozzle made in a single piece and having a valve-seat therein near its central outlet and having an exterior annular groove and a series of ducts or outlets communicating at one end with said groove and at the other end with the interior of the nozzle in rear of said valve-seat, an adjustable sleeve on the nozzle for controlling the passage of water through said ducts or outlets and annular groove, and a valve secured to and carried by the coupling and adapted to coöperate with said valve-seat.

705,755. WAGON-RACK. HENRY HAZEN and SAMUEL H. REESE, Galion, Ohio. Filed May 27, 1902. Serial No. 109,237. (No model.)

Claim.—1. The combination with a wagon-box, of a rack comprising a bracket, longitudinal bars secured thereto, a housing inclosing said bracket, and means for varying the inclination of the bracket and locking it to the housing, substantially as shown and described.

2. The combination with a wagon-box, of a rack comprising a bracket, longitudinal bars secured thereto, a housing for said bracket, openings in the bracket and housing, and a spring-pin engaging said openings for locking the bracket to the housing, substantially as shown and described.

3. A bracket comprising an adjustable arm, a housing inclosing the same to which said arm is pivoted, and means for varying the inclination of said arm and locking the same to the housing, substantially as shown and described.

4. A bracket comprising an adjustable arm, a housing therefor to which said arm is pivoted, openings in said arm and housing, and a spring-pin secured to the housing adapted to engage said openings to hold the arm in adjusted position, substantially as shown and described.

705,756. FORMING AND PLEATING MACHINE. WILLIAM H. HAYES, Flushing, N. Y. Filed Apr. 19, 1902. Serial No. 103,703. (No model.)

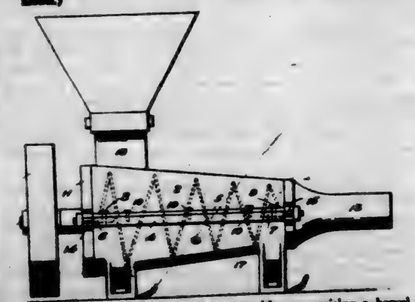

Claim.—A forming and pressing machine comprising a barrel or casing made in removable sections, flanges at the meeting edges of said

sections, ribs resting upon the flanges and bolted thereto, eyebolts secured between the ribs and flanges, said eyebolts projecting outward longitudinally of the barrel, to detachably secure the head of the barrel and the spout in place, substantially as described.

705,757. PNEUMATIC TRACK-SANDER. EDWARD H. EISLEY, Depew, N. Y. Filed Mar. 19, 1902. Serial No. 98,594. (No model.)

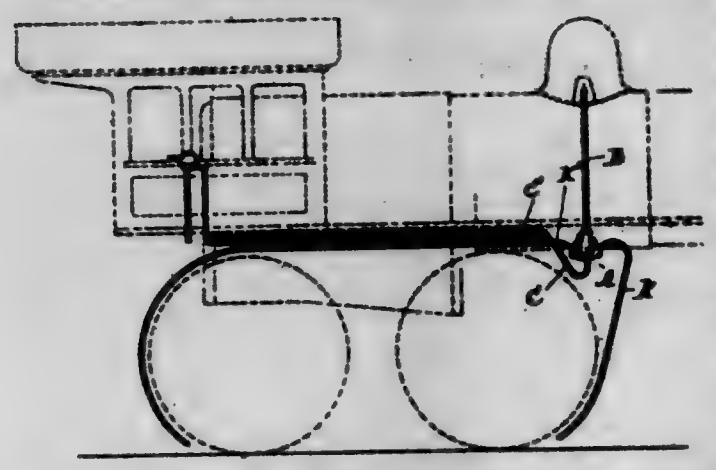

Claim.—1. A pneumatic track-sander comprising a casing having an opening for connection with the sand-reservoir, an opening for connection with the sand-discharge pipe and an opening for connection with the air-delivery pipe, of a valve movable transversely of said opening that leads to the sand-reservoir and a casing at one side of said last-mentioned opening to receive said valve when moved to open position, and a stem leading outside said valve-casing whereby said valve may be shifted.

2. A pneumatic track-sander comprising a casing having an opening for connection with the sand-reservoir, an opening for connection with the sand-discharge pipe and an opening for connection to the air-delivery pipe, of a valve for closing the opening that connects with the sand-reservoir, a chamber wherein said valve is inclosed, said chamber being formed with a slot to admit the valve, and a strip for closing said slot or opening of the chamber.

3. A pneumatic track-sander comprising a casing having an opening for connection with the sand-reservoir, an opening for connection with the sand-discharge pipe and an opening for connection with the air-delivery pipe, of a valve located in said casing and adapted to close the opening for the admission of sand, a handle connected with said valve and arranged upon the outside of said casing and a spring for holding said valve in open position.

4. A pneumatic track-sander comprising a casing having an opening for connection with the sand-reservoir, an opening for connection with the sand-discharge pipe and an opening for connection with the air-delivery pipe, of an air-jet nozzle or port for agitating the sand within the casing and an air-jet nozzle or port for causing the passage of sand through the sand-discharge pipe.

5. A pneumatic track-sander comprising a casing having an opening for connection with the sand-reservoir, an opening for connection with the sand-discharge pipe and an opening for connection with the air-delivery pipe, of an air-delivery channel extending partially around the sand-receiving chamber of said casing, an air-jet nozzle or port adjacent one end of said air-delivery channel and adapted to deliver a jet of air to agitate the sand, and a second air-jet nozzle or port at the opposite end of said channel and adjacent the opening of the casing that leads into the sand-discharge pipe, whereby the sand will be forced through said pipe.

6. A pneumatic track-sander comprising a casing having a sand-receiving chamber, an opening above said chamber, for connection with the sand-reservoir, an opening leading from said chamber at one side of said casing for connection with the sand-discharge pipe, an air-delivery channel beneath and extending partially around said chamber, an air-jet nozzle or port at the upper end of said channel and arranged to deliver air obliquely downward into said chamber, a second air-jet nozzle or port arranged at the end of said air-delivery channel opposite said sand-discharge opening and an air-delivery pipe connected to said channel.

7. A pneumatic track-sander comprising a casing having a sand-receiving chamber therein, an opening above said chamber for connection with the sand-reservoir, an opening at one side of said chamber for connection with the sand-discharge pipe, a deflector-arch arranged between said sand-admission opening and said sand-discharge opening, an air-jet nozzle or port arranged on the opposite side of the chamber from said deflector-arch and a pipe for delivering air to said air-jet nozzle or port, whereby a whirling movement of the sand within the chamber will be effected.

8. A pneumatic track-sander comprising a casing having an opening for connection with the sand-reservoir, an opening for connection with the sand-discharge pipe and an opening for connection with the air-delivery pipe, of a deflector-arch arranged within said casing, an air-jet nozzle or port for agitating the sand within the casing, said port being arranged at a point opposite said deflector-arch and a second air-jet nozzle or port arranged opposite the sand-discharge opening of said casing.

9. A pneumatic track-sander comprising a casing having an opening at its top for connection with the sand-reservoir, a vertically-disposed diaphragm arranged beneath said opening and dividing the casing into two chambers for receiving sand, a sand-discharge port leading from each of said chambers and individual air-delivery pipes and air-jet nozzles or ports for said chambers.

10. A pneumatic track-sander comprising a casing having at its top an opening for connection with the sand-reservoir, a diaphragm beneath said opening and dividing the casing into two sand-receiving chambers, each of which chambers is provided with a sand-discharge port, a deflector-arch within each of said chambers, an air-jet nozzle arranged adjacent the discharge-port of each of said chambers and serving to eject the sand therefrom, and an air-jet nozzle or port arranged within each of said chambers opposite said discharge-port for agitating the sand before it is discharged from the casing.

11. A pneumatic track-sander comprising a casing having an opening at its top for connection with the sand-reservoir, a vertically-disposed diaphragm beneath said opening and dividing said casing into two sand-receiving chambers, each of which chambers is provided with a sand-discharge port, a deflector-arch arranged within each of said chambers above said discharge-port, air-delivery channels extending beneath and partially around said chambers, each of said channels being provided at its upper end with an air-jet nozzle or port for delivering air to agitate the sand within the chamber and at its opposite end with an air-jet nozzle or port for delivering a jet of air to eject the sand from the casing, and air-delivery pipes connected with said channels.

12. A pneumatic track-sander comprising a casing having an opening for connection with the sand-reservoir, an opening for connection with the sand-discharge pipe and an opening for connection with the air-delivery pipe, of an air-jet nozzle for agitating the sand within the casing and an air-jet nozzle for causing the passage of sand through the sand-discharge pipe, said air-jet nozzles being removably held in position within said casing.

705,758. FISHING-REEL. ANDREW B. KIENZLE, New Haven, Conn. Filed May 24, 1902. Serial No. 108,968. (No model.)

Claim.—In a reel, the combination with the case-plate thereof, having a sleeve extending outward therefrom, a pinion-shaft extending outward through said sleeve, of a cap bearing upon said shaft and having a flange setting over the outer end of said sleeve, and a handle secured to said shaft and bearing upon said cap which rotates with it, substantially as described.

705,759. WIRE PUZZLE. FREDERICK HIRZ, Brooklyn, N. Y. Filed Nov. 16, 1901. Serial No. 82,604. (No model.)

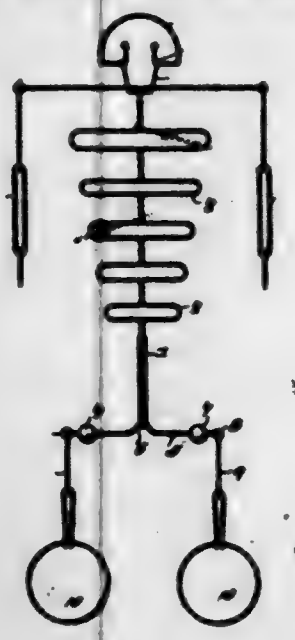

Claim.—1. A wire puzzle comprising a main member having a fixed elongated loop, a bar and a link having a limited movement therethrough, and a removable member constructed to pass over the bar, link and elongated loop, and to pass through said elongated loop, substantially as specified.

2. A wire puzzle comprising a main member bent into the semblance of a human skeleton and having a fixed elongated loop, a bar and a link having a limited movement through said elongated loop, balls carried by the bar on each side of said elongated loop and forming stops for limiting the movement of the bar, and a removable member forming the head of the figure, said movable member being adapted to be passed through said elongated loop, substantially as specified.

3. A wire puzzle comprising a main body having an elongated loop, a bar passing through said elongated loop, balls arranged on said bar on each side of said elongated loop and of greater diameter than the width thereof, linked members carried by said bar and adapted to be passed through said elongated loop, and a removable member adapted to be passed through said elongated loop and over one of said balls and the end of the supporting-bar.

4. A wire puzzle comprising in combination, a strip of wire centrally bent to form an elongated loop and thence bent to form representations of the back, ribs and shoulders of the human frame, a transversely-disposed bar passing through said loop, balls carried by said bar on each side of the elongated loop and of a diameter greater than the width of said elongated loop, links hung to the outer ends of said bar, rings of a diameter less than the length of said elongated loop, said rings being hung to the lower ends of said links, and a removable member made in two pivotally-connected sections and adapted to represent the head and neck, said removable member being of a length less than the length of the said elongated loop, substantially as specified.

705,760. JOURNAL-BEARING. HERBERT H. LEWITT, Buffalo, N. Y. Filed Dec. 24, 1901. Serial No. 87,120. (No model.)

Claim.—1. A journal-bearing provided with a curved bearing-face of brass or like antifriction metal having solid ends, said face and ends being adapted in emergency to afford a bearing for the journal, its flange and shoulder, said face being longitudinally grooved intermediate its ends, and a thick, freely-detachable lining of relatively soft metal extending from end to end of said bearing and guarding the face thereof against normal contact with the journal, said lining being homogeneous throughout and being provided upon its back with a longitudinal lug terminating intermediate its ends, said lug being adapted to freely enter and pass from the grooved bearing and serving as the means for detachably connecting said lining to the bearing whereby the easy removal of said lining may be effected.

2. A journal-bearing provided with a curved bearing-face of brass or like antifriction metal having solid ends adapted in emergency to engage the wearing-surface, the flange and shoulder of the journal, and having seats running lengthwise of but terminating within the ends of said face, said seats lying upon opposite sides of the longitudinal center of the bearing, and a freely-removable, thick lining of relatively soft metal extending from end to end of said bearing and completely protecting its face from normal contact with the journal, said lining having a lug upon each side of its longitudinal center to enter the corresponding seat of the bearing and serving as the means for locking the lining to the bearing, the walls of the seats and lugs being shaped to permit the lining to be readily inserted and removed in a direction transverse to the axis of the bearing.

3. A journal-bearing comprising a back of malleable iron or like inferior metal, an emergency wearing-body of brass or like antifriction metal having solid ends and rigidly secured to said back and covering the inner face thereof from end to end, said emergency wearing-body being grooved longitudinally intermediate its ends and having its wearing-face and ends adapted in emergency to engage the wearing-surface, the flange and shoulder of the journal, and a thick lining of relatively soft metal extending from end to end of said wearing-body and being provided upon its back with a lug adapted to enter the groove of the wearing-body and serving as the means for detachably locking said lining to the wearing-body, whereby said lining may be freely removed in a direction transverse to the axis of the bearing.

4. A journal-bearing comprising a back of malleable iron or like inferior metal, an emergency wearing-body of brass or like antifriction metal rigidly secured to said back and covering the inner face thereof from end to end, the wearing-surface of said emergency-body being adapted in emergency to afford a bearing for the journal, its collar and flange and the concave surface of said wearing-body being provided at each side of its longitudinal center with a seat terminating within the ends of said wearing-face and a thick lining of relatively soft metal having lugs upon its back to enter the seat of said wearing-body, said lugs and said seats having their walls so relatively shaped as to permit the lining to be readily inserted and removed in a direction transverse to the axis of the bearing.

705,761. ORE-BIN. GEORGE H. HULETT, Cleveland, Ohio. Filed May 8, 1902. Serial No. 105,796. (No model.)

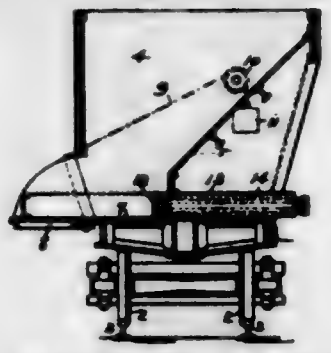

Claim.—1. In a bin for handling ore and similar material, the combination with a body having one inclined side and an opening in its opposite side, and a shelf or projection extending out beyond the opening, of a plunger adapted to move toward the opening and force the material in said bin through said opening.

2. In a bin for handling ore and other material, the combination with a body having one inclined side and an opening in its other side, and a shelf or projection extending out beyond the vertical plane of said opening, of a plunger adapted to move toward the opening and force the material through the latter, and a top plate carried by the plunger and forming a false bottom for the bin as the plunger is moved outwardly.

3. In a bin for handling ore and similar material, the combination with a body having an inclined side and an opening in its opposite side, of a door or shelf pivoted to the body and adapted to form a closure for said opening when in its upright position and a shelf or projection beyond said opening when in a horizontal position and a plunger for ejecting the material in the bin through said opening.

4. In a bin for handling ore, the combination with a body having one inclined side and a discharge-opening in its other side, and a counterweighted door for closing said opening, the said door adapted to turn downwardly to a horizontal position and form a shelf or projection, of a plunger for forcing the material in the body through said opening.

5. In a bin for handling ores, the combination with a body having one inclined side, an opening in its opposite side, and a counterweighted door pivoted at its lower end below the opening, of a plunger and a top plate secured to said plunger and moving under the inclined side of the bin.

6. In a bin for handling ore, the combination with a body divided into a series of compartments, each compartment having one inclined side and a discharge-opening in its other side, a pivoted door for each opening and a plunger for each compartment, each plunger having a top plate which moves under the lower edge of the inclined side of the compartment.

7. In a bin for handling ore, the combination with a body mounted on wheels and divided into a series of compartments, each compartment having an inclined side and a discharge-opening in its other side, a counterweighted door pivoted to the body below each discharge-opening, and a plunger in each compartment.

8. In a bin for handling ores, the combination with a body divided transversely into a series of compartments, each compartment having one inclined side and a discharge-opening in its other side, of a counterweighted pivoted door below each opening, a plunger in each compartment, a cylinder for each plunger, a supply-pipe common to all of the cylinders and a regulating-valve for each cylinder.

705,762. TAG-HOLDER. WILLIAM S. JACOBS, Malden, Mass. Filed Jan. 20, 1902. Serial No. 90,260. (No model.)

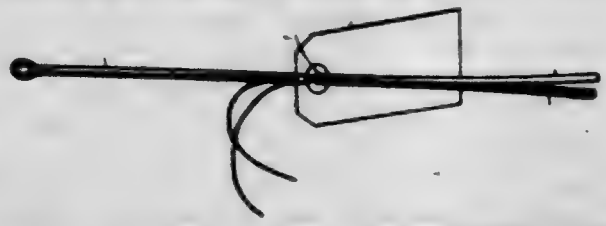

Claim.—A tag-holder comprising an elongated bodkin formed to enter the orifice in a tag, and having resilient diverging members at one end

adapted to yieldingly support the tag and to be forced inwardly by the margin of said orifice to permit the removal of the tag.

705,768. RAILWAY-CAR TRUCK. HERBERT R. KETTELEY, Buffalo, N. Y. Filed May 21, 1902. Serial No. 108,377. (No model.)

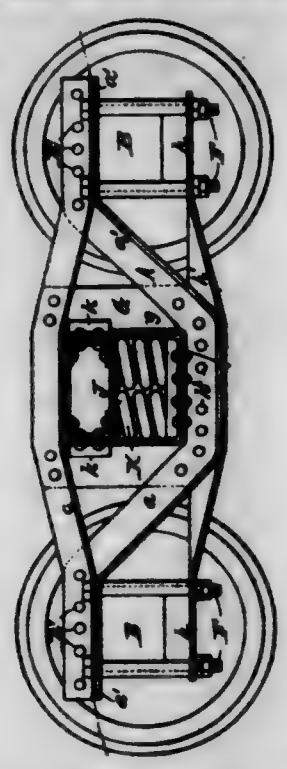

Claim.—1. In a diamond truck, the combination of axle-boxes, of a side frame composed of an upper and a lower chord, said lower chord having a horizontal flange and a vertical portion, the ends of said upper chord being riveted to the vertical portion of said lower chord, and vertical anchoring-bolts connecting said horizontal flange of the lower chord to said axle-boxes, substantially as set forth.

2. In a diamond truck, the combination with axle-boxes, of a side frame composed of an upper and a lower chord, said upper chord having a horizontal flange and a vertical portion, the ends of said lower chord being riveted to the vertical portion of said upper chord, and vertical anchoring-bolts connecting said horizontal flange of the lower chord to said axle-boxes, substantially as set forth.

3. In a diamond truck, the combination with axle-boxes, of a side frame composed of an upper chord and a lower chord, each having a horizontal flange and a vertical portion, the ends of said horizontal flanges being superposed and the ends of said vertical portions being riveted together, and vertical anchoring-bolts connecting said horizontal flanges to said axle-boxes, substantially as set forth.

4. In a diamond truck the combination with axle-boxes, of a side frame composed of an upper chord and a lower chord each comprising an angle-bar having a horizontal flange and a vertical flange, the ends of said horizontal flanges being superposed and the ends of said vertical flanges being riveted together, and vertical bolts connecting said horizontal flanges to said axle-boxes, substantially as set forth.

5. In a diamond truck, the combination with axle-boxes, of a side frame composed of an upper and a lower chord, one of said chords having a horizontal flange and a vertical flange, said other chord comprising two angle-bars each arranged with one flange vertical and one flange extending laterally from the vertical flange, the ends of the vertical flanges of the angle-bars of one chord being riveted to the ends of the vertical flanges of said other chord, and vertical bolts connecting the horizontal flange of one of said chords to said axle-boxes, substantially as set forth.

6. In a diamond truck, the combination with axle-boxes, of a side frame composed of an upper and a lower chord, said lower chord having a horizontal flange and a vertical flange, said upper chord comprising two angle-bars each arranged with one flange vertical and one flange extending laterally from the vertical flange, the ends of the vertical flanges of the angle-bars of the upper chord being riveted to the ends of the vertical flange of said lower chord, and vertical bolts connecting the horizontal flanges of said lower chord to said axle-boxes, substantially as set forth.

7. In a diamond truck, the combination with axle-boxes, of a side frame composed of an upper and a lower chord, said lower chord having a horizontal flange and a vertical portion, the ends of said upper chord being riveted to the vertical portion of said lower chord, vertical bolts connecting said horizontal flange of said lower chord to said axle-boxes, and a substantially U-shaped bar connecting said upper and lower chords between the axle-boxes, substantially as set forth.

8. In a diamond truck, the combination with axle-boxes, of a side frame composed of an upper and a lower chord, said lower chord having a horizontal flange and a vertical portion, the ends of said upper chord being riveted to the vertical portion of said lower chord, vertical bolts connecting said horizontal flange of said lower chord to said axle-boxes, a substantially U-shaped member connecting said chords between the axle-boxes and a tie-bar connected at its ends to said axle-boxes and at its central portion to said lower chord, substantially as set forth.

9. In a diamond truck, the combination with axle-boxes, of two side frames each composed of an upper and a lower chord, said lower chord having a horizontal flange and a vertical portion, the ends of said upper chord being riveted to the ends of the vertical portion of said lower chord, vertical bolts connecting said horizontal flanges of the lower chords to said axle-boxes, and a spring-board connecting said side frames, substantially as set forth.

705,764. PLAYING-BALL. ELEAZER KIMPBALL, Boston, Mass. Filed June 14, 1902. Serial No. 111,761. (No model.)

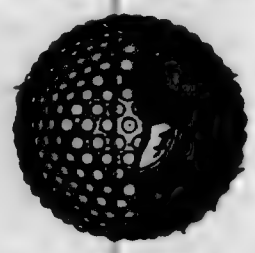

Claim.—1. The combination with a springy filling, of a shell comprising layers of gutta-percha, hard rubber, celluloid and fabric, said hard-rubber layer being inclosed within one of the other layers.

2. A playing-ball comprising a gutta-percha sphere between the inner and outer surfaces of which is embedded a shell of harder resilient material; said shell being close to the periphery of said gutta-percha sphere.

3. A playing-ball comprising a gutta-percha sphere between the inner and outer surfaces of which is embedded a shell of harder resilient material; said harder sphere being close to the periphery of said gutta-percha sphere, and the latter being provided with a filling of yielding material.

4. A playing-ball comprising a gutta-percha shell in which is embedded a perforated shell of harder resilient material; said harder shell being between the outer and inner surfaces of said gutta-percha sphere, and the latter being provided with a filling, and holding said filling under compression.

5. A playing-ball comprising a gutta-percha sphere in which is embedded a shell of thin hard rubber; said shell being close to the periphery of said gutta-percha sphere.

6. A playing-ball comprising a gutta-percha shell in which is embedded a shell of harder resilient material; said harder shell being close to the periphery of said gutta-percha shell, and the latter being filled with a sphere of soft rubber.

7. A playing-ball comprising a gutta-percha sphere in which is embedded a perforated shell of harder resilient material, said shell being close to the periphery of said gutta-percha sphere, and portions of said sphere lying within and without said shell.

8. A playing-ball comprising a gutta-percha sphere in contact with which is embedded a perforated shell of harder resilient material; said harder shell being close to the periphery of said gutta-percha sphere, and the latter being provided with a filling.

9. A playing-ball comprising a gutta-percha sphere in which is embedded a shell of harder resilient material; said shell being close to the periphery of said gutta-percha sphere; and a fabric-lined casing of celluloid upon said gutta-percha sphere.

10. A playing-ball comprising a gutta-percha shell in which is embedded a shell of hard rubber; said harder shell being close to the periphery of said gutta-percha shell, and the latter being filled with a sphere of soft rubber which is held under compression by said gutta-percha shell.

11. A playing-ball comprising a soft-rubber sphere and layers thereon of gutta-percha, hard rubber and celluloid, one of said gutta-percha and celluloid layers inclosing said hard-rubber layer.

12. A playing-ball comprising a gutta-percha sphere in which is embedded a perforated shell of harder resilient material; said shell being close to the periphery of said gutta-percha sphere; and a layer of celluloid upon said sphere.

13. A playing-ball comprising a shell of gutta-percha in which is embedded a perforated shell of harder resilient material; said harder shell being between the inner and outer sides of said gutta-percha shell, and the latter being provided with a filling, and being also reinforced by a layer of fabric.

14. A playing-ball comprising a gutta-percha shell in which is embedded a perforated shell of hard rubber; said gutta-percha shell being

provided with a filling, and holding said filling under compression, and a casing of fabric-lined celluloid upon said gutta-percha shell.

15. A playing-ball comprising a sphere of soft rubber, a shell thereon consisting of gutta-percha and holding said soft-rubber sphere under compression, a perforated shell of hard rubber embedded in said gutta-percha shell and a casing consisting of celluloid and fabric upon said gutta-percha shell.

705,765. PLAYING-BALL. ELIAKIM KEMPSHALL, Boston, Mass. Filed June 14, 1902. Serial No. 111,772. (No model.)

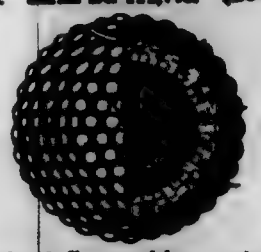

Claim.—1. A playing-ball comprising a spherical soft-rubber shell inflated or distended by mineral cement injected thereinto and forming a core of stone-like consistency.

2. In a playing-ball, the combination of a spherical shell formed of springy material and inflated or distended by cement injected thereinto, said cement consisting at least partially of plaster-of-paris; and a hard casing formed of plastic material upon said springy shell.

3. A playing-ball comprising a rubber shell and a core filling the same, said core consisting chiefly or wholly of plaster-of-paris and magnesia, and a gutta-percha shell upon said rubber shell.

4. A playing-ball comprising a rubber shell and a core filling the same; said core consisting of plaster-of-paris and magnesia, and said rubber sphere being in a state of expansion upon said core, and a gutta-percha shell upon said rubber shell.

5. A playing-ball comprising a rubber shell, a rigid core filling the same, and consisting of cement and having a stone-like consistency, and a hard casing upon said shell.

6. In a playing-ball, the combination of a rubber shell, a core filling the same and consisting at least partially of plaster-of-paris, said rubber sphere being in a state of expansion upon said core, and a hard casing of plastic material upon said shell.

7. In a playing-ball, the combination of a rubber sphere, and a core within said sphere and filling the same; said core consisting of a mineral composition whose weight is less than that of water.

8. In a playing-ball, the combination of a rubber sphere, a core upon which said sphere is expanded, said core consisting of a mineral composition whose weight is less than that of water, and a shell of plastic material upon said rubber sphere.

9. In a playing-ball, the combination of a rubber sphere, expanded by a mineral composition injected thereinto and having less weight than water, and a shell of gutta-percha holding said rubber sphere under compression.

10. A golf-ball consisting of a whole rubber shell expanded by injected cement, said cement forming a core of stone-like consistency, and a shell of plastic material holding said rubber under compression; the specific gravity of the complete ball being less than that of water.

11. A playing-ball comprising a sphere of soft rubber distended by a core of plaster-of-paris injected thereinto, and a shell of gutta-percha holding said sphere under compression.

705,766. GOLF-BALL. ELIAKIM KEMPSHALL, Boston, Mass., assignor to The Kempshall Manufacturing Company, a Corporation of New Jersey. Filed Apr. 16, 1902. Serial No. 103,231. (No model.)

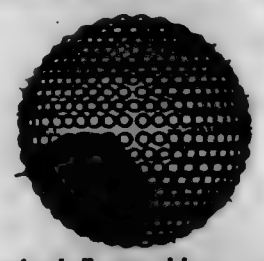

Claim.—1. A playing-ball comprising a center or core of gutta-percha, and applied cups or segments and an intermediate band, said segments and band consisting of plastic material and fabric, and being united at their edges.

2. A playing-ball comprising a spherical center or core, and applied shallow cups or segments and an intermediate band, said segments and band consisting of plastic material and fabric, and being welded together at their edges.

3. A playing-ball comprising a spherical center or core of gutta-percha, and applied shallow cups or segments and an intermediate band, said segments and band consisting of plastic material and fabric and being welded together at their edges, and said band consisting of a strip whose ends are welded together.

4. A playing-ball comprising a center or core, applied cups or segments, and an applied intermediate band composed of celluloid and fabric.

5. A playing ball comprising a center or core of gutta-percha, applied cups or segments, and an applied intermediate band composed of celluloid and fabric.

6. A playing-ball comprising a spherical center or core of gutta-percha, applied shallow cups or segments, and an applied intermediate band composed of celluloid and fabric.

7. A playing-ball comprising a center or core, applied cups or segments of celluloid and fabric, and an applied intermediate band composed of celluloid and fabric.

8. A playing-ball comprising a center or core of gutta-percha, applied cups or segments of celluloid and fabric, and an applied intermediate band composed of celluloid and fabric.

9. A playing-ball comprising a spherical center or core of gutta-percha, applied shallow cups or segments of celluloid and fabric, and an applied intermediate band composed of celluloid and fabric.

10. A playing-ball comprising a center or core, applied cups or segments, and an intermediate band joined or welded together at the edges, said segments and band consisting of plastic material and fabric.

11. A playing-ball comprising a center or core, a plurality of sets of cups or segments applied thereto at opposite points, and an applied band intermediate the cups or segments of each set.

12. A playing-ball comprising a center or core, a plurality of sets of cups or segments applied thereto at opposite points, and an applied band intermediate the cups or segments of each set, the band of one set overlying the cups or segments of the next innermost set.

13. A playing-ball comprising a center or core, a plurality of sets of cups or segments applied thereto at opposite points, and an applied band joined or welded at the edges to the edges of each set of said cups or segments.

14. A playing-ball comprising a center or core, a plurality of sets of cups or segments applied thereto at opposite points, and an applied band joined or welded at the edges to the edges of each set of said cups or segments, the band of one set overlying the cups or segments of the next innermost set.

705,767. FRUIT-DRIER. CLIFFORD J. KURTS, Salem, Oreg. Filed Feb. 3, 1902. Serial No. 92,370. (No model.)

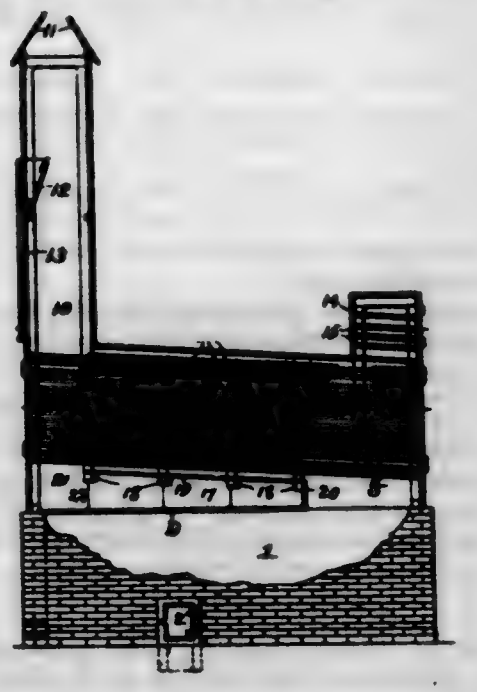

Claim.—1. In a drying apparatus, the combination of a heating-chamber, a drying-chamber above the same and communicating at one end therewith, an outlet-flue at the opposite end of the drying-chamber, and a dead-air chamber between said heating and drying chambers.

2. In a drying apparatus, the combination of a heating-chamber, a drying-chamber communicating at one end therewith, a flue communicating with the outer end of the drying-chamber, and a dead-air chamber between said heating and drying chambers, said dead-air chamber communicating with the drying-chamber at the same end with which the outlet-flue communicates.

3. In a drying apparatus, the combination with a heating-chamber,

a drying-chamber above the heating-chamber and communicating at one end therewith, and a flue communicating with the other end of the drying-chamber, of a hollow structure between said chambers and shorter than said chambers to permit communication between said chambers at one end of the apparatus and prevent such communication at the other end, said hollow structure forming a dead-air chamber in open communication with the outlet end of the drying-chamber and closed at its other end.

4. In a drying apparatus, the combination with a drying-chamber having doors at both ends and tray-supports extending throughout the length of said chamber to permit the continuous passage of trays therethrough, of an air-heating chamber below the drying-chamber, a partition between said chambers and terminating a distance from the tray-outlet end of the drying-chamber to permit the passage of heated air to this end of said drying-chamber, a flue at the tray-inlet end of said drying-chamber for the escape of air after passing through said chamber, dampers in said flue to regulate the draft of air and a dead-air space in said partition below the tray-supports, said dead-air chamber open at the end below the flue.

705,768. WHEEL-TIRE. HYMAN LIEBENTHAL, Chicago, Ill. Filed May 5, 1902. Serial No. 105,994. (No model.)

Claim.—1. In a wheel-tire, the combination with a flexible tube, of two series of yielding braces in said tube, each series being located at one side of the longitudinal center of the tube, and a spring for each brace intermediate of its ends, substantially as specified.

2. In a wheel-tire, the combination with a flexible tube, of two series of yielding wire braces in said tube, each of said series being located at one side of the longitudinal center of the tube and each brace having an intermediate coiled-spring portion, the several coils of which lie opposite the side of the tube, means for securing one end of said brace of each series opposite the tread portion of the tire, and means for securing the other end of each brace opposite the portion of the tire adapted to lie against a wheel-rim, substantially as specified.

3. In a wheel-tire, the combination with a flexible tube having oppositely-located internal ribs, of two series of yielding wire braces, each of said series being located in said tube at one side of the longitudinal center thereof, each of said braces having between its ends a coiled-spring portion whose coils lie opposite and against the side of the tube, and each brace extending substantially from one of said ribs to the other, substantially as specified.

4. In a wheel-tire, the combination with a flexible tube, of a series of yielding braces in the tube, each comprising a loop portion at each end and an intermediate spring acting to hold said ends in position, substantially as specified.

5. In a wheel-tire, the combination with a flexible tube, of a series of yielding braces in the tube, each composed of a single wire bent on itself to form a loop portion at each end and an intermediate coiled-spring portion, substantially as specified.

6. In a wheel-tire, the combination with a flexible tube, of a series of yielding braces in the tube, each composed of a single wire bent on itself to form a loop portion at each end and an intermediate coiled-spring portion, and means for uniting the sides of each loop portion, substantially as specified.

7. In a wheel-tire, the combination with a flexible tube, of a series of yielding braces in the tube, each composed of a single wire bent on itself to form a loop portion at each end and an intermediate coil-spring portion, the ends of the wire being bent and inserted within the intermediate spring portion, substantially as specified.

705,769. WASTE-PIPE TRAP. VICTOR E. LOMBARD and CLIFFORD E. COLE, Jackson, Miss. Filed Sept. 21, 1901. Serial No. 76,098. (No model.)

Claim.—1. A trap-cover and vent-pipe coupling comprising a ring having internal screw-threads and a laterally-extending vent-pipe section having an upwardly-tapering lower portion and a vertical cylindrical upper portion, and a cover formed with a depending annular flange provided with exterior screw-threads to engage the threads of the ring portion, substantially as described.

2. The combination with a trap of the kind described, having an inlet and an outlet pipe, of a trap-cover and vent-pipe coupling comprising a ring having internal screw-threads, and formed with a laterally-projecting vent-pipe coupling having an inclined upwardly-flaring portion and vertical pipe portion, substantially as described.

705,789.

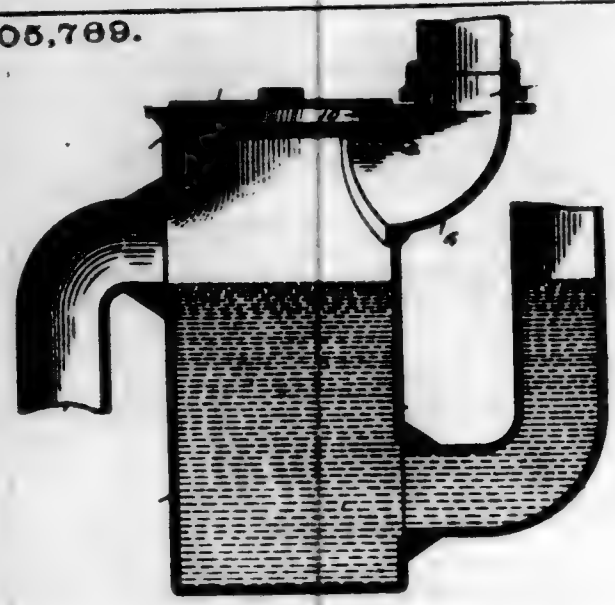

705,770. CORN-HUSKER. LEAVITT R. LOOMIS, Humphreysville, N. Y. Filed Dec. 14, 1901. Serial No. 86,960. (No model.)

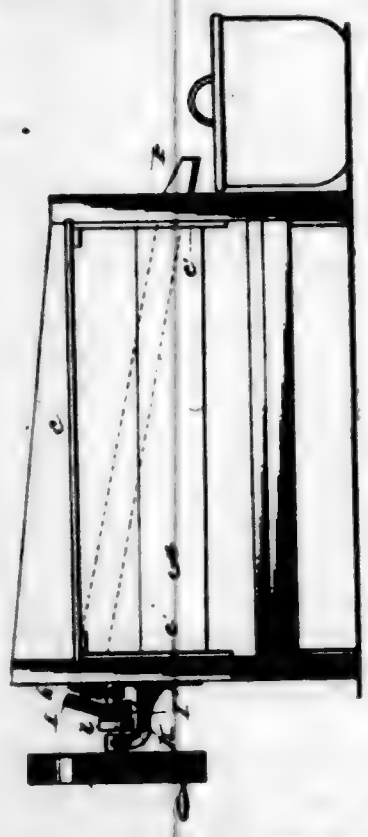

Claim.—1. In a corn-husker, the combination with the frame and drive-gear, of husking-rollers journaled in said frame and arranged in pairs, each of said rolls having a series of husking-pins mounted therein and having its diameter reduced immediately in advance of said pins, said reduced portion extending in a straight line longitudinally of the rollers and each roller having recesses for the reception of the ends of the pins on the cooperating roller, the rollers being so arranged as to bring a flat surface of one roller opposite the rounded surface of the coöperating roller; substantially as described.

2. In a corn-husker, the combination with the frame and drive-gear, of husking-rollers journaled in said frame and arranged in pairs, one of said rollers having a series of husking-pins mounted therein and having its surface flattened immediately in advance of said pins, said flattened surface extending in a straight line longitudinally of the roller and the other having recesses for the reception of the ends of said pins, the rollers being so arranged as to bring a flattened surface and a rounded surface into coöperation; substantially as described.

3. In a corn-husker, the combination with the frame and drive-gear, of husking-rollers journaled in said frame and arranged in pairs, one of said rollers having a series of husking-pins mounted therein and having its surface flattened immediately in advance of said pins, said flattened surface extending in a straight line from end to end of the roller, the other of said rollers having recesses for the reception of the pins and a cutting-blade and coöperating recess in said rollers in rear of said pins whereby the husk is first removed and then the ear severed from the stem; substantially as described.

4. In a corn-husker, a husking-roll formed in solid halves clamped on a central shaft having flattened surfaces on its periphery extending from end to end of the roll with husking-pins projecting from said flattened surfaces at the rear thereof, a knife extending from end to end of the roll and recesses and longitudinal grooves; substantially as described.

5. In a corn-husker, a husking-roll having flattened peripheral portions, pins projecting from said flattened portions at the rear thereof, and recesses in rear of said flattened portions, in combination with a coöperating roll having recesses for the pins and a knife extending from end to end of the roller in rear of said recesses adapted to enter the recess in the other roll in rear of the pins; substantially as described.

705,771. **PROJECTING APPARATUS.** AUGUSTE LUMIÈRE and LOUIS LUMIÈRE, Lyons, France. Filed Oct. 20, 1901. Serial No. 79,962. (No model.)

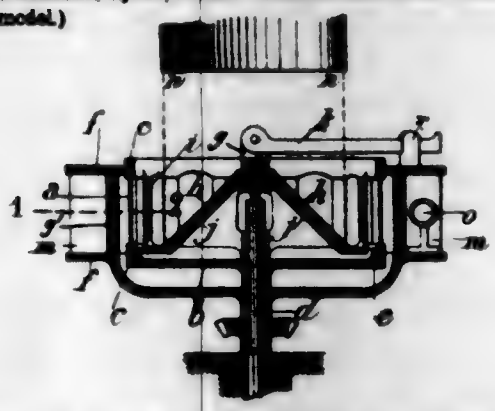

Claim.—In an apparatus for the projection of panoramic photographic images, the combination of a plate *b* keyed on a fixed vertical axle and carrying the image to be projected, a wheel *f* capable of revolving around the said axle on the exterior of the image and carrying a plurality of objectives accompanied by their correcting-mirrors *m*, and an illuminating apparatus capable of revolving in the interior of the film at the same speed as the objectives and comprising, in front of each objective, a mirror *h* inclined at an angle of forty-five degrees and a condenser *i*, substantially as herein set forth.

705,772. **APPARATUS FOR REPRODUCING PHONOGRAMS.** WILLIAM F. MEEKER, Chicago, Ill., assignor to the Lambert Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 1, 1902. Serial No. 92,110. (No model.)

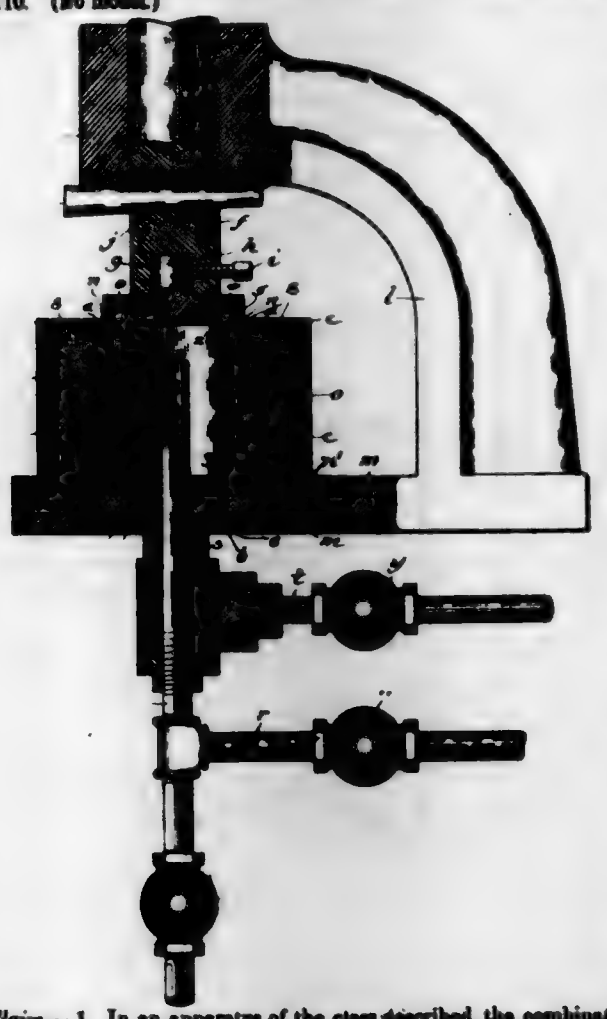

Claim.—1. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a blank record-cylinder, and a head portion arranged in contact with the other end of the record-cylinder and provided with outlet means communicating with the inner surface of such head and extending to the outer surface of such record-cylinder, substantially as described.

2. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a blank record-cylinder and provided with outlet means communicating with the inner surface of such base and extending to the outer surface of such record-cylinder, and a head portion arranged in contact with the other end of the blank record-cylinder, substantially as described.

3. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a blank record-cylinder and provided with perforations extending through such base and communicating with the inner surface thereof, and a head portion arranged in contact with the other end of the blank record-cylinder and provided with perforations in such head communicating with the inner surface thereof, substantially as described.

4. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a blank record-cylinder arranged within the matrix and provided with a groove in its inner surface and perforated outlet means through such base communicating with the groove, and a head portion arranged at the other end of the record-cylinder forming in connection with the record-cylinder and base a pressure-chamber, substantially as described.

5. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a record-cylinder and provided with a groove in its inner surface and with outlet means through such base communicating with such groove, and a head portion arranged in contact with the other end of the record-cylinder and provided with a groove in its inner surface and with outlet means through such head communicating with the groove, substantially as described.

6. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a blank record-cylinder, and a head portion arranged in contact with the other end of the blank record-cylinder and providing an opening communicating with the inner surface of the matrix outside of the record-cylinder and provided with perforations communicating with the inner surface of such head, substantially as described.

7. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a blank record-cylinder and provide a vent communicating with the inner surfaces of the matrix and provided with outlet means communicating with the inner surface of such base and extending to the outer surface of such record-cylinder, and a head portion arranged in contact with the other end of the record-cylinder to form in connection with the record-cylinder and base a chamber within such record-cylinder, substantially as described.

8. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion at one end thereof arranged to contact with the end of a blank record-cylinder having inwardly-extending end flanges, a head portion arranged in contact with the inner flange on the other end of the record-cylinder provided with perforations communicating with the inner surface of such head at points adjacent to the inner edge of such end flange and extending to the outer surface of such record-cylinder, substantially as described.

9. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion arranged at the end thereof in contact with the end portion of a blank record-cylinder having inwardly-extending flanges, such base portion being provided with perforations communicating with the inner surface thereof at points adjacent to the inner edge of the end flange of the record-cylinder, and a head portion arranged in contact with the opposite end of the record-cylinder and the end flange thereon and provided with perforations through such head communicating with the inner surface of the head at points adjacent to the inner edge of such end flange, substantially as described.

10. In an apparatus of the class described, the combination of a cylindrical matrix, a base portion arranged at one end thereof in contact with the end of a blank record-cylinder and provided with perforations extending through such base and communicating with the inner surface thereof, a head portion arranged in contact with the other end of the blank record-cylinder and provided with perforations in such head communicating with the space between it and the record-cylinder, a frame for holding the base in position, and means for admitting fluid under pressure to the chamber formed within the record-cylinder between the base and head, substantially as described.

11. In an apparatus of the class described, a movable head portion

adapted to close the end of a blank record-cylinder and provided with perforations through such head portion communicating with the inner surface thereof and extending to the outer surface of such record-cylinder, substantially as described.

12. In an apparatus of the class described, a base portion adapted to close one end of a blank record-cylinder to be operated upon and provided with perforations through such base portion communicating with the inner surface thereof and extending to the outer surface of such record-cylinder, substantially as described.

705,778. DEVICE FOR LIGHTING LAMPS BY ELECTRICITY. SVEND H. MEYER, Brooklyn, N. Y. Filed Jan. 3, 1898. Serial No. 665,624. (No model.)

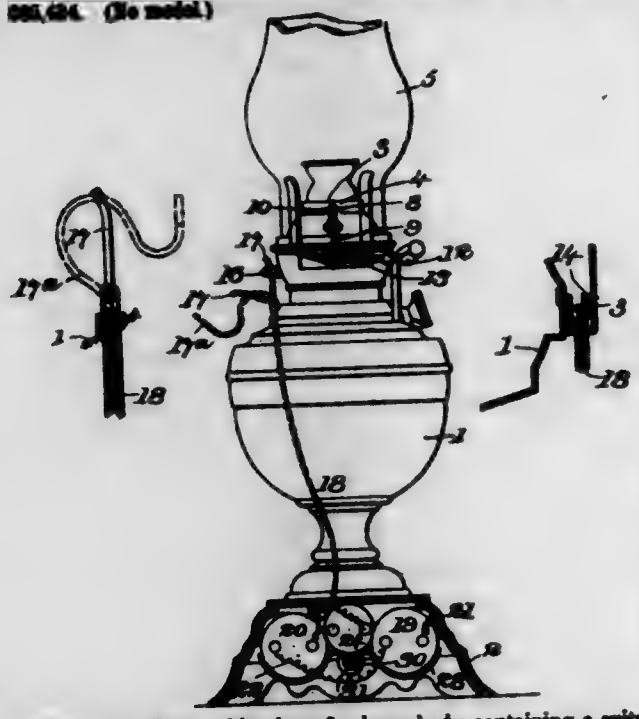

Claim.—1. The combination of a lamp-body containing a suitable source of electricity, a burner removably mounted thereon, a conductor separably connecting the source of electricity in the body with a fixed conductor in the removable burner, connected with lighting device adjacent to the lamp-wick, a vibrating contact-making device on the burner closing the circuit at mid-stroke only and automatically thrown to either extremity of its movement when moved by hand from the opposite extremity, to close the circuit as described.

2. In a device for lighting oil-lamps by electricity, the combination of a lamp-body 1, a burner 3 removably mounted thereon, a suitable source of electricity in the body of the lamp, a fixed sparking point 8 adjacent to the lamp-wick, a vertical rock-shaft 9, a contact-spring 11 carried by said rock-shaft and engaging with the sparking point 8, a horizontal arm 12 for rocking the rock-shaft 9, a spring device throwing the rock-shaft to the extremity of its movement when moved to mid-stroke from either direction, and separable conductors from the respective poles of the source of electricity to the connections of the sparking points 8 and 10, permitting the removal of the burner from the body of the lamp in which the source of electricity is mounted, substantially as described.

3. In a device for lighting oil-lamps by electricity, the combination of a lamp-body containing a suitable source of electricity; a lamp-burner removably mounted thereon, the contact-piece 8, inclined insulating bearing-surfaces 13ª adjacent thereto, a vibrating contact-spring 10 sliding upon the bearing-surfaces 13ª and engaging with the fixed point 8, and separable conductors connecting the respective poles of the source of electricity with the contact-points 8 and 10, substantially as described.

4. In a device for lighting oil-lamps by electricity, the combination of a lamp-body 1, containing a suitable source of electricity, a burner 3 removably mounted thereon, a fixed contact-point 8 adjacent to the wick, a vibrating contact-spring 10 engaging with the contact-point 8 at mid-stroke, inclined insulated bearing-surfaces 13ª on either side of the contact-point 8 arranged to deflect the vibrating contact-spring 10 as it is moved toward the contact-point 8 from either direction and throw it to the opposite extremity of its stroke, means for imparting vibratory movement to the spring 10 and separable conductors connecting the respective poles of the source of electricity with the contact devices 8 and 10, and permitting removal of the burner from the body of the lamp, substantially as described.

705,774. MACHINERY FOR SPINNING AND DOUBLING FIBROUS SUBSTANCES. GEORGE H. MILWARD, Nottingham, England. Filed Oct. 11, 1901. Serial No. 78,287. (No model.)

Claim.—1. In a ring spinning or doubling frame, a spindle, a spindle-rail, a tubular bolster having a recess in its top, conical bearing-surfaces in the recess and surrounding the spindle, a vertically-movable part in the recess, a weighted lever and means connecting it to said vertically-movable part whereby on the movement of the lever the desired drag is produced on the spindle, substantially as described.

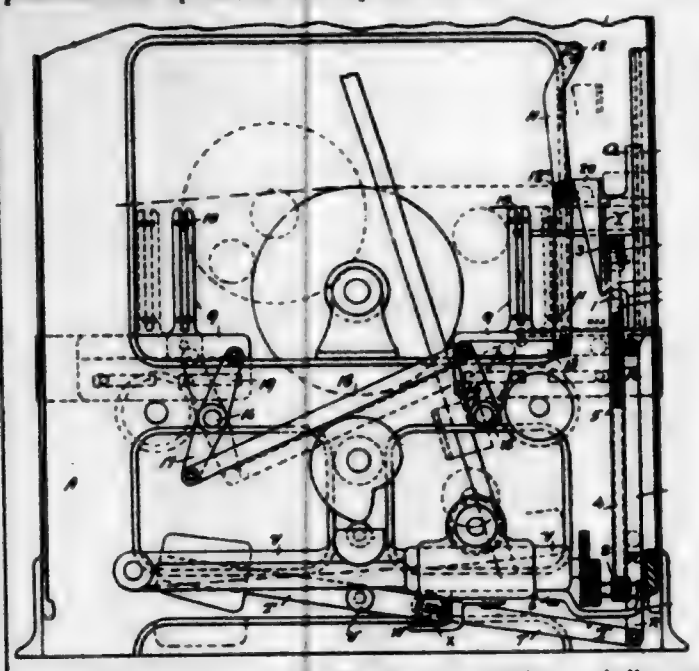

2. A ring spinning or doubling frame, comprising a spindle, a spindle-rail, a pivoted lever, a hollow tubular bolster having a recess in its upper portion, conical bearings in said recess surrounding the spindle, a cone in the lower part of said recess, vertical L-shaped supports in the interior of the bolster with their upper ends acting on said cone, and their outer ends resting on and actuated by said pivoted lever, as and for the purpose described

3. A ring spinning or doubling frame having drag-weights and levers, in combination with a "builder," a vertical slide connected to and worked by the "builder," a horizontal cross-slide having a rack working across the face of the vertical slide, a hanging shaft, a pinion keyed at the top of the hanging shaft and rotated by the "builder," an adjustable "former-block" with an inclined face carried by the said vertical slide, and a hanging lever pivoted at the top to the frame and provided with a bowl adapted to act against the said inclined face, a series of levers at the lower end of the hanging shaft, slides connected to said levers and adapted to move the "drag-weights" along the horizontal levers on which they are suspended whereby they are caused to impart a differential pressure to the spindles as and for the purpose described.

705,775. TOBACCO-FORK. WILLIAM L. MOORE, Lecie, Ky. Filed Mar. 10, 1902. Serial No. 97,571. (No model.)

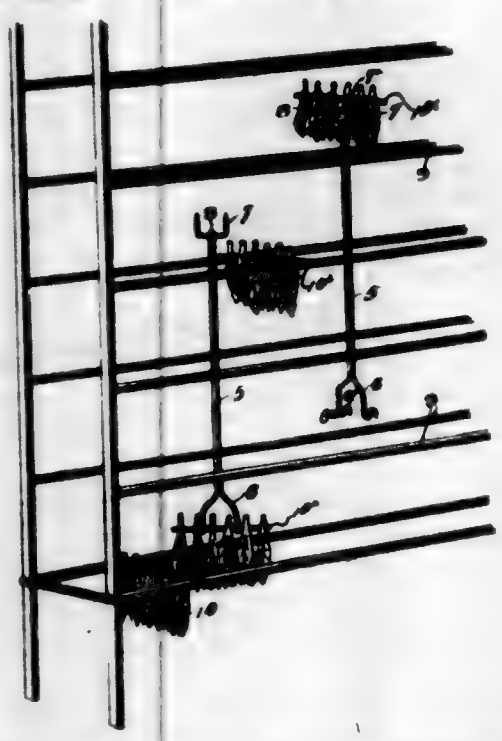

Claim.—1. As a new article of manufacture, a tobacco-fork consisting of a handle having a fork at each end adapted to engage the sticks

of tobacco, one of said forks being narrower than the other, substantially as shown and described.

2. As a new article of manufacture, a tobacco-fork consisting of a handle having a fork at each end and adapted to engage the sticks of tobacco, one of said forks being permanently attached to one end of the handle and the other removably secured to the opposite end of the same, the said permanent fork being provided with divergent arms each terminating in reversed oppositely-opening hooks, substantially as shown and described.

3. As a new article of manufacture, a fork for handling tobacco consisting of a handle with a fork connected to one end formed of two diverging arms each terminating in reversed oppositely-opening hooks, substantially as shown and described.

4. As a new article of manufacture, a tobacco-fork consisting of a handle having a fork at each end adapted to engage the sticks of tobacco, one of said forks being narrower than the other and detachable from said handle, substantially as shown and described.

5. As a new article of manufacture, a tobacco-fork consisting of a handle having a fork at each end adapted to engage the sticks of tobacco, one of said forks being narrower than the other and detachable from the handle, and the other, permanent, fork being provided with or formed of two diverging arms each terminating in reversed oppositely-opening hooks, substantially as shown and described.

705,776. GAME-BOARD. FRANK E. MORRILL, San Francisco, Cal. Filed May 1, 1902. Serial No. 105,477. (No model.)

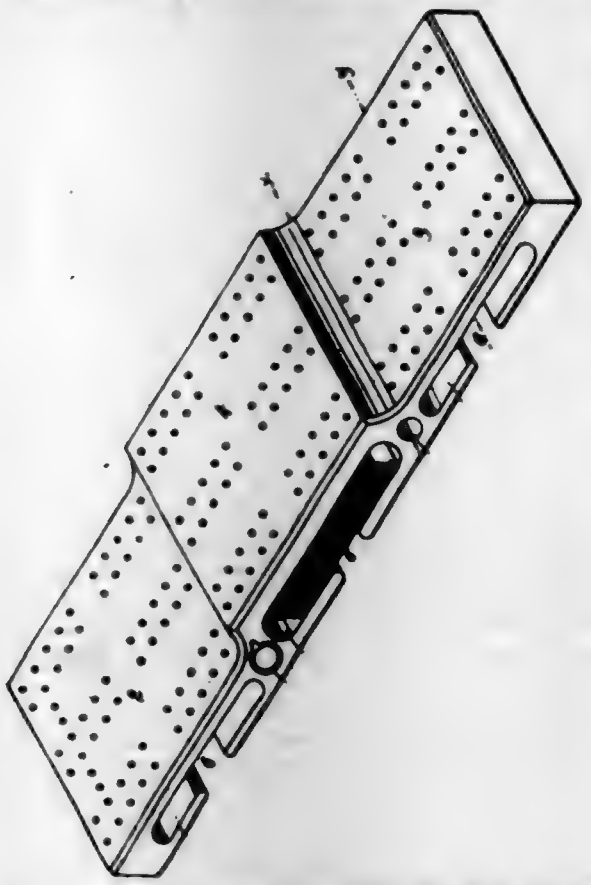

Claim.—1. A game-counting board having the upper surface divided transversely to form equal subdivisions, one of which is at a plane higher than the other two.

2. A game-counting board having parallel lines of holes extending from one end to the other, said board having its surface divided transversely and having the end surfaces upon essentially the same level and the central surface raised above said level, each of said surfaces containing an equal number of the marking-holes.

3. A game-counting board having its surface divided transversely and having a central section raised above the end sections, each section containing an equal number of marking-holes, transverse channels and holes made transversely in the board adapted to contain cards and marking-pins said channels opening through the bottom of the board.

4. A game-counting board consisting of a transversely-divided equally-spaced and unevenly-surfaced upper portion, channels made transversely from side to side to receive cards, said channels opening through the bottom of the board, and frictional pressure devices whereby the cards are held in place.

5. A game-counting board having holes in the upper surface, said surface being transversely divided into equal spaces, the central one of which is elevated above the end spaces, transverse channels with frictional devices whereby cards are retained therein, and pin-containing chambers between the channels, said chambers being inclined downwardly from the outer to the inner ends.

705,777. WASTE-TRAP. JOHN W. MCAULIFFE, Providence, R. I. Filed May 15, 1902. Serial No. 107,412. (No model.)

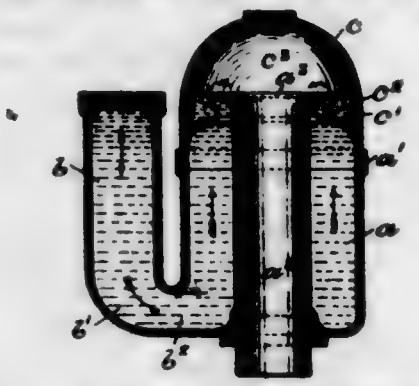

Claim.—1. In a waste-trap, the combination with the main body of the trap, a detachable dome-shaped upper body and an annular shelf in the detachable upper body, of a waste-duct extending from the bottom of the main body through the space inclosed by the annular shelf in the detachable upper body and having the expanded inlet-opening, as described.

2. In a waste-trap, the combination with the main body, a contracted opening in the upper part of the main body, an outflow-duct extending through the bottom of the main body and through the contracted opening in the upper part of the main body and the expanded inlet-opening of the discharge-duct, of an inlet-duct connected with the lower main body by a flaring branch, as described.

3. In a waste-trap, the combination with the inlet-duct b, a cylindrical main body, the flaring branch b^3 connecting the inlet-duct b with the main body and the contracted opening c^3 in the main body of the outflow-duct a^3 and the flaring inlet-opening a^2, as described.

4. In a waste-trap, the combination with the lower main body a, the dome-shaped cap c, means for connecting and disconnecting the cap from the main body, the annular shelf c^2 in the cap, the inlet-duct b and the flaring branch connecting the inlet-duct with the main body of the outlet-duct a^3 and the flaring inlet-opening a^2 of the same, located above the annular shelf within the dome-shaped cap, as described.

705,778. PORTABLE CONVEYER. WILLIAM I. MCCABE, Seattle, Wash. Filed Nov. 7, 1901. Serial No. 81,414. (No model.)

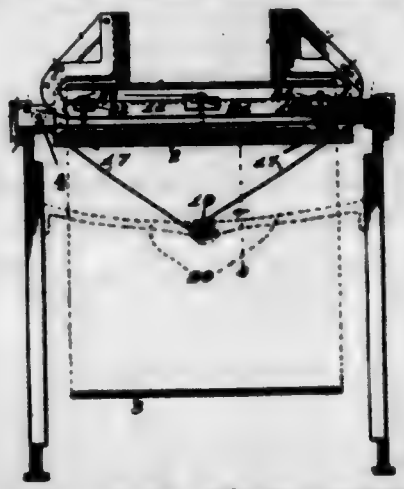

Claim.—1. In a mechanism of the class described, the combination with a suitable framework, of a transversely-arranged beam, brackets slidably mounted thereon, a roller supported at either end of said beam, a cable connected to one end of each of said brackets and passed over one of said rollers, and a shaft extending longitudinally of said framework and secured to said cables, whereby rotation of said shaft is designed to move said brackets, substantially as described.

2. In a mechanism of the class described, the combination with a suitable framework, of beams arranged transversely thereto, a bracket slidably supported at each side of each of said beams, means for moving each of said brackets longitudinally of its respective beam, and guiding-strips extending longitudinally of said framework at the sides thereof and connecting all of the brackets of their respective sides, substantially as described.

3. In a mechanism of the class described, the combination with a suitable framework, having T-rails extending longitudinally thereof, of a transversely-arranged beam, means for clamping the ends thereof to the opposite T-rails, slidably-mounted brackets carried by said transverse

beam, and means for moving said brackets toward each other, substantially as described.

4. In a mechanism of the class described, the combination with a suitable framework, having T-rails arranged longitudinally thereof on opposite sides, a transverse beam connecting said T-rails, a clamp at each end of said beams and formed of a vertical member, a horizontal member integral therewith, a lug extending downwardly therefrom designed to enter the material of the end of said transverse beam, a horizontally-extending lug projecting from the lower end of said vertical member, a screw threaded therethrough and designed to be screwed against the lower face of the outer flange of said T-rail, and means supported by said beam for guiding articles passed over the said framework, substantially as described.

5. In a mechanism of the class described, the combination with a suitable framework, and laterally-moving brackets at the opposite edges of said belt supported by said transverse beam, each of the brackets comprising a lower straight member, an upwardly-curved portion, a horizontal portion in a parallel plane to the lower portion, and a vertical portion extending upwardly from said horizontal portion, the curved portion being designed to inclose one edge of said belt when the brackets are brought toward each other, substantially as described.

6. In a mechanism of the class described, the combination with a suitable framework, of a beam supported thereby, oppositely-arranged brackets slidably mounted upon said beam, each of said brackets being formed of angle-irons and having a straight portion designed to fit one of the longitudinal corners of said beam, and a guiding-bracket carried by said beam and inclosing the flanges of the straight portion of each of said slidable brackets, substantially as described.

7. In a mechanism of the class described, the combination with a suitable conveying means, and a transversely-arranged beam of laterally-slidable brackets supported thereby, each of the brackets being formed with an L-shaped straight portion designed to engage and slide longitudinally of one of the longitudinal corners of said beam, a plurality of guiding-brackets secured to said beam, and provided with flanges designed to partially inclose and retain in position the flanges of said L-shaped straight portion of each of said brackets, and means for moving said brackets longitudinally of said beam, substantially as described.

8. In a mechanism of the class described, the combination with a suitable framework, and a carrier-belt supported thereby of transversely-movable brackets mounted upon said framework, guiding-strips on both sides of said framework and connecting all the brackets upon their respective sides, a cable secured to each of said brackets and passed about the bearing on the opposite side of said framework, and a rotatably-mounted shaft extending longitudinally of said framework, the free ends of said cables being secured to said shaft, whereby rotation of said shaft is designed to move the said brackets of the opposite sides of the framework toward each other, substantially as described.

705,779. STEAM-BOILER. EDWARD W. MCCAHNA, Anaconda, Mont. Filed Mar. 22, 1902. Serial No. 99,523. (No model.)

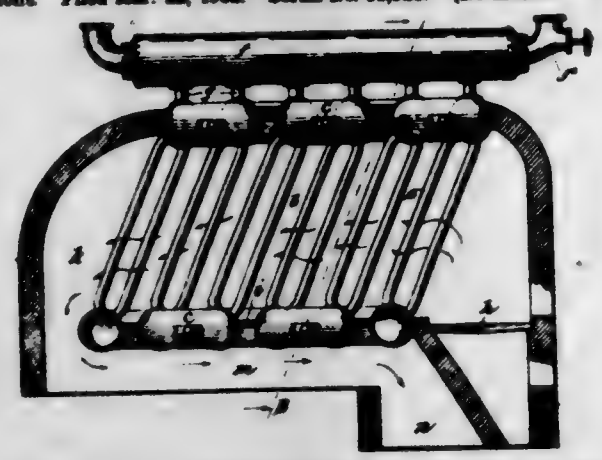

Claim.—1. A steam-boiler header, of serpentine form, composed of pipes and cast-steel return-bends united by calking and riveting.

2. A steam-boiler, composed of top and bottom headers of serpentine form, constructed of commercial pipes and cast-steel return-bends calked and riveted to said pipes, and steel upright tubes expanded into said pipes, substantially as described.

3. A steam-boiler, composed of top and bottom headers of serpentine form, constructed of commercial pipes and cast-steel return-bends calked and riveted to said pipes, and steel upright tubes expanded into said pipes, combined with a steam-drum and steel nozzles connecting it with the pipes of the top header.

4. A steam-boiler, composed of top and bottom headers of serpentine form, constructed of commercial pipes and cast-steel return-bends calked and riveted to said pipes, and steel upright tubes expanded into said pipes, combined with a setting having a downdraft including a horizontal partition in which the bottom header is arranged.

5. In a steam-boiler, a serpentine header composed of pipes with cast-steel return-bends having hand-hole plates, and manhole-plates at the ends of the header, substantially as described.

705,780. METAL-PIERCING MACHINERY FOR MAKING HOLLOW BODIES. BALFOUR F. MCTEAR, Rainhill, England. Filed Mar. 7, 1902. Serial No. 97,131. (No model.)

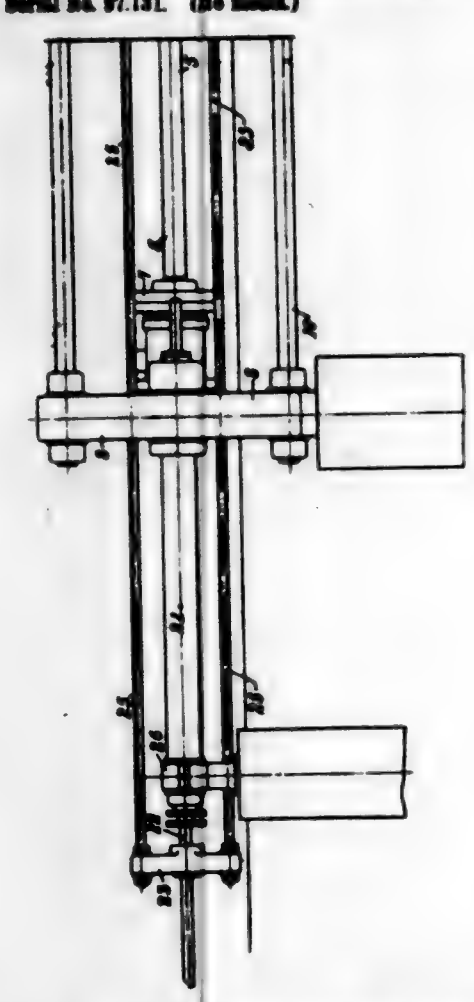

Claim.—1. In piercing machinery for making seamless tubes or hollow bodies, a front die part and means connecting therewith to receive and hold the front portion of the metal to be pierced, a rear die part adapted to receive and hold the rear portion of said metal, and axially in line with said front holding-die part, and a piercing-tool, said die parts and tool being adapted to be moved relatively longitudinally; substantially as described.

2. In piercing machinery for making seamless tubes or hollow bodies, a die part to receive and hold the front portion of the metal to be pierced; a gripping device in said die part, adapted to grip the front portion of the metal; a rear die part adapted to receive and hold the rear portion of said metal, and axially in line with said front holding-die part; and a piercing-tool; said die parts and tool being adapted to be moved relatively longitudinally; substantially as described.

3. In piercing machinery for making seamless tubes or hollow bodies, a front die part for receiving and holding the front portion of the metal to be pierced; a rear die part adapted to receive and hold the rear portion of the said metal, and axially in line with said front holding-die part; a hydraulic cylinder and ram connected with said front holding-die part, adapted to move the said die part away from the rear holding-die part; and a piercing-tool; substantially as described.

4. In piercing machinery for making seamless tubes or hollow bodies, a front die part to receive and hold the front portion of the metal to be pierced; a rear die part to receive and hold the rear portion of the said metal, and axially in line with said front holding-die part; a hydraulic cylinder and ram connected with said front holding-die part, adapted to move the said die part away from the rear holding-die part; a hydraulic cylinder and ram connected with and adapted to move the rear holding-die part in the same direction as the front holding-die part; and a piercing-tool; substantially as described.

5. In piercing machinery for making seamless tubes or hollow bodies, a piercing-tube, a die adapted to receive and hold the metal to be pierced; a tubular support disposed within said die, for supporting longitudinally the outer portion of the metal to be pierced; and an inner ram within said tubular support, adapted to hold the center portion of the metal, and to have movement within said tubular support; substantially as described.

6. In piercing machinery for making seamless tubes or hollow bodies, a piercing-tube, a die part adapted to receive and hold the front portion of the metal to be pierced, a die part adapted to receive and hold the rear portion of the said metal, and axially in line with said front holding-die part; a tubular support in said rear holding-die part, having a hydraulic cylinder at its back end, for supporting the outer part of the back end of the metal longitudinally; a ram within said tubular support for supporting the center portion of the metal longitudinally, and adapted to be held up by hydraulic pressure within said tubular support-cylinder; and a piercing-tool, said die parts and tool being adapted to be moved relatively longitudinally; substantially as described.

7. In piercing machinery for making seamless tubes or hollow bodies, a piercing-tube, the combination of the rear moving die parts 1, the front moving die parts 2, and a tubular support 31 within the die 1; substantially as set forth.

8. In piercing machinery for making seamless tubes or hollow bodies, a piercing-tube, the metal-die 1, the main piercing-ram 12 and cylinder 11, and the cylinder 31 disposed between the ram 12 and die 1, and its front end working within the die 1, substantially as set forth.

9. In piercing machinery for making seamless tubes or hollow bodies, a piercing-tube, the metal-die 1, the main piercing-ram 12 and cylinder 11, the cylinder 31 disposed between the ram 12 and die 1, and its front end working within the die 1, and the ram 33 disposed in the cylinder 31, said ram 12 and die 1 being connected together; substantially as set forth.

10. In piercing machinery for making seamless tubes or hollow bodies, the rear metal-containing die part 1, the main pressing-ram 12 and cylinder 11; a head 13 on said ram 12, separated from but connected with the die 1; the supporting-tube cylinder 31 between the head 13 and die 1; the front die part 2; the cylinders and ram 21, 22, connected with the die 2 for moving it in relation to the die 1; and a piercing-mandrel 5; substantially as set forth.

705,781. SIGN-BOARD. JOSEPH M. NIMMER, Elkhorn, Wis. Filed Dec. 27, 1901. Serial No. 87,508. (No model.)

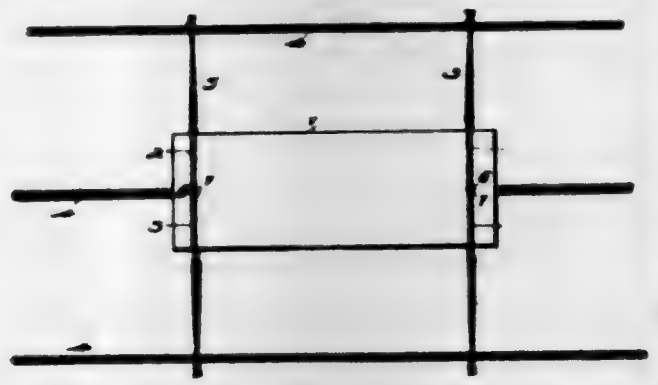

Claim.—The combination of a grooved board, wires extending across said board within said grooves and twisted together at the edges of said board to clamp the same, said wires having extended free ends for attachment to a suitable support, holes in said board communicating with said grooves, and wires passing over said first wires through the holes and having extended free ends twisted together at one face of the board to further secure said board and wires together.

705,782. GOVERNOR FOR WINDMILLS. CAMERON F. OBLER, Emmittsburg, Md. Filed May 3, 1902. Serial No. 105,834. (No model.)

Claim.—1. A windmill-governor comprising in combination a wheel having a series of independently-movable blades, means contained within the hub of the wheel for simultaneously shifting the said blades, governor-arms arranged substantially parallel with the wheel-shaft connected directly to two of the blades and adapted to operate the means for shifting all of the blades together with spring-actuated means for returning all of the parts to their normal positions, substantially as specified.

2. In a windmill-governor, a wheel comprising a hub and rim, a series of blades hinged to the rim and having shanks pivotally connected to the hub, the governor-arms connected to two of the shanks, the mutilated gears carried by all of the shanks, the gear-wheel adapted to mesh with said mutilated gears, and the spring-actuated device connected to the governor arms for returning them to their normal positions, substantially as described.

3. A wind-wheel governor comprising in combination a wheel-hub, the blades, rim and shanks, mutilated gears carried by the shanks, the gear-wheel arranged within the hub and adapted to mesh with said mutilated gears, the spring-actuated rock-bars extending longitudinally through the hub, the governor-arms connected to two of the shanks, and meshing with the said rack-bars, and a lever adapted to operate the spring-actuated rack-bars, for the purpose specified.

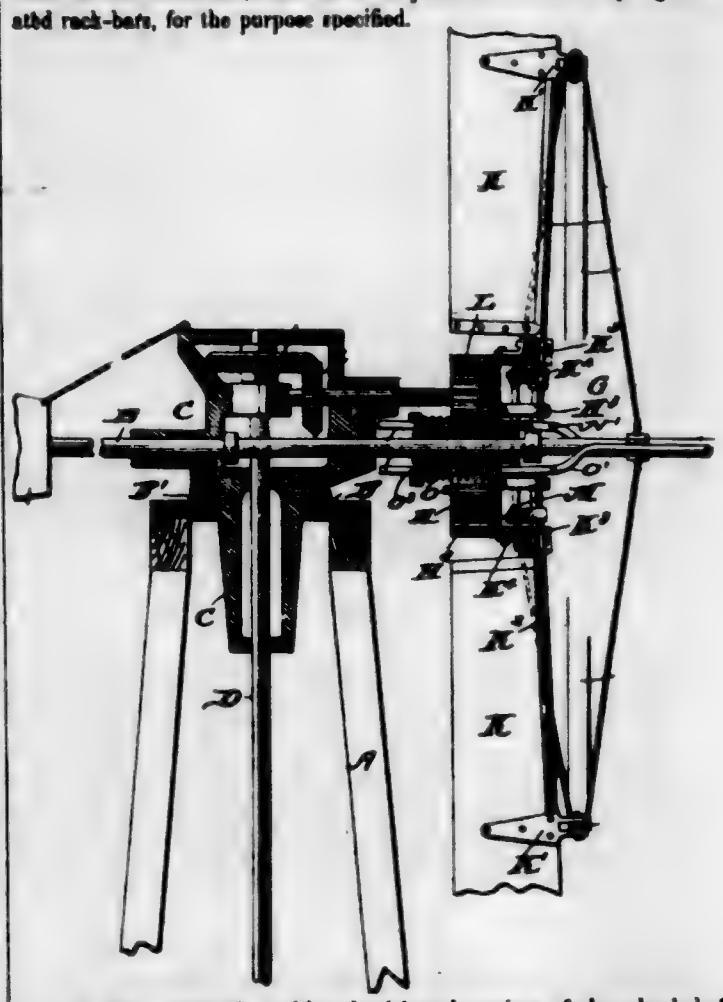

4. The combination with a derrick and casting, of the wheel-shaft journaled in the casting, the hub mounted upon said wheel-shaft, the said hub having the internally-toothed flange, the pinion meshing with said flange, the shaft carrying said pinion journaled in the casting and provided with a beveled gear, the vertical shaft having a beveled gear meshing with the aforesaid beveled gear, the wheel-rim, the blades hinged to the said rim, shanks attached to the blades and journaled upon the hub, the governor-arms attached to two of the said shanks, the mutilated gears arranged upon the inner ends of all the shanks, the gear-wheel mounted loosely upon the wheel-shaft within the hub and adapted to mesh with the said mutilated gears, the rack-bars extending through the hub, the toothed segments carried by the governor-arms, and adapted to mesh with the rack-bars, the springs surrounding said bars, the connecting-plate, the lever adapted to press against said plate, and means for operating the said lever for the purpose specified.

705,783. STREET-CAR FENDER. OLE OLSEN, St. Louis, Mo. Filed Aug. 7, 1901. Serial No. 71,197. (No model.)

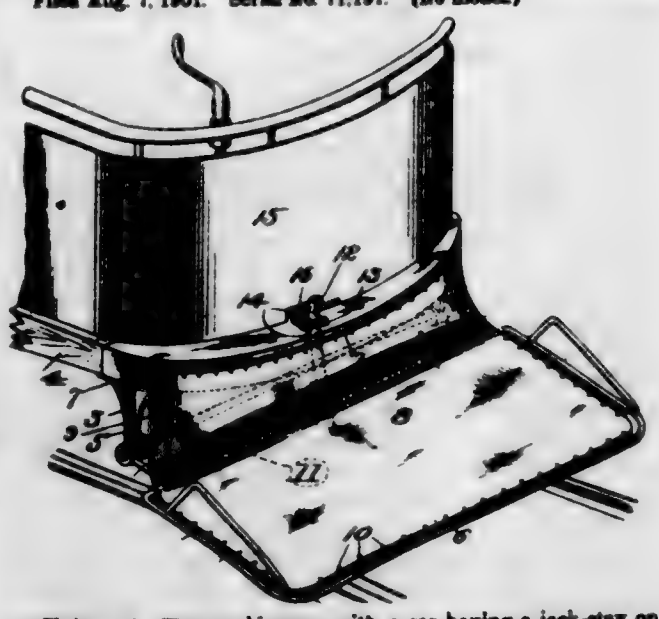

Claim.—1. The combination with a car having a jack-stay on the end thereof, of a car-fender pivotally supported on the car-body, said fender comprising a frame, a jack-stay thereon, and an apron laced to said jack-stays, substantially as described.

2. A car-fender having a pivotally-supported frame, a jack-stay

thereon, and an apron connected to said jack-stay, substantially as described.

3. A car-fender having a pivotally-supported skeleton frame, a jack stay thereon, and a canvas apron connected to said jack-stay, substantially as described.

4. A car-fender comprising an apron having a rope secured to its edge on the under side, substantially as, and for the purpose set forth.

5. A car-fender comprising an apron having a rope secured to its edge on the under side and having eyelets near said edge, substantially as, and for the purpose set forth.

6. The combination with a car having a jack-stay on the end thereof, of a car-fender pivotally supported on the car-body, said fender comprising a frame, a jack-stay thereon and an apron having a rope secured to its edge on the under side, said apron being hung to said jack-stays, substantially as described.

705,784. **HYDRAULIC-DREDGE CUTTER.** RAYMOND A. PERRY, Oakland, Cal., assignor of one-half to Atlantic Gulf & Pacific Co., New York, N. Y., and San Francisco, Cal., a Corporation of West Virginia. Filed Mar. 10, 1902. Serial No. 97,457. (No model.)

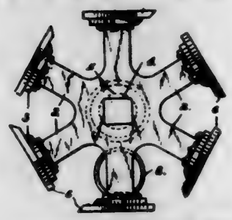

Claim.—1. The combination of a revolvable shaft, a hub and means for securing it to the shaft, arms extending radially outward from the hub and having their outer ends flattened to form a transversely-extended bearing-surface, cutters fitted flatwise against said surface, and a suction-pipe having its mouth located contiguous to the cutter.

2. The combination of a revolvable shaft, a hub and means for securing it to the shaft, arms extending radially outward from the hub, flat plates secured to the outer ends of the arms and extending transversely beyond the arms, cutters fitted flatwise against the flat plates, and a suction-pipe, having its mouth located within the circle of revolution and contiguous to the cutter.

705,785. **PROCESS OF PRODUCING COTTON-SEED OIL.** CECIL O. PHILLIPS, New York, N. Y., assignor to the American Cotton Oil Company, New York, N. Y., a Corporation of New Jersey. Filed Sept. 23, 1901. Serial No. 76,046. (No specimens.)

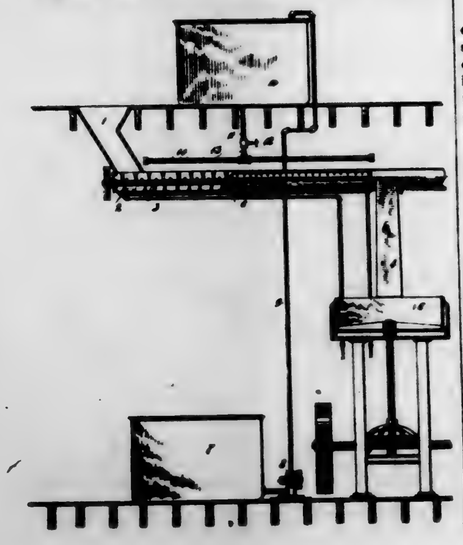

Claim.—1. The process of producing cotton-seed oil, which consists in crushing the cotton-seed meats, neutralizing the free fatty acids contained therein by an alkali, and then expressing the oil therefrom, substantially as described.

2. The process of producing cotton-seed oil, which consists in crushing the cotton-seed meats, treating them with a small proportion of alkali, heating them, and then expressing the oil therefrom, substantially as described.

3. The process of producing cotton-seed oil, which consists in crushing the cotton-seed meats, warming them, neutralizing the free fatty acids contained therein with a slight excess of alkali, heating them to a higher temperature and then expressing the oil therefrom, substantially as described.

4. The process of producing cotton-seed oil which consists in crushing the cotton-seed meats, agitating them, subjecting them to an alkaline spray and pressing out the oil therefrom, substantially as described.

705,786. **AUTOMATIC SWITCH.** HERMAN A. POPPENHUSEN, Evanston, Ill. Filed Oct. 31, 1901. Serial No. 80,594. (No model.)

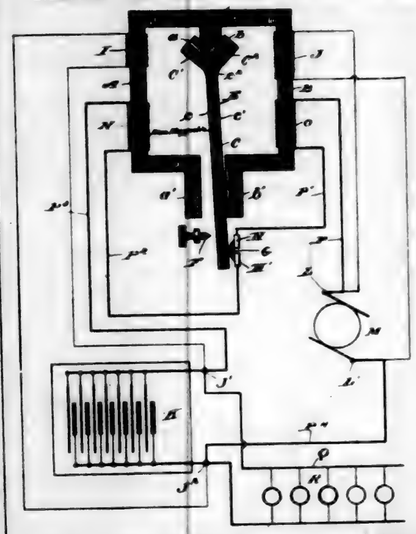

Claim.—1. The combination of a dynamo, a storage battery, a circuit connecting the dynamo with the storage battery which includes a switch, and means for actuating the switch comprising two magnetic circuits, a movable armature which is included in said magnetic circuits and is connected with and operates the switch, and coils located severally on the two magnetic circuits; one of said coils forming part of a shunt-circuit from the dynamo and the other of said coils forming part of a shunt-circuit from the storage battery.

2. The combination of a dynamo, a storage battery, a circuit connecting the dynamo with the storage battery which includes a switch, and means for actuating the switch comprising two magnetic circuits, a movable armature which is connected with and operates the switch, said armature embracing two magnetically-separated parts which severally form parts of the two magnetic circuits and coils on the two magnet-cores which form parts of shunt-circuits from the dynamo and storage battery.

3. The combination of a dynamo, a storage battery, a circuit connecting the dynamo with the storage battery, which includes a switch, and means for actuating the switch comprising two magnetic circuits, a movable armature which is included in said magnetic circuits, and is connected with and operates the switch, coils on two magnetic circuits which form parts of shunt-circuits from the dynamo and storage battery, and another coil on one of said magnetic circuits which forms part of the circuit connecting the dynamo with the storage battery and which is so wound that it augments or decreases the effect of one or the other of the said shunt-circuit coils.

4. The combination of a dynamo, a storage battery, a circuit connecting the dynamo with the storage battery, which includes a switch, and means for actuating the switch comprising two magnetic circuits, a movable armature which is connected with and operates the switch and which is included in said magnetic circuits, coils on the two magnetic circuits which form parts of shunt-circuits from the dynamo and storage battery, and two other coils on said magnetic circuits which form parts of the circuit connecting the dynamo with the storage battery and which are so wound that one of them augments the effect of one of the shunt-circuit coils and the other decreases the effect of the other of the said shunt-circuit coils.

5. A switch-actuating device comprising two magnetic circuits, a vibratory armature which is included in said magnetic circuits, and two coils located severally on the said magnetic circuits one of which forms part of one electric circuit and the other part of another electric circuit; said coils being adapted to give a greater magnetic flux in one of said cores than in the other.

6. A switch-actuating device comprising two magnet-cores which are mechanically connected but magnetically separated, a vibratory armature consisting of two magnetically-separated parts which operate severally in connection with the two magnet-cores, and coils on the said magnet-cores adapted to give a greater magnetic flux in one of said cores than in the other.

7. A switch-actuating device comprising two magnetic circuits, a vibratory armature which is included in said magnetic circuits, two coils located severally on said magnetic circuits one of which forms part of one electric circuit and the other part of another electric circuit; said coils being adapted to give a greater magnetic flux in one of said circuits than in the other, and another coil on one of said magnetic circuits which is so wound as to augment or decrease the action of the one or the other of said first-named coils.

8. A switch-actuating device comprising two magnetic circuits, a vibratory armature which is included in said magnetic circuits, two coils located severally on said magnetic circuits one of said coils forming part of one electric circuit and the other of said coils forming part of another electric circuit and said coils being adapted to give a greater magnetic flux in one of said magnetic circuits than in the other, and two other coils on said circuits which form parts of a single electric circuit and are so wound that one of them augments the action of one of the first-named coils and the other decreases the action of the other of said first-named coils.

9. A switch-actuating device embracing two magnet-cores, the poles of which are adjacent to each other, a pivotally-supported, vibratory armature adapted to approach and recede from the poles of said magnet-cores, and two coils located severally on said cores, one of said coils forming part of one electric circuit and the other part of another electric circuit and the said coils being adapted to give a greater magnetic flux in one of said magnet-cores than the other.

10. A switch-actuating device embracing two magnet-cores, which are mechanically connected but magnetically separated, and the poles of which are adjacent to each other, a pivotally-supported, vibratory armature embracing two magnetically-separated parts adapted, in the vibratory movement of the armature, to approach and recede from the poles of said magnet-cores, and coils on said cores adapted to give a greater magnetic flux in one of said cores than in the other.

11. A switch-actuating device embracing two magnetic circuits, a pivotally-supported, vibratory armature which is included in said magnetic circuits, an adjustable stop controlling the movement of the armature in one direction, and two coils located severally on said circuits, one of said coils forming part of one electric circuit and the other coil forming part of another electric circuit and said coils being adapted to give a greater magnetic flux in one of said circuits than in the other.

12. A switch-actuating device embracing two magnet-cores which are mechanically connected but magnetically separated, and the poles of which are adjacent to each other, a pivotally-supported, vibratory armature embracing two magnetically-separated parts adapted, in the vibratory movement of the armature, to approach and recede from the poles of said magnet-cores, an adjustable stop controlling the movement of the armature in one direction and coils on said cores adapted to give a greater magnetic flux in one of said cores than in the other.

13. The combination of a dynamo, a storage battery, a working circuit connecting the dynamo with the storage battery, which includes a switch, a pivotally-supported, vibratory armature which is included in said magnetic circuits and is connected with and gives movement to the movable part of said switch, an adjustable stop controlling the movement of the armature, coils on the two magnetic circuits which form parts of shunt-circuits from the dynamo and storage battery, the coil in the dynamo shunt-circuit being adapted to give a greater magnetic flux than the coil in the storage-battery shunt-circuit, and other coils on said magnetic circuits forming parts of the said working circuit, one of said working-circuit coils being so arranged as to augment the action of one of the shunt-circuit coils, and the other of said working-circuit coils being arranged to decrease the action of the other of said shunt-circuit coils.

14. The combination of a dynamo, a storage battery, a working circuit connecting the dynamo with the storage battery which includes a switch, two mechanically-connected but magnetically-separated magnet-cores, the poles of which are adjacent to each other, a pivotally-supported, vibratory armature which is connected with and gives movement to the movable part of said switch, said armature embracing two magnetically-separated parts adapted, in the vibratory movement of the armature, to approach and recede from the poles of said magnet-cores, an adjustable stop controlling the movement of the armature in a direction to open the switch, coils on the two magnet-cores which form parts of shunt-circuits from the dynamo and storage battery, the coil in the dynamo shunt-circuit being adapted to give a greater magnetic flux in its magnet-core than the coil in the storage-battery shunt-circuit, and other coils on said magnet-cores, forming parts of the said working circuit, one of said working-circuit coils being so arranged as to augment the action of one of the shunt-circuit coils, and the other of said working-circuit coils being arranged to decrease the action of the other of said shunt-circuit coils.

705,787. **PROCESS OF DEODORIZING.** FRANK M. PRATT, Decatur, Ill. Filed Dec. 20, 1901. Serial No. 87,233. (No specimens.)

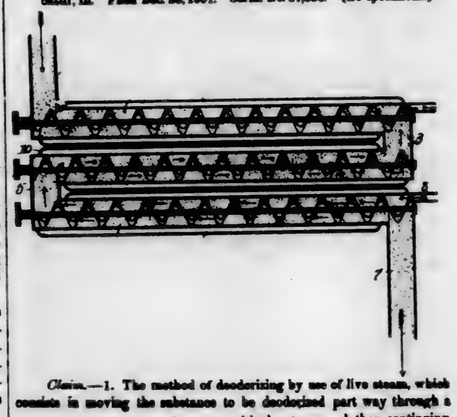

Claim.—1. The method of deodorizing by use of live steam, which consists in moving the substance to be deodorized part way through a heated passage-way out of contact with the steam and then continuing the movement of the substance through the heated passage-way in contact with live steam.

2. The method of deodorizing by use of live steam, which consists in moving the substance to be deodorized part way through a heated passage-way, in an agitated condition, out of contact with the steam and then continuing the movement and agitation of the substance through the heated passage-way in contact with live steam.

3. The method of deodorizing by use of live steam, which consists in moving a stream of the substance to be treated through a heated passage-way in one direction, and passing a current of live steam part way through the heated passage-way in the contrary direction; the steam being permitted to escape before reaching the supply-inlet for the substance to be deodorized.

705,788. **ACETYLENE-GAS GENERATOR.** SAMUEL W. RAY, Dallas, Tex., assignor to New Process Manufacturing Company, Dallas, Tex. Filed Oct. 2, 1901. Serial No. 77,234. (No model.)

Claim.—1. In an acetylene-gas generator, the combination with a generator-tank and a gasometer provided with a bell, of a carbid-receptacle mounted on said generator and communicating therewith, a diaphragm mounted in the side of said receptacle, inner and outer couplings secured to said diaphragm, a short arm secured to said inner coupling, a longer arm secured to said outer coupling, a valve mounted in said carbid-receptacle, and connected to said short arm, and means for connecting said long arm and said bell, said means being constructed to exert a component of force at right angles to said lever-arm thereby causing compound flexure in said diaphragm, substantially as described.

2. The combination with a generator of a carbid-receptacle connected to the top of said generator, a diaphragm mounted in the side of said receptacle, a lever connected to said diaphragm, a valve mounted in said receptacle and connected to said lever, and means operated by the gas-pressure for actuating said lever, said means being constructed to exert a component of force at right angles to the said diaphragm thereby causing compound flexure in said diaphragm, substantially as described.

3. The combination with a generator and a gasometer provided with a bell, of a carbid-receptacle connected to said generator, a diaphragm mounted in the side of said receptacle, a lever connected to said dia-

phragm, a valve mounted in said receptacle and connected to the short arm of said lever, and a flexible member connecting said lever and said gas-bell, said member being arranged to exert a component of force at right angles to said lever thereby causing compound flexure in said diaphragm substantially as described.

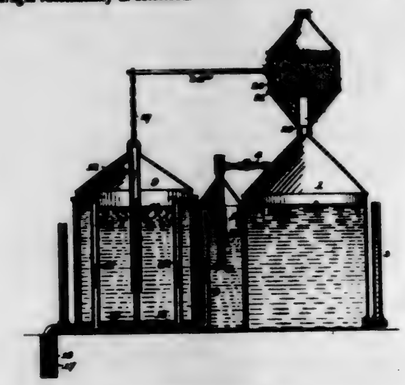

705,789. MOLD FOR HOLLOW CONCRETE ARTICLES. WILLIAM W. REEVES, Braddock, Pa. Filed Oct. 2, 1901. Serial No. 77,304. (No model.)

Claim.—1. A mold for concrete tombs, &c., having a core with end boards, each consisting of a plurality of adjustable parts; substantially as described.

2. A mold for hollow concrete articles having a core with side boards made in two or more parts and provided with adjustable separators; substantially as described.

3. A mold for concrete tombs, &c., having a core with side boards made in two or more parts and provided with adjustable separators, and end boards each consisting of a plurality of adjustable parts; substantially as described.

4. A mold for hollow concrete tombs, &c., having side boards and outwardly-flanged end boards adjustable along the side boards; said parts having means for clamping them in place; substantially as described.

5. A mold for hollow concrete tombs, &c., having a core with side boards made in two or more parts with a downwardly-tapering separator between said parts, and holders for preventing the separator from collapsing inwardly; substantially as described.

6. A cover-mold having a core adjustable in transverse and longitudinal dimensions; substantially as described.

7. A cover-mold having a longitudinally-movable shaper fitting and guided upon the side board; substantially as described.

705,790. TWO-SPEED AND DIFFERENTIAL GEAR FOR MOTOR-VEHICLES. JOHN C. ROSSIUS, Waltham, Mass. Filed Oct. 31, 1900. Serial No. 35,091. (No model.)

Claim.—1. In a motor-vehicle, means for varying the speed of the vehicle from fast with relatively low power, to slow with increased power, without varying the speed of the motor or power developed by the same, comprising a motor-driven shaft, a gear fast thereto, a gear loose on the same shaft and driven at a different speed by the first said gear through a speed-changing train of gears, a sprocket placed between said gears also loose on said drive-shaft, a clutch member formed on each side of said sprocket, corresponding clutch members on the driving-gears adapted to engage positively with the clutch members on the sprocket, and means for moving said sprocket laterally on the shaft to cause one of its clutch members to engage with the corresponding clutch member of either driving-gear, substantially as described.

2. In a motor-vehicle provided with a driving-sprocket positively connected with the motor and a following sprocket connected by chain-gearing with the driving-sprocket and loose on the driving-axle of the vehicle, means for varying the speed of the vehicle without altering the speed of the motor, comprising a high-speed gear fast to the driving-shaft of the motor, a gear loose on said shaft and driven at a low speed through a reducing train of gears by said high-speed gear, the said driving-sprocket placed between said gears loose on said shaft, a clutch member formed on each side of said sprocket, corresponding clutch members on the driving-gears adapted to engage positively with the clutch members on the sprocket, and means for moving said driving-sprocket laterally on the shaft to cause one of its clutch members to engage with the corresponding clutch member of either driving-gear, in combination with means for yieldingly connecting the following sprocket with the driving-axle of the vehicle, on which it turns freely, comprising a friction-clutch one member of which is carried by the sprocket while the other is fast to the axle.

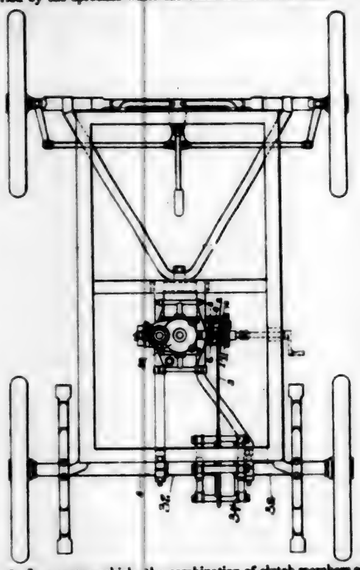

3. In a motor-vehicle, the combination of clutch members operating constantly at different speeds, a driving sprocket or gear having clutch members complemental thereto, provisions for bringing said sprocket or gear clutch members into connection with either of said constantly-operating clutch members, a driven axle having a friction clutch member, a complemental friction clutch member positively connected with the driving sprocket or gear, and means under control of the operator for bringing said friction clutch members into and out of clutching relation with each other.

4. In a motor-vehicle having a positively-driven sprocket or gear turning loosely about the driving-axle of the vehicle, means for yieldingly connecting said sprocket or gear with said axle, so that they will turn in unison, comprising a drum or pulley fast to the axle, a portion of an annular cylinder attached to the sprocket or gear and surrounding said drum or pulley, a suitable friction member or members surrounding said annular cylinder and suitably attached to said drum or pulley, adjustable bell-crank levers attached to the drum or pulley for pressing the friction member or members against the annular cylinder, and means controlled by the operator of the vehicle for so operating said levers as to press the friction member or members against the annular cylinder and cause the axle of the vehicle to turn with the sprocket or gear, substantially as specified.

705,791. PORTABLE DRILLING-MACHINE. JAMES ROURKE, Parkersburg, W. Va. Filed Dec. 10, 1901. Serial No. 85,360. (No model.)

Claim.—1. In a drilling-machine of the character described, the combination of a frame, a crank-shaft mounted upon said frame, a band-wheel mounted upon said crank-shaft, a sprocket-wheel also mounted upon said shaft, of a bull-wheel shaft, a sprocket-wheel carried by said bull-wheel shaft, one of the gudgeons of said bull-wheel shaft being mounted in one side of said frame, the other gudgeon being mounted in a post, one side of said frame being of lesser length than the other, to permit the mounting of the bull-wheel in close proximity to the ground and enable the same to spool the requisite amount of cable for deep drilling.

2. In a drilling-machine of the character described, the combination with a frame having two sides, of a bull-wheel shaft having one of its gudgeons mounted in the end of one of said sides, and a post forming a bearing for the other gudgeon of said bull-wheel shaft, the other side of said frame being of lesser length than the first-mentioned side to permit the mounting of the bull-wheel in close proximity to the ground and enable the same to spool the requisite amount of cable for deep drilling.

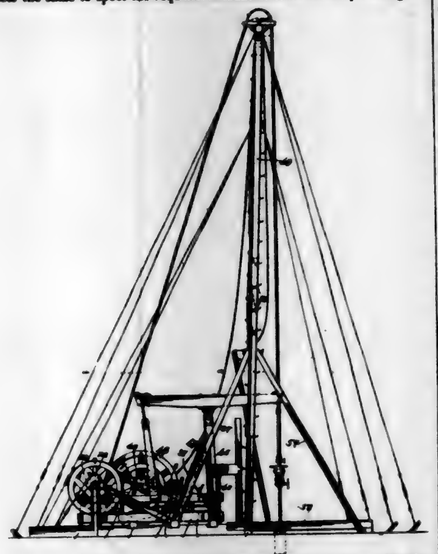

3. In a drilling-machine of the character described, the combination of a bull-wheel shaft, of a brake-wheel carried on the end of said shaft, a sprocket-wheel formed integral with one of the gudgeons of said shaft and having key-pins engaging perforations in the end of said shaft, of braces squared against said shaft and bracing the brake-wheel, of bolts passing through said sprocket-wheel, the brake-wheel and said braces, of transverse cots in said shaft, and bolts passing through said sprocket-wheel and longitudinally through said shaft to the transverse cots.

705,792. KEY CONNECTION. JOSEPH T. SCHLAGER, Helper, Utah. Filed May 21, 1901. Serial No. 61,263. (No model.)

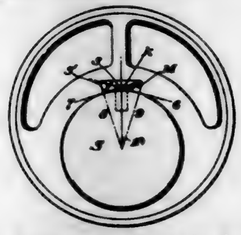

Claim.—1. The combination with a pair of contiguous members to be connected, of a removable intermediate inserted between said members and positioned to maintain a predetermined fixed relation to both of them in any single setting of the parts, and connecting means between said intermediate and one of said members and having a changeable relation to said intermediate.

2. The combination with a pair of contiguous members to be connected, of a removable intermediate inserted between and positioned to maintain a predetermined fixed relation to both of said members, and a key-and-slot connection between said intermediate and one of said members.

3. The combination with a pair of members to be connected, of an intermediate inserted between said members, a key-and-slot connection between said intermediate and one of said members and having a changeable relation to said intermediate, and a fixed connection between said intermediate and the other of said members.

4. The combination with rotary driving and driven members, of a removable intermediate inserted between said members and positioned to maintain a predetermined fixed relation thereto, and a key-and-slot connection between said intermediate and one of said members.

5. The combination with a rotary driver and with an eccentric, of a removable intermediate inserted between said members and positioned to maintain a predetermined fixed relation thereto, and a key-and-slot connection between said intermediate and one of said members.

6. The combination with a pair of contiguous members to be connected, of a removable intermediate inserted between said members and positioned to maintain a predetermined fixed relation thereto and having its inner wall in the meeting line of said members, and changeable connecting means between said intermediate and the other of said members.

7. The combination with rotary driving and driven members, of a removable intermediate inserted between said members and positioned to maintain a predetermined fixed relation thereto and having an inner wall conforming to the journal-surfaces of said members, and changeable connecting means between said intermediate and the other of said members.

8. The combination with a pair of members to be connected, of a key-and-slot connection therefor embodying a removable intermediate inserted between said members and having a master portion positioned to maintain a predetermined fixed relation to both of said members in any single setting of the parts and also having a changeable relation thereto governed by a plurality of adjustment-controlling individual portions located in different characteristic positions with respect to the master portion and each constituted to form when in use one element of the key-and-slot connection.

9. The combination with a pair of members to be connected, of a key-and-slot connection therefor embodying a master-key inserted between and positioned to maintain a predetermined fixed relation to both of said members and having an adjustment-controlling individual key-slot located in any characteristic position.

10. The combination with rotary driving and driven members, of a key-and-slot connection therefor embodying a master-key inserted between and positioned to maintain a predetermined fixed relation to both of said members in any single setting of the parts and also having a changeable relation thereto governed by a plurality of adjustment-controlling individual portions located in different characteristic positions and each constituted to form when in use one element of the key-and-slot connection.

11. The combination with rotary driving and driven members, of a key-and-slot connection therefor comprising an individual key in fixed relation with one of said members and a master-key in fixed relation with the other of said members and having an adjustment-controlling individual key-slot located in any characteristic position for receiving said individual key.

12. The combination with rotary driving and driven members, of a key-and-slot connection therefor comprising an individual key in fixed relation with one of said members and a master-key in fixed relation with the other of said members and having a journal-surface and also having in said journal-surface an adjustment-controlling individual key-slot located in any characteristic position for receiving said individual key.

13. The combination with rotary driving and driven members, of a key-and-slot connection fixed relatively to both of said members to prevent turning thereof relatively to each other said key and slot having contacting forward walls defined by the radius of the driver.

14. The combination with rotary driving and driven members, of a key-and-slot connection fixed relatively to both of said members to prevent turning thereof relatively to each other said key and slot having contacting forward walls and contacting rear walls disposed in planes passing through the axis of the driver.

15. The combination with a pair of movable members to be connected, of an intermediate having a slot connection with one of said members the forward wall of which connection is perpendicular to such path of movement, and a key-and-slot connection between said intermediate and the other of said movable members.

16. The combination with a pair of movable members to be connected, of an intermediate having a slot connection with one of said members the forward and rear walls of which connection are perpendicular to such path of movement, and a key-and-slot connection between said intermediate and the other of said movable members.

17. The combination with rotary driving and driven members, of an intermediate having a slot connection with one of said members the forward wall of which connection is defined by the radius of the driver, and a key-and-slot connection between said intermediate and the other of said rotary members.

18. The combination with rotary driving and driven members, of an intermediate having a slot connection with one of said members the forward and rear walls of which connection are defined by radii of the driver, and a key-and-slot connection between said intermediate and the other of said rotary members.

19. In a key-and-slot connection, a connecting master-key made in one piece and of such construction that its end walls are in engagement with the end walls of its coacting slot, said master-key also having an adjustment-controlling individual connector.

20. In a key-and-slot connection, a connecting master-key of such construction that its end walls are in engagement with the end walls of its coacting slot and said master-key also having an adjustment-controlling individual key-slot.

21. In a key-and-slot connection, a tapered connecting master-key of such construction that its end walls are in engagement with the end walls of its coacting slot and said master-key also having an adjustment-controlling individual key-slot.

22. In a key-and-slot connection, a connecting master-key wedge-shaped in cross-section and of such construction that its end walls are in engagement with the end walls of its coacting slot and said master-key also having an adjustment-controlling individual key-slot.

23. In a key-and-slot connection, a connecting master-key wedge-shaped in cross-section and of such construction that its end walls are in engagement with the end walls of its coacting slot and said master-key also having a concave journal-surface, tapered sides converging toward said journal-surface, and an adjustment-controlling individual key-slot in said concave surface.

705,793. **SEPARABLE BUTTON.** HENRY R. SIEVERKROPP, Racine, Wis. Filed Sept. 30, 1901. Serial No. 77,115. (No model.)

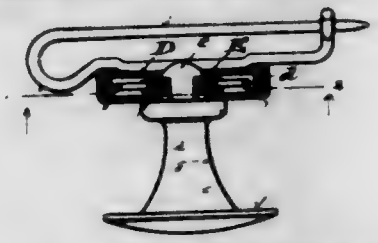

Claim.—1. A separable button comprising a back and shank section the shank being provided with a forward annular bead and a flat tongue having opposite edge notches; a tongue-engaging cap-section consisting of an annular shell provided with an inner annular seat and a disk held between the seat and an inturned shell-flange, a pair of levers fulcrumed intermediate of their extremities in notches of the shell-wall and said seat to have engagement with the tongue-notches, and a spring-wire arranged in said cap-section of the button to have its ends press the levers adjacent to their fulcrums.

2. A separable button comprising a back and shank section, the shank being provided with a forward annular bead and a flat tongue having opposite edge notches; a tongue-engaging cap-section consisting of an annular shell provided with an inner annular seat and a disk held between the seat and an inturned shell-flange, a pair of spring-controlled levers fulcrumed intermediate of their extremities in notches of the shell-wall and said seat to have engagement with the tongue-notches, and means in connection with said cap-section for attachment of same to a necktie.

705,794. **WINDING STAIRCASE.** HARRISON SNIDER, Indianapolis, Ind. Filed Nov. 26, 1901. Serial No. 83,563. (No model.)

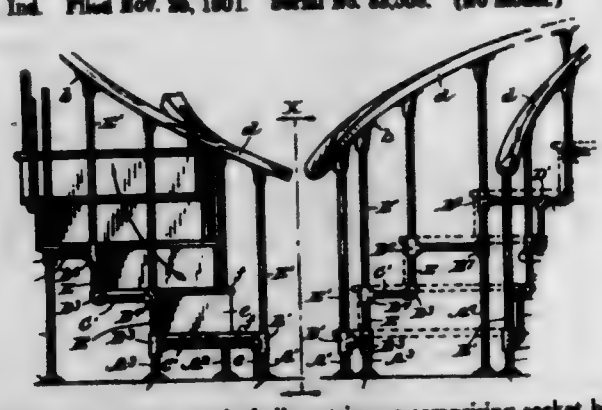

Claim.—1. A staircase including stringers comprising socket base-flanges, sections of piping vertical upon the flanges, L's upon the sections of piping, sections of piping attached horizontally to the L's, L's attached to the horizontal sections of piping, and sections of piping extending vertically from the L's and attached thereto, the horizontal sections of piping being supported by the L's, and the L's supported by the vertical sections of piping, substantially as set forth.

2. A staircase including stringers comprising socket base-flanges, sections of piping vertical upon the flanges, T's upon the sections of piping, sections of piping having oblique-angled flanges and vertical upon the T's, sections of piping attached horizontally to the T's, L's attached to the horizontal sections of piping, sections of piping extending vertically from the L's and attached thereto, the horizontal sections of piping being supported by the L's and the T's, and the L's supported by the vertical sections of piping, and hand-rails attached to the oblique-angled flanges, substantially as set forth.

3. A staircase comprising base-flanges, vertical pipe-sections attached to the flanges, T's attached to the vertical pipe-sections, pipe balusters attached to the T's, a hand-rail mounted upon the pipe balusters, horizontal pipe-sections attached to and supported by the T's, L's attached to and supported by the horizontal pipe-sections, vertical pipe-sections attached to and supported by the L's, and tread members supported upon the horizontal pipe-sections, substantially as set forth.

4. A staircase comprising vertical pipe-sections, L's, and horizontal pipe-sections, alternately, connected together, the vertical sections forming the risers and the horizontal sections forming the treads of the stringers, riser-boards attached to the vertical pipe-sections, and tread-boards mounted upon the horizontal pipe-sections, substantially as set forth.

5. A staircase comprising stringers composed of vertical pipe-sections, T's, L's, horizontal pipe-sections in pairs of unequal length, and base-flanges, the vertical sections being supported by the base-flanges and the L's and the T's, and the horizontal sections by the T's and the L's; riser-boards attached to the vertical pipe-sections, and tread-boards mounted on the horizontal sections, each tread-board on a long and a short section, substantially as set forth.

705,795. **THILL-COUPLING.** GEORGE H. SPITELL and GEORGE E. LORD, Utica, N. Y.; said Lord assignor to Arthur B. Maynard, Utica, N. Y. Filed Nov. 22, 1901. Serial No. 83,431. (No model.)

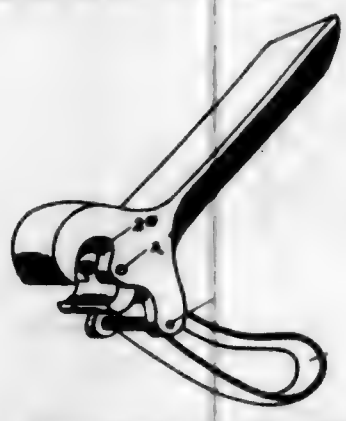

Claim.—1. The combination in a thill-coupling of the axle-clip and pin and the thill part having a downwardly-opening recess therein adapted to receive the clip-pin, a lock pivoted to the thill part and arranged to close said recess and engage the clip-pin, a bowed spring pivoted at one end to the said thill part and at the other to the said lock, said last-mentioned pivotal point being arranged to pass to both sides of the direct line between the pivot of the lock and the pivot of the spring, substantially as set forth.

2. The combination in a thill-coupling of the thill part having a downwardly-opening hook adapted to receive and engage the coupling-bolt and the hook portion of a size and arranged at an angle to engage both the coupling-bolt and the wall of the clip back of the coupling-bolt when in position for use and prevent vertical displacement, a lock or latch operating in the hook-opening and adapted to engage the bolt, and a spring for holding said lock or latch in open or closed position, substantially as set forth.

3. The combination with the thill portion of a thill-coupling having a downwardly-opening recess therein adapted to receive the coupling-bolt, a lock or latch arranged in said recess and having a part adapted to engage the coupling-bolt from the under side in securing said coupling and a part adapted to engage the coupling-bolt from the top in attaching or detaching said coupling and a spring for holding said lock or latch in closed or open position, substantially as set forth.

4. The combination with the thill portion of a thill-coupling having a downwardly-opening hook-recess to receive the coupling-bolt of a lock for closing said opening, a spring for holding said lock in open or closed position and means for automatically closing the lock, substantially as set forth.

5. The combination in a thill-coupling of the head having a hook-recess to receive the coupling-bolt, a lock to close said recess and grip the bolt, a spring for holding said lock in closed position and a catch for securing said lock against accidental opening, substantially as set forth.

6. The combination in a thill-coupling of the axle-clip and pin and the thill part having a downwardly-opening recess therein adapted to receive the clip-pin, a lock pivoted to the thill part in front of said recess and adapted to close said recess and arranged to engage said clip-pin both on the upper and lower sides, a bowed spring pivoted at one end to said thill part and at the other to said lock, said last-mentioned pivotal point

being arranged to pass to both sides of the direct line between the pivot of the lock and the pivot of the spring, substantially as set forth.

705,796. DISINTEGRATOR. EDGAR R. SUTCLIFFE, Leeds, England, assignor of one-half to Fred Spenkman, Leigh, England. Filed Apr. 17, 1902. Serial No. 103,587. (No model.)

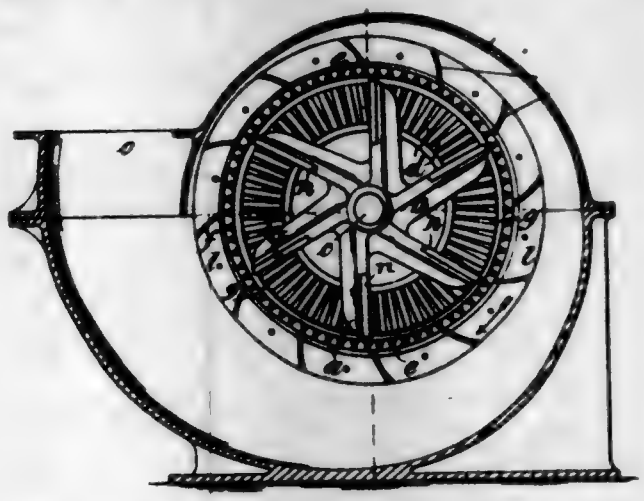

Claim.—1. In a disintegrator and in combination, a fixed casing having a feed-inlet and a discharge, a revoluble grinding-chamber having circumferential openings and fan-blades fixed around and outside of the circumferential openings and revolving with the grinding-chamber, whereby the ground material is drawn from the chamber into the casing and ejected from the latter.

2. In a disintegrator and in combination, a fixed casing having a feed-inlet and a discharge, a revoluble grinding-chamber having circumferential openings, fan-blades fixed around and outside of the circumferential openings and revolving with the grinding-chamber, and a revoluble fan-beater within the revoluble grinding-chamber, whereby the ground material is both drawn and forced from the chamber into the casing.

3. In a disintegrator and in combination, a fixed casing having a feed-inlet and a discharge, a revoluble grinding-chamber, fan-blades fixed to said chamber outside of and around its circumferential openings, a revoluble fan-beater within said chamber, and a circumferential grid between the external and the internal fan parts.

4. In a disintegrator and in combination, a fixed casing having a feed-inlet and a discharge, a revoluble grinding-chamber having a circumferential grid of bars, a fan carried by the chamber external to its grid, and surrounding it, and means whereby the grid-bars and their surrounding fan-blades are separately fastened together and to the side walls of the grinding-chamber.

5. In a disintegrator and in combination, a fixed casing having a feed-inlet and a discharge, a revoluble grinding-chamber having a circumferential grid of bars and means for spacing and securing the grid-bars consisting of a pair of ring-plates each formed with serrations or teeth on their concave edges by which the ends of the bars are spaced, and bolts binding the toothed rings upon the ends of the bars.

6. In a disintegrator and in combination, a fixed casing having a feed-inlet and a discharge, a revoluble grinding-chamber having circumferential grid of bars, fan-blades fixed around and outside of the circumferential grid, and means whereby the grid-bars are spaced and together with the fan-blades are fastened between the side walls of the chamber, consisting of a pair of ring-plates, each formed with serrations or teeth on their concave edges between which the ends of the grid-bars are spaced and bolts passing through the chamber-walls and through the toothed ring-plates binding the latter and the fan-blades together upon the ends of the grid-bars.

7. In a disintegrator and in combination with a fixed casing having a feed-inlet and a discharge, a revoluble grinding-chamber having circumferential grid of bars, a pair of rings having serrations adapted to intermatch with the grid-bars, fan-blades around and outside of the circumferential grid, and means whereby, the fan-blades, the toothed rings, and the grid-bars are detachably secured to the sides of the grinding-chamber.

705,797. NUT-LOCK. GEORGE W. VANDEVENDER, Mingo, W. Va. Filed May 10, 1902. Serial No. 106,813. (No model.)

Claim.—1. A device of the class described comprising a plate having a bolt-opening and provided with a dovetailed groove extending from the bolt-opening and having an inner narrow portion and an outer wide portion forming shoulders, and a nut-engaging locking device arranged in the groove and having dovetailed portions of different sizes forming shoulders for engaging the shoulders of the plate, whereby the locking device is held in engagement with a nut, substantially as described.

2. A device of the class described comprising a plate having a bolt-opening and provided with a dovetailed groove extending from the bolt-opening, and a resilient locking device composed of two sides provided with longitudinal dovetailed portions arranged in the said groove, the sides of the locking device being provided with means for engaging the plate, whereby the locking device is held in engagement with a nut, substantially as described.

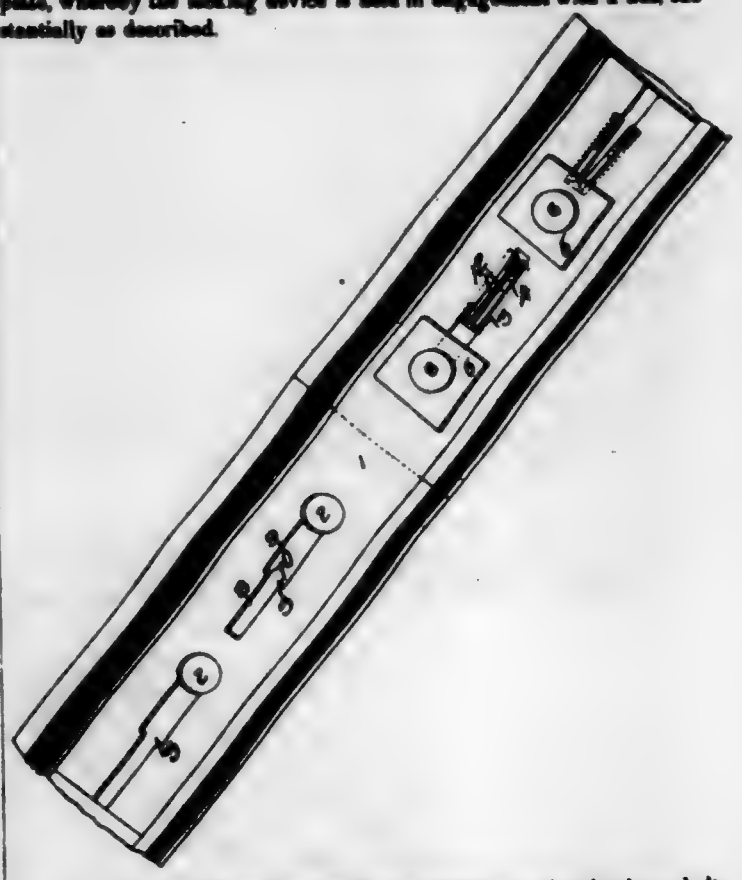

3. A device of the class described comprising a plate having a bolt-opening and provided with a dovetailed groove extending from the bolt-opening, and a locking device having dovetailed side portions interlocked with the walls of the groove and provided with projecting portions adapted to be compressed to permit the locking device to slide in the groove, said locking device being provided with a connecting end portion enlarged between the sides and the latter being reduced at the end portion to increase their resiliency, substantially as described.

4. A device of the class described comprising a nut having recesses and adapted to engage a bolt, a plate having a bolt-opening and provided with a dovetailed groove extending from the bolt-opening and provided between its ends with shoulders, and a locking device having resilient sides provided with dovetailed portions interlocked with the walls of the groove, and provided with means for detachably engaging the said shoulders, whereby the locking device is held in engagement with the nut, substantially as described.

705,798. TROLLEY. WILLIAM L. VON HARDENBERG, Brooklyn, N. Y. Filed June 22, 1901. Serial No. 65,577. (No model.)

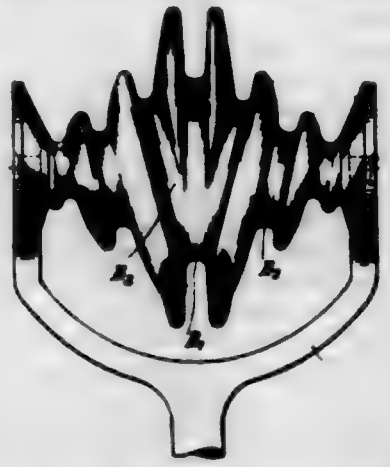

Claim.—1. A trolley-wheel formed with a deep central annular groove, a right and left handed helical groove substantially tangent to said annular groove, said helical grooves being of varying diameter, the increase in diameter of each grooves being substantially proportional to the distance between any two points, a trolley-arm formed with a yoke at the end of the same, beveled circular bearing portions formed on said yoke, said beveled portions serving to guide said trolley with relation to the trolley-wire.

2. A trolley-wheel formed with a deep annular groove in the center of the same, a right and a left handed helical groove substantially tangent to said annular groove, said helical grooves being gradually increased in diameter from the ends to the center of said trolley-wheel, a cylindrical bearing extension formed on either end of said trolley-wheel, a trolley-arm having a yoke formed at the end of the same, bearing portions formed on said yoke having circular beveled extensions and annular grooves into which said bearing extensions on said trolley-wheel fit and a pivot-pin secured to said trolley-arm and passing through said wheel.

3. A trolley-wheel formed with a central groove inclosed by annular flanges, and right and left handed helical shoulders forming helical grooves leading into said annular groove, said annular flanges having a greater diameter than the greatest diameter of said helical shoulders.

4. A trolley-wheel formed with an annular groove inclosed by annular flanges, and a helical shoulder forming a helical groove leading into said annular groove, said annular flanges having a greater diameter than the greatest diameter of said helical shoulder.

5. A trolley-wheel formed with a central annular groove inclosed by annular flanges, and helical shoulders forming helical grooves leading into said annular groove, said annular flanges having a greater diameter than the greatest diameter of said helical shoulders; a trolley-arm formed with a yoke to support said trolley-wheel and with beveled extensions on said yoke on either side of said wheel.

705,799. MONKEY-WRENCH. CHARLES P. WHITTEMORE, Mount Vernon, Iowa. Filed Apr. 4, 1902. Serial No. 101,235. (No model.)

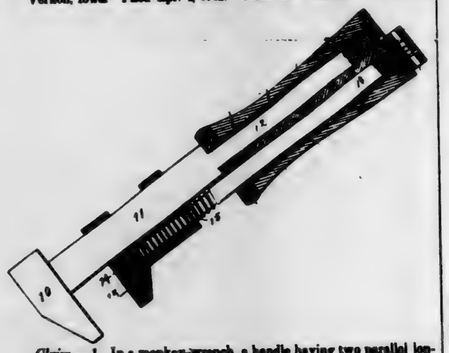

Claim.—1. In a monkey-wrench, a handle having two parallel longitudinal bores, a jaw having an integral shank and a tang extended from the end of the shank and fixed in one of said bores in the handle, a slidable jaw fitted on the shank of the fixed jaw and provided with a screw-seat, a screw fitted in the screw-seat and provided with an integral stem extended through the other bore in the handle and means for securing the screw in the handle, arranged and combined to operate in the manner set forth for the purposes stated.

2. In a monkey-wrench, a jaw having a fixed shank, a tang extending from the end of the shank, a sliding jaw fitted on the shank and provided with a screw-seat, a screw fitted in the screw-seat, an enlargement on the outer end of the screw and bores in the enlargement and a handle fitted and fixed on the tang to abut against the end of the shank, arranged and combined to operate in the manner set forth for the purposes stated.

3. A monkey-wrench comprising a jaw having a shank that terminates in shoulders adapted to abut against the end of a handle and a tang adapted to project through a bore in a handle, a slidable jaw on the shank, a screw-seat in the slidable jaw, a screw fitted in the screw-seat and terminating in a stem, a metal handle having a longitudinal bore to admit the stem and a parallel bore to admit the tang, a head on the end of the stem provided with transverse bores and means for fastening the handle to the tang on the end of the shank of the fixed jaw, arranged and combined to operate in the manner set forth for the purposes stated.

4. A monkey-wrench comprising a jaw having a shank that terminates in shoulders to engage the inner end of a handle, a tang adapted to project through a bore in a handle, a slidable jaw on the shank, a screw-seat in the slidable jaw, a screw fitted in the screw-seat and terminating in a stem, a metal handle having a longitudinal bore to admit the stem and a parallel bore to admit the tang, a head on the end of the stem provided with transverse bores, means for fastening the handle to the tang on the end of the shank of the fixed jaw and a wooden cover on the metal handle, arranged and combined to operate in the manner set forth for the purposes stated.

705,800. TAPE-NEEDLE. MARY B. WHITTEMORE, Mount Vernon, Iowa. Filed Nov. 5, 1901. Serial No. 81,199. (No model.)

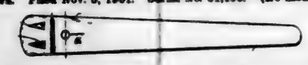

Claim.—A needle made of a single piece of sheet metal, wide at one end and tapering to a point at its other end and provided with a transverse eye at its large end, teeth near the eye and projecting toward the wide end and outward relative to the surface of the needle and a perforation near the center portion of the eye, to operate in the manner set forth for the purposes stated.

705,801. TRIMMING MECHANISM FOR LINOTYPE-MACHINES. FERDINAND J. WICH, Altringham, England. Filed Apr. 11, 1902. Serial No. 102,418. (No model.)

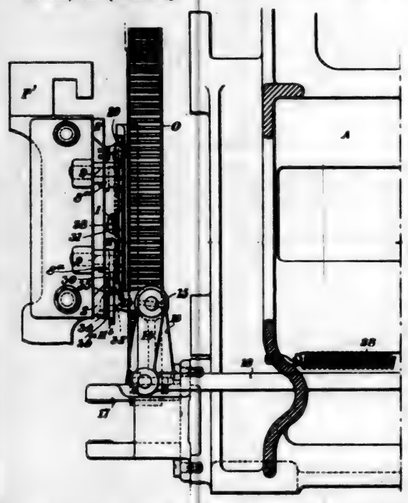

Claim.—1. In a linotype-machine the combination with the knife-block, a trimming-knife laterally movable thereon, an arm adapted to move the knife laterally, and a plurality of cams adapted to operate the arm at each cycle of the machine, of a fork pivotally mounted on the knife-block, the two prongs of the fork being situated in different planes, one on either side of the arm, a member in operative connection with the fork situated in the path of, and adapted to be operated by, overhang letters on the linotype to insert one fork-prong into operative connection with the arm and movable knife and render the second prong ineffective, and a spring for inserting the second prong into operative connection with the movable knife and rendering the first one ineffective substantially as set forth.

2. In a linotype-machine the combination with the knife-block and a trimming-knife laterally movable thereon, and toggles pivoted to the knife-block and movable knife, of a link pivotally connected to the toggles, abutments on the link, a vibrating arm between the abutments, a fork pivotally mounted on the knife-block, its two prongs being situated in different planes one on either side of the arm, a member in operative connection with the fork situated in the path of, and adapted to be operated by, overhang letters on the linotype to insert one prong between the arm and the proximate abutment and render the second arm ineffective substantially as set forth.

3. In a linotype-machine the combination with the knife-block and a trimming-knife laterally movable thereon, and toggles pivoted to the knife-block and movable knife, of a link pivotally connected to the toggles, abutments on the link, a vibrating arm between the abutments, a fork pivotally mounted on the knife-block, its two prongs being situated in different planes and one on either side of the arm, a member in operative connection with the fork, situated in the path of, and adapted to be operated by, overhung letters on the linotype to insert one of the prongs between one side of the arm and the proximate abutment and a spring connected to the knife-block and fork for inserting the other of the prongs between the other side of the arm and the second abutment substantially as set forth.

4. In a linotype-machine the combination with the laterally-movable knife, a link in operative connection with the knife and a vibrating arm operating the link, of bearings on the knife, a rod axially and angularly movable in the bearings, a fork rigid on the rod, the prongs of which are situated in different planes and one on either side of the vibrating arm, a plate rigid with the fork and at the opposite side of the axis of oscillation, and in the path of overhangs on the linotypes, and projections on the fork-prongs for insertion between the arm and link substantially as set forth.

5. In a linotype-machine, a knife movable toward and from its companion, power-driven mechanism for effecting the adjustment of the knife, and a controlling device for said mechanism, arranged to be acted upon by a projection on an outgoing linotype.

6. In a linotype-machine, a knife, adjustable transversely to its length, an independently-movable device for imparting motion to the knife, an intermediate movable member for connecting and disconnecting said parts, and a device for adjusting said member adapted to be acted upon by projections on the linotypes.

7. In a linotype, a knife, power-driven mechanism for adjusting the knife, and intermediate controlling devices arranged to be operated by the linotypes.

8. In a linotype-machine, a knife adjustable in a direction transverse to its length, a controlling device to be acted upon by the passing linotypes, and intermediate mechanism through which the controlling device determines the adjustment of the knife.

9. In a linotype-machine, a trimming-knife movable transversely, spring connections tending to advance the knife toward the path of the linotypes, positively-acting mechanism to retract the knife, and a device acted upon by the passing linotype to cause the action or non-action of the retracting mechanism.

10. In a linotype-machine, a transversely-adjustable knife, power-driven mechanism for effecting the adjustment, and a controlling device for said mechanism extending the entire length of the path traversed by the linotype, whereby a projection or overhang at any point in the length of the linotype will effect the adjustment of the knife.

705,802. CABLE-TERMINAL BOX FOR ELECTRICITY-SUPPLY PURPOSES. GEORGE WILKINSON, Harrogate, England. Filed Apr. 21, 1902. Serial No. 104,584. (No model.)

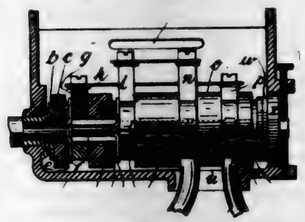

Claim.—1. The combination, with a box, and a supply-cable which enters the box and has its inner and outer conductors spread out inside the box in different planes; of service-cables which also enter the box, separate contact-washers which bear against the said conductors and service-cables respectively, fuses which connect the contact-washers of the inner and outer conductors with the service-cables to which they pertain, and a spring which operates longitudinally of the supply-cable and which holds its inner and outer conductors in contact with their respective contact-washers, substantially as set forth.

2. The combination, with a box, and a supply-cable which enters the box and has its lead covering and its inner and outer conductors spread out inside the box in different planes and insulated from each other; of service-cables which also enter the box, separate contact-washers which bear against the said conductors and service-cables respectively, fuses which connect the contact-washers of the inner and outer conductors with the service-cables to which they pertain, and a spring which operates longitudinally of the supply-cable and which holds its inner and outer conductors in contact with their respective contact-washers and its lead covering in contact with the said box, substantially as set forth.

3. The combination, with a box, of a supply-cable which enters the box and has its conductors spread out inside it, a single service-cable which also enters the box, separate contact-washers which bear against the said conductors and the service-cable respectively, a fuse connecting the said washers, a spring which operates longitudinally of the said supply-cable and which holds its said conductors in contact with their contact-washer, and a second supply-cable and a second single service-cable operatively connected together so as to form a complete circuit with the first said supply and service cables, said supply-cables being arranged concentric of each other where they enter the said box, substantially as set forth.

705,808. ASPHALTIC PAVING MIXTURE OR COMPOSITION. WALTER S. WILKINSON, Baltimore, Md., and CHARLES H. BURCHENAL, Pittsburg, Pa. Filed Aug. 16, 1901. Serial No. 72,220. (No specimens.)

Claim.—1. A bituminous paving or pavement mixture or composition wherein the body material is crushed rock or sand, said mixture or composition containing a small percentage of comminuted copper in amount not exceeding three per cent. of the body material, and a bituminous cement.

2. An asphaltic paving or pavement mixture or composition wherein the body material is crushed conglomerate rock bearing a small percentage of copper; and an asphaltic cement.

3. An asphaltic paving or pavement mixture or composition consisting of crushed conglomerate rock bearing one-half of one per centum to one and one-half per centum of native copper; fines; and an asphaltic cement.

4. As a new article of manufacture, a paving block or tile made from crushed conglomerate rock bearing from one-half of one per centum to one and one-half per centum of native copper, calcareous fines of substantially the condition of an impalpable powder, and an asphaltic cement.

705,804. DOOR-STOP. JASPER C. WISE, Chicago, Ill., assignor, by mesne assignments, to Jacob Rothschild, Chicago, Ill. Filed May 16, 1900. Renewed May 2, 1902. Serial No. 105,602. (No model.)

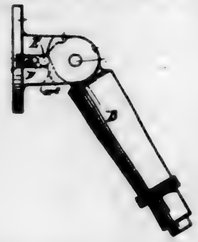

Claim.—1. In a door-stop the combination of a base, a movable member provided with a recess in one end thereof and fulcrumed to the base, an adjustable member provided with screw-threads fitting into corresponding screw-threads in the recess in the movable member, a head on one end of the adjustable member provided with screw-threads turned in a direction opposite to the first-named screw-threads, a spring wound to correspond with the screw-threads on the head of the adjustable member and engaged therewith, and a lug in the recess wherein such spring is contained engaging with the spring, substantially as described.

2. In a door-stop, the combination of a base, a movable member fulcrumed to the base, an adjustable member, a spring connected to the members and attaching them together, and means for longitudinally adjusting the adjustable member relative to the fulcrumed member; substantially as described.

3. In a door-stop the combination of a base, provided with a recess, a spring in the recess, a ball on one end of the spring, a second ball on the first-named ball, and a member fulcrumed to the base and provided with recesses in the end adjacent to the base, with which recesses the second-named ball comes in contact as such member is turned on its fulcrum; substantially as described.

4. In a door-stop the combination of a base, provided with a recess, a spring in the recess, a ball on one end of the spring, a second ball on the first-named ball, a member fulcrumed to the base and provided with recesses in the end adjacent to the base, with which recesses the second-named ball comes in contact as such member is turned on its fulcrum, and provided with a recess at the other end thereof in which a spring and an adjustable member are placed, an adjustable member provided with screw-threads fitting corresponding screw-threads in the recess in which it is placed, a head on one end of the adjustable member provided with screw-threads turned in a direction opposite to the first-named screw-threads, a spring wound to correspond with the screw-threads on the head of the adjustable member and engaged therewith, and a lug in the recess wherein such spring is contained engaging with the spring; substantially as described.

5. In a door-stop, the combination of a base, provided with a recess, a movable member fulcrumed to the base, an adjustable member, a spring connected to the members and attaching them together, means for longitudinally adjusting the members, a spring in the recess in the base, a ball mounted on the spring and a second ball on the first-named ball, between such first-named ball and the end adjacent thereto of the fulcrumed lever; substantially as described.

705,805. ELECTRIC ANNUNCIATOR. WILLIAM R. WISTER, Trenton, N. J. Filed Nov. 15, 1901. Serial No. 82,340. (No model.)

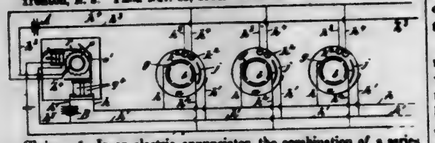

Claim.—1. In an electric annunciator, the combination of a series of delivery-stations each having a series of commutator-segments, a contact engaging the segments, a circuit controlled by the contact, an oscillating lever for operating the segments, a pin depending from the lever, an armature for locking the lever, and a yielding contact engaged by the pin, with a receiving-station having a signal-wheel, a ratchet-wheel attached to the signal-wheel, a pawl engaging the ratchet-wheel, an electric armature for operating the pawl and controlled by the circuit coming from the delivery-station, a second pawl engaging the ratchet-wheel, an armature for operating the second pawl, a circuit controlled by the yielding contact and adapted to operate the armature, a commutator attached to the signal-wheel, two contacts engaging the commutator, and a circuit controlled by the contacts and adapted to operate the armature for locking the levers of the delivery-station, substantially as specified.

2. In an electric annunciator, a delivery-station having a commutator, a stop attached to the commutator, a ratchet-wheel, a spiral spring connecting the ratchet-wheel to the commutator, a hand-lever for operating the ratchet-wheel, a detent fastened to the ratchet-wheel, said detent engaging the stop and adapted to be withdrawn by the hand-lever, and an armature for locking the hand-lever in its initial position, substantially as specified.

3. In an electric annunciator, a delivery-station having a frame, a ratchet-wheel rotatable upon the frame, a hand-lever engaging the ratchet-wheel, a pin attached to the hand-lever, a commutator having openings and yieldingly connected to the ratchet-wheel, a spring-influenced oscillating lever having a detent, an inclined plane and a hook, the detent being adapted to engage the openings of the commutator, the inclined plane being operated by the pin, and the hook being adapted to lock the hand-lever, substantially as specified.

4. In an electric annunciator, a series of delivery-stations each having a frame, a yielding curved contact-guide attached to the frame, a contact-piece adapted to slide upon the guide and composed of a metallic and an insulated portion, a circuit controlled by the metallic portion of the contact-piece, a hand-lever rotatable upon the frame, and a pin depending from the hand-lever and adapted to operate the contact-piece, combined with a receiving-station having a ratchet-wheel, a pawl engaging the ratchet-wheel, and an electric armature for operating the pawl and controlled by the circuit, substantially as specified.

705,806. HOISTING-BUCKET CARRIER. ANDREW WIRSING, Milwaukee, Wis. Filed Oct. 25, 1901. Serial No. 79,933. (No model.)

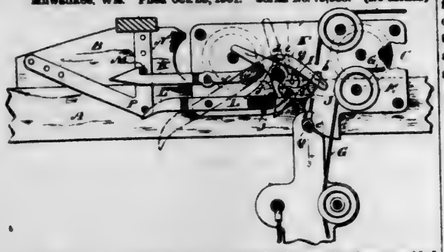

Claim.—1. A hoisting-bucket carrier having its side plates provided with recesses arranged to be engaged by a bucket-pin, bell-cranks intermediate of the plates, dogs having limited pivotal play on arms of the bell-cranks to be normally crosswise of the plate-recesses, a latch in pivotal connection with the carrier having branches that are also crosswise of said recesses above said dogs, and a pivotal yoke with said carrier in opposition to said bell-cranks, the latch being engageable with a stationary catch adjacent to a stationary striker in the path of a curved shank of the yoke.

2. A hoisting-bucket carrier having its side plates provided with recesses arranged to be engaged by a bucket-pin, guides to the recesses in the form of curved lower projections of the plates, bell-cranks intermediate of said plates, dogs having limited pivotal play on arms of the bell-cranks to be normally crosswise of the plate-recesses, a latch in pivotal connection with the carrier having branches that are also crosswise of the plate-recesses above said dogs, and a pivotal yoke with said carrier in opposition to said bell-cranks, the latch being engageable with a stationary catch adjacent to a stationary striker in the path of a curved shank of the tilt-yoke.

3. A hoisting-bucket-carrier track having buffer-blocks, stationary rods transversely of the track, the carrier having its side plates provided with recesses arranged to be engaged by a bucket-pin, bell-cranks intermediate of the plates, dogs having limited pivotal play on arms of the bell-cranks to be normally crosswise of the plate-recesses, a latch in pivotal connection with said carrier having branches that are also crosswise of said recesses above said dogs, and a pivotal yoke with the aforesaid carrier in opposition to said bell-cranks, the latch being engageable with one of the aforesaid rods and the other rod arranged in the path of a curved shank of the yoke.

705,807. VOUCHER. HOMER WEBB, Flushing, N. Y., assignor to Union Voucher Company, a Corporation of New York. Filed June 4, 1901. Serial No. 63,147. (No model.)

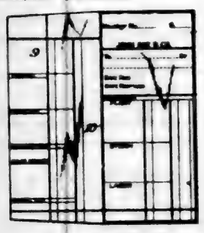

Claim.—1. An envelop-voucher adapted to contain a plurality of bills or statements of account, and comprising two parts one of which is a voucher proper having a column of account-classifying headings indicating expense items of different natures to which headings the items of said bills or statements are chargeable, and the other of which is a connected portion forming with said voucher an envelop or pocket.

2. The combination with a combined voucher and receipt the voucher portion of which has a column of account-classifying headings indicating expense items of different natures, of a connected portion forming therewith an envelop or pocket, said connected elements constituting an envelop-voucher.

3. The combination with a combined voucher and receipt having a fold-line at one edge of the receipt and the voucher portion of which has a column of account-classifying headings indicating expense items of different natures, of a connected portion at the other side of said fold-line and forming with the combined voucher and receipt an envelop or pocket, said connected elements constituting an envelop-voucher.

4. The combination with a combined voucher and receipt having the voucher and the receipt at opposite sides thereof and also having a fold-line at one edge of the receipt, said voucher portion having a column of account-classifying headings indicating expense items of different natures, of a connected portion located at the other side of said fold-line and forming with the combined voucher and receipt an envelop or pocket, said connected elements constituting an envelop-voucher.

705,808. SIGNAL-LAMP. FREDERICK K. WRIGHT, Syracuse, N. Y. Filed May 8, 1901. Serial No. 59,218. (No model.)

Claim.—1. The combination of a lamp provided with a lens, an upright guideway arranged adjacent to said lens, a circular signal-plate arranged in said guideway, and an actuating-lever having a suitable fulcrum, said lever being pivoted at its free end to the signal-plate near the periphery thereof, whereby the lens is caused to move up or down in the guideway with a rolling movement, substantially as set forth.

2. The combination of a lamp provided in its side with a light-opening, an upright guideway which intersects said opening, a circular signal-plate arranged in said guideway, and an actuating-lever having a suitable fulcrum, said lever being pivoted at its free end to the signal-plate near the periphery thereof, substantially as set forth.

3. The combination of a lamp provided in its side with a light-opening, an upright guideway intersecting said opening, a transverse partition dividing said guideway into a front and rear compartment, circular signal-plates arranged in said compartments, and actuating-levers pivoted in the front and rear walls of said guideway and having their free ends connected by pivots with said plates near the periphery thereof, substantially as set forth.

4. The combination of a lamp provided in its side with a light-opening, an upright guideway intersecting said opening and having its upper portion detachably connected with said lamp, a circular signal-plate arranged in said guideway, and an actuating-lever pivoted in the upper detachable portion of the guideway and connected at its free end directly with said plate by a pivotal connection, substantially as set forth.

5. The combination of a lamp provided in its side with a light-opening, an upright guideway intersecting said opening, circular signal-plates arranged one behind the other in said guideway, and actuating-levers pivoted in the front and rear walls of said guideway, each lever being composed of an inner arm which is connected with a signal-plate and an outer arm by which the lever is manipulated, substantially as set forth.

6. The combination of a lamp provided in its side with a light-opening, an upright guideway intersecting said opening, circular signal-plates arranged one behind the other in said guideway, actuating-levers pivoted, respectively, in the front and rear walls of said guideway and having inner arms connected with said signal-plates and outer manipulating-arms, and stops on the guideway for limiting the movement of said outer arms, substantially as set forth.

7. The combination of a lamp provided in its side with a light-opening, an upright guideway which intersects said opening, a circular signal-plate arranged in said guideway, an actuating-lever having a suitable fulcrum, said lever being composed of an outer manipulating-arm and an inner disk-shaped member, and a pivot which is arranged on said disk-shaped inner member, near the periphery thereof, and connects the same with said signal-plate near the periphery thereof, substantially as set forth.

8. The combination of a lamp provided in its side with a light-opening, an upright guideway intersecting said opening and provided with a circular opening, an actuating-lever arranged with its hub in said opening and provided with an inner and an outer arm on opposite sides of the wall of the guideway, and a circular signal-plate arranged in said guideway and connected directly with the inner arm of said lever, substantially as set forth.

9. The combination with the guideway and a signal-plate movable in the same, of an actuating-lever composed of two arms, one of which has a projecting hollow hub which is provided on diametrically opposite sides with openings in which the other arm is secured, substantially as set forth.

705,809. ADJUSTABLE THREAD-CUTTING TOOL. HARRY B. YATES, Slater, Mo. Filed Mar. 14, 1901. Serial No. 51,054. (No model.)

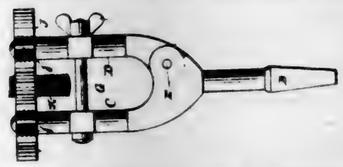

Claim.—1. A thread-cutting tool comprising two rotary members provided each with a plurality of cutting devices each of which, when the said rotary members have been rotated to the proper position, coöperates with a corresponding cutting device on the other rotary member, means for adjusting the said rotary members toward and from each other, and each rotary member being provided with a locking device adapted to engage the opposite rotary member for preventing transverse movement of the said rotary members when they have been adjusted to the desired position, substantially as described.

2. A thread-cutting tool comprising two rotary members provided each with a plurality of faces having each a cutting device which, when the rotary members have been rotated to the proper position, coöperates with a corresponding cutting device on a corresponding face of the other rotary member, and corresponding faces of the two rotary members being provided with interlocking projections and recesses for preventing transverse movement of the rotary members, and means for adjusting the two members toward and from each other, substantially as described.

3. A thread-cutting tool comprising two rotary members provided each with a plurality of faces having each a cutting device which, when the rotary members have been rotated to the proper position, coöperates with a corresponding device on a corresponding face of the other rotary member, and corresponding faces being provided with interlocking projections and recesses for preventing transverse movement of the rotary members, the disposition of the said projections and recesses being such that only those on corresponding faces will properly register, and means for adjusting the said two rotary members toward and from each other, substantially as described.

705,810. HORSE-HITCHER. PHILIP K. YOUNG, Omaha, Nebr. Filed Mar. 14, 1901. Serial No. 51,140. (No model.)

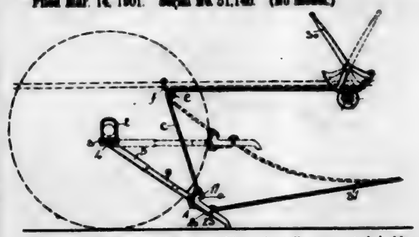

Claim.—1. The combination with a pivotally-supported holder, of a bar yieldingly held within said holder, a latch secured to said bar, and a trip held by said latch.

2. The combination in a device of the character described of a pivotally-supported holder, a bar yieldingly held within said holder a lever pivotally secured to the end of said bar and a keeper to lock said lever, as and for the purpose set forth.

3. In combination with a pivotally-supported tube provided with slots upon opposite sides, of a bar working within said tube provided with trunnions extending through said slots, a spring working against said bar to normally force the same outward, a stub-bar secured to said first-mentioned bar, said bar being provided with two steps and a supporting-pin, a keeper secured to said first-mentioned bar, a tilting lever secured to the end of said stub-bar and adapted to be engaged by said keeper, and means to actuate said keeper, as and for the purpose set forth.

705,811. INSULATING-SUPPORT FOR METALLIC CIRCUITS. JOHN S. ALLEN, Los Angeles, Cal. Filed Nov. 20, 1901. Serial No. 84,231. (No model.)

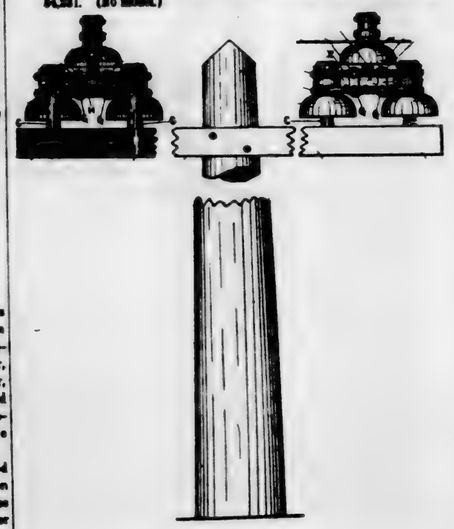

Claim.—1. A support for electric wires comprising two insulators mounted upon the cross-arm; a core interposed between said insulators and supported thereby; a yoke surrounding and uniting said insulators and core; and a third insulator mounted in said core.

2. An insulating-support for electric wires comprising a cross-arm affixed to a pole; two pins mounted in said cross-arm; an insulator on each pin; a core between said insulators, resting thereon and supported thereby; a yoke uniting said core and insulators and affixed thereto; a pin mounted in said core and carrying an insulator adapted for the attachment thereto of an electric wire.

3. A support for an electric wire comprising two insulators mounted upon the cross-arm, a yoke surrounding and supported by said insulators and adapted to receive a support for a third insulator, a third insulator mounted upon a support in said yoke.

705,812. NUT-LOCK. HUGH ANDERSON, Wellsville, Ohio, assignor of one-half to Charles C. Lawson, Wellsville, Ohio. Filed Dec. 3, 1901. Serial No. 84,502. (No model.)

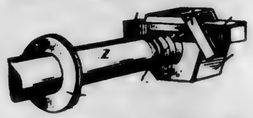

Claim.—1. In a nut-lock, the combination with a bolt and a nut having a recess formed therein, a key carrying engaging teeth secured in said recess of said nut, a staple producing a wedging action between said nut and key and engaging one of said teeth in the screw-threads of said bolt, substantially as described.

2. In a nut-lock, the combination of a bolt, a washer, a nut having a recess formed therein, a key having a central cut-away portion, inwardly-extending teeth formed on said key, said key arranged in the opening of said nut, and a staple secured between said nut and key to engage one of said teeth in the screw-threads of said bolt, all parts being arranged and operating substantially as described.

705,818. APPARATUS FOR FORMING GLASS ARTICLES. JAMES A. ARNOLD, Allegheny, Pa. Filed May 23, 1901. Serial No. 61,434. (No model.)

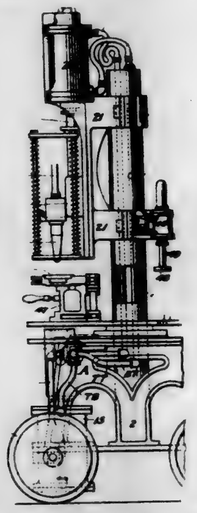

Claim.—1. In apparatus for forming glass articles, the combination of a rotating mold-carrier, a press-mold, a press-mold cylinder, a plunger-cylinder in alinement with the press-mold cylinder, a plunger, and a single valve for controlling the supply and exhaust of fluid to and from each end of said cylinders.

2. In apparatus for forming glass articles, the combination of a rotating mold-carrier, a press-mold, a press-mold cylinder, a plunger-cylinder in alinement with the press-mold cylinder, a plunger, means for controlling the supply and exhaust of fluid to and from said cylinders consisting of a single element, and intervening connections therefrom to each end of each cylinder.

3. In apparatus for forming glass articles, the combination of a rotating mold-carrier, a press-mold, a press-mold cylinder, a plunger-cylinder in alinement with the press-mold cylinder, a plunger, a blowing-cylinder situate above the carrier, a valve for controlling the supply and exhaust of fluid to and from each end of the press-mold cylinder and plunger-cylinder respectively, and a valve for controlling the supply and exhaust to and from the blowing-cylinder.

4. In apparatus for forming glass articles, the combination of a main frame provided with a horizontal rotating mold-supporting table, a press-mold, a cylinder provided with a piston attached to and supporting the press-mold, a plunger-cylinder situate above the press-mold cylinder provided with a piston connected with a plunger, a controlling-valve, and connections therefrom to each end of each cylinder for supplying intermittent fluid-pressure to said cylinders.

5. In apparatus for forming glass articles, the combination of a main frame provided with a horizontal mold-supporting table, a press-mold cylinder adapted to actuate a press-mold, a plunger-cylinder situate above the press-mold cylinder adapted to actuate a plunger, means for establishing a cushioning pressure in the cylinders, and means for supplying intermittent fluid-pressure to the cylinders.

6. In apparatus for forming glass articles, the combination of a main frame provided with a horizontal mold-supporting table, a press-mold cylinder provided with a piston supporting the press-mold, a plunger-cylinder situate above the press-mold cylinder provided with a piston connected with a plunger, means for establishing a cushioning pressure in the cylinders, and means for supplying intermittent fluid-pressure to each end of each cylinder, substantially as set forth.

7. In apparatus for forming glass articles, the combination of a main frame, a press-mold cylinder mounted thereon adapted to operate a press-mold vertically, a central mast supporting a plunger-cylinder above the press-mold cylinder, and a valve with connections therefrom to the top and bottom of the press-mold cylinder and the plunger-cylinder respectively, so as to establish therein intermittent fluid-pressure, substantially as set forth.

8. In apparatus for forming glass articles, the combination of a main frame, a press-mold cylinder mounted thereon adapted to operate a press-mold vertically, a central hollow mast supporting a plunger-cylinder above the press-mold cylinder, and a valve with connections therefrom to the top and bottom of the press-mold cylinder and the plunger-cylinder respectively, so as to establish therein intermittent fluid-pressure, such connections from the valve to the plunger-cylinder passing upwardly through the hollow mast, substantially as set forth.

9. In apparatus for forming glass articles, the combination of a main frame provided with a central mast, a press-mold cylinder mounted upon the main frame adapted to operate a press-mold vertically, a plunger-cylinder adjustably mounted upon the mast, and supporting a plunger in alinement with the press-mold, a controlling-valve, and means for supplying intermittent pressure therefrom to each end of each cylinder, substantially as set forth.

10. In apparatus for forming glass articles, the combination of a main frame provided with a central mast, a press-mold cylinder mounted upon the main frame, adapted to operate a press-mold vertically, a vertically-adjustable frame mounted upon the mast supporting a plunger-cylinder, the plunger, and its connected mechanism; and a controlling-valve with connections therefrom to each end of the press-mold cylinder and plunger-cylinder respectively, so as to establish therein intermittent fluid-pressure, substantially as set forth.

11. In apparatus for forming glass articles, the combination of a main frame provided with a central mast, a press-mold cylinder mounted in the main frame, adapted to operate a press-mold vertically, a supporting-framework adjustably mounted upon the hollow mast, carrying the plunger-cylinder, a plunger, and its connected mechanism, a blowing-cylinder rigidly connected with the framework, a controlling-valve with connections therefrom to each end of the press-mold cylinder and plunger-cylinder respectively, so as to establish therein intermittent fluid-pressure, and a valve with connections to the blowing-cylinder, substantially as set forth.

12. In apparatus for forming glass articles, the combination of a main frame provided with a central hollow mast, a press-mold cylinder mounted in the main frame adapted to operate a press-mold vertically, a supporting-framework adjustably mounted upon the hollow mast, carrying the plunger-cylinder, a plunger, and its connected mechanism; a blowing-cylinder rigidly connected with the framework, a controlling-valve with connections to the blowing-cylinder, the connections to and from the valve to the blowing-cylinder being located within the hollow mast, substantially as set forth.

13. In apparatus for forming glass articles, the combination of a main frame provided with a central hollow mast, a press-mold cylinder mounted in the main frame, adapted to operate a press-mold vertically; a supporting-framework adjustably mounted upon the hollow mast, carrying a plunger-cylinder, a plunger, and its connected mechanism; a blowing-cylinder rigidly connected with the framework; a controlling-valve with connections to the blowing-cylinder within the hollow mast, such connections being provided with flexible connecting portions whereby the cylinder may be adjusted with relation to the valve, substantially as set forth.

14. In apparatus for forming glass articles, the combination of a main frame, provided with a central mast, a rotatable mold-supporting table mounted upon the main frame, a press-mold cylinder supported in the frame adapted to operate a press-mold vertically, a supporting-framework adjustably mounted upon the mast carrying a plunger-cylinder, a plunger, and its connected mechanism; means for establishing intermittent fluid-pressure in the plunger-cylinder, and press-mold cylinder, and a blowing-cylinder rigidly connected with the framework; a controlling-valve; connections therefrom to the blowing-cylinder, and a treadle device for operating such valve, substantially as set forth.

15. In apparatus for forming glass articles, the combination of a main frame provided with a central mast, a rotatable mold-supporting table mounted upon the main frame, a press-mold cylinder supported in the frame adapted to operate a press-mold vertically, a supporting-framework adjustably mounted upon the mast carrying a plunger-cylinder; a plunger, and its connected mechanism; means for establishing intermittent fluid-pressure in the plunger-cylinder and press-mold cylinder; a blowing-cylinder rigidly connected with the framework; a controlling-valve, connections therefrom to the blowing-cylinder, a treadle device for operating such valve, a controlling-valve for both mold-cylinder and plunger-cylinder, and connections from such valve to such cylinders, substantially as set forth.

16. In apparatus for forming glass articles, the combination of a main frame provided with a central hollow mast, a rotatable mold-supporting table mounted upon the main frame, a press-mold cylinder supported on the frame adapted to operate a press-mold vertically, a supporting-framework adjustably mounted upon the hollow mast carrying a plunger-cylinder, a plunger, and its connected mechanism; means for cooling the plunger, a blowing-cylinder rigidly connected with the framework, a controlling-valve, connections therefrom to the blowing-cylinder, a treadle device for operating such valve, a controlling-valve for both the mold and plunger cylinders, so as to establish therein intermittent fluid-pressure, and connections from such valve to such cylinders, substantially as set forth.

17. In apparatus for forming glass articles, the combination of a main frame, a press-mold cylinder mounted thereon adapted to operate a press-mold vertically, a plunger-cylinder situate above the press-mold cylinder provided with a piston connected with the plunger, such plunger being in alinement with the press-mold, means for supplying fluid-pressure to the cylinders, and means located at each end of each cylinder for equalizing the pressure therein at the termination of the stroke, substantially as set forth.

18. In apparatus for forming glass articles, the combination of a main frame, a press-mold cylinder mounted thereon adapted to operate a press-mold vertically, a central mast, a framework adjustably mounted thereon, a plunger-cylinder supported upon the framework above the mold-cylinder, a controlling-valve with connections to the mold-cylinder and plunger-cylinder respectively, and a blowing-cylinder mounted upon the framework provided with a seating device, adapted to be adjusted upon a blow-mold and to deliver air-pressure thereto, a valve controlling the operation of such device, and connections from such valve to the blowing-cylinder, whereby air-pressure is supplied to it for the purposes set forth.

19. In apparatus for forming glass articles, the combination of a main frame provided with a central hollow mast, a rotatable mold-supporting table mounted upon the main frame, a blowing-cylinder adjustably mounted upon the mast and adapted to aline with the molds of the table, such blowing-cylinder being provided with a piston having a hollow stem and a perforated disk adapted to be set upon a blow-mold, air-pressure connections to the blowing-cylinder whereby its piston is raised or lowered and whereby pressure is established through the hollow stem in the blow-mold; a controlling-valve in communication with the connections to the blowing-cylinder, and treadle mechanism for actuating the controlling-valve, substantially as set forth.

20. In apparatus for forming glass articles, the combination of a main frame provided with a central hollow mast, a rotatable mold-supporting table mounted upon the main frame, a blowing-cylinder adjustably mounted upon the mast and adapted to aline with the molds of the table, such blowing-cylinder being provided with a piston having a hollow stem, means for holding such stem in a raised position independent of the air-pressure, a disk at the lower end of the hollow stem adapted to be set upon the blow-mold, air-pressure connections with the blowing-cylinder whereby its piston is raised or lowered, and whereby pressure is established through the hollow stem in the blow-mold, and a controlling-valve in communication with the connections to the blowing-cylinder, substantially as set forth.

705,814. FENDER OR GUARD FOR TRAMWAY-CARS. JOHN BAUER, New York, N. Y. Filed Mar. 19, 1902. Serial No. 98,886. (No model.)

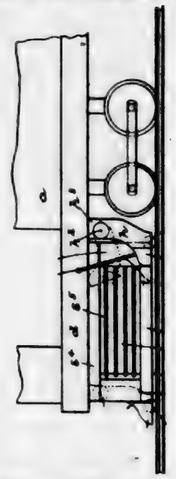

Claim.—1. A fender or guard for tramway-cars comprising main side members supported beneath the platform of a car in a V shape or triangular position, the apex thereof being directed forwardly, a supplemental member hinged beneath the platform of the car in the apex of the main side members and provided at its lower end with a wheel or roller, and other supplemental members hinged beneath the platform of the car at the rear end thereof and at the rear ends of the side members and provided with wheels or rollers adapted to travel on the rails of the track, substantially as shown and described.

2. A fender or guard for tramway-cars comprising side members supported beneath the platform of a car in a V shape or triangular position, the apex thereof being directed forwardly, a supplemental member hinged to the platform of the car, at the rear end thereof and at the rear ends of the side members and provided with wheels or rollers adapted to travel on the rails of the track, said last-named supplemental members being provided with means for raising them and holding them in a lifted position, substantially as shown and described.

705,815. BARREL HOOK OR HANDLE. GEORGE H. BERCHIPS, Summit, N. J. Filed May 7, 1901. Serial No. 59,083. (No model.)

Claim.—1. An improved barrel-hook, comprising a rod bent into two parallel loops *c*, *c*, the ends of one pair of arms having inward-projecting spurs *d*, and the ends of the other arms being connected by an outwardly-bent handle.

2. The herein-described barrel-hook, consisting of a piece of iron rod bent into parallel loops adapted to set down over the edge of a barrel, and each having arms of substantially equal length, one arm of each loop forming at its extremity an inwardly-turned spur, and the other two arms being connected by an integral handle bent out of the middle portion of the rod.

3. In a barrel-hook, the combination with a handle portion, of a U-shaped loop *c*, adapted to set down over the edge of a barrel, one arm of said loop having at its extremity an inwardly-projecting spur, and the other arm being of a length not less than the first said arm and connected at its extremity to said handle.

4. A barrel-hook comprising two parallel rigid loops of an inverted-U shape and adapted to set down over the edge of a barrel, one arm of each loop having at its end an inwardly-pointing spur and the other arms being connected to an outwardly-extending handle, said spurs and handle all lying substantially in a plane disposed at right angles to the loop.

5. A barrel-hook having parallel loops *c*, *c*, adapted to set down over the edge of a barrel at a little distance apart, said loops each having an inwardly-directed spur on one arm, and the other arms being connected by a handle bent outward to clear the curved side of the barrel.

705,816. LANTERN. ALBERT T. BISHOP, Southington, Conn. Filed Mar. 24, 1902. Serial No. 99,775. (No model.)

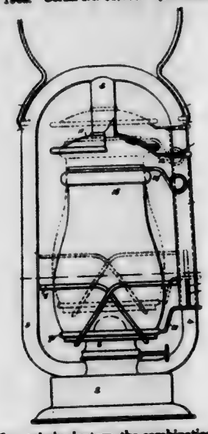

Claim.—1. In a tubular lantern, the combination with the side tubes thereof, of a vertically-movable sleeve arranged upon one of said tubes, rigid connection between the sleeve and globe-rest and swivel connection between the sleeve and a portion of the lantern above the globe whereby the upward movement of the sleeve will raise the globe and a portion of the lantern above the same, so as to permit the globe to be swung to one side, substantially as described.

2. In a tubular lantern, the combination with one of the said tubes, hood and globe-rest thereof, of a vertically-movable sleeve arranged on said tube, a swivel connection between the hood and the upper end of the sleeve, and a rigid connection between the globe-rest and lower end of the sleeve, substantially as described.

705,817. SHOE-FASTENER. MILTON S. BROWN, Washington, D. C. Filed Dec. 14, 1901. Serial No. 85,910. (No model.)

Claim.—1. In a shoe-fastener, the combination with lacing-eyelets extending part way up the meeting edges of the upper, of short lacing-loops attached to the upper above said eyelets and lying just below the line of the ankle-joint, long lacing-loops attached to the upper just above the line of the ankle-joint and extended substantially to the upper-top, and a lace crossed and recrossed through the eyelets and loops and retained against removal therefrom, substantially as set forth.

2. In a shoe-fastener, short lacing-loops attached adjacent the edges of the upper and below the line of the ankle-joint, and long lacing-loops also attached adjacent the edges of the upper and above the line of the ankle-joint, said long loops extending to substantially the top of the upper, substantially as set forth.

3. In a shoe-fastener, a single long lace-receiving loop on each side of the upper-opening and extending from just above the line of the ankle-joint to substantially the top of the upper, said loops being curved slightly toward each other for a purpose substantially as set forth.

705,818. INCANDESCENT GAS-LAMP. FRANK M. BROOKS, Brooklyn, N. Y. Filed Oct. 4, 1901. Serial No. 77,512. (No model.)

Claim.—1. In an incandescent gas-lamp the combination of a globe-holder provided with a horizontal flange having recesses and ledges between the recesses, a gallery connected with the burner having projections adapted to pass through the recesses in the flange of the holder to engage with the ledges thereof, locking devices engaging with inside ledges and projections which prevent accidental disengagement of the said parts and a gas-cock and operating devices therefor located below the burners.

2. In an incandescent gas-lamp the combination of a globe-holder provided with an inwardly-extending horizontal flange having a centrally-located opening large enough to permit the easy passage therethrough of the operating devices for the gas-cock, the inner edge of said flange having recesses and ledges between the recesses, a gallery connected with the burner having a perforated bottom for the free passage of the air and having also projections adapted to pass through the recesses in the flange of the globe-holder and to engage with the ledges thereof and a gas-cock and operating devices therefor located below the globe-support.

3. In an incandescent gas-lamp the combination of a globe-holder provided with an inwardly-extending horizontal flange, said flange having a central opening large enough to permit the devices which operate the gas-cock to pass freely through it, recesses and ledges between the recesses on the inner edge of said flange, a gallery connected with the burner and having projections adapted to pass through the recesses in the flange of the holder to engage with the ledges thereof, locking devices engaging with inside ledges and projections which prevent accidental disengagement of the said parts and a gas-cock and operating devices therefor located below the burners.

705,819. RHYTHMICAL RATTLE. LOUIS S. BURBANK, Worcester, Mass. Filed Dec. 10, 1900. Serial No. 39,304. (No model.)

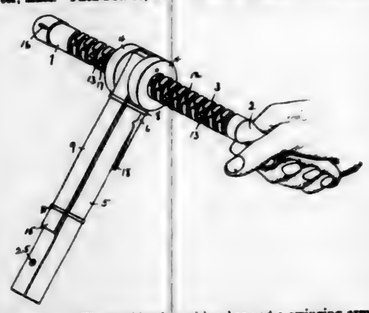

Claim.—1. The combination with a bar and a swinging arm capable of rotating about said bar, of a series of notches on said bar, a yielding tooth arranged to engage said notches, and means for advancing said arm along said bar, substantially as described.

2. The combination of a bar provided with a series of notches of varying distances apart, a swinging arm capable of rotating about said bar, and a yielding member carried by said arm and arranged to engage said notches, whereby with a uniform movement of the swinging arm sounds are produced with varying intervals, substantially as described.

3. The combination of a bar provided with a screw-thread, a swinging arm capable of rotating about said bar, and means for engaging said screw-thread, whereby said arm is traversed along said bar, a yielding member carried by said arm, and means on said bar for engaging said yielding member and producing a snapping sound as the arm travels along said bar, substantially as described.

4. The combination in a rhythmical rattle, of a stationary, notched member provided with notches varying in distance apart and in depth, an arm arranged to swing around said notched member and a yielding member carried by said arm and arranged to snap against the arm as actuated by said notched member and produce a series of rhythmical sounds varying in accent and at varying intervals, substantially as described.

5. The combination of a bar and an arm capable of rotating around said bar, of a series of notches of varying depth on said bar, and a yielding member carried by said arm and arranged to engage said notches, whereby a series of snapping sounds are produced with an accent, substantially as described.

6. The combination of a bar and a swinging arm, of a screw-thread on said bar, a lever pivoted on said arm, yielding means for normally holding said lever in engagement with said screw-thread, whereby said arm is traversed along said bar, a yielding member carried by said arm, and means on said bar for intermittently engaging said yielding member and producing a succession of snapping sounds, substantially as described.

7. The combination of a bar provided with a screw-thread, a swinging arm capable of rotating about said bar, means carried by said arm for engaging said screw-thread, whereby said arm is traversed along said bar, means for disengaging said arm from said screw-thread, a series of notches in said screw-thread, a yielding member carried by said arm and arranged to engage said notches, substantially as described.

8. The combination of a bar provided with a screw-thread having a series of notches 12 in abutment, an arm capable of rotating around said bar, a lever pivoted on said arm and engaging said screw-thread, a yielding member carried by said arm and provided with a tooth arranged to snap into said notches, means for disengaging said arm from said screw-thread, substantially as described.

9. The combination of a bar provided with a screw-thread, an arm capable of swinging around said bar, means carried by said arm for engaging said screw-thread, a row of notches 12, a yielding member carried by said arm and provided with a tooth engaging said notches, and a stop for checking the rotation of said arm, with its tooth in said row of notches, substantially as described.

10. The combination of a bar provided with a screw-thread having a series of notches, collars 4, 4, inclosing said bar, a swinging arm having one end attached to said collars, means carried by said arm for engaging said screw-thread, a vibrating tongue pivoted at one end to said collars, yielding means for holding its free end in contact with said arm, a tooth on said tongue arranged to slide on the periphery of said screw-thread, and a series of notches in said screw-thread, substantially as described.

705,820. OIL-BURNER. JOHN S. CHENHALLS, Plymouth, England. Filed Feb. 28, 1902. Serial No. 96,168. (No model.)

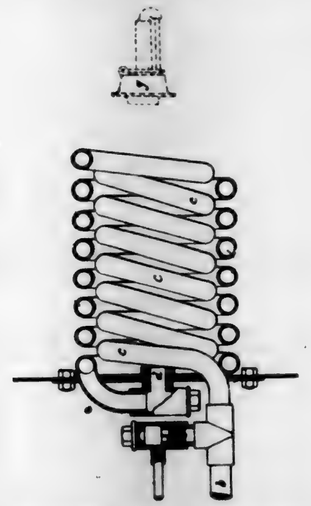

Claim.—In combination, an oil-pipe, an exhaust-pipe, a connection between the said pipes, a check-valve in said connection closing toward the oil-pipe, a pipe *c* connecting with the exhaust-steam pipe *b* and comprising inner and outer coils, the outer coil having a vapor-discharge nozzle arranged to discharge vapor centrally through the coil, substantially as described.

705,821. HERNIAL TRUSS. JOHN H. CHESTERMAN and DANA L. CHESTERMAN, Philadelphia, Pa., assignors to Chesterman & Streeter, a firm composed of Edwin Chesterman, John H. Chesterman, and Dana L. Chesterman, Philadelphia, Pa. Filed Mar. 22, 1902. Serial No. 99,395. (No model.)

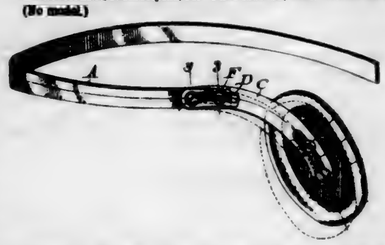

Claim.—1. In a truss, a pad, a spring, and a downwardly-deflected plate adapted to connect said pad with said spring, the opposite end portions of said plate having matched slots therein for the connecting members of said plate and pad in either the right or the left disposed position of said plate, substantially as described.

2. In a truss, a curved plate adapted to connect the pad and spring of the truss, opposite end portions of said plate having curved matched slots therein for the connecting-screws of said pad, substantially as described.

3. In a truss, a pad, a spring and a curved plate adapted to connect said pad with said spring, the opposite end portions of said plate having matched curved slots therein for the connecting-screws of said plate and pad in either the right or left disposed position of said plate, said slots and the shanks of said screws admitting of the adjustment of said plate in both longitudinal and lateral directions, substantially as described.

705,822. BLAST OR OTHER FURNACE. ELLERY F. COFFIN, Muirkirk, Md., assignor of one-fourth to Charles H. Coffin, Muirkirk, Md. Filed Mar. 27, 1901. Renewed May 31, 1902. Serial No. 109,809. (No model.)

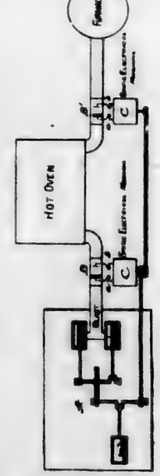

Claim.—1. The improvement in the art of operating furnaces requiring a blast of air, consisting in drying the air by passing an electric current through it and then forcing the dried air into the furnace, substantially as described.

2. The improvement in the art of operating furnaces requiring a blast of air consisting in drying the air by passing a diffused electric current through it and then forcing the dried air into the furnace, substantially as described.

3. The improvement in the art of operating furnaces requiring a blast

of air, consisting in passing a current of electricity through the air to eliminate a part of the moisture, heating the air and then passing the dried air to the furnace, substantially as described.

4. The herein-described process of drying a blast or current of air, by passing an electric current through it, and then passing the dry air to the point of use.

5. The process of facilitating the reduction of iron in a blast-furnace, which consists in subjecting to an electric discharge a column of rapidly-moving air under pressure and forcing said air into the furnace.

6. The process hereinbefore described consisting in subjecting a blast or current of air to an electric discharge and then passing the air thus treated to the point of use, substantially as described.

705,823. CLASP OR FASTENER. NEWTON CRANE, Boston, Mass. Filed Dec. 12, 1898. Serial No. 699,016. (No model.)

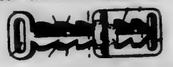

Claim.—1. A clasp member V shape in cross-section and having provisions at its outer end for attachment to a shoe or arctic, said member being elongated, and having two separated parallel series of upwardly or outwardly projecting engaging shoulders.

2. A clasp member having provisions at its outer or rear end for attachment to a shoe or arctic, said member being elongated and having its edges bent outward and notched to provide a plurality of engaging shoulders or parts.

3. A clasp member having provisions at its outer end for attachment to a shoe or arctic, said member being longitudinally curved and V-shaped in cross-section, and being provided with two parallel rows of upwardly or outwardly projecting engaging shoulders, which extend substantially from end to end of said member.

4. A clasp or fastener consisting of two members having provisions at their outer ends for attachment to a shoe or arctic, one member having two separated parallel rows of engaging upwardly or outwardly projecting shoulders, and the other member being substantially flat and being adapted to receive the first-mentioned member and having an engaging portion for the shoulders of each row of said first-mentioned member.

705,824. AUTOMOBILE. SAMUEL T. DAVIS, Jr., Ardsley-on-Hudson, N. Y., assignor to the "Locomobile" Company of America, New York, N. Y., a Corporation of West Virginia. Filed Feb. 8, 1902. Serial No. 93,102. (No model.)

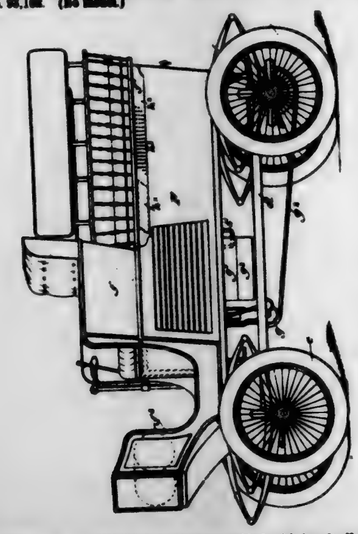

Claim.—1. A steam-motor vehicle provided with longitudinal side seats having a steam-engine and a steam-generator, the latter being provided with a plurality of draft-flues extending outwardly and then rearwardly to such a distance as to leave between said rearwardly-extended flues and between said longitudinal side seats an available and useful space.

2. A steam-motor vehicle, the steam-generator of which is provided with a plurality of rearwardly-extended longitudinally-arranged draft-flues having perforated side walls.

3. The combination with a motor-vehicle body having laterally-overhanging portions of a steam-generator carried beneath said body and provided with a longitudinal draft-flue arranged under one of said overhanging portions.

4. The combination with a motor-vehicle body having laterally-overhanging portions of a steam-generator carried beneath said body and provided with a longitudinal draft-flue arranged under one of said overhanging portions and having a closely-perforated side wall.

5. The combination with a motor-vehicle body having laterally-overhanging portions of a steam-generator carried beneath said body and provided with longitudinal draft-flues arranged respectively under the said overhanging portions.

6. The combination with a motor-vehicle body provided with longitudinal side seats of a steam-generator and a steam-engine carried beneath said body, the former being provided with a hood having flues extending divergently and rearwardly and longitudinal draft-flues communicating therewith and extending to the rear of said generator and contiguous to the sides of said vehicle-body and leaving an available and useful space between said flues and between said longitudinal side seats.

7. In a motor-vehicle the combination of a steam-generator a plurality of draft-flues extending outwardly and then rearwardly, having each a plurality of outlets at the side of the vehicle and a downdraft-flue in communication therewith.

8. In a motor-vehicle the combination of a steam-generator, a plurality of draft-flues extending outwardly and then rearwardly having each a plurality of outlets at the side of the vehicle, a downdraft-flue in communication therewith, and an exhaust-steam-supply device arranged in said downdraft.

9. In a motor-vehicle the combination of a steam-generator, a draft-flue extending rearwardly at the side of the body, having a plurality of side outlets, a downdraft-flue in communication therewith and an exhaust-steam-supply device arranged in said downdraft.

10. In a motor-vehicle, a body provided with longitudinal side seats, a steam-generator on said body, and one or more longitudinally-arranged draft-flues therefor, arranged under said seats.

11. In a motor-vehicle a body, a steam-generator, and a plurality of connected water-supply tanks therefor, arranged in the rear of said generator and separated to provide available and useful space between.

12. In a motor-vehicle a body provided with longitudinal side seats, a steam-generator, and connected water-supply tanks therefor arranged respectively beneath said seats, leaving available and useful foot-space between.

13. In a motor-vehicle, a body provided with a transverse seat, longitudinal seats in the rear thereof, and a dasher-box in front thereof, a steam-generator, a hydrocarbon-burner therefor and its fuel-supply tank arranged in said dasher-box; and a plurality of feed-water-supply tanks arranged beneath said longitudinal seats with useful space between.

14. A steam-motor vehicle provided with a body having a rearwardly-extending useful available space for carrying and transportation purposes, a steam-engine, a steam-generator therefor, the latter being provided with a plurality of draft-flues extending outwardly and then rearwardly contiguous to the sides of the vehicle to such a distance as to embrace between said rearwardly-extended flues said useful and available carrying-space.

15. A steam-motor vehicle the steam-generator of which is provided with a rearwardly-extended draft-flue arranged in a substantially longitudinal direction contiguous to the side of the vehicle and having outlet-passages at the side thereof.

16. A steam-motor vehicle, the steam-generator of which is provided with a draft-flue extending outwardly and then rearwardly in a substantially longitudinal direction having a plurality of outlet-passages at the side of the vehicle.

705,825. TROLLEY HEAD AND WHEEL. WALTER A. E. DAVIS, Toledo, Ohio, assignor to W. H. Lidell, Brooklyn, N. Y. Filed Dec. 18, 1901. Serial No. 86,377. (No model.)

Claim.—1. In a trolley-head, the combination of a socket-piece formed with upper and lower bearing-lugs; a trolley-head formed with a vertical bearing-piece fitted between said lugs and pivoted thereto to swing laterally, said trolley-head having inwardly and downwardly turned flanges; a trolley-wheel journaled in the head, a vertically-sliding bracket disposed between the side plates of the head, having vertical standards terminating in curved upper ends, and a lever to actuate the bracket.

2. In a trolley-head, the combination of a socket-piece formed with upper and lower bearing-lugs, a trolley-head formed with a vertically-bearing piece fitted between said lugs and pivoted thereto to swing laterally, said trolley-head having inwardly and downwardly turned guide-flanges, a trolley-wheel journaled in the head, a vertically-sliding bracket disposed between the side plates of the head and formed with curved upper ends, a lever to actuate the bracket, guide-arms pivotally fixed to the sides of the trolley-head, a trolley-rope to move the lever, and connections between the rope and the guide-arms to move the arms.

705,826. TAILOR'S PRESSING-MACHINE. JOHN DEERE, Cincinnati, Ohio, assignor of one-half to Chris Frankenstein, Cincinnati, Ohio. Filed Sept. 11, 1901. Serial No. 75,005. (No model.)

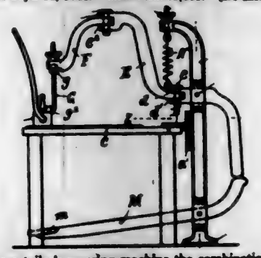

Claim.—In a tailor's pressing-machine the combination of a standard, an upper and a lower lever pivoted to the standard each to swing in a vertical plane the lower lever bearing upward against the upper, a spring attached to the upper end of the upper lever and to the standard at a point above the lever, an arm coupled to the upper end of the upper lever to swing in a horizontal plane, and a second arm coupled to the free end of the first arm to swing in a horizontal plane, substantially as shown and described.

705,827. RAIL-JOINT. JOSEPH W. DEERE and JOHN D. DEVORE, Versailles, Pa. Filed Mar. 10, 1902. Serial No. 97,494. (No model.)

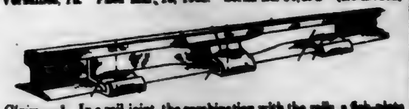

Claim.—1. In a rail-joint, the combination with the rails, a fish-plate carrying pins or studs, chair portions on each end having upturned ends formed integral with said fish-plate, a central rib carrying an upward extension, a fish-plate carrying extensions adapted to interlock in the upturned ends of the chair portions, substantially as described.

2. In a rail-joint, the combination with the rails, a fish-plate carrying pins or studs extending inwardly, chair portions carrying upturned ends formed integral with said fish-plate, a central rib carrying upward extensions, the fish-plate having a central recess or seat formed therein, downward extensions formed integral with said fish-plate adapted to interlock said chair portions and central rib, all parts being arranged and operating substantially as described.

705,828. HEATING-STOVE. WILLIAM DEMUTH, Pittsburg, Pa. Filed Feb. 20, 1902. Serial No. 94,600. (No model.)

Claim.—1. In a gas-stove, the combination of a casing, partitions arranged therein adjacent to the side walls thereof forming chambers between said partitions and the side walls of the casing, said chambers in communication with the open air, a fireback having a curved upper end, a rearchamber between the fireback and the rear wall of the casing, said chamber in communication with the open air, a hood mounted in the casing above the curved upper end of the fireback forming a chamber in communication with the rear chamber and the side chambers, and a cover on the casing forming a chamber above the hood which is in communication with the exit-flue, substantially as described.

2. In a gas-stove, the combination of a casing partitions arranged therein and forming chambers between the same and the side walls of the casing, a fireback having a curved upper end, a chamber between the fireback and the rear wall of the casing and in communication with the open air, a curved hood mounted over the curved upper end of the fireback forming a hot-air chamber which is in communication with the side and rear chambers, and a cover for said casing forming a chamber above the hood which is in communication with the side and rear chambers, substantially as described.

3. In a gas-stove, the combination of a casing, partitions therein adjacent to the side walls of the casing forming side chambers in communication with the open air, a fireback having a forwardly-curved upper end, a rear chamber between the fireback and the rear wall of the casing in communication with the open air, a hood forming a hot-air chamber between the same and the upper end of the fireback and in communication with the rear chamber, and a chamber above said hot-air chamber in communication with the exit-flue and side chambers, substantially as described.

705,829. REPRODUCER FOR SOUND-RECORDS. THOMAS A. EDISON, Llewellyn Park, N. J. Filed Nov. 8, 1901. Serial No. 81,886. (No model.)

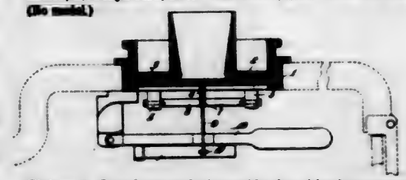

Claim.—1. In a phonograph, the combination with a sinuous grooved record, of a stylus presenting a curved extended bearing-surface engaging the record and vibrating in a plane parallel with the record-surface, an arm for carrying said stylus and vibrating with respect to a support extending substantially perpendicular to the record-surface, a diaphragm, and connections between said arm and the diaphragm, substantially as set forth.

2. In a reproducer for effecting reproductions from a sinuous grooved record, the combination of a diaphragm, a stylus presenting a curved extended bearing-surface engaging the record and vibrating in a plane parallel with the record-surface, and connections between said stylus and diaphragm, substantially as set forth.

3. In a reproducer for effecting reproductions from a sinuous grooved record, the combination of a diaphragm, a stylus presenting a curved extended bearing-surface engaging the record and vibrating in a plane parallel with the record-surface, connections between said stylus and diaphragm, and a compensating weight for engaging the stylus with the record and for compensating for mechanical variations or eccentricities in the latter, substantially as set forth.

4. In a reproducer for effecting reproductions from a sinuous grooved record, the combination of a diaphragm, a stylus presenting a curved extended bearing-surface engaging the record and vibrating in a plane parallel with the record-surface, connections between said stylus and diaphragm, and a compensating weight which carries the stylus for engaging the stylus with the record and for compensating for mechanical variations or eccentricities in the latter, substantially as set forth.

5. In a reproducer for effecting reproductions from a sinuous grooved record, the combination of a diaphragm, a spring maintained under a normal tension, connections between said spring and diaphragm, and a reproducer carried by the spring for engaging the record and vibrating in a plane parallel to the record-surface, substantially as set forth.

6. In a reproducer for effecting reproductions from a sinuous grooved record, the combination of a diaphragm, a pivoted compensating weight, a spring carried by said compensating weight and maintained under tension, connections between said spring and diaphragm, and a reproducer carried by the spring for engaging the record and vibrating in a plane parallel to the record-surface, substantially as set forth.

7. In a reproducer for effecting reproductions from a sinuous grooved record, the combination of a diaphragm, a spring maintained under a normal tension, a bell-crank lever between said spring and diaphragm, and a reproducing stylus carried by said spring and vibrating in a plane parallel with the record-surface, substantially as set forth.

8. In a reproducer for effecting reproductions from a sinuous grooved record, the combination of a diaphragm, a pivoted compensating weight, a spring carried by said weight, a bell-crank lever between said spring and diaphragm, and a stylus carried by said spring and vibrating in a plane parallel with the record surface, substantially as set forth.

705,880. PNEUMATIC MOTOR FOR CAR FANS AND VENTILATORS. CLARENCE A. EVANS, Upland, Pa. Filed Nov. 24, 1900. Serial No. 37,585. (No model.)

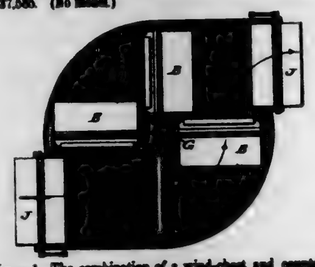

Claim.—1. The combination of a wind-chest and counterbalanced vane, a shaft freely carrying said vane, and a collar with separated shoulders on its hub, whereby the vane may be held in a vertical position while presenting its broad side or face to the impact of wind and in a feathering position while in its return motion, said shouldered collar being freely mounted on said arm and adjustably connected therewith whereby its abutments and those of the hub of the vane may be set relatively to each other.

2. The combination of a swinging vane, an arm carrying said vane, a counterpoise on said vane to facilitate the turning of the same by centrifugal force, a collar on said arm provided with separated shoulders, and means for adjustably securing said collar to said arm, the hub of said vane having separated shoulders thereon which are adapted to play between the shoulders of said collar and positively engage with the latter-named shoulders in the upright and horizontal positions of the vane.

705,881. DEVICE FOR MAKING IMPRESSIONS. DEREN L. FALARDEAU, Albany, N. Y. Filed June 6, 1901. Serial No. 63,447. (No model.)

Claim.—1. A device for taking impressions, consisting of the opposite jaws carrying the elastic cushions, said cushions having a thickness sufficient to receive the thickness of or encompass the object of which the impression is to be taken, and means for forcing said jaws together, substantially as specified.

2. A device for taking impressions of keys, consisting of the opposite jaws carrying the cushions of rubber or the like, said cushions being of a thickness sufficient to receive the thickness of the key, and means for forcing said jaws together, substantially as specified.

3. A device for making impressions of keys and other rigid objects, having three leaves or jaws, the intermediate jaw and one of the outer jaws being provided upon their meeting-faces with cushioned pad-like plateaus, and the opposite face of the intermediate jaw and the opposing face of the other outer jaw being provided with inking-pads, substantially as described.

705,882. LABELING-MACHINE. JOHN J. GAYNOR, Indianapolis, Ind., assignor of five-sixths to Frank Mans Fenyve and Anthony Harman, Indianapolis, Ind. Filed Dec. 2, 1901. Serial No. 84,627. (No model.)

Claim.—1. In a labeling-machine, oppositely-placed pairs of label-carrying plates that bring the labels into position against the neck and body of the bottle or the like for being affixed, and a label-holder that conforms to the neck and body of the bottle and which enters between said plates and holds the labels centrally lengthwise against the neck and body of the bottle while being affixed.

2. In a labeling-machine, a stationary label-support, means for elevating labels from the support to the under side of the bottle, a label-holder adapted to engage the labels centrally lengthwise of the bottle and hold them while being affixed, and means for moving the label-holder from the side into position between the label-support and label-carrier and then upward for engaging said labels.

3. In a labeling-machine, a label-support, means over the label-support for stopping the upward movement of the bottle, label-carriers for elevating the labels from the support to the under side of the bottle, brushes for affixing the labels that follow said label-carriers in their upward movement, a label-holder for centrally engaging the labels lengthwise of the bottle, and means for moving the same upward between the label-carriers and brushes against the labels on the under side of the bottles.

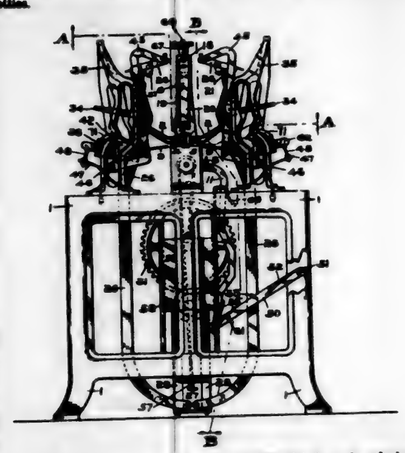

4. In a labeling-machine, means for holding labels against the bottle or the like while being affixed made to conform substantially to the shape of the bottle lengthwise and mounted so as to rock and adjust itself to different shapes of bottles.

5. In a labeling-machine, means for holding labels against the bottle or the like while being affixed that is made to conform substantially to the shape of the bottle lengthwise, a bar or support to which said label-holder is centrally pivoted so as to rock, and a spring to limit the rocking movement thereof.

6. In a labeling-machine, means for holding labels against the bottle or the like while being affixed consisting of a bar lengthwise of the bottle, a support on which said bar is pivotally mounted so as to rock, and cushions connected with said bar and extending beyond the same and made to conform substantially to the form of the bottle lengthwise.

7. In a labeling-machine, means for holding labels against the bottle or the like while being affixed which consists of a channeled bar, and pieces of resilient material pivoted in the channel thereof near their center so they will rock and which are made to conform substantially to the bottle lengthwise.

8. In a labeling-machine, the label-holder apparatus consisting of the bar 8 with the channel 75 therein, the bar 11 to which the bar 8 is centrally pivoted, the spring 12 mounted on the pin 74 in the bar 11 and acting against the bar 8 to limit its rocking movement, the resilient blocks 13 and 14 centrally pivoted in the channel 75 of the bar 8, and the springs 76 in said channel and acting against said blocks to limit their rocking movement, substantially as shown and described.

9. In a labeling-machine, the label-holder 8, the bar 11 on which the same is mounted, the bar 50 pivoted at one end of the framework of the machine and at its other end to said bar 11, a spring for elevating said bar 50, a spring tending to force the upper end of the bar 11 and the label-holder inward, and means for limiting the inward movement thereof.

10. In a labeling-machine, oppositely-located pairs of brushes made to conform to the neck and body of the bottle for affixing the labels to the different parts of the bottle or the like, and independent means for mounting and controlling the movement of the oppositely-located brushes.

11. In a labeling-machine, the combination of the brushes 9, the rods 16 to which the same are secured, the bars 45 to which said rods are secured, means for actuating said bars 45, and the standards 35 with a guideway therein for guiding and controlling the lateral movement of said rods and brushes, substantially as set forth.

12. In a labeling-machine, brushes for affixing labels to the bottle or the like, the rods 16 on which they are mounted, the bars 45 to which said rods are secured, the vertically-movable bars 26 to which said bars 45 are pivoted at their upper ends, the standards 35 provided with the guideways therein and rollers 46 on said bars 45 that run in said guideways, substantially as shown and described.

13. In a labeling-machine, a label-carrier plate, the pivotally-mounted bar 21 with its lower end inturned and hinged to said label-carrying plate, arms 23 rigidly connected with the label-carrying plate and extending about the inturned end of the bar 21, and a set-screw 22 in the arm 23 that acts against the bar 21, substantially as set forth.

14. In a labeling-machine, a pair of label-carrying plates, a paste-pad under each plate, a paste-applying apparatus, means for vertically moving the label-carriers, a bell-crank pivoted to said vertically-moving means that when actuated moves the paste-plates into engagement with the paste-applying apparatus, a stationary means to engage and cause the actuation of said bell-crank, and a spring for moving the label-carrying plates inward when the bell-crank is released.

15. In a labeling-machine, the paste-box 38, the cross-rod 41, the hooks 40 connected with the paste-box, the extension 62, the support 47, and the adjustable plate 48 combined, substantially as shown and described.

16. In a labeling-machine, a label-support, and means for holding the labels on said support that leaves the side edges of said labels exposed and free to be engaged on their upper edges.

17. In a labeling-machine, means for affixing the labels, the bars 26 for supporting said means, the cross-head 27 to which said bars are pivoted, means for reciprocating the cross-head 27, the weight 56, a stationary pulley, and a cable running over said pulley from the cross-head to the weight to support and elevate the latter.

705,883. GENEALOGICAL CHAIN RECORD. FATTIE W. GEE, New York, N. Y. Filed Apr. 1, 1901. Renewed Dec. 19, 1901. Serial No. 86,535. (No model.)

Claim.—1. A genealogical chain record having as record devices for each individual of the family, a series of record elements adapted for receiving inscriptions, said elements being loosely coupled together in multiple and each element having about its margin a plurality of holes to receive the coupling devices.

2. A genealogical chain record having as record devices for each individual of a family, a series of flat or disk-like record elements adapted for receiving inscriptions and open chain-links loosely coupling together said record elements, the elements having a plurality of holes in their margins to receive said open links.

3. A genealogical chain record composed of disk-like or flat elements coupled loosely together and adapted to receive inscriptions, each of said elements having three coupling-apertures, and means for coupling said elements together.

705,884. AIR-MOTOR. ERASH GLOWACKI, Miskolcz, Austria-Hungary. Filed Aug. 2, 1901. Serial No. 70,696. (No model.)

Claim.—1. In a wind-motor, the combination of a staging, a motor provided with cells and adjusting-plates pivoted to the staging for protecting portions of the motor from the wind, said plates being provided with adjustable flaps, substantially as described.

2. A drum for a wind-motor consisting of an axle, a frame thereon provided with a bar *h* extending therefrom, another bar *k* pivoted on the axle, means for connecting the bars to each other, ribs *p* pivotally connected to the frame, and supporting material to form cells, a cord *r* connecting the cells to each other, and means on the bar *k* cooperating with the ribs to cause two of the ribs to follow the motion of the bar when the bars are moved apart and toward each other, substantially as described.

3. A drum for a wind-motor consisting of an axle, a frame thereon provided with a bar *h* extending therefrom, another bar *k* pivoted on the axle and having segmental portions provided with slots *i*, means for connecting the bars *k* and *h* to each other, ribs *p* pivotally connected to the frame, and supporting material to form cells, pins *s* on two of the ribs, engaging the slots *i*, and means connecting the cells to each other in such manner that when the bars *k* and *h* are moved apart to cause the pins *s* to move in the slots *i*, the cells will be folded up, substantially as described.

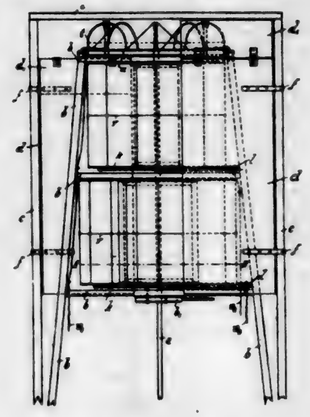

4. In a wind-motor, the combination with a staging, of an axle having bearings thereon, and a drum consisting of a frame *g* on the axle provided with a bar *h* and another bar *k* pivoted on the axle, said bar *k* being segmental at the sides and having curved slots *i*, a folding heel-piece *l* on the end of the bar *k* having an eye adapted to engage a pin *m* attached to the bar *h*, a rim *n* on the frame *g*, ribs *p* pivoted to said rim at top and bottom and inclosed in stretched cloth to form cells, pins *s* on two ribs engaging the slots *i* in the bar *k* and a cord *r* running around the cells in rings to draw them together when the bars *k* and *h* are moved apart to cause the pins *s* to move in the slots *i*, substantially as described.

5. In a wind-motor, the combination with a staging, of an axle having bearings thereon and a disk *u* on the axle provided with cells formed by upright ribs *t* with cloth stretched thereon and on the disk *u*, cords *v* connecting the cells on each half of the disk and another cord *x* fastened to one disk and passing over rollers to a catch for raising and lowering the cells, substantially as described.

6. In a wind-motor, the combination with a staging, of an axle having bearings thereon and a disk *u* on the axle provided with funnel-shaped cells formed by curved upright steel ribs *t* and cloth stretched on said ribs and on the disk *u*, cords *v* laterally connecting the cells on both halves of the disk arranged to raise the disks when one of them is raised and another cord *x* fixed to one cell and passing over rollers to a spring-catch *w* held by a pin *y*, substantially as described.

7. In a wind-motor, the combination with a staging, of an axle having bearings thereon, and a drum consisting of a frame *g* on the axle provided with a bar *h* and another bar *k* pivoted on the axle, said bar *k* being segmental at the sides and having curved slots *i*, a folding heel-piece *l* on the end of the bar *k* having an eye adapted to engage a pin *m* attached to the bar *h*, a rim *n* on the frame *g*, ribs *p* pivoted to said rim at top and bottom and inclosed in stretched cloth to form cells, pins *s* on two ribs engaging the slots *i* in the bar *k*, a cord *r* running around the cells in rings to draw them together when the bars *k* and *h* are moved apart to cause the pins *s* to move in the slots *i*, and means for releasing said heel-piece while the drum is rotating, substantially as described.

8. In a wind-motor, the combination with a staging, of an axle having bearings thereon and a disk *u* on the axle provided with cells formed by upright ribs *t* with cloth stretched thereon and on the disk *u*, cords *v* connecting the cells on each half of the disk, another cord *x* fastened to one disk and passing over rollers to a catch for raising and lowering the cells, and means for releasing said catch while the disk is rotating, substantially as described.

9. In a wind-motor, the combination with a staging, of an axle having bearings thereon and a disk *u* on the axle provided with funnel-shaped cells formed by curved upright steel ribs *t* and cloth stretched on said ribs and on the disk *u*, cords *v* laterally connecting the cells on both halves of the disk arranged to raise the disks when one of them is raised, another cord *x* fixed to one cell and passing over rollers to a spring-catch *w* held

by a pin *y*, and means for releasing said catch *w* while the disk is rotating, substantially as described.

10. In a wind-motor, the combination with a staging, of a vertical axle having bearings thereon, drums on the axle provided with cells, a disk on the axle provided with upright cells and adjusting-plates pivoted on the frame for protecting portions of the drums from the wind, said plates being provided with adjustable flaps, substantially as described.

11. In a wind-motor, the combination with a staging, of a vertical axle having bearings thereon, drums on the axle provided with foldable cells, a disk on the axle provided with vertical foldable cells and adjusting-plates pivoted on the frame for protecting portions of the drums from the wind, substantially as described.

12. In a wind-motor, the combination with a staging, of a vertical axle having bearings thereon, drums on the axle provided with foldable cells, a disk on the axle provided with vertical foldable cells, and adjusting-plates pivoted on the frame for protecting portions of the drums from the wind, said plates being provided with hinged flaps for protecting portions of the disks and their cells from the wind, substantially as described.

13. In a wind-motor, the combination with a staging, of a vertical axle having bearings thereon, drums on the axle provided with foldable cells and means for maintaining said cells in an unfolded position, a disk on the axle above the drums provided with vertical foldable cells, and means for maintaining said cells unfolded, and means for folding either or both sets of cells while the drums and disks are rotating, substantially as described.

705,885. **ROTARY ENGINE.** FRANK G. GROVE, Leroy, Va. Filed Mar. 14, 1902. Serial No. 98,327. (No model.)

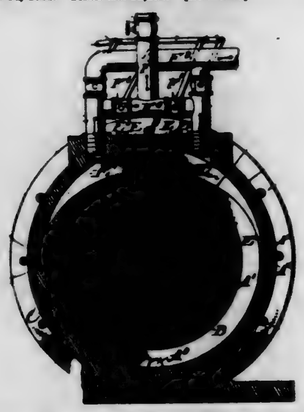

Claim.—1. In a rotary engine, a cylinder and piston-holder, a piston therein, an abutment at the upper portion of said cylinder, apertured cam-blocks at opposite sides of said abutment, and a by-pass extending from the aperture in said cam around the end thereof substantially as specified.

2. In a rotary engine, a cylinder and piston-holder, a piston therein, an abutment at the upper portion of said cylinder, cam-blocks at opposite sides of said abutment having apertures therethrough, by-passes extending from said apertures around the lower ends of said cam-blocks, conducting-pipes communicating with each of said cams, a steam-pipe communicating with said conducting-pipes and provided with cocks which are alternately opened and closed, and an exhaust-pipe communicating with said conducting-pipes and provided with valves which are alternately opened and closed, substantially as specified.

3. In a rotary engine, a cylinder and piston-holder, a piston therein, an abutment at the upper portion of said cylinder, cam-blocks at opposite sides of said abutment having apertures therethrough, conducting-pipes communicating with each of said cams, a steam-pipe communicating with said conducting-pipes and provided with cocks which are alternately opened and closed, an exhaust-pipe communicating with said conducting-pipes and provided with valves which are alternately opened and closed, levers extending from said cocks, a reversing-bar connecting said levers, and L-shaped packings disposed within an annular recess on the opposite ends of said piston-holder to bear against the piston-heads, substantially as specified.

4. A piston for a rotary engine, comprising opposite sections each having at one end a thickened portion provided with a recess and at the opposite end a tongue to fit the recess in the corresponding section and provided with a spring-recess between its ends, and a coiled spring of sufficient diameter to extend within the recess of each section, substantially as specified.

5. In a rotary engine, a casing having at opposite sides a seat, apertured cam-blocks adapted to rest at their lower ends upon said seats and having their upper ends secured to said casing, a by-pass extending from the aperture in said block around said seat, a cylindrical piston-holder, and pistons carried by said holder and normally projected therefrom under spring tension, substantially as specified.

6. In a rotary engine, a casing having at opposite sides a seat, apertured cam-blocks adapted to rest at their lower ends upon said seats and having their upper ends secured to said casing, a by-pass extending from the aperture in said block around said seat, a cylindrical piston-holder, pistons carried by said holder and normally projected therefrom under spring tension, an abutment between upper ends of said cam-blocks and comprising longitudinally-movable sections normally projected in opposite directions to each other, substantially as specified.

7. In a rotary engine, a casing having at opposite sides a seat, apertured cam-blocks adapted to rest at their lower ends upon said seats and having their upper ends secured to said casing, a by-pass extending from the aperture in said block around said seat, a cylindrical piston-holder, pistons carried by said holder and normally projected therefrom under spring tension, an abutment between upper ends of said cam-blocks and comprising longitudinally-movable sections normally projected in opposite directions to each other, segmental L-shaped packings disposed within similar recesses provided in the ends of said piston-holder, and means for admitting motive power to the aperture in one of said cams and exhausting from the opposite one, substantially as specified.

8. In a rotary engine, a cylinder having an apertured cam portion within its upper segment, feed and exhaust connections communicating with the said cam portion, an abutment between said connections, by-pass channels extending from the apertures at the opposite ends of the cam portion and around the ends thereof, a piston-holder provided with a transverse slot, a piston comprising separate members located within said slot, a spring between said members for projecting the ends thereof beyond said slot, and a spring beneath extending between the base of said slot and piston, substantially as specified.

705,886. **FASTENING DEVICE.** RAY W. GROVE, Lewistown, Mont. Filed Apr. 21, 1902. Serial No. 103,847. (No model.)

Claim.—1. A fastening device comprising two keepers and a bar, the ends of which are insertible into said keepers, said keepers being provided with means for holding said ends of said bar therein, said means consisting at one end of a laterally-movable spring-finger connected with the keepers and a plurality of notches or recesses formed in the side of the bar and in connection with which the spring-finger operates, substantially as shown and described.

2. The herein-described fastening device comprising two keepers, a bar, the ends of which are insertible into said keepers, one end of said bar being provided with a notch or recess and the keeper with a spring-finger adapted to enter the same at the other end of the bar being provided with a plurality of notches or recesses and the keeper with a laterally-movable spring-finger adapted to enter the same, substantially as shown and described.

705,887. **POWDER-PUFF.** MARIE L. GUHAER, Guymard, N. Y. Filed Mar. 12, 1901. Serial No. 50,833. (No model.)

Claim.—1. In a combined powder-receptacle and powder-puff, a flexible bag having a permeable base, a neck portion comprising a hollow stem and substantially parallel plates between which the upper edge of said bag is adapted to be received and clamped, and a stopper adapted to close said stem and serve as a handle, substantially as described.

2. In a combined powder-receptacle and powder-puff, a flexible bag having a permeable base, and a neck portion comprising an exteriorly-screw-threaded stem, a plate rigidly supported thereby and a second plate substantially parallel therewith adapted in connection with said screw-threads to engage the upper edge of said bag and clamp it against said first-mentioned plate, substantially as described.

3. In a combined powder receptacle and pad, a flexible bag having a permeable base, a removable neck portion comprising an interiorly and exteriorly screw-threaded hollow stem, a plate rigidly attached thereto

whereby the mouth of said bag is distended and pressure is exerted on the contents of said bag, a second plate substantially parallel therewith adapted in connection with said exterior threads to engage the edges of the mouth of said bag and clamp it against said first-mentioned plate and a screw-threaded stopper adapted in connection with said interior screw-threads to close said stem and also serve as a handle, substantially as described.

705,888. **CALCULATING-MACHINE.** OSKAR HAHAN, Friedenau-Berlin, Germany, assignor to Ernst Schmeler, Berlin, Germany. Filed Mar. 26, 1902. Serial No. 100,633. (No model.)

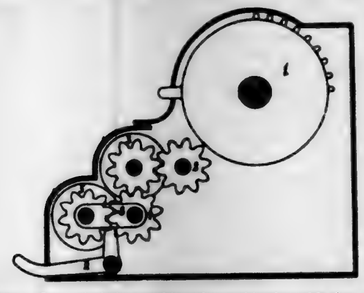

Claim.—In a calculating-machine, the combination with the registering-drum having a gear connected therewith and a second gear meshing with said first-named gear for driving the drum, of a second registering-drum having a gear connected therewith, a link pivoted at the axis of said second drum, an idler-gear journaled in the free end of said link and meshing with said last-named gear, and a bell-crank lever having one arm adapted to bear on the under side of said link and its other arm adapted to serve as an operating-handle, substantially as described.

705,889. **THRUST-BEARING.** ALBERT E. HENDERSON, Toronto, Canada. Filed Apr. 8, 1902. Serial No. 101,644. (No model.)

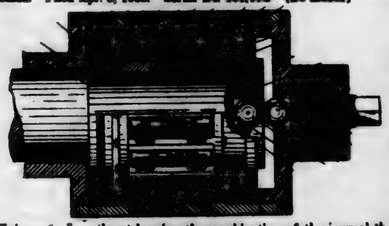

Claim.—1. In a thrust-bearing the combination of the journal the journal-box, antifriction thrust-balls interposed between the end of the journal and journal-box, a peripheral flange for the journal, an annular flange for the journal-box opposed to the peripheral flange, and auxiliary thrust-balls interposed between the annular and peripheral flanges, substantially as specified.

2. In a thrust-bearing the combination of the journal, having in its end a centrally-located ball-chamber, a journal-box having an end cap fitted with a longitudinal bore registering with the ball-chamber of the journal, contacting thrust-balls contained in the ball-chamber and bore respectively, and an adjusting-screw fitted into the bore to adjust the thrust-balls to each other, substantially as specified.

3. In a thrust-bearing the combination of the journal, having in its end a centrally-located ball-chamber, a journal-box having an end cap fitted with a longitudinal bore registering with the ball-chamber of the journal, contacting thrust-balls contained in the ball-chamber and bore respectively, an adjusting-screw fitted into the bore to adjust the thrust-balls to each other, and resilient cushions contacting the balls in the ball-chamber and adjusting-screw, substantially as specified.

4. In a thrust-bearing the combination of the journal, having in its end a centrally-located ball-chamber, a journal-box having an end cap fitted with a longitudinal bore registering with the ball-chamber of the journal, contacting thrust-balls contained in the ball-chamber and bore respectively, an adjusting-screw fitted into the bore to adjust the thrust-balls to each other, resilient cushions in the ball-chamber and adjusting-screw and contacting the balls, a radial flange for the journal opposed to an annular flange for the journal-box and auxiliary thrust-balls interposed between the annular and radial flanges, substantially as specified.

5. In a thrust-bearing, the combination of a journal having a recess in its outer end, said recess having a greater diameter than depth, a journal-plate opposed to the end of the journal provided with a bore in alinement with said recess, an adjustable screw mounted in said bore to provide a recess in the inner end of the plate of lesser depth than the diameter of the bore, and balls mounted in the recesses projecting respectively beyond the outer faces of the journal and the journal-plate, said balls contacting to receive the end thrust.

705,840. **GAS-PRODUCER.** JAMES A. HERRICK, Jonkintown, Pa. Filed July 26, 1901. Serial No. 69,840. (No model.)

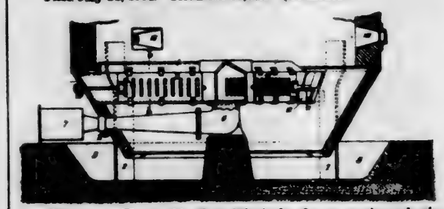

Claim.—1. The combination of the body of a gas-producer, having an ash-hopper at the base of the same, with a twyer-box structure projecting into the ash-hopper from the sides of the same, said twyer-box structure being located above the bottom of the hopper so as to provide a sealing-body of ashes in the hopper below the twyer-box structure, the laterally-extending portions of the twyer-box structure having openings therein for the escape of air into the mass of ashes surrounding the same, and the bottom of the hopper being some distance above the ash-supporting bed or platform whereby access to the body of ashes at all points between said ash-supporting bed and the bottom of the hopper is permitted, substantially as specified.

2. The combination of the body of a gas-producer having an ash-hopper at the bottom, a sealing-pit into which said ash-hopper projects and which extends entirely around said hopper, and a twyer-box structure projecting laterally into the producer and located above the top of the sealing-pit whereby the latter is accessible at all points for the removal of ashes, substantially as specified.

3. The combination of the body of a gas-producer having an ash-hopper at the bottom with a twyer-box structure projecting laterally into said hopper from the sides of the same, said twyer-box structure having openings both in its sides and bottom for the escape of air, and the bottom of said structure being above the bottom of the ash-hopper, substantially as specified.

4. The combination of the body of a gas-producer with a series of twyer-boxes projecting laterally into said producer from the sides of the same, the laterally-extending portions of said twyer-boxes having openings through which the air can escape and an air-injector communicating with said twyer-boxes where they meet at the center of the producer, substantially as specified.

5. The combination of a gas-producer, with a twyer-box structure located in the lower portion of the producer and having sides with openings through which the air can escape, damper-plates movable on said sides of the twyer-boxes so as to vary the area of the escape-openings therein, and means for introducing air under pressure into said twyer-boxes, substantially as specified.

6. A gas-producer having in the lower portion of the same a twyer-box structure having laterally-extending portions with air-escape openings therein, in combination with means for introducing air under pressure into said twyer-box structure, and refractory blocks mounted alongside of the laterally-extending portions of the twyer-box structure, and removable in order to permit access to the sides of said twyer-boxes for cleaning purposes, substantially as specified.

705,841. **BREECH BLOCK AND CHAMBER FOR ORDNANCE.** CARL HOLMSTRÖM, Glasgow, Scotland. Filed Jan. 3, 1902. Serial No. 88,867. (No model.)

Claim.—1. A breech-block which in cross-section comprises a series of concentric steps of different radii joined by surfaces other than radial with respect to the axis of the block so that the locking-surfaces can all be formed with continuous or uninterrupted screw-threads for the purpose specified.

2. A breech-block which in cross-section comprises a series of concentric steps of different radii joined by inclined surfaces substantially as and for the purpose specified.

3. A breech-block which in cross-section comprises a series of concentric steps of different radii joined by inclined surfaces that are approxi-

nately tangential to the concentric surfaces of larger radius and curved where they meet the concentric surfaces of smaller radius substantially as and for the purpose specified.

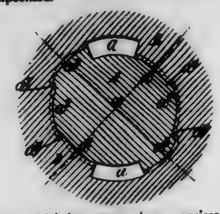

4. A breech-block which in cross-section comprises a series of concentric steps of different radii joined by curved surfaces of ogee formation substantially as and for the purpose specified.

705,842. MACHINE FOR ASSEMBLING LINKS IN MAKING CHAIN BELTS. JOHN C. HOWE, Indianapolis, Ind., assignor, by direct and mesne assignments, of eleven-twentieths to Daniel H. Moroney, Jacob Wohlfeld, Julius M. Kaminsky, and Isaac Bachrach, Indianapolis, Ind. Filed Oct. 25, 1901. Serial No. 79,905. (No model.)

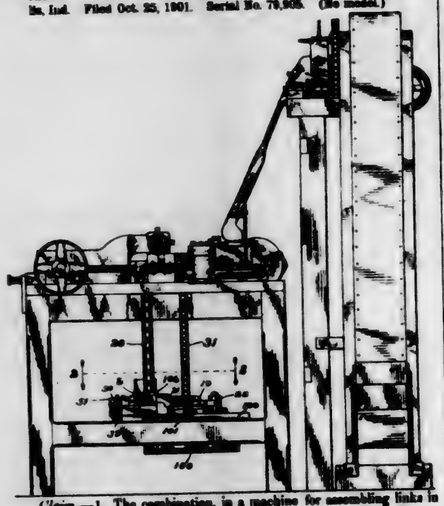

Claim.—1. The combination, in a machine for assembling links in making chain belts, of a suitable chute for introducing the links to the machine, a plunger for moving each link sidewise as it emerges from the chute into engagement with the preceding link, mechanism for drawing the chain along a distance equal to the length of a link after the last-stated movement, means actuated by the link as it is moved sidewise for throwing said mechanism into operation, and means for automatically throwing said mechanism out of engagement as the chain moves.

2. The combination, in a machine for assembling links in making chain belts, of a suitable chute for delivering the links to the machine, suitable mechanism for drawing the chain away as the links are assembled, a plunger for moving each link sidewise into engagement with the preceding link, a vibrating bar for operating said plunger, a cam-wheel for operating said vibrating bar, a slide-block engaging with said cam-wheel and with said bar, and means for adjusting the connection between said bar and said block, whereby the point to which the plunger shall move may be accurately determined.

3. The combination, in a machine for assembling links in making chain belts, of suitable mechanism for drawing the chain along as the links are assembled, a plunger for moving said links into assembled relations from the point where they are introduced into the machine, a vibrating bar for operating said plunger, a movable pivot for said vibrating bar whereby the length of the stroke of said plunger may be adjustably determined, a wheel revolving in proximity to said bar having a cam-groove in its periphery, a slideway alongside said wheel, a block mounted in said slideway and having a projection engaging with said cam-groove, and a stud adjustably secured to said block and engaging with said vibrating bar, whereby the point to which said bar shall move may be adjustably determined.

4. The combination, in a machine for assembling links in making chain belts, with the link-assembling mechanism, of a plunger for moving the links, a vibrating bar for operating said plunger a slide-block for operating said bar having a suitable adjustable stud connecting the block and the bar whereby the relative position of the two may be adjustably determined, and means for reciprocating said slide-block.

5. The combination, in a machine for assembling links in making chain belts, of a plunger for moving the links successively into position, a sprocket-wheel for drawing off the chain as the links are assembled, a ratchet-wheel on the same shaft with said sprocket-wheel, a vibrating arm on the end of said shaft, a pawl on said vibrating arm adapted to engage with said ratchet-wheel, a spring-pin on said arm adapted to hold said pawl out of engagement, a plunger adapted to be operated in one direction by the link when forced sidewise and having an arm which engages with said spring-pin to release the pawl and also having a pin extending over a tailpiece on said pawl whereby the same is raised out of engagement with the ratchet-wheel on its reverse movement, substantially as set forth.

6. The combination, in a machine for assembling links in making chain belts, of mechanism for drawing the belt forward as the links are assembled, a ratchet-and-pawl device for propelling the same, means for holding the pawl out of engagement except immediately after the link is assembled, means actuated by said link as it is assembled for throwing the ratchet-and-pawl devices into engagement, and means for automatically throwing said ratchet and pawl out of engagement as the chain moves forward after the link is assembled.

7. The combination, in a machine for assembling links in making chain belts, of mechanism for moving the links successively into assembled relation, mechanism embodying adjustable sprocket-wheel-supporting devices and a removable sprocket-wheel for moving the chain as the links are assembled, and means for adjusting said chain-moving mechanism to different positions whereby different-sized sprocket-wheels may be used to accommodate and handle different-sized links, substantially as set forth.

705,843. WIRE-STRETCHING MACHINE. HOOPER HYDE, Nashville, Tenn. Filed Feb. 3, 1902. Serial No. 92,456. (No model.)

Claim.—1. In a wire-stretcher, a bar comprising an intermediate section, side sections secured on opposite sides thereof, having their ends projecting beyond the ends thereof, a hook on one side of said bar, a wire-guide secured between the projecting ends of the side sections at one end of said bar, a drum disposed between the projecting ends of the side sections at the opposite end of the bar and having its bearings therein, a ratchet-wheel revoluble with the drum and disposed on the outer side of one of the side sections, a pawl having a slot and on the outer side of the last-mentioned side section, a pivot in said slot, the pawl being loose thereon, engaged with the ratchet-wheel and provided with a counterweighting-arm extending rearwardly from said pivot, said counterweighting-arm having at its rear end a vertically and laterally extended hook engaging the inner side of the last-mentioned side section, disposed to move in a recess in the intermediate section, and forming a loose pivot at the rear end of the counterweighting-arm, substantially as described.

2. In a wire-stretcher, the combination of a support, a drum, a ratchet-wheel revoluble with the drum, a pawl having a slot, a pivot in said slot, the pawl being loose on said pivot, engaged with said ratchet-

wheel and having a counterweighting-arm extending rearwardly from said pivot and provided with a vertically and laterally extended hook disposed to move in a recess in the support and forming a loose pivot at the rear end of the counterweighting-arm, for the purpose set forth, substantially as described.

3. In a wire-stretcher, a bar comprising an intermediate section, side sections secured on opposite sides thereof having their ends projecting beyond the ends thereof a hook on one side of said bar, a wire-guide secured between the projecting ends of the side sections at one end of said bar, a drum disposed between the projecting ends of the side sections at the opposite end of the bar and having its bearings therein, means to rotate said drum and means to prevent reverse rotation thereof when the stretcher is in operation, substantially as described.

705,844. PUMP MECHANISM. EDMUND M. IVENS, New Orleans, La.; HARRY K. IVENS administrator of said Edmund M. Ivens, deceased. Filed Apr. 30, 1901. Serial No. 58,738. (No model.)

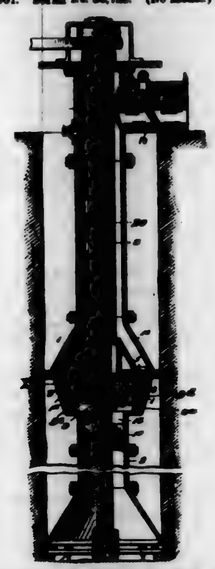

Claim.—1. In a pump mechanism as described; a lifting-pipe, and an outlet-pipe, a casing joining the two pipes, having a central inlet at the bottom joined with the lift-pipe, and annularly-disposed outlets discharging into the outlet-pipe, projections on the inner surfaces of the casing, whose inner edges are in a plane vertical with the pump-disk, said projections being inclined in the direction of the movement of the pump-disks from the bottom of the casing up to the outlets, and a centrifugally-acting pump-disk, operating with pump-casing, whose blades have vertically-disposed projecting surfaces, and whose outer extremities are held to travel close up to the vertical face of the casing projections, all being arranged substantially as shown and for the purposes described.

2. In a pump mechanism as described, a pump-casing, having a central bearing, and annularly-disposed outlets at the top, an offtake-pipe into which all of the outlets discharge, said casing having a single central inlet at the bottom, a shaft engaging the casing-bearing, a centrifugally-operating pump-disk thereon, whose blades have vertical outer edges, and curved impacting surfaces, adapted to throw the fluid toward the casing-wall, guide-lugs projected inwardly from the casing, having their inner face in a vertical plane to oppose the outer vertical edge of the disk blades, said guide-lugs being inclined from the bottom of the casing up to the annularly-disposed discharge-openings of the casing, substantially as shown and for the purposes described.

3. In a pump mechanism as described, the combination with the casing, and the centrifugally-operating pump-disk held therein, said casing having an outlet in the top, and an inlet in the bottom, an offtake-pipe connected with the outlet, and a water-feed discharging into the top of the casing for mixing up the material lifted by the pump-disk into the casing, for the purposes described.

4. In a mechanism as described, the casing, the centrifugally-operating pump-blades, said casing having an annular outlet and an offtake-pipe at the top, and a central inlet at the bottom, a water-feed pipe held within the offtake-pipe, discharging into the casing, and having a feed-lateral at the upper end, projected outside the offtake-pipe, substantially as shown and described.

5. The combination with the casing, comprising a lower part having converging sides, and a central opening in the bottom, and an annular discharge in the top, an upper or cap member extended over the annular discharge and terminating with an offtake, the upper and lower members having central bearing portions, the casing having a series of inwardly-projecting guide-lugs inclined from the bottom up, and in the direction of the movement of the pump-disk and having straight inner faces; of the shaft 3, and the pump-disk mounted thereon to rotate therewith, said disk having radial webs terminating in blades, filling the lower part of the casing, their outer ends having straight edges to travel in close proximity to the straight faces of the guide-lugs, substantially as shown and for the purposes described.

6. In a pump mechanism, including a casing, joined with the intake and offtake pipes, and a centrifugally-acting pump, operating within the casing; of detachable lugs on the inner wall of the casing for deflecting the water-column upwardly at an angle, and annularly.

7. The combination with the intake and offtake pipes; of the pump-casing, said casing consisting of a bottom section, having its walls converging downwardly, said section having a central opening in the bottom into which the lift-pipe discharges, a series of radially inwardly projecting guide-lugs on the wall of said casing-section, said stops being inclined upwardly at an angle in the direction of the movement of the pump-shaft and having vertical faces, said lower section having an annular discharge with which the said lugs coöperate, said discharge connecting with the offtake; of the shaft 4, the pump-disk mounted thereon, said disk comprising a hub, webs projected radially therefrom, blades forming an integral part of the webs, having their upper and lower edges running close to the top and bottom walls of the lower casing-section, and their vertical edges adapted to run close to the vertical face of the guide-lugs, all being arranged substantially as shown and described.

8. The combination with the intake and offtake pipes, and the drive-shaft; of the pump-casing, consisting of a lower section having a central pendent portion formed with a step-bearing to receive the drive-shaft, said lower section having its vertical wall diverging upwardly, a series of inwardly-projecting lugs on said wall, said lugs extending the full height of the said section, and inclined upwardly in the direction of movement of the shaft, and having their inner faces straight-faced, the pump-disk, having radial blades, whose upper and lower edges are adapted to run close to the top and bottom of the lower section, and its outer edges straight-faced, to run close to the straight faces of the aforesaid lugs, the top wall of the lower section having an annular discharge in line with the said lugs, and an upper casing-section, adapted to receive the fluid discharged from the lower section, and deflect it to the offtake, as set forth.

9. As an improvement in pumps of the character described, a pump-casing comprising a bottom part having a central inlet in the base thereof, a pendent portion joined with the inlet, and adapted to connect with the lift-pipe, said portion having a central bearing member 5, and a solid disk part of a diameter equal that of the pump-disk, and adapted to form the top of the disk-holding chamber of the casing, said member 5 also having radial projections 5^a, to extend over the annular discharge from the disk chamber, a cap member 1^a, the shaft 3, journaled in the bearings 5^a and 1^a, of the member 5 and the pendent portion aforesaid, respectively, the pump-disk having blades, whose upper and lower edges travel close to the plate 5, and the bottom of the disk chamber, and guide-lugs projected radially inward from the walls of the casing into the disk compartment thereof, the inner faces of which oppose the outer vertical edges of the disk blades, all being arranged substantially as shown and for the purposes described.

705,845. AMMONIA-SEPARATOR. VICTOR JOHNSON, St. Louis, Mo. Filed Mar. 26, 1902. Serial No. 99,975. (No model.)

Claim.—1. In an ammonia-separator, the trap 5 adapted to be incorporated into the ammonia-pipe; said trap comprising a horizontal spherical body cored to form the inlet-opening 7, and the outlet-opening 8 in horizontal alinement, and the branch outlet-opening 9 extending downwardly half-way between the openings 7 and 8; the baffle-wall 10 extending downwardly and backwardly immediately inside of the opening 7; the baffle-wall 11 extending upwardly and forwardly immediately in front of the opening 8; a receptacle connected to the outlet 9; and a pipe running from the receptacle and communicating with the ammonia-pipe; substantially as specified.

2. In an ammonia-separator, a trap adapted to be incorporated into the ammonia-pipe, and having the baffle-wall 10 extending downwardly and backwardly in the forward part of the trap, and having the baffle-wall 11 extending upwardly and forwardly in the rear part of the trap; a receptacle connected to the trap; a valve controlling the connection; a

second connection leading from the receptacle to the ammonia-pipe; and a second valve controlling the second connection; substantially as specified

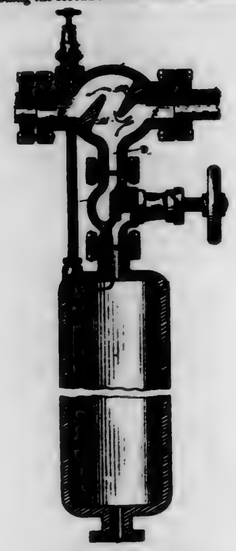

705,846. ARTIFICIAL-STONE FACING FOR BUILDINGS. THOMAS KELLY and FRANK G. BARBER, West Superior, Wis. Filed May 3, 1902. Serial No. 105,736. (No specimens.)

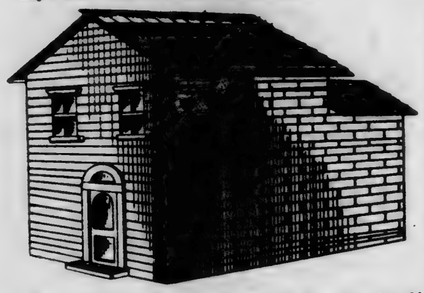

Claim.—1. In a device of the type set forth, the combination with the wall or the like, of a series of vertical laths secured thereto and a series of horizontal laths secured to the vertical laths, and a plastic composition applied to the said laths and completely inclosing the horizontal laths, with a series of slabs applied to the said plastic composition, while the latter is in a plastic state, substantially as described.

2. In a device of the type set forth, the combination with the wall or the like, of a series of suitably-spaced vertical laths secured to the said wall, and a series of suitably-spaced horizontal laths carried by the vertical laths, with a plastic composition applied to the said series of laths and engaging the said wall, the plastic composition entirely surrounding the horizontal laths and receiving a series of slabs on its outer surface, the slabs being secured solely by contact with the plastic composition, and having their edges in abutting engagement, substantially as described.

705,847. SPINDLE-BEARING. JOHN KILBURN, Belmont, Mass., assignor to the Sawyer Spindle Company, of Maine, a Corporation of Maine. Filed Feb. 27, 1897. Serial No. 626,266. (No model.)

Claim.—1. The combination with a bolster-case provided with an aperture in its base, of a tapered spindle, a bolster forming a bearing for the spindle located within the case, said bolster being loosely supported in the case and provided with an interiorly-smooth aperture in its bottom, a step-pintle for the spindle located in the aperture in the bottom of the bolster-case and projected through the aperture in the bottom of the bolster and free to have direct vertical movements in said apertures, and a support for the step-pintle independent of the support for the bolster adjustable through the base of the bolster-case, substantially as described.

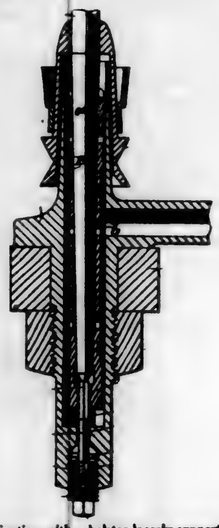

2. The combination with a bolster loosely supported in the bolster-case and bolster having apertures in their bases of a step-pintle free to tip laterally in all directions projecting into the aperture in the base of the bolster, and a support for said step-pintle independent of the support for the bolster adjustable through the base of the bolster-case, substantially as described.

3. The combination with the bolster-case and bolster, of a step-pintle projected into the bolster, and a tubular support for the bolster within the bolster-case loosely surrounding the step-pintle, substantially as described.

4. The combination with the bolster-case and bolster, of a step-pintle projected into the bolster, and a tubular support for the bolster comprising a rocker-washer having a convex face loosely surrounding the step-pintle, substantially as described.

5. The combination with a bolster-case and bolster, of a step-pintle projected into the bolster, a tubular support for the bolster loosely surrounding the step-pintle and a projection on the step-pintle arranged to engage the tubular support to remove said support from the bolster-case, substantially as described.

6. The combination with the bolster-case and bolster, having a circular aperture in its base, a step-pintle projected into said aperture and free to rotate therein, a bolster-support loosely surrounding said step-pintle and restrained from rotation thereby, and connections between the bolster and said support, whereby the bolster is restrained from rotation, substantially as described.

7. The combination with the bolster-case and bolster provided with a polygonal aperture in its base, of a step-pintle polygonal in section adjacent its opposite ends, an adjustable support for the step-pintle having a polygonal aperture therein, said step-pintle engaging at its opposite ends the apertures in the bolster and the adjustable support, substantially as described.

8. In a spindle-bearing, the combination with a bolster-case and bolster, of a step-pintle having a polygonal end engaging a polygonal bearing in the bolster and fitted for a longitudinal movement in the bottom of the bolster-case, means projecting from the bolster-case engaging the step-pintle to turn the same, and an intermediate annular bearing between the lower end of the bolster and the bolster-case, substantially as described.

705,848. ELECTRIC RAILWAY. CHARLES J. KINTNER, New York, N. Y. Filed Oct. 20, 1900. Renewed Feb. 20, 1902. Serial No. 94,128. (No model.)

Claim.—1. In an electric railway a switch journaled with its axis of rotation substantially parallel with the track-rails and provided with means for adapting it to be rotated gradually and continuously about its axis of rotation as a car passes over or by it, substantially as described.

2. In an electric railway a rotary switch journaled with its axis of rotation substantially parallel with the track-rails and provided with a spiral thread or groove in the direction of its length and of such pitch as to be given a gradual rotation as a car passes over or by it, substantially as described.

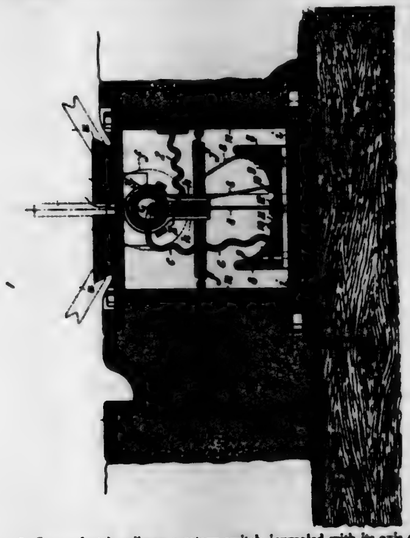

3. In an electric railway a rotary switch journaled with its axis of rotation substantially parallel with the track-rails and provided with means for adapting it to be gradually and continuously rotated about its axis of rotation as a car passes over or by it; in combination with a movable circuit making and breaking terminal adapted to be operated thereby, substantially as described.

4. In an electric railway a current feeder or main extending over the route and a series of third rails or sectional conductors normally disconnected therefrom; in combination with a series of rotary switches journaled with their axes of rotation substantially parallel with the track-rails and provided with means for giving them gradual and continuous rotation about their axes as a car travels over or by them; together with circuit connections whereby said third rails or sectional conductors are electrically connected to and disconnected from the current feeder or main in sequence and without damaging mechanical effects, substantially as described.

5. In an electric railway a series of rotary tubular switches inclosing a current feeder or main and constituting a conduit therefor, substantially as described.

6. In an electric railway a series of rotary tubular switches journaled in alinement with each other and constituting a means for conveying a heating medium for effecting better insulation and avoiding the evil effects of accumulated snow or ice, substantially as described.

7. In an electric railway a series of rotary tubular switches journaled in alinement with each other and with intervening switch-boxes inclosing circuits and circuit connections, the arrangement being such that a heating medium, as dry air, may be admitted through the tubular switches to the boxes, better insulation effected, and the system protected from evil effects of snow and ice, substantially as described.

8. In an electric railway a series of rotary switches journaled in alinement with each other and with their axes of rotation substantially parallel with the track-rails; in combination with a switch-actuating trolley adapted to impart gradual and continuous rotary movement to said switches, and means for maintaining said trolley always in a fixed relation to the switches, substantially as described.

9. In an electric railway a series of rotary switches journaled with their axes of rotation substantially parallel with the track-rails and operatively connected with circuits and circuit connections running to conducting third rails or conductors and a current feeder or main; in combination with a switch-actuating trolley having one or more mechanical trolley-rollers for controlling the movement of the switches; guide-rollers together with guiding means therefor adapted to maintain the trolley always in a fixed relation to the switches, substantially as described.

10. In an electric railway a series of rotary switches journaled with their opposite ends in adjoining switch-boxes and provided each with means for giving rotary motion thereto as a car passes over them; in combination with movable circuit making and breaking terminals operated by said switches, substantially as described.

11. In an electric railway a rotary switch journaled with its axis of rotation parallel with the tram-rails and provided with a spiral thread or groove in the direction of its length; in combination with means for yieldingly holding said switch and groove in a definite position, substantially as described.

12. In an electric railway, embracing a current feeder or main and sectional third rails or conductors, a series of rotary switches having their axes of rotation parallel with the tram-rails, said switches being provided each with a spiral thread or groove in the direction of its length; in combination with yielding means adapted to hold each of said switches with its thread or groove in a definite position; together with movable circuit making and breaking terminals operated by the switches and adapted to connect the third rails or conductors to and disconnect them from the current feeder or main, substantially as described.

13. In an electric railway a series of rotary switches having their axes of rotation parallel with the tram-rails, said switches being provided with means for rotating them as a car or vehicle passes thereover; in combination with ball-supporting bearings and means for yieldingly holding the switches in definite positions; together with movable circuit making and breaking terminals controlled thereby, substantially as described.

14. In an electric railway a series of rotary switches provided each with a spiral thread or groove extending in the direction of its length; in combination with a conduit inclosing said switches and having a guiding trolley-slot located above the thread or groove, substantially as described.

15. In an electric railway a series of rotary switches provided each with a spiral groove in the direction of its length; in combination with a conduit surrounding the same, said conduit having a slot bearing a definite or fixed relation to the grooves; together with a switch-actuating trolley adapted to always maintain a fixed relation to the grooves and the slot, substantially as described.

16. In an electric railway a series of rotary switches having their opposite ends journaled in adjoining switch-boxes, said switches being each provided with a spiral groove in the direction of its length; in combination with a conduit surrounding and supporting the switches and provided with a slot having a definite relation to the grooves; together with removable switch-box covers provided each with a slot located, when in position on the boxes, in alinement with the conduit-slot, substantially as described.

17. In an electric railway a series of rotary switches having their opposite ends journaled in adjoining switch-boxes, said switches being each provided with a spiral groove in the direction of its length; a conduit surrounding and supporting the switches and provided with a slot having a definite relation to the grooves; in combination with removable switch-box covers provided each with a slot located, when in position on the boxes, in alinement with the conduit-slot; together with a switch-actuating trolley so constructed and arranged with relation to the conduit and the switches that it always maintains a definite or fixed relation thereto, substantially as described.

18. In an electric railway a series of tubular rotary switches journaled with their opposite ends in adjoining switch-boxes and provided each with means for giving rotary motion thereto as a car passes over them; in combination with movable circuit making and breaking terminals operated by said switches and a current feeder or main inclosed within said tubular switches, said current feeder or main being composed of sectional parts having their opposite ends secured in the switch-boxes and so arranged that any section of the feeder may be removed and repaired or replaced without disturbing the other sections thereof, substantially as described.

19. In a sectional contact system for electrical railways, successive rotary, contact-sections extending longitudinally of the line of way and having each a spiral path extending longitudinally thereof, means for supplying current to the sections and cutting it off therefrom, and a device carried by the car for following the spiral paths and rotating said sections.

20. In a sectional contact system for electrical railways, a longitudinal rotary contact-section provided with a spiral web extending lengthwise thereof, means for supplying current thereto, and means carried by the car for engaging said web to rotate said section and take current therefrom.

21. In a sectional contact system for electrical railways, longitudinal rotary contact-sections arranged in succession along the line of way having spirally-arranged projections by which to rotate them, and circuit-controlling switches operated by the rotation of the sections.

22. In a sectional contact system for electrical railways, longitudinal rotary contact-sections arranged in succession along the line of way each having a spiral path extending along it, and circuit-controlling switches operated by said section in combination with means carried by the car and adapted to travel said spiral paths for rotating the sections and taking current therefrom.

23. In a sectional contact system for electrical railways, the combination with a conduit along the line of way, of rotary switches located

therein for each section and provided with spiral projections and means carried by the car for entering said conduit and engaging said projections for rotating said switches, for the purpose set forth.

24. In a sectional contact system for electrical railways, the combination of the conduit in insulated sections, a rotary contact-section journaled in each section of conduit, means for supplying current to each section, and a current-collector carried by the car for engaging the rotary sections successively.

25. In a sectional contact system for electrical railways, rotary contact-sections extending along the line of way and provided with spiral paths extending longitudinally thereof, means for feeding current to said sections successively, and a current-collector carried by the car and following said spiral paths, for the purpose specified.

705,849. **APPARATUS FOR DRYING GRAIN, &c.** MAX KÖNIG, Grosslichterfelde, Germany. Filed Mar. 14, 1900. Serial No. 8,625. (No model.)

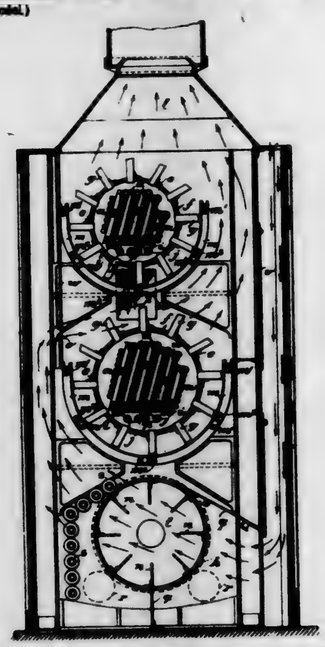

Claim.—1. In a drying apparatus for drying grain and other materials, the combination of a trough for receiving the materials, an agitator provided with an internal stationary heater, consisting of separate inclined sections, and adjustable baffle-plates or strips located between the heater-sections, essentially as and for the purpose described.

2. In a drying apparatus for drying grain and other materials, the combination of a trough for receiving the materials, an agitator provided with an internal stationary heater consisting of separate inclined sections, baffle-plates located between the heater-sections, and means for adjusting the baffle-plates into forwardly and rearwardly inclined positions, essentially as and for the purpose described.

3. In a drying apparatus for drying grain and other materials, the combination of a trough for receiving the materials, an agitator provided with an internal stationary heater consisting of separate inclined sections, and pivotally-suspended baffle-plates, finger-pieces bearing against the said baffle-plates, and means for moving said finger-pieces in forward or rearward direction for adjusting the baffle-plates into forwardly and rearwardly inclined positions, essentially as and for the purpose described.

4. In a drying apparatus for drying grain and other materials the combination of a trough for receiving the materials, an agitator provided with an internal stationary heater consisting of separate inclined sections, pivotally-suspended baffle-plates located between the heater-sections, finger-pieces bearing against said baffle-plates for adjusting the baffle-plates into forwardly and rearwardly inclined positions, and draw-bars projecting through the end of the trough for moving said finger-pieces from the outside of the apparatus, essentially as and for the purpose described.

5. In a drying apparatus for drying grain and other materials, the combination of a trough for receiving the materials, an agitator provided with a heater, adjustable baffle-plates, a perforated drum having internal scoops and located underneath the trough, air-passages, and guide-plates for conducting a ventilating air-current through the drum and farther on through the heating portion of the apparatus into the chimney, essentially as and for the purpose described.

705,850. **ELECTRICAL PANEL-BOARD.** HUBERT KRANTZ, Brooklyn, N. Y. Filed Mar. 12, 1902. Serial No. 97,871. (No model.)

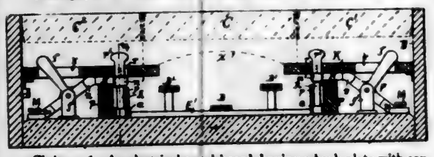

Claim.—1. An electrical panel-board, having a back plate with conducting-bars and switches mounted on the said back plate, and a protecting-cover inclosing the said conducting-bars and the current-carrying parts of the switches and their connections, said cover having openings for the manipulation of the switches.

2. An electrical panel-board, having conducting-bars, switches and fuses and contacts for the switches and fuses, with a protecting-cover inclosing the said conducting-bars, switches and fuses and their contacts, said cover having openings for the insertion of the fuses and for the manipulation of the switches.

3. An electrical panel-board, having a back plate, bus-bars and cross-bars with branch circuit connections and switches therein, all mounted on said back plate, and a protecting-cover inclosing all the current-carrying parts of the panel-board but with openings for the manipulation of the switches.

4. An electrical panel-board, having a back plate, bus-bars and cross-bars with branch circuit connections and switches and fuses in said branch circuits and a protecting-cover for all the current-carrying parts of the panel-board, but with openings for the insertion of the fuses and the manipulation of the switches, substantially as described.

5. An electrical panel-board having a back plate and conducting-bars and switches thereon with pairs of fuse-clips, one clip of each pair being in front of the other to receive the fuse-cartridge substantially at right angles to the plane of the back plate, in combination with a protecting-cover for all the current-carrying parts of the panel-board, but with openings for the insertion of the fuses and the manipulation of the switches, substantially as described.

6. An electrical panel-board, having a back plate and conducting-bars, switches and connecting-plates with pairs of fuse-clips, one clip of each pair being directly on the back plate and the other over or in front of the first to receive the fuse-cartridge substantially at right angles to the plane of the back plate, in combination with a protecting-cover for all the current-carrying parts of the panel-board, but with openings for the insertion of the fuses and the manipulation of the switches, substantially as described.

7. An electrical panel-board having a back plate and conducting-bars with pairs of fuse-clips, one clip of each pair being over or in front of the other and a cover-plate for the fuse-clips, said cover-plate having a hole for the insertion of the fuse-cartridge substantially at right angles to the back plate.

8. An electrical panel-board having a back plate and conducting-bars with binding-posts having contacts on the back plate, and contact-plates at some distance from the face of the back plate, a switch having a pivoted current-carrying part to make connection with said contacts and a cover-plate with a hole through which the switch can be manipulated.

705,851. **BANK-DEPOSIT-COUPON BOOK.** PAUL KUHER, Toledo Ohio, assignor to Harry Hoyle and Caroline Kuhen, Toledo, Ohio. Filed Mar. 21, 1902. Serial No. 99,231. (No model.)

Claim.—1. A numbered book for banking and commercial purposes, said book consisting of a set of covers with a number on one of said covers, a number of leaves provided with appropriate headings and ruled and arranged with columns so as to constitute a debit and credit page for deposits and withdrawals, and a desired number of leaves perforated so as to form stubs with detachable coupons interposed between said covers, said coupons bearing a number identical with that on cover and having printed thereon an agreement that the person detaching such coupon will deposit it in a certain bank, substantially as described.

2. In a book for banking and commercial purposes, the combination, with a set of covers, one of said covers having a number thereon, of a series of sheets being divided by horizontal and vertical rows of perforated and unperforated lines into coupons and stubs, said coupons bearing a number identical with number on cover and each having printed thereon an agreement that the person detaching such coupon will deposit it in a certain bank together with amount in money represented thereby, said stubs bearing a number the same as number on coupons and each having printed thereon a form of receipt, and a series of sheets having appropriate headings and horizontal and vertical lines arranged to constitute debit and credit pages for entry of deposits and withdrawals, substantially as described.

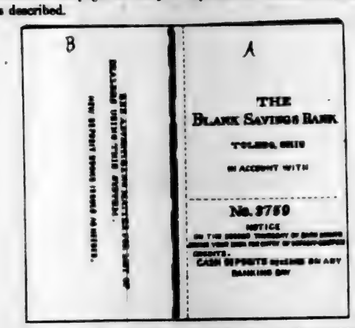

3. In a book for banking and commercial purposes, the combination, with a set of covers having a number thereon and a series of sheets having headings and vertical columns for debit and credit entries, of a series of sheets, said sheets being divided by horizontal and vertical perforated lines into detachable coupons and stubs therefor, each of said coupons and stubs bearing a number identical with number on cover, said coupons containing an agreement that the person detaching them agrees to deposit an amount represented thereby in the bank designated on said cover, and the stubs each containing a blank form of agreement to be signed by person detaching said coupons.

4. The combination, with a book having a numbered cover and leaves with headings and columns for debit and credit entries, of other leaves comprising discount deposit-coupons containing an agreement that the person detaching the same will deposit an amount named thereon to credit of person designated, and stubs therefor containing a form of agreement, said coupons being adapted to be detached from said stubs, and the said stubs and coupons being numbered to correspond to number on said cover, all being assembled and bound together, substantially as described.

705,852. **DOUBLE-WORKING PLANING-MACHINE.** JACOB LEHMANN and HERMANN MAURER, Bockenheim, Germany. Filed Mar. 4, 1902. Serial No. 96,712. (No model.)

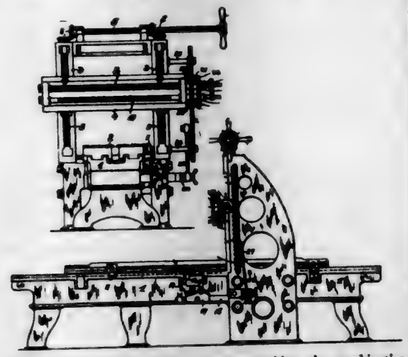

Claim.—In a double-working planing-machine, the combination with the bed and table, the frame for vertically guiding the cross-rail and said cross-rail, of a horizontal feed-screw spindle in said cross-rail, a grooved spindle in said latter parallel to said screw-spindle, guides extending from said frame, a rack-bar vertically movable up or down on said guides and means on the table to so move it at each end of the stroke of the table, a gear-wheel mounted on said cross-rail and meshing with said rack-bar, two toothed wheels in gear with said gear and loosely mounted on said spindles respectively, a ratchet-wheel rigidly fastened on said grooved spindle adjacent to said toothed wheel, another ratchet-wheel loosely mounted on said screw-spindle, a clutch on said screw-spindle adapted to engage its ratchet-wheel so as to connect the same to the spindle, arms in rigid connection with said toothed wheels and pawls carried on said arms for engaging said ratchet-wheels in either direction, substantially as described.

705,853. **WAGON-JACK.** JONAS D. MACK, Salem, N. Y. Filed Jan. 25, 1902. Serial No. 91,623. (No model.)

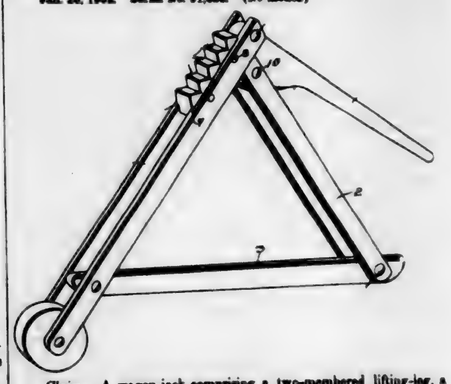

Claim.—A wagon-jack comprising a two-membered lifting-leg, a two-membered fulcrum-leg, a step-plate secured between the upper terminals of the members of the lifting-leg and serving to hold the same properly spaced apart, a base-bar pivotally secured between the lower terminals of the lifting-leg, and the fulcrum-leg, a wheel or roller carried by the lifting-leg, and a lever pivotally connected between the upper terminal of the lifting-leg and the fulcrum-leg, substantially as and for the purpose specified.

705,854. **GENERATING APPARATUS FOR CAR-LIGHTING.** ALBERT P. MADDEN, Newark, N. J., assignor to Charles A. Gould, New York, N. Y. Filed Feb. 24, 1902. Serial No. 95,321. (No model.)

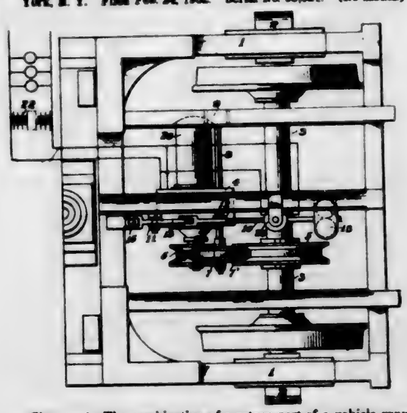

Claim.—1. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel engaging the wheels on the running-gear and dynamo-shaft, said transmitting-wheel mounted to swing in an arc which intersects the peripheries of both the said wheels.

2. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel engaging the wheels on the running-gear and dynamo, the tangential lines of contact between the several wheels being inclined to one another at an angle not less than a right angle.

3. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dyna-

mo-shaft, a transmitting-wheel engaging the wheels on the running-gear and dynamo-shaft and mounted in the free end of a swinging link, said link connected to a lever flexibly mounted on the vehicle-frame.

4. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel engaging the wheels on the running-gear and dynamo-shaft and mounted in the free end of a swinging link, said link connected to a lever flexibly and adjustably mounted on the vehicle-frame.

5. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel engaging the wheels on the running-gear and dynamo-shaft and mounted in the free end of a swinging link, said link connected to a lever flexibly mounted on the vehicle-frame, said lever having spring connection at one end with the vehicle-frame and connected at its other end with adjusting means to adjust the pressure of the said transmitting-wheel on the friction-wheels of the dynamo and vehicle running-gear.

6. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a screw-threaded rod mounted on the vehicle-frame, a block engaging said rod, a link pivoted on the vehicle-frame, one end of said link connected to said block, a spring-pressed lever having one end connected to said pivoted link and the other end having a spring connection with the vehicle-frame, a swinging arm supported at one end from said lever intermediate its ends and carrying at its other end a transmitting-wheel to engage the friction-wheels on the dynamo-shaft and the vehicle running-gear.

7. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel engaging the wheels on the running-gear and dynamo-shaft and mounted in the free end of a swinging link, said link connected to a lever flexibly mounted on the vehicle-frame, said lever having spring connection at one end with the vehicle-frame and connected at its other end with adjusting means, and having connected therewith an electrical device energized from the dynamo to control the pressure of the transmitting-wheel upon the friction means.

8. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel engaging the wheels on the running-gear and dynamo-shaft, said transmitting-wheel being free to swing toward one of said friction-wheels and from the other, but to maintain contact with both of said friction-wheels.

9. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel flexibly supported from the vehicle-frame and engaging the said friction-wheels, said transmitting-wheel being free to move in a direction from one of said friction-wheels toward the other while maintaining contact with both of said friction-wheels.

10. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel flexibly supported from the vehicle-frame and engaging the said friction-wheels, said transmitting-wheel being free to move in a direction from one of said friction-wheels toward the other while maintaining contact with both of said friction-wheels, means to adjust the pressure of said transmitting-wheel upon the friction-wheels.

11. The combination of a rotary part of a vehicle running-gear, a friction-wheel mounted thereon, a dynamo flexibly and independently mounted with respect to the running-gear, a friction-wheel on the dynamo-shaft, a transmitting-wheel flexibly supported from the vehicle-frame and engaging the said friction-wheels, said transmitting-wheel being free to move in a direction from one of said friction-wheels toward the other while maintaining contact with both of said friction-wheels, means operated from the interior of the vehicle to adjust the pressure of said transmitting-wheel upon the friction-wheels.

705,855. TOY OR ADVERTISING DEVICE. JOHN A. MANGOLD, Moundsville, W. Va. Filed June 20, 1901. Serial No. 65,332. (No model.)

Claim.—1. In a device of the class described, the combination with a platform, of a motor having a driven shaft, a portion of said shaft being located above the platform, and a freely-swinging puppet suspended from and having an eccentric connection with the portion of the shaft that is located above the platform, whereby said puppet is moved laterally as well as vertically upon the movement of the shaft.

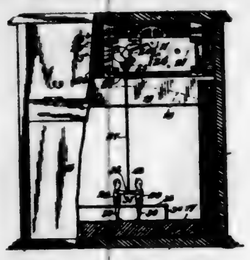

2. In a device of the class described, the combination with a platform, of a motor having a driven shaft, a portion of said shaft being located above the platform, and a freely-swinging puppet suspended from and having an adjustable eccentric connection with the portion of the shaft that is located above the platform, whereby said puppet is moved laterally as well as vertically upon the movement of the shaft and the range of movement of said puppet may be varied.

3. In a device of the class described, the combination with a platform, of a motor having a driven shaft, a portion of said shaft being located above the platform, a freely-swinging puppet located above the platform, and a flexible connection secured at one end to the puppet and having its other end eccentrically attached to the portion of the shaft that is arranged above the platform, to move the puppet laterally as well as vertically upon the rotation of said shaft.

4. In a toy of the class described, the combination with a driven shaft, of means for driving the shaft, a puppet, and a connection attached at one end to the puppet and its other end having a detachable eccentric connection with the shaft, said connection being movable toward and from said shaft, whereby the range of movement of the puppet may be varied.

5. In a toy of the class described, the combination with a driven shaft, of means for driving the same, a body having an adjustable eccentric connection with the shaft at one side, and a counterweight adjustably secured to the shaft on the side opposite the puppet connection.

6. In a toy of the class described, the combination of a driven shaft, of means for driving the same, a disk secured to the shaft and rotatable therewith, a puppet adjustably connected to the disk on one side of the shaft, and a counterweight adjustably secured to the disk on the side opposite the puppet connection.

7. In a toy of the class described, the combination with a driven shaft, of means for driving the same, a disk secured to the shaft and rotatable therewith, said disk being provided on one side with a row of openings extending from the shaft toward the rim, and a slot located in alinement with the row of openings on the opposite side of the shaft, a puppet, a connection between the puppet and the disk, said connection including a hook detachably engaging in the openings of the disk, a counterweight located on the side of the disk opposite the hook, and a set-screw passing through the slot of said disk and engaging the counterweight.

705,856. APPARATUS FOR DYEING, &c. DIEGO MATTEI, Genoa, Italy. Filed Aug. 17, 1897. Serial No. 648,598. (No model.)

Claim.—1. In combination, the guides for the sliver, a bath through which the sliver is passed and a device having a steam and a liquid jet arranged to act on the said sliver before the same enters the bath, substantially as described.

2. In combination, a bath, means for directing the sliver thereto and a moistening-jet device arranged adjacent to the path of the sliver, said jet device being supported to move toward the sliver by gravity, substantially as described.

3. In combination, the carrier-belts for the sliver, the bath, the guide over which the sliver passes, a box 25 having a discharge-opening directed toward the belt and below the same, and a box 29 arranged above the belt and having two compartments one for steam and one for water with discharge-openings in each directed toward the sliver on the belt, substantially as described.

4. In combination, a series of tanks, means for passing the sliver through the tanks comprising endless belts, carrier means for conveying the sliver from one endless belt of one tank to that of the next tank, said carrier means including a pair of endless belts to receive the sliver between them and means for arranging the sliver in folds between the said belts, said means comprising the reel and the movable plate 31 and operating means therefor, substantially as described.

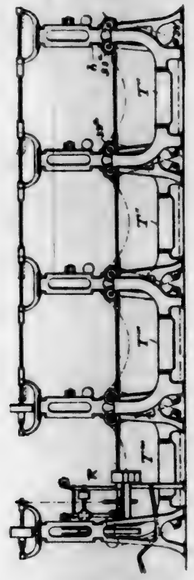

705,857. CURTAIN-STRETCHER. WALTER A. MAYR, Chicago, Ill. Filed Nov. 16, 1901. Serial No. 82,569. (No model.)

Claim.—1. In a curtain-stretcher, a center brace, side bars pivotally connected with each end thereof, said side bars being jointed and adapted to fold in the same plane upon said brace while retained in pivotal connection with each end thereof, one of said side bars being longitudinally adjustable on said brace, as and for the purpose set forth.

2. In a curtain-stretcher, a center brace, a plate secured to one end thereof, a plate adjustably secured to the other end of said brace, and jointed side bars pivotally connected with said plates respectively and both retained in pivotal connection in an extended and folded position for the purpose set forth.

3. In a curtain-stretcher, a center brace slotted at one end, a plate secured to the unslotted end, a plate adjustably secured to the slotted end by a bolt and winged nut, and jointed side bars pivotally connected with said plates and both retained in pivotal connection in an extended and folded position, as and for the purpose set forth.

4. In a curtain-stretcher, a center brace slotted at one end, a plate secured to the unslotted end, a plate adjustably secured to the slotted end by a bolt and winged nut, and jointed side bars connected with said plates and adapted to fold in the same plane with the parts connected with the adjustable plate outside the other parts, as and for the purpose set forth.

5. In a curtain-stretcher, a center brace, a plate connected with each end thereof, jointed side bars pivotally connected with said plates and both retained in pivotal connection in an extended and folded position, said side bars having rounded inner corners and flat ends, as and for the purpose set forth.

6. In a curtain-stretcher, a center brace, a plate adjustably secured to one end thereof, a plate secured to the other end thereof, a side bar composed of two pieces pivotally connected with each of said plates and both retained in pivotal connection in an extended and folded position, the abutting ends of said pieces having rounded inner corners and flat ends, as and for the purpose set forth.

7. In a curtain-stretcher, the combination of two end bars, two side bars each of which is composed of two pieces, plates with which said pieces are pivotally connected, a center brace, said plates being secured to said brace, the pivotal connection between said pieces and said plates being so proportioned and disposed that the pieces composing one of said bars may be folded in the same plane outside of the pieces of the other bar in a folded position, while in pivotal connection with the respective plate, as and for the purpose set forth.

8. A curtain-stretcher comprising a center brace, a plate secured to one end thereof, a side bar composed of two pieces pivotally connected with said plate, said pieces having rounded inner corners and flat ends, a plate adjustably secured to the other end of said brace, a side bar composed of two pieces pivotally connected with said last plate, said last pieces having rounded inner corners and flat ends, the pivotal connection with said last plate being at a greater distance from the center brace than said first pieces, and end bars adjustably connected with the ends of said pieces as and for the purpose set forth.

9. The combination in a curtain-stretcher of two end bars, two side bars each of which is composed of two pieces, a center brace-bar pivotally connected with said side bars at each end, and both retained in pivotal connection in an extended and folded position, each of the two pieces composing said side bars having rounded corners whereby they may be folded inward upon said center brace-bar, as and for the purpose set forth.

705,858. FERTILIZER-DISTRIBUTER. ALLEN MCWHORTER, Norfolk, Va., assignor to McWhorter Manufacturing Company, a Corporation of New Jersey. Filed Jan. 13, 1902. Serial No. 89,489. (No model.)

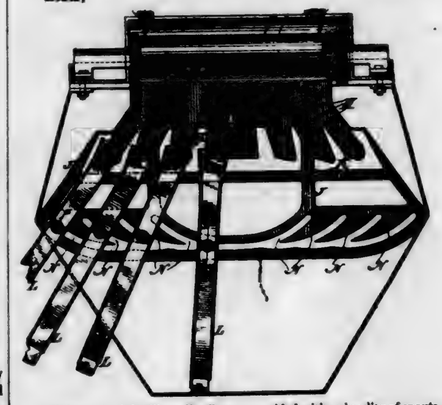

Claim.—1. A fertilizer-distributer, provided with a plurality of spouts, said spouts being independently movable transversely to the length of the machine.

2. A fertilizer-distributer, having a plurality of channels leading from the hopper, and spouts at the lower ends of said channels movable transversely to the length of the machine.

3. A fertilizer-distributer, having a plurality of channels leading from the hopper, spouts pivoted at the lower end of said channels, and means for holding said spouts in adjusted positions.

4. A fertilizer-distributer, having a plurality of channels leading from the hopper, spouts pivoted independently at the lower end of said channels, a frame upon which said spouts are supported, and friction devices carried by the spouts and engaging said frame.

5. A fertilizer-distributer, having a plurality of channels leading from the hopper, spouts pivoted at the lower end of said channels, a frame extending below said channels and in the rear of said spout, guide-slots in said frame, pins carried by said spouts extending through said guide-slots, and friction devices mounted upon said pins and engaging said frame.

705,859. BOOK-COVER. CARL HEUENDORFFER, New York, and BERTHA WITTER, Brooklyn, N. Y. Filed Oct. 23, 1901. Serial No. 79,608. (No model.)

Claim.—1. As a new article of manufacture, a binding for paper books and the like, consisting of a front and back having means for flexibly uniting them together, and fabric binders for the front and back each composed of a plurality of united leaves one of which is secured between the cover part and the inner finishing-sheet, another of which is adapted to be secured to a fly-leaf and the other two of which are adapted to be

secured to the outer side and the back of the body of the book in the manner substantially as described.

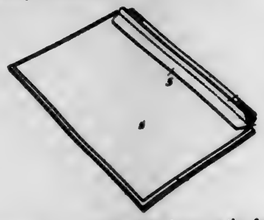

2. A book having a plurality of its leaves at the front and back gummed to form solid parts, a fabric binder at each inner edge of the book-body, said binders being each composed of a plurality of united leaves a pair of which are secured to an inner edge of the book-body, and a cover consisting of a front and back the front of which has a flap extension for securing the cover parts together, and each cover part having an inner finishing-sheet between which and the cover part another leaf of the binder is secured.

3. In combination with a paper-bound book, a front and a back stiff cover part each having a separate gummed fabric-binder strip along its inner edge, and a gummed flap extending from the front cover along the fabric binder, the said binders uniting the covers to the book at its back edges and the gummed flap uniting the cover parts, covering the binders and forming a binder for the back.

4. In combination with a paper-bound book having a plurality of its leaves gummed together to form a foundation extending from the bound back on each side of the book, a front and a back cover part each having a separate fabric-binder strip fastened to said foundation parts and the front cover part having a gummed flap for covering the binders, uniting the covers and forming a binding for the back.

705,860. WRENCH. JOSEPH O'BRIEN, Brooklyn, N. Y., assignor of one-half to Avery H. Bettling, New York, N. Y. Filed June 5, 1902. Serial No. 110,344. (No model.)

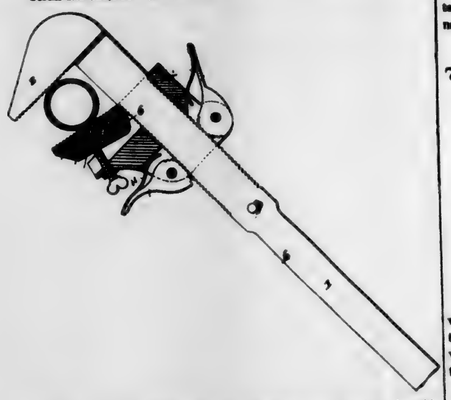

Claim.—1. In a wrench and in combination, the jaw-bar, the slidable head having an integral bottom wall standing at right angles to the edge of the jaw-bar, means for clamping the head to the bar, a grip-jaw pivoted to the head in overhanging relation to the bottom wall, a plate-spring on the jaw between it and said bottom wall, and a drive-screw tapped in said bottom wall beneath said spring.

2. In a wrench and in combination, the jaw-bar, the slidable head having an integral bottom wall standing at right angles to the edge of the jaw-bar, means for clamping the head to the bar, a grip-jaw pivoted at the inner corner of its inner end to the head, and a drive-screw tapped in the bottom wall beneath the grip-jaw to drive the latter against the pipe and by such driving force cause the outer corner of the jaw to be forced with a clamping action against the bar to reinforce the means for clamping the head to the bar.

705,861. SPRINKLING SCRUB-BRUSH. FELIX PIERSON, Ravenswood, Ill. Filed Mar. 21, 1902. Serial No. 99,303. (No model.)

Claim.—In a sprinkling scrub-brush, the combination with a block or body having in one of its ends cavities provided with a series of openings, a door or valve hinged to the upper surface of the block to close said cavities, and a box secured to the block or body over the cavities therein and having in its outer end a series of openings, substantially as described.

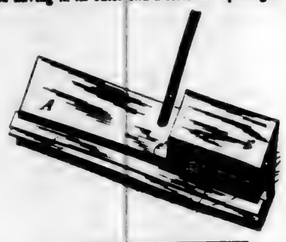

705,862. GAS-BURNER. SIMON A. POLITZKY and JOSEPH AGUST, Boston, Mass. Filed Nov. 2, 1901. Serial No. 80,679. (No model.)

Claim.—1. A gas-burner comprising an inner initial mixing-tube having an air-inlet and a discharge-orifice, a gas-discharge outlet directed into said tube in the vicinity of the air-inlet, and an outer secondary mixing-tube surrounding the discharge-orifice of the first said tube and having a burner-orifice, said secondary tube having its lower end removably fitting the exterior of the inner tube above the air-inlet of the latter and having its walls above its lower end expanded and forming alternate arms and air-inlets.

2. A gas-burner comprising a plurality of inner initial mixing-tubes having air-inlets and discharge-orifices, gas-discharge outlets directed into said tubes in the vicinity of the air-inlets, and a single outer secondary mixing-tube surrounding the discharge-orifices of the first said tubes and having a burner-orifice, said secondary tube having its lower end removably fitting the exterior of the inner tubes above the air-inlet of the latter and having its walls above its lower end expanded and forming alternate arms and air-inlets.

705,868. BEARING. HENRY H. PORTER, Dowagiac, Mich. Filed Jan. 5, 1900. Serial No. 508. (No model.)

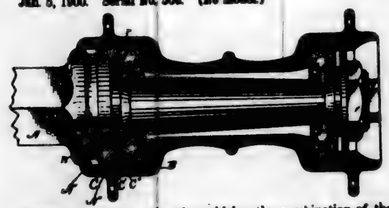

Claim.—1. In a bearing for vehicles, the combination of the axle with a suitable collar having a flange; a hub or boxing; a dust and water band combined with a ring to fit within the hub, the said dust and water band having an outwardly-projecting V-shaped portion fitting into the flange of the axle, for the purpose specified.

2. In a bearing for vehicles, the combination of the axle with a suitable collar having a flange; a hub or boxing; a dust and water excluder consisting of a band and an outwardly-projecting V-shaped portion carried by said hub or boxing and fitting within the flange of the axle, for the purpose specified.

3. The combination of a dust and water band having an outwardly-projecting V-shaped portion and means of supporting the same within the hub of a wheel.

4. A dust and water band or ring having a V-shaped projection and a retainer-ring open at one side and connected to said dust and water band or ring by a small web, all formed of a single integral piece, for the purpose specified.

5. A dust and water band or ring having a V-shaped projection C and a ring portion C'; and a ring C'' open at one side at *r* and connecting by a small web *s* to one side of the dust-band all formed of a single piece for the purpose specified.

6. A dust and water band and a retainer band or ring open at one side, and connected by suitable means to said dust and water band, for the purpose specified.

705,864. VEHICLE-AXLE AND AXLE-BOX. HENRY H. PORTER, Dowagiac, Mich. Filed Nov. 6, 1897. Serial No. 658,109. (No model.)

Claim.—1. In a vehicle-axle and axle-box the combination of the spindle A, with the usual or main collar formed thereon with a dirt-groove F, and an additional collar D, of larger diameter with forwardly-projecting cup-shaped flange D', containing dust-groove E, on its outside; the axle-box having formed in connection therewith the rearwardly-projecting outer ring B', adapted to fit over the flange D' on the axle, and having a V-shaped projecting ring C, concentric with ring B', the acute edge of which is adapted to fit the interior of the collar D', leaving an open space within the collar D, on each side of the V-shaped portion; all coacting together substantially as described for the purpose specified.

2. In a vehicle-axle and axle-box the combination of the spindle A, with the usual or main collar formed thereon and an additional collar D, of a larger diameter with a forwardly-projecting cup-shaped flange D'; and an axle-box having formed in connection therewith a rearwardly-projecting ring B', adapted to fit over the flanges D', on the axle and having a V-shaped ring concentric with ring B', the acute angle of which is adapted to fit the interior of the collar D', leaving an open space within the collar on each side of the V-shaped portion, coacting for the purpose specified.

3. In a vehicle-axle and axle-box the combination of the spindle A, with a collar of comparative broad diameter thereon, having a forwardly-projecting cup-shaped flange; and an axle-box having formed in connection therewith a rearwardly-projecting V-shaped ring portion the acute angle of which is adapted to fit within the flange on the axle forming an open space within the flange to each side thereof, coacting for the purpose specified.

4. In a vehicle-axle and axle-box the combination of the spindle A, with the usual or main collar formed thereon and an additional collar D, of a larger diameter with a forwardly-projecting cup-shaped flange D'; and an axle-box having formed in connection therewith a rearwardly-projecting ring B', adapted to fit over the flanges D', on the axle and having a V-shaped ring concentric with ring B', coacting for the purpose specified.

705,865. AIR-PURIFIER. HEINRICH V. PÖCKLER, Schloss Friedland, Silesia, Germany. Filed Sept. 13, 1901. Serial No. 75,204. (No model.)

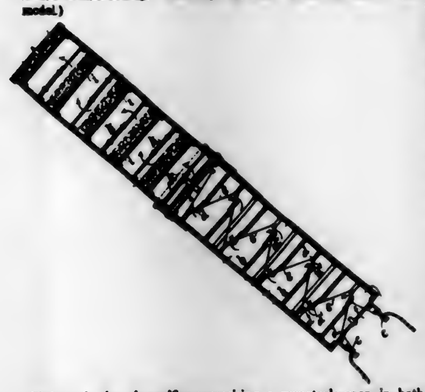

Claim.—1. An air-purifier comprising a receptacle open in both ends, partitions therein, openings in the partitions in zigzag line, a platinum wire in said zigzag line and a source of current-supply, substantially as described.

2. An air-purifier comprising a receptacle open in both ends, partitions therein, openings in the partitions in zigzag line, a platinum wire in said zigzag line, a source of current-supply and a cup-like vessel below the receptacle, substantially as described.

3. An air-purifier comprising a receptacle open in both ends, partitions therein, openings in the partitions in zigzag line, a platinum wire in said zigzag line, a source of current-supply, a cup-like vessel below the receptacle and a fan above it, substantially as described.

4. An air-purifier comprising a receptacle open at both ends, a platinum wire adapted to carry a current in the lower part and partitions in the upper part, openings in the partitions in zigzag line, and permeable partitions between said first partitions adapted to contain absorbent and filtering material, substantially as described.

5. An air-purifier comprising a receptacle open at both ends, partitions therein, each partition having an opening, said openings arranged in zigzag line, a platinum wire in the zigzag path of the lower portion of the receptacle, a source of current-supply therefor, and permeable partitions in the upper portion, adapted to contain absorbing and filtering materials, substantially as described.

705,866. ADJUSTABLE SCREW-PROPELLER. EDWARD E. PUDNEY, Norwalk, Conn., assignor to HORACE E. DANN and OSCAR H. BANKS, Norwalk, Conn. Filed Dec. 20, 1901. Serial No. 86,672. (No model.)

Claim.—1. An adjustable screw-propeller comprising a hub having threaded bosses, blades having threaded shanks adapted to engage the bosses, set-nuts upon the shanks adapted to engage the bosses to lock the blades when turned forward, and means for locking said shanks against movement in the bosses when the propeller is turned backward.

2. An adjustable screw-propeller comprising a hub having threaded bosses, blades having threaded shanks adapted to engage the bosses, set-nuts upon the shanks adapted to engage the bosses to lock the blades when turned forward and set-screws in the bosses which engage the shanks to lock the blades when turned backward.

705,867. COMBINATION SQUARE AND LEVEL. HARRY H. RICHARDSON, Beaverhills, Pa. Filed Feb. 26, 1902. Serial No. 96,710. (No model.)

Claim.—1. In a square, the combination of the body portion provided with a series of blade-seats the adjacent ones of which are separated by intervening walls, a removable blade, and a single clamp for holding the blade in either of the seats.

2. In a square, the combination of the body portion provided on its opposite sides with blade-seats and a central seat in its upper edge, a removable blade, and a clamp provided in its upper end with a slot, said clamp adapted to engage and retain the said blade when arranged in either of the said seats.

3. In a square the combination of the body portion provided with a central seat in its upper edge, and a seat on each side thereof, said body portion provided with a vertically-arranged opening communicating with the said central seat, a clamp provided with a screw-threaded shank, arranged in the said opening and having its upper end provided with a slot registering with the said longitudinal seat, a screw-threaded sleeve on said shank, a removable blade, and means whereby the said clamp will retain the said blade in each of the said seats.

4. In a square, the combination with a body portion provided with a central slot and formed on its opposite sides with shoulders, of a blade formed on one of its sides with a dovetail slot, said blade adapted to be received in the said central slot and shoulders of the body portion, clamping-jaws to engage the said blade and formed with a screw-threaded shank secured in said body portion, said clamping-jaws formed with dovetail extensions on their outer sides and one of them with such extension on its inner side, and a screw-threaded sleeve secured to said screw-threaded shank.

705,868. AXLETREE REPAIR IMPLEMENT. FRANK REHARD, Sandfield, Mich. Filed Apr. 18, 1902. Serial No. 103,636. (No model.)

Claim.—1. In an implement for repairing axletrees, an arm adapted to be secured to the axletree, a yoke connected with said arm and projecting back beyond the end of the axletree, a frame within said yoke and having a central bearing through the body of said yoke, adjustable clamps within said frame and arranged to center said frame with the axletree, adjusting-screws passing through the frame and said clamps, cutting-tools supported in said frame and having intermediate supports between the frame and the axletree, substantially as and for the purpose set forth.

2. In an implement for repairing axletrees, an adjusting-yoke adapted to be secured to the axletree, and having a central bearing, a frame having a central bearing engaging the central bearing of the yoke, said

frame extending over the axletree longitudinally, clamps within said frame, adjusting-screws actuating said clamps, a stationary cutter, an adjustable cutter, and a detachable and longitudinally-adjustable cap having an aperture for the cutter, and supporting-ribs, substantially as and for the purpose set forth.

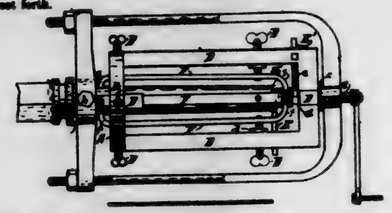

705,869. SUGAR-REFINING APPARATUS. JOSEPH ROSEN-LAUBLES, Paris, France. Filed June 26, 1901. Serial No. 66,977. (No model.)

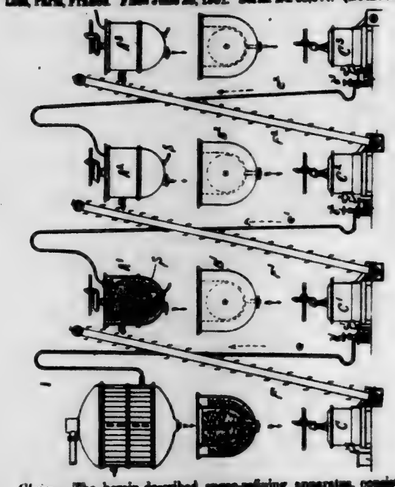

Claim.—The herein-described sugar-refining apparatus, consisting of a series of successive batteries of melting-pans, coolers and centrifugals so located that the sugar passes from pan to cooler and then to the centrifugal, with means connecting the successive batteries to cause dissolving liquid to travel through the successive batteries from the last toward the first, and to cause the sugar to travel through the same batteries but from the first toward the last, as and for the purpose described.

705,870. CRUSHING AND PULVERIZING MILL. JOHN F. SANDERS, Boise, Idaho. Filed May 10, 1901. Serial No. 59,611. (No model.)

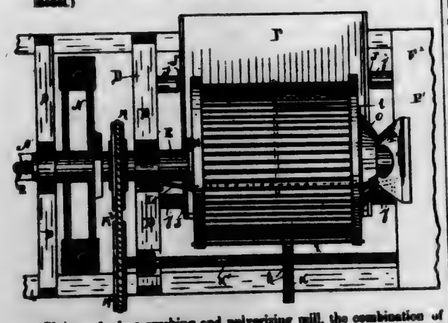

Claim.—1. In a crushing and pulverizing mill, the combination of a rotatable cylinder or drum, longitudinal bars set apart to leave spaces or interstices between them and forming the body of the cylinder or drum, supporting-heads one at each end of the cylinder or drum each head having a circular groove open to its periphery or rim and receiving the end of the bars, a continuous circumferential hoop or band for each head circumscribing the head and the ends of the bars for retaining the bars in place, a rotatable tubular shaft on which the cylinder or drum is mounted, holes or perforations in the shaft within the cylinder or drum, a pipe leading into the shaft for supplying water thereto and discharging the water into the interior of the cylinder or drum through the holes or perforations, an amalgamating-plate located beneath the cylinder or drum, a cam-wheel engaging the end of the amalgamating-plate, a shaft on which the cam-wheel is mounted, and a power connection between the shaft of the cam-wheel and the tubular shaft for revolving the cylinder or drum and reciprocating the amalgamating-plate from a common source of power, substantially as described.

2. In a crushing and pulverizing mill, the combination of a rotatable cylinder or drum, longitudinal bars set apart to leave spaces or interstices between them and forming the body of the cylinder or drum, supporting-heads one at each end of the cylinder or drum receiving and retaining the ends of the bars, a rotatable tubular shaft on which the cylinder or drum is mounted, holes or perforations in the shaft within the cylinder or drum, a water-supply pipe entered into one end of the shaft and discharging water thereinto and escaping the water through the holes or perforations into the interior of the cylinder or drum, openings in one of the heads of the cylinder or drum, a funnel or hopper attached to the head having the openings and revolving therewith and receiving thereinto the ore for depositing the ore within the interior of the cylinder or drum, means for crushing or pulverizing the ore within the cylinder or drum subject to the action of the discharged water from the tubular shaft, an amalgamating-plate located beneath the cylinder or drum and receiving thereon the pulverized material discharged through the spaces or interstices of the cylinder or drum, a cam-wheel engaging the end of the amalgamating-plate, a shaft on which the cam-wheel is mounted and a power connection between the shaft of the cam-wheel and the tubular shaft for revolving the cylinder or drum and reciprocating the amalgamating-plate from a common source of power, substantially as described.

3. In a crushing and pulverizing mill, the combination of a rotatable cylinder or drum, longitudinal bars set apart to leave spaces or interstices between them and forming the body of the cylinder or drum, supporting-heads one at each end of the cylinder or drum receiving and retaining the ends of the bars, a rotatable tubular shaft on which the cylinder or drum is mounted, holes or perforations in the shaft within the cylinder or drum, a water-supply pipe entered into one end of the shaft and discharging water thereinto and escaping the water through the holes or perforations into the interior of the cylinder or drum, openings in one of the heads of the cylinder or drum, a funnel or hopper attached to the head having the openings and revolving therewith and receiving thereinto the ore for depositing the ore within the interior of the cylinder or drum, means for crushing or pulverizing the ore within the cylinder or drum subject to the action of the discharged water from the tubular shaft, an amalgamating-plate located beneath the cylinder or drum and receiving thereon the pulverized material discharged through the spaces or interstices of the cylinder or drum, a rod attached to the bottom of the amalgamating-plate, a resistance-spring operating against the rod, a cam-wheel engaging the end of the amalgamating-plate, a shaft on which the cam-wheel is mounted and a power connection between the shaft of the cam-wheel and the tubular shaft for revolving the cylinder or drum and reciprocating the amalgamating-plate from a common source of power, substantially as described.

4. In a crushing and pulverizing mill, the combination of a rotatable cylinder or drum, longitudinal bars set apart to leave spaces or interstices between them and forming the body of the cylinder or drum, supporting-heads one at each end of the cylinder or drum receiving and retaining the ends of the bars, a rotatable tubular shaft on which the cylinder or drum is mounted, holes or perforations in the shaft within the cylinder or drum, a water-supply pipe entered into one end of the shaft and discharging water thereinto and escaping the water through the holes or perforations into the interior of the cylinder or drum, openings in one of the heads of the cylinder or drum, a funnel or hopper attached to the head having the openings and revolving therewith and receiving thereinto the ore for depositing the ore within the interior of the cylinder or drum, means for crushing or pulverizing the ore within the cylinder or drum subject to the action of the discharged water from the tubular shaft, an amalgamating-plate located beneath the cylinder or drum and receiving thereon the pulverized material discharged through the spaces or interstices of the cylinder or drum, rollers on which the amalgamating-plate is supported one of the rollers located in a higher plane than the other, a cam-wheel engaging the end of the amalgamating-plate, a shaft on which the cam-wheel is mounted and a power connection between the shaft of the cam-wheel and the tubular shaft for revolving the cylinder or drum and reciprocating the amalgamating-plate from a common source of power, substantially as described.

5. In a crushing and pulverizing mill, the combination of a rotatable cylinder or drum, longitudinal bars set apart to leave spaces or interstices between them and forming the body of the cylinder or drum, supporting-heads one at each end of the cylinder or drum receiving and retaining the ends of the bars, a rotatable tubular shaft on which the cylinder or drum is mounted, holes or perforations in the shaft within the cylinder or drum, a water-supply pipe entered into one end of the shaft and discharging water thereinto and escaping the water through the holes or perforations into the interior of the cylinder or drum, openings in one of the heads of the cylinder or drum, a funnel or hopper attached to the head having the openings and revolving therewith and receiving thereinto the ore for depositing the ore within the interior of the cylinder or drum, means for crushing or pulverizing the ore within the cylinder or drum subject to the action of the discharged water from the tubular shaft, an amalgamating-plate located beneath the cylinder or drum and receiving thereon the pulverized material discharged through the spaces or interstices of the cylinder or drum, a cam-wheel engaging the end of the amalgamating-plate, a shaft on which the cam-wheel is mounted and a power connection between the shaft of the cam-wheel and the tubular shaft for revolving the cylinder or drum and reciprocating the amalgamating-plate from a common source of power, substantially as described.

6. In a crushing and pulverizing mill, the combination of a rotatable cylinder or drum, longitudinal bars set apart to leave spaces or interstices between them and forming the body of the cylinder or drum, supporting-heads one at each end of the cylinder or drum receiving and retaining the ends of the bars, a rotatable tubular shaft on which the cylinder or drum is mounted, holes or perforations in the shaft within the cylinder or drum, a water-supply pipe entered into one end of the shaft and discharging water thereinto and escaping the water through the holes or perforations into the interior of the cylinder or drum, openings in one of the heads of the cylinder or drum, a funnel or hopper attached to the head having the openings and revolving therewith and receiving thereinto the ore for depositing the ore within the interior of the cylinder or drum, means for crushing or pulverizing the ore within the cylinder or drum subject to the action of the discharged water from the tubular shaft, an amalgamating-plate located beneath the cylinder or drum and receiving thereon the pulverized material discharged through the spaces or interstices of the cylinder or drum, a cam-wheel engaging the end of the amalgamating-plate, a shaft on which the cam-wheel is mounted and a power connection between the shaft of the cam-wheel and the tubular shaft for revolving the cylinder or drum and reciprocating the amalgamating-plate from a common source of power, and deflecting-plates one on each side of the cylinder or drum at the bottom thereof with their lower ends adjacent to the upper face of the amalgamating-plate for guiding the material discharged from the cylinder or drum onto the amalgamating-plate, substantially as described.

705,871. JOURNAL-BEARING. GEORGE H. SCHEIB, Chicago, Ill., assignor of one-half to George A. Woodman, Chicago, Ill. Filed Mar. 31, 1902. Serial No. 100,778. (No model.)

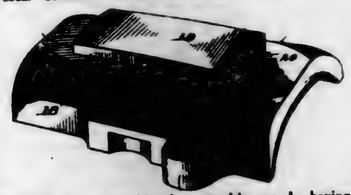

Claim.—1. A car journal-bearing comprising a wedge having a substantially rectangular recess in its under face, and a brass provided on its top face with a raised crown to work in said recess in the wedge.

2. A car journal-bearing comprising a wedge having a recess in its under face, and a brass provided on its top face with a raised crown to work in the recess in the wedge, said crown being shorter in length than the recess to enable the brass to move endwise relative to the wedge.

3. A car journal-bearing comprising a wedge having a substantially rectangular recess in its under face, and a brass provided on its top face with a raised crown to work in the recess in the wedge, said crown being narrower than the recess to enable the brass to have a slight sidewise and rotary movement relative to the wedge.

4. A car journal-bearing comprising a wedge having a recess in its under face, and a brass provided on its top face with a raised crown to work in the recess in the wedge, said crown being shorter and narrower than the recess to enable the brass to move endwise and sidewise and rotatably relative to the wedge.

5. A car journal-bearing comprising a wedge having in its under face a substantially rectangular recess with curved end walls, and a brass provided on its top face with a raised crown to work in the recess in the wedge and having curved ends.

6. A car journal-bearing comprising a wedge having a substantially rectangular recess in its under face and depending sides provided with inclined inner faces, and a brass provided with inclined sides and having a raised crown to work in the recess in the wedge.

7. A car journal-bearing comprising a brass having a raised crown on its top face, and a wedge provided on its under face with a substantially rectangular recess of less depth than the height of the crown to receive the crown on the brass and having side and end walls to confine the brass but permitting a limited movement thereof.

705,872. CIGAR-MACHINE. HANS A. SCHERMERHORN, New York, N. Y. Filed Mar. 27, 1901. Serial No. 53,073. (No model.)

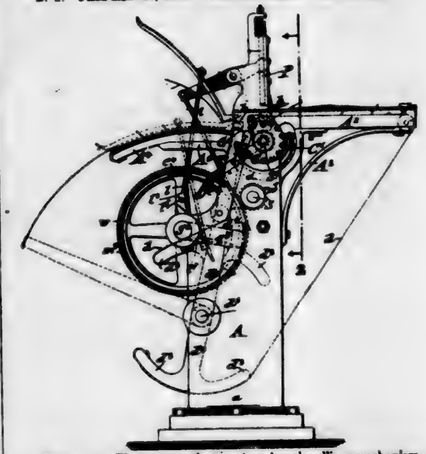

Claim.—1. The combination, with a bunch-rolling mechanism, of an intermittently-rotating mold-cylinder, an endless mold-carrying apron working in conjunction with the mold-cylinder, a delivery mechanism for transferring the bunches from the pockets of the mold-cylinder, an oscillating shelf for receiving said bunches, and a cigar-rolling mechanism to which the bunches are delivered from the shelf, substantially as set forth.

2. In a cigar-machine, the combination of a bunch-rolling mechanism, consisting of a stationary table having guideways, a pivoted and spring-cushioned bunch-rolling table, a reciprocating slide-plate, oscillating disks, an apron attached at its rear end to the front end of said slide-plate and at its opposite end to said oscillating disks, said slide-plate being provided with an opening, corresponding to the shape of the cigar, near its rear end, a vertically-reciprocating plunger passing through said opening, and an intermittently-rotating mold-cylinder having pockets that are placed vertically in line with said opening and plunger for receiving the bunch delivered by the bunch-rolling mechanism, substantially as set forth.

3. In a cigar-machine, a bunch-rolling mechanism consisting of a stationary table having guideways, a pivoted and spring-cushioned bunch-rolling table, a slide-plate guided in said ways, oscillating disks, an apron attached at its rear end to the slide-plate and at its front end to said oscillating disks, and mechanism for imparting reciprocating motion to said slide-plate for rolling the bunch and delivering the same at the end of the forward motion of the slide-plate, substantially as set forth.

4. In a cigar-machine, the combination, with a horizontal table having guideways, of a pivoted and yielding rolling-table, a reciprocating slide-plate guided in said ways, oscillating disks connected by a transverse bar, a rolling-apron attached at its rear end to the slide-plate and at its front end to said transverse bar carried by the oscillating disks, a vertically-guided stop-block guided in the rear end of the slide-plate and forming with the same an opening corresponding in shape to the bunch, said stop-block being provided with laterally-projecting lugs at its ends, inclined guide-rails on the guideways of the table for raising the stop-block so as to permit its passage over the rolling-table, and mechanism for reciprocating the slide-plate so as to produce the rolling of the bunch, substantially as set forth.

5. In a cigar-machine, the combination, with a horizontal table having guideways, of a pivoted and yielding rolling-table, a reciprocating

slide-plate guided in said ways, oscillating disks connected by a transverse bar, a rolling-apron attached at its rear end to the slide-plate and at its front end to said transverse bar carried by the oscillating disks, a vertically-guided stop-block guided in the rear end of the slide-plate and forming with the same an opening corresponding in shape to the bunch, said stop-block being provided with laterally-projecting lugs at its ends, inclined guide-rails on the guideways of the table for raising the stop-block so as to permit its passage over the rolling-table, mechanism for reciprocating the slide-plate so as to produce the rolling of the bunch, a reciprocating plunger, a mold-cylinder for taking up the bunch on its delivery from the rolling mechanism, and a curved rearwardly-extending heel adapted to engage the lugs of the stop-block and bring the same in proper position relatively to the plunger, substantially as set forth.

6. The combination, with a bunch-rolling mechanism, of a mold-cylinder provided with a number of pockets, a stationary block vertically above the mold-cylinder and provided with an opening for the bunch, a reciprocating plunger adapted to transmit the bunch, when delivered by the bunch-rolling mechanism, into one of the molds of the mold-cylinder, an endless mold-carrying apron moving in contact with the pockets of the mold-cylinder for holding the bunches in position before delivering them to the cigar-rolling mechanism, means mounted outside of and independent of the mold-cylinder for clearing or removing the bunches from the same, and mechanism for imparting intermittent rotary motion to the mold-cylinder and apron, substantially as set forth.

7. In a cigar-machine, the combination of a bunch rolling and delivering mechanism, with an intermittently-rotating mold-cylinder having pockets for receiving the bunches, and an endless mold-carrying apron moving in conjunction with said mold-cylinder, said mold-cylinder being provided with circumferential slits, and oscillating clearing-fingers in said slits for delivering the bunches from the pockets of the mold-cylinder, substantially as set forth.

8. In a cigar-machine, the combination, with a bunch rolling and delivering mechanism, of an intermittently-rotating mold-cylinder, provided with a number of pockets, and a plurality of circumferential slits, an endless mold-carrying apron moving in conjunction with said mold-cylinder, means for guiding said apron so as to hold its mold-sections in contact with the pockets of the mold-cylinder, oscillating clearing-fingers moving in the radial slits of the mold-cylinder, a vertically-reciprocating plunger for transmitting the bunches into the pockets of the cylinder, and means between said plunger and the oscillating fingers for operating the same on the descent of the plunger, so as to deliver the bunches successively from the pockets of the mold-cylinder, substantially as set forth.

9. In a cigar-machine, the combination, with an intermittently-rotating mold-cylinder having pockets for receiving the bunches, and a plurality of circumferential slits, of an endless mold-carrying apron moving in conjunction with said cylinder, means for guiding the same for bringing the molds in contact with the lower part of the mold-cylinder, oscillating clearing-fingers moving in the radial slits of the mold-cylinder for delivering the bunches from the mold-cylinder, and a shelf provided with seats for receiving the bunches, and means for oscillating said shelf for delivering one bunch after the other to the rolling mechanism, substantially as set forth.

10. In a cigar-machine, a cigar-rolling mechanism consisting of a rolling-table, a rolling-apron extending over the same, the front end of said apron being attached to the outer end of the rolling-table, an oscillating delivery-shelf to which the rear end of the rolling apron is attached, a guard-plate, and means for oscillating said guard-plate so as to place it in position over the rolling-table, substantially as set forth.

11. In a cigar-machine, a cigar-rolling mechanism consisting of a laterally-shiftable rolling-table, a rolling-apron extending over the same, an intermediate carded layer between the table and apron, an oscillating shelf, said rolling-apron being attached at its rear end to the shelf and at its front end to said table, means for oscillating the shelf so as to roll the bunch into the wrapper, and an oscillating guard-plate placed in position over the rolling-table when the rolling motion takes place, substantially as set forth.

12. In a cigar-machine, a cigar-rolling mechanism, consisting of a rolling-table, a rolling-apron extending over the same, an oscillating shelf, said rolling-apron being attached at its front end to the rolling-table and at its rear end to the shelf, means for oscillating said shelf, for rolling the bunch into the wrapper, an oscillating guard-plate adapted to be placed in position over the rolling-table for rolling the bunch into the wrapper, and leaf-springs attached to said guard-plate for holding the wrapper in position while the bunch is delivered into the same, substantially as set forth.

705,873. GAME-BOARD. MAX SCHMIDT, Philadelphia, Pa. Filed Feb. 5, 1902. Serial No. 92,610. (No model.)

Claim.—1. In a score-keeping apparatus of the character stated, a board having a recess and means bridging said recess for retaining strips or tablets for the order of playing.

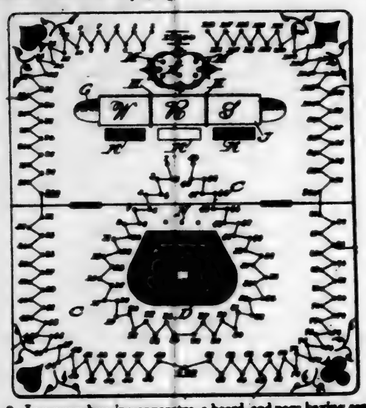

2. In a score-keeping apparatus, a board, and pegs having centrally-disposed recesses and tapered ends whereby said pegs are adapted to be inserted into said board and into each other.

3. In a score-keeping apparatus of the character stated, a board having numbered openings thereon and a recess with bars extending across the same, and tablets removably inserted under said bars and in said recess for the order of playing.

4. In a score-keeping apparatus of the character stated, a board having openings and pegs each provided with an axially-disposed opening, thus adapting said pegs to be inserted into any of the openings of the board and into each other.

705,874. CONSTRUCTION OF WRENCHES. HARRY SEARLE, Worcester, Mass., assignor to Coes Wrench Company, Worcester, Mass., a Corporation of Massachusetts. Filed Apr. 18, 1902. Serial No. 103,566. (No model.)

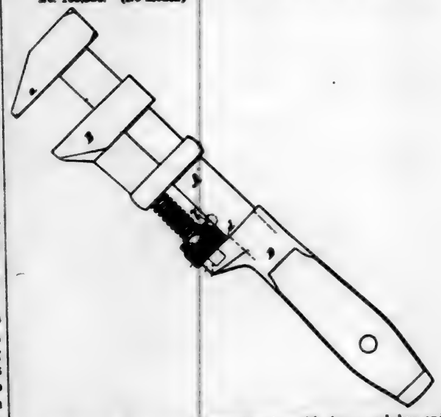

Claim.—1. In a wrench, in combination with the wrench-bar, and jaw-adjusting screw; a protuberant retaining member or keeper supported within a cavity formed in the front face of the wrench-bar, and projecting beyond the plane of the wrench-bar face and over a portion or shoulder of the rosette of the jaw-adjusting screw, for the purpose set forth.

2. In a wrench of the character described, the combination with the wrench-bar, and the jaw-adjusting screw; of a rotatable retaining member or keeper supported in a recess in the face of the wrench-bar, and engaging with an offset groove or bearing-surface upon the rosette or boss of the jaw-adjusting screw and counting therewith to prevent endwise displacement of said screw.

3. In a wrench having a sliding jaw, and a jaw-adjusting screw journaled in the collar projection, with its rosette clear of the front of the bar, the rosette provided with a circumferential groove, offset or bearing-surface, and a rolling retaining ball or member disposed in a cavity formed in the face of the wrench-bar and protruding therefrom and acting against said rosette-surface, substantially as set forth.

4. In a wrench, in combination, for the purposes set forth, a wrench-bar having in its face a socket, recess or cavity with a seating point or elevation on the interior thereof, a rotatable ball loosely supported within said socket by said seating-point and the rim of the cavity, and protuberant from the face of the wrench-bar, the jaw-adjusting screw journaled in the projecting portion of the handle-frame and provided with a rosette or boss having a circumferential bearing groove or surface engaging against said ball, and confining it loosely in connection with its cavity, and said screw in turn thereby confined to its journal-bearing.

705,875. CONSTRUCTION OF WRENCHES. HARRY SEARLE, Worcester, Mass., assignor to Coes Wrench Company, Worcester, Mass., a Corporation of Massachusetts. Filed Apr. 18, 1902. Serial No. 103,567. (No model.)

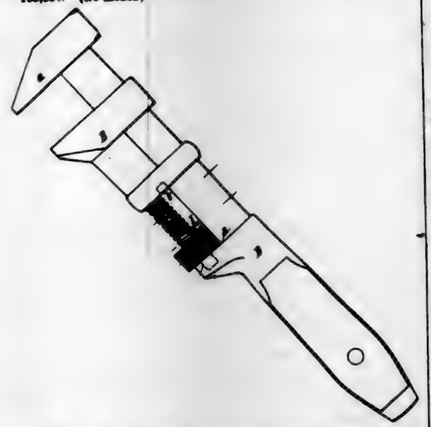

Claim.—1. In a wrench of the class described, the combination with the wrench-bar, the handle-frame or collar portion carrying the bearing-stop, the slidable jaw, and the jaw-adjusting screw journaled in said stop, and having the rosette thereon standing clear of the front plane of the wrench-bar; of a guard pin or stud inserted and solidly fixed at one end in the metal of the front edge of said wrench-bar, with its projecting outer end in overlying engagement with the rosette, and confining said adjusting-screw against endwise displacement.

2. In a wrench of the character described, in combination with the wrench-bar; the screw-supporting stop and the jaw-adjusting screw, of guard pin or stud inserted in an opening in the front of the wrench-bar above the top edge of the rosette, and solidly incorporated therein by staking in the metal of the bar around the neck of the pin, the head of the pin projecting outward above the rosette, substantially as set forth.

3. In combination, with the wrench-bar, the sliding jaw, the handle-frame and the adjusting-screw having the rosette thereon; a guard-pin fixedly inserted in the front of said wrench-bar, and having the head or projecting portion of greater width than the inserted portion, for the purpose set forth.

4. In a wrench of the character described, in combination, with the wrench-bar, the handle-collar, and jaw-adjusting screw having the rosette thereon; a protuberant pin or retaining member supported in the wrench-bar and projecting over the edge of the rosette for endwise confinement of the screw, and the slidable jaw arranged on said wrench-bar and screw, said jaw being provided with a recess or cavity at its lower end into which said retaining member is received when said jaw is at fully-opened position.

705,876. CONVEYER-BELT. WILLIAM J. SELLENS, Riverside, Conn. Filed May 31, 1902. Serial No. 109,601. (No model.)

Claim.—1. The combination with a conveyer-belt consisting in a plurality of longitudinal sections, of a hinge flexibly uniting said sections composed of parts movably joined together and rigidly secured to the adjoining edges of said sections.

2. The combination with a conveyer-belt composed of a plurality of longitudinal sections, of lacings passing through the adjoining edges of said sections, and means for flexibly uniting said lacings.

3. The combination with a conveyer-belt composed of a plurality of longitudinal sections, of coil-spring lacings passing through each of the adjoining edges of said sections, and a thong extending through the overlapped convolutions of the lacings.

4. The combination with a conveyer-belt composed of a plurality of longitudinal sections, of coil-spring lacings having elliptical convolutions passing through the adjoining edges of said sections, the projecting portions of said convolutions being overlapped, and a leather thong extending through the registering overlapped convolutions of said lacings.

5. In a conveyer-belt, the combination with central and side sections, of a hinge flexibly uniting said sections composed of parts movably joined together and rigidly secured to the adjoining edges of said sections.

6. In a conveyer-belt, the combination with central and side sections, of lacings passing through the adjoining edges of said sections, and means for flexibly uniting said lacings.

705,877. BOTTLE-WASHING MACHINE. MICHAEL P. SHEA, New London, Conn. Filed Oct. 17, 1901. Serial No. 78,906. (No model.)

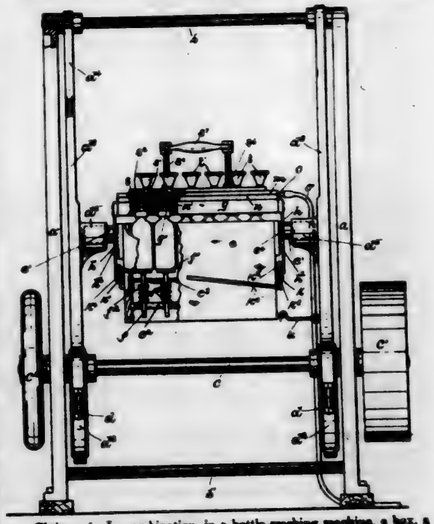

Claim.—1. In combination, in a bottle-washing machine, a box, a cover having depressions g', means for retaining a multiple of bottles in engagement with said depressions, and means for locking the said cover to the box consisting of teeth affixed to the opposite ends of the box, and depending spring-tongues on the cover having teeth to intermesh with the teeth on the box.

2. In combination, in a bottle-washing machine, a box, a cover having depressions g', means for retaining bottles in engagement with said depressions, and means for locking the said cover to the box consisting of teeth affixed to opposite ends of the box, and depending spring-tongues having teeth to engage with the teeth on the box, and means for unlocking the same consisting of levers k^2 k^3 pivotally mounted on the box with their free ends arranged to engage the free ends of said spring-tongues and connecting-rod k^4 joining the levers at the opposite ends of the box as specified.

3. In a bottle-washing machine, in combination, a plate *g* having depressions adapted to receive the necks of a multiple of bottles, means for holding said bottles in close engagement with said plate, means for agitating and for inverting said bottles, openings in said plate *g* coincident with the said depressions, and a plate *s* slidably mounted over the plate *g*; said plate *s* being provided with perforations *s'* extending through it and also with shot-chambers *t* having discharge-openings substantially as specified.

4. In a bottle-washing machine, in combination, a plate *g* having depressions adapted to receive the necks of a multiple of bottles and openings leading outward from said depressions, means for holding the bottles in engagement with said depressions, means as set forth for introducing water into said bottles, and a plate slidably mounted over the plate *g*; said plate *s* being provided with perforations *s'* adapted to register with the said depressions when plate *s* is moved in one direction and also with shot-chambers having outlets adapted to register with said depressions when the plates is moved in the opposite direction.

705,878. BOOK OR PARCEL CARRIER OR HOLDER. THEODOR H. SCHUTTENBERG, Hubbard, Ohio. Filed Jan. 30, 1902. Serial No. 91,913. (No model.)

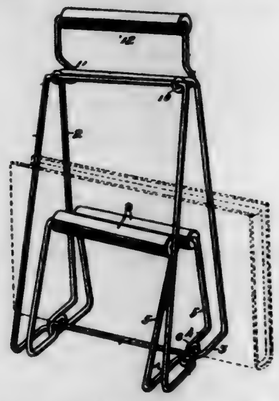

Claim.—1. A device of the class described comprising two sides hinged together at the bottom and adapted to clamp a parcel, and the clamping-jaws arranged at the lower portion of the device and connected with the sides and adapted to engage books or parcels, substantially as and for the purpose described.

2. A device of the class described comprising two sides hinged together at the bottom and spaced apart between their ends when the device is closed, means for holding the sides in their closed position, and the clamping-jaws connected with the sides and operating in the space between the same, whereby the device is adapted to hold and positively engage parcels or packages of different sizes, substantially as described.

3. A device of the class described comprising two sides provided at the bottom with arms hinged together and spacing the sides apart, and clamping-jaws connected with the said arms and operating in the spaces between the sides, substantially as described.

4. A device of the class described comprising sides hinged at the bottom and provided with clamping-jaws operating independently of the sides in clamping packages or books, and a frame hinged at one side to the top thereof and provided with a loop or bend receiving the other side of the device, said hinged frame being also provided with a grip or handle, substantially as described.

5. A device of the class described comprising hinged sides provided with lower clamping-jaws, and the approximately U-shaped frame hinged to one of the sides and provided at opposite sides with approximately U-shaped loops or bends to receive the other side of the device, said hinged frame being also provided with a grip or handle, substantially as described.

6. A device of the class described comprising hinged sides provided at the bottom with inwardly-extending loops, means for hinging the loops together, and clamping-jaws connected with the inner sides of the loops, substantially as described.

7. A device of the class described comprising hinged sides having inwardly-extending loops at their bottom and provided with clamping-jaws, and a rod provided at its end with eyes linked into the said loops and hinging the sides, substantially as described.

8. A device of the class described comprising upwardly-converging sides provided at the bottom with inwardly-extending arms, the upwardly-converging clamping-jaws terminating between the top and bottom of the device and provided with arms connected with the said arms and forming loops, and means for connecting the loops, whereby the sides are hinged together, substantially as described.

9. A device of the class described comprising sides constructed of a single piece of resilient material and provided at the bottom with inwardly-extending arms, the clamping-jaws provided with cross-pieces and having sides formed integral with the sides of the device and provided with arms connected with the said arms and forming loops, and means for hinging the loops together, substantially as described.

10. A device of the class described comprising sides provided at the bottom with inwardly-extending loops, clamping-jaws consisting of side portions formed integral with the said loops, and the connecting-bars having the upper terminals of the side portions embedded in them, and means for hinging the loops, substantially as described.

705,879. DRAWER-SUPPORTER. HARMON C. SMITH, Ithaca, N. Y. Filed Apr. 16, 1901. Serial No. 56,123. (No model.)

Claim.—A garment-supporter consisting of a plate adapted for attachment to a garment, and a hook comprising parallel shank members rigidly attached at one end to the plate and having their terminals bent and entered therein, diverged side bars and loops at the sides of the shank and between it and the side bars, the terminal of the hook being bent outward away from the plane of the hook, and the shank and the body of the hook being oppositely deflected, substantially as specified.

705,880. SWEEP-OPERATED HOISTING-WINDLASS. BYRON B. BYRNES, Crippleereek, Colo. Filed Sept. 4, 1901. Serial No. 74,269. (No model.)

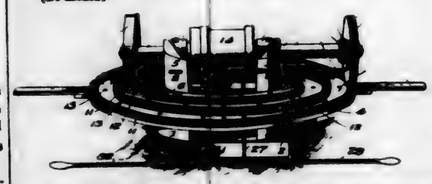

Claim.—1. In a machine of the class described, the combination with a rotary power-table having a plurality of concentric gear-tracks, of a rotary shaft extending transversely of the table, a guide-wheel journaled on the shaft at one side of the center of the table and bearing against the latter in the space between the gear-tracks, and a pinion slidably mounted on the shaft on the opposite side of the center of the table and adapted to engage with either of the gear-tracks so as to turn with the table and the shaft being adapted to turn with the pinion.

2. In a machine of the class described, the combination with a rotary power-table having concentric gear-tracks, of separated bearings located on opposite sides of the center of rotation of said power-table, a shaft journaled in said bearings, a winding-drum secured on the shaft intermediate the bearings, a guide-wheel loosely journaled on one end of the shaft and adapted to bear against the table between the gear-tracks, and a pinion slidable longitudinally on the shaft and adapted to turn therewith, which is arranged to mesh with any of the gear-tracks.

3. In a machine of the class described, the combination with a frame, of a table adapted to turn thereon, a shaft journaled to turn in the frame, a wheel on the shaft adapted to engage the table and slidable longitudinally on the shaft, a rod slidably mounted in the frame and connected to the wheel, said rod having an open arm, a pivoted member having a projection movable in the opening in the arm and a lever for operating said pivoted member, whereby the wheel may shift on the shaft.

4. In a machine of the class described, the combination with a frame having an upright portion and provided with antifriction-rollers, of a table having concentric gear-tracks and provided with an open central portion turning on the upright portion of the frame and being supported by the antifriction-rollers, a shaft journaled in the upright portion of the frame, a winding-drum on said shaft between the portions of the upright part of the frame, a friction-brake having one end secured to the frame and its remaining portion adapted to act on the drum, lever mechanism for operating said friction-brake, a guide-wheel journaled on the shaft and adapted to bear against the table, a pinion slidable longitudinally of the shaft at the opposite end from the guide-wheel and adapted to turn with the shaft, a rod slidably mounted on the frame and connected to the pinion, said pinion being adapted to engage the tracks, said rod having a member provided with an elongated slot, a member pivoted to the frame and provided with a projection received in the slot, and lever mechanism for operating said member, whereby the shifting of the pinion is accomplished.

705,881. GAS-ENGINE IGNITION-REGULATOR. MICHAEL J. SULLIVAN, Springfield, Ohio. Filed Jan. 13, 1902. Serial No. 89,410. (No model.)

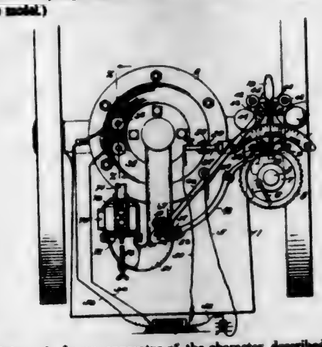

Claim.—1. In an apparatus of the character described, a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, a segment-bar lying in the plane of rotation of said arm, its center of curvature being the center of rotation of said arm, and a head provided with a contact-block and adjustable longitudinally on said bar, substantially as described.

2. In a sparking electric ignition device for gas-engines, the combination, with suitable electrodes, of a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, a segment-bar lying in the plane of rotation of said arm, its center of curvature being the center of rotation of said arm, and a head provided with a contact-block and adjustable longitudinally on said bar, and a governor driven by the engine and operatively connected with said block to shift the same, substantially as described.

3. In a sparking electric ignition device for gas-engines, the combination, with suitable electrodes, of a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, a segment-bar lying in the plane of rotation of said arm, its center of curvature being the center of rotation of said arm, and a head provided with a contact-block and adjustable longitudinally on said bar, a governor also driven by the engine and operatively connected with said block to shift the same, and a valve controlling the charge-inlet and operatively connected with the governor to work in unison with the shifting contact-block, substantially as described.

4. In an apparatus of the character described, a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, a segment-bar lying in the plane of rotation of said arm, its center of curvature being the center of rotation of said arm, and a head provided with a yielding contact-block and adjustable longitudinally on said bar, substantially as described.

5. In an apparatus of the character described, a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, a segment-bar lying in the plane of rotation of said arm, its center of curvature being the center of rotation thereof, said bar being longitudinally slotted, a head grooved to fit and slide in said slotted bar and provided with a contact-block and a clamping-block, and a handle threaded into said head and operating the clamping-block, substantially as described.

6. In an apparatus of the character described, a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, a segment-bar lying in the plane of rotation of said arm, its center of curvature being the center of motion thereof, a head adapted to slide longitudinally on said bar and provided with clamping means, lugs depending from said head and connected by a transverse pin, a contact-block fitting between said lugs and vertically slotted to receive the pin, and springs interposed between said block and head on each side of the pin, substantially as described.

7. In an apparatus of the character described, the combination, with a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, and a contact-block adjustable in the plane of rotation of said arm and in an arc whose center is the center of motion thereof, of a governor driven by the engine, and connecting mechanism between said governor and contact-block for shifting said block, said mechanism comprising means for regulating the portion of the arc of movement of said block over which the governor shifts the same, substantially as described.

8. In an apparatus of the character described, the combination, with a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, and a contact-block adjustable in the plane of rotation of said arm and in an arc whose center is the center of motion of said arm, of a governor driven by the engine, and connecting mechanism between said governor and contact-block for shifting the block, said connecting mechanism comprising means for regulating the extent of the motion imparted to the block by the governor, substantially as described.

9. In an apparatus of the character described, the combination, with a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, and a contact-block adjustable in the plane of rotation of said arm and in an arc whose center is the center of motion of said arm, of a governor driven by the engine, and connecting mechanism between the governor and contact-block to shift the latter, said connecting mechanism comprising means for regulating the portion of the arc of movement of the block over which the governor shifts said block, and also means for regulating the extent of motion within that portion of the arc imparted to the block by the governor, substantially as described.

10. In an apparatus of the character described, the combination, with a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, and a contact-block adjustable in the plane of rotation of said arm and in an arc whose center is the center of motion of said arm, of a governor driven by the engine, connecting mechanism between said governor and contact-block to shift the latter, and means for rendering said connecting mechanism inoperative at will, substantially as described.

11. In an apparatus of the character described, the combination, with a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, and a contact-block adjustable in the plane of rotation of said arm and in an arc whose center is the center of motion of said arm, of a governor driven by the engine, a rock-shaft operated by said governor and provided with a crank-arm, a crank-pin adjustable on said crank-arm, and a link operatively connected with the contact-block and adjustably connected with the crank-pin, substantially as described.

12. In an apparatus of the character described, the combination, with a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, and a contact-block adjustable in the plane of rotation of said arm and in an arc whose center is the center of motion of said arm, of a governor driven by the engine, a charge-inlet pipe having a rock-shaft connected with the governor and provided with a controlling-valve located within said pipe, said rock-shaft being provided with a crank-arm, and a link connecting said crank-arm and the contact-block, substantially as described.

13. In an apparatus of the character described, the combination, with a circuit-making device comprising a rotating part driven by the engine and provided with a contact-arm, a segment-bar located in the plane of rotation of said arm, its center of curvature being the center of motion thereof, and a head provided with a contact-block, said head being movable longitudinally on said arm and having clamping devices to engage the bar, of a governor, connecting mechanism between said governor and the head, a handle threaded into the head and controlling the clamping devices, and a spring interposed between the head and handle to prevent accidental clamping action by the handle, substantially as described.

705,882. TROLLEY. THOMAS W. BUTTON, Pittsburg, Pa. Filed May 7, 1902. Serial No. 106,267. (No model.)

Claim.—1. In a trolley, the combination with a harp, an axle mounted in said harp and extended beyond the sides of the latter, a pin passing through the ends of the harp and through said axle and a trolley-wheel mounted on the axle within the harp, of a yoke comprising a pair of cheek-plates mounted at their upper ends on the extended ends of the axle and secured together at their lower ends, retaining-rods journaled in keepers secured to said plates and rotatable in said keepers, the upper ends of said arms being extended inwardly, a keeper carried at the lower end of the yoke, means connected to the lower ends of the rods or arms and passing through said keeper for rotating the rods, said springs arranged on said rods for normally holding the same in the retaining position, substantially as described.

2. In a trolley, the combination with a trolley-harp, an axle mounted therein and extended beyond the sides of the harp and a trolley-wheel mounted on said axle, a pin passing through said harp and said axle, of a yoke embodying a pair of check-plates connected to a spacer-block at their lower ends, retaining-rods journaled in keepers on the outer face of said plates and rotatable in said keepers, springs arranged on said rods and bearing against the check-plates for normally holding the rods in a retaining position, a keeper carried by the spacer-block, an operating-cord extending through said keeper and connected to each of the retaining-rods, and means carried by the spacer-block for securing a weight thereto, substantially as described.

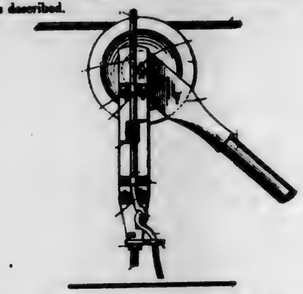

705,888. ICE-CAN. FLETCHER D. SWAREY, Kansas City, Kans., assignor of one-half to Herbert Galer, Kansas City, Kans. Filed June 13, 1901. Serial No. 64,462. (No model.)

Claim.—1. An ice-can, comprising a body portion, constructed of two similar sections formed at their outer sides with hooks 5, terminating short of the upper ends of the sections; plates 6, provided with hooks 7, interlocked with hooks 5, said plates terminating at their upper ends coincidently with said hooks 5; a bottom; a reinforced band, encircling the body portion above said hooks 5 and plates 6; and a second band, the same being provided with a hook above hooks 5 and plates 6, and underlying the reinforce-band, and interlocked with the upper end of the body portion, substantially as described.

2. An ice-can, comprising a body portion constructed of two similar sections formed at their outer sides with hooks 5 and at their lower ends with external upwardly-disposed hooks 10, the outer portions of said hooks lapping the lower ends of said sections and their hooks 5; plates 6, provided with hooks 7 interlocked with hooks 5, said plates terminating at their lower ends flush with said hooks 5, as to be also lapped by said hooks 10; and a bottom, fitting in the body portion and provided with upwardly-disposed hooks 9, externally embracing hooks 10, and downwardly-disposed hooks 9', interlocked with hooks 9, substantially as described.

3. An ice-can provided with upwardly-disposed hooks at its upper end, a reinforce-band encircling the upper end of the can, and a band embracing and interlocked with the reinforce-band to prevent it moving downwardly, and provided at its upper margin and outer side with a downwardly-disposed hook engaging the upwardly-disposed hooks of the can, substantially as described.

705,884. INLET FOR PNEUMATIC-DESPATCH TUBES. FRED R. TAMEY, Indianapolis, Ind., assignor to the Tamey Pneumatic Service Company, Indianapolis, Ind., a Corporation of Indiana. Filed Oct. 14, 1901. Serial No. 78,556. (No model.)

Claim.—1. An inlet for a pneumatic-despatch tube consisting of an inlet-chamber, a spring-closed lid or valve at the outer end thereof, a spring-closed valve for closing the outlet from said chamber, and means for moving said last-named valve laterally out of a closing position.

2. An inlet for a pneumatic-despatch tube consisting of an inlet-tube adapted to serve as a guide for a carrier, a valve-chamber secured to the inner end of said tube which is extended at a right angle from said tube, a valve for closing the outlet from said valve-chamber that is pivotally mounted, and means outside the valve-chamber for oscillating said valve.

3. An inlet for a pneumatic-despatch tube consisting of an inlet-tube, a valve-chamber secured to the inner end of said tube which is extended at a right angle from said tube, a valve for closing the outlet from said valve-chamber that is pivotally mounted, means outside the valve-chamber for oscillating the valve therein, and a rib or track in said casing upon which said valve moves in its oscillation.

4. An inlet for a pneumatic-despatch tube consisting of an inlet-chamber, a valve for closing the outer end thereof, a valve for closing the inner or outlet end thereof, means on the latter valve adapted to support the carrier out of contact with the valve after the carrier has been inserted into said chamber, and external means for moving said valve out of the path of the carrier.

5. An inlet for a pneumatic-despatch tube including an inlet-chamber with an outlet therefrom to the despatch-tube, a valve for closing said outlet, means for moving said valve laterally to open said outlet, and a collar on said valve to support a carrier before the valve is actuated, said collar being slotted on one side substantially as shown.

705,885. RAIL-JOINT. VICTOR L. TRUXALL, Latrobe, Pa. Filed Feb. 18, 1902. Serial No. 94,614. (No model.)

Claim.—A rail-joint comprising abutting rail-sections each having the ends of their web portions enlarged, a centrally-arranged hook formed integral with one end of one of the rails, said hook having a horizontally-disposed body portion formed integral with the web and being of the same thickness thereof, said body portion of the hook being located considerably below the head of the rail, carrying at its outer end a downwardly-curved extension having one of its edges beveled, the other of said sections formed in its abutting edge with a centrally-arranged horizontally-disposed enlarged recess adapted to normally receive the body portion of the said hook, said recess communicating at its rear end with a vertically-disposed contracted opening extending through the rail-base and adapted to receive the said downwardly-curved extension, substantially as described.

705,886. CAR-FENDER. JOHN W. WEBSTER, St. Louis, Mo. Filed Feb. 24, 1902. Serial No. 95,233. (No model.)

Claim.—1. In an automatic fender, a suitable framework or pilot having bifurcated inclined arms extending backwardly and upwardly from its forward end; bars mounted in the spaces in said bifurcated arms; pivots inserted through said arms and through said bars near their rear ends; a rod connecting the forward ends of said pivoted bars; an apron attached to said rod and extending backwardly and attached to the frame; springs attached to the rear ends of said pivoted bars and to the frame; the tension of said springs being exerted to throw the ends of the pivoted bars upwardly; loops slidingly controlling the bifurcated arms and removably engaging the rear ends of the pivoted bars as required to latch the scoop down in its normal position; arms slidingly mounted on top of the pivoted bars in position to engage said loops and extending forwardly beyond the ends of the pivoted bars; and a feeler-bar connecting the forward ends of said sliding arms, substantially as specified.

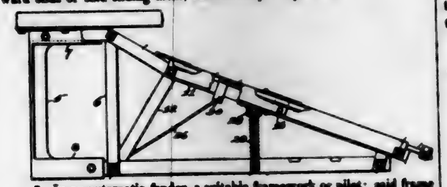

2. In an automatic fender, a suitable framework or pilot; said frame or pilot comprising vertical posts, horizontal arms extending forwardly from the lower ends of said vertical posts in a horizontal position, bifurcated inclined arms extending backwardly and upwardly from the forward ends of said horizontal arms, braces connecting the rear ends of said horizontal arms to the rear ends of said bifurcated inclined arms, second bifurcated inclined arms connecting the upper ends of said posts to the upper ends of said braces, and to the rear ends of said first-mentioned bifurcated inclined arms, and a rod connecting the upper ends of said posts; a scoop pivotally mounted on said pilot; said scoop consisting of bars mounted in the spaces in said bifurcated arms, pivots inserted through said arms and through said bars near their rear ends, a rod connecting the forward ends of said pivoted bars, straps connected to said rod and extending backwardly, arms-pieces connecting said straps together, a rod connecting the rear ends of said straps, springs extending backwardly from said rod, a second rod connecting the rear ends of said springs, straps connecting said second rod with the rod connecting the upper ends of said posts, and arms-pieces connecting the last-mentioned straps; springs attached to the rear ends of said pivoted bars and to the frame, the tension of said springs being exerted to throw the forward ends of the pivoted bars upwardly; loops slidingly controlling the bifurcated arms and removably engaging the rear ends of the pivoted bars as required to latch the scoop down in its normal position; arms slidingly mounted on top of the pivoted bars in position to engage said loops said arms extending forwardly beyond the ends of the pivoted bars; and a feeler-bar connecting the forward ends of said sliding arms; so that when the feeler-bar strikes an obstruction the loops are pushed backwardly to release the rear ends of the pivoted bars and allow the forward end of the scoop to swing upwardly, substantially as specified.

705,887. APPARATUS FOR ROLLING FLAT SHEET METAL. THOMAS WHITEHOUSE, Birmingham, England. Filed May 2, 1902. Serial No. 105,984. (No model.)

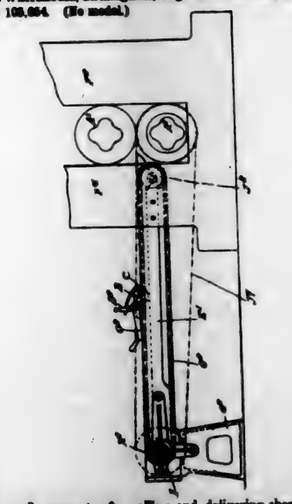

Claim.—In apparatus for rolling and delivering sheet metals in a perfectly flat state from the rolls, the combination with the sheet-finishing rolls, of a draw-bench provided with two endless chains G, G', sprocket-wheels mounted in bearings near the rolls over which said chains pass, a driving-shaft I at the opposite end of the bench, sprocket-wheels thereon over which said chains also pass, a carriage B moving on the draw-bench and having gripping-jaws C D adapted to grip the end of the sheet immediately it has passed through the rolls, dogs carried by the carriage adapted to engage and be disengaged from the chains, and means whereby the depression of the dogs causes the jaws to grip the sheet and the dogs to engage the chains, substantially as described.

705,888. CAR-ROOF. ALVA W. WILOX, Howard, Ohio. Filed Apr. 7, 1902. Serial No. 101,734. (No model.)

Claim.—1. A roof comprising planks each having its upper and lower portions projecting laterally in opposite directions each beyond the other and lying with the projecting upper portion of one upon the projecting lower portion of the other, the projecting lower portion of each plank having a longitudinally-extending channel formed in its upper face, and having an upwardly-extending bead at the outer edge of the channel, and the laterally-extending upper portion of each plank having a groove in its under face in which the bead is fitted to hold the planks against lateral movement with respect to each other, the free end of the laterally-extending upper portion of each plank and the corresponding face of the next plank having one a projection and the other a recess to receive the projection to prevent vertical movement of each plank with respect to the next.

2. A roof comprising planks each having its upper and lower portions projecting laterally in opposite directions each beyond the other, the outer end of the laterally-projecting upper portion of each plank being beveled at an obtuse angle to the upper face of the plank and the opposite side face of the upper portion of each plank being beveled at a complementary angle to the upper face of the plank, and lying with the projecting upper portion of one upon the projecting lower portion of the other, and with the corresponding beveled faces in close contact, the projecting lower portion of each plank having a longitudinally-extending channel formed in its upper face, and having an upwardly-extending bead at the outer edge of the channel, and the laterally-extending upper portion of each plank having a groove in its under face in which the bead is fitted to hold the planks against lateral movement with respect to each other.

705,889. ROAD-BREAKING MACHINE. ISMAEL WRESKI, Gross Dingen, Germany. Filed Nov. 18, 1901. Serial No. 82,786. (No model.)

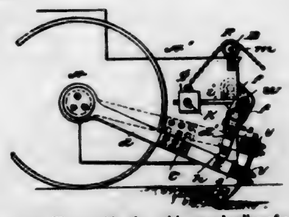

Claim.—1. The combination with a road-roller of a pair of adjustable frames, provided with toothed bars a transverse shaft pivoted to the rear of the road-roller, crank-arms secured to the ends of the shaft and the links connecting the cranks to the frames, a counter adjustable weight secured to the shaft and chains connected to the weights and passing over pulleys mounted on the shaft B, arranged in the brackets secured to the rear of the roller, all substantially as described.

2. In a device of the character described, the combination with the roller, of twin frames pivoted at their forward ends directly to the axle of said roller and arranged on each side thereof, the toothed bars interposed between said frame and the clamping-plate *v* and held in place by the bolts, the cranks secured to the shaft *w* and the links, the lower end thereof pivoted to the frame and the upper end pivoted to said crank, the weights *g* arm *i* and chains K, passing over the pulleys, all substantially as described.

3. The herein-described device for breaking up roads, comprising triangular frames, the forward-extended portions being pivoted to the axle of a road-roller said frames provided with the toothed bars, clamping-plates bolted to the frames between which and the plates said toothed bars are interposed, the crank-shaft journaled to the rear of the roller and having the arms *i i* and weights *g g*; the links *d' d'* interposed between the frames and cranks, and pivoted as described the chains, pulleys and shaft therefor, the latter mounted in brackets secured to the roller, the whole adapted to operate substantially as set forth.

705,890. **STEAM OR GAS TURBINE.** HEINRICH ZOELLY, Zurich, Switzerland. Filed Mar. 31, 1902. Serial No. 100,733. (No model.)

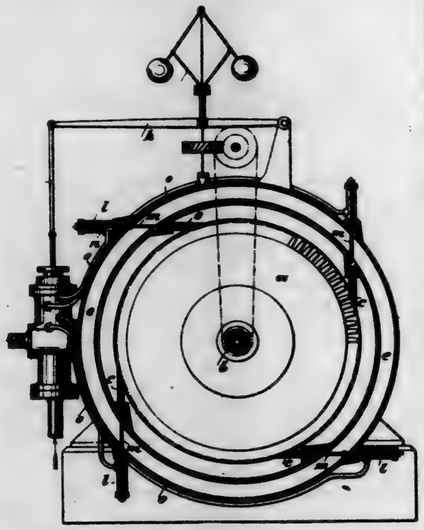

Claim.—1. In a steam or gas turbine, a plurality of inlet-nozzles, an independent valve controlling each nozzle and a piston-valve controlled by the speed of the turbine to separately actuate said valves, substantially as described.

2. In a steam or gas turbine, a plurality of inlet-nozzles, an independent valve controlling each nozzle normally closed and actuated by motive fluid, and a piston-valve controlled by the speed of the turbine to admit and cut off motive fluid to and from said valves in succession, substantially as described.

3. In a steam or gas turbine, the combination with the turbine wheel, of an annular motive-fluid passage surrounding the wheel, a plurality of nozzles leading from the passage, a motive-fluid-actuated valve to control each nozzle and governor-actuated means to control motive fluid to said valves, substantially as described.

4. In a steam or gas turbine, the combination with the turbine wheel, of an annular motive-fluid passage concentric with the wheel, a plurality of nozzles leading from the passage, a cylinder, a loaded piston and a valve connected to the piston for each nozzle, and a governor-controlled piston-valve to admit and cut off motive fluid to and from said valves successively, substantially as described.

5. In a steam or gas turbine, the combination with the turbine wheel, of a plurality of inlet-nozzles, a regulating-pin for each nozzle to control motive fluid therein, cylinders, a piston in each, and springs to load the pistons, each pin connected to a piston, a separate pipe connection to each cylinder, a controlling-cylinder to which each pipe is connected and a piston-valve, controlled by the speed of the turbine, in said controlling-cylinder to admit motive fluid to and cut it off from the first-mentioned cylinder in succession, substantially as described.

6. In a steam or gas turbine, a plurality of inlet-nozzles, an independent valve controlling each nozzle and actuated by motive fluid, and means controlled by the speed of the turbine to separately control the supply of motive fluid to said valves, substantially as described.

7. In a steam or gas turbine, a plurality of inlet-nozzles, an independent valve controlling each nozzle actuated by motive fluid, and a valve controlled by the speed of the turbine to admit motive fluid to and cut it off from said turbines, substantially as described.

705,891. **FIRE-ESCAPE.** MARIE ABRAHS, New York, N. Y. Filed Apr. 30, 1902. Serial No. 105,947. (No model.)

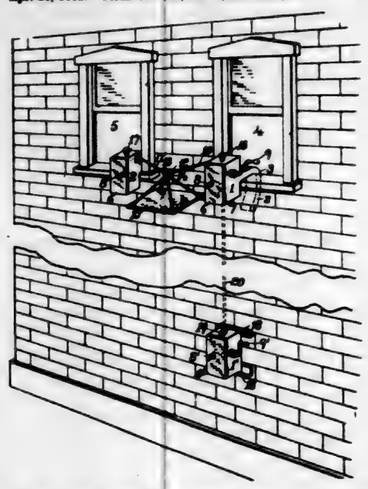

Claim.—In a portable fire-escape, the combination of the box 1 containing winding mechanism, the box 2, containing winding mechanism, each of said boxes 1 and 2 having sill-hooks 3, the cable 10, the cable 11, and the platform 15, substantially as described.

705,892. **STEERING MECHANISM.** FREDERICK R. ALLEN, Boston, and RAYMOND H. DAFFORTH, Salem, Mass., assignors to the Improvements Manufacturing Company, Boston, Mass., a Corporation of Maine. Filed Dec. 17, 1900. Serial No. 40,088. (No model.)

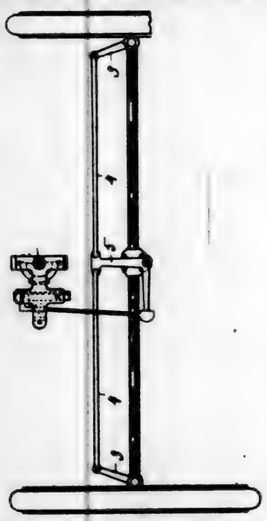

Claim.—1. In a steering mechanism, the combination of a guiding or steering member, a rotary cam having one or more complete turns or convolutions of a coiled or non-returning groove of uniform width, a movable cam-engaging member connected with said guiding member and having a single circular stud closely fitting said groove at all points in the operating length thereof and movable in a path which remains substantially normal to the groove through one or more complete rotations of the cam whereby the cam-engaging member is locked against movement when the cam is stationary, and means to rotate the cam and thereby impart a steering movement to the cam-engaging member.

2. In a steering mechanism, the combination of a vehicle-body, an underframe movable vertically with respect thereto, a steering wheel or wheels swiveled on said underframe, steering connections mounted on said frame, and a controlling and locking mechanism mounted on the body and including a rotary cam-like locking member, a downwardly-projecting arm connected with said member and movable by its rotation, and a substantially horizontal link connecting the lower end of said arm with the said steering connections.

705,893. **FOLDABLE STOOL.** PAUL B. ANTES, Topeka, Kans., assignor to Topeka Tent and Awning Company, a firm consisting of William Schlick, Frederick A. Antes, and Benjamin W. Carter, Topeka, Kans. Filed Dec. 16, 1901. Serial No. 86,092. (No model.)

Claim.—1. In a foldable stool, the combination, with four legs having parallel sides, and a rectangular spacing-block engaged with the legs between their ends, of a rectangular keeper-band embracing the legs, and pivots passing through perforations in the band and legs and affixed in the spacing-block.

2. In a foldable stool, the combination, with four legs each comprising a straight rectangular strip of wood, and a rectangular spacing-block engaged by a respective side of each leg, of a square keeper-band mounted on the assembled legs, and a pivot for each leg, passing loosely through the band and leg and affixed in the block, each leg having a clearance-notch in a suitable corner to permit the free, full opening of said legs, which is defined by their contact upon the upper and lower edges of the band.

705,894. **DRIVE-GEAR FOR TRACTION-ENGINES.** DAVID R. ARNOLD, Terre Haute, Ind. Filed Oct. 24, 1901. Serial No. 79,231. (No model.)

Claim.—1. The combination with the supporting-frame; of a steering-wheel located at one end thereof, traction-wheels loosely journaled upon the axles of the supporting-frame and provided with clutch members at the opposite ends of their hubs, clutch members located at each end of the axle and locked to rotate therewith and slide longitudinally thereon, springs for holding said clutch members into engagement with the clutches on the outer ends of the hubs, clutch members located upon the axles adjacent to the inner ends of the hubs and locked to rotate therewith and slide thereon and adapted to engage the clutch members at the inner ends of the hubs, and means for shifting the last-named sliding clutch members, substantially as described.

2. The combination with the supporting-frame; of an axle journaled in said supporting-frame and provided at each end with two clutch members keyed to rotate with the axle and slide thereon, traction-wheels loosely journaled upon said axle and each provided with a clutch member at each end of its hub, springs for holding the sliding clutch members into locked engagement with the outer clutch members of the hubs, a second set of clutch members keyed to rotate with and slide upon the axle and located to engage the clutch members on the inner ends of the axles, the teeth of the inner set of sliding clutch members being pitched in one direction and the teeth of the outer set being pitched in an opposite direction, and means for shifting the inner set of clutch members, substantially as specified.

3. The combination with the supporting-frame of a traction-engine; of an axle having a groove at its end, a two-part spline or feather fitted in said groove and provided with legs, a clutch member having a groove to engage one of said legs to cause the clutch member to turn with the spline or feather in the rotation of the axle, a traction-wheel located between two of the legs of the spline or feather and free to rotate therebetween but prevented from having endwise movement on the axle, a second clutch member mounted on the axle and having a groove engaging the outermost leg to lock said clutch member to rotate with said axle but to permit it to have a sliding movement thereon, the hub of said wheel being provided with clutch members to be engaged by the aforesaid clutch members, substantially as set forth.

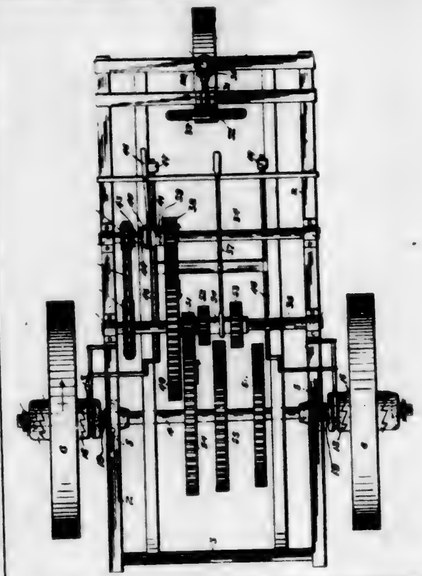

4. The combination with the supporting-frame of a traction-engine; of a steering-wheel and traction-wheels, clutch devices for locking the traction-wheels to said axle to turn in either direction of movement of said axle, differential gear-wheels fixed to said axle, a drive-shaft, a sprocket-wheel and a gear-wheel loosely mounted upon said drive-shaft, clutch members splined upon said drive-shaft to lock either the gear-wheel or the sprocket-wheel to rotate the said drive-shaft, a counter-shaft suitably mounted in the main frame and provided with differential gear-wheels to engage the differential gear-wheels aforesaid, a gear-wheel fixed to said counter-shaft and adapted to mesh with the gear-wheel on the drive-shaft, a sprocket-wheel fixed to the counter-shaft and connected to the sprocket-wheel of the drive-shaft by a chain and adapted to rotate the counter-shaft in a direction reverse to that when the gear-wheel is in mesh with the fixed gear-wheel on the counter-shaft, and means for shifting the several clutch members, substantially in the manner described.

705,895. **COVERING FOR DEMIJOHNS.** JACOB G. BAER, Brooklyn, N. Y. Filed Jan. 9, 1902. Serial No. 88,967. (No model.)

Claim.—1. A covering for demijohns, comprising a shell made of a woven fabric material, and a lining for the shell made of soft material such as paper, the lining at the spherical body portion of the vessel being formed of rings to conform to the curvature of the said spherical portion, as set forth.

2. A covering for demijohns, comprising a shell made of a woven fabric material made in sections, of which one is the body-section and the other the neck-section, the body-section extending onto the neck portion of the vessel to be overlapped by the lower end of the neck-section, and a lining for the said shell made of a soft material such as paper, the lining consisting of a body-section, rings and a neck-section, as set forth.

3. A covering for demijohns, comprising a shell, a lining for the same, an annular flange at the lower end of the shell, a metallic ring on the said flange, and prongs carried by the said metallic ring and extending inwardly from the ring to engage the shell at the bottom of the vessel, as set forth.

4. A covering for demijohns, comprising a shell, a lining for the same, a ring interposed between the lining and shell, a neck-band on the vessel, and a handle engaging the neck-band and the said ring, as set forth.

5. A covering for demijohns, comprising a shell, a lining for the same, a ring interposed between the lining and shell, a neck-band on the vessel, and a handle engaging the neck-band and the said ring, the handle having its lower portion formed with a hook hooking onto the ring, and the handle being bent inwardly over the ring, as set forth.

6. A covering for demijohns, comprising a shell, a lining for the same, the lower ends of the shell and lining extending over the outer portions

of the bottom of the vessel, an exterior flange on the said shell at the lower end thereof, a metallic ring held on the said flange, and prongs extending inwardly from the said ring to engage that portion of the covering held against the bottom of the vessel, as set forth.

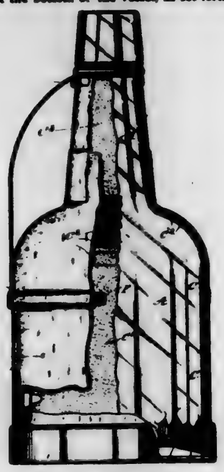

705,896. FEED-TROUGH. JAMES W BARNES, Beaverton, Oreg. Filed Apr. 9, 1902. Serial No. 102'068. (No model.)

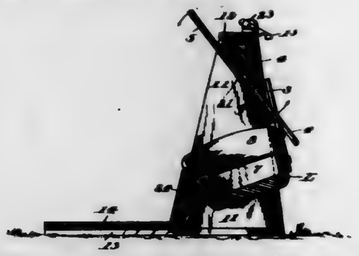

Claim.—1. A feed-trough comprising a trough hung upon pivots at the center of its ends so as to have a rotary adjustment, and a guard hung about pivots at the middle of its ends immediately above the trough, so as to be reversible, said trough and guard having locking devices cooperating with each other to hold the parts in their proper positions substantially as described.

2. A feed-trough, comprising a trough hung about centers at its ends, so as to have a rotary adjustment, and having also a projecting arm acting as a manipulating-handle and also as a locking device, and a guard hung about centers at its ends above the trough and having a spring-latch engaging the locking-arm of the trough substantially as described.

3. A feed-trough, comprising a trough hung about centers at its ends so as to have a rotary adjustment and having also a projecting arm acting as a manipulating-handle and also as a locking device, a guard hung about centers at its ends above the trough and having a spring-latch engaging the locking-arm of the trough, upright end frames with a cross-bar at the top, and a gravity-catch on said cross-bar adapted to engage and hold the guard substantially as described.

4. A feed-trough comprising a platform 14 with sills 13, 13, upright end frames 11, 11, mounted thereon and having cross-bar 12 at the top and lower cross-bar 24 at the bottom next to the platform, a trough hung on a horizontal axis between the end frames, and a guard-board also hung between the end frames on a horizontal axis, and locking devices for holding the trough and guard in two positions as described.

705,897. MOTOR. ROBERT L. RARSHART, Charleroi, Pa. Filed June 3, 1901. Serial No. 62,961. (No model.)

Claim.—1. In an explosive-engine, the combination of a receiver for the fluid-pressure of the engine, a valve commanding the fuel-supply, a movable arm connected with the valve, a device for engaging the arm to actuate the valve, and means controlled by the fluid-pressure within the receiver, such means being capable of throwing the arm out of the path of the said device, for the purpose specified.

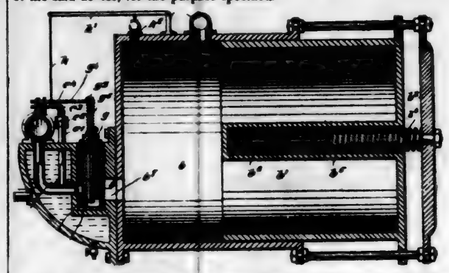

2. In an explosive-engine, the combination with a receiver for the fluid-pressure of the engine, of a valve commanding the fuel-supply, a swinging arm on the stem of the valve, a sliding actuating device for engaging the arm to operate it and thereby the valve, and means controlled by the fluid-pressure within the receiver for swinging the said arm out of the path of the sliding actuating device.

3. In an explosive-engine, the combination with a receiver, and a safety-valve therefor, of a valve for controlling the fuel-supply, an arm pivoted to the stem of the valve, means for operating the arm and thereby the valve, and a connection between the said arm and the safety-valve for swinging the arm into inactive position.

4. In an explosive-engine, the combination with the fuel-supply, and a spring-actuated valve therein provided with an arm extending from its stem, of a pump, and a pivoted dog connected with the pump-rod into the path of which the arm of the valve projects.

5. In an explosive-engine, the combination with the fuel-supply, and a spring-actuated valve therein, provided with an arm extending from its stem, of a pump, a slide on the pump-barrel and connected with the pump-rod, and a dog pivoted on the slide and into the path of which the arm of the valve projects.

6. In an explosive-engine, the combination with a receiver of a valve-chamber communicating with the receiver, a spring-actuated hollow valve in valve-chamber, a fuel-supply in communication with the valve-chamber, a pump also in communication with the valve-chamber, and means whereby the valve will be opened by the pump.

7. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a hollow valve in the chamber, means for normally holding the valve closed, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, and means for operating the valve from the pump.

8. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a pump, a pipe leading from the pump to the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, a hollow and spring-pressed valve in the valve-chamber and provided with ports adapted to register alternately with the port leading into the receiver and with the pipe leading from the pump, and means connected with the pump-rod for operating the said valve, as set forth.

9. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a valve in the chamber, means for normally holding the valve closed, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, means for operating the valve from the pump, and an igniting device controlled by the said valve.

10. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a hollow valve in the chamber, means for normally holding the valve closed, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, means for operating the valve from the pump, and an igniting device in the hollow valve and controlled by the movement of said valve.

11. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a valve in the chamber, means for normally holding the valve closed, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, a valve in the fuel-supply, and means for operating the said valves from the pump.

12. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a valve in the chamber, means for normally holding the valve closed, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, means for holding the valve closed, means for operating the said valves from the pump, and an igniting device controlled by the first-named valve.

13. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a hollow valve in the chamber, means for normally holding the valve closed, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, a valve in the fuel-supply, means for holding the valve closed, means for operating the said valves from the pump, and an igniting device in the valve and controlled by the same.

14. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a spring-actuated valve in the chamber and provided with an arm on its stem, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, a spring-actuated valve in the fuel-supply and provided with an arm on its stem, a slide connected with the pump-rod, and pivoted dogs on the slide and adapted to engage the arms of the said valves.

15. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a normally closed valve in the chamber and provided with an arm on its stem, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, a normally closed valve in the fuel-supply and provided with an arm on its stem, a slide connected with the pump-rod, pivoted dogs on the slide and adapted to engage the arms of the said valves, and an igniting device controlled by the first-named valve.

16. In an explosive-engine, the combination with a receiver, of a valve-chamber communicating with the receiver, a spring-actuated hollow rotating valve in the chamber and provided with an arm on its stem, a pump connected with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, a spring-actuated valve in the fuel-supply and provided with an arm on its stem, a slide connected with the pump-rod, pivoted dogs on the slide and adapted to engage the arms of the said valves, and an igniting device in the hollow valve and controlled by the movement of said valve.

17. In an explosive-engine, the combination with a receiver, and a safety-valve therefor, of a fuel-supply, a valve therein, provided with a pivoted arm on its stem, means for engaging said arm to operate the valve, a pivoted lever operated by the safety-valve, and a flexible connection between the lever and arm of the valve.

18. In an explosive-engine, the combination with a receiver, and a safety-valve therefor, of a pump, a fuel-supply, a valve therein, means for operating the valve from the pump, and means for controlling the operation of the said valve from the safety-valve.

19. In an explosive-engine, the combination with a receiver, and a safety-valve therefor, of a pump, a fuel-supply, a valve in the fuel-supply and provided with a pivoted arm on its stem, means carried by the pump-rod for engaging the arm of the valve-stem to operate the valve, and means whereby the arm of the valve-stem will be raised into inoperative position from the safety-valve.

20. A motor, comprising an expanding receiver, a motor proper with which the receiver communicates, a valve-chamber communicating with the receiver, a valve in the valve-chamber, a pump in communication with the valve-chamber, a fuel-supply also in communication with the valve-chamber, a fuel-supply connected with the pipe leading from the pump to the valve-chamber, means for operating the valves from the pump, and an igniting device controlled by the first-named valve.

21. A motor, comprising an expanding receiver, a motor proper with which the receiver communicates, a valve-chamber communicating with the receiver, a hollow valve in the chamber, a pump in communication with the valve-chamber, a fuel-supply also in communication with the said valve-chamber, a valve in the fuel-supply, means for operating the valves from the pump, and an igniting device in the hollow valve and controlled by the movement thereof.

22. A motor comprising an expanding receiver having a safety-valve, a motor proper in communication with the receiver, a valve-chamber communicating with the receiver, a hollow rotating valve in the chamber, a pump in communication with the valve-chamber, a fuel-supply also in communication with the valve-chamber, a valve in the fuel-supply, means for operating the valves from the pump, means for controlling the operation of the valve in the fuel-supply from the safety-valve of the receiver, and an igniting device in the hollow valve and controlled by the movement thereof.

705,898. LOOM-SHUTTLE. HENRY BARNSLEY, Providence, R. I., assignor to Crompton & Knowles Loom Works, Worcester, Mass., a Corporation of Massachusetts. Filed Nov. 18, 1901. Serial No. 82,617. (No model.)

Claim.—1. In a loom-shuttle, in combination, the receiver for the working weft-supply, a follower mounted to move in the direction of the length of the weft-receiver and controlled as to such movement by the mass of yarn constituting the said weft-supply, and a movable trip or controller held in abnormal position by the said follower and released to assume its normal position by the movement of the follower lengthwise of the weft-receiver, which is permitted by depletion of the said working weft-supply to the predetermined extent.

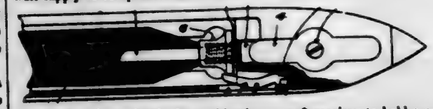

2. In a loom-shuttle, in combination, a weft-receiver to hold a cop of weft or filling, a spring-actuated follower to coact with the base of the said cop, movable lengthwise of the said weft-receiver, and adapted to be held in an abnormal position by the said base, and a trip or controller movably connected with the shuttle-body, having an engaging portion adapted to occupy a position in which to coöperate with outside instrumentalities, the said follower engaging with the said trip or controller to hold the latter in abnormal position until permitted by the unwinding of the cop to become disengaged from the trip or controller.

3. In a loom-shuttle, in combination, the spindle, the follower applied thereto, the spring acting in connection with the said follower to press the same against a cop of weft or filling on the said spindle, and the spring-actuated trip or controller engaged by the said follower and thereby held in an abnormal position, the said trip or controller moving into its normal position when by the unwinding of the cop the follower is permitted to release the same.

705,899. SAW-FILING DEVICE. ANDREAS J. BOSE, Williamsport, Pa. Filed Nov. 27, 1901. Serial No. 83,205. (No model.)

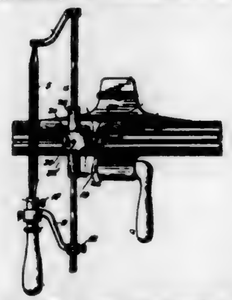

Claim.—In a saw-filing device, the combination with a saw-clamp and a file-holder having a guide-rod; of a slide adjustable longitudinally on the clamp and provided with a bracket having a bearing, a yoke in which the guide-rod of the holder is slidably mounted, said yoke being provided with a pivot-opening and an arc-slot, a yoke-carrier having opened ears forming a guide to receive the yoke and provided with a trunnion journaled in said bearing, said trunnion having at one end a collar engaging one end of the bearing to hold it against longitudinal movement in one direction, and an annular series of seats, a washer secured to the trunnion and engaging the other end of the bearing to hold the trunnion against longitudinal movement in the opposite direction, a set-screw upon the bearing to engage the seats in the trunnion to secure it in adjusted position against rotation, a pivot-pin passing through the pivot-opening in the yoke and pivotally connecting the same to the ears of the bracket, and an adjusting-screw passing through the arc-slot in the yoke and adapted to draw the ears together to clamp the yoke, substantially as specified.

705,900. LEAD-PENCIL. LEO C. REISTS, Philadelphia, Pa. Filed Dec. 27, 1901. Serial No. 87,420. (No model.)

Claim.—1. A pencil-body having a lengthwise opening provided near the point with an enlargement forming a socket which is tapered upward, and a rubber band fitted in said socket, as shown and described.

2. A pencil-body having a lengthwise opening which is enlarged near the point and formed with a flat base and upward taper, and a lead, and encircling elastic band arranged in the enlargement of the opening, substantially as shown and described.

3. A pencil comprising a body having a lengthwise opening which is enlarged at one point and tapered upward, and an elastic piece held in the enlargement of the opening and adapted to bear upon a slidable lead, as shown and described.

4. A pencil comprising a body having a lengthwise opening which is enlarged near the point, to form a cavity having a flat base and tapered upward from such base, and a lead and elastic piece fitted in such cavity and pressing upon the lead, substantially as shown and described.

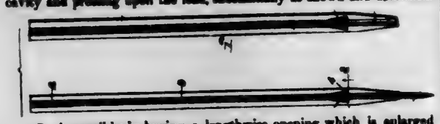

5. A pencil-body having a lengthwise opening which is enlarged near the point, to form a cavity having a flat base and tapered upward from such base, and adapted for reception of an elastic lead-detainer, as shown and described.

705,901. BUGGY-TOP RAISER. MORGAN BROWN, Lilley, Ga. Filed Nov. 12, 1901. Serial No. 82,004. (No model.)

Claim.—The combination with a vehicle-top and the rear knuckle-braces thereof, of a rock-shaft, handles, clamps each comprising two plates having converging channels and a clamping-bolt engaged through the plates said plates being disposed with their corresponding channels in registration, with a knuckle-brace and a handle thereon respectively, bearings for the shaft secured to the vehicle and comprising movable members and bolts for holding them in position, and helical springs wound upon the shaft and each having its ends respectively clamped beneath the heads of the bolts of the clamps and bearings.

705,902. ACETYLENE-GAS GENERATOR. HERBERT L. BOOE, Walnutridge, Ark. Filed July 11, 1900. Serial No. 23,264. (No model.)

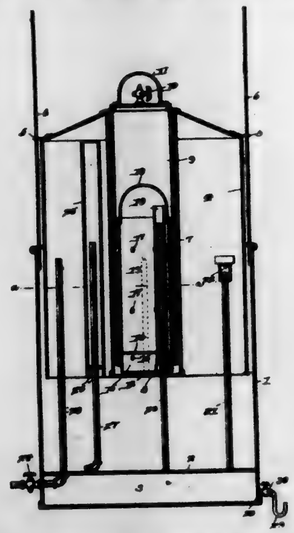

Claim.—The combination in an acetylene-gas generater, of the water-tank 1, a bell 4 having a centrally-disposed open-top cylinder 7, a perforated bottom for said cylinder, an open-bottom generating vessel 9 situated within said cylinder and having a handle 11, a U-shaped strap 12 having its ends pivotally connected to the opposite sides of the vessel and resting on the perforated bottom of the cylinder and supporting said vessel at a distance above said bottom, a carbid vessel in said generating vessel, said carbid vessel being supported on said strap and removable with the generating vessel from the apparatus, said strap serving as a means for readily detaching the carbid vessel from the generating-chamber, substantially as specified.

705,908. TABLE. GEORGE H. BULLOCK, Wakefield, R. I. Filed June 18, 1901. Serial No. 65,094. (No model.)

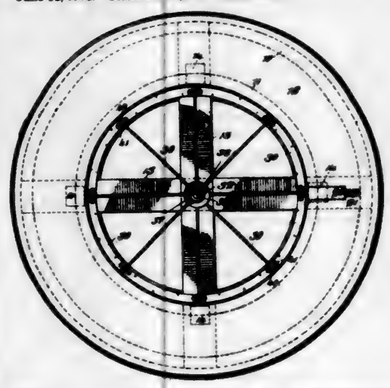

Claim.—1. A table, comprising a circular stationary outer section having a central opening and provided with feet and with bars on its bottom portion, extending across said central opening, a circular track secured upon the said bars at the margin of said opening, a socket-block secured to the cross-bars at the center thereof, an adjustable screw mounted in the block and having a recessed upper end, a hub mounted to turn on the socket-block and provided with radial arms, wheels at the outer ends of the arms, and a circular central revoluble section provided with a conical block at its center fitting in the recess of the screw and with a circular track on its lower face at the margin thereof, as set forth.

2. A table, comprising a circular stationary outer section having a central opening and provided with feet and with bars extending across the central opening, a circular track secured upon the bars at the margin of the opening, an adjustable support carried by the said bars at the center of the opening, a hub mounted to revolve around the support and provided with radial arms carrying wheels at their outer ends, and a revoluble circular inner section mounted upon the said support, within the opening of the stationary section and provided with a marginal rib at its upper edge extending over the stationary section and with a circular track on its lower face at the margin thereof, as set forth.

3. In a table, an outer stationary marginal section provided with legs one of which is provided with a longitudinal bore whose lower end is enlarged, and with a slot leading into said enlarged end of the bore, a revoluble central section, a brake mounted to slide in the stationary section, a spring for holding the brake retracted, a cord or chain secured to the brake and extending down into the bore of the leg, and a block secured to the lower end of the cord, said block being arranged in the enlargement of the bore of the leg and provided with a pin projecting out through the slot of the leg, as set forth.

4. A table, comprising a circular stationary outer section having a central opening and provided with feet and with bars extending across said opening, a circular track secured upon the bars at the margin of the opening, an adjustable support carried by the said bars at the center of the opening, a hub mounted to revolve around the support and provided with radial arms carrying wheels at their outer ends, a revoluble central circular section mounted in the opening upon the support and provided with a circular track on its lower face at the margin thereof, and a sliding brake mounted in the stationary section and adapted to engage the periphery of the revoluble section, as set forth.

5. A table, comprising a circular stationary outer section having a central opening and provided with feet and with bars crossing the central opening, a circular track carried by the cross-bars at the margin of the opening, an adjustable bearing carried by the said bars at the center of the opening, and having a socket in its end, a hub mounted to revolve around the bearing and provided with radial arms carrying wheels at their ends, a revoluble central section provided with a conical block at its center fitting in the socket of the bearing and provided with a bar on its under face at the margin, and a circular track secured to said bar, as set forth.

6. In a table the combination with a stationary outer section having a central opening and provided with an annular track at the margin of the opening, and a revoluble central section provided with an annular track on its under marginal surface, and with a conical block at its center, of a socket-block at the center of the stationary section, a screw screwing into said block and having a conical socket in its end receiving the conical block of the revoluble section, a hub mounted to revolve on the socket-block, and provided with radial arms, and wheels mounted on the outer ends of the said arms and traveling on the tracks, as set forth.

7. In a table, the combination with a stationary marginal section having a recess in its under face, and a revoluble central section mounted in the space inclosed by the outer section, of a sliding brake mounted in the recess of the stationary section and adapted to engage the periphery of the revoluble section, a spring for holding the brake out of engagement with the revoluble section, and a cord having one end secured to the brake and its other end provided with means to be engaged by the foot of the occupant of the table to operate the brake, as set forth.

705,904. DESULFURIZING OF SULFID ORES PREPARATORY TO SMELTING. ARCHIBALD D. CARMICHAEL, Broken Hill, New South Wales, Australia. Filed Nov. 11, 1901. Serial No. 81,941. (No specimens.)

Claim.—1. The process of treating mixed sulfid ores, which consists in mixing with said ores a sulfur compound of a metal of the alkaline earths, starting the reaction by heating the same, thereby oxidizing the sulfid and reducing the sulfur compound of the alkali metal, passing a current of air to oxidize the reduced sulfur compound of the metal of the alkalies preparatory to acting upon a new charge of sulfid ores, substantially as and for the purpose set forth.

2. The process of treating mixed sulfid ores, which consists in mixing calcium sulfate with said ores, starting the reaction by means of heat, thereby oxidizing the sulfid ores, liberating sulfurous-acid gas and converting the calcium sulfate into calcium sulfid and oxidizing the calcium sulfid to sulfate preparatory to treating a fresh charge of sulfid ores, substantially as and for the purpose set forth.

705,905. ELEVATING ROLLER ATTACHMENT. ALBERT H. CENTNER, Chicago, Ill. Filed Mar. 14, 1902. Serial No. 98,312. (No model.)

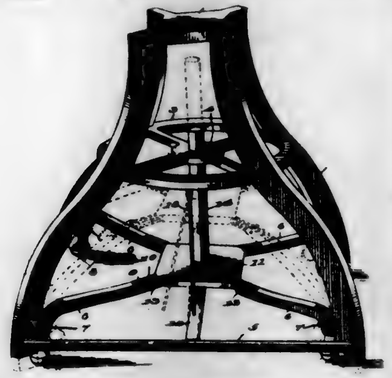

Claim.—1. An elevating roller attachment of the class set forth comprising a series of uprights connected to an upper bed, a series of levers movably connected to the inner portions of the uprights and having depending feet with rollers thereon, a central, movable device to which the said levers are attached, and a treadle connected to said movable device for throwing the rollers of the levers into operative position.

2. An elevating roller attachment comprising upright devices having levers movably connected thereto, the said levers being provided with depending feet having rollers thereon, and centrally-located means for operating the levers and throwing the rollers thereof below the lower ends of the said devices.

3. An elevating roller attachment of the class set forth comprising a series of upright supporting devices, levers movably attached to the inner portions of said devices and provided with outer depending feet having rollers thereon, central operating mechanism connected to said levers for throwing the rollers of the latter below the lower ends of the upright supporting devices, and means for locking the said central operating mechanism against movement when the rollers on the levers are depressed.

4. An elevating roller attachment of the class set forth, comprising a series of uprights, levers attached to the inner, lower portions thereof and provided with outer depending feet having rollers thereon, a spider horizontally disposed and connected to the uprights above the plane of the levers, a central table attached at opposite points to the levers and provided with an upwardly-projecting spindle movable through the spider, and a treadle attached to the table for lowering the latter and throwing the rollers on the levers into operative position.

5. An elevating roller attachment of the class set forth, comprising a series of uprights, levers attached to the inner, lower portions thereof and provided with outer depending feet having rollers thereon, a spider horizontally disposed and connected to the uprights above the plane of the levers, a central table attached at opposite points to the levers and provided with an upwardly-projecting spindle movable through the spider, a treadle attached to the table for lowering the latter and throwing the rollers on the levers into operative position, and a locking-rod loosely depending from the spider and adapted to engage the treadle.

705,906. RETORT FOR WOOD DISTILLATION. WILLIAM R. CHAPMAN, Boyne City, Mich. Filed Mar. 17, 1902. Serial No. 98,569. (No model.)

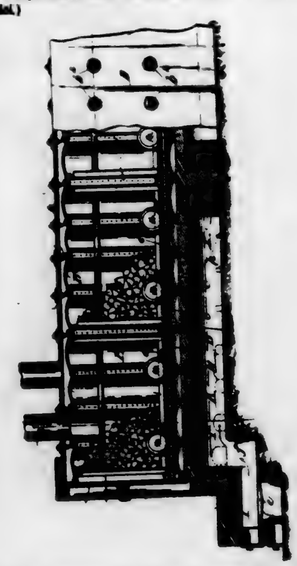

Claim.—1. A retort made of a series of separate plates said plates being bent or corrugated in direction transverse to the longitudinal axis of the retort substantially as described.

2. A retort consisting of a transversely-corrugated shell having its top and bottom and side walls made in separate plates, and continuous angle-bars arranged longitudinally to the retort along the corners for uniting said plates substantially as described.

3. A retort having corrugated sides combined in fixed relation with an outer casing of masonry and forming between said masonry casing and the corrugated plates closed flues for the passage of smoke and the products of combustion, each corrugation having its edges joined to the masonry walls to completely shut off the connection between the flue which it helps to form and the flues adjoining, whereby each flue is made capable of being opened or closed independently of the flue adjoining, substantially as described.

4. A retort made of sheet-metal plates corrugated transversely to the longitudinal axis of the retort, combined with an inclosing casing and anchors connecting the joints between the plates fixedly to the inclosing casing substantially as described.

5. A retort constructed as a sheet-metal shell corrugated transversely, rails laid longitudinally on the bottom of the retort, and supporting blocks or chairs for the rails between the corrugations of the bottom of the retort substantially as and for the purpose described.

6. The combination with a retort corrugated transversely; of an inclosing casing forming smoke-flues between the same and the corrugated retort, and a subjacent furnace with central and side fires, opening into

each other at the end remote from the furnace, and passage-ways opening from the side flues into the space between the retort and casing, said passage-ways increasing in size toward the more remote point of travel substantially as described.

7. The combination with a retort corrugated on all four sides transversely, an inclosing casing of masonry leaving a free space all around the corrugated retort, and a subjacent furnace with flues communicating with the free space substantially as described.

8. In a retort of the kind described, the combination with an exterior wall; of an inner sheet-metal shell composed of separate plates corrugated transversely to the retort and riveted together in transverse seams, an angle-iron outside the shell having one flange retained by the rivets, a tie-bolt secured to the other flange of the angle-iron and extended to the exterior of the incasing wall, and a washer or clamp-plate secured to the outer end of the tie-bolt substantially as described.

705,907. FURNACE FOR RETORTS. WILLIAM B. CHAPMAN, Boyne City, Mich. Filed Mar. 17, 1902. Serial No. 98,570. (No model.)

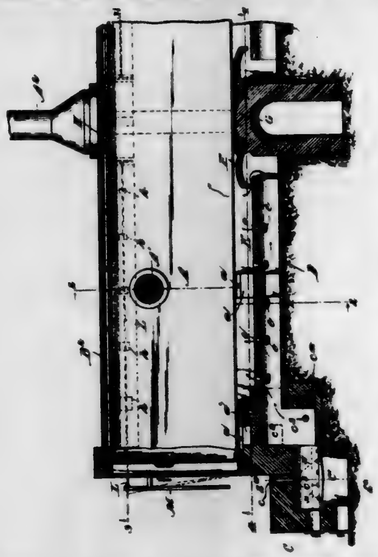

Claim.—1. A furnace for a retort comprising a fire-box extending beyond the end of the retort and having a feed-hole for fuel in the top of the same and a fire-flue communicating with the said fire-box extending longitudinally beneath the retort on a higher level than the fire-box and having interposed between the retort and said flue a perforated distributing-partition substantially as shown and described.

2. A furnace for a retort comprising a fire-box extending beyond the end of the retort and having a feed-hole for fuel in the top of the same, and a fire-flue communicating with the said fire-box and extending longitudinally beneath the retort on a higher level than the fire-box, a perforated arch covering said flue and extending to a point near the middle of the retort, and an overhanging deflector-plate at the inner end of said arch substantially as described.

3. The combination with two retorts; of the two outside walls and the middle partition-wall between the retorts, the partition-wall having exit-flues built in its top, and independent furnaces and hot-air flues located beneath each retort substantially as described.

4. The combination with the two retorts and their outer inclosing walls and furnaces; of a middle partition-wall having two horizontal flues built in the top of the same and opening into the space about the retorts, dampers controlling said flues, pull-rods attached to the dampers and extending to the ends of the retorts, and levers connected to said pull-rods substantially as and for the purpose described.

5. The combination with the two retorts, and their outer inclosing walls, and furnaces; of a middle partition-wall having two horizontal flues built in the top of the same and opening at their ends into the smoke-stack and along their sides into the space about the retorts through holes increasing in size away from the smoke-stack substantially as and for the purpose described.

6. The combination with two retorts, and their outer inclosing walls and furnaces; of a middle partition-wall having two horizontal flues built in the top of the same with a common chamber H′ at the end opening into the smoke-stack and a series of holes in the sides opening into the spaces about the retorts, a damper-frame with hinged dampers set in the chamber H′ at the ends of the flues, and pull-rods extending through said flues to the front of the furnace and provided with means for working the same substantially as described.

7. A furnace for burning pulverulent or comminuted material, comprising a fire-box having its air-inlets above the grate-bars, said fire-box having a feed-hole for the comminuted fuel in the roof, and said roof being made as a low arch arranged in relation to the grate as described whereby the angle of repose of the pile of comminuted fuel fed through the roof onto the grate shall not cover up and obstruct the air-inlets above the grate-bars combined with a retort and its setting, said setting having a return longitudinal flue built below the retort with one end of the lower portion of said flue in communication with the furnace-chamber, and the other portion of the flue opening into the space about the retort substantially as and for the purpose described.

705,908. CUSHIONED HORSESHOE. PHILLIP J. COATES, Macon, Ga. Filed Feb. 13, 1902. Serial No. 93,916. (No model.)

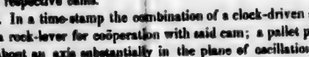

Claim.—A horseshoe comprising a rubber body having a chamber open at top, flaps for closing said chamber, and a nailing and reinforcing plate removably seated in said chamber and concealed by said flaps, substantially as set forth.

705,909. TIME-STAMP. NORMAN COLLINS, London, England, assignor to the Empire Cash Register, Limited, London, England. Filed July 10, 1901. Serial No. 67,737. (No model.)

Claim.—1. In a time-stamp the combination of type-wheels respectively adapted to denote hours and tens and units of minutes; racks respectively in gear with said type-wheels for imparting rotary movement thereto; rock-levers for operating the respective racks; clock-driven snail-cams stepped to correspond respectively to hours and to tens and units of minutes of angular movement for determining the amplitudes of the oscillations of said levers; springs for moving said levers up to the respective cams; a hand-operated main shaft and mechanism actuated thereby adapted to normally hold the said levers out of contact with the said snail-cams and to permit by the revolution of said shaft the levers to be brought, by the respective springs, into operative contact with the said cams, for revolving the respective type-wheels to extents determined by the respective cams.

2. In a time-stamp the combination of a clock-driven stepped snail-cam; a rock-lever for coöperation with said cam; a pallet pivoted to said lever about an axis substantially in the plane of oscillation of the lever and coincident with the direction of motion thereof, for making unyielding contact with the periphery of said cam for the purpose of determining the amplitude of oscillation of the lever; and a spring adapted to normally hold the pallet in position to make such unyielding contact with the cam, and to permit the pallet to yield and be swung aside when caught by the cam in its rotary movement.

3. In a time-stamp, the combination of clock-driven snail-cams stepped to correspond respectively to units and tens of minutes of angular movement and rotated together as one; a spring connection between said cams and the hours-arbor of the clock, a detent for periodically engaging and detaining said cams in order to put the spring in tension, and means actuated by said arbor whereby to cause the detent to be withdrawn after a short interval of detention so as to permit the said cams to make under the stress of the spring a sudden angular advance, at the completion of every tenth of a revolution of the units-of-minutes cam.

4. In a time-stamp the combination of clock-driven snail-cams stepped to correspond respectively to units and tens of minutes of angular movement and rotated together as one; a spring connection between said cams and the hours-arbor of the clock, a detent for periodically engaging and detaining said cams in order to put the spring in tension, means actuated by said arbor for withdrawing the detent so as to permit the cams to make a sudden angular advance under the stress of the spring, a snail-cam stepped to correspond to hours of angular movement, a ratchet on said cam, a spring-actuated driving-pawl to engage said ratchet for actuating the hours-cam intermittently and suddenly and a snail-cam rotated by the hours-arbor of the clock for straining the driving-pawl spring and controlling its action, the operation of the hours-cam-propelment mechanism being coördinated with one of the sudden movements of the units and tens of minutes cams.

5. In a time-stamp, the combination with type-wheels, a printing-platen for taking impressions from said wheels and a hand-operated main shaft, of cam mechanism actuated at each revolution of said shaft and adapted to act on the platen so as to move the same toward the type by a sudden movement and consisting of a cam lever on an axis revolved at each revolution of the hand-shaft, a spring connected to said cam and axis so as to be wound up by the revolution of the hand-shaft when the cam is held stationary, a dog in connection with the cam, a cylinder-escapement geared with and rotated by said shaft and adapted to be engaged by the dog so as to cause the arrest of the cam and the winding of the spring during the first part of the revolution of said shaft, and adapted to permit the escape of the dog and the sudden revolution of the cam under the stress of the spring at a given point in the revolution of the shaft as described.

6. In a time-stamp the combination with type-wheels, a printing-platen for taking impressions from said wheels and a hand-operated main shaft, of cam mechanism actuated at each revolution of said shaft and adapted to act on the platen so as to move the same toward the type in two successive stages of relatively slow and sudden movement, said cam mechanism consisting of two rotary cams adapted to act successively on the platen, the cam for producing the slow movement being operated directly by the revolution of said shaft, and the other cam being connected to the said shaft through the medium of a spring adapted to be wound by the revolution of said shaft while the cam is held stationary, and being combined with a cylinder-escapement adapted to engage and retain the said cam and operated by said shaft so as to release the cam and permit it to act suddenly on the platen under the stress of the spring as described.

7. In a time-stamp, the combination with a cam-shaft and with clock-actuated type-wheel-setting mechanism adapted to be brought into operation by the rotation of said shaft, of cam-operated lever, pawl, and ratchet mechanism intermediate of said shaft and the spring-arbor of the clock-barrel and adapted to cause the clock-barrel spring to be rewound by the rotation of the said shaft at each rotation thereof.

8. In a time-stamp the combination with a cam-shaft, and with clock-actuated type-wheel-setting mechanism adapted to be brought into operation by the rotation of said shaft, of cam-operated lever, pawl, and ratchet mechanism adapted to rotate the spring-arbor of the clock-barrel and rewind the spring at each revolution of the shaft, and of safety mechanism for rendering the rewinding mechanism inoperative when the spring is fully wound, said safety mechanism comprising a cam adapted when in operative position to throw the driving-pawl out of engagement with the ratchet, and mechanism controlling the said cam, whereby the position of the said cam is determined by the mutually relative angular displacement of the spring-barrel and the spring-arbor.

9. In a time-stamp, the combination with a cam-shaft and with a clock-movement of lever, pawl, and ratchet mechanism operated by a cam on the said shaft, for rewinding the mainspring of the clock at each revolution of said shaft, of mechanism for rendering the rewinding mechanism inoperative when the spring is fully wound, said mechanism consisting of a cam adapted when in operative position to throw the driving-pawl out of engagement with the ratchet of the spring-arbor, a "hunting-gear" formed by a pair of star-wheels controlled by jumper-springs and adapted to be intermittently revolved by the barrel and by the spring-arbor respectively, cam-studs rotating with the star-wheels and adapted, when said cam-studs coincide in angular position, to cause displacement of one of the star-wheels in the direction of its axis, and means intermediate of said star-wheel and the driving-pawl-disengaging cam, whereby the position of said cam will be determined by the mutually relative angular displacements of the said star-wheels.

705,910. EARTH OR ROCK DRILL. FERDINAND H. DANNHARDT, South Yarra, near Melbourne, Victoria, Australia, assignor of two-thirds to Mahren Muller, North Carlton, near Melbourne, Victoria, Australia. Filed Sept. 29, 1900. Serial No. 31,507. (No model.)

Claim.—1. In an earth or rock drill, a cutter or tool carrier, laterally-operating sliding bolts arranged therein, a key-plate having pairs of oppositely and vertically extending inclined surfaces, the inclined surfaces of each pair being substantially parallel to one another, the said pairs of inclined surfaces adapted to alternately operate the said bolts laterally in opposite directions, and a weight connected to said key-plate.

2. In an earth or rock drill, the combination with the boring-rods or lining-tubes provided with recesses, of a cutter or tool carrier operating in said boring-rods or lining-tubes, cutters suitably connected to said carrier, laterally-operating sliding bolts adapted to extend through said carrier and engage in said recesses for connecting the carrier to the rods or lining-tubes, and a key-plate for expanding said cutters and having two pairs of oppositely-extending and substantially parallel inclined surfaces, said key-plate operating between said bolts for actuating them by means of said inclined surfaces.

3. In an earth or rock drill, the combination with the boring-rods or lining-tubes, of a cutter or tool carrier operating therein, cutters suitably connected to said carrier, sliding bolts adapted to extend through said carrier and engage the said rods or tubes for connecting the former to the latter, a key-plate having two pairs of oppositely-extending inclined surfaces and operating between said bolts and cutters for actuating the same, a tube connected to said plate and provided with outlets, a weight attached to said tube, and means connected to said weight for elevating and lowering said plate.

4. In an earth or rock drill, a cutter-carrier, bolts arranged therein, a key-plate provided with pairs of inclined surfaces for operating said bolts to connect and disconnect the cutter-carrier to and from the boring-rods or lining-tubes, a core-barrel extending downwardly from said cutter-carrier, a casing arranged in said core-barrel, a pair of hooks connected with said casing, and means for connecting said hooks with the said key-plate.

5. In an earth or rock drill, a cutter-carrier, expansible cutters suitably attached thereto, means for simultaneously actuating said cutters and for connecting said carrier to the boring-rods or lining-tubes, a core-barrel extending downwardly from said carrier, a casing within said barrel, an externally-screw-threaded sleeve connected to said barrel, a series of boring-tools engaging the screw-threads of said sleeve, and an outer sleeve engaging said sleeve and boring-tools for securing the latter in position.

6. In an earth or rock drill, a core-barrel provided with an eccentric recess, an inner casing for said barrel, a spring-actuated eccentric ring mounted in said recess, means for retaining said ring in an inoperative position, a sleeve connected to said barrel, a series of boring-tools engaging said sleeve, and an outer sleeve engaging said sleeve and tools for securing the latter in position.

7. In an earth or rock drill, a core-barrel provided with an eccentric recess, an inner casing suitably connected therein, a spring-actuated eccen-

tric ring mounted in said recess, means for retaining said ring in an inoperative position, and a series of boring-tools connected with said barrel.

8. In an earth or rock drill, a cutter-carrier, laterally-operating means for connecting the cutter-carrier to the boring-rods or lining-tubes, expansible cutters suitably connected to said carrier, a key-plate for expanding the cutters and provided with inclined surfaces extending parallel to one another for operating the lateral connecting means, a core-barrel extending downwardly from said expansible cutter-carrier, an inner casing suitably connected thereto, a spring-actuated eccentric ring suitably mounted in said core-barrel, means for retaining said ring in an inoperative position, a series of adjustable boring tools connected with said barrel, and a spring-clip suitably connected with the means for expanding the cutters and operating the lateral connecting means.

9. In an earth or rock drill, a cutter or tool carrier, cutters connected thereto, bolts arranged in said carrier and adapted when operated to extend through the cutters and engage in the boring-rods or lining-tubes for connecting the carrier thereto, and a weighted key-plate having two pairs of oppositely and vertically extending inclined surfaces adapted to engage and operate said bolts and cutters in opposite directions.

10. In an earth or rock drill, a cutter or tool carrier, cutters attached thereto, bolts arranged in said carrier and adapted to operate the same and engage in the boring-rods or lining-tubes for connecting the carrier thereto, a key-plate having two pairs of oppositely and vertically extending inclined surfaces operating between said bolts and cutters for connecting them in either direction, and vertically-operating means for operating said plate to release the bolts and for elevating said carrier independently of the boring-rods or lining-tubes.

11. In an earth or rock drill, a cutter-carrier having waterways or passages, cutters connected to said carrier, means arranged in the said carrier and adapted when operated to extend therethrough and engage in the boring-rods or lining-tubes for connecting the carrier thereto, and a key-plate provided with two pairs of oppositely and vertically extending inclined surfaces adapted to engage said means and said cutters for operating them.

12. In an earth or rock drill, a cutter-carrier, means carried thereby and adapted to extend therethrough for connecting said carrier to the boring-rods or lining-tubes, cutters suitably connected to the carrier, a key-plate provided with two pairs of oppositely and vertically extending inclined surfaces for actuating said means and cutters in either direction, a core-barrel suitably connected to the said key-plate, and a series of boring-tools suitably connected with said barrel.

705,911. SHUTTLE-CHECKING MECHANISM FOR LOOMS. CLARE H. DRAPER, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Dec. 28, 1901. Serial No. 86,880. (No model.)

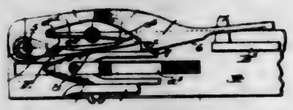

Claim.—1. In a shuttle-checking mechanism for looms, primary and secondary checking members, a controlling-spring for the latter, operatively connected with the primary member, movement of said member by impact of the shuttle increasing the tension of said spring proportionally to the force of the blow before engagement of the shuttle with the secondary checking member.

2. In shuttle-checking mechanism for looms, a binder, a controlling-spring therefor, and means governed by or through the shuttle on each incoming pick thereof to automatically adjust the tension of the spring in proportion to the shuttle-speed prior to engagement of the shuttle and binder.

3. In shuttle-checking mechanism for looms, a binder, a controlling-spring therefor, means actuated by impact of the shuttle to vary the tension of the spring proportionally to the shuttle speed prior to engagement of the shuttle and binder, and protector mechanism governed by or through said means.

4. In shuttle-checking mechanism for looms, primary and secondary binders, a controlling-spring for each, and a connection between the primary binder and the secondary-binder spring, to automatically adjust the tension of said spring in proportion to the force with which the shuttle engages the primary binder.

5. In shuttle-checking mechanism for looms, primary and secondary binders normally in the path of the shuttle, a controlling-spring for each binder, stops to limit inward movement of the binders, and a connection between the primary binder and the spring of the secondary binder, to adjust the tension of said spring proportionally to the force with which the shuttle engages the primary binder.

6. In shuttle-checking mechanism for looms, two binder members arranged in tandem, to successively engage the shuttle, a controlling-spring for the outermost member, and a connection between said spring and the innermost binder member, to set the tension of said spring, prior to engagement of to member with the shuttle, in proportion to the force with which the shuttle strikes the innermost of the binder members.

7. In shuttle-checking mechanism for looms, two binder members, a common fulcrum therefor, means to adjust the fulcrum, a spring controlling one of said binder members, and a connection between the other member and the spring, to adjust the tension of the latter, proportionally to the shuttle speed, by or through the engagement of the shuttle with the latter-mentioned binder member.

8. In shuttle-checking mechanism for looms, the combination of a primary binder, a spring therefor, a secondary binder, and a spring therefor, said primary binder acting as a stop for the secondary binder in its outward movement, whereby said secondary binder is checked in its outward movement by the successive action of both of said springs.

9. In shuttle-checking mechanism for looms, the combination of oscillatively-acting binders each pivoted to the lay, and a separate pressure-producing spring for each binder.

705,912. SOOT-CLEANER FOR STEAM-BOILERS. WILLIAM HOELSCHER, Windsor, Pa. Filed Dec. 3, 1901. Serial No. 84,510. (No model.)

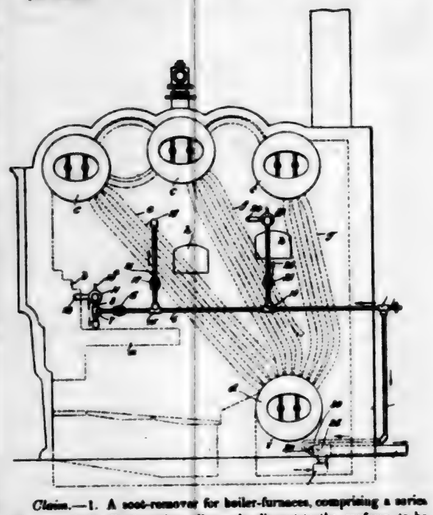

Claim.—1. A soot-remover for boiler-furnaces, comprising a series of horizontal distributing-pipes disposed adjacent to the surfaces to be cleaned and within a boiler-furnace, each pipe provided with jet openings or nozzles, certain of said pipes being adjustable axially and disposed between adjacent surfaces which it is desired to clean, and means for supplying gaseous fluid under pressure to said distributing-pipes.

2. A soot-remover for boiler-furnaces, comprising a series of horizontal distributing-pipes disposed across a boiler-furnace and adjacent to the surface it is desired to clean, one or more of said pipes being adjustable axially and arranged to face toward two or more of the surfaces to be cleaned, a pipe for supplying gaseous fluid under pressure to all of the distributing pipes, valved branch pipes between the adjustable pipes and said supply-pipe, and swiveled couplings for uniting the adjustable pipes to said valved branch pipes.

3. A soot-remover for boiler-furnaces, comprising a feed-pipe having branches, a horizontal distributing-pipe attached to one of the branches of the feed-pipe and disposed adjacent to a surface it is desired to clean, another distributing-pipe adapted to be adjusted on its axis and disposed parallel to the first-named pipe, and a swiveled coupling between the adjustable distributing-pipe and the other branch of said feed-pipe.

4. A soot-remover for boiler-furnaces, comprising a valved feed-pipe, a branch pipe connected to the end of said feed-pipe, an adjustable distributing-pipe coupled by a swiveled joint to one end of the branch pipe, another distributing-pipe made fast to the other end of said branch pipe, a series of valved branches extending from the feed-pipe, and other distributing-pipes united to said valved branches and disposed between and adjacent to other surfaces of the boiler which it is desired to clean.

5. A soot-remover for boiler-furnaces, comprising a horizontal collecting-pipe adapted to be arranged in the lower portion of a boiler-furnace and provided with a series of suction-nipples, a conveying-pipe leading from said collecting-pipe at a point between certain nipples of the series, and an injector arranged to discharge fluid under pressure into said conveying-pipe.

6. In a soot-remover for boiler-furnaces, the combination of a collecting-pipe having a plurality of suction-nipples, a conveying-pipe leading from the collecting-pipe, a feed-pipe adapted to supply steam or air under pressure, soot-removing pipes adapted to be disposed within a boiler-furnace and having communication with the feed-pipe, and an injector also communicating with the feed-pipe and arranged to deliver gaseous fluid under pressure to the conveying-pipe, substantially as described.

705,913. AUTOMATIC STOPPING MECHANISM FOR LOOMS. ABRAM D. ESTEY, Taunton, Mass., assignor to the Draper Company, Portland, Me., and Hopedale, Mass., a Corporation of Maine. Filed Apr. 7, 1900. Serial No. 11,987. (No model.)

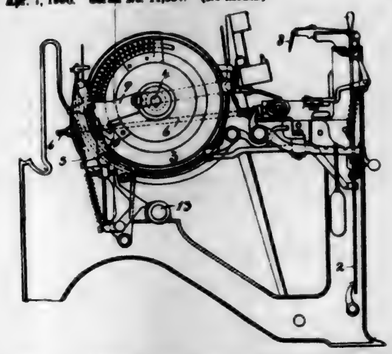

Claim.—1. A loom having, in combination, a rotary abutment, a brake-wheel, a brake movable to and from said brake-wheel, a stop carried by and movable with said brake, and a cam which acts to move said stop into the path of said abutment after said brake has been applied.

2. A loom having, in combination, shipping mechanism, a brake controlled by said shipping mechanism, a stop which positively stops the motion of the parts of the loom affected by the shipping action of the shipping mechanism after the brake is applied, and a rebound-dog which limits the rebound of the said parts of the loom.

3. A loom having, in combination, shipping mechanism, a brake controlled by said shipping mechanism, an abutment on a moving part of the loom, a stop which positively encounters said abutment after the brake has acted, and a rebound-dog which limits the rebound of the moving parts of the loom controlled by the shipping mechanism.

4. A loom having, in combination, a rotary abutment, a brake, a spring-pressed rebound-dog on said brake, a stop on said brake, and shipping mechanism connected with said brake, whereby when the shipping mechanism acts the dog and stop are moved toward the path of said abutment.

5. A loom having, in combination, a moving abutment, shipping mechanism, a cam or tappet, and a stop which is moved by the action of said shipping mechanism into the path of said cam or tappet, and is thereby moved into the path of said abutment.

6. A loom having, in combination, a moving abutment, shipping mechanism, and a rebound-dog which is moved by the action of the shipping mechanism into cooperative relation with said abutment.

7. A loom having, in combination, shipping mechanism, a moving cam or tappet, a moving spring-pressed abutment, a lever cooperatively connected with said shipping mechanism so that when said shipping mechanism acts it moves toward said abutment and a stop and a spring-pressed rebound-dog carried by said lever, the movement of said lever toward the abutment bringing said rebound-dog into the path of said abutment, and the said stop into cooperative relation to said cam or tappet, which thereupon moves said stop into the path of said abutment.

705,914. DRYING APPARATUS. JOHN C. FLEMING, New York, N. Y. Filed Jan. 12, 1901. Renewed Dec. 23, 1901. Serial No. 86,804. (No model.)

Claim.—1. The combination of a closed chamber having a series of annular troughs therein, one mounted above another, a pan in the lower portion of the chamber, a jacket for said pan, a steam-chamber under each of the troughs, a steam-supply pipe for said chambers and jacket, a driven shaft, blades carried by said shaft and arranged to travel in said troughs and the pan, a supply-pipe discharging material into the upper trough, outlet-openings in each trough, a pipe communicating with the pan, a comparatively large pipe forming an outlet from the closed chamber between the upper and lower troughs, a spider-like piece in said pipe, a shaft having a bearing in said piece, and an exhaust-fan on the said shaft in the pipe operating to draw the vapors from the body of the closed chamber, substantially as described.

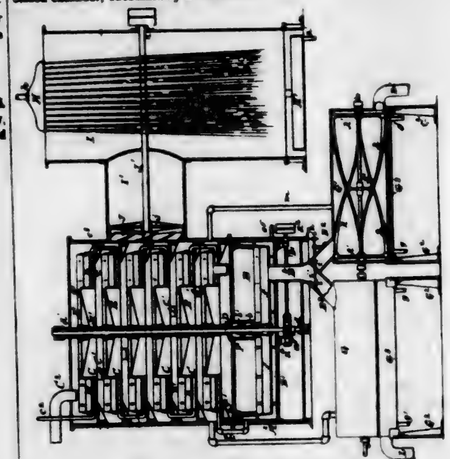

2. The combination of a closed chamber having a series of annular troughs therein, one mounted above another, a pan in the lower portion of the casing, means for heating the troughs and the pan, means for carrying off the vapor, a finishing-receiver under the chamber and communicating with the pan, and a shaft running therethrough carrying curved blades for agitating the material in the receiver, substantially as described.

3. The combination of a closed chamber, a series of troughs therein, a pan in the lower portion of the chamber, means for conveying material in the troughs to the pan, means for carrying off the vapor, two finishing-receivers mounted below the chamber and communicating therewith, and a valve for directing the material from the pan into either one of the finishing-receivers, substantially as described.

4. The combination of a closed chamber, a series of troughs therein, means for conveying material in the troughs, one trough discharging into another, means for heating the material in the troughs, a fan for carrying off the vapors, two finishing-receivers communicating with the lowermost trough or pan, a valve for directing the material into either one or the other of the receivers, and agitating means in each receiver, substantially as described.

5. The combination of a closed chamber, a series of troughs therein, means for conveying material in the troughs, one trough discharging into another, means for heating the material in the troughs, a fan for carrying off the vapors, two finishing-receivers communicating with the lowermost trough or pan, a valve for directing the material into either one or the other of the receivers, agitating means in each receiver, and steam-jackets inclosing the lower portion of each receiver, substantially as described.

6. The combination of a closed chamber, a series of troughs therein, means for conveying material in the troughs, one trough discharging into another, means for heating the material in the troughs, a fan for carrying off the vapors, two finishing-receivers communicating with the lowermost trough or pan, a valve for directing the material into either one or the other of the receivers, agitating means in each receiver, steam-jackets inclosing the lower portion of each receiver, and pipes connecting each receiver with the closed chamber, substantially as described.

7. The combination of a closed chamber, a series of troughs, one arranged below another, a pan in the lower portion, a steam-chamber for the troughs and a steam-jacket for the pan, a vertical shaft, arms thereon having blades arranged to travel in the several troughs and pan, outlet-openings in each trough, a supply-pipe for the material to be treated, an outlet-pipe for the material, a condenser, a water-spray device in the same, a comparatively large pipe forming communication between the chamber and the condenser, a spider-like piece therein, a shaft having a bearing

in said piece, and an exhaust-fan on the shaft in said pipe, substantially as described.

8. The combination of a closed chamber, a series of troughs therein, one mounted above another, a steam-chamber under the bottom of each trough, a steam-supply pipe for the upper chamber and pipes communicating the several chambers, a pan under the troughs, a jacket for said pan communicating with the steam-chamber of the lowermost trough, a vertical shaft, blades on said shaft arranged to travel in the troughs, a pan, outlet-openings in each trough, a feed-pipe for the material so that material fed into the upper trough will pass from one trough to the other and into the pan, two finishing-receivers communicating with the pan, a valve for directing the flow of material into either one of the said receivers, agitating means in each receiver, outlets for the receivers, a condenser, a water-spray device therein, a pipe forming communication between the chamber and the condenser, and a suction-fan in said pipe so as to carry off the vapor as it is formed, substantially as described.

705,915. **BOXING-GLOVE.** JOHN GAMBLE, Philadelphia, Pa., assignor to George A. Roach, Philadelphia, Pa. Filed Dec. 18, 1901. Serial No. 86,328. (No model.)

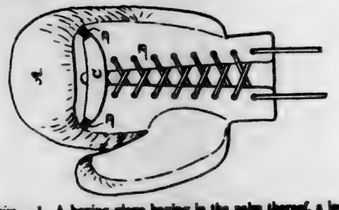

Claim.—1. A boxing-glove having in the palm thereof, a longitudinal vent or opening, adapted to be drawn together by any suitable means, and an adjustable palm-grip extending loosely across the palm of the glove and having its ends secured to said glove.

2. As an article of manufacture, a boxing-glove having its inner or palm portion provided with a longitudinal vent or opening extending to a point approximately midway between the base of the fingers and the tips thereof, the sides of said opening being provided with closing means, whereby the glove may be adjusted to hands of different sizes, so as to closely inclose both the body of the hand and the fingers thereof.

3. As an article of manufacture, a boxing-glove having its inner or palm portion provided with a longitudinal opening or vent extending from the top of the glove to a point approximately midway between the base of the fingers and the tips thereof, said opening affording ventilation for the palm and fingers, and suitable lacing means for drawing the edges of the vent or opening together, so as to adapt the glove to be drawn snugly around the body and fingers of the hand whether it be broad or narrow.

4. A boxing-glove having a palm-grip secured at its respective ends to the glove, said palm-grip lying across the palm and being free to accommodate itself to the grip of different sizes or lengths of hands.

5. A boxing-glove having therein an adjustable palm-grip that extends loosely across the inside of the glove and is fastened thereto only at the ends of the grip, substantially as shown.

6. A boxing-glove having therein an adjustable palm-grip that extends loosely across the inside of the glove, and is secured thereto through an intermediate elastic portion at the two ends of the grip, substantially as shown.

7. A boxing-glove having an adjustable palm-grip that extends loosely across the inner portion of the glove, and is secured thereto by an elastic cord or connection that passes through the grip and is attached at the ends thereof to the sides of the glove, substantially as shown.

705,916. **BOTTLE-NIPPLE.** PHILIP GANS, New York, N. Y. Filed July 14, 1900. Serial No. 23,722. (No model.)

Claim.—A nursing-bottle nipple having a mouth piece provided with a straight cylindrical duct through it and reduced centrad, the said mouthpiece being oval in cross-section, the walls at the approximately flat sides being thinner than the walls at the other sides, whereby the thin walls will permit of slight yielding and the thicker walls will prevent collapsing.

705,917. **SCREW-DRIVER.** GEORGE R. GAY, Augusta, Me. Filed Apr. 18, 1902. Serial No. 103,104. (No model.)

Claim.—1. A screw-driver comprising a ferrule, a blade mounted to rotate therein, ratchet-teeth on the inner end of said blade, a guide-pin extended transversely in the ferrule, a pawl having a slot through which said pin passes, whereby the pawl may swing on the pin and also move transversely thereof, and means for rocking the pawl to engage either of its ends with the ratchet-teeth, substantially as specified.

2. A screw-driver comprising a ferrule, a blade mounted to rotate therein and having ratchet-teeth on its inner end, said ferrule being provided with opposite slots, a pin extended transversely through the ferrule, a pawl extended across the ferrule and having a slot through which the pin passes, whereby the pawl may rock on the pin and also have a transverse movement with relation thereto, projections on said pawl passing through the slots of the ferrule, a sleeve mounted to rotate on the ferrule, and a cam on the inner side of said sleeve for rocking the pawl, substantially as specified.

3. A screw-driver comprising a ferrule, a blade mounted to rotate therein and having ratchet-teeth on its inner end, said ferrule being provided with opposite slots, a pin extended transversely through the ferrule, a pawl extended across the ferrule and having a slot through which the pin passes, whereby the pawl may rock on the pin and also have a transverse movement with relation thereto, projections on said pawl passing through the slots of the ferrule, a sleeve mounted to rotate on the ferrule, a cam on the inner side of said sleeve for rocking the pawl, and a stop-block engaging with the inner end of the blade, substantially as specified.

705,918. **CAR-FENDER.** CHARLES GIBLIN, Cleveland, Ohio. Filed Aug. 12, 1901. Serial No. 71,963. (No model.)

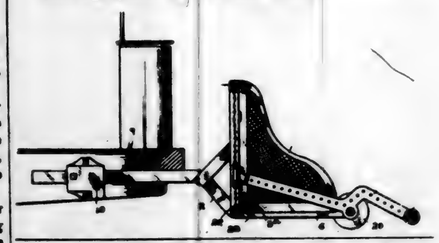

Claim.—1. The combination with a car, of bars secured thereto, supporting-arms carried by the bars, the sides and back of a cage detachably secured to the arms and bars, and a bottom pivotally mounted between the sides.

2. The combination with a car, of bars secured thereto, supporting-arms carried by the bars, the sides and back of a cage detachably secured to the arms and bars, a shaft carried by the bars, and a bottom pivotally mounted upon the shaft.

3. The combination with a car, of brackets secured thereto, bars secured to said brackets, and each having a downwardly-bent portion and a forwardly-extending arm, springs carried by said brackets to normally keep said arms elevated, the sides and back of a cage carried by said arms, a shaft carried by the forward ends of said arms, wheels carried by said shaft, and a bottom pivotally secured to said shaft.

4. The combination with a car, of brackets secured thereto, bars secured to said brackets to have a limited vertical movement, springs carried by said brackets to normally hold said bars elevated, the sides and back of a cage carried by said bars, a shaft journaled on said bars, wheels carried by said shaft, and a bottom pivoted upon said shaft.

5. The combination with a car, of bars secured thereto, supporting-arms carried by the bars, the sides and back of a cage detachably secured to the arms and bars, a shaft carried by the bars, a bottom pivotally mounted upon the shaft, and means carried by the sides and bottom to normally retain the bottom in an inclined plane.

6. The combination with a car, of brackets secured thereto, bars secured to said brackets, and having downwardly-curved portions and forwardly-extending arms, supporting-arms secured to said downwardly-curved portions, sides and back of a cage, means for securing said sides and back together, means for securing said sides and back to the supporting and forwardly-extending arms respectively, eyes carried by said sides, a shaft journaled in said forwardly-extending arms, wheels carried by said shaft, a bottom pivotally mounted on said shaft, pins secured to said bottom to engage said eyes, springs interposed between said eyes and said bottom to hold said bottom normally inclined and an antifriction-roller secured to the front of said bottom.

7. The combination with a car, of bars secured thereto, supporting-arms carried by the bars, the sides and back of a cage detachably secured to the arms and bars, a shaft carried by the bars, a bottom pivotally mounted upon the shaft, eyes carried by the sides, means carried by the bottom and adapted to engage the eyes, and springs interposed between the eyes and bottom to normally retain the bottom in an inclined plane.

8. The combination with a car, of brackets secured thereto, springs carried by the brackets, bars secured to the brackets, supporting-arms carried by the bars, the sides and back of a cage detachably secured to the arms and bars, a shaft carried by the bars, wheels journaled upon the shaft, a bottom pivotally mounted upon the shaft, and means carried by the sides and bottom to normally retain the bottom inclined.

9. The combination with a car, of bars secured thereto, and having downwardly-bent portions and forwardly-extending arms, supporting-arms secured to the downwardly-bent portions, the sides and back of a cage detachably secured to the supporting and forwardly-extending arms, a shaft carried by the forwardly-extending arms, and a bottom pivotally mounted upon the shaft.

705,919. **ELECTRIC BATTERY.** EDWIN R. GILL, New York, N. Y. Filed Nov. 15, 1901. Serial No. 82,478. (No model.)

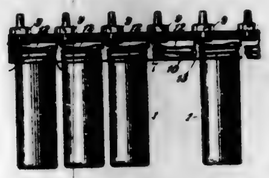

Claim.—1. As an article of manufacture, a battery-cell having an exterior screw-threaded electrode.

2. As an article of manufacture a battery-cell having a screw-threaded top in electrical connection with one electrode of said cell.

3. A screw-threaded socket, and a contact-spring therein; in combination with a battery-cell having threads adapted to screw into said socket.

4. A socket and two terminal pieces attached thereto, in combination with a battery-cell fitting said socket and having electrodes adapted to make contact with said socket-terminals respectively and means for securing said cell in said socket.

5. A socket and two terminal pieces attached thereto so constructed as to make contact when said socket is empty; in combination with a battery-cell fitting said socket and having electrodes adapted to make contact with said socket-terminals respectively and means for securing said cell in said socket.

6. A screw-threaded socket, a terminal spring therein and a second terminal upon which said spring normally bears; in combination with a screw-threaded battery-cell fitting said socket and having an electrode adapted to lift said spring-terminal off of said second terminal when said cell is screwed home in said socket.

7. A screw-threaded socket, a terminal at the side thereof and a terminal in the middle thereof; in combination with a battery-cell having an exterior electrode screw-threaded to fit said socket and an interior electrode so placed that when the cell is screwed home in said socket said interior electrode touches the terminal in the middle of the socket and the exterior electrode bears upon the terminal at the side of the socket.

8. As an article of manufacture, an insulating battery-head provided with sockets for receiving cells, and a spring at each socket, said springs overlapping from one socket to the other and normally making contact each with its neighbor.

9. An insulating-head, screw-sockets thereon, a binding-post beside each socket and a two-leaved spring attached to said post, one leaf of which extends across one contiguous socket and the other leaf of which extends to the edge of the other contiguous socket; in combination with a battery-cell having an external screw-threaded electrode fitting said socket and adapted to touch one leaf of one adjacent contact-spring and an interior electrode adapted to touch one leaf of the other adjacent contact-spring.

705,920. **STRAIGHTENING-CASE FOR THE FINGER.** MARIE GOTTSCHALK, Berlin, Germany. Filed Jan. 3, 1902. Serial No. 88,264. (No model.)

Claim.—A straightening-case for the finger comprising a plate *a* of rigid material and suitable fastening devices *b* for affixing the said plate to the finger over the finger-joint, substantially as and for the purpose set forth.

705,921. **HEATING-DRUM.** EUPHEMIA GRAHAM, Carroll, Iowa. Filed Dec. 31, 1901. Serial No. 87,918. (No model.)

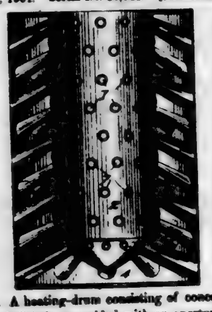

Claim.—1. A heating-drum consisting of concentric shells spaced apart, the outer shell being provided with an aperture at its lower end, and the inner shell being closed at its lower end and arranged immediately above said aperture, the upper ends of both of said shells being connected together by a ring to close the upper end of the chamber formed by the two shells, and open-ended tubes extending through said chamber and connected to said shells, substantially as set forth.

2. A heating-drum consisting of concentric shells spaced apart, the outer shell being provided with an aperture at its lower end and the inner shell having a closed conical lower end which is arranged immediately above said aperture, the upper ends of both of said shells being connected together by a ring which closes the upper end of the chamber formed by the two shells, and open-ended tubes extending through said chamber and connected to said shells, said tubes tapering from their outer to their inner ends at which latter point they are the smallest, substantially as set forth.

703,922. **WIND-MOTOR.** ALBERT GRAF, Chicago, Ill. Filed Nov 13, 1901 Serial No. 82,113. (No model.)

Claim.—1. A wind-motor, consisting of a frame mounted to turn, a wheel journaled in the frame, a chute for directing the wind to the wheel and comprising an inclined bottom extending upwardly and inwardly from the frame to within a short distance of the periphery of the wheel, and a top hinged to the frame and extending partially over the wheel, a bar pivoted to the top of the chute and provided with notches engaging the frame, a bracket secured to the frame and provided with a slot through which the bar passes, a pulley mounted in the bracket, and a rope passing loosely through an opening in the said bar and over said pulley, as set forth.

2. A wind-motor, comprising a frame mounted to turn, a wheel journaled in the frame, a chute for directing the wind to the wheel and comprising an inclined bottom extending upwardly and inwardly from the

outer edge of the frame to within a short distance of the periphery of the wheel, and a hinged top extending partially over the wheel, a bar hinged to the top and having notches engaging the frame, and a rope operatively connected with the said bar, as set forth.

3. In a wind-motor, the combination with a support, and a wheel mounted thereon, of a chute, comprising an imperforate inclined bottom extending to within a short distance of the periphery of the wheel at about the center thereof and a hinged top extending partially over the wheel, a bar hinged to the top and having an interlocking engagement with the said bottom, and means connected with the said bar for operating it, as set forth.

705,923. CUTTER FOR CORN-HARVESTERS. ARTHUR E. KAPLEY, Indianapolis, Ind. Filed Feb. 5, 1901. Serial No. 45,087. (No model.)

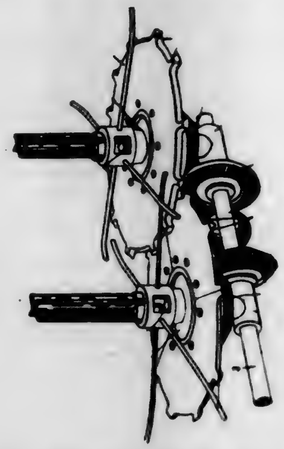

Claim.—1. As an article of manufacture, a disk cutter having a series of arms projecting from the periphery thereof, cutting edges formed upon the periphery of said disk, and the outer, forward, lower corner of each arm raised slightly above the plane of the cutting edge, substantially as described.

2. As an article of manufacture, a disk cutter having a series of arms projecting from the periphery thereof, cutting edges formed upon the periphery of said disk and upon the sides of said arms, and the lower corners of each arm raised slightly above the plane of the cutting edges, substantially as described.

705,924. APPARATUS FOR DEFECATING LIQUIDS. JAMES B. HAYNE, Santo Domingo, Santo Domingo. Filed Aug. 1, 1901. Serial No. 70,868. (No model.)

Claim.—1. In an apparatus for the defecation of liquids, a heating vessel, means for supplying heat thereto, a separator arranged within the vessel, a siphon leading from said separator, a supply-tank, and means for automatically controlling the supply of liquid from said tank to the heating vessel, substantially as specified.

2. An apparatus for the defecation of liquids, comprising a heating vessel, means for supplying a heating medium thereto, means for automatically controlling the supply of heating medium, a separator in the vessel, and an automatically-controlled siphon leading from said separator, substantially as specified.

3. An apparatus for the defecation of liquids, comprising a heating vessel, means for supplying a heating medium thereto, a supply vessel for supplying liquid to the heating vessel, a supply-pipe leading to the bottom of the heating vessel, an alkalinator-tank, and means for automatically controlling the supply of alkalizing medium to the liquid to be defecated, substantially as specified.

4. An apparatus for the defecation of liquids, comprising a heating vessel having a double bottom, a pipe for conveying the heating medium into the space between the bottoms, a pipe extended into the vessel and adapted to contain an expansive medium, a diaphragm arranged to receive the pressure of said expansive medium, a connection between said diaphragm and a valve in the heat-supply pipe, and a liquid-supply pipe leading into the vessel, substantially as specified.

5. An apparatus for the defecation of liquids, comprising a heating vessel, a separator arranged in the vessel and having a valve-controlled opening in its lower portion, a supply-pipe leading below the separator into the heating vessel, a siphon having one member extended into said separator and nearly to the bottom thereof, an automatically-controlled valve in said siphon, and a regulating-valve on the outer section of said siphon, substantially as specified.

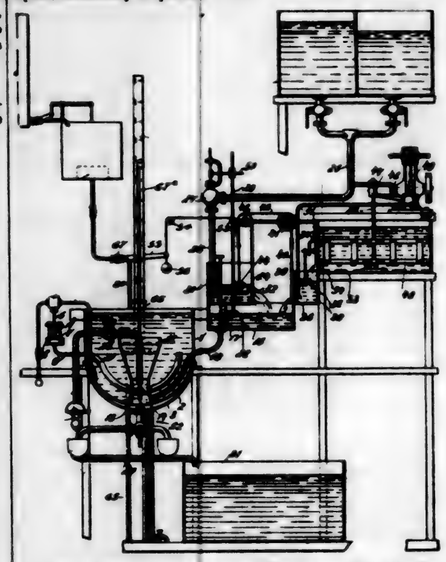

6. An apparatus for the defecation of liquids, comprising a heating vessel, means for automatically controlling a supply of heating medium to the vessel, a supply-tank having communication with the vessel, a tank for controlling an alkalizing medium, and means for automatically controlling the supply therefrom, substantially as specified.

7. An apparatus for the defecation of liquids, comprising a heating vessel, means for supplying heat thereto, a supply-tank having communication with the heating vessel, a tank for containing an alkalizing medium, an aerating vessel for receiving the said agent from said tank, an air-compressor, and a pipe leading from said compressor into said aerating vessel, substantially as specified.

8. An apparatus for the defecation of liquids, comprising a supply-tank, a measuring-tank having a vertical partition leading nearly to the bottom thereof and also having a vertical outlet-slot in one of its walls, a pipe leading from the supply-tank into the receiving-tank rearward of the partition, an automatically-controlled valve in said pipe, a trough into which the receiving-tank discharges, a supply-tank for an alkalizing medium discharging into said trough, and a heating vessel receiving the liquid from said trough, substantially as specified.

9. An apparatus for the defecation of liquids, comprising a heating vessel, a supply-tank having communication with said heating vessel, a tank for an alkalizing medium, means for automatically controlling the discharge of said medium from the tank, and a stirrer operating in the tank, substantially as specified.

705,925. APPARATUS FOR EXTINGUISHING FIRE IN OIL-TANKS OR THE LIKE. JOHN HARLSHORN, Philadelphia, Pa. Filed Oct. 19, 1901. Serial No. 79,254. (No model.)

Claim.—1. The combination with the oil-containing tank, the vertically-movable disk therein, devices for retaining the latter normally adjacent to the bottom of the tank, means for releasing said devices when required, and means adapted to automatically elevate said disk in the tank upon the release of said retaining devices, substantially as and for the purpose set forth.

2. The combination with the oil-containing tank, the vertically-movable disk therein, devices for retaining the latter normally adjacent to the bottom of the tank, means for releasing said devices when required, and means adapted to automatically elevate said disk in the tank upon the release of said retaining devices, together with the annulus adapted to be engaged by the said disk, substantially as and for the purpose set forth.

3. The combination with the oil-containing tank of the vertically-movable disk therein, the depending flange or skirt carried by the latter, means for retaining said disk normally adjacent to the bottom of the tank, and means for automatically elevating said disk upon the release of said retaining means, substantially as and for the purpose set forth.

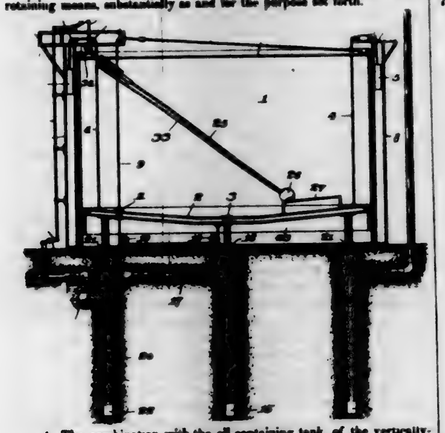

4. The combination with the oil-containing tank, of the vertically-movable disk therein, means for retaining the latter normally adjacent to the bottom of the tank, which means are adapted to be released by the heat of burning oil within said tank, and means for elevating said disk automatically upon the release of said retaining devices, substantially as and for the purpose set forth.

5. The combination with the oil-containing tank, of the vertically-movable disk therein, the inwardly-projecting flange or annulus of said tank, an inflammable or fusible connection for retaining said disk normally adjacent to the bottom of the tank, and weights or the like, connected with said disk and adapted to elevate the latter in the tank upon the severance of said disk-retaining connection, substantially as and for the purpose set forth.

6. The combination with the oil-containing tank, of the vertically-movable dished disk therein, devices for retaining the latter normally adjacent to the bottom of the tank, means for elevating said disk upon the release of said retaining devices, the exit-pipe leading from the central portion of said disk, the normally closed valve connected with said pipe and adapted to be opened by the upward movement of said disk at the predetermined time excited, substantially as and for the purpose set forth.

7. The combination with the oil-containing tank, of the vertically-movable hollow disk therein, means for charging the latter with water, devices for retaining said disk normally adjacent to the bottom of the tank, means for releasing said retaining devices when required, and means adapted to automatically elevate said disk upon the release of said retaining devices, substantially as and for the purpose set forth.

8. The combination with the oil-containing tank of the vertically-movable, hollow disk therein, the water inlet and outlet pipes communicating with the interior of said disk, devices for retaining the latter normally adjacent to the bottom of the tank, means for releasing said retaining devices when required, and means adapted to automatically elevate said disk upon the release of said retaining devices, substantially as and for the purpose set forth.

9. The combination with the oil-containing tank, of the vertically-movable disk therein, the annulus against which the latter is adapted to impinge, the connection comprising the chain or the like and the fusible ribbon, or the like, connected thereto and extending across the top of the tank, for maintaining the disk normally adjacent to the bottom of the tank, and means consisting of chains or the like connected to said disk and having weights adapted to draw up said disk when the said ribbon becomes fused from the heat of the burning oil within said tank, substantially as and for the purpose set forth.

10. The combination with the oil-containing tank, of the vertically-movable dished disk therein, devices for retaining said disk normally adjacent to the bottom of said tank, means for automatically elevating said disk upon the release of said retaining devices, the exit-pipe leading from the central part of said disk, the normally closed valve with which said pipe communicates, the pivoted bar having the float, the fusible ribbon or the like attached to said bar normally disconnecting devices between the latter and said valve, which devices are adapted to be connected upon the fusing of said ribbon, together with the projection of said disk adapted to impinge against said float when said disk is caused to move upwardly, substantially as and for the purpose set forth.

705,926. CONTINUOUS PROCESS OF COKING COAL. JOSEPH HEMINGWAY, Chicago, Ill., assignor of three-fourths to Curtis Joel Rothermel, Springvalley, Minn., and William Edwin Rothermel, Chicago, Ill. Filed Oct. 21, 1901. Serial No. 79,455. (No model.)

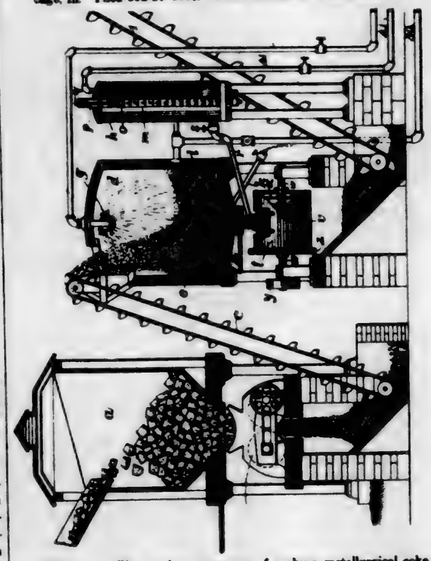

Claim.—1. The continuous process of making metallurgical coke, which consists in pulverizing bituminous or semibituminous coal, mixing it with about four per cent. of water and about ten per cent. of coal-tar, charging the coking-ovens with said mixture, and distilling it, substantially as described.

2. The continuous process of making metallurgical coke, which consists in pulverizing bituminous or semibituminous coal, mixing it with about four per cent. of boiling-hot water, mixing the moistened mass with about ten per cent. of coal-tar, charging the coking-ovens with said mixture, distilling it, and returning the heavy portion of the distillate containing tar, pitch and similar substances (mixed with a fresh charge of coal moistened with hot water) into the coking-ovens during the coking operation, substantially as described.

705,927. BRAKE-SHOE ADJUSTER. EDWIN M. HERR, Pittsburg, Pa., assignor to the Westinghouse Air Brake Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Dec. 7, 1901. Serial No. 85,051. (No model.)

Claim.—1. The combination with a brake-shoe, of an adjustable support therefor, and means operated by the dragging movement of said shoe for adjusting said support.

2. The combination with a brake-shoe having an adjustable support, of another brake-shoe adapted to be applied by the dragging movement of the first shoe and means for automatically adjusting the said support to compensate for the wear of said shoe.

3. The combination with a brake-shoe having an adjustable support, of another brake-shoe adapted to be applied by the dragging movement of the first shoe when the car is moving in either direction, and means operated by the dragging movement for adjusting said support.

4. In a car-brake, the combination with a brake-shoe having an adjustable support and means for applying said shoe, of another brake-shoe and intermediate connections adapted to apply the second shoe by the dragging movement of the first shoe, and means operated by such movement for automatically adjusting said support when the first brake-shoe becomes worn.

5. In a car-brake, the combination with a magnetic brake-shoe having an adjustable support, of means for automatically adjusting said support to compensate for the wear of said shoe.

6. In a car-brake, the combination with a magnetic brake-shoe hav-

ing an adjustable spring-support, and means operated by the dragging movement of said shoe for adjusting said support.

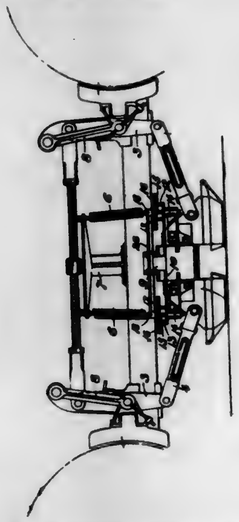

7. In a car-brake, the combination of a brake-shoe, a support therefor having an adjustable screw to compensate for the wear of the shoe, and means operated by the dragging movement of said shoe for adjusting said screw.

8. In a car-brake, the combination of a brake-shoe, a support therefor having an adjustable screw, and fixed stops secured to the car-frame by which said screw may be rotated during the dragging movement of said shoe.

9. In a car-brake, the combination with a rail brake-shoe having an adjustable support, of means operated by the dragging movement of said shoe for adjusting said support.

10. In a car-brake, the combination with a rail brake-shoe, having an adjustable support, of a wheel-shoe adapted to be applied by the longitudinal movement of the rail-shoe, and means operated by said longitudinal movement for adjusting said support.

11. In a car-brake, the combination with a magnetic rail-shoe having an adjustable support, of means operated by the longitudinal movement of the rail-shoe for adjusting said support.

12. In a car-brake, the combination of a rail brake-shoe, an adjustable supporting-screw having projecting arms, and fixed stops for engaging said arms.

705,928. STOVE. WILLIAM HEUERMANN, Sedalia, Mo. Filed Mar. 4, 1902. Serial No. 96,586. (No model.)

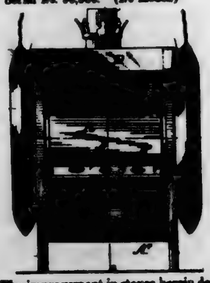

Claim.—1. The improvement in stoves herein described, comprising the combustion-chamber or fire-box having an outlet-opening in its top, a top flue communicating with said opening and extending from end to end of the combustion-chamber, the offtake connected with said flue, the grate within the combustion-chamber, the draft-box below said grate and lateral to the combustion-chamber, the damper controlling said draft-box, the plate within the ash-box and overlying the opening between the draft-box and the ash-box, and the end sections having encircling flues provided with stop-plates and on one side of said stop-plates with nipples arranged to enter the opposite ends of the top flue and on the other side of said stop-plates with openings leading into the combustion-chamber, all substantially as and for the purposes set forth.

2. The combination in a stove with the combustion-chamber and the top flue extending along the same and provided with an opening communicating with the combustion-chamber and with a valve controlling said opening, of the sections at the ends of the combustion-chamber and provided with encircling flues each having a stop-plate and communicating on one side thereof with the end of the top flue and on the other side of said stop-plate with the interior of the combustion-chamber, substantially as and for the purpose set forth.

3. The combination in a stove with a combustion-chamber and a top flue, of the end sections hinged to the combustion-chamber and having encircling flues and nipples connecting the same with the opposite ends of the top flue, and having stop-plates and openings in the end flues, whereby the products of combustion from the combustion-chamber may be caused to circulate through the end flues and thence into the top flue and an offtake connected with the top flue, substantially as set forth.

4. The combination with the combustion-chamber, and a flue extending along the top thereof, and communicating at its middle with the combustion-chamber and having at its middle an offtake, of a valve controlling the communication between the top flue and the combustion-chamber, and the end sections having encircling flues arranged to receive the products of combustion from the combustion-chamber and to discharge such products to the opposite ends of the top flue, substantially as set forth.

5. The combination with the combustion-chamber, of flues encircling the opposite ends of the combustion-chamber and having openings through which to receive the products of combustion from the combustion-chamber, and an offtake in connection with said flues, substantially as set forth.

6. The combination of the combustion-chamber, the end sections having flues encircling the opposite ends of the combustion-chamber, a top flue in communication at its opposite ends with the opposite end flues, a door in one of the end sections, and a valve controlling direct communication between the top flue and the combustion-chamber, substantially as set forth.

705,929. MANURE-DISTRIBUTER. JOHN HOWELL, Schaller, Iowa. Filed Mar. 5, 1902. Serial No. 96,761. (No model.)

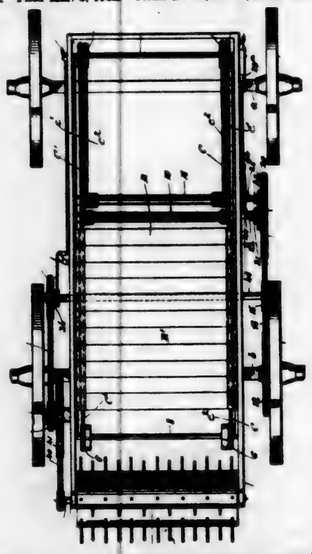

Claim.—1. A manure-distributer comprising a receptacle, suitable idler-pulleys near the front and rear portions of said receptacle, independent windlasses disposed between the idler-pulleys, cables fitted to said pulleys and having their opposite end portions coiled on the respective windlasses, a flexible bottom attached to and carried by said cables, a driving-shaft, and means for independently driving either of said windlasses from said shaft.

2. A manure-distributer comprising a suitable receptacle having supporting-pulleys near its front and rear portions, cables carrying a series of slats forming a flexible bottom, a driven shaft having a gear, separate windlasses disposed below the slatted bottom; the front portions of the cables passing in a forward direction from the bottom and coiled on one windlass, and the rear portions of said cables coiled on the other windlass and passing from the rear portion of the bottom, and thence around the front and rear pulleys, shiftable gears keyed on the windlasses, and means for individually adjusting said movable gears into and out of mesh with the driving-gear.

3. In a manure-distributer, the combination with suitable cables, and a flexible bottom having slats attached to said cables, of separate windlasses on which the opposite end portions of the cables are coiled, suitable brackets adjacent to said windlasses, shiftable gears keyed to the windlasses and provided with grooved hubs, adjusting-arms slidably fitted on said brackets and having depending shipper-forks loosely fitted in said hubs of the gears, rods connected to said arms and to a suitable operating-lever, and a shaft having a driving-gear with which the shiftable gears are adapted to independently mesh.

4. In a manure-distributer, a flexible bottom comprising suitable cables, transverse slats laid on said cables and provided with recesses in their upper faces, metallic plates fitted in said recesses, and U-shaped bolts embracing the cables and having their legs passed through the slats and plates and adapted to receive nuts which are countersunk in the recesses of the slats, substantially as specified.

5. A manure-distributer comprising a suitable receptacle, a windlass-driving shaft provided with a suitable gear, separate windlasses, each having a shiftable gear adapted to mesh with said gear of the shaft, cables having their end portions coiled on the respective windlasses and carrying suitable slats, a toothed distributing-cylinder disposed in rear of the flexible bottom, a cylinder-driving shaft extending across the receptacle and provided with a sprocket-gear, a driving-chain propelled by the movement of the distributer, and having operative connection with the cylinder-driving shaft and with the windlass-driving shaft, and a train of gearing between the cylinder-driving shaft and the cylinder, said gear-train including an intermediate shaft, and suitable means for throwing the train out of service.

705,930. SAW-CLAMP. AUGUST J. JAEGER, Phillips, Wis. Filed Mar. 29, 1902. Serial No. 100,864. (No model.)

Claim.—1. A saw-clamp, comprising a substantially S-shaped member terminating at each of its ends in a screw-eye, and provided with a slide disposed adjacent to each of said eyes, a screw member engaging each of said eyes, and a flat plate mounted transversely upon each of said screw members, and provided with a bifurcated edge for straddling one of said slides, being guided thereby.

2. A saw-clamp, comprising a frame provided with a depending bracket, a screw-eye integrally mounted upon said bracket, a screw engaging said screw-eye, a plate mounted upon said last-mentioned screw, a jaw integrally mounted upon said frame opposite said last-mentioned plate, a jaw integrally mounted upon said frame at right angles with the jaw first mentioned, a bracket integrally mounted upon said frame and provided with a screw-eye and with a slide, a screw revolubly mounted in said screw-eye, and a plate provided with an aperture engaging said screw, and with a bifurcated end for straddling said slideway.

705,931. RATCHET MECHANISM. CHRISTIAN JOST, Berne Switzerland. Filed Apr. 18, 1900. Serial No. 13,159. (No model.)

Claim.—A ratchet mechanism comprising a part to be driven, having a hub, a ratchet inclosed by the hub, said ratchet having a plurality of peripheral, rectangular notches, the shorter walls of the notches being substantially radial to the axis of the ratchet, means for rotating said ratchet, a ring consisting of a plurality of segments located between the periphery of the ratchets and the inner surface of said hub, each segment terminating in a shoulder and the shoulders being situated in said rectangular notches, and the adjacent ends of certain of the segments having outwardly-diverging beveled faces and rollers fitted between the rings and the inner surface of the hub and adapted to cooperate with the said outwardly-diverging faces.

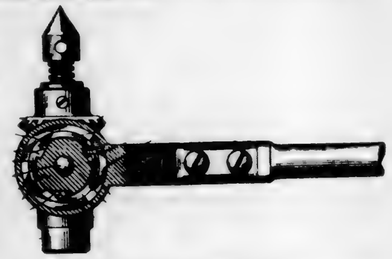

705,932. COMBINED VISE, DRILL, AND BOLT-HOLDER. ERASTUS L. KEARNEY, Highpoint, N. C., assignor of one-half to J. E. Northith, Davidson county, N. C. Filed Mar. 18, 1902. Serial No. 98,812. (No model.)

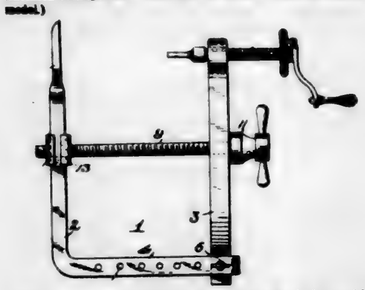

Claim.—1. In a device of the character described, the combination of stationary and movable arms each having a longitudinal slot, and a screw for adjusting the movable arm, said screw being adjustable in said slots, substantially as specified.

2. In a device of the character described, the combination of two arms, one of which is provided with a right angular support, means detachably connecting the other arm to said support, and means for adjusting the detachable arm toward and from the other arm, said means being longitudinally adjustable upon the arms, substantially as set forth.

705,933. TRAP-FLUSH. JOHN R. KETT, San Francisco, Cal., assignor of one-half to J. Raymond Smith, San Francisco, Cal. Filed July 5, 1901. Serial No. 67,236. (No model.)

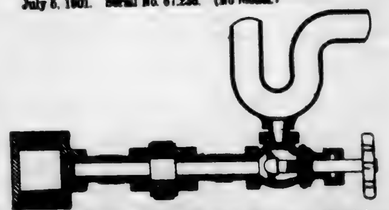

Claim.—The combination of a drain-pipe having a U end therein to form a trap and having an aperture in the lowest part of said U end, a supply-pipe, a conduit leading from the supply-pipe to a point below said trap, a valve in said conduit, and a removable connection between the conduit and said aperture, said connection being open at both ends and having a conical inner surface, the smaller open end being connected with the conduit and the larger open end being connected with the aperture for the trap, substantially as described.

705,934. STETHOSCOPIC INSTRUMENT. ADOLPHUS A. KNUDSEN and FRANK H. CLARK, Brooklyn, N. Y. Filed Apr. 7, 1902. Serial No. 101,983. (No model.)

Claim.—1. In a device of the character described, the combination of a hollow case, a diaphragm therein, an air-chamber attached to and open-

ing into the hollow case, such chamber being provided with two apertures forming sockets, such sockets being disposed diametrically of the hollow case, tubes in the sockets and rotatable therein to fold in a plane parallel with the plane of the case or at an angle thereto, and means for retaining the ends of such tubes in the sockets, substantially as shown and described.

2. In a device of the character described, the combination of a hollow case, a diaphragm therein, two sockets opening into such case, such sockets being disposed diametrically of the hollow case, tubes in the sockets and rotatable therein to fold in a plane parallel with the plane of the case or at an angle thereto, and means for retaining the ends of such tubes in such sockets, substantially as shown and described.

3. In a device of the character described a hollow case, two metallic disks within such case, an annular band between the edges of such disks, an air-chamber attached to an opening into such hollow case, apertures therein forming sockets, such sockets being disposed diametrically of the hollow case, tubes in the sockets and rotatable therein to fold in a plane parallel with the plane of the case or at an angle thereto, substantially as shown and described.

4. In a device of the character described, a primary air-chamber, a diaphragm therein, a secondary air-chamber a diaphragm between such primary and secondary air-chambers and two tubes rotatably attached to such secondary air-chamber, to fold in a plane parallel with the plane of the case or at an angle thereto, substantially as shown and described.

705,985. MAGNETIC CORE FOR INDUCTANCE-COILS. JOHN C. LEE, Brookline, and EDWIN H. COLPITTS, Boston, Mass., assignors to American Telephone and Telegraph Company, a Corporation of New York. Filed Nov. 30, 1901. Serial No. 84,199. (No model.)

Claim.—1. The herein-described method of producing non-conducting magnetic cores for electromagnetic apparatus, which consists in subjecting divided magnetic metal assembled or laid up into a loosely-built or open-work mass of desired form to heat in an atmosphere capable of constantly yielding oxygen to the said metal, until the said mass is substantially converted to magnetic oxid.

2. An improvement in the art of producing cores of high electrical resistance and sufficient permeability, for inductance or loading coils, which consists in building plates wires or like thin elements of iron into proper form and size, and then submitting the same as a whole to the action of a high temperature in the presence of an oxygen-yielding atmosphere, until the iron is reduced or converted to ferroso-ferric oxid, substantially as set forth.

3. The hereinbefore-described method of making magnetic oxid cores for loading-coils, which consists in building or laying up iron plates, ribbon, or wire into a structure of desired form having interstitial spaces between the component layers or turns and extending to the exterior of the mass; in subjecting the said mass to strong heat in an oxidizing-chamber; and in supplying to said chamber an oxygen-containing medium such as steam which will readily give up oxygen to the iron, substantially as described.

4. The hereinbefore-described method of producing inductance or loading coil cores which consists in building, laying up or winding iron plates or wire into an open-work core structure of desired conformation; and in then converting the substance of said structure without change of form into a compact and relatively dense mass of artificial magnetic oxid of substantially uniform constitution, by heating or roasting the said structure in the presence of an oxygen-supplying medium such as steam or carbon dioxid, substantially as described.

5. A core for inductance-coils constituted of non-conducting material having high magnetic permeability, substantially as described.

6. A core for inductance or loading coils constituted of artificially-produced magnetic oxid.

7. A magnetic core for inductance or loading coils constituted of ferroso-ferric oxid formed in a compact mass by the substantially uniform oxidation of divided iron.

8. A magnetically-permeable core of high electrical resistance constituted of artificial magnetic oxid prepared in a solid and compact mass of desired conformation by oxidizing a structure built of plates, ribbons or wires of magnetizable metal into such conformation, substantially as described.

9. A magnetically-permeable and non-conducting core for inductance or loading coils composed throughout or mainly of ferroso-ferric oxid in a compact state, and of substantially uniform constitution, prepared by oxidizing a structure consisting initially of iron plates, strips or wire built up or wound into the desired form and size, substantially as set forth.

705,986. LOADED ELECTRIC CIRCUIT. JOHN C. LEE, Brookline, and EDWIN H. COLPITTS, Boston, Mass., assignors to American Telephone and Telegraph Company, a Corporation of New York. Filed Nov. 30, 1901. Serial No. 84,200. (No model.)

Claim.—1. A loading-coil, consisting of a core of continuous or compact high-resistance material having high permeability, and an electrical winding surrounding the said core, substantially as described.

2. A loading-coil having a properly-conformed compact mass of artificial magnetic oxid for a core, with an electrical winding surrounding the said core, substantially as described.

3. A loading or inductance coil comprising a magnetic core constituted of ferroso-ferric oxid formed in a compact mass, and an electrical conductor wound or coiled thereover, substantially as described.

4. An electrical circuit for the transmission of energy by varying currents provided with inductance-coils serially connected therein at proper intervals, the said coils having highly-permeable and high-resistance cores constituted of dense or closely-compacted magnetic oxid of iron or like magnetic metal or alloy, substantially as described.

705,987. MACHINE FOR APPLYING SOLDER TO METAL BLANKS. JOHN LEE, San Francisco, Cal., assignor to American Can Company, Jersey City, N. J., a Corporation of New Jersey. Filed Dec. 7, 1900. Serial No. 39,045. (No model.)

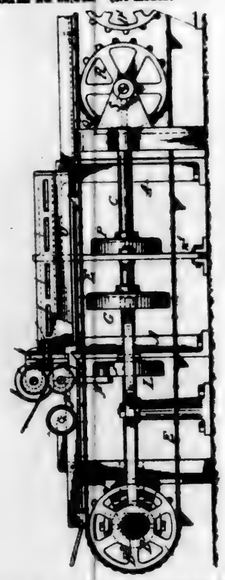

Claim.—1. In a machine for preparing blanks for the formation of soldered joints, the combination with means for holding or supporting a flat blank in a horizontal position, of parallel side guides for the ends of the blanks, and means for delivering one or more pieces of loose solder of proper length to form a seam, upon the surface of the blank, parallel and adjacent to but removed from the edges thereof, and means for causing said pieces to adhere in substantially the position in which they are delivered upon the blank.

2. In a machine for preparing blanks for the formation of soldered joints the combination with means for holding or supporting a flat blank in a horizontal position, and parallel side guides for the ends of the blanks, means for delivering a piece of loose solder of proper length to form a seam upon the surface of the blank parallel and adjacent to but removed from the edge thereof, and means for holding said piece and causing it to adhere in substantially the position in which it is delivered upon the blank.

3. In a machine for preparing blanks for the formation of soldered joints, the combination with a feed for a solder wire or strip, of a solder-cutter and means for supporting in a horizontal position a flat can-body blank beneath said cutter, and parallel side guides for the ends of the blank, whereby pieces of solder severed by said cutter fall upon said blanks.

4. In a machine for preparing blanks for the formation of soldered joints comprising means for propelling such blanks successively and flatwise in a horizontal position, parallel side guides for the ends of the blanks, means for feeding a solder-strip to a position above each blank, a solder-severing device, means for delivering the severed solder upon the surface of each blank, and means for heating and causing the solder-strip to adhere to each flat blank in substantially the position in which it is delivered upon the same, substantially as specified.

5. In a machine for preparing blanks for the formation of soldered joints, a guideway for said blanks, means intermittingly operated for propelling such blanks along it, an intermittingly-operated solder-feed, a solder-cutter, a support for the free end of the fed solder and means for removing said support so as to drop the severed piece upon the blank.

6. In a machine for preparing blanks for the formation of soldered joints, blank-propelling means intermittingly operated, a solder-strip feed intermittingly operated, a solder-cutter, a solder-support which receives solder from said feed, and maintains it above the blank, means for withdrawing said support and releasing the solder and a guide for delivering the severed solder in correct position upon the blank.

7. In a machine for preparing blanks for the formation of soldered joints, intermittingly-operated means for propelling a flat blank in a horizontal position, for feeding solder, for severing solder, and for delivering loose severed solder upon the surface of the blank, parallel and adjacent to but removed from the edges thereof, in combination with a heating device, and continuously-operating propelling means for conveying the blank carrying the loose solder in a horizontal position in proximity to the heating device, and parallel side guides for the ends of the blank.

8. In a machine for preparing blanks for the formation of soldered joints, the combination with the solder-wire feed, of a reciprocating cutter, a movable solder-holder, a solder-guide below the same, and mechanical connections for accomplishing operations of feeding the solder horizontally upon the holder severing a length of such solder, withdrawing the holder from beneath the solder, and so delivering a piece of solder through said guide.

9. In a machine for preparing blanks for the formation of soldered joints, the combination with a support upon which can-blanks lie and are propelled in a horizontal position, and side guides for the ends of the blanks, of an elongated solder-guide above the support having a contracted discharge in proximity to said support, and means for delivering lengths of solder-wire into said guide, which are thereby delivered in horizontal position upon the blanks adjacent to but removed from the edges thereof.

10. In combination with rolls arranged for feeding solder wire or strip horizontally, a cutter intermediate between said solder and rolls, and means for operating the cutter and releasing the piece of solder, thereby severed, from the holder, means for supporting and propelling flat blanks in a horizontal position, parallel side guides for the ends of the flat blanks, and a guide for the severed piece of solder, and means for heating the blanks and the solder-wire thereon and causing the solder to adhere to the blanks parallel and adjacent to but removed from the edges or seam-sections thereof, substantially as specified.

11. In a machine for preparing flat blanks for the formation of soldered joints, the combination with means for supporting and conveying the flat blanks in a horizontal position, of side guides for the ends of the blanks, means for delivering cut lengths of solder-wire adjacent to but removed from the edges of the blanks, and means for heating the blanks and the solder-stripe thereon and causing the same to adhere thereto adjacent to but removed from the edges of the blanks, substantially as specified.

12. The combination with means for supporting the flat blank in a horizontal position, with means for flattening and delivering the solder-wire in cut lengths upon the flat blank adjacent to but removed from the edges thereof, and means for causing the cut lengths of solder-wire to adhere to the blank in positions adjacent to but removed from the edges thereof, substantially as specified.

13. The combination with a horizontal table for supporting flat blanks, of parallel side guides for the opposite ends of the blanks, means for conveying the blanks along the table, a pair of solder-wire-feed devices, a pair of cutters for the solder-wire, a pair of guides for delivering the cut lengths of solder-wire upon the blanks in position adjacent to but removed from the edges of the blanks, and means for causing the cut lengths of solder-wire to adhere to the blanks in such positions, substantially as specified.

14. The combination with a horizontal table for supporting flat blanks, of guides for the edges of the blank, means for conveying the blanks along the table, a pair of solder-wire feeding and flattening devices, a pair of cutters for the solder-wire, a pair of guides for delivering the cut lengths of solder-wire upon the blank in positions adjacent to but removed from the edges of the blank, and means for causing the cut lengths of solder-wire to adhere to the blank in such positions, substantially as specified.

15. The combination with means for supporting and conveying flat blanks in a horizontal position, a pair of parallel side guides for the ends of the blanks, of a solder-wire-feed device, a solder-wire cutter, and a guide for the cut lengths of solder-wire for delivering the same on the flat horizontal blanks in a position adjacent to but removed from the edge thereof, and a heating device, substantially as specified.

705,988. PAINT. WILLIAM LEONARD FOOTE, Brooklyn, N. Y. Filed Oct. 28, 1901. Serial No. 80,217. (No specimens.)

Claim.—1. A composition of matter, consisting of talc, kaolin, silex, dissolved rubber, zinc oxid, diluted hydrofluoric acid, and silicate of soda.

2. A composition of matter, consisting of talc, kaolin, silex, corundum, dissolved rubber, zinc oxid, diluted hydrofluoric acid, and silicate of soda.

3. A composition of matter, consisting of talc, kaolin, silex, dissolved rubber, zinc oxid, an aqueous solution of alum, diluted hydrofluoric acid, and silicate of soda.

4. A composition of matter, consisting of talc, kaolin, silex, corundum, rubber in solution, zinc oxid, diluted hydrofluoric acid, alum in aqueous solution, silicate of potassium, and silicate of soda.

5. A composition of matter, consisting of one part talc, two parts kaolin, three parts silex, two parts corundum, three-fourths part rubber in solution, four parts zinc oxid, one and one-half parts diluted hydrofluoric acid, one-half part alum in aqueous solution, and sufficient silicate of soda to make the composition of a suitable paint-like consistency.

6. A composition of matter, consisting of one part talc, two parts kaolin, three parts silex, two parts corundum, three-fourths part rubber in solution, four parts zinc oxid, one and one-half parts diluted hydrofluoric acid, one-half part alum in aqueous solution, and sufficient of a mixture of equal parts of silicate of potassium and silicate of soda to make the composition of a suitable paint-like consistency.

705,989. SOUNDING TOY. LEE LOEB, Buffalo, N. Y., assignor of three-fourths to John C. McIntire, Jr., Buffalo, N. Y. Filed Sept. 30, 1901. Serial No. 77,084. (No model.)

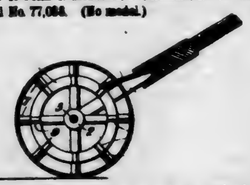

Claim.—In a sounding toy, a ground-wheel, a wheel encircled by the ground-wheel, and connected thereto, a handle, said handle having a V-shaped recess in its lower end, a clapper having one end pivoted in the V-shaped recess and adapted to bear against the walls of the recess for producing a spring action, the opposite end of the said clapper being bifurcated to embrace the wheels and engage the studs, as and for the purpose described.

705,940. FEED MECHANISM. HENRY HARLOW, Manor Park, England. Filed Feb. 24, 1902. Serial No. 96,282. (No model.)

Claim.—1. In a machine of the class described, the combination of a feed member, means for advancing the feed member toward the work and then moving the same in a direction to feed the work, and an automatically-operable lever adapted to impart a movement to the feed mem-

ber opposite the direction of feed and having a spring-arm for moving the feed member away from the work.

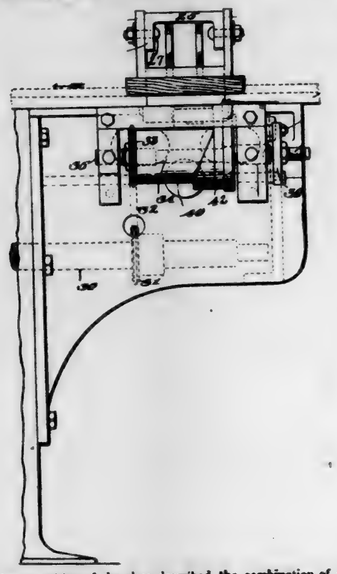

2. In a machine of the class described, the combination of a feed member, means for advancing the feed member toward the work and then moving the same in a direction to feed the work, and a spring-actuated lever for imparting a movement to the feed member opposite the direction of feed and having means for moving said feed member away from the work.

3. In a machine of the class described a feed member, means for advancing the feed members toward the work and then moving the same in a direction to feed the work, and a spring-controlled lever, the spring of which is adapted to move the feed member opposite the direction of feed and having a spring-arm adapted to move the feed member away from the work.

4. In a machine of the class described, a feed member having a slot, means for advancing the feed member toward the work and then moving the same in a direction to feed the work, and an automatically-operable lever having a spring-arm fitted in said slot the lever serving to move the feed member in a direction opposite that of the feed and its spring-arm, to move the feed member away from the work.

5. In a machine of the class described, a feed member, means for advancing the feed member toward the work and then moving the same in a direction to feed the work, an automatically-operable lever having a spring-arm, the lever being adapted to move the feed member in a direction opposite to that of the feed, and its spring-arm to move the feed member away from the work, and means for regulating the amount of movement of the feed member.

6. In a machine of the class described, a feed member, means for advancing the feed member toward the work and then moving the same in a direction to feed the work, an automatically-operable lever having a spring-arm, the lever being adapted to move the feed member in a direction opposite to that of the feed, and its spring-arm to move the feed member away from the work, and an adjustable stop disposed in the path of said lever.

7. In a machine of the class described, a feed member, means for advancing the feed member toward the work, and then moving the same in a direction to feed the work, a lever having a spring-arm adapted to move the feed member away from the work, and a coiled spring connected with said lever and adapted through the latter, to operate the feed member in a direction opposite the line of feed.

8. In a machine of the class described, a feed member, a cam adapted to move the feed member toward the work, a second cam for moving the feed member in a direction to feed the work, and a spring-controlled lever having a spring-arm and adapted to return the feed member to the initial position thereof.

9. In a machine of the class described, the combination of a feed member and means for moving it toward and from the work and longitudinally forward and backward, a spring-arm having means to engage the work, and means for positively operating the spring-arm to cause it to engage the work as the backward movement of the feed member begins and for releasing said spring-arm as the forward movement of the feed member begins.

10. In a machine of the class described, a feed member, a cam for moving it toward the work, a second cam for moving the feed device longitudinally to advance the work, means for returning the feed device to its initial position, work-engaging means to prevent the rearward movement of the work during the return of the feed member, and a third cam for operating the work-engaging means.

705,941. JAR-OPENER. WILLIAM S. MARSH, Intervale, Me. Filed Apr. 1, 1902. Serial No. 100,227. (No model.)

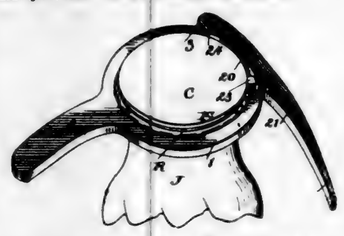

Claim.—1. The herein-described jar-opener made in two members, of which one comprises a ring and a handle, the other comprises a handle with a wedge projecting from that edge which stands toward the interior of the ring, and a pivotal connection between the two members.

2. The herein-described jar-opener, the same consisting of one member having a ring-shaped body with a handle projecting from one side and an ear projecting from another side at a point about ninety degrees from the handle; a second member consisting of a nearly straight body dished at one edge to conform with the contour of the interior of said ring, having a handle at one end, and provided with a wedge projecting from said dished edge toward the interior of the ring; and a pin rising from said ear and engaging the other end of the last-mentioned member so as to permit the pivotal movement of the members on each other in parallel planes.

705,942. LOCK. WILLIAM A. MARKEY, Rosbyrock, W. Va. Filed Jan. 25, 1900. Serial No. 2,746. (No model.)

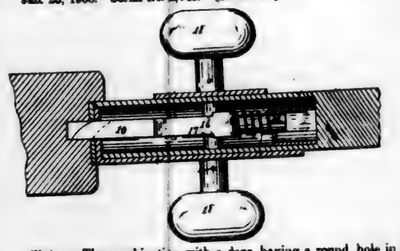

Claim.—The combination with a door having a round hole in the edge thereof, a spring-catch provided with a longitudinal slot therein, shoulders on said catch engaging lugs provided on a knob-shaft, and a shank on the rear end of said catch, of a cylindrical sleeve of equal diameter with the hole in the door slidably secured on the rear end of said shank and adapted to hold the catch rigidly in said hole, substantially as described.

705,943. SLED. CONRAD MILLER, Leadville, Colo. Filed May 17, 1900. Serial No. 17,050. (No model.)

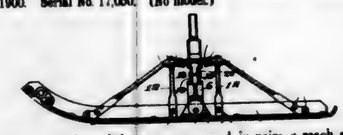

Claim.—1. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a forked coupling-head carried by said reach and provided with a shank, means

for detachably connecting said shank with the reach, and means for connecting the head with the other runners.

2. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a forked coupling-head carried by said reach and provided with a shank, a clamping-collar for detachably connecting said shank with the reach, and means for connecting the head with the other runners.

3. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a forked coupling-head carried by said reach and provided with a shank, a clamping-collar for detachably connecting said shank with the reach, and a pin for connecting the head with the other runners.

4. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a turning-gear carried by the other pair, and a forked coupling-head connected to said reach, the fork of said head receiving and embracing said turning-gear.

5. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, said reach being provided with a downwardly-extending offset, and a coupling-head connected to said reach and also connected to the other pair of runners.

6. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, said reach being provided with a downwardly-extending offset, a turning-gear carried by the other pair of runners, and a forked coupling-head connected to said reach, the fork of said head receiving and embracing said turning-gear.

7. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a turning-gear carried by the other pair and comprising a pair of plates working upon each other, one of said plates being provided with an extension having a segmental guide-slot, and the other plate carrying a guide-lug working in said slot, and a connection between said reach and said turning-gear.

8. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a turning-gear carried by the other pair and comprising a pair of plates working upon each other, one of said plates being provided with an extension having a segmental guide-slot, and the other plate carrying a guide-lug working in said slot, and a swivel connection between said reach and said turning-gear.

9. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a turning-gear carried by the other pair and comprising a pair of plates working upon each other, one of said plates being provided with an extension having a segmental guide-slot, and the other plate carrying a guide-lug working in said slot, and a coupling-head swiveled to said reach and connected to said turning-gear.

10. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a turning-gear carried by the other pair and comprising a pair of plates working upon each other, one of said plates being provided with an extension having a segmental guide-slot, and the other plate carrying a guide-lug working in said slot, and a forked coupling-head swiveled to said reach and embracing the plates of said turning-gear.

11. In a sled, runners arranged in pairs, a reach arranged between the same and connected to one pair of said runners, a turning-gear carried by the other pair and comprising a pair of plates working upon each other, one of said plates being provided with an extension having a segmental guide-slot, and the other plate carrying a guide-lug working in said slot and provided with an aperture, a forked coupling-head swiveled to said reach and embracing the plates of said turning-gear, and a pin passing through said forked head and the aperture of the guide-lug.

12. In a sled, runners arranged in pairs, a reach arranged between the same, a roller carried by said reach and comprising a pair of superimposed plates, attaching-spindles removably secured to said plates and connected to one pair of said runners, and a connection between the reach and the other pair.

13. In a sled, runners arranged in pairs, a reach arranged between the same, a roller carried by said reach and comprising a pair of superimposed plates, attaching-spindles removably secured to said plates and connected to one pair of said runners, and a swivel connection between the reach and the other pair.

14. In a sled, runners arranged in pairs, a reach arranged between the same, a roller carried by said reach and comprising a pair of superimposed plates, attaching-spindles removably secured to said plates and connected to one pair of said runners, bearing-eyes carried by said runners and adapted to receive the attaching-spindles, and a connection between the reach and the other pair.

15. In a sled, runners arranged in pairs, a reach arranged between the same, a roller carried by said reach and comprising a pair of superimposed plates, attaching-spindles removably secured to said plates and connected to one pair of said runners, bearing-eyes carried by said runners and adapted to receive the attaching-spindles, braces carried by the reach and connected to said spindles, and a connection between the reach and the other pair of runners.

16. In a sled, runners arranged in pairs, a reach arranged between the same, a roller carried by said reach and connected to one pair of said runners, a pole carried by the other pair, and a roller carried by said pole for connecting it to said runners, said reach and pole rollers each comprising a pair of spaced plates, and attaching-spindles arranged therebetween for connection with the respective runners.

17. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto, and a sectional supporting-beam connecting the knees of each runner, each of said beams being provided with an anchoring-iron arranged between its sections, and a reach arranged between the pairs of runners.

18. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto, and a sectional supporting-beam connecting the knees of each pair, and a reach arranged between said pairs.

19. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto, a brace secured to the runner proper and extending over said knee, and a sectional supporting-beam connecting the knees of each pair, and a reach arranged between said pairs.

20. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto, a brace secured to the runner proper and extending over said knee, tie-rods connected to the runner proper and having an adjustable connection with the brace for supporting the latter, and a supporting-beam connecting the knees of each pair of runners, and a reach arranged between said pairs.

21. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto, a brace secured to the runner proper and extending over said knee, tie-rods connected to the runner proper and the brace for supporting the latter, stops carried by said brace for limiting the movement of the runner on the knee, and a supporting-beam connecting the knees of each pair of runners, and a reach arranged between said pairs.

22. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto, a brace secured to the runner proper and extending over said knee, tie-rods connected to the runner proper and the brace for supporting the latter, stops for limiting the movement of the runner on the knee, and a supporting-beam connecting the knees of each pair of runners, a reach arranged between the runners and connected to one of the pairs thereof, and a swivel connection between the reach and the other pair.

23. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto and provided at its front and rear faces with recesses, and a sectional supporting-beam for connecting the runners of each pair, the members of said beam fitting within said recesses, and a reach arranged between the pairs of runners.

24. In a sled, runners arranged in pairs and each comprising a runner proper, a knee pivoted thereto and provided at its front and rear faces with recesses, means for limiting the movement of said runner proper on said knee, and a sectional supporting-beam for connecting the runners of each pair, the members of said beam fitting within the recesses of the knee, and a reach arranged between the pairs of runners.

25. In a sled, a runner comprising a runner proper, a U-shaped saddle embracing the runner proper, and a knee connected to said saddle.

26. In a sled, a runner comprising a runner proper, a U-shaped saddle embracing the runner proper, and a knee having its lower end bifurcated and receiving said saddle for connecting the knee to the runner proper.

27. In a sled, a runner comprising a runner proper, a saddle connected to said runner proper, the ends of said saddle converging to provide a comparatively long bearing-surface at the point of contact between the saddle and the runner proper, and a knee connected to said saddle.

28. In a sled, a runner comprising a runner proper of inverted-T shape in cross-section, a U-shaped saddle embracing the runner proper, and a knee having its lower end bifurcated and receiving said saddle for connecting the knee to the runner proper.

29. In a sled, a runner comprising a runner proper, a knee pivoted thereto, a brace secured to the runner proper and extending over the knee, and L-shaped stops carried by said brace for limiting the movement of the runner upon said knee.

30. In a sled, a runner comprising a runner proper, a knee pivoted thereto, a brace secured to the runner proper and extending over the knee, tie-rods also secured to the runner and the brace for supporting the latter, and stops carried by said brace for limiting the movement of the runner upon said knee.

31. In a sled, a runner comprising a runner proper, a saddle embracing said runner proper, a knee having its lower end bifurcated and receiving said saddle to connect the knee to the runner proper, a brace secured to the runner proper and extending over the knee, and tie-rods also secured to the runner proper and the brace for supporting the latter.

32. In a sled, a runner comprising a runner proper, a saddle embracing said runner proper, a knee having its lower end bifurcated and receiving said saddle to connect the knee to the runner proper, a brace secured to the runner proper and extending over the knee, tie-rods also secured to the runner proper and the brace for supporting the latter, and stops carried by said brace for limiting the movement of the runner proper upon the knee.

33. In a sled, a runner comprising a runner proper of inverted-T shape in cross-section, a U-shaped saddle embracing said runner proper, a knee having its lower end bifurcated and receiving said saddle to connect the knee to the runner proper, a brace secured to the runner proper and extending over the knee, and tie-rods also secured to the runner proper and the brace for supporting the latter.

34. In a sled, a runner comprising a runner proper of inverted-T shape in cross-section, a U-shaped saddle embracing said runner proper, a knee having its lower end bifurcated and receiving said saddle to connect the knee to the runner proper, a brace secured to the runner proper and extending over the knee, tie-rods also secured to the runner proper and the brace for supporting the latter, and stops carried by the brace for limiting the movement of the runner proper upon the knee.

705,944. DUST-COLLECTOR. JOHN R. MITCHELL, St. Louis, Mo. Filed Apr. 24, 1902. Serial No. 104,552. (No model.)

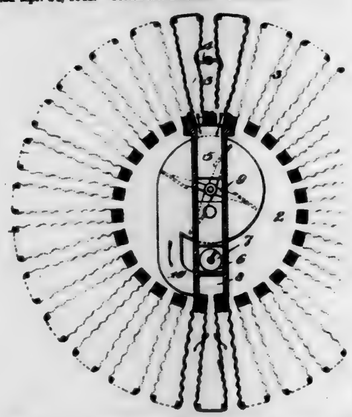

Claim.—1. In a dust-collector, a reel having a central drum into which dust-laden air is introduced and having filtering frames or pockets communicating with said drum, a main cut-off chamber in said drum, cleaning mechanism for the filtering frames or pockets which are for the time being in communication therewith, a supplemental cut-off chamber in said drum, and a reverse-draft fan having its inlet communicating with the main cut-off chamber and its outlet communicating with the supplemental cut-off chamber.

2. In a dust-collector, a rotatable reel having a central drum into which dust-laden air is introduced and filtering frames or pockets thereon, a plurality of cut-off chambers in said drum designed to communicate with one or more of said filtering frames or pockets and to cut off the dust-laden air in said drum from said pockets, cleaning mechanism coöperating with the filtering frames or pockets which are for the time being in communication with one of said cut-off chambers, and a back-draft fan having its inlet communicating with the cut-off chamber with which said cleaning mechanism coöperates and having its outlet communicating with the other of said cut-off chambers.

3. In a dust-collector, a reel having a central drum into which dust-laden air is introduced and having filtering mechanism communicating with said drum, a main cut-off chamber in said drum, cleaning mechanism for that part of the filtering mechanism which is for the time being in communication therewith, a supplemental cut-off chamber in said drum, and a reverse-draft fan having its inlet communicating with the main cut-off chamber and its outlet communicating with the supplemental cut-off chamber.

705,945. BUTTONHOLE-CUTTER. LEOPOLD F. MOSCK, New York, N. Y. Filed Dec. 21, 1901. Serial No. 86,753. (No model.)

Claim.—1. A buttonhole-cutting machine, comprising a series of cutting-blades, each blade having a plurality of cutting edges, standards, an upper cross-bar movable vertically with relation to the standards, a lower cross-bar movable vertically with relation to the standards, shank portions carrying the cutters and adjustably secured to said bars, and means for operating said bars, substantially as specified.

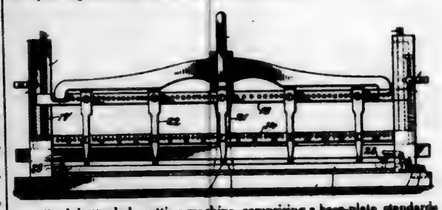

2. A buttonhole-cutting machine, comprising a base-plate, standards on said base-plate, upper and lower bars movable in said standards, cutter-carrying shanks adjustable along said bars, cutting-blades adjustable in the shanks, each blade having a plurality of cutting edges, a presser-bar engaging with one of said first-named bars, and an operating-lever connected to said presser-bar, substantially as specified.

3. A buttonhole-cutting machine comprising a base-plate, standards on said base-plate, cross-bars movable in said standards, cutters carried by said cross-bars, means for operating the cross-bars, and a gage-plate movable outward and inward with relation to the cutters, substantially as specified.

4. A buttonhole-cutting machine, comprising a base-plate, standards on said base-plate, cross-bars movable in said standards, springs for moving the cross-bars upward, a lever for moving the cross-bars downward, cutters carried by said bars and adjustable along the same, a gage-plate adjustable relatively to the cutters, and means for holding said gage-plate as adjusted, substantially as specified.

5. A buttonhole-cutting machine, comprising a base-plate, standards on said base-plate and provided with channels, one channel being forward of the other, a cross-bar movable in one of the channels, a cross-bar movable in the other of said channels, cutter-carrying shanks adjustably connected to said bars, cutters carried by said shanks, means for operating the bars, and a holding-clamp for the goods to be operated upon, substantially as specified.

6. A buttonhole-cutting machine, comprising a base-plate, standards on the base-plate, bars movable in the standards, cutter-carrying shanks attached to the bars, cutters carried by the shanks, and covering-hoods for the cutters, substantially as specified.

7. In a buttonhole-cutting machine, a cutter-carrying shank, and a cutter adjustable in said shank, the said cutter having a plurality of cutting edges of different lengths, substantially as specified.

8. In a buttonhole-cutting machine, a cutter-carrying shank, and a cutter adjustable in said shank, the said cutter having a plurality of cutting edges of different lengths, and an eyelet-cutter at one end of each cutting edge, substantially as specified.

9. In a buttonhole-cutting machine, a cutter-carrying shank having fingers at its lower end, a cutter-plate arranged between said fingers, means for clamping said plate, and a plurality of cutting edges on said plate, the said cutting edges being of different lengths, substantially as specified.

10. In a buttonhole-cutting machine, a cutter-carrying shank having fingers at its lower end, a cutter consisting of a plate having a plurality of cutting edges of different lengths, the said plate being recessed at its opposite sides to receive said fingers, and means for clamping the plate between the fingers, substantially as specified.

705,946. CAR-BRAKE. JOHN R. MONTAGUE, Syracuse, N. Y., assignor to Hydraulic Car-Brake Company, Syracuse, N. Y., a Corporation of New York. Filed Oct. 16, 1901. Serial No. 78,807. (No model.)

Claim.—1. The combination of a car-body, a car-truck pivotally connected therewith; brake-applying mechanism supported by the car-truck and brake-controlling mechanism flexibly connected with the brake-applying mechanism below and in line with the axis about which the truck moves relatively to the car-body.

2. The combination of a car-body; a car-truck pivotally connected therewith, brake applying mechanism, a rocking lever connected with said brake mechanism, another rocking lever, means for operating it, and connections between the two rocking levers having a pivot in line with the axis about which the truck moves relatively to the car-body.

3. The combination of a car-body, a car-truck pivotally connected therewith, fluid-pressure brake mechanism, a valve-operating rod connected therewith, a rocking lever connected with said valve-rod, another rocking lever, means for operating it and connections between the two rocking levers having a pivot in line with and below the axis about which the car turns.

4. The combination of a car-body, a truck pivotally connected therewith, two rock-shafts, a rod connecting said rock-shafts and having a jointed connection with one of them in line with the axis about which the truck turns relatively to the car-body, means for connecting the brake-operating mechanism with one of said rock-shafts and devices under the control of the attendant for moving the other rock-shaft.

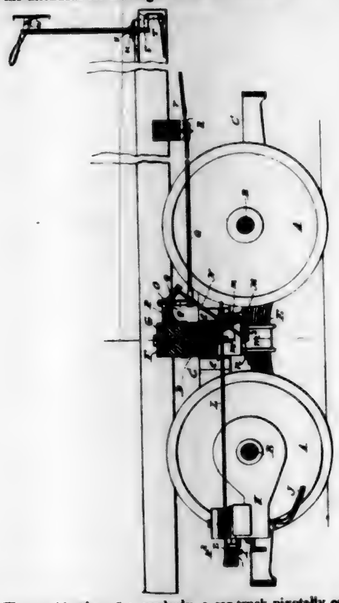

5. The combination of a car-body, a car-truck pivotally connected therewith, two rock-shafts, a rod connecting the rock-shafts and having a jointed connection with one of them in line with the axis about which the truck turns, valve mechanism, means connecting one of the rock-shafts with said valve mechanism, brake-controlling mechanism, and means connecting said mechanism with the other of said rock-shafts.

6. The combination of a car-body, a car-truck pivotally connected therewith, the upper rock-shaft having laterally-projecting arms, the lower rock-shaft also having laterally-projecting arms, a rod connected to arms on the two rock-shafts and having a jointed connection with the lower rock-shaft in line with the axis about which the truck turns relatively to the car-body, connections leading from the other arm on the lower rock-shaft to the brake-applying mechanism and connections leading from the other arm on the upper rock-shaft to the brake-controlling mechanism.

705,947. AIR COOLING, DRYING, AND PURIFYING APPARATUS. WILLIS L. MOORE, Washington, D. C. Filed May 29, 1902. Serial No. 109,497. (No model.)

Claim.—1. In an air-cooling apparatus, the combination of an ice-compartment, reticulated tubes extending through the same for diffusing air through the ice; an intermediate bottom for sustaining the ice in the upper compartment, a drip-pan for catching the flow of water from the intermediate bottom; a discharge-pipe for conducting the drip-water from the upper compartment to the bottom of the lower compartment; a second ice-compartment immediately below the first for the reception of ice and some chemical that lowers the melting point of ice, tubes arranged in the lower compartment for the passage of air through the same, a suction-fan to energize the operation of the machine, a damper to regulate the flow of air into the top of the shell, and a trough encircling the shell to catch the moisture that may condense on the outside of the shell.

2. A two-compartment air-cooling apparatus having ice-containing devices for the upper compartment with vertical reticulated or perforated tubes through the same, open at their upper ends, vertical pipes in the lower compartment opening at their upper ends below the ice-chamber, and means for maintaining the level of the meltage-water in the lower compartment below the level of the upper ends of the vertical air-pipes substantially as described.

3. An air-cooling apparatus comprising a casing, an intermediate bottom with openings through its edges next the casing, reticulated or perforated tubes arranged in the upper compartment, a drip-pan arranged below the intermediate bottom and having a drain-pipe leading into the lower compartment, air-tubes arranged in the lower compartment and opening below and protected by the drip-pan, and opening at their lower ends through the lower compartment, an overflow tapped into the lower compartment below the level of the upper ends of said air-tubes, and a drain-pipe tapped into the lower part of the lower compartment and also into the overflow-pipe and having a cut-off valve, and an external trough for the bottom of the casing also tapped into the overflow-pipe substantially as shown and described.

4. A two-compartment air-cooling apparatus having ice-containing devices for the upper compartment, a drip-pan arranged beneath the same and having central discharge-pipe leading to the lower compartment, vertical pipes in the lower compartment arranged about the drip-discharge pipe and opening at their upper ends below the drip-pan, and means for maintaining the level of the meltage-water in the lower compartment below the level of the upper ends of the vertical air-pipes in the lower compartment substantially as described.

5. An air-cooling apparatus having an ice-chamber with an intermediate bottom or diaphragm having openings through it around its outer edges and a central drainage-hole, a subjacent drip-pan, and vertical tubes of reticulated or perforated material open at their upper ends and arranged in said intermediate bottom and opening through the same and above said drip-pan substantially as described.

6. An air-cooling apparatus made in two compartments, the upper compartment having an intermediate bottom or supporting-diaphragm for ice with openings through it, and a subjacent drip-pan with central discharge-pipe, vertical tubes in the lower compartment surrounding the central drip-discharge pipe and opening at their upper ends into the lower compartment below the drip-pan and covered by the same to exclude drip-water from the tubes substantially as described.

7. An air-cooling apparatus made in two compartments, the upper compartment having an intermediate bottom or supporting-diaphragm for ice with openings through it, a subjacent drip-pan with central discharge-pipe, a series of vertical pipes in the lower compartment surrounding the drip-discharge pipe and opening at their upper ends below the drip-pan and covered by the same to exclude drip-water, and an overflow-pipe tapped into the lower compartment at a point below the upper ends of said pipes substantially as described.

8. An air-cooling apparatus having two compartments, one above the other, the upper one having means for holding the ice in it and open-meshed or perforated tubes through it opening at their upper ends into the top of the upper compartment and at their bottoms into the top of the lower compartment, the lower compartment being made as a trapped chamber and having vertical air-pipes through it opening at their upper ends below the upper compartment and adapted to receive a freezing mixture to produce a lower temperature than in the upper compartment substantially as described.

9. A two-compartment air-cooling apparatus consisting of an upright cylinder having ice-containing devices for the upper compartment, vertical pipes in the lower compartment opening at their upper ends below the ice-containing devices with a free space between said upper ends of the pipes and the ice-containing devices above, and doors arranged in the sides of the cylinder at an intermediate point of the cylinder opposite said free space to permit the introduction of a freezing mixture in the lower compartment substantially as shown and described.

100 O G.—67

10. A two-compartment air-cooling apparatus having ice-sustaining devices for the upper compartment, and an air-space below said ice-sustaining devices, a series of vertical pipes arranged in the lower compartment and opening at their upper ends into the lower portion of the air-space below the ice-sustaining devices, means for trapping the meltage-water around the vertical pipes of the lower compartment without overflowing into said pipes and an air-discharge conduit communicating with the bottom ends of said vertical air-pipes substantially as described.

705,948. HYDROCARBON-BURNER. MARSHAL W. MORGAN, Mount Vernon, Ind. Filed Aug. 1, 1901. Serial No. 70,496. (No model.)

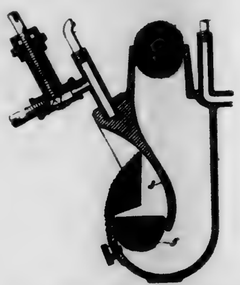

Claim.—1. In a hydrocarbon-burner, a body having a fixed chamber, a side wall of the body being curved downward and inward forming one wall of an inlet, a perforated burner at the outlet end, spaced screens at the inlet end of said chamber, a tube attached at its ends to the burner-body, a valve-casing having communication with said tube, a valve controlling the outlet of said casing, there being an open-air space between said outlet and the screens, and a supply-tube communicating with the first-named tube, substantially as specified.

2. In a hydrocarbon-burner, a body having a fixed chamber, a side wall of the body being curved downward and inward, forming one wall of an inlet, a perforated burner at the outlet end, spaced screens at the inlet end of said chamber, a tube attached at its ends to the burner-body and extended vertically and having a portion extended transversely for supporting a mantle, a valve-casing having communication with said tube, a valve controlling the outlet of said casing, there being an open-air space between said outlet and the screens, and a supply-tube communicating with the first-named tube, substantially as specified.

705,949. CARTRIDGE. GUSTAV MÜLLER, Duesseldorf, Germany, assignor to Firm Rheinische Metallwaaren- und Maschinenfabrik, Duesseldorf-Derendorf, Prussia, Germany. Filed Feb. 25, 1901. Serial No. 48,708. (No model.)

Claim.—1. A metallic cap for a cartridge provided with a yieldable spring end portion for the projectile to bear against, substantially as set forth.

2. The combination, with a cartridge-shell, of a metallic cap closing the front end of the shell and provided with a yieldable spring end portion, substantially as set forth.

3. A cap for a cartridge provided with spring-tongues struck up from the metal of its end portion, substantially as set forth.

705,950. INCANDESCENT GAS-BURNER. ALEXANDRE MURINE, St. Petersburg, Russia. Filed Nov. 21, 1900. Serial No. 37,315. (No model.)

Claim.—1. In an incandescent burner the combination with the feed-opening for the gas-supply and the burner, of a chamber for mixing the gas with air, said chamber being constructed with concentrically-arranged upper cup-like shells secured at their upper narrow edges to a ring for receiving the burner and having spaces between their wider lower edges, lower shells of similar shape which are connected with their lower narrow edges to a ring closely surrounding the gas-inlet and project with their upper wider edges into the spaces left between the lower edges of the upper shells, and outwardly-bent springs connected at their ends with said rings, substantially as and for the purpose stated.

2. In an incandescent burner the combination with the cone fixed to the gas-supply pipe, the housing rotatably mounted upon said cone, and the gas-channels formed in the cone and housing, of a gas-chamber formed by the upper part of the housing, a conically-hollowed plug screwed into the top part of the housing and having a centrally-bored axially-arranged extension on top, a hollow cylinder screwed on said extension and having a perforated bottom and open top, a needle axially fixed within the hollow of the cylinder, and another hollow cylinder adjustably mounted upon the first-named cylinder and having a conical opening in its top for said needle to project through, substantially as and for the purpose stated.

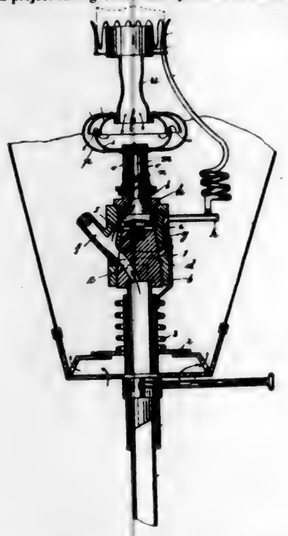

705,951. FENCE-LOCK. WILLIAM R. MACLEAN, Galetta, Canada. Filed Oct. 13, 1900. Serial No. 32,941. (No model.)

Claim.—1. A lock for locking a wire to a post or picket, comprising a U-shaped clip adapted to receive a wire between its parallel members and having vertically-alined bearings in said members to receive a post or picket, and integral locking-arms projecting from the ends of the portion connecting the parallel members, said arms being adapted to be bent so as to engage with their inner edges the wire and force it in firm contact with the post or picket, as set forth.

2. A lock for locking a wire to a post or picket, consisting of a U-shaped clip adapted to receive a wire between its parallel members and having vertically-alined openings in said members to receive a post or picket, and integral locking-arms projecting from the ends of the portion connecting the parallel members, said arms having their inner edges recessed or notched and adapted to be bent into engagement with the wire to force it into firm contact with the post or picket, as set forth.

705,952. MECHANICAL MUSICAL INSTRUMENT. JOHN MCTAMMANY, Spencer, Mass. Filed July 9, 1898. Serial No. 685,481. (No model.)

Claim.—1. In combination with the string of a musical instrument, an actuator, a string-controller, a coupler provided with a relatively movable dog resting in potential relation to the actuator, and an automatic selecting apparatus for projecting the dog into operative engagement with its actuator at the desired intervals.

2. The combination in a stringed musical instrument of a series of string-controllers, an actuator common to all the controllers, a series of couplers, each provided with a relatively movable dog arranged and resting in potential relation to the actuator, and an automatic selecting apparatus for projecting the dogs into operative engagement with the actuator.

3. The combination of a stringed musical instrument, a series of string-controllers, an actuator common to all the controllers, a series of couplers between the actuator and the controllers, each coupler including a slide in juxtaposition to the actuator, and a dog movable in the slide toward and from the actuator, and an automatic selecting apparatus adapted to operatively project the said dogs in a predetermined order.

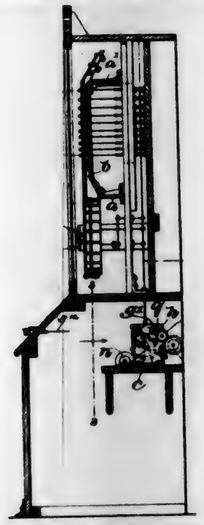

4. The combination of a stringed musical instrument, a series of string-controllers, an actuator common to all the controllers, a series of couplers between the actuator and the controllers, each coupler including a slide in juxtaposition to the actuator, and a dog movable in the slide toward and from the actuator, a series of levers adapted to project said dogs, and a progressively-moving program device adapted to release and control said levers in a predetermined order.

5. The combination of a stringed musical instrument, a series of string-controllers, an actuator common to all the controllers, a series of couplers between the actuator and the controllers, each coupler including a slide in juxtaposition to the actuator, and a dog movable in the slide toward and from the actuator, a series of levers adapted to project said dogs, each having a shoulder arranged to engage the dog of the accompanying slide when the dog-projecting movement of the lever is prolonged, and a perforated sheet against which said levers bear yieldingly.

705,953. KNOCKDOWN BOX. JACOB B. NEHEISEL, New Orleans, La. Filed Feb. 6, 1902. Serial No. 92,903. (No model.)

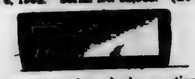

Claim.—1. A knockdown box, the box portion having an end flap bent upon itself and turned down inside said portion, slits formed in the bottom of the box radiating from the corners of the base of the said flap toward the center of the box-bottom, side flaps, a portion of each of which is folded upon itself and folded down into the box portion, the remaining portion of the side flaps lying flat upon the bottom of the box portion with their contiguous edges snugly abutting, whereby the folds in the side flaps are firmly braced against each other, the unfolded portions of the side flaps forming a supplemental bottom in the box portion, and an end wall bent up from the bottom, a cover integral with the same and bent over the box, and an endless flexible band secured in the said slits in the bottom of the box adapted to be secured around and secure the box in a closed position.

2. A knockdown box, the box portion having an end flap bent upon itself and turned down inside said portion, slits formed in the bottom of the box radiating from the corners of the base of said flaps toward the center of the box-bottom, side flaps, a portion of each of which is folded upon itself and folded down into the box portion, the remaining portion of the side flaps lying folded upon the bottom of the box portion with their contiguous edges snugly abutting whereby the folds of the side flaps are firmly braced against each other, the unfolded portions of the side flaps forming a supplemental bottom in the box portion, an end wall bent up from the bottom, a cover integral with the same and bent over the box, tongues formed integral with and extending sidewise from the base of the end flaps or folds, and adapted to lock between the folded portions of the side flaps, and an endless flexible band secured in the side walls in the bottom of the box and adapted to pass around and secure the box in a closed position.

705,954. SCRAPER FOR ASPHALT-COOKING DRUMS. JOHN P. NELSON, San Antonio, Tex. Filed Apr. 21, 1902. Serial No. 104,005. (No model.)

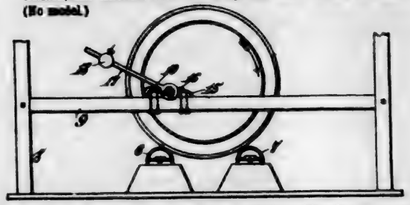

Claim.—1. The combination of an asphalt-cooking drum, a scraper-plate having a straight edge adapted to bear against the inner surface of said drum, a shaft carrying said scraper-plate and extending beyond the drum, a weighted arm carried by the shaft outside the drum, and adjustable bearings for said shaft.

2. The combination of an asphalt-cooking drum, a scraper-plate having a straight edge adapted to bear against the inner surface of said drum, a shaft carrying said scraper-plate and extending through and beyond the drum, weighted arms carried by the shaft outside the drum, and the weights thereof being adjustable and horizontally-adjustable bearings for said shaft.

705,955. RAIL-SUPPORT. CARL E. NEUBAUER, Virginia, Minn., assignor of one-half to Alfred Burke, Ida Krause, and Joseph Karl, Virginia, Minn., and Frank Julius Dahlberg, Buhl, Minn. Filed Feb. 10, 1902. Serial No. 93,406. (No model.)

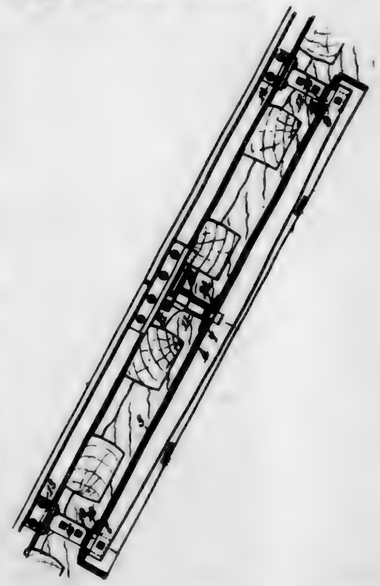

Claim.—1. In a rail-support, a beam, said beam having rail-supports at its ends, and an intermediate adjustable joint-support.

2. In a rail-support, a beam having rail-supports and a screw intermediate said rail-supports, and a nut on said screw, said nut and screw constituting a joint-support.

3. In a rail-support, a beam, said beam having rail-supports at its ends, and an intermediate adjustable joint-support, combined with a car-

ing for inclosing the beam, said casing having openings through which said supports project.

4. In a rail-support, a beam having rail-supports and an intermediate adjustable joint-support, a casing for inclosing said beam, said casing being of greater width than the beam, and having openings through which said supports project.

5. In a rail-support, a beam having rail-supports and a screw between said rail-supports, and a nut on said screw, the nut being provided with ratchet-teeth and the nut and screw constituting a joint-support, and a pawl mounted to engage said ratchet-teeth.

6. In a rail-support, a beam having rail-supports and an intermediate adjustable joint-support, a casing for inclosing said beam, said casing being perforated, and the said supports extending through said perforations, and plates surrounding said supports and closing said perforations.

7. In a rail-support, a beam having rail-supports and an intermediate adjustable joint-support, and clamps adapted to be fastened to the rails and having depending plates rigidly connected with said rail-supports.

705,956. COMPOSITION FOR CLEANING AND PRESERVING METALS. WILLIAM C. OBERWALDER, New York, N. Y. Filed Feb. 7, 1902. Serial No. 92,972. (No specimens.)

Claim.—1. The composition of matter for cleaning and preserving the polish of metals, said composition consisting in an abrasive material, sulfate of soda, borax, pulverized camphor, and a soapy substance combined in essentially the proportions stated.

2. A composition of matter for cleaning and preserving and polishing metals, said composition consisting in an abrasive material, sulfate of soda, borax, pulverized camphor, carbonate of magnesium, and a soapy substance combined in essentially the proportions stated.

705,957. STREET LETTER-BOX. FRANK D. OSBORN, Birmingham, Ala., assignor of one-half to Alexander C. Macpherson, Brooklyn, N. Y. Filed Feb. 5, 1902. Serial No. 92,662. (No model.)

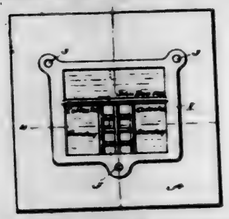

Claim.—1. In a letter-box of the class described, the combination with a box-wall having a sunken panel with the upper connecting offset portion cut through to form a narrow slot for the insertion of a card, a transparent plate fitting the panel-recess in front of the slot, and a metal frame covering the joint between the plate and the surrounding wall, and devices, releasable only on the inner side of said wall, detachably securing said frame to said wall.

2. In a letter-box of the class described, the combination with the box-wall having an integral sunken panel of which a portion is removed leaving an opening through the wall and further having a narrow card-admitting slot through the upper offset portion connecting the panel and non-sunken wall, a transparent plate fitting the panel-recess in front of the plane of said slot, a frame covering the joint between the plate and the wall surrounding it and provided with an integral grating in front of said opening, and devices, releasable only from the inner side of the wall, detachably fixing the frame to the wall.

3. In a letter-box of the class described, the combination with the box-wall having the partially-cut-away sunken panel provided with the outwardly-extending rib around the opening formed by such cutting away and further having along one side of the panel a slot extending through the offset formed by sinking the panel, of a glass plate overlying the panel and resting against said rib, and the frame having the integral grating covering said opening and secured to the wall to cover the margins of the glass and hold it against said rib, substantially as set forth.

4. In a letter-box of the class described, the combination with the box-wall having an integral sunken panel provided with an opening through its lower central portion and with an outwardly-extending rib around said opening, and further having a narrow slot through the upper offset formed in sinking the panel, a transparent plate fitting the panel-recess and held in front of the plane of said slot by said rib, a metal frame covering the joint between said plate and the surrounding wall and provided with a grating and integrally connected at top and bottom with said frame, and devices releasable only from the inner side of the wall, detachably fixing said frame to said wall.

5. In a letter-box, the combination with a box-wall pressed inward to form a sunken panel and having the upper offset slotted from end to end to admit sliding a card downward along the outer face of the panel, said panel being cut away centrally at its upper side to allow the finger to raise the card and cut away centrally below, to form a sight-opening, and provided with an outwardly-extending flange around the margin of the opening, a transparent plate fitting the panel-recess and resting against said flange, and a metal frame covering the joint between the plate and the surrounding wall and provided with a grating registering with said opening and integrally connected at top and bottom with said frame.

705,958. FOUNTAIN-PEN. RIDLEY C. PAINE, Bethel, N. Y. Filed Nov. 21, 1901. Serial No. 83,144. (No model.)

Claim.—1. A fountain-pen, comprising a casing having in its end carrying the pen a contracted opening, the outer wall of which flares outwardly to form a conical valve-seat, a rocking feeder adapted to move in and out through the valve-seat by gravity to feed the ink to the pen and to drain the ink therefrom, and a cap adapted to be secured on the casing and provided with a valve for engaging the said valve-seat when the cap is in position, as set forth.

2. A fountain-pen, comprising a casing having in its end carrying the pen a contracted opening, the outer wall of which flares outwardly to form a conical valve-seat, a weighted feeder mounted to slide and rock, whereby the feeder will be first moved out through the valve-seat and then swung into contact with the pen-point automatically, and a cap adapted to be secured on the casing and provided with a valve adapted to engage the said valve-seat when the cap is in position, as set forth.

3. A fountain-pen, comprising a casing provided with a conical valve-seat at its end forming a contracted opening leading into the casing, said end being adapted to carry a pen-point, a weighted feeder mounted to slide and rock in the casing and having an offset near its outer end, the portion beyond the offset being parallel with the body of the feeder and adapted to engage the pen-point when projected out through the valve-seat, and a cap adapted to be secured on the casing and provided with a valve for engaging the valve-seat when the cap is in position, as set forth.

4. A fountain-pen, comprising a casing provided with a nozzle having at its end a conical valve-seat forming a contracted opening leading into the casing, said end being adapted to carry a pen-point, a feeder mounted to swing and slide on a transverse pivot and provided with a weight at its inner end, said feeder having an offset near its outer end, the portion beyond the offset being parallel with the body of the feeder and engaging the pen-point when projected, means for limiting the sliding movement of the feeder, and a cap adapted to be secured on the nozzle and provided with a valve for engaging the said valve-seat when the cap is in position, as set forth.

5. A fountain-pen, comprising a casing provided with a nozzle having a conical valve-seat at one end and adapted to carry a pen-point at said end, a feeder slotted intermediate of its ends and provided with a weight at its inner end and having an offset outer end for engaging a pen-point a transverse pin forming a fulcrum for the feeder, a pin extending into the slot of the feeder, and a cap screwing on the nozzle and provided with a valve engaging the valve-seat, as set forth.

6. In a fountain-pen, the combination of a casing adapted to carry a pen at one end and having a contracted opening in said end, the outer wall of which opening flares outwardly, and a weighted feeder mounted to rock and slide in the casing, said feeder being provided with an offset near its outer end, for engaging the wall of the said opening, the portion beyond the offset being parallel with the body of the feeder and adapted when projected to engage the pen-point, as set forth.

7. In a fountain-pen, the combination with a casing adapted to carry a pen-point at one end and having an opening in said end, the outer wall of which opening flares outwardly, and a feeder slotted intermediately of its ends and provided with a weight at its inner end and with an offset near its outer end, the offset being adapted to engage the wall of the opening and the portion beyond the offset to engage the pen-point, a transverse pin in the casing upon which the feeder is fulcrumed, and a second pin projecting into the slot of the feeder, as set forth.

8. A fountain-pen, comprising a casing provided with a nozzle having a contracted opening at its end, the outer wall of the opening being flared outwardly, a pen-point carried by the nozzle and provided with a tongue having its rear end longitudinally split, and a weighted and rocking feeder adapted to move in and out through the contracted opening by gravity to engage the tongue of the pen to feed the ink thereto and to drain the ink therefrom.

9. A fountain-pen, comprising a casing provided with a nozzle having in its end a contracted opening, the outer wall of which is flared outwardly, a pen-point carried by the nozzle and provided with a tongue having its rear end slit longitudinally, and a weighted feeder mounted to slide and swing on a transverse pivot arranged between its ends, the end of the feeder when projected engaging the tongue of the pen-point, as set forth.

705,959. FLY-TRAP. ESSEX POTTER, Greensburg, Ind. Filed Nov. 20, 1901. Serial No. 83,053. (No model.)

Claim.—1. The combination with a screen formed with an opening, of a grooved collar having an annular flange and fitting in said opening, a cone having an opening in its apex, and a flange secured to said cone adapted to fit in said annular flange to secure the cone to the screen.

2. The combination with a screen formed with an opening, of a grooved collar having an annular flange and fitting in the opening, said flange being provided with bayonet-slots, a cone having an opening in its apex, a flange secured to said cone adapted to fit in said annular flange to secure the cone to the screen, a trap, a flange secured to said trap, and lugs upon the last-mentioned flange adapted to engage said bayonet-slots.

3. The combination with a trap, of a grooved flange secured to the base of said trap, a disk having an opening and fitting in said groove to close the bottom of said trap, and a cone fitting in said opening.

4. The combination with a screen formed with an opening, of a grooved collar having an annular flange and fitting in said opening, a cone having an opening in its apex, a flange secured to said cone adapted to fit in said annular flange, securing the cone to the collar, a semispherical trap, a grooved flange secured to said trap, a disk having an opening and fitting in said groove, a grooved collar having a flange and fitting in said last-mentioned opening, a lug upon said flange to engage a bayonet-join in said first-mentioned flange.

705,960. BOILER-FURNACE. ALEXANDER M. RANKIN, New York, N. Y., assignor to Oscar B. Madden, New York, N. Y. Filed Sept. 20, 1901. Serial No. 75,788. (No model.)

Claim.—1. A furnace having a gas-head at the center of the front of the fire-box above the level of the grates, said head having jet-apertures opening to the fire-box, means for supplying highly superheated or gasified steam to said gas-head, water-receptacles situated, respectively, above and below the jet-apertures therein, and means for supplying said receptacles with water, substantially as set forth.

2. A furnace having a steam-pipe, or series of connected steam-pipes, extending about the fire-box along the sides and bridge-wall of same, and a gas-head at the front of the fire-box above the fuel-bed and connected to the end of said series of pipes, said gas-head having in its side next the fire-bed a series of jet-apertures for the escape of the gasified steam, and a protecting water-conduit above said apertures.

3. A furnace having a water-base 26, mounted in its front wall, in combination with a boiler, pipes connecting said water-base with the boiler, a steam-pipe extending about the fire-box and connected at one end with the boiler and at the other end with a gas-head, 26, on the water-base, the said gas-head provided with jet-apertures 28 for the escape of the gasified steam to the fire-box, and provided with a protecting water-conduit 30, and the pipes connecting said conduit with the water-space of the boiler.

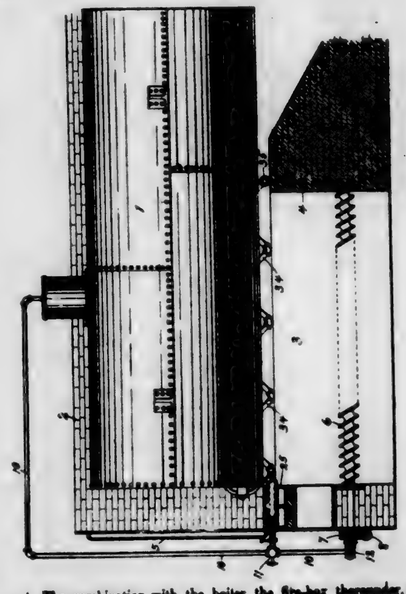

4. The combination with the boiler, the fire-box thereunder, and the grate-bars forming the fire-bed, of the water-base in the front wall of the fire-box, pipes connecting said water-base with the water-space in the boiler, a gas-head mounted on said water-base and having jet-apertures opening into the fire-box, means for supplying said gas-head with superheated or gasified steam, a water vessel or conduit on said gas-head above and adjacent to the said jet-apertures, and pipes connecting said conduit at one side with the water-base and at the other side with the water-space in the boiler, substantially as set forth.

5. The combination with the boiler, the furnace under the same, the gas-head at the front of the combustion-chamber, the superheating-pipes about the combustion-chamber and connected at one end with the boiler and at the other end with said gas-head, and the burning-jet on said gas-head, as and for the purpose set forth.

6. A furnace having a gas-head 26, in the front wall of its fire-box, zigzag steam-pipes 34 and 36 extending from the front of the fire-box back to the bridge-wall at the sides of the fire-box, the pipe 35 on the bridge-wall connecting said pipes 34 and 36, and the pipe 37 connecting the pipe 36 with the gas-head, in combination with a boiler over the furnace, and a pipe connecting the steam-space in the boiler with the pipe 34, substantially as set forth.

705,961. REVERSING MECHANISM. ROLLEND R. RICE, Marysville, Pa. Filed Oct. 30, 1901. Serial No. 80,537. (No model.)

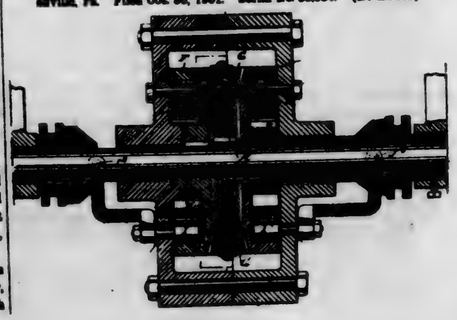

Claim.—1. A reversing mechanism, comprising a loose pulley, a driven shaft, a stationary shaft, split clutch-rings carried by the pulley, gear-wheels, of which one is secured to the driven shaft and the other is mounted to rotate loosely on the stationary shaft, the said gear-wheels being adapted to be engaged by the said clutch-rings, a carrier secured to the stationary shaft, pinions on the said carrier and in mesh with the said gear-wheels, and means for opening and closing the said clutch-rings, as set forth.

2. A reversing mechanism, comprising a loose pulley, a driven shaft, a stationary shaft, split clutch-rings carried by the pulley, gear-wheels, of which one is secured to the driven shaft and the other is mounted to rotate loosely on the stationary shaft, the said gear-wheels being adapted to be engaged by the said clutch-rings, a carrier secured to the stationary shaft, pinions on the said carrier and in mesh with the said gear-wheels, means for opening and closing the said clutch-rings, the said means comprising cams engaging the ends of the split clutch-rings, shifting cones under the control of the operator, and arms engaging the shifting cones and secured on the shafts of the said cams, as set forth.

3. A reversing mechanism, comprising a loose pulley, a driven shaft, a stationary shaft, split clutch-rings carried by the pulley, gear-wheels, of which one is secured to the driven shaft and the other is mounted to rotate loosely on the stationary shaft, the said gear-wheels being adapted to be engaged by the said clutch-rings, a carrier secured to the stationary shaft, pinions on the said carrier and in mesh with the said gear-wheels, means for opening and closing the said clutch-rings, the said means comprising cams engaging the split ends of the said clutch-rings, cam-shafts carrying the cams and journaled in the webs of the said pulley, arms on the said cam-shafts, pins adjustable in the said arms, and shifting cones slidable on the said shafts and engaged by the said pins, as set forth.

4. A reversing mechanism comprising a loose pulley, a driven shaft, a stationary carrier, pinions journaled thereon, beveled gear-wheels in mesh with opposite sides of the said pinions, one of the said gear-wheels being secured on the said driver shaft and the other being mounted to rotate loosely, and means for locking either of the said gear-wheels to the said pulley, as set forth.

5. A reversing mechanism comprising a loose pulley, a driven shaft, a stationary carrier, pinions journaled thereon, beveled gear-wheels in mesh with opposite sides of the said pinions, one of the said gear-wheels being secured on the said driven shaft and the other being mounted to rotate loosely, and means for locking either of the said gear-wheels to the said pulley, the said means comprising split clutch-rings secured to the pulley and adapted to engage the solid gear-wheels, cams for opening or closing the said split clutch-rings, and manually-controlled means for actuating the said means, as set forth.

705,962. WASHING-MACHINE. JOHN B. KEYSER, Manchester, Pa. Filed Jan. 5, 1901. Serial No. 42,239. (No model.)

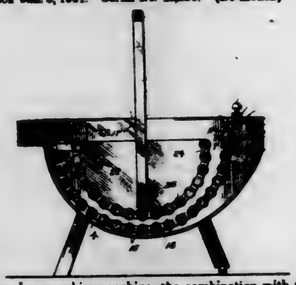

Claim.—In a washing-machine, the combination with the semicylindrical tub having an extended end, a semicylindrical stationary rubber pivoted at one end to the sides of the tub and adapted to rest upon the extended end when thrown out of engagement with the tub, the angular bearing-plates secured to the sides of the tub having one portion vertical and the other outwardly curved, links having their outer ends pivoted to the sides of the tub and their inner end provided with eyes, of a semicylindrical reciprocating rubber having trunnions detachably connected to the eyes of the links and adapted to rest in the bearing-plates, substantially as specified.

705,963. RAILROAD-RAIL JOINT. CHRIS BRANDS, Fredonia, Kans., assignor of one-third to William T. Stroud, Fredonia, Kans. Filed Feb. 4, 1902. Serial No. 92,771. (No model.)

Claim.—1. A railroad-joint comprising rail-terminals, one of which has a centrally-projecting tongue and a head cut back to clear the upper portion of the flange and form a table, and the other terminal formed with a longitudinal slot in the web and flange and a head projected beyond the end of said web and flange, the meeting portions of the rail-heads being scarfed.

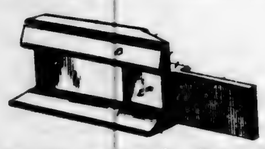

2. A railroad-joint comprising rail-terminals, one of which is transversely cut through to remove a portion of the head, web and flange to provide a longitudinally-projecting tongue having a vertical extent equal to the combined height of the flange and web at the center, the head being cut back from the point of intersection of the tongue with the web and flange, and the other terminal having a longitudinally-extending slot in the web and flange at the center and the head projected beyond the end of the flange and web to extend over the flange of the adjacent rail-terminal, the ends of the heads having interlocking relation and shaped to form a scarf-joint.

705,964. STOVEPIPE-HOLDER. JOSEPH A. RHODES, East Las Vegas, N. Mex. Filed Sept. 9, 1901. Serial No. 74,237. (No model.)

Claim.—1. The herein-described stovepipe-holder, consisting of an open band of bendable material and having an outwardly-extending arm at each end, one of the arms being provided with a longitudinal slot, a bolt carried by the short arm passed through the slot of the long arm and provided with a nut, corrugated stationary limb members projecting from opposite sides of the band, corrugated extension limb members overlapping a portion of the stationary limb members and provided with hooks at their ends, and a sleeve on the overlapped portions of the said limb members, as set forth.

2. A stovepipe-holder, comprising an open band of bendable material, arms on ends of the band, one arm having a longitudinal slot, a screw-bolt and nut on the other arm, the bolt passing through the slot and the nut clamping the arms toward each other, and two limbs adjustable for length having hooks on outer ends, and projecting from the band at one edge thereof.

705,965. FURNACE. ELMER O. RICHARD, Syracuse, N. Y., assignor to the Kelsey Furnace Company, Syracuse, N. Y. Filed Mar. 6, 1900. Serial No. 7,668. (No model.)

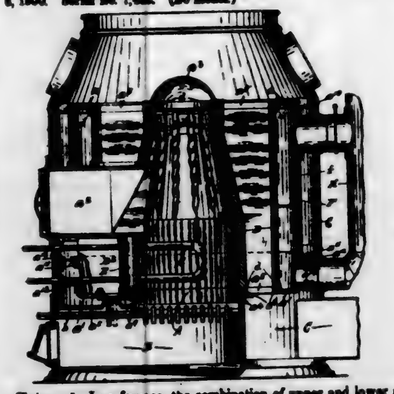

Claim.—1. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, and a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, substantially as and for the purpose specified.

3. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the upper plate being provided with a downwardly-extending flange of less diameter than said plate, and the lower plate being provided with an upwardly-extending flange having a peripheral shoulder, a tubular shell surrounding the depending flange on the upper plate and the upper portion of the flange on the lower plate, and interposed between the upper plate and the peripheral shoulder of the flange on the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber, said conduits being arranged between the upper and lower plates within the tubular shell at the inner sides of said flanges of the upper and lower plates and communicating with the openings in said plates, and a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being mounted on the lower plate within the tubular shell at the inner side of the upwardly-extending flange of said lower plate and between two of the air-heating conduits, substantially as set forth.

4. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, a tubular shell interposed between the upper and lower plates, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being arranged within the tubular shell between two of the air-heating conduits, and a supplemental water-heating chamber projecting from the inner face of the former water-heating chamber into said combustion-chamber, substantially as and for the purpose set forth.

5. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, and a supplemental water-heating chamber projecting from the inner face of the former water-heating chamber into said combustion-chamber, substantially as and for the purpose described.

6. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, a tubular shell interposed between the upper and lower plates, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell and communicating with the openings in said plates and having the lower portions of their contiguous sides formed substantially flat and engaged with each other, and the upper portions of said sides corrugated and separated, and a water-heating chamber also forming the upright wall of a part of said combustion-chamber and arranged within the tubular shell between two of the air-heating conduits, substantially as and for the purpose specified.

7. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being

ing conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell and communicating with the openings in said plates, and a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being arranged within the tubular shell between two of the air-heating conduits, substantially as and for the purpose described.

2. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, and a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, substantially as and for the purpose specified.

3. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the upper plate being provided with a downwardly-extending flange of less diameter than said plate, and the lower plate being provided with an upwardly-extending flange having a peripheral shoulder, a tubular shell surrounding the depending flange on the upper plate and the upper portion of the flange on the lower plate, and interposed between the upper plate and the peripheral shoulder of the flange on the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber, said conduits being arranged between the upper and lower plates within the tubular shell at the inner sides of said flanges of the upper and lower plates and communicating with the openings in said plates, and a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being mounted on the lower plate within the tubular shell at the inner side of the upwardly-extending flange of said lower plate and between two of the air-heating conduits, substantially as set forth.

4. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, a tubular shell interposed between the upper and lower plates, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being arranged within the tubular shell between two of the air-heating conduits, and a supplemental water-heating chamber projecting from the inner face of the former water-heating chamber into said combustion-chamber, substantially as and for the purpose set forth.

5. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, and a supplemental water-heating chamber projecting from the inner face of the former water-heating chamber into said combustion-chamber, substantially as and for the purpose described.

6. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, a tubular shell interposed between the upper and lower plates, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell and communicating with the openings in said plates and having the lower portions of their contiguous sides formed substantially flat and engaged with each other, and the upper portions of said sides corrugated and separated, and a water-heating chamber also forming the upright wall of a part of said combustion-chamber and arranged within the tubular shell between two of the air-heating conduits, substantially as and for the purpose specified.

7. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower wall, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of said combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, and water-circulating pipes connected to the water-heating chamber, one of the pipes being arranged above said upwardly-extending flange, and the other being passed through said flange, substantially as and for the purpose set forth.

8. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of said combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, a supplemental water-heating chamber projecting from the inner face of the former water-heating chamber into said combustion-chamber, and water-circulating pipes connected to the water-heating chamber, one of the pipes being arranged above said upwardly-extending flange, and the other being passed through said flange, substantially as and for the purpose described.

9. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, a tubular shell interposed between the upper and lower plates, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being arranged within the tubular shell between two of the air-heating conduits, and an air-heating chamber arranged within the tubular shell at the outer side of the water-heating chamber, substantially as and for the purpose specified.

10. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower wall, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, and an air-heating chamber arranged within the tubular shell between said upwardly-extending flange and the water-heating chamber, substantially as and for the purpose set forth.

11. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, an air-heating chamber arranged within the tubular shell between said upwardly-extending flange and the water-heating chamber, a supplemental water-heating chamber projecting from the inner face of the former water-heating chamber into said combustion-chamber, and water-circulating pipes passed through the air-heating chamber and connected to the water-heating chamber, one of the pipes being arranged above said upwardly-extending flange, and the other being passed through said flange, substantially as and for the purpose described.

12. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough and aligned with each other, the lower plate being provided with an upwardly-extending flange formed with an opening extending horizontally therethrough, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, and an air-heating chamber arranged within the tubular shell between said upwardly-extending flange and the water-heating chamber and formed with upper and lower openings communicating with one of the openings extending vertically through the lower plate and with the openings extending horizontally through the upwardly-extending flange of said lower plate, substantially as and for the purpose specified.

13. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough and aligned with each other, the lower plate being provided with an upwardly-extending flange formed with an opening extending horizontally therethrough, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits forming the upright wall of a part of the combustion-chamber of the furnace, said conduits being arranged between the upper and lower plates within the tubular shell at the inner side of the upwardly-extending flange of the lower plate and communicating with the openings in said plates, a water-heating chamber also forming the upright wall of a part of the combustion-chamber, said water-heating chamber being detachably mounted on the lower plate within the tubular shell at the inner side of said upwardly-extending flange and between two of the air-heating conduits, an air-heating chamber arranged within the tubular shell between said upwardly-extending flange and the water-heating chamber and formed with upper and lower openings communicating with one of the openings extending vertically through the lower plate and with the opening extending horizontally through the upwardly-extending flange of said lower plate, and water-circulating pipes passed through the air-heating chamber and connected to the water-heating chamber, one of the pipes being arranged above said upwardly-extending flange, and the other being passed through the opening extending horizontally through said flange, substantially as and for the purpose set forth.

705,966. TOY BUBBLE-BLOWER. LUELLEN H. ROCKWELL, Mount Carmel, Pa., assignor of one-half to William M. Kramer, Mount Carmel, Pa. Filed Mar. 19, 1902. Serial No. 98,986. (No model.)

Claim.—1. A bubble-blower comprising a blowing element, a body with a reservoir therein, and a bubble-forming head having a bell-mouth with a filling of saponaceous material, the head and blowing element having bores practically continuous with each other.

2. A bubble-blowing toy comprising a blowing element, a body with a reservoir therein, and a bubble-forming head, the blowing element having a mouthpiece and a stem with a bore therethrough, the said stem extending through the reservoir of the body and engaging the inner end of the head and the latter provided with a bore, and a bell-mouth having a saponaceous filling.

3. A bubble-blowing toy comprising a blowing element, an intermediate body having a reservoir, and a bubble-forming head, the said parts being frictionally engaged and disposed in longitudinal alinement, the head and blowing element having bores therethrough which are practically continuous with each other.

4. A bubble-blowing toy comprising a blowing element having a mouthpiece and a stem with a bore therethrough, the free end of the stem being reduced, an intermediate body having a reservoir through which the stem extends, and a bubble-forming head engaged by the one end of the body and having a bore therethrough and also provided with a mouth supplied with a saponaceous filling, the free end of the stem being adapted to engage the end of the head within the body.

705,967. AUTOMATIC CURRENT-MOTOR. JOHN ROSE, Greenville Wash. Filed July 15, 1901. Serial No. 67,999. (No model.)

Claim.—1. In a current-motor, the combination of a track, an oscillatory member engaging the said track, bumpers located on either end of said track, and a slide on said oscillatory member and adapted to strike the said bumpers as the oscillatory member moves along the said track, a blade pivoted upon said oscillatory member, and flexible connections between said blade and said slide for the purpose of shifting the angle of said blade when said slide engages said bumpers.

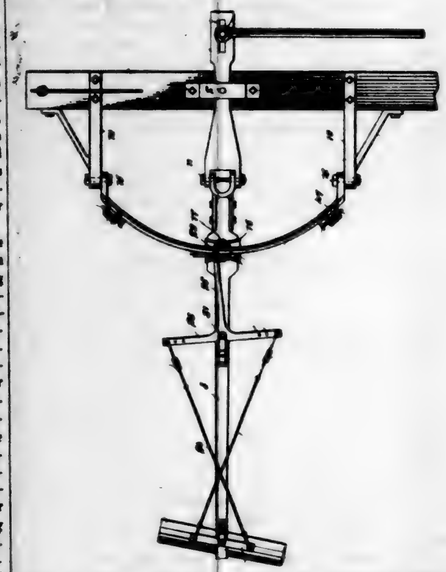

2. In a current-motor, the combination of an oscillatory member, a pivoted track engaging the said oscillatory member, a trolley adapted to move on said track and connect the same with the said oscillatory member, bumpers located on either end of said track, and a slide having a tripping mechanism positioned so as to meet said bumpers.

3. In a current-motor, the combination of a blade, an oscillatory member carrying the said blade, a swinging member mounted on the said oscillatory member and connected to the said blade, a slide also mounted on the said oscillatory member and connected to the said swinging member, a pivoted track engaging the said member, and bumpers located on either end of the said track and adapted to coöperate with the said sliding member to control the position of the said blade.

4. In a current-motor, the combination of a blade, an oscillatory member carrying the said blade, a swinging member connected to the said blade, a slide carried on the said oscillatory member, a pivoted member connected to the said oscillatory member, a support therefor, and a pair of bumpers adapted to control the position of the said slide.

5. In a current-motor, the combination of a blade, a slide connected thereto, pawls carried by said slide, and a rack moving under said pawls, whereby the position of the said blade is controlled.

6. In a current-motor, the combination of an oscillatory member, a swinging member mounted on the said oscillatory member, a slide connected to said swinging member and having pawls, a pair of bumpers adapted to operate on the said pawls, and a rack carried by the said oscillatory member, whereby the position of the said swinging member with respect to the said oscillatory member is controlled.

7. In a current-motor, the combination of an oscillatory member, racks and a slide carried by the said oscillatory member, pawls mounted on the said slide, and bumpers adapted to coöperate with the said pawls to control the position of the said sliding member.

8. In a current-motor, the combination of an oscillatory member, a movable member carried thereby, pawls mounted on said movable member, trips connected to said pawls, racks to be engaged by said pawls, and a pair of bumpers adapted to operate upon the said trips and the said movable member to control their positions with respect to the said oscillatory member.

9. The combination in a current-motor, of a blade, a swinging member connected to said blade, a slide having pawls and trips adapted to control the position of the said swinging member, racks to be engaged by said pawls, a pivoted track, and bumpers mounted on said track whereby the blade is swung into a different position at each end of its stroke.

10. An automatic current-motor, comprising a swinging arm pivoted upon a center and provided with a trolley, an arc-shaped track concentric to said center and engaging said trolley, a blade mounted upon said swinging arm and movable relatively thereto, and means for periodically shifting the position of said blade relatively to the said arm.

11. An automatic current-motor, comprising a swinging arm pivoted upon a center, a blade mounted upon said arm and movable relatively thereto, levers and connections for periodically moving said blade relatively to said arm, and bumpers for actuating said levers and connections.

705,968. VEHICLE-WHEEL SPINDLE. BLAIR B. ROOT, Lancaster, Pa., assignor to John F. Hess, Lancaster, Pa. Filed Oct. 2, 1901. Serial No. 77,269. (No model.)

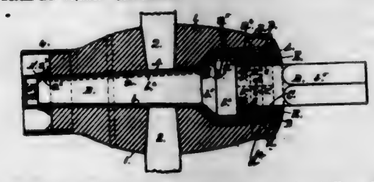

Claim.—1. The combination in a vehicle-wheel spindle and bearing, with the box, A, having the rearwardly-widening portion, *a*, the outwardly-sloping conical portion, *a'*, with the thickened wall, and the rearwardly-extending cylindrical portion, a^2, having the internal screw-thread, a^3, with means provided for securing it axially to a wheel-hub, of the spindle, B, seated in said box, said spindle having the rearwardly-widening portion, *b*, the outwardly-sloping conical portion, *b'*, the rearwardly-extending cylindrical portion, b^1, having the abrupt shoulder, b^2, and the cylindrical portion, b^4, having the angular rear end portion, b^5, with means provided, such as a divided screw, to revokably hold said spindle in place, substantially as and for the purpose hereinbefore set forth.

2. The combination in a vehicle-wheel spindle and bearing, with the box, A, as described, axially secured to a wheel-hub as shown, and the spindle, B, as described, seated in said box as shown, said box having the internal screw-thread, a^3, and said spindle having the abrupt shoulder, b^2, with the cylindrical portion, b^4, of the divided screw, C, with the external screw-thread, *c*, sleeved on said portion, b^4, screwed into said box and against said shoulder, b^2, substantially as described and for the purpose hereinbefore set forth.

3. In a vehicle spindle and bearing with the box, A, as described axially secured to a wheel-hub as shown, and the spindle, B, as described seated in the box as shown; said box having the internal screw-thread, a^3, and said spindle the abrupt shoulder, b^2, with the cylindrical portion, b^4; the divided screw, C, with the external screw-thread, *c*, sleeved on said portion, b^4, screwed into said box and against said shoulder, b^2; said screw, C, having the diametrical longitudinal cuts, *c'*, making the sections, c^2 c^2, with the notches, c^4, and the projections, c^5, engaging said notches, and with means provided to lock said screw, C, in place; all substantially as described and for the purpose hereinbefore set forth.

4. In a vehicle-wheel spindle and bearing, with a hub, I, having the box, A, as described, axially secured into said hub, the spindle, B, as described journaled in said box, and the screw, C, as described screwed therein and against the shoulder, b^2; the ring screw, D, with the internal screw-thread, *d*, screwed onto said screw, C, and against the rear end of said box, substantially as described and for the purpose hereinbefore set forth.

705,969. STEAM-HEATING SYSTEM. WILLIS E. ROYS, Richmond Hill, N. Y., assignor to Margaret T. Roys, New York, N. Y. Filed Nov. 18, 1900. Serial No. 36,625. (No model.)

Claim.—A gravity steam system, comprising a steam-generator, a plurality of radiators, steam-supply connections between the generator and the said radiators, steam-admission and temperature-controlling devices in the said connections adjacent to the radiators, each controlling device serving to regulate the amount of steam passing to its particular radiator and to control the degree of heat to which the room is to be heated, a water-of-condensation-disposing device connected with each radiator and arranged to receive and discharge the accumulating water of condensation from the radiator independently of said controlling device and irrespective of the pressure in the radiator, said water-of-condensation-disposing device preventing escape of steam from the radiator and a return connection between the said water-of-condensation-disposing device and the said generator, to return the water of condensation to the generator, said return connection containing a pressure-relief device open to the atmosphere, and an automatic return device between the said generator and the said relief device, as set forth.

705,969.

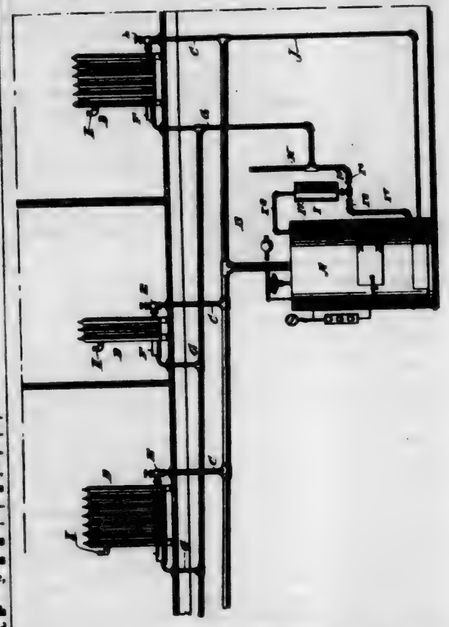

705,970. SOLAR ATTACHMENT FOR TRANSIT INSTRUMENTS. ORVILLE F. SHATTUCK, Denver, Colo. Filed Nov. 14, 1901. Serial No. 82,206. (No model.)

Claim.—1. In a solar attachment for transit, theodolite or similar instruments, the combination with the telescope, of two reflectors mounted to rotate about the objective extremity of the telescope while the latter remains stationary, and arranged to reflect a ray of light twice, substantially as described.

2. In an instrument of the class described, the combination with the telescope, of a bracket revolubly mounted on the objective extremity of the instrument and composed of two parallel side pieces, two reflectors mounted between the parallel members of the bracket and arranged to reflect a ray of light twice before entering the objective of the telescope.

3. In an instrument of the class described, the combination with the telescope, of a bracket revolubly mounted on the objective extremity of the telescope and composed of two parallel sides pieces, and two reflectors mounted between the sides of the bracket, one being fixed and the other movable to vary the angle between them, substantially as described.

4. The combination with the telescope of a transit, theodolite or similar instrument, of a reflector-holder revolubly mounted on the objective extremity of the telescope, two reflectors mounted on said holder and turning therewith, the reflectors being arranged at suitable angles to each other to reflect a ray of light twice, suitable means for regulating one of the reflectors to vary their angle, and suitable means for rotating the reflector-holder on the telescope, substantially as described.

5. The combination with the telescope of a transit, theodolite or similar instrument, of a reflector-holder revolubly mounted on the objective extremity of the telescope, two reflectors mounted on said holder and turning therewith, the reflectors being arranged at suitable angles to each other to reflect a ray of light twice, the second reflection being in the line of the optical axis of the telescope, and suitable means for regulating one of the reflectors to vary their angles for the purpose set forth.

6. The combination with the telescope of a transit or similar instrument, of a reflector-holder revolubly mounted on the objective extremity

of the telescope, two reflectors mounted on said holder and arranged to twice reflect a ray of light, the second reflection being in line of the optical axis of the telescope, one of the reflectors being pivotally mounted, and a differentially-threaded nut mounted to regulate the position of the pivoted reflector for the purpose set forth.

7. The combination with the telescope of a transit or similar instrument, of a bracket revolubly mounted to project beyond the objective of the telescope, two reflectors mounted on said bracket, one of them being fixed and crossing the line of sight of the telescope at a suitable angle, and the other being arranged at a suitable angle to the first and pivotally connected with the bracket, and a differentially-threaded nut suitably mounted for regulating the position of the pivoted reflector to vary its angle with the fixed reflector, substantially as described.

8. The combination with the telescope of a transit or similar instrument, of a bracket revolubly mounted to project beyond the objective of the telescope, two reflectors mounted on said bracket, one of them being fixed, and the other being arranged at a suitable angle to the first, and pivotally connected with the bracket, a differentially-threaded nut suitably mounted for regulating the position of the pivoted reflector to vary its angle with the fixed reflector, the said nut having a graduated head, substantially as described and for the purpose set forth.

9. The combination with the telescope of an instrument of the class described, of a bracket mounted to project beyond the objective of the telescope, two reflectors mounted on said bracket and arranged to form a suitable angle with each other, one of the said reflectors being pivotally connected with the bracket, a differentially-threaded nut suitably mounted for regulating the position of the pivoted reflector, the head of said nut being graduated for the purpose set forth, and a spring-held pointer mounted on the bracket and engaging the head of said nut, substantially as described.

10. The combination with the telescope of a transit or similar instrument, of a bracket revolubly mounted on the objective extremity of the telescope and projecting beyond the same, two reflectors mounted on said bracket and arranged at a suitable angle to each other, and suitable means for rotating the reflector-carrying bracket, substantially as described.

11. The combination with the telescope of a transit or similar instrument, of a reflector-holder revolubly mounted on the objective extremity of the telescope and projecting forward therefrom, two reflectors mounted on said reflector-holder and arranged to rotate therewith, the two reflectors being arranged to form an angle with each other and also arranged to twice reflect a ray of light, the second reflection being in line of the optical axis of the telescope, one of the reflectors being movably mounted, and a screw mounted on the reflector-holder, to regulate the position of the movable reflector for the purpose set forth.

12. The combination with the telescope of a transit, theodolite, or similar instrument, of a reflector-holder revolubly mounted on the objective extremity of the telescope, two reflectors mounted on said holder and turning therewith, the reflectors being arranged at suitable angles to each other to reflect a ray of light twice, suitable means for rotating the reflector-holder on the telescope, and suitable means for locking said holder in any desired position of adjustment, substantially as described.

705,971. PIPE-HANGER. CHARLES W. SHARP, Carbondale, Ill. Filed Sept. 9, 1901. Serial No. 74,720. (No model.)

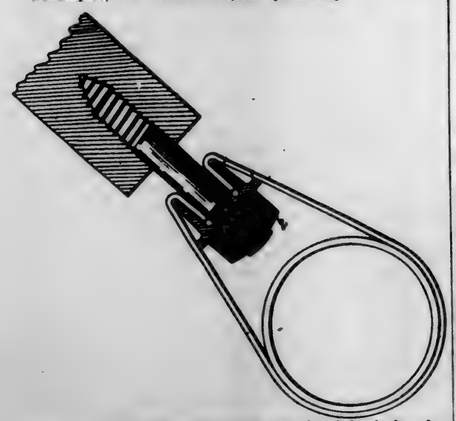

Claim.—1. A pipe-hanger consisting of a threaded rod adapted to be screwed in a stationary support, and a washer provided with a flange and adjustably carried by said rod, in combination with a metallic strap or support bent to form a loop for receiving the pipe, and its ends bent and held within the washer between the flange and the rod, and a nut for supporting the washer, substantially as specified.

2. A pipe-hanger consisting of a rod having both its ends threaded, a washer removably carried thereby provided with a flange, a strap bent into the form of a loop to support the pipe, hooks formed on the end of the strap and engaging the flange of the washer, and a nut placed upon the rod beneath the washer for supporting and adjusting the same, substantially as specified.

705,972. MOLD FOR ARTIFICIAL TEETH. THOMAS STEELE, Redbank, N. J. Filed Dec. 5, 1901. Serial No. 84,737. (No model.)

Claim.—1. A mold for artificial teeth, having a core-bar, heads hold adjustably thereon, and core-pins projecting rigidly from the said heads, as set forth.

2. A mold for artificial teeth, having a core-bar, heads hold adjustably thereon, core-pins on the said heads, and means for adjustably securing the heads to the core-bar, the heads having shanks provided with elongated slots, and screws extending through the slots and screwing in the core-bar for securing the shank to the core-bar, as set forth.

3. A mold for artificial teeth, having a core-bar provided with recesses, heads carrying the pins and having shanks extending into the recesses of the core-bar, each shank having an elongated slot and a countersink, and a screw passing through the slot and screwing into the core-bar, the head of the screw extending in the said countersink, as set forth.

705,973. COUPLING FOR CONNECTING HANDLES TO TOOLS. WILLIS A. SUTTLE, Austin, Tex. Filed Apr. 17, 1902. Serial No. 103,443. (No model.)

Claim.—In a device of the character described, the combination with a sleeve having communicating vertical and horizontal slots disposed one above the other, of a tang having transversely-projecting shoulders one arranged above the other, and a cuff having a tapering end to coact with the lower end of the sleeve and the lowermost shoulder to hold the uppermost shoulder in the horizontal slot, substantially as set forth.

705,974. SHUNTING-LEVER. WILLIAM TAYLOR, Sandiacre, England. Filed Apr. 15, 1902. Serial No. 102,984. (No model.)

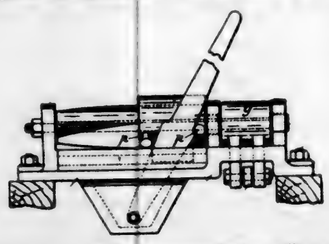

Claim.—1. In a shunting-lever or switching appliance, the combination of a helical element provided with a slot, a cylindrical element or piece in alinement therewith and provided with a slot, and a flat axle-bar passing through the slot in both said elements, said flat axle-bar being capable of a slight torsion at one end only, thereby permitting the said cylindrical element to move independently of the helical element.

2. In a shunting-lever or switching appliance, the combination of a helical element provided with a tapering slot, a cylindrical element separate therefrom but in alinement therewith and provided with a tapering slot, and a flat axle-bar passing through said slots and held at one end only but capable of slight torsion at the other end, so permitting the cylindrical element to move without influencing the helical element.

3. In a shunting-lever or switching appliance, the combination of a helical element provided with a tapering double-ended keyhole-slot, a cored nut adapted to traverse the same and provided with means for preventing its rotation, a cylindrical element in alinement with said helical element but capable of a movement independent of the helical element, said cylindrical element provided with a tapering double-ended keyhole-slot, and a flat axle-bar passing through the slots and on which bar said elements are mounted, said bar being held firmly at one end only but capable of slight torsion at the other end, and means for operating said shunting-lever or switching appliance.

4. In a shunting-lever or switching appliance, the combination of a helical element provided with a double-ended tapering keyhole-slot extending axially therethrough, a traveling nut mounted thereon, a lever for operating said nut, a cylindrical element in alinement with said helical element and provided with a double-ended tapering keyhole-slot extending axially therethrough, a flat axle-bar passing loosely through said slots, a slotted bush mounted between the helical and the cylindrical elements and supported in an intermediate bearing, the ends of said axle-bar being mounted in end bearings in a manner to permit the cylindrical element to move independently of the helical element, by a slight torsion on one end of said axle-bar.

5. In a shunting-lever or switching appliance comprising a helical element provided with a tapering double-ended keyhole-slot extending axially therethrough, a cored nut adapted to traverse the same, a lever operating said nut, a cylindrical element in alinement with said helical element provided with a tapering double-ended keyhole-slot extending axially therethrough, a bush arranged between said elements and provided with a tapering double-ended keyhole-slot extending axially therethrough, the flat axle-bar, formed with a cylindrical head at one end and with a screw-threaded portion at the other end, adapted to pass through said elements and bush, and bearings to support the ends of said axle-bar.

705,975. CLAM OR OYSTER DREDGE. WILLIAM A. THOMPSON, La Crosse, Wis. Filed Oct. 22, 1901. Serial No. 80,301. (No model.)

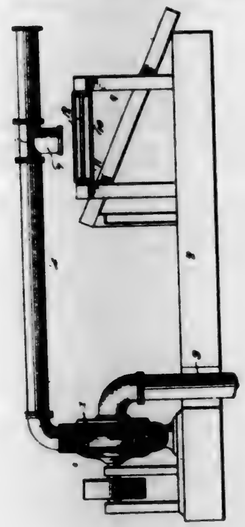

Claim.—1. A dredge having a discharge-conduit provided with a depending discharge branch, and a screen beyond the latter, whereby material carried through the conduit to the screen, will by its own gravity drop through the depending discharge branch, substantially as described.

2. A dredge having a discharge-conduit provided with a discharge branch and a screen beyond the latter, in combination with a screen onto which said branch discharges, substantially as described.

3. A dredge having a discharge-conduit provided with a discharge branch and a screen beyond the latter, in combination with an endless traveling carrier-screen onto which said branch discharges, substantially as described.

4. A dredge having a discharge-conduit provided with a discharge branch and a screen beyond the latter, in combination with a carrier-screen onto which said branch discharges, a chute under said carrier-screen to discharge the material that passes through the latter and a chute on which the material carried by said carrier is discharged by the latter, substantially as described.

705,976. WASHING-MACHINE. GEORGE THOMAS, Gothenburg, Nebr. Filed Mar. 25, 1902. Serial No. 99,891. (No model.)

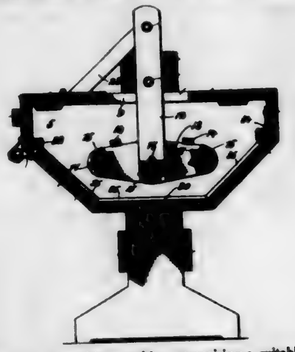

Claim.—1. A washing-machine, comprising a suitable supporting-frame, a pivoted ends-box, a pivotal shaft supported in stationary bearings on said ends-box, a rubber pivoted in the supporting-frame above the pivots of said box, and links connecting the pivoted rubber with the pivotal shaft on the ends-box.

2. A washing-machine, comprising a supporting-frame, having the slotted bearings at its upper portion, a ends-box pivotally supported in said frame at points below said bearings thereof, a rubber having the arms provided with the fulcrum-shaft and the connecting-rod, said fulcrum-shaft being removably mounted in the slotted bearings of the supporting-frame, another shaft mounted in stationary bearings on an end portion of the ends-box, and connecting arms or links between the last-mentioned shaft and the connecting-rod at the upper ends of the rubber-arms.

3. A washing-machine having a frame, a ends-box pivoted thereto, means for swinging said ends-box, a rubber pivoted to the frame in eccentric relation and independently of the ends-box and adapted to swing in an arc eccentric to the path of said ends-box, and links pivoted to the rubber and to the ends-box and communicating the motion of the latter to said rubber.

705,977. METHOD OF PRODUCING FIGURED PILE FABRIC. OTTO THIER, New York, N. Y. Filed Dec. 4, 1901. Serial No. 84,671. (No specimens.)

Claim.—The herein-described method for producing figured pile fabrics, consisting essentially in subjecting a portion of the pile of a plain, woven pile fabric to the action of colors to color this portion of the pile according to a predetermined design, at the same time subjecting the remaining portion of the pile to the action of a pile-destroying medium, then steaming the fabric to fix the color applied and to aid in the final destruction of that portion of the pile treated with the pile-destroying medium, and finally removing the destroyed pile from the fabric, as set forth.

705,978. REGENERATIVE FURNACE. FRANCIS H. TERRY, Pittsburg, Pa. Filed Nov. 14, 1901. Serial No. 82,318. (No model.)

Claim.—1. A regenerative furnace having air and gas regenerators on each side thereof, reversing-valves on opposite sides of the furnace, and a flue leading from one regenerator on each side to the reversing-valve on the side opposite the said regenerator; substantially as described.

2. A regenerative furnace having gas and air regenerators arranged in pairs on each side thereof, a reversing air-valve on one side, a reversing gas-valve on the other side, one of each pair of regenerators having a flue leading beneath the furnace to the valve on the other side thereof, while the other of said pair has a flue connection to the valve on the same side; substantially as described.

3. A regenerative furnace having gas and air regenerators arranged in pairs on each side thereof, an air-valve casing on one side having three flues, one leading to the chimney-flue, another to the air-regenerator on the same side of the furnace, and the third leading to the air-regenerator on the opposite side of the furnace, and a gas-valve casing having three flues, one leading to the gas-regenerator on the same side, one to the chimney-flue, and the third to the gas-regenerator on the opposite side and reversing-valves within the valve-casings; substantially as described.

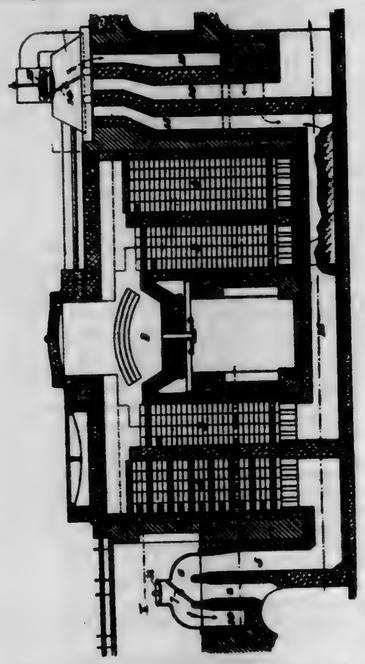

4. A regenerative furnace having a pair of regenerators on each side thereof, one of each pair being a gas-regenerator and the other an air-regenerator, three flues on one side of the furnace, one leading to the chimney-flue, another to the air-regenerator on the same side, and the third to the air-regenerator on the opposite side, three flues on the other side of the furnace, one a chimney-flue, the second leading to the gas-regenerator on the same side, and the third leading to the gas-regenerator on the opposite side, and valve mechanism for reversing the flow to the regenerators; substantially as described.

705,979. OVEN-SWAB. OSBRAVE W. TRESCHEL, Philadelphia, Pa. Filed Mar. 22, 1902. Serial No. 99,555. (No model.)

Claim.—1. A swab comprising a head having an opening in one end thereof, a link-bar projecting through the opening and secured to the head and a cloth-securing device carried by the link-bar.

2. A swab comprising a head, a casing on one end thereof and provided with a perforation, a headed link-bar projecting through the opening, and a cloth-securing device carried by the link-bar.

3. A swab comprising a head, a casing on one end thereof and provided with open sides and an opening in its end, a headed bar projecting through the opening in the end of the head, bars on the open sides of the head and a cloth-carrying device secured to the bar.

705,980. SHUTTLE-CHECKING MECHANISM FOR LOOMS. WALTER W. TWIST and WILLIAM H. BROOKHEAD, Fall River, Mass., assignors to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Oct. 5, 1901. Serial No. 77,620. (No model.)

Claim.—1. A shuttle-box, a spring-controlled binder having a fixed fulcrum adjacent the outer end of the box, and an impact member in pivotal connection with the binder and having a sliding fulcrum adjacent the mouth of the box, said impact member being normally maintained by the binder at an angle part way across the shuttle-path and constituting the movable wall of the shuttle-box.

2. A shuttle-box, and a shuttle-checking device comprising two oppositely-extended, juxtaposed members fulcrumed adjacent the inner and outer ends of the shuttle-box, respectively, and pivotally connected, one of said members having a sliding fulcrum, the inner of said members constituting the movable wall of the box, which is encountered by the shuttle as it enters the shuttle-box, and a spring to act upon the outer member and therethrough normally maintain the impact-face of the inner member partly across and at an acute angle to the shuttle-path.

3. A shuttle-box, and a shuttle-checking device comprising a spring-controlled, swinging member having a fixed fulcrum at its outer end, and a coöperating pivotally-connected impact member slidably supported at its inner end adjacent the mouth of the box, the impact member being normally maintained at an acute angle to and intersecting the shuttle-path.

4. A shuttle-box, and a shuttle-checking device comprising a spring-controlled, swinging member having a fixed fulcrum at its outer end, and a coöperating pivotally-connected impact member slidably supported at its inner end adjacent the mouth of the box, the impact member being normally maintained at an acute angle to and intersecting the shuttle-path, and means to limit the inward movement of the impact member.

5. A shuttle-box, and a shuttle-checking device comprising a spring-controlled member having a fixed fulcrum adjacent the outer end of the box, and a coöperating impact member having a sliding fulcrum at its inner end adjacent the mouth of the box and near its outer end pivotally connected with the spring-controlled member, the impact member having its elongated plane inner face normally maintained in the path of the shuttle at an angle thereto.

6. A shuttle-box, and a shuttle-checking device comprising a spring-controlled member, a juxtaposed and oppositely-extended impact member in pivotal engagement therewith near the outer end of the impact member, fulcra for said members adjacent the ends of the shuttle-box, the impact member being normally maintained in the path of the shuttle at an angle thereto, and a stop on the spring-controlled member to limit inward movement of the impact member.

7. A shuttle-box, and a shuttle-checking device comprising a spring-controlled member having a fixed fulcrum adjacent the outer end of the box, an impact member having a sliding fulcrum at its inner end, a rounded projection on one member to enter a socket in the adjacent face of the other member, to form a pivotal connection between them at or near the outer end of the impact member, and a stop on the spring-controlled member to coöperate with and limit inward movement of the impact member, the elongated, plane inner face of the latter being normally in the path of the shuttle at an acute angle thereto.

8. A shuttle-box, and a shuttle-checking device comprising a spring-controlled member having a fixed fulcrum adjacent the outer end of the box, and an impact member slidably supported at its end adjacent the mouth of the box, a lateral projection on one member to seat in a socket in the adjacent face of the other member, to form a pivotal connection between them adjacent the outer end of said impact member, the inner face of the latter being normally in the path of the shuttle at an angle thereto, engagement of the incoming shuttle with the impact member rocking it about its support and in turn rocking the coöperating member against its spring, the pressure of the impact member upon the shuttle gradually increasing as the latter approaches the outer end of the box and the inner face of the impact member parallels the shuttle side.

9. A shuttle-box, and a shuttle-checking device comprising a spring-controlled member having a fixed fulcrum adjacent the outer end of the box, and an impact member mounted to rock on said spring-controlled member and normally maintained with its inner elongated face in the path of the shuttle at an angle thereto, and a fixed support on which the inner end of the impact member can fulcrum and slide, the incoming shuttle simultaneously rocking the impact member upon the spring-controlled member and moving its inner end upon said fixed support, to thereby gradually increase the area of engagement between the impact member and the shuttle and the pressure upon the latter as it advances in the box.

10. In a loom, a spring-controlled protector rock-shaft, the lay having a shuttle-box, and a compound binder, comprising a member fulcrumed adjacent the outer end of the box and operatively connected with the said rock-shaft, and an impact member mounted at or near its outer end to rock on the first-mentioned member, and a fixed support for and on which the inner end of the impact member may slide, said impact member being normally maintained with its inner face in the path of the shuttle at an acute angle thereto.

11. A shuttle-box, and a shuttle-checking device, comprising an outer spring-controlled movable member, and a coöperating inner impact member, having a sliding fulcrum at its inner end, near the entrance of the shuttle-box, and bearing near its outer end upon said outer member, said impact member normally intersecting the shuttle-path.

705,981. LOW-PRESSURE STEAM-HEATER. FREDERIC TUDOR, Brookline, Mass. Filed June 13, 1901. Serial No. 64,494. (No model.)

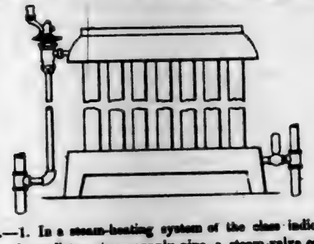

Claim.—1. In a steam-heating system of the class indicated, the combination of a radiator, steam-supply pipe, a steam-valve controlling the admission of steam to the radiator, a return-pipe and connections therewith to the radiator, a manipulating-handle and associated actuating devices for the steam-valve having an opening movement which is limited within one revolution of the valve-handle, the valve and its actuating devices proportioned to admit to the radiator its maximum normal condensable quantity of steam before it reaches the limit of its opening movement, and constructed to indicate the arrival of the valve at the said point of maximum normally condensable steam delivery.

2. In a steam-heating system of the class indicated, the combination of a radiator, steam-supply pipe, a steam-valve controlling the admission of steam to the radiator, a return-pipe and connections therewith to the radiator, a manipulating-handle and associated actuating devices for the steam-valve having an opening movement which is limited within one revolution of the valve-handle, the valve and its actuating devices proportioned to admit to the radiator its maximum normal condensable quantity of steam before it reaches the limit of its opening movement, constructed to indicate the arrival of the valve at the said point of maximum normally condensable steam delivery, and to accelerate the final opening movement of the valve with relation to the rate of angular movement of the valve-handle.

3. In a steam-heating system of the class indicated, the combination of a radiator, a steam-valve controlling the admission of steam to the radiator, return connections, a valve-stem, a cam surrounding the valve-stem, a cam-follower secured to the stem, the said cam being so proportioned that a fraction of a full rotation of the follower suffices to open the valve to the point where it admits the normal maximum quantity of steam condensable by the radiator, and an index-scale for the cam-follower which marks the point of said normal opening; the full movement of the valve being limited to one revolution of the cam-follower.

4. In a steam-heating system of the class indicated, the combination of a radiator, a steam-valve controlling the admission of steam to the radiator, return connections, a valve-stem, a cam surrounding the valve-stem, a cam-follower secured to the stem, the said cam being so proportioned that a fraction of a full rotation of the follower suffices to open the valve to the point where it admits the normal maximum quantity of steam condensable by the radiator, and an index-scale for the cam-follower which marks the point of said normal opening; the full movement of the valve being limited to one revolution of the cam-follower, and the portion of the cam beyond the point of normal maximum condensable steam delivery being of greater pitch than the initial-opening portion.

705,982. MAIL DELIVERY AND COLLECTION SYSTEM. FRANKLIN S. VOSBE, Keokuk, Iowa. Filed Sept. 6, 1901. Serial No. 74,570. (No model.)

Claim.—1. In a mail delivery and collection system, the combination of an elevated car having an opening in its bottom, a closure arranged to swing across the opening, a pinion to swing the closure, a gearing to reciprocate the pinion, and a chute communicating with the said opening in the car, substantially as described.

2. In a mail delivery and collection system, the combination of an elevated car provided with an opening in its bottom, a closure arranged to swing across the opening, means to swing the closure, a chute communicating with the said opening in the car, a door adjacent to the top of the chute, and mechanism connected to the door and having an element extending in the path of the car whereby the door is opened.

3. In a mail delivery and collection system, the combination with an electrically-propelled elevated car, of a stationary collection-box supported in an elevated position to discharge its contents into the car, a collection-box adapted to be raised, a hinged cover for the stationary box formed with a projection, and a device carried by the movable box adapted to strike said projection and open both boxes simultaneously.

4. In a mail delivery and collection system, an electrically-propelled elevated car having a discharge-opening in its bottom, mechanism therein for supporting and discharging mail, comprising an endless carrier, removable partitions in the carrier, a swinging door to open and close the opening in the car, a chute with which the opening communicates, a door to close the chute, and means to automatically open and close the door.

5. In a mail delivery and collection system, an electrically-propelled elevated car, and mechanism therein for supporting and discharging mail comprising an endless carrier provided with removable partitions in combination with a receiving-chute, and means for automatically opening and closing said chute.

6. In a mail delivery and collection system, the combination with an electrically-propelled elevated car, of an endless carrier therein for supporting mail-matter removable partitions on said carrier, a hinged door, mechanism for opening and closing said door, a receiving-chute, and means for automatically opening and closing said chute.

7. In a mail delivery and collection system, the combination with an electrically-propelled elevated car, of an endless carrier supported therein, removable partitions on said carrier for separating and supporting mail-matter, gearing for rotating said carrier, a hinged door for the car, and mechanism connected with said gearing for opening and closing said door.

8. In a mail delivery and collection system, the combination with an electrically-propelled elevated car, of an endless carrier supported therein, comprising parallel chains, cross-bars connecting said chains, a covering for said cross-bars and a plurality of pairs of fingers projecting from

said chains; removable partitions held by said fingers and means for revolving the endless carrier.

9. In a mail delivery and collection system, the combination with an electrically-propelled car, of a collection-box provided with a hinged door, a diagonally-disposed pivoted plate within the box and connected to the door by links, and means for tilting said plate upon its pivot to open the door, consisting of a longitudinally-movable rod and toggle-levers supporting said rod between the front wall of the box and said plate.

705,988. BOTTLE-WASHING BRUSH. CARL K. VOLCKENING, Brooklyn, N. Y. Filed Mar. 13, 1902. Serial No. 98,004. (No model.)

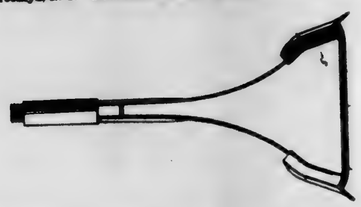

Claim.—1. A bottle-washing brush comprising expanding fingers the end of each finger being provided with an opening, and a rubber-brush material having socket members to engage over said ends of the fingers, portions of the socket members engaging in said openings, substantially as specified.

2. In a bottle-washing brush, spring-fingers, each finger having its end turned over upon the main portion, the said turned-over end having a rearwardly-opening slot or channel, and a rubber brush having socket members for engaging over said ends, substantially as specified.

3. A bottle-washing brush comprising spring-fingers, a rubber-brush material having socket members for engaging over the ends of the fingers, and a cross-strip connecting the socket members, the said cross-strip at its ends being curved rearward toward the ends of the fingers, substantially as specified.

4. A bottle-washing brush comprising socket members, spring-fingers for engaging in said socket members, a cross-strip connecting the socket members, longitudinal ribs on said cross-strip, and a transverse central rib on said cross-strip, substantially as specified.

5. A bottle-washing brush comprising spring-fingers, a rubber-brush material having socket members for engaging on said fingers and having a cross-strip, longitudinal ribs on said cross-strip, crossed ribs on the cross-strip, and a transverse central rib, substantially as specified.

705,984. CONDUIT-CLAMP. FRANK O. WELLINGTON, Braintree, Mass., assignor to Fore River Ship and Engine Company, Quincy, Mass., a Corporation of New Jersey. Filed Oct. 15, 1901. Serial No. 78,705. (No model.)

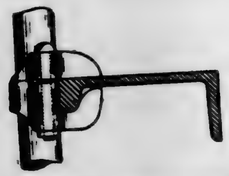

Claim.—1. A conduit-clamp comprising a substantially U-shaped body having its arms provided with notches or recesses facing in the same direction to fit over a flange of a beam, and means carried by said body for engaging the opposite side of the beam-flange, whereby said recessed arms will be confined in clamped position without exerting pressure on the conduit.

2. A conduit-clamp comprising a substantially U-shaped body having its arms adapted to engage one side of a beam, stud jaws movable toward the sides of the arms of said body, and means for moving both jaws in the same direction to engage the opposite side of a beam from that engaged by the arms of the U-shaped body.

3. A conduit clip or clamp consisting of a U-shaped body having an integral jaw at each end and cotiperating jaws attached to said body for securing said body to a projecting plate, the jaws being so arranged relatively to the U-shaped body as to confine a conduit between the U-shaped body and the plate without exerting pressure on the conduit, substantially as described.

705,985. MACHINE FOR CLEANING RICE &c. ROSIA W. WILSON, Baltimore, Md., assignor, by mesne assignments, to Southern Rice Polishing Machine Company, Baltimore, Md., a Corporation of Maryland. Filed Dec. 19, 1900. Renewed Dec. 19, 1901. Serial No. 86,584. (No model.)

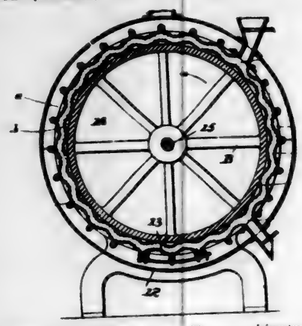

Claim.—1. A grain-cleaning machine comprising two members, one of which is rotatable, each of its members having an annular sinuous surface opposed to the like surface of the other member, the high or contiguous portions *a*, *b* of said surfaces being close to each other in passing to temporarily form pockets and being only separated sufficiently to prevent grinding the grain between them, walls for confining the grain in the space between said surfaces whereby it is caused to travel circumferentially, and inlet and discharge openings to said space.

2. A grain-cleaning machine comprising two members, one of which is rotatable, each of its members having an annular roughened sinuous surface opposed to the like surface of the other member, the high or contiguous portions *a*, *b* of said surfaces being close to each other in passing to temporarily form pockets and being only separated sufficiently to prevent grinding the grain between them, walls for confining the grain in the space between said surfaces whereby it is caused to travel circumferentially, and inlet and discharge openings to said space.

3. A grain-cleaning machine comprising two members, one of which is rotatable, each of its members having an annular sinuous screen opposed to the like screen of the other member, the high or contiguous portions *a*, *b* of said screens being close to each other in passing to temporarily form pockets and being only separated sufficiently to prevent grinding the grain between them, walls for confining the grain in the space between said surfaces whereby it is caused to travel circumferentially, and inlet and discharge openings to said space.

705,986. REIN-GUARD. JOHN T. WEST, Bowling Green, Ky. Filed July 10, 1901. Serial No. 67,710. (No model.)

Claim.—1. The combination with a divided crupper-strap and a crupper, of a rein-guide frame confined at its front end and having at its rear end a drop member which depends below the longitudinal plane of said frame, and a transversely-arranged confining-loop engaging with the members of said crupper in rear of the division in the crupper-strap, and forming a support for said rein-guide frame.

2. The combination with a divided crupper-strap and a crupper, of a rein-guide frame having the side bars extending forwardly from a rear drop member, and a confining-loop engaging with the side members of the crupper in rear of the division in the crupper-strap, and also engaging with the side bars of said frame, said side bars being confined against displacement relative to the parts by the side members of the crupper and by the end portions of said loop.

3. The combination with a divided crupper-strap and a crupper, of a rein-guide frame having side bars extending forwardly from a rear member, and a confining-loop slidably fitted to the side members of the crupper and to the side bars of said frame, said loop engaging with the crupper in rear of the division in the crupper-strap, and the side bars of the frame being held against displacement by the end portions of the loop and the side members of the crupper.

4. The combination with a crupper and a divided crupper-strap, of two loops disposed one in rear of the other and both engaging with the members of the crupper in rear of the division in the crupper-strap, and a rein-guide frame having side bars confined by and engaged with both of said loops, said side bars being provided with projections which engage the front loop and restrain said frame from rearward endwise movement.

5. The combination with a divided crupper-strap and a crupper, of a confining-loop engaging with said crupper-strap, a rein-guide frame having its side bars fitted between the members of the crupper-strap and the ends of the loop, and provided with projections arranged to fit against the loop and to restrain the frame from rearward endwise movement, and means engaging with the crupper and with the frame at a point intermediate of the length of the latter to support said frame in rear of said loop.

6. The combination with a crupper, of a confining-loop having its end portions doubled upon itself and forming keepers arranged to loosely receive the said members of the crupper, and a rein-guide frame having side bars extending forwardly from a rear member and fitted loosely within said confining-loop, said side bars being held from displacement by engaging with the members of the crupper and with the end portions of the loop.

705,987. THRESHING OR SEPARATING MACHINE. GEORGE R. WILSON, Stillwater, Minn. Filed Sept. 13, 1900. Serial No. 730,269. (No model.)

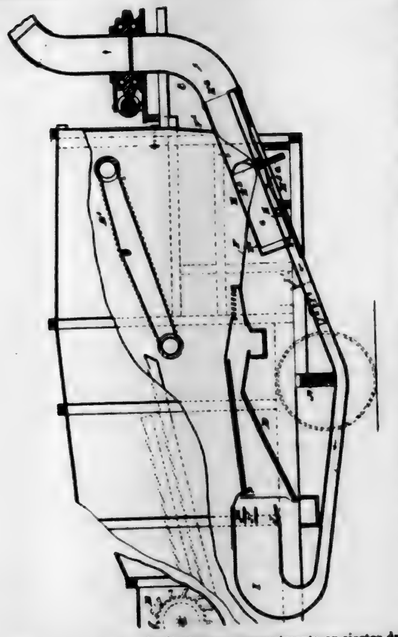

Claim.—1. A stacker-fan having two compartments, an ejector-duct leading from one of said compartments, means for delivering material to be stacked to the ejecting compartment of the fan, and means for delivering a blast from the other compartment of the fan against said material before it enters the fan to force the same toward and into the fan.

2. A stacker-fan having two compartments, an ejector-duct leading from one of said compartments, means for delivering material to be stacked to the ejecting compartment of the fan, said fan being arranged in an approximate horizontal position, with one of said compartments above the other, and means for delivering a blast from the lower compartment of the fan against said material before it enters the fan to force the same into and toward the fan.

3. A stacker-fan having two compartments, an ejector-duct leading from one of said compartments, means for delivering the material to be stacked to the ejecting compartment, and means for delivering a blast from the other compartments of the fan against said material before it enters the material to force the same toward and into the fan, said fan having a moving straw-supporting partition between the material-receiving eye, and said other compartment.

4. In a threshing and stacking mechanism, the combination of a stacker-fan having means for producing a suction air-current and a separate positive blast, an ejector-duct, into which said suction-current is delivered, means for delivering the material to be stacked to the suction portion of the fan, and devices for directing the said positive blast from said fan into the suction portion of the fan.

5. In a combined threshing and straw-stacking mechanism, the combination of means for supplying threshed material, a straw-separating device, a fan having two compartments to one of which the separated straw is delivered, an ejector-duct leading from the straw-receiving compartment of the fan, air-blast-conducting passages leading from the other compartment of the fan and back to the eye of the straw-receiving compartment, and chaff-separating means located in said passages in the path of said blast.

6. In a combined threshing and straw-stacking mechanism, the combination of the following elements, namely: threshing devices, a straw-separating mechanism, grain and chaff separating means, a final ejecting-duct for chaff and straw, a fan-casing situated relatively between the final ejector-duct and the grain and chaff separating means, an inlet to the fan-casing for chaff and straw, a chamber communicating with said inlet and adapted to receive the chaff from the grain and chaff separating means and the straw and deliver both to said inlet, a rotary fan in said casing adapted to positively engage both the chaff and the straw and drive them through said ejector-duct and supply a blast of air to said duct and means for taking from said fan-casing a blast of air forward to the front side of the grain and chaff separating means to drive the chaff backward therefrom into the said chaff and straw chamber, substantially as set forth.

7. In a threshing-machine, the combination of the straw-separator, the grain and chaff separating means, the final straw-ejecting duct, a chamber or duct receiving the chaff immediately after it leaves the grain and chaff separating means, a fan situated relatively between the grain and chaff separating means and the final straw-ejector duct, a casing for the fan divided by a partition, a straw-conduit delivering straw from the straw-separator to one portion of the fan, the fan being adapted to positively engage with the straw as the latter passes through said casing and drive it through said final ejector-duct, and a duct leading from the other portion of the fan and extending relatively forward to the grain and chaff separating means and delivering thereto a positive blast of air adapted to carry the chaff therefrom to the said chaff chamber or duct, substantially as set forth.

8. In a threshing-machine, the combination of a threshing mechanism, a final straw-ejecting duct, a straw-separating mechanism receiving the straw from the thresher, a fan at the rear of the straw-separating mechanism arranged to receive and positively engage with the threshed straw and force the same through the ejector-duct, a grain and chaff separating means situated relatively forward of said fan, and an air-duct extending forward from said fan to the grain and chaff separating means whereby a positive blast of air is delivered to the grain and chaff separating means adapted to carry the chaff backward toward the straw-duct.

9. In a threshing-machine, the combination of a threshing-cylinder rotating on an axis relatively forward in the machine, a straw-separating mechanism at the rear of the threshing-cylinder, a fan at the rear of the straw-separater on an axis remote from that of the threshing-cylinder, a straw chamber or duct delivering the straw to said fan, the fan being adapted to positively engage with the straw and force it through the ejector-duct, a grain and chaff separating means relatively forward of said fan, an air-conduit leading from said fan to the forward part of the grain and chaff separating means and delivering a blast thereto in a rearward direction, and means for preventing the entrance of straw into the said air-conduit, substantially as set forth.

10. In a threshing-machine, the combination of a threshing mechanism, a straw-chamber, a final ejector-duct, a stacker-fan between the threshing mechanism and the ejector-duct, a casing for said fan having an upper compartment and a lower compartment cut off from the ejector-duct, the upper compartment having an upturned straw-receiving eye through which the straw enters to the fan and from which it passes to the ejector-duct, and the lower compartment having an independent air-receiving eye, a grain and chaff separating means, and an air-conduit leading from the lower fan-compartment to the grain and chaff separating means to deliver a positive air-blast thereto, substantially as set forth.

11. In a threshing-machine, the combination of the straw-separator, the grain and chaff separating means, a fan-casing having an upwardly-turned eye and divided into two compartments, a chamber or duct which receives chaff from the grain and chaff separating means and straw from the separator, and guides both to the said eye, a final ejector-duct communicating with the upper compartment, a duct leading from the lower compartment to the grain and chaff separating means and a fan in said casing adapted to positively engage with the straw and chaff and eject them from said casing and also adapted to drive a positive blast of air

through the grain and chaff separating means to carry the chaff to the ejecting-compartment, substantially as set forth.

12. The combination of the straw-separating mechanism, the grain and chaff separating means, the final straw-ejecting duct, the fan-casing having a straw-receiving eye in the path of the straw and an interior rotary partition below said straw-receiving eye dividing it into two compartments, fan-blades on both sides of the partition, one of said compartments communicating with the final straw-ejector duct, and an air-blast duct leading from the other of said compartments to the grain and chaff separating means, substantially as set forth.

13. In a threshing-machine, the combination of threshing devices a straw-separating mechanism for separating the straw from the grain, grain and chaff separating means, a fan-casing having an eye adapted to receive the threshed straw, a straw ejecting or stacking duct, a fan in said casing, a diaphragm separating the casing into two parts, with one of which said straw-receiving eye communicates, and an air-supply eye for the other part of said fan, and a blast-duct leading from the latter part of said fan to said grain and chaff separating means, substantially as set forth.

14. In a threshing-machine, the combination of threshing devices, a straw-separating mechanism for taking the straw from the grain, grain and chaff separating means, a fan-casing having an upturned eye to receive the threshed straw, a straw ejecting or stacking duct, a fan in said casing having a diaphragm moving with the fan and separating the casing into two parts, with one of which parts said straw-receiving eye communicates, an air-supplying means for the under part of said fan, and a blast-duct leading from the latter part of said fan forward at the lower part of the machine to said grain and chaff separating means, substantially as set forth.

15. In a threshing-machine, the combination of threshing devices, a straw-separating mechanism for taking the straw from the grain, grain and chaff separating means, a fan-casing having an eye adapted to receive the threshed straw, a straw ejecting or stacking duct, a fan in said casing having a diaphragm moving with the fan and separating the casing into two parts, with one of which parts said straw-receiving eye communicates, an air-supply means for the other part of said fan and a blast-duct leading from the latter part of said fan to said grain and chaff separating means, the latter being arranged to deliver chaff to said straw-receiving-eye, substantially as set forth.

705,988. TOBACCO-PIPE. HENRY M. WILLIS, East Williston, N. Y. Filed Apr. 5, 1901. Renewed Dec. 30, 1901. Serial No. 87,623. (No model.)

Claim.—1. In a tobacco-pipe, the combination with a bowl which has a cylindric bore axially coincident with the tube or passage of the pipe-stem, and a cavity in its outer surface which connects with said bore, of a plug which is arranged to turn in said bore, an arm which is provided to the outer end of said plug and arranged to lie in said cavity with its outer surface flush or substantially so with the contiguous external surface of the bowl, and a semicylindric scoop provided to the inner end of the plug, placed in the passage of the pipe-stem and arranged to scrape the surface of said passage when turned by an axial movement of the plug, substantially as herein described.

2. In a tobacco-pipe, the combination with a bowl which has a cylindric bore axially coincident with the tube or passage of the pipe-stem, and a cavity in its outer surface which connects with said bore, of a cylindric plug which is arranged to turn in said bore, an arm which is provided to the outer end of said plug and arranged to lie in said cavity with its outer surface flush with the adjacent outer surface of the bowl, and with a space between the edge of the arm and the edge of the cavity for the insertion of an instrumentality for starting the plug from the bore, and a semicylindric scoop provided to the inner end of the plug and placed in the passage of the pipe-stem to scrape the same by a turning movement of the scoop, substantially as herein described.

705,989. INTERMEDIATE COUPLING. WILLIAM C. WILSON, St. Louis, Mo. Filed May 26, 1902. Serial No. 109,099. (No model.)

Claim.—1. The combination with a socket and a coupler-head adapted to be pivotally mounted in the socket; of an intermediate coupler adapted to be pivotally mounted in the said socket upon the removal of the coupler-head therefrom, and adapted to pivotally mount the coupler-head; substantially as specified.

2. The combination, with the usual socket and coupler-head, of an intermediate coupler adapted to be inserted between the coupler-head and the socket to increase the lateral motion of the coupler-head; substantially as specified.

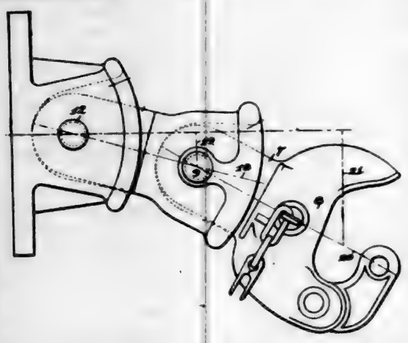

3. The combination with the usual socket and coupler-head, of an intermediate coupler adapted to be inserted between the socket and the coupler-head to increase the lateral motion of the coupler-head; said intermediate coupler being offset so as to change the height of the coupler-head by reversing the intermediate coupler; substantially as specified.

705,990. ALARM FOR REFRIGERATOR-PANS. PHILIP VON and LOUIS LAPENE, North Adams, Mass. Filed May 27, 1902. Serial No. 109,196. (No model.)

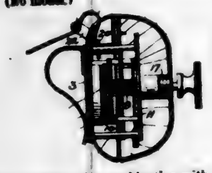

Claim.—1. In an alarm, the combination with a gong, of a spring-motor, an escapement arranged to control said motor, a lever bearing a hammer located to strike said bell, a slidingly-mounted pinion mounted to be driven by said motor and bearing a pin located to engage said lever to hold said escapement inoperative, a lever bearing a float and arranged to operate said pinion to disengage said pin from said first-mentioned lever, substantially as described.

2. In an alarm, the combination with a bell, of a spring-motor, a lever bearing an escapement arranged to control said motor and carrying a hammer located to strike said bell, a slidingly-mounted pinion arranged to be driven by said motor, a lug and a shorter pin carried by said pinion and located to engage said lever to hold said motor inoperative, a lever engaging said pinion, and a float positioned to be operated to release said motor, substantially as described.

3. In an alarm, the combination with a spring-motor, means arranged to control said motor, a lever arranged to control said means, a slidingly-mounted pinion bearing a plurality of pins of graduated length located to engage said lever, means controlled by a float and arranged to operate said pinion to disengage said pins, substantially as described.

4. In an alarm, the combination with a bell, of a spring-motor, a lever bearing a hammer and an escapement arranged to control said motor, a slidingly-mounted pinion arranged to be driven by said motor, two pins of different length carried by said pinion and located to engage said lever, a lever one arm of which is connected to said pinion, and a float mounted on said last-mentioned lever and arranged to operate it to release said motor, substantially as described.

705,991. TIME-SWITCH MECHANISM. GEORGE ZAEPFEL, Croghan, N. Y., assignor of one-half to George W. Henderson, Croghan N. Y. Filed Oct. 24, 1901. Serial No. 79,846. (No model.)

Claim.—1. A clock mechanism for actuating electrical switches, &c., comprising a series of spring-actuated gear-wheels, a crank actuated by said wheels, a switch-lever pivoted to said arm, a setting-wheel in mesh with a clock-work, pins mounted on said setting-wheel, a trip-arm disposed in the path of said pins, a lock-lever normally holding said gear mechanism from rotation, and actuated by the trip-lever, a momentum-wheel, turning with the spring-actuated wheel in one direction, and designed to turn idly after the switch-lever is operated, as set forth.

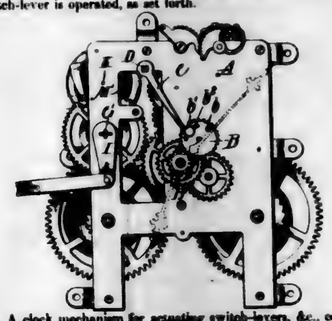

2. A clock mechanism for actuating switch-levers, &c., comprising a spring-actuated gear, a crank operated thereby, a lever pivoted to said crank, a setting gear-wheel and clock mechanism for operating same, pins on said wheel, a trip-arm disposed in the path of said pins, a momentum-wheel actuated as the crank is given a one-half rotation, and allowed to turn idly after the crank has been arrested, and means, actuated by said trip-arm, to allow the gear mechanism to operate, as set forth.

3. In combination with the spring-actuated gear mechanism, a stop-wheel actuated thereby, a crank actuated by the gear mechanism, pins on the face of said stop-wheel, a shaft geared to said stop-wheel, a momentum-wheel turning idly in one direction on said shaft after the switch is thrown, a setting-wheel and clock-work geared thereto, a trip-lever and pins on the setting-wheel for actuating said lever, and means, operated by the trip-lever, for allowing the stop-wheel to rotate and for arresting same, as set forth.

4. In combination with a spring-actuated gear, a stop-wheel in mesh therewith, pins on said wheel, a setting-wheel and clock mechanism for actuating same, pins on said setting-wheel, a trip-lever, and rock-shaft to which it is fastened, said lever being disposed in the path of said pins on the setting-wheel, a lock-lever secured at one end to said rock-shaft, its other end disposed in the path of the pins on said stop-wheel, a shaft geared to the stop-wheel, a ratchet secured thereto, a momentum-wheel, a pawl carried by the latter and having engagement with said ratchet, said momentum-wheel having a free rotary movement in one direction independent of the ratchet, and allowed to stop gradually after being rotated by the pawl and ratchet, and after the stop-wheel has ceased to rotate, as set forth.

5. In combination with the spring-actuated gear, the stop-wheel, the pins thereon, the momentum-wheel and shaft carrying same, the ratchet on said shaft, and pawl carried by said wheel and engaging said ratchet, the setting-wheel, and clock-work mechanism for actuating same, the trip-arm and shaft to which it is secured, a lock-lever fastened to said trip-arm-carrying shaft, and engaging the pins of the stop-wheel, a lug on the shaft to which the lock-lever is fastened, and an arm on the momentum-wheel shaft adapted to contact with said lug which forms a stop to prevent the rotation of the stop-wheel until the pin on the graduated wheel has passed by the free end of said trip-arm, as set forth.

6. In combination with the spring-actuated gear mechanism, the stop-wheel, and shaft on which it is mounted, a crank on said shaft, and switch-lever pivoted to said crank, pins on the face of the stop-wheel, a shaft geared to said stop-wheel, a momentum-wheel on said shaft, a setting-wheel, and clock work mechanism geared thereto, said setting-wheel having an elongated aperture therein, an adjustable pin held in said aperture, a fixed pin on the face of the setting-wheel, a rock-shaft, a trip-arm secured thereto, and disposed in the path of said adjustable and fixed pins, a lock-lever secured to the rock-shaft and engaging the pins on the stop-wheel, a stop on said rock-shaft, and an arm, on the momentum-wheel shaft, which is designed to contact with said stop, as set forth.

705,992. SASH-WEIGHT. JOHN D. ASHLEY, Everett, Mass., assignor, by mesne assignments, to Allston Foundry Company, a Corporation of Maine. Filed June 19, 1901. Serial No. 65,166. (No model.)

Claim.—1. A sash-weight, having a central perforation in one end through which the suspending cord or chain passes, a recess in the top of which the nut or ring on the end of the cord or chain seats itself, and into the center of which said perforation opens, said recess extending centrally lengthwise the weight, and having its upper portion laterally flared or enlarged and provided with a dome-like top with self-centering walls, and an opening leading into the lower part of the recess, said opening being narrower than the widest part of said recess.

2. A sash-weight, having a central perforation in one and through which the suspending cord or chain passes, a recess in the top of which the knot or ring on the end of the cord or chain seats itself, and into the center of which said perforation opens, said recess extending centrally lengthwise the weight, and having its upper portion laterally flared or enlarged and provided with a dome-like upper end having self-centering walls converging toward the central perforation, and openings on opposite sides of the weight leading into the lower part of the recess, said recess having its greatest diameter above the top of the openings, and the latter being narrower than the widest part of the recess.

705,993. HORIZONTAL-WATER-WHEEL SYSTEM. ARTHUR GIESLER, Dayton, Ohio, assignor to the Stilwell-Bierce & Smith-Vaile Co., Dayton, Ohio, a Corporation of New Jersey. Filed Oct. 1, 1900. Serial No. 31,889. (No model.)

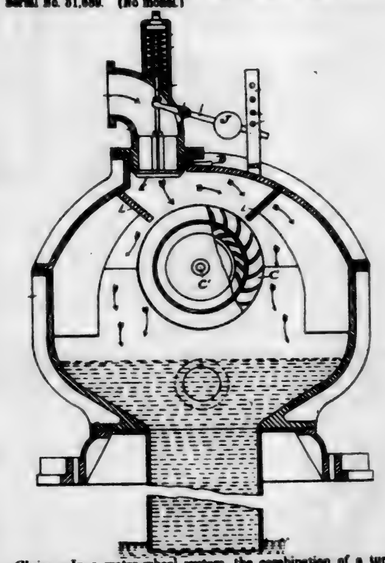

Claim.—In a water-wheel system, the combination of a turbine-casing, a draft-tube connecting said casing with the tail-water, a turbine in said casing, said turbine being of the impulse or Girard type, an air-valve opening into said casing above the surface of the water and upon the discharge side of the turbine, and yielding means to resist the opening of said valve by the atmosphere, whereby the height of the tail-water may be maintained approximately at a constant level for the purpose set forth.

705,994. TURBINE-WATER-WHEEL SYSTEM. ARTHUR GIESLER, Dayton, Ohio, assignor to the Stilwell-Bierce & Smith-Vaile Co., Dayton, Ohio, a Corporation of New Jersey. Filed Sept. 27, 1900. Serial No. 31,243. (No model.)

Claim.—1. In a horizontal-water-wheel system, the combination of a turbine-casing, a horizontal turbine wheel mounted in said casing, said turbine wheel being of the impulse or Girard type, a draft-tube connecting said casing with the tail-water, an auxiliary water-chamber, a communication between the draft-tube or wheel-casing and said auxiliary water-chamber, a float within said auxiliary water-chamber, an air-valve controlled by said float, and a communication between said air-valve and the turbine-casing whereby air is discharged into said turbine-casing above the surface of the water, substantially as and for the purposes specified.

2. In a horizontal-water-wheel system, the combination of a turbine-casing, a horizontal turbine wheel mounted in said casing, said turbine being of the impulse or Girard type, a draft-tube connecting said casing with the tail-water, an auxiliary water-chamber, a passage between the draft-tube or wheel-casing and said auxiliary water-chamber, a float

within said auxiliary water-chamber, an air-valve carried by said float, and a communication between said air-valve and said turbine-casing whereby air is discharged to said turbine-casing above the turbine wheel, substantially as and for the purposes specified.

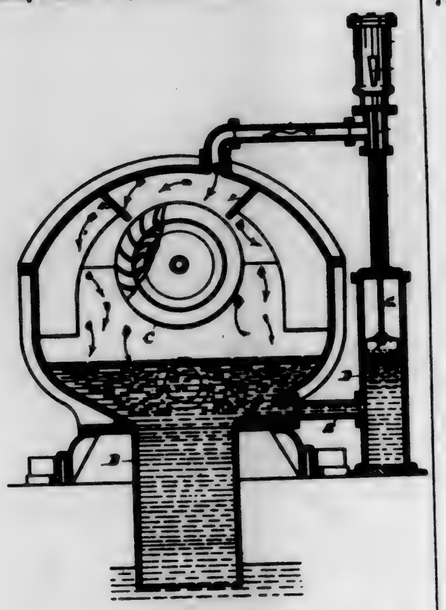

705,995. CARBURETER FOR EXPLOSIVE-ENGINES. GEORGE A. GRAVES, Joplin, Mo., assignor of two-thirds to Thomas W. Cunningham and Alfred Reynolds, Joplin, Mo. Filed Oct. 15, 1901. Serial No. 78,698. (No model.)

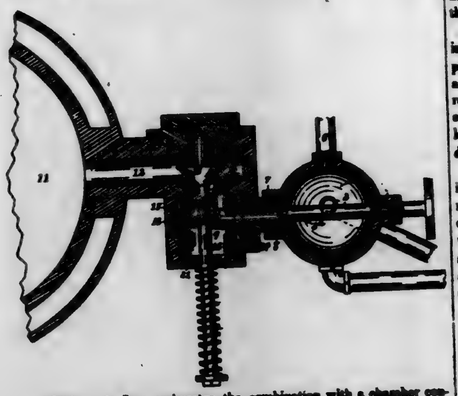

Claim.—1. In a carbureter, the combination with a chamber constructed to be connected to an engine and having air and gasolene connections, of a gasolene-cup mounted in said chamber, a valve bearing a vaporizer located to normally dip into said cup aft to be lifted out of said cup when said valve is mounted, substantially as described.

2. In a carbureter, the combination with a chamber constructed to be connected to an engine and having air and gasolene connections, an annular cup located in said chamber, a valve bearing a vaporizer dipping into said cup when said valve is seated and being withdrawn therefrom when said valve is mounted, substantially as described.

3. In a carbureter, a vaporizer comprising an annular member mounted on a valve-stem and bearing a serrated rim thereon, substantially as described.

4. In a carbureter, a cup, and a vaporizer bearing a serrated rim constructed to fit into said cup, substantially as described.

705,996. SPARKER FOR EXPLOSIVE-ENGINES. GEORGE A. GRAVES, Joplin, Mo., assignor of two-thirds to Alfred Reynolds and Thomas W. Cunningham, Joplin, Mo. Filed Oct. 15, 1901. Serial No. 78,699. (No model.)

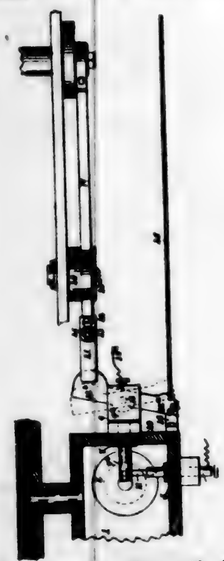

Claim.—1. In a sparker, the combination with a fixed electrode, of a shaft bearing an electrode located to be brought into engagement with said fixed electrode, a lever pivoted on said shaft, a pair of springs connected to said lever and each mounted to exert a component of force on the lever at right angles to the force of the other, and means for intermittently engaging and releasing said lever to make and break a circuit through said electrode to make a spark, substantially as described.

2. In a sparker, the combination with an electrode, of a shaft bearing an electrode located to engage said first-mentioned electrode, a lever pivoted on said shaft, a first spring having an arm slidingly mounted in an aperture in said lever, a second spring connected to said lever and arranged to exert a component of force at right angles to the force exerted by said first spring, and means for intermittently engaging and releasing said lever to make and break a circuit through said electrode, substantially as described.

3. In a sparker, the combination with an electrode, of a shaft having an electrode located to be brought into engagement with said first-mentioned electrode by rotating said shaft, a lever mounted on a pivot extending at right angles to said shaft, two springs connected to said lever and arranged to exert pulls on said lever at right angles to each other, and a pitman bearing a spring-actuated yielding arm secured at one end and located to intermittently engage said lever as said pitman is operated, substantially as described.

705,997. COMBINATION MINER'S TOOL. MARTIN HARRISON, Ottumwa, Iowa, assignor of one-half to Lester G. Hartsoog, Ottumwa, Iowa. Filed May 21, 1901. Serial No. 61,961. (No model.)

Claim.—1. A miner's combination-tool comprising a tubular stem, a tubular funnel-shaped cleaner on one end of said stem and a tamping-head on the opposite end of said stem, said tamping-head mounted eccentrically on said stem and notched radially for straddling a miner's needle when in use.

2. A miner's combination-tool, comprising a stem, a tool member on one end of said stem, a tamping-head on the opposite end of said stem, said tamping-head mounted eccentrically on said stem and bored in alinement with the bore of the stem for the reception of a miner's needle, said tamping-head being notched for straddling the miner's needle when in use.

3. A combination miner's tool, comprising a tubular stem, a tool member on one end of said stem, the opposite end of said stem being reduced in cross-section, and a tamping-head mounted eccentrically on and formed with a socket arranged to receive and be fixed to the reduced portion of the stem.

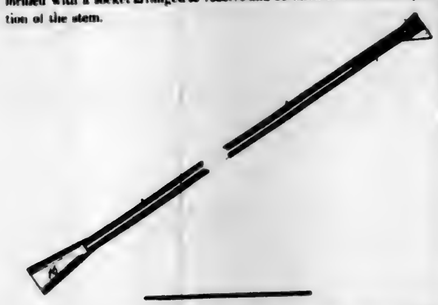

705,998. ADJUSTABLE RECEIVING-TABLE FOR SCORING-MACHINES. CLARENCE W. HOBBS, Worcester, Mass. Filed Aug. 5, 1898. Serial No. 687,753. (No model.)

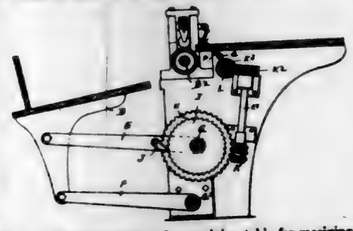

Claim.—1. The combination of a receiving-table for receiving the scored cardboard, mechanism for lowering the table and mechanism for controlling the action of said table-lowering mechanism comprising a member arranged in the path of the cardboard, substantially as described.

2. The combination with a receiving-table, for receiving paper or cardboard from a scoring-machine, mechanism for lowering said receiving-table as the cardboard is delivered thereon, a clutching mechanism by which said table-lowering mechanism is operatively connected with the driving power and a clutch-controlling mechanism arranged in the path of the cardboard as it passes through the machine and arranged to be actuated thereby, whereby said table is lowered by the passage of a sheet of cardboard through the machine, substantially as described.

3. In a scoring-machine, the combination with mechanism for scoring cardboard, of a receiving-table, a framework supporting said table and pivotally connected with the frame of the scoring mechanism, means controlled by the cardboard for rocking said table, whereby said table is lowered, substantially as described.

4. The combination of a receiving-table, a framework on which said table is mounted, parallel links by which said table is pivotally connected with the fixed framework, and means for rocking one of said links to lower the table, substantially as described.

5. The combination with a receiving-table for scoring-machines, of mechanism for lowering said table during the delivery of cardboard thereon, a clutching mechanism by which said table-lowering mechanism is operatively connected with the driving power, a clutch controlling mechanism comprising a tripping member operatively connected with the clutching mechanism and placed in the path of a sheet of cardboard as it passes through the machine, substantially as described.

6. The combination of a rocking shaft, links pivoted on said shaft, a receiving-table supported on said links, a ratchet-wheel attached to said shaft, a pawl pivoted on one of said links and engaging said ratchet-wheel, and mechanism by which said shaft is rotated and said receiving-table lowered, substantially as described.

7. The combination of a rocking shaft, arms pivoted on said shaft, a receiving-table supported on said arms, a ratchet-wheel attached to said shaft, a pawl pivoted on one of said arms and engaging said ratchet-wheel, mechanism for rotating said shaft, a clutching mechanism by which said rotating mechanism is operatively connected with the driving power and a clutch-controlling mechanism arranged in the path of the cardboard as it passes through the machine, substantially as described.

705,999. WINDOW. JOHN HOSSFELD, Chicago, Ill. Filed Apr. 3, 1902. Serial No. 101,266. (No model.)

Claim.—1. A window-sash having the top rail and side members provided with flanges adapted to form channels for inserting and retaining the pane, said channels being substantially twice the thickness of the pane, and a bottom rail sufficiently narrower than the other members to allow the glass to be inserted in said channels, and provided with a shoulder corresponding with shoulders on the other members so that the pane when inserted in said channels may be pressed against said shoulders for permanent fastening, substantially as described.

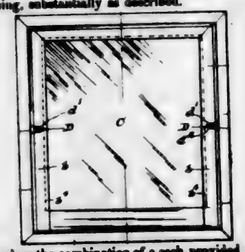

2. In a window the combination of a sash provided with stiles having curved outer edges and yielding closures adapted to engage said stiles.

3. In a pivot-window, the combination of a sash having the outer edges of the stiles thereof curved, and pivoted yielding closure-strips engaging said stiles.

4. In a window, the combination of a frame, a sash pivoted to said frame, and pivoted closure-strips yieldingly engaging said sash.

5. In a window, the combination of a frame, longitudinal channels in said frame, a sash, and closure-strips pivoted in said channels adapted to yieldingly engage said sash.

6. In a window, or equivalent device, the combination of a frame provided with channels, a sash having curved edges pivoted in said frame, longitudinal closure-strips pivoted in said channels, said strips being provided with curved faces to engage said sash and curved reversely-bent flange adapted to engage the walls of said channels, and means for holding said strips in yielding engagement with said sash.

7. A window-frame constructed of sheet metal, having the inner faces of the frame sides bent out at substantially right angles and reversely bent at a bevel to form channels therein and inner stay-plates at intervals along said faces substantially as herein described.

8. In combination a frame having longitudinal channels or grooves, a sash having stiles with curved edges pivoted in said frame in alinement with said channels or grooves, closure devices pivoted in said channels having curved faces engaging said stiles and curved flanges slidingly engaging the walls of said channels and springs adapted to press against said closure devices to urge them against the sash-stiles.

9. In combination with a pivot-window and its frame, a yielding closure-strip divided at a point opposite or near the pivot whereby only one portion of said strip is pressed back when the window is opened.

706,000. ADDING-MACHINE. JUDAH I. LEVIN, Detroit, Mich. Filed Nov. 18, 1901. Serial No. 82,636. (No model.)

Claim.—1. In an adding-machine, a series of fixed gear-wheels spaced at intervals apart, and a corresponding series of shafts journaled in axial line therewith carrying a like set of gear-wheels and the number-carrying wheels, a series of spring gear-teeth carried by said shafts in traveling contact with said fixed gears and adapted at intervals to mesh with the movable gears to impart a predetermined movement thereto, and a series of keys sleeved on said shafts having ratchet-and-pawl connection with said shafts to impart movement thereto in either direction as desired.

2. In an adding-machine, a series of fixed gear-wheels spaced at intervals apart, and a corresponding series of shafts journaled in axial line therewith, carrying a like set of gear-wheels and the number-carrying wheels, of a series of spring-teeth carried by said shafts in mesh with the fixed gears and adapted to be projected into mesh with the movable gears at intervals to impart movement thereto, and a series of keys sleeved on said shaft and having a ratchet-and-pawl connection therewith, said keys carrying numbers corresponding to those of the number-wheels but arranged in the inverse order.

3. In an adding-machine, a series of fixed gear-wheels spaced at intervals apart, and a corresponding series of shafts journaled in axial line therewith, carrying a corresponding series of gear-wheels and number-wheels, carrying a double set of numbers, from "0" to "9," of a pair of spring-teeth carried by each of said shafts, traveling in contact with the fixed gears and on opposite sides thereof, adapted at intervals to mesh with the next adjacent movable gear one tooth at a time, and a series of keys having ratchet-and-pawl connection with said shafts, said keys carrying numbers corresponding to those on the number-carrying wheels but arranged in the inverse order.

4. In an adding-machine, a series of fixed gear-wheels spaced at intervals apart and a corresponding series of shafts journaled in axial line therewith, carrying number-carrying wheels, and a corresponding series of gear-wheels, spring-teeth carried by said shafts in mesh with the fixed gears, and adapted to be projected at intervals into mesh with the movable gears, a series of ratchets carried by said shafts and a series of reversible pawls adapted to transmit motion to the ratchets through the medium of a key and a reversing-bar for tilting the pawls in either direction.

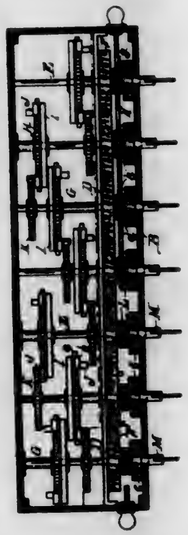

5. In an adding-machine, a series of fixed gear-wheels spaced at intervals apart, and a corresponding series of shafts formed with ratchets journaled in axial line therewith, carrying number-carrying wheels and a corresponding series of gear-wheels, spring-teeth carried by said shafts in mesh with the fixed gears and adapted to be projected at intervals into mesh with the movable gears, and a series of keys carrying numbers corresponding to those of the number-wheels but arranged in the inverse order, reversible pawls carried by said keys adapted to transmit motion to said ratchets in either direction and a reversing-bar for actuating the pawls.

6. In an adding-machine, a series of fixed gear-wheels and a corresponding series of shafts carrying a like series of movable gear-wheels and a series of number-carrying wheels, spring gear-teeth carried by said shafts meshing with the fixed gears and of a width greater than said gears and adapted at determined intervals to mesh with the next adjacent movable gear to the left to impart a proportionate movement thereto, a series of ratchet-drums carried by said shafts, formed with teeth corresponding in number to those of the gears, a series of keys sleeved on said shafts and bearing numbers corresponding to those of the number-wheels, but arranged in the inverse order, and a series of reversible pawls carried by said keys and adapted to turn said shaft in either direction.

7. In an adding-machine, a series of shafts and number-carrying wheels and means for transmitting motion from one shaft to the other in proportion to the numerical values which they represent, of a series of keys carrying numbers corresponding to those of the number-carrying wheels, but arranged in the inverse order, ratchet-and-pawl connections between said keys and shafts, means for reversing said pawl to turn the shaft in either direction and a stop to limit the return movement of the key.

8. In an adding-machine, a series of fixed gear-wheels and a corresponding series of shafts carrying a like series of movable gear-wheels, and a series of number-carrying wheels provided with two sets of numbers from "0" to "9," a pair of spring gear-teeth carried by each of said shafts meshing with the fixed gears on opposite sides thereof and adapted at intervals to move the next adjacent gear through the space of one tooth, said spring-teeth being of a width equal to that of both gears, a series of ratchet-drums formed on the shafts and having teeth equal in number to those of the gears, a series of keys formed with a lug or projection sleeved on said shafts and bearing numbers corresponding to those of the number-wheels but arranged in the inverse order, a series of tilting pawls carried by said keys and springs for holding said pawls in either direction, and a bar formed with pins for tilting said pawls to turn the shaft in either direction, said pins forming stops against which said lugs or projections are adapted to strike in the return movement of the key.

706,001. **PROCESS OF PRODUCING LAMPBLACK.** DAVID J. O'SULLY, Cincinnati, Ohio. Filed Aug. 15, 1897. Serial No. 648,167. (No specimens.)

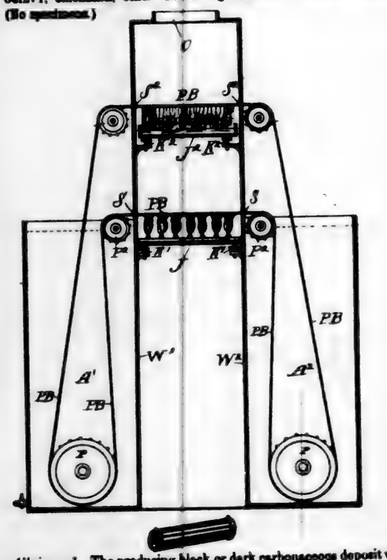

Claim.—1. The producing black or dark carbonaceous deposit which consists in impinging a carbonaceous flame upon an aqueous surface, substantially as and for the purposes specified.

2. The process of producing black or dark carbonaceous deposits which consists in impinging a carbonaceous flame upon an aqueous surface while the said aqueous surface is in a state of motion, substantially as and for the purposes specified.

3. The process of producing black or dark carbonaceous deposits which consists in impinging a stationary carbonaceous flame upon an aqueous surface while the said aqueous surface is in a state of motion, substantially as and for the purposes specified.

4. The process of producing black or dark carbonaceous deposits, which consists in impinging a carbonaceous flame on an aqueous surface, and the presenting of an aqueous moving surface to receive and carry away the pigment deposited thereon, substantially as specified.

5. The process of producing black or dark carbonaceous deposits, which consists in impinging a carbonaceous flame on an aqueous surface, and then subjecting the resulting deposit of pigment to an aqueous bath or spray, substantially as specified.

6. The process of producing black or dark carbonaceous deposits, which consists in impinging a carbonaceous flame on an aqueous surface, and the adding of suitable soluble matter to the water required during the process so as to overcome the repellant nature of the carbonaceous deposit toward the water, substantially as and for the purposes specified.

REISSUES.

12,018. **SWING.** EDWARD LUBEK, New York, N. Y., assignor of two-thirds to Henry C. Babcock, Jr., and John P. Tupper, borough of Bronx, New York, N. Y. Filed Feb. 1, 1902. Serial No. 92,229. Original No. 670,287, dated Mar. 19, 1901.

Claim.—1. In a swing, the combination of a revolvable roller, a support for the roller containing journals for the same and adapted to be fastened to the lintel of a door, two flexible suspending means each secured to said roller and adapted to be wound thereon, a hoisting-cord secured to said roller and arranged so as to be wound thereon when the suspending means are unwound, a seat carried by the suspending means and adapted to be raised into proximity to the revolvable roller by the winding of the suspending means about the roller effected by tension upon and the unwinding of the hoisting-cord and lowered into operative position by the unwinding of said suspending means and consequent winding of the hoisting-cord around the revolvable roller, and fastening means for preventing the rotation of the revolvable roller.

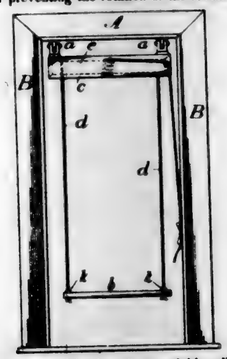

2. In a swing, the combination of a revolvable roller, a support for the roller containing journals for the same and adapted to be fastened to the lintel of a door, flexible suspending means secured to said roller and adapted to be wound thereon, a hoisting-cord secured to said roller and arranged so as to be wound thereon when the suspending means are unwound, a seat having a detachable back and carried by the suspending means and adapted to be raised into proximity to the revolvable roller by the winding of the suspending means about the roller effected by tension upon and the unwinding of the hoisting-cord and lowered into operative position by the unwinding of the suspending means and consequent winding of the hoisting-cord around the revolvable roller, and means for fastening the hoisting-cord.

3. In a swing, the combination with a case adapted to be fastened to the lintel of a door, means for so fastening such case, and a revolvable roller of uniform size through its whole length, and journaled in said case, of two ropes wound one way, one around each end of said roller, and extending without said case, a seat-board fastened on said ropes, a seat-back detachably fastened to said board and said ropes, a cord wound around the middle of said roller, in said case, in a direction opposite to said ropes, and extending without said case, and a cleat secured to the post of said door, upon which said cord is fastened to hold said swing-seat in any required position, substantially as set forth.

DESIGNS.

35,982. **HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES.** THEODORE REIDER, Providence, R. I., assignor to Roger Williams Silver Company, Incorporated, Providence, R. I. Filed Nov. 22, 1901. Serial No. 83,347. Term of patent 7 years.

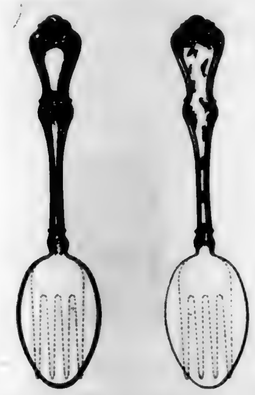

Claim.—The ornamental design for the handle of a spoon, fork, or similar article, as herein shown and described.

35,983. **MANTEL.** WILLIAM H. WALKER and JAMES F. WALKER, Gate City, Ala. Filed May 17, 1902. Serial No. 107,879. Term of patent 7 years.

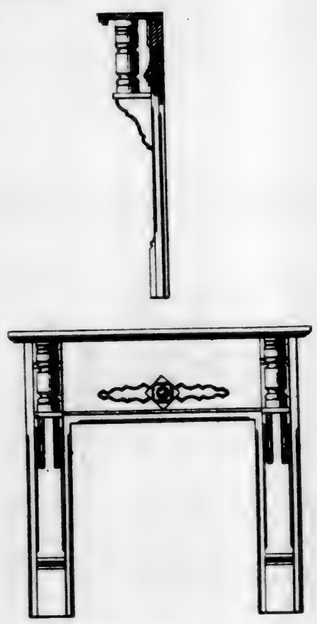

Claim.—The ornamental design for a mantel, as herein described and shown.

35,984. **AUTOCARETTE-BODY.** WILLIAM H. SCHNEIDER, Washington, D. C. Filed Apr. 11, 1902. Serial No. 102,485. Term of patent 14 years.

Claim.—The ornamental design for an autocarette-body, substantially as shown and described.

TRADE-MARKS

REGISTERED JULY 29, 1902.

38,664. CERTAIN NAMED YARNS AND THREAD. CALHOUN, ROBBINS & COMPANY, New York, N. Y. Filed Apr. 21, 1902.

The representation of a lion surrounded by tropical scenery, the whole inclosed in a circular band bearing the word "LION." Used since October, 1878.

38,665. KNIT UNDERWEAR AND HOSIERY. ROBERT REIS & Co., New York, N. Y. Filed May 29, 1902.

A bust portrait of Benjamin Franklin within a circular border. Used since May 23, 1902.

38,666. WRAPPING, WAXED, AND TOILET PAPER. ALBANY PERFORATED WRAPPING PAPER CO., Albany, N. Y. Filed May 9, 1902.

The words "LOOK INTO THIS" and the representation of a box, with a hat beside the same and a man leaning over and looking into the box. Used since 1894.

38,667. SCRAP-BOOKS. THE PERFECT SCRAP BOOK CO., Albany, N. Y. Filed Apr. 4, 1902.

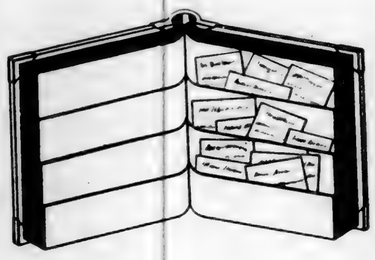

A picture or representation of an open scrap-book the leaves of which are provided with transverse pockets, in some of which are placed advertising-cards. Used since October 25, 1901.

38,668. DISK TALKING-MACHINES. WILBERT V. P. BRADLEY, Toledo, Ohio. Filed May 19, 1902.

The words "THE TALK-O-PHONE" and a surrounding scroll-like figure. Used since January 2, 1902.

38,669. CHECKER-BOARD GAMES. SALTA VERSAND VON AUGUST WASMUTH, Hamburg, Germany. Filed Feb. 5, 1901.

The picture of a person playing a checker-board game and thereunder the word "SALTA." Used since October, 1899.

38,670. GOLF-BALLS. H. HARTLEY CO., New York, N. Y., and Bridgeport, Conn. Filed Oct. 26, 1901.

The representation of a star surrounded by two concentric rings. Used since April 11, 1899.

38,671. CADDY-BAGS. THE H. HARTLEY COMPANY, Bridgeport, Conn., and New York, N. Y. Filed Apr. 5, 1902.

THISTLE

The word "THISTLE." Used since August 25, 1898.

38,672. VETERINARY REMEDY. EMMA M. KREISSER, Round Top, Tex. Filed June 7, 1902.

The representation of a standing bovine-calf. Used since December 20, 1901.

38,673. OINTMENT. CHARLES KIESEL, St. Louis, Mo. Filed Apr. 10, 1902.

ZEKO

The word "ZEKO." Used since 1897.

38,674. LITTLE CIGARS AND CIGARETTES. CARL UPHAM, New York, N. Y. Filed May 14, 1902.

DRESS SUIT

The words "DRESS SUIT." Used since January 31, 1902.

38,675. LITTLE CIGARS AND CIGARETTES. CARL UPHAM, New York, N. Y. Filed May 14, 1902.

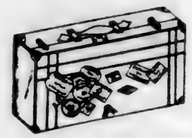

The pictorial representation of a dress-suit case, the said case having labels distributed carelessly over its front side. Used since January 31, 1902.

38,676. REMEDY FOR DANDRUFF AND A HAIR AND SCALP TONIC. SMITH T. DUSTIN, Chicago, Ill. Filed Dec. 9, 1901.

The hyphenated word "ESS-THE-DEE" inclosed within lines intended to represent a ribbon with waving ends thereto. Used since November 1, 1901.

38,677. NERVE-TONIC. EDWARD HORMAN BAKER, Des Moines, Iowa. Filed May 15, 1902.

KOLA-ETTES

The word "KOLA-ETTES." Used since August, 1900.

38,678. ALES. BARTHS BREWING COMPANY, Syracuse, N. Y. Filed June 21, 1902.

BRILLIANT

The word "BRILLIANT." Used since September 19, 1894.

38,679. JAVA AND MOCHA COFFEE. HAIG-SMITH TEA & COFFEE CO., Denver, Colo. Filed Apr. 21, 1902.

The words "WEDDING BREAKFAST" and the representation of a wedding party seated around a table, with a woman dressed as a bride in the foreground and distinguished by a long veil. Used since April 1, 1898.

38,680. ROASTED COFFEE. OSCAR H. GERWOLD, Winona, Minn. Filed June 5, 1902.

HUMMER

The word "HUMMER." Used since May, 1897.

38,681. MARMALADE. CORONATION MARMALADE CO., Boston, Mass. Filed May 3, 1902.

CORONATION

The word "CORONATION" and the representation of a crown. Used since April 15, 1901.

38,682. CONSERVING COMPOUND. R. OTTMOSER, a Firm, Hamburg, Germany. Filed Feb. 5, 1901.

Garantol

The word "GARANTOL." Used since February, 1897.

38,683. TABLE-SYRUP AND MOLASSES. THE TOWLE SYRUP COMPANY, St. Paul, Minn. Filed June 12, 1902.

A-CORN

The hyphenated word "A-CORN" and the representation of an acorn. Used since April 7, 1902.

38,684. COMPOUND FOR EXTRACTING GREASE. THEODORE H. PRICE, New York, N. Y. Filed May 23, 1902.

NAILITZA

The word "NAILITZA." Used since September 1, 1879.

38,685. CERTAIN NAMED WASHING COMPOUNDS. CHARLES C. GERHART, Clarksville, Tenn. Filed May 21, 1902.

CLEANO.

The word "CLEANO." Used since March 17, 1902.

38,686. WITHDRAWN.

38,687. SOAP. FRANK M. COULTER, Los Angeles, Cal. Filed May 13, 1902.

LEMOLA

The word "LEMOLA." Used since August 3, 1901.

38,688. CARBOLIC ACID AND PREPARATIONS CONTAINING SAME. F. C. CALVERT & CO., Bradford, Manchester, England. Filed Apr. 26, 1902.

Four arrows in the form of a cross diverging from a central disk to the circumference of a circle described around their points. Used since August, 1861.

38,689. PRINTING-INKS. SIGMUND ULLMAN CO., New York, N. Y. Filed May 21, 1902.

DOUBLETONE

The word "DOUBLETONE." Used since January 1, 1902.

38,690. INK FOR FINISHING EDGES AND HEELS OF BOOTS AND SHOES. S. A. WHITE CO., Boston, Mass. Filed Apr. 21, 1902.

MINITINK

The word "MINITINK." Used since January 23, 1902.

38,691. PAINTS. NAAMLOOZE VENNOOTSCHAP NEDERLANDSCHE VERFFABRIEK "ECLATIN," Amsterdam, Netherlands. Filed June 23, 1902.

ECLATIN

The word "ECLATIN." Used since May 9, 1901.

38,692. PAINTS AND ROOFING-PAINT. LEWIS ALLEN TERRY, Cleveland, Ohio. Filed June 16, 1902.

GRAPHAULT

The word "GRAPHAULT." Used since February 15, 1902.

38,693. BITUMINOUS COMPOSITION OR CEMENT. WARREN BROTHERS COMPANY, Boston, Mass. Filed Apr. 7, 1902.

TAROLITHIC

The word "TAROLITHIC." Used since January 1, 1902.

38,694. CERTAIN NAMED CEMENT. THE CLARK CAST STEEL CEMENT CO., Huntington, Conn. Filed June 19, 1902.

CAST STEEL.

The words "CAST STEEL." Used since November 1, 1900.

38,695. PRIMARY ELECTRIC CELLS. PORTABLE ELECTRIC POWER & LIGHT COMPANY, Jersey City, N. J. Filed June 11, 1902.

PORT ELEC

The representation of a portable electric primary cell with handle attached and lamp thereupon, with rays of light radiating therefrom, and the combination of letters "PORT ELEC" twice displayed. Used since May 22, 1902.

38,696. PORTABLE ELECTRIC AND OIL LAMPS AND LANTERNS. 20TH CENTURY M'F'G CO., New York, N. Y. Filed Apr. 28, 1902.

20th CENTURY

The abbreviation and word "20TH CENTURY." Used since November 15, 1901.

38,697. INCANDESCENT ELECTRIC LAMPS. BRYAN MARSH COMPANY, New York, N. Y. Filed Mar. 11, 1902.

The pictorial representation of a crown, which has a Maltese cross thereon. Used since 1894.

38,698. INCANDESCENT ELECTRIC LAMPS. BRYAN MARSH COMPANY, New York, N. Y. Filed Mar. 11, 1902.

IMPERIAL

The word "IMPERIAL." Used since 1894.

38,699. DRY BATTERIES. THE HUEGHMER ELECTRIC BATTERY CO., Cleveland, Ohio. Filed May 19, 1902.

THE 1900

The word and figures "THE 1900." Used since May 1, 1897.

38,700. PNEUMATIC TIRES FOR BICYCLES, CARRIAGES, AND AUTOMOBILES. FISK RUBBER COMPANY, Chicopee Falls and Springfield, Mass. Filed June 20, 1902.

PREMIER

The word "PREMIER." Used since November 22, 1900.

88,701. CERTAIN NAMED HEATING APPARATUS. PIERCE, BUTLER AND PIERCE MFG. CO., Syracuse, N. Y. Filed Nov. 14, 1901.

LOURAINE

The word "LOURAINE." Used since March 16, 1901.

88,702. WEIGHING-SCALES. THE H. H. SUBAIT MFG. CO., Kansas City, Kans. Filed June 3, 1902.

MONARCH

The word "MONARCH." Used since September 1, 1899.

THE NORRIS PETERS CO.

LABELS

REGISTERED JULY 29, 1902.

9,321.—*Title:* "CAST STEEL CEMENT." (For Cement.) THE CLARK CAST STEEL CEMENT CO., Huntington, Conn. Filed July 1, 1902.

9,322.—*Title:* "LAS AMERICAS." (For Cotton Cloth.) D. A. DE LIMA & Co., New York, N. Y. Filed July 2, 1902.

9,323.—*Title:* "KEMPSHALL FLYER." (For Golf-Balls.) THE KEMPSHALL MANUFACTURING COMPANY, Arlington, N. J. Filed July 1, 1902.

9,324.—*Title:* "KEMPSHALL LEAGUE." (For Golf-Balls.) THE KEMPSHALL MANUFACTURING COMPANY, Arlington, N. J. Filed July 1, 1902.

9,325.—*Title:* "VICTOR RECORD." (For Sound-Records.) VICTOR TALKING MACHINE CO., Camden, N. J. Filed July 1, 1902.

9,326.—*Title:* "MONARCH RECORD." (For Sound-Records.) VICTOR TALKING MACHINE CO., Camden, N. J. Filed July 1, 1902.

9,327.—*Title:* "AMMONIA CELERY." (For Medicine.) THOS. KELLY & SON, Baltimore, Md. Filed July 2, 1902.

9,328.—*Title:* "SPRAYINE." (For Medicine.) FRANK W. ROBINSON, McLeansboro, Ill. Filed July 5, 1902.

9,329.—*Title:* "CYBELINE." (For Dandruff Cure.) GEORGE L. TYLER, Auburn, N. Y. Filed June 16, 1902.

9,330.—*Title:* "STORY'S FOOT RELIEF." (For Foot-Powder.) FABRIKOID COMPANY, Newburgh, N. Y. Filed July 2, 1902.

9,331.—*Title:* "ALDERNEY BAKING POWDER." (For Baking-Powder.) THE NATIONAL LABEL CO., Cincinnati, Ohio. Filed July 3, 1902.

9,332.—*Title:* "MAIZE LOAF." (For Cereal Food.) GORDON AND RICHARDSON, St. Marys, Ohio. Filed July 1, 1902.

9,333.—*Title:* "REX PORK AND BEANS." (For Pork and Beans.) THE CUDAHY PACKING CO., Chicago, Ill., and South Omaha, Nebr. Filed June 30, 1902.

9,334.—*Title:* "COMPLIMENTS OF THE SEASON." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed July 2, 1902.

9,335.—*Title:* "PRIMUS." (For Bottled Beer.) BARKER & WHEELER CO., Peoria, Ill. Filed July 3, 1902.

9,336.—*Title:* "OTTOMAN." (For Cigars.) LINCOLN, SEYMS & CO., Hartford, Conn. Filed July 2, 1902.

9,337.—*Title:* "EL INTACTO." (For Cigars.) CHAS. STUTZ, a Firm, New York, N. Y. Filed May 15, 1902.

9,338.—*Title:* "JOSEPHINE." (For Cigars.) CHAS. STUTZ, a Firm, New York, N. Y. Filed May 15, 1902.

9,339.—*Title:* "LA MAGNITA." (For Cigars.) CHAS. STUTZ, a Firm, New York, N. Y. Filed May 15, 1902.

9,340.—*Title:* "MI ELEKTRA." (For Cigars.) CHAS. STUTZ, a Firm, New York, N. Y. Filed May 15, 1902.

PRINTS

REGISTERED JULY 29, 1902.

537.—*Title:* "A COMBINATION GAME." (For Game Apparatus.) MCLOUGHLIN BROTHERS, New York, N. Y. Filed June 13, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE PARKER, HOLMES & COMPANY.

Decided January 2, 1903.

1. TRADE-MARK—"WAUKWELL" FOR SHOES—NOT DESCRIPTIVE.
The word "Waukwell" as a trade-mark for shoes *Held* registrable, since it is not descriptive of the shoes.
2. SAME—ANTICIPATION—"WAUKWELL"—"WALKEASY."
Held that the trade-mark "Waukwell" is not anticipated by the prior marks "Walkeasy" and "Walk-a-way" for the same class of goods, since purchasers exercising ordinary care would not confuse the marks and be misled.

ON appeal.

TRADE-MARK FOR FOOTWEAR, ETC.

Application for registration filed March 11, 1901, No. 62,872.

Messrs. Macleod, Calver & Randall for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner of Trade-Marks refusing to register the word "Waukwell" as a trade-mark for footwear.

Registration was refused on the ground that the mark is descriptive and also on the ground that it so nearly resembles prior registered marks as to cause confusion in the minds of purchasers. The prior marks are "Walkeasy" and "Walk-a-way," applied to the same class of merchandise.

It is believed that "Waukwell" differs from "Walkeasy" to such an extent that a purchaser desiring the goods of one party and using the ordinary care which is to be expected of him in his efforts to obtain those goods would not be confused by the two marks and take the goods of one supposing them to be those of the other. The registration of "Walkeasy" therefore does not prevent the subsequent registration of "Waukwell." "Walk-a-way" differs still more from the applicant's mark than does "Walkeasy."

The word "Waukwell" as applied to shoes may by some persons be construed as meaning that one wearing these shoes will walk well, and that this will be accomplished by means of the shoes, and that thus "Waukwell" is descriptive of shoes.

This view, however, excludes other reasons equally probable to explain the quality of the walk. This may result from many causes, among which weather, health, and clothing might be enumerated, and to apply all this inference to the shoes in order to find the term descriptive of them is thought to be unwarranted.

The decision of the Examiner of Trade-Marks is reversed.

EX PARTE BUSTIN.

Decided May 15, 1902.

1. DIVISION—VESSEL—HULL AND RUDDER.
Held that division was properly required between claims to the external configuration of the hull of a vessel and claims to the means for mounting the rudder, since they are recognized as independent subjects of invention and are separately classified in this Office.
2. SAME—SAME—MEANS FOR PROPELLING VESSELS—INDEPENDENT INVENTION.
Held that claims covering the means for propelling the ship should be claimed in a separate application from claims to the shape of the hull and to the means for mounting the rudder.

ON petition.

NAVIGABLE VESSELS.

Application of Charles A. Bustin filed October 22, 1901, No. 79,537.

Mr. Charles S. Champion for the applicant.

ALLEN, *Commissioner:*

This is a petition from the Examiner's requirement of division between certain groups of claims in the above-entitled application on the ground that each group covers an independent and separate invention from those covered, respectively, by the other groups of claims.

The record shows that the application as filed contained eighty-four claims. The Examiner held that these claims covered six independent inventions and required that the application be divided, so that the further prosecution of the case should be confined to one invention.

The petitioner responded by amending certain claims and canceling others. Among the claims canceled from the application were those forming two groups of claims covering, respectively, the hatch construction and the oil-spraying device. The Examiner was then requested to withdraw his requirement for further division. On reconsideration the requirement was adhered to, from which action this petition was taken.

The Examiner is of the opinion that the remaining claims cover four separate and independent inventions. He has grouped them as follows: claims 1 to 37, inclusive, as covering the external configuration of the hull; claims 38 to 55, inclusive, and claims 59, 60, 61, and 63 as covering the form of the hull, with the construction and location of the propelling apparatus; claims 56, 57, 58, 62, 64, 65, and 66 as covering the details of the propelling apparatus, and claims 67, 68, and 69 as covering the particular means of mounting the rudder.

It is pointed out that the invention covered in the first and last groups of claims belong, respec-

tively, in the subclasses of "Form" and "Steering mechanism, rudders," of class 114, Ships. Not only are these two inventions recognized by this Office in its scheme of classification as being independent of each other, but they are recognized by inventors and manufacturers as independent objects of manufacture and sale, and from this it results that these devices possess a capacity for independent use. Division was properly required between claims 1 to 37, inclusive, and claims 67, 68, and 69.

Of the remaining claims those numbered 38, 39, 51, 52, 53, 54, 56, 57, 58, 63, 64, 65, and 66 cover inventions classified in class 115, Marine Propulsion, which are recognized by inventors and manufacturers as distinct and independent subjects-matter of invention and possess a capacity for independent use from those inventions covered in the first and last groups of claims, which are classified in the class of "Ships." The requirement of division between the groups of claims covering inventions, respectively, in "Marine Propulsion" and in "Ships" was a proper one. The claims specified by the Examiner as forming the group which covers the invention in "Marine Propulsion" should, however, be extended to include claims 38, 39, 51, 52, 53, and 54, as above indicated.

Claims 40 to 50, inclusive, claim 55, and claims 59 to 62, inclusive, which include both the construction of the hull and the location and construction of the propelling mechanism, may be prosecuted in the same application, either with claims 1 to 37, inclusive, which cover the hull, or with those claims which are held to cover the propelling mechanism, as the petitioner may elect.

The petition is granted to the extent indicated.

EX PARTE REGINA MUSIC BOX COMPANY.

Decided July 8, 1902.

1. LABEL—COMMISSIONER OF PATENTS DETERMINES LAWFULNESS.
The Commissioner of Patents is authorized and required to determine whether the thing presented for registration is a label and complies with the requirements of the law. He is not required to register everything which is presented and called a label.

2. SAME—MUST BE DESCRIPTIVE AS WELL AS ARTISTIC.
A label to be registrable in the Patent Office must not only possess artistic merit, but must be descriptive of the article for which it is used.

3. SAME—FOR ARTICLE OF MANUFACTURE—DESCRIPTIVE.
A mere statement by the applicant for registration that he intends to use the design presented upon a particular article of manufacture does not make it *for* that article within the meaning of the law. The indication of the article must be in the label itself.

4. SAME—REGISTRABILITY DETERMINED BY INTRINSIC QUALITIES.
The registrability of a label must be determined by its intrinsic qualities and not by some possible or contemplated use of it.

ON appeal.

LABEL FOR MUSIC-BOXES.

Application filed April 5, 1902, No. 2,701.

Messrs. Briesen & Knauth for the applicant.

ALLEN, *Commissioner:*

This is an appeal from a decision of the Examiner refusing to register a label entitled "Regina" to be used for music-boxes.

It is admitted that the label presented for registration is an intellectual and artistic production; but registration has been refused because there is nothing about it which indicates that it is used on music-boxes.

It is contended by appellant that—

> the statute has not defined what shall be considered a label whether it shall be a picture or a writing; whether it shall be descriptive of the article to which it is affixed; or whether it may be a mere arbitrary design—

and that therefore the Commissioner must register a label though it may not be descriptive. This contention is based upon the decision of the Supreme Court of the District of Columbia in *The United States, ex rel. Schumacher*, v. *Marble, Commissioner of Patents*, (3 Mackey, 32.) In this case the court, after stating the matter quoted above, said:

> If the applicant presents it as a label, and appeals to the Commissioner to give it the protection which the law provides for it as a label, the duty of the Commissioner is to register it, and in doing so he gives it only the protection which the statute provides. * * * With the character of the device the Commissioner is not at all concerned. His function is as purely ministerial as it is capable of being.

This indicates that the Commissioner is not to exercise discretion, but must register anything which is presented as a label. The later decision by the same court, however, in the case of *United States, ex rel. Moodie*, v. *Butterworth* (30 O. G. 97) is ample authority for the opposite conclusion. The court there held that the Commissioner is required to determine whether or not the thing presented is a label and in this must exercise discretion. He must determine whether or not it is a trade-mark, as was done in that case, and it seems equally true that he must determine whether or not it is used—

> for any other article of manufacture—

since section 3 of the act of June 18, 1874, gives him authority to register only such prints or labels as are—

> to be used for any other articles of manufacture.

Under this statute all other engravings, cuts, and prints consisting of—

> pictorial illustrations or works connected with the fine arts—

are to be registered by the Librarian of Congress under the general copyright law.

It seems clear from statements made by the Supreme Court in *Higgins et al.* v. *Keuffel et al.* (55 O. G., 1139) that a label to be registrable in this Office must, aside from other considerations, be descriptive of the article for which it is used. In that case the Court said, speaking of the clause of the Constitution under which Congress is authorized to legislate for the protection of authors and inventors:

> This provision evidently has reference only to such writings and discoveries as are the result of intellectual labor. * * * It does not have any reference to labels which simply designate or describe the articles to which they are attached, and which have no value separated from the articles, and no possible influence upon science or the useful arts. * * * To be entitled to a copyright the article must have by itself some value as a composition, at least to the extent of serving some purpose other than as a mere advertisement or designation of the subject to which it is attached.

The word "label" itself necessarily implies that it is descriptive of the article to which it is applied, and this Office has held that a print or label cannot be held to be "for any other article of manufacture" within the meaning of the statute unless it indicates that article. (*Ex parte Moodie*, 28 O. G., 1271; *ex parte Mahn*, 82 O. G., 1210; *ex parte Barnhart Bros. and Spindler*, 87 O. G., 2118; *ex parte Ball*, 98 O. G., 2366.) The indication must be in the print or label itself and not merely in a statement made by the applicant accompanying it. The print or label is the thing which is registered, and its registrability must be determined by its intrinsic qualities and not by some possible or contemplated use of it. All of the pictures registered by the Librarian of Congress and the arbitrary designs patented under the design law might be applied to china or other articles as ornamentations thereof; but a mere statement by the applicant that he intended to so use them would clearly not warrant this Office in registering them as labels for the articles mentioned. If such a statement of use by the applicant were permitted to determine whether the alleged print or label should be registered in this Office or in the Library of Congress, the distinction attempted to be drawn by Congress between the two classes of artistic productions would be nullified.

It must be held that a label to be registrable in this Office must not only possess artistic merit, but must be descriptive of the article for which it is used.

The alleged label in this case is said by the applicant to be for music-boxes; but the label itself does not indicate this. It is merely an arbitrary ornamental design having the word "Regina" thereon and might very appropriately be used as a trade-mark for various articles.

The decision of the Primary Examiner is affirmed.

DECISIONS OF THE U. S. COURTS.

Court of Appeals of the District of Columbia.

STONE v. PUPIN.

Decided March 5, 1902.

1. INTERFERENCE—PRIORITY—SUFFICIENCY OF DISCLOSURE IN APPLICATION—DECISION OF PATENT OFFICE CONCLUSIVE.
The decisions of the expert tribunals of the Patent Office as to the sufficiency of the disclosure in the original application to support the invention defined in the counts of the issue will be accepted as conclusive by the court in considering questions of priority of invention.

2. SAME—SUFFICIENCY OF DESCRIPTION—LIBERAL CONSTRUCTION.
The fact that the invention oversteps the boundary of pre-existing knowledge both as to structure and scientific principles warrants a liberal view of the scope of the descriptive specifications rather than a narrow and restrictive one.

3. SAME—PRIORITY—DECISION AFFIRMED.
The decision of the Assistant Commissioner (100 O. G., 981) awarding priority of invention to Pupin affirmed.

Messrs. Pollok & Mauro and *Mr. W. W. Swan* for the appellant.

Mr. Thomas Ewing and *Mr. Vernon M. Dorsey* for the appellee.

SHEPARD, *J.:*

This is an interference case involving claims to priority of invention of an improved system of multiplex telegraphy. The invention lies in the arrangement of the receiving-stations in the application of electrical resonance in the art of selective or multiplex signaling, and is embodied in the issue defined in two counts as follows:

> 1. The method of distributing the electrical energy of periodic currents which consists in developing a number of effective currents of different frequencies independently upon a single line and conveying the several energies of these currents each selectively to a separate electrical translating device.
> 2. A system of distribution of electrical energy comprising a main line, means for independently developing effective electromotive forces of different frequencies thereon, branch lines connected with the main line each having its self-induction and capacity so related as to be permeable to alternating currents of a given frequency, and an electrical receiving device in each branch line.

There were three independent claimants in the case when the interference was declared, namely, Pupin, Stone, and Hutin & Leblanc. The order of their applications as filed in the Patent Office is the following: Pupin, February 23, Stone April 4, and Hutin & Leblanc May 9, 1894.

Hutin & Leblanc remained in the case until the final decision of the Commissioner of Patents from which they took no appeal.

Pupin made an amendment of his specifications in March, 1895, and Stone thereafter moved to have him declared the junior party in accordance with a practice sometimes pursued in the Patent Office. Shortly thereafter, Stone filed an additional motion to dissolve the interference. Both motions were founded on the ground that the amendment introduced new matter constituting an entire departure from the invention originally claimed.

These motions were heard by the Primary Examiner who had declared the interference. In the beginning of an elaborate opinion, he stated that there was great difficulty in determining the question presented—

> occasioned by the fact that the issues of the interference relate to and cover an art which from its technological side involves a radical departure from previous electrical systems, and which from its theoretical side utilizes electrical principles which at the date of these respective inventions were but little understood, and are even now not worked out in detail or rigorously apprehended.

Coming then particularly to the invention of the issue he styled it one—

> which not only oversteps the boundary of pre-existing knowledge in the matter of the concrete devices and operations employed, but in its theoretical aspect goes well beyond the obvious application of known scientific principles to the production of new results and systems.

His conclusion was that there was no foundation for charging Pupin with changing his claims from one specific invention to another, hence the motion to dissolve was overruled. But because his amendment "omitted a limitation from his claims and from his description, and has set forth his invention in a broader light, both in the specifications and in the claims," he granted the motion to make Pupin the junior party, thereby shifting the burden of proof. This, in his opinion, was the necessary result, of broadening "his claims from a specific invention to a more generic statement of the invention."

No appeal was taken from this decision and testimony was taken in the order thereby indicated.

A number of experts were examined on the question whether the original application of Pupin disclosed the invention of the issue; and other evidence was introduced relating to the conception,

disclosures, and experimentation of the parties. The entire record consists of nearly seventeen hundred pages.

The Examiner of Interferences discussed the evidence at length, and finding no material discrepancy between the original and amended specifications, awarded priority to Pupin as the first to conceive, and reduce to practice—giving each party constructive reduction only through application filed.

The Examiners-in-Chief, to whom an appeal was taken by both of the losing parties, show in their decision a careful and thoughtful examination of the terms of Pupin's original specifications, and, as stated, had "no difficulty in finding therein a complete disclosure of the invention of each issue."

Passing then to the consideration of the evidence of his conception, they said:

Pupin's evidence impresses us as truthful; it is consistent with the probabilities of the case, and is corroborated by O'Connor as to the actual construction of a model device which disclosed all of the elements called for by the second count of the issue, and which was undoubtedly operated in the manner called for by the first count, even though the results were not so satisfactory as to entitle the device to be regarded as a reduction to practice. We regard the evidence sufficient to prove that Pupin had a conception of the invention of both counts of the issue in 1890, and that he constructively reduced the invention to practice by the filing of his application February 28, 1894.

Upon a review of the evidence on behalf of Stone and Hutin & Leblanc, they concluded that their conceptions followed that of Pupin, and that neither had done anything practically toward adapting and perfecting the invention for use.

On the other hand, they found that Pupin had—

experimentally worked out quantitative methods of measurement of circuits containing localized induction and capacity, determined the effect of iron in the cores on such circuits, and benefited the public by the disclosure of his work.

The Assistant Commissioner before whom the case came on further appeal, agreed with the Examiners-in-Chief, that Pupin "was the first to conceive the invention, the first to constructively reduce it to practice, and the only one to actually reduce it to practice," and, therefore, affirmed their decision.

In reaching a conclusion he did not content himself with adopting their decision but carefully reexamined the questions involved, reviewing particularly the evidence relating to the conception and development of the invention by each of the respective claimants.

The chief weight of the argument on this final appeal, in which Stone is the sole appellant, has been directed to the contention founded on the insufficiency of Pupin's original specifications.

In respect of this we must accept the decisions of the tribunals of the Patent Office as conclusive. (*Ostergren* v. *Tripler*, 17 App. D. C., 557, 559; 95 O. G., 837; *Schupphaus* v. *Stevens*, *Idem*, 548, 555, 95 O. G., 1452, and cases cited.)

The fact that—

the issues deal with an invention which not only oversteps the boundary of preëxisting knowledge in the matter of the concrete devices and operations employed, but in its theoretical aspect goes well beyond the obvious application of known scientific principles to the production of new results and systems—

as declared by the Primary Examiner in disposing of the motions before referred to, would seem rather to warrant a liberal view of the scope of the descriptive specifications, than a narrow and restrictive one. Moreover, the abstruseness of the art to which the invention belongs renders it all the more obligatory to accept the concurring decisions of the expert tribunals of the Patent Office. (*In re Beswick's Appeal*, 16 App. D. C., 345, 350; 91 O. G., 1436.)

We see no good purpose that would be served by again reviewing the evidence relating to the efforts of Pupin, after conception and in the course of his actual reduction to practice.

This has been fairly done in the decisions appealed from and nothing material could be added thereto. Upon a careful consideration of the evidence, we entirely concur in their conclusions.

Nothing remains but to affirm the decision appealed from, and to order this decision with the proceedings herein to be certified to the Commissioner of Patents as required by law; and the same is accordingly done.

Patent and Trade-Mark Registration in Cuba.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 21, 1902.

The subjoined correspondence, transmitted through the Honorable Secretary of the Interior, is published for the information of those whom it may concern.

E. B. MOORE,
Acting Commissioner.

DEPARTMENT OF STATE,
Washington, D. C., July 9, 1902.

SIR: I have the honor to inclose for your information copy of a note from the Cuban Minister at this capital transmitting the regulations of his government for the registration of United States patents and trade-marks in Cuba.

I have the honor to be, sir,
Your obedient servant,
JOHN HAY.

The Honorable the Secretary of the Interior.

[Translation.]

LEGATION OF CUBA,
Washington, D. C., July 5, 1902.

EXCELLENCY: In pursuance of instructions from my government, I have the honor to transmit to Your Excellency the communication addressed to the Department of State by the Department of Agriculture, Commerce and Industry under date of June 21 last, as follows:

SIR: I have, on this day, directed the announcement of the following decision. The military government of the United States in this Island having come to an end, and the circulars Nos. 12 and 21, respectively dated April 11 and June 1, 1899, issued by the Division of Customs and Insular Affairs of the War Department of Washington in respect to the registration of American trade-marks and patents having in consequence become void and null, by virtue of their text itself, since those circulars were issued for the territories subject to the military government of the military forces of the United States, I have decided that patents and trade-marks of all descriptions, printed matter, titles and labels, duly registered in the Patent Office of the United States, for whose protection in this Island application shall hereafter be made, from this date, by filing the same, shall be registered in the department of which I have charge if admissible, upon observing the procedure followed for the registration of those of other countries and upon the payment of $25.00 currency for patents and of $12.50 currency for trade-marks, prints, etc., that is to say the same fees as are paid by the other foreign and national marks and patents, in lieu of the one peso, currency, indicated with regard to the American, in said circular No. 21.

I avail myself of this opportunity, etc.

GONZALO DE QUESADA.

To H. E. The Hon. JOHN HAY,
Secretary of State of the United States.

Patents Nos. 706,002 to 706,507.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 6. TUESDAY, AUGUST 5, 1902. PRICE—$5 per year

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Labels	21—No.	9,341 to No. 9,361, inclusive.
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Reissues	None.	
Total issue	575	

TO CITIZENS OF THE UNITED STATES

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	2	....	Nebraska	4	....
Alaska Territory	....	....	New Hampshire	3	2
Arizona Territory	....	....	New Jersey	20	....
Arkansas	1	....	New Mexico Territ'y	....	....
California	10	1	New York	77	19
Colorado	5	1	North Carolina	3	....
Connecticut	13	2	North Dakota	1	....
Delaware	1	....	Ohio	41	4
District of Columbia	5	....	Oklahoma Territ'y	....	....
Florida	....	....	Oregon	....	....
Georgia	3	1	Pennsylvania	51	5
Hawaii Territory	1	....	Porto Rico	....	....
Idaho	....	....	Rhode Island	9	....
Illinois	37	2	South Carolina	2	....
Indian Territory	....	....	South Dakota	3	....
Indiana	12	2	Tennessee	6	....
Iowa	17	1	Texas	7	5
Kansas	11	1	Utah	2	....
Kentucky	4	....	Vermont	1	....
Louisiana	1	....	Virginia	2	1
Maine	3	....	Washington	5	....
Maryland	10	1	West Virginia	3	....
Massachusetts	31	7	Wisconsin	7	1
Michigan	15	5	U. S. Army	1	....
Minnesota	7	....	U. S. Navy	....	....
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TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Austria-Hungary	....	....	Netherlands	....	....
Barbadoes	....	....	Newfoundland	....	....
Belgium	3	....	New South Wales	1	....
Bermuda	....	....	New Zealand	1	....
Brazil	....	....	Norway	1	....
Canada	10	....	Peru	....	....
Cape Colony	....	....	Portugal	....	....
Chile	....	....	Russia	....	....
China	....	....	Santo Domingo	....	....
Cocos Island	....	....	Scotland	8	....
Colombia	....	....	South African Republic	....	....
Cuba	....	....	South Australia	....	....
Denmark	....	....	Spain	....	....
Egypt	....	....	Sweden	3	....
England	24	....	Switzerland	1	....
France	4	....	Uruguay	....	....
Germany	15	....	Victoria	....	....
Gautemala	....	....	Western Australia	1	....
India	....	....			
Ireland	....	....	Total to citizens of foreign countries	68	....
Italy	....	....			
Mexico	1	....			

Photographic Copies of Drawings.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 1, 1902.

The Patent Office is now prepared to furnish black line on white ground copies of any unbound drawing, foreign or domestic, which may be in its possession, instead of the blue-prints heretofore furnished. Only the 7x11 (patent) size and the full or 10x15 size prints will hereafter be furnished, at 15 and 25 cents per sheet, respectively.

Copies of drawings of pending, abandoned, forfeited, or informal cases and of caveats may be had in either of the above-named sizes except when they are to be certified, in which case they must be the 10x15 size.

Copies of United States or foreign patent drawings will be made only in the 10x15 size.

When ordering copies of foreign patent drawings, either the serial number of the applications in which they were cited as references or the class and subclass where they may be found must be given. The title of the invention or the number of the division will not be sufficient. Bound volumes cannot be used for making prints. Failure to give the fullest data whereby the mounted drawing may be found will result in delay and unnecessary correspondence.

The work will be much facilitated if a separate order be made for each drawing. The Office will furnish, gratuitously, blanks for this purpose on request.

As a result of abolishing the small (5x8) size the requirement that duplicate prints must be ordered in certain cases will no longer be enforced. The requirement that less than all the sheets of a case will not be printed unless there is already a full set in the file will not be insisted upon; but applicants or attorneys are strongly urged to file a set of prints or order them to be made by the Office at the time of filing an application. Such procedure will save delay later if correction of the drawing is desired or required.

F. I. ALLEN,
Commissioner.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business July 29, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	In arrears—Under one month.			
253	X. Carriages and Wagons	July 11	July 19	58
217	XXXIII. *Designs, †Trade-Marks. ‡Labels and Prints, Optics, and Photography.	July 10	July 10	73
106	II. Farm Products, etc., Lubricators, Presses, etc.	July 8	July 14	149
30	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyors, Hoisting, etc.	June 30	June 26	336
246	I. Tillage, etc., and Fences	June 29	June 26	326
	Between one and two months.			
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	June 23	July 15	102
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 19	July 7	282
258	VI. Chemistry, Explosives, Fertilisers, Medicines, Sugar and Salt, Surgery, etc.	June 16	July 3	230
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	June 16	June 28	355
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	June 16	June 27	231
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	June 16	June 26	450
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	June 14	July 11	273
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 14	June 25	343
128	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 13	June 24	225
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	June 12	July 5	121
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	June 12	June 28	121
218	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	June 11	July 5	249
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Canes, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc	June 11	June 28	259
103	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 10	June 21	283
155	XXIX. Wood-Working Machines, Coopering and Roofing.	June 9	June 20	220
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	June 6	June 23	301
197	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	June 6	June 17	272
223	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	June 4	July 8	241
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	June 2	June 23	268
	Between two and three months.			
67	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	May 26	June 25	288

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	May 23	May 14	337
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	May 17	May 17	452
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	May 16	June 11	442
245	XVIII. Steam-Engineering, etc	May 12	June 2	480
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 10	May 7	484
223	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 8	May 23	757
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	May 5	June 23	324
109	XXII. Fire-Arms, Ordnance, Navigation.	May 5	June 13	200
80	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 1	May 12	585
91	XVI. Telegraphy and Telephony	May 1	Apr. 28	324
	Between three and four months.			
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	Apr. 28	June 2	474
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	Apr. 28	Apr. 28	608
	Between four and five months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 28	June 11	501

Total number of applications awaiting action.....12,454

Under one month.			
*Designs	July 17	July 25	40
†Trade-Marks	July 1	July 26	119
‡Labels and Prints	July 25	July 25	6

Revision of Trade-Mark Rules.

(ORDER No. 1,465.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., April 8, 1902.

Rule 21, subdivision (*b*,) governing the registration of trade marks, is hereby amended to read as follows:

(*b*) A statement specifying name, domicile, location, and citizenship of the party applying; the class of merchandise and the particular description of goods comprised in such class to which the particular trade-mark has been appropriated; a description of the trade-mark itself, and a statement of the mode in which the same is applied and affixed to goods, and the length of time during which the trade-mark has been used, and if the applicant be a corporation it must set forth under the laws of what State or nation incorporated.

F. I. ALLEN,
Commissioner.

Patents to Assignees.

RULE 201. In every case where it is desired that the patents shall issue to an assignee the assignment must be recorded in the Patent Office at a date not later than the day on which the final fee is paid. (See Rule 36.) The date of the record is the date of the receipt of the assignment at the Office.

PATENTS

GRANTED AUGUST 5, 1902

706,002. KEYBOARD. GEORGE G. ALLEN, Malden, Mass., assignor to Stenotype Company, Portland, Me., a Corporation of Maine. Filed Nov. 11, 1899. Serial No. 611,769. (No model.)

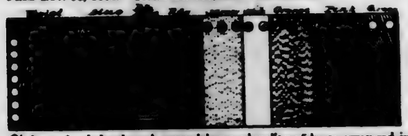

Claim.—1. A keyboard comprising a plurality of keys arranged in parallel rows, each row being a duplicate of the other and divided into a series of sections indicated by different colors, and the name of each color being indicative of the letters grouped therein, whereby a glance at any color suggests to the operator the letters embraced therein, and it is unnecessary to mark every key with the character it represents, substantially as set forth.

2. A keyboard comprising a plurality of keys arranged in parallel rows, each row being a duplicate of the other and divided into a series of groups, and a background for said keys composed of sections each differently colored from the others, the name of each color being indicative of the letters grouped therein, substantially as set forth.

3. A keyboard comprising a plurality of keys arranged in parallel rows, each row being a duplicate of the other and the keys being arranged in groups; and a background for said keys divided into sections corresponding with said groups, the name descriptive of the surface of each section being indicative of the letters grouped therein, substantially as set forth.

4. A keyboard comprising a plurality of keys arranged in groups indicated by different colors, the characters in each group being suggested phonetically by the name of the color associated therewith.

706,008. WHEEL-HUB. CHRISTIAN ANDERSON, Indianapolis, Ind. Filed Dec. 21, 1901. Serial No. 86,330. (No model.)

Claim.—1. A wheel-hub composed of a wooden center and two metal shells extending over the same, said shells being provided with interior inwardly-extending curved flanges and composed of compressible metal which is compressed in finishing the hub, substantially as set forth.

2. The combination in a wheel-hub, of the wooden center A, and the metal shells B and C, said shells being provided with the inwardly-extending flanges and teeth *f* and *i*, substantially as set forth.

706,004. PNEUMATIC MOTOR. GUSTAF B. ANDERSON, Chicago, Ill. Filed Aug. 2, 1901. Serial No. 70,697. (No model.)

Claim.—1. The combination with a casing having a central opening and air passages and chambers communicating therewith, of valves to open and close said passages, two bellows located in said opening, means to inflate and deflate a portion of each of the bellows alternately, a power wheel or pulley journaled near the casing and means connecting the pulley and bellows whereby the pulley is rotated, substantially as described.

2. The combination with a casing having a central opening and air chambers and passages communicating therewith, of valves to open and close said passages, two bellows located in said opening, a movable piece in each of the bellows, means to inflate and deflate a portion of each of the bellows alternately, a power wheel or pulley journaled near the casing, pitman-rods connecting the movable pieces of the bellows and the power-wheel, substantially as described.

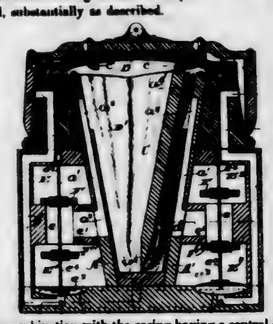

3. The combination with the casing having a central opening and air chambers and passages communicating therewith, of valves to open and close said passages, two bellows located in said opening, a movable piece in each of the bellows, means to inflate and deflate a portion of the bellows alternately, a power wheel or pulley journaled near the casing, pitman-rods connecting the movable pieces of the bellows and the power-wheel, a bar located above each of the bellows and connected at its ends to valves for closing the external openings of the casing, means on each of said bars to engage the upper portion of the movable pieces of the bellows, substantially as described.

4. The combination with a casing having a central opening and air passages and chambers communicating therewith, of valves to open and close said openings, two bellows located in said opening, a movable piece in each of the bellows and having on its upper end an outward extension, means to inflate and deflate the bellows alternately, a power wheel or pulley journaled near the casing, pitman-rods connecting the movable pieces of the bellows and the power-wheel, a bar extending over each of the bellows and having on its lower surface downward projections, valves at each end of each of said bars to close the external openings in the upper part of the casing, a pulley journaled above each of said bars, a spring on each of said bars and in contact with the pulleys, substantially as described.

706,005. ACTUATING MECHANISM FOR AWNINGS. WILLIAM H. ANGELL, Oakland, Cal. Filed Oct. 14, 1901. Serial No. 78,022. (No model.)

Claim.—1. In a mechanism of the character described, the combination of a casing having front and back walls provided with bearings, and also having upper and lower portions provided with a circular bore and a socket, respectively, a gear interposed between the upper and lower portions of the casing and having a bore of angular form in cross-section, a shaft journaled in the upper portion and stepped in the lower portion of the casing and having a portion of angular form in cross-section occupying the bore of the gear, a gear formed of one piece, interposed between and journaled in the bearings of the front and back walls of the casing and having teeth intermeshed with those of the gear on the shaft, and also having ratchet-teeth, a detent arranged to engage said ratchet-teeth, and suitable means for rotating the gear bearing the two kinds of teeth.

2. In a mechanism of the character described, the combination of a casing, a shaft journaled therein, a gear fixed on the shaft so as to turn

therewith, a gear formed of one piece, interposed between and journaled in opposite walls of the casing and having teeth intermeshed with those of the gear on the shaft, and also having ratchet-teeth, a detent for engaging said ratchet-teeth, and suitable means for rotating the gear bearing the two kinds of teeth.

3. In a mechanism of the character described, the combination of a casing having a bearing in its back wall and a circular aperture in its front wall, and also having upper and lower portions provided with a circular bore and a socket, respectively, a gear interposed between the upper and lower portions of the casing and having a bore of angular form in cross-section, a shaft journaled in the upper portion and stepped in the lower portion of the casing and having a portion of angular form in cross-section occupying the bore of the gear, a gear formed of one piece interposed between and journaled in the front and back walls of the casing and having an angular socket in its outer end, and teeth intermeshed with those of the gear on the shaft, and also having ratchet-teeth, a detent for engaging said teeth, and a crank having an angular stem corresponding to and removably arranged in the angular socket of the gear bearing the two kinds of teeth.

4. In a mechanism of the character described, the combination of a casing, a shaft journaled therein, a gear fixed to the shaft so as to turn therewith, a gear mounted in the casing and intermeshed with the gear on the shaft, ratchet-teeth fixed with respect to said latter gear, a pivoted detent adapted to engage the ratchet-teeth, a slide movable in the casing, in a position to engage the detent, and having a finger-piece extending through a slot in a wall of the casing, and a spring connected to and movable with the slide, and arranged to bear against the casing.

706,006. KEY-GUARD. BYRON R. BACON, South Orange, N. J. Filed Nov. 7, 1901. Serial No. 81,365. (No model.)

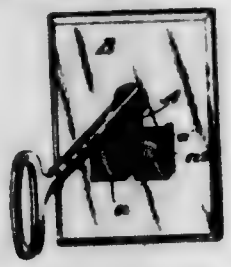

Claim.—1. In a key-guard consisting of a continuous strip of springy metal formed with parallel shanks adapted to be inserted through the key-hole of an escutcheon, projecting lips formed upon the said shanks and adapted to engage upon the inner side of the escutcheon, ledges or shoulders formed at the ends of the said shanks, and inwardly-turned edges formed along the outer ends of the said ledges or shoulders and adapted to engage against the outer side of the said escutcheon, substantially as described.

2. In a key-guard consisting of a continuous strip of springy metal bent to form shanks which are adapted to be inserted through the key-hole of an escutcheon, lips or lugs formed upon the said shanks and adapted to engage upon the inner side of the escutcheon, ledges or shoulders formed upon the ends of said ledges, and ridges or finger-recesses formed upon the said ledges, substantially as described.

706,007. PANTOGRAPH ENGRAVING-MACHINE. MARK BARR, Broadheath, England, assignor to the Linotype Company, Ltd., London, England. Filed Jan. 4, 1900. Serial No. 344. (No model.)

Claim.—1. The combination of swinging compound tracer-rod consisting of two portions telescopically connected together; two horizontal plates, one jointed to each portion of the said rod and capable of a reciprocating vertical motion; a lever-and-link mechanism from the horizontal plate of that portion of the tracer-rod that carries the tracer-point, to the tool, adapted to transmit to the latter, the vertical movements or vertical components of the movements of the tracer-point; and a connection between the two horizontal plates to prevent a lateral movement or a lateral component of a movement of the tracer-rod, producing a corresponding vertical movement in the tool.

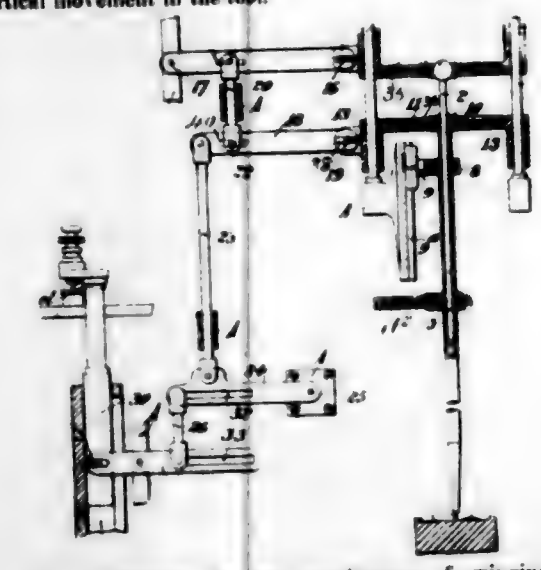

2. The hereinbefore-described combination of swinging compound tracer-rod having a bottom and outer portion adapted to slide over the top and inner portion; a connection fast to the said inner portion for limiting its motions to one and the same horizontal plane; a horizontal plate jointed to the top end of the said top and inner portion and capable of a reciprocating vertical motion; a horizontal plate jointed to the top end of the said bottom and outer portion and capable of a reciprocating vertical motion; a lever having a fixed fulcrum at one end and its opposite end connected to the horizontal plate of the said top and inner portion; a lever connected to the horizontal plate of the said bottom and outer portion of the tracer-rod; a link connecting the two levers and a link-and-lever mechanism establishing a connection between the last-mentioned lever and the tool to transmit the vertical movements or vertical components of the movements of the said bottom and outer portion of the tracer-rod to the tool.

706,008. SASH-BALANCE. JACOB BARROW, Windfall, Ind. Filed July 27, 1901. Serial No. 69,969. (No model.)

Claim.—In a lock for sashes operated in the manner described, the combination of a bracket, a circular block eccentrically journaled therein, the said block having an aperture which is normally arranged at an angle to the vertical line of the sashes, and a rope engaging the sashes and lock whereby through the weight of the upper sash the cord is held in the lock, and a cord for operating the lock, substantially as shown and described.

706,009. BELT-TIGHTENER. NORMAN C. BARRETT, Boston, Mass., assignor to General Electric Company, a Corporation of New York. Filed Dec. 5, 1900. Serial No. 38,718. (No model.)

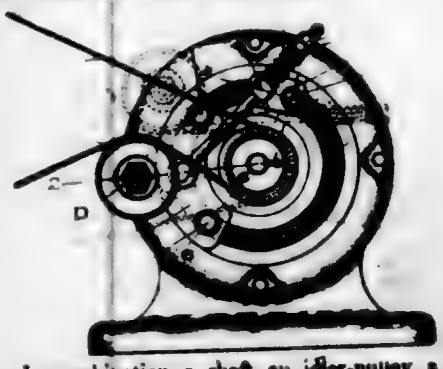

Claim.—1. In combination, a shaft, an idler-pulley, a support for the pulley which is concentrically adjustable around the shaft, a second support also concentrically adjustable about the shaft, and a spring located between the pulley and the second support and acting on the pulley in a manner to keep the belt tight.

2. A belt-tightener mounted adjacent to a shaft, means whereby it can be adjusted concentrically with reference to said shaft, and means for

exerting a spring-pressure on said tightener in any angular position to which it is moved.

3. A belt-tightener comprising an idler-pulley, a support for said pulley adjustable to any angular position with reference to the driving-pulley, and a spring-actuated rod attached to said support.

4. The combination with a movable idler-pulley, of a spring-actuated rod attached thereto, a support for the pulley which is movable bodily, and a movable support for said rod.

5. The combination of a driving-pulley, of an idler-pulley, a movable support for the idler-pulley, a rod pivoted to said support, an adjustable abutment through which said rod passes, nuts on the rod, and a spring compressed between the abutment and said nuts.

6. The combination with a driving-pulley and its shaft, of a bearing therefor containing a groove concentric with the shaft, a plate adjustable along said groove, an idler-pulley supported by said plate, and a spring which tends at all times to hold the pulley against a belt.

7. The combination with a driving-pulley and its shaft, of a bearing therefor containing a groove concentric with the shaft, a plate adjustable along said groove, an idler-pulley supported by said plate, a block also adjustable along the groove, and a yielding connection between the plate and the pulley.

8. The combination with a driving-pulley and its shaft, of a bearing therefor containing a groove concentric with the shaft, a plate adjustable along said groove, an idler-pulley supported by said plate, a block having a clamping-bolt engaging with the groove, and a spring-actuated rod pivotally attached to the plate and to the pulley.

9. The combination with an electric motor having an undercut groove in its casing concentric with the shaft, of a segment-plate adjustably mounted in the groove, bolts for connecting said plate with said grooved casing, an idler-pulley mounted on said plate, a block having a clamping-bolt engaging with said grooved casing, an eyebolt pivoted in the block, a rod pivoted to the plate and passing through the eyebolt, a spring on the rod, and means for compressing it against the eyebolt.

706,010. **PIPE-BENDING APPARATUS.** WILLIAM W. BENSON, Philadelphia, Pa. Filed Apr. 30, 1902. Serial No. 105,269. (No model.)

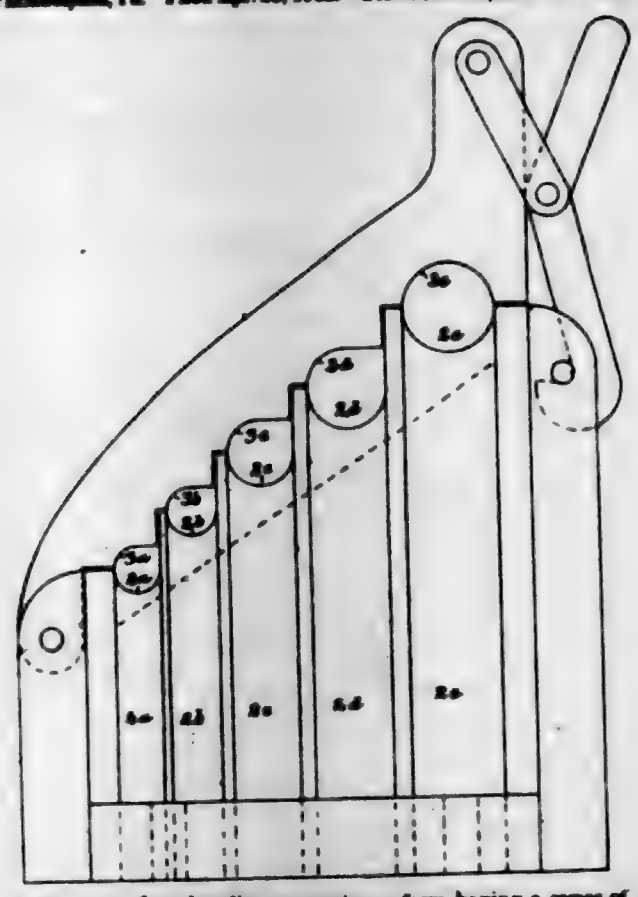

Claim.—1. In a bending apparatus, a form having a series of parallel circular grooves of varying radii, in combination with a base for supporting the same and holding the articles to be formed by the respective grooves, said mechanism being provided with apertures adjacent to the respective grooves for engaging the article to be formed, substantially as specified.

2. In a bending apparatus, the combination of a base having a series of holes therein adapted for engaging pipe ends, with a curved block or form having a series of peripheral grooves of varying radii extending from the respective holes, and a lever adapted to cross said grooves transversely and retain the shapes formed upon said apparatus, substantially as specified.

3. In a bending apparatus, the combination of a base having a series of holes therein adapted for engaging pipe ends, with a block or form having peripheral grooves of varying radii extending from the respective holes, said device having the form substantially of a cone-frustum section axially intersected by said base, and a hinged lever having a latch adapted for holding the shapes formed upon said apparatus.

706,011. **ART OF CONTROLLING ELECTRICAL SWITCHES OPERATED BY ELECTROMAGNETS.** FRANK BOURNE, Mount Vernon, N. Y., assignor to McElroy-Grunow Electric Railway System, Bridgeport, Conn., a Corporation of New Jersey. Filed Nov. 8, 1901. Serial No. 81,582. (No model.)

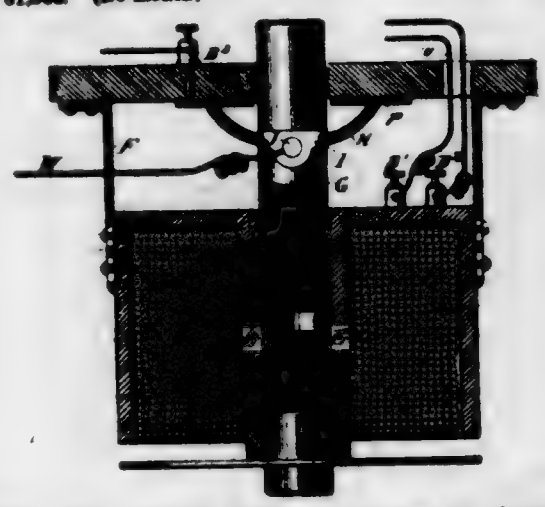

Claim.—The described method of operating an electromagnetic switch, consisting in controlling the movements of the movable part thereof by two magnetic forces which act upon magnetically-independent magnetic masses carried by said part and in such manner that when the circuit is first closed they act conjointly and afterward oppose each other.

706,012. **ELECTROMAGNETIC SWITCH.** FRANK BOURNE, Mount Vernon, N. Y., assignor to McElroy-Grunow Electric Railway System, Bridgeport, Conn., a Corporation of New Jersey. Filed Nov. 8, 1901. Serial No. 81,583. (No model.)

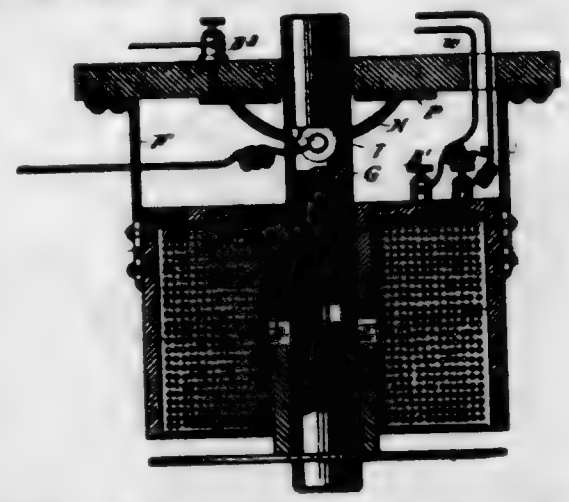

Claim.—1. In an electromagnetic switch a fixed and a movable terminal; a movable part carrying the movable terminal provided with two magnetizable parts, together with a magnet-coil adapted to magnetize both of said parts in such manner as to act conjointly to close the switch and ultimately to oppose each other, substantially as described.

2. An electromagnetic switch provided with a terminal operatively connected to a movable part carrying a solenoid-core and an armature; in combination with a fixed terminal and a magnetizing-coil, all relatively so located that when the circuit is closed the core and armature act conjointly to move the terminals into contact with each other and ultimately oppose each other in their pulling effect, substantially as described.

3. In an electromagnetic switch a fixed and a movable terminal and two magnetizable parts carried by the movable part of the switch; a magnetizing-coil adapted to act upon both of said magnetizable parts; in combination with adjustable means for varying the relative effect of the magnetizable parts in such manner that the delicacy of operation of the switch may be varied at will, substantially as described.

4. An electromagnetic switch embracing a magnet adjustably secured to a base carrying a fixed terminal; a movable part carrying a movable terminal and two magnetizable parts all adapted to be relatively so adjusted with relation to each other and the fixed terminal that on closing the operating-circuit through the coil of the magnet the two magnetizable parts first act conjointly to close the working circuit and afterward

oppose each other in their pull upon the movable part, substantially as described.

5. An electromagnetic switch having a movable terminal and two magnetizable parts, all carried by an insulating-support; in combination with a fixed terminal and a magnetizing-coil, all adjustably secured together and in such manner that on closing the switch-operating circuit both magnetizable parts act first to close the circuit and then oppose each other until the circuit is again broken, substantially as described.

6. An electromagnetic switch having an armature, a solenoid-core and a yielding conducting-terminal all carried by a movable part; in combination with a fixed terminal and an energizing-coil, the arrangement being such that when the circuit is closed through the coil the armature is out of contact with the poles of the magnet and the solenoid-core located with its median line above the median line of the coil, substantially as described.

706,013. ROTARY SCRAPER FOR FINISHING ARTIFICIAL DENTURES. THOMAS J. BOYCE, Chicago, Ill. Filed July 29, 1901. Serial No. 70,067. (No model.)

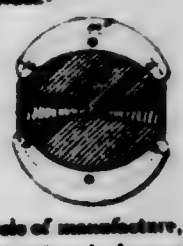

Claim.—1. As an article of manufacture, a rotary scraper for finishing artificial dentures consisting in a body portion, and a separate curved cutting-surface secured to said body portion and extending toward the axis of the scraper at an end of the same, substantially as described.

2. In a rotary scraper for finishing artificial dentures, the combination with a body portion, of a curved cutting-surface having openings therein into which the body portion extends and thereby securely unites the cutting-surface and body portion, substantially as described.

3. In a rotary scraper for finishing artificial dentures, the combination with a series of curved cutting-blades having openings therein, of a cast-metal body portion partially surrounding said blades and extending through the openings formed therein, substantially as described.

4. In a rotary scraper for finishing artificial dentures, the combination with a series of semicircular cutting-blades, of a body portion in which said blades are partially embedded said body portion having openings formed therein concentrically with the ends of said blades and at opposite points on its circumference, substantially as described.

706,014. COOKING VESSEL. ANTHONY A. BRANDENBURG and WILLIAM C. KNOBLOCH, St. Louis, Mo. Filed Apr. 23, 1902. Serial No. 104,572. (No model.)

Claim.—1. A cooking vessel having a body portion, an upper outwardly-flaring rim or wall, an annular seat at the base of the rim, a cover having scallops formed along the lower edge thereof adapted to rest on said seat, and means carried by the rim for locking the cover in position, substantially as set forth.

2. A cooking vessel having a body portion, an upper outwardly-flaring rim or wall, a spout having one of its walls formed by the wall of the rim, an annular seat at the base of the rim, a cover having scallops formed along the lower edge thereof adapted to rest on said seat, and means carried by the rim for locking the cover in position, substantially as set forth.

3. A cooking vessel having a body portion, an upper outwardly-flaring rim or wall, a spout, an annular cover adapted to rest within the rim, openings or perforations formed on the cover above the lower edge thereof, recesses having vertical and horizontal members cut in the peripheral wall of the cover, and locking-cams distributed along the inner surface of the rim for engaging said recesses and locking the cover in position, substantially as set forth.

4. A cooking vessel having a body portion, an upper outwardly-flaring rim or wall, an annular seat at the base of the rim, a cover having a series of openings formed adjacent to the lower edge thereof adapted to rest on said seat, and means carried by the rim above said seat for locking the cover in position, substantially as set forth.

706,015. INHALER. JAMES F. BAKER, Dayton, Ohio. Filed May 12, 1902. Serial No. 106,971. (No model.)

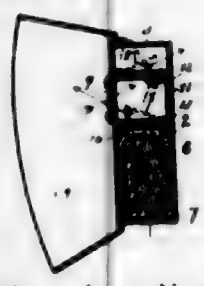

Claim.—1. In an inhaler, the combination with a casing having openings therein for the admission of air from without, a compartment in said casing containing suitable absorbent material through which the said air first passes, of a valve-frame comprising two parallel portions having openings therein, said valve-frame being mounted in said casing, inlet and outlet valves supported on the parallel parts of said valve-frame, said valves consisting of rectangular frames having each an opening therein, and said openings being closed by flaps consisting of any suitable flexible material, one of the longitudinal edges of said flaps being secured to one of the longitudinal edges of said frames, substantially as shown and described.

2. In an inhaler, the combination with a casing having a compartment therein for containing a suitable absorbent body, an opening in the rearward wall of said casing above said compartment, and an opening in said casing below said compartment and through which air is admitted to the absorbent body within said compartment, of a valve-frame comprising two parallel portions 12 and 13 each having an opening, said frame being placed within the casing with the said parallel portions occupying positions above and below the opening in the rear side of said casing, inlet and outlet valves supported on said parallel portions 12 and 13, said inlet and outlet valves each consisting of a metallic frame which rests upon said parallel portions of the frame, and a sheet of flexible material secured to each of said valve-frames and being adapted to be raised by the pressure of the incoming and outgoing air, substantially as specified.

706,016. DENTAL FLASK. FRANK A. BREWER, Jr., and GEORGE W. HARVEY, Watsonville, Cal. Filed Nov. 21, 1901. Serial No. 83,136. (No model.)

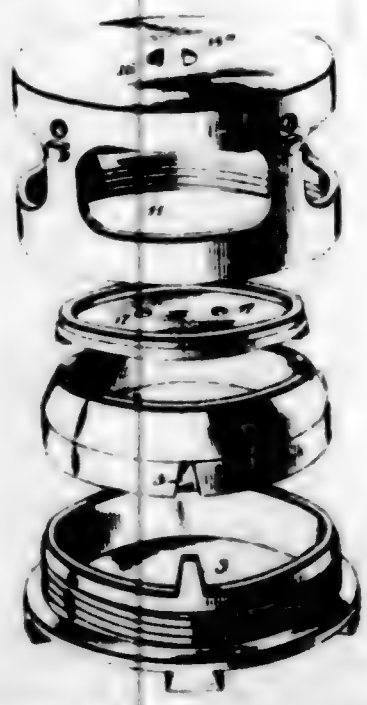

Claim.—1. A dental flask comprising a bottom, two rings, one of which is integral with the bottom, and a top, in combination with a cap having a screw-threaded connection with the ring integral with the bottom, for locking the parts of the flask together, substantially as set forth.

2. A dental flask comprising a bottom, two rings and a top, one ring being integral with the bottom and being provided with external screw-threads, in combination with a cap surrounding the top or the upper ring and provided with screw-threads to engage said screw-threaded ring, substantially as set forth.

3. A dental flask comprising a bottom, two rings and a top, one ring being fixed to the bottom and provided with lugs to engage recesses in the other ring, in combination with a screw-threaded cap for clamping the parts together, substantially as set forth.

4. The combination with a dental flask, the bottom of which is provided with lugs, of a spider to engage the said lugs, a screw-cap to clamp the parts of the flask together, and a spanner-wrench to engage the screw-cap, substantially as set forth.

706,017. DYNAMO-ELECTRIC MACHINE. JAMES DUNCK, Berlin, Germany. Filed June 26, 1900. Serial No. 21,071. (No model.)

Claim.—1. In a dynamo-electric machine, the combination of pole-piece and a separable extension therefor, the said extension being magnetized directly by the magnet-winding of the machine, as set forth.

2. In a dynamo-electric machine, the combination of a separable extension for the pole-piece, and means for magnetizing the same directly by the magnet-winding of the machine, substantially as described.

3. In a dynamo-electric machine, the combination with the magnet-frame, of a pole-piece, an extension which forms a portion of said pole-piece, the said extension and pole-piece forming an unbroken magnetic circuit, a magnet-winding carried by the pole-piece, and means for bracing the extension and pole-piece against movement, substantially as described.

4. In a dynamo-electric machine the combination with the pole-piece, of extensions therefor, said extensions being adapted to hold the magnet-windings in position, and braces between said extensions, substantially as described.

5. In a dynamo-electric machine, the combination with the pole-piece, of enlarged extensions therefor, said extensions being adapted to retain the magnet-windings in position, and means for securing said extensions against movement, substantially as described.

6. In a dynamo-electric machine the combination with the pole-piece, of extensions therefor adapted to retain the magnet-windings in position, and means for bracing the extensions against the magnet-frame, substantially as described.

7. In a dynamo-electric machine, the combination with the pole-piece, of a separate extension fitted thereto and in magnetic contact therewith, the said extension constituting a portion of the pole-piece, and a magnet-winding surrounding portions of both pole-piece and extension, substantially as described.

8. In a dynamo-electric machine, the combination with the pole-piece, of an extension therefor, the said extension constituting a portion of the pole-piece, and a section of the extension being separable, substantially as described.

9. In a dynamo-electric machine, the combination with the magnet-frame, of a separable pole-piece having a diagonally-cut end adapted to be fitted to and in magnetic contact with the frame, an extension a section of which is separable upon the other end of the pole-piece, a magnet-winding for said pole-piece, adapted to magnetize both the pole-piece and the extension, and means for bracing the pole-piece in contact with the frame, substantially as described.

10. In a dynamo-electric machine, the combination with the magnet-frame, of pole-pieces having one end diagonally cut and adapted to be fitted to and in magnetic contact with the frame, an extension constituting a portion of the pole-piece at the other end, a section of said extension being separable, magnet-windings upon said pole-pieces, and means for bracing the extensions against each other to hold the poles in contact with the frame, substantially as described.

11. In a dynamo-electric machine, the combination with the pole-piece, of an extension constituting a portion thereof, a section of said extension being separable, and a magnet-winding surrounding said pole-piece, substantially as described.

12. In a dynamo-electric machine, the combination of a pole-piece having a longitudinal recess, an extension for said pole-piece having a portion complementary to said recess, and a magnet-winding surrounding said pole-piece, substantially as described.

13. In a dynamo-electric machine, the combination of a pole-piece having a longitudinal recess with an angular end surface, an extension for said pole-piece having a portion complementary to said recess, and a magnet-winding surrounding said pole-piece, substantially as described.

14. In a dynamo-electric machine, the combination of a pole-piece having a longitudinal recess, an extension for said pole-piece having a portion complementary to said recess, a magnet-winding surrounding the pole-piece, and means for bracing the extension in the pole-piece, substantially as described.

15. In a dynamo-electric machine, the combination with the pole-pieces having recesses therein, of extensions having portions complementary to said recesses, magnet-windings surrounding the pole-pieces, and braces between the oppositely-disposed extensions, substantially as described.

16. In a dynamo-electric machine, the combination with the magnet-frame, of a separate pole-piece adapted to be fitted to and in magnetic contact with the frame and having an extension upon its end, constituting a portion of the pole-piece, a magnet-winding for said pole-piece, and means for bracing the pole-piece in contact with the frame, substantially as described.

17. In a dynamo-electric machine, the combination of a pole-piece extension separate from the pole-piece, and a magnet-winding surrounding the same, substantially as described.

18. In a dynamo-electric machine, the combination with the pole-piece, of a separate extension therefor having a portion adapted to be fitted to the pole-piece, and a magnet-winding surrounding the said portion of the extension-piece and the pole-piece, substantially as described.

19. In a dynamo-electric machine, the combination with the pole-piece of an extension therefor, a portion of said extension being fitted into and forming part of said pole-piece, a magnet-winding surrounded by said pole-piece and held in position by said extension, and means for bracing the extension against movement, substantially as described.

706,018. ALKYLOXYMETHYL ESTER OF SALICYLIC ACID AND PROCESS OF MAKING SAME. JÜRGEN CALLSEN, Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Filed May 7, 1902. Serial No. 106,315. (No specimens.)

Claim.—1. The process for producing the new alkyloxymethylic esters of salicylic acid having the formula:

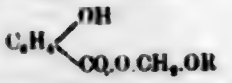

R meaning an alkyl radical, which process consists in first treating salts of salicylic acid with halogenmethylalkylethers having the above-defined formula: X—CH_2—OR and secondly separating the resulting alkyloxymethylic esters of salicylic acid from the reaction mixture, substantially as hereinbefore described.

2. The process for producing the new methyloxymethylic ester of salicylic acid having the formula:

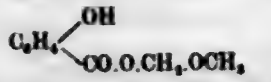

which process consists in first treating sodium salicylate with monochlordimethylether having the formula: CH_2Cl—O—CH_3 and secondly separating the resulting methyloxymethylic ester of salicylic acid, substantially as hereinbefore described.

3. The herein-described alkyloxymethylic esters of salicylic acid being colorless liquids soluble in ether, alcohol, chloroform and benzene, the alcoholic solutions being colored violet by ferric chlorid and exhibiting valuable therapeutic properties, substantially as hereinbefore described.

4. The herein-described methyloxymethylic ester of salicylic acid being a clear, colorless liquid boiling at 153° centigrade under a pressure of about thirty-two millimeters, breaking up into salicylic acid, formic aldehyde and methylic alcohol when reacted upon by dilute acids and exhibiting valuable therapeutic properties, substantially as hereinbefore described.

706,019. HOISTING MECHANISM. CHARLES W. CARHART, Chicago, Ill. Filed June 27, 1901. Serial No. 64,264. (No model.)

Claim.—1. In a hoisting system, the combination with a drum having flights of different diameters, of cables having different ranges of travel provided with cords in engagement with the different flights of the drum, a worm-wheel 16 in engagement with the drum, a worm-shaft 17 in engagement with the worm-wheel, a motor, an electromagnetic clutch coupling the motor-shaft with the worm-shaft, switching mechanism for including the helix of the clutch and the motor in circuit, means controlled by the drum for operating this switching mechanism to exclude the motor and the helix of the clutch from circuit, circuit closing and reversing switch mechanism for reversing the direction of rotation of the motor, and connections intervening between the switching mechanisms, whereby the helix of the electromagnetic clutch is included in circuit when the reversing-switch mechanism occupies one or the other of its alternative positions, substantially as described.

2. In a hoisting system, the combination with a drum, of a worm-

wheel 16 in engagement therewith, a worm-shaft 17 in engagement with the worm-wheel, a motor, an electromagnetic clutch coupling the motor-shaft with the worm-shaft, switching mechanism for including the helix of the clutch and the motor in circuit, means controlled by the drum for operating this switching mechanism to exclude the motor and the helix of the clutch from circuit, circuit closing and reversing switch mechanism for reversing the direction of rotation of the motor, and connections intervening between the switching mechanisms, whereby the helix of the electromagnetic clutch is included in circuit when the reversing switch mechanism occupies one or the other of its alternative positions, substantially as described.

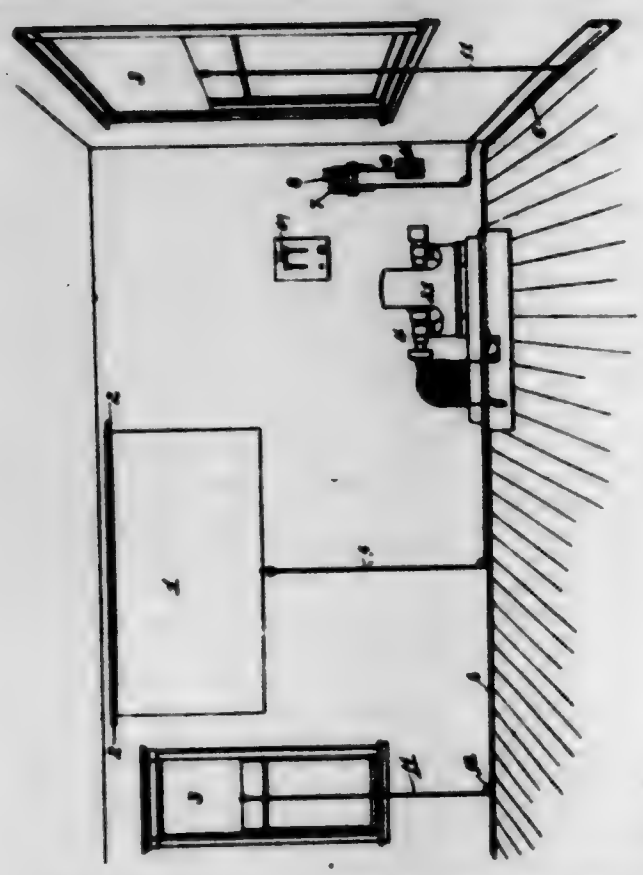

2. In a hoisting system, the combination with a drum having flights of different diameters, of carriers having different ranges of travel provided with cords in engagement with the different flights of the drum, a worm-wheel 16 in engagement with the drum, a worm-shaft 17 in engagement with the worm-wheel, a motor, a clutch coupling the motor-shaft with the worm-shaft, switching mechanism for including the motor in circuit and excluding the same from circuit, means controlled by the drum for operating this switching mechanism and disengaging the clutch members to exclude the motor from circuit and disconnect the same from the drum, and circuit closing and reversing switch mechanism for reversing the direction of rotation of the motor, substantially as described.

4. In a hoisting system, the combination with a drum having flights of different diameters, of carriers having different ranges of travel provided with cords in engagement with the different flights of the drum, a motor having driving connection with the drum, a clutch included in this driving connection, switching mechanism for including the motor in circuit and excluding the same from circuit, means controlled by the drum for operating this switching mechanism and disengaging the clutch members to exclude the motor from circuit and disconnect the same from the drum, and circuit closing and reversing switch mechanism for reversing the direction of rotation of the motor, substantially as described.

5. In a hoisting system, the combination with a drum, of a worm-wheel 16 in engagement therewith, a worm-shaft 17 in engagement with the worm-wheel, a motor, a clutch coupling the motor-shaft with the worm-shaft, switching mechanism for including the motor in circuit and excluding same from circuit, means controlled by the drum for operating this switching mechanism and disengaging the clutch members to exclude the motor from circuit and disconnect the same from the drum, and circuit closing and reversing switch mechanism for reversing the direction of rotation of the motor, substantially as described.

6. In a hoisting system, the combination with a drum, of a motor having driving connection with the drum, a clutch included in this driving connection, switching mechanism for including the motor in circuit and excluding the same from circuit, means controlled by the drum for operating this switching mechanism and disengaging the clutch members to exclude the motor from circuit and disconnect the same from the drum, and circuit closing and reversing switch mechanism for reversing the direction of rotation of the motor, substantially as described.

706,020. TRAIN-CONTROL SYSTEM. FRANK R. GAIL, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 7, 1901. Serial No. 42,508. (No model.)

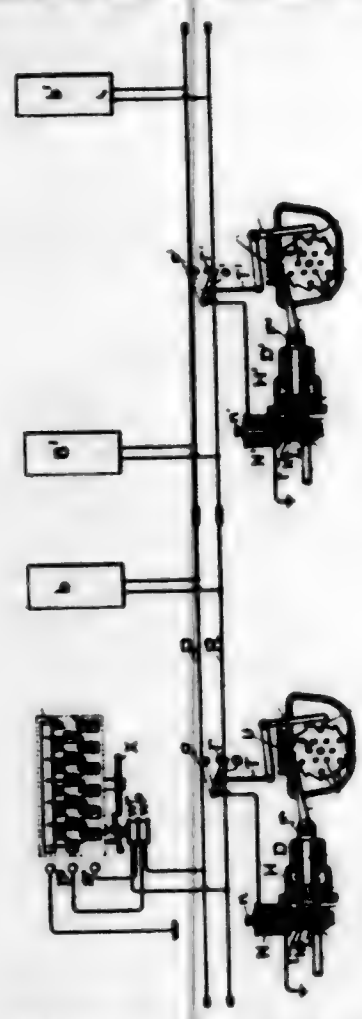

Claim.—1. The combination with a plurality of step-by-step controllers, of one or more master-controllers, and means for preventing the further operation of the master-controller in case any controller fails to operate.

2. The combination with a plurality of step-by-step controllers provided with actuating devices, of one or more master-controllers, and independent means associated with the several controllers for rendering inoperative the actuating device of each controller after each actuation thereof.

3. The combination with a plurality of step-by-step controllers provided with electrically-controlled actuating devices, of one or more master-controllers, and means for automatically opening the circuit of each controller-actuating device as soon as the corresponding controller has been operated.

4. The combination with a plurality of step-by-step controllers provided with electrically-controlled actuating devices, of one or more master-controllers, and means for automatically opening the circuit of each controller-actuating device at each step-by-step movement of the corresponding controller.

5. The combination with a plurality of step-by-step controllers provided with electrically-controlled actuating devices, of one or more master-controllers, and an electromagnetic lock for said master-controller in circuit with all of the controller-actuating devices.

6. The combination with a plurality of step-by-step controllers, provided with electrically-controlled actuating devices, of two working conductors, switch-arms automatically operated by the controllers to connect the actuating devices with each conductor alternately, one or more master-controllers, and an electromagnetic lock therefor in circuit with said conductors.

7. The combination with a plurality of step-by-step controllers, provided with electrically-controlled actuating devices, of two working conductors, switch-arms automatically operated by the controllers to connect the actuating devices with each conductor alternately, one or more master-controllers, a helix in circuit with each conductor, and a locking device for the master-controller operated by said helices.

8. The combination with a step-by-step controller, of a wheel carrying two sets of alternating pins, a lever actuated by said pins, a switch-arm connected with the lever, two conductors with which said switch-arm makes connection alternately when actuated, a controller-actuating device in circuit with said switch-arm, and means for energizing said conductors alternately.

9. The combination with two conductors, of a master-controller car-

rying contacts for connecting said conductors alternately with a source of current, a locking device for the controller operated by the current in said conductors, a plurality of controllers provided with electrically-controlled actuating devices, and means for connecting said devices to said conductors alternately.

10. The combination with a plurality of controllers, of separate step-by-step actuating devices for said controllers, an operating system for supplying energy to said actuating devices, and means whereby each controller in operating breaks the connection between its actuating device and the operating system.

11. The combination with one or more controllers, of separate step-by-step actuating devices for said controllers, an operating system comprising a plurality of branches, a master-controller for supplying energy to said actuating devices through either of the branches of the operating system, and means whereby each controller in operating breaks the connection between its actuating device and one of the branches of the operating system and makes a similar connection with another branch of said system.

12. The combination with one or more controllers, of separate step-by-step actuating devices for said controllers, an operating system comprising a plurality of branches, a master-controller for supplying energy to said actuating devices through either of the branches of the operating system, means whereby each controller in operating breaks the connection between its actuating device and one of the branches of the operating system and makes a similar connection with another branch of said system, and means for preventing a movement of the master-controller from one to another of its operative positions until all of the controllers have been similarly operated.

13. The combination with a plurality of controllers, of separate step-by-step actuating devices for said controllers, electromagnets for controlling the operation of said actuating devices, a conductor to which the several electromagnets are connected, a master-controller for supplying current to said electromagnets through said conductor, and means whereby each controller in operating breaks the connection between its electromagnet and the said conductor.

14. The combination with one or more controllers, of separate step-by-step actuating devices for said controllers, electromagnets for controlling the operation of the actuating devices, an operating system comprising a plurality of conductors, a master-controller for supplying current to the said electromagnets through either one of said conductors, and means whereby each controller in operating opens the circuit between its actuating electromagnet and the conductor through which current is being supplied to the same and makes a similar connection between said electromagnet and the other conductor of the operating system.

15. The combination with a plurality of step-by-step controllers, of separate electrically-controlled actuating devices therefor, two working conductors, a master-controller for supplying current to one or the other of said conductors, and means automatically operated by the controllers to connect each of the several actuating devices with the working conductors alternately.

16. The combination with one or more controllers, of separate electrically-controlled actuating devices therefor, two working conductors, a master-controller for supplying current to one or the other of said conductors, and means operated by each of the controllers to shift the connection of the actuating devices from one to the other of the working conductors alternately.

706,021. DEVICE FOR INFLATING PNEUMATIC TIRES. FREDERICK W. CLARKSON and JOHN G. HAGEN, Rochester, N. Y., assignors of one-third to George A. Cheesman, Rochester, N. Y. Filed Feb. 15, 1902. Serial No. 94,269. (No model.)

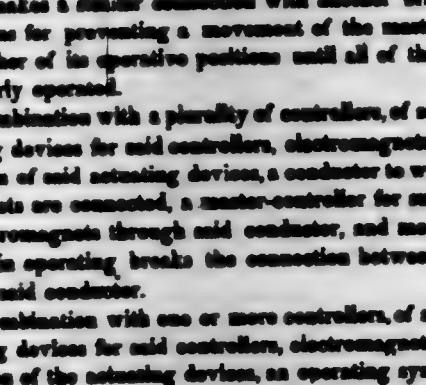

Claim.—1. In a device for inflating pneumatic tires, an air-bulb having discharge-valve at one end, a head holding the other end and having a chamber with side opening, a stopper having an opening, a cage adjustable in a cavity in said head and having an opening in communication with the side opening of the chamber in the head, and a valve mounted in said cage and fitted to a seat in the bottom of said cavity, all substantially as shown and described.

2. A device for automatically inflating pneumatic tires comprising an air-tube with outlet-valve at one end, a neck at the other end extending substantially at right angles thereto, a stem passed through the rim and engaging the inner wall of the tire and having a thimble for engagement with said neck, a valve in the neck guided in the thimble and fitted to a seat upon its inner end, means on the outer end of the stem for holding the parts together, and a stopper to said stem having an opening, a flange on the inner end of said stem having a vent-opening and valve-seat, a cage in said flange having an opening, and a spring-actuated valve in said cage and fitted to said seat.

706,022. KNOCKDOWN CRATE. HENRY H. CLEMENT, Thomasville, N. C. Filed Feb. 24, 1902. Serial No. 95,201. (No model.)

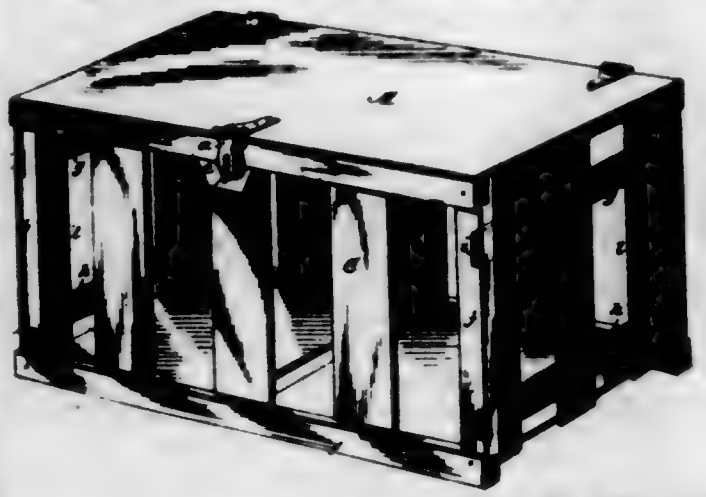

Claim.—A knockdown crate, comprising two side sections, a top hinged to one of said sections, both sections having longitudinal grooves upon the inner sides of the bottom braces thereof, bottom sections fitting in said grooves, and the upright standards at each end of the side sections having sockets, and end sections with horizontal bars, the projecting ends of which engage the sockets, and the inner upright bars of said end sections abutting against the end upright standards of the side sections to brace the crate at its corners without additional fastenings, substantially as and for the purpose set forth.

706,028. CHURN. ADRIAN CLOSE, Whitehall, Ill. Filed Feb. 17, 1902. Serial No. 94,504. (No model.)

Claim.—The churn herein shown and described, consisting of the rockers, the strips connecting the rockers near their ends, the flat board fitting in the space between the end strips, the pivoted latches carried by the strips and engaging the board to secure the board, the receptacle having weighted handles and mounted on said board and having the bottom walls raised along their center, the guides adjacent to said central raised portion, the dasher having the end pieces fitting in the guides and having the bottom connecting-strip, and the blades secured to the bottom strip and between the said pieces, said blades each composed of a pair of curved plates secured together and arranged in opposite direction.

706,024. SWITCH-OPERATING MECHANISM. GEORGE L. OSGOOD, Bridgeport, Conn., assignor to George P. Carvel, Bridgeport, Conn. Filed Dec. 6, 1901. Serial No. 84,898. (No model.)

Claim.—1. In a switch-operating mechanism in combination, a switch-point, a transversely and vertically movable pin connected with said point, means connected with a car for moving said pin in one direction whereby said switch is thrown and separate means also connected

with a car for moving said pin in the other direction whereby said switch is reset, substantially as described.

2. In a switch-operating mechanism in combination, a switch-point, a transversely and vertically movable pin connected with said point, means connected with a car for moving said pin in one direction whereby said switch is thrown, separate means also connected with a car for moving said pin in the other direction whereby said switch is reset and means for locking said switch-point in its temporary position, substantially as described.

3. In a switch-operating mechanism in combination, a switch-point, yielding means for holding said point in one of its set positions, a transversely and vertically movable pin connected with said point, means connected with a car for moving said pin in one direction whereby said switch is thrown and separate means also connected with a car for moving said pin in the other direction whereby said switch is permitted to return to its normal position.

4. In a switch-operating mechanism in combination, a switch-point, yielding means for holding said point in one of its set positions, means for locking said point in the other of its set positions, a transversely and vertically movable pin connected with said point, means connected with a car for moving said pin in one direction whereby said switch is thrown and separate means also connected with a car for moving said pin in the other direction whereby said locking means are released and said switch permitted to return to its normal position.

5. In a switch-operating mechanism in combination, a switch-point, a case or housing set transversely of said point, an aperture in the top of said case, a block movable longitudinally in said case and connected with said switch-point, a pin vertically movable in said block and projecting through said case-aperture, means for normally holding said switch-point in one of its set positions, means for locking said point in its other set position, means connected with a car for moving said pin transversely whereby said switch is thrown and locked and separate means also connected with said car for depressing said pin whereby said locking means is released and the switch returned to its normal position, substantially as described.

6. In a switch-operating mechanism in combination, a switch-point, a case or housing set transversely of said point, means as a spring for holding said point in its normal position, a block in said case and connected with said point, a pin vertically movable in said block and projecting through an aperture in said case, a second pin movable in said block and adapted to engage with said case when said point has been moved to its temporary position and two separate projecting portions each connected with a car and adapted to move said pin first transversely then vertically whereby said point is thrown, locked, released and reset by the passage of such car, substantially as described.

706,025. TYPE-WRITING MACHINE. EDWIN B. CRAM, Brooklyn, N. Y., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y., a Corporation of New York. Filed June 26, 1901. Serial No. 66,294. (No model.)

Claim.—1. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon said carriage, a series of denomination-stop levers pivoted upon the framework and extending longitudinally of the carriage and coöperating with said stop to arrest the latter at variable positions, the contact or stop ends of said levers terminating at letter-space intervals, and keys for swinging said levers and causing their said stops to be projected into the path of travel of the stop on the carriage.

2. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon said carriage, a series of denomination-stop levers pivoted upon the framework and extending longitudinally of the carriage and mounted upon a common fulcrum which is arranged transversely of the run of the carriage, one set of the ends of said levers overlapping and terminating at letter-space intervals and being adapted to coöperate with said stop for variably arresting the carriage, and a series of keys mounted in the framework and adapted to act on the other set of the ends of said denomination-stop levers.

3. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop upon said carriage, a series of levers pivoted upon the framework and extending longitudinally of the carriage, a series of projecting stops formed upon the ends of said levers and arranged at letter-space intervals, a carriage-release mechanism, and keys connected to said levers and also to said carriage-release mechanism.

4. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers of graduated lengths working upon a common fulcrum and arranged side to side, stops projecting from the ends of said levers in a direction parallel with said common fulcrum, the contact ends of said stops being flush, and keys connected to said levers.

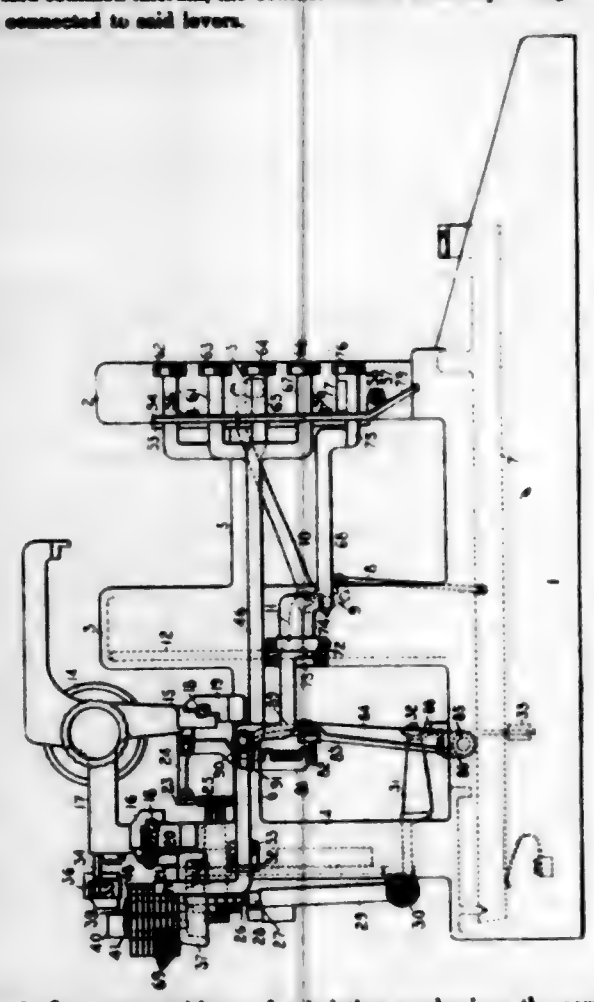

5. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a bank of levers, a support therefor, a common vertical fulcrum for said levers, stops formed upon the ends of said levers and arranged at letter-space intervals, the stops being of graduated lengths according to the elevations of their several levers, and the latter being of graduated lengths according to the locations of their several stops, and means for swinging said levers so as to enable said stops to coöperate with the first-mentioned stop for arresting the carriage.

6. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers pivoted between their ends upon a common fulcrum, stops formed upon one set of the ends of said levers and projecting in a direction parallel to said fulcrum, and key connections attached to the other set of lever ends, the levers being of graduated lengths, and the stops being also of graduated lengths and being flush at their contact ends, the shortest lever having the shortest stop and its key connection being the nearest to said fulcrum, the longest lever having the longest stop and its key connection being the most remote from said fulcrum, and the intermediate levers having the intermediate stops and intermediate connections.

7. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a series of levers supported upon the framework at the rear of the carriage and extending longitudinally of the latter, said levers having stops arranged at letter-space intervals along the run of the carriage, and connections extending from said levers forwardly to the keyboard of the machine, said connections bearing keys at their forward ends.

8. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a rack arranged upon the carriage, a column-stop adjustable along said rack, and a series of key-operated stop-levers mounted upon the frame and arranged longitudinally of said rack, said stop-levers terminating successively at letter-space intervals along said rack so as to arrest the carriage variably according to the lever operated.

9. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a rack arranged upon the carriage, a column-stop adjustable along said rack, and a series of key-operated stop-levers mounted upon the frame and arranged longitudinally of said rack, said stop-levers terminating successively at letter-space intervals along said rack, so as to arrest the carriage variably according to the lever operated, said levers being of graduated length and mounted side to side upon an axis or fulcrum which extends transversely of the rack.

10. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a rack arranged upon the carriage, a column-stop adjustable along said rack, and a series of key-

operated step-levers mounted upon the frame and arranged longitudinally of said rank, said step-levers terminating successively at letter-space intervals along said rank, so as to arrest the carriage variably according to the lever operated, and also vibrating in horizontal planes and being connected by endwise-movable forwardly-extending rods to keys arranged at the keyboard of the machine.

11. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a rank arranged upon the carriage, a column-stop adjustable along said rank, and a series of key-operated step-levers mounted upon the frame and extending from a common vertical fulcrum or pivot in a direction opposite to the advance movement of the carriage and being provided with vertically-projecting stops of graduated lengths and arranged at letter-space intervals, said stops being moved sidewise by the levers into position for engaging said column-stop.

12. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a series of vertical stops arranged at letter-space intervals upon the frame-work, a series of levers banked one upon another and working upon a common vertical axis which is arranged between the ends of the levers, and keys connected to the ends of said levers opposite to the stops.

13. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop rank mounted upon the rear portion of the carriage, a series of levers banked upon the top plate of the machine and working upon a common vertical fulcrum and having formed upon one set of their ends a series of projecting stops, rods extending forwardly from the other set of lever ends to the front of the machine, and keys mounted upon the forward ends of said rods.

14. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop rank mounted upon the rear portion of the carriage, a series of levers banked upon the top plate of the machine and working upon a common vertical fulcrum and having formed upon one set of their ends a series of projecting stops, rods extending forwardly from the other set of lever ends to the front of the machine, and keys mounted upon the forward ends of said rods, the key ends of said rods diverging, the keys being arranged in a downwardly-extending row at the side of the machine.

15. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a series of levers 38 banked upon the framework and extending longitudinally of the carriage, a common vertical fulcrum 39 for said levers, a series of coincident slots 42 formed on said levers, a common stop 41 passing through said slots, springs 43 bearing against said levers, push-rods 46 engaging said levers and extending forwardly therefrom, and keys carried by the forward ends of said push-rods.

16. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop upon the carriage, a series of levers 38 banked upon the framework and extending longitudinally of the carriage, a common vertical fulcrum 39 for said levers, springs 43 bearing against said levers, and key-bearing rods 46 engaging said levers and extending forwardly therefrom, said rods having upwardly-projecting fingers 48 which engage eyes formed in said levers, and the latter having cut-aways 52.

17. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop upon the carriage, a series of levers working upon a common vertical axis and extending longitudinally of the carriage and having at their inner ends a series of denomination-stops arranged at letter-space intervals, and a series of forwardly-extending rods having at their rear ends upwardly-extending devices engaged to the outer ends of said levers, said rods diverging at their forward ends and bearing keys.

18. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop upon the carriage, a series of levers working upon a common vertical axis and extending longitudinally of the carriage and having at their rear ends a series of denomination-stops arranged at letter-space intervals, a series of forwardly-extending rods having at their rear ends upwardly-extending devices engaged to the outer ends of said levers, a bracket 32 for the rear ends of said rods, differently-offset key-bearing stems on the forward ends of said rods, and a bracket for guiding said offset stems.

19. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop upon the carriage, a series of levers of graduated lengths working upon a common vertical axis and extending longitudinally of the carriage and having at their inner ends a series of denomination-stops arranged at letter-space intervals, a series of forwardly-extending rods having at their rear ends upwardly-extending devices engaged to the outer ends of said levers, said rods being disposed side by side and having at their forward ends upwardly and downwardly offset key-stems, and means for guiding said rods.

20. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop upon the carriage, a series of levers banked one upon another and working upon a common fulcrum and extending longitudinally of the carriage and having at their inner ends a series of denomination-stops arranged at letter-space intervals, said stops being of graduated heights and terminating upon the same level, a series of rods having at their rear ends a series of upwardly-extending devices of graduated lengths engaged to the outer ends of said levers, and keys connected to the forward ends of said rods.

21. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop upon the carriage, a series of levers banked one above another and working upon a common fulcrum and extending longitudinally of the carriage and having at their inner ends a series of denomination-stops arranged at letter-space intervals, said stops being of graduated heights and terminating at the same level, a series of rods having at their inner ends upwardly-extending devices of graduated lengths engaged to the outer ends of said levers, and keys connected to the forward ends of said rods, the longest of said levers lying at the bottom and having the longest stop and being connected to the outermost rod, and the shortest lever lying at the top and having the shortest stop and being connected to the innermost rod, and cut-aways formed in the outer ends of said levers so as to permit independent movement thereof by said rods.

22. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a group of denomination-stops coöperating therewith, a selecting-key, and means for enabling said key to operate any of said denomination-stops independently of the remaining denomination-stops.

23. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a series of denomination-stop levers, a selecting-key, and means for enabling said key to operate any of said levers independently of the remaining levers.

24. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a column-stop adjustable along the carriage, a series of denomination-stops arranged side by side at letter-space intervals, levers upon which said denomination-stops are mounted, and a selecting-key having means for engaging any of said levers.

25. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a key, and means for enabling said key when moved in one direction to select any of said stops and when moved in another direction to set the selected stop.

26. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop and a denomination-determining mechanism, the latter including a series of levers connected to means for variably arresting the carriage, and also including means for enabling said key to select any of said levers and then to operate or set the selected lever independently of the other levers.

27. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers having ends formed and arranged for coöperation with said stop to variably arrest the carriage, a key, and means for enabling said key to select any of said levers and then set the selected lever.

28. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers arranged side to side and having a common fulcrum, said levers having ends formed and arranged for coöperation with said stop to variably arrest the carriage, a key, and means for enabling said key to select any of said levers and then set the selected lever.

29. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers extending longitudinally of the carriage, steps projecting from their ends and coöperating with the first-mentioned stop to variably arrest the carriage, a key, and means for enabling said key to select any of said levers and then set the selected lever.

30. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops for coöperation therewith, and a rod mounted for movement in transverse directions, said rod moving in one direction for selecting a stop and moving in another direction for operating said stop.

31. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of independently-movable denomination-stops for coöperation therewith, and a key-rod having a transverse stop-selecting movement and a longitudinal stop-setting movement.

32. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of independently-movable step-levers, and a rod movable from one lever to another and adapted to vibrate any of said levers.

33. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops, and an endwise-movable swiveled rod for selecting and setting the stops.

34. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers pivoted between their ends and having means at one set of their ends for variably arresting the carriage, and a rod for engaging any of the levers at the other set of their ends and adapted to vibrate the engaged lever upon its pivot.

35. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers pivoted between their ends and formed and arranged at one set of their ends for variably arresting the carriage, notches 70 in said levers, and an endwise-movable rod swiveled between its ends and having a part adapted to engage any of said notches 70 and swing the engaged lever upon its pivot.

36. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers pivoted between their ends, a series of denomination-stops upon said levers, notches 70 and cut-aways 92 upon said levers, and an endwise-movable swiveled rod having an arm or finger adapted to engage any of said notches 70 and swing the engaged lever upon its pivot.

37. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of levers extending longitudinally of the carriage and having projecting stops adapted for coöperation with the carriage-stop, a common fulcrum for said levers, fingers 69 formed upon the ends of said levers opposite said stops, rod 68 having an arm or finger 71 for engaging any of said fingers 69, swiveling device 72 for said rod, and key 76.

38. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a selecting-key, means for enabling said key to operate any of said denomination-stops independently of the remaining denomination-stops, and a denomination-indicator for said key.

39. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops for coöperation therewith, a series of denomination-stop levers, a selecting-key, means for enabling said key to operate any of said levers, and a plate arranged at said key and marked to indicate the denominations corresponding to the several stop-levers.

40. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a key, means for enabling said key when moved in one direction to select any of said stops and when moved in another direction to set the selected stop, and means arranged at the key for guiding the latter during the stop-setting movement thereof.

41. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a selecting-key, means for enabling said key to operate any of said denomination-stops independently of the remaining denomination-stops, a denomination-indicator for said key, and means arranged at said key for guiding the latter during the stop-setting movement thereof.

42. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a key-rod movable transversely for selecting any of said stops and also movable longitudinally for operating the selected stop, and a series of guiding-slots for said rod.

43. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a key-rod movable transversely for selecting any of said stops and also movable longitudinally for operating the selected stop, a series of guiding-slots for said rod, and a denomination-indicator.

44. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of denomination-stops, and a set of keys therefor, the number of keys being less than the number of the denomination-stops, one of said keys having means for projecting a plurality of said stops, and the other keys being connected each to a single stop.

45. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a set of denomination-stops, and a set of keys, the number of keys being less than the number of the denomination-stops, and at least one of the keys having means for setting a plurality of the denomination-stops.

46. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of coöperating stop members, and stop-setting devices controlled by a plurality of denomination-keys, at least one of said keys controlling means for causing the arrest of the carriage at a plurality of denominational positions.

47. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a series of denomination-stop levers, a selecting-key having means for operating some of said levers, and keys connected one to each of the remaining levers.

48. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a series of keys, the number of said keys being less than the number of said denomination-stops, means for enabling at least one of said keys when moved in one direction to select one of several denomination-stops and when moved in another direction to set the selected stop, and means for enabling the other keys to operate the other denomination-stops.

49. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of independently-movable denomination-stops for coöperation therewith, a key-rod having a transverse stop-selecting movement and a longitudinal stop-setting movement, whereby it may operate several of said denomination-stops, and a series of key-rods having longitudinal stop-setting movements and connected one to each of the remaining denomination-stops.

50. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of independently-movable stop-levers, and a series of rods, said rods being fewer in number than said levers, and at least one of said rods being movable from one lever to another and adapted to vibrate the selected lever.

51. In a type-writing and tabulating mechanism, the combination with a carriage and carriage-feeding devices, of a stop, a series of denomination-stops, an endwise-movable swiveled rod for selecting and setting several of the denomination-stops, and endwise-movable rods connected one to each of the remaining stops.

52. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of denomination-stop levers, a series of key-rods connected to said levers, and a carriage-releasing device having a part which extends transversely of said rods so as to be engaged thereby.

53. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a rack arranged upon the carriage, a column-stop adjustable along said rack, a series of key-operated stop-levers mounted upon the frame and arranged longitudinally of said rack, said stop-levers terminating successively at letter-space intervals along said rack so as to arrest the carriage variably according to the lever operated, and also vibrating in horizontal planes and being connected by endwise-movable forwardly-extending rods to keys arranged at the keyboard of the machine, and carriage-releasing devices including a part extending across said rods and engageable thereby.

54. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a selecting-key, means for enabling said key to operate any of said denomination-stops independently of the remaining denomination-stops, and a carriage-releasing device operated by said key.

55. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a series of denomination-stop levers, a selecting-key, means for enabling said key to operate any of said levers independently of the remaining levers, and a carriage-releasing device operated by said key.

56. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of denomination-stops coöperating therewith, a key, means for enabling said key when moved in one direction to select any of said stops and when moved in another direction to set the selected stop, and a carriage-releasing device operated by the stop-setting movement of said key.

57. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a denomination-determining mechanism, the latter including a series of levers connected to means for variably arresting the carriage, and also including means for enabling said key to select any of said levers and then to operate or set the selected lever independently of the other levers, and a carriage-releasing device operated by the lever-setting movement of said key.

58. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of denomination-stops for coöperation therewith, a rod mounted for movement in transverse directions, said rod moving in one direction for selecting a stop and moving in another direction for operating said stop, and a carriage-releasing device engaged by said rod at the stop-setting movement thereof.

50. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of independently-movable denomination-stops for coöperation therewith, a key-rod having a transverse stop-selecting movement and a longitudinally stop-setting movement, and a carriage-releasing device engaged by said rod at the longitudinal movement thereof.

60. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of independently-movable stop-levers, a rod movable from one lever to another and adapted to vibrate any of said levers, and a carriage-releasing device engaged by said rod at the lever-vibrating movement thereof.

61. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of denomination-stops, an endwise-movable swiveled rod for selecting and setting the stops, and a carriage-releasing device operable by said rod.

62. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a set of denomination-stops, a set of keys, the number of keys being less than the number of the denomination stops and at least one of the keys having means for setting a plurality of the denomination-stops, and a carriage-releasing device operable by all of said keys.

63. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of coöperating stop members, stop-setting devices controlled by a plurality of denomination-keys, at least one of said keys controlling means for causing the arrest of the carriage in a plurality of denominational positions, and a carriage-releasing device operable by all of said keys.

64. In a type-writing and tabulating mechanism, the combination with a power-driven carriage and carriage-feeding devices, of a stop, a series of independently-movable denomination-stops for coöperation therewith, a key-rod having a transverse stop-selecting movement and a longitudinal stop-setting movement, whereby it may operate several of said denomination-stops, a series of key-rods having longitudinal stop-setting movements and connected one to each of the remaining denomination-stops, and a carriage-releasing device operable by all of said rods.

65. In a type-writing and tabulating mechanism, the combination with a power-driven carriage, of a carriage-feed-rack frame, escapement devices connected thereto, arm 81 upon said frame, bar 83 extending longitudinally of the carriage and adapted to engage said arm, a stop for said carriage, a denomination-determining mechanism, and means operated by said denomination-determining mechanism for moving said bar 83 and causing it to engage the arm 81 and release the carriage-feed rack.

66. In a type-writing and tabulating mechanism, the combination with a power-driven carriage, of a carriage-feed-rack frame, escapement devices connected thereto, arm 81 upon said frame, bar 83 extending longitudinally of the carriage and adapted to engage said arm, rocker-arms 84 carrying said bar 83, pin 90 connected to said bar, a stop for said carriage, and a denomination-determining mechanism, including means for moving said pin 90 and causing the bar 83 to engage the arm 81 and release the carriage-feed rack.

67. In a type-writing and tabulating mechanism, the combination with a power-driven carriage, of a carriage-feed-rack frame, escapement devices connected thereto, arm 81 upon said frame, bar 83 extending longitudinally of the carriage and adapted to engage said arm, a column-stop adjustable along the carriage, a set of denomination-stop levers, key-rods for operating said levers, and means for enabling said key-rods to operate said bar 83.

706,026. **GARMENT-STRETCHER.** FRANCIS F. CRAWFORD, Dunnville, Canada. Filed Apr. 30, 1902. Serial No. 105,292. (No model.)

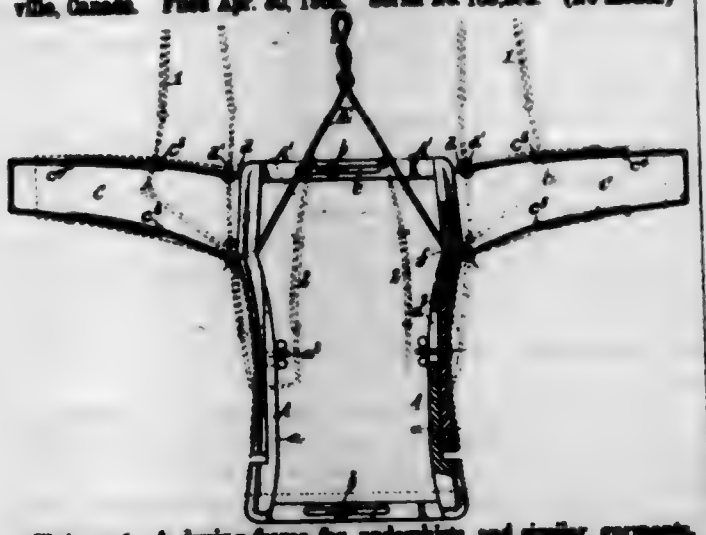

Claim.—1. A drying-frame for undershirts and similar garments, consisting of a body portion conforming approximately to the body of the garment, foldable arm members having upper and lower rods or bars, one of which is pivoted to said body portion, and a suspension-cord connected with the other rod of the arm member and arranged to hold the same in position against the body portion of the frame, substantially as set forth.

2. A drying-frame for undershirts and similar garments, consisting of a body portion conforming approximately to the body of the garment and having its side bars provided with guide-openings, foldable arm-members each having an upper rod or bar pivoted at its inner end to said body portion and a lower rod or bar connected with said upper rod but detached from said body portion, and a suspension-cord connected with the lower detached rods of the arm members and passing through said guide-openings, substantially as set forth.

706,027. **REVERSING MECHANISM.** OLIVER CROSBY, St. Paul, Minn. Filed Sept. 22, 1897. Serial No. 652,634. (No model.)

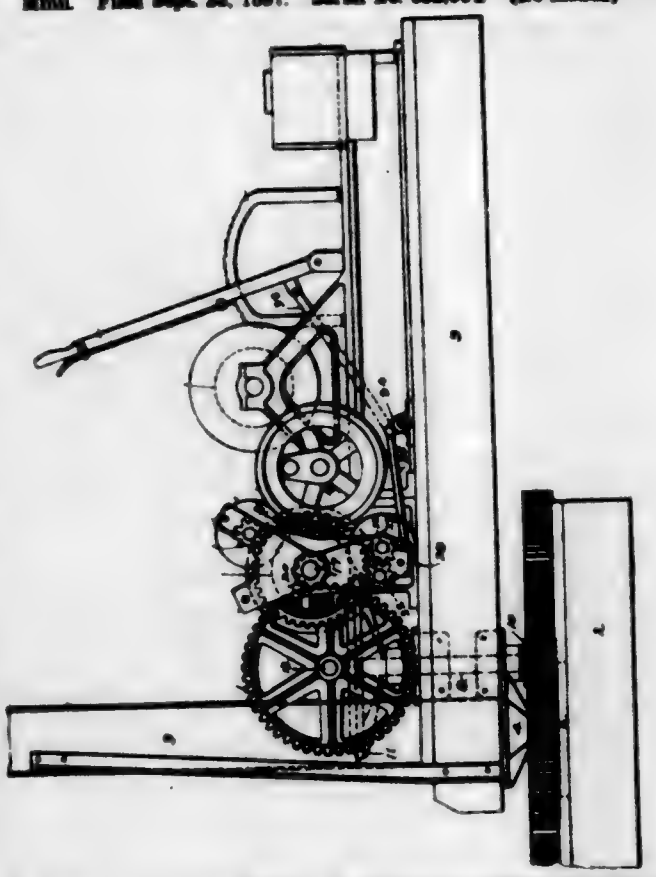

Claim.—1. In combination the driven and driving parts, the interposed oscillating frame having radial arms, a pair of friction-wheels carried one by each of said arms, pinions carried by said friction-wheels and a gear arranged between said pinions, as and for the purpose set forth.

2. In combination, the driven and driving parts, an interposed frame adapted to oscillate upon a central shaft, friction-wheels mounted on the opposite ends of said frame, and adapted to be engaged by the driving part, a gear loosely mounted on said shaft, a pinion actuated by one of said friction-wheels and intermeshing with said gear, and a pair of pinions actuated by the other friction-wheels and similarly engaging with said gear, and an operative connection between said gear and the part to be driven.

706,028. **PEDAL FOR BICYCLES.** FRANCIS H. CULLEN, Toronto, Canada. Filed Apr. 29, 1901. Serial No. 56,081. (No model.)

Claim.—1. In a bicycle-pedal, a hub adapted to be connected to the pedal-crank, a footbold foldably connected to the hub, and a brace, one end of which is rigidly connected to the footbold and the other end of which engages the hub and supports the footbold in the folded and extended positions, substantially as specified.

2. In a bicycle-pedal, a hub adapted to be connected to the pedal-crank and provided with a transversely-disposed groove, a footheld foldably connected to the hub and a brace, one end of which is connected to the footheld and the other end of which is adapted to register in the groove formed in the hub, substantially as specified.

3. In a bicycle-pedal, a hub adapted to be connected to the pedal-crank, a footheld foldably connected to the hub, a cam for the hub adjacent to the footheld a brace one end of which is connected to the footheld and the other end of which abuts against the hub when the footheld is in its extended position to firmly brace the same and engages the cam when the footheld is in its folded position, substantially as specified.

4. In a bicycle-pedal, a hub adapted to be connected to the pedal-crank and provided with downwardly-directed lugs, a footheld foldably connected to the hub, a brace, one end of which is rigidly connected to the footheld, and the other end of which engages the hub to support the footheld in its extended position, substantially as specified.

5. In a bicycle-pedal, a hub adapted to be connected to the pedal-crank and provided with downwardly-directed lugs, a footheld foldably connected to the hub, a brace, one end of which is rigidly connected to the footheld and the other end of which is free to engage the lugs of the hub when the footheld is in its extended position, cams on the lugs to distend the brace to hold the footheld firmly in its folded position, substantially as specified.

6. In a bicycle-pedal, a hub, a footheld foldably connected to the hub, downwardly-directed lugs integrally formed with the hub, a brace for the footheld one end of which is rigidly connected to the footheld and the other end of which is adapted to engage the lugs, and a tongue for the brace to register between the lugs, substantially as specified.

7. In a bicycle-pedal, a hub, downwardly-directed lugs integrally formed with the hub, a footheld foldably connected to the hub, a groove in the side face of the lugs adjacent to the footheld, a brace one end of which is rigidly connected to the footheld and the other end of which is free to engage the lugs and register in the groove when the footheld is in its extended position, and a tongue on the free end of the brace to register between the lugs, substantially as specified.

8. In a bicycle-pedal, a hub, downwardly-directed lugs integrally formed with the hub, a footheld foldably connected to the hub, a groove in the side face of the lugs adjacent to the footheld, a brace, one end of which is rigidly connected to the footheld and the other end of which is free to engage the lugs and register in the groove when the footheld is in its extended position, a tongue on the free end of the brace to register between the lugs, and cams on the lugs to distend the brace to securely hold the footheld in its folded position, substantially as specified.

706,029. WINDOW-GUARD. HARMON P. CULVER and HOMER LIGHTENTAFF, New York, N.Y. Filed Oct. 10, 1901. Serial No. 78,149. (No model.)

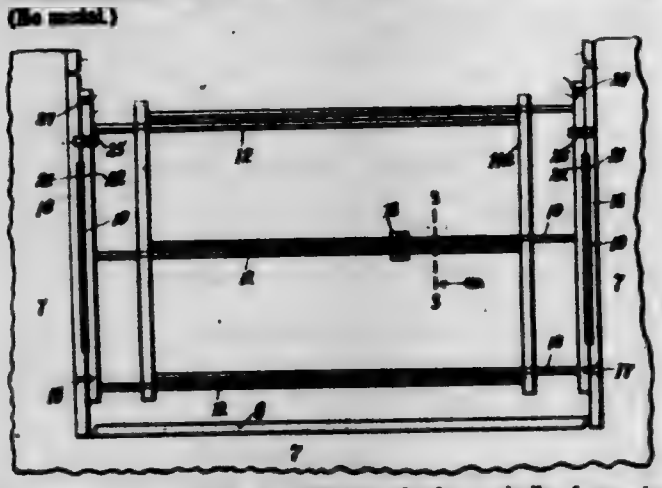

Claim.—1. A window-guard composed of two similar frames longitudinally adjustable and each of which is provided at its outer end with a supplemental bar to which it is pivoted near the lower end thereof, and side links pivotally connected with the outer ends of each frame at or near the top thereof, and two said supplemental bars at or near the top thereof, said links being pivotally connected substantially as shown and described.

2. A window-guard, composed of two similar frames longitudinally adjustable and each of which is provided at its outer end with a supplemental bar to which it is pivoted near the lower end thereof, and side links pivotally connected with the outer ends of each frame at or near the top thereof, and to the supplemental bars at or near the top thereof, said links being pivotally connected and means for holding the guard within the supplemental bars, substantially as shown and described.

3. A window-guard comprising two separate similar open frames each of which consists of two vertically-arranged end pieces and a plurality of horizontal rods, the rods of each frame being passed through one end piece of the other frame, supplemental bars to which the guard is pivoted at or near the bottom thereof, and devices for holding the guard in an upright position between the supplemental bars and other devices for lowering said guard outwardly and holding it in a horizontal position.

706,080. METAL-CRIMPING MACHINE. GEORGE CUSIN, Montreal, Canada. Filed Oct. 24, 1900. Serial No. 34,205. (No model.)

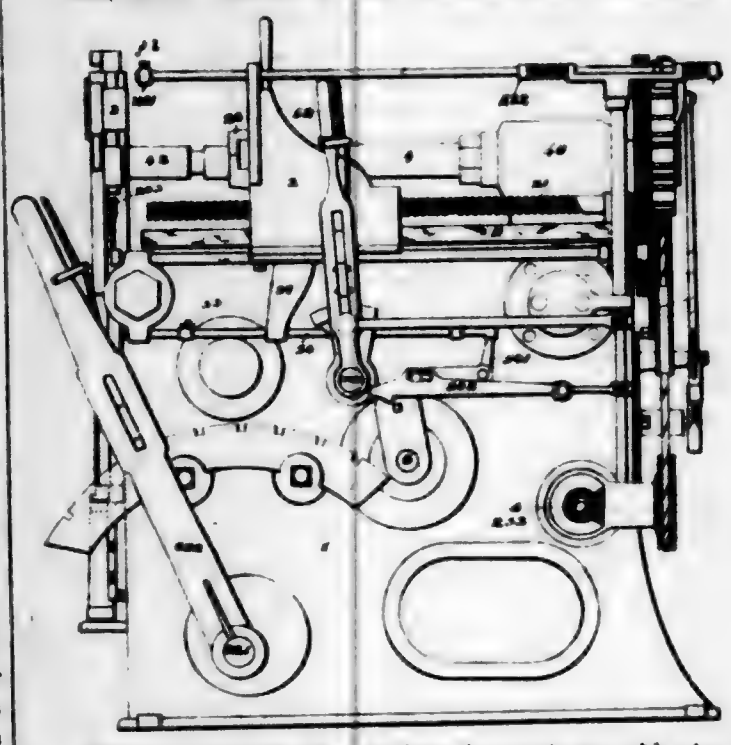

Claim.—1. In a pipe-elbow machine, the combination with crimping mechanism and creasing mechanism, and a cam-wheel geared to the power-shaft within the machine-frame and operatively connected by means adapted to crimp and crease alternately, as described.

2. In a pipe-elbow machine, the combination with crimping mechanism and creasing and folding mechanism, and a rotating oval cam adapted to actuate each mechanism alternately, a face-plate pivotally supported on the edge of the frame, and means for tilting the face-plate, as described.

3. In a pipe-elbow machine, the combination with crimping mechanism and creasing and folding mechanism, and a tilting face-plate provided with a supporting-collar, and means for tilting same, as described.

4. In a pipe-elbow machine, the combination with crimping mechanism and creasing and folding mechanism, and a sliding collar supported on a tilting face-plate, and means to open and close collar upon pipe.

5. In a pipe-elbow machine, the combination with crimping mechanism and creasing and folding mechanism, a tilting face-plate and means for tilting same, and a sliding collar supported on face-plate and means to open and close collar, as described.

6. In a pipe-elbow machine, the combination with a tilting face-plate, of a reciprocating frame with crimping-jaws attached thereto, and a sliding collar, as described.

7. In a pipe-elbow machine, a feed mechanism comprising a carriage provided with a pipe-clamp traveling on two screws, each having a pinion meshing with a gear-wheel, and means to rotate the gear-wheel, as described.

8. In a pipe-elbow machine, the combination of a hollow stationary mandrel, with a reciprocating rod therein, a slotted sleeve on the end of the mandrel, a movable head pivotally supported on the outer end of the sleeve and operatively connected with the rod, and a forked bell-crank lever in sliding contact with a cam mounted on a counter-shaft beneath the mandrel, as described.

9. In a pipe-elbow machine, a stationary hollow mandrel, having a slotted sleeve, a headpiece thereto having a projecting shoulder, a movable headpiece having bearings on the sleeve, and means to reciprocate the sleeve and operate the movable headpiece, as described.

10. In a pipe-elbow machine, a stationary hollow mandrel having a slotted sleeve, a headpiece thereto having a projecting shoulder, a movable headpiece having bearings on the sleeve, and means to reciprocate the sleeve and operate the movable headpiece, a loose pin in head piece and a reciprocating rod with projections adapted to operate the movable head as described.

11. In a pipe-elbow machine, the combination with crimping mechanism of an actuating-lever provided with eccentric bearings adapted to adjust the stroke of the crimping-jaws, as described.

12. In a pipe-elbow machine, the combination of a feed-carriage provided with a pipe-clamp, and screw-threaded bearings, two parallel screws adapted to operate feed-carriage with pinions thereto, a gear-wheel mesh-

ing with the pinions and means to rotate the gear-wheel intermittently when feeding, and continuously when returning feed-carriage, as described.

13. In a pipe-elbow machine, a stopping and starting mechanism consisting of a rod reciprocated by feed-carriage by means of stops, and means of connecting and disconnecting feed gear-wheel with feed-operating mechanism, as described.

14. In a pipe-elbow machine, the combination of a feed-carriage provided with a pipe-clamp traveling on two screws, each having a pinion meshing with a gear-wheel and means to vary the amount of rotation of the gear-wheel, as described.

15. In a pipe-elbow machine, a reciprocating sleeve provided with a projecting shoulder curved to support the uncrimped portion of the pipe-bend beyond the movable head of the creasing mechanism.

706,081. FURNACE FOR ANNEALING WIRE. FRED H. DANIELS, Worcester, Mass. Filed Apr. 9, 1902. Serial No. 101,891. (No model.)

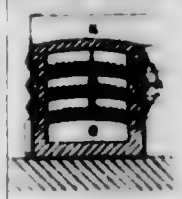

Claim.—1. In a wire-annealing furnace, a chamber through which the wire is drawn, said chamber having a floor adapted to support the wire, said floor being constructed of tiles having longitudinal corrugations formed therein to constitute channels or gutters to separate and guide the plies of the wire.

2. In a wire-annealing furnace, a chamber through which the wire is drawn, said chamber having a floor adapted to support the wire, and having longitudinal corrugations to form channels or gutters to separate and guide the plies of the wire, said floor having also similar corrugations on its under side alternating in position with those on the upper side.

3. In a wire-annealing furnace having a plurality of superposed chambers through which the wire is drawn consecutively, said chambers having floors formed of longitudinally-corrugated tiles to form channels or gutters to separate and guide the plies of the wire, and the under sides of the tiles having similar corrugations to form collectors for the heat in the chamber below.

4. In a wire-annealing furnace having a fire-box in stack, the combination with a chamber or chambers through which the products of combustion pass and through which the wire is drawn in direct contact with said products, of a floor adapted to support the wire and having open longitudinal channels or gutters to separate and guide the plies of the wire, and means for maintaining a pressure in said chambers above that of the atmosphere, said means consisting of a blast of air or steam in the ash-pit of the furnace.

706,082. HEATING-FURNACE. FRED H. DANIELS, Worcester, Mass. Filed May 2, 1902. Serial No. 105,671. (No model.)

Claim.—1. A furnace of the continuous type, comprising a hot-billet section, and a relatively long cold-billet section continuing beyond the hot-billet section, said hot-billet section opening into the continuation of the cold-billet section, whereby the waste gases of the hot-billet section are diverted into said continuation of the cold-billet section, and means for charging each section.

2. A furnace of the continuous type, comprising a hot-billet section and a relatively long cold-billet section, means for charging each section, and means for transferring billets from the cold-billet section into the hot-billet section.

3. A furnace of the continuous type, comprising a hot-billet section and a relatively long cold-billet section, said hot-billet section opening into the cold-billet section, whereby the waste gases of the hot-billet section are diverted into the cold-billet section, and means for transferring billets from the cold-billet section into the hot-billet section.

4. A furnace of the continuous type, comprising a hot-billet section, and a relatively long cold-billet section continuing beyond the hot-billet section, said sections being separated by a wall having an opening near the charging end of the hot-billet section through which the waste gases of the hot-billet section are diverted into the continuation of cold-billet section.

5. A furnace of the continuous type, comprising a cold-billet section and relatively short hot-billet sections located on each side of said cold-billet section, said hot-billet sections communicating with the cold-billet section at points intermediate the ends of the latter, and means for transferring billets from the cold-billet section into the hot-billet section.

6. A furnace of the continuous type, comprising a hot-billet section, and a relatively long cold-billet section, said sections being formed as component parts of an integral structure having a division-wall between said sections, said wall having an opening connecting said sections near the charging end of the hot-billet section, and means for transferring billets from the cold-billet section to the hot-billet section.

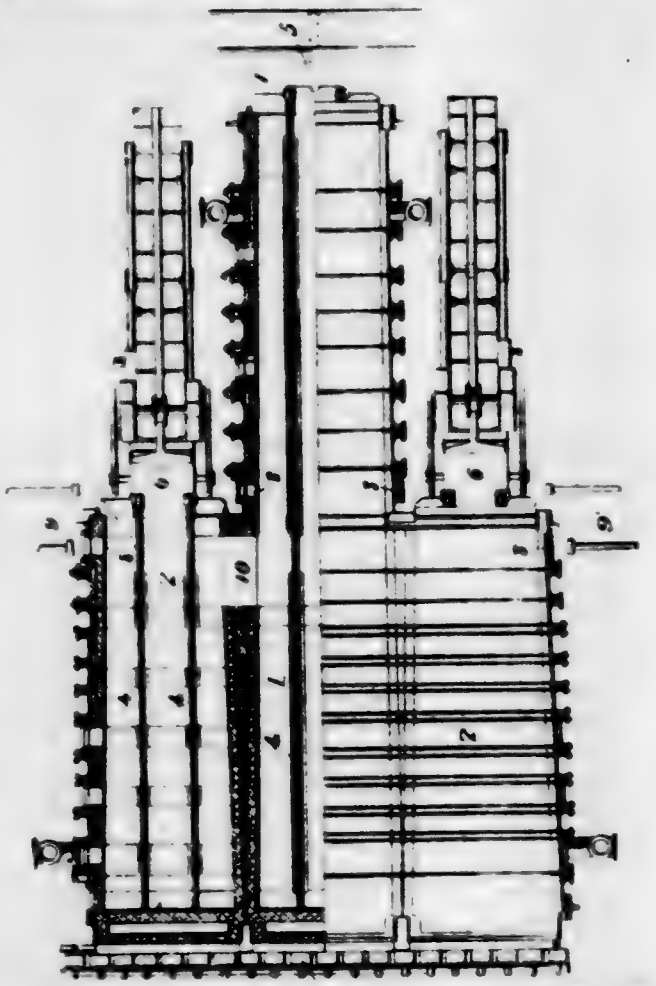

7. A furnace of the continuous type, comprising a cold-billet section, a relatively short hot-billet section on each side of said cold-billet section, a lateral opening from each hot-billet section near the charging end thereof into the cold-billet section, lateral openings into the cold-billet section adjacent to the charging ends of said hot-billet sections, and pushers adapted to pass through said openings to transfer billets from the cold-billet section into the respective hot-billet sections.

706,083. APPARATUS FOR WASHING FAT. DAVID I. DAVIS, Kansas City, Kans., assignor to Swift and Company, Chicago, Ill., a Corporation of Illinois. Filed Feb. 1, 1902. Serial No. 92,668. (No model.)

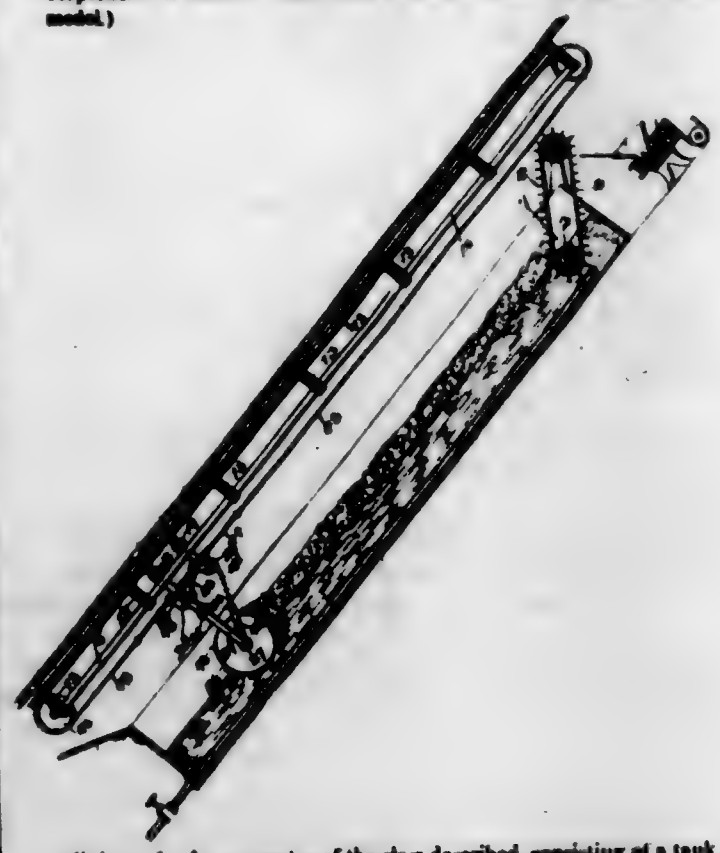

Claim.—1. An apparatus of the class described, consisting of a tank, a carriage, means suspended from said carriage adapted to engage and

submerge the fat, and means for operating said carriage to carry said submerging means across the tank, substantially as described.

2. An apparatus of the class described, consisting of a tank, a carriage, rotary mechanism suspended from the carriage adapted to engage and submerge the fat, and means for operating said carriage to carry said rotary mechanism across the tank, substantially as described.

3. An apparatus of the class described, consisting of a tank, a rotary drum, and traveling means supporting said drum and adapted to conduct it across the tank, substantially as described

4. An apparatus of the class described, consisting of a tank, a rotary drum, and traveling means supporting said drum and adapted to conduct it across the tank, said drum having ribs on its periphery, substantially as described.

5. An apparatus of the class described, consisting of a tank, a rotary drum, traveling means supporting said drum and adapted to conduct it across the tank, and means for adjusting the height of the drum, substantially as described.

6. The combination of a tank, a carriage, a submerging device suspended from said carriage and adapted to engage and submerge matter floating on the water in the tank, and means for vertically adjusting said submerging device, substantially as described.

7. The combination of a tank, a carriage, a rotary submerging device suspended from said carriage and adapted to engage and submerge matter floating on the water in the tank, and means for vertically adjusting said submerging device, substantially as described.

8. The combination of a tank having an inclined conveyer at one end, a submerging device movable across the tank and adapted to engage and submerge matter floating on the water in the tank, and means for vertically adjusting said submerging device, substantially as described.

9. The combination of a tank having an inclined conveyer at one end, a rotary drum movable across the tank and adapted to engage and submerge matter floating on the water in the tank, and means for vertically adjusting said rotary drum, substantially as described.

10. The combination of a tank having an inclined conveyer at one end, a rotary drum movable across the tank and adapted to engage and submerge matter floating on the water in the tank, and means for vertically adjusting said rotary drum, said drum having radial ribs on its surface, substantially as described.

11. In an apparatus of the class described, the combination of a tank adapted to contain water, means for cooling the water in the tank, and means for submerging matter floating on the surface of the water in the tank, substantially as described.

12. In an apparatus of the class described, the combination of a tank adapted to contain water, and traveling means adapted to submerge matter floating on the water in the tank, substantially as described.

13. The combination of a tank, a carriage, a rotary drum pivotally suspended from said carriage and adapted to engage and submerge matter floating on the water in the tank, means for moving said carriage to cause said drum to travel across the tank, and means for vertically adjusting said drum, substantially as described.

14. The combination of a tank, a carriage having pulleys 35 38, a rotary drum, straps pivotally suspending said drum from said carriage, and means for angularly adjusting said straps, to raise or lower the drum, substantially as described.

15. The combination of a tank, a carriage, pulleys 35 38 carried by said carriage, and a flexible connection extending over said pulleys and connected with said drum for raising or lowering said drum, substantially as described.

16. The combination of a tank, a submerging device movable across the tank and adapted to engage and submerge matter floating on the water in the tank, means for vertically adjusting said submerging device, and means for discharging the matter floating on the water in the tank, substantially as described.

17. In an apparatus of the class described, the combination of a tank adapted to contain water, and traveling means adapted to overlie and submerge matter floating in the water in the tank, substantially as described.

18. In an apparatus of the class described, the combination of a tank adapted to contain water, traveling means movable through the water in the tank, such traveling means acting as it moves through the water in the tank to submerge matter floating therein, substantially as described.

19. In an apparatus of the class described, the combination of a tank adapted to contain water, and means arranged to travel over matter floating in the water in the tank, for submerging such floating matter, substantially as described.

706,084. PARCEL-TYING DEVICE. JAMES S. DEAN and WILLIAM H. THOMAS, Cincinnati, Ohio, assignors of one-half to Hishani Mullen, Cincinnati, Ohio. Filed Jan. 13, 1902. Serial No. 89,543. (No model.)

Claim.—1. In a device of the character described, the combination of a frame or casing, a flexible connection, a part carried by the frame or casing with which one end of said connection is engaged and on which said connection is adapted to be wound, and a clamping means carried by the frame or casing and adapted for engagement with the other end of said connection for holding it in place when passed about a parcel, substantially as set forth.

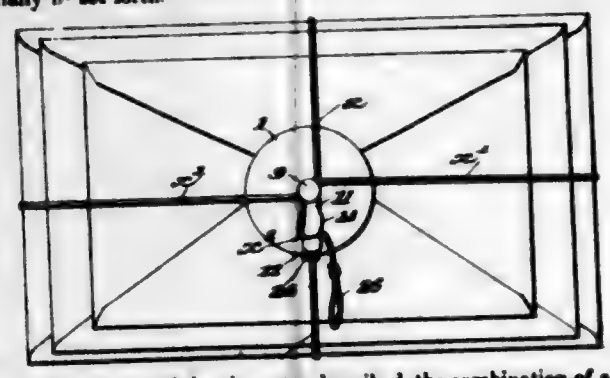

2. In a device of the character described, the combination of a frame having an opening at one side, a flexible connection passed through said opening and having an enlargement at one end, a part carried by the frame with which the other end of said connection has engagement and on which said connection is adapted to be wound and a clamping means carried by the frame and adapted for engagement with the enlarged end of the connection for holding it in place when passed about a parcel, substantially as set forth.

3. In a device of the character described, the combination of a frame having an opening, a grooved drum held to turn on the frame, a flexible connection one end of which is engaged with the drum, said connection being adapted to be wound on the drum and having its free end passed through the opening of the frame and provided with an enlargement and a clamping means carried on the frame and arranged for engagement with the enlarged end of said connection for holding it in place when passed about a parcel, substantially as set forth.

4. In a device of the character described, the combination of a frame having an opening, a grooved wheel held to turn on the frame, a spring one end of which has connection with said wheel and the other end of which is held in fixed relation to the frame, a flexible connection one end of which is engaged with the wheel, said connection being adapted to be wound on the wheel and having its free end passed through the opening of the frame and provided with an enlargement, and a clamping means carried by the frame for engagement with the free end of said connection, substantially as set forth.

5. In a device of the character described, the combination of a frame having an opening and provided with a stud, a wheel held to turn on said stud and formed with an annular chamber encircling the stud, a spring coiled in said chamber with one end connected to the wheel and its other end held in fixed relation to said frame, a flexible connection one end of which is engaged with the wheel, said connection being adapted to be wound on the wheel by the tension of the spring and having its free end passed through the opening in the frame and a clamping device carried by the frame for engagement with the free end of said connection, substantially as set forth.

6. In a device of the character described, the combination of a frame having an opening and provided with a stud, a wheel held to turn on said stud and formed with an annular chamber encircling the stud, a spring coiled in the chamber with one end connected to the wheel and its other end held in fixed relation to said frame, a plate fitted in said chamber over said spring to retain the same in position, a flexible connection one end of which is engaged with the wheel, said connection being adapted to be wound on the wheel by the tension of the spring and a clamping device for engagement with the free end of said connection, substantially as set forth.

7. In a device of the character described, the combination of a frame, a flexible connection, a part carried by the frame with which one end of said connection is engaged and on which said connection is adapted to be wound, and a clamping-jaw for holding the free end of said connection and formed of a strip of metal having projections passed through the frame and clenched beneath the same and having its extremity bent upward from the frame to receive the connection between it and the frame, substantially as set forth.

8. In a device of the character described, the combination of a frame, a flexible connection, a part carried by the frame or casing with which one end of said connection is engaged and on which said connection is adapted to be wound, a clamping means carried on the frame for engagement with the free end of said connection and an undercut part projected from the frame and around which said connection is adapted to be bent, substantially as set forth.

9. In a device of the character described, the combination of a frame

or casing formed of two parts, one of which is provided with an opening, a flexible connection passed through said opening, a spring-actuated means within the casing with which said connection is engaged and on which said connection is adapted to be wound, a clamping means for holding the free end of said connection, and a screw for holding together the two parts of the casing and formed with an undercut head or enlargement projected from the casing and about which the connection is adapted to be bent, substantially as set forth.

706,085. CONTINUOUS BRICK KILN AND DRIER. JAMES F. DU BOIS, Bellaire, Ohio. Filed Oct. 24, 1901. Serial No. 79,766. (No model.)

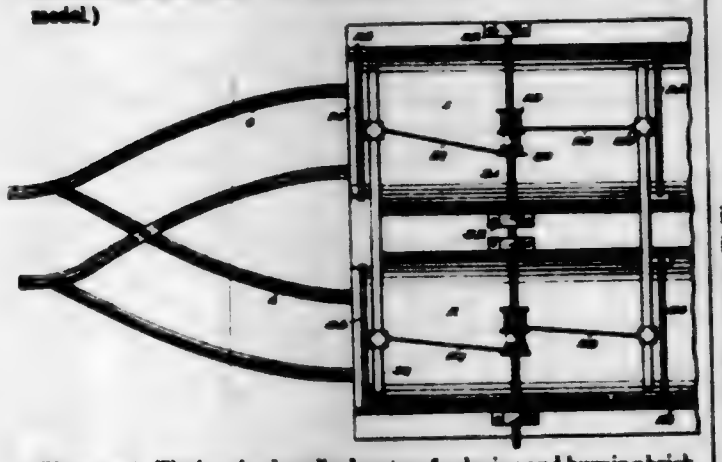

Claim.—1. The herein-described system for drying and burning brick, comprising a drying-tunnel and a kiln-tunnel with tracks arranged therein, a vertically-movable door arranged at the exit of the drying-tunnel and a like door arranged at the inlet to the kiln-tunnel, and means whereby said doors are simultaneously elevated, as and for the purpose described.

2. The herein-described continuous system for drying and burning brick, comprising a drying-tunnel and a kiln-tunnel, a track arranged in each tunnel, a pair of vertically-movable doors arranged in the drying-tunnel adjacent the exit end thereof, a pair of vertically-movable doors arranged in the kiln-tunnel adjacent the inlet end thereof, and means whereby the outer door of each tunnel is simultaneously raised with the lowering of one door of each tunnel, as and for the purpose described.

3. The herein-described continuous system for drying and burning brick comprising a drying-tunnel and a kiln-tunnel placed side by side and in communication the one with the other, tracks arranged in said tunnels and connected adjacent to one end of the tunnels whereby the car may be switched from one tunnel to the other, and doors arranged in pairs in each tunnel and operative to retain the heat in the tunnel while the car or hack is being moved from one tunnel to the other.

4. The herein-described system for continuously drying and burning brick, comprising a drying-tunnel and a kiln-tunnel, flues leading from both sides of the kiln-tunnel to both sides of the drying-tunnel, and doors arranged adjacent to the exit end of the drying-tunnel and to the inlet end of the kiln-tunnel, as and for the purpose described.

5. A continuous brick drying and burning apparatus comprising a drying-tunnel and a kiln-tunnel placed side by side, flues establishing communication between the kiln-tunnel and drying-tunnel, said flues leading from both sides of the kiln-tunnel into the drying-tunnel, and means for establishing an uninterrupted draft through said flues, substantially as described.

6. An apparatus for the continuous drying and burning of brick, comprising a drying-tunnel and a kiln-tunnel with a track extending the length of each, flues establishing communication between said tunnels, dampers for controlling the said flues, a pair of doors arranged adjacent to the exit end of the drying-tunnel and a like pair of doors arranged adjacent to the inlet end of the kiln-tunnel, and means for elevating the outer pair of said doors simultaneously with the lowering of the inner pair, for the purpose described.

7. The herewith-described system for the continuous drying and burning of brick, comprising a drying-tunnel and a kiln-tunnel, flues leading from both sides of the kiln-tunnel to both sides of the drying-tunnel, means for establishing an uninterrupted draft through said flues, a track throughout each tunnel to receive the cars or hacks carrying the brick, a supplemental track in each tunnel above the car-track, and means for forming a seal around the supplemental track in connection with the car, substantially as described.

8. The herein-described continuous system for drying and burning brick, comprising a drying-tunnel and a kiln-tunnel, flues leading from both sides of the kiln-tunnel to both sides of the drying-tunnel, and means for establishing an uninterrupted draft through said flues, the brick being passed into the tunnel on cars, there being a space between the piles of brick on the adjacent cars, which space serves as a combustion-chamber, and means for forming a seal around the car-bed, substantially as described.

9. The herein-described continuous system for drying and burning brick, comprising a drying-tunnel and a kiln-tunnel, flues leading from both sides of the kiln-tunnel to both sides of the drying-tunnel, and means for establishing an uninterrupted draft through said flues, tracks in said tunnels, the brick being passed through the tunnels on cars traveling on said tracks, the said brick being piled on the cars so as to produce a combustion-chamber between the piles of bricks on adjacent cars, and means for feeding fuel into said space, substantially as described.

706,086. HAIR-FASTENER. WILLIAM P. DUB LAEY, Cleveland, Ohio. Filed June 18, 1900. Serial No. 20,680. (No model.)

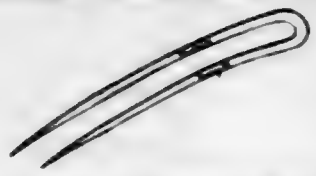

Claim.—1. The combination of a hair-pin having a depression about its tine, with a piece of seamless elastic rubber tubing having a smaller internal diameter than the external diameter of the tine and adapted to be slipped upon the tine and seated in said depression, substantially as described.

2. A hair-pin having an annular recess about its tine which recess is deeper at its edges than intermediately, combined with a removable sheathing consisting of a soft-rubber tube which surrounds the tine and occupies said recess, substantially as described.

706,087. PNEUMATIC STACKER. JOHN H. EDWARD, Pretty Prairie, Kans., assignor to the Indiana Manufacturing Company, Indianapolis, Ind., a Corporation of West Virginia. Original application filed Jan. 5, 1899, Serial No. 451,328. Divided and this application filed Dec. 9, 1901. Serial No. 85,253. (No model.)

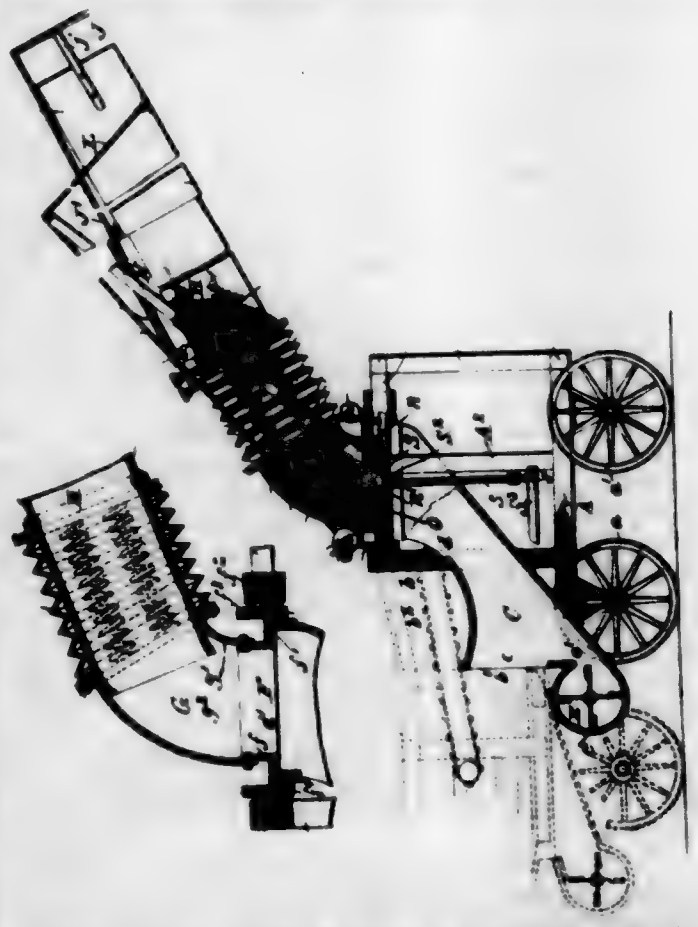

Claim.—1. In a pneumatic stacker, the combination with a horizontally-rotary hood, and a vertically-adjustable delivery tube or chute, of the longitudinally-extensible flexible joint secured to the hood to move horizontally therewith and also secured to the chute or spout to move vertically therewith, substantially as set forth.

2. The combination, in a pneumatic stacker, of a horizontally-rotary hood, an air chute or spout having its inner end telescopically connected with said hood, and its outer end vertically adjustable, and the longitudinally-extensible, air-tight, flexible cover surrounding the adjacent ends of and rigidly secured to both said hood and chute, substantially as set forth.

3. In a pneumatic stacker, the combination of a hood, a delivery-duct having a vertically-adjustable outer end and having its inner end movably connected to the hood, a support for the outer end of the de-

livery-duct connected with the main frame, a rotary base for the aforesaid parts, and a flexible, extensible cover connected to the hood and to the delivery-duct, substantially as set forth.

4. In a pneumatic stacker, the combination of a hood, a delivery-duct, an adjustable support for the outer end of said delivery-duct, means for adjusting said support to vary the elevation of the discharge end of said chute, a flexible joint connecting the said delivery-duct and the hood and extensible longitudinally of the said delivery-duct, and a horizontally-rotary base for all of the said parts, substantially as set forth.

5. The combination, in a pneumatic stacker, of the lower or inner chute or hood, the chute or trunk movably connected with said hood, and the springs arranged to bear upward and outward against the outer chute, substantially as set forth.

6. In a pneumatic stacker, the combination with the lower section or hood, and the chute or spout communicating therewith, of a flexible cover surrounding the adjacent sections of the hood and chute, and springs connecting the hood and chute, substantially as set forth.

706,088. SHOE-TURNING MACHINE. ANDREW EYTLER, Jr., Boston, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., a Corporation of New Jersey. Filed Oct. 10, 1901. Serial No. 78,188. (No model.)

Claim.—1. A shoe-turning machine, having, in combination, a central support, a form-carrying turret projected from one side of said support, and a yoke for supporting a turning implement supported from the opposite side of said support, substantially as described.

2. A shoe-turning machine, having, in combination, a central support, a yoke for supporting a turning implement projected from one side of said support, a vertically-adjustable bracket projected from the opposite side thereof, and a form-carrying turret mounted upon said bracket, substantially as described.

3. A shoe-turning machine, having, in combination, a turning implement, and a form having an aperture extending from a point toward the toe to a point toward the heel, substantially as described.

4. A shoe-turning machine, having, in combination, a turning implement, a form having provision to permit the sole of a shoe to be bent inward, and an auxiliary turning implement for engaging the sole and bending it inward, substantially as described.

5. A shoe-turning machine, having, in combination, a turning implement, a form, and means for preventing the sole of a shoe on the form from bending outward during the turning operation, substantially as described.

6. A shoe-turning machine, having, in combination, a form, a turning implement supported to engage the toe of a shoe on the form, and an auxiliary turning implement supported to engage the sole, said form and auxiliary turning implement being relatively movable to transfer the point of engagement of the auxiliary turning implement with the sole along the sole during the turning operation, substantially as described.

7. A shoe-turning machine, having, in combination, a form, a turning implement supported to engage the toe of a shoe on the form, an auxiliary turning implement movable longitudinally of and transversely to the form to engage the sole back of the toe, and means for actuating the auxiliary turning implement, substantially as described.

8. A shoe-turning machine, having, in combination, a turning implement, a form having a recess into which the sole of the shoe can be bent, and means for bending the sole into said recess, substantially as described.

9. A shoe-turning machine, having, in combination, a turning implement and a form having a cut-away portion extending from a point toward the toe to a point toward the shank for preventing the binding of the upper on the form, substantially as described.

10. A shoe-turning machine, having, in combination, a form, a turning implement supported to engage the toe of a shoe on the form and having at its working end a laterally-projecting lip, and an auxiliary turning implement, the working end of which is movable from a position behind said lip into position to engage the sole of a shoe on the form back of the toe, substantially as described.

11. A shoe-turning machine, having, in combination, a form, a turning implement supported to engage the toe of a shoe on the form, an auxiliary turning implement supported adjacent to the turning implement and movable with relation thereto, and mechanism for actuating the auxiliary turning implement, substantially as described.

12. A shoe-turning machine, having, in combination, a form, a turning implement, an auxiliary turning implement, and means for simultaneously moving both implements out of operative relation to the form to permit a shoe to be placed thereon, substantially as described.

13. A shoe-turning machine, having, in combination, a form, and a turning implement and auxiliary turning implement movable with and independently of each other, substantially as described.

14. A shoe-turning machine, having, in combination, means for interiorly supporting the shoe to be turned, a turning implement, and means exteriorly engaging the sole and movable along the same during the turning operation to insure its proper bending, substantially as described.

15. A shoe-turning machine, having, in combination, a turning implement, a form, and an auxiliary turning implement for engaging the sole of a shoe on the form and preventing it from bending outward during the turning operation, substantially as described.

708,089. ELECTRIC REGULATOR. AUGUSTUS R. EVERETT, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed Oct. 9, 1900. Serial No. 32,681. (No model.)

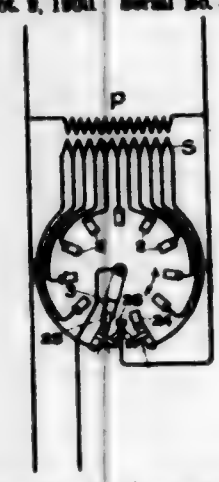

Claim.—1. The combination of a regulating-winding connected to a row of contacts, and a circuit having one terminal connected to a movable contact coöperating with said row of contacts and the other terminal to a switch-arm adapted to make electrical connection with either of two of the contacts of said row of contacts.

2. In a potential-regulator, the combination of a row of fixed contacts, a movable contact for coöperating with said fixed contacts, and a change-over switch brought into operation as the movable contact passes from one fixed contact to another and coöperating with said movable contact to reverse the connections of said row of fixed contacts or a portion thereof with respect to the circuit to be regulated.

3. The combination of a row of fixed contacts, a movable contact arranged to step from fixed contact to fixed contact, a coöperating change-over switch, a circuit to be regulated, and connections between one terminal of said circuit and said movable contact and also between the other terminal of said circuit and said change-over switch.

4. In a regulator, the combination of a regulating-winding, a row of contacts connected to said winding, a movable contact for traversing said fixed contacts, and a cam-actuated change-over switch for connecting one terminal of the circuit to be regulated to either one of two of said fixed contacts.

5. The combination of a row of fixed contacts, a movable contact coöperating therewith, and a circuit connected with one terminal to the movable contact and the other to a supplemental fixed contact.

6. The combination of a row of fixed contacts, a movable contact coöperating therewith, and a circuit connected with one terminal to the movable contact and the other to a supplemental contact located between two of the fixed contacts.

7. The combination of a plurality of fixed contacts, a movable contact coöperating therewith, and a supplemental contact between which and the movable contact current temporarily passes across an intervening space.

8. The combination of a plurality of fixed contacts, a movable contact arranged to step from fixed contact to fixed contact and a supplemental contact between which and the movable contact current may pass as the movable contact passes from one fixed contact to another.

706,040. SULKY ATTACHMENT FOR HARROWS. HENRY T. PAINE, Spencer, Mass. Filed Apr. 14, 1902. Serial No. 102,703. (No model.)

Claim.—1. In a riding attachment for harrows, the combination of a wheeled vehicle, a drag-frame connecting the vehicle with a harrow, a lifting-lever, a connection from the lifting-lever acting on the harrow-frame in front of its center of gravity, and a part engaged by the front end of the harrow when lifted, holding the harrow from tipping.

2. In a riding attachment for harrows, the combination of a wheeled

vehicle, a drag-frame connecting the vehicle with a harrow, a lifting-lever having a steadying-arm engaging the harrow when in raised position, and a connection between the lifting-lever and harrow.

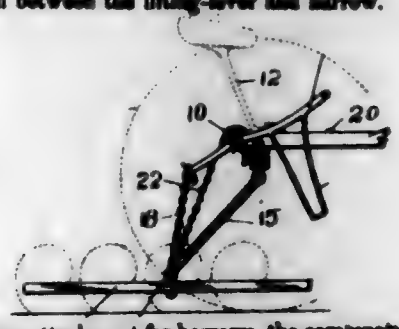

3. In a riding attachment for harrows, the combination of a wheeled vehicle, a drag-frame connecting the vehicle with a harrow, a lifting-lever, a connection between the lifting-lever and harrow, and a spring assisting the operation of the lifting-lever in raising the harrow.

4. In a riding attachment for harrows, the combination of a wheeled vehicle, a drag-frame connecting the vehicle with a harrow, a lifting-lever having a steadying-arm engaging the harrow when in its raised position, and a chain serving as an adjustable connection between the lifting-lever and harrow.

5. In a riding attachment for harrows, the combination of a wheeled vehicle, means connecting the wheeled vehicle with a harrow-frame, a lifting-lever connected to the harrow-frame, a coiled spring, a sprocket-wheel operated by the coiled spring, and a chain adjustably connecting the sprocket-wheel to the harrow-frame.

706,041. CAR-FENDER. ALBERT H. FERGUSON, Ste. Cunégonde, and JOSEPH A. U. BEAUDRY, Montreal, Canada. Filed Nov. 14, 1901. Serial No. 82,263. (No model.)

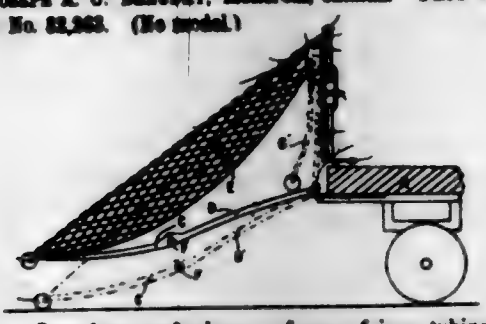

Claim.—In safety car-fenders: a frame of iron tubing in two sections articulated in compass-joints, hooks to attach the same to cars, two rubber-tired wheels to roll on the rails, a netting of metal bands, chains to suspend said fender to a horizontal rod chained to the splash-board and supported on hooks, a landing bagging-net of fabric fastened on its four sides, two supporting-chains, a vertical rod branching to the ends of the horizontal rod, for the purpose and in the manner hereinabove described.

706,042. WRENCH. CHARLES C. FIELDS, Morristown, Tenn. Filed July 27, 1901. Serial No. 69,897. (No model.)

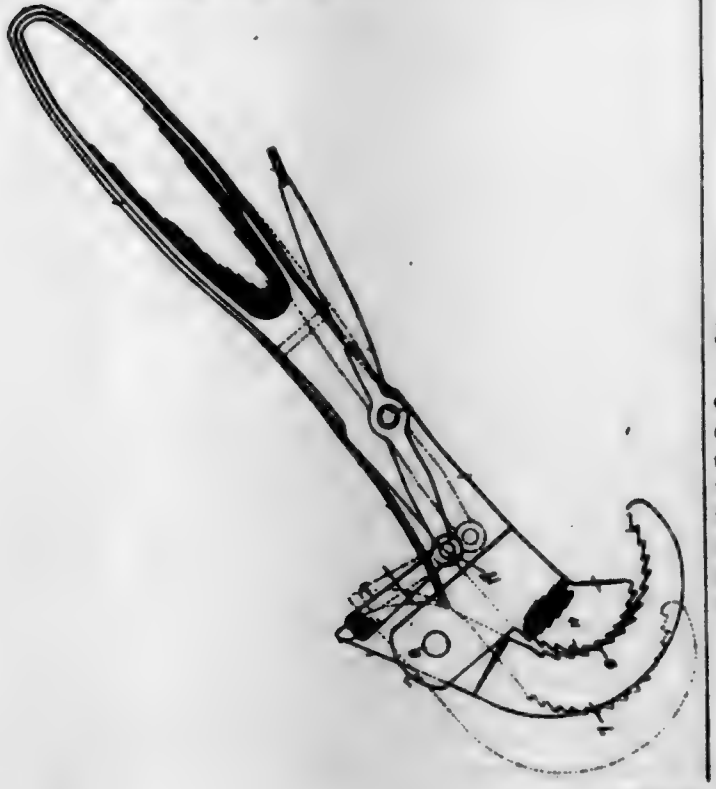

Claim.—A wrench comprising a body portion, having at one end an integral handle or hand-grasp and at the other end an integral fixed jaw provided with a convex gripping-surface having outwardly-inclined teeth, said body portion also having, adjacent to the fixed jaw, rearwardly-projecting parallel legs formed integral therewith, a movable jaw having a concave gripping-surface with inwardly-inclined teeth, and a shank pivotally mounted between the legs of the body and extending beyond the same, said extension being curved or cut away, as described, a leaf-spring secured at one end to the back of the body of the wrench and having its free end bearing against the extension of the shank of the pivoted jaw, a lever pivoted between its ends on the side of the body of the wrench, moving in a plane parallel with and immediately adjacent to the side of said body, and having one end located immediately adjacent to the handle or hand-grasp, in position to be operated by the thumb or fingers of the hand without shifting the grasp, being provided with a finger-plate at right angles to the plane of the body of the wrench, and a link pivotally connected at one end to the other end of the lever, the other end of said link being pivoted to the extension of the shank of the pivoted jaw, substantially as described.

706,048. LIFTING-JACK. OLIVER E. FIELDS, Duncannon, Pa. Filed Nov. 26, 1901. Serial No. 83,807. (No model.)

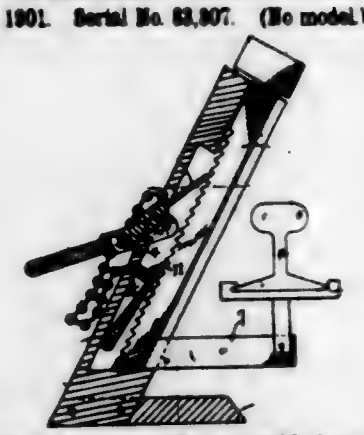

Claim.—A lifting-jack comprising a suitable base, a hollow post extending therefrom, the post having a longitudinal rear open slot, and a front closed slot, a sliding rack-bar in the post, a bracket projecting from the rack-bar through the open slot of the post, a shoe at the outer end of the bracket, an operating-lever pivoted in the post and projecting from the same in a direction opposite from the bracket, a gravity-pawl pivotally mounted on the lever and engaging the teeth of the rack-bar, a spring-actuated pawl pivoted below the lever and adapted to be automatically forced to an open position for the support of the rack-bar when the latter has become sufficiently elevated, and a chain for retracting the pawls, the parts operating substantially as, and for the purpose set forth.

706,044. MACHINE-BELTING. MARTIN GILLET, Arlington Mass., assignor to Julia G. Jordan, trustee, Merchantville, N. J. Filed May 17, 1901. Serial No. 60,670. (No model.)

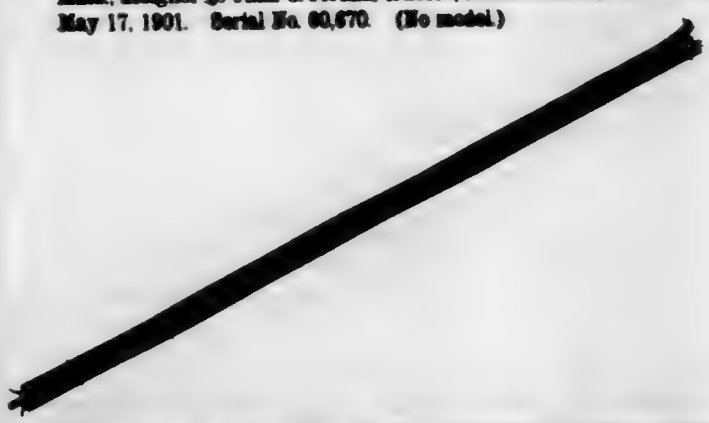

Claim.—As an article of manufacture, waterproof machine-belting composed of layers of untreated textile fabric and of paper on both sides of the textile fabric, the paper rendered insoluble in water and hygroscopic, the said layers being united solely by pressure while the paper is in a comparatively soft and plastic condition intimately to combine the fibers of the paper with the meshes of the fabric, whereby the use of cement or glue is avoided, the hygroscopic character of the paper preventing it from becoming hard and brittle, the prepared paper constituting the outside layers of the laminated belting.

706,045. TAKE-UP AND TENSION FOR SEWING-MACHINES. ALEXANDER GODFREY, Haverhill, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., a Corporation of New Jersey. Filed Oct. 29, 1898. Renewed Oct. 9, 1901. Serial No. 78,190. (No model.)

Claim.—1. A hook-needle chain-stitch shoe-sewing machine, having, in combination, stitch-forming mechanism, and a movable, cam-actuated tension device acting, while the needle is in the material, to tighten the loop which is around its shank, substantially as described.

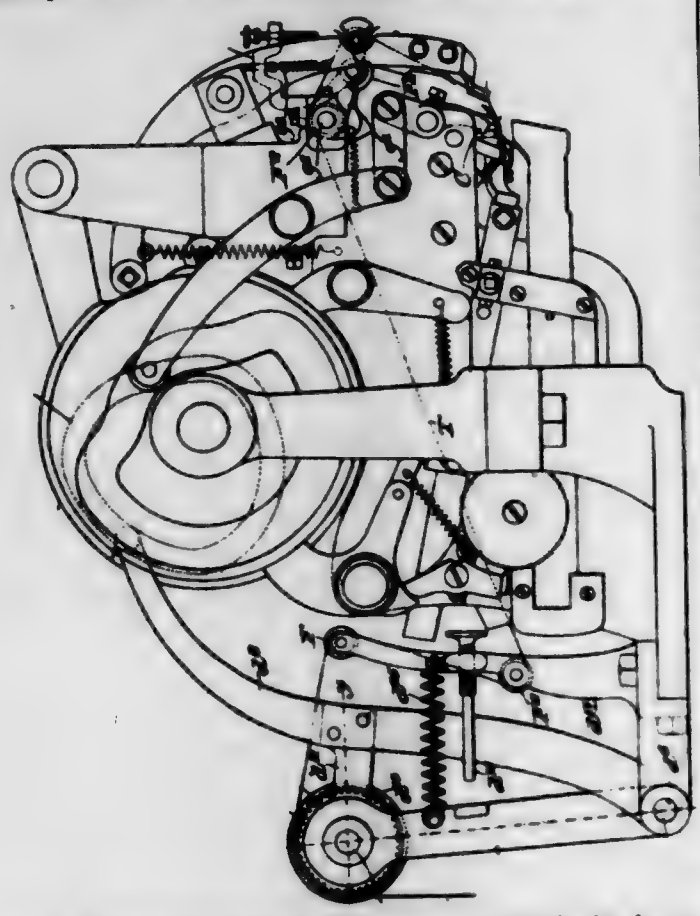

2. A hook-needle, chain-stitch shoe-sewing machine, having, in combination, stitch forming and setting mechanism, comprising a movable, cam-actuated stitch-setting tension device, and a spring exerting a gradually-increasing strain on the thread while the stitch is being set, substantially as described.

3. A hook-needle chain-stitch shoe-sewing machine, having, in combination, stitch-forming mechanism, and a movable, cam-actuated tension device acting, while the needle is in the material, to tighten the loop which is around its shank, and to set the stitch of which the loop interlocked therewith forms a part, substantially as described.

4. A hook-needle chain-stitch shoe-sewing machine, having, in combination, stitch-forming mechanism, a thread-trunk, means for intermittently locking and unlocking said trunk, and a cam and suitable connections for actuating said trunk while locked to exert a pull on the thread, substantially as described.

5. A hook-needle chain-stitch shoe-sewing machine, having, in combination, stitch-forming mechanism, a thread-trunk, means for intermittently locking and unlocking said trunk, and a cam and suitable connections for moving said trunk bodily while locked to exert a pull on the thread, substantially as described.

706,046. COMPUTING-SCALE FOR RAILWAY MILEAGE-BOOKS. JOHN S. GOLDTHWAITE, Albany, N. Y. Filed Jan. 28, 1902. Serial No. 91,662. (No model.)

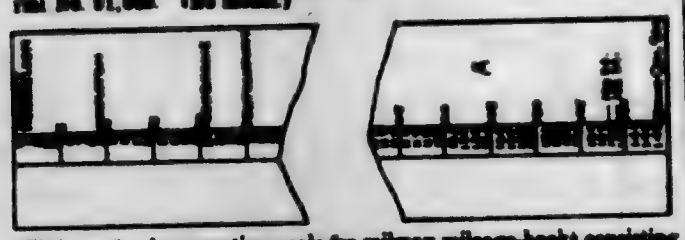

Claim.—1. A computing-scale for railway mileage-books consisting of a rule or tape having marked thereon as many divisions or spaces as there are miles of length in the portion of the railroad upon which said computing-scale is designed to be used, said spaces being numbered consecutively to correspond with the number of miles from the starting-point to the terminus thereof; and having the names of the stations along said portion placed opposite the numbers designating the number of miles of the respective stations from the starting-point; said spaces being of uniform length and equal in length to the length of a mileage-coupon of the railway mileage-books issued for passenger travel upon said railroad, whereby said rule or tape is constructed and adapted for use in conjunction with said railway mileage-book having a long strip or ribbon of paper with mileage-coupons printed thereon, substantially as described, and for the purposes set forth.

2. A computing-scale for railway mileage-books consisting of a rule or tape having marked thereon upon both sides thereof as many divisions or spaces as there are miles of length in the portion of railroad upon which the computing-scale is designed to be used; said spaces being numbered consecutively on one side of said scale to correspond with the number of miles from one end of said portion of railroad, and on the reverse side of said scale numbered in like manner commencing at the opposite end of said portion of railroad; said scale having thereon the names of the stations along said railroad placed opposite the numbers designating the number of miles of the respective stations from the respective starting-point; and each of said spaces being in length equal to the length of a mileage-coupon of the railway mileage-book issued for passenger travel on said railroad; whereby said rule or tape is constructed and adapted for use in conjunction with said railway mileage-book having a long strip or ribbon of paper with mileage-coupons printed thereon; substantially as described and for the purposes set forth.

3. A computing-scale for railway mileage-books made by marking off a rule or tape into as many divisions or spaces as there are miles of length in the railroad, or some portion or division thereof, upon which said computing-scale is designed to be used; said spaces being numbered consecutively to correspond with the number of miles from the starting-point to the terminus thereof; and having the names of the stations along said railroad, or the said division thereof, placed opposite the numbers designating the number of miles of the respective stations from the starting-point; said spaces being of uniform length and equal in length to the length of a mileage-coupon of the railway mileage-books issued for passenger travel upon said railroad; in combination with the said railway mileage-book, composed of a long strip or ribbon of paper with mileage coupon-tickets printed thereon and suitably attached at one end between two covers, of which covers the one next the face side of said mileage-strip is provided with a slot adapted to admit the said computing-scale to pass through it and lie upon the face side of said mileage-strip, substantially as described and for the purposes set forth.

706,047. PREPAYMENT ELECTRIC METER. GEORGE L. GOWLAND, Peterborough, Canada. Filed Aug. 21, 1901. Serial No. 72,737. (No model.)

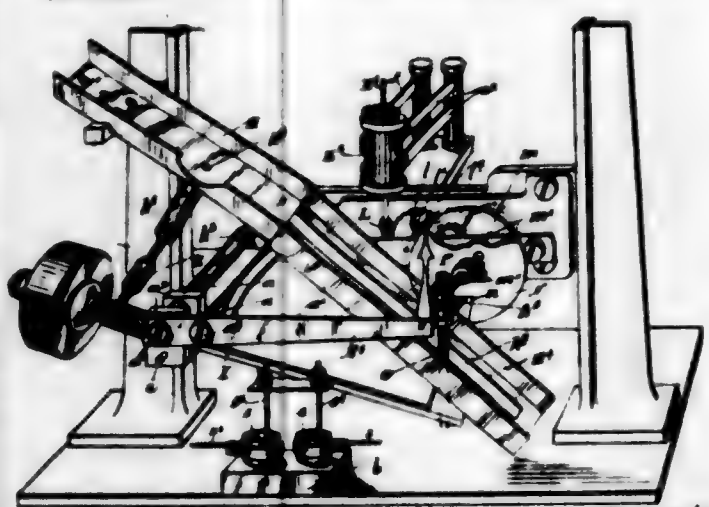

Claim.—1. The combination with the motor supported on a suitable frame and having one circuit-wire extending therethrough and the other circuit-wire and contacts separating the ends of the same, of a gravitating coin-slide, a lever suitably pivoted and supporting the slide at one end, the counterpoising weight at the opposite end of the lever, the contacts connected to the lever and rotatable current-indicating means interposed between the slide and the motor and operated from the latter whereby when the slide is depressed by the coin the contacts are thrown in and the measuring means set in motion as and for the purpose specified.

2. In a prepayment-meter, a motor with electric connections thereto, a switch included in said connections, a coin-slide adapted to swing downward under the weight of the coin, an indicator having driving connections with the motor, means whereby the coin-slide when in its elevated position holds the indicator against movement, but releases it on the depression of the coin-slide, and means whereby the depression of the coin-slide operates the switch to close the circuit through the motor, substantially as described.

3. The combination with the motor supported on a suitable frame and having one circuit-wire extending therethrough and the other circuit-wire and contacts separating the ends of the same, of a gravitating coin-slide provided with a longitudinal slot and a laterally-extending pin, a cross-spindle, an arm extending outwardly from the cross-spindle into the slot and designed to form a stop for the coin, a disk secured on the cross-

spindle and provided with a notch to coact with the pin extending laterally from the slide and a suitable driving means from the motor to the cross-spindle and the contact-pins connected with the slide and designed to be depressed by the depression of the slide as and for the purpose specified.

4. The combination with the motor supported on a suitable frame and having one circuit-wire extending therethrough and the armature vertically disposed and supported in suitable bearings and the other circuit-wire and contacts separating the ends from the same, of a gravitating coin-slide, the contact-pins connected with the same and rotatable current-indicating means interposed between the slide and the motor and driving means connecting such aforesaid means to the armature-shaft whereby on the depression of the slide the circuit is completed and the measuring means set in motion as and for the purpose specified

5. The combination with the motor supported on a suitable frame and having one circuit-wire extending therethrough and the armature vertically disposed and supported in suitable bearings and the other circuit-wire and contacts separating the ends of the same, of a gravitating coin-slide having a slot, the contact-pins connected to the same, the pin extending laterally from the slide, the cross-spindle, the disk secured on the same provided with a suitable notch to coact with the pin, the arm secured on the spindle and extending into the slot in the slide, the driving-gear connecting the armature-shaft and spindle, the said slide being designed to be depressed by the coin so as to throw in the contact-points and throw the pin on the periphery of the disk and the arm being designed to revolve so as to free the coin as soon as the pin has been started to ride upon the surface of the disk as and for the purpose specified.

6. The combination with the motor supported on a suitable frame and having one circuit-wire extending therethrough and the other circuit-wire and contacts separating the ends of the same, of a stationary slide, a supplemental gravitating coin-slide forming a continuation thereof, a circuit-closer operatively connected with said gravitating slide, a stop extending into the stationary slide and means whereby when the coin is deposited into the gravitating slide, so as to depress the same and the circuit is thrown in, the said slide operates upon the stop in the stationary slide, so as to form an obstruction to the passage of another coin as and for the purpose specified.

7. The combination with the motor supported on a suitable frame and having one circuit-wire extending therethrough and the other circuit-wire and contacts separating the ends of the same, of a stationary slide having a depending sleeve, a supplemental gravitating coin-slide forming a continuation thereof, a lever to which the gravitating slide is connected, a countervailing weight on such lever, a pin extending over one end of the lever through the sleeve into the stationary slide, the said gravitating slide when depressed by the coin, so as to throw in the circuit tilting the lever, so as to throw up the pin to form a stop on the slide as and for the purpose specified.

8. The combination with the stationary slide, and the balanced slide at one end thereof adapted to be depressed by the weight of a coin, of a pivoted lever supporting said balanced slide and a pin connected with and extending into the stationary slide, said pin being raised by the depression of the lever under the action of the balanced slide, substantially as described.

9. In combination with the stationary slide, a lever connected to the same, a gravitating slide supported on the lever, a pin extending through one end of the lever into the stationary slide and raised by the depression of the lever, substantially as described.

10. In a device of the class described, the combination with the gravitating slide suitably supported and having a slot therein, of the cross-spindle suitably driven from the motor, the arm secured to the same and extending through said slot in the gravitating slide and designed to form a temporary stop for the coin when deposited and the disk also secured to the same and provided with the countervailing weight to balance the arm as and for the purpose specified.

706,048. COUNTING-MACHINE. THOMAS W. GRAHAM, Dubuque, Iowa. Filed Mar. 5, 1902. Serial No. 96,893. (No model.)

Claim.—1. In a counting-machine the combination of one member bearing tens and hundreds figures, a second member carrying units figures and so disposed relative to said first-mentioned member that it may be progressively operated to successively bring the respective units figures into registration with the tens and hundreds figures of the first-mentioned member whereby said figures are collocated to form consecutive numbers, and means for progressively operating the units-carrying member; substantially as described.

2. In a counting-machine the combination with one member bearing tens and hundreds figures, a second member carrying units figures and so disposed relative to said first-mentioned member that it may be rotatively operated to successively bring the respective units figures into registration with the tens and hundreds figures of the first-mentioned member whereby said figures are collocated to form consecutive numbers, and means operating the units-carrying member, substantially as described.

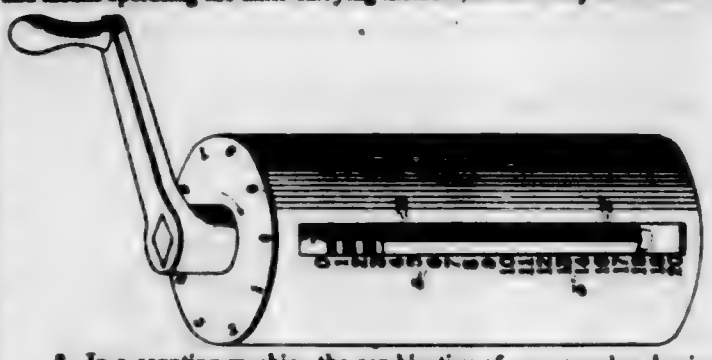

3. In a counting-machine the combination of one member having tens figures arranged in approximate alinement, a second member carrying units figures arranged around the periphery thereof and adapted to be successively brought into registration with the tens figures whereby said figures are collocated to form consecutive numbers, and means for rotating said units-carrying member and shifting the same during such rotation along the tens figures.

4. In a counting-machine the combination of a slotted cylindrical member having tens figures arranged in approximate alinement alongside said slot, said member having a spiral thread on its interior, and a second member carrying units figures arranged around the periphery thereof and grooved spirally to engage the interior thread of the cylinder, and means for rotating the units-carrying member and shifting the same longitudinally of the cylinder to cause the units figures to register with the tens figures; whereby said figures are collocated to form a single resultant number; substantially as described.

5. In a counting-machine the combination of one member provided with tens figures arranged in approximate alinement and provided with grooves on its surface, and a second member carrying units figures arranged around the periphery thereof and provided with spiral threads adapted to engage the grooves on the surface of the tens-carrying member, and means for operating the units-carrying member to rotate and cause the same to travel along the tens figures, whereby said figures are collocated to form a single resultant number; substantially as described.

6. In a counting-machine the combination of a slotted cylinder having tens figures arranged in approximate alinement alongside said slot, a second member adapted to be rotated within and shifted longitudinally of said cylinder and carrying units figures arranged around its periphery, means for operating the units-carrying member to cause the units figures to register with the tens figures whereby said figures are collocated to form a single resultant number, and an indicator disposed in circular arrangement upon the end of the cylinder adapted to designate the extent of movement of the operating means; substantially as described.

7. In a counting-machine the combination of one member having tens figures arranged in approximate alinement, a second member carrying units figures arranged around its periphery, and an operating-shaft in loose engagement with the units-carrying member and adapted to rotate the same, and means for shifting the units-carrying member along the shaft during its rotation to cause the units figures to successively register with the successive tens figures whereby said figures are collocated to form a single resultant number; substantially as and for the purpose described.

8. In a counting-machine the combination of a fixed member bearing tens and hundreds figures, and a movable member carrying units figures and adapted to be operated to cause the units figures to successively register with the tens and hundreds figures whereby said figures are collocated to form a single resultant number; substantially as described.

9. In a counting-machine the combination of a slotted cylinder having tens figures arranged alongside said slot, a member adapted to be rotated within and shifted longitudinally of said cylinder and carrying units figures arranged around its periphery, and means for operating the units-carrying member to cause the units figures to successively register with the tens figures whereby said figures are collocated to form consecutive numbers, substantially as described.

10. In a counting-machine the combination of one member bearing units figures, and a second member bearing tens figures, one of said members being fixed relative to the other whereby said other member may be operated to cause its figures to successively register with the figures of the fixed member whereby said figures are collocated to form consecutive numbers, substantially as described.

706,048. VARIABLE-SPEED DEVICE. ISAAC H. W. HANSEN and FREDERICK W. GORDON, Hartford, Conn., assignors to Pratt & Whitney Company, Hartford, Conn. Filed Mar. 24, 1902. Serial No. 99,581. (No model.)

Claim.—1. In a variable-speed device, the combination, substantially as set forth, of a first shaft, a series of diversely-sized gears thereon, a second shaft parallel with the first one, a gear thereon, a longitudinally and angularly adjustable geared tumbler, and a compound intermediate gear carried by said tumbler and driven by the gear on the second shaft and adapted to have one of its members engage with some of the gears on the first shaft and its other member alternatively engage with other gears on the first shaft, said diversely-sized gears being rigidly united with each other and being loose on the first shaft, a gear fast on the first shaft, a pair of gears united with each other on a common axis parallel with the first shaft and adapted to have one of its members engage one of said diversely-sized gears and its other member engage the gear fast on the first shaft, and means for locking said diversely-sized gears to the first shaft.

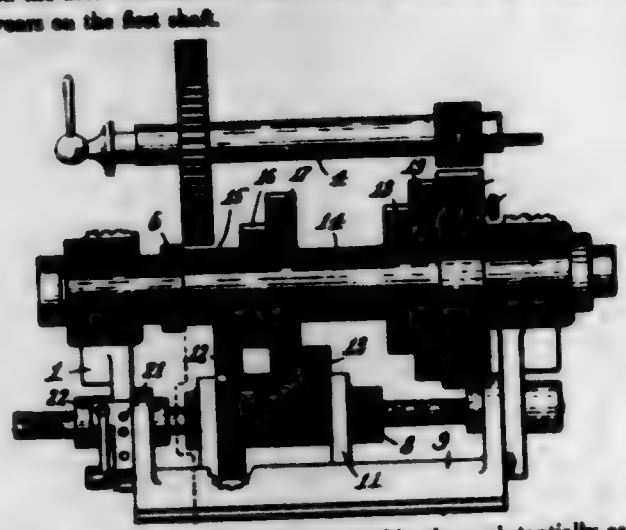

2. In a variable-speed device, the combination, substantially as set forth, of a first shaft, a series of diversely-sized gears thereon, a second shaft parallel with the first one, a gear thereon, a longitudinally and angularly adjustable geared tumbler, a compound intermediate gear carried by said tumbler and driven by the gear on the second shaft and adapted to have one of its members engage with some of the gears on the first shaft and its other member alternatively engage with other gears on the first shaft, said diversely-sized gears being rigidly united with each other and being loose on the first shaft, a gear fast on the first shaft, a pair of gears united with each other on a common axis parallel with the first shaft and adapted to have one of its members engage one of said diversely-sized gears and its other member engage the gear fast on the first shaft, and means for locking said diversely-sized gears to the first shaft.

3. In a variable-speed driving device for engine-lathes, the combination, substantially as set forth, with the head-stock, arbor, face-gear, back gear, and face-gear clutch, of a series of diversely-sized unified gears loose on the lathe-arbor and adapted to be locked thereto by the clutch, a driving-shaft mounted on the head-stock parallel with the arbor, a gear on said driving-shaft, a longitudinally and angularly adjustable gear-carriage, a compound intermediate gear carried by said gear-carriage and driven by the gear on said driving-shaft and adapted to have one of its members engage with some of the diversely-sized gears on the lathe-arbor and its other member engage alternatively with other of the diversely-sized gears on the lathe-arbor, and means for locking said gear-carriage in selective position.

706,050. MIXING-VALVE FOR GAS OR GASOLENE ENGINES. ROY E. HARDY, Detroit, Mich., assignor, by mesne assignments, to Hardy Motor Works, Limited, Port Huron, Mich., a Corporation of Michigan. Filed May 6, 1901. Serial No. 58,864. (No model.)

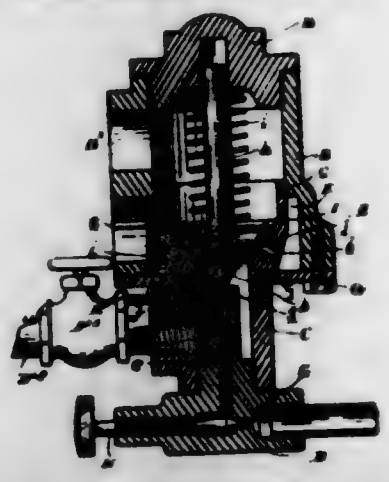

Claim.—1. In a mixing-valve for gas or gasolene engines, the combination with a casing, of a mixing-chamber for either gas and air or gasolene and air having a seat, a valve for the seat, air-inlet ports controlled by said valve, a valve-controlled gas-inlet opening below the seat, a valve-controlled gasolene-inlet opening projecting in proximity to the main valve and having a seat formed at its upper end, and a secondary valve carried by said valve adapted to seat against said inlet-opening.

2. In a mixing-valve for gas or gasolene engines, the combination with a casing, formed with a seat, of a valve for the seat mounted in the casing, a gas-inlet passage formed in the casing below the seat, and air-inlet ports leading into the seat, a gasolene-inlet port leading into proximity to the main valve, and a secondary valve carried by the main valve adapted to control said port.

3. In a mixing-valve for gas or gasolene engines, the combination with a casing, a valve and valve-seat in the casing, of a series of air-inlet ports leading into the seat, a gas-inlet formed in the casing below the seat, a valve-controlled gasolene-inlet passage extending into proximity to the valve and formed with a seat, a spring-backed secondary valve mounted in the main valve adapted to control said passage, said valve being free to have a limited movement irrespective of the main valve.

4. In a mixing-valve for gas or gasolene engines, the combination with a casing, of a main valve, and corresponding valve-seat formed in the casing, an air-inlet passage surrounding the valve-seat, and ports leading into the valve-seat controlled by said valve, a gas-inlet below said valve, and a valve-controlled gasolene-inlet extending into proximity to said valve, a valve-seat formed in the end of said gasolene-inlet, and a secondary valve carried by the main valve adapted to seat against said inlet.

5. In a mixing-valve for gas or gasolene engines, the combination with a casing formed with a mixing-chamber in communication with the cylinder, air, gas, and gasolene passages in communication with said chamber, a valve-seat formed in said casing, and a valve adapted to said seat controlling communication between said passages and the mixing-chamber, and an independently-movable valve carried by said valve adapted to control the gasolene-passage.

6. In a mixing-valve, the combination of a mixing-valve chamber for either gas or gasolene, having a seat, a valve for the seat guided in said chamber, valve-controlled gas and gasolene inlet openings below the seat, air-ports leading into the seat, said valve being adapted to control communication between said air gas and gasolene openings and said chamber, and a secondary valve yieldingly mounted in said valve and adapted to individually control said gasolene-inlet opening.

7. In a mixing-valve for gas or gasolene engines, the combination of the three-part casing, B, C, D, formed with the vapor, air, gas and gasolene inlet passages B^2, E, F and G, respectively, the cap B' and the valve I having its stem guided in said cap, and the spring *i* sleeved thereon, said valve being adapted to control communication between the air, gas and gasolene passages E, F and G, and the vapor-inlet passage B^2 as and for the purpose described.

8. In a mixing-valve for gas or gasolene engines, the combination of the three-part casing, B, C and D, formed with air, gas and gasolene inlet openings and an outlet-opening, the part C having an upward extension *c* adapted to fit within the part B and formed with a valve-seat, and air-ports *b* in said seat and the spring-backed valve I guided in said casing and adapted to said seat to control communication between said inlet and outlet passages.

9. In a mixing-valve, the combination with a casing, formed with a valve-seat, and air, gas and gasolene inlet openings below said seat and an outlet-opening above said seat of a two-part valve adapted to said seat comprising the spring-backed main valve I adapted to control communication with the outlet-opening and the spring-backed secondary valve J mounted within the main valve and adapted to control the gasolene-inlet port, comprising a plunger formed with a stop *k* and the spring *j* of lesser strength than that of the main valve.

706,051. AUTOMOBILE AIR-PUMP. JOHN G. HEAL, Detroit, Mich. Filed Sept. 24, 1901. Serial No. 76,246. (No model.)

Claim.—1. The combination of a driving-axle, a crown-cam mounted thereon, an air-pump fixedly located perpendicularly to the plane of the cam-wheel, the piston-rod thereof engaging the cam and actuating the piston of the air-pump to compress air therein, elastic means for retracting the piston and the piston-rod, a clamp adapted to frictionally engage the piston-rod, and means connected with the clamp operated by hand whereby the clamp can be brought into engagement with the piston-rod at the will of the operator, substantially as described.

2. The combination of a driving-axle, a crown-cam mounted thereon, an air-pump fixedly located perpendicularly to the plane of the cam-wheel, the piston-rod thereof engaging the cam and actuating the piston of the air-pump to compress air therein, elastic means for retracting the piston and the piston-rod, a clamp adapted to frictionally engage the piston-rod, a valve in a passage opening into the clearance-space of the pump, means for simultaneously actuating the valve and the clamp whereby the valve is opened as the clamp is brought into contact with the piston-rod, substantially as described.

3. In an automobile air-pump, the combination of a fixed axle, an air-pump mounted longitudinally thereon, a rotating axle, a crown-cam mounted on said rotating axle and adapted to frictionally engage the pis-

ton-rod of the air-pump, a spring for maintaining the piston-rod in engagement with the cam when the pump is operated, a frictional clamp adapted to compress the piston-rod and hold it against the tension of the spring and away from the cam, an automobile-body mounted upon springs located between the axle and the body and adapted to vibrate thereon, elastic means connecting the body and the clamp of sufficient tension to permit of the effective application of the clamp, and to accommodate the oscillations of the body without releasing the effective frictional contact of the clamp with the piston-rod, and means for actuating the elastic connection, substantially as described.

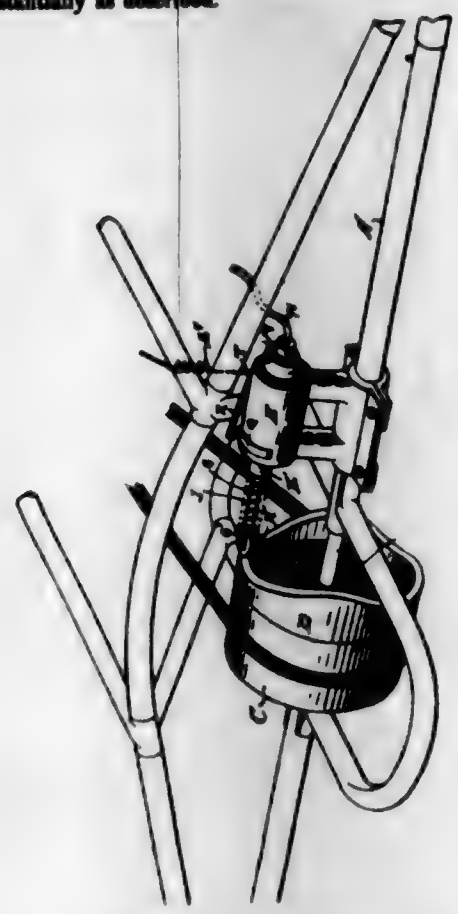

706,052. TOBACCO-HOISTER. WILLIAM P. HENRY, Central City, Ky. Filed May 28, 1902. Serial No. 109,364. (No model.)

Claim.—1. In a tobacco-hoister, the combination of a staff, a pulley located at the top of the said staff, a runner engaging the staff, a bar pivotally supported upon the runner, and a hoisting-rope passing over the pulley and arranged to raise and lower the runner, substantially as described.

2. In a tobacco-hoister, the combination of a staff consisting of separable portions, a pulley located at the top of said staff, a runner engaging the staff, a bar pivotally supported upon the runner, and a hoisting-rope passing over the pulley and arranged to raise and lower the runner, substantially as described.

3. In a tobacco-hoister, the combination of a staff, a pulley located at the top of the said staff, a runner engaging the staff, a bar pivotally supported upon the said runner, the said bar being provided with means for holding a stick of tobacco, the said bar being pivoted at one side of its middle point, and a hoisting-rope passing over the pulley and arranged to raise and lower the runner, substantially as described.

4. In a tobacco-hoister, the combination of a rectangular staff, a pulley located at the top of the said staff, a runner constructed to engage the staff, a bar pivotally supported upon the said runner, the said bar being provided with means for holding a stick of tobacco, a hoisting-rope passing over the pulley and arranged to raise and lower the said runner, a movable platform having guides, and devices sliding in the said guides of the platform and constructed to hold the staff upright, substantially as described.

706,058. MEANS AND APPLIANCES FOR THE MANUFACTURE OF COVERED STRIPS OF SOFT METAL FOR ELECTRICAL OR OTHER PURPOSES. ISAAC W. HETTINGER, Philadelphia, Pa. Filed Dec. 4, 1901. Serial No. 84,632. (No model.)

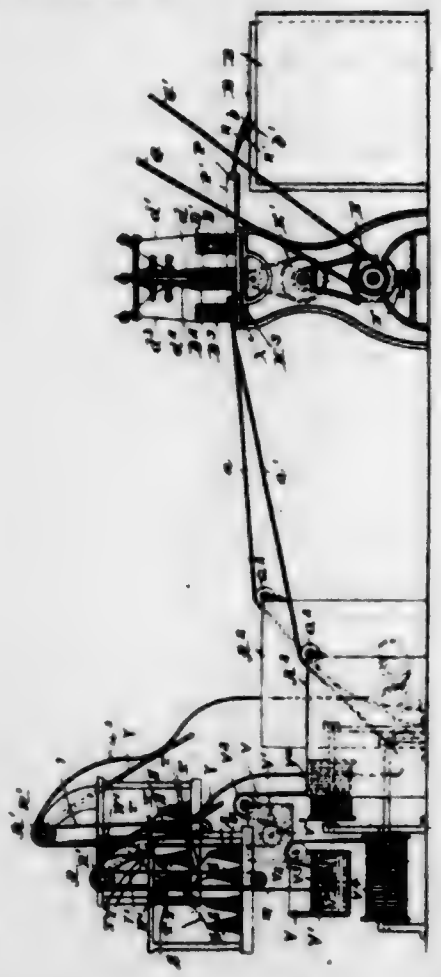

Claim.—1. The conjoined means for the manufacture of covered strips of soft metal consisting of one or more braiding-machines provided with a cup beneath adapted to hold a supply of liquid cement, guides adapted to carry a continuous soft-metal strip down through said cement and thence up to and through said braiding-machine, feed-rolls adapted to pass said strip through said machine continuously, a twin-needle sewing-machine adapted to receive two of said covered soft-metal strips from said braiding machine or machines, twin guide-passages adapted to direct each strand separately beneath its appropriate needle in said machine, and suitable means for subsequently receiving said completed fabric in separate strands, substantially as described.

2. In the manufacture of flat, cemented and covered strips of soft metal, having a stitched seam through the said metal strips along the flat sides thereof, and through said coverings, along the length thereof, the combination of a multiple or twin needle lock stitch sewing-machine, with a multiple or twin guide, having separate and parallel guide-passages through the same, one for each strand of material, and adapted to deliver said strands separately, one under each needle of said machine, and above the loop-forming mechanism thereof, said needles adapted to operate simultaneously and perforate said coverings and said inclosed metal strip, and stitch the same securely together from end to end, substantially as described.

3. In the manufacture of multiple strips of flat metal, covered with coverings of fabric separately braided thereupon, a multiple-needle sewing-machine adapted to simultaneously form a lock-stitch seam along and through the flat sides of each of said strips and the covering thereof, and a guide having parallel multiple guide-passages through the same adapted to present said covered strips separately to the needle and loop-forming mechanism of said sewing-machine, and multiple guideways to deliver the

separate covered and stitched strips each to a separate receptacle therefor, substantially as described.

4. In the manufacture of soft-metal strips having braided and cemented coverings, a twin or multiple needle sewing-machine, in combination with two or more reels adapted to deliver said covered strips to the needle and loop-forming mechanism of said sewing-machine, and guide-passages, one for each of said strips, directed each to one of the needles thereof as they operate, said machine adapted to simultaneously stitch twin or multiple covered strips through said coverings and said inclosed soft-metal strips within the said coverings, substantially as described.

5. In the manufacture of soft, flat metal strips, covered with a textile fabric continuously connected to said inclosed metal strip, said cement applied in liquid form to said strips and dried in contact therewith and with said coverings, said covered and cemented strips subsequently stitched together by a continuously-sewed seam passing through the flat surfaces of said covering and metal strip, a twin or multiple needle sewing-machine, and in combination therewith a guide having parallel and twin or multiple guide-passages, one for each of a series of said strips, feed mechanism adapted to simultaneously present and deliver said strips into said sewing-machine, and simultaneously stitch each of said series, and subsequently and continuously deliver said strips separately to different and independent receptacles or holders, substantially as described.

6. In combination with two or more braiding-machines, each provided with a separate cup for holding liquid cement, and with spools of thread for forming a braided covering around a flat soft-metal strip, and with means for passing said strip through said cement and through said braider, and for applying a coating of liquid cement to said strip and immediately afterward braiding a braided covering of fabric around said wet strip, and means for feeding and drying the said strip through said machine, and for passing said strip through a sewing-machine and applying a stitched seam sewed through said covering and metal strip, means for feeding said covered strip through a sewing-machine, adapted thereto together with a guide-passage to direct said covered strip thereto, and means for subsequently delivering said completed cemented, covered and stitched strips to separate receptacles adapted therefor, and from which said strips are adapted to be cut up transversely into suitable lengths for use, substantially as described.

7. In combination with a twin or multiple needle sewing-machine, a detachable and adjustable guide for twin or multiple strips of soft metal, having parallel guide-passages through the same and directed, one passage-way to each of said needles, and exit guide-passages beyond said needles, one for each of said strips after the same have been stitched, the whole constructed to operate substantially as and for the purposes described.

8. The means and appliances for manufacturing cemented and braid-covered strips of soft metal, consisting of a braiding-machine having cup of liquid cement, and spools of suitable thread, and means for passing a strip of soft metal successively through said cement and braider, a sewing-machine having a guide-passage adapted to direct said cemented and braided metal strip to the needle mechanism thereof, means for passing said strip through said sewing-machine and directly beneath the needle thereof, adapted to make a stitched seam through said covering and said metal, and means for taking up the finished product after passing through said sewing-machine, substantially as described.

9. The means and appliances for manufacturing cemented and braid-covered strips of soft metal, said covering and strip stitched together by a continuous lock-stitch seam, consisting of a braiding-machine having means for applying a coat of liquid cement to a covered strip passing through the same, and subsequently braiding upon it a covering of textile material, a sewing-machine having suitable guideways and feed mechanism, and adapted to pass the same therethrough and make a stitched seam through said cemented and covered metal strip, substantially as described.

10. In combination with the needle and loop-forming mechanism and feed of a twin or multiple needle sewing-machine, the detachable and adjustable parallel multiple guide-passages O^x O^z, each passage adapted to deliver a strand of covered fabric separately thereto, said fabric of soft metal covered with soft textile covering, and said sewing-machine adapted to make a separate row of stitches through each of said covered metal strips, and a corresponding series of divergent-delivery-guides, P P^z, from said needles to a receptacle or holder for each of said covered and stitched strips, substantially as described.

706,054. PNEUMATIC ELEVATOR AND WEIGHER. RIDGELY B. HILLIARY and CHESTER BRADFORD, Indianapolis, Ind. Filed Dec. 18, 1901. Serial No. 86,248. (No model.)

Claim.—1. The combination, in an adjustable elevator and weigher wherein the weigher apparatus is pivotally suspended to the elevating apparatus, of an adjustable brace extending from the elevating apparatus to a frame or rigid portion connected to the weigher apparatus, whereby the latter may be adjustably secured and held in position relatively to the weighing apparatus and a vertical position of said weigher apparatus thus maintained whatever the relative position of the elevator apparatus may be.

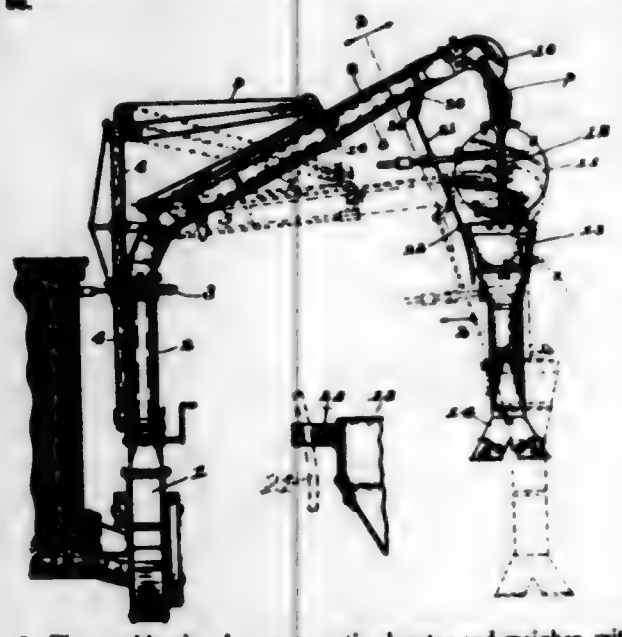

2. The combination, in a pneumatic elevator and weigher, with the adjustable elevator-pipe and the weigher apparatus suspended thereto, of a bracing apparatus consisting of a yoke 20, a brace-rod 21 connected to said yoke, a stud or eye 22 connected to the weigher apparatus frame and to which said brace-rod is connected, and a means whereby said brace-rod can be secured thereto at any desired position therein, substantially as set forth.

706,055. TIME-LIMIT CIRCUIT-BREAKER. HENRY M. HOBART, Berlin, Germany, assignor to General Electric Company, a Corporation of New York. Filed Jan. 5, 1901. Serial No. 42,260. (No model.)

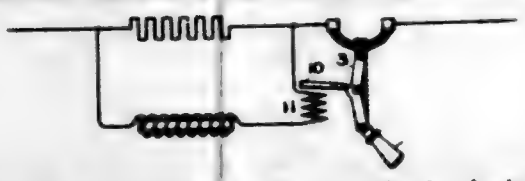

Claim.—1. The combination with a circuit-breaker having a tripping-coil normally connected to the circuit upon which the circuit-breaker operates, of electroreactive means for causing the current in said tripping-coil to vary slower than the current in said circuit.

2. The combination of a divided circuit, one branch of which includes the tripping-coil of a circuit-breaker, and a device possessing inductance in series with said tripping-coil.

3. The combination of a divided circuit, one branch of which includes the tripping-coil of a circuit-breaker, and a device in series with said tripping-coil and acting to oppose variation of current but inactive during a steady condition of current.

4. A circuit-breaker comprising circuit-interrupting means, a tripping-coil, and a device possessing reactance for preventing the current in the tripping-coil from varying at the same rate as the current in the circuit upon which the circuit-breaker operates.

5. The combination of a divided circuit, one branch of which includes the tripping-coil of a circuit-breaker, and means responsive to variation of current for causing the branch including the tripping-coil to have a higher time constant than the other.

6. The combination of a divided circuit, one branch of which includes the tripping-coil of a circuit-breaker, and means dependent for its action upon variation of current for causing the branch including the tripping-coil to have a different time constant than the other.

706,056. BOTTLE. WILLIE W. HOLLAND, Brenham, Tex. Filed Apr. 18, 1902. Serial No. 103,570. (No model.)

Claim.—1. A bottle having a closed neck formed integral with the bottle, a vulnerable portion to said neck, a shield for said vulnerable portion formed integral with the neck and serving also as the mouth of the bottle, and means for filling and sealing the bottle.

2. A bottle having a closed neck formed integral with the bottle, a vulnerable portion to said neck accessible through the mouth of the bottle, a false neck or shield for said vulnerable portion forming the mouth of the bottle and also a passage-way to conduct the broken glass from the bottle-mouth, and means for filling and sealing the bottle.

706,057. FOLDING BOX OR CASE. JOHN A. HOLLEN, Sioux City, Iowa. Filed Aug. 3, 1901. Serial No. 70,208. (No model.)

Claim.—1. A sample-case comprising two sections, one of which being smaller than the other and each having upright sides and an end portion, a strip hingedly connected to the bottoms of the sections at the open ends thereof, a flexible connection uniting the sides of the said sections, and a tape secured to the larger section, substantially as shown and for the purpose set forth.

2. A sample-case substantially as described comprising two sections, each section being formed of a bottom, sides and an end portion, a solid strip having its sides hinged to the open ends of the bottoms, flexible sections uniting the inner ends of the sides, and a tape connected to one of the sections, substantially as shown and described.

706,058. CYCLE. CHARLES L. HOBACK, New York, N. Y., assignor to Rufus H. Williams, New York, N. Y. Filed Apr. 26, 1900. Serial No. 14,373. (No model.)

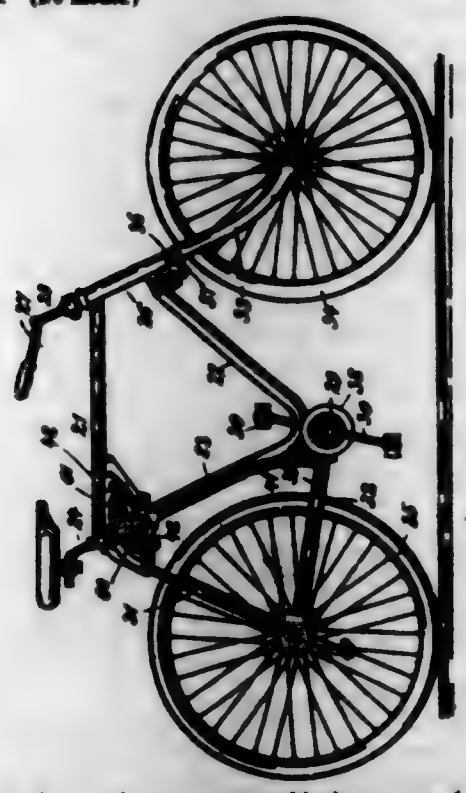

Claim.—1. In a cycle, pneumatic cushioning means adapted to resist relative displacement of the seating-surface of the saddle and one of the wheels and comprising a spring and two chambers, each chamber having a movable wall, one of said walls being adapted to yieldingly resist such relative displacement in one direction, and the other wall being adapted to resist such displacement in the opposite direction, means interposed between said chambers for permitting the flow of air between said chambers in one direction, and for permitting and regulating the flow of air in the opposite direction, and means for alternately actuating said spring and producing reaction of the same by alternate movements of said walls.

2. In a cycle, pneumatic cushioning means adapted to resist relative displacement of the seating-surface of the saddle and one of the wheels, and comprising a chamber having a movable wall adapted to be actuated upon such relative displacement and two additional chambers communicating therewith, and two check-valves, one of said valves being placed at the entrance to each of said chambers, suitable return-passages being provided between the chambers between which check-valves are so inserted.

3. In a cycle, pneumatic cushioning means containing three chambers and adapted to resist relative displacement of the seating-surface of the saddle and one of the wheels, and comprising a movable wall forming part of one of said chambers and adapted to be actuated upon such relative displacement, the additional two chambers being connected with the chamber having said movable wall, two automatic valves, one of said valves being interposed between aforesaid chamber and one of the additional chambers, and the other valve being interposed between aforesaid chamber and the other additional chamber, and means for forcing one of said valves toward its seat with greater pressure than that applied to the other valve, suitable return-passages being provided between the chambers between which check-valves are so inserted.

4. In a cycle, pneumatic cushioning means comprising three chambers and adapted to resist relative displacement of the seating-surface of the saddle and one of the wheels and comprising a movable wall forming part of one of said chambers and adapted to be actuated upon such relative displacement, each of the additional two chambers being in direct communication with aforesaid chamber, and two valves, one of said valves being placed in the connecting-passage between aforesaid chamber and one of the additional chambers, and the other being placed in the connecting-passage between aforesaid chamber and the other additional chamber, suitable return-passages being provided between the chambers between which check-valves are so inserted.

5. In a cycle, pneumatic cushioning means adapted to be compressed upon relative displacements of the seating-surface of the saddle and one of the wheels, said cushioning means comprising a chamber communicating with two other chambers, an automatic valve at the inlet to each of said other chambers, said valves being adapted to open successively, suitable return-passages being provided for permitting return flow of air while said valves are in their restricted positions.

6. In a cycle, pneumatic cushioning means adapted to yieldingly resist relative displacement of the seating-surface of the saddle and one of the wheels and comprising two movable walls maintained during their movements in close contact or connection with the adjoining portions of said cushioning means, and an automatic valve in a passage between said walls for restricting flow of air in one direction and permitting freer flow in the opposite direction whereby two chambers are formed within said cushioning means, one of said walls being adapted to be forced inward and the other being adapted to be forced outward simultaneously during such a displacement, a proper passage being provided for permitting flow of air between said chambers while said valve is in its restricting position, and means for arresting such movement of one of said walls while permitting movement of the other wall.

7. In a cycle, pneumatic cushioning means adapted to yieldingly resist relative displacement of the seating-surface of the saddle and one of the wheels and comprising two movable walls maintained during their movements in close contact or connection with the adjoining portions of said cushioning means, and an automatic valve in a passage between said walls for restricting flow of air in one direction and permitting freer flow in the opposite direction whereby two chambers are formed within said cushioning means, a proper passage being provided for permitting flow of air between said chambers when said valve is in its restricting position, and means for arresting such movement of one of said walls while permitting movement of the other wall.

8. In a cycle, pneumatic cushioning means adapted to yieldingly resist relative displacement of the seating-surface of the saddle and one of the wheels and comprising two chambers each provided with a movable wall, and means interposed between said chambers for permitting the flow of air between said chambers in one direction while one of said walls is moving inward and the other is moving outward and to regulate the flow of air while said walls are moving in the opposite directions, whereby smaller quantities of air are caused to flow backward during such opposite movements of said walls than during corresponding movements in the other direction, and means for arresting such movement of one of said walls while permitting movement of the other wall.

9. In a cycle, pneumatic cushioning means adapted to yieldingly resist relative displacement of the seating-surface of the saddle and one of the wheels and comprising two chambers each provided with a movable wall, and means interposed between said chambers for permitting the flow of air between said chambers in one direction while one of said walls is moving inward and the other is moving outward and to regulate the flow of air while said walls are moving in the opposite directions, whereby smaller quantities of air are caused to flow backward during such opposite movements of said walls than during corresponding movements in the other direction, and adjustable means for arresting such movement of one of said walls while permitting movement of the other wall.

10. In a cycle, pneumatic cushioning means adapted to yieldingly resist relative displacement of the seating-surface of the saddle and one of the wheels and comprising two chambers each provided with a movable wall, and means interposed between said chambers for permitting the flow of air between said chambers in one direction while one of said walls is moving inward and the other is moving outward and to regulate the flow of air while said walls are moving in opposite directions, whereby smaller quantities of air are caused to flow backward during such opposite movements of said walls than during corresponding movements in the other direction, and means for adjusting the extent of the movement of one of said walls prior to the movement of the other wall.

11. In a cycle, pneumatic cushioning means closed to the atmosphere and having an outer movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and one of the wheels, and a continuous movable wall inclosed by said cushioning means and having its edges fixedly secured to the walls of said cushioning means, whereby the same are divided into two non-communicating chambers.

12. In a cycle, pneumatic cushioning means closed to the atmosphere and having an outer flexible wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and one of the wheels, and a flexible wall inclosed in said cushioning means, whereby the same are divided into two non-communicating chambers.

13. In a cycle, the combination with the frame, of pneumatic cushioning means having an outer movable wall, adapted to be actuated upon relative displacement of the seating-surface of the saddle and one of the wheels, a continuous, movable wall inclosed by said cushioning means and having its edges in continuous contact with the walls of said cushioning means, whereby the same are divided into two chambers, and an inflation-valve for each of said chambers.

14. In a cycle, pneumatic cushioning means comprising a rigid casing and a movable wall adapted to yieldingly resist relative displacement of the seating-surface of the saddle and one of the wheels, and a movable wall within said cushioning means and having its edges in fixed contact with such rigid portion, whereby the cushioning means are divided into two chambers.

15. In a cycle, pneumatic cushioning means closed to the atmosphere and having a rigid casing and a movable wall adapted to yieldingly resist relative displacement of the seating-surface of the saddle and one of the wheels, and a flexible wall inclosed within and fixedly attached to the walls of said cushioning means, whereby the same are divided into two chambers.

16. In a cycle, the combination with the frame, of a pneumatic cushion having a movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and one of the wheels, another pneumatic cushion having a movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and another wheel and a continuous, movable wall between said cushions having its edges in continuous contact therewith and adapted to be actuated upon relative changes of pressures within said cushions.

17. In a cycle, the combination with the frame, of a pneumatic cushion having a movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and one of the wheels, another pneumatic cushion having a movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and another wheel, and a flexible wall forming part of each of said cushions adapted to be deflected upon relative changes of pressures within said cushions.

18. In a cycle, the combination with the frame, of a pneumatic cushion having a movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and one of the wheels, another pneumatic cushion having a movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and another wheel, a continuous, movable wall between said cushions and having its edges in continuous contact therewith and adapted to be actuated upon relative changes of pressures within said cushions, and an inflation-valve for each of said cushions.

19. In a cycle, the combination with a sectional frame, of a pneumatic cushion having a rigid casing and a movable wall adapted to be actuated upon relative displacement of the seating-surface of the saddle and one of the wheels, another pneumatic cushion having a rigid casing and a movable wall adapted to be actuated upon relative displacement of said seating-surface and another wheel, and a continuous, movable wall between said cushions having its edges in continuous contact with rigid portions of both said cushions and adapted to be actuated upon relative changes of pressures within said cushions.

20. In a cycle, the combination with a tubular sectional frame and the running-gear, of pneumatic cushioning means adapted to be compressed upon relative displacement of two of the frame-sections, tubing of one of the frame-sections forming portion of said cushion, and a continuous flexible wall within said tubing and fixedly attached thereto whereby said cushioning means are divided into two compartments.

21. In a cycle, the combination with a sectional frame, of cushioning means interposed between said sections and comprising a flexible diaphragm constructed in the form of a cup and having a flange protruding outside of its walls, a base in contact with the outer surface of said flange and provided with a suitable contact portion adapted to engage with one of the frame-sections, and means for securing said flange to said protruding portion of the diaphragm.

22. In a cycle, the combination with a sectional frame, of cushioning means interposed between said sections and comprising a flexible diaphragm constructed in the form of a cup and having a flange protruding outside of its walls, a base in contact with the outer surface of said flange and provided with a suitable contact portion adapted to engage with one of the frame-sections, an annular disk on the other side of said flange, and means for attaching said disk to said base outside of said diaphragm.

23. In a cycle, the combination with a sectional frame, comprising a seat-section, and a wheel-section articulated thereto, of cushioning means interposed between said sections, the wheel-section extending forward beyond and rearward of the diagonal or down tube of the seat-section, the forward extension being in the form of a yoke 42 in a substantially vertical plane, said yoke being placed laterally and at the same elevation with reference to such portion of the seat-section, and cushioning means interposed between said diagonal tube and the branches of said yoke.

24. In a cycle, the combination with a sectional frame having the seat-section comprising a diagonal or down tube and the upper main tube articulated to the rear-wheel section, the latter comprising the lower and the upper rear fork and a brace extending upward from the lower forward portion of said wheel-section, and a connecting device 42 between the upper portions of said brace and said upper fork extending forward beyond the diagonal or down tube, said connecting device being placed laterally with reference to the seat-section, and means for guiding said connecting device along said diagonal tube and said upper main tube.

25. In a cycle, the combination with a sectional frame having the seat-section articulated to the rear-wheel section, the latter comprising the lower and the upper rear fork and a brace extending upward from the lower forward portion of said wheel-section, and a substantially O-formed connecting device 42 between the upper portions of said brace and said upper fork extending forward beyond and rearward of the diagonal or down tube, said connecting device being placed laterally with reference to the seat section, of the seat section, and cushioning means interposed between said two sections and inserted within said connecting device forward and backward of said down-tube.

26. In a cycle, the combination with a sectional frame having the seat-section articulated to the rear-wheel section, the latter comprising the lower and the upper rear fork and a brace extending upward from the lower forward portion of said wheel-section and connected to said upper fork, and means for guiding said sections one upon the other at three points placed in substantially the same vertical plane parallel with the longitudinal central plane of the cycle and out of line with each other.

27. In a cycle, the combination with a sectional frame having the seat-section articulated to the rear-wheel section, the latter comprising the lower and the upper rear fork and a brace attached to the lower forward portion of said wheel-section in the rear of the crank-shaft, and means for connecting it to the upper portion of said upper fork, the portion of said brace between its points of attachment being placed substantially parallel with the down-tube of the seat-frame and lateral thereto.

28. In a cycle, the combination with a sectional frame, one of the frame-sections being articulated to another section, of cushioning means interposed between said sections, and a friction-roller with suitable axle between said sections, said axle being placed parallel with the axle to which the frame-sections are articulated, a guiding-surface being provided on one of said sections along which said roller travels longitudinally, while revolving around its axis.

29. In a cycle, the combination with a sectional frame, of cushioning means interposed between relatively movable sections of the frame, a friction-roller with suitable axle between said sections, a guiding-surface being provided on one of said sections along which said roller travels longitudinally while revolving around its axis, and an elastic tension device for enforcing contact between said roller and the other frame-section.

30. In a cycle, the combination with a sectional frame, of a rigid hollow casing detachably secured to one of the frame-sections and provided with a multiplicity of outlets, different cushioning means connected with said outlets and adapted to be compressed upon relative displacements of sections of the frame, an automatic valve in each of said outlets whereby flow of air is restricted by it in one direction and freer flow is permitted in the opposite direction, and means for permitting flow between said rigid hollow casing and the cushioning means connected with said outlets while the corresponding valves are in their restricting positions.

31. In a cycle, the combination with a sectional frame comprising

a seat-section and a wheel-section, of a rigid casing detachably secured to the diagonal or down tube of the seat-section and extending forward and backward of the same, pneumatic cushioning means attached to said casing forward and backward of said tube, and adjusted to contact with portions of the wheel-frame, a connecting-passage being provided between said cushioning means within said casing, an automatic valve in said passage for restricting flow of air in one direction and for permitting freer flow in the opposite direction, and means for permitting flow of air between said cushioning means while said valve is in its restricting position.

32. In a cycle, the combination with a sectional frame comprising two relatively movable sections, of a hollow rigid U-shaped casing detachably secured to one of said sections, and a pneumatic cushion mounted upon said casing and connecting with its interior and adapted to contact with the other frame-section.

33. In a cycle, the combination with a sectional frame, of a hollow rigid U-shaped casing detachably secured to one side of and partly encircling one of the tubes of one of the frame-sections, and a bracket connecting the branches of said U-shaped casing, thereby entirely surrounding said tube, and cushioning means mounted upon said casing and connecting with its interior and adapted to contact with the other frame-section.

34. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, and an arc-shaped casing forming part of another frame-section and revolubly mounted on said axle and adapted to be attached to and detached from said axle by moving it at right angles thereto, a shoe detachably secured to the end of one of the branches of said arc-shaped casing, and a projection on said axle adapted to engage with said shoe.

35. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, an arc-shaped rigid casing revolubly mounted thereon and forming part of another frame-section, and a retaining device movable with reference to said casing and held against its outer surface for retaining it in proper position with reference to said axle.

36. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, an arc-shaped rigid casing revolubly mounted thereon and forming part of another frame-section, and a roller with suitable axle and bearings in contact with the outer surface of said casing for the purpose of retaining it in proper position with reference to said axle, said bearings being fixedly attached to said axle.

37. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, a rigid casing revolubly mounted thereon and forming part of another frame-section, and a series of rollers around the outer periphery of said casing having their bearings rigidly attached to said axle and adapted to guide said casing.

38. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, a casing revolubly mounted thereon and forming part of another frame-section, a guide-roller interposed between said casing and the section carrying said axle, and means for adjusting the position of the axle of said guide-roller with reference to aforesaid axle.

39. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, an arc-shaped casing revolubly mounted thereon and forming part of another frame-section, and a brace between the branches of said arc-shaped casing and fixedly attached thereto, whereby a sleeve is formed around said axle.

40. In a cycle, the combination with a sectional frame, of an axle on the frame-section comprising the lower rear fork, an arc-shaped casing revolubly mounted on said axle and forming part of another frame-section, and a brace rigidly attached to both branches of said arc-shaped casing and placed between the prongs of said fork, whereby a sleeve is formed around said axle.

41. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, a casing revolubly mounted with reference to said axle, and means for adjusting and confining said casing in varying positions with reference to the longitudinal direction of said axle.

42. In a cycle, the combination with a sectional frame, of pneumatic cushioning means interposed between its sections, an axle on one of said sections, a casing revolubly mounted with reference to said axle, a pneumatic cushion between axle and casing, said casing being adapted to slide along said cushion while revolving with reference to the axle, and a connecting-passage between said cushion and aforesaid cushioning means.

43. In a cycle, the combination with a sectional frame, of pneumatic cushioning means having an inflation-valve interposed between its sections, a casing revolubly mounted with reference to said axle, a pneumatic cushion with an independent inflation-valve between axle and casing, said casing being adapted to slide along said cushion while revolving with reference to the axle, a connecting-passage between said cushioning means and said cushion, and a stop-cock in said passage between said inflation-valves.

44. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, a casing revolubly mounted thereon and forming portion of another frame-section, a rubber cushion interposed between axle and casing and seated upon one of said parts, and a series of metal contact-points attached to said cushion and adjusted to contact at intervals with the relatively movable portion of the other one of said parts, said contact-points forming portions of a continuous strip of metal.

45. In a cycle, the combination with a sectional frame, of an axle on one of the frame-sections, a casing revolubly mounted thereon and forming portion of another frame-section, an arc-shaped rubber cushion seated within a trough upon the circumference of said axle, and a continuous metallic band having its interior surface extending from the end surfaces of said cushion around the exterior surface of the same, and having its exterior surface contacting with the interior surface of said relatively movable casing.

46. In a cycle, the combination with a sectional frame, of an axle on the rear-wheel section, a casing revolubly mounted thereon and forming portion of the seat-section, the down-tube and the lower main tube of the seat-section being made continuous in a curve which is convex where they are joined to said casing, a depression in said casing for seating therein such curved portions of said tubes, and means for attaching the same to said casing.

47. In a cycle, the combination with a sectional frame, of an axle on the rear-wheel section, a casing revolubly mounted thereon and forming portion of the seat-section, the down-tube and the lower main tube of the seat-section being made a continuous tube, and a yoke for joining said continuous tube and said casing together and extending around and attached to the greater portion of the periphery of said tube and along portion of the outer surface of and along the sides of said casing.

706,059. **ANGLE-COCK FOR AIR-BRAKE MECHANISM.** MARTIN L. HOUDEK, Fort Wayne, Ind. Filed Feb. 15, 1902. Serial No. 94,173. (No model.)

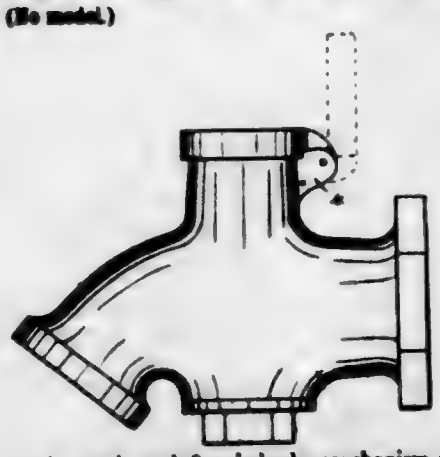

Claim.—1. An angle-cock for air-brake mechanism consisting of a hollow casting having a central upright chamber provided with opposite openings or air-ports; a rotary valve loosely mounted in said chamber, having a diametric opening adapted to register with the said air-ports when the valve is open, and provided upon its upper end with an angular extension which is contained within said chamber and which is adapted to indicate whether the said valve is open or closed; means for limiting the valve to a quarter-turn; and detachable means for rotating said valve to either limit of its adjustment; and means for normally closing said valve-chamber.

2. The combination in an angle-cock for air-brakes, of a hollow valve-casing having a screw-threaded opening in each end thereof, and having a central upright open-ended valve-chamber communicating with the interior of the casing by means of lateral ports, as shown, and provided upon its inner face with a pair of opposite lateral lugs adapted to limit the rotation of the contained valve; an inlet-valve rotatably mounted in said chamber, having a diametric opening adapted to register with the said lateral ports as described, and provided with an angular extension upon the upper end thereof which is at all times within the said casing; and a hinged lid closing the upper end of said chamber.

3. In an angle-cock a valve-casing having an inlet-port in each end thereof, and a central open-ended valve-chamber provided with opposite lateral ports, and with means for limiting the rotation of the contained valve; an inlet-valve rotatably mounted in said chamber, and having an opening therein adapted to register with the said ports when the valve is open; means for normally concealing said valve in said chamber; detachable means for operating said valve and the described means for determining by inspection whether the said valve is open or closed.

706,060. **TROUSERS-HANGER.** JAMES H. HOWE, Buffalo, N. Y. Filed May 11, 1900. Serial No. 16,303. (No model.)

Claim.—A trousers-hanger, made of a strip of spring metal, having its ends oppositely beveled, and at one end bent outwardly and then inwardly so that it extends inwardly a short distance beyond the loop thus formed, and being bent near its center outwardly and then inwardly so that its opposite end extends slightly beyond the first-named end, the two ends thus formed being capable of slightly overlapping each other throughout their beveled portions.

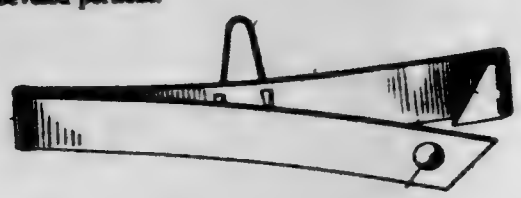

706,061. RIDDLE. EDWARD HUBER, Marion, Ohio. Filed Dec. 30, 1901. Serial No. 87,069. (No model.)

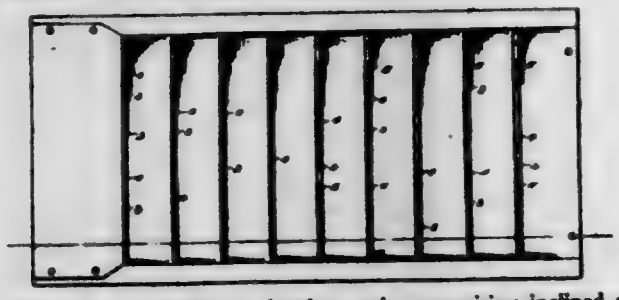

Claim.—1. A riddle for cleaning grain, comprising inclined slats, bars extending from the lower edge of each slat to the upper edge of the preceding slat, and projections between the bars, extending upward from the lower edge of each slat into the opening formed between the adjacent bars, substantially as described.

2. A riddle for cleaning grain, comprising inclined slats, a plurality of substantially upright bars extending from the lower edge of each slat to the upper edge of the preceding slat, thereby forming openings or spaces, and projections extending up centrally from the lower edges of the slats into said openings or spaces, whereby there are formed a plurality of relatively narrow openings above the edges of the slats to the height of the projections, and a plurality of relatively wider openings above the same and above the projections, substantially as described.

706,062. MAGAZINE FUSE-BOX. HARRY L. HUNT and WILLIAM R. MOON, Traverse City, Mich. Filed Nov. 5, 1901. Serial No. 81,254. (No model.)

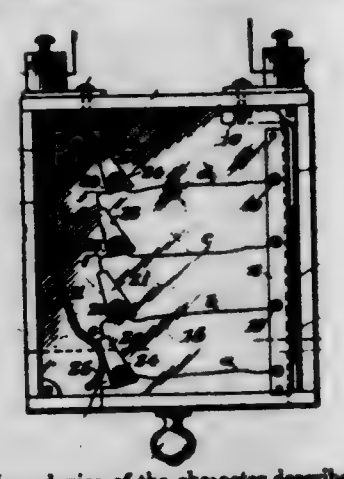

Claim.—1. In a device of the character described, the combination with a fuse-box, of a pair of circuit-terminals, one of which has the form of a spring, a magazine-slide mounted in the fuse-box and provided with a series of notches at one side disposed for engagement with the end of the spring-terminal, individual contact-plates located within said notches, fuses extended from said individual contact-plates to the opposite side of the magazine-slide, and means for effecting electrical connection between the other circuit-terminal and the ends of the fuses at the side of the slide opposite the individual contact-plates.

2. In a device of the character described, the combination with a fuse-box, and circuit-terminals therein in the form of springs, of a magazine formed in one side face thereof with a series of notches each defined by an inclined wall and an abruptly-curved wall, individual contact-plates imposed upon the several inclined walls, fuses extending from said plates to the opposite side of the magazine, and a continuous contact-plate connected to the several fuses and disposed in sliding contact with the circuit-terminal located at the side of the magazine opposite the individual contact-plates.

3. In a device of the character described, the combination with a fuse-box, and a pair of circuit-terminals in the form of springs, one of which has its free extremity curved, of a magazine-slide mounted in the fuse-box and provided with a series of notches at one side disposed for engagement with the curved end of the adjacent circuit-terminal, individual contact-plates located within said notches, fuses extending from said individual contact-plates to the opposite side of the magazine, and a continuous contact-plate connected to the ends of the fuses opposite the individual contact-plates and disposed in constant sliding engagement with the other circuit-terminal.

706,063. ANIMAL-POKE. HIRAM E. IRISH, Morille, Iowa. Filed Dec. 31, 1901. Serial No. 87,043. (No model.)

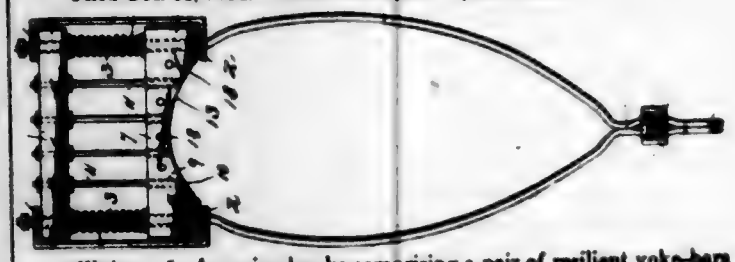

Claim.—1. An animal-poke comprising a pair of resilient yoke-bars with lower hooked terminals, a clamp surrounding said yoke-bars adjacent their hooked terminals for preventing said bars from separating, an upper vertically-movable device with which said yoke-bars engage, and a series of vertically-disposed movable rods having lower pointed ends and arranged in planes parallel with the upper portions of the yoke-bars and carried by the said movable device, said rods being actuated by the yoke-bars.

2. A poke comprising a head-bar carrying a plurality of vertically-disposed movable pointed rods, a guide-bar below the head-bar and through which the said rods are adapted to movably extend, springs interposed between the said bars to restore the latter and the rods to normal position, and resilient yoke-bars movably passing through the opposite extremities of both the head-bar and guide-bar and having lower laterally-extending hooked terminals.

3. A poke comprising a head-bar carrying a plurality of vertically-disposed movable pointed rods, a guide-bar below said head-bar and through which said pointed rods are adapted to extend, other pointed rods immovably secured to the guide-bar and extending rearwardly from the latter in horizontal planes, springs interposed between said bars to restore the parts to normal position, and yoke-bars extending through the said head and guide bars and having hooked terminals, the head-bar being vertically movable on the upper extremities of the yoke-bars.

706,064. HYDROCARBON-BURNER. WILLIAM R. JEAVONS, Cleveland, Ohio. Filed Feb. 24, 1902. Serial No. 95,148. (No model.)

Claim.—1. A vaporizing-trough, and a conduit for supplying oil thereto internally exposed at its top and open to the lower portion of the trough and provided with a vapor-outlet at its upper portion, substantially as described.

2. A vaporizing-trough having seats for a combustion-chamber, an oil-supplying conduit fixed to the said trough and open at its top, and having an extension projecting above said seats and provided with an opening for the overflow of vapor above the plane of said seats, substantially as described.

3. The vaporizing-trough having seats for a combustion-chamber, an oil-supplying conduit affixed to the said trough and extending to a plane above said seats and open at its top and in open relation to the trough below said seats, and having a vapor-overflow opening above said seats, substantially as described.

4. A vaporizing-trough having seats for burner-tubes on its walls, and a double-walled conduit to supply oil to said trough having its interior exposed from the top and provided with a stem to connect with an oil-supply pipe, and having a vapor-overflow opening at its top portion above the seats for the burner-tubes, substantially as described.

5. The oil and vaper trough and a substantially U-shaped oil-supply conduit affixed thereto at its ends and having outlets at its bottom and near its top, and the opening for supplying oil to said conduit arranged on a plane slightly above the bottom of the conduit, substantially as described.

6. An oil and vaper trough and an oil-supply tank having means for maintaining a constant oil-level therein, a conduit open along its top extending from side to side of the trough and attached at its ends to the inner wall thereof, and provided with an oil-passage from its lower portion to the lower portion of the trough, and the said conduit having an opening above the said oil-level and on a lower plane than its top edges for the escape of vaper, substantially as described.

706,065. WINDOW BRACE AND FASTENER. OREN J. JENKS, Wausau, Wis. Filed Apr. 3, 1902. Serial No. 101,272. (No model.)

Claim.—In a window-fastener the combination of a bar formed of two sections, which are pivotally connected to form a continuous bar, one of the said sections being slotted, and a thumb-nut passing through the slot and engaging the opposite section to form the said pivot, the other section of the bar having a series of notches formed therein, a lug or projection formed upon the end of the said slotted section and adapted for engagement with the said notches, a bracket carried by the window and secured to the free end of the notched bar, and a bracket secured to the window-sill and pivotally connected to the slotted bar, and a latch carried by the bracket that is secured to the window and adapted for engagement with the bracket upon the sill when the window is closed, substantially as and for the purpose set forth.

706,066. RULING DEVICE. BRAGG H. JOY, Chicago, Ill. Filed Dec. 16, 1900. Serial No. 39,950. (No model.)

Claim.—1. A ruling device comprising a holder, a single ruling-strip secured to one side of the lower edge of the holder, and a running-surface on the holder at the side opposite the ruling-strip, substantially as described.

2. A ruling device comprising a holder, a single ruling-strip fastened to the lower edge of the holder at one side thereof, and means on the holder at the side opposite the ruling-strip adapted to engage a surface to permit the ruling-strip to be slid thereover free from contact therewith, substantially as described.

3. A ruling device comprising a holder, a runner at one side of the holder adapted to engage and be slid over a surface, and a single ruling-strip secured to the edge of the holder at a point a sufficient distance away from the runner to be free from contact with the surface engaged by the runner when the runner is operated, substantially as described.

4. A ruling device comprising a holder, a ruling-strip, an attaching-flange on said strip secured to the edge of the holder at a point slightly short of one side thereof, and a runner on the holder at the side adjacent the flange of the strip, substantially as described.

5. A flexible ruling-strip having a substantially vertical side and a beveled side meeting to constitute a reinforced ruling edge, substantially as described.

6. An article of manufacture comprising a holder, a runner at one side of the holder adapted to engage and be slid over a surface, and marking means secured to the holder in a manner to be free from contact with the surface engaged by the runner when the runner is operated, substantially as described.

7. As a new article of manufacture, a holder, a bearing at one edge of said holder upon which the same may be operated, and marking means secured to the surface of the holder at a point remote from said bearing, substantially as and for the purpose described.

8. As an article of manufacture, a holder, a bearing at one edge of said holder upon which the same may be operated, a single ruling-strip, and means securing said strip to the surface of the holder at a point remote from said bearing, substantially as and for the purpose described.

706,067. ACETYLENE-GAS GENERATOR. ARTHUR KARG, Paterson, N. J. Filed Jan. 4, 1902. Serial No. 88,285. (No model.)

Claim.—1. In an acetylene-gas apparatus, a carbid-holder consisting of a receptacle or body portion open at the top and also opening downwardly, and a closure controlling the lower opening of said receptacle hinged thereto near the upper end of said opening, said closure being normally disposed at an incline, substantially as described.

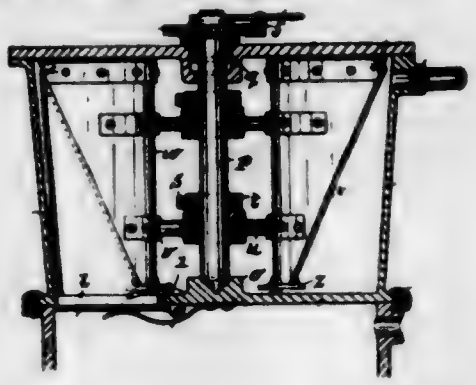

2. In an acetylene-gas apparatus, a carbid-holder open at the top and having one of its walls hinged near the upper end of said holder and extending at an incline across the same to form a closure therefor, in combination with means for maintaining said wall in its closed position, substantially as described.

706,068. PRESSER-FOOT-LOCKING MECHANISM FOR SEWING-MACHINES. HERMANN A. KLEMM, New York, N. Y. Filed Sept. 9, 1901. Serial No. 74,727. (No model.)

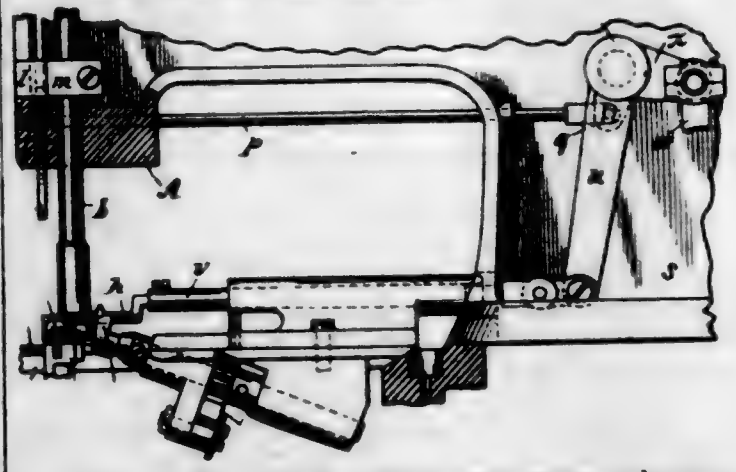

Claim.—1. The combination with the looper, presser, and presser-lifter, said looper having means for working the same within and transversely of the range of the presser-foot, of the locking-rod and means for operating the same synchronously with the looper, said rod automatically locking the lifter while the looper is in the range of the presser-foot, and unlocking said lifter when the looper retires out of range of the presser-foot.

2. The combination with the looper, presser, and presser-lifter, said looper having means for working the same within and transversely of the range of the presser-foot, means for automatically locking the presser-foot when the looper is within the range of said presser-foot and unlocking the same when the looper is out of the range of the presser-foot.

706,069. FOLDING BATH-CABINET. BURTON D. KNICKERBOCKER, Chicago, Ill. Filed June 22, 1900. Serial No. 721,227. (No model.)

Claim.—1. In a bath-cabinet, the combination with a stationary back plate, of hinged bottom, side, and front plates adapted to be folded into compact form against said back plate when not in use and to be opened when in use to form an inclosure having a bottom, side plates, and swinging doors, a drain-pipe carried by said stationary back plate, and eaves or troughs secured to the back and side plates and communicating with said drain-pipe for carrying the water from the surfaces of the bottom, back, side and front plates, substantially as described.

2. In a bath-cabinet, the combination with a back plate, of hinged bottom, side and front plates, a drain-pipe mounted upon said back plate and a series of communicating troughs mounted upon said side and back plates below the edges of said bottom plate and communicating with said drain-pipe, the front edge of said bottom plate being adapted to rest upon the troughs secured to the said side plates, substantially as described.

3. In a bath-cabinet, the combination with a back plate and hinged bottom, side and front plates, said bottom plate being provided with an upwardly-projecting ridge at the forward edge, rearwardly-inclined troughs mounted upon said side plates beneath the side edges of said bottom plate, and adapted to swing with said side plates, a drain mounted upon said back plate, and inclined troughs mounted upon said back plate communicating with the troughs on said side plates and with said drain,

whereby the water from the surfaces of said bottom, back, side and front plates is carried off through said drain, substantially as described.

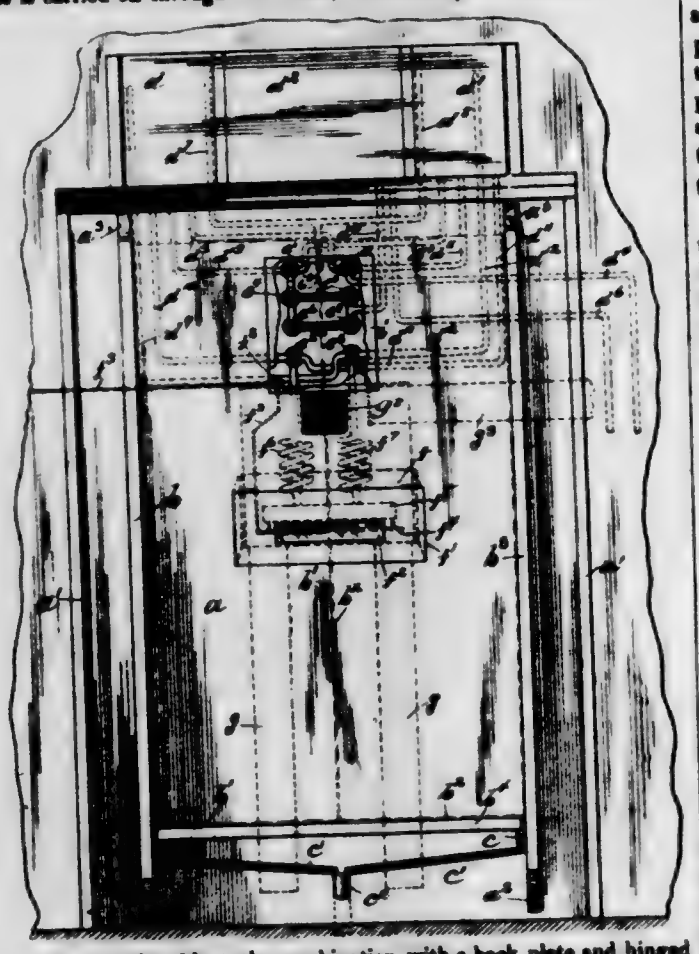

4. In a bath-cabinet, the combination with a back plate and hinged bottom, side and front plates, of a fire-box or heating-chamber mounted upon said back plate, a cold-air duct carried upon said back plate and communicating with said heating-chamber and a hot-air outlet opening into the space included within the side and front plates of said cabinet, substantially as described.

5. In a bath-cabinet, the combination with a back plate and hinged bottom, side and front plates, of a fire-box or heating-chamber, mounted upon said back plate, a cold-air duct carried upon said back plate and communicating with said heating-chamber, a hot-air outlet extending from said chamber to the interior of said cabinet, and a hot-air outlet extending from said chamber to the exterior of said cabinet and provided with a valve or damper, substantially as described.

6. A folding bath-cabinet comprising a back plate secured to the wall of the room in which the cabinet is placed, a heating-coil carried upon said back plate, a hot and cold water tank, mounted at the upper end of said back plate, suitable pipes between the coil and tanks, a shower-bath attachment extending forward from the back plate and suitable connections from said tank and heating-coil to said attachment, bottom and side plates hinged to said back plate and adapted to fold up into compact form, said side plates being hinged at some distance from the side edges of said plates, one of said side plates being adapted to fold outside the other plates and to form the entire unbroken front of the cabinet when closed, and members a' at the side edges of the back plate to form the sides of the closed cabinet, substantially as described.

7. In a bath-cabinet, the combination with the back plate and the hinged bottom, side and front plates, of a heating-coil mounted upon said back plate, means to heat said coil, a pair of hot-water tanks carried at the upper end of said back plate, suitable pipes extending between said heating-coil and each of said tanks, and valves whereby either of said tanks may be connected with the heating-coil, substantially as described.

8. In a bath-cabinet, the combination with a back plate and hinged bottom, side and front plates, of a heating-chamber mounted upon said back plate and provided with suitable inlet and outlet air-passages, a heating-coil mounted within said heating-chamber, a hot-water tank mounted upon said back plate and suitable pipes and valves between said hot-water tank and said heating-coil, substantially as described.

9. In a bath-cabinet, the combination with a back plate and hinged bottom, side and front plates, of a heating-coil mounted on said back plate, a hot-water tank and a cold-water tank mounted upon said back plate at the upper end thereof and connected with said coil, a suitable valve between the hot-water tank and the heating-coil, a water-supply exit mounted upon said back plate, pipes extending between the same and said tanks, and a pair of valves, one for controlling the flow of water from the hot-water tank and the other for controlling the flow of water from the cold-water tank, substantially as described.

10. In a bath-cabinet, the combination with a back plate, and hinged bottom, side and front plates, of a heating-coil mounted on said back plate, a cold-water tank and a pair of hot-water tanks mounted upon said back plate and connected with said coil, suitable valves between the hot-water tanks and the heating-coil a water-supply exit mounted upon said back plate, a valve for connecting one or the other of said hot-water tanks to supply water to said supply-exit, and a pair of valves, one for controlling the supply of water from the cold-water tank, and the other for controlling the supply of water from the hot-water tank, substantially as described.

11. In a bath-cabinet, the combination with a back, of hinged bottom, side and front plates, a heating-coil mounted upon the back and a heating-chamber therefor, a hot and a cold water tank at the upper end of the cabinet, pipes extending from said tanks to the coil and to the cabinet, a faucet-board carried by the back, and a plurality of faucets mounted on said board and controlling the flow of water through said pipes substantially as described.

706,070. JOINT FOR PILASTERS, PILLARS, POSTS, &c. WILLIAM KOPP, Louisville, Ky. Filed May 9, 1902. Serial No. 106,660. (No model.)

Claim.—1. In a new and useful joint of the character described, the combination with a pair of pieces to be united, of a pair of long meeting faces between the same, with a series of short segregated slots placed one above another in a meeting face and a series of headed projections separable from their meeting face and placed one above another and mating said slots, with all the slots and headed projections placed intermediate of the side edges of the meeting faces, enlarged openings for the slots, with a front wall for each side of each of the slots left integral with the wood of the piece and extending rearwardly toward the seating end of the slot, a rear wall for each slot left integral with the wood of the piece, with the slots and openings cut directly into the wood of the piece and entirely surrounded by the wood left integral with the piece at the sides, ends and rear of the slots and openings, said slots, openings and headed projections and securing means for the latter visible only at said meeting faces when the pieces are separated, with all the headed projections separable from their meeting face adapted to enter the said enlarged openings simultaneously by the movement of one meeting face at right angles to the other and thereby bringing all the slots and projections into vertical alinement, and drawing the two meeting faces together uniformly throughout their length by the further movement of a meeting face longitudinally of the other and thereby entirely hiding all parts of the securing means and fastenings therefor from all sides.

2. In a new and useful joint of the character described, the combination with a pair of pieces to be united, of a pair of long meeting faces between the same, with a series of short segregated slots placed one above another in a meeting face and a series of headed projections separable from their meeting face and placed one above another and mating said slots, with all the slots and headed projections placed intermediate of the side edges of the meeting faces, enlarged openings for the slots, with a front wall for each side of each of the slots left integral with the wood of the piece and extending rearwardly toward the seating end of the slot, a rear wall for each slot left integral with the wood of the piece, with the slots and openings cut directly into the wood of the piece and entirely surrounded by the wood left integral with the piece at the sides, ends and rear of the slots and openings, said slots, openings and headed projections and securing means for the latter visible only at said meeting faces when the pieces are separated, beading for each of said pieces extending longitudinally thereof, with the receding face of said beading next the meeting face of each piece receding from the outer face of the piece toward said meeting face and with the receding faces of beads of both pieces uniting and forming the depression between two beads when the pieces are united for obscuring the meeting line between the pieces when united, with all the headed projections separable from their meeting face adapted to enter the said enlarged openings simultaneously by the movement of one meeting face at right angles to the other and thereby bringing all the slots and projections into vertical alinement, and drawing the two meeting faces together uniformly throughout their length by the further movement of a meeting face longitudinally of the other and thereby entirely hiding all parts of the securing means and fastenings therefor from all sides.

706,071. SPOKE-TIGHTENER. VALCOURE J. LA BAUVE, Houston, Tex. Filed Nov. 23, 1901. Serial No. 83,416. (No model.)

Claim.—1. A spoke-tightener consisting of two interlocking washer-plates, each essentially U-shaped, one of said plates being provided with

angular shoulders at its ends and a boss intermediate its ends, the other plate having an angular boss at its center, the ends being devoid of shoulders, substantially as described.

2. A spoke-tightening device comprising the interlocking washer-plates C and C', the plates C having a central angular boss C^4, the plates C' having the end shoulders C^3 and the central boss C^5, said shoulders and boss extending in the same direction for the purpose described.

706,072. LOOM FOR WEAVING TUFTED PILE FABRICS.

CHARLES H. LANDENBERGER, Philadelphia, Pa. Filed Mar. 2, 1899. Renewed Jan. 10, 1902. Serial No. 89,216. (No model.)

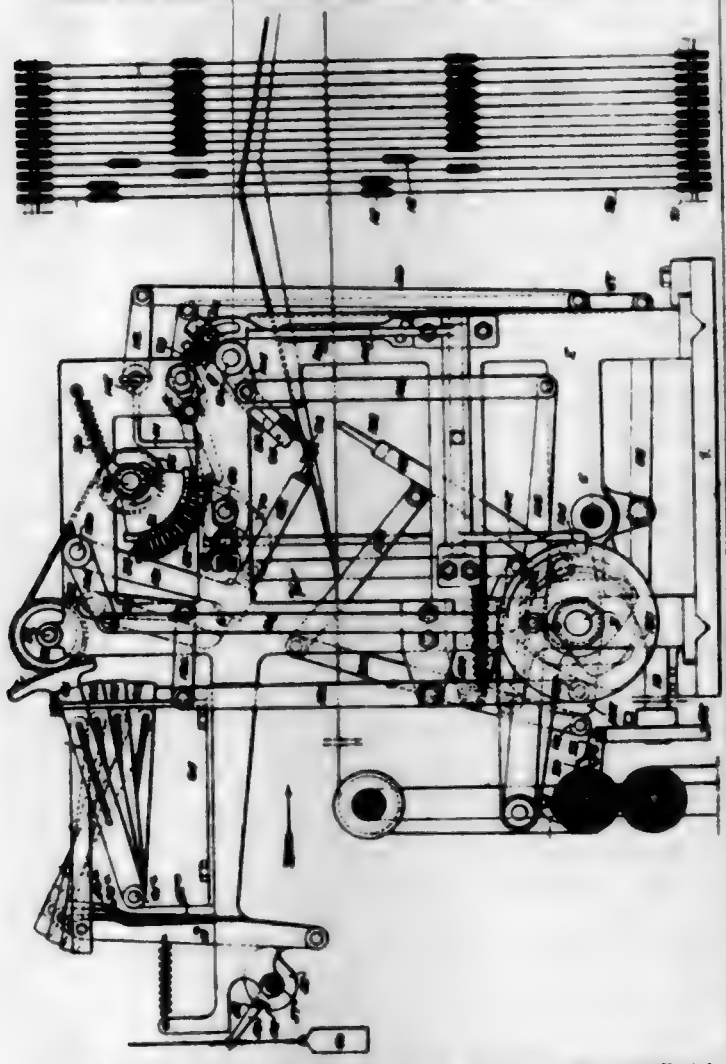

Claim.—1. The combination, in a loom for weaving tufted pile fabrics, of knot-forming mechanism, means for supplying yarn thereto, and provision for lifting pairs of ground warp-threads above the general level of said warp for the reception of the knots, substantially as specified.

2. The combination, in a loom for weaving tufted pile fabrics, of knot-forming mechanism, means for supplying yarn thereto, provision for lifting pairs of ground warp-threads above the general level of the warp for the reception of the knots, and mechanism for intermittently altering the lateral relations of the knot-forming devices and the ground-warp, substantially as specified.

3. The combination, in a loom for weaving tufted pile fabrics, of knot-forming mechanism, means for supplying yarn thereto, and provision for lifting above the general level of the ground-warp, first one and then the other of a pair of warp-threads intended to receive the knot, substantially as specified.

4. The combination, in a loom for weaving tufted pile fabrics, of knot-forming mechanism, means for supplying yarn thereto, provision for lifting pairs of ground warp-threads above the general level of the warp for the reception of the knots, and mechanism for shedding the warp for the introduction of one or more filling-threads after the formation of a row of knots across the warp, substantially as specified.

5. The combination, in a loom for weaving tufted pile fabrics, of knot-forming mechanism, means for supplying yarn thereto, provision for lifting pairs of ground warp-threads above the general level of the warp for the reception of the knots, and a beating-up comb acting upon said knots after they have been engaged with the warp, substantially as specified.

6. The combination, in a loom for weaving tufted pile fabrics, of knot-forming mechanism comprising a pair of looping-nippers and a pair of knotting-nippers, means for supplying yarn to the looping-nippers, provision for lifting above the level of the warp, first one and then the other of a pair of threads intended to receive the knot, mechanism for intermittently altering the lateral relations of the knot-forming mechanism and the ground-warp, means for shedding the warp for the introduction of one or more binding-wefts, after the formation of a row of knots, and beating-up devices, substantially as specified.

7. The combination in yarn-selecting mechanism for looms, of a series of levers, and a series of separators, said parts presenting to each other wedge bearings which increase in angle in geometrical progression throughout the series, the separators being interposed between successive levers of the set and each having a sliding bearing upon each of the levers between which it is interposed, with means for moving the members of one of said series of elements in respect to those of the other series, substantially as specified.

8. The combination in yarn-selecting mechanism for looms, of a movable yarn-controller, a series of levers having slots therein the slots of the different levers being at different angles, separators engaging with slots of adjoining levers, means for operating said separators, and provision for connecting the first lever of the series to the movable yarn-controller, substantially as specified.

9. The combination in yarn-selecting mechanism for looms, of a movable yarn-controller, a series of levers having slots at different angles, a series of bars having pins engaging with the slots of adjoining levers, provision for connecting the first lever of the series to the movable yarn-controller, and mechanism for reciprocating said bars, substantially as specified.

10. The combination in yarn-selecting devices for looms, of a series of levers, and a series of interposed separators presenting to each other bearings which increase in angle in geometrical progression throughout the series, and mechanism for moving the members of one of said series of elements in respect to those of the other, said mechanism having as elements slotted cams, and arms having projections playing in the slots of said cams whereby said arms may have lost motion, substantially as specified.

11. The combination in a loom for weaving tufted pile fabrics, of a yarn-controller, a pair of draft-nippers, looping-nippers comprising two independent nipping devices laterally separated from each other, provision for opening and closing each nipping device, and for moving the draft-nippers from and toward the yarn-controller, a pair of shears, and means for operating said shears so as to sever the yarn drawn from the yarn-controller by the draft-nippers, substantially as specified.

12. The combination in a loom for weaving tufted pile fabrics, of a yarn-controller, a pair of draft-nippers, provision for opening and closing the same and for moving them toward and from the yarn-controller, a pair of shears for severing the yarn drawn out by the draft-nippers, means for operating said shears, a pair of looping-nippers, comprising two independent nipping devices laterally separated from each other and means for opening and closing said nipping devices and for raising and lowering the same whereby the draft-nippers can draw yarn between the open jaws of the looping-nippers when the latter are raised, and said jaws can then be closed upon the yarn and the nippers caused to descend, substantially as specified.

13. The combination in a loom for weaving tufted pile fabrics, of a pair of looping-nippers, consisting of independent nipping devices laterally separated from each other, means for opening and closing the jaws of said nippers, provision for raising and lowering the nippers, and mechanism for causing each of the nipping devices of the nippers to turn as they are raised and lowered whereby they are caused to wrap a loop of pile-yarn around a pair of ground warp-threads, substantially as specified.

14. The combination in a loom for weaving tufted pile fabrics, of a pair of nippers for laying a loop of yarn around a pair of ground-warp threads, said pair of nippers comprising independent nipping devices laterally separated from each other with knotting-nippers and means for operating the same whereby they are caused to pass between the threads of the ground-warp while closed, are then expanded so as to embrace the loop of pile-yarn, are then closed upon said loop, and then raised so as to draw the free ends of the loop between the ground pile-threads, substantially as specified.

15. The combination in a loom for weaving tufted pile fabrics, of a swinging arm carrying a pair of shafts geared together and each having a head with nippers thereon, a rack engaging with a pinion on one of said shafts, and means for swinging said arm and reciprocating the rack, substantially as specified.

16. The combination in a loom for weaving tufted pile fabrics, of knot-forming devices, a shaft having mechanism for operating said de-

vices, a movable frame on which said knot-forming devices are mounted, a shaft provided with means for imparting movement to said frame, and means for imparting intermittent movement of partial rotation to said shaft on each rotation of the shaft which operates the knot-forming devices, substantially as specified.

17. The combination in a loom for weaving tufted pile fabrics, of knot-forming devices, a shaft having mechanism for operating said devices, take-up mechanism for the finished fabric, a shaft having means for operating said take-up mechanism, and provision for imparting movements of partial rotation to said shaft on each rotation of the shaft which operates the knot-forming devices, substantially as specified.

18. The combination in a loom for weaving tufted pile fabrics, of heddles and take-up mechanism for controlling a ground-warp, a series of sets of knot-forming devices disposed at intervals throughout the lateral extent of said warp, provision for operating said sets of knot-forming devices, and means whereby the lateral relations of the knot-forming devices and the ground-warp are changed by a succession of intermittent movements until a space of ground-warp has been covered equal to the distance between adjoining knot-forming devices of the series, substantially as specified.

706,078. MACHINE FOR CUTTING OR SHAVING ICE. PIERCE H. LIPPINCOTT, Philadelphia, Pa., assignor to American Soda Fountain Company, Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 8, 1901. Serial No. 71,311. (No model.)

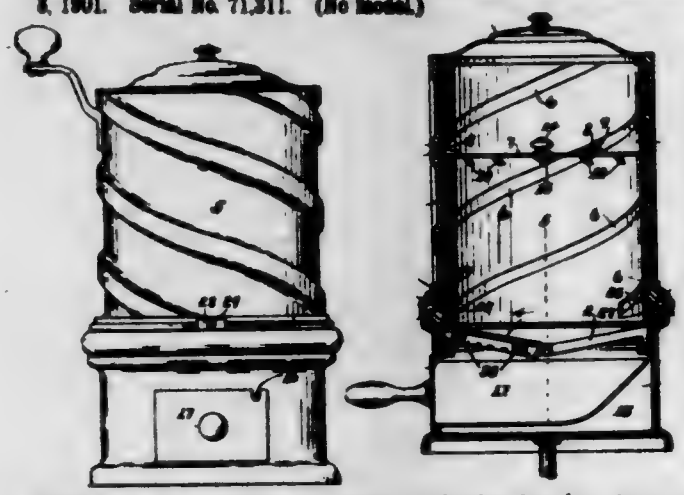

Claim.—1. In a machine for cutting or shaving ice, &c., the combination of the cutting-blades, the rotatable receptacle mounted above said blades, and having the screw-threads, together with the follower within said receptacle, having parts adapted to engage said threads, and having also the points or projections on its under side, all constructed and adapted to operate substantially as and for the purpose set forth.

2. In a machine for cutting or shaving ice, &c., the combination of the base, the non-rotatable plate, the cutting-blades secured thereto, the rotatable receptacle mounted on said base and having the screw-threads in its inner periphery, and the follower within said receptacle having parts or projections adapted to engage said threads, and having also the points or projections on its under side substantially as and for the purpose set forth.

3. In a machine for cutting or shaving ice, &c., the combination of the base, the fixed cutting-blades mounted therein, the rotatable receptacle above said blades, having the screw-thread grooves in its inner periphery, and the follower within said receptacle having the rollers adapted to enter said grooves and having also the points or projections on its under side, substantially as and for the purpose set forth.

4. In a machine for cutting or shaving ice, &c., the combination of the base, the removable non-rotatable plate, the blades secured thereto, the rotatable receptacle supported above said plate upon balls in a raceway between it and receptacle and a flange of said base, the screw-threads in said receptacle, and the follower within the latter having parts adapted to engage said threads and having also the points or projections on its under side, substantially as and for the purpose set forth.

706,074. SCUTTLE, BUCKET, &c. EDWARD M. LOCKWOOD, Jr., Darby, Pa. Filed Nov. 13, 1901. Serial No. 82,078. (No model.)

Claim.—1. A scuttle or bucket having a body and base united so as to form an annular groove or recess opening vertically upward and unobstructed from above, combined with a replaceable bottom having a downwardly-extending annular flange of smaller diameter than the body part detachably clamped in position in the annular groove and located at the bottom of the body portion and adapted to be pressed into or out of the annular groove without separating the body and base portions.

2. In a scuttle or bucket, a body portion and a base portion permanently secured together and provided at their juncture with an annular recess upon the inside opening vertically upward and of less diameter than the smallest diameter of the body portion, in combination with the replaceable bottom fitting into the opening in the bottom of body portion and having its perimeter downwardly flanged and adapted to fit into the annular recess.

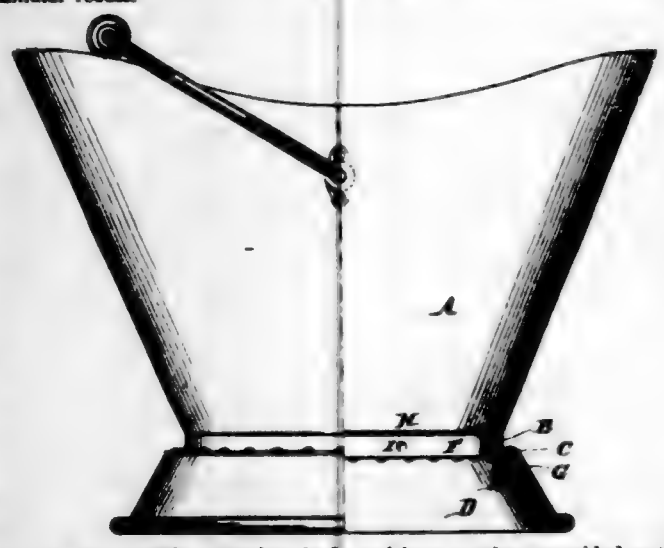

3. In a scuttle or bucket, body and base portions provided at their junction with an annular recess of less diameter than the smallest inside of the body portion and opening upward, in combination with a replaceable bottom of smaller diameter than the smallest diameter of the body portion fitted within the body portion and having its perimeter downwardly flanged and extended into the annular recess and held in place by a suitable locking means comprising a hole in one of the parts and a projection on the other snapping into the hole.

4. In a scuttle or bucket the body portion having at its smallest diameter a vertical portion B and having secured to it below said portion B a part E terminating in an internal upward annular flange F forming the deep annular groove or recess L between it and the portion B of the body and of less diameter than the smallest diameter of the body, in combination with the bottom H of less diameter than the smallest diameter of the part B of the body and having a downwardly-extending annular flange K fitted into the annular recess.

5. In a scuttle or bucket, the body portion having at the bottom a base portion permanently riveted to the body portion and having its top provided with an upwardly-extending internal annular flange F forming the deep annular groove or recess L inside of the line of rivets, in combination with the bottom H of less diameter than the smallest diameter of the body portion and having a downwardly-extending annular flange K adapted to fit into the annular recess.

6. In a scuttle or bucket, the body and base portions permanently secured together and having their juncture formed with a vertical annular flange on its interior, in combination with a bottom of less diameter than the diameter of the body portion having a downwardly-extending flange at its perimeter adapted to fit tightly over the annular flange and held in place independently of the means of uniting the body and base portions.

706,075. PROCESS OF CLARIFYING LIQUIDS. HANS LUDERER, Frankfort-on-the-Main, Germany, assignor to Ludwig Wilhelm Gans, Frankfort-on-the-Main, Germany. Filed Jan. 21, 1902. Serial No. 90,702. (No specimens.)

Claim.—1. The process of clarifying solutions by adding thereto a solution of gelatin and an oxidizing agent by which the gelatin is coagulated.

2. The process of clarifying solutions by adding thereto a solution of gelatin and an oxidizing agent by which the gelatin is coagulated while the solution is subjected to heat.

706,076. FLEXIBLE CONDUIT OR TUBE. GEORGE A. LOVE, Brooklyn, N. Y., assignor of one-half to Thomas E. Quinn, New York, N. Y. Filed Nov. 20, 1901. Serial No. 83,081. (No model.)

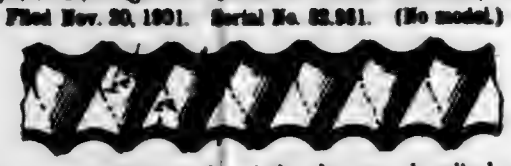

Claim.—1. A conduit or tube of the character described comprising a spirally-wound strip having grooves or depressions on opposite sides of the central or median line, the groove or depression of one convolution on one side of the strip lapping and interlocking with the groove or depression on the opposite side of the strip of the next convolution, substantially as described.

2. A conduit or tube of the character described comprising a spi-

rally-wound strip having longitudinally-extending grooves or depressions, the groove or depression on one side of the strip lapping and interlocking with the groove or depression on the opposite side of the strip, substantially as described.

3. A conduit or tube of the character described comprising a spirally-wound strip having similarly-disposed grooves or depressions on opposite sides of the central or median line, the groove or depression on one side of the strip lapping and interlocking with a similar groove or depression on the opposite side of the strip, substantially as described.

4. A conduit or tube of the character described comprising a spirally-wound strip having longitudinally-disposed grooves or depressions on opposite sides of the central or median line, said grooves or depressions having their concave surfaces facing outwardly, the convex surface of one side of the strip meshing with the concave surface of the opposite side of the strip, substantially as described.

708,077. ROTARY ENGINE. WILLIAM J. MASON, Chicago, Ill., assignor of one-third to Charles E. Wyman, Chicago, Ill. Filed Sept. 3, 1901. Serial No. 73,126. (No model.)

Claim.—1. In a rotary engine, a rotatable cylinder having pistons, means to operate the pistons, a stationary drum within the cylinder having inlet and exhaust passages, and a radially-slidable abutment seated in the drum and adapted to be forced by steam-pressure into contact with the cylinder.

2. In a rotary engine, a rotatable cylinder, a stationary drum within the cylinder, inlet and exhaust ports, suitable pistons and means to operate the same, and a wedge-shaped radially-slidable abutment loosely seated in a recess in the drum and adapted to be forced by steam-pressure into contact with the cylinder.

3. In a rotary engine, a rotatable cylinder, a stationary drum within the cylinder having a radially-slidable abutment projecting into contact with the cylinder pistons carried by the cylinder and means to operate the same, and inlet and exhaust passages in the drum.

4. In a rotary engine, in combination with a rotatable cylinder having grooves therein to receive pistons, and a stationary drum within the cylinder having inlet and exhaust passages, of a radially-movable abutment on the drum in contact with the cylinder, the contact-face of the abutment being of greater width, circumferentially, than the said grooves.

5. In a rotary engine, a rotatable cylinder, a stationary drum in the same, a radially-movable abutment carried by the drum, radially-slidable pistons carried by the cylinder and adapted to retreat into recesses therein, arms to operate the pistons having rock-shafts extending without the cylinder, levers connected to the shafts and cam mechanism to actuate the levers.

6. In a rotary engine, a rotatable cylinder a stationary drum within the same, a radially-movable abutment carried by the drum, radially-slidable pistons carried by the cylinder and adapted to retreat into recesses therein, arms to operate the pistons having rock-shafts extending without the cylinder, levers connected to the shafts, and bowed arms connected to the levers, said arms having weighted ends diametrically opposite the pistons, a face-plate having a cam-groove and pins running therein connected to the levers.

706,078. CUTTER-HEAD. FRANCIS O. MECHLIN, Washington Court-House, Ohio. Original application filed Aug. 30, 1901, Serial No. 73,841. Divided and this application filed Jan. 10, 1902. (No model.)

Claim.—1. A cutter-head comprising a circular body having a convex face or bottom, and a substantial strengthening boss or hub on its opposite face, and radial slots extending from the periphery of said body to the periphery of said boss and continuing thence to the center in the form of undercut recesses beneath said boss, together with knives fitted in said slots so that their inner ends in effect meet; substantially as described.

2. A cutter-head comprising a circular body having a convex face or bottom, and a substantial strengthening boss or hub on its opposite face, and radial slots extending from the periphery of said body to the periphery of said boss and continuing thence to the center in the form of undercut recesses beneath said boss, together with knives having slotted shanks adjustably secured in said slots and inner portions of reduced width extending inward in said undercut recesses to a point at the center; substantially as described.

706,079. MEANS FOR CUTTING SADDLE-SEAT BOTTOMS FOR CHAIRS. FRANCIS O. MECHLIN, Washington Court-House, Ohio. Filed Aug. 30, 1901. Serial No. 73,841. (No model.)

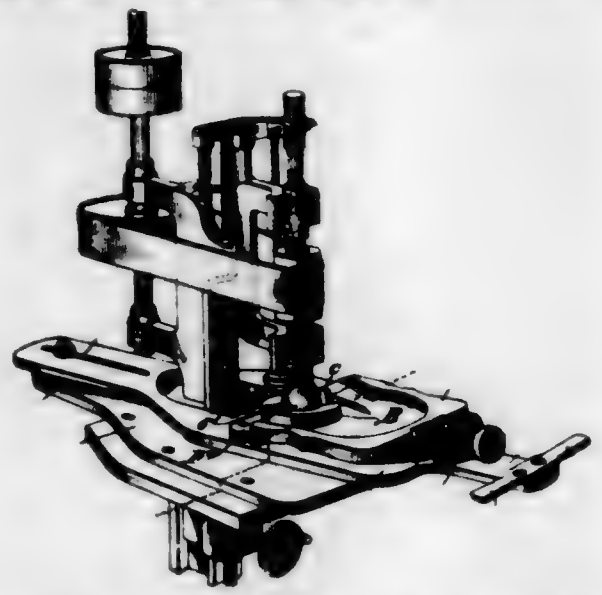

Claim.—1. In combination with the support and guide-plate having substantially the form of a lawn-tennis racket, the superposed sliding table having a reduced longitudinally-slotted portion pivoted to the reduced portion of said guide-plate by a pivot-bolt passing through said slot, and having an approximately lawn-tennis-racket-shaped slot on its under side, a stud on said guide-plate working in said slot for controlling the forward-and-back and sidewise movements of the table, and a clamping device for holding the work in a fixed position in engagement with the cutter-head; substantially as described.

2. A work-supporting sliding table comprising a fixed member and a movable member having rearward extensions pivotally connected together at one side of the machine-standard, the movable member being longitudinally slotted to receive the pivot-bolt, a substantially lawn-tennis-racket-shaped guide slot or groove in the surface of one member and a projection on the confronting surface of the other member working in said slot or groove, together with means on the reverse side of the movable or superposed member for holding the work in a fixed position for the action of the cutter-head; substantially as described.

3. In a machine of the character described, a work-supporting longitudinally-slidable and sidewise-movable table comprising a base-plate having an extension rearward of the machine-standard, a movable plate or table proper having a rearward extension pivotally connected with the extension of said base-plate and longitudinally slotted to receive the pivot-bolt, together with means for limiting and controlling the forward-and-back and sidewise movements of the table, consisting of a slot or groove on one of said plates engaged by a stud or projection on the other, and means carried by the movable member for holding the form or work to be cut in a fixed position thereon; substantially as described.

706,080. BUCKLE. JAMES E. MITCHELL, Lowell, Mass., assignor of three-fourths to George B. Mevis, George F. Stiles, and Charles Fredericks, Lowell, Mass. Filed Mar. 19, 1901. Serial No. 51,821. (No model.)

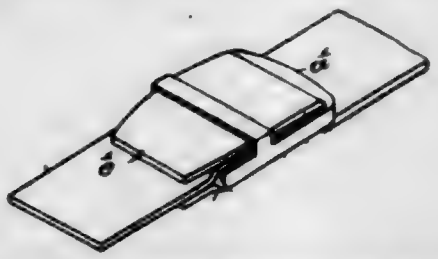

Claim.—1. In a buckle, the main frame, having the bracing cross-bar or keeper at the outside, the guide rods or wires adjacent to the side bars of the frame, the skeleton-form binder-plate engaging said guide-

rods, lying in the plane of the main frame, and having the opening adapted for the insertion of a finger for convenient operation, and the compression-springs between main frame and binder-plate, and surrounding said guide-rods, substantially as specified.

2. In a buckle, the main frame having the bracing cross-bar or keeper at the outside, the guide rods or wires adjacent to the side bars of the frame, the skeleton-form binder-plate engaging said guide-rods, and lying entirely within the plane of the buckle, the compression-springs between main frame and binder-plate, and surrounding said guide-rods, the front bars of binder-plate and buckle-frame being adapted to slide upon one another and the forward edge of the front bar of the binder-plate, and the rear edge of the front bar of the main frame, being thinned for better locking effect, substantially as specified.

706,081. **FRICTION-CLUTCH.** Louis P. Mooers, Cleveland, Ohio, assignor to the Peerless Manufacturing Company, Cleveland, Ohio, a Corporation of Ohio. Filed Oct. 30, 1901. Serial No. 80,426. (No model.)

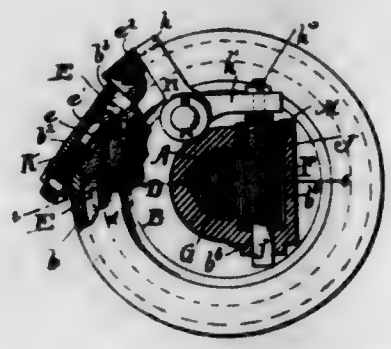

Claim.—1. In a friction-clutch, the combination of two independently-rotatable members mounted upon the same axis and having respectively cylindrical flanges of different diameters, of which the smaller flange lies within the larger flange, a split clamping-ring in the annular space between said flanges and lying normally out of contact with the smaller flange, means preventing relative movement of the outer flange and one end of said ring, an external shoulder on the other end of said ring, a bent lever pivoted to the side of the member of which the larger flange is a part on a pivot parallel with the axis of said member, said lever having one arm which extends outward from its pivot and is bent over the top of the flange and into contact with the external shoulder on the ring, and mechanism engaging with the other end of said lever whereby to rock it, substantially as and for the purpose specified.

2. In a friction-clutch, the combination of two independently-rotatable members mounted upon the same axis having respectively cylindrical flanges of different diameters of which the smaller flange lies within the larger flange, a split clamping-ring in the annular space between said flanges and lying normally out of contact with the smaller flange, means preventing relative movement of the outer flange and one end of the ring, an external shoulder on the other end of said ring, a bent lever pivoted to the member of which the larger flange is a part having one arm which extends outward and over the top of the flange and into contact with the external shoulder on the ring, a nut rotatively mounted in the member carrying the larger flange, means preventing the endwise movement of said nut, a screw upon which the nut is fitted and which is adapted to engage with one arm of said bent lever, means preventing the rotation of said screw but permitting its endwise movement, and mechanism for rotating said nut, substantially as and for the purpose specified.

3. In a friction-clutch, the combination of a hollow shaft, a member B secured thereto, and having a cylindrical flange, a member D rotatively mounted upon said shaft and having a cylindrical flange which projects into the flange of the member B, a split clamping-ring lying in the annular space between said flanges and having one end connected with the member B and having near its other end an external shoulder a bent lever pivoted to the member B having one arm adapted to engage with said shoulder, a nut rotatively mounted in a recess formed partly in the member B and partly in the hollow shaft and intersecting the hole through said shaft, said nut having external gear-teeth, means preventing the endwise movement of said nut, a screw fitted to said nut and having a squared end which enters and is movable in a square hole in the bottom of said recess, the opposite end of said screw being adapted to engage with an arm of said bent lever, and a rack movable through the hollow shaft and engaging with said nut, substantially as and for the purpose specified.

4. In a friction-clutch, the combination of a rotatable member B having a cylindrical flange, an independently-rotatable member D mounted in the same axial line and having a cylindrical flange of smaller diameter which lies within the flange of the member B, a split clamping-ring lying in the annular space between said flanges and having at one end an external groove with a shoulder at its end, a screw screwing through the flange of the member B and lying partly in said groove and abutting against said shoulder on the ring, and mechanism operating upon the other end of the split ring to reduce its diameter, substantially as and for the purpose specified.

706,082. **AUTOMATIC POLE-REVERSER.** Morris Moskowitz, Brooklyn, N. Y., assignor to James H. Young, trustee, New York, N. Y. Filed Aug. 27, 1901. Serial No. 73,441. (No model.)

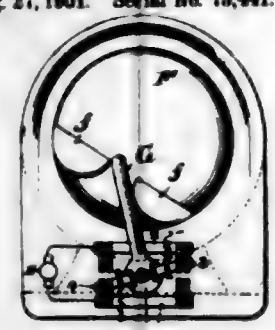

Claim.—1. In combination with an electric generator and its armature, means for automatically reversing the polarity of the generator, consisting of a friction pulley and brake operated by the armature-shaft of said generator, a centrifugal governor connected thereto, and a switch controlled by the movement of said pulley, substantially as set forth.

2. In combination with a shaft subject to reversal of rotation, an automatic pole-changer controlled thereby and combining frictional means for actuating it in a direction corresponding with the direction of rotation of said shaft, and means for reducing the friction when a given speed limit is reached.

3. In combination with a shaft subject to reversal of rotation, an automatic pole-changer controlled thereby and combining frictional means for actuating it in a direction corresponding with the direction of rotation of said shaft, and centrifugal means for reducing the friction as the speed increases.

4. In combination with a shaft subject to reversal of rotation, an automatic pole-changer controlled thereby and combining frictional means for actuating it in a direction corresponding with the direction of rotation of said shaft, having a spring acting to produce the friction and a centrifugal means for counteracting the spring as the speed increases.

706,088. **AUTOMATIC SWITCH.** Morris Moskowitz, Brooklyn, N. Y., assignor to James H. Young, trustee, New York, N. Y. Filed Sept. 28, 1901. Serial No. 76,842. (No model.)

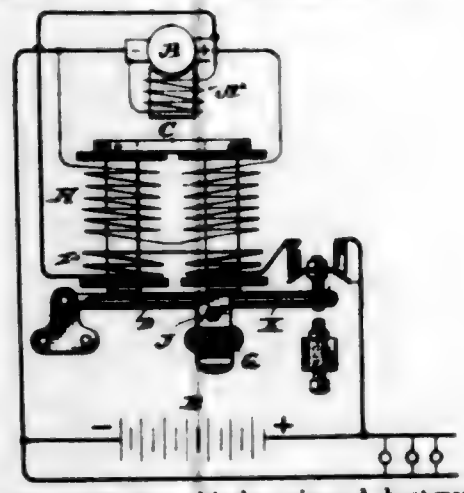

Claim.—The combination with the series and shunt wound electromagnet of a pivoted switch-arm actuated by the said electromagnet and provided with guides for a weight, and a weight fitted to said guides and sliding thereon and having integral with it two clamping-jaws and a clamp-screw by which it may be fixed in position thereon.

706,084. **AUTOMATIC SWITCH.** Morris Moskowitz, Brooklyn, N. Y., assignor to James H. Young, trustee, New York, N. Y. Filed Sept. 28, 1901. Serial No. 76,843. (No model.)

Claim.—1. In combination with an electrical switch and as a means for actuating the switch when the direction of rotation of a rotary part reverses, a rotary mechanism, and connections for positively, in contradistinction to frictionally, engaging and actuating the switch in a direction corresponding to the direction of rotation, and means for retracting the engaging part when a predetermined speed of rotation is exceeded.

2. In combination with an electrical switch and as a means for actuating the switch when the direction of rotation of a rotary body reverses,

a rotary part suitably mounted and subject to such reversals of rotation, and a retractable engaging device movably mounted upon the said rotary part for engaging and actuating the switch in either direction, the said retractable engaging device being provided with a weight for centrifugally retracting it.

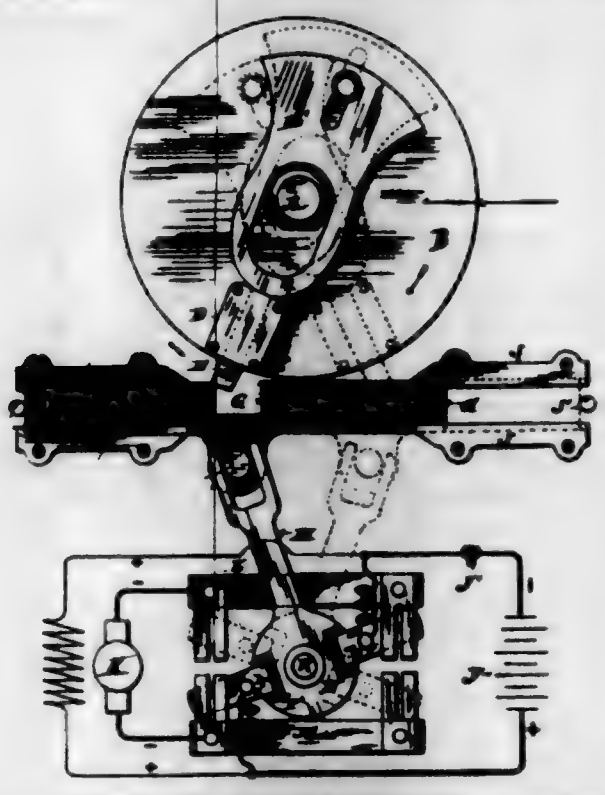

3. In combination with an electrical switch and as a means for actuating the switch when the direction of rotation of a rotary body reverses, a rotary part suitably mounted and subject to such reversals of rotation, a dog provided with a centrifugal retracting device and suitably mounted in guides upon the said rotary part, and a slide-bar connected to actuate the switch and situate in position to be engaged and actuated by the said dog in either direction, substantially as set forth.

706,085. ELECTRICAL SYSTEM FOR LIGHTING AND POWER. Moses Moskowitz, Brooklyn, N. Y., assignor to James H. Young, trustee, New York, N. Y. Filed Sept. 28, 1901. Serial No. 76,844. (No model.)

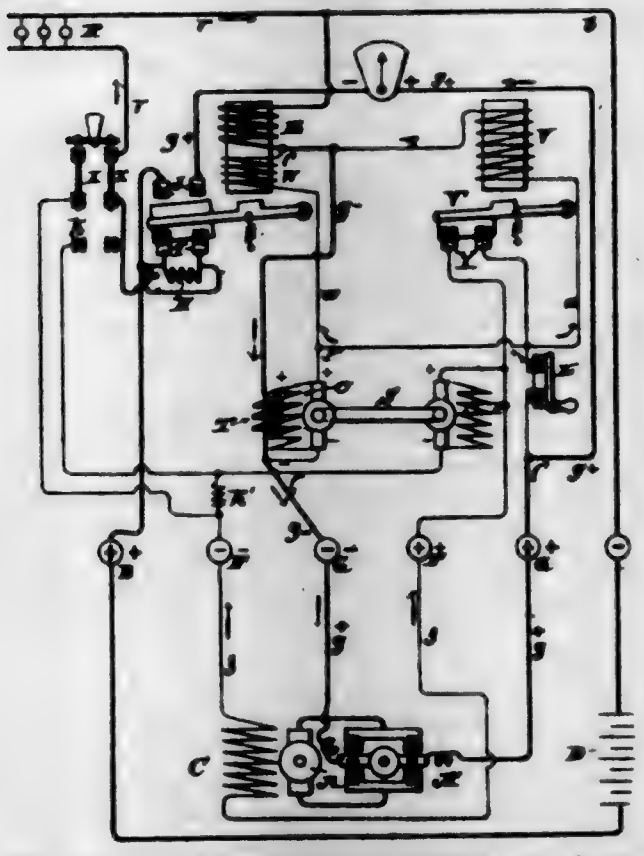

Claim.—1. As an improvement in an electrical system having a work-circuit, a storage battery with connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of a motor-dynamo connected to derive its motor-current from the generator and having connections for exciting the field-coils of the generator, and having a regulating motor field-coil connected to strengthen the motor-field when the current from the main generator increases.

2. As an improvement in an electrical system having a work-circuit, a storage battery with connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of a motor-dynamo connected to derive its armature-current from the generator and having connections for exciting the field-coils of the generator, and having means for changing its working speed oppositely to the changes of speed of the generator.

3. As an improvement in an electrical system having a work-circuit, a storage battery with connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of a motor-dynamo connected to derive its motor-current from the generator and having connections for exciting the field-coils of the generator, means for regulating the strength of field of the generator, a circuit maker and breaker for the connection from the generator for supplying the work-circuit and battery, and automatic means for closing said circuit-maker when the desired electromotive force of the generator is attained.

4. As an improvement in an electrical system having a work-circuit, a storage battery with connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of a motor-dynamo connected to derive its motor-current from the generator and having connections for exciting the field-coils of the generator, means for regulating the strength of field of the generator, a circuit maker and breaker for the connection from the generator for supplying the work-circuit and battery, and automatic means for closing said circuit-maker when the desired electromotive force of the generator is attained, and means constructed therewith for introducing a compensating resistance into the work-circuit.

5. As an improvement in an electrical system having a work-circuit, a storage battery having connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of self-exciting connections for the generator, automatic means for breaking the last of said connections when a predetermined speed is exceeded, means for separately exciting the generator, and means for regulating such excitation as the speed varies.

6. As an improvement in an electrical system having a work-circuit a storage battery having connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of self-exciting connections for the generator, automatic means for breaking the last said connections when a predetermined speed is exceeded, means for separately exciting the generator, and means for closing the said connections for supplying the work-circuit and charging the battery, when a certain speed has been reached.

7. As an improvement in an electrical system having a work-circuit, a storage battery having connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of self-exciting connections for the generator, automatic means for breaking the last said connections when a predetermined speed is exceeded, a suitably-energized motor-dynamo connected to excite the field of the generator, and means for regulating the excitation as the speed of the generator varies.

8. As an improvement in an electrical system having a work-circuit, a storage battery having connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of self-exciting connections for the generator, automatic means for breaking the last said connections when a predetermined speed is exceeded, a suitably-energized motor-dynamo connected to excite the field of the generator, and provided with a motor field-coil connected to strengthen the motor-field as the speed of the main generator increases.

9. As an improvement in an electrical system having a work-circuit, a storage battery having connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of self-exciting connections for the generator, automatic means for breaking the last said connections when a predetermined speed is exceeded, a suitably-energized motor-dynamo connected to excite the field of the generator, and provided with means for changing its working speed oppositely to changes in the speed of the generator.

10. As an improvement in an electrical system having a work-circuit,

a storage battery having connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of regulating means for controlling the electromotive force of the generator, a resistance normally included in the generator field-circuit, means for making and breaking the work-circuit, and means for cutting out or short-circuiting the said resistance when the work-circuit is open to increase the electromotive force for charging the battery in excess of that normally required on the work-circuit.

706,086. BRAKE-CONTROLLER. PAUL MILLER, Newark, N. J., assignor to Sprague Electric Company, New York, N. Y., a Corporation of New Jersey. Filed Dec. 4, 1901. Serial No. 84,621. (No model.)

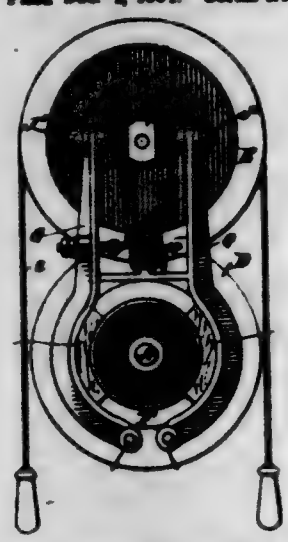

Claim.—1. A brake mechanism comprising a motor-driven shaft, a brake-pulley, spring-actuated brake-arms, adjustable followers carried thereby, a controller-shaft and cam thereon adapted to release said brakes when power is applied and vice versa.

2. A brake mechanism comprising a motor-shaft, a self-acting brake therefor, a controller for said motor, a cam carried by said controller and adjustable means carried by said brake coacting with said cam so that when said motor is started said brake is released and when the power is turned off said brake is applied.

3. A controlling mechanism for rotatable shafts comprising, a motor-driven shaft, a brake-wheel for said shaft, a controller for said shaft, a cam carried by said controller, a brake-arm pivoted at one end and carrying a brake-shoe adapted to coact with said brake-wheel, means for normally holding said brake-shoe in contact with said brake-wheel, and a stop carried by said brake-arm adapted to coact with said cam.

4. A controlling mechanism for a motor-driven shaft comprising a motor-driven shaft, a brake-wheel carried thereby, a controller for said motor-shaft, a cam carried by said controller, brake-arms normally drawn into engagement with said brake-wheel by a spiral spring connecting the two arms together, and means for operating said controller.

706,087. CENTRIFUGAL SEPARATOR. HERBERT MCCORMACK, Westchester, Pa. Filed July 14, 1900. Serial No. 23,567. (No model.)

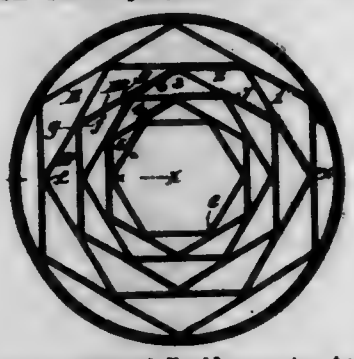

Claim.—1. In a centrifugal liquid-separator, two or more vertical walled partitions concentrically arranged therein in contact with each other at intervals to form a circular series of separating compartments between each of the said partitions and the contacting inner or outer one, each of said compartments having skim-milk openings in two of its walls and also cream-openings in two of its walls and said openings providing jointly separate outward and inward flow passages through adjoining inner and outer compartments, substantially as described.

2. In a centrifugal liquid-separator, two or more vertical walled partitions of angular cross-section concentrically arranged in contact with each other at intervals to form a circular series of separating compartments between them, each of said compartments having skim-milk openings in two of its walls and also cream-openings in two of its walls and said openings providing jointly separate outward and inward flow passages through adjoining inner and outer compartments, substantially as described.

706,088. SHAFT-MOUNTING. HERBERT MCCORMACK, Westchester, Pa. Filed July 26, 1901. Serial No. 69,817. (No model.)

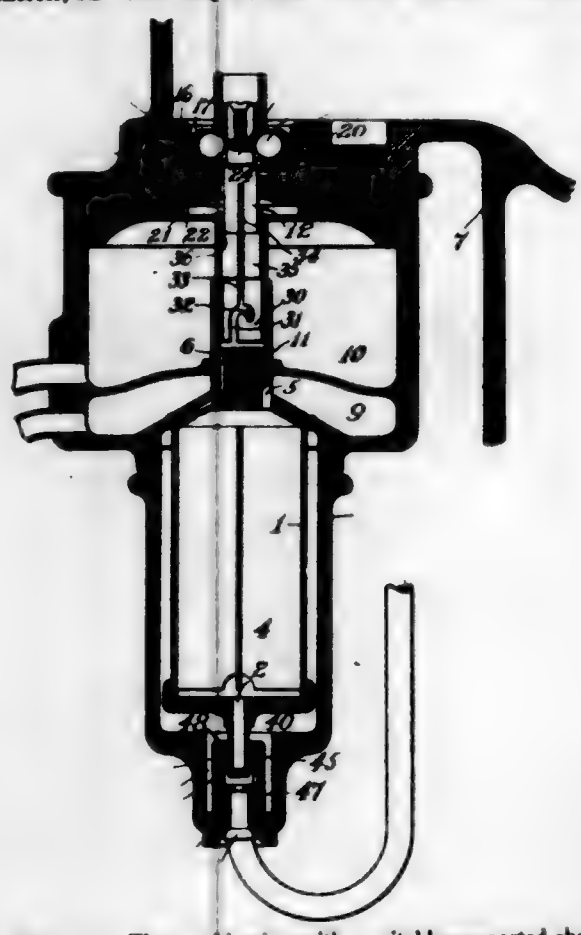

Claim.—1. The combination with a suitably-supported shaft of an independently-supported steadying device therefor inclosing the shaft and movable bodily therewith in a lateral direction and means independent of the weight of the device for providing frictional resistance to such movement.

2. The combination with a suitably-supported shaft of a steadying device therefor inclosing the shaft, a seat on which said device is adapted to be moved bodily in a lateral direction by swinging of the shaft, and means for pressing said device against its seat independently of the weight of the device.

3. The combination with a suitably-supported shaft of a steadying device therefor inclosing the shaft, a seat on which said device is adapted to be moved bodily in a lateral direction by swinging of the shaft, and adjustable means for pressing said device against its seat to provide a regulated frictional resistance to such movement independently of the weight of the device.

4. The combination with a suitably-supported rotary shaft of a fixed sleeve loosely inclosing the same and provided with an interior flange, a steadying device loosely located in the annular space between the shaft and the inclosing sleeve, and a spring to press the device against said flange to provide frictional resistance to lateral movement thereof.

5. The combination with a suitably-supported shaft, of a laterally-movable steadying device therefor inclosing the same, a fixed ring or sleeve loosely inclosing the shaft and forming a seat for said steadying device, and a spring or springs for pressing the latter against said seat.

6. The combination with a suitably-supported shaft, of a laterally-movable steadying device therefor inclosing the same, a fixed seat for said movable steadying device, and means for pressing the latter against said seat and for yieldingly pressing the same laterally toward its normal central position.

7. The combination with a shaft, a supporting-bearing therefor and a fixed ring or sleeve loosely surrounding the shaft and forming a bearing-flange, of an independently-supported steadying device comprising a band-ring inclosing the shaft and a conical-seat bearing-ring, and a spring-support for said bearing-ring arranged to press the band-ring against said flange.

8. The combination with a shaft, a supporting-bearing therefor and a fixed sleeve loosely surrounding the shaft and formed with an interior flange, of an independently-supported steadying device comprising a band-ring inclosing the shaft and a conical-seat bearing-ring, and a spring-support for said bearing-ring arranged to press the band-ring against said

flange, said sand-ring and bearing-ring having jointly a limited lateral movement with the shaft.

9. The combination with a shaft and a suspension-bearing therefor, of a non-rebounding laterally-movable frictional steadying device arranged to contact with the dependent portion thereof when the latter is swayed from the normal axis of rotation.

10. The combination with a shaft having a flexible portion, of a suspension-bearing therefor located above said flexible portion, and a laterally-movable frictional steadying device therefor located below the same.

11. The combination with a shaft having a flexible portion, of a suspension-bearing therefor located above said flexible portion and laterally-movable frictional steadying devices located respectively above and below said flexible portion.

706,089. METHOD OF MANUFACTURING BASIC BESSEMER STEEL. SAMUEL McDONALD, Youngstown, Ohio. Filed Jan. 25, 1902. Serial No. 91,226. (No specimens.)

Claim.—1. In the manufacture of basic Bessemer steel, the method herein described, which consists in pouring successive converter charges into a common receptacle from which the metal is taken to be cast, testing each charge in turn, and varying the duration of each succeeding blow according to the result of the preceding test, substantially as described.

2. In the manufacture of basic Bessemer steel, the method herein described, which consists in blowing a moderate percentage of the total product to be produced in suitable manner for the elimination of phosphorus so far as may be, charging the same into a heat-maintaining receptacle of capacity suitable to hold the entire amount of product desired, taking a test thereof, blowing another moderate percentage of the total product and continuing the after blow for such length of time that when mixed with the charge previously blown, the phosphorous element of the mixture will be at the desired low degree, charging this second moderate percentage into the receptacle and continuing such testing and further blowing, regulating each successive blow by the results of the previous test until the desired quantity is produced, substantially as described.

3. In the manufacture of basic Bessemer steel, the method herein described, which consists in subjecting successive charges to basic Bessemer treatment, testing each charge in turn and varying the duration of the treatment of succeeding charges according to the results of the preceding tests, pouring the charges so treated into a receiving-furnace, and bringing the metal contained in the furnace to a casting temperature, substantially as described.

706,090. LOAD-BINDER. JOSEPH F. HEVILLE, Woodruff, Utah. Filed Mar. 31, 1902. Serial No. 100,577. (No model.)

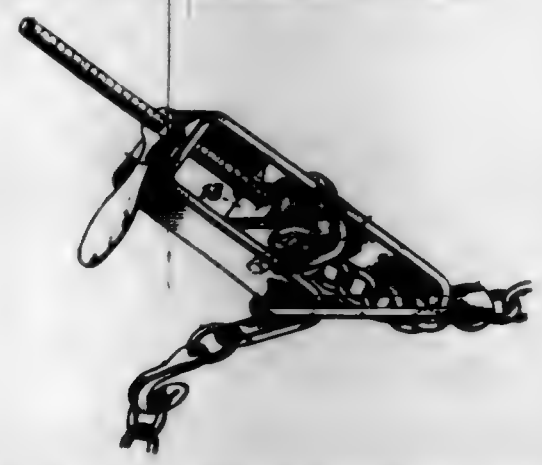

Claim.—1. A device of the class described comprising a frame composed of two sides and a connecting portion, one of the sides being shorter than the other and provided with means for engaging one end of a flexible connection, means slidable on the other side of the frame for engaging the other end of the flexible connection, and an adjusting device operating between the sides of the frame and connected with the said slidable means, substantially as described.

2. A device of the class described, comprising an approximately oblong frame, provided at one side with means for engaging a flexible connection, a slide guided on the other side of the frame and provided with means for engaging the other side of the said connection, and an adjusting device for operating the slide, substantially as described.

3. A device of the class described, comprising an approximately oblong frame provided at one side with means for engaging a flexible connection, a slide arranged within the frame and provided with arms embracing the other side of the same and having a lug at one end and provided at the other end with means for engaging the flexible connection, a screw, connected with the lug and means for adjusting the screw, substantially as described.

4. A device of the class described, comprising an approximately oblong frame, having one side longer than the other, the terminals of the sides being extended in opposite directions, a link connecting the ends of the sides, means connected with the shorter side of the frame for engaging one end of a flexible connection, a slide mounted on the long side of the frame for engaging the other end of the flexible connection, and an adjusting device connected with the slide, substantially as described.

5. A device of the class described, comprising an approximately oblong frame, having one side longer than the other, the terminals of the sides being extended in opposite directions and the end of the long side being provided with a concave inner face, a hook connected with the short side for engaging one end of a chain, a slide mounted on the long side of the frame and having a bifurcated claw for engaging the other end of the chain, a link connecting the end to the sides and an adjusting device for operating the slide, substantially as described.

706,091. SHOE-BLACKING MACHINE. JOHN NICOLET, Canton, Ohio. Filed Mar. 28, 1902. Serial No. 100,575. (No model.)

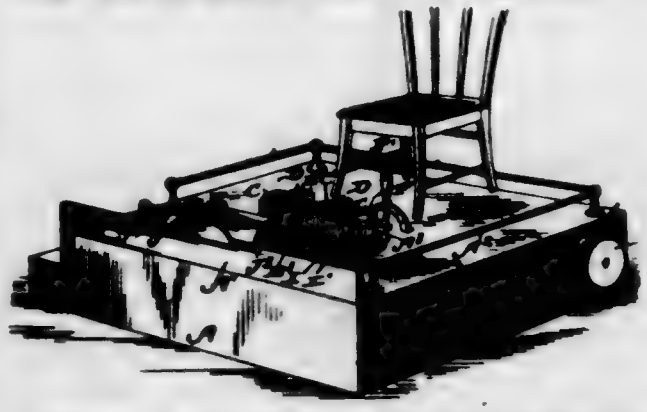

Claim.—1. In a shoe-polishing machine the combination of a stand, a bracket slidably mounted thereon, a foot-rest pivotally held to the bracket, reciprocating blocks positioned upon the frame and having brushes removably connected thereto, one of the said brushes being movable to and from the said foot-rest, a revolving brush mounted upon the stand in advance of the said foot-rest, and means for operating the said brushes, substantially as set forth.

2. In a shoe-polishing machine, the combination with the stand, having slots arranged in the upper surface thereof, brackets secured to the stand below the said slots, brush-carrying blocks slidably retained upon the said brackets, a crank-shaft mounted within the stand, pitmen connecting the said cranks of the shaft with the said blocks, a brush-carrying shaft revolubly mounted upon the upper portion of the forward end of the stand, a foot-rest slidably held between the said sliding brushes, and means for adjusting one of the said sliding brushes to or from the foot-rest, and means for operating the said brushes, substantially as shown and described.

3. In a shoe-polishing machine, the combination of a stand having slots formed in the upper surface thereof, brackets positioned upon the under side of the said upper surface and below the said slots, blocks slidably retained upon the said brackets, brush-carrying arms mounted upon the said blocks, brushes held upon the arms, one of said arms having a slot formed therein, a crank-shaft projecting through the said slot and having one end terminating in a handle-lever, the said shaft being mounted upon the stand at the ends of one of the said slots, a shaft mounted upon the stand and at the forward end thereof, a brush positioned upon the shaft, and means for operating the said sliding brushes, and means for operating the said revolving brush, substantially as shown and described.

4. In a shoe-polishing machine, the combination of a stand, having slots formed in the upper surface thereof and brackets held upon the under side of the stand and directly below the said slots, blocks slidably held upon the brackets, brush-carrying arms positioned upon the said blocks and having brushes arranged at their upper ends, guide-strips arranged upon the platform upon either side of the slots, a bracket slidably retained in the said strips, a foot-rest pivotally mounted upon the bracket, a shaft carrying a brush mounted upon the platform in advance of the said foot-rest, and means for operating said brushes, substantially as shown and described.

5. In a shoe-polishing machine, the combination of a stand having an adjustable foot-rest mounted thereon, brushes slidably positioned upon either side of the foot-rest, one of which is movable to and from the said foot-rest, a brush revolubly mounted upon the stand at the forward end of the foot-rest, means for operating the said brushes, and means for operating said movable brush to or from the said foot-rest, substantially as shown and described.

6. In a shoe-polishing machine, the combination of a frame, reciprocating blocks arranged thereon, brushes carried by the blocks, one of which is movable laterally, a bracket slidably arranged upon the stand be-

a storage battery having connections for supplying the work-circuit, a generator subject to variations in speed, and connections therefrom for supplying the work-circuit and for charging the battery, the combination therewith of regulating means for controlling the electromotive force of the generator, a resistance normally included in the generator field-circuit, means for making and breaking the work-circuit, and means for cutting out or short-circuiting the said resistance when the work-circuit is open to increase the electromotive force for charging the battery in excess of that normally required on the work-circuit.

706,086. BRAKE-CONTROLLER. PAUL MULLER, Newark, N. J., assignor to Sprague Electric Company, New York, N. Y., a Corporation of New Jersey. Filed Dec. 4, 1901. Serial No. 84,631. (No model.)

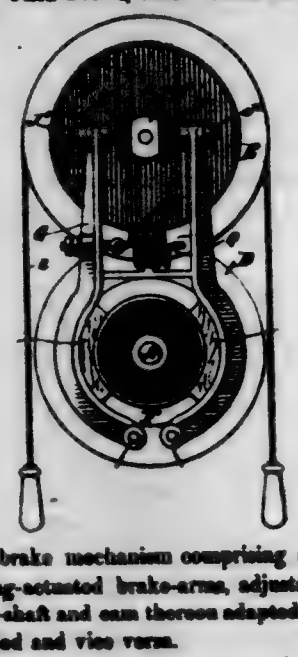

Claim.—1. A brake mechanism comprising a motor-driven shaft, a brake-pulley, spring-actuated brake-arms, adjustable followers carried thereby, a controller-shaft and cam thereon adapted to release said brakes when power is applied and vice versa.

2. A brake mechanism comprising a motor-shaft, a self-acting brake therefor, a controller for said motor, a cam carried by said controller and adjustable means carried by said brake coacting with said cam so that when said motor is started said brake is released and when the power is turned off said brake is applied.

3. A controlling mechanism for rotatable shafts comprising, a motor-driven shaft, a brake-wheel for said shaft, a controller for said shaft, a cam carried by said controller, a brake-arm pivoted at one end and carrying a brake-shoe adapted to coact with said brake-wheel, means for normally holding said brake-shoe in contact with said brake-wheel, and a stop carried by said brake-arm adapted to coact with said cam.

4. A controlling mechanism for a motor-driven shaft comprising a motor-driven shaft, a brake-wheel carried thereby, a controller for said motor-shaft, a cam carried by said controller, brake-arms normally drawn into engagement with said brake-wheel by a spiral spring connecting the two arms together, and means for operating said controller.

706,087. CENTRIFUGAL SEPARATOR. HERBERT MCCORMACK, Westchester, Pa. Filed July 14, 1900. Serial No. 23,587. (No model.)

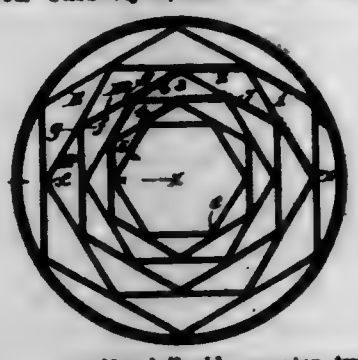

Claim.—1. In a centrifugal liquid-separator, two or more vertical walled partitions concentrically arranged therein in contact with each other at intervals to form a circular series of separating compartments between each of the said partitions and the contacting inner or outer one, each of said compartments having skim-milk openings in two of its walls and also cream-openings in two of its walls and said openings providing jointly separate outward and inward flow passages through adjoining inner and outer compartments, substantially as described.

2. In a centrifugal liquid-separator, two or more vertical walled partitions of angular cross-section concentrically arranged in contact with each other at intervals to form a circular series of separating compartments between them, each of said compartments having skim-milk openings in two of its walls and also cream-openings in two of its walls and said openings providing jointly separate outward and inward flow passages through adjoining inner and outer compartments, substantially as described.

706,088. SHAFT-MOUNTING. HERBERT MCCORMACK, Westchester, Pa. Filed July 26, 1901. Serial No. 69,817. (No model.)

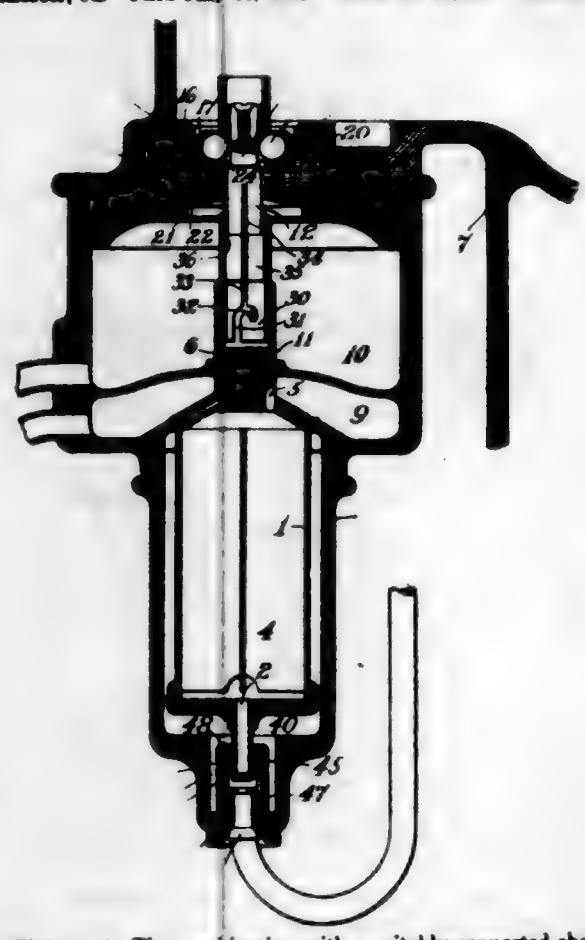

Claim.—1. The combination with a suitably-supported shaft of an independently-supported steadying device therefor inclosing the shaft and movable bodily therewith in a lateral direction and means independent of the weight of the device for providing frictional resistance to such movement.

2. The combination with a suitably-supported shaft of a steadying device therefor inclosing the shaft, a seat on which said device is adapted to be moved bodily in a lateral direction by swinging of the shaft, and means for pressing said device against its seat independently of the weight of the device.

3. The combination with a suitably-supported shaft of a steadying device therefor inclosing the shaft, a seat on which said device is adapted to be moved bodily in a lateral direction by swinging of the shaft, and adjustable means for pressing said device against its seat to provide a regulated frictional resistance to such movement independently of the weight of the device.

4. The combination with a suitably-supported rotary shaft of a fixed sleeve loosely inclosing the same and provided with an interior flange, a steadying device loosely located in the annular space between the shaft and the inclosing sleeve, and a spring to press the device against said flange to provide frictional resistance to lateral movement thereof.

5. The combination with a suitably-supported shaft, of a laterally-movable steadying device therefor inclosing the same, a fixed ring or sleeve loosely inclosing the shaft and forming a seat for said steadying device, and a spring or springs for pressing the latter against said seat.

6. The combination with a suitably-supported shaft, of a laterally-movable steadying device therefor inclosing the same, a fixed seat for said movable steadying device, and means for pressing the latter against said seat and for yieldingly pressing the same laterally toward its normal central position.

7. The combination with a shaft, a supporting-bearing therefor and a fixed ring or sleeve loosely surrounding the shaft and forming a bearing-flange, of an independently-supported steadying device comprising a band-ring inclosing the shaft and a conical-seat bearing-ring, and a spring-support for said bearing-ring arranged to press the band-ring against said flange.

8. The combination with a shaft, a supporting-bearing therefor and a fixed sleeve loosely surrounding the shaft and formed with an interior flange, of an independently-supported steadying device comprising a band-ring inclosing the shaft and a conical-seat bearing-ring, and a spring-support for said bearing-ring arranged to press the band-ring against said

flange, said sand-ring and bearing-ring having jointly a limited lateral movement with the shaft.

9. The combination with a shaft and a suspension-bearing therefor, of a non-rebounding laterally-movable frictional steadying device arranged to contact with the dependent portion thereof when the latter is swayed from the normal axis of rotation.

10. The combination with a shaft having a flexible portion, of a suspension-bearing therefor located above said flexible portion, and a laterally-movable frictional steadying device therefor located below the same.

11. The combination with a shaft having a flexible portion, of a suspension-bearing therefor located above said flexible portion and laterally-movable frictional steadying devices located respectively above and below said flexible portion.

706,089. METHOD OF MANUFACTURING BASIC BESSEMER STEEL. SAMUEL McDOUALS, Youngstown, Ohio. Filed Jan. 28, 1902. Serial No. 91,625. (No specimens.)

Claim.—1. In the manufacture of basic Bessemer steel, the method herein described, which consists in pouring successive converter charges into a common receptacle from which the metal is taken to be cast, testing each charge in turn, and varying the duration of each succeeding blow according to the result of the preceding test, substantially as described.

2. In the manufacture of basic Bessemer steel, the method herein described, which consists in blowing a moderate percentage of the total product to be produced in suitable manner for the elimination of phosphorus so far as may be, charging the same into a heat-maintaining receptacle of capacity suitable to hold the entire amount of product desired, taking a test thereof, blowing another moderate percentage of the total product and continuing the after blow for such length of time that when mixed with the charge previously blown, the phosphorous element of the mixture will be at the desired low degree, charging this second moderate percentage into the receptacle and continuing such testing and further blowing, regulating each successive blow by the results of the previous test until the desired quantity is produced, substantially as described.

3. In the manufacture of basic Bessemer steel, the method herein described, which consists in subjecting successive charges to basic Bessemer treatment, testing each charge in turn and varying the duration of the treatment of succeeding charges according to the results of the preceding tests, pouring the charges so treated into a receiving-furnace, and bringing the metal contained in the furnace to a casting temperature, substantially as described.

706,090. LOAD-BINDER. JOSEPH F. ENVILLE, Woodruff, Utah. Filed Mar. 31, 1902. Serial No. 100,877. (No model.)

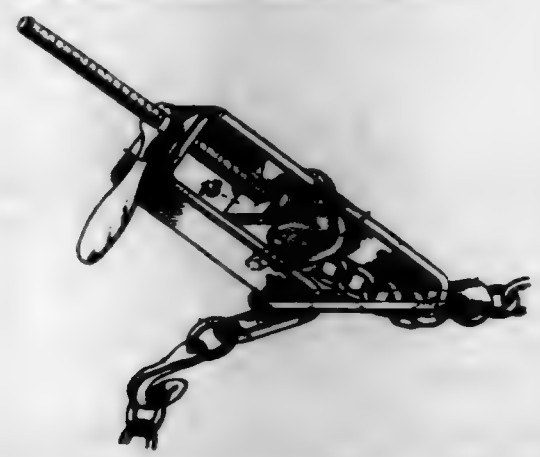

Claim.—1. A device of the class described comprising a frame composed of two sides and a connecting portion, one of the sides being shorter than the other and provided with means for engaging one end of a flexible connection, means slidable on the other side of the frame for engaging the other end of the flexible connection, and an adjusting device operating between the sides of the frame and connected with the said slidable means, substantially as described.

2. A device of the class described, comprising an approximately oblong frame, provided at one side with means for engaging a flexible connection, a slide guided on the other side of the frame and provided with means for engaging the other side of the said connection, and an adjusting device for operating the slide, substantially as described.

3. A device of the class described, comprising an approximately oblong frame provided at one side with means for engaging a flexible connection, a slide arranged within the frame and provided with arms embracing the other side of the same and having a lug at one end and provided at the other end with means for engaging the flexible connection, a screw, connected with the lug and means for adjusting the screw, substantially as described.

4. A device of the class described, comprising an approximately oblong frame, having one side longer than the other, the terminals of the sides, being extended in opposite directions, a link connecting the ends of the sides, means connected with the shorter side of the frame for engaging one end of a flexible connection, a slide mounted on the long side of the frame for engaging the other end of the flexible connection, and an adjusting device connected with the slide, substantially as described.

5. A device of the class described, comprising an approximately oblong frame, having one side longer than the other, the terminals of the sides being extended in opposite directions and the end of the long side being provided with a concave inner face, a hook connected with the short side for engaging one end of a chain, a slide mounted on the long side of the frame and having a bifurcated claw for engaging the other end of the chain, a link connecting the end to the sides and an adjusting device for operating the slide, substantially as described.

706,091. SHOE-BLACKING MACHINE. JOHN NICOLET, Canton, Ohio. Filed Mar. 29, 1902. Serial No. 100,575. (No model.)

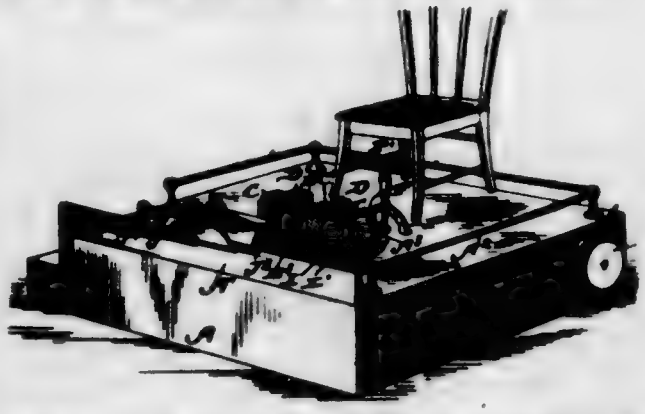

Claim.—1. In a shoe-polishing machine the combination of a stand, a bracket slidably mounted thereon, a foot-rest pivotally held to the bracket, reciprocating blocks positioned upon the frame and having brushes removably connected thereto, one of the said brushes being movable to and from the said foot-rest, a revolving brush mounted upon the stand in advance of the said foot-rest, and means for operating the said brushes, substantially as set forth.

2. In a shoe-polishing machine, the combination with the stand, having slots arranged in the upper surface thereof, brackets secured to the stand below the said slots, brush-carrying blocks slidably retained upon the said brackets, a crank-shaft mounted within the stand, pitmen connecting the said cranks of the shaft with the said blocks, a brush-carrying shaft revolubly mounted upon the upper portion of the forward end of the stand, a foot-rest slidably held between the said sliding brushes, and means for adjusting one of the said sliding brushes to or from the foot-rest, and means for operating the said brushes, substantially as shown and described.

3. In a shoe-polishing machine, the combination of a stand having slots formed in the upper surface thereof, brackets positioned upon the under side of the said upper surface and below the said slots, blocks slidably retained upon the said brackets, brush-carrying arms mounted upon the said blocks, brushes held upon the arms, one of said arms having a slot formed therein, a crank-shaft projecting through the said slot and having one end terminating in a handle-lever, the said shaft being mounted upon the stand at the ends of one of the said slots, a shaft mounted upon the stand and at the forward end thereof, a brush positioned upon the shaft, and means for operating the said sliding brushes, and means for operating the said revolving brush, substantially as shown and described.

4. In a shoe-polishing machine, the combination of a stand, having slots formed in the upper surface thereof and brackets held upon the under side of the stand and directly below the said slots, blocks slidably held upon the brackets, brush-carrying arms positioned upon the said blocks and having brushes arranged at their upper ends, guide-strips arranged upon the platform upon either side of the slots, a bracket slidably retained in the said strips, a foot-rest pivotally mounted upon the bracket, a shaft carrying a brush mounted upon the platform in advance of the said foot-rest, and means for operating said brushes, substantially as shown and described.

5. In a shoe-polishing machine, the combination of a stand having an adjustable foot-rest mounted thereon, brushes slidably positioned upon either side of the foot-rest, one of which is movable to and from the said foot-rest, a brush revolubly mounted upon the stand at the forward end of the foot-rest, means for operating the said brushes, and means for operating said movable brush to or from the said foot-rest, substantially as shown and described.

6. In a shoe-polishing machine, the combination of a frame, reciprocating blocks arranged thereon, brushes carried by the blocks, one of which is movable laterally, a bracket slidably arranged upon the stand be-

tween the said brushes, a foot-rest pivotally connected to the bracket, a shaft mounted upon the frame in advance of the said brushes and foot-rest, and having a brush mounted thereon, a guard arranged over the revolving brush, and means for operating the brushes substantially as shown and described.

706,092. TROLLEY-POLE CATCH. JAMES A. HORTON, Wilkesbarre, Pa., assignor of one-half to Michael C. Malley and James F. Munday, Wilkesbarre, Pa. Filed Nov. 19, 1901. Serial No. 82,820. (No model.)

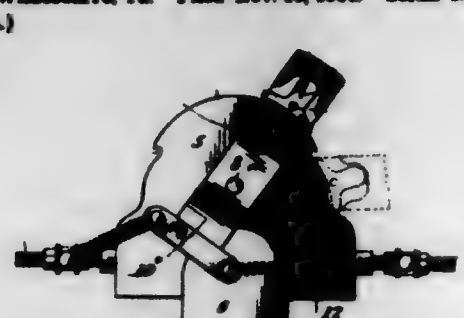

Claim.—1. The combination with a pivoted vertically-swinging trolley-pole, of means operated by the downward movement of the pole for automatically locking the pole in its depressed position when the pole is thrown downward, said locking means being normally inoperative during the ordinary movements of the pole throughout the range of movement of the pole.

2. The combination with a vertically-swinging trolley-pole of a relatively movable pawl and catch arranged to hold said pole in its depressed position, means for normally holding said pawl out of engagement with the catch throughout the range of movement of the pole, and means operated by the downward movement of the pole for deflecting said pawl into a direction to engage the catch.

3. The combination with a pivoted vertically-swinging trolley-pole of a catch fixed relatively to the pole, a pawl carried by the pole, means for normally holding said pawl in a direction to pass by the catch, and means for automatically deflecting the pawl in a direction to engage the catch when the trolley-pole is depressed.

4. The combination with a pivoted vertically-swinging trolley-pole of a catch fixed relatively to the pole, a gravity-pawl carried by the pole and arranged to normally swing in a direction away from the catch, and means for automatically deflecting the pawl into a direction to engage the catch when the trolley-pole is depressed.

5. The combination with a pivoted vertically-swinging trolley-pole, of a catch at each side of said pole, and a pawl carried by the pole and having two oppositely-projecting arms, means for normally holding the arm which is uppermost out of engagement with the catch during the normal movement of the trolley-pole, and means for deflecting said uppermost arm in a direction to engage the catch when the trolley-pole is thrown downwardly.

6. The combination with a pivoted vertically-swinging trolley-pole, of a catch at each side of said pole, and a pawl pivotally carried by said pole, said pawl having two arms projecting in opposite directions from its pivotal point, and a central weighted portion adapted to swing the arm which is uppermost away from the adjacent catch.

7. The combination with a standard comprising a plate having a catch at one of its lateral edges and a deflecting-surface below said catch, of a vertically-swinging trolley-pole pivotally mounted upon the standard, and a pawl pivoted to the pole and normally extending in a direction to pass by the catch without engaging, said deflecting-surface being arranged to deflect the pawl into a position to engage the catch.

8. The combination with a standard comprising a plate having a catch at one of its lateral edges, of a trolley-pole pivotally mounted upon the standard, a pawl pivoted to the pole and normally extending in a direction to pass by the catch without engaging, and a deflecting-surface arranged to tilt the pawl into the direction to engage the catch when the pole is depressed.

9. The combination with a standard comprising a plate having a catch at each lateral edge, of a trolley-pole pivotally mounted upon the standard, a pawl pivoted to the pole and having two oppositely-projecting arms, means for holding the arm which is uppermost out of engagement with the adjacent catch, and a deflecting-surface below each catch arranged to tilt said uppermost arm into the direction to engage the adjacent catch.

10. The combination with a standard comprising a plate having a catch at each lateral edge, and deflecting-surfaces upon said edges below the catches, of a trolley-pole pivotally mounted upon the standard, a pawl pivoted to the pole and having two oppositely-projecting arms, and means for holding the arm which is uppermost out of engagement with the adjacent catch, said deflecting-surfaces being arranged to be engaged by the pawl and deflected thereby into the proper direction to engage the adjacent catch.

11. The combination with a standard comprising a plate having an upper curved surface, catches at each lateral edge and deflecting-surface below said catches, of a forked trolley-pole pivoted to said plate, and a gravity-pawl pivoted between the arms of the fork, said pawl being arranged to engage the deflecting-surfaces when the trolley-pole is depressed.

706,093. SHADE-HOLDER. THOMAS B. HOWLIN, Sexton, Pa. Filed Apr. 25, 1902. Serial No. 714,390. (No model.)

Claim.—As a new article of manufacture, a window-shade fixture comprising a plate having a perforated attaching-ear projecting centrally from its upper edge, and at its upper edge on each side of said attaching portion bent forwardly and downwardly, and at its lower edge bent forwardly and upwardly, thus forming two flanges upon the front face of the plate having grooves formed therein, the portion of the plate projecting beyond the ends of said flanges being bent forward at right angles thereto so as to close the outer end thereof and formed with a slot extending downwardly from its upper edge, and an arm secured to the bent end portion of the plate and extending upwardly and forwardly and formed at its upper end with a curved seat and twisted adjacent to said seat so that the latter is formed of the flat portion of the arm, substantially as described.

706,094. REVOLVING BAR OR COUNTER. PATRICK J. O'BRIEN, Buffalo, N. Y. Filed June 3, 1901. Serial No. 62,835. (No model.)

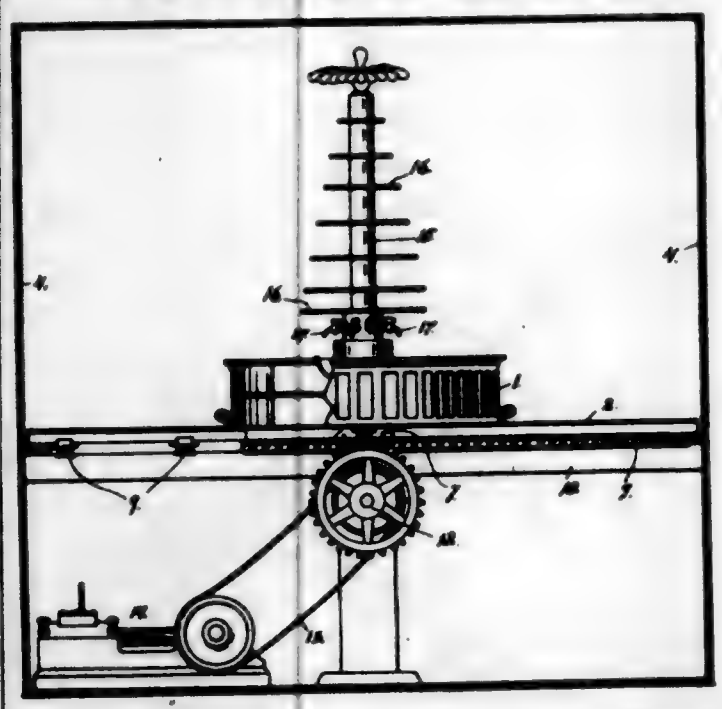

Claim.—An endless bar or counter with attached surrounding section of flooring having a toothed rack and radially-directed arms disposed upon its under surface, said arms carrying roller-bearings, a fixed flooring disposed beneath the aforesaid flooring and having trackways disposed upon its upper surface and over which said roller-bearings are adapted to travel, another section of flooring surrounding the first-mentioned flooring, means for rotating the bar or counter about a common center with its attached surrounding section of flooring, and an open space formed between the inner faces of the bar or counter and said common center.

706,095. COMBINATION SQUARE AND PROTRACTOR. EMANUEL OBERLE, Omaha, Nebr. Filed Oct. 21, 1901. Serial No. 79,458. (No model.)

Claim.—1. A square, comprising a head having a countersunk recess formed therein, a flanged disk finding a bearing in said recess, said disk having a groove in its periphery, a shoe loosely resting in said groove, a set-screw carried by the head and bearing upon the said shoe whereby the disk may be held in its bearing and may be clamped at any

point in its revolution, and a straight-edge carried by the said disk, substantially as described.

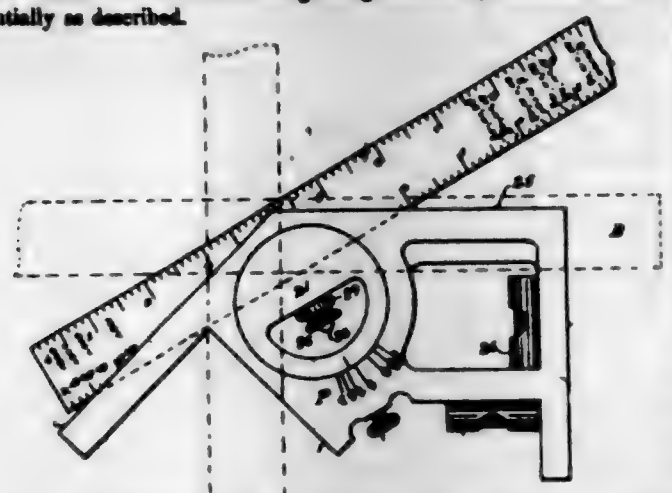

2. A combination-square comprising a head portion a disk having a flange on one side engaging a counterbank bearing in the said head, separate levels arranged at right angles to each other, upon the said head, a straight-edge carried by the said disk, and means traveling in a groove on the periphery of the disk for holding the same in position in connection with the flange of said disk, said means also clamping the disk in its adjusted positions, substantially as described.

3. A combination-tool comprising a head formed with a circular opening, a disk having a groove in its periphery, said disk lying in the opening in said head, a lip or shoulder on said disk engaging one face of said head for preventing lateral movement of said disk in one direction, means carried by said head engaging said peripheral groove for preventing lateral movement of said disk in an opposite direction, and ruling means carried by said disk, substantially as described.

4. A combination-tool comprising a head formed with a circular opening, a disk having an annular groove, said disk lying in the opening in said head, an annular shoulder engaging one face of said head, a set-screw passed through a portion of said head and into said annular groove, and ruling means carried by said disk, substantially as described.

706,096. CORSET. CHARLOTTE A. O'LOAN, Detroit, Mich. Filed Oct. 17, 1901. Serial No. 78,994. (No model.)

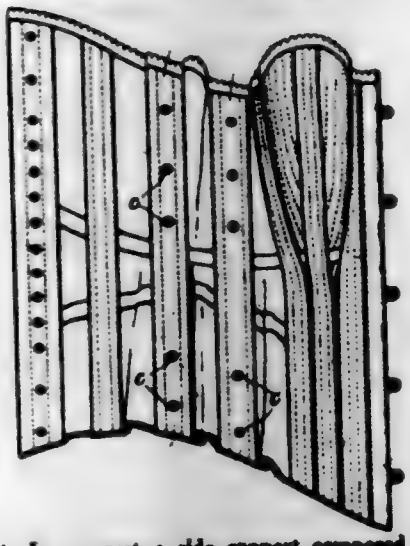

Claim.—1. In a corset, a side support composed of one or more corset-steels lying within a vertical pocket or pockets in the side of the corset, and eyelets passing through said pocket or pockets and through the steel or steels therein and turned down upon the fabric of the pockets only, the steel or steels being provided with perforations larger than the eyelets and said eyelets wholly contained within said perforations.

2. As a new article of manufacture, a corset-steel inclosed within a pocket and secured therein against displacement by means of eyelets passing through the fabric of the pocket and through perforations in the steel, said perforations being larger than the eyelets and the eyelets being turned down upon the fabric only and wholly within the perforations in the steel.

706,097. HEATING-STOVE. ELIAS R. CURT, Jackson, Ohio. Filed Mar. 6, 1902. Serial No. 96,961. (No model.)

Claim.—1. In a stove, the combination with a combustion-chamber and an ash-pit below the same, of an inverted cone communicating with the upper end of the combustion-chamber, a casing inclosing the cone and perforated around said cone, a smoke-pipe projecting through the top of the casing and an inverted cone connected with and spaced from the pipe and adapted to deflect the smoke and gases against the first-mentioned cone before they enter the pipe.

2. In a stove, the combination with a combustion-chamber and an ash-pit below the same, of a heating-drum on top of the combustion-chamber comprising two inverted cones one within the other and forming a smoke-passage between them, a casing inclosing the cones and perforated around the outer cone and a smoke-pipe communicating with the top of the casing and adapted to carry off the waste products of combustion.

3. In a stove, the combination with a combustion-chamber and an ash-pit below the same, of a heating-drum on top of the combustion-chamber, comprising two inverted cones one within the other and forming a smoke-passage between them, a casing inclosing the cones and perforated around the outer cone, a smoke-pipe communicating with the casing and projecting down into the inner cone, a flue connecting the smoke-pipe and ash-pit, and a damper in said smoke-pipe above its connection with the flue.

706,098. PAPER-BLANK FEEDING AND SCORING MACHINE. CHARLES H. PALMER and JOHN W. DENHEAD, Akron, Ohio, assignors to the Diamond Match Company, New York, N. Y., a Corporation of Illinois. Filed Mar. 26, 1901. Serial No. 52,955. (No model.)

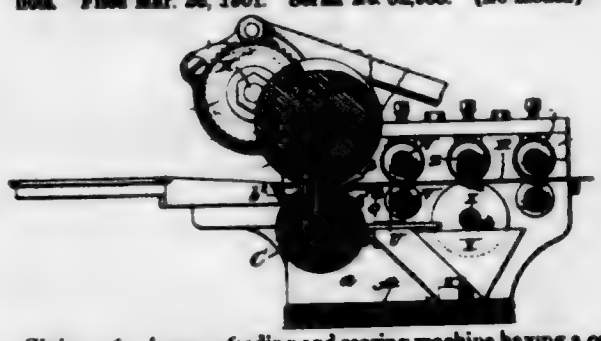

Claim.—1. A paper feeding and scoring machine having a combined feeding and scoring roll, on the periphery of which are interlocking segments movable relative to each other, substantially as and for the purpose described.

2. A paper feeding and scoring machine having a combined feeding and scoring roll on the periphery of which are series of interlocking segments, one of the series being movable relative to the other and the segments thereof joined, and carrying, where they are joined, a scoring device, substantially as and for the purpose described.

3. In a paper-feeding machine, a feeding-roll on the periphery of which is a series of segments shiftable on the roll, and interlocking at both ends with other segments on the roll, substantially as and for the purpose described.

4. In a paper-scoring machine, a roll on the periphery of which is a series of segments shiftable on the roll, and united between their ends, and interlocking at both ends with other segments on the roll, substantially as and for the purpose described.

5. In a paper-feeding machine, the combination of a pair of rolls each of which has a variable, peripheral feeding portion formed of interlocking segments, substantially as and for the purpose described.

6. In a paper-feeding machine, the combination of a pair of rolls, each of which has a variable, peripheral feeding portion formed of interlocking segments that carry a scoring device, substantially as and for the purpose described.

7. In a paper-feeding machine, the combination of a pair of rolls, one of which has a non-feeding peripheral portion, and the other has a peripheral portion that comes opposite the latter, which is formed of interlocking segments that are movable relative to each other, substantially as and for the purpose described.

8. In a paper-feeding machine, the combination of intermittently-acting feeding mechanism, comprising coacting parts between which is a space for non-feeding, and a feed-gage located on the side of said feed mechanism opposite that from which paper is fed thereto in position to engage the forward edge of the paper after the same has been passed through said space, substantially as and for the purpose described.

9. In a paper-feeding machine, the combination of a combined feeding and scoring roll having a depressed, non-feeding peripheral portion, and a feed-gage on the side of the roll opposite that from which paper

is fed to the roll, adapted to engage the forward edge of the paper, substantially as and for the purpose described.

10. In a paper-feeding machine, the combination of a combined feeding and scoring roll having a non-feeding peripheral portion, a feed-gage, and operating means therefor connected with the roll, substantially as and for the purpose described.

706,099. ELECTRIC FURNACE. ARTHUR PARKER, Chorley, England. Filed May 8, 1901. Serial No. 59,231. (No model.)

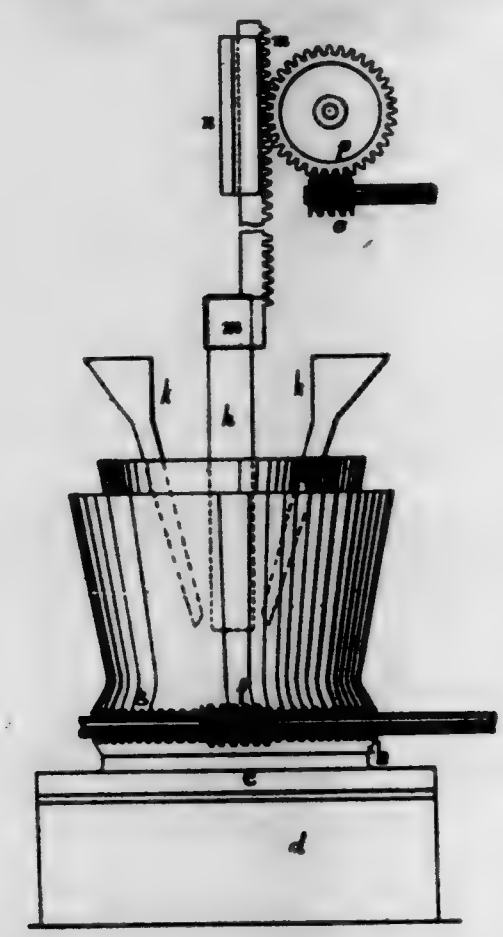

Claim.—In an electric furnace the combination with the crucible *a* and positive-carbon electrode *k* placed diametrically across the crucible, of the rotatable supporting-platform *b*, the recessed base *c*, the supporting-plate *e* in two parts with recess into which the platform-base fits, the worm-wheel *g* around its periphery, the worm *f* gearing with the wheel *g*, the chutes *h* to deliver the material direct into the arc, and mechanism for raising the carbon electrode *k* as the crucible fills substantially as described.

706,100. METAL-FOIL FABRIC. HARRY L. PARKER, El Paso, Tex. Filed Aug. 6, 1901. Serial No. 71,120. (No specimens.)

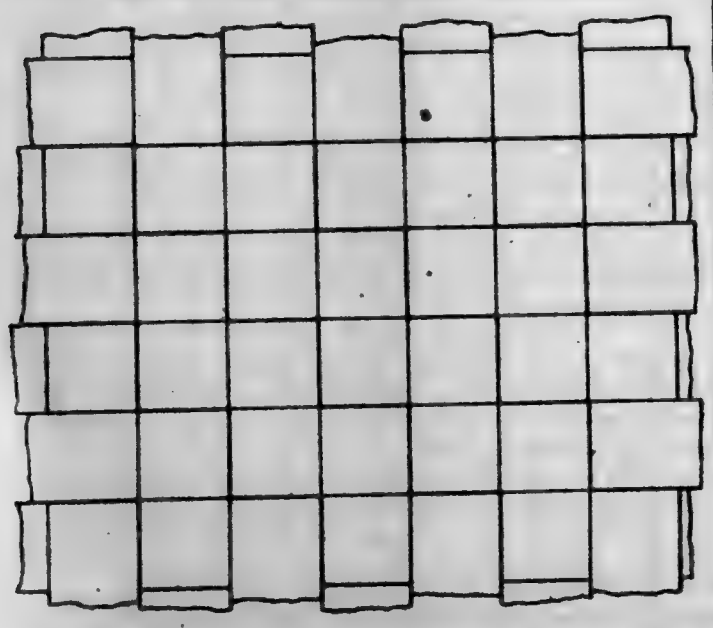

Claim.—A fabric consisting of strips of metal foil of one or more layers adhering to bands or ribbons made of a textile fabric, and woven, substantially as set forth.

706,101. PORTABLE AND SEPARABLE PHOTOGRAPHIC DEVELOPING-CASE OR DARK CABINET. THOMAS T. PATCHEL, Westchester, Pa., assignor, by mesne assignments, of one-half to George G. Patchel, Media, Pa. Filed Oct. 23, 1901. Serial No. 80,413. (No model.)

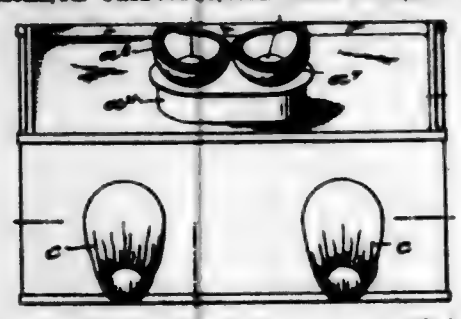

Claim.—1. In a photographic dark room, a separable box provided with an inclined roof having an opening therein, a slide adapted to close said opening, a crown surrounding said opening and carrying peep-holes, detachable eye-guards fitted to said crown, armlets projecting from the front of the box and a detachable slide in one end wall of said box and adapted to close the opening provided in said wall.

2. In a photographic dark room, a separable box, the front wall whereof is provided with openings and the roof whereof is inclined downward toward the front wall and having an opening, a flanged rim surrounding each opening in the front wall, a flexible armlet adapted to detachably engage said flanged rim, a crown inclosing the opening in the inclined roof, two flanges projecting upward from the crown to form peep-holes therein, and detachable eye-guards engaging said flanges of the crown.

3. In a photographic dark room, a separable box, an inclined roof for said box having an opening, a slide arranged within the box and adapted to close the opening in the roof, a crown surrounding the roof-opening and projecting from the exterior of the box, said crown having two openings or peep-holes, a flanged rim surrounding each peep-hole, and an eye-guard detachably connected to each flanged rim.

4. In a photographic dark room, a separable box, comprising a floor, side walls and an inclined roof having an opening, the meeting edges of the walls floor and roof of said box being complementally formed into feathers and grooves, the feathers of certain edges adapted to slide into and out of the grooves of the other complemental edges, a slide arranged to close the opening in the roof, a crown surrounding the roof-opening and having peep-holes, a flanged rim surrounding each peep-hole, and an eye-guard detachably connected to each flanged rim.

706,102. CENTRIFUGAL GRINDING-MILL. JOHN H. PENDLETON, Jamesburg, N. J., assignor to the Pendleton-Topscott Company, New York, N. Y., a Corporation of New Jersey. Filed July 9, 1901. Serial No. 67,005. (No model.)

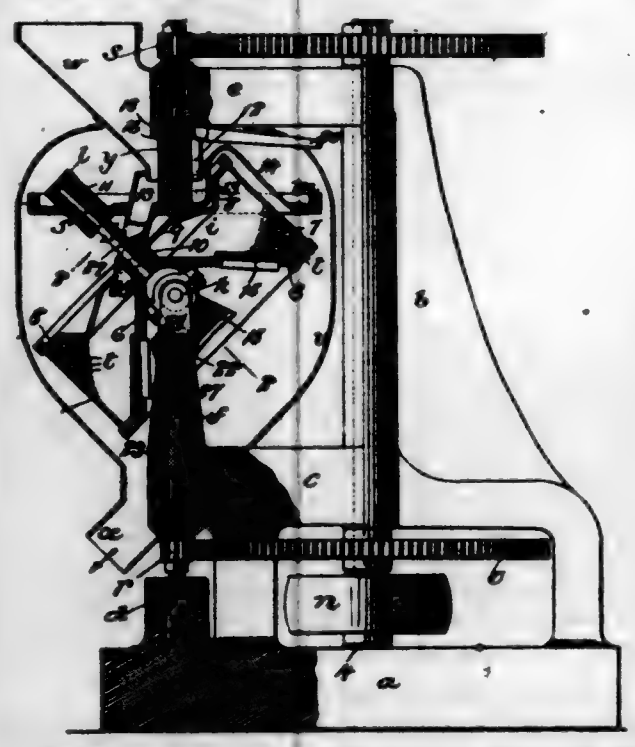

Claim.—1. In a mill, the combination of a mortar and grinding-balls therein, a shaft which carries said mortar, two shafts alined with each other and between the adjacent ends of which the first-named shaft is obliquely arranged and carried as part of a flexible crank connection, and means for rotating said alined shafts at different velocities, substantially as described.

2. In a mill, the combination of a mortar and grinding-balls therein, a shaft which carries said mortar, two shafts alined with each other and between the adjacent ends of which the first-mentioned shaft is obliquely arranged, a flexible connection between one of said alined shafts and one end of said obliquely-arranged shaft, a crank-arm on the other of said alined shafts, a pivotal connection between said crank-arm and the other end of said obliquely-arranged shaft, and means for rotating the two alined shafts at different velocities, substantially as herein described.

3. In a mill, the combination of a mortar and grinding-balls therein, a shaft which carries said mortar, two shafts alined with each other and between the adjacent ends of which the first-mentioned shaft is obliquely carried, means for rotating said alined shafts at different velocities, and a rotary feeding-spout carried by one of said alined shafts and entering the mortar, substantially as herein described.

4. In a mill, the combination of a mortar and grinding-balls therein, a shaft which carries said mortar, two shafts alined with each other and between the adjacent ends of which the first-mentioned shaft is obliquely arranged, a gimbal-joint between one of said alined shafts and one end of said obliquely-arranged shaft, a crank-arm on the other of said alined shafts, a journal-bearing in said crank-arm receiving a journal on the other end of said obliquely-arranged shaft, and means for rotating the two alined shafts at different velocities, substantially as herein described.

5. In a mill, the combination of a mortar and grinding-balls therein, a shaft which carries said mortar, two shafts alined with each other and between the adjacent ends of which the first-mentioned shaft is obliquely arranged and carried as part of a flexible crank connection, means for rotating said alined shafts at different velocities, and a rotary feeding-spout carried by one of said alined shafts and entering the mortar, substantially as herein described.

6. In a mill, the combination of a mortar and grinding-balls and screens therein, a shaft which carries said mortar, two shafts alined with each other and by and between the adjacent ends of which the first-mentioned shaft is obliquely arranged as part of a flexible crank connection, means for driving the two alined shafts at different velocities, and a stationary casing surrounding the mortar and the crank connection and having a feeding-inlet above the mortar and a delivery-outlet below the mortar, substantially as herein described.

7. In a mill, the combination of a mortar and grinding-balls therein, a shaft which carries said mortar, two shafts alined with each other and between the adjacent ends of which the first-mentioned shaft is obliquely arranged and carried as part of a flexible crank connection, means for rotating said alined shafts at different velocities, a rotary feeding-spout carried by one of said alined shafts and entering the mortar, and a stationary casing surrounding the mortar and its crank connections and having a feeding-inlet in its upper part communicating with said rotary feeding-spout and a delivery-outlet in its lower part, all substantially as herein described.

706,108. BARREL BUNG AND BUSHING. ELWOOD C. PHILLIPS, Chicago, Ill., assignor of one-fourth to Oscar A. Schaffer, Chicago, Ill. Filed June 11, 1900. Serial No. 19,868. (No model.)

Claim.—In a barrel bung or bushing of the character herein described, the combination of a stationary bushing formed with a lower inturned margin or seat, a rotatable plug fitting said bushing and provided on its lower end with an integrally-formed stud having a cylindrical shank headed at its lower end, and an elastic disk arranged on the under surface of said plug, and a centrally-arranged enlargement protruding beyond the lower face of the disk and in which is formed a cavity adapted to engage the headed attaching-stud, the bottom of said cavity being closed so as to prevent leakage around and through the metal portions of the bung and bushing, substantially as set forth.

706,104. CHEESE-HOOP. EDWARD J. PRESCOTT, Chicago, Ill. Filed Feb. 24, 1902. Serial No. 96,292. (No model.)

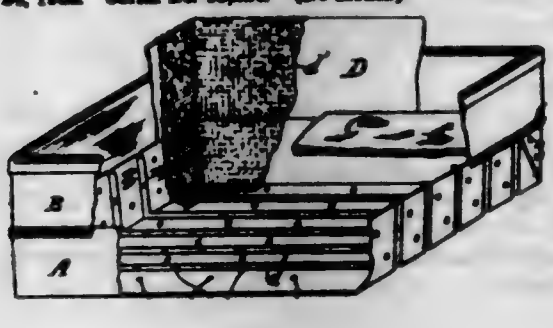

Claim.—1. A cheese-hoop comprising a rectangular-shaped main portion and a series of hollow and perforated ribs located on the inner surface of its bottom and walls, substantially as described.

2. A rectangular cheese-hoop having on its inner surface a series of hollow and perforated ribs, substantially as described.

3. A cheese-hoop comprising a rectangular-shaped main portion struck up and having formed integrally therewith a series of perforated ribs, substantially as described.

706,105. DRIVING MECHANISM FOR HOISTING AND CONVEYING APPARATUS. WILLIAM F. PILLSBURY and DAVID ANDERSON, Westerville, N. Y. Filed Dec. 22, 1900. Serial No. 40,830. (No model.)

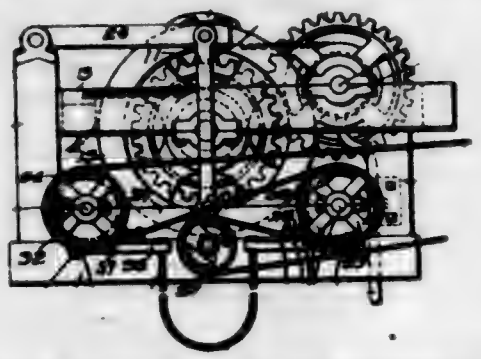

Claim.—1. In a reversing apparatus, the combination of a power-wheel, a brake normally applied thereto, opposite drive-wheels supported by the brake and constructed for alternate engagement with the power-wheel, and means for automatically removing the brake by the application of either drive-wheel.

2. In a power-controlling device, the combination with a power-wheel, of a drive-wheel normally out of engagement therewith, a brake supporting the drive-wheel and normally in engagement with the power-wheel, means for applying and removing the drive-wheel with respect to the power-wheel and a connection between the drive-wheel and the brake constructed for automatically removing the latter by the application of the former.

3. In a power-controlling device, the combination with a power-wheel, of a normally applied brake therefor, a drive-wheel normally out of engagement with the power-wheel and supported solely by the brake whereby the latter is normally applied, and means for applying the drive-wheel to the power-wheel and removing the brake through the connection between the latter and the drive-wheel.

4. In a power-controlling device, the combination with a power-wheel, of a normally applied brake therefor, a rocker supported solely by the brake whereby the latter is normally applied, opposite drive-wheels mounted upon the opposite end portions of the rocker, means for operating the rocker to alternately apply the drive-wheels to the power-wheel, and opposite fulcrum-supports for the rocker.

5. In a power-controlling device, the combination with a power-wheel, of a normally applied brake therefor, a rocker pivotally hung at its middle from the brake whereby the latter is normally applied, drive-wheels mounted upon the opposite end portions of the rocker and constructed for alternate engagement with the power-wheel, means for tilting the rocker upon its pivotal support to apply either drive-wheel to the power-wheel, and fulcrum-supports for the rocker located at opposite sides of the middle pivotal support and constructed for alternate engagement by the rocker in its opposite tilting movements to force the brake from the power-wheel.

6. In a power-controlling device, the combination with a power-wheel, of an intermediately-fulcrumed rocker, drive-wheels mounted upon the opposite end portions thereof and constructed for frictional engagement with the power-wheel, and opposite levers operatively connected to the respective ends of the rocker and constructed to tilt the latter and alternately apply the drive-wheels to the power-wheel.

7. In a power-controlling device, the combination with a frame, of a power-wheel mounted thereon, a brake-lever pivoted to the frame and having a shoe normally applied to the power-wheel, a rocker pivotally supported at its middle upon the brake-lever, whereby the weight of the rocker normally applies the brake, pairs of belt and drive wheels mounted upon the opposite end portions of the rocker, the drive-wheels being constructed for engagement with the power-wheel, a continuous drive-belt passed in opposite directions about the belt-wheels, means for tilting the rocker in opposite directions upon its pivotal support, and opposite fulcrum-supports carried by the frame at opposite sides of the pivotal support of the rocker and constructed for alternate engagement by the rocker in its opposite tilting movements, whereby the brake is forced out of engagement with the power-wheel when either drive-wheel is applied thereto.

8. In a power-controlling device, the combination with a frame, of a power-wheel mounted thereon, a brake hinged to the frame and normally applied to the power-wheel, a rocker pivotally hung at its middle from the brake and adjacent to the upper side of one of the frame-bars, the weight of the rocker normally applying the brake, operatively-connected pairs of belt and drive wheels mounted upon the opposite end portions of the rocker, the drive-wheels being constructed for alternate engagement with the power-wheel, a continuous drive-belt passed in opposite directions about the belt-wheels, lateral fulcrum projections carried by the rocker at opposite sides of its middle and constructed for alternate engagement with the adjacent frame-beam, and opposite levers fulcrumed upon the frame, and having operative connections with the respective ends of the rocker to tilt the same in opposite directions.

706,106. ELECTRIC RAILWAY. WILLIAM R. POTTER, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Nov. 18, 1896. Serial No. 612,648. (No model.)

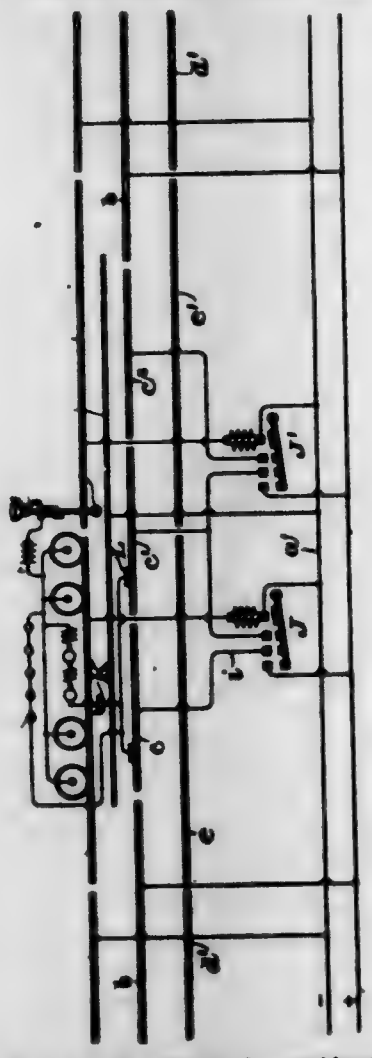

Claim.—1. In an electric railway, the combination of a third-rail conductor the continuity of which is interrupted at stations or other predetermined points, sectional conductors at the points of interruption, traffic-rails divided electrically into sections at the points of interruption, and energizing-coils for circuit-closing switches permanently included in circuit between the traffic-rail sections and the negative conductor; the arrangement being such that the coils are energized by the main-line current after it has passed through the propelling motor or motors.

2. In an electric railway, the combination of a third-rail conductor the continuity of which is interrupted at stations or other predetermined points, sectional power-conductors substituted at the points of interruption, insulated sections of the traffic-rails also located at the points of interruption of the third rail or conductor forming energizing-conductors, switches for closing the circuit between the power-sections and the source of supply, and energizing-coils for the switches permanently included in circuit between the sectional traffic-rails and the negative conductor, the arrangement being such that the coils are energized by the main-line current after it has passed through the propelling motor or motors.

3. In an electric railway, the combination of a vehicle, a sectional power-conductor normally disconnected from the source of supply, a continuous conductor extending parallel with the sectional conductor but forming no part of the motor-circuit, a battery, electromagnetic switches for closing the circuit between the source of supply and the sectional conductor, and means for including the battery in circuit with said conductor and the energizing-coils of the switches for closing the circuit of the sectional conductor.

4. In an electric-railway system, the combination of a third rail or conductor for supplying current to the motors and lighting-circuit, the continuity of which is interrupted at certain points, a sectional conductor substituted at the point of interruption, a feeder and means for transferring the lighting-circuit from the third rail to the sectional conductor.

5. In an electric-railway system, the combination of a third rail or conductor for supplying current to the motors and lighting-circuit, the continuity of which is interrupted at certain points, a sectional conductor substituted at the point of interruption, a feeder, means for transferring the lighting-circuit from the continuous third rail to the sectional conductor, switches for including the sectional conductors in circuit with the feeder, and means for maintaining the circuit after the supply of current to the motors ceases.

6. In an electric railway, the combination of a third rail or conductor, the continuity of which is interrupted at certain points, a sectional conductor substituted therefor at the point of interruption, traffic-rails also divided into sections at the point of interruption of the third rail, and a conductor permanently grounded extending parallel with the sectional conductor, and approximately equal in length to the space between the ends of the third rail.

7. In an electric railway, the combination with the positive and negative main wires or cables, of power-conductor sections, electromagnetically-operated switches for connecting the latter with the positive main, insulated track-sections, connections including switch-operating coils between the track-sections and the negative main, whereby the switches are operated by current flowing from the motors, an independent or auxiliary source of current carried by the car and adapted to be connected with the track-rails, and an auxiliary road-conductor connected to the negative main, and over which conductor a circuit is established to initially energize a switch-magnet.

8. In an electric railway, the combination with the feeder, of a power-conductor permanently connected therewith but interrupted at desirable locations, power-conductor sections between the adjacent ends of the interrupted conductor and normally disconnected from the feeder, collecting means on the car, electromagnetic switches adapted to connect said sections with the feeder as the car is driven forward, and a device on the car adapted to be operated manually to close said switches when insufficient current is flowing through the collecting means, said device being automatically rendered inoperative as the car proceeds.

9. In an electric railway, the combination with the feeder, of a sectional power-conductor, a collector carried by the car, car-motors, connected with the collector, a controller for the motors, translating devices in parallel with the motors, electromagnetic switches for connecting the power-conductor sections with the feeder while sufficient current is flowing through the collector, but tending to open when the current falls off, and an auxiliary means for maintaining said switches closed when the current flowing through the collector is insufficient.

10. In an electric railway, the combination with the feeder, of a power-conductor permanently connected with the feeder, and interrupted for a considerable space at locations where it is undesirable to have the power-conductor continuously alive, power-conductor sections in such space and normally disconnected from the feeder, a collector, electromagnetic switches adapted to be closed to connect said sections with the feeder while sufficient current is flowing through the collector, but tending to open when such current falls off, and auxiliary means for closing said switches when the current flowing through the collector is insufficient.

11. In an electric railway, the combination with the feeder, power-conductor sections, electromagnetically-operated switches for connecting the latter with the former, energizing-conductor sections connected with the magnet-coils of the switches, a traveling collector on the car for collecting current for the motors from the power-conductor section, traveling conductors on the car connected with the motors and engaging the energizing-sections, and an auxiliary traveling contact carried by the car for opening the switches when current is cut off from the car-motors.

12. In an electric railway, the combination with the feeder, of auxiliary conductor-sections, a collector carried by the car for engaging said conductor-sections, electromagnetic switches adapted to be closed by current flowing through the collector to connect the power-conductor sections with the feeder as the car progresses, a road-conductor independent of said conductor-sections, which is connected with the coils of said switches, a source of electricity on the car, and a contact device connected with said source and adapted to engage said road-conductor to energize said switches when they open owing to a leak of current flowing through the collector.

13. In an electric railway, the combination with the positive and negative mains, of conductor-sections, electromagnetic switches for connecting the latter with the former, the switch-coils being connected between the negative main and conductor-sections, an independent or auxiliary source of current adapted to be connected with a conductor-section, and an auxiliary road-conductor independent of said conductor-sections, which is connected to the negative main, whereby when the auxiliary

source is connected also with the auxiliary conductor, a circuit will be established through a switch-magnet.

14. In an electric railway, the combination with the feeder, of a sectional power-conductor, electromagnetic switches for connecting the sections of the latter with the former, an auxiliary or pick-up sectional conductor arranged parallel to the sectional power-conductor, each section of said auxiliary conductor being connected to but one switch-magnet coil, and collectors carried by the car, the relative arrangement of the sectional conductors and collectors being such that a section of the auxiliary conductor is engaged by a collector, in either direction of movement of the car, before the power-section, which is thereby energized, is engaged by its collector.

15. In an electric railway, the combination with the feeder, of a sectional power-conductor, electromagnetic switches connecting the former with the latter, a sectional auxiliary or pick-up conductor arranged parallel to the power-conductor, each section of the auxiliary conductor being connected with but one switch-magnet coil, and the sections of the power and auxiliary conductor overlapping with respect to each other, whereby each power-conductor section is connected to the feeder in advance of the collector.

16. In an electric railway, the combination with the feeder, of a sectional power-conductor, electromagnetic switches for connecting the sections of the latter with the former, an auxiliary or pick-up conductor located parallel to the sectional power-conductor, a section of the auxiliary power-conductor being connected to the magnet-coils of the switch, a switch being connected to two power-sections, a power-section being connected to two switches; and collectors carried by the car, the relative arrangement of the power and auxiliary sections and the collectors being such that a switch is closed to enliven two power-sections before the collector has engaged with either of such power-sections.

706,107. FRUIT-KNIFE. CHARLES W. PERRYMAN, Antrim, N. H., assignor to Goodell Company, Antrim, N. H. Filed Mar. 1, 1902. Serial No. 96,261. (No model.)

Claim.—A fruit-knife having a curved cutting front edge, and a curved blunt back edge, and a sharp point, and having on the blunt edge, near the point, a short sharpened parting-blade at an angle with the blunt back, and lying in the same plane with the blade proper, substantially as described.

706,108. DYNAMO-ELECTRIC MACHINE. HENRY G. REIST, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Nov. 13, 1900. Serial No. 36,348. (No model.)

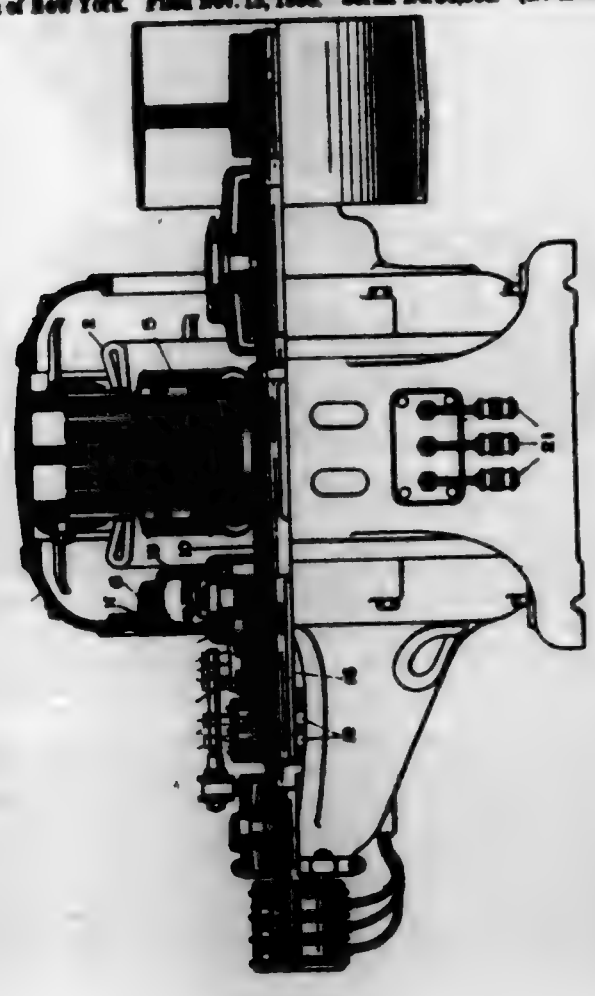

Claim.—1. The combination of an internal revolving-field alternator, an exciter or regulating-machine therefor having its armature synchronously rotatable with the revolving-field member of the alternator, collector-rings connected to said armature, and other collector-rings connected with said revolving-field member.

2. The combination of an internal revolving-field alternator, an exciter or regulating-machine therefor having its armature mounted on the same shaft as the revolving-field member of the alternator, and means for angularly adjusting the field of the exciter.

3. A dynamo-electric machine consisting of a main machine and an exciter therefor with the revolving members of each mounted on the same shaft, and means for moving the field of the exciter relatively to the fixed member of the main machine.

4. The combination of a main machine, a synchronously-driven exciter therefor, and means for adjusting the exciter-field relatively to the fixed member of the main machine.

5. The combination of a main machine, an exciter therefor having a field-magnet structure provided with pole-pieces, bridges of magnetic material extending between said pole-pieces, and means for adjusting the exciter-field relatively to the fixed member of the main machine.

6. A compounded alternator consisting of a main machine of the revolving-field type, an exciter or regulating-machine therefor having its armature and commutator mounted on the same shaft as the revolving member of the main machine, collector-rings connected to points in the winding of said armature, and other collector-rings connected to the winding of the revolving field of the main machine.

7. A compounded alternator consisting of a main machine of the revolving-field type, an exciter or regulating-machine therefor having its armature and commutator mounted on the same shaft as the revolving member of the main machine, collector-rings connected to points in the winding of said armature, other collector-rings connected to the winding of the revolving field of the main machine, and a rigid supporting structure or frame for carrying the fixed members of both machines.

8. A compounded alternator comprising a main machine, an exciter therefor, a single shaft upon which the revolving member of the main machine and armature of the exciter are both mounted, and means for shifting the field structure of the exciter relatively to the fixed portion of the main machine.

706,109. WHIFFLETREE ATTACHMENT. NICHOLAS REIMER, Hawkeye, Iowa. Filed Feb. 8, 1902. Serial No. 93,154. (No model.)

Claim.—The herein-described securing device for singletrees or the like, comprising a suitable anchoring-thimble 2, a hook 3 attached to the outer end of said thimble and having its free end directed inward; a housing 5 carried by said thimble having a pivoted detent 7 adapted to engage the free end of said hook; a spring adapted to hold the outer end of said detent in engagement with said hook and a pivoted detent having an operating handle or crank adapted to engage the locking-detent and hold the same against inward movement whereby the tug or trace-chain will be reliably locked in engagement with the said hook until it is desired to release the same, all operatively combined substantially as specified and for the purpose set forth.

706,110. TOY. FRANK D. REITZEL, Cincinnati, Ohio. Filed Feb. 3, 1902. Serial No. 92,206. (No model.)

Claim.—1. A representation of a human figure jointed so as to be capable of assuming either an upright or a sitting position, a seat for the figure and a support for it extending forwardly from the seat and on which it may be guided and moved bodily in a substantially horizontal direction

to or from such seat, the figure assuming a sitting position when coming in contact with the seat and assuming an upright position when being moved away therefrom.

2. In a toy, the combination of a seat, a figure and a support for this latter extending forwardly from the seat in a substantially horizontal direction and on which the figure may be moved between fixed limits to or from the seat, this latter forming the limit of the movement in a rearwardly direction.

706,111. METHOD OF MAKING CARBONIC-ACID GAS. VAN VECHTEN W. EMMENS, Philadelphia, Pa. Filed July 13, 1901. Serial No. 68,736. (No specimens.)

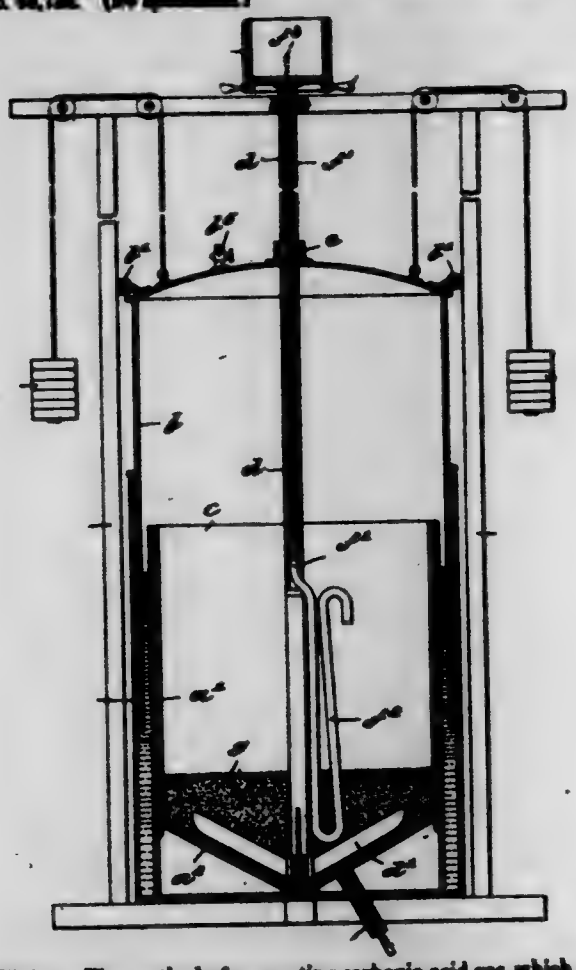

Claim.—The method of generating carbonic-acid gas, which consists in, first, introducing a charge of carbonaceous material into a receptacle; second, in forming in the receptacle a partial vacuum; third, introducing acid continuously to the carbonaceous material after the vacuum has been formed, and, finally, increasing the capacity of the receptacle as the gas is generated, to thereby maintain the gas under low pressure.

706,112. BAROMETER. ALFRED L. ROSSIUS, Chicago, Ill. Filed Sept. 30, 1901. Serial No. 77,063. (No model.)

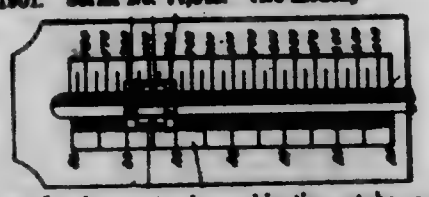

Claim.—1. In a barometer, in combination, a tube; a barometric column in said tube; a bracket having a shoulder for supporting said tube, also having an elongated opening in its upper end; a clip adapted to guide said bracket; and a thumb-screw extending through a threaded opening in said clip for engaging said bracket to bodily raise and lower said tube to provide for the expansion and contraction of said column.

2. In a barometer, in combination, a base; a barometric tube bent to form a long and a short leg, said short leg being provided with a cistern having an open upper end; a mercurial column in said tube; keeps on said base for slidably supporting the long leg of said tube; a mirror secured to said base behind said cistern, said mirror having a zero-mark, a bracket for supporting said tube at the point of juncture of its legs; and a screw for moving said bracket to adjust said column with reference to said zero-mark.

3. In a barometer, in combination, a barometric tube; an integral cistern having an open upper end, said cistern communicating at its lower end with one end of said tube and being formed integral with said tube; a barometric column in said tube; and a closure for said cistern, comprising a portion adapted to tightly engage the open upper end of said cistern, and a body portion composed of elastic material adapted to contain a quantity of mercury.

4. In a barometer, in combination, a barometric tube bent to form a long and a short leg, said short leg being provided with a cistern formed integral therewith, said cistern having an open upper end; a mercurial column in said tube; and a closure for said cistern, comprising an elastic tube adapted to contain a quantity of mercury, and to be secured by one of its ends to the upper end of said cistern.

5. In a barometer, in combination, a barometric tube having a cistern at its open end formed integral with said tube; a barometric column in said tube; an elastic closure for said cistern adapted to be secured over the open end thereof; and means for bodily adjusting the barometric tube to provide for the expansion and contraction of said barometric column.

6. In a barometer, in combination, a barometric tube having a cistern at its open end formed integral with said tube; a barometric column in said tube; an elastic closure for said cistern adapted to be secured over the open end thereof; a bracket for supporting said tube; and means for moving said bracket in a vertical direction to provide for the expansion and contraction of said column.

7. A vernier for barometers, having two scales for different systems linear measurement, and a spring for holding said scales in frictional engagement with a portion of the barometer upon which it is mounted.

8. A vernier for barometers, having two scales for different systems of linear measurement, and two loops for holding said scales together and for engaging the barometric tube for frictionally holding said vernier in engagement with a portion of the barometer upon which it is mounted.

706,118. KINETOGRAPHIC APPARATUS. ALVAN C. ROSSOCK and FRANK MCMILLAN, Chicago, Ill. Filed Mar. 22, 1900. Serial No. 9,947. (No model.)

Claim.—1. In a kinetographic apparatus, the combination of a closed casing provided with an objective at one side and with passages at top and bottom for the passage of a pictured film, a film-feeding mechanism arranged within said casing, a door forming the opposite side of the casing and adapted to maintain the film at the proper focal plane, a vertical pivot-pintle securing the door to the casing, a supporting-standard having connection with said casing at the side at which the door is hinged, and adapted to provide an open-sided passage beneath the casing, substantially as set forth.

2. In a kinetographic apparatus, the combination of a closed casing provided with an objective at one side and with passages at top and bottom for the passage of a pictured film, a film-feeding mechanism arranged within said casing, a door forming the opposite side of the casing and adapted to maintain the film at the proper focal plane, a vertical pivot-pintle securing the door to the casing, a vertically-adjustable sash arranged upon said door and provided with a framing-opening, a supporting-standard having connection with said casing at the side at which the door is

hinged and adapted to provide an open-sided passage beneath the casing, substantially as set forth.

3. In a kinetographic apparatus of the character herein described, the combination of a main casing, a door adapted to maintain the picture-frame at the focal plane, a vertically-sliding sash arranged to move in guides on said door and provided with a picture-framing opening, and a crank-disk journaled in the door and provided with a crank-pin having operative engagement with the sash, substantially as set forth.

4. In a kinetographic apparatus, the combination of a closed casing provided with an objective at one side and with passages at top and bottom for the passage of a pictured film, a film-feeding mechanism arranged within said casing, a door forming the opposite side of the casing and adapted to maintain the film at the proper focal plane, a vertical pivot-pintle securing the door to the casing, a bearing-roller journaled on said door and adapted to hold the film in engagement with the feeding mechanism, and a spring tending to force said roller toward such film-feeding mechanism, substantially as set forth.

5. In a kinetographic apparatus, the combination of a closed casing provided with passages at top and bottom for the passage of a pictured film, a film-feeding mechanism arranged within said casing, a door hinged at one side of said casing on a vertical pivot-axis and forming one side of the casing, and adapted to maintain the film at the proper focal plane, a supporting-standard having connection with said casing at the side at which the door is hinged, an initial film-feeding mechanism journaled wholly at one end to such supporting-standard, and adapted in connection with said door to admit of a ready removal and replacement of the film in the film-changing operation, substantially as set forth.

6. In a kinetographic apparatus, the combination of a closed casing provided with passages at top and bottom for the passage of a pictured film, a film-feeding mechanism arranged within said casing, a door hinged at one side of said casing on a vertical pivot-axis and forming one side of the casing and adapted to maintain the film at the proper focal plane, a supporting-standard having connection with said casing at the side at which the door is hinged, an initial film-feeding mechanism journaled wholly at one end to such supporting-standard, a horizontal arm secured to said standard, and an auxiliary film-feeding mechanism journaled wholly at one end on said horizontal arm, substantially as set forth.

7. In a kinetographic apparatus of the character herein described, the combination with the film-carrying reel, of a supporting-arbor for such reel, and a combined attaching means and frictional connection between such reel and arbor, the same comprising a spring-finger carried by the reel, and a circumferential groove in said arbor adapted to receive said spring-finger, substantially as set forth.

8. In a kinetographic apparatus of the character herein described, the combination with the main casing, of a swinging door for the same, and a horizontal rod extending transversely across the casing and provided with a catch to engage the free end of the door, substantially as set forth.

9. In a kinetographic apparatus of the character herein described, the combination with the main casing, film-feeding roller and a revolving shutter, of a driving-shaft forming a journal for the feeding-roller and revoluble independent of such roller, a gear-wheel on the driving-shaft, a gear-wheel on the shutter-shaft gearing with said gear-wheel, and gearing connection between the shutter and the film-feeding roller, adapted to impart intermittent motion to said roller, substantially as set forth.

706,114. BALL THRUST-BEARING. ALBERT RUDY, Toledo, Ohio. Filed May 22, 1902. Serial No. 108,658. (No model.)

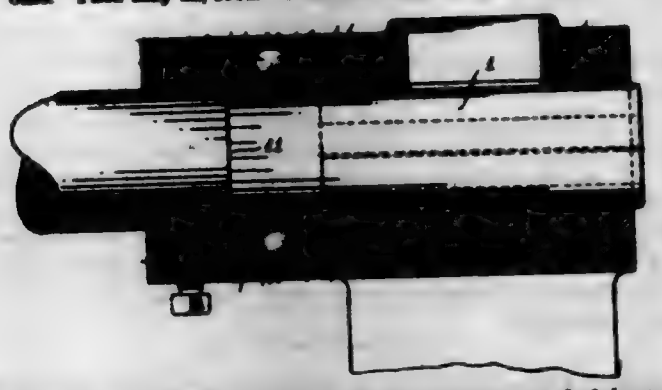

Claim.—In a ball thrust bearing, the combination of a shaft having a reduced end portion forming a shoulder; a bearing having a socket or bore to receive the end of the shaft, there being a bearing-face around the socket or bore of the bearing, and a pin projecting from the face; a flat-faced bearing-ring mounted on the shaft and provided with a socket on one side to receive the pin of the bearing, a collar having one side faced and provided with a pin projecting from the face, mounted and secured on the shaft with its face concentric and flush with the face of the shoulder of the shaft; a flat-faced bearing-ring mounted on the shaft having an aperture in one face adapted to receive the pin of the collar; a flat-faced ball cage-ring having cylindrical ball-apertures transverse through the sides and in a circle concentric around the bore of the ring mounted on the shaft between the bearing-rings and balls in the apertures having greater diameter than the thickness of the cage, substantially as shown and described.

706,115. APPARATUS FOR CARBONATING LIQUIDS. ARI RELF, Brussels, Belgium. Filed Aug. 9, 1901. Serial No. 71,462. (No model.)

Claim.—1. In a carbonating apparatus, the combination of an inclosed casing having a discharge-outlet for the carbonated liquid and inlets for the gas and the liquid to be carbonated, a plurality of concentric annular tubes arranged in said casing, communicative connection between said tubes and the liquid-inlet, and concentric cylindrical bodies alternating with said tubes and each open at one end, said tubes and the cylindrical bodies being arranged in close proximity to each other and the former being perforated adjacent said cylindrical bodies, substantially as described.

2. In a carbonating apparatus, the combination of an inclosed casing having a discharge-outlet at the bottom for the carbonated liquid and inlets for the gas and the liquid to be carbonated, a plurality of concentric annular tubes arranged in said casing, communicative connection between said tubes and the liquid-inlet, concentric cylinders alternating with said tubes and each open at one end, said tubes and the cylinders being arranged in close proximity to each other and the former being perforated adjacent said cylinders, and a perforated support serving as a seat for the lower ends of said cylinders, substantially as described.

706,116. ROTARY MOTOR. ROBERT C. SAYER, Bristol, England. Filed Sept. 30, 1901. Serial No. 77,112. (No model.)

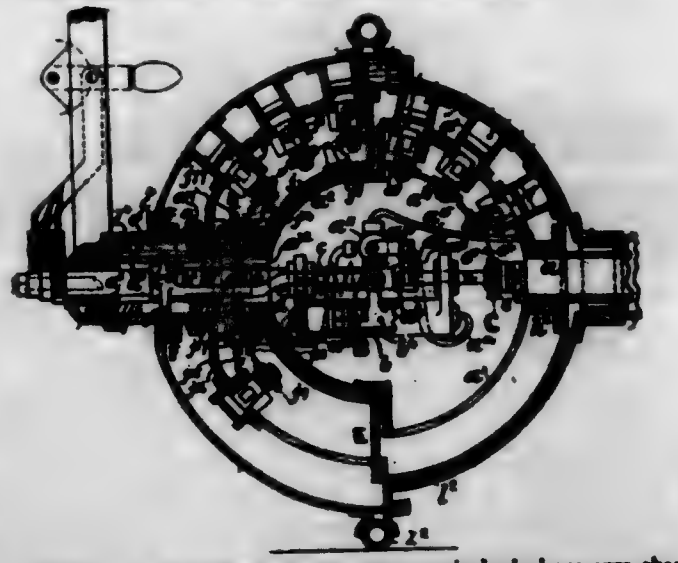

Claim.—1. In fluid-pressure motors a cuneiphorical pressure-chamber formed by an enlargement of the fixed axis, a series of nozzles or passages carried on and exterior to the pressure-chamber, a valve carried by and in the pressure-chamber, a means for actuating the valve through

the fixed axle from outside it for the valve to admit the pressure to the nozzles, a rotary element outside the pressure-chamber carried on proper bearings on the fixed axle, a series of vanes or buckets inside the rotary element and formed to receive jets of fluid from the nozzles or passages and be rotated by it; corrugated packings to prevent the pressure from escaping until the point of exhaust, a passage for the exhaust-pressure to pass between the rotary element, the pressure-chamber, and fixed axle, spiral pipe-coils to subdivide the exhaust-passage and a means for supplying the spiral pipe-coils with water or air, substantially as described.

2. A fluid-pressure motor comprising a fixed axle, a pressure-chamber formed by an enlargement of the fixed axle at an intermediate part of its length, a series of nozzles or passages carried on and exterior to the pressure-chamber, valves arranged in pairs in the pressure-chamber, a means for operating either valve of a pair to open while the other is closed to admit the fluid under pressure to either of a series of oppositely-directed nozzles to rotate the motor in either the forward or backward direction, a rotary element mounted outside the pressure-chamber on bearings on the fixed axle, and a series of vanes or buckets fixed inside the rotary element and adapted to receive the jets of fluid from the nozzles or passages, the valves, nozzles, and vanes or buckets, being arranged in series at different vertical distances from the center line of the axle, substantially as described.

3. In fluid-pressure motors the combination with a semispherical pressure-chamber and an outer rotary element adapted to be driven therefrom, of a semispherical auxiliary fluid-pressure chamber attached to the rotary element of the said motor, ports or openings through which the pressure in the axle pressure-chamber of the said motor can pass to the auxiliary pressure-chamber of the rotary element, valves in the said pressure-chamber disposed like those of the said motor, a means through and outside the fixed axle for actuating the valves, series of nozzles or passages outside the auxiliary pressure-chamber adapted to admit the pressure to and act and react against vanes or buckets fixed upon and within the concentric superimposed outer rotary element able to rotate on proper bearings directly or indirectly upon the fixed axle of the said motor, packing to prevent escape of the pressure and a passage in communication with the atmosphere to carry off the exhaust-pressure with dividing-pipes substantially as described.

4. In fluid-pressure motors having two or more concentrically-mounted rotors able to rotate on a fixed axle, keyways in the two rotors, and the fixed axle, and an annular passage in the axle in which a key may rotate with the one rotor or both so that in a center position the key connects the rotors and rotates in a side position the key frees the rotors and rotates; and the other side position it connects the fixed axle and its adjacent rotor; means for traversing the key by a ring on arms and a sleeve; means for traversing the sleeve on a tube against a spring secured to an arm on a rod having a piston each end within an elastic fluid-pressure cylinder in the axle pressure-chamber; a tap and pipes to send pressure to both ends of the cylinder, or retain it at either end and exhaust the other end, and a means for actuating the tap through and from outside the axle, substantially as described.

706,117. CLUTCH FOR INDUCTION-MOTORS. ALFRED SCHWARTZ, Munich, Germany, assignor to Helios Electricitäts-Aktiengesellschaft, Cologne-Ehrenfeld, Germany. Original application filed Mar. 18, 1901, Serial No. 51,736. Divided and this application filed Oct. 28, 1901. Serial No. 80,290. (No model.)

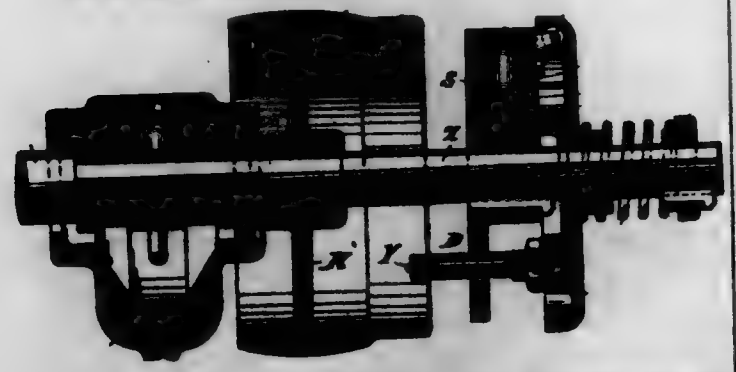

Claim.—1. In a clutch for induction-motors, the combination with a journal, of a belt-pulley mounted on the journal and provided with an extended cylindrical wall, an interior wall or partition in said pulley, a disk mounted to slide on the journal, radially-movable clutch-jaws carried by said disk, rollers carried by and extending outwardly from said jaws, means adapted to engage said rollers for holding said jaws in the retracted position, and means for engagement with the interior wall of the pulley to release the retaining means whereby said jaws engage the extended cylindrical wall of the pulley, substantially as described.

2. In a device of the character described, the combination with the journal, of a belt-pulley mounted thereon and provided with an interior wall or partition, a disk mounted for longitudinal movement on said journal, radially-movable jaws carried by said disk, rollers carried by said jaws, a spring-pressed retainer mounted on said journal for engagement with the rollers to normally hold said jaws in the retracted position and means for engagement with the interior wall or partition of the pulley to disengage the retainer from the pulleys, as and for the purpose specified.

706,118. COMBINED TEMPERING-VAT, CHURN, AND BUTTER-WORKER. PHILIP H SHARPLES, Westchester, Pa. Filed Jan. 16, 1900. Serial No. 1,852. (No model.)

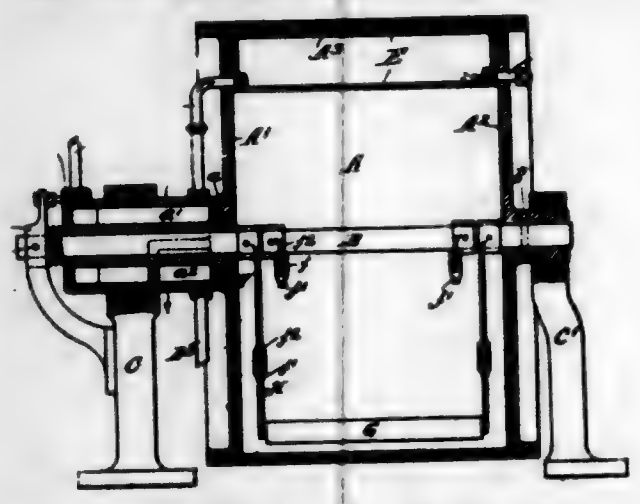

Claim.—1. A combined tempering-vat, churn, and butter-worker comprising a rotary vessel having a series of paddles, means for circulating liquid through said paddles and one or more working devices within said vessel adapted to be operated by the rotation of the latter.

2. A combined tempering-vat, churn, and butter-worker comprising a rotary vessel having a series of paddles, means for circulating liquid through said paddles during the rotation of the vessel, working devices within said vessel adapted to be operated by the rotation of the latter, and means for locking said working devices.

3. A combined churn and butter-worker comprising a rotary vessel having a series of paddles, and one or more working devices mounted on fixed pivots within the vessel and arranged to be raised by a passing paddle and thereafter to fall in the path of a succeeding paddle.

4. A combined churn and butter-worker comprising a rotary vessel having a series of paddles, and working devices mounted on fixed pivots within the vessel and arranged to be raised by each passing paddle and thereafter to fall in the path of a succeeding paddle, the swing of said working devices being first toward and then away from the wall of the vessel.

5. A combined churn and butter-worker comprising a rotary vessel having a series of paddles and one or more working devices eccentrically pivoted within the vessel and arranged to swing between adjacent projecting paddles of the rotating vessel in an arc of reduced radius approximately tangent to the wall of the vessel substantially as set forth.

6. A combined churn and butter-worker comprising a rotary vessel having a series of paddles, one or more working devices eccentrically pivoted within the vessel and arranged to swing between adjacent projecting paddles of the rotating vessel in an arc of reduced radius approximately tangent to the wall of the vessel, and stops to limit said swing substantially as set forth.

7. A combined churn and butter-worker comprising a rotary vessel having a series of paddles, one or more working devices eccentrically pivoted within the vessel and arranged to swing approximately at a tangent to the wall thereof, and means for attaching said pivoted devices to the vessel so as to be fixedly rotated therewith, substantially as set forth.

8. A combined churn and butter-worker comprising a rotary vessel having a series of paddles, a shaft having fixed thereto one or more carrying-arms, working devices connected to said arms so as to be capable of a limited swinging movement thereon, and means for rigidly attaching said shaft with its connections to the rotary vessel when desired substantially as described.

706,119. PAINT. JAMES C. SHAW, WILLIE J. SHAW, and ROBERT E. SHAW, Bessemer, Ala. Filed Mar. 11, 1902. Serial No. 97,764. (No specimens.)

Claim.—1. The herein-described paint, consisting of coal-tar, creosote, linseed-oil, asphaltum varnish, and fine salt, substantially as described and for the purpose specified.

2. The herein-described paint, consisting of, coal-tar thirty-six gallons, creosote eight gallons, linseed-oil two gallons, asphaltum varnish two gallons, and fine salt ten pounds, substantially as described.

706,120. ENGINE. SIDNEY H. SHORT, London, England. Filed Nov. 15, 1901. Serial No. 82,465. (No model.)

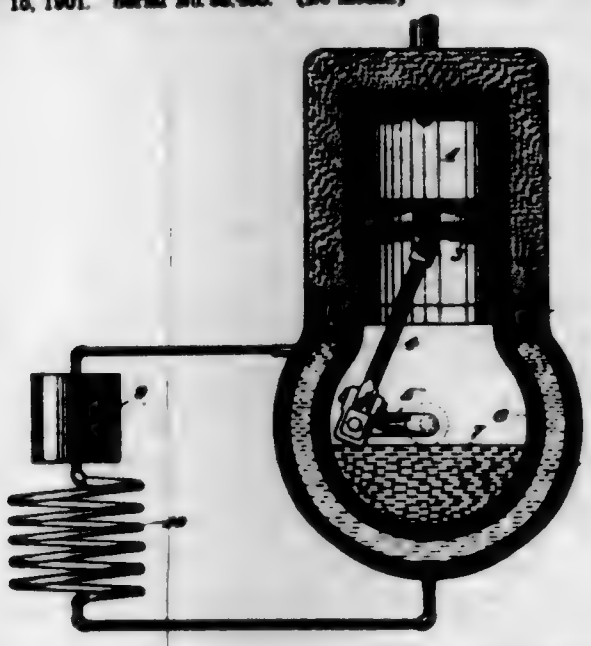

Claim.—1. In an engine, a water-jacketed crank-casing adapted to contain a body of oil, a non-water-jacketed cylinder, and a thermal insulation between said cylinder and said crank-casing.

2. In an engine, a water-jacketed crank-casing, a cylinder insulated therefrom and covered with a non-conducting substance, said crank-casing being adapted to hold a considerable body of oil, a water-supply, means for conducting cooling-water from said water-supply through said water-jacket.

3. A steam-engine having a lagged steam-cylinder, an inclosed crank-chamber insulated therefrom, said crank-chamber adapted to contain a body of oil, a water-jacket about said crank-chamber, and a water-circulating system for said water-jacket leading to a boiler-supply.

4. A high-pressure steam-engine having a steam-cylinder, an inclosed crank-chamber adapted to contain a considerable body of oil in such a position that the movement of the engine parts shall splash oil contained therein upon the parts, a water-jacket about the said crank-chamber, and a water-circulating system for said water-jacket adapted to prevent overheating of oil in said crank-chamber.

5. A high-pressure steam-engine having a steam-cylinder, an inclosed crank-chamber adapted to contain a considerable body of oil in such a position that the movement of the engine parts shall splash oil contained therein upon the parts, a water-jacket about the said crank-chamber, and a water-circulating system for said water-jacket adapted to prevent overheating of oil in said crank-chamber, the said water-circulating system leading to a boiler-supply.

706,121. IGNITION-GEAR FOR INTERNAL-COMBUSTION ENGINES. FREDERICK R. SIMMS, Bermondsey, England, and ROBERT BOSCH, Stuttgart, Germany. Filed Sept. 20, 1901. Serial No. 75,863. (No model.)

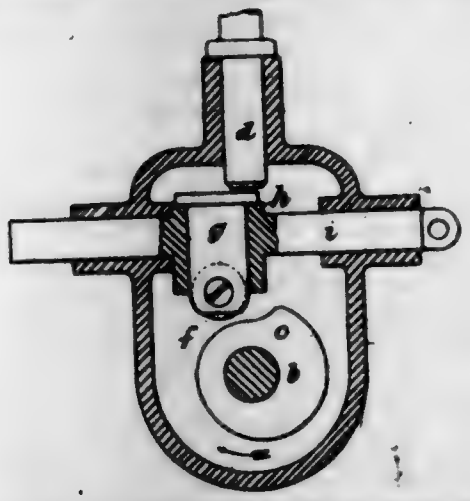

Claim.—1. The combination with igniting devices provided with a movable member, of an igniter-operating cam, a slide, a push-piece carried by said slide and movable with respect thereto, said push-piece being interposed between the said cam and said movable member of the igniting devices, substantially as described.

2. The combination with the igniting devices provided with a movable member, of an igniter-operating cam, a slide adapted to be adjusted transversely with respect to the shaft of said cam, and provided with a socket, a push-piece movably engaging said socket and having a part to engage said movable member, and a part to engage said cam, substantially as described.

706,122. BRACKET. THEODORE SMITH, Chicago, Ill. Filed Nov 6, 1901. Serial No. 81,296. (No model.)

Claim.—1. The combination in a bracket, of an arm, adapted to be supported upon the wall and to swing in a horizontal plane, a block pivoted upon the extremity of said arm, likewise adapted to swing in a horizontal plane, a second arm, composed of two parallel rods connected to said block and adapted to swing in a vertical plane, said arm supporting, at its extremity, a second block, adapted to serve as a supporting device, with a clamp adapted to fix the position of said parallel-bar arm in any desired position; substantially as described.

2. The combination in a bracket of an arm, adapted to be supported upon the wall and to swing in a horizontal plane, a block pivoted upon the extremity of said arm, likewise adapted to swing in a horizontal plane, a second arm, composed of two parallel rods connected to said block and adapted to swing in a vertical plane, said arm supporting, at its extremity, a second block, adapted to serve as a supporting device, with a clamp embracing said parallel arms and adapted to fix their relative positions, thereby fastening the parallel-bar arm in any desired position; substantially as described.

3. The combination in a bracket, of an arm adapted to be supported upon the wall and to swing in a horizontal plane, a block pivoted upon the extremity of said arm, likewise adapted to swing in a horizontal plane, a second arm composed of two parallel rods connected to said block and adapted to swing in a vertical plane, said arm supporting, at its extremity, a second block, adapted to serve as a supporting device, with a clamp consisting of two portions, B', B^2, connected with a set-screw, embracing said parallel bars, one of said portions being provided with a rib, b', adapted to engage a notch, b^2, of one of said parallel arms, said clamp being adapted to be tightened by movement of said set-screw upon the other part of the arm, thereby fixing the position of the arm as desired; substantially as described.

4. The combination, in a bracket, having two arms suitably pivoted together, one of which contains two parallel rods, a', a^2, for controlling the movement thereof in one plane, of a limiting device for the joint, consisting substantially of two plates, provided with radial extensions adapted to be held in place upon one of the arms of said bracket, and a projecting plate upon the other arm, said radial extensions being adapted to engage said spline to limit the movement of the arm, with a clamp, B, adapted to hold firmly the bars, a', a^2, against relative longitudinal movement; substantially as described.

5. The combination, in a bracket, with a suitably-pivoted arm having a grooved end, a second arm containing two suitably-pivoted parallel

rods, pivoted upon the upturned end of said first arm, a device for limiting the horizontal movement of said second arm, consisting substantially of a plate, E^2, seated in said groove, a second plate supported on said second-named arm, and the plates, E', E^3, provided with radial extensions adapted to strike the plate, E', and held against radial movement upon said upturned end, of a clamp composed of two parts, E', E^3, adapted to hold the parallel rods of said second-named arm against relative longitudinal movement; substantially as described.

6. In a bracket, the combination with a suitable support, of a swinging arm pivoted therein and a device for limiting the movement of said arm comprising substantially two plates formed with radial extensions and with notches, a plate upon the support seated in notches in said plates to prevent rotation of said plates with respect to the support and a stop-plate upon the arm adapted to strike said radial extensions in the movement of said arm upon the support; substantially as described.

7. In the bracket, the combination with a support, of an arm journaled thereupon, containing two blocks and a pair of parallel rods pivoted upon said blocks and a device for limiting the movement of said arm upon the support comprising substantially two perforated plates seated upon said support and having radial extensions, and notches extending from said perforations, a plate seated in said support and engaging either of the notches in the plates, a second plate seated in said block and adapted to engage said radial extensions in the movement of the arm relative to said support; substantially as described.

8. In a bracket, the combination with a grooved vertical support, an arm pivoted thereupon and comprising substantially a split block seated upon the upturned end, a second block, a pair of parallel arms pivoted to both blocks and a set-screw adapted to clamp the block upon the support, of a device for limiting the swinging movement of said arm upon the support, comprising substantially two notched plates provided with radial extensions seated upon the support, a plate seated in the groove in the support and in the notches of the plates and a second plate secured in the block and adapted to strike the radial extensions, to limit the movement of the arm upon the support; substantially as described.

706,123. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES P. STEINMETZ, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed June 30, 1900. Serial No. 22,123. (No model.)

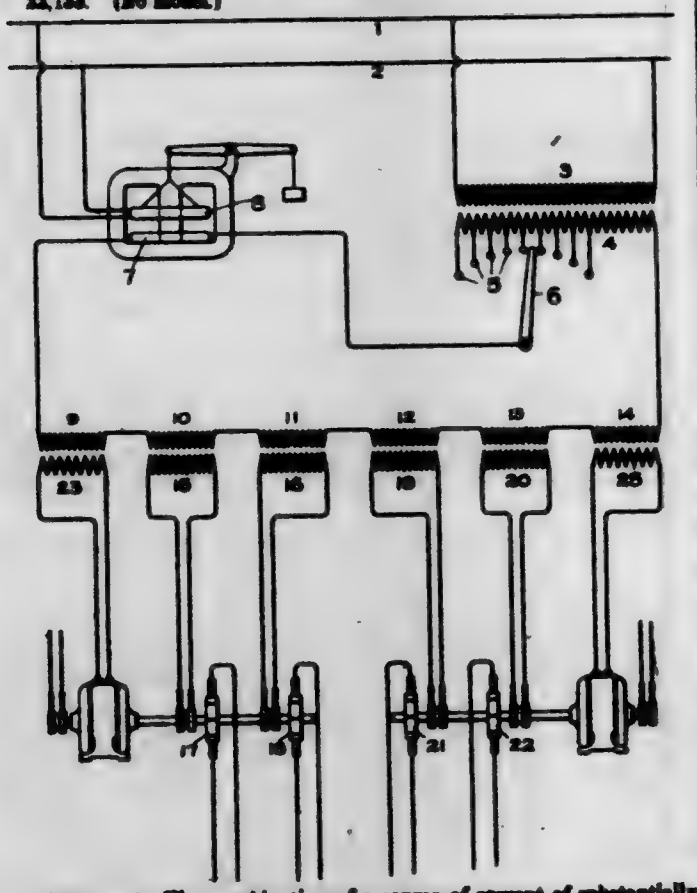

Claim.—1. The combination of a source of current of substantially constant value, a plurality of rectifiers, and means for supplying said rectifiers with current from said source.

2. The combination of a source of current of substantially constant value, a plurality of rectifiers, and means for deriving current from said source inductively and supplying it to said rectifiers.

3. The combination of a source of constant current, a synchronous motor, a rectifying-commutator driven thereby, and means for starting and supplying both the synchronous motor and the rectifying-commutator with current derived from said source.

4. The combination of a constant-current circuit carrying alternating current, a plurality of transformers having windings in series therewith, and rectifying-commutators fed from said transformers.

5. The combination of a constant-current circuit, and a plurality of rectifying-commutators supplied with current thereby.

6. The combination of a transformer having a divided secondary, a constant-current-regulating device in series with said secondary, and a consumption-circuit fed by said secondary and regulating device.

7. The combination of a plurality of sources of variable alternating electromotive force in series, and rectifying devices fed from said sources.

8. The combination of a constant-current circuit, a plurality of transformers having windings in series with said circuit, and rectifying-commutators fed from other windings on said transformers.

9. The combination of a constant-current circuit, means for deriving other constant-current circuits therefrom, and means for rectifying current flowing in the constant-current circuits last mentioned.

10. The combination of constant-potential mains, a transformer having its primary connected across said mains, a constant-current circuit including the secondary of said transformer, and means for varying the number of active turns of said secondary.

706,124. BUTTON-SEWING MACHINE. BENJAMIN T. STERN, Philadelphia, Pa., assignor to Clarence R. Mullen, Philadelphia, Pa. Filed July 17, 1900. Serial No. 23,916. (No model.)

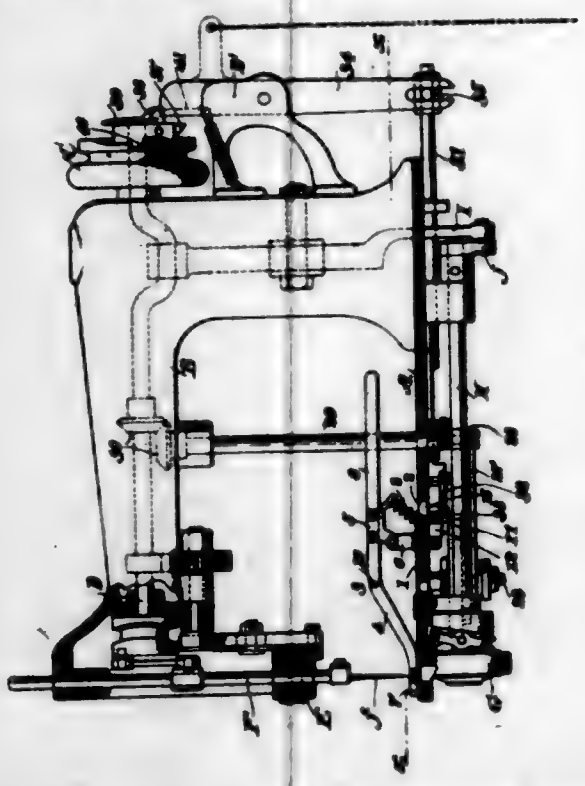

Claim.—1. In a button-sewing machine, the combination with stitch-forming mechanism and a button-holder, of means for imparting a vibratory movement to the needle-bar, and means comprising a cam to impart a vibratory movement to the button-holder in a plane at substantially a right angle to the plane of vibration of the needle-bar and simultaneously therewith and to suspend the motions of said button-holder during the vibration of the needle-bar.

2. In a button-sewing machine, the combination with stitch-forming mechanism and a button-holder, a slide-plate which is secured to the button-holder, and a cam for positively actuating said plate to impart to said holder a vibratory movement in a direction at substantially a right angle to the plane of movement of the needle-bar and simultaneously with the vibratory movement of the needle-bar and for suspending the motions of said button-holder during the vibration of the needle-bar.

3. In a button-sewing machine, the combination with stitch-forming mechanism and a button-holder, of means for imparting a vibratory movement to the needle-bar, means comprising a cam to impart a vibratory movement to the button-holder in a plane at substantially a right angle to the plane of vibration of the needle-bar and simultaneously therewith and to suspend the motions of said button-holder during the vibration of the needle-bar, and stop-motion devices to arrest both the needle-bar and button-holder after a given number of reciprocations.

4. In a button-sewing machine, the combination with stitch-forming mechanism and a button-holder, of means for imparting a vibratory movement to the needle-bar, means comprising a cam to impart a vibratory movement to the button-holder in a plane at substantially a right angle to the plane of vibration of the needle-bar and simultaneously therewith

and to suspend the motions of said button-holder during the vibration of the needle-bar, stop-motion devices to arrest both the needle-bar and button-holder after a given number of reciprocations, means to hold said stop-motion devices out of action, and means to automatically operate said means for holding the stop-motion devices out of action after a given number of reciprocations of the needle-bar and button-holder.

5. In a button-sewing machine, the combination with stitch-forming mechanism and a button-holder, of means for imparting a vibratory movement to the needle-bar, means comprising a cam to impart a vibratory movement to the button-holder in a plane at substantially a right angle to the plane of vibration of the needle-bar and simultaneously therewith and to suspend the motions of said button-holder during the vibration of the needle-bar, power-transmitting connections between said means for vibrating the needle-bar and means for vibrating the button-holder, and a stop-motion for controlling said power-transmitting connections controlled by the means for vibrating the needle-bar.

6. In a button-sewing machine, the combination with a vibrating needle, base-frame, and a driving-shaft carried by the overhanging arm, to vibrate said needle, of a reciprocating button-carrier movable transversely on said base-frame to the line of vibration of the needle, a cam device to reciprocate said carrier provided with means to stop said reciprocation during a vibration of the needle, connections between said cam device and button-carrier located wholly below said base-frame, and power-transmitting connections between said cam device and the driving-shaft in the overhanging arm, embracing a vertical shaft 29 extending between the base-frame and the overhanging arm.

7. In a button-sewing machine, the combination with a vibrating needle, of a reciprocating button-carrier movable transversely to the line of vibration of the needle of a cam device for reciprocating said carrier provided with means for stopping the reciprocation of said carrier during a vibration of the needle, a bell-crank lever 11 operatively connected with said carrier, a lever pivoted to said bell-crank lever, power-transmitting connections between said second lever and the cam device, and an adjustable fulcrum for said second lever whereby the throw of the bell-crank lever and the extent of reciprocation imparted to the carrier may be adjusted.

8. In a button-sewing machine, the combination with a vibrating needle, of a reciprocating button-carrier movable transversely to the line of vibration of the needle of a cam device for reciprocating said carrier provided with means for interrupting the reciprocation of said carrier during a vibration of the needle, the bell-crank lever 11 operatively connected with the carrier, the slide 20 operated by the cam device, and the lever 17 between the slide 20 and the bell-crank lever 11.

9. In a button-sewing machine, the combination with a vibrating needle, of a reciprocating button-carrier movable transversely to the line of vibration of the needle of a cam device for reciprocating said carrier provided with means for interrupting the reciprocation of said carrier during a vibration of the needle, the bell-crank lever 11 operatively connected with the carrier, the slide 20 operated by the cam device, and the lever 17 between the slide 20 and the bell-crank lever 11, said lever 17 having an adjustable fulcrum 18, substantially as and for the purposes described.

10. In a button-sewing machine, the combination with a vibrating needle, of a reciprocating button-carrier movable transversely to the line of vibration of the needle of a cam device for reciprocating said carrier provided with means for interrupting the reciprocation of said carrier during a vibration of the needle, the bell-crank lever 11 operatively connected with the carrier, the slide 20 operated by the cam device, and the lever 17 between the slide 20 and the bell-crank lever 11, said lever 17 having a fulcrum 18 carried by an adjustable rod 19 substantially as and for the purposes described.

11. In a button-sewing machine, the combination with a vibrating needle and means to vibrate it, of a reciprocating button-carrier movable transversely to the line of vibration of the needle, and a cam device independent of the means for vibrating the needle adapted to impart a series of reciprocations to said carrier and provided with a portion *f*, adapted to temporarily interrupt the reciprocation of the carrier during the vibration of the needle.

12. In a button-sewing machine, the combination with a vibrating needle and means to vibrate it, of a reciprocating button-carrier movable transversely to the line of vibration of the needle, and a cam device independent of the means for vibrating the needle adapted to impart a series of reciprocations to said carrier and provided with a portion *f*, adapted to temporarily interrupt the reciprocation of the carrier during the vibration of the needle, a stop-motion adapted to arrest both the needle and button-carrier after a given number of reciprocations, and means controlled by the cam device to control said stop-motion.

13. In a button-sewing machine, the combination with stitch-forming mechanism, of a reciprocating button-carrier, a cam device adapted to impart a series of reciprocations to said carrier, provided with a portion *f* adapted to temporarily interrupt said reciprocations, a stop-motion adapted to arrest the machine after a given number of reciprocations, a rod 31 operatively connected with said stop-motion, and provided with a dog 32, a fixed lug 33 adapted to be engaged by said dog to retain the rod 31 and hold the stop-motion out of action, and a lug 45 carried by the cam device adapted to disengage said dog and throw said stop-motion into action.

706,125. PRESERVING AND STORING BUILDING. JOHN H. STRAUS, San Antonio, Tex. Filed May 16, 1902. Serial No. 107,586. (No model.)

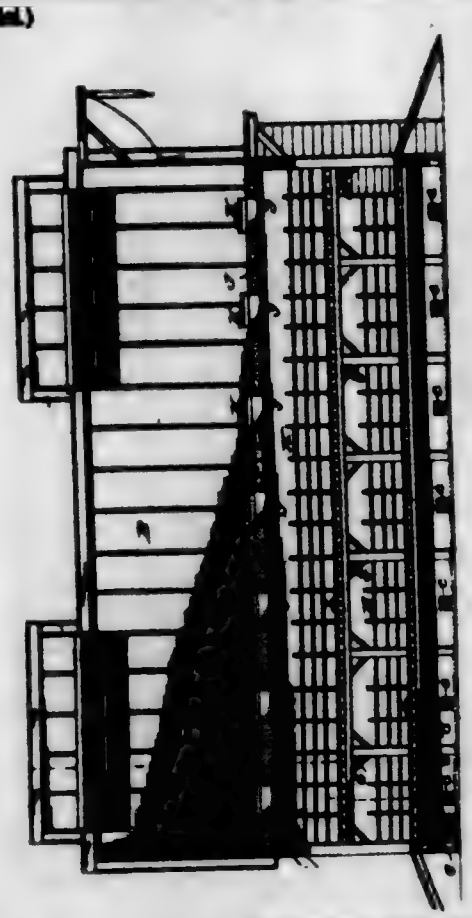

Claim.—A preserving and storing building, air-inlets at or near the bottom thereof, shelves located on a plane above said inlets for supplying with charcoal or other like ingredients, suitable grates located over and above the shelves, removable trays for receiving fruit or other product located over and above the grates, a central driveway located between the grates, walkways extending upon each side of the building, removable trays located above the walkways, and a plurality of valves at the top of the building for regulating the escape of the air therefrom, substantially as and for the purpose set forth.

706,126. ELECTRIC CONTROLLING APPARATUS FOR ELEVATORS. ANDREW SMITH, Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Jan. 31, 1902. Serial No. 92,093. (No model.)

Claim.—1. The combination with a motor and its supply-line, of a controlling-circuit of lower potential than the line derived from a shunt to said line, substantially as described.

2. The combination with a motor and its supply-line, of a controlling-circuit of lower potential than the line derived from a shunt to said line, and means for varying the potential of said controlling-circuit, substantially as described.

3. The combination with a motor and its supply-line, of a shunt to the line, a controlling-circuit derived therefrom, and means for varying the electric potential of said controlling-circuit in accordance with the current on the line, substantially as described.

4. The combination with a motor and its supply-line, of a controlling-circuit of lower potential than the line deriving its energy from said supply-line, and means for varying the power of said controlling-circuit for doing work without varying that of the line, substantially as described.

5. The combination with an electric motor and its supply-line, of a controlling-circuit of lower potential than the line deriving its energy from said supply-line, and means for varying the electric potential of said controlling-circuit without varying that of the line, substantially as described.

6. The combination with a motor and its supply-line, of a controlling-circuit for the motor deriving its energy from said line, and means for increasing the electric potential of the controlling-circuit without increasing that of the line, substantially as described.

7. The combination with a motor and its supply-line, of a controlling-circuit deriving its energy from said line, and means for varying at will the difference of potential between the terminals of said controlling-circuit, substantially as described.

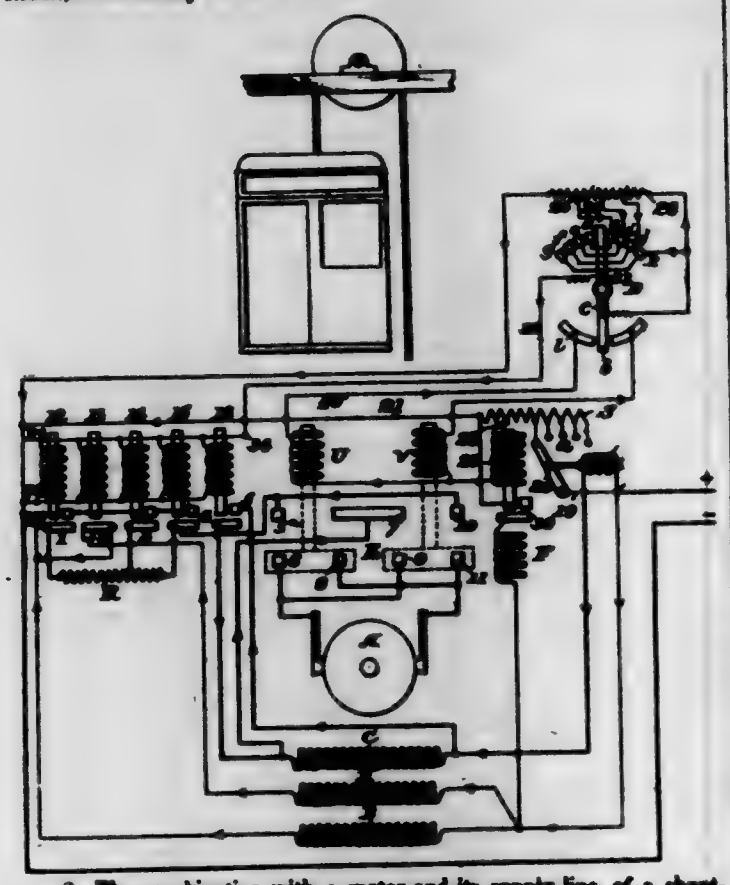

8. The combination with a motor and its supply-line, of a shunt-circuit across the line, a controlling-circuit derived from said shunt-circuit, and means for varying the difference of potential between the terminals of said controlling-circuit, substantially as described.

9. The combination with a motor and its supply-line, of a shunt-circuit across the line, a controlling-circuit derived from said shunt-circuit, and means for varying the difference of potential between the terminals of said controlling-circuit in accordance with variations of the current on the line, substantially as described.

10. The combination with a motor and its supply-line, of a controlling-circuit derived from said line, means for varying the electric potential in said controlling-circuit, and means for regulating the variations of said potential, substantially as described.

11. The combination with a motor and its supply-line, of a controlling-circuit derived from said line, means for varying the electric potential in said controlling-circuit, and means for regulating the variations of said potential in accordance with the current on the line, substantially as described.

12. The combination with a motor and its supply-line, of a shunt across the line, a circuit derived therefrom, means for varying the potential in said circuit, and means for regulating the variations of said potential, substantially as described.

13. The combination with a motor and its supply-line, of a shunt-circuit across the line, a controlling-circuit derived therefrom, and means for varying the electric potential of said controlling-circuit, substantially as described.

14. The combination with a motor and its supply-line, of a shunt-circuit across the line, a controlling-circuit derived therefrom, and means for varying the electric potential of said controlling-circuit without varying that of the line, substantially as described.

15. The combination with a motor and its supply-line, of a shunt-circuit across the line, a controlling-circuit derived therefrom, and means for maintaining a constant electric potential in said controlling-circuit, substantially as described.

16. The combination with a motor and its supply-line, of a shunt-circuit across the line, a controlling-circuit derived from said shunt-circuit, another controlling-circuit derived from said controlling-circuit, and means for varying the electric potential of said controlling-circuits, substantially as described.

17. The combination with a motor and its supply-line, of a shunt-circuit across the line, a controlling-circuit derived from said shunt-circuit, another controlling-circuit derived from said controlling-circuit, and means for varying the electric potential of each of said controlling-circuits, substantially as described.

18. The combination with a motor and its supply-line, of a shunt across the line including resistance, a controlling-circuit shunting a portion of said resistance and itself including resistance, and another controlling-circuit shunting the resistance in said controlling-circuit, substantially as described.

19. The combination with a motor and its supply-line, of a shunt across the line including variable resistance, a controlling-circuit shunting a portion of said resistance and itself including resistance, and another controlling-circuit shunting the resistance in said controlling-circuit, substantially as described.

20. The combination with a motor and its supply-line, of a shunt across the line including resistance, a controlling-circuit shunting a portion of said resistance and itself including resistance, another controlling-circuit in shunt to said controlling-circuit, and means for connecting said other circuit to different points on the resistance in said controlling-circuit, substantially as described.

21. The combination with a motor and its supply-line, of a shunt across the line, a circuit derived from said shunt and including resistance, a controlling-circuit connected in shunt to said derived circuit, and means for connecting said controlling-circuit to different points on said resistance, substantially as described.

22. The combination with a motor and its supply-line, of a shunt across the line, a circuit derived from said shunt, a controlling-circuit in shunt to said derived circuit, and means for connecting said controlling-circuit to different points on said derived circuit, substantially as described.

23. The combination with a motor and its supply-line, of a shunt across the line including a resistance, means for varying said resistance in accordance with the current on the line, a circuit derived from said shunt and shunting a portion of said variable resistance, a controlling-circuit in shunt to said derived circuit, and means for connecting said controlling-circuit to different points on said derived circuit, substantially as described.

24. The combination with a motor and the main line, of a shunt across the line including a variable resistance, means for varying said resistance in accordance with variations of current on the line, a circuit derived from said shunt and shunted across said variable resistance and itself including a resistance, a controlling-circuit in shunt to said derived circuit, and means for connecting said controlling-circuit to different points on the resistance in said derived circuit, substantially as described.

25. In an apparatus for controlling elevators, the combination with a motor and its supply-line, of a shunt across the line, a circuit derived therefrom including means for operating a motor-reversing switch, and another circuit in shunt to said derived circuit and including means for controlling the starting and stopping of the motor, substantially as described.

26. In an apparatus for controlling elevators, the combination with a motor and its supply-line, of a shunt across the line, a circuit derived therefrom including means for operating a motor-reversing switch, another circuit in shunt to said derived circuit and including means for controlling the starting and stopping of the motor, and means for varying the potential in said other circuit in shunt to said derived circuit, substantially as described.

27. In an apparatus for controlling elevators, the combination with a motor and its supply-line, of a shunt across the line, a circuit derived therefrom including means for operating a motor-reversing switch, another circuit in shunt to said derived circuit and including means for controlling the starting and stopping of the motor, and means for connecting said other circuit to different points on said derived circuit, substantially as described.

28. The combination with a motor and its supply-line, of a shunt across the line, a circuit derived from said shunt, a controlling-circuit in shunt to said derived circuit and including means for controlling armature resistance, means for connecting said controlling-circuit to different points on said derived circuit, and means for preventing the cutting out of said armature resistance too quickly on starting the motor with an excess of current on the line, substantially as described.

29. The combination with a motor and its supply-line, of a shunt across the line, a circuit derived from said shunt, a controlling-circuit in shunt to said derived circuit, means for varying the electric potential of said controlling-circuit, and means for regulating the variations of potential of said controlling-circuit, substantially as described.

30. The combination with a motor, and its armature-circuit, of a motor-controlling circuit, and an electromagnet for varying the electric potential of said controlling-circuit by means of the current in the armature-circuit, substantially as described.

31. The combination with a motor, and its main circuit, of a controlling-circuit in shunt to said main circuit, and means operated by the current in the main circuit for varying the electric potential of the shunt-circuit, substantially as described.

706,127. WRENCH. PETER TABOLL, Delray, Mich. Filed May 17, 1902. Serial No. 107,730. (No model.)

Claim.—1. In a wrench, the combination with the body having lat-

erally-projecting wings pierced with two pairs of holes, an L-shaped outer jaw having two holes through its stem adapted to register with those in the wings, and two bolts removably seated in said holes; of an inner jaw having a stem entering the body and provided with teeth, a head on this jaw whose face is inclined downwardly and inwardly, and a catch on the body adapted to engage said teeth, all as and for the purpose set forth.

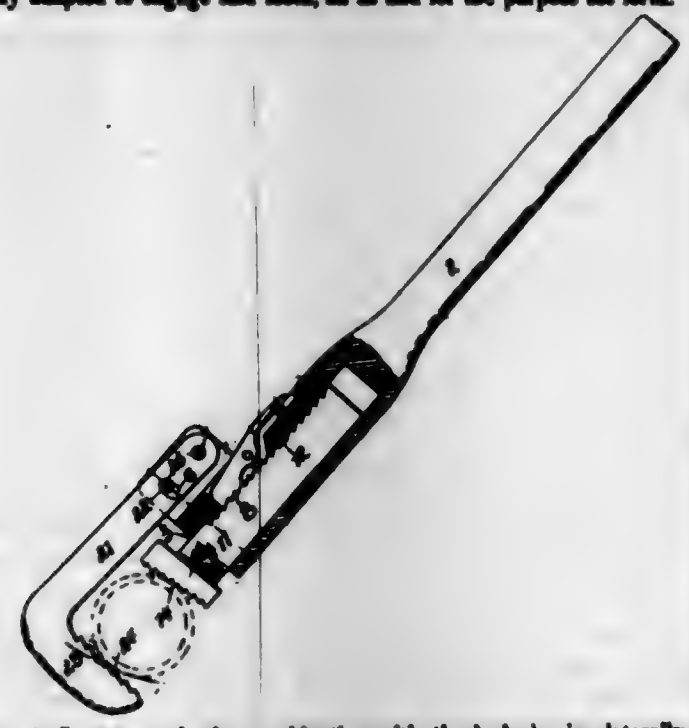

2. In a wrench, the combination with the body having laterally-projecting wings pierced with two pairs of holes of which the forward pair is oval, an L-shaped outer jaw having two holes through its stem adapted to register with those in the wings, and two bolts removably seated in said holes; of an inner jaw having a stem entering the body and adjustable longitudinally therein, a head on this jaw whose forward face stands in a plane slightly oblique to an upright line at right angles to its stem, and means for holding this stem in adjusted position.

3. In a wrench, the combination with the body having laterally-projecting wings pierced with two pairs of holes, an L-shaped outer jaw having two holes through its stem adapted to register with those in the wings, and two bolts removably seated in said holes; of an inner jaw having a stem entering the body and provided with teeth, and a catch on the body adapted to engage said teeth, all as and for the purpose set forth.

4. In a wrench, the combination with the body having laterally-projecting wings pierced with two pairs of holes of which the forward pair is oval, an L-shaped outer jaw having two holes through its stem adapted to register with those in the wings, and two bolts removably seated in said holes; of an inner jaw having a stem entering the body and adjustable longitudinally therein, and means for holding this stem in adjusted position.

706,128. ELECTRIC FURNACE. EDWARD R. TAYLOR, Penn Yan, N. Y. Filed Apr. 4, 1901. Renewed Jan. 2, 1902. Serial No. 88,042. (No model.)

Claim.—1. An electric furnace having, in combination, a working chamber, means for continuously supplying the same with material for a given reaction or reduction, conduits constructed of conductive material and arranged to discharge into the working chamber by gravity, means for feeding into and through said conduits fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, and means for connecting said conduits with a suitable generator of electricity.

2. In an electric furnace, the combination of a working chamber, means for continuously supplying the same with material for a given reaction or reduction, conduits constructed of conductive material and arranged to discharge into the working chamber by gravity, means for feeding into and through said conduits fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, means for connecting said conduits to a suitable generator of electricity, passages opening into the working chamber in front of said conduits and above their outlets, and means for feeding either conductive or non-conductive material through said passages at will.

3. In an electric furnace, the combination of a working chamber, means for continuously supplying the same with material for a given reaction or reduction, conduits constructed of conductive material and arranged to discharge into the working chamber by gravity, means for feeding into and through said conduits fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, means for connecting said conduits with a suitable generator of electricity, a dome provided with means for the removal of gaseous material from the working chamber, and a suitable tap-hole at the bottom of the working chamber for the removal of fused material.

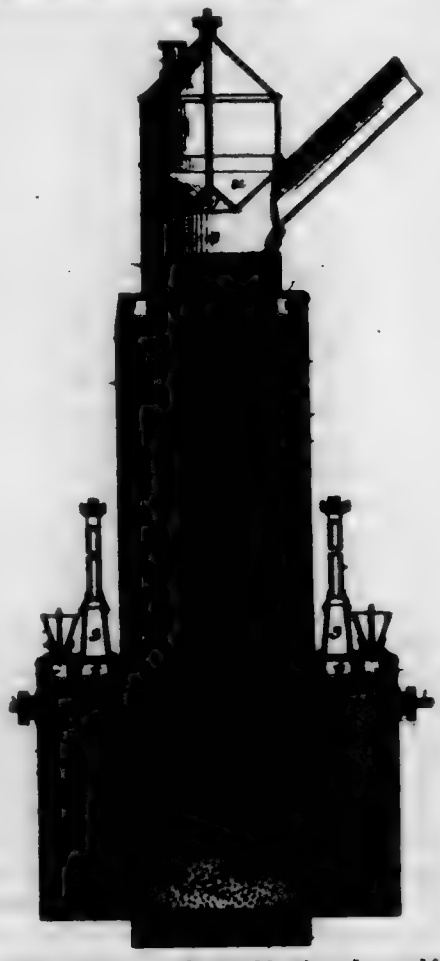

4. In an electric furnace, the combination of a working chamber, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits constructed of conductive material and arranged to receive said fragmentary conductive material and to discharge the same into the working chamber by gravity, and means for connecting said conduits with a suitable generator of electricity.

5. In an electric furnace, the combination of a working chamber, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits constructed of metal lined with carbon brick and arranged to receive said fragmentary conductive material and to discharge the same into the working chamber by gravity, and means for connecting said conduits with a suitable generator of electricity.

6. In an electric furnace, the combination of a working chamber, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits, in communication with the inlets last named, arranged for the descent of said fragmentary conductive material therethrough by gravity, and constructed with conductive back walls having inclined lower portions to retard and direct the flow of said fragmentary conductive material, and means for connecting said conduits with a suitable generator of electricity.

7. In an electric furnace, the combination of a working chamber, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, downwardly-extending passages, in communication with the inlets last named, and conduits constructed of conductive material leading from said passages, adapted to contain together a supply of such fragmentary conductive material, and arranged to discharge the same into the working chamber by gravity, and means for connecting said conduits with a suitable generator of electricity.

8. In an electric furnace, the combination of a working chamber, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits constructed of conductive material and arranged at the sides of the furnace for the passage therethrough of said fragmentary conductive material into the working chamber by gravity, means for connecting said conduits with a suitable generator of electricity, and protective walls of non-conductive material between said conduits respectively and the middle of the furnace.

9. In an electric furnace, the combination of a working chamber, an

inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits, in communication at their respective ends with the inlets last named and with the working chamber, each having back and side walls of metal provided with a refractory conductive lining and arranged at the sides of the furnace, means for connecting the metallic walls of the conduits with a suitable generator of electricity, and protective walls of non-conductive material interposed between the open fronts of the conduits respectively and the middle of the furnace.

10. In an electric furnace, the combination of a working chamber, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, trough-shaped conduits, constructed of conductive material, in communication with the inlets last named and with the working chamber at their respective ends, and arranged at the sides of the furnace with their open sides toward its middle, means for connecting said conduits with a suitable generator of electricity, and protective walls of non-conductive material bridging said open sides of the respective conduits.

11. In an electric furnace, the combination of a working chamber, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits, constructed of conductive material, arranged at the sides of the furnace and adapted for the passage therethrough into the working chamber of said fragmentary conductive material, means for connecting said conduits with a suitable generator of electricity, and inlets, adjacent to said conduits, adapted for the admission of material between said conduits respectively and the middle of the furnace.

12. In an electric furnace, the combination of a working chamber adapted for the location of a heat zone within its lower portion, an inlet into the working chamber for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits, constructed of conductive material, extending inwardly downward toward the bottom of the furnace, and adapted for the descent of the fragmentary conductive material therethrough into the lower portion of the working chamber by gravity, and means for connecting said conduits with a suitable generator of electricity.

13. In an electric furnace, the combination of a working chamber adapted for the location of its heat zone at bottom, inlets for fusible material for a given reaction or reduction near the bottom of the working chamber, higher inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits for such electrodes discharging downwardly toward the bottom of the furnace and having conductive walls, and means for connecting said conduits with a suitable generator of electricity.

14. In an electric furnace, the combination of a working chamber adapted for the location of its heat zone at bottom, an inlet for material for a given reaction or reduction, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits for such electrodes constructed of conductive material and arranged to direct the electrodes downwardly into the bottom of the working chamber and toward each other, means for connecting said conduits with a suitable generator of electricity, and an outlet at the bottom of the working chamber for a liquid product of the furnace.

15. In an electric furnace for making chemicals, the combination of a working chamber adapted for the location of its heat zone at bottom, spaces surrounding said working chamber and communicating therewith through passages in its lower walls at a considerable height above its bottom, means for feeding fusible material into said spaces on its way to the working chamber, and means for passing a suitable electric current through the charge.

16. In an electric furnace for making chemicals, the combination of a working chamber adapted for the location of its heat zone at bottom, spaces surrounding said working chamber and communicating therewith through passages in its lower walls near its bottom and at a considerable height above the same, respectively, means for feeding fusible material into said spaces on its way to the working chamber, and means for passing a suitable electric current through the charge.

17. In an electric furnace for making bisulfid of carbon, the combination of a working chamber adapted for the location of its heat zone at bottom, spaces surrounding the upper portion of the working chamber within its walls and communicating with the working chamber through passages in its lower walls at a considerable height above its bottom, means for feeding crushed sulfur into said spaces, and means for passing a suitable electric current through the charge.

18. In an electric furnace for making bisulfid of carbon, the combination of a working chamber adapted for the location of its heat zone at bottom, spaces surrounding the working chamber within its walls and having their bottoms at different heights, passages connecting the respective spaces with said working chamber in a plane near its bottom and at a considerable height above said plane, means for feeding crushed sulfur into said spaces, and means for passing a suitable electric current through the charge.

19. In an electric furnace for making bisulfid of carbon, the combination of a working chamber adapted for the location of its heat zone at bottom, inlets into said working chamber at top and in a plane near its bottom, adapted respectively for the introduction of carbon and sulfur, inlets at an intermediate height for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits constructed of conductive material and arranged for the passage of said fragmentary conductive material therethrough into the bottom of the working chamber, and means for connecting said conduits with a suitable generator of electricity.

20. In an electric furnace for making bisulfid of carbon, the combination of a working chamber adapted for the location of its heat zone at bottom, inlets into said working chamber at top and through passages in its side walls at different heights, adapted respectively for the introduction of the carbon and sulfur, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits constructed of conductive material and arranged for the passage of said fragmentary conductive material therethrough into the bottom of the working chamber, and means for connecting said conduits with a suitable generator of electricity.

21. In an electric furnace for making bisulfid of carbon, the combination of a working chamber adapted for the location of its heat zone at bottom, inlets into said working chamber at top and through passages in its side walls adapted respectively for the introduction of the carbon and sulfur, inlets for fragmentary conductive material adapted to constitute self-renewing electrodes in the working furnace, conduits constructed of conductive material and arranged for the passage of said fragmentary conductive material therethrough into the bottom of the working chamber, means for connecting said conduits with a suitable generator of electricity, and an outlet at the bottom of the working chamber for the residue from the carbon and sulfur in fused condition.

706,129. ASH-SIFTER. ISAIAH H. TAYLOR, Baltimore, Md., assignor of one-half to Frank R. Hooper, Baltimore, Md. Filed Feb. 20, 1901. Serial No. 48,040. (No model.)

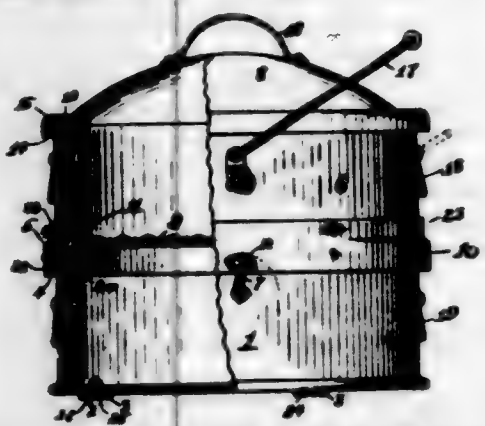

Claim.—1. In an ash-sifter, the combination with the receptacle 6, of the base or ring, 10, having projecting flanges, 20, 21, forming an annular groove, 22, the antifriction-bearings, 5, secured in said groove, the screen, 9, secured to the base or ring, and receptacle, 1, provided with the guideway, 4, over which the said groove fits and on which said bearings rest.

2. In an ash-sifter, the combination of the receptacle 1; the receptacle, 6; the screen, 9; the base or ring, 10, having flanges, 20, and 21 resting upon the upper edge of the receptacle, 1; and the hook-headed bolts, 11, to draw the screen taut and hold jointly the base 10 and screen, 9, to the receptacle, 6.

3. In an ash-sifter, the combination with the receptacle 6, of the base or ring, 10, having projecting flanges 20, 21, forming an annular groove, 22, the antifriction-bearings, 5, secured in the groove 22, the screen, 9, secured to the base or ring, and receptacle, 1, over which the said groove fits.

4. In an ash-sifter, the combination with the receptacle 6, of the base or ring, 10, having projecting flanges 20, 21 and 23; the removable screen, 9; hook-headed bolts, 11, having one end engaging the screen, 9, and the opposite end passing through the receptacle, 6, and the flange 23 of the base or ring, 10; and the receptacle, 1, over which the flanges 20 and 21 of the base 10 fit.

5. In an ash-sifter, the combination with the receptacle 6 of a base

or ring, 10, having projecting flanges 20, 21 and 23; antifriction-bearings, 5, between the flanges 20 and 21; the removable screen, 9, held in position by the hook-headed bolts, 11, engaging the screen and passing through the receptacle, 6, and the flange, 23 of the base or ring, 10; and the receptacle, 1, over the upper edge of which flanges 20 and 21 project and on which the said bearings rest.

6. In an ash-sifter, the combination of the receptacle 1; the receptacle, 6, adapted to be received upon the receptacle 1; a base or ring secured to the lower end of the receptacle 6; a removable screen, 9, secured to the said base or ring; hook-headed bolts, 11, engaging the screen and holding jointly the screen and ring, or base, to the lower end of the receptacle, 6; and antifriction-rollers between the receptacles 1 and 6.

706,180. MOLDING-MACHINE. JOHN R. THOMAS, Cincinnati, Ohio, assignor to J. A. Fay & Egan Company, Cincinnati, Ohio, a Corporation of West Virginia. Filed May 20, 1901. Serial No. 60,413. (No model.)

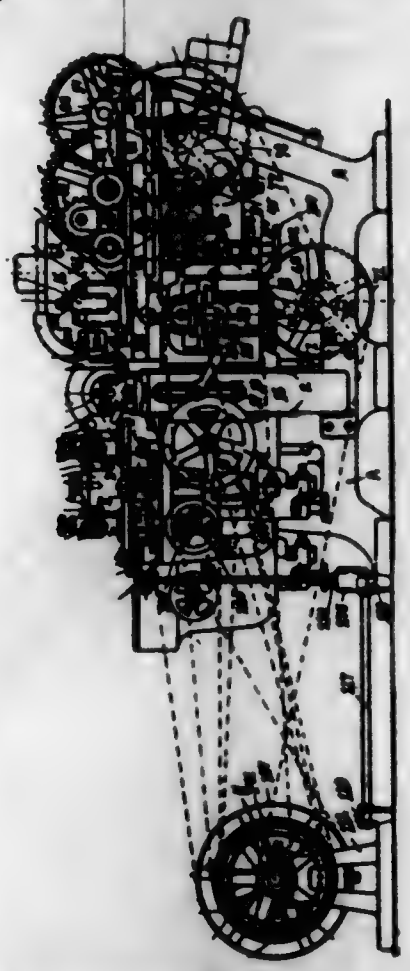

Claim.—1. In a molding-machine, the combination of a lower cutter-head cutting first, an upper cutter-head cutting next, and side cutter-heads cutting thereafter, with a plurality of pairs of feeding-in rolls having their upper rolls driven down, and a counter-shaft for turning the cutter-heads located at the feed-out end of the machine, substantially as described.

2. In a molding-machine, the combination of a lower cutter-head cutting first, an upper cutter-head cutting next, and side cutter-heads cutting thereafter, with a counter-shaft for turning the cutter-heads located at the feed-out end of the machine, and an adjustable connection between the counter-shaft and the frame of the machine for sliding the counter-shaft with relation to the frame, substantially as described.

3. In a molding-machine, the combination of a frame, a lower cutter-head cutting in advance, an upper cutter-head cutting thereafter, and two side cutter-heads cutting after the lower and upper cutter-heads, with a plurality of pairs of feeding-in rolls having their upper rolls driven down, and a counter-shaft with a frame therefor at the feed-out end of the machine for turning the cutter-heads, a plurality of rods connecting the frame of the molding-machine with the counter-shaft frame, with means at the rods for adjusting the distance between the frames, substantially as described.

4. In a molding-machine, the combination of a main frame with an outer secondary frame therefor, a lower cutter-head mounted on the outer secondary frame, with a feeding-in table located on the outer secondary frame in advance of the lower cutter-head, and means for adjusting the feeding-in table with relation to the outer secondary frame, with the lower cutter-head cutting first, an upper cutter-head mounted in the frame cutting thereafter, and side cutter-heads cutting after the upper cutter-head, feeding-in rolls having the upper rolls driven down, and a counter-shaft located at the feeding-out end of the machine for turning the cutter-heads, substantially as described.

5. In a molding-machine, the combination of a main frame, an outer secondary frame therefor, a lower cutter-head mounted at the feeding-in end of the outer secondary frame, with a supplemental frame carrying a feeding-in table, with means between the feeding-in table and the outer secondary frame for adjusting the former with relation to the latter, with feed-roll mounted in the supplemental frame, means for adjusting the feed-roll in the supplemental frame and means for turning the feed-roll from the main frame, upper feed-rolls driven down, an upper cutter-head, and side cutter-heads, with a counter-shaft located at the feed-out end of the machine for turning the cutter-heads, substantially as described.

6. In a molding-machine, the combination of a side head, slide, with a rearward extension therefor, a chip-breaker, and a side gage adjustably secured to the rearward extension, with means for sidewise adjustment of the slide for simultaneously adjusting the side head, chip-breaker and side gage, substantially as described.

7. In a molding-machine, the combination of a side head, slide, forward extension therefor, a side head and a saddle therefor secured to the slide between the slide and the forward extension, with a removable spanner-plate secured to the inner edge of the slide and forward extension for supporting the stock when passing the side head, with means for adjusting the slide sidewise and thereby simultaneously adjusting the slide, forward extension, side head and spanner-plate, substantially as described.

8. In a molding-machine, the combination of a main frame, an outer secondary frame therefor, guideway between the main frame and the outer secondary frame, means for adjusting the outer secondary frame up and down on the main frame, a lower cutter-head mounted at the feed-in end of the outer secondary frame, a supplemental frame carrying a feed-in table in advance of the lower cutter-head mounted on the outer secondary frame, means for adjusting the supplemental frame and its table up and down upon the outer secondary frame, with side cutter-heads mounted on the outer secondary frame at its feed-out end, and a counter-shaft at the feed-out end of the machine for turning the cutter-heads, substantially as described.

9. In a molding-machine, the combination of a frame, a lower cutter-head, an upper cutter-head, and side cutter-heads, with a counter-shaft and frame therefor for turning the cutter-heads located at the feed-out end of the machine, with a plurality of rods connecting the frame of the molder with the frame of the counter-shaft, with means for adjusting the distance between the frames.

10. In an outside molding-machine, the combination of a lower cutter-head, an upper cutter-head, with side cutter-heads, and a counter-shaft for operating the cutter-heads located at the feed-out end of the machine for the uses and purposes described.

706,181. DISTRIBUTING-VALVE FOR STEAM-ENGINES. CHARLES TOOKFIELD, East Molesey, England, assignor of two-thirds to Dyson Weston, London, England. Filed Nov. 15, 1901. Serial No. 82,260. (No model.)

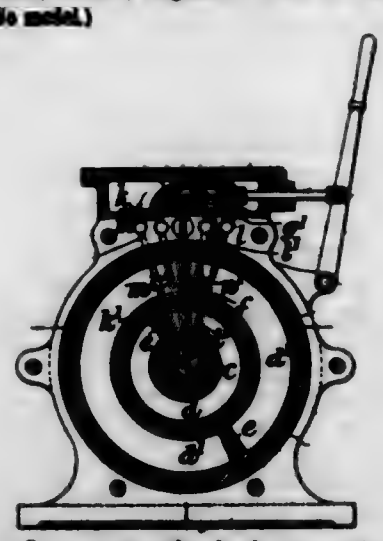

Claim.—1. In a steam-engine having more than one steam-cylinder or steam-space, a valve-casing having steam ports and passages communicating with each end of the said cylinders or steam-spaces and a slide-valve movable to different positions having passages therein, whereby two positions of the slide-valve will make cylinders or steam-spaces high-pressure engines in opposite directions and two other positions will make the cylinders or steam-spaces a compound engine in opposite directions, substantially as described.

2. The combination with a motor provided with a plurality of cylinders or steam-spaces, of a valve-chest provided with a main inlet and an exhaust-outlet, and with separate inlet and exhaust ports communicating with each of said cylinders or steam-spaces, a sliding valve in said

sheet, provided with a passage for connecting the exhaust-ports for one cylinder or steam-space with the inlet-ports of another cylinder or steam-space and a separate passage, for connecting the exhaust-port of the last cylinder or steam-space with the main exhaust, whereby two positions will make the cylinders or steam-spaces high-pressure engines moving in opposite directions and two other positions will make said cylinders or steam-spaces a compound engine moving in opposite directions, substantially as described.

3. The combination with a motor provided with a plurality of cylinders or steam-spaces, of a valve-sheet provided with a main inlet and an exhaust-outlet, and with separate inlet and exhaust ports communicating with each of said cylinders or steam-spaces, a sliding valve in said sheet provided with separate passages for independently connecting certain ports of the valve-casing whereby the motor may be adjusted as a high-pressure or compound motor, and reversed, in either adjustment, and means for moving said valve, substantially as described.

706,182. BRUSHING-MACHINE FOR CLOTH MANUFACTURE. James W. Voelker, Woonsocket, R. I. Filed June 12, 1901. Serial No. 64,367. (No model.)

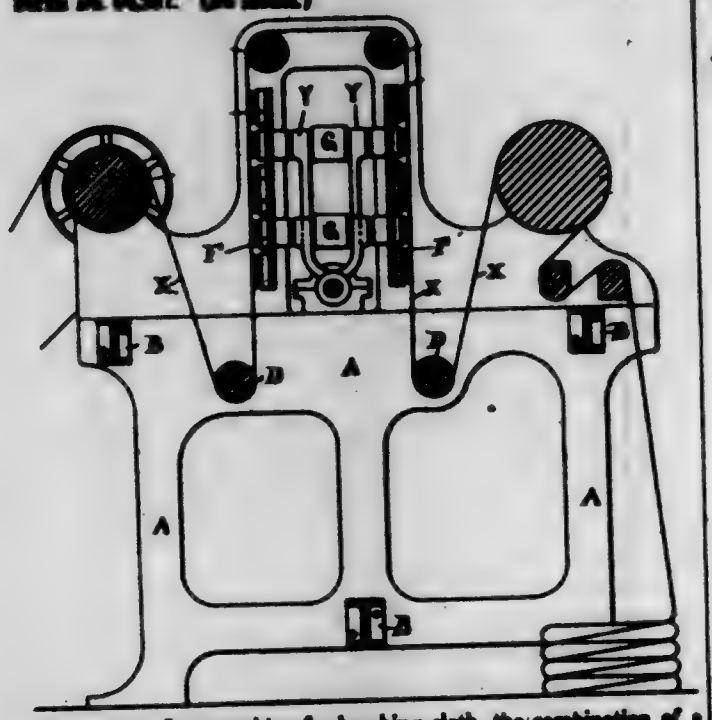

Claim.—1. In a machine for brushing cloth, the combination of a series of disks, with brushes upon their faces, arranged side by side in two rows across the cloth to be brushed and with the brushes of one row placed to cover the spaces between those of the other row, means for causing the cloth to pass over the brushes, and means for rotating the disks.

2. In a machine for brushing cloth, a number of pairs of disks with brushes upon their faces, each pair of disks being mounted upon a shaft with means between the two to rotate both, the brushes on one end of the several pairs being disposed side by side in two rows across the cloth to be brushed and with the brushes in one row placed to cover the spaces between those of the other row, and means for causing the cloth to pass successively over the brushes upon each end of the pairs of disks.

706,183. SWIVEL-LOOM. James Wadsworth, Paterson, N. J. Filed Mar. 27, 1902. Serial No. 100,341. (No model.)

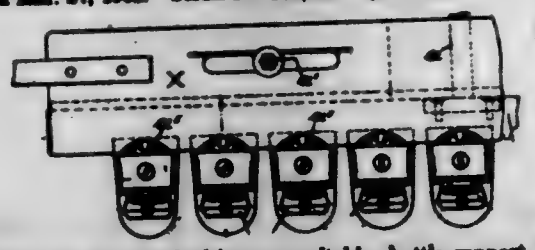

Claim.—1. In a swivel-loom, a suitable shuttle-support, in combination with a tapering, tongue-shaped, plate, adapted to be removably secured thereto with its narrow end projecting downwardly below the bottom, and laterally beyond the sides, thereof, substantially as set forth.

2. In a swivel-loom, the combination with the swivel-shuttle and means for operating the same, of the swivel-shuttle support and a tapering tongue-shaped plate extending downwardly behind and below the swivel-shuttle, substantially as set forth.

3. In a loom, the combination with a swivel-shuttle rail carrying swivel-shuttles, of a series of tapering tongue-shaped plates extending downwardly, behind, and below the shuttles, substantially as set forth.

4. In a swivel-loom, the combination with the swivel-shuttles, of a series of swivel-shuttle supports, and a series of tapering tongue-shaped plates extending downwardly below and laterally beyond the shuttles, substantially as set forth.

5. In a swivel-loom, the combination with a swivel-shuttle rail carrying swivel-shuttles, of means extending downwardly below, laterally beyond, and substantially at right angles with, the swivel-shuttles, and adapted to receive and temporarily confine a plurality of warp-threads within a smaller compass during the operation of the swivel-shuttles, than they normally occupied before the shed was opened, substantially as set forth.

6. In a swivel-loom, a swivel-shuttle and a support therefor, and means extending downwardly below, laterally beyond, and substantially at right angles with, the swivel-shuttle, and adapted to crowd into a small compass the warp-threads completing the upper plane of the shed formed for swivel-weaving, while the swivel-shuttle is passing through the shed.

706,184. TORCH. Edward H. Warren, New York, N. Y. Filed Apr. 2, 1902. Renewed Mar. 4, 1902. Serial No. 96,603. (No model.)

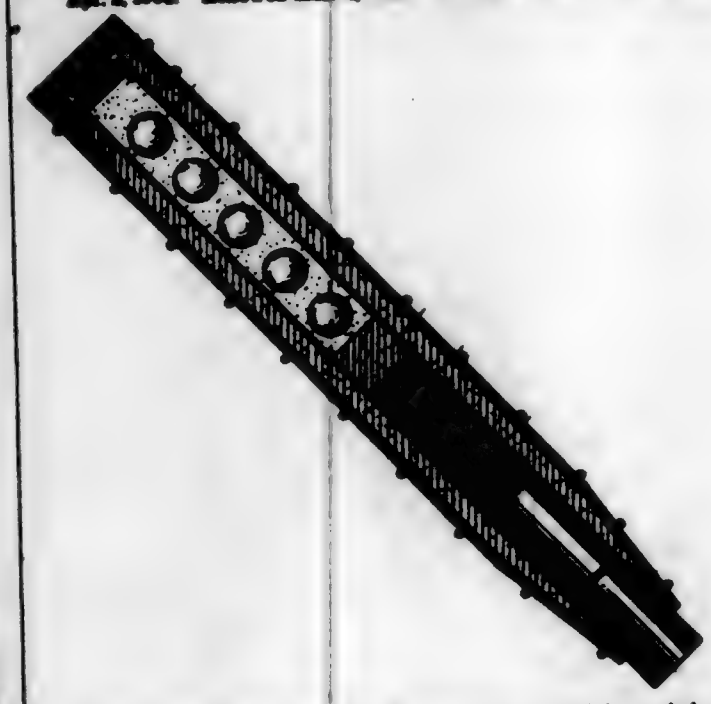

Claim.—1. As a new article of manufacture, a torch consisting of a hollow tube containing pyrotechnic material, an annular layer of solid combustible material surrounding said tube and a combustible fabric inclosing said layer, substantially as shown and described.

2. As a new article of manufacture, a torch consisting of an absorbent outer layer impregnated with a suitable combustible substance such as paraffin, a tubular core and a layer of combustible substance such as paraffin interposed between the outer layer and the core, substantially as shown and described.

706,185. MEANS FOR SHAPING AND SHARPENING DRILL-BITS. John Wagner, Denver, Colo. Filed Sept. 26, 1901. Serial No. 76,626. (No model.)

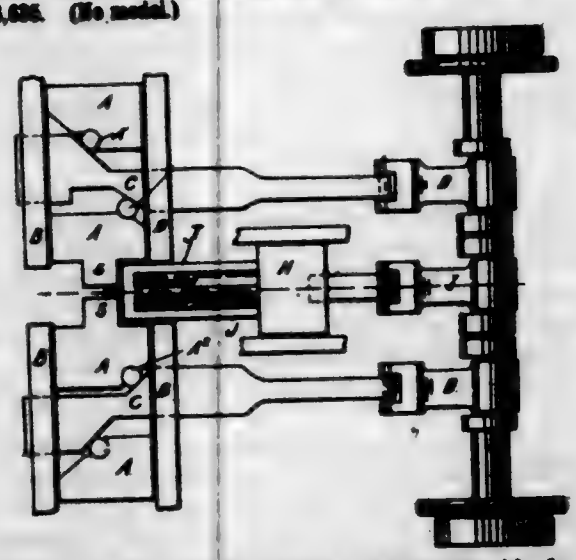

Claim.—1. In means for shaping and sharpening bits for machine rock-drills, the combination with two coöperating die-blocks, each having a wedge-shaped recess, and two other recesses each forming half of a wedge-shaped recess, each die-block having a hinged member on one side

of the wedge-shaped recess, a suitable frame on which one of the die-blocks is movably mounted, means for bringing the faces of the die-blocks together, whereby the bar from which the drill-bit is to be formed is securely held in place, means for holding the hinged members of the die-blocks closed, and means engaging one end of the drill-bit bar, for shaping the bar to conform to the wedge-shaped recesses of the die-blocks, and means for releasing the hinged members of the die-blocks, whereby they are allowed to open as the die-blocks are separated, substantially as described.

2. The combination with a suitable frame, of two die-blocks of the class described, said blocks being mounted on the frame, each block having a wedge-shaped recess adapted to conform to the shape of a wing of the cutting extremity of a drill-bit as described, the said blocks having hinged members adapted to open to allow the wing of the bit to be removed after it has been shaped to conform to the shape of the recess.

3. The combination of two coöperating die-blocks of the class described, each block having a recess adapted to conform to the shape of a part of a drill-bit or other tool, the said blocks having movable members respectively adapted to open to allow the said parts of the tool held thereby, to be removed after they have been shaped to conform to the shape of the recesses of the said blocks.

706,186. TYPE-WRITING MACHINE. MAX W. WEBB, Bowyer, N. J., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y., a Corporation of New York. Filed May 31, 1902. Serial No. 109,756. (No model.)

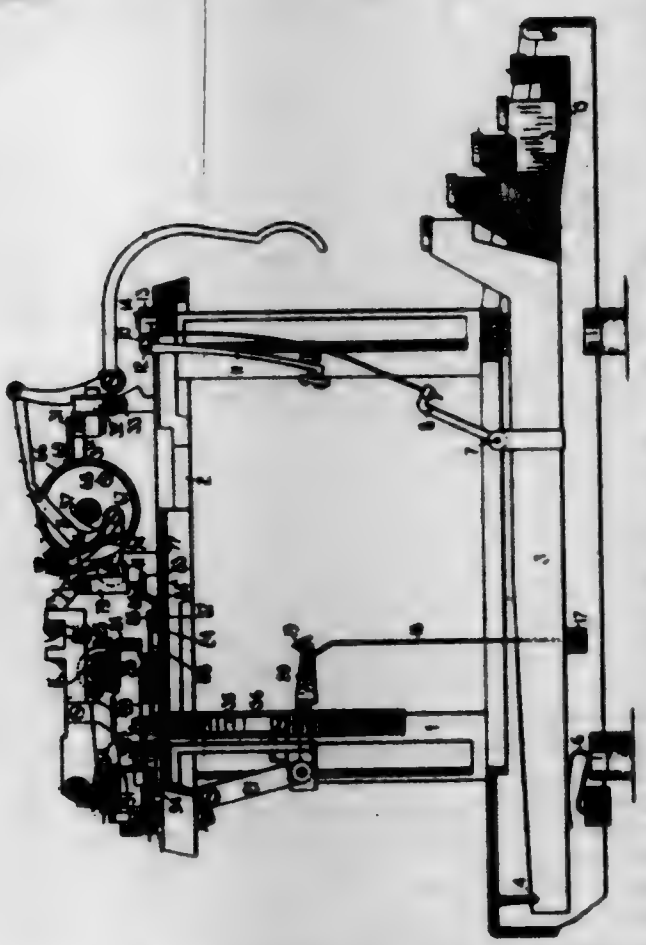

Claim.—1. In a type-writing machine, the combination of paper-feeding devices, printing instrumentalities and means controlled by the paper for affording a locking of said paper feeding and printing instrumentalities.

2. In a type-writing machine, the combination of a platen, type-bars, finger-keys, and means controlled by the paper for preventing a line-spacing movement of said platen and for affording a locking of the type-bars against printing.

3. In a type-writing machine, the combination of a platen, and means controlled by the paper for preventing a letter and line space movement of the platen.

4. In a type-writing machine, the combination of a carriage, a rotary platen, and means controlled automatically by the paper for locking the platen against rotation and for preventing a complete travel of the carriage in either direction.

5. In a type-writing machine, the combination of a carriage, a platen, key-actuated printing instrumentalities, line-lock mechanism, and means controlled by the paper for automatically affording an actuation of said line-lock mechanism and for locking the platen against line-spacing movement.

6. In a type-writing machine, the combination of a platen, key-actuated printing instrumentalities, line-lock mechanism, and means controlled by the platen during the line-spacing movement thereof, for affording an actuation of said line-lock mechanism.

7. In a type-writing machine, the combination of a carriage, a rotary platen carried thereby, printing instrumentalities, line-lock mechanism, controlling means carried by the carriage for actuating said line-lock mechanism, and means operatively connected to the platen for actuating said controlling means by a line-space movement of the platen.

8. In a type-writing machine, the combination of a carriage, a platen carried by said carriage, key-actuated printing instrumentalities, line-lock mechanism, a trip carried by the carriage for actuating said line-lock mechanism, a locking-wheel carried by the platen, and intermediate mechanism between said locking-wheel and trip, for moving the trip to the operative position.

9. In a type-writing machine, the combination of a carriage, a platen carried by said carriage, key-actuated printing instrumentalities, line-lock mechanism, a trip carried by the carriage for actuating said line-lock mechanism, a locking-wheel carried by the platen, intermediate mechanism between said locking-wheel and trip, for moving the trip to the operative position, and means controlled by the paper for automatically effecting an engagement between the intermediate mechanism and the locking-wheel.

10. In a type-writing machine, the combination of a carriage, a platen carried by said carriage, key-actuated printing instrumentalities, line-lock mechanism, a trip carried by the carriage for actuating said line-lock mechanism, a locking-wheel carried by the platen, intermediate mechanism between said locking-wheel and trip for moving the trip to the operative position, and means controlled by the paper for normally preventing an engagement between the locking-wheel and intermediate mechanism and for automatically effecting an engagement between said wheel and intermediate mechanism to afford an actuation of the trip and a locking of the trip when a predetermined point on the paper is reached.

11. In a type-writing machine, the combination of a platen, a movable part intermediate of the ends of the platen and which stands in the path of the paper in the introduction thereof into the machine, said movable part being maintained in one position by the paper in the machine and being adapted to automatically move to another position when an edge of the paper moves beyond said part, line-lock mechanism, and means controlled by said movable part for affording an actuation of the line-lock mechanism.

12. In a type-writing machine, the combination of a platen, a movable part maintained by the paper in one position and adapted to move to another position when an edge of the paper moves beyond said part, line-lock mechanism, means for locking the platen against line-spacing movement, and means controlled by said movable part for affording an actuation of said line-lock mechanism and platen-locking means.

13. In a type-writing machine, the combination of a platen, a locking-wheel carried thereby, a movable part maintained by the paper in one position and adapted to move automatically to another position when an edge of the paper moves beyond said part, line-lock mechanism, a trip for actuating said line-lock mechanism, locking means coöperating with the locking-wheel, for locking the platen against line-spacing movement, and means controlled by said movable part for affording an actuation of said line-lock trip and of the locking means for the platen.

14. In a type-writing machine, the combination of a carriage, key-actuated printing instrumentalities, line-lock mechanism, a movable trip on the carriage for actuating said line-lock mechanism, means controlled by the paper for moving said trip into the operative position, and means coöperating with the trip to prevent a complete travel of the carriage in either direction.

15. In a type-writing machine, the combination of a power-driven carriage, key-actuated printing instrumentalities, line-lock mechanism, a movable trip on the carriage for actuating said line-lock mechanism, means controlled by the paper for moving said trip into the operative position, and means carried by the frame of the machine and coöperating with the trip to prevent a complete travel of the carriage to the right when it has been moved to the left and for preventing a complete travel of the carriage to the left when it has been moved to the right.

16. In a type-writing machine, the combination of a power-driven carriage, key-actuated printing instrumentalities, line-lock mechanism, a movable trip on the carriage for actuating said line-lock mechanism, means controlled by the paper for moving said trip into the operative position when an edge of the paper reaches a predetermined point, and means carried by the frame of the machine and coöperating with the trip to prevent a movement of the carriage when it has been moved to the extreme right to begin a new line of writing and the trip has been moved to the operative position.

17. In a type-writing machine, the combination of a power-driven carriage, a platen carried by said carriage; key-actuated printing instrumentalities, line-lock mechanism, a movable trip on the carriage for ac-

tuating said line-lock mechanism, means controlled by the paper for moving said trip into the operative position when an edge of the paper reaches a predetermined point, means carried by the frame of the machine and coöperating with the trip to prevent a movement of the carriage when it has been moved to the extreme right to begin a new line of writing and the trip has been moved to the operative position, and means for simultaneously locking the platen against line-spacing movement.

18. The combination of a platen, a line-spacing ratchet-wheel at one end of the platen, line-spacing mechanism coöperating therewith, a line-locking wheel at the other end of the platen, and means coöperating with said locking-wheel to lock the platen against rotation.

19. The combination of a platen, a line-spacing ratchet-wheel at one end of the platen, line-spacing mechanism coöperating therewith, a line-locking wheel secured to the platen at the other end thereof, and means controlled by the paper and coöperating with said locking-wheel to lock the platen against rotation when an edge of the paper reaches a predetermined position.

20. In a type-writing machine, the combination of a carriage, printing instrumentalities, line-lock mechanism, a series of stops and a coöperating trip which are normally out of each other's path but which are adapted to actuate the line-lock mechanism and to arrest the carriage in its movement in either direction, and means controlled by the paper for moving one of said series of stop and trip elements into the path of the other.

21. In a type-writing machine, the combination of a carriage, a platen, printing instrumentalities, line-lock mechanism, and a device which is adapted to engage the platen and be moved thereby to afford an actuation of the line-lock mechanism.

22. In a type-writing machine, the combination of a carriage, a platen, printing instrumentalities, line-lock mechanism, and a device which is adapted to engage the platen and be moved thereby for a limited distance and then arrest it against line-spacing movement and to afford an actuation of the line-lock mechanism.

23. In a type-writing machine, the combination of a carriage, a platen, printing instrumentalities, line-lock mechanism, a device which is adapted to engage the platen and be moved thereby to afford an actuation of the line-lock mechanism, and means controlled by the paper for bringing about the engagement of said device with the platen.

24. In a type-writing machine, the combination of a carriage, a platen, printing instrumentalities, line-lock mechanism, an engaging device which is adapted to engage the platen and be moved thereby for a limited distance and then arrest it against line-spacing movement and to afford an actuation of the line-lock mechanism, and means controlled by the paper for normally maintaining said engaging device disengaged from the platen and for affording an engagement thereof with the platen when an edge of the paper reaches a predetermined point.

25. In a type-writing machine, the combination of a carriage, a platen carried thereby, printing instrumentalities, line-lock mechanism, a locking-wheel carried by the platen, an engaging device which is normally out of engagement with said locking-wheel but is adapted to be moved thereby, a trip carried by the carriage, and adapted to actuate said line-lock mechanism, and means for effecting an engagement between the engaging device and locking-wheel, to afford a movement of the trip and an actuation of the line-lock mechanism.

26. In a type-writing machine, the combination of a carriage, a platen carried thereby, printing instrumentalities, line-lock mechanism, a locking-wheel connected to the platen, an engaging device which is normally out of engagement with said locking-wheel but is adapted to be moved thereby for a limited distance and then arrest the line-spacing movement of the platen, a trip carried by the carriage and adapted to actuate said line-lock mechanism, and means for effecting an engagement between the engaging device and locking-wheel to afford a movement of the trip and an actuation of the line-lock mechanism and to lock the platen against line-spacing movement after the trip has been moved.

27. In a type-writing machine, the combination of a carriage, a platen carried thereby, printing instrumentalities, line-lock mechanism, a locking-wheel connected to the platen, an engaging device which is adapted to be moved by said locking-wheel, a trip carried by the carriage and adapted to actuate said line-lock mechanism, and means controlled by the paper for normally maintaining the engaging device out of engagement with the locking-wheel and for effecting an engagement between the engaging device and locking-wheel when an edge of the paper reaches a predetermined point, to afford a movement of the trip and an actuation of the line-lock mechanism.

28. In a type-writing machine, the combination of a carriage, a platen carried thereby, printing instrumentalities, line-lock mechanism, a locking-wheel carried by the platen, an engaging device which is adapted to be moved by said locking-wheel for a limited distance and then arrest the line-spacing movement of the platen, a trip carried by the carriage and adapted to actuate said line-lock mechanism, and means controlled by the paper for normally maintaining the engaging device out of engagement with the locking-wheel and for effecting an engagement between the engaging device and locking-wheel when an edge of the paper reaches a predetermined point, to afford a movement of the trip and an actuation of the line-lock mechanism and to lock the platen against line-spacing movement after the trip has been moved.

29. In a type-writing machine, the combination of a carriage, a platen carried thereby, a locking-wheel secured to rotate with said platen and having teeth thereon, a spring-pressed engaging device which is adapted to coöperate with the teeth of said locking-wheel to arrest the line-spacing movement of said platen, a spring-pressed finger which is adapted to stand in the path of the paper in its introduction into the machine and to be maintained by the paper against its spring tension, and intermediate connections between said finger and engaging device, whereby when the paper passes beyond the finger it will be released and the engaging device will be thrown into engagement with the locking-wheel.

30. In a type-writing machine, the combination of a carriage, a platen carried thereby, key-actuated printing instrumentalities, line-lock mechanism, a trip which is adapted to actuate said line-lock mechanism, a locking-wheel secured to said platen and having teeth thereon, a spring-pressed engaging device which is adapted to coöperate with the teeth of said locking-wheel to limit the line-spacing movement of said platen and to be moved thereby for a limited distance, a spring-pressed finger which is adapted to stand in the path of the paper in its introduction into the machine and to be maintained by the paper against its spring tension, and intermediate connections between said finger and engaging device and between the engaging device and said trip, whereby when the paper passes beyond the finger it will be released and the engaging device will be thrown into engagement with the locking-wheel to limit the line-spacing movement of the platen and to effect a movement of the trip and thereby bring about the locking of the line-lock mechanism.

31. In a type-writing machine, the combination of a platen, a platen-frame, a line-lock wheel secured to rotate with the platen, a spring-pressed rock-shaft carried by the platen-frame, a finger which is carried by the rock-shaft and is adapted to bear against the paper and maintain the rock-shaft against its spring tension, a crank-arm secured to said shaft and an engaging device connected to said crank-arm and adapted to engage the locking-wheel and limit the line-spacing movement of the platen when the paper passes beyond said finger.

32. In a type-writing machine, the combination of key-actuated printing instrumentalities, line-lock mechanism, a platen, a platen-frame, a line-lock wheel secured to the platen, a spring-pressed rock-shaft carried by the platen-frame, a finger which is carried by the rock-shaft and is adapted to bear against the paper and maintain the rock-shaft against its spring tension, a crank-arm secured to said shaft, an engaging device connected to said crank-arm, and adapted to engage the locking-wheel and limit the line-spacing movement of the platen when the paper passes beyond said finger, and a trip connected to said engaging device and adapted to be actuated thereby to afford a locking of the line-lock mechanism when the engaging device locks the platen against line-spacing movement.

33. In a type-writing machine, the combination of a platen, a platen-frame, a toothed line-lock wheel secured to the platen, a spring-pressed rock-shaft which extends longitudinally of the platen and is carried by the platen-frame, a finger which is rigidly secured to said rock-shaft and is adapted to bear against the paper and maintain the shaft against its spring tension, an independently spring-pressed engaging device which is provided with a locking pin or projection that is adapted to engage the teeth of the locking-wheel to arrest the line-spacing movement of the platen, and a crank-arm secured to said rock-shaft and to which the engaging device is pivoted.

34. In a type-writing machine, the combination of a carriage, type-bars, finger-keys for actuating said type-bars, line-lock mechanism, a platen, a platen-frame, a toothed line-lock wheel which rotates with the platen, a spring-pressed rock-shaft which extends longitudinally of the platen and is carried by the platen-frame, a finger which is rigidly secured to said rock-shaft and is adapted to bear against the paper, and maintain the shaft against its spring tension, an independently spring-pressed engaging device which is provided with a projection that is adapted to engage the teeth of the locking-wheel to limit the movement thereof and thus arrest the line-spacing movement of the platen, a trip or abutment carried by said engaging device and adapted to be moved to the operative position to afford a locking movement of the line-lock mechanism when the platen is locked against line-spacing movement and a crank-arm secured to said rock-shaft and to which the engaging device is pivoted.

35. In a type-writing machine, the combination of a platen, a platen-frame, a toothed line-lock wheel secured to the platen, a spring-pressed rock-shaft which extends longitudinally of the platen and is carried by the platen-frame, a finger which is rigidly secured to said rock-shaft and is adapted to bear against the paper and maintain the shaft against its spring tension, an independently spring-pressed engaging device which

is provided with a projection that is adapted to engage the teeth of the locking-wheel to arrest the line-spacing movement of the platen, a crank-arm secured to said rock-shaft and to which the engaging device is pivoted, and hand-actuated means for releasing the platen and permitting a line-spacing movement thereof.

36. In a type-writing machine, the combination of a carriage, type-bars, finger-keys for actuating said type-bars, line-lock mechanism, a platen, a platen-frame, a toothed line-lock wheel secured to the platen, a spring-pressed rock-shaft which extends longitudinally of the platen and is carried by the platen-frame, a finger which is rigidly secured to said rock-shaft and is adapted to bear against the paper and maintain the shaft against its spring tension, a crank-arm secured to said rock-shaft, an independently spring-pressed engaging device pivoted to said crank-arm and which is provided with a projection that is adapted to engage the teeth of the locking-wheel to limit the movement thereof and thus arrest the line-spacing movement of the platen, a trip or abutment carried by said engaging device and adapted to be moved to the operative position to afford a locking movement of the line-lock mechanism when the platen is locked against line-spacing movement, and hand-actuated means for releasing the platen and the line-lock mechanism.

37. In a type-writing machine, the combination of paper-feeding devices, printing devices, automatically-actuated means controlled by the paper for locking said paper-feeding and printing devices and hand-operated means for releasing said devices after they have been automatically locked.

38. The combination of a platen, key-actuated type-bars, line-lock mechanism, automatically-actuated means controlled by the paper for arresting the rotation of the platen and affording an actuation of the line-lock mechanism, and hand-operated means for releasing the platen and line-lock mechanism after they have been automatically locked.

39. In a type-writing machine, the combination of a line-spacing mechanism, letter-spacing mechanism, and means controlled by the paper for automatically locking the line-spacing and letter-spacing mechanisms.

40. In a type-writing machine, the combination of line-lock mechanism, line-spacing mechanism and a spring-pressed finger which is adapted to bear upon the paper, and to be released therefrom when an edge of the paper and the printing-center attain predetermined relations one to the other, and means controlled by said finger for affording an actuation of said line-spacing and line-lock mechanisms.

41. In a type-writing machine, the combination of a carriage, a removable spring-pressed rock-shaft carried thereby, a finger carried by said rock-shaft and adapted to bear upon said paper, line-lock mechanism, line-spacing mechanism, a locking device carried by said rock-shaft, and means coöperating therewith for locking the line-spacing mechanism and for affording a locking movement of the line-lock mechanism.

42. In a type-writing machine, the combination of a carriage, a spring-pressed rock-shaft carried thereby, a paper-shield having an aperture therein and against which shield the paper is adapted to bear, a finger carried by said rock-shaft and adapted to bear upon said paper opposite the aperture in the shield, line-spacing mechanism, a locking device carried by said rock-shaft, and means coöperating therewith for locking the line-spacing mechanism.

43. In a type-writing machine, the combination of a carriage, feed mechanism therefor, a platen, a locking-wheel carried by the platen, a locking device normally maintained out of engagement with the locking-wheel by the paper and adapted to be moved into locking engagement with the wheel when the paper reaches a predetermined point relatively to the printing-center, and means controlled by said locking device for locking said carriage-feed mechanism.

706,187. CLAMP FOR TANK OR LIKE HOOPS. JOEL WHOM, San Francisco, Cal. Filed Mar. 20, 1902. Serial No. 99,294. (No model.)

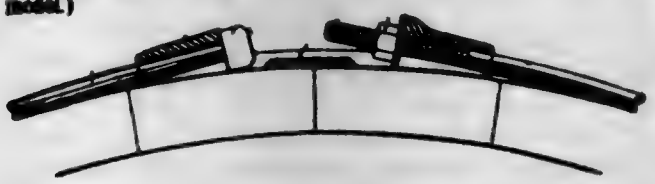

Claim.—1. A clamp for tank-hoops and the like consisting of a flat malleable plate having side ribs, lugs formed upon opposite ends thereof between said ribs said lugs having slots or channels made in their inner faces to receive the opposite ends of the hoop-rod, said lugs having adjacent surfaces adapted to form contact-faces for the head at one end and the nut upon the other end of the hoop whereby the hoop and clamp form an essentially continuous surface to contact with the tank.

2. A clamp for tank and like hoops consisting of parallel bendable ribs, lugs formed at each end between said ribs having slots or channels made in their inner surfaces to receive the ends of the hoop rod and retain them in close proximity with the surface inclosed, a thin diaphragm connecting the ribs intermediate between the lugs and open spaces formed between said diaphragm and the lugs to receive the head and nut respectively of the hoop.

3. A clamp for tank-hoops and the like consisting of a malleable plate having one flat surface adapted to fit the curvature of the object to which it is applied and openings made through it intermediate of the ends, slots or channels extending from said openings to the ends, and raised lugs upon the outer surface of the plate into which said slots extend, said lugs having faces of contact against which the head and nut respectively of the hoop are supported.

706,188. MORTAR COMPOSITION. EDWIN R. WELCH, Philadelphia, Pa. Filed Dec. 20, 1901. Serial No. 86,721. (No specimens.)

Claim.—1. A composition of matter adapted with the addition of water to form a mortar or plastering material, the said composition consisting of ground or crushed unslaked lime, ground or crushed cinder, jute and litharge, all mechanically combined in a substantially dry state.

2. A composition of matter adapted with the addition of water to form a mortar or plastering mixture or composition, consisting of twenty-five per cent. of ground or crushed unslaked lime, sixty per cent. of ground or crushed cinder, ten per cent. of jute and five per cent. of litharge, all mechanically combined in a substantially dry state.

706,189. SWITCH FOR OVERHEAD TUBULAR TROLLEY-TRACKS. PAUL F. WERNER, Williamsett, Mass., assignor to Coburn Trolley Track Manufacturing Company, Holyoke, Mass., a Corporation. Filed July 11, 1901. Serial No. 67,360. (No model.)

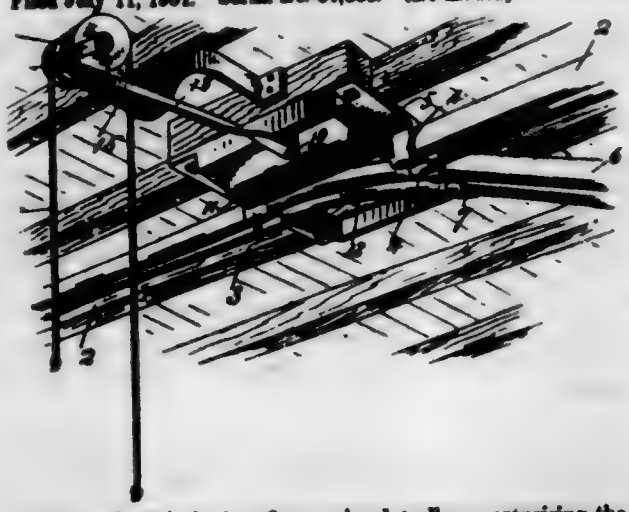

Claim.—Switch devices for overhead trolleys comprising the main frame 5 having a rectangular opening therein and the pending brackets 3 and 4, a side bracket 7 thereunder, and the ledges 10 in the opposite borders thereof, combined with the plate 8 having borders for engagement on said ledges, and slidable in said frame 5, and the track-sections 11 and 12 under said plate 8, registrable with said brackets 3 and 4 through sliding movements of the frame 8 in the frame 5, and means for moving said frame 8, substantially as set forth.

706,140. FOUNTAIN-PEN. PAUL E. WIRT, Bloomsburg, Pa. Filed July 12, 1901. Serial No. 67,947. (No model.)

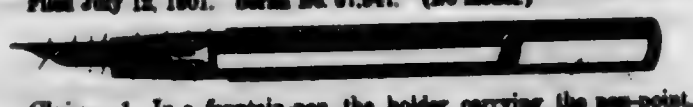

Claim.—1. In a fountain-pen, the holder carrying the pen-point, and a tubular feeder having at its lower closed end an offset feeding-foot provided with an expanded capillary attractive surface in contact with the nib portion of the pen-point and constituting the sole external capillary area of the feeder, and also provided with an ink-flowing fissure piercing said surface and communicating with the interior passage through the feeder, the latter being spaced from the pen-point to provide a non-attractive space above said capillary surface and provided within the zone of said space with an air-vent disposed in close relation to the intake of the fissure and more remotely removed from the capillary surface supplied thereby, the passage-way in the feeder being open and entirely unobstructed between the vent and said fissure.

2. In a fountain-pen, the holder carrying the pen-point and a tubular feeder having at its lower closed end a laterally-offset feeding-foot provided with an expanded prolate capillary attractive surface in contact with the nibs and constituting the sole external capillary area of the feeder, and also provided with an ink-flowing fissure piercing said surface and communicating with the interior passage-way of the feeder, the latter being spaced from the pen-point to provide a non-attractive space above

said capillary surface and provided within the zone of said space with an air-vent disposed in close relation to the intake of the fissure and more remotely removed from the capillary surface supplied thereby, the passage-way in the feeder being open and entirely unobstructed between the vent and said fissure.

3. In a fountain-pen, the holder carrying the pen-point, a tubular feeder provided with a lower closed end having a laterally-offset feeding-foot formed with an expanded capillary surface in contact with the nibs and pierced by an ink-flowing fissure located a distance above the lower end of the passage-way through the tube to provide at such end an auxiliary supply chamber or pocket, said feeder-tube being further provided with an air-vent disposed in close relation to the intake of the fissure and having the passage-way in the tube entirely open and unobstructed between the vent and said fissure, and supplementary means for positively feeding ink from the main column into the auxiliary supply chamber or pocket.

4. In a fountain-pen, the holder carrying the pen-point, a tubular feeder provided with a lower closed end having a laterally-offset feeding-foot formed with an expanded capillary surface in contact with the nibs and pierced by an ink-flowing fissure located a distance above the lower end of the passage-way through the tube to provide at such end an auxiliary supply chamber or pocket, said feeder-tube being further provided with an air-vent disposed in close relation to the intake of the fissure and having the passage-way in the tube entirely open and unobstructed between the vent and said fissure, and a supplementary feeding-shaft disposed longitudinally within the passage-way of the tube and extending the full length thereof, the lower extremity of said shaft projecting into the auxiliary supply chamber or pocket.

706,141. FOUNTAIN-PEN. Paul B. Wirt, Bloomsburg, Pa. Filed Sept. 14, 1901. Serial No. 75,408. (No model.)

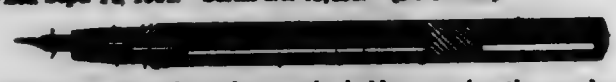

Claim.—1. In a fountain-pen, the holder carrying the pen-bearing section, a full-headed pen-point fitting within said section and having the edge flanges, a separate detachable top feeder arranged within the pen-bearing section and extending over the top side of the pen-point, and an approximately cylindrical vented plug having a close fit within the pen-bearing section and also tightly registering within the concavity of the pen-point heel and against the edge flanges thereof, said plug and separate top feeder constituting clamping members for holding the pen-point therebetween.

2. In a fountain-pen, the reservoir-holder carrying the pen-point, the feeder, and an interior dam having a body constructed to provide an impulse-check at the bottom of the reservoir, and also to provide an area extending along the feeder contiguous to the pen-point for the circulation of ink downward and air upward.

3. In a fountain-pen, the reservoir-holder carrying the pen-point, a feeding-shaft, and an interior dam having a body constructed to provide an impulse-check at the bottom of the reservoir, and also to provide an area extending along the feeding-shaft contiguous to the pen-point for the circulation of ink downward and air upward.

4. In a fountain-pen, the holder carrying the pen-point, a feeding-shaft, and an interior dam having a body constructed to provide an impulse-check at the bottom of the reservoir, said body also being constructed to permit the circulation of air upward and to concentrate the flow of ink along the portion of the feeder contiguous to the heel of the pen-point.

5. In a fountain-pen, the reservoir-holder carrying the pen-point, the feeding-shaft, and an interior dam comprising a plug-body constructed to provide an impulse-check at the bottom of the reservoir and having in its side next to the feeding-shaft an extended seat receiving the shaft and forming an extended circulation area along the shaft contiguous to the heel of the pen-point.

6. In a fountain-pen the reservoir-holder carrying the pen-point, the feeding-shaft, and an interior dam comprising a plug-body constructed to provide an impulse-check at the bottom of the reservoir and provided at the side next to the feeding-shaft with a channeled seat receiving the latter and also with a fissure or groove in the base of said seat, the latter constituting an extended circulation area along the inner portion of the shaft contiguous to the heel of the pen-point.

7. In a fountain-pen the reservoir-holder carrying the pen-point, a pen-holding plug bearing against the pen-point, a feeding-shaft overlying the pen-point, and a supplemental vented plug arranged in the pen-bearing section and directly adjoining the pen-holding plug, said supplemental plug being constructed to provide an impulse-check at the bottom of the reservoir, and also to provide an area extending along the shaft for the circulation of ink downward.

8. In a fountain-pen, the reservoir-holder carrying the pen-bearing section, a pen-point, a vented plug fitting within the pen-bearing section and bearing against the pen-point, a feeding shaft or tongue overlying the pen-point and extending through the pen-bearing section, and an impulse check or dam consisting of a supplemental plug arranged in the pen-bearing section above the pen-holding plug and having a circulation area lying next to the feeding shaft or tongue.

706,142. CORN-HARVESTER. James R. Wood, Harvard, Ill., assignor to Edwin C. Haymon, trustee, Chicago, Ill. Filed July 5, 1901. Serial No. 67,216. (No model.)

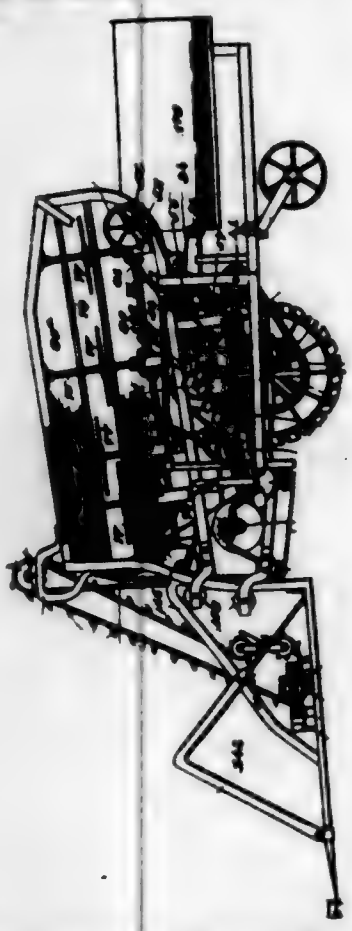

Claim.—1. In a corn-harvester, the combination with a frame having a longitudinal opening therein adapted to straddle a row of corn, of levers pivoted to said frame upon each side of said opening and pointing crosswise of the line of draft, and mechanism adapted to give to the inner and operative end of said levers a downward and inward movement crosswise of the line of draft, then a relatively rapid upward movement, then a movement downward and outward to the point of beginning, substantially as described.

2. In a corn-harvester, the combination with a frame having a longitudinal opening therein adapted to straddle a row of corn, of a forwardly-projecting pin fixed to said frame, a lever provided with a longitudinal slot intermediate its ends adapted to engage said pin and support said lever with its inner and operative end pointing crosswise of said longitudinal opening and crosswise of the line of draft, a crank having its wrist-pin pivoted to the other end of said lever, and mechanism for rotating said crank, substantially as described.

3. In a corn-harvester, the combination with a frame having a longitudinal opening therein adapted to straddle a row of corn, of forwardly-projecting pins fixed upon said frame upon each side of said opening, levers provided each with a longitudinal slot intermediate its ends adapted to engage said pins and support said levers with their inner and operative ends pointed crosswise of said opening in said frame and crosswise of the line of draft, cranks having their wrist-pins pivoted to the other ends of said levers, and mechanism for rotating said cranks, substantially as described.

4. In a corn-harvester, the combination with a sprocket-chain having fingers adapted when said chain is moved to engage partially-lifted corn and lift the same to a substantially upright position and mechanism for driving said sprocket-chain, of a lever adapted when operated to engage down corn lying along the line of draft and lift the same into engagement with said sprocket-chain, and means for giving the operative end of said lever a movement across the line of draft and upward, substantially as described.

5. In a corn-harvester, the combination with a sprocket-chain having fingers adapted when said chain is moved to engage partially-lifted down corn and lift the same to a substantially upright position and mechanism for driving said sprocket-chain, of a lever operating substantially at right angles to the line of draft and adapted when operated to engage

down corn lying along the line of draft and lift the same into engagement with said sprocket-chain, and means for giving the operative end of said lever a movement across the line of draft and upward.

6. In a corn-harvester, the combination with a pair of sprocket-chains adapted to straddle a row of corn and provided with fingers adapted when said chains are moved to engage partially-lifted corn and raise the same to a substantially vertical position, of a pair of levers operating crosswise of the draft and adapted to engage down corn lying forward or backward along the line of draft and lift the same into engagement with the said sprocket-chains, and mechanism for giving the operative end of said levers a movement across the line of draft and upward, substantially as described.

7. In a corn-harvesting machine, the combination with a frame provided with a longitudinal opening adapted to straddle a row of corn, a pair of sprocket-chains carried by said frame, one upon each side of said opening, adapted to straddle a row of corn and provided with fingers adapted as said machine is driven forward to engage partially-lifted corn and lift it to a vertical position, and means for moving said sprocket-chains, of movable arms operating crosswise of said opening in said frame, in advance of said sprocket-chains, and adapted by their movement to engage down corn lying either forward or backward along the line of draft and to lift the same into engagement with said sprocket-chains, and means for operating said arms, substantially as described.

8. In a corn-harvesting machine, the combination with a frame provided with a longitudinal opening adapted to straddle a row of corn, a pair of sprocket-chains carried by said frame, one upon each side of said opening, adapted to straddle a row of corn and provided with fingers adapted as said machine is driven forward to engage partially-lifted corn and lift it to a vertical position, and means for moving said sprocket-chains, of levers pivotally mounted upon each side of the longitudinal opening in said frame, in advance of said sprocket-chains and pointing substantially at right angles with the line of draft, and mechanism adapted to give to the operative ends of said levers a downward and inward movement crosswise of the line of draft, and thence upward, substantially as described.

9. In a corn-harvesting machine, the combination with lifting mechanism for down corn, consisting of a lever pivotally mounted near the front end of the machine and pointing substantially at right angles with the line of draft, mechanism adapted to give to the operative end of said lever a downward and inward movement across the line of draft, and thence upward, a pair of sprocket-chains located behind said lifting mechanism adapted to straddle a row of corn and provided with fingers adapted as said machine is driven forward, to engage the corn when partially lifted by said lifters and lift said corn to a vertical position as it passes between said sprocket-chains, and means for moving said sprocket-chains, substantially as described.

10. In a corn-harvesting machine, the combination with a frame provided with a longitudinal opening through which standing corn may pass, of lifters for down corn, consisting of levers pivotally mounted near the front of said frame at each side of said opening and pointing toward each other substantially at right angles with the line of draft, mechanism adapted to give to the operative ends of said levers, alternately, a downward and inward movement toward each other across said opening, and then upward, a pair of sprocket-chains on each side of said opening located behind said lifting mechanism and adapted to straddle a row of corn and provided with fingers adapted, as said machine is driven forward, to engage the corn when partially lifted by said lifting devices and to lift said corn to a vertical position as it passes between said sprocket-chains, and means for moving said sprocket-chains, substantially as described.

11. In a corn-harvesting machine, the combination with devices adapted to lift down corn toward a vertical position, of a pair of sprocket-chains adapted to straddle a row of corn and provided with curved fingers, which, when in their operative position, curve first inward, then downward and inward, adapted, as said machine is driven forward, to engage the corn when partially lifted by said lifting devices and to lift said corn to a vertical position as it passes between said sprocket-chains, and means for moving said sprocket-chains, substantially as described.

12. In a corn-harvesting machine, the combination with a knife adapted to sever stalks of standing corn, of a rotating cone provided with a spiral flange adapted, when said cone is rotated, to move the butts of the corn backward in the machine, means for rotating said cone, a plurality of rods adapted in their rotation to successively engage the stalks of corn at some distance above the butts and to cooperate with said cone in carrying the stalks of corn back in a substantially vertical position, and mechanism for rotating said rods, substantially as described.

13. In a corn-harvesting machine, the combination with an axle, carrier-wheels mounted thereon, and a rear frame journaled on said axle and adapted to carry corn-binding and bundle carrying and dropping mechanism, of a central tilting frame adapted to carry corn-harvesting mechanism and journaled on said axle, springs connecting the rear part of said central frame to said rear frame and tending to balance said central frame on said axle, and mechanism adapted to tilt said central frame upon said axle and secure it in any desired position thereon, substantially as described.

14. In a corn-harvesting machine, the combination with a rear frame adapted to carry corn-binding and bundle carrying and dropping mechanism, and a central or tilting frame adapted to carry corn cutting and forwarding mechanism, of a front frame adapted to carry corn-lifting mechanism and slidingly mounted on said central frame, and means for raising and lowering said front frame on said central frame, substantially as described.

15. In a corn-harvesting machine, a weeder, consisting of two arms pivotally mounted near the front of said machine and separated from one another at their forward ends and provided with downward-projecting plates extending across the under side of said arms, and springs adapted to yieldingly hold said arms together at a point back of their forward ends, substantially as described.

16. In a corn-harvesting machine, the combination with an axle, wheels mounted on said axle, and a rear frame journaled on said axle and adapted to contain corn-binding and corn carrying and dumping mechanism, of a caster-wheel pivoted on said rear frame and having a movement on its pivotal points in a horizontal and in a vertical arc, and a spring connected with said caster-wheel and said rear frame, substantially as described.

17. In a corn-harvesting machine, the combination with a binder-platform, consisting of a fixed and a hinged portion, of framework, two segments mounted in said framework and adapted to swing about a central longitudinal axis and, when closed together at their lower ends, to receive bundles of corn from a binder, mechanism adapted to swing said segments apart from one another at their lower edges and drop contained bundles of corn, one of said segments being adapted, when so swung, to engage the hinged portion of said binder-platform and lift the same into a substantially vertical position, substantially as described.

706,148. **MEANS FOR CONTROLLING ELECTRIC CIRCUITS.** JAMES J. WOOD, Fort Wayne, Ind. Filed June 28, 1901. Serial No. 66,334. (No model.)

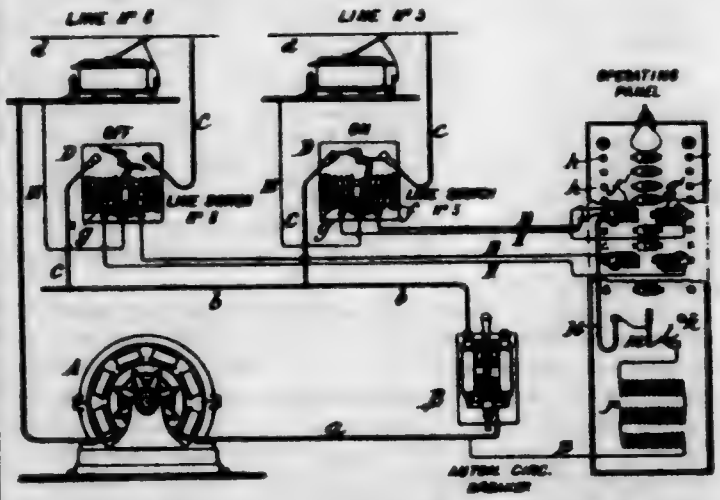

(Claim.—1. In an electric distributing system the combination of a dynamo, a main-circuit conductor and branch lines normally fed therefrom, an automatic circuit-breaker in the main circuit at the central power-station, a line-switch in each line, and means for operating said line-switches from said power-station.

2. In an electric distributing system the combination of a dynamo, a main-circuit conductor and branch lines fed therefrom, an automatic circuit-breaker in the main circuit, a line-switch in each line, means for operating said line-switches from the central power-station, and indicators at said station connected to said operating means and adapted to indicate the condition of the corresponding line-switches.

3. The combination with a dynamo and main-circuit and branch lines normally fed therefrom, of an automatic circuit-breaker in the main circuit electromagnetically-operated line-switches controlling the respective lines, circuit-wires leading from said switches to the central station, and circuit-closing means at said station adapted to send a current over any wire to operate the corresponding line-switch.

4. The combination with a dynamo and main circuit and branch lines fed therefrom, of electromagnetically-operated line-switches controlling the respective lines, circuit-wires leading from said switches to the central station, circuit-closing means at said station adapted to send a current over any wire to operate the corresponding line-switch, and electromagnetic indicators at said station corresponding to the respective line-switches and connected to said wires to be operated by the same current which oper-

ates the line-switch, and adapted to indicate the condition of the respective line-switches.

5. The combination with a dynamo and main circuit and branch lines fed therefrom, of line-switches controlling the respective lines, each switch having two oppositely-acting electromagnets for opening and closing the switch respectively, a pair of circuit-wires leading from the respective magnets of each switch to the central station, indicators at said station corresponding to the respective line-switches, each having two magnets connected respectively in the two wires leading from the corresponding line-switch, and circuit-closing means at the central station for sending a current over either wire to any line-switch, whereby to operate said switch and simultaneously to operate the indicator therefor to show the condition of the line-switch.

6. The combination with a dynamo and main circuit and branch lines fed therefrom, of electromagnetically-operated line-switches controlling the respective lines, circuit-wires leading from said switches to the central station, and there terminating in sockets, and a plug connected to a source of electric current and adapted to be inserted in any of said sockets to send a current over any wire to operate the corresponding line-switch.

7. The combination with a dynamo and main circuit and branch lines fed therefrom, of electromagnetically-operated line-switches controlling the respective lines, circuit-wires leading from said switches to the central station and there terminating in sockets, electromagnetic indicators at said station corresponding to the respective line-switches and connected to said wires, and a plug connected to a source of electric current and adapted to be inserted in any of said sockets to send a current over any wire to operate the corresponding line-switch and indicator.

8. The combination with a dynamo and main circuit and branch lines fed therefrom, of line-switches controlling the respective lines, each switch having two oppositely-acting electromagnets for opening and closing the switch respectively, a pair of circuit-wires leading from the respective magnets of each switch to the central station, indicators at said station corresponding to the respective line-switches, each having two magnets connected respectively in the two wires leading from the corresponding line-switch, said indicators arranged in a consecutive series, with terminals for said wires arranged also in consecutive series opposite their respective indicators, and circuit-closing means for connection with any of the respective terminals for sending a current over either wire to any line-switch, whereby to operate said switch and simultaneously to operate the indicator therefor to show the condition of the line-switch.

9. In a system for controlling electric circuits, the combination with electromagnetically-operated switches and wires leading thence to a central station, of operating means at said station comprising a series of circuit-terminals for said wires, a series of indicators having electromagnets operatively connected in the circuits of the respective wires, and circuit-closing means adapted to coact with said terminals to send a current over any of the wires to operate the magnets of the line-switch and indicator in connection with such wire.

10. In a system for controlling electric circuits, the combination with electromagnetically-operated switches and wires leading thence to a central station, of operating means at said station comprising a series of circuit-terminals for said wires, arranged consecutively, a series of indicators arranged consecutively and opposite the corresponding terminals, said indicators having electromagnets connected in the circuits of the respective wires, and circuit-closing means adapted to coact with said terminals to send a current over any of the wires to operate the magnets of the line-switch and indicator in connection with such wire.

11. In a system for controlling electric circuits, the combination with electromagnetically-operated switches and wires leading thence to a central station, of operating means at said station comprising a series of electromagnetic indicators arranged consecutively, two series of circuit-terminals for said wires arranged consecutively and opposite the respective indicators, and circuit-closing means adapted to coact with said terminals to send a current over any of the wires to operate the magnets of the line-switch and indicator in connection with such wire.

12. In a system for controlling electric circuits, the combination with electromagnetically-operated switches and wires leading thence to a central station, of indicators at said station comprising each a pair of electromagnetic coils, a movable member arranged to be attracted in opposite directions by the respective coils, and an indicating-tablet connected to and moved by said movable member.

13. In a system for controlling electric circuits, the combination with electromagnetically-operated switches and wires leading thence to a central station, of indicators at said station comprising each a pair of electromagnetic coils arranged in line, a core movable within said coils and attracted by each in an opposite direction, and an indicating-tablet connected to and moved by said core.

14. In a system for controlling electric circuits, the combination with electromagnetically-operated switches and wires leading thence to a central station, of indicators at said station comprising each a pair of electromagnetic coils f' and g', arranged in line, a core p movable within said coils, an indicating-tablet q, and a stem s connecting said tablet to said core.

15. In a system for controlling electric circuits, the combination with electromagnetically-operated switches, and wires leading thence to a central station, of indicators at said station, comprising each a pair of electromagnetic coils, and a movable member arranged to be attracted in opposite directions by the respective coils, and a retaining device coacting with said movable member for holding it in either position until attracted to the other.

16. In a system for controlling electric circuits, the combination with electromagnetically-operated switches and wires leading thence to a central station, of indicators at said station comprising each a pair of electromagnetic coils f' and g', arranged in line, a core p movable within said coils, an indicating-tablet q connected to said core by a stem s, and a spring t engaging said stem to hold the core and tablet against displacement.

17. In an electric distributing system, the combination of a dynamo, a main-circuit conductor and branch lines normally fed therefrom, an overload-indicator in the main circuit at the central power-station, a line-switch in each line, and means for operating said line-switches from said power-station.

706,144. BROOM, &c. McCLINTOCK YOUNG, Frederick, Md., assignor to the Palmetto Fibre Company, a Corporation of Illinois. Filed Apr. 1, 1902. Serial No. 100,847. (No model.)

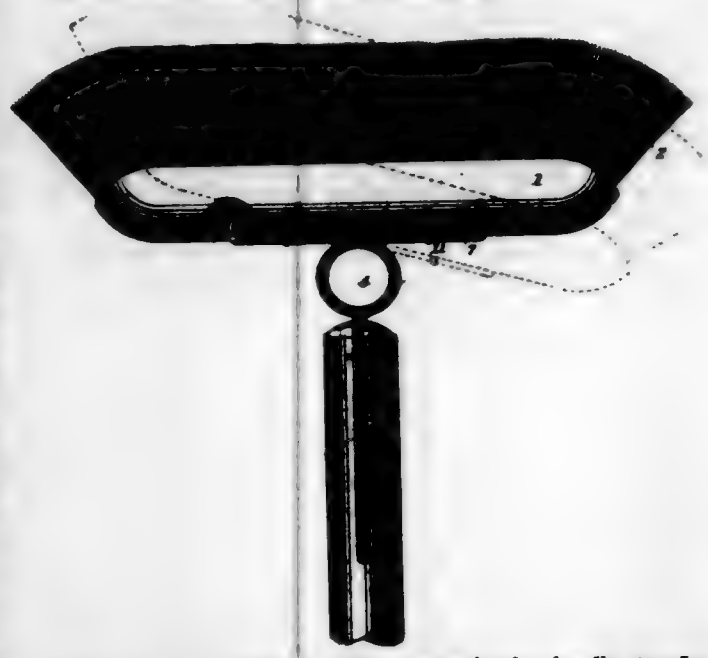

Claim.—1. In combination with a broom-head, a handle therefor, and an intermediate coiled spring disposed transversely of the axis of the handle and rigidly connected at its opposite ends respectively with the head and handle, and serving as the sole means for connecting the head with the handle; whereby the movement of the head in one direction transversely will subject the spring to a torsional strain and the movement in another direction transversely will compress and separate the coils respectively at opposite sides.

2. In combination with a broom-head, a handle therefor, an intermediate coiled spring arranged transversely of the axis of the handle, said spring having its ends extended at right angles to each other and firmly secured respectively to the handle and head.

3. In combination with a broom-head, a handle therefor, two intermediate coiled springs arranged end to end and disposed transversely of the axis of the handle, and each connected at its ends respectively with the head and handle, and serving as the sole means for connecting the head with the handle.

4. In combination with a broom-head, a handle, and two reversely-disposed coiled springs each having their opposite ends secured respectively to the head and handle, and jointly serving as the sole means for connecting the head with the handle.

5. In combination with a head, a handle therefor, and two reversely-disposed coiled springs arranged end to end with adjacent ends extended in opposite directions and secured to the head, and the opposite ends extended in the same direction and secured to the handle.

6. In combination with a grooved head, a handle provided with grooves in its side, and intermediate coiled springs having their ends extended and seated and secured in grooves in the head and handle.

7. In combination with a longitudinally-grooved head a handle formed in its sides with grooves, said grooves being formed at the ends

with holes, intermediate coiled springs provided with extensions extending respectively in the grooves in the head and handle, and said extensions having on their ends tangs seated in the holes at the ends of the grooves, and staples straddling the extensions adjacent to the coils and extending in the head and handle.

8. In combination with a broom-head, a handle therefor, and an intermediate flexible connection formed of open spring-coils arranged at the back of the broom, the said coils presenting an unobstructed opening which may be passed over a nail or similar support.

706,145. BEET-TOPPING MACHINE. JOSEPH ALBRIGHT, Watsonville, Cal. Filed Sept. 26, 1901. Serial No. 76,595. (No model.)

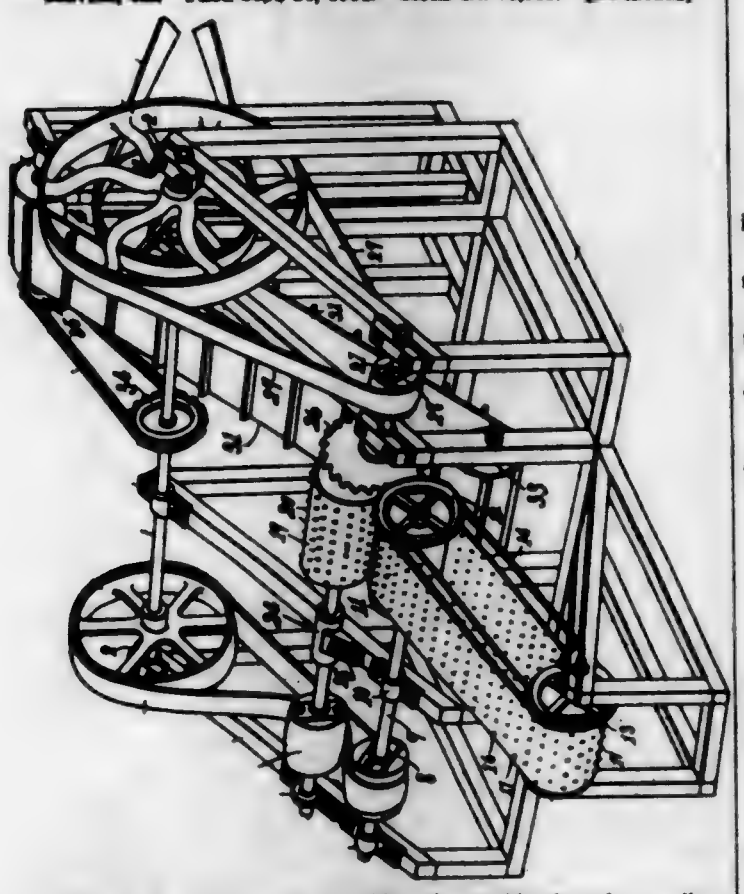

Claim.—In a beet-topping machine, the combination of an endless carrier running around horizontal shafts at its ends, and having suitable spikes to hold the beet in a fixed position on the upper surface thereof, a roller rolling opposite to the end of the carrier and mounted on a movable horizontal shaft substantially parallel to the horizontal shaft at the delivery end of the carrier, the opposite or nearest rolling-surfaces of the roller and carrier being vertical, and a circular saw mounted on a shaft substantially parallel with said last-named shaft, substantially as described.

706,146. MECHANISM FOR RECORDING OR REGISTERING THE MAXIMUM MOVEMENT OF ANY MECHANISM. LLEWELYN R. ATKINSON, London, England. Filed May 12, 1902. Serial No. 106,959. (No model.)

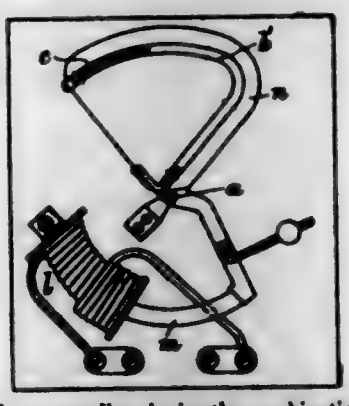

Claim.—1. In a recording device the combination with the moving part, the movement of which is to be recorded, of a movable part cooperating therewith and normally held by gravity in a position of equilibrium relative to the moving part, said movable part moving to a second position of equilibrium when a certain angular movement of the part to be measured has taken place, substantially as described.

2. In a recording device, the combination with the moving part, the movement of which is to be recorded, of a channeled movable part cooperating therewith and a rolling element carried by said channel and adapted to pass from one position of equilibrium to another when a given angular movement of the channeled part has taken place, substantially as described.

3. In a recording mechanism in combination an electromagnet, an armature, a pivoted arm carrying said armature, a curved tube or channel carried by said arm and a rolling element in said tube or channel substantially as described.

706,147. BRAKE-SHOE-LUBRICATING FILLER. RICHARD D. BALDWIN, Chicago, Ill., assignor of one-half to Harry H. Wright, Chicago, Ill. Filed Oct. 26, 1901. Serial No. 80,062. (No specimens.)

Claim.—1. A composition for brake-shoes comprising comminuted iron and pine-tar pitch.

2. A composition for brake-shoes comprising comminuted iron, pine-tar pitch and resin.

3. A composition for brake-shoes comprising comminuted iron, pine-tar pitch, resin and alum.

4. A composition for brake-shoes comprising comminuted iron, pine-tar pitch, resin, tallow and alum.

706,148. MICROMETER. CHARLES J. BAKER, Washington, England. Filed July 5, 1899. Serial No. 722,856. (No model.)

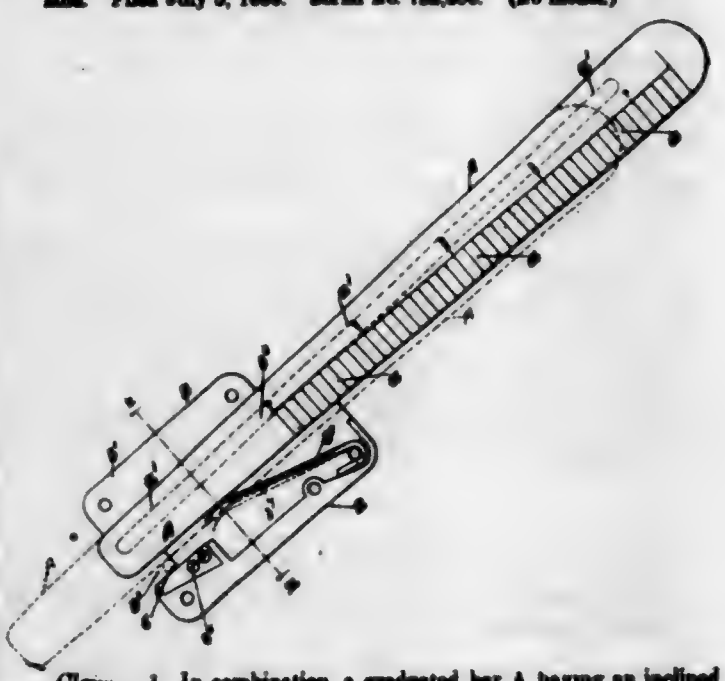

Claim.—1. In combination, a graduated bar A having an inclined edge and provided with a groove a' at one side parallel to the inclined edge, and a box B having a recess in which the bar A can slide, one side of the recess being inclined similarly to the inclined edge of the bar, a projection b^6 for engaging the groove a', and a spring b^7 bearing on the bar, substantially as described.

2. In combination, a graduated bar A having an inclined edge and provided with a groove a' at one side parallel to the inclined edge, and a box B, having a recess in which the bar A can be slid, one side of the recess being inclined similarly to the inclined edge of the bar A, a projection b^6 for engaging in the groove a', a notch or gap b^8 at one end, an extended graduated portion at the other end, and a spring b^7, all arranged and adapted for operating substantially as described.

706,149. PUMP-SPRING CONNECTION. JAMES O. BASS, Wasson, Minn. Filed May 13, 1902. Serial No. 107,665. (No model.)

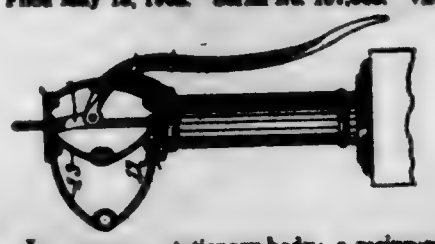

Claim.—In a pump, a stationary body; a reciprocating piston-rod; a spring base-plate supported on the body and another spring base-plate

secured to the piston-rod; the said base-plates having studs projecting from their adjacent faces, each of the said studs being cut of round and having its outer face shaped as an arc of a circle from a center located near the base of the opposite side of the stud; a series of U-shaped springs provided each with an open loop at its end shaped to engage one of the said studs, and a pin removably located in the stud just beyond the path of the spring, substantially as described.

706,150. WATER-WHEEL. THOMAS S. BARWIS, Vancouver, Canada. Filed Oct. 21, 1901. Serial No. 79,290. (No model.)

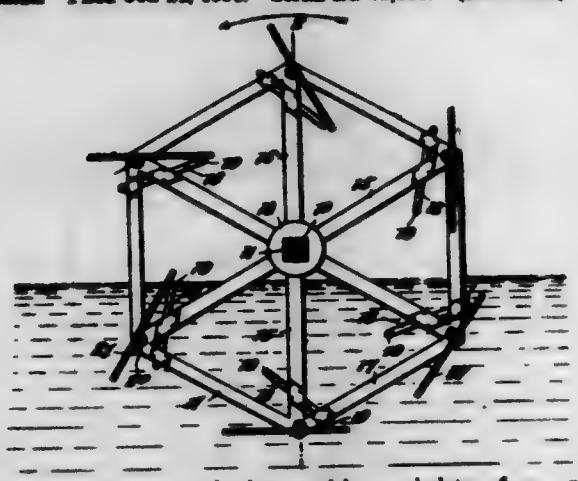

Claim.—1. A power-wheel comprising a skeleton frame, paddles independently hung on said frame, and a pair of stops for each paddle and carried by the frame, said stops being located on opposite sides of a line passing through the pivot of the paddle and perpendicular to a line connecting the two stops; each stop of the pair being disposed in the path of the paddle, and one stop of each pair being located closer to the pivot of the paddle than the other stop of said pair, whereby the stops act alternately to hold one paddle in two operative positions, when below the axis of motion of the wheel, and said paddle is free to lie in the plane of movement of the fluid at the lowest point to which it may be carried on the rotation of the wheel.

2. A power-wheel comprising a skeleton frame having radial arms, paddles hung eccentrically on said arms, and stop-frames extending diagonally across the arms, and each frame having a member extending between said arms, said members of each frame being disposed in the path of the unequal portions of one paddle and on opposite sides of a line passing through the pivot thereof, and perpendicular to a line connecting the two frame members, one member of each stop-frame being located closer to the pivot of said paddle than the other member of said frame, as and for the purposes set forth.

706,151. POWER-HAMMER. WILLIAM BAUERSMEISTER, Columbus, Ohio, assignor to the Hayden-Corbett Chain Company, Columbus, Ohio, a Corporation of New Jersey. Filed Feb. 7, 1902. Serial No. 93,954. (No model.)

Claim.—1. In combination with a hammer-shank, means for latching or holding the same in elevated or striking position, a lock for said hammer-holding device, a laterally-shiftable cam device for varying the strength of the blows and means for automatically operating said lock to permit the release of the hammer-holding device when the cam device has reached a definite position, substantially as described.

2. In combination with a hammer-shank, means for automatically latching or holding the same in elevated or striking position, a lock for said hammer-holding device, a laterally-shiftable cam device for varying the strength of the blows, and means for automatically operating said lock to permit the release of the hammer-holding device when the cam device has reached a definite position, substantially as described.

3. In combination with a hammer-shank, a cam device for lifting and dropping the same, means for catching and holding the hammer-shank in elevated or striking position, a lock for said hammer-shank-holding device, and means for automatically operating said lock to permit the release of the hammer-shank-holding device when the cam device has reached a definite position, substantially as described.

706,152. PERMUTATION-LOCK. WILLIAM BERER, Brooklyn, N. Y., assignor of twenty-one thirtieths to James H. Doremus, Brooklyn, N. Y. Filed Aug. 28, 1899. Renewed Dec. 27, 1901. Serial No. 87,437. (No model.)

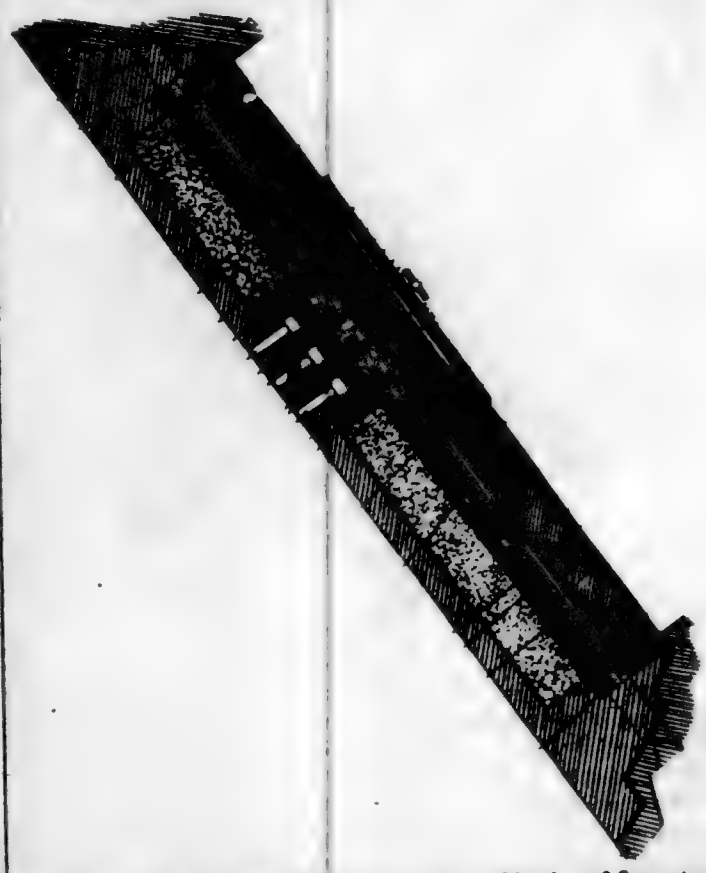

Claim.—1. In a permutation-lock, the combination of finger-keys, tumblers actuated thereby, a lock-plate sustained by the tumblers, a slide controlled by the lock-plate and a bolt having connection with the slide to be actuated therefrom.

2. In a permutation-lock, the combination of finger-keys, tumblers actuated thereby, a lock-plate held by the tumblers, a slide controlled by the lock-plate, and a bolt actuated by the slide.

3. In a permutation-lock, the combination of finger-keys, tumblers actuated thereby, a lock-plate sustained in locked position by the tumblers, a bolt, and means for throwing the same such means being released by the fall of the lock-plate.

4. In a lock for safe-doors, the combination with a door having a cavity therein, of a block mounted in the cavity, finger-keys mounted to move in the block and in the front wall of the door, plates mounted rigidly in the cavity of the door rearward of the block and having slots therein registering with the finger-keys, a vertically-sliding lock-plate mounted between the rigid plates, tumblers mounted in the slots of the rigid plates and working with the lock-plate, the tumblers being actuated by the finger-keys, and bolt mechanism controlled by the lock-plate.

5. In a lock for safe-doors, the combination with the door having a cavity formed therein and opening at the rear thereof, of a block mounted in the cavity and bearing against the front wall of the door, finger-keys mounted to move in the block and in the front wall of the door, a number of rigid plates mounted in the cavity rearward of the block and having slots registering with the finger-keys, a lock-plate mounted to move vertically between the rigid plates, tumblers mounted in the slots of the rigid plates and coacting with the lock-plate, the tumblers being actuated from the finger-keys, a slide controlled by the lock-plate, and bolt mechanism actuated by the slide.

6. In a lock, the combination of an actuated lock-plate, a spring-

pressed dog carried thereon, a slide mounted to move relatively to the lock-plate and normally held by the dog, the movement of the lock-plate releasing the dog from the slide, and bolt mechanism having connection with the slide to be actuated thereby.

7. In a lock, the combination of an actuated sliding lock-plate having a groove in the face thereof, a slide movable through the groove, a spring-pressed dog carried by the lock-plate and engaging the slide to hold the same, and bolt mechanism having connection with the slide.

8. In a lock, the combination of a lock-plate, means for holding the lock-plate and for permitting the same to drop, a slide movable relatively to the lock-plate, a dog carried by the lock-plate and engaging the slide to hold the same, and bolt mechanism having connection with the slide.

9. In a lock, the combination of an actuated lock-plate, a slide movable relatively thereto and held thereby when the lock-plate is in a certain position, the lock-plate moving from said position to release the slide, and bolt mechanism having connection with the slide.

10. In a permutation-lock, the combination of a vertically-movable lock-plate, tumblers normally sustaining the same, means for actuating the tumblers to release the lock-plate, a slide movable relatively to the lock-plate, the slide being held by the lock-plate when the lock-plate is in raised position, and bolt mechanism having connection with the slide.

11. In a lock, the combination of a bolt, a swinging member having a tangential slot therein, the slot receiving a portion of the bolt to impart movement to the bolt, a slide having a pin engaging said member to move the same, and a pinion meshing with rack-teeth on the slide, whereby to drive the slide.

12. The combination with two doors closing the one against the other, of bolts mounted in each door, the meeting edges of the doors having each a bolt, which bolts oppose each other, and the bolts of the first door being arranged so that the bolt at the meeting edge thereof will move outward when the other bolts of the said first door move inward, means for operating the bolts of the said first door, and permutation-lock mechanism for operating the bolts of the second door.

13. The combination with a door having permutation-lock mechanism inclosed therein, of a block serving to cover said mechanism and removably seated in a rear portion of the door, and an orificed disk mounted to turn in the rear portion of the door, the disk in one position serving to hold the block and in the other position serving to permit the removal thereof.

14. The combination with a door having permutation-lock mechanism inclosed therein, of a member removably seated in a rear portion of the door and serving to cover the lock mechanism, and a locking disk or member mounted to turn in the rear portion of the door and serving to removably hold the first-named member in place.

15. The combination with a main portion or support, of a door mounted thereon, a disk mounted to turn on the door and having a keyhole-slot therein, and a headed pin carried by the main portion or support and engaging in the keyhole-slot to hold the door in closed position until the disk is turned to disengage the pin from the walls of the keyhole-slot.

16. The combination with a door having lock mechanism inclosed therein, of an auxiliary door mounted on the main door and covering the lock mechanism, a disk mounted to turn in the auxiliary door and having a keyhole-slot therein, and a headed pin carried on the main door and engaging the walls of the keyhole-slot to hold the auxiliary door closed.

17. The combination with a door having permutation-lock mechanism inclosed therein, of an auxiliary door mounted on the main door, a disk mounted to turn on the auxiliary door, a pin carried by the main door and engaged by the disk, the pin serving to hold the auxiliary door closed, the disk being capable of disengaging the pin by a turning movement of the disk, and a spring-pressed pin carried in the main door and removably engaging the disk to prevent the turning thereof, the said spring-pressed pin coacting with parts of the permutation-lock, thus preventing the releasing movement of said pin except when the lock is in a certain predetermined position.

18. The combination with a main portion or support, of a door mounted thereon, a member mounted to turn in the door, a latch pivotally mounted on the door and engaging the member to hold the same, and a cam-shaped detent mounted on the main portion or support and engaged by the latch when the door is thrown to closed position, whereby to move the latch from engagement with the disk.

19. The combination with a door having permutation-lock mechanism contained therein, of an auxiliary door mounted on the main door, and means for holding the auxiliary door closed, such means being controlled by the lock mechanism and being releasable only when the lock mechanism is in a certain predetermined position.

20. The combination with a door having permutation-lock mechanism contained therein, of an auxiliary door mounted on the main door, and two independently-operative devices for holding the auxiliary door closed, such devices coacting with the lock mechanism and each being operative only when the lock mechanism is in a certain predetermined position, the one of such auxiliary-door-holding devices being operative during the time that the other of such devices is inoperative.

21. The combination with a door having countersunk passages in the front walls thereof, of permutation-lock mechanism contained in the door, and finger-keys mounted in the passages of the door to actuate the lock mechanism, the finger-keys normally lying flush with the front surface of the door.

22. A permutation-lock, having tumblers each having two wards respectively projecting upward and downward, the upper ward being of a width reduced over that of the lower ward, and the lower ward being longer than the upper ward, and the tumblers also having two oppositely-projected fingers extending from the tumblers at the juncture of the wards thereof.

23. A permutation-lock having a tumbler constructed with two wards respectively projected upward and downward, the edges of the ward at one side of the tumbler being in alinement with each other, and the upper ward being of a width reduced over that of the lower ward, and the tumbler having two oppositely-projected fingers extending from the tumbler at the juncture of the wards thereof.

24. In a permutation-lock, the combination with a bolt and mechanism connected therewith for throwing the same, of means serving to control said mechanism for throwing the bolt, tumblers controlling said means, each tumbler having two wards respectively projected upward and downward, the upper ward being of a width reduced over that of the lower ward, and the lower ward being longer than the upper ward, and the tumblers having oppositely-projected fingers extended therefrom at the juncture of the wards, thus permitting the reversal of the tumblers, for the purpose specified, and finger-keys for actuating the tumblers.

25. A permutation-lock, the combination with bolt-actuating mechanism, of tumblers controlling such mechanism, each tumbler having its end portions formed alike to permit the reversal of the tumblers, finger-keys respectively arranged end to end with the tumblers reciprocal to actuate the same.

26. The combination with a door having lock mechanism, of an auxiliary door mounted on the main door to cover the lock mechanism, and means for holding the auxiliary door closed, such means being controlled by the lock mechanism.

27. In a permutation-lock, the combination of a lock-plate, tumblers controlling the lock-plate, a bolt, and means for throwing the bolt, such means being controlled by the lock-plate.

28. In a permutation-lock, the combination of tumblers, a lock-plate controlled by the tumblers, a bolt, and means for throwing the bolt, such means comprising a sliding member imparting movement to the bolt, the movement of the sliding member being controlled by the lock-plate.

29. In a permutation-lock, the combination of tumblers, a lock-plate controlled thereby, a bolt, and means for throwing the bolt, such means comprising relatively movable parts through which is transmitted the movement to throw the bolt, one of the parts being controlled by the lock-plate.

706,158. FLUID-PRESSURE-REGULATED GAS-VALVE. ADOLF BEILER, Pittsburg, Pa., assignor of two-fifths to Frederic Hartley, Pittsburg, Pa., and Charles H. Parsons, Sharon, Pa. Filed Jan. 31, 1902. Serial No. 92,080. (No model.)

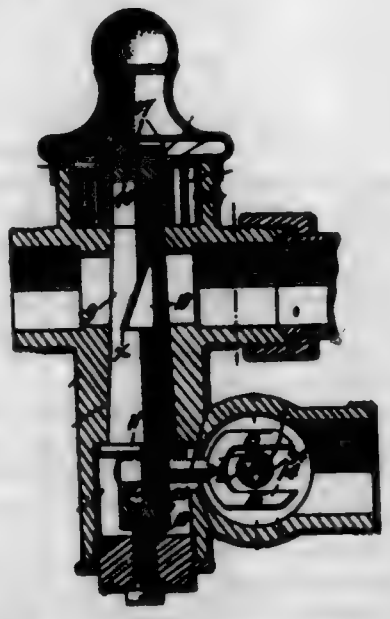

Claim.—1. The combination of a gas-valve, a water-passage, a piston movable by the pressure of water against the same and having an opening to establish communication between the parts of the water-passage on opposite sides of the piston, a connection between the gas-valve

and the piston whereby they are movable simultaneously, and means coacting with the piston to progressively increase the flow of water through the opening therein as the piston moves in one direction, and to maintain pressure in the water-passage on the inner side of the piston when the latter is at the limit of its outstroke, substantially as described.

2. In a fluid-pressure-regulated valve of the class described, the combination of a casing or body having a gas-passage and a water-passage, a bore intersecting the gas-passage and communicating with the water-passage, a plug in said bore, said plug having an opening to permit a flow of gas through the gas-passage, and provided with an oscillating arm extending into the water-passage, a spring to turn the gas-plug in one direction, and a piston in the water-passage, said piston forming a valve to permit the flow of water through the water-passage, being movable in one direction by the pressure of the water on one side thereof, and coacting with the arm to turn the gas-plug against the tension of the spring, substantially as described.

3. In a fluid-pressure-regulated valve of the class described, the combination of a gas-valve, a water-passage, a piston, movable by the pressure of water against the same and having an opening to establish communication between the parts of the water-passage on opposite sides of the piston, a connection between the piston and the gas-valve, whereby the piston and gas-valve are movable simultaneously, and a fixed plug in the opening in the piston, said plug having a water-channel to maintain water-pressure in the water-passage on both sides of the piston, substantially as described.

4. In a fluid-pressure-regulated valve of the class described, the combination of gas-valve, a water-passage, a primary water-pressure regulator in said passage, a fixed plug carried by said primary water-pressure regulator, said plug having a channel of reduced capacity to establish communication between the parts of the water-passage on opposite sides of the primary water-pressure regulator, a piston movable by the pressure of water against the same and operating in the water-passage, said piston having an opening in which the plug extends, the latter partially closing said opening, and a connection between the piston and the gas-valve whereby the same are simultaneously operated, substantially as described.

5. The combination of a valve-case having a gas-passage, a water-passage, a chamber communicating with the latter, and a bore communicating with said chamber and the gas-passage, a gas-plug revolvable in said bore, said gas-plug extending across the gas-passage and having an opening for the purpose set forth, a piston in the water-passage, a connection between the same and the plug, a cap to close the outer side of the chamber and a bearing carried by said cap and engaging said plug to fit the latter in the bore, substantially as described.

6. In a fluid-pressure-regulated valve of the class described, the combination of a revolvable gas-plug having an arm, a spring to turn the plug in one direction, means to vary the tension of said spring, a piston movable by fluid-pressure in one direction and coacting with the arm to turn the plug against the tension of the spring and means to vary and predetermine the maximum pressure of fluid on said piston, substantially as described.

7. In a fluid-pressure-regulated valve of the class described, the combination of a gas-valve having an element to cause a progressively-increased flow of gas when moved in one direction, a spring to move said element in the reverse direction, a water-passage, a guide-plug therein, said plug having exterior water-channels of progressively-increased capacity in one direction, a piston, movable in the water-passage in one direction by the pressure of water, and having a bore in which the guide-plug is disposed, and a connection between the piston and the gas-valve, whereby the same are simultaneously operated, substantially as described.

8. In a fluid-pressure-regulated valve of the class described, the combination of a revolvable gas-plug, a coiled spring to turn said plug in one direction, the outer end of said spring being secured to a fixed point, a sleeve revolvable on said plug and to which the inner end of said spring is attached, means to lock said sleeve to said plug at any desired tension of said spring, and a fluid-pressure-actuated element connected to the plug to turn the latter in one direction against the tension of said spring, substantially as described.

9. A valve-case having a passage, in combination with a revolvable plug intersecting said passage, said plug having a transverse opening coincident with said passage and of progressively-diminishing width in the direction in which the plug is turned to cover said opening and cut off the passage, substantially as described.

10. The combination of a valve-case having a gas-passage, a water-passage, a chamber communicating with the latter, and a bore communicating with said chamber and the gas-passage, a gas-plug fitted and revolvable in said bore, said gas-plug extending across the gas-passage and having an opening for the purpose set forth, a piston in the water-passage, a connection between the same and the plug, and a revolvable closure in the outer side of said chamber, substantially as described.

706,154. PRESSURE-GENERATOR. GEORGE E. BLAKE, Greencastle, Ind. Filed Mar. 31, 1902. Serial No. 100,840. (No model.)

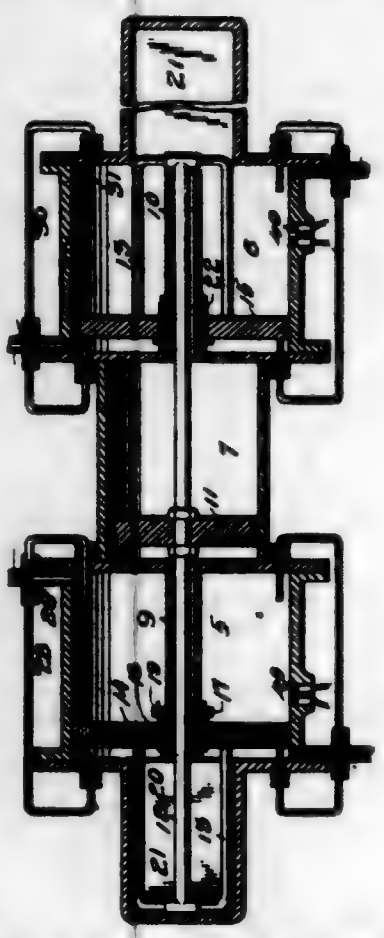

Claim.—1. In a device of the class specified, the combination with a plurality of alining cylinders, of a piston disposed in each cylinder, a piston-rod connected to all of the pistons, the central cylinder being in constant communication with the outer ends of the outer cylinders, valved openings arranged in the pistons of the outer cylinders, valved inlet and outlet pipes connected to opposite ends of the outer cylinder, and means for operating said valves.

2. In a device of the class specified, the combination of the end cylinders, a central cylinder in constant communication with the outer ends of said end cylinders, valved pistons arranged in the end cylinders, a piston disposed in the central cylinder, a piston-rod connecting all three of the pistons for simultaneous movement, inlet and outlet pipes connected to the end cylinders, controlling-valves in said pipes, and means for operating said valves.

3. In a device of the class specified, the combination of the end cylinders having valved pistons, a centrally-disposed cylinder of a diameter less than that of the end cylinders, a piston arranged in the central cylinder, a piston-rod connecting all of the pistons for simultaneous movement, connecting-tubes extending through the end pistons and serving to keep the central cylinder in constant communication with the ends of the end cylinder, and piston-operated valves for governing the supply of explosive mixture to said end cylinders and the escape of exploded gases from all of the cylinders.

4. In a device of the class specified, the combination of the three alining cylinders, of which the centrally-disposed cylinder is of less diameter than the end cylinders, a piston in said central cylinder, tubes extending from the ends of the central cylinder to the end portions of the end cylinders, sliding sleeves loosely mounted on said tubes and having ports or passages for controlling the flow of gas from one end of the cylinder to the other, pistons mounted on said sleeves, a piston-rod extending from the central piston through both of the tubes, yokes connecting the ends of the piston-rods to the end pistons, cylinder-heads having slots for the reception of the yokes, inlet-pipes for the admission of an explosive mixture to the end cylinders, outlet-pipes for the escape of gas under pressure from all of the cylinders, valves in all of said pipes, and arms connected to said valves, and extending through the end walls of the cylinders into the path of movement of the end pistons.

5. In a device of the class specified, the combination with the three alining cylinders, of pistons in said cylinders, means for alternately supplying the end cylinders with an explosive mixture, means for permitting the escape of gas alternately from said cylinders, means for exploding the explosive mixture in said end cylinders, and means for alternately admitting portions of an exploded charge from the end cylinders to the central cylinder, thereby to assist in the movement of the pistons in the several cylinders.

706,155. RIVET HEATING AND DISTRIBUTING SYSTEM. VICTOR E. BROWNING, Cleveland, Ohio. Filed Jan. 2, 1902. Serial No. 88,023. (No model.)

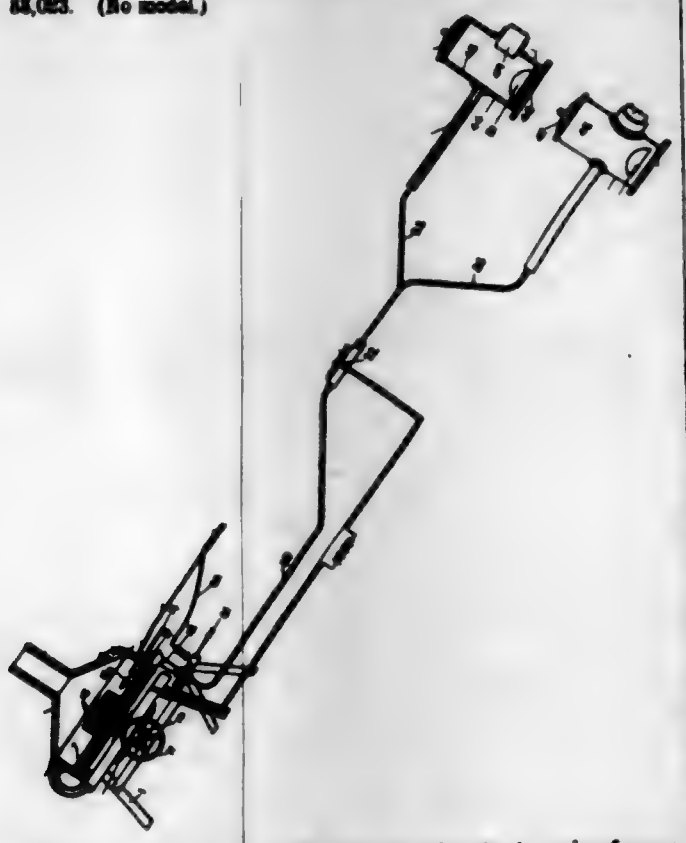

Claim.—1. In a device of the character described, a pipe for conveying hot rivets that are in condition suitable for riveting, and means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet, so that it will be fed along in the pipe.

2. In a device of the character described, a pipe for conveying hot rivets that are in condition suitable for riveting, and a valve for admitting a fluid under pressure to said pipe behind the rivet to drive it through the pipe.

3. In a device of the character described, a pipe for conveying hot rivets that are in suitable condition for riveting, a valve through which a fluid under pressure may be admitted momentarily to the pipe behind the rivet and then cut off, so that the expansive force of the fluid may be utilized in driving the rivet, and means at the end of the pipe for receiving the rivet.

4. In a device of the character described, a main pipe for conveying hot rivets that are in condition suitable for riveting, means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet so that it will be fed through the pipe, a plurality of distributing-pipes connected with the main pipe, and a switch for directing the rivets from the main pipe into any distributing-pipe desired.

5. In a device of the character described, a main pipe for conveying rivets and like articles, means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet so that it will be fed through the pipe, a plurality of distributing-pipes connected with the main pipe, a switch for directing the rivets from the main pipe into any distributing-pipe desired, and receivers for the rivets adjustably connected with the distributing-pipes.

6. In a device of the character described, a pipe for conveying rivets by fluid-pressure, a valve for closing the pipe, an opening in the valve which may be brought into register with the pipe and through which a rivet may be inserted, connections with said valve whereby a fluid under pressure may be conducted thereto, and a port in the valve which is also adapted to be brought into register with the pipe so that the compressed fluid may enter to force the rivet through the pipe.

7. In a device of the character described, a main pipe which is adapted for conveying hot rivets and like articles, a plurality of branch distributing-pipes, a switch-box connecting the main and the branch pipes, a switch within said box, a spring for normally holding the switch so as to connect the main with one of the branch pipes, and electrical means for moving the switch to connect the main with another of the branch pipes.

8. In a device of the character described, a pipe through which rivets and like articles are adapted to be forced by fluid-pressure, and a receiver for the rivets connected with said pipe, said receiver having a tubular extension for telescoping the end of the pipe, and a block of resilient material mounted in the receiver opposite the extension, for the purpose specified.

9. In a device of the character described, a pipe through which rivets and like articles are adapted to be forced by fluid-pressure, and a receiver for the rivets connected with said pipe, said receiver having a tubular extension for telescoping the end of the pipe, a block of resilient material mounted in the receiver opposite the extension, for the purpose specified, and openings cut in the wall of the receiver near the bottom through which the rivets may be removed from the receiver.

10. In a system for heating and distributing rivets and like articles, a heating device, and means for conveying the rivets therefrom at a high speed and without detrimental cooling.

11. In a system for heating and distributing rivets and like articles, a furnace, means for conveying the rivets therefrom at a high speed and without detrimental cooling, and receivers connected with the conveying means into which the rivets are deposited.

12. In a system for heating and distributing rivets and like articles, a furnace, a pipe for conveying the rivets therefrom at a high speed and without detrimental cooling, and means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet so that it will be fed through the pipe.

13. In a system for heating and distributing rivets and like articles, a furnace, means for conveying the rivets at a high speed and without detrimental cooling to an intermediate point, a plurality of conveying devices leading from said intermediate point, a switching device for connecting the conveying means with any one of the plurality of conveying devices desired, and receivers for the rivets connected with the conveying devices.

14. In a system for heating and distributing rivets and like articles, a pipe adapted for conveying the rivets, a valve for closing the entrance to the pipe, said valve having an opening which is normally out of register with the end of the pipe, a furnace for heating the rivets, &c., means for transferring the rivets from the furnace to the opening in the valve, means for rocking the valve to bring the opening into register with the pipe so that the rivet may enter therein, and means connected with the valve for admitting fluid under pressure to drive the rivet through the pipe.

15. In a device of the character described, a plurality of pipes through which rivets are forced by fluid-pressure, a single valve controlling the entrance to said pipes, a receiver in said valve for the rivets which is adapted to be brought into register with the end of any one of the pipes to drop the rivets therein, connections with said valve whereby fluid under pressure may be conducted thereto, and a port in the valve which may be brought into connection with any of the pipes at will to drive the rivets therethrough.

706,156. ELECTRIC RAILWAY. CHARLES R. CAMPBELL, New York, N. Y. Filed Dec. 28, 1900. Serial No. 41,322. (No model.)

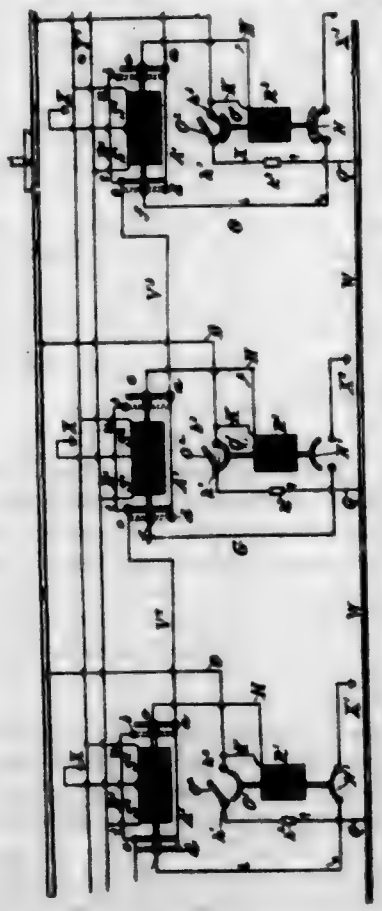

Claim.—1. In a sectional third-rail electric railway, the combination, for sending electric cars in opposite directions over the same track, of the third-rail conductor, the main feed-wire carrying the working current, means for diverting an auxiliary or shunt therefrom having changeable groundings through means contacts, multiple switches and wiring adapted

and the piston whereby they are movable simultaneously, and means cooperating with the piston to progressively increase the flow of water through the opening therein as the piston moves in one direction, and to maintain pressure in the water-passage on the inner side of the piston when the latter is at the limit of its outstroke, substantially as described.

2. In a fluid-pressure-regulated valve of the class described, the combination of a casing or body having a gas-passage and a water-passage, a bore intersecting the gas-passage and communicating with the water-passage, a plug in said bore, said plug having an opening to permit a flow of gas through the gas-passage, and provided with an oscillating arm extending into the water-passage, a spring to turn the gas-plug in one direction, and a piston in the water-passage, said piston forming a valve to permit the flow of water through the water-passage, being movable in one direction by the pressure of the water on one side thereof, and cooperating with the arm to turn the gas-plug against the tension of the spring, substantially as described.

3. In a fluid-pressure-regulated valve of the class described, the combination of a gas-valve, a water-passage, a piston, movable by the pressure of water against the same and having an opening to establish communication between the parts of the water-passage on opposite sides of the piston, a connection between the piston and the gas-valve, whereby the piston and gas-valve are movable simultaneously, and a fixed plug in the opening in the piston, said plug having a water-channel to maintain water-pressure in the water-passage on both sides of the piston, substantially as described.

4. In a fluid-pressure-regulated valve of the class described, the combination of gas-valve, a water-passage, a primary water-pressure regulator in said passage, a fixed plug carried by said primary water-pressure regulator, said plug having a channel of reduced capacity to establish communication between the parts of the water-passage on opposite sides of the primary water-pressure regulator, a piston movable by the pressure of water against the same and operating in the water-passage, said piston having an opening in which the plug extends, the latter partially closing said opening, and a connection between the piston and the gas-valve whereby the same are simultaneously operated, substantially as described.

5. The combination of a valve-case having a gas-passage, a water-passage, a chamber communicating with the latter, and a bore communicating with said chamber and the gas-passage, a gas-plug revolubly in said bore, said gas-plug extending across the gas-passage and having an opening for the purpose set forth, a piston in the water-passage, a connection between the same and the plug, a cap to close the outer side of the chamber and a bearing carried by said cap and engaging said plug to fit the latter in the bore, substantially as described.

6. In a fluid-pressure-regulated valve of the class described, the combination of a revolubly gas-plug having an arm, a spring to turn the plug in one direction, means to vary the tension of said spring, a piston movable by fluid-pressure in one direction and coacting with the arm to turn the plug against the tension of the spring and means to vary and predetermine the maximum pressure of fluid on said piston, substantially as described.

7. In a fluid-pressure-regulated valve of the class described, the combination of a gas-valve having an element to cause a progressively-increased flow of gas when moved in one direction, a spring to move said element in the reverse direction, a water-passage, a guide-plug therein, said plug having exterior water-channels of progressively-increased capacity in one direction, a piston, movable in the water-passage in one direction by the pressure of water, and having a bore in which the guide-plug is disposed, and a connection between the piston and the gas-valve, whereby the same are simultaneously operated, substantially as described.

8. In a fluid-pressure-regulated valve of the class described, the combination of a revolubly gas-plug, a coiled spring to turn said plug in one direction, the outer end of said spring being secured to a fixed point, a sleeve revolubly on said plug and to which the inner end of said spring is attached, means to lock said sleeve to said plug at any desired tension of said spring, and a fluid-pressure-actuated element connected to the plug to turn the latter in one direction against the tension of said spring, substantially as described.

9. A valve-case having a passage, in combination with a revolubly plug intersecting said passage, said plug having a transverse opening coincident with said passage and of progressively-diminishing width in the direction in which the plug is turned to cover said opening and cut off the passage, substantially as described.

10. The combination of a valve-case having a gas-passage, a water-passage, a chamber communicating with the latter, and a bore communicating with said chamber and the gas-passage, a gas-plug fitted and revolubly in said bore, said gas-plug extending across the gas-passage and having an opening for the purpose set forth, a piston in the water-passage, a connection between the same and the plug, and a revolubly closure in the outer side of said chamber, substantially as described.

706,154. PRESSURE-GENERATOR. George B. Blake, Greencastle, Ind. Filed Mar. 31, 1902. Serial No. 100,840. (No model.)

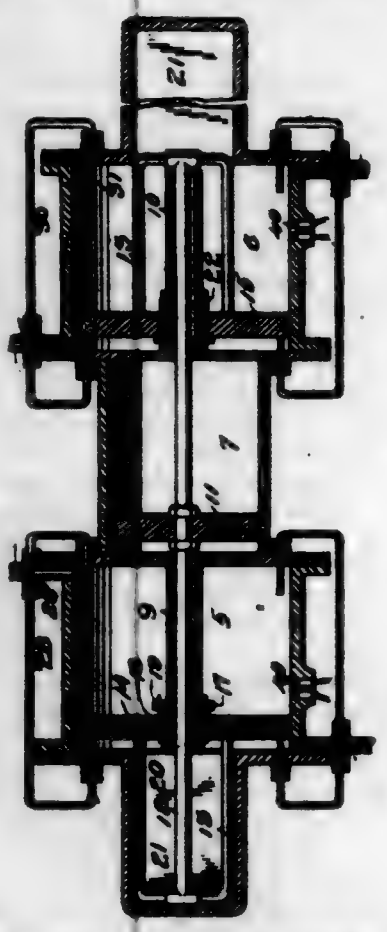

Claim.—1. In a device of the class specified, the combination with a plurality of alining cylinders, of a piston disposed in each cylinder, a piston-rod connected to all of the pistons, the central cylinder being in constant communication with the outer ends of the outer cylinders, valved openings arranged in the pistons of the outer cylinders, valved inlet and outlet pipes connected to opposite ends of the outer cylinder, and means for operating said valves.

2. In a device of the class specified, the combination of the end cylinders, a central cylinder in constant communication with the outer ends of said end cylinders, valved pistons arranged in the end cylinders, a piston disposed in the central cylinder, a piston-rod connecting all three of the pistons for simultaneous movement, inlet and outlet pipes connected to the end cylinders, controlling-valves in said pipes, and means for operating said valves.

3. In a device of the class specified, the combination of the end cylinders having valved pistons, a centrally-disposed cylinder of a diameter less than that of the end cylinders, a piston arranged in the central cylinder, a piston-rod connecting all of the pistons for simultaneous movement, connecting-tubes extending through the end pistons and serving to keep the central cylinder in constant communication with the ends of the end cylinder, and piston-operated valves for governing the supply of explosive mixture to said end cylinders and the escape of exploded gases from all of the cylinders.

4. In a device of the class specified, the combination of the three alining cylinders, of which the centrally-disposed cylinder is of less diameter than the end cylinders, a piston in said central cylinder, tubes extending from the ends of the central cylinder to the end portions of the end cylinders, sliding sleeves loosely mounted on said tubes and having ports or passages for controlling the flow of gas from one end of the cylinder to the other, pistons mounted on said sleeves, a piston-rod extending from the central piston through both of the tubes, yokes connecting the ends of the piston-rods to the end pistons, cylinder-heads having slots for the reception of the yokes, inlet-pipes for the admission of an explosive mixture to the end cylinders, outlet-pipes for the escape of gas under pressure from all of the cylinders, valves in all of said pipes, and arms connected to said valves, and extending through the end walls of the cylinders into the path of movement of the end pistons.

5. In a device of the class specified, the combination with the three alining cylinders, of pistons in said cylinders, means for alternately supplying the end cylinders with an explosive mixture, means for permitting the escape of gas alternately from said cylinders, means for exploding the explosive mixture in said end cylinders, and means for alternately admitting portions of an exploded charge from the end cylinders to the central cylinder, thereby to assist in the movement of the pistons in the several cylinders.

706,155. RIVET HEATING AND DISTRIBUTING SYSTEM.

Victor E. Browning, Cleveland, Ohio. Filed Jan. 2, 1902. Serial No. 88,022. (No model.)

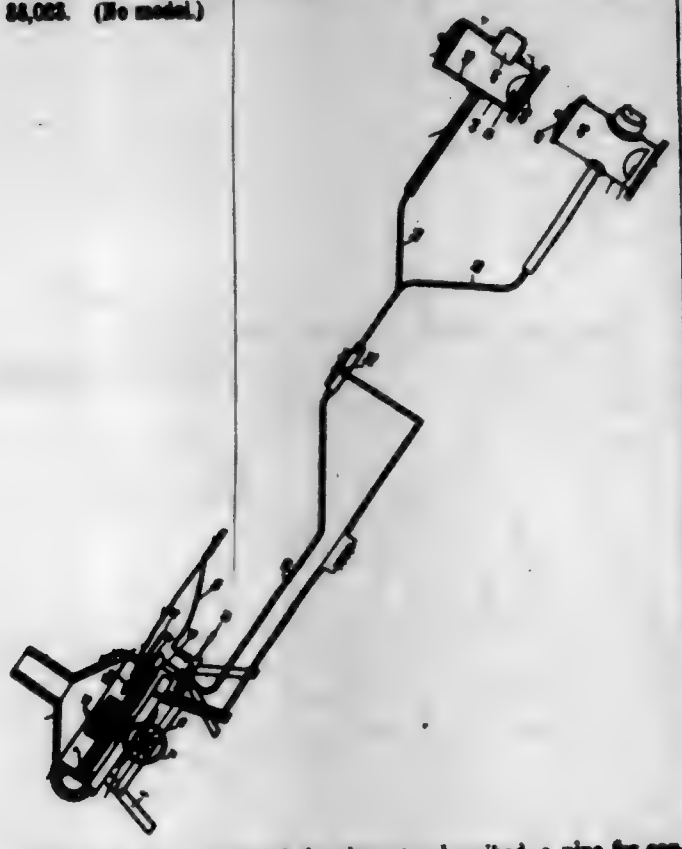

Claim.—1. In a device of the character described, a pipe for conveying hot rivets that are in condition suitable for riveting, and means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet, so that it will be fed along in the pipe.

2. In a device of the character described, a pipe for conveying hot rivets that are in condition suitable for riveting, and a valve for admitting a fluid under pressure to said pipe behind the rivet to drive it through the pipe.

3. In a device of the character described, a pipe for conveying hot rivets that are in suitable condition for riveting, a valve through which a fluid under pressure may be admitted momentarily to the pipe behind the rivet and then cut off, so that the expansive force of the fluid may be utilized in driving the rivet, and means at the end of the pipe for receiving the rivet.

4. In a device of the character described, a main pipe for conveying hot rivets that are in condition suitable for riveting, means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet so that it will be fed through the pipe, a plurality of distributing-pipes connected with the main pipe, and a switch for directing the rivets from the main pipe into any distributing-pipe desired.

5. In a device of the character described, a main pipe for conveying rivets and like articles, means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet so that it will be fed through the pipe, a plurality of distributing-pipes connected with the main pipe, a switch for directing the rivets from the main pipe into any distributing-pipe desired, and receivers for the rivets adjustably connected with the distributing-pipes.

6. In a device of the character described, a pipe for conveying rivets by fluid-pressure, a valve for closing the pipe, an opening in the valve which may be brought into register with the pipe and through which a rivet may be inserted, connections with said valve whereby a fluid under pressure may be conducted thereto, and a port in the valve which is also adapted to be brought into register with the pipe so that the compressed fluid may enter to force the rivet through the pipe.

7. In a device of the character described, a main pipe which is adapted for conveying hot rivets and like articles, a plurality of branch distributing-pipes, a switch-box connecting the main and the branch pipes, a switch within said box, a spring for normally holding the switch so as to connect the main with one of the branch pipes, and electrical means for moving the switch to connect the main with another of the branch pipes.

8. In a device of the character described, a pipe through which rivets and like articles are adapted to be forced by fluid-pressure, and a receiver for the rivets connected with said pipe, said receiver having a tubular extension for telescoping the end of the pipe, and a block of resilient material mounted in the receiver opposite the extension, for the purpose specified.

9. In a device of the character described, a pipe through which rivets and like articles are adapted to be forced by fluid-pressure, and a receiver for the rivets connected with said pipe, said receiver having a tubular extension for telescoping the end of the pipe, a block of resilient material mounted in the receiver opposite the extension, for the purpose specified, and openings cut in the wall of the receiver near the bottom through which the rivets may be removed from the receiver.

10. In a system for heating and distributing rivets and like articles, a heating device, and means for conveying the rivets therefrom at a high speed and without detrimental cooling.

11. In a system for heating and distributing rivets and like articles, a furnace, means for conveying the rivets therefrom at a high speed and without detrimental cooling, and receivers connected with the conveying means into which the rivets are deposited.

12. In a system for heating and distributing rivets and like articles, a furnace, a pipe for conveying the rivets therefrom at a high speed and without detrimental cooling, and means for creating a difference in fluid-pressure in said pipe on opposite sides of the rivet so that it will be fed through the pipe.

13. In a system for heating and distributing rivets and like articles, a furnace, means for conveying the rivets at a high speed and without detrimental cooling to an intermediate point, a plurality of conveying devices leading from said intermediate point, a switching device for connecting the conveying means with any one of the plurality of conveying devices desired, and receivers for the rivets connected with the conveying devices.

14. In a system for heating and distributing rivets and like articles, a pipe adapted for conveying the rivets, a valve for closing the entrance to the pipe, said valve having an opening which is normally out of register with the end of the pipe, a furnace for heating the rivets, &c., means for transferring the rivets from the furnace to the opening in the valve, means for rocking the valve to bring the opening into register with the pipe so that the rivet may enter therein, and means connected with the valve for admitting fluid under pressure to drive the rivet through the pipe.

15. In a device of the character described, a plurality of pipes through which rivets are forced by fluid-pressure, a single valve controlling the entrance to said pipes, a receiver in said valve for the rivets which is adapted to be brought into register with the end of any one of the pipes to drop the rivets therein, connections with said valve whereby fluid under pressure may be conducted thereto, and a port in the valve which may be brought into connection with any of the pipes at will to drive the rivets therethrough.

706,156. ELECTRIC RAILWAY.

Charles R. Campbell, New York, N. Y. Filed Dec. 28, 1900. Serial No. 41,228. (No model.)

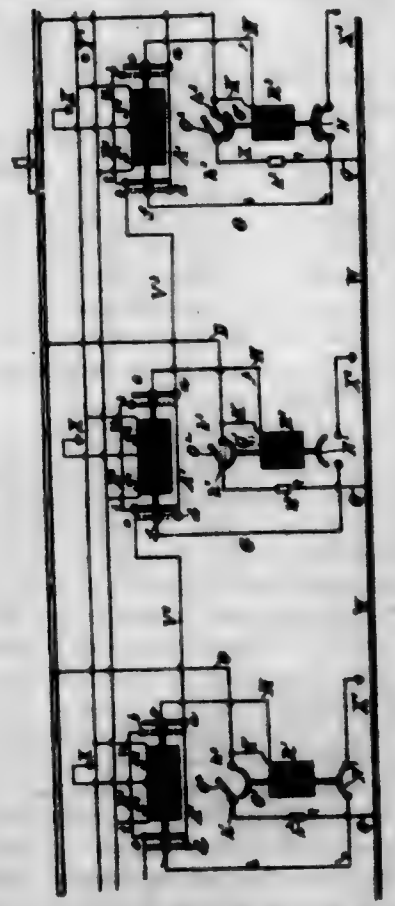

Claim.—1. In a sectional third-rail electric railway, the combination, for sending electric cars in opposite directions over the same track, of the third-rail conductor, the main feed-wire carrying the working current, means for diverting an auxiliary or shunt therefrom having changeable grounding through motor contacts, multiple switches and wiring adapted

to form separate pathways for grounding the auxiliary current in opposite directions, and supplementary wires carrying independent currents for actuating said switches.

2. In a sectional third-rail electric railway, the combination of the following instrumentalities, to wit: an electric feed-wire a sectional third-rail conductor, a series of single-acting solenoid coils or magnets, a series of double-acting solenoid coils or magnets, and suitable wires and switches connecting said coils to each other, to the feed-wire, and to the sections of said third rail, substantially in the manner and for the purpose herein described.

706,157. FRAME FOR DOORS OR WINDOWS. GEORGE CARR, Carrville, Iowa. Filed Jan. 10, 1902. Serial No. 89,662. (No model.)

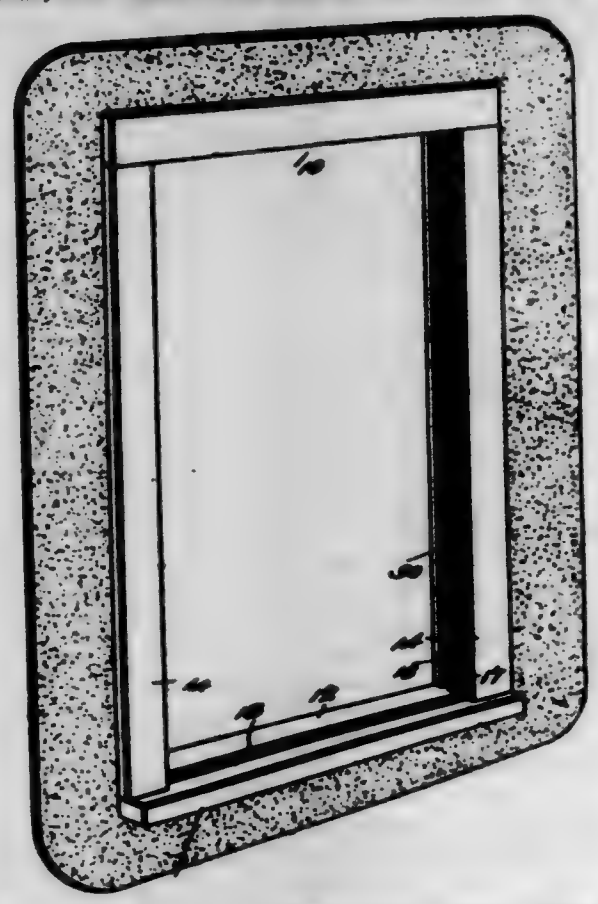

Claim.—1. A frame for a building-opening, having a strip of paper surrounding, secured to and projecting outwardly beyond the frame, and a facing on the frame and bearing on the inner portion of the strip, the latter being secured between and projecting beyond the frame and casing, to close the joints between the facing, the studding and the siding, substantially as described.

2. The combination with a building having an opening therein, of a frame in said opening having a strip of paper fastened between two of its members and extending outwardly therefrom and adapted to lie against the face of said building, said strip extending around and encircling said frame and projecting beyond the latter, and siding bearing on said projecting portion of the strip, the latter closing the joints between the facing, the studding and the siding.

706,158. ROTARY ENGINE. ALDEN P. CHARLES, Iola, Kans. Filed Feb. 24, 1902. Serial No. 95,622. (No model.)

Claim.—1. In a rotary engine, the combination with the cylinder, of a revolvable piston having radially-disposed recesses and provided with angularly-disposed ports or passages leading from the periphery of the piston to the lower portion of each recesses, sectional abutments adapted to said recesses, said abutments each comprising a plurality of overlapping sections having recesses adjacent to the terminals of the ports or passages, substantially as specified.

2. In a device of the class specified, the combination with the cylinder, of a revolvable piston having radially-disposed recesses and provided with angularly-disposed ports or passages leading from the periphery of said piston to the lower portion of the recesses, abutments adapted to said recesses, each abutment comprising two sections or members having overlapping central portions and provided with recesses between adjacent to the terminals of said ports or passages, each section being furthermore provided with a closed port or passage extending in a diagonal line from the inner lower portion thereof.

3. In a device of the class specified, the combination with the cylinder, of a piston arranged within the cylinder and having its periphery eccentric with the curved inner wall of the cylinder between the inlet and exhaust port, that portion of the cylinder between the ports lying adjacent to the periphery of the cylinder, an abutment carried by the cylinder for contact with the periphery of the piston, a series of abutments adapted to radially-disposed recesses in said pistons, the piston being provided with angularly-disposed ports or passages leading from the periphery thereof to the lower portion of the recesses, each abutment comprising a plurality of members having overlapping central portions, and each member being provided with recesses adjacent to the terminals of the angular ports or passages, there being diagonally-disposed ports or openings arranged in each of said members, substantially as and for the purpose specified.

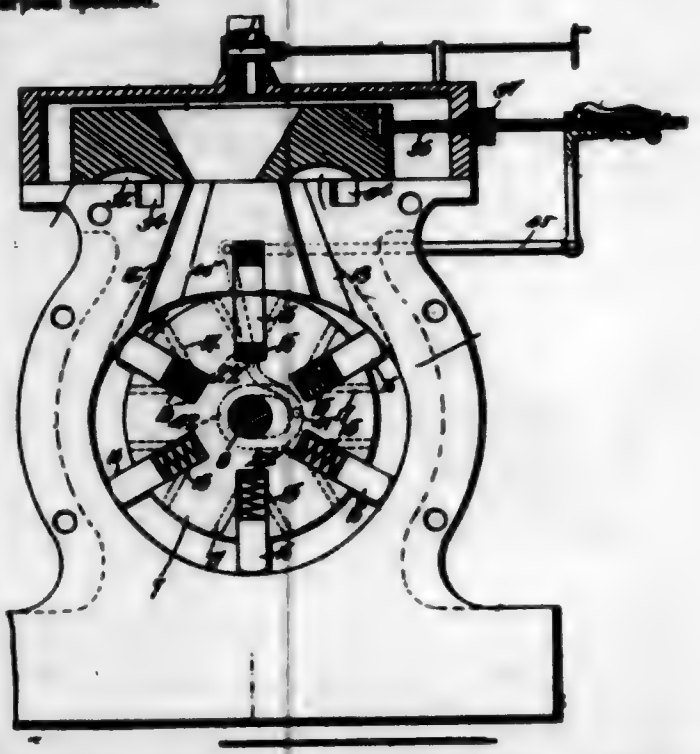

706,159. RADIATOR ATTACHMENT. GARDNER W. CHIPLEY, Chicago, Ill. Filed Apr. 14, 1902. Serial No. 103,063. (No model.)

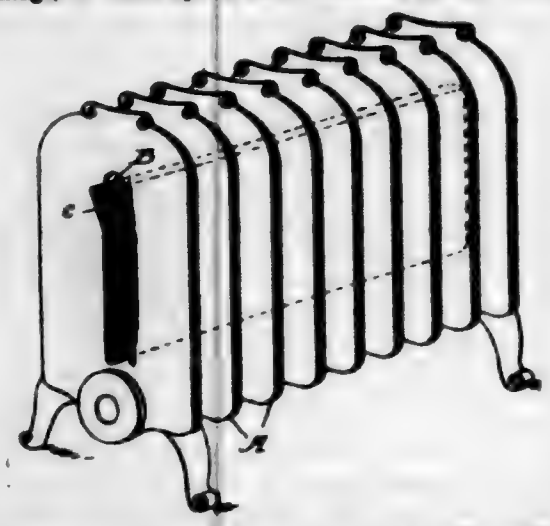

Claim.—A radiator attachment adapted to contain water and to be inserted in the usual openings between the columns of radiator-coils, said attachment comprising a narrow and deep water-receptacle, open at its top and made of thin sheet metal which is adapted to be distended against the sides of said openings by the weight of the column of water confined within said receptacle; substantially as described.

706,160. PLANT-GUARD ATTACHMENT FOR CULTIVATORS. MARTIN CHRISTIANSEN, Soda, Iowa. Filed Mar. 8, 1902. Serial No. 97,227. (No model.)

Claim.—1. A rotatable plant-guard consisting of a hub, straight spokes fixed to the hub to extend radially, a disk fixed to the inner end of the spoke and hub, and a rim fixed to the spokes at some distance from their outer ends, in combination with a bearer adapted to be fixed to the beams of a cultivator, to operate in the manner set forth, for the purposes stated.

2. A rotatable plant-guard, composed of a hub having an integral flange at one end, a disk fixed to said flange, a second disk placed against the end of the hub, a plurality of straight spokes provided with eyes at their inner ends, fixed between the two disks by means of rivets to extend radially and a band fixed to the outer end portions of the spokes, for the purposes stated.

3. A rotatable plant-guard, composed of a hub having an integral flange at one end, and a disk fixed to the said flange, a second disk placed against the end of the hub, a plurality of straight spokes provided with eyes at their inner ends fixed between the two disks, by means of rivets, to extend radially, and a band fixed to the outer portion of the spokes, and a disk detachably fastened to the spokes and rim, arranged and combined to operate in the manner set forth, for the purposes stated.

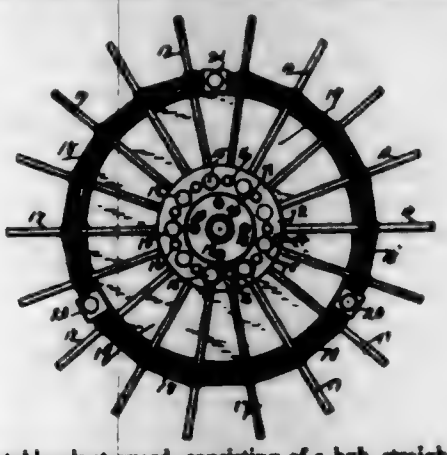

4. A rotatable plant-guard, consisting of a hub, straight spokes extending radially from the hub, a rim or band connecting the outer end portions of the spokes, clips fixed to the band, a disk connected with the said clips, and means for detachably fastening the disk to the spokes and rim, in combination with a bearer attached to a cultivator-beam, to operate in the manner set forth, for the purposes stated.

5. A plant-guard bearer, consisting of an upright, adapted to be detachably fastened to a cultivator-beam, a bar adapted to carry a rotatable plant-guard pivotally connected with the lower end of said upright to extend horizontally and to have an upward motion but no downward motion, and a weight adjustably connected with said bar, and a rotatable plant-guard attached to the front free end of said bar, arranged and combined to operate in the manner set forth, for the purposes stated.

6. A plant-guard and ground pulverizer and distributer comprising a rotatable guard having spokes extending radially, a fixed band or rim fixed to the inner end portions of the rim, a disk detachably fastened to the spokes and said rim, an upright adapted to be fastened to a plow-beam, and its lower end doubled upward, a bar, elbow-shaped at its rear end, pivoted between the double part of said upright and its front end inclined laterally to support and carry the rotatable plant-guard, and a weight adjustably connected with said bar, arranged and combined to operate in the manner set forth, for the purposes stated.

706,161. **WARM-AIR RADIATOR.** JAMES CLEMENTS, East Chicago, Ind. Filed Mar. 18, 1901. Serial No. 51,704. (No model.)

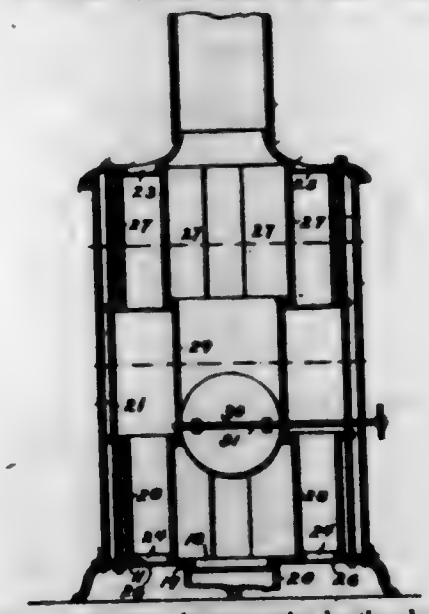

Claim.—The combination, in a stovepipe heating-drum, of the upper and lower heads having peripherally-disposed flanges, a cylindrical shell having its upper and lower edges disposed within the peripheral flanges, the upper head being provided with a central opening the walls of which are outwardly flanged for the reception of an upper stovepipe-section, and the lower head being provided with a central opening having outwardly-flanged walls for the reception of a lower stovepipe-section and both heads being provided with an annular series of openings having inturned flanged walls, a removable section comprising a drum and a series of upper and lower flues rigidly secured at one end to said drum, the drum being of short vertical height and of a diameter less than the internal diameter of the shell and separated from said shell by an open annular interspace, a centrally-disposed annular smoke-flue 29 carried by the drum in alinement with the upper and lower smoke-pipe sections, the upper ends of the upper flues and the lower ends of the lower flues being removably fitted over the flanges of the openings in the upper and lower heads, and tie-bolts passing through the casing exterior of the drum and engaging with the upper and lower heads for clamping said heads against the shell and flues, substantially as specified.

706,162. **STORE-SERVICE LADDER.** AZRO A. COBURN, Holyoke, Mass., assignor to Coburn Trolley Track Manufacturing Company, Williamsett, Mass., a Corporation. Filed Sept. 30, 1901. Serial No. 77,061. (No model.)

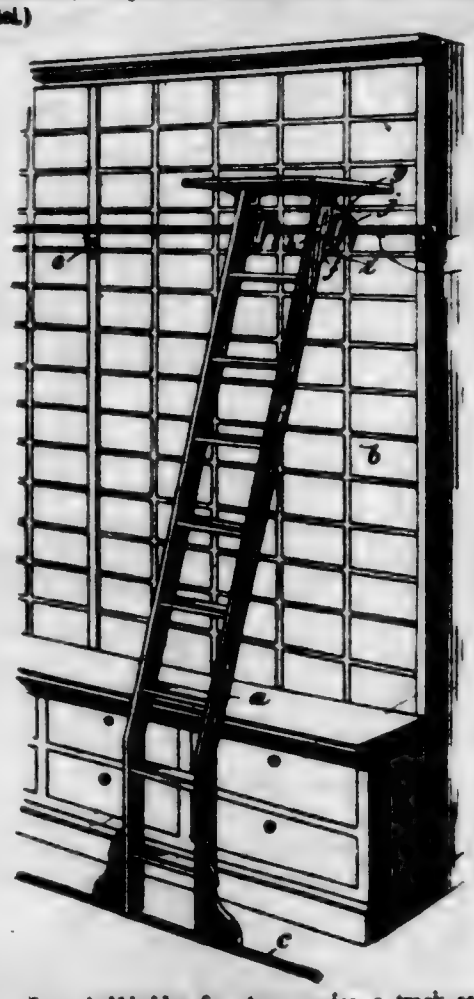

Claim.—In a shelf-ladder for store-service, a track secured to the floor, a roll on the lower end of the ladder engaging said track, a rail supported in front of and out of contact with the shelves, and near the upper end of the ladder, combined with a roller-supporting bracket fixed on the rear side of the ladder, a hook on said bracket extending from the upper end thereof rearwardly and downwardly to a point below said rail, a roller tapered from its center toward its ends, supported between projections, as *g*, *g*, on said brackets, whereby the central portion of said roller may bear on said rail.

706,168. **ORE-SEPARATING APPARATUS.** BEN C. COOK, Deadwood, S. D. Filed Jan. 13, 1901. Serial No. 43,779. (No model.)

Claim.—1. An apparatus for separating ores comprising a box or receptacle with longitudinal partition-wall therein with the lower portion of each compartment thus formed hopper-shaped with the adjacent inclined walls diverging from and joined to the partition, bottoms hinged to the longitudinal edges of said hopper-shaped portions, a valved outlet from one compartment to the other at the top, and a feed-pipe disposed longitudinally of said box and supported thereon at one end to deliver the incoming material in a direction reverse to the outflow of said material from said box and a flexible connection with the said pipe beyond its point of support whereby the said pipe may be swung laterally while supported on the end of the box, said box having an overflow-discharge passage at the end over which the material is fed, the feed and overflow being opposite in direction, as set forth.

2. The herein-described apparatus for separating ores, consisting of the box or receptacle, a longitudinal partition therein with the lower portion of each compartment inclined downward and outward from the lower edge of said partition, bottoms hinged to the longitudinal edges of the said compartments, valved outlet from one compartment to the other, a chute-trough disposed at the end of the box away from the force and direction of the incoming product and independent valved openings from

the compartments to said trough, a feed-pipe resting on the top of the trough and extended at right angles to the length of the same, and a flexible connection with the end of the pipe beyond its support on the trough, said pipe being arranged to deliver the incoming product lengthwise of the box and in an opposite direction to the flow of the same from the box to the chute-trough, all substantially as and for the purpose specified.

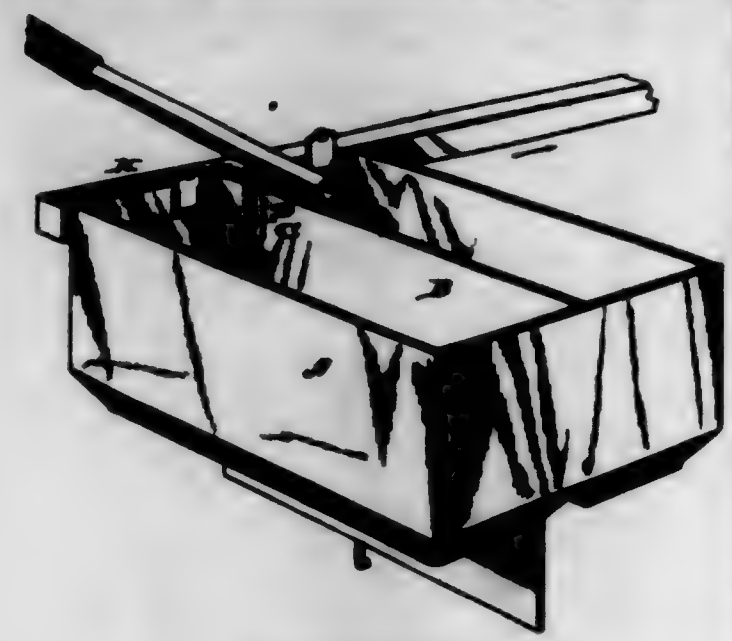

706,164. STOPPING MECHANISM FOR LOOMS. Henry Ord, Woonsocket, R. I., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Dec. 23, 1901. Serial No. 86,594. (No model.)

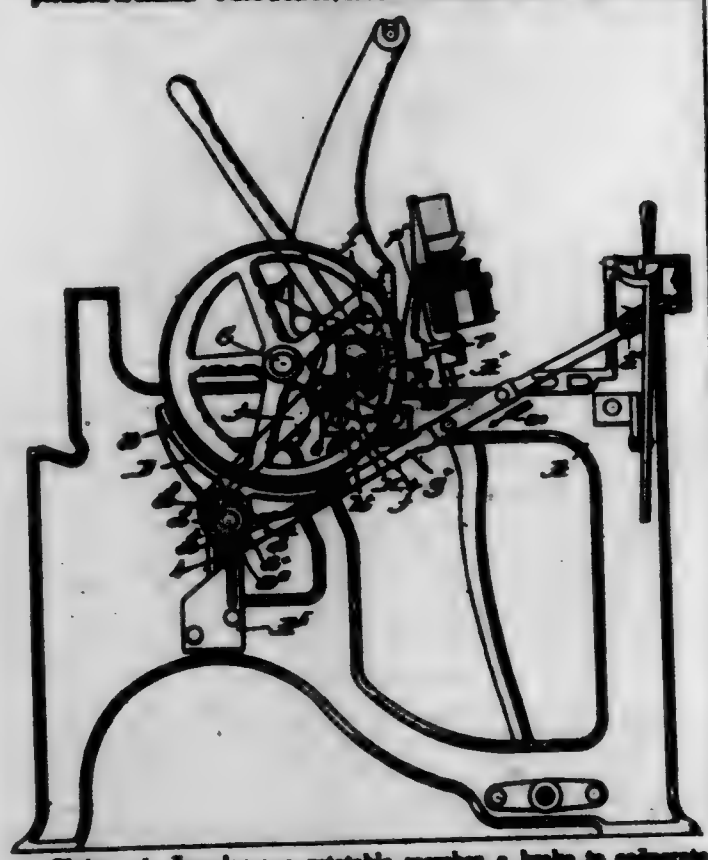

Claim.—1. In a loom, a rotatable member, a brake to coöperate therewith, a fixed support for and relative to which the brake is movable circumferentially of and also toward and from said member, an eccentric connection between the brake and its support, and means acting by or through said connection to automatically set the brake, the compound movement thereof operating to wedge it against the rotatable member between the latter and the fixed support.

2. In a loom, a rotatable member, a brake to coöperate therewith, a fixed support for the brake, an eccentric connection between the latter and its support, and means to turn said connection to apply the brake.

3. In a loom, a rotatable member, a brake to coöperate therewith, a shiftable fulcrum on which the brake is mounted, the brake being interposed between the fulcrum and the rotatable member, and means to directly set upon and shift the fulcrum to thereby apply the brake to and stop rotation of said member.

4. In a loom, a rotatable member, a brake to coöperate therewith, a fixed support, a fulcrum for the brake, eccentrically mounted on said support, and means to turn the fulcrum on the support and thereby apply the brake.

5. In a loom, a normally rotating member, a brake to coöperate therewith, protector mechanism, a shiftable fulcrum for the brake, and direct connections between the said fulcrum and the protector mechanism, to shift the former and thereby set the brake by or through the operation of the latter.

6. In a loom, a rotatable member, a brake to coöperate therewith, a shiftable fulcrum for the brake, actuating means for and directly connected with said fulcrum and operated by or through the movement of the lay, the lay, and protector mechanism for the loom, to control the operation of said actuating means, the shifting of the fulcrum by the said means setting the brake.

7. In a loom, a normally rotatable member, a brake to coöperate therewith, the lay, a shipper, a fixed support, an eccentric connection between it and the brake, means operated by or through the lay to actuate said connection and set the brake, and means to release the shipper when said eccentric connection is actuated.

8. In a loom, a rotatable member, a brake to coöperate therewith, a shiftable fulcrum for the brake, means to automatically act directly upon and shift the fulcrum and thereby set the brake, and a manually-actuated device to operate through said means to release the brake.

9. In a loom, the lay, an actuating-shaft operatively connected therewith and having an annular member fast upon it, a brake to coöperate with said member, a fixed support, a fulcrum for the brake eccentrically mounted on said support, means operated by or through the movement of the lay to turn said fulcrum and thereby apply the brake, and protector mechanism for the loom, to control the operation of said means.

10. In a loom, the lay, actuating mechanism therefor, including a rotatable member, a brake to coöperate with said member, a shiftable fulcrum for the brake, and means, including a member mounted on the lay, to act directly upon and shift the fulcrum and thereby apply the brake on the forward beat of the lay.

11. In a loom, a normally rotating member, a brake to coöperate therewith, a shipper, a fixed support, a fulcrum for the brake, eccentrically mounted thereon, whereby rotative movement of the fulcrum applies or withdraws the brake, means operative upon improper bearing of the shuttle to actuate the fulcrum and set the brake, a connection between the fulcrum and shipper, to release the latter when the brake is applied, and manually-operated means to move said fulcrum to release the brake.

706,165. SYSTEM OF ELECTRICAL DISTRIBUTION FOR CAR-LIGHTING PURPOSES. John L. Greville, New York, N. Y. Filed Dec. 7, 1900. Serial No. 39,048. (No model.)

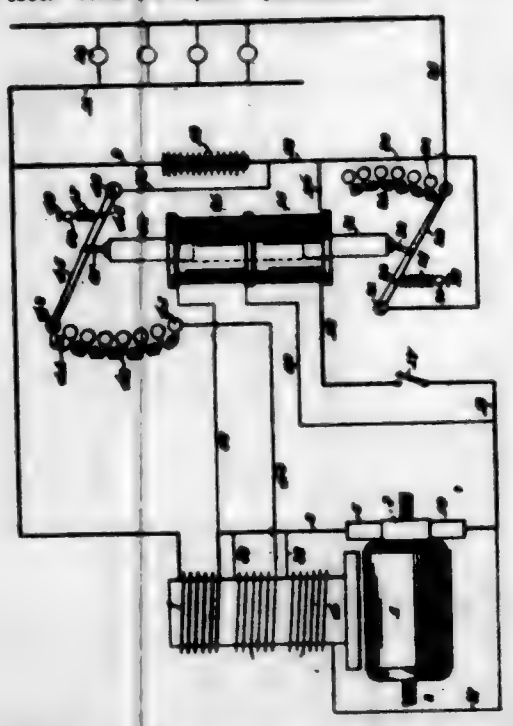

Claim.—1. In a system of electrical distribution the combination with a generator, a main circuit and electromagnetic means for controlling the magnetization of the generator, of a work-circuit and electromagnetic means for controlling the work-circuit, said last-mentioned electromagnetic means being adapted under predetermined conditions to act magnetically upon the first-mentioned electromagnetic means to cause the first-mentioned electromagnetic means to vary the magnetization of the generator.

2. The combination with a generator, storage battery and translating device, in electrical communication one with the other, of a field-coil, a

resistance device in circuit therewith, a yielding member coöperating with the resistance device, a second resistance device, and coöperating yielding member intersecting the translating-circuit, a pair of coaxially-disposed solenoids provided with separate cores, one core being operatively united to one of said yielding members and the other core to the other.

3. The combination with a generator, storage battery, and translating device, in electrical communication one with the other, as by usual mains, of a field-coil comprehending a yielding member and a resistance device, a solenoid having its windings in shunt with the generator-circuit and its core adapted to actuate said yielding member, a second solenoid having its windings in series with the generator, a variable resistance and coöperating yielding member intercepting the translating-circuit, the core of the second solenoid being operatively connected with said yielding member for the purpose specified, the two cores being separate.

4. The combination with a generator, storage battery and translating device in electrical communication one with the other, as by usual mains, of a field-circuit comprehending a yielding member and a resistance device, a solenoid having its windings in shunt with the generator-circuit and its core adapted to actuate said yielding member, a second solenoid coaxial with the first and having its windings opposed to that of the first and in series with the generator, a variable resistance and coöperating yielding member intercepting the translating-circuit, the core of the second solenoid being operatively connected with the yielding member for the purpose specified, the two cores being separate.

5. The combination with a generator, storage battery and translating device, in electrical communication one with the other through a switch adapted to close at a predetermined voltage, of a field-circuit comprehending a yielding member and a resistance device, a solenoid having its windings in shunt with the generator and its core adapted to actuate said yielding member, a second solenoid having its windings in series with the generator-circuit, a variable resistance and coöperating yielding member intercepting the translating-circuit, the core of the second solenoid being operatively connected with the said yielding member for the purpose specified, the two cores being separate.

6. The combination with a generator, storage battery, and translating device, in electrical communication one with the other through a switch adapted to close at a predetermined voltage, of a field-circuit comprehending a yielding member and a resistance device, a solenoid having its windings in shunt with the generator-circuit and its core adapted to actuate said yielding member, a second solenoid coaxial with the first and having its windings opposed to that of the first and in series with the generator-circuit, a variable resistance and coöperating yielding member intercepting the translating-circuit, the core of the second solenoid being operatively connected with said yielding member for the purpose specified, and a field-coil in shunt with the generator-circuit, all coöperating substantially as and for the purpose specified, the two cores being separate.

706,166. GUIDE FOR SEWING EDGINGS. JONATHAN DAVIS, Phœnixville, Pa. Filed May 6, 1902. Serial No. 106,127. (No model.)

Claim.—1. In a machine for sewing loosely-taped edgings to garments, a means whereby during the sewing of the edging the loosely-looped tape or braid may be guided away from the needles of the machine, said means comprising two members, whereof one is secured to the presser-foot and is provided with an upwardly and forwardly projecting curled body portion having a lip extending over the feed-roller of the presser-foot and the other member is fixed to the bed-plate of the machine and is provided with an upwardly-projecting curled portion and an outwardly-flaring portion serving respectively as a guide for the edge of the looped tape and a guide for the inner portion of the edging.

2. In a machine of the character described, the combination of a presser-foot and its feed-roller, a needle or needles and means for operating the same, with a guide member having a base united to the presser-foot, an upwardly and forwardly projecting body portion extending upward adjacent to the needles and a curled lip portion extending over the feed-roller of the presser-foot and a second guide member fixed to the bed-plate of the machine in front of the first guide member and coöperating therewith.

706,167. GAS-ENGINE. THOMAS DOHERTY, Sarnia, Canada. Filed Jan. 3, 1902. Serial No. 88,294. (No model.)

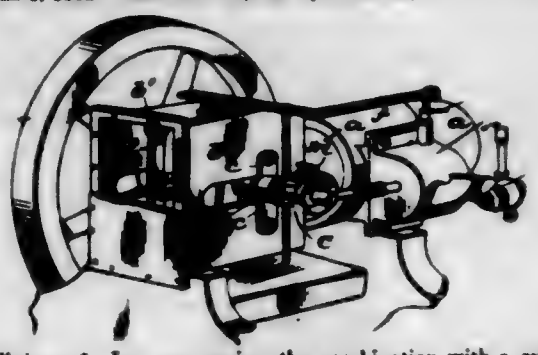

Claim.—1. In a gas-engine, the combination with a cylinder provided at one end with a crank-case, of two pistons adapted to operate within the cylinder, a double crank-shaft, one of said cranks being connected to one of the pistons by a single offset pitman, and the other crank connected to the other piston by a straight pitman and two offset connecting-rods, and means for supplying and exploding an explosive charge between the pistons.

2. In a gas-engine, the combination with a cylinder provided at one end with a crank-case, of a two-throw crank-shaft journaled in the walls of the crank-case, and two pistons, one of which is connected to one of the cranks by an offset pitman, and the other piston provided with a cross-bar which is connected to a cross-head by offset connecting-rods, said cross-head being connected to the crank by a straight pitman, substantially as specified.

3. In a gas-engine, the combination with a cylinder provided at one end with a crank-case, the other end of said cylinder being provided with oppositely-disposed guide-slots, and the inner wall of the crank-case provided with guide-grooves, of a two-throw crank-shaft journaled in the side walls of said crank-case, two pistons adapted to operate in the cylinder, one of said pistons being provided with a cross-bar adapted to reciprocate in the guide-grooves of the crank-case, the said cross-bar connected by offset rods to a cross-head adapted to reciprocate in the guide-slots in the end of the cylinder, said cross-head being connected to one of the cranks, and the other piston connected to the other crank by an offset pitman, whereby the force of the explosion between the pistons, moving them in opposite directions, is transmitted to the shaft.

706,168. PIN. GEORGE W. DOVER, Cranston, R. I., assignor to George W. Dover Company, a Corporation of Rhode Island. Filed Dec. 7, 1901. Serial No. 85,102. (No model.)

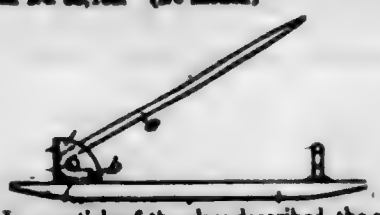

Claim.—1. In an article of the class described, the combination with a plate, of a housing secured thereto having side walls and an end and bottom wall, a pivot secured in the side walls crossing the space between the same, adjacent to the angle of the housing, and a pin comprising a shank portion having an entering end and a recurved pivoted end, the latter describing a curve of less than a half-circle, said curved end being confined between said pivot and the end and bottom walls of the housing, the extreme end thereof coacting with the bottom wall of the housing to limit the movement of the pin in one direction, and the major portion of the pin coacting with the end wall to limit the movement of the pin in an opposite direction.

2. In combination, a housing comprising side walls, and an end and bottom wall, a pin proper having its blunt end recurved, the latter describing a curve of less than a half-circle a pivot finding a bearing in the bail thereof, the end wall coacting with the pin to limit its pivotal movement in one direction and the bottom wall coacting therewith to limit its movement in the opposite direction, the pivoted end of the pin being retained in place by the proximity of the pivot to the side walls of said housing.

706,169. ANTISEPTIC TELEPHONE-MOUTHPIECE. WILLIAM H. ENGLISH and GEORGE A. ENGLE, San Francisco, Cal. Filed Oct. 28, 1901. Serial No. 80,522. (No model.)

Claim.—1. A telephone-mouthpiece consisting of an outer and inner shell having an intervening unfilled and unobstructed space, openings from said space through the inner shell, and means for discharging an antiseptic or sterilizing substance through said openings so that it may freely circulate throughout said space.

2. A telephone-mouthpiece consisting of outer and inner concentric

shells with an intervening unfilled and unobstructed space, a means for attaching the device to a transmitter, openings made through the interior shell connecting it with the interspace between the two, a receiving-opening formed in the outer shell, and a receptacle containing a sterilizing substance and connecting with substantially the lowest point of the space whereby the vapors enter the space and freely circulate therethrough and through the openings in the inner shell.

706,170. APPARATUS FOR HEATING OR COOLING LIQUIDS. HARVEY FIELDSHER, Littlehills, N. Y., assignor to D. H. Burrell & Company, Littlehills, N. Y. Filed Mar. 14, 1901. Serial No. 51,181. (No model.)

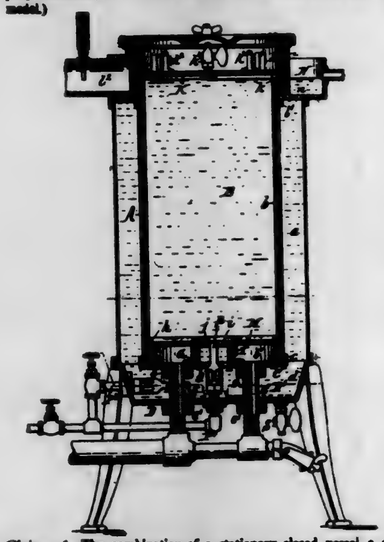

Claim.—1. The combination of a stationary closed vessel, a surrounding hollow jacket secured thereto, a hollow core detachably secured within said vessel and separated from the side walls thereof by an annular flow-space and from one end thereof by an outlet-chamber for the liquid to be treated extending across said vessel, an inlet-pipe for the liquid opening into the opposite end of said flow-space, a discharge-conduit for the liquid leading from said outlet-chamber, and means for supplying a heating or cooling medium to said jacket and core, substantially as set forth.

2. The combination of a stationary closed vessel, a surrounding hollow jacket secured thereto, a hollow core detachably secured within said vessel and separated from the side walls by an annular flow-space and from one end thereof by an outlet-chamber for the liquid to be treated extending across said vessel, said hollow core communicating with said hollow jacket, an inlet pipe for the liquid opening into the end of said vessel opposite to that at which said outlet-chamber is located, a discharge-conduit leading from said outlet-chamber, and means for supplying a heating or cooling medium to said jacket and core, substantially as set forth.

3. The combination of a stationary vessel, a surrounding hollow jacket, a stationary hollow core detachably secured within said vessel and separated from the side walls thereof by a flow-space for the liquid to be treated and from one end thereof by an outlet-chamber having an opening for the insertion and removal of said core, a detachable cover for said opening, a conduit for the discharge of the liquid which has been treated leading from said outlet-chamber, and means for supplying a heating or cooling medium to said jacket and core, substantially as set forth.

4. The combination of a stationary closed vessel, a surrounding hollow jacket secured thereto, a chamber at one end of said vessel extending across said vessel and said jacket, a stationary hollow core arranged within said vessel and separated from the side walls thereof by a flow-space for the liquid to be treated and from one end thereof by an outlet-chamber, a detachable hollow connection by which said core is attached to said vessel and placed in communication with said first-mentioned chamber, a supply-pipe for the liquid to be treated opening into the flow-space adjacent to said first-mentioned chamber, an outlet for the liquid which has been treated, and means for supplying a heating or cooling medium to said jacket or core, substantially as set forth.

5. The combination of a stationary closed vessel, a hollow surrounding jacket secured to the same, an end chamber which communicates with said jacket and extends across one end of said vessel, a stationary hollow core arranged within said vessel and separated from the side walls thereof by a flow-space for the liquid to be treated and from the other end of said vessel by an outlet-chamber, a detachable hollow connection by which said core is attached to said vessel and placed in communication with said end chamber, a supply-pipe for the liquid to be treated extending through said end chamber and opening into the flow-space adjacent thereto, an outlet for the liquid which has been treated, and means for supplying a heating or cooling medium to said jacket and core, substantially as set forth.

6. The combination of a stationary vessel, a hollow surrounding jacket secured to the same, an end chamber between one end of the jacket and the adjacent end of the vessel, a stationary hollow core arranged within said vessel and separated therefrom by a flow-space for the liquid to be treated, a detachable hollow connection by which said core is attached to said vessel and placed in communication with said chamber, a supply-pipe for the liquid to be treated opening into the flow-space adjacent to said end chamber, an outlet-chamber, an outlet-conduit for the liquid which has been treated communicating with said outlet-chamber, said vessel having at its end adjacent to said outlet-chamber an opening for inserting and removing the core, and a detachable cover for closing said opening, substantially as set forth.

7. The combination of a stationary vessel, a surrounding hollow jacket secured thereto, a bottom chamber between said jacket and said vessel, a hollow core arranged within said vessel and separated therefrom by a flow-space for the liquid to be treated, a detachable, hollow connection by which said core is attached to the bottom of said vessel and placed in communication with said chamber, a supply-pipe for the liquid to be treated arranged below the bottom of said vessel and opening into said flow-space at the lower end thereof, and an outlet-chamber at the upper end of said flow-space, substantially as set forth.

8. The combination of a stationary vessel, a surrounding hollow jacket secured thereto, a bottom chamber between said jacket and said vessel, a hollow core arranged within said vessel and separated therefrom by a flow-space for the liquid to be treated, a detachable hollow connection by which said core is attached to the bottom of said vessel and placed in communication with said bottom chamber, a supply-pipe for the liquid to be treated arranged below the bottom of said vessel and opening into said flow-space at the lower end thereof, and a drain device arranged in said liquid-supply pipe through which the contents of the vessel and core drain off upon disconnecting said core, substantially as set forth.

9. The combination of a stationary vessel, a surrounding hollow jacket secured thereto, an end chamber between the same and said vessel, a stationary hollow core arranged within said vessel and separated therefrom by a flow-space for the liquid to be treated, a detachable tubular connection between said vessel and said core, which establishes communication between the chamber and the core, a supply-pipe for the liquid to be treated discharging into said flow-space, and a supply-pipe for the heating medium discharging into said chamber in line with said tubular connection, substantially as set forth.

10. The combination of a stationary vessel, a surrounding hollow jacket secured thereto, an end chamber between the same and said vessel, a hollow core arranged within said vessel and separated therefrom by a flow-space for the liquid to be treated, a detachable tubular connection between said vessel and said core which establishes communication between the end chamber and the core, a supply-pipe for the liquid to be treated discharging into said flow-space, and a supply-pipe for the heating medium having branches discharging into said end chamber in line with said tubular connection and in line with said jacket, substantially as set forth.

11. The combination of a stationary vessel, a surrounding hollow jacket secured thereto, a bottom chamber between the same and said vessel, a stationary hollow core arranged within said vessel and separated from the side walls thereof by a flow-space for the liquid to be treated and from the upper end thereof by an outlet-chamber, a detachable, hollow connection by which said core is attached to the bottom of said vessel and placed in communication with said bottom chamber, a supply-pipe for the liquid to be treated opening into said flow-space at the lower end thereof, means for supplying a heating or cooling medium to said jacket and core, and an overflow-box arranged on the outer side of said vessel and communicating with the top of said jacket, substantially as set forth.

12. The combination of a stationary vessel, a surrounding hollow jacket secured thereto, a bottom chamber between said jacket and said vessel, a hollow core arranged within said vessel and separated from the side walls thereof by a flow-space for the liquid to be treated and from the upper end thereof by an outlet-chamber, a detachable hollow connection by which said core is attached to the bottom of said vessel and placed in communication with said bottom chamber, a supply-pipe for the liquid to be treated arranged below the bottom of said vessel and opening into said flow-space at the lower end thereof, and a vent-cock applied to the top of said core, substantially as set forth.

706,171. DYEING-MACHINE. WILLIAM H. PLETCHER, Paterson, N. J. Filed July 27, 1901. Serial No. 69,980. (No model.)

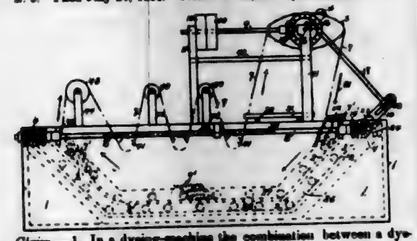

Claim.—1. In a dyeing-machine the combination between a dyeing-box an endless sliding rack, operated by sprockets and an actuating device of ratchet-wheels and levers, said racks sloping at each end of the box for the purpose of immersing and raising the goods, and the guides and guide-rollers for the rack, for the purpose of controlling said rack, and in connection with a succession of rollers for airing and drawing the goods from the liquid after being raised into position by the said sloping rack as set forth and described.

2. In a dyeing-machine the combination between the driving mechanism, consisting of the shaft 9, pulleys 10, the bevel-gearing 13 and 12 and the uprights 11 supporting the same and the reel, and a dye-box, endless rack, guides for the same actuated from the shaft on which the reel is, and the shaft 8 and gears 14 and 14' for operating the rack at the two ends of the tub as set forth and described.

3. In a dyeing-machine the combination between a shaft 9, a shaft 6 with an elliptic reel operated by said shaft 9, a lever 15 with a slot for lengthening and shortening the stroke, the rod 17 connecting the levers 15 and 19, the lever 19 also with a slot for the same purpose as that in lever 15, pawl 23, for operating the ratchet-wheel 25, pawl 24 for holding the same, the ratchet-wheel 25 secured to the shaft 20, the shaft 20 and the wheels on the same for moving the rack, the endless rack, guides and guide-rollers, and rollers 40 and 41 for oxidizing as set forth and described.

706,172. SKIRT-SUPPORTER. LLEWELLYN H. FLORY, Ashley, Pa. Filed June 20, 1901. Serial No. 65,206. (No model.)

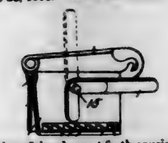

Claim.—A device of the class set forth consisting of a doubled spring-metal plate forming two members, the rear member having outstanding teeth at the lower edge which are projectable through a slot at the lower edge of the front or outer member, a safety-pin attached to the upper edge of the said doubled plate, and means for clamping the outer member against the rear member.

706,173. FLUID-PRESSURE APPARATUS FOR WELL-DRILLING TOOLS. GEORGE B. GALLAGHER and CHARLES J. MAGENHEIM, St. Marys, Ohio. Filed July 17, 1901. Serial No. 68,054. (No model.)

Claim.—1. A device of the character specified, comprising a fluid-containing cylinder, a piston mounted therein and operating to support the same by fluid contained between the piston and one end of the cylinder, valves for positively controlling passage of fluid from the upper to the under side of the piston to allow the cylinder to descend, a by-pass connecting the ends of the cylinder and a force-pump for withdrawing fluid from the under side of the piston and forcing it against the upper side thereof to raise the cylinder.

2. A device of the character specified comprising a fluid-containing cylinder having its ends closed by heads, a piston mounted within the cylinder and having a rod projecting through the upper head to be connected with suitable actuating mechanism, a force-pump carried by the lower head and coacting with a chamber arranged therein, a gravity-valve-controlled duct connecting the lower end of the cylinder and the chamber, a second chamber communicating with the first chamber through a gravity-valve-controlled duct, a by-pass connecting the cylinder-heads, branch ducts connecting the lower end of the cylinder and the said second chamber with the by-pass, and manually-operable valves arranged in the branch ducts and operating, respectively, to open or close communication between the lower end of the cylinder and the by-pass and between the said second chamber and the by-pass.

3. An apparatus of the character specified, comprising a cylinder to contain a fluid, a piston-carrying rod to work in the cylinder, a by-pass to establish direct communication between the ends of the cylinder, a duct to establish indirect communication between one end of the cylinder and the by-pass, a pump in communication with the duct for drawing fluid from the lower portion of the cylinder and forcing it through the by-pass to the top of the cylinder, and valves for controlling the passage through the by-pass and the duct.

4. An apparatus of the character specified, comprising a fluid-containing cylinder, heads secured thereto, a piston-carrying rod to work in the cylinder, the latter to be supported by the contained fluid, a by-pass pipe arranged exteriorly of and connecting the two cylinder-heads, valve-controlled chambers arranged in the lower cylinder-head, pumping means in cooperative relation with the chambers, a duct connecting the lower end of the cylinder with the chambers, a port having branches communicating, respectively, with the duct and one of the chambers and the by-pass and valves for controlling passage through the said branches.

706,174. DEVICE FOR QUARTERING FRUIT. JOHN GOSNER, Marion, N. Y. Filed Mar. 1, 1902. Serial No. 96,313. (No model.)

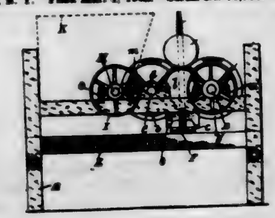

Claim.—1. A machine of the kind described, comprising a frame, a pair of parallel shafts on the frame, with connecting-gearing, a series of radial blades, a needle central with the blades and piercing the plane of said shafts between the latter, parts extending from the shafts to coact with the needle and disposed to act upon the fruit upon opposite sides of said needle, and means for revolving the shafts, substantially as set forth and shown.

2. A machine for quartering fruit, comprising a frame, a pair of parallel shafts mounted for rotation in bearings on said frame, a needle supported by the frame for holding the fruit, a series of knives at the base of the needle, and means to act upon the fruit in proximity to the corners of the knives for moving the fruit along the needle and against the knives, substantially as and for the purpose specified.

3. A machine of the kind described, having a frame, a pair of parallel coacting oppositely-revolving shafts on the frame, a block or body on the frame having slots or narrow openings, knives in said openings in the block, and a needle held centrally in the block, and arms reaching out from said shafts to press upon the fruit upon opposite sides of said needle and to coact with said needle and the knives and to strike down in proximity to the corners of the knives, substantially as shown and described.

4. In a machine for quartering fruit and vegetables a block having vertical radial jaws and axial opening at their intersection, a pointed needle held in said opening, radially-disposed knives seated in slots in said jaws, shafts in parallel relation at right angles to said needle above the plane of the knives, means for imparting rapid or slow revolution to said shafts and beaters on said shafts to act downwardly upon the fruit on opposite sides of said needle, as and for the purpose specified.

5. In a machine for quartering fruit and vegetables, a block having vertical radial jaws and axial opening at their intersection, a pointed needle held in said opening, radially-disposed knives seated in the slots in said jaws, shafts in parallel relation to each other at right angles to said needle above the plane of the knives, means for imparting rapid or slow revolution to said shaft, a series of beaters disposed about each shaft and arranged to bear down against the fruit on said needle as the shafts are revolved and drive the fruit in succession against said blades, said beaters being formed at their outer edges with openings in line with said knives, all substantially as and for the purpose specified.

706,175. EXCAVATOR. OSCAR B. H. HAMMERMO, Christiania, Norway. Filed Feb. 3, 1902. Serial No. 92,362. (No model.)

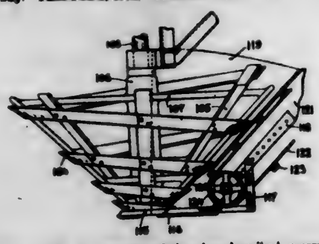

Claim.—1. In an excavator of the class described, a screw digger consisting of a comparatively narrow cutter which winds in a spiral with more or less centrity around a vertical rotatable axle, and has a corresponding conical space between the said axle and cutter which receives the earth excavated by the cutter-blade, the earth falling down to the bottom of the screw, means for conveying the excavated material from the bottom of the screw to the surface of the field and a collecting-plate surrounding the rear of the screw and having an exit-opening for the dirt, substantially as set forth.

2. In an excavator substantially as set forth, the combination with the spiral cutter 104 and the collecting-plate 119 having a hole 120 of a transporter 122, 123 two plates 121 fixed to the collecting-plate between which the transporter runs, two horizontal transporting-bands 129, 130, receiving the earth from said transporter whereby the earth is conveyed out of the trench and heaped up at both sides thereof, substantially as described.

3. In an excavator as set forth the combination with the spiral cutter and the axle bearing the cutter of a shoe 115 which has a guide-bar 116 running along the center underneath the shoe being prolonged to the rear and prevented from tipping up by a curved piece 117, substantially as described.

4. In an excavator as set forth, the combination with the spiral blade of inclined placed bars 105 supporting said cutter, said bars being connected by means of arms 107 with a hub 106 keyed on the axle 108.

5. In a machine of the character described, the combination with the main frame 3, having supporting-wheels, of an inner frame 2, connected thereto by bolts and bearings, worm-wheel segments rigidly secured to said frame 2, vertical shafts having worms meshing with said worm-wheel segments, and means for operating said vertical shafts, substantially as described.

6. In a machine of the character described, the combination with the main frame 3, of a frame 2 mounted to tilt thereon, worm-wheel segments connected to said shaft, vertical shafts having worms meshing with said segments, a third frame supported by said second frame and vertically movable in relation thereto, means for moving said third frame vertically, and gearing carried by the third frame for operating said shafts, said gearing having splined connections with the shafts, substantially as described.

706,176. HORN-STAND. FRANK C. HAMETT, Kelso, Wash. Filed Dec. 31, 1901. Serial No. 87,926. (No model.)

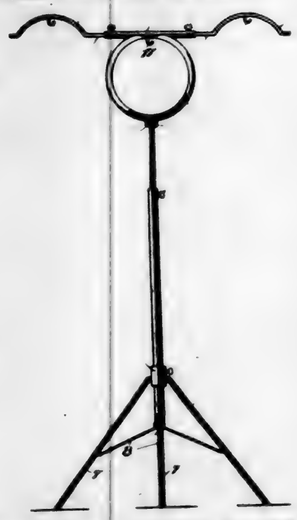

Claim.—1. A horn-stand comprising a stem including extensible members, a ring removably engaged with the upper member of the stem, and arms removably and adjustably engaged with the ring, said ring and arms having horn-attaching means.

2. A horn-stand comprising a stem having a ring at its upper end having sockets, arms adjustably engaged with the sockets and means for holding the arms in their adjusted positions, said arms and ring having horn-attaching means.

3. A horn-stand comprising a stem having a threaded upper end, a ring removably engaged with the threads of the stem and having sockets at the upper portion thereof, arms having their inner ends adjustably engaged in the sockets and having upwardly-sprung arcuate outer ends, and means for holding the arms at different points of their adjustment, said arms and ring having horn-attaching means at the upper portions of their curvatures.

706,177. MEANS FOR TESTING THERMOSTATS. THOMAS M. HEAPHY, London, England. Filed Aug. 8, 1900. Serial No. 26,312. (No model.)

Claim.—In a fire-alarm system having a thermostat and its terminals in circuit with a source of electric current and a local alarm device, a heating resistance in proximity to the thermostat and in circuit with a source of electric current, one of the extremities of the said circuit being connected to a contact-point and the other extremity to a contact-piece on a movable switch-arm; a second insulated contact-piece on said switch-arm forming one extremity of a circuit including a source of electric current, a distant central-station alarm device and an automatic switch operated by the local alarm device; the other extremity of said circuit being connected to a terminal adapted for contact with the terminal on the switch-arm, whereby the thermostat and its alarm connections at the local station may be tested while allowing the alarms at the local and distant stations to operate simultaneously in case of fire, as set forth.

706,178. EXTENSION SEE-COUCH. JOHN HAGY, San Francisco, Cal. Filed Apr. 28, 1902. Serial No. 104,947. (No model.)

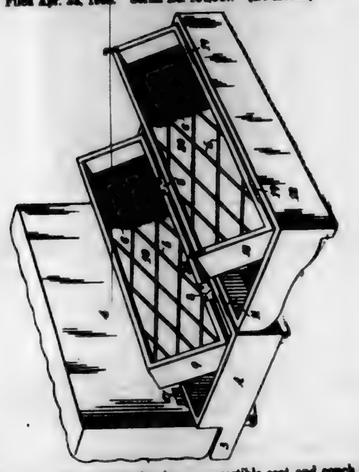

Claim.—1. The combination in a convertible seat and couch of a body portion, a back hinged to the rear to stand vertically or to be folded down horizontally upon the body portion, a section hinged to the front of the body and foldable therein and capable of being unfolded and extended outwardly from the front edge of the body, and a seat-section also hinged to the front edge of the body closable over the first-named section when folded into the body, said seat-section forming when unfolded a support for the inner upholstered section and having legs or supports upon its outer edge to rest upon the floor.

2. The combination in a convertible seat and couch of a hollow body portion, a section hinged to the front thereof so as to fold into the body or to be opened outwardly therefrom and having the side which forms the bottom when folded in composed of woven wire and cable-supports and an upholstered surface, a seat portion also hinged to the front and capable of being opened outwardly with its outer edge supported upon the floor or closed over the first-named section, said seat portion having its upper surface when closed formed of woven-wire supporting-cables and upholstery, and a back hinged to the rear of the body portion and normally supported in a vertical position when the seat portion is closed, said back having its rear portion upholstered and when the seat and inner section have been opened said back is turned down to rest upon the body portion with its upholstered back forming a continuation in the same plane with that of the unfolded inner section.

3. The combination in a convertible seat and couch of a body portion having a back hinged to its rear, said back having the rear portion upholstered to form the portion of a couch and turnable about its hinges so that it may rest upon the top of the body portion, a seat portion hinged to the front of the body having its upper surface, when closed, upholstered and arms which serve to support the back in its vertical position, said arms resting upon the floor and forming a support for the outer edge of the seat when unfolded, a couch-section hinged and foldable within the seat-section having an upholstered surface which forms the top when it is opened out from the seat-section and foldable legs by which its outer edge is supported, and a section hinged to the front edge of the body portion of the seat foldable therein and having an upholstered surface, said section being turnable about its hinges to open outwardly and rest upon the bottom of the inverted seat-section forming a continuation of the previously-opened section and intermediate between it and the upholstered surface of the back when the latter has been turned down into a horizontal position.

4. The combination in a convertible seat and couch of a hollow box or body portion having a seat-section hinged to its front adapted to open outwardly and having arms which support the outer edge when thus opened, said section having an upholstered seat-surface upon its upper side when in closed position, a second section hinged to the front of the body portion and foldable therein, said section having the side which is lowest when folded upholstered upon woven-wire and cable-supporting surface and adapted to be opened outwardly about its hinges to rest upon the inverted seat-section when opened and a back adapted to stand vertically when used as a seat and to be supported by the arms of the seat portion, said back having its rear portion upholstered and foldable to rest upon the body portion after the seat and inner section have been turned outwardly whereby the upholstered surface of the back and that of the inner folded section are brought into the same plane and their meeting contiguous edges forming an essentially continuous elastic couch-surface.

5. The combination in a convertible seat and couch, of a hollow body, a hollow section hinged to the front edge and having one side formed of elastic wire cables, a woven-wire fabric, and an upholstered surface thereon, said surface forming the bottom of the open section when folded into the body and the top when opened out, a hollow seat-section, hinged to the front of the body having a similarly-constructed seat-surface when closed, said section when opened outwardly, forming a support for the outwardly-opened interior section, and a back section hinged to the rear of the body, having its rear surface upholstered and turnable about its hinges after the seat and interior sections have been opened, so that it lies horizontally and its upholstered rear surface lies in plane with and contiguous to that of the interior section.

706,179. NUT-CRACKER. KATIE HOLDEN, Danville, Va. Filed May 16, 1902. Serial No. 107,669. (No model.)

Claim.—1. A nut-cracker consisting of a slotted nut-holder, in combination with a breaking-screw vertically adjustable in the slot of said holder.

2. In a nut-cracker, the combination with a nut-holder having a slot in its wall, a vertically-adjustable slide seated in said slot, a breaking-screw operable in said slide, and means for holding the slide against the pressure of the screw when operated to crack a nut.

3. In a nut-cracker, the combination with a nut-holder having a slot in its wall, a vertically-adjustable slide, seated in the slot, said slide being provided with flanges for engaging the inner and outer surfaces of the nut-holder, and a breaking-screw operable in said slide.

706,180. CALCULATING-MACHINE. IVAR HULTMAN, Stockholm, Sweden, assignor of one-half to Adolf Magnus Johnson, Stockholm, Sweden. Filed Dec. 16, 1901. Serial No. 86,102. (No model.)

Claim.—1. A calculating-machine, the combination of a series of driving-wheels fixed to a crank-axle, a series of controlling-wheels loosely mounted on another axle parallel to the crank-axle and adapted to engage

with movable teeth on the driving-wheels, a series of intermediate wheels loosely mounted on a third parallel axle and meshing with the controlling-wheels, and a series of carrying-wheels loosely mounted on a fourth parallel axle and adapted to engage with fixed teeth on the driving-wheels after having been turned a little by means of the intermediate wheels, said carrying-wheels acting upon the next controlling-wheel substantially as set forth.

2. A calculating-machine having four series of wheels (viz. driving, controlling, intermediate and carrying wheels) on four parallel axles, two of which (viz. controlling and intermediate) are mounted in a movable carriage, the carrying-wheels having teeth disposed in groups separated by wide spaces, so that said wheels cannot be turned directly by the driving-wheels unless first acted upon indirectly by means of the intermediate wheels and thereby brought into working position.

3. A calculating-machine having four parallel series of wheels (called driving, controlling, intermediate and carrying wheels), the driving-wheels having two series of fixed teeth adapted to engage with the carrying-wheels, the last tooth in each series being enlarged in peripherical direction and preferably common to both series, substantially as and for the purpose set forth.

4. A calculating-machine consisting of driving-wheels with two series of fixed teeth and one series of movable teeth, controlling-wheels adapted to engage with said movable teeth when these are brought into working position, intermediate wheels meshing with said controlling-wheels, and carrying-wheels having teeth disposed in groups and provided with two tappets each having an arm for each group of teeth, the one tappet being acted upon by a tappet fixed to the corresponding intermediate wheel for bringing the carrying-wheel in working position, so that it may be acted upon by the fixed teeth of the corresponding driving-wheel and thus turned a distance corresponding to a group of teeth, whereby the other tappet is caused to act upon the next intermediate wheel or upon a wheel fixed to the same for performing the "carrying," said machine having means for stopping the movement of the wheels and for showing the result of the operation, substantially as and for the purpose specified.

5. A calculating-machine having driving-wheels provided with fixed teeth and movable teeth, the latter consisting of levers turnable in axial planes and acted upon by concentric ribs for bringing the same into or out of working position.

706,181. ROTARY MOTOR. CARL A. HULT and OSCAR W. HULT, Stockholm, Sweden. Filed Dec. 5, 1899. Serial No. 739,283. (No model.)

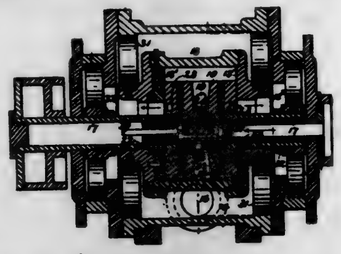

Claim.—In a rotary engine a piston provided with at least two vanes and an eccentric cone set in rotation by the said piston characterized by circular apertures arranged in the side pieces of the cone, concentrically to said cone, and surrounding the piston-shaft, said apertures being alternately passed by the ports, in the ends of the piston, of the admission and exhaust passages provided in the piston for the driving fluid.

706,182. HEAT-REGULATOR FOR FIREPLACES. ROBERT H. JOHNSON, Bremerton, Wash. Filed Apr. 24, 1902. Serial No. 104,546. (No model.)

Claim.—A fireplace having a throat or passage at its top communicating with an outlet-flue, a pivoted damper controlling said throat and normally inclined to throw the heat forward through the front of the fireplace, said damper consisting of longitudinally-adjustable plates, a stop limiting the closing movement of the damper, a shield carried by said stop and rearwardly curved for shielding the top of the fireplace from the heat passing out through the throat, a bracket fixed to one of the sides of the fireplace, an adjusting-rod connected to the bracket and sliding in the bracket and provided with a series of seats, and a spring-latch on the bracket to engage said seats, substantially as and for the purpose described.

706,182.

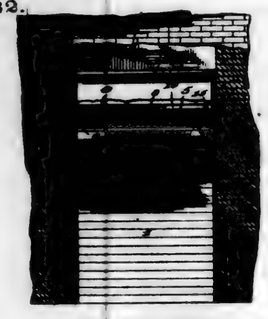

706,183. SEWING-AWL. ERASTUS H. JONES and ELI C. REPET, Pleasanton, Kans. Filed Jan. 23, 1902. Serial No. 90,965. (No model.)

Claim.—1. An awl comprising a casing having a chamber, a tension device having a fixed position upon the casing, a spool-holder within the chamber, and a spool mounted to rotate and to reciprocate longitudinally upon said holder as the thread is drawn out, whereby the unwinding portion of the thread is maintained substantially at right angles to or in alinement with the tension device, substantially as described.

2. An awl comprising a casing having a chamber, a tension device having a fixed position upon the casing, an elongated supporting-rod extending longitudinally within the casing, bearings in which said rod is removably mounted, and a spool having a bore through which the rod loosely extends, whereby the spool is free to rotate and reciprocate loosely on the rod as the thread is drawn out, substantially as set forth.

3. An awl comprising a chambered handle longitudinally divided to form two sections, means for uniting the sections in closed position, a tension device having a fixed position on one of the sections, a spool-support upon the other section, and a spool mounted to reciprocate and rotate upon said support, substantially as and for the purpose set forth.

4. An awl comprising a casing having a chamber, a tension-roller mounted in fixed bearings upon the casing, a spring exerting a resistance to the rotation of said roller, a spool-holder within the chamber, and a spool mounted to reciprocate and rotate upon the holder, the thread from the spool adapted to be drawn out over the roller, whereby the position of the thread relative to said roller will be maintained by the reciprocation of the spool, substantially as described.

5. An awl comprising a chambered handle longitudinally divided to form two sections, said sections being provided at their forward ends with jaws to receive and clamp the needle, one of said jaws having a guide to receive and hold the other jaw, whereby the jaws are adapted to be connected and disconnected by an endwise sliding movement, fastening means for uniting the rear ends of the sections, a spool-holder within the handle, a spool removably mounted upon said holder, and a tension device for the thread passing from the spool, substantially as specified.

706,184. TOOL. JERRY H. KOCH, Alpha, W. Va. Filed May 1, 1902. Serial No. 105,485. (No model.)

Claim.—1. A wedge for the purpose described, consisting of a body portion formed on its opposite sides with longitudinal ribs and upon its opposite edges with longitudinally-corrugated flanges, said flanges tapering from one end of the body portion to the other and merging into the ribs, substantially as set forth.

2. A wedge for the purpose described, consisting of a body portion formed on its opposite sides with longitudinal ribs and upon its opposite edges with longitudinally-corrugated flanges, said flanges tapering from one end of the body portion to the other and merging into the ribs, said body portion being provided at its opposite end with a driving-head, substantially as set forth.

3. The combination with a tool having an eye, and a handle having a bore, said handle being fitted in said eye, of a wedge for the purpose described, consisting of a body portion formed on its opposite sides with longitudinal ribs and upon its opposite edges with longitudinally-corrugated flanges, said flanges tapering from one end of the body portion to the other and merging into the ribs, said body portion being provided at its opposite end with a driving-head, substantially as set forth.

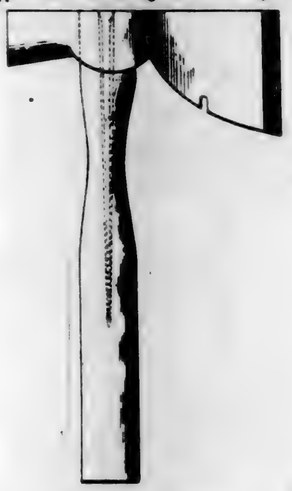

706,185. STAGING-CLAMP. JOHN LALLY, Waltham, Mass. Filed Nov. 25, 1901. Serial No. 83,636. (No model.)

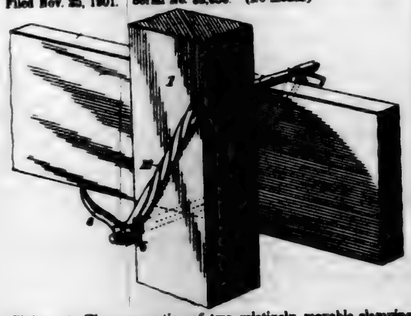

Claim.—1. The combination of two relatively movable clamping members one of which is provided with a spiral biting edge, and means for forcing the spiral biting-edge portion of said member sidewise toward the oppositely-arranged portion of the other member.

2. The combination of two relatively movable clamping members one of which is twisted to form a spiral-like biting edge, and means for forcing the spiral biting-edge portion of said member sidewise toward the oppositely-arranged portion of the other member.

3. The combination of two relatively movable clamping members having interlocking terminal hooks, one of which members is provided with a spiral biting edge, and means for forcing the spiral biting edge of said member sidewise toward the oppositely-arranged portion of the other member.

4. In a staging-clamp, two relatively movable members having interlocking terminal hooks one of which is provided with a wedge face, one of said members being provided with a spiral biting edge, and means for forcing the members into clamping position.

5. In a staging-clamp, two relatively adjustable members adapted to engage a pole or standard and one of which is provided with a keeper, in combination with a ledger-holder separable from both of said members and having means for engaging said keeper.

6. The combination with a pair of staging-clamps, of one or more ledger-holders separable therefrom and extending between the staging-clamps.

7. The combination with a pair of staging-clamps, of one or more ledger-holders extending between the staging-clamps and detachably connected therewith each holder carrying a clamping element.

706,186. VARIABLE-SPEED MECHANISM. RICHARD K. LE BLOND, Cincinnati, Ohio. Filed May 13, 1902. Serial No. 107,108. (No model.)

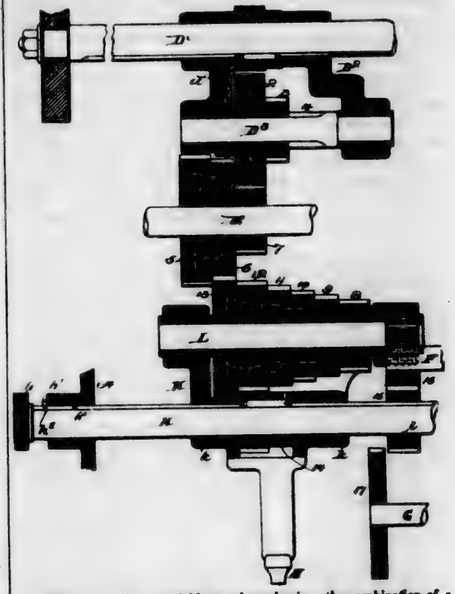

Claim.—1. In a variable-speed mechanism, the combination of a primary shaft, a transmitting-shaft, and a train of speed-changing gearing connecting said shafts, said gearing comprising an intermediate cone of gears, a swinging primary cone of gears between the primary shaft and the intermediate cone of gears, and a swinging transmitting cone of gears between the transmitting-shaft and the said intermediate cone of gears.

2. In a variable-speed mechanism, the combination of a primary shaft, a yoke mounted upon said shaft and carrying a primary cone of gears, a transmitting-shaft, a yoke mounted upon said transmitting-shaft and carrying a transmitting cone of gears, gearing connection between the primary shaft and the primary cone of gears, and between the transmitting-shaft and transmitting cone of gears, an intermediate shaft disposed between the primary and transmitting cones of gears, and a cone of gears carried by said intermediate shaft and adapted to be engaged by both the primary and transmitting cone of gears.

3. In a feeding mechanism for lathes, the combination of a primary shaft, a transmitting-shaft, and a train of speed-changing gearing connecting said shafts, said gearing comprising an intermediate cone of gears, a primary cone of gears between the primary shaft and the intermediate cone of gears, and a transmitting cone of gears between the transmitting-shaft and the said intermediate cone of gears, a lead-screw and gearing connections between said lead-screw and the transmitting-shaft.

4. In a feeding mechanism for lathes, the combination of a primary shaft, a transmitting-shaft, and a train of speed-changing gearing connecting said shafts, said gearing comprising an intermediate cone of gears, a primary cone of gears between the primary shaft and the intermediate cone of gears, and a transmitting cone of gears between the transmitting-shaft and the said intermediate cone of gears, a lead-screw, a feed-rod, and means for operatively connecting either the lead-screw or feed-rod to said transmitting-shaft.

5. In a variable-speed mechanism, the combination of a primary shaft, means for operating said shaft, a yoke mounted to swing upon said shaft and carrying a primary cone of gears, a transmitting-shaft, a yoke mounted to swing upon said shaft and carrying a transmitting cone of gears, an intermediate shaft carrying a cone of gears disposed between the primary and transmitting cones of gears and in engagement therewith, each of said yokes being provided with a handle disposed in convenient relation to each other to afford a ready and convenient means for changing the relation of both the primary and intermediate cones of gears with respect to the intermediate cone of gears.

6. In a variable-speed mechanism, the combination of a primary shaft, a yoke, the arms of which are hung upon said shaft, a gear splined to said shaft between the arms of the yoke, a primary cone of gears car-

ried by said yoke and in operative engagement with said gear, a transmitting-shaft, a yoke, the arms of which are hung upon said transmitting-shaft, a gear splined to said shaft between the arms of the yoke, a transmitting cone of gears carried by said last-named yoke and in operative engagement with said gear, an intermediate shaft and a cone of gears carried by said intermediate shaft and in operative engagement with both the primary and transmitting cone of gears.

7. In a variable-speed mechanism, the combination of a primary shaft, a transmitting-shaft, a yoke hung to each of said shafts and movable thereon, each of said yokes carrying a cone of gears, a shaft disposed intermediate said primary and transmitting shafts and carrying a cone of gears, said cones of gears being similarly arranged and disposed so that the largest gear of the primary and transmitting cones of gears may be engaged with each of the gears on the intermediate shafts, and the largest gear of the cone of gears on the intermediate shaft may be engaged with each of the gears of the primary and transmitting cones of gears.

8. In a feeding mechanism for lathes, the combination of a primary shaft, a transmitting-shaft having a gear fixed thereto, a lead-screw and a feed-rod each provided with a gear, means for longitudinally moving the transmitting-shaft to engage and disengage the gear carried thereby with or from either the lead-screw or feed-rod gear, and speed-changing mechanism disposed between the primary and transmitting shafts and comprising a primary cone of gears, a transmitting cone of gears, and an intermediate cone of gears adapted to be engaged by both the primary and transmitting cone of gears to transmit variable speed from the primary to the transmitting shafts.

9. In variable-speed mechanism, the combination of a driving cone of gears and a transmitting cone of gears, separate rocking yokes on which said cones are mounted, an intermediate cone of gears between said driving and driven cones, all the cones arranged step-like with the largest gear of the respective cones at the same end of the cones, for selectively engaging the gears of the driving-cone and the gears of the driven cone with the gears of the intermediate cone, and means for securing said rocking cones in adjusted positions.

10. In variable-speed mechanism, the combination of a stationarily-positioned cone of intermediate gears, a cone of driving-gears mounted on a rocking yoke selectively meshing therewith and imparting motion thereto, and a cone of driven gears mounted on a rocking yoke selectively meshing therewith and receiving motion therefrom, and means for securing the rocking yokes in adjusted positions.

11. In variable-speed mechanism, the combination with a lathe-bed, of a stationarily-positioned cone of intermediate gears, a cone of driving-gears mounted on a rocking yoke meshing therewith and imparting motion thereto, a cone of driven gears mounted on a rocking yoke also meshing therewith and receiving motion therefrom, all the cones having gears arranged step-like with the largest gear of the respective cones at the same end of the cones, in the lathe-bed, and means for securing the rocking yokes in adjusted positions.

706,187. PUMPING APPARATUS. Tore G. R. Lundmark, Stockholm, Sweden, assignor, by mesne assignments, to De Laval Steam Turbine Company, a Corporation of New Jersey. Filed Jan. 17, 1900. Serial No. 1,518. (No model.)

Claim.—1. The combination of a steam-turbine, a pump actuated thereby, and means for continuously supplying feed under pressure to said pump; the aforesaid parts being constructed and arranged so that the said pump normally actuated by the said turbine at a speed too great to enable it through its own suction to raise liquid to a given height is enabled to do so by the supply of feed under pressure.

2. The combination of a steam-turbine, a rotary pump actuated thereby and means for continuously supplying feed under pressure to said pump, the aforesaid parts being constructed and arranged so that the said pump normally actuated by the said turbine at a speed too great to enable it through its own suction to raise liquid to a given height is enabled to do so by the supply of feed under pressure.

3. The combination of a steam-turbine, a rotary pump having its wheel on the shaft of said turbine, and a second pump constructed and arranged continuously to deliver feed to said first-named pump, as and for the purpose set forth.

4. The combination of a steam-turbine and two rotary pumps actuated thereby, one of said pumps being of high speed and small cubic capacity and the other of relatively low speed and large cubic capacity, and means whereby said second pump delivers liquid under pressure to said first pump.

5. The combination of a steam-turbine, a rotary pump having its wheel on the shaft of said turbine, a second rotary pump, speed-reducing gearing between the said turbine-shaft and the wheel of said second pump and a conduit connecting said pumps; whereby said second pump delivers feed under pressure to said first pump.

6. The combination of a steam-turbine, a rotary pump having its wheel on the shaft of said turbine, a gear on said shaft, a second rotary pump, a gear on the shaft of said second pump engaging with said first-named gear and a conduit connecting said pumps; the said second pump being arranged to deliver feed under pressure through said conduit to said first pump and the said gearing being constructed to actuate the shaft of said second pump at a speed less than that of the shaft of said first pump.

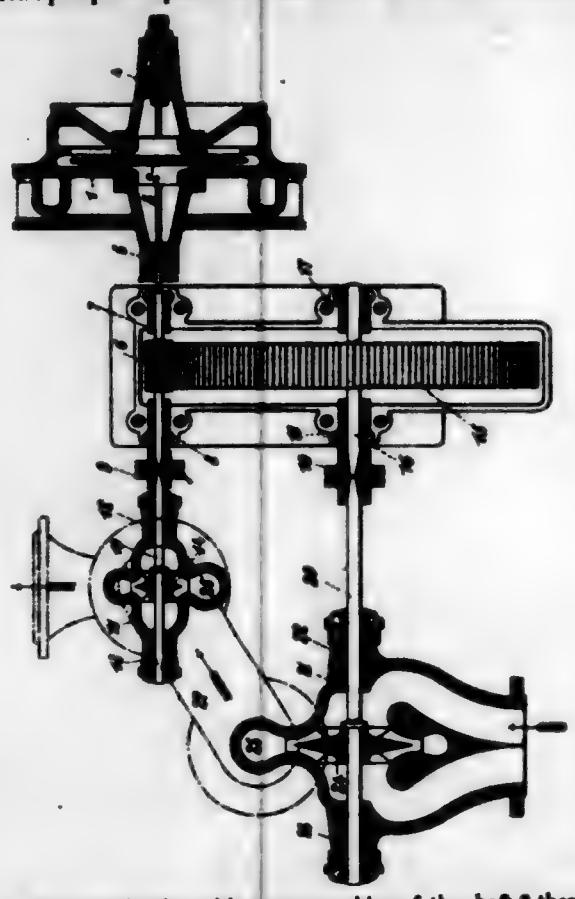

7. The combination with a steam-turbine of the shaft 3 thereof, gear 6 on said shaft, rotary pump 11 having wheel 14 on shaft 10, coupling 9 connecting shafts 3 and 10, shaft 16, gear 15 on said shaft engaging with gear 6, rotary pump 21 having wheel 24 on shaft 20, coupling 19 connecting shafts 16 and 20 and conduit 27 connecting pumps 11 and 21, substantially as described.

8. In combination with a pump of given dimensions of chamber and rate of speed and means for driving said pump, a second pump of greater dimensions of chamber and lower rate of speed constructed and arranged to deliver feed continuously to said first-named pump.

9. The combination of a steam-turbine, a rotary pump having its wheel on the shaft thereof and means for continuously supplying feed under pressure to said pump.

706,188. BOILER. Louis Mary and Polydore Baillik, Ghent, Belgium. Filed July 2, 1901. Serial No. 66,093. (No model.)

Claim.—1. A steam-generator comprising a furnace, a horizontal boiler above the furnace-grate, a series of auxiliary boilers and preheaters and means causing the products of combustion from the furnace to flow successively in opposite directions along opposite sides of each of the auxiliary boilers and preheaters, for the purpose set forth.

2. A steam-generator comprising a furnace, a horizontal boiler above the grate thereof, a steam-collector above said horizontal boiler, a series of auxiliary boilers and preheaters and means causing the products of combustion from the furnace to flow successively in opposite directions along opposite sides of each of said auxiliary boilers and preheaters; in combination with a superheater connected with the steam-collector and located in the path of the products of combustion, for the purposes set forth.

3. A steam-generator, comprising a furnace, a horizontal boiler above the grate thereof, a steam-collector above said boiler, a series of auxiliary boilers and preheaters and means causing the products of combustion to flow successively along opposite sides of each of said auxiliary boilers and preheaters; in combination with a superheater in the path of said products of combustion and connected with the steam-collector and means for diverting said products of combustion from said superheater, for the purpose set forth.

4. A steam-generator comprising one or more primary vaporizers in direct contact with a heating medium, a series of interconnected auxiliary vaporizers, a connection between a primary vaporizer and the first auxiliary vaporizer or vaporizers of a series of such, a series of interconn-

nected preheaters and a connection between the last auxiliary vaporizer or vaporizers of the series of each and the first preheater or preheaters of the series of each; in combination with means causing the aforesaid heating medium to flow successively along opposite sides of one or more auxiliary vaporizers and one or more preheaters, in a direction opposite to the direction of flow of the water therethrough, for the purpose set forth.

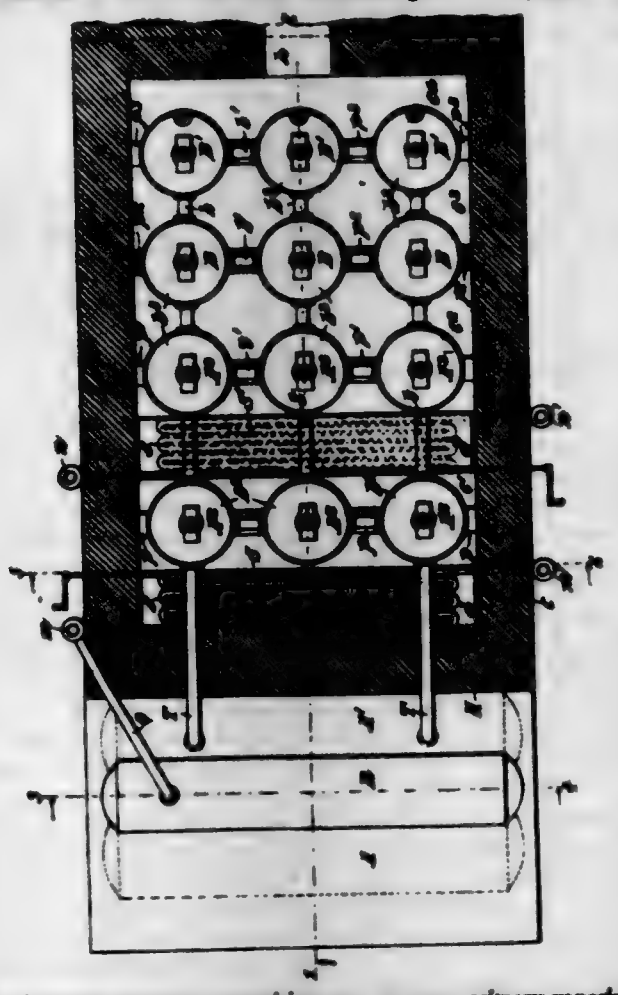

5. A steam-generator, comprising one or more primary vaporizers in direct contact with a heating medium, a series of vertical auxiliary vaporizing-drums interconnected at their upper ends at different levels, a connection from the higher level of the first auxiliary vaporizer or vaporizers of the series with a primary vaporizer, a series of vertical preheating-drums of less height than the auxiliary vaporizing-drums and connected together at or near their upper ends, and a connection between the last auxiliary vaporizer or vaporizers of the series and the upper end of the first preheater or preheaters of the series of such; in combination with means causing the aforesaid heating medium to flow successively along opposite sides of one or more auxiliary vaporizers and of one or more preheaters in a direction opposite to the flow of water therethrough, for the purpose set forth.

6. A steam-generator, comprising one or more primary vaporizers in direct contact with a heating medium, a steam-collector out of direct contact with the heating medium and connected to said vaporizer or vaporizers, a series of vertical auxiliary vaporizers connected together at their upper ends on different levels, a connection from the higher level of the first auxiliary vaporizer or vaporizers with a primary vaporizer, a series of vertical preheaters of less height than the auxiliary vaporizers and connected together at or near their upper ends, and a connection between the upper end of the last auxiliary vaporizer or vaporizers of the series and the like end of the first preheater or preheaters of the series; in combination with means causing the aforesaid heating medium to flow successively along opposite sides of one or more auxiliary vaporizers and one or more preheaters in a direction opposite to the flow of water therethrough, a superheater in the path of said medium and connected with the steam-collector and means for diverting the heating medium from said superheater, for the purpose set forth.

8. A steam-generator, comprising a furnace, two horizontal boilers above the furnace-grate, a chamber adjacent to and in communication with said furnace, a series of vertical boilers A^2 A^3 arranged in sets of three interconnected at their upper ends, a connection at a higher level between one of the horizontal boilers and two boilers A^2, vertical preheaters B, B', of less height than the auxiliary boilers and interconnected at their upper ends, and vertical staggered partitions between the boilers of each set and the chamber-walls to cause the products of combustion from the furnace to flow successively along opposite sides of each set of auxiliary boilers and preheaters in a direction opposite to the flow of water therethrough, for the purpose set forth.

9. A steam-generator, comprising a furnace, two horizontal boilers above the furnace-grate, a steam-collector above and connected with said boilers, a chamber adjacent to and in communication with said furnace, a series of vertical boilers A^2 A^3 arranged in sets of three interconnected near their upper ends, a connection at a higher level between one of the horizontal boilers and two boilers A^2, vertical preheaters B, B', of less height than the auxiliary boilers and interconnected at their upper ends, and vertical staggered partitions between the boilers of each set and the chamber-walls to cause the products of combustion from the furnace to flow successively along opposite sides of each set of auxiliary boilers and preheaters in a direction opposite to the flow of water therethrough; in combination with a superheater in the path of the products of combustion and connected with the steam-collector, for the purpose set forth.

10. A steam-generator, comprising a furnace, two horizontal boilers above the furnace-grate, a steam-collector above and connected with said boilers, a chamber adjacent to and in communication with said furnace, a series of vertical boilers A^2, A^3, arranged in sets of three interconnected near their upper ends, a connection at a higher level between one of the horizontal boilers and two boilers A^2, vertical preheaters B, B', of less height than the auxiliary boilers and interconnected at their upper ends, and vertical staggered partitions between the boilers of each set and the furnace-walls to cause the products of combustion from the furnace to flow successively along opposite sides of each set of auxiliary boilers and preheaters in a direction opposite to the flow of water therethrough; in combination with a superheater in the path of the products of combustion and connected with the steam-collector and means for diverting said products from said superheater, for the purpose set forth.

706,189. SILO. GEORGE W. MAHLOVE, Cleveland, Ohio. Filed Oct. 28, 1901. Serial No. 80,319. (No model.)

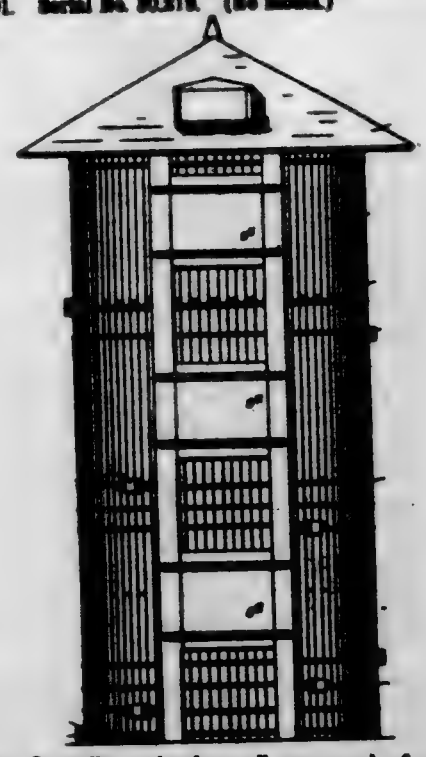

Claim.—1. In a silo, a circular wall composed of units formed of overlapping vertical members the edges whereof project outwardly from said wall, combined with encircling hoops which constrain said projecting edges inwardly, substantially as set forth.

2. In a silo, a circular wall composed of units formed of overlapping vertical members, the outermost of said members projecting outwardly from said wall, said wall presenting an uninterrupted cylindrical surface upon its inner side, combined with encircling hoops adapted to constrain inwardly the said projecting members, substantially as set forth.

3. In a silo, a circular wall made of two layers of material, and composed of units formed of overlapping vertical members, the free portions of the members of the outermost of said layers projecting outwardly from said wall, combined with encircling hoops constraining said free portions inwardly, substantially as set forth.

4. In a silo, a circular wall made of two layers of material, and composed of units formed of overlapping vertical members, the free portions of the outermost of said members projecting substantially tangentially from said wall, said wall presenting an uninterrupted cylindrical surface on its inner side, combined with encircling hoops constraining inwardly the said free portions, and means for adjusting the tension of said hoops, substantially as set forth.

706,190. SHUTTLE-LOCK FOR LOOMS. FRANCIS A. MILLS, Methuen, Mass., assignor of one-half to Grosvenor B. Simmons, Methuen, Mass. Filed Feb. 27, 1902. Serial No. 96,978. (No model.)

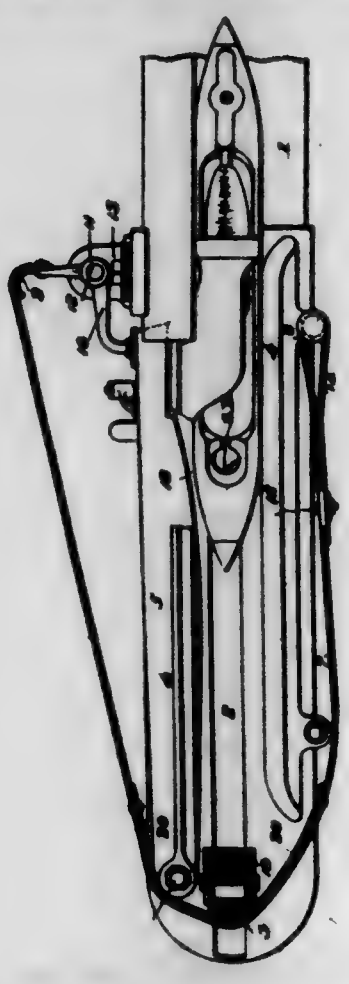

Claim.—1. A shuttle-box, a picker, a pivoted binder, a lever device pivoted on the box independent of the binder and a strap passing around the shuttle-box and having its ends connecting the lever device and the box in the manner for the purpose stated.

2. In a loom and in combination the shuttle-box, the picker, a pivoted binder for the box, a strap passing around the shuttle-box and fixed at one end to the box, and a lever device pivoted to the box at the free end of the binder, said lever device having an arm connected to the other end of the strap and an arm having a free bearing upon the free end of the binder, for the purpose stated.

3. A shuttle-box, a picker, a binder, a strap passing around and connected at one end to the lay, a device pivotally mounted on the lay connected to the other end of the strap and having an arm adapted to be forced with an impact pressure against the inner free end of the binder, whereby the strap receives and imparts the force of the impact of the shuttle to the said pivoted device and thence against the free end of the binder.

4. A shuttle-box, a picker, a binder, a strap connected at one end to the lay, a bell-crank lever mounted upon the lay having one arm connected to the other end of said strap, the other arm of said lever bearing on the free end of the binder and means for adjusting the length of the strap whereby to render effective the look of the binder upon the shuttle at any point of its throw in the box.

706,191. TRACTION-ENGINE. SAMUEL S. MORTON, WALTER S. MORTON, ROBERT L. MORTON, WILLIAM EVANS, and WILLIAM H. EVANS, York, Pa., assignors, by mesne assignments, to Morton Manufacturing Company. Filed Sept. 23, 1901. Serial No. 76,082. (No model.)

Claim.—1. The combination with a power-shaft and a driven shaft, the former having a longitudinal movement in its bearing, of a friction-wheel and a friction-disk, the one secured to the power-shaft and the other to the driven shaft, a collar fixedly secured to the power-shaft, a collar loosely secured to the power-shaft, and having antifriction-rollers arranged between them, a universally-movable lever, a link connecting the lever to the friction-wheel for moving it longitudinally upon its shaft across the face of the friction-disk, a pivoted lever adapted to engage the movable collar to force it toward the fixed collar, and a link between the pivoted lever and the universally-movable lever, substantially as set forth.

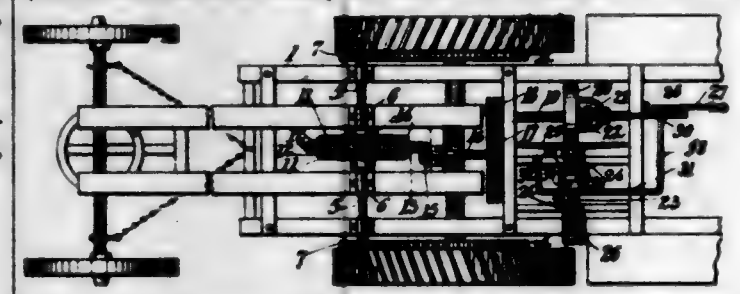

2. The combination with a two-part drive-shaft, the ends of which are arranged in close relation and are provided with beveled gears, a coupling-sleeve for connecting the ends of said shaft, a gear-wheel, the hub of which is loosely mounted upon said coupling-sleeve, and pinions journaled in said gear-wheel and in mesh with the gears carried by the shafts, substantially as set forth.

3. The combination with a two-part drive-shaft, the ends of which are arranged in close relation and are provided with annular grooves and with beveled gears, a split coupling-sleeve having annular inwardly-projecting flanges to engage said grooves, a gear-wheel, the hub of which is loosely mounted upon said coupling-sleeve to hold the same closed around the ends of the shafts, and pinions journaled in said gear-wheel and in mesh with the gears carried by the shafts, substantially as set forth.

4. In combination, gearing for the purpose described, comprising a power-shaft and a shaft to be driven, the one provided with a friction-disk and the other with a friction-wheel, and a universally-movable lever operatively connected to the disk and wheel and having an adjustment in one plane for independently adjusting the disk, an adjustment in a different plane for independently adjusting the wheel, and a third adjustment at an angle to said planes for simultaneously throwing the disk and wheel into frictional engagement and moving one across the face of the other, substantially as set forth.

706,192. WASHBOARD. SPENCER MCCAY, Topeka, Kans., assignor to Fred L. Woodbridge, Newark, Ohio. Filed Dec. 30, 1901. Serial No. 87,792. (No model.)

Claim.—1. In a washboard, a frame comprising a base, and a series of ribs journaled to the frame and deflected from a straight line passing through the journals and adapted to be turned to cause the ribs to lie close against the surface or the deflected parts to stand off from the surface of the base, substantially as set forth.

2. In a washboard, a frame comprising a base, and a series of ribs journaled at their ends and intermediate of their ends to the frame and having the parts between the journals deflected, said ribs being adapted to lie against the surface of the base or to be turned to throw the deflected parts away from the said surface, substantially as set forth.

3. In a washboard comprising side strips and a base or back board, ribs journaled at their ends in the side strips and having journals intermediate of their ends, the parts between the respective journals being de-

flected, and fastenings securing the intermediate journals to the said base, the ribs being adapted to lie close against the surface of the base or to be turned to throw the deflected parts outward therefrom, substantially as set forth.

706,198. BALE-TIE. SPENCER MCCAY, Topeka, Kans. Filed Jan. 13, 1902. Serial No. 89,572. (No model.)

Claim.—1. In a bale-tie, a coupling end comprising entrance and receiving loops separated by a contracted portion having the members facing the entrance-loop diverged and the members facing the receiving-loop abruptly bent to form stop-shoulders, and a coöperating coupling end having a cross-head to pass through the entrance-loop preliminary to passing into the receiving-loop, the side portions of the contracted part being separated by a portion of the end provided with the head riding upon the said diverged members, and said side portions springing together to prevent return of the head into the entrance-loop after passing into the receiving-loop, substantially as set forth.

2. In a bale-tie, a coupling end comprising entrance and receiving loops separated by a contracted portion having diverged members facing the entrance-loop and abrupt shoulders facing the receiving-loop, and a coupling end having a head to pass into the entrance-loop, thence by the contracted portion into the receiving-loop and having its outer bar forwardly deflected to obtain a bearing against a side of the receiving-loop near its inner end to brace and stiffen the joint, substantially as set forth.

3. In a bale-tie, a coupling end comprising entrance and receiving loops separated by a contracted portion having abrupt shoulders facing the receiving-loop and diverged members facing the entrance-loop, and a coupling end having a head inclined to the plane of the aforesaid loops and having its outer bar deflected to obtain a bearing against a loop a distance from the outer end of the receiving-loop, substantially as set forth.

4. In a bale-tie, a coupling end comprising entrance and receiving loops and an intermediate contracted portion, the receiving-loop being approximately of D form and the contracted portion having its side members diverged toward the entrance-loop and abruptly bent toward the receiving-loop to form the straight side thereof, and a second coupling end having a head offset and inclined, the outer bar of said head being outwardly deflected and the inner bar having portions adjacent to the offset portion curved to form side hooks, the outer bar of the head constituting a brace, the parts being constructed for operation substantially in the manner specified.

706,194. INSULATOR. LOUIS MCCARTHY, Boston, Mass. Filed May 26, 1902. Serial No. 108,909. (No model.)

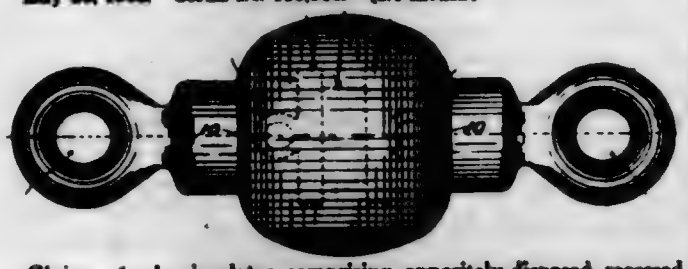

Claim.—1. An insulator comprising oppositely-disposed recessed metallic portions, an intermediate portion of insulating material, means for securing the said insulating material to the oppositely-disposed metallic portions, and a mass of molded insulating material filling the space between the proximate ends of the metallic portions, substantially as described.

2. An insulator comprising metallic end portions, each having a recess therein, the edge of said end piece at the open end of said recess being undercut or beveled, an intermediate connecting-piece of insulating material, secured to each of said end portions within the recess therein, and a mass of insulating material molded over the proximate ends of the end pieces and filling the space between the beveled edges thereof, substantially as described.

3. An insulator comprising recessed cup-shaped end pieces, an intermediate connecting-piece of insulating material, securing-pins passing through said end pieces and said piece of insulating material, and a mass of molded insulating composition in which the said pins and the joint between the end pieces and the insulating connecting-piece are embedded, substantially as described.

4. An insulator comprising end pieces each provided with means for attachment to a flexible support, said end pieces being each provided with a socket or recess, a connecting-piece of insulating material intermediate said end pieces and projecting into the recess in each, means for securing the said end pieces to the said intermediate connecting-piece and a mass of insulating material covering the proximate ends of said end pieces and the space intermediate the same, substantially as described.

706,195. DREDGE. GORDON MCKAY, Newport, R. I. Filed May 2, 1901. Serial No. 58,508. (No model.)

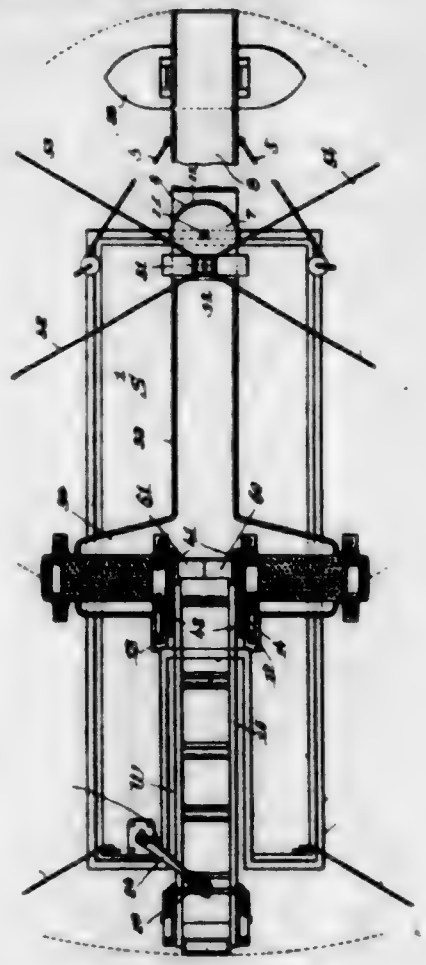

Claim.—1. In an apparatus of the class described, a scow, a dredging device at one end thereof, two oppositely-disposed grizzlies located to receive the material from the dredging device and to discharge the tailings over either side of the scow.

2. In an apparatus of the class described, a scow, a dredging device at one end thereof, two oppositely-disposed grizzlies located to receive the material from the dredging device and deliver the coarser tailings at either side of the scow, combined with a sluice located to receive the fine material from the grizzlies and deliver the fine tailings to the rear of the scow.

3. In an apparatus of the class described, a scow, a dredging device at one end thereof, mechanism for separating the coarse gravel from the fine and valuable material, said separating mechanism having side discharges whereby the coarse gravel is deposited either side of the scow, a sluice adapted to receive the fine material from the separating mechanisms, said sluice extending back from the scow and having its projecting end pivotally mounted, and means to maintain the pivoted end of the sluice in any adjusted position.

4. In an apparatus of the class described, a scow pivoted for swinging movement about one end, an excavating device on the front end of said scow, two oppositely-disposed rotating grizzlies or screens in front of the pivotal point of the scow, and projecting at their discharge ends over the sides of the scow, said grizzlies receiving material from the excavator and operating to discharge the coarse tailings on both sides of the scow, a sluice adapted to receive fine material from the grizzlies, said sluice being attached to the scow and extending back thereof a distance approximately equal to the length of the scow, and a float to support the end of the sluice, whereby tailings from the sluice are deposited on top of the tailings from the grizzlies

5. In an apparatus of the class described, a scow pivoted for swinging movement about one end, an excavating device on the front end of said scow, two oppositely-disposed rotating grizzlies or screens in front of the pivotal point of the scow, said grizzlies receiving material from the excavating device and operating to discharge the coarse tailings on either side of the scow, a sluice adapted to receive the fine material from the grizzlies, said sluice being attached to the scow and extending back thereof a distance approximately equal to the length of the scow.

6. In an apparatus of the class described, a scow or float, a dredge carried thereby, means to separate the coarse gravel from the fine and valuable material, a sluice to receive the fine material, said sluice extending

hook from the screw, and comprising two sections, one of said sections rigid with the screw and having at its end a joint articulating with the end of the other section, and means for varying the relative positions of the two sections and for holding them in any adjusted relative position, whereby one section may have a lateral swinging movement relative to the other or may be made rigid therewith.

706,196. COMPOUND TOOL. WINFIELD OFFUTT, Washington, D. C. Filed May 2, 1902. Serial No. 105,642. (No model.)

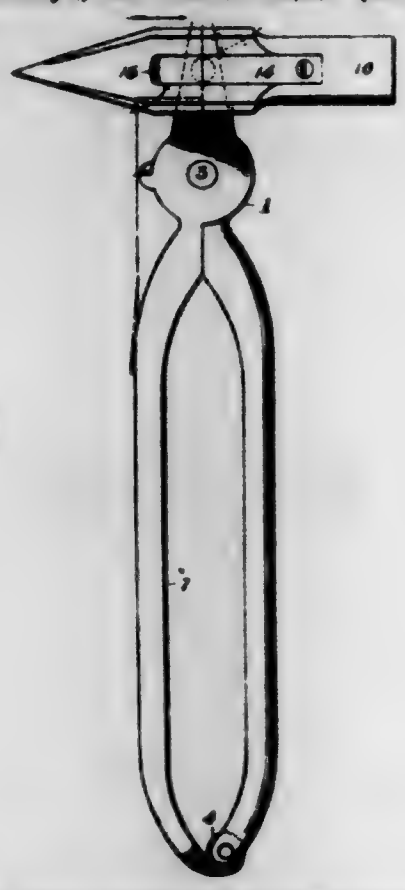

Claim.—1. The combination with the pivoted jaws of a pliers and arms extending therefrom; of a cutting-disk journaled in the end of one arm, and a claw at the end of the other arm adapted to extend over, and guard, the cutter.

2. The combination with a pliers having a jaw grooved in its inner face; of a head adapted to receive the closed jaws of the pliers, and means in the head for engaging the groove.

3. The combination with the jaws of a pliers; of a head having a recess for the reception of the closed jaws, and means for automatically locking the jaws in the recess.

4. The combination with the jaws of a pliers; of a head having a recess therein for the reception of the closed jaws, and a spring-pressed lug adapted to project into the recess and engage the jaws.

5. The combination with the jaws of a pliers; of a head having a recess for the reception of the closed jaws, a stud normally extending into the recess and adapted to engage the jaws, and a spring-strip secured to the head and stud and adapted to hold the stud in engagement.

6. The combination with the jaws of a pliers; of a head having a recess therein for the reception of the closed jaws, a spring-strip secured at one end within a groove in the head, a stud extending from said strip into the recess and adapted to lock the jaws therein, and an outwardly-turned end to the strip.

7. The combination with a pliers having jaws provided with grooves in their inner faces; of a head having a recess therein for the reception of the closed jaws, a spring-strip secured to the side of the head, and a beveled stud extending from the strip and into the recess and adapted to engage the grooves and lock the jaws in the recess.

706,197. STONE-HANDLING APPARATUS. CHARLES H. OWEN, Mechanicsburg, Pa. Filed Apr. 24, 1902. Serial No. 104,483. (No model.)

Claim.—1. Stone-handling apparatus comprising a carrying-truck, a portable bin mounted thereon, means for raising and lowering the bin, and a stone-elevator adapted to deliver to the bin, substantially as described.

2. Stone-handling apparatus comprising a carrying-truck, a portable bin mounted thereon, means for raising and lowering the bin, a screen at the top of the bin for receiving stone, and a stone-elevator adapted to discharge into the screen, substantially as described.

3. Stone-handling apparatus comprising a carrying-truck, a portable bin mounted thereon, means for raising and lowering the bin, a screen at the top of the bin, a stone-elevator arranged to discharge into the screen, and a stone-crusher arranged to deliver to the elevator.

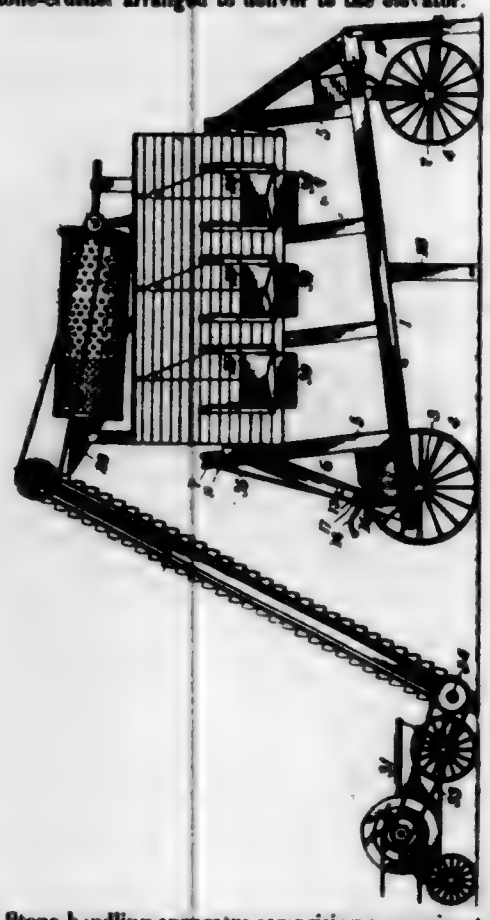

4. Stone-handling apparatus comprising a carrying-truck, a portable stone-bin thereon, means for raising and lowering the bin, a screen mounted at the top of the bin and adjustable therewith to receive the stone from an elevator and direct the same into the bin, a stone-elevator arranged to discharge into the screen, and a stone-crusher to which the elevator is connected and upon which it is adjustable.

5. Stone-handling apparatus comprising a carrying-truck, a portable stone-bin mounted thereon, means for raising and lowering the bin and the screen, a rotary stone-grading screen at the top of the bin arranged to receive the stone and discharge into the bin, and a stone-elevator arranged to deliver to the screen.

6. Stone-handling apparatus, comprising a carrying-truck, a stone-bin mounted thereon, a stone-grading screen at the top of the bin, and means for independently raising and lowering the opposite ends of the bin.

7. Stone-handling apparatus comprising a carrying-truck, a bin mounted thereon, a stone-grading screen at the top of the bin, means for independently raising and lowering the opposite ends of the bin, and movable props for supporting the bin when elevated.

8. Stone-handling apparatus comprising a portable truck, a stone-bin mounted thereon, a stone-grading screen at the top of the bin, means for raising and lowering the bin, and movable props for bracing and supporting the truck and bin, substantially as described.

9. Stone-handling apparatus comprising a portable truck, a stone-bin mounted thereon, a stone-grading screen at the top of the bin, means for raising and lowering the bin on the truck, and truck-supporting props or braces having a hinged connection with the truck-frame, substantially as described.

10. Stone-handling apparatus comprising a portable truck, having a longitudinally-inclined frame, a stone-bin mounted thereon, a stone-grading screen at the top of the bin, means for raising and lowering the bin, and removable props or braces adapted to be placed with a wedging fit between the inclined truck-frame and the elevated bin, substantially as described.

706,198. VIBRATING PROPELLER. WILLIAM W. PEARCE, New York, N. Y. Filed Dec. 10, 1901. Serial No. 85,358. (No model.)

Claim.—1. A vibrating propeller comprising two arms *d* hinged at opposite sides of the driving-shaft *f*, the cranks *g* upon the driving-shaft, the rods *h* connecting the cranks with the arms to vibrate the same, the blades *e* pivoted upon the ends of the arms, and means for tipping the blades when moved in opposite directions.

2. A vibrating propeller comprising two arms *d* hinged at opposite sides of the driving-shaft *f*, the cranks *g* upon the driving-shaft, in the rear of the stern-bearing *r*, the rods *h* connecting the cranks with the arms to vibrate the same, the blades *e* pivoted upon the ends of the arms,

the plungers *k* extended through the hull of the vessel and provided with means for reciprocating the same, and the links *i* actuated by the plungers to tip the blades in opposite directions, substantially as herein set forth.

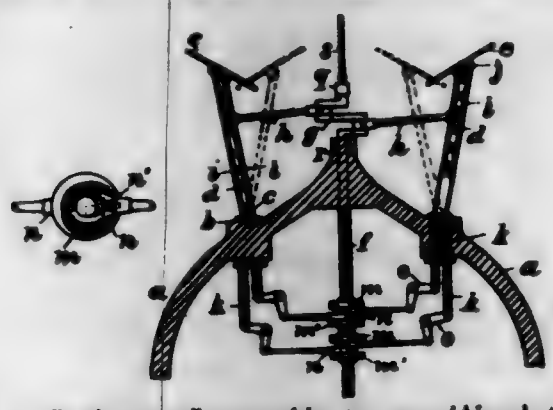

3. A vibrating propeller comprising two arms *d* hinged at opposite sides of the driving-shaft *f*, the cranks *g* upon the driving-shaft in the rear of the stern-bearing *r*, the rods *h* connecting the cranks with the arms to vibrate the same, the blades *a* pivoted upon the ends of the arms, the plungers *k* extended through the hull of the vessel, the links *i* connecting the plungers with the blades at opposite sides of the arm, cams upon the driving-shaft *f*, and connections from the cams to the plungers to suitably reciprocate the same and tip the blades, substantially as herein set forth.

4. A vibrating propeller comprising two arms *d* hinged at opposite sides of the driving-shaft *f*, the cranks *g* upon the driving-shaft, the rods *h* connecting the cranks with the arms to vibrate the same, links *i* pivoted to the blades at opposite sides of the arms, with means for reciprocating the links to tip the blades as set forth, and the stops *p* attached to the arms to support the blades when wholly tipped, substantially as herein set forth.

5. A vibrating propeller comprising two arms *d* hinged at opposite sides of the driving-shaft *f*, the cranks *g* upon the driving-shaft, the rods *h* connecting the cranks with the arms to vibrate the same, links *i* pivoted to the blades at opposite sides of the arms with means for reciprocating the links to tip the blades as set forth, and the arms being provided with the forked extensions *d'* each having the stops *p* projecting from opposite sides thereof to support the blades when wholly tipped, substantially as herein set forth.

6. A vibrating propeller comprising two arms *d* hinged at opposite sides of the driving-shaft *f*, the cranks *g* upon the driving-shaft, the rods *h* connecting the cranks with the arms to vibrate the same, links *i* pivoted to the blades at opposite sides of the arms, the arms *d* being forked at the base and having the feet pivoted upon separate lugs *c*, and means extended through the hull of the vessel between each feet for reciprocating the links and tipping the blades, substantially as herein set forth.

706,199. LOCK AND EXTRACTOR MECHANISM FOR FIRE-ARMS. NICOLAS PIEPER, Liege, Belgium. Filed July 1, 1901. Serial No. 66,810. (No model.)

Claim.—1. In a bolt-gun, the combination with the gun-body having a slot in its lower wall, the bolt, and the means for operating the bolt, of the extractor movable in said slot and adapted to be actuated by said bolt, the trigger-spring consisting of a flat blade arranged parallel to and lying against the body of the gun and forming a bearing in which the extractor slides, and the trigger pivoted to the rear end of the spring, substantially as described.

2. In a bolt-gun, the combination with the gun-body having a slot in its lower wall, the bolt, the striker, and the cocking means, of the trigger-spring consisting of a flat blade secured at its forward end to the gun-body and occupying a position parallel thereto and having a rear at its opposite end, the trigger pivoted to said spring, and the extractor movable in said slot and supported thereon by the trigger-spring, substantially as described.

706,200. BOILER-TUBE CLEANER. OSCAR C. CRAMBAUER, St. Louis, Mo., assignor of one-half to Nathan Holbert, St. Louis, Mo. Filed Mar. 24, 1902. Serial No. 99,764. (No model.)

Claim.—1. A boiler-tube cleaner comprising a piston-casing adapted to slide back and forth in the boiler-tubes and having a transverse bore forming a hammer-piston chamber; the ends of said chamber being enlarged to form die-holder seats; a hammer-piston slidingly mounted in said chamber; said piston having valve-releasing-port-connecting grooves in its periphery; die-holders slidingly mounted in said die-holder seats, dies carried by said die-holders, a valve-casing attached to the piston-casing and having a transverse bore parallel with the piston-chamber and forming a valve-chamber; a valve slidingly mounted in said valve-chamber and having pressure-port-connecting grooves in its periphery, and having an exhaust-port-connecting groove in its periphery and having valve-shifting ports connecting the pressure to each end of the valve, plugs closing the ends of said valve-chamber and a steam-supply pipe connected to said valve-casing; there being pressure-ports leading from the supply-pipe to the valve-chamber; and there being pressure-ports leading from the valve-chamber to the piston-chamber so that the reciprocation of the valve admits pressure first to one end of the valve and then to the other; and there being an exhaust-port so that the reciprocation of the valve will release the exhaust from one end of the valve, while the pressure is being admitted to the other end, and there being valve-releasing ports leading from said valve-chamber to the piston-chamber and there being second valve-releasing ports leading from the piston-chamber so that the reciprocation of the piston will connect said first and second valve-releasing ports to release the pressure first from one end of the valve and then from the other end, as required to reciprocate the valve.

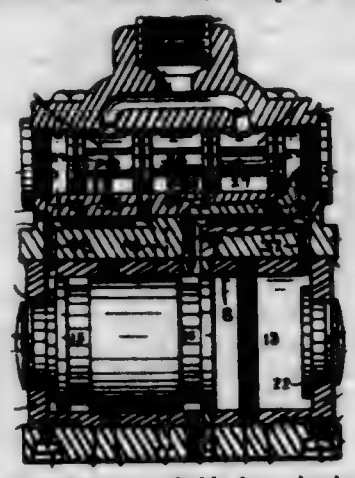

2. In a boiler-tube cleaner, a suitable frame having a transverse bore forming a hammer-piston chamber, die-holders mounted in the ends of said chamber, a hammer-piston mounted in said chamber, dies carried by said die-holders, steam-ports leading to said piston-chamber, and an automatic valve for admitting the steam first to one end of the piston and then the other, as required to reciprocate the hammer-piston, and cause it to strike the dies, said dies being held outwardly against the inner surface of the boiler-tube by the steam-pressure.

706,201. LUBRICATOR. WILLARD F. RICHARDS, Buffalo, N. Y., assignor to Charles M. Gould, New York, N. Y. Filed Jan. 19, 1900. Serial No. 2,013. (No model.)

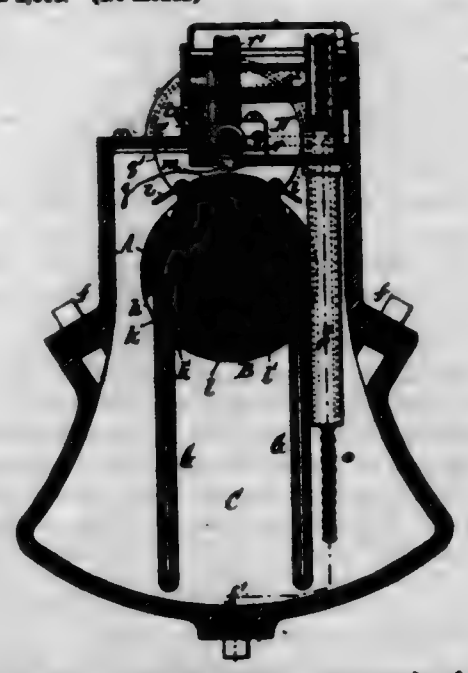

Claim.—1. The combination with an oil-reservoir, of a horizontal bearing-sleeve arranged in the upper portion of said reservoir and provided in its side wall with an aperture which intersects the bore of the

sleeve, and a stationary wick supported on said sleeve and immersed in the oil in said reservoir and having its upper portion arranged in said aperture so as to lie against the shaft journaled in said bearing-sleeve, substantially as set forth.

2. The combination with a journal, and an oil-reservoir, of a horizontal bearing-sleeve arranged in the upper portion of said reservoir and provided with an upper side over the journal and provided in its side walls with openings which open into the bore of the sleeve, and a wick supported upon the upper side of said sleeve and having depending branches which pass downwardly through said openings and are immersed in the oil in said reservoir, substantially as set forth.

3. The combination with an oil-reservoir, of a bearing-sleeve provided on opposite sides thereof with openings which intersect its bore, and a wick having depending branches which pass through said openings and are immersed in the oil of said reservoir, and which are provided at their exposed, upper ends with rings or handles for withdrawing the wick from the openings of the sleeve, substantially as set forth.

4. The combination with an oil-reservoir, of a bearing-sleeve provided in its side wall with a wick-opening which intersects its bore, and a transverse channel which leads from the inner lower edge of said opening to the bottom of the sleeve-bore, and a wick supported by said sleeve and arranged in said opening and immersed in the oil in said reservoir, substantially as set forth.

5. The combination with an oil-reservoir, of a bearing-sleeve provided in its side with an opening which intersects its bore, a shelf or ledge arranged at the lower, inner wall of said opening, a longitudinal channel arranged in the bottom of the sleeve-bore, and a transverse channel or channels leading from said ledge to said longitudinal channel, and a wick arranged in said opening and immersed in the oil in said reservoir, substantially as set forth.

6. A bearing-sleeve provided in its side with a wick-opening which intersects its bore, and having a recess in its lower, inner wall which forms a ledge or shelf adapted to receive any surplus oil flowing down the wick, a longitudinal channel arranged in the bottom of the sleeve-bore, and a transverse channel or channels leading from said ledge to said longitudinal channel, substantially as set forth.

7. The combination with a shaft to be lubricated, of a main oil-reservoir arranged below said shaft, an auxiliary reservoir arranged above said shaft and provided with a discharge-opening, a pulley arranged in said auxiliary reservoir, a depending flexible feed member running loosely over said pulley and dipping into the oil in said main reservoir, and means for turning said pulley, substantially as set forth.

8. The combination with a shaft to be lubricated, of a main oil-reservoir arranged below said shaft, an auxiliary reservoir arranged above said shaft and provided with a discharge-opening, a pulley arranged in said auxiliary reservoir, a depending flexible feed member running loosely over said pulley and dipping into the oil in said main reservoir, and intermediate gearing whereby said pulley is rotated from said shaft, substantially as set forth.

9. The combination with a shaft to be lubricated, of a main oil-reservoir arranged below said shaft, an auxiliary reservoir arranged above said shaft and provided with a discharge-opening, a pulley arranged in said auxiliary reservoir, a depending flexible feed member running loosely over said pulley and dipping into the oil in said main reservoir, a worm-wheel mounted on the shaft of said pulley, and an actuating-shaft having a friction-wheel which runs in contact with the lubricated shaft and a worm which meshes with said worm-wheel, substantially as set forth.

10. The combination with a shaft to be lubricated and a main reservoir arranged below the same, of a bottomless casing arranged above said shaft, a vertically-movable auxiliary oil reservoir capable of sliding freely in said casing and provided in its bottom with a discharge-opening, a pulley mounted on a horizontal shaft journaled in said auxiliary reservoir, an endless flexible feed member depending from said pulley and dipping into said main reservoir, and an actuating-shaft journaled in said auxiliary reservoir and having a friction-wheel which runs in contact with the shaft to be lubricated, and a worm which meshes with a worm-wheel mounted on the shaft of said pulley, substantially as set forth.

11. The combination with a shaft to be lubricated, of a main oil-reservoir arranged underneath the shaft, an auxiliary oil-reservoir arranged above the shaft and provided in its bottom with a discharge-opening, a wick depending from the shaft into said lower reservoir and exposed at the upper side of the shaft, a pulley journaled in the auxiliary reservoir, an endless flexible feed member suspended from said pulley and dipping into the oil in the lower reservoir, and intermediate gearing whereby said pulley is turned from the lubricated shaft, substantially as set forth.

12. The combination with a shaft, of a main oil-reservoir arranged below the shaft, an auxiliary reservoir arranged above the main reservoir and provided with a discharge-opening, a pulley arranged in said auxiliary reservoir, a flexible feed member running over said pulley and dipping into the oil in said main reservoir, means for driving said pulley, and a wick located between said discharge-opening and the shaft for catching any grit or sediment in the oil, substantially as set forth.

706,202. DRAFT-EQUALIZER. WILLIAM B. RIVERS, Tracy, Iowa. Filed Jan. 11, 1902. Serial No. 89,355. (No model.)

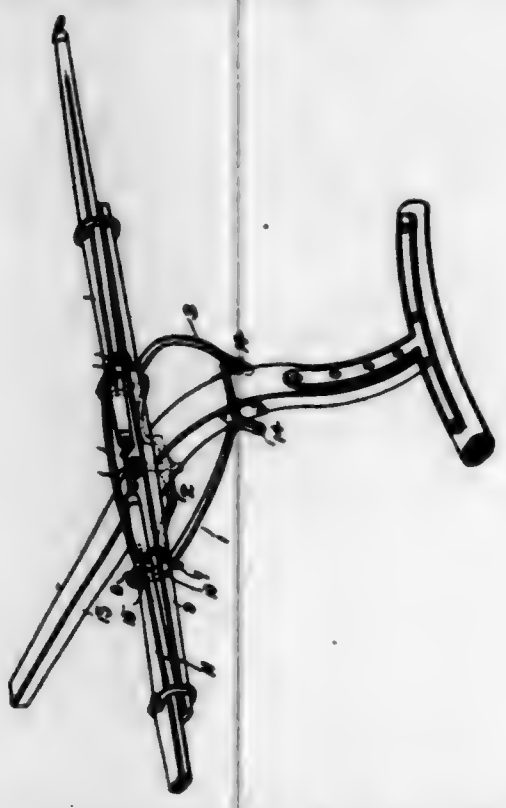

Claim.—1. A combined draft-equalizer and support provided at opposite sides with loops designed to be secured to a doubletree and receiving the inner portions of the singletree and permitting a limited movement of the same, said draft-equalizer and support being also provided with means for engaging the tongue to limit the movement of the doubletree, substantially as described.

2. A combined draft-equalizer and support comprising opposite loops designed to be secured to a doubletree and arranged to receive the inner portions of the singletree to permit a limited movement thereof, and a rearwardly-extending bar provided at opposite sides of the tongue or pole with means for engaging the same to limit the swing of the doubletree, substantially as described.

3. A combined draft-equalizer and support comprising opposite loops designed to be secured to a doubletree and arranged to receive the inner portions of the singletrees, and the approximately U-shaped rearwardly-extending bar resting upon the pole or tongue and provided at opposite sides of the same with depending lugs, substantially as described.

4. A combined draft-equalizer and support comprising the opposite loops having reduced lower portions to receive the doubletree and provided with enlarged upper portions to permit a limited swing of the singletrees, and means for connecting the loops, substantially as described.

5. A combined draft-equalizer and support comprising the opposite loops designed to be secured to the doubletree and arranged to receive the inner portions of the singletrees to limit the swing thereof, and means for connecting the loops with each other and with the tongue or pole, substantially as described.

6. A combined draft-equalizer and support comprising the opposite loops designed to be secured to the doubletree and arranged to receive the inner portions of the singletrees, and the top bar connecting the loops and extending over the inner ends of the singletrees to form a guard, substantially as described.

7. A combined draft-equalizer and support comprising the opposite loops designed to be secured to a doubletree and arranged to receive the inner portions of the singletrees, and the bottom bar connecting the loops and pivoted to the pole and extending beneath the latter, substantially as described.

8. A combined draft-equalizer and support comprising the opposite loops designed to be secured to a doubletree and arranged to receive the inner portions of the singletrees, the bottom bar connecting the loops and extending beneath and pivotally connected to the tongue or pole, the top bar connecting the loops and extending over the inner portions of the singletrees and forming a guard, and the rearwardly-extending bar supported by the tongue or pole and provided with means for engaging the same, substantially as described.

706,208. COIN-OPERATED TALKING-MACHINE. DELFORD G. ROYAL, London, England, assignor to the Gramophone and Typewriter, Limited, London, England, a Corporation. Filed Feb. 7, 1901. Serial No. 46,300. (No model.)

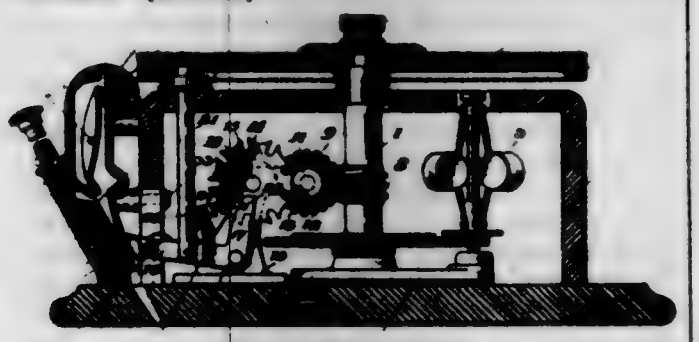

Claim.—1. The combination with a spring-motor, a turn-table driven thereby, a bell-crank lever pivotally mounted on a supporting-frame, a locking-bolt pivoted to the lower arm of the bell-crank adapted to engage and lock the turn-table, coin-controlled mechanism adapted to tilt the bell-crank and withdraw the locking-bolt, means for locking the bell-crank in its tilted position, and mechanism driven by the motor for automatically tripping the bell-crank to return it to normal position, for the purpose substantially as described.

2. The combination with a talking-machine, a spring-motor for running the record-support of same, a bell-crank lever pivoted to a supporting-frame, a vertically-disposed locking-bolt pivoted at one end to one arm of said bell-crank adapted to engage the record-support and normally lock the same, a coin-holding device adapted to receive and hold the coin, a push-bar or plunger in said coin-holder, mechanism carried by the push-bar adapted when said push-bar is operated to engage the coin and be thrown into engagement with the bell-crank to release the motor, and mechanism for resetting the bell-crank and automatically stopping the motor substantially as described.

3. The combination with the spring-motor and turn-table, of means for locking said turn-table against rotation, a coin-holding device secured to the motor-casing, means for holding a deposited coin in said holder, a push-bar carried by the coin-holder, and mechanism carried by the push-bar adapted to be actuated by the coin to engage the locking mechanism of the motor and simultaneously release the same and eject the coin, substantially as described.

4. The combination with the spring-motor and turn-table, of means for locking said turn-table against rotation, a coin-holding device secured to the motor-casing, means for holding a deposited coin in said holder, a push-bar carried by the coin-holder, a pivoted detent carried by the push-bar adapted to engage the edge of the coin when said push-bar is depressed and be thrown in engagement with the motor-locking mechanism to release the same and start the machine, substantially as described.

5. The combination with the spring-motor and turn-table, of means for locking said turn-table against rotation, a coin-holding device secured to the motor-casing, means for holding a deposited coin in said holder, a push-bar adapted to engage the edge of the coin when depressed and thereby be thrown into engagement with the motor-locking mechanism to release the same, and simultaneously eject the coin, and means for returning the push-bar to normal position, substantially as described.

6. The combination with a spring-motor, a driving-spindle driven thereby, a turn table secured to said driving-spindle so as to revolve therewith, a bell-crank lever pivoted to a suitable support, a locking-bolt pivoted to the lower arm of said bell-crank adapted to engage and lock the turn-table, means for holding the bell-crank in its locked position, a star-wheel located adjacent to the upper arm of the bell-crank, a pin carried by said star-wheel adapted to engage the bell-crank and trip the same on each revolution of the star-wheel, and gearing connecting the said star-wheel with the driving-spindle of the motor, substantially as described.

7. The combination with a spring-motor, a driving-spindle, a turn-table secured thereto, a bell-crank lever pivoted on a supporting-frame, a locking-bolt pivoted to the lower arm of the bell-crank adapted to normally engage the turn-table, a projecting pin carried by the upper arm of the bell-crank, a spring-pressed pawl pivoted to the machine-frame having its hooked end adapted to engage the pin and hold the lower arm of the bell-crank down, a spring secured to the frame of the machine and to the lower arm of the bell-crank, and a tripping mechanism operatively connected to the motor-spindle for releasing the pawl and allowing the bell-crank to tilt, for the purpose substantially as described.

706,204. WATCH-WINDING DEVICE. GEORGE H. SAWYER, Fishkill Landing, N. Y. Filed July 31, 1901. Serial No. 70,226. (No model.)

Claim.—1. In a winding attachment for watches, the combination with a winding-stem and its head, of a cap hinged to the head, a pin carried by the cap having a notched edge and a protuberance on the head engaging the pin, substantially as described.

2. In a stem-winding attachment for watches, a winding-stem and its head, ears formed with the head, a cap having a lug hinged to the ears, a pin projecting from the edge of the head, a pin carried by the cap and standing at right angles to the surface thereof, said pin having a recess to receive the pin of the head as for the purpose described.

706,205. CALK EQUIPPED HORSESHOE. ARTHUR F. SCHOFIELD, Westford, Conn. Filed Apr. 21, 1902. Serial No. 103,857. (No model.)

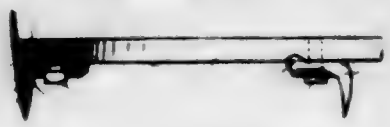

Claim.—1. The attachable and detachable calk for the front of the horseshoe made of one piece of sheet material doubled upon itself, sharpened at the double, and turned off laterally into a bearing-wing at the rear.

2. The attachable and detachable calk for the front of the horseshoe made of one piece of sheet metal composed of layers of material of different degrees of hardness, said sheet being doubled upon itself and sharpened at the double till the harder layer of material forms the edge, and turned off laterally into a bearing-wing.

706,206. COOKING APPARATUS. SIGMUND SILBERMANN, New York, N. Y. Filed Mar. 18, 1902. Serial No. 98,855. (No model.)

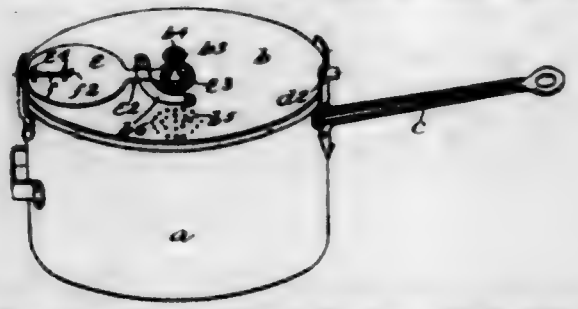

Claim.—A cooking utensil comprising a vessel having a cover provided at one side with perforations or openings and with a pivoted shield adapted to cover said openings, said vessel being also provided at its opposite sides with upwardly-directed members, and said cover being provided at one side with a lug or projection adapted to pass through one of said members, and said shield being provided with a radially-movable pin adapted to pass through the other of said members, substantially as shown and described.

706,207. BANANA-CRATE. WILLIAM H. SIMPSON, Chicago, Ill. Filed Dec. 31, 1901. Serial No. 87,948. (No model.)

Claim.—A banana-crate comprising two two-part polygonal heads, one of which is provided with a central orifice, sides connecting the ends, reinforcing-bands exteriorly embracing the sides intermediate of their ends and having their terminals formed into interengaging hinge members, a packing secured to the interior of each of the sides, a yielding cushion interposed between the packing and the sides, and means for holding the sides assembled.

706,208. WRENCH. ANDREW I. SLATER, Butte, Mont. Filed May 9, 1902. Serial No. 106,993. (No model.)

Claim.—In a wrench, the combination with a handle-bar having ratchet-teeth and provided with a fixed jaw, of a sliding frame mounted to slide upon said handle, a jaw having a shank pivoted in said sliding

frame, a spring exerting pressure upon said jaw to throw its face at an angle to the face of the fixed jaw, a lever pivoted to the sliding frame and provided with a straight spring which engages the rear side of the jaw, said spring serving the double function of paralleling the operative face of the movable jaw with the operative face of the fixed jaw when said lever is depressed, and when said lever is released, said spring acting to lock said lever in engagement with the ratchet-teeth and hold the sliding frame in locked adjustment thereto, substantially as set forth.

706,209. CASTER. WILLIAM J. SUMNER, Holyoke, Mass., assignor of one-half to ANNE A. COBURN, Holyoke, Mass. Filed May 20, 1902. Serial No. 108,151. (No model.)

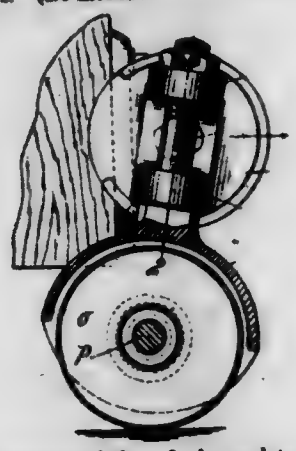

Claim.—1. A caster consisting of a base-plate adapted to be secured in a vertical plane to an article to be supported thereby; a swivel-plate pivotally supported on said base-plate, means for rotatably supporting a post vertically on said swivel-plate, a wheel suitably supported on the lower end of said post; and means whereby the swivel-plate may have a limited oscillatory movement on the base-plate, whereby said post may be swung to a position oblique to the perpendicular, in the plane of rotation of the wheel only.

2. A caster consisting of a plate adapted to be secured to an article to be supported thereby; a base-plate integral with said first-named plate located at right angles thereto and lying in a vertical plane; a swivel-plate pivotally supported on the base-plate; a post rotatably supported on the swivel-plate in a perpendicular position, a broken flange on the base-plate, and a projection on the swivel-plate lying between the ends of said flange, whereby the oscillations of the swivel-plate may be limited.

706,210. CAR-COUPLING. JAMES L. SUTHERLAND, Mayfield, Ky. Filed Apr. 28, 1902. Serial No. 105,102. (No model.)

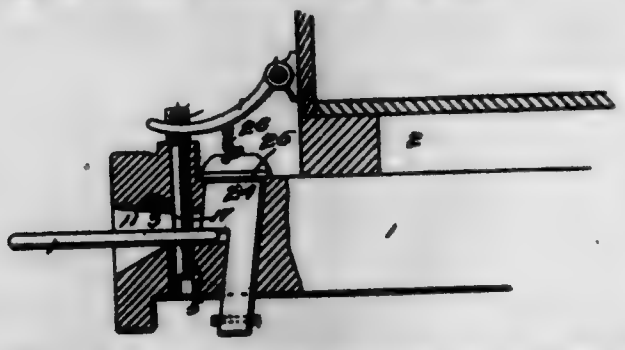

Claim.—1. In a car-coupling, the combination with a draw-head, and a coupling-pin, of an uncoupling mechanism having an arm connected with and adapted to lift the coupling-pin, means for supporting and tripping the coupling-pin, and a link-engaging bar mounted in the draw-head in rear of the coupling-pin and connected with the said arm and capable of upward and downward movement independently of the pin, substantially as and for the purpose described.

2. In a car-coupling, the combination with a draw-head, and a coupling-pin, of an uncoupling mechanism having an arm connected with and adapted to lift the coupling-pin, means for supporting and tripping the coupling-pin, a link-engaging bar mounted in the draw-head in rear of the coupling-pin and capable of movement independently of the coupling-pin, and a flexible connection extending from the arm to the link-engaging bar, substantially as described.

3. In a car-coupling, the combination with a draw-head, of a coupling-pin having a bifurcated upper portion, an antifriction-roller mounted in the bifurcation, an uncoupling mechanism having a curved arm arranged within the bifurcation and receiving the roller, a link-engaging bar provided with a flexible connection secured to the arm, and means for supporting and tripping the coupling-pin, substantially as described.

4. In a car-coupling, the combination with a draw-head provided at one side with a horizontal groove and having openings at the front and rear of the same, a push-bar having a stem and provided with a recess and mounted in the groove and openings of the draw-head, a spring disposed on the stem of the push-bar and engaging the same, and a lever fulcrumed between its ends on the draw-head and having its inner arm arranged to support the coupling-pin in an elevated position, its outer arm being detachably arranged in the recess of the push-bar and extended beyond the draw-head, substantially as described.

706,211. TROLLEY-WHEEL. RUDOLPH H. APELT, Boston, Mass. Filed Mar. 30, 1901. Renewed Dec. 19, 1901. Serial No. 86,534. (No model.)

Claim.—1. In a trolley-wheel, the combination, with a flange-plate provided with a hub having an oil-hole in it, of a second flange-plate slidable on the said hub, one of the said flange-plates being also provided with a series of lateral projections, and a tread-ring provided with grooves which slide over the said projections, an oil-chamber being formed by the two said flange-plates around the said hub and within the tread-ring, substantially as set forth.

2. In a trolley-wheel, the combination, with a flange-plate provided with a hub, of a flange-plate secured on the said hub and provided with a series of projections, and a tread-ring provided with grooves which engage with the said projections and having also a central opening which forms an oil-chamber between the said flange-plates substantially as set forth.

706,212. NUT-LOCK. OCTAV BAILLARGEON, Cohoes, N. Y. Filed Feb. 20, 1902. Serial No. 94,861. (No model.)

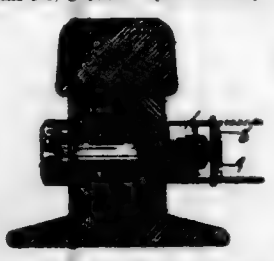

Claim.—The combination with a threaded bolt having a cross-groove in its threaded end and a similarly-threaded nut having a plurality of plane sides; of a sheet-metal yoke having a bolt-receiving aperture and extended arms engageable with the plane sides of the nut; and a keeper having a part adapted to enter the cross-groove of the bolt and provided with means for connecting the yoke-arms therewith whereby the keeper is adapted to hold the yoke-arms interlocked with the plane sides of the nut, and the arms to hold the keeper interlocked with the bolt, substantially as described.

706,213. LACING-EYE FOR SHOES, &c. LOUIS BALLBACH, Detroit, Mich. Filed Dec. 7, 1900. Serial No. 38,991. (No model.)

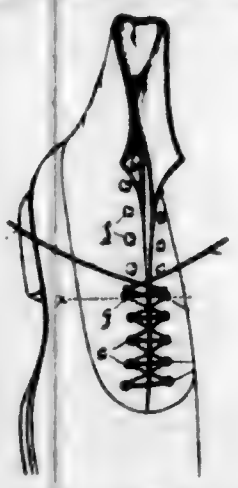

Claim.—1. A lacing-hook consisting of an eyelet having means for fastening it to the garment, and a hook formed with a shank hinge-con-

nected at one end to the eyelet in a plane parallel to and below the plane of the face of the eyelet and adapted to bear against the face of the eyelet at or near its opposite end, said end having an outwardly-turned hook portion forming an open inlet into the hook above the shank portion whereby the lacing-string may be engaged into the hook when the hook is folded down upon the eyelet and produce a clamping action between the shank and the eyelet to prevent another portion of the lacing-string drawn through the eyelet itself from being drawn through the eyelet, by the tension of that portion of the lacing-string engaged with the hook.

2. A lacing-hook consisting of an eyelet having means for securing it to the fabric, and a hook formed with a shank hinge-connected at one end to the eyelet in a plane parallel to and below the plane of the face of the eyelet and provided upon its under side with a bearing portion adapted to project into the eyelet, the free end of the shank having an outwardly-turned hook portion forming an open inlet into the hook above the shank portion, whereby the lacing-string may be engaged into the open mouth of the hook when the hook is folded down upon the eyelet and thereby produce a clamping action upon another portion of the lacing-string drawn through the eyelet itself.

706,214. **STRAW-STACKER.** JOHN B. BARTHOLOMEW, Peoria, Ill., assignor, by mesne assignments, to Avery Manufacturing Company, Peoria, Ill., a Corporation of Illinois. Filed Sept. 5, 1894. Serial No. 522,434. (No model.)

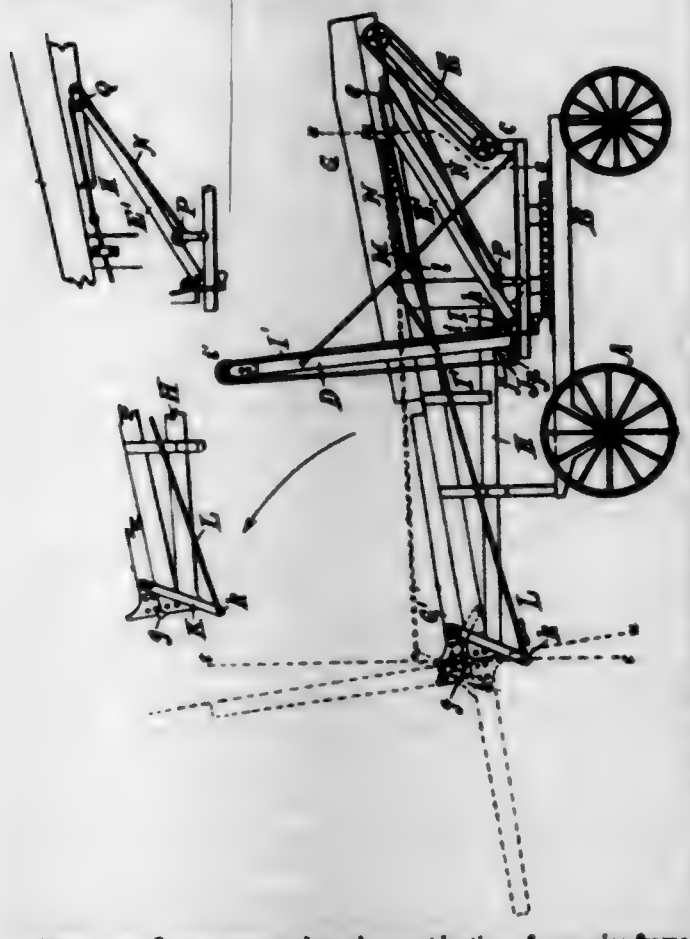

Claim.—1. In a straw-stacker, the combination of a carrier-frame having two sections hinged together, draft devices for moving the outer section around its hinge-axis, and a guide or holder for the said draft devices on the inner section, said draft devices being connected to the outer section at a point substantially as set forth whereby said attaching-point comes to the line through the guide and the hinge-axis at the time the center of gravity of the outer section crosses the vertical plane of the hinge-axis, as described.

2. In a straw-stacker, the combination with the carrier-frame consisting of two sections hinged together, of an arm or bar on the outer section, inclined toward the inner section when the sections are in line, and inclined away from the inner section when the outer one is folded, and draft devices connected to said arm, said parts being arranged substantially as described whereby a positive pull will be exerted on the draft devices by the gravity of the outer section at all points in its path of movement around its hinge-axis, substantially as set forth.

3. In a straw-stacker, the combination of a base or support, an inner carrier-section hinged to said support, an outer carrier-section hinged to the inner section, draft devices connected to the outer section and arranged substantially as set forth to exert a pulling force in one direction on said outer section during a part of its movement around its hinge, and to exert a pulling force thereon in the opposite direction during the remainder of its movement around said hinge, substantially as described.

4. In a straw-stacker, the combination of a base or support, an inner carrier-section hinged thereto, an outer carrier-section hinged to the inner, means for moving both carrier-sections from a relatively low position where the center of gravity of the outer section is outside of the vertical plane of the hinge of said section when the sections are at right angles to each other to a relatively high position where the center of gravity of the outer section is inside of the said hinge plane when the sections are at right angles to each other, and a draft device connected to the outer section at a point substantially as described, whereby it exerts a positive pull on the outer section and moves it to a position at right angles to the inner section, both when the entire carrier is in its lower position and when it is in its upper position, substantially as set forth.

5. In a stacker, the combination of a lower section horizontally vibratable, an upper section pivoted on the lower section to swing vertically forward and downward and backward to fold into portable position, an extension of the upper section behind the pivot thereof, a guide on the lower section, and a line having means connecting it with the extension and extended around the guide, said guide being located approximately on a right line drawn through the pivot and through the connection of the line with the extension when the vertically-swinging section is in a vertical position.

706,215. **WASHER FOR VEHICLE-AXLES.** CLARENCE BUTNER, and ROBERT L. BUTNER, Littlerock, S. C. Filed Dec. 4, 1901. Serial No. 84,666. (No model.)

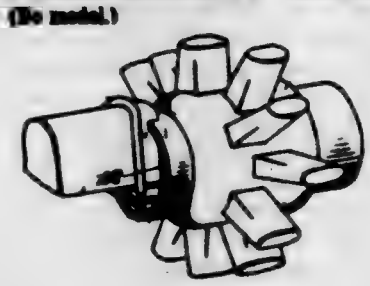

Claim.—1. A device of the class described comprising a metallic disk having a diametrical slot extending from its upper edge to a point near to its lower edge and having an ear at its lower edge bent outwardly at right angles to the face of the disk, a plate disposed transversely of the under side of the tongue and having spaced perforations, and a U-shaped clip having its legs engaged through the perforations and provided with nuts to prevent withdrawal thereof.

2. The combination with an axletree and spindle, of a wheel disposed upon the spindle and having a hub-band projecting from the inner end thereof, the axletree being higher than the band and having a slot in its end face in which the band is received, a metallic disk disposed in the end of the band and having a tongue cut therefrom and a resultant diametrical slot in which the axletree is snugly received, said ear being bent outwardly from the face of the disk, a plate disposed against the under side of the ear and provided with laterally-spaced perforations, and a clip disposed over the axletree and having its legs engaged through the perforations of the plate, said legs having nuts engaged therewith to prevent withdrawal thereof.

706,216. **ROLL-HOLDING CAMERA.** JOHN G. BROWNING, Fairfield, Iowa. Filed Mar. 31, 1902. Serial No. 100,726. (No model.)

Claim.—1. In a roll-holding camera, a spool-holding device adapted to receive spools of different lengths in combination with means adjustable within the body of the camera for shielding a part of the field of exposure of the camera.

2. In a roll-holding camera, a shield located at each end of the field of exposure and adapted to be adjusted to the front of the film or to the rear thereof, and means for holding said shields in their different places of adjustment.

3. In a roll-holding camera, a roll-holding device comprising a suitably-journaled spindle provided with a shoulder and a spring-actuated bracket adapted to press a spool against the shoulder of the spindle for one size spool and adapted to press a spool against the bearing of the spindle with the shoulder of said spindle at its rear for a larger-size spool, substantially as described.

4. In a roll-holding camera, a spool-holding device comprising a rotatable thumb-nut, a pawl-and-ratchet mechanism mounted thereon, a flange on the thumb-nut to fit the spool-slot for a large-size spool, a spring-actuated bracket having a trunnion on which a spool may be mounted, and a removable hub having a socket to fit over the flange on the thumb-nut and a flange to fit in the spool-slot for a small-size spool, substantially as described.

5. In a roll-holding camera, a spool-holding device comprising a suitably-journaled spindle provided with a shoulder and a spring-actuated bracket adapted to press a spool against the shoulder of the spindle for

one size spool and adapted to press a spool against the bearing of the spindle with the shoulder of said spindle at its rear for a larger-size spool, a rotatable thumb-nut, a pawl-and-ratchet mechanism mounted thereon, a flange on the thumb-nut, to fit the spool-slot for a large-size spool, a spring-actuated bracket having a trunnion on which a spool may be mounted, and a removable hub having a socket to fit over the flange on the thumb-nut and a flange to fit in the spool-slot for a small-size spool, substantially as described.

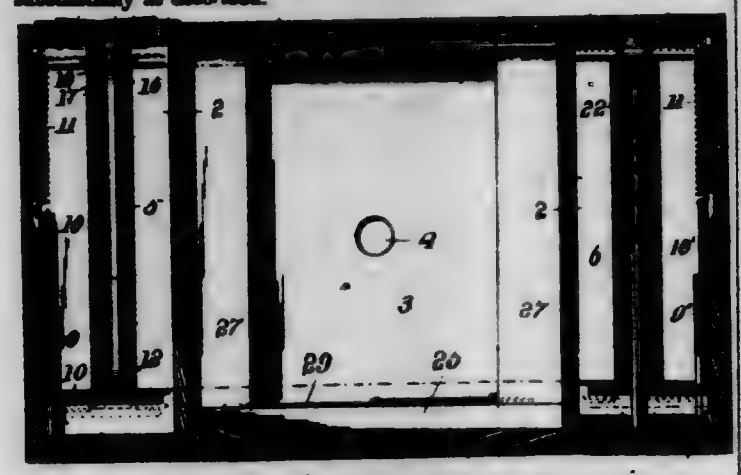

6. In a roll-holding camera, means adjustable within the body thereof adapted to be placed in front of the film or to the rear of said film whereby a full-sized exposure may be made or a reduced-sized exposure made, substantially as described.

7. In a roll-holding camera, a shield located at each end of the field of exposure and adapted to be adjusted to the front of the film or to the rear thereof.

8. In a roll-holding camera a shield mounted in slots in the frame of the camera at each end of the field of exposure thereof said slots being wider at their outer ends, the shields being adapted to lie in the front of the film when in the wider portions of the slots and to lie behind the film when in the narrow portions of said slots.

706,217. WINDOW-SHUTTER. John G. Bush, Alma, Wis. Filed Oct. 24, 1901. Serial No. 79,731. (No model.)

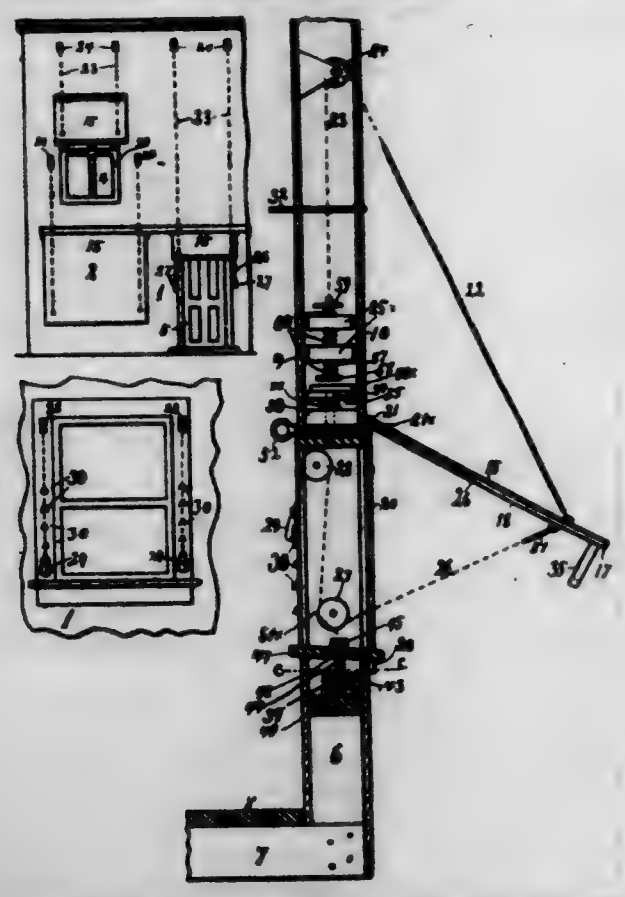

Claim.—1. The combination with a counterbalanced window-shutter hinged above the window and having locking-hooks near its free corners adapted to engage a locking mechanism in the wall, of a locking mechanism located in the wall or window-frame and having catches adapted to engage said hooks, said catches being connected together and to an unlocking lever or handle within easy reach upon the window-sill, and springs for throwing said hooks and catches into engagement.

2. In a shutter for doors or windows, the combination with a shutter hinged above the door or window to fold downward upon the same; sheaves in the wall above the shutter, chains or ropes extending from the shutter over the top of said sheaves, weights secured to the inner ends of said chains to raise the shutter, and stops above and below the weights, substantially as and for the purpose set forth.

3. The combination with a shutter hinged above a window or door, of weights counterbalancing and raising the shutter, sheaves arranged above the shutter, ropes or chains passed over the sheaves and secured to the weights, and to the shutter by means of rods 22 for steadying the shutter when raised.

4. The combination with a shutter for windows and doors the same being hinged at its upper edge, of ropes or a rope or chain passed over a sheave and having one end secured to the shutter to be raised, and at the other end a weight adapted to raise the shutter, a stop to take the blow of the weight, said stop being lined on its top with a cushion and consisting of two members with a spring interposed between them, and said weight consisting of a vertical rod secured to the rope, and a series of weight-sections and springs interposed between them on the rod.

5. The combination with a shutter hinged above a door or window of a counterbalancing and raising weight and a stop for same to fall upon, said weight consisting of a vertical rod and a series of weight-sections and intermediate coil-springs, and a plate secured on the lower end of the rod and a spring between it and the lowest weight-section.

6. In a raising and falling window-shutter, the combination with the counterbalancing-rope 23 and its shutter-raising weight 25, of stops above and below the weight to regulate automatic tilting of the shutter when snow accumulates on it.

7. The combination with an upwardly-folding, weight-controlled shutter of the closing cord or cords 26 secured to its under side and having its inner end within the building and provided with a small weight or handhold 29, the catches 30 adapted to hold the weight at various heights, and the sheaves 27 28 guiding said rope.

8. The combination with an upwardly-folding, weight-controlled shutter of the closing cords or cord 26 secured to its under side and having its inner end within the building and provided with a small weight or handhold 29, the catches 30 adapted to hold the weight at various heights, the sheaves 27 28 guiding said rope, and the short rods 51 at the outer end of the rope.

9. The combination with the locking-hooks of a downwardly-folding window-shutter, of a locking device located in the wall below the window-sill and having catches adapted to engage the hooks, a flexible or spring rod 43 connecting said catches and adapted to retract both of them when the rod is sprung out of line, means for springing the rod out of line and stops to control the motion of the catches.

10. The combination with the locking-hooks of a downwardly-falling window-shutter of a locking device located in the wall below the window-sill, and having catches adapted to engage the hooks, a flexible or spring rod 43 connecting said catches and adapted to retract both of them when the rod is sprung out of line, means for springing the rod out of line and stops to control the motion of the catches, and the rest 49 for supporting the rod in its normal position.

706,218. ELECTRIC SIGNALING SYSTEM AND APPARATUS USED THEREIN. Robert G. Callum, Washington, D. C. Filed Jan. 9, 1902. Serial No. 89,015. (No model.)

Claim.—1. In an electric signaling system, the combination of a normally closed metallic circuit connecting the place to be signaled from with a signal-receiving station, a ground connection in said circuit dividing the batteries thereof, one or more signaling instruments within said circuit adapted to automatically ground said circuit and transmit signals thereover at both sides of such ground, and means for indicating an increase of current through the first-mentioned ground connection, substantially as and for the purposes specified.

2. In an electric signaling system, the combination of a normally closed metallic circuit connecting the place to be signaled from with a signal-receiving station, a signaling instrument adapted to automatically ground said circuit and transmit a signal thereover to said receiving-station, and means for causing the operation of said instrument when the latter is looped out of said main circuit, substantially as described.

3. In an electric signaling system, the combination of a normally closed metallic circuit connecting the place to be signaled from with a signal-receiving station, a ground connection dividing the batteries of said circuit at said receiving-station, signal receiving or recording instruments controlled by the main-line current at each side of said ground connection, a signaling instrument adapted to automatically ground said circuit and transmit signals over the two earth-circuits thus established, an electromagnet within a local circuit for controlling the operation of said instrument, and means for causing said magnet to operate said instrument when the latter is cut out of the main circuit, substantially as described.

4. In an electric signaling system, the combination of a normally

closed metallic circuit connecting the place to be signaled from with a signal-receiving station, a ground connection dividing the batteries of said circuit at said receiving-station, signal receiving or recording instruments controlled by the main line at each side of said ground connection, a signaling instrument adapted to automatically ground said circuit and transmit signals over the two ground-circuits thus established, an electromagnet within a local circuit controlling the operation of said instrument, a relay within the main circuit adapted to short-circuit said magnet when the resistance of the main line is removed from said relay, substantially as and for the purposes specified.

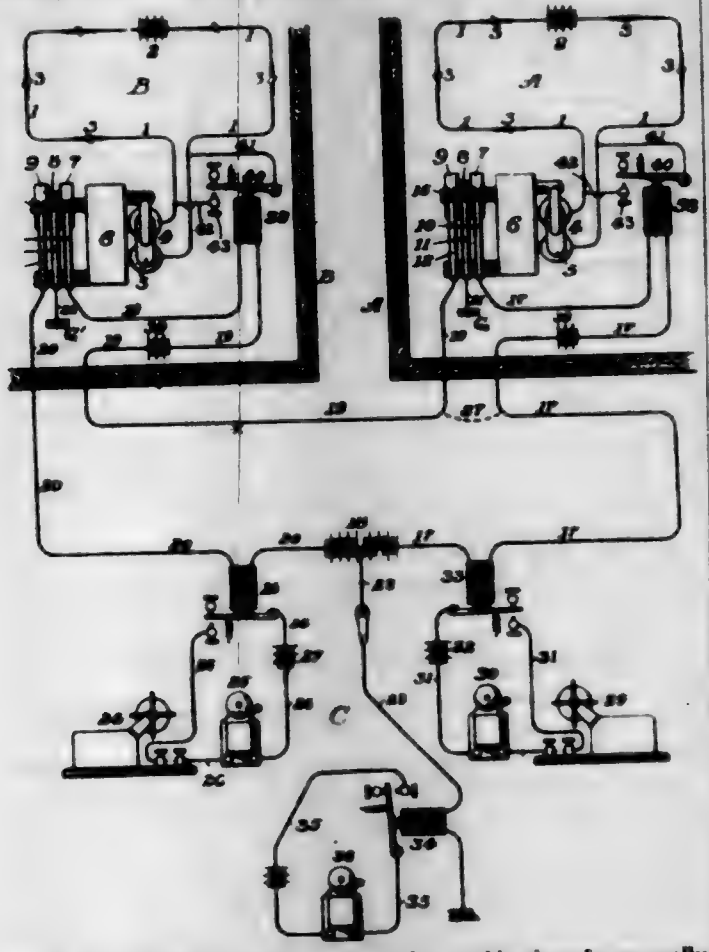

5. In an electric signaling system, the combination of a normally closed metallic circuit connecting the place to be signaled from with a signal-receiving station, a ground connection in said circuit dividing the batteries thereof, separate signal-receiving instruments controlled by said circuit at both sides of said ground connection, a signaling instrument, a normally open relay in said ground connection for controlling said instrument, and a signaling instrument at the place to be signaled from adapted to automatically ground said circuit and transmit a signal over the two earth-circuits thus established, substantially as and for the purposes specified.

6. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels, mechanism for rotating said wheel or wheels, a tripping device for said mechanism, an electromagnet for operating said tripping device, and means operative only after said tripping device has been first operated by said electromagnet for causing said wheels to be revolved at predetermined intervals, substantially as described.

7. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels, mechanism for rotating said wheels, a tripping device for said mechanism, an electromagnet for operating said device, mechanism for operating said device independently of the operation of said electromagnet, and means for preventing the operation of said last-mentioned mechanism until after said tripping device has been first operated by said magnet, substantially as described.

8. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels driven by windable mechanism, a tripping device for said mechanism, an electromagnet for operating said device, clock mechanism for operating said tripping device at predetermined intervals, and means whereby said clock mechanism will be prevented from operating said tripping device until after said device has been first operated by said electromagnet, substantially as described.

9. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels driven by windable mechanism, a tripping device for said mechanism, an electromagnet for causing the operation of said device, clock mechanism for operating said tripping device at predetermined intervals, and means for holding said clock mechanism in check controlled by said electromagnet, substantially as described.

10. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels, mechanism for rotating said wheel or wheels, a tripping device for said mechanism, clock mechanism for operating said device at predetermined intervals, a tripping device for said clock mechanism, and an electromagnet for simultaneously operating both tripping devices, substantially as described.

11. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels, mechanism for driving said wheel or wheels, a tripping device for said mechanism, clock mechanism for operating said device at predetermined intervals, a device for holding said clock mechanism in check adapted when released to give a starting impulse to said clock mechanism, and an electromagnet for holding said device in its operative position, substantially as described.

12. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels, mechanism for driving said wheel or wheels a tripping device for said mechanism, clock mechanism for operating said device at predetermined intervals, a device for holding said clock mechanism in check adapted when released to give a starting impulse to said clock mechanism, and an electromagnet for controlling the operation of said device, substantially as described.

13. In an electric signaling instrument the combination of a circuit-breaking wheel or wheels, mechanism for driving said wheel or wheels, a detent for normally holding said mechanism in check which when moved for releasing said mechanism will again check the same after the latter has revolved said wheel or wheels a predetermined number of revolutions, an electromagnet for moving said detent, a clock-movement for moving said detent at predetermined intervals, and means for preventing said clock-movement and its connecting mechanism from interfering with a movement of said detent by said magnet, substantially as described.

14. In an electric signaling instrument, the combination of a circuit-breaking wheel or wheels, mechanism for driving said wheel or wheels, a detent for normally holding said mechanism in check which when moved for releasing said mechanism will again check the same after the latter has revolved said wheel or wheels a predetermined number of revolutions, an electromagnet for moving said detent, a clock-movement for moving said detent at predetermined intervals, and means controlled by said magnet for normally holding said clock-movement in check, substantially as described.

706,219. METHOD OF OPERATING ELECTRIC RAILWAYS. CHARLES R. CAMPBELL, New York, N. Y. Filed May 6, 1902. Serial No. 106,170. (No model.)

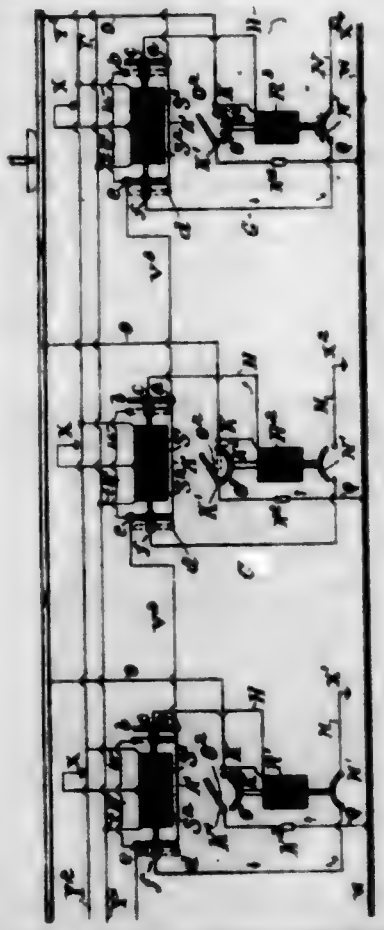

Claim.—1. The method of operating electrically-driven cars in either direction, consisting in leading a power-current along the line, diverting a portion of the power-current to form a divisionary shunt controlled by switches for use in fixing the direction the cars shall take, going or coming, leading two supplementary currents along the line independent of but paralleling the power-current for momentarily energizing one or

the other of the double solenoids, providing a changeable route for such divisionary, and controlling by switches the grounding of said shunt independently toward the right or left.

2. The method of electrically operating motor-cars in either direction over the same track, consisting in leading a power-current along the line, diverting a portion of the power-current to form a divisionary or shunt for use in fixing the direction the cars shall take, leading two supplementary currents along the line independently of but paralleling the power-current for momentarily energizing one or the other of the double solenoids, providing a changeable path for such divisionary current controlled by switches, grounding said shunt independently through its own switch toward the right or left, whereby the route of such divisionary to ground forward or backward determines the direction the car shall take, as set forth.

706,220. WIRE-FENCE FASTENING-CLIP. Frank Canfield, Denver, Colo., assignor to the Western Wire Fence Company, Denver, Colo. Filed Nov. 9, 1901. Serial No. 81,736. (No model.)

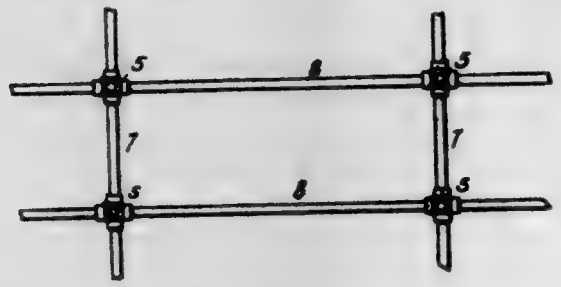

Claim.—1. A wire-fence clip composed of two coöperating members, each having a central part and four radial projections, the central part having an opening, the projections of both members being provided with grooves, the members being arranged on opposite sides of the wire and stay, the grooves of the projections forming seats for the parts to be connected, and the central parts of the members being adapted to receive the opposite bends of the two parts at their intersection, the projections of the two members having faces which are oppositely located when the parts are assembled, one of the members having arms located intermediate its projections, which arms are adapted to embrace and clinch upon the other member, the outer extremities of these arms being bent into the opening of the last-named member whereby the two parts are securely held together.

2. A wire-fence clip composed of two coöperating members, each member having a central part and four radial projections, the central part of one member having an opening, and the projections of each member having grooves leading outwardly from the central portion, the two members when the parts are assembled being arranged to embrace the wire and clip from opposite sides, and provided with oppositely-located faces, one of the said members having arms located between its projections, which arms embrace and clinch upon the central part of the other member, the outer extremities of the said arms being bent into the opening of the last-named member to increase their holding capacity.

706,221. CLAM FOR DREDGES. Ephraim Chagnette, New Rochelle, N. Y. Filed Jan. 10, 1902. Serial No. 89,103. (No model.)

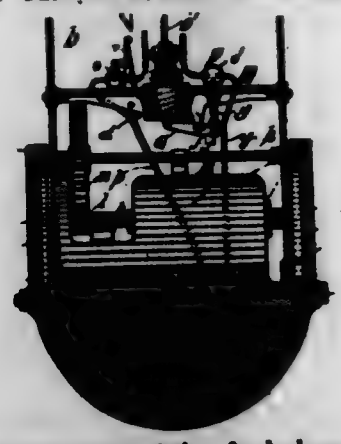

Claim.—The above-described clam for dredges which consists of an electric motor mounted upon a suitable frame, a shell inclosing said motor and composed of two hinged portions pivoted to said frame, one of said portions having an outside segmental rack and the other an inside segmental rack, a pinion driven by said motor and engaging both said racks and suitable circuit-closers mounted upon said clam whereby a direct or reverse current may be automatically transmitted to said motor to open or close said clam when required.

706,222. APPARATUS FOR UNLOADING COAL. Charles D. Day, Baltimore, Md. Filed Mar. 26, 1902. Serial No. 99,967. (No model.)

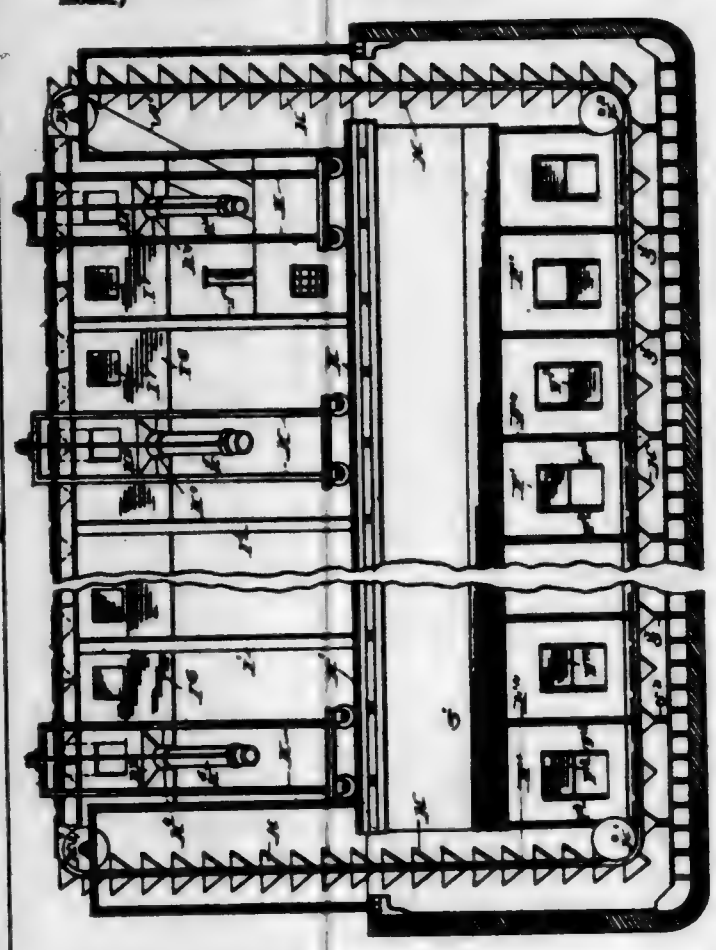

Claim.—1. An apparatus for unloading coal comprising a reservoir, a runway mounted thereabove, an endless, grouped bucket conveyer passing from the bottom of the reservoir along the runway, means for simultaneously discharging the buckets of several groups of buckets at a predetermined but changeable group of points along the runway, and a number of movable carriages carrying chutes placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

2. An apparatus for unloading coal comprising a reservoir, a runway mounted thereabove, an endless, grouped bucket conveyer passing from the bottom of the reservoir along the runway, differential tilting devices at a preselected but changeable group of points along the runway for discharging different groups of buckets at these points, and a number of movable carriages carrying chutes placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

3. An apparatus for unloading coal comprising a reservoir, a runway mounted thereabove, an endless grouped bucket conveyer passing from the bottom of the reservoir along the runway, stops fixed in different positions on different groups of buckets, trips at a preselected but changeable group of points along the runway to coöperate with the stops each to tilt and discharge a given group of buckets, and a number of movable carriages carrying chutes placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

4. An apparatus for unloading coal comprising a reservoir with inclined bottoms and a tunnel having gates coöperating therewith, a runway mounted above the reservoir, and endless, grouped bucket conveyer passing from below the inclined bottoms of the reservoir along the runway, means for simultaneously discharging the buckets of several groups of buckets at a preselected but changeable group of points along the runway, and a number of movable carriages carrying chutes placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

5. An apparatus for unloading coal comprising a reservoir, a runway mounted thereabove, inclines and a series of gates below the runway, an endless grouped bucket conveyer passing from the bottom of the reservoir along the runway, means for simultaneously discharging the buckets of several group of buckets at a preselected but changeable group of points along the runway so that it may pass down the inclines and through such gates as are open, and a number of movable carriages carrying chutes placeable in front of the group of open gates, substantially as described.

6. An apparatus for unloading coal comprising a reservoir, a runway mounted thereon comprising a pair of angle-irons having tracks, an endless grouped bucket conveyer passing from the bottom of the reservoir along the runway, stops fixed in different positions on different groups of

buckets, trips passing through apertures in the angle-irons at a preselected but changeable group of points along the runway to coöperate with the stops each to tilt and discharge a given group of buckets, and a number of movable carriages carrying chutes placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

7. An apparatus for unloading coal comprising a reservoir, a runway mounted thereabove, an endless grouped bucket conveyer passing from the bottom of the reservoir along the runway, means for simultaneously discharging the buckets of several groups of buckets at a preselected but changeable group of points along the runway, and a number of movable carriages carrying vertically-adjustable chutes placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

8. An apparatus for unloading coal comprising a barge, a runway mounted thereabove, and endless, grouped bucket conveyer passing from the bottom of the barge along the runway and back to the bottom of the barge, means for simultaneously tilting and thus discharging the tiltable buckets of several groups of buckets at predetermined but changeable groups of points along the runway, and a number of movable carriages carrying chutes mounted on the barge and placeable at a given group of points to receive and transfer the discharge from the buckets, substantially as described.

9. An apparatus for unloading coal comprising a barge, a runway mounted thereabove, and endless grouped bucket conveyer passing along the bottom of the barge and thence along the runway and back to the bottom of the barge, stops fixed in different positions on different groups of buckets, trips at a preselected but changeable group of points along the runway to coöperate with the stops, each to tilt and thus discharge a given group of buckets, and a number of movable carriages carrying chutes mounted on the barge and placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

10. An apparatus for unloading coal comprising a barge, a runway mounted thereabove, inclines and a series of gates below the runway, an endless, grouped bucket conveyer passing along the bottom of the barge and thence along the runway back to the bottom of the barge, means for simultaneously tilting and thus discharging the buckets of several groups of buckets at a preselected but changeable group of points along the runway so that it may pass down the incline and through such gates as are open, and a number of movable carriages carrying chutes mounted on the barge and placeable in front of the group of open gates to receive and transfer the discharge from the buckets, substantially as described.

11. An apparatus for unloading coal comprising a barge, a runway mounted thereabove, and endless grouped bucket conveyer passing along the bottom of the barge up to and along the runway and back to the bottom of the barge, means for simultaneously tilting and thus discharging the buckets of several groups of buckets at a preselected but changeable group of points along the runway, and a number of movable carriages carrying chutes mounted on the barge and placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

12. An apparatus for unloading coal comprising an endless grouped bucket conveyer, means for simultaneously discharging the buckets of several groups of buckets at a preselected but changeable group of points and a number of movable carriages carrying chutes placeable at this group of points to receive and transfer the discharge from the buckets, substantially as described.

706,228. HEMMING ATTACHMENT FOR SEWING-MACHINES.

THOMAS F. DEMMON, Brooklyn, N. Y. Filed June 22, 1901. Serial No. 65,630. (No model.)

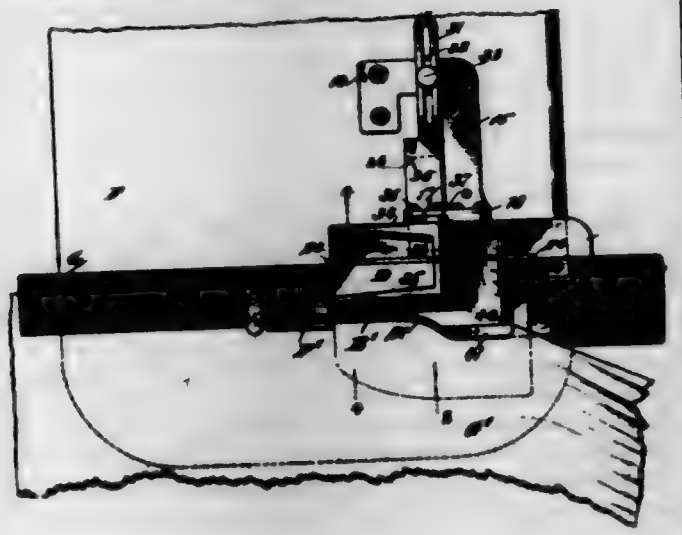

Claim.—1. A sewing-machine attachment, comprising a base-plate, adapted for attachment to a sewing-machine and having transverse guideways formed in its under face, an upper plate carried by the support for the base-plate, each plate being provided with a folding-scroll, a gage-plate adapted to be adjusted between the scroll-carrying plates to regulate the width of a hem, an adjusting supporting-bar for the gage-plate and movable in the guideways on the under face of the base-plate, means for holding the supporting-bar in position in the guideways and a hem guide-bar mounted to travel on the upper face of the base-plate, and connected with the supporting-bar for the gage-plate, as set forth.

2. In a sewing-machine attachment a stationary lower or base plate having means for attachment to a sewing-machine, one end portion of said base-plate being elevated above the other, guideways formed on the under face of the elevated portion of the base-plate, an upper stationary plate carried by the support for the base-plate, folding-scrolls carried by the upper plate and base-plate, the two scrolls having position one above the other, a gage-plate for a hem adjustable transversely between the upper and lower plates, a hem guide-bar mounted on the base-plate, a supporting-bar to which the gage-plate is secured, the said supporting-bar being adjustable in the guideways on the under face of the base-plate, and means for holding the supporting-bar in position in the guideways, the hem guide-bar being adjustably connected with the said supporting-bar, as described.

3. In a sewing-machine attachment, the combination with a stationary lower or base plate having guideways formed on its under face, a bearing-plate connected with the inner longitudinal edge of the base-plate and extending above the same, an upper stationary plate having an upward extension secured to the bearing-plate, and corresponding turning-scrolls carried by the base-plate and the upper plate, of a gage-plate adjustable to and from the scrolls to form a wide or a narrow hem, a supporting-bar for the gage-plate adjustable in the guideways on the under face of the base-plate, and buttons secured respectively to the base-plate and the lower projecting portion of the bearing-plate and arranged to hold the supporting-bar in position in the said guideways, as set forth.

4. A sewing-machine attachment, comprising an upper plate and a lower or base plate each provided with a folding-scroll, one end portion of the base-plate being elevated above the other, longitudinal brace-bars on the under face of the elevated portion of the base-plate and provided with recesses forming guideways, a gage-plate adjustable between the scroll-carrying plates, a supporting-bar for the gage-plate adjustable in the said guideways transversely of the base-plate, and buttons for holding the said bar in position in the guideways, as set forth.

5. A sewing-machine attachment comprising two plates each provided with a scroll having a plate curved transversely and forming a portion of the scroll, the curved plate extending longitudinally of the scrolls and adjustable transversely, and a gage-plate having movement between the scroll-carrying plates and adapted to regulate the width of a hem, as described.

6. In a sewing-machine attachment, a lower or base plate, a scroll carried by said base-plate, a transversely-curved plate fitted longitudinally in the scroll and adjustable transversely of the same, an upper plate provided with a similar scroll and adjustable curved plate, oppositely arranged, a gage-plate adjustable between the scroll-carrying plates to regulate the width of a hem, and means for adjusting the gage-plate, substantially as described.

7. A sewing-machine attachment, comprising a lower or base plate having a guideway in its under face, a tongue connected with the base-plate and having an L extension at its inner end provided with apertures for securing the attachment to the sewing-machine, a turning-scroll on said base-plate, an upper stationary plate having a scale at its forward end, a turning-scroll forming a portion of said upper plate, a gage-plate mounted to slide between the upper and lower plates, a supporting-bar secured to the outer edge of the gage-plate and adjustable in the guideway in the under face of the lower or base plate, and a hem guide-bar mounted on the base-plate and provided with a shank extending longitudinally of the tongue of the base-plate, the said shank being attached to the inner end of the supporting-bar secured to the gage-plate, and having an extension arranged for adjustable connection with the L extension of the tongue of the base-plate, as set forth.

8. A sewing-machine attachment, comprising a lower or base plate wider at one end portion than the other, the outer edge of the narrow portion of the base-plate being downwardly depressed and then curved upward and inward at the extreme outer edge forming a scroll, a transversely-curved plate adjustably fitted in the depressed portion of the scroll, an upper plate provided with a similar scroll and adjustable curved plate oppositely arranged, and a gage-plate adjustable between the scroll-carrying plates and adapted to regulate the width of a hem, as described.

9. In a sewing-machine attachment a lower or base plate provided with a scroll having a fixed member and a member adjustable relative to the fixed member and comprising a transversely-curved plate fitted in the

fixed member and having a shank for adjustable connection with the base-plate, and an upper plate provided with a similar scroll having its movable member adjustably connected with said upper plate, as set forth.

10. A sewing-machine attachment comprising an upper stationary plate having a scale formed at its forward end, a stationary lower or base plate, folding-scrolls carried by said plates and arranged one above the other, a gage-plate adjustable between the scrolls and provided with an extension or finger at its forward end portion to serve as an extra guide for the material to be formed into a hem, means for guiding the movement of the gage-plate and securing the same in adjusted position, and a guide-bar for the hem adjustable toward and from the inner longitudinal edge of the gage-plate, and movable with said gage-plate, substantially as described.

706,224. LUBRICATOR. FRANK W. EDWARDS, Logansport, Ind. Filed Oct. 30, 1901. Serial No. 80,569. (No model.)

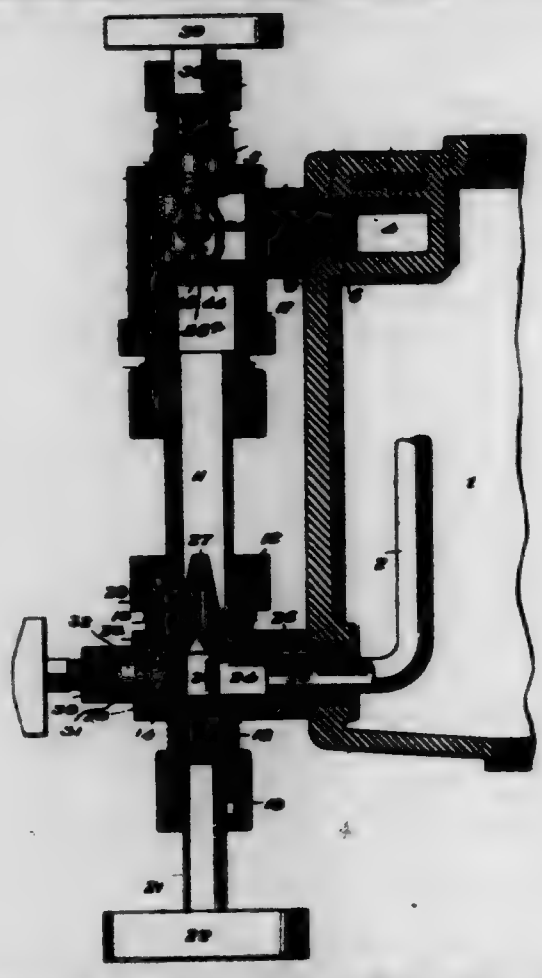

Claim.—1. In a lubricator, a feed-arm with a chamber, a cage fitted to a seat around an opening in the bottom of said chamber and having a smaller port in its bottom, a valve fitted to said port in said cage and movable within the cage independently thereof, and means movable independently of the cage and valve for seating the valve and cage together or allowing them to move independently of each other.

2. In a lubricator, a feed-arm having a chamber with opening, a cage fitted to said opening and having a small port, a valve movable within the cage and fitted to the opening therein, and means independent of and engaging said smaller valve and movable within the cage for closing both of said ports.

3. In a lubricator, a feed-arm having a diaphragm with port, a cage seated at said port and having a smaller port, a valve fitted to said port in the cage and having a stem, a stem disconnected from the cage and having tubular portions to receive the stem of the said valve and means to engage the cage, and means constructed to raise and lower the stem.

4. In a lubricator, a feed-arm having a diaphragm with port, a cage fitted to said port and having openings in its side walls and a valve-port, a valve having a stem and fitted to the port in the cage, a stem independent of the cage and having tubular lower end to receive the stem of the valve, and a lateral projection on said stem to engage and raise the cage and valve.

5. In a lubricator, a feed-arm having a chamber and diaphragm with port, a cage adapted to be seated to said port and having a smaller port in its lower portion, and openings above the same, a valve fitted to the port in the cage, a stem with tubular lower end movable independently of the cage, said valve being independently movable and having a stem fitting said tubular portion, and said lower end of the tubular stem being adapted to engage said valve for seating the valve and cage together or allowing them to move independently of each other, as set forth.

6. In a lubricator, an arm having a diaphragm with port, a cage having a bottom portion fitted to said port and having a smaller port in its bottom, a valve movable independently of the cage and fitted to said port therein, a stem independent of said valve and cage and movable within the latter and having a portion to receive the stem of said valve, means for engaging said stem with the valve to hold the latter to its seat, and means for engaging the cage to raise the same to move the cage and valve simultaneously, as set forth.

706,225. COMBINED CANE AND FISHPOLE. JOHN A. BERGLUND, Minneapolis, Minn., assignor of one-fourth to Nels A. Johnson, Murdock, Minn. Filed Nov. 26, 1901. Serial No. 83,663. (No model.)

Claim.—1. A combined cane and fishing-pole, comprising two or more telescoping sections, a hollow handle wherein that portion of the line intermediate to its ends may be folded, means for securing one end of the line near said handle and means for securing the opposite end in the outer section, substantially as described.

2. A combined cane and fishing-pole, comprising two or more telescoping sections, a hollow handle wherein that portion of the line intermediate to its ends may be folded, one end of the line extending through a hole in said handle and provided with a button, and the opposite end of the line extending through said telescoping sections, and provided with a head or cap at the outer end of the outer section, substantially as described.

3. A combined cane and fishing-pole, comprising two or more telescoping sections, a hollow handle provided at right angles to said sections and having a hinged cover and wherein a fishing-line may be folded, one end of said line being provided with a button and extending through a hole near the folded portion of said line and the opposite end of the line being provided with a head or cap fitting into the end of the outer section.

4. A combined cane and fishing-pole, comprising two or more telescoping sections, a hollow handle wherein the line may be folded, means for securing one end of the line in the outer section or tip of the pole, a roller provided near the folded portion of said line and around which the other end of the line is passed, and a button provided outside of said hand and connected to said last-named end.

5. A combined cane and fishing-pole, comprising two or more telescoping sections provided with slots or notches, spring-catches adapted to enter said slots and lock said sections when extended, a hollow handle wherein the portion of the line intermediate to its ends may be folded one end of said line extending outside said handle and adapted to be connected to a reel and the other end of the line being secured in the outer or tip section.

6. A combined cane and fishing-pole, comprising two or more telescoping sections provided with a hollow handle adapted to receive a folded fishing-line, a ring provided in the open end of the outer section and to which one end of the line is attached, and a button or cap provided near said handle and to which the opposite end of the line is connected, substantially as described.

7. A combined cane and fishing-pole, comprising two or more telescoping sections, means for locking said sections in their extended position, and for rendering the outer section capable of adjustment to different lengths, a hollow handle provided on the inner section, said handle being provided with a cover and adapted to contain a fishing-line, substantially as described.

8. A combined cane and fishing-pole, comprising two or more telescoping sections, means for locking them in their extended position, a hollow handle portion wherein the line intermediate to its ends may be folded, and means for securing the ends of said line at or near the opposite ends of the pole.

9. A combined cane and fishing-pole, comprising two or more telescoping sections, means for locking said sections when extended, a hollow handle portion wherein the line intermediate to its ends may be folded, one end of said line extending outside said handle portion and adapted to be connected to the reel, and the outer end of the line being secured in the outer or tip section.

706,226. ELECTRIC TRAIN-CONNECTOR. CHARLES E. PELT and DANIEL A. KINSARK, Chicago, Ill. Filed Nov. 29, 1901. Serial No. 83,965. (No model.)

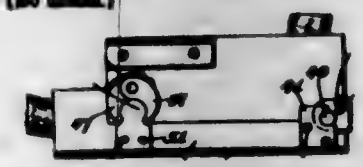

Claim.—1. In an electric train-connector the combination of a female member, a male member insertible transversely therein and means for locking said members together, substantially as set forth.

2. In an electric train-connector the combination of a female member, a male member insertible transversely therein and spring-actuated locking means for holding said members together, substantially as set forth.

3. In an electric train-connector the combination of a female member, a male member, a hinge connection for said members comprising two parts, male and female, located on said members respectively, and means for holding said members against accidental turning on said hinge, substantially as set forth.

4. In an electric train-connector the combination of a female member, a male member, a hinge connection for said members comprising two parts, male and female, located on said members respectively, the female member of said hinge having an open side for the transverse insertion of the male hinge member, and means for holding said connector members against accidental turning on said hinge, substantially as set forth.

5. In an electric train-connector the combination of a female member, a male member, a hinge connection for said members comprising two parts, male and female, located on said members respectively and a clutch for holding said members against accidental turning on said hinge, substantially as set forth.

6. In an electric train-connector the combination of a female member, a male member, a hinge connection for said members comprising two parts, male and female, located on said members respectively at one end thereof, and means located at the other end of the connector for holding the members thereof against accidental turning on said hinge, substantially as set forth.

7. In an electric train-connector the combination of a female member, a male member, a hinge connection for said members comprising two parts, male and female, located on said members respectively, the female part having an open side for the transverse insertion of the male part of said hinge, and a pivoted clutch for holding said members against accidental turning on said hinge, substantially as set forth.

8. In an electric train-connector the combination of a female member, a male member, a hinge connection for said members comprising two parts, male and female, located on said members respectively, the female part of said hinge having an open side for the transverse insertion of the male part thereof, and a pivoted clutch comprising two independently-movable spring-actuated members for locking the first said members against accidental turning on said hinge, substantially as set forth.

9. In an electric train-connector the combination of male and female members hinged together hook fashion and a clutch for holding them from opening or swinging on their hinge, substantially as set forth.

10. In an electric train-connector the combination of male and female members detachably hinged together hook fashion and separable both transversely and longitudinally, and means for holding them from accidental turning on their hinge, substantially as set forth.

11. In an electric train-connector the combination of male and female members hinged together hook fashion and having engageable inclines for forcing them transversely when subjected to longitudinal strain, substantially as set forth.

12. In an electric train-connector the combination of a female member having an incline at one end and a hinge member at the other end, and a male member having an incline at one end and a hinge member at the other end and adapted to be inserted between and engage with said first incline and hinge member respectively, substantially as set forth.

13. In an electric train-connector the combination of a female member having an incline at one end and a hinge member at the other end, a male member having an incline at one end and a hinge member at the other end adapted to be inserted between and engage with said first incline and hinge member respectively, and a clutch for holding said male and female members against accidental turning on their hinge, substantially as set forth.

14. In an electric train-connector the combination of male and female members engageable with each other in a transverse direction, means for yieldingly locking said members against transverse movement, and means for forcing said members transversely against the action of said locking means, when one of them is subjected to longitudinal strain, substantially as set forth.

15. In an electric train-connector the combination of a female member provided with an internal incline, a male member having an incline adapted to be engaged with said first incline, a hinge located at one end of said train-connector and comprising disengageable male and female parts, and a clutch located at the opposite end of said connector and comprising male and female parts located on said male and female members for holding the latter from accidental turning on said hinge, substantially as set forth.

16. In a train-connector the combination of a male and a female member one of which comprises an angular head, each angle of which has a perforation or socket therein, and an electric conductor-lug having means adapted to be inserted in and secured to either of said sockets, substantially as set forth.

17. In an electric train-connector the combination of male and female members one of which comprises an angular part, and an electric conductor-lug, said lug and each angle of said angular part having engageable fastening means for attaching the lug thereto, substantially as set forth.

18. In an electric train-connector the combination of male and female members one of which is provided with apertures in the side and the end thereof and an angular part with its angles opposed to said apertures respectively, and an electric conductor-lug adapted to be inserted through either of said apertures and to connect with either of said angles, substantially as set forth.

19. In an electric train-connector the combination of male and female members one of which comprises an angular part arranged so that one of the angles thereof will be opposed to the adjacent end of the member, an electric conductor-lug adapted to be inserted through either said side or end, and means whereby said lug may be attached to either of said angles, substantially as set forth.

20. In an electric train-connector the combination of male and female members, a plurality of electric conductors connected with each of said members, a plurality of electric contacts carried by each of said members and connecting with said conductors respectively, and a jumper comprising a flat blade slidable between two of said contacts on one of said members and an exterior operating-handle connecting with said blade, substantially as set forth.

21. In an electric train-connector the combination of male and female members, a plurality of electric conductors for said members, respectively, a plurality of contacts carried by said members for said conductors respectively, two flexible fingers connecting two of said contacts together on one of said members, a longitudinally-slidable blade carried by one of said members and adapted to slide between said fingers, and a handle connected to and insulated from said blade and slidably mounted in one of said members, substantially as set forth.

706,227. SUSPENSION-CLAMP. JOHN B. FLETCHER, Dayton, Ohio. Filed Nov. 11, 1901. Serial No. 81,896. (No model.)

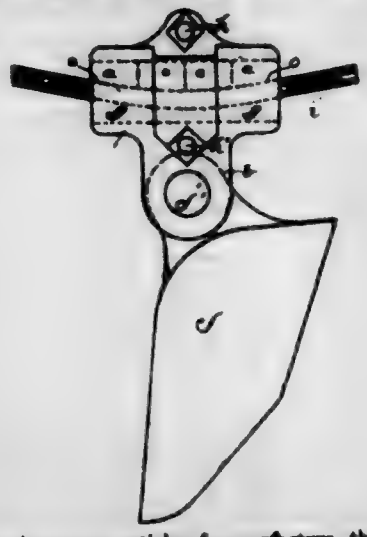

Claim.—1. As a new article of manufacture, the herein-described clamp comprising two interlocking members, the adjacent surfaces of which

are provided with laterally-projecting lugs with adjacent recesses, the lower surfaces of said lugs when interlocked, providing a continuous rounded surface which provides a gradual curve to which curvature the rope or cable upon which said clamp is supported, conforms, the said clamp having a horizontal channel extending through it below the lugs and through which the said rope or cable passes, the said lugs forming the upper inclosure of said channel, and means for securing the clamp members together.

2. A suspension-clamp consisting of two interlocking members having a horizontal channel in the adjacent surfaces thereof through which a rope or cable passes, laterally-projecting lugs on the adjacent surfaces of said members, adjacent recesses into which said lugs project, the said lugs having their lower surfaces suitably rounded to provide a continuous and uniform curve, to which curvature the rope or cable conforms, and means for connecting said members above and below the rope or cable.

3. In a suspension-clamp for cables, the combination with a pulley-case, of a suspension-clamp consisting of two interlocking members to which said case is swiveled, the said interlocking members having a horizontal channel therein through which the cable passes, laterally-projecting lugs on the inner adjacent surfaces of said members above the channel through which the cable passes, the lower surfaces of said lugs forming a curved inclosure for the top of said channel, recesses adjacent to said lugs into which the lugs on the opposite members project, and means for connecting said members above and below the horizontal channel.

4. A new article of manufacture, comprising a suspension-clamp, having a channel therein through which a rope or cable passes, a suitably-rounded surface in said clamp which lies above the rope or cable and forms a bearing-surface between the clamp, and the rope or cable, the said bearing-surface being rounded to conform to the curvature of the rope or cable, and whereby any sharp edges or corners of the clamp are prevented from coming in contact with the rope or cable.

706,228. ADJUSTABLE SUPPORT. ANDREW FLEMING, Brooklyn, N. Y. Filed June 11, 1901. Serial No. 64,158. (No model.)

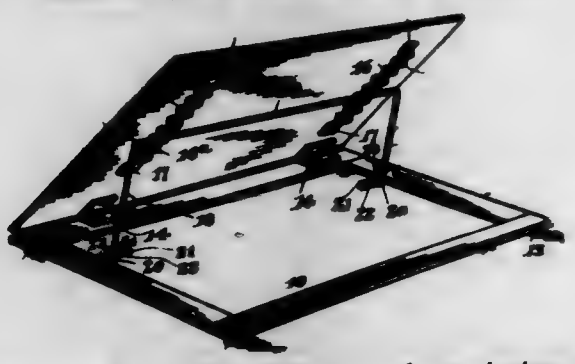

Claim.—1. The combination with a rack, of a stem having a spring at one end and an eye at the other, said spring being secured to the rack, and a cross-bar rotatably mounted intermediate its ends in the eye of the stem.

2. The combination with a rack, of a stem having a yielding and pivotal connection at one end with the rack and provided at its other end with an eye, a cross-arm having an ear that passes through the eye of the stem, and a keeper passing through the ear of the cross-arm to hold it in place.

3. The combination with a rack, of a stem having a yielding and pivotal connection at one end with the rack and provided at its other end with an eye, and a cross-arm comprising a single piece of metal bent to form a pair of loops and an intermediate offset ear that passes through the eye of the stem, the terminals of said metal piece passing through the offset ear thereof to hold the cross-arm in place.

706,229. FUEL-SAVER AND SMOKE-CONSUMER. CHARLES W. FRANCOIS, Brantford, Canada. Filed Nov. 27, 1901. Serial No. 83,892. (No model.)

Claim.—1. In a device of the class described, a bridge-wall provided with hot-air ports and pockets or recesses; in combination with superheating air-conducting pipes open at both ends and located in said bridge-wall, the upper one of said pipes provided with openings leading into said hot-air ports, in said bridge-wall, and said pockets or recesses being formed in said bridge-wall at the ends of said pipes, so that the air will be conducted from one pipe to the other, and one of said pipes extending to the outside of the boiler-wall, substantially as and for the purpose set forth.

2. In a device of the class described, a bridge-wall provided with hot-air ports and pockets or recesses, in combination with superheating and air-conducting pipes, open at both ends, and located in said bridge-wall, the upper one of said pipes provided with openings leading into said hot-air ports in said bridge-wall, and said pockets formed in said bridge-wall, at the ends of said pipes, so that the superheated air will pass from one pipe to the other, and one of said pipes extending to the outside of the boiler-wall, and abutment-plates at the upper side of each of said pockets or recesses, substantially as and for the purpose set forth.

3. In a device of the class described, a bridge-wall provided with hot-air ports and pockets or recesses, superheating air-conducting pipes open at both ends and located in said bridge-wall, the upper one of said pipes provided with openings leading into said hot-air ports, in said bridge-wall, and said pockets or recesses formed in said bridge-wall, at the end of said pipes so that air will be conducted from one pipe to the other, and one of said pipes extending to the outside of the boiler-wall, in combination with a steam-boiler, a combustion-chamber, a baffle-wall located therein, openings in said baffle-wall, and a draft-opening between said boiler and said baffle-wall, substantially as and for the purpose set forth.

4. In a device of the class described, a bridge-wall provided with hot-air ports and pockets or recesses, superheating air-conducting pipes open at both ends and located in said bridge-wall, the upper one of said pipes provided with openings leading into said hot-air ports, in said bridge-wall, and said pockets or recesses formed in said bridge-wall, at the end of said pipes so that air will be conducted from one pipe to the other, plates at the upper side of each of said pockets or recesses, and one of said pipes extending to the outside of the boiler-wall, in combination with a steam-boiler, a combustion-chamber, a baffle-wall located therein, openings in said baffle-wall, and a draft-opening between said boiler and said baffle-wall, substantially as and for the purpose set forth.

5. In a device of the class described, a bridge-wall provided with hot-air ports and pockets or recesses, superheating and air-conducting pipes, open at both ends, and located in said bridge-wall, the upper one of said pipes provided with openings leading into the hot-air ports in said bridge-wall, and said pockets or recesses formed in said bridge-wall at the end of said pipes so that the air will be conducted from one pipe to the other, and one of said pipes extending to the outside of the boiler-wall, in combination with a combustion-chamber, a baffle-wall located therein in which openings are formed, and a draft-opening between the boiler and said baffle-wall, and one or more series of superheating air-conducting pipes located in said combustion-chamber, openings in each series of said pipes, and one of each of said series of said pipes extending to the outside of the boiler-wall, substantially as and for the purpose set forth.

6. In a device of the class described, a bridge-wall provided with hot-air ports and pockets or recesses, superheating air-conducting pipes open at both ends and located in said bridge-wall, the upper one of said pipes provided with openings leading into the hot-air ports in said bridge-wall, and said pockets or recesses formed in said bridge-wall at the end of said pipes so that the air will be conducted from one pipe to the other, plates at the upper side of each of said pockets or recesses, and one of said pipes extending to the outside of the boiler-wall, in combination with a combustion-chamber, a baffle-wall located therein in which openings are formed, and a draft-opening between the boile and said baffle-wall, and one or more series of superheating air-conducting pipes located in said combustion-chamber, openings in each series of said pipes, and one of each of said series of said pipes extending to the outside of the boiler-wall, substantially as and for the purpose set forth.

706,230. TRIANGLE. CHARLES W. FULLER, Medway, Mass. Filed July 19, 1901. Serial No. 68,961. (No model.)

Claim.—1. The combination, with a base-plate provided with a foot-plate at one end and a standard at the other end, of a triangle suspended from the standard, a spring-supported foot-lever hinged at one end to one end of the said foot-plate, and a hammer-head provided with a spring-shank which is inserted in the free end portion of the said foot-lever, substantially as set forth.

2. The combination, with a base-plate provided with a foot-plate at one end and a standard at the other end, of a triangle suspended from the standard, a spring-operated foot-lever pivoted at one end to the foot-plate, a spring-hammer projecting from the other end of the foot-lever and engaging with the triangle, and a damper of soft material mounted to

the base-plate under the front end portion of the said foot-lever, substantially as set forth.

706,281. BOX OR RECEPTACLE. DAVID GOLDMAN, Milwaukee, Wis. Filed Sept. 26, 1901. Serial No. 76,526. (No model.)

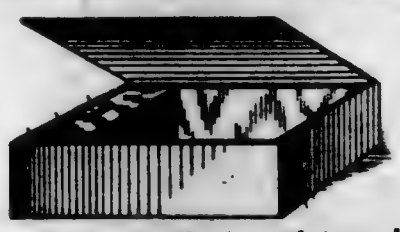

Claim.—As an improved article of manufacture, a box or receptacle having a main chamber provided with an open top, said chamber adapted for containing articles to be sold, a cover for the open top of the main chamber, and normally closing said open top, but adapted to be moved so as to open and close the same, and thereby permit articles to be freely placed therein and removed therefrom, a separate money-compartment fast to the box, and having its outer side removable to provide for access to the interior thereof, and the remaining sides closed, the upper closed side having a coin-slot therethrough for the introduction of money into the compartment.

706,282. SKIRT-SUPPORTER. LOUIS E. HAGUENELLE, New York, N. Y. Filed Apr. 9, 1900. Serial No. 672,262. (No model.)

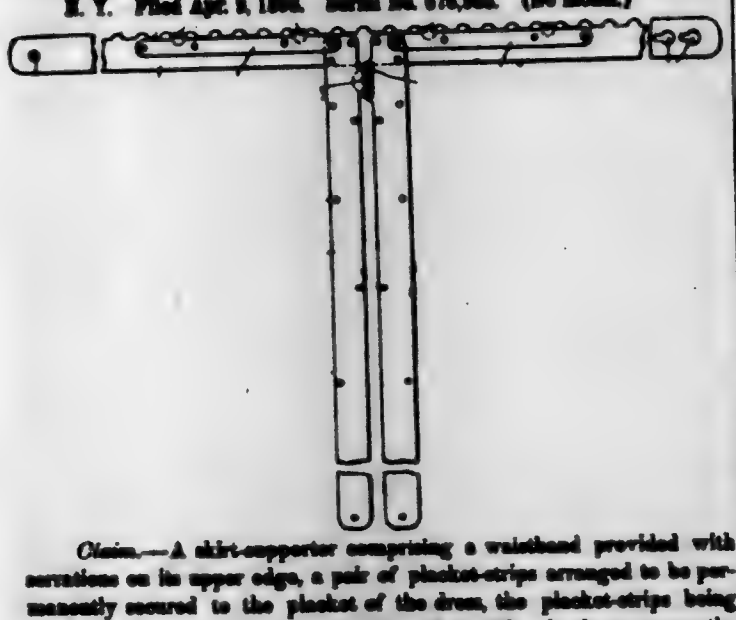

Claim.—A skirt-supporter comprising a waistband provided with serrations on its upper edge, a pair of placket-strips arranged to be permanently secured to the placket of the dress, the placket-strips being provided, the one with an eye and the other with a hook to engage the eye, the latter extending in the vertical plane of the waistband and a pair of arms pivotally secured to the placket-strips and provided with hooks for engaging the serrations in the band, the said arms serving, when engaged with the serrated edge of the band, to prevent the placket-strips from movement toward and away from each other to unhook and the said hook when in position preventing the strips from vertical movement by its engagement with the lower edge of the band, substantially as set forth.

706,283. TRUCK-FRAME FOR RAILWAY-CARS. JOHN M. HARRIS, Pittsburg, Pa. Filed Jan. 9, 1902. Serial No. 89,054. (No model.)

Claim.—1. A side frame, composed of a composite arch-bar, the members of which are brought together at opposite ends, and spaced apart between their ends, and adapted to receive the springs in substantially the center line of the truck.

2. A truck-frame, the upper arch-bar of each side of which is composed of flanged members, the ends of which are brought together, and the centers spaced apart in a substantially hexagonal figure, and adapted to receive the springs.

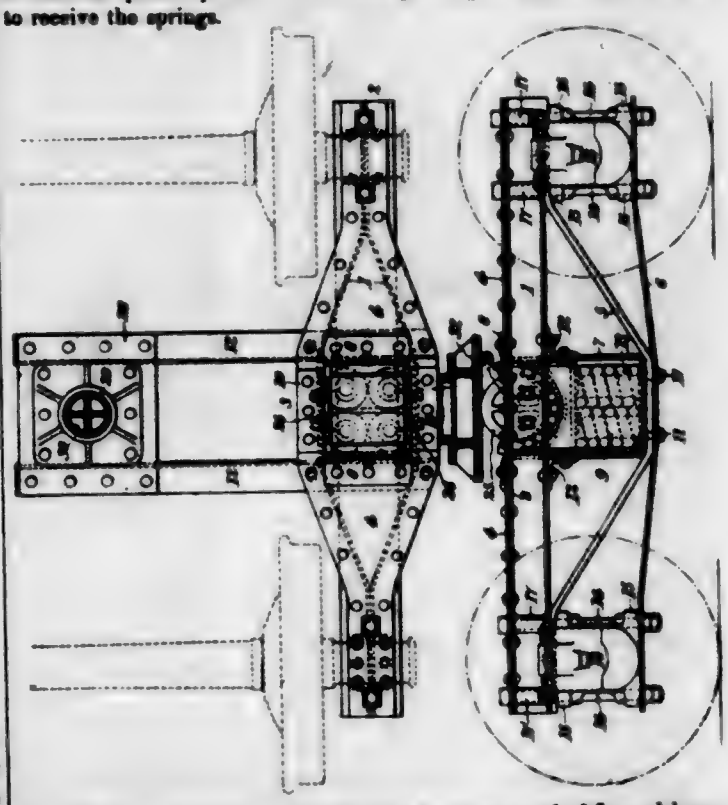

3. In a truck-frame, an upper arch-bar, composed of flanged beams arranged back to back, with their ends brought together over the journals, and spaced apart centrally, and provided with a spring-pocket in said centrally-spaced portion.

4. In a truck-frame, an upper arch-bar composed of flanged steel beams brought together at their ends over the journals, and spaced apart between their ends, top cover-plates rigidly uniting the said beams, and a longitudinally-arranged U-shaped stirrup rigidly fixed to the cover-plates, and depending therefrom, and another U-shaped stirrup arranged transversely of the first-named stirrup, and secured rigidly to the flanges of the beams, and depending therefrom within the first-named stirrup, the said stirrups constituting a spring-pocket.

5. A side frame, having an upper arch-bar composed of channel-beams arranged back to back at their ends, spaced apart between their ends, and connected rigidly by cover-plates applied to their ends, extending centrally toward each other and riveted to the flanges of the beams.

6. A truck-frame, having sides of substantially the character described, provided with centrally-arranged spring-pockets, springs arranged in said pockets, roller-bearings arranged in said pockets above the said springs and each bearing including a main roller, and adapted to support the load of the car by contact with the side bearings of the body-bolster.

7. A truck-frame, having roller-bearings in its side frames, and said frames connected by tie-bars provided with a socket, combined with a body-bolster supplied with side bearings resting directly upon said roller-bearings, and a pivot-pin cooperating with the socket aforesaid.

8. In a truck-frame, a side having an arch-bar provided with a spring-pocket, a spring arranged therein, a roller-bearing base also constituting a spring-cap, supporting-rollers and a retainer therefor arranged in said roller-bearing base, and a main roller-bearing arranged upon the supporting-rollers.

706,284. TRUCK-FRAME FOR RAILWAY-CARS. JOHN M. HARRIS, Pittsburg, Pa. Filed Jan. 9, 1902. Serial No. 89,055. (No model.)

Claim.—1. A truck-frame, having a side composed of two complemental members brought together at their ends, and spaced apart centrally, and in which the upper and lower arch-bars are in one, substantially as described.

2. A truck-frame, having a side composed of complemental members brought together at their ends, and spaced apart centrally, and in which the upper and lower arch-bars are formed of solid pressed-steel flanged beams.

3. A truck-frame, having a side composed of complemental pressed-steel laterally-flanged beams, of greatest vertical width in their center, brought together at their ends, and spaced apart laterally between their ends, and united by cover-plates riveted to the upper flanges.

4. A truck-frame, having a side composed of a pair of solid pressed-steel combined upper and lower arch-bars, brought together at their ends, and spaced apart laterally at their center, a spring-pocket arranged in

said spaced-apart center, and tie-bars secured by plates to the inner members of the adjacent sides.

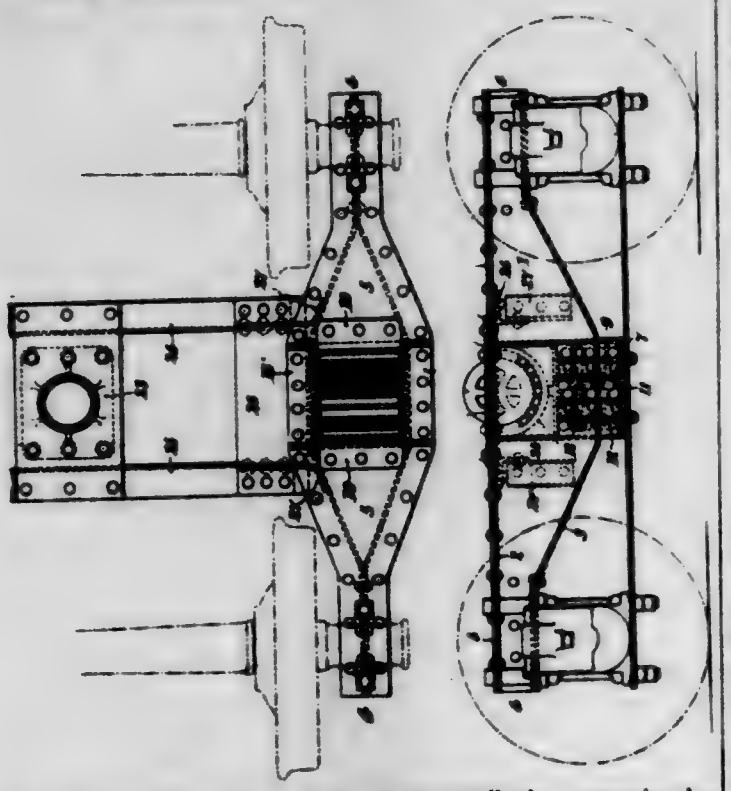

5. A truck-frame, having a side of substantially the construction described, provided with a central spring-pocket, a roller-bearing arranged in said pocket above the springs, and chafing-plates interposed between the roller-bearing and the spring-pocket.

6. A truck-frame, having a side of substantially the construction described, provided with a central spring-pocket, a roller-bearing arranged in said pocket above the springs, and chafing-plates interposed between the roller-bearing and the spring-pocket, said roller-bearing comprising a base, having a semicircular cavity, a roller-retainer arranged in said cavity and containing supporting-rollers, and a main roller arranged upon the supporting-rollers, the several parts of the bearing abutting against the chafing-plates, substantially as described.

7. A truck-frame, having a side composed of a pair of combined upper and lower arch-bars, brought together at their ends, and spaced apart centrally between said ends, and a spring-pocket within such spaced-apart portion.

706,285. LADY'S UNDERSHIRT. CLARA L. HERMANN, New York, N. Y. Filed June 3, 1902. Serial No. 110,919. (No model.)

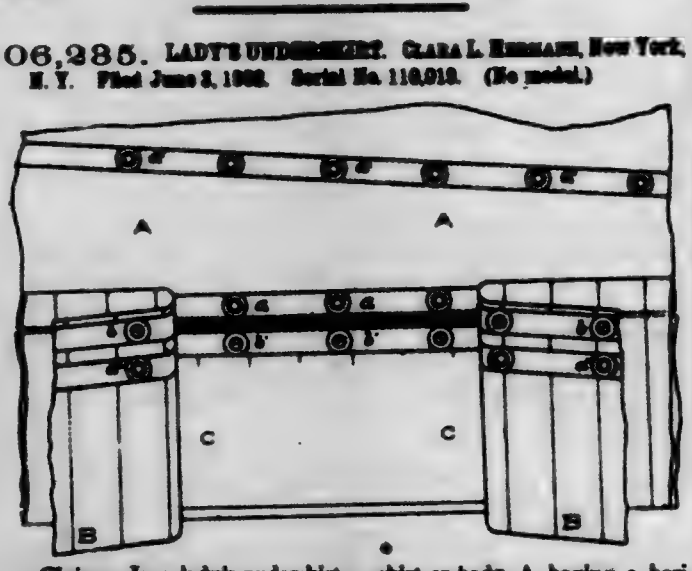

Claim.—In a lady's undershirt, a shirt or body, A, having a horizontal row of fastenings, *a a*, at the bottom, and a diagonal arrangement of fastenings, *a' a'*, just above the horizontal row, in combination with a flounce, B, wider in its rear section than in its front section, and also provided with a row of complemental fastenings, *b b*, whereby the double function of a trailing or a short shirt may be secured in a single garment, substantially as described.

706,286. AUTOMATIC CAR-COUPLING. GUSTAF A. HERMANSEN, Chicago, Ill., assignor to James Manton, Maywood, Ill. Filed June 7, 1902. Serial No. 110,962. (No model.)

Claim.—1. In an automatic car-coupler, the combination of a forked draw-head having a shouldered passage for a lock, and a groove or bearing in its pivot-arm for a knuckle-thrower, a gravity-lock having a shoulder fitting under the shoulder on the draw-head to prevent the lock from creeping, a lifting-piece having a sliding connection with the lock and provided with a shoulder or enlargement to hold the shoulder on the locking-pin under the shoulder on the draw-head when the coupler is locked, and a weighted or gravity-acting crank-shaped knuckle-thrower having an operating-arm engaging the tail of the knuckle, a weight fitting in the chamber of the draw-bar, and an arm connecting the weight with the pivot or shaft portion of the knuckle-thrower, substantially as specified.

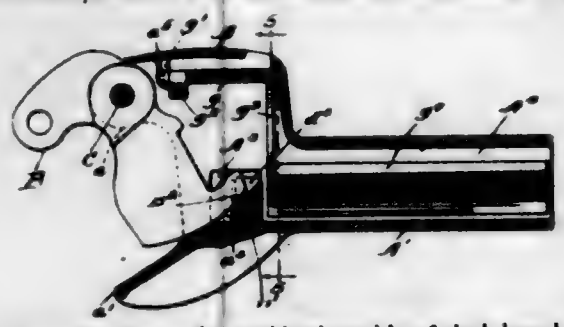

2. In a car-coupler, the combination with a forked draw-head and pivoted knuckle, of a crank-shaped gravity knuckle-thrower, substantially as specified.

3. In a car-coupler, the combination with a forked draw-head and pivoted knuckle, of a knuckle-thrower having a weight fitting in the chamber of the draw-bar, a pivot or shaft portion and an operating-arm engaging the tail of the knuckle to throw the same open, substantially as specified.

4. The combination in a car-coupler, with a draw-head having a groove or bearing for a knuckle-thrower in its pivot-arm, of a knuckle, and a gravity knuckle-thrower having a shaft or pivot portion *g*, an operating-arm g^2, a curved arm g^3 and a weight-bar g^4 fitting in the chamber of the draw-bar, substantially as specified.

5. In a car-coupler, the combination with the forked draw-head, of a knuckle, a gravity-lock having a shoulder, a shoulder on the draw-head engaging the shoulder on the lock, and a sliding lifting-piece having a shoulder or enlargement, substantially as specified.

6. In a car-coupler, the combination with the forked draw-head, of a knuckle, a gravity-lock having a shoulder, a shoulder on the draw-head engaging the shoulder on the lock, and a sliding lifting-piece having a shoulder or enlargement, said lifting-piece and lock having a sliding head and slot connection with each other, substantially as specified.

7. In a car-coupler, the combination with a draw-head having a shoulder, of a knuckle, a lock D having a shoulder *d* engaging the shoulder on the draw-head and provided with a slot *d'*, having an opening d^2 at one side, and a sliding lifting-piece F, having a shoulder or enlargement *f* and an integral head f^2 and connecting web or neck f^3, substantially as specified.

8. In a car-coupler, the combination with a knuckle, of a forked draw-head having a shouldered passage-way for a lock, of a gravity-lock having a shoulder engaging the shoulder on the draw-head, a lifting-piece having a sliding connection with the lock, and a shoulder or enlargement to hold the shoulder on the lock under the shoulder on the draw-head, said lock being provided with an extension D' at its lower end having a projecting foot to serve as a lock-set, substantially as specified.

9. In a car-coupler, the combination with a knuckle, of a forked draw-head having a shouldered passage-way for a lock, of a gravity-lock having a shoulder engaging the shoulder on the draw-head, a lifting-piece having a sliding connection with the lock, a shoulder or enlargement to hold the shoulder on the lock under the shoulder on the draw-head, said lock being provided with an extension D' at its lower end having a projecting foot to serve as a lock-set, said projecting foot also engaging the tail of the knuckle to prevent the lock being separated from the draw-head substantially as specified.

10. In a car-coupler, the combination with a forked draw-head, of a knuckle and a gravity-lock D, having an extension D' at its lower end provided with a projecting foot d^3 to serve as a lock-set and prevent removal of the lock from the draw-head by engagement with the tail of the knuckle, substantially as specified.

11. In a car-coupler, the combination with the forked draw-head, of a knuckle, a gravity-lock having a shoulder, a shoulder on the draw-head engaging the shoulder on the lock, a sliding lifting-piece having a shoulder or enlargement, and a crank-shaped gravity knuckle-thrower having a weight-bar fitting in the hollow chamber of the draw-bar, a curved arm extending behind the tail of the knuckle, a pivot or shaft fitting in a groove in the pivot-arm of the knuckle, and an operating-arm, substantially as specified.

12. In an automatic car-coupler, the combination with a pivoted knuckle, of a forked draw-head having a shouldered passage for the locking-pin, of a gravity-lock having a shoulder adapted to fit under the shoulder in the passage-way of the draw-head to prevent the lock from creep-

ing, and a lifting-piece having a sliding connection with the lock and provided with a shoulder or enlargement at its upper end to force the shoulder on the locking-pin under the shoulder on the passage-way of the draw-head when the coupler is locked, substantially as specified.

706,287. PRINTING APPARATUS FOR USE WITH MACHINES FOR MAKING PAPER BAGS. HERMANN HÖLSCHER, Langerich, Germany. Filed Mar. 19, 1900. Serial No. 9,167. (No model.)

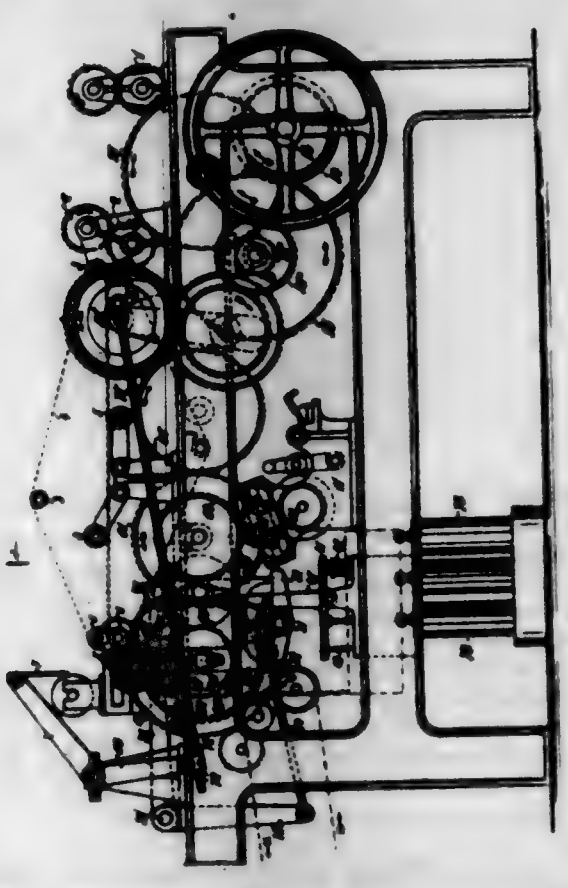

Claim.—1. In a bag-printing machine, the combination with the impression-cylinder mounted in swinging bearings, of cam-disks on the ends of the shaft of the cylinder bearing against circular disks mounted also in swinging bearings and double locking-lever, essentially as and for the purpose described.

2. In a bag-printing machine, the combination with the impression-cylinder mounted in swinging bearings, of cam-disks bearing against circular disks also mounted in swinging bearings, double locking-lever, and means for keeping the swinging bearings of the press-cylinder locked as long as the bags are regularly fed to the printing apparatus and for releasing them when the feed is interrupted.

3. In a bag-printing machine, the combination with the impression-cylinder mounted in swinging bearings, cam-disks on shaft of press-cylinder, circular disks, swinging bearings for same, and double locking-lever connected by lever system with the armature of an electromagnet, essentially as and for the purpose described.

4. In a bag-printing machine, the combination with the impression-cylinder mounted in swinging bearings, cam-disks on shaft of press-cylinder, circular disks, swinging bearings for same, double locking-lever connected by link connection with a bell-crank lever, armature of electromagnet, and swinging support controlled by said armature, essentially as and for the purpose described.

706,288. GAS-REGULATOR. CHARLES W. ISSELL, New York, N. Y. Filed Aug. 21, 1901. Serial No. 73,722. (No model.)

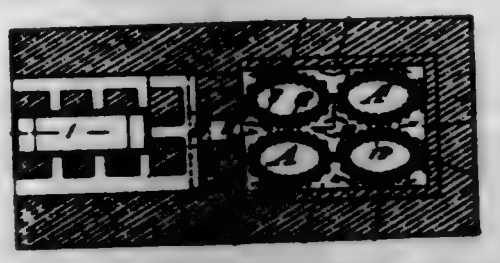

Claim.—As a upright gas-retort having a single wall in the inner surface of which are upwardly-running channels and on the outer surface of which are upwardly-running ribs, substantially as and for the purpose herein described.

706,289. PRICE-SCALE. LEONARD T. JOHNSON, Brooklyn, N. Y. Filed Apr. 9, 1901. Serial No. 55,059. (No model.)

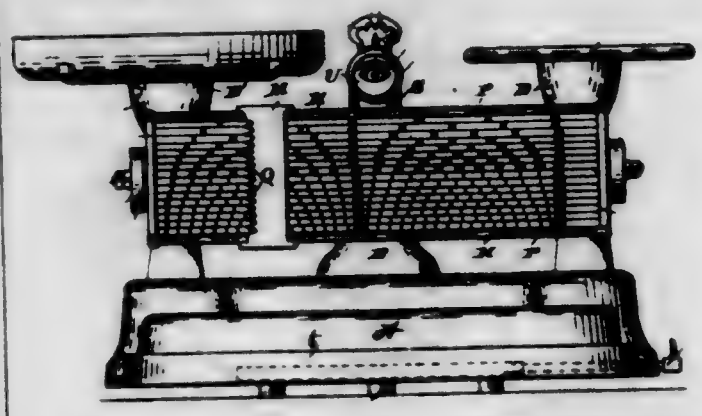

Claim.—1. In a weighing-scale, the combination with the beam, of a signal comprising a pivoted member, and an actuating-lever, both of which are carried by the beam, and a member mounted independently of the beam and adapted to be engaged by said lever, substantially as described.

2. In a weighing-scale, the combination with the beam, of a signal comprising a casing mounted upon the beam, a pivoted member in said casing, an actuating-lever pivoted in said casing for effecting the movement of the pivoted member, and a member mounted independently of the beam and adapted to be engaged by said lever, substantially as described.

3. In a weighing-scale, the combination with the beam, of a signal comprising a casing mounted upon the beam and having an aperture, a pivoted member mounted in said casing behind said aperture, an operating-lever pivoted in said casing and adapted to actuate said pivoted member and having an arm, and an arm fixed to the base of the scale and positioned in said casing in the path of said lever-arm, substantially as described.

4. In a weighing-scale, the combination with the beam, of a signal comprising an apertured casing mounted upon the beam and having an opening in its top wall, an arched plate above said open end having indicating projections, a pivoted member in said casing, an operating-lever pivoted in the casing and adapted to actuate the pivoted member, and an arm fixed to the base of the scale and disposed in said casing and adapted to effect the movement of said lever and having its upper end projecting through the open end of the casing and adapted to coact with the indicating projections of the arched plate, substantially as described.

5. In a scale, the combination with the beam, of a signal operated by the movement thereof, comprising a pivoted member mounted upon a crank-shaft, and an operating-lever actuated by the movement of the beam and adapted to engage the crank of said shaft, substantially as described.

6. In a scale, the combination with the beam, of a signal operated by the movement thereof, comprising a pivoted member mounted upon a crank-shaft, a pivoted lever having its free end disposed beneath the crank of said shaft, a support for the free end of the lever, said lever having an arm near its pivotal point, and a member adapted to actuate said lever by engagement with said arm, substantially as described.

7. In a scale, the combination with the base formed with perforations and slots, of a detachable weight-shelf formed with horizontally-disposed lugs adapted to enter said slots, and with vertically-disposed shoulders adapted to bear against the outer surface of the base, and with slotted lugs, and securing members adapted to pass through said perforations and slotted lugs, substantially as described.

706,240. LIQUID DOOR-CHECK. HORACE E. JONES, Hartford, Conn., assignor to the Russell and Erwin Manufacturing Company, New Britain, Conn. Filed Feb. 28, 1902. Serial No. 96,071. (No model.)

Claim.—1. In a liquid door-check, the combination of the piston having the passage 16 leading downwardly from its upper end, a transverse passage 18 leading from the periphery inwardly to the said passage 16, said passage 18 having a valve-seat therein and transverse openings leading down to the lower end of the piston, with a ball-valve confined within the said passage 18, substantially as described.

2. In a liquid door-check, a piston provided with an opening extending therethrough, part of said opening consisting of a transverse inclined passage having open communication with the lower end of said piston, said inclined passage being contracted in its lower portion to form a valve-seat, said contracted portion having open communication with the upper end of said piston, a ball-valve in said inclined passage and normally held by gravity in such relation to its seat as to permit the flow of liquid in one direction only, substantially as described.

706,240.

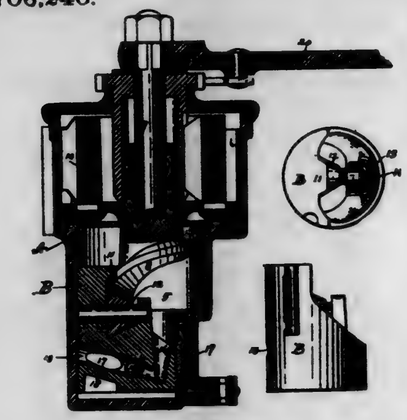

706,241. RAIL-JOINT. KENT KOSS, Lincoln, Nebr. Filed Dec. 17, 1901. Serial No. 86,379. (No model.)

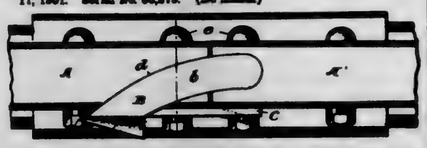

Claim.—1. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at one side of one rail and extending into the other rail, and a curved bar fitted into said groove, substantially as set forth.

2. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at one side of one rail and extending into the other rail, and a curved bar fitted into said groove, said groove and bar having inclined surfaces on their sides, to prevent vertical movement of the bar in the groove, substantially as set forth.

3. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at one side of one rail and extending into the other rail, a curved bar fitted into said groove, and means to secure the bar to the rails, substantially as set forth.

4. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at one side of one rail and extending into the other rail, and a curved bar, fitted into said groove, said bar having surfaces at its outer end against which a tool may bear to force the bar out of the groove, substantially as set forth.

5. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at one side of one rail and extending into the other rail, a curved bar fitted into said rail and a plate rigidly connected to the bar to lie parallel with said rails and be secured thereto, substantially as set forth.

6. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at one side of one rail and extending into the other rail, a curved bar fitted into said groove, and a coating on said bar to prevent corrosion, substantially as set forth.

7. The combination of two rails arranged end to end and provided with a curved open-topped groove opening out at one side of one rail and extending into the other rail, a curved bar fitted into said groove, and a coating on said bar and on the surface of said groove to prevent corrosion, substantially as set forth.

8. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at the side of one rail and extending into the other rail, fish-plates and bolts to connect said rails, a curved bar fitted into said groove, a plate rigidly connected to said bar and lying against one of said fish-plates, said bar being provided with openings for the passage of said bolts, substantially as set forth.

9. The combination of two rails arranged end to end and provided with a curved, open-topped groove opening out at one side of one rail and extending into the other rail, and a curved bar fitted into said groove and cut from the open end thereof, said projecting portion being cut away to bring its upper surface below the upper surface of the rail, substantially as set forth.

706,242. MEASURING-RULE. ALLEN LAMBAW, Philadelphia, Pa. Filed Jan. 25, 1902. Serial No. 91,151. (No model.)

Claim.—A measuring-rule having units whereof each is divided by graduation-lines, which are equal in length to the fractional part of the unit which each line represents, and each of said divisions being subdivided by graduation-lines, which are equal in length to the fractional part of the division which each line represents, substantially as described.

706,243. JOURNAL-BOX. SIMEON W. LEWIS, Portsmouth, Va., assignor of one-half to Caroline A. Hank, Norfolk, Va. Filed Apr. 24, 1902. Serial No. 104,023. (No model.)

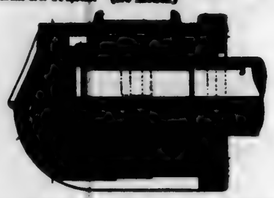

Claim.—1. A journal-box, having a single rear wall, and its floor constructed with an inverted-V-shaped ridge extending from the front wall to within a short distance of the rear wall, the space between the said rear wall and the inner vertical surface or end of said ridge adapted to receive the lower end of the dust-guard, substantially as described.

2. A journal-box, having a single rear wall, and its floor constructed with an inverted-V ridge extending from the front wall to within a short distance of the said rear wall, there being a recess between the rear wall and inner vertical surface or end of the ridge, and a slotted top, said recess, slotted top and rear wall constituting a pocket for the dust-guard, substantially as described.

706,244. MOP-HEAD. JOHN C. LOCK TUCKER, Cal. Filed May 23, 1900. Serial No. 17,704. (No model.)

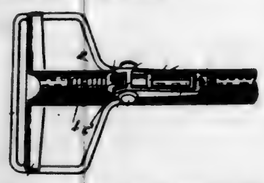

Claim.—1. In a mop-head, a handle provided with a clamp-head and with a ratchet, a pawl adjustably connected with the ratchet, a lever pivoted to the pawl at the end thereof engaging the ratchet and on the same side of the handle as the ratchet, and a clamp device pivoted to the lever.

2. In a mop-head, a handle provided with a clamp-head, a ratchet-bar on said handle, a pawl movable longitudinally along said ratchet-bar and having a body extending along the handle on the same side thereof as the ratchet-bar, means for maintaining the body of said pawl substantially parallel with the said ratchet-bar when in engagement, a lever pivoted to said pawl, and a clamping device pivoted to the lever.

3. In a mop-head, a handle provided with a clamp-head, a ratchet-bar on said handle having a retainer, a pawl movable longitudinally along said bar, its body portion being retained between said handle and retainer, a lever pivoted to said pawl, and a clamping device pivoted to the lever.

706,245. ROLL-HOLDING CAMERA. WILLIAM LOUDER, Fairfield, Iowa. Filed Apr. 16, 1902. Serial No. 103,210. (No model.)

Claim.—1. In a roll-holding camera, a removable plate having an opening in the central part of its body, and being adapted to be adjusted

in front of the sensitive film for an exposure of reduced size, or to be removed therefrom to permit a full-sized exposure.

2. In a roll-holding camera a series of plates, each having a different-sized opening in the central part of its body, each plate being adapted to be adjusted, one at a time, in front of a sensitive film of a size to correspond with the opening in its body, and to be removed therefrom to permit the use of a different-sized film.

3. In a roll-holding camera having two end compartments for the roll-holding spools, and a central compartment for the field of exposure, a removable plate having an opening in its body, and being adapted to be adjusted in front of the film and upon the partitions between the compartments so as to effectually shut out the light at the ends of the plate, and limit the size of exposure.

4. In a roll-holding camera, a removable plate having an opening in its body adapted to be adjusted in front of the film to regulate the area of the exposure, and flanges on its back to guide the passage of the film over said opening.

5. In a roll-holding camera having two end compartments for the roll-holding spools, and a central compartment for the field of exposure, a removable plate having an opening in its body, and being adapted to be adjusted in front of the film and into rabbets in the edges of the partitions and also in the sides of the body of the camera to shut out the light at the edges of the plate and limit the size of exposure.

6. In a roll-holding camera, a removable plate having an opening in its body, adapted to be adjusted in front of the film to regulate the area of the exposure and means in the body of the holder to the rear of the film for storing the plate when not in use.

7. In a roll-holding camera, a series of removable plates, each having an opening of a different size in its body adapted to be adjusted in front of the film to regulate the area of the exposure, and means in the body of the holder to the rear of the film for storing said plates one being adapted to fit upon another.

8. In a roll-holding camera a removable plate having an opening in its body adapted to be adjusted in front of the film to regulate the area of the exposure, and spring-clamps secured to the back of the holder to clamp the plate in position to the rear of the film when not in use.

9. In a roll-holding camera having plates, each having an opening in its body for regulating the area of exposure, a hook with a right-hole having an extension on its inner side, and means for storing said plates on said hook so as to surround said extension.

10. In a roll-holding camera, metallic spindles adapted to pass into the bore of the roll-holding spools, said spindles having angular corners longitudinally disposed thereon, and said corners being adapted to impinge against the wall of said bore and hold the spools fixed upon the spindles.

11. In a roll-holding camera, roll-holding spools having cylindrical bores, and metallic spindles adapted to pass into said bores, said spindles having angular ribs longitudinally disposed thereon and said ribs being adapted to become indented in the wall of the bore and hold the spool fixed thereon.

706,246. RELEASING-HOOK FOR HANDLING LOGS, &c. EDGAR F. HARE, Clinton, Ala. Filed Oct. 17, 1901. Serial No. 78,980. (No model.)

Claim.—The herein-described device for handling logs, &c., consisting of a cable, a trolley thereon, a hoisting-line running over said trolley, a releasing-hook on the lower end of said line consisting of a shank, a releasing-lever pivoted to the lower end of said shank, a releasing-latch for releasing said lever, a tripping-cord connecting said latch with the trolley and a binding-chain secured by one end to the shank and by the other end to the releasing-lever.

706,247. STOPPERING BOTTLES, JARS, OR OTHER VESSELS. FREDERICK W. HARGREVE, East Dulwich, England. Filed Oct. 10, 1901. Serial No. 78,361. (No model.)

Claim.—1. A bottle, jar or other vessel having a neck internally screw-threaded and formed with an upwardly-projecting tapering ledge, with a tapering space between the neck-wall and the ledge and an intervening tapering blank part between the lower part of the screw-thread and the ledge, substantially as described.

2. A bottle, jar or other vessel having a neck internally screw-threaded, and formed with an upwardly-projecting tapering ledge, with a tapering space between the neck-wall and the ledge and an intervening blank or straight part between the lower part of the screw-thread and the ledge, a screw-stopper fitting the internal screw-thread on the neck and provided with a longitudinal aperture therethrough containing a cork or other compressible washer which extends below the under surface of the stopper so as to take a seating on the ledge on the neck of the bottle or other vessel when the stopper is screwed down, substantially as described and for the purpose stated.

3. In combination with a bottle, jar or other vessel having a neck with an internal screw-thread and a ledge or seat with a space between the neck-wall and the ledge, and an intervening blank or straight part between the lower part of the screw-thread and the ledge, a screw-stopper fitting the internal screw-thread on the neck and provided with a longitudinal aperture therethrough containing a cork or other compressible washer which extends below the under surface of the stopper so as to take a seating on the ledge on the neck of the bottle or other vessel when the stopper is screwed down.

4. In combination with a bottle, jar or other vessel having a neck internally screw-threaded and formed with an upwardly-projecting, tapering ledge, with a tapering space between the neck-wall and the ledge and an intervening blank or straight part between the lower part of the screw-thread and the ledge, a screw-stopper fitting the internal screw-thread on the neck, and a compressible washer carried by the said screw-stopper and extending below the under surface of the stopper whereby to take a seating on the ledge on the neck of the bottle, or other vessel when the stopper is screwed down.

5. In combination with a bottle, jar or other vessel having a neck with an internal screw-thread and an upwardly-projecting tapering ledge, with a tapering space between the neck-wall and the ledge, and an intervening tapering blank part between the lower part of the screw-thread and the ledge, a screw-stopper fitting the internal screw-thread on the neck, and a tapering compressible washer carried by the screw-stopper and extending below the under surface of the stopper so as to take a seating on the ledge on the neck of the bottle or other vessel, when the stopper is screwed down and be wedged in position against the tapering wall of the said blank part, substantially as described.

706,248. DRAFT ATTACHMENT. NICHOLAS KIECHER, Oldham, S. D. Filed Apr. 15, 1902. Serial No. 103,080. (No model.)

Claim.—1. A draft attachment comprising sections 1 and 2, hinged together at one end of the attachment, a rotary locking-pin mounted on

the section 1 and provided between its ends with a cut-away portion, arranged to engage the section 2, an exterior lever connected with one end of the locking-pin and adapted to operate the same, and a spring engaging the other end of the locking-pin, substantially as described.

2. A draft attachment, comprising the section 1 provided with a recess at one end and having an opening intersecting the recess, the section 2 hinged to the other end of the section 1 and provided with a catch, arranged in the recess when the attachment is closed, a rotary locking-pin mounted in the opening of the section 1 and provided with means for engaging the catch and having a recess at one end, a lever, connected with the other end of the locking-pin and a spring mounted on the section 1 and engaging the recess of the locking-pin and holding the latter against movement and retaining the same in the opening, substantially as described.

3. A draft attachment, comprising the section 1 having a shank provided with lugs, spaced apart and having recesses, a spring, arranged between the lugs and engaging the recesses thereof, the section 2 hinged to the section 1, a locking-pin mounted on the section 1 and arranged to engage the section 2 to hold the same closed and engaged by the said spring and means for operating the locking-pin, substantially as described.

706,249. **MECHANISM FOR COVERING BICYCLE-GRIPS, &c.** JAMES A. MILLER, New Haven, Conn. Filed Nov. 5, 1901. Serial No. 81,562. (No model.)

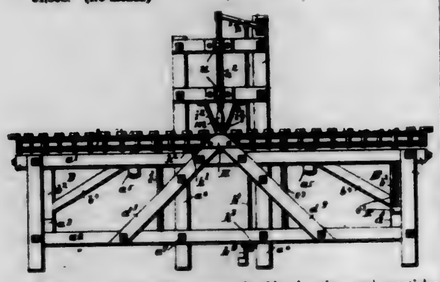

Claim.—1. In a machine for covering bicycle-grips or other articles of manufacture, the employment of an elastic former for compressing and shaping the covering upon the surface of the article, in combination with mechanism for forcing the elastic former into conformation with the article to be covered, substantially in the manner and for the purpose specified.

2. In a machine for covering bicycle-grips or other articles of manufacture, the combination of a conveyer, a series of former-supporters carried by the conveyer, elastic formers carried by the supporters, a plunger for forcing the formers upon the surface to be covered, and an anvil for sustaining the thrust of the plunger substantially as and for the purpose specified.

3. In a machine for covering bicycle-grips or other articles of manufacture the combination of an endless conveyer, a series of holders carried by the conveyer, elastic formers carried by the holders, plunger mechanism for forcing the elastic formers into conformation with the article to be covered, and an anvil for resisting the thrust of the plunger mechanism provided with a clearance-way for the passage through it of the covered articles while held projecting through the dies and carried along by the conveyer, substantially in the manner and for the purpose specified.

4. In a machine for covering bicycle-grips or other articles of manufacture, the combination of a frame, upright shafts and carrying-wheels supported upon the frame, an endless conveyer supported upon the wheels, a series of sockets carried by the conveyer, elastic formers carried by the sockets, a plunger for forcing the article to be covered within the formers, an anvil provided with a clearance-way for the passage through it of the covered articles while held projecting through the formers and carried along by the conveyer, and an opening for the exit of the finished work from the former by the stroke of the plunger, and mechanism for propelling the conveyer by a step-by-step movement and locating the formers centrally coincident with the axis of the plunger, substantially in the manner and for the purpose specified.

5. In mechanism for propelling an endless conveyer by step-by-step movement, the combination of a series of operating-lugs spaced along the conveyer, a lever, a pawl carried by the lever for engaging said lugs, a spring for actuating the pawl into engagement with the lugs, a handle pivotally attached to the lever engageable with the pawl to release the same from the lugs, and stops limiting the pivotal play of the handle on the lever, substantially in the manner and for the purpose specified.

6. In a machine for covering bicycle-grips or other articles of manufacture, the employment of centrally-divisible clamps in combination with a sectional elastic former carried by the clamps, and mechanism for spreading and contracting the several sections of the clamp, substantially as and for the purpose specified.

706,250. **ADHESIVE SHIELD.** WALTER J. MÜLLER, Aurora, Ill., assignor to Bauer & Black, Chicago, Ill., a Corporation of Illinois. Filed June 8, 1901. Serial No. 63,727. (Specimens.)

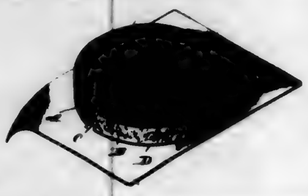

Claim.—1. A shield of the character described consisting of a hollow body composed of independent members having a loose connection permitting the members to spread apart.

2. A shield of the character described consisting of a hollow body composed of independent members having a loose connection on one face thereof permitting the members to spread apart.

3. An adhesive shield of the character described consisting of two members, and a piece of fabric secured to said members on one face thereof and having that portion between the members puckered to provide a loose connection therefor, substantially as described.

4. A shield of the character described consisting of two members and provided on one face with a coating of adhesive material, and a piece of fabric affixed to the other face and folded between its connection with the members.

5. A hollow shield divided transversely into two separate members and provided on one face with a coating of adhesive material and a fabric covering for the other face having a folded full portion constituting a flexible connection between the members.

706,251. **MECHANICAL TELEGRAPH-TRANSMITTER.** JOSEPH W. MCDONALD, Larimore, N. D. Filed Jan. 27, 1902. Serial No. 91,350 (No model.)

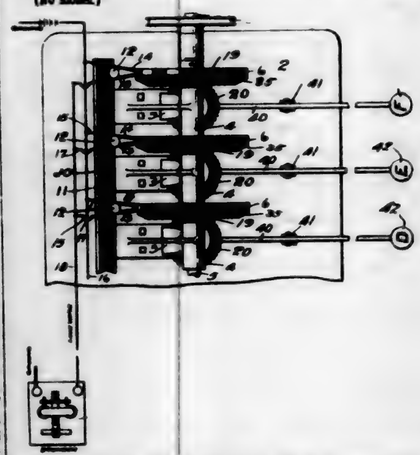

Claim.—1. The combination, with a frame, of a series of disks loosely mounted therein and normally stationary, a series of contact-blocks of different widths arranged in the periphery of each disk and representing a single letter or character of the telegraph code, contact-brushes arranged in pairs and adapted to bear upon the peripheries of said disks, the brushes of each pair being insulated from each other and one being connected to the line-wire and the other to the battery, a series of levers, keys therefor, a driving mechanism, and means in connection therewith for causing a complete revolution of each disk when its lever is operated by the movement of the corresponding key.

2. The combination, with a frame, of a shaft horizontally arranged therein, a series of disks loosely mounted at intervals on said shaft an

provided in their peripheries with a series of contact-blocks that are insulated from each other, the blocks of each disk representing a single letter or character of the telegraphic code, contact-brushes arranged in pairs and adapted to bear upon the peripheries of said disks and on said blocks, each brush being insulated from the other brush of the same pair and from the other pair, said one brush of each pair being connected to the line-wire and the other to a battery, a series of levers, keys therefor, a driving mechanism, and suitable connections provided between said driving mechanism and each of said disks and adapted to be actuated by the movement of said levers when the corresponding key is operated.

3. The combination, with a shaft, of a series of loosely-mounted disks arranged at intervals thereon and provided at intervals in their peripheries with a series of contact or circuit-closing blocks of different widths insulated from each other and representing the letters or characters of a telegraphic code, brushes arranged in pairs and insulated from each other and connected with the battery and line wires respectively, the free ends of said brushes being adapted to bear upon the peripheries of said disks and alternately make or break the circuit as the disks are revolved, a keyboard and a series of levers therefor, and means controlled by the movement of said levers for causing a complete revolution of each disk when the key corresponding thereto is operated.

4. The combination, with a loosely-mounted disk of non-conducting material provided in its periphery with a series of circuit-closing or contact blocks of different widths arranged at intervals and representing the letters or characters of a telegraphic code, contact-brushes adapted to bear upon the periphery of said disk and connected respectively with the battery and line wires whereby the circuit will be closed when the brushes pass over a contact-block, a lever and key, and a gear mechanism controlled by the movement of said lever for causing a complete revolution of said disk when said key is operated.

5. The combination, with a loosely-mounted disk of non-conducting material provided in its periphery with a series of circuit-closing or contact blocks arranged at intervals and of different widths to represent the dots and dashes of a letter or character of a telegraphic code, brushes adapted to bear upon the periphery of said disk and connected respectively with the line and battery wires, whereby the circuit will be alternately closed and broken during the revolution of said disk, a gear provided on one face of said disk, an upright shaft provided with a gear engaging the gear on said disk, a loosely-mounted gear provided on said shaft, a driving-gear engaging said loosely-mounted gear, a clutch mechanism provided in connection with said loosely-mounted gear, and a lever and key for operating said clutch device to cause a complete revolution of said disk and the transmission of the letter or character represented thereby when the key is struck.

6. The combination, with a series of loosely-mounted disks of non-conducting material provided in their peripheries with a series of circuit-closing or contacting blocks arranged at intervals and of different widths to represent the dots and dashes of a letter or character of a telegraphic code, brushes arranged in pairs and adapted to bear upon the peripheries of said disks those of the same pairs being connected respectively with the line and battery wires, whereby the circuit will be alternately closed and broken during the revolution of said disks, gears provided on the faces of said disks, upright shafts having gears engaging said disk-gears, loosely-mounted gears on said shafts, driving-gears normally engaging said loosely-mounted gears, clutch mechanisms provided in connection with said loosely-mounted gears, springs for normally holding the movable members of said clutch mechanisms out of engagement with the fixed members thereof, key-levers provided with a series of keys and adapted to actuate said movable clutch members when the keys are struck to lock said loosely-mounted gears, and means for permitting the automatic disengagement of said clutch mechanisms when said disks have completed a single revolution.

706,252. **AIR-BRAKE.** FRANK A. MCELVEY, Knoxville, Pa. Filed June 17, 1901. Serial No. 64,881. (No model.)

Claim.—1. In an air-brake system employing a single train-line wherein the engineer's valve is connected with an equalizing discharge-valve, the combination with the engineer's valve, the train-line, and auxiliary reservoir, of a supplemental feed-port in the engineer's valve to communicate with the train-line, a supplemental air-passage from the train-line to the auxiliary reservoir, and an air-pressure-actuated check-valve in said passage which is adapted to open automatically by the pressure in the train-line when recharging said reservoir during brake application and close automatically by the pressure in the reservoir when a reduction is made in said line.

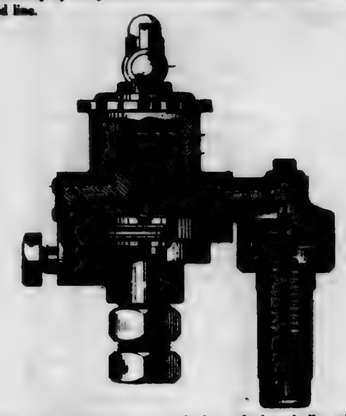

2. In an air-brake system employing a single train-line wherein the engineer's valve is connected with an equalizing discharge-valve and a train-line governor is arranged between said line and engineer's valve, the combination with the engineer's valve, train-line, and auxiliary reservoir, of a supplemental feed-port in the engineer's valve to communicate with the train-line, a supplemental air-passage from the train-line to the auxiliary reservoir, and an air-pressure-actuated check-valve in said passage which is adapted to open automatically by the pressure in the train-line when recharging said reservoir during brake application and close automatically by the pressure in the reservoir when a reduction is made in said line.

3. In an air-brake system employing a single train-line wherein the engineer's valve is connected with an equalizing discharge-valve and the auxiliary reservoir and train-line has means therebetween to permit recharging of said reservoir during brake application and prevent a return of air in said line when a reduction is made therein, of a supplemental feed-port in said engineer's valve.

4. In an air-brake system employing a single train-line wherein the engineer's valve is connected with an equalizing discharge-valve and a train-line governor is arranged between said line and engineer's valve and the auxiliary reservoir and train-line has means therebetween to permit recharging of said reservoir during brake application and prevent a return of air in said line when a reduction is made therein, of a supplemental feed-port in said engineer's valve.

5. In an engineer's air-brake valve provided with an equalizing discharge-valve and having a train-line governor to regulate the supply of air to the train-line, the combination therewith of a supplemental feed-port extending from the valve-seat to the passage leading from the governor to the main feed-passage.

6. In an engineer's air-brake valve provided with an equalizing discharge-valve and having a train-line governor to regulate the supply of air to the train-line, of a supplemental feed-port in said engineer's valve.

706,253. **EYELET-SEWING MACHINE.** DONALD NOBLE, Finsbury, London, England, assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed Apr. 4, 1900. Serial No. 11,495. (No model.)

Claim.—1. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a reciprocating needle-bar, and means for feeding the material in a circular path, with mechanism for effecting a horizontal vibration of the needle-bar, and instrumentalities whereby said needle-bar may be brought to a standstill (as regards horizontal vibration) in a predetermined position intermediate of the limits of said horizontal vibration and its reciprocation continued, whereby a circular line of plain stitches will be made upon and intersecting the overseam-stitches previously made, as set forth.

2. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a reciprocating needle-bar, mechanism for effecting a horizontal vibration of the needle-bar throughout a predetermined cycle of movement whereby overseam-stitches are made, instrumentalities for effecting a discontinuance of the horizontal vibration of said needle-bar whereby plain stitches are made upon and intersecting said overseam-stitches, and means for feeding the material, whereby each separate overseam-stitch will be anchored in place by a separate plain stitch, substantially as set forth.

3. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a reciprocating needle, a cloth-clamp and means to carry around the material in a circular path, means to control the number of stitches to be made, means for horizontally vibrating the needle to permit the placing of a series of radial stitches, means for arresting such vibration at a predetermined point between the ends of the radial stitches and while the reciprocation of the needle continues and placing a circle

of plain stitches over and amid the lengths of thread of the radial stitches, and connections between the stitch-controlling means and the mechanism for arresting the horizontal vibration, by which connections the said horizontal vibration may be automatically resumed, substantially as described.

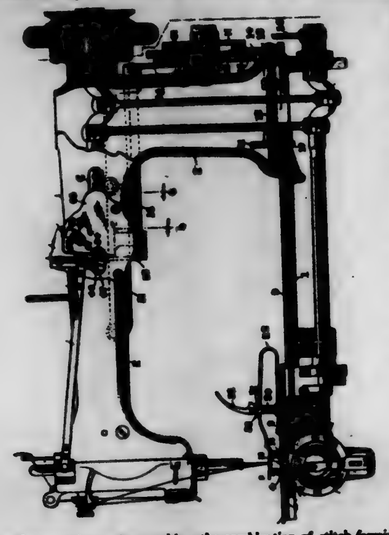

4. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, a lever pivoted to the arm of the machine, means for oscillating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, and means for locking said oscillatory lever and segment-lever together, substantially as set forth.

5. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, a lever pivoted to the arm of the machine, means for oscillating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever, substantially as set forth.

6. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever and shifted to a predetermined stationary position, for the purpose set forth.

7. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, the segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, and instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever and shifted to a predetermined stationary position intermediate of the two extreme limits of the oscillatory movement of said lever, for the purpose set forth.

8. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever, and a suitably-supported cam-plate against which said segment-lever is forced when disconnected from said oscillatory lever, for the purpose specified.

9. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted on said oscillatory lever, operative connections between said segment-lever and the needle-bar, means for locking said oscillatory lever and segment-lever together, instrumentalities whereby said segment-lever may be disconnected from said oscillatory lever, a stationary stop-block against which said segment-lever may abut when disconnected from said oscillatory lever previous to assuming the desired position for placing the line of plain stitches, and an adjustable cam-plate, suitably supported, against which said lever is subsequently forced into complete position for placing the line of plain stitches.

10. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means, as a cam-disk, for actuating said lever, a segment-lever pivoted concentrically with the pivotal center of said oscillatory lever, operative connections between said segment-lever and the needle-bar, a spring whereby said segment-lever is held against said oscillatory lever, means for locking said levers together against independent oscillatory movement, a plunger housed within the hollow pivot of said oscillatory lever and in operative contact with said segment-lever, means including a cam for governing the number of stitches to be made, and operative connections between said plunger and said cam, substantially as set forth.

11. In an eyelet-sewing machine, the combination of stitch-forming mechanism including a needle-bar, means for feeding the material, an oscillatory lever pivoted to the arm of the machine, means for actuating said lever, a segment-lever pivoted concentrically with the pivotal center of said oscillatory lever, means for locking said levers together, operative connections between said segment-lever and the needle-bar, a plunger housed within the hollow pivot of said oscillatory lever and in operative contact with said segment-lever, means for governing the number of stitches to be made, a cam carried by said stitch-governing mechanism, a rock-shaft, a lever on one end of said rock-shaft which bears against said plunger, and a lever on the opposite end of said rock-shaft adapted to be engaged by the said cam, for the purpose specified.

12. A machine for stitching eyelet-holes, comprising essentially a rotating cloth-carrier, stitch-forming mechanism including a reciprocating needle-bar and needle, means to vibrate said needle-bar to form a series of radial stitches around the hole, means to arrest automatically the vibratory movement of the needle-bar between the hole and the outer extremity of the radial stitches while the reciprocation of said needle-bar continues at the point where thus arrested and while the feeding motion progresses uninterruptedly, thereby to form a circle of plain stitches around the border of the hole and amid the radial stitches, the said plain stitches embracing the radial stitches and tying them down, and means to stop the machine at any point during the formation of either the radial stitches or the plain stitches, substantially as described.

13. The combination of feed mechanism having a rotary motion, stitch-forming mechanism including a reciprocating needle-bar and needle, means to vibrate said needle-bar to form a series of radial zigzag stitches, and automatic means to arrest the vibratory movement of the needle-bar at some point between the limits of its vibration and while its reciprocating motion continues, thereby to form a circle of plain lock-stitches which severally embrace the constituent threads of each over-seam-stitch.

14. A machine for stitching eyelet-holes, comprising essentially a feed mechanism having a rotary motion, stitch-forming mechanism including a reciprocating needle-bar and needle, means to vibrate said needle-bar to form a series of radial stitches around the hole, and means to arrest automatically the vibratory movement of the needle-bar between the hole and the outer extremity of the radial stitches and continue the reciprocation of said needle-bar at the point where thus arrested and while the feed motion progresses uninterruptedly, thereby to form a circle of plain stitches around the border of the hole and amid the radial stitches, the said plain stitches embracing the radial stitches and tying them down.

15. An eyelet-sewing machine, comprising a feed mechanism, means for overseaming the edges of the perforation with radial stitches, automatic means for arresting the radial stitching, and automatic means for inserting a circular line of plain stitches around the perforation and amid the radial stitches and thereby intersecting and stitching down the said radial stitches, substantially as described.

16. In a sewing-machine, the combination with stitch-forming mechanism comprising a needle-bar, of a work-support, means to produce a vibratory movement of the needle relatively to the work-support, and other independent automatic means to suspend such movement at a predetermined time to permit tying-stitches to be sewed.

17. In a sewing-machine, the combination with stitch-forming mechanism comprising a needle-bar frame, of a work-support, a main rock-lever, a pitman connecting said lever and the needle-bar frame, a supplementary rock-lever, means to actuate said last-named lever, and means to connect and disconnect said levers, whereby the movement of the first-named lever may be suspended.

18. In a sewing-machine, the combination with stitch-forming mechanism, of a work-support, a rock-shaft, a lever rigidly secured to said shaft and engaging a cam, a main rock-lever loosely mounted on said shaft, a pitman connecting said last-named lever to the needle-bar, a latch connection between said levers, and means to release the latch at a predetermined time to suspend the vibratory movement of the needle.

706,254. DUMPING-CAR. FRANCIS PUDLER, Minneapolis, Minn. Filed Jan. 27, 1902. Serial No. 91,202. (No model.)

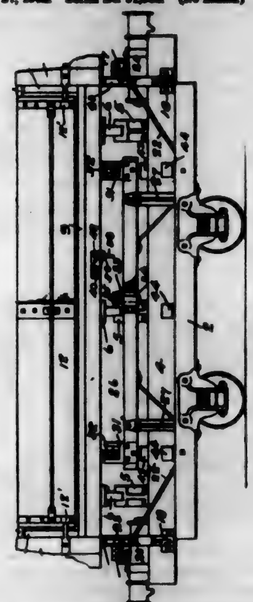

Claim.—1. In a dumping-car, doors slidably supported upon swinging posts or standards.

2. In a dumping-car, swinging side doors, and reciprocating standards whereon said doors are removably and slidably supported.

3. In a dumping-car, standards pivoted near the center line of the car, and normally inclined toward the sides of the same, means for limiting the outward swinging movement of said standards and doors slidably supported at or near the upper ends of said standards.

4. In a car adapted to dump on both sides, doors closing only the sides of the car and slidably supported upon posts or standards, the connections of said doors with their supports permitting the doors to automatically adjust themselves to the tilted positions of the car-body.

5. In a dumping-car, swinging standards pivoted near the center line of the car, doors movably mounted upon said standards, each door being adapted to remain stationary when the car-body is tilted toward its side and to be raised above said standards when the car is tilted toward the opposite side, and suitable stops for limiting the inward movement of each door when so raised.

6. In a dumping-car, pivoted standards provided on each side of the center line, doors movably supported upon said standards, each door being adapted to remain stationary when the car is tilted toward its side and to be raised above said standards when the car is tilted toward the opposite side.

7. In a dumping-car, a door having pivots that are slidably supported upon posts or standards.

8. In a dumping-car, swinging standards pivoted near the center line of the car and provided near their upper ends with suitable sockets, and doors provided with pins that are adapted to enter said sockets and slide freely therein.

9. In a dumping-car, standards provided upon each side of the center line, timbers between which and the car-body said standards reciprocate, stops provided on said timbers for limiting the outward swinging movement of said standards, and doors pivotally supported upon the upper ends of said standards, and movable lengthwise thereof.

10. In a dumping-car, standards provided upon each side of the center line, doors slidably mounted on the upper ends of said standards and adapted to be raised one at a time above the same by the tilting of the car, and means provided on the ends of the car-body for limiting the inward movement of the door when so raised.

11. In a car adapted to dump on both sides, swinging standards or posts, doors slidably mounted at or near the upper ends of said standards, swinging bolsters provided beneath the car-body on each side thereof, and lever mechanisms for operating said bolsters.

12. In a car adapted to dump on both sides, swinging bolsters provided beneath the car-body, a lever mechanism connected with each bolster and operable on the opposite side of the car therefrom and means for locking said lever mechanism against premature movement.

13. In a car adapted to dump on both sides, swinging bolsters provided beneath the car-body, levers pivoted on the car-body and adapted to oscillate lengthwise thereof, each lever being operable on the opposite side of the car from the bolster with which it is connected, and rods connecting said levers and bolsters.

14. In a car adapted to dump on both sides, inwardly-swinging bolsters provided under each side of the car and having idle rolls or wheels to engage the bottom of the same, a lever mechanism connected with each bolster and operable on that side of the car opposite from the bolster to which it is attached, and means for locking said lever mechanisms against premature movement.

15. In a car adapted to dump on both sides, standards pivoted near the center line of the car, castings provided at or near the upper ends of said standards and having pins slidably mounted to reciprocate on said standards, and doors having bearings in said castings.

16. In a dumping-car, doors supported independently of the car-body, each door being adapted to remain stationary when the car is tilted toward its side and to be raised above its supports when the car is tilted toward the opposite side.

706,255. APPARATUS FOR PROTECTING SEALS OF SEWER-GAS TRAPS. JOHN P. PUTNAM, Boston, Mass. Filed Apr. 8, 1902. Serial No. 102,149. (No model.)

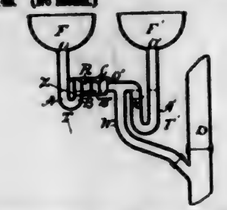

Claim.—1. The combination of the plumbing-fixtures F F', traps T T' serving the fixtures, chamber R between the traps and the waste-pipe W, the trap T consisting of a shallow U-shaped return-bend, and the trap T' consisting of a deep U-shaped return-bend, and the chamber R consisting of a shallow reservoir between the two traps, the upcast limb of trap T connecting with the chamber at its bottom, and the trap T' connecting with the chamber at one of its sides at a point somewhat above its bottom, and the waste-pipe W, which serves both fixtures and their traps, connecting with them at a point between the chamber and the deep-seal trap, substantially as and for the purposes specified.

2. The combination of the plumbing-fixtures F F', traps T and T' serving the same, and waste-pipe W, the trap T having a shallow seal being provided with means for refilling it after siphonage, and the trap T' having a deep seal but without any such means of refilling, the two traps connecting with the same waste-pipe W, substantially as and for the purposes specified.

3. The combination with a U-shaped sewer-gas trap T, of a reservoir-chamber R and a waste-pipe opening O', the upcast limb B of the trap entering the chamber at its bottom, and the waste-pipe opening being on one side of the chamber a short distance above its bottom, the chamber being provided with a number of partition-walls a, b, extending from top to bottom of and dividing the chamber into a number of parts and forming a continuous waterway through the chamber, the entrance of the upcast limb of the trap being at one end of the waterway, and the waste-pipe opening O'' being at the other end, substantially as and for the purposes specified.

4. The combination of the trap T, chamber R, waste-outlet opening O', the chamber being provided with a movable cap C, the cap being bent upward at its outer edge, substantially as and for the purposes specified.

5. The combination of the trap T, reservoir-chamber R, waste-outlet opening O', the chamber consisting of a main body and a removable cap C, the cap having partitions a, b, rigidly secured thereto, the partitions descending to the bottom of the chamber, and dividing the cham-

ber into a continuous winding waterway, with means for making a water-tight connection between the body of the chamber and the cap, substantially as and for the purpose specified.

6. The combination of the trap T, reservoir-chamber R, waste-outlet opening O", the chamber consisting of a main body having a flat bottom B", provided with grooves K K and a removable cap C, the cap being provided with partitions *a b* secured thereto, and descending slightly below the bottom B" of the chamber, into said grooves K, K.

7. The combination of the trap T, reservoir-chamber R, waste-outlet opening O", standard S, circular partition *c' c'* concentric with the standard S, partition *b* extending from the standard to the outer wall of the chamber, and partition *a* extending from the outer wall of the chamber to the circular partition.

706,256. HOISTING-MACHINE. LOUIS T. PFOTZ, Philadelphia, Pa., assignor to John B. Reyburn, Philadelphia, Pa. Filed Apr. 15 1901. Serial No. 55,462. (No model.)

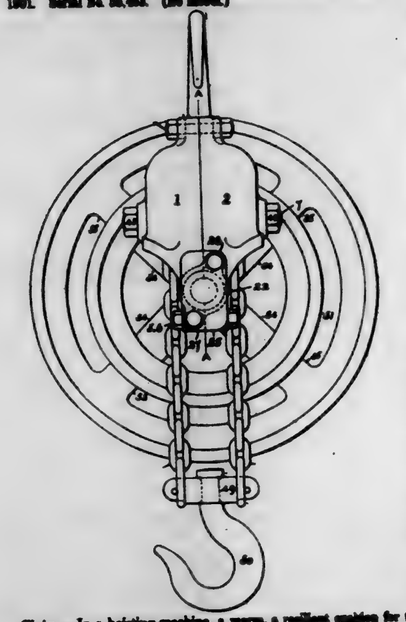

Claim.—In a hoisting-machine, a worm, a resilient cushion for the worm, disks interposed between the worm and its resilient cushion, a worm-wheel engaging the worm, chain-wheels thereto removably attached, a divided covering-case, and sheaves of different diameters attached to the worm for its turning.

706,257. TEMPORARY BINDER. CHARLES E. REED and CHESTER A. REED, Worcester, Mass. Filed Oct. 11, 1901. Serial No. 78,328. (No model.)

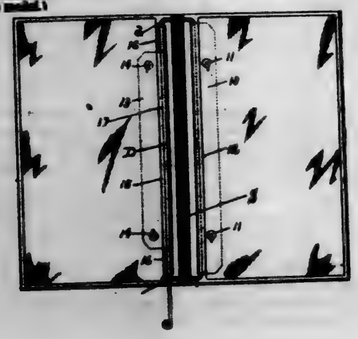

Claim.—1. In a temporary binder, the combination of front and back covers connected by a back, a rectangular wire frame permanently hinged along one of its longer sides to one of the covers, means for detachably hinging the other longer side of the rectangular frame to the other of said covers, and supporting rods or strips permanently strung at their ends onto the end sections of the wire frame.

2. In a temporary binder, the combination of front and back covers connected by a back, a rectangular wire frame, a piece of sheet metal bent around part of the wire frame to permanently hinge said frame along one of its longer sides to one of the covers, means for detachably hinging the other longer side of the rectangular frame to the other of said covers, and supporting rods or strips having their ends strung onto the shorter sides of the rectangular wire frame.

3. In a temporary binder, the combination of front and back covers connected by a back, an ear arranged on the inside edge of one cover, a wire bent to form a frame and having its ends contained in said ear, ears secured to said wire, an ear secured to the inside edge of the other cover, a pintle passing through said ears, and detachably hinging said wire to this other cover, and a number of supporting-strips arranged on said wire.

706,258. FLOWER SUPPORT OR HOLDER. BERTHA D. SANDERS, New York, N. Y. Filed Jan. 20, 1902. Serial No. 91,158. (No model.)

Claim.—1. The herein-described flower-holder, comprising a flexible strip bent into a series of convolutions, such convolutions combining to form intervening flower-receiving spaces.

2. The herein-described flower-holder, having a convolute flower-receiving space.

3. The herein-described flower-holder, comprising a central section having a flower-receiving space, and a series of independent segmental sections, each provided with a series of flower-receiving spaces, and arranged in a design about said central section.

4. The herein-described flower-holder, comprising a central section having a flower-receiving space, a plurality of independent segmental sections, each having a flower-receiving space, said independent sections being arranged in a design about said central section and intermediate triangular sections arranged between said segmental sections.

5. The herein-described flower-holder, comprising a flexible strip bent to produce flower-receiving spaces.

706,259. GROOVING MILLSTONES. JOSEPH SCHWEITZER, Paris, France, assignor to La Société Internationale de Meuneris et de Pantfaction Système Schweitzer, Brussels, Belgium. Filed Dec. 27, 1897. Serial No. 663,304. (No model.)

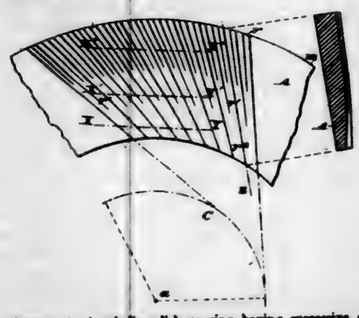

Claim.—1. A grinding disk or ring having successive groups of combined grooves cut therein all decreasing in size and depth from the inner edge of the ring toward the periphery and all tangential to the same interior circle the center whereof coincides with that of the ring, the principal groove extending the entire width of the ring and being sufficiently wide and deep near the inner edge thereof to receive, cut and crush the grain, and being divided into secondary grooves extending from the periphery about half the width of the ring, said principal grooves being divided into still shorter grooves extending only a short distance from the periphery, said secondary grooves forming the grist and the last-mentioned grooves forming the fine flour.

2. A grinding apparatus provided with identically-dressed grinding disks or rings constructed to receive on that the inclined faces of the grooves approach each other and the diagonal grooves of each disk cross each other, whereby the grain is sheared or clipped and propelled along the grooves toward the periphery of the disks decreasing the time the grain is acted upon and lessening the heating thereof, all of said grooves being tangential to the same interior circle the center whereof coincides with that of the disks and all being of the same form and decreasing in size and depth toward the periphery of the disk, the principal groove extending the entire width of the disk being sufficiently wide and deep near the inner edge thereof to receive cut and crush the grain, and being divided into secondary grooves of less length, said principal grooves being divided into still shorter grooves extending only a short distance from the periphery, the secondary grooves forming the grist and the last-mentioned grooves forming the fine flour.

706,260. PRESSURE-REGULATOR. JACOB L. SCHUERMAN, Chicago, Ill. Filed May 31, 1902. Serial No. 109,605. (No model.)

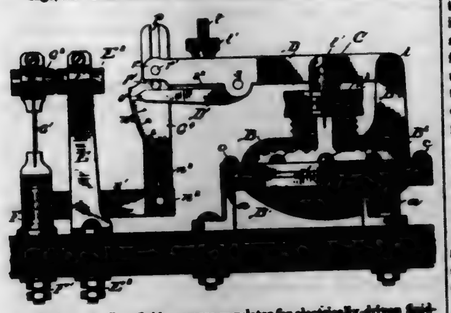

Claim.—1. In a fluid-pressure regulator for electrically-driven fluid-pressure generators, the combination of a chamber having a spring-pressed movable diaphragm, exposed on one side to the generated fluid-pressure, to be moved thereby, when excessive, against the resistance of the spring, an electric current making and breaking contact, contact-moving lever mechanism connected with the diaphragm, and adjusting mechanism interposed in said lever mechanism for regulating the effect of the diaphragm's movements upon the contact, substantially as and for the purpose set forth.

2. In a fluid-pressure regulator for electrically-driven fluid-pressure generators, the combination with a chamber having a movable diaphragm exposed at one side to the generated fluid-pressure, a spring bearing against the opposite side of said diaphragm, means for increasing and decreasing the resistance of said spring, an electric current making and breaking contact, a lever connected with said diaphragm, a contact-moving lever, and connecting means between said levers adjustable to vary the movement of the said contact-lever with relation to the said diaphragm-lever, substantially as and for the purpose set forth.

3. In a fluid-pressure regulator for electrically-driven fluid-pressure generators, the combination with a chamber having a movable diaphragm exposed at one side to the generated fluid-pressure, a spring bearing against the opposite side of said diaphragm, means for increasing and decreasing the resistance of said spring, an electric current making and breaking contact, a lever D connected with said diaphragm, a finger D' pivoted upon said lever, adjusting means for said finger, a strip in the path of said lever and finger, to be moved thereby alternately in opposite directions, and having a cam, and an electric current making and breaking contact operatively connected with said strip, substantially as and for the purpose set forth.

706,261. COMBINED STOP AND ALARM MECHANISM FOR CARDING-MACHINES. JAMES W. SCOTT, Weston, Me. Filed June 9, 1900. Serial No. 19,798. (No model.)

Claim.—1. The combination with a carding-machine, and stop mechanism, of a flat feed-table over which the sliver is led to the machine, a floating leaf hinged at one edge and supported directly opposite such surface by the sliver passing thereover, and means for effecting the operation of the stop mechanism upon the gravitation of the leaf permitted when the sliver passing over the feed-table is less than the predetermined thickness.

2. The combination with a carding-machine and stop mechanism, of a supporting-surface over which the sliver is led to the machine, a flat floating leaf supported directly opposite such surface by the sliver passing thereover, and means for effecting the operation of the stop mechanism through the movement of the leaf.

3. The combination with a carding-machine, and a feed-table, of electrical controlling mechanism for the carding-machine including a stop-motion circuit, and a circuit-closer having a flat floating leaf disposed directly over and in substantially parallel relation with the table to permit its support upon that portion of the sliver passing over and supported by the feed-table, said circuit-closer being organized to effect the closing of the circuit upon the gravitation of the leaf permitted when the sliver fed to the feed-table is less than a predetermined thickness.

4. The combination with a carding-machine, and a horizontal feed-table, of electrical controlling mechanism for the carding-machine including a stop-motion circuit, a circuit-closer having a hinged leaf formed with a flat smooth under surface imposed upon the flat sliver passing over the feed-table, said leaf serving to cover a considerable portion of the sliver upon the feed-table in order to prevent its extension by slight irregularities of the sliver, and to insure its depression when a considerable amount of the sliver passing over the feed-table is less than a predetermined thickness.

5. The combination with a carding-machine, and a feed-table, of electrical controlling mechanism for the carding-machine including a stop-motion circuit, a circuit-closer having a flat floating leaf disposed directly above the table to be sustained on top of the sliver passing over said table, and an alarm-circuit also controlled by said circuit-closer, whereby when the sliver passing over the table is less than a predetermined thickness, both the stop-motion circuit and the alarm-circuit will be automatically closed to stop the machines and to sound an alarm apprising the operator of the irregular feed of the sliver.

6. In a device of the character described, the combination with stop mechanism and electrical controlling means therefor including a stop-motion circuit, of a circuit-closer consisting of a base having fixed and movable sections hinged together, the movable section being horizontally disposed and connected to the lower end of the fixed section, and contact-plates carried by the fixed and movable sections of the base and designed to be brought into contact upon the downward swinging of the movable section.

7. In a device of the character described, the combination with stop mechanism and electrical controlling means therefor including a stop-motion circuit, of a circuit-closer consisting of a base having fixed and movable sections hinged together, the movable section being in the form of a flat smooth flooring leaf, a contact device mounted upon the upper side of said leaf adjacent to its hinge connection, and a cooperating contact device mounted upon the fixed base-section adjacent to the hinge.

8. In a mechanism of the class described, the combination of a belt-shipper having an electrical releasing device, a stop-motion circuit including said releasing device, and a circuit-closing device consisting of a base having fixed and movable sections hinged together, the movable section being arranged in a substantially horizontal plane for support on top of the sliver, a fixed pendent contact-plate fitted to and offset from the fixed base-section, and a movable contact-plate fitted to the upper side of the movable base-section and having an upturned end overhung by and normally out of contact with the pendent end of the fixed plate, substantially as set forth.

706,262. MACHINERY FOR FOLDING, PACKING, AND STACKING SHEETS OF PAPER, &c. RALPH C. SEYMOUR, South Orange, N. J., assignor to C. B. Cottrell & Sons Company, New York, N. Y., a Corporation of New Jersey. Filed Mar. 20, 1902. Serial No. 100,562. (No model.)

Claim.—1. In a machine for packing and stacking sheets, the combination of a stationary open fence, a reciprocating pusher for pushing sheets against said fence, and a carriage having a to-and-fro movement in relation to said fence for taking packs of sheets from and through said fence and depositing the so-taken packs in a stack, substantially as herein described.

2. In a machine for packing and stacking sheets, the combination of

a stationary open fence, a reciprocating packer for packing sheets against said fence, and a carriage and attached grippers having a to-and-fro movement in relation to said fence for taking packs of sheets from and through said fence and depositing the so-taken packs in a stack, substantially as herein described.

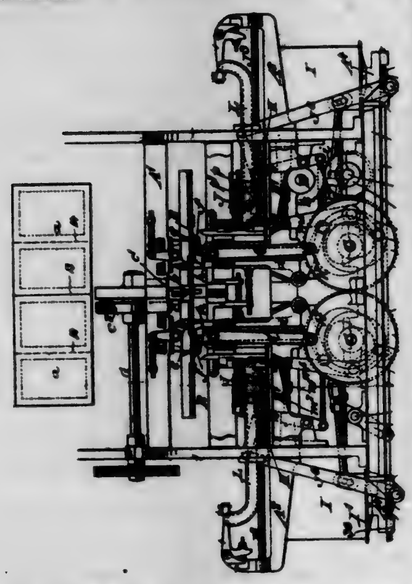

3. The combination with a reciprocating sheet-packer, of a stationary fence having an opening the width of which is not less than that of sheets to be packed against said fence by said packer and the height of which is less than that of such sheets, substantially as herein described.

4. The combination of a stationary open fence, a reciprocating packer for packing sheets against said fence, retaining-fingers pivoted to the sides of said fence for temporarily retaining the so-packed sheets successively against said fence, and means for giving the said fingers a to-and-fro movement, substantially as herein described.

5. The combination with a reciprocating sheet-packer, of a stationary fence having an opening of not less width than that of the sheets to be packed against said fence and having at the sides of said opening in front thereof inwardly-projecting flanges the faces of which are beveled or rounded from their inner edges, substantially as and for the purpose herein described.

6. The combination of a stationary open fence, a reciprocating packer for packing sheets against said fence, retaining-fingers pivoted to the sides of said fence for retaining the so-packed sheets successively against said fence, means for giving said fingers a to-and-fro motion, and flanges on the sides of said fence projecting inwardly therefrom in front of the points of said fingers, substantially as herein described.

7. In a machine for packing and stacking sheets, the combination of a stationary open fence, a reciprocating packer for collecting sheets in packs against said fence, a stacking-receptacle for said packs, a pack-carriage with attached grippers having a to-and-fro motion between said fence and receptacle, means for turning said grippers vertically in said carriage for turning the packs therein from an upright to an approximately horizontal position, and means for opening and closing said grippers, substantially as herein described.

8. In a machine for packing and stacking sheets, the combination of a stationary open fence, a reciprocating packer for collecting sheets in packs against said fence, a stacking-receptacle for said packs, a pack-carriage with pivotally-attached grippers having a to-and-fro motion between said fence and receptacle, means for giving said grippers a lateral pivotal movement on said carriage, and means for opening and closing said grippers, substantially as herein described.

9. In a machine for packing and stacking sheets, the combination of a stationary open fence, a reciprocating packer for collecting sheets in packs against said fence, a stacking-receptacle for said packs, a pack-carriage, grippers having two independent pivotal attachments to said carriage whereby provision is made for both vertical and lateral movements therein, means for producing both said vertical and lateral movements, and means for opening and closing said grippers, substantially as herein described.

10. In a machine for folding, packing and stacking sheets, the combination of a stationary open fence, a reciprocating packer for collecting folded sheets in packs against said fence, a device for folding sheets and depositing them folded between said fence and packer, a receptacle for said packs, a pack-carriage having a to-and-fro motion between said fence and receptacle for taking said packs from said fence to said receptacle, and means for turning the said receptacle between the successive deposits of packs therein, substantially as and for the purpose herein described.

11. In a machine for folding, packing and stacking sheets, the combination of a stationary upright open fence, a reciprocating packer for collecting folded sheets in packs against said fence, a device for folding sheets and depositing them folded between said fence and packer, a receptacle for said packs, a pack-carriage and attached grippers having a to-and-fro motion between said fence and receptacle, means for turning said grippers in said carriage for turning the packs therein from an upright to an approximately horizontal position, means for opening and closing said grippers, and means for turning said receptacles for reversing the direction of the folded edges in successively-received packs, substantially as herein described.

12. In a machine for packing and stacking sheets, the combination of a stationary open fence, a reciprocating packer for collecting sheets in packs against said fence, a stacking-receptacle for said packs, a pack-carriage having grippers so pivoted thereto as to be capable of a lateral motion thereon, means for giving a to-and-fro motion to said carriage between said fence and receptacle, means for producing the lateral movements of the grippers on their pivots, and means for opening and closing the grippers, substantially as herein described.

13. In a machine for packing and stacking sheets, the combination of a stationary open fence, a reciprocating packer for collecting sheets in packs against said fence, a stacking-receptacle for said packs, a pack-carriage having a to-and-fro motion between said fence and receptacle, grippers which are together pivoted in said carriage to turn vertically therein and which are separately pivoted to said carriage to turn laterally thereon, means for turning the grippers vertically in said carriage, means for turning said grippers laterally on said carriage and means for opening and closing said grippers, substantially as herein described.

14. In a machine for packing and stacking sheets, the combination of carriers and stationary guides on which said carriers are capable of a to-and-fro movement, a rock-shaft and bearings therefor on said carriers, two gripper-levers pivoted to said rock-shaft to move laterally with respect to said to-and-fro movement, corresponding gripper-jaws one on each lever and one affixed to the rock-shaft, and gripper-jaws one on each of said levers movable to and from said corresponding gripper-jaws, substantially as herein described.

15. In a machine for packing sheets and depositing them in packs, the combination with a pack-carriage, of two sets of grippers attached to said carriage for taking opposite sides of a pack, springs on the carriage for opening said grippers, detents for holding the grippers closed, trip-levers for disengaging said detents, and tappets on the carriage for actuating said trip-levers to effect said disengagement, substantially as herein described.

16. In a machine for packing sheets and depositing them in packs, the combination with a pack-carriage, of two sets of grippers and pivots which attach said grippers to said carriage and on which said grippers move laterally to said carriage for taking opposite sides of a pack, springs on said carriage for moving the grippers outward on said pivots, detents between said grippers and the carriage for holding said grippers toward the sides of the pack, trip-levers for disengaging said detents, and tappets on the carriage for actuating said trip-levers to effect said disengagement, substantially as herein described.

17. In a machine for packing sheets and depositing them in packs, the combination with a pack-carriage, two sets of grippers and pivots which attach said grippers to said carriage and on which said grippers move laterally to said carriage for taking opposite sides of a pack, springs on said carriage for moving the grippers outward on said pivots, detents between said grippers and the carriage for holding said grippers toward the sides of the pack, springs on the carriage for opening said grippers, detents for holding said grippers closed, trip-levers for disengaging both of said detents, and tappets on the carriage for actuating said trip-levers to effect said disengagement, substantially as herein described.

18. In a machine for packing sheets and depositing them in packs, the combination with a pack-carriage, of two sets of grippers attached to said carriage for taking opposite sides of a pack, springs on the carriage for opening said grippers, a spring for closing said grippers and a cam for actuating and controlling said spring to overcome the action of the first-mentioned springs, substantially as herein described.

19. In a machine for packing sheets and depositing them in packs, the combination with a pack-carriage, of two sets of grippers and pivots which attach said grippers to said carriage and on which said grippers move laterally to said carriage for taking opposite sides of a pack, springs on said carriage for moving the grippers outward on said pivots, detents between said grippers and the carriage for holding said grippers toward the sides of the pack, springs on the carriage for opening said grippers, detents for holding said grippers closed, trip-levers for disengaging both of said detents, tappets on the carriage for actuating said trip-levers to effect said disengagement, and a cam for actuating said springs, substantially as herein described.

20. In a machine for packing sheets and depositing them in packs, the combination with a pack-carriage and attached grippers for taking opposite sides of a pack, a spring and connected mechanism outside of the carriage for opening said grippers, and a rotary cam outside of said carriage for first producing an expansive tension of said spring and afterward suddenly releasing it to produce the said opening, substantially as herein described.

21. In a machine for packing sheets and depositing them in packs, the combination with grippers for taking the sides of the packs and a spring for opening said grippers, of a spring *f* for closing said grippers, a fixed abutment f^4 for said spring, a trip-lever f^3, a sliding tappet-bar f^{11}, connections between said lever and bar and between said lever and spring, a rotary cam f^7 for operating on said trip-lever for producing first the tension of the spring and afterward the tripping of the lever to produce the closing of the grippers, and a detent for holding the grippers closed, all substantially as herein described.

22. In a machine for packing sheets and depositing them in packs, the combination of two reciprocating carriers and guides therefor on which they have a to-and-fro movement, a rock-shaft and bearings therefor on said carriers, two sets of pack-grippers pivoted to said rock-shaft to move laterally to said to-and-fro movement, means for producing said lateral movement, means for opening and closing the grippers and means for turning the said rock-shaft in said bearings, substantially as and for the purpose herein described.

23. In a machine for packing sheets and depositing them in packs, the combination with a pack-carriage, of gripper-levers pivoted to said carriage, one on each side thereof, to be capable of moving laterally to and fro thereon, gripper-jaws formed on each of said levers, a gripper-rod sliding longitudinally within said lever and furnished with a gripper-jaw opposite that on the corresponding lever, springs applied between said rods and their respective levers for opening the gripper-jaws, and a detent on said lever for engaging with said rod for keeping the grippers closed, substantially as herein described.

24. In a machine for packing sheets and depositing them in packs, the combination with a reciprocating pack-carriage, of gripper-levers one at each side of the carriage and each furnished with a pair of gripper-jaws, pivots one for each lever on which it is capable of moving laterally to the carriage, arms one on each pivot, fixed stops one for each of said arms for the purpose of producing the movement of the gripper-levers in an inward direction by the movement of the carriage for taking the packs, and detents between said levers and carriage for locking the levers in said direction, substantially as herein described.

25. In a machine for packing and stacking sheets, the combination of carriers and stationary guides on which they are capable of a to-and-fro movement, a rock-shaft and bearings therefor in said carriers, grippers on said rock-shaft for taking opposite sides of packs of sheets, and means for turning said rock-shaft and grippers to change the position of the pack in the grippers from an upright to a substantially horizontal, substantially as herein described.

26. In a machine for packing and stacking sheets, the combination of carriers and stationary guides on which they are capable of a to-and-fro movement, a rock-shaft and bearings therefor in said carriers, grippers on said rock-shaft for taking opposite sides of a pack of sheets, a stationary cam, and an arm on the rock-shaft engaging with said cam for producing the turning of said rock-shaft and grippers to change the position of the pack in the grippers from upright to substantially horizontal and vice versa by the to-and-fro movement of the carriage, substantially as herein described.

706,268. GATE. George W. Green, Thornton, N. Y. Filed Apr. 24, 1902. Serial No. 104,468. (No model.)

Claim.—A folding panel-gate comprising the longitudinal strips with end and intermediate pivotal, cross-bars, the plate M fastened to the cross-bar at the free end of the gate, the bars H pivoted to the top and bottom strips of the gate, and fastened together at their forward ends, suitably bowed, and guided behind said plate M and one of the said cross-bars, and a pivoted brace E adapted to contact with one of said bars H, as shown and for the purpose set forth.

706,268.

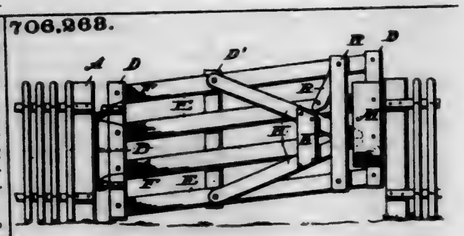

706,264. CUTTING-TOOL FOR PLANING-MACHINES. Ransome H. Slater, Auckland, New Zealand. Filed Mar. 18, 1902. Serial No. 98,389. (No model.)

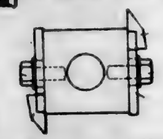

Claim.—The combination of a cutter-holder having means by which it may be secured to the cutter-block of a planing-machine and a cutter dovetailed into said holder substantially as and for the purpose specified.

706,265. MEANS FOR SECURING WHEELS ON SHAFTS. Clarence C. Shalley, Manitowoc, Wis. Filed June 2, 1902. Serial No. 109,851. (No model.)

Claim.—1. The combination with a wheel, of a rotatable shaft having a tapering bearing, a cylindrical bearing of equal diameter throughout its length and terminating in a screw-threaded extension, a collar engaging the tapering bearing and a screw-nut engaging the screw-threaded extension, said collar and nut providing means for holding the wheel upon the shaft, substantially as and for the purpose described.

2. A rotatable driving-shaft having a tapering bearing, an outwardly-extending cylindrical bearing terminating in a screw-threaded extension having a projection thereon, a key engaging therewith, a wheel supported upon the cylindrical bearing, a collar upon the tapering bearing, and a nut engaging the screw-threaded extension, substantially as and for the purposes set forth.

706,266. SWITCH. Gustave H. Sitzer, Boston, Mass. Filed Sept. 26, 1901. Serial No. 76,542. (No model.)

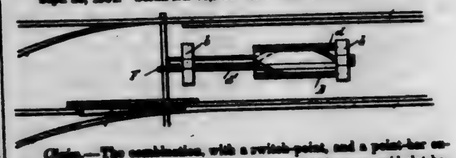

Claim.—The combination, with a switch-point, and a point-bar engaging with it and provided with a slot at its middle part; said slot being arranged vertically and open at the lower edge of the said bar of a ling arranged vertically and open at the lower edge of the said bar of a spirally-grooved cylinder provided with a shaft and journaled longitudinally between the rails, a crank-pin projecting from one end of the said shaft and engaging with the said slot of the point-bar, and a switch-bar

carried by the car and engaging with the said cylinder, substantially as set forth.

706,267. AUTOMATIC CIGAR-MAKING MACHINE. BENJAMIN H. SEAVEY, Bridgewater, and THOMAS H. KELLER, Lima, Pa. Filed Aug. 30, 1900. Renewed May 3, 1901. Serial No. 59,260. (No model.)

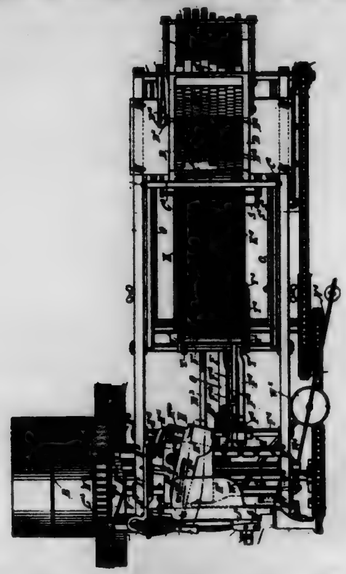

Claim.—1. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, and a wrapping mechanism receiving the bunch from the said rolling device and wrapping the wrapper around the bunch and securing it in place, as set forth.

2. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, and a wrapping mechanism into which the bunch is discharged by the said rolling device, and a wrapping mechanism into which the bunch is discharged by the said transferring device, the said wrapping mechanism wrapping the wrapper around the bunch and securing it in place, as set forth.

3. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, a transferring device into which the bunch is discharged by the said rolling device, a cutting device on the said transferring device to cut off the ends of the bunch, and a wrapping mechanism into which the bunch is discharged by the said transferring device, the said wrapping mechanism wrapping the wrapper around the bunch and securing it in place, as set forth.

4. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, a wrapping mechanism receiving the bunch from the said rolling device and wrapping the wrapper around the bunch and securing it in place, and means for cleaning the head portion of the said wrapping mechanism after a cigar is discharged therefrom, as set forth.

5. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, and a wrapping mechanism receiving the bunch from the said rolling device and wrapping the wrapper around the bunch and securing it in place, the said wrapping mechanism having a wrapper-smoothing device for smoothing the wrapper on the bunch during the wrapping process, as set forth.

6. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, and a wrapping mechanism receiving the bunch from the said rolling device and wrapping the wrapper around the bunch and securing it in place, the said wrapping mechanism having a cut-off device for cutting off the butt end of the wrapper during the wrapping process, as set forth.

7. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, and a wrapping mechanism receiving the bunch from the said rolling device and wrapping the wrapper around the bunch and securing it in place, the said wrapping device having means for cutting the head end of the wrapper previously to wrapping the head end onto the bunch, as set forth.

8. An automatic cigar-making machine, comprising a compacting device for forming the loose tobacco in measured quantities into a compacted filler, a rolling device receiving the compacted filler of tobacco from the said compacting device, to roll the filler and secure the binder around it to form the bunch, and a wrapping mechanism receiving the bunch from the said rolling device and wrapping the wrapper around the bunch and securing it in place, the said wrapping device having a cutting device for forming a point on the head end of the wrapper, and a pasting device for delivering paste to the head end of the wrapper after the said end is cut to a point, as set forth.

9. An automatic cigar-making machine, controlled by a definite revolving agent, consisting of a compacting device for forming the loose or scrap tobacco in measured quantities into a compacted filler, a rolling device for which the said compacting device forms the feed, said rolling device rolling the filler and securing the binder around it, to form the bunch, a wrapping mechanism receiving the bunch from said rolling device and placing the wrapper around it, means for actuating said devices and mechanism in unison, and a main or power shaft for said means, as set forth.

10. An automatic cigar-making machine controlled by a definite revolving agent, consisting of a compacting device for forming the loose or scrap tobacco in measured quantities into a compacted filler, a rolling device for which the said compacting device forms the feed, said rolling device rolling the filler and securing the binder around it to form the bunch, a transferring device, a wrapping mechanism receiving the bunch by the said transferring device from the said rolling device, means for actuating the said devices, and a main or power shaft for the said means, as set forth.

11. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket at the discharge-opening of said hopper, pushers mounted to slide independently one of the other on the bottom of the said hopper for pushing the tobacco into said pocket and packing it therein, and means for imparting movement to the said pushers, as set forth.

12. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, and pushers mounted to slide on the bottom of the hopper toward and from said pocket, said pushers having ratchet-teeth on their upper faces, as set forth.

13. An automatic cigar-making machine having a hopper with an inclined bottom and arranged to contain loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, and spring-pressed pushers arranged on said hopper-bottom and mounted to slide successively toward or from said pocket, said pushers being formed at their upper surfaces with ratchet-teeth, for straightening out the tobacco in the hopper prior to pushing the same into said pocket, as set forth.

14. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, pushers mounted to slide on the bottom of the hopper, and springs for forcing the pushers toward said opening, to push the tobacco into said pocket and pack it therein, as set forth.

15. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, pushers mounted to slide on the bottom of the hopper, springs for forcing the pushers toward said opening, to push the tobacco into said pocket and pack it therein, and cam-arms or wipers for engaging said pushers and moving the same outward against the tension of said springs, as set forth.

16. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, pushers mounted to slide on the bottom of the hopper, springs for forcing the pushers toward said opening, to push the tobacco into said pocket and pack it therein, a revolvable cam-shaft, and cam-arms or wipers thereon, and adapted to engage depending arms on said pushers to move the latter against the springs and from said hopper discharge-opening, as set forth.

17. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, pushers mounted to slide on the bottom of the hopper, springs for forcing the pushers toward said opening, to push the tobacco into said pocket and pack it therein, a revolvable cam-shaft, and cam-arms or wipers thereon, and adapted to engage depending arms on said pushers, to move the latter against the springs and from said hopper discharge-opening, said cam-arms being set at an angle to one another, to impart a successive sliding motion to the pushers, as set forth.

18. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket at the discharge-opening of the hopper, pushers mounted to slide independently one of the other on the bottom of the hopper for pushing the tobacco into said pocket and packing it therein, means for imparting movement to said pushers, and an agitator in the hopper above the said pushers for keeping the tobacco therein loose and for insuring proper feed of the tobacco into the pocket by the pushers, as set forth.

19. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, pushers mounted to slide on the bottom of the hopper, an agitator in said hopper, and means for intermittently actuating said pushers and said agitator in unison, as set forth.

20. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, pushers mounted to slide on the bottom of the hopper, springs for forcing the pushers toward said opening and pushing the tobacco into said pocket and packing it therein, a revolvable cam-shaft, cam-arms or wipers thereon for engaging arms on said pushers and moving the latter against the springs and from said hopper discharge-opening, agitator-arms in said hopper, a rock-shaft carrying said arms, and a connection between said cam-shaft and said rock-shaft, for actuating the latter from the cam-shaft, as set forth.

21. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, a compacting-pocket extending across the discharge-opening of said hopper, pushers mounted to slide on the bottom of the hopper, springs for forcing the pushers toward said opening and pushing the tobacco into said pocket and packing it therein, a revolvable cam-shaft, cam-arms or wipers thereon for engaging arms on said pushers and moving the latter against the springs and from said hopper discharge-opening, agitator-arms in said hopper, a rock-shaft carrying said arms, and a connection between said cam-shaft and said rock-shaft, for actuating the latter from the cam-shaft, said connection comprising an eccentric on the cam-shaft, and an arm on the rock-shaft and pivotally connected with the eccentric-rod of said eccentric, as set forth.

22. An automatic cigar-making machine having a hopper for containing loose or scrap tobacco, compacting-pocket movable to and from the discharge-opening of said hopper, and a knife movable on said hopper over the discharge-opening thereof, to cut off the tobacco in the hopper and to close the said discharge-opening, the said knife also forming a side for the said pocket when the latter is moving from and to said discharge-opening, as set forth.

23. An automatic cigar-making machine having a compacting-pocket into which tobacco is mechanically packed, said pocket having a hinged bottom and an adjustable top, for giving the desired shape to said top, as set forth.

24. An automatic cigar-making machine having a compacting-pocket into which tobacco is mechanically packed, said pocket having a flexible top, and means for giving the desired curvature to the top, as set forth.

25. An automatic cigar-making machine having a compacting-pocket into which tobacco is mechanically packed, said pocket comprising a hinged bottom, a knife movable over the inlet to said pocket and arranged to form one side thereof when closed, and an adjustable top for the pocket, as set forth.

26. An automatic cigar-making machine having a compacting-pocket into which tobacco is mechanically packed, said pocket comprising a hinged bottom, a knife movable over the inlet to the pocket and arranged to form one side thereof when closed, a flexible top, and means for supporting said top and changing the curvature thereof, as set forth.

27. An automatic cigar-making machine having a compacting-pocket into which tobacco is mechanically packed, said pocket comprising a hinged bottom, a knife movable over the inlet to the pocket and arranged to form one side thereof when closed, an adjustable top, and means for imparting a swinging motion to said hinged bottom, to open and close the same, as set forth.

28. An automatic cigar-making machine having a hopper provided with a discharge-opening, a slide arranged to reciprocate on the side of the hopper, a pocket-carrier movable on said slide, and a pocket carried partly by said pocket-carrier and partly by said slide, as set forth.

29. An automatic cigar-making machine having a hopper provided with a discharge-opening, a slide mounted to reciprocate on the side of the hopper, a pocket-carrier movable on said slide, a pocket carried partly by said pocket-carrier and partly by said slide, means for imparting a reciprocating motion to said slide, and means controlled by the slide, for imparting a reciprocating motion to the pocket-carrier, as set forth.

30. An automatic cigar-making machine having a hopper provided with a discharge-opening, a slide mounted to reciprocate on the side of the hopper, a pocket-carrier movable on said slide, a pocket carried partly by said pocket-carrier and partly by said slide, said pocket comprising a knife fixed on said slide, a bottom hinged to said carrier, and a top adjustably carried by said pocket-carrier, as set forth.

31. An automatic cigar-making machine having a hopper provided with a discharge-opening, a slide mounted to reciprocate on the side of the hopper, a pocket-carrier movable on said slide, a pocket carried partly by said pocket-carrier and partly by said slide, said pocket comprising a knife fixed on said slide, a bottom hinged to said carrier, a top adjustably carried by said pocket-carrier, and means for imparting a swinging motion to said hinged bottom, to open and close the same, as set forth.

32. An automatic cigar-making machine having a hopper provided with a discharge-opening, a slide mounted to reciprocate on the side of the hopper, a pocket-carrier movable on said slide, a pocket carried partly by said pocket-carrier and partly by said slide, said pocket comprising a knife fixed on said slide, a bottom hinged to said carrier, a top adjustably carried by said pocket-carrier, and means for imparting a swinging motion to said hinged bottom, to open and close the same, said means comprising arms having lugs, and fixed pins for engagement by the lugs, as set forth.

33. An automatic cigar-making machine having a hopper, a slide reciprocating on the side of the said hopper, a pocket-carrier movable on said slide, a pocket comprising a knife fixed on said slide, a bottom hinged to said pocket-carrier, a flexible top adjustably carried by said pocket-carrier, and means for imparting sliding movement to said pocket-carrier, as set forth.

34. An automatic cigar-making machine having a hopper, a slide reciprocating on the side of the said hopper, a pocket-carrier movable on said slide, a pocket comprising a knife fixed on said slide, a bottom hinged to said pocket-carrier, a flexible top adjustably carried by said pocket-carrier, and means for imparting a sliding movement to said pocket-carrier, said means being controlled by said slide, as set forth.

35. An automatic cigar-making machine having a hopper, a slide reciprocating on the side of the said hopper, a pocket-carrier movable on said slide, a pocket comprising a knife fixed on said slide, a bottom hinged to said pocket-carrier, and means for imparting sliding movement to said pocket-carrier, and comprising bell-crank levers fulcrumed on the slide and engaging said carrier, and cam-grooves on said hopper, as set forth.

36. An automatic cigar-making machine having a hopper, a slide reciprocating on the side of the said hopper, a pocket-carrier movable on said slide, a pocket comprising a knife fixed on said slide, a bottom hinged to said pocket, bell-crank levers fulcrumed on the slide and engaging said carrier and shoes in cam-grooves on the said hopper for controlling the movement of the bell-crank levers, as set forth.

37. An automatic cigar-making machine having a hopper, a cut-off knife for the discharge end of said hopper, pushers in the hopper for feeding tobacco to said discharge end, and means for imparting movement to said cut-off knife and to said pushers, to actuate the latter while the cut-off knife is in an open position, and to move and hold the knife in a closed position when the pushers are at rest, as set forth.

38. An automatic cigar-making machine having a hopper with a discharge-opening, a compacting-pocket movable on the side of said hopper and having a cut-off knife and a movable bottom, the cut-off knife being arranged to close the said discharge-opening and to form a side of the pocket, an apron, and means for moving said pocket from said opening into engagement with said apron, to form a pocket therein for the reception of the compacted filler contained in said compacting-pocket, the said knife closing the discharge-opening during the movement of the pocket from and to said opening, as set forth.

39. An automatic cigar-making machine having a hopper with a discharge-opening, a compacting-pocket movable on the side of said hopper and having a cut-off knife and a movable bottom, the cut-off knife being arranged to close the said discharge-opening and to form a side of the pocket, an apron, means for moving said pocket from said opening into engagement with said apron, to form a pocket therein for the reception of the compacted filler contained in said compacting-pocket, the said

knife closing the discharge-opening during the movement of the pocket from end to said opening, and means for moving said bottom after the apron-pocket is formed to open the compacting-pocket, to drop the compacted filler into the apron-pocket, as set forth.

40. An automatic cigar-making machine having a hopper with a discharge-opening, a compacting-pocket movable on the side of said hopper and having a cut-off knife and a movable bottom, the cut-off knife being arranged to close the said discharge-opening and to form a side of the pocket, an apron, means for moving said pocket from said opening into engagement with said apron, to form a pocket therein for the reception of the compacted filler contained in said compacting-pocket, the said knife closing the discharge-opening during the movement of the pocket from end to said opening, and means for imparting supplementary movement to the knife independent of the pocket, as set forth.

41. An automatic cigar-making machine having a table with a recess, an apron extending over the said table, a compacting-pocket having a hinged bottom, means for moving said compacting-pocket into engagement with said apron by said table-recess, to force the apron into the recess and thereby produce a pocket in the apron, and means for swinging the bottom open while in contact with the apron, to allow the compacted filler to pass into the apron-pocket, without the compacted filler opening up, as set forth.

42. An automatic cigar-making machine having a perforated table, an apron, and a suction device for holding the apron by suction to said table, the suction taking place through the perforations in the said table as set forth.

43. An automatic cigar-making machine having a table, an apron having an aperture, and a suction device for holding the apron by suction to the table and for holding a binder by suction to the apron at said aperture, as set forth.

44. An automatic cigar-making machine having a perforated table, an apron extending over the table, and a suction-chamber in communication with the perforations in the table, to hold the apron by suction to the table, said apron having an aperture in register with one of the perforations in the table, to hold one end of a binder by suction to the apron, as set forth.

45. An automatic cigar-making machine having a perforated table, an apron over said table and held thereon by suction through the perforations of the table, the apron having a pocket for containing a filler of tobacco, a reciprocating carriage, a roller journaled on said carriage and over which passes the apron, as set forth.

46. An automatic cigar-making machine having a perforated table, an apron over said table and held thereon by suction through the perforations of the table, the apron having a pocket for containing a filler of tobacco, a reciprocating carriage, a roller journaled on said carriage and over which passes the apron, and a cut-off plate on said carriage, for covering up the perforations of the table as the apron leaves the same during the forward movement of the carriage, as set forth.

47. An automatic cigar-making machine having a table, an apron over said table, and having a pocket for containing a filler, a reciprocating carriage, a roller supported by the carriage and engaged by the apron, and a finger supported from the carriage, and adapted to engage a binder and hold the latter to the apron and start it onto the filler, said finger being mounted to swing on one end thereof as the fulcrum, as set forth.

48. An automatic cigar-making machine having a finger for engagement with a binder and mounted to swing, one end of the finger being the fulcrum, as set forth.

49. An automatic cigar-making machine having an arm mounted to swing, means for moving the arm endwise and a finger fulcrumed at one end on said arm, to allow the finger to swing, said finger being adapted to engage one end of the binder and hold the latter to the rolling-apron, as set forth.

50. An automatic cigar-making machine having an arm mounted to swing, means for moving the arm endwise, a finger having a head loosely mounted on said arm, and a spring carried by the arm, and engaging said head, as set forth.

51. An automatic cigar-making machine having a table, an apron over the table and provided with a pocket for containing a filler, a reciprocating carriage, a roller carried thereby and engaged by said apron, an arm moving with said carriage and arranged to swing toward or from said apron, and a finger carried by said arm and adapted to engage the binder on said apron, as set forth.

52. An automatic cigar-making machine having a table, an apron over the table and provided with a pocket for containing a filler, a reciprocating carriage, a roller carried thereby and engaged by said apron, an arm moving with said carriage and arranged to swing toward or from said apron, a finger carried by said arm and adapted to engage the binder on said apron, and means for imparting a swinging motion to said arm from said carriage, as set forth.

53. An automatic cigar-making machine having a reciprocating carriage, a slide mounted thereon, an arm fulcrumed on said slide and carrying a finger for engaging the binder, means for imparting motion to said slide independently of the movement of the carriage, and means for imparting a swinging motion to said arm, as set forth.

54. An automatic cigar-making machine having a reciprocating carriage, a slide mounted thereon, an arm fulcrumed on said slide and carrying a finger for engaging a pointer, a pin extending from the fulcrum end of said arm, a link pivotally connected with said slide and having a connect engaged by said pin, a segmental gear-wheel connected with said link and means for imparting an intermittent rotary motion to said segmental gear-wheel, as set forth.

55. An automatic cigar-making machine having a reciprocating carriage, a slide mounted thereon, an arm fulcrumed on said slide and carrying a finger for engaging a pointer, a pin extending from the fulcrum end of said arm, a link pivotally connected with said slide and having a connect engaged by said pin, a segmental gear-wheel connected with said link and having an intermittent rotary motion, and cam of pins for engaging said segmental gear-wheel, as set forth.

56. An automatic cigar-making machine having a reciprocating carriage with a guideway having a curved end, a slide in said guideway, an arm fulcrumed on said slide and carrying a finger for engaging a binder, a pin extending from the fulcrum end of said arm, a link pivotally connected with said slide and having a cam-slot engaged by said pin, a segmental gear-wheel connected with the link and means for imparting an intermittent rotary motion to the said segmental gear-wheel, as set forth.

57. An automatic cigar-making machine having a slide mounted to move in a guideway with a curved end, an arm fulcrumed on said slide and carrying a finger for engaging a binder, and means, substantially as described, for imparting a reciprocating movement to said slide, and at the same time a swinging motion to said arm, as set forth.

58. An automatic cigar-making machine having a reciprocating carriage, a roller moving with said carriage, and fixed guideways of different shape and engaged by the ends of said roller, so that upon reciprocating the carriage the roller moves with it and rocks in a plane at an angle to the plane of movement of the carriage, as set forth.

59. An automatic cigar-making machine having a carriage, and a roller moving with the carriage and having a rocking motion in a plane at an angle to the plane in which the carriage moves, as set forth.

60. An automatic cigar-making machine having a carriage, and a roller moving with the carriage and having a rocking motion in a plane at an angle to the plane in which the carriage moves, said roller having a concave face, as set forth.

61. An automatic cigar-making machine having an apron, a roller over which the apron passes, to roll a filler, and to roll a binder around said filler, said roller having a curved shaft, collars of different diameters and mounted to turn loosely on said shaft, a carriage having a reciprocating movement, arms pivoted on said carriage and engaging said shaft, and fixed guideways of different shape and engaged by the ends of said roller-shaft, to impart a rocking motion to the roller in a plane at an angle to the plane of movement of the carriage, as set forth.

62. An automatic cigar-making machine having a reciprocating carriage, a fixed table, an apron over said table, a roller having a curved shaft, collars mounted to turn thereon, arms pivoted to said carriage and supporting said shaft, and fixed guideways of different shape and engaged by the ends of said shaft, as set forth.

63. An automatic cigar-making machine having a bunch-forming device, a transferring device into which discharges said bunch-forming device, a wrapping mechanism into which discharges said transferring device, a driven shaft, and means for actuating in unison said bunch-forming device, the transferring device and the wrapping mechanism, as set forth.

64. An automatic cigar-making machine having a lever with a fixed plate, means for imparting a swinging motion to said lever, and a plurality of levers fulcrumed on said first-named lever and moving with the same, and having plates forming in conjunction with the first-named plate a pocket, as set forth.

65. An automatic cigar-making machine having a lever with a fixed plate, means for imparting a swinging motion to said lever, a plurality of levers fulcrumed on said first-named lever and moving with the same, and having plates forming in conjunction with the first-named plate a pocket, for receiving and holding the filler, one of the plates having an ejecting-plate for forcing the filler out of the pocket, and means for operating the said ejecting-plate, as set forth.

66. An automatic cigar-making machine having a lever with a fixed plate, means for imparting a swinging motion to said lever, a plurality of levers fulcrumed on said first-named lever and moving with the same, and having plates forming in conjunction with the first-named plate a pocket, and means for actuating the last-named levers independently of the first-named lever, as set forth.

67. An automatic cigar-making machine having a transferring-pocket

with a plurality of plates, two of which form opposite sides and one the bottom of the pocket, one of said side plates having movement toward the other plates, and means for operating the said movable side plate to close or open the pocket, as set forth.

68. An automatic cigar-making machine having a transferring-pocket, comprising a plurality of plates, two of which form opposite sides and one the bottom of the pocket, the bottom plate having movement between said side plates to eject the filler from the pocket, as set forth.

69. An automatic cigar-making machine having a transferring-pocket, comprising a plurality of plates, two of which form opposite sides and one the bottom of the pocket, the bottom plate having movement between said side plates to eject the filler from the pocket, and means, substantially as described, for imparting movement to the said plates, as set forth.

70. An automatic cigar-making machine having a wrapping mechanism, a transferring device for holding a bunch, a shaft, and means actuated from said shaft and connected with and actuating said wrapping mechanism and said transferring device in unison, to discharge the bunch from said transferring device to the wrapping mechanism, as set forth.

71. An automatic cigar-making machine having a wrapping mechanism, a transferring device for holding a bunch, a shaft, and means actuated from said shaft and connected with and actuating said wrapping mechanism and said transferring device in unison, to discharge the bunch from said transferring device to the wrapping mechanism, and to cause said wrapping mechanism and transferring device to automatically open for the transferring device to discharge the bunch into the open wrapping mechanism, as set forth.

72. An automatic cigar-making machine having a fixed wrapper-platform, means for rolling a wrapper around a bunch, a slide having an intermittent sliding movement lengthwise of said means, a platform pivoted to a fixed part and extending partly under said fixed platform, a connection between said slide and said pivoted platform, to impart a swinging motion to the latter, a brush hinged to the swinging platform for holding the head of the wrapper in place on the swinging platform, revolving brushes operating in conjunction with said wrapping means, an arm pivoted on said slide carrying said revolving brushes, and controlling the movement of said platform-brush, and means for imparting movement to said arm, as set forth.

73. An automatic cigar-making machine having a fixed wrapper-platform, means for rolling a wrapper around a bunch, a slide having an intermittent sliding movement lengthwise of said means, a platform pivoted to a fixed part and extending partly under said fixed platform, a connection between said slide and said pivoted platform, to impart a swinging motion to the latter, a brush hinged to the swinging platform for holding the head of the wrapper in place on the swinging platform, revolving brushes operating in conjunction with said wrapping means, an arm pivoted on said slide carrying said revolving brushes, and controlling the movement of said platform-brush, a driven cam-wheel, an operative connection between said cam-wheel and said slide, to impart an intermittent sliding motion to the slide, and an operative connection between said cam-wheel and said brush-carrying arm, as set forth.

74. An automatic cigar-making machine having a plurality of wrapping-rollers forming a pocket for receiving a bunch and wrapping a wrapper around said bunch, a slide arranged to move lengthwise of said wrapping-rollers, a wrapper-platform for feeding the wrapper to said rollers and pivoted to a fixed part, a connection between the slide and platform for imparting a swinging motion to the latter, a shoe carried by said slide, a shaft having a double spiral groove engaged by said shoe, and a driven cam gear-wheel for intermittently rotating said shaft, as set forth.

75. An automatic cigar-making machine having a plurality of wrapping-rollers forming a pocket for receiving a bunch and wrapping a wrapper around said bunch, a slide arranged to move lengthwise of said wrapping-rollers, a wrapper-platform for feeding the wrapper to said rollers and pivoted to a fixed part, a connection between the slide and platform for imparting a swinging motion to the latter, a shoe carried by said slide, a shaft having a double spiral groove engaged by said shoe, a driven cam gear-wheel for intermittently rotating said shaft, brushes for brushing the wrapper tight around the bunch, and an arm pivoted on said slide and carrying said brushes, said arm receiving an intermittent swinging motion from said cam gear-wheel, as set forth.

76. An automatic cigar-making machine having a plurality of wrapping-rollers forming a pocket for receiving a bunch and wrapping a wrapper around said bunch, a slide arranged to move lengthwise of said wrapping-rollers, a wrapper-platform for feeding the wrapper to said rollers and pivoted to a fixed part, a connection between the slide and platform for imparting a swinging motion to the latter, a shoe carried by said slide, a shaft having a double spiral groove engaged by said shoe, a driven cam gear-wheel for intermittently rotating said shaft, brushes for brushing the wrapper tight around the bunch, an arm pivoted on said slide and carrying said brushes, said arm receiving an intermittent swinging motion from said cam gear-wheel, and operative connections between said cam gear-wheel and said shaft, and between the cam gear-wheel and said arm, as set forth.

77. An automatic cigar-making machine having a plurality of wrapping-rollers forming a pocket for receiving a bunch and wrapping a wrapper around said bunch, a slide arranged to move lengthwise of said wrapping-rollers, a wrapper-platform for feeding the wrapper to said rollers and pivoted to a fixed part, a connection between the slide and platform for imparting a swinging motion to the latter, a shoe carried by said slide, a shaft having a double spiral groove engaged by said shoe, a driven cam gear-wheel for intermittently rotating said shaft, brushes for brushing the wrapper tight around the bunch, an arm pivoted on said slide and carrying said brushes, said arm receiving an intermittent swinging motion from said cam gear-wheel, and means for intermittently rotating said brushes from said shaft, as set forth.

78. An automatic cigar-making machine having a plurality of wrapping-rollers forming a pocket for receiving a bunch and wrapping a wrapper around said bunch, a slide arranged to move lengthwise of said wrapping-rollers, a wrapper-platform for feeding the wrapper to said rollers and pivoted to a fixed part, a connection between the slide and platform for imparting a swinging motion to the latter, a shoe carried by said slide, a shaft having a double spiral groove engaged by said shoe, a driven cam gear-wheel for intermittently rotating said shaft, brushes for brushing the wrapper tight around the bunch, an arm pivoted on said slide and carrying said brushes, said arm receiving an intermittent swinging motion from said cam gear-wheel, and a flat brush pivoted on said platform and controlled by means on said revolving brush-carrying arm, as set forth.

79. An automatic cigar-making machine having rollers for wrapping a wrapper around a bunch, a slide moving lengthwise of the rollers, an arm pivoted on said slide, revolving brushes journaled in said arm, a segmental gear-wheel on said arm, and racks having movement in the direction of the movement of the slide, and adapted to mesh with said segmental gear-wheel, as set forth.

80. An automatic cigar-making machine having rollers for wrapping a wrapper around a bunch, a slide moving lengthwise of the rollers, an arm pivoted on said slide, revolving brushes journaled in said arm, a segmental gear-wheel on said arm, racks having movement in the direction of the movement of the slide, and adapted to mesh with the said segmental gear-wheel, a shaft carrying said racks, and a cam-wheel for imparting a sliding motion to said shaft, as set forth.

81. An automatic cigar-making machine having rollers for wrapping a wrapper around a bunch, a slide moving lengthwise of the rollers, an arm pivoted on said slide, revolving brushes journaled in said arm, a segmental gear-wheel on said arm, racks having movement in the direction of the movement of the slide, and adapted to mesh with the said segmental gear-wheel, a shaft on which said racks are pivoted, springs pressing on the free ends of said racks, and a cam-wheel for imparting a sliding movement to said shaft, as set forth.

82. An automatic cigar-making machine having a plurality of wrapping-rollers forming a pocket for a bunch, and arranged to wrap a wrapper around said bunch, a fixed platform on one side of the rollers, a support on the other side of the rollers at or near one end thereof, to support the wrapper on both sides of the opening leading to the pocket, and a lug on said support to form an abutment for one edge of the wrapper, as set forth.

83. An automatic cigar-making machine having a plurality of wrapping-rollers forming a pocket for a bunch, and arranged to wrap a wrapper around said bunch, a fixed platform on one side of the rollers, a support on the other side of the rollers at or near one end thereof, to support the wrapper on both sides of the opening leading to the pocket, a lug on said support to form an abutment for one edge of the wrapper, and a finger adapted to engage the top of the wrapper between said support and said platform, directly over the pocket-opening, as set forth.

84. An automatic cigar-making machine having a plurality of retaining rollers forming a pocket, arms mounted to swing at one end of the pocket and transversely of the same, head-forming devices adjacent to the end of the pocket, and a yieldingly-mounted shield between the arms arms at the end of the pocket, as set forth.

85. An automatic cigar-making machine having a plurality of retaining rollers forming a pocket, arms mounted to swing at one end of the pocket and transversely of the same, head-forming devices adjacent to the end of the pocket, a yieldingly-mounted shield between the arms at the end of the pocket, and V-shaped knives secured on said arms, to cut the head end of the wrapper, said head-forming devices being inclosed by the knives, as set forth.

86. An automatic cigar-making machine having a plurality of retaining rollers forming a pocket, arms mounted to swing at one end of the pocket and transversely of the same, head-forming devices adjacent to the end of the pocket, a yieldingly-mounted shield between the arms at the end of the pocket, V-shaped knives secured on said arms, to cut the head end of the wrapper, said head-forming devices being inclosed by

the knives, concentric shafts carrying said knife-arms, and a driven cam-wheel having connection with said concentric shafts for rocking the shafts in opposite directions, as set forth.

87. An automatic cigar-making machine having a brush, and means for moving the brush into and out of the cigar-head-forming device for cleaning the same, as set forth.

88. An automatic cigar-making machine having a cigar-head-forming device, a brush for cleaning the cigar-head-forming device, and means for imparting an up-and-down and a transverse motion to said brush, as set forth.

89. An automatic cigar-making machine having a brush, a lever on which the handle of the brush is pivoted, means for imparting a swinging motion to said lever in a transverse direction, and means for imparting an up-and-down swinging motion to said brush, as set forth.

90. An automatic cigar-making machine having a brush, a lever on which the handle of the brush is pivoted, arms fulcrumed on said lever on opposite sides of its fulcrum, a link connecting the arms with each other, a second link connecting one of the arms with the handle of the brush, and a cam device for said arms, for imparting motion thereto and to said lever, as set forth.

91. An automatic cigar-making machine having a brush, a lever on which the handle of the brush is pivoted, arms fulcrumed on said lever on opposite sides of its fulcrum, a link connecting the arms with each other, a second link connecting one of the arms with the handle of the brush, and a cam device for said arms, for imparting motion thereto and to said lever, said cam device comprising a driven wheel, and cam-lugs on said wheel, and arranged to engage said arms, as set forth.

92. An automatic cigar-making machine having a plurality of rollers forming a pocket for receiving a bunch and for wrapping a wrapper around said bunch, a finger for carrying the butt-end of the wrapper to the butt-end of the bunch in said pocket, a ring on which said finger is secured, a sleeve on which the ring is pivoted, a revolvable shaft on which the sleeve is mounted to slide loosely, said shaft having means for engagement by the finger to turn the same around with the shaft, a shifter for the sleeve, a slide-shaft having a bearing for said shifter, a slide-rod for rocking the shifter in its bearing, and a cam gear-wheel for actuating the slide-shaft and said slide-rod, as set forth.

93. An automatic cigar-making machine having a plurality of rollers forming a pocket for receiving a bunch and for wrapping a wrapper around said bunch, a finger for carrying the butt-end of the wrapper to the butt-end of the bunch in said pocket, a ring on which said finger is secured, a sleeve on which the ring is pivoted, a revolvable shaft having means for engagement by the finger to turn the same around with the shaft, a shifter for the sleeve, a slide-shaft having a bearing for said shifter, a slide-rod for rocking the shifter in its bearing, a cam gear-wheel for actuating the slide-shaft and said slide-rod, and means for driving said revolvable shaft from said cam gear-wheel, as set forth.

94. In a cigar-machine, the combination of mechanism for forming a bunch, mechanism for wrapping a bunch, mechanism for transferring the bunch from the bunch-forming mechanism to the wrapping mechanism, and mechanism for causing the several operations to occur in proper sequence.

706,268. FORM FOR TACK-MACHINES. FRED A. SIBLE, Providence, R. I. Filed Nov. 6, 1901. Serial No. 81,269. (No model.)

Claim.—1. In a device of the character described, the combination with a stand, of a support arranged to hold a nipper, means for adjusting the support transversely to the nipper, and a guide arranged to support a strip carried by the nipper.

2. In a device of the character described, the combination with a stand, of a support arranged to hold a nipper, a guide arranged to support a strip carried by the nipper, and means for vertically adjusting the guide.

3. In a device of the character described, the combination with a stand, of a support arranged to hold a nipper, and a guide having a V-shaped slot arranged to support a strip carried by the nipper, by the walls of its V-shaped portion, and means for vertically adjusting the guide.

4. In a device of the character described, the combination with a stand, of a support arranged to hold a nipper, three guides arranged to support a strip carried by the nipper, and means for vertically adjusting the intermediate guide.

5. In a device of the character described, the combination with a stand, of a support arranged to hold a nipper, a plurality of guides arranged to support a strip carried by the nipper, one of said guides being located in proximity to the nipper, and having members adjustable transversely to the strip.

6. In a device of the character described, the combination with a stand, of a support arranged to hold a nipper, and a guide arranged to support a strip carried by the nipper, said guide comprising a pair of jaws pivotally supported from the stand, a spring arranged to move the jaws together, and a set-screw arranged to separate said jaws.

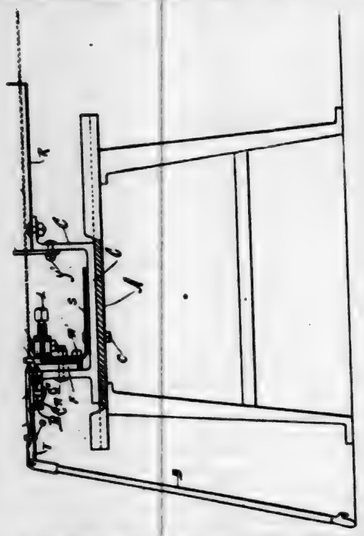

7. In a device of the character described, the combination of a stand, a support mounted on the stand and arranged to hold a nipper with the nipper-rod in a nearly vertical position with one end resting on the floor, means for adjusting the support to hold the nipper in a higher or lower position, and a plurality of guides arranged to support a strip carried by the nipper.

8. In a device of the character described, the combination of a stand, and a support mounted on the stand and arranged to hold the nipper with the nipper-rod in a nearly vertical position with one end resting on the floor, and three guides arranged to support a strip carried by the nipper, one of said guides being located in proximity to the nipper and having members adjustable transversely to the strip, and means for adjusting the intermediate guide vertically.

706,269. WEB-PRINTING PRESS. WILLIAM SPALCKHAVER, Brooklyn, N. Y., assignor, by direct and mesne assignments, to Robert Hoe and Charles W. Carpenter, New York, N. Y., under the firm-name of R. Hoe and Company. Filed Oct. 30, 1897. Serial No. 656,908. (No model.)

Claim.—1. The combination with a plurality of web-printing mechanisms arranged in the same vertical planes with their cylinders parallel, of two folding and delivery mechanisms having longitudinal folders arranged in line with said between said web-printing mechanisms with the folders facing in opposite directions and away from each other toward the opposite ends of the press, substantially as described.

2. The combination with a plurality of web-printing mechanisms arranged in the same vertical planes with their cylinders parallel, of two folding and delivery mechanisms arranged in line with and between said web-printing mechanisms with the front side of the folding and delivery mechanisms facing in opposite directions and away from each other toward the respective ends of the press, substantially as described.

3. The combination with a plurality of web-printing mechanisms arranged in the same vertical planes with their cylinders parallel, of folding and delivery mechanisms arranged in line with and between said web-printing mechanisms, and pairs of web-roll supports, as 13, 14, for each printing mechanism arranged at the opposite ends of the press and positioned for the lead to the respective printing mechanisms of a web from a roll mounted in either of the corresponding pair of supports and to permit the substitution of a full web-roll for an exhausted roll in either support of a pair while the printing mechanism is running on a web from a web-roll mounted in the other support of said pair, substantially as described.

4. The combination with a plurality of web-printing mechanisms arranged in the same vertical planes with their cylinders parallel, of two longitudinal folders arranged in line with said web-printing mechanisms with the folders facing in opposite directions and away from each other toward the opposite ends of the press, substantially as described.

5. The combination with a plurality of web-printing mechanisms arranged in the same vertical planes with their cylinders parallel, of two longitudinal folders arranged in line with said web-printing mechanisms with the folders facing in opposite directions and away from each other toward the opposite ends of the press, and means for directing the webs from the printing mechanisms to either of the longitudinal folders or partly to one longitudinal folder and partly to the other, substantially as described.

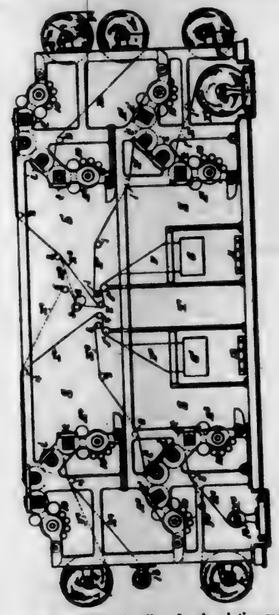

6. The combination with a plurality of web-printing mechanisms arranged in line with each other, with their cylinders parallel, of two folding and delivery mechanisms having longitudinal folders arranged in line with and between said web-printing mechanisms, with the folders arranged back to back and facing toward the opposite ends of the press.

7. The combination with a plurality of web-printing mechanisms arranged in line with each other, with their cylinders parallel, of two folding and delivery mechanisms arranged in line with and between said web-printing mechanisms, with the front side of the folding and delivery mechanisms facing in opposite directions and away from each other toward the respective ends of the press.

8. The combination with a plurality of web-printing mechanisms arranged in line with each other with their cylinders parallel, of two longitudinal folders arranged in line with said printing mechanisms, with the folders arranged back to back and facing toward the opposite ends of the press.

9. The combination with a plurality of web-printing mechanisms arranged in line with each other, with their cylinders parallel, of two longitudinal folders arranged in line with said web-printing mechanisms, with the folders arranged back to back and facing toward the opposite ends of the press, and means for directing the webs from the printing mechanisms to either of the longitudinal folders or partly to one longitudinal folder and partly to the other.

706,270. PICKER-CHECK FOR LOOMS. ADOLPH ST. ARNAUD, Manville, R. I. Filed Jan. 2, 1902. Serial No. 88,173. (No model.)

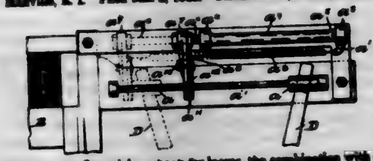

Claim.—1. In a picker-check for looms, the combination with a tube and a picker-rod sliding in the tube, of a bracket secured to the picker-rod and having its face provided with a cushion, a metal plate covering the face of the cushion, and the tensile spring secured to the bracket and a fixed part of the loom near the end of the shuttle-box, as described.

2. In a picker-check for looms, the combination with the shuttle-box, the picker, and the picker-rod, of the tube a^4 closed at one end, the opening a^5 near the closed end of the tube, and the brackets a^6 and a^7, of the picker-rod a^3, the bracket a^7 secured to the piston-rod, the cushion a^{11}, the plate a^{12} secured to the bracket by the bolt a^{13}, and the tensile spring a^8 secured to the bracket and a fixed part of the loom, as described.

706,271. MAIL-BAG FASTENER AND LOCK. ELMER STEVENS, Redfield, S. D. Filed June 12, 1901. Serial No. 64,366. (Model.)

Claim.—1. The combination with a bag, of a strap encircling the bag and having its ends extended, and a locking device comprising a sleeve slidably arranged on the ends of the strap, said strap being provided with registering holes j' to be engaged by the locking device when the strap is tightened on the bag to close the same, substantially as described.

2. The combination with a bag, of a strap encircling the bag and fastened thereto at or about its middle, said strap being provided with registering holes j' and having its ends extended and connected together, a locking device comprising a sleeve through which the ends of the strap slide and means for engaging the holes in the strap when the latter is drawn taut on the bag to close the same, substantially as described.

3. The combination with a bag of a strap encircling the bag and having its ends extended, a locking device slidably arranged on the ends of the strap, and a hook fastened to the bag and engaging and holding the locking device.

4. The combination with a strap, of a sleeve slidably arranged on said strap, a lock on one side of the sleeve, and a hasp pivoted to the sleeve on the other side thereof and provided with a post arranged to pass through holes in the sleeve and strap and enter the lock.

5. The combination with a strap, of a sleeve slidably arranged on said strap, a lock on one side of the sleeve, lugs on the other side of the sleeve, a hasp pivoted in said lugs and provided on its outer side with a card-holder, and a post on its other side to pass through openings in the sleeve and strap and enter the lock.

6. The combination with a bag, of a strap loosely encircling the bag and having its ends extended, said strap being fastened at or about its middle to the bag and having a stop at its ends, a locking device arranged on said strap between said stop and the bag and comprising an elongated sleeve through which the strap operates freely, and means for locking the strap and sleeve together, substantially as described.

7. The combination with a bag, of a strap encircling the bag and attached thereto on one side and having its ends extended said strap being provided with registering holes in its sides, a sleeve slidably arranged on the ends of the strap and having a flared end adjacent to the bag, a lock carried by the sleeve on one side thereof, a hasp pivotally supported on the other side of the sleeve, and a post carried by the hasp and arranged to pass through openings in the sleeve and said openings in the strap when the strap has been drawn through the sleeve to close the bag.

8. The combination with a bag, of a strap encircling the bag, a locking device arranged on said strap and comprising a hasp, a post on the hasp arranged to enter openings in the strap and a lock for securing the hasp in engagement with the strap, substantially as described.

706,272. CLASP. CHARLES W. STURGIS, New York, N. Y. Filed Dec. 6, 1901. Serial No. 84,788. (No model.)

Claim.—1. A clasp comprising two members having a spring-hinge connection with each other, and having overlapping portions, in which are overlapping openings, adapted each to permit the passage of the head of a stud through it, and in conjunction with the other opening, to pro-

vent escape of said stud, when the parts are in normal position, the portions of said members which bound said openings being continuous and completely inclosing said openings.

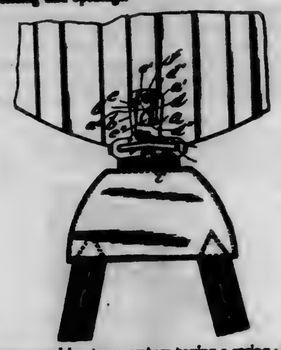

2. A clasp comprising two members having a spring-hinge connection with each other, and having overlapping portions in which are overlapping openings, each such opening being bounded continuously and comprising a larger portion adapted to permit the passage of the head of a stud through it, and a narrower or contracted portion arranged at an angle to said larger portion.

3. A clasp comprising two members having a spring-hinged connection with each other, and having overlapping portions in which are overlapping openings, each such opening being bounded continuously and comprising a larger portion adapted to permit the passage of the head of a stud through it, and a narrower or contracted portion, the contracted portion of the opening of one member being narrower than that of the other.

706,273. CAR-COUPLING. WENDELL H. STILLWELL, Davenport, Iowa. Filed June 12, 1902. Serial No. 111,315. (No model.)

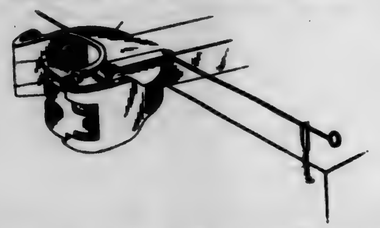

Claim.—1. The combination with a coupling of the Janney type comprising the head, the knuckle and the knuckle-pin for pivotally connecting the knuckle to the head, of an angular lever pivotally connected to the knuckle-pin and having one end connected to the knuckle, and means for operating the said lever, substantially as set forth.

2. The combination with a coupling of the Janney type comprising the head, the knuckle and the knuckle-pin for pivotally connecting the knuckle to the head, of an angular lever pivotally connected to the knuckle-pin and provided with an aperture alined with the coupling-pin aperture of the knuckle, and a coupling-pin inserted through said apertures of the knuckle and the aperture of the angular lever, and means for operating the angular lever, substantially as set forth.

706,274. MACHINE FOR MAKING VENEER BOXES. WILLIAM H. SHARP, Dayton, Ohio. Filed Feb. 7, 1902. Serial No. 93,041. (No model.)

Claim.—1. In a cylindrical-box machine, the combination of drums, means for imparting rotary movement to said drums during which the boxes are formed, mechanism for uniting the ends of the boxes and the hoops on the outer surface thereof, means for severing the cylinder from which the boxes are made, into suitable portions, and means for imparting longitudinally-reciprocating movements to said drums to strip the boxes therefrom.

2. In a cylindrical-box machine, the combination of drums, means for imparting rotary movement to said drums during which the material from which the boxes are constructed is carried around said drums, means for supporting the bottoms of the boxes in position to be received by the drums, uniting mechanism for uniting the material from which the boxes are formed, means for severing or cutting the cylinder into suitable parts to form the boxes, and means for subsequently imparting longitudinally-reciprocating movement to the drums to strip the boxes therefrom.

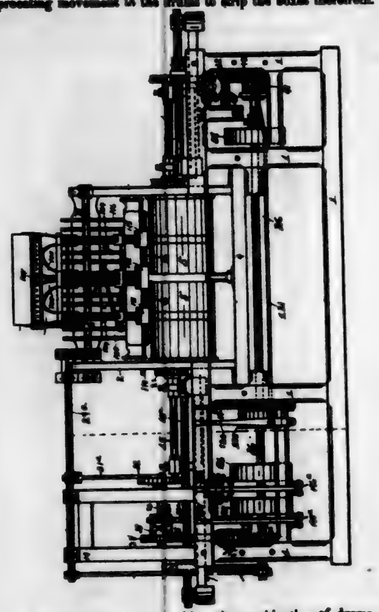

3. In a cylindrical-box machine, the combination of drums, means for imparting rotary movement to said drums during which the material from which the boxes are formed is carried around said drums, uniting mechanism for uniting the material from which the boxes are formed, further mechanism for applying metallic strips to the ends of the bands or hoops of said boxes, means for cutting the cylinder from which the boxes are formed into suitable portions, and means for imparting longitudinally-reciprocating movement to said drums at the completion of the formation of the boxes and during which said boxes are stripped from the drums.

4. In a cylindrical-box machine, the combination of drums, means for imparting intermittent rotary movement to said drums, during which the material from which the boxes are formed is carried around said drums, means for uniting said material during such intermittent rotary movement, means for imparting a subsequent continuous rotary movement to said drums during which the cylinder is formed from the material, cutting mechanism adapted to cut the cylinder in suitable portions to form boxes, means for uniting the metallic strips to the ends of the bands around said cylinder, and means for imparting horizontally-reciprocating movement to said drums at the completion of the formation of the boxes during which said boxes are stripped from the drums.

5. In a cylindrical-box machine, the combination of drums, means for imparting intermittent rotary movement to said drums, during which the material from which the boxes are formed is made into a cylinder, means for uniting said cylinder, and bands thereto, means for imparting a subsequent continuous rotary movement to said drums, means for cutting the cylinder in suitable portions during the last-named movement, means for supporting the bottoms of the boxes in position to be held by the drums during the formation of the cylinder, and mechanism for imparting horizontally-reciprocating movement to said drums after the boxes have been made and during which the boxes are stripped from the drums.

6. In a cylindrical-box machine, the combination of drums, means for imparting intermittent rotary movement to said drums, during which the cylinder from which the boxes are formed is completed, mechanism for uniting said cylinder during each movement, mechanism for uniting the ends of the bands or hoops around said cylinder by means of metallic strips, means for feeding such metallic strips into proper positions to be united to said bands, and cylinder, means for cutting the cylinder into suitable portions for boxes, means for supporting the bottoms of said boxes in positions to be received by the drums at the initial operation of said drums, and means for spreading or separating said drums at the completion of the boxes whereby said boxes are removed from said drums.

7. In a cylindrical-box machine, the combination of drums, means for imparting a rotary intermittent movement to said drums and a continuous rotary movement after the completion of said intermittent movement during which movements the material from which the boxes are made is formed in cylindrical shape around said drums, uniting mechanism for uniting the material in cylindrical form during the intermittent movement of the drums, and uniting mechanism for attaching metallic strips to the adjacent ends of the hoops or bands inclosing said cylinder, means for feeding said metallic strips into proper position to be united to said hoops or bands, and means for cutting the cylinder into suitable portions for boxes.

8. In a cylindrical-box machine, the combination of drums, means for imparting a rotary intermittent movement to said drums and a continuous rotary movement after the completion of said intermittent movement during which movements the material from which the boxes are made is formed in cylindrical shape around said drums, uniting mechanism for uniting the material in cylindrical form during the intermittent movement of the drums, uniting mechanism for attaching metallic strips to the adjacent ends of the hoops or bands inclosing said cylinder, means for feeding said metallic strips into proper position to be united to said hoops or bands, means for cutting the cylinder into suitable portions for boxes, and means for holding the bottoms of the boxes in position to be clamped by the drums in their initial movement.

9. In a cylindrical-box machine, the combination of drums, means for imparting an intermittent rotary movement and a continuous rotary movement after the completion of said intermittent movement during which movements the material from which the boxes are constructed is formed into cylindrical shape, uniting mechanism mounted on opposite sides of the machine, one set of such mechanism being adapted to unite the cylinder during the intermittent rotary movement of the drums, and the other set of said uniting mechanism being adapted to unite metallic strips to the ends of the bands or hoops inclosing said cylinder at the completion of said intermittent rotary movement, means for feeding said metallic strips into proper positions to be united to the bands, and means for severing the cylinder into suitable portions for boxes.

10. In a cylindrical-box machine, the combination of drums adapted to rotary and longitudinally-reciprocating movements, the former of such movements being adapted to form the material from which the boxes are made into cylindrical shape, and the latter of such movements being adapted to strip the boxes from said drums after their completion, means for holding the bottoms of the boxes in position to be held by the drums in their rotary movement, uniting mechanism adapted to unite the cylinder during the rotary movement thereof with the drums, means for feeding metallic strips into proper positions to unite the ends of the bands, uniting mechanism adapted to unite said metallic strips as they are fed in proper positions, and means for cutting said cylinders into proper parts for boxes after the operations of uniting said cylinder and the bottoms.

706,275. GRATE FOR BOILERS. HENRY SYLVESTER and FRED NOX SHEPHERD, Chicago, Ill. Filed Mar. 3, 1902. Serial No. 96,734. (No model.)

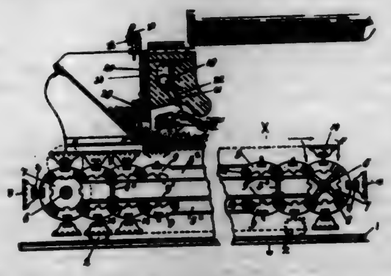

Claim.—1. In a combustion-chamber, the combination in a chain-grate stoker, of the grate-bars having locking-recesses 15' on their under sides the I-beam grate-carriers having upper flanges to engage said locking-recesses, the two-piece pivoted link-sections 9 hinged together at one side of the middle of said link, the longer section thereof having an inverted-T slot 13 to interlockingly engage the lower flanges of said I-beam grate-carrier and suitable upper and lower tracks and guideways for said links and rollers to support same in both their forward and rearward travel, substantially as described.

2. In a traveling grate, the combination of the individual grate-bars, each having the webbed upper surface and a base, said base having interlocking apertures or openings adapted to engage the flanges of the I-beam grate-carrier and hold said carrier against vertical movement, the I-beam grate-carrier having flanges engaging said interlocking apertures or openings 15', the pivoted two-section flexing links, each having in the upper side of one section thereof the inverted-T slots for engaging the opposite flanges of said I-beam grate-carriers to hold said carriers against movement in a vertical direction, and having on their under sides the lugs or teeth directly opposite to said T-shaped apertures, the chain-cams 7 for engaging said lugs, and the antifriction-rollers in the ends of said two-section links, substantially as described.

3. In a traveling grate, the combination with the coking-furnace and the grate-carriage of the flanged and apertured removable grate-sections, the grate-bar carriers 14 adapted to interlock with said grate-sections, the curved two-section links provided with the short forked ends adapted to receive the cheek of the adjoining link and containing the antifriction-rollers, said links being provided with the long cheek-section 9 and the short section provided with the inverted-T-shaped aperture 13 interlocking with the lower flanges of the grate-carrier 14, and also provided with the teeth or lug 9' engaging cams 7, and the I-beam rails and angle-plates upon which said rollers travel, substantially as described.

4. In a traveling grate, the combination of the grate-bars 15 having T-shaped openings 15' interlocking with the upper flanges of the grate-bar carriers, the grate-bar carriers having flanges on their upper sides engaging said openings and also having engaging flanges on their under sides, the antifriction-roller links having two sections hinged together, one thereof being larger than the other, said larger section having the T-shaped opening interlocking with the grate-carrier flanges, the cams 7 engaging the teeth 9' on the under side of said links, and the I-beam rails and angle-plates supporting said grate, substantially as described.

5. In a traveling grate the combination of the grate-bars having openings 15', the I-beam grate-carriers, having upper and lower flanges, the upper thereof being adapted for interlocking engagement with said openings 15', the arched, two-part hinged links having openings 13 on their upper sides adapted to engage said lower flanges, said links being provided with the lugs or teeth on their under sides, the rollers pivoted on the ends of said hinged links, and the I-beam rails between and on the upper and lower flanges of which said rollers travel, substantially as described.

6. The combination of the series of grates, movable over and around the movable framework, the individual roller-links 9 attached to said grates and moving therewith to support all of said grate-sections on an equal level, the I-beam and angle-plate guides 5', 5' for said rollers governing their movement in a vertical direction, the interlocking means 13, 14 and 15' provided in and between said grate-sections and links, and the means for moving said series of grates over and around said framework, substantially as described.

7. The combination of the series of grates, movable over and around the movable framework, the individual supporting-links 9 for each of said grate-sections and movable therewith to support the entire upper and lower surfaces of said grate on a level, the guiding-rails 5', 5' in said framework coacting with said supporting means, the interlocking apertures and flanges 13, 14 and 15' in said grate-sections, links and grate-carriers, the spider provided at the rear end of said chain-grate stoker to prevent the products of combustion from falling inside of same, and means for moving said grate and spider, substantially as described.

706,276. COMPRESSOR. JOHN STUMPF, Berlin, Germany. Filed May 8, 1901. Serial No. 59,514. (No model.)

Claim.—In a steam-actuated earbon-fluid compressor, the combination of a single cylinder forming both the steam-chamber and the compression-chamber, a piston working in the cylinder exposed on one side to the steam and performing on its other side the work of compression, a steam inlet and outlet slide-valve, means for positively moving the valve consisting of a stem connected at one end to the valve and provided at its other end with a shoulder, said stem being movable in a chamber in

the piston, a shoulder at the lower end of the chamber adapted in the upward movement of the piston to engage the shoulder on the stem to close the valve, a shoulder at the upper end of the chamber adapted in the downward movement of the piston to engage the end of the stem to open the valve, and piston-returning means opposing the force of the piston-moving means.

706,277. REVERSING FRICTION-CLUTCH. ARNOLD M. DYRENG, Marquette, Mich. Filed Sept. 4, 1901. Serial No. 74,373. (No model.)

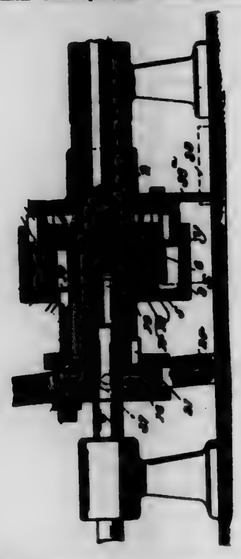

Claim.—1. A reversing-gearing comprising, in combination, a driving-shaft, a driven shaft, a coupling-head on each shaft, one head having a true concentric surface and a tapered surface, the other head having an inner tapered surface opposite the tapered surface of the former head, an expansion-ring carried by one head for engaging the true concentric surface of the other head, means for acting on each ring to effect its engagement with the said concentric surface, a series of friction-rolls designed to be thrown into frictional engagement with the tapered surface of the two heads when the expansion-ring is out of engagement, and means for actuating said rolls, substantially as set forth.

2. A reversing-gearing comprising, in combination, a driving-shaft, a driven shaft, a coupling-head on each shaft, one head having an inner true concentric surface and an outer tapered surface, the other head having an inner tapered surface opposite the tapered surface of the former head, an expansion-ring carried by one head for engaging the true concentric surface of the other head, means for expanding said ring, a series of friction-rolls designed to be thrown into frictional engagement with the tapered surfaces of the two heads when the expansion-ring is out of engagement, and means for actuating said rolls, substantially as set forth.

3. A reversing-gearing comprising, in combination, a driving-shaft, a driven shaft, a coupling-head on each shaft, one head having an inner true concentric surface and an outer tapered surface, the other head having an inner tapered surface opposite the tapered surface of the former head, an expansion-ring carried by one of the heads for engaging the inner true concentric surface of the other head, means for expanding said ring, auxiliary means for positively coupling said heads supplemental or in addition to the coupling effected by the expansion-ring, a series of friction-rolls designed to be thrown into frictional engagement with the tapered surfaces of said heads when the friction-ring and auxiliary means are out of engagement, and means for actuating said rolls, substantially as set forth.

4. The combination with the driving-shaft, its coupling-head having an inner true concentric surface and an outer tapered surface, of the driven shaft, the coupling-head thereon having a central bore and an inner tapered surface opposite the before-mentioned tapered surface, a friction-ring fixed on said bore within the concentric surface of the coupling-head of the driving-shaft, a sliding collar carried by the coupling-head of the driven shaft, means actuated by said collar for expanding said ring, a lever for shifting said collar, a series of rolls between said tapered surfaces, a disk supporting said rolls, and connections between said disk and said lever, substantially as set forth.

5. The combination with the driving-shaft having a coupling-head with an inner true concentric surface and an outer tapered surface, of the driven shaft, the coupling-head thereon having a central bore and an inner tapered surface opposite the before-mentioned tapered surface, a friction-ring fixed on said bore within the concentric surface of the coupling-head of the driving-shaft, a sliding collar carried by the coupling-head of the driven shaft, a wedging-bar carried by said collar and designed to be forced between the ends of said ring, a lever for shifting said collar, a series of rolls between said tapered surfaces, a disk supporting said rolls, and connections between said disk and said lever, substantially as set forth.

6. The combination with the driving-shaft having a coupling-head with an inner true concentric surface, and an outer tapered surface, of the driven shaft, the coupling-head thereon having a central bore and an inner tapered surface opposite the before-mentioned tapered surface, a friction-ring fixed on said bore within the concentric surface of the coupling-head, of the driving-shaft, a sliding collar carried by the coupling-head of the driven shaft, a wedging-bar carried by said collar and designed to be forced between the ends of said ring, said bar being split longitudinally and having a central bore, a regulating-pin extended through said bore and having a tapered head for engaging the bar at its end, means for adjusting said pin, a lever for shifting said collar, a series of rolls between said tapered surfaces, a disk supporting said rolls, and connections between said disk and said lever, substantially as set forth.

7. The combination with the driving-shaft and its coupling-head having an inner true concentric surface and formed with openings in its wall, of the driven shaft, the coupling-head thereon having a central bore, reversing-gearing between said heads, an expansion-ring on said bore, a sliding collar, spring-pressed pins carried by said collar and extended through openings in the coupling-head of the driven shaft for entering said openings of the other coupling-head, and means for actuating said collar, substantially as set forth.

8. The combination with the driving-shaft and its coupling-head having an inner true concentric surface, of the driven shaft, the coupling-head thereon having a central bore formed with a groove, reversing-gearing between said heads, a split ring on said bore having a lug fitted in said groove, a wedging-bar for expanding said ring, a sliding collar carrying said wedging-bar, a lever for actuating the collar, two spring-pressed pins mounted on the collar and extended through the head of the driven shaft and designed to extend into the openings in the coupling-head of the driving-shaft.

9. The combination with the driving-shaft and its coupling-head having a central bore, of the driven shaft, the coupling-head thereon having a central bore, reversing-gearing between said heads, a coupling-pin fitted in said bore and extended into the bore of the driving-shaft coupling-head, a locking-pin engaging said coupling-pin, a split ring on said bore, a cap-plate holding said ring and coupling-pin, a wedging-bar for expanding the ring, a sliding collar, and means for actuating the same, substantially as set forth.

10. The combination with the driving-shaft, and its coupling-head, of the driven shaft, the coupling-head thereon, means for effecting a positive engagement between said heads for causing both shafts to rotate in the same direction, a lever for controlling such means, a series of friction-rolls between said heads for reversing the rotation of the driven shaft, a disk on which such rolls are mounted, connections between such disk and lever, a plate extending from such disk, and a stop with which such plate is designed to engage when the rolls are in action, substantially as set forth.

11. The combination with a coupling-head and a shaft, said head having an inner true concentric surface and an outer tapered surface, of a second coupling-head having a tapered surface and an expansible friction-ring for engaging said inner concentric surface, a wedge for expanding said ring, shiftable means for moving said wedge into and out of engagement with said ring, a series of tapered rolls for engaging both concentric surfaces, a disk supporting such rolls, a connection between such disk and shiftable means, and a plate having a bore through which the shaft is passed, both coupling-heads being concentric with the shaft, which latter is limited in its longitudinal movement in coupling and uncoupling, substantially as set forth.

706,278. FOLDER FOR SEWING-MACHINES. WILBUR L. SWIFT and EDWARD BURR, New York, N. Y., assignors to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed Mar. 6, 1901. Serial No. 49,725. (No model.)

Claim.—1. The herein-described folding-guide for ruffling and sewing machines, comprising a folding and guiding-recess, a guiding-lip and a guiding-recess opposed to the first folding and guiding recess, whereby the raw edge of a plaited fabric may be folded and guided, the plait guided by the lip, and the edge of the fabric to be ruffled guided in the recess substantially as described.

2. The herein-described folding-guide for sewing-machines, comprising a lower folding and guiding recess, a vertically-extending guiding-lip, and a guiding-recess above said folding and guiding recess and opposed thereto, whereby the raw edge of a plaited fabric may be folded and guided, the plait guided by the lip and the edge of the other fabric guided in the recess; substantially as described.

3. The herein-described folding-guide for ruffling and sewing machines, comprising a folding and guiding recess, a guiding-lip and a guiding-recess opposed to the first folding and guiding recess, and a forwardly-projecting spring-tongue whereby the raw edge of a plaited fabric may be folded and guided, the plait guided by the lip, and the edge of the fabric to be ruffled guided in the recess; substantially as described.

4. The herein-described folding-guide for ruffling and sewing machines, comprising a folding and guiding recess, a guiding-lip and a guiding-recess opposed to the first folding and guiding recess, whereby the raw edge of a plaited fabric may be folded and guided, the plait guided by the lip, and the edge of the fabric to be ruffled guided in the recess, and a trough-shaped recess arranged in advance of the folding-guide; substantially as described.

706,279. PUNCH. HENRY S. TEMPLE, Milwaukee, Wis. Filed Dec. 20, 1901. Serial No. 86,662. (No model.)

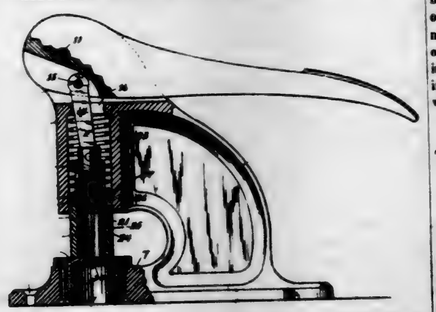

Claim.—1. The combination of a base having a standard projecting therefrom, and a chambered arm extending from the standard, a lever pivoted to the standard, a tubular spring-pressed plunger movable in the chamber of the arm, the spring-pressure being exerted in a direction to force the plunger outwardly from the chamber, a punch-carrier fitting movably in the bore of the plunger, a connection between the carrier and the lever, whereby when the lever is operated the carrier is moved either toward or from the material to be punched, in accordance with the direction of the turning of the lever, a supporting medium for the material to be punched, said supporting medium located beyond, and in line with, the chambered arm, and provided with an opening therethrough for the passage of the punch, means for causing the plunger and carrier to move outwardly together for a certain distance, and for causing the carrier and its punch to move outwardly after the plunger comes in contact with the material to be punched, to thereby force the punch through said material, means for holding the plunger in contact with the punched material during the withdrawal of the punch, and means, after the withdrawal of the punch, for causing the carrier and plunger to move together away from said punched material.

2. The combination of a base having a standard projecting therefrom, and a chambered arm extending from the standard, a lever pivoted to the standard, a spring-pressed tubular plunger movable in the chamber of the arm, the spring-pressure being exerted in a direction to force the plunger outwardly from the chamber, and said plunger provided longitudinally with a key-seat, one end of said key-seat leading to a slot extending through the plunger into the bore thereof, a key fitting said seat and bearing against the wall of the chambered arm, said key having one end provided with a lug projecting through the slot and into the bore of the plunger, a punch-carrier fitting movably in the bore of the plunger and provided with a shoulder adapted, at certain periods of the movement, to make contact with the lug of the key, a connection between the carrier and the lever, whereby when the lever is operated the carrier is moved toward or from the material to be punched, in accordance with the direction of turning of the lever, and a supporting medium for the material to be punched, said medium provided with an opening through which the punch is adapted to pass.

3. The combination of a base having a standard projecting therefrom, and a chambered arm extending from the standard, a lever pivoted to the standard, a spring-pressed tubular plunger movable in the chamber of the arm, the spring-pressure being exerted in a direction to force the plunger outwardly from the chamber, and said plunger provided within its bore with a shoulder, and also provided longitudinally with a key-seat, one end of said key-seat leading to a slot extending through the plunger into the bore thereof, a key fitting said seat and bearing against the wall of the chambered arm, said key having one end provided with a lug projecting through the slot and into the bore of the plunger, a punch-carrier fitting movably in the bore of the plunger and provided with a shoulder adapted, at certain periods of the movement, to make contact with the lug of the key and also with the interior shoulder of the plunger, a connection between the carrier and the lever, whereby when the lever is operated the carrier is moved toward or from the material to be punched, in accordance with the direction of turning of the lever, and a supporting medium for the material to be punched, said supporting medium provided with an opening through which the punch is adapted to pass.

4. The combination of a base having a standard projecting therefrom, and a chambered arm extending from the standard, a lever pivoted to the standard, a spring-pressed tubular plunger movable in the chamber of the arm, the spring-pressure being exerted in a direction to force the plunger outwardly from the chamber, a wedge-key adapted to be wedged in between the plunger and the inner wall of the chambered arm, when the plunger engages the material to be punched, a punch-carrier fitting movably in the bore of the plunger and adapted, at certain periods of the movement, to release said key from wedging engagement, a connection between the carrier and the lever, whereby when the lever is operated the carrier is moved toward or from the material to be punched, in accordance with the direction of turning of the lever, and a supporting medium for the material to be punched, said supporting medium provided with an opening through which the punch is adapted to pass.

706,280. PREPARING SURFACES FOR ETCHING AND IN ETCHING SUCH SURFACES. FRANCIS H. TRIBODO and SEBASTIAN S. PECKHAM, Greenbay, Wis.; said Peckhamagh assignor to Rutherford B. H. Macrorie, Greenbay, Wis. Filed June 13, 1899. Serial No. 720,345. (No specimens.)

Claim.—1. In the art of etching glass, or similar substances, the process which consists in covering one surface of a sheet of glass with a coating composed of albumen, water, ammonia, chrome-alum and bichromate of ammonia in the proportions specified; in then drying this coating in subdued light; in passing actinic rays through the glass into the coating; in then developing sensitized and exposed carbon tissue on this coating; in then subjecting the sheet of glass to the action of hydrofluoric gas, eroding the surface of the glass; and in then removing the remaining portion of the coating.

2. In the art of etching glass, or similar substances, the process which consists in covering one surface of a sheet of glass with a coating composed of albumen, water, ammonia, chrome-alum and bichromate of ammonia in the proportions specified; in then drying this coating in subdued light; in then exposing this coating to the light; in then developing sensitized and exposed carbon tissue on this coating; in then eroding the surface of the plate on which the coating is placed to a depth varying with the protection afforded by the coating; and in then removing the remaining portion of the coating.

706,281. MEANS FOR TRANSMITTING MOVEMENTS AND INDICATING POSITIONS ELECTRICALLY. WILHELM A. THIERBACH, Hanover, Germany. Original application filed Nov. 12, 1901, Serial No. 82,022. Divided and this application filed Apr. 4, 1902. Serial No. 101,288. (No model.)

Claim.—1. In a system for the transmission of movements and positions of indicators by means of electric currents, the combination of one apparatus, consisting of a bipolar rotor without windings and a stator having a primary winding, which is connected to a source of electricity, and also a secondary winding, with one or more apparatuses, consisting of a bipolar rotor without windings and a stator having only one winding, whose sections are respectively connected to the sections of said secondary winding at the corresponding points, substantially as shown and described.

2. In a system for the transmission of movements and positions of indicators by means of electric currents, the combination of one apparatus, consisting of a bipolar rotor without windings and a stator having a primary winding, which is connected to a source of electricity, and also a

secondary winding, with one or more apparatuses, consisting of a bipolar rotor without windings and a stator having only one winding, whose extremities are respectively connected to the ecstions of said secondary winding at the corresponding points, by lines, one of which near to each apparatus is provided with a bell, which sounds only when compensating currents enter and which stops ringing, when the rotor is adjusted, substantially as shown and described.

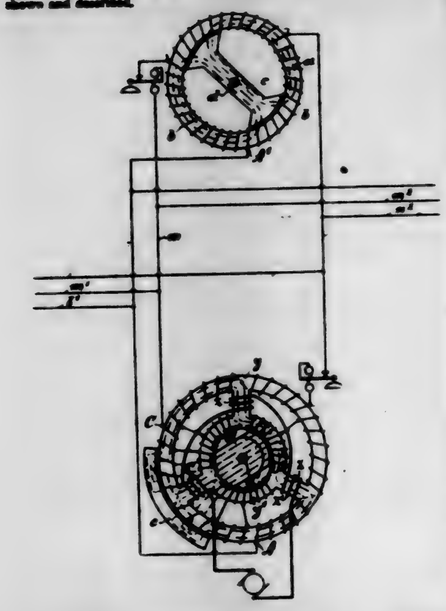

706,282. PAPER-FEEDING MACHINE FOR TYPE-WRITERS. HARRY C. TOBEY, Salina, Kans. Filed July 12, 1901. Serial No. 67,266. (No model.)

Claim.—1. In a device of the character described, the combination of a supporting-frame having triangular side pieces, the crown-bars of which are vertically disposed at the front of the frame, paper-rolls journaled in said crown-bars, a carbon-roll journaled in the rear central angles of the side pieces, means for winding up the carbon-paper on the carbon-roll, and braking devices for said paper-rolls consisting of tension-springs bearing on the rolls and mounted upon the arms of one of the said triangular side pieces, substantially as described.

2. In a device of the character described, the combination of a supporting-frame having triangular side pieces formed with open bearings in their crown-bars and at their central angles, said crown-bars being disposed vertically at the front of the frame, paper-rolls journaled in the open bearings in the crown-bars, a carbon-roll journaled in the open bearings at the said central angles, means for rotating the carbon-roll to wind up the carbon-paper thereon, and braking devices for said paper-rolls consisting of tension-springs bearing on the rolls and mounted upon the arms of one of the said triangular side pieces, substantially as and for the purpose specified.

3. In a device of the character described, the combination of a supporting-frame having triangular side pieces formed with open bearings in their crown-bars and at their central angles, said crown-bars being disposed vertically at the front of the frame, paper-rolls journaled in the open bearings in the crown-bars, a carbon-roll journaled in the open bearings at the said central angles, tension-springs adjustably secured to the arms of one of the triangular side pieces and serving as braking devices bearing on the paper-rolls, a pinion mounted upon the axis of the carbon-roll, and a crank-operated gear-wheel meshing with said pinion to adapt the carbon-roll to be rotated to wind up the carbon-paper thereon, substantially as set forth.

706,283. ELECTRIC GLASS-FURNACE. ADOLF VOELKER, Cologne, Germany, assignor to Company l'Industrie Verrière et ses Dérivés, Brussels, Belgium. Filed Apr. 26, 1901. Serial No. 57,489. (No model.)

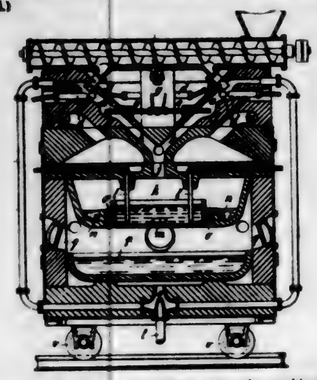

Claim.—1. In a furnace for melting glass, the combination with a plurality of inclined passages converging to form a common outlet, an inlet for each of said passages, electrodes to form an arc immediately at the inlet to each of said passages, electrodes positioned in the respective passages below the first-named electrodes, a refining-pot located immediately below the common outlet of the said passages and electrodes positioned in said pot.

2. In a furnace for melting glass, the combination with a plurality of inclined passages converging to form a common outlet, electrodes in said passages, an inlet for each of said passages, a refining-pot below said outlet and a basin below the refining-pot, of outlets forming a continuation of the respective passages above the said inlets for the escape of combustible gases produced in said passages and pipes leading from said outlets to a suitable burner below the basin whereby said basin is heated by said gases.

706,284. CAR-BRAKE MECHANISM. AUGUST W. VOLLSTORF, Toledo, Ohio. Filed Nov. 26, 1901. Serial No. 84,070. (No model.)

Claim.—1. In a car-brake, the combination with a truck-frame mounted on wheels having friction-disks on their inner webs concentric to their axles, of a pair of bars movably supported in parallel position between the wheels by the truck-frame, and having shoes secured thereto opposite each wheel-disk, concentrically to their axle; an extension-rod coupling the parallel bars, comprising a central and end sections, the center section being like threaded at both ends; and the inner ends of the end sections being reversely threaded to the adjacent ends of the middle section, and having their outer ends adapted to be coupled to the parallel bars; sleeves internally threaded for coupling the sections, each sleeve having a radial arm; means to couple the radial arms each to an operating-lever at opposite ends of the car; and means to prevent rotation of the middle and end sections of the extension-rod.

2. In a car-brake, the combination with a truck-frame mounted on wheels having friction-disks on their inner webs, concentric to their axles, of a pair of bars movably supported in parallel position between the wheels by the ends of the truck-frame, and having shoes secured thereto opposite each wheel-disk, concentrically to their axle; an extension-rod coupling the parallel bars, comprising a central and end sections, the center section being like threaded at both ends, and the inner ends of the end sections being reversely threaded to the adjacent ends of the middle section, and having their outer ends reduced in diameter and threaded; sleeves internally threaded for coupling the sections, each sleeve having a radial arm; orifices central to the bars adapted to receive the reduced ends of the middle sections; nuts for the threaded ends of the end sections adapted to secure the extension-rod thus formed to the bars; means to prevent rotation of the middle and end sections; a lever pivoted to each platform of the car and a link-rod connecting each lever with the arm of one of the sleeves.

3. In a car-brake, the combination with a truck-frame mounted on wheels having friction-disks on their inner webs, concentric to their axles, of a pair of transed bars movably supported in parallel position between the wheels by stirrups pivoted to the ends of the truck-frame, and having shoes secured thereto opposite each wheel-disk, concentrically to their axle; an extension-rod coupling the parallel bars, comprising a central and end sections, the center section being like threaded at both ends, and the inner ends of the end sections being reversely threaded to the adjacent ends of the middle section, and having their outer ends adapted to be coupled to the parallel bars; sleeves internally threaded for coupling the sections, each sleeve having a radial arm; means to couple the radial arms each to an operating-lever at opposite ends of the car respectively; and stay-chains connecting the parallel bars to the sides of the truck-frame adapted to adjustably limit the retraction of the bars.

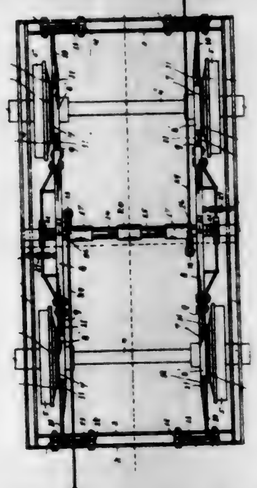

4. In a car-brake mechanism, the combination with a shoe-supporting bar, having an arch for spanning the axle of a car-truck and provided with pendantly-pivoted arms curved to complete the circle of the arch when their free ends are abutted, of an annular brake-shoe disk inset to admit the axle central thereto, and having hooks at the back adapted to engage the arms and arch and be held thereby when the arms are abutted and locked together.

5. In a car-brake, the combination with a truck-frame mounted on wheels having friction-disks on their inner webs, concentric to their axles, of a pair of bars movably supported in parallel position between the wheels by stirrups pivoted to the ends of the truck-frame, and having shoes secured thereto opposite each wheel-disk, concentrically to their axle; and means to laterally advance and retract the bars.

706,285. COMBINED STORM-APRON AND DUST-HOOD. GUSTAVE WALTER, Sandwich, Ill. Filed Feb. 5, 1902. Serial No. 92,841. (No model.)

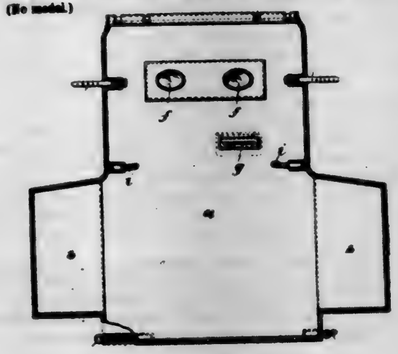

Claim.—A combined storm-apron and dust-hood consisting of a waterproof flexible fabric provided at its lower end with means for attaching it to the dashboard and at its side edges with means for detachably fastening it to the top-props and at its upper end with means for attaching it to a buggy-top, this latter means consisting of a flexible strip attached to the upper edge of the apron and adapted to flex transversely to fit buggy-tops of various shapes and sizes, means being provided on the buggy-top for detachably clamping said strip under the front edge of the buggy-top.

706,286. BRUSH-HOLDER. FRANK T. WELDAW, Syracuse, N. Y. Filed Feb. 10, 1902. Serial No. 93,441. (No model.)

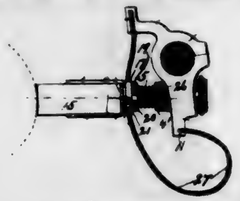

Claim.—1. A brush-holder comprising a support, a laminated bow-spring having opposite ends secured to the support and its central portion movable toward and away from said support, and a brush-clamp secured to the central portion of the spring.

2. A brush-holder comprising a support, a spring having its opposite ends secured to the support and its intermediate portion movable toward and away from the support, and a brush-clamp secured to the intermediate portion of the spring.

3. A brush-holder comprising a support having a guideway, a reciprocally-movable brush-clamp guided in said way, and a spring fixed to the support at opposite sides of the guideway and its intermediate portion movable and provided with a clamp to hold the brush to the commutator.

4. A brush-holder comprising a support, a reciprocally-movable brush-clamp guided on the support, a spring having its opposite ends secured to the support at opposite sides of the clamp and its intermediate portion fixed to the clamp to hold the brush to the commutator.

5. In a brush-holder, a support, a movable brush-clamp provided with a stem guided on the support and a spring secured to the support at opposite sides of the stem and its intermediate portion movable and provided with a clamp to hold the spring to the commutator.

6. In a brush-holder, a support having an adjustable member provided with a guideway, a reciprocally-movable brush-clamp guided in said way and a spring operating between the adjustable member and clamp and insulated therefrom for moving the brush-clamp away from the support toward the commutator.

7. A brush-holder comprising a support having an adjustable member provided with a guideway, a brush-clamp guided in said way and insulated from said member, and a spring interposed between the member and brush-clamp for forcing the brush to the commutator.

8. A brush-holder comprising a support, a brush-clamp having a projecting rod, a sleeve formed of insulating material guided in the support and encircling a rod, and a spring operating upon the clamp to force the brush to the commutator.

9. A brush-holder comprising a support having a threaded aperture, a threaded sleeve movable in the aperture, a plunger-rod movable in the sleeve and insulated therefrom, a brush-clamp secured to the rod and a spring interposed between the sleeve and clamp and operating to force the brush to the commutator.

10. A brush-holder comprising a support, a reciprocally-movable brush-clamp guided in the support, a bow-spring having its ends fixed to the support and its central portion movable toward and away from said support and provided with a clamp to hold the brush to the commutator, and yielding means for holding the central portion of the spring away from the support.

11. A brush-holder comprising a support, a threaded member adjustable on the support and provided with a guideway, a sleeve of insulating material guided in said way and having one end provided with an annular shoulder, a spring interposed between the adjustable member and said annular shoulder, a brush-clamp actuated by the sleeve to force the brush to the commutator and having a stem extending into the sleeve.

12. A brush-holder comprising an arm, a support adjustable on said arm and provided with a threaded aperture, an adjustable threaded sleeve in the aperture, a brush-clamp having one of its jaws adjustable toward and away from the other, a rod or stem secured to the clamp and projecting into the threaded sleeve, an insulating-sleeve surrounding said rod

or stem, a spring interposed between the adjustable sleeve and clamp for holding the brush to the commutator and an additional spring having its opposite ends secured to the support and its intermediate portion secured to the clamp.

13. In a brush-holder, a support, a laminated spring having its opposite ends secured to the support, a reciprocally-movable brush-clamp guided on the support and secured to the intermediate portion of the spring, said clamp having oppositely-arranged jaws, one of which is adjustable toward and away from the other.

706,287. **SHADE-BRACKET.** FREDERICK YARR, Paterson, N. J. Filed Feb. 3, 1902. Serial No. 92,573. (No model.)

Claim.—1. The combination of a shade-roller bracket consisting of a plate having one end portion thereof formed as spaced parallel guides and with a tongue between said guides, and having its other end portion turned off at right angles to said guides and constituting the roller-carrying portion of said bracket, said tongue having a rebend or hump serving as a knob, and a guiding-support for said bracket, said support having teeth adapted to be engaged by the tongue and grooves adapted to receive said guides, substantially as described.

2. The combination of a shade-roller bracket consisting of a plate having one end portion thereof formed as spaced parallel guides and with a tongue between said guides, and having its other end portion turned off at right angles to said guides and constituting the roller-carrying portion of said bracket, said tongue having a rebend or hump serving as a knob, and a guiding-support for said bracket, said support having teeth adapted to be engaged by the tongue and grooves adapted to receive said guides and the tongue, substantially as described.

3. The combination of a shade-roller bracket consisting of a plate having one end portion thereof formed as spaced parallel guides and with a tongue between said guides, and having its other end portion turned off at right angles to said guides and constituting the roller-carrying portion of the bracket, and a guiding-support for said bracket, said support having grooves adapted to receive said guides, and another groove intermediate said first-named grooves and adapted to receive said tongue, and said support also having teeth in the intermediate groove adapted to be engaged by said tongue, substantially as described.

706,288. **PORTABLE TOY FENCE.** CHRISTIAN J. YOUSE, Jr., JOHN R. YOUSE, and LOUIS A. YOUSE, Baltimore, Md. Filed May 14, 1902. Serial No. 107,342. (No model.)

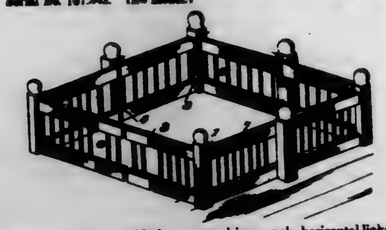

Claim.—1. A portable fence comprising panels, horizontal links pivotally connecting the panels, a post, and hooks projecting from the post, said hooks engaging the links, the ends of the panels being seated against the post and held against lateral displacement by the hooks engaging the links, substantially as described.

2. A portable fence comprising panels, horizontal links pivotally connecting the panels, an opening being formed in the links, a post, and hooks projecting from the post, said hooks engaging the openings in the links, the ends of the panels being seated against the post and held against lateral displacement by the hooks engaging the openings in the links, substantially as described.

3. A portable fence, comprising two panels disposed at an angle to each other, links pivotally connected to the panels, a post having faces corresponding to the ends of the panels, the ends of said panels fitting said faces of the post, and hooks projecting from the post, said hooks engaging the links to bind the panels to the post to prevent lateral displacement of the panels, substantially as described.

4. A portable fence comprising a plurality of panels, horizontal links pivotally connecting the panels together, an intermediate post or posts, square faces being provided on the posts, hooks projecting from said post to engage the links of two panels disposed in line with each other, end posts interposed between and at the angle formed between the two end panels, said post being squared off to form faces, hooks projecting from the end posts to engage the links connecting the end panels, the ends of the panels fitting squarely the faces of the posts to prevent lateral displacement of the said panels, substantially as described.

5. In a portable fence, the combination with two or more panels normally resting on a base or support, of horizontal links pivotally connecting the panels together, posts interposed between each two adjacent panels, said posts normally resting on the same base or support as the panels, and fastening devices permanently fixed to the posts for engaging the links to bind the panels and posts together, substantially as described.

706,289. **AUTOMATIC STREET-SPRINKLING DEVICE.** TERRY D. YOUNG, Memphis, Tenn. Filed Sept. 9, 1901. Serial No. 74,849. (No model.)

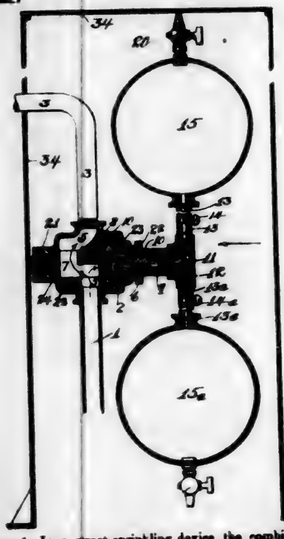

Claim.—1. In a street-sprinkling device, the combination with a supply-pipe and an automatic regulating-valve for same consisting each of a vertical pipe, a sleeve on said pipe having its upper surface beveled in the form of a flat inverted cone, a flat inverted cone fitting the bevel top of said sleeve, and adjustable to and from it to regulate the flow of water, and a flat band surrounding the head below the opening thus formed and having a part extended above and closing the said opening, substantially as and for the purposes described.

2. In a street-sprinkling device, the combination with a supply-pipe and an automatic regulating-valve for same, of sprinkling-heads consisting each of a vertical pipe, a sleeve on said pipe having its upper surface beveled in the form of a flat inverted cone, a hub in said sleeve, a screw extending upward from said hub and an inverted flat cone fitting the bevel top of said sleeve and adjustable toward and from it along said screw, and a flat band surrounding the head below the opening thus formed and having a portion extended above and closing part of the said opening, substantially as and for the purposes set forth.

3. In an automatic street-sprinkling device, the combination with a sprinkling-head and a water-supply pipe of means of regulating the flow of water to said sprinkling-head, consisting of a valve, a valve-stem extending beyond the said valve suitable stuffing-boxes for said valve-stem, water-channels through said valve-stem, which are alternately open to the water in said valve, a T on the end of said valve-stem, pipes leading oppositely from said T, water-reservoirs on said pipes substantially as and for the purposes set forth.

4. In an automatic street-sprinkling device, the combination with a sprinkling-head and a water-supply pipe of means of regulating the flow of water to said sprinkling-head consisting of a valve, a valve-stem extending beyond the said valve, suitable stuffing-boxes for said valve-stem, water-channels through said water-stem, which are alternately open to the water in said valve, a T on the end of said valve-stem, pipes leading oppositely from said T, a ball-valve in said T adapted to rest on the lower pipe and close the passage through same and water-reservoirs on said pipes, substantially as and for the purposes set forth.

5. In an automatic street-sprinkling device, the combination with a sprinkling-head and a water-supply pipe of means of regulating the flow of water to said sprinkling-head, consisting of a valve, a valve-stem extending beyond the said valve suitable stuffing-boxes for said valve-stem, water-channels through said valve-stem, which are alternately open to the water in said valve, a T on the end of said valve-stem, pipes leading oppositely from said T, a ball-valve in said T adapted to rest on the lower pipe and close the passage through same, means of regulating the flow of water through said pipes, and water-reservoirs on said pipes, substantially as and for the purposes set forth.

6. In an automatic street-sprinkling device, the combination with a sprinkling-head and a water-supply pipe of means of regulating the flow of water to said sprinkling-head, consisting of a valve, a valve-stem extending beyond the said valve suitable stuffing-boxes for said valve-stem, water-channels through said valve-stem, which are alternately open to the water in said valve, a T on the end of said valve-stem, pipes leading oppositely from said T, a ball-valve in said T adapted to rest on the lower pipe and close the passage through same, means of regulating the flow of water through said pipes, an overbalance-chamber on the sides of each of said water-reservoirs and means of filling said overbalance-chamber after the water-reservoir has filled, substantially as and for the purposes described.

7. In an automatic street-sprinkling device, the combination with a sprinkling-head and a water-supply pipe of means of regulating the flow of water to said sprinkling-head, consisting of a valve, a valve-stem extending beyond the said valve suitable stuffing-boxes for said valve-stem, water-channels through said valve-stem, which are alternately open to the water in said valve, a T on the end of said valve-stem, pipes leading oppositely from said T, a ball-valve in said T adapted to rest on the lower pipe and close the passage through same, means of regulating the flow of water through said pipes, an overbalance-chamber on sides of each of said water-reservoirs, a pipe leading from the bottom of same to near the top of the overbalance-chamber, and suitable drains for each, substantially as and for the purposes set forth.

706,290. **METALLIC PACKING.** ALBERT J. SWART, Chicago, Ill. Filed Mar. 5, 1901. Serial No. 49,873. (No model.)

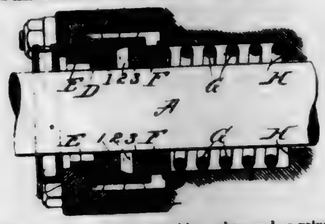

Claim.—1. The combination with a piston-rod or valve-stem and packing-case therefor, of a single vibrating cup containing a plurality of conical bores and one final cylindrical bore, wearing-rings within said bores, the combined length of said rings being less than the combined length of said bores, and a follower snugly fitting between said rod and the interior circumference of said cylindrical bore and longitudinally movable therein; substantially as described.

2. The combination with a piston-rod or valve-stem and packing-case therefor, a vibrating cup, and a wearing-ring in said cup, of a follower fitting about said rod and in said cup and bearing snugly and directly between said rod and the interior circumference of said cup, whereby said follower connects said rod and cup and causes them to move together during the vibration of said rod; substantially as described.

3. The combination with a rod having an enlarged diameter at its extremity and a packing-case therefor, of a vibrating cup having a split bushing, said vibrating cup being bored to provide two or more centrally-bounded, and one cylindrically-bounded conical cavities around the rod, metallic wearing-rings, a combination sliding face and ball-seated ring, a follower, a spring, and a stuffing-box bushing against which said follower bears; substantially as described.

706,291. **SYSTEM AND APPARATUS FOR TRANSMITTING CARRIERS IN PNEUMATIC-DISPATCH TUBES.** BERNEY C. BATCHELLER, Philadelphia, Pa. Filed Nov. 3, 1900. Serial No. 736,092. (No model.)

Claim.—1. A pneumatic transmission system comprising three or more stations, each connected to the adjacent station by an outgoing and incoming transmission-tube, said tubes having their receiving ends in each station connected to the delivery-conduit of an air-compressor situated at or near each station and their delivery ends in each station open to the atmosphere, an air-conduit in each station leading from a point in the transmission-tubes near their open delivery ends to the suction-conduits to the air-compressors aforesaid, all substantially as described, and so as to maintain one body of air in circulation between each two adjacent stations.

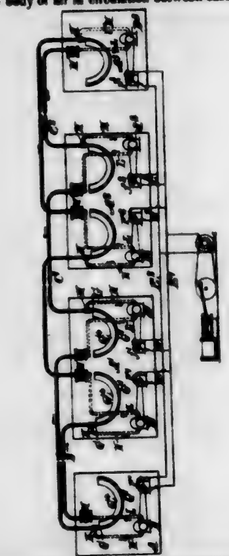

2. A pneumatic transmission system comprising a series of stations, outgoing and incoming transmission-tubes connecting said stations in pairs, air-compressors situated in separate stations of the series connected to force air into the receiving ends of the tubes and draw air from them at points adjacent to their delivery ends, electric motors in the separate stations connected to drive the compressors, an electric generator common to the system and circuit connections leading therefrom to the motors aforesaid.

3. In a pneumatic transmission system comprising three or more stations connected in pairs by outgoing and incoming transmission-tubes, said tubes being connected at their receiving ends to sources of air under pressure and open to the atmosphere at their delivery ends, and air-pumps having their suction-conduits connected to the delivery ends of the transmission-tubes a short distance from their open ends, the combination with a transmitter situated in the receiving end of a transmission-tube at one station of a curved delivery-table, as G^7 G^8, connected with the delivery end of a transmission-tube leading to the station and a chute as G^9, leading from said table to the transmitter.

706,292. **PIPE-HANGER.** ALLAN J. BEATON, Southington, Conn. Filed Oct. 16, 1900. Serial No. 33,290. (No model.)

Claim.—1. In a pipe-hanger, the combination of the buckle-frame having a rectangular opening, with the locking-bar formed of plate metal bent into the form of an inverted V with notches at each end in the junction of the two legs to receive the side bars of the frame, and the flexible metal strap fastened by one end to the said bar and with its other end free to pass between the said locking-bar and the lower end of the frame, substantially as described.

2. In a pipe-hanger, the combination of the rectangular buckle-frame with the locking-bar in the form of an inverted V fitted to slide vertically within the said frame, and the long flexible metal strap having one end rolled over the top of the said V-shaped bar and around the lower end of one leg thereof and secured thereto by having the extreme end forced up in between the two legs of the bar near their junction, substantially as described.

3. In a pipe-hanger, the combination of a buckle-frame with the roll 12, on the lower end bar of the frame and a V-shaped locking-bar mounted to slide within the said frame, and having the lower ends of its legs spread apart for exerting a pressure upon the roll at the laterally opposite sides of the lower end bar of the said frame, substantially as described.

4. In a pipe-hanger, the combination of the buckle-frame with a locking-bar having two depending legs, the said bar being loosely mounted within the said frame at the apex of the said bar, whereby the said bar may rock laterally on its fulcrum according to the varying pressure on the lower end of the legs, substantially as described.

5. The combination of a buckle-frame having side bars and a lower end bar, with a two-legged locking-bar mounted within the said frame for sliding longitudinally to the said bar, and a sheet-metal hanger-strap doubled upon itself over one of the said legs and depending from the other one of the said legs, substantially as described.

706,293. PNEUMATIC TREAD OR TIRE. FRANK L. BRADSHAW, Sutton-Coldfield, England. Filed Oct. 11, 1901. Renewed July 9, 1902. Serial No. 114,981. (No model.)

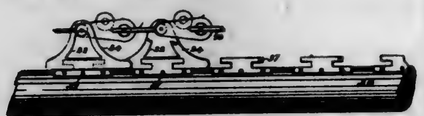

Claim.—1. In a device of the class described, the combination with a plurality of metallic securing members consisting of flat base or bottom plates having upwardly-extending securing portions secured together at the top forming a link chain, of a hollow tubular endless tread provided with means for removably securing such tread to the face or bottom plates of pieces, substantially as shown and described.

2. In a device of the class described, the combination with a plurality of securing members each consisting of a base or bottom plate provided with central orifices having end shoulders located at the side of the center of the end portions of said orifice, of a tubular tread or tire provided with metallic securing-lugs secured thereto in pairs the top members of which lugs are adapted to pass through the central portion of the hollow base or bottom plates and to be forced over upon the shoulders thereof upon the inflation of the tubular tread or tire so as to lock such tire to the base or bottom plates of the securing members so long as the same remains inflated, substantially as shown and described.

3. In a device of the class described, the combination with a plurality of securing members each consisting of a base or bottom plate provided with a rectangular central orifice provided at the end with a central entrance-slot, of link members securing such securing members together at the top in such manner that there will be a pivot-joint at the top of each of such securing members, a pivot-joint member secured between each pair of such members, an antifriction-roller carried by one of each pair of the link members so connecting the securing members, and a pair of T-shaped metallic securing-lugs for each pair of securing members secured to a tubular endless tread or tire, the construction being such that the securing-lugs may be passed through the central slotted portion of the abutting securing members one by one end upon inflation of the tire will be forced over the end shoulders thereof so as to lock such securing members to the tubular endless tread or tire so long as the same is inflated.

706,294. CONVEYER. FRITZ BENZ, New York, N. Y. Filed Apr. 13, 1901. Serial No. 55,626. (No model.)

Claim.—1. In a conveyer the combination of a rail, yokes traveling on same, connections between said yokes, means supported by said yokes for receiving the material to be carried, and means for operating the conveyer, substantially as described.

2. In a conveyer the combination of a rail, yokes traveling on same, connections between said yokes, means supported by said yokes for receiving the material to be carried, means for operating the conveyer and automatic means for discharging the load at any predetermined points.

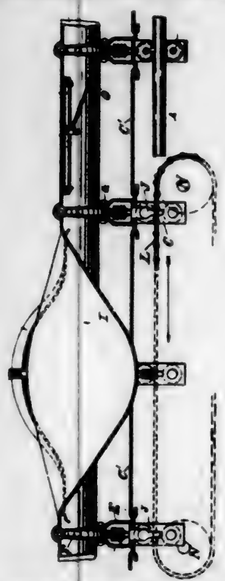

3. In a conveyer the combination of a rail, yokes traveling on said rail, connections between said yokes, curved brackets supported by said yokes and a belt or apron supported by said brackets, substantially as described.

4. In a conveyer the combination of a rail, yokes traveling on said rail, connections between said yokes, curved tilting brackets supported by said yokes, a belt or apron supported by said yokes and means for tilting said brackets at any predetermined points, substantially as described.

5. In a conveyer the combination of a rail, yokes traveling on said rail, connections between said yokes, curved brackets supported by said yokes, a belt or apron supported by said brackets, and means for supporting the edge of the belt or apron when passing around curves, substantially as described.

6. In a conveyer the combination of a rail, yokes traveling on same, wheels on said yokes bearing one at the top and the other at the bottom of the rail, connections between said yokes, means supported by said yokes for receiving the material to be carried, and means for operating the conveyer, substantially as described.

706,295. STARTING MECHANISM FOR TRAINS. JOHN B. RLOOD, Newburyport, Mass. Filed Aug. 28, 1901. Serial No. 73,547. (No model.)

Claim.—1. A starting system for a train of cars, comprising pressure-controlling devices situated throughout the train, and means whereby the starting impulse is consequent upon the coincident condition of all of said pressure devices, as and for the purpose set forth.

2. A starting system for trains including pressure-controlling devices mounted upon each car, a motor or other propelling device, said motor being controlled in its starting movements by coincident conditions of the pressure-controlling devices on all the cars, as and for the purpose set forth.

3. A starting system for trains, comprising a controller, a train-circuit, means for supplying pressure thereto, said means provided with devices throughout the train for controlling such pressure, as and for the purpose set forth.

4. In a starting system for trains, a controller arranged to control the supply of pressure to the motors, and pressure-control devices arranged on each car of the train in series with each other, as and for the purpose set forth.

5. In a starting system for trains, a train-circuit, switches arranged upon each car and in series with said train-circuit, a controller, said circuit supplying pressure to said controller, as and for the purpose set forth.

6. In a starting system for trains, a circuit arranged to extend throughout the train and communicating with a source of pressure, a controller to which such pressure is connected, and switches arranged on the various cars of the train and in series with said circuit, as and for the purpose set forth.

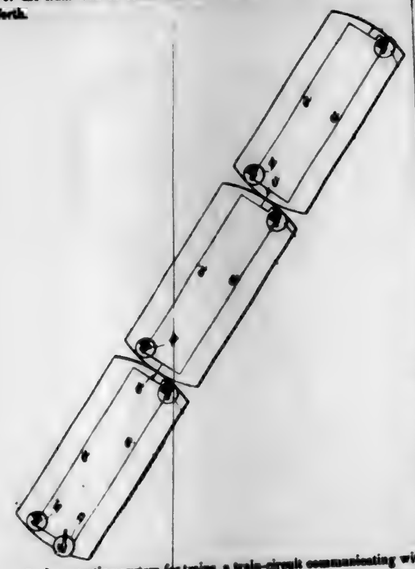

7. In a starting system for trains, a train-circuit communicating with a source of pressure, a controller arranged in said train-circuit, and normally open switches arranged in series with each other in said circuit and placed upon the various cars of the train, as and for the purpose set forth.

8. In a starting system for trains, a motor, a controller for controlling the supply of pressure thereto, a train-circuit for said controller for initially controlling the supply of pressure to said translating devices, and a normally open switch arranged at each end of each car of the train, said switches being included in series with each other in said open circuit, as and for the purpose set forth.

706,296. METAL CAN. JAMES H. BRADLEY, Washington, D. C. Filed Dec. 14, 1901. Serial No. 86,068. (No model.)

Claim.—1. A can having a partition immovably secured therein adjacent to its upper end, said partition being dished or concave-convex and provided with an opening the concaved side being arranged uppermost.

2. A can having a partition arranged therein adjacent to the upper end, said partition having a central opening and formed with means for securing it immovably in the can.

3. A can having a partition immovably secured therein adjacent to its upper end, said partition being dished or concave-convex and having an opening at its center the concaved face being arranged uppermost, and provided with means at its outer edge for connection to a can.

4. A can having a partition immovably arranged therein adjacent to its upper end, said partition having a central circular opening, said partition also having an annular flange by means of which it is connected to the can, substantially as described.

5. A can having a partition arranged therein adjacent to its upper end, said partition having a central circular opening, the partition also having an annular flange, the flange and can being corrugated or crimped for the purpose of securing the partition within the can.

706,297. APPARATUS FOR COMPARING HANDWRITINGS OR OTHER OBJECTS. JACQUES DE BRUN. (MARTHOD GERARDS BOSE.) Lausanne, Switzerland. Filed Feb. 12, 1902. Serial No. 93,731. (No model.)

Claim.—1. In an instrument for comparing handwritings and other objects, the combination with a base and a frame, of a mirror secured in said frame, a mirror, in part reflecting and in part transparent, also secured in said frame, means in connection with said base for holding one of the objects to be compared, means for adjusting the position of the aforesaid means in the base, and means for reflecting the compared objects upon a screen, substantially as set forth.

2. In an instrument for comparing handwritings and other objects, the combination with the base *b* and frame *d*, of a mirror *c* secured in said frame, a mirror c' in part reflecting and in part transparent, also secured in said frame and parallel to the aforesaid mirror and at a slightly-higher elevation, the platform *f* for holding one of the objects to be compared, and wedges g^3 placed between the said base and platform *f* for adjusting the height of the platform *f* and object thereon in relation to the bottom of the base under which the second object is placed, substantially as specified.

3. In an instrument for comparing handwritings and other objects, the combination with the base *b* and frame *d*, of a mirror *c* secured in said frame, a mirror c', in part reflecting and in part transparent, also secured in said frame and parallel to the aforesaid mirror and at a slightly-higher elevation, a platform *f* for holding one of the objects to be compared, wedges g^3 between the said base and platform *f* for adjusting the height of the platform *f* and object thereon in relation to the bottom of the base under which the second object is placed, and a detachable mirror *i* to be placed in the upper part of said frame for reflecting the comparison of the objects upon a screen, substantially as specified.

4. In an instrument for comparing handwritings and other objects, the combination with a suitable framework-support, of an adjustable platform in a plane parallel to the surface carrying the support, a mirror carried by the support above the platform and a device in part reflecting and in part transparent set in a plane parallel to the mirror and carried by the support at a slightly-higher elevation than the mirror, substantially as and for the purposes set forth.

706,298. SEWER-PIPE CONNECTION. FRANK W. CARLSON, Chicago, Ill. Filed Mar. 21, 1902. Serial No. 99,333. (No model.)

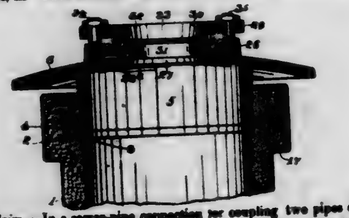

Claim.—In a sewer-pipe connection for coupling two pipes of different diameters, the combination of the main connection adapted to enter the end of the larger pipe, the said main connection having a flange at its lower part, a ring of packing arranged between the said flange and the interior of the larger pipe, and L-bolts engaging the outside of the larger pipe and the main connection whereby the said packing may be pressed against the interior of the larger pipe, the said main connection having a downwardly-inclined overhanging portion projecting circularly over the open end of the larger pipe and adapted to protect the end from falling dirt or moisture, the said main connection having a central opening and an upwardly-extended central portion constituting the base of a stuffing-box, the complemental element 29 of the stuffing-box, a ring of

packing within the box and bolts connecting the said element 29 and the upwardly-extended central portion of the main connection whereby the packing within the stuffing-box may be forced against a pipe of relatively smaller diameter passing through it, substantially as described.

706,299. HAY-STACKER. THOMAS CASCADEN, Jr., Waterloo, Iowa, assignor to Cascaden Manufacturing Company, Waterloo, Iowa, a Corporation. Filed May 29, 1902. Serial No. 109,420. (No model.)

Claim.—1. A hay-stacker comprising the combination with the base-bars or runners, of a vertical frame at the rear of said base-bars or runners, swinging arms pivoted to the top of said vertical frame and provided at their forward ends with a fork or carrier, a mast pivoted between said arms, connections uniting the upper end of said mast to said fork or carrier, a pulley at the base of said vertical frame, pulleys at the top of said vertical frame and said mast and a lifting rope or cable passing around said pulleys.

2. A hay-stacker comprising the combination with the base-bars or runners, of a vertical frame at the rear of said base-bars or runners, said frame consisting of posts extending upwardly from each of said base-bars or runners and connected together at their tops, swinging arms pivoted at their rear ends to the top of said vertical frame and provided at their forward ends with a fork or carrier, a mast pivoted between said swinging arms and in front of said vertical frame, said mast being arranged to swing rearwardly between the forward posts of said vertical frame, connections between the top of said mast and said fork or carrier, pulleys located at the top of said mast and of said vertical frame and a lifting-rope extending between said pulleys and leading to the base of said vertical frame.

3. A hay-stacker comprising the combination with a base, of a vertical frame at the rear of said base, said vertical frame being provided with forwardly and downwardly extending brace-bars connecting the vertical frame with the base, swinging arms pivoted at their rear ends to the top of said vertical frame and provided at their forward ends with a fork or carrier, a mast pivoted between said swinging arms, connections between the top of said mast and said fork or carrier and a lifting rope or cable and pulleys located upon the top of said mast and said vertical frame.

4. A hay-stacker comprising the combination with the base-bars or runners, of a vertical frame at the rear of said base-bars or runners, said frame consisting of posts extending upwardly from each of said base-bars or runners and connected together at their tops, forwardly and downwardly extending brace-bars connecting the rear upper portion of said vertical frame with the central portion of said base-bars or runners, a mast having its lower end pivoted adjacent the central portion of said base-bars or runners, swinging arms having their rear ends pivotally connected to the top of said vertical frame and having their forward ends provided with a fork or carrier, connections between the top of said mast and said fork or carrier, pulleys at the top of said mast and said vertical frame, a pulley at the base of said vertical frame and a lifting rope or cable extending around said pulleys.

706,300. THROTTLE-VALVE. JOHN S. CHAMBERS, Wilmington, N. C. Filed Jan. 20, 1902. Serial No. 90,547. (No model.)

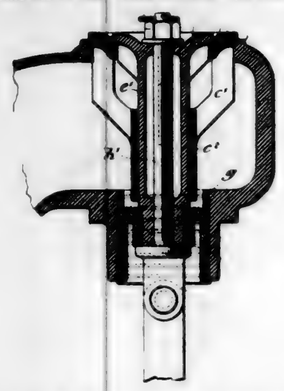

Claim.—1. A throttle-valve comprising a casing extending into a steam-space, valve-sections, means for balancing the valve-sections and a valve-operating rod arranged to operate the valve-sections, the passage-way for steam between both the valve-sections and their seats being over the top of the casing.

2. A throttle-valve comprising a valve-casing extending into a steam-space and provided with a valve-seat at its top, a valve-section fitted to said seat, a second valve-section seated within the aforesaid valve-section, means for balancing the valve-sections and a valve-operating rod for operating the sections, substantially as set forth.

3. A throttle-valve comprising a valve-casing extending into a steam-space and provided with a valve-seat at its top, a valve-section fitted to said seat, a second valve-section seated on said first-named valve-section and having a limited movement relative to the first-named valve-section, means for balancing said second valve-section and a valve-operating rod for operating the sections, substantially as set forth.

4. A throttle-valve comprising a casing having a valve-seat at its top, a valve-section fitted to said seat, a piston having a sliding movement in an opening at the bottom of said casing, a second valve-section connected with said piston and seated within the first-named valve-section and a valve-operating rod for operating the sections, substantially as set forth.

5. A throttle-valve comprising a suitable casing having a valve-seat at its top, a valve-section fitted to said seat, a piston having a sliding movement in an opening at the bottom of the casing, a valve-section seated within the aforesaid valve-section and connected with the piston and means for operating the piston, the said piston and the valve carried thereby having a movement relative to the other valve-section whereby the interior valve-section may be opened before the exterior valve-section is opened, substantially as set forth.

6. A throttle-valve comprising a casing extending into a steam-space and having a valve-seat, an annular valve-section fitted to the seat and provided with a depending sleeve connected with the annular valve-section by arms, an interior valve-section seated within the annular valve-section and having a limited movement with respect to the annular valve-section, means for balancing the interior valve-section and a rod for operating the two sections, substantially as set forth.

7. A valve box or casing provided with one valve-seat only, the said valve-seat being located at its top, and with a piston-receiving cylinder located at its bottom, in combination with a valve and piston fitted to said seat and cylinder, respectively.

8. The combination with a valve box or casing, of two valves located at the top of the box or casing, a rod for operating the valves at intervals with respect to each other and means connected with the valve-operating rod for balancing one of the valves, the opening of said balanced valve serving to admit fluid-pressure to balance the other valve.

706,301. BOTTLE-STOPPER. JOHN B. CROSBY, Buffalo, N. Y. Filed Nov. 27, 1901. Serial No. 83,873. (No model.)

Claim.—1. The combination with a bottle having a neck and oppositely-disposed depressions in its neck, of an angular bail having inwardly-bent ends adapted to be sprung into the depressions in the bottle-neck, a bottle-stopper having a semispherical top portion provided with a transverse opening, a washer on said stopper, a bifurcated locking-block pivotally connected to the bail and having the inner surface of its bifurcations curved to conform to the rounded form of the semispherical top portion of the bottle-stopper and a pivoting-pintle passing through the bottle-stopper and the bifurcations of the locking-block, substantially as set forth.

2. The combination with a bottle having a neck, of a stopper movably secured to said neck and provided with a flange and a semispherical top portion, a bail pivoted to the bottle-neck, a substantially U-shaped bifurcated block pivoted to the top portion of the stopper and the bail and having the lower ends of its bifurcations provided with fairly-wide bottom surfaces which seat on the flange, substantially as set forth.

3. The combination with a bottle having a neck, of a bail movably secured to said neck, a stopper having a flange and a semispherical top portion and a bifurcated locking-block having pivotal support from the bail with its bifurcations straddling and pivotally attached to the semispherical top portion of the stopper, the inner surface of the bifurcation being curved to conform to the semispherical form of the top portion, substantially as set forth.

4. The combination with a bottle having a neck, of an angular bail movably secured to said neck, a stopper having a flange and a semispherical top portion and a locking-block pivoted to the bail above the stopper and having downward extensions passing on opposite sides of and pivoted to the stopper and provided with an inner surface conforming to the semispherical top portion and a flat broad bottom surface adapted to seat upon the flange to retain the block in its vertical locking position, substantially as set forth.

5. In combination, a bottle having a neck, a bail pivoted to the neck, a stopper having a semispherical top portion provided with a transverse opening, a bifurcated locking-block having an upper opening through which the bail passes and lower openings in the bifurcations, said bifurcations being adapted to extend on opposite sides of the top portion of the stopper and having curved inner surfaces conforming to the rounded form of the stopper, and a pivoting-pintle passed through the lower openings in the bifurcations and the opening in the top portion of the stopper, substantially as set forth.

6. In combination, a bottle having a neck, a bail pivoted to the neck, a stopper having a top portion provided with an opening below the top portion, a bifurcated locking-block having an upper opening through which the bail passes and lower openings in the bifurcations, said bifurcations being adapted to extend on opposite sides of the top portion of the stopper; and a pivoting-pintle passed through the lower openings in the bifurcations and the opening in the top portion of the stopper, substantially as set forth.

7. In combination, a bottle having a neck, a bail having pivotal connection with said neck, a stopper having a lower portion adapted to fit in the opening in the bottle-neck, a semispherical upper portion adapted to project above the bottle and an annular projecting flange intermediate the lower and upper portion and adapted to rest upon the top edge of the neck, and a U-shaped bifurcated locking-block having pivotal connection with the bail and stopper; said locking-block being adapted to have its bifurcations straddle and curve around the upper portion of the stopper and rest upon the flange when in locking position, substantially as set forth.

8. In combination, a bottle having a neck provided with oppositely-disposed depressions, an angular bail having inwardly-bent ends adapted to be sprung into the depressions, a stopper having a top portion provided with a rounded head, a lower portion having a tapering upper part merging in an enlarged button and a flange intermediate the top and lower portion, a washer adapted to be sprung over the button and onto the tapering portion, a locking block substantially in the form of an inverted U having an upper opening through which the bail passes and lower openings, and a pivoting-pintle passed through the lower openings in the block and the top portion of the stopper, substantially as set forth.

706,302. MEANS FOR EXTRACTING PRECIOUS METALS FROM ORES. LEVI B. DARLING, Providence, R. I. Filed Nov. 1, 1901. Serial No. 80,768. (No model.)

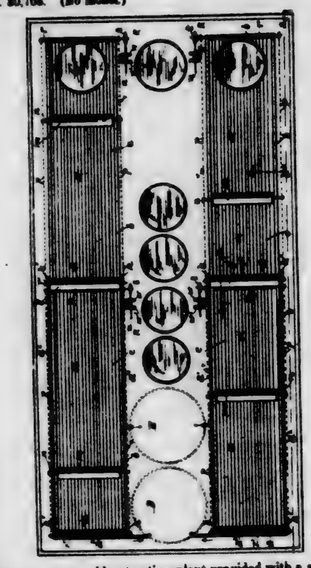

Claim.—1. In a gold-extracting plant provided with a substantially flat treating-floor *a*, of non-absorbent material, a series of longitudinally-extending channels *c* formed therein, a transverse groove or end launder *d* in direct communication with said channels, fixed screens or strainers covering the top of said channels and launder, side launders or ducts, and valved connections interposed between and uniting the said end and side launders, substantially as described.

2. In a gold-extracting plant, the combination with the treating-floor *a* having screen-covered grooves *c* and end launder *d*, of a mechanically-actuated rolling device adapted to be continuously propelled forth and back longitudinally of the floor, substantially as hereinbefore described and for the purpose set forth.

3. In a gold-extracting plant, the combination of the grooved treating-floor *a*, adapted to receive thereon a comparatively thin layer of finely-divided ore and treating solution constituting the pulp, a mechanically-actuated rolling device arranged to be continuously propelled forth and back to agitate the said pulp or material lying on the floor, suitable launders or ducts communicating with the grooved portion of the floor, and scamp-tanks into which the metal-charged solution is discharged from the launders, substantially as described.

4. In a gold-extracting plant, two laterally-separated double floors *a*, *a*, provided with suitable grooves and launders, rolling or agitating mechanism adapted to be propelled forth and back longitudinally of the floors scamp-tanks into which the metal-carrying solution is discharged, and suitably-arranged water, leach and solution tanks, substantially as described.

706,303. PROCESS OF EXTRACTING PRECIOUS METALS FROM ORES. LEVI B. DARLING, Providence, R. I. Filed Feb. 12, 1902. Serial No. 93,705. (No specimens.)

Claim.—1. The process or method hereinbefore described of extracting precious metals from finely-divided materials or ores, which consists in spreading a comparatively thin layer of the material over a substantially flat and large working surface provided with drainage ducts or channels; then covering said material with suitable metal-dissolving or cyanid

solution; then passing a heavy roll back and forth over the charge of material, &c., thereby at the same time thoroughly agitating or stirring the charge and forcing some of the solution into the drainage-ducts; then discharging said solution into the sump, and finally precipitating the precious metal from the solution.

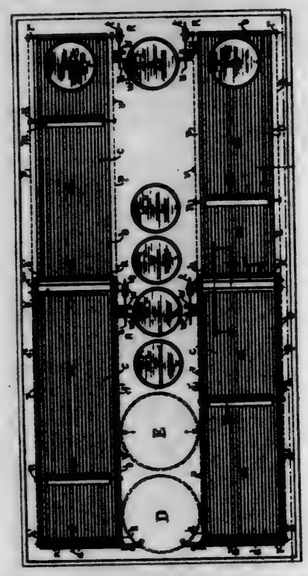

2. The improvement in processes of extracting precious metals from finely-divided ores, which consists in spreading a comparatively thin layer of the suitably-prepared ore treated with metal-dissolving solution over a substantially flat and broad floor; then rolling a weight back and forth over the material lying upon said floor, thereby at the same time thoroughly agitating and aerating the material and forcing out some of the metal-carrying solution, and finally treating the latter to extract or precipitate the precious metal therefrom.

706,804. HOOK AND EYE. CHARLES R. DEVINE, Toledo, Ohio, assignor of one-fourth to P. H. Goodall, Indianapolis, Ind. Filed Oct. 14, 1901. Renewed June 27, 1902. Serial No. 113,366. (No model.)

Claim.—As a new article of manufacture, a hook and eye consisting of a hook made of a single piece of wire, eyelets formed in each end of the wire, a head formed by the loop of the wire, said head being raised above the side wires, the connection between the head and the side wires forming shoulders, an eye composed of a single piece of wire, an eyelet D formed in one end of the wire, an eye B formed by the loop of the wire, a throat C formed by bending the wire inward behind the eye, a loop E formed opposite the eyelet B by bending the other end of the wire back upon itself so as to form a tongue K, said tongue extending through the throat C part way into the eye B, substantially as and for the purpose specified.

706,805. BED ELEVATOR OR HOIST. FRANK C. DEY, Newark, N. J. Filed Sept. 14, 1901. Serial No. 75,420. (No model.)

Claim.—1. In a bed hoist or elevator, the combination of a rigid rectangular support or framework *b*, adapted to be stationed in upright position at the bottom of the hoist, means for holding said support in fixed position, a shorter rigid rectangular frame *i*, comprising a single integral casting arranged flatwise against one side of said support and adapted to slide vertically thereon, means connecting said frame to said support and preventing lateral shifting thereon or outward movement therefrom while permitting endwise adjustment, a single adjusting-screw passing loosely through the middle of the top piece of said support and working in a threaded socket in the corresponding end piece of the frame, transverse shafts journaled near their opposite ends upon the opposite upright lateral portions of said frame and lying approximately in the plane of the frame, and a conveyer-belt pulley, driving-pulley and connecting-gears mounted on said shafts.

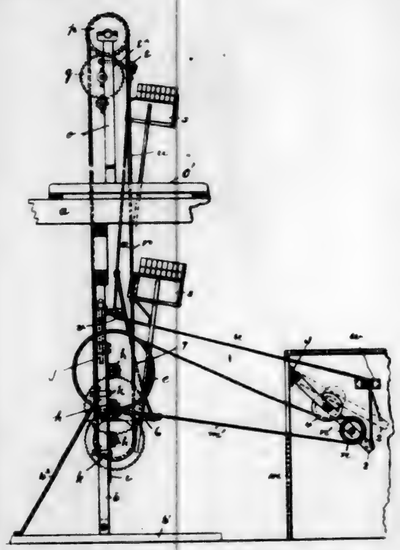

2. In a bed hoist or elevator having upper and lower bearings, an endless conveyer-belt passing around said bearings, a continuously-operating source of power, means normally transmitting power from said source of power to the conveyer-belt, and controlling means adapted to be engaged by a load on the conveyer and disengage said transmitting means to stop the conveyer or belt without stopping the source of power.

3. In a bed-hoist, a conveyer-belt, a sprocket-wheel and driving-pulley at one end of said belt, a suitable source of power and a belt adapted to transmit motion to the driving-pulley, means normally tightening said belt, and a lever *l*, adapted to be engaged by a load on the conveyer-belt and being connected to said power-belt-tightening means.

4. In a bed hoist having a conveyer-belt and sprocket-pulleys therefor, a loose power-belt connected to the bottom sprocket, a lever *l*, adapted to be engaged by a load on the conveyer-belt, a lever having a friction-pulley for tightening the power-belt and a connecting-rope extending from said lever *l*, to the belt-tightening lever.

5. In a bed-hoist having a lower sprocket-wheel and driving-pulley, an upper sprocket, and a conveyer-chain, a loose power-belt passing around said driving-pulley, tightening means therefor, a brake for said pulley, a lever *l*, adapted to be engaged by a load on the conveyer, and means connecting said lever to the said brake and power-belt-tightening means.

6. In a bed hoist or elevator, a conveyer-belt, a pulley geared to said belt, a continuously-rotating driving-pulley, a loose belt passed over said pulleys, a pressure-roller normally tightening said belt to transmit power, a lever adapted to be engaged by a load on the conveyer, and connecting means extending from said lever to the said pressure-roll and adapted to release the latter from the belt when the lever is operated.

7. In a bed hoist or elevator, a conveyer-belt, a pulley geared to said conveyer-belt and having a braking-surface, a brake, a continuously-rotating driving-pulley, means for connecting and disconnecting said pulley and driving-pulley, a lever adapted to be engaged by a load on the conveyer-belt, and means connecting said lever to said brake and to said connecting and disconnecting means whereby the latter are operated conjointly to stop or start the conveyer-belt irrespective of the driving-pulley.

8. In a bed-hoist the combination with the conveyer-belt, supporting means therefor, and driving means, of a lever *l*, connected to the driving means and adapted to be operated by a load on the conveyer to disengage the driving means, said lever being fulcrumed on the outer end of a crank-shaped pin l^2, adapted to be turned in its seat to adjust the position of the lever.

706,806. MEANS FOR AUTOMATICALLY REGULATING THE RESISTANCE OF RESILIENT DEVICES. PHILO C. HUART, Cincinnati, Ohio, assignor of one-half to Charles A. Barnard, Cincinnati, Ohio; Myra V. Huart, executrix of said Philo C. Huart, deceased. Filed Aug. 23, 1899. Serial No. 728,086. (No model.)

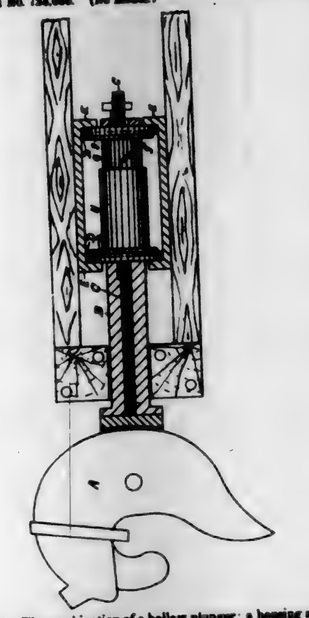

Claim.—1. The combination of a hollow plunger; a housing adapted to receive the plunger; a coiled spring within the plunger having one end adapted to engage the plunger and the other adapted to engage the housing, and screw-threads on the plunger and housing whereby the spring may be wound as it is compressed, substantially as and for the purpose set forth.

2. The combination of a hollow plunger; a housing adapted to receive the plunger; friction-heads upon the plunger and housing; a coiled spring within the plunger having one end adapted to engage with and be rotated by the friction-head on the plunger and the other end adapted to engage with and be rotated by the friction-head on the housing; and screw-threads on the plunger and housing whereby the spring may be wound as it is compressed, substantially as and for the purpose set forth.

3. The combination of a coiled spring mounted in bearings, one or both of which are rotatable, with screw-threaded parts connecting the bearings, the male member of the thread being narrower at the end first engaging, than the female member, thereby permitting longitudinal play before the threads actively engage, substantially as and for the purpose set forth.

4. The combination of a coiled spring mounted in bearings, one or both of which are rotatable, with screw-threaded parts connecting the bearings, the pitch of the threads being in a reverse direction to the coil of the spring and the male member of the thread being narrower at the end first engaging than the female member, thereby permitting longitudinal play before the threads actively engage, substantially as and for the purpose set forth.

5. The combination of a hollow plunger; a housing adapted to receive the plunger; a coiled spring within the plunger having one end adapted to engage the plunger and the other adapted to engage the housing; screw-threads on the plunger and housing whereby the spring may be wound as it is compressed, and stops adapted to prevent complete compression of the spring, substantially as and for the purpose set forth.

6. The combination of a hollow plunger; a housing adapted to receive the plunger; a coiled spring within the plunger having one end adapted to engage the plunger and the other adapted to engage the housing; screw-threads on the plunger and housing whereby the spring may be wound as it is compressed; the pitch of the threads being in a direction reverse to that of the coil of the spring, and the male member being narrower, for a portion of its length, than the female member, and stops adapted to limit the compression of the spring, substantially as and for the purpose set forth.

7. The combination of a hollow plunger; a housing adapted to receive the plunger; friction-heads on the plunger and housing; a coiled spring within the plunger having one end adapted to engage with and be rotated by the friction-head on the plunger and the other end adapted to engage with and be rotated in the reverse direction by the friction-head on the housing; and screw-threads on the plunger and housing whereby the spring may be wound as it is compressed, substantially as and for the purpose set forth.

8. The combination of a hollow plunger; a housing adapted to receive the plunger; friction-heads on the plunger and housing; a coiled spring within the plunger having one end adapted to engage with and be rotated by the friction-head on the plunger and the other end adapted to engage with and be rotated in the reverse direction by the friction-head on the housing; screw-threads on the plunger and housing whereby the spring may be wound as it is compressed, and stops limiting the compression of the spring, substantially as and for the purpose set forth.

9. The combination of the plunger B; the housing C; the heads *g* and *h*; the screw-threads *g'* and *h'*; the sockets g^2 and h^2; and the coiled spring F having back-turned ends *f*, substantially as and for the purpose set forth

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706,807. CORSET. EUGÈNE FAREY, Paris, France, assignor to Ste. des Etablissements Farey et Oppenheim, Paris, France. Filed Jan. 9, 1902. Serial No. 88,958. (No model.)

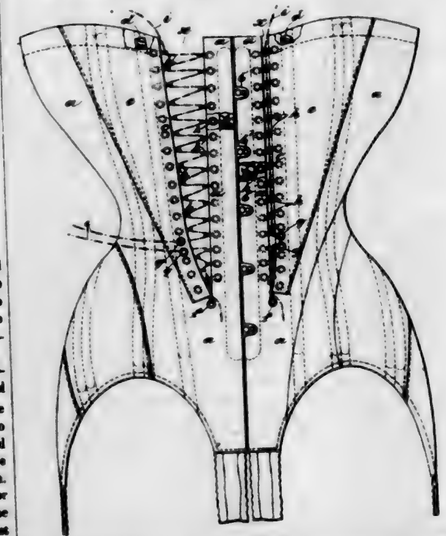

Claim.—A corset, open at the median line in front and provided thereat with busks or steels and clasps, and having at the respective opposite sides of said busks slits *a a* which extend only part way down from the top of the corset to the bottom thereof, lacing devices along the margins of said slits, lacing-cords engaging said lacing devices, eyelets *f* at the lower ends of the slits for securing the lacing-cords, and pairs of eyelets *g* at the waist through which the cords extend, as and for the purpose set forth.

706,808. TELEPHONE-CIRCUIT. MARIA J. FARRAR, Wellesley, Mass., administratrix of Josiah H. Farrahar, deceased, assignor to New England Telephone & Telegraph Company, a Corporation of New York. Filed July 2, 1901. Serial No. 66,982. (No model.)

Claim.—1. A plurality of pairs of paper-insulated conductors, the conductors of each pair evenly and equally twisted together throughout their length, and each twisted pair evenly and equally twisted with another twisted pair, the said two pairs that are twisted together being insulated from any other conductor.

2. A plurality of pairs of paper-insulated conductors, the conductors of each pair evenly and equally twisted together throughout their length, and each twisted pair evenly and equally twisted with another twisted pair, but in a direction reverse to that of the individual pairs, the said two pairs that are twisted together being insulated from any other conductor.

3. An electric cable composed of a suitable covering or sheath, and a plurality of inclosed pairs of insulated conductors, the conductors of each pair evenly and equally twisted together throughout the length thereof, and each twisted pair equally twisted with another twisted pair, the two said pairs that are twisted together being insulated from any other conductor.

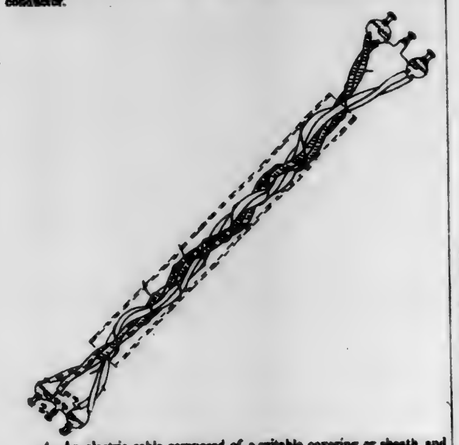

4. An electric cable composed of a suitable covering or sheath, and a plurality of inclosed pairs of insulated conductors, the conductors of each pair evenly and equally twisted together throughout the length thereof, and each twisted pair equally twisted with another twisted pair, but in a direction reverse to that of the said pairs, the said two pairs that are twisted together being insulated from any other conductor.

5. A plurality of pairs of electric circuits, the conductors of each pair evenly and equally twisted together throughout their length, and each twisted pair evenly and equally twisted with another twisted pair; with an impedance-coil at the terminals of each twisted pair and in a bridge between the conductors thereof dividing the circuit into sections, one section provided with signaling instruments, with a connecting branch between the centers of the impedance-coil windings of two circuits adapted to contain signaling instruments.

6. A plurality of pairs of electric circuits, the conductors of each pair evenly and equally twisted throughout their length, and each twisted pair evenly and equally twisted with another twisted pair; with an impedance-coil at the terminals of each twisted pair and in a bridge between the conductors thereof dividing the circuit into sections, one section provided with signaling instruments, with a connecting branch between the centers of the impedance-coil windings of two circuits to constitute a third circuit, the said branch adapted to contain signaling instruments.

7. A plurality of pairs of electric circuits, the conductors of each pair evenly and equally twisted throughout their length, and each twisted pair evenly and equally twisted with another pair; with an impedance-coil at the terminals of each twisted pair and in a bridge between the conductors thereof dividing the circuit into sections, one section provided with signaling instruments, current from which is adapted to circulate in the helices of the said coil-winding in series, with a connecting branch between the centers of the impedance-coil windings of two circuits to constitute a third circuit, the said branch containing signaling instruments, current from which is adapted to circulate in the helices of the coil-windings of the two circuits differentially.

8. A plurality of pairs of electric circuits, the conductors of which are evenly and equally twisted together throughout their length; with an impedance-coil at the terminals of the conductors and in a bridge between the conductors of each pair dividing the circuit into sections, one section provided with signaling instruments, with a connecting branch between the centers of the impedance-coil windings of two circuits adapted to contain signaling instruments.

9. A plurality of pairs of electric circuits, the conductors of which are evenly and equally twisted together throughout their length; with an impedance-coil at the terminals of the conductors and in a bridge between the conductors of each pair, dividing the circuit into sections, one section provided with signaling instruments as telephones, with a connecting branch between the centers of the impedance-coil windings of two circuits to constitute a third circuit the respective conductors of each pair of circuits forming the limbs thereof, the said branch adapted to contain signaling instruments as telephones.

706,809. GAS-STOVE. JOHN C. FORSTER, Pittsburg, Pa. Filed Jan. 25, 1902. Serial No. 91,194. (No model.)

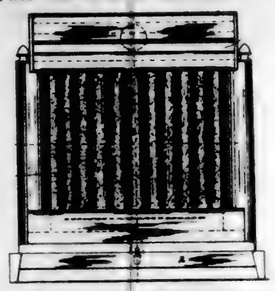

Claim.—1. In a gas-stove, a fire-board having a vertically-corrugated fire-surface, and a gas connection having gas-emitting openings arranged complementary to the said corrugated fire-surface.

2. In a gas-stove, a fire-board having a vertically-corrugated fire-surface, and a horizontal burner positioned transversely of the fire-board at the base thereof, said burner being formed with gas-emitting openings arranged in a winding or serpentine course complementary to the said corrugated fire-surface.

706,810. MACHINE FOR BENDING ANGLE-IRONS, CHANNEL-IRONS, &c. CHARLES GABRIEL, Chicago, Ill. Filed July 12, 1901. Serial No. 66,039. (No model.)

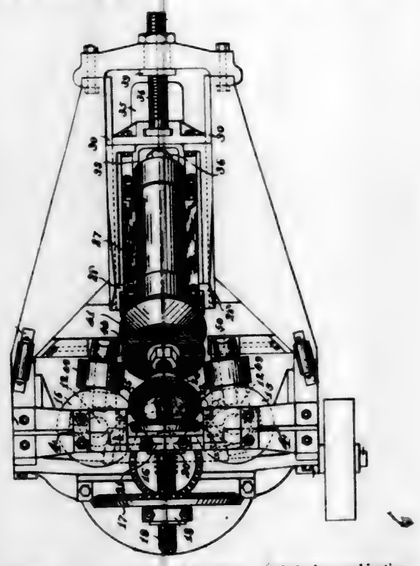

Claim.—1. In a machine of the kind specified, the combination with a driven shaft mounted in a bearing movable in two directions and carrying a roller, of two driven rollers mounted on shafts journaled in bearings movable relatively to each other and to said first-named shaft, said rollers on said shafts being adapted to bear on the bar to be bent at three different points to bend the same.

2. In a machine of the kind specified, the combination with a shaft standing at an angle of forty-five degrees to a vertical line and carrying bevel-faced rollers, of two pairs of rollers turning on vertical and horizontal axes respectively and journaled in movable bearings, said rollers being adjusted relatively to each other and to said bevel-faced roller to coact with the latter to bear upon and bend a bar to any desired single or compound curvature.

3. In a machine of the kind specified, the combination with two pairs of rollers revoluble on horizontal and vertical axes respectively, of a shaft standing at an angle of forty-five degrees to the axes of rotation of each of said pairs of rollers, a sleeve-bearing carrying said shaft, a frame

in which said sleeve-bearing is longitudinally movable, guides in the frame of the machine in which said frame carrying said bearing is movable in a direction at an angle to the direction of movement of said sleeve-bearing, and bevel-faced rollers carried by said shaft and coacting with said pairs of rollers respectively to bear upon the bar to be bent to bend the latter.

4. In a machine of the kind specified, the combination with a frame, a drive-shaft journaled therein, a curved guide on said frame concentric with said shaft, bearings movably mounted on said guide, shafts journaled in said bearings and carrying spur-gears, a pinion on said drive-shaft intermeshing with each of said spur-gears, and rollers carried by said shafts, of a shaft journaled in a bearing on said frame and carrying a roller coacting with said first-named rollers to bear upon and bend a bar.

5. In a machine of the kind specified, the combination with a frame, a drive-shaft journaled therein, a curved guide on said frame concentric with said shaft, bearings movably mounted on said guide, shafts journaled in said bearings and carrying spur-gears, a pinion on said drive-shaft intermeshing with each of said spur-gears, and rollers carried by said shafts, of a shaft journaled in a bearing on said frame and carrying a roller coacting with said first-named rollers to bear upon and bend a bar, and gearing between said last-named shaft and said drive-shaft.

6. In a machine of the kind specified, the combination with a frame, a drive-shaft journaled therein, a curved guide on said frame concentric with said drive-shaft, bearings movably mounted on said guide, counter-shafts journaled in said bearings, gearing between said drive-shaft and said counter-shafts, rollers carried by said counter-shafts, bearings pivotally secured to said counter-shafts, shafts journaled in said pivoted bearings extending transversely to said counter-shafts, and rollers on said transverse shafts, of a shaft carrying rollers coacting with the rollers on said counter-shafts and said transverse shafts to bear upon and bend a bar.

7. In a machine of the kind specified, the combination with a frame, a drive-shaft journaled therein, a curved guide on said frame concentric with said drive-shaft, bearings movably mounted on said guide, counter-shafts journaled in said bearings, gearing between said drive-shaft and said counter-shafts, rollers carried by said counter-shafts, bearings pivotally secured to said counter-shafts, shafts journaled in said pivoted bearings extending transversely to said counter-shafts, and rollers on said transverse shafts, of a shaft carrying rollers coacting with the rollers on said counter-shafts and said transverse shafts to bear upon and bend a bar, and means for adjusting said last-named shaft relatively to said counter-shafts and transverse shafts to bring said rollers thereon into the desired position relatively to said rollers on said counter and transverse shafts.

8. In a machine of the kind specified, the combination with a frame, a drive-shaft journaled therein, a curved guide on said frame concentric with said drive-shaft, bearings movably mounted on said guide, counter-shafts journaled in said bearings, gearing between said drive-shaft and said counter-shafts, rollers carried by said counter-shafts, bearings pivotally secured to said counter-shafts, shafts journaled in said pivoted bearings extending transversely to said counter-shafts, and rollers on said transverse shafts, of a frame movable in guides in the frame of the machine transversely to said drive-shaft, a sleeve-bearing mounted in guides in said movable frame movable longitudinally in said guides and extending at an angle of forty-five degrees to said drive-shaft, a shaft journaled in said bearing, gearing between said shaft and the drive-shaft, and bevel-faced rollers mounted on said shaft and adapted to coact with said rollers on said counter-shafts, and drive-shafts to bend a bar in one or more directions.

9. In a machine of the kind specified, the combination with a pair of rollers revoluble on vertical axes and adapted to bear upon the bar to be bent on one face, and a pair of rollers revoluble on horizontal axes and adapted to bear upon the bar to be bent on a face transverse to the face engaged by said first-named rollers, of a shaft extending at an angle of forty-five degrees to the vertical axes of said first-named rollers, an adjustable sleeve-bearing carrying said shaft and movable horizontally and longitudinally, and a grooved roller carried by said shaft and having one face overhanging and adapted to coact with said horizontal rollers and engage the face of the bar opposite to that engaged by said horizontal rollers, and having a beveled face in horizontal alinement with said vertical rollers and adapted to engage the face of the bar opposite that engaged by said vertical rollers, said beveled faces being adapted to bear upon the bar at points practically midway between the points of engagement of said vertical, and horizontal rollers respectively, and forming a third bearing-point relatively to each of said pairs.

706,811. OFFSET MECHANISM FOR SAWMILL-CARRIAGES. JOHN J. GALWAY, Duluth, Minn., assignor of one-half to Kenneth McDonald, Duluth, Minn. Filed Apr. 16, 1902. Serial No. 103,204. (No model.)

Claim.—1. An offset mechanism for sawmill-carriages, comprising means for moving a carriage laterally upon its trucks, fulcrums projecting beyond the trucks, levers arranged longitudinally of the carriage and connected at one of their ends with the carriage-frame, the said levers being pivoted to said extended fulcrums, and means for moving the other ends of the said levers for shifting the carriage upon the trucks, substantially as described.

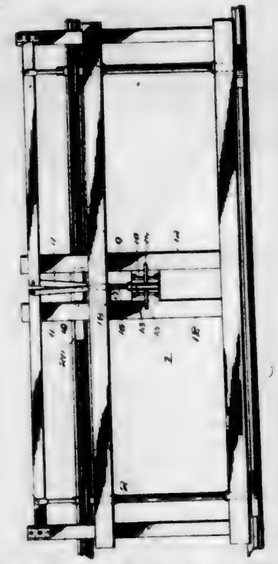

2. An offset mechanism for sawmill-carriages, comprising a carriage movably mounted on the axles of suitable trucks, fulcrum-pieces projecting from the ends of said axles, comparatively long levers pivoted to said fulcrum-pieces, the outer ends of said levers being connected with the carriage-frame, a power mechanism carried by the truck and connected with the inner ends of said levers for simultaneously moving them to shift the position of the carriage upon its trucks, substantially as described.

3. An offset mechanism for sawmill-carriages, comprising a frame, trucks supporting the same, extension-pieces on the ends of the truck-axles, forming fulcrum-pieces, levers arranged longitudinally of the carriage outside the wheels thereof and pivoted to the fulcrum-pieces, the outer ends of the levers being connected with the carriage, a power-cylinder carried by the carriage, a piston moving therein, means connecting the inner ends of the said levers with the said pistou, the power means thus being capable of simultaneously moving the said levers, to offset the carriage, and means operated by the movement of the carriage for controlling the application of power in the power-cylinder, substantially as described.

4. An offset mechanism for sawmill-carriages, comprising comparatively long levers pivoted to the ends of the carriage-axles, means for connecting both the inner ends of the said levers with a power mechanism, a valve mechanism for controlling the power mechanism, and a drag engaging one of the tracks in which the carriage travels for automatically operating the valve mechanism in accordance with the direction in which the carriage is moved, substantially as described.

5. An offset mechanism for sawmill-carriages, comprising levers extending longitudinally of the carriage and pivoted thereto at their outer ends, fulcrum-pieces projecting from the axles of the carriage so as to support the said levers at points near their connections with the said carriage, a power-cylinder carried by the carriage, means for connecting its piston with the inner adjacent ends of the levers at a suitable distance from their fulcrum-points, a valve for controlling the application of power to said cylinder, a comparatively light drag-block fitting upon one of the tracks of the carriage, a bell-crank lever connecting the same with the valve mechanism of the power-cylinder so that the valve will be controlled for admitting pressure to the piston in accordance with the direction in which the carriage is traveling, substantially as described.

706,812. DEVICE FOR SECURING OR RELEASING TRAP-FLOORS FOR ORE-CARS. JOHN J. GALWAY, Duluth, Minn. Filed Mar. 25, 1902. Serial No. 99,044. (No model.)

Claim.—1. The combination with a car provided with trap-doors, of a rod designed to support the same in a closed position, means for locking said rod, devices for releasing said rod's locking means, mechanism for rotating the rod after it is released, and devices connected with said rotating mechanism, adapted, upon reciprocation, to impart such rotation, substantially as set forth.

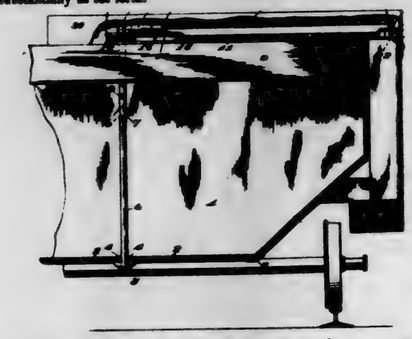

2. The combination with a car having trap-doors, of means supported within said car for locking said doors in a closed position, mechanism for rotating said locking means, and a reciprocating lever adapted to operate said rotating mechanism, substantially as set forth.

3. The combination with a car having trap-doors, of means supported within said car for locking said doors in a closed position, mechanism for rotating said locking means, such mechanism comprising a ratchet, a lever, a pawl carried by said lever for operating said ratchet, and a second reciprocating lever for actuating the pawl-carrying lever, substantially as set forth.

4. The combination with a car having trap-doors, of a rod held against longitudinal movement and provided with means for supporting said doors in a closed position, a joint formed intermediate the length of said rod, and means for rotating said rod for releasing said door, substantially as described.

5. The combination with a car having trap-doors, of means supported within said car for locking said doors in a closed position, a lever engaging said locking means, and means carried by said lever for releasing the locking means such means comprising a vertically-reciprocating lever connected at one end to first said lever, substantially as described.

6. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting said doors in a closed position in such manner as to release the same upon rotation, a lever for rotating said rod, and means extending outside said car for operating said lever, substantially as described.

7. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting said door in a closed position in such manner as to release the same upon rotation, means for locking said rod against rotation, means for releasing said locking means, and means for rotating said rod, substantially as described.

8. In a mechanism of the class described the combination with a suitable car having trap-doors, of means supporting the same in a closed position in such manner as to release the same upon rotation of the supporting means, a ratchet-wheel carried by said supporting means, means for locking said ratchet-wheel against rotation, and means extending outside said car for releasing said locking means and rotating said ratchet-wheel, substantially as described.

9. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting the same in such manner as to effect their release upon rotation, a ratchet-wheel carried by said rod, a lever pivoted within said car and provided with a pawl engaging said ratchet, and means for swinging said lever upon its pivot for rotating said ratchet-wheel, substantially as described.

10. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting the same in their closed position in such manner as to effect their release upon rotation, means for locking said rod against rotation, a lever for rotating said rod, and a rod engaging both the locking means and said lever for manipulating the same, substantially as described.

11. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting the same in such manner as to effect their release upon rotation, said rod being formed with a groove in its upper end, a bolt normally engaging said groove for preventing the rotation of said rod, means for withdrawing the said bolt, and means for rotating said rod, substantially as described.

12. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting the same in such manner as to effect their release upon rotation, a lever bifurcated and having the arms of its bifurcation pivotally engaging said rod, a ratchet-wheel secured to said rod between the arms of said bifurcation, a pawl pivotally attached to said lever, and means for retaining said pawl in engagement with said ratchet-wheel, substantially as described.

13. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting the same in such manner as to effect their release upon rotation, a bolt engaging said rod for preventing rotation thereof and provided with an eye at its free end, a lever engaging said rod for rotating the same, a rod engaging the said lever for operating the same, and a bent arm carried by said last-mentioned rod and engaging the eye of said bolt, substantially as described.

14. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting the same in such manner as to effect their release upon rotation, means for locking said rod against rotation, a lever for rotating said rod having its outer end bifurcated, a swivel-block pivotally mounted between the arms of said bifurcation, and a rod engaging said swivel-block and provided with means engaging said locking means for manipulating the parts, substantially as described.

15. In a mechanism of the class described the combination with a suitable car having trap-doors, of a rod supporting the same in such manner as to effect their release upon rotation, a bolt jointed intermediate its length, a guiding-box inclosing a portion of said bolt beyond the joint, that portion of said bolt beyond the guiding-box being designed to engage said rod for preventing rotation thereof, means for disengaging said bolt from said rod, and means for rotating said rod, substantially as described.

706,818. INCANDESCENT ELECTRIC LAMP. HOWARD GILMORE, Boston, Mass. Filed Apr. 7, 1900. Serial No. 11,967. (No model.)

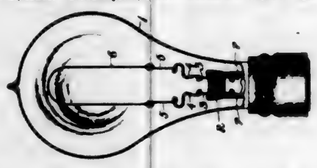

Claim.—1. The improved electric lamp above described comprising a filament and a short piece of wire 5 coiled at both ends, with one end of the filament connected and secured to one coil of wire 5, and a second short piece of wire 4, connected and secured to the other coil of wire 5.

2. In an incandescent electric lamp a leading-in wire comprising a piece of wire (such as platinum or nickel) coiled at one end and another piece of more fusible wire such as copper with its end in that coil and held therein by a melted portion of the more fusible metal flowing into the coil and cooling between the spires of the coil and the wire within the coil.

3. In an incandescent lamp a filament with one end connected by a body part B and carbon deposited on that body part to a coil on one end of a short piece of wire 5, and with a coil on the other end of that wire 5, connected and secured to another short piece of wire 4.

706,814. COMPOUND INCANDESCENT ELECTRIC LAMP. HOWARD GILMORE, Boston, Mass. Filed Feb. 7, 1901. Serial No. 46,413 (No model.)

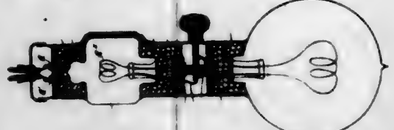

Claim.—1. In combination two incandescent lamps one with a fine filament the other with a coarser filament and means for passing the current through the lamp with the coarser filament to bring that lamp alone to full glow, and means for passing the current through both lamps in series and so reduce the amperage that only the lamp with the fine filament will be brought to full glow.

2. An incandescent electric lamp comprising a bulb, a filament in that bulb, one set of contacts comprising three contact-pieces and another set of contacts comprising two contact-pieces, with two contact-pieces of the three-piece set connected respectively to the terminals of the filament and one of these two contact-pieces connected also to one contact of the two-piece set; having one contact of the three-piece set and one contact of the two-piece set to be connected respectively with the main wires.

706,815. CURTAIN-POLE AND HANGER. SAMUEL G. GREENE, Baltimore, Md. Filed Apr. 14, 1902. Serial No. 103,726. (No model.)

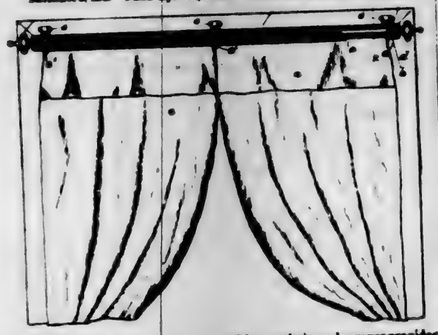

Claim.—1. A curtain-pole, comprising a tubular pole proper provided with a longitudinal slot; a rod over which the curtain is intended to be hung and said rod inserted in said tubular pole with the curtain extending out through said slot; and means for positively pressing said rod toward said slot whereby to pinch the curtain between the rod and edge walls of the slot, as set forth.

2. A curtain-pole, comprising a tubular pole proper provided with a longitudinal slot; a rod over which the curtain is intended to be hung and said rod adapted for insertion in said tubular pole; and end caps provided with a wedge or plug entered in the tubular pole and wedging between the internal wall of the pole and the ends of said rod whereby to press said rod toward said slot, as and for the purpose set forth.

3. A curtain-pole, comprising a tubular pole proper provided with a longitudinal slot; a rod over which the curtain is intended to be hung and said rod inserted in said tubular pole with the curtain extending out through said slot; and plugs wedging in said pole between said rod and that internal wall of the pole which is opposite said slot, whereby to positively press said rod toward the slot, as set forth.

706,816. DISPLAY-BENCH FOR DOG-SHOWS. ROBERT B. HARRELL, Baltimore, Md. Filed Apr. 18, 1902. Serial No. 103,569. (No model.)

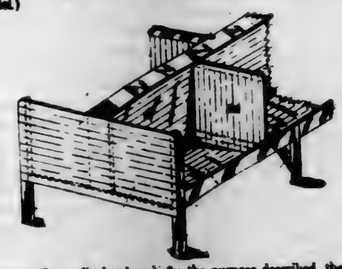

Claim.—In a display-bench for the purpose described, the combination of two heads having suitable supporting legs and stringers at their lower edges, a floor extending between the heads and supported at its ends by the said stringers, a rail at each lateral edge of the floor, a longitudinal partition erected on the floor with its ends adjoining the heads, a cap-plate laid on the edge of the longitudinal partition, vertical cross-partitions which extend between the longitudinal partition and the rails, and a series of removable clips which clamp the rear and front edges of the said partitions to the cap-plate and the rails respectively and adapted to slide thereon in the adjustment of the said cross-partitions longitudinally of the bench, substantially as specified.

706,817. ELECTRIC MOTOR. ALBERT B. HOLSON, Chicago, Ill. Filed Nov. 4, 1901. Serial No. 81,076. (No model.)

Claim.—1. In an electric motor, the combination of a rotary armature, a drive-shaft rotating therewith, a pinion on each end of said shaft and a surrounding driven member provided with duplex parallel annular gears having their pinion-engaging surfaces facing toward each other and respectively engaged with said pinions in diametrically opposite relation, whereby the driving moment of the motor is simultaneously imparted to said driven element through both pinions.

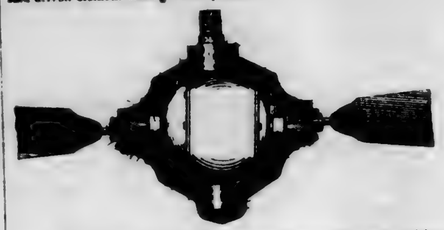

2. In an electric motor, the combination of a rotary armature, a drive-shaft rotating therewith, a friction-pinion on each end of said shaft and a surrounding driven member provided with duplex parallel annular friction-surfaces arranged to face each other and respectively engaged with said pinions in diametrically opposite relation whereby the driving moment of the motor is simultaneously imparted to said driven element through both pinions.

3. In an electric motor, the combination of a rotary armature, a drive-shaft rotating therewith, a pinion on each end of said shaft, a surrounding driven member provided with duplex parallel annular gears having their pinion-engaging surfaces facing each other and respectively engaged with said pinions in diametrically opposite relation, said gears being adjustable toward and from each other whereby the engagement of the pinions therewith may be adjusted, substantially as described.

4. In an electric motor, the combination of a rotary armature provided with a drive-shaft rotating therewith, a pinion on each end of said shaft, a relatively stationary frame within which the ends of said armature-shaft are journaled, and whereby the armature is held in fixed relation to the frame, and a surrounding driven element journaled upon said frame, and provided with duplex parallel annular gears having their pinion-engaging surfaces facing each other and respectively engaged with said pinions in diametrically opposite relation, whereby the driving moment of the motor is simultaneously imparted to said driven element through both pinions.

5. In an electric motor, the combination of a rotary armature provided with a drive-shaft rotating therewith, a pinion on each end of said shaft, a relatively stationary frame within which the ends of said armature-shaft are journaled, and whereby the armature is held in fixed relation to the frame, and a surrounding driven element journaled upon said frame, and provided with duplex parallel annular gears having their pinion-engaging surfaces facing each other and respectively engaged with said pinions in diametrically opposite relation, whereby the driving moment of the motor is simultaneously imparted to said driven element through both pinions, said driven element being separable and the members thereof adjustably united, and each of said members carrying one of the gears, whereby the latter may be adjustable relatively to each other for the purpose set forth.

6. In an electric motor, the combination of a relatively stationary frame of hollow construction, a series of field-pieces supported upon the interior of said frame, an armature having an armature-shaft journaled within said frame and provided at each end externally of the frame with a pinion, a shell-like driven member inclosing said stationary frame and journaled to rotate thereon, a pair of parallel, annular gears having their pinion-engaging surfaces facing each other, rigidly mounted within said shell and respectively engaged with the pinions of the armature-shaft, and means for adjusting one of said gears relatively to the other, for the purpose set forth.

7. In an electric fan, the combination of a relatively stationary frame of hollow construction, a series of field-pieces supported upon the interior of said frame, an armature having an armature-shaft journaled within said frame and provided at each end externally to the frame with a friction-pinion, a shell-like driven member inclosing said stationary frame and journaled to rotate thereon, a pair of parallel, annular friction-gears having their pinion-engaging surfaces facing each other, rigidly mounted within said shell and respectively engaged with the pinions of the armature-shaft at diametrically opposite points, means for adjusting one of said gears relatively to the other, fan-blades mounted upon said outer shell and suitable electric connections for the motor, substantially as set forth.

8. In an electric fan, the combination of a hollow stationary frame member provided at diametrically opposite points with trunnion-like lour-

nal-bearings, an armature provided with an armature-shaft journaled in said stationary frame with its axis inclined slightly from a position at right angles to the axis of said trunnion-like journals, a friction-pinion upon each end of said armature-shaft, an inclosing shell having its opposite sides journaled upon said trunnion-like journals and provided upon its interior with a pair of parallel, annular friction-surfaces, said shell being made of two-part construction and separably in a plane extending between said annular friction-surfaces, means for adjusting one shell member upon the other to approach or separate said annular friction-surfaces and fan-blades mounted upon the exterior of the shell, substantially as described.

706,818. COMPOSITE ELECTRIC CIRCUIT. MARTIN H. HOWELL, Melrose, Mass., assignor to New England Telephone and Telegraph Company, a Corporation of New York. Filed June 24, 1901. Serial No. 65,803. (No model.)

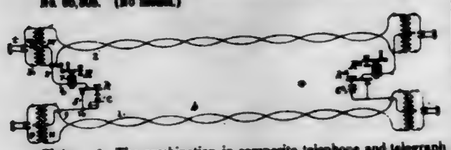

Claim.—1. The combination in composite telephone and telegraph circuits, of a metallic circuit whose conductors are transposed relatively to each other between their terminals, a repeating-coil at each end of the circuit whose windings are inductive to telephone-currents and non-inductive to telegraph-currents, the telephone-currents adapted to traverse the helices of the windings in series, and the telegraph-currents adapted to circulate in the helices of the windings differentially, with telephones in series with one of the windings of each coil, and telegraph instruments connected to the center of the second winding of the coil, as set forth.

2. The combination in composite telephone and telegraph circuits, of a metallic circuit whose conductors are transposed relatively to each other between their terminals, a repeating-coil at each end of the circuit whose windings are inductive to telephone-currents and non-inductive to telegraph-currents, the telephone-currents adapted to traverse the helices of the windings in series, and the telegraph-currents adapted to circulate in the helices of the windings differentially, telephones in series with one of the windings of each coil, and telegraph instruments connected to the center of the second windings of each coil, with one or more repeating-coils in the line-circuit between the said end coils having extensions from the centers of both windings of each coil adapted to include telegraph instruments.

3. The combination in composite telephone and telegraph circuits; of a metallic circuit whose conductors are transposed relatively to each other between their terminals; a repeating-coil at each end of the circuit whose windings are inductive to telephone-currents and non-inductive to telegraph-currents, the former currents being adapted to traverse the helices of the windings in series, and the latter currents adapted to circulate in one of said winding differentially; with telephones in a local circuit with one of said windings, and telegraph instruments connected to the center of the second winding, as set forth.

4. The combination in composite telephone and telegraph circuits, of a metallic circuit whose conductors are transposed relatively to each other between their terminals, a repeating-coil at each end of the circuit whose windings are inductive to telephone-currents and non-inductive to telegraph-currents, the telephone-currents adapted to traverse the helices of the windings in series, and the telegraph-currents adapted to circulate in the helices of the windings differentially, telephones in series with one of the windings of each coil, and telegraph instruments connected to the center of the second windings of each coil, with one or more repeating-coils in the line-circuit between the said end coils the centers of the windings of each coil being connected and including in circuit telegraph instruments, as set forth.

706,819. TELEPHONE-CIRCUIT. MARTIN H. HOWELL, Melrose, Mass., assignor to New England Telephone and Telegraph Company, a Corporation of New York. Filed June 19, 1901. Serial No. 65,137. (No model.)

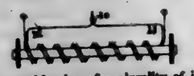

Claim.—1. The combination of a plurality of insulated conductors inclosed in a protective sheath, twisted together in pairs to form independent metallic circuits, each pair twisted with a second pair; with a repeating-coil at the terminal of each pair of conductors and provided with an extension from the center of the main-circuit windings to constitute a third instrument-circuit.

2. The combination of a plurality of insulated conductors inclosed in a protective sheath, twisted together in pairs to form independent metallic circuits, each pair twisted with a second pair in a direction reverse to their own twist, with a repeating-coil at the terminals of each pair of conductors whose windings are twisted together and provided with an extension from the center of the main-circuit windings to constitute a third instrument-circuit.

3. The combination of a plurality of insulated conductors inclosed in a protective sheath, twisted together in pairs to form independent metallic circuits each pair twisted with a second pair; with a repeating-coil at the terminals of each pair of conductors whose windings are twisted together and are in inductive relation respectively to the main circuits and to their local instrument-circuits, and provided with an extension from the center of the main-circuit windings to constitute a third instrument-circuit.

4. The combination of a plurality of insulated conductors inclosed in a protective sheath, twisted together in pairs to form independent metallic circuits, each pair twisted with a second pair in a direction reverse to their own twist; with a repeating-coil at the terminals of each pair of conductors whose windings are twisted together and provided with an extension from the center of the main-circuit windings to constitute a third instrument-circuit.

5. The combination of a plurality of insulated conductors inclosed in a protective sheath, twisted together in pairs to form independent main circuits having telephones at each terminal thereof, a repeating-coil at the said terminals of each pair, the said windings being twisted together and having an extension from the center of the main-circuit windings to include telephones and to form a third circuit, each pair of conductors constituting a metallic circuit and twisted with a second pai , as set forth.

6. The combination of four insulated conductors twisted together in pairs to form independent main metallic circuits, each pair twisted with the other pair; with a repeating-coil at the terminals of the pairs of conductors and provided with an extension from the center of the main-circuit windings to constitute a third instrument-circuit, as set forth.

7. The combination of four insulated conductors twisted together in pairs to form independent main metallic circuits, each pair twisted with the other pair; with a repeating-coil at the terminals of the pairs of conductors, and provided with an extension from the center of the main-circuit winding, to constitute a third circuit including telephones, as set forth.

8. The combination of a plurality of conductors transposed in pairs to form independent metallic circuits; with a repeating-coil at the terminal of each pair of conductors and provided with an extension from the center of the main-circuit windings to constitute a third instrument-circuit.

9. The combination of a plurality of telephone-circuits extending between terminal stations, two or more of which circuits are insulated and contained in a protective sheath for a portion of their length, and for the remainder of the distance are non-insulated and supported upon pins in the air; the said insulated portions of the circuits being twisted in pairs to form independent metallic circuits, each pair twisted with a second pair, and the non-insulated continuations of said pairs are transposed upon said pins; with a repeating-coil at the terminal of each pair of conductors and to their local instrument-circuits and provided with an extension from the center of the main-circuit windings to constitute a third instrument-circuit.

10. A repeating-coil for electric circuits, one or both of whose inductive windings consist of twisted conductors both of the windings provided with end terminals and one winding having a central terminal.

11. A repeating-coil for electric circuits, one or both of whose inductive windings consist of twisted conductors whose terminals are so connected that the circuit therethrough continues through the conductors twice in series, with an extension from the center of the windings.

12. A repeating-coil for electric circuits whose inductive windings consist of double-twisted conductors, the circuits through each winding continuing through the helices twice in series, with an extension or terminal from the center of one of the windings.

13. A repeating-coil for composite electric circuits consisting of three windings composed of several conductors wound together, the helices of one winding in series from one terminal to the other and inductive to alternating or telephone currents, the helices of the second winding provided with end terminals and a third terminal from the center thereof, the said winding inductive to alternating or telephone currents traversing its helices in series, and non-inductive to such currents circulating therein differentially, and the third winding consisting of one or more helices adapted to be grounded at one terminal and open at the other.

706,820. STEAM-ENGINE. JAMES A. JENNEY, Providence, R. I. Filed May 9, 1901. Serial No. 59,484. (No model.)

Claim.—1. In a steam-engine, the combination with the casing and the driving-shaft, of a plurality of equidistant cylinders arranged about said casing parallel with the driving-shaft, pistons in said cylinders, crank-disks, pivoted connecting-rods connecting the disks and pistons, bevel-gears fixed to said disks, a larger bevel-gear on the driving-shaft meshing with said bevel-gears, valve-chambers at one end of the casing, rotatable valves in said chambers a gear on the driving-shaft and gears on the stems of the said valves meshing with said gear, all substantially as shown and described.

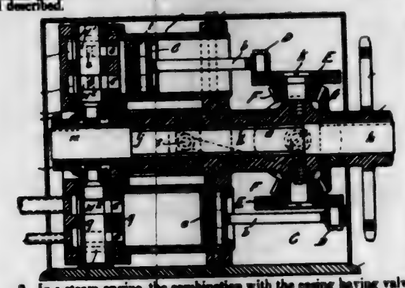

2. In a steam-engine, the combination with the casing having valve-chambers at one end, and the driving-shaft, of a plurality of equidistant cylinders arranged about said casing parallel with the driving-shaft, pistons in said cylinders, crank-disks, pivoted connecting-rods connecting the crank-disks and pistons, bevel-gears fixed to said disks, a larger bevel-gear on the driving-shaft meshing with said bevel-gears, rotatable valves in said valve-chambers, a gear on the driving-shaft, gears on the stems of the valves meshing with said gear, and means for adjusting the last-mentioned gear to readjust the said valves, as set forth.

3. In a steam-engine, the combination with a plurality of cylinders of pistons, and their connecting-rods, crank-disks rotated by said connecting-rods, gears fixed to the crank-disks, a larger gear on the driving-shaft, a driving-shaft, a shaft-casing upon which said disks and gears are supported, and a gear fixedly mounted upon the driving-shaft meshing with the said gears, rotatable valves and gears carried by the stems thereof and meshing with the larger gear on the driving-shaft.

4. In a steam-engine, the combination with a plurality of cylinders circularly arranged about the driving-shaft of a plurality of cylindrical valves governing the engine-ports and radiating from the driving-shaft, gears upon the inner ends of valve-stems, a driving-shaft, and a large gear mounted thereon meshing with the smaller gears, means for adjusting said larger gear, and a sprocket-wheel on the outer end of the driving-shaft.

5. In a steam-engine, the combination of the cylinders, arranged parallel with the driving-shaft, the pistons therein, a series of cylindrical valves, radially disposed in relation to a central driving-shaft, each valve being provided with a plurality of transverse slots located one above the other upon opposite sides of the valves, a driving-shaft, and a sprocket-wheel on the outer end of said shaft and means connected with said driving-shaft for simultaneously rotating the valves, and means for adjusting said valves.

706,821. SPEED-REGULATOR. JOSEPH R. JOHNSON, Meriden, Conn. Filed Dec. 16, 1901. Serial No. 86,079. (No model.)

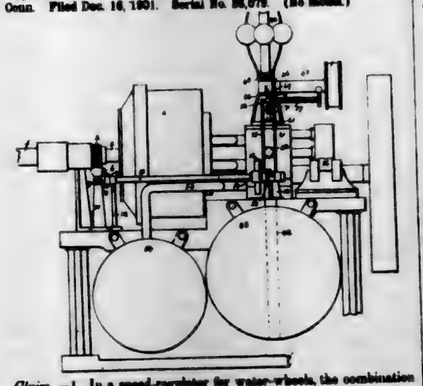

Claim.—1. In a speed-regulator for water-wheels, the combination with a water-wheel-gate controller, of a governor, operating connections between the governor and controller, and connections between the controller and the governor, including a friction-clutch.

2. In a speed-regulator for water-wheels, the combination with a water-wheel-gate controller, of a governor, operating connections between the said governor and controller, connections between the controller and the governor including a friction-clutch, and an operating-bar connected with and operated by the governor to cause the friction-clutch to come into action.

3. In a speed-regulator for water-wheels, the combination with a water-wheel-gate controller, of a governor, operating connections between the governor and controller, connections between the controller and the governor including a friction-clutch, an operating-bar connected with and operated by the governor to cause the friction-clutch to come into action, and an operating-lever operated by the said bar to bring the friction-clutch into play.

4. In a speed-regulator for water-wheels, the combination with a water-wheel-gate controller, of a governor, operating connections between the governor and controller, connections between the controller and the governor including a friction-clutch, an operating-bar connected with and operated by the governor to cause the friction-clutch to come into action, an operating-lever operated by the said bar to bring the friction-clutch into play, and means operated through the friction-clutch for restoring the speeder-lever to its normal position.

5. In a speed-regulator for water-wheels, the combination with a water-wheel-gate controller, of a governor, a speeder-lever operated by the governor, and connections between the said controller and the speeder-lever including a friction-clutch, an operating-lever, an operating-bar between the said operating-lever and the speeder-lever, a rock-arm, and a rod operated by the said arm and operating to restore the speeder-lever to its normal position.

6. In a speed-regulator, the combination with a gate-controller, of a centrifugal governor, connections between the governor and controller, a speeder-lever operated by the governor, and connections between the controller and speeder-lever, including means for adjusting the resistance of those connections to operation by the speeder-lever.

7. In a speed-regulator, the combination with a gate-controller, of a centrifugal governor, connections between the governor and gate-controller, a speed-lever operated by the said governor, and connections between the said controller and speeder-lever, including a clutch, an operating-lever, an operating-bar connected with the speeder-lever and formed with a cam operating upon the operating-lever, and means brought into play by the friction-clutch for restoring the speeder-lever to its normal position and arresting the gate-controller.

8. In a speed-regulator, the combination with a gate-controller, of a centrifugal governor, connections between the governor and controller, a speeder-lever, connections between the gate-controller and the speeder-lever, whereby the gate-controller is arrested, and means for absorbing or nullifying the minor fluctuations of the speeder-lever or gate-controller.

9. In a speed-regulator, the combination with a gate-controller, of a centrifugal governor, connections between the governor and controller, a speeder-lever, connections between the gate-controller and the speeder-lever, whereby the gate-controller is arrested, and a tension device for nullifying the minor fluctuations of the speeder-lever, including two pins engaged with the said lever, springs coacting with the said pins, and means for varying the tension of those springs.

706,822. SEPARABLE RING. CLEMENT A. KELLOGG, East Carmel, Ohio. Filed Mar. 17, 1902. Serial No. 98,658. (No model.)

Claim.—1. In a separable ring the combination with relatively fixed and movable ring-sections, of a hinge-pin projecting from one of said sections, a hinge-pin socket formed in the other of said sections, and a spur folded over said pin in its socket for interlocking the ring-sections, substantially as described.

2. In a separable ring, the combination with relatively fixed and movable ring-sections, of a hinge-pin projecting from one of said sections bearing an angular feather, a socket in the other of said sections for receiving said hinge-pin, and a spur folded over the hinge-pin to prevent its withdrawal from the socket aforesaid, substantially as described.

706,823. MAIL-BAG CATCHER. GEORGE B. KLINK and JOHN C. KLINK, Tacoma, Wash. Filed Jan. 31, 1902. Serial No. 92,070. (No model.)

Claim.—1. A mail-catcher comprising a base, a bracket or cleat secured to the side of a car-door having grooves to receive said base, an abutment-wall formed on said cleat or bracket for limiting the movement of said base, an arm pivotally carried by said base, means for normally forcing the arm outwardly, and means for retaining it in position, substantially as described.

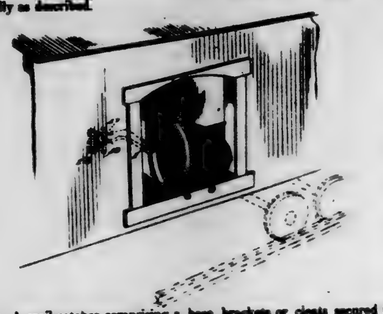

2. A mail-catcher comprising a base, brackets or cleats secured to the opposite sides of the car-door having grooves to receive the said base, abutment-walls formed on the door sides of said cleats or brackets closing the end of the recess therein for limiting the movement of said base in that direction, a pivoted arm carried by said base, means for normally forcing the arm outwardly through the door, and means for retaining it in said position, substantially as described.

3. A mail-catcher comprising a movable base, an arm pivotally mounted thereon inside a car and bent so as to project therefrom when swung to its outer position, spring means carried by said base for normally forcing the arm outwardly, a ratchet mechanism also on said base for holding the arm at various positions when it is swung inwardly, the impact of the mail-bag striking the arm, forcing it automatically inwardly where it is held by the said ratchet mechanism, substantially as described.

4. A mail-catcher comprising an arm carrying a mail-receiving bag, a spring for holding the arm normally outside a car-door, a ratchet-wheel attached to said arm, a spring-pawl engaging the same, means for lifting the pawl out of engagement with the ratchet so that the spring may force the arm outwardly the said pawl holding the ratchet-wheel when the arm is forced inwardly by the impact of the mail-pouch, and a movable base carrying all of said mechanism so that the catcher may be moved and used with equal facility on either side of a car-door, substantially as described.

706,824. **TONGS FOR HANDLING INGOTS, &c.** JOHN M. LAFFERTY, Pittsburg, Pa. Filed Oct. 15, 1901. Serial No. 78,673. (No model.)

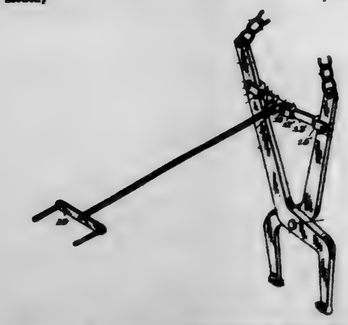

Claim.—1. In tongs, the combination with the handles thereof, of straps connected to said handles and to each other, jaws on the side of one of said straps, and means connected to the said jaws to operate the straps in opening and closing the jaws of the tongs.

2. In tongs, the combination with the handles thereof, of straps pivoted to said handles and to each other, jaws on the side of one of said straps, and means connected to the said jaws to operate the straps in opening and closing the jaws of the tongs.

3. In tongs, the combination with the handles thereof, of straps pivoted to said handles and to each other, jaws on the side of one of said straps, stops on said handles to limit the movement of the straps, and means engaging with said jaws to operate the straps in opening and closing the jaws on the tongs.

4. In tongs, the combination with the handles thereof, of straps pivoted to said handles and to each other, jaws on the side of one of said straps, and a lever or bar connected to the said jaws to operate the straps in opening and closing the jaws of the tongs.

5. In tongs, the combination with the handles thereof, of straps pivoted to said handles and to each other, jaws on the side of one of said straps, and a lever or bar pivoted to the said jaws to operate the straps in opening and closing the jaws of the tongs.

6. In tongs, the combination with the handles thereof, of straps pivoted to said handles and to each other, jaws on the side of one of said straps, a lever or bar pivoted to the said jaws, and handles on said lever or bar for moving the same and the straps to open and close the jaws of the tongs.

706,825. **NUT-LOCK.** HERBERT W. LANDMAN, Barton, Md. Filed May 26, 1902. Serial No. 108,390. (No model.)

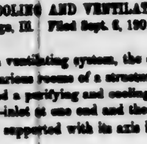

Claim.—In a nut-lock the combination of a nut provided in its base with an approximately wedge-shaped recess the inner end of which is in communication with the nut-opening, and an aperture arranged adjacent one of the edges of the said nut, and an approximately T-shaped spring locking-lever provided on its enlarged end with an inwardly-projecting integral flange, arranged in the said recess, and provided adjacent its outer end with a projection to engage the said aperture, substantially as described.

706,826. **VOTING-MACHINE.** WILLIAM LARSELL, Bay City, Mich. Filed Feb. 14, 1900. Serial No. 5,153. (No model.)

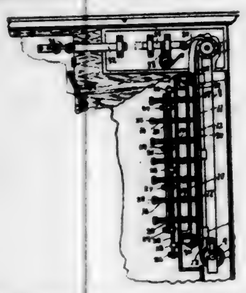

Claim.—In a voting-machine, the combination of the voting-booth provided with an entrance-door, an upper and a lower roller journaled in supports within the booth, a supporting-board extending over the space between the rollers, a tally-sheet passed over the outer face of the board and with its end portions secured upon the rollers, mechanism for imparting revolution to the rollers by the movement of the door, a removable supporting-plate arranged in front of the tally-sheet and carrying a series of plungers having on their outer printing die-faces presented to the tally-sheet, a series of springs for actuating the plungers outwardly, a curtain-shutter carried by a spring-roller at one side of the booth and located in front of the supporting-plate, a line carried by pulleys and extending across the booth and with one end secured to the said shutter and having its opposite end secured to the outer edge of the door for moving the shutter across the booth in front of the series of plungers when the door is opened, and a spring for swinging the entrance-door open, substantially as set forth.

706,827. **COOLING AND VENTILATING SYSTEM.** JAMES E. LAWRENCE, Chicago, Ill. Filed Sept. 6, 1901. Serial No. 74,581. (No model.)

Claim.—1. In a ventilating system, the combination of a series of ducts leading to the various rooms of a structure, a blower for forcing air through said ducts, and a purifying and cooling apparatus consisting of a vessel having the air-inlet at one end and the air-outlet at the opposite end, and a water-coil supported with its axis in the path of the air-current, so that the air will pass through the spaces inclosed by the coil on its way through the apparatus, said coil being provided with numerous fine perforations, for the purposes set forth.

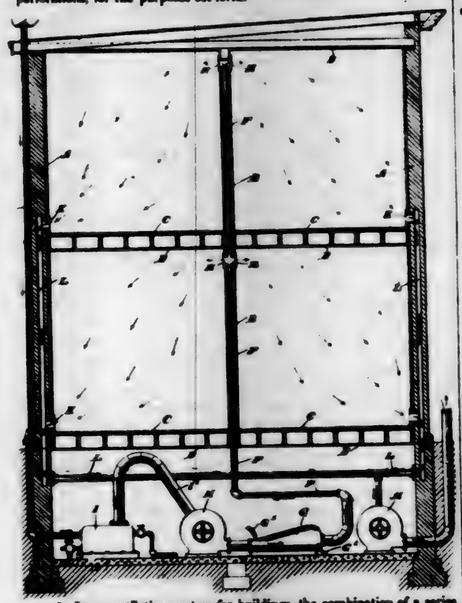

2. In a ventilating system for buildings, the combination of a series of fresh-air ducts leading to the various rooms, a cooler connected to these ducts, a blower connected to the cooler, a purifying apparatus consisting of a vessel having an air-inlet at one end and an air-outlet at the opposite end, this outlet rising vertically directly from the vessel and then extended downward to the blower, a pipe for supplying water to the vessel and means for drawing off water from the vessel, a water-coil connected to the supply-pipe and supported within the vessel above the water therein and with its axis in the path of the air-current and provided with numerous perforations throughout its length, and means for exhausting the vitiated air from the various rooms of the building, for the purposes set forth.

706,828. **CHEESE-CUTTER.** FRANK MAY, Knoxville, Tenn. Filed Jan. 22, 1902. Serial No. 90,104. (No model.)

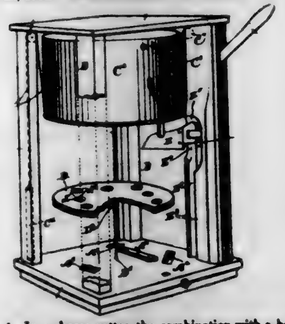

Claim.—1. In a cheese-cutter, the combination with a base, a turn-table, and a vertically-shiftable cover, of a vertically-reciprocable knife supported outside of the range of said cover and adapted to be turned so as to extend radially substantially to the axial line of said turn-table and to be turned laterally out of the range of said cover, substantially as described.

2. In a cheese-cutter, the combination with a base, a turn-table, and a vertically-shiftable cover, of a knife secured to a vertically-reciprocable support outside of the range of said cover at a suitable distance from the axial line of the turn-table to permit the point of said knife to extend substantially to said axial line, suitable guides for turning said knife laterally out of the range of said cover when said knife is at the upper limit of its vertical movement and for turning said knife into the working position when it descends, substantially as described.

706,829. **INK-WELL.** JOHN P. MENTZER, Chicago, Ill., assignor to Atkinson & Mentzer, Chicago, Ill., a Firm. Filed June 28, 1901. Serial No. 66,203. (No model.)

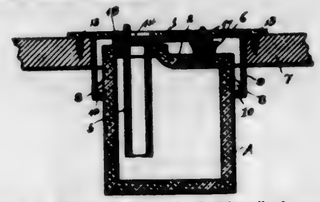

Claim.—1. The combination with the ink-well, of an annular support for the same, the well being provided with projections and the support having a flange provided with apertures through which said projections can pass, whereby the well can be inserted into the annular support from below and then turned to cause the projections to rest upon said flange, a cover adapted to be secured in position above the well and having an aperture to permit access to the well, a stopper for opening and closing said aperture, and means on the cover for engaging the well to prevent the rotation thereof, substantially as described.

2. The combination of an annular support having notches or recesses at intervals, a well having lateral projections adapted to rest upon the annular support and to thereby support the well, the lateral projections being adapted to pass through the notches or recesses in the annular support, whereby the well can be inserted from below and then turned to cause the projections to rest upon the support, and a plate adapted to be secured in position above the well and provided with means for engaging the same to prevent rotation thereof, substantially as set forth.

3. The combination of an annular support having its inner edge provided at intervals with notches or recesses and having lateral projections adapted to rest upon the annular support and thereby support the well, said projections being adapted to pass through the notches in the support, whereby the well can be inserted in position from below and then turned to cause the projections to rest upon the support, and means for holding the well against rotation, substantially as set forth.

4. The combination with a well having lugs or projections 8, 8, of a collar 9 secured to the desk and having a flange 10 adapted to support the projections 8, 8, and provided with apertures or notches 11, 11, capable of receiving the projections 8, 8, a cover 12 secured upon the top of the desk and having an opening adapted to register with the pen-opening in the well, a stopper for opening and closing said pen-opening, and means on the cover 12 for holding the well against rotation, substantially as described.

5. The combination with a well having projections or lugs 8, 8, of a collar 9 secured to the desk and provided with a flange 10 having notches 11, 11, adapted to receive the lugs or projections 8, 8, a tube 5 extending to nearly the bottom of the well, a cork 6 fitted into an aperture in the top of the well, a cover 12 secured to the desk above the well and having an aperture registering with the tube 5, a swinging stopper adapted to open and close said opening in the cover, a cork provided for an opening in the well, and a pivot-pin for said swinging stopper adapted to rest upon said cork and thus hold the well against rotation, substantially as described.

706,830. **PACKAGE FOR WATER-BOTTLES, WATER-BAGS, &c.** EDWARD E. HIMMAN, New Haven, Conn., assignor to the Stamless Rubber Co., New Haven, Conn., a Corporation. Filed Apr. 1, 1902. Serial No. 100,987. (No model.)

Claim.—1. A package for water-bottles, &c., comprising a box and a cover hinged to its upper edge at one end thereof, said cover formed

with sides adapted to overlap the sides of the box when the cover is closed, the sides of the said cover connected with the box, and a clamp secured to the inner face of the cover to support the neck of the bottle, the main portion of which rests in the box, substantially as described.

2. A package for water-bottles, &c., comprising a box, a cover hinged thereto at one end, means connecting the cover and box for supporting the cover in a raised position, the sides of said cover tapering from its forward edge rearward, a holder and a label secured to the inner face of the top of the box and connecting the holder thereto said holder adapted to support a water-bottle by its neck whereby the bottle may rest in the box and be otherwise free, substantially as described.

706,831. VENEER-CUTTING MACHINE. LOUIS G. MERRITT, Lockport, N. Y. Filed Mar. 11, 1902. Serial No. 97,714. (No model.)

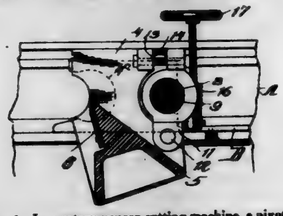

Claim.—1. In a rotary veneer-cutting machine, a pivoted knife-carriage, means for automatically changing the pitch of the knife, and independent means whereby the pitch of the knife can be abruptly changed at any desired point without affecting said automatic means.

2. In a rotary veneer-cutting machine, a suitable framework, blocks slidable in ways thereon, a knife-carriage pivotally mounted on said blocks, blocks connected to said knife-carriage and traveling on fixed ways on the framework of the machine, which ways are inclined to impart through the blocks traveling thereon a change of pitch of the knife at a fixed rate as the knife is fed toward the work.

3. In a rotary veneer-cutting machine, a suitable framework, blocks slidable in ways thereon, a knife-carriage pivotally mounted on said blocks, hangers pivotally connected to said knife-carriage a shaft passing through said hangers, inclined wedges in connection with said ways, bearing-blocks for supporting the ends of said shaft movable on said wedges and means whereby said slide-blocks and said bearing-blocks may be fed together toward the work, whereby the pitch of the knife will be automatically changed during such feeding movement.

4. In a veneer-cutting machine, in combination, the frame having suitable ways A thereon, the slide-blocks 2 adapted to be fed therealong, the knife-carriage pivotally mounted on said slide-blocks, the hangers pivotally connected to said knife-carriage, the shaft passing through said hangers, the blocks 10 in which said shaft has eccentric bearings at its ends, means for rotating said shaft in order to change the pitch of the knife, the inclined ways or wedges B in connection with the main ways, upon which said bearing-blocks 10 travel, whereby the pitch of the knife is automatically changed while it is being fed toward the work.

5. In combination, the frame having suitable ways thereon, the slide-blocks adapted to be fed therealong, the tool-carriage mounted on said slide-blocks, the pressure-bar casting, the second blocks providing points of support for both the pressure-bar casting and the tool-carriage, said slide-blocks being cut away so as to straddle said second blocks and permit of independent movement thereof substantially as and for the purposes set forth.

6. In a veneer-cutting machine in combination, a frame having suitable ways A thereon, the slide-blocks 2 adapted to be fed therealong, said blocks being cut away as at C, the knife-carriage pivotally mounted on said slide-blocks, the hangers pivotally connected to said knife-carriage, a shaft passing through said hangers, the pressure-bar casting supported by said shaft, the blocks 10 providing bearings for the ends of said shaft, said blocks being located within the cut-away portion of said slide-blocks 2 whereby they may be reciprocated relatively to said slide-blocks substantially as and for the purposes set forth.

706,832. FURNACE-TWYER. EDWIN H. MEREWETHER, San Luis Potosi, Mexico. Filed Nov. 30, 1901. Serial No. 83,773. (No model.)

Claim.—1. In a furnace blast apparatus an air-introducing mechanism having a furnace outlet-duct, a blast inlet-duct, an escape-duct communicating with the atmosphere, a passage-way connecting the blast inlet-duct and the furnace outlet-duct and the closing devices simultaneously closing said passage-way and the escape outlet-duct, substantially as set forth.

2. In a furnace blast apparatus an air-introducing mechanism having a furnace outlet-duct, an inlet-duct, means for checking the backflow of gas from the furnace-duct to the inlet-duct, a duct communicating with a region of pressure lower than that in either of the aforesaid ducts and a closing device for said low-pressure duct independent of the said gas-check means, substantially as set forth.

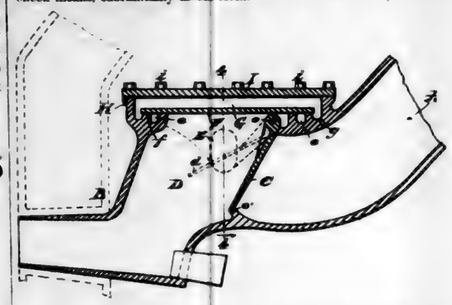

3. In a furnace blast mechanism an air-introducing mechanism having a furnace-duct, a blast-duct communicating therewith, a check-valve between the furnace-duct and the blast-duct, an atmosphere-duct adapted to communicate with the furnace-duct, a valve for the atmosphere-duct movable independently of the first aforesaid valve and adapted to be closed when the first said valve is closed, substantially as set forth.

4. The combination of the twyer duct or a tlet B, the blast or inlet duct A, the automatically-acting means for closing the duct A against backflow of gases, the escape-passage E adapted to communicate with the twyer to connect the latter with an exterior space and a second closing device for closing the escape-passage, the two said closing devices being adapted to be closed simultaneously and to be opened independently of each other, substantially as set forth.

5. In a furnace blast mechanism an air-introducing device having a main check-valve, a duct on the outside of said valve, a furnace-duct on the inner side of said valve, a supplemental escape-duct relatively on the inner side of said valve adapted to connect the furnace-duct with a region of relatively low pressure and a supplemental valve movable independently of the main check-valve for closing the escape-duct, substantially as set forth.

6. In a furnace blast mechanism an air-introducing device having a check-valve, an inlet-duct on the outer side of said valve, an outlet-duct on the inner side of said valve, an escape-duct adapted to connect said inlet-duct with a region of relatively low pressure, a supplemental valve held closed by the pressure in the inlet-duct and interposed between the outlet-duct and the escape-duct, substantially as set forth.

7. In a furnace blast apparatus an air-introducing mechanism having a furnace outlet-duct, a blast inlet-duct, two passage-ways from the inlet-duct to the furnace outlet-duct, two closing devices, one for each of said passage-ways, and a supplemental outlet-duct adapted to communicate with the furnace outlet-duct, said supplemental outlet being closed by one of said closing devices, substantially as set forth.

8. In a furnace blast apparatus an air-introducing mechanism having a furnace outlet-duct, a blast inlet-duct, two passage-ways from the inlet-duct to the furnace outlet-duct, two closing devices, one for each of said passage-ways, and a supplemental outlet-duct adapted to communicate both with the aforesaid outlet-duct and with the inlet-duct, said supplemental outlet-duct being closed by one of the said closing devices, substantially as set forth.

9. In a furnace blast apparatus the air-introducing mechanism having a chamber D, three ducts adapted to communicate with said chamber, the first duct also communicating with an air-forcing mechanism, the second duct communicating with the interior of a furnace, and the third duct communicating with the open atmosphere, and two independent valves, one interposed between said chamber and the open atmosphere-duct, and one interposed between the said chamber and the blast-duct, and one being held open and the other held closed independently of each other by the air-blast, substantially as set forth.

10. In a furnace blast mechanism an air-introducing device having an inlet, a furnace-outlet, a check-valve between the inlet and the outlet, a supplemental outlet connecting the furnace-outlet with a region of pressure lower than that of the air-blast, a valve between said two outlets and a duct supplemental to the check-valve passage to carry air from the inlet to the second valve to hold it closed.

11. In a furnace blast mechanism an air-introducing device having a check-valve, a duct on the outer side of the valve, a furnace-duct on the inner side of the valve, a duct adapted to connect the furnace-duct with the open atmosphere, a valve for said duct supplemental to and independent of the check-valve, a pressure-chamber on the outer side of the supplemental valve and a duct adapted to connect said pressure-chamber with a region of relatively high pressure, substantially as set forth.

12. In a furnace blast mechanism an air-introducing device having a check-valve, an inlet-duct on the outer side of said valve, a furnace-duct on the inner side of said valve, an escape-duct adapted to connect the furnace-duct with the open atmosphere, a valve supplemental to the check-valve for closing said escape-duct, a pressure-chamber for the supplemental valve and a reduced port connecting said pressure-chamber with the first aforesaid duct on the outer side of the check-valve, substantially as set forth.

13. In furnace blast apparatus the air-introducing mechanism having a chamber as at D, three ducts, the first adapted to communicate with said chamber, the second being a furnace-duct permanently communicating therewith, and the third being an atmosphere-duct intermittently communicating therewith, a gravity-valve introduced between the first duct and said chamber D and adapted to be opened by the air-blast, a gravity-valve interposed between the said chamber and the atmosphere-duct and normally held closed by the blast, substantially as set forth.

14. The combination of the twyer, the blast-duct, an automatically-operative check-valve between the same, a relief device communicating with the twyer, and means whereby the operation of said relief device is determined by a difference of pressure in said blast-duct and twyer when cut off from each other by said check-valve.

15. The combination of the twyer, the blast-duct, an escape-duct from the twyer, means whereby said escape-duct is closed by the pressure of the blast, and an automatically-acting check-valve between the twyer and blast-duct.

16. The combination of the twyer, the blast-duct, an automatically-acting check-valve between the same, an escape-duct, passages from each side of the check-valve communicating with said escape-duct, and a supplemental valve acting to close the passage from the twyer and from the blast-duct to the escape-duct.

17. The combination of the twyer, the blast-duct, an automatically-acting check-valve between the same, an escape-passage from the twyer to an outer region of relatively low pressure, a supplemental valve controlling said escape-passage, and means whereby the pressure in the blast-duct acts on said supplemental valve in the direction in which the same closes.

706,833. EAVES-TROUGH PROTECTOR. WILLIAM L. MEYER, Anson, Kans. Filed Nov. 13, 1901. Serial No. 82,133. (No model.)

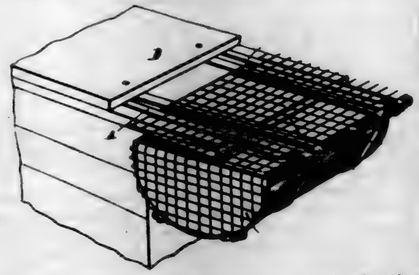

Claim.—In an eave-trough protector the combination of a strip of wire-cloth, slightly wider than the eave-trough to which it is to be applied, a clamp A one end of which clamps the lower edge of the cloth to the headed edge of the trough and the other end is secured to the roof and clamps the upper edge of the cloth thereto, a supplemental clamp B applied to the lower edge of the cloth and the headed edge of the trough and a piece of flexible wire fastening the strip of cloth about the end of the trough, substantially as set forth.

706,834. APPARATUS FOR LEACHING ORES, &c. GEORGE MOORE, Salt Lake City, Utah. Filed Feb. 3, 1902. Serial No. 92,262. (No model.)

Claim.—1. An apparatus for leaching comprising a shell or body in the form of a truncated cone, a head at each end of said body having a central opening, one of said openings to receive material to be operated upon and the other to receive a fluid solvent, means for rotating the body about its central horizontal axial line, and means for causing the material and fluid solvent to pass through the body simultaneously in opposite directions, substantially as described.

2. An apparatus for leaching comprising a shell or body in the form of a truncated cone, a head at each end of said body having a central opening, one of said openings to receive material to be operated upon, and the other to receive a fluid solvent, means for rotating the body about its central horizontal axial line, and combined means for actuating the material through the body in one direction, and disintegrating it during its passage, and means for simultaneously causing the fluid solvent to flow through the body in the opposite direction to the movement of the material, substantially as described.

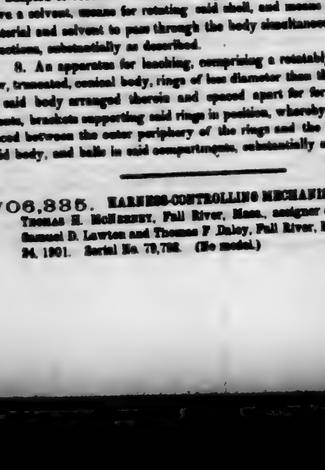

3. An apparatus for leaching, comprising a shell or body in the form of a truncated cone mounted to rotate about its central horizontal axial line, a head at each end having a central opening, the opening in the larger head being arranged to receive a fluid solvent, and that in the smaller head to receive material to be operated upon, means for actuating the material to be operated upon through the body from the smaller to the larger end, and means for causing the fluid solvent to flow through the body from the larger to the smaller end, substantially as described.

4. An apparatus for leaching, comprising a shell or body in the form of a truncated cone, a head at each end having a central opening, the opening of the small head being larger than that of the large head, and adapted to receive material to be operated upon, means for admitting a fluid solvent through the opening in the large head, and discharging it through the opening in the small head, and means for actuating the material through the body, and discharging through the opening of the large head, substantially as described.

5. An apparatus for leaching, comprising a hollow truncated conical body or shell arranged to rotate about its central horizontal axial line, brackets secured in the shell at intervals of its length, transverse rings secured upon said brackets, out of contact with the shell, and forming partitions to divide the shell into compartments, and a series of balls in each compartment, substantially as described.

6. An apparatus for leaching, comprising a hollow truncated, conical body, a head at the smaller end, having a central opening to receive the material to be operated upon, a head at the larger end having a central opening, a pipe for discharging fluid solvent into the latter opening, a guard or cover over said pipe, and means for discharging the material admitted at the small end through the large end around said guard, substantially as described.

7. An apparatus for leaching comprising a suitable shell, a head at each end of said shell, having a central opening, one of said openings being adapted to receive material to be operated upon and the other to receive a solvent, means for rotating said shell, and means for causing the material and solvent to pass through the body simultaneously in opposite directions, substantially as described.

8. An apparatus for leaching, comprising a rotatably-mounted hollow, truncated, conical body, rings of less diameter than the inner surface of said body arranged therein and spaced apart for forming compartments, brackets supporting said rings in position, whereby spaces are produced between the outer periphery of the rings and the inner surface of said body, and balls in said compartments, substantially as described.

706,835. HARNESS-CONTROLLING MECHANISM FOR LOOMS. THOMAS H. MOLLINEUX, Fall River, Mass., assignor of two-thirds to Samuel D. Lawton and Thomas F. Daley, Fall River, Mass. Filed Oct. 24, 1901. Serial No. 79,782. (No model.)

Claim.—In a loom harness mechanism, a plurality of vertically-moving harness-frames, guides mounted above said frames, a support and an equalizer comprising a pair of axially-alined connected primary rolls or cylinders stationarily journaled on said support in a position laterally remote from the guides, primary flexible bands wrapped around the respective rolls in opposite directions, one or more of said bands being looped to form journal-bearings, secondary pairs of axially-alined connected rolls or cylinders having journals mounted to rotate in the said bearing-loops, secondary pairs of flexible bands wrapped in opposite directions around said secondary rolls, and suspending connections between said primary and secondary bands and the harness-frames passing over said guides.

706,886. CASTER. DAVID EISEN, Morris, Ill., assignor to Hintzl Manufacturing Company, Morris, Ill. Filed Nov. 23, 1901. Serial No. 83,344. (No model.)

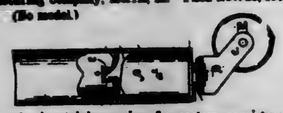

Claim.—1. A retaining-spring for casters, consisting of a tubular body formed from a plate of springy material to have one end of the plate overlap the outer wall of the body and freely contact therewith, a sleeve within the body, and a web between the wall and the sleeve, substantially as described.

2. A retaining-spring for casters made from a single plate of springy material, consisting of a tubular body formed to have one end of the plate overlap the outer wall of the body and freely contact therewith, a sleeve within the body, and a web between the wall and the sleeve, substantially as described.

3. A retaining-spring for casters made from a single plate of springy material spirally bent or coiled to form a sleeve and further bent or coiled in the same direction to form a wall or body, and a web between the sleeve and the wall or body with the outer end of the plate free to allow of compression, substantially as described.

4. A retaining-spring for casters made from a single plate of springy material bent or coiled to form a sleeve and further bent or coiled to form a wall or body provided with a step on its upper edge bent inward toward the sleeve, and a web between the sleeve and the wall or body with the outer end of the plate free to allow of compression, substantially as described.

5. A retaining-spring for casters made from a single plate of springy material bent or coiled to form a sleeve and further bent or coiled to form a wall or body, and a web between the sleeve and the wall or body provided in its lower edge with a recess the outer end of the plate being free to allow of compression, substantially a described.

6. A retaining-spring for casters made from a single plate of springy material bent or coiled to form a sleeve and further bent or coiled to form a wall or body provided with steps bent inward toward the sleeve, and a web between the sleeve and the wall or body provided in its edge with a recess the outer end of the plate being free to allow of compression, substantially as described.

7. The combination of a retaining-spring for casters made from a single plate of springy material bent or coiled to form a sleeve and further bent or coiled to form a wall or body, a web between the sleeve and the wall or body, provided in its edge with a recess the outer end of the plate being free to allow of compression, and a distending-washer encircling the sleeve and lying within the recess in the web, substantially as described.

8. In combination with a caster, of a retaining-spring therefor made from a single piece of springy material bent or coiled to form a sleeve and further bent or coiled to form a wall or body having its outer free edge curved or rounded at its upper corner, a web between the sleeve and the wall or body provided in its edge with a recess, a distending-washer encircling the sleeve and lying within the recess in the web, and a plate carrying a roller and journaled within the sleeve, substantially as described.

9. In combination with a caster, of a retaining-spring therefor made from a single piece of springy material bent or coiled to form a sleeve and further bent or coiled to form a wall or body, a web between the sleeve and the wall or body provided in its edge with a recess, a distending-washer encircling the sleeve and lying within the recess in the web, a plate carrying a roller and journaled within the sleeve, and an exterior washer encircling the plate and lying outside of the retaining-spring, substantially as described.

10. An essentially oblong blank for the formation of a retaining-spring for casters with one end of greater width than the other having a recess in its lower edge and having, in its upper edge near the wider end, a cut allowing a portion of its upper edge to be turned inwardly and furnish a stop or abutment when the blank is formed into a sleeve and spring, substantially as described.

11. A blank for the formation of a retaining-spring for casters oblong in general outline having the upper edge of one of its ends curved or rounded and having a recess in its lower edge and having two cuts on its upper edge adapted to be inwardly turned furnishing stops or abutments when the blank is formed into a sleeve and spring, substantially as described.

706,887. CASTER. DAVID EISEN and PETER B. PETERSEN, Morris, Ill., assignors to Hintzl Manufacturing Company, Morris, Ill. Filed Dec. 20, 1901. Serial No. 86,671. (No model.)

Claim.—1. A retainer or retaining-socket for casters consisting of a split tubular body of springy material provided at its upper end with a wing or ear extending onto the tubular body and crossing the slit therein, substantially as described.

2. A retainer or retaining-socket for casters consisting of a split tubular body of springy material provided at its upper end with two wings or ears extending onto the tubular body, crossing the slot therein and overlapping one another to increase the spring action of the socket, substantially as described.

3. A retainer or retaining-socket for casters consisting of a split tubular body of springy material provided at its upper end with two wings or ears extending onto the tubular body, crossing the slot therein and overlapping one another to increase the spring action of the socket, and a base-disk centrally and firmly attached to the lower end of the tubular body, in combination with a plate carrying a caster-wheel provided at its upper end with a head adapted to be forced through the socket and project above the wings and upper edge thereof, substantially as described.

4. A retainer or retaining-spring for casters consisting of a split tubular body of springy material provided at its upper end with two wings or ears extending onto the tubular body crossing the slit therein and overlapping one another to increase the spring action of the socket, in combination with a plate carrying a caster-wheel and provided with a head adapted to be forced through the spring-socket expanding the same and to project beyond and rest upon the upper edge of the wings and the socket and further provided with a collar near its lower end for contact with the lower end of the socket, substantially as described.

706,888. TROLLEY-WIRE-FINDER. LOUIS C. HOLAN, St. Paul, Minn. Filed Apr. 11, 1902. Serial No. 102,491. (No model.)

Claim.—1. In a trolley-wire finder, the combination of a trolley-head, a trolley-wheel carried by said head, an elongated band divided longitudinally and with elongated plates depending therefrom contiguous to said longitudinal division, inwardly-projecting ribs upon said plates near their ends, a transverse bolt engaging said plates, and a wire-finder consisting of a central bar pivoted upon said bolt between said plates and with its ends extending beyond the ends of the plates and between said ribs, and with diverging extended forks adapted to guide the wire to the groove of the trolley-wheel when said finder is actuated, substantially as and for the purpose set forth.

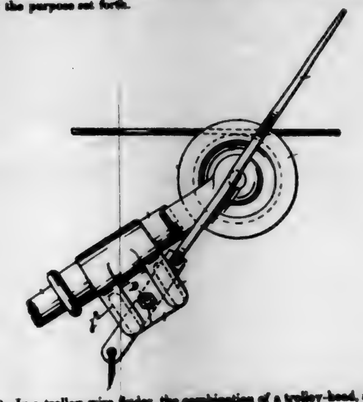

2. In a trolley-wire finder, the combination of a trolley-head, a trolley-wheel carried by said head, an elongated band divided longitudinally and with elongated plates depending therefrom contiguous to said longitudinal division, inwardly-projecting ribs upon said plates near their ends, a bolt passing transversely through said plates centrally thereof and with spaced shoulders thereon between said plates, nuts on the ends of said bolt outside said plates, and a wire-finder consisting of a central bar pivoted upon said bolt between said plates and with its ends extending beyond their ends, and between said ribs, and with diverging forks adapted to guide the trolley-wire to the trolley-wheel, substantially as set forth.

706,889. SAWMILL-FEED. ALEXANDER C. GREEN, Charleston, W. Va. Filed Nov. 1, 1901. Serial No. 80,772. (No model.)

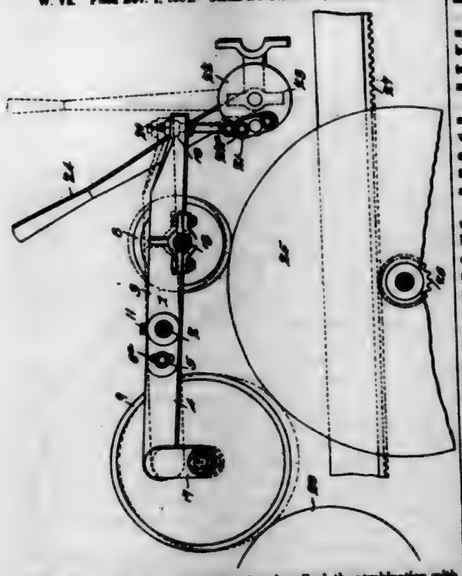

Claim.—1. In a device of the class described, the combination with pulleys 25 and 26 of an oscillatory frame pivotally mounted between its ends and composed of sections adjustably connected together, wheels mounted on the sections of the frame and carried by the latter, and means for operating the frame, substantially as described.

2. In a device of the class described, the combination with pulleys 25 and 26 of a shaft, an oscillatory frame composed of sections having alined openings to receive the shaft and adjustably connected together, wheels mounted on the frame and located at opposite sides of the shaft, and means for operating the frame, substantially as described.

3. In a device of the class described, the combination with pulleys 25 and 26 of a shaft, an oscillatory frame mounted on the shaft and extending from the same in opposite directions, a feed-wheel mounted on the frame at one side of the shaft, links depending from the frame and arranged at opposite sides of the shaft, a wheel supported by the lower ends of said links, and means for operating the frame, substantially as described.

4. In a device of the class described, the combination with pulleys 25 and 26 of the vertically-adjustable bearings, a shaft mounted thereon, a frame mounted on the shaft and extending from the same in opposite directions, a pair of links supported by the frame and pivotally connected with the same, a friction-wheel supported by the links, a feed-wheel mounted on the frame, and operating mechanism connected with the frame, substantially as described.

706,840. BATTERY. WILLIAM L. PARKHOFF, New Haven, Conn. Filed Mar. 18, 1902. Serial No. 98,321. (No model.)

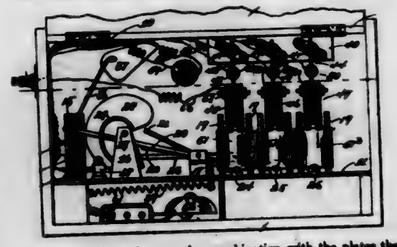

Claim.—1. In a battery the combination with the plates thereof; of a cell; a rest upon which said cell is adapted to stand so that the mouth thereof will be under said plates and in a line therewith; an elevating-lever one end of which is secured to said rest; and means for operating the other end of said lever so that said cell may be raised to contain said plates, substantially as described.

2. In a battery the combination with a series of plates; of cells; rests upon which said cells are adapted to stand so that the mouths thereof will be under said plates and in a line therewith; an elevating-lever secured to each of said rests; and means for raising said levers so that said cells may be raised to contain said series of plates, substantially as described.

3. In a battery the combination with the plates thereof; of a cell; a rest upon which said cell is adapted to stand so that the mouth thereof will be under said plates and in a line therewith; an elevating-lever secured to said rest; a cam adapted to come in contact, upon the revolution thereof, with said lever to force said cell upward to contain said plates; and means for operating said cam, substantially as described.

4. In a battery the combination with a series of plates; of cells; rests upon which said cells are adapted to stand so that the mouths thereof will be under said plates and in a line therewith; elevating-levers secured to each of said rests; cams adapted to come in contact with said levers upon the revolution thereof to force said cells upward to contain said plates; and means for operating said cams, substantially as described.

5. In a battery, the combination with the plates thereof, of a cell; a rest upon which said cell is adapted to stand so that the mouth thereof will be under said plates and in a line therewith; an elevating-lever secured to said rest; a contact-plate; a contact-lever; connection between said battery and said contact-plate; connection between said contact-plate and said contact-lever; and means for elevating said rest and said cell, and forcing said contact-lever into connection with said contact-plate, substantially as described.

6. In a battery the combination with a series of plates; of cells; rests upon which said cells are adapted to stand so that the mouths thereof will be under said plates and in a line therewith; elevating-levers secured to said rests; a contact-plate; a contact-lever; connection between said battery and said contact-plate; connection between said contact-plate and said contact-lever; and means for elevating said rests and said cells, and forcing said contact-lever into connection with said contact-plate, substantially as described.

7. In a battery the combination with the plates thereof; of a cell; a

rest upon which said cell is adapted to stand so that the mouth thereof will be under said plates and in a line therewith; an elevating-lever secured to said rest; a contact-plate; a contact-lever; a cam adapted to come in contact with said elevating-lever and said contact-lever, to force said cell upward to contain said plates, and said contact-lever into contact with said contact-plate, and means for operating said cam, substantially as described.

8. In a battery the combination with a series of plates; of cells; rests upon which said cells are adapted to stand so that the mouths thereof will be under said plates and in a line therewith; elevating-levers secured to said rests; a contact-plate; a contact-lever; cams adapted to come in contact with said elevating-levers and said contact-lever, to force said cells upward to contain said plates, and said contact-lever into contact with said contact-plate, and means for operating said cams, substantially as described.

9. In a battery the combination with a casing containing therein a shelf; battery-plates; a cell; a standard secured to said shelf; an elevating-lever pivoted in said standard; a rest secured to one end of said lever upon which said cell is adapted to stand so that the mouth thereof will be under said plates and in a line therewith; a second standard secured to said shelf; a cam journaled in said second standard, adapted to come in contact with the other end of said lever to elevate said cell; and a handle adapted to operate said cam from the outer side of said casing, substantially as described.

10. In a battery the combination with a casing containing therein a shelf; battery-plates; cells; a standard secured to said shelf; elevating-levers pivoted in said standard; rests secured to one end of said levers upon which said cells are adapted to stand so that the mouths thereof will be under said plates and in a line therewith; a second standard secured to said shelf; cams journaled in said second standard, adapted to come in contact with the other end of said levers to elevate said cells; and a handle adapted to operate said cams from the outer side of said casing, substantially as described.

11. In a battery the combination with a casing containing therein a shelf; battery-plates; a cell; a standard secured to said shelf; an elevating-lever pivoted in said standard; a rest secured to one end of said elevating-lever upon which said cell is adapted to stand; a contact-lever pivoted in said standard; a contact-plate secured to said shelf; a second standard secured to said shelf; a cam or cams journaled in said second standard; a handle adapted to operate said cam or cams to come in contact with said elevating-lever to raise said cell in a position to contain said plates, and to force said contact-lever in connection with said contact-plate, substantially as described.

12. In a battery the combination with a casing containing therein a shelf; battery-plates; cells; guides for said cells; a standard secured to said shelf; elevating-levers pivoted in said standard; rests secured to one end of said levers upon which said cells are adapted to stand; a contact-lever pivoted in said standard; a contact-plate secured to said shelf; a second standard secured to said shelf; a cam or cams journaled in said second standard; a handle adapted to operate said cam or cams to come in contact with said elevating-levers to raise said cells in a position to contain said plates, and to force said contact-lever in connection with said contact-plate, substantially as described.

13. In a battery the combination with a casing containing therein a shelf; battery-plates; a cell; a standard secured to said shelf; an elevating-lever pivoted in said standard; a rest secured to one end of said lever upon which said cell is adapted to stand; a second standard secured to said shelf; a cam or cams journaled in said second standard, adapted to come in contact with the other end of said elevating-lever to elevate said cell; a contact-plate secured to said shelf; a contact-lever pivoted in said first-mentioned standard, adapted to be forced into connection with said contact-plate by said cam or cams; a rod one end of which is secured to the upper end of said contact-lever; a plate secured to the other end of said rod having on its inner surface denoting characters, adapted to pass before a perforation in said casing upon the operation of said contact-lever; substantially as described.

14. In a battery the combination with a casing containing therein a shelf; battery-plates; a cell; a standard secured to said shelf; an elevating-lever pivoted in said standard; a rest secured to one end of said lever upon which said cell is adapted to stand; a second standard secured to said shelf; a cam or cams journaled in said second standard, adapted to come in contact with the other end of said elevating-lever to elevate said cell; a contact-plate secured to said shelf; a contact-lever pivoted in said first-mentioned standard, adapted to be forced into connection with said contact-plate by said cam or cams; a rod one end of which is secured to the upper end of said contact-lever; a plate secured to the other end of said rod having on its inner surface denoting characters, adapted to pass before a perforation in said casing upon the operation of said contact-lever; a bell within said casing; a push-button on the outer side of said casing connecting with said bell, substantially as described.

15. In a battery the combination with a casing containing therein a shelf; battery-plates; a cell; a standard secured to said shelf; an elevating-lever pivoted in said standard; a rest secured to one end of said lever upon which said cell is adapted to stand; a second standard secured to said shelf; a cam or cams journaled in said second standard adapted to come in contact with the other end of said elevating-lever to elevate said cell; a contact-plate secured to said shelf; a contact-lever pivoted in said first-mentioned standard, adapted to be forced into connection with said contact-plate by said cam or cams; a rod one end of which is secured to the upper end of said contact-lever; a plate secured to the other end of said rod having on its inner surface denoting characters, adapted to pass before a perforation in said casing upon the operation of said contact-lever; a bell within said casing; a push-button on the outer side of said casing; binding-posts secured to the outer side of said casing, and conducting connection between said plates, contact-plate, contact-lever, push-button, bell, and binding-posts, substantially as described.

706,341. OIL-BURNER. LOUIS A. PFEIFFER and LYMAN D. STAPLES, San Francisco, Cal. Filed Nov. 13, 1901. Serial No. 82,135. (No model.)

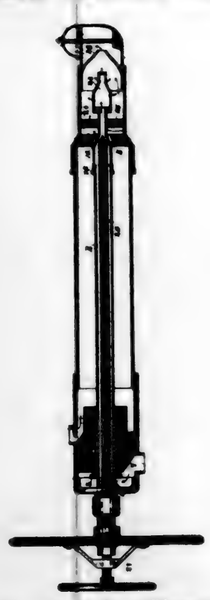

Claim.—1. The combination in an oil-burner of concentric tubes forming a steam-space, with an inlet at one end and a convergent discharge at the other, a core forming an annular space between itself and the inner tube said inner tube having the rear end connecting with the oil-inlet and the front forming a convergent discharge within and concentric with the steam-discharge, a mixing-chamber to receive the discharge from both tubes said inner tube having an extension beyond its convergent discharge and entering the mixing-chamber, and a perforated diaphragm between the mixing-chamber and the said convergent passages and adjustable toward and from said passages, and a burner connecting with the mixing-chamber.

2. The combination in an oil-burner of concentric tubes, a block consisting of a single casting having its body formed with steam and oil passages and having a projecting flange to which the rear end of the outer tube is screwed, said block having, also a central passage and stuffing-box through which the inner tube is movable; a cap fitting a rear flange of the block and forming a chamber at the rear of the block, said chamber communicating with the oil-passage in the block and said inner tube having perforations connecting with the oil-chamber, a block with which the front ends of the tubes are connected, a mixing-chamber into which the steam and oil are delivered at the front, discharge-openings and a burner inclosing the mixing-chamber.

3. The combination in an oil-burner of concentric tubes and interior cylindrical core having an annular space between it and the outer tube, a block consisting of a single casting formed integral with oil and steam passages and forwardly and rearwardly extending flanges, said outer tube connecting with one of said flanges and a cap fitted to the other flange and forming an oil-chamber between itself and the block said block having a passage through it for the inner tube and said inner tube having perforations connecting with said chamber, a stuffing-box carried by the block and through which the inner tube passes, a second block at the front of the tubes, having projecting flanges at both ends, to one of which flanges the front end of the outer tube is fitted, said second block having a convergent passage between itself and a corresponding front portion of the inner tube, a core movable within the inner tube said inner tube extended beyond the second block, a mixing-chamber on the extension of the inner tube, an adjustable and perforated diaphragm between the mixing-chamber and the second block, and a burner connecting with the mixing-chamber.

4. In an oil-burner, the combination of inner and outer tubes, front and rear block to which the tubes are fitted, each of said blocks consisting of a single casting having front and rear extending flanges and one of said blocks having self-contained oil and steam passages, a cap fitted to the rear flange of the rear block and forming an oil-chamber communicating with said oil-passage, and said inner tube having perforations connecting with said chamber, a core passing through the inner tube means for operating the core and inner tube independently, means forming independent, convergent steam and oil passages at the front of the tube, a mixing-chamber in front of the tube and connecting with the inner tube, an adjustable perforated diaphragm between said chamber and the forward block, and a burner.

5. The combination in an oil-burner of an outer tubular chamber with blocks at opposite ends, an inner tubular chamber and a core concentric therewith, a mixing-chamber at the front with a perforated adjustable diaphragm in the rear, said diaphragm having a screw-threaded central opening through which the extension of the main inner tube is guided and movable.

6. The combination in an oil-burner of concentric tubes having blocks at opposite ends and forming outer and inner chambers, a steam-passage opening through the rear block into the outer chamber and an oil-passage leading into the inner chamber, a cone-shaped opening in the front block, a corresponding cone-shaped portion at the front of the inner tube, a guide and means for advancing and retracting the inner tube to vary the steam-passage exterior to itself, a cone-headed core adjustable within the inner tube and the cone-shaped portion of the inner tube to vary the oil-passage, a burner-chamber with an adjustable diaphragm forming a supplemental steam-chamber with openings to admit steam to the burner-chamber, and a perforated head from which oil is delivered to meet the steam in said chamber.

706,342. HAND-TRAP. JOHN C. POSTENFIELD, Columbus, Ohio, assignor to Harry E. Mitchell, London, Ohio. Filed Apr. 6, 1901. Serial No. 54,596. (No model.)

Claim.—1. In a hand-trap, the combination with a frame-bar 1 having a handhold enlargement 3 in its forward portion and a downturned rear end portion, a spring-actuated catch-bar pivotally connected with said bar 1, an operating-lever for said catch-bar and a rearwardly-extending trigger-rod connected with said operating-lever, of a carrier-arm having at one end means for holding removably a target and a spring connecting its remaining end with a pin in the rear portion of the bar 1, substantially as specified.

2. In a hand-trap, the combination with a frame-bar having a hand hold enlargement in its forward portion and a downturned rear end portion, and a rearwardly-extending trigger adjacent to the downturned rear end portion, of a spring-actuated carrier-arm having at one end means for holding removably a target, said carrier-arm being adapted to be released by the trigger.

3. In a hand-trap, the combination with a frame-bar having a hand-hold enlargement in its forward portion and a downturned rear end portion forming a grip for the other hand, and a spring-actuated trigger adjacent to the downturned end portion, of a spring-actuated carrier-arm having at one end means for holding removably a target, said carrier-arm being adapted to be released by said trigger.

706,848. WHEELED SCRAPER. THOMAS D. RADCLIFFE, Lawrence, Kans., assignor of one-third to Charles Rich Metcalf, Lawrence, Kans. Filed Nov. 12, 1901. Serial No. 82,094. (No model.)

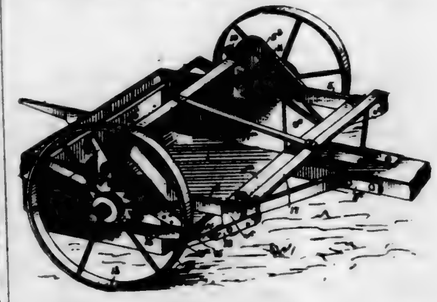

Claim.—1. A wheeled scraper, comprising a pan, an end-gate therefor, having side arms straddling the pan, and pivotally secured to the pan sides; stub-axles projected from said arms at a point forward of their pivotal connection, wheels loosely mounted on the said axles; a draft-tongue, and means for locking the pivotal connections of the side arms with the wheels, whereby to elevate the pan as the wheels rotate forward, for the purpose described.

2. A wheeled scraper, comprising in combination, a pan, an end-gate closable over the front of the pan, said end-gate including side arms adapted to straddle the pan, and pivotally secured to said pan, stub-axles projected from the said side arms at a point in advance of their pivotal connection, wheels loosely mounted on said axle, and devices for connecting the pivotal connections with the wheels at a point forward of the center of the pan, whereby to lift the pan and simultaneously lower the end-gate as the wheels are drawn forward, substantially as described.

3. A wheeled scraper, comprising in combination with the supporting-wheels, the vertically-movable pan and independently-movable end-gate, a twin-hook latch mechanism for automatically engaging the pan and end-gate as they come together to hold the pan elevated and the end-gate closed for transportation, and means for tripping said twin-hook latch mechanism, for the purpose described.

4. A wheeled scraper, having a vertically-movable pan and a downwardly-closing end-gate, and mechanism controlled by the forward movement of the wheels for effecting the lifting action of the pan and closure of end-gate; of detent devices for automatically engaging the pan and the end-gate to hold them to their cooperative position, and means including a handle extended back over the pan for releasing said detent devices, substantially as shown and for the purposes described.

5. The combination with the stub-axles and the wheels, said stub-axles having rearwardly-extending frame-pieces fixedly connected thereto; of the pan, connections for pivotally supporting the pan on the frame-pieces, and means for locking the said pivotal connections with the wheels, substantially as shown and for the purpose described.

6. The combination with the stub-axles, having rearwardly-extending portions, and the wheels; of the pan, connections for pivotally supporting the pan on the end of said extending portions, means for interlocking the said pivotal connections with the wheels, and detent devices including hand-operated tripping-lever for engaging the pan and holding it to its elevated position, as specified.

7. The combination with the stub-axles, the frame-pieces extended rearwardly therefrom, and the wheels loosely mounted on the axles, and having ratchet-disk portions; of the pan pivotally supported on the axle frame-pieces, latches pivotally supported on the pan, and lever devices including a handle member for throwing said latches into engagement with the ratchet-disks on the wheel, substantially for the purposes described.

8. The combination with the stub-axles, the supporting-wheels loosely mounted thereon, frame-pieces fixedly connected to the axle and extended rearwardly of the pan pivotally suspended from said frame-pieces, means joining the pan with the wheels to lift it, said pan having forwardly-projecting latch-hooks, the draft-tongue pivotally connected to the pan, pivoted latches on said tongue for engaging the pan latch-hooks when the pan is elevated, and means for releasing the draft tongue-supported latch-hooks, substantially as shown described.

9. The combination of the pan, the end-gate having side arms straddling the pan, the draft-tongue having side arms to straddle the pan, a pivoted latch member at each side of the pan, a single pivot-pin on each side of the pan, forming a fulcrum for the ends of the end-gate and tongue side arms, and the latches at each side, stub-axles projected from the end-gate side arms at a point forward of the pan pivot-pins, the carrier-wheels loosely mounted thereon, ratchet-disks fixedly held on the wheels in a plane with the pivoted latches, means controlled from the rear of the pan for shifting said latches into engagement with the ratchet-disks, and hand-lever-released detents for automatically engaging the pan and end-gate to hold said pan and end-gate to their cooperating positions, for the purposes specified.

706,844. TOOL FOR FORMING BOTTLE-NECKS. EDWARD D. SMITH, Baltimore, Md., assignor, by mesne assignments, to Universal Seal and Stopper Company, Baltimore, Md., and Camden, N. J., a Corporation of New Jersey. Filed Jan. 7, 1902. Serial No. 89,733. (No model.)

Claim.—1. In a tool for forming bottle-necks, the combination with movable jaws and a central core, of levers connected to the core and jaws, links pivoted in advance of the lever ends and also to said lever ends, thus in conjunction with said ends forming a compound forming device adapted to be projected into operative position and retracted therefrom by the movement of the jaws, substantially as and for the purpose set forth.

2. In a tool for forming bottle-necks, the combination with a central core, of jaws connected to said core, levers rockably secured to the core and having connection with the jaws, said levers having ends constituting a part of the forming means, links pivoted to the core and to the ends of said levers and constituting the other part of the forming means, substantially as set forth.

3. In a tool for forming bottle-necks, the combination with a central core, of jaws connected to said core by links, levers pivoted to the core and to the jaws, whereby the jaws in their opening and closing movements are maintained parallel to the core and to each other, said levers having ends constituting a part of the forming device, links pivoted to the core and to the ends of said levers, and constituting the other part of the forming device, substantially as set forth.

4. In a tool for forming bottle-necks, the combination with a central core having a slot therein, of jaws connected with said core by links, levers pivoted in said slot and to the jaws, the ends of said levers constituting a part of the forming means, links pivoted in said slot in advance of the ends of said levers and pivoted to the ends thereof and constituting the other part of the forming means, substantially as set forth.

5. In a bottle-neck-forming tool, the combination with a central core having a slot therein near its forward end, jaws connected with said core and means for holding them normally separated, a stop on the core and having a forward extension, levers pivoted in the slot and to the jaws, the ends of said levers constituting a part of the forming means, links pivoted in the slot in advance of the lever ends and pivoted thereto and constituting the other part of the forming means, substantially as described.

6. In a tool for forming bottle-necks, the combination with a slotted central core, of jaws connected with said core, means for normally separating said jaws, a stop on said core having a forward extension adapted to enter the bottle-neck, levers pivoted to the core and to the jaws and having their ends shaped to constitute part of the forming device and working in said extension, links pivoted in the slot and having elongated slots in their rear ends, pins passing through the ends of the levers and the slots in the links, whereby when the jaws are closed the forming means on said links will be projected beyond the forward extension both laterally and longitudinally, substantially as described.

7. In a tool for forming bottle-necks, the combination with a central core having an enlargement near its forward end of jaws movable to and from said core for the purpose set forth, levers connected with the jaws and core, a forming device constituted in part by the lever ends, links having connection with the core and with the lever ends and constituting a part of the forming device, forming-device on the links being adapted to be projected beyond the enlargement both laterally and longitudinally when the jaws are moved toward each other, substantially as described.

8. In a tool for forming bottle-necks, the combination with a central core having an enlargement near its forward end and a stop or shoulder 6, of jaws connected with said core, a forming device mounted in said core formed in part by levers pivoted to the core and having connections with the jaws, and links pivoted in the core and having connection with the lever ends, said forming device being adapted to rest normally in the enlargement of the core but to be projected beyond said enlargement both laterally and longitudinally, substantially as and for the purpose set forth.

9. In a tool for forming bottle-necks, the combination with a central core having links 3 pivoted to its rear end, jaws pivotally connected to said links and provided with forming-surfaces at their forward ends, an enlargement near the forward end of said core, a forming device mounted in said core and formed in part by levers pivoted to the core and having connection with the jaws, and links pivoted in the core in advance of the enlargement and having connection with the lever ends, said forming device being adapted to rest normally in the enlargement of the core but to be projected beyond said enlargement both laterally and longitudinally when the jaws are moved toward each other, substantially as and for the purpose set forth.

10. In a tool for forming bottle-necks, the combination with movable jaws and a central core, of levers connected with the core and operable by the jaws, members mounted in advance of the lever ends and also having connection with said lever ends, thus forming a compound forming device, the parts thereof being adapted to be projected into operative position both laterally and longitudinally with respect to the core, and retracted therefrom by the movement of the jaws, substantially as described.

706,845. APPARATUS FOR SIGHTING GUNS WITH INDEPENDENT LINE OF SIGHT. CHARLES P. E. SCHREIBER and JEAN B. G. A. CAREY, Le Creusot, France. Filed Jan. 29, 1901. Serial No. 45,305. (No model.)

Claim.—1. The combination of a sight device, a gun, and its carriage, with a sector-shaped bar supporting the sight and with which the gun moves, a guide for said bar on the gun or cradle and concentric with the trunnions, means on the carriage for shifting said bar in a vertical plane, and gun elevating and depressing devices connected to the gun and to said bar.

2. The combination of a sight device, a gun and a gun-carriage of a gun elevating and depressing mechanism, a sector-shaped bar supporting the sight device and said elevating and depressing mechanism, a worm-gear operatively connected to said bar for elevating and depressing the same and thereby simultaneously moving the sight device and gun in a vertical plane without altering their angle of inclination to each other.

706,845.

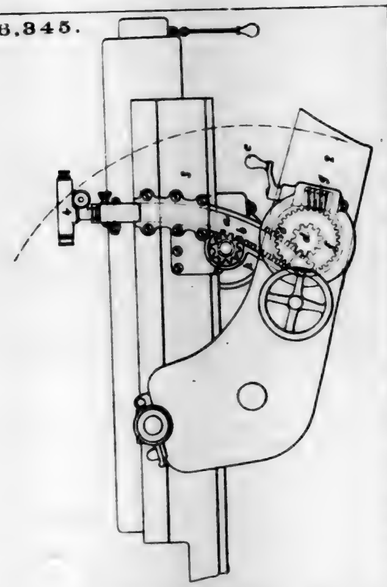

706,846. SHIELD FOR BICYCLE-HANDLES. OTTO SCHMIDT, Leutenberg, Germany. Filed Jan. 7, 1902. Serial No. 88,704. (No model.)

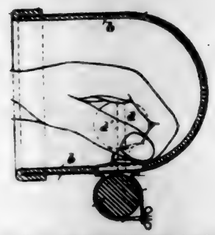

Claim.—The herein-described shield for the hands comprising a metallic body of an elongated cup shape having a soft lining falling back upon the outside to form rounded and smooth edges, a metallic block set in one side of the metallic body, a clamp-ring projecting outwardly from said metallic block, means for securing the clamp-ring to the shaft or bar, a pin projecting from the metallic block into the cup-shaped body, attached upon said ring in position to be gripped by the hand and projecting into the metallic body, substantially as described.

706,847. FIREPROOF FLOOR CONSTRUCTION. JOHN T. SIBLEY and MARSHALL E. SHOEMAKER, Jersey City, N. J., assignors to American Concrete-Steel Company, Newark, N. J., a Corporation of New Jersey. Filed Mar. 28, 1902. Serial No. 99,843. (No model.)

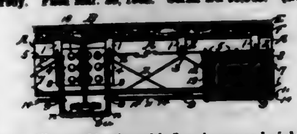

Claim.—1. The combination with floor beams and girders of main supporting metal bars, extending from beam to beam and attached thereto by means of stirrups, resting on the top flanges of the beams, diagonal rods, passing underneath and supported by said bars, and supporting-clips for said rods, the diagonal rods and clips forming a frame for the beam and girder casings, adapted to receive and hold the concrete or other plastic material, substantially as shown and described.

2. The combination with floor beams and girders, of main supporting metal bars extending from beam to beam, and attached thereto by stirrups resting on the top flanges of the beams, diagonal rods and supporting-clips, and diagonal wires and clips, passing down and about the beams and girders and located in such position as to allow a sufficient amount of concrete or other plastic material being placed against and under the bottom flanges of the beams and girders, and a body of concrete, or other plastic material placed around and about the same, all as substantially shown and described.

3. The combination with floor beams and girders, of main supporting metal bars extending from beam to beam, and attached thereto by means of stirrups resting on the top flanges of the beams, diagonal rods and their supporting-clips diagonal wires and clips passing down and about the beams and girders, and located in such position as to allow of a sufficient amount of concrete or other plastic material being placed against the web and under the bottom flanges of the beams and girders, a centering attached thereto, and passing around the space between and down and up the sides of and under the flanges of the beams and girders and forming a supporting-center on which the concrete or other plastic material is placed from above, said centering being used only for the support of concrete or other plastic material while the concrete or other plastic material is being placed around and about the supporting beams and girders, bars, rods, clips, &c., to form the body of the floor, and the beam and girder casing, substantially as shown and described.

4. The combination with floor beams and girders of main supporting metal bars extending from beam to beam, and attached thereto by means of stirrups resting on the top flanges of the beams, diagonal rods and their supporting-clips diagonal wires and clips, passing down and about the beams and girders, and located in such position as to allow of a sufficient amount of concrete or other plastic material being placed against the web and under the bottom flanges of the beams and girders, a wooden centering of the ordinary form, placed under and about the supporting beams, girders, bars, rods, clips, &c., forming a supporting-center on which the concrete or other plastic material is placed from above, said centering above mentioned being used only for the support of the concrete or other plastic material, while the concrete or other plastic material is being placed around and about the supporting beams, girders, bars, rods, clips, &c., to form the body of the floor and the beam, and girder-casing, said centering being removed after the concrete or other plastic material has become set or hardened, substantially as shown and described.

5. The combination with floor beams and girders, of main supporting-bars, extending from beam to beam, and attached thereto by means of stirrups resting on the top flanges of the beams, diagonal rods and their supporting-clips, diagonal wires and clips, passing down and about the beams and girders and located in such a position as to allow of a sufficient amount of concrete or other plastic material being placed against the web and under the bottom flanges of the beams and girders, a wire or metal lath, expanded metal, or similar centering attached thereto and passing across the space between and down and up the sides, and under the flanges of the beams and girders, and forming a supporting-center upon which the concrete or other plastic material is placed from above, substantially as shown and described.

6. The combination with beams A girders B, and main supporting-bars 2 extending between the supporting-beams A and attached thereto by means of suitable connections, diagonal rods 5 extending diagonally between beams A and passing under the bars 2 and attached thereto by means of clips 3 and 6, diagonal wires 7 and 8 placed alongside of and parallel with the webs of beams A and girders B, and clips 9 and 9ª secured to the bottom flanges of the beams A and girders B, diagonal wires 10 passing between clips 9 and 9ª across and under the bottom flanges of beams A and girders B, parallel wires 11 attached to clips 9 and running parallel with and below the bottom flanges of beams A and girders B, and clips 4 attached to bars 2 and supporting-wires 8 of the girder-casing, all substantially as shown and described.

7. The combination with beams A, girders B and main supporting-bars 2 extending between the beams A and attached thereto by means of stirrups 1, rods 5 extending diagonally between beams A passing under the bars 2 and attached thereto by means of clips 3 and 6, diagonal wires 7 and 8 placed alongside of and parallel with the webs of beams A and girders B, clips 9 and 9ª secured to the bottom flanges of the beams A and girders B, diagonal wires 10 passing between clips 9 and 9ª across and under the bottom flanges of beams A and girders B, parallel wires 11 attached to clips 9 and running parallel with and below the bottom flanges of beams A and girders B, clips 4 attached to bars 2 and supporting-wires 8 of the girder-casing, wires 14 passing diagonally between beams A and attached to clips 9 and secured at their intersection by wires 4 supported by bars or rods 15 running parallel with beams A, said bars 15 being supported from the main bars 2 by means of suspension-wires 16, substantially as shown and described.

8. In a fireproof floor and ceiling structure, a clip composed of two

or more pieces secured together by means of rivets or bolts and provided with a plurality of pairs of upwardly-directed hooks, substantially as shown and described.

706,848. **FIREPROOF PARTITION STRUCTURE.** JOHN T. SHEPHERD and MARSHALL H. BROMBAKER, Jersey City, N. J., assignors to American Concrete-Steel Company, Newark, N. J., a Corporation of New Jersey. Filed Mar. 26, 1902. Serial No. 99,650. (No model.)

Claim.—1. In a partition construction, the combination with upright main supporting-bars, and diagonal bracing and binding members, passing across and attached to the same, of metal clips secured between the bars, and ceiling or floor materials to secure and change the direction of the diagonal members, and a metallic fabric or body secured thereto and against which the plaster is applied so as to embed and protect all parts of the metal frame against fire and securely hold the plaster or plastic material, substantially as shown and described.

2. In a fireproof partition construction, the combination with upright main supporting-bars and diagonal bracing and binding members passing across and attached to said bars, of clips secured between the bars and ceiling or floor materials to secure and change the direction of the diagonal wires so as to form a rigid framework, and a metallic body or fabric secured to said bars and diagonal members and connected as a centering against which plaster or other material is applied, substantially as shown and described.

3. A fireproof structure comprising upright supports provided at their upper and lower ends with clips having hooks, diagonally-arranged bracing and binding members connected with said hooks and with said supports so as to form in connection therewith a network and centering material connected with said network, substantially as shown and described.

706,849. **WOOD-PLATE-CUTTING MACHINE.** ANDREW SMITH, Chicago, Ill. Filed Oct. 16, 1901. Serial No. 78,809. (No model.)

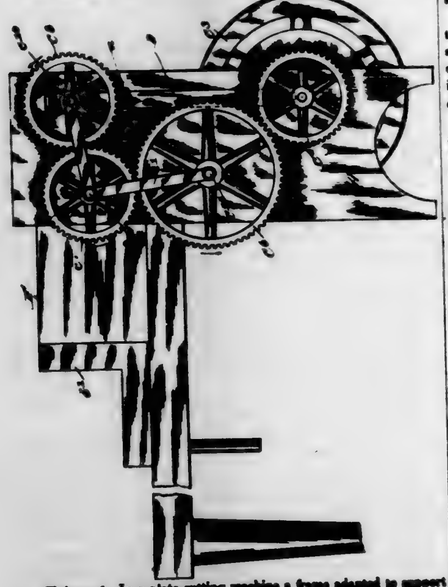

Claim.—1. In a plate-cutting machine a frame adapted to support a block from which the product is to be cut, a cutting-off knife adapted to engage said block, a means for reciprocating said knife, and a means for returning said knife and in connection with the reciprocating means for returning said knife to a position to begin another stroke within less time than that required to make the stroke.

2. In a plate-cutting machine a frame adapted to support a block from which the product is to be cut, a cutting-off knife adapted to engage said block, a means for reciprocating said knife, a means for rotating said knife and in connection with the reciprocating means for returning said knife to a position to begin another stroke within less time than that required to make the stroke, and a facing-knife adapted to face the block.

3. In a plate-cutting machine a revolubly cutting-off knife D^4, shafts C^{14} C^{15} to which opposite ends of said knife are attached, gear-wheels C^8 C^9 for rotating said shafts, bearing-supports for each of said shafts, adapted to be reciprocated, a means for reciprocating said bearing-supports, driving gear-wheels C^6 C^6 on a shaft common to both, intermediate shifting gear-wheels C^7 C^7 connecting the gear-wheels C^8 and C^9, a means for holding said shifting gear-wheels in train while gear-wheels C^8 C^9 are being reciprocated.

4. In a plate-cutting machine a driving-shaft C', bearings in which said shaft is journaled, shafts C^{14} C^{15}, a revolubly cutting-off knife having opposite ends fixed to and connecting said shafts, vertically-reciprocating journal-bearings for each of said shafts C^{14} on said bearings, guides in which said bearings are adapted to be reciprocated, means for coincidentally reciprocating said shafts, a driving-shaft C', gear-wheels C^8 C^9 on opposite ends of said driving-shaft, and an intermediate train of gearing for transmitting rotary motion therefrom to the shafts C^{14} C^{15}.

706,850. **HOOK FOR TYPE-WRITER COVERS.** EDWARD A. SMITH, Middletown, Conn. Filed Mar. 3, 1902. Serial No. 96,456. (No model.)

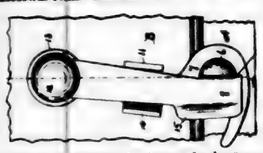

Claim.—1. The combination of a keeper in the form of a headed screw-body with an open hook mounted on an axis that extends transversely to the broad side of the said hook and parallel to the said keeper, for presenting the mouth of the hook to the side of the said keeper, and a separately-formed spring-latch having a pivotal eye by which it is mounted on the same axis as the said hook for locking the hook to said keeper, substantially as described.

2. A type-writer cover having swinging fastening-hooks mounted to swing in a plane parallel to the sides of the said cover to which the said hooks are secured, and spring-latches each latch having a pivotal eye by which it is mounted on the broad side of the said hooks for locking the said hooks into engagement with their keeper, substantially as described.

3. A hook having lugs on each side of its body in combination with a spring-latch pivoted on the axis of said hook, and with its body between the said lugs to hold the engaging ends of the said hook and latch in unison, substantially as described.

4. The combination of a hook for engaging a screw-like keeper having a head provided with a driving-slot with a spring-latch swinging with the said hook, and having the locking-lip adapted to engage the driving-slot in the end of the head of the said keeper, substantially as described.

5. The combination of a hook for engaging a screw-like keeper with a spring-latch swinging with the said hook and having the longitudinally-extended locking-lip with its edge slanting backwardly from its outer end substantially as described.

6. The combination of a hook for engaging a screw-like keeper, with a spring-latch swinging with the said hook and having the locking-lip on one side of its outer end and the beveled wing 15 on the other side of the said end, substantially as described.

706,851. **BAKER'S OVEN.** GEORGE F. SMITH, Baltimore, Md. Filed May 13, 1902. Serial No. 107,084. (No model.)

Claim.—1. A baker's oven, comprising a casing provided at its front with a fire-chamber; flues leading rearwardly from said fire-chamber and opening at their rear into a downwardly-extending transverse dust-chamber, *c;* an oven above said flues and surmounted by longitudinally-extending flues, *i;* vertical flues, *f*, connecting said flues, *i*, at the front with said first-named flues; a combination dust and draft flue, *o*, adapted to connect said first-named flues at the rear with the stack or chimney and provided with a damper, *q;* and a dust-flue, *s*, connected to said combination-flue underneath said damper.

2. A baker's oven, comprising a casing provided with a fire-chamber; horizontal flues, *b*, and, *e*, leading from said fire-chamber; a transverse dust-chamber, *c*, opening downwardly from said flues at the rear and provided with a forwardly-opening dust-flue, *d;* an oven above said flues; longitudinally-extending flues, *i*, above said oven; vertical flues, *f*, connecting said longitudinally-extending flues, *i*, with said first-named flues, *b*, and, *e;* a combination dust and draft flue, *o*, extending entirely across the casing at the rear of said dust-chamber, *c*, and provided with a damper, *q;* and a dust-flue, *s*, leading from said combination-flue underneath said damper to the front of the casing, as and for the purpose set forth.

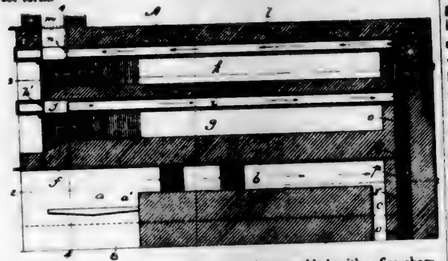

3. A baker's oven, comprising a casing provided with a fire-chamber; flues leading rearwardly from said fire-chamber; dust-chambers, *c*, opening downwardly from said flues at the rear; dust-flues, *d*, leading forwardly from said dust-chambers; a combination dust and draft flue, *o*, in the rear of said dust-chambers and provided with a damper, *q*, controlling communication between said first-named flues and the stack of the oven-casing; a dust-flue, *s*, leading forwardly from said combination-flue underneath said damper; and an oven, *g*, above said first-named flues, as set forth.

706,852. **UMBRELLA-STICK.** THOMAS H. SMITH, Lansford, Pa. Filed May 18, 1901. Serial No. 60,847. (No model.)

Claim.—1. In an umbrella, a stick constructed in telescopic sections, including a main or body section and a handle-section, a crown secured to the body-section, a runner mounted to slide upon the handle and the body sections, a spring located within the body-section and provided with projecting portions extending through openings in the body-section and arranged for frictional engagement with the runner when the latter is in its upper position, and having means for limiting the upward movement of the runner, a spring-controlled cam-support for the runner below and adjacent to the said spring, and a second spring located within the body-section of the stick and provided with feet arranged to extend through openings in the body-section, for the purpose set forth.

2. In umbrellas, a stick consisting of a tubular main section, a handle-section adapted to slide on the main section, and a ferrule-section adapted to slide in the main section, the ferrule-section having guided and locking connection with the main section, a crown secured to the main section, ribs pivoted to the crown, stretchers pivoted to the ribs, a runner having pivotal engagement with the stretchers, means for limiting the upward movement of the runner carried by the main section, a spring-latch carried by the main section and adapted for engagement with the upper end of the handle-section when the stick is lengthened, a cam-support for the runner, likewise carried by the main section of the stick and located above the said latch, a spring-controlled rod connected with the said cam, the said rod having a loop-section spanning the said latch, and means for operating said rod from the exterior of the said stick, as described.

3. In folding umbrellas, the combination, with a stick constructed in telescopic sections, embracing a ferrule-section, a tubular body-section and a tubular handle-section, the body-section being provided with a longitudinal slot having horizontal branches and the ferrule-section with a lug adapted to travel in the said slot and enter the said branches, of a spring-latch located within the body-section and adapted for engagement with the upper end of the handle-section of the stick when the stick is lengthened, a stop-spring located above the spring-latch, a runner arranged to travel on the handle and body sections of the stick, and having a downwardly-extending outwardly-flaring sleeve provided with an interior groove, the said stop-spring being arranged to engage the said groove and provided with extensions for limiting the upward movement of the runner, a cam-support for the runner pivoted on the body-section of the stick, a spring-controlled rod attached to the cam, a spring-controlled latch secured to the body-section of the stick and extending out through an opening therein, and a link connection between said latch and said rod, for the purpose described.

4. In folding umbrellas, the combination, with a stick constructed in telescopic sections, embracing a ferrule-section and a tubular body-section and a tubular handle-section, the body-section being provided at its outer end with a longitudinal slot having upper and lower branches, a lug extending from the ferrule-section into the said slot, means, substantially as described, for preventing one section of the stick turning on the other, a crown attached to the upper portion of the body-section of the stick, ribs pivoted to the crown, stretchers pivoted to the ribs, and a runner having a flaring sleeve mounted to slide upon the handle and the body sections of the stick, of a bridge-spring located within the body-section of the stick near its upper end, having feet extending out through openings in opposite sides of the said stick-section, which feet limit the upward movement of the runner, a cam-support pivoted upon the body-section of the stick below the said bridge-spring, a spring-controlled rod attached to the cam-support and extending downward through the body portion of the stick, a spring-controlled latch attached to the inner face of the body-section of the stick and extending out through an opening therein, a link connection between the latch and the rod, and a latch bridge-spring also located within the body-section of the stick, the feet whereof extend out through openings in the said section of the stick and serve to hold the handle-section of the stick in its lower position, as described.

5. In an umbrella a stick having a tubular main section, a handle-section adapted to slide on the main section and a ferrule-section adapted to slide in the main section, a crown secured to the main section, a runner adapted to slide on the handle and body sections, means for limiting the upward movement of the runner, a latch bridge-spring located within the body-section of the stick and having feet extending through openings in the said section, to hold the handle-section in its extended position, a support for the runner pivoted upon the body-section of the stick above the said bridge-spring, to hold the runner in its upper position, a spring-controlled rod connected at its upper end with the support for the runner, a spring-latch secured to the body-section and extending out through an opening therein and adapted to engage an opening in the handle-section when the latter is extended, and a connection between the said spring-latch and the lower part of the spring-controlled rod, substantially as set forth.

6. In an umbrella, a stick constructed in telescopic sections, a crown secured to one section, a runner adapted to slide upon two of said sections, and having a downwardly-extending and outwardly-flaring sleeve provided with an interior annular groove, means for limiting the upward movement of the runner, a spring-controlled cam-support for the runner, when the latter is in the upper position, and a spring-controlled latch adapted to engage the annular groove of the sleeve of the runner, when the latter is in its lowest position, substantially as described.

7. In an umbrella, a stick constructed in telescopic sections, a crown secured to the main or body section, a runner adapted to slide upon the handle and the body sections, a stop-spring located within the body-section and adapted to limit the upward movement of the runner, a spring-latch also located within the body-section below the stop-spring, for engagement with the upper end of the handle-section, when the stick is lengthened, a spring-controlled cam-support for the runner pivoted upon the body-section and located between the said stop-spring and the spring-latch, a latch secured to the main or body section and extending out through openings in the main and handle sections when the stick is extended, the said latch also serving to hold the runner in the lower position, and a connection between the said latch and the spring-controlled cam-support for the runner, substantially as described.

8. In an umbrella, the combination with a hollow stick having an inner or body section and an outer or handle section, and a runner there-

on, of a spring located within the inner section and provided with feet adapted to extend out through openings in opposite sides of the section the said feet being arranged for frictional contact with the runner, and provided with extensions at their upper portions to limit the upward movement of the runner, a cam for holding the runner in its uppermost position, and a second spring having feet extending out through opposite sides of the inner section of the stick for the purpose set forth.

9. In an umbrella, the combination with a hollow stick, and a runner on the stick and having an internal annular groove, of a spring provided with feet extending out through opposite sides of the stick and adapted to enter the groove of the runner, and a pivoted runner-support below the projecting feet of the spring, as set forth.

10. In an umbrella, the combination with a hollow stick, and a runner on the stick and having an internal annular groove, of an arched spring having feet at the lower ends of its members, the outer edges of the feet being convex and adapted to enter the groove of the runner, a pivoted and spring-pressed runner-support below the projecting feet of the spring, a spring-latch adapted to enter the groove of the runner and hold it in its lowermost position, and an operative connection between the latch and the pivoted runner-support, as set forth.

11. In an umbrella, the combination with a hollow stick, and a runner on the stick, of an arched spring, having feet at the lower ends of its members extending out through opposite sides of the stick, the said feet being provided with horizontal extensions at their upper portions for limiting the upward movement of the runner, the side edges of said feet being arranged for frictional engagement with the runner, and means for supporting the runner in its uppermost position.

12. In umbrellas, a stick constructed of a tubular main section, a handle-section adapted to slide on the main section, the main section being provided at its upper end with a longitudinal slot having end extensions, a ferrule-section adapted to slide in the main section at the slotted portion and having a lug adapted to travel in the slot of the main section and to enter either of the end extensions of the slot, a crown secured to the main section, ribs pivoted to the crown, stretchers pivoted to the ribs, a runner having pivotal engagement with the stretchers, means carried by the main section for limiting the upward movement of the runner, a support for the runner when the latter is in its upper position, the said support being also carried by the main section, a spring also carried by the main section for holding the handle-section in the extended position, and a spring-latch for holding the runner in its lowest position, substantially as set forth.

706,853. WASHING-MACHINE. WILLIAM SPARKMAN, Orangeville, Tex. Filed May 1, 1902. Serial No. 105,505. (No model.)

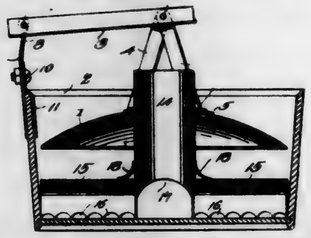

Claim.—1. A washing-machine comprising a combined guide and overflow tube arranged in an upright position and designed to be placed in a suitable receptacle, and a pounder having an opening receiving the combined guide and overflow tube and adapted, when moved downward, to force water into the same, substantially as described.

2. A washing-machine comprising an upright tube designed to be placed in a receptacle and provided at its lower end with approximately semicircular arms forming a base, said tube being open at the top, and a pounder adapted when moved downward to expel water from clothes and force the said water into the tube, substantially as described.

3. A washing-machine comprising a combined guide and overflow tube arranged in an upright position and provided with a base having apertures, a concavo-convex pounder presenting a lower concave face and provided with a central opening receiving the tube, and means for operating the pounder, substantially as described.

706,854. METHYLENE DISALICYLIC ACID AND PROCESS OF MAKING SAME. SAMUEL L. SUMMERS, Philadelphia, Pa. Filed Apr. 26, 1902. Serial No. 104,221. (No specimens.)

Claim.—1. The new product described which is methylene disalicylic acid, a tasteless, impalpable creamy-white powder of granular construction, melting at 245° centigrade, having the empiric formula $C_{15}H_{12}O_4$, insoluble in water and benzol either hot or cold, slightly soluble in chloroform, and very soluble in ether and cold ethyl alcohol.

2. The process of producing methylene disalicylic acid which consists in heating to ebullition a saturated solution of salicylic acid to which has been added, in successive portions, concentrated hydrochloric acid and formaldehyde, then freeing the precipitate from all hydrochloric and unchanged salicylic acids by repeated washings in boiling water.

3. The process of producing methylene disalicylic acid by subjecting an alcoholic solution of salicylic acid to the action of hydrochloric and formaldehyde gases, in a suitable vessel, and then purifying the precipitate by washing in hot water.

706,855. ACET SALICYL PHENETIDIN AND PROCESS OF MAKING SAME. SAMUEL L. SUMMERS, Philadelphia, Pa. Filed Mar. 24, 1902. Serial No. 99,783. (No specimens.)

Claim.—1. As a new product the acet salicyl paraphenetidin herein described, which has the formula $C_{17}H_{17}NO_4$, melting at 92° centigrade, forming in white satin-like crystals, slightly astringent to the taste, and soluble in ether, alcohol and benzol.

2. The process of producing the acet salicyl paraphenetidin herein described, which consists in heating one molecule of acet paraphenetidin with one molecule of brom-salicylic acid to a temperature of about 140° centigrade, until all acid vapors cease, then allowing the mass to cool, and finally extracting the crystalline body in a purified state by means of a suitable solvent.

706,856. ACET SALICYL PHENETIDIN AND PROCESS OF MAKING SAME. SAMUEL L. SUMMERS, Philadelphia, Pa. Filed June 5, 1902. Serial No. 110,293. (No specimens.)

Claim.—1. As a new pharmaceutical product, the acet salicyl paraphenetidin described, having the formula $C_{17}H_{17}NO_4$, melting at about 85° centigrade, forming in white needle-like crystals, tasteless, soluble in alcohol, ether, benzene and chloroform.

2. The process for producing the acet salicyl paraphenetidin described, which consists in first allowing oxychlorid of phosphorus to react on salicylic acid and paraphenetidin at a temperature of about 100° centigrade, and finally exhibiting the pure salicyl paraphenetidin thus formed to the action of acetic anhydrid, and purifying the resultant product by recrystallization.

706,857. SUSPENDERS. JOHN M. SUNDEAN, Lincoln, Nebr. Filed Sept. 30, 1901. Serial No. 77,117. (No model.)

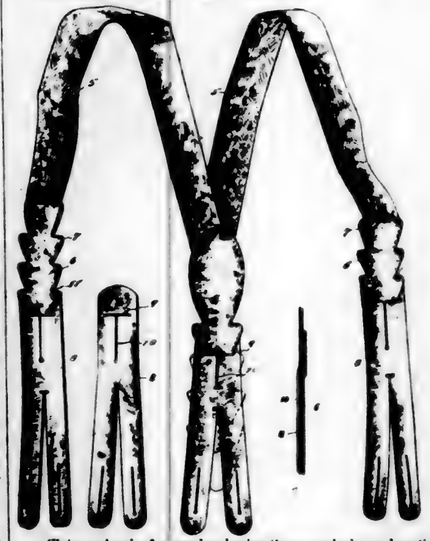

Claim.—A pair of suspenders having three terminal or end portions formed of non-metallic material and each provided with a series of engaging shoulders, and button-straps adapted for engagement with any one of said end portions, said button-straps each comprising a single piece of flat leather having its lower portion bifurcated to form two button-engaging

strips and its upper or head portion provided with a horizontally and a vertically slitted portion forming a T-shaped slot adapted for engagement with the shoulders on said end portions.

706,858. APPARATUS FOR ADMINISTERING ANESTHETICS. CHARLES K. TETER, Upper Sandusky, Ohio. Filed Apr. 16, 1902. Serial No. 103,224. (No model.)

Claim.—1. In a stand of the class described, the combination of a hollow standard having legs thereon, a stem adjustably mounted in said standard and bearing oppositely-extending arms bored throughout their length, a nipple formed on each of said arms, gas-cylinders connected to said arms, cocks mounted in said arms to regulate the flow of gas from said cylinders, a hollow arm connected to said arms intermediate said cocks and bearing a nipple, an adjustably-mounted gooseneck provided with a hook, a gas-bag suspended from said hook and provided with means for connecting it to a face-piece, and a hose-pipe connected to said gas-bag and said nipple, substantially as described.

2. In a stand of the class described, the combination with a standard, of legs hinged to said standard and provided with flanges which form feet, a collar slidingly mounted on said standard and carrying a set-screw, and brace-bars pivoted to said legs and said collar, said brace-bars being curved to adapt them to clear said feet so that said stand may be compactly folded, substantially as described.

706,859. FOOT-REST FOR CARRIAGES. ROLLIN THOMPSON, Thomaston, Conn. Filed June 13, 1902. Serial No. 111,507. (No model.)

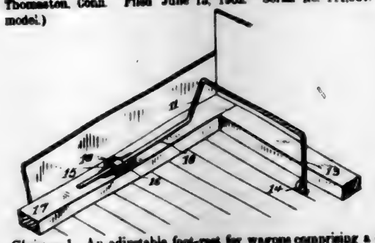

Claim.—1. An adjustable foot-rest for wagons comprising a clamp adapted for attachment at the sides of a wagon-bottom and a rest consisting of a longitudinal strip adapted to engage the clamp, a riser, a transverse piece and a brace descending therefrom and adapted to engage the bottom of the body at approximately its mid-width.

2. The foot-rest C made from a piece of rod-iron and consisting of a longitudinal strip 10, a riser 11, a transverse piece 12, a brace 13, and a head 14, substantially as shown, for the purpose specified.

3. The combination with a wagon-body, of clamps on opposite sides thereof and adjustable rests engaging said clamps and extending inward to approximately the mid-width of the body, each rest consisting of a longitudinal strip, a riser, a transverse piece, and a brace depending from the riser and engaging the bottom of the body.

706,860. SPRING-PROTECTING DEVICE FOR RAILWAY-CAR-COUPLING ATTACHMENTS. WILLIAM THORNBURGH, Detroit, Mich., assignor to the Thornburgh Coupler Attachments Company, Limited, Detroit, Mich., a Corporation of Michigan. Filed Apr. 8, 1901. Renewed Nov. 15, 1901. Serial No. 82,408. (No model.)

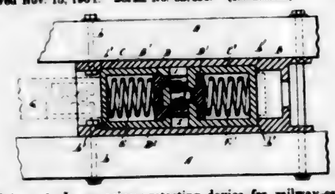

Claim.—1. In a spring-protecting device for railway-car-coupler attachments, box-followers, springs within said followers, and additional means to communicate pressure from one of said box-followers to the spring in the opposite box-follower.

2. In a spring-protecting device for railway-car-coupler attachments, box-followers normally separated the one from the other, springs located in said box-followers, and additional means to communicate pressure from one of said box-followers to the spring in the opposite box-follower.

3. The combination with box-followers and their associated instrumentalities, of a spring in each follower, a pin extension from one follower entering the other follower and engaging the spring thereof, and a pin extension from the other follower entering the first-mentioned follower and engaging the spring thereof, substantially as described.

4. The combination with box-followers each having a spring therein, of pin extensions from the respective followers entering the opposite follower and engaging the spring therein, substantially as described.

5. In a spring-protecting device for railway-car-coupler attachments, box-followers, plate-followers within the box-followers, draft-springs within the box-followers located between the corresponding plate-follower and the opposite end of the corresponding box-follower, and means whereby each plate-follower may communicate pressure applied thereto to the opposite box-follower.

6. In a spring-protecting device for railway-car-coupler attachments, box-followers, plate-followers within the box-followers, and draft-springs within the box-followers between the corresponding plate-follower and the opposite end of the corresponding box-follower, and arms projecting through the adjacent end wall of the box-followers, whereby each plate-follower may communicate pressure applied thereto to the opposite box-follower.

7. In a spring-protecting device for railway-car-coupler attachments, box-followers normally separated one from the other toward their adjacent ends, plate-followers within the box-followers, and draft-springs within the box-followers between the corresponding plate-follower and the opposite end of the corresponding box-follower, and arms projecting through the adjacent end walls of the box-followers, said arms contacting at their outer extremities with the adjacent end wall of the box-follower opposite that through which the arms project, whereby each plate-follower may communicate pressure applied thereto to the opposite box-follower.

8. In a spring-protecting device for railway-car-coupler attachments, the combination with a draft-spring housing, of box-followers having a movable engagement therein and constructed to abut the one against the other at their adjacent ends, draft-springs within the box-followers, and additional means to communicate the spring tension in one of the box-followers to the spring in the other box-follower, the draft-spring housing constructed to limit the movement of the box-followers toward opposite ends thereof.

706,861. INSTRUMENT FOR MEASURING ELECTRIC CURRENTS. WILLIAM THOMSON, Glasgow, Scotland. Filed Dec. 30, 1897. Serial No. 664,582. (No model.)

Claim.—1. The combination of a coil or solenoid; a plunger reciprocating in the coil or solenoid; a beam carrying a pointer, a segment and an adjustable counterbalance-weight; a ligament secured at one end to the segment and at the other end supporting the plunger; a rod attached to the plunger, having a disk; and a vessel for containing fluid in which the disk is immersed to control the movement of the plunger.

2. An instrument for measuring electric currents comprising a coil or solenoid, a plunger reciprocating in the coil or solenoid, hooks having V-shaped recesses, a beam having knife-edges resting in the V-shaped

recesses, and carrying a pointer, a segment secured to the beam, a screw-threaded rod secured to the beam, counterbalance-weight adjustable on the screw-threaded rod, and a ligament secured at one end to the segment and at the other end supporting the plunger.

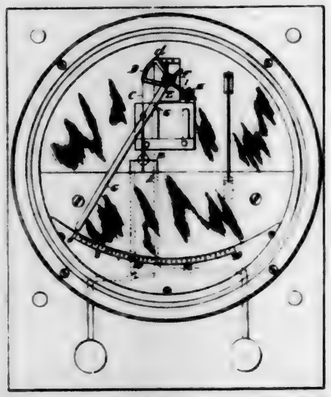

3. An instrument for measuring electric currents, comprising a coil or solenoid, a plunger reciprocating in the coil or solenoid, hooks having V-shaped recesses, a beam having knife-edges resting in the V-shaped recesses, and a pointer connected to the beam.

4. A coil or solenoid for an instrument for measuring electric currents, comprising a tube having a spiral cut.

5. A coil or solenoid for an instrument for measuring electric currents comprising inner and outer tubes having right and left hand spiral cuts respectively.

6. A coil or solenoid for an instrument for measuring electric currents, comprising a number of concentrically-arranged tubes each having a spiral cut.

706,862. GRAIN-PACKER FOR HARVESTING-BINDERS. DANIEL H. THURSTON and JOHN F. HOLDEN, Plymouth, Iowa. Filed Feb. 13, 1901. Serial No. 47,179. (No model.)

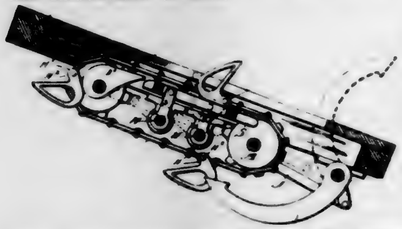

Claim.—In a grain-packer for harvesting-machines, the combination with the binder-deck having longitudinal slots therein, rotating shafts mounted in the stubbleward and grainward portions of the deck below the slots, sprocket-wheels on said shafts having chains thereon, and oppositely-arranged packer-fingers pivoted on said chains, cam-shaped guides secured on the grainward shaft coacting with the fingers to project the same upwardly through the slots, of shafts carrying a pivoted endwise-movable frame for supporting the fingers during their movement along the slots, a shaft at the stubbleward end of the frame, a binder-needle thereon, a crank-arm on said shaft, a crank-arm on one of the shafts of the endwise-movable frame, and a pitman connected to said crank-arms whereby the supporting-frame is adapted to be swung downward during the motion of the needle-shaft thereby withdrawing the fingers from operative position, substantially as specified.

706,863. AIR-BRAKE ATTACHMENT. ARTHUR L. TIBBITS, Chicago, Ill. Filed Nov. 15, 1901. Serial No. 82,482. (No model.)

Claim.—1. The combination with an automatic air-brake system having the usual auxiliary reservoirs, brake-cylinders, engineer's brake-valve and train-pipe, of an auxiliary pipe independent of the automatic brake system, said auxiliary pipe extending throughout the length of the train and to the cab of the engine, said pipe being connected directly to the auxiliary reservoirs and forming a bleeder, a valve arranged in the cab independent of the engineer's brake-valve and controlling the flow of air from the auxiliary reservoirs, normally open valves arranged on said auxiliary pipe at points adjacent to the ends of the cars, and means for automatically closing said valves on the parting of the train, substantially as specified.

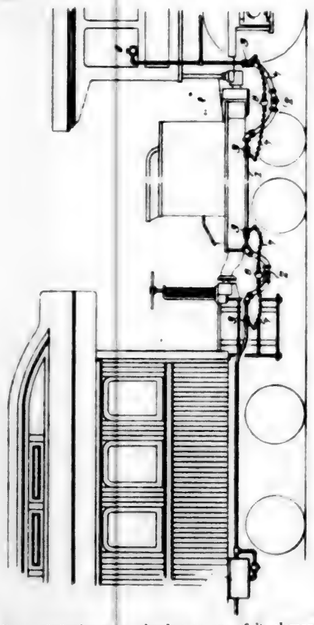

2. In an air-brake system having as one of its elements, an auxiliary reservoir on each car, an auxiliary pipe connected to each of the reservoirs and having coupled sections between the cars, cocks arranged on said pipe at the ends of the car, a separable coupling member for connecting adjacent cocks and adapted to operate the same upon the parting of a train, and a controlling-valve on said pipe.

3. In an air-brake system having as one of its elements an auxiliary reservoir on each car, an auxiliary pipe connected to each of the reservoirs by a valved branch pipe, cocks arranged on said pipe at each end of the cars, flexible couplings arranged on the pipe between the cars and a separable coupling-member connecting said valves, said member being adapted to be uncoupled in advance of the uncoupling of the pipe members, and a controlling-valve on said pipe, substantially as specified.

706,864. WATCHMAKER'S EYEGLASS. HORMIDAS TREMBLAY, Southbridge, Mass. Filed Dec. 26, 1901. Serial No. 87,320. (No model.)

Claim.—1. A watchmaker's eyeglass comprising a two-part frame having its members spaced apart by permanently-secured rivets, a spring held in place by the rivets, and a lens-ring and an eye-ring each carrying a lug provided with an angularly-disposed slot to engage the respective rivets, and bearing at their ends upon the terminals of the spring.

2. A watchmaker's eyeglass comprising a two-part frame having its members spaced apart by permanently-secured rivets, a spring held in place by the rivets, a lens-ring and an eye-ring each carrying a lug provided with an angularly-disposed slot to engage the rivets and bearing at their ends upon the terminals of the spring, and stops carried by the frame members for holding the lens-ring out of contact with the frame.

706,865. TREATMENT OF GOLD AND SILVER ORES. SIDNEY TREVICK, Clapham Common, England. Filed Oct. 30, 1899. Serial No. 735,270. (No specimens.)

Claim.—1. A process for evolving nascent chlorin and effecting the chlorination of metals in order that they may be extracted from a metalliferous mass by rendering them solvent consisting in adding to the mass a mixture in definite proportions of two dilute solutions, one being a solution of calcium hypochlorite free from calcium hydrate, and the other a solution of ferric chlorid, the proportions being such as to result in the formation of ferric hypochlorite leaving some excess of ferric chlorid, which will evolve nascent chlorin.

2. A process for evolving nascent chlorin and effecting the chlorination of metals in order that they may be extracted from a metalliferous mass by rendering them solvent consisting in adding to the mass a mixture in definite proportions of two dilute solutions, one being a solution of calcium hypochlorite free from calcium hydrate, and the other a solution of ferric salt, the proportions being such as to result in the formation of ferric hypochlorite and ferric chlorid which will evolve nascent chlorin.

3. A process for evolving nascent chlorin and effecting the chlorination of metals in order that they may be extracted from a metalliferous mass by rendering them solvent consisting in adding to the mass a mixture in definite proportions of two dilute solutions, one being a solution of hypochlorite of a metal of the alkali groups, and the other a solution of ferric chlorid, the proportions being such as to result in the formation of ferric hypochlorite leaving some excess of ferric chlorid, which will evolve nascent chlorin.

4. A process for evolving nascent chlorin and effecting the chlorination of metals in order that they may be extracted from a metalliferous mass by rendering them solvent consisting in adding to the mass a mixture in definite proportions of two dilute solutions, one being a solution of hypochlorite of a metal of the alkali groups, and the other a solution of ferric salt, the proportions being such as to result in the formation of ferric hypochlorite and ferric chlorid, which will evolve nascent chlorin.

706,866. INTERNAL-COMBUSTION MOTOR. ADOLF VOGT and MAX VON RECKLINGHAUSEN, Westminster, London, England. Filed June 25, 1901. Serial No. 66,008. (No model.)

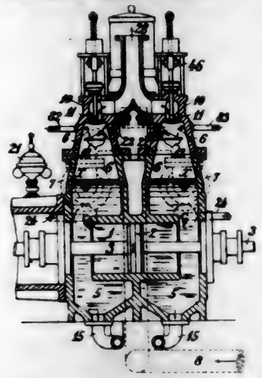

Claim.—1. An internal-combustion engine comprising a horizontal cylinder with its working piston, a vertical extension at each end of said cylinder closed at the upper end and charged with liquid constituting liquid extensions of said piston, spaces in said cylinder extensions above the liquid for containing the explosive charges, means for introducing and exploding said charges alternately in each cylinder extension so that on the explosion of a charge in the one extension, the liquid will be forced downward therein, causing the piston to drive the liquid upward in the other extension, and to compress an explosive charge previously admitted therein, and means for discharging the combustion-gases from the cylinder extensions and for forcing in a charge of air under pressure after each explosion, substantially as described.

2. An internal-combustion motor comprising a horizontal working cylinder and its piston, the ends of the cylinder being formed into upwardly-extending chambers having closed coned upper ends and being partly filled with liquid that constitutes extensions of the piston, means for introducing combustible charges alternately into each chamber above the liquid, means for exploding such charges and thereby forcing downward the corresponding liquid column and causing the piston to perform its stroke to propel upward the other liquid column to compress an explosive charge previously admitted above it, means for introducing a scavenger charge of air into said chambers after each explosion for expelling the combustion-gases and supplying the air required for the next explosive charge, and means for discharging a portion of liquid from such chambers after each explosion and introducing a body of fresh liquid, substantially as described.

3. An internal-combustion motor comprising a horizontal working cylinder and its piston, the ends of the cylinder constituting upwardly-extending chambers having closed coned upper ends and containing liquid that constitutes extensions of the piston, means for introducing combustible charges alternately into each chamber, means for exploding such charges and thereby forcing downward the corresponding liquid column and raising the other liquid column, valve devices for discharging the products of combustion from and for admitting a scavenger charge of air into the space above the liquid column after each explosion, a forcing device for forcing an air-supply through said scavenger-valve device, a forcing device for forcing a fresh quantity of liquid into the liquid column after each explosion, and a valve device communicating with the lower part of the working cylinder for discharging a quantity of liquid from the liquid column when the compression-pressure exceeds a predetermined amount, substantially as described.

4. An internal-combustion motor comprising a horizontal working cylinder and its piston, upwardly-extending chambers at each end of the cylinder, charged with liquid forming extensions of the piston, means for the introduction of combustible matter for the combustible charges into the upper ends of said chambers, means for introducing air under pressure after each explosion for expelling the combustion-gases and supplying the air to mix with the combustible matter for forming the next explosive charge, a discharge-valve device for the escape of the combustion-gases, means for forcing liquid into the cylinder extensions after the explosion of a charge therein and means for allowing a controlled escape of the liquid therefrom during the upward motion of the liquid column in the one extension consequent on the explosion of a charge in the other extension, substantially as and for the purposes described.

5. An internal-combustion motor comprising a horizontal working cylinder and its piston, upwardly-extending chambers at each end of the cylinder having coned upper ends and charged with liquid forming extensions of the piston, means for the introduction of combustible matter into the coned ends of said chambers, a discharge-valve device for the combustion-gases at the upper end of each cylinder extension, a valve device for the admission of air under pressure into the upper part of each cylinder extension after the explosion of each combustible charge, means for forcing liquid into each cylinder extension after the explosion of a charge therein, a loaded escape-valve device, communicating with the lower end of each cylinder extension, and adapted to allow the escape of liquid therefrom when on the compression-stroke of the piston the compression-pressure exceeds the load on the valve, and a valve device adapted to close the said communication between the cylinder extensions and the loaded escape-valve at all times except during the compression-strokes of the piston, substantially as described.

6. An internal-combustion motor comprising a horizontal working cylinder and its piston, upwardly-extending closed chambers at each end of the cylinder charged with liquid, a valve device for the introduction of combustible matter into each cylinder extension, a valve device for the discharge of the combustion-gases after each explosion of a combustible charge, a valve device for the admission of air under pressure into each cylinder extension after each explosion for forming the next explosive charge, means for forcing liquid into each cylinder extension after each explosion, means for allowing the escape of liquid from each cylinder extension during the compression-stroke when the pressure exceeds a predetermined amount, and governor-controlled mechanism for varying the duration of the opening of the said discharge-valve according to variations in the load on the motor, substantially as and for the purpose described.

7. An internal-combustion motor comprising a horizontal working cylinder and its piston, upwardly-extending closed chambers at each end of the cylinder charged with liquid, a valve device for the introduction of combustible matter into each cylinder extension, a valve device for the discharge of the combustion-gases after each explosion of a combustible charge, a valve device for the admission of air under pressure into each cylinder extension after each explosion for forming the next explosive charge, means for forcing liquid into each cylinder extension after each explosion, means for allowing the escape of liquid from each cylinder extension during the compression-stroke when the pressure exceeds a predetermined amount, and governor-controlled mechanism for varying the duration of the opening of the said discharge-valve according to varia-

tions in the load on the motor and also to vary the time of opening and duration of opening of the said inlet-valve for combustible matter so that, on the one hand, it shall only open after the closing of the said discharge-valve, and on the other hand, the quantity of combustible matter shall vary according to variations in the load on the motor, substantially as described.

8. An internal-combustion motor comprising a horizontal working cylinder and its piston, upwardly-extending closed chambers at each end of the cylinder charged with liquid, a valve device for the introduction of combustible matter into each cylinder extension, a valve device for the discharge of the combustion-gases after each explosion of a combustible charge, a valve device for the admission of air under pressure into each cylinder extension after each explosion for forming the next explosive charge, means for forcing liquid into each cylinder extension after each explosion, means for allowing the escape of liquid from each cylinder extension during the compression-stroke when the pressure exceeds a predetermined amount, and governor-controlled means for varying the quantity of liquid forced into the cylinder extensions after the explosion of each charge, according to variations in the load on the motor, substantially as described.

9. An internal-combustion motor comprising a horizontal working cylinder and its piston, upwardly-extending chambers at each end of the cylinder charged with liquid and having closed upper ends, each provided with a valve device for the introduction of combustible matter, a valve device for the discharge of the combustion-gases after each explosion of a combustible charge, a valve device for the admission of air under pressure into each cylinder extension after each explosion for forming the next explosive charge, means for forcing liquid into each cylinder extension after each explosion, means for allowing the escape of liquid from each extension during the compression-stroke when the compression-pressure exceeds a predetermined amount, a governor, controlling mechanism connecting the said discharge-valve, the inlet-valves for compressed air, and fuel, and the device for forcing liquid into the cylinder extensions with the engine-governor, so as, according to variations in the load of the motor, to vary the duration of the opening of the discharge-valve, to vary the quantity of air remaining in the cylinder extensions after the closing of the discharge-valve, to vary the time and duration of the opening of the valve device for the admission of combustible matter, and to vary the amount of liquid admitted to the cylinder extensions after each explosion for the purpose of varying the volume of the combustible charges according to the varying load on the motor, while maintaining the composition of such charges and the degree to which they are compressed constant, substantially as described.

10. An internal-combustion motor comprising a working cylinder open at both ends, each end being in a separate chamber, which chamber is filled with liquid and terminates above in an upwardly-coned explosion-chamber, the said explosion-chamber being fitted with a device for injecting combustible matter, a scavengering-valve for the introduction of air under pressure, a valve for the discharge of combustion-gases, and an igniting device: pumps for supplying the compressed air and the said liquid; and a valve for allowing liquid to flow from either cylinder-chamber, the said valve being loaded so that only when compression of the explosive charges exceeds a predetermined pressure it will allow the escape of liquid, substantially as and for the purpose described.

11. An internal-combustion motor comprising a working cylinder open at both ends, each end being in a separate chamber, which chamber is filled with liquid and terminates above in an upwardly-coned explosion-chamber, the said explosion-chamber being fitted with a device for injecting combustible matter, a scavengering-valve for the introduction of air under pressure, a valve for the discharge of combustion-gases, and an igniting device; pumps for supplying the compressed air and the said liquid; and a valve for allowing liquid to flow from either cylinder-chamber, and a regulating mechanism for causing the combustible matter to be introduced immediately after the closure of the discharge-valve, consisting of a lever 58, toothed wheelwork 57, 59, 60, 61, turned by the valve-motion shaft 20 and a casing 62 capable of rotation with respect to the lever 58, the nave of which casing runs free on the valve-motion shaft and carries tappets 40, 41, in whose paths are the bell-cranks 39 that actuate the mechanism for introducing the combustible matter, the said lever 58 being connected with a lever 67 actuated by the governor so that when during the rotation of the valve-motion shaft the toothed wheelwork is turned backward by the governor through the lever 58, the tappets 40, 41, actuate the levers 39 somewhat later, substantially as described.

12. An internal-combustion motor comprising a working cylinder open at both ends, each end being in a separate chamber, which chamber is filled with liquid and terminates above in an upwardly-coned explosion-chamber, the said explosion-chamber being fitted with a device for injecting combustible matter, a scavengering-valve for the introduction of air under pressure, a valve for the discharge of combustion-gases, and an igniting device; pumps for supplying the compressed air and the said liquid; and a valve for allowing liquid to flow from either cylinder-chamber, and a device for regulating the compression of the explosive charges consisting of a rotary valve 13 combined with a loaded valve 14, for the escape of liquid, which rotary valve is actuated by the valve-motion shaft in such manner that the valve 14 is put in communication with that explosion-chamber in which a charge is being compressed, the said rotary valve receiving this motion through the levers 56 which open the scavengering-valve 9 and through telescopic rods 69, 70, carrying collars 71, 72, and connected with cranks on the spindle of the rotary valve so that the latter is alternately moved into the position in which it allows liquid to flow from the one cylinder or the other through the valve 14, substantially as described.

13. An internal-combustion motor comprising a working cylinder open at both ends, each end being in a separate chamber, which chamber is filled with liquid and terminates above in an upwardly-coned explosion-chamber, the said explosion-chamber being fitted with a device for injecting combustible matter, a scavengering-valve for the introduction of air under pressure, a valve for the discharge of combustion-gases, and an igniting device; pumps for supplying the compressed air and the said liquid; and a valve for allowing liquid to flow from either cylinder-chamber, and a starting-gear consisting of a compressed-air pipe and a three-way cock 74 making communication between the said air-pipe and one or other side of the working cylinder, the said cock being turned by the engagement of a coupling 87, 88, at the same time that the cut-off cock 77 of the compressed-air pipe is turned, in order that compressed air may flow into one or the other of the explosion-chambers, substantially as described.

14. An internal-combustion motor comprising a horizontal working cylinder and its piston, an upwardly-extending chamber at each end of the cylinder charged with liquid that constitutes extensions of the piston, means to blow an explosive charge into the extensions above the liquid-level therein, a discharge-valve and a valve controlling the admission of compressed air in each extension, a pump operated by the motor to force liquid into each extension after each explosion, means to vent liquid from the bottom of each chamber, a compressor connected to the piston to send scavengering air under pressure into the extensions, valve mechanism controlling compressed air to start the motor, and an independent compressor operated by the motor to supply air to the cylinder extensions through the starting mechanism, substantially as described.

15. An internal-combustion motor comprising a horizontal working cylinder and its piston, chambers at each end of the cylinder charged with liquid that constitutes extensions of the piston, means to blow an explosive charge into the extensions above the liquid-level therein, a loaded discharge-valve and a valve controlling the admission of compressed air into each extension, a pump operated by the motor to force liquid into each extension after each explosion, means to vent liquid from the bottom of each chamber, a valve to control the venting of fluid from the chambers, means to send scavengering air under pressure into the extensions, a valve-motion shaft, means thereon to actuate the feed of the charge, devices thereon to actuate the discharge-valves, devices thereon to actuate the valves controlling scavengering air and simultaneously operate the valve venting liquid from the chambers, a governor, and a shaft controlled thereby and connections between said shaft and means to blow in the charge to control the introduction thereof, and auxiliary means connected to said shaft to control the operation of the exhaust-valves, substantially as described.

16. An internal-combustion engine comprising a horizontal cylinder with its working piston, an extension at each end of the cylinder charged with liquid that constitutes liquid extensions of the piston, means for introducing and exploding explosive charges alternately in said chambers above the liquid-level therein, means for discharging the combustion-gases, means to force in a charge of air under pressure after each explosion, a rotatable starting-valve controlling air under pressure to admit said air alternately to the chambers and hand-operated clutch mechanism to engage a rotating element to actuate the valve, substantially as described.

17. An internal-combustion engine comprising a horizontal cylinder with its working piston, an extension at each end of the cylinder charged with liquid that constitutes liquid extensions of the piston, means for introducing and exploding explosive charges alternately in said chambers above the liquid-level therein, means to discharge the combustion-gases, means to force in a charge of air under pressure after each explosion, a driven valve-motion shaft, a gear-wheel loose thereon, a clutch-sleeve on the shaft to engage said wheel, a rotatable starting-valve controlling air under pressure, a gear-wheel on the valve meshing with that on the valve-motion shaft, substantially as described.

18. An internal-combustion motor, comprising a horizontal cylinder with its working piston, an extension at each end of the cylinder charged with liquid that constitutes liquid extensions of the piston, a pulverulent fuel-container on each extension, a fuel-injector, a fuel-feed to deliver a determined quantity of fuel from the container to the injector to be blown into the chambers above the liquid-level therein, means to discharge the combustion-gases therefrom, means to force in a charge of air under pressure after each explosion and a valve-motion shaft to actuate the fuel-feed, a governor-controlled shaft, and means connected thereto to vary the quantity of fuel fed to the fuel-feeding device, substantially as described.

706,367. HARVESTER. WARREN S. WARBURN, Adams Center, N. Y. Filed Sept. 20, 1900. Serial No. 30,604. (No model.)

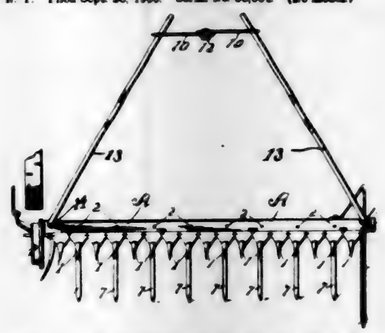

Claim.—1. The combination with a finger-bar provided with fingers, of guards secured to the finger-bar and extending forwardly therefrom beyond the fingers, that portion of the guards in front of the fingers forming a downwardly-inclined prolongation of the fingers and terminating in a slight upward incline, without returning toward the finger-bar, the downwardly-inclined prolongation forming a runner resting upon the ground, and the rearward portion of the guards located beneath the fingers.

2. In a harvester, the combination with a finger-bar provided with fingers, of guards secured to the finger-bar and extending forwardly therefrom beyond the fingers, that portion of the guards in front of the fingers forming a downwardly-inclined prolongation of the fingers, and terminating in a slight upward incline without returning toward the finger-bar, the downwardly-inclined prolongation forming a runner at the extreme end to prevent contact of the point of the guard with the ground, and the rearward portion of the guards located beneath the fingers, the harvester provided also with a divider secured to the finger-bar and a pair of movable wings or windrowers extending rearwardly of the finger-bar to which they are pivoted.

3. The combination with a finger-bar provided with fingers, of a guard for the fingers, having a portion bent to conform to the lower surface of the fingers and constituting runners therefor, said guards having shoulders formed with an opening to receive the point of the finger and the forward terminating ends constituting an extension or elongation of the fingers, and the rear ends having a hole therein in alinement with the hole in the fingers and finger-bar, whereby the guard and finger are secured to the finger-bar by the same bolt, the rear ends of the guards and fingers terminating in approximately the same plane as the rear edge of the finger-bar.

4. The combination with a pair of wings pivoted or hinged at their forward ends adjacent to the opposite ends of the finger-bar of a harvester, of a pair of arms, one of which is connected with each wing at or near the rear end thereof, said arms formed into loops at their free ends and means connecting the ends whereby they can be secured adjustably together to regulate the space between the rear ends of the wings.

706,368. MACHINE FOR CUTTING VEGETABLE-ROOTS. HENRY WEBB, Ashton, Mich. Filed Apr. 8, 1901. Serial No. 54,941. (No model.)

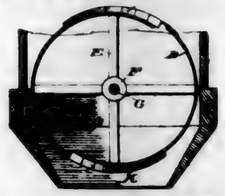

Claim.—1. In a vegetable-cutter, a rotary drum having a portion of its periphery curved gradually inward and thus made eccentric, and a series of openings located at the edges of such eccentric portion and a series of cutters arranged stepwise over said openings and differing in height, substantially as shown and described.

2. In a vegetable-cutter, a rotary drum, having a series of peripheral openings arranged on divergent lines, and cutters which are right angular in form and arranged over said openings, substantially as shown and described.

3. In a vegetable-cutter, the rotary drum, provided with peripheral openings, and cutters arranged on divergent lines, the ends of the drum being notched as described to provide for discharge of the severed pieces of the roots, substantially as shown and described.

706,369. GRIP-ACTUATING MECHANISM. SAMUEL S. WEBBER, Trenton, N. J. Filed Apr. 12, 1902. Serial No. 102,503. (No model.)

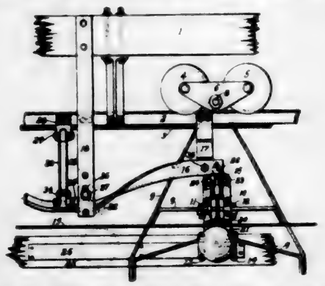

Claim.—1. In a grip-actuating mechanism, a member having a bearing-surface the plane of which bearing-surface is, at one end thereof, at an angle with its plane at the other end thereof, said bearing-surface being placed in the line of motion of an actuating member of a gripping mechanism, and adapted by contact therewith to force a closure of the jaws of said gripping mechanism, in combination with means for affording a yielding contact between said bearing-surface and said actuating member.

2. In a grip-actuating mechanism, a member having a bearing-surface the plane of which bearing-surface is, at one end thereof, at an angle with its plane at the other end thereof, said bearing-surface being placed in the line of motion of an actuating member of a gripping mechanism, and adapted by contact therewith to force a closure of the jaws of said gripping mechanism, in combination with means for affording a yielding contact between said bearing-surface and said actuating member, and auxiliary means for enforcing such contact.

3. The combination of a gripping mechanism having an actuating member, a member having a curved bearing-surface the plane of which bearing-surface is, at one end thereof, at an angle with its plane at the other end thereof, said bearing-surface being placed in the line of motion of said actuating member of said gripping mechanism, and adapted by contact therewith to force a closure of the jaws of said gripping mechanism, means for affording a yielding contact between said bearing-surface and said actuating member, and auxiliary means for enforcing such contact.

706,370. FILTER. FRANK S. YOUNG, Norristown, and WILLIAM W. UBBERROTH, South Bethlehem, Pa., assignors of one-fourth to Henry De Huff, Philadelphia, Pa. Filed Oct. 21, 1901. Serial No. 79,469. (No model.)

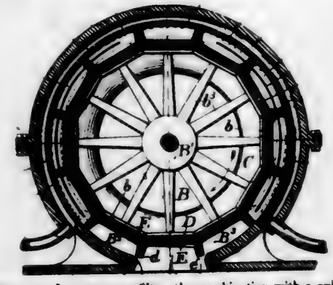

Claim.—1. In a pressure-filter, the combination with a cylindrical casing; of a drum mounted to turn in said cylindrical casing, pockets in said drum, filter-cloths in said pockets, and means for conducting mate-

rial to said pockets, and for conducting liquid from said pockets, and springs in said pockets for throwing the solid material out, substantially as described.

2. In a pressure-filter, the combination with a cylindrical casing having a discharge-opening therethrough, of a drum mounted to turn in said cylindrical casing, pockets in said drum, filter-cloths in said pockets, means for conducting material to said pockets, means for conducting the liquid away from said pockets, means for discharging the contents from said pockets and means for cutting off the flow of material to said pockets while passing the discharge-opening, substantially as described.

3. In a pressure-filter, the combination with a cylindrical casing having interior corrugations a filter-cloth, and a perforated plate covering said corrugations, of a drum mounted to turn in said casing and having pockets in its periphery, corrugations in said pockets, means for conducting material into said pockets, and for conducting the liquid away from said pockets, and means for ejecting the solid material from said pockets, substantially as described.

4. In a pressure-filter, the combination with a cylindrical casing having interior corrugations, a filter-cloth, and a perforated plate covering said corrugations, of a drum mounted to turn in said casing and having pockets in its periphery, corrugations in said pockets, means for conducting material into said pockets, and for conducting the liquid away from said pockets, means for discharging the solid material from said pockets and means for cutting off the flow of material to the pockets while said discharge is taking place, substantially as described.

5. In a pressure-filter, the combination with a cylindrical casing having interior corrugations and outlet-passages communicating with said corrugations a filter-cloth, and a perforated plate covering said corrugations, of a drum mounted to turn in said casing, pockets in said drum having corrugations, means for conducting material to said pockets, and means for ejecting the solid material therefrom, substantially as described.

6. In a pressure-filter, the combination with a cylindrical casing having passages communicating with the interior thereof, corrugations in the interior of said casing, a filter-cloth, and a perforated plate covering said corrugations, of a drum mounted to turn in said casing and having pockets in the periphery thereof, and passages communicating with said pockets, corrugations in said pockets, filter-cloths in said pockets, and means for ejecting the solid material from said pockets, substantially as described.

7. In a pressure-filter, the combination with a cylindrical casing having passages communicating with the interior thereof, corrugations in the interior of said casing, a filter-cloth and a perforated plate covering said corrugations, of a drum mounted to turn in said casing and having pockets in the periphery thereof, and passages communicating with said pockets, corrugations in said pockets, means for cutting off the flow of material to the pockets at intervals, and means for ejecting the solid material from the pockets, substantially as described.

8. In a pressure-filter, the combination with a cylindrical casing having interior corrugations, a filter-cloth, and a perforated plate covering said corrugations, of a drum mounted to turn in said casing and having pockets in its periphery, corrugations in said pockets, means for conducting material into said pockets, and for conducting the liquid away from said pockets, and means for ejecting the solid material from said pockets, substantially as described.

9. In a pressure-filter the combination with a cylindrical casing, having interior corrugations, a filter-cloth, and a perforated plate covering said corrugations, of a drum mounted to turn in said casing and having pockets in its periphery, corrugations in said pockets, filter-cloths in said pockets, means for conducting material into said pockets, and for conducting the liquid away from said pockets, and means for ejecting the solid material from said pockets, substantially as described.

10. In a pressure-filter, the combination with a cylindrical casing having interior corrugations, and outlet-passages communicating with said corrugations, a filter-cloth, and a perforated plate covering said corrugations, of a drum mounted to turn in said casing, pockets in said drum having corrugations, means for conducting material to said pockets, and means for ejecting the solid material therefrom, substantially as described.

706,371. STRETCHER. FRANCIS X. AIGNER, Jersey City, N. J. Filed Dec. 30, 1901. Serial No. 87,710. (No model.)

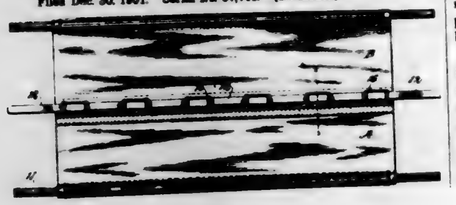

Claim.—1. In a stretcher, a body consisting of two sections arranged to overlap, the overlapping portion of the under section having openings extending through from face to face, and the corresponding portion of the upper section being provided with loops on its under face, and a tie-strip interlaced through said openings and loops, as set forth.

2. In a stretcher, a body consisting of two sections arranged to overlap and provided with registering openings in their overlapping portions, a flexible strip removably interlaced through the said openings, and a blanket attached to the upper face of each of the sections of the body, the blankets abutting at the central portion of the stretcher for the purpose described.

3. In a stretcher, a body consisting of two sections arranged to overlap, the overlapping portion of the under section having openings extending through from face to face, the corresponding portion of the upper section being provided with a hem and the under member of the hem having loops formed therein, the inlets and outlets of which loops are in registry with the openings in the under section, and a tie-strip interlaced through the openings and passed through the loops, as specified.

4. In a stretcher, a pliable body constructed in two overlapping sections having registering eyelets, and a strip of strong belting laced through the eyelets, the ends of the belting-strip being free, whereby the sections of the body are detachably held together even when the stretcher is heavily weighted, and dispensing with the necessity of cross-bars and other fastening devices for the ends of the belting-strip and avoiding tension on the ends of the strip which might be painfully communicated to the patient carried, as described.

5. A stretcher, comprising a body formed of two sections having their inner edges overlapping and provided in the overlapping edges with registering openings, a strip interlaced through said openings, and a folded blanket secured upon each section, the turned edges of the blankets meeting at the center of the body of the stretcher, as set forth.

706,372. ROTARY ENGINE. WILLIAM ALSOP, Newcastle, near Sydney, New South Wales, Australia. Filed June 17, 1901. Serial No. 64,940. (No model.)

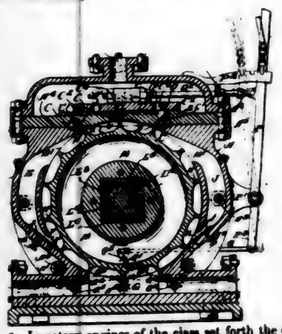

Claim.—1. In rotary engines of the class set forth the combination with a driving-disk in a casing, of duplicate initial directing-orifices and duplicate sets of ports and passages with further directing-orifices and with controlling devices so that the direction of travel of the disk may be reversed, substantially as herein described and explained.

2. In rotary engines of the class set forth, the combination with the steam-ports directing-orifices and controlling devices, of additional or auxiliary ports or passages from the initial steam-supply to one or more of further directing-orifices for starting the disk to revolve, substantially as herein described and explained.

3. In a rotary engine, the combination with a driving-disk, of a series of vanes arranged in suitable relation thereto and each provided with an opening, the opening of each alternate vane arranged out of alinement with the opening of the adjacent vane.

4. In a rotary engine, the combination with a driving-disk, of a series of radially-extending vanes formed integral with the disk and each provided with a transversely-extending opening, the opening of one vane being out of alinement with the opening of the adjacent vane.

5. In a rotary engine of the class set forth, a main shaft, bearings therefor, a disk for driving said shaft, resilient packing mounted in oblong orifices for connecting the shaft to the disk, and a series of vanes arranged in suitable relation to said disk and each provided with an opening, the opening of each alternate vane arranged out of alinement with the opening of the adjacent vane.

6. In a rotary engine of the class set forth, a main shaft provided with a squared boss, a driving-disk having an oblong orifice, a box

mounted therein, resilient packing interposed between said box and said shaft, resilient packing interposed between said box and disk, a series of vanes carried by the disk, each provided with a transversely-extending opening, and means for directing a motive fluid to act on and exhaust from said vanes directly and tangentially in the plane of their rotation.

7. In a rotary engine of the class set forth, the combination with a casing and a driving-disk mounted therein, of an initial directing-orifice for the motive fluid to impact with the disk, for imparting movement thereto, a redirecting-orifice for collecting the spent motive fluid to use the same for further impacting with the disk, a passage for establishing communication between the said redirecting-orifice and the disk, and means for regulating the passage of the motive fluid from the redirecting-orifice to the disk.

8. In a rotary engine of the class set forth, the combination with a casing and driving-disk mounted therein, of a series of vanes formed integral with the disk and each provided with a transversely-extending opening, the opening of one vane being out of alinement with the opening of the adjacent vane, an initial directing-orifice for the motive fluid to impact with the said vanes for imparting motion thereto, and means arranged in said casing for collecting the spent motive fluid after its impact with the vanes and then further directing said spent motive fluid against said vanes for causing an additional impulse thereof.

9. In a rotary engine, a drive-disk provided with perforated vanes suitably extending therefrom, the perforation of each alternate vane being out of alinement with the perforation of the adjacent vane, means for initially directing the motive fluid to impact with the said vanes for imparting movement to the disk, and means for collecting the spent motive fluid after its impact with the vanes and for further directing said spent motive fluid against the vanes for causing an additional impulse to the disk.

10. In a rotary engine, a drive-disk provided with perforated vanes suitably extending therefrom, means for initially directing the motive fluid to impact with the said vanes for imparting movement to the disk, means for collecting the spent motive fluid after its impact with the vanes and for further directing said spent motive fluid against the vanes for causing an additional impulse to the disk, means for regulating the passage of the motive fluid from said collecting means to the vanes, and means for reversing the movement of said disk.

11. In a rotary engine of the class set forth, the combination with a casing and driving-disk mounted therein, of an initial directing-orifice for the motive fluid to impact with the said disk for imparting motion thereto, means arranged in said casing for collecting the spent motive fluid after its impact with the disk and for further directing said spent motive fluid against said disk for causing an additional impulse thereof, means for regulating the passage of the motive fluid from said collecting means to the disk, and means for reversing the movement of said disk.

12. In a rotary engine of the class set forth, the combination with a casing and driving-disk mounted therein, of an initial directing-orifice for the motive fluid to impact with the said disk for imparting motion thereto, means arranged in said casing for collecting the spent motive fluid after its impact with the disk and for further directing said spent motive fluid against said disk for causing an additional impulse thereof, means for regulating the passage of the motive fluid from said collecting means to the disk, means for reversing the movement of said disk, and a valve mechanism for exhausting the motive fluid.

13. In a rotary engine of the class set forth, the combination with a casing and a drive-disk mounted therein, of means for initially directing the motive fluid to impact with the said disk for imparting movement thereto, means arranged in said casing for collecting the spent motive fluid after its impact with the disk and for further directing said spent motive fluid against said disk for causing an additional impulse thereto, means for regulating the passage of motive fluid from said collecting means to the disk, a valve mechanism for exhausting the motive fluid from said casing, and means for reversing the movement of said disk, causing thereby the simultaneous reversing of the exhausting valve mechanism.

14. In a rotary engine of the class set forth, a drive-disk mounted in a suitable casing, means for supplying motive fluid to said disk for operating the same, means arranged in the casing for collecting the spent motive fluid after its impact with the disk and for further directing said spent motive fluid against the disk for causing an additional impulse thereof, means for regulating the passage of the motive fluid from said collecting means to the disk, a valve mechanism for exhausting the motive fluid from said casing, and means for reversing the supply of motive fluid to the disk causing a different movement to be imparted thereto and for simultaneously reversing the exhaust valve mechanism.

15. In a rotary engine, the combination with the casing and a driving-disk arranged therein, of means to permit of a motive fluid impacting with the disk for operating the same, means arranged in said casing for collecting the spent motive fluid, a passage for establishing communication between said collecting means and the disk, and means arranged in said passage for regulating the flow of the spent motive fluid from the collecting means to the disk and to permit of the spent motive fluid impacting with the disk for imparting additional impulses to the disk.

16. In a rotary engine, the combination with the casing and a disk arranged therein, of means for operating the same, means arranged in said casing for collecting and causing the spent motive fluid to impact with the disk for giving additional impulses thereto, means for regulating the impact of the said spent motive fluid, a valve mechanism for exhausting the motive fluid from the casing, and means for reversing the movement of the disk and for simultaneously reversing the exhaust valve mechanism.

17. In a rotary engine, the combination with the casing, of a disk mounted therein and provided with perforated vanes, a valve mechanism for admitting motive fluid to impact with the said vanes for operating the disk, means for collecting the spent motive fluid and for causing the same to impact with the vanes obtaining thereby additional impulses for the disk, means for regulating the impacting of the motive fluid to the disk, a valve mechanism for exhausting the motive fluid from the casing, and means for simultaneously operating said inlet and exhaust valve mechanisms causing thereby a reverse operation of the disk.

18. In a rotary engine, the combination with a driving-disk, of a series of vanes arranged in suitable relation thereto and each provided with an opening, the opening of each alternate vane arranged out of alinement with the opening of the adjacent vane, and means for directing a motive fluid to act on and exhaust from the said vanes directly and tangentially in the plane of their rotation.

19. In a rotary engine, the combination with a driving-disk, of a series of radially-extending vanes formed integral with the disk and each provided with a transversely-extending opening, the opening of one vane being out of alinement with the opening of the adjacent vane, and means for directing a motive fluid to act on and exhaust from the vanes directly and tangentially in the plane of their rotation.

706,373. TIME DAMPER MECHANISM. GEORGE E. ARCHER, Nutley, N. J. Filed Mar. 4, 1902. Serial No. 96,637. (No model.)

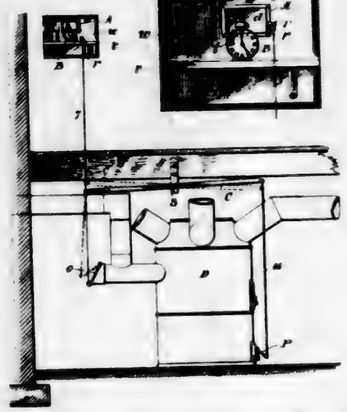

Claim.—1. In an automatic furnace-draft controlling apparatus of the class herein described the tripping device comprising the fulcrumed angle-lever with arms *a* and *g*, sliding arm *k*, and a fulcrumed angle-lever having arms *n* and *p*; the said arms *g* and *k* being beveled and notched and adapted to slide over each other and interlock, in combination with a balanced rocker C connected at one end with the smoke-pipe draft and at the opposite end with the ash-pit door, a cord attached at its lower end to one end of the balanced rocker and having a ring at the upper end adapted to rest on and readily slip from the horizontal tipping arm *p* of the tripping device, and a clock mechanism adapted to be set to actuate the tripping device at a given time and cause the tipping arm *p* to drop, substantially as and for the purpose shown and described.

2. The combination with a clock mechanism of a tripping device comprising a lever with an operating-arm *a* connected with the clock, and a locking-arm *g* having a notch *i* and beveled tip, a slidably-mounted arm *k* having a notch to engage the notch *i*, the guide for said arm, and a lever having arms *n* and *p*, one of which is coupled to the sliding arm *k*, substantially as shown and described.

706,374. RAIL-JOINT. HORACE O. BALDWIN, New Brighton, Pa.; Mary E. Baldwin administratrix of said Horace O. Baldwin, deceased. Filed Mar. 1, 1902. Serial No. 96,334. (No model.)

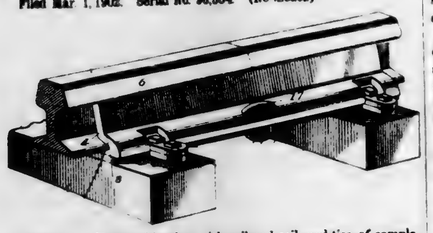

Claim.—1. The combination with railroad rails and ties, of complementary clamping members having overlapped base-flanges and oppositely-extending pairs of overlapped arms, the members having upwardly and inwardly extending flanges bearing against the opposite sides of the rails and one provided with slots therethrough above its base-flange and the other having openings in alinement with its base-flange through which a portion of the arms projects, and fastenings passed through the opposite pairs of overlapping arms and driven into the ties.

2. In a device of the class set forth, the combination with railroad rails and ties, of complementary clamping members having overlapping base-flanges with outwardly-extending pairs of overlapping arms, the arms at one side of each base-flange extending through openings in the other member, and fastening devices passed through the overlapping arms and extending into the ties.

3. In a device of the class set forth, the combination with railroad rails and ties, of complementary clamping members having overlapped base-flanges and oppositely-extending pairs of arms, the flanges having openings therein for the insertion therethrough of a portion of the arms, said openings being located above the base-flange of one member and in alinement with the similar flange of the other member, fastenings passed through the overlapped arms, and a key removably inserted through the base-flanges at one side at a point between the ties.

706,375. CALCULATING-MACHINE. FRANK S. BALDWIN, Newark, N. J. Filed Nov 26 1901. Serial No. 83,741. (No model.)

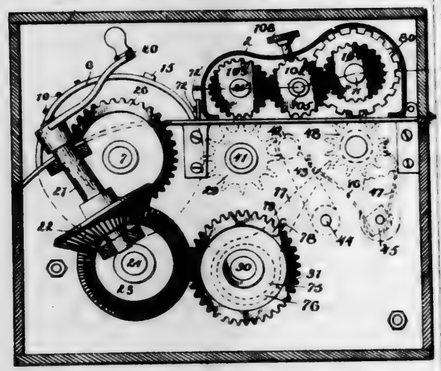

Claim.—1. A calculating mechanism including twelve-toothed intermediate wheels, registering-wheels and carrying members adapted to engage respectively the upper and lower sides of said intermediate wheels, an actuating mechanism adapted to engage one side and check members engaging the opposite sides of said intermediate wheels, for the purpose described.

2. A calculating mechanism including registering-wheels, actuating members, a plurality of independent intermediate wheels engaging respectively the registering-wheels and the actuating members, a shaft adapted to rotate in the opposite direction, the said shaft provided with a plurality of carrying members constructed and arranged to engage an actuating intermediate gear when the shaft is moved in either direction, substantially as described.

3. A calculating mechanism including registering-wheels, actuating members, a plurality of independent intermediate wheels engaging in operation respectively the registering-wheels and the actuating members, the actuating members adapted to be moved in two directions, a member adapted to move in two directions and carrying a plurality of actuating members arranged in spiral relation, the carrying members constructed and arranged to engage and actuate the intermediate wheels when the carrying members are moved in either direction, substantially as described.

4. A calculating mechanism including registering-wheels, intermediate wheels in engagement therewith, toothed actuating members, and a plurality of carrying members arranged around a common center and actuated independently of the actuating members and said intermediate wheels, the pitch of the teeth of the intermediate wheels and the actuating member being less than the pitch of the arrangement of the carrying members, whereby the teeth of the intermediate wheels revolve slightly in lead of the carrying members, substantially as and for the purpose described.

5. A calculating mechanism including a plurality of registering-wheels, a plurality of independent intermediate wheels in engagement therewith, a plurality of toothed actuating members adapted to engage the intermediate wheels, a plurality of carrying members each carrying member adapted to act in two directions, sliding members between the intermediate wheels and adapted to be actuated by the registering-wheels, and moved in the path of travel of the carrying members and to throw them into engagement with the succeeding intermediate wheel when they are moved in either direction, substantially as described.

6. A calculating mechanism including registering-wheels, a plurality of intermediate wheels in engagement therewith, a plurality of toothed actuating members adapted to engage the intermediate wheels, a plurality of sliding bars adapted to slide transverse the intermediate wheels and actuated by the movement of the registering-wheels, and a plurality of oscillating carrying members adapted to be thrown into action through the medium of the said sliding bars substantially as described.

7. A calculating mechanism including registering-wheels, a plurality of intermediate wheels in engagement therewith, a plurality of toothed actuating members adapted to engage the intermediate wheels, and a revolving member carrying a plurality of oscillating carrying members, and means controlled by the registering-wheels adapted to throw the carrying members into action, substantially as described.

8. A calculating mechanism including a plurality of registering-wheels, a plurality of intermediate wheels in engagement therewith, a plurality of toothed actuating members adapted to engage the intermediate wheels, a revolving member carrying a plurality of oscillating carrying members adapted to engage the intermediate wheels when the revolving member is moved in either direction, and means controlled by the registering-wheels adapted to throw the carrying members into action in either direction, substantially as described.

9. A calculating mechanism including registering-wheels, intermediate wheels, in engagement therewith, toothed actuating members adapted to engage the intermediate wheels, and a revolving member carrying a plurality of independently-acting carrying members, the said carrying members arranged thereon in double oppositely-spiral arrangement, substantially as and for the purpose described.

10. A calculating mechanism including registering-wheels, actuating mechanism and intermediate connections between the actuating mechanism and the registering-wheels, and carrying elements adapted to engage the intermediate mechanism, the carrying elements including a transversely-movable bar, two connected oscillating members one adapted to be engaged by the bar, and the other adapted to engage the succeeding intermediate wheel, substantially as described.

11. A calculating mechanism including registering-wheels, actuating mechanism, intermediate mechanism between the actuating mechanism and the registering-wheels, and a carrying mechanism including a revolving member carrying a plurality of carrying members, a plurality of sliding bars, the carrying members adapted to be oscillated in opposite directions by the sliding bars and consisting each of an approximately cross-shaped member for engagement with the sliding bar, and a shouldered member for engagement with the intermediate mechanism, substantially as described.

12. A calculating mechanism including registering-wheels, actuating mechanism, intermediate mechanism between the actuating mechanism and the registering-wheels, and a carrying mechanism including transversely-movable bars, a revolving member carrying a plurality of oscillating carrying members, each oscillating carrying member having a limited oscillating movement and provided with means to hold it normally in the position to operate in two directions, through engagement with the sliding bars, substantially as described.

13. A calculating-machine including two series of registering-wheels, and a wiping-out mechanism consisting of an intermediately-arranged oscillating member provided with oppositely-projecting arms adapted to engage projections respectively upon said series of wheels according to the direction in which the oscillating member is moved, and a handle adapted to rotate the series of wheels, whereby the calculation upon either of the series can be independently wiped out, substantially as described.

14. A calculating mechanism including registering-wheels, actuating mechanism, intermediate mechanism, a carrying mechanism, operatively connected with the actuating mechanism, a lever, an eccentric operated by the carrying mechanism, the free end of the eccentric-lever adapted to engage intermediate gears, and a second series of registering-wheels adapted to be actuated by said intermediate gears, substantially as described.

15. A calculating mechanism including a plurality of registering-wheels, a plurality of intermediate wheels, an actuating mechanism, a carrying mechanism, a plurality of independent levers forming checks respectively for the intermediate wheels, an oscillating member carrying a plurality of independent springs adapted to engage the said independent levers, and means for adjusting the oscillating member and thus controlling the tension of the spring and consequently the tension of the checks, substantially as described.

16. In a calculating-machine, a series of registering-wheels alined loosely upon a shaft, and non-shouldered friction devices frictionally connecting said wheels with said shaft.

706,376. LOOM. FRÉDÉRIC BARLET, St. Etienne, France, assignor to William T. P. Hollingsworth, Paterson, N. J. Filed Jan. 13, 1902. Serial No. 89,558. (No model.)

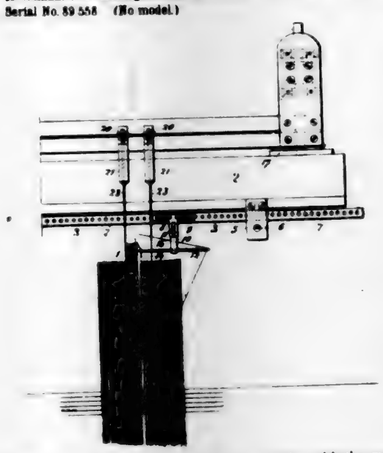

Claim.—1. In a shuttle-loom, and in combination with the means for weaving the body fabric, provisions for forming upon one of the lifts of the main or ground shed an auxiliary or supplemental shed, a needle mounted on and movable lengthwise of the lay and adapted to insert an auxiliary-weft thread into said supplemental shed, and a weft-loop retaining-needle also mounted on the lay and reciprocating thereon in a path transverse to that of the weft-inserting needle and adapted to yield toward the reed and the edge of the warp, substantially as and for the purposes hereinbefore set forth.

2. In a combined shuttle and needle-loom substantially as described, the combination with the batten and the reed, of a double-ended horizontal weft-inserting needle adapted to receive an independent weft-thread at each end, said needle being mounted on and reciprocating lengthwise of the batten, and flexible oscillating weft-loop retaining-needles mounted on the lay and reciprocable thereon in a path transverse to that of the double-ended horizontal needle, substantially as and for the purposes hereinbefore set forth.

706,377. EXTENSION STOVE-LEG. JAMES BARBER, Columbus, Ga. Filed July 27, 1901. Serial No. 69,966. (No model.)

Claim.—The combination with a stove-leg, of a tube or sleeve integral therewith, said tube or sleeve being slotted longitudinally and having bayonet-slots arranged alternately upon opposite sides of the longitudinal slot and communicating therewith, a footpiece having a rod extending upwardly therefrom, said rod being of a length greater than the length of the tube, and the laterally-projecting lug arranged at the upper end of said rod, substantially as described.

706,378. FILE-HANDLE. PHILIPP BENDER, Dotzheim, near Wiesbaden, Germany, assignor to Firm Carl Bender I. Dotzheim, near Wiesbaden, Germany. Filed May 1, 1902. Serial No. 105,562. (No model.)

Claim.—A file-handle provided on its upper end with windings of a material which shrinks when moistened with water, substantially as described and for the purpose set forth.

706,379. GEM-SETTING. ROBERT S. BIEBER, Brooklyn, N. Y. Filed Mar. 27, 1902. Serial No. 100,239. (No model.)

Claim.—1. In a gem-setting and in combination with a gem having converging sides or facets forming laterally-projecting edges, a band arranged on said converging sides of the gem above the projecting edges thereof as shown, and means forming a part of the gem-seat adapted to engage the said band substantially as described.

2. In a gem-setting and in combination with the fingers thereof, a band arranged on the gem between it and said fingers, the gem resting on its seat, as common, and the fingers bent over the band substantially as described.

3. In a gem-setting and in combination with a gem having converging sides or facets forming laterally-projecting edges, a band angular in cross-section arranged upon said converging sides of the gem above the projecting edges thereof as shown, and means forming a part of the gem-seat adapted to engage the said band substantially as described.

706,380. METHOD OF CONSTRUCTING TUNNELS. JULES BREUCHAUD, Yonkers, N. Y. Filed Feb. 24, 1902. Serial No. 95,330. (No model.)

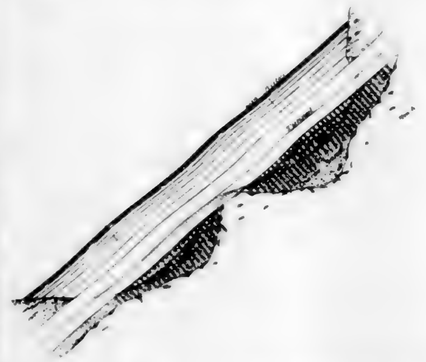

Claim.—1. The method of constructing subaqueous tunnels which consists in building progressively an artificial foundation in the bed of the river where needed, then building a portion of the base or bottom of the tunnel upon said foundation in advance of the head of the tunnel, and in then progressively building forward the sides and top of the tunnel.

2. The method of constructing subaqueous tunnels which consists in inserting piling in the bed of the river where needed, in building thereupon a portion of the base of the tunnel to be constructed, and in then building forward on said base portion the sides and top of the tunnel.

3. The method of constructing subaqueous tunnels which consists in first adjusting or placing a movable pneumatic shield in position, in afterward building a foundation in the bed of the river from within the movable shield and in then building a forward extension to the tunnel within said shield.

4. The method of constructing a subaqueous tunnel which consists in first adjusting or placing a movable pneumatic shield in position, in afterward building in the river-bed a suitable foundation for the tunnel

and from within the movable pneumatic shield, in then building an extension to the tunnel within the shield, and in then moving the shield forward for the construction of additional foundation and tunnel.

5. The method of constructing a subaqueous tunnel which consists in first adjusting or placing a movable pneumatic shield in position, in afterward building in the river-bed a suitable foundation for the tunnel and from within the movable pneumatic shield, in then building an extension to the tunnel within the shield, in then ejecting jets from the head of the shield and removing or displacing material in advance thereof and in then forcing the shield forwardly over said foundation.

6. The method of constructing subaqueous tunnels which consists in first adjusting or placing a movable open-bottom pneumatic shield in position, in afterward inserting piling into the bed of the river from within the open bottom of said pneumatic shield, in then building a portion of the bottom of the tunnel upon said piling and within said shield, in then building extensions of the sides and top of the tunnel within said shield, in then moving the shield forwardly over said bottom portion of the tunnel, and in then successively repeating said operations where necessary.

7. The method of constructing subaqueous tunnels which consists in first adjusting or placing a movable open-bottom pneumatic shield in position, in afterward inserting piling into the bed of the river from within the open bottom of said pneumatic shield, in then building a portion of the bottom of the tunnel upon said piling and within said shield, in then building extensions of the sides and top of the tunnel within said shield, in then displacing or removing material from in front of the shield in then forcing the shield forwardly over the said bottom of the tunnel and in then repeating the several operations where needed.

8. The method of constructing a subaqueous structure which consists in first adjusting or placing a longitudinally-movable pneumatic shield in position, in afterward building a foundation from within said shield, in then building an extension of such structure upon such foundation, in then advancing the shield, and in then repeating the operations wherever needed.

9. The method of constructing subaqueous structures, which consists in first adjusting or placing a longitudinally-movable open-bottom pneumatic shield in position, in afterward inserting piling into the river-bed from within the open bottom of said shield, in then building from within said shield a flooring or covering upon such piling, and thereby extending the said structure longitudinally, and in then moving the shield forwardly in the line of the structure so as to enable the several operations to be repeated.

10. The method of constructing a subaqueous tunnel which consists in first adjusting or placing a movable pneumatic shield in position, in then inserting piling into the bed of the river from within said shield and in advance of the tunnel, in then building a flooring or covering upon said piling from within said shield, in then building extensions of the sides and top of the tunnel within said shield, and in then advancing the shield horizontally to enable the said several operations to be repeated.

706,881. BANJO ATTACHMENT. HOWARD M. BROWSON, Brandon, Vt. Filed Nov. 21, 1901. Serial No. 83,135. (No model.)

Claim.—1. The combination with a cross-bar of a banjo, or similar musical instrument, of a lever resting on said bar, yieldable members connected to said lever, a coupling coöperating with said members in holding said lever in operative position on said cross-bar, and a muffler carried by said lever.

2. A muffling attachment for banjos and other musical instruments, comprising a lever provided with an offstanding arm, a muffler adjustably fitted to said arm and shiftable to different positions lengthwise thereof, means for holding said muffler in different positions on the arm, suitable attaching devices for the lever, and an operating device.

3. A banjo attachment, comprising a lever terminating at one end in an angular handle carrying a knob and terminating at its other end in a loop, a return bent arm having an upright stem, elastic bands attached to the said loop and having a connection engaging the under side of the cross-brace, and a muffler secured on the said stem, for engaging the head of the instrument, as set forth.

4. A banjo attachment comprising a lever terminating at one end in an angular handle carrying a knob and terminating at its other end in a loop, a return bent arm having an upright stem, elastic bands attached to the said loop and having a connection engaging the under side of the cross-brace, a muffler secured on the said stem, for engaging the head of the instrument, and a guide on the side of the cross-brace for the angular handle to slide in, as set forth.

706,882. ROAD-GRADING MACHINE. ROBERT H. BURKE, Anderson, Ind., assignor to M. B. Wilson, Chicago, Ill. Filed Dec. 2, 1901. Serial No. 84,370. (No model.)

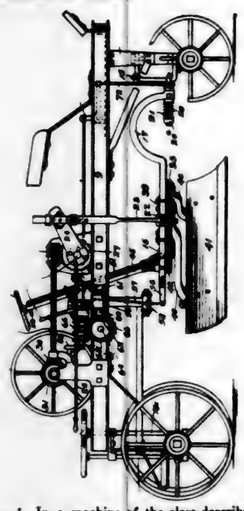

Claim.—1. In a machine of the class described, the combination with the main longitudinally disposed blade-supporting bars, of an externally-toothed circle-plate disposed therebeneath and having the scraper-blade pendent therefrom, a plurality of intersecting supporting-bars hung from said main longitudinal bars and disposed transversely of the circle-plate and at their outer ends supporting the latter, and a pinion engaging the toothed periphery of the circle-plate and operating means for said pinion, substantially as described.

2. In a machine of the class described, the combination, with the main longitudinally-disposed blade-supporting bars, of an externally-toothed circle-plate disposed therebeneath and having the scraper-blade pendent therefrom, a plurality of intersecting supporting-bars hung from said main longitudinal bars and disposed transversely of the circle-plate, said bars being vertically offset through their main body portions which lie within the circle-plate diametrically thereof and having their end portions underlying said circle-plate and forming both a support and a centering-guide therefor, and a pinion engaging the toothed periphery of the circle-plate and operating means for said pinion, substantially as described.

3. In a machine of the class described, the combination with the scraper-blade and its immediate supporting-frame, of means for effecting the vertical adjustment of said frame from the operator's platform, said means including as elements thereof a transverse shaft, arms on said shaft from which the blade-supporting frame is suspended, worm-gears on said shaft and worms for operating the same, and clutch mechanisms intermediate said arms and worm-gears and levers for operating said clutches, whereby the arms may be maintained in rotative engagement with the gears or may be freed therefrom to permit the blade to drop suddenly, substantially as described.

4. In a machine of the class described, the combination, with the scraper-blade of a pair of longitudinally-disposed main supporting-bars therefor suspended from and beneath the main frame of the machine, the rear ends of said main supporting-bars having end sections pivoted thereto in vertical planes, and means for vertically adjusting said blade and its supporting-bars relatively to the main frame of the machine in which adjustment said pivoted sections yield downwardly to permit the extreme upward movement of the blade and its bars without interference with fixed elements of the main machine-frame, substantially as described.

5. In a machine of the class described, the combination with the main frame of the machine and the scraper-blade and the two longitudinally-disposed and rearwardly-divergent supporting-bars therefor suspended from the main frame, of means for adjusting said blade and its supporting-bars laterally of the machine-frame, said means comprising a pair of drums journaled adjacent and parallel with the principal side members of the machine-frame and supported by the latter, chains attached to the rear ends of the blade-supporting bars and carried thence over suitable guides to and around the drums on the sides of the machine-frame respectively, a shaft extending transversely of the main frame, bevel-gears fast on the ends of said shaft, bevel-pinions on the adjacent ends of the drum-shafts and engaging said bevel-gears, and a worm-gear and operating devices therefor engaging and driving said transverse shaft, substantially as described.

6. In a machine of the class described, the combination, with the longitudinally-disposed main supporting-bars, the intersecting circle-plate-supporting bars suspended therefrom and the toothed circle-plate and its attached scraper-blade supported and centered by said last-named bars, said circle-plate having a series of locking-apertures formed therethrough, of a driving-pinion for rotating said circle-plate supported on the main longitudinal bars and a vertically-reciprocable spring-actuated locking-pin also supported on said bars directly above the path of travel of said locking-apertures and adapted to engage the latter, and means for withdrawing said locking-pin, the same comprising a spiral cam-surface axially coincident with the locking-pin and a laterally-projecting lug on the latter engaging said cam-surface to raise the pin out of locking engagement with the circle-plate, substantially as described.

7. In a machine of the class described, the combination, with the main carrying-frame and the blade-supporting frame suspended therefrom and longitudinally disposed therebeneath, and mechanism for quickly elevating the forward end of the blade-supporting frame in order to enable the blade to surmount an obstruction, said mechanism comprising a hand-lever and segment-rack therefor mounted on the main frame, and rod and lever connections therefrom to the forward end of the underlying blade-supporting frame, substantially as described.

8. The combination with the longitudinal side members of the main frame of a pair of upstanding bracket-plates bolted thereto on opposite sides of the machine, said plates being vertically slotted near their upper ends, a transverse shaft journaled in and between said bracket-plates below the slots thereof and carrying worm-gears on the outer ends thereof, worms and supporting-brackets therefor, the stems of which latter extend through the slots of the bracket-plates, a pair of intersecting diagonally-disposed brace-rods uniting the shank of each worm-bracket with the base of the opposite bracket-plate, and lock-nuts for adjusting said brace-rods longitudinally and through the latter adjusting the relation of the worms to their gears, said parts being assembled and operating substantially in the manner described.

9. The combination with the side channel-beam of the main frame and a filling-block interposed therein of a bracket secured thereon adapted to form a support for coöperating elements of the blade-adjusting mechanism, said bracket comprising a pair of upwardly-divergent side plates bolted at their lower ends on opposite sides of the channel through the web of the latter and the filling-block, a horizontal U-shaped brace uniting the upper ends of the side plates, and upstanding journal-blocks secured on the upper ends of the side plates and on the transverse element of the U-shaped brace, said bearing-blocks constituting journals for a pair of shafts disposed at right angles and carrying intermeshing bevel-pinions constituting elements of the blade-adjusting mechanism, substantially as described.

10. In a road-machine of the character indicated, the combination with a rear axle formed in two overlapping extensible bar-sections having longitudinal grooves in their outer faces respectively, of a housing for said axle-sections, the same comprising four angle-bars slidingly engaged by the outer corners of the axle-sections and top and bottom and front and rear plates rigidly tying together said angle-plates, a series of anti-friction-rollers journaled in said top and bottom plates between the inner opposite faces of the axle-bars and engaging the latter in rolling contact, and means for adjusting the axle-bars longitudinally of each other comprising racks secured in the grooves of the bars and pinions engaging said racks, substantially as described.

706,883. CULTIVATOR. WILLIAM F. CARSON, Skinnersville N. C. Filed Aug. 19, 1901. Serial No. 72,605. (No model.)

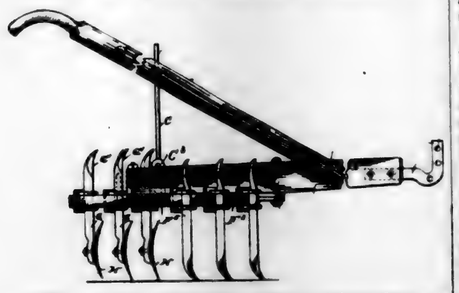

Claim.—1. The combination in a cultivator of the tooth-supporting frame-bar, the clamping-block having an upright curved groove for the tooth, and provided at its opposite ends with lugs or ears to overlap the frame-bar, and at such ends with grooves for the clamping-bolts, the tooth, and the U-shape clamping-bolts fitting around the tooth and in the grooves of the clamping-block, and securing the tooth and clamping-blocks in connection with the frame-bar, substantially as set forth.

2. In a cultivator, the combination of the beam, the handles, the keeper-box applied to the beam near its rear end, the bolts securing the said keeper-box to the beam, the handle-supporting stand bold to the beam by one of said bolts, means securing the handles to the upright portions of said stand, the tooth-supporting frames having at their rear ends portions fitting within the keeper-box, and clamp devices for securing said portions in the keeper-box, substantially as set forth.

706,884. FIRE-ALARM-TELEGRAPH SYSTEM. ROBERT G. CALLUM, Washington, D. C., assignor to the Callum Fire Signal Company, Washington, D. C. Filed Oct. 5, 1899. Renewed Jan. 11, 1902. Serial No. 89,336. (No model.)

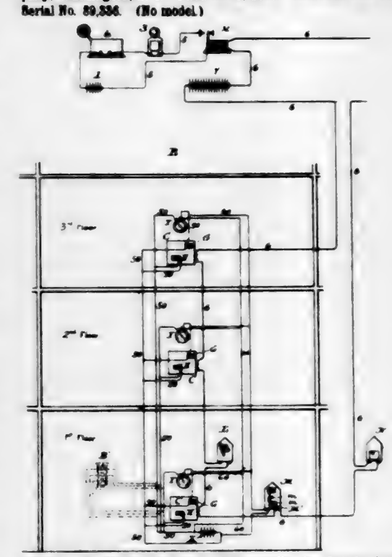

Claim.—1. The combination of a normally closed main electric circuit, a fire-alarm box included in said circuit, successively-acting signal-transmitting instruments operated by clock-trains, a controlling-electromagnet, a closed local electric circuit, an open local electric circuit, and a thermostat adapted to open the closed circuit through said electromagnet and release the clock-trains when the temperature reaches a predetermined degree of heat, and close the open circuit through the fire-alarm box when the temperature reaches a predetermined higher degree of heat, substantially as set forth.

2. In a fire-alarm system, the combination of a normally closed main electric circuit, a fire-alarm box, and an automatic signal-transmitting instrument included in said circuit, an electromagnet, G, for controlling the signal mechanism of the transmitting instrument, a thermostat, a local battery, a closed circuit from the local battery through the magnet, G, and the thermostat, and an open circuit from said local battery through the fire-alarm box and the thermostat, substantially as set forth.

3. In a fire-alarm system, the combination of a normally closed main circuit, a fire-alarm box, and a signal-transmitting instrument included in said circuit, an electromagnet, G, in said transmitting instrument, a thermostat, a local battery, a closed circuit from the local battery through the magnet, G, and the thermostat, an open circuit from local battery through the fire-alarm box, and the thermostat, a battery signaling instrument also on the main circuit, and a second closed circuit from the local battery through the battery signaling instrument, substantially as set forth.

4. In a fire-alarm system, the combination of a normally closed main electric circuit, a fire-alarm box and an automatic signal-transmitting instrument operated by clock-train, included in said circuit, a closed local circuit containing an electromagnet for tripping the clock-train, a battery, a thermostat adapted to open the closed local circuit when the temperature reaches a predetermined degree of heat, an open circuit from said battery to the fire-alarm box, which circuit is closed when the temperature reaches a predetermined higher degree of heat and trips the mechanism in said fire-alarm box, and a separate instrument on the main circuit

adapted to transmit thereover an arbitrary signal when the local battery fails, substantially as set forth.

5. In a fire-alarm system, in combination with a normally closed main circuit, including signal-receiving instruments, successively-acting signal-transmitting instruments, an independent, automatic signal-transmitting instrument and manually and electrically operated fire-alarm-signaling instruments, a battery, a closed circuit from battery to the electromagnet of the successively-acting signal-transmitting instruments, an open circuit from said battery to the electrically-operated fire-alarm-signal instrument, a thermostat adapted to open the closed and close the open circuits, and a second closed circuit also from said battery to the magnet of the independent, automatic signal-transmitting instrument, substantially as set forth.

6. In a fire-alarm system, successively-acting signal-transmitting instruments, each operated by a clock-train, a circuit-breaking disk adapted to be rotated by each clock-train, means for arresting the movement of each clock-train, an electromagnet in a closed circuit adapted to release one of the clock-trains when the circuit is broken, a battery in the closed circuit, an independent signal-transmitting instrument containing a clock-train, a rotatable disk, and means for stopping the clock-train, an electromagnet in a second closed circuit from the battery, and mechanism for releasing the independent signal-transmitting instrument and arresting the movement of the successively-acting signal-transmitting instruments when the circuit through the last-named magnet is broken, substantially as set forth.

7. In a fire-alarm system, successively-acting signal-transmitting instruments, an independent signal-transmitting instrument, a circuit-breaking disk on each instrument rotated by clockwork, means for arresting the movement of each circuit-breaking disk, a thermostat, an electromagnet on a closed electric circuit adapted to be broken by the movement of the thermostat for releasing the first of the successively-acting signal-transmitting instruments, a battery in the closed circuit, an electromagnet energized by a second closed circuit from the battery, means controlled by said electromagnet for alternately releasing and arresting the operation of the successively-acting and independent signal-transmitting instruments, and a normally closed main circuit passing through the several circuit-breaking disks, substantially as set forth.

8. In a fire-alarm system, successively-acting signal-transmitting instruments, rotatable circuit-breaking disks thereon, a battery, an electromagnet for arresting the operation of the circuit-breaking disks while the circuit remains unbroken, a normally closed main circuit through said signal-transmitting instruments, a second electromagnet in a closed circuit from the battery, and means in the normally closed main circuit for sending an arbitrary signal therethrough should the battery become inoperative, substantially as set forth.

9. In a fire-alarm system, the combination of a normally closed main circuit, signal-receiving instruments therein at a central office, signal-transmitting instruments also in the normally closed main circuit in various parts of a building to be protected, a local battery, closed local circuits, controlling through the movement of thermostats the operation of each signal-transmitting instrument, and means in the normally closed main circuit for transmitting an arbitrary signal to the central office when the local battery fails, substantially as set forth.

10. A signal-transmitting instrument provided with an electromagnet, a battery, a circuit from the battery through said electromagnet, a second signal-transmitting instrument also provided with an electromagnet, a second or shunt circuit from aforesaid battery to the second electromagnet, and means for locking against movement the first-mentioned signal-transmitting instrument while the second instrument is in operation.

11. A signal-transmitting instrument operated by clockwork and provided with an electromagnet and a circuit-breaker, a thermostat, a battery, a closed local circuit from the battery through the electromagnet and the thermostat, a second signal-transmitting instrument similar to the first, a second closed circuit from the aforesaid battery to the magnet of the second signal-transmitting instrument, and a normally closed main circuit passing through the circuit-breakers of the two instruments, substantially as set forth.

12. A signal-transmitting instrument operated by clockwork and provided with an electromagnet and a circuit-breaker, a thermostat, a battery, a closed local circuit from the battery through the said electromagnet and the thermostat, a second signal-transmitting instrument operated by clockwork also provided with an electromagnet, and a circuit-breaker, a closed local circuit from the aforesaid battery to the second electromagnet, means for locking against movement the first-mentioned signal-transmitting instrument when the second instrument is in operation, and a main circuit passing through the circuit-breakers.

13. In a fire-alarm system, the combination of a normally closed main electric circuit, a fire-alarm box and an automatic signal-transmitting instrument included in said main circuit, controlling-magnets, M', G, in the fire-alarm box and automatic signal-transmitting instrument respectively, a closed local electric circuit through the magnet, G, an open local circuit through the magnet, M', a battery, and a thermostat through which both local circuits pass, substantially as set forth.

14. In a fire-alarm system, the combination of a normally closed main circuit, a fire-alarm box and a signal-transmitting instrument included in said main circuit, a controlling-electromagnet, M', in the fire-alarm box, a similar magnet, G, in the signal-transmitting instrument, a closed local circuit through the magnet, G, an open local circuit through the magnet, M', a battery and a thermostat through which both local circuits pass, and a battery signaling instrument on the main closed circuit, containing an electromagnet in a closed shunt-circuit from the aforesaid battery, substantially as set forth.

706,885. WIRE-FENCE CLIP. FRANK CANFIELD, Denver, Colo., assignor to the Western Wire Fence Company, Denver, Colo. Filed Nov. 9, 1901. Serial No. 81,737. (No model.)

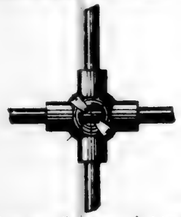

Claim.—1. A fastening-clip composed of two twin members, each having a central part provided with an opening, and projections provided with grooves or recesses, the arrangement being such that when the parts are assembled, the wire and stay cross in the center of the clip, and are bent into the central openings, while the grooved projections form seats for the wire and stay respectively, each member being provided with two arms adapted to embrace the other member, the free extremities of the arms of each member being bent into the openings of the opposite member.

2. The combination with a wire and stay, of a fastening-clip composed of two twin members, each having a central part provided with an opening, and four projections having grooves or recesses communicating with said opening, the arrangement being such that when the parts are assembled, the wire and stay cross each other in the central part of the clip whose members are placed face to face so that their grooves and openings register or coincide, the grooves forming seats for the wire and stay which are bent where they cross, into the openings of the clip members, each member having a fastening-arm adapted to embrace the other member, the free extremities of the fastening-arms being bent into the openings of the opposite clip members.

3. A wire-fence fastening-clip composed of two coöperating members, each having a central part provided with an opening, and four projections having grooves or recesses forming seats for the wire and stay when crossed in the central part of the clip, each member having two arms diagonally arranged and adapted to embrace and clinch the other member, the free extremities of the embracing arms being bent into the openings of the opposite clip members, substantially as described.

706,886. PLOW. OLIVER L. CARMICAL, Monk, Ga. Filed Jan. 6, 1902. Serial No. 88,610. (No model.)

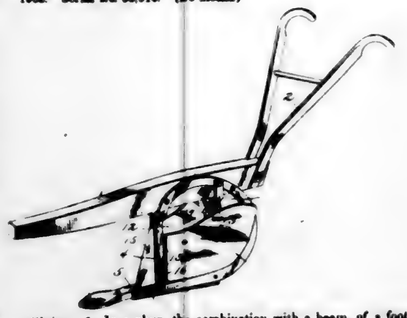

Claim.—1. In a plow, the combination with a beam, of a foot secured thereto, comprising two D-shaped members secured together at their lower ends and engaging the beam on either side, a removable plow-point secured to the forward extremity of said foot.

2. In a plow, the combination with a beam, of a foot comprising a pair of vertically-arranged D-shaped pieces of steel secured to said beam, a pair of parallel vertically-arranged standards secured to said members, a removable wing bolted to said standards and adjustably secured between the same.

3. In a plow, the combination with a beam, of a foot secured thereto, comprising two D-shaped members secured together and engaging the beam on either side, a removable plow-point secured to the forward extremity of said foot and a vertically-arranged knife fastened between the members for the purpose specified.

4. In a plow, the combination with a beam; of a foot secured thereto and having two forwardly-projecting lateral extensions at its lower extremity, said extensions being spaced apart, and a removable point secured between the extensions.

5. In a plow, the combination with a beam; of a foot secured thereto and having two forwardly-projecting lateral extensions at its lower extremity, said extensions being spaced apart, and a removable point secured between the extensions, and a removable landside secured to the under side of the foot and terminating adjacent the point.

6. In a plow, the combination with a beam, and a foot secured thereto having a vertical groove in the forward portion thereof, of a pair of standards carried by the foot and arranged parallel to each other, of a vertically-adjustable wing secured to the standards, means interposed between the standards for retaining the wing in its adjusted position, and means carried by the wing for engagement with the slot in the foot.

7. In a plow, the combination with a beam and a vertically-arranged foot carried thereby, of two forwardly-projecting extensions carried by said foot, a removable plow-point secured between the extensions, a removable landside arranged adjacent the point, a pair of standards carried by the foot and vertically-adjustable wings carried by the standards and secured to the foot.

706,887. STAMP DETACHING AND AFFIXING MACHINE. JOHN A. CHAMBLISS, New York, N. Y. Filed July 30, 1900. Renewed Jan. 18, 1902. Serial No. 90,284. (No model.)

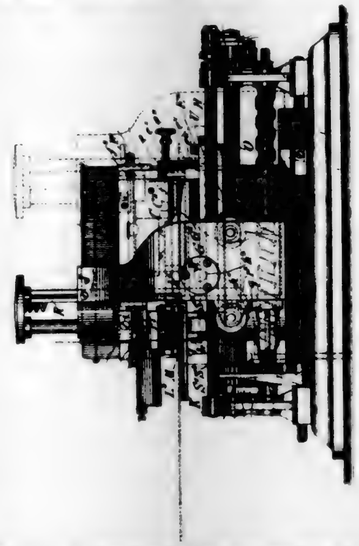

Claim.—1. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, a carriage provided with an aperture or throat for receiving the articles to be stamped, means for guiding said carriage, a plunger mounted on the carriage, means for supplying moisture, and means for automatically returning the plunger and for automatically shifting the carriage progressively from one stamp to the next, substantially as set forth.

2. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, means for automatically shifting the sheet progressively, a carriage provided with an aperture or throat for receiving the articles to be stamped, means for guiding said carriage, a plunger mounted on the carriage, means for supplying moisture, and means for automatically returning the plunger and for automatically shifting the carriage progressively from one stamp to the next, substantially as set forth.

3. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, a carriage provided with an aperture or throat for receiving the article to be stamped, means for guiding said carriage, a plunger mounted on the carriage, means for supplying moisture, means for automatically returning the plunger and for automatically shifting the carriage progressively from one stamp to the next, and means for causing the automatic return of the carriage to initial position, substantially as set forth.

4. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, means for shifting the sheet progressively, a carriage provided with an aperture or throat to receive the articles to be stamped, means for guiding said carriage, a plunger mounted on the carriage, means for supplying moisture, means for automatically shifting the carriage progressively from one stamp to the next, and means for causing the automatic return of the carriage to initial position, substantially as set forth.

5. In a stamp detaching and affixing machine, the combination of a platform for supporting a sheet of stamps, means for retaining the stamps, means for automatically shifting the position of the sheet progressively, a carriage having an aperture or throat for receiving the articles to be stamped, a suitably-operated and spring-returned plunger connected to and movable with the carriage for detaching and affixing the stamps, mechanism operated automatically by the plunger for automatically shifting the carriage progressively from one stamp to the next, and means for limiting or determining the extent of such movement, substantially as set forth.

6. In a stamp detaching and affixing machine, a platform for supporting a sheet of stamps, means for automatically shifting the position of the sheet progressively, a carriage having an aperture or throat for receiving the articles to which the stamps are to be affixed, a hand-operated and spring-returned plunger connected to and movable with the carriage for detaching and affixing the stamps, mechanism operated automatically by the plunger for automatically shifting the carriage progressively from one stamp to the next, and means for locking the carriage momentarily to prevent accidental movement, substantially as set forth.

7. In a stamp detaching and affixing machine, the combination of a platform, means for feeding the sheet of stamps forward, a carriage guided transversely of the platform, said carriage comprising a moistener, and means for detaching the stamps and pressing them onto the articles to be stamped, and means for automatically returning the carriage to initial position, substantially as set forth.

8. In a stamp detaching and affixing machine, the combination of a platform, a carriage guided transversely of the platform, and comprising a moistener, a work-table for supporting the articles to be stamped, and means for detaching the stamps and pressing them onto the articles, and means for automatically returning the carriage to initial position, substantially as set forth.

9. In a stamp detaching and affixing machine, the combination of an apertured box, provided with means for feeding a sheet of stamps through its aperture, for use, means for supporting a pile of sheets in the box, and means consisting of a series of pivoted pushers, a pivoted segment protruding through the box, and devices connecting the segment and pushers, said means being adapted for imparting an initial movement to the uppermost sheet in the box for introducing it to the aforesaid feeding means, substantially as set forth.

10. In a stamp detaching and affixing machine, the combination of an apertured box or case, provided with means for supporting a sheet or sheets of stamps therein, a pair of feed rolls arranged in the aperture, one of said rolls being shiftable relatively to the other, automatically-operated gearing for turning said rolls intermittently, and means for adjusting and setting the other roller and said gearing back for producing a certain movement of the rolls, corresponding with the width of a row of stamps, substantially as set forth.

11. In a stamp detaching and affixing machine, the combination of means for holding sheets of stamps, a pair of feed-rolls, gearing for said rolls, such gearing comprising a worm-wheel, a carriage, means for guiding said carriage parallel with said feed-rolls, means on said carriage for successively detaching and affixing the exposed stamps, and a rack-bar fixed to the carriage and meshing with said worm-wheel, substantially as set forth.

12. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, a carriage, means for guiding the carriage, means, mounted on the carriage for detaching individual stamps, means for supplying moisture, a feed-worm suitably geared with said carriage, means for rotating said feed-worm in one direction, and means for reversing the direction of movement of the feed-worm, substantially as set forth.

13. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, a carriage, means for guiding the carriage, means, mounted on the carriage, for detaching individual stamps,

a feed-worm suitably geared to said carriage, means, operated through the stamp-detaching means, for rotating said feed-worm in one direction, whereby the carriage is advanced step by step, means for limiting said advancing motion to correspond with one stamp, and means for automatically reversing the direction of movement of said feed-worm to return the carriage to original position, substantially as set forth.

14. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, a carriage, means for guiding the carriage, means, mounted on the carriage, for detaching individual stamps, a feed-worm suitably geared with the carriage, a spring-barrel, means, operated through the stamp-detaching means, for storing up power in said barrel and for causing the turning of the feed-worm in one direction, and means operated by the spring-barrel for reversing the direction of movement of said feed-worm to return the carriage to original position, substantially as set forth.

15. In a stamp detaching and affixing machine, the combination, of means for holding a sheet of stamps, a carriage, means for guiding the carriage, means, mounted on the carriage, for detaching the stamps, a feed-worm suitably geared with the carriage, a toothed actuating-bar guided in the carriage, a spring-barrel, a toothed or ribbed winding-shaft operated by said actuating-bar and connected with said spring-barrel, means for connecting the latter with the feed-worm for intermittently turning the same in one direction, and means for holding said winding-shaft stationary so that the spring-barrel may impart a reverse movement to the feed worm, substantially as set forth.

16. In a stamp detaching and affixing machine, the combination of means for holding a sheet of stamps, a carriage, means for guiding said carriage, means mounted on the carriage for detaching the stamps, mechanism for advancing said carriage step by step and for automatically returning it to original position, and a shifting device operated by a part connected with the detaching devices on the carriage for causing the automatic return thereof to initial position, substantially as set forth.

17. In a stamp detaching and affixing machine, the combination of means for detaching individual stamps, comprising a plunger, an apertured die-plate through which the plunger passes, and a pivoted yielding work-table upon which the articles to be stamped are placed, substantially as set forth.

706,888. SAVINGS-BANK. JULIUS CHEIN, New York, N. Y. Filed Jan. 3, 1902. Serial No. 88,836. (No model.)

Claim.—1. In a bank the combination of a plurality of counterpart members, a plurality of longitudinal ribs thereon, slots in such longitudinal ribs, and a plurality of separable rings, each provided with an inwardly-projecting flange, substantially as shown and described.

2. In a device of the character described a plurality of separable rings provided with inwardly-projecting notched flanges and a separable cylinder provided with notched ribs, substantially as shown and described.

3. The combination with a coin-holder comprising a pair of longitudinally-slidable semitubular sections forming a cylindrical chamber, of a plurality of rotatable bands inclosing said tubular sections and provided with means for locking and releasing said sections.

4. The combination with a coin-holder comprising a pair of semitubular sections forming a cylindrical chamber, each section provided with a headed portion and a plurality of longitudinally-disposed ribs, having concentrically-alined recesses transversely thereof, of a plurality of locking devices operating in said recesses for locking said sections together

5. The combination with a coin-holder, comprising a pair of longitudinal slidable semitubular sections forming a cylindrical coin-chamber, each section provided with a head and a series of longitudinal and intermitted ribs, of a plurality of rings, rotatable upon said sections provided with means for alternately locking said sections together and permitting them to slide longitudinally, one relatively to the other.

6. In a coin-holder, the longitudinally-slidable tube-sections having heads, the rings forming the exterior of the tube between the heads and rotatable upon said sections, combined with means extending between said sections and said rings for locking and releasing the tube-sections.

7. In a coin-holder the combination with a pair of semitubular sections forming a cylindrical chamber, each section provided with a headed portion and a plurality of longitudinally-disposed ribs having concentrically-alined recesses transversely thereof, of a plurality of bands incasing said sections, and means on said bands adapted to operate in said recesses and engage said ribs for locking the two sections together.

8. The combination, in a coin-holder, with the tube-sections, each having a head and longitudinally-projecting ribs having concentrically-alined spaces, of a plurality of rings having inwardly extending flanges adapted to move in said rib-spaces, and niches in said flanges permitting said ribs to move longitudinally therein.

9. In a coin-holder the combination with a cylindrical chamber comprising a pair of semitubular sections, each section having a headed portion and provided on their longitudinal edges with ribs forming a sliding connection between said sections, said ribs having concentrically-alined recesses transversely thereof, of a locking device comprising a plurality of rotatable bands incasing said sections and provided with means adapted to operate in said recesses and engage said ribs for locking the two sections together.

10. In a coin-holder, the combination with the tube-sections having guide-forming projections on their longitudinal edges, the edges of one section being received within said groove, spaces in said guide-ribs or projections adapted to be concentrically alined, the said sections having further longitudinal and spaced ribs between said guide-ribs, all the spaces being adapted to be transversely alined, and a plurality of rings encircling said sections and having inwardly-extending flanges laterally rotatable in said spaces, and niches formed in said flanges in which said ribs are longitudinally movable.

706,889. MEASURING DEVICE. CHRISTIAN CHRISTENSEN, Racine, Mich. Filed Dec. 7, 1901. Serial No. 85,006. (No model.)

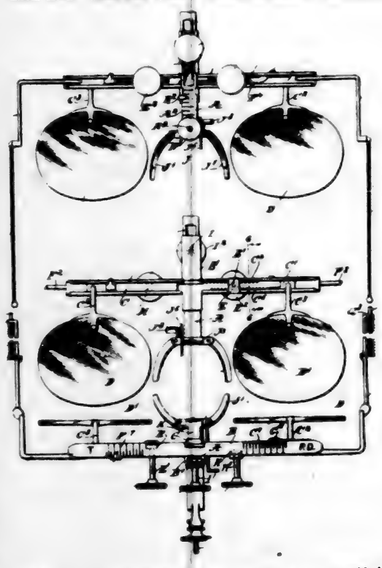

Claim.—1. A measuring device, comprising a post provided with a longitudinal slot having a rack at one side, a bar having a sleeve mounted to slide up and down on the said post, the said bar being provided with guideways, lens-carriers slidable toward or from each other and lengthwise on the bar, means for sliding the lens-carriers simultaneously temple-carriers slidable toward or from each other and lengthwise on the said bar, means for sliding the temple-carriers simultaneously, an adjustable saddle or crest for the nose supported on said post, and a gear-wheel arranged in the slot in the post and meshing with the rack, the shaft of the gear-wheel being journaled in said sleeve, as set forth.

2. A measuring device, comprising a post, a bar slidable up and down on the post and provided at the front and rear sides with guideways, lens-carriers mounted in the guideway at one side, and slidable, toward or from each other and lengthwise on the bar, means for sliding the lens-carriers simultaneously temple-carriers mounted in the other guideway and slidable toward or from each other and lengthwise of the bar, means for sliding the temple-carriers simultaneously an adjustable saddle or crest for the nose, supported on said post, and means for setting said saddle at a desired angle, as set forth.

3. A measuring device provided with a bar having a longitudinal guideway formed in one of its faces lens-carriers mounted to slide in said guideway toward or from each other and provided with racks, a gear-wheel in mesh at opposite sides with said racks, and means for turning said gear-wheel to move said lens-carriers simultaneously toward or from each other, as set forth.

4. A measuring device provided with a bar having a longitudinal guideway, temple-carriers mounted to slide in said guideway and provided with racks, adjustable temples carried by said temple-carriers, a gear-wheel in mesh at opposite sides with said racks, and means for turning said gear-wheel for moving said temple-carriers simultaneously toward or from each other, as set forth.

5. A measuring device provided with a bar having a guideway, temple-carriers mounted to slide in said guideway and provided with racks, adjustable temples carried by said temple-carriers, a gear-wheel under the control of the operator and in mesh at opposite sides with said racks for moving said temple-carriers simultaneously toward or from each other, a pointer on one of the temple-carriers and a graduation on said bar on which the pointer indicates, as set forth.

6. A measuring device, comprising a post, a bar slidable up and down on the post and provided on its front and rear faces with longitudinal guideways, lens-carriers mounted in the guideway on one face of the bar and slidable toward or from each other, temple-carriers mounted in the other guideway and slidable simultaneously toward or from each other, means for sliding the temple-carriers simultaneously, an adjustable saddle or crest for the nose supported on said post, means for setting said saddle at a desired angle, a pointer on one of the lens-carriers, and a graduation on the said bar on which said pointer indicates to give the pupilary distance of the eyes, as set forth.

7. A measuring device, comprising a post, a bar mounted to slide on said post and having guideways, lens and temple carriers supported in said guideways, means for moving said bar up and down on said post, a pointer moving with said bar, a graduation on said post on which the pointer indicates, a saddle, a bar in which the saddle is pivoted, the said bar being adjustable transversely in a bearing at the lower end of the post, means for turning said saddle on its pivot, and means for adjusting said bar transversely, as set forth.

8. A measuring device, comprising a post, a bar provided with a sleeve mounted to slide on said post, the said bar having guideways in its front and rear faces, lens and temple carriers mounted to slide in said guideways, means for moving the bar up and down on said post, a pointer moving with said bar, a graduation on said post on which the pointer indicates, a saddle a bar in which the saddle is pivoted, the said bar being adjustable transversely in a bearing at the lower end of the post, means for turning said saddle on its pivot means for adjusting the bar carrying the saddle transversely, a pointer carried by said bar, and a graduation on the bearing in which the bar is mounted, for indicating the distance said bar and saddle are moved as set forth.

9. A measuring device provided with a post having a bearing at its lower end, a bar mounted to slide transversely in said bearing, a saddle having a pivot mounted to turn in said bar, saddle-leaves hinged on said pivot, the said bar being provided at its rear end with a screw-rod, a nut screwing on said screw-rod and having an annular groove, and an arm extending from the bearing for said bar, and having a forked end engaging the groove in the said nut, as set forth.

10. A measuring device provided with a saddle having sets of hinged leaves, a bar having a bearing at one end, a pivot on which the leaves are hinged the pivot being journaled in said bearing, an arm on said pivot for turning the latter and a plate on said bearing and provided with a graduation on which the arm indicates, as set forth.

11. A measuring device having a post provided with a bearing at its lower end, a bar mounted to slide transversely in said bearing and having a bearing at one end, a saddle provided with a longitudinally-extending pivot journaled in the latter bearing, and leaves pivoted on the ends of said pivot and of different lengths, as set forth.

12. A measuring device provided with a bar having a longitudinal guideway, temple-carriers mounted to slide in said guideway and provided with racks, each temple-carrier having an angular depending arm, a temple-bar pivoted on said arm and having a spring-pressed earpiece mounted to slide in a bearing on the temple-bar, a bracket mounted to slide on the temple-bar and moving with the earpiece and in which the inner end of the earpiece is mounted to turn, means for indicating the length of the temple, and comprising a graduation formed on the temple-bar and on which the bracket indicates, and a gear-wheel in mesh at opposite sides with the racks on the temple-carriers, as set forth.

13. A measuring device, comprising a post, a bar slidable up and down on the post and provided with guideways, lens and temple carriers slidable in said guideways and provided with racks, pinions meshing at opposite sides with the racks of the lens and temple carriers respectively, and a saddle or crest for the nose supported on said post, as set forth.

14. A measuring device provided with a horizontally-arranged bar having a guideway, lens-carriers mounted to slide in said guideway and having depending arms or brackets supporting the lenses, the lens-carriers being provided with racks, a gear-wheel under the control of the operator and in mesh at opposite sides with said racks for moving said lens-carriers simultaneously toward or from each other, and a pointer on one of the lens-carriers, and indicating on a graduation on the said bar, as set forth.

706,890. RANGE-FINDER ATTACHMENT FOR GUNS. ARTHUR P. COLLINS, U. S. Army. Filed Nov. 5, 1901. Serial No. 81,194. (No model.)

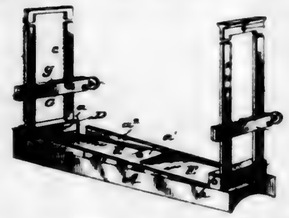

Claim.—1. The improved range-finder, comprising a base-piece; a graduated rear frame adapted to be held vertical and serve as an ordinary sight; and the range-finder attachment proper, consisting of a front frame also adapted to be held rigidly vertical parallel to the first-named one, and having a sight-bar which is adjustable vertically thereon, so that it may be brought into line with a distant object and a selected and fixed point on the elevating-sight; both of said frames being graduated correspondingly; substantially as shown and described.

2. The improved range-finder comprising a base-piece; the rear elevating-sight frame, having a sight-guide at the top; the front range-finder attachment proper, consisting of a pivoted frame which is provided with graduations corresponding to those of the rear frame and having rack-teeth which are arranged transversely, the transverse sight-bar adapted to slide on said front frame, and a rotatable shaft having pinions that engage the rack-teeth on the range-finder frame, for adjusting said sight-bar higher or lower, as shown and described.

706,891. CLUTCH. WILLIAM D. COOKSON, Gateshead, England, assignor to Clarke Chapman & Company, Limited, Gateshead, England. Filed July 2, 1901. Serial No. 66,900. (No model.)

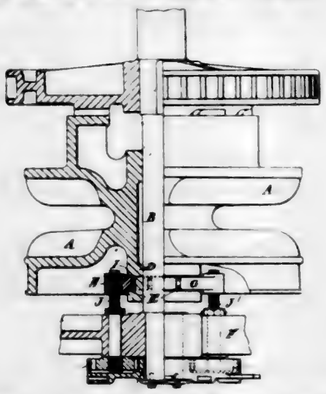

Claim.—1. A clutch comprising in combination a part clutch connected to a shaft so as to rotate therewith, a second part clutch mounted upon said shaft and adapted to be moved along it into or out of engagement with said other part, a groove in said movable part, a ring or strap located in said groove and surrounding said longitudinally-movable part, leaving same free to rotate independently but which ring or strap is adapted when itself moved lengthwise of the shaft to move said part along with it, screw-threaded openings or nuts in said ring or strap, screw-spindles that extend through said openings or nuts, bearings wherein said spindles are mounted and can rotate and whereby they are held longitudinally, spur-wheels on said spindles and in gear with said wheels a central spur-wheel adapted through said spur-wheels, spindles and ring or strap to actuate the movable part, substantially as described.

2. A windlass-clutch comprising in combination a part clutch constituting a cable holder or lifter, or a windlass, and which part is mounted upon a shaft and is adapted to be moved along it into or out of engagement with a second part clutch connected to said shaft so as always to rotate with it, a groove in said movable part, a ring or strap located in said

groove and surrounding said longitudinally-movable part, leaving same free to rotate independently but which ring or strap is adapted when itself moved lengthwise of the shaft to move said part along with it, screw-threaded openings or nuts in said ring or strap, screw-spindles that extend through said openings or nuts, bearings wherein said spindles are mounted and can rotate and whereby they are held longitudinally, spur-wheels on said spindles and in gear with said wheels a central spur-wheel loose on said shaft and formed as a hand-wheel and adapted to operate through said spur-wheels, spindles and ring the movable part, substantially as described.

706,892. HAND DOWELING-GAGE. JOSEPH COLLINS, New York, N. Y. Filed Jan. 23, 1902. Serial No. 91,579. (No model.)

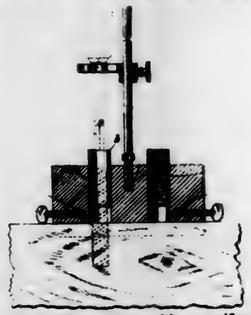

Claim.—1. A doweling-gage, comprising an orificed body portion, a pin or rod transversely adjustable therein, means for rigidly holding the pin or rod, a gage-plate fastened rigidly to one end of the pin or rod, a second gage-plate on the other end of the pin or rod, and nuts working on threaded portions of the pin or rod and lying at opposite sides of the second-named plate, adjustably to hold it.

2. A doweling-gage, comprising an orificed body portion, a rod carried transversely thereby, a gage-plate mounted on one end of the rod, a second gage-plate mounted on the other end of the rod and movable thereon longitudinally thereof, means for adjustably holding the second gage-plate in place, and means for adjustably holding the rod on the body portion.

3. A doweling-gage, comprising a body portion having a hole therein for the boring-tool, said body serving as the gage proper, a transverse rod carried adjustably thereby, and gage-plates carried by the rod, one of said gage-plates being adjustable on the rod in direction longitudinally thereof.

4. A doweling-gage, comprising a body portion forming the gage proper, means for holding the same in place, a standard mounted on the body, and a depth-gage arm adjustably carried on the standard and having a hook-like portion adapted to embrace the bit, for the purpose specified.

5. A doweling-gage, comprising a body portion having a hole therein for the boring-tool, said body forming a gage proper, a rod adjustably mounted therein transversely thereto, means for adjustably holding the rod, and gage-plates carried on the rod and relatively adjustable thereon longitudinally of the rod.

6. A doweling-gage, comprising a body portion serving as the gage proper, a transverse rod movably mounted therein, gage-plates carried on the rod, one of said gage-plates being adjustable thereon, for the purpose specified, a threaded rod or screw working in the body portion and serving adjustably to hold the said transverse rod, and a depth-gage arm adjustably carried on the said rod or screw.

706,893. COUPLING FOR CABLES, ROPES, &c. THADDEUS DARLING, Marietta, Ohio. Filed Jan. 22, 1902. Serial No. 90,773. (No model.)

Claim.—1. A coupler of the class described comprising separable members provided on their opposing faces with longitudinal channels, transverse grooves, and cavities of larger cross-sectional area than the channels and intersecting the same.

2. A coupler of the class described comprising separable members provided on their opposing faces with longitudinal registering channels, cavities of larger cross-sectional area than said channels and in communication therewith, said cavities in the members being disposed in matching relation, and grooves intersecting with the channels independently of the cavities.

3. A coupler of the class described comprising a member provided with a shoulder having a cavity which opens through one face of the member, another member having a cavity arranged to coincide with the cavity of the first-named member, channels in said members and in communication with the cavities therein; and means for clamping said members together.

4. A coupler of the class described, comprising a base member having an eye and a shoulder, the latter provided with a recess, a longitudinal channel in said member and having communication with said recess, a companion member provided with a channel and with a recess arranged to coincide respectively with the channel and recess in the base member, and means for laterally clamping the two members together.

706,894. PERCUSSIVE ROCK-DRILL. ZACHARIAS W. DAW, London, England. Filed Jan. 27, 1902. Serial No. 91,517. (No model.)

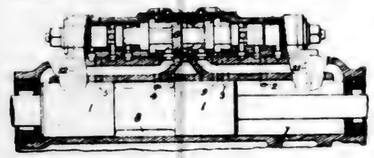

Claim.—1. The combination with the motor-cylinder of a main valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, a motor-piston in said motor-cylinder controlling by its movements the ports which govern the operation of the main valve, and a shut-off valve also controlled by said motor-piston for cutting off or practically cutting off the supply to the motor-cylinder, so as to allow the motive fluid to act expansively therein, all substantially as specified.

2. The combination with the motor-cylinder of a main valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, a motor-piston in said motor-cylinder controlling by its movements the ports which govern the operation of the main valve, and a shut-off valve also controlled by said motor-piston for each end of the motor-cylinder arranged one to cut off or practically cut off the supply alternately to the opposite ends of the motor-cylinder, substantially as and for the purpose specified.

3. The combination with the motor-cylinder of a main valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, a motor-piston in said motor-cylinder controlling by its movements the ports which govern the operation of the main valve, and a shut-off valve for cutting off or practically cutting off the supply to the motor-cylinder, such shut-off valve being actuated by pistons working in cylinders respectively connected by passages leading one to each end of the motor-cylinder and controlled by the reciprocation of the motor-piston, substantially as specified.

4. The combination with the motor-cylinder of a main valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, a motor-piston in said motor-cylinder controlling by its movements the ports which govern the operation of the main valve, and a shut-off valve for each end of the motor-cylinder, each of said valves being actuated by a piston working in a cylinder connected respectively by a passage leading one to each end of the motor-cylinder and controlled by the reciprocation of the motor-piston, substantially as specified.

5. The combination with the motor-cylinder of a valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, and a shut-off valve for cutting off or practically cutting off the supply to the motor-cylinder, such shut-off valve being actuated by pistons working in cylinders respectively connected by passages leading one to each end of the motor-cylinder and controlled by the reciprocation of the motor-piston, said valve being formed with an opening or openings which permit the motive fluid to pass to its under side, substantially as specified.

6. The combination with the motor-cylinder of a valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, and a shut-off valve for each end of the motor-cylinder, each of said valves being actuated by a piston working in a cylinder connected respectively by a passage leading one to each end of the motor-cylinder and controlled by the reciprocation of the motor-piston, said valve being formed with an opening or openings which permit the motive fluid to pass to its under side so as to open same, substantially as specified.

7. The combination with the motor-cylinder of a valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, and a shut-off valve for each end of the motor-cylinder, each of said valves being actuated by a piston working in a cylinder connected respectively by a passage leading one to each end of the motor-cylinder and controlled by the reciprocation of the motor-piston, the space in front of the valve-piston being connected by a passage to the main exhaust, substantially as specified.

8. The combination with the motor-cylinder of a valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, and a shut-off valve for cutting off or practically cutting off the supply to the motor-cylinder, such shut-off valve being actuated by pistons working in cylinders each connected by a passage to the motor-cylinder in such a position that a groove formed in the motor-piston will in its reciprocation alternately place one of the piston-cylinders open to exhaust, while the piston in the other cylinder is open to the pressure of the motive fluid which has leaked through small openings formed in such piston to the rear thereof, and the valve is consequently reversed, substantially as specified.

9. The combination with the motor-cylinder of a valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, and a shut-off valve for cutting off or practically cutting off the supply to the motor-cylinder, such shut-off valve being actuated by pistons working in cylinders respectively connected by passages leading one to each end of the motor-cylinder and controlled by the reciprocation of the motor-piston, and adjustment means for limiting the extent of throw of the shut-off valve, substantially as specified.

10. The combination with the motor-cylinder of a valve for regulating the supply and exhaust to and from such cylinder and working in a valve-cylinder, and a shut-off valve for each end of the motor-cylinder, each of said valves being actuated by a piston working in a cylinder connected respectively by a passage leading one to each end of the motor-cylinder and controlled by the reciprocation of the motor-piston, and of a screw or other adjustable device for limiting the extent of throw of the shut-off valve, substantially as specified.

706,895. ENDLESS-BELT CONVEYER. PETER M. DE JONG, Horton county, Kans. Filed Aug. 1, 1901. Serial No. 70,546. (No model.)

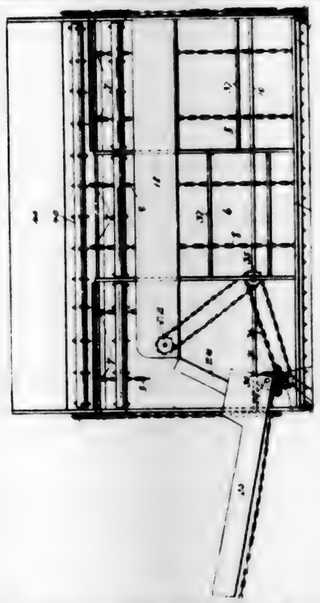

Claim.—1. In a conveyer for feeding corn to a sheller, an endless apron, a studded roller journaled above the point of delivery of said apron, means for rotating said roller and operating said apron, and a trough below the delivery-point of said apron and arranged to carry the corn in a direction at right angles to the direction of the apron, substantially as shown and described.

2. In a conveyer, an upwardly-traveling endless apron, a studded roller under the point of delivery to prevent ears of corn following the returning portion of said endless apron, means to rotate said roller and actuate said apron, and a trough below the delivery-point of said apron and arranged to carry the corn in a direction at right angles to the direction of the apron, substantially as shown and described.

3. In a conveyer, an inclined endless apron, a trough below the point of delivery thereof, an endless apron in said trough, a slide at the delivery end of said trough, a frame arranged below said slide containing an endless apron, said frame being pivoted to swing in a horizontal plane, and means to simultaneously actuate said aprons, substantially as shown and described.

4. In an endless conveyer, endless aprons arranged to travel upward over an inclined plane, a suitably-supported apron arranged below said inclined apron running in a direction at right angles to said apron and adapted to deliver into a trough pivoted to swing on a shaft in a horizontal plane, a horizontal wheel journaled on the shaft on which is pivoted said trough, a beveled gear on the top and bottom edge of said horizontal wheel, a beveled gear meshing with the beveled gear on top of said horizontal wheel to drive an endless apron in said trough, and a beveled gear suitably mounted, meshing with the beveled gear on the bottom edge of said horizontal wheel, and connected with the source of power, substantially as shown and described.

5. In a conveyer for feeding corn to a sheller, studded rollers, an endless apron, slats on said apron, a trough below the delivery-point from said apron, an endless apron in said trough, a swinging trough to receive the ears of corn from the first-mentioned trough, an endless apron in said swinging trough, and means for actuating said studded rollers and endless apron, substantially as shown and described.

6. In a conveyer for feeding corn to a sheller, a frame having a perpendicular back portion and a slanting front, a shaft journaled at the front of the base, a shaft journaled on said perpendicular back portion, sprocket-wheels on said shafts, an endless apron supported by said sprocket-wheels, a studded roller journaled to said perpendicular back portion below said endless apron, and means for operating said studded roller and endless apron, substantially as shown and described.

706,896. DREDGE AND WELL-BORER. CHARLES EHRENFELD, Pasadena, Cal. Filed May 2, 1898. Serial No. 679,557. (No model.)

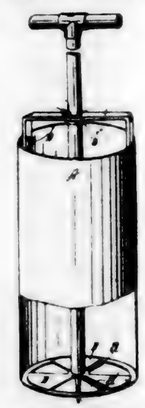

Claim.—1. A dredge comprising a hollow cylindrical body provided with a bottom having an opening; a yoke extending over the top of the cylinder and provided with upwardly-projecting lugs; a shaft slidingly journaled in the yoke and in the bottom of the cylinder and provided at its lower end above the bottom of the cylinder with a blade to form a gate to close the opening; a lug extending from the side of the shaft above the yoke to engage with the lugs of the yoke to cause the cylinder to rotate with the shaft when the gate is against the bottom of the cylinder; means for temporarily holding the shaft with its lug in position to engage the lugs of the yoke; a screw above the gate and fixed to the shaft; and means for locking the screw against rotation when the shaft is being slid upward.

2. A dredge comprising a hollow cylindrical body provided in its bottom with an opening; a yoke having elongated side arms secured to the top of the casing; a shaft journaled in the yoke and in the bottom of the dredge and having a screw secured thereto, the edges of the screw being provided with notches to engage with the side arms and prevent rotation of the screw, stop-arms on the yoke; a pin on the shaft to en-

gage with the stop-arms; and a collar on the shaft between the top of the yoke and the screw.

706,397. RAKE. ADAM S. ELLIOTT, Mechanicsville, Iowa. Filed Mar. 4, 1902. Serial No. 96,583. (No model.)

Claim.—1. In an apparatus of the class described, a rake-head consisting of longitudinal bars, a series of teeth, and a corresponding series of clamps, each clamp consisting of complementary members having interlocking connection one with the other and adapted to be secured firmly to the bars of the rake-head.

2. In an apparatus of the class described, a tooth-clamp comprising complemental channeled members provided in their opposing faces with projecting shoulders, said shoulders of the members being assembled into interlocking engagement, whereby the shoulders limit endwise displacement of the members relative to each other.

3. In an apparatus of the class described, a rake-head, consisting of longitudinal bars, a series of clamps interposed between said bars and each consisting of members which have interlocking engagement with each other and with the individual bars of said rake-head, and a series of teeth having individual engagement with the members of the clamps.

4. In an apparatus of the class described, a tooth-clamp, consisting of complementary members provided with channels, and with recesses and shoulders on their opposing faces, said shoulders of one member arranged to enter the recesses of the other member, and the shoulders of the two members having engagement one with the other.

5. In an apparatus of the class described, a tooth-clamp, consisting of members each cast in a single piece of metal and having their active faces provided with longitudinal ribs and with tooth-receiving channels, the respective ribs being provided on their edges with the recesses and the shoulders on each member, said members being assembled in reversed positions, and the shoulders of one member interlocking with the shoulders of the other member.

6. In an apparatus of the class described, a tooth-clamp consisting of members each cast in a single piece of metal and provided on its outer side with a transverse rib and with a longitudinal rib, each member being also provided on its inner face with longitudinal flanges which are enlarged and formed with the facing abutments or shoulders.

706,398. ADJUSTABLE COUCH-CASKET. JOSEPH KENNY, Cincinnati, Ohio. Filed Mar. 6, 1902. Serial No. 96,957. (No model.)

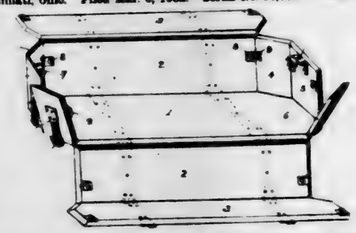

Claim.—1. The couch-casket having independent angularly-movable sides, top and end boards, said sides and ends being attached to the bottom by hinges having heads with a circumferential series of slots therein and a coöperating bolt to fit in any one of said slots whereby the parts may be adjusted and fixed in any desired angular position, to form couches of varying shapes, as set forth.

2. An adjustable couch-casket having movable top, sides and end pieces, each joined with a hinge provided with means for setting and locking the same at any desired angle, and provided also, with removable filling plates or boards to close the spaces between the said ends and sides when the same are set at an angle with the normal vertical.

3. A couch-casket having hinged sides and end pieces adjustable in position angularly, and removable filling plates or boards to close the spaces between said sides and end pieces when the same are spread apart.

4. A couch-casket having hinged sides and end pieces each provided with slots in its edges, and sets of filling plates or boards designed to rest in said slots and close the spaces between the sides and end pieces when the same are spread apart at any angle.

5. An adjustable casket having hinged sides and top and surrounded with a continuous series of straps hinged at the corners and having means for fastening the loose ends across the top of the casket.

6. A casket having hinged sides, top and end pieces, adjustable in angular position, some of the end pieces being provided with perforated brackets and the top having fixed studs arranged to fit in the said perforations of the brackets when the casket is closed in normal position.

706,399. TOY CANNON. ARCHIE G. PIPER, Quincy, Ill. Filed Oct. 23, 1901. Serial No. 79,094. (No model.)

Claim.—1. The combination with the slotted and shoulder-bored toy gun, of the mainspring and headed plunger, the pivoted angular spring-catch and reciprocating trigger, substantially as specified.

2. The combination with the slotted and shoulder-bored toy gun, of the angular slotted catch, the reciprocating trigger, movably connected therewith, the spring connected with said trigger and bearing against the catch, the mainspring and the headed plunger, substantially as specified.

3. The combination with the slotted shoulder-bored and screw-breeched toy gun, of the mainspring, and headed plunger, the pivoted catch, and the reciprocating trigger, connected to said catch, substantially as specified.

4. The combination with the shoulder-bored toy gun, its screw-breech piece, the mainspring, and headed plunger, of the catch and trigger, the bed and pivoted carriage, substantially as specified.

5. A toy gun, comprising a bed, a pintle-carriage, a slotted shoulder-bored gun and screw-breech, trunnion-pins, a mainspring and headed plunger, a pivoted spring-catch, and a reciprocating trigger connected thereto, substantially as specified.

706,400. FRICTION-CLUTCH. CHARLES A. FISHER, Thorold, Canada, assignor of one-tenth to Curt C. Andrews, North Tonawanda, N. Y. Filed Oct. 15, 1901. Serial No. 78,720. (No model.)

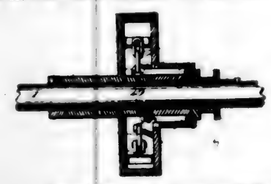

Claim.—1. A friction-clutch comprising a revolvable pulley, a fixed disk, arms pivotally secured to the disk, levers fulcrumed upon the disk and having friction-shoes, connections between the arms and levers, and laterally-movable means for operating the arms and levers.

2. A friction-clutch comprising a loosely-mounted pulley, a fixed disk having a slotted sleeve extension, arms pivotally secured within said extension, oppositely-disposed levers fulcrumed upon said disk, connections between said arms and levers, a sliding sleeve for operating said arms and friction-shoes secured to said levers.

3. A friction-clutch comprising a loosely-mounted pulley; a fixed disk having a sleeve extension; arms pivotally secured within the said extension; oppositely-disposed curved levers fulcrumed upon said disk and connected to the ends of said arms; retracting-springs for said levers; friction-shoes adjustably supported upon the inner face of said disk; and a sliding sleeve for forcing said arms toward each other.

706,401. COMBINED CORN COOKING AND CANNING MACHINE. LEONARD S. FLECKENSTEIN, Easton, Md. Filed Dec. 4, 1901. Serial No. 84,664. (No model.)

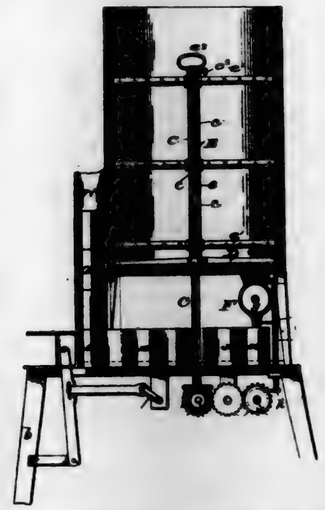

Claim.—1. In a corn cooking and canning machine, the combination with the vertical corn-receiver, and the hollow, apertured, vertical shaft, supported in the lower portion of the machine and projecting upward and terminating freely in said receiver and means for rotating said shaft, of the agitator formed of a central apertured tube, and lateral hollow arms having apertures for discharging steam, the said agitator being supported on the shaft and adapted to be drawn upward and removed from both the shaft and receiver, as required for cleaning it, as shown and described.

2. In a machine of the character described, the combination, with a corn-receiver, of a casting secured to the under side of the same and having a transverse bore provided with a central partition, two connected pistons arranged to reciprocate in the two chambers formed on opposite sides of said partition, two inlet and two discharge passages arranged vertically opposite each other in the upper and lower sides, respectively, of the casting, the two discharge-passages opening adjacent to the partition and diverging therefrom downward, and two slidable valves provided with slots arranged as described, and means for operating said pistons and valves, whereby the pistons are continuously reciprocated, and the valves are intermittently reciprocated, as required for closing and opening coincident inlet and discharge openings, simultaneously, substantially as shown and described.

3. In a machine of the character described, the combination, with a corn-receiver, having two discharge passages, two chambers communicating with each passage and having discharge-passages as specified, a central partition dividing the two chambers from each other, two pistons and a rod connecting the same and passing through said partition, the pistons being separated a distance sufficient to admit a corn charge between each of them and the partition; means for imparting continuous reciprocation to the pistons; and two valves slotted as described, and arranged in guideways above and below the pistons; a rock-shaft connected with said valves, and a rotatable cam having an abrupt offset with which an arm of the said rock-shaft engages, substantially as shown and described, whereby the valves are moved suddenly and simultaneously immediately preceding a return movement of the pistons, thereby alternately cutting off an inlet and closing a discharge passage of the respective chambers, as specified.

706,402. AXLE-BOX FOR CARRIAGES OR WAGONS. CLARENCE M. FLORET, Scranton, Pa., assignor of one-fourth to John H. Brooks, Scranton, Pa. Filed Nov. 23, 1900. Serial No. 37,092. (No model.)

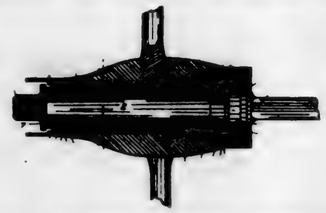

Claim.—1. In a vehicle-axle box, the combination of an inner sheath adapted to revolve on the vehicle-spindle, an outer shell concentric therewith, and mounted thereon, inner end and outer end antifriction-bearings between cups incasing the outer end bearings thereof, said cups being of a diameter less than the general distance between the outside walls of the shell aforesaid, whereby the assembled parts are insertible endwise through the hub of a wheel, filling the same, substantially as specified.

2. In a vehicle-axle box, the combination of an inner sheath adapted to revolve on the vehicle-spindle, and an outer shell concentric therewith and mounted thereon, inner end and outer end antifriction-bearings, cups incasing the said outer end bearings thereof, the diameters of said cups being less than the minimum diameter of said outer shell, the said inner and outer shell aforesaid having a space between them adapted to be filled with lubricant, and ports leading to the inner end and outer end bearings, substantially as and for the purpose specified.

706,408. UNIVERSAL JOINT FOR SHAFTING. JOSEPH L. FOLLETT, New York, N. Y., assignor to the Follett Machine Company, New York, N. Y. Filed Jan. 11, 1901. Renewed July 9, 1902. Serial No. 114,954. (No model.)

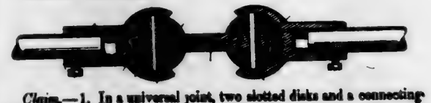

Claim.—1. In a universal joint, two slotted disks and a connecting-link pinned or pivotally jointed to the same, in combination with yokes, provided each with a bearing-groove to receive one of the disks, said groove being concentric with its disk, and having a curved portion of not more than one hundred and eighty degrees in extent, substantially as and for the purposes hereinbefore set forth.

2. The yokes provided each with a socketed hub and with a bearing-groove having a curved portion of not more than one hundred and eighty degrees in extent the walls of which are integral with the body of the yoke, in combination with slotted disks entered and fitting in said grooves, and a connecting-link jointed to said disks, substantially as and for the purposes hereinbefore set forth.

706,404. COMBINED SEED-PLANTER AND FERTILIZER-DISTRIBUTER. ABRAHAM G. W. FOSTER, Sr., Powellville, Ga. Filed May 19, 1902. Serial No. 108,027. (No model.)

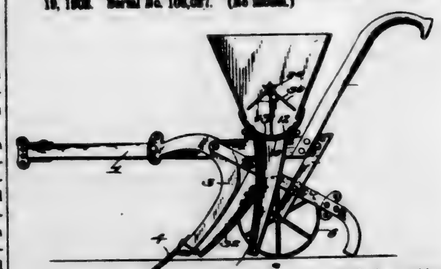

Claim.—1. In a machine of the character described, the combination of the plow-frame, the combined seed and fertilizer hopper having a concave bottom, the ground-wheel journaled in downwardly-projecting arms adjustably connected to the plow-beam, brace-bars connected to the plow-beam and to said adjustable arms, covering-blades secured to the outer ends of the brace-bars, a discharge-tube connected with the seed-compartment and a discharge-tube connected with the fertilizer-compart-

ment, a feed-opening in the bottom of the fertilizer-compartment, a sliding valve for regulating said feed-opening, means for operating said sliding valve from the outside of the hopper, an adjustable cotton-seed feed-plate and an adjustable grain-seed feed-plate adapted to be interchangeable with each other and adapted to cover a feed-opening in the bottom of the seed-compartment, an agitator-shaft journaled in the sides of the hopper, adjustable agitator-arms carried by said agitator-shaft, a crank-arm fixed to one end of said agitator-shaft, and a crank-arm fixed to the shaft of the ground-wheel, a pitman connecting the said crank-arms whereby motion is imparted from said ground-wheel to said agitator-shaft, substantially as set forth.

2. In a machine of the character described, the combination of the plow-frame, the combined seed and fertilizer hopper having a concave bottom, the ground-wheel journaled in downwardly-projecting arms adjustably connected to the plow-beam, brace-bars connected to the plow-beam and to said adjustable arms, covering-blades adjustably secured to the outer ends of the brace-bars, a discharge-tube connected with the seed-compartment and a discharge-tube connected with the fertilizer-compartment, a feed-opening in the bottom of the fertilizer-compartment, a sliding valve for regulating said feed-opening, a lever pivoted to the side of said hopper and connected at its lower end to said sliding valve to operate the same, an adjustable cotton-seed feed-plate and an adjustable grain-seed feed-plate adapted to be interchangeable with each other and adapted to cover a feed-opening in the bottom of the seed-compartment, an agitator-shaft journaled in the sides of the hopper, adjustable agitator-arms carried by said agitator-shaft, a crank-arm fixed to one end of said agitator-shaft, and a crank-arm fixed to the shaft of the ground-wheel, and an adjustable pitman connecting the said crank-arms whereby variable movements may be imparted to said agitator-shaft, substantially as set forth.

706,405. CAR-COUPLING. EDWARD FOSTER, Cleveland, N. Y. Filed July 14, 1900. Serial No. 23,672. (No model.)

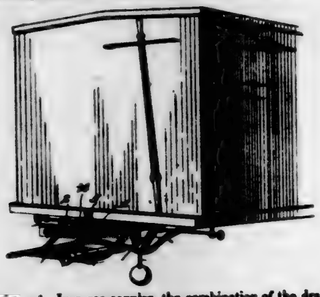

Claim.—1. In a car-coupler, the combination of the draw-bar pivotally secured at one end of the car, a coupling head or member on the end, and a weighted bar secured to the other end passing through a sleeve pivotally mounted in brackets on the under side of the car whereby to correct any lateral deviation of the draw-bar from a line with the car.

2. In a car-coupler, the combination of the draw-bar pivotally secured at one end of the car, a coupling head or member on the front end, a collar slidably mounted on its rear end and a weighted rod secured to the other end passing through a sleeve pivotally mounted in brackets on the under side of the car whereby to correct any lateral deviation of the draw-bar from a line with the car.

3. In a car-coupler, the combination of the draw-bar pivotally secured at one end of the car, a barbed coupling head or member on the forward end, and a weighted rod secured to the other end passing through a sleeve pivotally mounted in brackets on the under side of the car, whereby to correct any lateral deviation of the draw-bar from a line with the car.

4. In a car-coupler the combination of the draw-bar, pivotally secured at one end of the car, a barbed coupling head or member in the forward end, a loose collar on its reduced cylindrical rear end, and a weighted rod secured to the other end passing through a sleeve pivotally mounted in brackets in the under side of the car, whereby to correct any lateral deviation from a line lengthwise of the car, substantially as described.

5. In a car-coupler, the combination, with the bumper, of a bar pivotally secured thereto to swing in a horizontal plane the forward end of which is provided with an inclined hook, and the rear end is cylindrical in form, a thimble upon said cylinder, a weighted rod secured thereto, and a fulcrum for said bar in alinement with the coupling-bar and the thimble, substantially as described.

6. In a car-coupler, the combination, with the bumper, of a bar pivotally secured thereto to swing in a horizontal plane, the forward end of which is provided with an inclined hook and the rear end is cylindrical, a thimble upon the cylindrical portion, braces secured to the under side of the car, a sleeve pivotally secured between said braces and a weighted rod secured to the thimble and extending down through said sleeve, substantially as described.

7. In a car-coupling a bar provided at one end with two upcast and internally-projecting hooks having beveled faces a reduced portion at its other end a vertical opening adjacent to the reduced portion and an intermediate inclined portion projecting from the same side of the car as the hooks, as set forth.

706,406. CURRENT-METER. GEORGE L. GOWLLAND, Peterboro, Canada. Filed Mar. 22, 1902. Serial No. 99,472. (No model.)

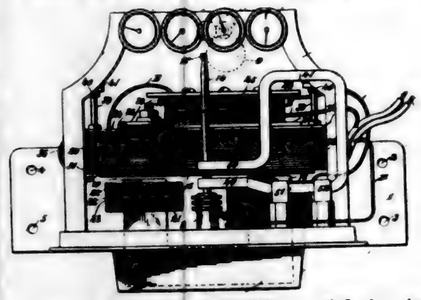

Claim.—1. In a current-meter in which a magnetic flux is employed for giving movement to the indicating mechanism, the combination of a revolvable member, a magnet and a flux-plate connected with said magnet and extending therefrom to a point adjacent to said revolvable member.

2. A current-meter comprising indicators, a revolvable disk of conducting material for actuating the same, electric mains, a solenoid-coil provided with a core of non-magnetic conducting material, a conducting-plate of non-magnetic material mounted upon said core, a flux-plate connected with said conducting-plate and disposed adjacent to said disk for the purpose of inducing eddy-currents therein, a magnet connected with said mains, and a laminated flux-plate connected with said magnet and disposed adjacent to said disk for inducing eddy-currents therein, said flux-plates being mounted adjacent to each other and upon opposite sides of said disk.

3. A current-meter, comprising indicating mechanism, a revolvable member for actuating said mechanism and driven by eddy-currents, electric mains and a magnet energized thereby, the said magnet being provided with a flux-plate of a non-magnetic material disposed adjacent to said revolvable member for generating eddy-currents.

4. A current-meter, comprising indicating mechanism, a revolvable member for actuating said indicating mechanism and driven by eddy-current, electric mains, a magnet energized thereby, and a flux-plate of non-magnetic material connected with said magnet and extending therefrom to a point adjacent to said revolvable member.

5. A current-meter comprising indicators, a revolvable disk of conducting material for actuating the same, a magnet provided with a composite core consisting of alternately-disposed members of magnetic material and non-magnetic material, and a flux-plate built up of a laminæ of conducting but non-magnetic material, said laminæ being insulated from each other, and said flux-plate being mounted upon said magnet and disposed adjacent to said disk.

6. A current-meter comprising indicators, a revolvable disk of conducting material for actuating the same, a laminated flux-plate disposed adjacent to said disk, another flux-plate mounted adjacent to said disk and also adjacent to said laminated flux-plate, and magnetic members for exciting both of said flux-plates, said magnetic members being energized by the current to be measured.

7. A current-meter comprising indicators, a revolvable disk of conducting material for actuating the same, a magnetic member, means connected with the main circuit for exciting said magnetic member, and a flux-plate built up of conducting laminæ insulated from each other and fitted upon said magnetic member, said laminæ being disposed parallel with said disk and adjacent thereto.

8. A current-meter comprising indicators, a revolvable member of non-magnetic but conducting material for actuating the same, a magnetic member consisting of a solenoid-coil provided with a longitudinal core of conducting but non-magnetic material, a flux-plate of similar material connected with said core and extending therefrom to a point adjacent to said disk, and a solenoid-core provided with a plate for generating eddy-currents, said plate being disposed adjacent to said disk.

9. A current-meter comprising indicators, a revolvable member of non-magnetic but conducting material for actuating the same, a magnetic member consisting of a solenoid-coil provided with a longitudinal core of conducting but non-magnetic material, a flux-plate of similar material connected with said core and extending therefrom to a point adjacent to said disk, a solenoid-coil provided with a plate for generating eddy-currents, said plate being disposed adjacent to said disk, and means controllable at will for adjusting said flux-plate relatively to said disk.

10. A current-meter comprising indicators, a revolvable disk of non-magnetic but conducting material for actuating the same, a two-pole magnet having one of its poles provided with a coil and the other not so provided, and a longitudinal flux-plate of non-magnetic but conducting material mounted upon said last-mentioned pole, said flux-plate being disposed parallel to said disk, and means for energizing said magnetic member.

11. A current-meter comprising indicators, a revolvable disk of non-magnetic but conducting material for actuating the same, a two-pole magnet consisting of two iron members and a copper member sandwiched between the same, all of said members being provided with a common winding, said magnet having both of its poles disposed adjacent to said disk, and a laminated flux-plate detachably secured upon one of said poles and disposed adjacent to said disk.

12. A current-meter comprising indicators, a revolvable disk of non-magnetic but conducting material for actuating the same, a magnet, means for exciting the same from the current to be measured, a flux-plate mounted upon said magnet and built up of laminæ insulated from each other, said laminæ being disposed parallel to said disk, a solenoid-coil provided with a core of non-magnetic but conducting material, a flux-plate connected with said core and extending therefrom to a point adjacent to said disk, said flux-plates being disposed opposite to each other and also adjacent to opposite positions of said disk, and a solenoid provided with a flux-plate mounted adjacent to said disk and adjustable relatively thereto.

706,407. BAIT-BUCKET. JAMES B. HALL, Cleveland, Ohio. Filed Oct. 2, 1901. Serial No. 77,286. (No model.)

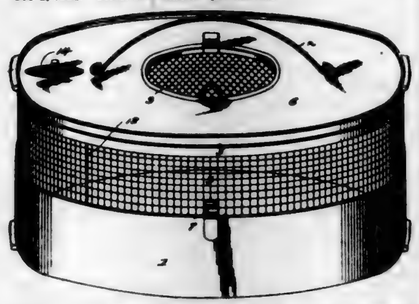

Claim.—1. A bait-basket made in telescopic sections, frictionally held in position, one of said sections being reticulated, as set forth.

2. A bait-basket made in telescopic sections frictionally held in position, one of said sections being reticulated, and stays secured to one section and engaging the other section for giving additional support to the movable section, as set forth.

3. A bait-basket comprising a main section, and a movable section of reticulated material having a bottom-holding ring snugly fitting within the main section, as and for the purpose specified.

4. A bait-basket formed in telescopic sections with the one section fitting tightly within the other to be held frictionally in its adjusted positions, the upper edge of the movable section and the lower edge of the outer section being provided with outwardly-extending lugs as and for the purpose specified.

5. A bait-basket formed of telescopic sections one of which is reticulated, the inner and movable section being provided with an independent, elastic, inflatable air-chamber serving as a float and held in position by the distention of the walls thereof, as set forth.

6. A bait-basket in telescopic sections provided with a telescopic separate bait-compartment, as set forth.

7. A bait-basket in telescopic sections, and provided with tubes for the admission of water to the bottom section, as and for the purpose specified.

8. In a bait-basket the combination with a main section, of a section movable therein, and telescopic tubes carried by the movable section, as set forth.

9. A bait-basket composed of a main non-reticulated section, a reticulated section movable therein and frictionally held in position, a partition within the main section at one end, and a partition depending from the movable section and movable within the compartment formed by the partition of the main section, and a removable closure to an opening in the top of the movable section to permit access to said compartment, as set forth.

706,408. APPARATUS FOR COATING METAL PLATES. GEO. B. HAMMOND and THOMAS DENNIS, South, England; said Dennis assignor to said Hammond. Filed Aug. 23, 1901. Serial No. 73,080. (No model.)

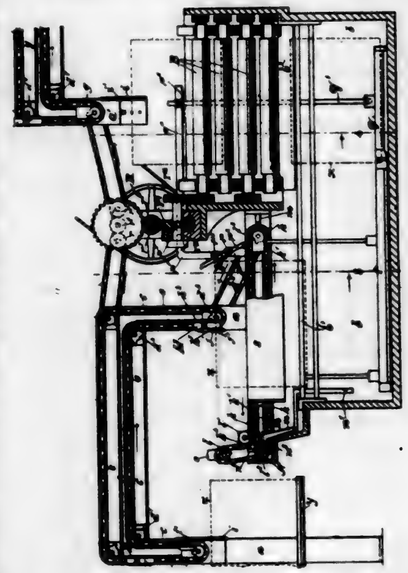

Claim.—1. In a machine for coating plates, the combination with a bath-pot and means for conveying plates to and from same, of means movable longitudinally of said bath-pot for pushing the plates therethrough, and means engaging said pushing means for alternately moving the same forward and back again to its initial position.

2. In a machine for coating plates, the combination with a bath-pot, of conveyer-chains and means coöperating with said conveyer-chains for automatically delivering the plates to the bath-pot, moving the same longitudinally therethrough, and delivering the plates to one of said conveyer-chains.

3. In a machine for coating plates, the combination with a bath-pot, of conveyer-chains for conveying the plates to and from said bath-pot, means for pushing said plates longitudinally through said bath-pot, means for elevating said plates from said bath-pot, and means coöperating with said conveyer-chains, engaging and automatically operating said pushing and elevating means.

4. In a machine for coating plates, the combination with a bath-pot; of a rail above said bath pot, a block on said rail, an extension on said block for pushing plates through said bath-pot, and means for propelling said block along said rail, substantially as described.

5. In a machine for coating plates, the combination with a bath-pot; an endless chain arranged to travel above said pot, grippers upon said chain, means for closing said grippers upon a plate, and means for opening said grippers when over said pot to drop said plate in the pot; of a rail above said pot, a block sliding on said rail, an extension on said block for pushing said plate, and means for propelling said block along said rail, substantially as described.

6. In a machine for coating plates, the combination with a bath-pot; and a cradle in said bath-pot; of means for conveying plates to said bath-pot, means for pushing said plates through said bath-pot into said cradle, means for raising said cradle, a set of rolls for lifting the plate from said cradle, and a conveyer for removing the plate from said rolls, substantially as described.

7. In a machine for coating plates, the combination with a bath-pot; a conveyer for placing the plates to be coated in said pot, of a block arranged to slide above said pot, an extension on said block for pushing said plates through said pot, a cradle in said pot for receiving the plates, a lever operated by said sliding block for lifting said cradle, a set

of rolls for lifting the plate from the cradle, and a conveyer for removing the plates from said rolls, substantially as described.

8. In a machine for coating plates, the combination with a bath-pot, a conveyer for placing the plates to be coated in the pot, a block arranged to slide above said pot, an extension on said block for pushing said plates through said pot, a cradle in said pot, a lever p^4 to which said cradle is attached, a weighted lever in the path of said sliding block adapted to act on the lever p^4 to lift said cradle, a set of rolls for lifting said plate from said cradle, and a conveyer for removing said plates from said rolls, substantially as described.

9. In a machine for coating plates, the combination with a bath-pot, a flux-box above said bath-pot, guide-bars, and a cradle in said bath-pot; of means for conveying plates to said bath-pot, means for pushing said plates through said bath-pot into said cradle, means for raising said cradle and means for removing the plate from said cradle, substantially as described.

10. In a machine for coating plates, the combination with a bath-pot, of a rail above said pot, a block arranged to slide on said rail and having an extension extending into said pot, lugs on said block extending above and below the same, a chain running and returning parallel with said rail and having a pin adapted to engage said lugs and move said block forward and backward along said rail, substantially as described.

11. In a machine for coating plates, the combination with a bath-pot, of a rail above said pot, a block arranged to slide on said rail and having an extension extending into said pot, lugs on said block extending above and below the same, a chain running and returning parallel with said rail and having a pin adapted to engage said lugs and move said block forward and backward along said rail, a lever p^4 connected with the said cradle, a lever P arranged in the path of one of the lugs on said sliding block and adapted to actuate the lever p^4 to raise said cradle, substantially as described.

12. In a machine for coating plates the combination with a bath-pot; of conveying means operating adjacent thereto, comprising a movable frame, a gripping-jaw pivoted thereto, provided with an inwardly-projecting lug, and a sliding lock adapted to engage said lug for holding said jaw in its open or closed position; and means located in the path of said movable frame for opening and closing said gripping-jaw.

13. In a machine for coating plates, the combination with a bath-pot; of conveying means operating adjacent thereto, comprising a movable frame, a gripping-jaw pivoted thereto, provided with an inwardly-projecting lug having a beveled end, and a sliding lock provided with a beveled point adapted to alternately engage said lug on its upper and beveled face for holding said gripping-jaw open and closed, respectively; and means located in the path of said movable frame for opening and closing said gripping-jaw.

14. In a machine for coating plates, the combination with a bath-pot and conveyer-chains located adjacent thereto; of gripping devices carried by said conveyer-chains comprising a slotted frame, a gripping-jaw pivoted thereto and provided with pins operating in said slots, and a sliding lock for holding said jaw in its open or closed position; and means located adjacent the path of said conveyer-chains adapted to engage said pins for opening and closing said gripping-jaw.

706,409. NUT-LOCK. FRANK HART, Newcastle, Pa., assignor of two-thirds to Frank J. Bolinger, George H. Bolinger, James O. Sutherland, and Joseph Cobery Perkins, Newcastle, Pa. Filed Apr. 30, 1902. Serial No. 105,264. (No model.)

Claim.—The nut-lock herein described consisting of the washer having a body portion provided with an opening for the bolt, having the projecting anchor-lugs at its opposite edges of a length sufficient to space said body portion of the washer away from the abutment in the use of the bolt, whereby to secure the resilience of the washer and to supplement the resilience of the shanks carrying the locking-tongues, and the opposite locking-tongues and their shanks, said shanks projecting from the opposite edges of the body of the washer and the tongues being returned over the said shanks and inclined with respect thereto, as and for the purposes set forth.

706,410. MOLD FOR CEMENT OR CONCRETE CURBS. JOHN T. HARNEY, Garfield, N. J. Filed Sept. 26, 1901. Serial No. 76,444. (No model.)

Claim.—1. A curb-mold composed of separate similar sections each of which is composed of a front and back plate and detachable end plates and a central detachable partition-plate, one end of the front and back plates of each section being provided with two fastening-points arranged at different distances apart, and the other end of the front and back plates of each section being provided with a single fastening-point at different distances from the tops of said plates, and the end plates being each provided at its opposite sides with three fastening-points, the fastening-points at one side being farther apart than those at the opposite sides, substantially as shown and described.

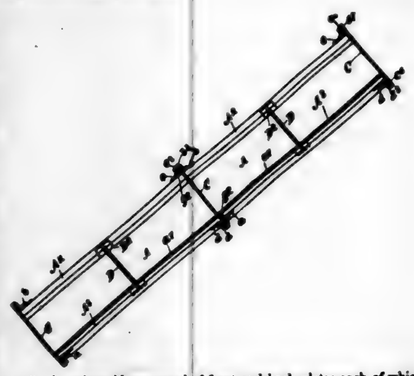

2. A curb-mold composed of front and back plates each of which is provided at its opposite ends with fastening devices differently arranged, and an end plate provided at its opposite sides with fastening devices differently arranged and adapted to be connected with either end of the mold, whereby a plurality of separate molds may be connected, substantially as shown and described.

3. A curb-mold composed of separate sections, each of which is composed of a front plate provided at the top thereof and at the inner edge with a longitudinal groove, each of said plates being also provided at their opposite ends with fastening devices differently arranged, and end plates having fastening devices at their opposite sides which are differently arranged, whereby a plurality of said sections may be connected, substantially as shown and described.

4. A curb-mold composed of separate sections, each of which is composed of a front plate provided at the top thereof and at the inner edge with a longitudinal groove, each of said plates being also provided at their opposite ends with fastening devices differently arranged, and end plates having fastening devices at their opposite sides which are differently arranged whereby one of said sections of the mold may be connected with either end of the other section, and said end plates be secured between said section and at either end thereof, each of said sections being also provided centrally with a removable partition-plate, substantially as shown and described.

5. A curb-mold composed of separate sections, each of which is composed of a front and back plate, the front plate being provided at one end with fastening lugs or projections a^3 and at the opposite end with fastening lugs or projections d^3 and the back plate being provided at one end with a fastening lug or projection c^3 and at the opposite end with fastening lugs or projections b^3 and an end plate provided at one side with fastening lugs or projections c^3 and at the opposite side with fastening lugs or projections c^3, substantially as shown and described.

6. A curb-mold composed of separate sections, each of which is composed of a front and back plate, the front plate being provided at one end with fastening lugs or projections a^3 and the opposite end with fastening lugs or projections d^3 and the back plate being provided at one end with a fastening lug or projection c^3 and at the opposite end with fastening lugs or projections b^3 and an end plate provided at one side with fastening lugs or projections c^3, said front plate being also provided in the top thereof with a longitudinal groove, substantially as shown and described.

7. A curb-mold composed of separate sections, each of which is composed of a front and back plate, the front plate being provided at one end with fastening lugs or projections a^3, and the opposite end with fastening lugs or projections d^3 and the back plate being provided at one end with a fastening lug or projection c^3, and at the opposite end with fastening lugs or projections b^3, and an end plate provided at one side with fastening lugs or projections c^3, said front plate being also provided in the top thereof with a longitudinal groove, and the separate sections of the mold being provided with central transverse removable partition-plates, substantially as shown and described.

706,411. PROCESS OF EXTRACTING ELLAGIC ACID. ADOLF HEIDEMANN, Eberswalde, Germany. Filed Oct. 26, 1901. Serial No. 80,123. (Specimens.)

Claim.—1. The process herein described of producing ellagic acid from tanning materials containing it, which consists in concentrating an aqueous extract of the crude tanning substances to a specific gravity of 1.2, and then separating the crystalline and insoluble ellagic acid from said extract, substantially as set forth.

2. The process herein described of producing ellagic acid from tanning materials containing it, which consists in concentrating an aqueous extract of the crude tanning substances to a specific gravity of 1.2, separating therefrom the crystalline insoluble ellagic acid, inverting the ellagic-acid compound contained in the extracted husks by boiling them with a suitable acid, filtering off the acid, and separating the ellagic acid set free by the inversion from the residue.

706,412. GAS-PRODUCER. JAMES A. HERRICK, Philadelphia, Pa. Filed Apr. 10, 1902. Serial No. 102,234. (No model.)

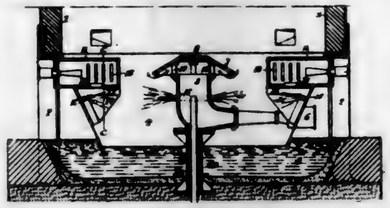

Claim.—1. The combination in a gas-producer, of a central blast-pipe for supplying air to the mass of fuel in the producer, with inwardly-projecting twyer-boxes independent of said central blast-pipe and having openings, inwardly beyond the wall or casing of the producer, for supplying air to the fuel between said wall or casing, and the central blast-pipe, substantially as specified.

2. The combination in a gas-producer, of a central blast-pipe having a top grating and a hood for supplying air independently to the central portion or core of the mass of fuel in the producer and to the mass of fuel surrounding said central core, with inwardly-projecting twyer-boxes independent of said central blast-pipe for supplying air to the outer mass of fuel adjacent to the wall or casing of the producer, substantially as specified.

3. The combination in a gas-producer, of an ash-hopper, air-blast pipes for supplying air to the fuel in the producer, and pipes disposed so as to project water laterally into the mass of ashes in the ash-hopper below the air-blast openings, substantially as specified.

4. The combination in a gas-producer, of an ash-hopper, air-blast pipes for supplying air to the fuel in the producer, and inner and outer pipes for supplying water to the ashes in the ash-hopper below the air-blast openings, substantially as specified.

5. The combination in a gas-producer, of a water-cooled ash-hopper, air-blast pipes for supplying air to the fuel in the producer, and pipes disposed so as to project water laterally into the mass of ashes in the ash-hopper between the air-blast openings and the water seal, substantially as specified.

6. The combination in a gas-producer, of a water-cooled ash-hopper, air-blast pipes for supplying air to the fuel in the producer, and inner and outer pipes for supplying water to the ashes in the ash-hopper between the air-blast openings and the water seal, substantially as specified.

7. The combination in a gas-producer, of an ash-hopper having inwardly-projecting twyer-boxes, and brackets secured to the ash-hopper and serving as supports for said twyer-boxes substantially as specified.

8. The combination in a gas-producer, of the main body or casing, and the ash-hopper with inwardly-projecting twyer-boxes adjustable from and toward the center of the producer, substantially as specified.

9. The combination in a gas-producer, of the main body or casing, and the ash-hopper with a central blast-pipe and inwardly-projecting twyer-boxes adjustable from and toward said central blast-pipe, substantially as specified.

10. The combination in a gas-producer, of the ash-hopper having inwardly-projecting twyer-boxes, and supporting-brackets therefor having projecting portions serving to engage the twyer-boxes and prevent lateral displacement of the same, substantially as specified.

11. The combination in a gas-producer, of the ash-hopper having inwardly-projecting twyer-boxes with central longitudinal slots in the bottom portions thereof, and supporting-brackets for said twyer-boxes having guiding lugs or fingers projecting into said slots, substantially as specified.

706,418. GATE. TERRELL A. HILL, Maryville, Tenn., assignor of one-half to Vernondo B. McClung. Filed Feb. 13, 1902. Serial No. 93,944. (No model.)

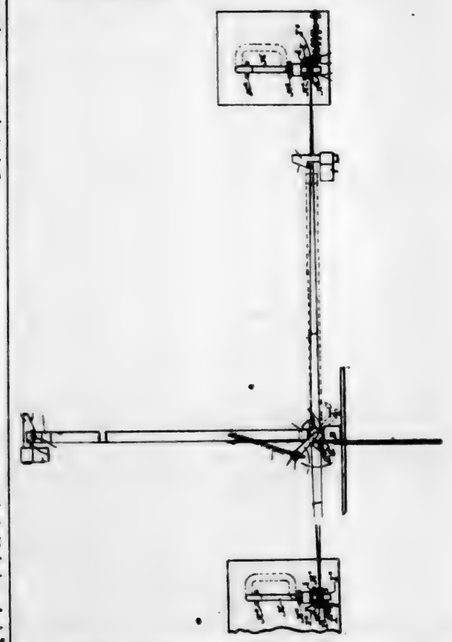

Claim.—1. The combination with a gate secured by a vertical hinge to an upright post, of a spring connected to said gate, and means for shifting the direction of the action of said spring from one side of the plane of said gate across said plane prior to the movement of the gate, substantially as described.

2. The combination with a gate and a hinge-post, said gate being secured to said post by a vertical hinge, two stop-posts, a spring applied to said gate, and mechanism for shifting said spring from one side of the plane of said gate to the other prior to the movement of the gate, substantially as described.

3. The combination of a gate and a hinge-post, the gate being secured to the post by a vertical hinge, stop-posts, a spring applied by one end to the gate, and means for shifting the other end of said spring rearward from one side of the plane of the gate to the other, substantially as described.

4. The combination of a gate, a hinge-post and a vertical hinge-shaft joining said gate and said post, the upper end of said shaft being extended and bent laterally, a spring joined to the upper end of said shaft and said gate, means for rotating said hinge-shaft so as to carry said upper end rearward across the plane of the gate, and stop-posts for limiting the movement of the gate, substantially as described.

5. The combination with a horizontally-swinging gate, a stop-post, and latch mechanism, of means for simultaneously drawing the gate toward said stop-post and unlocking the latch mechanism, substantially as described.

6. The combination of a gate, a hinge-post and a vertical hinge-shaft joining said gate and said post, the upper end of said shaft being extended and bent laterally, a spring joined to the upper end of said shaft and said gate, means for rotating said hinge-shaft so as to turn said upper end rearward across the plane of the gate, stop-posts for limiting the movement of the gate, and latch mechanism for securing the gate to said stop-posts, substantially as described.

7. The combination with a horizontally-swinging gate, and a post against which said gate rests when closed, of a spring drawing said gate at the side at which the stop-post is located, a member to which said spring is attached, means for moving said member away from said gate and said stop-post and then across the plane of said gate, whereby greater pulling force is exerted upon said gate in the direction of said stop-post immediately before pulling force is exerted upon said gate in the opposite direction, substantially as described.

8. A horizontally-hinged gate, a stop-post for engaging said gate when closed, a spring attached by one end to said gate and by the other to a tension member, such a tension member mounted upon a vertical axis, and mechanism for revolving said member partially around said axis from a point at one side of the plane of said gate rearward across the plane of said gate, substantially as described.

9. The combination of a horizontally-swinging gate, a stop-post, latch mechanism, a spring attached by one end to said gate and by the other end to a shiftable member, and a latch-cord secured by one end to said latch mechanism and by its other end to said spring at a point intermediate the ends of said spring, substantially as described.

10. The combination of a hinge-post, the gate, a hinge-shaft, C, extended laterally at its upper end, a swivel-post mounted upon said end, and a spring having one end joined to said swivel-post and the other end to said gate, substantially as described.

11. The combination of a hinge-post, the gate, the hinge-shaft, C, extended laterally at its upper end, a swivel-post mounted upon said end, a spring having one end joined to said swivel-post and the other end to said gate, and means for rotating said shaft so as to carry said swivel rearward and across the plane of the gate, substantially as described.

12. The combination of a hinge-post, the gate, the hinge-shaft, C, extended laterally at its upper end, a swivel-post mounted upon said end, a spring having one end adjustably joined to said swivel-post and the other end to said gate, and means for rotating said shaft so as to carry said swivel rearward and across the plane of the gate, substantially as described.

13. The combination of a crank-shaft, a rocking lever loosely secured to said crank-shaft and having arms extending away from said crank-shaft in opposite directions from the point of attachment between said lever and crank-shaft, a yoke mounted upon said crank-shaft and extending along one side of said rocking lever, substantially as described.

14. The combination of a rocking lever, a crank-shaft, and an adjustable yoke mounted upon said crank-shaft and surrounding said rocking lever, substantially as described.

15. The combination of a crank-shaft, a rocking lever loosely secured to said crank-shaft and having arms extending away from said crank-shaft in opposite directions from the point of attachment between said lever and crank-shaft, a yoke mounted upon said crank-shaft and extending along one side of said rocking lever, and mechanism applied to said yoke for restoring the crank-shaft to its normal position, substantially as described.

16. The combination of a rocking lever, a crank-shaft, an adjustable yoke mounted upon said crank-shaft and surrounding said rocking lever, and a spring applied to said yoke for restoring the crank-shaft to its normal position, and mechanism for varying the tension of said spring, substantially as described.

706,414. RING SPINNING AND TWISTING FRAME. ALFRED HITCHON, Accrington, England. Filed Mar. 14, 1902. Serial No. 98,342. (No model.)

Claim.—1. In ring spinning or twisting machines, a vertically-reciprocable spindle-carrying frame, in combination with pairs of reversely-placed and oppositely-revolving lifting-cams therefor, and projections on the said spindle-carrying frame upon which said cams operate, each of said projections being located above its cam and to one side of a vertical plane through the axis of said cam, substantially as and for the purposes hereinbefore set forth.

2. In ring spinning or twisting machines a series of independent vertically-reciprocable spindle-carrying frame-sections, a power-driven worm-shaft extending lengthwise of the spinning-frame and provided with pairs of right and left handed worms, one pair for each frame-section, two cross-shafts for each section provided the one with a right-handed worm-gear to engage the right-hand worm, and the other with a left-handed worm-gear to engage the left-hand worm, a pair of lifting-cams on each cross-shaft, the one pair being reversely placed relatively to the other pair, and projections on the spindle-frame sections, each located to one side of a vertical plane through the axis of its cam, substantially as and for the purposes hereinbefore set forth.

3. In ring spinning or twisting machines a vertically-reciprocable spindle-carrying frame, in combination with pairs of reversely-placed and oppositely-revolving lifting and descent-controlling cams, and coöperating projections upon the spindle-carrying frame, the projections pertaining to the lifting-cams being located to one side of a vertical plane through the axis of their respective cams, and those pertaining to the descent-controlling cams being located vertically over the centers of their respective cams, substantially as and for the purposes hereinbefore set forth.

4. In ring spinning or twisting machines the combination of a number of independent vertically-reciprocable spindle-carrying frame-sections, and a series of sets of actuating-cams therefor located and adjusted substantially as herein described so that each individual spindle-carrying frame-section will move up and down in a step manner relative to its adjacent spindle-carrying frame section or sections, substantially as and for the purposes hereinbefore set forth.

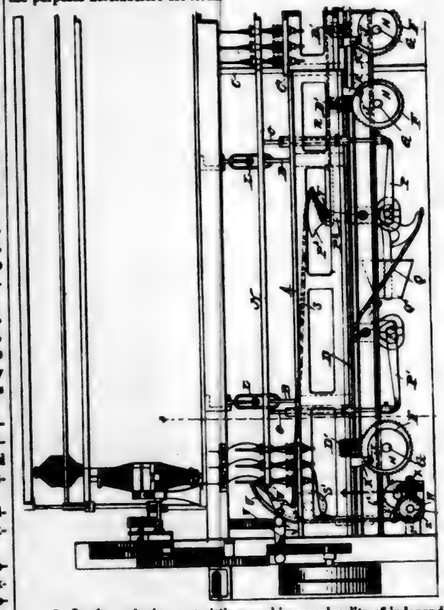

5. In ring spinning or twisting machines a plurality of independent vertically-reciprocable spindle-carrying frame-sections, and a series of sets of actuating-cams therefor arranged and operating to cause each individual spindle-carrying frame-section to move upward and downward in a step manner relative to its adjacent spindle-carrying frame section or sections, in combination with coinciding sectional lengths of ring-rail, and mechanism whereby, during the vertical reciprocation of the spindle-sections, the rail-sections are gradually raised, substantially as and for the purposes hereinbefore set forth.

6. In ring spinning and twisting machines sectional spindle-carrying frames working in step manner relative to one another as described, coinciding lengths of ring-carrying rails, and means whereby, during the vertical reciprocation of the spindle-carrying sections the ring-rail sections are gradually raised in combination with a doffing-handle common to all the ring-rail sections and connections whereby when the handle is operated the several ring-rail sections are allowed to drop on their appropriate spindle-carrying sections, substantially as and for the purposes hereinbefore set forth.

706,415. DRIVING-GEAR FOR AUTOMOBILES. ALFRED HITCHON, Clayton-le-Dale, England. Filed Apr. 12, 1902. Serial No. 102,498. (No model.)

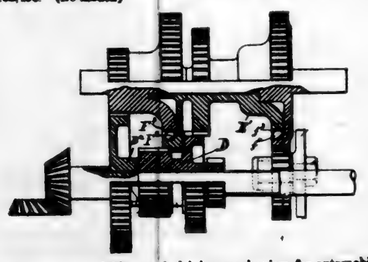

Claim.—In variable-speed driving mechanism for automobiles, the combination with the driving-shaft and the driven wheel, of a plurality of sets of free-wheel clutch devices, motion-transmitting means between the same and the driven wheel, independent gearing between each set of said free-wheel clutch devices and the driving-shaft, and means, operated by a single handle, for withdrawing said gearing from connection with each set of free-wheel clutch devices successively, beginning with that giving the highest speed, the driving-gears for all speeds below the one inactive remaining in operative connection with their respective free-wheel clutch devices, substantially as and for the purposes hereinbefore set forth.

706,416. BEET-HARVESTER. HIRAM S. HOUGHTON, Lyons N. Y. Filed Sept. 3, 1901. Serial No. 74,088. (No model.)

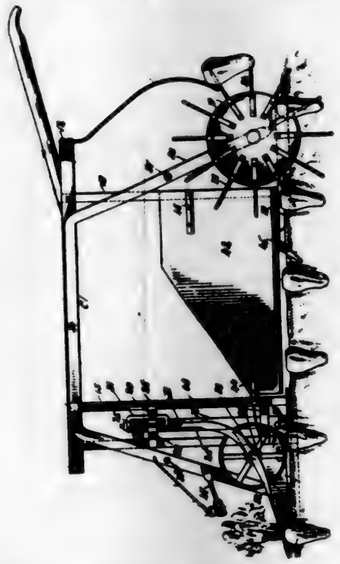

Claim.—1. In a beet-harvester, a frame adapted to travel over the surface of the ground, a guide carried by the frame, adapted to travel over the crowns of the beets, a top-separating finger carried by the support for the said guide and in advance of the said guide, and cutters mounted to rotate at the rear of said guide, said cutters being in pairs, the edges of the cutters in a pair being brought close together at a point at the rear of the said finger of the guide, substantially as described.

2. In a beet-harvester, a frame adapted to travel over the surface of the ground, a guide carried by the frame, adapted to travel over the crowns of the beets, a top-separating finger carried by the support for the said guide and in advance of the guide, cutters mounted to rotate at the rear of said guide, said cutters being in pairs, the edges of the cutters in a pair being brought close together at a point at the rear of the said finger of the guide, a yoke-frame carrying the said cutters, which yoke-frame has vertical guided movement in the main frame of the machine, and fingers carried by the main frame, which fingers enter the ground at opposite sides of the beets to be topped, for the purpose of loosening the soil around the topped beets, as described.

3. In a beet-harvester, the combination, with a main frame, a yoke located at the forward portion of the main frame, having vertical guided movement in said main frame, cutters mounted to turn at the bottom portion of the said yoke, which cutters have their peripheral edges brought close together at a point represented by a line drawn transversely through the cutters and frames, a shank adjustably carried by the said yoke, a guide-wheel carried by the said shank, adapted to travel in front of the meeting-point of the cutters, and a gathering device carried by the frame at the rear of the cutters, arranged to draw the beets from the ground, as and for the purpose set forth.

4. In a beet-harvester, the combination with a main frame, of a frame mounted to slide freely on the main frame, horizontally-arranged cutters mounted on the lower end of the sliding frame, a guide-wheel in advance of the cutting edges of the cutters, and a separating-finger in front of the guide-wheel, the wheel and finger being carried by a common support, as set forth.

5. In a beet-harvester, the combination with a main frame, of a frame mounted to slide freely in the main frame, horizontally-arranged disk cutters on the lower end of the sliding frame, a guide-wheel in advance of the cutting edges of the cutters, a separating-finger in front of the guide-wheel, and a support for the wheel and finger adjustably mounted in the sliding frame, as set forth.

6. In a beet-harvester, the combination with a main frame supported by runners at its front and at its rear, a yoke having vertical guided movement at the forward portion of the main frame, cutters mounted to revolve at the bottom portion of the said yoke, the cutters being in pairs, their cutting edges approaching each other closely at the longitudinal center of the frame, a shank adjustably carried by the said yoke, a guide-wheel carried by the said shank in advance of the meeting edge of the cutters, which wheel is adapted to travel over the crown of the beets from which the tops are to be cut, and a separating-finger carried by the shank of the guide-wheel and located in front of the said wheel, which finger is adapted to separate the tops of the beets in advance of the guide-wheel passing over their crowns, as set forth.

7. In a beet-harvester, the combination with a main frame, of a frame mounted to slide loosely in guideways of the main frame, a horizontally-arranged cutter on the lower end of each side member of the said frame, a shank adjustably secured to the frame carrying the cutters and having a curved lower portion, and a guide-wheel mounted in the curved portion of the shank, as set forth.

8. In a beet-harvester, the combination with a main frame, of a frame mounted to slide loosely in guideways of the main frame, horizontally-arranged cutters on the lower ends of the side members of the frame, a shank adjustably secured to the cutter-carrying frame and having a forwardly-curved lower portion, said curved portion being in two members which are brought together to form a finger, and a wheel mounted between the members of the shank, as set forth.

9. A beet-harvester, comprising a main frame mounted on runners, a frame mounted to slide freely in the main frame, horizontally-arranged disk cutters on the lower end of the sliding frame, a guide-wheel in advance of the cutting edges of the cutters, a separating-finger in front of the guide-wheel, a support for the wheel and finger adjustably mounted in the sliding frame, an auxiliary frame secured to the front and rear runners, and a gathering device mounted in the rear portion of the auxiliary frame, as set forth.

706,417. ENVELOP. JOHN B. HOWE, Windber, Pa. Filed May 12, 1902. Serial No. 106,885. (No model.)

Claim.—1. An envelop-seal consisting of a metal thimble having a covering of suitable fabric, and a disk having barbed prongs to penetrate said fabric and connect the disk with the thimble, substantially as described.

2. An envelop-seal consisting of two members, one having a diaphragm of fabric or like material, and the other having prongs to penetrate the envelop and said diaphragm to connect the members together, substantially as described.

706,418. WASHING-MACHINE. ALEXANDER C. ISRAEL, Laporte, Tex. Filed Aug. 21, 1901. Serial No. 73,233. (No model.)

Claim.—In a washing-machine, the combination with the drum having intake-slots arranged at equidistances apart therein and projecting upwardly and out of line with the periphery of the drum, and transverse ribs secured below the slots, and transverse inclined boards arranged in rear of said slots, said ribs and said boards being spaced apart to form buckets between them, a cross-batched head at each end of the drum, and radial cross-arms at the other end of said drum, and the said cross-arms increasing in width from their central points of connection toward their outer ends, substantially as and for the purpose specified.

706,419. CROSS-CUTTING MACHINE. BENJAMIN S. JAYNE, New York, N. Y., assignor to Horace Craighead, Flushing, borough of Queens, N. Y. Filed Oct. 8, 1901. Serial No. 77,895. (No model.)

Claim.—1. In a stave-sawing machine, the combination with a suitable frame, and a main driving-shaft journaled therein, of two rotatable stave-carriers, each provided with corresponding peripheral seats to receive the staves, spring-pressed guides for normally holding the stave-blanks in said seats, a crosing-cutter and a chamfering-cutter mounted on

the same shaft, adjustable bearings for said shaft, a trimming-cutter mounted on an independent shaft on the same line radial to the stave-carrier as to the cross-cutter, adjustable bearings for said shaft, means for revolving the cutters, and a feed-hopper or magazine centrally located above the supporting-frame.

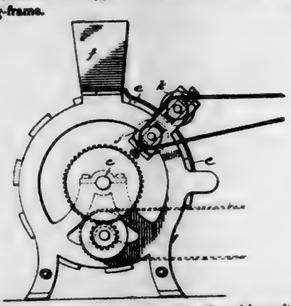

2. In a stave-crozing machine, the combination with a suitable frame, a stave magazine or hopper located centrally above said frame, and a main driving-shaft journaled therein, of two rotatable stave-carriers mounted on said shaft, each provided with corresponding peripheral seats to receive the staves, spring-pressed guides for normally holding the stave-blanks in said seats, a crozing-cutter and a chamfering-cutter mounted on a single shaft, adjustable bearings for said shaft, a trimming-cutter mounted on an independent shaft on the same line radial to the stave-carrier as to the cross-cutter, adjustable bearings for said shaft, means for adjusting the cutters carried on the single shaft and the cutter mounted on the independent shaft toward and from each other, mechanism for revolving the cutters, and mechanism for driving the main shaft.

706,420. SMOKE-CONSUMER. WILLIAM T. KROM, New York, N. Y. Filed Oct. 5, 1901. Serial No. 77,695. (No model.)

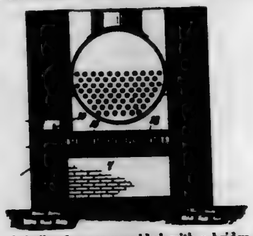

Claim.—1. A boiler-furnace provided with a bridge-wall having a rearwardly-inclined upper face, a metallic distributing member having an inclined side cast embedded in said bridge-wall for its inclined side only to be exposed through, and to lie in flush relation with, the inclined top face of said bridge-wall, said exposed inclined side of the member having a plurality of perforations, air and steam channels extending through a wall of the furnace, an air-supply tube located in the air-channel and coupled at a point intermediate of its length to one end portion of the distributing member, a combining-tube opening into the air-tube and extending into and surrounded by the distributing member, and a steam-pipe leading through the steam-flue and extending into the combining-tube.

2. A boiler-furnace provided with a bridge-wall, a distributing member having jet-perforations, an air-supply tube coupled at a point intermediate of its length to one end portion of the distributing member and having two open ends, a combining-tube united at one end to the air-tube and extending for the major portion of its length into a non-perforated portion of the distributing member, and a steam-pipe extending across the air-tube and into the combining-tube, whereby the combining-tube is protected by a surrounding chamber in, and the metallic portions of, the distributing member, and a small steam-pipe has its delivery end fitting loosely in a comparatively large combining-tube so as to provide for the unobstructed inward flow of the air-current through the open-ended air-tube.

706,421. TOY. HARRY T. KINGSBURY, Keene, N. H. Filed Mar 8, 1901. Serial No. 49,989. (No model.)

Claim.—1. A toy car, composed of a single section bent to form a roof, and downwardly-projecting sides, said sides having inwardly-turned projections, *c* and *e*, said projections *e* being of length sufficient to substantially abut when bent inwardly; with means for securing said oppositely-placed projections *c* together; substantially as described

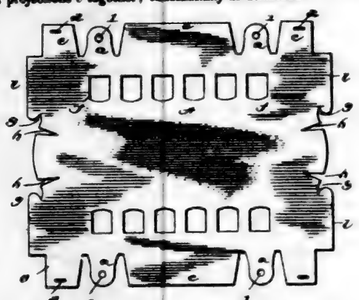

2. A toy car composed of a single section bent to form a roof, and downwardly-projecting sides, said sides having inwardly-turned projections provided with slits, and a T-clip *k*, the head of which is bent to enter the slits; and having its body portion extending beyond the end of the blank and provided with an opening to receive a coupling-link, substantially as described.

706,422. TOY BANK. HARRY T. KINGSBURY, Keene, N. H. Filed Sept. 21, 1901. Renewed June 4, 1902. Serial No. 110,180. (No model.)

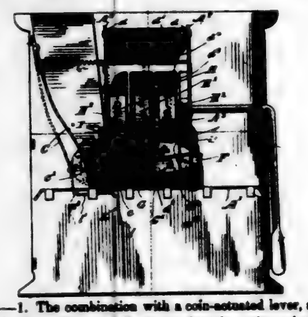

Claim.—1. The combination with a coin-actuated lever, and a registering mechanism, of a manually-operated latch-carrier, a latch carried thereby to connect the said carrier with the registering mechanism, and a connection between the coin-operated lever and said latch to throw it into its operative position; substantially as described.

2. The combination with a coin-actuated lever, and a registering mechanism including a plurality of registering wheels or disks and their operating rack-bars, of a manually-operated latch-carrier, a latch mounted on the said carrier and toothed for engagement with said rack-bars, and operative connections between the said coin-actuated lever and the latch to throw it and bring the proper teeth into operative relation to the rack-bars; substantially as described.

3. The combination of an open-sided coin-chute, and a coin-operated lever along the open side of the chute, a manually-operated latch-carrier; a latch mounted on said carrier, means for operating the latch from the coin-lever, of registering-wheels provided with shouldered operating-bars adapted to be connected with and thrown by the manually-operated carrier when its latch is thrown into operative position by a coin; substantially as described.

4. The combination with the tapered open-sided coin-chute, a coin-operated lever along the open side of the chute, and a registering mechanism including a plurality of registering-wheels provided with shouldered operating-bars, of a manually-operated carrier to swing along said operating-bars, a latch mounted on the carrier and toothed to engage said shouldered bars and connect the carrier therewith, and an operative connection between the coin-actuated lever and the latch for throwing it into its operative position; substantially as described.

5. The combination with the tapering coin-chute open at one side, a coin-operated lever along the open side of the slot for varying throw by coins of different diameter, and a registering mechanism including a plurality of registering-wheels and shouldered operating rack-bars, of a pivoted manually-operated latch-carrier mounted to swing along said rack-bars, a latch pivoted at the lower free end of the carrier and having graduated teeth on its lower edge, a rod for connecting said latch with the coin-actuated lever to swing the latch and bring the proper teeth into the path of the rack-bar shoulders and so connect said bars with the carrier; substantially as described.

6. The combination with the tapering coin-chute open at one side, a coin-operated lever along the open side of the slot for varying throw by coins of different diameter, and a registering mechanism including a plurality of registering-wheels and shouldered operating rack-bars, of a pivoted manually-operated latch-carrier crossing said rack-bars and movable along the same, a latch pivoted to the lower end of the said carrier with its lower edge provided with graduated teeth for engaging the shoulders on the rack-bars, a spring-pressed cranked arm pivoted on the said carrier with one of its cranks forming the pivot of the latch and extended through the carrier for engagement with the back plate to release the latch, and a rod extending from the plate and bent to pass behind the coin-lever for operation thereby; substantially as described.

7. The combination with an open-sided coin-chute, a lever along the open side of the chute, and a registering mechanism including registering-wheels provided with operating-bars, of a manually-operated carrier to swing along said bars and provided with a latch to connect it with the said bars, and a rod for connecting the latch with the coin-lever, the lower edge of the carrier having a flange to temporarily support the coin in the chute; substantially as described.

8. A toy bank comprising a body having a removable wall, a partition and framework secured to said wall, of an open-sided chute secured to said wall and registering at its upper end with a coin-inlet in the top and at its lower end registering with a coin-outlet in the partition, a lever along the open side of said chute, a registering mechanism mounted on said framework and including registering-wheels exposed through a front opening and provided with rack-bars, a forwardly-swinging latch-carrier pivoted at its upper end to said removable wall and swinging over the rack-bars, a lever for operating said carrier from the exterior of the bank, a latch pivoted to the carrier and having a graduated toothed lower edge to engage the respective rack-bars and connect them to said carrier for operation thereby; and a rod for connecting the said latch with the coin-actuating lever; substantially as described.

9. The combination with the toothed registering-wheels, and rack-bars for operating them, pins on the wheels, and lugs or shoulders on the rack-bars in the path of said pins, and a coin-controlled actuating mechanism for throwing the rack-bars; substantially as described.

10. The combination with a coin-actuated lever and a registering mechanism including toothed wheels, each having a pin and operating rack-bars, each having a shoulder at its forward end for engagement by the said pins and a retracting-shoulder at its rear end, of a forwardly-swinging manually-operated latch-carrier having slots at its lower end, receiving the rear shouldered ends of the rack-bars, a latch on the carrier having a graduated toothed lower edge to engage the rack-bars for forward throw by the carrier, and a rod for connecting the latch with the coin-actuated lever; substantially as described.

11. The combination with the registering-wheels and their operating rack-bars, of a manually-operated latch-carrier extending over said bars and provided with a coin-actuated latch for operatively connecting it with the rack-bars; substantially as described.

12. The combination with the registering mechanism, provided with shouldered operating-bars, of a manually-operated latch-carrier extending over said bars and provided with a coin-actuated latch for operatively connecting it with said rack-bars, means for holding the latch in its operative position, and means for releasing the latch and restoring the same to its normal inactive position; substantially as described.

13. The combination with a manually-operated carrier or arm and a series of devices for operation by said carrier or arm, of a coin-operated latch mounted on said carrier or arm and provided with graduated teeth thrown into operative relation with one or more of said series of devices according to the distance the latch is moved by coins of different diameters: substantially as described.

706,428. SIPHON FOR DISPENSING LIQUIDS. ARTHUR KLEINFELDT, New York, N. Y. Filed Jan. 23, 1901. Serial No. 44,441. (No model.)

Claim.—1. A carbonic-acid-gas reservoir provided with a neck portion whereby said reservoir may be secured to a receptacle, a passage in said neck portion providing a means for filling the reservoir and for supplying gas to the interior of the receptacle, a valve in said passage provided with a spindle engaging a yielding packing, a faucet communicating with the interior of the receptacle provided with a handle operatively engaging said spindle when the faucet is opened and closed to reciprocate the same and open and close the valve, and means for normally holding said valve closed but permitting the valve to be opened automatically by the pressure of the incoming gas when the receptacle is charged through said passage.

2. The combination with a receptacle, of a carbonic-acid-gas reservoir having an outlet communicating with said receptacle, a valve controlling said outlet, means for normally closing said valve, a plunger in alinement with the spindle of said valve, whereby said valve is actuated, a faucet communicating with the interior of the receptacle provided with a handle engaging with said plunger when the faucet is open to reciprocate same, and a yielding packing interposed between said plunger and valve-spindle, substantially as described.

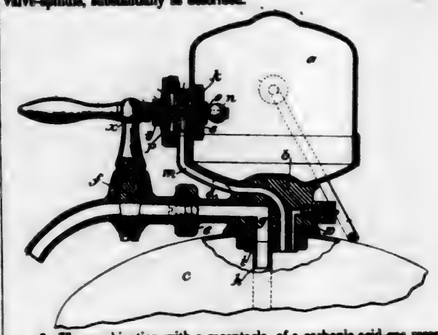

3. The combination with a receptacle, of a carbonic-acid-gas reservoir having an outlet communicating with said receptacle, a valve controlling said outlet, a spring for holding said valve in its closed position, a plunger engaging said valve to open same against the resistance of the spring, a faucet communicating with the receptacle having a handle engaging with said plunger when the faucet is partly open to reciprocate same and open the valve, and a yielding packing interposed between said plunger and the valve-spindle, substantially as described.

4. The combination with a receptacle, of a carbonic-acid-gas reservoir having an outlet communicating with said receptacle, a valve on the interior of said receptacle for controlling said outlet, a spring for holding said valve in its closed position, a plunger arranged to actuate the spindle of said valve, a faucet communicating with the interior of the receptacle having its handle provided with an irregular cam engaging said plunger to move same varying distances, an elastic diaphragm to prevent the escape of the gas through the opening for said plunger, and a yielding packing interposed between said plunger and the valve-spindle, substantially as described.

706,424. METALLIC HOOD FOR VESTIBULES OF CARS. JAMES M. KNAUS, Sedalia, Mo. Filed Apr. 16, 1902. Serial No. 103,219. (No model.)

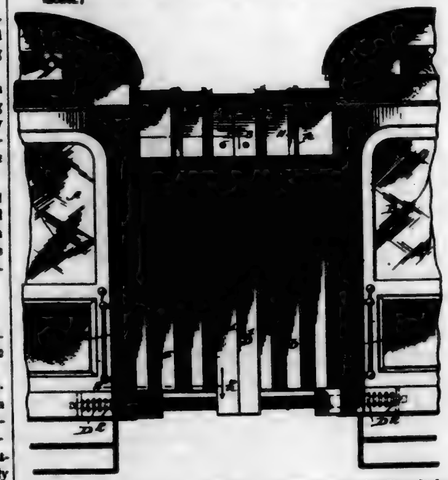

Claim.—1. A hood for vestibuled cars comprising a plurality of telescoping sections, a flap-plate secured to the outer section, means for holding the hood yieldingly distended, and means for securing the inner section to the vestibule with freedom to give laterally to the motion of the car, substantially as described.

2. A hood for vestibuled cars comprising a plurality of telescoping sections, a slotted plate secured to the inner section and adapted to rest against the outside of the frame of the vestibule, cleat-plates adapted to be secured to the vestibule to overlap the edges of the slotted plate and pins adapted to be passed through the slots of the slotted plate into the frame of the vestibule, substantially as described.

3. A hood for vestibuled cars comprising a plurality of telescoping sections, the two inner sections being composed of metallic plates doubled back and under exposing only the rounded folded edge, a face-plate secured to the outer section, means for holding the sections yieldingly in their extended position, and means for limiting such outward extensions, substantially as described.

4. A hood for vestibuled cars, comprising a plurality of telescoping sections, each overlapping section consisting of a plate of metal folded back and under, the under fold being slotted longitudinally of the car, means for yieldingly maintaining the sections extended, and pins passing through the interior sections into the slots in the inner folds of the exterior sections to limit the outward movement of the sections on each other, substantially as described.

5. A hood for vestibuled cars comprising a plurality of telescoping sections, a strip of metal secured to the edge of each overlapping or exterior section, bent to form a pocket facing the interior section, and a strip of flexible material, having one edge secured in said pocket and its other edge bent outward and resting on the exterior of the interior section, substantially as described.

706,425. HOT-AIR PUMPING-ENGINE. JOHN T. LALLY and JAMES J. ENGLISH, Wilmington, Del. Filed Jan. 28, 1902. Serial No. 91,592. (No model.)

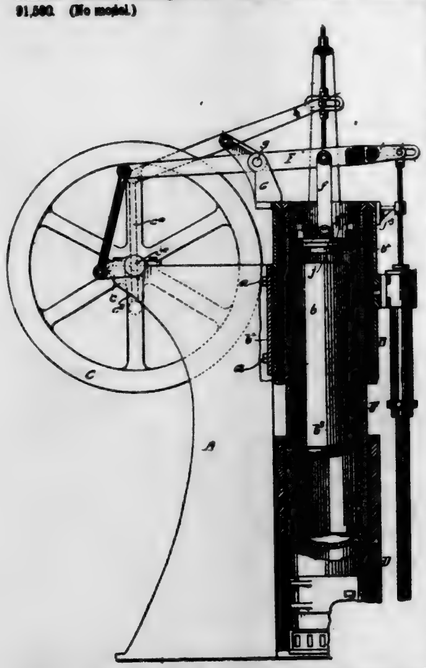

Claim.—1. In a hot-air engine, the combination of a frame, a cylinder supported thereon, having working and transfer pistons, means for heating the cylinder, a fly-wheel and a shaft therefor, with two levers connected to said shaft both pivotally supported above the top of the engine-cylinder and connected respectively to the working and to the transfer pistons, substantially as described.

2. In a hot-air engine, the combination of a frame, a cylinder supported thereon having working and transfer pistons, means for heating the cylinder, a fly-wheel and a shaft therefor, two cranks on the shaft, two levers supported over the cylinder each having a connecting-rod operatively attaching it to one of the cranks, one of the levers being connected to the transfer-piston and the other being connected to the working piston and to mechanism operated by the engine, substantially as described.

3. In a hot-air engine, the combination of a cylinder, means for heating the same, working and transfer pistons in the cylinder, a fly-wheel, a shaft therefor, two levers each connected to the fly-wheel shaft, one of the levers having a projecting portion or arm turned parallel to the body thereof and with said body connected to one of the pistons, the other lever extending between the said two parts of the first lever and being connected to the other piston, substantially as described.

4. In a hot-air engine, the combination of a cylinder, means for heating the same, working and transfer pistons in the cylinder, a fly-wheel, a shaft therefor, two levers each connected to the fly-wheel shaft, one of the levers having a projecting portion or arm turned parallel to the body thereof, and with said body connected to one of the pistons, the other lever being also forked and having a pin extending between the arms of its forked end with a rod connected to the second piston having a slotted block in engagement with said pin, substantially as described.

5. In a hot-air engine, the combination of a cylinder means for heating the same, working and transfer pistons in the cylinder, a fly-wheel, a shaft therefor, two levers each connected to the fly-wheel shaft, means for connecting one of the levers to one of the pistons, a piston-rod attached to the other piston and provided with a slotted block, a guide supported from the cylinder-casting and in engagement with said rod, the second lever being provided with means whereby it is attached to the rod through said slotted block, substantially as described.

6. In a hot-air engine, the combination of a cylinder, means for heating the same, working and transfer pistons in the cylinder, a fly-wheel, a shaft therefor, two levers supported above the cylinder, one of the same carrying a roller, a rod attached to one of the pistons carrying a slotted block engaged by said roller, the second lever provided with a projecting arm bent parallel with the body thereof, links connecting the second piston with the said arm and body of the second lever and an extension to said lever having means whereby it may be connected to mechanism to be operated, substantially as described.

7. In a hot-air engine, the combination of a cylinder, means for heating the same, working and transfer pistons in the cylinder, a fly-wheel, a shaft therefor, two levers each connected to the fly-wheel shaft, one of the levers having means for connecting it to the transfer-piston, the other lever being connected to the working piston and provided with an extension beyond the point of said connection, a pump having a piston-rod with a slotted block operatively connected to said extension, with means for guiding said rod supported from the cylinder-casing, substantially as described.

706,426. FOLDING BASKET. THOMAS J. LANGSTON, Johnston, S. C. Filed Mar. 24, 1902. Serial No. 99,653. (No model.)

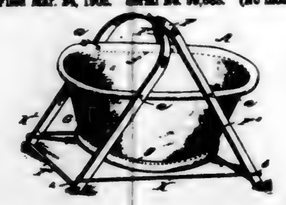

Claim.—1. The improvement in baskets herein described consisting of, the basket-body having top and bottom rim-frames, a flexible separable bottom, a free frame for said bottom having its edges secured to a rim-frame with said separable bottom adjusted inside the flexible body above its bottom rim-frame, a draw-string around the flexible body above said separable bottom, a stitched-in flexible bottom above said removable bottom, handle-frames having their side bars pivoted to the top rim-frame of basket-body and extending below the bottom of said body forming legs, cross-braces for said legs, guides on the legs for tension-lines, the tension-lines carried in and through said guides and secured at their ends to the rim-frame of the flexible bottom, and a latching device for the handle-frame consisting of a staple on one frame, a cooperating staple on the other frame, and a bolt for locking the staples together, substantially as described.

2. The combination of a flexible collapsible basket-body having top and bottom rim-frames, a removable bottom over and under a free frame with the edges of said removable bottom secured to a rim-frame, a draw-string around the flexible body above the flexible removable bottom, the handle-frames having their side bars pivoted to the top rim-frame of the basket-body and extending below the bottom of said body and forming legs, braces for said legs, guides on the legs for tension-lines, the tension-lines extending through said guides and secured at their ends to the bottom rim, substantially as described.

3. In a basket the combination of a flexible body having top and bottom rim-frames, a stitched-in flexible bottom above the bottom rim-frame, the handle-frames having their side bars pivoted to the top rim-frame of the basket-body and extending below the bottom forming legs, braces for said legs with guides for tension-lines, and tension-lines passing through said guides and secured at their ends to the bottom rim of the basket-body substantially as set forth.

4. A flexible basket-body having a top rim-frame, a pair of bow handle-frames having their side bars pivoted to said rim-frame and extending below the basket-body forming legs therefor, straps, or lines, connecting the legs and bottom of flexible basket-body, and a latching device for the crowns of the bow-handles consisting of a bolt, guides therefor and interlocking staples arranged to bolt the basket in open position, substantially as described.

5. The combination of a flexible basket-body, the rim-frames at the top and bottom thereof, a stitched-in flexible bottom above lower frame, handle-frames having their side bars pivoted to upper frame of basket-body, and extending at their lower ends below the basket-body forming legs and the latching devices for the crowns of the handle-frames substantially as described.

6. In a basket the combination with the basket-body and the handle-frames having their side bars pivoted to the basket-body and extending below the same, and provided with guides for line connections and the line connections passing through said guides and connected at their ends to the basket-body, substantially as set forth.

7. A flexible basket-body provided with a flexible bottom, and below the same with a flexible false bottom, substantially as set forth.

8. The flexible basket-body provided with a flexible removable bottom and with a frame by which the bottom is held in said body substantially as set forth.

9. The combination with a flexible basket-body having a flexible bottom, of a draw-string applied around the body adjacent to the bottom, substantially as set forth.

10. The combination of a flexible basket-body, the rim-frame at the upper and lower ends thereof, a flexible false bottom above the lower frame and a draw-string applied to the body above the false bottom, substantially as described.

11. The combination of a flexible basket-body, the rim-frames at the upper and lower ends thereof and a flexible stitched-in bottom between the upper and lower frames, and the false bottom between the stitched-in bottom and the lower free frame, substantially as set forth.

12. The combination of a flexible basket-body, having a rim-frame and a support-frame pivoted to the side bars of bow handle-frames, with said side bars of handle-frames extending below the bottom of flexible basket-body forming legs therefor, line connections between the legs and bottom of flexible basket-body, and a latching device for the crowns of the bow-handles, substantially as described.

13. The improvement in baskets herein described consisting of the basket-body having the top frame and the bottom frame and provided with the flexible bottom and with a draw-string and a casing therefor and having an extension below said bottom, the handle-frames having their side bars pivoted to the body of the basket and extending below the bottom of said body to form legs and provided with guides for the line connections, and the line connections carried through said guides and secured at their ends to the body of the basket, substantially as set forth.

14. The combination of the flexible body having a flexible bottom and an extension below the same, and a lower rim-frame and bracing or false bottom operating in connection with said lower extension substantially as set forth.

15. The combination of the flexible basket-body having a bottom and below the same an extension and the lower rim-frame held in said extension, the free frame D in said extension above the lower and rim frame, and the false bottom passed over said free frame and secured substantially as set forth.

16. The combination with the flexible basket-body having a flexible bottom and an extension below the said bottom, the rim-frame held in said extension, and the flexible bracing or false bottom held to said rim-frame, substantially as and for the purposes set forth.

706,427. DRIVE-CHAIN. CHRISTOPHER W. LEVALLEY, Milwaukee, Wis. Filed June 11, 1901. Serial No. 64,157. (No model.)

Claim.—1. A chain formed of links having side bars and hollow end bars of cast metal, and interior and exterior wearing-sleeves of steel for the end bars, substantially as set forth.

2. A chain formed of links having side bars and hollow end bars of cast metal, the side bars of each link being separate from each other, and interior and exterior wearing-sleeves of steel for the end bars, substantially as set forth.

3. A chain comprising links having side bars and divided hollow end bars carried by the side bars, and tubular connecting parts having tight-fitting engagement with the divided end bars arranged to rigidly connect the opposite side bars, substantially as set forth.

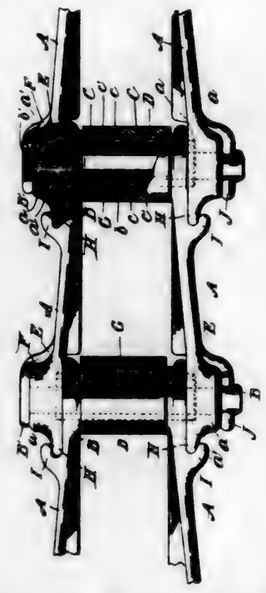

4. In a chain, the combination with the side bars, the divided tubular end bars carried by the side bars, removable bushings fitting tightly within the end bars and uniting the opposite side bars and cross-bolts extending through the side bars and end bars and uniting the adjacent links, substantially as set forth.

5. In a chain, the combination with the side bars, the divided tubular end bars carried by the side bars, the removable bushings within the tubular end bars and having their ends extended outward and arranged to have interlocking engagement with the side bars, and means for preventing the side bars from spreading laterally, substantially as set forth.

6. In a chain, the combination of the side bars, each bar being provided with an inward-extending tubular portion C, such tubular portions of the opposite side bars being arranged to be brought together, end to end, to form a hollow or tubular end bar, and a sleeve adapted to fit tightly over the said tubular portions C, and rigidly hold them together and also to constitute wearing-surfaces for the sprocket-teeth to engage with, substantially as set forth.

7. In a chain, the combination of the side bars provided with inward-extending tubular portions C, such tubular portions of the opposite side bars being arranged to be brought together, end to end, to form hollow tubular end bars, bushings fitting tightly within the said hollow end bars, and arranged to constitute internal wearing-surfaces for the end bars, and also to rigidly connect and hold together the opposite side bars, connecting bolts or pins arranged to unite adjacent links and have wearing engagement with the said bushings, and means for preventing the connecting-bolts from rotating relative to the side bars through which they pass, substantially as set forth.

8. In a chain formed of articulated links, the combination of the side bars of the links, the divided end bars carried by the side bars and formed with interlocking parts, the sleeves fitting the end bars tightly and arranged to unite and rigidly hold together the parts of the divided end bars and the opposite side bars, and means for connecting the links at the joints of the chain, substantially as set forth.

9. In a chain, the combination of the side bars each provided with an inward-extending tubular portion C, the tubular portions of opposite side bars being arranged to be brought together, end to end, to form hollow or tubular end bars, bushings D fitted tightly within the hollow end bars, sleeves G fitted tightly upon the exterior of the said end bars, the said bushing and sleeves constituting interior and exterior wearing-surfaces of the end bars, and operating to unite the opposite side bars, and connecting cross pins or bolts which pass through the side bars and the end bars and unite the links at the joints thereof, substantially as set forth.

706,428. APPLE CORER AND PARER. JOSEPH P. MASSEY, Allegan, Mich., assignor of one-half to Theodore S. Updyke, Allegan, Mich. Filed Dec. 21, 1901. Serial No. 86,815. (No model.)

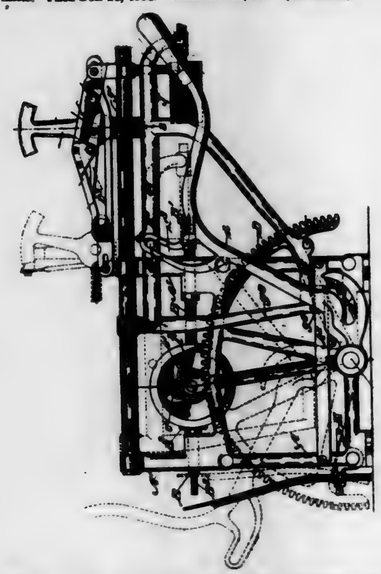

Claim.—1. In an apple-parer, the combination of the fork and means for rotating it, a reciprocating frame, a vertical shaft carried by said frame, a knife-head-supporting rod suspended from said shaft, a spring for holding and drawing said rod toward the shaft, and a guide for the rod; with a crank pivoted beside the shaft, a gear on the upper end of the shaft, a sector on the upper arm of the crank meshing therewith, a pin on the short arm of the crank, and a stationary plate having a guide-slot traversed by said pin, substantially as and for the purpose described.

2. The combination of the fork and means for rotating it; with a reciprocating frame, the knife-supporting shaft carried thereby, a segment on the end of said shaft, a sector meshing with said segment, a bell-crank carrying said sector, on one arm and having a pin on its other arm, a stationary plate having a guide-slot traversed by said pin, and a cam pivoted in said guide-slot adapted to cause the proper oscillation of the crank when the frame moves toward the fork, substantially as described.

3. The combination of the rotatable tubular shaft, the core-ejector therein, the bevel-gears for rotating the tubular shaft, the sector, pinion and clutch for operating the gears, the pivoted stop for the sector, the lever attached to the stop adapted to actuate the core-ejector when the stop is struck by the sector; with a reciprocating frame, the coring-blade thereon, the knife-supporting shaft carried by said frame, a gear on the end of said shaft, a segment meshing with said gear, a bell-crank carrying said segment on one arm and having a pin on its other arm, a stationary plate having a guide-slot traversed by said pin, and a cam pivoted in said guide-slot and an oscillating lever and connections for operating the sector and said frame, all substantially as and for the purpose set forth.

4. The combination of a rotatable fork, a reciprocating frame, a cutter-head carried by said frame, means for partially turning said cutter-head during the paring operation, and for stopping its rotation on its return stroke, and a reciprocating lever and connections for operating said carriage and rotating said fork from such lever, substantially as described.

5. The combination of a rotatable fork, a reciprocating frame, a cutter-head carried by said frame, means for partially turning said cutter-head during the paring operation, and for stopping its rotation on its return stroke, and a reciprocating lever and connections for operating said carriage and rotating said fork from such lever; with a coring-knife rigidly attached to said frame in rear of the cutter-head, and adapted to core the fruit simultaneously with the paring operation, substantially as described.

6. In an apple-paring machine, the combination of the movable frame, a rotatable shaft mounted thereon, the knife-head suspended from and rotatable with the shaft, a segment on the shaft, a sector meshing with the segment, and a vibrating arm carrying the sector having a pin; with a slotted plate beside the path of the sector having a slot adapted to be traversed by said pin to rock the arm, and a cam adapted to engage the pin and rock the sector during the paring operation, substantially as described.

7. In an apple-paring machine, the combination of the rotatable shaft, the fork on one end thereof, the bevel-gear and pinion for actuating said shaft, a vibrating segment, a pinion meshing with said segment, and clutch devices between said pinion and gear; with a reciprocating frame, the paring devices thereon and a rocking lever connected to the segment having open-ended cam-slots adapted to alternately engage pins on the frame and reciprocate the latter, said slots and pins imparting different speed to the frame in its strokes, substantially as described.

8. In an apple-paring machine, the combination of the rotatable fork, a reciprocating frame, the coring and paring devices mounted thereon; a rocking lever provided with open-ended cam-slots at different distances from its pivot, and studs on the frame adapted to be respectively engaged and disengaged by the cam-slots of the lever on each stroke of the frame, for the purpose and substantially as described.

9. In an apple-parer, the combination of the sliding frame, a rotatable shaft mounted thereon, the knife-head suspended from said shaft, a segment on the shaft, a sector meshing with the segment, and a rocking arm carrying the sector on one end and having a pin on the other end; with a slotted guide-plate beside the path of the sector having a slot adapted to be traversed by said pin, and a cam-plate pivoted in the slot and adapted to engage the pin and rock the sector during the paring operation, substantially as described.

10. The combination of the rotary shaft carrying a fork, the oscillating segment and gearing for rotating said shaft, and a rocking lever for oscillating said segment provided with open-ended cam-slots at different distances from its pivot; with a reciprocating frame movable to and from the fork, provided with studs respectively adapted to be successively engaged and disengaged by the corresponding cam-slots of the lever on each stroke of the frame to impart different speeds to the latter, substantially as described.

11. The combination of the rotary shaft carrying a fork, the oscillating segment and clutch-gearing for rotating said shaft, and a rocking lever for oscillating said segment provided with upper and lower open-ended cam-slots; with a reciprocating frame movable to and from the fork, provided with upper and lower studs adapted to alternately and respectively engage and disengage the cam-slots of the lever on each stroke of the frame to impart different speeds thereto, and the paring and coring devices mounted on and movable with said frame substantially as described.

12. The combination of the rotary shaft carrying a fork, an oscillating lever having two open cam-slots at different distances from its pivot, clutch-gearing actuated by said lever for rotating said shaft, and means for ejecting the core upon the completion of the paring and coring operations; with a reciprocating frame movable to and from the fork, upper and lower studs on said frame adapted to alternately engage the slots on the lever on each stroke of the frame to impart different speeds thereto, and the paring and coring devices mounted on and movable with said frame all substantially as and for the purpose described.

13. In an apple-parer, the combination of the fork and means for rotating it, a reciprocating frame, a vertical shaft carried by said frame, a knife-head suspended from said shaft, a controlling-spring for the knife-head, and a guide therefor, a crank pivoted beside the shaft, a sector on one end of the crank meshing a gear on the shaft, and a pin on the other arm of the crank; with a stationary plate having a guide-slot traversed by said pin and a cam pivoted in said slot, substantially as and for the purpose described.

706,429. LAMPBLACK APPARATUS. JOHN L. MANN, Smithton, W. Va., assignor to the Castle Brook Carbon Black Company, Williamsport, Pa. Filed Feb. 3, 1902. Serial No. 92,445. (No model.)

Claim.—1. In an apparatus for making carbon-black, the combination with means for producing carbon, of carbon-collecting means made up of a substantially horizontal series of members mounted to rotate in individual substantially parallel vertical planes which are separated by vertical interspaces, each member being arranged with its peripheral edge in coöperative relation with the carbon-producing means and provided with opposite flat unbroken heads or ends forming collecting-surfaces, and scrapers for the heads of the collecting members.

2. In an apparatus for making carbon-black, the combination with carbon-producing means, of carbon-collecting means made up of a substantially horizontal series of wheels mounted to rotate in individual substantially parallel vertical planes which are separated by vertical interspaces, each member being disposed above the carbon-producing means with its periphery in coöperative relation therewith, and provided with opposite flat unbroken heads or ends which are flush throughout with the respective sides of the periphery of the wheel and forming carbon-collecting surfaces, and scrapers disposed across the heads to scrape carbon therefrom.

3. In an apparatus for making carbon-black, the combination with carbon-producing means, of a plurality of vertically-disposed rotatable carbon-collecting wheels separated by vertical interspaces and having opposite flat carbon-collecting heads, and scrapers located between the carbon-collecting wheels, each scraper being in operative relation to the opposite faces of adjacent wheels.

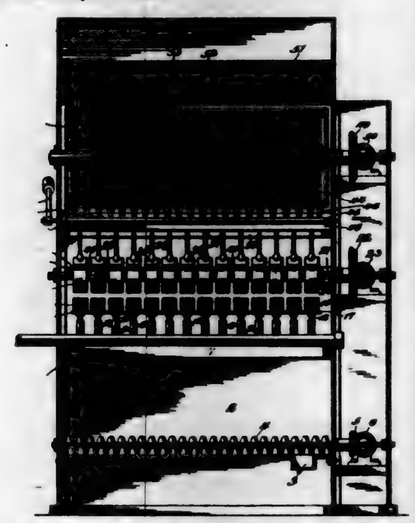

4. In an apparatus for making carbon-black, the combination with a casing, and carbon-producing means housed thereby, of a vertically-disposed rotatable carbon-collecting wheel located above the carbon-producing means and having a flat carbon-collecting head, and a relatively fixed scraper in operative relation to the flat carbon-collecting head of the wheel and having its opposite ends supported at opposite sides of the casing.

5. In an apparatus for making carbon-black, the combination with a casing, and carbon-producing means housed therein, of a plurality of vertically-disposed rotatable carbon-collecting wheels having opposite flat carbon-collecting heads and separated by vertical interspaces, scrapers located in the interspaces in frictional engagement with the opposite heads of adjacent wheels, and scraper-supports carried by opposite sides of the casing, the opposite ends of the scrapers being carried by the respective supports.

6. In an apparatus for making carbon-black, the combination with a casing, and carbon-producing means housed therein, of a plurality of vertically-disposed rotatable carbon-collecting wheels mounted upon a common axis and provided with opposite flat carbon-collecting heads, the wheels being separated by vertical interspaces, notched supports carried by the casing and located at opposite sides of the wheels, and scrapers located in the interspaces between the wheels to scrape the heads thereof and having their opposite ends seated in the corresponding notches of the opposite supports.

7. In an apparatus for making carbon-black, the combination with carbon-producing means, of a rotatable shaft located adjacent to the same, a plurality of rotatable carbon-collecting wheels mounted upon the shaft and having their hubs projected at corresponding ends to form spacing devices for the wheels, the latter also having opposite flat carbon-collecting heads, and scrapers located in the spaces between the wheels and in operative relation to the heads thereof.

8. In an apparatus for making carbon-black, the combination with carbon-producing means, of a rotatable shaft located adjacent thereto, a plurality of hollow carbon-collecting wheels mounted thereon, each wheel having one flat integral carbon-collecting head, a hub projected beyond the opposite side of the wheel, and a separate flat carbon-collecting head applied to that side of the wheel having the projected hub portion forming a spacing device for the adjacent wheels, and scrapers situated in the spaces between the wheels and in operative relation to the adjacent heads thereof.

9. An apparatus for making carbon-black, having carbon-producing means, in combination with carbon-collecting means made up of a plurality of carbon-collecting wheels mounted to rotate in substantially parallel individual planes which are separated by interspaces, each wheel consisting of a hollow casting, and a flat unbroken head secured to one end of the wheel and forming a carbon-collecting surface.

10. In an apparatus for making carbon-black, the combination with carbon-producing means, of a hollow rotatable carbon-collecting wheel in operative relation thereto, and provided upon its inner periphery with integral ribs disposed transversely of the rim thereof, and a flat circular carbon-collecting head secured to corresponding ends of the ribs.

11. An apparatus for making carbon-black having carbon-producing means, in combination with carbon-collecting means made up of a plurality of carbon-collecting wheels mounted to rotate in substantially parallel individual planes which are separated by interspaces, each wheel consisting of a hollow cylindrical casting having one integral head, and a separate flat unbroken head secured to the opposite end of the casting, both heads forming carbon-collecting surfaces.

12. In an apparatus for making carbon-black, the combination with carbon-producing means, of a rotatable shaft located adjacent thereto, a plurality of carbon-collecting wheels mounted thereon, each wheel comprising an open-ended cylinder having one flat integral carbon-collecting head, a hub projected at the opposite side of the wheel, integral ribs upon the inner periphery of the wheel, and a flat carbon-collecting head closing the open side of the wheel and secured to the adjacent ends of the ribs, fastening means engaging the projected ends of the hubs to connect the wheels to the shaft, said projected hub portions forming spacing devices to separate the wheels, and scrapers located in the spaces between the wheels and in operative relation to the heads thereof.

13. In an apparatus for making carbon-black, the combination with a casing and carbon-producing means housed therein, of a rotatable shaft located above the carbon-producing means, a plurality of vertically-disposed carbon-collecting wheels mounted upon the shaft, each wheel having one flat integral carbon-collecting head, a hub projected at the opposite side of the wheel, the projected portion of the hub bearing against the head of the next adjacent wheel and forming a spacing device to separate the two wheels, a separate flat carbon-collecting head applied to the open side of the wheel, fastening means connecting the respective projected hub portions to the shaft, individual scrapers in operative relation to the peripheries of the respective wheels, supports carried by the frame and located at opposite sides of the shaft, and scrapers having their opposite ends carried by the supports and their intermediate portions located in the spaces between the wheels and in operative relation to the heads thereof.

14. In an apparatus for making carbon-black, the combination with a collecting-surface, of carbon-producing means embodying a burner, and flame-confining means embracing the burner and adjustable toward and away from the carbon-collecting surface independent of the burners.

15. In an apparatus for making carbon-black, the combination with a carbon-collecting surface, of a burner which is adjustable toward and away from said surface, and a flame-confining device embracing the burner and adjustable toward and away from the collecting-surface independently of the adjustment of the burner.

16. In an apparatus for making carbon-black, the combination with a collecting-surface, of a burner in coöperative relation thereto, and an open-ended flame-confining device which is adjustable toward and away from the collecting-surface.

17. In an apparatus for making carbon-black, the combination with a carbon-collecting surface, of a carbon-producing burner, and an open-ended perforate flame-confining device embracing the burner and adjustable toward and away from the collecting-surface.

18. In an apparatus for making carbon-black, the combination with a collecting-surface, of a carbon-producing burner, and a flame-confining device carried by the burner and adjustable thereon toward and away from the carbon-collecting surface.

19. In an apparatus for making carbon-black, the combination with a carbon-collecting surface, of a carbon-producing burner having a screw-threaded part, and a flame-confining device embracing the burner and connected to the screw-threaded part thereof for adjustment toward and away from the carbon-collecting surface.

20. In an apparatus for making carbon-black, the combination with a carbon-collecting surface, of a carbon-producing burner having a screw-threaded part, a nut adjustably applied to the screw-threaded part, and a flame-confining device supported upon the nut and adjustable therewith toward and away from the collecting-surface.

21. In an apparatus for making carbon-black, the combination with a carbon-collecting surface, of a carbon-producing burner having a screw-threaded part, a nut adjustably applied to said screw-threaded part, and a flame-confining device having a cross-bar which is provided with an opening receiving the burner with the cross-bar supported upon and adjustable with the nut.

22. In an apparatus for making carbon-black, the combination with a collecting-surface, of a carbon-producing burner having an intermediate tip and opposite terminal tips, the outer tips being externally screw-threaded, nuts applied to the screw-threaded tips, and a flame-confining device embracing the tips and provided with a pair of cross-bars having open-

ings receiving the terminal tips with the cross-bars supported upon and adjustable with the nuts.

23. In an apparatus for making carbon-black, the combination with a carbon-collecting surface, of a carbon-producing burner having an intermediate tip and opposite externally-screw-threaded tips, adjustable nuts upon the screw-threaded tips, and a flame-confining device comprising a skeleton frame having a pair of cross-bars provided with perforations receiving the screw-threaded tips with the cross-bars resting upon and adjustable with the nuts, and a perforate hood supported upon and rising from the frame.

24. In an apparatus for making carbon-black, the combination with a carbon-collecting surface, of a carbon-producing burner having a screw-threaded nipple, an externally-screw-threaded burner-tip adjustably fitted to the screw-threaded portion of the nipple, a nut adjustably fitted upon the screw-threaded portion of the tip, and a flame-confining device supported upon and adjustable with the nut.

25. In an apparatus for making carbon-black, the combination with a cylindrical carbon-collecting device mounted to rotate upon a horizontal axis, of a carbon-producing burner having a plurality of burner-tips disposed in the vertical plane of the cylinder, with their upper ends arranged in an arc eccentric to that of the collecting-cylinder.

26. In an apparatus for making carbon black, the combination with a vertically-disposed rotatable carbon-collecting wheel, of a carbon-producing burner having a plurality of tips aligned transversely of the burner in the vertical plane of the wheel, the outer tips being nearer to the surface of the wheel than the inner tips.

27. In an apparatus for making carbon-black, the combination with a casing, of a gas-service pipe therein, a plurality of burners carried thereby and disposed transversely thereof, each burner having a plurality of screw-threaded nipples, externally-screw-threaded burner-tips adjustably fitted to the nipples, adjustable nuts fitted upon the outermost screw-threaded tips, an open frame embracing the tips and having cross-bars provided with openings loosely receiving the outermost tips with the cross-bars supported upon and adjustable with the nuts, an upstanding foraminous hood carried by the frame, a horizontal rotatable shaft aligned longitudinally above the gas-service pipe, a plurality of rotatable carbon-collecting wheels mounted upon the shaft and separated by vertical interspaces, each wheel having opposite flat carbon-collecting heads, supports carried within the casing and at opposite sides of the shaft, scrapers lying between the respective wheels in frictional engagement with the adjacent heads thereof to scrape the carbon therefrom and having their opposite ends carried by the respective supports, and individual weighted scrapers in frictional engagement with the peripheries of the respective wheels.

28. In an apparatus for making carbon-black, the combination with carbon-producing means, of rotatable carbon-collecting wheels having opposite flat carbon-collecting heads and flat peripheries, individual scrapers engaging the periphery of each wheel, and scrapers arranged between each pair of wheels to scrape the heads.

29. In an apparatus for making carbon-black, the combination with carbon-producing means, of a rotatable shaft located adjacent thereto, a plurality of hollow carbon-collecting wheels mounted thereon, each wheel having one flat integral head, a hub projected beyond the opposite side of the wheel, and a separate flat head applied to that side of the wheel having the projected hub portion forming a spacing device for the adjacent wheels.

30. In combination with the carbon-collecting means, the carbon-producing means arranged below and spaced from the carbon-collecting means, of flame-confining means arranged in the space between the carbon-collecting means and the carbon-producing means and adjustable independently of the carbon-producing means for the purpose described.

706,480. APPARATUS FOR MAKING CARBON-BLACK. JOHN H. MARS, Blandville, Pa., assignor to the Castle Brook Carbon Black Company, Williamsport, Pa. Filed Apr. 26, 1901. Serial No. 57,567. (No model.)

Claim.—1. In an apparatus for making carbon-black, carbon-producing means, a horizontally-disposed shaft, and carbon-collecting wheels carried thereby and spaced apart thereon and having wedge-shaped peripheries.

2. In an apparatus for making carbon-black, the combination with a series of gas-service burner-pipes, of a horizontally-disposed shaft, and carbon-collecting wheels carried thereby and spaced apart thereon and having wedge-shaped peripheries.

3. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed shaft carrying a series of vertically-disposed rotary carbon-collectors spaced apart to permit passage of air between them, and deflector-plates arranged in the spaces between the collectors.

4. In an apparatus for making carbon-black, the combination with carbon-producing means, of a series of vertically-disposed rotary carbon-collectors spaced apart to permit passage of air between them, and perforated deflector-plates arranged in the spaces between the collectors.

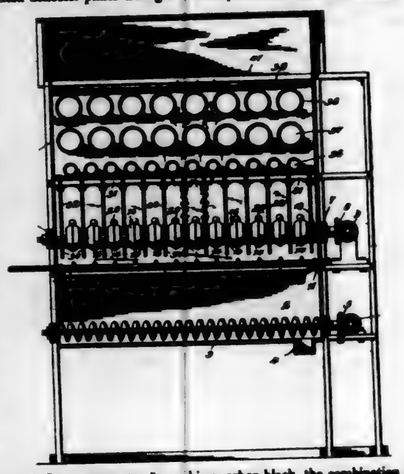

5. In an apparatus for making carbon-black, the combination with a series of gas-service burner-pipes, of a horizontally-disposed shaft arranged above the pipes and carrying vertically-disposed carbon-collectors spaced apart to permit passage of air between them, and deflector-plates arranged between the collectors.

6. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed shaft, wedge-faced carbon-collecting wheels carried by the shaft and spaced apart thereon, and scrapers coacting with the wheels.

7. In an apparatus for making carbon-black, the combination with carbon-producing means, a horizontally-disposed shaft, carbon-collecting wheels carried by the shaft and spaced apart thereon, and having wedge-shaped peripheries, and weighted scrapers having chisel scraping edges to coact with the wheels.

8. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed rotatable shaft, vertically-disposed carbon-collecting wheels carried by and spaced apart upon the shaft to permit a passage of air between the same, a support located adjacent to the shaft, and relatively fixed weighted scrapers independently mounted on the support in coöperative relation with the respective wheels for the purpose described.

9. In an apparatus for making carbon-black, the combination of a series of gas-service burner-pipes, a horizontally-disposed shaft carrying a series of carbon-collecting wheels arranged above said pipes and spaced apart on the shaft and having wedge-shaped peripheries, and scrapers shaped to conform to the peripheries of and to coact with the collecting-wheels.

10. In an apparatus for making carbon-black, the combination of a series of gas-service burner-pipes, a horizontally-disposed shaft carrying a series of carbon-collecting wheels arranged above said pipes and spaced apart on the shaft and having wedge-shaped peripheries, and weighted scrapers having chisel scraping edges shaped to conform to the peripheries of and to coact with the collecting-wheels.

11. In an apparatus for making carbon-black, the combination with carbon-producing means, a horizontally-disposed shaft carrying a series of carbon-collecting wheels spaced apart on the shaft to permit passage of air between them, scrapers coacting with the collecting-wheels and shaped to conform to the peripheries thereof, and perforated deflector-plates arranged in the spaces between the collecting-wheels.

12. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed shaft carrying a series of carbon-collecting wheels spaced apart on the shaft, deflector-plates arranged in the spaces between the wheels, and collecting-cylinders arranged above the spaces between the deflectors.

13. In an apparatus for making carbon-black, the combination of carbon-producing means, a horizontal shaft carrying carbon-collecting wheels spaced apart on the shaft to permit passage of air between them scrapers coacting with the carbon-collecting wheels, perforated deflector-plates arranged in the spaces between the collecting-wheels, and collecting-cylinders arranged above the deflector-plates.

14. In an apparatus for making carbon-black, the combination of carbon-producing means, a horizontally-disposed shaft carrying carbon-collecting wheels spaced apart thereon to permit passage of air between them, scrapers coacting with the carbon-collecting wheels, perforated deflector-plates arranged in the spaces between the said wheels, and open-ended collecting-cylinders arranged above the deflector-plates.

15. In an apparatus for making carbon-black, the combination of carbon-producing means, carbon-collecting wheels spaced apart to permit passage of air between them, scrapers coacting with the carbon-collecting wheels, perforated deflector-plates arranged in the spaces between the wheels, open-ended collecting-cylinders arranged above the deflector-plates, and a screen arranged above the upper series of collecting-cylinders.

16. In an apparatus for making carbon-black, the combination with carbon-producing means, of two shafts, each carrying a series of carbon-collecting wheels spaced apart on the shaft to permit passage of air between them, and being rotated in opposite directions, that is to say toward each other, scrapers coacting with the wheels, perforated deflector-plates arranged in the spaces between the wheels, open-ended collecting-cylinders arranged above the deflecting-cylinders, and a screen arranged above the upper series of collecting-cylinders.

17. In an apparatus for making carbon-black, a pair of substantially horizontal rotatable shafts, vertically-disposed carbon-collecting wheels carried by and rotatable with the shafts and separated by interspaces, carbon-producing burners disposed transversely of the shafts and located beneath the respective wheels, a support located between the shafts, and a series of independent weighted scrapers, one for each wheel, carried by the support and in frictional engagement with the respective wheels.

18. In an apparatus for making carbon-black, a pair of substantially horizontal rotatable shafts, carbon-collecting wheels mounted upon and rotatable with the shafts and separated by interspaces, carbon-producing burners arranged in groups transversely of the shafts and beneath the respective wheels, a support extending longitudinally between the shafts, and a series of individually-movable weighted scrapers, one for each wheel, and having their lower ends pivotally mounted upon the support and their upper portions inclined upwardly and outwardly and in frictional engagement with the respective collecting-wheels.

19. In an apparatus for making carbon-black, the combination of a series of gas-service burner-pipes suitably spaced apart, a horizontal shaft carrying a series of carbon-collecting wheels spaced apart upon the shaft, collecting-wheels arranged in the spaces between the collecting-wheels, and a plurality of series of open-ended collecting-cylinders arranged above the deflectors, the lowest series of cylinders being the smallest and constituting breakers operating initially to retard the currents of the products of combustion and then to direct such currents against the remaining series of collecting-cylinders.

20. In an apparatus for making carbon-black, the combination of a series of gas-service burner-pipes suitably spaced apart, carbon-collectors spaced apart to permit passage of air between them, perforated deflector-plates arranged on each side of the carbon-collectors, series of open-ended collecting-cylinders arranged above the deflectors, the lower series of cylinders being the smallest, and constituting breakers operating initially to retard the currents of the products of combustion and then direct them against the remaining series of collecting-cylinders, a screen arranged above the upper series of collecting-cylinders, and escape-passages arranged above the screen.

21. In an apparatus for making carbon-black, the combination with a suitably-inclosed casing, a hopper formed in the bottom thereof, a worm mounted in the lower portion of the hopper and operating to feed material to a chute arranged at one end of the hopper, carbon-collectors arranged within the casing and rotating in opposite directions, a series of gas-service burner-pipes arranged in a horizontal plane below the collectors and disposed in the arc of a circle with relation thereto, the collectors and gas-pipes being spaced apart to permit passage of air between them and also the deposition of carbon from the collectors past the pipes and into the hopper, scrapers coacting with the carbon-collectors, perforated deflector-plates arranged on each side of the carbon-collectors, a plurality of series of open-ended collecting-cylinders arranged above the deflectors, a screen arranged above the upper series of cylinders, and escape-passages formed in the roof of the casing adjacent to the screen.

22. In an apparatus for making carbon-black, a closed casing having its lower portion formed into a hopper provided at one end of the chute, a worm working in the hopper, a series of gas-service burner-pipes supported in horizontal position upon cross-sills within the casing, shafts carrying carbon-collectors spaced apart to permit passage of air between them, the actuating mechanism for the worm and for the carbon-collectors being on the exterior of the casing, thereby to protect such mechanism from an accumulation of carbon-black, scrapers coacting with the carbon-collectors, perforated deflector-plates arranged on each side of the carbon-collectors, open-ended collecting-cylinders arranged above the deflectors, a screen arranged above the upper series of the cylinders, and escape-passages formed in the roof of the casing adjacent to the screen.

23. In an apparatus for making carbon-black, the combination of carbon-producing means, and a vertically-disposed carbon-collecting wheel, the rim of which is formed with two opposite flat carbon-collecting surfaces, and a peripheral flame-dividing projection located at the junction of the carbon-collecting surfaces, the carbon-producing means being in alinement with the flame-dividing projection to direct the flame to opposite sides thereof and into coöperative relation with the carbon-collecting surfaces.

24. In an apparatus for making carbon-black, the combination with carbon-producing means, of a vertically-disposed rotatable carbon-collecting wheel, having its rim beveled inwardly from its opposite edges to provide opposite flat carbon-collecting surfaces, the pointed intersection of these faces forming a peripheral flame-dividing projection or partition.

25. In an apparatus for making carbon-black, the combination with carbon-producing means, of a plurality of vertically-disposed rotatable carbon-collecting wheels which are separated by interspaces, and partitions located in the interspaces between the carbon-collecting wheels and projected downwardly below the latter and toward the carbon-producing means, and also projected above the wheels.

26. In an apparatus for making carbon-black, the combination with carbon-producing means, of a plurality of vertically-disposed rotatable carbon-collecting wheels located above the carbon-producing means and separated by interspaces, vertical partitions in the interspaces and projected above and below the carbon-collecting wheels, and secondary carbon-collectors located above the wheels and opposite the spaces between the respective partitions.

27. In an apparatus for making carbon-black, the combination of carbon-collecting wheels which are separated by interspaces, carbon-producing means located under each wheel, scrapers for each wheel and vertical partitions situated in the interspaces and projected above and below the wheels.

28. In an apparatus for making carbon-black, the combination with carbon-producing means, of carbon-collectors located above the same and separated by interspaces, vertical partitions located in the interspaces and projected above the carbon-collectors, horizontal series of secondary carbon-collectors located transversely above the primary collectors and with one series above the other, the lowermost series having its members located opposite the space between adjacent partitions, and the members of the next-above series being staggered with respect to the members of the lowermost series.

29. In an apparatus for making carbon-black, the combination of a casing, a horizontal shaft mounted therein, a series of carbon-collecting wheels mounted thereon and spaced apart to permit the passage of air between the same, carbon-burners arranged beneath each carbon-collecting wheel, and perforated plates located between the burners and the carbon-collecting wheels to separate the wheels from each other and direct the flame thereto.

30. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed rotatable shaft located above said means, vertically-disposed carbon-collecting wheels carried by the shaft and having their hubs equally projected at corresponding ends to form means for regularly spacing the wheels, and independent scrapers in coöperative relation with the respective wheels.

31. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed shaft located above said means, vertically-disposed carbon-collecting wheels carried by the shaft and having their hubs provided with projected portions lying against the respective adjacent wheels and thereby spacing the latter, and independent scrapers in coöperative relation with the respective wheels.

32. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed shaft located above said means, vertically-disposed carbon-collecting wheels carried by the shaft and having their hubs terminated flush at one end with the respective adjacent sides of the wheels, and the opposite ends of the hubs projected beyond the sides of the wheels and adapted to lie against the flush ends of the hubs to form spacing devices for the wheels, and independent scrapers in coöperative relation with the respective wheels.

33. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed shaft located above said means, a pair of vertically-disposed carbon-collecting wheels carried by the shaft, one of the wheels having a projected hub portion lying against the other wheel and forming a spacing device to separate the two wheels, and independent scrapers in coöperative relation with the respective wheels.

34. In an apparatus for making carbon-black, the combination with carbon-producing means, of a horizontally-disposed shaft, vertically-disposed carbon-collecting wheels carried by and spaced apart upon the shaft to permit a passage of air between the same, a support located adjacent

to the shaft, and scrapers, one for each wheel, independently mounted on the support in cooperative relation with the respective wheels, for the purpose described.

706,481. APPARATUS FOR MAKING LAMPBLACK. JOHN H. MANN, Mendville, Pa., assignor to the Castle Brook Carbon Black Company, Williamsport, Pa. Filed June 27, 1901. Serial No. 66,203. (No model.)

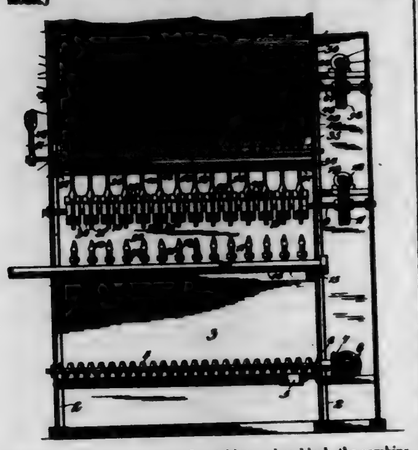

Claim.—1. In an apparatus for making carbon-black, the combination with carbon-producing means, of a vertically-rotatable carbon-collecting wheel having opposite flat collecting-surfaces the adjacent portions of which lie in the same plane, and flame-dividing means projecting beyond and lying between the said surfaces.

2. In an apparatus for making carbon-black, the combination with carbon-producing means, of a carbon-collecting wheel having a T-shaped collecting-face.

3. In an apparatus for making carbon-black, the combination with a carbon-collecting wheel having opposite flat collecting-surfaces and an intermediate circumferential flange located between said surfaces, of gas-burning means disposed to direct the flame against the flange.

4. In an apparatus for making carbon-black, a shaft, carbon-collecting wheels secured thereto and suitably spaced apart, each wheel being provided with opposite flat collecting-surfaces and an intermediate circumferential flange disposed at substantially right angles thereto, gas-burner pipes arranged below the said wheels and carrying tips disposed to conform to the periphery of and to impinge against the said flanges, and scraping means supported above the wheels and coacting with the collecting-surfaces.

5. In an apparatus for making carbon-black, the combination with carbon-producing means, carbon-collecting wheels, and scrapers coacting therewith, a revolvable open-work cylinder arranged above the carbon-collecting wheels, and means coacting with the cylinder to clear the same of accumulated carbon.

6. In an apparatus for making carbon-black, the combination with carbon-producing means, carbon-collecting wheels arranged above the same, scraping means coacting with the carbon-collecting wheels, an open-work cylinder above the carbon-collecting wheels, means for removing the accumulated carbon from the cylinder, and carbon-retaining means arranged above the cylinder.

7. In an apparatus for making carbon-black, the combination with suitable carbon-producing means, of an open-work carbon-collecting cylinder arranged above the same, means for removing the carbon from the cylinder, a collecting-chute arranged below the cylinder, and carbon-collecting means arranged above the cylinder.

8. In an apparatus for making carbon-black, the combination with a casing for suitable carbon-producing means, of a rotary carbon-collecting perforate cylinder arranged above the carbon-producing means, the ends of the cylinder being open, and escape-openings in the casing adjacent to the open ends of the cylinder, whereby to permit escape of heated air from the cylinder.

9. In an apparatus for making carbon-black, a casing for carbon-producing mechanism, an open-top roof, a hood so disposed over the roof as to prevent air-passages, and inclined screens connecting with the inner edges of the roof and with the top of the casing.

10. In an apparatus for making carbon-black, the combination with carbon-producing means, of a carbon-collecting wheel comprising two like portions suitably assembled, each comprising a hub portion, a plurality of arms, collecting-surfaces carried by the arms, and flanges carried by the collecting-faces.

11. In an apparatus for making carbon-black, the combination with suitable carbon-producing means, of an open-work carbon-collecting cylinder arranged above the same, a weight-controlled brush for removing the carbon from the cylinder, a collecting-chute arranged below the cylinder, and carbon-collecting means arranged above the cylinder.

12. In an apparatus for making carbon-black, the combination with suitable carbon-producing means, of an open-work carbon-collecting cylinder arranged above the same, means for removing the carbon from the cylinder, and a collecting-chute arranged below the cylinder.

13. In an apparatus for making carbon-black, the combination with carbon-producing means, of a hollow rotary perforate collecting-cylinder mounted over the carbon-producing means to collect the carbon and permit of the free escape of heated air, and a scraper in frictional engagement with the rotatable collector-cylinder.

14. In an apparatus for making carbon-black, the combination with carbon-producing means, of a hollow rotary collecting-cylinder formed of metallic netting and mounted over the carbon-producing means to collect the carbon and permit of the free escape of heated air, and a scraper in frictional engagement with the rotatable collecting-cylinder.

15. In an apparatus for making carbon-black, the combination with carbon-producing means, of a pair of primary carbon-collectors located above the carbon-producing means and separated by an interspace, a rotatable secondary carbon-collector located above and aligned with the interspace between the primary collectors, a scraper in frictional engagement with the lower side of the secondary collector, and a chute located between the primary and secondary collectors and constructed to receive the carbon scraped from the secondary collector and to discharge the same downwardly through the interspace between the primary collectors.

16. In an apparatus for making carbon-black, the combination with carbon-producing means, and a rotatable carbon-collector located above said means, of a support located above the carbon-collector, and a scraper having its upper end provided with a hook which is detachably engaged with the support to pivotally mount the scraper, the latter being normally in contact with the carbon-collector.

17. In an apparatus for making carbon-black, the combination of a horizontal shaft, a series of vertically-disposed carbon-collecting wheels carried thereby and separated by interspaces, and a plurality of carbon-producing burners disposed below the respective wheels, each burner having a plurality of tips which are individually adjustable in a vertical direction and disposed in an arc of a circle.

18. In an apparatus for making carbon-black, the combination of a horizontal shaft, vertically-disposed carbon-collecting wheels carried thereby and separated by interspaces, and carbon-producing burners corresponding to and located below the respective wheels, each burner having a plurality of upstanding screw-threaded nipples which increase in length outwardly from an intermediate nipple, and burner-tips fitted to and individually adjustable in a vertical direction in the screw-threaded portions of the respective nipples and disposed in the arc of a circle.

706,482. SELF-CLOSING VALVE. FREDERIC H. MASON, Spokane, Wash. Filed Dec. 13, 1901. Serial No. 40,940. (No model.)

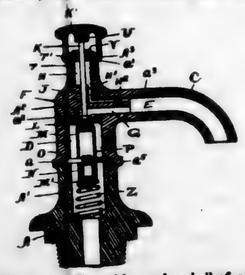

Claim.—1. The combination with a valve-shell of a valve-closing with an opening against the fluid-pressure, and a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior communicating with the fluid under pressure, one part of the cushion being connected to the shell and the other part thereof to the valve, the cylinder of said fluid-cushion being closed at both ends and having its communication with the valve-chamber at its middle portion, substantially as specified.

2. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior commencing with the fluid under pressure as its interior space expands or contracts in operation, one part of the cushion being connected to the shell and the other part thereof to the valve and movable therewith, said fluid-cushion cylinder being closed at both ends and having ingress and egress opening for the fluid at its middle portion, said fluid-cushion retarding and steadying the movement of the valve in both directions, substantially as specified.

3. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, and a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior communicating with the fluid under pressure, one part of the cushion being connected to the shell and the other part thereof to the valve, said fluid-cushion cylinder being closed at both ends and having slots in its middle portion for the fluid to pass in and out, substantially as specified.

4. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, of a double-acting fluid-cushion piston and cylinder immersed in and its interior communicating with the fluid under pressure within the valve-shell, and connections for operating said fluid-cushion by movement of the valve in either direction, the cylinder of said fluid-cushion being closed at both ends, substantially as specified.

5. The combination with a valve of a valve-shell having two screw-threaded parts or sections, a transverse pin fitting between said sections, and a two-part fluid-cushion, one part connected to the valve-shell by said transverse pin and the other part connected to the valve, substantially as specified.

6. The combination with a valve of a valve-shell having two screw-threaded sections, a transverse pin fitting between said sections, a fluid-cushion piston secured to said pin, and a fluid-cushion cylinder connected to the valve and having slots to receive said pin, substantially as specified.

7. The combination with a valve of a valve-shell having two screw-threaded sections, a transverse pin fitting between said sections, a fluid-cushion piston secured to said pin, and a fluid-cushion cylinder connected to said valve and having slots to receive said pin, said pin having a screw-threaded connection with said fluid-cushion piston, substantially as specified.

8. The combination with a valve-shell and valve, of a fluid-cushion immersed in and its interior communicating with the fluid under pressure within said shell, and composed of two telescopic parts one connected to the valve-shell and the other to the valve, and operating to cushion and steady the movement of the valve, the outer or cylinder part of said fluid-cushion being closed at both ends, substantially as specified.

9. The combination with a valve-shell and valve, of a fluid-cushion immersed in and its interior communicating with the fluid under pressure within said shell, and composed of two telescopic parts one connected to the valve-shell and the other to the valve, and operating to cushion and steady the movement of the valve, the outer telescopic part or cylinder of said fluid-cushion being closed at both ends and having openings at its middle portion for ingress and egress of the fluid, said valve-shell having a drainage-chamber and a drainage-channel leading therefrom to the delivery chamber or orifice of the shell, said valve-shell having a contracted outlet-channel leading from said valve-chamber to said delivery-chamber and coöperating with said drainage-channel to draw or suck the liquid out of the drainage-chamber, substantially as specified.

10. The combination with a valve-shell and valve, of a fluid-cushion immersed in and its interior communicating with the fluid under pressure within said shell, and composed of two telescopic parts one connected to the valve-shell and the other to the valve, and operating to cushion and steady the movement of the valve, the outer telescopic part or cylinder of said fluid-cushion being closed at both ends and having openings at its middle portion for ingress and egress of the fluid, said valve-shell having a cushion-chamber, a valve-chamber, a delivery chamber or orifice, a contracted outlet-channel leading from said valve-chamber to said delivery-chamber, a drainage-chamber, and a drainage-channel terminating in said delivery-chamber adjacent to said outlet-channel, and having a portion parallel to said outlet-channel, the fluid flow and pressure in the contracted outlet-channel operating to draw or suck the liquid out of the drainage chamber and channel, substantially as specified.

11. The combination with a valve-shell and valve, of a fluid-cushion immersed in and its interior communicating with the fluid under pressure within said shell, and composed of two telescopic parts one connected to the valve-shell and the other to the valve, and operating to cushion and steady the movement of the valve, the outer telescopic part or cylinder of said cushion being closed at both ends and having openings at its middle portion for ingress and egress of the fluid, substantially as specified.

12. The combination with a valve-shell of a valve and valve-stem, a fluid-cushion piston and cylinder, the latter having a shouldered screw-threaded end upon which the valve is mounted and to which the valve-stem is secured, substantially as specified.

13. The combination with a valve-shell of a valve and valve-stem, a fluid-cushion piston and cylinder, the latter having a shouldered screw-threaded end upon which the valve is mounted and to which the valve-stem is secured, and said cushion-cylinder having a removable plug closing its opposite end, substantially as specified.

14. The combination with a valve and valve-stem, of a valve-shell having two sections or fittings screw-threaded together, a transverse pin fitting between the meeting ends of said sections, a fluid-cushion piston and cylinder, one secured to said transverse pin and the other slotted to reciprocate in respect thereto, substantially as specified.

15. The combination with a valve and valve-stem of a valve-shell, having two screw-threaded sections, a transverse pin between the meeting ends of said sections, a fluid-cushion piston secured thereto, a reciprocating fluid-cushion cylinder having longitudinal slots to receive said pin, and a cap on the upper end of said valve-stem, said cap and valve-shell having a longitudinal groove and pin to prevent rotation, substantially as specified.

16. The combination with a valve and valve-stem of a valve-shell, having two screw-threaded sections, a transverse pin between the meeting ends of said sections, a fluid-cushion piston secured thereto, a reciprocating fluid-cushion cylinder having longitudinal slots to receive said pin, a shouldered end to receive said valve, and screw-threads to receive the valve-stem, substantially as specified.

17. The combination with a valve and valve-stem of a valve-shell, having two screw-threaded sections, a transverse pin between the meeting ends of said sections, a fluid-cushion piston secured thereto, a reciprocating fluid-cushion cylinder having longitudinal slots to receive said pin, a shouldered end to receive said valve, screw-threads to receive the valve-stem, and a nut () to hold the valve in place, substantially as specified.

18. The combination with a valve and valve-stem of a valve-shell, having two screw-threaded sections, a transverse pin between the meeting ends of said sections, a fluid-cushion piston secured thereto, a reciprocating fluid-cushion cylinder having longitudinal slots to receive said pin, a shouldered end to receive said valve, and a removable screw-plug a its opposite end, substantially as specified.

19. The combination with a valve and valve-stem of a valve-shell, having two screw-threaded sections, a transverse pin between the meeting ends of said sections, a fluid-cushion piston secured thereto, a reciprocating fluid-cushion cylinder having longitudinal slots to receive said pin and a cap on the upper end of said valve-stem, said cap and valve-shell having a longitudinal groove and pin to prevent rotation, said longitudinal slots in the cushion-cylinder and in the valve-stem cap having transverse slots to adapt the valve to be held open, substantially as specified.

20. The combination with a valve and valve-stem, of a valve-shell having two sections or fittings screw-threaded together, a transverse pin fitting between the meeting ends of said sections, a fluid-cushion piston and cylinder, one secured to said transverse pin and the other slotted to reciprocate in respect thereto, one of said screw-threaded sections of the valve-shell having notches or recesses in its end to receive said transverse pin, substantially as specified.

21. The combination with a bowl or vessel of a valve-shell, a valve therein closing with and opening against the fluid-pressure, a horizontally-extending valve-stem having a cap or knob on its outer end, and an upright wall or slab through which the valve-stem projects and behind which the valve-shell and its supply-pipe and discharge-tube connections fit, whereby the valve is rendered less capable of being tied open, substantially as specified.

22. The combination with a bowl or vessel, a valve therein closing with and opening against the fluid-pressure, a fluid-cushion composed of two telescopic parts, one connected to the valve-shell and the other to the valve, a horizontally-extending valve-stem having a cap or knob on its outer end, and an upright wall or slab through which the valve-stem projects and behind which the valve-shell and its connections fit, whereby the valve is rendered less capable of being tied open, substantially as specified.

23. The combination with a valve of a valve-shell having two screw-threaded parts or sections, a transverse pin fitting between said sections, and a two-part fluid-cushion, one part connected to the valve-shell by said transverse pin and the other part connected to the valve, said valve-shell having a valve-seat and valve-chamber, a drainage-chamber, a delivery or discharge chamber, an escape-outlet connecting the valve-chamber and delivery-chamber, and a drainage-outlet connecting the drainage-chamber and delivery-chamber, substantially as specified.

24. The combination with a valve-shell, of a valve and a fluid-cushion immersed in the fluid under pressure in the valve-shell and composed of two telescopic parts, one connected to the valve-shell and the other to the valve, the outer or cylinder part of said fluid-cushion being closed at both ends and having an ingress and egress opening for the fluid at its middle portion, substantially as specified.

25. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior communicating with

the fluid under pressure, one part of the cushion being connected to the shell and the other part thereof to the valve, the outer or cylinder part of said fluid-cushion being closed at both ends and having an ingress and egress opening for the fluid at its middle portion and a supplemental means to aid the water-pressure inclosing the valve, substantially as specified.

26. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior communicating with the fluid under pressure, one part of the cushion being connected to the shell and the other part thereof to the valve, the outer or cylinder part of said fluid-cushion being closed at both ends and having an ingress and egress opening for the fluid at its middle portion and a spring to supplement or aid the water-pressure in closing the valve when the water-pressure is low or wanting, substantially as specified.

27. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, and a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior communicating with the fluid under pressure, one part of the cushion being connected to the shell and the other part thereof to the valve, the outer telescopic part or cylinder of said fluid-cushion being closed at both ends and having openings at its middle portion for ingress and egress of the fluid, said valve-shell having a cushion-chamber D, delivery-chamber E, valve-chamber F and a comparatively small outlet-channel G connecting said chambers E and F, a drainage-chamber and drainage-channel leading into said delivery-chamber at the end of said contracted outlet-channel G to cause the flow of the liquid under pressure to draw out or suck the liquid from the drainage chamber and channel, substantially as specified.

28. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, and a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior communicating with the fluid under pressure, one part of the cushion being connected to the shell and the other part thereof to the valve, the outer telescopic part or cylinder of said fluid-cushion being closed at both ends and having openings at its middle portion for ingress and egress of the fluid, said valve-shell having a delivery-chamber E, valve-chamber F and a comparatively small outlet-channel G connecting said chambers E and F, a drainage-chamber and drainage-channel leading into said delivery-chamber at the end of said contracted outlet-channel G to cause the flow of the liquid under pressure to draw out or suck the liquid from the drainage chamber and channel, substantially as specified.

29. The combination with a valve-shell of a valve closing with and opening against the fluid-pressure, and a fluid-cushion cylinder and piston within the valve-shell immersed in and its interior communicating with the fluid under pressure, one part of the cushion being connected to the shell and the other part thereof to the valve, the outer telescopic part or cylinder of said fluid-cushion being closed at both ends and having openings at its middle portion for ingress and egress of the fluid, said valve-shell having a cushion-chamber D, delivery-chamber E, valve-chamber F, and a comparatively small outlet-channel G connecting said chambers E and F, drainage-chamber H and drainage-channels H', H^2, said channel H^2 extending parallel to said channel G, substantially as specified.

706,433. CUT-OFF DEVICE FOR TRAIN-LINES. GILBERT C. MOORE, Guntown, Miss. Filed Mar. 17, 1902. Serial No. 98,585. (No model.)

Claim.—The combination with a train-line, of a two-way cock mounted in said line and provided with a lever extending at an angle to the said train-line when the valve is open, a chain connected to said lever and bearing a snap-hook, and a chain bearing a snap engaging said first-mentioned snap and having grasping resilient jaws constructed to hold said snap until said lever is straightened out and to release said snap when the pull becomes greater and thereby avoid breaking the chains, substantially as described.

706,434. END-BOARD FOR FARM-WAGONS. CLYDE S. MOSER, Shabbona, Ill. Filed June 5, 1902. Serial No. 110,367. (No model.)

Claim.—The combination with the side-boards of a wagon, of an end-board consisting of two sections, cleats secured to the inner sides of the side-boards and provided with vertically-disposed slots and with a recess or keeper, said slots having contracted entrances, angle-plates secured to the ends of the sections of the end-board and provided with heads and shanks which correspond in shape and fit said vertical slots, one of said sections of the end-board being divided into two parts, which parts are hinged together, locks connected to the sections of the end-board and adapted to engage the keepers of the cleats, and a lock connected to the hinged part of one of the end-board sections and adapted to engage a keeper in the bottom of the wagon-box, substantially as set forth.

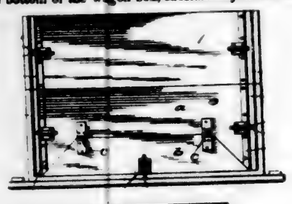

706,435. CIRCUIT-CLOSER. DAVID F. MULKEY, Soddy, Tenn. Filed Dec. 31, 1901. Serial No. 87,863. (No model.)

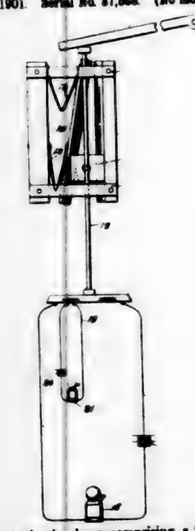

Claim.—1. A circuit-closer comprising a fixed guide, a movable guide, springs engaging near opposite ends thereof whereby it may move in angular relation to the fixed guide, a block movable along the guides, and a contact carried by the block, substantially as specified.

2. A circuit-closer, comprising a frame, a side member of which forms a guide, a spring-pressed guide in the frame, a block movable along said guides, a rod carried by said block, a contact connected to the rod, and means for moving the rod in one direction, substantially as specified.

3. A circuit-closer, comprising a frame, one member of which forms a guide, a movable guide in the frame, spring connections near opposite ends of said movable guide and the frame, a block movable along said guides, a rod carried by the block, a plurality of contacts carried by the rod, and a lever for moving said rod to circuit-closing position, substantially as specified.

706,436. APPARATUS FOR THE ELECTROLYTICAL TREATMENT OF ORES OR SLIMES. FRANK T. MUNFORD, Kalgoorlie, Western Australia, Australia. Filed Sept. 30, 1901. Serial No. 77,077. (No model.)

Claim.—1. An apparatus for the extraction of metals from their ores and slimes, comprising a metallic drum, a copper lining therein, means to maintain said lining continually amalgamated, a trailing electrical contact for the drum, a plurality of conductive bars passing longitudinally through the drum and insulated therefrom, and means to rotate said drum substantially as described.

2. An apparatus for the extraction of metals from their ores and slimes, comprising a rotatable cylindrical metallic drum, a copper lining therein, a body of mercury in the drum to maintain the lining amalgamated, a valve-controlled inlet and outlet, and a relief-valve at one end, a plurality of conductive rods insulated from and passing longitudinally through the drum, a metallic ring connecting the bars, trailing electrical contact for the drum and one for said ring, substantially as described.

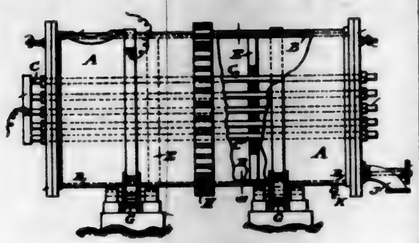

706,487. MACHINE FOR HANDLING VEHICLES. GEORGE R. MYERS and JESSE S. MYERS, St. Joseph, Mo. Filed Feb. 5, 1901. Serial No. 46,142. (No model.)

Claim.—1. The improved apparatus for the use specified, comprising parallel tracks which gradually increase in elevation from front to rear, two separate trucks, adapted to run on said tracks one immediately in front of the other, side supports for wheels of vehicles to be run on the said tracks, each supports being lower than the highest elevation of said tracks, and the trucks having top portions with which the vehicle-axles come into contact as the vehicle is pushed over the tracks, substantially as shown and described.

2. An apparatus for handling and cleaning vehicles, comprising tracks resting upon ground or floor, two separate sets of tracks, each set bearing a framework of its own, the one set of tracks running on the tracks immediately in front of the other set, and unconnected with each other in any way, and having inclined top portions as described, whereby vehicles of different lengths may be elevated as and for the purpose specified.

3. An apparatus for handling and cleaning vehicles consisting of track and front and rear trucks, the upper framework of rear truck being stationary or fixed, and inclined with lower end to front of track adapted for having vehicles whose rear axles may be of different heights readily accommodated thereon, substantially as described.

4. An apparatus for handling and cleaning vehicles consisting of track and front and rear trucks, the one set of trucks immediately in front of the other, the front truck so constructed, that the framework forming the upper part thereof is free to move up and down at rear end, and is provided with suitable contrivances for raising and lowering and holding in place, and adapted for collapsing so as to allow the rear axle of vehicle to clear it and to be raised to allow front axle to rest thereon and held there while vehicle is being handled, substantially as shown and for the purpose specified.

5. An apparatus for handling and cleaning vehicles consisting of track and trucks, the one set of trucks immediately in front of the other, and the front set being provided with an automatic release, adapted for tripping and causing the upper framework of front truck, when elevated at rear end to collapse, thereby releasing front axle of vehicle and allowing rear axle to pass over front truck unobstructed, substantially as shown and for the purpose specified.

6. In an apparatus for the purpose specified, the combination, with a track gradually increasing in height, of a truck adapted to run thereon and having a hinged top portion which is vertically adjustable at one end, a ratchet-bar pendent from the latter, a pivoted lever having a pawl adapted to engage said ratchet-bar, and a releasing device or trip pivoted to the truck and having a projecting arm, and a fixed obstruction on the track with which the trip comes in contact in the manner described.

7. In an apparatus for the purpose specified, the truck having a hinged top which is free at one end, a ratchet and pawl for locking the same in different elevations, and a pivoted lever one end of which is adapted to engage said free end of the adjustable top, for raising it, as shown and described.

706,438. MEASURING DEVICE FOR ARTESIAN WELLS. SAMUEL MCCAVERTEY, Washington, Pa. Filed Oct. 16, 1901. Serial No. 78,857. (No model.)

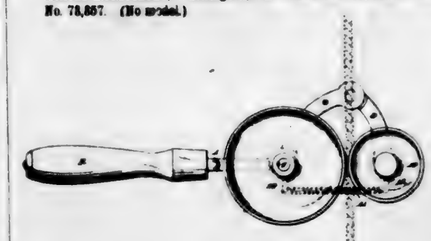

Claim.—1. In a device for measuring the depth of wells, a frame having a handle secured to one end thereof and a shaft journaled in the other end, one end of said shaft extending into the casing of a register for the purpose of operating the register, a drive-wheel rigidly mounted on said shaft, an upwardly-extending arm secured to the frame, a downwardly-extending bracket-arm pivotally secured to the upper end of said first-named arm, a pulley journaled in the lower extremity of said bracket-arm between which and said drive-wheel the rope passes, and a spring connected to said bracket-arm for normally holding the rope in engagement with the drive-wheel, substantially as described.

2. In a device for measuring the depths of wells, a frame having a handle secured to one end thereof, a hub carried by the other end of the frame and having a shaft journaled therein, a drive-wheel having a milled periphery secured to one end of said shaft, the other end of said shaft extending into the casing of the register, for the purpose of operating the register, an arm carried by the hub and extending above said drive-wheel, a bracket-arm pivotally secured to said arm and carrying a revolnble pulley in alinement with said drive-wheel, lugs carried by the hub and the bracket-arm, and a spring connected to said lugs for holding the rope between said drive-wheel and pulley, substantially as described.

706,439. MOTOR-VEHICLE. HARRY M. MCCALL, Pittsburg, Pa., assignor of five-eighths to James Rees Sons' Company, Pittsburg, Pa. Filed Mar. 7, 1902. Serial No. 97,077. (No model.)

Claim.—1. A motor-vehicle consisting of a traction-wheel having a track concentrically located thereon, a motor-shaft having a disk adapted to engage said track, and a suitable guide for the motor-shaft, whereby the said shaft may be moved in the arc of a circle about the center of the traction-wheel, a means for operating the guide, a motor mounted on said shaft, the weight of the motor, the shaft and their attachments being borne by the said track.

2. A motor-vehicle consisting of a traction-wheel, a track concentrically arranged upon said traction-wheel, a motor having its armature fixed to a motor-shaft, said motor-shaft having at its end a disk adapted to engage said track, a guide adapted to move said shaft and its attachments in the arc of a circle, a means for supporting the field of the motor and hold it against revolution, but permit it to rotate in the arc of a circle and a means for operating the guide.

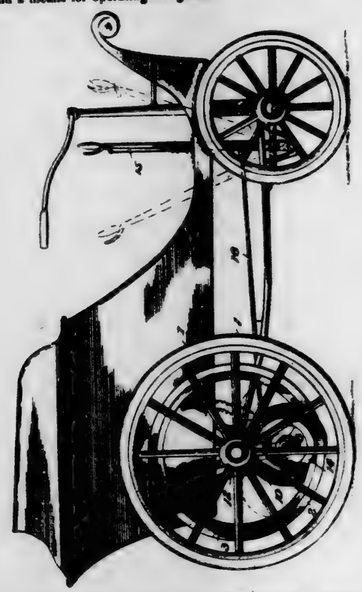

3. A motor-vehicle consisting of a traction-wheel, a track concentrically arranged on said traction-wheel, a motor consisting of an armature and a field, a support for said field adapted to retain it against revolution, but permit it to rotate in the arc of a circle, a motor-shaft fixed to said armature, a disk carried by said motor-shaft and adapted to engage said track, a guide adapted to move said shaft and its attachments in the arc of a circle, and a means for operating said guide.

4. A motor-vehicle consisting of a traction-wheel, a track concentrically arranged upon said traction-wheel, a motor-shaft, a disk arranged on said shaft and adapted to engage said track a guide adapted to rotate said shaft in the arc of a circle, said guide having at its lower end an elongated opening receiving said motor-shaft and a means for operating the motor-shaft and said guide.

5. A motor-vehicle consisting of a traction-wheel, a track concentrically arranged upon said traction-wheel, a motor-shaft adapted to rotate in the arc of a circle, a disk attached to said shaft and adapted to engage said track, a guide having an elongated opening, a sliding box carried by said opening, said motor-shaft being journaled in said box, and a means for operating the motor-shaft and the guide.

6. A motor-vehicle consisting of a traction-wheel, a track concentrically arranged upon said wheel, a motor consisting of an armature and a field, a motor-shaft fixed to said armature, a disk carried by said motor-shaft, said disk adapted to engage said track, a guide adapted to move said motor-shaft and its attachments in the arc of a circle, a means for operating said guide, guides for the motor-field, said guides being so constructed, arranged and connected with the motor-field whereby the same is held from rotation, but permitted to move in the arc of a circle.

706,440. COMBINED DEFLECTOR AND SCREEN. CHARLES R. MCCLURE, Chicago, Ill., assignor of one-half to Charles F. Quiney, Chicago, Ill. Filed Jan. 13, 1902. Serial No. 89,569. (No model.)

Claim.—1. The combination with a removable window-screen for car-windows, of a deflector pivotally secured thereto at the end thereof toward the direction of movement of the car, and a spring interposed between said screen and said deflector tending to maintain the deflector in a plane at substantially right angles to said screen, but permitting said deflector to fold against the screen.

2. The combination with a removable window-screen comprising hinged sections adapted to be folded upon each other when the screen is removed from the window, of a deflector pivotally secured to an end of one section of said screen, and means for normally maintaining said deflector in a plane transverse to that of the screen, said deflector being of a length less than that of the sections of the screen and thereby adapted to lie between said sections when they are removed from the window and folded together.

3. The combination with a removable window-screen for car-windows, of a deflector pivotally secured thereto, lugs projecting from said screen, and a spring interposed between said screen and said deflector tending to retain the deflector in contact with said lugs, but permitting the deflector to fold against the screen.

4. The combination with a removable window-screen, of a deflector, hinges pivotally securing said deflector to said screen, integral lugs on said hinges projecting at substantially right angles to the plane of the screen, and a spring interposed between said screen and said deflector tending to retain the deflector in contact with said lugs, but permitting the deflector to fold against the screen.

5. The combination with a window-screen, of a deflector, brackets secured to said screen, integral lugs projecting from said brackets, a rod supported by said brackets around which portions of the deflector are bent, a spring surrounding said rod and engaging said deflector and said screen whereby the former is maintained in contact with said lugs.

706,441. PULP-SEPARATOR. JEREMIAH K. MCLAUGHLIN, Au Sable Forks, N. Y. Filed Oct. 4, 1901. Serial No. 77,564. (No model.)

Claim.—1. In a separator of the class described, the combination of a vertical shaft, a funnel-shaped screen revoluble with said shaft, and successively smaller deflectors carried by said shaft within said screen and having working surfaces inclined oppositely to the taper of said screen.

2. In a separator of the class described, the combination of a vertical shaft having jet-openings, a screen, and hollow conical deflectors carried by the shaft and having their inner surfaces opposite to said jet-openings, said conical deflectors having their active surfaces inclined to the active surface of said screen.

3. In a separator of the class described, the combination of a vertical shaft having jet-openings, a revoluble screen, means for feeding pulp to the upper end of the screen, and a series of conical deflectors mounted on the shaft and disposed in the path of the pulp discharged by the feed mechanism, said deflectors adapted to be flushed by jets from the shaft-openings.

4. A separator of the class described, comprising a tank having an acid-outlet, a funnel-shaped screen mounted to rotate on a vertical axis, an outlet communicating with the apex end of said screen, and a plurality of conical deflectors arranged within said screen and having their active surfaces inclined in opposite directions to the taper of the screen.

5. A separator of the class described, comprising a tank having an acid-outlet, a funnel-shaped screen mounted within said tank and adapted to rotate on a vertical axis, a pulp-outlet connected with the apex end of the screen, means for feeding pulp to the upper end of said screen, and deflectors mounted within and revolvable with said screen, said deflectors having their active surfaces inclined in opposite directions to the taper of the screen.

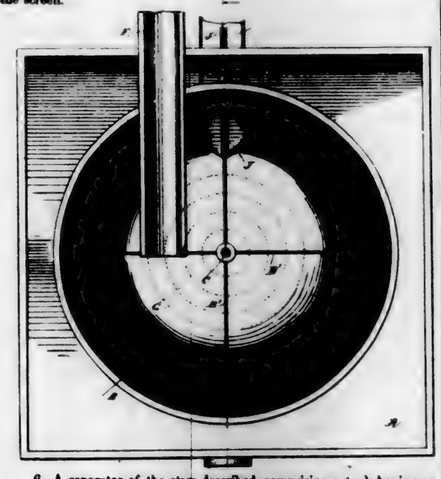

6. A separator of the class described, comprising a tank having an acid-outlet, a funnel-shaped screen mounted to rotate on a vertical axis and within said tank, a pipe provided with a head which communicates with the apex end of said screen, a cap fitted to the apex end of the screen and extending over the open end of said head, and a series of conical deflectors mounted within said screen and having their active surfaces inclined in an opposite direction to the taper of the screen.

7. A separator of the class described, comprising a tank, a vertical hollow shaft provided with jet-openings, a funnel-shaped screen revolvable on a vertical axis, and conical deflectors carried by said shaft and disposed adjacent to said jet-openings, said deflectors having their active surfaces inclined inwardly from the surface of the screen.

8. A separator of the class described, comprising a perforated vertical shaft, a funnel-shaped screen mounted on said shaft, and conical deflectors mounted within the screen and disposed in the path of the jets from said perforated shaft, said deflectors having their active surfaces inclined in opposite directions to the taper of the screen.

9. A separator of the class described, comprising a tank, a funnel-shaped screen mounted to rotate on a vertical axis and within said tank, means for feeding pulp at the foot of the screen, a series of conical deflectors disposed within the screen and having their active surfaces inclined in opposite directions to the taper of the screen, and an inclined perforated pipe disposed outside of the screen and adjacent to the surface thereof, as and for the purpose described.

706,442. AUTOMATIC GRAIN-WEIGHER. ANDREW MCLEOD and JOHN H. MCLEOD, Marietta, Kans. Filed Aug. 17, 1901. Serial No. 72,375. (No model.)

Claim.—1. In a weighing-machine, the combination, with a fixed supporting-frame, a movable lever-supported frame, a weighing-hopper pivoted in the latter, and a weighing-beam connected with the levers supporting said movable frame, of a lever, pivoted at one end below the said frame and extending alongside the lower portion of the hopper, and a device which pivotally connects such lever and the lower end of the hopper, and locks the latter in position for receiving a load, and then shifts to a new locking position when a portion of the load has been received by the hopper, substantially as shown and described.

2. In a weighing-machine, the combination, with a fixed supporting-frame, a weighing-beam, a tiltable weighing-hopper, and a supporting-frame for the latter, of a lever pivoted at one end to bars pendent from the hopper-supporting frame, and a toggle-bar, which is pivoted to both lever and hopper, and normally assumes an inclined position and supports the said lever until the load is received in the hopper, when it releases the latter, to allow discharge of the load, substantially as shown and described.

3. In a weighing-machine, the combination, with a tiltable, weighing-hopper, a frame in which it is suspended, a weighing-beam, and intermediate levers connected with said beam and hopper, of a lever pivotally connected with the hopper-supporting frame, a device attached to the lower end of the hopper and connected with the said lever at a point removed from its fulcrum, means for locking the said lever temporarily when raised to a certain position by a partial load in the hopper, and means connected with the weighing mechanism whereby the locking means is tripped when the full load is received in the hopper, and whereby the hopper is released and allowed to shift for discharging the load, substantially as shown and described.

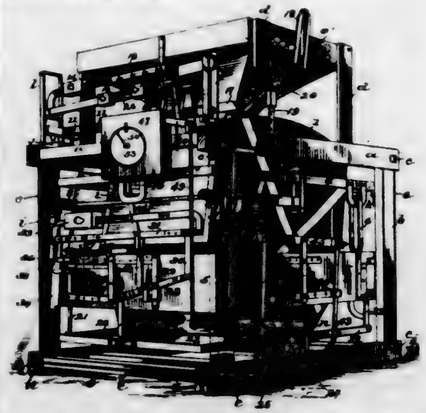

4. In a weighing-machine, the combination, with a tiltable hopper, a frame in which it is hung, weighing-beam, and levers supporting the hopper and connected with said beam, of a lever, 22, pivotally connected at its fulcrum end with the hopper-supporting frame, a vertical slidable stop, and lever connected with the same, means for connecting said lever with the aforesaid lever 22, and a locking device connecting the latter with the hopper, said device being so arranged that the lever 22 is elevated when the hopper receives its load and the stop is released, substantially as shown and described.

5. In a weighing-machine, the combination with a weighing-beam, a tiltable weighing-hopper, and levers supporting the latter and connected with said beam, of devices connected with the lower portion of the hopper for locking it in position to receive a load, means operatively connecting such locking devices with the hopper-supporting levers, whereby said devices are tripped to allow automatic release of the hopper when loaded as shown and described.

6. In a weighing-machine, the combination, with the tiltable weighing-hopper, a frame in which said hopper is hung, the weighing-beam, and interposed levers connected with the latter and supporting the hopper, of a lever 22 pivotally connected with the hopper-supporting frame, toggle-bars pivoted to said lever and the lower portion of the hopper, and normally assuming an inclined position when the hopper is in position to receive the load, a vertical slidable bar provided with a shoulder, a fixed stop engaged by said shoulder, means for holding the said bar normally engaged with the stop, a lever pivotally connected with the bar and supporting the same, means for connecting such lever with the lever to which the toggle-bar is attached, and a device connected with the intermediate weighing-levers for tripping the locking-bar, to allow the hopper to shift when the load is complete, substantially as shown and described.

7. In a weighing-machine, the combination, with a tiltable weighing-hopper, weighing-beam, and levers suspending the hopper, of a stop-bar, and lever mechanism connecting it with the hopper, whereby the latter is held in normal position, a toggle-lever for holding said stop-bar in locking position, the said lever mechanism having a contact-piece suitably arranged for depressing the toggle-lever and forcing it back to place after the hopper has made its complete shifting movement, as shown and described.

8. In a weighing-machine, the combination, with the tiltable hopper, the weighing-beam, and weighing-levers interposed and supporting the hopper, of a slidable bar having a shoulder adapted to engage a fixed stop, a toggle-lever and a movable device to which said lever is attached for holding the locking-bar fixed in normal position, a lever to which said bar is pivoted and by which it is supported, means connecting said lever with the lower portion of the hopper whereby the latter is held locked in position to receive the load, and a trip device connected with the weighing mechanism, and which, when the hopper is loaded, descends and trips the toggle-lever and thereby releases the locking device, substantially as shown and described.

9. In a weighing-machine, the combination, with the tiltable weigh-

ing-hopper, a weighing-lever and interposed levers from which the hopper is suspended, of a lever 22 pivoted at one end, a toggle-bar, or lever, connecting the lever 22 with the lower portion of the hopper, whereby when the load is nearly sufficient the toggle is shifted and lever 22 is raised, a registering mechanism, and a lever connected therewith, and arranged in position to be acted upon when the said lever 22 is raised, substantially as shown and described.

10. In a weighing-machine, the combination, with a receiving-hopper, the weighing-hopper, the weighing-beam, and levers interposed between it and the weighing-hopper, and supporting the latter, of a cut-off for the receiving-hopper; means for suspending it whereby it is adapted to swing beneath the said hopper, weighted levers connected with the cut-off, a lever pivoted at one end and arranged adjacent to the lower portion of the hopper and a toggle-bar connecting said lever with the hopper, whereby the weighted levers are released and allowed to shift the cut-off beneath the discharge of the receiving-hopper when the weighing-hopper has received a portion of its load, substantially as shown and described.

11. In a weighing-machine, the combination, with a receiving-hopper, a tiltable weighing-hopper, a weighing-beam, and levers connected therewith and supporting the weighing-hopper, of a cut-off for the receiving-hopper which is adapted to swing under the latter, a lever 22 pivotally connected with the hopper by means of toggle-bars, and means connected with said lever 22 and serving to hold the cut-off retracted, the cut-off being released and allowed to swing automatically to reduce the flow of grain to a dribble when the load in the weighing-hopper becomes sufficient to depress it and thereby elevate the lever 22 in the manner shown and described.

12. In a weighing-machine, the combination, with the receiving-hopper, the weighing-hopper, the weighing-beam, and levers connected with the latter and supporting the said hopper, of a swinging cut-off for the receiving-hopper, a slidable bar connected therewith and provided with a series of holes to receive a stop-pin, and a bar arranged vertically for supporting said slidable bar and serving also as a stop, whereby the swinging movement of the cut-off is regulated in the manner shown and described.

13. In a weighing-machine, the combination, with a weighing-beam, a tiltable weighing-hopper, a frame in which the hopper is hung, and levers connected with said beam and suspending the hopper-frame, of swinging gates which are separated by a slot and arranged below the hopper for alternately closing the same and allowing discharge of its contents, and lugs attached to the hopper-supporting frame and adapted for arresting the gates, when the hopper makes its preliminary shifting movement, substantially as shown and described.

14. In a weighing-machine, the combination, with the weighing-hopper having a central partition dividing it into two compartments, and a weighing mechanism suspending the hopper as described, of shiftable gates arranged for alternately closing the compartments of the hopper and separated by a slot through which discharge of the hopper takes place, vertical bars and a walking-beam pivotally suspending the said gates, and means for arresting the movement of the latter after the hopper has made its preliminary shift, substantially as shown and described.

15. In a weighing-machine, the combination, with the weighing-hopper, the weighing-beam, and interposed levers from which the hopper is suspended, of gates for closing the mouth of the latter and curved upon the arc of a circle described from the pivot of said hopper, the latter being arranged in contiguity to, but out of contact with, the gates, cleaners consisting of transverse plates pivoted to the hopper and having extended arms, and spiral springs connected with said arms and serving to hold the cleaners in elastic contact with the gates, substantially as shown and described.

16. In a weighing-machine, the combination, with the receiving-hopper having a tapered and truncated lower portion, of the smaller guard-hopper arranged in the receiving-hopper and having a similar form, both hoppers having discharge-openings which are arranged in vertical alinement, and the guard-hopper being arranged below the upper edge of the receiving-hopper and separated from it by a considerable space, substantially as shown and described.

17. In a weighing-machine, a hanger or stirrup composed of two open loops having like form, one being larger than the other, whereby it is adapted to receive the same, the two being riveted together, and bearing-blocks supported in each end of the hanger and provided with depressions for receiving the pivotal bearings of the levers, substantially as shown and described.

18. In a weighing-machine, the combination with two sockets-bearings 10 10 spaced apart of the weighing-lever 13 having two conical fulcrum-pivots arranged opposite in the same horizontal plane and adapted to bear in such sockets and hold the beam in position without friction, said beam having also a pivot on the end of its shorter arm, and on the upper side of the latter, it being thus above the fulcrum-pivots, a stirrup 12 hung on such end pivot, a lever having a bearing in said stirrup, and a weighing-hopper connected with said lever, as shown and described.

706,448. PROCESS OF MAKING COKE. PAUL HAIN, New Brighton, N. Y. Filed Sept. 7, 1897. Serial No. 650,761. (No specimens.)

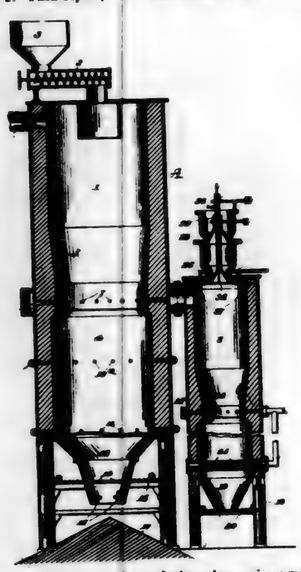

Claims.—1. In a process for producing coke, passing a mass of finely-divided carbonaceous material through a furnace or shaft and simultaneously forcing heated fluid and steam into said mass a considerable distance from both ends of said furnace or shaft, whereby successive portions of the mass will be coked, the coke desulfurized and the by-products absorbed by the heated fluid as it ascends through the mass and permitted to pass from the upper end of the furnace or shaft.

2. In a process for producing coke, passing a mass of finely-divided carbonaceous material through a shaft or furnace, generating a gas under pressure and heating said gas and coking said carbonaceous material by injecting said heated gas under pressure into the mass as it passes through the furnace or shaft, at a point between and a considerable distance from the ends of the furnace or shaft through which said mass passes, whereby portions of the mass will be coked successively and the hot gas with by-products absorbed thereby will ascend through the uncoked portion of the mass and be permitted to pass from the upper end of the shaft or furnace.

3. In a process of producing coke, passing a mass of finely-divided coking material through a furnace or shaft, introducing hot gas into said mass a considerable distance from the ends of said furnace or shaft and introducing steam into the descending coke at a point below the ingress of hot gas and a considerable distance above the outlet of coke at the lower end of the furnace or shaft.

4. A coking process consisting in passing a mass of finely-divided carbonaceous material continuously through a furnace or shaft, and subjecting the moving mass to the action of hot gas at a point a considerable distance from the top of the furnace or shaft and subjecting the descending coke at a lower point and a distance above the lower end of the furnace or shaft to the action of steam, whereby the mass will be gradually and rapidly coked and the by-products made to ascend through the descending mass and be permitted to pass from the furnace.

5. In a continuous process of producing coke, introducing into a body of finely-divided coking material, heated gas, at a distance from the upper end of the mass, introducing steam at a lower level and introducing water at a still lower level.

6. In a process of producing coke, subjecting a body of coking material to the action of heated gas and simultaneously injecting steam and water into the heated material at points below that at which the body of material is subjected to the action of heated gas.

7. In a continuous process for producing coke, coking coal by introducing a series of jets of heated gas into a body of fine coking material at the juncture of the coking and cooling chambers and a considerable distance from the other ends of said chambers at the respective ends of the apparatus.

8. The process of producing coke, gas and by-products which consists in passing heated gas through a body of coking material whereby the volatile matter is removed; injecting steam at a lower level whereby ammonia is formed by decomposition of the nitrogenous compounds contained in the coke and finally injecting water at a still lower level chiefly for the purpose of cooling the coke.

9. In a coking process passing a mass of carbonaceous material through a furnace or shaft, generating a heated gas mixed with steam in a separate apparatus and coking the carbonaceous material by injecting the mixed gas and steam into the mass thereof, whereby the latter is coked and desulfurized and the gas and by-products absorbed and permitted to pass from the top of the furnace or shaft.

10. The herein-described process of making coke which consists in taking hot gas from a shaft furnace or producer at such height that said gas will be under considerable pressure, and coking coal by passing said hot gas under pressure through a mass of coal.

11. The method which consists in subjecting a progressing column of bituminous fuel in one part to the action of coking and treating another part of the column of coke while said part is still highly heated for the elimination of impurities, without interfering with the structure of the coke.

12. The method, which consists in conducting gaseous fluid through a body of coking material in one part for the purpose of coking, and conducting a different gaseous fluid for the removal of impurities through another part.

706,444. COMPOSITION FOR USE IN SECONDARY BATTERIES. CARL T. J. OTTERBAEN, London, England. Filed Jan. 11, 1902. Serial No. 89,223. (No specimens.)

Claims.—1. In a secondary battery, the combination with the lead oxid constituting the active material, of bitumen in solution, whereby to render the active material harder and more coherent.

2. In the preparation of the active material for the plates of a secondary battery, the combination with lead oxid, of bitumen in solution in a light hydrocarbon.

3. In the preparation of the active material for the plates of a secondary battery, the combination with lead oxid, of bitumen in solution in benzene with the addition of alcohol.

4. In the preparation of the active material for the plates of a secondary battery, the combination with the lead oxid, of bitumen in solution in a light hydrocarbon and of dilute sulfuric acid.

5. A battery composition, consisting of active material admixed with a solution of bitumen in a solvent thereof and with dilute sulfuric acid.

6. A battery composition consisting of active material admixed with a solution of bitumen in a hydrocarbon liquid and with dilute sulfuric acid in quantities sufficient to form a paste.

7. A battery composition consisting of oxid of lead admixed with a solution of bitumen in a hydrocarbon liquid and with a sufficient quantity of dilute sulfuric acid to form a paste.

706,445. RAIL-JOINT. CHARLES C. CHEVRAGUE and RANDALL L. GIBSON, Remington, Pa. Filed June 6, 1902. Serial No. 110,460. (No model.)

Claim.—1. A rail-joint comprising a boxing having side pieces to engage against the sides of joining rails, the bottom wall of said boxing having a depression or recess, rails adapted to engage with their lower portions against the ends of said joint, and lugs on the rails for engaging in said recess or depression, substantially as specified.

2. A joint for railway-rails comprising a boxing having side pieces for engaging against the web portions of joining rails, flanges extended outward from the bottom of the boxing and adapted to engage between flanges of the rail-sections, the bottom wall of said boxing having a depression or recess, and lugs on the under sides of the rail-webs at the ends for engaging in said recess or depression, the recess or depression being longer than the combined length of the lugs, substantially as specified.

706,446. COMBINED PLOW AND PLANTER. JAMES H. PARK and JAMES L. PERKINS, Mooreville, Tenn. Filed Oct. 15, 1901. Serial No. 78,710. (No model.)

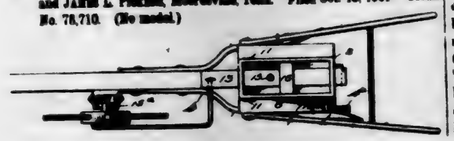

Claim.—In a corn-planter the combination with a hopper, and a slide arranged therein, of means for reciprocating said slide comprising a wheel supported in front of the hopper, a connection between said wheel and slide, and supporting and adjusting devices for the wheel consisting of a guide formed with elongated slots at the front and rear, and a vertical slot at the outer side, a block within said guide having threaded projecting arms, nuts on said arms, and an axle projecting from the outer side of the block.

706,447. DOUBLE-ACTING SAW. GEORGE R. PEART, Sheffield, England, assignor of one-half to Frank Fuzen, Sheffield, England. Filed Sept. 9, 1901. Serial No. 74,816. (No model.)

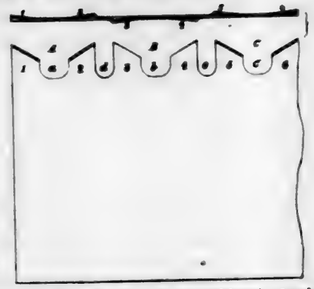

Claim.—A saw having its teeth arranged in pairs, 1 and 2, 3 and 4 and so on, with gullets *a*, *b*, between the members of each pair and with the gullets *d*, *e*, separating one pair of teeth from the next, the teeth of each pair having their edges converging inwardly toward the bottom of the gullet between them being sharpened from the same side and both set over in the same direction.

706,448. COMBINED BABY CARRIAGE AND ROCKER. JAMES C. PENDER, Crowley, La. Filed Apr. 26, 1902. Serial No. 104,864. (No model.)

Claim.—1. A combined baby carriage and crib comprising a frame having legs, rockers at the bottom thereof, a basket mounted on the frame, bars pivoted together at their inner ends and having sliding pivotal connections with said legs, spring-strips carried by said bars, axles carried by the springs, and wheels mounted on the axles, a handle in connection with the bars, a link pivoted to one of the cross-pieces of the frame, the bar T pivoted to said link and adapted to be actuated by said handle, whereby the axles carrying the wheels may be raised or lowered to throw the wheels above or below the rockers, as set forth.

2. A combined baby carriage and crib comprising a frame, legs thereon, rockers at the bottoms of said legs, a table, a basket secured thereto, bars pivoted together at their inner ends and having sliding pivotal connections with the legs, axles carried by said bars, a handle connected to the bars, a link pivoted to the cross-piece connected to the legs, a bar T, a pin carried thereby and about which said handle is bent, said bar T having pivotal connection with said link, said bars which have pivotal connection with each other and the legs adapted to buckle to hold the lower portions of the wheels above or below the rockers, as set forth.

706,449. CAR-DOOR. EDWARD D. PEPPERS, Mobile, Ala. Filed Jan. 25, 1902. Serial No. 91,266. (No model.)

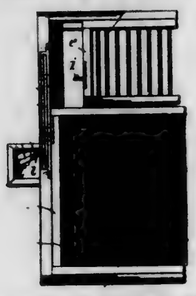

Claim.—1. In a car-door, the combination with a pair of upper and lower sliding doors, and latches carried by each of said doors; of a bar mounted to slide vertically in the door-frame, a stop upon the lower end of said bar, means carried by said bar for engaging said latches, a rock-shaft passing through the side of the car, a crank upon the inner end of said shaft provided with means for engaging said stop upon said bar, a hasp upon the outer end of said shaft to operate the same, and eyebolts upon the outside adapted to secure said hasp in its locked and unlocked positions.

2. In a car-door, the combination with a pair of upper and lower sliding doors, and latches carried by each of said doors; of a bar mounted to slide vertically in the door-frame, a stop upon the lower end of said bar, means carried by said bar for engaging said latches, a rock-shaft passing through the side of the car, a crank upon the inner end of said shaft provided with means for engaging said stop upon said bar, a hasp upon the outer end of said shaft to operate the same, eyebolts upon the outside adapted to secure said hasp in its locked and unlocked positions, and swinging doors hinged upon the outside of the car, adapted to close the door-opening from the outside.

706,450. CHIMNEY-TOP. CHARLES J. QUINN, Scranton, Iowa. Filed June 12, 1901. Serial No. 64,304. (No model.)

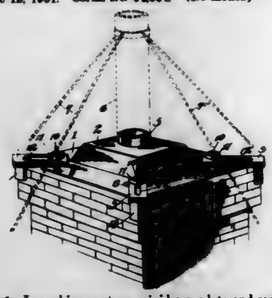

Claim.—1. In a chimney-top, a rigid cap-plate and radial chimney-engaging clamps which are longitudinally and laterally adjustable independent of the cap-plate.

2. In a chimney-top, a cap-plate provided with diagonally-disposed corner-slots, in combination with cleats having means for engaging the slots, and corner-clamping lugs carried by the cleats.

3. In a chimney-top, a cap-plate provided with diagonally-disposed slots, slotted cleats carrying corner-clamping lugs, bolts passed through the slots of the plate and the cleats, and nuts carried by the bolts.

4. A chimney-cap having chimney-engaging clamps which are adjustable laterally and longitudinally, the cap and each clamp having crossed slots, and adjustable fastenings piercing the respective crossed slots of the clamps and cap.

5. A rigid polygonal chimney-cap having chimney-engaging clamps located at the corners thereof and both laterally and radially adjustable independent of the cap.

706,451. STORAGE SYSTEM. JOHN R. RECTOR, Lipan, Tex. Filed Feb. 9, 1901. Serial No. 46,670. (No model.)

Claim.—A storage system comprising a house, a stack mounted upon the ground some distance therefrom and provided with a revolvible funnel for facing the wind from different directions, an underground passage connected with said stack and extending beneath said house, a part of said passage beneath said house having a general tapering form and being provided with branch passages disposed obliquely to the general direction of said passage and terminating at points adjacent to the walls of said house, a slatted floor for said house, said floor being disposed over all of said branch passages, and means for permitting the escape of air-currents from the top of said house.

706,452. AUTOMATIC CAR-BRAKE. ARTHUR W. REED, Orvisburg, Miss. Filed Apr. 14, 1902. Serial No. 103,911. (No model.)

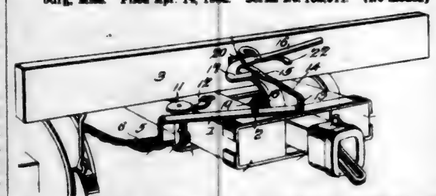

Claim.—1. In a device of the class described, the combination with a car having a car-coupling capable of longitudinal movement, of a transverse lever fulcrumed between its ends on the car and designed to be connected at its outer end with the brake mechanism, and means for connecting the inner arm of the lever with the car-coupling, said means comprising a connection and a lever arranged to place the connection under tension to cause the inward movement of the car-coupling to apply the brake and adapted to slacken or loosen the said connection to prevent the longitudinal movement of the car-coupling from affecting the brakes, substantially as described.

2. In a device of the class described, the combination with a car having a car-coupling capable of longitudinal movement, of a transverse lever fulcrumed between its ends on the car and designed to be connected at its outer arm with the brakes, a lever carried by the draw-head and fulcrumed at one end, and a connecting device extending from the inner arm of the transverse lever to the operating-lever and connected with the same beyond the fulcrum-point and adapted to be placed under tension by the operating-lever and to be slackened or released by the same, substantially as described.

3. In a device of the class described, the combination with a car having a car-coupling capable of longitudinal movement, of a transverse lever fulcrumed between its ends on the car and designed to be connected at its outer arm with the brakes, an operating-lever carried by the draw-head and fulcrumed on a suitable support, a flexible connection extending from the operating-lever to the transverse lever and adapted to be placed under tension by the former, and a resilient catch for locking the operating-lever against movement when the flexible connection is under tension, substantially as described.

4. In a device of the class described, the combination with a car having a car-coupling capable of longitudinal movement, of a transverse lever fulcrumed on the car and designed to be connected at its outer arm with the brakes, an operating-lever having a curved end portion and fulcrumed at the outer terminal thereof and carried by the car-coupling, and a flexible connection extending from the inner arm of the transverse lever to the operating-lever and connected with the same to the inner terminal of the curved portion, substantially as described.

5. In a device of the class described, the combination with a car provided with a car-coupling capable of longitudinal movement, a transverse lever fulcrumed on the car and designed to be connected at its outer arm with the brakes, a bracket secured to the draw-head, an operating-lever fulcrumed on the bracket, a flexible connection extending from the operating-lever to the inner arm of the transverse lever and connected with the former beyond the fulcrum and adapted to be placed under tension by the said operating-lever, and a spring secured to the bracket and forming a catch for locking the operating-lever when the flexible connection is placed under tension, substantially as described.

706,458. CONVERTIBLE BICYCLE-REST. WILLIAM R. RIDDALL, Edinburgh, Scotland. Filed Nov. 14, 1901. Serial No. 82,736. (No model.)

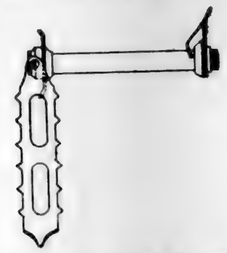

Claim.—1. In a bicycle-rest, the combination with a pedal shaft or axle and a supporting-plate at the outer end thereof, of a pedal-frame pivoted to said plate and adapted to swing downwardly to constitute a support for the bicycle, a plate fixed to and connecting the parallel members of said frame at their inner ends having a recess therein adapted to embrace the under side of said axle, an upright secured to the bearing-sleeve of the pedal on said axle, and a spring-actuated retaining device fulcrumed on said upright and provided with engaging portions adapted to coöperate with the latter plate for retaining said pedal-frame in raised position, said pedal-frame being of such length that the plate on its free end will reach to the ground when swung downwardly.

2. In a bicycle-rest, the combination with a pedal shaft or axle and a supporting-plate at the outer end thereof, of a pedal-frame pivoted to said plate and adapted to swing downwardly to constitute a support for the bicycle, a plate connecting the parallel members of said frame at their inner ends having a recess therein adapted to embrace the under side of said axle, an upright secured to the bearing-sleeve of the pedal on said axle, a lever fulcrumed in said upright having a forked lower end, the branches of which straddle said axle and are provided with engaging portions which coöperate with the latter plate for retaining said pedal-frame in raised position, and a spring acting upon said lever for holding it in operative position.

706,454. CARBURETER. CLARK ROBINSON, Hartley, Iowa. Filed Jan. 27, 1902. Serial No. 91,436. (No model.)

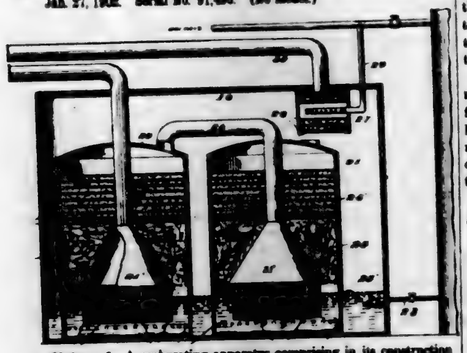

Claim.—1. A carbureting apparatus comprising in its construction a chamber containing carbureting-tanks, means for introducing air into one of said tanks, a hydrocarbon-liquid reservoir, a pipe for conducting a supply of the hydrocarbon liquid to the aforesaid chamber, devices for controlling the supply, and apertures in the walls of the carbureting-tank for permitting the liquid to flow from the aforesaid chamber into the carbureting-tanks, substantially as and for the purpose set forth.

2. In a carbureting apparatus, the combination of a carbureting-chamber, carbureting-tanks therein, mechanism for supplying atmosphere under pressure into one of said carbureting-tanks, a hydrocarbon-liquid reservoir, a pipe for conducting a supply of the liquid from the reservoir into the aforesaid chamber, devices for controlling such supply, means for permitting the liquid to enter the carbureting-tanks, means in said carbureting-tanks for causing an intimate commingling of the atmosphere and the hydrocarbon liquid, whereby a gas is formed, supplemental apparatus in said carbureting-chamber for straining and refining the gas in said supplemental straining apparatus, means for diluting the gas, and conducting apparatus for conveying the gas to the point of consumption.

3. In a carbureting apparatus the combination of a carbureting-chamber, carbureting-tanks in said chamber, mechanism for supplying atmosphere to one of said carbureting-tanks, means for supplying a hydrocarbon liquid to the carbureting-chamber and the tanks therein, and means in said carbureting-tanks for intimately mixing the atmosphere and hydrocarbon liquid to form a gas, such means comprising devices for introducing atmosphere into the body of hydrocarbon liquid at a point beneath the surface thereof, a body of condensing material placed above the surface of the hydrocarbon liquid, a series of perforated plates situated above said condensing material, the space between such plates being filled with a packing of condensing material, substantially as set forth.

4. In a carbureting apparatus, the combination of a carbureting-chamber, and means therein for forming a hydrocarbon gas, such means comprising carbureting-tanks situated in said chamber, means for supplying a hydrocarbon liquid to the said tanks, a device in one of said tanks for supplying air under pressure to points below the surface of the hydrocarbon liquid, such device comprising a conductor-pipe extending from a suitable source of air-supply to the interior of said tank, a flared chamber formed at the end of said pipe, depending tubes communicating with said chamber and extending below the surface of the liquid, a body of condensing material placed above the surface of the liquid, a series of perforated plates situated above the condensing material, and a packing of absorbent material between the said plates.

5. In a carbureting apparatus, the combination of a carbureting-chamber, and means therein for forming a hydrocarbon gas, such means comprising a series of communicating carbureting-tanks, means for supplying a hydrocarbon liquid to such tanks, devices in one of said tanks for supplying air under pressure to a point beneath the surface of the hydrocarbon liquid therein, means situated above the level of the hydrocarbon liquid in the tanks for straining and refining the vapor thus formed, means for conveying the charge of gas from one tank of the series to another, an outlet in the last said tank for communicating with the chamber, a strainer situated in the chamber and means for conducting the gas from the chamber to the place of consumption.

6. In a carbureting apparatus, the combination of a carbureting-chamber, a series of tanks therein communicating with each other by suitable conducting-pipes, means in said tanks for causing an intimate commingling of the elements forming the gas, such means comprising a flared chamber at the ends of the communicating pipes, tubes depending therefrom to the hydrocarbon-liquid-condensing material placed above the surface of the liquid, a series of perforated plates above such condensing material, an outlet from the last tank of the series into the chamber, a strainer in said chamber, conducting means leading from the strainer to the point of consumption of the gas, means for introducing atmosphere to one of said carbureting-tanks, means for supplying hydrocarbon liquid to the tanks, a valve-controlled means for introducing atmosphere into the strainer for diluting the gas therein.

7. In a carbureting apparatus, the combination of a chamber and means for forming a hydrocarbon gas therein, a strainer in said chamber for refining the gas, comprising in its construction a chamber open at its lower end, a series of spaced parallel perforated plates therein, absorbent material between said plates, means for diluting the gas in said straining-chamber and means for conducting the gas to the point of use, substantially as described.

706,455. TANK OR ICE-CHEST. THOMAS R. ROGERS, Brooklyn, N. Y. Filed Dec. 13, 1901. Serial No. 85,762. (No model.)

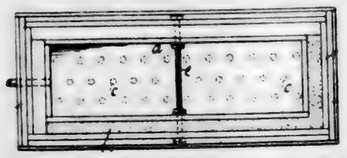

Claim.—1. A tank or ice-chest comprising an inner and an outer casing, a water-tight material made to surround the inner casing, and chambers on the interior of the outer casing for securing the water-tight material to said outer casing, the inner casing being in contact with but not adhering to the water-tight material, so as to allow said inner casing to contract and expand without affecting the water-tight material or the outer casing, said water-tight material preventing leakage or moisture from the inner casing penetrating to the outer casing.

2. A tank or ice-chest comprising an inner and outer casing, water-tight material between the casings, a tie or screw rod having nuts made to sit against the casings to prevent buckling or bulging of the same, and chambers on the inside of the outer casing to hold or engage said water-tight material, said outer casing having a shell forming an air-space thereabout.

706,456. COMBINED SASH-FASTENER AND SHADE-SUPPORT. EDWARD A. SACKET, Denver, Colo., assignor of one-half to John Curran Anderson, Telluride, Colo. Filed Apr. 15, 1901. Renewed Apr. 14, 1902. Serial No. 102,780. (No model.)

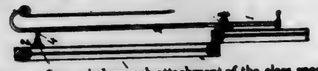

Claim.—1. In a window-sash attachment of the class specified, the combination with a socket adapted for attachment to a slidable sash and a rod engaging said socket and having its lower portion reduced in thickness, of a clamp adapted for attachment to a sash and having a lateral opening adapted to receive a reduced portion of the rod, but having less width at its mouth or entrance than the diameter of the body of the rod, substantially as shown and described.

2. In a window-sash attachment of the class specified, the combination, with a socket adapted for attachment to a sash, of a sash-fastening rod adapted to engage the said socket and provided with a gooseneck or curved top portion having a socket for reception of the journal of the shade-roller, substantially as shown and described.

3. In a window-sash attachment of the class specified, the combination, with sockets adapted for attachment to the upper sash and clamps adapted for attachment to the lower sash, of rods which engage said sockets and clamps and are provided at their upper ends with forward extensions having sockets for reception of the journals of a shade-roller, substantially as shown and described.

706,457. SUSPENDING DEVICE FOR CATAMENIAL BANDAGES. EDNA L. SCOTT, Portland, Me. Filed Jan. 20, 1902. Serial No. 90,394. (No model.)

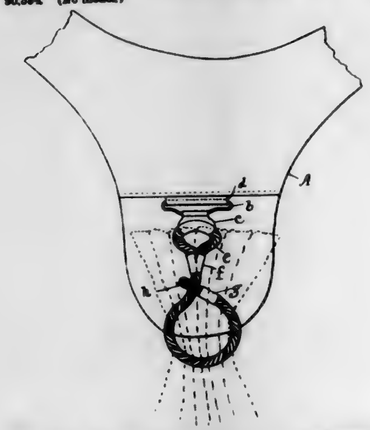

Claim.—1. The herein-described device for suspending catamenial bandages, consisting of a waistband having secured thereto an elastic cord having an eye formed of the same material in its lower end, the main cord passing through said eye to form a slip-noose, and the material in said eye adapted to be stretched or distended to create friction with the cord.

2. A suspending device for catamenial bandages, comprising a waistband with oppositely-arranged depending flaps, a loop carried by each flap, a clip suspended from said loop, an elastic cord connected to said clip and depending therefrom, and an eye carried by the free end of said cord adapted to have the body of the cord pass therethrough to form an elastic slip-noose, substantially as disclosed herein.

3. A device for suspending catamenial bandages, comprising a belt having depending flaps at the front and rear, a flexible loop secured to each of said flaps, a reinforcing-strip secured transversely across the flap and over the secured ends of the loop, and an elastic cord secured swingingly to said loop having an eye upon its lower end through which the body of the cord passes to form a slip-noose.

4. A device for suspending catamenial bandages, comprising a belt having two oppositely-arranged depending flaps, a flexible loop carried by each flap upon the outer face thereof, a metal loop secured in said flexible loop, a depending clip carried by said metal loop, and an elastic cord having a wide eye formed in its upper end to be engaged by said clip, and a long eye formed in its lower end; whereby said cord is adapted to pass through said long eye to form a noose to engage the bandage.

706,458. MORTISING-MACHINE. CHARLES J. SEAGUIST, Silverlake, Wash. Filed Nov. 14, 1901. Serial No. 82,311. (No model.)

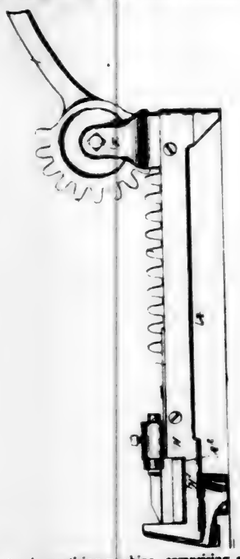

Claim.—1. A mortising-machine, comprising a bed-plate formed with longitudinal guideways, a carrier mounted to reciprocate in the said guideways, a rack on top of the said carrier, a handled gear-wheel in mesh with the said rack, a bearing on the top of the carrier near the front end thereof, a tool-post for supporting the tool and having a shank held in the said bearing, a table held vertically adjustable in a depression in the said bed-plate near its forward end, an abutment at the forward end of the bed-plate and a longitudinally-adjustable clamp on the top of said bed-plate.

2. A mortising-machine, comprising a bed-plate formed with longitudinal guideways, a carrier mounted to reciprocate in the said guideways, means for reciprocating the said carrier, a bearing on the top of the carrier near the front ends thereof, and a tool-post formed with a socket for the shank of the tool and having a shank held in said bearing, the shank of the tool-post being eccentric to said socket.

3. A hand-power mortising-machine, comprising a bed-plate having a depression near its forward end and an abutment at the end of the depression comprising an upwardly-extending flange integral with the bed-plate, a bearing carried by the bed-plate at the depressed portion, a table provided with a central depending post held vertically adjustable in said bearing, a set-screw extending through the side of the bearing and engaging the post to fasten the table in the adjusted position, a carrier mounted to reciprocate on the said bed-plate toward and from said table, means for reciprocating said carrier, and a tool-support on the said carrier and carrying the tool as set forth.

4. A mortising-machine, comprising a bed-plate, formed with longitudinal guideways, a carrier mounted to reciprocate in the said guideways, a rack on top of the said carrier, a handled gear-wheel in mesh with the said rack, a bearing on the carrier, a tool-post adapted to receive a tool, and having a shank held in said bearing, a table held vertically adjustable in a depression in the bed-plate, and a slotted clamp held longitudinally adjustable on the top of said bed-plate, the forward end of the clamp being adapted to engage wood of different thicknesses.

706,459. APPARATUS FOR COPYING MODELS. WILLY A. C. SELKE, Berlin, Germany. Original application filed Jan. 30, 1896, Serial No. 667,261. Divided and this application filed Oct. 4, 1900. Serial No. 32,053. (No model.)

Claim.—1. The combination, with a centrally-arranged model; of a source of light arranged on one side of the model, a screen arranged with its edge between the light and the model, and a photographic camera arranged on one side of the screen; a support connecting together the said source of light, screen and camera; and means for changing the relative positions of the support and model so that a series of photographs may be taken around the model in planes which intersect its axis, substantially as set forth.

2. The combination, with a centrally-arranged model; of a source of light arranged on one side of the model, a screen arranged with its edge between the light and the model, and two photographic cameras arranged one on each side of the said screen; a support connecting together the said source of light screen and cameras; and means for changing the relative positions of the support and model so that a series of photographs may be taken around the model in planes which intersect its axis, substantially as set forth.

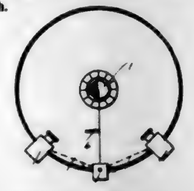

706,460. PRICE-SCALE. HARRY B. SHERWOOD, Ashbourne, Pa., assignor to the Automatic Scale Company, Washington, D. C., a Corporation of New Jersey. Filed Oct. 7, 1901. Serial No. 77,875. (No model.)

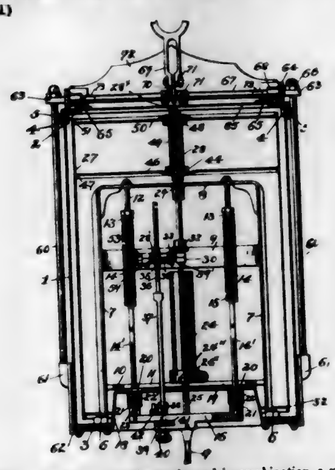

Claim.—1. In a computing-scale, and in combination, a vertically-arranged cylindrical chart supported upon frames 46 50, one below the other and both mounted upon connected hubs, whereby is furnished a broad upper bearing for the upper end of the chart, the said hubs and frame being connected with the vertical shaft, with which the chart turns, all substantially as described.

2. In combination in a computing-scale, a casing having a bottom ring, a suspension-frame comprising rods 60, brackets carried by the lower ends of said rods and having feet fixed to the bottom ring of the casing, an upper ring 2 connected to the casing, segments 64 fixed to said upper ring, ears 63 on the segments from which the said rods 60 are suspended, a cross-bar 67 connecting the segment 64 and a suspension device connected to the bar 67, substantially as described.

3. In combination in a computing-scale, a casing, a frame supported at the lower end of the casing and comprising a cross-bar 10, a movable cross-head, springs for supporting said cross-head, rods 14' interposed between the cross-head and the springs, telescoping sleeves on the rods 14' and springs within the sleeves arranged to take up the shock when the weight is removed, the said bar 10 serving to sustain the blow of the sleeves, substantially as described.

4. In combination, a rotary chart, a shaft carrying the same and operating mechanism for said shaft, a supporting-frame, a cross-head, the rods 14' connected with the cross-head, the suspension-springs connected with the rods, a pneumatic cushion for retarding the return of the cross-head, and cushions for taking up the final impact, said cushions comprising the sleeves surrounding the rods 14' and the springs inclosed within the sleeves, substantially as described.

5. In combination with the supporting-frame comprising the cross-bar 10, the outer casing, the ring 2 connected therewith, the shell 16 closing the lower end of said casing and connected with the ring 2, impact-blocks 20 arranged between the cross-bar 10 and the shell 16, a cross-head, supporting means therefor, operating mechanism controlled thereby and the spring-cushions arranged between the cross-head and the impact-blocks, substantially as described.

6. In combination, the rotary chart, a rack-and-gear connection for operating the same, a bracket supporting the gearing, said bracket having a kerf for the rack-bar with a rib therein to afford a bearing for the rack-bar and a pin 59 extending into said kerf for engaging the rack-bar, substantially as described.

7. In combination, the casing, mechanism inclosed therein, suspension means comprising the suspension-rods extending along the outside of the casing and connected with the lower end of the same, a connection for the upper ends of the said suspension-rods extending transversely of the upper end of the casing and means connected with said transverse connection for suspending the casing, substantially as described.

8. In combination, the casing, the suspension-segments connected with the upper end of the same, the cross-rod extending between the segments, suspending means connected with the cross-rod, and the suspending-rods extending from the segments along the outside of the casing and connected at their lower ends thereto, substantially as described.

9. In combination, the casing, mechanism inclosed therein, the suspending-segments connected with the upper ends of the casing, a cross-rod connecting the segments, ears extending from the segments, suspending-rods extending down from said ears and connected at their lower ends with the casing, substantially as described.

10. In combination, a casing, consisting of a shell, upper and lower rings connected with said shell and suspending means consisting of the segments connected with the upper ring, a suspension device connected with the segments, suspending-rods connected with the segments and extending downwardly along the casing and brackets at the lower ends of the suspending-rods connected with the lower ring, substantially as described.

706,461. STORM-CURTAIN. JAMES W. SERMON, Bloomington, Ind. Filed Mar. 5, 1902. Serial No. 96,774. (No model.)

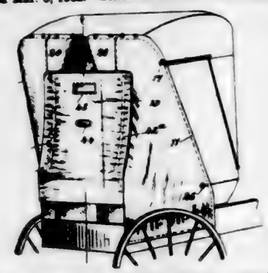

Claim.—1. A curtain for a vehicle, having a curved rear and top edge for engaging along the front bow of the vehicle-top, and a triangular wing extending along the inner edge of the curtain, and means for securing the curtain to the vehicle-body, substantially as specified.

2. Storm-curtains for a buggy, elastic straps extending along the front and rear edges of the curtains, transverse elastic straps connecting with the first-named straps, and a front curtain adapted for engagement with a dashboard and with the first-named curtains.

3. A storm-curtain for a buggy, adapted to be removably secured to the top of the buggy and to the body of the buggy, elastic straps extended along the front and rear edges of the curtain near the bottom, and a transverse elastic strap connecting with the first-named elastic straps.

4. A storm-curtain for a buggy, having its rear edge conformed to the front bow of the buggy-top and having at its inner edge extended from the top downward, an angular wing, fastening devices on the buggy-top for engaging with the curtain, the said curtain being made somewhat full at its lower portion, elastic material extended along the front and rear edges of the curtain at the lower portion, and an elastic material extending transversely of the curtain and connecting with the first-named elastic materials, substantially as specified.

706,462. APPARATUS FOR MALTING, DRYING, OR OTHERWISE TREATING GRAIN. JAMES SLEEMAN, Somerset, England. Filed Dec. 24, 1898. Serial No. 700,285. (No model.)

Claim.—1. An apparatus for malting and otherwise treating grain, comprising a rotatable vessel, one portion of which is formed with a grain-compartment having perforated walls and the remaining portion being formed larger than and communicating with said grain-compartment and constituting a mixing-chamber, and an air inlet and exhaust communicating with said grain-compartment, substantially as set forth.

2. An apparatus for malting and otherwise treating grain, comprising a rotatable vessel, a hollow partition, or a series of hollow partitions having perforated walls and dividing said vessel into a number of communicating grain-compartments, and air inlet and exhaust pipes, said hollow partitions being alternately arranged in communication with said inlet and exhaust pipes, respectively, substantially as described.
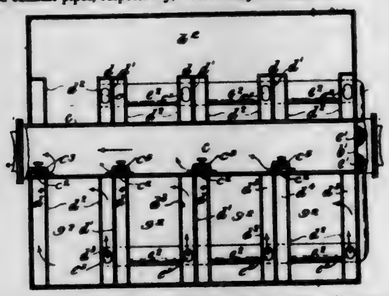
3. An apparatus for malting and otherwise treating grain, comprising a rotatable vessel, a series of hollow partitions having perforated walls, dividing said vessel into a number of grain-compartments, each of said partitions having a segment or portion thereof, removed to afford a space communicating with all of said compartments, a series of imperforate walls dividing each of said hollow partitions into two chambers, and air inlet and exhaust pipes, said chambers being alternately arranged in communication with said inlet and exhaust pipes, substantially as described.

4. An apparatus for malting and otherwise treating grain, comprising a suitable vessel, a series of hollow partitions having perforated walls and dividing said vessel into a number of communicating grain-compartments, a supply-pipe and a series of air-ducts leading therefrom, and a central exhaust-tube, said hollow partitions being alternately arranged in communication with said air-ducts and said exhaust-tube, respectively, substantially as described.

5. An apparatus for malting and otherwise treating grain comprising a suitable vessel, a series of hollow upright partitions having perforated walls and dividing said vessel into a series of grain-compartments, removable caps or covers supported by adjacent partitions and closing said grain-compartments, and air inlet and exhaust pipes, said hollow partitions being alternately arranged in communication with said inlet and exhaust pipes, respectively, substantially as described.

706,468. EDUCATIONAL APPARATUS. WILLIAM L. SMITH, Boston, Mass. Filed Mar. 13, 1901. Serial No. 51,858. (No model.)

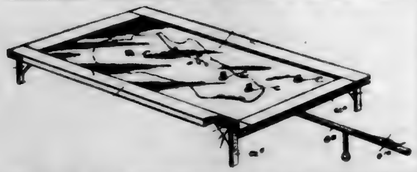

Claim.—1. An educational apparatus comprising a table having a top surface through which a map or similar object may be seen and on which it may be drawn or copied, means beneath said top surface for receiving and holding a map in position to be copied, supports for said table holding the same elevated sufficiently to permit free movement of an actuator, blocks or movable information-stations having their bases containing material to be attracted by a magnet, and an actuator containing a magnet adapted to be moved beneath said table for shifting the blocks as may be desired.

2. An educational apparatus comprising a copying-surface, means behind the said surface for retaining an object to be copied on said surface, a magnet movable behind said surface, means extending beyond said surface for moving said magnet, information-stations mounted on said surface and provided with means attractive to said magnet, whereby movement of the latter correspondingly moves the said stations to the locations required by the object copied thereon.

3. An educational apparatus comprising a table, having a surface capable of readily receiving marks, and sufficiently transparent to display therethrough an object placed behind the same, means behind said surface for holding a map to be copied, movable blocks carried on said surface and containing magnetically-attractive material, an actuator beneath said table provided with a handle extending beyond the table at one end, and having at its other end a magnet to attract said blocks, a support for said magnet provided with means permitting the same to slide around beneath the table, and means for raising or lowering the magnet relatively to said surface.

4. An educational apparatus comprising a table, having a surface capable of readily receiving marks, and sufficiently transparent to display therethrough an object placed behind the same, means behind said surface for holding a map to be copied, movable blocks carried on said surface and containing magnetically-attractive material, an actuator beneath said table provided with a handle extending beyond the table at one end, and having at its other end a magnet to attract said blocks, a support for said magnet provided with means permitting the same to slide around beneath the table, a lever pivoted to said handle, said magnet being carried by the inner end of said lever to be raised and lowered by the depressing or raising of the outer end of said lever.

5. An educational apparatus comprising a table, having a surface capable of readily receiving marks, and sufficiently transparent to display therethrough an object placed behind the same, means behind said surface for holding a map to be copied, movable blocks carried on said surface and containing magnetically-attractive material, an actuator beneath said table provided with a handle extending beyond the table at one end, and having at its other end a magnet to attract said blocks, a support for said magnet provided with means permitting the same to slide around beneath the table, a lever pivoted to said handle, said magnet being carried by the inner end of said lever to be raised and lowered by the depressing or raising of the outer end of said lever, and means for detachably holding the other end of the lever in depressed position.

6. An educational apparatus comprising a table, having a surface capable of readily receiving marks, and sufficiently transparent to display therethrough an object placed behind the same, means behind said surface for holding a map to be copied, movable blocks carried on said surface and containing magnetically-attractive material, an actuator beneath said table provided with a handle extending beyond the table at one end, and having at its other end a magnet to attract said blocks, a support for said magnet provided with means permitting the same to slide around beneath the table, a lever pivoted to said handle, said magnet being carried by the inner end of said lever, to be raised and lowered by the depressing or raising of the outer end of said lever, and means for detachably holding the other end of the lever in depressed position.

7. An educational apparatus comprising a thin table, having folding legs secured thereto, movable blocks bolted on said table and provided with magnetically-attractive material in their bases, and an actuator for moving said blocks, said actuator comprising a handle, a lever, a magnet, and a support for the latter, said support being carried by the inner end of said handle, and said lever being pivotally mounted in said handle and carrying the magnet at its inner end in said support, the outer end of the lever being in position to be engaged and operated by the manipulator of the handle, and serving to raise or lower the magnet beneath the table into or out of attractive relation with the blocks on said table for positioning the latter as required.

8. An educational apparatus comprising a thin table, movable blocks on said table and provided with magnetically-attractive material in their bases, and an actuator for moving said blocks, said actuator comprising a handle, a lever, a magnet, and a support for the latter, said support being carried by the inner end of said handle, and said lever being pivotally mounted in said handle and carrying the magnet at its inner end in said support, the outer end of the lever being in position to be engaged and operated by the manipulator of the handle, and serving to raise or lower the magnet into or out of attractive relation with the blocks on said table for positioning the latter as required.

9. An educational apparatus comprising a thin table, movable blocks on said table and provided with magnetically-attractive material in their bases, and an actuator for moving said blocks, said actuator comprising a handle, a lever, a magnet, and a support for the latter, said support being carried by the inner end of said handle, and said lever being pivotally mounted in said handle and carrying the magnet at its inner end in said support, the outer end of the lever being in position to be engaged and operated by the manipulator of the handle, and serving to raise or lower the magnet into or out of attractive relation with the blocks on said table for positioning the latter as required, the support for said actuator being provided with legs terminating in ball-like ends, for permitting the same to slide readily as required.

706,464. GARMENT-SUPPORTING WEBBING. CELIA A. SPURGIN, Des Moines, Iowa. Filed Feb. 3, 1902. Serial No. 93,237. (No model.)

Claim.—1. As an article of manufacture, a webbing, a hook-receiving metallic strip 8, and two pairs of fingers 9 and 10 integral with the strip and having oppositely-inclined sides, which fingers are passed through the webbing and overlap in the same plane upon the opposite side of the webbing with their inclined sides abutting.

2. As an article of manufacture, a webbing, a hook-receiving metallic strip 8, and two pairs of triangular fingers 9 and 10 formed integral with the strip, which fingers are passed through the webbing in a manner to perforate the same longitudinally and overlap in the same plane upon the opposite side of the webbing

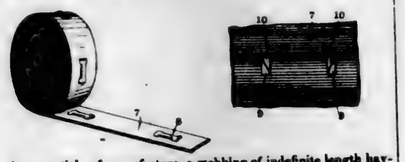

3. As an article of manufacture, a webbing of indefinite length having permanently secured thereto at equal distance apart throughout its length a series of hook-receiving strips which are straight in the direction of length of the webbing, each of said strips being secured to the webbing by two pairs of fingers located, respectively, at opposite ends of the strip, which fingers are passed through the webbing in a manner to perforate the same longitudinally, and clenched upon the opposite side thereof.

706,465. FUNNEL. JOHN DE ST. LESLIE, Hicksville, N. Y. Filed Jan. 24, 1902. Serial No. 91,063. (No model.)

Claim.—1. A funnel provided with a strainer which is hinged at one edge within the body of the funnel, and a spring-handle attached to the free edge of the strainer, the hinge of the strainer being located below the top edge of the funnel at a point substantially equal to the diameter of said strainer, whereby the strainer may be raised to an inoperative position and the handle may snap over the top edge of the funnel to hold the strainer out of the way of matter passing through said funnel.

2. A funnel provided with a strainer which is concavo-convex in cross-section and is arranged within the body of the funnel to present its convex side uppermost and in facing relation to the broad open end of the body, said strainer being hinged to the body at a point below the top edge of the funnel equal to the diameter of the strainer, and means to firmly hold the strainer in its lowered and raised positions.

3. A funnel provided with a strainer which is hinged at one edge to the body of the funnel at a point below the top edge of the funnel equal to the diameter of the strainer, means adapted to engage the free end of the strainer and fasten it in the lowered operative position, and a fastener arranged to hold the strainer in a raised inoperative position within the funnel.

706,466. HYDRAULIC OR FIRE HOSE. BENJAMIN L. STOWE, Jersey City, N. J. Filed Jan. 2, 1902. Serial No. 88,211. (No model.)

Claim.—Hydraulic hose consisting of an inner seamless fabric rubber-lined tube, and an outer wrapping of rubber-coated duck upon said inner tube, the whole vulcanized together as set forth.

706,467. SACK-RACE STRUCTURE. JOHN J. WEBSTER, Brooklyn, N. Y. Filed Mar. 24, 1902. Serial No. 99,698. (No model.)

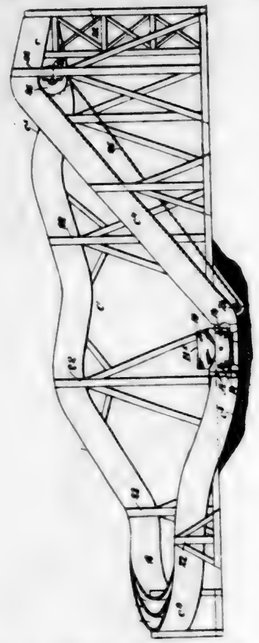

Claim.—1. In structures for amusement, a car comprising a body-section, a carriage adapted to receive occupants and pivotally mounted within the body-section, and springs concealed within the body-section and having bearing against the free upright walls of the carriage and opposing walls of the body-section, for the purpose described.

2. In a structure for amusement, a track, and a car adapted to travel on the rails of the track, the car comprising a body-section, a carriage adapted to receive occupants, pivotally mounted in the body portion, springs interposed between the body portion of the car and the carriage at opposite ends thereof, and a fabric extension from the upper portion of the said carriage, which fabric extension has the appearance of a sack extending above the body of the car, for the purpose described.

3. In a structure for amusement, an elevated endless track undulating for a portion of its length and inclined from its highest point in opposite directions to a lower point, each track consisting of side guard-rails and bottom rails, the bottom rails having a space between them, a car provided with supporting-wheels adapted to travel on the bottom rails of the track and with friction-rollers at its sides for engagement with the side rails of the track, the car being further provided with a pivoted basket mounted to rock in the body portion of the car, which basket is adapted to receive occupants, springs located at the end portions of the car, engaging with the body and with the basket, whereby the basket has rocking movement in the car-body against the tension of the said spring, and a sack-like extension from the upper portion of the basket of the car, as and for the purpose described.

4. In a structure for amusement, the combination, with an elevated track inclined downward in opposite directions from an elevated point, the said track consisting of side guard-rails, an intermediate guard-rail and bottom rails attached to the side rails and to each side of the intermediate guard-rail, of cars adapted to travel on the rails of the track at each side of the intermediate guard-rail, said cars comprising a body open at the top and at the bottom, supporting-wheels journaled in the body and adapted for engagement with the bottom rails of the track, a basket pivotally mounted in the body and extending below the bottom of the same, springs engaging with the body and with the basket at opposite ends, a sack-like extension from the upper portion of the basket, and friction-rollers carried by the sides of the body of the cars for engagement with the car-rails, for the purpose set forth.

5. In a structure for amusement, the combination with an elevated track inclined downward in opposite directions from an elevated point, the said track consisting of side guard-rails, an intermediate guard-rail

and bottom rails attached to the side rails and to each side of the intermediate guard-rail, of cars adapted to travel on the rails of the track at each side of the dividing guard-rail, said cars comprising a body open at the top and at the bottom, supporting-wheels journaled in the body and adapted for engagement with the bottom rails of the track, a basket pivotally mounted in the body and extending below the bottom of the same, springs engaging with the body and with the basket at opposite ends, a neck-like extension from the upper portion of the basket, friction-rollers carried by the sides of the body of the cars for engagement with the guard-rails, an endless chain belt located below the section of the track structure connecting the lowest point with its highest point, means for supporting the said endless belt, and devices carried by the said belt for pushing the car up the said connecting section of the track structure, for the purposes set forth.

706,468. STIRRUP-STRAP. LOUIS P. WELLMAN, West New York, N. J. Filed July 11, 1901. Serial No. 67,861. (No model.)

Claim.—1. The combination with a stirrup and a stirrup-strap, of a swivel uniting the stirrup-strap and said stirrup and permitting the latter to turn on a vertical axis and to assume different angular positions relative to the stirrup-strap, and a spring connection between the stirrup-strap and a member of the swivel, said spring connection holding the stirrup normally in a predetermined position relative to the stirrup-strap and allowing the position of the stirrup to be changed by pressure of the rider's foot.

2. The combination with a stirrup and a stirrup-strap, of a swivel uniting the stirrup and the strap and permitting the latter to turn on a vertical axis, and a spring connection attached to said strap and shiftably connected to a member of said swivel, as set forth.

3. The combination with a stirrup and a stirrup-strap, of a loop fitted to said strap to turn thereon as on a vertical axis, and a torsion-spring connection between said strap and the loop, as set forth.

4. The combination with a stirrup-strap, and a member having a head, of a stirrup-support provided with a series of openings and with members which engage said head of the first-named member, and a spring connected with said first-named member and shiftably engaging with openings in the stirrup-support, said spring connection holding the stirrup normally in a predetermined position relative to the stirrup-strap and allowing the position of said stirrup to be changed by pressure of the rider's foot.

5. The combination of a stirrup-strap having a stem terminating in a head, a loop fitted loosely on the stem in engagement with the head thereof and adapted to turn freely thereon, a stirrup fitted to the loop, and means connecting the loop and the strap and holding the stirrup normally in a predetermined position relative to said strap, said stirrup and its holding means being yieldable to pressure applied to the stirrup.

6. The combination of a stirrup-strap, a loop swiveled on the strap and provided with a series of notches or slots, a spring attached to the strap and shiftably connected to the loop by engaging with either of the notches or slots therein, and a stirrup fitted in the loop.

7. The combination with a stirrup-strap, of a swiveled loop provided with notches or slots, a spring attached to said strap and shiftably connected to the loop by engaging with either of the slots or notches therein, a stirrup fitted in the loop and held by the energy of the spring in a predetermined position, and means for confining said end of the spring in engagement with the loop.

706,469. RAIL-JOINT FASTENER. JAMES C. WESTZEL, Greensburg, Pa. Filed Nov. 9, 1901. Serial No. 81,747. (No model.)

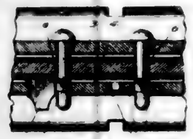

Claim.—The combination with a pair of rails, of angle-plates secured in either side of the meeting edges thereof, one of said angle-plates having a keyhole-slot adapted to register with an opening in the rail, a second angle-plate provided with a keyhole-slot in the narrow portion of which is arranged cam-surfaces, a bolt adapted to pass through each slot in the first-named angle-plate and provided with a rib to fit in the narrow portion thereof, said bolt extending through the opening in the rail and through the slot in the remaining angle-plate, a shoulder formed on the bolt and adapted to engage the cam-surfaces of the last-named angle-plate whereby said angle-plate may be reciprocated with relation to the rails to tighten the bolt, and a wedge adapted to be inserted in the narrow portion of the slot to lock the angle-plate rigid with relation to the bolt.

706,470. ANIMAL-TRAP. PARDON A. WHITNEY, Southington, Conn. Filed Mar. 4, 1902. Serial No. 96,625. (No model.)

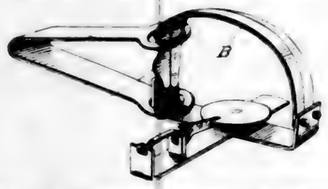

Claim.—1. In a trap of the class specified the combination with the pair of pivoted jaws, of a latch engaging one of said jaws when in open position, and a spring, the one jaw which is engaged by the latch being provided with a projection adapted to engage the said spring.

2. In a trap of the class specified, the combination of the pair of pivoted jaws, one of said jaws being provided on its outer edge with an outwardly-projecting portion, a latch to engage the last-named jaw, and a spring adapted to be engaged by the projected portion of the said jaw when in open position, whereby both jaws are held in substantially the same plane.

706,471. MEANS FOR OPERATING BULKHEAD-DOORS. PAUL HOPPE, Berlin, Germany, assignor to Norddeutscher Lloyd, Bremen, Germany. Filed May 19, 1902. Serial No. 108,056. (No model.)

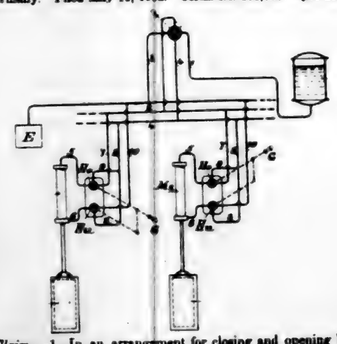

Claim.—1. In an arrangement for closing and opening bulkhead-doors from a central controlling-station, the combination with hydraulic cylinders fitted to the doors, means for operating the doors according as pressure is admitted to either end of said cylinders and a pressure-accumulator, of a pair of pipes connecting the accumulator with the cylinders, a third pipe connecting the cylinders with an exhaust-tank, independent pipes connecting said cylinders with said third pipe and controlled by local valves, and means for switching the pressure stored in the accumulator to either of the pair of pipes and connecting the other with the exhaust-pipe.

2. In an arrangement for closing and opening several bulkhead-doors from a common controlling-station which arrangement consists of a hydraulic cylinder fitted to each of said doors, means for operating the doors when pressure is admitted to either end of the cylinders and a pressure-accumulator the combination with means for switching the pressure stored in said accumulator onto either of a pair of pipes leading from the controlling-station to said cylinders and simultaneously connecting the other to an exhaust-pipe such means being located at the controlling-station of means for connecting the one end of said cylinders either with one of the said pair of pipes or with the said exhaust-pipe and for simultaneously connecting the other end of said cylinders with either of the said pair of pipes substantially as and for the purpose set forth.

3. In an arrangement for closing and opening several bulkhead-doors from a common controlling-station which arrangement consists of a pressure-accumulator, a hydraulic cylinder fitted to each of said doors and means for operating said doors when pressure is admitted to either end of said cylinders, the combination with a four-way valve located at the controlling-station of a pipe connecting said central valve to said accumulator, a second pipe connecting said central valve to each of the cylinders and leading to an exhaust-tank and of two more pipes connecting the central valve with the cylinders, the central valve being arranged so as to connect either of the two latter pipes to the pressure-pipe and the other to the exhaust-pipe or vice versa and of means for connecting one end of said cylinders with either of the said latter pipes and the other end with either one of said latter pipes or with the exhaust-pipe, substantially as and for the purpose set forth.

4. In an arrangement for closing and opening several bulkhead-doors from a common controlling-station the combination with hydraulic cylinders fitted to each of said doors, means for closing and opening said doors when pressure is admitted to either end of said cylinders, a pair of three-way cocks fitted to each of said cylinders each of which cocks is connected by a pipe or channel to one end of the cylinder, means for simultaneously operating both three-way cocks, such three-way cocks being arranged and connected so as to switch the one end of said cylinders onto either of a pair of pipes connecting all cylinders with the controlling-station and the opposite end of the cylinders either onto one of said pair of pipes or onto an exhaust-pipe likewise connecting all doors with the controlling-station, of a pressure-accumulator, a pipe connecting same with the controlling-station and of a four-way cock fitted at the controlling-station and adapted and connected so as to switch the pressure stored in said accumulator onto either of the above said pair of pipes and simultaneously to connect the other to the exhaust-pipe, substantially as and for the purpose set forth.

706,472. FILTER-BED FOR CHLORINATION-BARRELS. ALFRED E. JOHNSON, Colorado Springs, Colo. Filed May 17, 1902. Serial No. 107,909. (No model.)

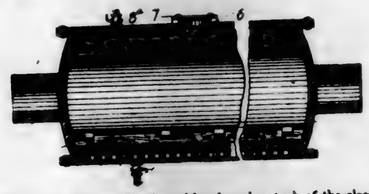

Claim.—1. The combination with a barrel or tank of the class described, of a filter-bed located therein and composed of a number of bars arranged side by side and having their sides grooved or hollowed out, and filtering material filling the spaces between the bars, substantially as described.

2. The combination with a chlorination barrel or tank, of a filter located therein and composed of a series of bars placed side by side and having grooves in their sides, and filtering material filling the spaces between the bars which are notched at the top to allow the solution to enter and at the bottom to allow it to escape after passing through the filtering material, and suitable means for holding the filter in place.

3. The combination with a chlorination barrel or tank, of a filter-bed placed therein and composed of a series of bars placed side by side and having grooves in their sides forming spaces for filtering material, the corners of the bars being cut away to permit insertion of the filtering material after the bars are placed side by side, and binding-strips located at the ends of the bars and covering the filling-openings, the said strips being secured to the barrel to hold the filter in place, an outlet being formed in the barrel below the filter, substantially as described.

4. The combination with a tank or barrel of the class described, of a filter located therein and composed of bars arranged side by side and having grooves formed in their sides, filtering material filling the spaces between the bars which are arranged to expose the said material to the solution and to allow the filtered solution to pass through the filtering material between the bars, the latter being provided with lugs or short legs to support the filter in place.

5. A filter composed of a number of bars having grooved sides, said bars being arranged side by side and filtering material filling the spaces between the bars, openings being left at the top and bottom to permit the entrance and escape of the solution, substantially as described.

6. The combination with a tank or barrel of the class described, of a filter located therein and comprising grooved bars arranged side by side so that the grooves in the adjacent side of any two bars register, filtering material placed in the spaces between the bars, openings being left at the top and bottom to allow the solution to pass through the filter, the filter-bars being provided with lugs to support the filter, the corners of the bars being cut away at their ends forming openings for the insertion of the filtering material, and binding-strips covering the end openings and secured to the tank to hold the filter in place, substantially as described.

706,473. DISH-WASHING MACHINE. HAMILTON F. LOW, New York, N. Y. Filed Oct. 28, 1901. Renewed July 14, 1902. Serial No. 115,561. (No model.)

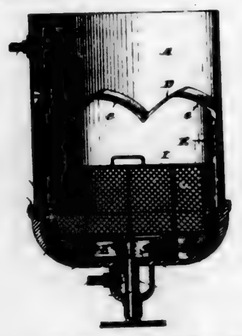

Claim.—1. In a dish-washing machine, the combination of a tank or vessel, a casing forming a water-tight receptacle with the tank, an agitator within the casing, said tank having a series of webs or ribs upon the interior thereof extending from the base of the tank, and inclined from the perpendicular, and rising to a point somewhat above the middle of the cylinder, substantially as described.

2. In a dish-washing machine, the tank or vessel A having upon its interior surface curved ribs extending from the base, and rising to a point somewhat above the middle of the vessel, and a second series of ribs or webs, each rib of said second series extending from the apex of one of the ribs of the first series to a point near the apex of the next succeeding rib of the second series, substantially as described.

3. In a dish-washing machine, the combination of a tank or vessel, a casing beneath said tank, and an agitator within the casing, said casing being provided on its interior surface with ribs extending upwardly from the bottom and forming guides or conduits for the passage of water into the tank, substantially as described.

4. In a dish-washing machine, the combination of a tank or vessel, a casing with which said tank forms a water-tight receptacle, ribs upon the inner surface of said tank, a lining fitted against said ribs, an agitator within the casing, and means for imparting motion to said agitator, substantially as described.

5. In a dish-washing machine, the combination of a tank or vessel, a casing forming with the tank a water-tight receptacle, an agitator within said casing, and a plate or casting having a central aperture resting on the ribs within said casing, substantially as described.

6. In a dish-washing machine, the combination of a tank or vessel, a casing upon which said tank rests, said tank and casing being provided on their interior surfaces with ribs, and a lining fitting against the ribs in the tank, the upper edge of said lining being serrated and conforming to the shape of a deflector formed by a series of ribs in the tank, substantially as described.

7. In a dish-washing machine, the combination of a tank or cylinder, a casing upon which said tank or cylinder rests, and with which it forms an air-tight receptacle, an agitator within the casing, and a series of ribs disposed within the casing, and a series of ribs on the inner surface of the tank, the two series of ribs forming continuous water-channels from the casing to a point somewhat above the middle of the cylinder, substantially as described.

706,474. PROCESS OF SETTING TILES. JAMES H. MUNRO, Newark, N. J. Filed June 28, 1902. Serial No. 113,567. (No specimens.)

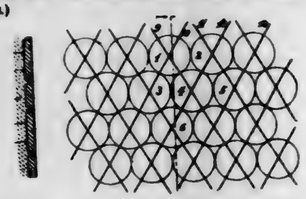

Claim.—1. That improvement in the art of preparing and setting tiles consisting in connecting said tiles loosely for transportation; adjusting said tiles, *in situ*, while still connected; and cementing said tiles in adjusted position, substantially as described.

2. That improvement in the art of setting tiles which consists in connecting the respective tile members together flexibly, for adjustment, and in such a manner as to leave substantially the entire reverse portions free to access; and cementing and grouting the tile while said members are still connected, substantially as described.

706,475. METHOD OF PRODUCING METALS IN A FINELY-DIVIDED STATE. EDUARD POHL, Weisswasser, Germany. Filed Oct. 23, 1901. Serial No. 79,716. (No specimens.)

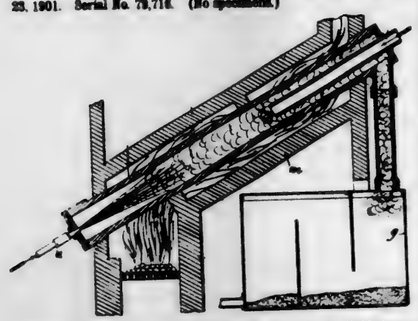

Claim.—A process for producing metals in a finely-divided state consisting in smelting the material, spraying the smelted material into a retort heated to a suitable temperature, evaporating the spray, and then condensing the obtained vapors.

706,476. BATH-CABINET. JAMES W. RILEY, Marshalltown, Iowa, assignor of one-half to D. C. Wilbur, Marshalltown, Iowa. Filed Sept. 21, 1901. Serial No. 76,106. (No model.)

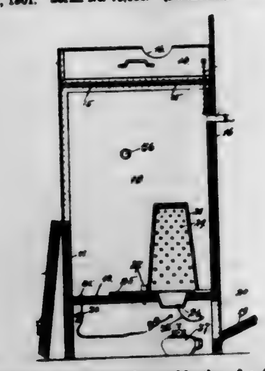

Claim.—In a bath-cabinet the combination of a frame comprising two sides, a back, and a front which is hinged at its central portion allowing the top portion thereof to swing outwardly and downwardly; a top divided along its longitudinal center capable of swinging outwardly, said top having a circular opening in its longitudinal center through which the operator may pass his head when the top is closed, a bottom piece elevated some distance above the lower edge of the front, back, and sides, means for introducing steam into the interior of the cabinet from beneath the bottom piece, a metal conductor-lining for the entire interior of the cabinet, a plate of insulating material resting upon the upper surface of the bottom piece having suitable openings therein, a metal seat resting upon the insulating-plate, removable metal pins passed through the insulator-plate and said bottom piece to engage the metal seat and limiting the movement thereof, a contact-plate to engage one of the metal pins when it is in position for use, a source of electrical supply, means for connecting one pole thereof with said metal lining and the other pole with said contact-plate, substantially as and for the purpose stated.

706,477. WHEEL. JOHN J. ROWE, New Kensington, Pa. Filed Sept. 25, 1901. Serial No. 76,475. (No model.)

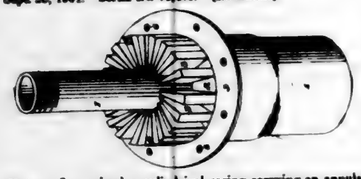

Claim.—In a wheel, a cylindrical casing carrying an annular flange at one end thereof, a hub mounted within said casing, a series of radial wedge-shaped extensions carried by said hub having their ends extending beyond said flange of the casing, an interior sleeve having an enlarged end secured in said hub and extending therebeyond, a second cylindrical casing carrying an annular flange, a hub mounted in said last-named casing and having its end flush with the said last-named flange, said end of the hub having radial wedge-shaped notches formed therein for the reception of said extensions carried by the first-named hub, the said extensions adapted to have the spokes interposed therebetween and have their ends seated in said notches, the said flanges having registering apertures therein and engaging the sides of the spokes, and bolts passed through said flanges and engaging in the space between said spokes, substantially as described.

706,478. FLUID-PRESSURE ELECTRIC-SWITCH-CONTROLLING APPARATUS. AUGUST SUNDH, Yonkers, N. Y., assignor to Electrite Company, New York, N. Y. Filed Dec. 16, 1901. Serial No. 86,066. (No model.)

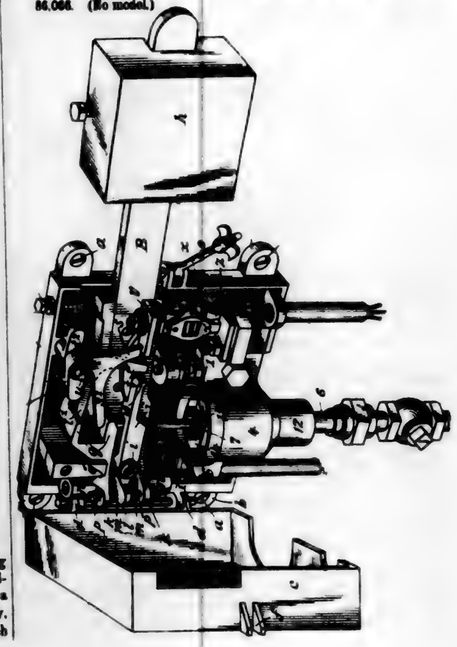

Claim.—1. In a fluid-pressure-controlled snap-switch, the combination with the stationary and movable contacts, and a lever carrying said movable contacts, of a fluid-pressure-operated lever whereon the contact-carrying lever is pivoted, and having opposing springs for actuating said contact-carrying lever in opposite directions, gravitating contact-lever stops respectively engaging said contact-lever and opposing the operating-springs of said lever for augmenting their tension for quick action, and tripping-jaws of the fluid-pressure-operated lever respectively releasing the contact-carrying lever from the stops.

2. In a snap-switch, the combination with the movable and stationary contacts, of a lever carrying the movable contacts, an operating-lever whereon the contact-carrying lever is pivoted, compression-springs for transmitting the power of the operating-lever to the contact-carrying lever, and means for stopping and releasing the contact-carrying lever for augmenting the tension of the springs, said contact-carrying lever pivoted on the operating-lever concentrically to said operating-lever pivot for causing rubbing action of the contacts.

3. In a snap-switch, the combination with the movable and stationary contacts, of a lever carrying the movable contacts, an operating-lever whereon the contact-carrying lever is pivoted, compression-springs for transmitting the power of the operating-lever to the contact-carrying lever, means for stopping and releasing the contact-carrying lever for augmenting the tension of the springs, said contact-carrying lever carried on the operating-lever, and means carried by said operating-lever for tripping the contact-lever stops to release the contact-carrying-lever-actuating springs.

4. In a snap-switch, the combination with the movable and stationary contacts, of a lever carrying the movable contacts, an operating-lever whereon the contact-carrying lever is pivoted, compression-springs for transmitting the power of the operating-lever to the lever carrying the movable contacts, means for stopping and releasing the contact-carrying lever for augmenting the tension of the springs, said means consisting of the gravitating stops, stop-catches on the contact-carrying lever, and the jaws of the operating-lever engaging the arms of the stops.

5. In a snap-switch, the combination with the movable and stationary contacts, of a lever carrying the movable contacts, an operating-lever whereon the contact-carrying lever is pivoted, compression-springs for transmitting the power of the operating-lever to the contact-carrying lever, means for stopping and releasing the contact-carrying lever for augmenting the tension of the springs, said means consisting of the gravitating stops, stop-catches on the contact-carrying lever, and the jaws of the operating-lever engaging the arms of the stops, said jaws located immediately of the stops and the operating-lever pivot.

6. In a snap-switch, the combination with the movable and stationary contacts, of a lever carrying the movable contacts, an operating-lever whereon the contact-carrying lever is pivoted, compression-springs for transmitting the power of the operating-lever to the contact-carrying lever, means for stopping and releasing the contact-carrying lever for augmenting the tension of the springs, said means consisting of the gravitating stops, stop-catches on the contact-carrying lever, and the jaws of the operating-lever engaging the arms of the stops, said stops mounted independently of each other and arranged to gravitate in reverse directions for engaging the stop-catches of the contact-carrying lever, with their tripping-arms both ranging in the same direction, and in relation to the tripping-jaws of the operating-lever located one above another and in approximately the same relation to the pivot of said operating-lever, whereby the stops are respectively operated by the reverse movements of the operating-lever.

7. In a snap-switch, the combination with the movable and stationary contacts, of a lever carrying the movable contacts, an operating-lever whereon the contact-carrying lever is pivoted, means for operating the contact-carrying lever through the instrumentality of the operating-lever, and effecting snap action of the contacts, variable fluid-pressure apparatus for actuating the operating-lever, and a protective case inclosing the switch apparatus and the fluid-pressure apparatus.

8. In a snap-switch, the combination with the movable and stationary contacts, of a lever carrying the movable contacts, an operating-lever whereon the contact-carrying lever is pivoted, means for operating the contact-carrying lever through the instrumentality of the operating-lever, and effecting snap action of the contacts, and variable fluid-pressure apparatus for actuating the operating-lever, through the instrumentality of a pressure-actuated diaphragm and a rod mounted on said diaphragm, said diaphragm having a pendent socket guide-stem in which said stem is seated near the lower end of said stem, and said stem, having a guideway for its lower extremity.

706,479. REVERSING-CLUTCH. AUGUST H. SWIRBUL, Marquette, Mich. Filed Nov. 7, 1900. Renewed July 8, 1902. Serial No. 114,128. (No model.)

Claim.—1. A clutch mechanism comprising a driving-shaft, a driven shaft, a coupling-head on each shaft, each head having two tapered walls, two corresponding walls of the two heads being designed to be thrown into frictional engagement, the other walls being oppositely tapered to form a surrounding V-space, a series of tapered frictional rolls located within such space and designed to be thrown into frictional engagement with the adjacent walls of said heads when the before-mentioned walls are out of engagement, and means for effecting said engagements, substantially as set forth.)

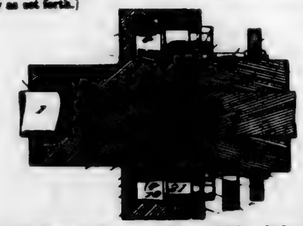

2. A clutch mechanism comprising a driving-shaft, a driven shaft, a coupling-head fast on one shaft, a second coupling-head fast on the other shaft but capable, together with its shaft, of a limited longitudinal movement, a connection between said heads, each head having two tapered walls, two corresponding walls of the two heads being designed to be thrown into frictional engagement, a series of frictional rolls designed to be thrown into frictional engagement between the other walls of said heads when the before-mentioned walls are out of engagement, and means for effecting said engagements, substantially as set forth.

3. A clutch mechanism comprising a driving-shaft, a driven shaft, a coupling-head fast on the driving-shaft, a second coupling-head fast on the driven shaft which latter together with its coupling-head is formed with a longitudinal slot, a connection between said heads, a cross-rod carried by said connection extended through said slots, each of said heads having two tapered walls, two corresponding walls of the two heads being designed to be thrown into frictional engagement, a series of frictional rolls designed to be thrown into frictional engagement between the other walls of said heads, and means for effecting said engagements, substantially as set forth.

4. A clutch mechanism comprising a driving-shaft, a driven shaft, a coupling-head fast on each shaft, the coupling-head on the driven shaft together with the latter having coincident slots, a connection between said coupling-heads secured at one end within the head of the driving-shaft and extended into a bore in the driven shaft, a cross-rod carried by said connection extended through said slots, a raceway for said rod, each of said heads having two tapered walls, two corresponding walls being designed to be thrown into frictional engagement, a series of frictional rolls designed to be thrown into frictional engagement between the other walls of said head, and means for effecting said engagements, substantially as set forth.

5. A clutch mechanism comprising a driving-shaft, a driven shaft, a coupling-head fast on the driving-shaft, a coupling-head on the driven shaft having, together with the latter, coincident slots, a connection between said coupling-heads comprising a stem fitted in a bore of the driven shaft and a disk-like head, means for holding said disk-like head in the coupling-head of the driving-shaft, a cross-rod carried by said connection extended through said slots, rolls on the ends of said cross-rod, a raceway for said rolls, each of said heads having tapered walls, a series of frictional rolls, and means for effecting the driving of the driven shaft in the same or opposite direction as the driving-shaft, substantially as set forth.

6. The combination with the driving-shaft and a coupling-head fast thereon formed with inner and outer tapered walls, of a driven shaft having a hole or bore at one end, a coupling-head fast on said driven shaft which, together with the latter, has a longitudinal slot, a T connection having its disk-like head secured in the coupling-head of the driving-shaft and its stem fitted in the hole or bore of the driven shaft, a transverse rod carried by said stem extended through said slots, rolls on said rod, a disk, a series of frictional rolls carried by said disk located in the space between the outer tapered walls of the two coupling-heads, a ring secured to said disk and formed with a raceway for the rolls of the transverse rod, and means for simultaneously moving said series of frictional rolls and the coupling-head of the driven shaft in opposite directions, substantially as set forth.

7. The combination with the driving-shaft and the coupling-head fast thereon having an annular groove or channel formed with inner and outer tapered walls, of the driven shaft, a coupling-head fast thereon having inner and outer tapered walls, a connection between the two coupling-heads, a disk, a series of frictional rolls located in the space between the outer tapered walls of the two coupling-heads, studs for said rolls supported by said disk, two rings on the coupling-head of the driven shaft

having opposite bearing-surfaces, a collar loose on said head, and an operating-lever fulcrumed to said collar and designed to engage said bearing-surfaces, substantially as set forth.

706,480. WHEEL. ALPHONSO A. VERE, Glasgow, Scotland. Filed May 17, 1902. Serial No. 107,751. (No model.)

Claim.—1. An improved wheel comprising the hub having radial plates arranged parallel and provided with radial slots, an annular spoke-socket arranged between said plates and provided with sockets to receive spokes and between said sockets with spaces for the cross-bolts and with spaces opening at the sides of the annular socket-piece and with wooden blocks therein fitting such spaces and relieving friction between the spoke-socket annulus and the parallel hub-plates, cushioning means between the hub and the annular spoke-socket and cross-bolts through the side plates of the hub and the spoke-socket annulus substantially as set forth.

2. An improved wheel comprising the parallel side plates, the annular spoke-socket between the same and having recesses opening at its sides facing said plates, and filling-blocks in said recesses and bearing against the side plates substantially as set forth.

706,481. DEVICE FOR CUTTING SUGAR-CANE, &c. JOHN H. H. WILSON, Honolulu, Hawaii. Filed Oct. 17, 1901. Serial No. 78,981. (No model.)

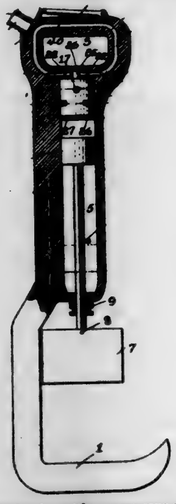

Claim.—1. In a device for cutting sugar-cane or the like, the combination with an operating-engine having a piston, of a body provided with a hook and a hand-grasp, and a knife attached to the piston of the engine and adapted to operate in connection with the hook to sever the sugar-cane or the like.

2. In a device for cutting sugar-cane or the like, the combination with an engine having a piston, of a body provided with a hook and a hand-grasp at its extremes, and a knife connected to the piston and adapted to operate in connection with the hook, substantially as set forth.

3. A light portable device for cutting sugar-cane or the like having a body provided with a hook at its lower end, a hand-grasp at its upper end and an engine-cylinder, a cutting-knife, a piston having connection with the cutting-knife and operating in the engine-cylinder, and a rotary valve device between the hand-grasp and engine-cylinder, substantially as set forth.

4. A device for cutting sugar-cane or the like comprising a body having a hook adapted to be placed against a stalk to be severed, and a pneumatic engine having a piston carrying a knife adapted to operate in connection with the hook to cut the stalk, substantially as set forth.

706,482. THERMOCAUTER. LOUIS WIESCHING, New York, N.Y. Filed Feb. 14, 1902. Serial No. 94,025. (No model.)

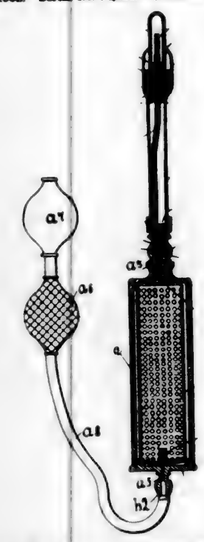

Claim.—1. In a thermocauter, a carburetor, an air-forcing device connected with one end thereof, a tubular arm connected with the opposite end thereof, a small tube placed within said tubular arm, a canter-head connected with the end of said arm and provided with a canter-tube, a conical casing connected with said canter-head and inclosing the base of said canter-tube, a burner-tube secured in said head and projecting into the canter-tube, the space within said conical casing being in communication with the interior of said arm and the inner burner-tube being in communication with the small tube within said arm, said canter-head being also provided with an annular space or chamber around the inner end of said burner-tube and with ports or passages communicating therewith and opening outwardly through said head, substantially as shown and described.

2. In a thermocauter, a carburetor, an air-forcing device connected with one end thereof, a tubular arm connected with the opposite end thereof, a small tube placed within said tubular arm, a canter-head connected with the end of said arm and provided with a canter-tube secured in said head and projecting into the canter-tube, the space within said conical casing being in communication with the interior of said arm and the inner burner-tube being in communication with the small tube within said arm, said canter-head being also provided with an annular space or chamber around the inner end of said burner-tube and with ports or passages communicating therewith and opening outwardly through said head and means for controlling the flow of carbureted air through said tubular arm, and the small tube within said arm, substantially as shown and described.

706,483. RUNNING-GEAR FOR VEHICLES. HERBERT A. WISE, Luxora, Ark. Filed Oct. 17, 1901. Serial No. 78,986. (No model.)

Claim.—1. In a device of the class described, the combination with an axle, of a spindle composed of two sections and provided with a pivot passing through the axle and connecting the sections, substantially as described.

2. In a device of the class described, the combination of a spindle composed of two sections provided with longitudinal openings having inner and outer tapered portions converging toward the center, a central pivot carried by the spindle, and an axle extending into the said openings and provided with an eye to receive the pivot, and having the arm or extension 6 extending into the outer tapered portions of the openings, substantially as described.

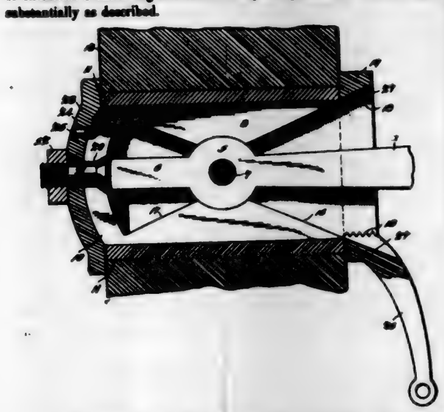

3. In a device of the class described, the combination with an axle, of a spindle composed of sections and receiving the axle, and a pivot carried by the spindle and connecting the same with the axle, substantially as described.

4. In a device of the class described, the combination of a spindle composed of sections, a collar or ring arranged at the inner ends of the sections and receiving the same and securing the sections together and adapted to abut against a hub, and a pivot carried by the spindle for connecting it to an axle, substantially as described.

5. In a device of the class described, the combination of a spindle composed of sections having longitudinal openings composed of circular central portions, and inner and outer tapered portions, an axle arranged within the spindle and having an eye located near its end and arranged within the central portions of the openings of the sections, and a pivot passing through the eye and connecting the sections, substantially as described.

6. The combination of an axle, a spindle composed of two sections receiving the axle and provided at their outer ends with registering grooves or notches, a pivot carried by the spindle and passing through the axle, and a screw having its head arranged within the grooves or notches, whereby it is detachably interlocked with the spindle, said screw extending outward from the spindle and adapted to receive an axle-nut, substantially as described.

7. In a device of the class described, the combination of a spindle composed of separable sections, a screw interlocked with and extending outward from the sections, an axle-nut arranged on the screw, a washer mounted on the screw and having a perforation, and a projection carried by the spindle and engaging the perforation of the washer, substantially as described.

8. The combination of an axle, a spindle composed of two sections receiving the axle, a pivot carried by the spindle and connecting the latter to the axle, a longitudinally-disposed fastening device extending outward from the outer end of the spindle and detachably interlocked with the sections and adapted to receive means for holding a wheel on the spindle, and means for connecting the sections, substantially as described.

706,484. RUFFLING AND SEWING MACHINE. ROSSEL G. WOODWARD, Waukegan, Ill., assignor to The Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed May 17, 1902. Serial No. 108,071. (No model.)

Claim.—1. In a sewing and ruffling machine, suitable stitch-forming mechanism, a feeding device and a ruffling device including a ruffler-blade, a driving-shaft, a rock-shaft journaled on the bed of the machine beneath the work-plate and carrying a frame supporting the ruffler-blade which operates above said work-plate, a rocking frame journaled on the machine-frame with its axis, parallel with the first rock-shaft and operatively engaging the same, a second rocking shaft operatively engaging the rocking frame, and itself in operative engagement with the driving-shaft; substantially as described.

2. In a sewing-machine, and in combination, the driving-shaft and three rocking members journaled on the frame of the machine beneath the work-plate, one of said members carrying a frame having an eccentric connection with the driving-shaft, a connection between said frame, and an arm on the second rocking member, a second arm on said second rocking member, in engagement with an arm on said third rocking member, said third rocking member having also an arm supporting a ruffler-blade; substantially as described.

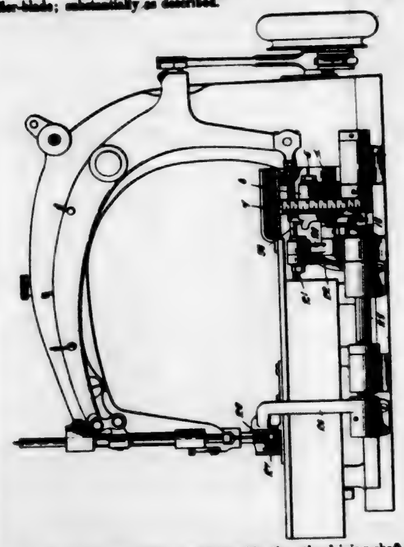

3. In a sewing-machine, and in combination, the driving-shaft and the three rocking members journaled on the frame of the machine beneath the work-plate, one of said members carrying a frame having an eccentric connection with the driving-shaft, an adjustable connection between said frame and an arm on the second rocking arm, and a second arm on said second rocking member in engagement with an arm on said third rocking member, said third rocking member having also an arm supporting a ruffler-blade; substantially as described.

4. In a sewing and ruffling machine, in combination with the driving-shaft, a rock-shaft provided with an upwardly-extending arm with an eccentric connection between the upwardly-extending arm and the driving-shaft, a rocking frame, an arm secured thereto at one end and having its outer end at the front of the machine secured to the upwardly-extending arm of the first rock-shaft, and a second rock-shaft having an upwardly-extending arm to the upper end of which is secured one end of an arm which at its opposite end is attached to the rocking frame, said second rock-shaft being also provided with an arm supporting the ruffler-blade; substantially as described.

5. In a sewing and ruffling machine, in combination with the driving-shaft, a rock-shaft provided with an upwardly-extending arm with an eccentric connection between the upwardly-extending arm and the driving-shaft, a rocking frame, an arm secured thereto at one end and provided at its outer end with a head adjustable upon the upwardly-extending arm of the first rock-shaft, a second rocking shaft having an upwardly-extending arm, to the outer end of which is secured an arm attached at its lower end to the rocking frame, said second rocking shaft being also provided with an arm supporting the ruffler-blade; substantially as described.

6. In a sewing-machine having stitch-forming mechanism, and a feeding device, the herein-described mechanism for operating a ruffler-blade or like fabric-manipulating device comprising a driving-shaft, an eccentric thereon, a pivoted arm having a slot and operated from the eccentric on the driving-shaft, a link, an arm pivoted to the link, and adjustable within the slot, a rock-shaft supporting the ruffler-blade, and an arm secured to the same, and pivoted to the link; substantially as described.

7. In a sewing-machine having stitch-forming mechanism, and a feeding device, the herein-described mechanism for operating a ruffler-blade or like fabric-manipulating device comprising a driving-shaft, an eccentric thereon, a pivoted arm driven from the eccentric, a pivoted link, a rock-shaft supporting the ruffler-blade and connections between the link and the ruffler-blade-supporting shaft, said first pivoted arm being provided with a slot, and an arm pivotally secured at one end to the link and

at its other end carrying a part adjustably secured within said slot; substantially as described.

8. In a sewing-machine having stitch-forming mechanism, and a feeding device, the herein-described mechanism for operating a ruffler-blade or like fabric-manipulating device comprising a driving-shaft, an eccentric thereon, a pivoted arm driven from the eccentric, a pivoted link, a rock-shaft supporting the ruffler-blade and connections between the link and the ruffler-blade-supporting shaft, said first pivoted arm being provided with a T-shaped slot, and an arm pivotally secured at one end to the link, and at its opposite end enlarged to form a head, and a bolt passing through said head, and having on its inner end a part sliding in said slot; substantially as described.

706,485. ROTARY ENGINE. GEORGE H. WOODWARD, Bradford Pa. Filed Oct. 24, 1901. Serial No. 79,845. (No model.)

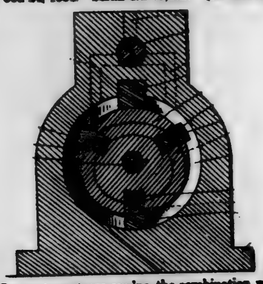

Claim.—In a rotary steam-engine, the combination with a cylinder provided with grooves in its ends, of heads secured to said cylinder, packing-strips located in said grooves and forming a steam-tight joint between the cylinder and the heads, cam-grooves located in the inner sides of the heads of the cylinder, an abutment-head located within said cylinder, a valve-casing provided with a steam-inlet having two ducts leading therefrom into the cylinder at opposite points of a vertical line drawn through said cylinder, said casing being also provided with exhaust-ports and with exhaust-ducts which lead into the cylinder at opposite points of a vertical line drawn therethrough, a valve-ring provided with two recesses in its periphery, one being designed to control the admission of steam into the cylinder at either side of the abutment-head, so as to reverse the direction of rotation of the piston, and the other designed to control the exhaust through the exhaust-ducts, a rotary piston having an annular groove intersected by slots open at their ends, wings located in said slots and having studs or trunnions projecting through the open ends of the slots and through the grooves in the heads of the cylinder, whereby as they approach the abutment-head, the wings will be drawn into said slots to permit of said wings freely passing under the abutment-head, substantially as set forth.

706,486. HYDROCARBON-BURNER. ALFRED A. ARNOTT, New Haven, Conn., assignor to the Arnott Light and Burner Company, New Haven, Conn., a Corporation of South Dakota. Filed Feb. 20, 1901. Serial No. 48,126. (No model.)

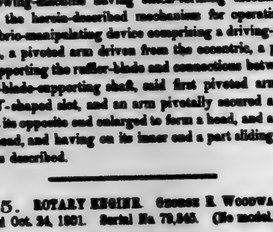

Claim.—1. A hydrocarbon-burner, comprising a tubular body member having a shank of reduced diameter at its lower end with a spiral shoulder formed by said reduction, and a vaporizing-tube wound spirally about said shank with the said spiral shoulder resting upon and engaging the whole of the upper coil of said vaporizing-tube, which tube projects laterally at its upper end from the said body member, and all of the coils thereof being below said projecting portion, all constructed and operating substantially as described.

2. In a burner, the combination with the tubular body member 1 having a shank 2 at its lower end of reduced diameter with a spiral shoulder formed by said reduction and a bore therethrough with a gauze cap 5 covering the upper end thereof; of a vaporizing-tube 6 formed into a spiral coil midway of its length which surrounds said shank 2 and supports said body member, the said spiral shoulder resting upon the top inclined coil of said vaporizing-tube, and the outside diameter of said coil and said body member being substantially the same, with the end 7 of said tube projecting laterally from said body member with all of the said coils below said projecting portion and the other end of said tube projecting downwardly substantially parallel with the axis of said body member and thence upwardly substantially parallel with the said downwardly-projecting portion and terminating below the bottom of the body member; and a perforated check-plate 10 covering the end of said tube; and a nut threaded thereon inclosing the said check-plate, all constructed and operating substantially as described.

706,487. MACHINE FOR MOLDING. JOHN H. BATTENFELD, Cleveland, Ohio, assignor to the Cleveland Automatic Moulding Machine Company, a Corporation of Ohio. Filed Aug. 24, 1901. Serial No. 73,142. (No model.)

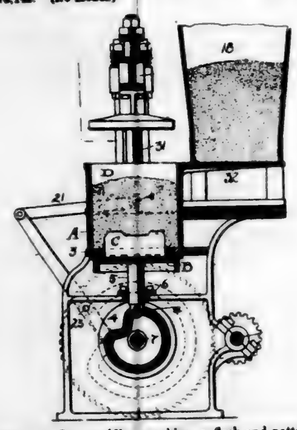

Claim.—1. In a molding-machine, a flask and pattern, and means to support the same, in combination with a movable sand-feed box having a greater sand capacity than said flask when the pattern is in place therein and when the sand is compressed, means to support said feed-box above and in close relation to said flask, and means to operate said feed-box back and forth over said flask, substantially as described.

2. In a molding-machine, the flask and a support therefor, a ramming-plunger, a support for the pattern beneath said plunger, a sliding feed-box having a greater sand capacity than said flask when the sand is compressed, and means to carry said box over the pattern-support whereby part of its contents is discharged into said flask, and means to retire said feed-box to level the sand within the flask, substantially as described.

3. In a molding-machine, the flask and its support, a ramming-plunger arranged to operate above said support, means to raise and lower said plunger, a sand-feed box adapted to slide back and forth over said flask, said box comprising vertical walls with an open top and bottom, and constructed to carry more sand than said flask will hold when the pattern is in place therein and when the sand is compressed, a sand-supply box for said feed-box, and means to move said feed-box back and forth between said flask and supply-box, substantially as described.

4. In a molding-machine, the combination of a flask, a pattern-support beneath said flask, a ramming-plunger adapted to raise and lower in relation to said flask, vertical guides for said plunger, a power-gear, connecting-rods having crank connection with said gear and a sliding connection with said plunger, and springs mounted on said connecting-rods to provide a yielding pressure for the plunger, substantially as described.

5. A molding-machine provided with a flask and a support for said flask; a ramming-plunger having a cross-beam adapted to slide, rigid vertical guides for said beam, trunnions at either side of said beam, connecting-rod heads supported on said trunnions, power-gear, connecting-rods having crank connection with said gears and a sliding connection with said heads, adjustable nuts on the ends of said rods, and springs between said nuts and head to provide a yielding pressure for said plunger, substantially as described.

6. In a molding-machine, the movable ramming-plunger and a flask supported below the same, a pattern-support beneath said flask, a feed-box at one side constructed to hold more sand than said flask when the sand is compressed, and adapted to slide over the top face of the flask, a sand-supply box for said feed-box, means to slide said feed-box forward to convey part of the sand in said feed-box to said flask, means to slide said feed-box back to level the sand deposited in the flask, and means to operate said plunger to compress the sand fed into said flask, substantially as described.

7. A molding-machine comprising a sand-supply box, a flask, a feed-box having a larger sand capacity than said flask when the sand is compressed, and means to move said feed-box back and forth to fill the flask uniformly with sand and to level the sand therein, in combination with a ramming-plunger having means to operate the same to compress the sand fed to said flask, substantially as described.

8. A molding-machine having a movable pattern-support and a ramming-plunger in line with said support, and means to operate both said support and plunger, comprising a shaft centrally located beneath both said plunger and support, power-gears at each side of the vertical center of said plunger and movable support, connecting-rods for the plunger having crank connections with said gears, a cam on said shaft having operative connection with said movable support, and means to rotate said shaft, substantially as described.

9. A molding-machine having a flask and a support therefor with a ramming-plunger arranged to operate above the same, a movable pattern-support arranged beneath said plunger, a cross-shaft beneath said pattern-support, a cam on said shaft to carry said support up and down and to hold the same in raised position during the filling of the flask and compression of the sand therein, power-gears on said shaft, connecting-rods for said shaft having crank connections with said gears, and means to rotate said shaft, substantially as described.

10. In a molding-machine having a frame constructed to support a flask and provided with a table at one side and level with the top face of said flask, a sand-supply box supported above said table, a movable feed-box having an open top and bottom with vertical walls to form a chamber having a greater sand capacity than said flask when the sand is compressed, and provided with an extension at its top and rear adapted to close the bottom of said supply-box when the said feed-box is shifted, means to shift said feed-box from said sand-box to the flask and back to partially discharge its load of sand into said flask, and means to level the sand in said flask by the back movement of said feed-box, substantially as described.

11. In molding-machines using flasks and patterns, a sand-supply box, a movable sand-feed box beneath said supply-box, a ramming-plunger, a movable support for the pattern, a cross-shaft beneath said pattern-support, a pair of power-gears on said shaft, connecting-rods having crank connections with said gears to operate said plunger, cam-grooves in the face of said gears, a pivoted lever mounted opposite each gear and having a roller riding in said grooves, links connecting said lever with the movable feed-box, means to rotate said gears and shaft, and means to automatically stop said mechanism at the end of the molding operation, substantially as described.

12. In a molding-machine using flasks and patterns, a movable sand-feed box for filling the flask, a ramming-plunger, a movable support for the pattern, a cross-shaft having power-gears with connected mechanism to operate each of said parts, a friction-clutch, a lever to throw said clutch, and means eccentrically mounted on one gear to engage said lever and stop the operation after each full revolution of said shaft, substantially as described.

706,488. ANTIFRICTION-COLLAR FOR WOOD-SHAPERS. THOS. S. CRAFF, Waynetown, Ind. Filed Nov. 28, 1901. Serial No. 84,010. (No model.)

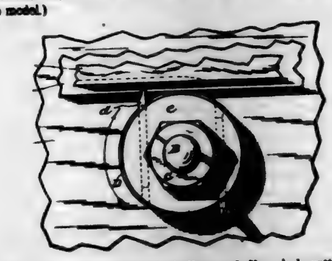

Claim.—1. A wood-shaper including a spindle, a hub, cutters, means for binding the cutters and the hub to the spindle, a collar mounted rotatively on the hub, and antifrictional bearings mounted between the hub and the collar.

2. A wood-shaper spindle provided with a hub secured thereto having a projecting flange, a cutter mounted at the top of the hub, a collar adjustably secured to the hub, the spindle and the hub and the cutter moving together, a guide-collar mounted rotatively on the hub between the flange and the collar, and antifrictional bearings mounted between the hub and the guide-collar.

3. An antifrictional guide-collar for wood-shaper spindles comprising a bored hub having a flange at the upper portion, a collar adjustably attached to the lower portion of the hub, a collar having an internal annular rib mounted rotatively on the hub, and antifrictional bearings having contact with the sides of the annular rib and also with the hub.

4. In a wood-shaper spindle, the combination of the hub secured to the spindle and having the downwardly-facing shoulder, the bearing-collar screwed to the lower end of the hub, the locking-nut engaging the bearing-collar, the guide-collar rotatively mounted on the hub and having the internal annular rib, and the ball-bearings situated at either side of said rib and engaging the shoulder and the bearing-collar, with the cutter, and means whereby the cutter and the hub may be secured to the spindle, substantially as set forth.

706,489. MOTOR. WILLIAM EVANS, Manchester, England, assignor of two-thirds to William Thomas Hill, Withington, Lancaster county, England, and Ronald Gale, Woking, Surrey county, England. Filed Jan. 8, 1902. Serial No. 88,822. (No model.)

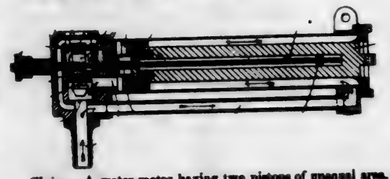

Claim.—A water-motor having two pistons of unequal area, a port in uninterrupted communication with the water-supply and conducting pressure to the piston of the smaller area, a port leading to the piston of larger area, a double valve having a slotted valve-stem and a piston of larger area than the valve, a port leading to back of said piston, and a port leading to exhaust, piston-valves working in the slot of the double valve and actuated by the piston of the motor to govern such ports, and an exhaust-port arranged substantially as described.

706,490. LOCOMOTIVE-BOILER. JOSEPH J. GAGE, Mansfield, Ohio. Filed Mar. 7, 1902. Serial No. 97,110. (No model.)

Claim.—In a device of the type set forth, the combination with a boiler having front and rear heads, of an intermediate vertical head secured in front of the rear head, with a series of horizontal flues passing through all of said heads, the intermediate head supporting the weight of the flues between the front and rear heads, a series of short flues located within said first-named flues and extending from said rear head through the intermediate head, the rear ends of said short flues being swaged over the ends of said horizontal flues, said short and horizontal flues being of the same thickness throughout, substantially as described.

706,491. BOW-FACING OAR. RICHARD B. HARRON, Buffalo, N. Y., assignor to J. Herbert Diehl, Buffalo, N. Y. Filed Jan. 16, 1902. Serial No. 89,962. (No model.)

Claim.—1. A device of the class described comprising a base-plate having a boxing thereon provided with upper bearing-faces, a rocker having a leg disposed within the boxing and having bearing-faces disposed against the corresponding faces of the boxing, and intermeshing gears mounted at opposite ends of the rocker and having opposite end sections of oars attached thereto.

2. A device of the class described comprising a base-plate having convex bearing-faces, a rocker having convex bearing-faces disposed against those of the base-plate, means for holding the bearing-faces in mutual operative relation, end gears pivoted at opposite ends of the rocker and intermeshing, said gears having means for attachment of handle and blade sections of oars thereto, respectively.

3. A device of the class described comprising a base-plate having terminal clamps for engagement with the gunwale of a boat, an inclosure upon the plate having bearing-faces at its upper edge, a rocker having a depending lug disposed within the inclosure and having convex bearing-faces at the sides thereof resting upon the bearing-faces of the inclosure, and intermeshing gears arranged respectively at opposite ends of the rocker, said gears having means for attachment of oar-sections thereto.

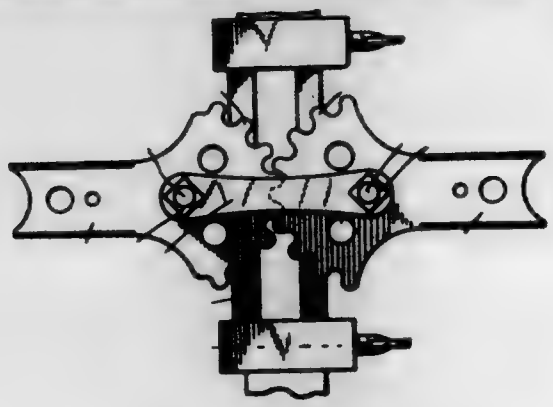

706,492. SPARKING IGNITER FOR EXPLOSIVE-ENGINES.

JOSEPH LEMOTTE, Quincy, Mass., assignor of one-half to Helen N. Bray, Boston, Mass. Filed Dec. 11, 1901. Serial No. 85,442. (No model.)

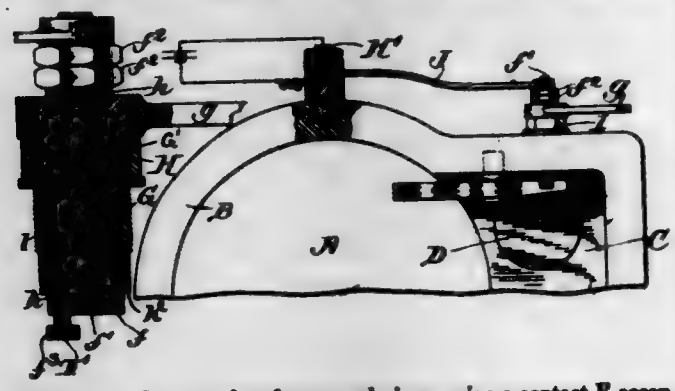

Claim.—1. In a sparker for an explosive-engine a contact F eccentrically formed on a stud *f'*, an adjustable sleeve G carrying the stud and insulated therefrom, and a bushing I in which the sleeve is frictionally held from rotation, substantially as described.

2. In a sparker for explosive-engines, a stud *f'* provided with an eccentric contact, an adjustable sleeve G in which said stud is secured against rotation, insulating material separating the stud and sleeve, and means for holding said sleeve in its adjusted positions, substantially as described.

3. In a sparker for explosive-engines, a stud *f'* provided with an eccentric contact F, a sleeve G, an insulating-sleeve H between the stud and the sleeve G, means for binding the stud and the sleeves G and H together, a bushing I in which the sleeve G is mounted, and a spring G' for frictionally holding the sleeve G in its adjusted positions, substantially as described.

706,493. TROUSERS-SUPPORTER.

LUCIAN O. MILLER, Cincinnati, Ohio. Filed Nov. 8, 1901. Serial No. 81,643. (No model.)

Claim.—1. In a trousers-supporter, the combination of a band or belt adapted to be passed about the waist, plates adapted for attachment inside the trousers, and slides having loops embracing and movable along said band or belt and provided with pads adapted to rest upon the hips of the wearer, one loop of each slide having means for detachable engagement with one of said plates for supporting the trousers from said band or belt, substantially as set forth.

2. In a trousers-supporter, the combination of a band or belt adapted to be passed about the waist and provided with means for attachment to the trousers and slides having pads adapted to rest upon the hips of the wearer, said pads having loose extensions below the slides and adapted to be interposed between the person and the lower edges of the slides and said band or belt, substantially as set forth.

3. In a trousers-supporter, the combination of a band or belt adapted to be passed about the waist, slides having loops embracing and movable along said band or belt, a headed stud on the outer side of one loop of each slide, pads on the slides and adapted to rest on the hips of the wearer and catch-plates adapted for attachment inside the trousers and provided with openings in which said headed studs are adapted to be engaged, substantially as set forth.

706,494. MOTIVE-POWER ENGINE.

MARTIN T. MISCOE, Springfield, Ohio, assignor of one-half to Simeon F. Pierce, St. Paul, Minn. Filed June 5, 1901. Serial No. 62,941. (No model.)

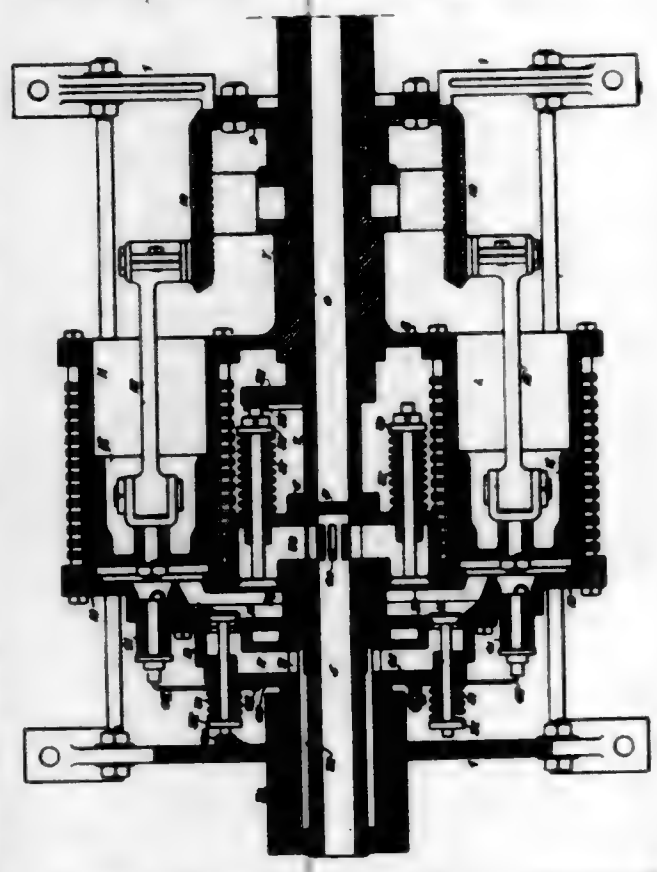

Claim.—1. The combination in an engine, of a series of cylinders each with reciprocating pistons therein, a cylinder-carrying structure rotatable about an axis parallel with the axes of all the cylinders, a series of pinions each rotated by connection with the piston of one of the cylinders and each rotating with and rotatable on the cylinder-carrying structure, and a fixed annular rack with which said pinions mesh, substantially as specified.

2. The combination in an engine, of a series of cylinders, a cylinder structure rotatable around an axis parallel with the axes of all of said cylinders, a series of pinions carried by said rotating cylinder structure but rotatable thereon on axes at right angles to its axis of rotation, a fixed annular rack with which said pinions mesh, and trunk-pistons reciprocating in the cylinders of the engine, each of said pistons being connected by a swinging rod to a crank-pin of one of the pinions, substantially as specified.

3. The combination in an engine, of a frame, a series of cylinders each having a reciprocating piston therein, a fixed shaft parallel to the axes of the cylinders, a cylinder structure rotatable about said shaft having inlet and exhaust chambers for the motive fluid, valves governing the communication between the cylinder and said inlet and exhaust chambers, and cams on the shaft and on the frame for operating said valves as the cylinder structure rotates, substantially as described.

4. The combination in an engine of a frame, a series of cylinders each having a reciprocating piston therein, a fixed shaft parallel to the axes of the cylinders, a cylinder structure rotatable about said shaft having inlet and exhaust chambers for the motive fluid, spring-closed valves on the cylinder structure governing communication between the cylinders and said inlet and exhaust chambers, and fixed cams upon the said shaft and upon the frame, one set of said cams acting upon the stems of the inlet-valves to open the same as the cylinder structure rotates, and the other set of cams acting upon the stems of the exhaust-valves, substantially as described.

5. The combination of a fixed frame having attached to it an annular rack, a shaft carrying rotatable pinions meshing with said rack, a cylinder structure fixed to the shaft, cylinders provided with pistons carried by said structure having their axes parallel to said shaft, and a connecting-rod between each piston and one of the pinions whereby reciprocating motion of the piston causes its respective pinion to move on said rack, substantially as described.

6. The combination of a fixed frame having attached to it a beveled gear forming an annular rack, a shaft carrying beveled pinions meshing with said rack, a cylinder structure fixed to the shaft, cylinders provided with pistons carried by said structure having their axes parallel to said shaft and a connecting-rod between each piston and one of the pinions whereby the reciprocating motion of the pistons causes the pinions to move on the rack, substantially as described.

7. The combination of a fixed frame having attached to it an annular rack, a shaft carrying a number of auxiliary shafts, pinions on said shafts meshing with said rack, a cylinder structure fixed to the shaft, cylinders provided with pistons and carried by said structure, said cylinders having their axes parallel to the shaft, and means for connecting each piston with one of the pinions whereby the reciprocating motion of the pistons results in a rotary motion of the cylinder structur with its attached shaft, substantially as described.

8. The combination in an engine of a series of cylinders, a cylinder structure rotatable around an axis parallel with the axes of the cylinders and having inlet and exhaust chambers for the motive fluid, valves for controlling the flow of motive fluid to and from the cylinders, and a hollow fixed shaft having within it a partition at right angles to its axis whereby a chamber is formed at one end of said shaft for containing lubricating material, and a second chamber is formed at the other end; said second chamber forming an exhaust-passage and communicating with the exhaust-chamber of the cylinder structure, substantially as described.

706,495. PULVERIZED-FUEL BURNER. FRANKLIN H. REED, Indianapolis, Ind., assignor of one-third to Harry W. Roll, Indianapolis, Ind. Filed Oct. 19, 1901. Serial No. 79,204. (No model.)

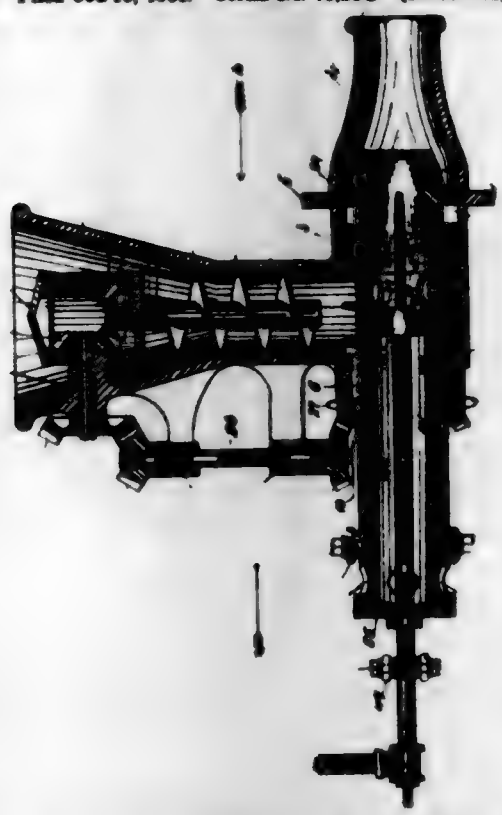

Claim.—1. In a pulverized-fuel burner, the combination with a fuel-receiving chamber having a closed end and an open reduced ejecting or nozzle end, of an air-conducting tube situated centrally and extending longitudinally within said fuel-receiving chamber, and having its open ejecting or nozzle end directed toward the reduced or nozzle end of said fuel-receiving chamber, and means, adapted to operate in line with and between said air-conducting tube and the interior surface of said fuel-receiving chamber, to feed the fuel positively to the discharging-nozzle.

2. In a pulverized-fuel burner, the combination with a fuel-receiving chamber having a closed end and an open reduced ejecting or nozzle end, and a feed-hopper situated at or near the closed end of said fuel-receiving chamber, of an air-conducting tube situated centrally and extending longitudinally within said fuel-receiving chamber and having its open ejecting or nozzle end directed toward the reduced or nozzle end of said fuel-chamber, a spiral conveyer integral with and encircling said air-tube and means for rotating the air-tube and conveyer.

3. In a pulverized-fuel burner, the combination with a fuel-receiving chamber having a closed end and an open reduced ejecting or nozzle end, a vertically-extending feed-hopper situated at or near the closed end of said feed-receiving chamber of an air-conducting tube situated centrally and extending longitudinally within said fuel-receiving chamber and having its open ejecting or nozzle end directed toward the reduced or nozzle end of said fuel-chamber, a spiral conveyer integral with and encircling said air-tube and means for rotating said tube and spiral conveyer and for operating said hopper-conveying means simultaneously.

4. In a pulverized-fuel burner, the combination with a fuel-receiving chamber having a closed end and an open reduced ejecting or nozzle end, a vertically-extending feed-hopper connected to said fuel-receiving chamber, an air-conducting tube situated centrally and extending longitudinally within said fuel-receiving chamber and having its open ejecting or nozzle end directed toward the reduced or nozzle end of said fuel-receiving chamber, a spiral conveyer integral with and surrounding said air-tube, a depending spiral conveyer situated in said hopper and means for simultaneously rotating said air-tube and conveyers whereby equal and regular quantities of fuel are supplied to said fuel-receiving chamber as it is discharged from the nozzle of the latter.

5. In a pulverized-fuel burner, the combination with a fuel-receiving chamber having a closed rear end and an open reduced ejecting or nozzle end, of an air-tube situated centrally and extending longitudinally within said fuel-receiving chamber and having its ejecting or nozzle end directed toward the reduced or nozzle end of said fuel-receiving chamber, a steam or blast pipe extending centrally and longitudinally within said air-tube, and a liquid-fuel-conveying pipe within said steam-pipe and projecting beyond the open end thereof to a point at or near the ejecting-nozzle of said air-tube.

706,496. FURNACE. REUBEN O. RICKARD, Syracuse, N. Y., assignor to the Kelsey Furnace Company, Syracuse, N. Y. Filed Feb. 6, 1900. Serial No. 4,164. (No model.)

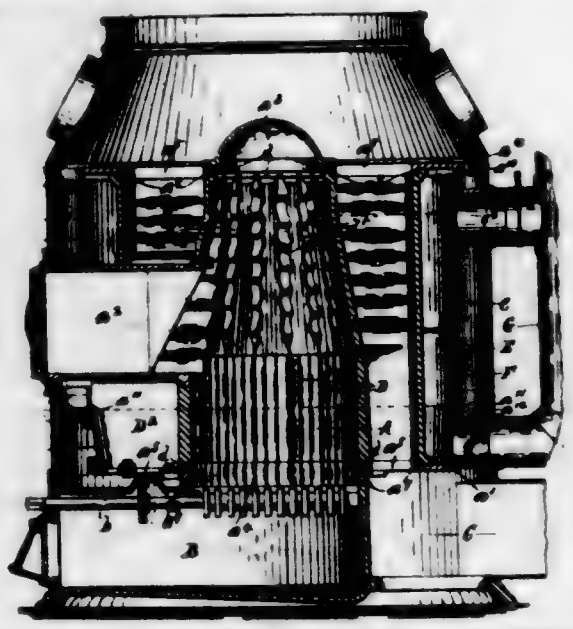

Claim.—1. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, a tubular shell interposed between the upper and lower plates, and upright air-heating conduits arranged between the upper and lower plates within the tubular shell and communicating with the openings in the upper and lower plates, the lower portions of the opposing walls of contiguous conduits being formed substantially flat and engaged with each other and the upper portions of said walls being corrugated and separated, substantially as and for the purpose set forth.

2. In a furnace, the combination of upper and lower separable plates provided with openings extending vertically therethrough and having their opposing faces formed with substantially vertical flanges, the flange of the upper plate being of less diameter than said upper wall, and the flange of the lower plate being provided with a peripheral shoulder arranged above the top face of the lower plate, a tubular shell surrounding the flange of the upper plate and the upper portion of the flange of the lower plate, and having its end edges respectively engaged with the lower face of the upper plate and the peripheral shoulder of the flange of the lower plate, upright air-heating conduits arranged between the upper and lower plates within the tubular shell and communicating with the openings in the upper and lower plates, the lower portions of the opposing walls of contiguous conduits being formed substantially flat and engaged with each other and the upper portions of said walls being corrugated and separated, and bolts passed through the air-heating conduits and engaged with the upper and lower plates, substantially as and for the purpose specified.

3. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the upper plate being provided with a detachable central portion encircled by the openings therein, and the lower plate being provided with an upwardly-extending flange having outwardly-projecting tubular branches or extensions, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate above the tubular branches or extensions, upright air-heating conduits arranged between the upper and lower plates and communicating with the openings in said plates, and bolts passed through the air-heating conduits and engaged with the detachable central portion of the upper plate and with the lower plate, substantially as and for the purpose set forth.

4. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough and being each provided with a detachable central portion encircled by the openings therein, the lower plate being also provided with an upwardly-extending flange having outwardly-projecting tubular branches or extensions, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate above the tubular branches or extensions, upright air-heating conduits arranged between the upper and lower plates and communicating with the openings in said plates, an outer series of bolts passed through the air-heating conduits and engaged with the outer portions of the upper and lower plates, and an inner series of bolts passed through the air-heating conduits and engaged with the detachable central portions of the upper and lower plates, substantially as and for the purpose described.

5. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, a tubular shell interposed between the upper and lower plates, upright air-heating conduits arranged between the upper and lower plates within the tubular shell and communicating with the openings in the upper and lower plates, the opposing walls of two of the conduits being separated and the remaining opposing walls of each pair of the conduits having their lower portions engaged with each other and their upper portions corrugated and separated, and an air-heating chamber arranged between the opposing separated walls of said two of the conduits and formed with upper and lower openings for the air, substantially as and for the purpose set forth.

6. In a furnace, the combination of upper and lower separable plates having openings extending vertically therethrough, the lower plate being provided with an upwardly-extending flange formed with an opening extending horizontally therethrough, a tubular shell interposed between the upper plate and the upwardly-extending flange of the lower plate, upright air-heating conduits arranged between the upper and lower plates within the tubular shell and communicating with corresponding openings in said plates, the opposing walls of two of the conduits being separated, and the remaining opposing walls of each pair of the conduits having their lower portions engaged with each other and their upper portions corrugated and separated, and an air-heating chamber arranged between the opposing separated walls of said two of the conduits and formed with upper and lower openings communicating with one of the openings extending vertically through the lower plate and the opening extending horizontally through the upwardly-extending flange of said lower plate, substantially as and for the purpose described.

706,497. SUIT-HANGER. DELBERT B. SALSBU and DEAN C. MITCHELL, Potsdam, N. Y. Filed June 22, 1901. Renewed June 13, 1902. Serial No. 111,579. (No model.)

Claim.—1. The combination in a garment-supporter, of a recessed bar having a contour conforming to the shoulder portions of a body-garment, an auxiliary bar adapted to fit within such recessed portion, the end walls of the recess being constructed to directly support said auxiliary bar, and a spring acting to press such bars together; substantially as described.

2. The combination, in a garment-supporter, of a bar, having a contour conforming to the shoulder portion of a body-garment and having a wedge-shaped recess formed therein, an auxiliary wedge-shaped bar adapted to fit within the wedge-shaped recess and to be supported by the end walls of the recess, and a spring acting to press the bars together, substantially as described.

3. The combination in a garment-supporter, of a recessed bar having a contour conforming to the shoulder portion of a body-garment, an auxiliary bar adapted to fit closely in said recessed portion, the end walls of the recess being so constructed as to support said bar directly, and a combined spring and suspending device comprising a single piece of spring-wire bent in suitable form, and having its opposite ends secured to said bar; substantially as described.

4. The combination in a garment-supporter of a bar A having a wedge-shaped recess *a*, a wedge-shaped auxiliary bar A' adapted to fit in such recess and to be supported by the end walls of the recess, a lining B arranged in the meeting faces of such bars, and a spring-wire section C having its ends secured to said bars, the intermediate portion of such wire being so bent as to form a suspending device *c*, coil c^2, and oppositely-disposed operating portions c^3; substantially as described.

706,498. STRONG LIGHT BODY AND METHOD OF PRODUCING SAME. JAMES B. SEELEY, Los Angeles, Cal., assignor to W. W. Sweeney Co., Los Angeles, Cal., a Corporation of California. Filed Aug. 2, 1901. Serial No. 70,606. (No specimens.)

Claim.—1. A new article of manufacture comprising a body of yucca-brevifolia wood fiber, united in its natural structure, and approximately free from the non-fibrous material with which said fiber is associated in its natural state.

2. A new article of manufacture comprising a body of yucca-brevifolia wood fiber, united in its natural structure, and approximately free from the non-fibrous material with which said fiber is associated in its natural state; and a binding material binding the intersections of the fiber together.

3. As a new article of manufacture, a body composed of yucca brevifolia wood fiber approximately free from the non-fibrous materia with which it is associated in nature; and fixed chromated gelatin binding the fibers of said body at their intersections.

4. The process of manufacturing a strong, light body set forth which consists in, first, removing from a body of yucca-brevifolia wood the non-fibrous material occurring in said wood in nature; second, applying to said body a binding material in solution; third, fixing said binding material.

5. The process of manufacturing a strong, light body set forth which consists in, first, removing from a body of yucca-brevifolia wood the non-fibrous material occurring in said wood in nature; second, applying gelatin to said body; third, fixing said gelatin.

6. The process of manufacturing a strong, light body which consists in, first, boiling a body of yucca-brevifolia wood in an alkaline solution and thereby removing the non-fibrous material from said wood; second, drying the wood so treated substantially in the absence of actinic rays of light; third, applying to the wood thus treated and dried a solution of gelatin; and fourth, exposing the material thus produced to actinic rays of light.

7. A body composed of yucca-brevifolia veneer formed in a tube and approximately free from the non-fibrous material with which the fiber of said wood is associated in nature; and a coating of fixed gelatin on the fibers of said wood.

8. The process of forming a strong and light body which consists in, first, treating a veneer of yucca-brevifolia wood with a solution in which non-fibrous portions of said wood are soluble, thereby removing non-fibrous material from said veneer; second, forming said veneer in a tube over a form and coating the fibers of said wood with a gelatin solution; third, fixing said gelatin solution.

9. The process of forming a strong and light body which consists in, first, treating a veneer of yucca-brevifolia wood with a solution of bichromate of potash, thereby removing non-fibrous material from said veneer; second, forming said veneer in a tube over a form and allowing said veneer to dry in the absence substantially of the actinic rays of light; third, applying a gelatin solution to said wood; and fourth, fixing said gelatin solution.

706,499. LAST. FRED J. SEAMEN, Dayton, Ohio, assignor to Krentler-Arnold Hinge Last Company, Detroit, Mich. Filed Sept. 23, 1901. Serial No. 76,239. (No model.)

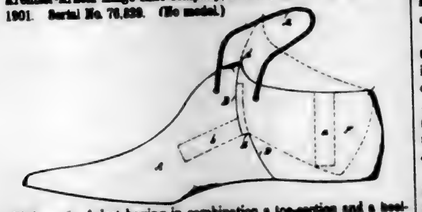

Claim.—1. A last having in combination a toe-section and a heel-section, the contiguous surfaces of said sections being formed in the arc of a circle having its center at or near to the angle formed between the upper and rear part of the heel-section.

2. A last having in combination a toe-section and a heel-section, each of said sections being provided with two surfaces formed in the arcs of circles having their center at or near to the angle formed between the upper and rear part of the heel-section, said surfaces being joined by a surface radial to the curvature.

3. A last having in combination a toe and a heel section, each of said sections being provided with two surfaces formed in the arcs of circles having their center at or near to the angle formed between the upper and rear part of the heel-section, said surfaces being joined by a surface approximately radial to the curvature, the dividing-line between the sections cutting the upper surface at the rear of the instep, and on the lower side at the forward part of the heel.

706,500. WIRELESS TELEGRAPHY. HARRY SHOEMAKER, Philadelphia, Pa., assignor to Mario V. Gehring and the Consolidated Wireless Telegraph and Telephone Company, Philadelphia, Pa. Original application filed Oct. 26, 1901, Serial No. 79,969. Divided and this application filed May 10, 1902. Serial No. 106,736. (No model.)

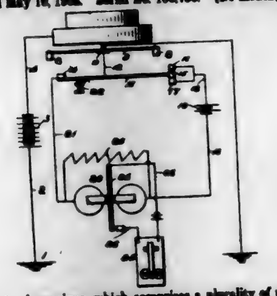

Claim.—1. A receiver, which comprises a plurality of plates in inductive relation, means for permanently charging the plates and a local circuit controlled by said plates.

2. A receiver, which comprises a plurality of plates in inductive relation, a source of high-potential energy in connection with opposing plates through an earth-circuit.

3. A receiver, which comprises opposing plates, a high-potential source of energy connected to said plates through an earth-circuit to permanently charge the same, and a circuit-controlling means operated by the reaction between said plates upon the reception of a signal.

4. A receiver, which comprises plates in inductive relation to each other, means for normally charging said plates to a high potential, means controlling a local signal-circuit operated upon fluctuations of charge on said plates due to received signal energy.

5. A receiver, which comprises a plurality of plates in inductive relation, batteries of high potential permanently charging the plates, and a local circuit controlled by said plates.

6. A receiver, which comprises a plurality of plates in inductive relation, a battery of high-potential energy in connection with opposing plates of an earth-circuit.

7. A receiver, which comprises opposing plates, a battery of high potential connected to said plates through an earth-circuit to permanently charge the plates, and a circuit-controlling means operated by the reaction between said plates upon the reception of a signal.

8. A receiver, which comprises a plurality of plates in inductive relation to each other, a battery for normally charging said plates to a high potential, means controlling a local signal-circuit operated upon fluctuations and charged on said plates due to receive signal energy.

9. A receiver, which comprises a plurality of plates in inductive relation, batteries of high potential permanently charging the plates, means kept under an electrostatic field interposed between said batteries and one of the plates, and a local circuit controlled by said plates.

10. A receiver, which comprises a plurality of plates, a high-potential source of energy connected to said plates and an electrostatic means interposed between one of the plates and the high-potential source of energy.

11. A receiver, which comprises a plurality of plates, a high-potential source of energy connected to said plates, an electrostatic means interposed between one of the plates and the source of energy, and a recorder instrument controlled by said means.

12. A receiver, which comprises a plurality of plates, a source of high-potential energy connected to said plates and an electrostatic means interposed between one of the plates and the source of energy, a relay-circuit controlled by said means and a recorder-circuit controlled by said relay-circuit.

13. A receiver, which comprises a plurality of plates, a diaphragm surrounded by insulation connected to one of the plates, a battery of high potential interposed between the plate and diaphragm, a disk adjacent to the diaphragm and connected to the other plate so as to be kept under an electrostatic field, and a recorder controlled by said disk.

14. A receiver, comprising a plurality of ground-plates, a high-potential source of energy interposed therebetween, a diaphragm connected directly with the source of energy, a disk mounted so as to be free to vibrate adjacent to said diaphragm and kept under an electrostatic influence by said source of energy, said plate or disk being directly connected to the other of the ground-plates and a recorder-circuit controlled by the disk.

706,501. CANE. ALBERT SOBERS, Lincoln, Nebr., assignor of one-half to Joseph W. Edgerton, Grand Island, Nebr. Filed Feb. 19, 1900. Serial No. 5,862. (No model.)

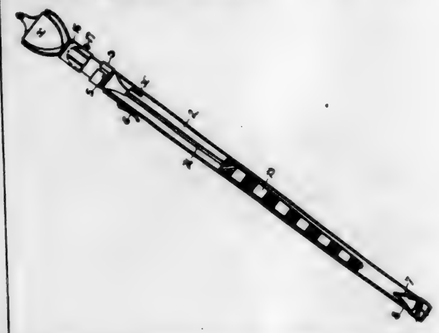

Claim.—A cane constructed as shown and comprising the cylindrical sheet-metal cane portion 2, of the upper strengthening-collar 3, both col-

ler and upper cane portion being provided with an L-shaped incision, of the carrying-hook 6 secured near the upper end of the cane so that said cane may be carried stabbard fashion, aforesaid cane being open at the lower end and provided with the reed or horn portion 7, in combination with a suitable socket adapted to fit into the upper end of the cane and having a pin 5 adapted to be held within aforesaid L-shaped incision.

706,502. COMBINED BROILER AND TOASTER. PETER G. VAN WIE, Detroit, Mich., assignor to Ideal Manufacturing Company, Detroit, Mich., a Corporation of Michigan. Filed May 2, 1900. Serial No. 15,166. (No model.)

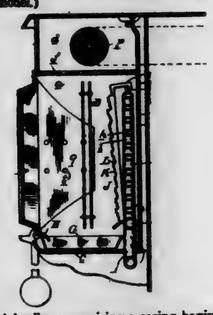

Claim.—1. A broiler, comprising a casing having an open front and sides partially cut away, a burner within said casing, a door for closing said front having inwardly-extending side flanges forming complementary portions of the sides of the casing, and a holder laterally adjustably secured to said side flanges for the purpose described.

2. In a broiler and toaster, the combination with a burner arranged in a vertical plane and a rack or holder parallel to said burner, of a foraminous screen between said burner and rack comprising a series of horizontal offsets or ledges and connecting inclined portions, substantially as and for the purpose set forth.

3. A broiler comprising a casing having an open front and sides partially cut away, a burner within said casing and a door for closing said front having inwardly-extending side flanges forming complementary portions of the sides of the casing and also forming a support for the article to be cooked.

4. A broiler and toaster comprising a casing having an open front, a burner arranged within said casing adjacent to the vertical rear wall thereof, a hinged door for closing said front also forming a drip-pan, a pan supported upon the bottom of the casing and a laterally-extending flange upon said door overlapping said lower pan.

706,503. HOT-PLATE. PETER G. VAN WIE, Detroit, Mich., assignor to the Ideal Manufacturing Company, Detroit, Mich., a Corporation of Michigan. Filed Feb. 12, 1901. Serial No. 46,861. (No model.)

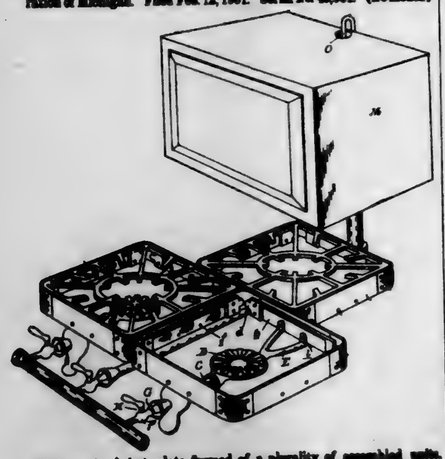

Claim.—1. A hot-plate formed of a plurality of assembled units, each unit comprising an open frame or ring, a burner supported centrally therein and a supply-pipe for said burner extending to one side of said ring, said rings being adapted to be detachably secured to each other to form a common supporting-frame.

2. A hot-plate formed of a plurality of units each comprising a substantially rectangular open frame or ring, a burner supported centrally therein and a supply-pipe extending to one side of said ring, said units being assembled to have their supply-pipes extending in the same direction, and a common gas-supply pipe connected to all of said burner supply-pipes, said rings being adapted to be secured to each other in either straight or staggered series to form a common supporting-frame.

3. A hot-plate comprising a substantially rectangular open frame formed of corner-pieces and connecting straight side pieces, a burner arranged centrally within said frame, a supporting-bracket for said burner extending to and connected with one side of said frame, a supply-pipe extending to the opposite side of said frame, and a plurality of supporting-lugs connected to said frame centrally of said side pieces.

4. A hot-plate comprising an open frame or ring, a burner arranged centrally of said ring, a supporting-bracket for said burner extending inward from one side of said frame, a supply-pipe for said burner extending outward below the opposite sides of said frame and a supporting-lug for said frame apertured for the passage of said supply-pipe and forming a support therefor.

5. The combination with a hot-plate, of a tubular standard projecting upward from the margin thereof, and an oven sleeved upon said standard, a coil-spring within said standard, a rod supported upon said spring within said standard having a return-bend portion extending external thereof and secured to the wall of the oven-casing and a set-screw having a threaded engagement with an aperture in said return-bend portion adapted to bear against said standard and to hold the oven in different positions of adjustment.

6. The combination with a hot-plate, of a tubular standard projecting upward therefrom, an oven sleeved upon said standard, a coil-spring within said standard and a rod secured to said oven, extending centrally downward in said hollow standard and supported upon said spring.

706,504. HYDROCARBON INCANDESCENT LAMP. GEORGE WASHINGTON, New Brighton, N. Y. Original application filed Nov. 5, 1898, Serial No. 695,575. Renewed Jan. 22, 1901. Serial No. 44,301. Divided and this application filed July 24, 1901. Serial No. 69,905. (No model.)

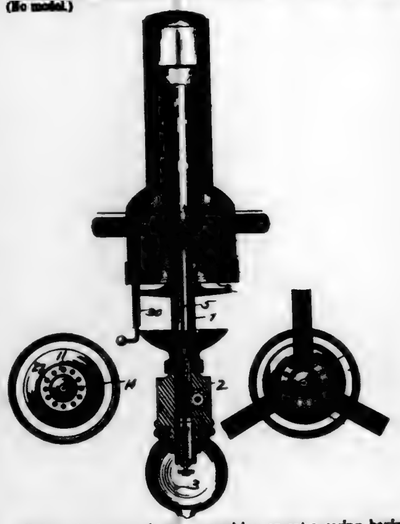

Claim.—1. A vapor-burner comprising an outer casing having a burner-tube arranged at its upper end, a mixing-tube within said casing, an intermediate tube within the casing and surrounding said mixing-tube, and a diaphragm in said intermediate tube above the open upper end of the mixing-tube, a vaporizer penetrating the bottom of the casing and arranged to discharge vapor into the mixing-tube, air-inlet tubes penetrating the sides of the casing and arranged to discharge air into said mixing-tube, and a vapor-jet burner connected to the base of said casing and arranged to heat said vaporizer, substantially as described.

2. A vapor-burner comprising an outer casing carrying a burner, a mixing or commingling tube within said casing, an intermediate tube closed at its top and open at its bottom and surrounding said vaporizing-tube, a vaporizer arranged to discharge vapor into the mixing-tube, air-inlet tubes discharging into said mixing-tube, and a vapor-jet burner connected to the base of said casing and arranged to heat said vaporizer, substantially as described.

2. A vapor-burner comprising an outer tube or casing carrying a burner, a mixing or commingling tube within said casing, an intermediate tube closed at its top and open at its bottom, a vaporizer arranged to discharge vapor into the mixing or commingling tube, air-pipes leading to the mixing or commingling tube, a valve for controlling the flow of mixed air and vapor from the intermediate tube to the outer tube or casing and an auxiliary burner adjacent to the vaporizing-tube for heating the latter.

4. In a lamp of the class described, the combination with a vaporizer, of a burner provided with tubes disposed one within another to form three communicating passages connected to cause the vapor to pass through the intermediate passage in the opposite direction from that in which it passes through the other two passages, and an air-supply tube extended across two of the said passages and communicating with the innermost tube above the vapor-outlet of said vaporizer to supply the vapor issuing from the vaporizer with air, substantially as and for the purpose specified.

706,505. GAGE. GEORGE WASHINGTON, New Brighton N.Y. Filed July 30, 1901. Serial No. 70,394. (No model.)

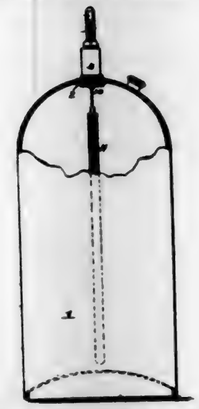

Claim.—1. In a gage for indicating the quantity of liquid in a tank or receptacle, the combination with a closed receptacle, a block secured thereto and a transparent tube supported on said block, of a plunger movable in said tube, a rod depending from said plunger and passing freely through the block, a weight within said closed receptacle and suspended from the lower end of said rod, and means for normally counterbalancing said weight.

2. In a gage, the combination with a closed tank or receptacle, a block secured thereto and provided with a chamber, a rod passing through said block and the chamber therein, an enlargement on said rod, a spring on the rod, bearing at one end against said enlargement and at the other end in the bottom of the chamber in the block, and a weight within said closed receptacle and suspended from said rod and counterbalanced by said spring.

3. In a gage for indicating the quantity of liquid in a tank or receptacle, the combination with a block having a chamber therein, a weight to be immersed in the liquid in the tank or receptacle and a transparent tube communicating with said chamber, of a plunger in the tube, a connection between the plunger and weight, and a spring within said chamber, said spring bearing against the plunger and the bottom of said chamber, and acting to counterbalance said weight.

4. In a gage for indicating the quantity of liquid in a tank or receptacle, the combination with a closed receptacle or tank a weight to be immersed in the liquid in the tank or receptacle and a transparent tube carried by said tank or receptacle, of a movable plunger in the tube, a connection between the plunger and said weight and means for counterbalancing said weight.

706,506. APPARATUS FOR PRESERVING FOODS. MARSHALL D. ELLIS, Congress Heights, D. C., assignor of one-half to Guy H. Field, Highgate, N. C. Filed Sept. 16, 1901. Serial No. 75,526. (No model.)

Claim.—1. In an apparatus for the purpose described, the combination of the casing, a rigid shelf or support having a conducting-surface, a circuit including a source of electrical energy having one terminal connected to said conducting-surface, and a movable conductor adapted to fall by gravity into contact with any substance located on said shelf, said movable conductor being connected to the opposite terminal of the circuit to thereby compel the passage of a current through the substance being treated.

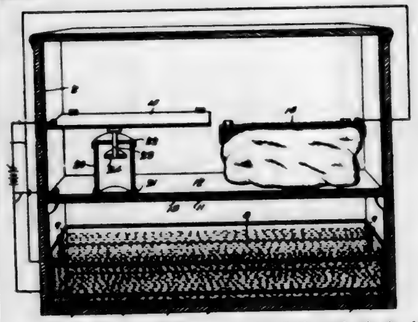

2. In an apparatus for the purpose described, a casing having insulated walls, a fixed shelf or support arranged within the casing and having a conducting-surface, a circuit including a source of electrical energy, one terminal of said circuit being formed by said conducting-surface, a flexible conductor pivotally connected at one side or edge to one of the insulated walls at a point above the shelf or support and adapted to move by gravity into contact with a substance placed on the shelf or support for treatment, said flexible conductor forming the opposite terminal of the circuit to thereby compel the passage of a current through the substance being treated.

3. An apparatus for the purpose described, comprising a casing, a shelf arranged within the casing and having a conducting-surface, a movable conductor formed of a series of interwoven metallic links adapted to move into contact with the material to be treated and to conform itself by gravity to the contour of such material, and an electric circuit having its terminals connected to the shelf and to the flexible conductor.

706,507. PHOTOGRAPHIC SHUTTER. WILLIAM F. FOLMER, New York, N. Y. Original application filed Feb. 17, 1902, Serial No. 94,475. Divided and this application filed May 9, 1902. Serial No. 106,821. (No model.)

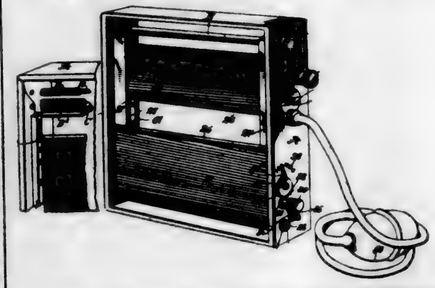

Claim.—1. In cameras, a curtain-shutter having a plurality of curtains forming an exposure-opening between adjacent ends, an upper set of plain rollers located one above the other, a lower set of tension-controlled rollers also located one above the other, one curtain being connected with the outer rollers of the two sets and the other curtain with the inner rollers of the sets, all of the rollers having the same diameter with the exception of the lower roller of the upper set, which is of increased diameter, a winding mechanism for the upper rollers, a tension-controlling device for one of the lower rollers, and a releasing device for the wound shutter, which releasing device is capable of being operated manually or pneumatically, as desired.

2. An adjustable curtain-shutter and its curtains, and a scale at the rear of the shutter for indicating the width of the exposure-opening in the shutter, and supports for the said scale independent of the curtains of the shutter, for the purpose specified.

3. A curtain-shutter having a plurality of curtains forming an ex-

posure-opening between adjacent ends, a scale for indicating the width of the exposure-opening, and a support for the scale adjacent to the said curtains, crossing the said exposure-opening and independent of the curtains, the scale being adjacent to the curtains and reading relatively thereto, as described.

4. In camera-shutters, a releasing device for the shutter, consisting of a cylinder open at both ends, a removable cap for one end of the cylinder, provided with an apertured projection to receive a flexible tube, a piston-head having sliding movement in the cylinder, a stem connected with the head, and a locking member for the shutter, connected with the said stem, as described.

5. In cameras, a curtain-shutter having a plurality of curtains forming an exposure-opening between adjacent ends, an upper set of plain rollers located one above the other, a lower set of tension-controlled rollers also located one above the other, one curtain being connected with the outer rollers of the two sets and the other curtain with the inner rollers of the sets, a train of gearing for winding the upper rollers, a master-wheel in connection with said train of gearing and provided with ratchet-teeth upon one face, a locking member for engagement with the ratchet-teeth of the master-wheel, and an exteriorly-operated releasing device for the locking member, as set forth.

6. In cameras, a curtain-shutter having a plurality of curtains forming an exposure-opening between adjacent ends, an upper set of plain rollers located one above the other, a lower set of tension-controlling rollers also located one above the other, one curtain being connected with the outer rollers of the two sets and the other curtain with the inner rollers of the sets, a train of gearing for winding the upper rollers, a master-wheel in connection with said train of gearing and provided with ratchet-teeth upon one face, a spring locking member for engagement with the ratchet-teeth of the master-wheel, a cylinder open at both ends, a removable cap for the said cylinder, provided with an apertured extension to receive the flexible tube, a piston-head mounted in the said cylinder, and a connection between the piston-head and the spring locking members, as described.

7. In a curtain-shutter for cameras, a frame, a plurality of curtains within the frame, forming an exposure-opening between adjacent ends, an upper set of plain rollers located in the said frame one above the other, a lower set of tension-rollers also located within the frame, one above the other, one curtain being connected with the outer rollers of the two sets and the other curtain with the inner rollers of the sets, a train of gearing for winding the upper rollers, a master-gear in connection with the said train of gearing and provided with ratchet-teeth on one face and a stop-pin extending from its opposite face, said ratchet-teeth being circularly arranged with a single break in the arrangement of the teeth of a width substantially equal to the length of a ratchet-tooth, a spring locking member attached to the frame and having a head for engagement with the ratchet-teeth of the master-gear, a push-pin mounted in the frame and connected with the said spring locking member, a stop-pin extending from the frame below the said pin, an arm carried by the push-pin, adapted for engagement with the stop-pin on the master-gear and the stop-pin on the frame in one position of the said push-pin, a dial at the outer part of the frame, and a pointer carried by the outer portion of the push-pin and adapted to travel over the said dial, whereby to regulate the movement of the shutter for time or for instantaneous exposure.

8. In a camera, a curtain-shutter having a plurality of curtains forming an exposure-opening, and exteriorly-operated means substantially as described for regulating the size of the exposure-opening, which means comprise the shaft for the roller of the curtain, the shaft being mounted to slide in the roller and turn therewith, a winding mechanism for the roller, with which the shaft has clutch connection, and an indicator rotated by the movement of the shaft.

9. In a camera, a curtain-shutter having a plurality of curtains forming an exposure-opening, and exteriorly-operated means for regulating the size of the exposure-opening, which means comprise a shaft mounted to slide in one of the curtain-rollers and turn therewith, a winding mechanism for the curtain-rollers, a clutch at one end of the shaft, arranged for engagement with the winding mechanism, a pinion at the opposite end of the shaft, a toothed indicator-wheel exteriorly mounted on the shutter-frame and meshing with the said pinion, and provided with a scale indicating distances, and stop devices for the indicator-wheel, limiting its movement, substantially as described.

10. In a camera, a curtain-shutter having a plurality of curtains forming an exposure-opening, upper and lower sets of rollers for the curtains, a train of gearing connecting the upper set of curtain-rollers, the lower set being tension-controlled, a locking device connected with one end of the shaft of one of the tension-rollers, and an indicator at the exterior of the shutter-frame, operated by the said shaft, for the purpose set forth.

11. In cameras, a curtain-shutter having a plurality of curtains forming an exposure-opening between adjacent ends, an upper set of plain rollers located one above the other, and a lower set of tension-controlled rollers also located one above the other, one curtain being connected with the outer rollers of the two sets and the other curtain with the inner rollers of the sets, all of the rollers having the same diameter with the exception of the lower roller of the upper set which is of increased diameter, a winding mechanism for the upper rollers, a releasing device for the winding mechanism, and a device for indicating the width of the exposure-opening in the shutter, operated by the said winding mechanism, substantially as described.

12. In cameras, a curtain-shutter having a plurality of curtains forming an exposure-opening between adjacent ends, an upper set of gear-controlled rollers connected with one of the ends of the curtains and arranged one above the other, a lower set of tension-controlled rollers also arranged one above the other, all of the rollers being of the same diameter with the exception of the lower roller of the upper set which is of increased diameter, exteriorly-operated means, substantially as described, for regulating the size of the exposure-opening in the shutter, which means comprise a shaft for a roller of the upper set, the shaft being mounted to slide in the roller and turn therewith, a winding mechanism for the roller, with which the shaft has clutch connection, and an indicator rotated by the movement of the shaft, substantially as described.

13. In cameras, a curtain-shutter having a plurality of curtains forming an exposure-opening between adjacent ends, an upper set of gear-controlled rollers connected with one of the ends of the curtains, arranged one above the other, a lower set of tension-controlled rollers also arranged one above the other, all of the rollers being of the same diameter with the exception of the lower roller of the upper set which is of increased diameter, exteriorly-operated means, substantially as described, for regulating the size of the exposure-opening in the shutter, which means comprise a shaft for a roller of the upper set, the shaft being mounted to slide in the roller and to turn therewith, a winding mechanism for the roller, with which the shaft has clutch connection and an indicator rotated by the movement of the shaft, a shaft for one of the tension-controlled rollers, operated from the exterior of the shutter-frame, a stop for the said shaft, a dial adapted to indicate the amount of tension on the roller to which the shaft belongs, which dial is mounted at the exterior of the shutter-frame, and means, substantially as described, for operating the said dial from the said shaft of the tension-controlled roller, for the purposes specified.

14. In a camera-shutter, a frame for the shutter, a releasing device for the shutter, consisting of a sleeve mounted on the frame, being in communication with the interior thereof, a plunger mounted to slide in the said sleeve, a trip device carried by the plunger, and a cap removably covering the said sleeve, the said cap having an apertured projection to receive the tube of a pneumatic apparatus, as and for the purpose set forth.

DESIGNS.

35,985. FLAG. A. REED COMER, Cynthiana, Ky. Filed June 9, 1902. Serial No. 110,935. Term of patent 7 years.

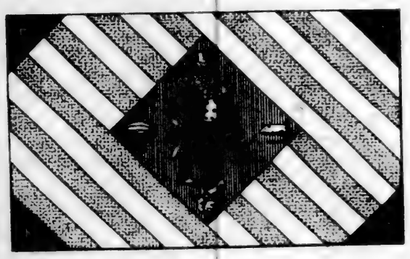

Claim.—The ornamental design for a flag, substantially as herein shown and described.

35,986. BADGE. MICHAEL J. KANE, Buffalo, N. Y. Filed May 6, 1902. Serial No. 106,232. Term of patent 3½ years.

Claim.—The ornamental design for a badge as herein shown and described.

35,987. RANGE. RICHARD H. WHITEFIELD, Keston, Ohio. Filed June 6, 1902. Serial No. 110,564. Term of patent 3½ years.

Claim.—The ornamental design for a range, as herein shown and described.

35,988. RANGE. RICHARD H. WHITEFIELD, Keston, Ohio. Filed June 6, 1902. Serial No. 110,565. Term of patent 3½ years.

Claim.—The ornamental design for a range, as herein shown and described.

35,989. RANGE. RICHARD H. WHITEFIELD, Keston, Ohio. Filed June 6, 1902. Serial No. 110,567. Term of patent 3½ years.

Claim.—The ornamental design for a range, as herein shown and described.

35,990. RANGE. RICHARD H. WHITEFIELD, Keston, Ohio. Filed June 6, 1902. Serial No. 110,568. Term of patent 3½ years.

Claim.—The ornamental design for a range, as herein shown and described.

TRADE-MARKS

REGISTERED AUGUST 5, 1902.

38,708. COLLAR-BUTTONS. WILLIAM J SMITH, New York, N. Y. Filed June 26, 1902.

SAMPSON

The word "SAMPSON." Used since January 15, 1902.

38,704. DOLLS. EDMUND ULRICH STEINER, New York, N. Y. Filed June 20, 1902.

MAJESTIC

The word "MAJESTIC." Used since 1894.

38,705. DOLLS. EDMUND ULRICH STEINER, New York, N. Y. Filed June 20, 1902.

A scroll with an eagle perched thereon and the word "LILIPUT" appearing on the scroll. Used since 1894.

38,706. RUBBER DRESS-SHIELDS HAVING A STOCKINET COVERING. THE CANFIELD RUBBER CO., Bridgeport, Conn., and New York, N. Y. Filed May 3, 1902.

MOLESKIN

The word "MOLESKIN." Used since January 1, 1902.

38,707. HATS. ROBB S. BARTLETT, Fall River, Mass. Filed Mar. 1, 1902.

The words "OLD COLONY" and a surrounding ornamental border. Used since May 10, 1902.

38,708. HATS. SAMPSON BROS., Dallas and Waco, Tex. Filed Mar. 6, 1902.

The word "BUCKHORN," associated with the antlers of a deer, the said word being inclosed in a rectangular panel resting on said antlers and the said panel being surmounted by a star. Used since October 18, 1899.

38,709. HATS. SAMPSON BROS., Dallas and Waco, Tex. Filed Mar. 6, 1902.

The words "GREAT AMERICAN" and the representation of an eagle with outspread wings, inclosed in a rectangular panel, with lines drawn across the four corners of said panel. Used since September 10, 1897.

38,710. FELT HATS. SAMPSON BROS., Dallas and Waco, Tex. Filed Mar. 6, 1902.

The words "THE BUCKSKIN" inclosed in the annular space between two concentric circles and the representation of a ram's head inside the inner circle. Used since December 5, 1899.

88,711. COLLARS AND CUFFS. CLUETT, PEABODY & Co., Troy, N. Y. Filed June 26, 1902.

The word "ORIENTAL" and the representation of a crescent partly inclosing a small circular dot. Used since June 22, 1899.

88,712. GLOVES AND MITTENS. SARANAC GLOVE Co., Littleton N. H. Filed June 27, 1902.

The representation of a horse. Used since March 27, 1902.

88,713. CERTAIN NAMED LEATHER FOOTWEAR. R. H. FITZ & Co., Detroit, Mich. Filed Jan. 24, 1902.

"Colonial"

The word "COLONIAL" in quotation-marks. Used since November 11, 1899.

88,714. RIBBONS, SILKS, SATINS, AND VELVETS. J. KEISER, Sons & Co., New York, N. Y. Filed May 5, 1902.

A circular band or arc thereof traversed by a band or ribbon of rectilinear form longer than it is wide, terminated at the left-hand end by a fancy scrollwork and running into space at the right-hand end, the whole having for a background a mass of clouds with a spray of flowers and leaves on the left-hand side thereof. On the rectilinear band referred to appears the arbitrary combination of letters and numbers "PAT 100." Used since March 8, 1899.

88,715. COTTON AND SILK WOVEN TEXTILE FABRICS. DAVIES TEXTILE Co., New York, N. Y. Filed June 20, 1902.

The representation of a crescent having three stars thereon. Used since January 1, 1902.

88,716. TICKINGS. ARKWRIGHT MANUFACTURING COMPANY, Manchester, N. H. Filed Dec. 4, 1901.

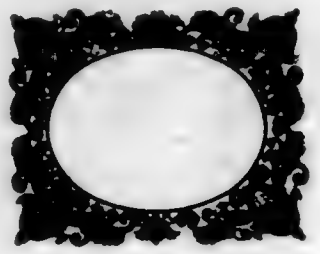

The design, comprising an oval-shaped field surrounded by a rectangular border composed of scrolls with urn-like figures at the corners. Used since 1837.

88,717. CIGARS. MARGARET J. LOSS, Lebanon, Pa. Filed Apr. 22, 1902.

JOHN C. CALHOUN

The name "JOHN C. CALHOUN," accompanying a picture of John C. Calhoun and also a picture of the Calhoun homestead at Abbeville, South Carolina. Used since October 1, 1896.

88,718. CHOCOLATE CANDY. F. H. DOW & COMPANY, Boston, Mass. Filed June 21, 1902.

Utopian

The word "UTOPIAN." Used since February 1, 1902.

88,719. CERTAIN NAMED CONFECTIONERY. JOHN H. FAULKNER, Allegheny, Pa. Filed June 2, 1902.

U—NO

The hyphenated word "U-NO." Used since February, 1898.

88,720. MODIFIED MILK. Charles H. Pattison, New York, N. Y. Filed June 14, 1902.

CON-DE-LAC

The hyphenated word "Con-de-lac" inclosed in a diamond-shaped figure. Used since May 15, 1902.

88,721. PREPARED CEREAL FOOD. The American Cereal Co., Akron, Ohio; Chicago, Ill., and Cedar Rapids, Iowa. Filed June 27, 1902.

Apitezo

The word "Apitezo." Used since April 1, 1902.

88,722. WHEAT-FLOUR, WHEAT FOOD PREPARATIONS, AND WHEAT BREAKFAST-FOODS. James A. Neal, Boston, Mass. Filed Mar. 24, 1902.

RED ROBIN

The words "Red Robin" and the representation of a robin perched upon a branch. Used since March 26, 1902.

88,723. BRAN, MIDDLINGS, (BROWN AND WHITE,) MIXED FEED, AND RED DOG. Lindsay Mill Company, La Crosse, Wis. Filed June 21, 1902.

ELMCO.

The word "Elmco." Used since April 10, 1902.

88,724. STOCK-FOOD. The American Cereal Co., Akron, Ohio, and Chicago, Ill. Filed June 27, 1902.

BELL COW

The words "Bell Cow" and the representation of the head of a cow with a bell about the neck. Used since April 1, 1902.

88,725. MEDICINE FOR CERTAIN NAMED DISEASES. Charles W. Bonar, Fort Wayne, Ind. Filed Dec. 14, 1901.

COM-SEL-SAR

The word "Com-sel-sar." Used since July 1, 1901.

88,726. PEPSIN COMPOUND. Bert Louis Maltbie, New York, N. Y. Filed June 21, 1902.

"FELSIN"

The word "Felsin" in quotation-marks. Used since May 26, 1902.

88,727. MEDICINAL PLASTERS. Raymond & Co., New York, N. Y. Filed June 19, 1902.

The words "The Alray," a representation of the sun and rays from the sun, on which latter the words are produced, and a border surrounding the words, the sun, and the rays. Used since May 23, 1902.

88,728. REMEDIES FOR TREATMENT OF THE HAIR AND SCALP. THE ALTHEIMER MEDICAL DISPENSARY, Cincinnati, Ohio. Filed May 12, 1902.

The representation of a woman's head having a luxuriant growth of hair, executed in gilt or gold, and with the words "NONE GENUINE WITHOUT THE GOLDEN HEAD" printed in plain capital letters, arranged in a semicircle above the same. Used since January 1, 1895.

88,729. FOOT-POWDER. JAMES W. MADDOX, Albany, Tex. Filed June 13, 1902.

A representation of the registrant's photograph. Used since May 1, 1902.

88,730. TALCUM POWDER. HARVEY H. EISENTRAUER, Spring-field, Ohio. Filed June 26, 1902.

QUEEN

The word "QUEEN." Used since March 20, 1896.

88,731. INSECT-POWDERS. WILLIAM F. STRIMMER, Philadelphia, Pa. Filed May 16, 1902.

The words "UNPLEASANT KUMPNER" printed on the back of the representation of a roach. Used since February 1, 1902.

88,732. CARBON-BLACK. CASTLE BRIDGE CARBON BLACK CO., Williamsport, Pa. Filed Jan. 31, 1902.

NAPTHOL-METHANE.

The compound word "NAPTHOL-METHANE." Used since January 24, 1901.

88,733. ROSIN-OIL. S. P. SHORTER COMPANY, Savannah, Ga.; Chicago, Ill.; New York, N. Y., and New Orleans, La. Filed Mar. 27, 1902.

MYSTIC

The word "MYSTIC." Used since August, 1868.

88,734. PAINTS AND CERTAIN NAMED PAINTERS' SUPPLIES. STANDARD VARNISH WORKS, New York, N. Y. Filed June 17, 1902.

LACQUERET

The word "LACQUERET." Used since June 10, 1902.

88,735. CLEANING AND POLISHING COMPOUND. AMERICAN POTTERY SUPPLY COMPANY OF BALTIMORE CITY, Baltimore, Md. Filed June 19, 1902.

SCOUR-IT

The hyphenated word "SCOUR-IT," having the upper portion of the letter "S" extending over the intermediate letters in a straight line and connecting with and forming part of the letter "T." Used since May, 1901.

88,736. LIQUID FURNITURE-POLISH. PHILIP LEVI, New York, N. Y. Filed June 24, 1902.

CHING FOW

The words "CHING FOW." Used since January 1, 1875.

88,737. FABRIC ROOFING. THE KANSAS CITY ROOFING & CORRUGATING CO., Kansas City, Mo. Filed May 15, 1902.

The word "ALLIGATOR" and the representation of an alligator standing behind a roll of roofing. Used since August, 1900.

88,738. CERTAIN NAMED SEALS. R. J. Brooks & Company, New York, N. Y., and Newark, N. J. Filed June 24, 1902.

TIN BUTTON.

The words "TIN BUTTON." Used since August 31, 1894.

88,739. PRESCRIPTION-BOTTLES. CEDAR RAPIDS GLASS COMPANY, St. Louis, Mo. Filed May 17, 1902.

Usona

The word "USONA." Used since May 5, 1902.

88,740. ELECTRIC SWITCHES. THE HART MFG. CO., Hartford, Conn. Filed June 26, 1902.

DIAMOND H

The word "DIAMOND" associated with the letter "H." Used since May, 1899.

88,741. GAS-FIXTURES. AMERICAN TANK & FIXTURE COMPANY, Chicago, Ill. Filed June 30, 1902.

LUMO

The word "LUMO." Used since November 13, 1901.

THE NORRIS PETERS CO.

LABELS

REGISTERED AUGUST 5, 1902.

9,341.—*Title:* "HERCULES RIP PROOF GLOVES." (For Gloves.) SCHWARTZ, SCHIFFER & COMPANY, New York, N. Y. Filed July 11, 1902.

9,342.—*Title:* "COLORADO ROCKY MOUNTAIN COUGH AND CATARRH ROOT." (For Medicine.) JEROME BLANCHARD and CHARLES H. MCINTYRE, Denver, Colo. Filed June 28, 1902.

9,343.—*Title:* "BELL'S BARBWIRE LINIMENT." (For Liniment.) G. W. BELL & SON, Winterset, Iowa. Filed May 1, 1902.

9,344.—*Title:* "ELIXIR OVARANS." (For a Medicine.) W. H. NELSON, Richmond, Va. Filed July 10, 1902.

9,345.—*Title:* "THE FAMOUS RIPPER." (For Cigars.) J. H. BLOCH, Scranton, Pa. Filed May 26, 1902.

9,346.—*Title:* "LA CAROLITA." (For Cigars.) CHAS. STUTZ, a firm, New York, N. Y. Filed July 12, 1902.

9,347.—*Title:* "TARQUINIUS." (For Cigars.) CHAS. STUTZ, a firm, New York, N. Y. Filed July 12, 1902.

9,348.—*Title:* "ARISTYPHO." (For Cigarettes.) ARISTYPHO COMPANY, New York, N. Y. Filed July 15, 1902.

9,349.—*Title:* "FRUTONIC." (For a Tonic Beverage.) SOUTHERN CALIFORNIA CHEMICAL CO., Los Angeles, Cal. Filed June 17, 1902.

9,350.—*Title:* "COOK'S BUDWEISER." (For Bottled Beer.) THE F. W. COOK BREWING CO., Evansville, Ind. Filed July 11, 1902.

9,351.—*Title:* "ALT NÜRNBERGER BRÄU." (For Beer.) THE GRAND RAPIDS BREWING COMPANY, Grand Rapids, Mich. Filed July 12, 1902.

9,352.—*Title:* "QUEEN QUALITY." (For Burgundy Wine.) SIEGEL-COOPER CO., New York, N. Y. Filed May 26, 1902.

9,353.—*Title:* "PINK ROSE WINE." (For Wine.) POPEL & GILLER, Warsaw, Ill. Filed July 9, 1902.

9,354.—*Title:* "JOHN LATOUR. COGNAC 1858." (For Brandy.) S. KRAUS & BRO., New York, N. Y. Filed July 9, 1902.

9,355.—*Title:* "SEA-WALL." (For Coffee.) SOUTHERN COFFEE COMPANY, Galveston, Tex. Filed July 12, 1902.

9,356.—*Title:* "CHASE & SANBORN SEAL BRAND COFFEE." (For Coffee.) CHASE & SANBORN, Boston, Mass. Filed July 14, 1902.

9,357.—*Title:* "CHASE & SANBORN SEAL BRAND COFFEE." (For Coffee.) CHASE & SANBORN, Boston, Mass. Filed July 14, 1902.

9,358.—*Title:* "THE LINDSEY." (For Crackers.) N. B. LINDSEY, Marblehead, Mass. Filed July 15, 1902.

9,359.—*Title:* "GLORIA." (For Flour.) DETROIT MILLING CO., Detroit, Mich. Filed February 1, 1902.

9,360.—*Title:* "BLUE BELL." (For Flour.) DETROIT MILLING CO., Detroit, Mich. Filed February 1, 1902.

9,361.—*Title:* "ADRIAN." (For Flour.) DETROIT MILLING CO., Detroit, Mich. Filed February 1, 1902.

PRINTS

REGISTERED AUGUST 5, 1902.

538.—*Title:* "ZAPHA." (For Shoe-Polish.) K. J. QUINN & CO., Boston, Mass. Filed June 25, 1902.

539.—*Title:* "WE SELL MASURITE SAFE EXPLOSIVE." (For an Explosive.) MASURITE EXPLOSIVE COMPANY, New York, N. Y. Filed June 6, 1902.

540.—*Title* "VIENNA SAUSAGE." (For Vienna Sausage.) ARMOUR PACKING COMPANY, Kansas City, Kans. Filed June 26, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE CLASSIC CORSET COMPANY.

Decided January 17, 1902.

TRADE-MARK—"GRECIAN"—GEOGRAPHICAL OR DESCRIPTIVE.

Held that the word "Grecian" should not be registered as a trade-mark, since it either conveys the idea that the articles to which it is applied came from Greece and is therefore geographical or that they are made in the Grecian style and is therefore descriptive.

ON appeal.

TRADE-MARK FOR CORSETS, ETC.

Application filed July 12, 1901, No. 63,761.

Mr. Clarence K. Chamberlain for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register as a trade-mark for bust-girdles and athletic and negligé corsets the word "Grecian."

Without doubt the word "Grecian" in its primary significance means "of or pertaining to Greece." (See *Century Dictionary.*) That is, the primary signification of the word is geographical. If this were its only meaning, it would under a practice which is well settled be unregistrable as a trade-mark. (*Ex parte Rome Textile Company*, 91 O. G., 820; *ex parte Manogue-Pidgeon Iron Company*, 97 O. G., 2084.)

In addition to its primary geographical meaning this word is used frequently in a descriptive sense to signify "characteristics of the Greeks, resembling what is Greek." Thus we may speak of Grecian architecture, meaning architecture in the Greek style, Greek or Grecian fire, Greek cross. In these cases, as in others similar thereto, the word "Grecian" is used not in a geographical sense, but as descriptive of the kind of architecture, fire, cross, or of whatever the subject may be. This descriptive significance of the word is not fanciful or arbitrary, however. It is a significance which conveys to the mind some characteristic or quality of the subject or article to which the word is applied. In fact, it may be said that this word has no fanciful or arbitrary significance. As applied to a bust-girdle, then, this word if used in any other than a geographical meaning must describe some characteristic or quality of the girdle as being like those worn by the Greeks; otherwise it is deceptive, and a purchaser thinking to obtain such a girdle would be misled.

That words descriptive of character or quality of an article are not registrable as trade-marks is too well settled to admit of discussion. (See *ex parte Birkhead*, 97 O. G., 749; *ex parte The Crescent Manufacturing Company*, 97 O. G., 750.)

Viewed from any standpoint the word "Grecian" fails to satisfy the requirements laid down as necessary for a registrable trade-mark. Registration, therefore, was properly refused.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE HUENEFELD.

Decided February 13, 1902.

1. TRADE-MARK—"SUCCESS"—ARBITRARY AND FANCIFUL WORD.

Held that the word "Success" as a trade-mark for stoves and ranges is registrable, since it does not describe any quality or characteristic of the articles and would be understood by purchasers as arbitrary and fanciful.

2. SAME—DEFINITION OF DESCRIPTIVE WORDS.

The prohibition against the registration of descriptive words as trade-marks applies only to those words which state or define some quality or characteristic of the article or designate its class, grade, style, or quality or the ingredients of which it is composed.

ON appeal.

TRADE-MARK FOR COOKING AND HEATING APPARATUS.

Application of Ernst H. Huenefeld filed November 28, 1900, No. 62,201.

Mr. H. A. Seymour for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner of Trade-Marks refusing to register the word "Success" as a trade mark for stoves, ranges, furnaces, ovens, and heating-drums, exclusive of gas-stoves.

Registration has been refused on the ground that the word is a descriptive word used in a descriptive sense.

The law is well settled that words which are "merely descriptive of an article of trade, of its qualities, ingredients, or characteristics" are not registrable as technical trade-marks. (*Canal Company* v. *Clark*, 13 Wall., 311; *Lawrence Manufacturing Company* v. *Tennessee Manufacturing Company*, 138 U. S., 537.) The prohibition applies only to those words which state or define some quality or characteristic of the article or designate its class, grade, style, or quality or the ingredients of which it is composed.

The word "Success" cannot be said to describe any quality or characteristic of stoves. It may suggest that the stoves will operate as they are in-

tended to; but as was said in *ex parte Peck*, (96 O. G., 425:)

* * * It cannot be held to be one of those descriptive terms which any person has the right to use in describing similar articles and which therefore cannot be exclusively appropriated by one person. The mark would be recognized by purchasers as being arbitrary and fanciful.

The decision of the Examiner of Trade-Marks is reversed.

EX PARTE HUTCHINS.

Decided April 26, 1902.

TRADE-MARK—"TELEGRAPHONE" REFUSED REGISTRATION ON "TELEGRAPHOPHONE."

The word "Telegraphone" refused registration as a trade-mark for apparatus for recording and reproducing sounds in view of the descriptive word "Telegraphophone," which has long been in use to describe such apparatus.

ON appeal.

TRADE-MARK FOR APPARATUS FOR RECORDING AND REPRODUCING SOUNDS, SIGNALS, ETC.

Application of Stillson Hutchins filed June 1, 1901, No. 63,498.

Mr. Ellis Spear for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the word "Telegraphone" as a trade-mark for apparatus for recording and reproducing sounds, signals, and the like.

This mark must be refused registration on the ground that it is descriptive, and therefore it is unnecessary to discuss the other reasons for refusal stated by the Examiner. It is a contraction of the descriptive word *telegraphophone*, which has long been used to describe machines of the same class as those to which the present mark is applied. The word *telegraphophone* was in use as a descriptive term long before the date of adoption alleged by this appellant, as will be seen by reference to the patent to Wheless, No. 410,305, September 3, 1889, and to the *Century Dictionary*, which defines its meaning as—

an apparatus for reproducing at a distance the sounds which produce a graphophonic record; also an apparatus for producing a graphophonic record at a distance by means of a telegraphic circuit.

The contraction of this word by the omission of one of its syllables does not produce a word so distinct from the original as to become an arbitrary and fanciful mark, but, on the contrary, the word retains its descriptive character and would be so understood by the public.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE CASLER.

Decided April 29, 1902.

FINAL REJECTION—AMENDMENT NOT AFFECTING SUBSTANCE OF CLAIMS.

Where after the rejection of claims the applicant presented an amendment correcting the spelling of words positively including elements which were inferentially included before and transposing a descriptive phrase from one place to another, *Held* that the amendment is merely formal in character and does not prevent a final rejection.

ON petition.

WASHING-MACHINE.

Application of Alonzo A. Casler filed May 17, 1901, No. 60,733.

Mr. William N. Moore for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner refusing to enter and consider an amendment not presented under the provisions of Rule 68 and filed after the final rejection.

The petitioner contends that the final rejection was premature and that therefore the amendment should be entered and considered.

The records show that the claims were rejected on references on June 17, 1901. On July 13, 1901, certain amendments were made to the claims and a reconsideration was asked.

The amendments consisted in the correction of the spelling of certain words, in positively including elements which were already inferentially included, and by transposing a descriptive phrase from one place to another.

These amendments are merely formal in character. The claims as amended are the same in substance as before.

The Examiner finally rejected the claims on July 27, 1901. The petitioner thereafter filed an amendment limiting the claims in some respects and argued that the claims as then amended avoided the references of record and should therefore be allowed. The Examiner having twice refused to enter and consider the amendment, this petition is brought.

From the facts above stated it is clear that the Examiner's action of July 27, 1901, finally rejecting the claims was right, and it should not be disturbed. It follows that no amendments can be made to this application except as provided in Rule 68.

The petition is denied.

EX PARTE CASLER.

Decided May 10, 1902.

FINAL REJECTION—AMENDMENT—CLAIMS NOT THE SAME IN SUBSTANCE.

Where a claim including a "tub" as an element is rejected and the applicant presents an amendment including an "oscillating tub," *Held* that the claim is not the same in substance and that a final rejection is not in order.

ON petition.

WASHING-MACHINE.

Application of Alonzo A. Casler filed May 17, 1901, No. 60,736.

Mr. William N. Moore for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner finally rejecting the claims of the above-entitled application and refusing to enter a subsequent amendment unless presented under the provisions of Rule 68.

The record shows that the application as originally filed contained three claims. These claims were rejected on June 17, 1901. On July 13, 1901,

a formal amendment was made to claim 2, a new claim (numbered 4) was inserted, and a reconsideration of the three rejected claims was asked, reasons therefor being given.

On July 27, 1901, the Examiner finally rejected all the claims, holding that the new claim 4 was the same in substance as the original claim 3.

A comparison of these two claims discloses the fact that claim 3 includes the "tub" positively as an element and claim 4 includes this element as an "oscillating tub." This difference alone renders claim 4 more limited than claim 3. They therefore differ in scope. In view of this conclusion it follows that the final rejection of July 27, 1901, was premature.

The petition is granted.

EX PARTE ALMINANA.

Decided July 8, 1902.

1. DIVISION—WHEN REQUIREMENT SHOULD BE MADE—RULE 42.

Held that when the independence of the inventions is clear the requirement for division will be made before any action upon the merits, and when the independence of the inventions is not clear the requirement may be made at any time before the final action.

2. SAME—UMBILICAL-TRUSS STRUCTURE—BELT.

Where certain claims are drawn to an umbilical-truss structure and other claims are not so limited, but nevertheless cover the unitary structure of the invention, *Held* that the device covered by all the claims is a single invention and divison between the broad and narrow claims should not be required.

3. DRAWING—RULE 50—SECTIONAL VIEW OF ELEMENT.

Where an element is described and claimed, *Held* that said element should also be clearly shown in the drawing and that an illustration of said element by means of a sectional view where it does not completely illustrate the structure is not sufficient.

ON petition.

BABY BANDS OR BANDAGES.

Application of Louise Alminana filed March 31, 1902, No. 100,762.

Mr. James W. Bevans for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division between claims 1 and 2 and the remaining claims in the above-entitled application and also from his requirement that a certain feature be clearly shown in the drawings, which feature is specifically described and claimed.

It appears that the Examiner did not make the requirement of division in the first action, and the petitioner calls attention to this fact.

The Examiner has given careful consideration to this application. Rule 42 specifically provides that in cases where the independence of the invention is not clear the requirement of division—

may be made at any time before final action—

and when the independence of the invention is clear the—

limitation will be made before any action upon the merits.

This simply means that the Office will not make an action on several independent inventions for one fee; but if an applicant should be so fortunate as to receive an action on the merits as to several independent inventions before he is required to divide he surely has no ground of complaint.

It is of course desirable that all questions should be raised by an Examiner in the first action; but in the nature of things it is beyond human power to always raise every objection and cite every reference applicable to the claims in the first action.

The propriety of making the first action as complete as possible is fully appreciated by the Examiner, as shown by the statements in his answer to the petition. The Examiner is right in requiring the petitioner to clearly show the "disk" in the drawing. The disk is specifically described and claimed. Rule 50 is in part as follows:

The drawing must show every feature of the invention covered by the claims.

In view of the rule the Examiner would have been clearly in error had he not made this requirement. This disk is shown in section in one of the views; but a drawing in section when it does not clearly and completely illustrate a structure is not sufficient to show the invention described and claimed.

As suggested in the Office letter of June 14, 1902, the disk—

can be shown in dotted lines in the pocket K in Fig. 2.

Claims 1 and 2 are drawn specifically to an umbilical truss structure. Claims 3, 4, and 5 are not so limited; but they nevertheless cover the unitary structure of this invention. The device described and claimed in this application is a single invention, and there does not appear to be a clear line of division between the broad claims 3, 4, and 5 and the specific claims 1 and 2. The requirement of division should not be insisted upon.

The petition is granted to the extent indicated.

WILLIAMS v. LIBERMAN.

Decided July 5, 1902.

1. INTERFERENCE—PRELIMINARY STATEMENT—AMENDMENT.

Where a preliminary statement contains the allegation that no model was made and it is desired to amend it by adding the allegation that an experimental device was made and it appears that said device was in fact a model, *Held* that the amendment should not be permitted, since it would make the statement contradictory.

2. SAME—SAME—SAME.

Where there is no attempt to change the date of conception, disclosure, or reduction to practice, the reason for the strict rule against amendment does not apply.

3. SAME—AMENDMENT TO PRELIMINARY STATEMENT—MODEL.

Where it appears from the testimony that a model was in fact made which had been forgotten and motion to amend the preliminary statement to allege that fact is made before the opposing party's time for taking testimony is closed, *Held* that the amendment will be permitted.

APPEAL on motion.

COMBINED CIGAR-WRAPPER CUTTER AND ROLLING-TABLE.

Application of John R. Williams filed April 17, 1901, No. 56,200. Application of Isadore Liberman filed February 25, 1901, No. 48,669.

Mr. Chas. C. Gill and *Mr. Wm. G. Henderson* for Williams.

Mr. John P. Croasdale and *Mr. Wm. N. Cromwell* for Liberman.

ALLEN, *Commissioner:*

This is an appeal from a decision of the Examiner of Interferences denying a motion by Liberman for leave to amend his preliminary statement by adding thereto the following matter:

An experimental device was made by him prior to May 1st, 1900, embodying the principles of his invention.

It appears that Liberman filed his preliminary statement October 5, 1901. In this statement he alleges certain dates of conception, disclosure to others, and reduction to practice, and also—

that no model was made of the invention other than a complete machine.

This statement was executed October 3, 1901.

Liberman's testimony was begun January 6, 1902, and concluded January 20, 1902. At the taking of the testimony on the last-named date the attorney for Liberman gave notice on the record that he would move to amend Liberman's preliminary statement so as to include the matter which it is now sought to introduce. The present motion was filed in accordance with this notice February 4, 1902.

From the showing made in support of the motion it appears that when Liberman made his preliminary statement he had forgotten the experimental device and did not have it in mind when questioned by his attorney as to a model, that this device was afterward recalled to his memory by his friends after the filing of the preliminary statement, and that when found at his house it did not occur to him that it was a model in the meaning which he supposed that term had in his preliminary statement. He was reminded of this device the last of October or first part of November, 1901, and immediately called it to the attention of his attorney; but no motion was then made to amend the preliminary statement for the reason, above stated, that it was not regarded as a model. At the taking of Liberman's testimony, however, objection was made to the introduction of this experimental device and of evidence relating thereto because of Liberman's allegation in his preliminary statement that he had made no model. It was after this objection had been made that notice of the present motion was given and the motion brought in accordance therewith.

It appears, therefore, that Liberman does not now desire to change the allegation that no model was made. He does desire to add to this allegation the further allegation that he made an experimental device. An examination of the affidavits presented and Liberman's testimony, however, shows that the alleged experimental device is, in fact, a model. It was clearly designed and intended merely as an illustration of the invention and not as a complete machine adapted to do practical work. Liberman did not regard it as of importance, for the reason stated by him that—

I never could put it to do any cutting. (Q. 110.)

He states that after "playing with" this device for a while he put it away in a closet. (Q. 11.) It is evident that Liberman looked upon it as nothing more than what is in patent law and practice defined as a model; but he was apparently not aware of the meaning of the term "model." To permit him to say, therefore, that an experimental device embodying the principles of the invention was made is, in effect, to permit him to say that a model was made. The proposed amendment to Liberman's preliminary statement, therefore, in effect changes the allegation that no model was made to the allegation that a model was made prior to May 1, 1900. If this amendment were permitted, the statement would contain the contradictory allegations that a model was made and that a model was not made. Manifestly such a statement should not be received, since it would be impossible to take testimony in conformity therewith. The entry of the amendment was properly refused.

Should appellant, however, seek to amend the statement by erasing the allegation that no model was made and substituting therefor the allegation that a model was made prior to May 15, 1900, the amendment may be received and entered, for while it is true that there has been delay in bringing the motion to amend and that testimony has been taken it is also true that no attempt is made to change the dates of conception, disclosure, or reduction to practice. Furthermore, the amendment will make Liberman's preliminary statement conform to the facts brought out in his testimony and no substantial injury will be done to Williams, since he has yet to take his testimony in rebuttal.

Under the circumstances of this case it is not necessary to apply the strict rule laid down in *Franklin* v. *Morton* v. *Cooley* (93 O. G., 2063) and in *McDermott* v. *Hildreth*, (98 O. G., 1282;) but it is believed to be for the interest of all parties that such an amendment to Liberman's preliminary statement be permitted. If, therefore, Liberman should within ten days from this date present such a motion to amend his statement as has been indicated above, such motion may be favorably considered.

The decision of the Examiner of Interferences denying the present motion to amend is affirmed.

Patents Nos. 706,508 to 707,067.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 7. TUESDAY, AUGUST 12, 1902. PRICE—$5 per year.

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TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama			Nebraska	2	
Alaska Territory			Nevada	1	
Arizona Territory			New Hampshire	1	1
Arkansas	3		New Jersey	31	5
California	21	3	New Mexico Territ'y	2	1
Colorado	6	1	New York	54	21
Connecticut	13		North Carolina	9	
Delaware			North Dakota	1	
District of Columbia	4		Ohio	35	9
Florida	1		Oklahoma Territ'y	1	
Georgia	4		Oregon	3	
Hawaii Territory			Pennsylvania	71	3
Idaho	1		Porto Rico		
Illinois	53	9	Rhode Island	5	1
Indian Territory			South Carolina	1	
Indiana	16	2	South Dakota	1	
Iowa	10		Tennessee	6	
Kansas	10		Texas	5	
Kentucky	6		Utah	1	
Louisiana	2	1	Vermont	1	
Maine	1		Virginia	2	
Maryland	8	1	Washington	7	1
Massachusetts	31	3	West Virginia	4	1
Michigan	26	2	Wisconsin	10	1
Minnesota	10	2	U. S. Navy		
Mississippi	2		Total to citizens of the United States	518	71
Missouri	23	3			
Montana	3				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina	1		Netherlands	2	1
Austria-Hungary			Newfoundland		
Belgium			New South Wales		
Bermuda			New Zealand	4	
Brazil			Norway		
Canada	8		Peru		
Cape Colony			Portugal		
Chile			Russia		
China			Santo Domingo		
Cocos Island			Scotland	2	1
Colombia			South African Republic		
Cuba			South Australia		
Denmark	1		Spain	1	
Egypt			Sweden	1	
England	7	2	Switzerland	1	1
France	6		Uruguay		
Germany	24		Victoria		
Guatemala			Western Australia		
India	1				
Ireland					
Italy	1		Total to citizens of foreign countries	60	5
Japan					

Attorneys.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., August 4, 1902.

This Office has been advised by the Secretary of the Interior of the disbarment of the following attorneys from practice before the Department or any Bureau thereof:

Charles A. Gibson, Washington, D. C., August 2, 1902; John O'Laughlin, Alexandria, Va., formerly of Washington, D. C., August 2, 1902; James P. O'Laughlin, Lock Haven, Pa., formerly of Washington, D. C., August 2, 1902.

C. M. IRELAN,
Chief Clerk.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., August 8, 1902.

This Office has been advised by the Secretary of the Interior that Department order of May 10, 1902, disbarring Lindsay Steele, of Chester, Ill., from practice before the Department or its Bureaus was rescinded August 7, 1902.

C. M. IRELAN,
Chief Clerk.

Classification Bulletin.

CLASSIFICATION BULLETIN No. 7, containing the revision made during the months of May and June, 1902, has been published. Price, ten cents.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business August 5, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	In arrears—Under one month.			
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	July 24	July 21	38
253	X. Carriages and Wagons	July 16	July 21	79
106	II. Farm Products, etc., Lubricators, Presses, etc.	July 11	July 17	144
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	July 7	July 12	113
246	I. Tillage, etc., and Fences	July 7	July 3	348
90	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	July 5	July 7	302
	Between one and two months.			
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	June 26	July 16	264
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	June 23	July 14	205
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	June 23	June 26	529
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 21	July 14	213
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	June 21	July 3	162
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 20	June 23	244
223	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	June 19	July 14	190
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	June 19	June 7	188
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	June 18	July 11	211
213	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	June 17	July 8	243
281	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	June 16	July 7	354
125	XXIX. Wood-Working Machines, Coopering and Roofing.	June 13	June 30	202
122	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 13	June 24	241
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	June 13	June 9	316
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	June 12	June 30	404
108	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 12	June 28	308
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	June 11	July 10	257
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	June 9	June 23	305
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	June 6	June 23	326
	Between two and three months.			
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	May 28	June 30	211

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	May 27	May 17	430
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	May 23	May 17	328
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	May 16	June 11	451
248	XVIII. Steam-Engineering, etc	May 16	June 9	515
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 10	June 9	718
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 10	May 12	480
91	XVI. Telegraphy and Telephony	May 8	May 15	336
109	XXII. Fire-Arms, Ordnance, Navigation.	May 5	June 13	198
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	May 5	June 2	490
	Between three and four months.			
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 1	May 15	602
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	Apr. 29	Apr. 28	609
	Between four and five months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 28	June 11	515

Total number of applications awaiting action 12,374

Under one month.			
*Designs	July 24	July 28	34
†Trade-Marks	July 2	Aug. 1	167
‡Labels and Prints	Aug. 1	July 31	12

Photographic Copies of Drawings.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 1, 1902.

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F. I. ALLEN,
Commissioner.

PATENTS

GRANTED AUGUST 12, 1902.

706,508. ARMATURE-WINDING FOR INDUCTION-MOTORS.

ALBERT H. ARMSTRONG, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Nov. 3, 1897. Serial No. 657,239. (No model.)

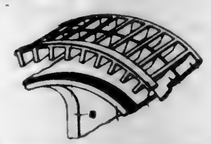

Claim.—1. In combination, a plurality of conductors of drawn metal, and end connections formed integral therewith uniting said conductors in closed-circuit relation.

2. In combination, a plurality of separately-formed conductors, and end connections cast integral therewith.

3. In an electrical apparatus, the combination of a body of toothed laminæ, a support for the laminæ, a winding having separately-formed conductors mounted in the laminæ-slots, and an end ring formed integral with the conductors.

4. In an induction-motor, the combination of a body of toothed laminæ, a support therefor, copper conductors mounted in the laminæ-slots, and end rings uniting the copper conductors in closed-circuit relation, formed by casting metal around the conductors.

5. In a closed-circuited armature, the combination of a cast-metal spider, an end flange formed integral therewith, copper bars formed integral with the flange which unites them in closed-circuit relation, and a ring at the opposite end of the armature, also formed integral with said bars.

6. In a closed-circuit armature, in combination, a cast-metal spider, an end flange therefor, copper bars formed integral with the flange which unites them in closed-circuited relation, and a short-circuiting ring uniting the opposite ends of the said bars.

7. In a closed-circuit armature, the combination of a cast-metal spider, an end flange formed integral therewith, a body of toothed laminæ, a clamping-ring for holding the laminæ against the flange, copper bars formed integral with the flange which unites them in closed-circuit relation, and a ring at the opposite end of the armature also formed integrally with the conductors, so arranged that the laminæ can be assembled by slipping them inside the ring.

706,509. ATTACHMENT FOR AUTOMATIC CIRCULAR-KNITTING MACHINES.

JAMES F. BARR, Wayne, Pa. Filed Feb. 18, 1901. Serial No. 47,714. (No model.)

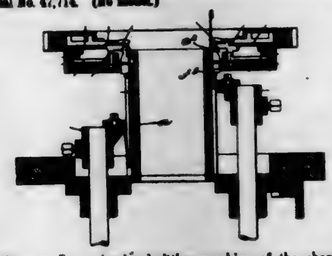

Claim.—1. In a circular-knitting machine of the character described, in combination with bearded needles and mechanism for operating the same, two sets of beard-closing jacks, of which one set is fixed and controls certain of the needles to form regular meshes and the other set is movable and adapted when withdrawn to clear the beards of certain other needles and prevent the formation of regular meshes thereon.

2. In a circular-knitting machine of the character described, a series of bearded needles and mechanism for operating the same, means for constantly closing the beards of certain of said needles at every downward movement of the same, a series of movable jacks controlling the beards of the remaining needles, and mechanism for elevating said jacks to prevent the closure of the beards during the downward movement of said remaining needles.

3. In a machine of the character described, a bearded needle, a needle-cylinder wherein the needle is adapted to be reciprocated, a sinker-bar bed adjacent to the needle-cylinder, a sinker-bar arranged to operate in said bed, and a beard-closing jack in fixed lateral relationship to the needle-cylinder and fulcrumed below the sinker-bar bed so as to oscillate toward and away from the beard of the needle, substantially as and for the purposes described.

4. In a machine of the character described, a beard-closing jack having at one end a beard-closing nose and at the other end a tailpiece, said jack having a fulcrum intermediate of its ends, and a segmental cam-piece adapted to be oscillated and to be elevated and depressed adjacent to the tailpiece and when depressed adapted to impinge on said tailpiece to depress the same and to elevate and withdraw the nose of the jack from the beard of said needle.

5. In a circular-knitting machine of the character described, bearded needles, mechanism for operating the same and fixed and movable jacks for respectively closing regularly and intermittently the beards of said needles.

6. In a circular-knitting machine of the character described, bearded needles, mechanism for operating the same, two sets of jacks, whereof one set is adapted to continuously in one direction close and the other set intermittently in the same direction close the beards of said needles.

706,510. ART OF MANUFACTURING PLATE-ICE.

EDWARD BARRATH, Philadelphia, Pa., assignor of two-thirds to Augustus Buttney and John J. Keller, Philadelphia, Pa. Filed Nov. 27, 1901. Serial No. 83,963. (No specimens.)

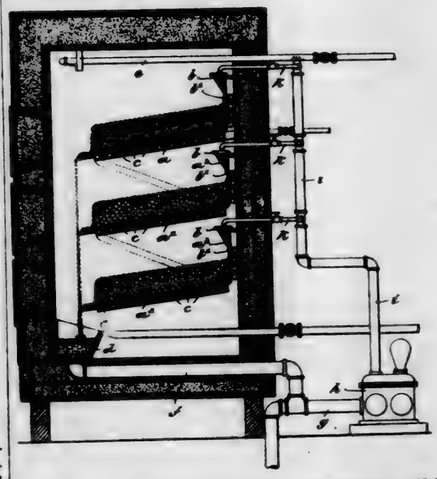

Claim.—1. The improvement in the art of manufacturing artificial plate-ice from constantly-flowing water, which consists in stilling the water, presenting the stilled water continuously in a film of substantially uni-

form thickness to an artificial freezing medium and causing the continuous flow of such films over the medium and over successive strata of ice, until a plate of ice has been built up by successive accretions.

2. The improvement in the art of manufacturing artificial plate-ice from constantly-flowing water, which consists in stilling the water, presenting the stilled water continuously in a film of substantially uniform thickness and causing the continuous flow of such films over an artificial freezing medium, under the influence of gravity.

706,511. APPARATUS FOR MANUFACTURING PLATE-ICE. EDWARD BARRATH, Philadelphia, Pa., assignor of two-thirds to Augustus Bettney and John J. Keller, Philadelphia, Pa. Filed Nov. 20, 1901. Serial No. 84,008. (No model.)

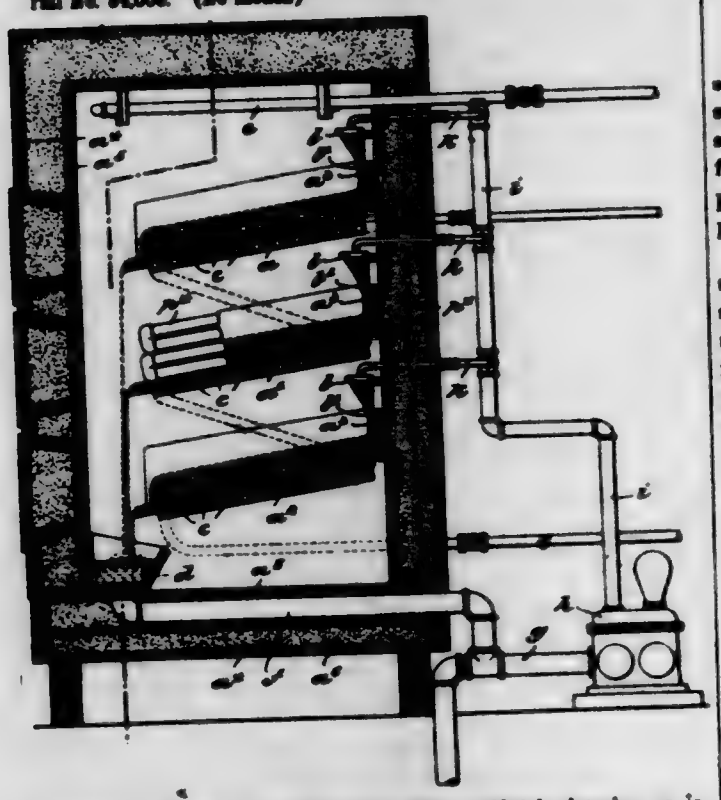

Claim.—1. In an apparatus for making artificial plate-ice, an inclined freezing surface or plate, a source of flowing-water supply discharging above the uppermost portion of the freezing surface or plate, and stationary means interposed between the water-supply and the surface or plate and arranged to receive the water and to present the same in film or sheet form to the uppermost portion of the freezing surface or plate.

2. In an apparatus of the character described, a series of superposed inclined freezing plates or surfaces, a source of water-supply for said plates and discharging at the uppermost portion of each plate, and a stationary means interposed between the water-supply and each plate and arranged to receive the water and to present the same in film or sheet form to the uppermost portion of each plate in series.

3. In an apparatus of the character described, a series of superposed, inclined plates having both upper and lower freezing-surfaces, a source of water-supply for each plate and discharging at the uppermost portion thereof, and a stationary means interposed between the water-supply and each plate and arranged to receive the water and to present the same in film or sheet form to the upper surface of each plate in series.

4. In an apparatus of the character described, an inclined freezing-plate, an extension projecting vertically from the uppermost portion of said plate, a wedge-shaped tank having for its vertical wall the extension on the freezing-plate, a contracted outlet formed at the base of the tank above the freezing-plate, and a source of water-supply discharging into said tank.

5. In an apparatus of the character described, an inclined freezing-plate, an extension projecting vertically from the uppermost portion of said plate, a tank having a narrow outlet leading to one side of the extension and arranged above the plate, a source of water-supply leading to said tank, and a releasing-coil arranged adjacent to the other side of said extension.

6. In an apparatus of the character described, an inclined freezing-plate, a corrugated extension projecting vertically from the uppermost portion of said plate, a tank having a narrow outlet leading to the extension above its corrugations, and a source of water-supply leading to said tank.

706,512. FOLDING OPERA-GLASS. EMILE BATAILLE, Geneva, Switzerland. Filed Mar. 11, 1902. Serial No. 97,701. (No model.)

Claim.—1. In a folding opera-glass, the combination with a band, two case-sections hinged to said band, bellows between said case-sections, and springs directly engaging said case-sections for normally separating the same, of a frame within the case-sections, eyepiece-lenses carried by said frame, and objectives pivoted to said frame, substantially as and for the purposes set forth.

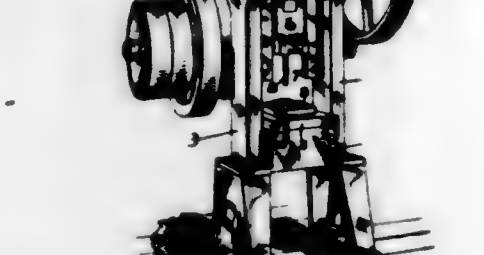

2. In a folding opera-glass, the combination with a band, two case-sections hinged to said band, bellows between said case-sections, and springs directly engaging said case-sections for normally separating the same, of a frame within the case-sections, eyepiece-lenses carried by said frame, objectives pivoted to said frame, and means for adjusting the eyepiece-lenses with respect to the frame, substantially as and for the purposes set forth.

3. In a folding opera-glass, the combination with a band, two case-sections hinged to said band, bellows between said case-sections, and springs directly engaging said case-sections for normally separating the same, of a frame within the case-sections, eyepiece-lenses carried by said frame, objectives pivoted to said frame, and means for locking the objectives in line with the frame or in a position at right angles thereto, substantially as and for the purposes set forth.

706,513. MACHINE FOR MAKING TUBULAR TOOL-SHANKS. FRANKLIN P. BATES, Indianapolis, Ind., assignor to the Indianapolis Drop Forging Company, Indianapolis, Ind., a Corporation of Indiana. Filed Apr. 3, 1901. Serial No. 54,153. (No model.)

Claim.—1. The combination, in a machine for making tubular structures, of the reciprocating internal die or mandrel, a lower die composed of rollers surrounding the opening through which the metal is to be forced the faces whereof form the outside shape of the hollow structure being made, said several rollers being arranged in the same plane with their adjacent edges adapted to operate in close touch with each other, and adjustable supports in which said rollers are mounted, substantially as set forth.

2. The combination, in a machine for making tubular structures, of a reciprocating internal die or mandrel, a lower die composed of rollers surrounding the opening through which the metal is to be forced the faces whereof form the outside shape of the tubular structure being made, said several rollers being arranged in the same plane with their adjacent edges adapted to operate in close touch with each other, whereby a rotary internal die is provided with a practically continuous circular face and adjustable housings wherein said rollers are mounted, whereby an accurate adjustment thereof is provided.

3. The combination, in a machine for making tubular structures, of a reciprocating internal die or mandrel an outer die composed of rollers arranged in the same plane and formed with concave faces set around and bounding the die-opening through which metal is to be forced, means for adjusting said rollers, and strippers for removing the tubular structure when formed from the internal die or mandrel.

4. The combination, in a machine for making tubular structures, of a reciprocating internal die or mandrel, a bottom die-plate, housings adjustably mounted thereon, and rollers framed with concave faces mounted in said housings and forming the lower die through which the metal is forced in being formed in the tubular structure, said several parts being combined, arranged and operating substantially as shown and described.

706,514. TROWEL. ERNEST A. BRETTENDORFER, Hamilton, Ohio. Filed July 15, 1901. Serial No. 68,432. (No model.)

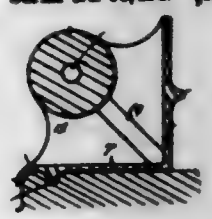

Claim.—1. As a new article of manufacture, a trowel having two blades formed integral and at substantially a right angle to each other, and a handle permanently mounted parallel with the blades and in the angle formed between them, the one of said blades having a longitudinal rib formed on its surface and the other terminating at one edge in a curved longitudinal flange.

2. As a new article of manufacture, a trowel consisting of two blades formed integral and at an angle to each other, one of said blades being formed with a longitudinal groove on its surface, and a handle permanently mounted parallel with the blades and within the angle between them.

3. As a new article of manufacture, a trowel consisting of two blades formed integral and at an angle to each other, one of said blades being formed with a longitudinal rib on the middle portion of its surface, and a handle mounted parallel with and in the angle formed between the blades.

706,515. SOD-LINE-CUTTER MECHANISM FOR RAILWAY-TRACK APPLIANCES. VICTOR BERTRAM, Tara, Canada. Filed June 10, 1901. Serial No. 63,936. (No model.)

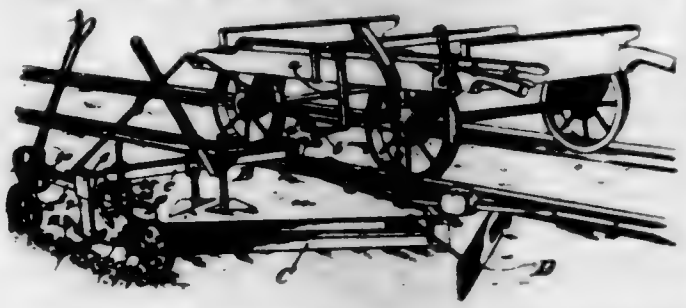

Claim.—1. In an apparatus of the class described, the combination with a carriage, and a framework extending outwardly therefrom, of a horizontal carrier-bar, suitable wheel-supports connected adjustably to said carrier-bar and each having a ground-wheel, and sod-line-cutter devices mounted on the carrier-bar between the connection of the wheel-supports thereto, substantially as set forth.

2. In an apparatus of the class described, the combination with a carriage, and a framework extending outwardly therefrom, of a carrier-bar, wheel-supports connected to the fore and after ends of the bar and adjustable independently of each other, suitable wheels mounted in the wheel-supports, and sod-line-cutter devices mounted on the carrier-bar, substantially as set forth.

3. In a sod-line-cutter mechanism for railway-track appliances, the combination with a wheeled car, and a suitable frame extending outwardly therefrom, of weed-cutter devices on the frame, a carrier-bar lying substantially parallel to the length of the car and attached to the frame, a caster-wheel having adjustable connection with said carrier-bar and sod-line-cutter devices mounted on the carrier-bar beyond the operative plane of the weed-cutter devices, substantially as set forth.

4. In an apparatus of the class described, the combination with a carriage and a suitable framework extending outwardly therefrom, of a carrier-bar, a standard attached to said carrier-bar and provided with a vertical share at one side of a moldboard, and suitable wheels for supporting the carrier-bar, substantially as set forth.

5. In an apparatus of the class described, the combination with a carriage and a suitable framework extending outwardly therefrom, of a carrier-bar having sod-line-cutter devices mounted thereon, a lever fulcrumed on the carrier-bar and provided with a caster-wheel, and means for locking the lever in adjustable relation to the carrier-bar, substantially as described.

6. In an apparatus of the class described, the combination with a carriage and a suitable framework extending outwardly therefrom, of a carrier-bar having sod-line-cutter devices attached thereto, a lever mounted on the carrier-bar and provided with a caster-wheel, and a trailing hanger supporting a trailing wheel and connected adjustably with the carrier-bar, substantially as described.

7. In an apparatus of the class described, the combination with a suitable framework, of a standard attached to said framework and provided with a moldboard and with a vertical share, a toothed yoke disposed on the framework in advance of the standard, a lever having a pivotal connection with the framework and carrying a caster-wheel, and a latch mechanism mounted on the lever and arranged for engagement with the yoke, substantially as set forth.

8. In an apparatus of the class described, the combination with a suitable framework, of a standard provided with suitable sod-line-cutter devices, a caster-wheel having adjustable connection with the framework and disposed in advance of said cutter devices, a trailing hanger pivoted on the framework in rear of the cutter devices and provided with a curved arm, a clamping-yoke for adjustably fastening said arm to the framework, and a trailing wheel mounted in the hanger, substantially as set forth.

9. In an apparatus of the class described, the combination with a suitable framework, of a standard fastened adjustably to the framework and provided with a moldboard and with a vertical share, a lever fulcrumed on the framework in advance of the standard and supporting a caster-wheel, means for locking the lever in adjustable relation to the framework, a trailing hanger pivoted to the framework in rear of the share and supporting a trailing wheel, and means for adjustably holding the trailing hanger with relation to the framework, said lever and said hanger being adjustable independently with respect to one another, substantially as set forth.

706,516. RAILWAY-GATE. JOHN BOWMAN, Wennington, S. D. Filed Dec. 4, 1901. Serial No. 84,694. (No model.)

Claim.—1. In a device of the class described, the combination with a trackway and a rail thereof, of a supporting-post, a gate pivoted upon the post, links pivotally connected at their adjacent ends, one of said links being hinged to a support and the other link being free for slidable movement, said links being disposed to project with their connecting ends above a rail of the trackway, a lever pivoted beneath the links and disposed with its free end thereabeneath, said lever being inclined in the direction of sliding movement of the second link when the links are depressed, connections between the lever and the gate for levering the latter, and a counterbalance upon the gate for raising it and returning the lever and links.

2. The combination with a trackway and a rail thereof, of a supporting-post having a gate pivoted thereon, an angular lever pivoted to the post, a shaft on which the gate is mounted, said shaft having a crank-arm, connections between the angular lever and the crank-arm for operating one from the other, links pivotally connected at their adjacent ends and adapted to lie with said adjacent ends above and close to the rail, one of the links having its outer end hinged to a support whereby when the connected ends of the links are depressed the other link will be moved bodily from the post, a lever pivoted beneath the links, said lever being inclined in the direction of sliding movement of the bodily-movable link when the links are depressed and having its free end in contact with the links for operation thereby, and a connecting-rod between the angular lever and the lever beneath the links, the gate having a weighted end for returning it to move the links to their normal positions to project above the rail.

706,517. APPARATUS FOR WELDING AND TAPERING SOCKETS. PETER BOYD, Pittsburg, Pa., assignor to National Tube Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Dec. 21, 1901. Serial No. 86,766. (No model.)

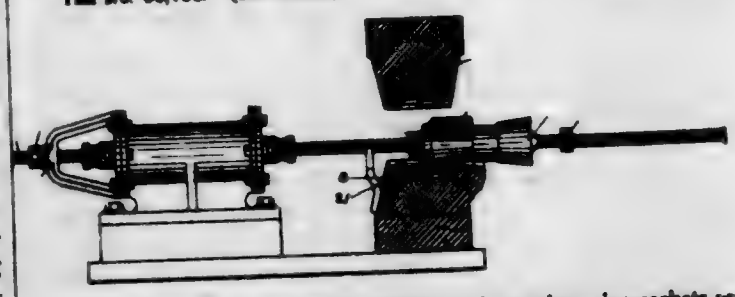

Claim.—1. In apparatus for welding and tapering pipe sockets or couplings, the combination of a mandrel, and a die having a welding-cavity and a stripping-shoulder in front of and above the same.

2. In apparatus for welding and tapering pipe sockets or couplings, the combination with a mandrel, of a die having a welding-cavity and a

stripping-shoulder in front of and above the same, and a plunger in line with said shoulder.

3. In apparatus for welding and tapering pipe sockets or couplings, the combination with a mandrel having a tapered portion, of a die having a welding-cavity and a stripping-shoulder in front of and above the same, and a plunger in line with said stripping-shoulder, said plunger having a tapered portion.

4. In apparatus for welding and tapering pipe sockets or couplings, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder in front of and above the same, a plunger in line with said stripping-shoulder, and a stripper adjacent to said plunger and to the rear of the stripping-shoulder.

5. In apparatus for welding and tapering pipe sockets or couplings, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder in front of and above the same, a plunger in line with said shoulder, and power mechanism for actuating said plunger.

6. In apparatus for welding and tapering pipe sockets or couplings, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder in front of and above the same, and a fulcrum-support for the mandrel in front of the die.

7. In apparatus for welding and tapering pipe sockets or couplings, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder in front of and above the same, of a fulcrum in front of the die upon which the mandrel rests, and a stripping-plunger in line with the stripping-shoulder, said plunger being inclined to bring it in line with the mandrel.

8. In apparatus for welding and tapering pipe sockets or couplings, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder in front of and above the same, a fulcrum-support for the mandrel in front of the die, and a shoulder or collar on the mandrel arranged to engage said support to position the mandrel in the die.

706,518. APPARATUS FOR WELDING AND TAPERING SOCKETS.

PETER BOYD, Pittsburg, Pa., assignor to National Tube Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Dec. 21, 1901. Serial No. 86,764. (No model.)

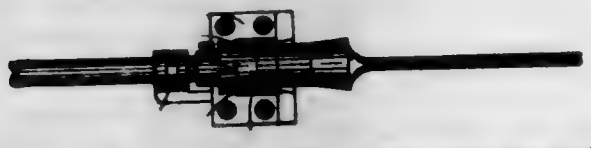

Claim.—1. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a tapered portion on which the coupling is welded and tapered internally, of means for engaging the coupling and holding it stationary, and a plunger having a tapered portion and adapted to abut against the mandrel, force it out of the coupling and simultaneously expand the smaller end of the coupling and taper it internally.

2. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and tapered internally at one end, of means for holding the coupling stationary, and a plunger having a tapered portion and adapted to expand the opposite end of the coupling and taper it internally.

3. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and tapered internally at one end, of a stripping-die provided with a shoulder against which the enlarged end of the coupling may rest, and a plunger having a tapered portion and adapted to abut against the mandrel, force it out of the coupling and simultaneously expand the opposite end of the coupling and taper it internally.

4. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a tapered portion on which the coupling is welded and tapered internally, of a stripping-die provided with a cavity adapted to receive the coupling and having a shoulder at both ends, and a plunger having a tapered portion and adapted to abut against the mandrel, force it out of the coupling and simultaneously expand the opposite end of the coupling and taper it internally.

5. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a tapered portion on which the coupling is welded and tapered internally, of means for welding and shaping the coupling on said mandrel, means for holding the coupling stationary, and a plunger having a tapered portion and adapted to abut against the mandrel, force it out of the coupling and simultaneously expand the smaller end thereof and taper it internally.

6. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and tapered internally at one end, of dies having suitably-shaped cavities for welding and shaping the coupling on said mandrel, and a plunger having a tapered portion and adapted to expand the opposite end thereof and taper it internally.

7. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and simultaneously tapered internally at one end, of dies having suitably-shaped cavities for welding and shaping the coupling on said mandrel, a stripping-die provided with a shoulder against which the expanded end of the coupling may rest, and a plunger having a tapered portion and adapted to abut against the mandrel, force the latter out of the coupling, and simultaneously expand and taper internally the opposite end of the latter.

8. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and simultaneously tapered internally at one end, of dies having suitably-shaped cavities for welding and shaping the coupling on said mandrel, and a stop or gage for positioning the mandrel with reference to the blank.

9. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and simultaneously tapered internally at one end, of dies having suitably-shaped cavities for welding and shaping the coupling on said mandrel, and a stop on said dies and adapted to contact with the mandrel for positioning the latter with reference to the blank.

10. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and simultaneously tapered internally at one end, of dies having suitably-shaped cavities for welding and shaping the coupling on said mandrel, an arm or bracket secured to the die and provided with a fork adapted to embrace the mandrel, and a collar or shoulder on the mandrel adapted to coöperate with said fork.

706,519. METHOD OF WELDING AND TAPERING SOCKETS.

PETER BOYD, Pittsburg, Pa., assignor to National Tube Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Dec. 21, 1901. Serial No. 86,767. (No model.)

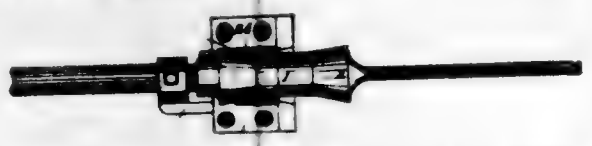

Claim.—1. The method of welding and tapering pipe couplings or sockets, which consists in heating the blank, welding the same on an internal support and simultaneously tapering it internally toward one end, and then removing the same from the internal support and simultaneously expanding the smaller end thereof and tapering it internally.

2. The method of welding and tapering pipe couplings or sockets, which consists in heating the blank, welding the same on a mandrel having a tapered portion, thereby simultaneously tapering the coupling internally toward one end, and then stripping the same from the mandrel and simultaneously expanding and tapering the other end thereof internally.

3. The method of welding and tapering pipe couplings or sockets, which consists in welding a blank on a mandrel having a straight and a tapered portion, said blank extending onto both of said portions, whereby the blank is welded and tapered internally at one end, then stripping the coupling from said mandrel and tapering the other end thereof internally.

4. The method of welding and tapering pipe couplings or sockets, which consists in welding a blank on a mandrel having a tapered portion, whereby the coupling is tapered internally toward one end, and then forcing the mandrel out of the coupling by a tapered plunger, thereby expanding the smaller end of the coupling and tapering the same internally.

5. The method of welding and tapering pipe couplings or sockets, which consists in welding a blank on a mandrel having a straight and a tapered portion, said blank extending onto both of said portions, whereby it is welded and tapered internally at one end, and then forcing the mandrel out of the coupling by a tapered plunger, thereby expanding the other end of the coupling and tapering the same internally.

706,520. APPARATUS FOR WELDING AND TAPERING SOCKETS.

PETER BOYD, Pittsburg, Pa., assignor to National Tube Company, Pittsburg, Pa., a Corporation of New Jersey. Filed Dec. 21, 1901. Serial No. 86,795. (No model.)

Claim.—1. In apparatus for welding and tapering pipe couplings or sockets, the combination of a mandrel, and a die having a welding-cavity and a stripping-shoulder independent of said welding-cavity.

2. In apparatus for welding and tapering pipe couplings or sockets,

the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder, and a plunger in line with said stripping-shoulder.

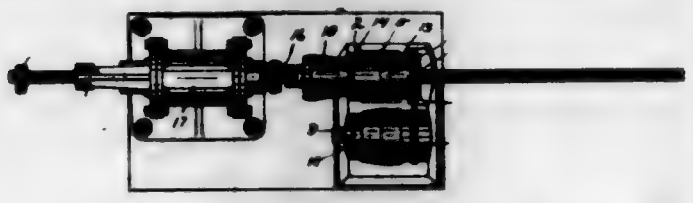

3. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a tapered portion, of a die having a welding-cavity and a stripping-shoulder, and a plunger in line with said shoulder, said plunger having a tapered portion.

4. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder at one side thereof.

5. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder at the side thereof, and a plunger in line with said stripping-shoulder.

6. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion, of a die having a welding-cavity and a stripping-shoulder at the side thereof, and a plunger in line with said stripping-shoulder, said plunger having a tapered portion.

7. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel, of an anvil-die having a welding-cavity and a stripping-shoulder, a top die having a welding-cavity, and a plunger in line with said stripping-shoulder.

8. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel, of an anvil-die having a welding-cavity and a stripping-cavity, a top die having corresponding welding and stripping cavities, and a plunger in line with said stripping-cavity.

9. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a tapered portion, of a die having a cavity formed therein provided with a shoulder at its front end, and a power-actuated plunger in line with said cavity and provided with a tapered head.

10. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel, of a die having a welding-cavity and a stripping-shoulder, of a plunger in line with said stripping-shoulder, power mechanism for actuating said plunger, and a stop for limiting the forward movement of said plunger.

11. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel, of a die having a stripping-cavity, of a plunger in line with said stripping-cavity, a power-cylinder for actuating said plunger, the piston-rod of said cylinder extending through the rear head thereof, and a stop on said piston-rod.

12. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel, of a die having a welding-cavity and a stripping-cavity at the side thereof, said stripping-cavity having front and rear shoulders, and a plunger in line with said cavity and adapted to force the mandrel out of the coupling and in turn to have the coupling stripped therefrom by the rear shoulder of said cavity.

13. In apparatus for welding and tapering pipe couplings or sockets, the combination with a mandrel having a straight and a tapered portion on which the coupling is welded and simultaneously tapered internally at one end, of dies having suitably-shaped cavities for welding and shaping the coupling on said mandrel, and an arm or bracket secured to the die and having its end projecting into the die-cavity in position to have the end of the mandrel abut thereagainst to properly position the mandrel in the dies.

706,521. SUSPENDED CARRIER. REUBEN A. ERDOS, Columbia, Va. Filed May 7, 1902. Serial No. 106,212. (No model.)

Claim.—The herein-described suspended carrier comprising a plurality of supporting-posts; a trackway operatively supported on said posts; a plurality of pulley-wheels and a controlling-cable passing over said pulley-wheels and a vessel-carrier forming a link in said controlling-cable and adapted to move upon said trackway, in combination with a suitable buffer-spring located at the terminal of said trackway and a discharging apparatus located at the other end of said trackway and comprising suitable standards and a movable holster carried by said standards and provided with a hook adapted to engage the bucket or other vessel whereby the bucket will be tilted and disposed upon said holster and thereby discharged of its contents into a receptacle placed to receive it, all combined substantially as specified and for the purpose set forth.

706,521.

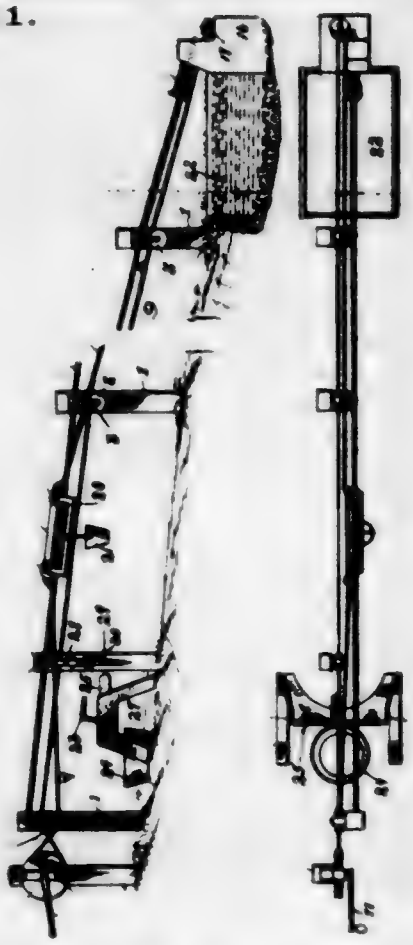

706,522. CLASP. CHARLES A. BRYANT, Wakefield, Mass., assignor to Consolidated Safety Pin Company, Bloomfield, N. J., a Corporation of New Jersey. Filed Mar. 17, 1902. Serial No. 98,536. (No model.)

Claim.—1. A clasp comprising a U-shaped frame, a clamping-lever pivoted on one member of the frame and having a clamping-jaw to cooperate with the other member and directly engage the fabric and a handle, and a spring secured to said frame and coöperating with said clamping-lever to hold it in either its open or closed position, substantially as described.

2. A clasp comprising a U-shaped frame having one member provided with teeth, a clamping-lever pivoted on one member of the frame and having a clamping-jaw to coöperate with the toothed member and directly engage the fabric, and a handle, and a spring secured to said frame and coöperating with said clamping-lever to hold it in either its open or closed position, substantially as described.

3. A clasp comprising a U-shaped frame, a clamping-lever pivoted on one member of the frame and having a clamping-jaw to coöperate with the other member, and a handle, and a presser-foot pivoted on said clamping-jaw on an axis parallel with the axis of the clamping-jaw, substantially as described.

4. A clasp comprising a U-shaped frame, a clamping-lever pivoted on one member of the frame and having a clamping-jaw to coöperate with the other member, and a handle, a presser-foot pivoted on said clamping-jaw on an axis parallel with the axis of the clamping-jaw, and a spring secured to said frame and coöperating with said clamping-lever to hold it in either its open or its closed position, substantially as described.

5. A clasp comprising a U-shaped frame having on one member two longitudinal, parallel series of teeth, a clamping-lever pivoted on the other member of the frame and having a clamping-jaw and a handle, and a presser-foot pivoted on said clamping-jaw on an axis parallel with the axis of the clamping-jaw and adapted to enter between said series of teeth.

6. A clasp comprising a U-shaped frame having on one member two longitudinal, parallel series of teeth, a clamping-lever pivoted on the other member of the frame and having a clamping-jaw and a handle, a presser-foot pivoted on said clamping-jaw on an axis parallel with the axis of the clamping-jaw and adapted to enter between said series of teeth, and a spring secured to said frame and coöperating with said clamping-lever to hold it either in its open or its closed position, substantially as described.

706,528. CROSS-TIE. JOHN E. BURNS, Northport, N. Y. Filed May 20, 1902. Serial No. 108,486. (No model.)

Claim.—1. A cross-tie comprising a trough-like body portion, having side and end walls provided with concave faces, and rail-chairs arranged between the side and end walls, substantially as described.

2. A cross-tie comprising a trough-like body portion having side and end walls and provided with depending bottom flanges, and rail-chairs arranged between the side flanges, substantially as described.

3. A cross-tie comprising a trough-like body portion, having side and end walls, and the upwardly-extending hollow rail-chairs, substantially as described.

706,524. CARD-HOLDER FOR TYPE-WRITERS. LEE S. BURRIDGE, New York, N. Y., and STEPHEN T. SMITH, Stamford, Conn., assignors to the Wagner Typewriter Company, New York, N. Y., a Corporation of New York. Filed Sept. 5, 1901. Serial No. 74,944. (No model.)

Claim.—1. The combination, with a platen having ends, of a card-holder comprising a holder proper arranged to extend lengthwise of the platen, and fastening arms or members projecting from the holder proper exteriorly of the platen ends and provided with inwardly-projecting fingers engaging the platen ends at points about diametrically opposite that portion at which the holder proper is arranged.

2. The combination, with a platen, of a card-holder comprising a holder proper extending lengthwise of the platen, and fastening members projected from the holder proper exteriorly of the platen ends and having securing engagement with the platen ends at a distance from the platen-trunnions and on the side of the platen axis or center opposite to that on which the holder proper is arranged.

3. A card-holder for type-writers, comprising a card-holder proper and spring members projecting from the end portions of the holder, said members having forked portions arranged to pass on both sides of the axle or trunnions of the platen.

4. A card-holder for type-writing machines, provided with two continuous plates or strips both curved in the direction of their width and spaced from each other to form a pocket for the reception of the card edge.

5. A card-holder for type-writing machines, provided with two rigidly-connected curved members which are parallel with each other and spaced apart to form a pocket for the reception of the card edge.

6. A card-holder for type-writers, having two members curved conformably with the platen and spaced from each other to form a pocket, the inner member being tapered on its outer surface at the entrance of said pocket.

7. The combination with the platen having an axle or trunnions provided with flat surfaces, of a card-holder provided with arms engaging the said flat surfaces to prevent a circumferential movement of the holder on the platen.

8. The combination with the platen having an axle or trunnions with flattened surfaces, of a card-holder provided with forked arms arranged for sliding engagement with the said flat surfaces.

706,525. ADVERTISING DEVICE. WILLIAM D. BUTT, Kansas City, Mo. Filed Dec. 4, 1901. Serial No. 84,902. (No model.)

Claim.—1. In advertising devices a case, a pendent sign connected with the under surface of the bottom of said case, said bottom having perforations and a luminous body within said case.

2. An advertising-case, a suspension rod or bolt, a lug connecting the forward end of the case with the said rod, and a notched plate upon the rear end of said case, perforate lugs extending from the forward sides of said plate, and a bolt extending through said lugs.

3. An advertising-case and a pendent sign connected with the bottom of said case, a standard, a suspension-rod upon said standard for said case, a lug connecting the forward end of said case with said rod, and a downward extension of said sign connected with said standard.

4. A structural advertising device, comprising a penetrable standard, and a suspension-rod upon said standard, an advertising-sign body, a perforate leg on said body connecting said case with said rod, a projection upon the rear end of said sign-body, and a stamping device upon said sign-body acting to force the projection into said standard.

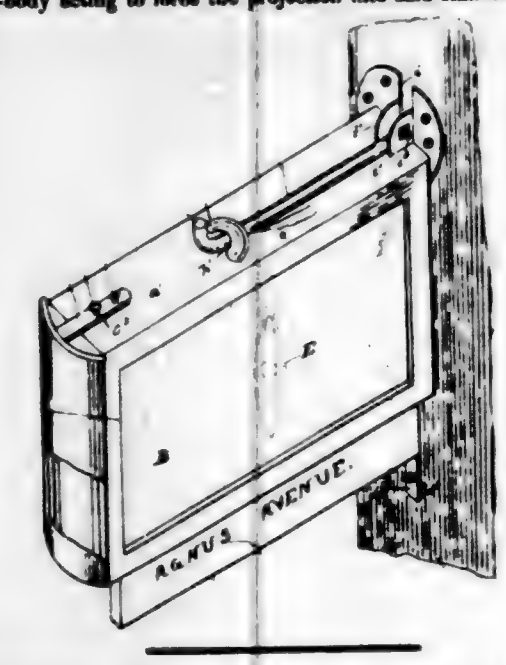

706,526. SELF-ADJUSTING WEIR. CHARLES C. CARLISLE, near Kamiah, Idaho, assignor of one-half to Frank Bond, Cheyenne, Wyo. Filed Jan. 4, 1902. Serial No. 88,447. (No model.)

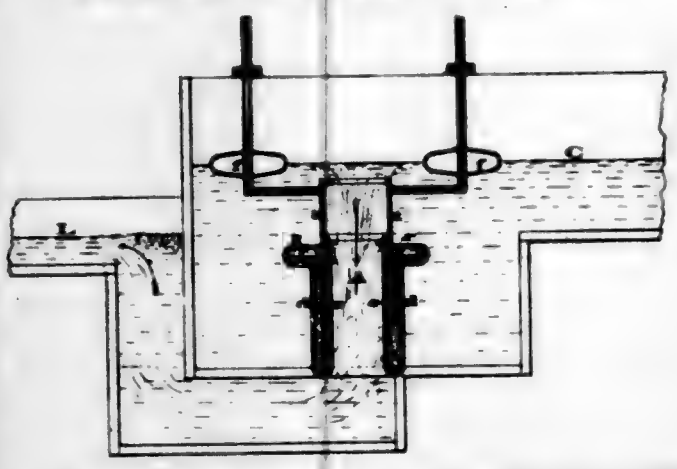

Claim.—1. The combination of a float, a movable inlet-conduit suspended from said float, a fixed outlet-conduit leading to service telescoping freely within the movable conduit having a gland or pocket around the extremities of both conduits and a liquid packing of greater specific gravity than water in said pocket.

2. The combination with an automatically-adjustable inlet-conduit and a fixed outlet-conduit having a liquid joint between them of an air-duct leading below the crest of the weir into said inlet-conduit substantially as described.

706,527. ELECTRIC SWITCH. EUGENE R. CARICHOFF, East Orange, N. J., assignor to the Otis Elevator Company, East Orange, N. J., a Corporation of New Jersey. Filed Feb. 3, 1901. Serial No. 46,564. (No model.)

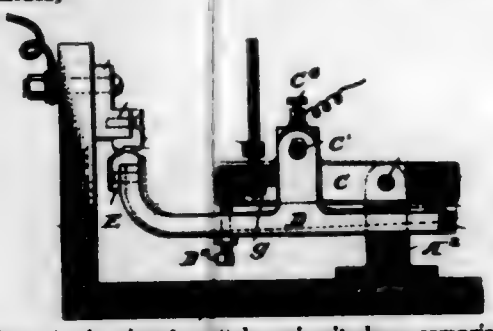

Claim.—1. An electric switch or circuit-closer, comprising a contact constituting one terminal of a circuit, a second contact constituting the other terminal of the circuit, and a movable jointed contact-carrier supporting the said second contact, means for moving said carrier to initially close the circuit between the second contact and a portion of the first contact, and means for subsequently rotating the second contact bodily about the first contact on the face of the same, and simultaneously therewith sliding said second contact along the face of the first contact to a

new portion of the face of the same entirely clear of the portion of said face upon which circuit was initially closed, substantially as described.

2. An electric switch or circuit-closer comprising two contacts, a contact-carrier supporting one of the contacts, and means for operating the same to initially close the circuit between the contact supported by the carrier and a portion of the other contact, and means for subsequently rotating the contact supported by the carrier bodily about the other contact on the face of the same and simultaneously therewith sliding said contact supported by the carrier along the face of the other contact to a new portion of the face of the same entirely clear of the portion of said face upon which circuit was initially closed, substantially as described.

3. An electric switch or circuit-closer, comprising a circuit-terminal having a contact-piece, another circuit-terminal having a second contact-piece, a toggle-acting contact-carrier for the second contact, means for moving said carrier to initially close the circuit between the second contact and a portion of the first contact, means for subsequently sliding the second contact along the face of the first contact to a new portion of the face of the same entirely clear of the portion of said face upon which circuit was initially closed, and means for maintaining the circuit closed upon said new portion of the face, substantially as described.

4. An electric switch or circuit-closer, comprising two contacts, a contact-carrier for one of the contacts including two members joined together and normally under stress applied by means acting at one side of the point of jointure tending to hold the members in certain relations to each other, and means on one of the members for limiting the relative movement of the members in one direction, substantially as described.

5. An electric switch or circuit-closer, comprising two contacts, a contact-carrier for one of the contacts including two members joined together, one of which members is pivotally mounted and the other of which members supports a contact, and means acting at one side of the point of jointure tending to hold the members in certain relations to each other, and means on one of the members for limiting the relative movement of the members in one direction, substantially as described.

6. An electric switch or circuit-closer, comprising two contacts, a contact-carrier including two members joined together and a spring interposed between the members to one side of the point of jointure tending to hold them in certain relations to each other, and means on one of the members for limiting the relative movement of the members in one direction, substantially as described.

7. An electric switch or circuit-closer, comprising two contacts, a contact-carrier including two members joined together, a spring interposed between the members at one side of the point of jointure tending to hold them in certain relations to each other and to soften the blow when the contacts come together, and a stop to limit such tendency, substantially as described.

8. An electric switch or circuit-closer, comprising two circuit-terminals, a toggle-acting carrier for one of the terminals, means for moving said carrier to initially close the circuit between one of the terminals and a portion of the other, means for subsequently sliding said terminal along the face of the other to a new portion of the face of the same entirely clear of the portion of said face upon which circuit was initially closed and means for maintaining the circuit closed upon said new portion of the face, substantially as described.

9. An electric switch or circuit-closer comprising two contacts, one of which is relatively fixed and the other movable, a contact-carrier for said movable contact, including two members, one of which is pivotally mounted and the other of which supports a contact, means for moving said carrier to initially close the circuit between the movable contact and a portion of the relatively fixed contact, and means for subsequently sliding the second contact along the face of the first contact to a new portion of the face of the same, entirely clear of the portion of said face upon which circuit was initially closed and means for maintaining the circuit closed upon said new portion of the face, substantially as described.

10. An electric switch or circuit-closer comprising two contacts, one of which is relatively fixed and the other movable, a contact-carrier for said movable contact including two members one of which is pivotally mounted and the other of which supports the contact, electromagnetic means for moving said carrier to initially close the circuit between the movable contact and a portion of the relatively fixed contact means for subsequently sliding the movable contact along the face of the relatively fixed contact to a new portion of the face of the same entirely clear of the portion of the said face upon which circuit was initially closed, substantially as described.

11. An electric switch or circuit-closer, comprising a plurality of relatively fixed contacts constituting one terminal or terminals of an electric circuit, a plurality of movable contact-carriers or contacts constituting the other terminal or terminals of the electric circuit, each of said contact-carriers being pivoted to a movable member, means for moving said contact-carriers to initially close the circuit between the movable contacts and portions of the relatively fixed contacts, means for subsequently sliding the movable contacts along the faces of the relatively fixed contacts to new portions of the faces of the same entirely clear of those portions of said faces upon which circuit was initially closed, and means for maintaining the circuit closed upon said new portions of the faces, substantially as described.

12. An electric switch or circuit-closer comprising two contacts, one of which is relatively fixed and the other movable, a contact-carrier for the movable contact, means for operating the same to initially close the circuit between the movable contact and a portion of the relatively fixed contact means for subsequently sliding the movable contact along the face of the relatively fixed contact, to a new portion of the face of the same entirely clear of the portion of said face upon which circuit was initially closed, and means for maintaining the circuit closed upon said new portion of the face, substantially as described.

706,528. INDICATING DEVICE. CHARLES A. CHRISTIAN, East Orange, N. J. Filed Apr. 4, 1901. Serial No. 54,286. (No model.)

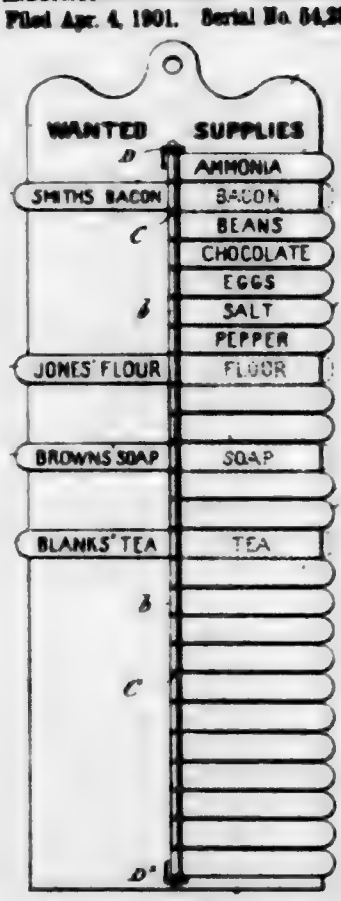

Claim.—1. In an indicating device in combination a support, a row of indicators attached thereto, each of said indicators having the name of a commodity on an exposed face and also on a concealed face thereof said indicators being movable on said support independently of each other whereby said formerly-concealed faces having the names of the commodities thereon may be exposed in another row.

2. In an indicating device in combination a support, a row of indicators attached thereto, each of said indicators having the name of a commodity on an exposed face and also on a concealed face thereof, said indicators being pivoted to said support independently of each other whereby said formerly-concealed faces with the names of the commodities thereon may be exposed in another row.

3. In an indicating device in combination a support, a row of indicator-arms, each of said arms having the name of a commodity on the front face and also on the rear face thereof but reading in the contrary direction, each of said arms being pivoted at one side only to said support whereby said arms may be turned on their pivots independently of each other and caused to lie in another row with the rear faces thereof exposed.

4. In an indicating device in combination a support, a row of indicator-arms, each of said arms being pivoted at one side only to said support whereby said arms may be turned on their pivots independently of each other and caused to lie in another row with the rear faces thereof exposed, each of said arms having the name of a commodity on the front face thereof and the name of the same commodity on the rear face but reading in the contrary direction whereby the names of said commodities will be exposed in either position of said arms.

5. In an indicating device in combination a base, a support thereon, a row of indicator-arms, each of said arms having the name of a commodity on the front face and also on the rear face thereof, each of said arms being pivoted at one side only to said support and at the opposite end extending beyond said base, whereby said arms may be grasped and

turned on their pivots independently of each other and caused to lie in another row with the rear faces thereof exposed.

6. In an indicating device in combination a support, a row of indicators attached thereto, each of said indicators having the name of a commodity without the name of a vender on an exposed face thereof, some of said indicators also having on a concealed face thereof the name of the same commodity together with the name of a vender of said commodity, said indicators being movable on said support independently of each other whereby said formerly-concealed faces may be exposed in another row.

7. In an indicating device in combination a support, a row of indicator-arms, each of said arms having the name of a commodity without the name of a vender on the front face thereof, and some of said arms also having on the rear face the name of the same commodity but reading in the contrary direction together with the name of a vender of said commodity, each of said arms being pivoted at one side only to said support whereby said arms may be turned on their pivots independently of each other and caused to lie in another row with said rear faces thereof exposed.

8. In an indicating device in combination a base of sheet metal, a row of arms, a support for said arms consisting of a wire held on said base, each of said arms being pivoted at one side only to said wire and at the opposite end extending beyond said base whereby said arms may be grasped and turned on said pivots independently of each other and caused to lie in another row with the rear faces thereof exposed, each of said arms having the name of a commodity without the name of a vender on the front face thereof, and some of said arms also having on the rear face thereof the name of the same commodity together with the name of a vender of said commodity, whereby merely the names of the commodities appear in one row, and the names of said commodities together with the names of the venders of the same appear in the other row when said arms are turned on said pivots as specified.

706,529. ELECTROCHEMICAL APPARATUS. CHAUNCEY G. CLARK, Philadelphia, Pa., assignor of one-half to James G. Carson, Philadelphia, Pa. Filed Sept. 20, 1901. Serial No. 75,728. (No model.)

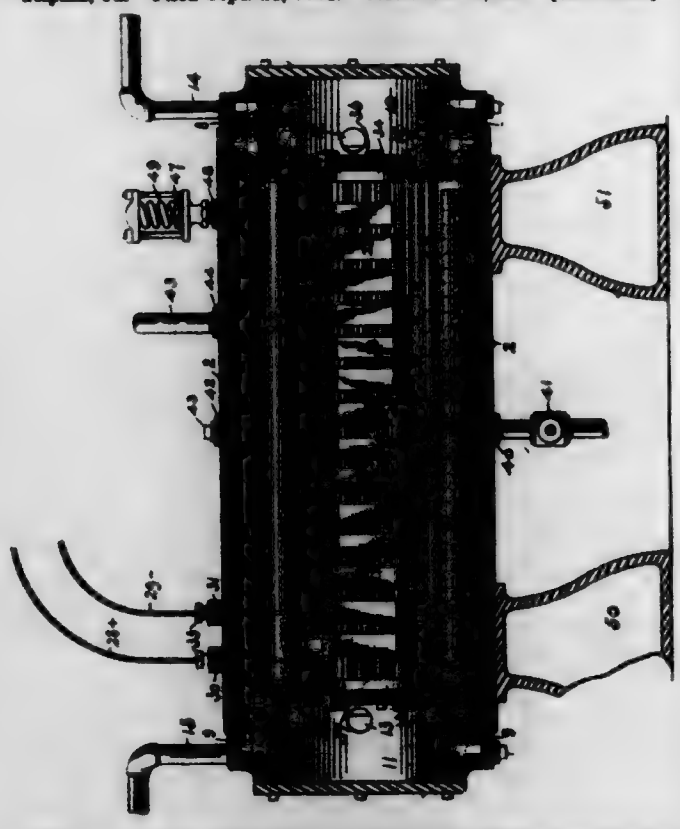

Claim.—1. In an electrolytic apparatus, two cylinders, one surrounding the other, and an inclosed space between the cylinders, a chamber at each end of the cylinders, means of communication from each chamber to the space between the cylinders, a fluid-inlet to one chamber, a fluid-outlet from the other chamber, means of communication from chamber to chamber through the surrounded cylinder, and a series of electrodes within the said cylinder.

2. In an apparatus for electrolysis, an inclosed cylinder having means for the introduction and the withdrawal of the electrolyte, a series of electrodes within the cylinder, electrical conductors therefor, means to surround the cylinder by a cooling fluid, diametrally, and at its ends, a series of tubes passing through the cylinder for the circulation of cooling fluid, means to introduce the cooling fluid and to permit it to flow from the apparatus, and means for its flowing to the parts surrounding the cylinder diametrally, at its ends, and to the tubes therethrough, to enable a free and uninterrupted flow of the cooling fluid about and through the electrolyte to neutralize the heat generated by the electrodes.

3. In an electrochemical apparatus, two cylinders, one within the other and an intervening space between the cylinders, a chamber at each end of the cylinders, means of communication from the chambers to the intervening space, means of communication from chamber to chamber through the inner cylinder; tube-sheets formed on the chambers, a series of electrodes within the inner cylinder, and means for their removable suspension to the tube-sheets aforesaid.

4. In an electrochemical apparatus, an interior and an exterior cylinder forming an intervening space, a series of electrodes within the inner cylinder, electrical connections therefor, and sleeves tapered and screw-threaded upon their exterior surface and adapted to be screwed into the two cylinders, to tie and connect them, and afford communication from the exterior of the outer cylinder to the interior of the inner cylinder through the intervening space.

5. In an electrochemical apparatus, an inner closed cylinder, an outer closed cylinder, a series of electrodes within the inner cylinder, electrical conductors therefor, and tapered and screw-threaded stuffing-boxes screwed into the inner and outer cylinders and having means for the passing of the electrical conductors therethrough, and for the prevention of liquid flow outward from the cylinders.

6. In an electrochemical apparatus, an inner and an outer closed cylinder, a series of electrodes within the inner cylinder, electrical conductors therefor, and a perforated drain-pipe therefor reaching from end to end of the cylinder, and having a central outward discharge adapted to communicate with the inner cylinder only.

706,530. DUST-CAP FOR HUBS. SAMUEL T. COPENHAVER, Losantville, Ind. Filed Mar. 26, 1902. Serial No. 100,100. (No model.)

Claim.—The combination with an axle and a hub, of a dust or sand cap comprising a polygonal sleeve conforming to the configuration of the axle and provided with means for securing it to the same, a disk provided with a central opening and secured to the outer end of the sleeve and fitted against the inner end of the hub and closing the same, and an annular flange extending from the periphery of the disk and fitting over the sand-band or inner end band of the hub, substantially as described.

706,531. WORK-HOLDER. EVERETT G. COUCH and NELSON D. WELLS, Southern Pines, N. C. Filed Nov. 4, 1901. Serial No. 81,120. (No model.)

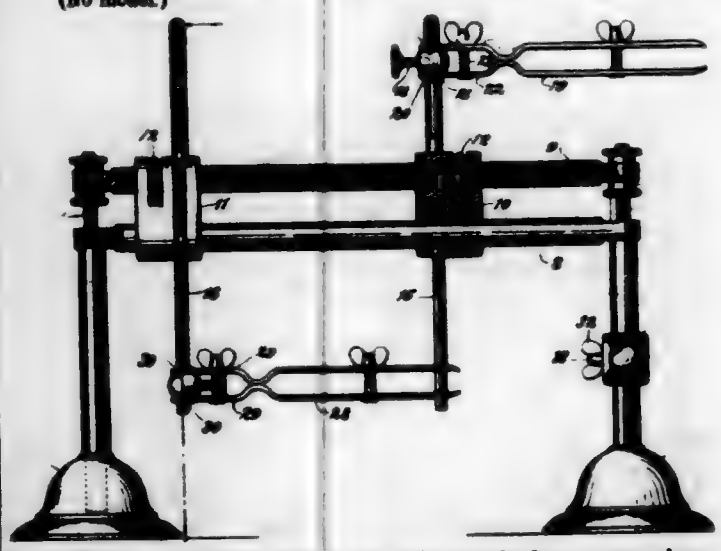

Claim.—1. A work-holder, comprising standards, a screw-rod connection between the upper ends of the standards, a carrier-block movable on said rod, a nut engaging with the rod and with the block for moving the block along the rod, an arm attached to the block, and tweezers having universal-joint connection with said arm, substantially as specified.

2. A work-holder, comprising standards, a screw-rod connecting the upper ends of said standards, a block movable along said rod, means for causing movements of said block, an arm extended upward and then downward from said block, a ball-joint member adjustable vertically on said arm, and tweezers having jaw members provided with depressions for receiving said ball member, substantially as specified.

3. A work-holder, comprising standards, two rods connecting the upper portions of said standards, one of said rods being screw-threaded, blocks movable along said rods, nuts on the screw-rod and engaging with said blocks, arms carried by the blocks, and tweezers having universal-joint connection with said arms, substantially as specified.

4. A work-holder, comprising standards having reduced screw-threaded upper portions, parallel rods removably placed on said reduced portions, one of said rods being screw-threaded, jam-nuts for holding the screw-rod as adjusted on said reduced portions, carrier-blocks engaging with and movable along said rods, means engaging with the screw-rod for causing the movements of said blocks, arms carried by the blocks, and tweezers having universal-joint connection with said arms, substantially as specified.

5. A work-holder, comprising standards, a rod connection between the upper ends of said standards, work-holding devices adjustable along said rod, a plate adjustable on one of the standards, and clamping-plates adjustable on said first-named plate, substantially as specified.

706,532. **AUTOMATIC FEEDER FOR STRAW-BURNING FURNACES.** JOHN A. COWAN, Calgary, Canada. Filed July 15, 1901. Serial No. 68,387. (No model.)

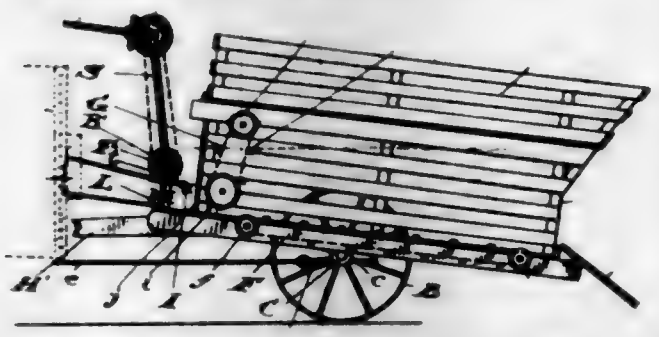

Claim.—1. In an automatic feeder for straw-burning furnaces, the combination of a straw-cage; means for moving the straw to the front part of the bottom; a spiked roller suitably supported and driven above the bottom in front of the point to which the straw is moved; suitably supported and driven transverse conveyers in front of, and below the said roller, and adapted to carry the straw to the center; and a feed-box adapted to receive straw from the said conveyers, substantially as described.

2. In an automatic feeder for straw-burning furnaces, the combination of a straw-cage; means for moving the straw to the front part of the bottom; a spiked roller suitably supported and driven above the bottom in front of the point to which the straw is moved, the spikes of the rollers being inclined outwardly on each side of the center; suitably supported and driven transverse conveyers in front of, and below the said roller and adapted to carry the straw to the center; and a feed-box adapted to receive straw from the said conveyers, substantially as described.

3. In an automatic feeder for straw-burning furnaces, the combination of a straw-cage; means for moving the straw to the front part of the bottom; a spiked roller suitably supported and driven above the bottom in front of the point to which the straw is moved; suitably supported and driven transverse conveyers in front of, and below the said roller, and adapted to carry the straw to the center; and a feed-box adapted to receive straw from the said conveyers, the said feed-box being contracted at the throat where it receives the straw and flaring toward the delivery end, substantially as described.

4. In an automatic feeder for straw-burning furnaces, the combination of a straw-cage having a feed-box contracted at the throat and flaring toward the delivery end, and mechanism adapted to draw straw from the cage and force it into the throat of said contracted and flaring feed-box, substantially as described.

5. In an automatic feeder for straw-burning furnaces, the combination of a straw-cage; means for moving the straw to the front part of the bottom; a vertically-movable spiked roller supported and driven above the bottom and in front of the point to which the straw is moved; means operated by the vertical movement of the said roller for stopping the mechanism moving the straw from the cage; suitably supported and driven transverse conveyers in front of and below the said roller and adapted to carry the straw to the center; and a feed-box adapted to receive straw from the said conveyers, substantially as described.

6. In an automatic feeder for straw-burning furnaces, the combination of a box or cage for straw; a transverse conveyer arranged in communication with the front part of the bottom of the cage; means to move straw in the cage to the conveyer; a suitably supported and driven spiked roller located behind the transverse conveyer and adapted to rest on the upper surface of the straw passing to the conveyer; and a feed-box adapted to receive straw from the conveyer, substantially as described.

7. In an automatic feeder for straw-burning furnaces, the combination of a straw-cage having an opening at the bottom of its front side; an endless conveyer suitably supported and driven to move straw to the front of the cage; a suitably supported and driven endless upright conveyer adapted to discharge the straw through the opening at the front of the cage; suitably supported and driven endless conveyers adapted to take the straw and move it to the center; and a feed-box into which the said transverse conveyers force the straw, substantially as described.

8. In an automatic feeder for straw-burning furnaces, the combination of a straw-cage having an opening at the bottom of its front side; an endless conveyer suitably supported and driven to move straw to the front of the cage; a suitably supported and driven endless upright conveyer adapted to discharge the straw through the opening at the front of the cage; suitably supported and driven endless conveyers adapted to take the straw and move it to the center; a suitably-supported roller vertically movable and adapted to rest on the straw passing from the upright conveyer to the transverse conveyers; means operated by the rise and fall of the said roller for throwing the horizontal conveyer into and out of gear; and a feed-box into which the said transverse conveyers force the straw, substantially as described.

9. In an automatic feeder for straw-burning furnaces, the combination of a box or cage for straw; a transverse conveyer arranged in communication with the front part of the bottom of the cage; means to move straw in the cage to the conveyer; a feed-box arranged to receive straw from the conveyer, the said transverse conveyer comprising a chain running on sprocket-wheels, swinging hooks pivoted on the said chain, tailpieces on the said hooks, and a backboard with a groove therein to engage the tailpieces, said groove decreasing in depth from the end from which the hooks are moving toward the opposite end, substantially as described.

10. In an automatic feeder for straw-burning furnaces, the combination of a box or cage for straw; a feed-box; transverse conveyers arranged in communication with the front part of the bottom of the cage and arranged to draw straw to the middle and force it into the feed-box; and means to move the straw in the cage to the transverse conveyers, the transverse conveyers comprising chains running on sprocket-wheels, swinging hooks pivoted on the said chain, tailpieces on the said hooks, and a backboard with a groove therein to engage the tailpieces, said groove decreasing in depth from the end from which the hooks are moving toward the opposite end, substantially as described.

706,533. **ARTIFICIAL FUEL.** GEORGE M. DALLAS, Chicago, Ill., assignor of one-half to William R. Chittenden, Chicago, Ill. Filed May 2, 1902. Serial No. 105,687. (No specimens.)

Claim.—The herein-described artificial fuel consisting of first treating the culm or coal-dust to a temperature which will raise it to the point of ignition and afterward mixing the heated dust with a mixture composed of fifty gallons of paraffin residuum, ten pounds borax, twenty-five pounds antimony, three pounds acetic acid, one peck oil-cake meal, two hundred pounds clay, five pounds crude potash boiled in thirty gallons water, twenty-five pounds salt, to twenty-five tons of coal-dust, all combined in the manner specified and for the purpose set forth.

706,534. **VEHICLE-FRAME.** JAMES DAWSON, Rochester, N. Y. Filed May 22, 1901. Serial No. 61,571. (No model.)

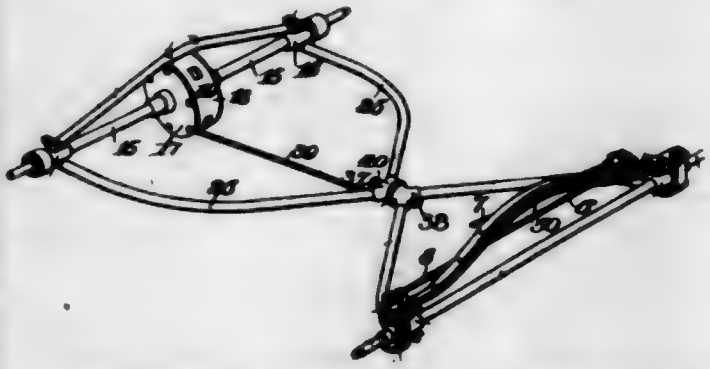

Claim.—1. In a vehicle-frame, the combination with a forward axle having reach members extending rearwardly from its ends and united in a swivel member, and a rear axle having similar reach members extending forwardly and united in a second swivel member adapted to cooperate with the first member, of a bolt extending through the two members having a shoulder thereon engaging one side of one of the members and means on the bolt for engaging the opposite side of said member to secure it rigidly thereon and a nut on the bolt engaging the outer side of the other member to secure it in position.

2. In a vehicle-frame, the combination with the forward and rear axles having the projecting ears or lugs provided with the projecting

faces, of the reach-frame extending between the axles adapted to abut against the lugs and having the recessed ends receiving the faces on the lugs and detachable connections between the latter and the reach members.

3. In a vehicle-frame the combination with the forward and rear axles having the lugs thereon provided with the projecting faces, of the reach-frame extending between the axles having the recessed ends adapted to abut against the lugs and receive the projecting faces thereon, and securing devices extending through the lugs and engaging the interior of the reach members.

4. In a vehicle-frame the combination with the axles having lugs thereon, of a reach-frame having its ends abutting against the lugs, cooperating projections and recesses between the ends of the reach members and the proximate faces of the lugs, and securing devices projecting longitudinally through the latter and engaging the reach members.

5. In a vehicle-frame, the combination with the axles having the lugs thereon, of a swivel arranged between the axles composed of the separate pivoted members, forwardly and rearwardly extending reach members attached to the parts of the swivel provided at their outer extremities with recesses in which the lugs on the axles engage and securing devices passing through the lugs and engaging the interior of the reaches.

6. In a vehicle-frame, the combination with the axles, and the swivel located between them composed of the separate members, of the forwardly and rearwardly extending reach members threaded into the parts of the swivel and diverging therefrom and removable connections securing them at their outer extremities to the axles.

7. In a vehicle-frame, the combination with the axles, the heads or castings at their ends having the lugs, and threaded tapered connections between said parts, of the reach members having their ends abutting against the lugs, coöperating projections and recesses between the ends of the reaches and the faces of the lugs, and connections extending longitudinally through the latter and engaging the interior of the reaches.

8. In a vehicle-frame, the combination with the axles, the heads or castings at their ends having the lugs, threaded tapered connections between the axles and heads, and an enlarged box or casing provided in one of the axles, of the reach members extending between the axles having the recessed ends adapted to receive the lugs on the heads and provided with a threaded interior, and the bolts projecting longitudinally through the lugs and engaging the threaded interior of the reaches.

9. In a vehicle-frame the combination with the axles having tapered and threaded ends, the heads having the threaded apertures, and secured on the axles, and lugs formed on the heads, of a swivel composed of cooperating pivoted members having tapered and threaded recesses, reach members having tapered and threaded ends engaging the recesses in the swivel members and bolts extending longitudinally through the lugs on the axle-heads and engaging the interior of the reach members.

706,535. APPARATUS FOR HARVESTING PEAT. ALEXANDER DOMSON, Beaverton, Canada, assignor to Peat Machinery Supply Company, Limited, Toronto, Canada, a Corporation of Canada. Filed Nov. 21, 1901. Serial No. 83,188. (No model.)

Claim.—1. In an apparatus for harvesting peat, a wagon or car, a peat excavating and elevating device at one side thereof, a closed box or receptacle to receive said elevated peat and means for conveying the commingled peat from said box to the opposite side of the car, substantially as described.

2. In an apparatus for harvesting peat, a wagon or car, a peat excavating and elevating device at one side thereof, a closed box or receptacle to receive said elevated peat and an endless conveyer extending through the bottom of said box and to the opposite side of the car, substantially as described.

3. In an apparatus for harvesting peat, in combination a wagon or car, an inclined conveyer-box provided with a suitable bottom, chain conveyers having one side passing over such bottom, suitable sprockets and shafts for supporting the ends of the conveyers, suitable knives and elevating-buckets secured to the conveyer-chains, a depositing box at the upper end of the conveyer-box, and means for conveying the intermingled peat from such box over the far side of the wagon onto the surface of the bog as and for the purpose specified.

4. In an apparatus for harvesting peat, in combination a wagon or car, an inclined conveyer-box provided with a suitable bottom, chain conveyers having one side passing over such bottom, suitable sprockets and shafts for supporting the ends of the conveyers, suitable knives and elevating-buckets secured to the conveyer-chains, a depositing-box at the upper end of the conveyer-box, a directing-board located in the box, and the conveyer-box and endless conveyer-chains provided with cross-slats for conveying the intermingled peat from the conveyer-board over the far side of the wagon as and for the purpose specified.

5. In a device of the class described, the combination with the conveying means, of knives comprising a cross-bar, the intermediate L-shaped knives suitably held in the bar and provided with crosswise-extending top cutting edges and the side knives also L-shaped in form and provided with the side and cross cutting edges as and for the purpose specified.

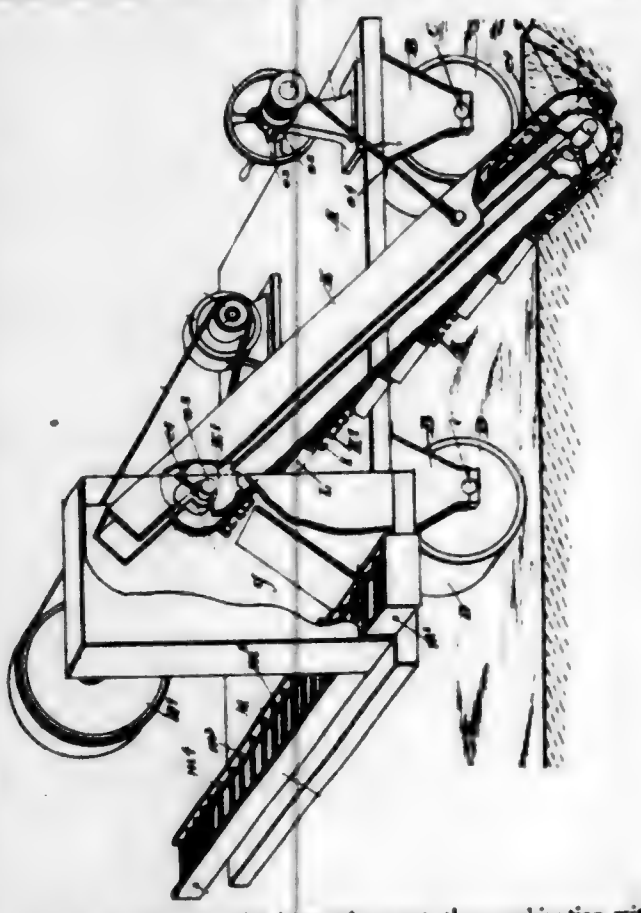

6. In an apparatus for harvesting peat, the combination with the cross-conveyer extending over the side of the car, of the bottom board thereof also extending over the side of the car and obliquely cut away at the end overhanging the ground as shown and for the purpose specified.

706,536. STUFFING-BOX FOR PISTON-RODS. DAVID W. DOUGAN and FRANK C. WATSON, Philadelphia, Pa. Filed Sept. 3, 1901. Serial No. 74,157. (No model.)

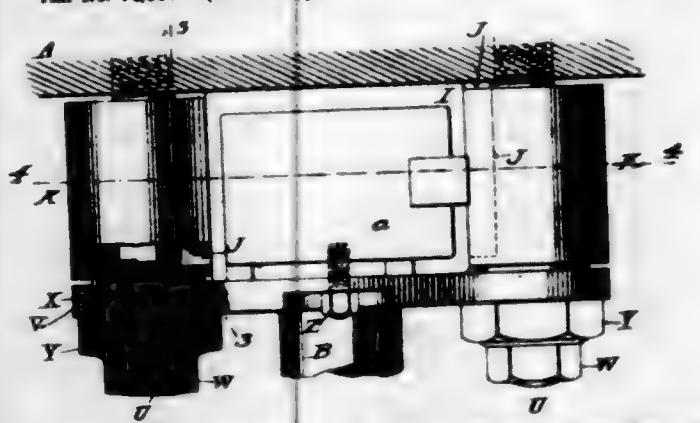

Claim.—1. In combination with a two-part stuffing-box, clamps to secure said parts together; and means for securing the box in position, said means likewise acting on the clamps and causing the same to become effective, substantially as described.

2. In combination with a cylinder; bolts extending out therefrom; a longitudinally-separable packing-box; clamps for securing the box together; and nuts mounted on the bolts, said nuts bearing on the clamps and serving to hold the box in position.

3. In combination with a cylinder, bolts extending out therefrom; a longitudinally-separable packing-box; wedging-clamps for securing the parts thereof together; and nuts mounted on the bolts acting to force the clamps to place and to hold the box in position.

4. In combination with a cylinder; bolts extending out therefrom; a longitudinally-separable packing-box, each section thereof having abutting flanges which when the parts are assembled form dovetailed wedges; wedging-clamps fitting on said flanges, and nuts mounted on the bolts acting to force the clamps to place and to hold the box in position.

5. In combination with a cylinder, bolts extending out therefrom; a longitudinally-separable stuffing-box; each section thereof having outwardly-projecting ribs adapted to abut with those of the adjacent section; wedge-shaped clamps longitudinally movable on the ribs; and nuts mount-

ed on the bolts and bearing on the clamps moving the same inwardly thereby drawing the sections together and at the same time securing the box in place.

6. In combination with a cylinder; bolts extending out therefrom; a longitudinally-separable stuffing-box; wedging-clamps for securing the sections of the box together; nuts mounted on the bolts and bearing on the clamps; a face-plate for the box; and means for securing the face-plate in position.

7. In combination with a cylinder; bolts extending out therefrom; a longitudinally-separable stuffing-box; wedging-clamps for securing the sections together; nuts mounted on the bolts and bearing on the outer ends of the clamps; a face-plate for the box, said plate having openings through which the bolts and nuts pass; and a second set of nuts secured upon the outer threaded face of the first set, said second set bearing on the face-plate and holding the same in position.

8. In combination with a cylinder; a sleeve mounted therein; having passages for steam; a spring mounted in the end of the sleeve; a stuffing-box; means for securing said box in position; an oil-reservoir formed in the box; and metallic packing interposed between the rounded inner face of the box and the outer end of the sleeve.

9. In combination with a cylinder; a sleeve mounted therein and having passages for steam therethrough; a spring mounted in the outer end of the sleeve; a stuffing-box secured to the cylinder over the sleeve; and a metallic packing interposed between the rounded inner face of the box and the end of the sleeve.

10. In combination with a cylinder; a longitudinally-separable stuffing-box; means for securing it together; metallic packing mounted in the outer ends of said box; sections Q and R mounted in the box and forming an oil-reservoir intermediate the same; fibrous packing adjacent to said sections; and means for securing the box to the cylinder.

11. In combination with a cylinder; a longitudinally-separable stuffing-box; means for securing it together and to the cylinder; an oil-chamber formed in said box; and a sliding cover mounted on the box, said cover being provided with means for preventing its entire removal and likewise with means for maintaining it in a normally closed position.

12. In combination with a cylinder; a longitudinally-separable stuffing-box; wedging-clamps for securing the sections together; bolts extending out from the cylinder and passing freely through the clamps; a bushing-collar T; a face-plate; nuts mounted on the bolts and bearing on the clamps; and a second set of nuts mounted on the threaded exterior of the first set of nuts and serving to clamp the face-plate in position.

706,537. KEY-FASTENER. BYRON B. DOWBARD, Milwaukee, Wis. Filed Nov. 15, 1901. Serial No. 82,337. (No model.)

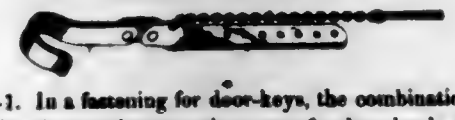

Claim.—1. In a fastening for door-keys, the combination of a hook or clip adapted to be caught upon the stem of a door-knob, a perforated bar having a jointed connection at one end with the shank of said hook, and a pin or cotter having a flexible connection with a part of the device and adapted to pass through any of the holes in said bar, substantially as described.

2. In a fastening for door-keys, the combination of a hook made of a flat metal strip and a flat bar connected at one end with the shank of said hook by a link and having a quarter-twist close to said link, substantially as described.

706,538. CUSPIDOR. SPENCER H. DUNCAN, Nashville, Tenn. Filed May 21, 1901. Serial No. 61,261. (No model.)

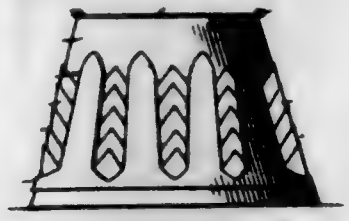

Claim.—1. In a device of the character described, the combination, with a casing provided with a plurality of carton-receiving pockets, of a receptacle removably seated in said casing and a slotted cover for said receptacle.

2. In a device of the character described, the combination with a casing, of a ring arranged on the exterior thereof and provided with a plurality of upwardly-projecting fingers to form grooved pockets, adapted to support a plurality of cartons in each pocket in overlapping series, and a receptacle arranged within the casing, for the purpose described.

706,589. RINGLESS CURTAIN-POLE. HENRY H. EDGELY, Altoona, Pa. Filed Aug. 24, 1901. Serial No. 73,116. (No model.)

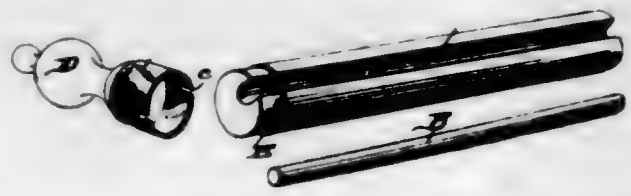

Claim.—A curtain-holder comprising a solid pole having its ends reduced and a groove circular in cross-section produced therein throughout its length, pins arranged on the reduced ends of the pole, knobs having sleeve portions formed integral therewith, the said sleeves having bayonet-slots formed therein that are adapted to receive the pins for holding the said knobs in position, and a pole adapted to rest within the groove and held in position by the sleeves of the knobs, substantially as shown and described.

706,540. ELECTRICALLY-CONTROLLED SWITCH. WILLIAM L. R. EMMET, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Nov. 3, 1899. Serial No. 735,702. (No model.)

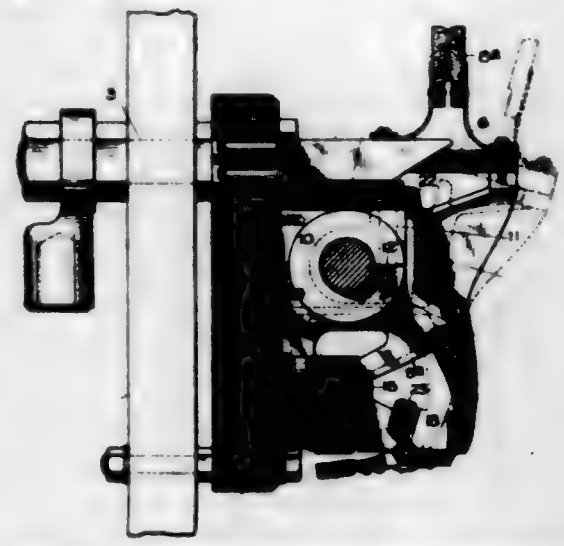

Claim.—1. A magnetically-controlled switch comprising fixed contact-terminals, an armature carrying a bridging-contact, auxiliary shunting-contacts to absorb the spark of rupture, a switch-operating magnet housed between the armature and the base, and a releasing-magnet and tripping devices between the plane of the switching-armature and the base.

2. A magnetically-controlled switch comprising a circuit-closing armature, an operating-magnet, the armature being journaled to move to and from the field-poles over a wide air-gap and having a curved face near the journal to maintain a continuously-varying short air-gap thereat throughout its entire range of motion.

3. The combination of a magnet having split pole-pieces firmly engaging the ends of its core, and an armature coöperating with the said pole-pieces pivoted near the face of the pole-piece and provided with a curved edge to maintain a short air-gap in part of the magnetic field throughout the entire range of motion of the armature.

4. A magnetically-controlled switch comprising a setting-magnet, an armature moving in a plane at right angles to said magnet's axis and coöperating with both its poles, main and shunt contacts for an electric circuit, a magnetically-controlled trip, and a spring-pressed pin to assist withdrawal of the armature, said pin being mounted so as to engage the armature only after the latter is close to the poles of the magnet.

5. A magnetically-controlled switch comprising a magnetically-controlled armature carrying the movable contacts supported for movement to and from the base, a controlling-magnet between it and the base, an extension-arm to the armature, magnetically-controlled tripping devices for the armature between the extension and the base, a stop to arrest the armature when released, and a spring arc-rupturing device strained when the switch is closed, but permitting free movement of the armature while the air-gap is long and the torque weak.

706,541. PROCESS OF MAKING COLLAPSIBLE TUBES, &c. LEON FEVAL, New Brunswick, N. J., assignor, by mesne assignments, to Transparent Cellulose Products Company, New Brunswick, N. J., a Corporation of New Jersey. Filed Jan. 2, 1902. Serial No. 88,107. (No specimens.)

Claim.—1. The process of molding hollow articles from a pyroxylin composition, consisting in dipping a non-collapsible former in a solution of the pyroxylin composition and drying the coating thereon, then subjecting the former and its coating to the action of a moist heat at least equal to that of boiling water to loosen the coating from the former, and then removing the coating from the former, substantially as set forth.

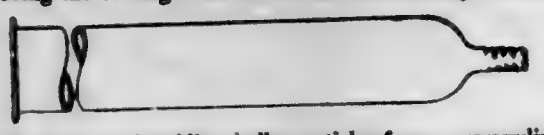

2. The process of molding hollow articles from a pyroxylin composition, consisting in dipping a non-collapsible former in a solution of the pyroxylin composition and drying the coating thereon, then immersing the former and its coating in boiling water to loosen the coating from the former, and then removing the coating from the former, substantially as set forth.

3. The process of molding hollow articles from a pyroxylin composition, consisting in dipping a non-collapsible former in a solution of the pyroxylin composition and drying the coating thereon, then subjecting the former and its coating to the action of a moist heat at least equal to that of boiling water to loosen the coating from the former, then removing the coating from the former, and then subjecting the removed coating to the action of heat to evaporate the pyroxylin solvent, substantially as set forth.

4. The process of molding hollow articles from a pyroxylin composition, consisting in dipping a non-collapsible former in a solution of the pyroxylin composition and drying the coating thereon, then subjecting the former and its coating to the action of a moist heat at least equal to that of boiling water to loosen the coating from the former, then removing the coating from the former, and then boiling the removed coating in water to evaporate the pyroxylin solvent, substantially as set forth.

5. The process of molding hollow articles from a pyroxylin composition, consisting in dipping a non-collapsible former in a solution of the pyroxylin composition and drying the coating thereon, then immersing the former and its coating in boiling water to loosen the coating from the former, then in removing the coating from the former, and finally subjecting the removed coating to the action of heat to evaporate the pyroxylin solvent, substantially as set forth.

6. The process of making collapsible tubes or other tubular articles, consisting in dipping a non-collapsible former of suitable form in a solution of pyroxylin composition and drying the coating thereon, then in immersing the former and its coating in boiling water to loosen the coating from the former, then removing the coating from the former, and finally boiling the removed coating in water to evaporate the pyroxylin solvent, substantially as set forth.

706,542. CAR OR ENGINE REPLACER. FREDERICK J. FEWINGS, Duluth, Minn. Filed Dec. 5, 1901. Serial No. 84,902. (No model.)

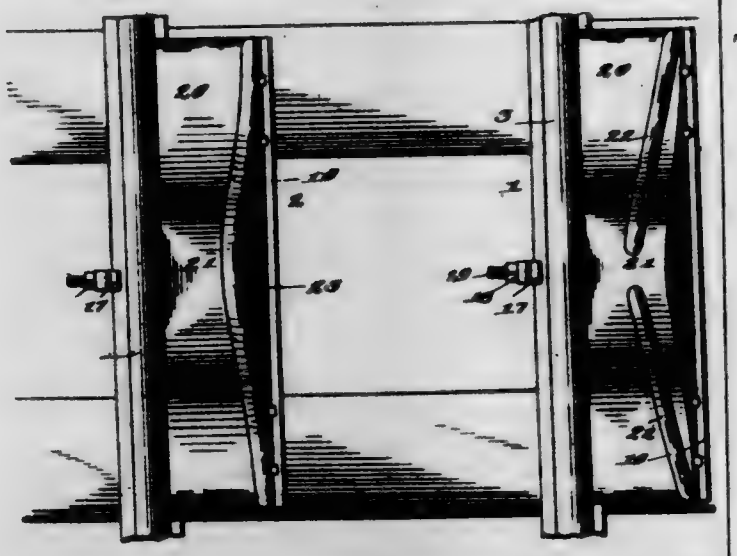

Claim.—1. A car or engine replacer comprising an inner and an outer replacing-block, each having its upper face from end to end formed upon a reverse compound curve gradually rising to and from the center of the upper face of each of the said blocks and forming thereby a ridge of convex curvature transversely and longitudinally.

2. A car or engine replacer comprising an inner and an outer replacing-block and each having its upper face formed with a ridge of convex curvature transversely and longitudinally, said ridge extending from one side of the block to the other, a pair of diagonally-extending ribs of concave curvature longitudinally integral with the upper face of said outer block, said ribs terminating at their upper end in said ridge, and a diagonally-extending rib of concave-convex curvature longitudinally integral with the upper face of said inner block.

3. A car or engine replacer comprising an inner and an outer replacing-block, each of which having the upper face carved in contour, a pair of ribs of concave curvature longitudinally integral with the upper face of said outer block, and a rib of concave-convex curvature longitudinally integral with the upper face of the inner block.

4. A car or engine replacer comprising an inner and an outer replacing-block, both of which have their upper face formed upon a reverse compound curve, a pair of diagonally-extending ribs integral with the upper face of said outer block, and a rib integral with the upper face of said inner block.

5. In a car or engine replacer, an outer replacing-block having its upper face formed on a compound curve rising from each end to the center forming thereby a ridge of convex curvature transversely and longitudinally, and a pair of ribs integral with the upper face of said block and each extending from one corner of one end of the block and terminating in said ridge.

6. In a car or engine replacer, an outer replacing-block having its upper face formed upon a reverse compound curve, and a pair of ribs of concave curvature longitudinally integral with the upper face of said block and each extending from one corner of one end of the block diagonally toward the center thereof.

7. In a car or engine replacer, a hollow replacing-block having its upper face formed upon a reverse compound curve, a vertical web-brace arranged within said block, and a pair of inclined web-braces arranged within said block at each side of said vertically-extending web-brace.

8. In a car or engine replacer, a hollow replacing-block having a countersunk opening in one side thereof, a vertical web-brace arranged within the said block, a pair of inclined web-braces arranged within said block at each side of the said vertical web-brace, a hook-bolt extending in the said block in the said opening, an L-shaped connecting-arm attached to said bolt, and means carried by the said arm for connecting the same to a rail thereby securing the block in position.

9. In a car or engine replacer, a hollow replacing-block having one side formed with depressed portions and its opposite sides with an opening, a flange integral with the said side having depressed portions and provided with openings registering with the recesses formed by the said depressed portions, a vertical web-brace arranged within said block, a pair of inclined web-braces arranged within said block at each side of said vertical web-brace, a bolt extending in the said block through the said opening, an L-shaped connecting-arm connected to said bolt, and means carried by the said arm for connecting the block to a rail.

10. In a car or engine replacer, a replacing-block, having its upper face of reverse compound curvature rising from both ends to the center.

11. In a car or engine replacer, an inner replacing-block having its upper face of reverse compound curvature rising from both ends toward the center, and a rib of convexo-concave curvature longitudinally integral with the upper face of said block.

706,548. HORSESHOE. JOHN W. FISHER, Akron, Ohio, assignor of one-half to Frank Reifsnyder, Chicago, Ill. Filed Apr. 19, 1902. Serial No. 103,707. (No model.)

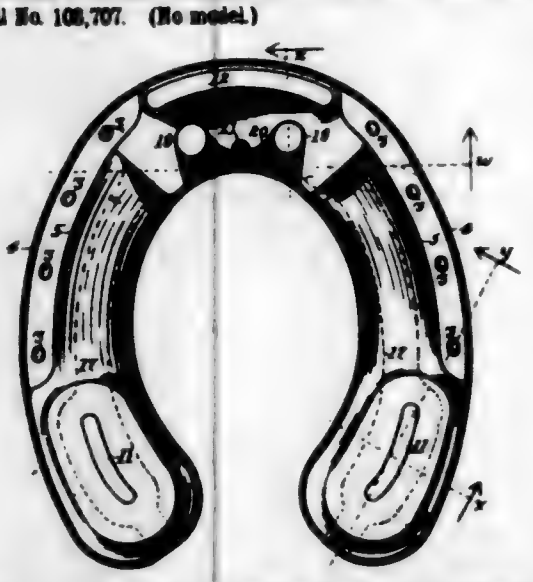

Claim.—1. An improved cushion-horseshoe consisting of a metal shoe to be secured to the hoof having means for securing thereto an independent underimposed vulcanized-rubber tread-surface inclosing a metal frame provided as described with a rubber coating, excepting at the toe and arranged to be detachably secured to said shoe and means for connecting said shoe and frame, substantially as shown and described.

2. An improved cushion-horseshoe consisting of a metal shoe to be

secured to the hoof having means for securing thereto an underimposed vulcanized-rubber tread-surface, in combination with a metal frame having integral toe and heel calks and provided with a rubber coating, and a rubber envelop inclosing said frame and thickened at the heel substantially even with the heel-calks, and means for detachably uniting said frame and shoe, substantially as shown and described.

3. An improved cushion-horseshoe consisting of a metal shoe to be fastened to the hoof having on its under face, flanges to form a seat for an underimposed cushion and means for securing said cushion thereto, in combination with a metal frame having integral toe and heel calks and a rubber envelop, arranged to lie within said flanges, thickened at the heel about said heel-calks, and means for uniting said frame and envelop, with said metal shoe, substantially as shown and described.

4. An improved cushion-horseshoe consisting of a metal shoe to be fastened to the hoof having notches in the heel with bands over the back ends of said notches, in combination with a metal frame having integral toe and heel calks with offset pins to enter said notches and rest under said bands, and means for detachably securing the toe of said frame to the shoe, and a rubber envelop inclosing said frame back of the toe portion, and thickened at the heel about said heel-calks, substantially as shown and described.

5. An improved cushion-horseshoe consisting of a metal shoe 1, to be fastened to the hoof having means at the heel for securing a rubber-covered frame, and a hole 6, at the toe with lateral narrower branches 7, and posts 18, to enter said hole having grooves to fit said branches 7, in combination with a frame 10, having integral means 16, for securing it to the heels of said shoe 1, and holes to register with and receive said posts 18, a rubber envelop 17, on said frame, and means for holding the toe of said frame on said posts, substantially as shown and described.

6. The herein-described cushion-horseshoe consisting of a metal shoe 1, to be secured to the hoof, having flanges to form a retaining-seat for an underimposed cushion, with notches in the heel with bands 9, over their back ends, a hole 6, at the toe with lateral narrower branches 7, and posts to enter said hole having grooves to fit said branches, and other grooves for a binding-wire 20, in combination with a metal frame 10, having integral toe and heel calks, with offset pins 16, to enter said notches and rest under said bands 9, and holes to register with and receive said posts at the ends of said branches and a recess at the toe back of and between said holes, a rubber envelop 17 inclosing said frame 10 back of the toe portion and thickened about said heel-calks, and a wire 20, to rest across said recess and in the grooves 19 thereof, and in the grooves 23 of said posts 18, to retain the toe of said frame, substantially as shown and described.

706,544. SYSTEM OF ELECTRICAL DISTRIBUTION. RICHARD FLEMING, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed Jan. 28, 1900. Serial No. 2,230. (No model.)

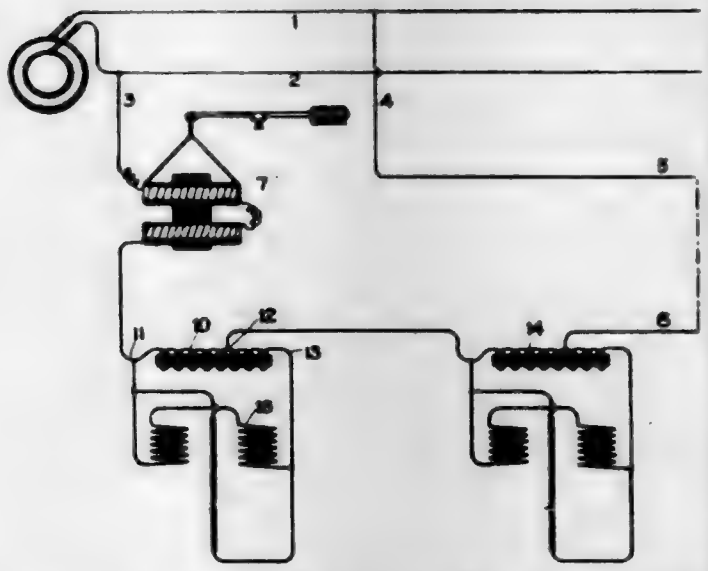

Claim.—1. The combination of an alternating-current circuit, means for maintaining a substantially constant current in said circuit, a plurality of compensators in series in said circuit, the points of connection of said circuit to each compensator being such as to include less than the whole length of the compensator-coil, and a translating device supplied from each compensator and connected thereto so as to include the whole length of the compensator-coil.

2. The combination of an alternating-current circuit, means for maintaining a substantially constant current in said circuit, a plurality of compensators in series in said circuit, the points of connection of said circuit to each compensator being such as to include less than the whole length of the compensator-coil, and a translating device supplied from each compensator and connected thereto so as to include more of the compensator-coil than that between the connections of said circuit.

706,545. ELECTRIC-ARC LAMP. RICHARD FLEMING, Swampscott, Mass., assignor to General Electric Company, a Corporation of New York. Filed Nov. 23, 1901. Serial No. 83,401. (No model.)

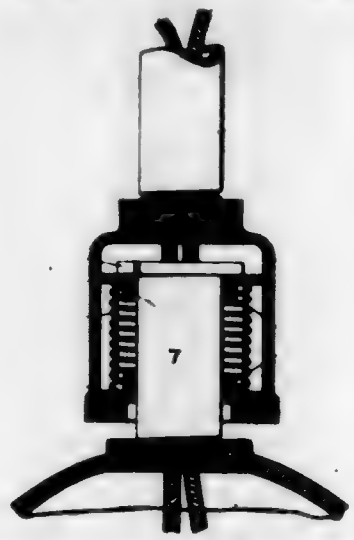

Claim.—1. In a suspension device for arc-lamps, the combination of a support which is secured to the lamp, a fixed support, a spring located between the supports and arranged to sustain the weight of the lamp, and insulating-bushings which prevent current from being transferred from one support to the other, at the same time permitting the parts to move slightly with respect to each other.

2. In an arc-lamp, the combination of a tube which is secured to the lamp, a second tube capable of being secured to a fixed support, a casing secured to one of the tubes, a lamp-supporting spring which surrounds one of the tubes and is located within the casing, and a body of insulation which separates the metallic parts of the lamp from the support, and also acts as a guide to direct the movements of the tubes.

3. In a suspension device for an arc-lamp, the combination of a support secured to the lamp which has an enlarged head, a casing which surrounds the support, and is provided with a seat, insulating-bushings which surround one of the supports, and act as guides for the parts as they move with respect to each other, and a lamp-supporting spring which is located between the bushings.

4. In a lamp-supporting device, the combination of a supporting-tube, a casing secured thereto, a perforated disk mounted on the lower end of the casing, a lamp-tube having a head, a pair of oppositely-disposed insulating-bushings, each bushing having a flange which engages the inner wall of the casing, one of said bushings resting on the head, the other on the disk, and a lamp-supporting spring which surrounds the lamp-tube and engages with the bushing and is prevented by them from making electrical contact with the tubes.

5. In a lamp-supporting device, the combination of a lamp-cover, a tube secured thereto, a supporting-tube, a casing secured thereto, a disk which is perforated centrally for closing the bottom of the casing, a head formed on the lamp-tube which is greater in diameter than the opening in the disk, and a coiled compression-spring located between the head and the disk.

706,546. SQUARE SHAKING-GRATE. FRANK W. POTTER, Melrose, Mass. Filed Dec. 2, 1901. Serial No. 84,256. (No model.)

Claim.—1. In a rocking grate, the combination of notched side frames, a notched rocker-bar, the side frames and rocker-bar mutually embraced by the notches in the rocker-bar and side frames, respectively, the side-frame notches being wider than the rocker-bar is thick, to give play to the rocker-bar to rock in the side-frame notches, the sides of said notches serving as stops to the rocker-bar motion.

2. In a rocking grate, the combination of notched side frames, a rocker-bar, notched to embrace the side frames, the rocker-bar embraced by the side-frame notches, said notches being wider than the rocker-bar is thick, to give play to the rocker-bar, the rocker-bar held from lateral movement by the side frames in the rocker-bar notches, substantially as described.

3. In a rocking grate, the combination of notched side frames, a rocker-bar, the rocker-bar embraced by the side-frame notches, which are wider than the rocker-bar is thick, to give play to the rocker-bar, the rocker-bar provided with filler-lugs which occupy substantially the entire width of the said notches at the bottom thereof.

4. In a rocking grate, the combination of notched side frames, a notched rocker-bar, the side frames and rocker-bar mutually embraced,

each by the notches of the other, the side-frame notches being wider than the rocker-bar is thick, to give the rocker-bar play to work, the rocker-bar provided with filler-lugs which occupy substantially the entire width of the side-frame notches at the bottom thereof.

5. In a rocking grate, the combination of a plurality of parallel grate-bars, mounted to reciprocate longitudinally, means for longitudinally agitating the grate-bars, end fingers on the grate-bars, stationary sectional extension-pieces each consisting of a cross-head from which project upwardly fingers which dovetail with the end fingers of the grate-bars, and provided with a depending stem, and a support for the said sectional extension-bars provided with sockets for the said stems.

6. In a grate, the combination of side frames, front and rear end beams, both vertically slotted to slide over the side frames, grate-bars, rocker-bars, and a stationary cross-beam whereon the grate-bars rest and slide, said cross-beam provided with vertical slots to embrace the side frames, and lugs on the side frame to confine the front and rear end beams and cross-beam when in position on the side frames, substantially as described.

706,547. ELECTRIC-ARC LAMP. FREDERICK A. GILBERT, Brookline, and EMIL O. LUNDIN, Beachmont, Mass., assignors to the General Electric Company, a Corporation of New York. Filed Mar. 24, 1898. Serial No. 674,963. (No model.)

Claim.—1. An electric-arc lamp provided with a contact device for the movable carbon, means for connecting and disconnecting the same from the carbon, and a rigid lever yieldingly mounted on the contact device and effecting a sliding frictional contact between the carbon-follower and the circuit-terminal.

2. An arc-lamp provided with a device for maintaining contact between the movable carbon and a circuit-terminal, means permitting the carbon to be connected and disconnected therefrom, and a plurality of levers mounted on one of the parts and held in elastic or yielding frictional engagement with the other part.

3. A contact device for the movable carbon of an arc-lamp, comprising a support, a plurality of independently-movable, laterally-separable contact members mounted thereon and electrically connected with the carbon, said members having elongated contact-faces and interior cam portions, and means to engage said cam portions of the contact members and positively spread them laterally into operative position.

4. A contact device for the movable carbon of an arc-lamp, comprising a support, a plurality of independently-movable, laterally-separable contact members mounted thereon and electrically connected with the carbon, said members having elongated contact-faces and interior cam portions, a spreader inclosed and supported by the contact members, and means to move said spreader to positively separate and maintain the contact members in operative position.

5. A contact device for the movable carbon of an electric lamp, comprising a plurality of inflexible, separable contact-levers electrically connected and bodily movable with the carbon and means to positively separate or laterally extend the free ends of said levers in operative position.

6. In an arc-lamp, a carbon-carrier, a tubular metallic guide therefor, a plurality of separable contact-levers mounted on the carrier in electrical connection with the carbon, and means to positively separate or laterally extend the free ends of said levers and maintain them operatively in contact with the guide.

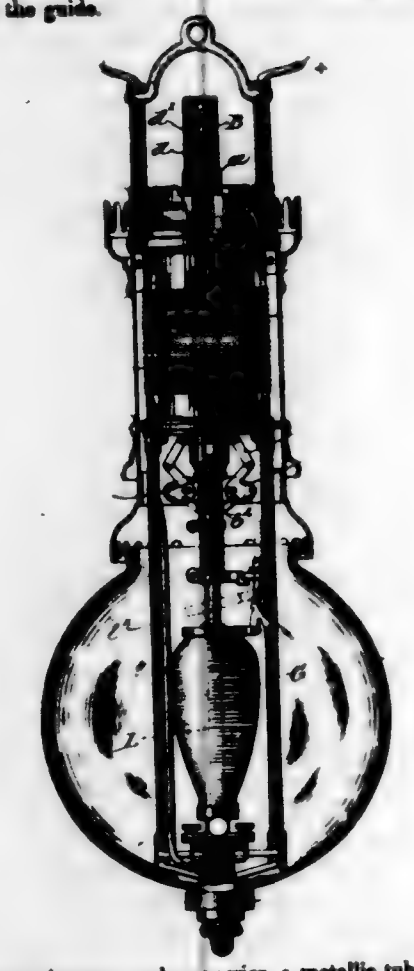

7. In an arc-lamp, a carbon-carrier, a metallic tube through which it travels and in the lamp-circuit, a plurality of separable contact-levers mounted on the carrier and electrically connected with the carbon, and a spreader to act upon the lever-arms and positively separate or laterally extend them and maintain them in operative contact with the tube.

8. In an arc-lamp, a metallic tube in the lamp-circuit and within which the movable carbon travels, a carbon-carrier, pivoted contact-levers in electrical connection with the carbon, and means to positively engage and move said contact-levers into operative position and to maintain them in yielding sliding engagement with said tube.

9. In an arc-lamp, a metallic carbon-carrier having side openings therein, a plurality of depending contact members pivotally mounted on the carrier, a spreader within and supported by the said members, and means to move said spreader to positively separate said contact members and maintain them in operative position projecting laterally through the openings in the carrier.

10. A contact device for the movable carbon of an arc-lamp, comprising a plurality of movable contact-levers electrically connected with the carbon, and means to positively maintain said contact-levers in operative position.

11. In an arc-lamp, a carbon-carrier, a tubular metallic guide therefor, a plurality of movable contact-levers mounted on the carrier in electrical connection with the carbon, and means to positively maintain said levers in operative contact with the guide.

12. In an electric-arc lamp, a movable carbon, a tube wherein the same is adapted to slide, a contact for the movable carbon comprising a series of arms bent inwardly and each pivoted at one end in the holder for the carbon, and means surrounded by said arms for maintaining the same in expanded position.

13. In an electric-arc lamp, a contact for the upper carbon comprising a series of arms bent inwardly and each pivoted at one end in the carbon-holder, and a spherical weight surrounded by, and normally adapted to expand, said arms.

706,548. ROLLING-MILL. PIERRE GIRIN, Paris, France, assignor to Ste. Ame. de Commentry-Fourchambault et Decazeville, Paris, France. Filed Apr. 28, 1902. Serial No. 104,311. (No model.)

Claim.—The combination with finishing-cylinders of a rolling-mill, of a plurality of conveyors, means for directing a bar from said cylinders to either of said conveyors at will, driving mechanism, and means for simultaneously actuating said directing means and clutching to the driving mechanism the conveyor to which said bar is directed.

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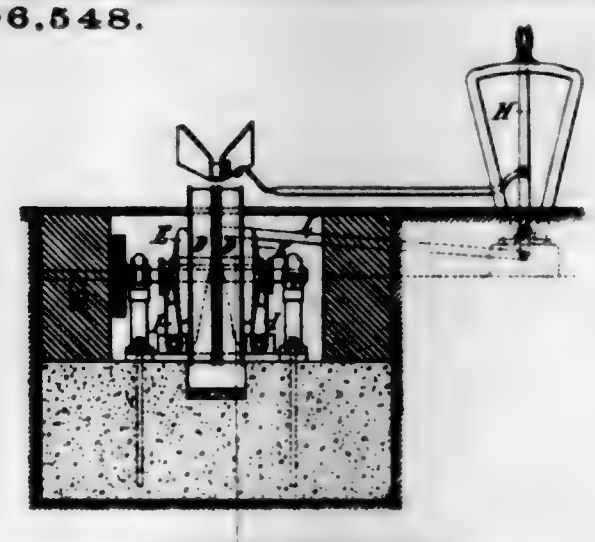

706,549. COASTER-BRAKE. CHARLES GLOVER, New Britain Conn., assignor to P. & F. Corbin, a Corporation of Connecticut. Filed June 11, 1901. Serial No. 64,096. (No model.)

Claim.—1. In a brake mechanism for coaster-brakes and the like, a stationary block having two recesses therein, two curved brake-shoes, one end of each of said brake-shoes being adapted to fit within said recesses and means to operate said brake-shoes, substantially as described.

2. A brake mechanism for coaster-brakes and the like, comprising a plurality of hinged brake-shoes, a stationary support therefor, a double-acting cam pivotally mounted between the ends of said brake-shoes, an arm projecting from said cam, a shoulder on said arm, a wheel-hub, an axle, said axle being located in the path of movement of the shoulder on said cam-arm and means for operating said cam, substantially as described.

3. A brake mechanism for coaster-brakes comprising an axle, a wheel-hub, bearings therefor, brake-shoes adapted to coact with said wheel-hub or an extension thereof, said brake-shoes being hinged upon a stationary support, a pivotally-mounted cam located between the ends of said brake-shoes and adapted to operate both of said brake-shoes, an arm projecting from said cam and a shoulder on said arm adapted to impinge against said axle and means to operate said cam, substantially as described.

4. In a brake mechanism for coaster-brakes and the like, a stationary block having two recesses therein, two curved brake-shoes, one end of each of said brake-shoes being adapted to fit within said recesses, and a spring for holding said brake-shoes in their retracted position, and means to operate said brake-shoes, substantially as described.

5. In a brake mechanism for coaster-brakes and the like, a stationary block having two recesses therein, two curved brake-shoes, one end of each of said brake-shoes being adapted to fit within said recesses, and a spring for holding said brake-shoes in their retracted position, said spring engaging said brake-shoes near the ends thereof and means to operate said brake-shoes, substantially as described.

6. In a brake mechanism for coaster-brakes and the like, a stationary block having two recesses therein, two curved brake-shoes, one end of each of said brake-shoes being adapted to fit within said recesses, and a spring for holding said brake-shoes in their retracted position, said spring engaging said brake-shoes near the ends thereof and bearing against the said stationary block and means to operate the brake-shoes.

7. In a brake mechanism for coaster-brakes and the like, a stationary block having two recesses therein, two curved brake-shoes, one end of each of said brake-shoes being adapted to fit within said recesses, and a spring for holding said brake-shoes in their retracted position, said spring engaging said brake-shoes near the ends thereof and means for operating said brake-shoes consisting of a pivoted cam and actuating-arm.

706,550. GLASS-MAKING MACHINE. HENRY GOLLINER, Oak Station, Pa. Filed Sept. 16, 1901. Serial No. 75,563. (No model.)

Claim.—1. In a glass-making machine, the combination of a frame composed of the side plates, each of which having slots or raceways arranged in the edges thereof, the said slots having ratchet-teeth formed therein, boxes arranged in the said slots and having shafts journaled therein, cylinders held upon said shafts, blocks carrying pawls that are adapted for engagement with the said ratchet-teeth, and a screw operating in the said blocks and adapted to engage the said boxes whereby the said cylinders may be adjusted laterally, and means for revolving the said cylinders, substantially as shown and described.

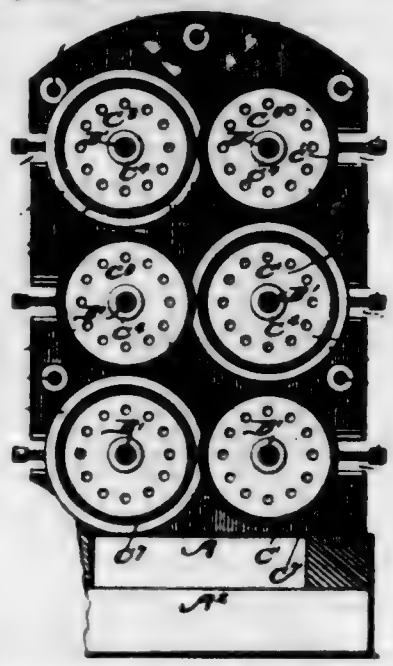

2. In a glass-making machine, the combination of a frame comprising the side plates and supports, a hopper fixedly arranged between the plates at the upper end thereof, the said plates having a series of slots arranged in their edges, the slots of one edge being arranged opposite and parallel with those of the opposite edge, and each having ratchet-teeth formed upon the inner and outer edges thereof, boxes arranged in the said slots, shafts journaled in the boxes, cylinders held upon the shafts and arranged in pairs in the frame, one cylinder of each pair having end plates that overlap the ends of the opposite cylinder, thereby producing a slot between the cylinders, blocks arranged in the grooves and having pawls for engagement with the ratchet-teeth, screws operating within the blocks and adapted to bear against the boxes, whereby the width of the slot between the cylinders may be increased or decreased, the said shafts of the cylinders having ports arranged therein, and one end provided with stuffing-boxes through which pass pipes, gears mounted upon the opposite ends of the shafts, and idlers journaled in the frame and adapted to mesh with the gears of the shafts, and means for revolving the cylinders, substantially as shown and for the purpose set forth.

706,551. BOOT OR SHOE. WILLIAM GORDON and GEORGE E. WARREN, Boston, Mass., assignors to Metallic Heel and Counter Company, Kittery, Me., a Corporation of Maine. Filed Dec. 17 1900. Serial No. 40,151. (No model.)

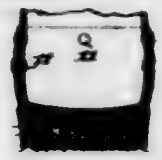

Claim.—An article of manufacture consisting of a metallic heel and counter-protector, a tread-plate and a heel-block, said tread-plate and heel-block being provided with a series of registering holes through which fastening devices may be driven into the sole of a boot or shoe after the heel and counter-protector, tread-plate and heel-block are in position thereon, substantially as described.

706,552. PUNCHING-MACHINE. BENJAMIN F. HALL, Salem, Mass., assignor of one-half to Ezra Goodell, Salem, Mass. Filed Sept. 21, 1901. Renewed July 9, 1902. Serial No. 114,959. (No model.)

Claim.—1. In a punching or perforating machine, in combination, a rotary driving-shaft and mechanism for imparting a reciprocating motion to a die-carrier, a rocking feed-point and carrier, means for positively actuating and controlling the amount of feed of the latter, a rock-lever actuated by a cam or eccentric on the rotary driving-shaft, and pivotally connected to the rocking feed-point carrier, said rock-lever being pivotally arranged upon an adjustable eccentric-pin for the purpose of adjusting the vertical movement of the feed-point carrier substantially as and for the purpose set forth.

2. In a punching or perforating machine, a four-motion positive and adjustable feed device, consisting in combination a rotary driving-shaft, an eccentric thereon, a pivoted grooved segment actuated by said eccen-

trio, a block adjustable in said segment, a rocking feed-point carrier, pivotally connected to said block, means for adjusting the latter in the segment, a rock-lever actuated by an eccentric on the driving-shaft and pivotally connected to the feed-point carrier, and an adjustable eccentric-pin upon which said lever is hung for the purpose of adjusting the vertical motion of said feed-point carrier substantially as herein set forth and described.

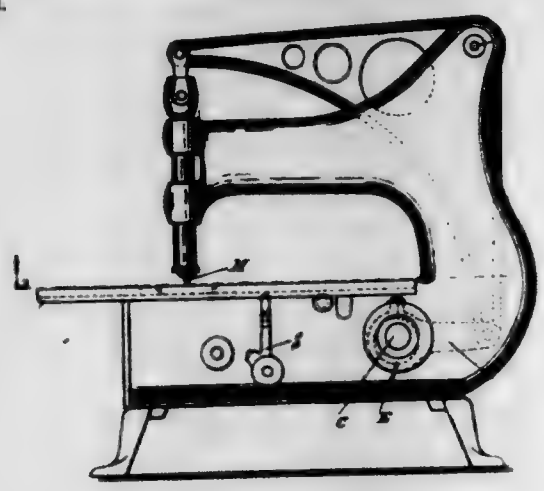

706,558. PROCESS OF MANUFACTURING ALUMINA. CHARLES M. HALL, Niagara Falls, N. Y. Filed Aug. 10, 1901. Serial No. 71,639. (No specimens.)

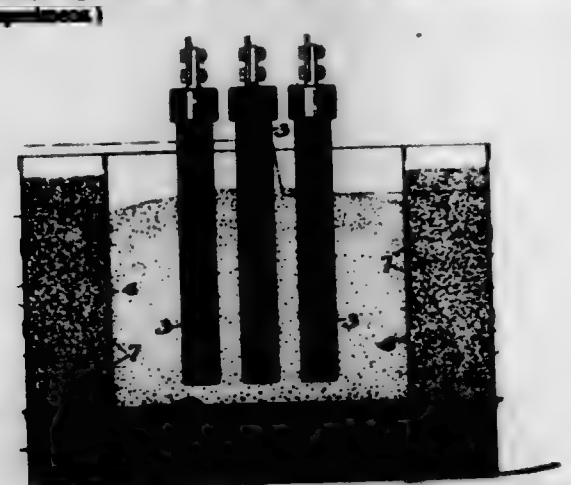

Claim.—1. The method herein described of purifying bauxite or other impure oxid of aluminium, which consists in heating the same in admixture with a reducing agent by means of an electric current without substantial fusion, thereby reducing the contained impurities in whole or in part, removing the mass so treated and afterward fusing it in an electric furnace and causing the impurities to agglomerate; substantially as described.

2. The method herein described of purifying bauxite or other impure oxid of aluminium, which consists in heating and fritting the same in admixture with a reducing agent by means of an electric current, without substantial fusion, reducing thereby the contained impurities in whole or in part, removing the mass so treated and afterward fusing it in an electric furnace and causing the reduced impurities to agglomerate; substantially as described.

3. The method herein described of purifying bauxite or other impure oxid of aluminium, which consists in surrounding a mass containing such oxid with a mixture of like oxid and carbon, subjecting it to heat generated by an electric current, fusing it thereby and causing the impurities thereof to unite in a fused alloy, and by the waste heat so developed effecting a reduction, in whole or in part, of the surrounding mixture without substantial fusion of such mixture, then removing the purified central mass, and subsequently fusing such surrounding mixture to effect the removal of its impurities; substantially as described.

4. The method herein described of purifying bauxite or other impure oxid of aluminium, which consists in surrounding a mass containing such oxid with a mixture of like oxid and carbon, subjecting it to heat generated by an electric current, fusing it thereby and causing the impurities thereof to unite in a fused alloy, allowing said mass to cool slowly, and by the waste heat so developed effecting a reduction, in whole or in part, of the surrounding mixture without substantial fusion of such mixture, then removing the purified central mass, and subsequently fusing such surrounding mixture to effect the removal of its impurities; substantially as described.

5. The method herein described of purifying bauxite or other impure oxid of aluminium, which consists in surrounding a mass containing such oxid with a mixture of like oxid and carbon, subjecting it to heat generated by an electric current, fusing it thereby and causing the impurities thereof to unite in a fused alloy and by the waste heat so developed effecting a reduction in whole or in part, of the surrounding mixture without substantial fusion of such mixture, then removing the purified central mass, and subsequently fusing such surrounding mixture in like manner in the middle of a surrounding mixture of impure oxid and carbon; substantially as described.

706,554. SPEED-INDICATING SYSTEM. JOHN L. HALL, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Nov. 29, 1901. Serial No. 83,967. (No model.)

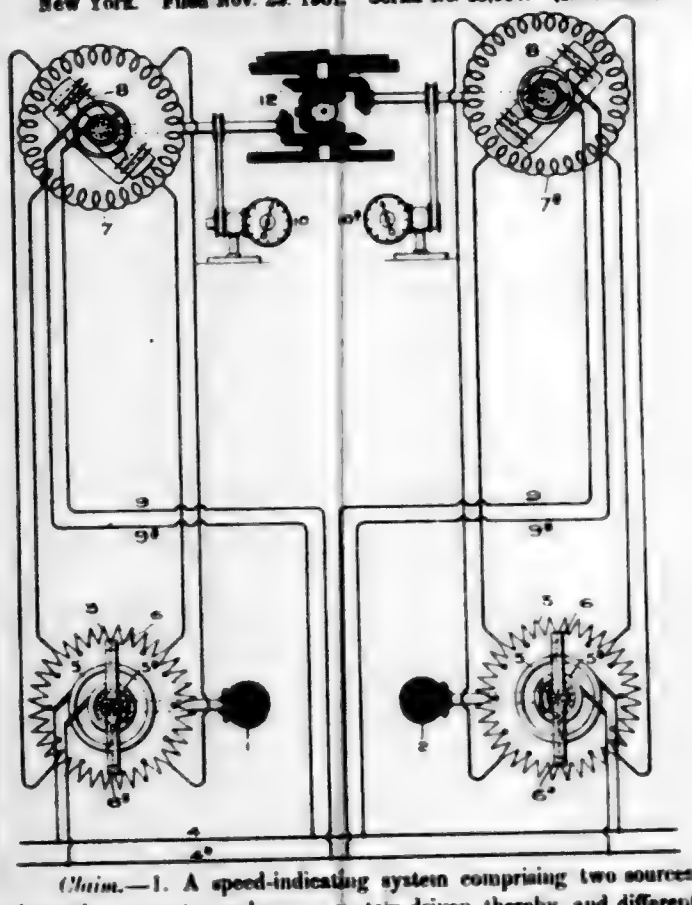

Claim.—1. A speed-indicating system comprising two sources of alternating current, synchronous motors driven thereby, and differential gearing driven by the joint action of the two motors to show the speed relation of the two machines.

2. A speed-indicating system comprising two alternating-current generators, polyphase circuits connecting therewith, and an indicator differentially driven by rotary fields set up by the polyphase currents.

3. A speed-indicating system comprising two alternating-current generators, synchronous motors, tachometers operated by the motors, differential gearing driven by the motor system, and an indicator operated thereby to show difference of speed.

4. A speed-indicating system comprising a resistance, a source of direct current, commutators for converting the direct into alternating currents, synchronous motors in the alternating-current circuits, and a differential indicator showing differences of speed of the motors.

706,555. ELECTRIC METER. CARYL D. HASKINS, Schenectady N. Y., assignor to General Electric Company, a Corporation of New York. Filed Feb. 13, 1901. Serial No. 47,092. (No model.)

Claim.—1. In an electric motor-meter, a starting-coil wound in halves symmetrically disposed with relation to the armature-shaft, and means for adjusting said coil angularly around said shaft.

2. In an electric motor-meter, a starting-coil having a plurality of sections, and a sleeve concentric with the armature-shaft supporting said sections within, and symmetrically related to, the field-coils.

3. In an electric motor-meter, a sectional starting-coil, a rotatable sleeve concentric with the armature-shaft and carrying said coil, a bearing in which said sleeve is rotatable, and means for holding the sleeve and coils in any angular position with reference to the shaft.

4. In an electric motor-meter, a starting-coil, a rotatable sleeve concentric with the armature-shaft and carrying said coil, and a clamp between the sleeve and its support.

5. In an electric motor-meter, a starting-coil wound in halves on trough-shaped hoops located on each side of the armature.

6. In an electric motor-meter, the combination with a sleeve, of a head mounted transversely thereon, and two hoops carried by said head in parallel planes symmetrically disposed on each side of the axis of the sleeve.

7. In an electric motor-meter, the combination with the armature-resistance, of a controllable shunt around part of said resistance.

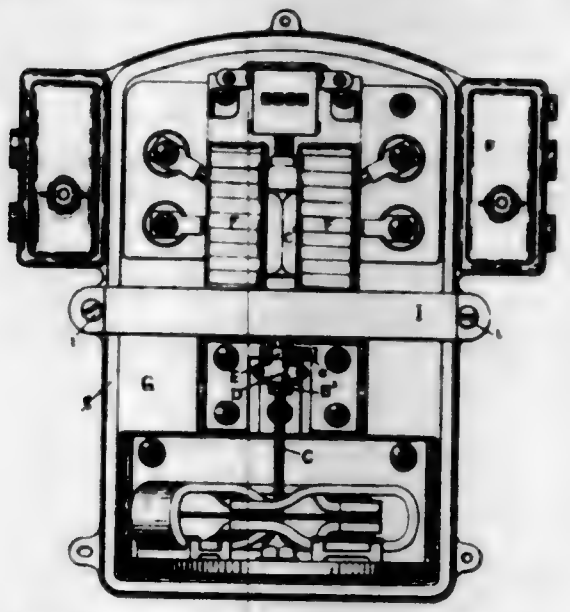

8. In an electric motor-meter, the combination with two work-circuit terminals and two line-wire terminals, of a third line-wire terminal, an armature-resistance, a shunt around part of said resistance, and means for connecting said shunt with the third line-terminal.

706,556. BOTTLE-NECK. ROBERT HAY, Summit, N. J.; Julia Booth Hay executrix of said Robert Hay, deceased. Filed Apr. 16, 1901. Serial No. 56,083. (No model.)

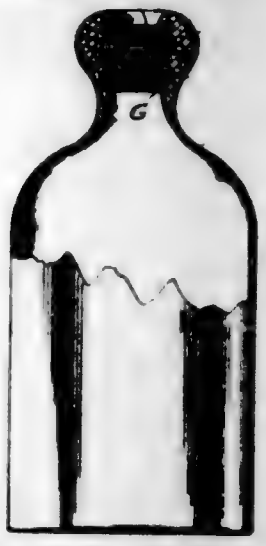

Claim.—1. The combination with a bottle-neck having a series of corrugations, contiguous to each other and forming edges between them, the said edges between the corrugations being all of equal internal diameter throughout the whole neck; a discharge-opening or mouth located above said corrugations of smaller diameter than the inner diameter of the said edges between the corrugations, and forming a flat shoulder beneath the said mouth, the said mouth being flared outwardly and upwardly on its upper surface; of a compressible stopper, of a diameter equal to about the inner diameter of the edges of the said corrugations, and of any available length which may be pressed through the said mouth, and beneath the said flat shoulder, and expand again to its normal size, only, and be forced upward by the internal pressure against the said flat shoulder, and hold there while the said internal pressure forces the body of the stopper outward against the edges of the said corrugations, and thereby cause a sealing of the bottle by means of the internal pressure only, substantially as specified.

2. A bottle-neck whose internal bore is of equal diameter throughout its length, and provided with a series of corrugations, contiguous to each other, and forming edges at their junction, the internal bore of the neck being surmounted, at its upper end, by an angular flange and centrally of said flange having a discharge-opening or mouth of less diameter than the internal diameter of the bottle-neck, the upper surface of said flange being tapered from its exterior diameter toward the said mouth; and a compressible stopper adapted to enter beneath said flange, and to seal the bottle by internal pressure only, substantially as specified.

3. As an article of manufacture a bottle having a neck with corrugations formed within it, the internal diameters of which are equal, and above said corrugations having a narrow flange turned inwardly, and a discharge-opening of smaller diameter than the inner edges of said corrugations, and above said flange having an upper surface flaring outwardly from said discharge-opening substantially as specified.

706,557. CLARINET. WILHELM HECKEL, Biebrich, Germany. Filed Aug. 27, 1900. Serial No. 28,242. (No model.)

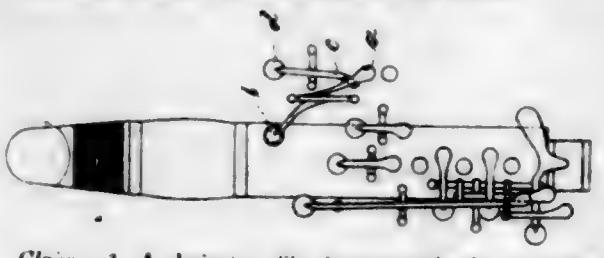

Claim.—1. A clarinet or like instrument having two octave-holes *b*, *d*, arranged at the same height, *i. e.*, at the same distance from the mouthpiece, and opposite to each other, and means for simultaneously opening and closing said holes.

2. A clarinet or like instrument, provided with two octave-holes arranged at the same height, *i. e.*, at the same distance from the mouthpiece, and opposite to each other, in combination with a key adapted when pressed down to open one of said holes, and a second key arranged relatively to the first key, whereby when the latter is pressed down, the said second key will be operated to open the other hole simultaneously.

706,558. DEVICE FOR UTILIZING WAVE-POWER. JOHN C. HERSHMAN and CHARLES C. VON DER AHE, New York, N. Y. Filed Mar. 12, 1902. Serial No. 97,935. (No model.)

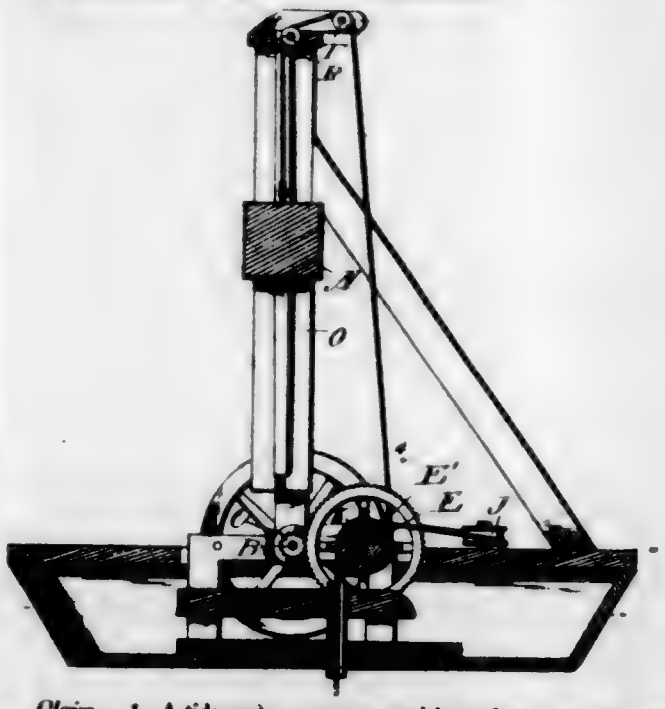

Claim.—1. A tide-motor power comprising a float, a winding-drum and shaft with gear-wheels rotating therewith and mounted upon said float, an anchor, a suspended weight carried by the float, a cable adapted for connection to said anchor, passing about said drum, and over suitable pulleys and suspending said weight, whereby as the float rises said suspended weight will be raised and cause the driving-shaft to be operated, as set forth.

2. A tide-motor power comprising a float, a shaft, a winding-drum loosely journaled on said shaft and mounted upon the float, a ratchet-wheel fastened to rotate with said drum, a gear-wheel keyed to rotate with said shaft, a pawl carried by the gear-wheel and designed to engage said ratchet-wheel, a counter-shaft carried by the float, a pinion-wheel keyed thereto and meshing with said gear-wheel, a cable, adapted for connection at one end to an anchor, and passing about said winding-drum, and pulleys carried by the float, a weight suspended on uprights carried by the float and to which suspended weight said cable is connected, as shown and for the purpose set forth.

3. A tide-motor power comprising in combination with a float, a shaft journaled therein, a pinion-wheel rotating with said shaft, a counter-shaft, a gear-wheel meshing with said pinion, drums on the counter-shaft, a horizontally-mounted pulley on the float, standards on said float provided with guide-strips on their adjacent faces, a suspended weight having grooves on its opposite faces to receive said guide-strips, pulleys at the upper ends of the standards, a cable fastened to said suspended weight

passing about axis pulleys and drums, and its other end adapted for attachment to an anchor, substantially as shown and described.

706,559. ELECTRIC TRANSMISSION OF POWER. EDWARD M. HEWLETT, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Nov. 23, 1901. Serial No. 83,410. (No model.)

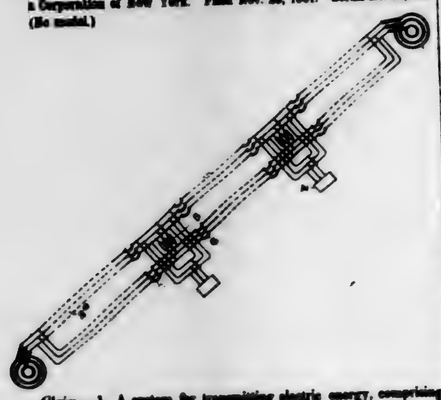

Claim.—1. A system for transmitting electric energy, comprising duplicate transmission-mains connected in parallel at the substation or local distributing-point, and differential means responsive to both mains for automatically opening the damaged main in case the two sides become unbalanced.

2. An electrical transmission system comprising a generating-station, a distant distributing-station, multiple transmitting-mains, conductive ties between the multiple mains at one or more points, and a differential device at each points controlled by the mains jointly for opening a main which becomes disproportionately loaded.

3. An electrical transmission system containing multiple transmitting-mains traversing different geographical routes, conductive ties between the different mains at a protected point or points, and means responsive to an unbalancing of the mains for opening the defective main in the region of the disturbance.

4. An electrical transmission system comprising a source of energy and a distributing system containing duplicate transmitting-mains, a differential relay at or near a protected point controlled by the joint effect of the two mains, and a circuit-breaker in each main actuated by the relay when the main in which the circuit-breaker is connected carries a disproportionate load with respect to its companion main.

5. An electrical transmission system comprising a source of energy, duplicate transmitting-mains, one or more substations, conductive ties between the mains at the substations, relays controlled by the joint effect of the duplicate mains, circuit-breakers at each side of the conductive tie, and connections with the relays for opening the circuit of the disturbed main at that side of the tie in which the disturbance occurs.

6. An electrical transmission system comprising a polyphase alternating-current generator, duplicate distributing-mains traversing different geographical routes, conductive ties at different points between the termini of the system, circuit-breakers for the different phases on each side of a tie, and differential relays controlled by the joint effect of the duplicate mains at each side of a tie for opening the circuit of a disturbed section of the transmitting-main.

7. An electrical transmission system comprising a polyphase alternating-current generator, duplicate distributing-mains cross-connected by conductive ties at points between the termini of the system, current-transformers in different phases at or near each tie, and circuit-breakers in each main governed by the joint effect of cooperating transformers in the duplicate mains to open the main which becomes disproportionately loaded.

8. A polyphase transmission system comprising a generator, duplicate transmission-mains cross-connected by metallic ties at points between termini, series transformers in different phases of each main at or near a tie, differential relays controlled by the joint effect of the duplicate mains, and circuit-breakers in each main opened by the relay when the main in which the circuit-breaker is connected is disproportionately loaded.

9. An electrical transmission system comprising a source of energy, and a distributing system containing duplicate transmitting-mains, a differential relay at or near a protected point controlled by the joint effect of two corresponding mains, a circuit-breaker in each main tripped by the relay, and means for disabling the circuit-breaker in the duplicate line when its companion operates.

10. An electrical transmission system comprising a source of energy, and a distributing system containing duplicate transmitting-mains, a differential relay at or near a protected point controlled by the joint effect of two corresponding mains, a circuit-breaker in each main tripped by the relay, and a contact in each trip-circuit opened when the companion circuit-breaker operates.

706,560. TRACTION-ENGINE TENDER. ALBERT HILDEBRAND, Hutchins, Iowa. Filed Apr. 8, 1902. Serial No. 101,893. (No model.)

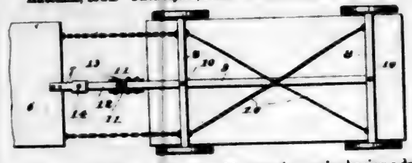

Claim.—1. The combination with a traction-engine having a draw-bar, of a wheeled vehicle having pivoted front and rear axles, a draft-reach projecting before the body of the vehicle with horizontal rigidity, a coupling joining the draw-bar and reach, and flexible connections between the rear end of the engine and the front axle retaining them in parallelism.

2. The combination with a traction-engine having a draw-bar at the rear end thereof, of a tender having pivoted front and rear axles and wheels thereon, a draft-reach rigid with the body of the tender and projecting in advance thereof, a joint in the reach permitting vertical but preventing horizontal play, a coupling between the end of the reach and the draw-bar, and flexible guide connections between the rear end of the engine and the front axle retaining them in parallelism.

706,561. SUBMARINE BOAT. JOHN P. HOLLAND, Newark, N. J. Filed Aug. 7, 1901. Serial No. 71,132. (No model.)

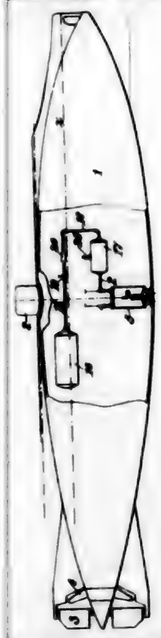

Claim.—1. A submarine boat having the usual water-ballast tanks, an independent special tank to contain a predetermined quantity of water, a valve controlling the admission of water thereto from the outside, manually-operable means for opening said valve from the interior of the boat, a manually-operable stop-valve controlling communication between the top of said tank and the interior of the boat, a tank containing compressed air, a pipe connecting said tank with the said special tank, and a manually-operable stop-valve controlling said pipe.

2. A submarine boat having the usual water-ballast tanks, an independent water-ballast tank of fixed and predetermined capacity situated below the center of buoyancy of the boat when submerged, manually-controlled means of rapidly discharging the water from said tank to permit the boat to rise to the surface, and manually controlled and operable means for rapidly refilling said tank as soon as the conning-tower reaches the surface, substantially as and for the purpose set forth.

706,562. WIRE FENCE. LEONARD C. HOOVER, Clarkton, Ky. Filed Jan. 20, 1902. Serial No. 91,245. (No model.)

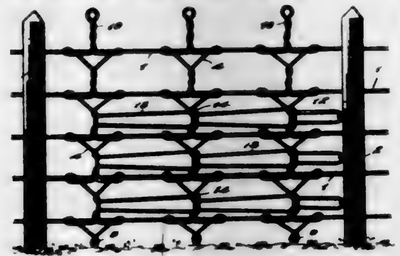

Claim.—1. In a fence, the combination of a plurality of runners, and stays having longitudinally oppositely extended parts provided with eyes to receive the runners and intermediate longitudinally-extending interlocked loops between the planes of the runners, substantially as described.

2. In a fence, the combination with runners, of stays having inverted triangular loops with opposite eyes to receive the runners and intermediate longitudinally-extending interlocked loops between the planes of the runners.

3. In a fence, the combination of a plurality of runners, and vertically-disposed stays or pickets having interlocking loops extending longitudinally from opposite sides thereof and located between the planes of the runners.

706,568. STEAM-BOILER. JOHN J. HOOVER, Springfield, Ohio. Filed Jan. 27, 1902. Serial No. 91,342. (No model.)

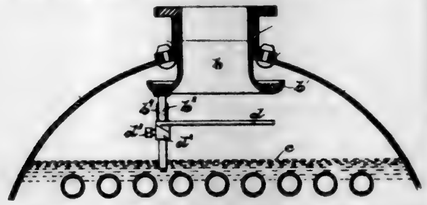

Claim.—1. In a steam-boiler, the combination with the steam-discharge outlet, of a nozzle extending in said boiler having at its lower end an outwardly-projecting flange-gutter, with a conduit-pipe extending from above the bottom of said gutter to below the water-line in said boiler, and a pan extending between said nozzle and said water-line, and means for holding said pan in position, substantially as specified.

2. In a steam-boiler, the combination with the steam-discharge outlet, the nozzle and a gutter on said nozzle with a conduit-pipe extending below the water-line as described, of a pan supported by said pipe extending between said nozzle and the water-line in said boiler, and having an outlet to said pipe, substantially as specified.

3. In a steam-boiler, the combination with the steam-discharge outlet, the nozzle and a gutter on said nozzle with a conduit-pipe extending below the water-line as described, of a pan journaled on said pipe with an outlet thereto, said pan normally extending between said nozzle and the water-line in said boiler, means to support said pan and automatically return it when it has been moved from its normal position, substantially as specified.

4. In a steam-boiler, the combination with the steam-discharge outlet, the nozzle and a gutter on said nozzle with a conduit-pipe extending below the water-line as described, of a pan journaled on said pipe with an outlet thereto, said pan extending between said nozzle and the water-line in said boiler, having the lower end of its journal beveled, and a supporting-collar on said pipe having a corresponding bevel, means to fix said collar on the pipe, and means to limit the movement of said pan toward the nozzle, substantially as specified.

5. In a steam-boiler, the combination with the steam-discharge outlet, of a pan extending between said outlet and the water-line in said boiler and a conduit from said pan extending below said water-line, substantially as specified.

6. In a steam-boiler, the combination with the steam-discharge outlet, of a pan normally extending between said outlet and the water-line in said boiler, and a hollow support for said pan extending below the water-line in said boiler, said pan having an outlet to said hollow support, and means to automatically return said pan when moved from its normal position, substantially as specified.

706,564. PUMP. BARRY IVOR and JOHN S. WARD, Chicago, Ill. Filed Dec. 17, 1901. Serial No. 86,205. (No model.)

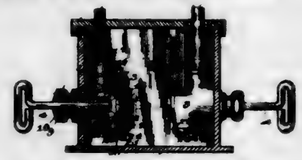

Claim.—The combination of an oil-reservoir, a pump-casing, a piston-chamber in said casing, a piston working in said chamber, an oil-passage in said casing extending across the inner mouth of said piston-chamber, an inlet and an outlet passage connecting with said transverse passage, at the lower and upper extremities thereof respectively, said inlet-passage extending backward beneath and in the general direction of said piston-chamber; a boss on said casing, a screw-threaded chamber in said boss, said chamber extending to a point near to but not entering said inlet-passage, a perforated wall formed of and integral with said casing constituting a strainer between said inlet-passage, and said threaded chamber; a valve-seat screwing into said threaded chamber, a ball coöperating with said seat, a valve-seat formed at the outer opening of said outlet-passage, a ball coöperating therewith, an opening in said casing opposite to said piston-chamber and connecting directly with said transverse passage, said inlet and outlet passages and with said piston-chamber, to afford ready access to all of said passages; and a nut or plug screwing into said last-mentioned opening for covering the same.

706,565. AUTOMATIC WEIGHING-MACHINE. ULYSSES S. JAMES, Anaconda, Mont., assignor of two-thirds to Charles M. Smith and Maurice S. Dean, Anaconda, Mont. Filed Oct. 24, 1901. Serial No. 79,851. (No model.)

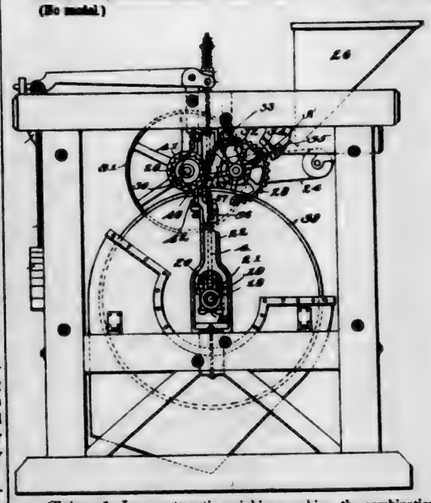

Claim.—1. In an automatic weighing-machine, the combination of weighing mechanism including a rotary bucket, a frictional driving device supported independently of the weighing mechanism, a device carried by the bucket arranged for engagement with and operation by said frictional driving device to effect the discharge of said bucket, a feeder for supplying material to said bucket, a driving member, a driven member actuated by said driving member, a universal connection between said driven member and feeder, a shiftable carrier for said driven member, and means con-

trolled by the weighing mechanism for normally maintaining said driving and driven members in operative relation.

2. In an automatic weighing-machine the combination of weighing mechanism including a basket, a feeder for supplying material to said basket, a driving member, a driven member actuated by said driving member, a universal connection between said driven member and the feeder, a shiftable spring-actuated carrier for said driven member, and detent means operative with the weighing mechanism for normally holding the carrier in position to maintain the driving and driven members in operative relation.

3. In an automatic weighing-machine, the combination of weighing mechanism including a rotary basket having a disk, a shaft provided with a disk for coöperating with the disk on the basket to rotate the latter, a toothed gear carried by said shaft, a second toothed gear meshing with the other one, a feeder for supplying material to the basket, a universal connection between said second toothed gear and the feeder, a spring-actuated carrier for said second toothed gear, and detent fingers carried by the basket for engaging said carrier and normally holding the said toothed gears in mesh.

4. In an automatic weighing-machine, the combination of weighing mechanism including a basket, a feeder for supplying material to said basket, a driving member, a driven member actuated by said driving member, a universal connection between said driven member and the feeder, a shiftable carrier for said driven member, and means controlled by the weighing mechanism for normally maintaining said driving and driven members in operative relation.

5. In an automatic weighing-machine, the combination of weighing mechanism including a basket, a feeder for supplying material to said basket, a driving member, a driven member actuated by said driving member, and operatively connected with the feeder, a rock-shaft having an arm carrying said driving member, means connected with said rock-shaft and tending normally to shift the same, a second arm on the rock-shaft, and a detent operative with the weighing mechanism for engaging said arm.

6. In an automatic weighing-machine, the combination of weighing mechanism including a basket, a feeder for supplying material to said basket, coöperating power-transmitting members, a rock-shaft having an arm carrying one of said power-transmitting members, a spring connected with said arm, a second arm on said rock-shaft, and a detent adjustably engaging said second rock-arm.

7. In an automatic weighing-machine, the combination of weighing mechanism including a basket, a feeder for supplying material to said basket, coöperating power-transmitting members one of the latter being operatively connected with the feeder, a shiftable spring-actuated carrier for the driven member, and detent means operative with the weighing mechanism for holding said carrier.

8. In an automatic weighing-machine, the combination of weighing mechanism including a basket, a feeder for supplying material to said basket, intermeshing gears, a shiftable carrier for one of the gears, the gear that is supported by said carrier being operatively connected with the feeder, a spring connected with said carrier, and a detent on the weighing mechanism for holding the carrier.

9. In an automatic weighing-machine, the combination of weighing mechanism including a basket, an endless conveyer, a hopper over said conveyer, intermeshing gears, a shiftable carrier for one of the gears, the gear on said carrier being operatively connected with said conveyer, a spring connected with said carrier, a detent controlled by the weighing mechanism for holding said carrier, and a discharge-hopper to receive the material from said basket.

10. In an automatic weighing-machine, the combination of weighing mechanism having a basket, a continuously-operable shaft, a feeder for delivering material to said basket, coöperating driving and driven elements connected respectively with the shaft and the feeder, a spring-actuated carrier for the driven element, means controlled by the weighing mechanism for holding said carrier in position to maintain said elements in working relation, and means actuated by said shaft for positively discharging the basket.

11. In an automatic weighing-machine, the combination of weighing mechanism having a basket, a continuously-operable shaft, a feeder for delivering material to said basket, coöperating driving and driven elements connected respectively with the shaft and the feeder, a spring-actuated carrier for the driven element, means controlled by the weighing mechanism for holding said carrier in position to maintain said elements in working relation, a pair of driving-wheels carried by said shaft, and driven wheels upon opposite sides of the basket adapted for engagement by the driving-wheels and having notches in proximity to the respective driving-wheels.

12. In an automatic weighing-machine, the combination of a beam, a basket, hangers connected to the basket, bezes on the beam through which said hangers project such portions of the hangers being threaded, nuts on the threaded portions of the hangers having heads inclosed by said bezes, coiled springs on the threaded portions of the hangers resting on the bezes, and relatively fixed means on the hangers engaging the upper ends of the springs.

706,566. URINAL. HERMAN D. JAMES, Saginaw, Mich. Filed May 11, 1901. Serial No. 59,723. (No model.)

Claim.—1. A hood for urinals having a curved top for supporting the body of the user; inclosing sides; and substantially horizontal flaring portions at the lower ends of the inclosing sides, said flaring portions having curved front edges, for the purposes set forth.

2. A hood for urinals having a top provided with a curved front edge; inclosing sides having substantially vertical front edges; and substantially horizontal flaring lower portions having curved front edges, for the purposes set forth.

706,567. TELEPHONE-CABLE CONNECTION. THOMAS P. JOHNS, Olyphant, Pa. Filed June 27, 1901. Serial No. 66,261. (No model.)

Claim.—In a device of the character described, the combination of a casing comprising two tubular parts adapted to receive the spliced wires and contracted portions on the outer ends of the tubular parts, of a covering wrapped around the wires and occupying the space between the wires and the interior of the tubular parts, and means carried by the tubular parts whereby the other ends thereof may be brought together and the covering compressed, substantially as described.

706,568. ELECTRODE FOR STORAGE BATTERIES. CHARLES W. KEMMERT, Rutledge, Pa. Filed July 30, 1901. Serial No. 70,240. (No model.)

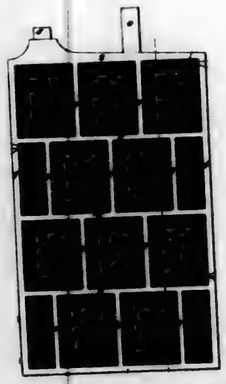

Claim.—1. As a new article of manufacture, a grid for storage-battery electrodes comprising a frame provided with recesses to receive the material to become active and having series of horizontal and vertical members forming said recesses, each of said vertical members being disposed opposite one or more of said recesses and serving to resist the pressure caused by the expansion of the active material during the "forming" period.

2. As a new article of manufacture, a grid for storage-battery electrodes comprising a frame provided with recesses to receive the material to become active, a series of horizontal cross-bars carried by said frame, and a series of vertical connecting-pieces forming with said cross-bars, the recesses for the active material, each series of vertical pieces being so disposed that those of no two adjacent series are directly opposite each other, substantially as and for the purpose set forth.

3. As a new article of manufacture, an electrode for storage batteries comprising a frame provided with recesses to receive the material to become active, horizontally-disposed strips forming the material to become active arranged in said recesses and spaced apart to permit expansion, and horizontal bars and vertical pieces connected with the frame and forming said recesses, said vertical pieces being arranged opposite the spaces adapted to contain the masses of active material and serving to resist the pressure due to the expansion of the same when "forming."

4. As a new article of manufacture, an electrode for storage batteries comprising a frame having recesses for the reception of the material to become active, horizontal and vertical members carried by said frame and forming said recesses, the vertical members being disposed opposite the spaces above and below the same, horizontally-disposed lead strips arranged in said spaces and forming the material to become active, and means carried by the vertical members whereby said strips may be retained in position within the frame, but free to expand during the "forming" period.

5. As a new article of manufacture, an electrode for storage batteries, comprising a frame having recesses for the reception of the material to become active, and lead strips arranged in sets or groups and forming the material to become active, said strips comprising pieces of different thickness horizontally arranged within the electrode, and so confined therein as to permit expansion during the "forming" period, substantially as described.

6. The combination in an electrode for secondary batteries of the frame having recesses to receive the material to become active, vertical members forming the side walls of said recesses, said members having grooves on their inner sides and projecting portions upon one outer face, and lead strips forming the material to become active and having projections at their ends adapted to the grooves of the vertical members, said strips being held in place by the bending over of the projecting portion of the vertical members of the frame.

7. In combination with an electrode of the character described, a lead strip bent or shaped to form a supporting-trough and adapted to have its surface acted upon by a chemical agent whereby it may be rendered active, and a thinner lead strip capable of being entirely reduced by electrochemical action to form the active material and carried by the bent strip, the walls of said bent strip being perforated for the passage of the electrolyte.

8. Material to become active for use in electrodes wherein such material is rendered active by electrochemical action, comprising strips of lead arranged in series of different thickness and alternating with each other throughout said electrodes, the thinner strips being entirely reduced during the electrochemical action, while the thicker strips, alternating with the same, have only their surfaces acted upon and serve as a supporting medium for the rest of the active material.

706,569. SPRING-ROLLER FOR FIREPROOF BLINDS, &c. WILLIAM B. KINNEAR, Columbus, Ohio. Filed Dec. 13, 1901. Serial No. 85,948. (No model.)

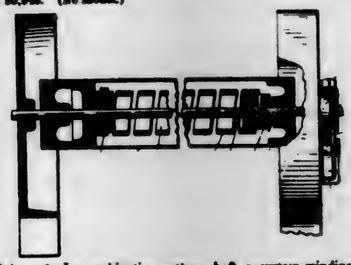

Claim.—1. In combination with a shaft, a curtain-winding drum supported to revolve thereon, a spring secured between the drum and the shaft for counterbalancing the curtain in its normal raising and lowering, means fusible on a dangerous rise of temperature for holding said shaft stationary until released by such dangerous rise of temperature without interfering with the normal raising and lowering of the curtain.

2. In combination with a shaft, a curtain-winding drum supported to revolve thereon, a spring between the drum and the shaft to counterbalance the curtain in its normal raising and lowering, and fusible means for automatically liberating said drum upon a dangerous rise of temperature, said fusible means when in place not interfering with the normal raising and lowering of the curtain.

3. In combination with the shaft of a spring-roller for fire-resisting curtains, an arm fixed to said shaft, a movable abutment for said arm and means fusible on a dangerous rise of temperature to liberate said abutment.

4. In combination with the shaft of a spring-roller for fire-resisting curtains, an arm fixed to said shaft, a movable abutment for said arm, a support for said abutment and fusible means for liberating said support upon a dangerous rise of temperature.

5. In combination with the shaft of a spring-roller for fire-resisting curtains, an arm fixed to said shaft, a movable abutment for said arm, a fixed support for said abutment, a supplementary support for said abutment held by means fusible on a dangerous rise of temperature.

706,570. LUBRICATOR. OLIVER G. KIPP, Rochelle, Ill. Filed Apr. 15, 1901. Serial No. 55,961. (No model.)

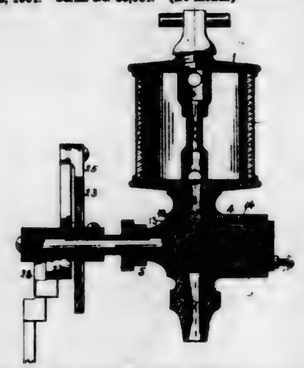

Claim.—1. The combination of an oil-reservoir, an outlet-passage leading from the reservoir, a cylindrical opening having a communication with the outlet-passage, a discharge-opening leading from the cylindrical opening, a cap for the cylindrical opening, a head located within the cylindrical opening having a shaft extension, means for imparting an intermittent rotary movement to the shaft, the head having a series of lengthwise chambers each having an opening through the periphery of the head, each chamber having a plunger, a spring for each plunger moving it in one direction and a cam moving the plungers in the opposite direction.

2. The combination of an oil-reservoir, an outlet-passage leading from the reservoir, a cylindrical opening having a communication with the outlet-passage, a discharge-opening leading from the cylindrical opening, a cap for the cylindrical opening, a head located within the cylindrical opening having a shaft extension, means for imparting an intermittent rotary movement to the shaft, the head having a series of lengthwise chambers each having an opening through the periphery of the head, each chamber having a plunger, a spring for each plunger moving it in one direction and a cam moving the plungers in the opposite direction, the cam being adjustable.

706,571. COFFEE-ROASTER. FRANK KRUX, San Francisco, Cal. Filed Feb. 27, 1902. Serial No. 96,260. (No model.)

Claim.—In a coffee-roaster, a rotary drum having a feed-opening and a door therefor, of a shaft fixed in relation to the drum and turning

therewith, a wing secured to the shaft and disposed opposite the opening in the drum, another wing secured to the drum on the opposite side from the said opening, and inclined wings each located substantially a quadrant's distance from the wings aforesaid, said inclined wings extending from opposite ends of the drum toward each other and with their angles of inclination opposed and their respective ends being rounded and terminating short of opposite ends or heads of the drum.

706,572. LAMP-EXTINGUISHER. LEROY D. LAWRENCE, Parsons, Kans. Filed Mar. 5, 1902. Serial No. 96,869. (No model.)

Claim.—In combination with a burner having a perforated top, a wick-tube and wick-operating shaft, a flame-extinguishing plate having ears which are perforated and journaled on said shaft, said plate having a play in an elongated aperture in said perforated top of the burner, a perforated sliding plate having an elongated slot to receive said extinguishing-plate, and adapted to slide upon the perforated top of the burner, and a tubular key for throwing the extinguishing-plate over the wick-tube, and a spring for returning said extinguishing-plate to its normal position, as set forth.

706,578. COCK OR FAUCET. ROBERT F. LEDBAY, Greenville, S. C., assignor to Samuel C. Keenon, Clarksville, Pa., and John S. Leslie, Sharon, Pa. Filed Feb. 15, 1901. Serial No. 47,309. (No model.)

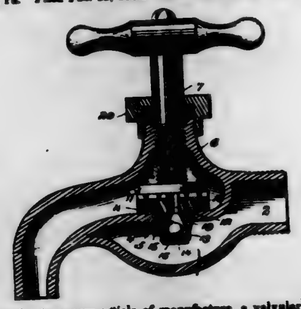

Claim.—1. As a new article of manufacture, a valvular device for controlling the exit of water from and the admission of air to the water-inlet side of a cock or faucet, formed separate from the key or stem of the cock or faucet and to have a non-threaded engagement therewith, said valvular device consisting essentially of a main body portion having a flange or head from which it depends, said flange or head being designed to rest upon the diaphragm of the cock or faucet and said body to extend through the opening therein and being formed relatively to the wall of said opening to leave a water-passage between it and said wall when it is elevated, said valvular device being also formed with longitudinal and lateral openings for the admission of air from the spout of the cock or faucet to the water-inlet side thereof and having a valve in said longitudinal opening arranged and constructed to be upheld to its seat therein by the pressure of water in the cock or faucet, substantially as described and for the purpose set forth.

2. As a new article of manufacture, a valve for cocks or faucets, formed separately from the key-stem of the cock or faucet and comprising an externally-tapered body having a longitudinal opening, a flange projecting from said body and adapted to rest upon the diaphragm of the cock or faucet, said flange having openings through which the opening in said body communicates with the spout, and a valve seated in the opening in said body and adapted to be held to its seat therein by the pressure of water at the inlet side of the diaphragm of the cock or faucet, for the purpose specified.

3. The combination with a cock or faucet having a diaphragm formed to provide an opening and having its key-stem provided with a disk at its lower end, of a valve formed separately from said stem and adapted to close said opening, said valve having a valved inlet air-passage therethrough and a head formed with grooves leading to said passage, said head being engaged with said disk, substantially as described and for the purposes set forth.

4. The combination with the key-stem and body of a cock or faucet, said body having its diaphragm formed to provide an opening, of a valvular device for controlling the passage of water through said opening and for admitting air to the water-inlet side of cock or faucet from the spout thereof, said valvular device being formed separate from said key-stem and having a non-threaded engagement therewith, and consisting essentially of a main body portion having a head from which it depends and which rests upon said diaphragm, said body portion extending through said opening and being formed relatively to the wall thereof to provide a water-space between them, and having a longitudinal air-passage and a valve in said passage upheld to its seat therein by the pressure of water, said valvular device having openings through which its passage communicates with the spout of the cock or faucet, substantially as described and for the purposes specified.

5. The combination with the body of a cock or faucet, having its diaphragm formed to provide an opening, and a key-stem, provided with a disk at its lower end, of a valve formed separately from said stem and adapted to close said opening, said valve comprising a body portion of externally-tapered form projecting through said opening and having an air-passage through it, a valve in said passage held to its seat by the pressure at the water-inlet side of the cock or faucet, and a head having openings leading to said passage, said head being engaged with said disk and designed to be seated upon said diaphragm.

706,574. PNEUMATIC PIANO-PLAYER. SAMUEL B. LOCKLIN, Boston, Mass. Filed Aug. 10, 1901. Serial No. 71,560. (No model.)

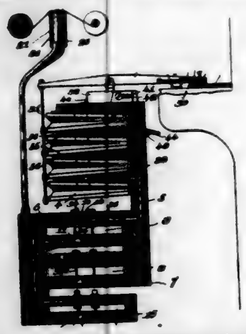

Claim.—1. In an automatic piano-player, a series of fingers adapted to operate the keys of the piano, and automatic finger-operating mechanism, each of said fingers having integral therewith a yieldable projection carrying a hammer, and an adjusting device in the end of each finger constructed to adjust the said projection relative to the finger.

2. In an automatic piano-player, a series of fingers adapted to operate the keys of the piano, and automatic finger-operating mechanism, each of said fingers being divided at the hammer end, a hammer secured directly to one part of each of said fingers, and means to adjust that portion of the finger to which the hammer is attached relative to the body of the finger.

3. In an automatic piano-player, a series of fingers adapted to operate the keys of the piano, and automatic finger-operating mechanism, the hammer ends of each of said fingers being forked, a hammer secured directly to one arm of the fork, and an adjusting-screw in the other arm thereof and engaging the first-named arm, whereby the hammer may be adjusted vertically relatively to the finger.

4. In an automatic piano-player, a series of fingers adapted to operate the keys of a piano, and automatic finger-operating mechanism, the hammer end of each finger being forked, one arm of said fork having a hammer secured directly thereto, and an adjusting-screw in the other arm of the fork and engaging the first-named arm, whereby each hammer may be adjusted vertically relatively to its supporting-finger.

5. In an automatic piano-player, a series of fingers to operate the piano-keys, a hinged carrier to which said fingers are pivoted, means to positively turn said carrier about its pivot to raise all of the fingers bodily from the piano-keys, said means comprising an actuating-lever pivoted to a fixed support, and having a cam-slot eccentric to the pivot of the lever, and a stud on the carrier engaging said slot, the turning of the lever about its pivot operating to positively turn said carrier about its axis.

6. In an automatic piano-player, a series of fingers to operate the piano-keys, a hinged carrier to which said fingers are pivoted, means to positively turn said carrier about its pivot to raise all of the fingers bodily from the piano-keys, said means comprising an actuating-lever pivoted to a fixed support, and having a cam-slot eccentric to the pivot of the lever, and a stud on the carrier engaging said slot, said slot having a locking-recess at one end into which the stud enters, the construction being such that the turning of the lever about its pivot operates to positively turn said carrier about its axis, the said stud when the carrier is in its operative position entering the locking-recess to lock the carrier in such position.

7. In an automatic piano-player, a series of fingers to operate the piano-keys, a hinged carrier to which said fingers are pivoted, a lever having an inclined slot therein and pivoted to a fixed support, and a stud on the carrier engaging the slot, whereby the carrier may be turned to raise the hammer end of all the fingers from the keys simultaneously, said slot operating to lock the carrier in its operative position.

8. In an automatic piano-player, a series of fingers to operate the piano-keys, a hinged carrier to which said fingers are pivoted, and means to positively turn said carrier about its pivot to raise all of the fingers bodily from the piano-keys, said means comprising an actuating-lever pivoted to a fixed support and having a pin-and-slot connection with the carrier, the turning of the lever about its pivot operating to positively turn the carrier in either direction.

9. A pneumatic for a pneumatic piano-player, comprising two opposed side pieces of inflexible material movable toward and from each other, and a strip of flexible material secured to the edges of each of said side pieces and extending inwardly toward the center thereof, the inner edges of said strips being secured together, and a frame-like stiffener connected to said inner edges, said stiffener being smaller than the side pieces.

10. A pneumatic for a pneumatic piano-player, comprising two opposed side pieces of inflexible material hinged together at one end, a strip of flexible material extending around each side piece and secured to the edges thereof, said strips extending inwardly from their point of attachment with the side pieces, the inner edge of one strip being secured to that of the other strip, to make an inwardly-extending fold.

11. A pneumatic for a pneumatic piano-player, comprising two pieces of inflexible material hinged together at one end, a strip of flexible material extending around each side piece and secured to the edges thereof, said strips each being folded inwardly toward the center of the pneumatic, a part of the inwardly-extending portion of one strip being secured to that of the other strip, and an apertured stiffening-piece secured to the inward edges of said strips, said stiffening-piece being smaller than the side pieces.

12. In an apparatus of the class described, a series of pneumatics, a flat-faced support for the same, headed studs in the flat face of said support, a forked projection on one end of each pneumatic adapted to embrace one of said studs, a slotted clip on the other end of each pneumatic, to embrace the end of the support, and also a headed stud thereon, whereby each pneumatic may be detached from the said support.

13. In an apparatus of the class described, a series of pneumatics, means to support the same, each of said pneumatics having at one end forked projections embracing headed studs on the supporting means, and at the other end a clip to embrace the end of the support, whereby said pneumatics may be detached from the supporting means.

14. In an apparatus of the class described, a series of pneumatics, supporting means therefor, each of said pneumatics having at one end forked projections embracing headed studs on the supports, and at the other end a slotted clip embracing a stud in the end of the support, the end of said clip being bent over the upper edge of the support.

15. A valve for a pneumatic piano-player comprising a screw-threaded stem and a valve screw-threaded thereon, said valve comprising a facing of yielding material such as felt, and a backing of some suitable stiffened material, said backing being out of contact with the valve-stem, and an intermediate layer of tough flexible material which has a screw-threaded engagement with the stem, whereby said valve may have a bodily movement transversely to the stem.

16. A valve for a pneumatic piano-player comprising a screw-threaded valve-stem, and two independent valve-sections adjustably secured thereto, said valve-sections each comprising a facing of yielding material, a backing of stiffened material, said backing having an enlarged aperture through which the stem passes, and an intermediate layer of fibrous flexible material, said intermediate layer having a screw-threaded engagement with the valve-stem, whereby said valve may have a bodily movement transversely of the stem.

17. A compensating spool for perforated music comprising a body portion having screw-threaded ends, journal-pins extended from the ends thereof, and concavo-convex flanges or heads having screw-threaded sockets engaging said screw-threaded ends and central apertures through which said journal-pins project.

18. A compensating spool for perforated music comprising a body portion having screw-threaded ends, concavo-convex flanges or heads having screw-threaded sockets to receive said screw-threaded ends, and means independent from the heads for supporting the spool for turning movement.

706,575. MULTIRATE-METERING SYSTEM. ALEXANDER D. LOEB, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 31, 1901. Serial No. 46,488. (No model.)

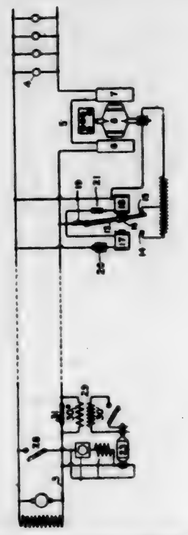

Claim.—1. The combination of means for metering electric current of a given character, with means controlled by current of a different character for changing the rate of registration or metering.

2. The combination of a direct-current meter, and means controlled by an alternating electromotive force for changing the rate of the meter.

3. The combination of a circuit-changing switch, a magnet responsive to current of a given frequency for urging the switch in one direction, another magnet responsive to current of a different frequency for actuating the switch in the opposite direction, and a means operative at will for supplying said magnets with alternating current of either frequency.

4. The combination of an electric meter for measuring current of a given character, and means controlled by current of a different character for changing the rate of registration of the meter.

5. The combination of a direct current-distribution system, a switch-actuating circuit connected thereto, and means for impressing an alternating electromotive force on said system.

6. The combination of a direct-current-distribution system, a meter connected thereto, and a switch responsive to alternating electromotive force for altering the resistance of the armature-circuit of said meter.

7. The combination of a distribution system, a meter connected thereto, a switch movable in opposite directions by alternating electromotive forces of respectively different frequencies, and means controlled by said switch for altering the rate of registration of said meter.

8. The combination of an electric meter, a device sensitive to alternating currents of different frequencies for changing the rate of the meter, and means for supplying alternating currents of selected frequencies to said device.

9. The combination of a direct-current-distribution system, means for impressing alternating currents of selected frequencies upon said system, and a circuit-changing switch responsive to said alternating current.

10. The combination of a distribution system, means for impressing alternating currents of selected frequency upon said system, and a circuit-changing switch responsive to said alternating current.

706,576. PLANE. AXEL L. LUNDGREN, Pullman, Ill., assignor of one-half to Harry W. Wirth, Chicago, Ill. Filed Jan. 4, 1902. Serial No. 88,468. (No model.)

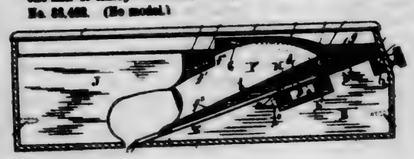

Claim.—1. In a plane, having flat side walls and connecting end walls, inclosing the operative mechanism and having an escape-opening in its sides and a mouth in its sole, a bed having an inclined upper face, a bit resting against the inclined upper face of the bed and projecting through the mouth in the sole, a clamping lever-block lying between and in close contact with the side walls of the hollow stock, a flat spring connected to the clamping lever-block and projecting rearwardly therefrom having its free end in contact with the bed, an abutment for the upper face of the clamping lever-block extending between the side walls, and a cam-headed lever pivoted at the rear end of the clamping lever-block and operating within a slot in the top thereof to have its cam-head contact with the flat spring, whereby the spring under tension is forced against the bed raising the clamping lever-block against the abutment and forcing down the bit, substantially as described.

2. In a plane, the combination of a holder stock or frame having flat side walls and connecting end walls inclosing the operating mechanism and having an escape-opening in its sides and mouth and in its sole, a bed having an inclined upper face, a bit resting against the inclined face of the bed and projecting through the mouth in the sole, a clamping lever-block lying between and supported against lateral movement by the side wall of the stock having a forwardly-projecting bearing-plate attached to its bottom, a rearwardly-projecting spring attached to the bearing-plate, having its free end in contact with the bed, an abutment for the upper face of the clamping lever-block carried between the side walls of the stock, a bearing-screw, screw-threaded through the abutment for contact with the upper face of the clamping lever-block and a cam-headed lever pivoted at the rear end of the clamping lever-block and operating within a slot in the top thereof to contact with the spring whereby the spring under tension is forced against the bed, raising the clamping lever-block against the abutment forcing the forward end of the bearing-plate against the bit at a single point, substantially as described.

3. In a plane, the combination of a hollow stock or frame having an escape-opening in its sides and a mouth in its sole, a bed having an inclined upper face with a recess therein, an adjusting-screw projecting through the recess in the bed, a traveling nut carried by the adjusting-screw and operating within the recess, a bit resting against the inclined face of the bed and carried by the traveling nut, and projected through the mouth in the sole, a clamping lever-block supported against lateral movement by the side walls of the hollow stock having a bearing-plate attached to its bottom, a rearwardly-projecting flat spring attached to the bearing-plate and having its free end in contact with the bed an abutment for the upper face of the clamping lever-block, and a cam-headed lever pivoted to the lever-block and contacting with the spring whereby the spring under tension is forced against the bed and the clamping lever-block against the abutment and the bearing-plate against the bit at a single point, substantially as described.

4. In a plane, the combination of a hollow stock or frame, a bed having an inclined upper face with a recess therein, an adjusting-screw projecting through the recess in the bed, a traveling nut carried by the adjusting-screw and operating within the recess, a bit resting against the inclined face of the bed and carried by the traveling nut and projecting through the mouth in the sole, a clamping lever-block having a forwardly-projecting plate attached to its bottom, a rearwardly-projecting flat spring attached to the bearing-plate and having its free end in contact with the bed, an abutment for the upper face of the clamping lever-block, a bearing-set screw-threaded through the abutment for contact with the clamping lever-block, and a cam-headed lever pivoted at the rear end of the clamping lever-block and operated within a slot therein to contact with the flat spring whereby the spring under tension is forced against the bed raising the clamping lever-block against the abutment and the adjusting-screw and forcing the forward end of the bearing-plate against the bit at a single point, substantially as described.

5. In a plane, the combination of a hollow stock or frame having an escape-opening in its sides and a mouth in its sole, and having its upper rear corner inclined or beveled, a bed within the stock or frame having an inclined upper face with a forward recess therein, and a rear recess in the rear upper corner of the bed leaving a bearing-leg between the recesses, an adjusting-screw projecting through the beveled rear wall of the stock and the leg in the bed and through the recesses therein, a traveling nut provided with an upwardly-extending pin and carried by the adjusting-screw to operate within the forward recess, a bit resting against the inclined face of the bed and carried by the pin on the traveling nut, a clamping lever-block having a forwardly-projecting bearing-plate attached to its bottom, a rearwardly-projecting flat spring attached to the bearing-plate and having its free end in contact with the bed, an abutment for the upper face of the clamping lever-block, a bearing-screw screw-threaded through the abutment for contact with the clamping lever-block, and a cam-headed lever pivoted at the rear end of the lever-block and lying when forced down within a slot in the top of the lever-block and having its cam-head in contact with the flat spring whereby the spring under tension is forced against the bed raising the clamping lever-block against the bearing-screw and forcing the forward end of the bearing-plate against the bit at a single point, substantially as described.

6. In a plane, the combination of a hollow stock or frame having an escape-opening in its sides and a mouth in its sole, and having its upper rear corner inclined or beveled, a bed within the stock or frame having an inclined upper face with a forward recess therein, and a rear recess in the rear upper corner of the bed leaving a bearing-leg between the recesses, an adjusting-screw projecting through the beveled rear wall of the stock and the lug in the bed and through the recesses therein, a head on the adjusting-screw contacting with the outer face of the beveled corner, a traveling nut provided with an upwardly-extending pin and carried by the adjusting-screw to operate within the forward recess, a bit resting against the inclined face of the bed and carried by the pin on the traveling nut, a clamping lever-block supported against lateral movement by the side walls of the hollow stock having a forwardly-projecting bearing-plate attached to its bottom, a rearwardly-projecting flat spring having its free end in contact with the bed, an abutment for the upper face of the clamping lever-block, a bearing-screw screw-threaded through the abutment for contact with the clamping lever-block, a cam-headed lever pivoted at the rear end of the clamping lever-block and operating within a slot in the top thereof to contact with the flat spring whereby the spring under tension is forced against the bed raising the clamping lever-block against the bearing-screw and forcing the forward end of the bearing-plate against the bit at a single point, a filling-block in the forward end of the stock or frame, and a cap fitting within the top of the stock or frame, substantially as described.

706,577. ELECTRIC SWITCH FOR FLASHING LIGHTHOUSE-LANTERNS. FREDERICK MACKINTOSH, Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Jan. 9, 1899. Serial No. 701,676. (No model.)

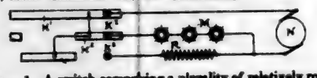

Claim.—1. A switch comprising a plurality of relatively rotary contacts, a drive-shaft, a gear-train connecting the same with the rotary switch element, and an adjustable journal for one of the gear-wheels to permit changeable gearing to vary the rate of change in the control-circuit.

2. A switch comprising a rotary contact, a spring-brush bearing thereon, an offset at the end of the contact to permit the brush to snap out of engagement, and a cushion of yielding material on the rotary contact to arrest the snapping movement of the brush.

706,578. MARINE ELECTRIC-LIGHT FIXTURE. GEORGE I. MARTIN, New York, N. Y. Filed Dec. 10, 1900. Serial No. 39,414. (No model.)

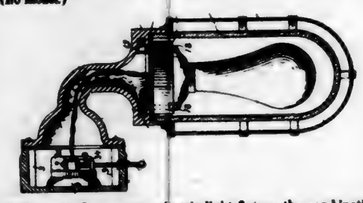

Claim.—1. In a marine electric-light fixture, the combination with an outlet-box of a bracket secured thereto in a water-tight manner, said bracket consisting of a base, a contracted neck, and a head formed of one piece of metal, said head being provided with a socket adapted to receive a globe, a seat for a gasket beneath said globe, and a seat for a lamp-socket, as and for the purpose set forth.

2. In a marine electric-light fixture, the combination with an outlet-box of a bracket consisting of a head, neck, and base formed of one piece of metal, said head being provided with an internal, integral flange, and with integral posts, as 19, extending from points adjacent to the neck and having the ends thereof in a plane parallel with said flange, as and for the purpose set forth.

3. In combination with a marine electric-light fixture, a switch comprising a base, a plate supported thereon by legs, a shaft rotatably mounted adjacent to one of said legs, a jointed shaft passing through a stuffing-box in the outlet-box, and through the other leg, and provided at the inner end with an inclined face adapted to bear against said first shaft, a spring adapted to hold said inclined face in contact with said first shaft, a block rotatably mounted on said second shaft, and plates on said base, provided with binding-posts, as and for the purpose set forth.

706,579. COMBINED GAS-PRODUCER AND RECUPERATIVE FURNACE. ARTHUR J. MASSEY, Martins Ferry, Ohio. Filed May 21, 1902. Serial No. 108,301. (No model.)

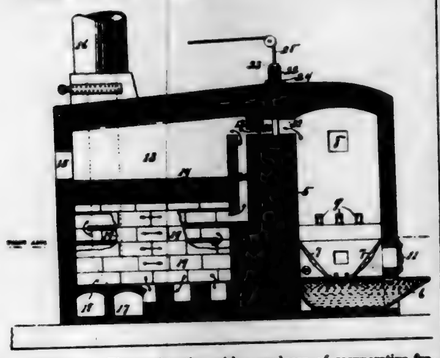

Claim.—1. The combination with a producer, of recuperative furnaces arranged at each side of the rear end thereof, combustion-chambers in each furnace, separate passages leading from said producer to said combustion-chambers for conveying the gases generated in the producer, and intake-flues for admitting heated air to said combustion-chambers at substantially the same points in which the gases are admitted, substantially as described.

2. The combination with a combined pair and finishing furnace, of a producer, combustion-chambers in each furnace, distributing-chambers intermediate the producer and the furnaces, dampers for regulating the supply of gases to the distributing-chambers, intake-flues for supplying heated air to the combustion-chambers, and escape-flues leading from said combustion-chambers and arranged intermediate the intake-flues to heat the air as it passes through said intake-flues, substantially as described.

3. The combination with a producer in which combustion of the fuel takes place slowly, of a longitudinal chamber 30 for receiving the combustible gases resulting from the decomposition of the fuel in the producer and adapted for distributing the said gases throughout its length, a combustion-chamber into which the combustible gases are directed through communicating ports, and passages for admitting heated air to the combustion-chamber, the said communicating gas-ports and the said air-passages converging at or near the top of the combustion-chamber so as to commingle the air and gases as they enter the combustion-chamber, substantially as described.

4. The combination with a producer for containing a bed of fuel and having stoke-holes through which said producer is fed, of longitudinal distributing-chambers arranged at the rear of the producer for receiving and distributing the combustible gases from said producer to different points along their lengths, combustion-chambers arranged at the rear of each distributing-chamber for receiving the gases therefrom through ports provided therein, escape-flues for the products of combustion leading from the combustion-chambers, and intake-flues arranged intermediate said escape-flues for admitting heated air to the combustion-chambers, the points of admission for said heated air being in juxtaposition to the gas-discharge ports so as to permit the air and gases to commingle as they enter the combustion-chambers, substantially as described.

5. The combination with a producer for driving off volatile gases from the fuel, of a pair and finishing furnace, a combustion-chamber in each furnace, communicating passages between the producer and said combustion-chambers, means for regulating and controlling the supply of gases from the producer to the combustion-chambers, a plurality of intake-flues for supplying heated air to said combustion-chambers, which intake-flues are arranged in parallel rows some distance apart, each row consisting of a number of tiers of fire-brick tiling, escape-flues leading from said combustion-chambers to the stack, said escape-flues being intermediate the intake-flues and adapted to heat the air as it passes through said intake-flues, substantially as set forth and described.

6. In a combined gas-producer and pair and finishing furnaces, the combination with the producer for driving off volatile gases from the fuel, of communicating chambers extending the entire lengths of the pair and finishing furnaces and adapted for distributing the gases throughout their lengths, combustion-chambers communicating with said first-mentioned chambers through a plurality of ports, and a plurality of passages for supplying heated air to the combustion-chambers, said air-passages opening into said combustion-chambers directly underneath the said communicating gas-ports so as to commingle the air and gases as they enter the combustion-chambers, substantially as described.

7. The combination with a recuperative pair and finishing furnaces, of a producer arranged in connection therewith at the rear thereof, combustion-chambers in each furnace, distributing-chambers arranged intermediate the combustion-chambers and the producer, dampers between the producer and the distributing-chambers for regulating the supply of gases from the producer, intake-flues in said furnaces for supplying heated air to the combustion-chambers, and escape-flues for the products of combustion leading from the combustion-chambers and arranged intermediate said intake flues, whereby the air passing through the intake-flues is heated in its passage, substantially as described.

8. The combination with a producer for generating combustible gases, and having means for regulating and controlling the admission of air to support combustion therein, of said producer having openings therein through which the fuel may be stabilized to secure slow combustion, a combustion-chamber, a distributing-chamber for receiving the combustible gases resulting from the decomposition of fuel in the producer, said distributing-chambers being located between said producer and combustion-chamber and provided with ports adapted for discharging the gases from the producer to the combustion-chamber at different points along its rear side, intake-flues for supplying heated air to the combustion-chamber, the intake-flues and the gas-ports discharging their contents together so as to commingle the air and gases as the enter the combustion-chamber, substantially as described.

9. The combination with two separate furnaces having a common dividing-wall, and a stack in common between them, of a gas-producer arranged in connection therewith and adapted for supplying combustible gases resulting from the decomposition of fuel therein to both furnaces; a longitudinal chamber located at the rear of each of said furnaces and communicating with said producer, said longitudinal chamber adapted for distributing the gases supplied thereto throughout its entire length; a combustion-chamber in each of said furnaces, into which the combustible gases are discharged through a plurality of ports from the distributing-chamber; and intake-flues in each furnace for supplying heated air to the combustion-chamber, said intake-flues discharging the heated air directly underneath the ports for the entrance of the gases so as to mix the air and gases as they enter said combustion-chamber, substantially as shown and described.

706,580. DRIVING-GEAR FOR VARYING SPEED AND REVERSING. WILLIAM MESSMER-SMITH and GEORGES F. MESSMER-SMITH, Dresden, Germany. Filed Jan. 10, 1902. Serial No. 89,159. (No model.)

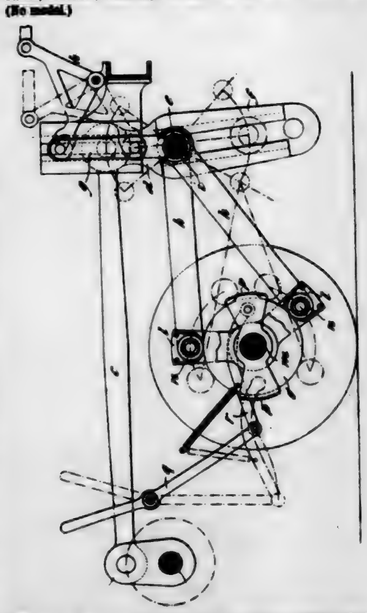

Claim.—Gear for varying speed comprising a driving-shaft having a crank, a rocking shaft and arms operated by said crank, an adjustable pin in slots of the rocking arms, arms connected to the adjustable pin and arranged to rock free on a driven shaft, cams on the latter arms arranged

to engage with and drive by friction a disk on the driven shaft, toothed segments loosely mounted on the driven shaft, means for swinging said segments, and teeth on the cam-rollers arranged to reverse the movement substantially as described.

706,581. ELECTRIC SWITCH. FRANK A. MERRICK, Johnstown, Pa., assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed June 26, 1901. Serial No. 66,105. (No model.)

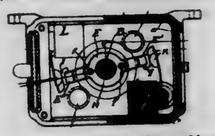

Claim.—1. In an electrical switch, the combination of an inclosing casing having vent-openings in one wall thereof, a rotary drum of conducting material journaled in said casing and insulated therefrom, said drum having two sets of contacts, and a set of contact-fingers for connection with each set of said contacts, the fingers of each set being connected in multiple with each other, and those fingers of each set nearest the vent-openings being set to retain their contact engagement longer than the other fingers of each set.

2. In an electrical switch, the combination with a rotary body or drum of conducting material carrying two sets of contacts, of two sets of contact-fingers, one set for engagement with each set of contacts, the fingers of each set being all connected in multiple in the switch-circuit, and means for actuating the said drum, said fingers being so arranged that one or more of each set will retain their contact engagement momentarily longer than the remaining fingers.

3. In an electrical switch, the combination with a rotary body or drum having two sets of contacts thereon, of two sets of relatively stationary contact-fingers, one set for engagement with each set of contacts, the fingers of each set being all connected in multiple, and an actuating-handle secured to the shaft or spindle which carries said body or drum, the contact-fingers of each set which are most distant from the said handle being placed to retain their contact engagement momentarily after the others.

4. In an electrical switch, the combination of a casing or inclosure, a shaft or spindle journaled therein, a body or drum of conducting material secured to the said shaft and carrying two sets of contacts, relatively stationary fingers for engagement with each set of contacts, the fingers of each set being connected in multiple, and a handle secured to an exteriorly-projecting end of the shaft or spindle, the wall of the casing at the opposite end thereof from the handle having vent-openings therein, and the contact-fingers adjacent to said openings being set to retain their contact engagement momentarily after the other fingers.

5. In an electrical switch, the combination of a box or casing, a shaft or spindle journaled therein, heads secured to the end portions of said shaft or spindle, a body or drum of conducting material secured to said heads and insulated therefrom and from the shaft or spindle, said body or drum having two radiating contact-carrying wings, a plurality of contact-fingers for engagement with the contacts of said wings, the fingers of each set being connected in multiple, and an actuating-handle for said shaft or spindle.

706,582. BORING-MACHINE. ROBERT R. MILLER, Toledo, Ohio. Filed Sept. 12, 1901. Serial No. 75,141. (No model.)

Claim.—1. In a boring-machine for overhead work, the combination of an extensible standard, a sprocket-wheel, E, with guide-wheels I, a sprocket-wheel and cylinder H containing the jaws *f* and mounted in the collar A, a belt-chain connecting the sprocket-wheels, a lever N connected by the cords O and P with the sliding bar W bearing the clamps V and X and the bar U sliding in the lower extension of the clamp V, bearing the idler R, having a right-angled extension through which the bar W slides and which supports the bit-holder and bit, all substantially as set forth.

2. In a boring-machine for overhead work, the combination of an extensible standard A B, a hinged floor-plate M, a lever N attached to cords O and P which pass up over idlers Q and R and are attached to pins S inserted in the clamp V and T inserted in the bar W, a bar U with an upright portion at right angles thereto supporting the boring-bit with its holder and having a slot through which the bar W slides, and a bar W supporting the clamps V and X with a slot in the lower extension of the clamp V through which the bar U slides, all substantially as set forth.

3. In a boring-machine for overhead work the combination of a sprocket-wheel and cylinder H, made to revolve in a collar A and held therein by the disk *c* and screws *d*, having antifriction ball-bearings *i*, and having a rectangular opening two sides of which approach each other toward the disk *c* made to receive the jaws *f*, with the screw *e* and nut *r*, substantially as set forth and for the purposes specified.

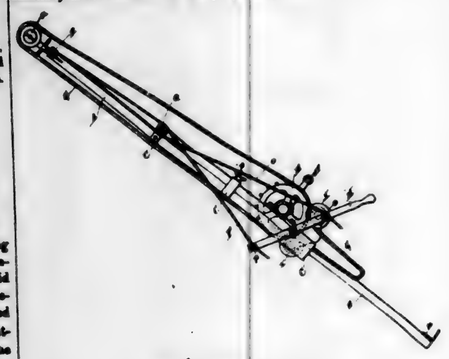

706,583. TIRE-SETTER. FRANK W. MITCHELL, Leaf River, Ill. Filed Apr. 14, 1902. Serial No. 102,809. (No model.)

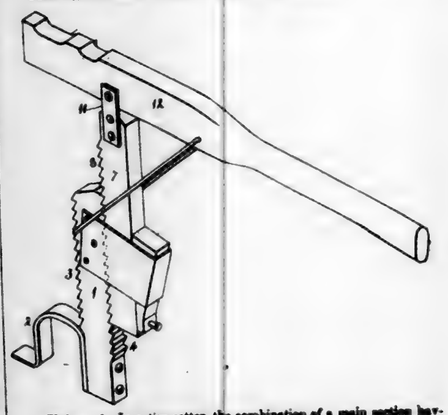

Claim.—1. In a tire-setter, the combination of a main section having teeth on both edges, an adjustable section having teeth engaging the teeth of one of the edges of the main section, a loop secured to the main section encircling the adjustable section, a wedge located in the loop and resting against the adjustable section, a lever having a pivotal connection with the adjustable section, and a bail pivotally connected to the lever and engaging the teeth on one edge of the main section.

2. In a tire-setter, the combination of a main section having teeth on both edges, an adjustable section having teeth engaging the teeth on one of the edges of the main section, a loop secured to the main section encircling the adjustable section, a wedge located in the loop and resting against the adjustable section, a lever having a pivotal connection with the adjustable section, a bail pivotally connected to the lever and engaging the teeth on one edge of the main section, and a foot connected to the lower end of the main section.

3. In a tire-setter, the combination of a main section having teeth, an adjustable section having teeth engaging the teeth of the main section, a loop secured to one of the sections and encircling the other section, a wedge located in the loop, a lever having a pivotal connection with the adjustable section, and a bail forming a connection between the lever and one of the sections.

706,584. CAR-TRUCK. GEORGE C. MURRAY, Chicago, Ill. Filed Mar. 8, 1902. Serial No. 97,253. (No model.)

Claim.—1. In a car-truck of the class described, the combination of transom or bolster columns connected by and with the usual arch-bars, a bolster movably mounted between the same, a spring-seat, rocking levers mounted between the transom-columns and supporting the spring-seat, and spring mechanism interposed between the spring-seat and the ends of the bolster, substantially as described.

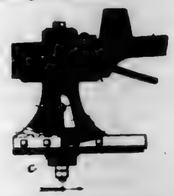

2. In a car-truck of the class described, the combination of transom or bolster columns provided with a platform inside the base thereof, a bolster movably mounted between such columns, a spring-plate, spring mechanism interposed between the spring-plate and the ends of the bolster, and independent rocking-lever arms mounted on the base at the bottom and inside the bolster-columns and pivotally engaged with the spring-plates, substantially as described.

3. In a car-truck of the class described, the combination of transom or bolster columns provided with a platform inside of the base thereof, a bolster movably mounted between such columns, a spring-plate, spring mechanism interposed between the spring-plate and the ends of the bolster, and rocking-lever arms on the base portions of the bolster-columns pivotally engaged with the spring-plates and provided with rocking curved surfaces of greater radius than the distance between the pivots and the curved surfaces, substantially as described.

4. In a car-truck of the class described, the combination of a pair of bolster-columns, toothed platforms arranged inside of such columns, a car-bolster movably mounted between such columns, a spring-plate arranged underneath the bolster and between the bolster-columns, toothed rocking levers mounted on the toothed platforms and pivotally engaged with the spring-plates, and spring mechanism interposed between the spring-plates and the lower surfaces of the ends of the bolster, substantially as described.

5. In a car-truck of the class described, the combination of a pair of bolster-columns, toothed platforms arranged inside of such bolster-columns at or near the base thereof, a car-bolster movably mounted between such transom-columns, spring-plates mounted between such bolster-columns, rocking-lever arms pivotally secured to such spring-plates and provided with curved toothed surfaces resting on the platform of greater radius than the distance between the pivotal points and such toothed surfaces, and spring mechanism interposed between the spring-plates and the lower surface of the bolster, substantially as described.

6. In a car-truck of the class described, the combination of a pair of bolster-columns, arch-bars connecting the same together at their upper and lower ends, toothed platforms arranged inside of such bolster-columns at their base portions, a bolster movably mounted between such transom-columns and provided with guides forming a channel of greater width than the bolster-columns to permit a limited movement thereof, spring-plates arranged underneath the bolster between the bolster-columns and provided with upwardly-extending side arms, toothed levers pivotally engaged by means of trunnions with the arms of the spring-plates and provided with curved toothed rocking surfaces engaging the toothed platforms and formed of curvatures, the radii of which are greater than the distance between such pivotal points and the curved surfaces, substantially as described.

706,585. CAR-TRUCK. GEORGE C. MURRAY, Chicago, Ill. Filed Mar. 11, 1902. Serial No. 97,730. (No model.)

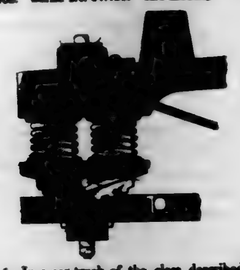

Claim.—1. In a car-truck of the class described, the combination of bolsters or transom-columns, a bolster movably mounted between the same, a spring-plate under each end of the bolster and between the bolster-columns, a platform arranged between the lower ends of such columns under each spring-plate, a plurality of rockers extending parallel with each other transversely of the car arranged directly under and attached to the spring-plates supporting the same and supported on the platform, and spring mechanism interposed between the bolsters and the spring-plates, substantially as described.

2. In a car-truck of the class described, the combination of bolsters or transom-columns, a bolster mounted between the same, spring-plates under the ends of the bolsters and between the bolster-columns, a toothed platform arranged between the lower ends of each pair of bolster-columns in fixed relation thereto, toothed rockers extending transversely of the car arranged directly under and pivotally attached to the spring-plate and supported on the toothed platform, and spring mechanism between the bolsters and the spring-plates and means for stepping the rocking movement of the rockers and thereby the end thrust of the bolster, substantially as described.

3. In a car-truck of the class described, the combination of bolsters or transom-columns, a bolster movably mounted between the same, spring-plates under each end of the bolsters and between the bolster-columns, spring mechanism between the bolsters and the spring-plates, platforms arranged underneath the spring-plates and between the bolster-columns, and rocker mechanism pivotally connected to the spring-plates mounted upon the platforms and provided with heeled ends which act as stops, substantially as described.

4. In a car-truck of the class described, the combination of bolsters or transom-columns, a bolster movably mounted between the same, spring-plates under each end of the bolster and between the bolster-columns, spring mechanism between the bolster and the spring-plates, a toothed platform under each spring-seat arranged between the lower ends of the bolster-columns, and a plurality of elongated toothed rockers pivotally connected with the under side of the spring-plates to rockingly support the same and act as stops to the movement thereof, substantially as described.

5. In a car-truck of the class described, the combination of bolsters or transom-columns, a bolster movably mounted between the same, spring-plates under each end of the bolster and between the bolster-columns, spring mechanism between the bolster and the spring-plates, a toothed platform under each spring-seat arranged between the lower ends of the bolster-columns, a plurality of elongated toothed rockers pivotally connected with the under side of the spring-plates to rockingly support the same and act as stops to the movement thereof, and shafts for pivotally connecting the spring-plates and rockers together, substantially as described.

706,586. AUTOMATIC ELECTROMECHANICAL SEMAPHORE-SIGNAL. JOHN J. MCGILL, Chicago, Ill., assignor of two-thirds to Eugene W. Richey and Samuel A. Johnson, Chicago, Ill. Filed Aug. 19, 1901. Serial No. 72,049. (No model.)

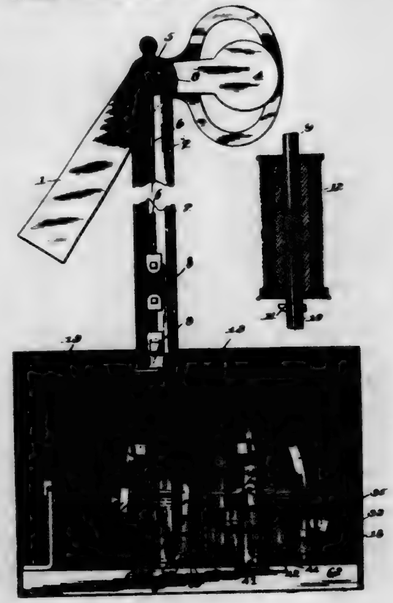

Claim.—1. In a railway-track signal the combination, of a mechanically-operated connection between said signal and a railway-track whereby said signal is released by the passing train, and mechanically moved to danger position, an electric switch-shifting magnet for controlling the electric circuits of said signal, a motor-magnet for moving and setting said signal to safety position when said magnet is energized, a circuit closed by the passing train for energizing the switch-shifting magnet, and a circuit subsequently closed by the said train for energizing said motor-magnet, substantially as set forth.

2. In a railway-track signal the combination, of a mechanically-operated connection between said signal and a railway-track whereby said signal is released by the passing train and mechanically moved to danger position, an electric switch-shifting magnet, and an electric motor-magnet, a circuit for each magnet, a track-circuit closer for each circuit, a switch for controlling both circuits and adapted to be shifted by the switch-shifting magnet, a means operated by the passing train for energizing the circuit containing the switch-shifting magnet to close the circuit at the switch containing the motor-magnet, and a means operated by the passing train for subsequently energizing said motor-magnet, whereby said signal is moved and set to safety position, substantially as set forth.

3. In a railway-track signal the combination, of a mechanical means, located at one end of a block for setting said signal to "danger" by the passing train, an electric motor-magnet for returning said signal to "safety," a circuit-closer operated by the passing train, located at the other end of the block, a circuit containing said motor-magnet and adapted to be closed by said circuit-closer, a switch-shifting magnet, a circuit containing said shifting-magnet, and a circuit-closer adapted to be operated by the passing train, located intermediate of the first-named circuit-closer and the said mechanical means, for setting the signal, and an electric switch for controlling both circuits operated by the switch-shifting magnet, substantially as set forth.

4. In a railway-track signal the combination, of a track pressure-bar, a semaphore, a motor-magnet adapted to move said semaphore to a position of safety, and to open its own circuit, when energized, a means for retaining the said semaphore in the position to which it is moved by said magnet, and a connection between said pressure-bar and said means adapted to release said semaphore when said pressure-bar is depressed by a passing train, substantially as set forth.

5. In a railway-track signal the combination, of a track pressure-bar, a semaphore adapted to automatically return to the danger position, a solenoid, an armature-core thereof connected to said semaphore and adapted to move it to the safety position, a detent carried by said armature, a lever adapted to engage said detent for retaining said semaphore in said position, a connection between said lever and said pressure-bar, whereby said lever is adapted to be disengaged from said detent, a latch for holding said lever and said detent separated, said latch adapted to be tripped by said armature when said solenoid is energized, and a means for bringing said lever and said detent again into engagement, substantially as set forth.

6. In a railway-track signal the combination, of an electric motor-magnet adapted to move a semaphore to safety position when energized, a retaining device for holding said semaphore in position to which it has been moved by said magnet, a semaphore adapted to automatically return to danger position when so released, a track-bar adapted to be moved by a passing train, and a connection between said bar and said retaining device, for releasing said semaphore, substantially as set forth.

7. In a railway-track signal the combination, of an electric motor-magnet adapted to move a semaphore to safety position when energized, a retaining device for holding said semaphore in position, to which it has been moved by said magnet, a semaphore adapted to automatically return to danger position when so released, a track-bar adapted to be moved by a passing train, a connection between said bar and said retaining device for releasing said semaphore, an electric circuit containing said motor-magnet, and a circuit-controller adapted to be operated by a passing train located near the track at a remote point from the semaphore, substantially as set forth.

8. In a railway-track signal the combination, of a track pressure-bar adapted to release a semaphore, a semaphore adapted to automatically return to danger position when released, a circuit containing a switch-shifting magnet, adapted to be closed when said semaphore is released, an electric motor-magnet adapted to move said semaphore to safety position when energized, a means for energizing said switch-shifting magnet operated by the passing train, and a switch shifted by said switch-shifting magnet whereby its own circuit is broken, and the circuit containing said motor-magnet is closed and a means operated by the passing train for energizing said motor-magnet, substantially as set forth.

9. In a railway-track signal the combination, in a weatherproof case 12, a tubular support 2, a semaphore mounted upon a crank in the top of said support, an insulated bottom 14, mechanism for operating said semaphore in said case, and a connecting-rod between said semaphore-crank and said mechanism contained within said tubular support, substantially as set forth.

10. In a railway-track signal the combination, of a semaphore, a means for moving said semaphore to safety position, a track-bar adapted to be moved by a passing train, a connection between said track-bar and said semaphore for releasing said semaphore, and a means coacting with said bar to release said semaphore, and adapted to independently release said semaphore in the event of the connection between said bar and said semaphore becoming removed or otherwise inoperative, substantially as set forth.

11. In a railway-track signal the combination, of a track pressure-bar, a semaphore adapted to return to danger position when released, a rod connecting said semaphore and said pressure-bar and adapted to release said semaphore when moved in one direction, and to hold a retaining-lever in position when moved in the other direction, an electric motor for moving said semaphore to safety position, a retaining device for holding said semaphore in the said position, and a spring adapted to displace said retaining device when said bar is removed, substantially as set forth.

706,587. METALLIC SLEEPER OR TIE. JOHN I. NEWSOME, Vicksburg, Miss. Filed Dec. 16, 1901. Serial No. 86,107. (No model.)

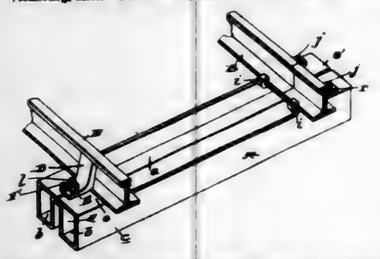

Claim.—1. A sleeper or tie formed of sheet metal and comprising a longitudinal central portion of inverted-U shape in cross-section, bottom walls and side walls serving in conjunction with the longitudinal central portion to form channels, and a top wall supported by the longitudinal central portion.

2. A sleeper or tie formed of sheet metal, and comprising a longitudinal central portion of inverted-U shape in cross-section, bottom walls and side walls serving in conjunction with the longitudinal central portion to form channels, and top walls arranged at opposite ends of the sleeper or tie so as to expose the portions of the channels between them; said top walls having their meeting edges arranged on the longitudinal central portion, and being provided with openings to receive rail-fastening devices.

3. The combination of a sleeper or tie having a top wall, a rail arranged on said top wall, a chair-bolt disposed below the top wall and having an upwardly-extending, hook-shaped head at one end engaging one edge of the rail-base and one edge of the top wall, and an arm at its opposite end extending above the top wall at the opposite side of the rail-base with reference to the hook, and a combined rail holder and brace secured on the arm of the bolt and having its upper portion arranged against the under side of the head of the rail so as to support the same.

4. The combination of a sleeper or tie having a top wall provided with an opening, a rail arranged on said top wall, a chair-bolt disposed below the top wall, and having an upwardly-extending hook-shaped head at one end engaging one edge of the rail-base, and one edge of the top wall, and an arm at its opposite end extending upwardly through the opening in the top wall of the sleeper, and provided with a beveled upper edge and the reduced and threaded portion, a rail-holder resting over and beveled in conformity to the rail-base and the edge of the arm of the bolt, and having an aperture receiving the threaded portion of the bolt, and a nut securing the holder on the bolt.

5. The combination with a sheet-metal tie comprising a longitudinal central portion of inverted-U shape in cross-section having apertures *f g* in its top, bottom and side walls serving in conjunction with said longitudinal central portion to form channels, and top walls having their meeting edges arranged on the longitudinal central portion and provided with notches forming an aperture *h* coincident with the aperture *g;* of a rail arranged on the top walls of said sleeper, a chair-bolt arranged in the longitudinal central portion of the sleeper, and having an upwardly-extending hook-shaped head at one end extending through the aperture *f* and engaging the inner ends of the top walls of the sleeper, and one edge of the rail-base, and an arm at its opposite end extending through the apertures *g h* of the sleeper, a rail-holder arranged on said arm and resting over the rail-base, and means for securing said brace on the arm of the bolt.

6. The combination with a sheet-metal tie comprising a longitudinal central portion of inverted-U shape in cross-section having apertures *f g* in its top, bottom and side walls serving in conjunction with said longitudinal central portion to form channels, and top walls having their meeting edges arranged on the longitudinal central portion and provided with notches forming an aperture *h* coincident with the aperture *g;* of a rail arranged on the top walls of said sleeper, a chair-bolt arranged in the longitudinal central portion of the sleeper, and having an upwardly-extending hook-shaped head at one end extending through the aperture *f* and engaging the inner ends of the top walls of the sleeper, and one edge of the rail-base, and an arm at its opposite end extending through the apertures *g h* of the sleeper, and provided with a threaded portion, a rail-holder arranged on the threaded portion of the bolt, and provided with an aperture *n*, a nut on the threaded portion of the bolt above the holder, and a pin arranged at the side of the nut, and having the beveled end inserted between the meeting edges of the top wall of the sleeper.

7. A rail-fastening means comprising a chair-bolt having an upwardly-extending hook-shaped head at one end, and an upwardly-extending arm at its other end provided with a beveled upper edge and a reduced and threaded portion, a rail-holder resting over and beveled in conformity with the edge of the arm of the bolt, and a nut securing the holder in the bolt.

8. A rail-fastening means comprising a chair-bolt having an upwardly-extending hook-shaped head at one end provided at its inner side with a plurality of abutments, and also having an upwardly-extending arm at its other end provided at its inner side with a plurality of abutments, and a rail-holder secured on said arm of the bolt.

9. The combination of a sleeper or tie having a top wall provided with an opening, a rail arranged on said top wall, a chair-bolt disposed below the top wall and having an upwardly-extending hook-shaped head at one end provided with an abutment j^2 engaging one edge of the rail-base, and an abutment j^3 engaging one edge of the top wall, and also having an arm at its opposite end extending upwardly through the opening in the top wall of the sleeper and provided with an abutment j^1 engaging one edge of said wall, and an abutment j^3 engaging one edge of the rail-base, and a rail-holder resting over the rail-base and secured on said arm of the chair-bolt.

10. The combination of a sleeper or tie formed of sheet metal, and comprising a longitudinal central portion of inverted-U shape in cross-section, bottom walls and side walls serving in conjunction with the longitudinal central portion to form channels, and top walls arranged at opposite ends of the sleeper or tie so as to expose the portions of the channels between them; the top walls having their meeting edges arranged on the longitudinal central portion, and those at one end of the sleeper or tie being provided at either side of the longitudinal central portion with apertures *f'*, the meeting ends of two rails arranged on the said apertured top walls of the sleeper or tie, chair-bolts connecting said rails and top walls, and a plate bolted to and connecting said meeting ends of the rails and having a depending end portion or portions extending below the plane of the upper side of the sleeper or tie, and arranged to engage the same.

706,588. APPARATUS FOR FEEDING WEIGHING-MACHINES. WILLIAM R. HENDERSON, Cambridge, Mass., assignor to the New England Automatic Weighing Machine Company, Portland, Me., a Corporation of Maine. Filed Feb. 5, 1900. Serial No. 603,602. (No model.)

Claim.—1. In a feeding apparatus for weighing-machines, the combination of a chute adapted to receive a supply of material at its upper end, the height of said chute being greater than its transverse dimensions, a movable receptacle arranged to receive material from the lower end of said chute and to transmit the same to a weighing-machine, said receptacle being operated by the weight of a predetermined amount of said material, and means operative with the movements of said receptacle for controlling the admission of the material to the upper end of said chute.

2. In a feeding apparatus for weighing-machines, the combination of a chute adapted to receive a supply of material at its upper end, the height of said chute being greater than its transverse dimensions, a movable receptacle adapted to receive material from said chute and to transmit the same to a weighing-machine, said receptacle being provided with a counterbalance the weight of which is substantially equal to the weight of said receptacle together with a quantity of material sufficient to fill the same to a predetermined depth, a valve located at the upper end of said chute, and operating connections between said valve and receptacle.

3. In a feeding apparatus for weighing-machines, the combination of a movable receptacle arranged to be operated when partially filled with material, a positively-driven feeding device for transferring material from said receptacle to a weighing-machine, and means operated by the movements of said receptacle for controlling the admission of material thereto, and thereby maintaining a substantially constant depth of material above the feeding device.

4. In a feeding apparatus for weighing-machines, a stationary supply-chute, a stationary casing adapted to deliver material to a weighing-machine, a movable receptacle located between said stationary parts and connected thereto by flexible dust-proof connections, and means operative with said receptacle for controlling the admission of material to said chute.

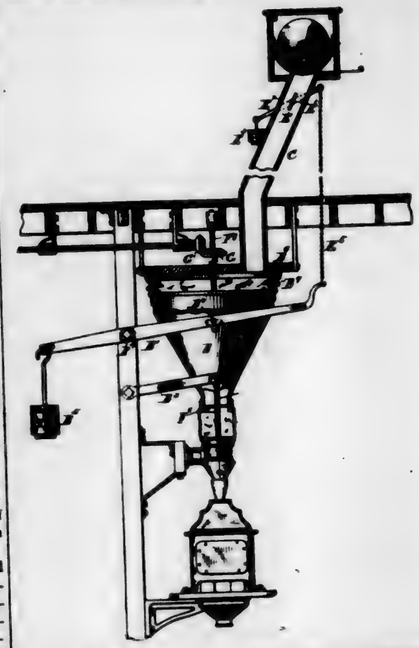

5. In a feeding apparatus for weighing-machines, in combination, a positively-driven feeding device, a counterbalanced, vertically-movable receptacle located above the same, a chute adapted to supply material to said receptacle, flexible, dust-proof connections between said receptacle and the said chute and feeding device respectively, and a valve adapted to be operated by the movements of said receptacle and to control the admission of material thereto.

6. In a feeding apparatus for weighing-machines, a feeding device comprising in combination a casing containing a disk provided with one or more concentric, horizontal slots, an agitator located above and adjacent to said disk and adapted to rotate continuously, and means for rotating said agitator.

7. In a feeding apparatus for weighing-machines, a casing containing a disk provided with one or more concentric, horizontal slots, each slot forming a complete circle, in combination with an agitator adapted to rotate concentrically with said slots and provided with projections adapted to enter and move therein, and means for rotating said agitator.

8. In a feeding apparatus for weighing-machines, a casing containing a disk comprising a number of concentric rings connected on their bottom faces by radial spokes and spaced apart to provide a series of slots between them, in combination with an agitator comprising a number of radial arms and adapted to be rotated adjacent to said disk, said arms and spokes being unequal in number, and means for rotating said agitator continuously.

9. In a feeding apparatus for weighing-machines, the combination of a casing containing a slotted disk, a vertically-movable receptacle located above said casing, a valve operated by the movement of said receptacle for controlling the admission of material thereto, a rotary agitator above said disk, and a shaft connected to said agitator and adapted to be rotated continuously, said shaft extending upward through said movable receptacle and having near the lower end thereof one or more projecting pins.

706,589. STOVE. WILLIAM H. HULL, Philippi, W. Va. Filed Sept. 4, 1901. Serial No. 74,200. (No model.)

Claim.—1. In a cooking-stove, the combination of a lower heating-oven, a cooking-oven located above the same and having a flue surrounding the top, bottom and opposite ends of the cooking-oven, the top of

the heating-oven and the bottom of the cooking-oven forming the walls of the flue portion between the two ovens, and the bottom of the lower oven being formed by the bottom of the stove, a fire-box projected in front of the heating-oven and having its top located below the main top of the stove and above the top of the lower oven to form a seat or support for a water-tank, the back of the fire-box being terminated substantially at the top of the lower oven, whereby a direct communication is had between the fire-box and the flue or space between the two ovens, and a vertically-swinging damper pivoted substantially at the intersection of the inner edges of the front and bottom flue portions and capable of swinging vertically toward the fire-box to open and close the lower end of the vertical flue and the front end of the horizontal flue, whereby either of these flues may be wholly closed.

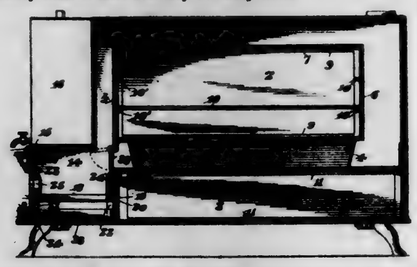

2. In a stove, the combination with a fire-box, of an endwise-removable grate having legs, and an ash-pan inserted through an opening in the front of the fire-box and lying snugly between the legs to prevent accidental displacement of the grate.

3. In a stove, the combination with a fire-box having draft-openings formed in the front thereof, and a door at one end, of a grate insertible through the door and having draft-openings corresponding to the similar openings in the fire-box, and an ash-pan removably inserted through an opening in the front of the fire-box and having its outer end normally projected externally of the fire-box, and a slidable damper mounted upon the projected portion of the ash-pan.

706,590. VEHICLE-TIRE. FRED E. OSGOOD and FRANKLIN F. BRADLEY, Chicago, Ill., assignors of one-third to Richard A. Kent, Chicago, Ill. Filed Feb. 17, 1902. Serial No. 94,549. (No model.)

Claim.—1. The process of manufacturing vehicle-tires which consists in inclosing within an outer covering a core of less bulk than the space within the covering and composed of a mixture of an expansible material and a chemical capable of generating gas when heated, and heating said mixture to generate a gas and permanently expand the core to completely fill the space within the outer covering without expanding said covering the initial exterior diameter of which remains the same in the finished tire.

2. The process of manufacturing vehicle-tires which consists in inclosing within an outer covering a core of less bulk than the space within the covering composed of a mixture of rubber stock and ammonium carbonate, and subjecting the tire to heat whereby the ammonium carbonate is decomposed and the core expanded to fill the space within the outer covering without expanding said covering the initial exterior diameter of which remains the same in the finished tire.

3. The process of manufacturing vehicle-tires which consists in forming a tube of the size desired for the tire, inclosing within the tube a core of less bulk than the space within the tube composed of a mixture of expansible material and a gas-producing chemical, decomposing the chemical and thereby generating gas and expanding the core to fill the space within the tube without expanding said tube the initial exterior diameter of which remains the same in the finished tire, and expelling the air from the space within the tube as the core expands.

4. The process of manufacturing vehicle-tires which consists in forming a rubber tube of a diameter equal to the size of the tire, inclosing in the tube a core of less bulk than the space within the tube composed of a mixture of rubber stock and ammonium carbonate, subjecting the tire to sufficient heat to vulcanize the rubber tube and decompose the ammonium carbonate thereby generating a gas and expanding the core to fill the space within the tube without expanding said tube the initial exterior diameter of which remains the same in the finished tire, and expelling the air from the space within the tube as the core expands.

706,591. SYSTEM OF ELECTRIC DISTRIBUTION. HORACE F. PARSHALL, London, England, assignor to the General Electric Company, a Corporation of New York. Filed Dec. 7, 1898. Serial No. 739,457. (No model.)

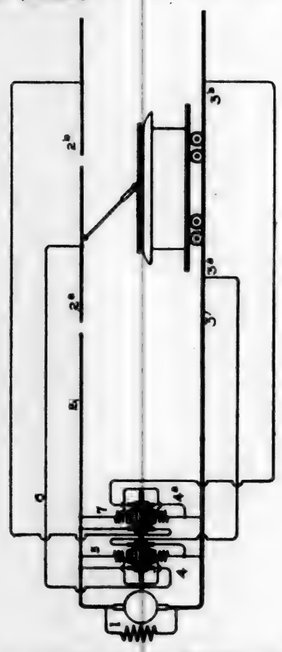

Claim.—1. A system of electrical distribution, comprising a generator, a booster, and a motor driving the booster, said motor having a constant-field magnet, and an armature-current fluctuating with the load on the system.

2. A system of electrical distribution, comprising a generator, a feeder, a motor having an armature in the feeder branch, a field-magnet circuit independent of the feeder branch, and a booster operated by said motor.

3. A system of electrical distribution, having its translating devices fed through a ground branch or earth-return and including metallic return-paths connecting with the return-feeder at different distances from the distributing-point, a motor having a constant-field magnet, an armature in the feeder branch, and a booster driven by the motor in a metallic return-path.

4. A system of electrical distribution, having its translating devices fed through a ground branch or earth-return, and including metallic return-paths connecting with the return-conductor at different distances from the distributing-point, a plurality of boosters connected in the several metallic return-paths, and motors for driving said boosters, having constant-field magnets and armatures in circuit with the several feeders, for the purpose described.

706,592. WASHING-MACHINE. LAURA B. PARKER, Ogden, Utah. Filed Nov. 14, 1901. Serial No. 82,397. (No model.)

Claim.—1. In a washing-machine of the kind described, the combination with the arm of the oscillating rubber having a projecting wrist-pin; of a bracket having perforated lugs receiving said wrist-pin, a pitman also perforated to receive the wrist-pin and lying between the lugs, and a spring-tension device connected to the bracket and also to the top of the washing-machine substantially as described.

2. An attachment for washing-machines, consisting of a coupling adapted to be attached to the actuating devices for the rubber, a spring attached to the said coupling and having an anchorage on the top of the washing-machine case, said spring and coupling having a lateral snap connection for permitting quick and easy lateral engagement or disengagement, substantially as described.

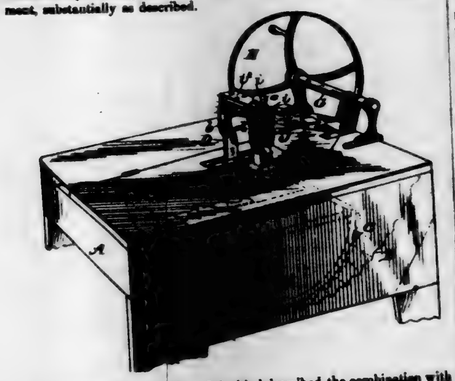

3. In a washing-machine of the kind described, the combination with the arm and pitman of the oscillating rubber; of a bracket-coupling connected to the joint between said arm and pitman, spring-latches in the end of the said coupling, a helical spring having a diametrical claw and a screw passing through the same and also between the latches and an anchorage for the lower end of the spring, substantially as described.

4. In a washing-machine of the kind described, the combination with the arm and pitman of the oscillating rubber; of a coupling attached to the joint of said arm and pitman, a helical spring, having at one end a diametrical claw and a stem connecting it to the coupling, and at the other end a diametrical claw with a hinged clevis adapted to connect it to the top of the washing-machine substantially as described.

706,593. COMBINED CORNSTALK HARVESTER AND SHOCKER. HERMAN PECKMAN, Argentine, Kans. Filed June 20, 1901. Serial No. 65,273. (No model.)

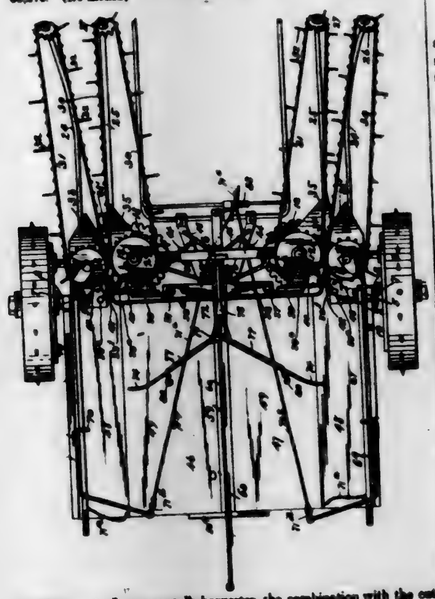

Claim.—1. In a cornstalk-harvester, the combination with the cutting apparatus, of two dumping-platforms, one at the rear of each cutting apparatus, and a vertically-movable partition separating said platforms, and a shock-former, the parts of which are located above said platforms, said shock-former consisting of two hinged frames located at the side of the machine and capable of swinging inwardly, and annularly-curved frames mounted to slide upon said hinged frames, substantially as set forth.

2. In a cornstalk-harvester, the combination with the cutting apparatus, of two dumping-platforms, one at the rear of each cutting apparatus, and a vertically-movable partition separating said platforms, a shock-former, the parts of which are located above said platforms, said shock-former consisting of two hinged frames located one at each side of the machine and capable of swinging inwardly, and annularly-curved frames mounted to slide upon said hinged frames, and a shock-compresser mounted above the partition, substantially as set forth.

3. In a cornstalk-harvester, the combination with the cutting apparatus carried at each side of the machine, a platform arranged at the rear of each cutting apparatus to receive the severed stalks in standing position, a hinged compresser-frame having its rearward end forked and slotted, a windlass, ropes passed through the slots in said forked ends of the compresser-frame and connected to the windlass, substantially as set forth.

4. In a cornstalk-harvester, the combination with the cutting apparatus, of two platforms mounted at the rear of each cutting apparatus, frames hinged at the outer side and above each platform and capable of swinging inwardly, and a bail-shaped frame mounted to slide upon the hinged frame longitudinally, substantially as set forth.

5. In a cornstalk-harvester, the combination with a cutting apparatus, of two platforms mounted at the rear of each cutting apparatus, frames mounted at the outer side and above each platform and capable of swinging inwardly, and a bail-shaped frame mounted to slide upon the hinged frame longitudinally, a friction device, and ropes connected to the bail-shaped frame and the friction device, whereby as the shock is being formed the density may be controlled by increasing the friction upon the rope as it slides past the friction device, substantially as set forth.

706,594. BICYCLE-PEDAL. ANTHONY PERRESS, Rochester, N. Y. Filed Sept. 10, 1901. Serial No. 74,838. (No model.)

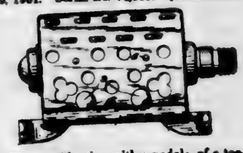

Claim.—1. The combination with a pedal; of a toe-clip comprising arms pivoted to the under side of the pedal to swing laterally thereof, means connecting the arms to move in unison, and means for clamping the arms in adjusted position, substantially as described.

2. The combination with a pedal; of pivot-pins upon the pedal, a toe-clip comprising arms formed with slots and open bearings, said bearings receiving the pivot-pins, clamping-bolts passing through the pedal and slots, and nuts upon said bolts, substantially as specified.

3. The combination with a pedal having a transverse rib; of a toe-clip comprising arms pivoted to the under side of the pedal to swing laterally thereof, means connecting the arms to move in unison, clamping-bolts passing through the pedal and arms and having their heads formed with flattened faces to engage said rib, and nuts upon said bolts, substantially as described.

4. The combination with a pedal, of a toe-clip comprising arms pivoted to the pedal and formed with slots and provided with grippers, interengaging members on the arms to adapt them to move in unison, bolts upon the pedal passing through said slots, nuts upon the bolts, and a bridge-plate connecting the nuts, substantially as specified.

706,595. WINDOW-FASTENER. WILLIAM W. POTTER, Pawtucket, R. I. Filed Nov. 12, 1901. Serial No. 82,040. (No model.)

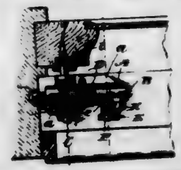

Claim.—1. The combination of a casing or support, bolts mounted to move crosswise of each other, means for transmitting motion from one bolt to the other, and means to cause one of said bolts to move successively longitudinally and rotatably, comprising a guide that has a part

that extends parallel with the bolt and a part that extends crosswise thereof, and a part to coact with said guide, substantially as described.

2. The combination of a casing or support, bolts mounted to move crosswise of each other, a knob on one of the bolts, a guide composed of a right-angled slot in the casing or support, engaged by the knob-shank, and a rack-and-pinion connection between the two bolts, substantially as described.

3. The combination of a casing or support, spring-actuated bolts mounted to move crosswise of each other, a rack-and-pinion connection between them, and a spring-actuated knob having a sliding connection with one of the bolts, adapted to engage a cavity in the casing or support, substantially as described.

4. The combination of a casing or support, spring-actuated bolts mounted to move crosswise of each other, and adapted respectively to enter cavities in the window-frame and the sash, a motion-transmitting connection between them, the frame engaging one of said bolts being movable longitudinally and rotatably, and being situated above the other bolt, a knob having a sliding connection with said bolt, a guide composed of a right-angled slot engaged by the knob-shank, and a cavity at one extremity of the right-angled slot to coact with the sliding knob substantially as described.

706,596. **FIRE-SCREEN.** CLAUD POTTER, Martin, Tenn. Filed June 1, 1901. Serial No. 63,737. (No model.)

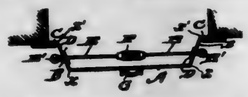

Claim.—A fire-screen formed of a single piece of sheet metal and comprising a body portion A bent at X to form the sides B, the free ends of the said sides being bent at X' to form lateral extensions parallel to but in the rear of the plane of the body portion of the screen, the said sides B, having apertures arranged therein, reinforcing-plates D, having apertures registering with the apertures in the said sides, rods projecting through the apertures and having their inner ends threaded, a turnbuckle engaging the threaded ends of the rods, handle portions formed upon the outer ends of the rods and adapted to bear against the said sides of the screen, and a bail-handle secured to the body portion of the screen, all arranged substantially as and for the purpose set forth.

706,597. **GEM-CUTTING MACHINE.** GODFREY PERPER, JAMES HOGAN, and REINHOLD DOEHLER, New York, N. Y. Filed Oct. 31, 1901. Serial No. 80,606. (No model.)

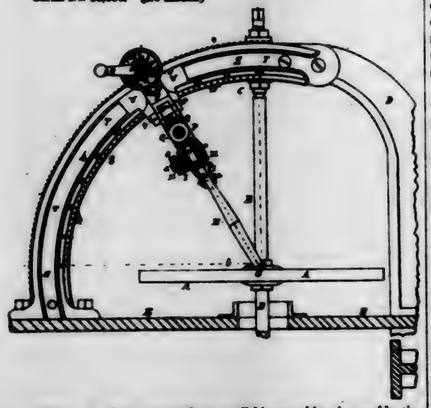

Claim.—1. In a gem cutting or polishing machine the combination with a lapidary-wheel having a horizontal grinding or polishing surface, in one or more vertical parallel planes with the axis of the spindle of the wheel, a stationary graduated quadrant arc-rail secured above said surface to the machine and having a slide guided and adjustable to all degrees of the said quadrant and connected to a radial jointed working arm and by it to a radial arm of a gem-stick socket and a holder to which is attached a radial gem-stick, placing the gem concentric with said arc-rail and its periphery in contact with said grinding-surface, and its axis longitudinal and central with the axis of said gem-stick which is revolubly in said socket to all degrees of a circle in a vertical plane across the gem's axis, and is adjustable for closely placing and grinding tangential facets upon the surface of the gem, substantially as and for the purpose set forth.

2. In a gem cutting or polishing machine the combination with a lapidary-wheel having a horizontal grinding or polishing surface in one or more vertical parallel planes with the axis of the spindle of the wheel, a stationary graduated quadrant arc-rail above the said surface and having a slide guided and adjustable to all degrees of said quadrant and connected to a working arm with a radial joint and vertical pivot on one end and with a vertical joint and horizontal pivots to connect with a radial gem-stick socket and holder and said socket and holder being provided with a gem-stick attached carrying a gem in the center of said arc-rail and said holder with the gem-stick and being held centrally and longitudinally with the axis of the gem and revolubly in said socket and adjustable to all degrees of a circle in a vertical plane and concentric to said axis of the gem for closely placing and grinding or polishing minute tangential facets over the surface of the gem and said socket and holder and gem-stick and gem being provided as aforesaid, are movable in a vertical plane for inspection of the gem and in a horizontal plane for grinding, substantially as herein shown and set forth.

3. In a gem cutting or polishing machine the combination with a lapidary-wheel having a horizontal grinding or polishing surface in one or more parallel planes with the axis of the spindle of the wheel, a stationary graduated quadrant arc-rail, above said surface and having an adjustable slide to all degrees of said quadrant and said slide connected and pivoted to a two-arm working lever in a radial plane and the loose arm of said lever attached by a horizontal pivot to a radial gem-stick socket in which is held and guided in line with it a tooth or notch and pawl graduated and numbered gem-stick holder with a longitudinal central gem-stick carrying a gem which is concentric with the said arc-rail and its periphery resting upon said grinding-surface and its axis in the same plane with the axis of said socket-holder and gem-stick, substantially as herein set forth.

4. In a machine for cutting gems the combination comprising a horizontal revolving lapidary-wheel, a quadrant guide-rail secured with one end to the bracket of the top bearing of the spindle of said wheel and the other end of said rail to the table of the machine to brace the machine rigidly, a slide in the groove of said rail with a radius center in the gem's center and a radial connection consisting of a gem-stick and gem-stick holder connected with a cross-head and the cross-head connected with a working arm and then pivoted to a radial arm carrying a pinion-arbor, a pinion engaging a toothed periphery on the said quadrant-rail, substantially as and for the purpose to move the said slide over the scale on said rail.

5. In a machine for cutting gems the combination comprising a radial revolvable gem-stick holder in the axis of the gem guided in a socket of a cross-head pivoted to a working arm and said gem-stick holder carrying a revolving spring-pawl around a stationary ratchet-wheel secured upon said cross-head socket, substantially as and for the purpose herein set forth.

6. In a machine for cutting gems the combination comprising a gem-stick holder with a socket-opening to receive a cylindrical shank of the gem-stick and said socket-opening having a longitudinal key-opening in which a loosely-pivoted key is held and filling in the removed portion of said opening, but slightly increasing the diameter on the outside periphery at this key, the outside periphery of the socket being threaded and a proper screw-cap placed over the socket by these means the gem-stick shank is clamped very rigidly in said socket.

7. In a machine for cutting gems a combination comprising a horizontal revolving lapidary-wheel, a quadrant guide-rail over it in a vertical plane and concentric with the gem upon the cutting-surface of the wheel and said gem held with a gem-stick held radial with a revolvable gem-stick holder guided in a socket, of a cross-head with a fixed ratchet-wheel and the gem-stick holder carrying a spring-pawl over the periphery of said ratchet, and said cross-head being pivoted to swing vertically on a working arm pivoted to a radial arm to swing laterally and said radial arm being connected to a slide guided in the groove of the quadrant guide-rail and said radial arm carrying a lateral pinion-arbor and pinion of which said pinion engaging in the peripherical gear-rim on the quadrant guide-rail, and of which the said pinion-arbor is furnished with a hand-crank to adjust said lever-arm with the said slide to any angle indicated on the scale upon said quadrant-rail, or indicated by the more reduced scale at the arbor of the pinion-gear, substantially as and for the purpose herein set forth.

8. In a gem-cutting machine, which consists of a radial gem-stick and gem-stick holder and a fixed stationary quadrant guide-rail both in vertical planes and with the center of the radius in the gem, and a working arm pivoted in the radius, turning in a lateral plane and the gem-stick holder pivoted to a working arm movable in a vertical plane and revolvable on its axis and provided for all turns and parts thereof controllable with pawl and tooth or notch graduations, substantially as and for the purpose herein set forth.

706,598. **ROTARY TRANSFORMING APPARATUS.** EDWIN W. RICE, Jr., Schenectady, N. Y., assignor to the General Electric Company, a Corporation of New York. Filed Dec. 20, 1899. Serial No. 742,083. (No model.)

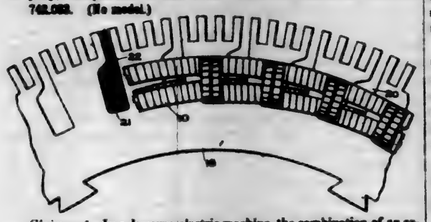

Claim.—1. In a dynamo-electric machine, the combination of an armature-core having two sets of slots, one set consisting of numerous small slots and the other set of a fewer number of larger slots, an armature-winding located in the larger slots and adapted to be connected by suitable connections with alternating-current mains, another armature-winding located in the set of small slots, and a commutator connected to the last-mentioned winding.

2. In a rotary transforming device, a plurality of massed coils or windings, connected to the alternating-current terminals, a commutator, and a plurality of distributed coils or windings connected to the commutator.

3. In a rotary transforming device, a plurality of massed coils or windings of fine wire, connected to the alternating-current terminals, a commutator, and a plurality of distributed coils or windings connected to the commutator and overlying the massed windings.

4. In a rotary transforming device a plurality of massed coils or windings of fine wire, connected to the alternating-current terminals, a commutator, and a plurality of distributed coils or windings connected to the commutator.

5. In a dynamo-electric machine, a distributed winding of formed insulated coils, in slots, connected to the direct-current terminals, and a smaller number of coils of finer wire, formed and separately insulated, connected to the alternating-current terminals.

6. In a dynamo-electric machine, a distributed winding of formed insulated coils, in slots, connected to the direct-current terminals, and a smaller number of coils of finer wire connected to the alternating-current terminals.

7. In a dynamo-electric machine, a distributed winding of formed insulated coils, in slots, connected to the direct-current terminals, and a smaller number of coils of finer wire, formed and separately insulated, wound in slots opening into the first-named slots, connected to the alternating-current terminals.

706,599. **ELECTRIC CABLE.** TITO RENATI, Florence, Italy. Filed Jan. 30, 1901. Serial No. 45,208. (No model.)

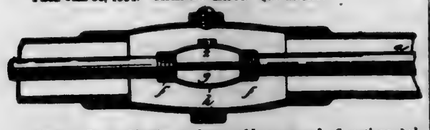

Claim.—In combination an inner cable composed of sections, hollow coupling-sleeves connecting the ends of said sections and having an opening therein, tube-sections encircling said cable-sections and having couplings connecting the adjoining ends thereof, said outer coupling-sleeves having an opening alining with the opening in the inner coupling-sleeve and means for closing said opening, substantially as described.

706,600. **CARBURETER.** JOHN ERNST, Waterloo, Iowa. Filed Feb. 26, 1901. Serial No. 48,989. (No model.)

Claim.—1. In a carburetor for gas-machines, the combination with a mixing-tank having an oil-inlet and gas-outlet; of an air-inlet pipe entering the tank above the level of the gasolene, and a number of small tubes communicating with and depending from said pipe into the gasolene and each pierced with minute perforations.

2. In a carburetor for gas-machines, the combination with a mixing-tank having an oil-inlet and gas-outlet; of an air-inlet pipe entering the tank above the gasolene, a ring-shaped distributer-pipe communicating with said inlet-pipe and also standing above the level of the gasolene, and a number of small tubes communicating with and depending from said distributer into the gasolene and each pierced with minute perforations.

3. In a carburetor for gas-machines, the combination with a mixing-tank having an oil-inlet and gas-outlet; of an air-inlet pipe entering the tank, a distributer-pipe communicating with said inlet-pipe and standing within the tank above the level of the gasolene, and a number of small tubes leading from the distributer downward below the level of the gasolene and each pierced with a number of minute perforations in its side walls, as and for the purpose set forth.

4. In a carburetor for gas-machines, the combination with a mixing-tank, the gas-outlet and air and oil inlet pipes, a valve in the latter, a float, and adjustable connections between the float and valve-stem whereby the float operates the valve at varying levels of the oil; of a distributer-pipe connected with the air-inlet, and a series of small tubes depending from said pipe beneath the normal level of the oil and there provided with minute perforations, all as and for the purpose set forth.

706,601. **PUNCHING-MACHINE.** JOHN R. SCOTT, Philadelphia, Pa. Filed Aug. 20, 1901. Serial No. 73,315. (No model.)

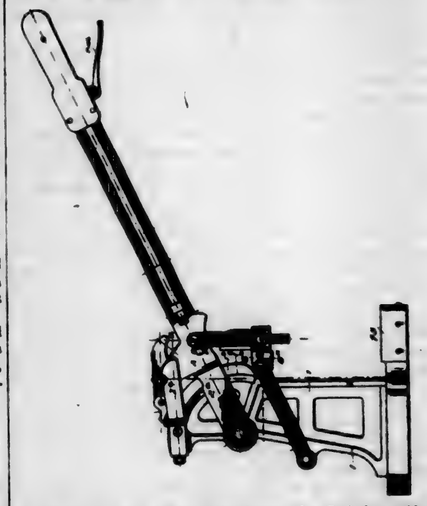

Claim.—1. In a machine of the character described, the combination of a plunger for the thimble of a shoe-last spindle-socket of tubing, a punch having longitudinal movement independent of, and adapted to work laterally to, said plunger, and means for separately actuating said plunger-carrier and punch, substantially as set forth.

2. In a machine of the character described, the combination of a plunger for tubing, a punch having longitudinal movement independent of, and arranged to work laterally to said plunger, and means for separately actuating said plunger and punch, substantially as set forth.

3. In a machine of the character described, the combination of a plunger for tubing, having a longitudinal slot therethrough with a sloping bottom surface, a punch or cutter having a beveled heel and a point upon its forward side, at the lower end, and means for separately actuating said plunger and punch, substantially as set forth.

4. In a machine of the character described, the combination of a plunger for tubing, having a longitudinal slot with an inclined bottom surface, a punch having its shank provided with an inclined offset near its rear edge, and its lower end inclined forward and downward, and having a pyramidal point upon its forward side, at the lower end, and means for separately actuating said plunger and punch, substantially as set forth.

5. In a machine of the character described, the combination of a plunger for tubing, a punch having longitudinal movement independent

of said plunger with its outer or point adapted to work laterally to said plunger, and means for separately operating said plunger and punch, substantially as set forth.

6. In a machine of the character described, the combination of a plunger for tubing, a punch having longitudinal movement independent of said plunger with its effective edge adapted to work laterally to said plunger, a lever, and means for connecting said punch to said lever, substantially as set forth.

7. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective point adapted to work laterally to said plunger, a lever, and a second plunger or link connecting said punch to said lever, substantially as set forth.

8. In a machine of the character described, the combination of a plunger for tubing, a punch having longitudinal movement independent of said plunger with its effective edge or point adapted to work laterally to said plunger, a hand-lever, and means for connecting said hand-lever to said punch, substantially as set forth.

9. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective edge or point adapted to work laterally to said plunger, a hand-lever, and an additional plunger or link connecting said hand-lever and punch, substantially as set forth.

10. In a machine of the character described, the combination of a plunger for tubing, a punch having longitudinal movement independent of said plunger with its effective edge or point adapted to work laterally to said plunger, a lever connected to said punch, and means for lowering and raising said plunger, substantially as set forth.

11. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective point or edge adapted to work laterally to said plunger, means for actuating said punch, a lever, and a stock or guide carrying said plunger and connected to said lever, substantially as set forth.

12. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective point or edge adapted to work laterally to said plunger, a complex lever adapted to separately actuate said plunger and said punch, substantially as set forth.

13. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective point or edge adapted to work laterally to said plunger, a lever mechanism comprising a pivoted arm and a hand-lever pivoted to said arm, said arm being connected to said plunger and said lever being connected to said punch, substantially as set forth.

14. In a machine of the character described, the combination of a plunger for tubing, a punch having longitudinal movement independent of, and adapted to work laterally to, said plunger, a tubular stock or barrel for said plunger, a lever mechanism for carrying said stock or barrel and actuating said punch, substantially as set forth.

15. In a machine of the character described, the combination of a plunger for tubing, a punch, a lever mechanism connected to said plunger and punch, a dog with its shoe adapted to serve as a brake and said dog adapted to be acted upon by a member of said lever mechanism, substantially as set forth.

16. In a machine of the character described, the combination of a plunger for tubing, a punch, a lever mechanism, comprising a pivoted arm and a lever proper, a dog carrying a pivoted shoe, a stand having an arcuate surface engaged by said shoe, one member of said lever mechanism adapted to engage said dog and force said shoe upon said arcuate surface, substantially as set forth.

17. In a machine of the character described, the combination of a plunger for tubing, a punch, a lever mechanism comprising a pivoted arm and a lever proper connected to said arm, and said lever mechanism connected to said plunger and punch, and a keeper having spring-arms adapted to hold said parts elevated, substantially as set forth.

18. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective edge or point adapted to work laterally to said plunger, a tubular stock carrying said plunger, and a lever having link or plunger connection with said punch, moving through said stock, substantially as set forth.

19. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective edge or point working laterally through said plunger, a tubular stock carrying said plunger and linked to a suitable support, a lever linked to said stock, and means for actuating said punch, substantially as set forth.

20. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective edge or point adapted to work laterally through said plunger, a lever suitably connected to means carrying said punch, a pivoted arm connected to said lever and linked to said plunger, substantially as set forth.

21. In a machine of the character described, the combination of a longitudinally-slotted plunger for tubing, a punch, a tubular stock carrying said plunger, a pivoted arm connected to said stock, a lever connected to said arm, and an additional plunger connected to said lever and working in said stock, and connected to said punch, substantially as set forth.

22. In a machine of the character described, the combination of a longitudinally-slotted plunger for tubing, a punch, a tubular stock carrying said plunger, a collar or sleeve connected to said stock and linked to a suitable support, a pivoted arm connected to said collar or sleeve, and a lever connected to said arm and to said punch, substantially as set forth.

23. In a machine of the character described, the combination of a longitudinally-slotted plunger for tubing, a punch, a tubular stock carrying said plunger and linked to a support or fixture, a pivoted arm linked to said collar, a lever connected to said arm, an additional plunger working in said stock and loosely connected to said punch and similarly to said lever, substantially as set forth.

24. In a machine of the character described, the combination of a plunger for tubing, a punch, a pivoted arm having upstanding projections, a dog pivoted between said projections and carrying a pivoted shoe, a stand having an arcuate portion adapted to be engaged by said shoe, means for connecting said plunger to said pivoted arm, and a lever connected to said arm and to said punch, and means to effect a binding action between said lever and dog, substantially as set forth.

25. In a machine of the character described, the combination of a plunger for tubing, a punch, a lever having an upstanding projection, means for connecting said lever to said punch, a dog pivoted to said upstanding projection and carrying a pivoted shoe, and means to effect a binding action of said shoe, and means to secure a like action between said lever and dog, substantially as set forth.

26. In a machine of the character described, the combination of a plunger for tubing, a pivoted arm having upstanding projections, and connected to said plunger, a dog equipped with a pivoted shoe or brake adapted to effect a binding action with the arm-support, a keeper having spring or resilient arms, adapted to effect engagement with the ends of the pivot between said dog and arm, and means connected to said punch for the actuation of the last named, substantially as set forth.

27. In a machine of the character described, the combination of a plunger for tubing, a punch, a pivoted arm, means connecting said arm to said plunger, a lever connected to said arm and to said punch, a dog pivoted to upstanding projections of said arm and a keeper provided with spring-arms having in their upper edges notches adapted to receive the ends of the pivot between said dog and upstanding projections, substantially as set forth.

28. In a machine of the character described, the combination of a plunger for tubing, a punch, a pivoted arm connected to said plunger, and having upstanding projections, means connected to said arm and to said punch for the actuation of the last named, a dog pivoted to upstanding projections of said arm, and a keeper having its spring or resilient arms with inner forward beveled surfaces and in their upper edges with notches to receive the ends of the pivot between said dog and upstanding projections, substantially as set forth.

29. In a machine of the character described, the combination of a plunger for tubing, a punch with its effective edge or point adapted to work laterally through said plunger, a pivoted arm connected to said plunger, and having upstanding projections, said resilient arms having inner forward beveled surfaces and beveled recesses indenting said beveled surfaces, substantially as set forth.

30. In a machine of the character described, the combination of a plunger for tubing, a punch, a pivoted arm, means connecting said arm and plunger, a lever connected to said arm, means connecting said lever to said punch, a sliding handle arranged on said lever and sliding detents adapted to engage notches in the outer ends of the forward bifurcated portion of said pivoted arm, and a finger-lever pivoted upon said handle and connected to said detents, substantially as set forth.

31. In a machine of the character described, the combination of a plunger for tubing, a punch arranged interiorly thereof, a pivoted arm carrying said plunger, a lever connected to said arm, a sliding handpiece or handle arranged on said lever and spring-acted-upon detents connected to said handpiece and adapted to engage one end of said arm, substantially as set forth.

32. In a machine of the character described, the combination of a plunger for tubing, a punch arranged interiorly thereof, a pivoted arm carrying said plunger, a lever connected to said arm, a sliding handpiece or handle arranged on said lever, detents or pawls arranged laterally of said lever and adapted to engage one end of said arm, and a finger-lever pivoted to said handpiece and adapted to engage said lever, substantially as set forth.

33. In a machine of the character described, the combination of a plunger carried by a pivoted arm, a punch arranged within said plunger, a lever connected to said arm and carrying said punch, a handpiece sliding upon said lever, detents arranged laterally of said lever and adapted to engage one end of said arm and acted upon by a spring and a finger-lever pivoted upon said handpiece and engaging said detents, substantially as set forth.

34. In a machine of the character described, the combination of a plunger carried by a pivoted arm, a punch arranged within said plunger, a lever connected to said arm and to said punch, a sliding handpiece arranged upon said lever and having bosses moving in elongated recesses in said lever, detents or pawls arranged laterally in said lever and adapted to engage said arm, and connected to said handpiece—and a spring connecting said detents or pawls and said lever, substantially as set forth.

706,602. THERAPEUTIC ELECTRICAL APPARATUS. IRA R. SHAFER, Mount Vernon, N. Y. Filed Nov. 27, 1901. Serial No. 83,944. (No model.)

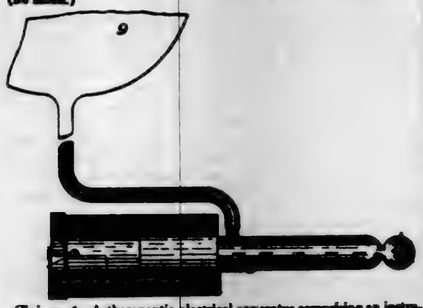

Claim.—1. A therapeutic electrical apparatus comprising an instrument adapted to convey a liquid to the part of the body to be treated, means to electrically charge the flowing liquid, and a spherical terminal provided with perforations so disposed as to disperse the liquid over a large area, for the purpose set forth.

2. A therapeutic electrical apparatus comprising an instrument adapted to convey a liquid to the part of the body to be treated, means to connect one pole of a battery with the flowing liquid, and means to connect the other pole with a portion of the body, and a spherical terminal provided with perforations so disposed as to disperse the liquid over a large area, as and for the purpose set forth.

3. A therapeutic electrical apparatus comprising a syringe, a battery-holder connected with one end of the nozzle thereof, a battery mounted in said holder, a terminal mounted in the passage-way of said nozzle, and a second terminal mounted on the exterior of the battery-holder, as and for the purpose set forth.

4. A therapeutic electrical apparatus, comprising a syringe, a battery-holder connected with one end of the nozzle thereof, a battery mounted in said holder, a tube mounted in the passage-way of said nozzle, a conductor connecting one pole of said battery with said tube, a plate mounted on the exterior surface of said battery-holder, and a conductor connecting the other pole of said battery with said plate, as and for the purpose set forth.

5. A therapeutic electrical apparatus comprising a syringe, a battery, a terminal mounted in the nozzle of said syringe, a second terminal exterior to said nozzle, the discharge end of the nozzle being composed of non-conducting material semispherical in form, and provided with a plurality of perforations, as and for the purpose set forth.

6. A therapeutic electrical apparatus comprising a syringe, a battery-holder, a battery mounted therein, a tube mounted in the nozzle of said syringe, a conductor connecting said tube with one pole of said battery, a plate mounted on said battery-holder, a conductor connecting said plate with the other pole of said battery, and a globular tip forming the discharge end of said nozzle, said tip being provided with a plurality of large orifices, as and for the purpose set forth.

706,603. GAME-CARDS. REED H. SHARP, Victoria, Tex. Filed May 20, 1901. Serial No. 62,490. (No model.)

Claim.—A pack of playing-cards made up of three suits of three groups each, each suit representing a country and comprising a group of consecutively-numbered similar cards, a second group of cards of different values, said values being indicated by pictures on the cards, and a third group of consecutively-numbered cards bearing similar pictures thereon.

706,604. LOCOMOTIVE-TRUCK. EPHRAIM SHAY, Harbor Springs, Mich. Filed Apr. 8, 1902. Serial No. 101,808. (No model.)

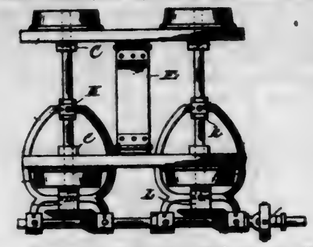

Claim.—1. In a truck for locomotives of the character described, the combination with the longitudinal driving-shaft, driving-wheels and axle, and intermeshing gears on said shaft and axle, of a rigid bridle-frame mounted on said axle having bearings at opposite sides of the gears in which the shaft is journaled and supported, substantially as described.

2. In a locomotive-truck, the combination with drivers and axle, a longitudinal driving-shaft at the side of the truck, and intermeshing gears on said shaft and axle, of a rigid frame or structure in which the driving-shaft is journaled inclosing the adjacent driver and mounted on the axle at opposite sides of said driver, substantially as described.

3. In a locomotive-truck, the combination with the drivers and axle, a longitudinal driving-shaft disposed at the side of the truck, and intermeshing gears on said shaft and axle, of a journal-box mounted in fixed position on the axle intermediate the drivers, a box mounted on the axle between said gearing and adjacent driver, a bridle-frame inclosing said driver and rigidly secured to said boxes, and similar boxes in which the driving-shaft is journaled secured to and supported by said bridle-frame; substantially as described.

4. In a locomotive-truck, the combination with the drivers and axle, a longitudinal driving-shaft disposed at the side of the truck, and intermeshing gears on said shaft and axle, of journal-boxes mounted on the axle at opposite sides of the driver, a bridle-frame inclosing said driver and rigidly secured to said boxes, said frame having outwardly-extending yoke-arms, and boxes at opposite sides of the gears in which the driving-shaft is journaled secured to and supported by said arms; substantially as described.

5. In a locomotive-truck, the combination with drivers and axle, a longitudinal driving-shaft, and intermeshing gears on said shaft and axle, of a rigid structure mounted on the axle and having bearings at opposite sides of the gears in which the driving-shaft is journaled, and a guard secured to said bearings beneath the gears, substantially as described.

6. In a locomotive-truck, the combination with a number of axles and drivers, of a longitudinal driving-shaft, intermeshing gears on said shaft and axles, and rigid structures mounted on each of the driver-axles at opposite sides of one set of drivers having bearings in which the shaft is journaled, said structures thereby fully supporting the shaft, substantially as described.

706,605. FOLDING CANOPY FOR VEHICLES. WILLIAM J. SLYKER, Troy, Ohio, assignor of one-half to Roman F. Douglas, Troy, Ohio. Filed Apr. 14, 1902. Serial No. 103,831. (No model.)

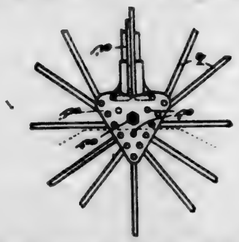

Claim.—1. The combination with a central support consisting of separable plates having a series of oppositely-disposed perforations, of a series of ribs having lateral oppositely-extending trunnions at their inner ends formed integrally therewith pivoted in said perforations and adapted

to swing in unison in a horizontal plane to open and close the canopy, and means for holding said plates in engaging position with said trunnions, substantially as specified.

2. The combination with a central support substantially heart-shaped consisting of separable plates having a series of oppositely-disposed perforations, of a series of ribs having lateral oppositely-extending trunnions at their inner ends formed integrally therewith pivoted in said perforations and adapted to swing in unison in a horizontal plane to open and close the canopy, means for holding said plates in engaging position in said trunnions and intersngaging projections on one of said ribs and plates to fix the radial position of said rib, said ribs further having flanges formed thereon and U-shaped parts adapted to fit over said flanges to form extensions for said ribs, substantially as specified.

706,606. WIRE-TIGHTENER. THOMAS STINSON, Little River, Kans. Filed May 11, 1901. Serial No. 59,933. (No model.)

Claim.—1. As an improved article of manufacture a wire-tightener for direct application to a wire strand to be tightened, comprising a hub with opposite horizontally-disposed extremities and intermediate radially-arranged arms with one or more sets of terminal hooks to bear upon the wire, the arms having means at one point whereby the wire to be stretched or tightened may be carried transversely across the device to engage opposite portions of the hub, the hub, arms and hooks being of an integral immovable construction relatively to each other and the wire strand engaging the hub on opposite sides of the arms when the tightener is in operative position.

2. A wire-tightener comprising a hub with a plurality of arms radiating therefrom, the said arms being extended from an intermediate point of the hub and having means at one point whereby the wire to be stretched or tightened may be carried transversely across the device to engage opposite portions of the hub divided by the arms.

3. A wire-stretcher comprising a hub having longitudinal extensions, arms radiating from said hub intermediately between said extensions and provided with terminal hooks for engaging the wire, and means for engaging a loop of the wire and permitting it to pass transversely across the device for winding engagement with both hub extensions.

706,607. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES P. STEINMETZ, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 2, 1901. Serial No. 41,812. (No model.)

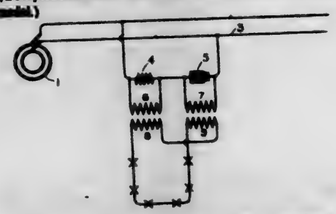

Claim.—1. The combination of reactances of opposite sign connected together, a consumption-circuit, and an inductive connection between said consumption-circuit and each of said reactances.

2. The combination of constant-potential mains, reactances of opposite sign connected so as to receive current from said mains, a constant-current circuit, and an inductive connection between said circuit and each of said reactances.

3. The combination of constant-potential mains, reactances of opposite sign connected so as to be traversed by current flowing in said mains, a constant-current circuit, and an inductive connection between said circuit and each of said reactances.

4. The combination of a condenser and an inductance device connected together, two transformers having a winding of one connected across the terminals of the condenser, and a winding of the other connected across the terminals of the inductance device, and a circuit including in series another winding of each of said transformers.

5. The combination of a condenser and an inductance device connected together, two transformers having a winding of one connected across the terminals of the condenser, and a winding of the other connected across the terminals of the inductance device, and a circuit including in series another winding of each of said transformers, the last-mentioned windings being reversely connected with respect to each other.

6. The combination of reactances of opposite sign connected together, a supply-circuit, operative connections between said reactances and said supply-circuit, and means for combining electromotive forces corresponding to those existing between the terminals of the respective reactances, and a consumption-circuit upon which the resultant electromotive force is impressed.

7. The combination of a condenser and an inductance device connected together, two transformers having a winding of one connected across the terminals of the condenser, and a winding of the other connected across the terminals of the inductance device, and a circuit including in series another winding of each of said transformers, the last-mentioned windings being reversely connected with respect to each other.

8. The combination of constant-potential mains, a condenser and an inductance device connected in series across said mains, transformers having a winding of one connected across the terminals of the condenser and a winding of another connected across the terminals of the inductance device, and a constant-current circuit including in series other windings of said transformers.

9. The combination of constant-potential mains, a condenser and an inductance device connected in series across said mains, transformers having a winding of one connected across the terminals of the condenser and a winding of another connected across the terminals of the inductance device, and a constant-current circuit including in series other windings of said transformers.

10. The combination of constant-potential mains, reactances of opposite sign in series across said mains, transformers having a winding of one connected across the terminals of one reactance, and a winding of another across the terminals of another reactance, and a constant-current circuit including in series a winding of each of said transformers.

706,608. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES P. STEINMETZ, Schenectady N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 2, 1901. Renewed Dec. 26, 1901. Serial No. 87,233. (No model.)

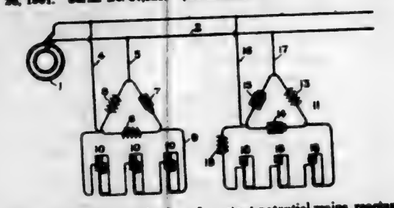

Claim.—1. The combination of constant-potential mains, reactances of opposite sign connected in series across said mains, a consumption-circuit operatively connected across one of said reactances, and an additional reactance operatively connected in shunt to said mains.

2. The combination of constant-potential mains, reactances of opposite sign connected in series across said mains, a consumption-circuit connected across one of said reactances of given sign, and a reactance of opposite sign connected in shunt to said mains.

3. The combination of supply-mains, reactances of opposite sign in series across said mains, a constant-current circuit in shunt to one of said reactances, and an additional reactance in shunt to said mains.

4. The combination of constant-potential mains, reactances of opposite sign in series across said mains, a constant-current circuit in shunt to one of said reactances, and an additional reactance in shunt to said mains.

5. The combination of a constant-potential circuit, a constant-current circuit, means for transferring energy between the two circuits, arc-lamps of the shunt type in series in the constant-current circuit, and an inductance device in series with said lamps.

6. The combination of a closed circuit including in series three reactances two of which are of the same sign and a remaining one of opposite sign, a constant-potential circuit shunted about one of said reactances, and a constant-current circuit in shunt to another of said reactances.

7. The combination of a closed circuit including in series three reactances two of which are of different sign from the third, a constant-potential circuit connected in shunt to one of the two reactances of the same sign, and a constant-current circuit in shunt to the other of said two reactances of the same sign.

8. The combination of constant-potential mains, a condenser and an inductance device connected in series across said mains, a consumption-circuit operatively connected across said condenser, and an inductance device connected across said mains.

9. The combination of constant-potential mains, a condenser and an inductance device connected in series across said mains, a consumption-circuit operatively connected across said condenser, an inductance device in series in said consumption-circuit, and an inductance device connected across said mains.

10. The combination of a constant-potential circuit, reactances of opposite sign in series across said circuit, a consumption-circuit connected across one of said reactances and including arc-lamps of the shunt-type in series, and an inductance device in series in said consumption-circuit.

11. The combination of a constant-potential circuit, reactances of opposite sign in series across said circuit, a consumption-circuit connected across one of said reactances and including arc-lamps of the shunt type, and an inductance device in series in said consumption-circuit.

706,609. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES P. STEINMETZ, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 2, 1901. Serial No. 41,807. (No model.)

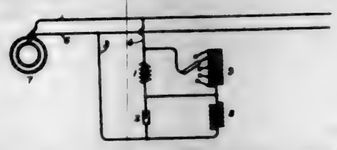

Claim.—1. The combination of constant-potential supply-mains, energy-consuming means supplied therefrom, and means for causing the consumption of power in said energy-consuming means to remain constant regardless of variation of the aggregate resistance of said energy-consuming means.

2. The combination of supply-mains, consumption-circuits fed therefrom, and means for automatically maintaining a constant consumption of power in said circuits regardless of variation of the aggregate resistance of said circuits.

3. The combination of constant-potential mains, reactances of opposite sign in series across said mains, a non-inductive energy-consuming device operatively connected across one of said reactances, and another energy-consuming device operatively connected across another of said reactances.

4. The combination of constant-potential mains, reactances of opposite sign in series across said mains, and non-inductive resistances in shunt respectively across said reactances.

5. The combination of constant-potential mains, reactances of opposite sign in series across said mains, a circuit in shunt to one of said reactances and containing an approximately constant resistance, and a circuit in shunt to another of said reactances and containing a variable resistance.

6. The combination of constant-potential mains, reactances of opposite sign in series across said mains, a resistance arranged to receive current transmitted through a circuit in shunt to one of said reactances of the same value in ohms as the resistance, and another resistance receiving energy from a circuit in shunt to another of said reactances.

7. The combination of constant-potential mains, reactances of opposite sign in series across said mains, a resistance arranged to receive current transmitted through a circuit in shunt to one of said reactances of the same value in ohms as the resistance, and a variable resistance receiving energy from a circuit in shunt to another of said reactances.

706,610. STACK FORMER AND PROTECTOR. EDWIN M. STIFF, Leakey, TEX. Filed Nov. 5, 1901. Serial No. 81,621. (No model.)

Claim.—1. In a stack former and protector, the combination with the surrounding framework, of a roof composed of sections hinged to the framework to swing outwardly and downwardly and form vertical walls for the framework during the formation of the stack, substantially as set forth.

2. In a stack former and protector, the combination with the surrounding framework, of a pitched roof consisting of hinged sections capable of swinging outwardly and downwardly parallel with the sides of the framework, and gables hinged to swing outwardly and downwardly, substantially as set forth.

3. In a stack former and protector, the combination with the surrounding framework, of hinged roof-sections adapted to swing outwardly and downwardly, one of said roof-sections consisting of two independent parts, substantially as set forth.

4. In a stack former and protector, the combination with the surrounding framework, of hinged roof-sections adapted to swing outwardly and downwardly, one of said sections consisting of two independent parts, one part being provided with a batten-strip to overlap the other, substantially as set forth.

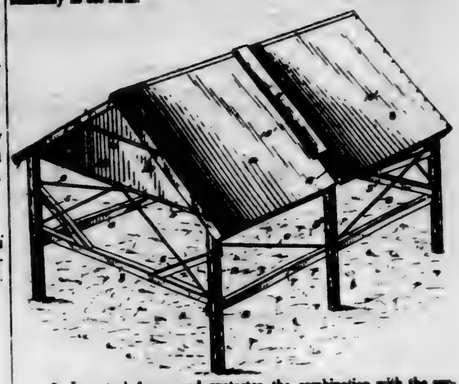

5. In a stack former and protector, the combination with the surrounding framework, of pitched roof-sections hinged to the framework and adapted to swing outwardly and downwardly, one of said sections being provided with longitudinal cleats to engage the upper edge of the other section when in their pitched or inclined position, gables hinged to the framework and adapted to swing outwardly and downwardly and when in vertical position adapted to be held in such position by cleats carried by the roof-sections, and means for connecting the pitched roof-sections and holding them in their inclined positions, substantially as set forth.

706,611. VARIABLE-SPEED GEARING. CLARENCE STOKE, Philadelphia, Pa., assignor of one-half to Albert R. Grover, Philadelphia, Pa. Filed Dec. 21, 1901. Serial No. 86,753. (No model.)

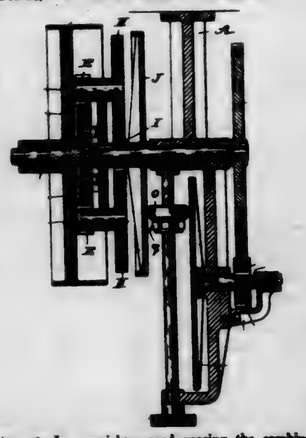

Claim.—1. In a variable-speed gearing, the combination with a power-shaft and a pulley thereon, of a friction-wheel on said shaft, planetary gearing between said wheel and pulley, a second friction-wheel, gearing between the latter and the counter-shaft, a friction-disk interposed between the faces of said friction-wheels, and means for adjusting said disk radially in respect to said wheels, substantially as described.

2. In variable-speed gearing, the combination with a power-shaft and a pulley thereon, of a gear-wheel on said pulley, pinions meeting with said gear-wheel, and shafts for said pinions, a support for said stud-shafts affixed to the power-shaft, spur-wheels on said stud-shafts, a friction-wheel loose on the power-shaft, the hub of said wheel including a pinion in gear with the spur-wheels last named, a spur-wheel fast on the power-shaft, a pinion in gear therewith, a shaft for said pinion, a friction-wheel on the latter shaft, a friction-disk interposed between the faces of said friction-wheels, and means for adjusting said disk radially in respect to said wheels, substantially as described.

3. In variable-speed gearing, the combination with a power-shaft and a pulley thereon, of a friction-wheel on said shaft, planetary gearing

between said wheel and pulley, a second friction-wheel, gearing between the latter and the counter-shaft, a friction-disk interposed between the faces of said friction-wheels, a shaft for said disk, a screw-shaft a nut thereon, and a connection between said nut and disk, substantially as described.

706,612. ELECTRIC METER. ELIHU THOMSON, Swampscott, Mass., assignor to the General Electric Company, a Corporation of New York. Filed Jan. 18, 1900. Serial No. 1,962. (No model.)

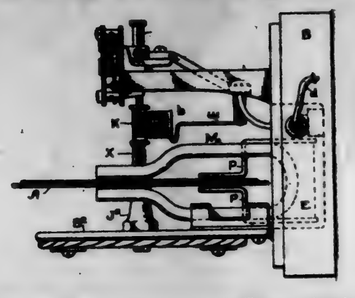

Claim.—1. In an electric meter, a retarding-magnet system, the magnetization of which gradually increases with the load on the meter up to a certain point and thereafter remains substantially constant.

2. In an electric meter, a retarding-magnet system comprising one or more permanent magnets producing a constant magnetization, and an electromagnet having its windings supplied with a current which varies with the load on the meter.

3. In an electric meter, a retarding-magnet system, comprising one or more magnets producing a substantially constant magnetization, and an electromagnet, the magnetization of which is produced by a current which varies with the load on the meter, the said electromagnet being so calculated that it will become substantially saturated by the time that the meter-current rises to its full-load value.

4. In an electric meter, a retarding-magnet system comprising one or more magnets producing a substantially constant magnetization and an electromagnet, the winding of which is connected in the meter-circuit, the said magnet being so proportioned that at or near full load, its magnetization will become substantially constant.

5. In a retarding-magnet system for an electric meter, an electromagnet having its energizing-winding included in the meter-circuit, the said magnet being so proportioned that its magnetization will vary with the load on the meter up to a certain point and will therefore remain substantially constant.

6. In an electric meter-motor, a suitable retarding means in combination with means for increasing the effect of said retarding means at a rate which decreases as the load on the meter increases.

7. In an electric meter-motor, a retarding means, the effect of which is substantially constant, and an auxiliary retarding means, the effect of which increases with the load on the meter but at a constantly-diminishing rate.

8. In an electric meter-motor, a retarding means, the effect of which is substantially constant, and an auxiliary retarding means, the effect of which increases with the load on the meter up to a certain point and thereafter becomes substantially constant.

9. In an electric meter-motor having its armature shunted by a low resistance, a retarding-magnet system including an electromagnet connected in the low-resistance shunt and wound for saturation at heavy loads.

10. An electric meter composed of a register, a meter-motor, and a retarding-magnet wound for saturation at heavy loads.

11. An electric meter comprising a register, a meter-motor, a damping device for slowing the meter, and a retarding-magnet wound for weak magnetization at low load, and saturation at heavy loads.

12. An electric meter comprising a register, a meter-motor having field-magnets of constant strength and an armature in the consumption-circuit, and a compounding retarding-magnet symmetrically located between the field-magnets, as described, wound for saturation at heavy loads.

13. A meter for an electric meter provided with a commutator-brush formed of a plurality of silver contacts thinner at their point of connection with the support than at the points of contact, for the purpose described.

14. In an electric meter, a commutator-brush comprising a comparatively long spring-pressed arm mounted upon a suitable pivot and terminating in a plurality of relatively small and independently elastic members thinner and more flexible than the arm to which they are attached, and adapted to suitably engage the commutator of the meter-armature.

15. A commutator-brush comprising a plurality of flexible and independently elastic members, and a spring-support for said members, the support being thicker and more inflexible than the members attached thereto.

16. A commutator-brush comprising a plurality of relatively small and independently elastic members, and a common support for said members consisting of a long arm thicker and more inflexible than the members attached thereto, and having its end coiled about a supporting-stud so as to form a spring.

17. A commutator-brush comprising a plurality of relatively small and independently elastic members, and a relatively large and long arm pivotally mounted at one end and constituting a common support for all of said members, the said arm being thicker and more inflexible than the members attached thereto.

18. A commutator-brush comprising a comparatively long supporting-arm, and a plurality of relatively small wires supported therefrom, the said wires being flattened for the purpose of increasing their flexibility and rendering them independently elastic.

19. A commutator-brush comprising a relatively thin portion made up of a plurality of independently elastic members and a relatively thick, heavy portion acting as a support for said members.

20. A commutator-brush comprising a relatively thin portion made up of a plurality of independently elastic members, and a thick, heavy arm, spring-supported at one end, acting as a support for the said members.

21. A commutator-brush comprising a relatively thin portion made up of a plurality of independently elastic members, and a relatively thick, heavy portion rotatably mounted and acting as a support for the said members.

706,613. STEAM-VALVE. HENRY W. WAITE, Wollaston, Mass., assignor of one-half to William H. Cox, Wollaston, Mass. Filed May 4, 1901. Serial No. 58,797. (No model.)

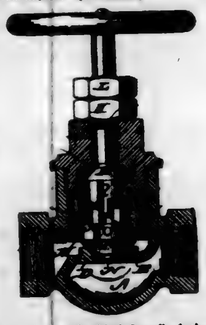

Claim.—1. In a valve of the kind described, the combination with a case having a bonnet provided with an interior valve seat, of a valve arranged within the case and having inclined projections upon its upper side, a valve-stem enlarged at its lower end and having inclined projections adapted to mate with the projections carried by the valve, the upper end of said enlarged portion being essentially conical in form and adapted to engage the seat of the bonnet, and a central guide-pin carried by the valve and projecting upwardly into the enlarged portion of the stem for the purpose described.

2. In a globe-valve, the combination with the casing, of a valve arranged therein and having radially-arranged incline-faced projections upon its upper side, said valve having a central and side guide-pins, the stem enlarged at its lower end and having radially-arranged depending projections corresponding with the projections carried by the valve, the shoulder of the enlarged portion being inclined and adapted to engage the seat upon the bonnet for the purpose of making a tight joint when the valve is either opened or closed, substantially as shown and described.

706,614. CORN-HARVESTER. EDWARD D. WALLS, Hammond, Kans. Filed June 22, 1901. Serial No. 65,671. (No model.)

Claim.—1. In a machine of the class described, the combination of a main frame, an oscillating supporting-axle, having cranks on which the supporting-wheels are mounted and provided further with an operating-crank, a rocking arm, a supporting-wheel carried thereby, a lever, and connections between said lever and said rocking arm and operating-crank, whereby said rocking arm and oscillating cranked axle may be simultaneously operated, to raise or lower said main frame, substantially as described.

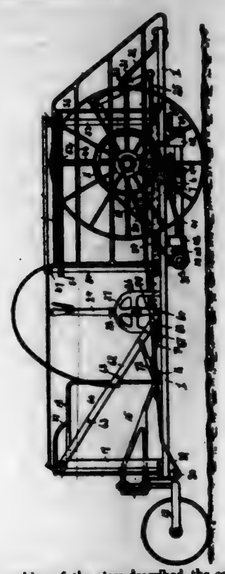

2. In a machine of the class described, the combination of a main frame, an oscillating supporting-axle having cranks on which the supporting-wheels are mounted and provided further with an operating-crank, a rocking arm, a supporting-wheel carried thereby, a link-lever connected to said operating-crank and to said rocking arm, a lever connected to said link-lever, and means to lock said lever at any desired adjustment, substantially as described.

3. In a corn-harvester, the combination with a cutter, carrier, and guides for the cut cornstalks, of a dump-carrier to receive the cut stalks, said dump-carrier being pivotally mounted at its inner side and having a depending rock-arm, a foot-lever and connections therebetween whereby upon the downward pressure of the foot-lever said rock-arm is thrust outward, for the purpose set forth, substantially as described.

706,615. MACHINE FOR MAKING PIECED SOLES. GEORGE E. WARREN, Boston, Mass., assignor to Metallic Heel and Counter Company, Kittery, Me., a Corporation of Maine. Filed Apr. 30, 1901. Serial No. 57,982. (No model.)

Claim.—1. A machine for making pieced soles, having, in combination, means for holding the main piece and heel piece or pieces of the sole in proper relative position to each other in the same plane, and means for securing a uniting device or uniting devices in the abutting edges of the pieces of the sole, substantially as described.

2. A machine for making pieced soles, having, in combination, means for holding the main piece of the sole and means for holding the heel piece or pieces of the sole in proper relative positions to each other in the same plane, and means for securing a uniting device or uniting devices in the abutting edges of the pieces of the sole, substantially as described.

3. A machine for making pieced soles, having, in combination, devices for bringing the heel piece or pieces of the sole into a correct predetermined position with relation to the machine, and devices for bringing the main piece of the sole into correct position with relation to the heel piece or pieces in the same plane, substantially as described.

4. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, and means for securing a uniting device or uniting devices in the pieces of the sole, substantially as described.

5. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, and means for pressing the pieces of the sole against the stops, substantially as described.

6. A machine for making pieced soles, having, in combination, a support, and stops for determining the position of the lines of juncture of the pieces of the sole constructed to engage internal edges of each piece, substantially as described.

7. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, means for securing a uniting device or uniting devices in the pieces of the sole, and means for withdrawing the stops, substantially as described.

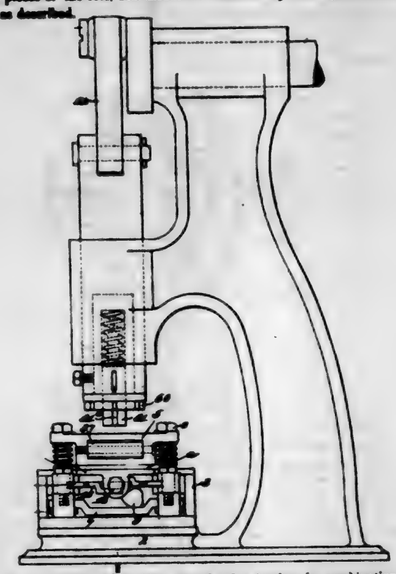

8. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, clamping means for clamping the pieces of the sole on the support, substantially as described.

9. A machine for making pieced soles, having, in combination, a support, clamping means for clamping the main piece and heel piece or pieces of the sole on the support and in the same plane, and means for securing a uniting device or uniting devices in the pieces of the sole, substantially as described.

10. A machine for making pieced soles, having, in combination, a support, means for holding the main piece of the sole on the support, means for pressing the heel piece or pieces of the sole against the main piece, and means for holding the heel piece or pieces on the support, substantially as described.

11. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture of the pieces of the sole, means for pressing the heel piece or pieces against the stops and against each other and the main piece and means for clamping the pieces to the support, substantially as described.

12. A machine for making pieced soles, having, in combination, a support, stops for determining the positions of the lines of juncture, clamping means for clamping the pieces of the sole against the support, and means for withdrawing the stops, substantially as described.

13. A machine for making pieced soles, having, in combination, a support, clamping means for clamping the main piece of the sole on the support, means for pressing the heel piece or pieces together, clamping means for clamping the heel piece or pieces on the support and mechanism for actuating both the heel-piece pressing and clamping means, substantially as described.

14. A machine for making pieced soles, having, in combination, means for pressing the pieces together in the same plane, means for clamping them in position and connected mechanism for actuating the pressing and clamping means, substantially as described.

15. A machine for making pieced soles, having, in combination, devices for bringing the heel piece or pieces of the sole into correct position with relation to the machine, centering devices for bringing the main piece of the sole into correct position with relation to the heel piece or pieces, and clamping means for holding said pieces in position, substantially as described.

16. A machine for making pieced soles, having, in combination, devices for bringing and holding the pieces of the sole into correct position with relation to each other in the same plane and means for securing a uniting device or uniting devices in the abutting edges of the pieces of the sole, substantially as described.

706,616. GOVERNOR-VALVE. LESLIE J. WARNER, Port Huron, Mich., assignor of one-half to George F. Gunner, Port Huron, Mich. Filed June 27, 1901. Serial No. 66,261. (No model.)

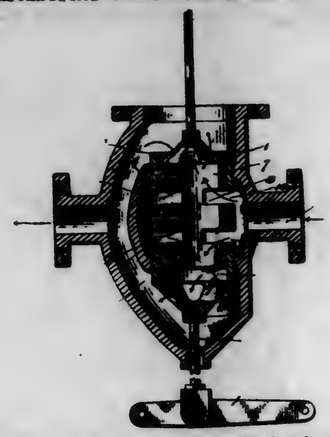

Claim.—1. In a governor-valve, the combination of a casing provided with admission and delivery ports, a valve-guide formed integrally with the casing and open only at top and bottom and on the side communicating with said admission-port, the opposite closed side of said guide being spaced apart from the casing to form a passage communicating with the delivery-port and the body of the guide enlarged to form a steam-space, a hollow cylindrical valve-seat slidably mounted in the guide and provided with ports, a hollow cylindrical valve slidably mounted in said seat and provided with coöperating ports, a stem connected to the valve and extending to the exterior through one end of the casing for connection with a governor, a stem connected with the valve-seat and extending to the exterior through the opposite end of said casing, and an adjusting-lever connected to the outer and lower end of said valve-seat stem substantially as described.

2. In a governor-valve, the combination of a casing provided with admission and delivery ports, an open-ended valve-guide in communication with the admission-port and spaced apart from the casing at the other side to form a passage communicating with the delivery-port, a hollow cylindrical valve-seat slidably mounted in the guide and provided with ports, a hollow cylindrical valve slidably mounted in said seat and provided with coöperating ports, a stem connected to the valve and extending to the exterior through one end of the casing adapted to be connected to a governor, a stem attached to the valve-seat and extending to the exterior through the opposite end of the casing, and an adjusting-lever connected with the valve-seat stem, substantially in the manner set forth.

706,617. ANIMAL-POKE. SAMUEL F. WEBB and WILLIS R. HUFF, Wichita, Kans. Filed Nov. 26, 1901. Serial No. 83,736. (No model.)

Claim.—1. An animal-poke comprising two sections, bolts pivoting the sections and interlocked with one of the sections, and arms mounted on one of the sections and arranged to be engaged by the other to limit the pivotal movement of the sections, said arms being also extended to points adjacent to the nuts of the bolts and forming nut-locks to prevent the nuts from unscrewing, substantially as described.

2. An animal-poke comprising two sections provided with opposite sides arranged adjacent to each other, bolts pivotally connecting the sections, and the approximately L-shaped arms mounted on one of the sections and forming stops for limiting the movement of the other section and extended to points contiguous to the nuts of the bolts and forming nut-locks, substantially as described.

3. An animal-poke comprising two approximately Y-shaped sections, one of the sections being provided at opposite sides with approximately L-shaped arms arranged to be engaged by the other section to limit the movement thereof, and bolts pivotally connecting the sections and interlocked with the sections having the arms and provided with nuts arranged contiguous to the latter, substantially as described.

4. An animal-poke comprising two pivotally-connected sections provided with means for engaging an animal, and a locking rod or bar hinged to one of the sections and extending therefrom to the other section and detachably engaging the same, whereby the sections are locked rigid with each other substantially as described.

5. An animal-poke comprising two approximately V-shaped sections pivotally connected with each other, one of the sections being provided with an opening, and a locking rod or bar hinged to the other section and provided with a projection detachably engaging the opening, substantially as described.

6. An animal-poke comprising two sections, bolts pivoting the sections and provided with nuts, and arms mounted on one of the sections and limiting the movement of the other section and forming nut-locks when the sections are in alinement, said arms being arranged to be swung away from the nuts to permit the latter to be unscrewed when the sections are arranged at an angle to each other, substantially as described.

706,618. BALE-PRESS. SAMUEL J. WEBB, Hinden, La. Filed Feb. 23, 1901. Renewed Jan. 3, 1902. Serial No. 88,132. (No model.)

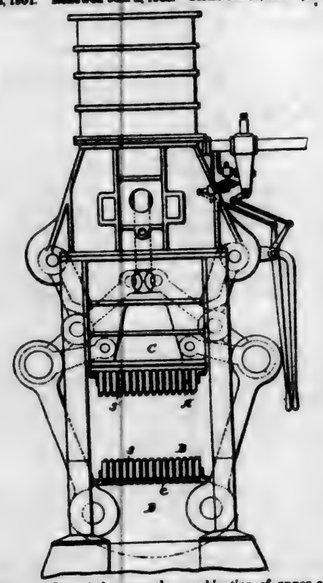

Claim.—1. In a bale-press, the combination of upper and lower platens, and means for moving the platens to and from each other, with means whereby the pressure at each end of each platen is changed from a vertical to an inclined direction to first compress the whole bale vertically and thereafter to compress the side portions of the bale to a greater extent than the central portion until two faces at about right angles to each other are formed at each side, substantially as described.

2. The combination in a bale-press, of means for applying pressure first vertically to reduce the height of a bale, and devices whereby to thereafter compress the side portions to a greater extent than the center until each side portion is brought to conform to two faces substantially at right angles to each other, substantially as described.

3. A press having upper and lower platens, each platen consisting of sections pivoted to the platen-support nearest the outer ends and extending inward toward each other, and means for maintaining the sections normally with their working faces approximately in the same horizontal plane but capable of yielding under high pressure to permit the sections to gradually assume a position with their faces at right angles to each other as the pressure is completed, substantially as described.

4. The combination in a press-platen, of two sections pivoted nearest their outer ends and back of their working faces, means for supporting and maintaining the sections normally with their working faces in approximately a horizontal plane, and means for permitting the sections to yield under heavy pressure until their working faces are at right angles to each other, substantially as described.

5. A press-platen, consisting of two rocking sections pivoted nearest their outer ends to assume positions with their working faces either approximately on a horizontal plane or at right angles to each other, and yielding means arranged to normally maintain the sections with their faces horizontal, substantially as described.

6. The combination with the platen-supports of a press, of sections pivoted thereto to present substantially flat faces to the bale at the beginning of the pressure and to present faces at a right angle as the pressure is completed, substantially as described.

7. The combination with the platen-supports of a press, of sections pivoted to present substantially flat faces to the bale at the beginning of the pressure and to present faces at a right angle as the pressure is completed, with means for resisting the movement toward the final position, substantially as described.

8. The combination with the platen-supports of a press, of sections pivoted thereto to present substantially flat faces to the bale at the beginning of the pressure and to present faces at a right angle as the pressure is completed, with springs for resisting the movement toward the final position, substantially as described.

9. The combination in a press, of a press-platen having rocking sections pivoted to rock as the platens are brought together, and yielding means for resisting the rocking movement, substantially as described.

10. The combination in a press, of a press-platen having rocking sections pivoted to rock as the platens are brought together, and yielding means for resisting the rocking movement constructed to prevent such movement until the maximum pressure is approximated, substantially as described.

11. The combination in a press-platen, of two pivoted sections connected to rock together, and means for resisting the rocking motion, substantially as described.

12. The combination in a press-platen, of two sections each consisting of a series of independent sectors pivoted to assume positions with their faces approximately horizontal or at right angles, and means for supporting the sectors yieldingly with the working faces in horizontal position, substantially as described.

706,619. BEAM FOR RAILROAD-TRACK FOUNDATIONS. LAWRENCE R. WEST, Cincinnati, Ohio. Filed Dec. 14, 1901. Serial No. 86,004. (No model.)

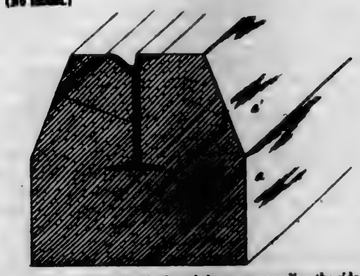

Claim.—1. A longitudinal track-beam surrounding the sides and bottom of a rail and composed of asphalt, coal-tar or other bituminous products mixed with sand, crushed stone and like material.

2. A longitudinal track-beam composed of asphalt, coal-tar or other bituminous products mixed with sand, crushed stone and like material laid at the sides and beneath the rail and tamped, so that said rail will be embedded and supported therein.

3. A longitudinal track-beam composed of asphalt, coal-tar or other bituminous products mixed with sand, crushed stone and like material, and laid at the sides and beneath the rail and tamped so that said rail will be embedded and supported therein, the said beam being wider at the base than at the top.

4. A longitudinal track-beam composed of asphalt, coal-tar or other bituminous product mixed with sand, crushed stone or like material laid at the sides and beneath the rail, the top of the beam being flush with the top of the rail.

5. In a longitudinal track-beam for railways, the combination with the rail having a base-flange, of a beam composed of asphalt, coal-tar or other bituminous products mixed with sand, crush stone or similar material, and laid and tamped at the sides and beneath the base-flange of the rail, so that the said rail will be embedded in the beam.

706,620. WAVE-MOTOR. ESBEY WILLIAMS, Wilbur, Or. Filed Dec. 17, 1901. Serial No. 86,303. (No model.)

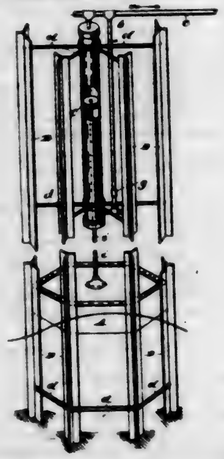

Claim.—1. The combination with a vertical, double-acting air-pump, of a vertically-movable float having non-corrosive friction-plates on the lateral sides thereof, and operating between vertical guide-bars having non-corrosive friction-strips attached thereto; said float being attached to the piston-rod of said pump, all substantially as described and for the purpose set forth.

2. The combination with a vertically-movable float adapted to operate a vertical, double-acting air-pump, of one or more other similar air-pumps and floats, the said floats being arranged to operate between several three-way vertical guide-bars D substantially as described and for the purposes specified.

706,621. SINK-STRAINER. SAMUEL F. WILLIAMS, San Francisco, Cal. Filed Sept. 3, 1901. Serial No. 74,174. (No model.)

Claim.—A sink-strainer of the character described, comprising a perforated plate or disk having a central opening with a screw-threaded edge and a screw-threaded pendent sleeve in continuation of said opening, having upon its outer surface a flange, a second perforated plate or disk arranged upon said sleeve below said first plate and carried by said flange, and means for retaining said second plate, substantially as set forth.

706,622. CONTROLLING MECHANISM FOR PRINTING-PRESSES. WILLIAM C. WILLIAMS, Brooklyn, N. Y., assignor to William H. Klein, Chicago, Ill. Filed Sept. 3, 1901. Serial No. 74,169. (No model.)

Claim.—1. In a device of the character specified, the combination with a suitable backing member, of a contact member journaled adjacent

to said backing member, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a suitable controlling device constructed to be operated by said contact member, and means whereby the contact member is released from the material after operating the controlling device.

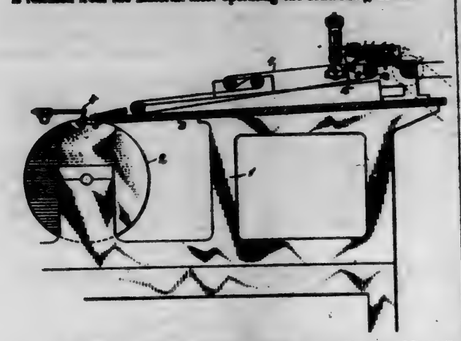

2. In a device of the character specified, the combination with a suitable backing member, of a contact member journaled adjacent to said backing member, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a suitable controlling device constructed to be operated by said contact member, means for normally withholding said contact member from engagement with said controlling device, and means whereby the contact member is released from the material after engaging the controlling device.

3. In a device of the character specified, the combination with a suitable backing member, of an unbalanced contact member journaled adjacent to said backing member, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a suitable controlling device constructed to be operated by said contact member, and means whereby the contact member is released from the material after operating the controlling device.

4. In a device of the character specified, the combination with a suitable backing member, of a support movably mounted adjacent to said backing member, a contact member journaled on said support, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, and a controlling device constructed to be operated by said contact member, the construction being such that the contact member is released from the material after operating the controlling device.

5. In a device of the character specified, the combination with a suitable backing member, of a support movably mounted adjacent to said backing member, a contact member journaled on said support, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a controlling device constructed to be operated by said contact member, and means for limiting the movement of the contact member whereby the support is operated to release the contact member from the material after the controlling device is operated.

6. In a device of the character specified, the combination with a suitable backing member, of a support movably mounted adjacent to said backing member, a contact member journaled on said support, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a controlling device connected to said support, and a stop for limiting the movement of the contact member whereby the support is caused to operate the controlling device and to release the contact member from the material.

7. In a device of the character specified, the combination with a backing-roller, of a lever pivoted adjacent to said roller, an unbalanced contact-wheel journaled on said lever, said wheel having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a controlling device connected to said lever, and a stop carried by said lever for limiting the movement of the contact-wheel whereby said lever is caused to operate the controlling device and to release the contact-wheel from the material.

8. In a device of the character specified, the combination with a suitable backing member, of a contact member journaled adjacent to said backing member, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a fluid-operated controlling mechanism, a device for controlling the operating fluid constructed to be operated by said contact member, and means whereby the contact member is released from the material after operating the controlling device.

9. In a device of the character specified, the combination with a backing-roller, of a lever pivoted adjacent to said roller, an unbalanced contact-wheel journaled on said lever, said wheel having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, a fluid-operated controlling mechanism, a valve for controlling the operating fluid connected to said lever, and a stop carried by said lever for limiting the movement of the contact-wheel whereby said lever is caused to operate the controlling device and to release the contact-wheel from the material.

10. In a device of the character specified, the combination with a fluid-operated controlling mechanism, of a valve for controlling the operating fluid, and means for operating said valve comprising a suitable backing member, a contact member movably mounted adjacent to said backing member, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device and means whereby the contact member is released from the material after the valve has been operated.

11. In a device for feeding sheets of paper or similar material to a printing-press or other machine having front gages the combination with means for conveying the sheet to the machine, of means independent of the machine for timing the passage of the sheets to the machine, and a sheet-operated device for controlling the machine located between said timing means and the sheets when the latter are in position against the front gages of the machine.

12. In a device for feeding sheets of paper or similar material to a printing-press or other machine having front gages the combination with means for conveying the sheet to the machine, of means independent of the machine for timing the passage of the sheets to the machine, and a device operated by an abnormal thickness of material for controlling the machine located between said timing means and the sheets when the latter are in position against the front gages of the machine.

13. In a device for feeding sheets of paper or similar material to a printing-press or other machine having front gages the combination with means for conveying the sheet to the machine, of means independent of the machine for timing the passage of the sheets to the machine, and a sheet-operated device for controlling the machine located between said timing means and the sheets when the latter are in position against the front gages of the machine, said sheet-operated device consisting of a backing member, and a contact member movably mounted adjacent to said backing member and having a bearing-surface arranged to be gripped by an abnormal thickness of material passing through the device.

14. In a device for feeding sheets of paper or similar material to a printing-press or other machine the combination with means for conveying the sheet to the machine, of means independent of the machine for timing the passage of the sheets to the machine, and a sheet-operated device for controlling the machine located between said timing means and the machine, said sheet-operated device consisting of a backing member, and a contact member movably mounted adjacent to said backing member and having a bearing-surface arranged to be gripped by an abnormal thickness of material passing through the device, and means whereby the contact member is released from the material after the controlling device has been operated.

15. In a device of the character specified, the combination with a fluid-operated controlling mechanism including a tube mounted transversely to the path of the paper in the machine and an arm adjustably mounted on said tube, said arm having a valve-port connected to said tube by a flexible pipe, of a controlling-valve mounted on said arm, and means rendered operative by an abnormal thickness of material for operating said valve.

16. In a device of the character specified, the combination with a fluid-operated controlling mechanism including a tube mounted transversely to the path of the paper in the machine and an arm adjustably mounted on said tube, said arm having a valve-port connected to said tube by a flexible pipe, of a controlling-valve mounted on said arm, and means for operating said valve comprising a suitable backing member and a contact member movably mounted adjacent to said backing member, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device.

17. In a device of the character specified, the combination with a fluid-operated controlling mechanism including a tube mounted transversely to the path of the paper in the machine and an arm adjustably mounted on said tube, said arm having a valve-port connected to said tube by a flexible pipe, of a controlling-valve mounted on said arm, and means for operating said valve comprising a suitable backing member and a contact member movably mounted adjacent to said backing member, said contact member having a bearing-surface arranged to be gripped by an abnormal thickness of the material passing through the device, and means whereby the contact member is released from the material after the device has been operated.

706,623. CONTROLLING MECHANISM FOR PRINTING-PRESSES. William C. Williams, Brooklyn, N. Y., assignor to William M. Klein, Chicago, Ill. Filed Sept. 3, 1901. Serial No. 74,104. (No model.)

Claim.—1. In a printing-press or similar paper-manipulating machine the combination with a fluid-operated controlling mechanism including an arm having a valve-port, of a controlling-valve pivoted on said arm, and a contact-finger connected to said valve and arranged in such relation to the path of the paper in the machine that a crumpling of the paper will operate said controlling-valve.

2. In a printing-press or similar paper-manipulating machine the combination with a fluid-operated controlling mechanism including an arm having a valve-port, of a valve pivoted on said arm and constructed to open and close said port by a movement transverse thereto, and a contact-finger connected to said valve and arranged in such relation to the path of the paper in the machine that a crumpling of the paper will operate said controlling-valve.

3. In a printing-press or similar paper-manipulating machine, the combination with a fluid-operated controlling mechanism including a tube mounted transversely to the path of the paper in the machine and an arm adjustably mounted on said tube, said arm having a valve-port connected to said tube by a flexible pipe, of a controlling-valve pivoted on said arm, and a contact-finger connected to said valve and arranged in such relation to the path of the paper that a crumpling of the paper will operate said controlling-valve.

4. In a printing-press or similar paper-manipulating machine the combination with a fluid-operated controlling mechanism including a tube mounted transversely to the path of the paper in the machine and an arm adjustably mounted on said tube, said arm having a valve-port connected to said tube by a flexible pipe, of a valve constructed to open and close said valve-port by a movement transverse thereto, and a contact-finger connected to said valve and arranged in such relation to the path of the paper that a crumpling of the paper will operate said controlling-valve.

5. In a printing-press the combination with an impression-cylinder and a set of automatically-operated fingers for stripping the sheets therefrom, of a fluid-operated controlling mechanism, a controlling-valve therefor and a contact-finger connected to said valve and arranged in such relation to said stripping-fingers that a crumpling of the paper will upon the movement of said stripping-fingers operate said controlling-valve.

706,624. BED-SPRING. Hyrum Western, Atlanta, Ga. Filed Nov. 27, 1901. Serial No. 83,202. (No model.)

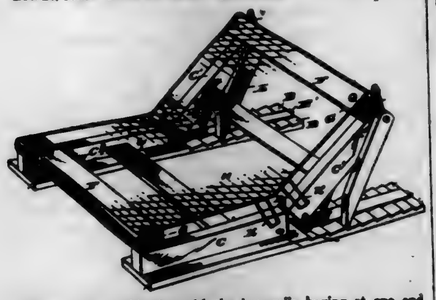

Claim.—The combination with the base-rails, having at one end double racks, of the rigid strips at one end of said rails, the movable strips hinged to said rigid strips, the latches for holding said hinged strips in line, cross-strips, a wire fabric secured to said cross-strips, fastenings upon opposite sides of the hinges connecting the wire fabric to the hinged and rigid strips to secure the wire fabric to the said strips, pivoted detents carried by the free end of the movable section to engage said racks, and means for connecting one of the sections with the other at their hinge-joint, substantially as shown and described.

706,625. REFRIGERATING-MACHINE. Willard J. Woodside, Brooklyn, N. Y. Filed Feb. 26, 1901. Serial No. 49,398. (No model.)

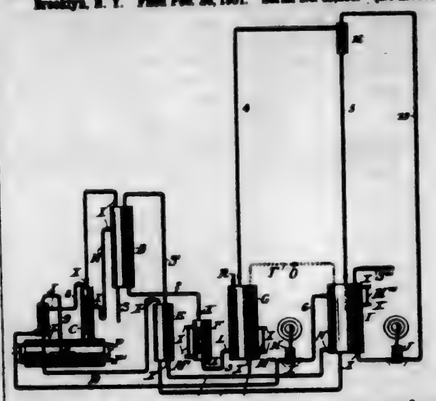

Claim.—1. In combination, an absorber having an entrance for gas, a reception vessel having an entrance for weak liquor, and an exit for strong liquor, means for withdrawing weak liquor from the reception vessel and delivering it to the absorber, means for returning enriched liquor from the reception vessel adapted to maintain a low pressure in the absorber, substantially as specified.

2. In combination, an absorber having an entrance for gas, a reception vessel having an entrance for weak liquor, and an exit for strong liquor, means provided to cool the liquor circulated, means for withdrawing weak liquor from the reception vessel and delivering it to the absorber, means for returning enriched liquor from the absorber to the reception vessel adapted to maintain a low pressure in the absorber, substantially as specified.

3. In combination, an expansion-chamber having an entrance for liquid and exit for gas, connections to conduct the gas to an absorber having an entrance to receive it, a reception vessel having an entrance for weak liquor and exit for strong liquor, means for withdrawing weak liquor from the reception vessel and delivering it to the absorber, means for returning enriched liquor from the absorber to the reception vessel adapted to maintain a low pressure in the expansion-chamber, substantially as specified.

4. In combination, an expansion-chamber having an entrance for liquid and exit for gas, connections to conduct the gas to an absorber having an entrance to receive it, a check-valve placed in said connection, a reception vessel having an entrance for weak liquor, and an exit for strong liquor, means for withdrawing weak liquor from the reception vessel, and delivering it to the absorber, means for returning enriched liquor from the absorber to the reception vessel adapted to maintain a low pressure in the absorber, substantially as specified.

706,626. GRAIN-DOOR FOR RAILROAD BOX-CARS. John W. Wess, Terre Haute, Ind. Filed June 27, 1901. Serial No. 66,311. (No model.)

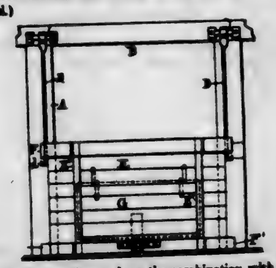

Claim.—1. In a grain-car door, the combination with two hangers having hooks at their lower ends and pivoted at their upper ends at each

side of the door-frame, of a door provided near each side edge with upper and lower eyes, the former in constant engagement with the adjacent hanger and the latter adapted to pass over said hanger when the door is raised; and be engaged by the hooked end of said hanger.

2. A grain-car door, comprising two hangers having hooks at their lower ends and pivoted at their upper ends to the frame of the car, a main door provided at its inner side near each edge with a small upper eye engaging said hanger above the hook and a large lower eye adapted to pass over said hook when the door is raised, a small door hinged to said main door and closing an opening therein, cooperating fastening devices on said small door and on the lower part of the main door, and a fastening device in the car-roof for suspending the door when raised on the hangers and turned up against the roof.

706,627. ATTACHMENT FOR PHONOGRAPHS. MARSH M. WOOLVERTON, New London, Conn. Filed Aug. 5, 1901. Serial No. 71,021. (No model.)

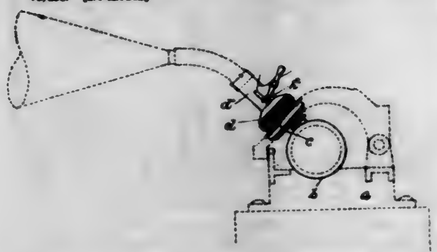

Claim.—1. In a phonograph, a sound-modifying chamber adapted to be interposed between the diaphragm and the trumpet, and means within said chamber for varying the size thereof, substantially as described.

2. In a phonograph, a sound-modifying chamber adapted to be interposed between the diaphragm and the trumpet, and means within the chamber and operable from the exterior thereof for varying its size, substantially as described.

3. In a phonograph, a sound-modifying chamber adapted to be interposed between the diaphragm and the trumpet, and means within said chamber independent of the diaphragm for varying its size, substantially as described.

4. In a phonograph, a sound-modifying chamber adapted to be interposed between the diaphragm and the trumpet, a longitudinally-movable abutment in said chamber of substantially the same size as the internal diameter thereof, and means for moving said abutment to vary the size of the chamber, substantially as described.

5. In a phonograph, a sound-modifying chamber adapted to be interposed between the diaphragm and the trumpet, and means within said chamber for establishing or eliminating communication between the same and the trumpet, substantially as described.

6. In a phonograph, a sound-modifying chamber adapted to be interposed between the diaphragm and the trumpet, and means within the chamber for establishing or eliminating communication between the same and the trumpet while the machine is in operation, substantially as described.

7. In a phonograph, a sound-modifying chamber adapted to be interposed between the diaphragm and the trumpet, and means within and operable from the exterior of the chamber for establishing or eliminating communication between the same and the trumpet, substantially as described.

706,628. BOX-LID HOLDER AND LABEL-DISPLAYER. JOHN W. WRIGHT, Elk City, Kans. Filed Apr. 5, 1902. Serial No. 101,460. (No model.)

Claim.—1. A box-lid holder and label-displayer comprising a plate provided near one end with a hole for the insertion of a securing device, and having a portion of the other end of the plate rearwardly bent, and provided with a forwardly-extending tongue projecting from the plate near said bent portion, the said tongue being provided with a portion thereof disposed substantially parallel to the body of the plate, and the outer end of the tongue being bent away from the said plate, substantially as described.

2. A box-lid holder and label-displayer comprising a plate the body portion of which is provided with a rearwardly-projecting bent having a hole therethrough, and provided also with a tongue projecting away from the body and having a portion thereof disposed parallel with the body of the plate, substantially as described.

3. As an article of manufacture, a lid-holder and label-displayer consisting of a metallic plate having a bent formed on one side provided with a hole therethrough and having a tongue cut out from the body of the plate and extending forwardly therefrom and disposed in a portion thereof substantially parallel to the body of the plate, the said tongue being disposed upon the side of the plate opposite the said bent, substantially as described.

706,629. MACHINE-WRENCH. JOHN W. ALBRIGHT Kinsold, Kans. Filed Mar. 26, 1902. Serial No. 100,141. (No model.)

Claim.—1. In a wrench of the character described, a frame, bearings located at opposite ends of the frame and in line therewith, one of said bearings forming a handle, an operating-shaft journaled in the handle, a socket disposed at the end of the frame opposite the handle portion thereof, and a crank-handle adapted to be driven by the said operating-shaft at the outer end of the frame-handle by which the operating-shaft is turned, substantially as set forth.

2. In a device of the character described, in combination, a frame, bearings at opposite ends of the frame in line therewith and adapted to receive an operating-shaft journaled therein, one of said bearings forming a handle, a socket journaled with its axis about at a right angle with the axis of the operating-shaft and adapted to be rotated in the manner described, an arm pivoted intermediate the handle and socket ends of the frame and about parallel with the latter and adapted to carry a tool, and spring means for holding the said arm in an ascertained relation to the frame, substantially as described.

3. In a device of the character described, a frame, a handle located at one end of same and adapted in conjunction with a bearing at the opposite end of the frame to receive an operating-shaft rotatably journaled therein, an arm pivoted intermediate the ends of the frame about parallel therewith and adapted to carry a tool longitudinally slidable therein, the latter extending normally into the socket at the end of the frame, adjustable spring means for holding said arm in an ascertained relation to the frame and a set-screw adapted to limit the movement of the arm, substantially as set forth.

706,630. FILE. JOHN D. ALLEN, Athens, Ga. Filed Sept. 14, 1901. Serial No. 75,267. (No model.)

Claim.—A file composed of an outer case open at the bottom and closed at the top, an inner file-case open at the top and closed at the bottom and having tapered sides adjacent to said bottom, a hinged right-angled latch on the outer case to engage the bottom of the inner file-case, a vertical filing-pin within said inner file-case and a retainer for said filing-pin at the upper end thereof, substantially as described.

706,631. CHEMICAL GENERATOR OF ELECTRICITY. EDWARD L. ANDERSON, St. Louis, Mo., assignor to John A. Gillam, trustee, St. Louis, Mo. Filed Sept. 30, 1901. Serial No. 77,010. (No model.)

Claim.—1. In a single fluid-cell, an aluminium electrode, a negative electrode, and an electrolyte in contact with both of said electrodes containing a suitable halogen salt and nitric acid.

2. In a chemical generator of electricity, an aluminium electrode, a negative electrode, and an electrolyte containing a fluorid and nitric acid.

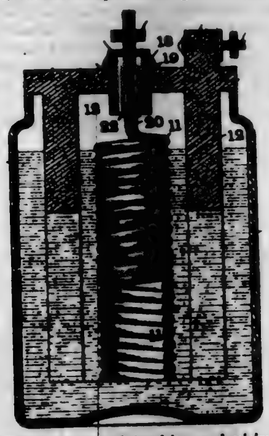

3. In a chemical generator of electricity, an aluminium electrode, a negative electrode, and an electrolyte containing calcium fluorid and nitric acid.

4. In a chemical generator of electricity, an aluminium electrode, a negative electrode, and an electrolyte containing a fluorid, a chlorid, and nitric acid.

5. In a chemical generator of electricity, an aluminium electrode, a negative electrode, and an electrolyte containing calcium fluorid, zinc chlorid, and nitric acid.

6. In a chemical generator of electricity, an aluminium electrode, a negative electrode, and an electrolyte containing a suitable halogen salt, nitric acid, and a depolarizing agent.

7. In a chemical generator of electricity, an aluminium electrode, a negative electrode, and an electrolyte containing a fluorid, an acid, and a depolarizing agent.

706,632. ARMATURE-WINDING FOR INDUCTION-MOTORS. ALBERT H. ARMSTRONG, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Original application filed Nov. 3, 1897, Serial No. 657,508. Divided and this application filed Jan. 17, 1901. Serial No. 43,615. (No model.)

Claim.—1. An induction-motor winding comprising a plurality of conductors united at their ends by webs integral therewith, the said winding being adapted to be wrapped around an armature-core and secured thereon.

2. As an induction-motor winding, a cast-metal grid comprising a plurality of conductors united by web connections at their ends, the said winding being adapted to be wrapped around an armature-core and secured thereon.

3. An induction-motor winding comprising a plurality of parallel bars connected at their ends by flexible integral intermediate portions.

4. An induction-motor winding comprising a plurality of parallel bars arranged side by side and connected at their ends by flexible integral webs arranged perpendicular to said bars.

5. In combination, a core comprising a body of toothed laminæ, a grid, constituting a closed-circuited winding, comprising a plurality of conductors having end connections formed integral therewith, and means for fastening said grid in position on the core.

6. A winding for an electric motor, consisting of a cast-metal grid composed of parallel bars and end webs perpendicular thereto, and provided at one end of the grid with an offset portion.

7. The combination in an induction-motor, of a toothed core and a winding consisting of a grid adapted to be wrapped around the core, the said grid being composed of parallel bars adapted to fit between the teeth of the core and connected by intermediate portions arranged to lie against the ends of the core.

706,688. GAS-BURNER. ADOLF BELOW, Pittsburg, Pa., assignor of two-fifths to Frederic Hartley, Pittsburg, Pa., and Charles H. Parsons, Sharon, Pa. Filed Jan. 31, 1902. Serial No. 91,031. (No model.)

Claim.—1. A burner of the class described having a deflector and a narrow channel leading therefrom to the flame, a primary mixer open to the outer air and having its inner end disposed opposite the deflector, means to discharge a jet of gas against the deflector, through the primary mixer, whereby the commingled gas and air will be disposed in a thin film on the surface of the deflector, and a secondary mixer, to admit air to the surface of the deflector, at a point between the primary mixer and the intake of the channel, substantially as described.

2. In combination with an outer casing having a flared portion and a contracted tubular portion leading therefrom, said tubular portion having means to admit air; a deflector in said casing, disposed proximate to the flared portion and across the contracted portion thereof, a narrow channel being thereby formed between them; an air-intake funnel disposed in the contracted portion of the casing, opposite the deflector and open at its outer end for the admission of air, and a gas tip or nozzle disposed to discharge a jet through the air-intake funnel and directly against the deflector, the air-intake funnel forming a primary mixing-chamber, the space between said funnel and the contracted tubular portion of the casing forming a secondary mixing-chamber, at the surface of the deflector, from which secondary mixing-chamber the mixed gas and air pass through the narrow channel to the flame, substantially as described.

3. In combination with an outer casing having a flared portion and a contracted tubular portion leading therefrom, said tubular portion having air-inlet openings and means to vary the effective area thereof; a deflector in said casing, disposed proximate to the flared portion and across the contracted portion thereof, a narrow channel leading to the flame being thereby formed between them; an air-intake funnel, disposed in the contracted portion of the casing, opposite the deflector, and open at its outer end for the admission of air, and a gas tip or nozzle disposed to discharge a jet through the air-intake funnel and directly against the said deflector, for the purpose set forth, substantially as described.

4. In a burner, a mixing-chamber, a deflector therein and spaced therefrom to form a narrow channel between said mixing-chamber and said deflector and an annular flame-spreader disposed above the said channel and adapted to contain water, substantially as described.

706,684. STOPPER FOR BOTTLES. ARTHUR BLEIER, La Varenne, France. Filed June 3, 1902. Serial No. 109,510. (No model.)

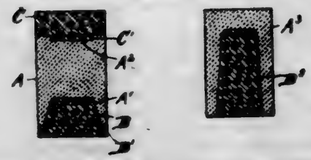

Claim.—1. In a stopper for bottles, the combination with a gas and water proof cylindrical body portion formed from a solid piece of material consisting of powdered cork and nitrocellulose and having a longitudinal opening in its inner end, of a plug of natural cork fitted within the opening, the said plug being adapted to exert an outwardly-directed expansive action upon the annular walls of the body portion which is inserted in the neck of the bottle, in the manner and for the purpose described.

2. In a stopper for bottles, the combination with a gas and water proof body portion formed from a solid piece of material consisting of cork and nitrocellulose and provided with a longitudinal opening in its inner end, of a plug of natural cork fitted within the opening, the said plug being adapted to exert an outwardly-directed expansive action upon the annular walls of the body portion which is inserted in the neck of the bottle, and a flange on the plug lies against the face of the body portion at the inner end of the latter, and constituting an extension of said body portion, in the manner and for the purpose set forth.

3. In a stopper for bottles, the combination with a gas and water proof cylindrical body portion formed from a solid piece of material consisting of powdered cork and nitrocellulose and provided with a longitudinal opening in each end, of a plug B of natural cork fitted within one opening, a flange on said plug, a cap C of natural cork in the other opening, substantially as and for the purpose described.

4. In a stopper for bottles, the combination with a gas and water proof cylindrical body portion formed from a solid piece of material consisting of powdered cork and nitrocellulose, impregnated with paraffin, and provided with a longitudinal opening in each end, a plug of natural cork fitted within one opening, a flange on this plug, a cap of natural cork fitting within the opening in the other end of the body portion, substantially as and for the purpose described.

706,685. CAN AND METHOD OF ATTACHING A LABEL THERETO. THOMAS C. BOOTH, New Brunswick, N. J. Filed Nov. 30, 1900. Serial No. 38,943. (No model.)

Claim.—1. The combination with a metallic can having its edges united by an interlocked seam, of a label coextensive with the can-blank and included between the laps of the seam.

2. The combination with a metallic can having its edges united by an interlocked seam, of a label pasted to the exterior of the can and coextensive with the can-blank and included between the laps of the seam.

3. The herein-described method of securing a label to a metallic can, which consists first in pasting the label to the can-blank, the label to be coextensive with the blank, then bending the blank to the desired form, and then interlocking the edges of the blank to confine the label between the interlocked parts, substantially as and for the purpose specified.

706,686. EXHAUST-MUFFLER. ROBERT E. BOURFIELD, Bay City, Mich. Filed Oct. 8, 1900. Serial No. 32,364. (No model.)

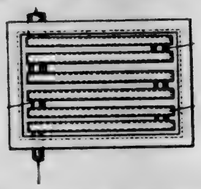

Claim.—In an exhaust-muffler for gas-engines the combination of a closed water-tight containing vessel having a water-inlet near its bottom and a water-outlet at its top; of a plurality of flat-sided water-tight cells spaced a short distance apart and arranged side by side within said containing vessel, the first cell of the series being connected at one end with the exhaust-pipe of the gas-engine, and connected near the lower part of its opposite end with the second cell of the series by means of a short tube; the remaining cells being connected alternately at their opposite ends, and the last cell having a discharge-outlet outside the containing vessel, substantially as described.

706,687. REVERSING-GEAR FOR ENGINES. VICTOR W. CLOUSE, Geneseo, Ill. Filed Mar. 3, 1902. Serial No. 96,517. (No model.)

Claim.—1. The combination with an engine having two pistons moving in opposite directions, two driven shafts suitably connected to said pistons, gears on said shafts mutually engaging one another and a third suitably-journaled drive-shaft, of a sprocket mounted on each of said driven shafts, friction-clutches connected to said sprockets, suitable means of connection between said sprockets and said driving-shaft and suitable means for throwing one of said friction-clutches into engagement with the gear upon its shaft and the other friction-clutch out of engagement with the gear upon its shaft at the same time; substantially as described.

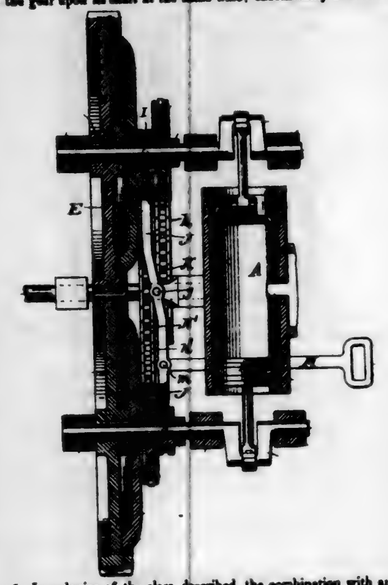

2. In a device of the class described, the combination with an engine having two gears moving synchronously in opposite directions, two shafts suitably connected to said gears, means of engagement between said shafts, whereby they are made to move synchronously in opposite directions and a suitably-journaled driving-shaft, of suitable gears loose upon said driven shafts, means of connection between said gears and said driving-shaft, and means for throwing either of said gears into engagement with its own shaft and at the same time releasing the other of them from similar engagement, substantially as described.

3. In a device of the class described, the combination with an engine having two pistons moving synchronously in opposite directions, two driven shafts suitably connected to said pistons, gears upon said shafts mutually engaging each other, and adapted to cause them to move synchronously in opposite directions and a third suitably-journaled driving-shaft, of loose collars upon said driven shafts, a friction-clutch adapted to engage its corresponding gear, a suitable sprocket-wheel and a grooved ring secured to each of said collars, a suitably-pivoted lever engaging both of said grooved rings and adapted to move said collars at the same time in opposite directions, suitable sprockets rigidly secured to said driving-shaft, and suitable means of connection between the sprockets mounted upon the collars and the sprockets mounted upon the driving-shaft; substantially as described.

4. In a device of the class described, the combination with two oppositely-driven shafts, gears thereon mutually engaging each other, and a suitably-journaled driving-shaft, of sprockets loosely mounted on each of said driven shafts, means of connection between said sprockets and said driving-shaft, and means whereby either of said sprockets may be thrown into engagement with the shaft on which it is mounted, the other sprocket being at the same time released from similar engagement with its shaft; substantially as described.

706,688. REVERSING-GEAR FOR ENGINES. VICTOR W. CLOUSE, Geneseo, Ill. Filed Mar. 3, 1902. Serial No. 96,518. (No model.)

Claim.—1. In a device of the class described, the combination with two oppositely-driven shafts substantially in line with each other, a suitably-journaled driving-shaft and gear-wheels thereon, of gears loosely mounted upon each of said driven shafts, means of connection between said gears, and the gears on said driving-shaft and means for securing engagement between one of said loosely-mounted gears and its shaft and at the same time for releasing the other of said loosely-mounted gears from similar engagement; substantially as described.

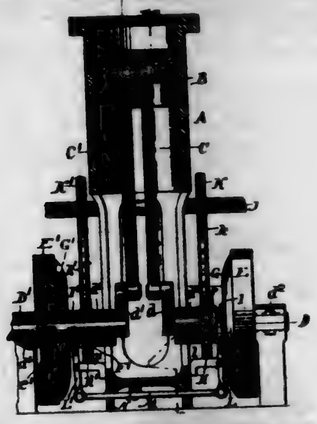

2. In a device of the class described, the combination with a cylinder and a piston therein, two connecting-rods pivotally connected to said piston, two suitably-journaled shafts adapted to be driven in opposite directions by said connecting-rods, and sprockets loosely mounted upon said shafts, of a suitably-journaled driving-shaft, sprockets secured thereon, means of connection between said sprockets and said loosely-mounted sprockets on said driven shafts, and means for producing engagement between one of said loose sprockets and its shaft, and at the same time for releasing the other of said loose sprockets from similar engagement; substantially as described.

3. In a device of the class described, the combination with a cylinder, a piston therein, two connecting-rods pivotally connected to said piston, two suitably-mounted shafts adapted to be driven in opposite directions by said connecting-rods, fly-wheels on said shafts, sleeves loosely mounted on said shafts, a sprocket-wheel and a friction-clutch on each of said sleeves, and means for throwing one of said clutches into engagement with the contiguous fly-wheel, at the same time releasing the other clutch from similar engagement, of a suitably-journaled driving-shaft, sprockets thereon, and means of connection between said sprockets and the aforesaid sprockets mounted on said sleeves; substantially as described.

4. In a device of the class described, the combination with a cylinder, A, a piston, B, therein, connecting-rods, C, C', connected to said piston, shafts, D, D', adapted to be driven in opposite directions by said connecting-rods, fly-wheels, E, E', secured upon said shafts, sleeves, F, F', upon said shafts, clutches, G, G', sprockets, H, H', and grooves, I, I', upon said sleeves, forks, L, L', engaging said grooves and means whereby both of said forks can be simultaneously shifted in the same direction, of a suitably-journaled driving-shaft, J, sprockets, K, K', upon said shaft, and chains, *k*, *k'*, connecting said sprockets with the sprockets, H, H'; substantially as described.

706,689. PNEUMATIC-DESPATCH APPARATUS. JAMES T. COWLEY, Lowell, Mass., assignor to the American Pneumatic Service Company, Dover, Del., a Corporation of Delaware. Filed Nov. 27, 1899. Renewed Dec. 14, 1901. Serial No. 86,912. (No model.)

Claim.—1. In a pneumatic-despatch apparatus, a despatch-tube, a terminal, a receiver for the carriers consisting of two receiving-tubes, mechanism consisting of a shaft having arms for moving said tubes and connecting-rods engaging with said arms and with said tubes, the connections on said arms and on said tubes being of equal distances from the centers of revolution, and mechanism for operating said shaft and connecting-rods.

2. In a pneumatic-despatch apparatus, a despatch-tube, a terminal, a receiver for the carriers consisting of two receiving-tubes, mechanism consisting of a shaft having arms for moving said tubes and connecting-rods engaging with said arms and with said tubes, the connections on said arms and on said tubes being of equal distances from the centers of revolution, a gear-wheel fast on said shaft, a cylinder, a piston located on said cylinder and provided with a piston-rod to engage with said gear-wheel and operate the same upon the movement of the piston, and an air-supply for operating said piston.

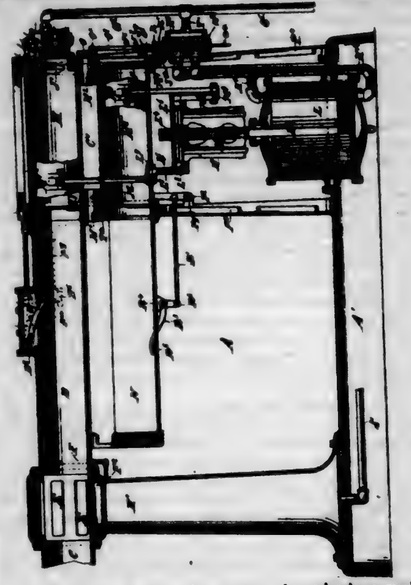

4. In a pneumatic-despatch apparatus, a despatch-tube, a receiver, means for cushioning the carrier by the air compressed ahead of the traveling carrier, and means for releasing the compressed air ahead of the carrier after the carrier has been cushioned so that the pressure behind the carrier will move it to the end of the receiver.

5. In a pneumatic-despatch apparatus, a despatch-tube, a receiver, means for cushioning the carrier by the air compressed ahead of the traveling carrier, and means operated by the carrier for releasing the compressed air ahead of the carrier after the carrier has been cushioned so that the pressure behind the carrier will move it to the end of the receiver.

6. In a pneumatic-despatch apparatus, a despatch-tube, a receiver, means for cushioning the carrier, means operated by the air compressed ahead of the carrier for preventing the escape of the compressed air ahead of the carrier until the carrier has been cushioned, and means for releasing the compressed air ahead of the carrier after the carrier has been cushioned so that the pressure behind the carrier will move it to the end of the receiver.

7. In a pneumatic-despatch apparatus, a despatch-tube, a receiver for the carriers consisting of receiving-tubes, mechanism for moving one of said tubes out of alinement with the despatch-tube for the discharge of the carrier and for moving another tube into alinement with the despatch-tube to receive a carrier from said despatch-tube, and mechanism located in the path of the carrier and operated thereby to actuate the mechanism for moving the receiver to discharge a carrier.

8. In a pneumatic-despatch apparatus, a despatch-tube, a receiver for the carriers consisting of receiving-tubes, mechanism for moving one of said tubes out of alinement with the despatch-tube for the discharge of the carrier and for moving another tube into alinement with the despatch-tube to receive a carrier from said despatch-tube, mechanism located in the path of the traveling carrier and operated thereby to admit air for operating said receiver-moving mechanism, and an air-supply for operating said receiver-moving mechanism.

9. In a pneumatic-despatch apparatus, a despatch-tube, a receiver for the carriers consisting of receiving-tubes, mechanism for moving one of said tubes out of alinement with the despatch-tube for the discharge of the carrier and for moving another tube into alinement with the despatch-tube to receive a carrier from said despatch-tube, an air-supply for oper-

ating said receiver-moving mechanism, mechanism located in the path of the traveling carrier and operated thereby to actuate the receiver-moving mechanism by air from said supply, and means for discharging the carrier.

10. In a pneumatic-despatch apparatus, a despatch-tube, a receiver for the carriers consisting of receiving-tubes, mechanism for moving one of said tubes out of alinement with the despatch-tube for the discharge of the carrier and for moving another tube into alinement with the despatch-tube to receive a carrier from said despatch-tube, an air-supply for operating said receiver-moving mechanism, mechanism located in the path of the traveling carrier and operated thereby to actuate the receiver-moving mechanism by air from said air-supply, an air-supply for discharging the carrier, and means for admitting air to discharge the carrier.

11. In a pneumatic-despatch apparatus, a despatch-tube, a receiver for the carriers consisting of receiving-tubes, a source of compressed air, mechanism operated by compressed air from said source for moving one of said tubes out of alinement with the despatch-tube for the discharge of the carrier and for moving another tube into alinement with the despatch-tube to receive a carrier from said despatch-tube, an air-supply for operating said receiver-moving mechanism, mechanism located in the path of the traveling carrier and operating thereby to admit air to said receiver-moving mechanism for operating said receiver-moving mechanism, and means for discharging the carrier.

12. In a pneumatic-despatch apparatus, a despatch-tube, a receiver for the carrier, mechanism for removing said receiver out of alinement with the despatch-tube for the discharge of a carrier, an air-supply for operating said mechanism, mechanism located in the path of the carrier and operated thereby to actuate said mechanism for moving the receiver for the discharge of a carrier, an air-supply for discharging said carrier, means for admitting air from said air-supply to discharge a carrier, and means operated by the discharged carrier for cutting off the air-supply which discharges the carrier.

13. In a pneumatic-despatch apparatus, a transmission-tube for the carriers, a movable receiver, a source of air-pressure, a cylinder having a piston connected to said receiver, a valve controlling the flow of air-pressure into said cylinder to operate the piston therein, mechanism located in the path of the traveling carrier and operated thereby to actuate said valve to admit air to said cylinder to move the receiver from alinement with the transmission-tube for the discharge of the carrier, and a valve controlling the flow of air-pressure into said receiver to discharge the carrier and adapted to be operated by the movement of the receiver from alinement with the transmission-tube to admit air into said receiver to discharge the carrier.

14. In a pneumatic-despatch apparatus, a transmission-tube for the carriers, a movable receiver, a source of air-pressure, a cylinder having a piston connected to said receiver, a valve controlling the flow of air-pressure into said cylinder to operate the piston therein, mechanism located in the path of the traveling carrier and operated thereby to actuate said valve to admit air to said cylinder to move the receiver from alinement with the transmission-tube for the discharge of the carrier, an outlet from said receiver for the escape of the air compressed by the traveling carrier, and a valve actuated by the air compressed by the traveling carrier and adapted to close the escape of compressed air from the receiver to cushion the carrier in the receiver.

15. In a pneumatic-despatch apparatus, a transmission-tube for the carriers, a movable receiver, a source of air-pressure, a cylinder having a piston connected to said receiver, a valve controlling the flow of air-pressure into said cylinder to operate the piston therein, mechanism located in the path of the traveling carrier and operated thereby to actuate said valve to admit air to said cylinder to move the receiver from alinement with the transmission-tube for the discharge of the carrier, an outlet from said receiver for the escape of the air compressed by the traveling carrier, a valve actuated by the air compressed by the traveling carrier and adapted to close the escape of compressed air from the receiver to cushion the carrier in the receiver, and means for opening said valve after the carrier has been cushioned.

706,640. TYPE-WRITING MACHINE. EDWIN R. GRAY, Brooklyn, N. Y., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y., a Corporation of New York. Filed Apr. 27, 1901. Serial No. 57,767. (No model.)

Claim.—1. In a type-writing machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, and a series of outlying key-operated toothed bell-cranks having parallel axes and geared directly to the type-bar hubs.

2. In a front-strike writing-machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, and a series of key operated toothed bell-cranks having horizontal axes and mounted in an ascending series, and having at their inner ends upwardly-extending overlapping toothed arms geared directly to the type-bar hubs.

3. In a type-writing machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, a series of key-levers extending rearwardly beneath the type-bars, a series of bell-cranks having horizontal axes and arranged in ascending series, said bell-cranks having upwardly-extending toothed arms which are geared directly to said type-bar hubs, and connections extending upwardly from said key-levers to said bell-cranks.

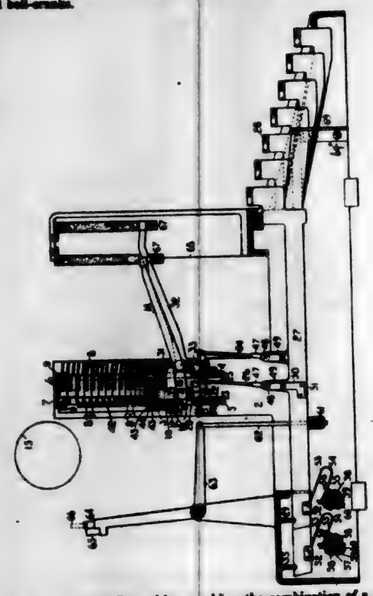

4. In a front-strike writing-machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, a series of keys, and a series of bell-cranks connected to the keys and having horizontal axes arranged in ascending series, the axes at the lower portion of the bell-crank system being disposed end to end, and those at the sides of the system overlapping one another, said bell-cranks having upwardly-extending arms which are geared directly to the type-bar hubs.

5. In a front-strike writing-machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, and a series of keys connected thereto, the type-bars at the sides of the system being connected to their keys by means of toothed bell-cranks having overlapping axes and geared directly to the type-bar hubs.

6. In a front-strike writing-machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, a group or series of outlying bell-cranks, the width of the group of bell-cranks being greater than the width of the system of type-bars and each bell-crank engaging directly the toothed hub of a type-bar, said bell-cranks being of substantially uniform size and having substantially parallel pivots, and the type-bar-engaging arms of the bell-cranks at the sides of the system being offset, and a series of key-levers connected to said bell-cranks.

7. In a front-strike writing-machine, the combination of a segment, a series of rearwardly-striking type-bars mounted thereon and having toothed hubs, a series of outlying bell-cranks of substantially uniform size and having horizontal axes, a series of key-levers extending rearwardly beneath said bell-cranks, each bell-crank being directly connected to the toothed hub of a type-bar, and links extending upwardly from said key-levers to said bell-cranks.

8. In a front-strike writing-machine, the combination of a rearwardly-striking type-bar having a toothed hub, and a key-operated bell-crank having a prolonged axis or shaft and also having an inwardly-offset arm which is geared directly to the type-bar hub.

9. In a front-strike writing-machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, and a series of outlying bell-cranks having horizontal axes and pivoted in ascending series, the bell-cranks at the sides of the system being mounted at gradually-increasing distances from their type-bars and having upwardly-extending arms which are correspondingly offset, said arms being geared directly to the type-bar hubs.

10. In a type-writing machine, the combination of a series of rearwardly-striking type-bars, a segment upon which said type-bars are mounted, an outlying frame, and a series of bell-cranks having parallel axes mounted in ascending series upon said frame and directly gearing with said type-bars.

11. In a front-strike writing-machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, a segment upon which said type-bars are mounted, an outlying frame, a series of toothed bell-cranks having horizontal axes and directly geared to said type-bar hubs, and mounted in a series of brackets attached to said frame in ascending series, and keys for operating said bell-cranks.

12. In a front-strike writing-machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, and a series of keys connected thereto, the type-bars at the sides of the system being connected to their keys by means of bell-cranks having overlapping axes and inwardly-offset toothed arms which are directly geared to the type-bar hubs.

13. In a front-strike type-writing machine, the combination of a series of type-bars whose hubs have bevel-gears, and a series of upright operating-levers having substantially parallel axes arranged in different horizontal planes, said levers having bevel-gears which mesh with said type-bar gears.

14. In a type-writing machine, the combination of a series of type-bars whose hubs have bevel-gears thereon, a series of parallel bell-crank operating-levers provided with offset-gears in mesh with said type-bar gears, and independent key-levers operatively connected to said bell-crank operating-levers.

15. In a type-writing machine, the combination of a type-bar having a toothed hub, an operating-lever having a grooved portion, and a series of pins set into and extending across the grooved portion of said operating-lever for meshing with the teeth in the type-bar hub.

16. In a type-writing machine, the combination of a type-bar having a cupped hub, teeth formed upon said hub, and an operating-lever having an axis at an angle to the type-bar axis and also having a groove in which is inserted a series of transverse pins for meshing with the teeth upon the type-bar hub.

17. In a type-writing machine, the combination of a segment, two sets of hangers, the bases of which are secured upon opposite sides of said segment, and type-bars mounted in said hangers, the pivots of the type-bars in one set being in a different plane from the pivots of the type-bars in the other set, and the bases of all of said hangers extending inwardly from the arms which support the type-bar pivots toward the printing-center.

18. In a type-writing machine, the combination of a segment, two sets of hangers mounted upon opposite sides of said segment, the hangers of one set being staggered with relation to the hangers of the other set, and type-bars mounted in said hangers, the pivots of the type-bars in one set being in a different vertical plane from but in the same horizontal plane as the pivots of the type-bars in the other set, the bases of all of the hangers extending inwardly toward the printing-center, and the type-bars mounted in one set of hangers working between the hangers in the other set.

19. In a type-writing machine, the combination of a segment having vertically-disposed parallel faces, a set of elbow-hangers mounted upon one side or face of said segment and overhanging the outer edge thereof, type-bars pivoted in said hangers, a set of hangers mounted upon the other side or face of said segment, and type-bars mounted in the second set of hangers, the bases of all of said hangers extending inwardly from the type-bar pivots.

20. In a front-strike writing-machine, the combination of a segment having vertically-disposed parallel faces, a set of hangers mounted upon the front face thereof, forwardly-extending type-bars pivoted in said hangers, a second set of hangers mounted upon the rear face of said segment, and forwardly-extending type-bars mounted in said second set of hangers, the bases of all of said hangers extending inwardly from the type-bar pivots, and the type-bars in the rear set working between the hangers of the forward set.

21. In a front-strike writing-machine, the combination of a vertically-disposed segment, a set of hangers mounted upon the front face thereof, forwardly-extending type-bars pivoted in said hangers, a set of elbow-hangers mounted upon the rear face of said segment, and having type-bar-bearing arms which extend horizontally forward past the outer edge of said segment, and type-bars mounted in said arms and working between the forward hangers.

22. In a type-writing machine, the combination of a segment, two sets of hangers secured upon the opposite faces thereof face and aft of the machine by oppositely-directed screws, and type-bars mounted in said hangers, the bases of all of said hangers extending inwardly toward the printing-center.

23. In a front-strike machine, the combination of a segment having parallel faces, a set of hangers secured upon the rear face thereof, a second set of hangers secured upon the front face thereof, each of said hangers having both a forwardly-extending type-bar-bearing portion and also a base portion which extends radially inward therefrom, the bases of the two sets of hangers being parallel, and type-bars pivoted in said hangers.

24. In a front-strike type-writing machine, the combination of a segment having vertically-disposed parallel faces, a set of hangers which are spaced apart, type-bars pivoted thereon, a second set of hangers arranged to alternate with said spaced hangers and secured to the rear face of the segment, arms on said second set of hangers which extend forwardly past the outer edge of the segment and type-bars which are pivoted to said arms and are adapted to work between said spaced hangers.

25. In a type-writing machine, the combination of a segment, a series of type-bars pivotally mounted thereon, a curved bar secured upon the inner edge of said segment, perforations formed in said bar, and guiding-slots also formed in said bar at said perforations, said type-bars engaging said guiding-slots at points between their pivots and types.

26. In a type-writing machine, the combination of a segment, a series of hangers mounted upon the rear face thereof and having arms which project forwardly beyond the forward face of said segment and carry type-bars at their forward ends, and a bar secured to the inner edge of said segment and having guiding-slots which are engaged by the type-bars at points between their pivots and types.

27. In a type-writing machine, the combination of type-bars whose hubs have gears thereon, operating-levers having progressively-increasing heads and gearing with said type-bar gears, and the pivots of the operating-levers being progressively elongated.

28. In a front-strike writing-machine, the combination of a segment, a series of radiating hangers fastened thereto by screws, said hangers having forwardly-extending arms in which type-bars are pivoted, and independent projections extending from said hangers with guiding-slots formed in said projections and engaged by the type-bars between their pivots and types.

29. In a front-strike writing-machine, the combination of a segment, a set of hangers fastened upon the rear face thereof and having arms which extend forwardly and carry pivoted type-bars at their forward ends, a bar secured upon the inner edge of said segment and having guiding-slots which are engaged by said type-bars at points between their pivots and types, a set of hangers fastened upon the forward face of said segment and having forwardly-extending arms which carry pivoted type-bars, the said arms being more remote from the printing-point than the bases of the hangers, and guiding-slots formed upon the bases of said hangers and engaged by the forward type-bars between their pivots and types, the type-bars in the rear set working between the hangers in the forward set.

30. A folded sheet-metal forked type-bar hanger having a filling-block between its ends, a space being left at the base end of the hanger for a fastening-screw, and a space being also left at the other end of the hanger for receiving the hub of the type-bar.

31. A folded sheet-metal forked hanger having a base, and also having type-bar-carrying arms extending angularly from said base, a filling-block being secured between the base portions of said arms.

32. In a front-strike writing-machine, the combination of two sets of alternating type-bars striking rearwardly at a common center, the type-bars in one set being pivoted forwardly of the type-bars in the other set, and two sets of upwardly-extending key-operated levers having horizontal axes situated in different vertical planes and engaging said type-bars.

33. In a front-strike writing-machine, the combination of two sets of rearwardly-striking type-bars having toothed hubs and printing at a common center, the type-bars in one set being pivoted forwardly of the type-bars in the other set, and two sets of pivoted key-actuated bell-cranks, the pivots of each set being parallel one with the other, and said bell-cranks being geared directly to said type-bar hubs.

34. In a front-strike writing-machine, the combination of two sets of type-bars striking rearwardly at a common center, the type-bars in one set being pivoted forwardly of the type-bars in the other set, two sets of bell-cranks directly geared to said type-bars, a system of key-levers extending rearwardly beneath said bell-cranks, the pivots of each set of bell-cranks being progressively elongated, and two rows of connections extending from said bell-cranks to said key-levers.

35. In a front-strike writing-machine, the combination of a segment, two sets of type-bars pivoted thereon and striking rearwardly at a common center, one set being pivoted forwardly of the other set, two sets of bell-cranks directly geared to said type-bars, a system of parallel key-levers extending rearwardly beneath the bell-cranks, and two transverse rows of vertical connections extending from said bell-cranks to said key-levers.

36. In a front-strike type-writing machine, the combination of pivoted type-bars segmentally arranged, a series of bell-crank levers segmentally arranged and operatively connected to said type-bars, and a series of key-levers operatively connected to said bell-cranks, the vertical arms of the bell-cranks having progressively-increasing heads from the

middle of the segment upward, and the pivots of the bell-cranks progressively increasing in length from the middle of the segment upward.

37. In a front-strike writing-machine, the combination of a system of key-levers, two sets of alternating type-bars striking rearwardly at a common center, one set pivoted forwardly of the other, a set of bell-cranks having horizontal axes and geared directly to the type-bars in the forward set, connections extending downwardly from said bell-cranks to their key-levers, a second set of bell-cranks having horizontal axes and geared directly to the type-bars in the rear set, and connections arranged in rear of the forward set of bell-cranks and extending down from the rear bell-cranks to their key-levers, the bell-cranks in each set being arranged in ascending series.

38. In a front-strike writing-machine, the combination of two sets of alternating type-bars striking rearwardly at a common center, two sets of pivotal supports for said type-bars mounted in two vertical planes, two sets of key-operated bell-cranks geared directly to the type-bars and situated in substantially the same vertical planes as the pivots of the type-bars, and two sets of fixed brackets in which said bell-cranks are pivoted, the pivots of the bell-cranks of each set being parallel with each other and progressively elongated.

39. In a type-writing machine, the combination of a segment, two sets of alternating type-bars pivotally mounted thereon, and two outlying plates each carrying a set of bell-cranks directly engaging the type-bars.

40. In a type-writing machine, the combination of a segment, two sets of hangers thereon, type-bars having toothed hubs and mounted in said hangers, the pivots of one set of hangers being in a different plane from the pivots of the other set of hangers, the bases of all of the hangers extending inwardly from their pivots toward the printing-center, and the type-bars in one set of hangers working between the hangers of the other set, and two sets of bell-cranks mounted in individual hangers and directly engaging said type-bar hubs, the axes of said bell-cranks being substantially parallel.

41. In a front-strike writing-machine, the combination of a segment, a set of hangers mounted upon the front face thereof, forwardly-extending type-bars having toothed hubs pivoted in said hangers, a set of hangers mounted upon the rear face of said segment, forwardly-extending type-bars having toothed hubs mounted in said rear hangers, the bases of all of said hangers extending inwardly from the type-bar pivots, two sets of bell-cranks of nearly uniform size and having horizontal axes and geared directly to said type-bar hubs, and keys connected to said bell-cranks.

42. In a type-writing machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, and two sets of outlying key-operated toothed bell-cranks each set having pivots which are parallel with one another, said bell-cranks being geared directly to the type-bar hubs, the pivots of one set of bell-cranks being in a different plane from the pivots of the other set.

43. In a front-strike writing-machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, and two sets of key-operated toothed bell-cranks having horizontal axes mounted in ascending series and having at their inner ends upwardly-extending overlapping toothed arms geared directly to the type-bar hubs, the pivots of one set of bell-cranks lying in a different plane from the pivots of the other set.

44. In a type-writing machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, a system of horizontal key-levers lying side by side and extending rearwardly beneath the type-bars, two sets of bell-cranks having horizontal axes and arranged below the type-bars, said bell-cranks having upwardly-extending toothed arms which are geared directly to the type-bar hubs, and two rows of connections extending upwardly from said key-levers to said bell-cranks.

45. In a front-strike writing-machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, two sets of outlying bell-cranks having toothed arms to engage said hubs, the width of each set of bell-cranks being greater than the width of the system of type-bars and said bell-cranks being of substantially uniform size and having substantially parallel pivots, the type-bar-engaging arms of some of the bell-cranks being offset, and a system of key-levers connected to said bell-cranks.

46. In a front-strike writing-machine, the combination of a segment, two sets of type-bars mounted in different vertical planes thereon and having toothed hubs and striking rearwardly at a common printing-center, two sets of outlying bell-cranks geared to said hubs and of substantially uniform size and having horizontal axes, the said sets of said bell-cranks cooperating with said sets of type-bars and each set of bell-cranks being situated in substantially the same plane as the plane of the pivots of the cooperating set of type-bars, a system of key-levers extending rearwardly beneath said bell-cranks, and links extending upwardly from said key-levers to said bell-cranks.

47. In a front-strike writing-machine, the combination of a system of rearwardly-striking type-bars having toothed hubs, a segment upon which said type-bars are mounted, two sets of brackets fixed upon an outlying framing, bell-cranks mounted in said brackets and directly geared to said type-bar hubs, said bell-cranks having horizontal axes, and the axes of one set being in a different plane from the axes of the other set, and keys connected to said bell-cranks.

48. In a type-writing machine, the combination of two separate series of type-bars pivoted in different vertical planes and whose hubs have bevel-gears, two sets of operating-levers having substantially parallel axes, one set of operating-levers for each set of type-bars, said levers having bevel-gears in mesh with said type-bar gears and independent key-levers for actuating said operating-levers.

49. In a front-strike type-writing machine, the combination of two separate series of type-bars whose hubs have bevel-gears cut thereon, two sets of operating-levers having progressively-increasing heads and gearing with said type-bar gears, the pivots of each set of operating-levers being progressively elongated, and independent key-levers for actuating said operating-levers.

50. In a front-strike writing-machine, the combination of two sets of type-bars pivoted to strike at a common center, two sets of key-levers, the levers in one set being fulcrumed in rear of the levers in the other set, a set of bell-cranks geared directly to one set of type-bars and connected to one set of key-levers, and a set of bell-cranks geared directly to the other set of type-bars and connected to the other set of key-levers.

51. In a front-strike writing-machine, the combination of two sets of type-bars pivoted so as to strike rearwardly to a common center, two sets of key-levers, one set of said key-levers being fulcrumed in rear of the other set, a set of intermediate levers connected to one set of type-bars and one set of key-levers, and a separate set of intermediate levers connected to the other set of type-bars and the other set of key-levers.

52. In a front-strike writing-machine, the combination of two sets of type-bars pivoted to strike at a common center, the type-bars in one set being pivoted in rear of the type-bars in the other set, two sets of key-levers, the key-levers of one set having bearings forwardly of the key-levers in the other set and bearing keys at the rear portion of the keyboard, the other set of key-levers bearing keys at the front portion of the keyboard, a set of bell-cranks geared directly to the type-bars in the forward set and connected to the key-levers having the forward bearings, and a set of bell-cranks arranged in rear of the first-mentioned set and geared directly to the other set of type-bars and connected to the key-levers having the rear bearings.

53. In a front-strike writing-machine, the combination of a system of type-bars, two sets of bell-cranks connected thereto, the bell-cranks of one set being arranged in rear of the bell-cranks in the other set, a set of key-levers having keys at the rear portion of the keyboard and connected to the forward set of bell-cranks, and a set of key-levers fulcrumed in rear of the first-mentioned key-levers and having keys at the forward portion of the keyboard and connected to the rear set of bell-cranks.

54. In a type-writing machine, the combination with a type-bar and a fulcrumed operating-lever therefor, of a loop-spring fixed at one end to said lever and directed obliquely therefrom, and an abutment against which the other end of the loop bears, the loop lying between said lever and said abutment, and working in the plane of the lever.

55. In a type-writing machine, the combination of a type-bar, an operating-lever therefor, a loop-spring secured at one end to said lever, an abutment against which the free end of the loop bears, said loop lying between the abutment and the lever, and a device at said abutment for guiding the free end of said loop.

56. In a type-writing machine, the combination of a type-bar, an operating-lever therefor, a loop-spring secured at one end to said lever, an adjustable abutment against which the free end of the loop bears, said loop lying between the abutment and the lever, and a device at said abutment for engaging the free end of said loop.

57. In a type-writing machine, the combination with a series of types, of a series of operating-levers, a fixed bar extending transversely of said levers, a comb extending along said bar, a series of springs fixed to said levers and engaging said comb, and a series of screws tapped into said bar and bearing against the free ends of said springs for adjusting the tension of the latter.

58. In a type-writing machine, the combination of a series of types, a series of key-levers connected thereto, a bar arranged transversely beneath the key-levers, a series of loop-springs fixed at their ends to said key-levers and extending to said bar, a comb arranged along said bar and engaged by the free ends of said springs, and a series of screws tapped into said bar and bearing against the free ends of said springs for adjusting the tension of the latter.

59. In a type-writing machine, the combination of a series of types, a series of key-levers connected thereto, a bar extending transversely beneath said key-levers, inclined combs secured upon opposite faces of said bar, loop-springs fixed upon the bottom edges of said levers and extending obliquely therefrom and engaging said combs, and a series of screws tapped into said bar and bearing against said springs for adjusting the tension of the latter.

60. In a type-writing machine, the combination of a series of types, a series of operating-levers therefor, a series of loop-springs secured upon said levers, and means for adjusting the free ends of said springs.

61. In a type-writing machine, the combination of a type-bar, a key-lever, an ear formed upon said key-lever, a yielding keeper riveted to said key-lever and extending alongside of said ear, a turnbuckle detachably secured between said ear and said keeper, and a type-bar-connecting rod threaded into said turnbuckle.

62. In a type-writing machine, the combination of a type, a pivoted arm connected thereto, pins fixed upon said arm at different distances from its pivot, a link having at its upper end a slotted head for engaging said pins in succession, and a key-lever connected to the lower end of said link.

63. In a front-strike writing-machine, the combination of a rearwardly-striking type-bar, a bell-crank connected thereto, a key-lever, and a connecting-rod extending from said key-lever to said bell-crank for engaging the latter at different points so as to decrease the key-leverage during the printing stroke.

64. In a front-strike writing-machine, the combination of a rearwardly-striking type-bar, a bell-crank directly geared thereto, pins arranged at different distances from the pivot of said bell-crank, a link having a slotted head for engaging said pins in succession during the printing stroke, and a key-lever to which said link is attached.

65. In a type-writing machine, the combination of a type, an arm 25 for operating said type, pins 70 on said arm, pins 71 arranged between the said pins 70 and the pivot of the arm, link 26 having heads 72, slots 73 in said head adapted to engage pins 70 at the initial portion of the printing stroke, a slot 74 in said head adapted to engage pins 70 during the completion of the printing stroke, and a key-lever to which said link is attached.

66. In a front-strike writing-machine, the combination of a series of rearwardly-striking type-bars, a series of bell-cranks connected thereto and having horizontal axes, a series of key-levers extending rearwardly beneath said bell-cranks, a series of links extending upwardly from the key-levers and each provided with slots 73 and 74, and pins 70 and 71 arranged upon the bell-crank arms for engagement with the slots.

67. In a front-strike writing-machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, a series of bell-cranks directly engaging said toothed hubs, a series of key-levers extending rearwardly beneath the bell-cranks, and a series of rods attached to the key-levers and having a leverage-decreasing connection with said bell-cranks.

68. In a type-writing machine, the combination of a series of rearwardly-striking type-bars having toothed hubs, a series of bell-cranks geared directly to said hubs, a series of keys, and means for decreasing the leverage of the keys upon the bell-cranks during the printing stroke.

69. In a type-writing machine, the combination of a series of rearwardly-striking type-bars, a series of key-levers, a series of sublevers arranged between the type-bars and the key levers, and a series of links connecting the key-levers to the sublevers and having a leverage-changing connection to the latter.

70. In a front-strike writing-machine, the combination of a platen, a segment, a set of hangers fastened upon the rear vertical face of said segment and extending forwardly beyond the front vertical face thereof, a set of type-bars pivoted in the hangers, a set of bell-cranks pivoted in substantially the same vertical plane as said type-bars, a second set of hangers fastened upon the front face of said segment and extending forwardly therefrom, a set of type-bars pivoted in said second set of hangers, a second set of bell-cranks pivoted in substantially the same plane as said second set of type-bars, and key-levers extending rearwardly beneath all of the bell-cranks and connected thereto.

71. In a front-strike writing-machine, the combination of a platen, a segment, a set of hangers fastened upon its rear face and extending forwardly past its outer edge, a set of rearwardly-striking type-bars pivoted in the forward ends of said hangers, a set of bell-cranks directly engaged to said type-bars and pivoted in substantially the same vertical plane, a plate upon which said bell-cranks are supported by means of brackets, a second set of hangers fastened upon the front vertical face of said segment and extending forwardly therefrom, a second set of type-bars pivoted in said second set of hangers, a set of bell-cranks directly engaging said second set of type-bars and pivoted in substantially the same vertical plane, a second plate upon which said second set of bell-cranks is supported by means of brackets, key-levers extending rearwardly beneath the bell-cranks, and links connecting all the bell-cranks to the key-levers.

706,641. FENCE. WILLIAM CRAIG, San Francisco, Cal. Filed Oct. 8, 1901. Serial No. 77,662. (No model.)

Claim.—In a fence, a longitudinally-channeled post, said post having longitudinal slots in its side walls and perforations in the bottom of the channel, wires passing through said perforations, a shaft to which one end of each of said wires attach, said shaft having its journal ends slidably mounted in the longitudinal slots in the side walls of the post so as to be freely movable across one of said perforations, a ratchet upon said shaft, a block or plate having a pawl thereon, by which said ratchet is engaged, said plate adapted to be inserted in the channel of the post, and to be freely slidable in the bottom of said channel.

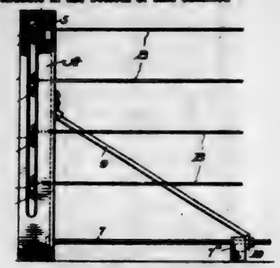

706,642. CLAMP FOR RETORT-MOUTHPIECES. JOHN C. DOAN, St. Louis, Mo., assignor to James Green, St. Louis, Mo. Filed Sept. 21, 1901. Serial No. 76,124. (No model.)

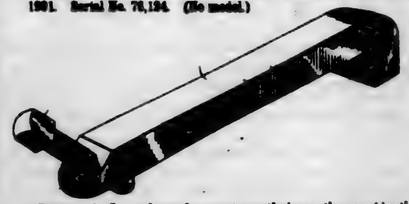

Claim.—1. In a clamp for retort-mouthpieces, the combination of a body having a straight outer end, a hook at its inner end and a screw movably seated in its outer end at an angle thereto, substantially as described.

2. In a clamp for retort-mouthpieces, the combination of a body having a hook at its inner end, and having a straight beveled forward end, and a screw passing through said forward end at an angle to the body of the clamp, substantially as described.

3. In a clamp for retort-mouthpieces, the combination of a body having a hook at its inner end, and having a beveled forward end and a screw passing through said beveled portion perpendicular thereto, whereby said screw receives a firm seat in said body.

706,643. CELERY-BLEACHING DEVICE. LOUIS DOPPELHAYE, Valverde, and MARIUS WIBER, Denver, Colo. Filed Apr. 22, 1901. Serial No. 56,562. (No model.)

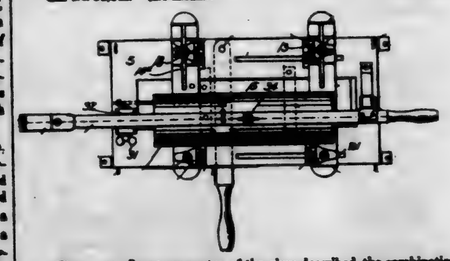

Claim.—1. In an apparatus of the class described, the combination of a platform having a central opening, a slide located in said opening, a cross-bar attached to the slide, standards attached to the cross-bar, a lever connected with the slide for adjusting the cross-bar, another cross-bar attached to the platform, standards attached to the cross-bar, and a vertically-swinging lever acting from above on the material embraced by the side standards.

2. The combination of a platform composed of two parts, one part being movable, cooperating side standards for embracing the material placed thereon, one set of standards being mounted on the movable part of the platform, a lever for adjusting the movable platform part and its standards, and another lever arranged to act from above on the material between the standards.

706,644. ELEVATOR-STOP. ELMER C. EDWARDS, Emporia, Kans. Filed May 16, 1902. Serial No. 108,716. (No model.)

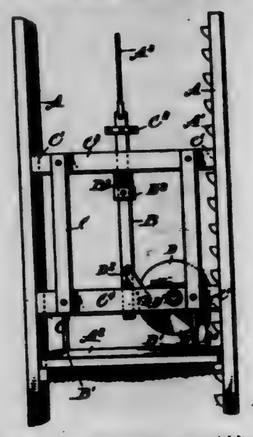

Claim.—1. In an elevator-stop, a frame comprising parallel members, a reciprocating supporting-rod, a lifting-cable connected therein, a fixed rack, a dog pivoted between said members and provided with a lateral projection to engage said frame in one position, and a connecting-link pivoted at opposite ends to said rod and to said dog; substantially as specified.

2. In an elevator-stop, a reciprocating supporting-rod, a lifting-cable connected therein, a fixed rack, a dog pivoted to engage said rack in one position, a connecting-link extending from said rod to said dog, a sliding frame in which said dog is mounted, and a stop-block carried by said dog to engage said frame; substantially as specified.

3. In an elevator-stop, a reciprocating supporting-rod, a lifting-cable connected therein, a fixed rack, a dog pivoted to engage said rack in one position, a connecting-link extending from said rod to said dog, a sliding frame in which said dog is mounted, a stop-block carried by said dog to engage said frame, a collar supported by said rod, and a spring extending between said frame and collar; substantially as specified.

4. In an elevator-stop, a sliding frame, a rotary dog mounted therein, a rack at one side of said frame, a peripheral point carried by said dog to engage said rack, a stop-block carried by said dog to engage said frame, and means for rotating said dog upon its pivot; substantially as specified.

5. In an elevator-stop, a sliding frame, a rotary dog mounted therein, a rack at one side of said frame, a peripheral point carried by said dog to engage said rack, a stop-block carried by said dog to engage said frame, a car beneath said frame, a lifting-cable, a rod passing through said frame and connecting said cable and dog, and a supporting-head upon said rod; substantially as specified.

706,645. GRIT-MILL. CLIFFORD S. BOALER, Boston, Pa., and JAMES W. TREMAYNE, Shamokin, N. J. Filed Jan. 7, 1902. Serial No. 88,511. (No model.)

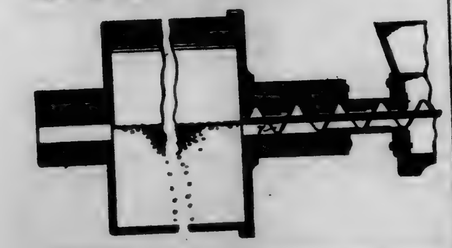

Claim.—The combination with a grit-mill and its hollow trunnion, of a feed-sleeve communicating with said trunnion and having an opening surrounded by said trunnion, and a ring of buckets rotating in unison with the trunnion and positioned to have their buckets successively register with the opening in the sleeve, and a feed-conveyer extending through said sleeve and designed to carry the material discharged by said buckets through said opening, into the mill, substantially as set forth.

706,646. AUTOMATIC STOP MECHANISM FOR BUTTONHOLE-MACHINES. PHILIP FARRIS, Baltimore, Md. Filed Oct. 21, 1901. Serial No. 79,208. (No model.)

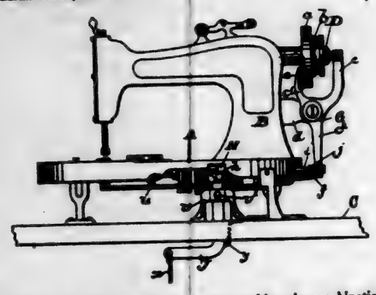

Claim.—1. In a buttonhole-sewing machine, the combination with the feed-wheel, driving-shaft, and spring-released clutch mechanism adapted to drive said shaft, of a rod adapted to move said clutch mechanism against the action of its spring, into operative engagement with said shaft; a lever connected to said rod to move the same; a look-bar also adapted to be moved by said lever; a detent automatically moved into locking engagement with said bar when the latter and said rod are moved by said lever to throw the clutch mechanism into engagement with said shaft; and a tripping-dog adapted to retract said detent and arranged for actuation by said feed-wheel, as set forth.

2. In a buttonhole-sewing machine, the combination with a driving-shaft, feed-wheel, and spring-released clutch mechanism adapted to drive said shaft, of a rod adapted to move said clutch mechanism, against the action of its spring, into operative engagement with said shaft; a three-armed lever, H, having one arm connected to said rod to move the same; means connected to another arm of said lever for moving the latter; an oscillating toothed bar connected to the third arm of said lever; a reciprocating rack-bar meshing with said oscillating bar and provided with a notch; a pin spring-pressed toward said rack-bar and adapted to enter said notch to lock said rack-bar against movement; and a tripping-arm connected to said pin to retract the same from the said notch, and arranged for actuation by the feed-wheel, as set forth.

3. In a buttonhole-sewing machine, the combination with the driving-shaft, of spring-released clutch mechanism for driving said shaft; means including a lever, for throwing said clutch mechanism against the action of its spring, into operative engagement with said driving-shaft; an oscillating toothed bar connected to said lever; a reciprocating rack-bar meshing with said oscillating bar; a detent automatically moved into locking engagement with said rack-bar when the lever and oscillating bar are moved to throw the clutch mechanism into operative engagement with said driving-shaft; and a tripping-dog automatically actuated to retract said detent, as set forth.

4. In a buttonhole-sewing machine, the combination with the bed-plate, driving-shaft, feed-wheel, and spring-released clutch mechanism adapted to actuate said shaft, of a reciprocating bar; an oscillating bar movable with said reciprocating bar; means connected with said oscillating bar for holding said clutch mechanism against the action of its spring, in operative engagement with said driving-shaft; a detent spring-pressed into engagement with said reciprocating bar; and a tripping-dog connected with said detent and actuated by said feed-wheel to withdraw the detent from said reciprocating bar, as set forth.

5. In a buttonhole-sewing machine, the combination with a driving-shaft and feed-wheel, of spring-released clutch mechanism adapted to drive said shaft; a rod adapted to move said clutch mechanism, against the action of its spring, into operative engagement with said shaft; a lever connected to said rod to move the same; an oscillating toothed bar also connected to said lever; a reciprocating rack-bar meshing with said oscillating bar and provided with a notch; a pin spring-pressed toward said rack-bar and adapted to enter said notch to lock said rack-bar against movement; and a tripping-arm connected to said pin to retract the same from the said notch and arranged for actuation by the feed-wheel, as set forth.

6. In a buttonhole-sewing machine provided with a bed-plate, drive-shaft, and feed-wheel, means for driving said shaft; a casing secured to the bed-plate adjacent the feed-wheel and provided with a channel and a recess opening into said channel; a bar slidable in said channel and provided with a notch; a detent mounted in said recess and spring-pressed toward said bar, whereby when the bar is moved in one direction to bring its notch in registry with said detent, the latter will enter said notch and prevent the return movement of said bar; a tripping-dog pivoted to the bed-plate and adapted to automatically retract said detent; and a connection between said bar and the shaft-driving means, as set forth.

7. In a buttonhole-sewing machine, the combination with the drive-shaft, and spring-released clutch for the same, of means for locking said clutch in operative engagement with said drive-shaft, said means including a detent or locking-pin provided on one side with a recess; and a tripping-dog adapted to be moved by a shoulder on the feed-wheel of the machine and provided with an arm taking in said recess, whereby to move said pin, as set forth.

8. In a buttonhole-sewing machine, the combination with the drive-shaft, and spring-released clutch for the same, of means for locking said clutch in operative engagement with said drive-shaft, said means including a detent or locking-pin provided on one side with a recess; a tripping-dog adapted to be moved by a shoulder on the feed-wheel of the machine and provided with an arm taking in said recess, whereby to move said pin; and a rod, *x*, connected to said arm for moving said tripping-dog independently of the feed-wheel, as set forth.

9. In a buttonhole-sewing machine, the combination with the drive-shaft, and clutch mechanism therefor, of a rod for pressing said clutch mechanism into operative engagement with said drive-shaft; a lever connected to said rod to move the same, and provided with a toothed arm; means connected to said lever for automatically locking and releasing said rod respectively into and from pressing engagement with said clutch mechanism; and a lever, J, provided with teeth meshing with the toothed arm of said first-named lever whereby to move the latter and the said rod and said locking and releasing means, as set forth.

10. In a buttonhole-sewing machine, the combination with the drive-shaft clutch mechanism, of a clutch-pressing rod; an automatically-actuated locking mechanism for holding said rod into pressing engagement with said clutch mechanism; a lever for moving said rod and locking mechanism into operative position, said lever being provided with a toothed arm; and a foot-operated lever, J, provided with teeth meshing with the toothed arm of the first-named lever, as set forth.

706,647. CAR BODY-BOLSTER. CHARLES G. FLOYD, St. Louis, Mo., assignor to American Steel-Duly Double-Bolster Co., St. Louis, Mo., a Corporation of New Jersey. Filed June 11, 1902. Serial No. 111,163. (No model.)

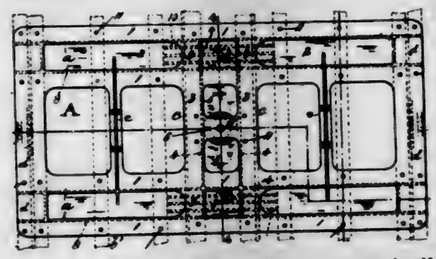

Claim.—1. A car body-bolster, consisting of two opposite side beams, and a cross-beam intermediate to the side beams, the said beams, respectively, being a double-reversed-Z shape in cross-section, and adapted to bear against the car-sills, substantially as described.

2. A car body-bolster, consisting of two opposite side beams, and a cross-beam intermediate to the side beams, the said beams, respectively, being a double-reversed-Z shape in cross-section, and adapted to bear against the car-sills, and the said cross-beam being integral with, and intersecting the side beams, substantially as described.

3. A car body-bolster, consisting of two opposite side beams, a cross-beam intermediate to the side beams, and united thereto at their middle portions, or thereabout, the said beams being, respectively, a double-reversed-Z shape in cross-section and intersecting each other, a cross-plate intermediate to and intersecting the side beams, and united thereto at their end portions, the said beams and plates being adapted to bear against the car-sills, and the said cross-beam and plates having, respectively, the body center-bearing, and the legs for the truss-rods, all the said parts being integral throughout, substantially as described.

706,648. TOBACCO-POUCH. GEORGE FRANK, Fremont, Ohio. Filed Dec. 26, 1901. Serial No. 87,209. (No model.)

Claim.—1. A tobacco-pouch comprising a flexible body portion, a rigid carrying-ring therefor, guiding-springs carried by said ring and projecting within the body of the pouch, and a plunger carried and guided by said spring, substantially as specified.

2. The combination in a tobacco-pouch, of a cup portion having a central discharge-opening, a spring-held lid or cover for said opening, a flexible pouch-body secured to the cup portion, a spring carried by the cup portion and extending within the body of the pouch, and a plunger guided by said spring, substantially as specified.

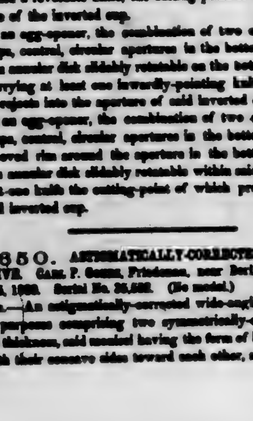

3. The combination in a tobacco-pouch, of a cup portion having a central discharge-opening, a lid or cover therefor, a swiveled spring carrying said lid or cover, a flexible pouch-body secured to the cup portion, and a plunger disposed within the bag in alinement with the discharge-mouth, substantially as specified.

4. The combination in a tobacco-pouch, of the cup portion comprising a ring having peripheral heads or flanges and a removable cap-piece having a central discharge-opening, a lid or cover for closing said opening, a flexible pouch-body, a securing-ring for confining the same to the cup portion, guiding-springs carried by the cup portion and extending within the body of the pouch, and a plunger carried by said springs, substantially as specified.

5. The combination in a tobacco-pouch, of a cup portion having a central discharge-opening, a flexible pouch-body secured thereto, a spring carried by the cup portion and extending within the body of the pouch and adapted to hold the same in spread or extended position, and a plunger carried by said spring, substantially as specified.

706,649. EGG-OPENER. ADA F. GARDANIER, Chicago, Ill. Filed Sept. 28, 1901. Serial No. 76,603. (No model.)

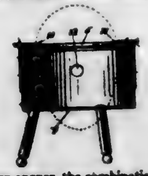

Claim.—1. In an egg-opener, the combination of two end-telescoping, cylindrical cups, central, circular apertures in the bottoms of both of said cups, and a revolvable knife, the cutting-point of which projects into the aperture of the inverted cup.

2. In an egg-opener, the combination of two end-telescoping, cylindrical cups, central, circular apertures in the bottoms of both of said cups, and an annular disk slidably retainable on the bottom of the inverted cup and carrying at least one inwardly-pointing knife the cutting-point of which projects into the aperture of said inverted cup.

3. In an egg-opener, the combination of two end-telescoping, cylindrical cups, central, circular apertures in the bottoms of both of said cups, a grooved rim around the aperture in the bottom of the inverted cup, and an annular disk slidably retainable within said groove and carrying at least one knife the cutting-point of which projects into the aperture of said inverted cup.

706,650. AUTOMATICALLY-CORRECTED WIDE-ANGLE OBJECTIVE. CARL P. GOERZ, Friedenau, near Berlin, Germany. Filed Nov. 5, 1900. Serial No. 35,582. (No model.)

Claim.—An astigmatically-corrected wide-angle objective for photographic purposes comprising two symmetrically-arranged menisci of very small thickness, said menisci having the form of hollow hemispheres, located with their concave sides toward each other, and having the radii

of the convex and concave surfaces of substantially equal lengths: substantially as and for the purpose described.

706,651. MAGAZINE PLATE-HOLDER. CARL P. GOERZ, Friedenau, near Berlin, Germany. Filed Feb. 14, 1898. Serial No. 670,088. (No model.)

Claim.—In a magazine plate-holder the combination of a flat box, open at one of its narrow sides and having in its top side a window-like opening surrounded by a shoulder, a second flat box open at the top being inserted into the same, said box having arranged flat springs in its bottom, with a slide, sliding in grooves just under the top of said second box, said slide bearing in its top side flat springs; substantially as hereinbefore shown and described.

706,652. COUNTING AND REGISTERING MACHINE. CHARLES D. GRIESS, WILFRED W. SUMMERLAND, and BENJAMIN F. BILLESBACH, Dayton, Ohio. Filed Jan. 20, 1900. Serial No. 2,162. (No model.)

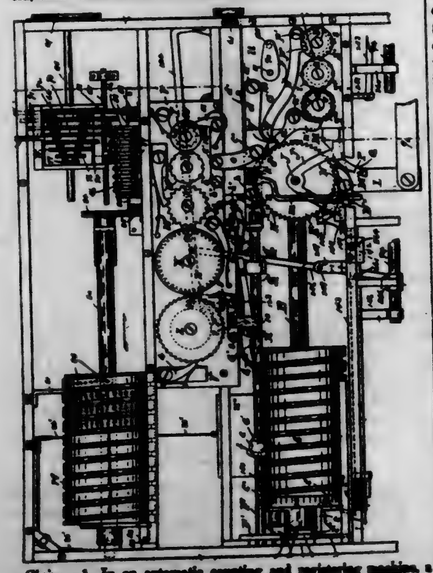

Claim.—1. In an automatic counting and registering machine, a plurality of sets of counters, independent of each other and registering the operations of the machine, with mechanisms for stopping said counters at predetermined intervals variable at will, and means for starting again said sets of counters, together, substantially as described.

2. In an automatic counting and registering machine, a set of counters to count and register one class of units, a second set of counters to count and register another class of units, both operated by the same mechanism, means for stopping one set of counters, when it has counted a predetermined number, the other set continuing to count until it has counted a certain fixed number, said predetermined number and said fixed number having no constant proportionate relation, and means for starting said first set of counters to counting again when said second set has finished a cycle, substantially as described.

3. In an automatic counting and registering machine, two sets of counters, one set counting all the time, the other set counting at intervals, and means for varying at will the intervals, at which the second set shall count, substantially as described.

4. In an automatic counting and registering machine, an oscillating arm, a set of registry-wheels for registering the oscillations of said arm up to a certain predetermined number, a mechanism for automatically throwing out of gear said set of registry-wheels, when said predetermined number has been reached, means for varying said predetermined number; a second set of registry-wheels counting all the oscillations of said arm, and a mechanism for automatically throwing into gear the first set of registry-wheels when a certain constant number of oscillations has been counted by the second set, substantially as described.

5. In an automatic counting and registering machine, an oscillating arm, a set of registry-wheels counting the oscillations of said arm in cycles, a second set of registry-wheels counting a predetermined number of said oscillations, for each cycle, means for varying said predetermined number, a mechanism for throwing out of gear said second set of counters when said predetermined number is reached and means for throwing into gear again said second set, when the first set of counters has completed a cycle, substantially as described.

6. In an automatic counting and registering machine, a set of counters counting pounds, means for stopping this set of counters when a predetermined number of pounds has been counted, mechanism for varying said predetermined number; a second set of counters counting a constant number of sheets, means for starting said first set of counters each time the second set completes said constant number of sheets, and a tripping mechanism which trips off packages containing a desired number of sheets, substantially as described.

7. In an automatic counting and registering machine, an oscillating arm, two pawls mounted thereon, a set of registry-wheels operated by the first pawl and indicating pounds, means for automatically throwing out said set of registry-wheels, when a predetermined number of pounds has been counted, means for varying said predetermined number; a second set of registry-wheels operated by the second pawl indicating sheets; the two sets of counters counting together until the first set is thrown out, the second set continuing to count until it has counted a ream; with means for starting the first set again when the second set has finished counting a ream, substantially as described.

8. A cylinder for counting, provided with means for giving it a combined longitudinal and rotary motion with reference to a gage, a mechanism for automatically throwing said cylinder out of gear at a predetermined point, and means for returning it to its initial position, substantially as described.

9. A cylinder for counting, provided with means for giving it a combined longitudinal and rotary motion with reference to a gage, a mechanism for automatically throwing said cylinder out of gear at a predetermined point, and means for returning it to its initial position, by a sliding motion, which returns it to its initial longitudinal position and by an independent rotary motion, which returns it to its original angular position, substantially as described.

10. A cylinder for counting in combination with a shaft adapted to give said cylinder a rotary as well as a longitudinal motion, a gage to adjust the extent of the rotary and longitudinal motion of said shaft and cylinder, and means for returning said shaft and cylinder to their initial positions, substantially as described.

11. A cylinder for counting, in combination with a shaft adapted to give the said cylinder both a rotary and a longitudinal motion, a gage to determine the extent of the rotary and longitudinal motion of said shaft and cylinder, and means for returning said shaft and cylinder to their initial positions, substantially as described.

12. A threaded cylinder slidingly keyed to a shaft, a dog to engage the thread of said cylinder, a pawl and ratchet to turn said shaft, a set of registry-wheels to record each part turn of said cylinder, a gage to determine a point, at which said cylinder shall cease to turn, with means for throwing out of gear said cylinder and its corresponding set of registry-wheels, a mechanism for returning said cylinder to its initial position; a second set of registry-wheels and a pawl operating the same, said second set of registry-wheels counting a constant number in cycles, with means for throwing into gear said cylinder and the first set of registry-wheels each time the second set finishes counting a cycle, substantially as described.

13. In an automatic counting and registering machine, a threaded cylinder slidingly keyed to a shaft, a dog to engage the thread on said cylinder, and cause it as it rotates to travel along said shaft, a gage to control the distance said cylinder shall travel along said shaft; a gear attached to said shaft and operated by a pawl and ratchet; a set of counters for registering each part turn of said cylinder, means for throwing out of gear said pawl and ratchet when a predetermined number has been counted, and returning said cylinder to its initial position, in readiness to count another lot substantially as described.

14. A threaded cylinder slidingly keyed to a shaft, a pawl and ratchet for turning said shaft, a dog adapted to engage the thread of said cylinder and cause it to travel along said shaft as said shaft is revolved, and means for throwing out of mesh said pawl and ratchet when said cylinder has traveled a certain predetermined distance along said shaft, substantially as described.

15. A cylinder for counting, operated by a pawl and ratchet, having an adjustable graduated ring carrying a lug, the graduations of said ring being equal to the angle through which said cylinder is turned for every operation of said pawl and ratchet, so that the number of operations of said pawl and ratchet that will bring the lug to a certain position, may be varied at will substantially as described.

16. A graduated rod carrying a sliding gage, said graduations being equal to the pitch of the thread on a cylinder bearing a lug which is adapted to engage with an arm on said gage, so that when the said cylinder has reached a certain position to be determined by the position of said gage upon said rod, said lug will strike said arm and rock it, substantially as described.

17. A threaded cylinder having a sliding and rotary motion, a lug mounted thereon, a dog adapted to engage the thread of said cylinder, a gage-rod, a cam secured to said gage-rod, said cam holding said dog in engagement with the thread of said cylinder, and a gage with an arm mounted thereon, adapted at a certain predetermined position of said cylinder, to be struck by said lug and rock said gage-rod, thus rotating said cam and permitting said dog to rise out of engagement with the thread on said cylinder, substantially as described.

18. A threaded cylinder for counting, a dog for engaging the thread of said cylinder, a rocking gage-rod, a sliding gage carrying an arm designed to engage with a lug on said cylinder, the time of striking to be determined by the position of said gage and a registry-wheel to register each time said lug rocks said gage-rod, substantially as described.

19. A cylinder with a worm, adapted to slide along its shaft, operated by a pawl and ratchet, a gage to determine a point at which this sliding motion shall cease, a set of registry-wheels for registering each operation of said pawl and ratchet and means for throwing out of gear and returning to its initial position, said cylinder and ceasing said registry-wheels to stop registering until said cylinder begins to count again, substantially as described.

20. A dog for preventing counter rotation in a ratchet-wheel having a notch and an extension designed to be raised by a lug on registry-wheel, a catch having a tooth designed to drop into said notch and hold said dog out of engagement, said catch having a downward extension designed to be struck and raised by a lug on another registry-wheel, at a certain interval after said dog has been raised, thus releasing said dog, substantially as described.

21. A spool having flanges operated by a pawl and ratchet, said flanges having lugs adapted to strike and oscillate up and down a rod carrying a series of pawls adapted to engage with a series of ratchet-wheels fixed to disks, said ratchet-wheels having a varying number of teeth, said disks having lugs adapted to engage with a lug on an arm which operates a tripping device, said arm being adjustable so that it may be caused to engage with any one disk, the others being inoperative, substantially as described.

22. A spool having flanges operated by a pawl and ratchet, said flanges having lugs adapted to strike and oscillate up and down a rod carrying a series of pawls adapted to engage with a series of ratchet-wheels, said ratchet-wheels having a varying number of teeth, and having lugs adapted to engage with a lug on an arm which operates a tripping device, said arm being adjustable, so that it may be caused to engage with the lug on any one of said series of ratchet-wheels, the others being inoperative, substantially as described.

23. A main counting-wheel and a series of auxiliary counting-wheels, said auxiliary counting-wheels having different number of teeth, means by which all of said auxiliary counting-wheels are made to turn one division for each turn of said main counting-wheel, and means by which any one of said auxiliary counting-wheels may be caused to register for any part of its revolution, substantially as described.

24. A main counting-wheel and a series of auxiliary counting-wheels, said auxiliary counting-wheels having different number of teeth, means by which all of said auxiliary counting-wheels are made to turn one division for each turn of said main counting-wheel, and means by which any one of said auxiliary counting-wheels may be caused to register for any part of its revolution, and mechanism for returning all of said wheels to their initial position, substantially as described.

706,658. MEANS FOR UTILIZING COMPRESSED AIR. EUGENE HAYWARD, Chicago, Ill., assignor of two-thirds to John T. Lauder and John B. Morris, Chicago, Ill. Filed Feb. 15, 1901. Serial No. 47,490. (No model.)

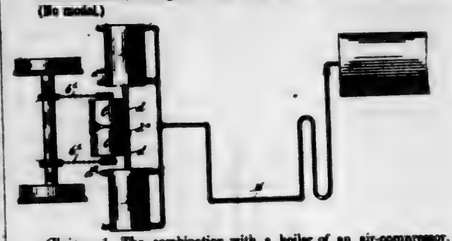

Claim.—1. The combination with a boiler of an air-compressor, means for operating the same, a metal-cased pipe located transversely in the fire-box and leading into the dome of the boiler and adapted to deliver thereinto heated and compressed atmospheric air.

2. The combination with a steam-boiler of an air-compressor, means for actuating the air-compressor, the pipe leading therefrom to the dome of the boiler and a bend or bends of said pipe incased or jacketed in metal and extending into and transversely of the fire-box near the rear end thereof and exposed to the maximum direct heat.

3. The combination with a steam-boiler, of a double-acting air-compressor, means for actuating said compressor, a pipe connected therewith and adapted to deliver compressed air to the dome of said boiler and means for heating the compressed air before delivery in the dome, comprising a coil in said pipe located in and transversely of the furnace of said boiler and a valve in the connection acting to regulate the flow of said compressed air to the boiler.

4. In a device of the class described, the combination with a locomotive-boiler, of a compressor secured beneath the tender or the like, means operated from a truck-axle for actuating said compressor, a pipe leading therefrom through transversely of the fire-box of the boiler to the dome thereof, said pipe being cased in metal and exposed to maximum heat, whereby the air is first compressed then heated and then delivered within the boiler.

5. The combination with a steam-boiler of a coil located transversely in the fire-box or furnace thereof adjacent to and below the fire-door said coil comprising a tube bent to the desired shape and cased in cast metal and a protecting-covering in said coil.

706,654. TRUSS-ROD BEAM. ALFRED W. KINNEY, St. Louis, Mo. Filed Feb. 21, 1902. Serial No. 95,022. (No model.)

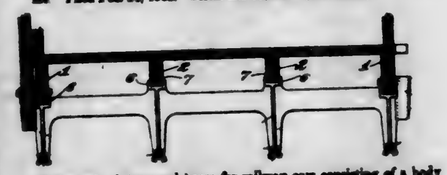

Claim.—1. A truss-rod beam for railway-cars consisting of a body portion extending continuously from side to side of the car and having seats on its upper edge for the longitudinal sills of a car, and projections extending downwardly from its lower edge, said projections having seats for the truss-rods of a car, said body portion, seats, and projections being formed in one piece; substantially as described.

2. A truss-rod beam for railway-cars consisting of a body portion having seats on its upper edge, and columns depending from its lower edge in alinement with the seats, all of said parts being made in one piece; substantially as described.

3. A truss-rod beam for railway-cars consisting of a web, overhanging seats on the upper edge of said web and integral therewith, and integral columns in alinement with said seats, the integral side walls of the seats at the ends of the beam being extended upwardly; substantially as described.

4. A truss-rod beam for railway-cars in the form of a casting comprising a body portion, seats for the longitudinal sills of the car, dowels in said seats, seats for the truss-rods, and reinforcing-webs; substantially as described.

5. A truss-rod beam for railway-cars in the form of a casting comprising a body portion extending continuously from side to side of the car and having seats for the longitudinal sills, and depending columns extending from said body portion, said columns being arranged at an angle other than a right angle, with relation to said seats; substantially as described.

6. A truss-rod beam for railway-cars, in the form of a casting comprising a substantially vertical web extending continuously from side to side of the car, seats for the longitudinal sills of the car, said seats being arranged at the upper edge of said casting, and depending posts formed with seats in their lower ends, said posts being strengthened by reinforcing-webs; substantially as described.

7. The combination with a truss-rod beam, of stake-pockets carried thereby; substantially as described.

8. The combination with a truss-rod beam, of stake-pockets upon the ends thereof and integral therewith; substantially as described.

9. A truss-rod beam for railway-cars consisting of a body portion having a plurality of seats on its upper edge for receiving the longitudinal sills of the car, and columns depending from the lower edge, each of said columns being provided with a seat for a truss-rod, all of said parts being integral; substantially as described.

706,655. CRUSHING AND PULVERIZING MACHINE. LEWIS HERMAN, Cleveland, Ohio. Filed Feb. 23, 1901. Serial No. 48,441. (No model.)

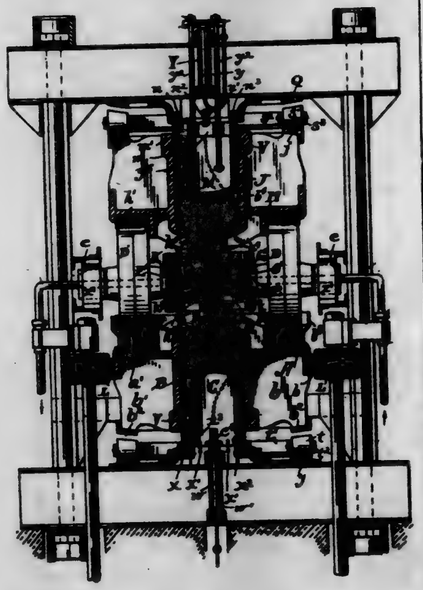

Claim.—1. In a machine of the character described, the combination of a fixed cylindrical piston, a cylinder rotatively mounted thereon, means for admitting a fluid under pressure into said cylinder, a table secured to said cylinder, and rotatable crushing-wheels bearing upon said table, and means for yieldingly pressing said table and crushing-wheels against each other, substantially as described.

2. In a machine of the character described, the combination of a rotatable table, means for rotating it, a parallel table capable of being rotated, and rotatable grinding-wheels between said tables and in contact with both, hydraulic means for pressing both of said tables toward each other and against said grinding-wheels, substantially as described.

3. Two pistons fixed in axial alinement, two cylinders rotatively mounted on said pistons respectively, each cylinder having a table fixed to it, means for admitting fluid under pressure into both cylinders, mechanism for rotating one or both of said cylinders, and rotatable grinding-wheels located between said tables and in contact with both, substantially as described.

4. Two pistons fixed in axial alinement, two cylinders rotatively mounted on said pistons respectively, each cylinder having a table fixed to it, means for admitting fluid under pressure into one or both cylinders, two boxes, movable in paths parallel with the axes of the pistons, two shafts supported at their outer ends in said boxes, a member rigidly connected to the inner ends of said shafts, crushing-wheels rotatively mounted on said shafts and lying between and engaging with said tables, and mechanism for rotating one of said tables, substantially as described.

5. In a machine of the character specified, the combination of two tables rotatably mounted in axial alinement and capable of axial movement, crushing-wheels located between said tables and in contact with both, said wheels being rotatable about an axis at right angles to the axis of the tables and capable of movement in paths parallel with the axis of said tables, and yielding means for pressing said tables toward each other and against said crushing-wheels, substantially as described.

6. In a machine of the character specified, the combination of a cylindrical piston, a support therefor, dowel-pins engaging said two parts, and hooks preventing their separation, a cylinder rotatively mounted on said piston, a table fast to said cylinder, means for rotating it, and rotatable wheels which bear upon said table, substantially as described.

7. In a machine of the character specified, the combination of a piston, a fixed support therefor, and means for connecting and disconnecting said piston and its support, a cylinder rotatably mounted on the piston and having an internal annular packing-groove near its open end, a crushing-table secured to said cylinder, mechanism for rotating the same, crushing-wheels bearing upon the surface of said table, a fixed hydraulic cylinder, its piston, and means connecting said piston with the piston first named, substantially as described.

706,656. STEM-WINDING WATCH. CHARLES T. EISENBRUHAR, Springfield, Ill., assignor to Illinois Watch Company, Springfield, Ill., a Corporation of Illinois. Filed Oct. 3, 1901. Serial No. 77,408. (No model.)

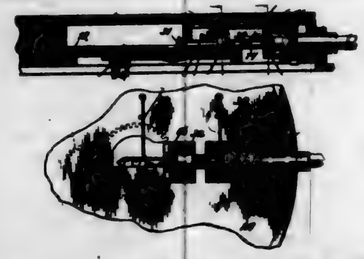

Claim.—1. In a pendant-setting watch, the combination with a longitudinally-movable and rotatable arbor, of a rotatable member slidingly mounted thereon and held in constant yielding engagement with the winding-train, a rotatable setting member carried on said arbor and constantly engaged with the setting-train, and means for alternately connecting said arbor with and disconnecting the same from said rotatable and sliding member and said rotatable setting member, by the direct longitudinal movement of said arbor, substantially as described.

2. In a pendant-setting watch, the combination with a rotatable longitudinally-movable arbor, of a clutch rotatably mounted on said arbor, longitudinally movable thereon and normally held in constant yielding engagement with the winding-train, a pinion rotatably mounted on said arbor and in constant engagement with the setting-train, and means for causing the alternative engagement and disengagement of said arbor with said clutch and said pinion by the longitudinal movement of said arbor, substantially as described.

3. In a pendant-setting watch, the combination with a rotatable longitudinally-movable arbor having no positive connection with the cone-arbor, of a clutch rotatably mounted on said arbor, longitudinally movable thereon and normally held in constant yielding engagement with the winding-train, a pinion rotatably mounted on said arbor and in constant engagement with the setting-train, and means for causing the alternative engagement and disengagement of said arbor with said clutch and said pinion by the longitudinal movement of said arbor, substantially as described.

4. In a pendant-setting watch, the combination with a rotatable and longitudinally-movable arbor adapted to be moved longitudinally inward by the inward movement of a cone-arbor, but having no positive connection therewith, a spring adapted to move said arbor longitudinally outward and hold the same at the outer limit of its motion when left free by the outward movement of the cone-arbor, and means for limiting the longitudinal movement of said arbor in both directions, of a clutch rotatably mounted on said arbor, longitudinally movable thereon and normally held in constant yielding engagement with the winding-train, a pinion rotatably mounted on said arbor and in constant engagement with the setting-train, and means for causing the alternative engagement and disengagement of said arbor with said clutch and said pinion by the longitudinal movement of said arbor, substantially as described.

5. In a pendant-setting watch, the combination with a winding-train, a setting-train, a winding-pinion constantly in engagement with said winding-train and having ratchet-teeth on its inner face, and a setting-pinion having constant engagement with the setting-train, of a rotatable longitudinally-movable arbor having no positive connection with the cone-arbor and passing through said winding-pinion and said setting-pinion, rotatable in said winding-pinion and rotatable in said setting-pinion when at one limit of its longitudinal motion, a clutch member rotatably and slidingly mounted on said arbor, provided with ratchet-teeth, and normally held in constant yielding engagement with the ratchet-teeth on said winding-pinion, and means for causing the alternative engagement and disengagement of said arbor with said clutch member and with said setting-pinion by the longitudinal movement of said arbor, substantially as described.

6. In a pendant-setting watch, the combination with a winding-train, a setting-train, and a pinion in constant engagement with said setting-train and having a squared axial opening, of a rotatable longitudinally-movable arbor having no positive connection with the cone-arbor, passing through said setting-pinion and having two squared portions thereon, and a clutch rotatably mounted on said arbor, longitudinally movable thereon and normally held in constant yielding engagement with the winding-train and having a squared axial opening, said squared portions of said stem-arbor being adapted to alternately engage with and disengage from the squared axial openings on said clutch and on said setting-pinion, by the longitudinal movement of said arbor, substantially as described.

7. In a pendant-setting watch, the combination with a winding-train, a setting-train, and a pinion in constant engagement with said setting-train and having a squared axial opening, of a rotatable longitudinally-movable arbor having no positive connection with the cone-arbor, passing through said setting-pinion and having two squared portions thereon, a clutch rotatably mounted on said arbor, longitudinally movable thereon and normally held in constant yielding engagement with the winding-train and having a squared axial opening, said squared portions of said stem-arbor being adapted to alternately engage with and disengage from the squared axial openings on said clutch and on said setting-pinion, by the longitudinal movement of said arbor, and a spring adapted normally, when free to act, to force said arbor longitudinally outward to engage one of the squared portions thereon with the squared axial opening of said setting-pinion, substantially as described.

8. In a pendant-setting watch, the combination with a winding-train, and a setting-train, of a rotatable, longitudinally-movable arbor having no positive connection with the cone-arbor and having two squared portions thereon, a pinion rotatably mounted on said arbor and having constant engagement with the setting-train, and provided with ratchet-teeth upon its inner surface, a clutch rotatably mounted on said arbor, longitudinally movable thereon and having a squared axial opening, and provided with ratchet-teeth upon its outer surface, a spring adapted to normally and yieldingly hold said clutch in constant engagement with said winding-pinion, a setting-pinion rotatably mounted on said arbor in constant engagement with the setting-train and having a squared axial opening, one of the squared portions on said stem-arbor being adapted to engage with the squared axial opening of said clutch when said stem-arbor is moved longitudinally inward, and to be disengaged from it when said arbor is moved longitudinally outward, the other of said squared portions being adapted to engage with the squared axial opening in said setting-pinion when said stem-arbor is moved longitudinally outward and to be disengaged therefrom when said stem-arbor is moved longitudinally inward, and a spring bearing on said stem-arbor and adapted normally, when free to act, to move said stem-arbor longitudinally outward into engagement with said setting-pinion, substantially as described.

706,657. APPARATUS FOR DYEING, &c. EDWARD EDDLEY, SAMUEL WALKER, and MARSHALL BEBB, Stockport, England. Filed Oct. 28, 1901. Serial No. 80,373. (No model.)

Claim.—In apparatus for dyeing, scouring, bleaching and otherwise treating yarn in cop or other similar compact form, a liquor vessel having at the bottom and the side liquor connections, a pump having at the suction and delivery respectively a three-way tap, a pipe between the former tap and the said bottom connections having a branch leading to the said tap at the delivery end and a pipe between the latter tap and the said side connection having a branch leading to the said tap at the suction end of the said pump, all combined substantially as and for the purpose set forth.

706,657.

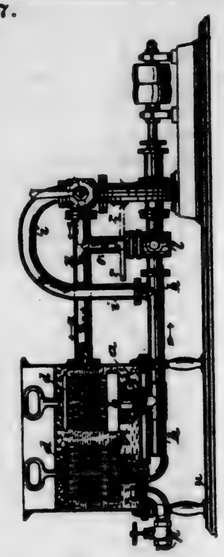

706,658. GAME APPARATUS. WILLIAM B. HOUK, Catasauqua, Pa., assignor of one-half to August Hohl, Catasauqua, Pa. Filed Dec. 31, 1901. Serial No. 87,092. (No model.)

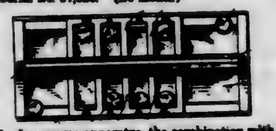

Claim.—1. In a game apparatus, the combination with a box or receptacle; of movable bodies arranged therein, movable pockets or stalls, and a suction-tube accessible from without and adapted to hold one of the movable bodies in position to be received by one of the pockets or stalls, substantially as described.

2. In a game apparatus, the combination with a box or receptacle having an arched bottom; of movable bodies arranged within the box or receptacle, a suction-tube accessible from without and communicating with the box or receptacle at a point above its arched bottom, and movable stalls or pockets arranged within said box or receptacle and located upon opposite sides of a line drawn through the highest part of the arched bottom, substantially as specified.

3. In a game apparatus, the combination with a box or receptacle having an arched bottom; of movable bodies arranged within the box or receptacle, movable stalls or pockets arranged within said box or receptacle and located upon opposite sides of a line drawn through the highest part of the arched bottom, diagonally-arranged blocks projecting upwardly from the arched bottom between the two sets of stalls or pockets and a suction-tube accessible from without and communicating with the space between two of said blocks, substantially as and for the purpose described.

4. In a game apparatus, the combination with a box or receptacle, and a longitudinal row of diagonally-arranged blocks projecting upwardly from the bottom of the box or receptacle and a suction-tube accessible from without and communicating with the space between two of said blocks; of two sets of stalls or pockets connected together, one set being arranged upon one side of the box or receptacle and the other set upon the opposite side of the box or receptacle and capable of movement in unison, substantially in the manner specified.

5. In a game apparatus, the combination with a box or receptacle, and blocks projecting from the bottom thereof and spaced apart; of a suction-tube accessible from without and communicating with a space between two of the blocks, movable bodies adapted to be held by suction at a certain point on the bottom of the box or receptacle, and stalls or pockets movably mounted within the box or receptacle, substantially as set forth.

6. In a game apparatus, the combination with a box or receptacle having an arched bottom and provided with a transparent top or cover

and with a division-bar; of a longitudinal row of blocks arranged diagonally and projecting from the highest point of the bottom of the box upwardly and connected to the under side of the division-bar, said division-bar being provided with a bore having a mouth-slit and communicating with the space between two of the blocks, movable bodies arranged within the box or receptacle, and movable pockets arranged upon opposite sides of the box or receptacle, substantially as and for the purpose set forth.

706,659. ELASTIC STEEL SPOKE FOR VEHICLE-WHEELS. HENRY G. M. HOWARD, Kalamazoo, Mich. Filed Dec. 30, 1901. Serial No. 87,763. (No model.)

Claim.—Elastic metal spokes for vehicles, comprising as a continuous whole, a rigid T-head at outer end; a short straight portion immediately below and made from the elastic part of the spoke; a short bowed portion and a longer bowed portion below and bending in directions laterally and inversely to each other shown; and a short inward laterally-oblique portion at the lower end, substantially as set forth.

706,660. FRICTION-CLUTCH. EDWARD ESSER, Marion, Ohio. Filed Feb. 26, 1902. Serial No. 95,778. (No model.)

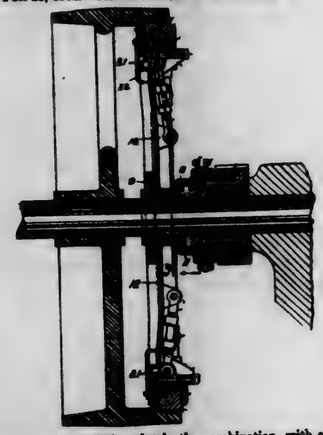

Claim.—1. In a friction-clutch, the combination, with a shaft, of a friction-wheel having an internal annular friction-surface, and means for limiting the motion of the shoes along the shaft toward the friction-wheel, a spider movable longitudinally on the shaft and having radial arms, means for moving said spider longitudinally of the shaft, shoes adapted to engage the friction-wheel, said shoes and radial arms being capable of independent movement, toggle-arms pivoted to the radial arms and to the shoes, and contripetally-acting springs connecting the radial arms and shoes and serving also to transmit to the shoes the movement of the radial arms longitudinally of the shaft, substantially as described.

2. In a friction-clutch, the combination, with a shaft, of a friction-wheel having an internal annular friction-surface, and means for limiting the motion of the shoes along the shaft toward the friction-wheel, a spider movable longitudinally of the shaft and having radial arms provided with terminal guiding-ways parallel with the shaft, means for moving said spider longitudinally of the shaft, shoes adapted to engage the friction-wheel and having guiding-ways fitting the guiding-ways of the radial arms, whereby the shoes are movably supported on said radial arms, toggle-arms pivoted to the radial arms and to the shoes, and contripetally-acting springs connecting the radial arms and shoes and serving also to transmit to the shoes the movement of the radial arms longitudinally of the shaft, substantially as described.

3. In a friction-clutch, the combination, with a shaft, of a friction-wheel secured thereon and having an internal annular friction-surface, and means for limiting the motion of the shoes along the shaft toward said friction-wheel, a spider loosely mounted on the shaft, provided with a clutch-collar and having radial arms, means for moving said spider longitudinally of the shaft, shoes adapted to engage the friction-wheel, said shoes and radial arms being capable of independent movement, toggle-arms pivoted to the radial arms and to the shoes, contripetally-acting springs connecting the radial arms and shoes and serving also to transmit to the shoes the movement of the radial arms longitudinally of the shaft, a pinion loosely mounted on the shaft and provided with a clutch member to engage the clutch-collar of the spider, and a spring interposed between the pinion and spider, substantially as described.

706,661. REFRIGERATOR-CAR. WILL J. HUGHES, St. Louis, Mo., assignor to Samuel Miles Hastings, trustee, Chicago, Ill. Filed Dec. 14, 1901. Serial No. 85,916. (No model.)

Claim.—1. In a refrigerator-car, a centrally-located vestibule, having outlets at both its ends through the side walls of the car, and inlets through the compartments formed on both its sides, said inlets and outlets being controlled by doors, ice-bunkers arranged in the side compartments, water-conduits leading downwardly from said bunkers, cold-air conduits arranged between said water-conduits, and pipes leading from said water-conduits to the exterior of the car, substantially as described.

2. In a refrigerator-car, a centrally-located vestibule, and storage-compartments on both sides thereof, ice-bunkers in said storage-compartments, water-conduits leading downwardly from said bunkers, a pipe or gutter having upwardly-projecting cups or tubes telescoping said water-conduits, and cold-air conduits arranged to alternate said water-conduits, substantially as described.

706,662. DUMP-CAR. FRANK S. INGOLSBY, St. Louis, Mo. Filed Dec. 13, 1900. Serial No. 39,664. (No model.)

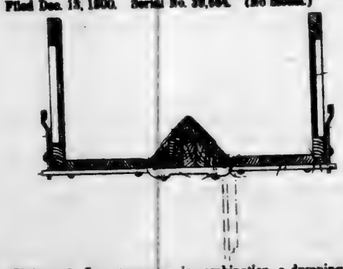

Claim.—1. In a dump-car, in combination, a dumping-door which swings downward, and a car side with which said door is adapted to substantially engage, the cooperating edges of said door and side being beveled and rabbeted, and means for forcing the door and side snugly together whereby the bevels may normally engage forming a tight joint and if the door shrinks the horizontal face of the rabbet may still engage preventing leakage, substantially as described.

2. In a dump-car, in combination, a beam having a recess at its lower edge, a dumping-door pivoted to said beam by hinges which occupy said recess, and a shield carried by the door and adapted to extend into the recess over the hinge in various positions of the door, substantially as described.

3. In a dump-car, the combination of a beam having a downwardly-sloping upper surface, said beam being recessed along its lower edge, a dumping-door pivoted to said beam substantially within such recess, and a metal shield carried by said door and extending over the hinges, said shield curving over the hinged pivot when the door is dumped and operating to substantially close the entrance to such recess in various positions of the door, substantially as described.

4. In a dump-car, in combination, a beam downwardly sloping in opposite directions on its upper surface, the lower edge of said beam being recessed, a strap extending across the under side of said beam and provided at its ends with hinge-eyes substantially at said recesses, a pair of dumping-doors having straps on their under surface, hinge-plates connecting the beam-straps with the door-straps, and shields carried by the doors and extending over the hinges into said recess, substantially as described.

5. In a dump-car, a central longitudinal beam having its lower edges formed in concave curves, combined with a pair of dumping-doors hinged to said central beam on pivots substantially concentric with such curves, and a shield carried by the upper surface of said doors and extending across the pivots thereof, said shield being curved so as to substantially contact with said concave edge in all positions of said doors, substantially as described.

6. In a dump-car, a beam having a concavely-curved edge, and a dumping-door hinged to said beam on pivots substantially concentric with such curve, the hinge members being spaced along the under sides of the beam and door and secured respectively thereto, and a shield carried by the upper surface of the door and extending along the inner edge thereof and curved over the hinge-pintles and confined between the curve of the beam and the ends of the hinge members secured to the door, substantially as described.

706,663. DUMP-CAR. FRANK S. INGOLSBY, St. Louis, Mo. Filed Feb. 24, 1902. Serial No. 95,212. (No model.)

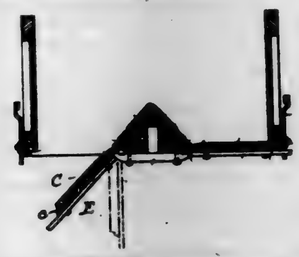

Claim.—1. In a dump-car, in combination, a hinged door, a shield carried by the door and extending over the hinge thereof, and a cooperating member with which said shield abuts when the door is closed to make a tight joint, substantially as described.

2. In a dump-car, a hinged door, a shield carried thereby and extending over the hinge of the door, and a cooperating member with which said shield abuts when the door is closed, combined with straps carried by the door, and beveled hooks carried by the car-body and adapted to engage such straps to force the shield into contact with said cooperating member, substantially as described.

3. In a dump-car, in combination, a beam having a recess at its edge, a dumping door pivoted to said beam by hinges which occupy said recess, a shield carried by the door and extending into the recess over the hinge in various positions of the door, and a cooperating member carried by the beam which said shield engages in a closed position of the door but clears when the door is dropped, substantially as described.

4. In a dump-car, in combination, a beam, a plate carried thereby and extending over the edge of the beam, a door pivoted to said beam, and a shield carried by said door and extending over the hinge and adapted to abut the lower edge of said plate when the door is closed, substantially as described.

5. In a dump-car, in combination, a beam, a plate along the upper surface of said beam extending over its edge, a door pivoted to said beam, and a shield carried by said door and curving over the hinge and between said curve and the door receding from the center of revolution, whereby said shield abuts the lower edge of said plate when the door is closed and clears it when the door drops, substantially as described.

6. In a dump-car, the combination of a beam having its upper surface sloping downwardly in opposite directions, said beam being recessed along its edges, a pair of dumping-doors pivoted to said beam substantially within such recesses, the beam carrying projecting edges over said recesses, metal shields carried by said doors and extending over the hinges, said shield curving over the hinge-pivot but continuing tangentially to the door, the shields operating to abut said projecting edges when the door is closed and to clear the same when the door is dropped, substantially as described.

7. In a dump-car, the combination of a central longitudinal beam having an upper surface sloping downwardly in opposite directions, said beam being recessed along its lower edges, a metal protection on the upper surface of said beam overhanging said recesses at each side, dumping-doors pivoted to said beam substantially within said recesses, shields carried by said doors and extending over said hinges and adapted to abut said protection when the doors are closed, and beveled hooks carried by the side of the car and adapted to draw the door snugly into such engagement, substantially as described.

8. In a dump-car, the combination of a beam having its upper surface sloping downwardly, a dumping-door pivoted to said beam, a strip of metal carried by said beam and overhanging its edge, a protecting-plate on the upper surface of the beam overlapping said strip, a metal shield carried by said door and extending over the hinge, said shield curving over the hinge-pivot but continuing to the door and receding from such pivot, substantially as described.

9. In a dump-car, in combination, a beam downwardly sloping in opposite directions on its upper surface, the lower edges of said beam being recessed, a strap extending across the under side of said beam and provided at its ends with hinge-eyes substantially at said recesses, a protecting-plate on the upper side of said beam, separate plates extending from under said protecting-plate and overhanging said recesses, a U-shaped bolt lying over said plate and extending through said beam and said strap, a pair of dumping-doors having straps on the under surface, hinge-plates connecting said door-straps with the strap on the beam, and shields carried by the doors and extending over the hinges into said recess, said shields being adapted to abut the lower edges of the overhanging plates when the doors are closed, substantially as described.

706,664. DIFFERENTIAL-SPEED POWER-TRANSMITTING MECHANISM. SAMUEL JACKSON, Fayetteville, N. Y. Filed July 5, 1901. Serial No. 67,184. (No model.)

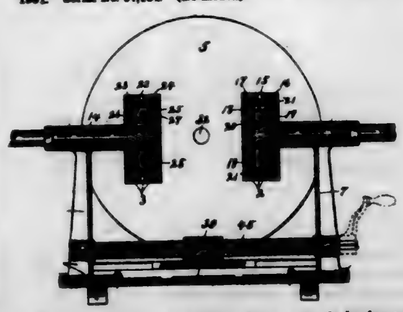

Claim.—1. A plurality of friction rings or wheels having a common axis, in combination with a friction member in contact with the rings or wheels and having a different axis, and means connecting the rings or wheels whereby the rotation of the contacting parts causes the rings or wheels to travel in the same direction at different rates of speed.

2. The combination with a rotary disk, of a rotating shaft, a plurality of friction wheels or rings in contact with the disk, and compensating gears connecting said wheels for permitting their rotation at variable speeds.

3. A revolving shaft, a plurality of friction rings or wheels mounted thereon, one being secured to the shaft, compensating gears connecting the other rings or wheels in combination with a friction-disk contacting with the peripheries of the rings or wheels.

4. The combination of two revolvable shafts or spindles having their axes arranged at an angle with each other, a friction-disk secured to one of the shafts, and a plurality of friction-rings mounted on the other shaft

and having peripheral contact with the end face of the disk, one of said rings being secured to the latter shaft, and the other ring being loose thereon, and compensating gears connecting the loose rings or wheels for the purpose set forth.

5. The combination of two rotary members having contacting friction-faces one being driven by the other, one of the members consisting of intermediate and opposite end friction rings or wheels of substantially the same diameter, a revolvable pinion carried by the intermediate wheel and a gear secured to each of the other wheels or rings and meshing with said pinion for the purpose described.

6. In a power-transmitting device, the combination of a rotary shaft or spindle, a plurality of friction rings or wheels mounted thereon, one of said wheels or rings being secured to the shaft and the others being loose thereon, compensating gears connecting the loose rings or wheels, and friction-disks contacting with different points in the peripheries of said rings or wheels for the purpose set forth.

7. The combination with a rotary friction-disk, of a rotating shaft, a plurality of friction wheels or rings in contact with the disk, compensating gears connecting said wheels or rings for permitting their rotation at variable speeds, and means for moving one of the friction members across the face of the other for varying the speed of the driven member.

8. The combination of two revolvable shafts or spindles, a plurality of friction rings or wheels mounted on each of the shafts or spindles, one of said rings or wheels of each shaft being secured to the shaft and the others being loose thereon, and compensating gears connecting the loose rings or wheels of their respective shafts, for the purpose described, and a friction-disk in contact with the peripheries of the rings or wheels of each shaft.

9. A revolving shaft, a plurality of friction rings or wheels mounted thereon, one being secured to the shaft and the others being loose thereon and compensating gears connecting the loose rings or wheels, in combination with a friction-disk contacting with the peripheries of the rings or wheels and movable lengthwise of the axis of said shaft.

10. The combination of two revolvable shafts or spindles, a plurality of friction rings or wheels mounted on each of the shafts or spindles, one of said rings or wheels being secured to the shaft and the others being loose thereon, compensating gears connecting the loose rings or wheels of their respective shafts for the purpose described, and a friction-disk in contact with the peripheries of the rings or wheels of each shaft and means for moving the disks lengthwise of the axes of said shafts for the purpose specified.

706,665. **ENGINE-LATHE.** WILLIAM T. S. JOHNSON, Cincinnati, Ohio. Filed Nov. 23, 1901. Serial No. 83,264. (No model.)

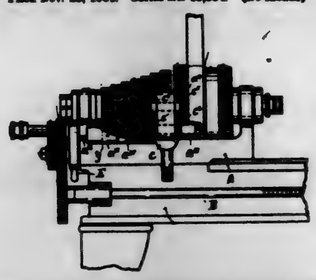

Claim.—1. In a lathe in combination with the bed, carriage, lead-screw and head-stock thereof, the live-spindle mounted in the head-stock, a sleeve mounted rotatably upon the spindle, a pinion, means for securing it upon the sleeve, a gear-wheel secured to the spindle, means for coupling and uncoupling the sleeve with the spindle, back gear to be thrown into gear with the pinion on the sleeve and gear-wheel on the spindle when the sleeve and spindle are uncoupled from each other, means for throwing the back gear into gear with the sleeve and spindle and means for coupling the sleeve with the lead-screw, substantially as shown and described.

2. In a lathe in combination with the bed, carriage, lead-screw and head-stock thereof, the live-spindle mounted in the head-stock, a sleeve mounted rotatably on the spindle, a driving-pulley and a toothed pinion mounted rotatably upon the sleeve, a plate or disk secured upon the sleeve, a gear-wheel secured upon the spindle, means for coupling the plate with both the pulley and with the gear-wheel on the spindle, back gear, means for throwing it into gear with the sleeve and the spindle, and means for coupling the sleeve and the lead-screw.

3. In a lathe in combination with the bed, carriage, lead-screw and head-stock thereof, the live-spindle mounted in the head-stock, a sleeve mounted rotatably upon the spindle, a pinion, means for securing it upon the sleeve, a gear-wheel secured to the spindle, means for coupling and uncoupling the sleeve with the spindle, back gear to be thrown into gear with the pinion on the sleeve and the gear-wheel on the spindle when the sleeve and the spindle are uncoupled from each other, means for throwing the back gear into gear with the sleeve and spindle, an intermediate shaft mounted in the head-stock adjacent to the live-spindle, variable-speed mechanism coupling the sleeve and the intermediate shaft and means for coupling the intermediate shaft and the lead-screw, substantially as shown and described.

4. In a lathe in combination with the bed, carriage, lead-screw and head-stock thereof, the live-spindle mounted in the head-stock, a sleeve mounted rotatably on the spindle, a driving-pulley and a toothed pinion mounted rotatably upon the sleeve, a plate or disk secured upon the sleeve, a gear-wheel secured upon the spindle, means for coupling and uncoupling the plate with both the pulley and with the gear-wheel on the spindle, back gear, means for throwing it into gear with the sleeve and the spindle, an intermediate shaft mounted in the head-stock adjacent to the live-spindle, variable-speed mechanism coupling the sleeve and the intermediate shaft and means for coupling the intermediate shaft and the lead-screw, substantially as shown and described.

5. In a lathe in combination with the bed, carriage, lead-screw and head-stock thereof, the live-spindle mounted in the head-stock, a sleeve mounted rotatably upon the spindle, a pinion, means for securing it upon the sleeve, a gear-wheel secured to the spindle, means for coupling and uncoupling the sleeve with the spindle, back gear to be thrown into gear with the pinion on the sleeve and the gear-wheel on the spindle when the sleeve and the spindle are uncoupled from each other, means for throwing the back gear into gear with the sleeve and spindle, variable-sized toothed wheels secured upon the sleeve, a shaft mounted in the head-stock adjacent to the live-spindle, a slipping yoke upon the shaft carrying gear-wheels to put the shaft in gear with one or another of the toothed wheels upon the sleeve and means for coupling the shaft and the lead-screw, substantially as shown and described.

6. In a lathe in combination with the bed, carriage, lead-screw and head-stock thereof, the live-spindle mounted in the head-stock, a sleeve mounted rotatably on the spindle, a driving-pulley having a toothed pinion secured to it and both mounted rotatably upon the sleeve, a plate or disk secured upon the sleeve, a gear-wheel secured upon the spindle, means for coupling and uncoupling the plate with both the pulley and with the gear-wheel on the spindle, back gear, means for throwing it into gear with the sleeve and the spindle, variable-sized toothed wheels secured upon the sleeve, a shaft mounted in the head-stock adjacent to the live-spindle, a slipping yoke upon the shaft carrying gear-wheels to put the shaft in gear with one or another of the toothed wheels upon the sleeve and means for coupling the shaft and the lead-screw, substantially as shown and described.

7. In a lathe in combination with the bed, carriage, lead-screw and head-stock thereof, the live-spindle mounted in the head-stock, an intermediate shaft mounted in the head-stock adjacent to the live-spindle, variable-speed mechanism coupling the spindle and the intermediate shaft, loose pinions mounted upon the end of the shaft, a sliding spline for making any one of said pinions fast on the shaft, an adjustable support carrying a number of gear-wheels secured to one another and each in mesh with one of the pinions on the shaft, and a gear-wheel on the lead-screw in mesh with one of the gear-wheels of the adjustable support, substantially as shown and described.

706,666. **PORTABLE FIRE-ESCAPE.** MARY J. JOHNSTON, Milwaukee, Wis. Filed Feb. 3, 1902. Serial No. 92,985. (No model.)

Claim.—In a portable fire-escape, a spindle, a pair of spools mounted at either end thereof, a cable having its ends secured to the spools and adapted to be wound upon the latter, a slotted hollow handle loosely mounted upon the aforesaid spindle between the spools, a pawl secured to the handle, and a ratchet-wheel fast to the spindle whereby the handle and spindle are normally locked together, a brake-band projecting from one of the spools in the path of the pawl whereby when the latter is disengaged from the ratchet-wheel it will bear upon the brake-band, another cable secured to the spindle within the hollow handle and adapted to be wound upon the former in the opposite direction from the first-named cable, thimbles loosely mounted upon the aforesaid spindle and a stirrup suspended from the thimbles substantially as set forth.

706,667. **REVERSING-GEAR.** LUCIAN B. JAMES, Cornish, Conn., assignor to Charles A. Freeman, South Norwalk, Conn. Filed Mar. 26, 1902. Serial No. 99,132. (No model.)

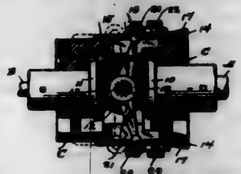

Claim.—1. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing, bevel-gears carried by said casing and engaging the bevel-gears on the shafts, an operating-sleeve longitudinally movable on the casing and adapted to engage the casing and means intermediate said sleeve and the bevel-gears carried by the casing, whereby said bevel-gears may be locked against rotation and the shafts and casing will be locked together.

2. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing, a transverse shaft in said casing, bevel-gears on said shaft engaging the gears on the shafts in line with each other, an operating-sleeve longitudinally movable on the casing and adapted to engage the casing and means intermediate said sleeve and the bevel-gears on the transverse shaft, whereby the latter may be locked against rotation, so that without stopping the rotation of the driving-shaft the driven shaft may be driven in either direction or disconnected from the driving-shaft.

3. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing having an incline, bevel-gears carried by said casing and engaging the bevel-gears upon the shafts, an operating-sleeve longitudinally movable on the casing and adapted to engage the incline to lock the casing against rotation, and means intermediate said sleeve and the bevel-gears carried by the casing, whereby the bevel-gears may be locked against rotation.

4. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing, a transverse shaft in said casing, bevel-gears on said shaft engaging the gears on the other shafts, an operating-sleeve longitudinally movable on the casing and adapted to engage the casing and having an internal groove, connecting-sleeves 18 on the transverse shaft having arms engaging said groove and means whereby when said sleeves are oscillated they will be moved toward or from each other to lock or release the bevel-gears on the transverse shaft.

5. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing, a transverse shaft in said casing, bevel-gears on said shaft engaging the gears on the other shafts, connecting-sleeves on the transverse shaft having arms 19 and provided with means whereby they are moved toward or from each other when oscillated, and a longitudinally-movable operating-sleeve adapted to engage the casing and having an internal groove engaged by the arms, so that the driven shaft may be turned forward, reversed or disconnected without stopping the driving-shaft.

6. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing having slots 21, a transverse shaft in said casing, gears on said shaft engaging the other gears, connecting-sleeves on the transverse shaft having arms passing through the slots and having heads 20, and a longitudinally-movable operating-sleeve adapted to engage the casing and having an internal groove engaged by heads 20, substantially as shown, for the purpose specified.

7. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing having an incline, bevel-gears carried by said casing and engaging the other gears, a longitudinally-movable operating-sleeve having a taper adapted to engage the incline and means intermediate the operating-sleeve and the gears carried by the casing, whereby said gears may be locked against rotation.

8. A reversing-gear comprising two shafts in line with each other and having bevel-gears at their contiguous ends, a rotary casing, a transverse shaft in said casing, bevel-gears on said shaft engaging the other gears, connecting-sleeves on the transverse shaft having arms 19, and arms 24, and a longitudinally-movable operating-sleeve adapted to engage the casing and having an internal groove engaged by the arms, said operating when the operating-sleeve is moved in one direction to force the connecting-sleeves against the gears on the transverse shaft and lock said gears against rotation, substantially as shown, for the purpose specified.

706,668. **SWING-THROWING DEVICE.** THOMAS J. KING, Pittsburg, Pa., assignor of one-half to Samuel B. Charters and William H. Daughenbaugh, Pittsburg, Pa. Filed Mar. 4, 1902. Serial No. 96,602. (No model.)

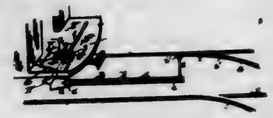

Claim.—1. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with two pockets therein, a lever adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks, having one end connected to the switch-point, whereby by swinging the lever into one of said pockets the lower end thereof will engage the free end on the switch-bar and throw the switch-point to the position desired.

2. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks having one end connected to the switch-point and its opposite end provided with inclined faces thereon, whereby, by swinging the lever into one of the said pockets the lower end thereof will engage one of the inclined faces on the switch-bar and throw the switch-point to the position desired.

3. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with two pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks and having one end connected to the switch-point, whereby by swinging the lever into one of the said pockets the lower end thereof will engage the free end on the switch-bar and throw the switch-point to the position desired.

4. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with two pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks having one end connected to the switch-point and its opposite end provided with inclined faces thereon, whereby by swinging the lever into one of said pockets the lower end thereof will engage one of the inclined faces on the switch-bar and throw the switch-point to the position desired.

5. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with two pockets therein, a lever adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks and having one end connected to the switch-point, a plate having inclined flanges thereon around the free end of said switch-bar, whereby by swinging the lever into one of said pockets the lower end thereof will be directed by one of said flanges to engage the free end of said switch-bar and throw the switch-point to the position desired.

6. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks having one end connected to the switch-point and its opposite end provided with inclined faces thereon, a plate having inclined flanges thereon around the inclined face end of said switch-bar, whereby by swinging the lever into one of said pockets the lower end thereof will be directed by one of said flanges to engage one of the inclined faces on said switch-bar and throw the switch-point to the position desired.

7. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks and having one end connected to the switch-point, a plate having inclined flanges thereon around the free end of said switch-bar, whereby by swinging the lever into one of said pockets the lower end thereof will be directed to engage the free end of said switch-bar and throw the point to the position desired.

8. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, in combination with a pivoted switch-bar located between the tracks and

having one end connected to the switch-point and its opposite end provided with inclined faces thereon, a plate having inclined flanges thereon around the inclined face end of said switch-bar, whereby by swinging the lever into one of said pockets the lever and thereof will be directed by one of said flanges to engage one of the inclined faces on said switch-bar and throw the switch-point to the position desired.

9. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, a spring connected to said lever and platform to hold the lever above the tracks, in combination with a pivoted switch-bar located between the tracks and having one end connected to the switch-point, whereby by swinging the lever into one of said pockets the lever and thereof will engage the free end of the switch-bar and throw the switch-point to the position desired.

10. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, a spring connected to said lever and platform to hold the lever above the tracks, in combination with a pivoted switch-bar located between the tracks having one end connected to the switch-point and its opposite end provided with inclined faces thereon, whereby by swinging the lever into one of said pockets the lever and thereof will engage one of the inclined faces on the switch-bar and throw the switch-point to the position desired.

11. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, a spring connected to said lever and platform to hold the lever above the tracks, in combination with a pivoted switch-bar located between the tracks and having one end connected to the switch-point, a plate having inclined flanges thereon around the free end of said switch-bar, whereby by swinging the lever into one of said pockets the lever and thereof will be directed to engage the free end of said switch-bar and throw the point to the position desired.

12. In railway-switch-operating mechanism, a car-platform having a guide in the floor thereof provided with pockets therein, a lever pivoted to said floor and adapted to fit within and swing in said guide, a spring connected to said lever and platform to hold the lever above the tracks, in combination with a pivoted switch-bar located between the tracks and having one end connected to the switch-point and its opposite end provided with inclined faces thereon, a plate having inclined flanges thereon around the inclined face end of said switch-bar, whereby by swinging the lever into one of said pockets the lever and thereof will be directed by one of said flanges to engage one of the inclined faces on said switch-bar and throw the switch-point to the position desired.

706,669. PROCESS OF CONTINUOUS DIFFUSION. FERNANDO KREMER, Rosario, Argentina. Filed May 11, 1901. Serial No. 59,746. (No specimens.)

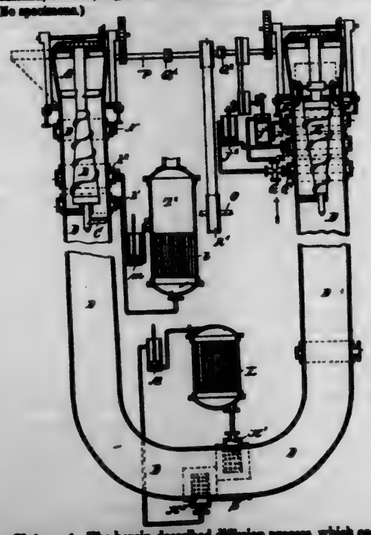

Claim.—1. The herein-described diffusion process, which consists in forming the material to be treated, into a continuous mass or column, imparting a practically continuous movement to said mass or column and exerting a gradually-increasing pressure thereon at both ends, introducing at a point situated at a distance from the delivery end of the column, an extracting or diffusing medium under a pressure smaller than that obtaining at the said delivery end, and causing said medium to travel in the opposite direction to the material.

2. The herein-described diffusion process, which consists in forming the material to be treated, into a continuous mass or column, imparting a practically continuous movement to said mass or column and exerting a gradually-increasing pressure thereon at both ends, introducing at a point situated at a distance from the delivery end of the column, an extracting or diffusing medium under a pressure smaller than that obtaining at the said delivery end, causing said medium to travel in the opposite direction to the material, in contact therewith, heating said medium at an intermediate point, out of contact with the material, and returning the heated medium into contact with the material.

3. The herein-described diffusion process, which consists in forming the material to be treated, into a continuous mass or column, imparting a practically continuous movement to said mass or column and exerting a gradually-increasing pressure thereon at both ends, introducing at a point situated at a distance from the delivery end of the column, an extracting or diffusing medium under a pressure smaller than that obtaining at the said delivery end, causing said medium to travel in the opposite direction to the material and in contact therewith, and withdrawing the said medium by suction at a point situated at a distance from the inlet of the material, so as to reduce the pressure at said point.

706,670. PULL-OFF MECHANISM FOR SEWING-MACHINES. JOSEPH L. KEEFER, Montreal, Canada. Original application filed Aug. 24, 1901, Serial No. 73,201. Divided and this application filed Nov. 14, 1901. Serial No. 82,262. (No model.)

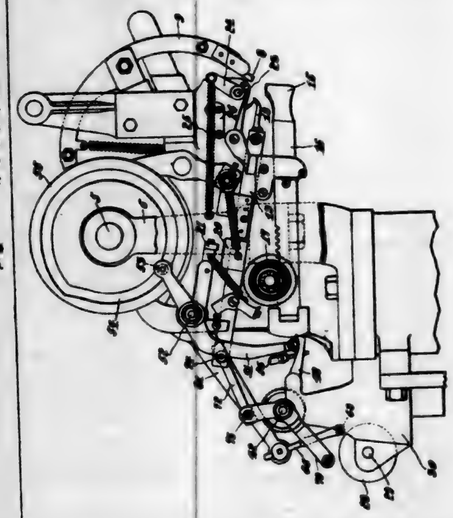

Claim.—1. In a sewing-machine, of the class described, the combination of a cam carried by the shaft of the machine, a cam-lever operated thereby, a reciprocating needle-block connected to one end of said lever, pull-off mechanism carried by the opposite end of said lever, tension mechanism from which the thread is adapted to be drawn by said pull-off mechanism, and an adjustable stud movable to various positions across the path of the thread adjacent to said connecting with said pull-off mechanism.

2. In a sewing-machine the combination of a lever pivoted at an intermediate point, means for oscillating said lever, operative stitch-forming parts operated by the forward end of said lever, a pull-off device carried by the rear end of said lever and movable across the path of the thread to draw a loop therefrom upon the oscillation of said lever, a coöperating measuring-stud also movable across the path of the thread on the opposite side thereof from the pull-off device, and means for adjusting the position of said measuring-stud whereby the length of the thread-loop is regulated.

3. In a sewing-machine, the combination of a two-armed lever extending from front to rear of the machine and pivoted at an intermediate point, a needle-block connected to the front arm of the lever and operated thereby, a pull-off fork carrying a thread-engaging stud or roller through which the thread is looped and carried by the rear arm of said lever, a tension device from which the thread is drawn by said pull-off device, and a measuring device comprising a roller movable to variable positions across the path of the thread between said tension device and pull-off fork, said measuring device being connected to a spring presser-foot which presses against the work and causes said measuring device to assume a varying position in accordance with the thickness of the stock.

4. In a sewing-machine, a two-armed needle-lever pivoted at an intermediate point and having its front arm connected to the needle-block to operate the same, a pull-off fork carried by the rear arm and through which the thread is looped, an offset having a cam stud or roller on the forward arm of said lever, a rotary needle-cam with which said stud or roller engages, a tension device from which the thread passes to the pull-off fork, a ratchet-wheel held against backward rotation having a thread-retaining device to which the thread passes from the pull-off fork, and a measuring device comprising a spring presser-foot arranged to abut against the work being sewed, a bell-crank lever mounted on an axis in the rear of the machine a link connecting one end of said lever with the rear end of the presser-foot, and a stud 71 carried by the opposite end of said bell-crank lever and arranged to assume a position across the path of the thread between the tension device and pull-off fork, whereby the position of said presser-foot causes said stud to project more or less across the path of the thread.

5. In a sewing-machine, a pull-off mechanism comprising a tension device, a thread-retaining device secured against backward rotation, a thread-engaging fork through which the thread is looped and which is adapted to reciprocate across the path of the thread, a bell-crank lever one arm of which carries a stud projecting into the path of the thread between the tension device and said fork, and which is also adapted to reciprocate across the path of the thread and assume variable positions, a presser-foot carried by a sliding bar, means for resiliently holding said presser-foot against the work, and a link connected with the rear end of said sliding bar and with the other arm of said bell-crank lever.

6. In a sewing-machine, a pull-off mechanism comprising a tension device, a thread-retaining device secured against backward rotation, a thread-engaging fork through which the thread is looped and which is adapted to reciprocate across the path of the thread, a bell-crank lever one arm of which carries a stud projecting into the path of the thread between the tension device and said fork, and which is also adapted to reciprocate across the path of the thread and assume variable positions, a presser-foot carried by a sliding bar, means for resiliently holding said presser-foot against the work, means for locking said sliding bar against motion during the formation of a stitch, and a link connecting said sliding bar with the other arm of said bell-crank lever.

7. In a sewing-machine, a pull-off and thread-measuring mechanism comprising a lever pivoted at an intermediate point and extending from front to rear of the machine, a needle-block connected by a link to the front end of said lever, a needle-cam and a cam-stud carried by said lever engaging the same to reciprocate said needle, a thread-engaging fork carried by the rear arm of said lever, a tension device from which the thread passes to said fork, a thread-retaining wheel to which the thread passes from said fork, a ratchet wheel and pawl carried by said thread-retaining wheel and adapted to prevent the backward rotation of the latter, a bell-crank lever mounted coaxially with said thread-retaining wheel and having a rearwardly-extending arm carrying a stud adapted to assume variable positions across the path of the thread between the tension device and said fork, a sliding bar projecting from front to rear of the machine and carrying at its front end a presser-foot, a spring causing said presser-foot and bar to be pressed into a forward position, a link connecting the rear end of said bar with the upright arm of said bell-crank lever, a serrated plate 20 carried by said sliding bar, and a serrated locking-dog 21 adapted to engage with said serrated plate during the formation of a stitch and simultaneous operation of the pull-off mechanism to retain the measuring device in place, substantially as described.

8. In a sewing-machine, the combination of a two-armed lever extending from front to rear of the machine and pivoted at an intermediate point, a needle-block connected to the front arm of the needle and operated thereby, a pull-off fork carrying a thread-engaging stud or roller through which the thread is looped and carried by the rear arm of said lever, a tension device from which the thread is drawn by said pull-off device, a measuring device comprising a roller movable to variable positions across the path of the thread between said tension device and pull-off fork, said measuring device being connected to a spring presser-foot which presses against the work and causes said measuring device to assume a varying position in accordance with the thickness of the stock, and stitch-forming mechanism acting in conjunction with the needle mechanism to form a chain-stitch.

706,671. ELECTRIC ROAD-GRADING MACHINE. JOHN W LAMBERT, Adel, Iowa. Filed June 20, 1901. Serial No. 65,608. (No model.)

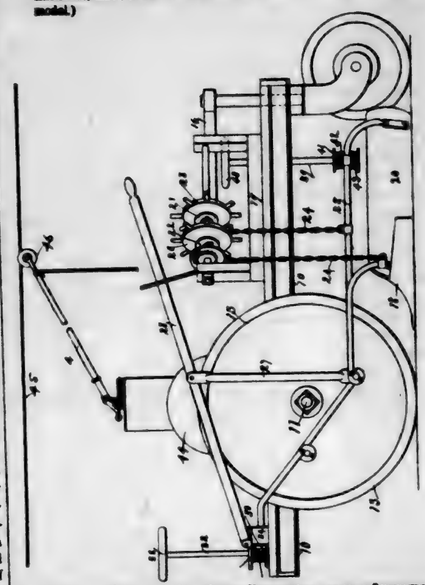

Claim.—1. In a machine for grading roads, a carriage-frame mounted upon an axle having traction-wheels on its ends and a steering-wheel at the end and center of the frame and plows adjustably connected with the carriage to advance at the sides of the carriage, means for moving the plows laterally at the front ends of the beams, means for moving the plows laterally at the rear ends of the beams, and means for raising and lowering the plows, arranged and combined to operate in the manner set forth for the purposes stated.

2. In a machine for grading roads, a carriage-frame mounted upon an axle having traction-wheels on its ends and a steering-wheel at one end and center of the frame and plows adjustably connected with the carriage to advance at the sides of the carriage, means for raising and lowering the plows and means for adjusting the plows laterally relative to the carriage and the line of advance, arranged and combined to operate in the manner set forth for the purposes stated.

3. In a machine for grading roads, plows having scrapers extended laterally and rearward adjustably suspended at the sides of the carriage, slidable racks mounted on the front of the carriage and connected with the plow-beams and means for moving said racks simultaneously in reverse ways, arranged and combined to operate in the manner set forth for the purpose stated.

4. In a machine for grading roads, plows having scrapers extended laterally and rearward adjustably suspended at the sides of the carriage, slidable racks mounted on the front of the carriage and connected with plow-beams and means for moving said racks simultaneously in reverse ways, levers connected with the ends of the slidable racks and hangers pivotally connected with the central parts of said levers and also pivotally connected with the front ends of the plow-beams, arranged and combined to operate in the manner set forth for the purpose stated.

5. In a machine for grading roads, plows having scrapers extended laterally and rearward adjustably suspended at the sides of the carriage, slidable racks mounted on the front of the carriage and connected with plow-beams and means for moving said racks simultaneously in reverse ways, levers connected with the ends of the slidable racks and hangers pivotally connected with the central parts of said levers and also pivotally connected with the front ends of the plow-beams and means for retaining said levers at different points of elevation, arranged and combined to operate in the manner set forth for the purpose stated.

6. In a machine for grading roads, plows having scrapers extended laterally and rearward adjustably suspended at the sides of the carriage, slidable racks mounted on the front of the carriage and connected with the plow-beams and means for moving said racks simultaneously in reverse ways, levers connected with the ends of the slidable racks and hangers pivotally connected with the central parts of said levers and also pivotally connected with the front ends of the plow-beams, means for re-

taining said lever at different points of elevation and means connected with the carriage and the rear ends of the plow-beams for adjusting the plows laterally relative to each other and the carriage, arranged and combined to operate in the manner set forth for the purposes stated.

7. In a machine for grading roads, a carriage, a plow adjustably connected at each side of the carriage with the front of the carriage, a drum at the center and rear part of the carriage, ropes fixed to the drum and to the rear ends of the plow-beams, drums mounted on the rear part of the carriage, chains fixed to the drums and also fixed to the plows, and means for operating the drums for raising and lowering the plows, arranged and combined to operate in the manner set forth for the purposes stated.

8. A road-grading machine comprising a carriage-frame, an axle fixed to the front portion of the carriage, wheels mounted on the ends of said axle, a wheel-bearer pivotally connected with the rear end center, a wheel mounted in the bearer, means for adjusting said wheel-bearer and wheel, a motor on the front portion of the carriage connected with the front carriage-wheels by means of a driving-shaft having gear-wheels fixed to its ends and gear-wheels fixed to the carriage-wheels, plows suspended under the rear end portion of the carriage, means for raising and lowering the plows and means for adjusting the plows relative to the line of advance, arranged and combined to operate in the manner set forth for the purposes stated.

706,672. CAR-BRAKE. Reuben R. Lockwood, Chicago, Ill. Filed Apr. 3, 1902. Serial No. 101,158. (No model.)

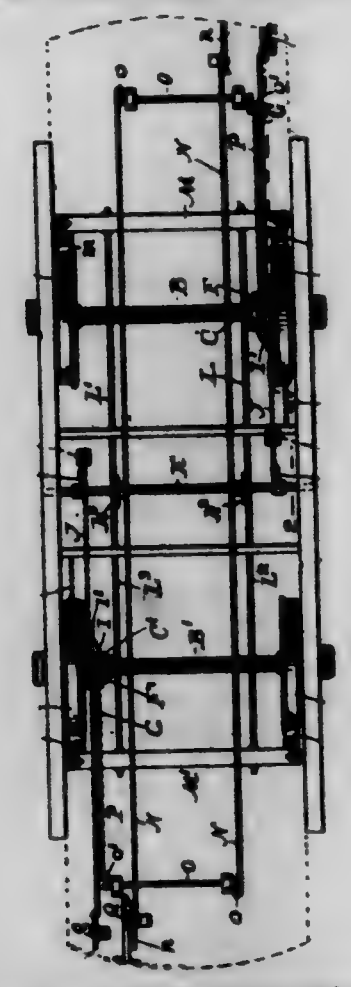

Claim.—1. In a device of the class described, the combination with a rotatable car wheel and axle, of a block running loose upon said axle, a friction-shoe connected thereto, means for bringing said friction-shoe into contact with the periphery of said wheel, and means whereby the rotation of said block may set a brake-shoe; substantially as described.

2. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a friction-shoe connected to said block, a lever pivotally connected to said block, means of connection between said lever and said friction-shoe, means for actuating said lever to bring said shoe into contact with the periphery of said wheel, and means whereby rotation of said block may set a brake-shoe; substantially as described.

3. In a device of the class described, the combination with a rotatable wheel and axle, and block running loose upon said axle, of a friction-shoe connected to said block, means for bringing said shoe into engagement with the periphery of said wheel, means whereby the rotation of said block may set a brake, and means for holding said friction-shoe normally out of engagement with said shoe; substantially as described.

4. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a member longitudinally movable with respect to said block, a friction-shoe upon the end of said member, means for moving said member with respect to said block to bring said friction-shoe into engagement with the periphery of said wheel and means whereby the rotation of said block may set a brake-shoe; substantially as described.

5. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a member longitudinally movable with respect thereto, a friction-shoe upon the end of said member, a lever pivoted upon said block, means of connection between said lever and said member, means for actuating said lever to bring said friction-shoe into engagement with the periphery of said wheel, and means whereby the rotation of said block may set a brake-shoe; substantially as described.

6. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a member longitudinally movable with respect to said block, a friction-shoe upon the end of said member, a lever pivoted upon said block, a yoked link pivoted between the ends of said lever and running to said member, means for actuating said lever to bring said friction-shoe into engagement with the periphery of said wheel and means whereby the rotation of said block may set a brake-shoe; substantially as described.

7. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said forked member farthest removed from said block, means for moving said forked member with respect to said block to bring said shoe into engagement with said wheel and means whereby the rotation of said block may set a brake-shoe; substantially as described.

8. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said forked member, means for actuating said member to bring said shoe into engagement with the periphery of said wheel, means for holding said shoe normally out of engagement with said wheel and means whereby the rotation of said block may set a brake-shoe; substantially as described.

9. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said member farthest removed from said block, means for actuating said forked member to bring said shoe into engagement with said wheel, a bow-spring confined between said block and said forked member and adapted to hold said friction-shoe normally out of engagement with said wheel, and means whereby the rotation of said block may set a suitable brake-shoe; substantially as described.

10. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said member, a lever pivoted to said block, means of connection between said lever and said forked member, means for actuating said lever to bring said shoe into engagement with the periphery of said wheel and means whereby the rotation of said block may set a brake; substantially as described.

11. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a lever of the second order pivoted to said block, means of engagement between said lever and said forked member, means for actuating said lever to bring said friction-shoe into engagement with the periphery of said wheel, and means whereby the rotation of said block may set a brake-shoe; substantially as described.

12. In a device of the class described, the combination with a rotatable wheel and axle, of a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said forked member farthest removed from said block, a lever of the second order pivoted upon said block, a yoked link pivotally connected to said forked member and to said lever between its ends, means for actuating said lever to bring said friction-shoe into engagement with the periphery of said wheel, and means whereby the rotation of said block may set a brake-shoe; substantially as described.

13. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said forked member, a lever of the second order pivoted to said block, a yoked link pivotally connected to said forked member and to said lever, between its ends, a connecting-rod pivoted to the end of said lever, means for actuating said connecting-rod to draw said friction-shoe into engagement with the periphery of said wheel, means for holding said friction-shoe normally out of engagement with said wheel, and means whereby rotation of said block may set a brake; substantially as described.

14. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said member, means for longitudinally moving said forked member to throw said shoe into engagement with the periphery of said wheel, means for holding said forked member normally in a position wherein said friction-shoe is out of engagement with said wheel and means for limiting the longitudinal movement of said forked member; substantially as described.

15. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a forked member longitudinally movable with respect to said block, a friction-shoe upon the end of said member, means for moving said longitudinal member to bring said shoe into engagement with the periphery of said wheel, means for holding said member normally in a position wherein said shoe is out of engagement with said wheel, a bolt running through the tines of said forked member, and adapted to limit its motion in one direction, and means whereby the rotation of said block may set a brake-shoe; substantially as described.

16. In a device of the class described, the combination with a rotatable wheel and axle, of a block running loose upon said axle, a member longitudinally movable with respect to said block, a friction-shoe upon the end of said member farthest removed from said block, means for actuating said member to bring said shoe into engagement with the periphery of said wheel, a suitable brake-setting mechanism, and suitable means of connection between said block and longitudinally-movable member and said brake-setting mechanism, whereby the rotation of said block may actuate said brake-setting mechanism; substantially as described.

17. In a device of the class described, the combination with a rotatable wheel and axle, a block running loose upon said axle, a member longitudinally movable with respect to said block, a brake-shoe upon the end of said member, and means for actuating said member to bring said brake-shoe into engagement with the periphery of said wheel, of a member rigidly connected to said block at right angles to said longitudinally-movable member, a piece pivotally connected to said longitudinally-movable member between said friction-shoe and said block, a third piece connecting the extremity of this piece with the extremity of the member rigidly connected to said block, a chain connected to the junction of these members, and a suitable brake-setting mechanism adapted to be actuated by said chain; substantially as described.

18. In a device of the class described the combination with a truck, of a shaft transversely journaled thereon, wheels upon said shaft, brake-beams upon the front and rear of said truck, connecting-rods running from the peripheries of said wheels to said brake-beams, radial levers connected to said shaft, chains connected to said levers, suitable friction mechanisms upon said truck, connected to said chains, whereby the motion of said friction mechanism may actuate said brake-beams; substantially as described.

19. In a device of the class described, the combination with a car and two axles having wheels connected thereto, of a friction-shoe swung upon each of said axles, a lever upon each end of the car, means of connection between each of said levers and the friction-shoe upon the axle nearer to it, a second lever upon each end of the car, a connecting-rod running from said lever to the opposite end of the car, a crank-shaft journaled upon the opposite end of the car and means of connection between said crank-shaft and the friction-shoe upon the other end of the car whereby the motion of said second lever may operate the friction-shoe upon the axle farthest from it; substantially as described.

706,678. **LATHE.** Peter Lohse, Bockenheim, Frankfort-on-the-Main, Germany. Filed Nov. 26, 1901. Serial No. 84,120. (No model.)

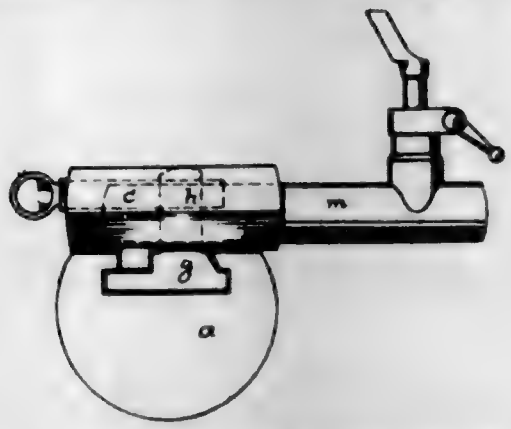

Claim.—1. The combination with the fixing-plate having a vertical bolt with a transverse hole, of a holder comprising two parts separated by a horizontal kerf and having a vertical hole and a cross-passage, and an eccentric-bolt arranged in the cross-passage and engaging the hole in the vertical bolt, substantially as described.

2. The combination with the fixing-plate having a vertical bolt with a transverse hole, of a holder comprising two parts separated by a horizontal kerf and having a vertical hole and a cross-passage, the adjacent surfaces of the two parts being grooved to receive the rest-slide, and an eccentric-bolt arranged in the cross-passage and engaging the hole in the vertical bolt, substantially as described.

706,674. **MACHINE FOR ROLLING CAR-WHEELS.** Henrik V. Loss, Philadelphia, Pa., assignor to Charles T. Schoen, Philadelphia, Pa. Filed Mar. 7, 1902. Serial No. 97,198. (No model.)

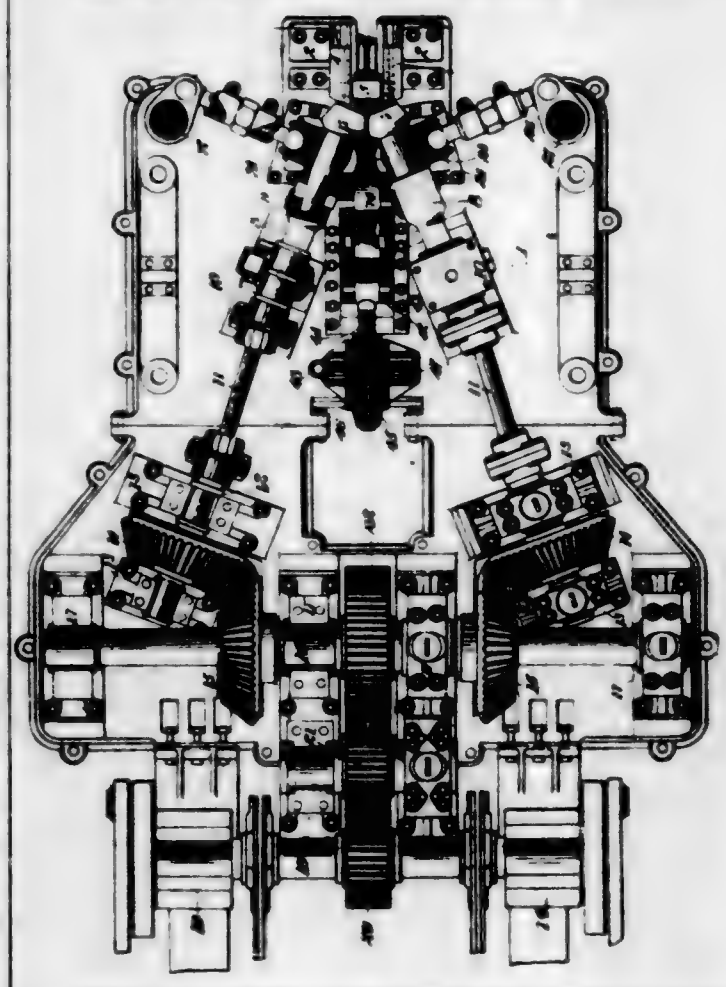

Claim.—1. A machine for rolling car-wheels, comprising a carriage having a horizontal spindle upon which the work is supported in a vertical position, a pair of converging rolls adapted to shape the wheel between its hub and rim, rolls adapted to shape the flanged tread of the wheel, and complemental lateral edge rolls, combined with power appliances for driving the converging rolls positively, independent means for moving positively both of said converging rolls into and out of position and for retaining them in position, independent means for moving the tread-rolls into and out of position, and independent means for moving the edge rolls into and out of position.

2. In a rolling-mill, the combination of lateral shaping-rolls, a main edge-shaping roll having its axis of rotation in the plane of the axis of the work, a complemental edge-shaping roll suspended against the work above the horizontal axial plane of the main shaping-roll and the work, a controlling medium for said complemental edge-shaping roll, and a train of gearing interposed between said complemental edge-shaping roll and the controlling medium.

3. In a machine for rolling car-wheels, a work-supporting carriage having a spindle upon which the work is sustained in a vertical plane, a tread-shaping roll, a carriage in which it is mounted, means to adjust said carriage and its roll relatively to the work and controllable independently of the remainder of the machine, a complemental suspended tread-shaping roll and means for controlling it independently, web-shaping rolls, means to drive said web-shaping rolls positively, and independent means for moving the said web-shaping rolls into and out of position.

4. In a rolling-mill, a pair of rolls, roll-holders therefor, supports for said holders, bearings for said rolls, rock-shafts, connections between said bearings and said rock-shafts, a screw, a traveling nut on said screw, and connections between said traveling nut and said rock-shafts, combined with means to rotate the screw and thereby rock the shafts to move the rolls into and out of position.

5. In a rolling-mill, a shaping-roll, a carriage in which it is placed, ways for said carriage, a screw applied to said carriage, a nut applied to

said screw, a worm-wheel connected with said nut, a worm-shaft meshing with said worm-wheel, an independent motor, and connections between said worm-shaft and independent motor for actuating the carriage.

6. In a rolling-mill, edge rolls, an eccentric shaft for each of them, a worm-wheel on each of said shafts, a shaft having right and left hand worms meshing with the said worm-wheels, and a train of gearing interposed between a hand-wheel shaft and said worm-shaft for adjusting the said rolls relatively to the work.

706,675. COLLAPSIBLE SUPPORT OR FRAME FOR TABLES, CHAIRS, &c. FRITZ MACK, Nuremberg, Germany. Filed Aug. 21, 1901. Serial No. 72,789. (No model.)

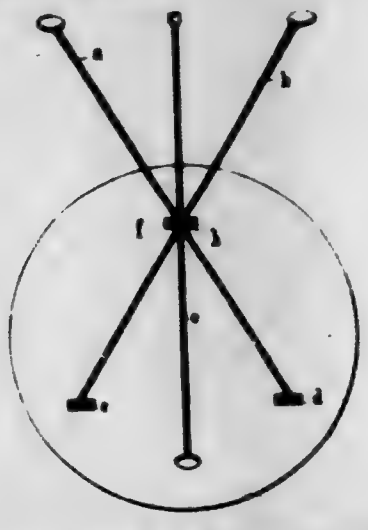

Claim.—1. The combination with a table-top, of legs pivotally secured to the under face thereof, said legs being integral and having their upper ends at an angle to said top, and their lower ends at a substantial right angle to the upper ends, said legs being secured to one another at the corners formed by said upper and lower ends, and a straight leg pivotally secured between said angular legs and detachably secured to the top, substantially as described.

2. In combination with a table-top, a pair of legs pivotally secured to the under face thereof, said legs being secured at an angle to the top of the table, contacting at an intermediate point and then being bent outwardly, a straight leg pivotally mounted between said legs, means passing through all of said legs for securing the legs together, the upper end of said straight leg being detachably secured to the table-top, whereby the said end may be swung on its point of pivot and disengaged from the said top, substantially as described.

706,676. TOP-SPINNING TOY. GEORGE R. HAHN, Columbus, Ohio, assignor of two-thirds to Edwin J. Hiatt and Matthew R. Denver, Wilmington, Ohio. Filed Apr. 30, 1902. Serial No. 104,260. (No model.)

Claim.—1. In a top-spinning toy, the combination of a longitudinally-movable slide, a spring for moving it in one direction, and means for setting the slide and tensioning the spring; with a laterally-movable spring-pressed plate beside the slide, means for regulating the spring-pressure, and opposed frictional surfaces on the plate and slide, substantially as described.

2. In a toy pistol the combination of the stock and barrel, the hammer pivoted thereto having an arm above its pivot projecting rearwardly and downwardly when hammer is cocked, and a notch in hammer adjacent to its pivot, a trigger engaging the notch to hold hammer cocked and a bent spring confined in the handle, one end of said spring engaging the arm of the hammer and operating therewith substantially as and for the purpose described.

3. The herein-described top-spinning toy comprising a hammer, a spring engaging the hammer, a trigger for locking the hammer when "cocked," a slide in the barrel, a link connecting the hammer and slide, a plate in the barrel beside the slide, a spring pressing the plate toward the slide, a regulating-screw therefor, a slot in the barrel adjacent to said frictional surfaces, and a top having a spindle adapted to be inserted through said slot between the said frictional surfaces after the hammer is "cocked" all substantially as and for the purpose described.

4. In a top-spinning toy pistol, the combination of the barrel, a slide therein, a spring-actuated hammer, connections for moving the slide with the hammer, a laterally-movable presser-plate beside the slide, opposed frictional surfaces on the plate and slide between which the top-spindle is held, a spring interposed between the plate and barrel and pressing the plate toward the slide, and means for releasing the spring when desired to actuate the slide, substantially as described.

706,677. KNIFE-CLEANING MACHINE. HENRY MICHAUX, New York, N. Y. Filed Apr. 7, 1902. Serial No. 101,673. (No model.)

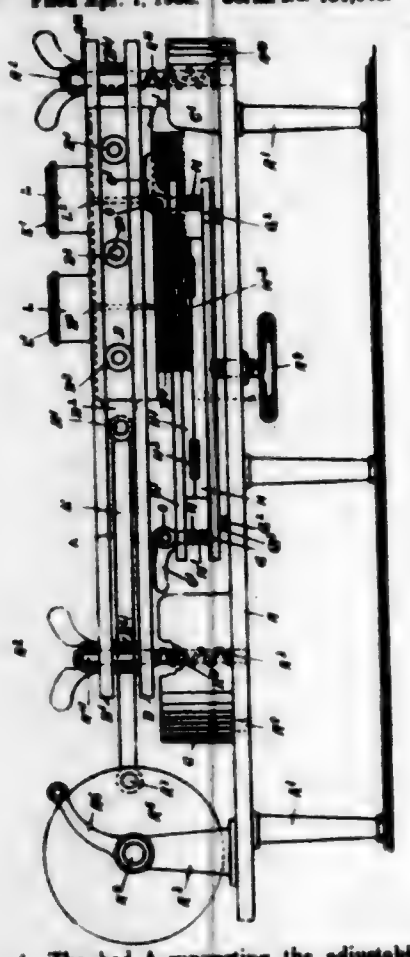

Claim.—1. The bed A supporting the adjustable bed G and the screw A^6, the knife-holder H and clamp-bar G, in combination with the reciprocating brush-carrier D having brush D and receptacle L provided with passages L^2 as set forth.

2. The bed A supporting the adjustable bed G, the stanchions N, the bar G and cam-lever O, in combination with the knife-holder H and the reciprocating brush D having receptacles L and passages L^2 as set forth.

3. The bed A stanchion A^7 bars B and B forming a track for the friction-rolls D^2, the springs A^7 and nut A^{12}, in combination with the stanchions N bar G cam-lever O, knife-holder H and reciprocating brush D as set forth.

4. The bed A having the copings C and C the arbor A^4 and disk A^5, operating the rod E and carrier D, in combination with the adjustable bar G cam-lever O knife-holder H brush D and boxes L as set forth.

5. The bed A having screw A^6 screw-stanchions A^7 disk A^5 crank rod E to operate the brush-carrier D, in combination with the bed G stanchions N, bar H, cam-lever O, knife-holder H and reciprocating brush D as set forth.

6. The bed A having screw-stanchions A^7 spring A^{11} bars B, blocks B^1 bars B and nuts A^{12}, in combination with the brush-carrier D having rolls D^2 brush D, knife-holder H and bar G held by the cam-lever O as set forth.

706,678. DUPLEX HOOK FOR HITCHING-STRAPS, &c. ELI H. MOORMAN, Winterset, Iowa; Sarah M. Moorman administratrix of said Eli H. Moorman, deceased. Filed Jan. 21, 1901. Serial No. 44,000. (No model.)

Claim.—A duplex hook for hitching-straps, consisting of two mating parts adapted to be adjustably connected with a strap, each part consist-

ing of a body portion that has a hook at its front end, a cross-bar in rear of the hook and a loop curved outwardly at its rear end in combination with a leather strap, as shown and described to operate in the manner set forth for the purposes stated.

706,679. CIGAR-PERFORATOR. SIDNEY MOUNTFORD, Newark, N. J., assignor to the Whitehead & Hoag Company, Newark, N. J., a Corporation of New Jersey. Filed May 21, 1902. Serial No. 108,342. (No model.)

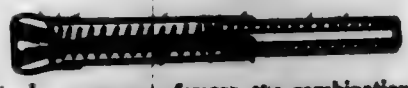

Claim.—1. In a cigar-perforator, the combination of a cutter-section and a holding-section for the cutter having a lengthwise slot, one of the sections having an aperture and the other being provided with an indentation projecting into the aperture for locking the sections together in combination with an extractor having arms united through the slot, one arm in the cutter-section and the other along the outside of said cutter-section and provided with an aperture to receive the cutter-section, and means for holding said parts.

2. In a cigar-perforator, the combination with a cutter-tube and a holding-section therefor, the cutter-tube being split longitudinally and having an aperture near one end and the holding-section having an indentation near one end projecting into the aperture for the purpose described, casing-sections, one being movable endwise and moving the perforator, and an extractor held by the other casing-section and projecting into the cutter-section.

3. In a cigar perforator and cutter, a tubular cutter-section formed of steel having one end provided with a cutting edge and its other end provided with an aperture in its side wall, a tubular holding-section having one end fitting closely upon the perforated end of the cutter-tube, and provided with a depression entering the aperture for the purpose described, in combination with an extractor projecting into the cutter-section, and casing-sections, one engaging and operating the perforator endwise and the other engaging and holding the extractor.

4. In a cigar perforator and cutter, a connecting-tube and a holding-section secured to each other, a sleeve or head mounted on one end of the holding-section, said holding-section having spurs or shoulders crimped or turned outwardly for holding the head in position.

5. In a cigar-perforator, the combination of a tubular cutting-section having one end provided with a cutting edge and its other end provided with an aperture, a tubular holding-section having one end fitting upon the apertured end of the cutter-section and provided with a depression entering said aperture, a head on the opposite end of the holding-section, said holding-section having outturned spurs or shoulders engaging the outer end face of the head for the purpose set forth, an extractor, and telescoping casing-sections one engaging and holding the extractor and the other engaging and operating the perforator-cutter.

6. In a cigar-perforating device, a tubular cutter and perforator, in combination with arms united at one end, one of the arms being inserted in the tubular cutter and the other arm provided with an abutting plate, a head on the perforator and cutter and a spring interposed between said head and the abutting plate.

7. In a cigar cutter and perforating device, the combination with a tubular cutter, of an extractor consisting of a U-shaped bar having one arm inserted in the cutter and means for holding the parts in position.

8. The herein-described extractor for cigar-perforators consisting of a U-shaped bar in combination with a tubular cutter receiving one arm of the bar, and telescoping parts inclosing the former parts and operable endwise to move the cutter lengthwise of the arm therein.

9. The herein-described extractor for cigar-perforators consisting of substantially parallel arms having corresponding ends united, the opposite end of one of the arms being provided with an abutting plate, in combination with a tubular cutter receiving one of the arms, and an inclosing case composed of sections, movable endwise one upon the other, one section engaging the tubular cutter and the other the abutting plate for the purpose set forth.

10. In combination with a slotted cutter and perforator having a tubular cutting-section and an abutting head, an extractor having an arm inserted in the tubular cutter and provided with an abutting head, a spring interposed between said heads and a case inclosing said parts.

11. The combination of telescoping tubes movable endwise one upon the other and a cigar-receiving tip secured to one of the tubes, a hollow cutter and perforator movable with one of the tubes into the tip, an extractor having an arm inserted in the hollow cutter and an abutting plate engaged with the tip and a spring interposed between said abutting plate and one end of one of the tubes for the purpose set forth.

12. In a cigar perforator and cutter, a tube having a removable tip provided with a socket for receiving the cigar end, a second tube movable lengthwise within the former tube, a perforator and cutter engaged by and movable with the second tube into the socket, in combination with a U-shaped extractor having one arm abutting against the inner end of the tip and its other arm inserted in the cutter, and a spring interposed between said abutting end of the extractor and the head of the cutter and perforator.

706,680. CAR BODY-BOLSTER. JOHN V. MCADAM, St. Louis, Mo., assignor to American Steel-Body Double-Bolster Co., St. Louis, Mo., a Corporation of New Jersey. Filed June 9, 1902. Serial No. 110,894. (No model.)

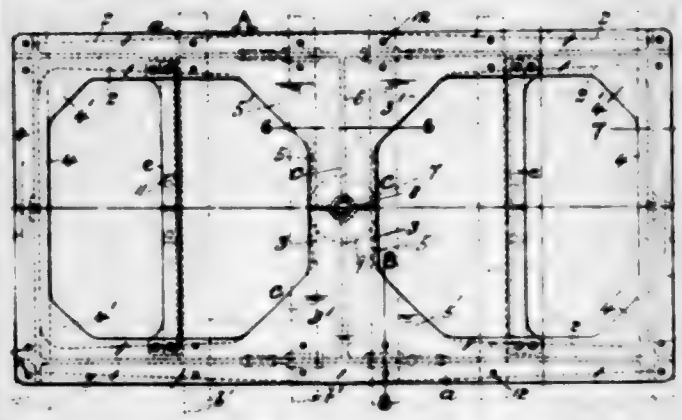

Claim.—1. A car body-bolster, consisting of two opposite side beams, and a cross-beam intermediate to the side beams and united thereto, the said beams having lateral gussets at their junctions to each other, and adapted with the said gussets to bear against the car-sills, substantially as described.

2. A car body-bolster, consisting of two opposite side beams, and a cross-beam intermediate to the side beams and united thereto, the said beams having lateral gussets at their junctions to each other, all the said parts being integral and adapted to bear against the car-sills, substantially as described.

3. A car body-bolster, consisting of two opposite side beams, and a cross-beam intermediate to the side beams and united thereto, the said cross-beam having the body center-bearing, and the said beams having lateral gussets at their junctions to each other, all the said parts being integral and adapted to bear against the car-sills, substantially as described.

4. A car body-bolster, consisting of two opposite side beams, a cross-beam intermediate to the side beams and united thereto at their middle portion, or thereabout, and a cross-beam intermediate to the side beams and united thereto at their end portions, respectively, the said beams having lateral gussets at their junction to each other, and adapted with the said gussets to bear against the car-sills, substantially as described.

5. A car body-bolster, consisting of two opposite side beams, a cross-beam intermediate to the side beams and united thereto at their middle portion, or thereabout, a cross-beam intermediate to the side beams and united thereto at their end portions, respectively, the said beams having lateral gussets at their junctions to each other, and the said cross-beams having respectively the body center-bearings and lugs for the truss-rods, all the said parts being integral, substantially as described.

706,681. PRESS FOR PACKING BARRELS OR OTHER PACKAGES. SYLVESTER MCCOWN, Athalia, Ohio, assignor to Gabe M. Weil, Louis Breckman, and S. S. Weil, copartners as Weil, Breckman & Company, Cincinnati, Ohio. Filed Aug. 7, 1901. Serial No. 71,186. (No model.)

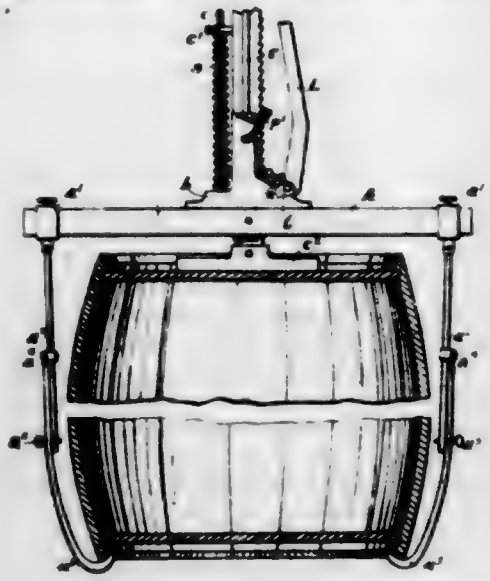

Claim.—1. In an apparatus of the character indicated the combination of the cross-bar, a vertical guide rising from the central longitudinal portion thereof, a rack-bar operating in the guide, an operating-lever fulcrumed to the guide, a pawl to engage said rack-bar, and a spring proximate to and parallel with the guide and rack-bar and seated upon the base of the former, and upholding the rack-bar in its elevated position in relation to the cross-bar.

2. In an apparatus of the character indicated in combination with the cross-bar and the rack-bar operated vertically through the same, of pivotally-suspended tie-rods, yokes slidable thereon, hook members pivotally secured to said slidable yokes, and means for holding the hook members in adjusted positions on the tie-rods.

3. In an apparatus of the character indicated, the combination with the cross-bar and rack-bar, operated vertically in relation to the same, of the hooked tie-rods pivotally secured to the ends of the cross-bar and adapted when out of use to fold inward beneath the said cross-bar.

4. In an apparatus of the character indicated, the combination of the cross-bar, the guide-piece, B, provided with the flange *b*, the rack-bar, C, adapted to operate with the guide-piece, and provided with the perforated lug, *c'*, the fixed standard, *c*, and the spring, *s*, coiled upon said standard, between the lug, *c'*, and the flange, *b*.

5. In a portable apparatus of the character indicated, the cross-bar in combination with tie-hooks pivoted to the ends thereof to fold inward, said tie-hooks being pivoted midway of their shanks to fold outward substantially as and for the purpose specified.

706,682. RECORDER. EDWARD A. HERBAUER, Iron Mountain, Mich. Filed May 24, 1902. Serial No. 61,660. (No model.)

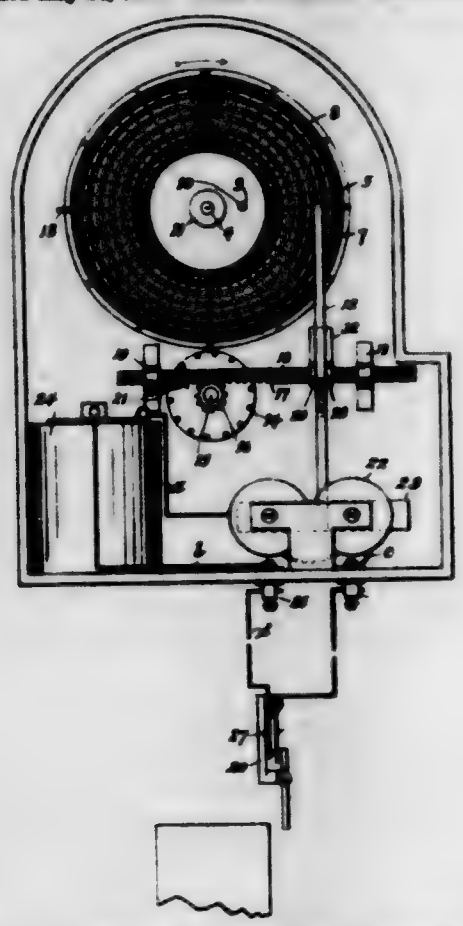

Claim.—In a recorder, the combination of a dial having a pin projecting from the periphery thereof, and also having a diagram on its face, said diagram divided circularly into time-spaces, and also provided with a series of concentric circular spaces, each circular space indicating a certain period of time as twelve hours, means for rotating the dial so as to cause the same to make a complete revolution once in a stated period of time, a record-making device adapted to act on the diagram, said device being originally set so as to register with the initial concentric circular space of the diagram, a movable rod on which the record-making device is pivotally mounted, but held against longitudinal movement thereon, said rod provided with a series of rack-teeth, a shaft having a toothed wheel mounted fast thereon, the teeth of said wheel being adapted to be successively acted upon by the projecting pin of the dial upon each complete revolution of said dial, a pinion mounted fast on the toothed-wheel shaft, said pinion being in mesh with the rack-teeth of the rod, and adapted to move said rod a limited distance when the toothed wheel is partially rotated, means for holding the rod in adjusted position, and means adapted to act on the record-making device so as to cause said device to leave a visible record on the diagram in one of the circular spaces thereof.

706,683. FIELD-GATE. CLEVELAND P. HILER, Chinook, Mont. Filed Dec. 30, 1901. Serial No. 87,796. (No model.)

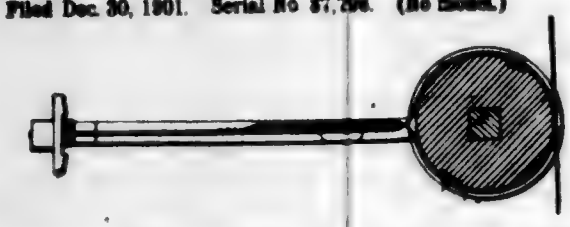

Claim.—1. The combination of a swinging gate provided with a latch, a projection or finger extending from the gate, a connecting device extending from the latch and having a loop receiving the finger, a disk or plate connected with the gate, and operating cords or ropes arranged on the disk or plate and connected with the loop, substantially as described.

2. The combination of a swinging gate having a latch and provided with a finger projecting upward from its upper edge, a connecting-rod extending along the top of the gate from the latch and provided with an oblong loop arranged at the rear portion of the gate and receiving the finger, a disk or plate mounted on the gate in rear of the loop, operating cords or ropes arranged on the disk or plate and connected with the loop, and means for limiting the movement of the cords or ropes independently of the disk or plate, substantially as described.

3. The combination of a swinging gate having a latch, a disk or plate mounted on the gate and provided at opposite sides thereof with recesses, operating cords or ropes extending around the disk or plate and capable of movement independently thereof, and provided with stops extending into the said recesses and adapted to engage the end walls thereof, means for connecting the operating cord or ropes with the latch, and means for actuating the cords or ropes, substantially as described.

706,684. SNOW GUARD OR FENDER. FRANCIS A. PETER, Washington Township, Lehigh County, Pa. Filed May 16, 1902. Serial No. 107,658. (No model.)

Claim.—1. In combination, the fastening-bar having one end bent backwardly upon itself to form a brace, and a plate arranged perpendicular to and transversely of the bar, and abutting against the extremity of the brace, said plate having a notch to accommodate the bar and secured thereto, substantially as described.

2. In combination, the guard-plate having an abutment on its front side and a notch in its lower edge; with a fastening-bar lying transversely of the plate, and extending through the notch therein, and having its front end bent backward to form a brace, the extremity of which is fitted against the plate above the abutment, substantially as described.

3. A snow-guard, comprising a fastening-bar having one end bent backwardly upon itself at an angle, and a plate lying transversely of the bar, having an abutment provided with a pintle engaging an aperture in the bar, and a flange above the abutment the extremity of the brace being confined between the flange and top of abutment, substantially as described.

4. A snow-guard comprising a plate having an abutment, provided with a pintle to secure it to the fastening-bar, a fastening-bar extending under and at right angles to the plate, and a brace between the front end of bar and the plate, substantially as described.

5. A snow-guard comprising a fastening-bar, a plate lying transversely of the bar having an abutment resting on the bar and a flange above the abutment, and a brace between the front of plate and front end of bar, substantially as and for the purpose set forth.

706,685. TRACTION-ENGINE. JOSEPH S. PFENNER, Fountain, Minn. Filed Apr. 28, 1902. Serial No. 106,100. (No model.)

Claim.—1. In a traction-engine, the combination with a boiler and the front axle and wheels journaled thereon; of a supporting-frame having a longitudinal sliding engagement with the axle and a sliding engagement with the boiler, and means for vertically adjusting the boiler with respect to the supporting-frame.

2. In a traction-engine, the combination with the boiler, its traction-wheels and the forward supporting-wheels and their axle; of a frame hav-

ing a longitudinal sliding connection with said axle, said boiler having a vertically-adjustable connection with said supporting-frame, and means for adjusting said boiler.

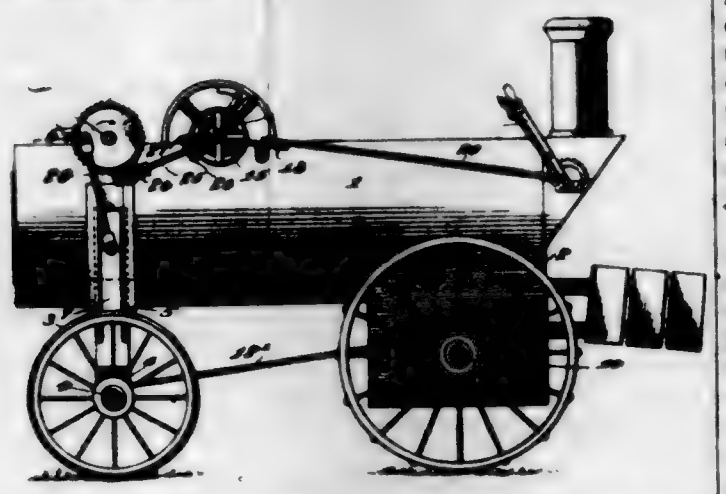

3. In a traction-engine, the combination with a boiler and its traction-wheels and its forward supporting-wheels and their axle, a frame connected to said axle and having vertical standards, guides fixed to the sides of the said boiler and engaging said standards, a shaft journaled to said boiler, cranks connected to said shaft, links connecting said cranks to the vertical members of the supporting-frame, a worm-wheel mounted to turn with said shaft, a worm in mesh with said wheel, and means for rotating said worm.

4. In a traction-engine, the combination with a boiler, its traction-wheels and its forward supporting or steering wheels and their axle, a frame connected to the axle and having vertically-disposed members, guideways secured to the sides of the boiler and having a dovetailed sliding connection with said vertical members, a shaft extending across the boiler and provided at one end with a crank and at the other end with a crank-wheel having formed thereon or made integral therewith a worm-wheel, links, one connecting the crank-wheel with one of said vertical members and the other connecting the crank with the other vertical member, a worm in engagement with the worm-wheel, and means for rotating the worm.

706,686. INCANDESCENT GAS-BURNER. EDWARD W. PHELPS, Montreal, Canada, assignor of one-half to Theodore Nadeau, Montreal, Canada. Filed Dec. 9, 1901. Serial No. 85,212. (No model.)

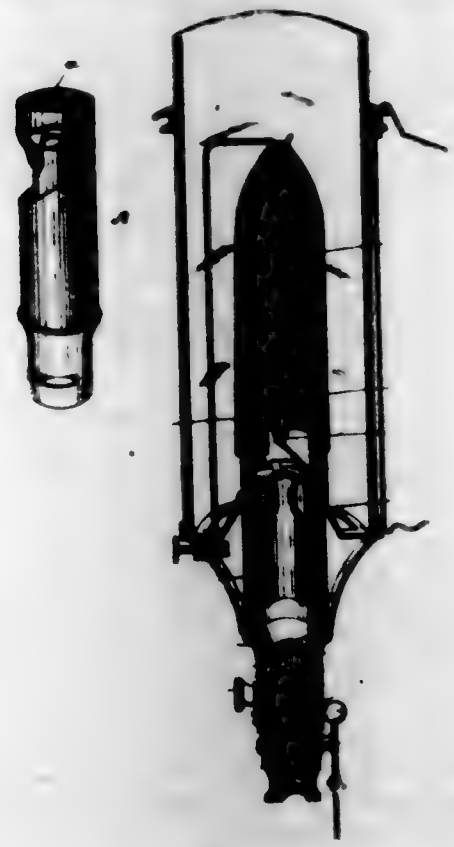

Claim.—1. The combination with the mantle-supporting double-cylinder burner having openings in the outer wall thereof, of a secondary burner substantially cup-shaped in form and extending up within the main burner, a pipe extending down through the cylinder-burner and connecting by a passage-way to the main gas-supply, the said pipe having extending into the upper end thereof, within the cup, a slotted set-screw capable of being turned from the top as specified.

2. The combination with the mantle-supporting double cylinder having openings in the outer wall thereof, of a nosepiece having a central orifice and fitted onto the upper end of the gas-supply pipe and receiving the lower end of the outer wall of the cylinder-burner and having a reduced threaded upper end suitably tapered and flattened at the top and provided with an opening therein, a cylindrical cap internally threaded and provided with a central opening at the top designed to fit over the reduced upper end of the nosepiece and means for circumferentially adjusting such cap and holding it in position when adjusted as specified.

3. The combination with the mantle-supporting double-cylinder burner having openings in the outer wall thereof, and a circumferential slot formed at the lower end thereof, of a nosepiece fitting the central orifice, and fitted onto the upper end of the gas-supply pipe and receiving the lower end of the outer wall of the cylinder and having a reduced threaded upper end suitably tapered and flattened at the top and provided with an opening therein, a cylindrical cap internally threaded and provided with a central opening at the top designed to fit over the reduced upper end of the nosepiece, and an arc-shaped projection formed on the cap and fitting the interior of the lower portion of the cylinder, and a set-screw extending into the arc-shaped projection and through the slot as specified.

4. The combination with the mantle-supporting cylinder-burner having openings in the outer wall thereof, of a nosepiece having a central orifice and fitted onto the upper end of the gas-supply pipe and having the top tapered and an opening extending therethrough, a cap provided with a central opening suitably fitted onto the nosepiece, means for adjusting said cap, a side passage-way extending through the nosepiece to the gas-supply, a tap having the central orifice designed to communicate with the central orifice of the nosepiece, and a side orifice at right angles to the central orifice of the tap and designed to communicate with the side passage-way, a pipe extending upwardly from the side passage-way in the nosepiece and bent at the top so as to have the top centrally disposed and a suitable burner at the top, as and for the purpose specified.

706,687. VANNER. CYRUS C. PRATT, Portland, Oreg., assignor of one-half to Thomas Holland, Portland, Oreg. Original application filed June 18, 1901, Serial No. 65,041. Divided and this application filed Nov. 20, 1901. Serial No. 82,976. (No model.)

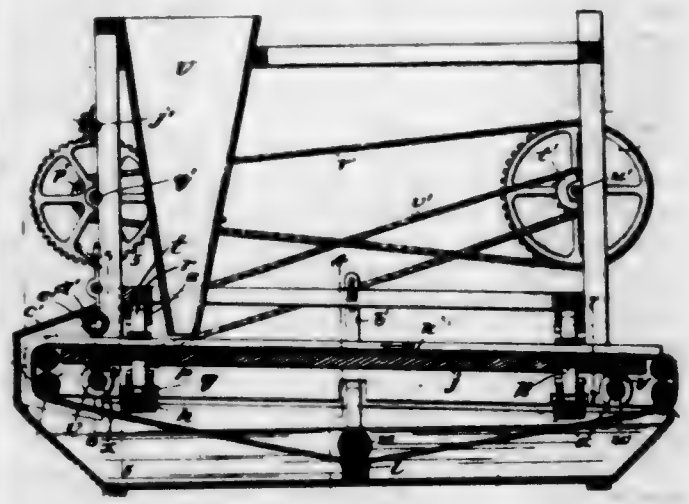

Claim.—1. In a machine for the purpose described, the combination of a frame, lower and upper antifriction-rollers arranged in said frame, an oscillatory jigger interposed between said lower and upper antifriction-rollers, and having antifriction-rollers on its under side, transverse shafts having oppositely-disposed cam-wheels arranged between and engaging the antifriction-rollers at the under side of the jigger, and means for rotating said shafts.

2. In a machine for the purpose described, the combination of a water-tank, arranged in a suitable frame, lower and upper antifriction-rollers also arranged in said frame, an oscillatory jigger interposed between said lower and upper rollers, and having antifriction-rollers on its under side, transverse shafts having oppositely-disposed cam-wheels arranged between and engaging the antifriction-rollers at the under side of the jigger, means for rotating the said shafts, a brush disposed in the tank, a roller adjustable toward and from the brush, an endless corrugated belt having its upper stretch disposed above the jigger and its lower stretch passed through the tank and between the brush and roller, means for moving said belt, a pipe having openings, and a covering of wire-gauze for supplying water in a finely-divided state to the upper stretch of the belt, and a hopper disposed above said upper stretch of the belt.

706,688. FLUID-PRESSURE-OPERATED TOOL. JOHN F. W. REYBURN and WILLARD T. SEARS, Harrisburg, Pa. Filed July 17, 1901. Serial No. 68,082. (No model.)

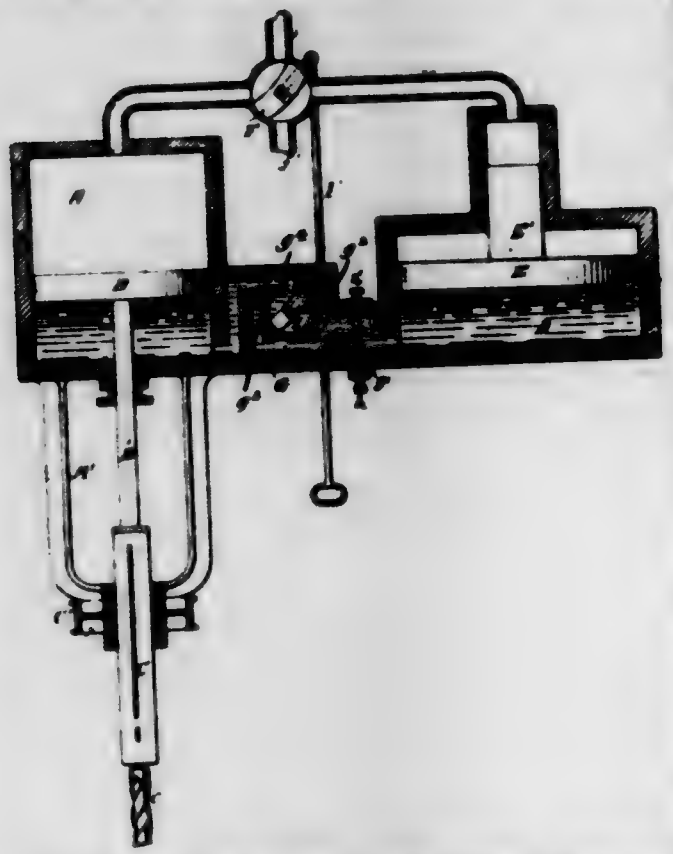

Claim.—1. The combination of a liquid-reservoir, a cylinder containing a piston, a tool operatively connected to said piston, means whereby fluid-pressure may be exerted upon liquid in the reservoir or upon the piston at will, and a structure connecting the reservoir and the cylinder whereby the liquid in the reservoir may be made to act upon the piston, substantially as described.

2. The combination of a liquid-reservoir, a cylinder containing a piston, a tool operatively connected to said piston, means whereby fluid-pressure may be exerted upon liquid in the reservoir or upon the piston at will, and a conduit connecting the reservoir and the cylinder, said conduit being provided with mechanism permitting free flow of liquid in one direction but restricting said flow when the liquid moves in an opposite direction, substantially as described.

3. The combination of a drill or other tool with a feeding device therefor, the same comprising a cylinder having within it a piston, a liquid-reservoir, means for subjecting the liquid in said reservoir to the pressure of an elastic fluid, means for operatively connecting the liquid-reservoir and the piston-cylinder whereby said liquid under the pressure of said fluid may be caused to act upon one side of the piston to move it in one direction, with means for connecting the portion of the cylinder on the other side of the piston with the source of fluid under pressure, whereby said piston may be moved in the opposite direction, the said tool being free to turn independently of the piston, substantially as described.

4. The combination of a drill or other tool, with a feeding device therefor comprising a cylinder with piston therein, fluid-pressure apparatus and communication between said fluid-pressure apparatus and the piston-cylinder, said communication presenting a restricted area to flow in one direction and a greater area to flow in the opposite direction, substantially as described.

5. The combination of a drill or other tool, with a feeding device therefor comprising a cylinder with piston therein, a liquid-reservoir, means for subjecting the liquid in said reservoir to the pressure of an elastic fluid, a communication between said liquid-reservoir at one side of the piston and means for exerting the pressure of the elastic fluid directly upon the other side of the piston, substantially as described.

6. The combination of a drill or other tool with a feeding device therefor comprising a cylinder having in it a piston means for exerting fluid-pressure upon said piston to move the tool, and an automatic valve in the fluid-pressure-supply pipe whereby the area of said pipe is normally restricted when the fluid-pressure is exerted in one direction, but is open to its full extent when pressure is exerted in the opposite direction, substantially as described.

7. The combination of a drill or other tool with a feeding device consisting of a piston and a cylinder therefor, fluid-pressure apparatus, means for operatively connecting said fluid-pressure apparatus and the piston-cylinder, and a valve for use in connection with said means, said valve being constructed to be automatically moved by changes in the direction of flow of the fluid under pressure, being thereby made to occupy two extreme positions, one of which restricts the flow of said fluid to a greater extent than the other, substantially as described.

8. The combination of a drill or other tool with a working cylinder, a piston in said cylinder to which the tool is attached, a reservoir, means for connecting the reservoir and the working cylinder, an automatic valve within said means, means for maintaining the valve at any desired distance off its seat, and means for limiting the upward movement of the valve, an air-pressure pipe communicating with the reservoir, substantially as described.

9. The combination of a working cylinder, a piston therein, a tool connected to the said piston, an oil-reservoir, a passage forming communication between the lower portion of the oil-reservoir and the lower portion of the working cylinder, a valve in said passage, means for adjusting said valve, a controlling-valve, a casing therefor, a pipe leading from said casing to the upper end of the working cylinder, and a pipe leading from the casing to the upper end of the reservoir, an exhaust-pipe and an air-pressure pipe communicating with the valve-casing, substantially as described.

10. The combination of a working cylinder, a piston therein connected to the drill or other tool to be operated, an oil-reservoir, a passage forming communication between the oil-reservoir and the working cylinder, a cylinder mounted above the oil-reservoir, a piston in the oil-reservoir and having a plunger working in the cylinder, a valve-casing, a controlling-valve therein, a pipe leading from the valve-casing to the upper portion of the working cylinder, and a pipe leading from the valve-casing to the upper portion of the plunger-cylinder, an air-pipe and exhaust-pipe communicating with the valve-casing, substantially as described.

11. The combination of a working cylinder, a piston therein connected to the drill or other tool to be operated, an oil-reservoir, a passage forming communication between the oil-reservoir and the working cylinder, a cylinder mounted above the oil-reservoir, a piston in the oil-reservoir, and having a plunger working in the cylinder, a valve-casing, a controlling-valve therein, a pipe leading from the valve-casing to the upper portion of the working cylinder, and a pipe leading from the valve-casing to the upper portion of the plunger-cylinder, an air-pipe and exhaust-pipe communicating with the valve-casing, with a stop-valve in the passage leading from the working cylinder to the reservoir, substantially as described.

12. The combination of the working cylinder, a piston therein, a rod, a tool connected to said rod, a reservoir for liquid, a passage leading from the liquid-reservoir to the working cylinder, a valve in said passage for limiting the flow of liquid through the passage, a stop-valve also in the passage, a controlling-valve casing, a valve therein, a pipe leading from the valve-casing to the liquid-reservoir, the stop-valve and controlling-valve being connected so as to operate in unison, substantially as described.

13. The combination of a drill or other tool with a feeding device therefor, said device including a cylinder and a piston within the same operatively connected to said tool, means for exerting fluid-pressure on one side of the piston, means for controlling the flow of fluid from the portion of the cylinder on the other side of the piston, and a normally open valve constructed to automatically open to a greater or less extent as the direction of flow of fluid through it is changed, substantially as described.

706,689. TOY. FRIEDRICH A. REUTER, Rudolstadt, Germany. Filed Feb. 13, 1902. Serial No. 93,980. (No model.)

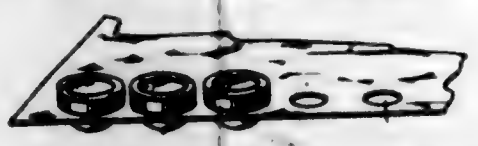

Claim.—1. In a toy for producing various mosaic patterns by means of interchangeable pieces, the combination of recesses and projections on the pieces and depressions in the board to receive the projections of the pieces, the exterior surface of said depressions being adapted to fit the recesses of the pieces at the opposite side substantially as described.

2. In a toy consisting of a board on which a series of colored pieces are arranged to produce a mosaic pattern, the combination of a set of pieces having a depression in the form of a spherical segment on one face and a corresponding expression on the opposite face and a board having a set of correspondingly-shaped depressions and expressions at its opposite sides substantially as described.

706,690. WIRE-STITCHING MACHINE. FREDERICK P. ROSBACK, Chicago, Ill. Filed June 5, 1901. Serial No. 63,235. (No model.)

Claim.—1. In a wire-stitching machine, the wire-feeding device, consisting of the main drive-wheel B, its shaft B', the sprocket-wheel B² se-

cured thereto, its drive-chain B^2 communicating a rotary motion to the sprocket-pinion B^1 that revolves the sleeve-shaft B^3 actuating the pawl-bearing wheel B^9 secured thereto, and provided with pawl B^7 that contacts with ratchet-wheel B^8 for imparting motion to the sleeve-shaft B^3, and the feed-roll B^{11} secured thereto, combined with the geared drive-wheel b^2 that causes the pinion b^1 to actuate the feed-roll B^{11} substantially as shown and described.

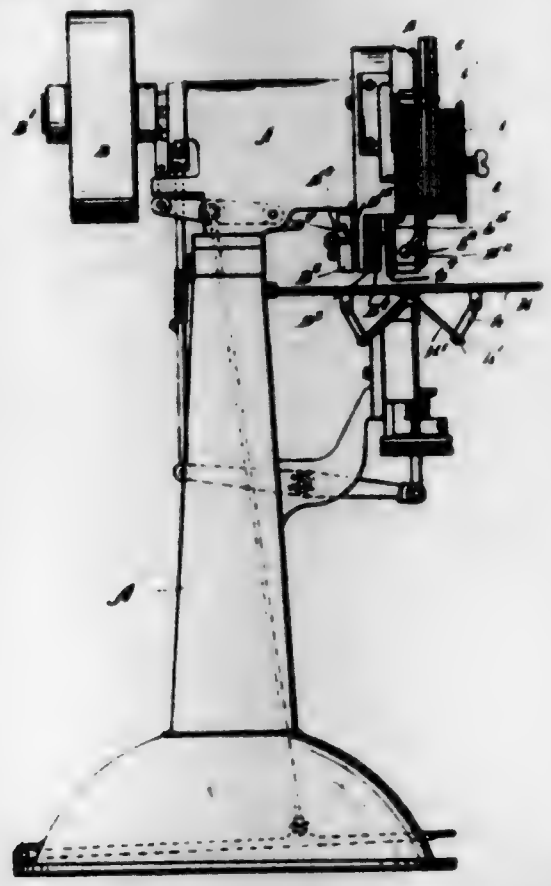

2. In a wire-stitching machine, the wire-feeding device consisting of the main drive-wheel B, its shaft B^*, the sprocket-wheel B^2 secured thereto, its drive-chain B^2 communicating a rotary motion to the sprocket-pinion B^1 for rotating the sleeve-shaft B^3 and the pawl-bearing wheel B^9 secured thereto, that is provided with pawl B^7 that contacts with ratchet-wheel B^8 for actuating the sleeve-shaft B^3 having the feed-roll B^{11} secured thereto, and the geared drive-wheel b^2 that imparts motion to the pinion b^1 and its shaft b^3 and the feed-roll B^{11}, combined with the dial-adjusting plate B^{12} secured to the shaft B^{10} and the adjustable ratchet cam-plate B^{14} keyed thereto, having the raised cam on its periphery to contact with the projecting heel o of the pawl and control its connection in various adjustments with the ratchet-wheel B^8 and the cam-plate B^{13}, attached to the frame A for raising the pawl out of action substantially as shown and described.

3. In a wire-stitching machine the wire-feeding device in combination with the oscillating adjustable journal-bearing b of the lower feed-roller B^{11}, the tapered projecting flange b' and its screw b^5 whereby the journal-bearing is oscillated to incline its upper surface and press the wire upon one edge and secure proper tension upon the wire substantially as shown and described.

4. In a wire-stitching machine, the staple-forming and staple-driving mechanism combined with the grooved knife c' and the forcing-die E that cuts a section of wire from between the portion which is to form the staple and the remaining portion of the strand, thereby providing square ends substantially as and for the purposes set forth.

5. In a wire-stitching machine the combination of the anvil F having the upwardly-inclined slot f and the vertically-grooved former G, having the holding notch or groove g^3 at its base to receive from the anvil the wire from which the staple is to be formed and hold it in proper position for entering the vertical grooves of the former G substantially as shown and described.

706,691. DIE FOR MAKING GAME-HOOK CLASPS. OLE RUSS, West Duluth, Minn. Filed Oct. 12, 1901. Serial No. 78,662. (No model.)

Claim.—The combination with a die block or section having the rounded bending lug or shoulder a^2 and an adjacent recess a' with countersunk lug-forming rest a^3, of the die-section b having the depending plunger portion b' fitting said recess a' and beveled or cut at b^2 for coöperating with the said rounded shoulder a^2, said die-sections having coöperating stop surfaces or shoulders which properly space apart said surfaces a^3, b^3 and the end of said die b and bottoms of recesses a, a', substantially as described.

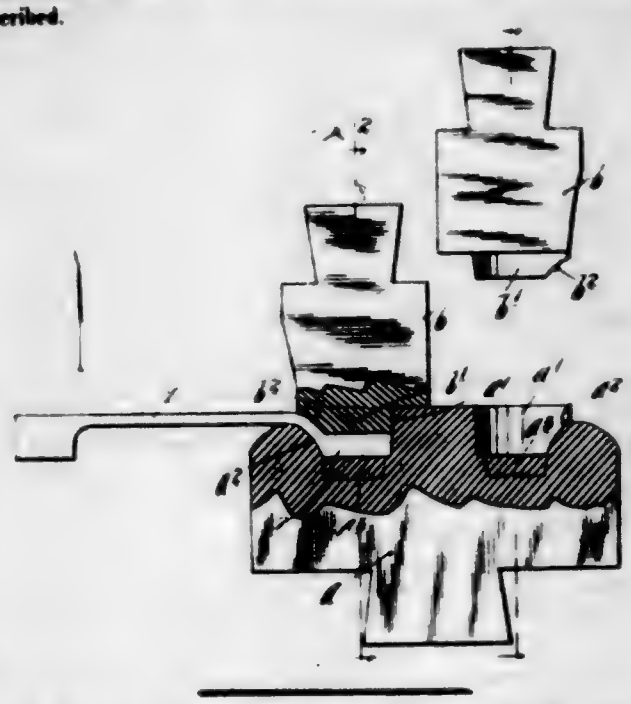

706,692. FOLDING CRATE. HARVEY J. SCHROCK, Goshen, Ind. Filed Apr. 11, 1902. Serial No. 102,458. (No model.)

Claim.—1. A folding crate, comprising two end sections and a front and rear section, corner-posts secured to the inner faces of the front and rear section and in line with the end sections, said posts being pivotally connected to the end sections and a bottom hingedly connected to the front or rear section adapted to be folded inward and against the section and also of lesser thickness than the corner-posts.

2. A folding crate, comprising two end sections and a front and a rear section pivotally secured together so that when the crate is folded the ends and front sections are in respectively the same line, corner-posts carried by the front and rear sections providing compartments or spaces upon the inner face thereof when folded and a lid and bottom adapted to fit in said compartments or spaces when the crate is folded.

3. A folding crate, comprising two end sections having its top and bottom rails provided with intermediate depressed recesses and connected together by panels, which fit in said recesses, rods passing through said rails near the ends thereof, a front and a rear section, a corner-post carried at the ends of the front and rear sections upon the inner face thereof adapted to be connected hingedly to said rods, and a bottom hingedly connected to the posts of the rear section adapted to be folded upon the inner side thereof.

4. A folding crate, comprising two ends, a front and a rear section, said end sections comprising a top and bottom rail and panels, said rail projecting beyond each face of the panel to form a rim, and provided with intermediate depressed recesses to receive the ends of the panels, a corner-post carried upon the inner side of the front and rear sections and hingedly connected to the end sections, and a bottom hingedly connected to the posts of the rear section adapted when the crate is extended to rest upon the rim formed by the lower rails and when the crate is folded to rest against the inner face of the section inside the inner edge of the posts.

706,698. BOTTLE-STOPPER. SILAS SHEWBRIE, Belleville, N. J., assignor to Hardman Rubber Company, Belleville, N. J., a Corporation of New Jersey. Filed Nov. 18, 1901. Serial No. 82,612. (No model.)

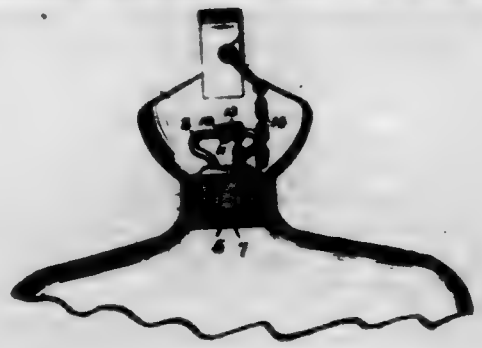

Claim.—1. In a bottle, a stopper provided with a finger-piece, a means of attachment rotatively connected with said finger-piece so as not to interfere with the rotation of said stopper, a flexible connection secured at its one end to said means of attachment which is connected with the said finger-piece, and a second means of attachment rotatively connected with a portion of said bottle to which the other end of said flexible connection is attached, comprising, an eyelet connected with a portion of said bottle, a pin, and means connected with said eyelet for retaining said pin in its rotative relation to said eyelet, and means on said pin to which the other end of said flexible connection is attached, substantially as and for the purposes set forth.

2. In a bottle, a stopper provided with a finger-piece, a means of attachment rotatively connected with said finger-piece so as not to interfere with the rotation of said stopper, a flexible connection secured at its one end to said means of attachment which is connected with the said finger-piece, a second means of attachment rotatively connected with a portion of said bottle, consisting, essentially, of an eyelet, a ring in said eyelet, a pin rotatively connected with said ring, and means on said pin to which the other end of said flexible connection is attached, substantially as and for the purposes set forth.

3. In a bottle, a stopper provided with a finger-piece, a means of attachment rotatively connected with said finger-piece so as not to interfere with the rotation of said stopper, a flexible connection secured at its one end to said means of attachment which is connected with the said finger-piece, a second means of attachment rotatively connected with a portion of said bottle, consisting, essentially, of an eyelet, a ring in said eyelet, a pin rotatively connected with said ring, said ring being provided with an eye, and a snap-hook connected with said eye to which the other end of said flexible connection is attached, substantially as and for the purposes set forth.

4. In a bottle, a stopper provided with a finger-piece having a perforation, a pin rotatively arranged in said perforation, means connected with said pin for preventing the displacement of said pin, a flexible connection secured at one end to said pin, and a means of attachment rotatively connected with a portion of said bottle to which the other end of said flexible connection is attached, comprising, an eyelet connected with a portion of said bottle, a pin, and means connected with said eyelet for retaining said pin in its rotative relation to said eyelet, and means on said pin to which the other end of said flexible connection is attached, substantially as and for the purposes set forth.

5. In a bottle, a stopper provided with a finger-piece having a perforation, a pin rotatively arranged in said perforation, means connected with said pin for preventing the displacement of said pin, a flexible connection secured at one end to said pin, and a means of attachment rotatively connected with a portion of said bottle, consisting, essentially, of an eyelet, a ring in said eyelet, a pin rotatively connected with said ring, and means on said pin to which the other end of said flexible connection is attached, substantially as and for the purposes set forth.

6. In a bottle, a stopper provided with a finger-piece having a perforation, a pin rotatively arranged in said perforation, means connected with said pin for preventing the displacement of said pin, a flexible connection secured at one end to said pin, and a means of attachment rotatively connected with a portion of said bottle, consisting, essentially, of an eyelet, a ring in said eyelet, a pin rotatively connected with said ring, said ring being provided with an eye, and a snap-hook connected with said eye to which the other end of said flexible connection is attached, substantially as and for the purposes set forth.

7. In a bottle, a stopper, a means of attachment rotatively connected with said stopper so as not to interfere with the rotation of said stopper, a flexible connection secured at its one end to said means of attachment which is connected with the stopper, and means for detachably connecting the other end of said flexible connection to a portion of the bottle, consisting, essentially, of an eyelet, a ring in said eyelet, a pin rotatively connected with said ring, said ring being provided with an eye, and a snap-hook connected to said eye and also attached to the other end of said flexible connection, substantially as and for the purpose set forth.

706,694. DOOR FOR MAIL-WAGONS. WILLIAM F. SHELLY, Newcastle, Ind. Filed May 16, 1902. Serial No. 107,592. (No model.)

Claim.—1. A door having one of its corners cut out to form a recess, in combination with a doorway with which said recess is adapted to register, substantially as described.

2. A wagon having a doorway, and a door with one of its corners cut out to form a recess, said recess adapted to register with said doorway and form an opening into the interior of the wagon when the door is moved in one direction, and be covered or closed when it is moved in the opposite direction, substantially as described.

3. A door for a wagon having one of its corners cut out to form a recess, and the upper portion of said door provided with a window in combination with an opening in said wagon with which said recess is adapted to register, substantially as described.

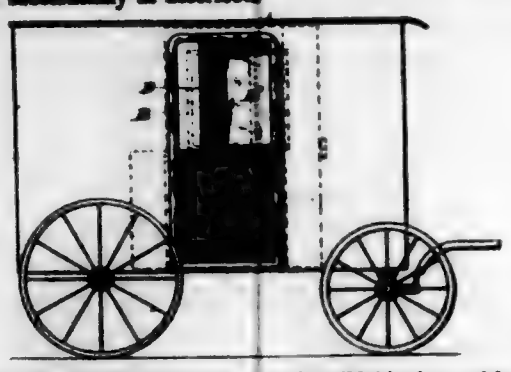

4. A wagon having a doorway, and a slidable door with one of its corners cut out to form a recess adapted to register with said doorway and form an opening in connection therewith when slid in one direction, and when slid in the opposite direction to be covered by the side of the wagon, substantially as described.

5. A door having one of its corners cut out to form a recess and also having a window, in combination with a doorway with which said window and recess are adapted to register, substantially as described.

706,695. LABEL WITH METAL FASTENING-CLAMP. WILHELM SIEPFERT, Chemnitz, Germany. Filed Sept. 23, 1899. Serial No. 731,198. (No model.)

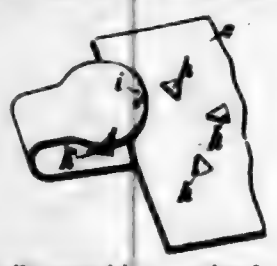

Claim.—A label-clip comprising a strip of metal having enlarged ends and bent to form a pair of flaps one of greater length than the other, a plurality of claws on the outer edge of the longer flap, a perpendicular tooth located at an intermediate point on the inner face of said longer flap and a tooth on the outer edge of the shorter flap bent inwardly to oppose said intermediate tooth.

706,696. MICROMETER-GAGE. ROBERT J. HERTSON, Athol, Mass., assignor to the L. S. Starrett Company, Athol, Mass., a Corporation of Mass. Filed Apr. 5, 1900. Renewed Jan. 11, 1902. Serial No. 89,256. (No model.)

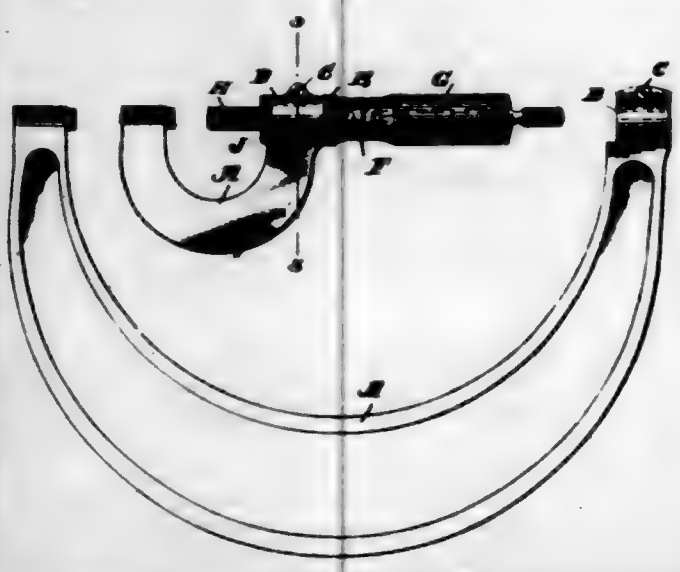

Claim.—In a micrometer-gage, the rotatable spindle and sleeve and the tubular barrel adapted to receive them and formed with a cylindrical end portion D and collar E, in combination with any one of a plurality of frames or bodies, each provided with a receiving-socket and a clamping-screw, adapted to receive and hold said end portion of the barrel, whereby such frames or bodies may be interchangeably attached to and detached from the tool proper, substantially as set forth.

706,697. ARTICLE-ATTACHER. HEATH H. HIRE, Oceanpark, Cal. Filed May 15, 1901. Serial No. 60,306. (No model.)

Claim.—1. An article-attacher for travelers' use comprising a cone, the sides of which are extended beyond its periphery to form flanges and

the periphery of which case is provided with means for suspending it in position and is perforated diametrically opposite said means, one wall of the perforation being provided with a sharp edge, a spring secured at one end to the periphery between said flanges and adjacent to the perforation, the free end of the spring being curved and fitting in the perforation with its tip in position to engage said sharp edge, a take-up in the case, and a flexible connector through the perforation between the tip of the spring and the sharp edge, the inner end of the connector being secured to the take-up and the other end provided with a fastener.

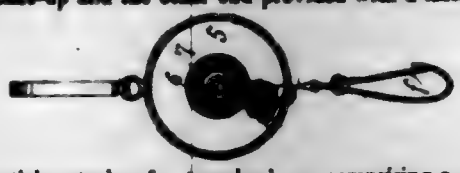

2. An article-attacher for travelers' use comprising a case, the periphery of which is perforated and provided with a rigid ring diametrically opposite the perforation, a take-up in the case, a flexible connector secured to the take-up and projecting through the perforation, means for temporarily holding the connector from moving through the perforation, the outer end of the connector and the ring being each provided with a hook, said hooks being each provided with a spring-tongue which stands at an angle to the hook and engages therewith at a distance from its tip the end of the tongue terminating abruptly and being provided with a sharp edge which normally engages with the inner face of the hook.

706,698. CURRENT-MOTOR. LEROY SPRAGUE, Milan Township, Allen County, Ind. Filed Feb. 11, 1902. Serial No. 93,522. (No model.)

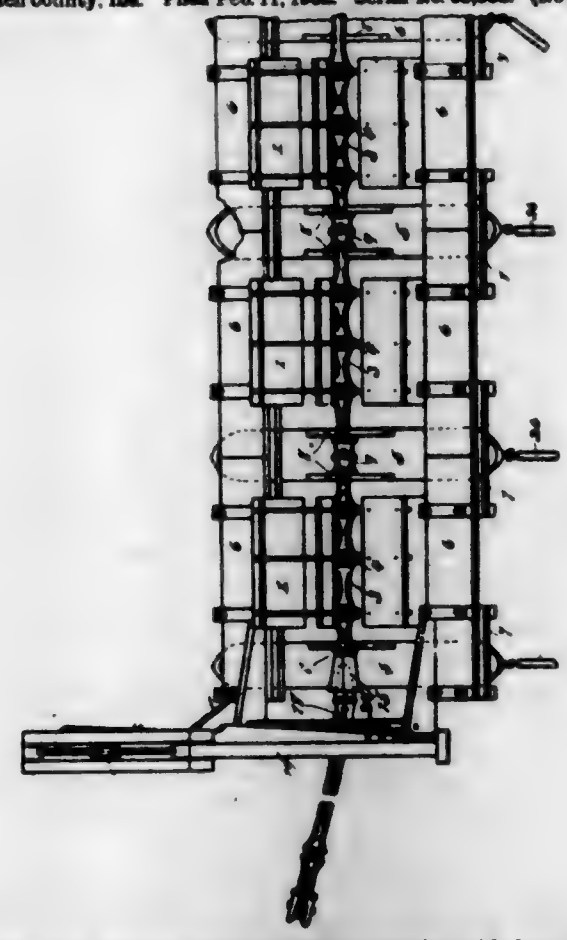

Claim.—1. In a current-motor the combination with boats of water wheels and shafts supported thereby, flexible joints connecting said shafts, a land or power shaft, flexible joints therein, a socket-joint connecting said land-shaft with the water-wheel shaft, a vertically-slidable rest supporting said shaft and adapted to be raised or lowered in conformity with the motor, substantially as described.

2. In a current-motor the combination with boats of water wheels and shafts supported thereby, a land-shaft connected to said water-wheel shafts, a vertically-slidable rest adapted to be raised or lowered in conformity to the motor, substantially as described.

3. In a current-motor, the combination with boats of water wheels and shafts supported thereby, a land-shaft connected to said water-wheel shafts, a sliding joint between the two and means for raising and lowering said land-shaft in conformity to the motor.

706,699. PROCESS OF TREATING TROLLEY-WIRES. ALFRED STEPHENS, Cincinnati, Ohio. Filed Feb. 7, 1902. Serial No. 92,871. (No specimens.)

Claim.—1. The method or process of restoring to normal molecular condition trolley-wires of electric railways deteriorated by use, consisting in treating the wire *in situ* at successive substantially adjacent points in its length by a total or partial interruption of the circuit at each of said points in succession.

2. The method or process of restoring to normal molecular condition trolley-wires of electric railways deteriorated by use, consisting in treating the wire *in situ* at successive substantially adjacent points in its length by a total or partial interruption of the circuit at each of said points in succession, and immediately thereafter cooling said wire to normal temperature by means applied in similar succession to heated portions, substantially as set forth.

708,700. JOURNAL-BOX LID. JOHN W. STEPHENSON, Toledo, Ohio, assignor to the National Malleable Castings Company, Cleveland, Ohio, a Corporation of Ohio. Filed Dec. 26, 1901. Serial No. 87,182. (No model.)

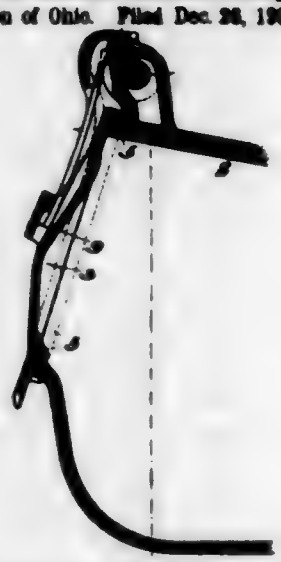

Claim.—1. A journal-box having a lid adapted to fit against the edges of the box, and a leaf-spring fitted to the said lid, the said lid having a recess extending under the spring for the discharge of dirt; substantially as described.

2. A journal-box having a lid adapted to fit against the edges of the box, a leaf-spring, and a socket for holding the spring, said socket being formed on the said lid, being open at its lower end and having a recess extending under the spring for the discharge of dirt, substantially as described.

3. A journal-box having a lid adapted to fit against the edges of the box, a leaf-spring, and a socket for holding the spring, said socket being formed on the said lid, being open at its lower end and having a recess extending under the spring for the discharge of dirt, the spring being substantially of the same width as the socket; substantially as described.

4. A journal-box having a lid adapted to fit against the edges of the box, and a leaf-spring fitted to the said lid, the said lid having a recess extending under the spring for the discharge of dirt, and a hood which covers the spring; substantially as described.

5. A journal-box having a lid adapted to fit against the edges of the box, a leaf-spring fitted to said lid, ribs formed on said lid substantially coextensive in length with the spring, said spring fitting between the ribs and being of substantially the same width as the space between them, said ribs protecting said spring and preventing its sidewise displacement, and a socket at the lower end of said ribs adapted to hold the spring detachably in proper position to engage the box; substantially as described.

6. A journal-box lid having a leaf-spring, ribs formed upon the lid, said spring being confined between said ribs and protected thereby, and a recess formed between the ribs and extending under said spring for the discharge of dirt; substantially as described.

7. A journal-box lid having a leaf-spring, ribs formed upon the lid, said spring fitting neatly between the ribs, said ribs protecting the spring and preventing its sidewise displacement, and a socket at the lower end of said ribs adapted to hold the spring in proper position to engage the box, said socket being open at its lower end and having a recess beneath the spring for the discharge of dirt; substantially as described.

706,701. METHOD OF IMPACTING ONE METAL UPON ANOTHER. SAMUEL H. THURSTON, Longbranch, N. J. Filed Mar. 28, 1902. Serial No. 99,891. (No specimens.)

Claim.—The method of providing a metal article with a coating of another metal, which consists in forcing particles of the coating metal, by a blast of a gas, against the said article with such force as to cause the particles to become embedded in the surface of the said article and form a permanent coating thereon.

706,701.

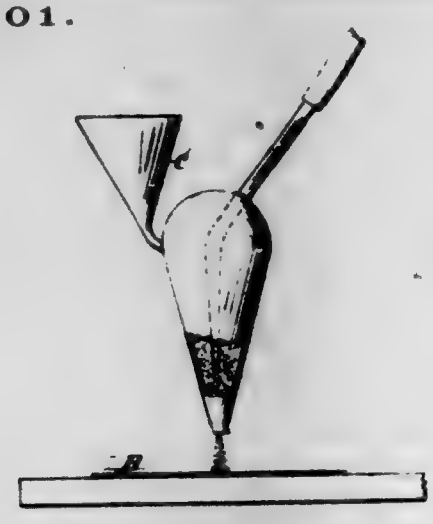

706,702. PROCESS OF COATING ONE METAL WITH ANOTHER METAL. SAMUEL H. THURBER, Long Branch, N. J. Filed Dec. 24, 1901. Serial No. 87,079. (No specimens.)

Claim.—The within-described process of coating one metal upon another with an amphorous inherent, adherent, coherent, permanent film or particle of the coating metal, which consists in artificially heating the metal to be coated and then impacting the particles of the coating metal into the pores of the metal being coated, by beating them, substantially and for the purposes hereinbefore specified.

706,708. BAR-CHUCK. TUCKER R. TERRY, Downey, Cal. Filed Jan. 17, 1902. Serial No. 90,217. (No model.)

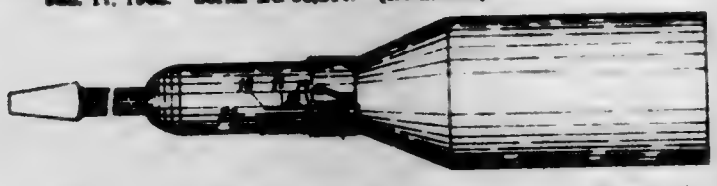

Claim.—1. A bar-chuck provided with means for varying the size thereof to accommodate different-size nuts or bars and means for retaining the first-mentioned means in operative position after the extension thereof.

2. A bar-chuck provided with a plurality of bushings and means for retaining bushings singly or collectively in an extended and retracted position.

3. A bar-chuck provided with a plurality of bushings and a ring for retaining said bushings singly or collectively in both an extended and retracted position.

4. A bar-chuck provided with a plurality of bushings constructed to fit one within the other and all within the chuck and a device for retaining the bushings in an extended or retracted position.

5. A device of the character described provided with a hollow interior, bushings constructed to fit within the device within each other and a ring for retaining the bushings in both an extended and retracted position.

6. A device of the character described provided with a hollow interior and having slots, bushings or sleeves constructed to fit within said device and within each other and having slots and pins to enter said slots in the device and the bushings and a split ring upon the device constructed to engage said pins, to retain the bushings in an extended and retracted position.

706,704. PLANE. JOSEPH A. TRAUT, New Britain, Conn. Filed May 20, 1901. Serial No. 60,962. (No model.)

Claim.—1. In a plane, the combination with a stock having a sole, of a supplemental sole, a threaded hole in the stock, a differently-threaded hole of different diameter in the sole, and a single thumb-screw having correspondingly-threaded shanks of large and small diameters working in both of said holes.

2. In a plane, the combination with a stock having a sole, of a supplemental sole, a hole in said stock, a hole in said supplemental sole, one of said holes being of larger diameter than the other and one of said holes having a right-hand thread and the other having a left-hand thread, and a screw having shanks of corresponding sizes and threads and working in both of said holes.

3. In a plane, the combination with a stock having a sole, of a supplemental sole, a hole in said stock having a right-hand thread, a hole of smaller diameter in said supplemental sole, and having a left-hand thread, and a screw having shanks of corresponding sizes and threads and working in said holes.

4. In a plane, the combination with a stock having a sole, of a supplemental sole, a hole in said stock having a right-hand thread, a hole of smaller diameter in said supplemental sole and having a left-hand thread of coarser pitch, and a screw having portions of corresponding sizes and threads and working in said holes.

5. In a plane, the combination with a stock having a sole, of a supplemental sole; a threaded hole in the stock; a differently-threaded hole of smaller diameter in the sole; a single thumb-screw having differently-threaded shanks of large and small diameters working in said holes; and means for limiting the movement of said supplemental sole so as to prevent the withdrawal of said screw from said sole.

6. In a plane, the combination with a stock having a sole, of a supplemental sole; a hole in said stock; a hole in said supplemental sole; one of said holes being of larger diameter than the other, and one of said holes having a right-hand thread and the other having a left-hand thread; a screw having portions of corresponding sizes and threads and working in both of said holes, and detachable means for clamping said supplemental sole to the stock; said clamping means including a part which limits the movement of said supplemental sole so as to prevent the withdrawal of said screw therefrom.

7. In a plane, the combination with a stock having a sole, of a supplemental sole; a hole in said stock having a right-hand thread; a hole of smaller diameter in said supplemental sole having a left-hand thread; a screw having portions of corresponding sizes and threads and working in said holes; a slot in said supplemental sole, and a transverse clamping-screw passing through said slot and engaging said stock; the play of said slotted sole upon the shank of said clamping-screw being insufficient to permit the withdrawal of said adjusting-screw from the supplemental sole.

8. In a plane, the combination of a stock, a supplemental sole, and a screw having near its head a finely-threaded shank portion which is threaded into a hole in said stock, and also having at its tip a coarsely-threaded shank portion of smaller diameter which is threaded into a hole in the supplemental sole.

9. In a plane, the combination with a stock and a supplemental sole adjustable up and down thereon, of an up-and-down thumb-screw having at its upper end a threaded portion of fine pitch which works in a corresponding hole formed in the upper portion of the stock, and also having at its lower end a coarsely-threaded portion of smaller diameter which works in a corresponding hole in the supplemental sole.

10. In a plane, the combination with a stock and a supplemental sole adjustable up and down thereon, of an up-and-down thumb-screw having at its upper end a right-hand-threaded portion of fine pitch which works in a corresponding hole in the stock, and also having at its lower end a left-hand-threaded portion of smaller diameter and of coarse pitch which works in a corresponding hole in the supplemental sole.

706,705. FURNITURE-CLAMP. WILLIAM L. TUELL, New Albany, Ind. Filed Oct. 7, 1901. Serial No. 77,878. (No model.)

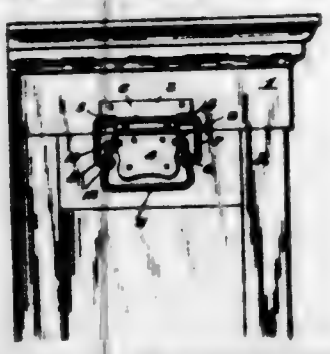

Claim.—The combination with two pieces of furniture, of a clamp consisting of two plates, one secured to one piece of furniture and the other secured to the other piece of furniture, one of said plates being provided with integral hooks or eyes, and the other plate with integral perforated ears projecting at right angles from the plate, a bail pivoted in the hooks or eyes and consisting of a horizontal portion 6, a vertical portion 7, and the inwardly-projecting crank-arms 8, and a second bail consisting of a horizontal portion 11 having inwardly-projecting ends formed with eyes 12 into which the crank-arms 8 project and terminating at their upper ends in inwardly-projecting studs which are pivoted in the perforated ears, substantially as set forth.

706,706. SAFETY-CATCH FOR WHEELED EARTH-SCRAPERS. CHARLES J. WHITING, Lasalle, Ill. Filed June 5, 1902. Serial No. 110,342. (No model.)

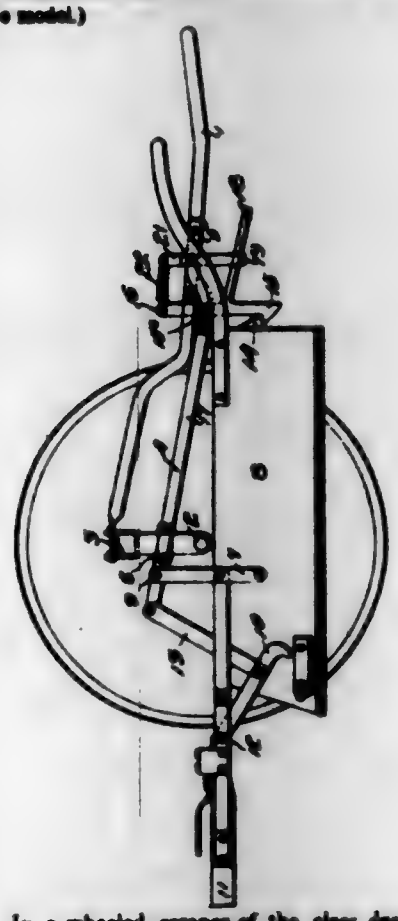

Claim.—1. In a wheeled scraper of the class described, a catch pivoted to the lever, adapted to engage the cleat on the rear end of the bowl or box, having an arm 16, extending upwardly from its pivot, and also having a rearwardly-extending lever-arm 18, in combination with a stirrup secured to the lever in rear of the catch, forming a guide and stop for the lever-arm 18, the latter extending therethrough and working therein, said stirrup having an upwardly-extending post 21, and a spring connecting said post to the arm 16 of the catch, substantially as described.

2. In a wheeled scraper of the class described, a pivoted catch carried by the lever and adapted to engage a cleat on the rear end of the bowl, or box, a spring to keep said catch in engagement with said cleat means to prevent lateral movement of said catch, and means to limit the pivotal movement thereof when disengaged from the cleat, substantially as described.

3. In a wheeled scraper of the class described, a pivoted catch carried by the lever and adapted to engage a cleat on the rear end of the bowl or box, said catch having a rearwardly-extending operating-arm and a guide for the latter, carried by the lever, said guide preventing lateral movement of the catch and coacting with the arm to limit the pivotal movement of the catch when disengaged from the cleat, substantially as described

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706,707. LIGHT LIFE-BUOY. CARLOS C. A. B. WIBEL, Hamburg, Germany. Filed Nov. 20, 1901. Serial No. 83,017. (No model.)

Claim.—1. A life-buoy composed of a float, a carbid-receptacle having a water-inlet, an expansible bulb communicating with the carbid-receptacle, a cock opened by the bulb and adapted to close an electric circuit, a burner, and a platinum igniting-wire in circuit which serves to break the circuit after igniting the gas, substantially as specified.

2. A life-buoy composed of a float, a vertically-extending tube, a carbid-receptacle, a battery within the lower end of the tube, a circuit and contacts, a burner within the upper end of the tube, an expansible bulb communicating with the carbid-receptacle, a cock opened by the bulb and adapted to close said contacts and circuit, and a platinum igniting-wire in circuit, which is adapted to break the circuit after the ignition of the gas, substantially as specified.

3. A life-buoy composed of a float, a carbid-receptacle, an expansible bulb communicating therewith, a lever operated by the bulb, a cock actuated by the lever, a contact adapted to be engaged by the cock, a circuit closed by the contact, a burner, and a platinum igniting-wire in circuit, which is adapted to break the circuit after the ignition of the gas, substantially as specified.

4. A life-buoy composed of a float, a carbid-receptacle, a burner, a connecting-pipe, a spring-influenced cock in the pipe, a disk on the cock-spindle having a nose and a pair of contacts, a bulb communicating with the gas-receptacle, a lever influenced thereby and adapted to engage the disk, an electric circuit adapted to be closed by the disk contacts, and a platinum igniting-wire in circuit, substantially as specified.

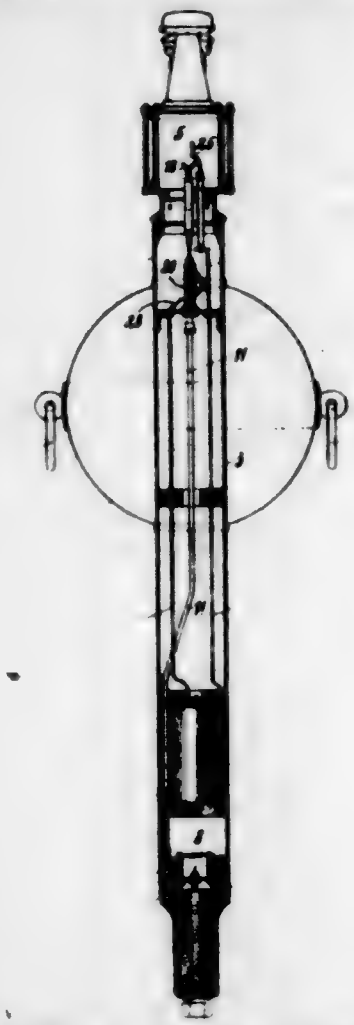

5. In a life-buoy, the combination of a burner and a sulfur-coated platinum igniting-wire, a pair of arms adapted to carry the wire, a sulfur-coated projection on one of said arms, a pair of concentric metallic pipes connected with the arms, an insulating-pipe between the metallic pipes, a battery, two wires connecting the pipes with the battery, and a circuit adapted to glow the platinum wire and ignite the sulfur, substantially as specified.

6. In a life-buoy, the combination of a water-chamber, a tube inserted into the bottom of said chamber, a glass pipe within the said tube, a needle in the glass pipe, and a carbid-receptacle beneath the needle, substantially as specified.

706,708. SHIP CONSTRUCTION. AUGUSTUS B. WOLVIN, Duluth, Minn. Filed Jan. 17, 1902. Serial No. 90,194. (No model.)

Claim.—1. In ship construction the combination of a hull having internal vertical side frame members, vertical stanchions rising from points above the center hatches and midway between the hatches, each consisting of two members secured together from their lower ends up to the points near their upper ends, from which points said members diverge, transverse spar-deck beams secured to the side frame members and to the diverging upper ends of the stanchion members, transverse main-deck beams composed of two members which are connected together and to a stanchion and have diverging outer ends which are connected with the vertical side frame members, whereby the deck-beams are supported by the stanchions and serve to tie the sides of the hull together, substantially as specified.

2. In ship construction the combination of a hull having internal vertical side frame members, stanchions rising from points above the center hatches and midway between the hatches and extended up to the spar-deck, each stanchion consisting of two channel-bars secured together back to back from their lower ends up to a point near the upper deck, from which point they diverge fore and aft, transverse spar-deck beams secured to the side frame members and to the diverging upper ends of the stanchion members, main-deck beams consisting of channel-bars secured together back to back but diverging at their outer ends, said main-deck beams being secured to said stanchions and having their outer diverging ends secured to the vertical frame members, substantially as specified.

3. In ship construction the combination of a hull having internal vertical side frame members, stanchions rising from points above the center hatches and midway between the hatches and each consisting of two channel-bars secured together back to back but diverging at their upper ends, transverse spar-deck beams secured to the frame members, trans-

verse gusset-plates connecting the upper ends of said stanchion members with said deck-beams, longitudinal gusset-plates connecting together the diverging upper ends of the stanchion members, and transverse main-deck beams secured to said stanchions and having at their outer ends diverging arms which are connected with side frame members, substantially as specified.

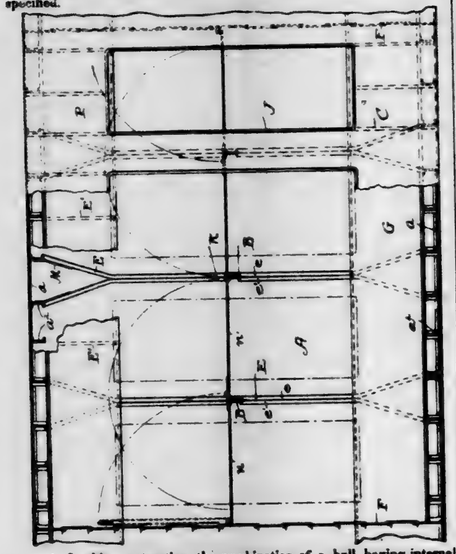

4. In ship construction, the combination of a hull having internal vertical side frame members, stanchions rising from points above the center keelson and midway between the hatches, each stanchion consisting of two channel-bars riveted together back to back but having diverging upper ends, transverse spar-deck beams secured to the side frame members and to the diverging upper ends of the stanchion members, transverse main-deck beams each consisting of a bar *c* which lies in a transverse groove in the flanges of one of the stanchion members and is riveted to the stanchions and has its ends bent out of line and secured to two of said side frame members, and two bars *c c'* which are batted against the stanchions on opposite sides and extend therefrom toward the sides of the hull and have their ends bent out of line and secured to the side frame members, gusset-plates lying on opposite sides of the stanchion and between the deck-beam members *c c'* and secured to said deck-beam members, and angle-irons fastened to said gusset-plates and to the stanchions, substantially as described.

5. In ship construction the combination of a hull having internal vertical side frame members, a plurality of hatches in the spar-deck, bulkheads extending transversely across the hold and secured to the hull, vertical stanchions rising from points above the center keelson and midway between the hatches and having diverging arms at their upper ends, transverse spar-deck beams secured to the side frame members and to the diverging upper ends of said stanchions, transverse main-deck beams which are secured to said stanchions and having diverging ends which are secured to the side frame members, substantially as specified.

6. In ship construction the combination of a hull having internal side frame members, bulkheads extending across the hold at suitable intervals and secured to the hull, and shifting boards, each consisting of two members hinged together on a vertical pivot, and a hinge connection between one member of each shifting board and an adjacent bulkhead, substantially as specified.

7. In ship construction, the combination of a hull and vertical frame members in the hold midway between the sides of the vessel, shifting-board sections hinged to said frame members, and other shifting-board sections respectively hinged to the outer ends of the sections first referred to, whereby the two connected members of the shifting boards are capable of being folded together and then swung around into a position crosswise of the ship, or unfolded and swung into a position lengthwise of the ship, substantially as specified.

706,709. PRINTING-PRESS. HERBERT B. ALLEN, San Francisco, Cal., assignor to John D. Spreckels, San Francisco, Cal. Filed Feb. 13, 1902. Serial No. 93,514. (No model.)

Claim.—1. The combination in a printing-press of the independent presses A and B, a feed-roll from which a continuous sheet is first delivered through one-half of the portion A, diagonally-disposed guides located between A and B over which the paper is passed and by which it is returned over the top of A, direction-rolls whereby the continuous web or sheet is returned parallel with the first portion and again passed through the press, other direction-rollers by which it is carried from the part A over the top of the part B, a diagonal lead-bar over which it passes and by which it is directed over the top of the part B, direction-rollers by which the sheet is transmitted downwardly and into the press B to pass over printing-rollers within said portion.

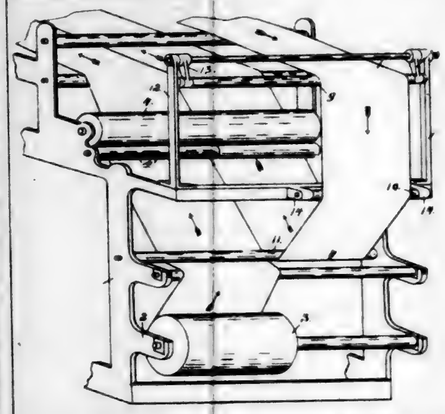

2. The combination with a two-part press A and B, of diagonally-disposed lead-bars, means by which they are supported between the parts A and B, said bars serving to return a continuous sheet of paper over the top and again into the part A after it has once passed through said part, direction-rollers and a lead-bar located above the part B whereby the continuous sheet finally delivered from A is caused to pass through the portion B to receive a third impression.

706,710. RECEPTACLE FOR TOOTH-POWDER OR OTHER MATERIAL. JOSEPH C. ALLEN, Plainfield, N. J., assignor to Consolidated Fruit Jar Company, New Brunswick, N. J., a Corporation of New Jersey. Filed June 27, 1901. Serial No. 66,211. (No model.)

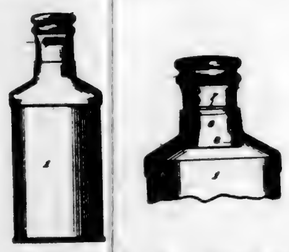

Claim.—1. The combination with a receptacle having a top provided with a collar, of a head provided with a continuous neck fitting movably within said collar and having a discharge-aperture therein, and means upon the neck on opposite sides of its discharge-aperture adapted to secure the neck to the collar by a tight joint when the aperture is opened by longitudinal movement of the neck as well as when it is closed, substantially as set forth.

2. The combination with a receptacle having a top provided with a collar, of a head provided with a neck fitting movably within said collar, said neck being provided upon its end within the collar with a continuous, outwardly-flared, slightly-inclined skirt, and upon the outer end with an annular, flaring shoulder, and having a discharge-aperture opening between said skirt and shoulder, said skirt and shoulder being separated by a distance sufficient to permit longitudinal movement of the neck for opening and closing the discharge-aperture, and each being adapted to wedge within the collar and form therewith a tight joint, substantially as set forth.

706,711. MULTIPLE-CYLINDER EXPLOSIVE-ENGINE. GUSTAV S. ADLERS, San Francisco, Cal., assignor to Automobile Company, San Francisco, Cal., a Corporation of California. Filed Dec. 18, 1899. Renewed May 15, 1902. Serial No. 107,462. (No model.)

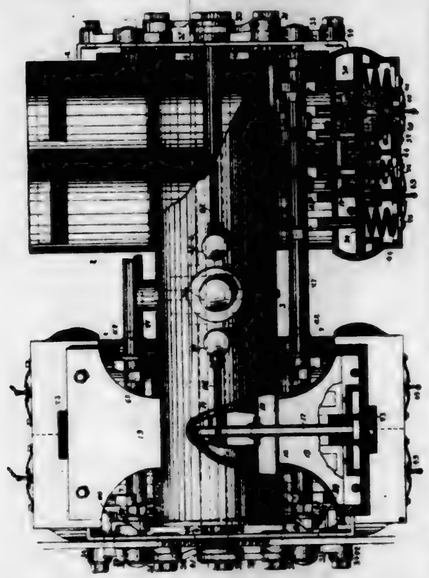

Claim.—1. In an explosive-engine, four pairs of oppositely-placed cylinders, pistons fitting each pair of cylinders having an intermediate uniting web whereby they are movable in unison, a crank-shaft extending between the adjacent ends of said cylinders, having cranks at each ninety degrees of the circumference of the shaft, connecting-rods uniting each pair of pistons with one of the cranks, valves and mechanism including cam-shafts and cams loose thereon and adapted to engage the shafts by which an explosive mixture is admitted and compressed into each cylinder, means for igniting the explosive mixture successively in the cylinders whereby an impulse is given to the crank-shaft at each quarter of its revolution.

2. In an explosive-engine, four pairs of oppositely-placed cylinders lying in the same plane, an intermediate shaft with cranks at angles of ninety degrees with each other, connections between the pistons and said cranks, inlet and exhaust valves whereby an explosive mixture is admitted to each cylinder successively, and the waste products exhausted therefrom, cam-shafts and cams loose thereon and adapted to engage the shafts to open said valves.

3. In an explosive-engine, a plurality of cylinders disposed in pairs in the same horizontal plane, an intermediate crank-shaft, pistons in each cylinder connected and movable in unison, connections between said pistons and the cranks, spring-pressed admission and exhaust valves, cam-shafts and cams loosely mounted thereon and engaging shoulders on the shafts, mechanism by which said shafts are revolvable whereby the inlet and exhaust valves are opened successively, and mechanism for adjusting the position of the cams and regulating the opening of the valves.

4. In an explosive-engine, a plurality of cylinders, standing in a common plane and disposed in pairs opposite to each other, pistons in said cylinder connected to move in unison, connecting-rods between each pair of pistons and the crank common thereto, spring-closed inlet and exhaust valves, cam-shafts having shoulders and cams loose on the shafts and engaging said shoulders by which said valves are alternately opened, a generator and connection between it and each inlet-valve chamber whereby gas is admitted when the valve is opened, and an air-inlet passage through which air is drawn to mix with the gas by the receding piston when the valve is opened.

5. In an explosive-engine, a plurality of cylinders lying in a common plane in pairs, each pair having the pistons connected with each other and with a crank-shaft common to all so as to move in unison, admission and exhaust valves and cam-shafts and cams loose thereon by which the valves are actuated, and mechanism for moving the shafts and cams to or from the valve-stems, by which said valves are regulated, a generator, means for supplying hydrocarbon liquid thereto, an exterior casing surrounding said generator and connected with the exhaust-passages of the engine, and passages leading from the generator to the inlet-valves.

6. In an explosive-engine, a plurality of cylinders disposed in pairs opposite to each other and in a common plane, a crank-shaft extending between the adjacent ends of the cylinders and connections between the cranks and the pistons whereby each pair of pistons moves in unison within their cylinders, inlet and exhaust valves with passages through which gas and air are admitted to form an explosive, and means for operating the valves including cam-shafts having shoulders and cams loose on the shafts and engaging said shoulders.

7. In a gas-engine and in combination, cylinders lying in the same plane, with pistons connected in pairs, a shaft extending between the adjacent ends of the cylinders having cranks set at angles with each other and connections between each pair of pistons and one of the cranks, admission and exhaust valves, shafts having cams loosely mounted thereon and shoulders whereby the cams are caused to turn with the shafts to open the valves, said cams turning freely upon the shaft after passing the point at which the valves are fully opened whereby the valves are allowed to close instantaneously.

8. In a gas-engine and in combination with cylinders, pistons movable therein, a shaft intermediate of the cylinders, and cranks with which the pistons are connected in pairs, inlet and exhaust valves, shafts with cams thereon whereby the valves are opened, said cams being movable upon the shafts to allow the valves to close after being fully opened, supports in which the cam-shafts are journaled and mechanism by which they and the cams are moved to or from the valve-stems to vary the opening of the valves.

9. In a gas-engine and in combination, cylinders, pistons movable therein, a crank-shaft with which the pistons are connected, admission and exhaust-valves for the cylinders, shafts having cams mounted thereon by the revolution of which the valves are opened, supports in which the cam-shafts are journaled, fulcrumed lever-arms by which said supports are carried, a shaft with eccentrics fixed thereon and connections between the eccentrics and the lever-arms, whereby the turning of the shaft moves the arms and the cam-shafts to vary the position of the cams with relation to the valve-stems, and a mechanism by which the eccentric-shaft is rotated.

10. In a gas-engine and in combination, cylinders having pistons movable therein, a crank-shaft with which the pistons are connected to move in unison, admission and exhaust valves, cams mounted upon shafts and adapted to open and close the valves, fulcrumed lever-arms carrying the journals of the cam-shafts and guides for the movements of said arms, a shaft carrying eccentric-rods connecting with the fulcrums of the levers whereby they are movable, a pinion upon the eccentric-shaft, a slidable rack engaging the pinion whereby the shaft is rotated to vary the positions of the lever-arms and the cam-shafts carried thereby.

11. In a gas-engine and in combination, cylinders having pistons movable therein, a crank-shaft with which the pistons are connected to move in unison, inlet and exhaust valves, cam-shafts and cams mounted thereon adapted to engage the valve-stems and open the valves when the crank-shaft is turned in one direction, other cams mounted upon the shafts and adapted to open the valves so as to reverse the movement of the crank-shaft, journal-boxes for the cam-shafts, beveled or inclined cams carried upon the shafts and a mechanism whereby said cams are moved so that the cam-shafts are caused to slide in the line of their axis and change the positions of the valve-actuating cams to reverse the engine.

12. In a gas-engine and in combination cylinders, pistons movable therein, a crank-shaft with which the pistons are connected, inlet and exhaust valves, shafts having two sets of cams mounted thereon, one set adapted to open the valves to rotate the crank-shaft in one direction, and the other to open the valves to rotate the shaft in the opposite direction, journal-boxes in which the cam-shafts are slidable longitudinally whereby the cams are moved to reverse the movements of the valves and engine, mechanism consisting of a slidable rack-bar, pinions upon the cam-shafts with which said rack engages when moved, and inclined cams mounted upon the cam-shafts so that their faces engage when the shafts are rotated and the cam-shafts are moved longitudinally to change the engagement of the valve-actuating cams.

706,712. NON-REFILLABLE RECEPTACLE. HENRY W. AVERY, Cleveland, Ohio. Filed Dec. 27, 1899. Serial No. 741,730. (No model.)

Claim.—1. A receptacle having a central contracted chamber in the neck thereof, and an enlarged annular recess thereabove leaving a substantially flat annular ledge connecting the walls of said chamber and recess, combined with a valve device occupying such chamber and consisting of a buoyant closure surmounted by a weight, and a fluted metal guard in a cup-like form adapted to be inserted concave side downward

and rest on said ledge and be expanded by pressure in the annular recess whereby it is held therein and forms a guard for the valve device below it while allowing the contents of the vessel to pass out, substantially as described.

2. A receptacle having a central well in the neck thereof, and an annular recess thereabove, combined with a buoyant closure interrupting communication of the bottom of said well with the interior of said receptacle, a weight entering said well above the closure, a concave stamped fluted metal guard having a scalloped edge which expands by pressure in said annular recess, whereby it is held therein and forms a guard for the members below while allowing the contents of the vessel to pass out, substantially as described.

706,713. LOCATION-TRACER. HENRY S. BACON, Worcester, Mass. Filed May 2, 1901. Serial No. 58,519. (No model.)

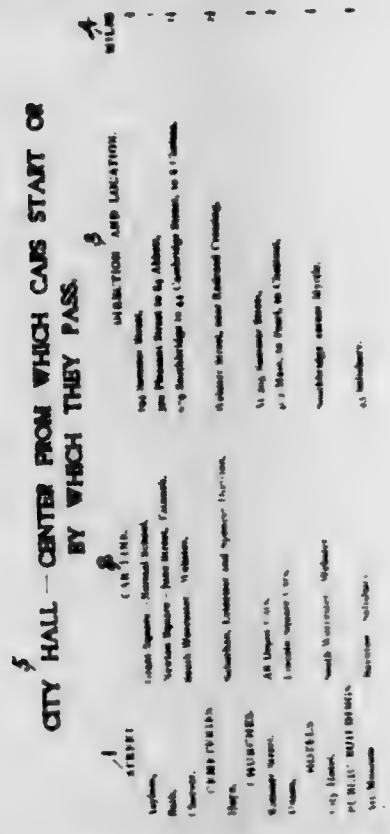

Claim.—1. A location-tracer comprising a plurality of columns arranged under appropriate headings, giving respectively streets or points, car-lines, and connecting thoroughfares, with a key, substantially as set forth.

2. A location-tracer comprising a plurality of columns arranged under appropriate headings, giving respectively streets or points, car-lines, connecting thoroughfares, and distances from a given center, with a key, substantially as set forth.

3. In a location-tracer, a key; columns of streets or points, car-lines and connecting thoroughfares respectively arranged consecutively, substantially as set forth.

706,714. WINDMILL-CONTROLLER. WILLIAM J. BAKER, Shelton, N. D. Filed May 19, 1902. Serial No. 107,897. (No model.)

Claim.—1. In an apparatus for automatically releasing spring-actuated gear mechanism of windmills, the combination, with a pivoted lever, a rod extended therefrom and a spring-retained trip-bar, of a bucket suspended from the trip-bar and an overflow-pipe for filling the bucket, and a framework supporting the parts, substantially as shown and described.

2. In an apparatus for automatically releasing spring-actuated gear mechanism of windmills, the combination, with the pivoted lever C and the collar A, for attachment to the leg of a windmill-tower, the rod D extended from said lever, and the spring-retained trip-bar H, and a supporting-frame and means for attaching the same to the lower part of a windmill-tower, of a bucket suspended from said trip-bar and an overflow-pipe for filling the bucket, substantially as shown and described.

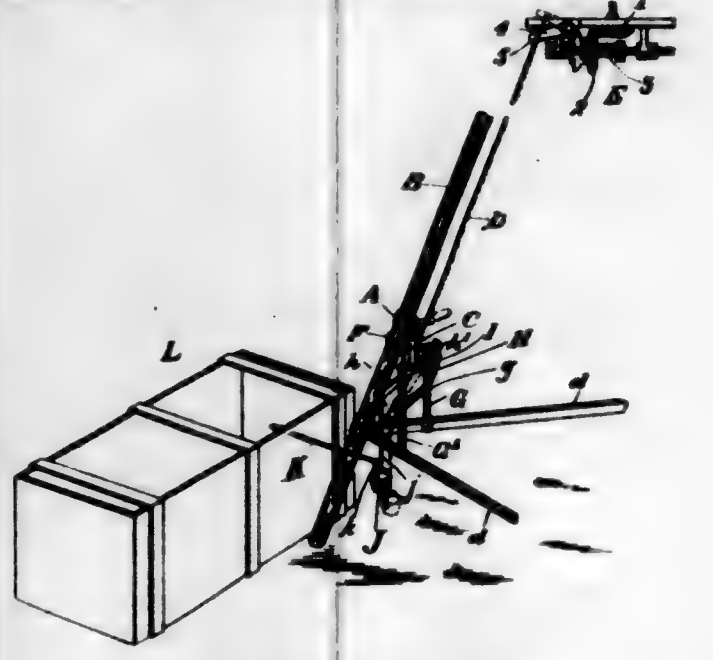

706,715. ABDOMINAL SUPPORTING-BANDAGE. MILDRED T. BARRETT, San Francisco, Cal. Filed May 15, 1902. Serial No. 107,266. (No model.)

Claim.—1. An abdominal or like bandage and support consisting of a sheet, elastic in every direction having gores cut, and the edges of the cut portions brought together and united to shape the bandage to the person, and means for securing the bandage.

2. An abdominal or like bandage consisting of a sheet of material elastic in every direction, having gores cut transversely from the edges, the cut edges united, and elastic overlying strips cemented over said seams.

3. The combination in an abdominal or like bandage of a sheet of material elastic in every direction having gores cut transversely and from the ends, the cut edges united to fit the bandage to the person, elastic overlying strips cemented over said seams, and inelastic end pieces attached to the end of the bandage having eyelet-holes and lacing-strings whereby the bandage may be adjustably fitted and retained in place.

4. The combination in an abdominal or like bandage of a sheet of material elastic in every direction, having gores cut out and the edges united and overlaid with elastic reinforcing-strips, hems formed upon the edge of the bandage, inelastic tapes secured within said hems and forming the bases for the attachment of straps whereby the bandage may be held in place.

5. The combination in an abdominal or like bandage of a sheet of material elastic in every direction and formed to fit the person, supplemental elastic reinforcing-pieces cemented on the bandage to provide for increased pressure at desired points, and means for adjustably securing the bandage in place.

6. The combination in an abdominal or like bandage of a sheet of material elastic in every direction cut to measure to fit the part to which it is to be applied, having elastic reinforcing-strips overlying the seams, supplemental elastic reinforcing-patches cemented on the bandage at desired points, inelastic strips forming continuations of the ends of the bandage with eyelet-holes and lacing-strings, hems formed upon the edge of the bandage with inelastic tapes secured therein and straps connected with said tapes whereby the bandage may be adjustably fitted.

706,716. PNEUMATIC MALTING-KILN. BERNARD BERG, San Francisco, Cal. Filed Dec. 30, 1901. Serial No. 87,746. (No model.)

Claim.—1. The combination in a malting apparatus of a heater, a plurality of chambers, revoluble perforated drums in said chambers, cylinders in said drums, said cylinders adapted to have their ends extend through the heads of said drums, connections between the ends of said cylinders whereby air is delivered from one to the other, air-passages between the heater and the first chamber, heads or spreaders in said chamber by which the air from said passages is distributed, and means for inducing an air-current through said chambers, drums and cylinders.

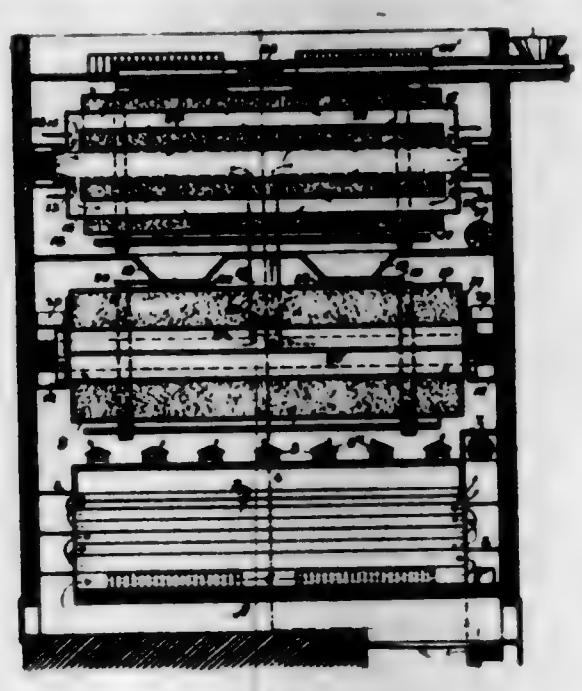

2. The combination in a malting apparatus of a heater, a plurality of chambers superposed in relation to each other, revoluble perforated drums therein, perforated cylinders in said drums, means for admitting material into said drums, openings in the floor of the uppermost chambers through which the material in the uppermost drum may be delivered into the drum in the chamber beneath, closures for said openings, passages through which air from the heater is admitted to said lower chamber, connections between the ends of said cylinders, and means in said connections by which the air is drawn into the first cylinder through the surrounding material whereby it is attemperated and is thence delivered to the second cylinder and forced outwardly through the material surrounding the heater.

3. In a malting apparatus, the combination of a heating-furnace, a chamber within which said furnace is located, a malting-chamber, one or more mains connecting said chambers, a stationary horizontally-disposed cylinder in the malting-chamber, said cylinder divided longitudinally into compartments, mains in which the ends of said compartments terminate and valves controlling the flow of air through said compartments, and means for forcing air through the apparatus.

4. In a malting apparatus, the combination of a furnace, an air-chamber within which said furnace is located, mains leading from said chamber, a horizontal, perforated cylinder longitudinally divided into a plurality of separate compartments, a revoluble perforated drum inclosing said cylinder, mains in which the ends of the cylinder terminate, valves adjacent to the ends of said cylinder whereby the flow of air through said longitudinal compartments may be regulated, and means for forcing a current of air through the apparatus.

5. In a malting apparatus, the combination of a horizontal, perforated, hollow structure, means for forcing a current of air therethrough, longitudinal partitions therein whereby the air-current is divided, and valves at the ends of the cylinder controlling the compartments thereof and regulating the admission of air thereto, and a drum inclosing said structure and revoluble thereto.

6. In a malting apparatus the combination of a stationary horizontal cylinder, means for forcing a current of air therethrough, longitudinal partitions in said cylinder whereby the air is divided, valves at the ends of the cylinder for controlling the flow of air through certain of the compartments formed by said partitions, and a revoluble drum inclosing said cylinder.

7. In a malting apparatus the combination of a stationary horizontal perforated cylinder, partitions in said cylinder whereby the latter is interiorly divided into a plurality of separated longitudinal compartments, means by which heated air may be forced through said compartments, slide-valves at each end of the cylinder by which the supply of air to any one of said compartments may be controlled, and a drum or germinating-chamber within which said cylinder is contained.

8. In a malting apparatus the combination of a horizontal perforated stationary cylinder, air-conducting mains with which the ends of said cylinder communicate, longitudinal partitions in and extending the length of said cylinder, gates slidable across the ends of the cylinder and regulating the admission of air to the compartments thereof, and a revoluble drum inclosing said cylinder.

9. In a malting apparatus, the combination of a horizontal perforated cylinder, air-conducting mains with which the ends of said cylinder communicate, partitions within said cylinder whereby the cylinder is longitudinally divided into a plurality of air-conduits communicating with said air-mains, gates or valves slidable across the ends of the cylinder whereby the admission of air to said conduits may be controlled, and a drum inclosing said cylinder.

10. In a malting apparatus, a revoluble perforated drum, a centrally and horizontally disposed, perforated cylinder in said drum, the ends of said cylinder extending beyond the ends of the drum, mains connected therewith, a plurality of perforated cylinders within the drum parallel with the first and having their ends extending beyond the ends of the drum, and short sections connecting the ends of said last-named cylinders with the central cylinder.

11. In a malting apparatus, a perforated drum, a plurality of perforated cylinders in said drum disposed parallel with the axis of the drum, said cylinders having their ends extending through the heads of the drum, means by which a current of air is forced through said cylinders and means in said cylinders exterior to the drum by which the air supplied to said cylinders is regulated.

12. The combination in a malting-kiln of a furnace, a chamber in which said furnace is situated, air inlets and outlets in said chamber, a plurality of drying-chambers, the first of said chambers adapted to receive the air from said heating-chamber, perforated drums in said drying-chambers, a horizontal perforated cylinder in the first of said drums, a longitudinal partition in said cylinder, a plurality of horizontal cylinders in the second drum, air-trunks uniting the ends of the cylinders in both drums, a suction apparatus in said trunks whereby a current of air is induced through the chambers, drums and cylinders, and valves in each of said cylinders whereby the flow of air therethrough may be regulated.

706,717. OIL-LAMP. RUSTOMJEE R. BOTTLEWALLA, Bombay, India. Filed May 19, 1902. Serial No. 108,018. (No model.)

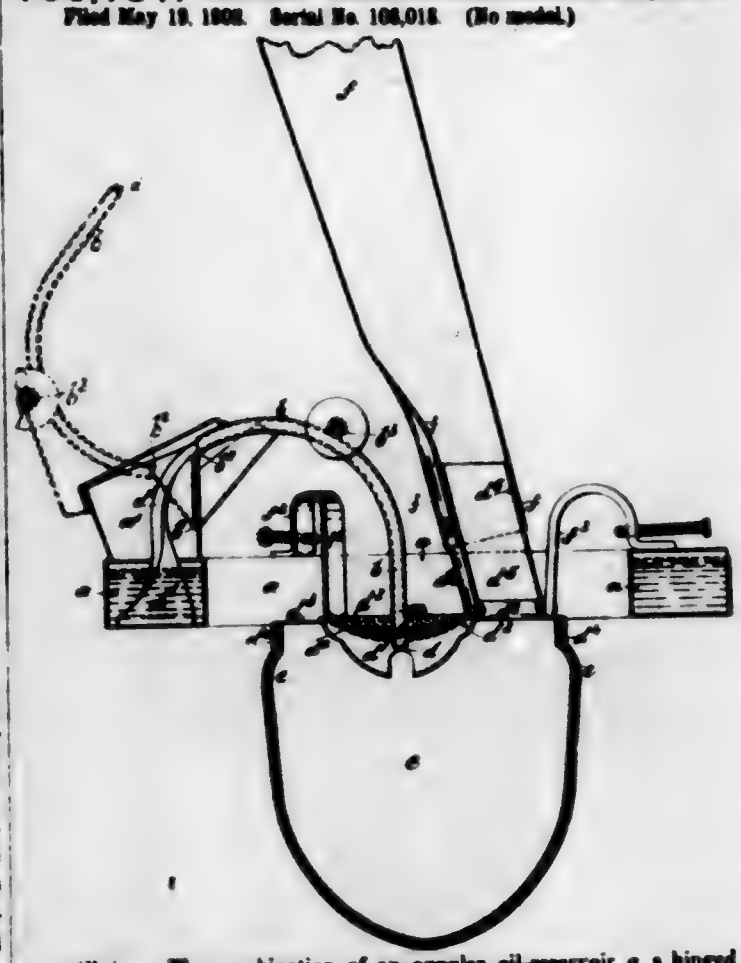

Claim.—The combination of an annular oil-reservoir *a* a hinged wick-holder *b* a plate d^3 carrying a burner or flame chamber *d* and having a socketed aperture and chimney *f* and a detachable globe or shade *e* the whole forming an inverted oil-lamp for throwing the light downward substantially as described and shown.

706,718. BICYCLE-STAND. WALTER S. BRADBURY, Willimantic, Conn. Filed Oct. 17, 1901. Serial No. 79,033. (No model.)

Claim.—1. A bicycle-rack consisting of a rotatable vertical spindle, a ring concentric with said spindle, fixed hooks suspended from said ring to receive the rim of the front wheel of a bicycle, a disk on said spindle in proximity to said hooks and having notched periphery, and a second disk fixed to said spindle near its lower end and having notched periphery the notches of which are in vertical alinement with the notches of the upper disk and with the said hooks, as set forth.

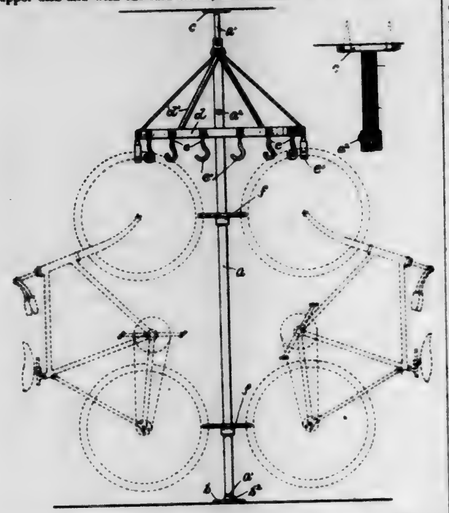

2. A bicycle-rack consisting of a rotatable vertical spindle, a rod telescoping in the same, means for holding the same in adjusted position, a lower bearing for said rod having hub with raceway, balls in said raceway and engaging the lower end of the spindle, a ring concentric with the spindle, hooks suspended therefrom, and upper and lower notched disks fast on the spindle below the said ring and having their notches in vertical alinement with each other and with said hooks as set forth.

706,719. **REVERSING MECHANISM.** FREDERICK M. BROUE, Warren, R. I., assignor of one-half to Edmund H. Matteson, Warren, R. I. Filed Mar. 27, 1902. Serial No. 100,219. (No model.)

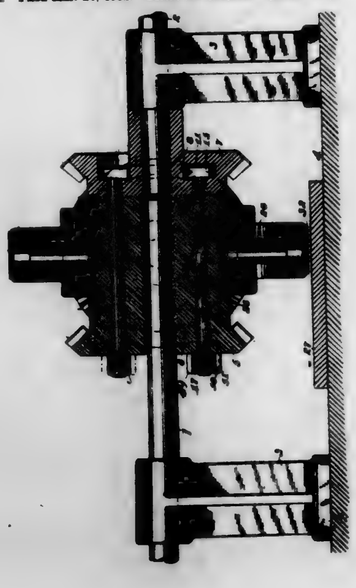

Claim.—1. In a reversing mechanism, the combination with a driving-shaft of a driving-gear mounted on said shaft, a driven shaft, a gear fixedly mounted on the driven shaft, a circular frame intermediate said gears, gears mounted in said frame and meshing with the driving and driven gears, bolts traversing the driving and driven gears, and means for tightening said bolts.

2. In a reversing mechanism, the combination with a frame of a driving-shaft, a driving-gear mounted on said shaft, a driven shaft, a gear fixedly mounted on the driven shaft, gears mounted in the frame and meshing with the driving and driven gears, bolts provided with threads traversing the driving and driven gears and projecting beyond the face of the driving-gear, nuts provided with lugs engaged with said threads, and means for turning said nuts.

3. In a reversing mechanism, the combination with a frame of a driving-shaft a driving-gear mounted on said shaft, a driven shaft, a gear fixedly mounted on the driven shaft, gears mounted in the frame and meshing with the driving and driven gears, bolts provided with threads traversing the driving and driven gears, and projecting beyond the face of the driving-gear, nuts provided with lugs engaged with said threads, stops upon the driving-gear to limit excessive rotation of the nuts, and means for turning said nuts.

4. In a reversing mechanism, the combination with a driving-shaft of a driving-gear mounted on said shaft, a driven shaft, a channeled gear fixedly mounted on the driven shaft, bolts traversing the driving and driven gears, whose heads are adapted to travel in said channeled driven gear, and means upon the opposite bolt extremities for tightening said bolts.

5. In a reversing mechanism, the combination with a driving-shaft of a driving-gear, mounted on said shaft, a driven shaft, a channeled gear fixedly mounted on the driven shaft, bolts provided with threads traversing the driving and driven gear, and whose heads are adapted to travel in the channel of the driven gear, nuts provided with lugs engaging the threaded bolts, and means contacting with said lugs for turning the nuts.

6. In a reversing mechanism, the combination with a gang of quadrilaterally-arranged gears, of a revolvable frame carrying two of the gears, a metallic band encircling the frame means for permanently holding one end of said band, an eccentric lever-shaft for carrying the other end of the band, and a lever-arm for rotating said shaft.

7. In a reversing mechanism, the combination with a driving-shaft of a driving-gear mounted on said shaft, a driven shaft, a gear fixedly mounted on the driven shaft, bolts provided with threads traversing the driving and driven gears, nuts engaging said threads and protruding from the face of the driving-gear, a frame lying in a plane parallel to that of the driving-gear face pivoted at its base, inwardly-directed projections upon the inner face of said frame adapted to contact with said nuts when the frame is vibrated, and means for vibrating the frame upon its pivot.

8. In a reversing mechanism, the combination with the driving mechanism of an upright slotted frame pivoted at its lower inner corner, projections upon its inner face for contacting with the driving mechanism, a lever-shaft, a lever-arm mounted on said shaft adjacent the outer face of the slotted frame, and a pin mounted on the lever-arm traveling in said slotted frame.

9. In a reversing mechanism, the combination with a driving-shaft of a beveled friction-wheel mounted on said shaft, a driven shaft, a beveled friction-wheel fixedly mounted on the driven shaft, a circular frame intermediate said wheels, beveled friction-wheels mounted in said frame and contacting with the driving and driven wheels, bolts traversing the driving and driven wheels, and means for tightening said bolts.

10. In a reversing mechanism, the combination with a driving-shaft of a driving-gear mounted on said shaft, a driven shaft, a channeled gear fixedly mounted on the driven shaft, bolts provided with curved heads and threaded ends engaging the driving-gear and the channeled gear, and nuts engaging the ends of the bolts.

11. In a reversing mechanism, the combination with a driving-shaft of a driving-gear mounted on said shaft, a driven shaft a gear fixedly mounted on the driven shaft, a rotatable frame intermediate said gears, gearing carried in said frame, bolts traversing the driving and driven gears, and means for tightening said bolts.

12. In a reversing mechanism, the combination with a driving-shaft of a driving-gear fixedly mounted thereon, a driven shaft, a gear fixedly mounted thereon, a rotatable frame intermediate said gears, gearing carried in said frame and meshing with the driving and driven gears, and means operated by the driving mechanism for locking the said gears.

706,720. **ADDRESSING ATTACHMENT FOR PRINTING-PRESSES.** JOSEPH P. BRYAN, St. Michaels, Md., assignor to Joseph H. Radcliffe, St. Michaels, Md. Filed Nov. 11, 1901. Serial No. 81,791. (No model.)

Claim.—1. In combination with a printing-press having a bed for a printing-form, a belt with means to move it over or across the said bed a magazine adapted to contain address-printing blocks, and pick-up devices on the said belt, which in the operation of the printing-press, remove the said address-printing blocks separately from the said magazine deliver them to a proper position in the printing-form, substantially as and for the purpose specified.

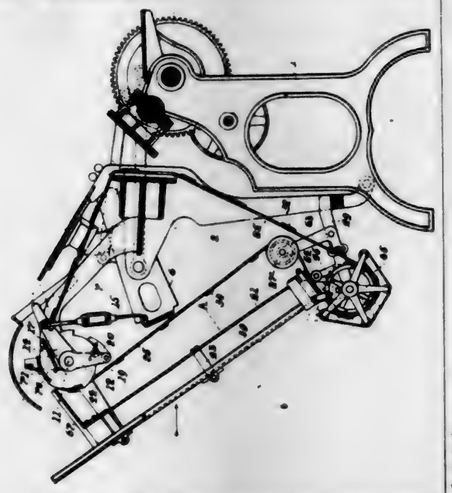

2. In combination with a printing-press having a bed for a printing-form, an endless belt with means to move it intermittently over or across the said bed, a magazine adapted to contain a stack of address-printing blocks, and pick-up devices attached to the said belt, which in the operation of the printing-press remove the said address-printing blocks from the said magazine separately, and carry them to a certain position in the printing-form situated on the bed, substantially as, and for the purpose specified.

3. In combination with a printing-press having a bed for a printing-form, an endless belt with means to move it intermittently over or across the said bed, a magazine adapted to hold stacked address-printing blocks, pick-up devices attached to the said belt, which in the operation of the said printing-press, remove the said address-printing blocks separately from the said magazine and deliver them to a certain position in the printing-form on the said bed, and mechanism to detach the said blocks after they have performed their office, from the pick-up devices and deliver them to the said magazine, substantially as, and for the purpose specified.

706,721. **PRESSURE-REDUCING VALVE.** CHARLES H. BOOKSLEW, Plainfield, N. J. Filed Oct. 30, 1901. Serial No. 80,503. (No model.)

Claim.—1. In a pressure-reducing valve, the combination of a main-valve chest having a high-pressure inlet-chamber and a low-pressure outlet-chamber, a valve between the two chambers, a cylinder on the valve-chest, a piston in said cylinder, which piston is connected to the main valve and is reciprocated only by the action of the high pressure as it is applied to one side or the other thereof, a valve-chamber on the wall of the cylinder, an auxiliary valve in said chamber for controlling the admission of the high pressure to the said valve-operating piston, and a diaphragm-containing chamber together with its diaphragm for moving the valve in one direction, which diaphragm is constantly exposed on one side to the low pressure, together with means for moving the auxiliary valve in the other direction.

2. In a pressure-reducing valve, the combination of the main-valve chest having a high-pressure inlet-chamber and a low-pressure outlet-chamber, and a valve-seat between the two chambers, a main regulating-valve arranged in connection with said seat, a cylinder contiguous to the valve-chest, a piston in said cylinder whose rod is connected to the main valve, a valve-chamber on the cylinder and an auxiliary valve in said chamber for controlling the admission of high pressure to the cylinder in order that it may act on one side or the other of the piston for the purpose of opening or closing the main valve, said auxiliary valve having passages running through it from one end to the other, a diaphragm-chamber containing a flexible diaphragm which is connected to the stem of the auxiliary valve, a passage between the low-pressure chamber and the diaphragm-chamber which causes low pressure to be constantly applied to one side of the diaphragm, and a spring for moving the auxiliary valve in a direction opposite to that in which it is moved by the diaphragm.

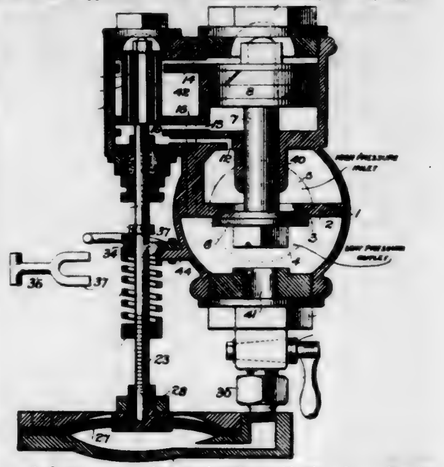

3. In a pressure-reducing valve, the combination of a main-valve chest having a high-pressure inlet-chamber and a low-pressure outlet-chamber, a valve between the two chambers, a cylinder on the valve-chest, a piston in said cylinder which piston is connected to the main valve and is reciprocated by the action of the high pressure as it is applied to one side or the other thereof, an auxiliary valve having a valve-rod, a diaphragm on said valve-rod which is exposed to the low pressure, and means adapted to engage the valve-rod for the purpose of so locating the auxiliary valve as that the main valve will temporarily remain closed and thus the whole reducing-valve mechanism be temporarily converted into a stop-valve.

4. In a pressure-reducing valve, the combination of a main-valve chest having high-pressure and low-pressure chambers, a valve between the chambers, a cylinder on the valve-chest having a piston whose stem is connected to the main valve, said piston being of larger area than the valve and being actuated only by high-pressure fluid, an auxiliary valve controlling ports leading into opposite ends of the cylinder, said auxiliary valve itself having ports running through it from one end to the other, a valve-chamber on the wall of the cylinder for containing said auxiliary valve, an exhaust-port for conveying high-pressure fluid from one side or the other of the piston to the low-pressure chamber, a diaphragm-containing chamber connecting through a passage with the low-pressure chamber, said passage being provided with a cock, a diaphragm in said chamber connected to the auxiliary-valve rod and exposed on one side to low pressure and a spring for moving the auxiliary valve in a direction opposite to that in which it is moved by the diaphragm.

706,722. **CANOPY.** EDWARD G. BURLAND, Watsonville, Cal. Filed Mar. 27, 1902. Serial No. 100,170. (No model.)

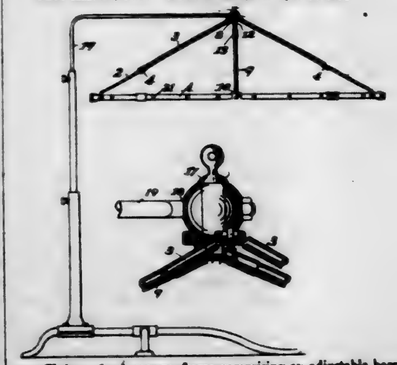

Claim.—1. A canopy-frame comprising an adjustable base, adjustable rods pivotally connected thereto, pairs of said rods flexibly connect-

ed to a block and means for connecting said blocks together at a point above the base.

2. A canopy-frame consisting of an adjustable base, adjustable convergent rods pivotally connected therewith, male and female coupling-blocks to which the upper convergent ends of said rods are flexibly connected, and means for securing said blocks together.

3. A canopy-frame consisting of a rectangular adjustable base, rods pivoted adjacent to the angles thereof, said rods adjustable in length, other rods pivotally connected to the base intermediate of its ends, and means by which said rods are detachably united above the base.

4. A canopy-frame consisting of an adjustable rectangular base, rods pivoted adjacent to the angles thereof, the rods at either end of the base connected with a block or member, other rods pivotally connected to the base intermediate of its ends, a block or member to which said rods are connected and means by which all of said members are detachably united.

5. A canopy-frame consisting of a base, convergent rods pivotally connected thereto, male and female coupling-blocks to which said rods are secured and means for holding the blocks together.

6. A canopy-frame consisting of a base, convergent rods pivotally connected thereto, male and female coupling blocks or members with which said rods are flexibly connected and means for locking said members together.

7. A canopy-frame consisting of an adjustable rectangular base, rods pivoted thereto adjacent to the angles thereof, said rods adjustable in length, blocks or members to which said rods are pivotally connected, other rods pivotally connected to said base, a block or member to which said rods are connected, said members adapted to lie adjacent to each other at a point above the base and a locking means by which said members are held together.

8. A canopy-frame consisting of an adjustable rectangular base, rods pivoted at the corners thereof, said rods adjustable in length, a socketed coupling block or member to which these rods at either end of the base are pivotally connected at their upper convergent ends, other rods pivotally connected to said frame, a coupling connection with said other rods, said socketed members adapted to embrace the last-named coupling, and means upon the latter by which said couplings are all united.

9. The combination of an adjustable rectangular base-frame, rods adjustable in length pivoted at the corners of said frame, female coupling members to which the upper ends of said rods are pivotally connected, other rods pivotally connected with the frame, a male coupling having short fork-sections to which said other rods are pivoted, sleeves slidable on said last-named rods which are adapted to embrace said pivotal joints and means for locking said sleeves, means by which said coupling members are locked together, and a standard substantially as described upon which the frame is suspended.

706,728. CONTROL OF DYNAMO-ELECTRIC MACHINERY.

ROBERT R. GARDNER, East Orange, N. J., assignor to the Sprague Electric Company, a Corporation of New Jersey. Filed Jan. 16, 1901. Serial No. 43,720. (No model.)

Claim.—1. In a system of control of dynamo-electric machinery the combination of three switches, means controlled by one of the switches for operating another of the switches, and means controlled by these two switches for operating the third switch, and means controlled by either of the other switches for operating the first, substantially as shown.

2. In a system of control of dynamo-electric machinery the combination of a rheostatic switch, a pilot-switch, a motor-grouping switch, means controlled by the rheostatic switch for operating the pilot-switch, and means controlled by the rheostatic switch and the pilot-switch for operating the motor-grouping switch, substantially as described.

3. In a system of control of electric motors, the combination of a rheostatic switch, a pilot-switch, a motor-grouping switch, means controlled by the rheostatic switch for operating the pilot-switch, means controlled by the rheostatic switch and the pilot-switch for operating the motor-grouping switch, and means controlled by the pilot-switch for operating the rheostatic switch substantially as described.

4. In a system of control of a pair of electric motors the combination of a rheostatic switch, a pilot-switch, a series-multiple switch, means controlled by the rheostatic switch for operating the pilot-switch, and means controlled by the rheostatic switch and the pilot-switch for operating the series-multiple switch, to change the motors from series to multiple, substantially as described.

5. In a system of control of a pair of electric motors the combination of a rheostatic switch, a pilot-switch, a series-multiple switch, means controlled by the rheostatic switch for operating the pilot-switch, so that it can be operated only when the rheostatic switch is in position to admit current to the motors, and means controlled by the rheostatic switch and the pilot-switch, for operating the series-multiple switch to change the motors from series to multiple, which means can be operated only when the rheostatic switch is in the open-circuit or a high-resistance position, substantially as described

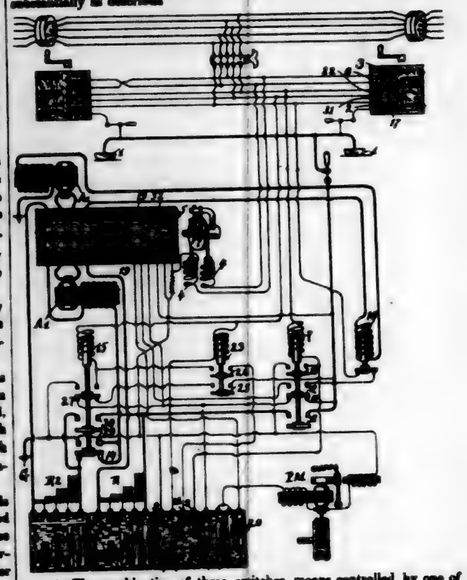

6. The combination of three switches, means controlled by one of the switches for operating another of the switches, means controlled by the two for operating a third of the switches, means controlled by the second switch for operating the first of the switches, and a master-switch for operating the system, substantially as described.

7. In a system of control of dynamo-electric machinery, the combination of a rheostatic switch, a pilot-switch, a motor-grouping switch, means controlled by the rheostatic switch for operating the pilot-switch, means controlled by the rheostatic switch and the pilot-switch for operating the motor-grouping switch, and a master-switch for operating the system, substantially as described.

8. In a system of control of electric motors, the combination of a rheostatic switch, a pilot-switch, a motor-grouping switch, means controlled by the rheostatic switch for operating the pilot-switch, means controlled by the rheostatic switch and the pilot-switch for operating the motor-grouping switch, and a master-switch for operating the system, substantially as described.

9. In a system of control of a pair of electric motors, the combination of a rheostatic switch, a pilot-switch, a series-multiple switch, means controlled by the rheostatic switch for operating the pilot-switch, means controlled by the rheostatic switch and the pilot-switch for operating the series-multiple switch to change the motors from series to multiple, and a master-switch for operating the system, substantially as described.

10. In a system of control of a pair of electric motors the combination of a rheostatic switch, a pilot-switch, a series-multiple switch, means controlled by the rheostatic switch for operating the pilot-switch, so that it can be operated only when the rheostatic switch is in a position to admit current to the motors, means controlled by the rheostatic switch and the pilot-switch for operating the series-multiple switch to change the motors from series to multiple, which means is operated only when the rheostatic switch is in the open-circuit or a high-resistance position, and a master-switch for operating the system, substantially as described.

706,724. GLOVE.

ROBERT H. CARSON, San Francisco, Cal. Filed Apr. 10, 1902. Serial No. 102,164. (No model.)

Claim.—1. The combination in a glove of a palm portion having the concavo-convex gauge for the thumb cut so as to coincide approximately as the inside of the joint at the base of the thumb, a thumb composed of a piece of leather cut with a notch in the tip separating it into parts, one of which is approximately one-third the size of the other, and has its outer edge extending downwardly so that when stitched together the line of the seam approximately follows the curvature of the thumb-nail from the interior to its base, thence down the outside toward the wrist, and the interior of the base portion being cut in convex curves whereby it unites with the palm portion when fitted thereto on the aforesaid line of the thumb-joint, said thumb portion and palm portion overlapping and double-seamed, and a supplemental reinforcing-strip secured over the said seam at the base of the thumb.

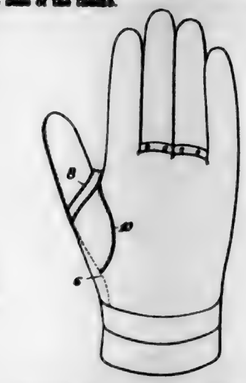

2. The combination in a glove of the palm portion having a thumb-gauge cut in concavo-convex form, and a single thumb-piece cut with a notch in its outer end, dividing it into two parts, one of which is approximately one-third the size of the other and slightly shorter whereby when united a seam is formed following approximately the line of the thumb-nail, the exterior edges of said thumb-piece being extended downwardly and having a notch formed between said downwardly-extending portions with convex sides whereby the outer and narrower portions form the line of the outside seam, and the extension of the wider portion underlaps the palm, reinforcing that portion which covers the base of the thumb.

3. The combination in a glove of the palm portion having a concavo-convex gauge to receive the thumb, a thumb formed of a single piece cut with the narrower and wider sections separated by a notch at the tip, and having the outside lines extending downward and a notch also formed in the opposite end whereby when stitched together and into the thumb-gauge, the narrower portion forms the back of the thumb, the wider portion covers the entire interior of the thumb back to the line of the thumb-nail, the meeting outer edges uniting to form a seam on the outside of the thumb extending downwardly toward the wrist, and the curved lines at the base of the thumb portion forming the seam by which the thumb portion is united to the back and palm on the line of the joint at the base of the thumb, and a supplemental reinforcing-strip secured over said seam along the inside of the thumb.

706,725. GLOVE.

JENNINGS COMER, Milwaukee, Wis. Filed Jan. 22, 1902. Serial No. 93,841. (No model.)

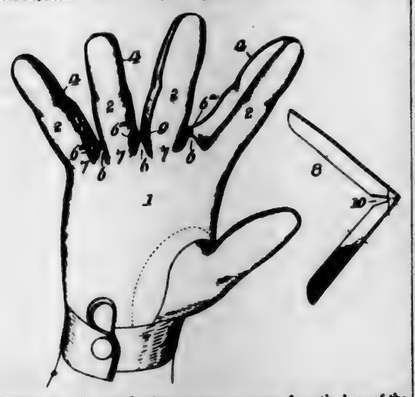

Claim.—1. A glove having tongues cut away from the base of the inside finger parts whereby the inner ends of the said inside finger parts are narrowed and quirks produced which extend in continuous pieces from the palm of the glove and between the fingers thereof and fourchettes attached to the sides of these quirks and to the sides of the inside and outside finger parts.

2. A glove having tongues formed with rounded ends cut away from the inside finger parts whereby the inner ends of the said finger parts are narrowed and quirks produced which extend in continuous pieces from the palm of the glove and between the fingers thereof and fourchettes having recesses at their inner ends in which the rounded ends of the attached or solid end quirks extend, and attached to the sides of the said quirks and to the sides of the inside and outside finger parts.

706,726. CULTIVATOR.

ANDREW J. COMSTOCK, Tyler, Tex., assignor of one-half to Edward L. Booth, Tyler, Tex. Filed Aug. 28, 1901. Serial No. 73,711. (No model.)

Claim.—1. In a cultivator, the combination of a wheeled frame, a shovel-frame loosely connected thereto and capable of being swung vertically thereon, and shovel-frame-supporting means carried by the wheel-frame and capable of being moved out of the path of the shovel-frame to permit of vertical movement of the latter and then capable of movement into engagement with the shovel-frame to support the same in an elevated position.

2. In a cultivator, the combination of a wheeled frame, a shovel-frame having a loose connection with the wheeled frame and capable of being swung vertically thereon, and a vertically-swinging shovel-frame support hinged to the wheeled frame, the rear free end of the hinged support lying in the upward path of a portion of the shovel-frame, and being capable of an upward and forward swinging movement to a position out of the path of the shovel-frame to permit of an upward movement of the latter, and then capable of a return movement to its original position to underlie a portion of the shovel-frame and support the same in an elevated position.

3. In a cultivator, the combination with a wheeled frame, of a plurality of shovel-beams loosely connected to the frame, a cross-bar connecting the beams, and a two-part supporting-bar carried by the wheeled frame and having a hinged connection between the parts thereof, the adjacent ends of these parts being beveled and normally bowed to dispose the outer member in an upwardly-inclined position, said movable member being located in the upward path of the bar which connects the shovel-beams.

4. In a cultivator, the combination with shovel-beams, and a cross-bar to connect the same, of a substantially L-shaped bracket having one end applied across the adjacent beam, and its opposite end provided with a laterally-projected ear applied to the cross-bar, a fastening piercing the cross-bar, the beam and the adjacent end portion of the bracket, and another fastening connecting the ear to the cross-bar.

5. The combination with a wheeled frame, of a shovel-beam loosely connected thereto, and a two-part supporting-bar carried by the wheeled frame and having a hinged connection between the parts thereof, the outer part being free and arranged in the path of the shovel-beam for the purpose substantially as described.

706,727. HYDRAULIC RAM. WILLIAM L. DUNING, Salem, Ohio, assignor to the Duning Company, Salem, Ohio, a Corporation of Ohio. Filed Apr. 24, 1901. Serial No. 57,269. (No model.)

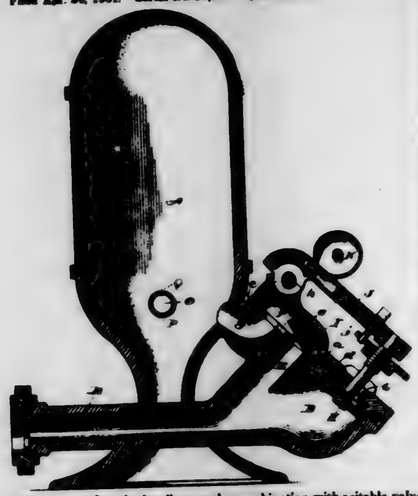

Claim.—1. In a hydraulic ram the combination with suitable valve mechanism, an air-chamber and service-pipe; of a horizontally-arranged perforated pressure-regulating and water-discharge tube intersecting the air-chamber and communicating directly with said service-pipe, substantially as described.

2. In a hydraulic ram the combination with suitable valve mechanism, an air-chamber and service-pipe; of a horizontally-arranged perforated pressure-regulating and water-discharge tube intersecting and supported in opposite walls of said air-chamber and communicating directly with the service-pipe aforesaid, substantially as described.

3. In a hydraulic ram the combination with suitable valve mechanism, an air-chamber and service-pipe; of a horizontally-arranged perforated pressure-regulating and water-discharge tube intersecting opposite walls of said chamber below the normal water-line and communicating directly with the service-pipe aforesaid, substantially as described.

4. In a hydraulic ram the combination with suitable valve mechanism, an air-chamber and service-pipe; of a horizontally-arranged pressure-regulating and water-discharge tube intersecting the air-chamber and perforated by water-inlet ports and superimposed air-inlet ports, substantially as described.

5. In a hydraulic ram the combination with suitable valve mechanism, an air-chamber and service-pipe; of a horizontal pressure-regulating and water-discharge tube intersecting opposite walls of said chamber and communicating directly with the service-pipe, and water and air inlet ports the latter located above the former in the tube aforesaid, substantially as described.

706,728. COMBINED SHADE-ROLLER AND CURTAIN-POLE HOLDER. HERBERT S. DE BOLLAR, Denver, Colo. Filed Nov. 15, 1901. Serial No. 82,420. (No model.)

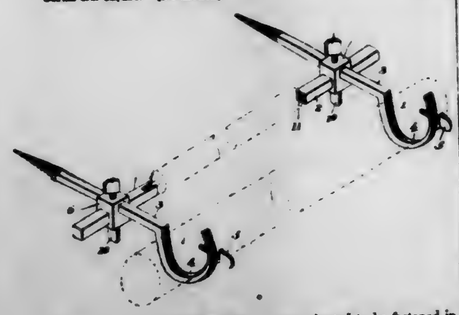

Claim.—1. In combination with a stem adapted to be fastened in place so as to extend horizontally outward from the wall, means for fastening a curtain-pole to its outer end, a frame mounted on the stem and adjustable along the same, and a roller-support mounted in the frame and adjustable in the direction of the axis of the roller.

2. In combination with a pole-holder provided with a stem adapted to be fastened in place so as to extend horizontally from the wall, a block mounted slidingly on said stem, a clamping device carried by the block and arranged to engage the stem, a roller-support mounted in the block and slidable endwise in the direction of the axis of the roller, and a clamping device carried by the block and arranged to engage the support.

3. In combination with a stem adapted to be fastened in place so as to extend horizontally from the wall and formed to support a curtain-pole, a frame mounted on said stem and reversible thereon side for side, and a shade-roller support carried by the frame and reversible thereon end for end.

4. In combination with a stem adapted to be secured in place so as to extend horizontally outward from the wall, said stem being formed on its outer end to support a curtain-pole, a block recessed longitudinally to receive the stem and formed with a transverse opening, means for clamping the block to the stem, a shade-roller support mounted in the said transverse opening in the block, and means for clamping said support to the block.

706,729. PULVERIZING-SHOE. HENRY F. DEYERDING, Commerce, Mo. Filed Apr. 22, 1902. Serial No. 104,309. (No model.)

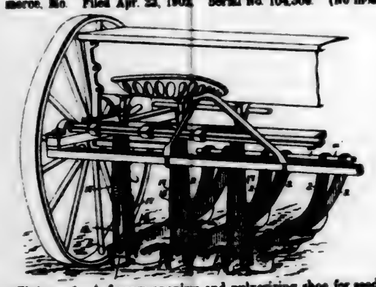

Claim.—1. A furrow opening and pulverizing shoe for seed-planters, having a worm-like penetrating edge, for the purposes described.

2. A furrow opening and pulverizing shoe, having a cutting-surface, worm-like in a horizontal plane, and laterally-projected wings merging with said cutting-surface.

3. A furrow opening and pulverizing shoe, the body of which is corrugated from the penetrating edge upwardly and rearwardly at an angle to the vertical plane of the shoe.

4. A furrow opening and pulverizing shoe, comprising a corrugated body portion, the corrugations of which extend upwardly and rearwardly from the penetrating edge, and are of a gradually-increasing area in transverse direction from the front to the heel portion.

5. A furrow opening and pulverizing shoe, consisting of a body, having a series of parallel corrugations, inclined rearwardly at an acute angle to the lower or penetrating edge of the body, and merging therewith, for the purposes specified.

6. In a furrow opening and pulverizing shoe of the character described, the combination with the dropping-tube and a spring-metal shoe-body, having a rearwardly-extended portion, a spring-metal cap-plate for opposing said extension, said extension and cap-plate having seat portions adapted to engage and clamp the dropping-tube, substantially as shown and for the purposes described.

7. As a new article, a spring-metal furrow opening and pulverizing shoe, having attached means for joining it with the supporting-frame of the machine to which it is to be attached, said shoe having a sinuous penetrating edge, and covering-wings extended laterally alternately to each side of the longitudinal plane of the shoe-body, said wings terminating at their lower end with the penetrating edge of the shoe and inclined rearwardly, and being of progressively-increasing widths from the front to the heel end of the shoe, for the purposes described.

706,730. TWO-CYCLE ROTARY MOTOR. PAUL A. DUPONT, Rouen, France. Filed Feb. 17, 1902. Serial No. 94,532. (No model.)

Claim.—1. The combination, in a rotary motor, of a cylinder rotatable in one direction and having axial inlet and exhaust passages at opposite ends communicating through the cylinder, a concentric shaft in the cylinder rotatable in the same direction and projecting through one of said passages, said cylinder and shaft having radial alternate partitions therebetween, forming, alternately, reciprocal abutments and pistons, and valves and valve-gear.

2. The combination, in a rotary motor, of a rotatable cylinder contracted at its ends to hollow journals forming inlet and exhaust passages at opposite ends respectively communicating through the cylinder, an independently-rotatable shaft therein, said cylinder and shaft having alternate pistons therebetween, forming, alternately, abutments for each other, and means to prevent rotation of the cylinder and shaft except in the same direction.

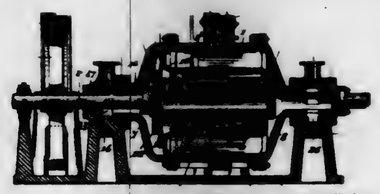

3. The combination, in a rotary engine, of a rotatable cylinder, and a hollow shaft in the cylinder independently rotatable in the same direction and having radial ports, a radial partition projecting from the cylinder to contact with the shaft, a radial partition projecting from the shaft to contact with the cylinder, said partitions forming, alternately, a reciprocal abutment and piston and rocking valves in the hollow of the shaft controlling admission and exhaust through the ports.

706,731. ROTARY ENGINE. JAMES F. EDWARDS, Macon, Mo. Filed June 17, 1901. Serial No. 64,912. (No model.)

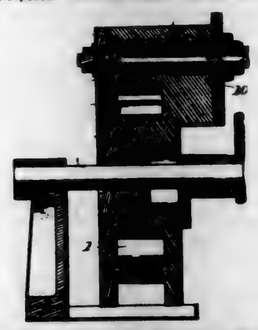

Claim.—1. In an engine of the character described, the combination with the cylinder, a revolubly piston mounted therein, a swinging abutment pivoted outside of the cylinder and working in said cylinder and adapted to cooperate with the piston, a valve-chamber and an inlet and an outlet port connecting said chamber and cylinder.

2. In an engine of the character described, the combination with the cylinder, a piston and swinging abutment pivoted outside of and extending into said cylinder, of combined inlet and outlet ports in the path of the swinging abutment, the steam-chamber having two outlet-ports and a sleeve revolubly mounted on said steam-chamber, ports in the sleeve adapted to register with the ports in the steam-chamber, whereby the engine may be reversed.

3. In an engine of the character described, the combination with the steam-chamber, an inlet-port and two outlet-ports leading therefrom, a sleeve revolubly mounted on said steam-chamber, ports formed through said sleeve adapted to respectively register with the respective ports in said chamber according to the position of the valve, an exhaust-passage formed in the periphery of the sleeve between said ports, and an exhaust-port connected with said exhaust-passage leading to the outside atmosphere.

4. In an engine of the character described, the combination with the cylinder, a revolubly piston mounted therein, inlet and outlet ports formed in the periphery of the cylinder, of a swinging abutment pivoted outside of, but working in, the cylinder and lips or flanges projecting from said abutment adapted to close said ports at the extreme limit of the upper stroke of the swinging abutment and a main exhaust-port in the cylinder adapted to be opened and closed by the swinging abutment as it moves upward and downward.

5. In an engine of the character described, the combination with the cylinder, a revolubly piston therein, inlet and outlet ports formed in the periphery of the cylinder and a swinging abutment, flanges formed on the inner ends of the same adapted to close said ports, of a steam-chamber, two ports leading therefrom, a sleeve revolubly mounted on the steam-chamber, two ports formed through the sleeve and an exhaust-passage formed in the periphery of the sleeve between said ports and an exhaust-port connected with said exhaust-passage.

6. In an engine of the character described, the combination with the cylinder, a revolubly piston therein, a piston-head integral therewith and having a steam-tight fit with said cylinder, a main exhaust through one side of the cylinder in the path of the piston-head, inlet and outlet ports formed in the periphery of the cylinder, and a swinging abutment adapted to close the main exhaust-port when in its lowermost position, flanges or lips formed on said abutment adapted to close the inlet and outlet ports when the abutment is in its uppermost position, of a steam-chamber, a sleeve revolubly mounted thereon, two ports formed through the sleeve and an exhaust-passage formed in the periphery of the sleeve between said ports and an exhaust-port connected with said exhaust-passage leading to the outside atmosphere.

706,732. APPLICATOR. ALLEN W. ELLINGTON, Los Angeles, Cal. Filed Aug. 7, 1901. Serial No. 71,233. (No model.)

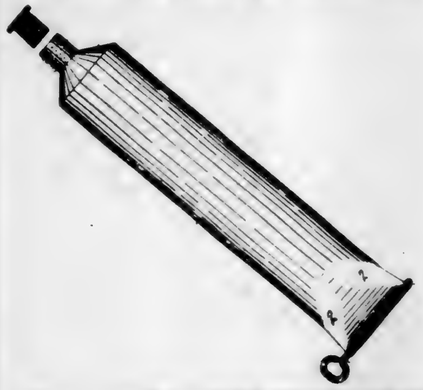

Claim.—1. An applicator provided with an internally-screw-threaded nozzle, to present a smooth exterior to the parts treated, an externally-screw-threaded plug therefor, said nozzle having lateral orifices, an attachment having a longitudinal slot to receive the extremity of the applicator and constructed to be rotated to wind said extremity thereupon to expel the contents of the applicator through said nozzle and orifices.

2. An applicator provided with an internally-screw-threaded nozzle having a smooth exterior to present a smooth surface to the parts into which the nozzle is introduced, said nozzle having lateral discharge-orifices and a plug having an enlarged head or cap and an exteriorly-screw-threaded shank constructed to enter and engage said interiorly-screw-threaded nozzle and close said orifices, whereby the applicator can be submerged in a sterilizing agent to cleanse the same without injury to the contents.

706,733. FOUR-CYCLE EXPLOSIVE-VAPOR ENGINE. GUSTAF ERICSON, Södertelje, Sweden, assignor to Vagnfabriks Aktiebolaget I Södertelje, Södertelje, Sweden. Filed Oct. 9, 1901. Serial No. 78,088. (No model.)

Claim.—1. A four-cycle internal-combustion engine having a suction admission-valve for the explosive mixture, a valve communicating with the explosion-chamber and closing outward, automatic means for opening said valve at regular intervals, a spring for closing said valve, and dash-pot device for retarding the closing of the last-named valve after the beginning of the suction-stroke, substantially as set forth.

2. A four-cycle internal-combustion engine having as an automatic means for controlling the smoking in of the explosive mixture, an exhaust-valve communicating with the explosion-chamber, means operated by the engine for opening said valve at regular intervals, a spring for closing said valve, and means for retarding the closing of said valve by its spring, said means comprising a fixed cylinder having an inlet for air and a valve-controlled outlet for the same, and a piston in said cylinder and fixed on the stem of the last-named valve, substantially as set forth.

3. A four-cycle internal-combustion engine having a suction admission-valve for the explosive mixture, an exhaust-valve, automatic means for opening said exhaust-valve at all times to the same extent, a spring which closes said valve, and means for retarding the exhaust-valve, said means comprising a fixed cylinder or pot G, having a lateral air-inlet N and a valve-controlled outlet O, a screw-valve M controlling said outlet,

and a piston F, in said cylinder or pot and connected with the stem of the exhaust-valve.

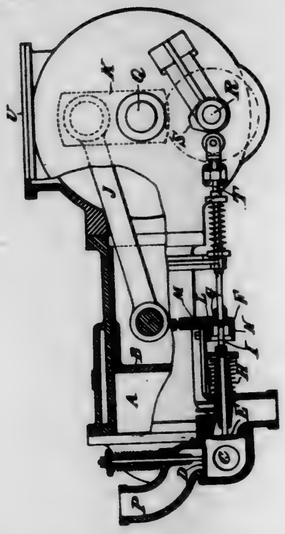

706,784. ATTACHMENT FOR STOVEPIPES. WILLIAM H. BUCHHOLZ and LORIS B. WITHERELL, Knoxville, Ill. Filed Mar. 16, 1901. Serial No. 51,394. (No model.)

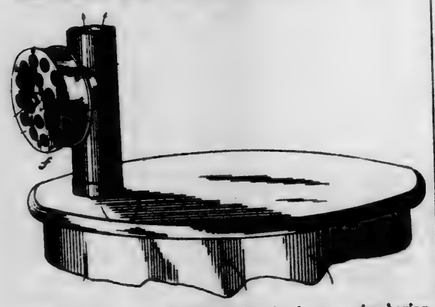

Claim.—In a damper, the combination of a damper-casing having substantially parallel end plates, one of which is provided with apertures or perforations and with an offset bearing on its inner face, a pipe open at both ends extending from the other end plate and in communication with said casing a rod slidably mounted in said bearing and end plate and a damper at the end of said rod and at substantially right angles thereto adapted to close the end of said pipe.

706,785. WIRELESS TELEGRAPHY. REGINALD A. FESSENDEN, Allegheny, Pa. Filed Dec. 15, 1900. Serial No. 740,698. (No model.)

Claim.—1. As an improvement in the art of transmitting signals electrically by electromagnetic waves the method herein described, which consists in the generation of electromagnetic waves at one station and transforming the energy of the currents generated by such waves at the receiving-station into the energy of motion, that is without the necessary interposition of a secondary or auxiliary generator for the production of such motion, substantially as set forth.

2. As an improvement in the art of transmitting signals between stations by electromagnetic waves, the method herein described which consists in causing the radiation of electromagnetic waves from a grounded conductor, generating voltages by such waves in a conductor at the receiving-station and transforming the energy of each of said voltages into the energy of motion, substantially as set forth.

3. As an improvement in the art of transmitting signals electrically between stations by electromagnetic waves, the method herein described which consists in producing an electromagnetic field in a receiving mechanism consisting of relatively fixed and movable members arranged in operative relation to each other by the generation of electromagnetic waves at the sending-station, thereby causing a movement of one of the parts of the receiving mechanism, substantially as set forth.

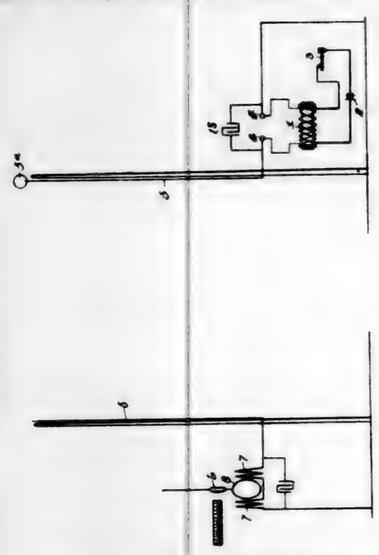

4. As an improvement in the art of transmitting signals electrically between stations by electromagnetic waves, the method herein described which consists in the generation of a current or currents in a portion of a receiving mechanism consisting of relatively fixed and movable members by the generation of electromagnetic waves at the sending-station and then producing a current or currents in the other portion of the receiving mechanism by the current or currents generated by the electromagnetic waves, whereby one part of the receiving mechanism is caused to move relative to the other part, substantially as set forth.

5. As an improvement in the art of transmitting electrical energy by electromagnetic waves the method herein described, which consists in maintaining a secondary circuit in an energized condition and controlling the energy of said circuit by current effects produced by electromagnetic waves flowing through a current-operated wave-responsive device forming a portion of the secondary circuit.

6. As an improvement in the art of transmitting electrical energy by electromagnetic waves the method herein described, which consists in prolonging the oscillations of an energy-radiating conductor by energy from a source external to the radiating-conductor and tuned to the period of the radiating-conductor, substantially as set forth.

7. As an improvement in the art of transmitting electrical energy by electromagnetic waves the method herein described, which consists in the generation of electromagnetic waves at one station and transforming the energy of the currents generated by such waves at the receiving-station into the energy of motion, varying the motion thus produced by varying the amount of energy delivered at the receiving-station without the necessary interposition of a secondary or auxiliary generator for the purpose of such motion, substantially as set forth.

8. As an improvement in the art of signaling by electromagnetic waves the method herein described, which consists in generating electromagnetic waves in a grounded conductor at the sending-station, receiving such waves at the receiving-station and transforming the energy of electromagnetic waves so received into the energy of motion by means of a receiving instrument having a low resistance, substantially as set forth.

9. As an improvement in the art of transmitting electrical energy, the method herein described, which consists in varying the conductivity of a secondary circuit at the receiving-station by motion produced by currents generated by electromagnetic waves, substantially as set forth.

10. As an improvement in the art of transmitting electrical energy, the method herein described, which consists in the generation of electromagnetic waves at one station, transforming the energy of the currents generated by such waves at the receiving-station into energy of motion, varying the currents in two or more local circuits by such energy of motion and transforming the energy of such currents into the energy of motion, substantially as set forth.

11. As an improvement in the art of transmitting electrical energy, the method hereby described, which consists in generating electromagnetic waves at one station, transforming the energy of currents generated by such waves into the energy of motion, varying the currents in two or more local or secondary circuits by such energy of motion, transforming the energy of the varied currents into the energy of motion and causing the energies of motion so produced to operate in the same direction, substantially as set forth.

706,786. APPARATUS FOR WIRELESS TELEGRAPHY. REGINALD A. FESSENDEN, Allegheny, Pa. Original application filed Dec. 15, 1900, Serial No. 740,698. Divided and this application filed May 17, 1900. Renewed Nov. 20, 1901. Serial No. 84,097. (No model.)

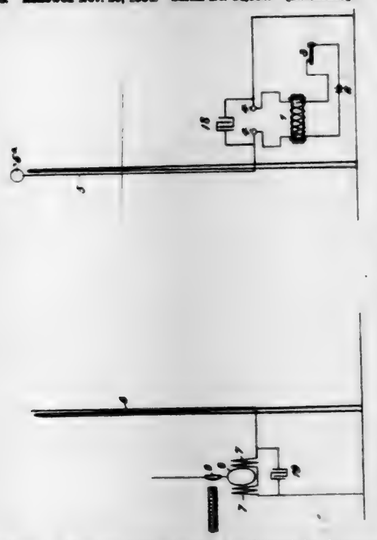

Claim.—1. In a plant for the transmission of signals by electromagnetic waves, the combination of means located at the sending-station for the generation of electromagnetic waves, a receiving-conductor at the other station, means for directly transmitting the energy of the currents produced in the receiving-conductor by the electromagnetic waves into energy of motion and means for observing or recording such motion, substantially as set forth.

2. In a plant for the transmission of signals by electromagnetic waves, the combination of means located at the sending-station for the generation of electromagnetic waves, a receiving-conductor at the other station, a field coil or coils adapted to be energized by the currents produced in the receiving-conductor and a ring forming a closed circuit movably supported with its plane normally at an angle less than a right angle to the field, the ring having relatively low resistance and high self-induction so that a current induced therein will impart a twisting movement to the ring and means for recording or observing the movements of the ring, substantially as set forth.

3. As a means for transforming the energy of electromagnetic waves into the energy of motion, the combination of a receiving-conductor in which currents may be produced by electromagnetic waves, a field coil or coils adapted to be energized by the current produced in the receiving-conductor, a condenser connected in shunt with said field, and a ring forming a closed circuit movably supported in such relation to the field that a current will be induced therein, substantially as set forth.

4. In a plant for the electrical transmission of signals without the use of wires, the combination of means for the generation of electromagnetic waves, said means including a capacity of relatively large radiating-surface, and means for directly translating the energy of the currents produced in a receiving-conductor by electromagnetic waves into the energy of motion, substantially as set forth.

5. As a means for transforming the energy of electromagnetic waves into the energy of motion, the combination of a receiving-conductor in which currents may be produced by electromagnetic waves, a field formed by a single turn of wire adapted to be energized by the currents produced in the receiving-conductor, and a ring forming a closed circuit movably supported in operative relation to the coil, the ring having relatively low resistance and high self-induction, substantially as set forth.

6. In a system of transmission of energy by means of electromagnetic waves, a receiving system including in combination a receiving-conductor and a wave-responsive device, the portion of the receiving system containing said wave-responsive device constituting a closed circuit tuned to the frequency of the transmitter, substantially as set forth.

7. In a system of transmission of energy by electromagnetic waves, a receiving system including in combination a receiving-conductor, a wave-responsive device, which is also an inductance and a condenser in shunt thereto, said inductance and capacity being adjusted to make the portion of the receiving system in which they are placed resonant to the frequency of the transmitter, substantially as set forth.

8. In a system of transmission of energy by electromagnetic waves, a receiving system including in combination a receiving-conductor and a wave-responsive device, the portion of the system containing said wave-responsive device having two conducting-paths in shunt relation, one having inductance and the other having capacity, said inductance and capacity being adjusted to each other and to the frequency of the transmitter to cause one hundred and eighty degrees difference in phase of the currents in the two conducting-paths, substantially as set forth.

9. In a receiving system for transmission of energy by electromagnetic waves, a closed circuit tuned to the frequency of the transmitted impulses and a current-operated wave-responsive device, substantially as set forth.

10. In a system of transmission of energy by electromagnetic waves, a transmitter system including a tuned circuit, said system being adjusted to radiate trains of electromagnetic waves in which a single frequency is predominant, in combination with a receiver system including a closed circuit tuned to said predominant frequency, substantially as set forth.

11. In a system of transmission of energy by electromagnetic waves, a transmitter system including a closed tuned circuit, said system being adapted to radiate trains of electromagnetic waves in which a single frequency is predominant, and a receiver system including a closed circuit tuned to said predominant frequency, substantially as set forth.

12. In a system of transmission of energy by electromagnetic waves, the combination of a generator, a grounded sending-conductor, a receiving-conductor, means for translating the energy of currents produced at the receiving-station by electromagnetic waves radiated from the sending-conductor into the energy of motion and means for observing or recording such motion, substantially as set forth.

13. In a system of transmission of signals by electromagnetic waves, the combination of means for generating and radiating electromagnetic waves at the sending-station, a receiving-circuit at the receiving-station tuned to the sending-circuit, and a low-resistance means for producing signals by currents produced by electromagnetic waves radiated from the sending-conductor, substantially as set forth.

14. In a system of transmission of signals by electromagnetic waves, the combination of means for generating and radiating electromagnetic waves at a sending-station, a receiving-circuit at the receiving-station tuned to the sending-circuit, and a current-actuated wave-responsive device included in said receiving-circuit, substantially as set forth.

15. In a receiver system for signaling by electromagnetic waves, a low-resistance receiving mechanism in series with a transformer, the primary of the transformer being in the circuit of the receiving-conductor, substantially as set forth.

16. A system of signaling by electromagnetic waves, having in combination a receiving-conductor and a differentially-wound indicating mechanism controlled by currents produced in the receiving-conductor by electromagnetic waves, substantially as set forth.

17. A system of signaling by electromagnetic waves, having in combination a receiving-conductor and a differentially-wound indicating mechanism dependent for its operation on currents produced by electromagnetic waves, substantially as set forth.

18. A system for signaling by electromagnetic waves, having in combination therewith a differentially-wound mechanism dependent for its operation on currents produced by electromagnetic waves, substantially as set forth.

19. In a system of signaling by electromagnetic waves the combination of a receiving-conductor, a secondary circuit and a current-actuated wave-responsive device controlling the secondary circuit, substantially as set forth.

20. In a system of signaling by electromagnetic waves the combination of a receiving-conductor, a secondary circuit and a self-restoring current-actuated wave-responsive device controlling the secondary circuit, substantially as set forth.

21. A system for signaling by electromagnetic waves having in combination therewith a current-actuated wave-responsive operative device in a closed circuit, tuned to the frequency of the electromagnetic waves to which it is desired to respond, substantially as set forth.

22. In a plant for the transmission of electrical energy without the use of wires, the combination of means located at the sending-station for the generation of electromagnetic waves, a receiving-conductor at the other station, and means having a low resistance for directly translating the energy of the currents produced in the receiving-conductor by the electromagnetic waves into the energy of motion, substantially as set forth.

23. In a plant for the transmission of electrical energy without the use of wires, the combination of means located at the sending-station for the generation of electromagnetic waves, and a low-resistance receiving mechanism at the other station operative by the currents generated by the electromagnetic waves, substantially as set forth.

24. In a plant for the transmission of electrical energy without the use of wires, the combination of means located at the sending-station for the generation of electromagnetic waves, including a grounded sending-conductor, a receiving-conductor and a low-resistance receiving mechanism in circuit with the receiving-conductor, substantially as set forth.

25. In a plant for the transmission of electrical energy without the use of wires, the combination at the receiving-station of two local or secondary circuits, a receiving mechanism having a movable member, a wave-operated means adapted to increase the resistance in one local circuit and to decrease the resistance in the other local circuit, the currents thus modified tending to produce motion of the movable member in the same direction, substantially as set forth.

26. In a system of signaling by electromagnetic waves, the combination at the sending-station of a generator, a sending-conductor, a spark-gap, and a condenser connected across the spark-gap so that the condenser and its connecting-wires form a local and parallel circuit in resonance to the sending-conductor, substantially as set forth.

27. In a system of signaling by electromagnetic waves, the combination at the sending-station of a generator, a grounded conductor, a spark-gap, and a condenser connected across the spark-gap so that the condenser and its connecting-wires form a local and parallel circuit in resonance to the sending-conductor.

28. In a receiving system for transmission of energy by electromagnetic waves, a closed circuit of low resistance tuned to the frequency of the transmitted impulses and a current-actuated wave-responsive device, substantially as set forth.

29. In a system of signaling by electromagnetic waves, the combination at the receiving-station of a closed tuned circuit and a current-operated wave-responsive device adapted to give indications proportioned to the total activity of the receiving-circuit, substantially as set forth.

30. In a system of wireless transmission of energy by electromotive waves, an apparatus for utilizing the energy of said waves, said apparatus including in combination a conductor constructed and arranged to cause the energy of each wave to develop electric-current flow, means for rendering said current-flow persistent and for coördinating the currents developed by successive waves to cause them to act cumulatively upon each other to produce an increased or reinforced resultant current-flow, and means operated by said resultant current-flow to produce a sensible effect or indication, substantially as set forth.

31. A system of signaling by electromotive waves, having at the receiving-station a current-operated constantly-receptive wave-responsive device.

32. A system of signaling by electromotive waves, having at the receiving-station a current-operated, self-restoring, constantly-receptive wave-responsive device.

33. A system of signaling by electromotive waves, having at the receiving-station a current-operated, constantly-receptive, wave-responsive device, in combination with a closed tuned circuit.

34. A system of signaling by electromotive waves, having in combination a current-operated, constantly-receptive wave-responsive device at the receiving-station and a source of persistent radiation at the sending-station.

35. A system of signaling by electromotive waves, having in combination a closed tuned circuit, a current-operated, constantly-receptive, wave-responsive device at the receiving-station and a source of persistent radiation at the sending-station.

706,787. WIRELESS TELEGRAPHY. REGINALD A. FESSENDEN, Allegheny, Pa. Filed May 30, 1901. Serial No. 62,201. (No model.)

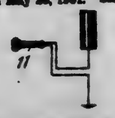

Claim.—1. A sending-conductor for electromagnetic waves, having a large capacity distributed with substantial uniformity over its radiating portion, substantially as set forth.

2. A sending-conductor for electromagnetic waves, having its capacity so adjusted that the waves radiated therefrom have a low frequency, substantially as set forth.

3. A sending-conductor for electromagnetic waves, having its capacity and inductance so adjusted that the waves radiated therefrom have a low frequency, substantially as set forth.

4. In a system for transmission of energy by electromagnetic waves, the combination of a source of alternating voltage and a conductor in series therewith forming a sending-conductor said sending-conductor being adapted to radiate electromagnetic waves and having its radiating portion of a length which is a large fraction of the quarter-wave length produced by the alternating source of the radiating portion in the medium surrounding the radiating portion, substantially as set forth.

5. In a system for transmission of energy by electromagnetic waves, the combination of a source of alternating voltage and a conductor in series therewith forming a sending-conductor said sending-conductor being adapted to radiate electromagnetic waves having its radiating portion of a length which is a large fraction of the length of the sending-conductor, substantially as set forth.

6. In a system for transmission of energy by electromagnetic waves, the combination of a source of alternating voltage generating groups of impulses of low frequency and a conductor in series therewith forming a sending-conductor said sending-conductor being adapted and proportioned to radiate electromagnetic waves, and being tuned to the source of alternating voltage, substantially as set forth.

7. In a system for the transmission of energy by electromagnetic waves, the combination of an alternating-current dynamo and a conductor in series therewith forming a sending-conductor said sending-conductor being tuned to the dynamo and adapted to radiate electromagnetic waves and tuned to the dynamo, substantially as set forth.

8. In a system for the transmission of energy by electromagnetic waves, the combination of a sending-conductor so proportioned as to radiate waves of low frequency and an alternating-current dynamo having its terminals connected respectively to the sending-conductor and to ground, the dynamo being so adjusted that its periodicity is the same or approximately the same as the natural period of the sending-conductor, substantially as set forth.

9. A sending-conductor for electromagnetic waves, formed by an alternating-current dynamo and a conductor in series therewith, one pole of the dynamo being grounded, the sending-conductor thus formed being so proportioned as to radiate waves of low frequency, substantially as set forth.

10. A sending-conductor for electromagnetic waves so proportioned as to radiate waves of low frequency in combination with a source of alternating voltage having its terminals connected respectively to the radiating portion of the sending-conductor and to ground, the voltage-generator being so adjusted that its periodicity is the same or approximately the same as the natural period of the system when so connected, substantially as set forth.

11. A sending-conductor for electromagnetic waves, formed by a source for continuously generating alternating voltage and a conductor in series therewith, one pole of the source of alternating voltage being grounded, the sending-conductor thus formed being so proportioned as to radiate waves of low frequency, substantially as set forth.

12. A system for signaling by electromagnetic waves having in combination a conductor adapted to radiate waves of low frequency, and a receiver dependent for its action upon a constant or independently-varying magnetic field and adapted to respond to currents produced by said waves, substantially as set forth.

13. A sending-conductor for electromagnetic waves of a length much less than a quarter of the length of an ether-wave, having a frequency equal to the natural period of said sending-conductor, and having a radiating portion which is a large fraction of its total length.

14. A sending-conductor for electromagnetic waves having a natural period of vibration much lower than the period of an ether-wave four times its length, whereby its radiating portion may be a relatively large fraction of the total length of said sending-conductor.

15. A sending-conductor for electromagnetic waves tuned to a desired low frequency by large capacity and small inductance.

16. A sending-conductor for electromagnetic waves having small inductance and tuned to a desired low frequency by a suitably-proportioned large capacity.

17. A sending-conductor for electromagnetic waves having low resistance, small self-induction and great capacity, substantially as and for the purpose set forth.

18. A sending-conductor for electromagnetic waves having low resistance, small self-induction and great capacity so correlated as to support persistent oscillation of a frequency much less than that of an ether-wave of a length four times that of said sending-conductor.

19. A system for transmission of energy by electromagnetic waves in combination with a radiating-conductor and a source of alternating electrical energy or potential, said radiating-conductor and source being coördinated and relatively adjusted to radiate a substantially continuous stream of electromagnetic waves.

20. A system of transmission of energy by electromagnetic waves including in combination a radiating-conductor and a source of alternating electrical energy or potential, said radiating-conductor and source being coördinated and relatively adjusted to generate and radiate a substantially continuous stream of electromagnetic waves.

21. A system for transmission of energy by electromagnetic waves, including in combination a radiating-conductor and a source of alternating electrical energy or potential, said radiating-conductor and source being coördinated and relatively adjusted to radiate a substantially continuous stream of electromagnetic waves of substantially uniform strength.

706,788. WIRELESS TELEGRAPHY. REGINALD A. FESSENDEN, Allegheny, Pa. Filed May 30, 1901. Serial No. 62,202. (No model.)

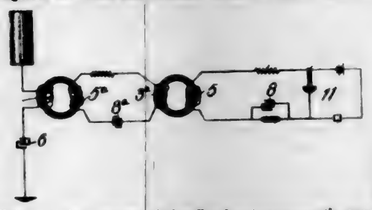

Claim.—1. In a system of signaling by electromagnetic waves, a receiving-conductor having a transforming device in series in the circuit, in combination with a circuit including a translating device and having a local source of voltage and controlled by the transforming device and a source of voltage so arranged that its voltage will oppose the voltage from the local source operating the translating device, substantially as set forth.

2. In a system of signaling by electromagnetic waves, a receiving-conductor having a transforming device in series in the circuit, in combination with a circuit including a translating device and having a local source of voltage and controlled by the transforming device and an electrolytic cell so arranged that its voltage will oppose the voltage from the local source operating the translating device, substantially as set forth.

3. In a system of signaling by electromagnetic waves, a sending-conductor adapted to maintain and to radiate persistent oscillations, in combination with a receiving-conductor and one or more secondary circuits controlled by the receiving-conductor, a wave-responsive device included in a secondary circuit of the series, the several circuits being each tuned to correspond to the period of the sending-conductor, substantially as set forth.

4. In a system of signaling by electromagnetic waves, a sending-conductor adapted to radiate electromagnetic waves having its electrical constants so proportioned that only a relatively small fraction of the energy of the charged conductor is radiated during a single oscillation, in combination with a prime conductor including the receiving-conductor, one or more secondary circuits controlled by the prime conductor and a wave-responsive device included in the last circuit of the series, the several circuits being each tuned to correspond to the period of the sending-conductor, substantially as set forth.

5. In a system of signaling by electromagnetic waves, a sending-conductor adapted to maintain and to radiate persistent oscillations, in combination with a receiving-conductor and one or more secondary circuits controlled by the receiving-conductor, the ratio of inductance to capacity being larger in a secondary circuit than in the sending-conductor, a wave-responsive device included in a secondary circuit of a series, the several circuits being each tuned to correspond to the period of the sending-conductor, substantially as set forth.

6. In a system of signaling by electromagnetic waves, a sending-conductor adapted to maintain and to radiate persistent oscillations in combination with receiving-conductor and one or more secondary circuits controlled by the receiving-conductor, the inductance of the secondary circuit being greater than that of the primary circuit, a wave-responsive device included in the secondary circuit of the series, the several circuits being each tuned to correspond to the period of the sending-conductor, substantially as set forth.

706,789. CONDUCTOR FOR WIRELESS TELEGRAPHY. REGINALD A. FESSENDEN, Allegheny, Pa. Filed May 30, 1901. Serial No. 62,203. (No model.)

Claim.—1. A conductor for radiating electromagnetic waves, in combination with a medium having an electrical constant on which the wave length depends of a value greater than that of air arranged in suitable relation to the conductor.

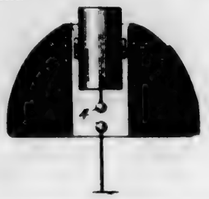

2. A conductor for radiating electromagnetic waves having in combination therewith, a medium having an electrical constant on which the wave length depends of a value greater than that of air, arranged around the conductor, substantially as set forth.

3. A conductor for radiating electromagnetic waves in combination with a medium consisting of lamina of insulated magnetic material arranged in suitable operative relation to the conductor, substantially as set forth.

4. A conductor for radiating electromagnetic waves in combination with a medium consisting of lamina or wire of magnetic material and a material of higher specific inductive capacity than that of air, filling the spaces between the lamina of conducting material, substantially as set forth.

5. A conductor for radiating electromagnetic waves in combination with a medium having an electrical constant on which the wave length depends of a value greater than that of air and means for causing an incremental effectiveness in a given direction, substantially as set forth.

6. A conductor for radiating electromagnetic waves in combination with a medium having an electrical constant on which the wave length depends of a value greater than that of air and a reflector whereby the waves generated by the conductor may be concentrated and projected in a given direction, substantially as set forth.

7. A conductor for radiating electromagnetic waves in combination with means whereby a different periodicity is imparted to the wave generated from different portions of the conductor, and a medium having an electrical constant on which the wave length depends of a value greater than that of air arranged in suitable relation to the conductor, substantially as set forth.

8. A conductor for radiating electromagnetic waves in combination with a piece of conducting material arranged on the conductor, and a medium having an electrical constant on which the wave length depends of a value greater than that of air arranged in suitable relation to the conductor, substantially as set forth.

9. A conductor for wireless telegraphy in combination with a movable piece of conducting material arranged on the conductor, substantially as set forth.

10. A conductor for radiating electromagnetic waves, surrounded by a medium in which the wave length of electromagnetic radiation is less than the wave length of the same radiation in air, substantially as set forth.

11. A conductor for radiating electromagnetic waves, in combination with a movable piece of conducting material so arranged and proportioned that the system will simultaneously radiate waves of different periodicities of approximately the same energy, substantially as set forth.

12. A conductor for radiating electromagnetic waves, having a substantially uniform capacity over a large portion of its length and a piece of conducting material connected to such portion, whereby waves of different periodicities but of approximately the same energy may be radiated, substantially as set forth.

13. The combination of a vertically-arranged conductor for wireless telegraphy and a medium substantially as described arranged in operative relation to the conductor, substantially as set forth.

14. The combination of a conductor for radiating electromagnetic waves connected to ground and a medium having an electrical constant on which the wave length depends of a value greater than that of air arranged in operative relation to the conductor, substantially as set forth.

15. A grounded conductor for radiating electromagnetic waves in combination with a medium having an electrical constant on which the wave length depends, of a value greater than that of air, arranged in suitable relation to the conductor.

16. A grounded conductor for wireless telegraphy, having in combination therewith a medium having an electrical constant on which the wave length depends, of a value greater than that of air, arranged around the conductor, substantially as set forth.

17. A grounded conductor for wireless telegraphy, having in combination therewith a medium consisting of lamina of insulated magnetic

material arranged in suitable operative relation to the conductor, substantially as set forth.

18. A grounded conductor for wireless telegraphy, in combination with means whereby a different periodicity is imparted to the waves generated from different portions of the conductor, and a medium having electrical constant on which the wave length depends, of a value greater than that of air, arranged in suitable relation to the conductor, substantially as set forth.

19. A grounded conductor for wireless telegraphy, in combination with a movable piece of conducting material arranged on the conductor, substantially as set forth.

20. A combination of a vertically-arranged grounded conductor for radiating electromagnetic waves, and a medium substantially as described arranged in operative relation to the conductor, substantially as set forth.

706,740. WIRELESS SIGNALING. REGINALD A. FESSENDEN, Manteo, N. C. Filed Sept. 23, 1901. Serial No. 76,536. (No model.)

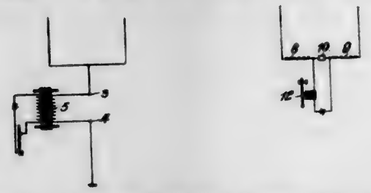

Claim.—1. In a system of signaling by electromagnetic waves, the combination of a source of waves of different periodicities and two or more receivers responsive respectively to the differing waves or impulses and a wave-responsive device operative when the waves or impulses attain a certain predetermined phase relation, substantially as set forth.

2. In a system of signaling by electromagnetic waves, the combination of two or more sources producing waves of different periodicities, two or more receiving-conductors responsive respectively to the differing waves or impulses and a wave-responsive device operative when the waves of impulses attain a certain predetermined difference in phase, substantially as set forth.

3. In a system of signaling by electromagnetic waves, the combination of two or more sources producing waves or impulses of different periodicities and two or more receiving-conductors responsive respectively to the differing waves or impulses and a wave-responsive device operative by such waves or impulses when they attain a certain predetermined difference in phase, substantially as set forth.

4. In a system of signaling by electromagnetic waves, the combination of a generator, two or more sending-conductors adapted to produce waves or impulses differing in periodicity, two or more receiving-conductors tuned to the sending-conductors, and wave-responsive device operative by the oscillations in the receiving-conductors when the oscillations attain a certain predetermined difference in phase, substantially as set forth.

5. In a system of signaling by electromagnetic waves, the combination of two or more sources of persistent waves or impulses of different periodicities, two or more receiving-conductors responsive respectively to waves or impulses produced by the generators, and a wave-responsive device operative by the oscillations in the receivers only when said oscillations attain a predetermined difference in phase, substantially as set forth.

6. In a system of signaling by electromagnetic waves, the combination of means at the sending-station for generating two or more sets of waves of different periodicities and a wave-responsive device at the receiving-station operative by the conjoint action of such sets of waves, substantially as set forth.

7. In a system of signaling by electromagnetic waves, the combination of a source of waves of different periodicities, two or more receiving-circuits responsive respectively to the different waves or impulses, and a current-operated, wave-responsive device operative when the waves or impulses attain a certain predetermined phase relation, substantially as described.

8. In a system of signaling by electromagnetic waves, the combination of two or more sources producing waves of different periodicities, two or more receiving-conductors responsive respectively to the different waves or impulses, and a current-operated, wave-responsive device operative when the waves or impulses attain a certain predetermined difference in phase, substantially as set forth.

9. In a system of signaling by electromagnetic waves, the combination of means at the sending-station for generating two or more sets of waves of different periodicities, and a current-operated, wave-responsive device at the receiving-station operative by the conjoint action of such sets of waves, substantially as set forth.

706,741. APPARATUS FOR WIRELESS TELEGRAPHY. REGINALD A. FESSENDEN, Manteo, N. C. Filed Nov. 5, 1901. Serial No. 81,215. (No model.)

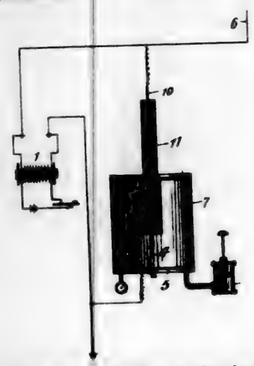

Claim.—1. An apparatus for the generation of radiation, having in combination sparking terminals directly connected respectively to the radiating portion of the sending-conductor and to ground, and the gap or space between the terminals being occupied by an insulating medium under pressure greater than atmospheric pressure, substantially as set forth.

2. An apparatus for the generation of radiation, having in combination sparking terminals directly connected respectively to the radiating portion of the sending-conductor and to ground, and the gap or space between the terminals being occupied by a gaseous insulating material under pressure greater than atmospheric pressure, substantially as set forth.

3. An apparatus for the generation of radiation, having in combination sparking terminals, one of said terminals having a large superficial area relative to the other and the gap or space between the terminals being occupied by an insulating medium under pressure greater than atmospheric pressure, substantially as set forth.

4. An apparatus for the generation of radiation, having in combination sparking terminals, the space between the terminals being occupied by an insulating medium under pressure, the gap between said terminals forming, when the spark passes, practically all the resistance between the radiating portion of the sending-conductor and the ground, substantially as set forth.

5. An apparatus for the generation of radiation, having in combination a conductor for radiating electromagnetic waves, and sparking terminals, all gaps between sparking terminals being occupied by insulating material under pressure greater than atmospheric pressure, substantially as set forth.

6. An apparatus for the generation of radiation, having in combination sparking terminals, one of said terminals having a large superficial area relative to the other, the surface of the larger terminal being arranged at or approximately at right angles to a line passing through points on said terminals most closely adjacent to each other, and the gap or space between the terminals being occupied by an insulating medium under pressure greater than atmospheric pressure, substantially as set forth.

7. In an apparatus for the generation of radiation, the combination of a chamber having at least one of its walls formed of conducting material, and connected to ground and a rod projecting into the chamber but not in electric connection with the metallic wall, the conducting-wall and rod being connected to the radiating portion of the sending-conductor, said chamber containing an insulating medium under pressure, substantially as set forth.

8. An apparatus for the generation of radiation having in combination sparking terminals directly connected to the circuit in which the oscillations occur, and the gap or space between the terminals being occupied by an insulating medium under pressure greater than atmospheric pressure, substantially as set forth.

9. An apparatus for the generation of radiation having in combination a conductor for radiating electromagnetic waves and sparking terminals, all gaps between sparking terminals being occupied by insulating material under pressure greater than sixty (60) pounds above atmospheric pressure, substantially as set forth.

10. An apparatus for the generation of radiation having in combination a conductor for radiating electromagnetic waves and sparking terminals, all gaps between sparking terminals being occupied by insulating material under pressure greater than eighty (80) pounds above atmospheric pressure, substantially as set forth.

11. An apparatus for the generation of radiation having in combination a conductor for radiating electromagnetic waves and sparking terminals, all gaps between sparking terminals being occupied by insulating material under pressure above a certain critical high pressure.

706,742. WIRELESS SIGNALING. REGINALD A. FESSENDEN, Manteo, N. C. Filed June 6, 1902. Serial No. 110,469. (No model.)

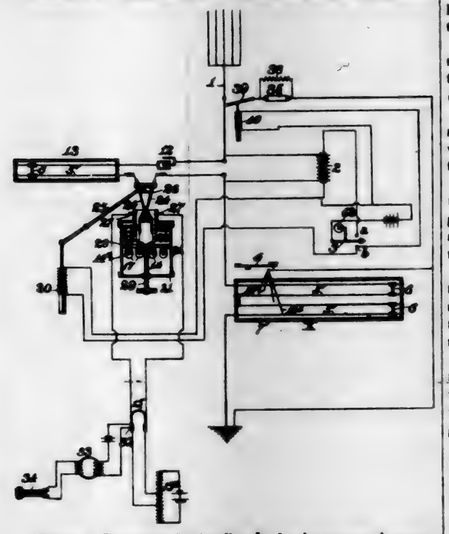

Claim.—1. In a system for signaling, &c., by electromagnetic waves, the combination of a conductor adapted to radiate and receive electromagnetic waves, mechanism for causing the radiation of electromagnetic waves from said conductor, means for modifying one or more of the characteristics of said waves, a receiving mechanism controlled by currents produced in said conductor by electromagnetic waves, and means for bringing said conductor into operative relation with either the generating or the receiving mechanism, substantially as set forth.

2. In a system for signaling, &c., by electromagnetic waves, the combination of a conductor adapted to radiate and receive electromagnetic waves, mechanism for causing the radiation of electromagnetic waves from said conductor, a receiving mechanism controlled by currents produced in said conductor by electromagnetic waves, and means for bringing said conductor into operative relation with either the generating or the receiving mechanism, substantially as set forth.

3. In a system for signaling, &c., by electromagnetic waves, the combination of a conductor adapted to radiate and receive electromagnetic waves, mechanism for causing the radiation of electromagnetic waves from said conductor, a receiving mechanism controlled by currents produced in said conductor by electromagnetic waves, and electrically-operated means for bringing said conductor into operative relation with either the generating or the receiving mechanism, substantially as set forth.

4. In a system for signaling, &c., by electromagnetic waves, the combination of a conductor adapted to radiate and receive electromagnetic waves, mechanism for causing the radiation of electromagnetic waves from said conductor, means for modifying step by step one or more of the characteristics of said waves, a receiving mechanism controlled by currents produced in said conductor by electromagnetic waves, and means for bringing said conductor into operative relation with either the generating or the receiving mechanism, substantially as set forth.

5. In a system for signaling, &c., by electromagnetic waves, the combination of a conductor adapted to radiate electromagnetic waves, means for causing the radiation of electromagnetic waves from said conductor and means for modifying one or more of the characteristics of said waves, substantially as set forth.

6. In a system for signaling, &c., by electromagnetic waves, the combination of a conductor adapted to radiate electromagnetic waves, means for causing the radiation of electromagnetic waves from said conductor and means for modifying step by step one or more of the characteristics of said waves, substantially as set forth.

7. In a system of signaling by electromagnetic waves, a tuning device having one or more conductors arranged for tuning and constructed so as to have small inductance as compared with that of a coil containing an equal length of the conductor for the purpose of preventing the inductance from prolonging the oscillations of the sending-circuit and hence cutting down the radiation per oscillation, substantially as set forth.

8. In a system of signaling by electromagnetic waves, a tuning device having one or more conductors arranged for tuning and so adjusted as to have the same ratio of inductance to capacity per unit of length that the radiating conductor has, as distinguished from tuning devices having conductors so formed as to have maximum inductance, substantially as set forth.

9. In a system of signaling by electromagnetic waves, the combination of a conductor and a spark-gap with means for changing the function of the conductor, *i. e.*, from sending to receiving without bridging or disconnecting the spark-gap, substantially as set forth.

10. In a system of signaling by electromagnetic waves, the combination of a radiating conductor, a spark-gap, a capacity and a source of voltage with a high resistance, whereby an intermittent discharge across the spark-gap may be produced, substantially as set forth.

11. In a system of signaling by electromagnetic waves, the combination of a radiating conductor, a spark-gap, one terminal of the spark-gap being connected to ground, a capacity and a source of voltage with a high resistance, whereby an intermittent discharge across the spark-gap may be produced, substantially as set forth.

12. In a system of signaling by electromagnetic waves, the combination of a radiating conductor and a spark-gap, one terminal of the spark-gap being connected to ground, with means for changing the function of the conductor, *i. e.*, from sending to receiving without bridging the spark-gap, substantially as set forth.

13. In a system of signaling by electromagnetic waves, the combination of a radiating conductor, a spark-gap, a capacity and a source of voltage with a high resistance, and means for varying said resistance, whereby any desired number of discharges per second across the spark-gap may be produced, substantially as set forth.

14. In a system of signaling by electromagnetic waves, the combination of a wave-responsive device, an indicating mechanism and means for operating the indicating mechanism when the wave-responsive device becomes inoperative while in operative connection, substantially as set forth.

15. In a system of signaling by electromagnetic waves, the combination of a receiver, an indicating mechanism, and means for operating the indicating mechanism when the receiver is ruptured, substantially as set forth.

16. In a system of signaling by electromagnetic waves, the combination of a receiving-circuit, a series of receivers, and means shifting any desired one of said receivers into and out of operative relation to the receiving-conductor, substantially as set forth.

17. A system for signaling by electromagnetic waves, the combination of a receiver, rods movable into and out of contact with the terminals of the receiver, contacts adapted to be brought into contact by the rods when shifted out of contact with the receiver-terminals, substantially as set forth.

18. A system for signaling by electromagnetic waves, in combination therewith, a tuning device consisting of one or more connected pairs of conductors and one or more contact-pieces connecting the legs of each pair movable along the same, substantially as set forth.

19. A system of signaling by electromagnetic waves, having in combination one or more connected pairs of connected conductors in series in the sending-circuit and contact-fingers adapted to bear against the conductors in succession, thereby cutting different portions of the sending-conductor, substantially as set forth.

20. A system of signaling by electromagnetic waves, having in combination a sending-conductor and a key provided with fingers arranged to be brought into contact with the sending-conductor at different points, substantially as set forth.

21. A system of signaling by electromagnetic waves, having in combination a sending-conductor and a key provided with fingers adapted to be brought into contact in succession with the sending-conductor at different points, substantially as set forth.

22. A system of signaling by electromagnetic waves, having in combination therewith mechanism for the production of the proper signal of a station at that station, as means for indicating the busy or free state of that station, substantially as set forth.

23. A system of signaling by electromagnetic waves, having in combination therewith automatic mechanism for the production of the proper signal of a station at that station, as means for indicating the busy or free state of that station, substantially as set forth.

24. A system of signaling by electromagnetic waves, having in combination a sending-conductor and a normally closed shunt, said parts being so arranged that the sending-conductor will have the natural period proper to that station, substantially as set forth.

25. A system of signaling by electromagnetic waves, having in combination a sending-conductor, a sending-key forming part of a shunt for

said conductor and provided with a finger normally in contact with the conductor so that said conductor will normally have the natural period proper to that station, substantially as set forth.

26. A system of signaling by electromagnetic waves having in combination therewith means for indicating to a third station during sending or receiving that such sending or receiving station is busy, substantially as set forth.

27. In a system of signaling by electromagnetic waves, the combination of radiating-conductor and a gap, one terminal of the gap being connected to ground, with means for changing the function of the conductor, i. e., from sending to receiving, without bridging the gap, substantially as set forth.

28. In a system of signaling by electromagnetic waves, a sending-conductor, a receiving-conductor, a transformer connected in operative relation to the receiving-conductor, in combination with a current-actuated wave-responsive device (in the secondary circuit of the transformer,) the secondary circuit, receiving-conductor and sending-conductor all being tuned to the same periodicity.

29. A system for signaling by electromagnetic waves having in combination therewith an aerial conductor, a tuning device for said system including a pair of conductors constructed and arranged to inductance and capacity in substantially the same ratio as the aerial conductor, and means for varying the operative length of the pair of conductors, substantially as set forth.

706,743. WIRELESS SIGNALING. REGINALD A. FESSENDEN, Manteo, N. C. Filed June 25, 1902. Serial No. 113,244. (No model.)

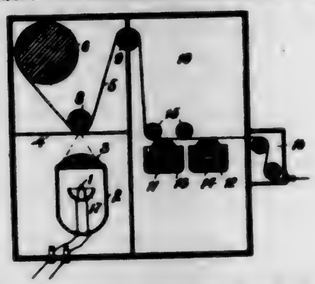

Claim.—1. As an improvement in the art of signaling by electromagnetic waves, the method herein described, which consists in producing interpretable characters or symbols on a strip or film by chemical action produced by currents generated by electromagnetic waves, substantially as set forth.

2. As an improvement in the art of signaling by electromagnetic waves, the method herein described, which consists in affecting a sensitive strip or film by currents generated by electromagnetic waves, substantially as set forth.

3. As an improvement in the art of signaling by electromagnetic waves, the method herein described, which consists in producing interpretable characters or symbols on a strip or film by chemical action induced by electric currents generated by electromagnetic waves, substantially as set forth.

706,744. CURRENT-ACTUATED WAVE-RESPONSIVE DEVICE. REGINALD A. FESSENDEN, Manteo, N. C. Original application filed June 6, 1902, Serial No. 110,669. Divided and this application filed July 1, 1902. Serial No. 113,968. (No model.)

Claim.—1. A receiver for currents produced by electromagnetic waves consisting of a conductor having small heat capacity, substantially as set forth.

2. A receiver for currents produced by electromagnetic waves consisting of a conductor having small radiating-surface, substantially as set forth.

3. A receiver for currents produced by electromagnetic waves consisting of a conductor having low resistance and small heat capacity, substantially as set forth.

4. A receiver for currents produced by electromagnetic waves consisting of a conductor having a curved portion of small heat capacity, substantially as set forth.

5. A receiver for currents produced by electromagnetic waves consisting of a conductor constructed to lose its heat more rapidly by conduction than by radiation, substantially as set forth.

6. A receiver for currents produced by electromagnetic waves consisting of a conductor rapidly responsive as regards temperature to variations in electrocurrents, substantially as set forth.

7. A receiver for currents produced by electromagnetic waves consisting of a conductor formed of two or more materials and having small heat capacity, substantially as set forth.

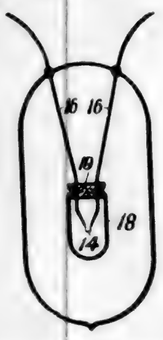

8. A receiver for currents produced by electromagnetic waves, consisting of a short conductor having small heat capacity, substantially as set forth.

9. A receiver for currents produced by electromagnetic waves, consisting of a composite conductor, substantially as set forth.

10. A current-actuated wave-responsive device formed by a conducting filament, substantially as set forth.

11. A current-actuated wave-responsive device formed by a metallic filament, substantially as set forth.

12. A current-actuated wave-responsive device formed by a platinum filament, substantially as set forth.

13. A current-actuated wave-responsive device formed of conducting material and coated with another conducting material, substantially as set forth.

14. A current-actuated wave-responsive device formed of a conducting filament having relatively large ends or terminals of high heat conductivity, substantially as set forth.

15. A current-actuated wave-responsive device formed by a platinum filament having a silver coating, substantially as set forth.

16. A current-actuated wave-responsive device consisting of a conductor having a small heat capacity arranged in a vacuum, substantially as set forth.

706,745. SIGNALING BY ELECTROMAGNETIC WAVES. REGINALD A. FESSENDEN, Manteo, N. C. Filed July 1, 1902. Serial No. 113,969. (No model.)

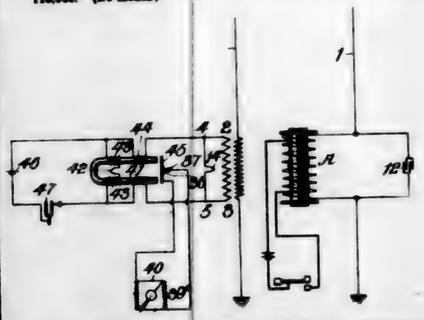

Claim.—1. In a system of signaling by electromagnetic waves, the combination at the receiving-station of a current-operated wave-responsive device and a closed circuit, said closed circuit having a ratio of inductance to capacity larger than the ratio of inductance to capacity in the receiving-conductor, substantially as set forth.

2. In a system of signaling by electromagnetic waves, the combination at the receiving-station of a current-operated wave-responsive device, a closed circuit, said closed circuit having a ratio of inductance to capacity larger than the ratio of inductance to capacity in the receiving-conductor, and a source of persistent radiation at the sending-station, substantially as set forth.

3. In a system of signaling by electromagnetic waves, the combination of a current-operated wave-responsive device in series with a closed

circuit, said closed circuit having a ratio of inductance to capacity greater than the ratio of inductance to capacity of the receiving-conductor, substantially as set forth.

4. In a system of signaling by electromagnetic waves, the combination of a current-operated wave-responsive device in series with a closed circuit, said closed circuit having a ratio of inductance to capacity greater than the ratio of inductance to capacity of the receiving-conductor, and a source of persistent radiation at the sending-station, substantially as set forth.

5. In a system of signaling by electromagnetic waves, the combination of a current-operated wave-responsive device in series with a closed tuned circuit, said circuit having a ratio of inductance to capacity greater than the ratio of inductance to capacity of the receiving-conductor, and a source of persistent radiation at the sending-station, substantially as set forth.

6. In a system of signaling by electromagnetic waves, the combination at the receiving-station of a current-operated wave-responsive device and a closed tuned circuit, said closed tuned circuit having a ratio of inductance to capacity larger than the ratio of inductance to capacity in the receiving-conductor, substantially as set forth.

7. In a system of signaling by electromagnetic waves, the combination at the receiving-station of a current-operated wave-responsive device, a closed tuned circuit, said closed tuned circuit having a ratio of inductance to capacity larger than the ratio of inductance to capacity in the receiving-conductor, and a source of persistent radiation at the sending-station, substantially as set forth.

8. In a system of signaling by electromagnetic waves, the combination of a current-operated wave-responsive device in series with a closed tuned circuit, said closed circuit having a ratio of inductance to capacity greater than the ratio of inductance to capacity of the receiving-conductor, substantially as set forth.

9. In a system of signaling by electromagnetic waves, the combination at the receiving-station, of a current-operated wave-responsive device, and a closed secondary circuit, substantially as set forth.

10. In a system of signaling by electromagnetic waves, the combination of a current-operated wave-responsive device and a closed tuned secondary circuit, substantially as set forth.

11. In a system of signaling by electromagnetic waves, the combination at the receiving-station, of a current-operated wave-responsive device, a closed secondary circuit and a source of persistent radiation at the sending-station, substantially as set forth.

12. In a system of signaling by electromagnetic waves, the combination at the receiving-station, of a current-operated wave-responsive device, a closed tuned secondary circuit and a source of persistent radiation at the sending-station, substantially as set forth.

13. In a system of signaling by electromagnetic waves, the combination at the receiving-station, of a current-operated wave-responsive device and a step-down closed tuned secondary circuit, substantially as set forth.

14. In a system of signaling by electromagnetic waves, the combination at the receiving-station, of a closed tuned secondary circuit, a current-operated wave-responsive device in series with said circuit and a source of persistent radiation at the sending-station, substantially as set forth.

15. In a system of signaling by electromagnetic waves, the combination of a step-down closed tuned secondary circuit and a current-operated wave-responsive device in series with said circuit, substantially as set forth.

16. In a system of signaling by electromagnetic waves, a current-operated wave-responsive device, in combination with a microphonic circuit controlled thereby, and an indicating mechanism controlled by the microphonic circuit and adapted to be inoperative for steady or slowly-varying currents and responsive to rapid variations of currents, substantially as set forth.

17. In a system of signaling by electromagnetic waves, the combination of a receiving-circuit and a receiver having small heat capacity and adapted to be energized by currents produced by electromagnetic waves in the receiving-circuit, substantially as set forth.

18. In a system of signaling by electromagnetic waves, the combination of a receiver rapidly responsive as regards temperature to variations in currents produced by electromagnetic waves and an indicating mechanism controlled by changes in temperature due to variations in currents in said receiver, substantially as set forth.

19. In a system of signaling by electromagnetic waves, the combination of a receiving-conductor, a receiver rapidly responsive as regards temperature to variations in electric currents and adapted to be energized by currents produced by electromagnetic waves in the receiving-conductor, a circuit controlled by said receiver and an indicating mechanism controlled by said circuit, substantially as set forth.

20. In a system of signaling by electromagnetic waves, the combination of a grounded sending-conductor, a receiving-conductor, a receiver rapidly responsive as regards temperature to variations in electric currents and adapted to be energized by currents produced by electromagnetic waves in the receiving-conductor, a circuit controlled by said receiver and an indicating mechanism controlled by said circuit, substantially as set forth.

21. A system of signaling by electromagnetic waves, having in combination a receiver responsive as regards temperature to variations in currents produced by electromagnetic waves, and a differentially-wound indicating mechanism controlled by currents produced in the receiving-conductor by electromagnetic waves, substantially as set forth.

22. In a system of signaling by electromagnetic waves, the combination of a receiving-conductor, a receiver responsive as regards temperature to variations in currents produced in said conductor by electromagnetic waves, a circuit controlled by said receiver and a differentially-wound mechanism controlled by said circuit, substantially as set forth.

23. In a system for signaling, &c., by electromagnetic waves, the combination of a receiver responsive as regards temperature to variations in currents produced by electromagnetic waves and a differentially-wound indicating mechanism dependent for its operation on currents produced by electromagnetic waves in the receiving-conductor, substantially as set forth.

24. A system for signaling, &c., by electromagnetic waves, having in combination a receiver rapidly responsive as regards temperature to variations in currents produced by electromagnetic waves, and a differentially-wound mechanism controlled by said receiver, substantially as set forth.

25. In a system for wireless transmission of energy by electromagnetic waves, an apparatus for utilizing the energy of said waves, said apparatus including in combination a conductor adapted to receive the energy of said waves and to conserve the same in the form of electric-current flow, means for transforming said current energy into energy of a different order or class, said means being adapted to conserve and accumulate such transformed energy, and a sensitive receiver cumulatively responsive to said transformed energy, substantially as set forth.

26. In a system for wireless transmission of energy by electromagnetic waves, an apparatus for utilizing the energy of said waves, said apparatus including in combination a conductor adapted to receive the energy of said waves and to conserve the same in the form of electric-current flow, means for transforming said current energy into energy of heat, said means being adapted to conserve and accumulate such transformed energy, and a sensitive receiver cumulatively responsive to said transformed energy, substantially as set forth.

27. A system of signaling by electromagnetic waves, having in combination at the receiving-station a closed tuned secondary circuit and a constantly-receptive current-operated, wave-responsive device, substantially as set forth.

28. A system of signaling by electromagnetic waves, having in combination at the receiving-station a closed tuned secondary circuit and a constantly-receptive, self-restoring, current-operated, wave-responsive device, substantially as set forth.

29. A system of signaling by electromagnetic waves, having at the receiving-station a closed tuned secondary circuit and a constantly-receptive, current-operated, wave-responsive device, in combination with a source of persistent radiation at the sending-station, substantially as set forth.

30. A system of signaling by electromagnetic waves, having in combination at the receiving-station, a closed tuned secondary circuit and a constantly-receptive rapidly-responsive, wave-responsive device, and a source of persistent radiation at the sending-station, substantially as set forth.

706,746. SIGNALING BY ELECTROMAGNETIC WAVES. REGINALD A. FESSENDEN, Manteo, N. C. Filed July 1, 1902. Serial No. 113,970. (No model.)

Claim.—1. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves and an artificial ground connected to the lower end of the sending-conductor and to ground and extending outwardly from the sending-conductor, substantially as set forth.

2. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves and an artificial ground connected to the lower end of the sending-conductor and to ground and extending outwardly from the sending-conductor a distance equal to a quarter wave length in air of the electromagnetic-wave length used, substantially as set forth.

3. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves and an artificial ground consisting of a series of wires or strips connected to the lower end of the sending-conductor and to ground and radiating from the lower end of the conductor and connected at suitable intervals by transverse wires or strips, substantially as set forth.

4. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves and an artificial ground connected to the lower end of the sending-conductor and to ground and extending outwardly from the sending-conductor a distance equal to a quarter wave length in air of the electromagnetic-wave length used and in the direction in which it is desired to send the waves, substantially as set forth.

5. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves and an artificial ground connected to the lower end of the sending-conductor and connected at its outer end to ground, substantially as set forth.

6. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves supported by a metallic conductor of low resistance to currents of the frequencies used, substantially as set forth.

7. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves supported by a metallic conductor, a shield for said conductor having low resistance to currents of the frequencies used, substantially as set forth.

8. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves supported by a metallic conductor having a natural period of oscillation different from that of the frequencies of the electromagnetic waves used, substantially as set forth.

9. A conductor for radiating electromagnetic waves, consisting of a conductor immersed in a liquid medium having an electric constant on which the wave length depends of a value greater than that of air, substantially as set forth.

10. A conductor for radiating electromagnetic waves, consisting of a conductor immersed in water, substantially as set forth.

11. A conductor for radiating electromagnetic waves, consisting of a metal vessel containing a medium of the character described, a conductor immersed in said medium and a generator, substantially as set forth.

12. A conductor for radiating electromagnetic waves, consisting of a metal vessel containing a medium of the character described, a tubular conductor immersed in the medium, sparking terminals arranged in the chamber, substantially as set forth.

13. In a system for the transmission of energy by electromagnetic waves, a sending-conductor for radiating such waves, an artificial ground connected to the lower end of the sending-conductor and to ground and extending outwardly from the sending-conductor, and a second grounded conducting-strip leading around the station from that facing a source of electrical disturbances to the opposite side, substantially as set forth.

14. In a system for transmission of energy by electromagnetic waves, a support for a conductor encircled by one or more turns or coils of magnetic material, substantially as set forth.

15. In a system for transmission of energy by electromagnetic waves, a support for a conductor encircled by one or more turns or coils by iron wire, substantially as set forth.

16. In a system for transmission of energy by electromagnetic waves, a conductor in combination with a support therefor, said support having a coating of non-magnetic material, substantially as set forth.

17. In a system for transmission of energy by electromagnetic waves, a conductor in combination with a support therefor, said support having a coating of non-magnetic material and encircled by one or more turns of magnetic material, substantially as set forth.

706,747. APPARATUS FOR SIGNALING BY ELECTROMAGNETIC WAVES. REGINALD A. FESSENDEN, Manton, N. C. Original application filed Sept. 26, 1901, Serial No. 76,257. Divided and this application filed July 22, 1902. Serial No. 116,468. (No model.)

Claim.—1. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses, means for modifying or changing the character of such waves or impulses without interruption of their continuity, and an indicating means or mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

2. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses, means for continuously modifying or changing the character of such waves or impulses without interruption of their continuity, and an indicating mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

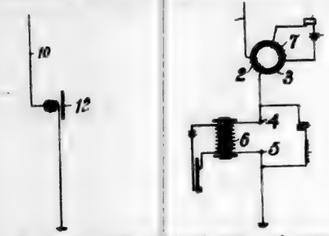

3. In a system of signaling by electromagnetic waves, the combination of means for generating the electromagnetic waves or impulses, means for modifying or varying the character of a portion of such waves or impulses without interruption of their continuity, and an indicating mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

4. In a system of signaling by electromagnetic waves, the combination of means for the generation of electromagnetic waves or impulses of uniform character, means for continuously modifying or varying the character of a portion of such waves or impulses without interruption of their continuity and an indicating mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

5. In a system for transmitting sounds by electromagnetic waves, the combination of means for the generation of electromagnetic waves or impulses, means operative by sound waves or impulses for modifying or varying the character of the electromagnetic waves or impulses without interruption of their continuity, and mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

6. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses normally of a predetermined character, means for changing the electrical constants of the sending-conductor so as to change the degree of resonance between the generator and the sending-conductor and thereby modify or change the character of such waves or impulses without interrupting their continuity, and mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

7. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses, means for modifying or changing the intensity of said waves or impulses without interrupting their continuity and a receiving-conductor tuned to correspond with the sending-conductor, whereby the receiving-conductor will be affected by the electromagnetic waves or impulses during only a portion of the time, substantially as set forth.

8. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses, and means for changing the resistance in the sending-conductor, thereby modifying or changing the intensity of the electromagnetic waves or impulses without interrupting their continuity substantially as set forth.

9. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses normally of a predetermined character, means for modifying or changing the character of such waves or impulses without interruption of their continuity, and mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

10. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses normally of a predetermined character, means for continuously modifying or changing the character of such waves or impulses without interruption of their continuity and indicating mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

11. In a system for the transmission of sounds by electromagnetic waves, the combination of means for the generation of electromagnetic waves or impulses normally of uniform character and means operative by sound waves or impulses for modifying or changing the character of the electromagnetic waves or impulses without interruption of their continuity, substantially as set forth.

12. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses of uniform character, means for modifying the character of said waves or impulses without interruption of their continuity and indicating mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

13. In a system of signaling by electromagnetic waves or impulses, the combination of means for the practically continuous generation of electromagnetic waves or impulses of constant periodicity, means for modifying or changing the intensity of such waves without interruption of their continuity and an indicating mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

14. In a system for transmission of speech by electromagnetic waves the combination at the sending-station of means for the practically continuous generation of electromagnetic waves a telephone-transmitter for modifying the character of the waves or impulses, and a telephone-receiver at the receiving-station responsive to currents generated by the electromagnetic waves, substantially as set forth.

15. In a system of signaling by electromagnetic waves, the combination of means for the practically continuous generation of electromagnetic waves or impulses of constant periodicity, means for changing the resistance of the sending-conductor, thereby modifying or changing the intensity of such waves or impulses without interruption of their continuity, and an indicating mechanism at the receiving-station operative by the electromagnetic waves or impulses, substantially as set forth.

706,748. BED-GUARD. JOHN C. FINK, Shelby, Ohio. Filed Oct. 23, 1900. Serial No. 34,072. (No model.)

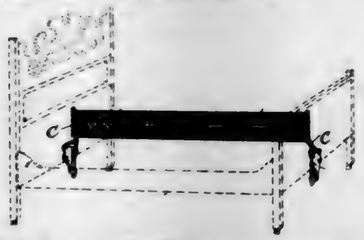

Claim.—1. In combination with a bedstead, brackets adapted to be secured thereto, said brackets each having a vertical opening through its lower end and a vertical recess thereabove aligning with said opening, said opening and recess forming a guide, uprights carried by said guides, means for adjusting the heights of said uprights, and a flexible partition stretched between said uprights, substantially as described.

2. The combination with a bedstead, of brackets, means for securing said brackets to the frame of said bedstead, a vertical guide formed in the feet of each of said brackets, projections on said brackets thereabove to form another guide in the form of an open-ended slot, offset uprights carried in said guides, and a vertical flexible partition stretched between said uprights, substantially as described.

3. A bedstead having a head or foot with a substantially horizontal cross bar or member, combined with a bracket secured to the head or foot lower than the cross-bar but outside of the vertical plane through it, and an upright having an offset and continuing substantially parallel with said head or foot above and below said offset, said upright being carried by said bracket beneath the offset, an upright at the other end of the bed, and a flexible partition stretched between said uprights, substantially as described.

706,749. TYPE-WRITING MACHINE. WILLIAM R. FOX and GLENN J. BARRETT, Grand Rapids, Mich. Filed Nov. 4, 1899. Serial No. 735,774. (No model.)

Claim.—1. In a type-writing machine, the combination of the main frame A with suitable ways A′, A″ thereon; a non-shiftable carriage traveling on said ways; a platen-cylinder O; a suitable frame therefor having end pieces F, front bar D and back bar E; a rock-shaft H with upwardly-projecting fin H′ thereon, supported on the frame A; spring connections to hold the same yieldingly in position; a shift-key connection for actuating the same; a rock-shaft G supported on the said carriage with an arm G″ containing a notch to engage the fin H′ of the rock-shaft H on said main frame; upwardly-projecting arms G′ on the rock-shaft G having inwardly-projecting shoulders at the top to receive the front ends of the end pieces F of the platen-frame; antifriction-rollers E′ to the rear of the platen-frame, adapted to rest on suitable ways a with notches a′ on said carriage; links F′ connecting pivots a on the arms G′ of the rock-shaft with the spindle of the platen; a lever E for raising the platen-frame and its platen for the inspection of the writing, all constructed substantially as described for the purpose specified.

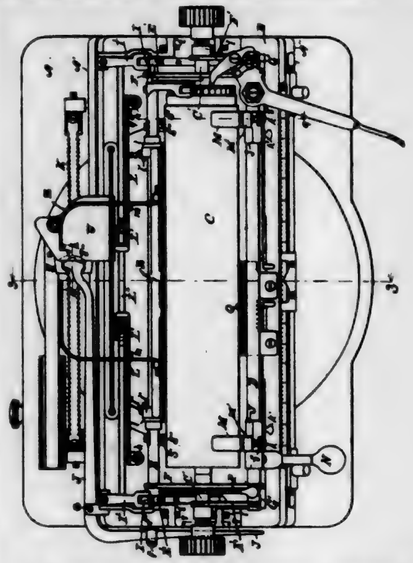

2. In a type-writing machine, the combination of the main frame A with suitable ways A′, A″ thereon; a non-shiftable carriage traveling on said ways; a platen-cylinder O; a suitable frame therefor having end pieces F, front bar D and back bar E; a rock-shaft H with upwardly-projecting fin H′ thereon, supported on the frame A; spring connections to hold the same yieldingly in position; a shift-key connection for actuating the same; a rock-shaft G supported on the said carriage with an arm G″ containing a notch to engage the fin H′ of the rock-shaft H on said main frame; upwardly-projecting arms G′ on the rock-shaft G having inwardly-projecting shoulders at the top to receive the front ends of the end pieces F of the platen-frame; antifriction-rollers E′ to the rear of the platen-frame, adapted to rest on suitable ways a with notches a′ on said carriage; links F′ connecting pivots a on the arms G′ of the rock-shaft with the spindle of the platen; all constructed for the purpose specified.

3. In a type-writing machine, the combination of the main frame A with suitable ways A′ A″ thereon; a non-shiftable carriage traveling on said ways; a platen-cylinder C; a suitable frame therefor having end pieces F, front bar D and back bar E; a rock-shaft H with upwardly-projecting fin H′ thereon, supported on the frame A; spring connections to hold the same yieldingly in position; a shift-key connection for actuating the same; a rock-shaft G supported on the said carriage with an arm G″ containing a notch to engage the fin H′ of the rock-shaft H on said main frame; upwardly-projecting arms G′ on the rock-shaft G having shoulders to receive the front ends of the end pieces F of the platen-frame; antifriction-rollers E′ to the rear of the platen-frame, adapted to rest on suitable ways a with notches a′ on said carriage; links F′ connecting pivots a on the arms G′ of the rock-shaft with the platen and platen-frame, all constructed for the purpose specified.

4. In a type-writing machine, the combination of the main frame with suitable ways thereon; a non-shiftable carriage traveling on said ways; a platen-cylinder; a suitable frame; a rock-shaft with upwardly-projecting fin thereon supported on the frame; a shift-key connection for actuating the same; a rock-shaft supported on the said carriage with an arm containing a notch to engage the fin of the rock-shaft on said main frame; antifriction-rollers E′ to the rear of the platen-frame, adapted to rest on suitable ways with notches, on said carriage; links from the last aforesaid rock-shaft to the platen and platen-frame, all constructed for the purpose specified.

5. In a type-writing machine the combination of a non-shiftable carriage; a platen-frame consisting of end pieces F and side pieces or rods D, E, adapted to rest upon ways on the said carriage; antifriction-rollers E′ to the rear of the said platen-frame; a rock-shaft G supported on the carriage; means of actuating the rock-shaft supported on the main frame; arms G′ extending upwardly from said rock-shaft with suitable shoulders for the front of the ends F of the platen-frame to rest upon; links F′ connecting pivots a on the arms G′ and the spindle of the platen

together, for the purpose of shifting the platen and frame back and forth, all consting for the purpose specified.

6. In a type-writing machine, the combination of a main frame; a non-shiftable carriage thereon; a platen supported in a suitable frame adapted to rest on said carriage in suitable ways; a rock-shaft on said carriage; suitable connections from the main frame to actuate said rock-shaft; and link connections from said rock-shaft to the platen and its frame to shift the platen back and forth and permit its being swung up from the carriage for convenient inspection of the writing, as specified.

7. In a type-writing machine, the combination of a main frame; a non-shiftable carriage thereon; a platen supported in a suitable frame adapted to rest on said carriage; a rock-shaft on said carriage; means of actuating said rock-shaft; link connection from the said rock-shaft to the platen and its frame, to shift the platen back and forth and permit its being swung up from the carriage for the convenient inspection of the writing, as specified.

8. In a type-writing machine, the combination of the main frame; a non-shiftable carriage thereon; a platen in a suitable frame adapted to rest on suitable ways on said carriage; antifriction-rollers on said platen-frame; means of shifting said platen back and forth on said carriage; and rollers I yieldingly supported above said antifriction-rollers and adapted to press against the same to force the platen-frame back and forth to the limits of its movements when the same is shifted, for the purpose specified.

9. In a type-writing machine, the combination of the main frame; a non-shiftable carriage thereon; a platen in a suitable frame adapted to rest on suitable ways on said carriage; antifriction-rollers on said platen-frame; means of shifting said platen back and forth on said carriage; springs I'; and rollers I at the ends thereof, supported above said antifriction-rollers and adapted to press against the same to force the platen-frame back and forth to the limit of its movements when the same is shifted for the purpose specified.

10. In a type-writing machine, the combination of a platen-roll; a suitable frame therefor; a feed-roll; arms *l* from the platen-frame carrying said feed-roll and containing suitable longitudinal slots; curved springs *l'* secured to the platen-frame and adapted to press the said roll against the platen; means of adjusting the pressure on said spring; and a lever P pivotally supported on the platen-frame with a portion P' thereof extending through the slots in said arms *l* and connected by suitable pivots to the frame, consting for the purpose specified.

11. In a type-writing machine, the combination of a platen-roll; a suitable frame therefor; a feed-roll; arms from the platen-frame carrying said feed-roll and containing suitable longitudinal slots; curved springs secured to the platen-frame and adapted to press upon antifriction-rolls at the end of said rolls; adjusting-screws *l''* for adjusting the pressure on said springs; and a lever P pivotally supported on the platen-frame with a portion P' thereof extending through the slots in said arms and connected at its opposite end to the back bar of said frame, consting for the purpose specified.

12. In a type-writing machine, the combination of a platen-roll; a suitable frame for supporting the same; a feed-roll supported by suitable pivoted arms and adapted to rest against said platen-roll; a lever pivoted to said frame extending transversely to said platen-roll at its outer end and bent parallel to said roll at its opposite end and inserted through suitable perforations in the said pivoted arms which support the said feed-roll the same being swung bodily to control the said feed-roll for the purpose specified.

13. In a type-writing machine the combination of a platen-roll; a suitable frame for supporting the same; a feed-roll supported by suitable pivoted arms and adapted to rest against said platen-roll; a lever pivoted to said frame extending transversely to said platen-roll at its outer end and bent parallel to said roll at its opposite end and engaging said pivoted arms which support the said feed-roll; arms on said levers with balls on their ends engaging apertures in the rear bar of the said frame to control the said feed-roll for the purpose specified.

14. In a type-writing machine, the combination of a platen-roll; a suitable frame therefor; a paper-guide consisting of the curved spring-band M adapted to embrace the roll; and a spring M' one end of which is attached to the frame and the opposite end pivoted at O to the center of the spring-band M said pivot being parallel to the platen-roll as specified.

15. In a type-writing machine the combination of a platen-roll; a paper-guide consisting of a spring conformed to said roll, a yielding support for said spring pivoted to the middle portion thereof said pivot being parallel to the platen-roll, for the purpose specified.

16. In a type-writing machine, the combination of the platen-roll; the spring-band paper-guide M; spring-loop M' pivotally connected to said band M at one end by a pivot parallel to the platen-roll, and secured to the platen-frame at the opposite end and the screw-threaded bolt *t* extending through said loop; and a thumb-nut *t'* on said bolt for adjusting the tension on said spring for the purpose specified.

17. In a type-writing machine the combination of a platen-roll; a paper-guide conformed thereto; a curved-spring support pivoted to the middle portion thereof by a pivot parallel to the platen-roll; and means of adjusting said spring to vary its tension.

18. In a type-writing machine, the combination of a platen-roll; a paper-guide conformed thereto; a curved-spring support centrally connected thereto; and means of adjusting said spring to vary its tension.

19. In a type-writing machine, the combination of a platen; a paper-guide on said platen; a rod D to one side of said platen having a key-seat D'; a spring D'' within the said key-seat curved to contact at its ends therewith; a sleeve *j* on said rod; a screw *k* to secure the said paper-guide sleeve and spring together; and a knob *k'* for adjusting the same, consting as specified.

20. In a type-writing machine, the combination of a platen; a paper-guide on said platen; a rod D to one side of said platen having a key-seat D'; a spring D'' within the said key-seat; a sleeve *j* on said rod; a screw *k* to secure the said paper-guide sleeve and spring together, consting as specified.

21. In a type-writing machine, the combination of a platen; a paper-guide therefor; a rod to one side of said platen having a longitudinal groove therein; means of securing said paper-guide to said rod by embracing the same; a spring secured to said paper-guide and resting in said groove to retain the same by friction so it can be adjusted along said rod for the purpose specified.

22. In a type-writing machine, the combination of the platen; a paper-guide therefor; a rod to one side of said platen, having a longitudinal groove therein; means of securing said paper-guide to said rod by embracing the same; a spring carried by said paper-guide and resting in said groove to retain the guide by friction so it can be adjusted along said rod, for the purpose specified.

23. In a type-writing machine, the combination of the main frame of the machine; a carriage therefor; a platen on said carriage; a combined ribbon-guide and paper-guide consisting of plates T suitably slotted at T' for the ribbon with the edges toward the front side of the machine curved upwardly at T''' to serve as a guide for the paper; and a guide Q secured to the carriage and extending down and in front of the band-ribbon guide and paper-guide as specified.

24. In a type-writing machine, the combination of the main frame of the machine; a carriage therefor; a platen on said carriage; a combined ribbon-guide and paper-guide consisting of plates T suitably slotted at T' for the ribbon with the edges toward the front side of the machine curved upwardly at T''' to serve as a guide for the paper; as specified.

25. In a type-writing machine, the combination of the main frame; a carriage; a platen on said carriage; a ribbon-guide supported by the frame having a curved portion to serve as a paper-guide; a guide carried by said carriage in proximity thereto, for the purpose specified.

26. In a type-writing machine, the combination of the main frame; a carriage; a platen on said carriage; a ribbon-guide supported by the frame having a curved portion to serve as a paper-guide for the purpose specified.

27. In a type-writing machine, the combination of the main frame of the machine; a carriage resting on suitable tracks or ways thereon; levers L pivoted to the main frame; antifriction-rollers L' on the upper ends of said levers to rest upon the carriage; and springs to put tension on said levers to hold the carriage into close engagement with the tracks or ways, as specified.

28. In a type-writing machine, the combination of the main frame; a carriage resting on suitable tracks or ways thereon; antifriction-rollers resting on said carriage; and spring connections to put pressure on said rolls to hold the carriage close to its track for the purpose specified.

29. In a type-writing machine, the combination of the main frame; a carriage traveling in suitable ways thereon; a double-toothed oscillating rack pivoted to oscillate on said main frame; escapement-dogs carried by said carriage to engage said rack; a lever J pivoted to said carriage and extending between the dogs of said rack having a guide for said lever between said dogs; a guide *f* for the opposite end of said lever with suitable spring to hold it normally out of engagement with the pawls whereby the lever will throw either pawl out of engagement with said rack and permit the adjustment of the carriage, as specified.

30. In a type-writing machine, the combination of the main frame; a carriage thereon; a toothed rack on said main frame; escapement-dogs to engage the same carried by said carriage; an angle-lever extending from one front corner of said carriage to the flank and thence to the escapement-pawls; suitable guides for said lever; and a spring holding it normally out of engagement with the pawls, for the purpose specified.

31. In a type-writing machine, the combination of the platen; a frame for carrying the same; a platen-scale S to rest against the same supported by spring-arms S' secured to the platen-frame; fingers S'' struck up from said arms to serve as additional guides; and a paper-roll between the said arms with means of releasing the same, as specified.

32. In a type-writing machine, the combination of the platen; a paper-roll adapted to rest against said platen; a platen-scale to rest against the said platen, and curved outwardly to embrace and protect said paper-roll; spring-arms beyond the ends of the paper-roll for retaining the platen-scale in position; and means for controlling the said paper-roll and platen-scale independent of each other.

33. In a type-writing machine, the combination of the platen; a paper-roll adapted to rest against said platen; means for releasing the same independent of the platen-scale; and a platen-scale to rest against the said platen curved outwardly to embrace and protect the paper-roll and retain the paper when the roll is released.

706,750. COOKING-STOVE. ROBERT GALBRAITH, Troy, N. Y., assignor to the Great Western Stove Company, Leavenworth, Kans.

Filed Aug. 5, 1901. Serial No. 70,960. (No model.)

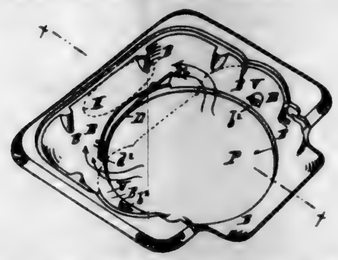

Claim.—1. The combination with the fire-cylinder of a stove having a combustion-chamber that is partly directly over, and in part horizontally extended beyond the upper edge of the fire-cylinder, to encircle the same thereat; and is provided with an exit-flue in the rear of the boiler-hole top inclosing said combustion-chamber; of a deflecting-plate that is upwardly projected from the top edge of the fire-cylinder at the rear thereof to connect with the boiler-hole top in front of said exit-flue; a passage at each end of said deflecting-plate whereby the heat and gases evolved from the fire in the fire-cylinder are caused to pass through said lateral extension of the combustion-chamber to reach the exit-flue, substantially as, and for the purposes set forth.

2. The combination with the fire-cylinder P, of the combustion-chamber C, arranged above the latter, and having the laterally-arranged combustion-chamber extension E, provided with the exit-flue F, at its rear; the deflecting-plate D, upwardly projected from the rear edge of said fire-cylinder at its top to connect with the under side of the boiler-hole top of the combustion-chamber; and the passage *d*, at each end of said deflecting-plate whereby the heat and gases evolved from the fire-cylinder will be forced to pass through the lateral extension of the combustion-chamber to reach the exit-flue, substantially as, and for the purposes set forth.

706,751. MOLDING-MACHINE. CHARLES EHRMAN, Allegheny, Pa. Filed Apr. 8, 1901. Serial No. 54,972. (No model.)

Claim.—1. In a molding-machine, the combination of a jarring-block, a casing, a post within said casing having a pattern-plate thereon carrying a pattern, a stripping-plate supported by the pattern-plate and carrying a flask, and a power-motor contained within said casing and directly connected to said post for imparting a vertical reciprocatory movement to the post and the pattern-plate, pattern, stripping-plate and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern; substantially as described.

2. In a molding-machine, the combination of a jarring-block, a casing having guides on its inner surface, a cover fitting over and around the top of said casing, a cross-head in said casing connected to said cover and adapted to slide on said guides, a post in said casing connected to said cross-head, a pattern-plate carrying a pattern connected to said cover, a stripping-plate carrying a flask supported by said pattern-plate, and a power-motor connected to said post for imparting a vertical reciprocatory movement to said post and the pattern-plate, pattern, stripping-plate, and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern; substantially as described.

3. In a molding-machine, the combination of a jarring-block, a casing, a post within said casing having a pattern-plate thereon carrying a pattern, a stripping-plate supported by the pattern-plate and carrying a flask, and a power-cylinder contained within said casing having its piston directly connected to said post for imparting a vertical reciprocatory movement to the post and the pattern-plate, pattern, stripping-plate, and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern; substantially as described.

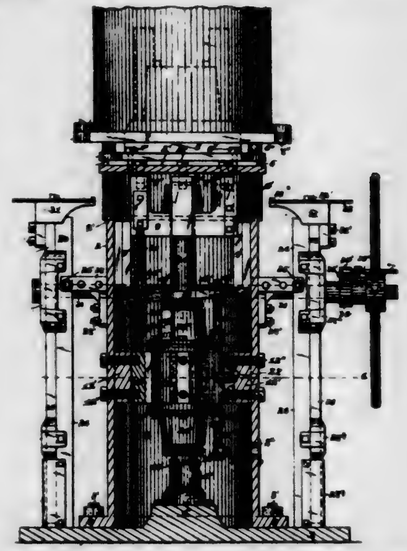

4. In a molding-machine, the combination of a jarring-block, a casing having guides on its inner surface, a cover fitting over and around the top of said casing, a cross-head in said casing connected to said cover and adapted to slide on said guides, a post in said casing connected to said cross-head, a pattern-plate carrying a pattern connected to said cover, a stripping-plate carrying a flask supported by said pattern-plate and a power-cylinder having its piston connected to said post for imparting a vertical reciprocatory movement to said post and the pattern-plate, pattern, stripping-plate and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern; substantially as described.

5. In a molding-machine, the combination of a jarring-block, a post having a pattern-plate carrying a pattern, a power-cylinder having its piston directly connected to said post, valve mechanism for said cylinder, and mechanism whereby said valve mechanism is automatically operated to admit fluid to the cylinder to impart to the piston a vertical reciprocatory movement, which movement is transmitted to the post whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand around the pattern; substantially as described.

6. In a molding-machine, the combination of a jarring-block, a post having a pattern-plate carrying a pattern, a power-cylinder having its piston directly connected to said post, valve mechanism for said cylinder, and mechanism whereby said valve mechanism is operated to admit fluid to the cylinder to impart to the piston a vertical reciprocatory movement, which movement is transmitted to the post whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand around the pattern; substantially as described.

7. In a molding-machine, the combination of a jarring-block, a casing having guides on its inner surface, a cover fitting over and around said casing, a cross-head within said casing connected to said cover and adapted to slide on said guides, a post within said casing connected to said cross-head, a pattern-plate carrying a pattern connected to said cover, a stripping-plate carrying a flask supported by said pattern-plate around the pattern, a power-cylinder having its piston connected to said post, valve mechanism for said cylinder, and mechanism whereby said valve mechanism is automatically operated to admit fluid to the cylinder to impart to the piston a vertical reciprocatory movement, whereby said post is caused to strike against the jarring-block for the purpose of compacting the sand in the flask around the pattern; substantially as described.

8. In a molding-machine, the combination of a jarring-block, a casing having guides on its inner surface, a cover fitting over and around said casing, a cross-head within said casing connected to said cover and

adapted to slide on said guides, a post within said casing connected to said cross-head, a pattern-plate carrying a pattern connected to said cover, a stripping-plate carrying a flask supported by said pattern-plate around the pattern, a power-cylinder having its piston connected to said post, valve mechanism for said cylinder, a bar connected to said cross-head, and a lever pivoted on the cylinder and connected to said rod and to said valve mechanism whereby said valve mechanism is automatically operated to admit fluid to the cylinder to impart to the piston a vertical reciprocatory movement whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand around the pattern; substantially as described.

9. In a molding-machine, the combination of a jarring-block, a casing, a post within said casing having a pattern-plate thereon carrying a pattern, a stripping-plate supported by the pattern-plate and carrying a flask, a power-motor contained within said casing and directly connected to said post for imparting a vertical reciprocatory movement to the post and to the pattern-plate, pattern, stripping-plate and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern; and mechanism for engaging with said stripping-plate to raise the same and the flask from around the pattern; substantially as described.

10. In a molding-machine, the combination of a jarring-block, a casing, a post within said casing having a pattern-plate thereon carrying a pattern, a stripping-plate supported by the pattern-plate and carrying a flask, a power-motor contained within said casing and directly connected to said post for imparting a vertical reciprocatory movement to the post and the pattern-plate, pattern, stripping-plate and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern, vertically-movable lifting-bars adapted to engage with said stripping-plate to raise the same and the flask from around the pattern, and mechanism for operating said lifting-bars; substantially as described.

11. In a molding-machine, the combination of a jarring-block, a casing, a post within said casing having a pattern-plate thereon carrying a pattern, a stripping-plate supported by the pattern-plate and carrying a flask, a power-motor contained within said casing and directly connected to said post for imparting a vertical reciprocatory movement to the post and to the pattern-plate, pattern, stripping-plate and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern, vertically-movable lifting-bars adapted to engage with said stripping-plate to raise the same and the flask from around the pattern, gear-racks on said lifting-bars, and gear-wheels meshing with said gear-racks for lifting and lowering said lifting-bars; substantially as described.

12. In a molding-machine, the combination of a jarring-block, a casing, a post within said casing having a pattern-plate thereon carrying a pattern, a stripping-plate supported by the pattern-plate and carrying a flask, a power-motor connected to said post for imparting a vertical reciprocatory movement to the post and to the pattern-plate, pattern, stripping-plate and flask carried thereby and partaking of the movements thereof, whereby said post is caused to strike against said jarring-block for the purpose of compacting the sand in the flask around the pattern, vertically-movable lifting-bars adapted to engage with said stripping-plate to raise the same and the flask from around the pattern, gear-racks on said lifting-bars, gear-wheels meshing with said gear-racks for operating said lifting-bars, a ratchet-wheel on said shaft, and a pawl engaging with said ratchet-wheel for holding said lifting-bars in their elevated position; substantially as described.

13. In a molding-machine, the combination of a jarring-block, a casing, a post within said casing having a pattern-plate thereon carrying a pattern, a stripping-plate supported on the pattern-plate around the pattern and carrying a flask, mechanism connected to said post for imparting a vertical reciprocatory movement to said post, pattern-plate, pattern, stripping-plate and flask, whereby said post is caused to strike against said jarring-block, vertically-moving lifting-bars for engaging said stripping-plate to raise the same and flask, gear-racks on said lifting-bars, gear-wheels meshing with said gear-racks for operating said lifting-bars, a ratchet-wheel, a spring-operated pawl for engaging with said ratchet-wheel to hold said lifting-bars in their raised position, and a pivoted lever adapted to come in contact with said pawl for holding the same in engagement with said ratchet-wheel; substantially as described.

706,752. REVERSING-GEAR. THOMAS HOLLIDAY, Chicago, Ill. Filed July 11, 1901. Serial No. 67,041. (No model.)

Claim.—In a reversing-gear, the combination of a frame; a driving-shaft journaled in said frame; a driven shaft journaled in said frame in line with said driving-shaft; a gear rigidly secured to said driving-shaft; a second gear rigidly secured to said driven shaft; a wheel loosely journaled on one of said shafts and between said gears, the outer face of its rim being substantially the frusta of two cones placed base to base; a gear journaled within said wheel and in mesh with the gears on said shafts; a flange having an inner conical face concentric with the shafts, adapted to fit the adjacent part of the face of said wheel, said flange having thereon a lug engaging said frame whereby said flange is secured against rotation but slidable longitudinally of said shafts; a second flange having an inner conical face concentric with the shafts, adapted to fit the adjacent part of the face of said wheel, said secured to the other shaft so as to be longitudinally slidable thereon and revolvable therewith; suitable connection between said flanges for maintaining a constant distance between same; and means for controlling the position of said flanges longitudinally of said shaft.

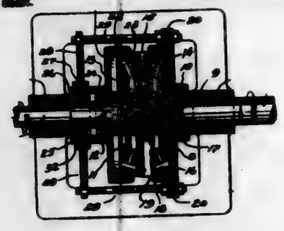

706,753. PIPE-WRENCH. WILLIAM HOLKER, Parkersburg, W. Va. Filed Mar. 5, 1902. Serial No. 97,331. (No model.)

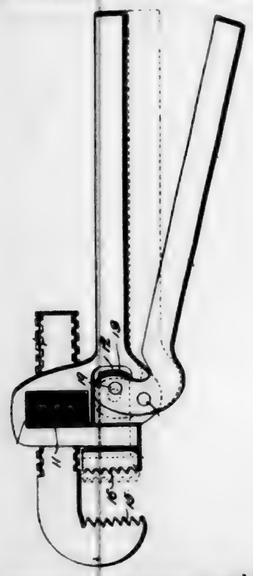

Claim.—In a wrench, a stock having an enlarged end provided with a longitudinal and a transverse aperture intersecting each other, a longitudinally-slidable jaw and an operating-nut for the same mounted in said apertures, a longitudinally-slidable nether jaw mounted in a longitudinal recess at the front end of and in alinement with the stock, and an operating-lever pivotally connected with the latter and having pivotal connection with the nether jaw through an opening formed transversely in the stock, substantially as set forth.

706,754. WAGON-POLE CAP. PATRICK HOLMSTROM, Hancock, Minn., assignor of one-half to William Ramsey Craig, St. Paul, Minn. Filed May 1, 1902. Serial No. 105,502. (No model.)

Claim.—The combination with a wagon-pole, of a sleeve on the end thereof carrying a fin on its under side extending downwardly at an angle to the sleeve and terminating in an eye-shaped hook having an L-shaped seat on its inner upper edge, a pair of spaced lugs formed integral with the end of the sleeve between the top and bottom thereof, a tongue pivotally secured between said lugs and having its free end engaging in said seat on the hook, the inward movement of the tongue being limited by the outer end of the sleeve, and a spring secured to the tongue engaging over the head thereof and having its free end engaging between said lugs and the end of the sleeve, substantially as described.

706,755. RABBLE-CARRIAGE. DANIEL C. JACKLING, Republic, Wash. Filed Aug. 2, 1901. Serial No. 70,643. (No model.)

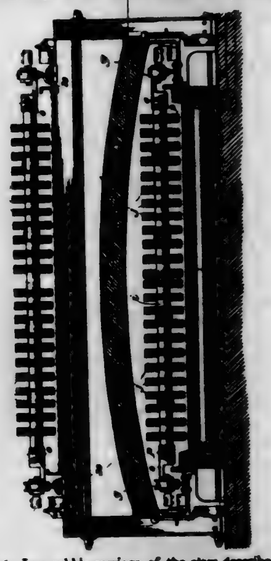

Claim.—1. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of bars extending longitudinally thereof, a pair of wheel-washers secured in position between the ends of the pair of bars to form a ball-raceway, an annular wheel-rim surrounding said washers and completing the raceway, and a plurality of antifriction-balls interposed between the washer and wheel-rim, substantially as described.

2. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of longitudinal bars, a pair of trolley-wheels mounted between the ends of the longitudinal bars, a laterally-projecting tubular portion made in two parts, means for clamping said parts together, and a rabble-bar secured in said clamping tubular portion, substantially as described.

3. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of longitudinal bars, a pair of trolley-wheels—one mounted between each end of the longitudinal bars, a laterally-projecting tubular portion made in two parts extending inwardly from each carriage, means for clamping said parts together, a tubular rabble-bar mounted in the clamping portions of the carriage, and rabble-blades secured to said tubular bar extending upwardly and downwardly therefrom and at an angle to their line of motion, substantially as described.

4. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of longitudinal bars, trolley-wheels composed of fixed washers and movable wheel-rims and antifriction-balls interposed between the same and secured between each end of the parallel bars, a laterally-projecting tubular portion on each body portion made in two clamping parts—one movable and one fixed, bolt-and-nut mechanism for securing said parts together, a tubular rabble-bar, rabble-blades on said tubular rabble-bar extending upwardly and downwardly therefrom and provided with a cylindrical hub portion, and dowel mechanism for securing the rabble-carriage and rabble-blades to the tubular bar so as to prevent their having independent motions, substantially as described.

5. In a rabble-carriage of the class described, the combination of a body portion provided with trolley-wheels, an outwardly and laterally extending arm provided with a recess, a sprocket-chain, and clip mechanism removably secured in said recess for attaching and detaching the sprocket-chain thereto and therefrom, substantially as described.

6. In a rabble-carriage of the class described, the combination of a body portion provided with trolley-wheels, laterally-extending arms forming a part thereof and extending outwardly therefrom provided with a shouldered recess in one surface thereof, a sprocket-chain, a pair of T-shaped clips removably secured in said recess, a block interposed between the ends of each clip, and bolt-and-nut mechanism for securing the clips and laterally-projecting arm of the rabble-carriage together, substantially as described.

7. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of flanged trolley-wheels, a bar detachably secured thereto and provided with a plurality of rabble-blades, a second carriage provided with a pair of trolley-wheels having smooth peripheral cylindrical surfaces to permit expansion and contraction of the tubular bar, a laterally-projecting tubular portion on each of said body portions made in two clamping parts—one movable and one fixed—on which the rabble-bars are detachably secured, and bolt-and-nut mechanism for securing said parts together substantially as described.

706,756. ORE-ROASTING FURNACE. DANIEL C. JACKLING, Republic, Wash. Filed Aug. 2, 1901. Serial No. 70,644. (No model.)

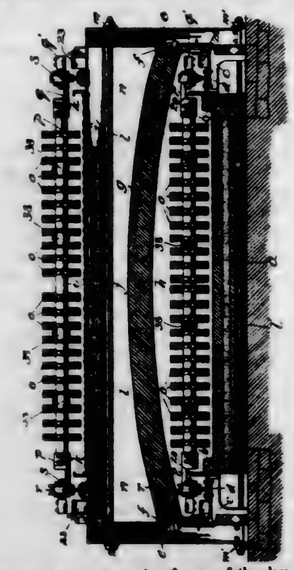

Claim.—1. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, tracks arranged parallel therewith, and means for supporting said tracks independent of the ore-roasting hearth, substantially as described.

2. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above the ore-roasting hearth, tracks arranged parallel with and outside of both said hearths, and means for supporting the track mechanism and cooling-hearth independently of the roasting-hearth, substantially as described.

3. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above said ore-roasting hearth, an arched wall forming the roof of the ore-roasting chamber, a pair of tracks arranged parallel with and outside of each of said hearths, and a plurality of brackets and side posts supporting said track, cooling-hearth and arched roof independent of the ore-roasting hearth, substantially as described.

4. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above the ore-roasting-hearth, a pair of tracks arranged outside of and

parallel with both hearths, rabble mechanism movably mounted on such tracks, a plurality of side posts supporting the cooling-hearth independent of the ore-roasting hearth and formed of channel-irons arranged back to back with their web portions transverse of the furnace, and a plurality of side brackets secured to each side posts to support the tracks outside of the ore-roasting hearth and independent thereof, substantially as described.

5. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above the ore-roasting hearth, a pair of tracks arranged outside of and parallel with both of such hearths, a pair of rabble-tracks oppositely mounted upon such tracks and connected together by a rabble-supporting bar, rabble mechanism on such supporting-bar, link belts connecting together the rabble-tracks on each side of both such hearths in a continuous manner, driving-shaft mechanism provided with sprocket-wheels for operating such link belts, and flanged pulleys to receive the rabble-tracks as they leave one track and convey them opposite to and in alinement with the other set of tracks, substantially as described.

6. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above the ore-roasting hearth, a pair of tracks arranged outside of and parallel with both of such hearths, a pair of rabble-tracks oppositely mounted upon such tracks and connected together by a rabble-supporting-bar, rabble mechanism on such supporting-bar, link belts connecting together the rabble-tracks on each side of both such hearths in a continuous manner, driving-shaft mechanism provided with sprocket-wheels for operating such link belts, flanged pulleys to receive the rabble-tracks as they leave one track and convey them opposite to and in alinement with the other set of tracks, a hinged door at the discharge end of the ore-roasting hearth, and bumper mechanism on the rabble-bars to contact such hinged door and hold it open as the rabble mechanism is passed out of the same, substantially as described.

7. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above the same, a hinged door arranged at each end of the ore-roasting hearth, a hopper provided with a hinged chute or apron arranged at the receiving end of the cooling-hearth to discharge the roasted material thereon, a pair of tracks arranged outside of and parallel with both of such hearths, a plurality of rabble-tracks oppositely mounted on each of such pairs of tracks, a pair of link belts connecting each rabble-tracks together in a continuous manner, rabble-supporting bars connecting each pair of tracks together, rabble mechanism on each bars for agitating and moving the material along both of such hearths, means for transferring the rabble mechanism from one pair of tracks to the other, bumper mechanism on such rabble-supporting bars to contact with the hinged doors and apron to raise the same and hold them in raised position until the rabble mechanism passes thereunder, and an endless flexible conveyor to receive the material from the ore-roasting chamber and convey it into the hopper at the end of the cooling-hearth, substantially as described.

8. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above the same, a hinged door arranged at each end of the ore-roasting hearth, a hopper provided with a hinged chute or apron arranged at the receiving end of the cooling-hearth, a pair of tracks arranged outside of and parallel with both of such hearths, a plurality of rabble-tracks oppositely mounted on each of such pairs of tracks, a pair of link belts connecting such rabble-tracks together in a continuous manner, rabble-supporting bars connecting each pair of tracks together, rabble mechanism on such bars for agitating and moving the material along both of such hearths, means for transferring the rabble mechanism from one pair of tracks to the other, bumper mechanism on such rabble-supporting bars to contact with the hinged doors and apron to raise the same and hold them in raised position until the rabble mechanism passes thereunder, an endless flexible conveyor to receive the material from the ore-roasting chamber and convey it into the hopper from which it is discharged onto the cooling-hearth, a boot arranged adjacent to the receiving end of the ore-roasting hearth to be contacted by the rabble mechanism and move the material therein into and upon the ore-roasting hearth, a trough arranged at the discharge end of the cooling-hearth, and a screw conveyor in such trough to discharge the cooled product therefrom, substantially as described.

9. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel with and above the same, a hinged door arranged at each end of the ore-roasting hearth, a hopper provided with a hinged chute or apron arranged at the receiving end of the cooling-hearth, a pair of tracks arranged outside of and parallel with both of such hearths, a plurality of rabble-tracks oppositely mounted on each of such pairs of tracks, a pair of link belts connecting such rabble-tracks together in a continuous manner, rabble-supporting bars connecting each pair of tracks together, rabble mechanism on such bars for agitating and moving the material along both of such hearths, means for transferring the rabble mechanism from one pair of tracks to the other, bumper mechanism on such rabble-supporting bars to contact with the hinged doors and apron to raise the same and hold them in raised position until the rabble mechanism passes thereunder, an endless flexible conveyor to receive the material from the ore-roasting chamber and convey it into the hopper from which it is discharged onto the cooling-hearth, a boot arranged adjacent to the receiving end of the ore-roasting hearth to be contacted by the rabble mechanism and move the material therein into and upon the ore-roasting hearth, a trough arranged at the discharge end of the cooling-hearth, a screw conveyor in such trough to discharge the cooled product therefrom, and means for driving the operative mechanisms, substantially as described.

10. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a pair of tracks arranged parallel with and outside of the same, rabble-tracks provided with rabble mechanism mounted upon such tracks for agitating and moving material along the ore-roasting hearth, link-belt mechanism connected with such rabble-tracks to operate them in a continuous manner, shafts provided with sheave and sprocket wheels for operating such link belts, a main driver connected with one of such shafts, slide mechanism upon which at least one of said shafts is mounted, and means for operating such slides and moving the shaft, should the link belt break, to disconnect the operative mechanism and stop the machine, substantially as described.

11. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a pair of tracks arranged outside of and parallel with the ore-roasting hearth, rabble-tracks provided with rabble mechanism mounted on such tracks for agitating and moving the material along such hearth, link belts connecting such tracks for operating them in a continuous manner, driven shafts provided with sheave and sprocket wheels for operating the link belts, a main driver geared with at least one of the said shafts, slide-block mechanism in which one of the said shafts has its bearing, and a weighted chain connected with such sliding block to keep the link belt under tension and operate such sliding block, should either one or both the link belts become broken, to contact the driving mechanism and disengage it from the sprocket-driving mechanism, substantially as described.

12. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a pair of tracks arranged parallel with and outside of such hearth, a cooling-hearth arranged parallel with and above the ore-roasting hearth, a pair of tracks arranged parallel with and outside of the cooling-hearth, a plurality of rabble-tracks provided with rabble mechanism for agitating the moving material along both of such tracks, a pair of link belts connecting the rabble-tracks together in a continuous manner, a plurality of shafts provided with sheave and sprocket wheels for holding and driving the pair of link belts, a pair of slide-blocks supporting one of such shafts, a counter-shaft connected with one of the said shafts to transmit power and motion thereto, means for driving such counter-shaft, shipper mechanism for throwing the driving means into and out of engagement with the driving-shaft, and a weighted chain or similar element connected with the slide-blocks to hold the link belts under tension and, should either or both of such belts break, contact the shipper mechanism and disengage the driving means from the counter-shaft, substantially as described.

13. In an ore-roasting furnace of the class described, the combination of an ore-roasting hearth, a cooling-hearth arranged parallel therewith, a pair of tracks arranged outside of and parallel with such hearths, rabble-tracks provided with rabble mechanism mounted upon such tracks and provided with outwardly-extending arms q', endless chains connected to such rabble-tracks at or near the outer edge thereof, a pair of sheave-pulleys provided with and mounted on rotatable shafts at each end of the furnace having annular flanges inclined inwardly at the outer edges thereof arranged to be contacted by the outwardly-extending arms q' of the rabble-tracks thereby centering the rabble-tracks as they are passed from one hearth to the other, and means for driving the operative mechanisms, substantially as described.

706,757. MACHINE FOR COATING LABELS WITH ADHESIVE. FRED R. JAGENBERG and RICHARD HÖPFLER, Düsseldorf, Germany. Filed Feb. 11, 1902. Serial No. 93,512. (No model.)

Claim.—1. In a machine for coating labels with an adhesive, the combination of an intermittently-rotated drum, with gluing-rolls in contact therewith, means for feeding labels to the drum, and a gripper for taking the labels off the drum, substantially as specified.

2. In a machine for coating labels with an adhesive, the combination of an intermittently-rotated drum, with gluing-rolls in contact therewith, a notched disk and belt for locking the drum, a label-magazine, means for moving said magazine toward and away from the drum, and a gripper for taking the labels off the drum, substantially as specified.

3. In a machine for coating labels with an adhesive, the combination of an intermittently-rotated drum, with gluing-rolls in contact therewith, means for feeding labels to the drum, a sliding gripper for taking the labels off the drum, and means for guiding the sliding gripper, substantially as specified.

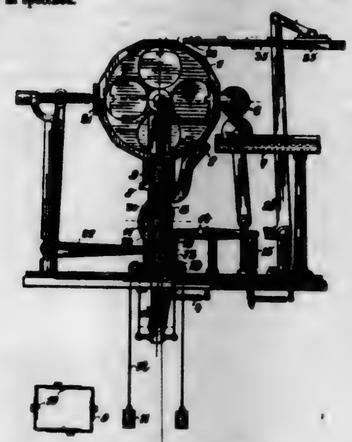

706,758. GOLF-BALL. ELMER KIMBALL, Boston, Mass. Filed June 14, 1902. Serial No. 111,703. (No model.)

Claim.—1. In a playing-ball, the combination of a center piece; a multitude of windings thereon of extremely thin and highly-tensioned approximately pure acid-cured sheet-rubber, said windings forming a solid body, and a cover formed of plastic material; said cover holding said rubber under compression, and said center piece consisting of undistended segments of molded elastic material drawn together at their edges by said windings.

2. In a playing-ball, the combination of a center piece, a multitude of windings thereon of extremely thin and highly-tensioned acid-cured sheet-rubber, said windings forming a solid body of spherical form and adhering to one another; and a shell of gutta-percha holding said body under compression; said center piece consisting of a hard sphere and a molded rubber elastic shell thereon.

3. A playing-ball comprising a small hard center piece; a small sphere of solid molded soft rubber thereon; a substantially solid materially larger spherical body upon said soft-rubber sphere and consisting of windings of extremely thin and highly-tensioned acid-cured sheet-rubber; and a shell or cover of plastic material.

4. In a playing-ball, the combination of a center piece; adherent windings thereon of thin and highly-tensioned acid-cured sheet-rubber, and a cover of gutta-percha upon said rubber; said windings forming such a proportion of the ball as to enable it to float in water, and said center piece comprising a celluloid sphere and a shell of solid soft rubber thereon.

5. A playing-ball comprising a hard sphere 1 of between twenty-five and thirty-five per cent. of the diameter of the ball; a sphere upon said sphere 1 and consisting of soft rubber, the diameter of said soft-rubber sphere being between thirty-five and forty-five per cent. of the diameter of the ball; a substantially solid sphere 4 upon said soft-rubber sphere and consisting of a multitude of extremely thin and highly-tensioned approximately pure acid-cured sheet-rubber, the diameter of said sphere 4 being between seventy and ninety per cent. of the ball; and a gutta-percha shell or cover.

6. In a playing-ball, the combination of a sphere of celluloid, a sphere of solid molded rubber tensioned thereon; a multitude of windings of extremely thin and highly-tensioned approximately pure acid-cured sheet-rubber upon said sphere, and a shell of plastic material.

7. In a playing-ball, a center piece compounded of celluloid and solid soft rubber, a solid body thereon consisting of windings in miscellaneous directions of highly-tensioned acid-cured sheet-rubber, each of said windings being not more than four one-thousandths of an inch in thickness; and a cover of wear-resisting material upon said body.

8. In a playing-ball, the combination of a solid body of spherical form and provided with a center piece, and consisting of miscellaneous coherent windings of highly-tensioned approximately pure acid-cured sheet-rubber, each of said windings being not more than four one-thousandths of an inch in thickness, and a shell of gutta-percha holding said windings under compression; said center piece consisting of a hard sphere and undistended segments of solid soft rubber drawn together at their edges by said windings.

9. A playing-ball comprising a hard sphere 1 whose diameter is thirty per cent. of the diameter of the ball; a soft-rubber sphere upon said hard sphere, the diameter of said soft-rubber sphere being forty per cent. of the entire ball; a substantially solid sphere 4 upon said soft-rubber sphere and consisting of a multitude of windings of extremely thin and highly-tensioned approximately pure acid-cured sheet-rubber, the diameter of said sphere 4 being eighty-five per cent. of that of the entire ball and each of said windings being not more than four one-thousandths of an inch in thickness; and a gutta-percha shell holding said sphere 4 under compression; substantially as set forth.

706,759. ELECTRICAL SWITCH OR CUT-OFF. PATRICK KENNEDY, Brooklyn, N. Y. Filed Dec. 4, 1901. Serial No. 84,632. (No model.)

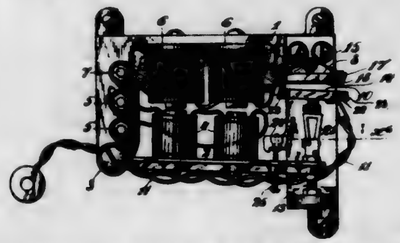

Claim.—1. An electrical circuit-closing device having a sheet of metallic gauze over the face of one of its terminals.

2. An electric circuit-closing device having a flat-faced metal contact-terminal, and having a spring 16, carrying at its respective ends carbon contact-blocks 18, which are advanced, normally, slightly beyond the face of the metal terminal, in combination with another contact-terminal, coöperating with the first and having a metal face and two carbon blocks, substantially as set forth.

3. An electric circuit-closing device having a substantially fixed or non-moving contact-terminal, a lever-arm, and a contact-terminal carried by said arm, said terminal being carried by a stem having its axis perpendicular to the face of the contact and composed of spring-like supporting-plates grouped substantially as set forth.

4. In an electrical circuit-closing device, the combination with the substantially fixed contact-terminal, having a flat face covered with wire-gauze, and provided with a yielding carbon contact which is normally advanced beyond the face of the metal terminal, of the movable contact-terminal of metal provided with a carbon contact adapted to contact with the yielding carbon of the non-moving terminal when the circuit is closed, substantially as and for the purpose set forth.

5. The combination with the lever-arm, of the moving terminal, and the laterally-yielding support for the latter on said lever-arm, said support comprising the two spring-like supporting-plates 19, and the two spring-plates 21, all arranged and constructed substantially as set forth.

6. An electrical circuit-closing device having a flat-faced metal terminal, the face of which is covered with wire-gauze, and having a spring 16, carrying at its ends carbon contact-blocks 18, which are advanced, normally, slightly beyond the face of the metal terminal, in combination with another contact-terminal having a metal face and two carbon contact-blocks, substantially as set forth.

7. An electric circuit-closing device having two coöperating terminals of metal with relatively extended contact-surfaces, one of said terminals having metallic gauze over its face and the other having its face cross-grooved, substantially as set forth.

8. In an electrical switch, the combination with a terminal contact-piece and the part which carries it, of an intermediate support for said

contact-piece, comprising the two spring-plates 21, secured to the carrying part and contact-piece at their respective ends, and the two spring-plates 19, secured to only one of said parts, substantially as set forth.

706,760. HYDRAULIC FIREPROOF CEMENT. WILLIAM B. KNOX, Newark, N. J. Filed July 10, 1901. Serial No. 68,422. (No specimens.)

Claim.—An improved hydraulic cement comprising the following ingredients necessary to produce one hundred pounds of cement, viz. silica, twenty-four pounds, alumina six and one-half pounds, magnesia, five pounds, lime, sixty pounds, muriatic acid, three pounds, iron oxid, one and one-half pounds.

706,761. GAS-BURNER. JOHN G. KOEHLE, Columbus, Ohio. Filed Jan. 2, 1902. Serial No. 88,112. (No model.)

Claim.—1. A burner consisting of an elongated hollow body the interior upper portion of which tapers upwardly, on curved lines, to form a reduced longitudinal ridge which is provided with a row or series of burner-openings; whereby as the combustible mixture within the burner ascends in the chamber thereof it will be compressed and caused to issue from said burner-openings with more force than would otherwise occur; said burner-body having at its lower part one or more depending frusto-conical mixing-chambers into which the gas is conducted, said mixing-chambers being each provided, near its base, with side openings for the admission of air; and the said burner-body having, above the inlet of each mixing-chamber, a baffle-plate, *f*, to equalize the pressure of the combustible gaseous mixture within the chamber of the said burner.

2. A burner consisting of an elongated hollow body to form a main receiving-chamber for the combustible material, the interior upper part of said body tapering upwardly on curved lines, to form an auxiliary distributing-chamber having the form of a reduced longitudinal ridge surmounting the main chamber, said ridge being provided with a row or series of burner-openings at its apex; whereby as the combustible mixture within the burner ascends into the said distributing-chamber it will be compressed and caused to issue from said burner-openings at the apex of the ridge with more force than would otherwise occur; the body of said burner being provided at its opposite ends with exterior supports to be engaged by holders.

3. A burner, consisting of a longitudinal hollow body the interior upper portion of which tapers upwardly on curved lines, to form a reduced longitudinal ridge which is provided with a row or series of burner-openings; whereby as the combustible mixture within the burner ascends in the chamber thereof it will be compressed and caused to issue from said burner-openings with more force than would otherwise occur; the body of said burner being provided at its opposite ends with circular exterior supports so that the burner may be pivotally mounted in suitable holders.

4. The combination in a burner, of an elongated body containing a main receiving-chamber for the combustible mixture, an upper central longitudinal ridge surmounting said body and containing a distributing-chamber, said ridge having burner-openings formed in its apex and having at its ends journals or pivotal supports, and holders in which said burner-body is mounted so that it may be turned to give said burner any desired inclination or chest.

5. A burner consisting of a cast-metal elongated body *a* having an integral depending and upwardly-tapering mixing-chamber *b* provided at or near its base with transverse air-openings *c* and with a gas-opening *d*, said burner being provided with an interior horizontal spreader above the opening with which the said mixing-chamber communicates with the interior of the burner, and the said burner being upwardly tapered transversely at its top portion, both interiorly and exteriorly, to form a reduced part or ridge which is provided with burner-openings.

706,762. WINDOW-SCREEN. MAX KOLF, St. Louis, Mo., assignor to Emil J. Blumz and John A. Bednarzick, St. Louis, Mo. Filed Apr. 15, 1902. Serial No. 102,936. (No model.)

Claim.—In a window-screen, the combination with the parting-strips 7; of the extension-pieces 8; the brackets 9 and 10 attached to the lower corners of the window-sash and extending outwardly and laterally to points in front of the extension parting-strips 8; the roller 11 mounted in the brackets; the clock-spring 12 connecting the roller to one of the brackets; the fly-screen 13 attached to the roller and adapted to be wound thereon; the stiffening-bars 14 and 15 attached to the lower edge of the fly-screen, one on each side thereof; brackets 17 attached to the window-casing; and hooks 18 extending outwardly from the brackets through the screen, and rigidly engaging the bars 14 and 15; substantially as specified.

706,763. BOX-JOINT. REINHOLD A. LAMBE, St. Louis, Mo. Filed Mar. 6, 1902. Serial No. 96,888. (No model.)

Claim.—1. In a box, the combination of side pieces having alternated mortises and tenons at their ends slanting downwardly, end pieces having alternated mortises and tenons at their sides interlocking with those on the side pieces and slanting upwardly, and grooves in said end pieces in which keys or wedges are inserted.

2. In a box, the combination of side and end pieces having interlocking beveled mortises and tenons those on the end pieces being slanted oppositely to those on the sides, transverse grooves in said end pieces, and wedge-shaped keys located in said grooves when the box is assembled.

3. In a box, the combination of side and end pieces having mortises and tenons, tenons on the bottom which fit into grooves in said end pieces, said grooves being wider than the tenons fitting therein to, and keys fitting into the extra width of said grooves.

4. In a box, the combination of side pieces having downwardly-inclined mortises and tenons, and pieces having transversely upwardly inclined mortises and tenons interlocking therewith, a bottom having a tenon at each end the extremity of which is thicker than its piece of union with said bottom piece, a groove in each of said end pieces in the lower part thereof, said groove being deeper at its bottom than at its opening, wedge-shaped keys extending through said grooves, resting on said tenons at each end of the bottom piece, said keys being inserted in place through holes in the tenons of the end pieces registering with mortises in the side pieces after the box is assembled.

706,764. FISH-FLAKING MACHINE. EDWARD H. LAWRENCE, Lubec, Me. Filed Dec. 12, 1901. Serial No. 86,783. (No model.)

Claim.—1. In a fish-flaking machine, a tank adapted to contain fish suspended in liquid, an endless conveyor provided with a series of buckets adapted to take the fish from said tank, an endless carrier adapted to carry fish-drying flakes removably mounted thereon, means for preventing accidental displacement of the flakes on the carriage, and means for rotating said conveyor and carrier.

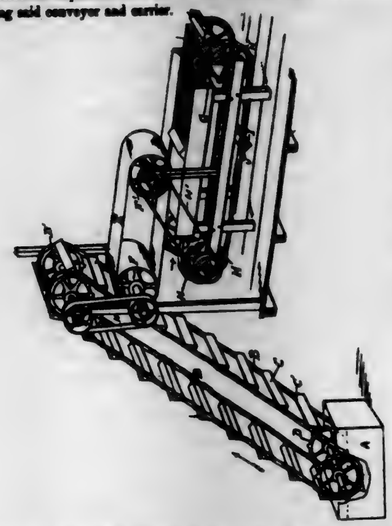

2. In a fish-flaking machine, a tank adapted to contain fish suspended in liquid, an endless conveyor provided with a series of buckets adapted to take the fish from said tank, an endless traveling apron adapted to receive the fish delivered by the buckets and spread them evenly, a carrier adapted to carry fish-drying flakes removably mounted thereon and to have an onward motion in a position to receive on said flakes the fish delivered by said apron and means for operating said conveyor, apron and carrier.

3. In a fish-flaking machine, a tank adapted to contain fish suspended in liquid, an endless conveyor provided with a series of buckets adapted to take the fish from said tank, a carrier-table, an endless carrier adapted to traverse said table, removable flakes supported on said carrier and positioned to receive the fish delivered by the buckets, means for preventing the fish from falling upon the flake-frame, and means for operating said conveyor and carrier.

4. In a fish-flaking machine, a tank adapted to contain fish suspended in liquid, an endless conveyor provided with a series of buckets adapted to take the fish from said tank, a carrier-table having inclined side guards, an endless carrier adapted to traverse said table and having inverted-V-shaped transversely-positioned guards spaced apart the length of a flake, removable flakes supported on said carrier, the frame of the flake being hidden by said guards and means for operating said conveyor and carrier.

706,765. SUGAR-BEET PLOW. JOHN T. LEUTHEUSER and JOHN G. SCHMIDT, Frankenlust township, Bay county, Mich. Filed Oct. 22, 1901. Serial No. 79,093. (No model.)

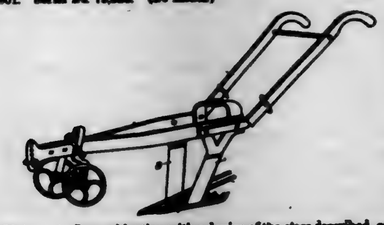

Claim.—1. In combination with a device of the class described, comprising a frame carrying a pair of supports having shoes on their lower ends extending in advance and in the rear of the supports; inclined lifting-bars secured at their forward ends to the forward part of said shoes and having their rear portions supported from the shoes by adjustable means connecting said bars and shoes whereby the inclination of the bars may be adjusted.

2. In combination with a device of the class described, comprising a pair of supports having shoes mounted on their lower ends; a pair of inclined lifting-bars having their front ends removably secured to said shoes, together with means for raising or lowering the rear ends of said bars.

3. In combination with a device of the class described, comprising a pair of standards having shoes mounted on their lower ends; inclined lifting-bars having their front ends removably secured to said shoes, together with a curved link for raising or lowering the rear end of each bar, and means for clamping said link to the shoe, substantially as described.

4. A digging device for plows of the class described, comprising a pair of digging-shoes, a pair of inclined lifting-bars each having near its front end a downwardly-projecting finger to engage a socket in the shoe; together with a curved link for raising or lowering the rear end of each bar, and a bolt for clamping said link to the shoe.

5. A digging device for plows of the class described, comprising a pair of digging-shoes, a pair of inclined lifting-bars each having near its front end a downwardly-projecting curved finger to engage a curved socket in the shoe; together with a curved link for raising or lowering the rear end of each bar, and a bolt for clamping said link to the shoe, substantially as described.

706,766. RANGE-FINDER. ISAAC N. LEWIS, Washington, D. C. Filed Oct. 22, 1901. Serial No. 79,094. (No model.)

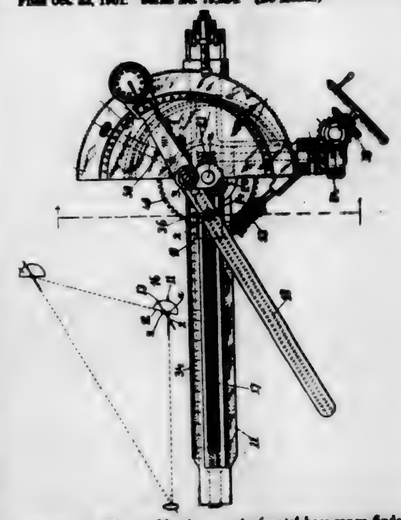

Claim.—1. The combination, in a horizontal-base range-finder, of a base-piece having an arm or bar adapted to be traversed correspondingly with the changing azimuth position of a target, a sector having a base-line corresponding to the line of orientation, and intermediate mechanism operating on the sector to maintain the relation of its base-line to the line of orientation during the traverse of the base-piece, substantially as described.

2. In a horizontal-base range-finder, the combination of a sector having an azimuth-scale, a bar adapted to be swung according to the changing position of the target in azimuth and mounted or supported together with the sector so that when the bar is swung the base-line of the sector will tend to be moved with it, an angle-measuring arm pivoted on said sector and connected with the former bar by a pivotal and sliding connection, and mechanism for maintaining the position of the base-line of said sector and bar during the swinging of the support in azimuth substantially as described.

3. In a horizontal-base range-finder, the combination of a sector having an azimuth-scale, two angle-measuring bars pivotally connected to the base-line of said sector, means operating on the sector to maintain the relation of its base-line to the line of orientation during the traverse of the instrument, and an adjustable coupling in the operating mechanism adapted to permit readjustment in accordance with changes in location of the termini of the base-line with which the instrument is used, as and for the purpose described.

706,767. AUTOMATIC RANGE-FINDING SIGHT FOR CANNON. ISAAC N. LEWIS, Washington, D. C. Filed Oct. 22, 1901. Serial No. 79,095. (No model.)

Claim.—1. The combination with a gun, of a horizontal-base range-finder having an adjustable member or members adapted to be set to angles corresponding to the angles at the gun and distant observing-stations respectively, and training mechanism for the gun connected with said adjustable member or members, as and for the purpose described.

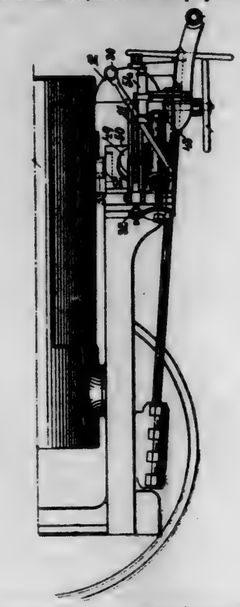

2. The combination with a gun and the elevating mechanism therefor, of a horizontal-base range-finder having its adjustable member or members connected with the elevating mechanism, so that in the act of bringing the adjustable member or members to position corresponding to the observed angle at the distant station the gun will be automatically sighted upon the target.

3. The combination with elevating mechanism for a gun, of a horizontal-base range-finder having two coördinately-operating arms or devices, one adapted to be set according to the traverse of the gun in azimuth, and the other to be set or adjusted according to the transmitted horizontal angle sent from another observing-station, and operating devices connected with said arms or devices at the point of intersection and with the elevating mechanism, as and for the purpose described.

4. The combination of a gun, with an elevating mechanism having a transmitting cam or curve plotted or calibrated according to the variable elevation required for different ranges, and a horizontal-base range-finder, whose coördinately-operating parts are connected with the elevating mechanism of the gun.

5. An automatic sighting apparatus for guns comprising an azimuth indicator or sector whose base-line corresponds to a base-line connecting the gun and observing-station, and mechanism for elevating the gun connected with the azimuth-indicator, and having a transmission-gear plotted according to the elevation required for different ranges.

6. The combination with a gun, of a horizontal-base range-finder mounted on the gun-carriage, an angle-measuring arm or bar for the range-finder, and means to automatically change the angular rotation of said arm to the base-line of the range-finder in the act of traversing the gun.

7. The combination with a gun, of a range-finder mounted to swing in azimuth therewith and comprising a sector, an indicator-arm adapted to be adjusted over a scale of angles on said sector, and means for maintaining the relation of the sector base-line to the line of orientation during the swinging of the gun in azimuth.

8. The combination with a gun, of a horizontal-base range-finder having its base-line portion pivotally mounted with relation to the gun-carriage, means for traversing the gun, and intermediate mechanism for turning the base-line portion of the range-finder so as to maintain the position of said line with relation to the line of orientation.

9. The combination substantially as described with a gun, of a horizontal-base range-finder having two coördinately-operating arms or devices, one adapted to be set as desired according to the azimuth of the target at the gun-station, and the other to be set or adjusted according to the transmitted horizontal angle sent from another observing-station, and mechanism connecting the shiftable point of intersection of said arms with the elevating devices for the gun.

10. The combination with a gun, of an elevating mechanism provided at some point in its transmission-gear with a transmission-cam calibrated or plotted with reference to the variable elevation required for different ranges.

11. The combination with a gun and its elevating mechanism, of interchangeable transmission-cams plotted or calibrated with reference to varying muzzle velocities of projectiles to be discharged by the gun.

12. The combination with a gun, of a horizontal-base range-finder having parts adapted to represent in miniature the elements of a triangle whose base is the line between the gun-station and an observing-station, and whose sides are respectively lines joining the gun and the distant observing-station with the target, and means for automatically shifting the base-line portion of the instrument when the gun is turned in traverse.

13. The combination with a gun, of a horizontal-base range-finder having parts adapted to represent in miniature the elements of a triangle whose base is the line between the gun-station and an observing-station, and whose sides are respectively lines joining the gun and the distant observing-station with the target, and means for automatically setting the parts to angular position corresponding to the angle between the base-line and the line joining the gun and target when the gun is traversed to direct it upon the target.

14. The combination with a gun, of a horizontal-base range-finder having two adjustable angle-measuring arms or members adjustable with reference to a common base-line representing the base between a distant observing-station and the gun, means for automatically adjusting one of said arms with reference to the base-line in traversing the gun, and means for automatically adjusting the other arm in the act of changing the elevation of the gun.

15. The combination with a gun, of a horizontal-base range-finder mounted on the gun-carriage and comprising two adjustable angle-measuring arms or members adapted to be adjusted with reference to a common base-line representing the base between the gun and a distant observing-station, means for automatically adjusting one of said members in the operation of traversing the gun, and means for adjusting the other member according to the azimuth angle transmitted from the distant station.

706,768. SOFT-TREAD HORSESHOE. BURTON P. MARSLEY, Brooklyn, N. Y. Filed Jan. 23, 1902. Serial No. 90,973. (No model.)

Claim.—In combination, a horseshoe comprising a continuous vertical rim and an inner horizontal flange and having heel extensions forming continuations of the said rim, and a pad spaced from the rim and having the forward corner portions of the heel part cut away to receive the aforementioned heel extensions of the horseshoe, substantially as set forth.

706,769. MANIFOLDING SALES OR ORDER BOOK. BELA G. MERRILL, Oakpark, Ill. Filed Oct. 19, 1901. Serial No. 79,241. (No model.)

Claim.—1. In a device of the character described, the combination with a support, of a carbon-carrier frame consisting of a single piece of wire bent to form a pair of angularly-related arms, and a clamping member formed in a single piece of metal bent around one of said arms to form a hinged connection therewith, said clamping member being disposed longitudinally over the other arm to clamp a carbon-sheet thereon, and a clip for retaining the clamping member in its closed position.

2. In a device of the character described, the combination with a support, of a carbon-carrier frame consisting of a single piece of wire bent to form a pair of angularly-related arms, and a clamping member consisting of a single piece of metal bent to form a sleeve encircling one arm of the frame to effect a hinged connection therewith, said clamping member being disposed over the other arm to clamp a carbon-sheet thereon, and having spring-clips engaging said last-named arm to hold the clamp closed.

3. In a device of the character described, the combination with a support, of a carbon-carrier frame consisting of a single piece of wire bent to form a pair of angularly-related arms, and a clamping member consisting of a single piece of metal bent to form a longitudinal concavity for the reception of one arm, and also to form a pair of spring-clips engaging said arm to retain the clamping member in its closed position, and a sleeve integral with the clamping member and encircling an arm to form a hinged connection therewith, the end of the clamping member opposite the sleeve being bent outward to form an opening for the reception of a pencil-point or the like for the purpose of opening the clamp.

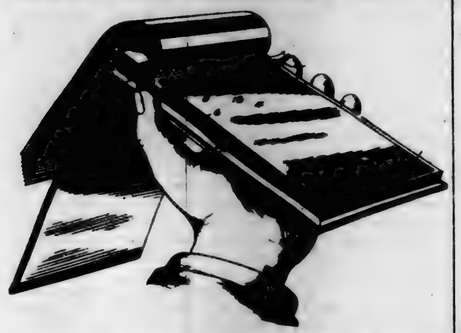

4. In a device of the character described, the combination with a support for a series of leaves, of a carbon-carrier comprehending a transverse arm extended across a leaf, a hinged clamping member disposed over said arm and having a longitudinal concavity for the reception thereof, spring-clips carried by the clamp and engaging the arm to hold the clamp closed, and a clamping lip or flange extending longitudinally along one side of the clamping member in a plane below the upper surface of the arm to clamp the carbon-sheet flat against its support at a point adjacent to the clamp.

5. In a device of the character described, the combination with a carbon-carrier comprising a rounded arm having a beveled end, of a clamping member having a longitudinal concavity for the reception of the arm and having its end bent outward and opposed to the oppositely-inclined or beveled end of the arm to provide an opening for the reception of a pencil-point or the like.

6. In a device of the character described, the combination with a support, of a carbon-carrier frame consisting of a single piece of wire bent to form a pair of angularly-related arms, and a transversely U-shaped clamping member having an integral portion thereof engaging one of said arms to form a hinged connection therewith, said clamping member being disposed longitudinally over and embracing the other of said arms to clamp a carbon-sheet thereon.

7. In a device of the character described, the combination with a support for a series of leaves, of a carbon-carrier comprehending an arm extending across the support to sustain one end of a carbon-sheet, and a clamping member engaging said arm to retain the carbon-sheet and having means disposed to clamp the carbon-sheet flat against a subjacent leaf.

8. In a device of the character described, the combination with a support, of a carbon-carrier frame consisting of a single piece of wire bent to form a pair of angularly-related arms, and a clamping member consisting of a single piece of metal bent to form a longitudinal concavity for the reception of one arm, and also to form a pair of spring-clips engaging said arm to retain the clamping member in its closed position, and a sleeve integral with the clamping member and encircling an arm to form a hinged connection therewith.

9. In a device of the character described, the combination with a support for a series of leaves, of a carbon-carrier comprehending a transverse arm extended across a leaf, a hinged clamping member disposed over said arm and having a longitudinal concavity for the reception thereof, and a clamping lip or flange extending longitudinally along one side of the clamping member in a plane below the upper surface of the arm to clamp the carbon-sheet against its support at a point adjacent to the clamp.

10. In a device of the character described, the combination with a support, of a carbon-carrier frame consisting of a single piece of wire bent to form a pair of angularly-related arms, and a transversely U-shaped clamping member having an integral part thereof surrounding one of said arms to form a hinged connection therewith, said clamping member being disposed longitudinally over and embracing another of said arms to clamp a carbon-sheet thereon, the extremity of said last-named arm being inclined and the adjacent extremity of the clamping member being bent outward to define an opening for the reception of a pencil-point or the like.

11. In a device of the character described, the combination with a support, and a series of leaves, of a carbon-carrier comprehending a transverse arm, a clamping member disposed over said arm to retain one end of a carbon-sheet, and a clamping lip or flange extending longitudinally along one side of the clamping member in a plane below the upper surface of the arm to clamp the carbon-sheet against its support at a point adjacent to the clamp.

706,770. CIRCULAR SAWING MACHINE. WILLIAM MILLER, Falkirk, Scotland. Filed May 6, 1902. Serial No. 106,280. (No model.)

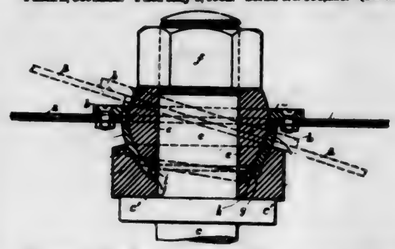

Claim.—1. In a circular sawing machine, means for setting the saw-disk at any desired inclination to, and retaining it upon its rotating spindle, said means consisting of a cup-shaped boss on the saw-disk, a socket-block adapted to receive said cup-shaped boss, a convex-shaped washer surrounding the rotating spindle and a nut threaded upon said spindle for clamping together the saw-disk boss, socket-block, and rotating spindle, substantially as described.

2. In a circular sawing machine means for setting the saw-disk at any desired inclination to, and retaining it upon its rotating spindle, said means consisting of a cup-shaped boss formed on or fitted to the saw-disk and having a pin projecting from its surface, a concave socket-block adapted to receive said cup-shaped boss, a groove in said socket-block eccentric to the spindle orifice and adapted to receive the pin upon the cup-shaped boss of the saw-disk, a convex washer surrounding the spindle and adapted to enter the cup-shaped boss, and a nut threaded upon the outer end of the saw-disk spindle for clamping together the saw-disk boss, socket-block, and rotating spindle, substantially as described.

706,771. JAR-CLOSURE. WILLIAM R. MCCARNEY, Eureka Springs, Ark. Filed June 27, 1901. Serial No. 66,366. (No model.)

Claim.—The combination of a jar, having an external annular flange upon the neck thereof, the under edge of the flange being inclined upwardly and outwardly and the outer edge of the flange being inclined upwardly and inwardly, the two inclined faces intersecting at an acute angle, with a cover applied to the outer end of the neck and having its marginal edge inclined upwardly and inwardly to correspond with the inclined outer edge of the neck-flange, and also provided with oppositely-inclined cam-surfaces upon the top of the cover, and clamps to connect the cover to the jar, each clamp comprising a rigid body portion lying against the corresponding inclined outer edges of the neck-flange and the cover, and provided at opposite ends with rigid laterally-projected shoulders which are undercut at acute angles corresponding to and for engagement respectively with the under inclined edge of the neck-flange and one of the cam-surfaces of the cover, each clamp being separate from and slidably movable in a circular direction about the peripheries of the cover and neck-flange.

706,772. FOLDING STALL FOR CATTLE. ROBERT A. MCLEBY, JOHN W. WILSON, and AMOS S. WOOSTER, Palmyra, Wis. Filed Apr. 9, 1902. Serial No. 102,102. (No model.)

Claim.—In a stable, the combination of a series of swinging partitions hinged to suitable supports at their inner ends along the manger-line, with their outer ends unsupported and free to move in either direction, each independently of the others; a pivotal hinge for each of said

partitions; a second hinge for each partition, acting eccentrically to tilt the partition, when swung from its normal position at right angles to the manger-line, whereby the partition will be automatically restored to normal position by gravity, except when swung to an extreme or folded position with both hinge-joints in substantially the plane of the partition, said partitions being formed to overlap when folded whereby the movement of one will adjust the others to a position for automatic operation.

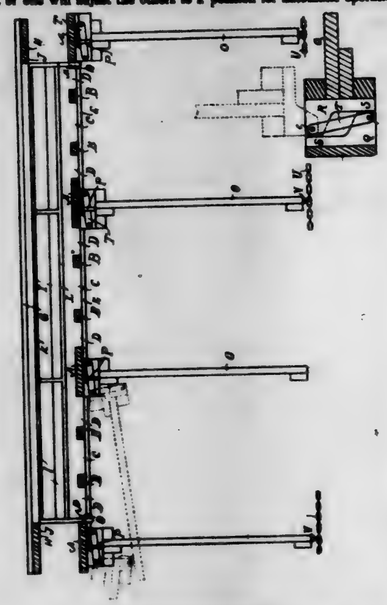

706,773. ICE-CRUSHER FOR REFRIGERATORS. FRANK H. NIEMAN, Lynn, Mass. Filed Nov. 14, 1901. Serial No. 82,180. (No model.)

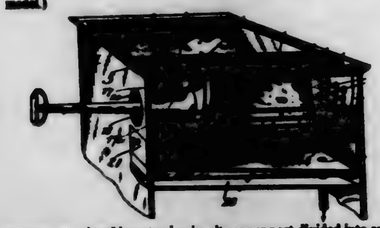

Claim.—1. A refrigerator having its upper part divided into an ice-storage compartment and an ice-crushing compartment, the latter comprising a chamber having inclined sides and bottom with spaced openings therein, and a plunger-pick slidable on the sides and bottom of said chamber to crush the ice between said pick and the end of said chamber.

2. A refrigerator having its upper part divided into an ice-storage compartment and an ice-crushing compartment, the latter comprising a chamber having inclined sides and bottom with spaced longitudinal openings therein and provided at one end with a plurality of penetrating points projecting inwardly, and a plunger-pick embodying a head slidable on the sides and bottom of said chamber and provided with like opposed points.

3. A refrigerator having its upper part divided into an ice-storage compartment and an ice-crushing compartment, the latter comprising a chamber having inclined sides and bottom with spaced longitudinal openings and one end of which is provided with inwardly-projecting penetrating points, a plunger-pick embodying a head slidable on the sides and bottom of said chamber and provided with similar opposed points, and removable means positioned beneath said chamber to receive the crushed ice and provided with an outlet to drain the same.

4. A refrigerator having its upper part divided into an ice-storage compartment and an ice-crushing compartment, the latter comprising a chamber having inclined sides and bottom with spaced openings therein and provided at one end with a plurality of penetrating points of different lengths projecting inwardly, and a plunger-pick embodying a head slidable on the sides and bottom of said chamber and provided with like opposed points.

5. An improved device of the class described, comprising a chamber within the refrigerator U-shaped in cross-section and provided at one end with inwardly-projecting penetrating points and with sides and a bottom composed of spaced bars, a plunger-pick embodying a U-shaped head slidable on said bars and provided with penetrating points adapted to coact with the points in the end of such chamber, and a sliding rod extending through an opening in the wall of said refrigerator and secured at one end to said head.

6. An improved device of the class described, comprising a closed compartment within the refrigerator, a chamber U-shaped in vertical cross-section in the upper part of said compartment one end of said chamber consisting of a plate provided with inwardly-projecting points of different lengths and the bottom and sides of said chamber consisting of spaced bars, guide-rails along the top of the sides of said chamber and extending inwardly, a plunger-pick embodying a head fitting in said chamber beneath said guide-rails and sliding on said bars which head is provided with projecting points of different lengths, a sliding rod secured at one end to said head and projecting through an opening in the wall of said refrigerator, and means beneath said chamber to receive the crushed ice and provided with a drain-outlet.

7. The combination with a refrigerator comprising a casing, a chamber therein provided with openings in its sides and bottom, and a plunger-pick slidable in said chamber, of a drawer beneath said chamber to receive the crushed ice and provided with a bottom inclined from front to rear and with a drain-outlet at the rear.

8. The combination with a refrigerator comprising a casing, a chamber therein provided with openings in its sides and bottom, a plunger-pick slidable in said chamber, and a drawer beneath said chamber to receive the crushed ice and provided with a drain-outlet, of a drain-compartment extending across said casing beneath said drawer, when the latter is in normal position.

706,774. PROCESS OF PRODUCING PHOTOGRAPHS IN RELIEF. WILHELM GUNT, Berlin, Germany. Filed June 1, 1901. Serial No. 62,800. (No specimens.)

Claim.—1. The process of producing a picture in rilievo by photography, which consists in throwing a strong light upon the object to be reproduced, placing the object opposite a photographic camera, and causing a shade to gradually reach over the object in the axis of the photographic apparatus while but a single exposure is made, substantially as specified.

2. The process for producing a picture in rilievo by photography, which consists in first throwing a strong light upon the object to be reproduced, exposing the object to a sensitive plate, then covering the object gradually by a shade while but a single exposure is made, the position of the shade relatively to the sensitive plate and to the object being changed gradually during exposure, and finally covering a layer of sensitized gelatin with the picture produced upon the said sensitive plate and then developing said sensitized layer to form a solid rilievo-picture, substantially as specified.

706,775. FORMING STATUARY OR OTHER ORNAMENTAL STRUCTURES. FELIX PEANO, Oakland, Cal. Filed Mar. 7, 1902. Serial No. 97,502. (No model.)

Claim.—1. A process of forming statuary or other ornamental structures consisting in shaping a natural cellular body and then applying thereto an exterior plastic coating which enters the cells of the cores and forms a bond or union for locking the coating to said core.

2. A process of forming statuary and other ornamental structures consisting in imparting an outline to a natural cellular body and then finishing with an outer coating applied in a plastic state so that it will enter the cells of the body and form a bond or union therewith.

3. A process of producing statuary and other ornamental structures consisting in building up a sectional cellular body and uniting the sections by plastic material which enters the cells and forms a bond or union therewith, thus shaping the exterior of the body, and, finally, finishing with an outer coating of plastic material which also enters the cells and forms a bond to retain the outer coating in place

4. A process of producing statuary and other ornamental structures consisting of forming a cellular, viscous core, boring channels or holes therethrough, inserting perforated pipes in said holes, injecting cement or the like into said pipes whereby they become embedded in the cement and closely united with the surrounding core, sculpturing said core and applying thereto an external surface coating.

5. A process of producing statuary and like ornamental structures consisting in shaping a cellular body into the desired form or design and ornamenting the exterior by applying in a plastic state a metallic coating which enters the cells and forms a bond therewith.

6. As a new article of manufacture, the combination of a porous, mineral body and a metallic outer coating entering the pores of the body and forming a permanent bond therewith.

706,776. FLOOD-GATE. JOHN D. PERRY, Farmgould, Ark., assignor to Samuel K. S. Russell, Bard, Ark. Filed June 8, 1901. Renewed Apr. 25, 1902. Serial No. 104,672. (No model.)

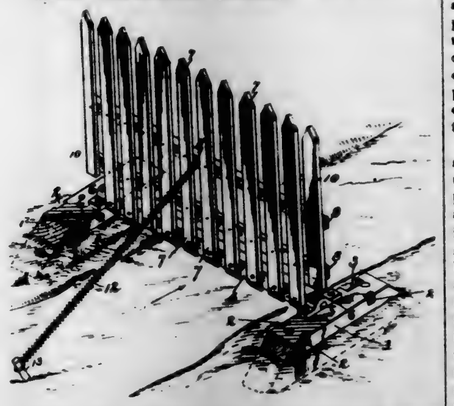

Claim.—The combination of the mudsills 1, provided with recesses 2, and 3; a hinged beam secured to said mudsills by bearings 6; slats secured to the front face of said hinged beam in an upright position; a cross-beam secured to said slats just above said hinged beam, and extending beyond each end of said hinged beam; an upper cross-beam secured to said slats, above last-mentioned beam, and extending beyond the ends of said hinged beam; two shorter slats, one at each end, secured to the ends and front faces of said last-mentioned cross-beams; an eye secured in the front face of the upper cross-beam, flush with the front faces of the first-mentioned slats; a spiral spring, having one end secured to said eye, and its other to a stob in the stream in such position that when the gate is horizontal, the upper part of said spring, and the extreme upper part of said eye will not extend above the said slats; extensions, one secured to the lower face and near each end of the hinged beam; extensions secured to the inner face of each of the mudsills in position to arrest the first-mentioned extension, and hold the gate as against the spring in an upright position, substantially as shown and described and for the purposes set forth.

706,777. PELLET OR TABLET MAKING APPARATUS. EMERICH PETRANYI, Elizabeth, N. J. Filed Feb. 15, 1902. Serial No. 94,368. (No model.)

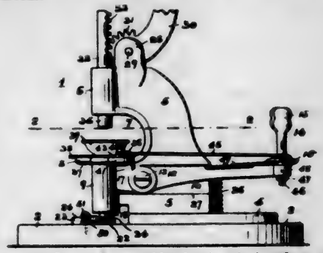

Claim.—1. In a pellet or tablet forming device, the combination with a base and a standard, of a table connected with said standard having a plunger-receiving opening, a guide directly beneath said table having its guiding portion communicating with said opening in the table, a presser-rod movably arranged in said guide, a plunger provided with means for forcing its lower end down into the said opening in the table, and means for causing a sliding movement of said presser-rod, an arm pivotally arranged on said table, a finger-piece connected with said arm, a funnel-shaped compound-containing receptacle on said arm provided with an open bottom for delivering a predetermined quantity of the compound into the opening in said table, and a slide-arm pivotally arranged on said table adapted to be slid laterally across the opening in said table for removing the finished pellet or tablet, substantially as and for the purpose set forth.

2. In a pellet or tablet forming device, the combination, with a base and a standard, of a table connected with said standard having a plunger-receiving opening, a guide directly beneath said table having its guiding portion communicating with said opening in the table, a presser-rod movably arranged in said guide, a plunger provided with means for forcing its lower end down into said opening in the table, and means for causing a sliding movement of said presser-rod, consisting, essentially, of a pivoted lever on said standard, having a finger-piece at or near its one end and said lever having its opposite end in lifting engagement with said presser-rod, an arm pivotally arranged on said table, a finger-piece connected with said arm, a funnel-shaped compound-containing receptacle on said arm provided with an open bottom for delivering a predetermined quantity of the compound into the opening in said table, and a slide-arm pivotally arranged on said table adapted to be slid laterally across the opening in said table for removing the finished pellet or tablet, substantially as and for the purposes set forth.

3. In a pellet or tablet forming device, the combination, with a base and a standard, of a table connected with said standard having a plunger-receiving opening, a guide directly beneath said table having its guiding portion communicating with said opening in the table, a presser-rod movably arranged in said guide, a plunger provided with means for forcing its lower end down into the said opening in the table, means for causing a sliding movement of said presser-rod, and an adjusting means on said base on which the lower end of said presser-rod rests, capable of raising and lowering the relative positions of said presser-rod with respect to the upper surface of said table, an arm pivotally arranged on said table, a finger-piece connected with said arm, a funnel-shaped compound-containing receptacle on said arm provided with an open bottom for delivering a predetermined quantity of the compound into the opening in said table, and a slide-arm pivotally arranged on said table adapted to be slid laterally across the opening in said table for removing the finished pellet or tablet, substantially as and for the purposes set forth.

4. In a pellet or tablet forming device, the combination, with a base and a standard, of a table connected with said standard having a plunger-receiving opening, a guide directly beneath said table having its guiding portion communicating with said opening in the table, a presser-rod movably arranged in said guide, a plunger provided with means for forcing its lower end down into the said opening in the table, means for causing a sliding movement of said presser-rod, and an adjusting means on said base on which the lower end of said presser-rod rests, capable of raising and lowering the relative positions of said presser-rod with respect to the upper surface of said table, consisting, of a rotatably-arranged cam-disk provided with a cam-shaped face, and means connected with said disk for holding said disk in its variously-adjusted positions, an arm pivotally arranged on said table, a finger-piece connected with said arm, a funnel-shaped compound-containing receptacle on said arm provided with an open bottom for delivering a predetermined quantity of the compound into the opening in said table, and a slide-arm pivotally arranged on said table adapted to be slid laterally across the opening in said table for re-

moving the finished pellet or tablet, substantially as and for the purposes set forth.

5. In a pellet or tablet forming device, the combination, with a base and a standard, of a table connected with said standard having a plunger-receiving opening, a presser-rod and a plunger both connected with the said standard, and a compound-containing receptacle slidably arranged upon said table, said receptacle being provided with an opening in its bottom for depositing a certain quantity of the compound through the opening in the table and directly upon the end of the presser-rod, means connected with said plunger for forcing its lower end down into the said opening in the table, and means for causing a sliding motion of said presser-rod, consisting, essentially, of a lever pivoted to said standard, having a finger-piece at or near its one end and said lever having its opposite end in lifting engagement with said presser-rod, substantially as and for the purposes set forth.

6. In a pellet or tablet forming device, the combination, with a base and a standard, of a table connected with said standard having a plunger-receiving opening, a guide directly beneath said table having its guide portion communicating with the opening in the table, a presser-rod movably arranged in said guide, a plunger provided with means for forcing its lower end down into the said opening in the table, a slide-arm on said table for removing the finished pellet or tablet, and means for causing a sliding movement vertically of said presser-rod and a sliding movement laterally on said table of said slide-arm, consisting, essentially, of a lever pivoted to said standard, said lever having its one end in lifting engagement with said presser-rod, a post rotatively arranged at or near the opposite end of said lever, and a connecting-link between said post and said slide-arm, substantially as and for the purposes set forth.

7. In a pellet or tablet forming device, the combination, with a base and a standard, of a table connected with said standard having a plunger-receiving opening, a guide directly beneath said table having its guide portion communicating with the opening in the table, a presser-rod movably arranged in said guide, a plunger provided with means for forcing its lower end down into the said opening in the table, a slide-arm on said table for removing the finished pellet or tablet, and means for causing a sliding movement vertically of said presser-rod and a sliding movement laterally on said table of said slide-arm, consisting, essentially, of a lever pivoted to said standard, said lever having its one end in lifting engagement with said presser-rod, a post rotatively arranged at or near the opposite end of said lever, and a connecting-link between said post and said slide-arm, and a set of springs 26 and 49 connected with said lever for returning said lever and the parts operated by said lever to their normally inoperative positions, substantially as and for the purposes set forth.

8. In a pellet or tablet forming device, the combination, with a table having an opening, and means for pressing a compound into a pellet or tablet, of an arm pivotally arranged on said table, a finger-piece connected with said arm, a funnel-shaped compound-containing receptacle on said arm provided with an open bottom for delivering a predetermined quantity of the compound into the opening in said table, and a slide-arm pivotally arranged on said table adapted to be slid laterally across the opening in said table for removing the finished pellet or tablet, substantially as and for the purposes set forth.

9. The herein-described pellet or tablet making device, consisting, essentially, of a base, a standard, and a table connected with said standard having a plunger-receiving opening, a tubular guide 6 connected with said standard, a plunger movably arranged in said guide 6, a second guide 9 directly beneath said table having its guide portion in communication with the opening in said table, a presser-rod movably arranged in said guide 9, a pivotally-arranged lever on said standard having one end in lifting engagement with said presser-rod for bringing the upper end of said presser-rod flush with the upper surface of said table, an arm 37 pivotally arranged on said table, a finger-piece connected with said arm 37, a funnel-shaped compound-containing receptacle on said arm 37 provided with an open bottom for delivering a predetermined quantity of the compound into the opening in said table, and a slide-arm 43 pivotally arranged on said table adapted to be slid laterally across the opening in said table for removing the finished pellet or tablet, substantially as and for the purposes set forth.

706,778. MEDICATED TAMPON. EDWARD M. PUTT, Rutland, Vt. Filed Dec. 3, 1901. Serial No. 84,830. (No model.)

Claim.—A medicated tampon, consisting of a body of fibrous material, fragile restraining-cords to compress the body arranged at intervals thereon, and a strand threaded under the cords lengthwise of the body to cut the cords and permit the body to expand.

706,779. THRUST-BEARING. JOHAN POETTY, San Francisco, Cal. Filed Apr. 12, 1901. Serial No. 55,574. (No model.)

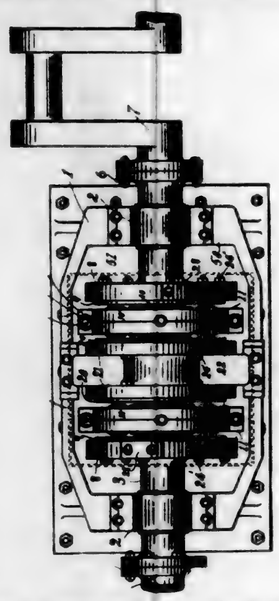

Claim.—1. In a device of the character described, the combination of a shaft, a thrust-collar thereon, a fixed abutment, bearing-plates removably secured to said collar and abutment on opposing faces thereof, each plate being divided into sections along radial lines extending from the center at such an angle with each other as to pass beneath the hereinafter-mentioned rollers diametrically, a roller-carrier mounted loosely on the shaft between said collar and abutment, and divided diametrically into sections, and a circular series of an even number of rollers carried by said carrier, said rollers being interposed between the bearing-plates or the collar and abutment, substantially as described.

2. In a device of the character described, the combination of a shaft, a thrust-collar thereon, a fixed abutment, bearing-plates removably secured to said collar and abutment on opposing faces thereof, each plate being divided into sections along radial lines extending from the center at such an angle with each other as to pass beneath the hereinafter-mentioned rollers diametrically, a roller-carrier mounted loosely on the shaft between said collar and abutment, and divided diametrically into sections, and a circular series of rollers carried by said carrier, said rollers being interposed between the bearing-plates on the collar and abutment, substantially as described.

3. In a device of the character described, the combination of a shaft, a thrust-collar thereon, a fixed abutment, bearing-plates removably secured to said collar and abutment on opposing faces thereof, said plates being divided into sections, clamps at the periphery of said plates, means for moving said clamps inwardly to clamp said plate-sections tightly together, a roller-carrier mounted loosely on said shaft between said collar and abutment, and a circular series of rollers carried by said carrier, said rollers being interposed between the bearing-plates on the collar and abutment, substantially as described.

4. In a device of the character described, the combination of a shaft, a thrust-collar thereon, a fixed abutment, a roller-carrier mounted loosely on the shaft between said collar and abutment, and a circular series of rollers carried by said carrier, each roller being fixedly secured on axles extending radially from the center of the carrier, the outer ends of said axles being stepped in the carrier and preventing their radial movement, and the carrier being divided into sections on a plane at right angles to the shaft, each section having inner and outer series of half-bearings to receive the ends of said roller-axles, substantially as described.

5. In a device of the character described, the combination of a shaft, a thrust-collar thereon, a fixed abutment, a roller-carrier mounted loosely on the shaft between said collar and abutment, a circular series of rollers carried by said carrier, said rollers being interposed between the collar and abutment, and a frame comprising end walls supporting said shaft, and side walls supporting the upper section of the abutment, said side walls and end walls being closed to form an oil-tank for lubricating the moving parts, substantially as described.

6. In a device of the character described, the combination of a shaft, a thrust-collar thereon, a fixed abutment, a roller-carrier mounted loosely on the shaft between said collar and abutment, and divided diametrically into sections, a circular series of rollers carried by said carrier and interposed between the collar and abutment, and bolts connecting the two sections of the carrier at the ends of said diameter, said roller-carrier being of circular form but its circular periphery being cut down or notched on each side of the ends of the dividing diameter whereby the projecting ends of the bolts may lie in said notches and below or within the circumference of the said peripheral circle of the carrier, thereby avoiding projections beyond said circumference, substantially as described.

7. In a device of the character described, the combination of a shaft a thrust-collar thereon, a fixed abutment, a roller-carrier mounted loosely on the shaft between said collar and abutment and divided diametrically into sections, a circular series of rollers carried by said carrier and interposed between the collar and abutment, and double-ended bolts, each having a central head contained in recesses or sockets in the opposing faces of the carrier-sections, the threaded ends of each bolt being passed through said sections, and nuts on said threaded ends, substantially as described.

8. In a device of the character described, the combination of a shaft, a thrust-collar thereon, a fixed abutment, a roller-carrier mounted loosely on the shaft between said collar and abutment, and divided diametrically into sections, a circular series of rollers carried by said carrier and interposed between the collar and abutment, said roller-carrier being of circular form, but its circular periphery being cut down or notched on each side of the ends of the dividing diameter, and double-ended bolts connecting the two sections of the carrier at the ends of said diameter, each bolt being threaded at each end, and said threaded end projecting into one of said notched portions, and nuts on the ends of the bolts in said notched portions, substantially as described.

9. In a thrust-bearing, in combination with a circular series of rollers, a carrier therefor divided diametrically into sections and also divided on a plane at right angles to the axis, double-ended bolts at the ends of the aforesaid diameter, extending in said plane on each side of said diameter, and nuts on the threaded ends of said bolts, said nuts having on their inner faces conical sockets, and the carrier-sections having conical ring-sections adapted to fit into said sockets and to be clamped by said nuts, substantially as described.

706,780. CLAMP FOR PIPES. HENRY P. G. REED, Chicago, Ill., assignor to George W. Phillips, Camden, N. J. Filed June 28, 1900. Serial No. 722,125. (No model.)

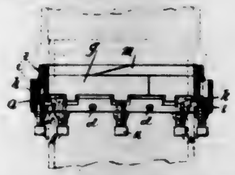

Claim.—1. In a pipe-clamp, the combination with an annulus adapted to be fixedly supported upon a pipe, of an annular packing-strip surrounded by said annulus and movable longitudinally of the annulus and adapted for fixed engagement with an opposed face of a pipe-joint, and a plurality of independently-acting adjusting devices *k* acting longitudinally of the pipe for effecting a fixed engagement between the packing-strip and an opposed face of a pipe-joint, substantially as described.

2. In a pipe-clamp, the combination with an annulus adapted to be fixedly supported upon a pipe, of an annular packing-strip surrounded by said annulus and movable longitudinally of the annulus and adapted for fixed engagement with an opposed face of a pipe-joint, and a plurality of independently-acting adjusting-screws *k k* carried by said annulus, acting longitudinally of the pipe for effecting a fixed engagement between the packing-strip and an opposed face of a pipe-joint, substantially as described.

3. The combination with an annulus formed in sections, of means for securing said annulus about a pipe, a second annulus formed in sections and inclosed by the first aforesaid annulus and having a packing-face, and longitudinally-acting screws *k k* carried by the first aforesaid annulus adapted for engagement with the latter annulus to force the same longitudinally of the pipe and thereby effect fixed engagement between the packing-face and the pipe-joint, substantially as described.

4. The combination with an annulus formed in sections, of means for securing said annulus about a pipe, a second annulus formed in sections and inclosed by the first aforesaid annulus and having a packing-face, outwardly-projecting lugs *h* provided upon the second aforesaid annulus, and longitudinally-acting screws *k k* carried by the first aforesaid annulus, adapted for engagement with said lugs to force the annulus carrying the same longitudinally of the pipe and thereby effect fixed engagement between the packing-face and the pipe-joint, substantially as described.

5. The combination with an annulus formed in sections, of means for securing said annulus about a pipe, a second annulus formed in sections and inclosed by the first aforesaid annulus and having a packing-face, outwardly-projecting lugs *h* provided upon the second aforesaid annulus and projecting within recesses provided in the first aforesaid annulus, and longitudinally-acting screws *k k* carried by the first aforesaid annulus adapted for engagement with said lugs to force the annulus carrying the same longitudinally of the pipe and thereby effect fixed engagement between the packing-face and the pipe-joint, substantially as described.

6. The combination with an annulus formed in sections, of a plurality of radially-acting screws *d* for fixing said annulus about a pipe, a second annulus formed in sections and inclosed by the first aforesaid annulus and having a packing-face, and longitudinally-acting screws *k k* carried by the first aforesaid annulus adapted for engagement with the latter annulus to force the same longitudinally of the pipe and thereby effect fixed engagement between the packing-face and the pipe-joint, substantially as described.

706,781. STEAM-TRAP. WILLIAM H. REYNOLDS, Houston, Tex. Filed July 9, 1901. Serial No. 67,674. (No model.)

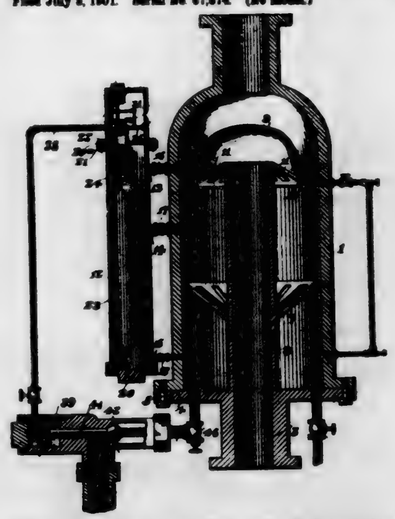

Claim.—1. In a device of the character described, the combination with a trap, a float-cylinder, valve-controlled water-relieving means for the trap and a float within the cylinder, of a hollow head located at the upper end of the float-cylinder, a valve-casing located within said head at one side thereof, a balanced valve controlling the communication between the float-cylinder and the valve-casing, connecting devices operatively connecting the float and the balanced valve, and a conduit extending from the valve-casing to the water-relieving means to convey steam to said water-relieving means when the balanced valve is opened by the actuation of the float.

2. In a device of the character described, the combination with a trap, an exteriorly-arranged float-cylinder, valve-controlled water-relieving means for the trap and a float within the cylinder, of a hollow head located at the upper end of the float-cylinder, a valve-casing located within said head at one side thereof, a pivoted arm mounted in the head opposite the casing, a balanced valve controlling the communication between the float-cylinder and the valve-casing, connecting devices effecting an operative connection between the pivoted arm, the float and the balanced valve, and a conduit extending from the valve-casing to the water-relieving means to convey steam to said water-relieving means when the balanced valve is opened by the action of the float.

3. In a device of the character described, the combination with a trap, an exteriorly-arranged float-cylinder, a float within said cylinder, water-relieving means for the trap, a conduit extending from the float-cylinder to the water-relieving means, and a valve controlling said con-

duit and connected to the float for actuation thereby, of a valve-controlled pipe establishing communication between the upper portion of the trap and the float-cylinder at a point above the float to permit the escape of steam to the cylinder, a second valve-controlled pipe extending between the trap and cylinder at a point adjacent to the first-named pipe to permit the escape of water from the trap to the float-cylinder, and a third valve-controlled escape-pipe establishing communication between the trap and cylinder adjacent to the lower extremities thereof, said last-named pipe serving to permit the escape of water from the float-cylinder in any desired ratio to the escape of water from the trap, for the purpose of effecting the depression of the float and the closing of the balanced valve either before or after the trap has been entirely emptied, or at the moment of complete discharge, as desired.

706,782. FEED-WATER HEATER AND PURIFIER. HARRY J. REYNOLDS, Cleveland, Ohio, assignor of one-half to Ernest T. Saunders, Cleveland, Ohio. Filed Feb. 28, 1901. Serial No. 48,419. (No model.)

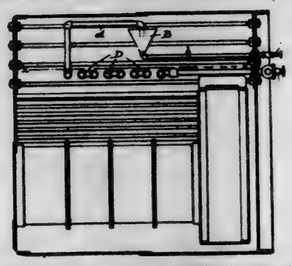

Claim.—In a feed-water heater and purifier for steam-boilers, the combination of a feed-pipe leading into the boiler, a horizontal heating-coil connected therewith and located in the boiler in a plane parallel with but just below the normal water-line of the boiler and a pipe leading up from the inner end of the coil and having its discharge end curved over and downwardly, with an open-topped funnel-shaped receiving vessel located in the boiler below said discharge-outlet of the heating-coil but above the normal water-line of the boiler and a discharge-pipe connected with the lower end of said receiving vessel and extending out through the shell of the boiler, together with suitable valves in the feed and discharge pipes, outside of the boiler, to control them, substantially as specified.

706,783. AUTOMATIC CYCLE OR BICYCLE SKATE. ELIAS E. RIES, New York, N. Y. Filed May 8, 1897. Renewed Dec. 28, 1901. Serial No. 87,627. (No model.)

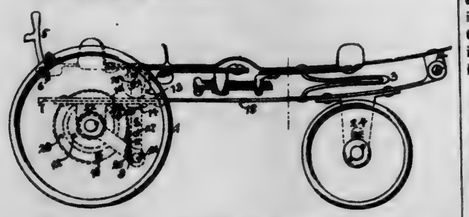

Claim.—1. In a motor-skate the combination of a base-plate or frame carrying the driving and pilot wheels, a bodily-depressible foot-plate having suitable pivotal or hinged connections with said base-plate, and driving mechanism operatively connected with said foot-plate and acting upon said driving wheel or wheels.

2. In a skate, the combination of a base-plate, with a depressible foot-plate pivotally connected to the said base-plate at the toe portion of the said foot-plate, and a guide or guides between the foot-plate and base-plate at or near the heel portion of said foot-plate.

3. In a motor-skate, the combination of a base-plate supporting front and rear wheels with a depressible foot-plate supported and guided by the base-plate, at two or more separate points in its length, and driving mechanism operated by the foot-plate.

4. In a skate, the combination of a base-plate, and a bodily-depressible foot-plate pivoted thereto, with driving mechanism operated by the said foot-plate.

5. In a skate, the combination of a base-plate with a depressible foot-plate connected to the said base-plate at the toe portion of said foot-plate, and driving mechanism operated by the said foot-plate.

6. In a skate, the combination of a base-plate, and a bodily-depressible foot-plate pivoted thereto, with driving mechanism operated by the depression of said foot-plate, and means for normally raising the said foot-plate.

7. In a skate, the combination of a base-plate supporting at its rear end one or more driving-wheels and at its forward end one or more pilot-wheels, and a bodily-depressible foot-plate mounted upon the base-plate, with driving mechanism connecting the rear portion of the foot-plate with the driving wheel or wheels.

8. In a skate, the combination of a base-plate supporting at its rear end one or more driving-wheels and at its forward end one or more pilot-wheels, and a bodily-depressible foot-plate mounted upon the base-plate, with driving mechanism connecting the rear portion of the foot-plate with the driving wheel or wheels, and adapted to impart thereto a positive forward motion while always permitting the continual forward rotation of said driving wheel or wheels.

9. In a skate, the combination of a base-plate supporting pilot and driving wheels, and a bodily-depressible foot-plate pivoted to said base-plate, with driving mechanism and means to engage the said driving mechanism with the driving-wheel on the depression of said foot-plate and to disengage the same during the upward motion of the foot-plate.

10. In a skate, the combination of a base-plate, with a bodily-depressible foot-plate pivoted thereto, and yielding buffers or stops between the foot-plate and the base-plate, to form a cushion-stop for the foot-plate at the end of each downward movement or throw.

11. In a skate, the combination of a base-plate, and a foot-plate pivoted to the base-plate at the toe portion of the foot-plate, with a driving-wheel carried by the base-plate and driving mechanism connected to the rear end of the foot-plate.

12. In a skate, the combination of a base-plate supporting pilot and driving wheels, and a bodily-depressible foot-plate pivoted to the base-plate, with driving mechanism operated by said foot-plate, and means for locking the driving-wheel against backward rotation.

13. In a skate, the combination of a base-plate and a foot-plate pivoted thereto and means for normally separating the foot-plate from the base-plate, with driving mechanism and a driving-wheel, and a clutch adapted to engage the driving mechanism with the driving-wheel during the depression of the foot-plate and to disengage the same during the upward motion of the foot-plate.

14. In a skate, the combination of a base-plate, a foot-plate pivoted thereto, and means for normally separating the foot-plate from the base-plate, with driving mechanism and a driving-wheel, and a clutch adapted to engage the driving mechanism with the driving-wheel during the depression of the foot-plate and to disengage the same during the upward motion of the foot-plate, and an inclosing drum for said clutch.

15. In a cycle-skate, the combination with the base-plate, foot-plate and driving-axle, of a driving-gear mounted upon said axle, a reciprocating rod or rods connected respectively with the foot-plate and driving-gear, and a clutch or friction mechanism designed and adapted to be operated to engage with the driving-gear so as to positively rotate the driving-axle when the connecting rod or rods are moved in one direction and to permit of the continued rotation of the driving-axle while the connecting rod or rods are moving in the opposite direction, substantially as set forth.

16. In a cycle-skate, the combination of the base-plate or frame, the driving-axle and a driving-gear or friction-pulley mounted rigidly thereon, an inclosing drum mounted loosely upon said axle, a bodily-depressible foot-plate connected to the drum for rocking the same upon said axle, and suitable pawl or friction-clutch devices within said drum designed and adapted to engage with the driving-gear or friction-pulley, substantially as and for the purposes set forth.

17. In a cycle-skate, the combination with the base-plate, foot-plate and driving-axle, of a connecting rod or rods secured at one end to and arranged to be moved or reciprocated by the foot-plate, one or more links or levers pivotally mounted upon the base-plate or driving-axle and adapted to be operatively engaged by the other end of said connecting rod or rods, and mechanism, substantially as described, connected with and designed and adapted to be operated by the said links or levers so as to convert the intermittent movements of the same into a progressive rotary motion of the driving-axle.

18. As a new article of manufacture, an automatic or self-acting cycle or bicycle skate comprising a base-plate or support having bearings in which the wheels or the axles forming part of, or secured to the same are free to move, a bodily-movable foot plate or support having clamps or fastenings for securing the same to the foot or shoe, said foot-plate being pivotally secured to said base-plate, means for normally lifting or separating the foot-plate from the base-plate when the foot to which the skate is secured is lifted or when its pressure upon the foot-plate is removed, and a motion-converting mechanism designed and adapted to be set into operation by the downward movement of the foot plate or support when the foot is depressed and the weight of the body is brought to bear upon it, to convert the downward movement of the foot-plate into a direct forward motion of the skate, substantially as set forth.

19. As a new article of manufacture, an automatic or self-acting cycle or velocipede skate having an adjustable foot-support pivoted at its forward end and capable of a limited reciprocating motion in a substantially vertical direction, one or more driving-wheels between the yielding foot-support and the ground or other surface of travel, and a suitable driving gear or mechanism interposed between the foot-support and the driving wheel or wheels and designed and adapted to convert the limited vertical motion of the foot-support at each thrust or stroke into an amplified forward or horizontal motion of the said skate, substantially as and for the purpose set forth.

20. In a cycle-skate, the combination with the skate-frame, of a pilot wheel or wheels of comparatively small diameter mounted in suitable bearings under and located entirely beneath the ball or toe portion of the skate-frame, a driving wheel or wheels of larger diameter than the said pilot wheel or wheels, also mounted in suitable bearings behind or at the sides of the heel portion of the skate-frame and partially projecting above the latter, a vertically-movable foot-plate and mechanism connecting the same with the driving wheel or wheels as and for the purpose described.

21. In a cycle-skate, the combination with a frame or base-plate and a foot-plate movable with respect thereto, of one or more driving-wheels mounted in suitable bearings on said frame or base-plate, a friction-clutch mechanism for said driving wheel or wheels also mounted upon said frame or base-plate and designed and adapted to rotate the said wheel or wheels in a forward direction and to lock the same against backward movement, and pivoted rods or links connecting the movable foot-plate with the clutch mechanism and arranged to transmit the movement of the foot-plate to the same, substantially as set forth.

22. In a cycle-skate, the combination with the frame or base-plate containing the driving wheel or wheels and clutch mechanism, and a foot-plate movable with respect thereto, of one or more pairs of driving-levers having one end journaled upon the driving-axle, one or more pivoted rods or links connecting the free ends of said levers with the movable foot-plate, and one or more flexible bands, straps or chains having one end secured to the clutch mechanism and the other end fastened to the driving-levers, substantially as set forth.

23. In a cycle-skate, the combination of a base-plate or frame, a foot-plate vertically movable independently of said frame, a clutch mechanism consisting of a friction-disk keyed to the driving-axle, a hollow projecting drum surrounding or inclosing said disk and capable of a rocking motion about the same, and friction devices carried by said drum in contact with the periphery or sides of said disk in such a manner as to grasp or bind the latter and compel it to revolve when the drum is rotated in one direction, and to loosen their hold upon the disk when the drum is rotated in the opposite direction, substantially as set forth.

706,784. CHEMICAL APPARATUS. RALPH C. ROBINSON, Boston, Mass., assignor to John Irving, Newton, Mass. Filed Dec. 6, 1901. Serial No. 84,938. (No model.)

Claim.—1. A testing-blade having a substantially plane face, and a passage-way extending longitudinally of the blade substantially from its upper to its lower end.

2. A testing-blade having a nook at its upper end provided with an inlet, an outlet near the lower end of the blade, a passage-way extending longitudinally of the blade and connecting the inlet and outlet, and means for supporting the blade upon the edges of the vessel in which the blade is used.

3. A testing-blade having an inlet and an outlet, the body of the blade showing a dark color at one of its faces.

4. A testing-blade having an inlet and an outlet, and provided with scale-marks.

5. A testing-blade having a substantially plane face, means for supporting the blade upon the edges of the vessel in which it is used, said blade being provided with scale-marks.

6. A vessel having supporting notches or pockets, combined with a testing-blade having legs to engage said notches or pockets and support the blade and prevent rotation or movement thereof within said vessel.

706,785. WASHBENCH. LEROY A. ROBBINS, Constantine, Mich. Filed Apr. 11, 1902. Serial No. 102,404. (No model.)

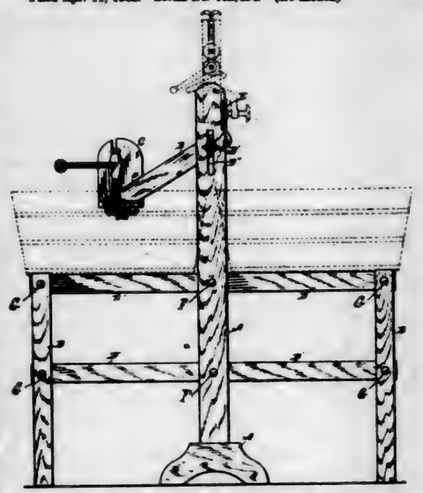

Claim.—In a washbench, the combination of the standards A having slots D'; rounds F securing said standards together; legs B; rounds G securing said legs together in pairs; longitudinal bars B' arranged in pairs, pivoted on said rounds F and G respectively, whereby said legs are permitted to fold upwardly; arms D secured to a suitable washing-machine; bolts through said arms inserted through said slots; and suitable thumb-nuts on said bolts, whereby the position of said washing-machine may be adjusted, substantially as described.

706,786. DEVICE FOR STRINGING ELECTRIC WIRES. JOHN W. SHARAR, Bay City, Mich. Filed Jan. 14, 1902. Serial No. 89,726. (No model.)

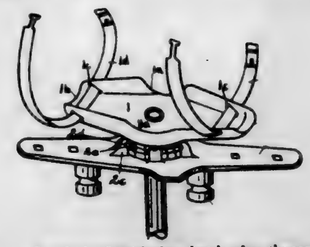

Claim.—1. In a device for stringing electric wires, the combination of a base adapted to be attached to the framework of a building, and a detachable insulator-carrying cap secured to said base by means whereby said cap can be secured at various angles relatively to the base, for the purposes set forth.

2. The combination of a base having a circumferentially-grooved polygonal boss secured thereto; an insulator-carrying cap having oppositely-placed lugs with grooves to register with the groove of the polygonal boss, and pins fitting said grooves for locking the lugs to the boss, substantially as described.

3. In a device for stringing electric wires the combination of a base; a polygonal boss secured to said base; radial slots in the faces of said boss; a circumferential groove intersecting said radial slots; together with a cap carrying oppositely-placed lugs; inwardly-projecting tongues integral with said lugs and adapted to engage the radial slots of the boss; a transverse slit in each tongue; and a pin adapted to interlock said lugs and boss.

4. In combination with a base and an angularly-adjustable cap; a detachable cutout-carrying bracket; comprising a flat frame having radial slots, and openings intermediate said slots; together with an upwardly-

extending projection on said bracket adapted to engage a hole in said cap, substantially as described.

5. In a device for stringing electric wires the combination with a base and an angularly-adjustable cap removably secured thereto; of a detachable insulator-carrying bracket removably secured to said cap, the plane of said bracket being offset from the plane of the cap, for the purposes set forth.

6. In a device of the kind described, a base having upwardly-extended sides provided with slits near their ends; of metal straps passing through the slits, each of said straps having one end T-shaped and having at the other end a straight slit and a T-shaped slit whereby the ends of said straps can be locked together, for the purposes set forth.

7. In a device for stringing electric wires, the combination of a base adapted to be secured to the frame of a building; an angularly-adjustable insulator-carrying cap removably secured to said base; a threaded opening through said cap; and extension-bars having threaded ends to engage said openings, whereby a plurality of caps may be supported from a single base.

8. The combination of a base having upwardly-extending sides provided with curved recesses and having slits near their ends; metal straps passing through the slits, each strap being T-shaped at one end and having at the other end a straight slit and a T-shaped slit; a circumferentially-grooved polygonal boss secured to the face of said base; an insulator-carrying cap having oppositely-placed lugs with grooves to register with the groove of the polygonal boss; a pin fitting said grooves for locking the lug to the boss; a central threaded opening in the cap; extension-bars having threaded ends to engage said threaded openings; a switch-supporting bracket having a projection; an opening in the cap to receive said projection; radial slots in said bracket; and an L-shaped offset-bracket having an upwardly-extending projection to fit the opening in the cap, all arranged substantially as described and for the purposes set forth.

706,787. **WATER-TUBE BOILER.** HERMEGO VICENTE, Cartagena, Spain. Filed Feb. 13, 1902. Serial No. 93,650. (No model.)

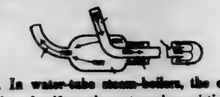

Claim.—1. In water-tube steam-boilers, the combination with a drum and a number of uniform elements each consisting of a downwardly-extending lower tube closed at its base, a chamber with which the upper end of the lower tube communicates, and a removable cover to the said chamber; of a removable slide for each chamber adapted to be slid into same, and guides in the chambers to receive the slides, water-supply tubes extending from the lower part of the drum equal in number to the elements employed, and steam-tubes extending from the upper part of the drum also equal in number to the elements employed, all the tubes from the drum entering the wall of the chamber of the first element, the slide of the first chamber being formed with steam and water conducting passages coinciding with continuation-tubes to the next element-chamber, and also carrying the downwardly-extending water-feed tube of its own chamber, the removable slide of the second chamber carrying the water-supply tube therefor and communicating passages for the next chamber and so on, a furnace, and means for supporting the elements in position so that the furnace-gases pass between the lower tubes of the elements, substantially as set forth.

2. In water-tube steam-boilers, the combination with a furnace, a main drum, a number of uniform elements each consisting of a downwardly-extending lower tube closed at its base, a chamber with which the upper end of the lower tube communicates and a removable cover to the chamber, with means for supporting series of the elements in position so that the furnace-gases pass between the lower tubes of the elements; of a single steam-conducting tube passing from the drum and extending to the chamber of the first element of a series, and so on from chamber to chamber of the elements to collect the steam from all the chambers, and a number of water-feed tubes equal to the number of chambers, the water-tubes extending from the drum and entering the first chamber of a series, a removable slide in each chamber, and passages in the slide connecting all the tubes but one with corresponding tubes passing from the first chamber to the second, and a tube carried by the slide extending into the lower tube of the element and corresponding with the remaining water-tube from the drum, and by which the first element is supplied with water, the second being supplied in like manner and so on, substantially as set forth.

3. In water-tube steam-boilers, the combination with a furnace, a main drum, a number of uniform elements each consisting of a downwardly-extending lower tube closed at its base, a chamber with which the upper end of the lower tube communicates, and a removable covering to the chamber, with means for supporting series of the elements in position so that the furnace-gases pass between the lower tubes of the elements; of a steam-conducting tube passing from the drum and extending to the chamber of the first element of a series and so on from chamber to chamber of the elements to collect the steam from all the chambers, and a common water-feed tube extending from the lower part of the drum and extending to the first chamber of a series and so on from chamber to chamber of the elements; a removable slide in each chamber, a passage in the slide connecting the water-feed tube upon one side of the chamber with the continuation of the water-feed tube upon the other side of the chamber leading to the next, and a branch from the slide-passage extending into the lower tube of the element to supply water thereto, substantially as set forth.

706,788. **METALLIC RAILWAY-TIE.** JOHN F. WEHRROD, Allegheny, Pa. Filed Feb. 11, 1902. Serial No. 93,573. (No model.)

Claim.—1. A rail-tie, composed of similar metallic channels, bowed longitudinally, set on edge, and united back to back.

2. A rail-tie, composed of two pressed-steel channels, bowed longitudinally, arranged on edge, and united back to back.

3. A rail-tie, composed of similar channels, bowed longitudinally, set on edge, united back to back, and having their outer ends flaring, and stays interposed between the flanges at the points of support of the rails.

4. A rail-tie, composed of longitudinally-bowed channels united back to back, and provided with rail-seats in their upper flanges, and stays interposed between the flanges beneath the rail-seats.

5. A metallic rail-tie, combined with rail-fastenings, each of which has a flat portion adapted to be bolted to the tie, a vertical portion projecting beyond the tie to abut against the base of the rail, and a substantially horizontal portion on said vertical portion to overlap the base of the rail, one of which fastenings is adjustable.

6. A metallic rail-tie, combined with rail-fastenings, each of which has a flat portion adapted to be bolted to the tie, a vertical portion projecting beyond the tie to abut against the base of the rail, and a substantially horizontal portion on said vertical portion to overlap the base of the rail, means to adjust the fastenings, and a cross-bolt engaging the vertical portions of the fastenings beneath the rail-base.

706,789. **TRUCK-END CASTING.** CHARLES T. WHITLAKE, Granite City, Ill., assignor to Commonwealth Steel Company, St. Louis, Mo., a Corporation of New Jersey. Filed Mar. 25, 1902. Serial No. 99,976. (No model.)

Claim.—1. The improved truck-column casting, consisting of an integral spring-seat base 6; truck-columns extending upwardly from the ends of the base; brake-hangers extending inwardly from said columns; all cast integrally; a spring-seat resting upon said base; lugs extending downwardly from the spring-seat upon each side of the base; and lugs extending outwardly from the ends of said spring-seat upon each side of each of said columns; substantially as specified.

2. A truck-end or truck-column casting comprising a spring-seat base 6; truck-columns extending upwardly from the base, there being column-bolt openings lengthwise of said columns; brake-hangers extending inwardly from said columns; lugs extending from the upper ends of said columns on each side of the upper arch-bar; all cast integrally; and a spring-seat resting upon said base; lugs extending downwardly from the spring-seat upon each side of the base and lugs extending outwardly from the ends of said spring-seat upon each side of each of said columns; substantially as specified.

3. The improved truck-column casting, consisting of an integral spring-seat base 6; truck-columns extending upwardly from the ends of the base; brake-hangers extending inwardly from the upper ends of said columns; lugs extending upwardly from the upper ends of said columns on each side of the upper arch-bar; all cast integrally; a spring-seat resting upon said base; lugs extending downwardly from the spring-seat upon each side of the base; and lugs extending outwardly from the ends of said spring-seat upon each side of each of said columns; substantially as specified.

4. A truck-end or truck-column casting comprising a spring-seat base 6; truck-columns extending upwardly from the base, there being column-bolt openings lengthwise of said columns; brake-hangers extending inwardly from the upper ends of said columns; lugs extending downwardly from the spring-seat base on each side of the lower arch-bar; lugs extending upwardly from the upper ends of said columns on each side of the upper arch-bar; all cast integrally; and a spring-seat resting upon said base; lugs extending downwardly from the spring-seat upon each side of the base and lugs extending outwardly from the ends of said spring-seat upon each side of each of said columns, substantially as specified.

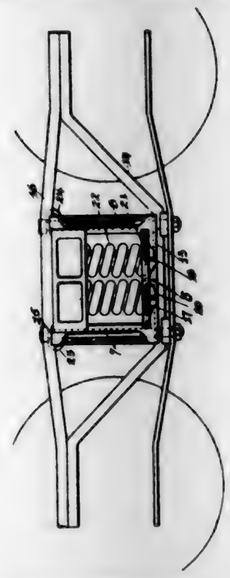

706,790. **CLEANING-PASTE AND PROCESS OF MAKING SAME.** AUGUST WOLFERS, Hannoverwald, Germany. Filed Mar. 20, 1902. Serial No. 98,804. (No specimens.)

Claim.—1. A cleaning-paste, consisting of soap, milk and eggs intimately mixed.

2. The process of producing a cleaning-paste, which consists in cooking soap and milk until it reaches the consistency of a paste, and then adding eggs to the mixture, and stirring the whole until cold.

706,791. **SEAT FOR WATER-CLOSETS.** WILLIAM C. ANDERSON, Detroit, Mich. Filed Feb. 15, 1901. Serial No. 47,411. (No model.)

Claim.—1. A closet-seat of fibrous material laid in layers arranged regularly around the center with included sections of strengthening-wire and having holding-nails driven at intervals through the layers of the structure, substantially as described.

2. A closet-seat of fibrous material wound in a coil with included sections of strengthening-wire, substantially as described.

3. A closet-seat of fibrous material laid in layers arranged regularly around the center with included sections of strengthening-wire, said wire having a continuous bent or wavy form, substantially as described.

4. A closet-seat of fibrous material laid in layers arranged regularly around the center with included sections of strengthening-wire, said wire having a continuous bent or wavy form, said seat having holding-nails driven at intervals through the layers of the structure, substantially as described.

706,792. **ATTACHMENT FOR BEER-PUMPS.** EDWARD A. AUSMS, Chicago, Ill. Filed Aug. 28, 1901. Serial No. 73,980. (No model.)

Claim.—1. The combination with a beer keg or barrel, of a gas-charging cylinder, a supply-pipe directly connecting said cylinder with the keg or barrel, a storage-tank, a pump between the keg or barrel and the tank, a pipe leading directly from said storage-tank to the supply-pipe between the charging-cylinder and the keg or barrel, a reducing or regulating valve in said pipe leading from the storage-tank, and means to prevent the gas from flowing in the reverse direction from the supply-pipe into the storage-tank, substantially as described.

2. The combination with a beer keg or barrel, of a bung therefor and a tapping-pipe passing through the bung and capable of longitudinal adjustment therein, a charging-cylinder, a supply-pipe directly connecting the said cylinder with the bung and therethrough to the keg or barrel, a storage-cylinder and a pipe connecting it with the supply-pipe, a regulating-valve in the pipe from the storage-tank, a check-valve in the last-named pipe, a pump connected with the storage-tank, and a tube leading from the pump to the keg or barrel, said tapping-pipe being adapted to be connected with the pipe leading to the draft-faucet when its lower end is extended beneath the surface of the beer in the keg or barrel, and to be disconnected from said pipe and connected with the said pump-tube when its lower end is drawn up above the surface of the beer, substantially as described.

3. The combination with a beer keg or barrel, of a bung therefor adapted to be connected with a gas-charging cylinder, a tapping-pipe passing through said bung and capable of longitudinal adjustment therein, said pipe being arranged when its lower end is beneath the surface of the beer and the gas-pressure is turned on to be connected with the draft-faucet for drawing beer in the usual manner, a controlling means to close the passage through said pipe, a gas-saving mechanism adapted to be connected with said pipe when the latter is drawn above the beer to draw the gas out of the keg or barrel, and a normally closed branch connection formed on said tapping-pipe outside the barrel or keg through which a suitable siphon-tube may be inserted when the pipe is again inserted into the beer for siphoning purposes, whereby the same pipe is utilized for drawing beer and for siphoning, the gas is saved and the beer is prevented from foaming during the siphoning process, substantially as described.

706,793. **ORE-CONCENTRATOR.** HOWARD S. BAILEY and WILLIAM E. WILD, Denver, Colo. Original application filed Feb. 14, 1901, Serial No. 47,315. Divided and this application filed Feb. 20, 1902. Serial No. 94,975. (No model.)

Claim.—1. In an ore-concentrator, a reciprocating table containing a plurality of ore-pulp-receiving recesses of equal lengths, width and depth, a plurality of ridges or dams extending across said ore-pulp-receiving recesses, also of equal lengths, a plurality of concentrate-washing and classifying portions below said dams, also of equal lengths, the said recesses and the said dams being arranged in a line at right angles to the length of the table, and means for feeding ore-pulp into and across said recesses, substantially as described.

2. In an ore-concentrator, a reciprocating table containing a plurality of ore-pulp-receiving reservoirs of equal lengths in the head-end portion of the table and of predetermined breadths and depths, a plurality

of ridges or dams of equal lengths extending across said ore-pulp-receiving reservoirs, a plurality of concentrates washing and classifying portions below said ridges or dams, also of equal lengths, the said reservoirs and dams being arranged in a line at right angles to the length of the table, and means for conveying the concentrates from each of said reservoirs to each concentrates washing and classifying portion below said ridges and dams, means for feeding ore-pulp into and over said reservoirs, and means for tilting said table, substantially as described.

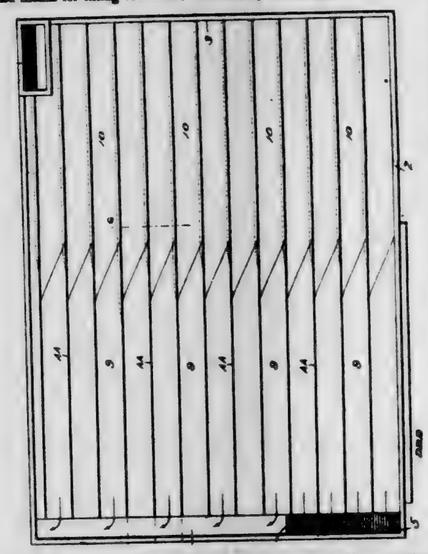

3. In an ore concentrator and separator, a reciprocating concentrating-table provided with a plurality of concentrating-surfaces of equal lengths from one end of the table to the other, in step form, each step comprising inclined surfaces intersecting at points intermediate of the ends of the steps, the said points of intersection forming dams arranged in a line at right angles to the length of the table, substantially as described.

4. In a reciprocating ore concentrator and separator, a table having a concentrating-surface comprising a plurality of concentrating-surfaces of equal lengths, in stepped form, each stepped surface comprising warped inclined surfaces intersecting each other at a point intermediate of the length of the step and each step being provided with a pocket in its vertical wall, substantially as described.

5. In an ore-concentrator, a reciprocating table comprising a plurality of separating portions of equal lengths in stepped relation, each separating-step comprising inclined warped surfaces intersecting each other at a point intermediate of the length of the step, the portion of the surface near the discharge end being inclined, and the series of intersections being arranged in a line at right angles to the length of the table, substantially as described.

6. In an ore-concentrator, a reciprocating table composed of a succession of separating portions of equal lengths in stepped relation, each portion comprising surfaces of different pitches intersecting each other in a line in such a manner as to form a dam intermediate the ends of the separating portions, the series of dams being arranged at right angles to the length of the table, substantially as described.

7. In an ore-concentrator, a reciprocating concentrating-table comprising a plurality of separating portions in stepped relation, each portion comprising surfaces intersecting each other on a line to form a dam on said separating portions, a pocket extending into each wall between two separating portions and extending along the lower edge of each portion, the series of dams being arranged at right angles to the length of the table, substantially as described.

8. In an ore-concentrator, a reciprocating, concentrating-table comprising a group of independent separating portions of equal lengths, each portion comprising two curved inclined sections intersecting each other on a line oblique to the length of the table, the feed-section being inclined to form an uphill surface for the pulp or ore to travel over, a vertically-disposed wall between the highest edge of each portion and the lowest edge of the succeeding portion, each wall being provided with a pocket tapering toward the discharge-section and merging into the substantially horizontal surface with which the discharge-section is provided near the discharge end, the lines of intersection being arranged at right angles to the length of the table, substantially as described.

9. In an ore-concentrator, a reciprocating, concentrating-table comprising a plurality of independent, concentrating portions of equal lengths, each consisting of an independent concentrating-surface, the discharging-sections being inclined slightly at the discharge ends, the concentrating-sections being substantially straight at the feed end, and of equal lengths, and each section being upwardly curved to form ridges or dams intermediate of the length of the table, the said ridges or dams being of equal lengths, the concentrating portions being transversely inclined and being arranged in step relation, a wall between each portion and tapering pockets of each corner formed by said separating portions and walls, said pockets entering the face of each wall, the series of ridges or dams above mentioned extending across the table at right angles to its length and being adapted to retain a bed of ore or pulp in each concentrating-section and to guide the mineral of said ore into said pockets, substantially as described.

10. In a reciprocating, ore-concentrating table over which ore-pulp flows, a plurality of reservoirs, of equal lengths, in the head end portion of said table adapted to receive said ore-pulp, a plurality of ridges or dams of equal lengths arranged at the discharge-end portion of said table and arranged to intersect said reservoir portions, and a plurality of pockets or channels of equal lengths, one of said pockets in each of said reservoirs, arranged to receive the concentrates from said ore-pulp of said reservoirs and arranged and adapted to convey said concentrates from said reservoirs past said ridges, the series of reservoirs and dams being arranged at right angles to the length of the table, substantially as described.

11. In an ore-concentrator, a reciprocating concentrating-table embodying on its concentrating-surface a plurality of ore-pulp-receiving recesses extending from the head end of said table toward its discharge end, a plurality of ridges at some distance from the discharge end of said table arranged to intersect said ore-pulp-holding recesses in a diagonal line in such a manner as to form dams across them and arranged to make of said recesses ore-pulp-holding reservoirs, and a pocket or channel in said recesses or reservoirs extending past said dam and arranged to bleed into portions of said table beyond the dams formed by said ridges, the said ridges and reservoirs being all of equal lengths and arranged in a series at right angles to the length of the table, substantially as described.

12. In an ore-concentrator, a reciprocating table containing a plurality of ore-pulp-receiving recesses of uniform depth for a portion of their length from the head end of the table and of decreasing depth the rest of their length, the bottoms sloping upwardly to form diagonal ridges with the upwardly-sloping surfaces of discharge-sections which extend from said ridges to the discharge end of the table, and means for feeding pulp transversely over said series of recesses, the said reservoirs being of equal lengths and arranged at right angles to the length of said table, the said ridges being of equal lengths and arranged in a series at right angles to the length of the table, and the said discharge-sections also being of equal lengths, substantially as described.

13. In an ore-concentrator, a reciprocating table containing a plurality of recesses of equal lengths extending longitudinally of said table and of uniform depths for a predetermined portion of their lengths, and gradually decreasing in depth by an upward slope on diagonal lines of their bottoms the rest of their length, the said diagonal lines being arranged in a series at right angles to the length of the table, the intersection of said upwardly-sloping bottoms with the upwardly-sloping bottoms of discharging-sections extending from said recesses to the discharge end of said table forming diagonal ridges or dams extending across said recesses and a pocket in each channel arranged to convey the concentrates to the ridges that form said dams, substantially as described.

14. In an ore-concentrator, a reciprocating table having in its concentrating-surface a plurality of ore-pulp-receiving reservoirs of equal lengths extending longitudinally from the head of said table, a plurality of discharging-sections extending from the discharge end of the table to said reservoirs, also of equal lengths, the surface of said discharging-sections sloping upwardly to form diagonal intersecting dams across the ends of said reservoirs, a pocket in the side of each of said reservoirs extending at least to the said dams and the said dams being arranged in a series at right angles to the length of the table, substantially as described.

15. In an ore-concentrator, a reciprocating table comprising a plurality of inclined intersecting surfaces forming reservoir-sections of equal lengths at the head of the table, and discharge-sections extending from the discharge end of the table to the reservoir-sections, the surfaces of the discharge-sections being placed at a higher horizontal plane than those of the respective reservoir-sections, the surfaces of the reservoirs and discharge-sections being curved to different pitches to form dams at their intersections across the ends of the reservoirs, the said dams being arranged in a series at right angles across the table, and a passage in the side of each reservoir extending by the dam to the discharging-section, each reservoir and its dam being independent in its concentrating action of those reservoirs and dams above and below it and each reservoir and its dam being of a predetermined length, substantially as described.

16. In an ore-concentrator, the combination of a reciprocating table composed of a plurality of longitudinal concentrating-sections of equal length, each section comprising an ore-pulp-receiving portion and a concentrates washing and discharging portion, the respective portions intersecting each other to form a ridge or dam across the section at a point intermediate of its length, and a channel or pocket connecting the respective portions past said ridge or dam, substantially as described.

17. In an ore-concentrator, the combination of a reciprocating table composed of a plurality of concentrating-sections of equal lengths, each section being composed of two portions, the portion at the head end of the table being so inclined as to form a deep recess, and the other portion being inclined at a less depth to form a slight step; the intersection of the two inclined portions forming a diagonal ridge or dam, the said dams being arranged in a line at right angles to the length of the table, a tapering pocket extending along the side of the head portions of each section merging into the surface of the portion beyond the ridge, substantially as described.

18. In an ore concentrator and separator, a reciprocating, concentrating-table provided with a plurality of inclined concentrating-surfaces of equal lengths in step form, each comprising a reservoir-section and an ore washing and classifying section, said inclined surfaces intersecting at points intermediate of the ends of the steps, a ridge or dam portion at the point of intersection of said inclined surfaces of predetermined form, and a concentrates-passage connecting the reservoir-sections of said concentrating-surfaces with the ore washing and classifying section, substantially as described.

19. In an ore concentrator and separator a reciprocating, concentrating-table provided with a plurality of concentrating-surfaces of equal lengths in step form, each stepped concentrating-surface comprising an inclined reservoir-section and an inclined ore washing and classifying section, the said sections being arranged to intersect one another at points intermediate of the ends of the stepped concentrating-surfaces, a raised ridge or dam at the point of intersection, a concentrates-passage past the dam arranged to connect the lowest portions of the inclined surfaces with one another, a pocket in the lowest side of the inclined surface at and adjacent to the head end of the table bleeding into said concentrates-passage and having said dams arranged and adapted to guide the concentrates from the reservoir-section away from the dam below and in a substantially different direction from that in which the ore-pulp flows, and having said dams arranged across the table in any suitable direction substantially as described.

20. In an ore concentrator and separator a reciprocating, concentrating-table provided with a plurality of concentrating-surfaces of equal lengths in step form, each step comprising concentrating-surfaces of different inclination, a dam intermediate of the opposite ends of said concentrating-surfaces arranged to guide the concentrates away from the dam of the concentrating-surface below it, and a channel at the side of the dam nearest the feed side of the table arranged to connect said concentrating-surfaces on each side of the said dam, substantially as described.

21. In an ore concentrator and separator, a reciprocating, concentrating-table comprising a plurality of concentrating-surfaces of equal lengths, each concentrating-surface having an upward step or wall at one side and a downward step or wall at its opposite side, each concentrating-surface comprising an independent concentrating-surface consisting of two coöperating sections, a head-end section comprising an ore-pulp-holding reservoir, which extends from the head end of the table a predetermined distance toward the discharge end of the table, an inclined concentrates washing and classifying portion positioned above the bottom of said reservoir portion and extending from the discharge end of said table to said reservoir portion, a dam arranged to intersect and extend across said reservoir portion, and an upwardly-sloping inclined portion in said reservoir extending upward from its bottom adjacent to said dam to its top edge, a concentrates-passage from said reservoir past said dam, means for reciprocating said table, substantially as described.

22. In an ore-concentrator a reciprocating table comprising a plurality of riffles, a plurality of dams arranged across said riffles in such a manner as to close them at predetermined points and form of them ore-pulp-holding reservoirs, said dams being positioned at a predetermined distance from the head end of said table and commencing at the tailings-discharge side of said riffles and extending in a diagonal line toward the feed side of said riffles a predetermined distance, and a plurality of ore-washing portions below said dams, the said dams being arranged in a line at right angles to the length of the table, substantially as described.

23. In an ore concentrator and separator a reciprocating table comprising a plurality of stepped inclined concentrating-surfaces, each concentrating-surface being composed of two end-to-end sections of different inclined pitches arranged to intersect each other intermediate of their ends diagonally and having the diagonal line of intersection commencing at the head end and tailings-discharge side of each concentrating-surface, and extending toward the feed side of each inclined concentrating-surface, and having said diagonal lines of intersection arranged in a line at right angles to said table, substantially as described.

24. In an ore concentrator and separator a reciprocating table composed of a succession of separating-surfaces of equal length in stepped relation extending across the table from end to end, each concentrating-surface comprising end-to-end sections, one of which is a head-end reservoir-section, and the other an ore washing and classifying and discharge section, the said sections being of different pitches and arranged to intersect each other diagonally to form a dam across the head-end section, a passage by the feed side of each dam from one section to the other and having said intersecting dams arranged to commence at the head end and tailings-discharge side of said separating-surfaces, and extend diagonally toward their feed side and discharge end and having said dams arranged in a right-angle path across the table from the feed side to the discharge side of the table, substantially as described.

25. In an ore concentrator and separator, a reciprocating table composed of a plurality of concentrating-surfaces of equal lengths extending across the table from one end to the other, each surface being composed of sections of different pitches and arranged in end-to-end order and to form diagonally-arranged ridges or dams across one another, a pocket in one wall of one section of each end-to-end concentrating-surface, each dam being arranged from the head end and tailings-discharge side diagonally toward the feed side of each concentrating-surface and arranged one below the other in a line at right angles across the table, substantially as described.

26. In an ore-concentrator, a reciprocating table, containing a plurality of ore-pulp-receiving reservoirs of equal length, a plurality of dams extending across the ends of said reservoirs, a plurality of inclined ore washing and classifying portions of equal length extending from said dams to the discharge end of said table, a plurality of pockets arranged to convey concentrates from said reservoirs below said dams onto said ore washing and classifying portions, the said dams being each arranged diagonally from the head end and tailings side toward the feed side and discharge end of said table the position of each dam being such that the concentrates from each ore-pulp-receiving reservoir will be guided by its own individual dam away from the dam or dams below it to the feed side of its concentrating-surface and onto the feed side of its riffled ore washing and classifying portion below the dam and the tailings from each dam will flow clear ahead of all the dams below the second or third dam below it, substantially as described.

706,794. **MULTIPLYING-GEARING.** ELIE BESSET, Worcester, Mass. Filed Sept. 20, 1901. Serial No. 75,808. (No model.)

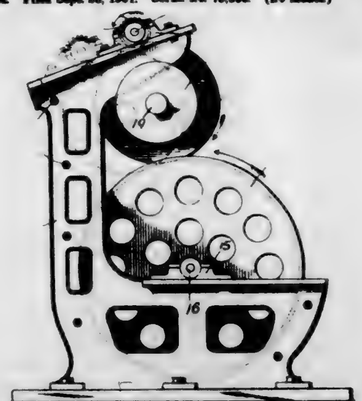

Claim.—1. In a power-transmitting gearing, the combination of a driving-shaft having a gear thereon, a shaft to be driven having a gear thereon, and a floating intermediate power-transmitting gear supported without internal bearings so as to normally tend to wedge itself by gravity between the driving and driven gears.

2. In a power-transmitting device, the combination of a driving-shaft having a toothed gear thereon, a shaft to be driven having a toothed gear thereon, and a heavy floating intermediate power-transmitting gear arranged without internal bearings in position to wedge itself by gravity between the toothed gears.

3. In a power-transmitting device, the combination of a shaft to be

driven having a gear thereon, a driving-shaft journaled above and at one side of the center line of the driven shaft, and having a gear thereon, and a solid intermediate power-transmitting gear arranged without internal bearings, and supported on the driven shaft so as to tend to wedge itself by gravity between the driving and driven gears.

4. In a power-transmitting gearing, the combination of a driven shaft having a flanged wheel or wheels secured thereon, a driving-shaft, and a floating power-transmitting wheel supported on the flanged wheels of the driven shaft at one side of the center line thereof, and tending to wedge itself by gravity into engagement with gears on the driving-shaft and driven shaft.

5. In a power-transmitting gearing, the combination of a driving-shaft, a shaft to be driven, wheels secured on the driving-shaft, flanged wheels secured on the driven shaft, and a floating intermediate power-transmitting wheel supported without internal bearings upon the driven shaft, so as to tend to wedge itself by gravity into engagement with said shaft and held in place by the flanges on the wheels of the driven shaft.

6. In a power-transmitting gearing, the combination of a shaft to be driven having wheels thereon, a driving-shaft having a wheel thereon journaled above and at one side of the center of the driven shaft, a floating intermediate power-transmitting wheel supported without internal bearings to rest on the driven shaft, so as to tend to wedge itself by gravity into engagement with the wheels on the driving-shaft and driven shaft respectively, a tooth-gear on the driving-shaft, a tooth-gear on the driven shaft, and a tooth-gear turning with the intermediate wheel and meshing with the two previously-named gears to maintain a constant speed ratio between the driving-shaft and the driven shaft.

7. In a power-transmitting gearing, the combination of a driven shaft, flanged wheels secured on the driven shaft, a driving-shaft journaled above and at one side of the driven shaft, a wheel secured upon the driving-shaft, a floating intermediate power-transmitting wheel resting upon the wheels of the driven shaft and held from lateral displacement by the flanges thereof, in position tending to wedge itself by gravity into engagement with the wheels on the driving-shaft and driven shaft respectively, and toothed gears on the driving-shaft, driven shaft, and intermediate power-transmitting wheel for maintaining a substantially constant speed ratio between the driving-shaft and driven shaft.

8. In a power-transmitting and multiplying gearing, the combination of a framework, a driving-shaft and a shaft to be driven journaled in the framework and carrying wheels, a heavy intermediate power-transmitting wheel arranged to wedge itself by gravity into engagement with the wheels on the driving-shaft and shaft to be driven, said wheels being arranged inside said framework, and supplemental weights secured on the shaft of the intermediate power-transmitting wheel outside the framework.

706,795. TILTING VESSEL. ALBERT J. BOTTERSON, Meriden, Conn., assignor to the International Silver Co., Meriden, Conn., a Corporation of New Jersey. Filed Mar. 24, 1902. Serial No. 99,773. (No model.)

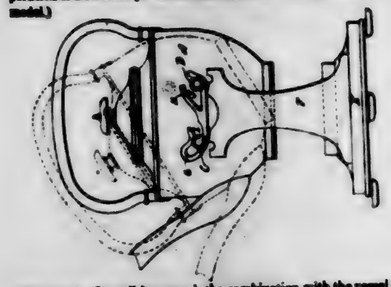

Claim.—1. In a tilting vessel, the combination with the vessel thereof, having two trunnions on each side arranged in a substantially horizontal plane, of a stand having uprights upon which said trunnions may rest, fingers at the upper ends of said uprights, the ends of which extend into the path of said trunnions, one of said fingers having a hooked end whereby, when the vessel is raised, the trunnions will engage with said fingers and hold the vessel in engagement with the stand, substantially as described.

2. In a tilting vessel, the combination with the vessel thereof, having two trunnions on each side arranged in a substantially horizontal plane, of a stand having uprights upon which said trunnions rest, resiliently-extending fingers on said uprights, one of said fingers having a hooked end, said fingers being so arranged that the vessel is free to rock upon the uprights, but held against vertical movement by said fingers whereby, when the vessel is tilted, it will be interlocked with the stand, substantially as described.

706,796. HEATING APPARATUS. FRANK BURGER and HENRY M. WILLIAMS, Fort Wayne, Ind.; said Burger assignor of one-half of his right to said Williams. Filed Jan. 15, 1900. Serial No. 1,483. (No model.)

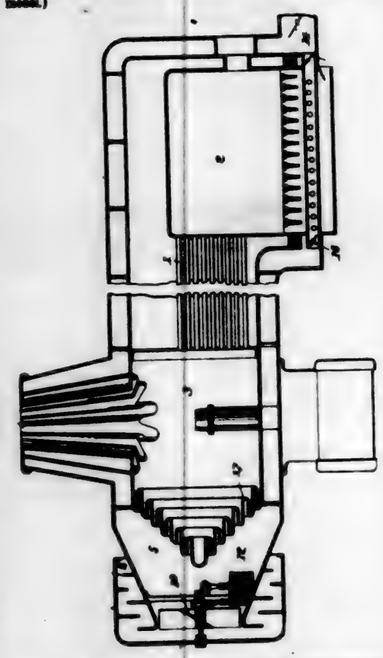

Claim.—1. The combination of a boiler, its smoke box and stack, said smoke-box having a vertical front wall concentrically corrugated and said stack being corrugated longitudinally, a shell surrounding the boiler stack and smoke-box to leave a space between them and projecting beyond the front wall of the smoke-box, means supported in the front end of the shell to force air from the exterior directly against the front wall of the smoke-box and through the spaces between the shell and the smoke-stack and boiler, and a conduit leading from said space at the rear end of the boiler, substantially as set forth.

2. The combination of a boiler and its smoke-box, a shell surrounding the same to leave a space between the two the said shell being formed with an open end, a flanged cap surrounding said end and separated therefrom to form an inlet-passage, the flange of the cap extending rearwardly, means for directing air through the space between the shell and boiler, and an outlet-passage leading from said space, substantially as described.

3. The combination with the boiler and its smoke-box, a shell surrounding the same to leave a space between them, the said shell being formed with an open end, a cap surrounding said end and separated therefrom to form an inlet-passage, baffle-plates within said passage, a blower likewise arranged in the passage, and an outlet-passage leading from the space between the shell and boiler, substantially as described.

4. The combination of a locomotive, its saddle and boiler resting thereon, the said boiler having a smoke-box, the wall of which is formed with a series of parallel corrugations, segmental filling-pieces within the recesses of the corrugations, bolts passing through said filling-pieces and the saddle, a shell surrounding the boiler and separated therefrom to leave a space between the two, and inlet and outlet passages leading to and from the said space respectively, substantially as described.

706,797. LOAD-RETAINING MEANS FOR VEHICLES. WILLIAM H. CASE, Carlton, Minn. Filed Mar. 26, 1902. Serial No. 100,096. (No model.)

Claim.—1. In a load-retaining apparatus, the combination with a suitable load-bearing structure, of a bracket extending therefrom, a stake-carrying socket pivotally supported in said bracket, a lever for locking said socket in a vertical position, means carried by said socket engaging said lever for effecting the locking operation, and means extending beyond said socket for operating and controlling said lever, substantially as described.

2. In a load-retaining apparatus, the combination with a suitable load-bearing structure, of a bracket extending therefrom, a tubular socket pivotally mounted on said bracket, a lever-engaging finger formed on said socket, a stake carried by the socket, a lever pivotally supported in the said bracket and adapted to engage said finger, and means pivotally supported by said bracket for controlling the movement of said lever, substantially as described.

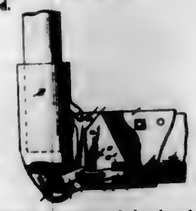

3. In a load-retaining apparatus of the class described, the combination with a suitable load-bearing structure, of a bracket extending therefrom, a stake-carrying socket pivotally supported in said bracket, a lever pivoted at its upper end and provided with a locking-finger, means carried by said socket engaging said finger for locking the socket in position, and means for swinging said lever on its pivot for releasing said engaging means, substantially as described.

4. In a load-retaining apparatus of the class described, the combination with a suitable load-bearing structure, of a bracket extending therefrom, a stake-carrying socket pivotally supported in said bracket, a pivotally-mounted lever, means carried thereby for locking said socket against movement, and means engaging the pivot of said socket and also engaging the free end of said lever for controlling the movement of the lever, substantially as described.

5. In a load-retaining apparatus the combination with a suitable load-bearing structure of a bracket extending therefrom; a stake-socket pivotally secured on said bracket and provided with lever-engaging means; a lever pivotally secured to said bracket and adapted to engage said means and provided with latch-engaging means; a latch pivotally secured at one end to said bracket and adapted to engage the latch-engaging means of said lever, substantially as described.

6. In a load-retaining apparatus the combination with a suitable vehicle of a bracket secured thereon and extending therefrom; a stake-socket pivotally secured to said bracket and provided with lever-engaging means; a lever pivotally secured to said bracket and adapted to engage said means and provided with latch-engaging means; a latch pivotally secured to said bracket and adapted to engage the latch-engaging means of said lever; means extending beyond said bracket for operating said latch, substantially as described.

7. In a load-retaining apparatus the combination with a suitable vehicle of a bracket secured thereto and extending therefrom; a stake-socket pivotally secured to said bracket, and provided with lever-engaging means; a lever pivotally secured to said bracket and adapted in operative position to engage said means, and provided with latch-engaging means; a latch pivotally secured near one end to said bracket and adapted intermediate of its ends to engage the latch-engaging means of said lever; means for operating said latch, comprising an integral locking-bolt formed with an angular extension adapted, in operative position, to overreach said latch, a wedge portion adapted, in operation to lift said latch and a vertical stop, substantially as described.

8. In a load-retaining apparatus, the combination with a suitable vehicle of a bracket extending therefrom and formed with forwardly-projecting parallel arms; a stake-socket forked at its lower end and pivotally secured between said arms and provided near its upper end with lever-engaging means; a lever centrically pivoted near its upper end between the walls of said bracket and adapted at said upper end in operative position to interlock with the lever-engaging means of said socket, and provided near its lower end with a latch-engaging pin; a latch pivoted at one end between the arms of said bracket and having a slot formed therein intermediate of its ends extending longitudinally thereof and having a vertical extension of said slot at the end thereof nearest the pivoted end of said latch, and adapted to engage said latch-engaging pin; latch-operating means, comprising a bolt formed with an angular portion adapted in operative position to overreach the free end of said latch, a wedge portion adapted in operation to raise said latch, a vertically-extending lug adapted to prevent the entire withdrawal of said bolt from beneath said latch and a draw-rod secured to said bolt for moving the same; means for securing said draw-rod against movement substantially as described.

706,798. ELECTRIC TESTING APPARATUS. PHINEAS R. CHAPMAN, St. Louis, Mo. Filed Dec. 4, 1901. Serial No. 84,681. (No model.)

Claim.—1. In a testing-coil, an incandescent lamp, a circuit for operating the lamp, a transformer in the lamp-circuit, and means of taking current from any desired portion of the transformer, substantially as specified.

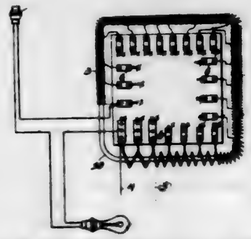

2. In a testing-coil, an incandescent lamp, a circuit for operating the lamp, a transformer in the lamp-circuit, said transformer being subdivided and graduated so that any desired amount of the transformer may be short-circuited or loaded, substantially as specified.

3. In a testing-coil, an incandescent lamp, an adjustable stand supporting the lamp, a circuit for operating the lamp, a transformer in the circuit sufficient to reduce the brilliancy of the lamp to a desired extent, and means of short-circuiting or loading a desired amount of the transformer, substantially as specified.

4. In a testing-coil, an incandescent lamp, a circuit for operating the lamp, a transformer in the circuit to reduce the brilliancy of the light, so that when a part of the transformer is short-circuited the light will increase in brilliancy proportionately to the value of the short circuit, substantially as specified.

5. In a testing-coil, or transformer, an incandescent lamp, a circuit for operating the lamp, a transformer in the lamp-circuit to materially reduce the brilliancy of or extinguish the light, means of subdividing and graduating the transformer, and leads adapted to be attached to the transformer at any desired point so that said leads may be used in testing, the effect of the leads being to carry current to the work, and as means for short-circuiting a predetermined amount of the transformer to increase the brilliancy of the light, substantially as specified.

6. In a testing-coil, an incandescent lamp, a circuit for operating the lamp, a transformer in said circuit, said transformer being subdivided and graduated, binding-posts connected to said subdivisions, and leads adapted to be connected to said binding-posts, substantially as specified.

7. In a testing-coil, an incandescent lamp, a transformer, a circuit for operating the lamp, and a rotary transformer or other device for transforming direct current to alternating current suitable for supplying alternating current to the testing-coil, substantially as specified.

8. In a testing-coil, a transformer, a circuit for operating same substantially as above described, and an ammeter or other current-indicating device having sufficient impedance inherent or auxiliary, substantially as specified.

706,799. GARMENT-CLASP. BYRON S. CLARK, Brookline, Mass., assignor to the Clark Manufacturing Company, Boston, Mass., a Corporation of New Jersey. Filed Jan. 2, 1902. Serial No. 87,995. (No model.)

Claim.—1. A clasp comprising a plate having a transverse opening at one end to receive the end of the webbing, a transverse tubular bearing at the other end of the plate, a swinging loop mounted in said bearing, to receive the free end of the webbing, the latter being firmly held and pinched between the loop and the adjacent end of the plate, means to engage and stop further movement of the loop when the webbing is pinched thereby, a movable jaw mounted on the plate independently of the said bearing, and means to operate and control the jaw.

2. A clasp comprising a plate having a transverse webbing-receiving slot at one end, a loop pivotally connected with the plate at its other end, and adapted to be swung beyond the under face of the plate when in operative position, to thereby firmly pinch and hold the webbing passed through the loop, between the latter and the adjacent end of the plate, means to stop the movement of the loop when in position to pinch the webbing, a movable jaw mounted on the plate, and means to operate and control said jaw.

3. In a garment-clasp, a plate having at one end a transverse slot, and at its other end reduced in width to present lateral shoulders, and provided with a transverse tubular bearing between the shoulders, and a loop fulcrumed in said bearing, and adapted to be swung past dead-

center close to the adjacent end of said plate, to pinch and firmly hold a piece of webbing when passed beneath the plate and through said loop, the sides of the loop at each time engaging the shoulders and being held thereby from further movement.

4. In a garment-clasp, a plate folded upon itself at one end, and bent to form a tubular, transverse bearing adjacent the folded end, and having a lateral shoulder at each end of said bearing, a movable jaw mounted on the plate independently of the bearing, a webbing-holding loop pivotally mounted in the bearing, and adapted to be swung past dead-center beyond the under face of the plate, and closely adjacent the folded end thereof, to pinch and hold a piece of webbing passed through the loop, said loop when pinching the webbing engaging and being held by the shoulders from movement beyond dead-center.

5. In a garment-clasp, a plate having a supporting-strap of webbing attached at one end thereto, and passed longitudinally along the under face of the plate, swinging means mounted on the opposite end of the plate to clamp or pinch the webbing at such point, and prevent transmission of longitudinal strain to the webbing under the plate, a fixed bearing on the plate for said means, a clamping-jaw mounted on the plate independently of said bearing to cooperate with the said plate, and a device to stop the movement of the clamping means when the webbing is clamped thereby.

706,800. **MEAT-CHOPPER.** LAUTAUS S. COBB, Holden, and CHAS M. JORDAN, Somerville, Mass., assignors to William G. Bell Company, Boston, Mass., a Corporation of Massachusetts. Filed May 1, 1902. Serial No. 105,625. (No model.)

Claim.—1. A meat-chopper comprising a frame having a receiving-hopper and a lateral outlet, a cutter-shaft journaled in said frame and located in said outlet, said shaft and outlet having cooperating cutting members, one end of the cutter-shaft projecting through a bearing formed at one end of the casing, a gear detachably secured to the projecting end of the cutter-shaft, the cutter-shaft being removable from said gear and through the bearing and outlet, a driving-shaft journaled in a bearing on the supporting-frame and provided with a gear, and an intermediate gear meshing with the gears on the driving and cutter shafts and located below the said detachable gear, whereby the intermediate gear is adapted to prevent downward displacement of the detachable gear when the cutter-shaft is removed therefrom, means being also provided for preventing lateral displacement of said gear after removal of the cutter-shaft.

2. A meat-chopper comprising a frame having a receiving-hopper and a lateral outlet, a cutter-shaft journaled in said frame and located in said outlet, said shaft and outlet having cooperating cutting members, one end of the cutter-shaft projecting through a bearing formed at one end of the casing, a gear detachably secured to the projecting end of the cutter-shaft, the cutter-shaft being removable from said gear and through the bearing and outlet, a driving-shaft journaled in a bearing on the supporting-frame and provided with a gear, an intermediate gear meshing with the gears on the driving and cutter shafts and located below the said detachable gear, whereby the intermediate gear is adapted to prevent downward displacement of the detachable gear when the cutter-shaft is removed therefrom, and a hood affixed to the supporting-frame and inclosing said gears, said hood cooperating with the intermediate gear in preventing lateral displacement of the detachable gear and having an opening which permits access to the device which secures the detachable gear to the cutter-shaft.

706,801. **APPARATUS FOR DYEING, &c.** CÉSAR CORREA, Lyons, France. Filed Feb. 16, 1901. Serial No. 47,563. (No model.)

Claim.—1. In a machine for dyeing or for washing yarn or like materials in skeins, the combination with the ordinary means employed for elevating and lowering the skein-carriers as well as for producing the displacement of the skeins upon the carriers, of eccentric gears and interposed gears meshing therewith and keyed directly to the spindles of the skein-carriers for imparting to the said skein-carriers during their eccentric displacement in both directions of movement varying successive speeds, substantially as hereinbefore described and for the purpose specified.

2. In a machine for the treatment of yarn or like materials in skeins, the skein-carriers of a shape constituting an undulated skein-carrier, combined with means for imparting thereto during their eccentric movements in both directions of movement varying successive speeds, substantially as hereinbefore described and shown.

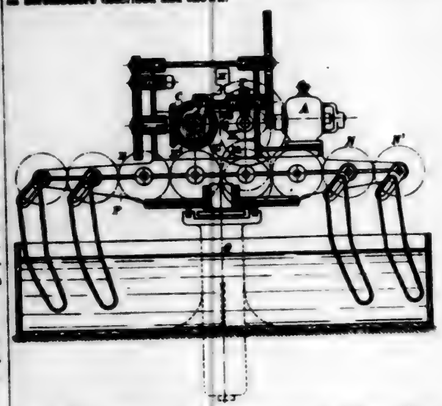

3. In a machine serving for the purpose described, the combination with the ordinary arrangements hitherto provided in connection with skein-carriers, of an operating-gear of eccentric toothed wheels and gears on the spindles of said skein-carriers meshing with said eccentric wheels for imparting to their skeins varying successive speeds during every revolution, the said skein-carriers having undulatory portions, the whole substantially as described and for the purpose specified.

706,802. **DRESS-SHIELD.** EMMA M. COWLES, Milwaukee, Wis. Filed Feb. 16, 1901. Serial No. 47,644. (No model.)

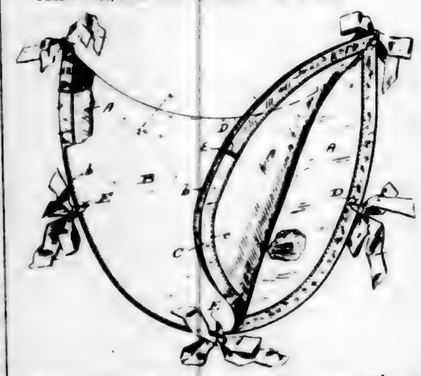

Claim.—1. A dress-shield comprising a fabric cover and a removable rubber lining of equal area, and both provided with hems or bindings having coinciding eyelets, in combination with fastening devices for temporarily securing the cover and lining together.

2. A dress-shield, comprising a fabric cover having holes or eyelets in its edge, in combination with a folded sheet of rubber, provided with a binding formed with holes or eyelets therein at intervals corresponding to those in said cover and registering therewith, and a series of tapes or ribbons for holding the cover and rubber together, and for attaching same to a dress and its sleeves.

3. A dress-shield comprising a folded fabric cover, made double, of two pairs of similarly-shaped pieces, having concave upper edges, with the upper meeting edges of the outer pieces turned in and stitched together, and the upper meeting edges of the inner pieces likewise turned in and stitched together, independently of the stitching of the outer pieces, and with the other edges of said pieces stitched together and formed with eyelets therethrough, in combination with a removable folded rubber lining provided with a binding, said lining and its binding being equal in area to said cover, and the binding of the lining being formed with eyelets coinciding with the cover-eyelets; and a series of tapes or ribbons, each passed through one coinciding pair of said eyelets for temporarily holding the cover and lining together, and for removably attaching the same to a dress and its sleeves.

706,803. **BUOY.** WILLIAM S. CROUCH, Jr., Tacoma, Wash. Filed Apr. 30, 1901. Renewed Jan. 30, 1902. Serial No. 91,905. (No model.)

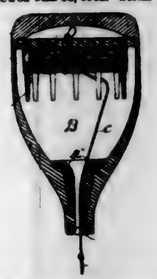

Claim.—1. A buoy for sending a line to or from a distressed vessel, comprising in its construction a body portion of substantially oval shape, said buoy being hollow and having its lower end weighted, a device for holding a line loosely in position, suspended within the hollow buoy and having fixed depending projections for loosely engaging a line, the said line being adapted to pass therefrom through an aperture in the lower end of the buoy, substantially as described.

2. A floating buoy for sending a line to or from a vessel, comprising a divided body portion, the main part of which is hollow and weighted at its lower end, a line-holding device suspended in the upper part of the buoy and having fixed projections depending into the lower part thereof, a line loosely disposed on said fixed projections so that it may be easily drawn therefrom and passed out through the hole in the bottom of the buoy, the buoy being so constructed that the line-holding device may be removed and the line replaced, substantially as described.

3. A floating buoy for sending a line to or from a distressed vessel, comprising in its construction a suitable body portion of substantially oval shape, said buoy being hollow and having a reduced, weighted lower end, a device for holding and paying out a line arranged within the buoy, said device comprising a plurality of pins or pegs upon which the line is wound, the line being adapted to be passed through an aperture in the lower weighted end of the buoy, and means for affording access to the interior of the buoy for the insertion or removal of the line, substantially as described.

4. A floating buoy for sending a line to or from a distressed vessel, comprising in its construction a suitable body portion of substantially oval shape, said buoy being hollow and having a reduced, weighted lower end, and a movable cover, a device for holding and paying out a line arranged within the cover, and adapted to be removed therefrom for the insertion of another line-holding device, the line being adapted to be passed through an aperture in the lower end of the buoy, means for temporarily locking the line-holding device within the cover, and means for locking the cover in position on the lower section of the buoy, substantially as described.

5. A buoy comprising a hollow casing having a suitable cover fitting upon its upper end and being provided with an outlet or aperture at its lower end, a weight disposed at the lower end of the buoy to hold the aperture normally at the bottom of the buoy, a plate or board secured within the removable top of the buoy and provided with a series of depending, tapering pins upon which a suitable line may be wound, the arrangement being such that when the buoy is released the line will easily pay out through the aperture in the bottom of the buoy, substantially as described.

6. A buoy comprising a hollow casing larger at the top than at the bottom, a weight for maintaining the small lower end in the lowest position when the buoy is floating, a removable cover closing the upper end of the buoy, a removable plate or board secured to the inner surface of the cover, a series of latches carried by the plate or board and engaging detents on the cover so that the said board can be easily removed or replaced, a series of depending pins projecting from the under surface of the said plate or board upon which a line is loosely wound, the structure being such that the line can be easily drawn out of the buoy through the bottom aperture thereof, and the plate can be removed from the cover for rewinding the line upon the pins at any time, substantially as described.

7. A buoy for sending a line to or from a distressed vessel, or for indicating the location of an anchor, comprising in its construction a suitable hollow body portion, and provided with an aperture or outlet at its lower end, and also with a suitable cover which fits upon the upper end of the buoy, a weight disposed at the lower end of the buoy for holding the latter in an upright position, a device for holding and paying out a line arranged within the buoy, said device comprising a plate or board provided with a series of depending tapering pins upon which the line is adapted to be wound, means for temporarily locking the device within the buoy, the arrangement being such that when the buoy is released the line will readily pay out through the aperture in the bottom of the buoy, substantially as described.

706,804. **BUOY.** WILLIAM S. CROUCH, Jr., Tacoma, Wash. Filed Jan. 30, 1902. Serial No. 91,897. (No model.)

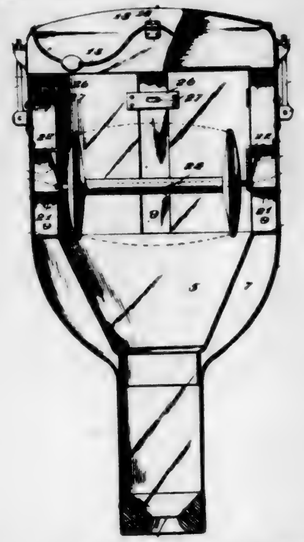

Claim.—1. A buoy for sending a line to or from a distressed vessel, or for indicating the location of an anchor, comprising in its construction a suitable hollow body portion, and provided with an aperture or outlet at its lower end, and also with a suitable cover which fits upon the upper end of the buoy, said cover being formed with an air-compartment, a weight disposed at the lower end of the buoy for holding the latter in an upright position, and a device for holding and paying out a line arranged within the buoy, substantially as described.

2. A buoy for sending a line to or from a distressed vessel, or for indicating the location of an anchor, comprising in its construction a suitable hollow body portion, and provided with an aperture or outlet at its lower end, and also with a suitable hollow cover which fits upon the upper end of the buoy, means disposed at the lower end of the buoy for retaining the latter in an upright position, a device for holding and paying out a line arranged within the buoy, said device comprising a plurality of pins or pegs upon which the line is wound, the line being designed to be passed through the aperture in the lower end of the buoy, substantially as described.

3. A buoy for sending a line to or from a distressed vessel, or for indicating the location of an anchor, comprising in its construction a suitable hollow body portion which is weighted at its lower end and provided with an aperture at said lower end which communicates with the interior of the buoy, a device within said buoy for holding and paying out a line, means for temporarily locking the line-holding device within the buoy, a cover for said buoy, means for locking the cover in position on the body of the buoy against the entrance of water, independent air-compartments arranged within the buoy, and also an air-compartment in the cover, substantially as described.

4. A buoy for sending a line to or from a distressed vessel, or for indicating the location of an anchor, comprising a hollow body portion, the buoy being weighted at its lower end and provided with an aperture at said lower end which communicates with the interior of the buoy, a device arranged within the buoy for holding and paying out a line, independent air-compartments within the buoy with spaces between said compartments for the reception of means for holding the line-holding device, and a cover for said buoy, means for locking the cover in position on the buoy against the entrance of water, and a rope carrying corks or floats secured around the buoy, substantially as described.

5. A buoy comprising a hollow body portion having its lower end weighted and apertured, a device arranged within said body portion for holding and paying out a line, and independent air-compartments within said body portion arranged with spaces therebetween for the reception of means for retaining the line-holding device, substantially as described.

706,805. FLOOR LAYING AND NAILING MACHINE. JOSEPH C. DAIGNAULT, Worcester, Mass., assignor of one-half to Wilfred A. Beaudette, Worcester, Mass. Filed Nov. 20, 1899. Serial No. 737,589. (No model.)

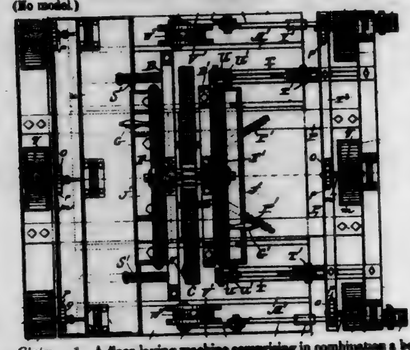

Claim.—1. A floor-laying machine comprising in combination a bed having supporting-standards carrying horizontal shafts; a series of vertically-arranged, intermeshing gears, mounted on said shafts and having means for turning them; sprocket-wheels, mounted on one of the shafts of said gearing; horizontal rollers fitted to turn in suitable bearings in the bed, and each having a gear mounted thereon; endless chains engaging said sprocket-wheels and the last-named gears; an eccentric mounted on one of the gear-shafts; a frame fitted over and operated by said eccentric; a nail-driver pivoted to a suitable support connected with the eccentric-frame; horizontal bars, fitted to slide longitudinally in the bed; means for imparting longitudinal movements thereto from one of the gears and for drawing them back when the pressure is removed; combined nail receptacle and feed devices mounted on said slide-bars and operated by connection with the eccentric-frame to intermittently feed the nails into position for the drivers to act thereon, and said drivers also mounted on supports connected with the eccentric-frame, substantially as and for the purpose set forth.

2. In a floor-laying machine, the combination of the bed and vertical stands mounted thereon, with a series of vertically-arranged, intermeshing gears mounted on horizontal shafts, in turn mounted in said stands, one of said gears being provided with a cam projection; means for turning said gears; a pair of rollers, one at each side of the machine fitted to turn in suitable bearings and adapted to travel upon the floor; means for connecting said rollers with one of the gear-shafts to impart the driving power thereof to said rollers; horizontal bars fitted to slide in the bed, and adapted to be moved longitudinally by engagement with the aforesaid cam projection on the gear; means for imparting opposite longitudinal movements thereto, and horizontal friction-rolls mounted on the outer ends of said bars and adapted when moved forward to bear against the edge of the board being laid, substantially as and for the purpose set forth.

3. In a floor-laying machine, the combination of the bed and vertical stands mounted thereon, with a series of vertically-arranged intermeshing gears mounted on horizontal shafts, in turn mounted in said stands, one of said gears being provided with a cam projection; means for turning said gears; a pair of rollers, one at each side of the machine, fitted to turn in suitable bearings and adapted to travel upon the floor; means for connecting said rollers with one of the gear-shafts to impart the driving power thereof to said rollers; horizontal bars fitted to slide in the bed and adapted to be moved longitudinally by engagement with the aforesaid cam projection on the gear; means for imparting opposite longitudinal movements thereto; horizontal friction-rolls mounted on the outer ends of said bars and adapted when moved as aforesaid, to bear against the edge of the board being laid; combined nail receptacles and feed devices mounted on said longitudinally-operating bars, each device consisting of an outer case having a hopper at its upper end for the nails and a chute for guiding the nails to the edge of the floor-board, a transversely-arranged, longitudinally-grooved cylinder fitted to turn in said case, and a ratchet-wheel attached to the shaft of said grooved cylinder, and adapted to be turned by a reciprocating pawl on the machine, substantially as and for the purpose set forth.

4. In a floor-laying machine, the combination of the bed and vertical stands mounted thereon with a series of vertically-arranged intermeshing gears mounted on horizontal shafts, in turn mounted in said stands; means for turning said gears; an eccentric mounted on one of the gear-shafts; the frame in which said eccentric is fitted to turn, having means for supporting a vertically-arranged pawl; said pawl, adapted to engage with the ratchet-wheel of the feed device, and said ratchet-wheel, substantially as and for the purpose set forth.

5. In a floor-laying machine, the combination of the bed and vertical stands mounted thereon, with a series of vertically-arranged, intermeshing gears mounted on horizontal shafts, in turn mounted in said stands; means for turning said gears; an eccentric mounted on one of the gear-shafts; the frame in which said eccentric is fitted to turn, having means for supporting a vertically-arranged pawl; said pawl adapted to engage with the ratchet-wheel of the feed device, said ratchet-wheel; the shaft upon which it is mounted; the longitudinally-grooved cylinder of the feed device also mounted on said shaft; the feed-device case, having a hopper at its upper end to receive the nails and a suitable chute for guiding said nails to the edges of the floor-boards, and means for supporting said feed device, substantially as and for the purpose set forth.

6. In a floor-laying machine, the combination of the bed and vertical stands mounted thereon, with a series of vertically-arranged intermeshing gears mounted on horizontal shafts, in turn mounted in said stands; means for turning said gears; an eccentric mounted on one of the gear-shafts; the frame in which said eccentric is fitted to turn, the nail-drivers mounted on a support on said frame and the feed device, substantially as and for the purpose set forth.

7. In a floor-laying machine, the combination of the vertically-reciprocating pawl for operating the ratchet-wheel of the feed device, with said ratchet-wheel; the shaft upon which it is mounted; the longitudinally-grooved cylinder, also mounted on said shaft for carrying around the nails to the chute of the device; the case of the device having a hopper at its upper end to receive the nails and a chute for guiding said nails to the edges of the floor-boards, and means for supporting said feed device, substantially as and for the purpose set forth.

8. In a floor-laying machine, the combination of the bed and vertical stands mounted thereon, with a series of vertically-arranged intermeshing gears mounted on horizontal shafts, in turn mounted in said stands; means for turning said gears; an eccentric mounted on one of the gear-shafts; the frame in which said eccentric is fitted to turn; a link, pivoted to each end of said frame; two levers, each pivoted to said links and to a fixed bearing, and the nail-drivers mounted on the outer ends of said levers, substantially as and for the purpose set forth.

9. In a floor-laying machine, the combination of the bed and a vertical fixed bearing mounted thereon, with an eccentric pivoted on a transverse bolt in said bearing and having means for turning it; said bolt; a carriage arranged in the bed under said eccentric; wheels mounted thereon and normally out of contact with the floor, and means for connecting said carriage with the eccentric, and for elevating and depressing the carriage, substantially as and for the purpose set forth.

10. In a floor-laying machine, the combination of the bed and a vertical, fixed bearing, mounted thereon, with an eccentric pivoted on a transverse bolt in said bearing and having means for turning it; said bolt; a crank-arm attached to said bolt; a connecting rod or lever pivoted to said crank-arm and fitted to slide in a fixed bearing, and a shoe pivoted to the outer end of said rod or lever and provided with spurs adapted to engage with the floor, substantially as and for the purpose set forth.

706,806. BOTTLE ATTACHMENT. LOUIS S. DE FOREST, New Haven, Conn. Filed Apr. 18, 1902. Serial No. 103,615. (No model.)

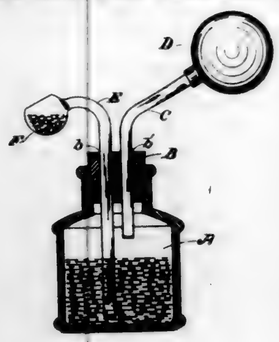

Claim.—In a bottle the combination with a stopper B, of perforations *b* and *b'* in said stopper; a tube C adapted to fit through said perforation *b'* in said stopper and having secured at its outer end a collapsible bulb D, and a tube E adapted to pass through the perforation *b* of said stopper and have formed integral with its outer end a well or bucket F, substantially as described.

706,807. DITCHING-JACK. CHARLES E. DIXON and JOHN E. DIXON, Pittsburg, Pa. Filed Jan. 13, 1902. Serial No. 89,544. (No model.)

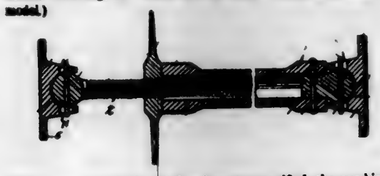

Claim.—1. In a device of the character specified, the combination with shoes having lateral impact lugs and sockets provided with transversely-alined slots, of two adjustable parts or sections having their outer ends provided with balls to engage the sockets, and pins rigidly associated with the balls and projecting through the slots.

2. In a device of the character specified, the combination of the shoes having lateral impact lugs and sockets and transversely-alined slots, a sleeve and a screw carrying balls engaging the sockets, pins rigidly associated with the balls and projecting through the slots, and a nut engaging the screw.

3. In a device of the character specified, the combination with the shoes having sockets, of a screw carrying a ball associated with one socket, a sleeve having its ends circumferentially enlarged for the purpose of reinforcement and carrying a ball engaging the other socket, and a nut carried by the screw.

4. As a new article of manufacture, a shoe for ditching-jacks provided with impact-lugs extending beyond the base of the shoe and with a socket provided with alined slots.

706,808. RAILWAY-TIE. JOHN DOYLE, Grand Rapids, and GEORGE H. KIMBALL, Detroit, Mich., assignors of one-third to W. J. McWain, Saginaw, Mich. Filed Jan. 10, 1902. Serial No. 88,144. (No model.)

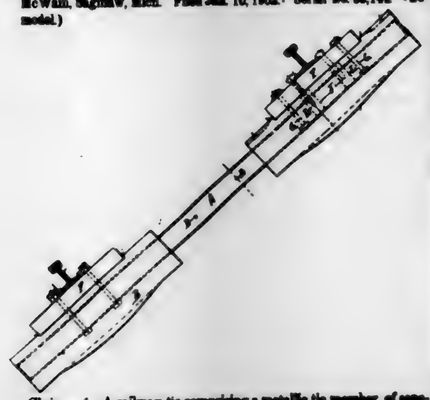

Claim.—1. A railway-tie comprising a metallic tie member, of separated cement sleepers formed on the ends of the tie member, a combining rail-block on each sleeper, the sleepers extending substantially equal distances on opposite sides of the rail-bearing.

2. A railway-tie comprising a rigid metallic tie member, of two separated cement sleepers formed on the ends of the tie member, rail-blocks on the sleepers to support the rails, the sleepers extending a substantially equal distance on each side of the rail-bearing, and the rail-blocks being of such length and thickness as to distribute the load throughout the sleepers.

3. A railway-tie comprising a cement body having openings at the points where the spikes are to be driven, plugs therein, fibrous blocks thereon and bolts for securing the blocks on the body over the plugs.

4. A railway-tie comprising a cement body, wooden spike-plugs therein, and wooden blocks secured on the body, having apertures in line with the plugs.

5. A railway-tie, comprising a body formed of two separated cement sleepers, wooden rail-blocks secured to the sleepers, and flanged bars connecting the sleepers and extending therein beyond the blocks.

6. A railway-tie comprising two flanged bars spaced apart and tied, cement sleepers molded about the end portions thereof, and a cement filling between the intermediate faces thereof.

7. A railway-tie comprising two flanged bars spaced apart and tied, cement sleepers molded about the end portions thereof, having a transverse gain at each end on top, and rail-blocks secured in the gains.

8. A railway-tie comprising metallic bars spaced apart, cement sleepers molded about the end portions thereof, and an integral bowed trans-shaped bottom thereon.

9. The combination in a railway-tie, of longitudinal metallic tie members, separated cement sleepers molded about the ends thereof, wooden rail-blocks on the sleepers and vertical bolts for clamping the blocks to the sleepers.

706,809. OIL-HOLE PROTECTOR. FRED L. EBERHARDT and HENRY F. EBER, Newark, N. J., assignors to Gould & Eberhardt, Newark, N. J., a Corporation of New Jersey. Filed June 19, 1901. Serial No. 65,157. (No model.)

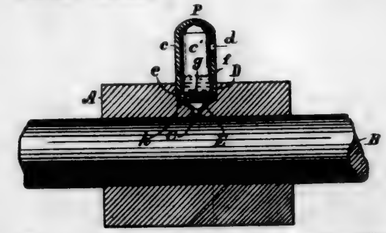

Claim.—1. The oil-hole protector herein shown and described, and consisting of a cup provided with a feed-hole, the internal cavity of the cup having at the bottom the recess *e* with shoulder *f* upon its upper side to set a felt disk at a given point, and the annular lip A at the bottom or margin of the recess, adapted to hold a felt disk in the recess when the disk is crowded through the lip into contact with the shoulder.

2. The oil-hole protector herein shown and described and made in one piece, and consisting of an inverted cup with feed-hole in the side, the internal cavity *c'* of the cup being enlarged at the bottom to form the recess *e* having shoulder *f* to set a felt disk at a given point, and the cup having the annular lip A at the margin of the recess adapted to hold a felt disk in the recess, when the disk is crowded through the lip into contact with the shoulder.

706,810. ACETYLENE-GAS GENERATOR. ALFRED C. REMPEL, St. Louis, Mo. Filed Feb. 18, 1901. Serial No. 47,711. (No model.)

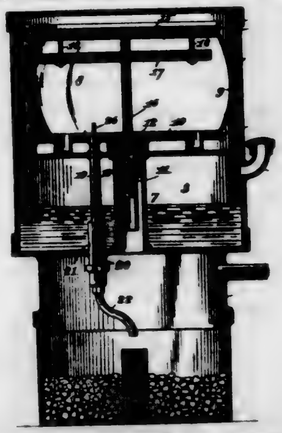

Claim.—In an acetylene-gas generator, the combination of a casing containing a generating-chamber, a collapsible bag having communication with said generating-chamber, a weight loosely suspended from the top of said bag, a water-reservoir, a valve-housing mounted in said cas-

servoir between the generating-chamber and collapsible bag and having communication with said reservoir and said generating-chamber, a tube extending from said housing to said collapsible bag, a valve in said housing, a spring arranged to press said valve to its seat and a stem carried by said valve extending through said tube into said collapsible bag above the bottom thereof and adapted to receive the impact of said weight when the bag collapses for the purpose of unseating said valve, substantially as described.

706,811. MACHINE FOR DRILLING RIVET-HOLES IN WHEEL-HUBS. GEORGE H. EVERSON, Pittsburg, Pa. Filed July 13, 1901. Serial No. 68,804. (No model.)

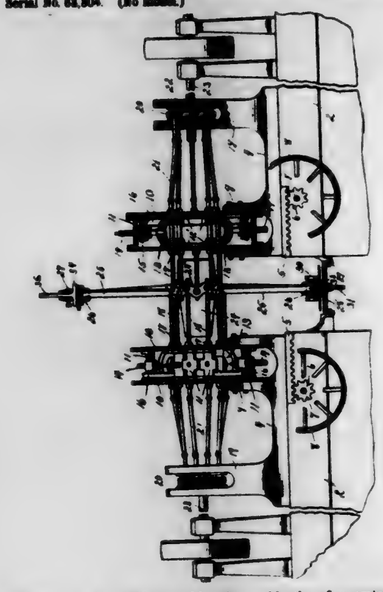

Claim.—1. In a drilling-machine, the combination of separated parallel side members formed on adjacent faces with corresponding radial guideways and radial slots, heads slidable in the guideways, drill-actuating shafts extending through said radial slots and journaled in said heads, shaft-actuating means, and means for radially adjusting said heads, substantially as shown and described.

2. In a drilling-machine, the combination of drilling mechanism, an upright work-holding frame, wheel-supporting cradle 30, screw 31 and guides 32 depending from the cradle into the lower portion of the frame, means for vertically adjusting said screw, and an adjustable wheel-clamping device in the upper portion of the frame, substantially as shown and described.

706,812. HANDLE FOR SAD-IRONS. WILLIAM B. PENN, Wilkesbarre, Pa., assignor to A. J. Rost Manufacturing Company, Kingston, Pa. Filed Sept. 28, 1901. Serial No. 76,901. (No model.)

Claim.—1. A handle for sad-irons composed of a blank of sheet metal comprising a central body portion and oppositely-directed end portions 4, said blank being adapted to be formed into a handle, the central body portion and the legs of which are tubular in cross-section, and the legs of which are split from the body upwardly, substantially as shown and described.

2. A handle for sad-irons formed from a blank of sheet metal comprising a central body portion 3 and oppositely-directed leg portions 4 at each end thereof, said parts being adapted to be folded so as to form a tubular handle and tubular leg portions, the handle portion and leg portions being gradually curved at the outer and inner sides thereof and the leg portions being split from the bottom upwardly so as to form spring side portions, substantially as shown and described.

3. The combination with a handle-plate for sad-irons provided with holes to receive the legs of a handle, of a tubular handle provided with tubular legs composed of separate spring side portions and the ends of which are adapted to be inserted into said holes and means for securing said legs in said holes, substantially as shown and described.

4. A handle-plate for sad-irons provided with openings 12 having inwardly-directed lugs or projections 13, at their opposite sides, and a hollow detachable handle, the legs of which are split from the bottom upwardly and adapted to be inserted into said openings 12, said legs being also provided at their lower ends with openings 5 adapted to receive the lugs or projections 13, substantially as shown and described.

706,813. HANDLE FOR SAD-IRONS. WILLIAM B. PENN, Wilkesbarre, Pa., assignor to A. J. Rost Manufacturing Company, Kingston, Pa. Filed Sept. 28, 1901. Serial No. 76,902. (No model.)

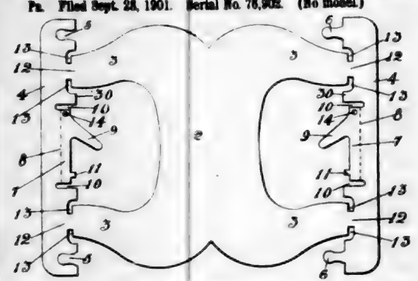

Claim.—1. A handle and attaching-plate for sad-irons, said parts being stamped from a single sheet of metal and pressed or folded into form, said handle being tubular in cross-section and provided with legs interiorly connected with said plate, which are also tubular in form, said attaching-plate being also adapted to be connected with the iron and being provided with a stationary hook on its under side, and a spring hook-plate provided with side hooks, and means for connecting said hook-plate with said attaching-plate substantially as shown and described.

2. A handle and attaching-plate for sad-irons comprising a blank composed of a body portion 2 having laterally-directed leg extensions or members 3 connected by parallel attaching-plate members 4, said blank being adapted to be folded or pressed into shape, substantially as shown and described.

3. A handle and attaching-plate for sad-irons formed from a blank comprising a body portion 2 laterally-directed end members 3 and plate members 4 provided centrally with prongs or hooks 9 and recesses 10 also with holes 14 and pins or projections 11, substantially as shown and described.

4. A handle and attaching-plate for sad-irons formed from a blank comprising a body portion 2, laterally-directed end members 3, and plate members 4 provided centrally with prongs or hooks 9 and recesses 10, also with holes 14 and pins or projections 11, said plate members being also provided, one with recesses 5, and the other with corresponding lugs or projections 6, substantially as shown and described.

5. The combination with a handle-plate for sad-irons of a spring hook-plate 24 slotted longitudinally and provided at one end with hooks 26 having slots 27 and at the opposite end with pins or projections 25, substantially as shown and described.

706,814. SCYTHE-SNATH-FASTENING DEVICE. PETER FOLEEN, Oakley, Mich. Filed Dec. 27, 1900. Serial No. 41,223. (No model.)

Claim.—1. In a scythe-snath-fastening device, the combination, with a scythe-snath, of a clip comprising two semicircular parts one of which is formed with a flattened surface, a shoulder adjacent one end of said flattened surface, and means for securing said parts together and to the snath.

2. In a scythe-snath-fastening device, the combination with a scythe-snath, of a clip comprising two semicircular parts hinged together, one of which is formed with a laterally-projecting slotted plate, and the other with a tangentially-projecting threaded stem to enter said slotted plate the last-named part having a flattened portion on its interior surface and a shoulder adjacent said flattened portion.

706,815. HOSE-BRIDGE. GEORGE H. FRASHER, JOHN W. WAGNER, and HARRY G. IRWIN, Dennison, Ohio. Filed Mar. 3, 1902. Serial No. 96,496. (No model.)

Claim.—A hose-bridge consisting of an arc-shaped body portion having an opening therein to receive the hose, outwardly-projecting horizontally-arranged rectangular flanges formed integral with the lower portion of the body and extending the entire length thereof, a downwardly-projecting rib formed integral with the lower face of the body portion and having beveled ends extending beyond the ends of the flanges, said rib being secured to one side of the longitudinal center of said body to engage the head of the rail, prongs formed integral with the lower faces of the said flanges adapted for engagement in the road-bed, some of said prongs extending adjacent said rib and engaging the side of the rail-head opposite to that engaged by the rib, and a tread on the body, substantially as described.

706,816. VEHICLE-TOP. LEONARD GILLASPY, Sturgeon, Mo., assignor of one-half to David A. Mayer, Sturgeon, Mo. Filed June 5, 1902. Serial No. 110,332. (No model.)

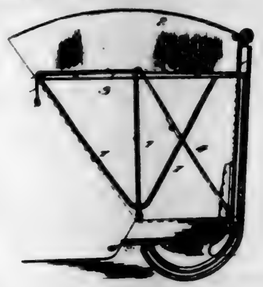

Claim.—In a folding vehicle-top, spring-rollers applied to said top at the rear of its sides and movable therewith, the lower ends of said rollers being movable in curved lines, a guide for the lower ends of the rollers, and side curtains adapted to wind upon the said rollers, substantially as set forth.

706,817. ELECTRIC CLOCK. HARLOWE GILLETTE, Highland Park, Ill. Filed June 24, 1899. Serial No. 721,698. (No model.)

Claim.—1. In a clock, the combination with the time-measuring vibrator, of a gravity impelling device therefor comprising a pivotal swinging armature-lever, an armature upon and weighting said lever, an electromagnet, a movable circuit making and breaking contact actuated by fall of the armature-lever to close the circuit and by rise of the armature-lever to break the circuit, and a prop for the armature-lever displaced by movement of the said vibrator, substantially as described.

2. In a clock, the combination with the time-measuring vibrator, of gravity impelling-lever mechanism therefor, comprising a permanent magnet, a lever-raising armature of too great resistance to be attracted by the permanent magnet alone, an electromagnet-winding for the permanent magnet, and a circuit making and breaking contact actuated under the movement of the vibrator to reinforce the magnet intermittingly to attract the armature, substantially as and for the purpose set forth.

3. In a clock, the combination with the time-measuring vibrator, of gravity impelling-lever mechanism therefor comprising a permanent magnet, a vibrator-impelling lever, an armature, upon and weighting said lever, of too great resistance to be attracted by the permanent magnet alone, an electromagnet-winding for the permanent magnet, and a circuit making and breaking contact actuated under the movement of the vibrator to reinforce the magnet intermittingly to attract the armature and raise the said lever, substantially as and for the purpose set forth.

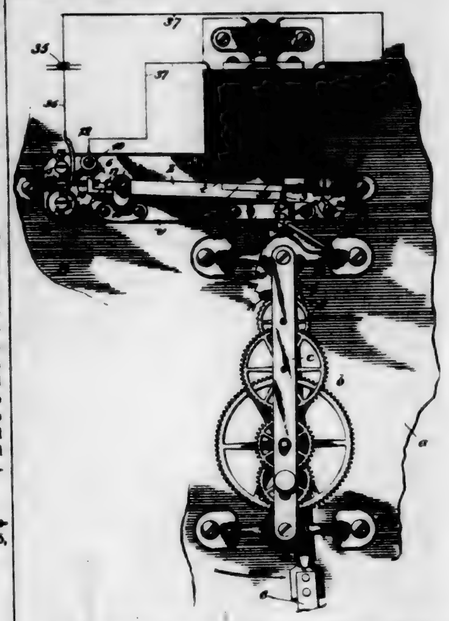

4. In a clock, the combination with the time-measuring vibrator of a pivotal vertically-swinging gravity impelling-lever therefor, a lever-raising armature, an electromagnet having a projecting core extending beyond the path of the end of the armature, means for adjusting the core with relation to the path of the armature, and means for making and breaking the electric current through the magnet, comprising a pivotal contact-piece actuated by movement of the said lever, substantially as described.

5. In a clock, the combination with the time-measuring vibrator, of a pivotal gravity impelling-lever therefor, a lever-raising armature upon and weighting said lever, an electromagnet and means for making and breaking the electric current through the magnet, comprising a relatively stationary contact and a vibratory spring-operated contact-piece actuated to snap to and from the said stationary contact by change in angle of the said lever, substantially as described.

6. In a clock, the combination with the time-measuring vibrator, of a pivotal gravity impelling-lever therefor, a lever-raising armature upon and weighting said lever, an electromagnet and means for making and breaking the electric current through the magnet, comprising a relatively stationary contact and a vibratory spring-operated contact-piece pivotally engaging the end of the said lever to snap to and from the said stationary contact by change in angle of the said lever, substantially as described.

7. In a clock, the combination with the pendulum, of a pivotal gravity impelling-lever therefor, a lever-raising armature, an electromagnet and means for making and breaking the electric current through the magnet, comprising a stop and a stationary electric contact-point close to said stop, a vibratory contact-piece provided with sharpened bearing ends resting end to end against said lever, and extending between said contact-point and stop, and a spring connected with said contact-piece and with a stationary support and operating to snap the contact-piece alternately to the contact-point and stop under changes in angle between the contact-piece and said impelling-lever, substantially as described.

8. In a clock, the combination with the pendulum, of a pivotal gravity impelling-lever therefor, a lever-raising armature, an electromagnet and means for making and breaking the electric current through the magnet, comprising a stop and a stationary electric contact-point close to said stop, a vibratory contact-piece provided with sharpened bearing ends resting end to end against said lever, and extending between said contact-point and stop, a spring connected with said contact-piece and with a stationary support and operating to snap the contact-piece alternately to the contact-

point and stop under changes in angle between the contact-piece and lever, and tensioning means for said spring, substantially as described.

9. In a clock, the combination with the pendulum, of a pivotal gravity impelling-lever therefor, a lever-raising armature, an electromagnet and means for making and breaking the electric current through the magnet, comprising a stop and a stationary electric contact-point close to said stop, a vibratory contact-piece provided with sharpened bearing ends resting end to end against said lever, and extending between said contact-point and stop, and a spring connected with said contact-piece and with a stationary adjustable spring-tensioning support and operating to snap the contact-piece alternately to the contact-point and stop under changes in angle between the contact-piece and lever, substantially as described.

10. In a clock, the combination with the pendulum, and gravity impelling device therefor comprising a pivotal swinging armature-lever, electromagnet and means for making and breaking the electric current through the magnet, of a movable prop for the armature-lever operating normally to engage the same, and a gravitating releaser for the prop actuated by movement of the pendulum, substantially as described.

11. In a clock, the combination with the pendulum, and gravity impelling device therefor comprising a pivotal swinging armature-lever, electromagnet and means for making and breaking the electric current through the magnet, of a movable prop, a spring connected with the prop and operating normally to move the same into sustaining engagement with the armature-lever, and a gravitating releaser for the prop actuated by movement of the pendulum, substantially as described.

12. In a clock, the combination with the electromagnet and pendulum of a vibratory gravity impelling-lever for the pendulum, a lever-raising armature, means for making and breaking the electric circuit through the magnet actuated by movement of the said lever, to close the circuit in the fall of the lever to its lowest limit and open the circuit in the rise of the lever, a movable prop engaging the lever when raised, and a bearing swinging with the pendulum and movable against the lever to effect release thereof from the prop, and subject to the weight of the lever in the descent thereof, substantially as described.

13 In a clock, the combination with the electromagnet, the electric circuit, pendulum, gravity impelling-lever *z* for the pendulum and lever-raising armature, of circuit making and breaking mechanism comprising a vibratory contact-piece 13 having pivotal end-to-end engagement with the lever *z* and provided with a contact-surface portion 15, a stop above and a contact below said contact-piece and a snapping-spring 16 for the contact-piece, all arranged to operate substantially as and for the purpose set forth.

14. In a clock, the combination of a lever-raising armature having a shoulder 3, a vibrating arm A carrying bearing-pieces 33 and 34, a movable prop 19, and a prop-releasing lever 28, all constructed to operate as and for the purpose set forth.

15. In a clock, the combination of a lever-raising armature having a shoulder 3, a vibrating arm A carrying adjustable screw-bearing pieces 33 and 34, a movable prop, and a prop-releasing lever 28, all constructed to operate as and for the purpose set forth.

16. In a clock, the combination of a lever-raising armature having a shoulder 3, a vibrating arm A carrying bearing-pieces 33 and 34, a movable prop 19, prop-spring 23, tensioning means for the prop-spring, and a prop-releasing lever 28, all constructed to operate as and for the purpose set forth.

17. In a clock, the combination of a lever-raising armature having a shoulder 3, a vibratory arm A carrying bearing-pieces 33 and 34, bearing-pins *k* and 27, prop 19, prop-spring 23, and gravity prop-releasing lever 28 having the prop-engaging finger 30 and guide-finger 31, all arranged to operate substantially as and for the purpose set forth.

706,818. MACHINE FOR MAKING SPIRAL TUBING. GERHARDT H. GRIEB, Camden, N. J., assignor to Sidney Mason. Filed Nov. 20, 1900. Renewed Jan. 28, 1902. Serial No. 90,542. (No model.)

Claim.—1. A machine for making spiral tubing comprising parallel ways and a power-shaft, strip-guides and their accessories, an arm pivoted near its end to one of said ways and having sliding contact at its other end with the other of said ways, belt-pulleys carried by said arm, a belt and a mandrel, a traveler intermediate of the points of pivotal support and sliding contact of the arm and carrying intermeshing bevel gear-wheels of which one is splined to the power-shaft, a train of gear-wheels driven by the other bevel gear-wheel and operatively connected with the pulleys, and movable studs for intermediate wheels of the last-mentioned train.

2. A machine for making spiral tubing comprising parallel ways and a power-shaft, strip-guides and their accessories, an arm pivoted near its end to one of said ways and having sliding contact at its other end with the other of said ways, belt-pulleys carried by said arm, a belt and a mandrel, a traveler intermediate of the points of pivotal support and sliding contact of the arm and carrying intermeshing bevel gear-wheels of which one is splined to the power-shaft, a train of gear-wheels driven by the other bevel gear-wheel and operatively connected with the pulleys, movable studs for the intermediate wheels, and means for shifting one of said pulleys to tighten or loosen the belt.

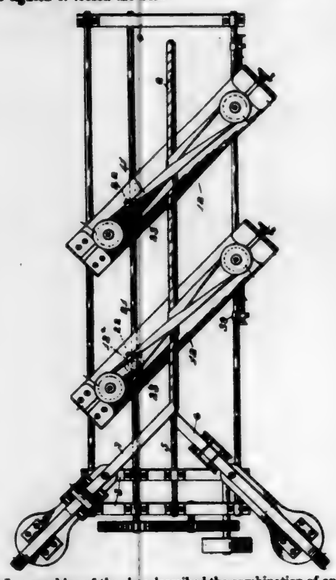

3. In a machine of the class described the combination of an arm pivoted at or near one of its ends and provided with belt-pulleys, a power-shaft, a traveler located intermediate of the ends of the arm and carrying a pair of intermeshing bevel-wheels of which one is splined to the power-shaft, a toothed wheel carried by the traveler and connected with the other bevel gear-wheel, a train of gear-wheels for driving said pulleys, intermediate wheels between the toothed wheel and the train of gear-wheels, and movable studs for the intermediate wheels, substantially as described.

4. In a machine of the class described, the combination of an arm pivoted at one of its ends, a way having sliding engagement with the other end of the arm, and a screw fastened to the way and the last-mentioned end of the arm for both shifting and holding the latter, substantially as described.

5. The combination in a machine of the class described of a movable arm, a way, a guide having sliding engagement with the way and with the arm, means for clamping and unclamping the guide, a clamp adapted to the way, and a screw interposed between the clamp and arm, substantially as described.

706,819. PRESSED-METAL BELT-SHIFTER ARM. HOWARD T. HALLOWELL, Philadelphia, Pa. Original application filed Aug. 11, 1900, Serial No. 26,560. Divided and this application filed Nov. 12, 1900. Serial No. 36,168. (No model.)

Claim.—1. As an improved article of manufacture, an arm for supporting a belt-shifter, made in sections of sheet metal secured together, a clamping device for holding said sections in position, and a guide-piece carried by said arm and adapted to support said belt-shifter.

2. A metal belt-shifter arm made in sections, suitably fastened together, a clamping device, and a guide-piece secured to said arm and having an opening therethrough in which the belt-shifter is adapted to be supported.

3. A metal belt-shifter arm, made in sections, a guide-piece attached to said arm, said guide-piece and sections being riveted together, and a clamping device on the end of said arm opposite to said guide-piece.

4. A metal belt-shifter arm, made in sections, one extremity of said sections having inwardly-turned lips, a clamping device for causing said lips to engage a hanger-leg, and a guide-piece for a belt-shifter, attached to said arm and having an opening therethrough.

5. A metal belt-shifter arm, made in sections, each section having a longitudinal rib, a clamping device for holding said sections in position and a guide-piece carried by said arm and adapted to support a belt-shifter.

6. A metal belt-shifter arm made in sections, each section having a longitudinally-extending rib, a guide-piece attached to said arm, said guide-piece being in sections and riveted together, and a clamping device on the end of said arm opposite to said guide-piece.

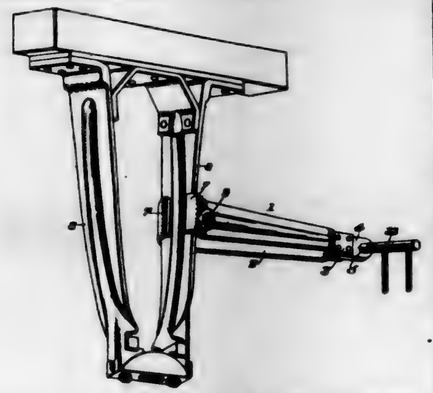

7. A metal belt-shifter arm, made in sections, each of the latter having a longitudinally-extending rib, one extremity of said sections having inwardly-turned lips, a clamping device for causing said lips to engage a hanger-leg and a guide-piece for a belt-shifter attached to said arm and having an opening therethrough.

706,820. AWNING-PROTECTOR. CHARLES H. HAMER, Racine, Wis. Filed May 20, 1901. Serial No. 61,893. (No model.)

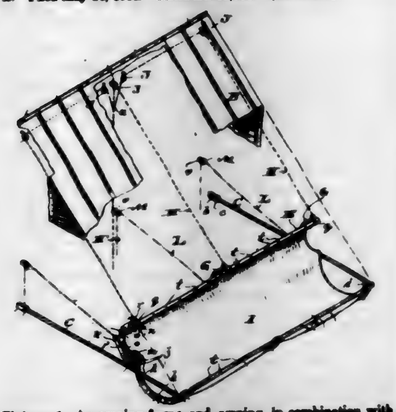

Claim.—1. An awning-frame and awning, in combination with a movable jointed supporting device pivotally attached to said frame, the holding said awning when raised, and cords or cables for drawing the outer end of said supporting device over the awning supported thereby.

2. An awning-frame, in combination with a series of jointed supports, pivotally secured to said frame, a cover secured to said frame and resting on said supports, and cords or cables for raising said frame and folding said jointed supports.

3. The combination with a supporting structure, of an awning-frame pivotally secured thereto; an awning secured to said structure and to said frame; a series of jointed supports, secured to said frame beneath the outer end of said awning; a cover secured to said frame and resting on said supports, beneath said awning, for receiving the latter when raised; and cords or cables for raising said frame and awning, and folding said jointed supports and said cover over said awning when raised.

4. In an awning-protector, the combination with the awning-frame having swinging lower arms and a pair of transverse rods united by a series of jointed supports, of levers projecting backward from the outer members of said supports; and series of cords or cables, one series leading from the inner members of said supports, and the other series leading from said levers.

5. In an awning-protector, the combination with the awning-frame having swinging lower arms and a pair of transverse rods, of a series of jointed supports centrally pivoted together and the extreme ends of said jointed supports being pivotally connected to said transverse rods; a lever projecting backward from the outer member of each jointed support; a cover secured to said transverse rods, and resting on said jointed supports; and series of cords or cables, one series being connected to the rear ends of the inner members of the supports, and the other series being connected to the rear ends of said levers.

6. The combination with an awning-frame having swinging lower arms and a pair of transverse rods, of series of jointed supports uniting said rods, each support having an inner and outer member pivotally united, and each member comprising two sections formed with slots therethrough, and adjustably bolted together, and the outer members having backward-projecting levers, together with series of cords and cables, connected, respectively, to the said inner members, and to the said levers.

7. An awning-frame and awning in combination with a jointed supporting device, pivotally attached to the outer end of said frame, and secured to the outer end of said awning, and cords or cables for raising said frame and folding said jointed supporting device.

8. An awning-frame and awning, in combination with a jointed supporting device pivotally secured to said frame beneath the outer ends of said awning, and cords or cables for raising said frame and folding said jointed supporting device.

706,821. PLANT POT OR HOLDER. HENRY HART, New York, N. Y. Filed Dec. 3, 1901. Serial No. 84,523. (No model.)

Claim.—1. A plant or flower holder comprising a tub or receptacle having a drawer in the bottom thereof, a supplemental tub or receptacle placed therein over said drawer, and provided with a transverse perforated partition and a perforated bottom, a post secured in said supplemental tub or receptacle, and a top tub or receptacle secured on the top of said post and provided with a transverse perforated partition, and a perforated bottom, the bottom of said last-named tub or receptacle being provided with a casing, the bottom of which is conical in form and perforated and a tubular casing connected with the bottom of said casing, and inclosing said post, substantially as shown and described.

2. A plant or flower holder comprising a tub or receptacle having a drawer in the bottom thereof, a supplemental tub or receptacle placed therein over said drawer, and provided with a transverse perforated partition and a perforated bottom, a post secured in said supplemental tub or receptacle and a top tub or receptacle secured on the top of said post and provided with a transverse perforated partition, and a perforated bottom, the bottom of said last-named tub or receptacle being provided with a casing, the bottom of which is conical in form and perforated and a tubular casing connected with the bottom of said casing, and inclosing said post, said tubular casing being provided with side receptacles which are secured thereto, substantially as shown and described.

3. A plant or flower holder comprising a tub or receptacle having

a drawer in the bottom thereof, a supplemental tub or receptacle placed therein over said drawer, and provided with a transverse perforated partition and a perforated bottom, a post secured in said supplemental tub or receptacle and a top tub or receptacle secured on the top of said post and provided with a transverse perforated partition, and a perforated bottom, the bottom of said last-named tub or receptacle being provided with a casing, the bottom of which is conical in form and perforated and a tubular casing connected with the bottom of said casing, and inclosing said post, said tubular casing being provided with side receptacles which are secured thereto, and a tube connected with the bottom of the top tub or receptacle and extending downwardly adjacent to said post, through said tubular casing and communicating with the drawer in the bottom of the first-named receptacle, substantially as shown and described.

4. A plant or flower holder comprising a receptacle having a drawer in the bottom thereof, a perforated partition above said drawer, a tub placed over said perforated partition and provided with a perforated bottom, said tub being also provided with a perforated partition, charcoal placed between said partition and the bottom of said tub the top portion of said tub being adapted to receive earths, substantially as shown and described.

706,822. BUMP-BOARD FOR WAGON-BOXES. LYSANDER L. HAWORTH, Decatur, Ill. Filed June 10, 1902. Serial No. 111,050. (No model.)

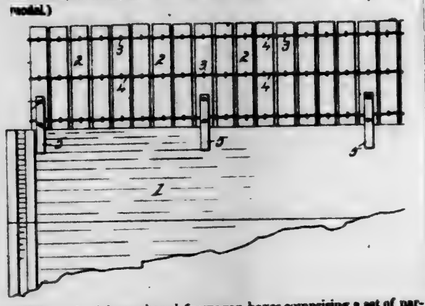

Claim.—1. A bump-board for wagon-boxes comprising a set of parallel slats flexibly secured together, and clamps on the ends of some of the slats whereby the board is secured to the wagon-box.

2. A bump-board for wagon-boxes comprising a set of parallel slats flexibly secured together and clamps on the ends of some of the slats adapted to hold the board with the ends of the slats resting on the edges of the wagon-box.

3. A bump-board for wagon-boxes, comprising a set of parallel slats secured together by wires running lengthwise of the board and crosswise of the slats, and clamps for securing the board to the wagon-box.

4. A bump-board for wagon-boxes comprising a set of parallel slats secured together by wires running lengthwise of the board and interwoven with the slats, and clamps for securing the board to the wagon-box.

5. A bump-board for wagon-boxes comprising a set of parallel slats secured together by wires interwoven with the slats crosswise thereof, staples securing the wires to the slats and clamps securing the slats to the wagon-box.

6. A bump-board, or wall, for wagon-boxes, comprising a flexible strip having clamps at intervals along one of its edges, whereby it may be secured to a wagon-box, substantially as described.

706,823. CAN-OPENER. MOSES L. HAWES, New York, N. Y. Filed Mar. 15, 1902. Serial No. 98,201. (No model.)

Claim.—A can-opener of the character described, comprising a handle or frame provided with a centering-spur at one end, a longitudinal slot, and short transverse slots near the end, with an elongated sliding plate having its end bent downward, one end of which is pointed and sharpened forming the knife, the other end being bent backward upon the under side of the frame thus securing the plate and knife to the frame—as shown and described.

706,824. BRAKE FOR VEHICLES. WILLIAM F. HITCHCOCK, Rochester, N. Y. Filed Mar. 10, 1900. Serial No. 8,168. (No model.)

Claim.—1. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, a lever pivotally connected to each brake-shoe and to a portion of the vehicle at such a point that said lever moves said brake-shoe in a path intersecting the circle of the rim of the wheel at a small angle thereto, and means for operating said two levers.

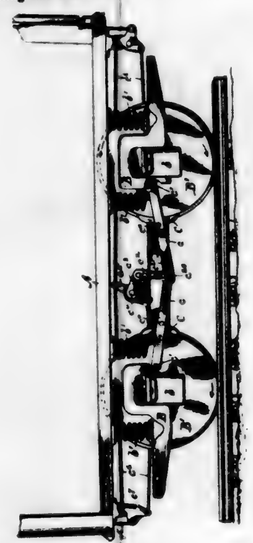

2. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, a lever pivotally connected to each brake-shoe and to a portion of the vehicle at such a point that said lever moves said brake-shoe in an arc of a circle intersecting the circle of the rim of the wheel and at a small angle thereto, and means for operating said two levers.

3. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, and a lever pivotally connected to each brake-shoe and to a stationary point on the vehicle adjacent to the wheel-axle and having a movement of said brake-shoe eccentric to the wheel and in an arc intersecting the circle of the rim at a small angle, and means for operating said two levers.

4. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, and a lever pivotally connected to each brake-shoe and to a stationary point on the vehicle adjacent to the wheel-axle and having a radius for movement of said brake-shoe less than the radius of the wheel, and means for operating said two levers.

5. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, two levers, one for each brake-shoe pivotally connected thereto and to a stationary point on the vehicle and having an arc of movement of the brake-shoe eccentric to the circle of the rim of the wheel and intersecting the circle of the rim thereof at a small angle, said levers being connected for simultaneous operation at all times and a single means for operating both levers.

6. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, two levers, one for each brake-shoe pivotally connected thereto and to a stationary point on the vehicle and having an arc of movement of the brake-shoe eccentric to the circle of the rim of the wheel and intersecting the circle of the rim thereof at a small angle, said levers being connected for simultaneous operation at all times, a rock-shaft having an arm thereon, means for connecting said arm to the free ends of both levers, and means for operating said rock-shaft.

7. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, two levers, one for each brake-shoe pivotally connected thereto and to a stationary point on the vehicle and having an arc of movement of the brake-shoe eccentric to the circle of the wheel and intersecting the circle of the rim thereof at a small angle, the free ends of said two levers being overlapped and being pivotally connected, and a single means for operating the common pivot of both levers.

8. In a vehicle-brake, a pair of wheels, a pair of brake-shoes for acting upon the oppositely-moving sides of said two wheels, two levers, one for each brake-shoe pivotally connected thereto and to a stationary point on the vehicle and having an arc of movement of the brake-shoe eccentric to the circle of the rim of the wheel and intersecting the circle of the rim thereof at a small angle, said levers being connected for simultaneous operation at all times, a rock-shaft, a rock-arm c^4 upon said rock-shaft and carrying the link c^3, an arm c^5 upon said rock-shaft, one or more rods c^6 for operating said arm c^5, a T-lever c^7 for operating said rod or rods, and means for operating said T-lever.

9. In a vehicle-brake, a wheel B', a brake-shoe C for acting upon the rim of said wheel, a lever c having said brake-shoe pivoted thereto, said lever being pivoted to a portion of the vehicle at such a point as to move the brake-shoe in an arc of a circle intersecting the circle of the rim of each wheel at a small angle thereto, a link c^3 pivotally connected to the free end of said lever, a rock-shaft c^4, a rock-arm c^5 upon said rock-shaft and carrying the link c^3, an arm c^5 upon said rock-shaft, one or more rods c^6 for operating said arm c^5, a T-lever c^7 for operating said rod or rods, and means for operating said T-lever.

10. In a vehicle-brake, a pair of wheels B', a pair of brake-shoes C for acting upon the rim of said wheels, a pair of levers c having said brake-shoes pivoted thereto, said levers being pivoted to portions of the vehicle at such points as to move the brake-shoes in arcs of circles intersecting the circles of the rims of the wheels at small angles thereto, and a link c^3 pivotally connected to the free ends of said levers, a rock-shaft c^4, a rock-arm c^5 upon said rock-shaft and carrying the link c^3, an arm c^5 upon said rock-shaft, rods c^6 for operating said arm c^5, a T-lever c^7 for operating said rods, and means for operating said T-lever.

706,825. ATTACHMENT FOR PLOWS. WILFORD H. HOLSCLAW, Louisville, Ky., assignor to B. F. Avery & Sons, a Corporation of Kentucky. Filed Jan. 6, 1902. Serial No. 88,644. (No model.)

Claim.—1. In a mechanism of the class described, the combination with a plow, of a wheel-carrying axle attached to said plow, a squared bearing inclosing said axle for a portion of its length, means for adjusting the ends of said axle to various planes, and locking means clamped about said squared bearing for receiving and retaining said adjusting means, substantially as described.

2. In a device of the class described, the combination with a suitable plow, of a transversely-arranged divided axle, means for securing the same to the beam of said plow, a squared bearing inclosing the inner ends of the sections of said axle, and means carried by said bearing for adjusting the outer ends of said axle to various horizontal planes with respect to each other, substantially as described.

3. In a mechanism of the class described, the combination with a suitable plow and its beam, of an axle, means carried thereby for securing same to said plow-beam, the said axle being formed of two parts each part being bent intermediate its length, the ends thereof lying in different horizontal planes, a squared bearing inclosing the inner ends of said parts, and means carried thereby for rotating the inner ends of the parts of said axle for altering the horizontal plane of the outer ends thereof, substantially as described.

4. In a mechanism of the class described, the combination with a suitable plow, of an axle designed to support the beam thereof, bent out of its plane and again bent into a plane parallel to the first-mentioned plane, that portion of said axle lying in said parallel plane being longer than the distance between the said first bends, and means for adjusting the wheel-carrying portions of said axle to various planes, substantially as described.

5. In a mechanism of the class described, the combination with a suitable plow, of a two-part axle, means for securing the same to the beam of said plow, each part of the said axle being bent from a horizontal to a diagonal outward plane and back to a horizontal again, and means carried by said axle for rotating the upper horizontal portion of each of its respective parts independently of the other, substantially as described.

6. A riding-plow attachment, comprising in its construction a two-part axle, each of the parts consisting of a bar having a wheel-carrying portion extending in a horizontal plane, said bar being bent from said plane to a diagonal plane outwardly, and then again bent inwardly to a horizontal plane, a squared tube surrounding the inner ends of said bars, means for securing said bars against lateral movement with respect to said tube, and means for rotating the ends of said bars within the tube, substantially as described.

7. A riding-plow attachment comprising an axle formed of two bars extending inwardly in a horizontal plane, then bent upwardly from said plane, and again inwardly in a horizontal plane, a squared bearing inclosing said bars, a lever pivotally engaging each of said bars outside the squared bearing, means carried by said squared bearing for engaging the said levers for preventing movement thereof, and means carried by said levers for rotating the inner ends of each of said bars upon movement of the same, substantially as described.

8. In a mechanism of the class described, the combination with a suitable plow, of an axle formed in two parts and bent centrally upward and flared outwardly, means retaining the parts of said axle against longitudinal movement with respect to each other, means for securing the beam of said plow to said axle, means carried by the center portion of said axle for moving the outer ends of the two parts thereof to different horizontal planes with respect to each other, substantially as described.

9. In a mechanism of the class described, the combination with a suitable plow, of an axle designed to support the beam thereof, said axle being bent centrally out of its horizontal plane, and again in a higher horizontal plane, a two-part casting clamped about each of the lower bends in said axle, and means engaging said castings for adjusting said lower horizontal portion of the axle to different planes, substantially as described.

10. In a mechanism of the class described, the combination with a suitable plow, of an axle designed to support the beam thereof bent centrally from its horizontal plane, flared outwardly and again bent to a higher horizontal plane, the said axle being formed in two parts, means inclosing the inner ends of said parts, means carried by the upper horizontal portion of said axle engaging the axle at the points of its lower bends and designed to be operated for moving the lower horizontal portions of the axle to various planes with respect to each other, substantially as described.

11. In a mechanism of the class described, the combination with a suitable plow of an axle designed to support the beam thereof, means for securing the said axle to said beam, the axle being bent centrally from its horizontal plane, the axle being formed in two parts, a squared bearing inclosing the inner ends of said parts, a sleeve clamped about each end of said bearing, a lever pivoted to said axle outside of each of said sleeves, means carried by said lever engaging said axle whereby movement of the lever is designed to rotate the upper horizontal portion of the respective part of said axle, and locking means carried by each of said sleeves designed to be engaged by its respective lever for preventing movement thereof, substantially as described.

12. In a mechanism of the class described, the combination with a suitable plow of an axle designed to be secured to the beam thereof, said axle being bent centrally from its horizontal plane, then again bent to a higher horizontal plane, said axle being formed in two parts, a squared bearing inclosing the inner ends of the parts of said axle, sleeves engaging the ends of said squared bearing, locking-sectors carried by said sleeves, a lever pivotally engaging said axle outside each of said sectors, means carried by said lever for engaging the sectors to prevent movement of the lever, and means carried by each of said levers pivotally engaging its respective part of said axle at the points of its lower bend, whereby movement of one of the levers is designed to rotate the upper horizontal portion of its respective part of the axle and to alter the plane of the lower portion thereof, substantially as described.

13. In a mechanism of the class described, the combination with a plow of an axle designed to be secured to the beam thereof, said axle being bent centrally and from its horizontal plane, and again bent to a higher horizontal plane, the axle being formed in two parts, a squared bearing inclosing the inner ends of the parts of said axle, a sleeve inclosing each of said squared bearings, means for clamping each of said sleeves in position upon said bearing, an inwardly-extending shoulder formed upon said sleeve and designed to snugly fit about its respective part of the axle outside the end of the squared bearing, a space being left between said end of the bearing and said shoulder, a lug carried by the respective part of said axle and occupying the space between said shoulder and the respective end of said squared bearing, whereby the parts of said axle are held against longitudinal movement, and means for rotating the upper horizontal portion of said axle, substantially as described.

14. In a mechanism of the class described, the combination of an axle bent centrally from the horizontal plane, and again bent to a higher horizontal plane, the said axle being formed in two parts, means for preventing longitudinal movement of the parts of said axle with respect to

each other, two-part castings clamped about and inclosing the lower bend of each part of said axle, levers pivotally carried by the upper horizontal portion of said axle, means carried by each lever pivotally engaging its respective castings, and means for locking each of said levers against movement, whereby the wheel-carrying horizontal portions of said hub may be moved to varying planes with respect to each other, and held in said relative positions, substantially as described.

15. In a mechanism of the class described, the combination of an axle centrally bent from the horizontal plane, and again bent to a higher horizontal plane, the said axle being formed in two parts, means for retaining said parts of the axle against longitudinal movement with respect to each other, levers each provided with an eye surrounding its respective part of said axle, a two-part casting, clamped about the lower bend of each part of said casting, an arm carried by each of said levers pivotally engaging one of said lugs, whereby movement of either lever is designed to alter the plane of the lower horizontal portion of the respective part of said axle and rotate the upper portion thereof, and means for locking said lever against movement, substantially as described.

16. In a mechanism of the class described, the combination of an axle bent centrally from a horizontal plane upward and again bent to a higher horizontal plane, the said axle being formed of two parts, divided centrally of the upper horizontal portion, a squared tube inclosing the inner ends of said parts, the inner walls of said tube being cut away to accommodate the contour of said axle, means for preventing longitudinal movement on the parts of said axle, and means for altering the plane of the lower horizontal portions of the axle, substantially as described.

17. In a mechanism of the class described, the combination with a suitable plow, of an axle bent centrally from a horizontal plane, and again bent to a higher horizontal plane, the said axle being divided approximately at the center thereof, a squared bearing inclosing the inner portion of said axle, means preventing a longitudinal separation of the parts of said axle, means carried by the respective parts of said axle for altering the horizontal plane of the wheel-carrying portion thereof, and clamping means carried by said bearing designed to engage the beam of said plow, substantially as described.

18. In a mechanism of the class described, the combination with a suitable plow of an axle and means for securing same to the beam of said plow, the said axle being bent centrally from its normal horizontal plane, flared outwardly, and again bent to a horizontal plane, and means carried by the second-mentioned horizontal portion of the axle for altering the plane of the first-mentioned horizontal portion thereof, substantially as described.

19. In a mechanism of the class described, the combination with a suitable plow, of a divided axle engaging the beam thereof, each part of said axle being bent out of its normal horizontal plane, and means for independently rotating the inner ends of the parts of said axle, said inner ends lying at times in the same transverse, vertical plane, substantially as described.

706,826. ELEVATOR-OPERATING MECHANISM. WILLIAM W. HUBBARD, Manchester, N. H. Filed Apr. 12, 1902. Serial No. 102,505. (No model.)

Claim.—1. The combination of a fixed vertical elongated rack, a vertically-movable lift, a pair of primary operating-levers each formed as a treadle pivoted on the lift and carrying a pawl which constitutes an extension of the lever, and a gear journaled on the lift and engaging both the pawls and the rack, said gear constituting a secondary lever which has the fixed rack for its fulcrum, whereby the weight of a passenger on the lift exerted alternately on the two primary levers and applied to retain the gear is supported wholly by the rack and caused to raise the lift, the latter being relieved of the weight of the passenger while the lift is rising.

2. The combination of a fixed vertical elongated rack, a vertically-movable lift, a pair of primary operating-levers each formed as a treadle pivoted on the lift and carrying a pawl constituting an extension of the lever, a gear journaled on the lift and engaging both the pawls and the rack, said gear being rotatable in a forward direction by the levers and pawls, and means for preventing backward rotation of the gear.

3. The combination of a fixed vertical elongated rack, a vertically-movable lift, a pair of primary operating-levers each formed as a treadle pivoted on the lift and carrying a pawl constituting an extension of the lever, a gear journaled on the lift and engaging both the pawls and the rack, said gear being rotatable in a forward direction by the levers and pawls, a stop-pawl pivoted on the lift and adapted to prevent backward rotation of the gear, and means for simultaneously disengaging the pawls from the gear to permit the descent of the lift.

4. The combination of a fixed vertical elongated rack, a vertically-movable lift, a pair of primary operating-levers each formed as a treadle pivoted on the lift and carrying a pawl constituting an extension of the lever, a gear journaled on the lift and engaging both the pawls and the rack, said gear being rotatable in a forward direction by the levers and pawls, a stop-pawl pivoted on the lift and adapted to prevent backward rotation of the gear, means for simultaneously disengaging the pawls from the gear to permit the descent of the lift, and means for retarding the descent of the lift.

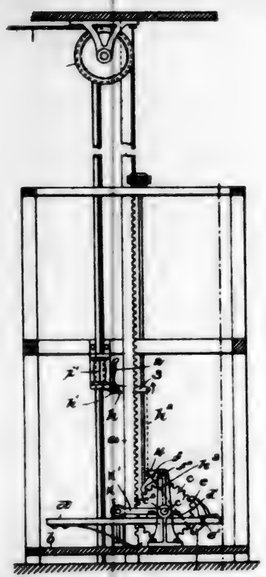

5. The combination of a fixed vertical elongated rack, a vertically-movable lift, a pair of primary operating-levers each formed as a treadle pivoted on the lift and carrying a pawl constituting an extension of the lever, a gear journaled on the lift and engaging both the pawls and the rack, said gear being rotatable in a forward direction by the levers and pawls, a stop-pawl pivoted on the lift and adapted to prevent backward rotation of the gear, means for simultaneously disengaging the pawls from the gear to permit the descent of the lift, and brake mechanism comprising a fixed vertical elongated friction member and a complemental sliding friction member movable with the lift and adapted to coöperate with the said fixed member.

6. The combination of a fixed vertical elongated rack, a vertically-movable lift, a pair of primary operating-levers each formed as a treadle pivoted on the lift and carrying a pawl constituting an extension of the lever, a gear journaled on the lift and engaging both the pawl and the rack, said gear being rotatable in a forward direction by the levers and pawls, an antifriction-roll in rolling contact with the back of the rack, and tension-rods connecting said roll with the axis of the gear.

706,827. REVERSING MECHANISM. CHARLES W. JAMES, Philadelphia, Pa. Filed Dec. 12, 1901. Serial No. 85,628. (No model.)

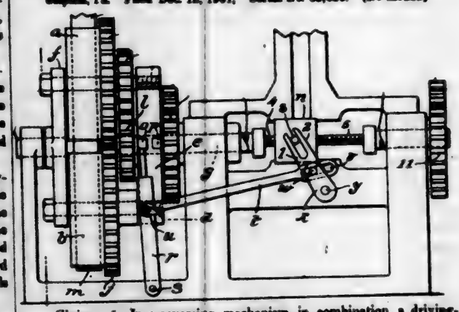

Claim.—1. In a reversing mechanism, in combination, a driving-belt, two pulleys, means for carrying said pulleys so that they can be rotated in a plane at right angles to their shafts, gears carried by each of said pulleys meshing with each other, a second gear carried by and rotating with one of said pulleys, a gear meshing with said second gear, a shaft upon which said second gear is carried, and means whereby either of said pulleys may be held in operative contact with said driving-belt.

2. In a reversing mechanism, in combination, a shaft, a bearing-piece rotatably carried by said shaft, means for engaging and disengaging said bearing-piece so as to prevent or permit its rotation, two superposed pulleys carried by said bearing-piece, gears connecting said pulleys, and gears connecting one of said pulley-connecting gears and said shaft.

3. In a reversing mechanism, in combination, a shaft, a circular bearing-piece rotatably carried by said shaft and carrying upon opposite sides stops, two studs carried by said bearing-piece at diametrically opposite points, pulleys carried by said studs, gears carried by said pulleys meshing with one another, a gear carried by one of said latter gears meshing with a gear carried by said shaft, said latter gear, a stop adapted to engage alternately the stops on said bearing-piece and means for tripping said stops.

4. In a reversing mechanism, in combination, a shaft, a bearing-piece rotatably carried by said shaft, two superposed pulleys carried by said bearing-piece, and means carried by and turning with said shaft and pulleys, whereby a movement is given to one pulley, upon the rotation of said shaft, in the same direction as said shaft, and to the other pulley in the opposite direction, or vice versa.

5. The combination with a reciprocating block or frame and rotatable means for driving said block or frame in either direction, of a shaft, a bearing-piece rotatably carried by said shaft, two superposed pulleys carried by said bearing-piece, gears connecting said pulleys, gears connecting one of said pulley-connecting gears and said shaft, gears connecting said shaft and said block or frame driving means, means operated by the movements of said block or frame for bringing said pulleys alternately into engagement with a driving-belt, and said driving-belt.

6. The combination in a reversing mechanism of two superposed pulleys, gears carried by and connecting said pulleys, a bearing-piece carrying studs carrying said pulleys, and carrying upon opposite sides stops, said stops, a shaft carrying said bearing-piece, gears connecting said shaft and one of said pulleys, a reciprocating block or frame driven by the movements of said shaft, and means actuated by the movements of said block or frame for engaging and releasing said stops carried by said bearing-piece.

706,828. AUTOMATIC AIR-BRAKE ORDER SYSTEM. DANFORD W. JEWELL, Kalamazoo, Mich., assignor of two-thirds to Willis H. Ralston and Melvin O. Beattie, Kalamazoo, Mich. Filed Mar. 24, 1902. Serial No. 100,127. (No model.)

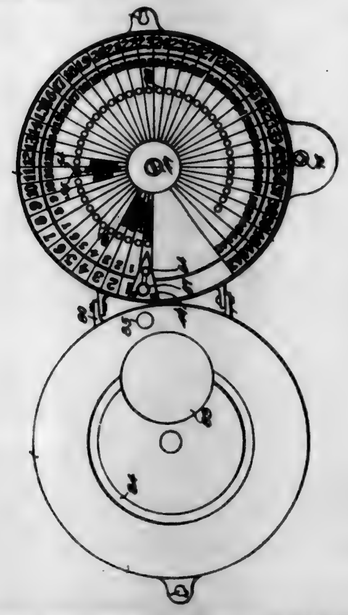

Claim.—1. The combination with means carried by the train for signaling at a predetermined period, of an operative mechanism having as one of its elements a removable member, the conformation of which compels the adjustment of said mechanism to a predetermined position.

2. A train-signaling mechanism comprising a train-order card, an adjustable mechanism arranged on the train for the reception and support of said card, the adjustment of such mechanism and the time of operation of the signaling mechanism being governed by the conformation of the card.

3. In a device of the class specified, a mechanism having as one of its elements a revoluble member, means for imparting motion thereto, means for effecting a preliminary adjustment of said revoluble member, and a train-order adapted to be carried by said revoluble member and governing the extent of adjustment of said revoluble member.

4. In a device of the class specified, a mechanism having as one of its elements a revoluble member, means for imparting motion thereto, means for effecting a preliminary adjustment of said revoluble member, and a train-order the conformation of which governs the adjustment of said revoluble member.

5. In a device of the class specified, a mechanism having as elements a fixed member and an adjustable revoluble member, each member bearing distinguishing-marks and the distance between such marks controlling the time or place of actuation, and a train-order the conformation of which governs the adjustment of the revoluble member and the distance between such distinguishing-marks.

6. In a device of the class specified, a mechanism having a stationary member, a revoluble dial, means for actuating the dial, means for adjusting the dial, and a train-order the conformation of which governs the extent of adjustment of such dial.

7. In a device of the class specified, a mechanism having a fixed member, a revoluble dial, means for adjusting the dial, a pin or stud carried by such dial, and a train-order having a perforation for the reception of the pin.

8. In a device of the class specified, a train-order, a revoluble dial for its reception and support, a train-order-engaging means carried by the dial, and means for adjusting the position of such train-order-engaging means in accordance with the conformation of the train-order.

9. In a device of the class specified, a stationary member, a movable member, a train-order, a train-order-engaging means carried by such member, and mechanism for adjusting the movable member, the degree of adjustment being governed by the conformation of the train-order.

10. In a device of the class specified, stationary and movable members each having a projecting stud, means for adjusting the movable member, and a train-order having perforations for the reception of the two studs, the distance between such perforations determining and governing the extent of adjustment of the movable member.

11. In a device of the class specified, a stationary ring, a revoluble dial, studs carried by the ring and dial, means for effecting a preliminary adjustment of the dial, a removable member having perforations for the reception of both studs and governing the extent of adjustment, and means for disengaging the stud carried by the stationary ring.

12. In a device of the class specified, a stationary ring, a revoluble dial, means for adjusting the dial, studs carried by the ring and dial, a removable member having perforations for the reception of both studs and governing the extent of adjustment, and means for automatically disengaging the stud carried by the ring from contact with the removable member.

13. In a device of the class specified, a stationary ring having an annular series of designating-marks, a dial having a pointer movable into radial alinement with any one of such marks, a fixed stud carried by the dial, a movable stud carried by the ring, means for adjusting the dial, and a train-order disk having perforations for the reception of both studs and governing the extent of adjustment, and a door or cover for the dial and ring adapted to engage with and force the movable stud from contact with the train-order disk.

14. A train-signaling mechanism, comprising a fixed casing, a ring carried thereby and having an annular series of designating-marks, a zero-indicator carried by the ring, a spring-pressed stud adapted to an opening in the ring, a pin carried by said stud, a revoluble disk rotated within the ring and having a pointer, means for adjusting the disk to aline the pointer with any one of the designating-marks of the ring, a fixed stud carried by the dial, a train-order disk having perforations to engage the pin of the stationary ring and the stud of the dial thereby to govern the extent of adjustment of such dial, a door carried by the casing and having means for engaging the spring-pressed stud to force the latter to inoperative position, said door having a transparent panel through which the movement of the train-order may be observed.

15. In a device of the class specified, a train-order of disk-like form and bearing on its surface designating-data including the names of railroad-stations, said disk having two concentric rows of designating-marks through which perforations may be formed.

16. In a device of the class specified, a casing, a dial, a hand or

pointer adapted to travel over the dial, a revolvable support for said hand or pointer, a gear-wheel, a ratchet-wheel and a cam forming part of such support, an adjusting-pinion intermeshing with the gear-wheel, means for imparting a step-by-step movement to the ratchet-wheel, and a train-controlling mechanism governed by said cam.

17. In a device of the class specified, a casing, a stationary spindle carried thereby, a dial, a pointer adapted to travel over the dial, a gear-wheel, a ratchet-wheel and a cam all carried by and revolvable on the spindle, an adjusting-pinion intermeshing with the gear-wheel, means for imparting a step-by-step movement to the ratchet-wheel, and a train-controlling mechanism governed by the cam.

18. In a device of the class specified, a casing, a stationary spindle therein, a cam mounted on said spindle, a train-controlling mechanism governed by said cam, a friction-drum carried by the cam, an adjustable band-brake for said drum, a ratchet-wheel and a gear-wheel secured to and revolvable with the cam and drum, a stationary dial, a pointer carried by the gear-wheel and adapted to travel over said dial, an adjusting-pinion intermeshing with the gear-wheel, and means for imparting a step-by-step movement to the ratchet-wheel.

19. In a device of the class specified, a stationary casing, a dial carried thereby, a hand or pointer adapted to travel over the dial, a revolvable support for the hand or pointer, a ratchet-wheel connected to such support, a pawl for engaging the ratchet-wheel, a pawl-guiding box in which the shank of the pawl is situated, a spring engaging the shank of the pawl and tending to force the latter into engagement with the ratchet-wheel, a revolvable disk carried by the shank of the pawl, and a pin carried by said disk and serving as a means for locking the pawl in disengaging position, substantially as specified.

20. In a device of the class specified, a casing, a train-controlling means, a cam for governing the same, a ratchet-wheel connected to the cam, a pawl in engagement with said ratchet-wheel, a cylinder, a piston located in the cylinder, a piston-rod connecting the piston and the pawl, and means for automatically admitting fluid under pressure to said cylinder.

21. In a device of the class specified, a casing, a train-controlling means, a cam for governing the same, a ratchet-wheel connected to the cam, a pawl in engagement with said ratchet-wheel, a cylinder, a piston situated in the cylinder and connected with the pawl, a spring for returning the piston to an initial position after each operative movement, and an automatically-operated valve controlling the admission of fluid under pressure to said cylinder.

22. In a device of the class specified, a train-controlling mechanism having as one of its elements a ratchet-wheel, a pawl in engagement with the ratchet-wheel, a cylinder, a piston situated in the cylinder and connected to the pawl, a valve-casing connected to the cylinder, a source of pressure-supply also connected to said valve-casing, a valve situated in the casing and controlling the flow of fluid under pressure to the cylinder, and means for automatically opening and closing said valve.

23. In a device of the class specified, a train-controlling mechanism having as one of its elements a ratchet-wheel, a pawl in engagement with the ratchet-wheel, a cylinder, a piston situated in the cylinder and connected with the pawl, a valve-casing connected to the cylinder, a source of pressure-supply also connected to the valve-casing, a valve controlling the flow of fluid under pressure to said cylinder, a valve-rod, a pivoted arm adapted to operate thereon, and a series of actuating devices provided along the line of the road for contact with said arm.

24. In a device of the class specified, a valve-casing having inlet and outlet ports, a valve controlling the flow of fluid between such ports, a valve-rod extending through the casing, a pivoted arm, a block or lug carried thereby, and an adjustable cut-over carried by the block or lug and adapted for contact with the valve-rod, means for limiting the downward movement of the arm, and a roller carried by the arm for contact with projections on the road-bed.

25. In a device of the class specified, an air-brake system having a train-pipe, a valved branch pipe connected to the pipe, a cam normally holding said valve in closed position, a ratchet-wheel connected to said cam, a pawl engaging the ratchet-wheel, and means for imparting a step-by-step movement to the cam through the pawl and ratchet-wheel.

26. In a device of the class specified, a pipe having a connection with the train-pipe of an air-brake system, a valve in said pipe, a valve-rod, a cam in contact with the valve-rod and normally serving to hold said valve-rod in an elevated position, a guiding-block for the valve-rod, a cushioned lug carried by the valve-rod and adapted for contact with said block, and means for rotating the cam to permit the opening movement of the valve.

706,829. BRAKE FOR OPERATING AND LOCKING SCUTTLE-COVERS. EDWARD F. JOHNSON, Jersey City, N. J. Filed May 14, 1900. Serial No. 16,263. (No model.)

Claim.—1. The herein-described means for opening, closing and locking a scuttle-cover, transom, skylight or similar device, comprising a toggle-lever, two of the side arms of which are pivoted to the framework and one of which is projected and provided with an operating device, one of the opposite side arms of said toggle-lever being also projected and pivotally connected with a link which is pivoted to a plate secured to the scuttle-cover, transom or skylight, spring-operated locking-dogs hinged to said cover, transom or skylight, and catches secured in the frame and adapted to be engaged by said dogs, said dogs being also in operative connection with said link, substantially as shown and described.

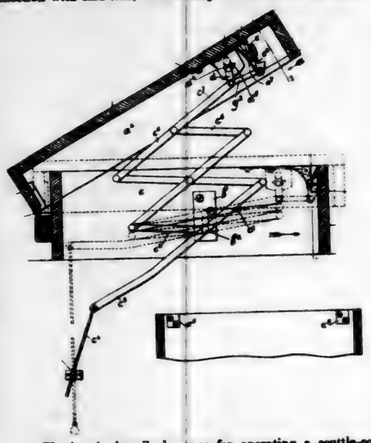

2. The herein-described means for operating a scuttle-cover comprising a toggle-lever two of the side arms of which are pivoted to the framework of the scuttle and one of which is projected and provided with an operating device one of the opposite side arms of said toggle-lever being also projected and pivotally connected with a link which is pivoted to a support secured to said cover and a spring-operated dog hinged to said cover and adapted to engage a catch secured in said framework, said dog being also in connection with said link, substantially as shown and described.

706,830. BUNSEN BURNER. WILHELM KAPPEL, Berlin, Germany. Filed Oct. 8, 1901. Serial No. 77,974. (No model.)

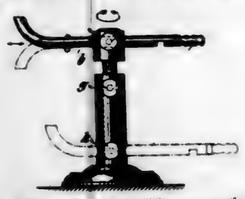

Claim.—1. A Bunsen burner comprising a supporting socket or stand with axial opening and an independent transverse opening, a stem constructed to fit either of said openings and having a head, a burner-tube axially and longitudinally adjustable in the head of said stem and means for holding the tube in either opening of the socket and means for holding the tube in said stem.

2. A Bunsen burner comprising a supporting stand or socket with axial and transverse openings, a stem adjustable in either of said openings, and a burner-tube axially and longitudinally adjustable in said stem, the said burner-tube having its burner end bent out of the axial line of the tube and its other end provided with a nozzle.

3. A Bunsen burner comprising a supporting stand or socket having axial and transverse openings intersecting each other, a head with transverse opening and a stem at right angles thereto, a burner-tube axially and longitudinally adjustable in the opening of the head, said stem being constructed to fit either the axial or transverse opening of the socket, means for securing the tube in its support, and means for securing the stem in its adjusted position in the socket.

706,831. REGENERATIVE GAS-BURNER. ROBERT H. KELLY, Buffalo, N. Y. Filed May 16, 1902. Serial No. 107,643. (No model.)

Claim.—1. A regenerative gas-burner having a head provided with gas-conducting branches, a regenerator connected to and supported by said branches, a gas-discharge branch provided with means for admitting air thereto, and a tapering gas and air mixing and heating chamber having a contractible and expansible discharge end.

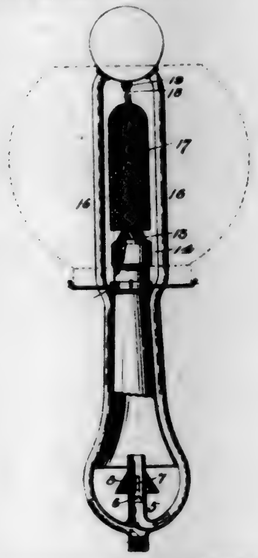

2. A regenerative gas-burner having a head provided with gas-conducting branches, a regenerator connected to and supported by said branches, a gas-discharge branch provided with means for admitting air thereto and a conical hood surrounding the branch, and a tapering gas and air mixing and heating chamber engaged by the gas-conducting branches and provided with an adjustable discharge end.

3. A regenerative gas burner having a head provided with gas-conducting branches, a regenerator connected to and supported by said branches, a gas-discharge branch provided with means for admitting air thereto, a tapering gas and air mixing and heating chamber engaged by the gas-conducting branches, a collar on said tube, a globe supported by said collar, and a mantle suspended from the regenerator.

4. A regenerative gas-burner provided with gas-conducting branches, a regenerator connected to and supported by said branches, a gas-discharge branch, a tapering gas and air mixing and heating chamber engaged and supported by the gas-conducting branches, means for controlling the discharge end of said mixing and heating chamber, and a mantle suspended from the regenerator.

706,832. COVERING FOR AEROPLANES. ISAAC LANGLEY, Chicago, Ill. Filed Nov. 26, 1901. Serial No. 83,311. (No model.)

Claim.—1. A covering for an aeroplane having a reticulated body and an acting surface, the acting surface formed of thin material set edgewise, leaving interstices or spaces and having a curved rearwardly-deflecting edge, for pressure to pass through the interstices or spaces and give a forward thrust or projection in the direction of the front of the aeroplane, substantially as described.

2. A covering for an aeroplane having its acting surface formed of thin material set edgewise with interstices or spaces, the edgewise-set thin material having a plane of curved rearwardly-deflecting edge, for pressure to pass through the interstices or spaces and give a forward thrust or projection in the direction of the front of the aeroplane, substantially as described.

3. A covering for an aeroplane consisting of longitudinal or fore-and-aft bars and cross-bars set into the upper edges of the longitudinal or fore-and-aft bars, and strips, sheets or plates of thin material set edgewise in the longitudinal or fore-and-aft bars and crosswise of the aeroplane with upwardly and rearwardly curved edges above the plane of the top surface of the bars, substantially as described.

4. A covering for an aeroplane having longitudinal or fore-and-aft bars and cross-bars set into the upper edge of the longitudinal or fore-and-aft bars forming a meshed body or support, and thin strips, sheets, or plates set edgewise in the longitudinal or fore-and-aft bars between the cross-bars, forming a filling with interstices or spaces for the meshes of the support or body and extending above the upper plane of the support or body with their extended edges rearwardly curved for rearwardly-deflecting pressure passing through the interstices or spaces and have the impact give a thrust or projection forward in the direction of the parallelism of motion for the aeroplane, substantially as described.

5. A covering for an aeroplane having a series of longitudinal or fore-and-aft bars and a series of cross-bars set into the upper edge of the longitudinal or fore-and-aft bars, forming a support or body with square meshes, and thin strips, sheets or plates set edgewise in the longitudinal or fore-and-aft bars between the cross-bars forming a filling with interstices or spaces within the square meshes and extending above the upper plane of the body, with the extending edges rearwardly curved for rearwardly-deflecting pressure passing through the interstices or spaces and have the impact give a thrust or projection forward in the direction of the parallelism of motion for the aeroplane, substantially as described.

706,888. TRAP-DOOR FOR CAR-PLATFORMS. JAMES G. LAWLER, St. Charles, Mo. Filed Mar. 31, 1902. Serial No. 100,609. (No model.)

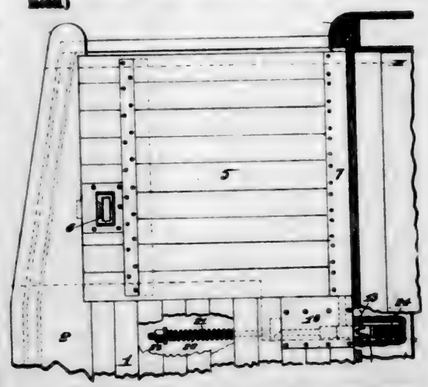

Claim.—1. The combination with a trap-door for car-platforms, of a hinge member, a rock-shaft carried by said hinge member, a toothed segment carried by said rock-shaft, a pull-rod, a spring surrounding said pull-rod, and a rack carried by said pull-rod and having engagement with said segment, substantially as described.

2. The combination in a trap-door for car-platforms, of a hinge member, a rock-shaft carried by said hinge member, a toothed segment carried by said rock-shaft, a pull-rod, a spring mounted on said pull-rod, a grooved rack carried by said pull-rod, and adapted for engagement with said segment, and a roller mounted beneath said rack adapted to enter the groove in said rack, substantially as and for the purpose set forth.

3. The combination with a trap-door for car-platforms, of a hinge member, a rock-shaft carried by said hinge member, a segment carried by said rock-shaft, a bearing-plate in which said rock-shaft is mounted, a pull-rod mounted in said bearing-plate, a longitudinally-grooved rack carried by said pull-rod and arranged to engage said segment, and a roller mounted upon said bearing-plate beneath said rack and adapted to rotate in the groove of said rack, substantially as and for the purpose set forth.

706,884. WINDOW-CLEANING APPARATUS. SIDNEY C. LAWLOR, Duluth, Minn. Filed July 24, 1901. Serial No. 69,546. (No model.)

Claim.—1. A window-washing apparatus comprising a supporting-bar, a handle-bar adapted to move thereon, a sliding sleeve supporting said handle-bar on the supporting-bar, a sleeve secured to the handle-

bar and provided with a bearing for partially surrounding the said sliding sleeve, and a latch for holding the said bearing upon the said sleeve, substantially as described.

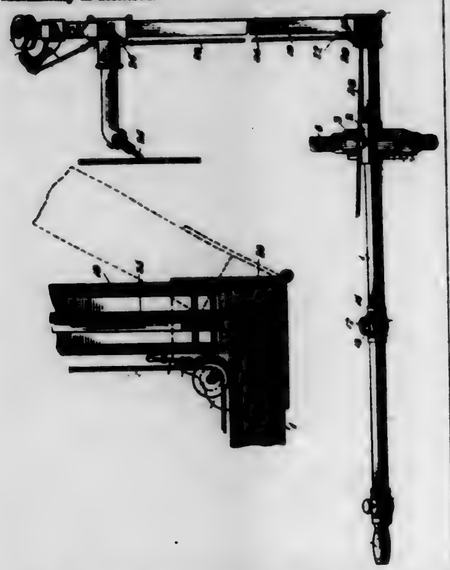

2. In a window-washer, the combination with a supporting-bar, of a sleeve sliding thereon, a handle-bar extending across the sleeve, a second sleeve for supporting the handle-bar, the said second sleeve being provided with a semicylindrical bearing, the latch for holding the bearing in the said sliding sleeve comprising a bent piece of material engaging the bearings in the said semicylindrical bearing portion, the said latch being adapted to lock the semicylindrical bearing upon the sliding sleeve, substantially as described.

3. In a window-washer a handle-bar and a vertical standard, a hinge connecting the standard to the handle-bar, a housing inclosing the end of the handle-bar and adapted to receive the end of the standard for holding the same properly in position, and means for holding the standard normally in a vertical position, the structure being such that when said means is raised the said standard is straightened out to the plane of the handle-bar for moving the apparatus from a window or placing it therein, substantially as described.

4. A window-washer comprising a handle-bar, a standard hinged thereto, a sleeve sliding upon said standard and adapted to carry window-washing tools, means for pulling the sleeve upwardly comprising a cord connected with the sleeve and a spring-actuated drum for winding up said cord, and means for pulling the sleeve down against the action of said spring-drum, substantially as described.

5. A window-washer, comprising a handle-bar, a standard carried at the outer end thereof, an implement-carrying sleeve moving on said bar, a drum mounted on the upper end of the standard and having its axis in coincidence with the axis of the standard, a coil-spring secured to said drum at one end and to a portion of the standard at the other end, and a cord connecting the drum with the implement-carrying sleeve, the structure being such that the spring-drum will always tend to wind up the cord and draw the sleeve upwardly on the standard, substantially as described.

6. A window-washer comprising a handle-bar, a standard carried thereby, an implement-carrying sleeve moving on said standard, splines connecting the said sleeves with grooves in the standard for guiding the sleeve in its movement thereon, a rod mounted interiorly of the said standard, the said standard being hollow, the said rod projecting above the upper end of the standard, a drum journaled on the projecting end of the said rod, a spring surrounding the said rod and secured thereto at one end and to the said pulley at the other end for turning the pulley on its bearings, bearings interposed between the upper end of the standard and the said drum, a cord connecting the drum with the sleeve, a bracket mounted on the standard, guide-pulleys carried by the said bracket, the said cord passing around said guide-pulleys, a cord connected with the said sleeve and extending to a point near the handle-bar, so as to be within easy reach of the operator of the washer, the structure being such that by pulling on the cord the sleeve will be brought downwardly upon the standard and upon releasing the cord the spring-actuated drum will wind it up again and raise the sleeve upon the standard, substantially as described.

7. A window-washer comprising a supporting-rod, a handle-bar movably mounted thereon, the said handle-bar being jointed, to accommodate it to different positions occupied by the apparatus, a standard hinged to the outer end of the said handle-bar, a casing inclosing the outer end of the handle-bar and receiving the lower end of the standard, a spring-pressed latch pivoted in the standard and engaging a pin carried by the said casing, a pulley journaled in said casing, an implement-carrying sleeve movably mounted on the standard, an operating-cord connected with eyes on the said sleeve, the cord passing about the pulley in the said casing to a point within easy reach of the operator of the device, and spring-actuated means at the top of the standard for raising the sleeve, substantially as described.

8. A window-washing apparatus comprising a supporting-bar, a handle-bar adapted to move thereon, a bearing on the handle-bar partially surrounding the supporting-bar, and a latch for holding the said bearing upon the supporting-bar, substantially as described.

9. A window-washer comprising a handle-bar, a standard carried thereby, a washing-implement carrier moving on said standard, a spring-actuated drum mounted upon the upper end of said standard, and rotatable on a horizontal plane, a cord attached to said drum and secured to said carrier for moving the same in one direction, means guiding said cord in its movement, and means for moving said carrier in an opposite direction against the action of said spring, substantially as described.

706,835. COMBINATION HIGH CHAIR. GEORGE A. LEARNED, Detroit, Mich. Filed Feb. 12, 1902. Serial No. 93,718. (No model.)

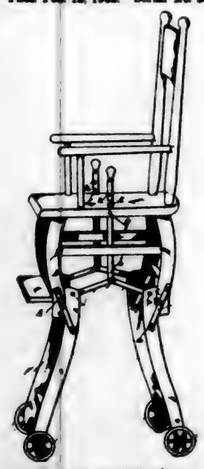

Claim.—1. In a combination-chair, the combination of a chair-frame, extension-legs pivotally secured thereto, a catch links connecting the ends of said extension-legs and a draw-rod extending through a slot in the chair-seat, pivotally connected at its lower end to said links, and provided with means for engaging the catch the pivotal connection between the legs, the links, and the draw-rod requiring the draw-rod to be raised as the initial movement in swinging the extension-legs, substantially as described.

2. In combination with a chair-frame, extension-legs secured thereto, links pivoted to the upper ends of said extension-legs, a catch on the chair-seat, a draw-rod pivotally connected to the links, extending through a slot in the chair-seat, provided with notches for engaging the catch on the chair-seat, and arranged to lift the engaging ends of said links and thereby swing inward the ends of the extension-legs, and outward the extremities of the extension-legs, substantially as described.

3. In combination with a chair-frame, extension-legs provided with wheels journaled to said legs, the extension-legs being pivotally secured intermediate their ends to the chair-frame, a holding means, links pivotally connected to the extension-legs to each other, and to a draw-rod reaching upward through a slot in the chair-bottom and which is provided with notches to engage the holding means, a spring arranged to hold the rod and the holding means in engagement, substantially as described.

706,836. SCOOP AND SCRAPER. WILLIAM R. LEE, St. Clair, Nev. Filed Dec. 4, 1901. Serial No. 84,673. (No model.)

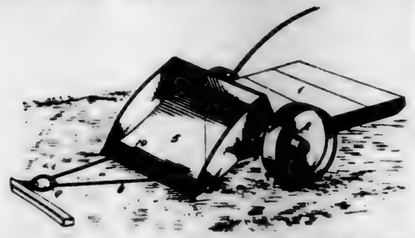

Claim.—1. A drag element having a vertically-movable member, in combination with a scoop, pivotally connected, at a point in advance of the center thereof, to said vertically-movable member of the drag element, a lever to overturn the scoop, and a draft element connected to the scoop, at a point in advance of the center thereof, whereby the stress of the draft, counting with the lag of the drag element, will return the scoop to operative position after the scoop has been overturned, substantially as described.

2. A drag element having a pivotally-supported platform the front end of which is movable in a vertical plane, in combination with a scoop pivotally connected at a point in advance of the center thereof to the front end of the platform, and a draft element connected to the scoop at a point in advance of the center thereof, substantially as described.

3. The combination of a platform having supporting-wheels, the axle of which is intermediate the ends of said platform, a scoop pivotally connected to the front end of the platform and thereby adapted to be overturned and a draft element connected to the scoop at a point in advance of the pivotal connection between said scoop and platform, substantially as described.

4. The combination of a drag element adapted to rock in a vertical plane, a scoop pivotally connected to said drag element and adapted to be overturned, a lever attached to and extending rearwardly from the scoop and a draft element connected to the scoop at a point in advance of the pivotal connection between the latter and the drag element, substantially as described.

706,837. GRATER. HARRIS P. LOGAN, Washington, D. C. Filed Mar. 22, 1901. Serial No. 52,363. (No model.)

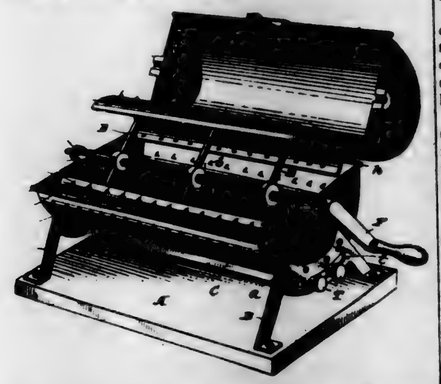

Claim.—1. In a grater, the combination of a trough formed with a slot in the lower portion thereof, extending longitudinally of the trough, longitudinal bars arranged in said slot and laterally adjustable with relation to each other and to the trough for regulating the granulation of the material operated upon, means for grating cooperating with the trough, consisting of a spindle having arms carrying wings, and means for rotating the spindle, substantially as described.

2. In a grater, the combination with a trough, of means for grating cooperating therewith, consisting of a spindle having arms carrying segmental wings, extending to a substantial distance on each side of said arms and roughened on the outside, the said wings on each side of the arms being of less radius of curvature than that of the trough, substantially as described.

706,838. CARD LIST OR INDEX. WILLIAM LOBLEY, Chicago, Ill. Filed July 19, 1897. Serial No. 645,048. (No model.)

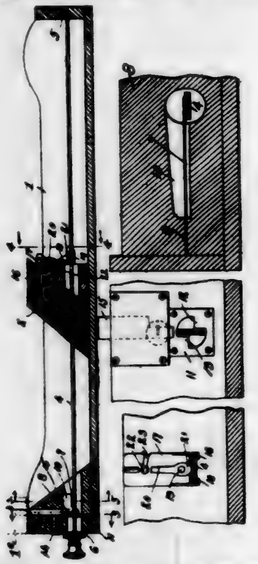

Claim.—1. A device for the purpose described having in combination a drawer or receptacle, a rod journaled therein, the cards strung upon said rod, and a lock having a bolt arranged to alternately engage said rod and the casing in which said drawer or receptacle is situated for locking either the rod or drawer, substantially as set forth.

2. A device for the purpose described having in combination a drawer or receptacle, a casing or cabinet in which said drawer or receptacle is situated, a rod journaled in said drawer and having a flattened side, the cards strung upon said rod and a lock having a bolt arranged to be projected either against said rod or into said casing or cabinet, for alternately locking the rod and the drawer, substantially as set forth.

3. A device for the purpose described having in combination a drawer or receptacle, the rod 4 journaled therein, the cards on said rod, the block 8 through which said rod passes, having the saw-cut 9 and recess 10 and the blade-spring 7 inserted in said saw-cut and bearing against said rod said block 8 being arranged against the end of the drawer for holding said spring 7 against lateral movement, substantially as set forth.

4. A device for the purpose described having in combination a rotatable rod, the cards strung thereon, a follower for said cards, a clamp for locking said follower detachably secured thereto and consisting of a plate extending across said rod and having the legs 18 engaging thereunder, and the pivoted lever 20 having an eccentric or cam 21 formed thereon and directly impinging said rod, substantially as set forth.

5. A device for the purpose described having in combination a rotatable rod, the cards strung thereon, the follower for said cards, a clamp for said follower consisting of the plate 17 extending across said rod and having the legs 18 engaging thereunder and the lever 20 having eccentric 21 pivoted to said plate and impinging said rod, said plate being provided with the slot 23 and the follower with the headed leg 22, substantially as and for the purpose set forth.

706,839. AUTOMATIC STOP-MOTION FOR KNITTING-MACHINES. GEORGE W. MARTIN and JOHN PALMER, Philadelphia, Pa., assignors to Edward H. Godshalk, Philadelphia, Pa. Filed Nov. 21, 1900. Serial No. 37,230. (No model.)

Claim.—In an electrically-operated stop-motion for a knitting-machine, a member or lever which is pivotally supported at substantially the center thereof, a spring secured to said lever to hold the lever in one position when the yarn is supported thereby and which yields when the tension thereof is overcome whereby the yarn is released from said lever a circuit-closing device on the other side of the pivotal point of said lever and with which the latter is brought in contact by the action of said spring and a stationary support over which the yarn passes before its engagement with said lever and which supports said yarn after released by said lever for convenience of resetting the parts.

706,889.

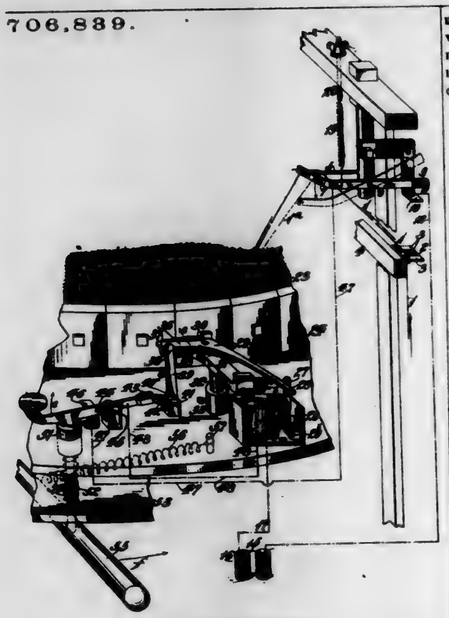

706,840. AUTOMATIC STOP-MOTION FOR KNITTING-MACHINES. GEORGE W. MARTIN and JOHN PALMER, Philadelphia, Pa., assignors to R. H. Goldsmith, Philadelphia, Pa. Filed June 26, 1901. Serial No. 66,087. (No model.)

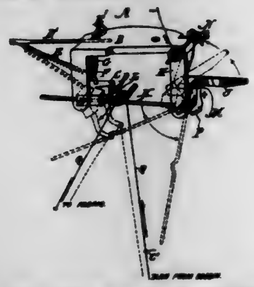

Claim.—In an automatic stopping device for knitting-machines, a body portion, a spring-clip carried by said body portion, an arm adapted to contact with said clip and close the circuit, a rod connected with said arm which is adapted to be supported by the yarn in substantially a horizontal position whereby said arm is held out of contact with said clip, pins which are adapted to support the yarn, and means for holding said pins in normal position and for permitting the same to be lowered and for returning said pins to their normal position after said yarn has been released.

706,841. CASTING APPARATUS. PATRICK MEEHAN, Lowellville, Ohio. Filed Apr. 21, 1900. Serial No. 13,668. (No model.)

Claim.—1. In a casting-machine, the combination with a series of open molds, of a trough or spout for conveying molten metal to the molds without permitting contact of the molten metal with the mold-carrier, means for moving the molds adjacent to the trough or spout, and automatic means for periodically checking the flow of metal to the machine.

2. In a casting-machine, the combination with a series of open molds, of a trough or spout for conveying molten metal to the molds without permitting the molten metal to contact with the mold-carrier, means for moving the molds adjacent to the trough or spout, and mechanism controlled by the moving part of the machine for periodically checking the flow of the metal to the machine.

3. In a casting-machine, the combination with the series of open molds, of a trough or spout for conveying molten metal to the molds, without permitting the molten metal to bear against the mold-carrier, means for moving the molds adjacent the trough or spout, and adjustable mechanism controlled by a moving part of the machine for periodically checking the flow of metal to the molds.

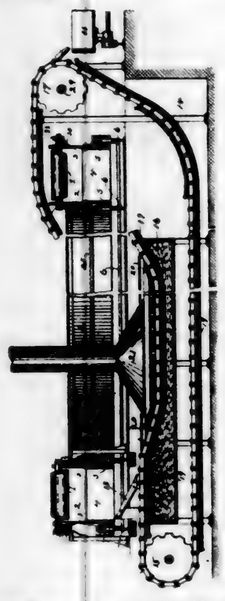

4. In a casting-machine, the combination with a series of open molds, of a trough or spout for conveying molten metal to the molds without permitting the molten metal to contact with the mold-carrier, means for moving the molds adjacent to the trough or spout, and means controlled by the mold-carrying means for periodically checking the flow of the metal to the machine.

5. In a casting-machine, the combination with the series of open molds, of a carrier therefor, a pouring-trough provided with an opening, for supplying molten metal to the molds without permitting the molten metal to bear against the mold-carrier, means for closing said opening, and automatic means for periodically actuating said closing means.

6. In a casting-machine, the combination with the series of open molds, of a carrier therefor, a pouring-trough provided with an opening for supplying molten metal to the molds without permitting the molten metal to bear against the mold-carrier, adjustable means for closing said opening, and automatic means for periodically actuating said closing means.

7. In a casting-machine, the combination with the series of open molds, of a carrier therefor, a pouring-trough provided with an opening for supplying molten metal to the molds without permitting the molten metal to bear against the mold-carrier, means for closing said opening, and adjustable means actuated by a moving part of the machine for periodically actuating said closing means.

8. In a casting-machine, the combination with the series of open molds, of a carrier for the molds, a pouring-trough provided with an opening for supplying molten metal to the molds without permitting the molten metal to bear against the mold-carrier, means for closing said opening, and means controlled from the mold-carrier for periodically actuating said closing means.

9. In a casting-machine, the combination with the molds, of a carrier therefor for carrying them beneath the charging-trough, a charging-trough provided with an opening, a valve for closing said opening, means adjustably connected to the valve for holding the same closed, and means adjustably connected with said holding means and actuated by a moving part of the machine for opening said valve.

10. In a casting-machine, the combination with the molds, of continuously-acting means for moving the molds adjacent the charging mechanism, automatic mechanism for charging molten metal into said molds without permitting the molten metal to bear against the mold-carrier, and means for throwing said charging mechanism out of operation to allow a mold or molds to pass without being charged.

11. In a casting-machine, the combination with the molds, of continuously-acting means for moving the molds adjacent the charging mechanism, mechanism controlled by a moving part of the machine for charging a fixed quantity of molten metal into the molds without permitting the molten metal to bear against the mold-carrier, and means for rendering said charging mechanism inoperative to allow a mold or molds to pass without being charged.

12. In a casting-machine, the combination with the molds, of means for moving the molds adjacent the charging mechanism, a charging-trough provided with a discharge, a weighted lever for closing said discharge, an arm actuated by a moving part of the machine, and means on said arm for connecting the same to the lever or disconnecting it therefrom at will.

13. In a casting-machine, the combination with the carrier provided with vertical slots, of molds trunnioned in said slots, an inclined plane arranged to engage the molds and raise the same in said slots, and means for simultaneously inverting the molds.

14. In a casting-machine, the combination with the molds, of means for moving the same, and automatic means for measuring out different portions of refractory material from a mass and spraying them in succession into the molds.

15. In a casting-machine, the combination with the molds, of means for moving the same, and intermittently-actuated means for measuring out different portions of refractory material from a mass and spraying them in succession into the molds.

16. In a casting-machine, the combination with the carrier, and the molds mounted thereon, of means intermittently actuated by a moving part of the machine for spraying refractory material into the molds.

17. In a casting-machine, the combination with the carrier, of the molds mounted thereon, means for spraying the molds, and means actuated by a moving part of the machine for moving said spraying means toward and from the molds.

18. In a casting-machine, the combination with the carrier, of the molds mounted thereon, a spraying device, means for moving said device toward and from the molds, and means for rendering said spraying device operative when moved toward the molds and inoperative when moved from the molds.

19. In a casting-machine, the combination with the carrier, of the molds mounted thereon, means intermittently actuated by a moving part of the machine for spraying the mold with a fixed quantity of refractory material, and means for rendering said spraying means inoperative at will.

20. In a casting-machine, the combination with the carrier, of the molds mounted thereon, a spraying device, means actuated by a moving part of the machine for moving the spraying device toward and from the molds, means connected with said last-named means for rendering the spraying device operative when moved toward the molds and inoperative when moved from the molds, and means for rendering the first-named means inoperative at will.

21. In a casting-machine, the combination with the carrier, of the molds mounted thereon, a spraying device, means actuated by a moving part of the machine for moving the spraying device toward and from the molds, and means connected with said last-named means for rendering the spraying device operative when moved toward the molds and inoperative when moved from the molds.

22. In a casting-machine, the combination with the carrier, and the molds mounted thereon, of adjustable means intermittently actuated by a moving part of the machine for spraying the molds with a fixed quantity of refractory material.

23. In a casting-machine, the combination with the carrier, of the molds mounted thereon, a spraying device, and adjustable means actuated by a moving part of the machine for moving said spraying device toward and from the molds.

24. In a casting-machine, the combination with the carrier, of the molds mounted thereon, a spraying device, adjustable means actuated by a moving part of the machine for moving the spraying device toward and from the molds, and means connected with said last-named means for rendering the spraying device operative when moved toward the molds and inoperative when moved from the molds.

25. In a casting-machine, the combination with the circular carrier, of the molds mounted thereon, a conveyer beneath the circular carrier and extending across the area inclosed thereby, means for discharging the pigs onto the conveyer on one side of the area inclosed by the circular carrier, means for discharging the pigs from the conveyer on the opposite side thereof and means in said area for cooling the pigs.

26. In a casting-machine, the combination with the circular carrier, of the molds mounted thereon, a conveyer extending across the area inclosed by the circular carrier and passing underneath the same on one side and over the same at the opposite side, means for discharging the pigs upon the conveyer on one side of the area inclosed by the circular carrier, means for discharging the pigs from the conveyer on the opposite side thereof, and means in said area for cooling the pigs.

27. In a casting-machine, the combination with the circular carrier, of the molds mounted thereon, a conveyer beneath the circular carrier and extending across the area inclosed thereby, means for discharging the pigs onto the conveyer on one side of the area inclosed by the circular carrier, means for discharging the pigs from the conveyer on the opposite side thereof, and a cooling-tank in said area through which the conveyer passes.

28. In a casting-machine, the combination with the circular carrier, of the molds mounted thereon, a conveyer extending across the area inclosed by the circular carrier and passing underneath the same on one side and over the same at the opposite side, means for discharging the pigs upon the conveyer, of a cooling-tank located within the said area and through which the conveyer passes, and a motor also located in said area for driving the carrier and conveyer.

706,842. VAPOR-BURNING TORCH. WILLIS MITCHELL, Malden, Mass., assignor to the Mitchell Gas Generator and Burner Company, Boston, Mass., a Corporation of West Virginia. Filed Feb. 14, 1901. Renewed June 5, 1902. Serial No. 110,327. (No model.)

Claim.—1. In combination with a hollow tool-handle serving also as a reservoir for liquid fuel an inner supplemental reservoir flexibly suspended therein with its receiving end downward, the burner-generator and body of the tool removably attached to the said handle and a tubular connection between the said generator and the said inner reservoir, the latter being removable with the said body from the said handle or main reservoir substantially as set forth.

2. In combination with a tool-handle which also serves as a main reservoir for easily-vaporizable liquid fuel, the body of the said tool removably attached to the said handle, a generator and burner, an inner reservoir suspended flexibly within the main reservoir at the front thereof and arranged to have its receiving end always in position to draw out the liquid from the bottom of the said main reservoir except when the tool is held downward, and a tube extending from the generator to the said inner reservoir and serving also as the suspending device of the latter substantially as set forth.

3. In combination with the body of the tool-handle which also serves as the main reservoir for easily-vaporizable liquid fuel, a removable disk or inner end piece for said handle, an implement-body to which said disk is rigidly attached, a generator and burner, a tube connecting said generator with an inner reservoir, the inner end of said tube being extended through the said disk and bent into a spring-coil in proximity thereto, an inner reservoir suspended by said spring-coil and arranged to have its receiving-tip at the lowest point of the main reservoir notwithstanding the change of position of the latter except when the tool is held downward substantially as set forth.

4. In combination with the burner-generator and gasoline-supply tube of a tool, a handle forming the main reservoir and provided at the outer end of said handle with an inwardly-extending tubular offset, which leaves an annular space between it and the wall of said reservoir, and an

inner reservoir suspended at the forward end of said outer reservoir by a spring-coil formed in the end of the said tool and having its tip in the said annular space in order that it may receive the fuel from the lowest part of the main reservoir notwithstanding the change of position except when the tool is held downward, and the said opening through the offset serving also to allow liquid to be poured into the said main reservoir substantially as set forth.

5. A tool provided with a hollow handle serving also as a main reservoir for liquid fuel and having at its outer end an inwardly-extending part which leaves an annular space between it and the wall of the reservoir, an inner reservoir flexibly suspended at the forward end of the main reservoir and having its tip or rear end which receives the liquid arranged to remain always within the said annular space while the parts of the tool are assembled, a burner, a generator, and a tubular communication between the said generator and the suspended end of the inner reservoir substantially as set forth.

6. In combination with a hollow tool-handle body, a fixed end piece for the outer end of the same, having a central hole and tubular inward and outward offsets l' and l'', having their bores in alinement therewith, and further provided with internal screw-threads and with a groove on its outer face concentric with the said hole, screw-cap adapted to screw into the said hole and to complete the ends of the said handle, said cap being provided with a passage for compressed air and with an annular flange adapted to fit against a packing-ring in the said groove, a burner, a generator, a tool-body, an inner reservoir suspended by one end within the said handle at the forward end of the same and having its tip or receiving end always in the space between the inner offset of the outer end piece of the handle and the annular wall of the latter, and a tube connecting the generator with the said inner reservoir and constituting an elastic suspending device for the latter substantially as set forth.

7. The body of a hollow tool-handle, serving also as a main reservoir for liquid fuel, in combination with a removable disk, which constitutes the forward end of said handle, an inner reservoir flexibly suspended by its forward end from the said disk for the purpose stated, the body or frame of a tool having another disk at its proximate end, a generator and burner mounted on the said body or frame of the tool, and a tubular connection between the said generator and the said inner reservoir, the said disks being rigidly fastened together, so that they with the inner reservoir and the other attached parts may be removed together from the said handle, said disks being further provided with intervening devices which make an air-space between them substantially as set forth.

8. In combination with the body of the tool-handle, constituting also a reservoir for liquid fuel, a disk removably closing the forward end of said handle, and provided with a series of studs on its forward face the body or frame of the tool provided at its rear end with a disk having recesses formed in its rear face to receive the said studs and having also a central hole, a bolt or screw-threaded stud rigid with the first disk and passing up through the said hole in the second, a nut engaging the said bolt or stud to lock the said disks together, a burner and generator carried by the said body of the tool, a tube extending from the said generator down through the said frame and disks and having its rear end coiled into a spring-support within the forward end of the said handle, and a supplemental inner reservoir attached at its forward end to the said spring-support and freely removable from the said handle or main reservoir with the said tool-body and the other parts named substantially as set forth.

9. In a vapor-heated tool, the combination with a mixing-chamber having an opening or openings through its side in front of the jet-block, of a casing surrounding the said mixing-chamber and provided with side openings, which allow external air to pass through to the openings in said chamber, a jet-block closing the end of the said chamber and imperforate excepting a jet-hole for vapor, a generator located between the said chamber and the said casing, a reservoir for volatile liquid and a tubular connection between said reservoir and said generator substantially as set forth.

10. In a vapor-heated tool, the combination with a mixing-chamber having side openings and tapering from the forward to the rear end, of a casing surrounding the said mixing-chamber and having side openings for air, a jet-block closing the rear end of the said chamber and imperforate except a jet-hole for vapor, a generator located between the said chamber and casing, a reservoir for volatile liquid and a tubular connection between said reservoir and said generator substantially as set forth.

11. In a vapor-heated torch, a mixing-chamber and a casing which are separated by an interval and together constitute a burner discharging through the end of the said casing and which are provided with side openings, in combination with a jet-block discharging a jet of vapor into the rear end of the said mixing-chamber, a generator located between the said casing and mixing-chamber and discharging through the said jet-block, a reservoir for volatile liquid, and a tubular connection between the said reservoir and the said generator substantially as set forth.

12. In a vapor-heated tool, the combination of a burner consisting of a mixing-chamber and concentric casing with an intervening generator, a reservoir for volatile liquid, a tubular communication between the said reservoir and the said generator, means for admitting air into the said mixing-chamber means for admitting into the said mixing-chamber the vapor produced by the said generator, and a device for primarily heating the said generator and starting the tool, consisting of an alcohol-tray detachably suspended from the said casing and provided with an incombustible covering for the alcohol, permitting the fumes of the latter to be ignited above it substantially as set forth.

13. An alcohol-tray provided at its forward end with two upwardly-extending arms and at its rear end with a flange and having further a concave incombustible covering for alcohol in combination with the burner of a vapor-heated hand-tool, the said tray being attached to the sides and bottom of the casing of the said burner by screws passing through the said arms and flange substantially as set forth.

706,848. MAIL-BOX. WILLIAM H. MOORE, Joliet, Ill. Filed Nov. 4, 1901. Serial No. 80,996. (No model.)

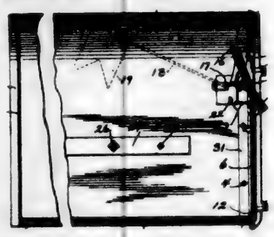

Claim.—1. In a mail-box provided with a door and mail-receiving slot, a shutter normally closing said slot, a signal-lever mounted with its inner end in proximity to the shutter, a part on the shutter for moving the lever to display the signal when the shutter is opened, and a latch carried by and swinging with the door and adapted to engage the lever when oscillated by the shutter to lock it in signaling position until the door is opened, substantially as described.

2. In a mail-box provided with a door and mail-receiving slot, a shutter normally closing said slot, a signal-lever mounted with its inner end in proximity to said shutter, a part on the shutter for moving the lever to display the signal when the shutter is opened, a spring-latch carried by and swinging with the door and engaging the lever when oscillated by the shutter to lock it in signaling position until the door is opened, substantially as described.

3. In a mail-box provided with a door and mail-receiving slot, a shutter normally closing said slot, a signal-lever mounted with its inner end in proximity with said shutter, a part on the shutter for moving the lever to display the signal when the shutter is opened, a spring-latch carried by and swinging with the door and engaging the lever when oscillated by the shutter to lock in signaling position until the door is opened, said spring coacting with the tip of the lever to snap the lever away from engagement with the shutter and leave the latter free to swing, substantially as described.

4. In a mail-box provided with a door and mail-receiving slot, a shutter normally closing the slot and pivoted near the lower margin thereof with its upper portion projecting through the slot into the box and its lower portion exterior thereto, a signal-lever mounted with its inner end in proximity to the shutter, a part on the shutter for moving the lever to display the signal when the shutter is opened, and a latch carried by and swinging with the door for locking the lever in signaling position while the door is closed, substantially as described.

5. A mail-box provided with a fastening device consisting of a bolt passing through a hole in the wall of the box and through a reinforcing-strip therein, bolts passing through holes in the wall of the box to secure the reinforcing-strip in place, similar bolt-holes on the opposite side of the box, and a card-plate bolted to the opposite wall of the box, through said holes and interchangeable with the fastening device, substantially as described.

6. A mail-box comprising a bottom wall, a rear end wall, top and side walls folded around an outwardly-projecting flange of the end wall and around downwardly-projecting flanges of the bottom wall, and a door and frame secured in the front end of the box, the ends of the bottom resting on inwardly-projecting flanges of the rear wall and door-frame, substantially as described.

7. A mail-box provided with a mail-receiving slot, a shutter pivoted near the lower margin of the slot with its upper portion normally closing the slot from within but adapted to be pressed back to disclose an opening above the shutter through which mail may be introduced into the box, the lower portion of the shutter projecting through the slot out of the box and normally overbalancing its upper portion to hold it in closed position and being cut away behind its lower edge to form a handle, and the outer or exposed face of the shutter being a smooth uninterrupted and substantially plane surface, the upper edge of the shutter and adjacent wall of the box being provided with interfitting projections and recesses, substantially as described.

706,844. MUFFLER. HOMER H. HOTTENROTH, Pendleton, Ind., assignor of one-half to J. B. Bartholomew, Peoria, Ill. Filed Sept. 23, 1901. Serial No. 76,163. (No model.)

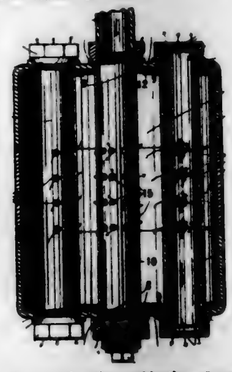

Claim.—1. In a muffler, the combination of a pair of heads each having a similar set of openings therethrough, one or more pipes passing one through each pair of the said openings, means carried by said pipes for clamping said heads together and the pipes in position, and a pair of alined openings leading into the interior of each of said pipes.

2. In a muffler, the combination of a pair of heads each having a similar set of openings therethrough, a cylinder arranged between said heads and provided with ends adapted to mate with said heads, one or more pipes passing one through each pair of the said openings, a cap mounted upon each end of each pipe and adapted to engage the heads so as to close the openings and clamp the heads upon the cylinder, and openings leading from the cylinder into the interior of each of said pipes.

3. In a muffler, the combination of a receiving-chamber, and a plurality of pipes extending therethrough each of said pipes having openings leading through its walls from the receiving-chamber into its interior.

4. In a muffler, the combination of a receiving-chamber, a receiving-pipe extending through the middle thereof and having a series of openings through its wall into the chamber, and a plurality of discharge-pipes surrounding the receiving-pipe and extending through the receiving-chamber and having a series of openings leading through their walls into the interior.

706,845. SASH-LOCK. VINCENT R. MCBRIDE, Stillwater, Okla. Filed May 17, 1902. Serial No. 107,861. (No model.)

Claim.—1. The combination of the casing-plate provided at its outer edge with a bent portion forming a catch, of a lever pivoted to the under side of said casing-plate and having a bent operating end, a handle pivoted to the same and adapted for engagement with the catch of the casing, and a pin or spur pivotally connected with the opposite end of the lever, extending through a staple attached to the casing-plate, and beyond the inner edge of the latter, substantially as set forth.

2. In a sash-lock, the combination with a casing-plate having a bent portion or catch, of a lever mounted pivotally upon said casing-plate and provided at its opposite ends with a handle adapted for engagement with the catch of the casing-plate, and with a pivotally-connected pin or spur, substantially as set forth.

706,846. STEAM-GENERATOR OR HOT-WATER HEATER. WILLIAM H. PAGE, Norwich, Conn., assignor to the Page Company, Plainfield, Conn. Filed Oct. 23, 1901. Serial No. 79,668. (No model.)

Claim.—1. In combination, an ash-pit section, a fire-pot section mounted thereon, a hollow water-bar n extending across said ash-pit section, and a water-passage of pipe form located substantially centrally of the said fire-pot and connecting the said water-bar with the water-chamber over the said fire-pot.

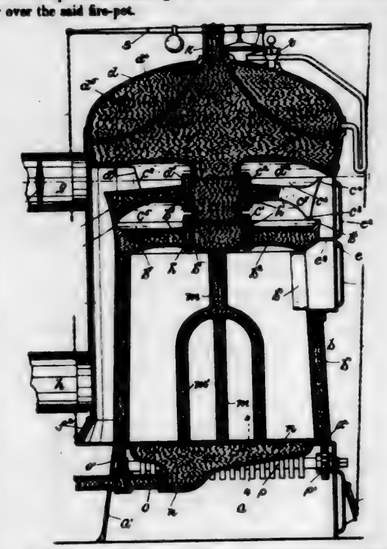

2. In combination, a water-jacketed fire-pot section, a hollow water-bar located below said fire-pot section, a water-passage of pipe form located in the fire-pot and connecting the said water-bar with the water-chamber over the fire-pot, and branch pipes m' connecting the said water-bar with the said central water-passage.

3. In combination, an ash-pit section, a superimposed water-jacketed fire-pot section, and a grate supported in and by the ash-pit section, said grate being formed of fixed hollow water-bar n and rocking sections, substantially as herein set forth, and a water-passage of pipe form located in the fire-pot and connecting the said water-bar n with the water-chamber over the fire-pot.

706,847. HOSE OR PIPE COUPLING. HENRY A. F. PETERSEN, New York, N. Y. Filed Apr. 10, 1902. Serial No. 102,947. (No model.)

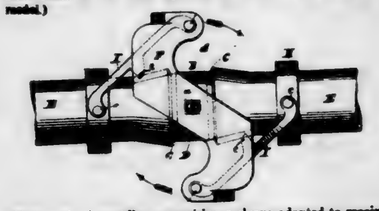

Claim.—1. A coupling comprising a sleeve adapted to receive the ends of pipe, annular clamps adapted to embrace the ends of the sleeve and the pipe thereon, and a lever pivotally connected to said sleeve and annular clamps for locking said annular clamps in position upon said sleeve, substantially as specified.

2. A coupling comprising a sleeve adapted to receive the ends of pipe, annular clamps adapted to embrace the ends of the sleeve and the pipe thereon, and a lever pivotally secured intermediate its ends to said sleeve and at its ends to the annular clamps and adapted to lock said annular clamps in position upon the ends of said sleeve, substantially as specified.

3. A coupling comprising a sleeve adapted to receive the ends of pipe, collars adapted to embrace the ends of the sleeve and the pipe thereon, a double lever pivotally secured to said sleeve, and links pivotally secured to said collars, and the ends of said double lever, substantially as specified.

4. A coupling comprising a sleeve having tapering ends adapted to receive the ends of pipe, collars adapted to embrace the tapering ends of the sleeve and the pipe thereon, a locking device comprising two lever members united together at their ends, and pivotally secured midway between their ends to the sleeve, and links pivotally secured to the ends of said lever members, and the collars, substantially as specified.

5. A coupling comprising a sleeve having tapering ends adapted to receive the ends of pipe, collars adapted to embrace the tapering ends of said sleeve and the pipe thereon, a locking device comprising two substantially S-shaped members united at their ends, and pivotally secured midway of their ends to said sleeve, and links having their ends pivotally secured to the ends of said S-shaped members and to the opposite surfaces of said collars, substantially as specified.

6. A coupling comprising a sleeve having tapering ends adapted to receive the ends of pipe, square bosses arranged upon the opposite sides of said sleeve intermediate its ends, collars adapted to embrace the tapering ends of said sleeve and the pipe thereon, a locking device comprising two substantially S-shaped members united at their ends and pivotally secured midway of their ends to the square bosses on said sleeve, and links having their ends pivotally secured to the ends of said S-shaped members and to the opposite sides of said collars and provided with toes adapted to contact with the sides of said square bosses, substantially as specified.

706,848. CONVEYER-BELT-SUPPORTING MECHANISM. EDWIN S. PHILIPS, Kennett Square, Pa., assignor to American Road Machine Co., Kennett Square, Pa., a Corporation of Pennsylvania. Filed May 26, 1902. Serial No. 108,904. (No model.)

Claim.—1. In combination, with a traveling conveyer belt or apron, and a set of carrier-pulleys therefor comprising a horizontal and two obliquely-disposed pulleys, said pulleys having integral or fixed axle-journals arranged within their overhanging end rims; the intermediate bearing-standards between said pulleys, each provided with a hollow T-head consisting of a horizontally-projecting portion and an upwardly-inclined projecting portion, said projecting portions internally fitted for supporting the rotating pulley-journals within the rims of the adjacent pulley ends, and a pair of outside supporting-standards having oblique inwardly-projecting hollow bearing-heads that respectively extend into the overhanging rims, and sustain the journals within the outer ends of said obliquely-disposed pulleys, substantially as set forth.

2. In a conveyer-belt supporter, the carrier pulleys or rollers provided with internal short hubs and integral or fixed journals arranged within their endwise overhanging rims, the inclined pulley-journals having a central bore or passage therein partially, but not entirely, through their axis, with radial outlets from said passage to the journal-surface; in combination with the bearing-standards, having projecting hollow-head portions within which said pulley-journals are rotatably inclosed, in the manner set forth.

3. In a conveyer-belt supporter, a series of carrier-pulleys comprising a plurality of inclined pulleys provided with internal axle-journals fixed in the pulley and turning therewith, and having a hollow or bore extending from the end of one journal partially through said axis, with lateral holes therein; in combination with inner end bearing-standards, and outside end bearing-standards, said standards provided with head portions that project into the pulley ends and form bearings for the journals, and having hollow space within the heads, communicating with the bearing-surfaces and said axis-bore, for the purpose set forth.

4. In combination with the endwise-movable conveyer-belt, a set of carrier-pulleys comprising the horizontal pulleys, and two oppositely-inclined pulleys respectively provided internally with axle-journals centrally fixed within the pulley and turning therewith, each of said inclined pulleys having an axial bore or opening from the end of one journal nearly to the end of its opposite journal, with lateral outlets therefrom, a pair of intermediate standards provided with horizontal and inclined projecting portions with bearings therein, said bearings united by a hollow space within the standard-head, and a pair of separate outside standards each having an inwardly-projecting bearing, and an outwardly-upturned portion forming a seat for the lubricator-cup, and a passage from said cup to the open upper end of the pulley-journal, all substantially as shown and described.

706,849. COMBINED BILL-SHEET AND JOURNAL-LEAF. JOHN T. PIERE, Jr., Chicago, Ill. Filed Mar. 5, 1901. Serial No. 49,909. (No model.)

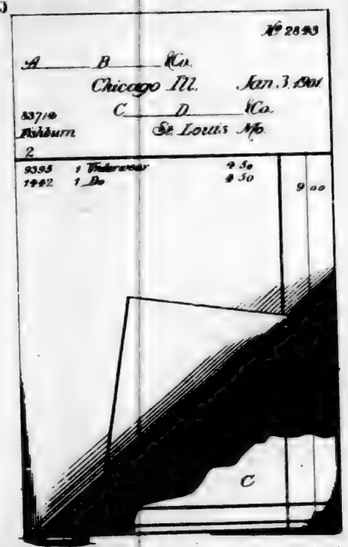

Claim.—1. A combined original and copy instrument for the purpose set forth, comprising two superimposed leaves having like identifying characters, said leaves being folded on a common line near one edge, the folded portion of the copy affording a binding-strip after separation, substantially as described.

2. A combined original and copy instrument for the purpose set forth, comprising two superimposed leaves, the original leaf having a user's card thereon, and the copy-leaf having a non-detachable folded margin joined to said original leaf at a line of folding, said margin affording a binding-strip after separation of the leaves, substantially as described.

3. A combined bill-sheet and journal-leaf for the purpose set forth, comprising a bill-sheet supplied with a user's card, and an underlying journal-leaf supplied with journal-rulings, said journal-leaf having a folded binding-margin connected with the adjacent edge of said bill-sheet and an opposite rearwardly-folded margin affording a memorandum-slip, substantially as described.

4. A combined bill-sheet and journal-leaf, comprising a bill-sheet supplied with a user's card and with an identifying character, and an underlying journal-leaf having a like identifying character and supplied with suitable journal-rulings, said bill-sheet and journal-leaf being folded rearwardly on a common line near one edge and joined at said edge at a perforate line, and said journal-leaf having at its opposite free edge a rearwardly-folded vertically-ruled margin, substantially as described.

5. A combined bill-sheet and journal-leaf for the purpose set forth, comprising a bill-sheet supplied with a user's card, and an underlying journal-leaf supplied with journal-rulings, said journal-leaf having a folded binding-margin detachably connected at a weakened line with the adjacent edge of said bill-sheet, substantially as described.

6. A combined bill-sheet and journal-leaf for the purpose set forth, comprising a bill-sheet supplied with a user's card, and an underlying journal-leaf supplied with journal-rulings, said journal-leaf having a folded binding-margin detachably connected at a weakened line with the adjacent edge of said bill-sheet, said bill-sheet and journal-leaf having like identifying characters, substantially as described.

7. An instrument of the character described, comprising a bill-sheet supplied with a user's card and having a folded lateral margin affording a binding-strip, and an underlying journal-leaf formed integrally with said bill-sheet and supplied with rulings parallel with said folded margin and joined to said folded margin at a weakened line, said bill-sheet and journal-leaf having like identifying characters for the purpose set forth.

8. A combined bill-sheet and journal-leaf, comprising a single sheet of material folded to afford an original leaf of a certain width and a copy-leaf of greater width, the projecting free margin of said copy-leaf being folded rearwardly to afford a memorandum-slip, the connected margin of said leaves being folded rearwardly and that of the original leaf being detachable from its leaf and from the folded adjacent margin of the copy-leaf, substantially as and for the purpose set forth.

706,850. HYDRAULIC JACK. LEWIS S. PITCHER, Albany, N. Y., assignor to William M. Dudgeon, executor of Richard Dudgeon, deceased. Filed Mar. 29, 1902. Serial No. 100,553. (No model.)

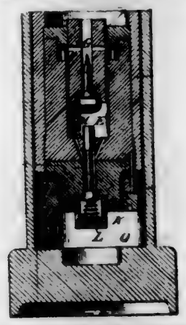

Claim.—1. In a hydraulic jack the combination of a ram provided with a passage-way connecting the force-chamber of the jack with the bore of the pump, backflow-openings connecting the bore of the pump with the passage-way, a lowering-valve having an upper part adapted to fit the passage-way and move through it to close the backflow-openings, the upper end of which valve extends into the bore of the pump sufficiently to enable the piston to depress the valve far enough to close the backflow-passages, a reduced stem past which the liquid can flow, a valve-head below the reduced part of the stem and sufficient space below the head to permit the stated downward movement of the valve, for the purpose set forth.

2. In a hydraulic jack the combination of a ram provided with a passage-way connecting the force-chamber of the jack with the bore of the pump, backflow-openings extending from the bore of the pump and connecting at substantially right angles with said passage-way, a lowering-valve having an upper part adapted to fit the passage-way and move through it to close the backflow-openings, the upper part of which valve extends into the bore of the pump sufficiently to enable the piston to depress the valve far enough to close the backflow-openings, means for permitting the liquid to flow past the stem of the valve, a valve-head at the lower end of the valve and sufficient space below the head to permit the stated downward movement, for the purpose set forth.

3. In a hydraulic jack the combination of a ram provided with a passage-way connecting the force-chamber of the jack with the bore of the pump, backflow-openings connecting the bore of the pump with the passage-way, a lowering-valve having an upper part which extends into the bore of the pump and which is adapted to fit the passage-way and move through it to close the backflow-openings, the upper end of which valve extends into the bore of the pump sufficiently to enable it to be depressed far enough to close the backflow-passages, means for depressing the said valve, a reduced stem past which the liquid can flow, a valve-head below the reduced part of the stem and sufficient space below the head to permit the stated downward movement of the valve, for the purpose set forth.

706,851. CAR-FENDER. OLLIE M. PROUSE, Tunis Mills, Md. Filed Jan. 9, 1902. Serial No. 89,070. (No model.)

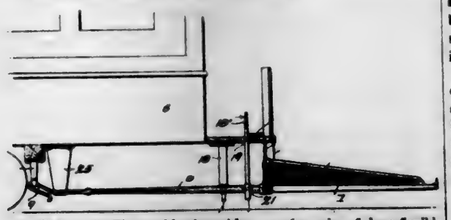

Claim.—1. The combination with a car, of a series of short flexible connections depending from the car, a fender loosely suspended at the back by the said flexible connections and having an arm extending rearward beyond the latter, operating mechanism for moving the fender longitudinally of the car, and means for engaging the arm, whereby when the fender is swung rearward, its front end will be depressed, substantially as described.

2. The combination with a car, of short flexible connections depending from the car, a fender loosely suspended at the back by the said flexible connections and having an arm extending rearward beyond the flexible connections and provided with an inclined portion, a bracket fixed to the car and receiving the inclined portion of the arm, and means for moving the fender longitudinally of the car, substantially as described.

3. The combination with a car having sand-boxes, of a fender loosely suspended at the back from the car and having central and side arms extending rearward beyond the supporting means, the side arms being connected with the sand-boxes and adapted to open the same, and means for engaging the central arm whereby the front of the fender will be depressed when the fender is swung rearward, substantially as described.

4. The combination with a car, of a fender loosely suspended at the back therefrom and having central and side arms extending rearward beyond the supporting means, a bracket receiving the central arm and adapted to raise the same when the fender is swung rearward, whereby the front of the fender will be depressed, and means for engaging the side arms to prevent the fender from rising bodily, substantially as described.

5. The combination with a car, of short flexible connections depending from the car, a fender suspended at its back by the flexible connections and provided with central and side arms extending rearward beyond the flexible connections, the central arm being provided with an inclined hook and the side arms being slotted, a bracket fixed to the car and receiving the inclined hook, and posts depending from the car and extending through the slots of the side arms and having shoulders for engaging the said side arms, substantially as described.

706,852. APPARATUS FOR DEVELOPING AND FIXING CARTRIDGE PHOTOGRAPHIC FILMS. MAX REICHERT, London, England. Filed Feb. 3, 1902. Serial No. 92,418. (No model.)

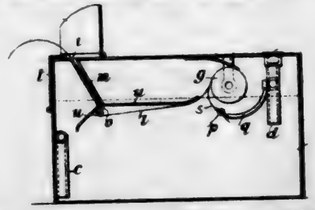

Claim.—1. In combination, a light-tight box, a spool-holder in the upper part of said box, means whereby the backing-paper may be drawn off from the spool without admitting light to the box and in a direction substantially horizontally and at the upper part of the box, and a device within the developing-box for holding the free edge of the film while that portion of the film intermediate of its ends is being drawn from the spool, the said box having a space beneath the plane of the spool and the drawing-off means to allow the film to fall from said plane into position to be acted on by the developer, substantially as described.

2. A developing-box having a spool-holder therein, a device within the box for holding the outer or free end of the film and means whereby the backing-paper may be drawn off to thus draw off also the main body portion of the film while both its ends are held one on the spool and the other by the said device, substantially as described.

3. Apparatus for the purpose set forth, comprising a box and a lid wherein is a light-trapped aperture through which the backing-paper may be drawn out, a spool-holder within the box, a clip adapted to grip the free edge of the film close up to the spool, and means for introducing and drawing off liquids without admitting light to the box, both the spool-holder and the clip aforesaid being carried by the lid, whereby the arrangement of the spool for development and its removal after treatment is facilitated, as specified.

4. In apparatus or means for the purpose set forth, the combination of a box made light-tight by a lid wherein is a slot, a tube leading to said slot through which tube and slot the backing-paper is drawn out, a light-baffle to said tube, a clip connected with the lid by a flexible attachment and adapted to be placed on the free edge of the film close up to the spool, and means for introducing and drawing off liquids without admitting light, as specified.

706,853. SNOW-EXTRACTOR. JOSEPH C. SCANNELL, Boston, Mass., assignor, by mesne assignments, to Sadie Scannell, Boston, Mass. Filed Apr. 14, 1902. Serial No. 103,751. (No model.)

Claim.—1. A snow-extractor comprising two holders having channels adapted to receive one leg of a fowl, and provisions for relatively moving said holders into and out of a position substantially closing the said channels.

2. A snow-extractor comprising two holders having channels adapted to receive one leg of a fowl, and provisions for imparting a movement

of one of said holders relatively to the other in a path at an obtuse angle to the channels and into and out of a position substantially alining said channels.

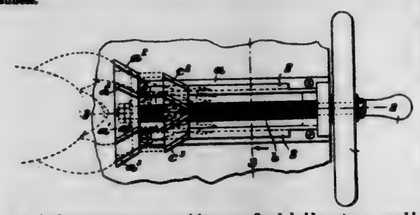

3. A snow-extractor comprising two fixed holders, two movable holders connected for operation in unison and located closer together than the fixed holders, said holders having channels adapted to receive the two legs of a fowl, and provisions for moving said movable holders in paths at an obtuse angle to the channels and into and out of positions substantially alining the channels.

706,854. PERAMBULATOR. CARL W. R. SCHULZE, Leipsic, Germany. Filed Oct. 16, 1901. Serial No. 78,899. (No model.)

Claim.—A safety device for perambulators, mail-carts or the like, comprising a spring-actuated guard or guards normally held depressed by a retaining device or devices, said retaining device or devices being operated to release said guard or guards and thus allow same to be raised by said spring action when pressure is exerted on a strap or equivalent device passing across the body of the vehicle, in the described manner and for the purpose mentioned.

706,855. GARTER. EDWARD W. SCHEELE, Brooklyn, N. Y., assignor of one-half to William V. Cole, New York, N. Y. Filed Jan. 27, 1902. Serial No. 91,308. (No model.)

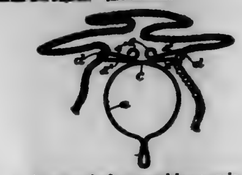

Claim.—1. A garter device comprising a spring-ring having an integral projecting loop at one side, said ring being open opposite said loop and the sides thereof being crossed and extended and formed into oppositely-directed and independent loops which open inwardly adjacent to the point where the sides of the ring are crossed and form frictional holders, and the ends of the free sides of which are curved outwardly substantially as shown and described.

2. A garter device comprising a spring-ring having an integral projecting loop at one side, said ring being open opposite said loop and the sides thereof being crossed and extended and formed into oppositely-directed and independent loops which open inwardly adjacent to the point where the sides of the ring are crossed and form frictional holders, and the ends of the free side of which are curved outwardly, and a card which is adapted to be passed around the leg and into said loops, substantially as shown and described.

706,856. SHADE-HOLDER FOR INCANDESCENT ELECTRIC LAMPS. EDWARD W. SCHEELE, Brooklyn, N. Y., assignor of one-half to William V. Cole, New York, N. Y. Filed Feb. 5, 1902. Serial No. 92,511. (No model.)

Claim.—1. A shade-holder composed of spring-wire bent to form a spring-ring open at one side, the parts of said ring at the open side being crossed and extended in opposite directions and formed into outwardly-directed, vertically-arranged, loop-shaped shank members which are separated and arranged in separate vertical planes, and segmental clamp members connected with the lower end of said shank members and arranged concentrically with reference to said spring-ring and below said ring and outside thereof, substantially as shown and described.

2. A shade-holder composed of spring-wire bent to form a spring-ring open at one side, the parts of said ring at the open side being crossed and extended to form projecting loop-shaped shank members which are separated and arranged in separate vertical planes when the shade-holder is in its normal position and segmental members connected with the bottom of the shank members and below said ring when said holder is in its normal position, said segmental members being open at the side opposite the loop-shaped shank members substantially as shown and described.

3. A shade-holder composed of spring-wire bent to form a spring-ring open at one side, the parts of said ring at the open side being crossed and extended to form projecting loop-shaped shank members which are separated and arranged in separate vertical planes when the shade-holder is in its normal position, and segmental members connected with the bottom of the said shank members and below said ring when said holder is in its normal position, said segmental members being open at the side opposite the loop-shaped shank members and being curved outwardly and backwardly, substantially as shown and described.

706,857. TONGUELESS BUCKLE. GEORGE SCHNEIDER, Newport, Ky. Filed Apr. 30, 1901. Serial No. 58,002. (No model.)
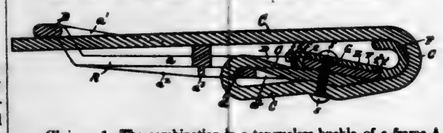
Claim.—1. The combination in a tongueless buckle, of a frame A; attaching-frame D provided with bar *d*; a strap looped over bar *d*; projection E on frame D; and hook F detachably secured to frame D by means of lugs *f* and *a'* and pin *f'*, substantially as specified.

2. The combination of buckle-frame A, having flanges *a*, *a'* and *a²* and the raised open bar B; attaching-frame D, having intermediate bar *d* and projection E; hook F, and strap C, looped over bar *d* and secured to projection E and hook F, substantially as specified.

706,858. TYPE-WRITER. CHARLES SEARS, Cleveland, Ohio. Filed July 19, 1899. Serial No. 724,579. (No model.)

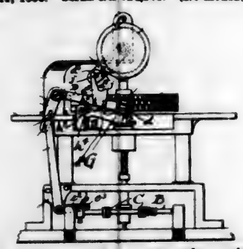

Claim.—1. In a type-writing machine, the combination of a pivoted type-carrier, and means operated by finger-keys for bringing any character on said carrier to the impression-point with a rotatable inking-platen, an arm carrying an inking-roller, mechanism for swinging said arm to carry said roller into contact with the character at the impression-point and with said inking-platen, a ratchet secured to the platen, and a pawl operated by said arm, substantially as specified.

2. In a type-writer having a pivoted type-carrier, the combination of an inking-platen located above the type-carrier, with an oscillating pivoted lever carrying an inking-roller which is adapted to contact with the character at the impression-point and with said platen, the impression-hammer and mechanism, which moves synchronously with the impression-hammer, for moving said roller-carrying lever up whereby the roller contacts with the character at the impression-point and with said platen, and then down again to its normal position, substantially as and for the purpose specified.

3. In a type-writer the combination of a movable shield having an opening which permits the paper to contact only with the character at the impression-point, and mechanism for moving said shield with a roller-carrying device, an inking-platen, and mechanism for moving said roller across the face of the character at the impression-point, and into contact with the inking-platen, substantially as and for the purpose specified.

4. In a type-writer having a pivoted type-carrier, the combination of a pivoted lever carrying inking-rollers, the impression-hammer and means which operate synchronously with the impression-hammer for moving said lever to carry the inking-rollers across the face of the character at the impression-point, with a movable shield having an opening through which the character may be printed which movable shield lies in the path of said inking-roller lever whereby it is moved in one direction, and a spring for moving it in the contrary direction, substantially as and for the purpose specified.

5. In a type-carrier, having an oscillating type-segment, the combination of a pivoted lever carrying inking-rollers, the impression-hammer and mechanism operating synchronously with the impression-hammer for moving said lever to carry the rollers across the face of the type at the impression-point, with a shield-lever having an opening through which the character at the impression-point may be printed, and mechanism for moving said shield, substantially as and for the purpose specified.

6. In a type-writer having an oscillating type-carrier, the combination of a rotary inking-platen located above the type-carrier, a ratchet-wheel secured thereto, a pawl-carrier mounted adjacent to and concentric with said ratchet, and a spring-pawl on said carrier, with an oscillating lever carrying inking-rollers which are adapted to move across the face of the character at the impression-point, and an arm attached to said lever and having two shoulders d^n d^1, and a pin on the pawl-carrier with which said shoulders are adapted to engage, substantially as and for the purpose specified.

706,859. SPARKER FOR EXPLOSIVE-ENGINES. HARRY H. SAGER and CHARLES B. SUMMER, Hagerstown, Md., assignors of one-third to Arthur S. Dorsbimer, Hagerstown, Md. Filed Sept. 13, 1901. Serial No. 75,244. (No model.)

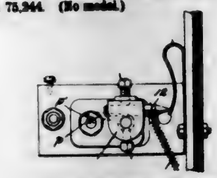

Claim.—1. In an explosive-engine, the electric sparker comprising a stationary electrode, a movable electrode, and a spring of the form described mounted on a rectilinearly-reciprocating rod and arranged to contact with a strike connected with said movable electrode and throw said movable electrode into contact with the stationary electrode, and then release the same, and means for separating said electrodes, substantially as set forth.

2. In an electric sparker for explosive-engines, the combination, of the base, the stationary electrode insulated from said base and connected with one wire of an electric circuit, a movable electrode adapted to contact with said stationary electrode, a strike thereon, a strike mounted on a rod, which rod is mounted to reciprocate in a fixed plane, said strike thereon being formed flexible and with a curved portion adapted to contact with the strike on the electrode and throw it into contact with the other to close the circuit and hold it closed during the down-and-up movement of the rod, and means for breaking the contact suddenly when the strikes separate, substantially as set forth.

3. In an electric sparker for explosive-engines, the combination of the base, the stationary electrode mounted thereon and insulated therefrom, one wire of an electric circuit connected therewith, the movable electrode mounted on a rock-shaft extending to the outside, a projecting strike carried thereby, and a spring mounted on a reciprocating rod alongside said strike to engage therewith, the spring having a curved portion adapted, and being of a form, to throw said electrode into contact with the stationary electrode on its down motion and hold the contact until freed therefrom on its up motion, substantially as set forth.

4. In an electric sparker for gasolene-engines, two electrodes adapted to be thrown together to close the circuit, and a spring on a rectilinearly-reciprocating part arranged and formed to strike a part and throw said electrodes into contact on one motion and hold them in contact until free therefrom on its return motion, substantially as set forth.

706,860. PHOTOSCULPTURE APPARATUS. WILLY A. C. SELKE, Berlin, Germany. Filed July 20, 1901. Serial No. 69,732. (No model.)

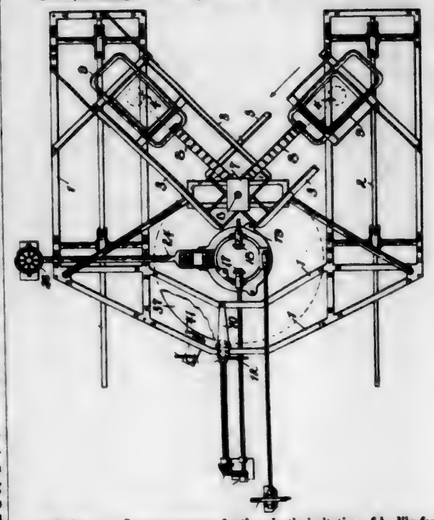

Claim.—1. In an apparatus for the plastic imitation of bodily forms by means of photography, the combination of a carriage, movable longitudinally and carrying two groups of lights and two screens, which groups of lights and screens are arranged on the said carriage in a fixed angular position each to the others, with a rotatable disk as carrier of the bodily object, to be reproduced, and with a photographic apparatus and means for moving the carriage, carrying the lights and screens, longitudinally and means for rotating the rotatable disk, and also means for throwing out of gear the gearing of the said carriage and the gearing of the said disk, substantially as described.

2. In an apparatus for the plastic imitation of bodily forms by means of photography, the combination of a carriage, movable longitudinally and carrying two groups of lights and two screens, which groups of lights and screens are arranged in the said carriage in a fixed angular position each to the others, with a rotatable disk as carrier of the bodily object, to be reproduced, and with a kinematographic apparatus, engaging with its gearing in the gearing of the movable carriage and the rotatable disk, and means for moving the movable carriage longitudinally and means for rotating the rotatable disk and also means for throwing out of gear the gearing of the said carriage and the gearing of the said disk, substantially as described.

706,861. FLUID-COMPRESSOR. EDWARD SEITZ, Ironridge, Wis. Filed Dec. 6, 1901. Serial No. 84,886. (No model.)

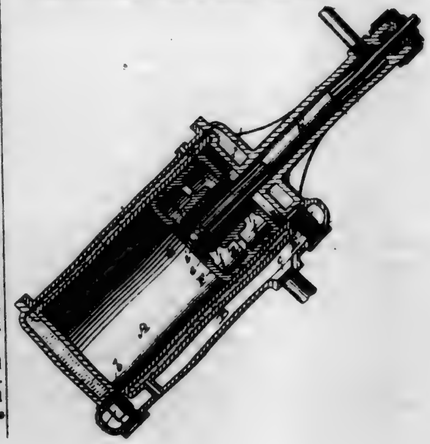

Claim.—A fluid-compressor cylinder having head-ports in valve-controlled communication with a chamber provided with an outlet, a hollow piston in the cylinder provided with valve-seats in its ends, an apertured hollow valve guided in the piston and having a hollow shank, a valve-cheek guide in the form of a cylinder-head neck having a fluid-inlet, and a rod that being in rigid connection with the valve extends through a stuffing-box with which the outer end of said neck is provided.

706,862. WEB-FOLDING MACHINE. RALPH C. SEYMOUR, New York, N. Y., assignor to C. B. Cottrell & Sons Co., Jersey City, N. J., and Bennington, Conn., a Corporation of New Jersey. Filed Aug. 4, 1898. Serial No. 687,720. (No model.)

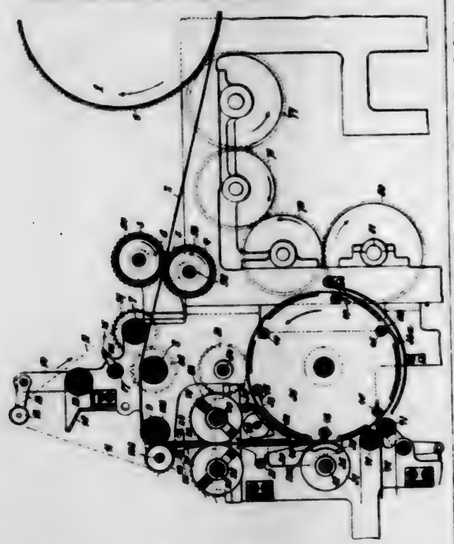

Claim.—1. In a folding-machine, the combination of a pair of rotary cutters traveling at the same surface speed as the printed web, a folding-cylinder whose circumference is exactly equal to a plurality of the sheets detached by said cutters from the web, a plurality of sets of grippers on said cylinder, a plurality of folding-blades on said cylinder, and means cooperating with said folding-blades to take the sheets away from said cylinder in a doubled or folded condition.

2. In a folding-machine, the combination of a pair of rotary cutters, a folding-cylinder whose periphery is exactly equal to a plurality of the sheets detached by said cutters, the said cylinder, the said cutters and the printed web all traveling at the same surface speed, a plurality of sets of grippers, a plurality of folding-blades alternating therewith on said cylinder, and a pair of folding-rollers cooperating with said folding-blades.

3. In a folding-machine, the combination of a pair of rotary cutters, a folding-cylinder traveling at the same surface speed of said cutters and of the web, a plurality of sets of grippers on said cylinder, each set of which is adapted to seize the leading end of the web before detachment of the sheet, a plurality of folding-blades on said cylinder alternating with said sets of grippers, and a pair of folding-rollers; the combination and arrangement being such that each set of grippers takes the leading end of the web at the receiving-point and before it is detached by the cutters and such that every alternate set of grippers releases two superposed sheets to the pair of folding-rollers.

4. In a folding-machine, the combination of rotary cutters traveling at the same surface speed as the printed web, a folding-cylinder having mounted thereon three sets of grippers, and alternately-arranged folding-blades, the circumference of said cylinder being in length exactly equal to the length of three sheets of paper detached by the rotary cutters and traveling at the same speed as the web, a pair of folding-rollers, means for opening and closing a set of grippers so that it may take the head of a sheet at the receiving-point before it is detached from the web, means for opening every alternate set of grippers to release two superposed sheets to said folding-roller, and means for actuating the folding-blades so as to cause them to act alternately and double two superposed sheets into the bite of said folding-rollers when released by their associated grippers.

5. In a folding-machine, the combination of rotary cutters for detaching sheets from the body of the web, a folding-cylinder traveling at the same surface speed as the web and having its periphery proportioned, as described, to the length of the sheets detached by said cutters, a plurality of sets of grippers on said cylinder, a tucking device having a cut-away or space to enable the grippers to close, and provided with a nose or projection for positively directing the leading end of the web in between the said grippers and the surface of the folding-cylinder.

6. The combination of a cylinder provided with vibratory grippers which clamp the sheet upon the periphery of the cylinder, a tucker for tucking the loose leading end of the web between the points of said grippers and the periphery of the cylinder and means disconnected from said tucker for feeding the web between the tucker and the gripper-cylinder.

7. In a folding-machine, the combination of a folding-cylinder provided with vibratory grippers which clasp the sheet upon the periphery of the cylinder, and a rotary tucking device adapted to tuck the leading end of the sheet between the grippers and the periphery of the cylinder.

8. In a folding-machine, the combination of a folding-cylinder having vibratory grippers which clasp the sheet upon the periphery of the cylinder, a rotary tucking device having a nose or projection adapted to force the leading end of the sheet into the space between said grippers when open and the periphery of the folding-cylinder.

9. In a folding-machine, the combination of a folding-cylinder traveling at the same surface speed as the web, vibratory grippers for clasping the sheet upon the periphery of the cylinder, mechanism for detaching sheets from the web, a tucking device adapted when the grippers are open to force the leading end of the web in between the grippers and the periphery of the cylinder, means disconnected from said tucking device for feeding the web between the tucking device and the folding-cylinder, and means for closing said grippers before detachment of the foremost sheet from the body of the web.

10. In a folding-machine, the combination of rotary cutters, a folding-cylinder whose periphery is exactly equal to a plurality of sheets detached by said cutters and whose periphery travels at the same surface speed as the web, a plurality of equidistant sets of grippers on said cylinder and which clasp the sheet upon the periphery of the cylinder, a plurality of folding-blades alternating with said sets of grippers, means for taking away the doubled or folded sheets from said cylinder when the folding-blades are operated, and a tucking device that pushes the leading end of the web positively into the space between the grippers and the periphery of the cylinder before the closure of said grippers and before the detachment of the foremost sheet from the body of the web.

11. In a folding-machine, the combination of the rotary cutters, the folding-cylinder having a plurality of sets of vibratory grippers which clasp the sheet upon the periphery of the cylinder and a plurality of folding-blades, a pair of folding-rollers, and a series of rotatory disks registering with the gripper-fingers and provided each with means for directing the leading end of the web in between the open grippers and the periphery of the folding-cylinder before detachment of the foremost sheet from the body of the web.

12. In a folding-machine, the combination of a folding-cylinder having vibratory grippers which clasp the sheet upon the periphery of the cylinder, and a series of tucking-disks adapted to force the leading end of a sheet into the grasp of said grippers upon the periphery of the cylinder.

13. In a folding-machine, the combination of a folding-cylinder having grippers, and a series of tucking-disks each having a cut-away or space for the operation of said grippers and also a nose or projection to direct the leading end of a sheet into the grasp of said grippers.

14. In a folding-machine, the combination of a folding-cylinder having grippers adapted to receive the leading end of the web, and a tucking device adapted to act on the head of the web while the grippers are open and positively to break any fibrous or ligamental connection between the head of said web and the tail of the preceding sheet, in case said connection should exist, and to also positively force the leading end of the web into the space between said grippers and the periphery of the cylinder before the closure of said grippers.

706,863. METHOD OF MANUFACTURING GLASS TOMBSTONES, &c. JOHN Q. SHAFFER, Pittsburg, Pa. Filed Sept. 16, 1901. Serial No. 75,584. (No model.)

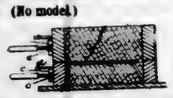

Claim.—1. The method of manufacturing a block of glass, having an inclosed imprint or design, consisting in casting a mass of glass upon the face of a plate of glass, bearing the design or imprint, then casting a second mass of glass upon the back of the same.

2. The method of manufacturing solid sections of glass with an inclosed inscription or the like consisting in placing a plate of glass imprinted with the desired matter within and at the bottom of the mold, casting glass within the mold upon top of the plate, then reversing the position of the mass so cast, and then casting a second mass within another mold and upon the other side of the plate.

706,864. MOTOR-PROPELLED LAWN CUTTER AND ROLLER. WILLIAM P. SIMPSON, Overbrook, Pa. Filed Mar. 14, 1901. Serial No. 51,129. (No model.)

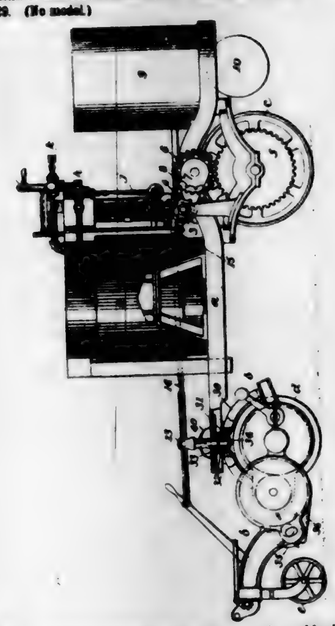

Claim.—1. The combination with a frame and combined traction and rolling rollers, of a second frame provided with supporting devices engaging the ground, and with cutting mechanism, said second frame pivoted to and supporting the forward end of the main frame, substantially as set forth.

2. The combination with a frame and combined traction and rolling rollers, of a second frame provided with supporting devices engaging the ground, and with cutting mechanism, said second frame pivoted by a universal joint to and supporting the forward end of the main frame, substantially as set forth.

3. The combination with a frame and combined traction and rolling rollers, of a second frame provided with supporting devices engaging the ground and with cutting mechanism, said second frame pivoted to and supporting the forward end of the main frame, and a motor operatively connected with said traction-rollers, substantially as set forth.

4. The combination with a frame and combined traction and rolling rollers, of a second frame provided with rollers supporting its entire weight and with cutting mechanism driven from said rollers, and with connections between the frames permitting them to rock longitudinally and transversely with respect to each other, substantially as set forth.

5. The combination with a frame and combined traction and rolling rollers, of a second frame provided with rollers supporting its entire weight and with cutting mechanism driven from said rollers, and with connections between the frames permitting them to rock longitudinally and transversely with respect to each other, and a motor operatively connected with said traction-rollers, substantially as set forth.

6. The combination in a lawn roller and mower, of a cutter-frame having supporting-wheels, a main frame supported partly by the cutter-frame and partly by rolling rollers, said frames connected to permit each to rock independently of the other, and a motor operatively connected to drive the apparatus, substantially as set forth.

7. The combination in a lawn roller and mower, of a cutter-frame having supporting-wheels connected to operate the cutter, a main frame supported partly by the cutter-frame and partly by rolling rollers, said frames connected to permit each to rock independently of the other, and a motor operatively connected to drive the apparatus, substantially as set forth.

8. The combination in a lawn roller and mower, of a cutter-frame having supporting-wheels, a main frame supported partly by the cutter-frame and partly by rolling rollers, said frames connected to permit each to rock independently of the other, a motor operatively connected to drive the apparatus, and a hand device and connections whereby to turn the cutter-frame to guide the apparatus, substantially as set forth.

9. The combination with a frame, of a combined traction and lawn-rolling roller connected therewith, a second frame provided with supporting devices engaging the ground and supporting the entire weight of said frame, cutting mechanism carried by the second frame, means for operating said mechanism, connections between the frames permitting them to rock transversely in respect to each other, a motor carried by the main frame, a gear on the motor-shaft, a gear connected with the roller, and intermediate gear supported by the main frame, substantially as set forth.

10. The combination with a frame, combined traction and lawn-rolling rollers connected therewith, of a second frame, arranged in front of said traction and lawn-rolling rollers and provided with supporting devices engaging the ground and supporting the entire weight of the frame, cutting mechanism carried by said second frame, a motor operatively connected with said traction-rollers and connections between said frames permitting them to rock transversely with respect to each other to accommodate them to inequalities of the ground, substantially as described.

11. The combination with a frame and combined traction and lawn-rolling rollers connected therewith, of a second frame, arranged in front of said traction and lawn-rolling rollers and provided with rollers supporting the entire weight of the frame, cutting mechanism carried by said second frame, a motor operatively connected with said traction-rollers and connections between said frames permitting them to rock longitudinally and transversely with respect to each other, substantially as described.

706,865. SAW-SET. DAVID W. SOLOMON, Arlington, Wash., assignor of one-half to Nell Brown, Arlington, Wash. Filed Mar. 1, 1902. Serial No. 96,334. (No model.)

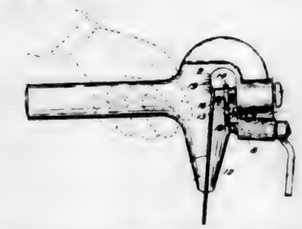

Claim.—1. A saw-set comprising a stock having an anvil, a jaw provided with a face inclined from the plane of the said anvil, and a supporting-bracket connected by a bend with the said anvil; a movable jaw having a flat end and a collar engaging with a setting-pin; supporting-springs connecting said movable jaw with the said bracket; means carried by the bracket for clamping said movable jaw; said setting-pin having a flat side and terminating in a shoulder extending through said bracket; a spring mounted on said setting-pin; and graduate-marks, substantially as described.

2. In a saw-set the combination with the stock having a jaw inclined from the anvil-face thereof and integrally connected to a supporting-bracket, a setting-pin and a clamp-screw carried by the said bracket; of a movable jaw supported adjacent to one end by springs from the said bracket and engaging with the said setting-pin to raise the same coincidently, substantially as described.

706,866. PUNCHING-BAG PLATFORM. SAMUEL TRESSIS, New York, N. Y. Filed Mar. 27, 1902. Serial No. 100,251. (No model.)

Claim.—1. A punching-bag platform, a bracket having removable connection therewith, a longitudinally-adjustable brace consisting of two sections having overlapped ends, the overlapping portions being corrugated on their engaging surfaces, and means for securing the sections as adjusted, substantially as specified.

2. A punching-bag platform, a supporting-plate, a bracket-arm having removable connection with the platform and plate, a brace connection between the platform and plate, the said brace consisting of two sections mounted to slide one upon the other, one section being slotted, and a fastening-bolt extended from the other section through said slot, substantially as specified.

3. A punching-bag platform, a metal frame secured thereon and provided with sockets, a supporting-plate, a socketed member on said supporting-plate, a bracket-arm adapted to engage in said sockets of the plate and platform, and a brace consisting of two members, adjustable one upon the other, one member having pivotal connection with the platform and the other having pivotal connection with the supporting-plate, substantially as specified.

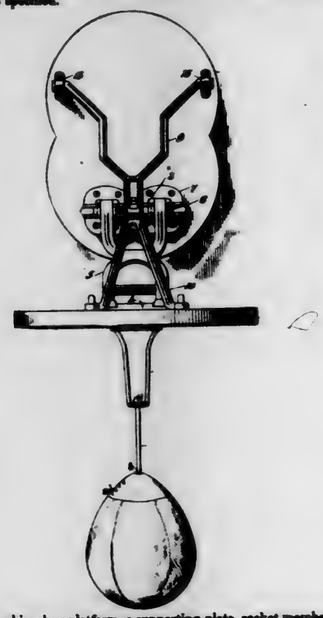

4. A punching-bag platform, a supporting-plate, socket members on the supporting-plate, socket members on the platform, a bracket-arm having its upper end adapted to engage in the socket members of the plate, lugs on said upper ends for engaging on the upper sides of the socket members, the lower end of said arm being adapted for removable engagement with the sockets on the platform, and an adjustable brace connection between the platform and supporting-plate, substantially as specified.

706,867. **RETAINING-VALVE.** WALTER V. TURNER and FRANKLIN C. FARNHAM, Raton, N. Mex., assignors to the Raton Air Brake Improvement Company, Raton, N. Mex. Filed June 26, 1901. Serial No. 66,157. (No model.)

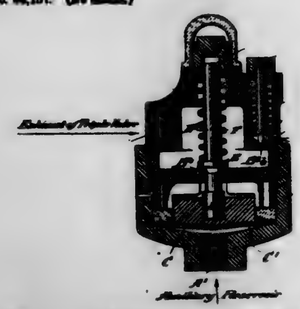

Claim.—1. A retaining-valve connected with the exhaust of the triple valve and the auxiliary reservoir, and comprising a diaphragm under pressure of the auxiliary reservoir, a release-valve controlled by the diaphragm, for releasing all the pressure from the brake-cylinder, and a graduated retainer-valve controlling some of the triple-valve exhaust-pressure to the atmosphere, as set forth.

2. A retaining-valve comprising a casing having a triple-valve exhaust-section and an auxiliary-reservoir section having a port to the atmosphere, a graduated release-valve controlling a seat between the said sections, a diaphragm in the auxiliary-reservoir section and under pressure of the auxiliary reservoir to control the said release-valve and a graduated retainer-valve in the said triple-valve exhaust-section for exhausting some of the triple-valve exhaust-pressure to the atmosphere, as set forth.

3. A retaining-valve connected with the exhaust of the triple valve and the auxiliary reservoir, and comprising a diaphragm under pressure of the auxiliary reservoir, a release-valve controlled by the diaphragm, for releasing all the pressure from the brake-cylinder, and a graduated retainer-valve controlling some of the triple-valve exhaust-pressure to the atmosphere, said retainer-valve being pressed by a graduated spring and controlling a discharge to the atmosphere, as set forth.

4. A retaining-valve connected with the exhaust of the triple valve and the auxiliary reservoir, comprising a graduated release-valve and a graduated retainer-valve, of which the graduated release-valve is controlled by auxiliary-reservoir pressure and the retainer-valve opens to the atmosphere under brake-cylinder pressure until the latter is reduced to the pressure to which the retainer-valve is set and the said graduated release-valve opens to completely exhaust the brake-cylinder pressure on recharging the auxiliary reservoir, as set forth.

706,868. **FOLDING TABLE.** EDWARD P. VAN ALSTYNE, Jr., Kinderhook, N. Y. Filed Mar. 4, 1902. Serial No. 96,587. (No model.)

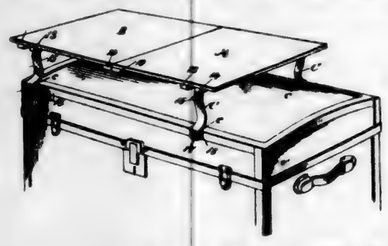

Claim.—1. A table the top of which is constructed in hinged sections adapted to fold one upon the other, means for locking the sections in the same horizontal plane, legs for the sections, guideways on the sections in which the heads of the legs are adapted to slide and means substantially as described, for detachably and adjustably securing the said legs in said guideways, as set forth.

2. In tables, a top constructed in hinged sections adapted to fold one upon the other or outward so that their outer faces will be in the same horizontal plane, a locking device for holding the sections in their outer unfolded position, battens secured to the under faces of the said sections, provided with transverse apertures, the apertures in one batten corresponding in position to the position of those in the opposing batten, a space intervening between each pair of battens, and legs for the table provided with head-sections adapted to slide in the spaces between the battens, which head-sections have eyes adapted to be brought in alinement with opposing apertures in the battens, the lower ends of the legs terminating in vertical foot-sections, the foot-sections being at angles to the lower portion of the body-section of the legs, whereby inner lower shoulders are formed on the legs, and pins adapted to be passed through the apertures in the battens and through the eyes in the heads of the legs, for the purpose set forth.

3. In a table, the combination, with a top constructed in hinged connected sections, battens secured to the under faces of the sections at their hinged ends, a locking-pin adapted to be passed through said battens, and leg-supporting battens arranged in pairs upon the under faces of the sections near their outer ends, the battens of the said pairs having spaces intervening between them and being provided with transverse alining apertures, of legs comprising body-sections formed on the lines of a compound curve, head-sections at right angles to the body-section, the head-sections being provided with eyes and adapted to slide in the spaces between the end battens of the top sections, each leg being provided also with a perpendicular foot-section, and pins adapted to be passed through the apertures in the end battens and through the eyes at the head-sections of the legs, whereby the said legs are adjustably and removably attached to the top of the table, as described.

4. A table, comprising a top constructed in hinged sections adapted to fold one upon the other, legs for the sections terminating at their lower ends in vertical foot-sections, the foot-sections being at angles to the lower portion of the body-section of the legs, whereby inner lower shoulders are formed on the legs, guideways on the sections in which the heads of the legs are adjustable, and means for holding said legs in adjusted position, as set forth.

5. A table, comprising a top, legs each comprising a curved body-section, a head-section at right angles to the body-section and adjustable on the under face of the table-top, and a perpendicular foot-section forming a shoulder with the body-section and provided with a pad on its inner face, and means for holding the legs in the adjusted position as set forth.

706,869. **MECHANISM FOR TEMPORARILY LOCKING WATER-CLOSET BOWLS OR WASHBASINS.** EDWARD WOODRUFF, Chicago, Ill. Filed May 8, 1902. Serial No. 106,475. (No model.)

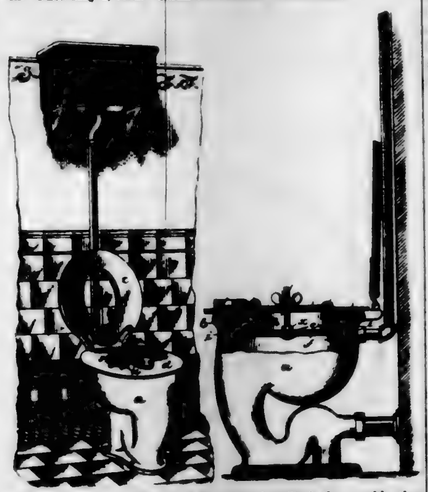

Claim.—1. In mechanism of the class described, the combination of a plate adapted to cover the opening in the receptacle to be closed, mechanism in a horizontal plane below said plate adjustable horizontally within said plane to fit inside of receptacles of different sizes and engage the under sides of the flanges of said receptacles, a bolt passing through said last-mentioned mechanism and said plate, mechanism for tightening said bolt, and mechanism for locking the tightening mechanism for the purposes set forth.

2. In mechanism of the class described, the combination of a plate adapted to cover the opening in the receptacle to be closed, a bolt through said plate, two arms crossing each other on the bottom of said bolt, adapted to be moved to and from each other, and also adapted to have their ends bear against the inside of the rim of the receptacle to be closed, adjustable means for securing said arms in different positions with reference to each other, mechanism for tightening said bolt, and mechanism for locking said bolt so that it cannot be loosened, for the purposes set forth.

3. In mechanism of the class described, the combination of a plate adapted to cover the opening in the receptacle to be closed, a bolt through said plate, two arms crossing each other on the bottom of said bolt adapted to be moved to and from each other, and also adapted to have their ends bear against the inside of the rim of the receptacle to be closed, means for varying the lengths of said arms, adjustable means for securing said arms in different positions with reference to each other, mechanism for tightening said bolt, and mechanism for locking said bolt so that it cannot be loosened, for the purposes set forth.

4. In mechanism of the class described, the combination of a plate adapted to cover the opening in the receptacle to be closed, a bolt through said plate, two arms crossing each other mounted on the bottom of said bolt adapted to be moved to and from each other and also adapted to have their ends bear against the under side of the rim of the receptacle to be closed, a hook loosely secured to one arm having its end bent so as to engage holes along one end of the other arm whereby said arms may be secured in different positions with reference to each other, mechanism for tightening said bolt, and mechanism for locking said bolt so that it cannot be loosened, for the purposes set forth.

5. In mechanism of the class described, the combination of a plate adapted to cover the opening in the receptacle to be closed, a bolt through said plate, two arms crossing each other mounted on the bottom of said bolt adapted to be moved to and from each other and also adapted to have their ends bear against the under side of the rim of the receptacle to be closed, a hook loosely secured to one arm having its end bent so as to engage holes along one end of the other arm whereby said arms may be secured in different positions with reference to each other, a thumb-nut on said bolt and a hasp secured to said plate adapted to fit over said thumb-nut and secure the same against rotation, and means for locking said hasp, for the purposes set forth.

6. In mechanism of the class described, the combination of a plate adapted to cover the opening in the receptacle to be closed, a bolt through said plate, two arms crossing each other mounted on the bottom of said bolt adapted to be moved to and from each other and also adapted to have their ends bear against the under side of the rim of the receptacle to be closed, a hook loosely secured to one arm having its end bent so as to engage holes along one end of the other arm whereby said arms may be secured in different positions with reference to each other, a thumb-nut on said bolt and a hasp secured to said plate adapted to fit over said thumb-nut and secure the same against rotation, and means for locking said hasp, all of the parts being arranged and disposed substantially as shown and described, for the purposes set forth.

706,870. **HANGER FOR TRANSFORMERS OR THE LIKE.** JAMES J. WOOD, Fort Wayne, Ind. Filed Nov. 29, 1901. Serial No. 83,963. (No model.)

Claim.—1. A hook for the suspension of transformers or the like, adapted for attachment at its upper end to a cross-arm and carrying means for clamping it in engagement with a complementary engaging means on the casing of a transformer, said hook having an uninterrupted flat rear face.

2. A hook for the suspension of transformers or the like, adapted for attachment at its upper end to a cross-arm and carrying on its front face means for clamping it in engagement with a complementary engaging means on the casing of a transformer and having an uninterrupted flat rear face.

3. A hook for the suspension of transformers or the like, adapted for attachment at its upper end to a cross-arm and carrying means for clamping it in engagement with a complementary engaging means on the casing of a transformer, said means being permanently connected to said hook.

4. Means for attaching a supporting member for the suspension of transformers or the like to a casing for such transformers, comprising a lug on one of said parts and means for locking said lug in engagement with the other of said parts, said locking means being entirely on the adjacent face of the latter of said parts.

5. Means for attaching a supporting member for the suspension of transformers or the like to a casing for such transformers, comprising a lug on one of said parts and means for locking said lug in engagement with the other of said parts, said locking means being permanently connected to the latter of said parts.

6. Means for attaching a supporting member for the suspension of transformers or the like to a casing for such transformers, comprising a pair of complementary engaging members of said parts, and a wedge adapted to maintain said engaging members in engagement.

7. Means for attaching a supporting member for the suspension of transformers or the like to a casing for such transformers, comprising a recessed lug on one of said parts, a stud on the other of said parts adapted to be engaged in said lug, and a wedge adapted to maintain such engagement.

8. Means for attaching a supporting member for the suspension of transformers or the like to a casing for such transformers, comprising a recessed lug on one of said parts, a stud on the other of said parts adapted to be engaged in said lug, and a wedge carried at the end of a pivoted arm and adapted to maintain such engagement.

9. Means for attaching a supporting member for the suspension of transformers or the like to a casing for such transformers, comprising an undercut recessed lug on one of said parts, a stud on the other of said parts having a head adapted to engage in the recess of said lug, and a wedge adapted to hold said lug and bolt in engagement, said wedge having a rib M for holding said head against the outer wall of said recess.

10. A supporting member for the suspension of transformers or the like, comprising a hook having an uninterrupted flat rear face and carrying on its front face a stud permanently attached thereto.

706,871. **AIR-COMPRESSOR.** GEORGE H. ADAMS, Brooklyn, N. Y. Filed May 15, 1902. Serial No. 107,941. (No model.)

Claim.—1. In a combined air compressor and expander, the combination of a cylinder and piston for compressing air to a high tension, an outlet therefrom adapted for connection with a suitable cooling device, an inlet thereto adapted to receive the air upon its return from said cooling device, means whereby the compressed air may expand in the rear of the piston, and suitable means whereby the air first compressed may be led directly to the rear of the piston instead of first passing through a cooling device, substantially as described.

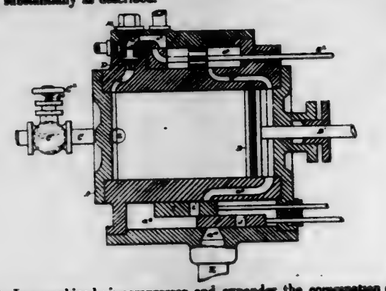

2. In a combined air compressor and expander, the concentsion of a cylinder and piston for compressing air to a high tension, an outlet therefrom adapted for connection with a suitable cooling device, an inlet thereto adapted to receive the air upon its return from said cooling device, means whereby the air may expand in the rear of the piston, means permitting the piston to partially recompress the air on its return stroke and suitable means whereby the air first compressed may be led directly to the rear of the piston instead of first passing through a cooling device, substantially as described.

3. In a combined air compressor and expander, the combination of a cylinder and piston for compressing air to a high tension, a valve-controlled outlet from said cylinder adapted to communicate with the cylinder at the rear of the piston to permit the air to expand thereat, and valve mechanism adapted to be positively operated from a moving part to permit the expanded air to be recompressed on the return stroke of the piston but at a lower degree than that of its primary compression and allow its discharge from the cylinder while under such secondary compression for service expansively external to the cylinder.

4. In a combined air compressor and expander, the combination of a cylinder and piston, a passage for establishing communication between the front and rear ends of the cylinder by way of a chamber, a check-valve and a revolnble plug in said passage, the latter adapted to permit the compressed air to be directed to the aforesaid chamber or led away, suitable valves in said chamber controlling the inlet and outlet therefrom, and a valve-controlled passage from the cylinder at the rear side of the piston.

5. In a combined air compressor and expander, the combination of a cylinder and piston, a passage for establishing communication between the front and rear ends of the cylinder by way of a chamber, a check-valve in said passage, valve provision adapted to return the compressed air through the passage and chamber to the back end of the cylinder, a second chamber having a port communicating with the rear end of the cylinder and provided with an outlet-port; and valve mechanism in said second chamber controlling the outlet and adapted to be positively operated by a moving part to permit the expanded air to be recompressed on the return stroke of the piston but at a lower degree than that of its primary compression.

6. In apparatus for compressing air, the combination of a cylinder, a piston therein, a valved passage-way for externally conveying the compressed air directly from the front end of said cylinder, a second passage-way for establishing communication between the front and rear ends of said cylinder, a revolnble plug in said second passage-way provided with a suitable port whereby the compressed air may be returned to the rear of the piston to expand thereat, and valve mechanism adapted to be positively operated from a moving part to permit the expanded air to be recompressed on the return stroke of the piston but at a lower degree than that of its primary compression and allow its discharge from the cylinder while under such secondary compression.

706,872. DRILL-ROD GRAB. JAMES H. ADAMS, Fullerton, Cal. Filed Nov. 27, 1901. Serial No. 83,911. (No model.)

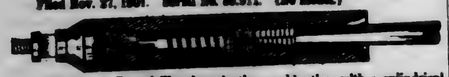

Claim.—1. In a drill-rod grab, the combination with a cylindrical casing, a cominbenber rigid jaw secured therein, a coinciding sliding jaw arranged adjacent said rigid jaw, and provided at its top with a collar, and a spring pressing against said collar for normally holding said sliding jaw against an upward movement.

2. In a drill-rod grab, the combination with a suitable casing, a rigid jaw retained therein, a coinciding sliding jaw arranged adjacent the rigid jaw and provided with a plurality of impinging teeth, the engaging surface of said sliding jaw being wedge-shaped, and means for normally holding said sliding jaw against an upward movement.

3. In a drill-rod grab, the combination with an outer casing, a rigid jaw secured therein and provided with a plurality of teeth, a coinciding sliding jaw arranged adjacent the rigid jaw and also provided with teeth, a collar on the upper end of said sliding jaw, a guide-pin projecting from said collar, and a spring surrounding said pin and adapted to bear against the collar to retain the sliding jaw normally against an upward movement.

706,873. GAME APPARATUS. JOHN S. AKERMAN, San Diego, Cal. Filed Dec. 11, 1900. Serial No. 39,511. (No model.)

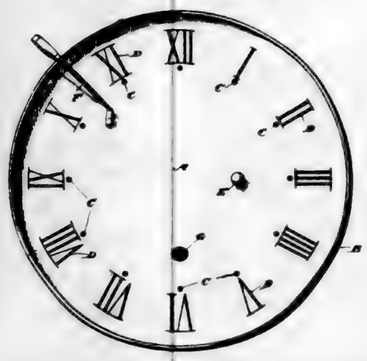

Claim.—A game apparatus, comprising a board having a circular series of numbered starting-points arranged adjacent to its edge or periphery, and a hole or pocket located in the board at a distance from the center thereof adjacent to one of said starting-points.

706,874. MEANS FOR SETTING MOSAICS. FELIX ALGAN, New York, N. Y., assignor to American Encaustic Tiling Company, Limited, New York, N. Y., a Corporation of New York. Filed Apr. 5, 1902. Serial No. 101,472. (No model.)

Brief.—A mosaic having an open-meshed fibrous woven backing, colored tile secured thereon by soluble cement, the color of tiles showing through backing, the pattern being placed face down in a bed of cement, the backing being saturated and stripped from the active face of the tiles.

Claim.—A mosaic pattern comprising an open-mesh absorbent backing made of fibrous woven material, and pieces of suitably-colored tile arranged in the desired order on the backing with open or unfilled spaces intervening the same, each piece of tile being firmly united to the backing by soluble cement; said backing material having its meshes so arranged as to make the color of the tiles plainly visible through the backing; the entire pattern adapted to be placed face downward in a bed of cementitious material and the backing being saturated with moisture and stripped from the active wearing-faces of the tiles.

706,875. ATTACHMENT FOR PLOWS OR THE LIKE. HERBERT H. ALLEN, Chicago, Ill. Filed Feb. 4, 1902. Serial No. 92,583. (No model.)

Claim.—1. The combination with a draft device, of a support attached to the front extremity thereof, a clevis laterally adjustable on the support, a windlass in rear of the latter, and a flexible connection between the windlass and the clevis, whereby said clevis may be shifted in opposite lateral directions.

2. The combination with a beam, of a support attached to the front extremity provided with upper and lower sheaves, a clevis shiftably engaging the said support, a windlass having means in connection therewith for locking it against movement when rotated in opposite directions, and a flexible connection between the windlass and the clevis and passing over the said sheaves.

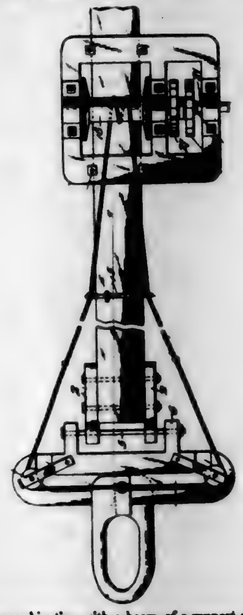

3. The combination with a beam, of a support adjustably and movably attached to the front extremity thereof, a clevis shiftably engaging the said support, a windlass rotatable in opposite directions and having means for locking it against movement, a lever for rotating the windlass by a step-by-step movement, and a flexible connection between the windlass and the clevis.

4. The combination with a beam, of a support attached to the front extremity thereof and having channels in the upper and lower sides thereof, a clevis having the rear extremities engaging the said channels, a windlass in rear of said support, and flexible means extending from the windlass to the clevis for shifting the clevis.

5. The combination with a beam, of a support movably attached to the front extremity thereof and having channels in the upper and lower sides and upper and lower sheaves adjacent to opposite terminals, a clevis having rear locked extremities shiftably engaging the said channels, a reversely-rotatable windlass having locking and operating means, and a flexible connection between the windlass and the clevis, said connection engaging the sheaves on the support.

706,876. GRIPPER FOR PLATEN PRINTING-PRESSES. ARTHUR L. ANDERSON, Grundy Center, Iowa. Filed Mar. 4, 1902. Serial No. 96,562. (No model.)

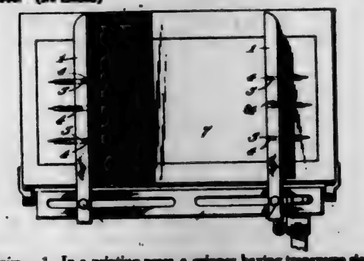

Claim.—1. In a printing-press, a gripper having transverse slots or notches in its edges adapted to receive the projecting portions of tympan gage-pins secured to the platen, substantially as and for the purpose set forth.

2. In a printing-press, a gripper having transverse slots or notches in its inner edge, said slots or notches being adapted to receive the projecting portions of tympan gage-pins secured to platen of the press.

3. In a printing-press, a gripper having transverse slots or notches in its edges, and transverse recesses or depressions in its under face, said recesses or depressions being adapted to receive the shank portion of tympan gage-pins secured to the platen of the press.

4. In a printing-press, a gripper having transverse recesses or depressions in its under face, adapted to fit over the ridge caused by the shank of a gage-pin in the tympan-sheet.

5. In a printing-press, a gripper having transverse recesses or depressions in its under face, said recesses or depressions extending across the width of the gripper, adapted to fit over the ridge caused by the shank of a gage-pin in the tympan-sheet.

6. In a printing-press, a gripper having transverse slots or notches in its edges, and transverse recesses or depressions in its under face, said recesses or depressions extending from the inner end of the slots to the opposite edge of the gripper, substantially as and for the purpose set forth.

7. In a printing-press, the combination with a platen, of a gripper having transverse slots or notches in its edges adapted to receive the projecting portion of tympan gage-pins secured to the platen, and means for securing the said gripper to the platen.

8. In a printing-press, a gripper having transverse slots or notches in its opposite edges alternately disposed.

9. In a printing-press, a gripper having transverse slots or notches in its opposite edges alternately disposed, and transverse recesses or depressions in its under face extending from the inner end of the slots to the opposite edge of the gripper.

10. In a printing-press, the combination with a platen, of a gripper having transverse slots or notches in its edges, transverse recesses or depressions in its under face extending from the inner end of the slots to the opposite edge thereof, and means for securing said gripper to the platen.

11. As an article of manufacture, a gripper having transverse slots or notches in its edges, and recesses or depressions in its under face, said recesses or depressions extending from the inner end of the slots to the opposite edge of the said gripper.

12. In a printing-press, a gripper having slots or notches in its edges, and recesses or depressions in its under face extending from the inner end of the slots to the opposite edge of the gripper, said recesses or depressions being of a greater width than the said slots in the edges of the gripper.

13. In a printing-press, the combination with the gripper-bar of the platen, of a gripper having transverse slots or notches in one of its edges, and means for securing the gripper to said platen, substantially as and for the purpose set forth.

14. A gripper for platen printing-presses, consisting of a bar having transverse slots on opposite edges extending across its width beyond the longitudinal center thereof.

706,877. SAFE. WILBER H. ARNOLD, Madisonville, Ohio. Filed Jan. 18, 1902. Serial No. 89,944. (No model.)

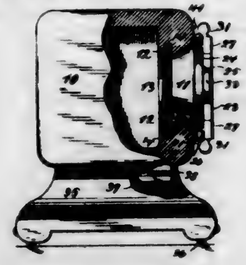

Claim.—1. A screw-door safe having its body cast in its entirety of non-workable metal, a circular opening in the front thereof adapted to receive the door of the safe, a ring 12 of workable metal lining part of the door-opening and having on the inside of its periphery the complementary female screw to receive the door and on the outside of its periphery integral parts projecting radially outwardly so as to extend into the metal which forms the safe-body, said ring being held in position by being placed accordingly during the act of casting the safe-body and whereby the outwardly-projecting parts mentioned become embedded into the molten metal of which the safe-body is formed in which position they also resist any strain in a peripheral direction which would tend to rotate ring 12 and due to the manipulation of the complementary male screw of the door when said screw is in engagement with the female screw on the inner side of ring 12.

2. A screw-door for a screw-door safe being cast of non-workable metal and provided on its inner side with a disk of workable metal, said disk formed with a screw-thread on its outer edge adapted to engage the

female thread within the door-opening of the safe-body and having integral projections on its outer side which reach into and are embedded within the non-workable metal of the safe-door and whereby said disk is connected to the inner side of this latter, said projecting parts being embodied into the metal of the safe-door while the same is cast.

3. A cast-metal safe having projecting from its under side strips 39 forming integral parts thereof, depressions 38 in the sides thereof, an independent base-frame fitted against the under side of the safe-body and connecting means passing through the upper part of this base-frame and engaging depressions 38.

706,878. **DOOR SIGNAL OR ALARM.** HENRY C. ATKINSON, Louisville, Ky. Filed May 10, 1902. Serial No. 106,764. (No model.)

Claim.—1. In a pneumatic signal, an air-compressing means; comprising a stationary end and a movable end, opposing it, a flexible air-tight connection joining the two ends, an air-operated sounder mounted on the movable end, and a means for imparting motion to said movable end, as set forth.

2. In a pneumatic signal, an air-compressing means; comprising a fixedly-held end, and a movable end opposing the fixedly-held end, a flexible air-tight body joining the two ends, the stationary end having a central aperture, a pull-rod reciprocable through said aperture and connected to the movable end, said movable end carrying a whistle or like wind-sounder, substantially as shown and for the purposes described.

3. The combination with a supporting-body, apertured for the pull-rod; of a pneumatically-operated signal means, comprising a plate having a central aperture and a packing-receiving socket surrounding said aperture, a disk opposing the said plate, a whistle or like sounding device mounted in the disk, a pull-rod slidable through the apertures in the supporting-body, and the plate having the packing, the inner end of said pull-rod being connected to and supporting the disk, and a flexible air-tight connection joining the aforesaid disk and the plate, substantially as shown and described.

4. The combination with the supporting-body, apertured for the passage of the pull-rod; of the plate 4, adapted to be rigidly secured to the inner side of the supporting-body, said plate having an inwardly-extending hub provided with a socket 4', the disk 7, the whistle 8 carried thereon, the air-tight flexible connection joining the plate and the disk, the pull-rod joined to the disk, and adapted to pass through the socketed hub of plate 4, and the aperture in the supporting-body, and the spring 13 having a flat bearing at one end and connected to the disk 7, and a metal sleeve at the other end to fit into the socket 4' of the plate 4, all being arranged substantially as shown and described.

5. The hereinbefore-described improved pneumatic door-signal, comprising in combination; the plate 4, adapted to be fixedly secured to the back of the door or other support, said plate having a central aperture, a socket 4' on the rear side and a socket 4' on the front side, the latter being for holding an air-tight packing, said plate 4 having an annular projecting rim, the disk 7, a whistle carried on said disk, a flexible air-tight body connected to the disk periphery and the annular rim of plate 4, the spiral spring having its base or large portion secured to the inner side of the disk, a metal sleeve joined to its inner or apex end, said sleeve detachably fitting the socket 4', in plate 4, and the pull-rod connected to the disk 7, all being arranged substantially as shown and for the purposes described.

706,879. **WHIFFLETREE-CLIP.** WALTER B. AYER, Raccourci, La. Filed June 14, 1902. Serial No. 111,699. (No model.)

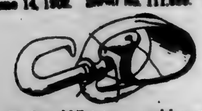

Claim.—A clip for whiffletrees comprising an elongated collar, having one flattened and broadened portion constructed to encircle approximately one-half the circumference, and provided at its other end with an internally-threaded boss, a fastening device consisting of a loop and a threaded shank fitted in said boss, and a swivel-block consisting of an arc-shaped metal plate constructed to fit against one edge of the whiffletree and provided with a step-bearing, the end of the shank being arranged to engage the step-bearing and when screwed up operating to force the swivel-block against the whiffletree and draw the flat and broadened portion of the collar against said whiffletree, the operative or inner face of the collar and swivel-block being smooth to permit the clip to be readily adjusted longitudinally on the whiffletree, substantially as described.

706,880. **LIFTING-JACK.** JOSEPH C. BARLEY, York, Pa. Filed Nov. 21, 1901. Serial No. 83,127. (No model.)

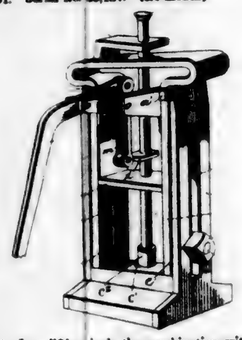

Claim.—1. In a lifting-jack, the combination with a main frame, a lifting-rod and mechanism for lifting the same step by step, an auxiliary frame carrying said rod and raising mechanism, said frame having depending leg members adjustably connected to the main frame, substantially as described.

2. In a lifting-jack, and in combination, a main frame including a base and vertical side standards, a lifting-rod and mechanism for raising the same, and an auxiliary frame carrying said rod and raising mechanism, said auxiliary frame having depending leg members adjustably connected to and guided by said side standards, substantially as described.

3. In a lifting-jack, and in combination, a main frame including a base and slotted side standards, a lifting-rod, and mechanism for raising the same step by step, an auxiliary frame carrying said rod and raising mechanism, said frame having leg members corresponding to and bearing against said standards, guides at the upper ends of the standards for the legs, threaded studs extending from the lower ends of the legs through the slots in said standards, and binding-nuts threaded on said studs, substantially as described.

4. In a lifting-jack, and in combination, a main frame including a base and slotted side standards, a lifting-rod, and mechanism for raising the same step by step, an auxiliary frame carrying said rod and raising mechanism, said frame having leg members corresponding to and bearing against the standards, threaded studs extending from the lower ends of the legs through the slots in said standards, and binding-nuts threaded on said studs, the opposing faces of the legs and standards being serrated to interlock with each other, substantially as described.

5. In a lifting jack, and in combination, a main frame including a base and vertical standards, a lifting-rod and mechanism for raising the same step by step, and an auxiliary carrying-frame including a top plate and integral depending legs adjustably connected and supported from said standards, a cross-plate extending between said legs, said plate and the top plate having alining openings to guide the lifting-rod, and overhanging portions on the top plate designed to find a bearing or rest upon the ends of the standards when the auxiliary frame is in its retracted position.

6. In a lifting-jack, and in combination, a main frame, an auxiliary frame including a top plate, and depending leg members adjustably secured to and supported from the main frame, a lifting-rod guided in the main frame, brackets secured to and extending laterally from the auxiliary frame, a lever pivoted between said brackets, a clutch-plate threaded on said rod, a link interposed between the end of said plate and the end of the lever, and a brace-plate extending between the legs of the adjustable frame, said plate providing a guide for the lifting-rod and a limiting-stop to arrest the downward movement of the clutch-plate and the movement of the lever operating the same, substantially as described.

7. In a lifting-jack, the combination with a vertically-movable lifting-rod, lifting mechanism including a lifting and a detent clutch, of a frame including a brace having a guiding-opening therein for the rod, and a yielding stop on said rod adapted to coact with said brace, substantially as described.

8. In a lifting-jack, the combination with a vertically-movable lifting-rod, lifting mechanism including a lifting and a detent clutch, of a frame including a brace having a guiding-opening therein for the rod, and a yielding stop on said rod adapted to coact with said brace, said stop comprising a pin secured in said rod and a sleeve of yielding material surrounding the rod and supported on said pin, substantially as described.

706,881. **VEGETABLE OR MEAT CUTTER.** FREDERICK BARR, New York, N. Y. Filed May 22, 1901. Serial No. 61,396. (No model.)

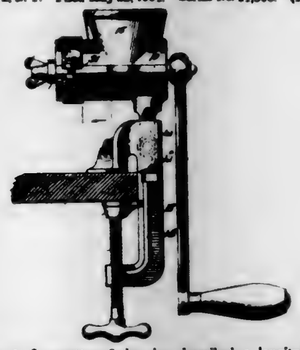

Claim.—1. In a cutter of the class described, a longitudinally-divided casing having the members thereof fitted snugly together, an annular series of external cam projections spaced on the outer surface of said casing members, and an axially-adjustable clamping-ring circumferentially embracing the members of the casing and provided with internal cam-surfaces coöperating with said cam projections and adapted to tightly force the casing members together, combined with a feed-screw and suitable cutters, as set forth.

2. In a cutter of the class described, a divided casing having the members thereof provided with an annular series of external cam projections spaced at intervals on the outer surface thereof, an external ring circumferentially embracing the members of the casing and having internal cam-surfaces coöperating with said cam projections, and a clamp carried by said ring and adapted to impinge said casing to hold the clamp against retrograde movement, combined with a feed-screw and suitable cutters, as set forth.

3. In a meat and vegetable cutter, a shell, a feed-screw mounted to revolve within said shell, a cutter constituting a continuation of the delivery end of the feed-screw, and an extension from the delivery end of the feed-screw, of a cutting-plate stationarily held in the said shell, the cutting-plate being provided with a series of large openings having cutting edges, a locking device for the outer cutter, carried by the extension of the feed-screw, and means whereby an auxiliary outer cutter may be located on said extension of the feed-screw in engagement with the cutter held in the shell, as and for the purpose set forth.

4. A cutter apparatus, comprising a divided shell provided with external clamping means and with an internal annular seat, a stationary cutter provided with arms forming openings and with cutting edges, said stationary cutter being received in said annular seat and clamped in position by the shell, a feed-screw having an extension which is partly plain and partly threaded, a revolvable cutter mounted fast on the feed-screw extension and disposed in coöperative relation to the stationary cutter, an auxiliary cutter, and means whereby the auxiliary cutter may be secured removably to the feed-screw extension.

706,882. **AUTOMOBILE.** HARMON F. BATES, Lansing, Mich. Filed June 14, 1902. Serial No. 111,612. (No model.)

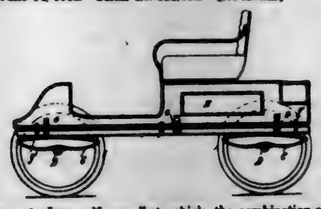

Claim.—1. In a self-propelled vehicle, the combination of the running-gear, driving mechanism secured upon said running-gear, and a body pivoted at one side at one side of said running-gear, substantially as and for the purpose described.

2. In a self-propelled vehicle, the combination of the running-gear, driving mechanism secured upon said running-gear, a body pivoted at one side at one side of said running-gear, and means for detachably securing the unpivoted edge of said body to said running-gear, substantially as and for the purpose described.

706,883. **WIRE FENCE.** CHARLES S. BURR, Racine, Wis. Filed Feb. 15, 1902. Serial No. 94,277. (No model.)

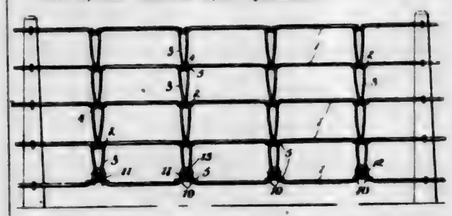

Claim.—1. A fence-stay consisting of a length of spring-wire having at one end portion an open coil whose axis is substantially transverse to the length of wire; the other end portion of the length being bent transversely to the main portion, and extending in a line substantially parallel with said axis.

2. A fence-stay consisting of a length of spring-wire having at one end portion an open coil inclosing a substantially elliptical bore, and whose axis is substantially transverse to the length of wire; the other end portion of the length being bent transversely to the main portion, and extending substantially parallel with said axis.

3. A fence-stay consisting of a length of spring-wire having at one end portion an open coil inclosing a substantially elliptical bore with the major axis transverse to the length of wire and whose axis is substantially transverse to the length of wire; the other end portion of the length being bent transversely to the main portion, and extending substantially parallel with said axis.

4. A line-wire fence, and a vertical series of stays extending from wire to wire, the stays being each formed of a length of spring-wire having a coil at one end and the other end portion bent laterally at an angle: the coil of one stay embracing a line-wire and the lateral portion of this stay being alongside of an adjacent line-wire; the adjoining stay having its coil embracing said latter line-wire and adjacent transverse portion of the stay, and thereby locking them together; and means locking the transverse end of the last-mentioned stay to the next line-wire.

5. A line-wire fence, and a vertical series of stays extending from wire to wire, each stay formed of a length of stiff spring-wire having a gripping-eye at one end with a side passage, whereby the loop can be slipped onto a line-wire and the stay swung down to rigidly grip the line-wire, the opposite end of the stay formed with a lateral end, the stay being bent under tension with its said lateral end beside another line-wire, another stay having its gripping-loop embracing said lateral end and line-wire and rigidly locking them together, and means locking the lateral end of the last stay to a line-wire, substantially as described.

6. A fence having a series of line-wires, and a vertical series of stays, each stay extending from one line-wire to the next and looked thereto by gripping-loops, each stay having a gripping-loop at one end and being laterally bent at the opposite end, and a look to secure the lateral end of the last stay to a line-wire, said look comprising a stem at one end bent to form a locking-loop with a side passage, said loop locking the said lateral end and line-wire together, and the stem extending beside the stay, and means to lock the stem against releasing movement, substantially as described.

7. A fence comprising line-wires, and a vertical series of stays rigidly locking the line-wires together, the stays arranged in pairs between each pair of line-wires, the stays of each pair locking in opposite directions forming rights, and lefts, each stay bent to form a gripping-loop at one end and having its opposite end bent laterally and resting beside a line-wire and locked thereto by the loop of the next succeeding stay, substantially as described.

706,884. **VALVED BUNG AND CONNECTION FOR BEER-BARRELS.** DELLAS BEERS, Howard, N. J. Filed Jan. 17, 1902. Serial No. 90,146. (No model.)

Claim.—1. The combination with a bung having a valve and means for positively locking said valve against opening, of a key adapted to engage said locking means to unlock the same, and a slip-rod adapted to enter through the said key and open the valve.

2. The combination of a hollow bung-body, an automatically-closing valve at the inner end thereof, means at the inner side of said valve, for positively locking the valve in closed position, a rotary key adapted to operate said locking means and a reciprocating slip-rod adapted to push the valve open, said key and slip-rod being independently operable.

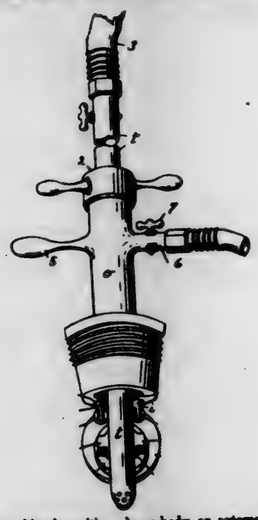

3. The combination with a bung-body, an automatic-closing valve thereon, and means for positively locking said valve when closed, of a tubular key adapted to unlock said valve, and a slip-rod adapted to be thrust through said key and bung-body to open the valve.

4. In a bung, a bung-body having at its inner end a swinging cap or valve-carrier, a valve and a locking device both arranged upon the side of said cap next the bung-body, said valve being adapted to make an imperious joint with the bung-body when the cap is closed and the locking device to project into said body, and means for operating said locking means from within the bung-body to lock the cap or carrier-plate to the bung-body.

5. A bung comprising a hollow body portion adapted to be permanently seated in a barrel and temporarily receive a flow device, a hinged cap or gate at the inner end of said body, a valve carried by said cap adapted to imperviously close the inner end of the bung, and locking means to engage the body carried on the inner face of said gate and adapted to be operated by the flow device.

6. The herein-described tubular key for operating a valved bung and entering into communication with the package, said key having hook from its end an exterior annular flange adapted to engage the top of the bung, and having in its end edge notches or recesses to serve as a wrench, and in its sides having slots or grooves extending from its end longitudinally toward the said flange and then turning and extending circumferentially and obliquely toward said flange.

7. The herein-described key for a valved bung having an interior locking-head with radial arms, said key comprising a tubular body portion adapted to enter the bung and having in its end edges notches or recesses adapted to receive the arms of the locking-head, an exterior shoulder on the key back from its said notched end, and the outer walls of the key having between said shoulder and notched end bayonet-joint slots or grooves therein whose inner end portions are circumferentially inclined.

8. A bung comprising a body portion having a passage therethrough and providing at inner end a valve-seat lying in from the end of the body, and opposite integral flanges projecting from the interior wall of said passage back of said valve-seat, a cap or valve-carrier adapted to automatically close against the inner end of the bung-body, a valve upon said cap or carrier to fit the valve-seat, and locking means carried by the cap or valve-carrier above said valve and adapted to engage the said flanges on the bung-body.

9. A bung comprising a body portion having a passage therethrough and providing at its inner end a valve-seat, a cap or valve-carrier adapted to automatically close against the inner end of the bung-body, a valve carried on said cap or carrier to fit the valve-seat on the body, and locking means carried by said cap or carrier above the valve and adapted to engage the bung-body.

10. A bung comprising a body portion having a passage therethrough providing at the inner end of the bung-body a valve-seat, flanges projecting from the interior walls of said passage in from said valve-seat and presenting at their inner sides opposite inclines, a cap or valve-carrier adapted to automatically close against the inner end of the bung-body, a valve on said carrier adapted to fit the said valve-seat in the bung-body, and a locking-head carried by the cap or valve-carrier above the said valve and having arms adapted to be brought by the closing of said cap into position to be turned into engagement with the said flanges on the bung-body.

11. The combination with a bung-body having a longitudinal passage, of a cap adapted to automatically close against the inner end of said body, locking means carried by said cap, coöperating locking means within the bung-passage and adapted to be engaged by the locking means on the cap when said cap is closed, and a key for effecting such engagement.

12. A bung comprising a body portion having a longitudinal passage and a smaller chamber substantially parallel thereto and having a reduced opening at the inner end of the bung, a cap adapted to lie against the inner end of the bung-body and close the said flow-passage, a rod or plunger lying in the smaller chamber of the bung-body and having one end hinged to said cap and the other provided with a stop, and a spiral spring upon said rod or plunger between its stop and the reduced opening of the chamber at the inner end of the bung.

13. A bung comprising a body portion having a longitudinal passage and two smaller chambers adjacent thereto, a cap adapted to lie over the inner end of the bung-body and close the said passage, a rod or plunger in each of said chambers and pivotally hinged at one end to said cap, and a retracting-spring arranged on each rod within its chamber between a stop on the walls thereof at the inner end of the bung-body and a stop on the opposite end of the rod, whereby the cap is hinged to the bung-body at two points and held against edgewise twisting out of alinement therewith.

14. In a valved bung, the combination with a body having a longitudinal passage and adjacent recesses or chambers, of a cap adapted to lie against the inner end of the bung and close said passage, and hinge means pivoted to the inner face of said cap and adapted to lie in said recesses or chambers in the bung-body, whereby the said cap when closed covers not only the longitudinal passage but also the means of hinging itself to the bung-body.

706,885. VALVE MECHANISM. RUDOLF BERG, Pittsburg, Pa., assignor of one-half to Ferdinand Wenig, Pittsburg, Pa. Filed Aug. 17, 1901. Serial No. 72,343. (No model.)

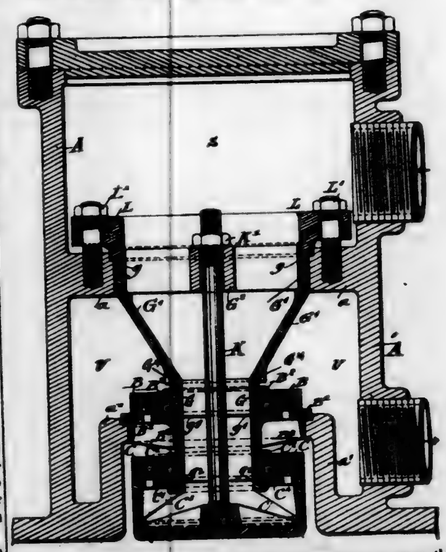

Claim.—1. In a valve mechanism for compressors or pumps, the combination, with a valve-casing having an internal annular flange midway the ends thereof and an inwardly and upwardly extending seat at the lower end, of a suction-valve, a discharge-valve, valve-seats for said valves, a suction-tube, means for securing together the valve-seats and

suction-tube, and means for securing them between the internal flange and the upwardly-extending seat, substantially as set forth.

2. In a valve mechanism for compressors or pumps, the combination, with a valve-casing having an internal annular flange midway the ends thereof and an inwardly and upwardly extending seat at the lower end, of a suction-valve, a discharge-valve, annular valve-seats for said valves, a suction-tube arranged above said valve-seats, a bottom disk for the valve-seats and suction-tube, a hanger-bolt connecting them together, and means for securing them between the flange and the upwardly-extending seat, substantially as set forth.

3. In a valve mechanism for compressors or pumps, the combination, with a valve-casing, of a suction-valve, a discharge-valve, seats for said valves, a suction-tube, a bottom disk for the valve-seats and suction-tube, a spider on the suction-tube, a hanger-bolt connecting the bottom disk with the spider, a seat in the lower part of said valve-casing for supporting the parts therein, an internal annular flange provided midway the ends of the valve-casing, and a ring bolted to said flange for securing the parts in the valve-casing, substantially as set forth.

4. In a valve mechanism, the combination, of a suction-tube, annular valve-seats arranged successively below said suction-tube and in line therewith, an annular discharge-valve provided at the lower end of the suction-tube and seated upon the upper one of said annular valve-seats, a suction-valve seated upon the lower annular valve-seat, a bottom disk, and a hanger-bolt for securing said suction-tube, valve-seats and bottom disk together, substantially as set forth.

5. In a valve mechanism, the combination, of a suction-tube having a reduced lower end, an annular upper valve-seat, an interior flange depending therefrom, an annular discharge-valve seated on said valve-seat and guided on the reduced lower end of said suction-tube, an annular lower valve-seat having an exterior flange depending therefrom, a suction-valve on the lower valve-seat, a bottom disk, and a hanger-bolt for securing the valve-seats, suction-tube and bottom disk together, substantially as set forth.

6. In a valve mechanism, the combination, with a valve-casing having an internal flange, of an annular suction-valve, an annular discharge-valve, valve-seats for the same, a suction-tube arranged in line with said valve-seats, said valve-seats and suction-tube being assembled and secured together, stud-bolts provided in said internal flange and a ring secured by said bolts for removably securing the assembled parts in position in the valve-casing, substantially as set forth.

706,886. DOMESTIC BOILER. JOSEPH A. BERNARD, Salem, Oreg. Filed May 2, 1901. Renewed June 26, 1902. Serial No. 113,316. (No model.)

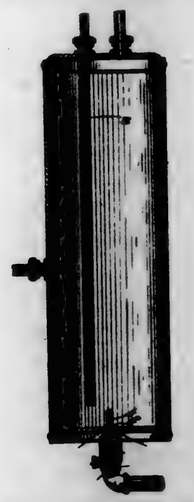

Claim.—In a range or domestic boiler, the combination with the boiler having a supply-pipe arranged vertically therein, with a free and unobstructed lower end, and a screw-threaded central opening in the bottom of the boiler, of a sediment-chamber having at its side a projecting screw-threaded outlet connection, a screw-threaded projecting upper end, and a projection at its lower end having interiorly and exteriorly screw-threaded portions, a tube-pipe provided with exteriorly-screw-threaded lower portions connected to the interiorly-screw-threaded portion of the lower projection so that said tube will extend centrally and vertically through the sediment-casing and likewise through and above the upper screw-threaded projection, the said screw-threaded upper end of the upper projection adapted to be connected to the screw-threaded central opening in the bottom of the boiler with the free end of the tube extending above said bottom and at one side of the free end of the supply-pipe, a water-back pipe connected to the lower projecting screw-threaded opening, and means connected to the outlet-opening to relieve the sediment-casing and boiler of their contents, and a space surrounding the upper end of the tube for the passage of the sediments from the boiler into the sediment-casing, substantially as specified.

706,887. CLOTHES-DRAINER. HARRIET BLEECKER, Minneapolis, Minn. Filed Feb. 5, 1902. Serial No. 93,003. (No model.)

Claim.—1. A drainer having a flanged body which is perforated and channeled and provided with a solid flat portion at the rear, and a bracket or casting secured to said flat portion of the body and provided with a cross-bar and with pairs of legs, each pair of legs being joined by a web.

2. A drainer comprising a body and a bracket secured to the under side of the body, said bracket having a cross-bar and pairs of legs integral with the cross-bar, each pair of legs being united by an integral web and the two pairs of legs being disposed at different angles to the length of the cross-bar.

3. In a drainer, a bracket or casting comprising a cross-bar, pairs of legs at the ends of said cross-bars joined together by webs, and legs at the upper ends of the outer legs and disposed in the plane of said cross-bar, as and for the purposes described.

706,888. ELBOW AND PIPE. HERBERT K. BLYTH, Chicago, Ill., assignor of one-half to Robert L. Nelson, Chicago, Ill. Filed Nov. 6, 1901. Serial No. 81,302. (No model.)

Claim.—1. An elbow for pipes, consisting of intermediate sections of segmental form revolubly connected one to the other by means of interlying companion grooves and beads in the ends of the adjacent segments, a locking-section of cylindrical form revolubly attached by the same means to one of the segments and having its attached end lying in right-angle transverse relation to its longitudinal plane, in combination with a pipe united to the locking-section by suitable locking means, substantially as described.

2. An elbow for pipes consisting of intermediate sections of segmental form revolubly connected one to the other, a locking-section of cylindrical form revolubly attached to one of the segments and having its attached end lying in right-angle transverse relation to its longitudinal plane, in combination with a pipe united to the locking-section by means of a bayonet catch-lock, substantially as described.

3. An elbow for sheet-metal seamed pipes, consisting of a series of intermediate sections of segmental form revolubly connected one to the other, an end locking-section of cylindrical form revolubly attached to one of the segments and having its attached end lying in right-angle transverse relation to its longitudinal plane, in combination with a pipe united to the locking-section by means of a bayonet catch-lock located transversely opposite to the seam of the pipe, substantially as described.

4. An elbow for sheet-metal seamed pipes, consisting of a series of intermediate sections of segmental form revolubly connected by means of interlying companion grooves and beads in the ends of the adjacent segments, an end locking-section cylindrical in form and revolubly attached by interlying companion grooves and beads to one of the segments and having its attached end lying in right-angle transverse relation to its

longitudinal plane, in combination with a pipe united to the locking-section by means of a bayonet catch-lock located opposite to the seam of a pipe, substantially as described.

706,889. COTTON-CHOPPER. JOHN T. BOYET, Lewisburg, Texas. Filed Oct. 18, 1901. Serial No. 79,179. (No model.)

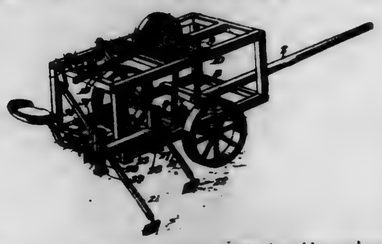

Claim.—1. In a cotton-chopper, the combination with an axle and driving-wheels, of a frame mounted on said axle, a gear-wheel on the axle, a shaft located above the axle and having a gear-wheel fixed thereon, an operative device connecting the said gear-wheels, a friction-disk on the inner end of the second shaft, a crank-shaft loosely mounted in suitable bearings, the forward bearing being slidable, a friction-disk on the forward end of said crank-shaft, a series of choppers connected to said crank-shaft, adjustable holders for the choppers, means for adjusting the said holders, and means for shifting the crank-shaft to throw the disk thereof into and out of engagement with the disk on the shaft located above the axle.

2. In a cotton-chopper, the combination of a frame, an axle on which said frame is mounted, said axle having ground-wheels thereon, a longitudinally-disposed crank-shaft on the upper portion of the frame, actuating mechanism between the crank-shaft and axle, the said crank-shaft being adjustable to throw the same out of operative relation to said mechanism, chopping devices having bars connected to the crank-shaft and projected laterally from one side of the frame, holders with upper bifurcated heads in which the bars on the chopping devices are disposed, and means for vertically adjusting the holders to raise and lower the chopping devices.

3. In a cotton-chopper, the combination with an axle and driving-wheels, of a longitudinally-disposed shaft operated from the axle, mechanism intermediate of the axle and said longitudinally-disposed shaft, chopping devices having inner terminals connected to the shaft and projected laterally from one side of the machine, vertically-adjustable holders to engage said chopping devices, rods having their terminals secured to the holders, and fulcrums through which the said rods are transversely extended.

4. In a cotton-chopper, the combination with operating mechanism, of chopping devices having bars attached to a portion of said operating mechanism and projected laterally from one side of the machine, vertically-disposed holders having upper bifurcated heads in which the bars are disposed, and means for adjusting the said holders.

706,890. APPARATUS FOR MIXING AND KNEADING DOUGH. FREDERICK BRACKETT, Baltimore, Md. Filed Apr. 30, 1902. Serial No. 105,337. (No model.)

Claim.—1. In an apparatus for mixing and kneading dough, a vertically-adjustable pan-supporting frame, a rotary table carried thereby having a circular rack thereon, a kneading-pan on said table, kneading mechanism cooperating with said pan, a shaft mounted in bearings in said frame, a pinion on said shaft meshing with said rack, operating means for said kneading mechanism, and adjustable connections between said operating means and said shaft for intermittently rotating said table and the pan carried thereby.

2. In an apparatus for mixing and kneading dough, a vertically-adjustable pan-supporting frame, a rotary table carried thereby and having a circular rack thereon, a kneading-pan mounted on said table, reciprocating kneading mechanism operating in said pan, a pinion carried by said frame meshing with said rack, a rotary shaft having cranks thereon connected with said kneading mechanism for operating it, and adjustable connections between said shaft and said pinion for intermittently rotating the latter in any position of said frame.

3. In an apparatus for mixing and kneading dough, a vertically-adjustable pan-supporting frame, a rotary table carried thereby having a circular rack thereon, a kneading-pan mounted upon said table, reciprocating kneading mechanism operating in said pan, a pinion carried by said frame meshing with said rack, a ratchet-wheel connected with said pinion, a rotary shaft having cranks thereon connected with said kneading mechanism, a pitman eccentrically connected with said shaft and an adjustable engaging portion thereon cooperating with the teeth of said ratchet-wheel, as and for the purpose set forth.

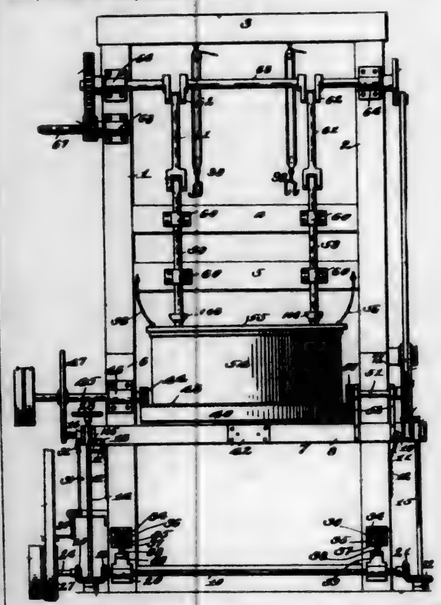

4. In an apparatus for mixing and kneading dough, a rotary table having a circular rack thereon, a kneading-pan mounted on said table, reciprocating kneading mechanism operating in said pan, a pinion meshing with said rack, a ratchet-wheel connected with said pinion, a rotary shaft having cranks thereon connected with said kneading mechanism, a disk having a wrist-pin thereon secured to said shaft, a pitman pivoted to said wrist-pin, parallel arms secured to said pitman and embracing said ratchet-wheel, and an adjustable pin connecting said arms and adapted to engage the teeth of said ratchet-wheel, as and for the purpose set forth.

5. In an apparatus for mixing and kneading dough, a vertically-adjustable pan-supporting frame, a table mounted for rotation thereon, a kneading-pan carried by said table, vertically-reciprocating kneading mechanism operating in said pan, and means for intermittently rotating said table, the said means having an adjustable connection with said table whereby the same may operate to rotate said table in any position to which said table may be adjusted.

6. In an apparatus for mixing and kneading dough, a vertically-adjustable pan-supporting frame, a rotary table supported thereby having a circular rack thereon, a kneading-pan mounted upon said table, reciprocating kneading mechanism operating in said pan, a shaft mounted in bearings on said pan-supporting frame having a pinion thereon meshing with said rack and having a ratchet-wheel thereon, a crank-shaft operatively connected with said kneading mechanism, a pitman eccentrically connected with said crank-shaft, and an adjustable engaging portion carried by said pitman and cooperating with said ratchet-wheel, as and for the purpose set forth.

7. In an apparatus for mixing and kneading dough, a vertically-adjustable pan-supporting frame, a rotary table thereon provided with a circular rack, a kneading-pan mounted upon said table, a drive-shaft mounted in fixed bearings and having a pinion thereon meshing with said rack, when said frame is in its raised position, for imparting a continuous rotation to said table, an intermittently-rotatable shaft mounted in bearings on said pan-supporting frame having a pinion thereon meshing with said rack and having a ratchet-wheel thereon, reciprocating kneading mechanism operating within said pan, a crank-shaft operatively connected with said kneading mechanism, and an adjustable pin reciprocated by said crank-shaft and cooperating with said ratchet-wheel for imparting an intermittent movement thereto and to the parts connected therewith.

8. In an apparatus for mixing and kneading dough, the combination with two uprights of the main frame, having racks thereon, of a vertically-movable pan-supporting frame, means for raising and lowering said pan-supporting frame, and pivoted dogs carried thereby and cooperating with said racks for supporting said pan-supporting frame in adjusted position, the said dogs being normally held by gravity in operative relation to said racks.

9. In an apparatus for mixing and kneading dough, a vertically-movable pan-supporting frame and means for raising and lowering said frame, the said means consisting of vertically-disposed intergeared screw-shafts, internally-screw-threaded bearings in said frame through which said shafts pass, and means for rotating said shafts.

10. In an apparatus for mixing and kneading dough, a vertically-movable pan-supporting frame, means for raising and lowering said frame, and means for automatically arresting the upward movement of said frame when the same has reached a predetermined point.

11. In an apparatus for mixing and kneading dough, a vertically-movable pan-supporting frame, a rotary shaft having a fast pulley and a loose pulley thereon, operative connections between said shaft and said frame for raising and lowering the latter, a driving-belt, a belt-shifter therefor and connections between said belt-shifter and said frame for operating the former to shift said belt from the fast pulley to the loose pulley, when said frame reaches a predetermined point in its upward movement.

12. In an apparatus for mixing and kneading dough, a vertically-movable pan-supporting frame, a rotary shaft having a fast pulley and a loose pulley thereon, operative connections between said shaft and said frame for raising and lowering the latter, a driving-belt, a belt-shifter therefor, a bell-crank lever connected with said belt-shifter for operating it, and a rod connecting said bell-crank lever with said frame, whereby said belt will be shifted from said fast pulley to said loose pulley when said frame reaches a predetermined point in its upward movement.

13. In an apparatus for mixing and kneading dough, a vertically-movable pan-supporting frame, vertically-movable brackets, constituting buffers, within the path of downward movement of said frame, and springs for supporting said brackets.

14. In an apparatus for mixing and kneading dough, the combination with a kneading-pan, of a reciprocating kneading-frame comprising a plurality of arms set at an angle to each other and posties arranged in groups on one of said arms.

15. In an apparatus for mixing and kneading dough, a kneading-pan and a reciprocating kneading-frame comprising a plurality of arms set at right angles to each other, a group of posties secured to one of said arms, and deflecting-cutters carried by the other of said arms.

16. In an apparatus for mixing and kneading dough, a kneading-pan and a reciprocating kneading-frame operating within said pan, the same comprising a plurality of arms arranged at right angles to each other, each of said arms having notches or slots in its lower edge, a group of posties secured to one of said arms, and deflecting-cutters carried by the other of said arms.

17. In an apparatus for mixing and kneading dough, a reciprocating kneading-frame comprising an arm and kneading-posties arranged in groups on opposite sides of said arm, each of said posties having upwardly-inclined bottom walls.

18. In an apparatus for mixing and kneading dough, a reciprocating kneading-frame comprising an arm and kneading-posties arranged in groups on opposite sides of said arm, each of said posties having the sides thereof converging from its upper end downwardly.

19. In an apparatus for mixing and kneading dough, a reciprocating kneading-frame comprising an arm and kneading-posties arranged in groups on opposite sides of said arm, each of said posties having the front wall thereof converging toward the back from the upper end thereof downwardly.

20. In an apparatus for mixing and kneading dough, a group of separated kneading-posties connected to a common support, each having an upwardly-inclined bottom wall and sides which converge toward each other from the upper end downwardly.

21. In an apparatus for mixing and kneading dough, a kneading-postie having an upwardly-inclined bottom wall, side walls which converge from the upper end thereof downwardly and a front wall which converges toward the back from the upper end downwardly.

22. In an apparatus for mixing and kneading dough, a kneading-postie having an upwardly-inclined bottom, a curved or arched top, sides which converge from the upper end downwardly, and a front which converges toward the back from the upper end downwardly.

23. In an apparatus for mixing and kneading dough, a reciprocating kneading-frame comprising an arm and a group of kneading-posties arranged in pairs on opposite sides of said arm, the posties on each side of said arm being separated from each other by spaces which converge from the bottom upwardly.

24. In an apparatus for mixing and kneading dough, a group of kneading-posties having spaces between them which converge from the bottom upwardly and from the inner end outwardly.

25. In an apparatus for mixing and kneading dough, a group of kneading-posties having upwardly-inclined bottom walls and having spaces between them which converge from the lower end upwardly.

26. In an apparatus for mixing and kneading dough, a group of kneading-posties having upwardly-inclined bottom walls and having spaces between them which converge from the lower end upwardly and from the inner end outwardly.

27. In an apparatus for mixing and kneading dough, a reciprocating kneading-frame comprising an arm and posties secured to said arm on opposite sides thereof, the bottom walls of said posties being upwardly inclined from the points of connection with said arm, and the spaces between those posties which are arranged on the same side of said arm converging from their lower ends upwardly.

28. In an apparatus for mixing and kneading dough, a reciprocating kneading-frame comprising an arm, posties secured to said arm on opposite sides thereof, the bottom of each of said posties being upwardly inclined from its point of connection with said arm, and the spaces between the posties on the same side of said arm being tapering from their lower ends upwardly and from said arm outwardly.

29. In an apparatus for mixing and kneading dough, a reciprocating kneading-frame comprising an arm, posties arranged in pairs on opposite sides of said arm and screw-bolts for securing said posties to said arm, the said bolts extending through said arm and through openings in the posties on opposite sides thereof, nuts for locking said bolts to said arm located on opposite sides thereof and fitting within sockets in the inner faces of said posties, and nuts for securing said posties to said bolts, the latter nuts screwing upon the ends of said bolts and fitting within sockets in the outer surfaces of said posties.

706,891. PORTABLE REVOLVING THEATER. CHARLES F. BRANDALL, Kingman, Kans. Filed Jan. 7, 1902. Serial No. 88,764. (No model.)

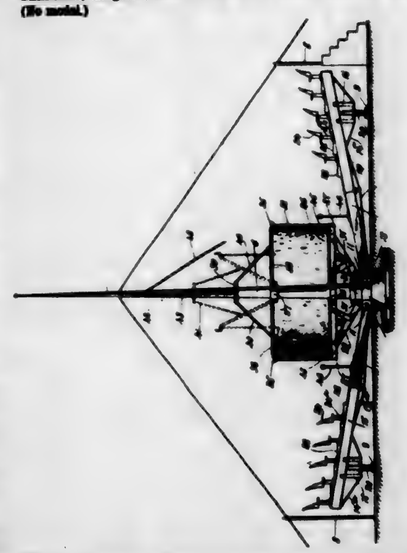

Claim.—1. In a portable theater, a revolvable framework comprising outwardly and upwardly inclined members, each made up of the side and central bars united by cross-pieces, adjacent members of said framework having the side bars thereof separably fastened together, and each frame member equipped with a carrying-wheel which is disposed between and journaled in the cross-pieces thereof, and a stepped platform on the framework, combined with a central elevated stage below which are carried the inner ends of the central bars of said frame members, a central sleeve having said central bars of the frame members attached thereto, and means for rotating the framework and the platform.

2. A portable theater, comprising a vertical mast or post, a revolvable auditorium formed by upwardly-inclined framework sections or members provided with carrying-wheels near their outer ends, a sleeve or collar loosely fitted on said mast and having attached thereto the inner ends of the converging frame members or sections, a stationary stage directly attached to said mast above said sleeve or collar, an annular curtain supported on said mast above the stage, and means for raising the curtain to expose the stage, or for lowering the curtain to inclose the stage.

3. A portable theater, comprising a mast, a revolvable auditorium having a collar loosely mounted on said mast which is adapted to serve as the axis of rotation of said auditorium, a stage supported directly by said mast in an elevated position above the lower part of the auditorium, an annular curtain adapted to inclose said stage, and curtain-operating mechanism supported on the mast and adapted to raise and lower said curtain with relation to the stage.

4. A portable theater, comprising a central mast, a stage supported in a stationary position thereon, a circular auditorium revolvable around the stage and disposed in concentric relation to the mast and the stage, an annular curtain arranged to inclose the stage, supporting-arms pivoted on the mast above the stage and connected to said curtain, an adjustable collar guided on the mast and linked to the curtain-arms, and means for raising and lowering said adjustable collar.

5. A portable theater, comprising a mast, an elevated circular stage supported in a stationary position on the mast, a circular auditorium having seats disposed in tiers and revolvable around said stage, a circular curtain operatively fitted to the mast and disposed to inclose the stage, and means for bodily raising or lowering said curtain with relation to the stage.

706,892. **CARPET-CLEANING MACHINE.** JAMES C. BRADY, Pittsburg, Pa. Filed Mar. 21, 1902. Serial No. 99,341. (No model.)

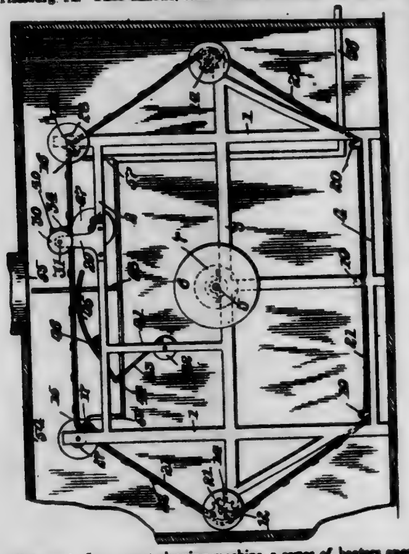

Claim.—1. In a carpet-cleaning machine, a series of beaters operating on the under side of the carpet, means for actuating said beaters, means for conveying the carpet continuously over said beaters, a brush operating on the upper side of the carpet, means for actuating said brush in a lateral direction, and means for continuously moving the carpet, substantially as described.

2. In a carpet-cleaning machine, the combination of a frame having a continuously-operated endless chain, with means for actuating said chain, means for securing the carpet to said endless chain, a series of beaters operating on the under side of the carpet, means for operating said beaters, a casing mounted on the frame, a laterally-movable brush operating in said casing, means for operating said brush across the upper face of the carpet, and a means connecting said last-named means to the means for operating the beaters whereby both may have a simultaneous movement, substantially as described.

3. In a carpet-cleaning machine, the combination with a frame, of a series of beaters pivoted at their ends to said frame, with means for operating said beaters on the under face of the carpet, a stationary casing supported by the frame, a block movable within said casing and carrying depending arms with a brush secured to the lower end of said arms and adapted to move in a lateral direction across the upper face of the carpet, and means for operating said block, substantially as described.

706,893. **SPINNING-HEAD.** FRANK A. BARBER, Forest Mills, Canada, assignor of one-half to James Wilson, Richmond, Province of Ontario, Canada. Filed Jan. 9, 1902. Serial No. 88,953. (No model.)

Claim.—1. An improved spinning-head comprising a tubular spindle through which the sliver is adapted to pass, drawing-rolls carried at its lower end, a sleeve carrying a pulley loosely mounted upon the lower end of the spindle above the rolls and supported by the spindle, connections for driving the rolls from the sleeve, and a bearing at the upper end of the spindle supporting the entire weight of the spindle, sleeve and rolls.

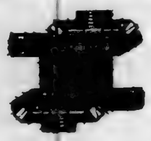

2. An improved spinning-head comprising a tubular spindle having at its lower end a footpiece, drawing-rolls carried by said footpiece, a sleeve loosely mounted on the spindle above the footpiece and supported thereby, a gear-wheel mounted on the sleeve and turning therewith, pinions carried by the drawing-rolls and intermeshing with said gear-wheel, and means for independently rotating the spindle and sleeve.

3. An improved spinning-head comprising a tubular spindle through which the sliver is adapted to pass and carrying at its lower end a branched footpiece, drawing-rolls mounted in the footpiece beneath the end of the spindle, a sleeve loosely mounted on the spindle and supported by the same, a gear-wheel carried by the sleeve, gear-pinions on the axes of the drawing-rolls intermeshing with said gear-wheel, and a thrust-bearing at the upper end of the spindle supporting the entire weight of the head and sleeve.

4. An improved spinning-head comprising a tubular spindle carrying a branched footpiece at the lower end thereof, drawing-rolls mounted beneath the lower end of the spindle between the two flanges of said footpiece, a sleeve loosely mounted on the spindle above the foot-piece and supported by the latter, a gear-wheel mounted on the sleeve and turning therewith, gear-pinions carried on the axes of the drawing-rolls and intermeshing with the said gear-wheel, a thrust-bearing at the upper end of the spindle carrying the entire weight of the rotating parts, and pulley-sheaves carried by the spindle and sleeve respectively and adapted to rotate them at differential velocities.

5. In a spinning-frame, a pair of journal-rails supporting a spinning-head, a tubular spindle forming the axis of said head mounted in bearings in said rails, a pulley-sheave mounted on the tubular spindle between the two journal-rails, a footpiece carried by the lower end of the spindle, drawing-rolls mounted in the footpiece beneath the end of the spindle, and means for rotating the drawing-rolls comprising a sleeve having connections therewith and loosely mounted on the spindle between the lower journal-rail and the footpiece and supported by the latter and carrying a pulley-sheave.

6. In a spinning-head, a branched footpiece, a pair of drawing-rolls carried in the flanges thereof, each of said rolls having a ball-bearing upon one side and a sliding-bearing on the other, and means for turning said rolls in unison.

7. In a spinning-head, a branched footpiece, a pair of drawing-rolls rotatably mounted in the flanges thereof, each of said rolls being adapted to have a slight oscillating motion about an axis in the plane of one bearing and an adjustable sliding step-bearing provided for the other end of the roll.

8. In a spinning-head, a branched footpiece, a pair of drawing-rolls journaled in the flanges thereof, each drawing-roll being extended outwardly through the side of one flange and having turning means upon its outer end, a sliding bearing provided for the other end of the roll comprising a coned step-piece for the roll and a transverse sliding member in which the coned step-piece is mounted.

9. In a spinning-head, a branched footpiece, drawing-rolls journaled in the flanges thereof, each flange being provided with a removable annular bearing-block for one end of one roll, and a sliding coned step-bearing for the opposite end of the other roll.

10. In a spinning-head, a branched footpiece, a pair of drawing-rolls journaled between the flanges thereof, a removable annular bearing-block provided with ball-bearings on its interior surface and a taper screw-thread on its exterior surface located in one side of each flange, and a sliding bearing located in the other side of each flange for the opposite ends of the drawing-rolls, said sliding bearing consisting of a bolt having a lateral transverse motion in an aperture in the flange, and a screw-threaded step-bearing adjustably fitted in said bolt.

11. In a spinning-head, a branched footpiece, a pair of drawing-rolls journaled between the flanges thereof, and a sliding step-bearing for one end of a roll located in each of said flanges, said bearings consisting of a bolt sliding in a transverse aperture in the flange, a step-bearing block having a screw-thread on its outer surface and adjustably screwed into a transverse aperture in said bolt, and a set-screw plug adjustably mounted in a longitudinal aperture in said bolt and abutting against said bearing-block.

12. In a spinning-head, a branched footpiece, a pair of drawing-rolls journaled between the flanges thereof, and a sliding step-bearing for one end of a roll located in each of said flanges, said bearings consisting of a bolt sliding in a transverse aperture in the flange, a step-bearing block having a screw-thread on its outer surface and adjustably screwed into a transverse aperture in said bolt, a set-screw plug adjustably mounted in a horizontal aperture in said bolt and abutting against said bearing-block, a compression-spring bearing inwardly against said bolt, and a screw-plug closing the outer end of the aperture in the flange and forming an abutment for the opposite end of the spring.

13. In a rotating spinning-head, a branched footpiece, drawing-rolls journaled between the flanges thereof, each of said drawing-rolls having an axis extending through one flange and carrying a gear on the other side of the flange, a removable annular bearing-block carrying ball-bearings for said axle, and a sliding step-bearing for the opposite end of the roll comprising a cylindrical bolt sliding in a transverse aperture in the flange, a coned bearing-block adjustably mounted thereon, a set-plug adapted to hold said bearing-block from turning, and a spring pressing inwardly upon said bolt to press the two drawing-rolls toward each other.

14. An improved spinning-head comprising a tubular spindle and rotating means therefor, a branched footpiece carried by the lower end of the spindle, drawing-rolls mounted in and beneath the end of the tubular spindle, a sleeve loosely mounted on the tubular spindle and supported by a bearing on the footpiece and carrying a gear-wheel, gear-pinions on the outer ends of the rolls intermeshing with said wheel, a ball-bearing in each flange for the wheel end of a roll permitting of a slight lateral motion, and an adjustable sliding bearing for the other end of the roll carried by the opposite flange.

15. An improved spinning-head comprising a tubular spindle and rotating means therefor, a branched footpiece carried by the lower end of the spindle, drawing-rolls mounted in and beneath the end of the tubular spindle, a sleeve loosely mounted on the tubular spindle and supported by a bearing on the footpiece and carrying a gear-wheel, gear-pinions on the outer ends of the rolls intermeshing with said wheel, a ball-bearing in each flange for the wheel end of a roll permitting of a slight lateral motion, and a sliding bearing for the other end of the roll comprising a bolt sliding in a transverse aperture in the opposite flange, an adjustable step-bearing block mounted in said bolt, a set-plug for the bearing-block, a spring pressing inwardly against said bolt, and a screw-plug closing said aperture and forming an abutment for the other end of the spring.

706,894. **SHEET-METAL PULLEY.** CHARLES A. BRIDLEY, Philadelphia, Pa., assignor to the American Pulley Company, a Corporation of Pennsylvania. Filed Mar. 22, 1902. Serial No. 99,394. (No model.)

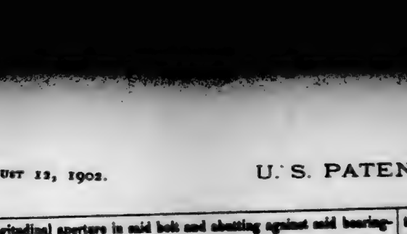

Claim.—1. A sheet-metal pulley composed of two sheet-metal halves secured together by their webs and each consisting of a circular band-rim, a circular hub-rim, a web connecting them of single thickness adjacent to the band-rim and double thickness adjacent to the hub-rim, there being an annular space between the rims, in combination with two substantially semicircular hub-blocks fitted to the interior of the hub-rims for connecting it with a shaft.

2. A sheet-metal pulley composed of two sheet-metal halves secured together by their webs and each consisting of a circular band-rim, a circular hub-rim, a web connecting them, there being an annular space between the rims, in combination with two substantially semicircular hub-blocks fitted to the interior of the hub-rims by projecting lugs or bosses extending into perforated or recessed portions of the hub-rims whereby they are held together against independent movement, said blocks being adapted for connecting it with a shaft.

3. A sheet-metal pulley composed of two sheet-metal halves secured together by their webs and each consisting of a circular band-rim, a circular hub-rim, a web connecting them, there being an annular space between the rims, in combination with two substantially semicircular hub-blocks fitted to the interior of the hub-rims by projecting lugs or bosses extending into perforated or recessed portions of the hub-rims whereby they are held together against independent movement said blocks being adapted for connecting the pulley with a shaft, and clamping-screws extending through the hub-blocks and projecting outwardly beyond the hub-rims.

4. In a sheet-metal pulley, the combination of the circular outer or band-rim sections A A having the radial flanges H directed inward almost to the hub and riveted together close to the rim, and the circular hub-rims C C having the circular radial flanges B fitting upon the outside of the flanges H and riveted upon them close to the hub to constitute a strong web.

5. In a sheet-metal pulley, the combination of the circular outer or band-rim sections A A having the radial flanges H directed inward almost to the hub and riveted together close to the rim, the circular hub-rims C C having the circular radial flanges B fitting upon the outside of the flanges H and riveted upon them adjacent to the hub to constitute a strong web, and internal hub-blocks E E fitted to the interior of the hub-rims and held therein against rotation.

6. In a sheet-metal pulley, the combination of the outer or band-rim sections A A having the radial flanges H riveted together, the hub-rims C C having the radial flanges B and apertures D fitting upon the outside of the flanges H and riveted upon them to constitute a strong web and internal hub-blocks E E fitted to the interior of the hub-rims and held therein against rotation by lugs or bosses F extending outwardly through the apertures.

7. In a sheet-metal pulley, the combination of the outer or band-rim sections A A having the radial flanges H riveted together, the hub-rims C C having apertures D and the radial flanges B fitting upon the outside of the flanges H and riveted upon them to constitute a strong web, internal hub-blocks E E fitted to the interior of the hub-rims and held therein against rotation by lugs or bosses F extending outwardly through the apertures, and clamping-screws K extending through the lugs or bosses.

8. A pulley provided with a radial web having two hub-rims formed each with one or more portions opening from their interior surfaces, in combination with hub-blocks fitting into said hub-rims each less than semi-cylinder and having projecting portions or bosses to fit into the inverse portions of the rims, whereby said blocks may be inserted in position and held against rotation independent of the pulley.

9. A pulley having a tubular hub of fixed shape, in combination with two substantially semicylindrical removable hub-blocks to receive the shaft and fit upon the internal surface of the pulley-hub and having their outer surfaces at one or more places formed with projections, and received upon or in corresponding inverse portions of the tubular hub.

10. A pulley having a tubular hub of fixed shape, in combination with two substantially semicylindrical removable hub-blocks to receive the shaft and fit upon the internal surface of the pulley-hub and having their outer surfaces at one or more places formed with projections, and received upon or in corresponding inverse portions of the tubular hub, and clamping-screws extending through the hub and carried by the hub-blocks.

706,895. **MACHINE FOR MAKING SUCKERS OR DRINKING-TUBES.** LOUIS H. BRITTON and HENRY W. MORROW, Lisbon, Ohio, assignors to Union Manufacturing Company, Lisbon, Ohio, a Corporation of Ohio. Filed Feb. 26, 1902. Serial No. 96,272. (No model.)

Claim.—1. In a machine of the class specified, a heating-box, an open coil inclosed by said heating-box, means for forming a paper-tube stream, said open coil being arranged to receive said stream from the forming means, and a coating-box containing an open coil, the latter being arranged to receive the stream from the heating-box, and means for feeding the stream.

2. In a machine of the class specified a heating-box, an open coil inclosed by the heating-box, means for forming a paper-tube stream, and said open coil being arranged to receive the paper-tube stream from the forming means, a coating-box, an open coil arranged in said coating-box and adapted to receive said stream, means for advancing the paper-tube stream, and means for applying a blast of air to the latter when it emerges from the coating-box.

3. In a machine of the class specified, a coating-box, means for forming a paper-tube stream, said stream being arranged for passage through said box, and an open coil in said coating-box through which said stream is arranged to pass.

4. In a machine of the class specified, a coating-box, means for forming a paper-tube stream, said stream being arranged for passage through said box, an open coil in said coating-box through which said stream is arranged to pass, and means for removing an excess of coating from the stream as it emerges from said box.

5. In a machine of the class specified, a coating-box, means for forming a paper-tube stream, said stream being arranged for passage through said box, an open coil in said coating-box through which said stream is

arranged to pass, and means for applying heat to the stream before it enters the coating-box.

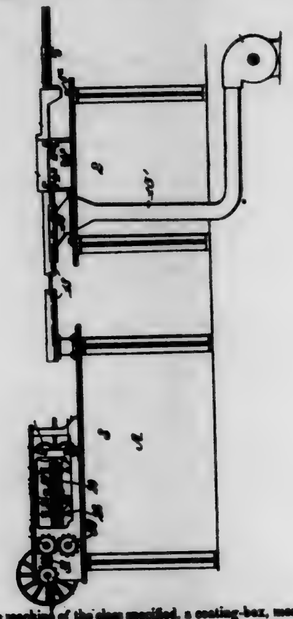

6. In a machine of the class specified, a coating-box, means for forming a paper-tube stream, said stream being arranged for passage through said box, an open coil in said coating-box through which said stream is arranged to pass, means for applying heat to the stream before it enters said coating-box and means for directing a blast of air to the stream after it leaves said coating-box.

7. In a machine of the class specified, means for forming a tubular stream, a coating-box arranged to receive the tubular stream, a tube through which the stream is adapted to pass after it leaves the coating-box, means for feeding the stream, and means for delivering a blast of air through said tube.

8. In a machine of the class specified, a heating-box, an open coil inclosed by said heating-box, means for forming a paper-tube stream, said open coil being arranged to receive said stream from the forming means, a coating-box containing an open coil, the latter being arranged to receive the stream from the heating-box, a pair of belts grooved to receive said stream and means for operating said belts.

9. In a machine of the class specified, a heating-box, an open coil inclosed in said heating-box, means for forming a paper-tube stream, said open coil being arranged to receive said stream from the forming means, a coating-box containing an open coil, the latter being arranged to receive the stream from the heating-box, a pair of belts grooved to receive said stream and adjustable plates carrying antifriction-rolls against which the working portions of the belts are arranged.

10. In a machine of the class specified, a heating-box, an open coil inclosed by said heating-box, means for forming a paper-tube stream, said open coil being arranged to receive said stream from the forming means, a coating-box containing an open coil, the latter being arranged to receive the stream from the heating-box, means for feeding the stream and means for severing the stream into desired lengths after it leaves the feeding means.

11. In a machine of the class specified, a heating-box, an open coil inclosed by said heating-box, means for forming a paper-tube stream, said open coil being arranged to receive said stream from the forming means, a coating-box containing an open coil, the latter being arranged to receive the stream from the heating-box, a pair of belts grooved to receive said stream, means for holding the working portions of the belts in contact with said stream, a roll to support the stream after it leaves the belts and a knife arranged to cut said stream while on said roll, the knife being arranged to come in contact with the roll.

12. In a machine of the class specified, a heating-box, an open coil inclosed by said heating-box and a forming device tapering from one end toward the other, the broader end being of segmental form, the curvature being gradually increased toward the smaller end and the edges of said forming device being overlapped and spaced apart at the small end, said coil being adapted to receive the tubular stream from said forming device, a coating-box containing an open coil, the latter being arranged to receive the stream from the heating-box, and means for feeding the stream.

13. In a machine of the class specified, a coating-box, a forming device adapted to form a tubular stream and the latter being adapted for passage through said coating-box, and an open-work tubular member in said coating-box through which said stream is arranged to pass, the internal diameter of said tubular member being substantially the same as that of the leaving end of the forming device.

14. In a machine of the class specified, a heating-box, means for forming a stream and the heating-box being adapted to receive the stream after it is formed, a coating-box adapted to receive the stream from the heating-box, means for guiding the stream through said heating and coating boxes, a tube adapted to receive the stream from the coating-box and having an opening for the admission of a blast of air, means for feeding the stream, and means for delivering a blast of air into said tube.

15. In a machine of the class specified, a heating-box having an open coil, means for forming a tubular stream and said open coil being adapted to receive the tubular stream, a coating-box having an open coil adapted to receive the stream after it leaves the heating-box, an elongated tube through which the stream is adapted to pass after it leaves the coating-box and having an opening for the admission of a blast of air, means for removing the excess of coating from the stream when discharged from the coating-box means for feeding the stream, and means for delivering a blast of air into said tube.

16. In a machine of the class specified, a heating-box, an open coil inclosed by said heating-box, and a forming device for forming a tubular stream and said coil being arranged to receive said tubular stream from the forming device, and the internal diameter of said coil being substantially the same as that of the leaving end of said forming device.

17. In a machine of the class described, a heating-box, an open coil inclosed by said heating-box, a forming device for forming a tubular stream and said coil being arranged to receive said tubular stream from the forming-means device, and the internal diameter of said coil being substantially the same as that of the leaving end of said forming device for applying a coating to the stream, and means for feeding the stream and cutting it into desired lengths.

18. In a machine of the class specified, a heating-box and a forming device for forming a tubular stream, said stream being adapted to enter the heating-box after it leaves the forming device, and an open-work tubular member in said heating-box through which the stream is adapted to pass, and the internal diameter of said open-work tubular member being substantially the same as that of the leaving end of said forming device.

19. In a machine of the class specified, a forming device adapted to form a tubular stream, heating and coating boxes through which said stream is adapted to successively pass, and open-work tubular members in said boxes adapted to receive said stream, and the internal diameters of said open-work tubular members being substantially the same as that of the leaving end of said forming device.

706,896. CONTROLLING DEVICE FOR COUPLINGS OF RAILWAY-WAGONS. ALBERT BROOKES, Bentleigh, England, assignor of one-half to Dominic Fagioli and William Bailey, Bentleigh, England. Filed Oct. 2, 1901. Serial No. 77,261. (No model.)

Claim.—1. In controlling devices for railway-wagon couplings of that type wherein each wagon has a centrally-located draw-bar hook the stem of which carries a chain, the free end of which chain is to be passed on or off a like hook on the opposite wagon; the combination with the said chain, a horizontal operating-shaft extending transversely of the wagon from side to side thereof beneath the draw-bar hook, bearings on the end of the wagon to carry the shaft, operating-levers on each end of the shaft at the sides of the wagon, a single crank fixed on the shaft near the center of its length; of a carrying-arm 4, consisting of a single member, a knuckle-joint connecting one end of the carrying-arm 4 to the crank permitting the arm to only have an upward motion relatively to the said crank, a bend in the arm 4 to bring its upper end in the central vertical plane of the coupling, the said upper end of the arm 4 extending above the said coupling-links, a pendent forked yoke pivoted to the upper end of the arm 4, and pivot-pins connecting the side members of the end coupling-link with the pendent ends of the forked yoke whereby the end link is pivotally suspended, substantially as set forth.

2. In controlling devices for railway-wagon couplings of that type wherein each wagon has a centrally-located draw-bar hook the stem of which carries a chain, the free end of which chain is to be passed on or off a like hook on the opposite wagon; the combination with the said chain, a horizontal operating-shaft extending transversely of the wagon from side to side thereof beneath the draw-bar hook, bearings on the end of the wagon to carry the shaft and in which the shaft is capable of both rocking and endwise motions, a helical spring on the shaft to maintain the same in its normal lengthwise position, operating-levers on each side of the shaft at the side of the wagon, a notched plate on the wagon with which one of the operating-levers is normally brought into engagement by the spring to maintain the shaft in the angular position into which it has been placed, and a single crank fixed on the shaft near the center of its length; of a carrying-arm 4, consisting of a single member, a knuckle-joint connecting one end of the carrying-arm 4 to the crank permitting the arm to only have an upward motion relatively to the said crank, a bend in the arm 4 to bring its upper end in the central vertical plane of the coupling, the said upper end of the arm 4 extending above the said coupling-links, a pendent forked yoke pivoted to the upper end of the arm 4, and pivot-pins connecting the side members of the end coupling-link with the pendent ends of the forked yoke whereby the end link is pivotally suspended substantially as set forth.

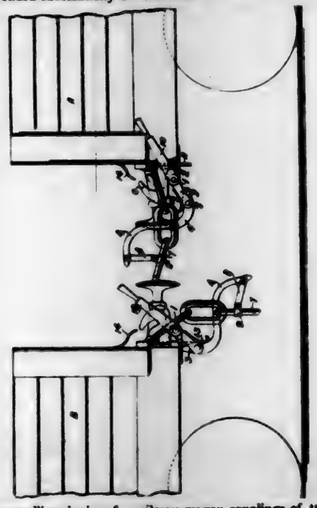

3. In controlling devices for railway-wagon couplings of that type wherein each wagon has a centrally-located draw-bar hook the stem of which carries a chain, the free end of which chain is to be passed on or off a like hook on the opposite wagon; the combination with the said chain, a horizontal operating-shaft extending transversely of the wagon from side to side thereof beneath the draw-bar hook, bearings on the end of the wagon to carry the shaft, operating-levers on each end of the shaft at the sides of the wagon, a single crank fixed on the shaft near the center of its length, a carrying-arm 4, consisting of a single member, a knuckle-joint connecting one end of the carrying-arm 4 to the crank, permitting the arm 4 to move upwardly relatively to the crank, and a bend in the arm 4 to bring its upper end above and in the central vertical plane of the coupling; of a forked yoke 8, a tongue 8" on the upper arm of the yoke, a pivot-pin pivotally connecting the tongue of the yoke to the upper end of the arm 4, clips 9 bent around the side arms of the link 7, and pivot-pins pivotally connecting the ends of the pendent forks of the yoke to the said clips whereby the end link 7 of the coupling is pivotally suspended, substantially as set forth.

706,897. SINGLETREE-CLIP. CHARLES J. BUSER, Lena, Ind., assignor of one-half to Fred R. Lancaster and John H. Kanner, Lena, Ind. Filed May 19, 1902. Serial No. 108,081. (No model.)

Claim.—1. A singletree-clip comprising a resilient bow and a pair of arms integral therewith, one of the arms being provided with a reduced terminal to project through an eye in the other arm and to be upset.

2. A singletree-clip comprising a flat resilient bow and arms integral therewith, one of the arms being provided with an eye, and the other arm being bent to produce a ring-engaging loop and having its terminal reduced to engage the eye, the projecting end of the terminal being upset.

3. A singletree-clip comprising a resilient bow and a pair of arms integral therewith and having their terminals riveted together, the point of juncture between the arms and the bow on the inner side of the latter forming knife-edge lugs to engage with the singletree to hold the attachment from slipping thereon.

706,898. BRAKE FOR VEHICLES. GEORGE W. BURTON, Morehead, Ky. Filed Sept. 13, 1901. Serial No. 75,310. (No model.)

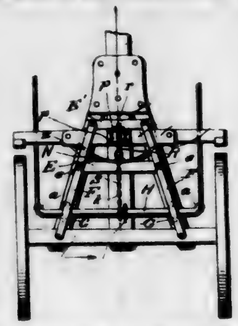

Claim.—In a vehicle-brake, the combination with the rear hounds, the two bracing transverse bars thereof, and the braces connecting said bars, and forming guideways between the same and the hounds, of the brake-beam having movement in said guideways, its grooved plate upon one side thereof, and engaging the wagon tongue or pole for prevention of lateral movement, the perforated lugs upon the opposite side of said beam centrally of the length thereof, the curved plate-spring having a bearing at its middle portion against one of said transverse bars, to which it is secured, and at its ends against the end portions of the brake-beam to equalize the application thereof, the transverse winding-shaft, its bearings supported by said hounds, and the chain connected by one end to said shaft at about the central portion thereof, and the adjustable screw connection with said lugs at its opposite end portion, substantially as specified.

706,899. EYEGLASSES. JOHN CARTER, Malden, Mass., assignor of one-half to Alfred G. Carter, Malden, Mass. Filed Jan. 16, 1902. Serial No. 89,142. (No model.)

Claim.—1. A screw-lock for eyeglasses, comprising a plate having a slot formed therein to receive the shank of the screw, a groove in the inner face of said plate adjacent to one edge, and an inwardly-extending flange at said edge, as set forth.

2. A screw-lock for eyeglasses, comprising a plate having a diagonal slot formed therein to receive the screw, and a groove in the inner face of the said plate adjacent to one edge, as set forth.

3. A screw-lock for eyeglasses, comprising an eyeglass-stud having flanges, a plate with a diagonal slot therein, said plate having adjacent to one edge a groove to receive the adjusting-stud flange, and the plate also having a laterally-turned tooth or flange adjacent to the groove, the tooth or flange lying on the outside of the flange of the stud of the eyeglasses.

4. The combination with an eyeglass-stud having flanges, of a screw-lock comprising a plate having a diagonal slot therein to receive the shank of the fastening-screw, the said plate being provided with a groove in its inner face adjacent to one edge and extending from the top to the bottom of the plate and adapted to receive one of the stud-flanges, the said plate being further provided with an inwardly-bent flange at the edge adjacent to the groove, as set forth.

5. The combination with the eyeglass-stud having flanges adapted to receive between them the ends of the spring and guard-shank, one of said flanges being shorter than the other, of a screw-lock comprising a plate having a diagonal slot to receive the screw, the said plate being provided with a groove in its inner face adjacent to one edge to receive the shorter flange of the stud, the plate having at said edge inwardly-bent flanges or teeth adapted to engage the outer side of the shorter flange of the stud, the opposite edge of the said plate extending at the inner side of the longer flange of the stud, as set forth.

706,900. BOOT OR SHOE PROTECTOR. ROBERT CHRISTENSEN, Racine, Wis., assignor of one-half to Christ. Nelsen, Racine, Wis. Filed Oct. 18, 1901. Serial No. 79,198. (No model.)

Claim.—1. In a boot or shoe protector, a sole-plate comprising a sole and a heel portion formed from a single piece of sheet metal, an upturned sectional flange upon each of said portions, the heel-portion flange being wider than the sole-portion flange, two reverse and substantially right-angular bends in said plate intermediate the sole and heel portions causing the flange-sections upon said sole portion adjacent the heel portion to overlap the contiguous flange-sections of said heel portion, a vamp or body portion shaped to inclose the lower part of the shoe to be protected, and securing means passing through said overlapping flange-sections and vamp, together with means for securing the remaining flange-sections to said vamp, substantially as described.

2. A sole-plate for a boot or shoe protector, comprising a sole and a heel portion formed from a single piece of sheet metal, an upturned sectional flange upon each of said portions, the heel-portion flange being wider than the sole-portion flange, and said plate having two reverse and substantially right-angular bends intermediate the sole and heel portions causing the flange-sections upon the sole portion adjacent the heel portion to overlap the contiguous flange-sections of said heel portion, substantially as described.

706,901. STILL FOR ABSORPTION REFRIGERATING APPARATUS. NATHAN W. ORMSBY, Jersey City, N. J. Filed Nov. 16, 1901. Serial No. 82,535. (No model.)

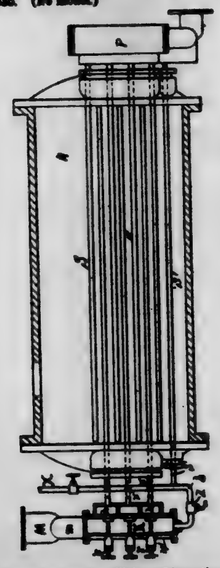

Claim.—1. In an ammonia-still for refrigerating purposes, the combination of the generating-chamber of the still and steam-coils therein with two connected headers at the inlet end and two connected headers at the outlet end, the headers at the inlet end having valves to control the admission of steam to the different coils and means for supplying steam from different sources to the inlet-headers.

2. In an ammonia-still for refrigerating purposes, the combination of the generating-chamber of the still with steam-coils in horizontal serpentine layers, these successive layers having their inlets at opposite sides of the still alternately and valved headers controlling the admission of steam to the said coils.

3. In an ammonia-still for refrigerating purposes, the combination of the generating-chamber of the still and steam-coils therein with headers having valves to control the admission of exhaust-steam to the coils, a live-steam pipe and valved connections from the latter to the inlets of said coils.

4. In an ammonia-still for refrigerating purposes, the combination of the generating-chamber of the still with steam-coils in independent sets and both a live-steam-supply pipe and an exhaust-steam-supply pipe and valves controlling admission therefrom to the several independent sets of coils, substantially as described.

706,902. ABSORPTION REFRIGERATING APPARATUS. NATHAN W. ORMSBY, Jersey City, N. J. Filed Apr. 29, 1902. Serial No. 106,202. (No model.)

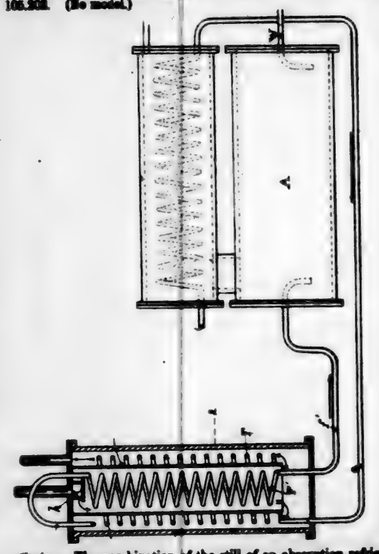

Claim.—The combination of the still of an absorption refrigerating apparatus with a heating-cylinder containing two strong-liquor coils and connections and a cylindrical shield between the two coils, with steam inlet and outlet to the cylinder on opposite sides of the shield, as and for the purpose described.

706,903. PIPE-HANGER. JAMES CRAWFORD, Boston, Mass. Filed Sept. 20, 1901. Serial No. 75,731. (No model.)

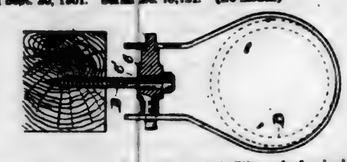

Claim.—A pipe-hanger consisting of a bail formed of a single piece of spring metal, the ends thereof each provided with a rectangular slot arranged parallel to the sides of the bail, in combination with a yoke consisting of a body portion, a cylindrical trunnion at each end of the body portion and a T-head integral with each of the trunnions, said T-heads adapted to pass through the slots of the bail when said T-heads are arranged longitudinally of said slots, and means extending through the yoke at right angles to the T-head for securing the yoke in position when suspending the bail.

706,904. COMBINED DOOR STOP AND CATCH. JACOB DANIEL, Los Angeles, Cal. Filed May 11, 1901. Serial No. 59,579. (No model.)

Claim.—1. A door-catch provided with an attaching portion and a device constructed to engage frictionally the door-knob when extended and to fold closely upon said portion when not in use.

2. A door-catch provided with an attaching portion, a receiving-pad thereon and a device constructed to frictionally engage a door-knob when extended and to fold closely upon said portion when not in use.

3. A door-catch provided with an attaching portion carrying a receiving-pad, an antifriction device movably connected with said portion constructed to be supported above the latter to engage the door-knob and to fold thereupon when not in use.

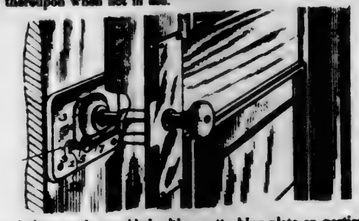

4. A door-catch provided with an attaching plate or portion to be secured to the wall behind the door when open, legs or ears upon said portion, a yoke movably connected with said legs and a roller carried by said yoke constructed to frictionally engage the under surface of the knob of the door when forced thereboyond.

5. A door-catch provided with an attaching portion or plate to be secured to the wall behind the door when open, a receiving-pad or bumper upon said plate, legs or ears secured in the former, a yoke movably connected with said legs and a roller carried by said yoke constructed to frictionally engage the under surface of the knob of the door when forced thereboyond.

6. A door-catch provided with a rectangular attaching portion carrying a receiving-pad, a yoke hinged to said portion and carrying a roller and constructed to be extended above said portion to engage a door-knob and to fold thereupon when not in use.

706,905. WINDOW-VENTILATOR. DAVID O. DAVIS, Atlanta, Ga. Filed Oct. 4, 1902. Serial No. 752,470. (No model.)

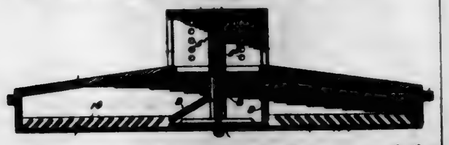

Claim.—1. In a ventilator, a casing comprising two communicating wings having apertures in their front walls permitting independent communication between each wing and the apartment to be ventilated; an extension projecting from the rear of the casing, open at both ends and communicating with the wings through an opening in its side, a central partition dividing the extension and a movable shutter controlling communication between the two wings, in line with the partition.

2. In a ventilator, a casing comprising two wings having apertures in their front walls permitting independent communication between each wing and the apartment to be ventilated, means for permitting the circulation of air through the rear wall, means for dividing the casing intermediately its length and doors for controlling the passage of air through the wings.

706,906. CAR-WHEEL. HARRIS T. DAVIS, Jr., Charleston, W. Va. Filed May 19, 1902. Serial No. 107,998. (No model.)

Claim.—1. The improvement in wheels herein described, comprising the hub having an annular chamber for the lubricant, and provided in its outer end with a rabbet for the nut and at its inner end with a rabbet non-circular in cross-section, with a stop-flange at the inner end of the rabbet and provided in its inner edge with notches for the passage of the lubricant, the perforated tubular bushing provided at its middle portion with perforations for the passage of the lubricant, threaded at its outer end to receive the securing-nut and provided at its inner end with a head to fit in the rabbet at the inner end of the hub and having adjacent to said head perforations registering at their outer ends with the notches in the stop-flange of the hub and opening at their inner ends adjacent to the inner end of the lubricating-bushing, and the nut on the threaded end of the lubricating-bushing, substantially as set forth.

2. The combination with the hub having the chamber for the lubricant, and provided at its inner end with an inwardly-projecting flange notched in its inner edge, and the lubricating-bushing having at its inner end a head abutting said flange and provided adjacent to said head with perforations which register at their outer ends with the notches in the flange of the hub, and discharge at their inner ends adjacent to the inner end of the bushing, substantially as set forth.

3. The combination with the hub provided in its inner side with a rabbet for the head of the bushing, said rabbet having a non-circular portion and at its inner side a stop-flange provided in its inner edge with notches, and the lubricating-bushing provided at its inner end with a head to fit the rabbet in the hub and having adjacent to said head perforations which register at their outer ends with the notches in the stop-flange and open at their inner ends adjacent to the inner end of the lubricating-bushing, substantially as set forth.

706,907. PAINT-OIL. WILLIAM H. DEMPSTER, Brunswick, Ga., assignor of one-half to C. P. Goodyear, Sr., and C. P. Goodyear, Jr., Brunswick, Ga. Filed Feb. 6, 1902. Serial No. 92,866. (No specimens.)

Claim.—1. The herein-described paint vehicle composed of rosin and kerosene, in the proportions substantially as specified.

2. The herein-described process of making paint-oil consisting in mixing rosin and kerosene, and then boiling the mixture.

3. The herein-described process of making paint-oil consisting in mixing rosin with kerosene, and boiling the mixture in the open air.

706,908. CRATE. RICHARD DE WEERDT, Saugatuck, Mich. Filed June 2, 1902. Serial No. 108,894. (No model.)

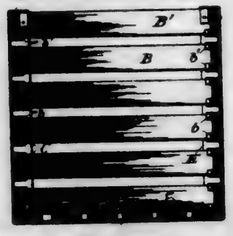

Claim.—1. In a knockdown crate, an end brace and slat-holder comprising an angular strip of sheet metal shaped to present parallel side members with tongues which are struck up therefrom, the tongues having parallel sides and straight ends at right angles with the sides, the tongues being bent inward from the side members of the angular strip and adjacent to the ends toward each other to provide slat-receiving sockets, registering perforations through each of the end portions of the angular strip, and perforations through the part which connects the parallel side members, the perforations being positioned adjacent to the side members; whereby when nails are passed through the perforations and the slats which enter the sockets adjacent to the perforations the crate will be maintained in position for use, substantially as set forth.

2. An angular brace and slat-holder for knockdown crates, comprising side pieces having tongues having blunt ends, the tongues being bent to provide sockets for the ends of the side and end slats, a connecting portion having sockets for the bottom slats, and perforations adjacent to the ends and the bent portions of the brace for the passage of nails to lock the brace and slat-holder to the slats, substantially as shown.

3. A sheet-metal end brace and slat-holder for knockdown crates, made up from a continuous strip which is angular in cross-section, bent tongues struck up from the strip to provide sockets, connecting portions between the tongues, an angular bar or connecting portion having a single line of sockets and a strip in line therewith, and perforations adjacent to the ends of the brace and slat-holder and near the transversely-bent portion thereof through which are passed nails for connecting the upper and corner slats to the braces, substantially as shown and for the purpose set forth.

706,909. GARMENT FASTENER AND SUPPORTER. WINFIELD L. DUNNOON, Portland, Oreg. Filed Dec. 2, 1901. Serial No. 84,356. (No model.)

Claim.—1. A garment fastener and supporter, comprising a belt securable on a person's waist, a plate secured to the rear of the belt, a staple projected from the center of the plate and adapted to pass through openings in female garments, and an elongated looped keeper-bar slidably held on the staple.

2. A garment fastener and supporter, comprising a belt securable on a person's waist, a plate secured to the rear of the belt and provided with

an opening at about the center, a removable staple projected through the opening in the plate, for engagement with eyelets in the waistbands or shirts near their plackets, the ends of the members of the staple being oppositely bent to form feet which lie against the inner face of the plate and an elongated looped keeper-bar slidably held on the staple and detachably securing the eyelets in place on the staple.

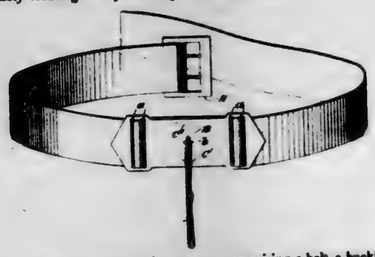

3. A garment fastener and supporter, comprising a belt, a buckle on one end of the belt, a back plate slidably mounted upon the belt and having a slot therein at about its center, a removable staple having the ends of its members bent to form feet adapted to rest on the inner face of the back plate when the staple is inserted through the slot, and an elongated looped keeper-bar slidably held on the staple and provided with a kink in one of its members at about the center of length thereof.

4. A garment fastener and supporter, comprising a belt, a buckle thereon, a back plate having slots at the ends adapted to receive the belt, whereby the plate is adjustably mounted upon the belt, and an opening at about its center, a removable staple having the ends of its members bent to form zigzag feet and passing loosely through the opening in the back plate with its feet resting against the rear face of the said plate, and an elongated keeper-bar formed with spaced side members and looped ends, and having slidable engagement with the staple, one member of the said bar having a kink therein at about the center of its length.

5. In a garment fastener and supporter, a plate provided at each end with two parallel transverse slots to receive a belt, and at its center with a slot, a removable staple having the ends of its members bent to form feet, the staple projecting through the center slot of the plate with its feet resting against the inner face of the said plate, and an elongated looped keeper-bar loosely engaging the staple and provided with a kink in one of its members at about the center of length thereof, as set forth.

706,910. BALLOT-BOX. HENRY DROUYLESS, Auckland, New Zealand. Filed Jan. 26, 1901. Serial No. 44,826. (No model.)

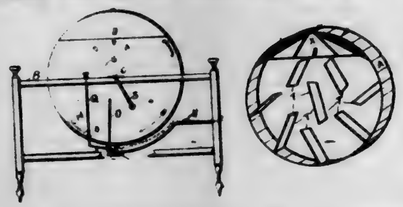

Claim.—1. A ballot-box comprising a revolvable drum provided with an exit-hole, a closure normally closing said hole, and means for actuating the closure automatically on the rotation of the drum to expose or uncover the hole.

2. A ballot-box comprising an axially-turning drum provided with a peripheral exhit-hole, leading-boards and agitators within said drum, and automatic means for closing the exit-hole when the drum is at rest and for exposing or opening the hole on the drum assuming a certain predetermined position when turning on its axis.

3. A ballot-box comprising a revolvable drum having an exit-hole, a closure to cover said hole, a guard arranged in a reverse position to the closure and adapted to also cover and uncover the hole, and means for actuating said closure and the guard on the rotation of the drum.

4. A ballot-box comprising a drum mounted to turn on an axis and provided with an exit-hole, a closure adapted to open and close said hole, and a guard arranged to close the hole when the closure is adjusted to an open position.

5. A ballot-box comprising a drum mounted to turn on an axis and provided with an exit-hole, a closure arranged to open and close said hole, and a guard operatively connected with the closure, and adapted to close the hole on the movement of the closure to an open position.

6. A ballot-box comprising a drum mounted to turn on an axis and provided with an exit-hole, a closure for said hole, and trip devices to automatically actuate the closure when the drum is turned on its axis.

7. A ballot-box comprising a drum mounted to turn on an axis and provided with an exit-hole, a closure actuated by a suitable retractor and normally covering said hole, a trip device occupying an abnormal position relative to the closure, and means actuated by a turning movement of the drum to automatically bring the trip device into coöperative relation to said closure.

8. A ballot-box comprising a drum having an exit-hole, a spring-actuated closure having a projecting shoulder, a track disposed in the path of said shoulder, a pivoted trip connected with the track, and means carried by the drum to ride against the pivoted trip.

9. A ballot-box comprising a drum mounted to turn on an axis and having an exit-hole, a closure therefor, a track controlled by a trip, and a retracting-rod to maintain the trip and the track in their abnormal positions on the turning movement of the drum.

706,911. TOOL FOR REMOVING CAPS FROM BOTTLES. WILLIAM L. DURHAM, Washington, D. C., assignor to William R. Matthews and Franklin H. Hough, Washington, D. C. Filed Feb. 27, 1902. Serial No. 96,967. (No model.)

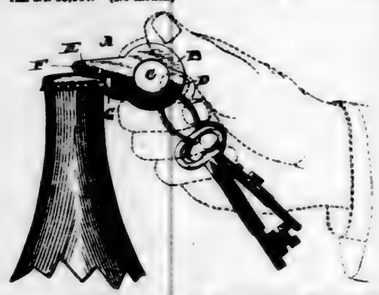

Claim.—1. The herein-described tool for removing caps from bottles, the same comprising a metallic ring provided at a point adjacent to one of its lower edges upon one side with a groove and upon its opposite side with integral arms adapted to engage the edge and top respectively of a bottle-cap, substantially as shown and described and for the purpose specified.

2. As an improved article of manufacture, a device for removing caps from bottles, comprising a metallic plate having a circular aperture with a recess D therein adapted to receive a key-ring, integral arms E and G of unequal length projecting laterally from said circular portion, one of said arms G being disposed at an angle to the arm E, as shown and described.

706,912. HAME-FASTENER. NILS P. ERICKSON, Red Wing, Minn. Filed Dec. 16, 1901. Serial No. 86,152. (No model.)

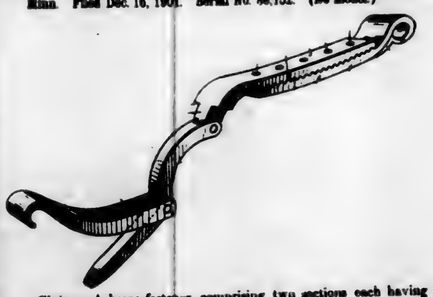

Claim.—A hame-fastener, comprising two sections each having a hook at its outer end, one of said sections having the end thereof opposite its hook contracted to form a tang and shoulders on opposite sides thereof, and the other of said sections having the end thereof opposite its hook bifurcated, the branches of which bifurcated end straddle said tang and engage said shoulders when the device is in its locked position, and an operating-lever pivoted at one end to said tang and at a point intermediate its ends to the branches of said bifurcated end, and the said lever being located between said branches and of the same thickness as said tang, whereby the pivotal point between said branches and said lever may

be moved inside the line of strain between the hooks on the outer ends of said sections, as and for the purpose set forth.

706,913. SLOT-GUARD FOR TOY BANKS. JOHN W. ERELEMAN, Mount Joy, Pa. Filed Nov. 12, 1901. Serial No. 82,006. (No model.)

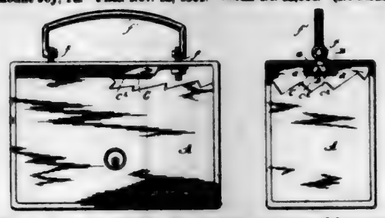

Claim.—1. As a new article of manufacture, a slot-guard for money-boxes, comprising a block or casting having a central slot and grooves arranged transversely of said slot, balls located in the grooves at opposite sides of the slot, springs bearing against the balls to bring them together over the slot, a covering-plate having a slot on a line with the aforesaid slot, and perforated extensions or wings on the block to provide for securing it to the money-box, substantially as shown and described.

2. In a slot-guard for money-boxes, the combination of the box having a coin-slot and holes beyond the ends of said slot, a block provided with a slot and grooves arranged transversely of said slot, and a series of spring-actuated balls located in the grooves and adapted to close the coin-slots; together with screw-eyes passed through the holes in the box and apertured extensions of the block, a handle connected to said screw-eyes, and nuts holding the parts together, substantially as shown and described.

706,914. NON-REFILLABLE BOTTLE. JULIUS EWALD, Philadelphia, Pa. Filed Apr. 10, 1901. Serial No. 55,1604. (No model.)

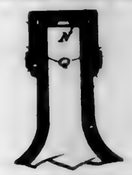

Claim.—1. In a non-refillable bottle, a neck provided with a rim, vertically-extending recesses in said rim, one of said recesses inclining downwardly and outwardly so as to form a shoulder which is continuous of a shoulder around the bottle-neck, and a finger which is connected with the bottle-cap and adapted to spring under said first-named shoulder.

2. A non-refillable bottle consisting of a neck provided with a rim, a bead below the same, vertically-extending recesses in said rim, a headed pin at the side of the neck a cap having its lower edge adapted to interlock with said pin, and a finger connected with the cap on the interior thereof, one of said recesses being inclined downwardly and outwardly so as to form a shoulder which is continuous of a shoulder around the bottle-neck and said finger being adapted to spring under the first-named shoulder.

706,915. PLOW. SPENCER FARMER, Rust, Ky. Filed Aug. 30, 1901. Serial No. 103,232. (No model.)

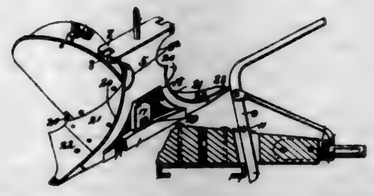

Claim.—1. The combination with a plow-beam, of a standard pivoted to said plow-beam, oppositely-disposed moldboards carried by said standard, hinged moldboards located to be set to form an extension of either of said boards when in operating position, a stud-shaft mounted on said beam and having a slot therein, a brace-bar connected to said hinged moldboards and engaging said slot, a catch-bar arranged to hold said brace against all movement, and a latch arranged to hold said standard against rotation, substantially as described.

2. The combination with a plow-beam, of a standard pivoted to said plow-beam and bearing oppositely-disposed moldboards, hinged moldboards arranged to be set to form an extension for either of said moldboards, a brace-bar connected to said hinged moldboards and provided with a notch, a latch-lever fulcrumed on said plow-beam and engaging the said standard to hold it against turning, and a notch-bar pivoted to said latch-lever and engaging said brace-bar, substantially as described.

3. In a plow the combination with a standard, bearing a flange, a T-shaped land-bar provided with a groove engaging said flange and having a recess in its stem, a pin seated in said standard and engaging said recess, substantially as described.

706,916. FUEL-VALVE FOR GAS-ENGINES. JESS B. FENNER, Buffalo, N. Y., assignor to the J. W. Ruger Manufacturing Company, Buffalo, N. Y. Original application filed Mar. 21, 1900, Serial No. 9,536. Divided and this application filed Oct. 26, 1901. Serial No. 80,094. (No model.)

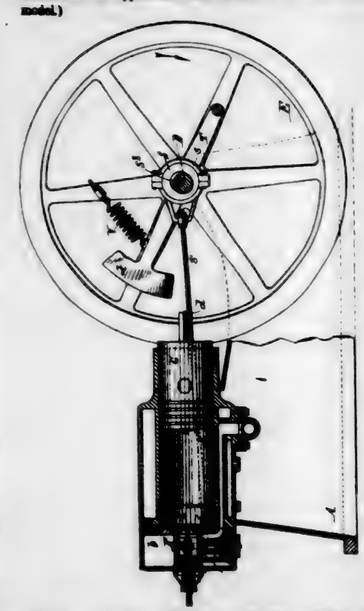

Claim.—1. In a gas-engine, the combination with the cylinder, the piston arranged in the cylinder and the crank-shaft connected with the piston, of a valve-chest communicating by a main port with the cylinder, a main valve controlling the main port, a speed-reducing-gear mechanism which is interposed between the crank-shaft and the main valve and which is constructed to open the same once during every two rotations of the shaft, a rocking fuel-valve whereby the fuel-supply to the cylinder is controlled, and an actuating mechanism which is interposed between the crank-shaft and the fuel-valve and which is constructed to open the same once during each rotation of the shaft, substantially as set forth.

2. The combination with the cylinder and the piston therein, of a chest arranged at the end of the cylinder and having a valve-chamber communicating with the cylinder, a socket extending from the outer side of the chest into the valve-chamber, and a fuel-conduit opening into the side of the socket; a valve-case fitting in said socket and having ports in its side which communicate with said fuel-conduit; and a hollow rock-valve arranged in said case and having ports in its side which register with the ports of said case and opening at its inner end into the valve-chamber of said chest, substantially as set forth.

3. The combination with the cylinder and the piston therein, of a chest arranged at the end of the cylinder and having a valve-chamber communicating with the cylinder, a socket extending from the outer side of the chest into the valve-chamber, and a fuel-conduit opening into the side of the socket; a valve-case fitting in said socket and having ports in its side which communicate with said fuel-conduit; a hollow rock-valve arranged in said case and having ports in its side which register with the ports of said case and opening at its inner end into the valve-chamber of the chest;

a head bearing against the outer end of the valve and the valve-case and provided with a bearing; a screw-ring whereby said head is clamped against said case; and a rock-shaft journaled in said bearing and carrying said rock-valve, substantially as set forth.

706,917. SPLIT PULLEY. HIRAM W. FINCH, Tacoma, Wash. Filed Dec. 19, 1901. Serial No. 86,505. (No model.)

Claim.—In a split pulley, the combination with the segment-rims *a a* provided with cross-arms or spokes *a* each having a recess at its inner side, of the two-part box or hub fitting between the arms in the recesses thereof and having registering bolt-holes, said parts also having transverse recesses in their contiguous sides for the shaft and one of the parts further recessed centrally, a metal casing seated in the said central recess and provided with an eccentrically-curved wall terminating at one end in a straight wall, said casing being also provided with a flange projecting from the open end thereof and provided with holes registering with the aforesaid bolt-holes in the hub, and bolts passed through the parts for clamping them together; together with a curved wedge-piece having teeth on its concave edge adapted to engage the shaft, said wedge-piece being located in the casing to impinge against the curved wall thereof.

706,918. TOY. JOHN J. FITZPATRICK, Washington, Pa. Filed Oct. 3, 1901. Serial No. 77,492. (No model.)

Claim.—1. A whirligig toy comprising a blade formed with a handle and a rubbing edge provided with pointed teeth beveled at their sides, a headed pin located at the end of the blade, and a wheel loosely mounted on the pin and constructed with peripheral segments which are bent forward to provide angular wind-wings diagonal of the segments.

2. A whirligig toy comprising a blade formed with a handle and a rubbing edge provided with pointed teeth beveled at their sides, a headed pin located at the end of the blade, washers mounted on the pin, a large wheel loosely mounted on the pin between the washers constructed with peripheral segments which are bent forward to provide angular wind-wings diagonal of the segments on one side and a small wheel loosely mounted on the pin between the outer washer and the head of the pin, constructed with peripheral segments which are bent forward to provide angular wind-wings diagonal of the segments at the opposite side to those of the segments of the large wheel.

706,919. SOAP-PRESS. JOHN J. PENNOCK and ROBERT I. MITCHELL, Avalon, Pa. Filed June 21, 1901. Serial No. 65,461. (No model.)

Claim.—1. In a soap-press, the combination of a mold-box, main and auxiliary plungers, a stationary abutment, mechanism for causing said plungers to move together out of the mold-box and to carry the compressed cake into line with the abutment, mechanism for separating the plungers when the cake is in line with the abutment, a gripping-jaw, positively operating means for shifting the jaw to clamp the cake between it and the abutment, and means for imparting a sudden return movement to the jaw, substantially as set forth.

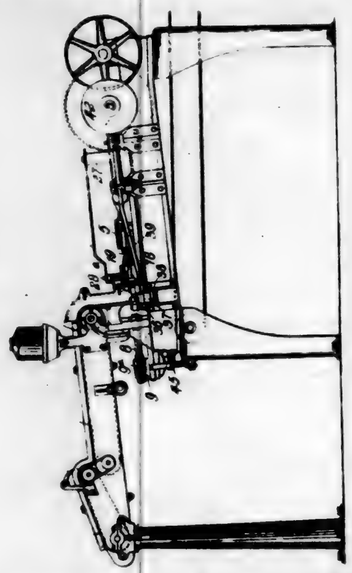

2. In a soap-press, the combination of a mold-box, main and auxiliary plungers, a stationary abutment, means for causing the plungers to bring a compressed cake into alinement with the abutment, a gripping-jaw arranged opposite the abutment, a lever connected to the jaw, an arm pivotally mounted on the main plunger and adapted to engage the lever and a stop for preventing the movement of the arm during the rearward movement of the main plunger, and a spring for effecting the return movement of the gripping-jaw, substantially as set forth.

3. In a soap-press, the combination of a mold-box detachably secured to the frame of the machine, a supporting-table arranged in the rear of the soap-box, means for shifting the table, an adjustable chute for directing cakes of soap onto the table, and an adjustable pusher for shifting the cakes along the table, substantially as set forth.

4. The combination of a soap-press, and a feed mechanism adapted to turn and space the cakes of soap while feeding them to the press, substantially as set forth.

5. The combination of a soap-press, two feed-belts driven at different speeds, and a turning-arm arranged in the path of movement of the upper edges of the cakes as carried along by one of the belts, substantially as set forth.

6. The combination of a soap-press, two belts arranged in or approximately in line with each other, one belt being driven at a higher speed than the other, a bridge connecting the belts, and a turning-arm arranged over the belt having the higher speed and in the path of movement of the upper portions of the cakes as carried forward by the belt, substantially as set forth.

7. The combination in a soap-press, of a mold-box, main and auxiliary plungers, means for moving said plungers simultaneously out of the box, and means for effecting a step-by-step movement of the auxiliary plunger to pressing position, substantially as set forth.

8. In a machine of the character described, the combination with the dies and means for operating them, of a charging-table and a charger for pushing bars placed thereon into the dies, conveying mechanism adapted to receive the bars to be pressed in a row standing upright side by side, and to move said bars toward the charging-table, and an intermediate feeding device for receiving the bars from the conveyer and transferring said bars to the charging-table, said conveying mechanism being arranged to turn each cake on its side as it is delivered to the intermediate feeding device.

9. The combination with the dies, the charging-table and the charger moving over the same, of a main driven conveyer-belt adapted to receive a row of bars standing on edge, an intermediate feeding device leading from the end of the main conveyer to the charging-table, said intermediate feeding device including a supplementary driven conveyer-belt passing below the end of the main conveyer for receiving the bars as they fall one by one over the end of the main conveyer, said bars being turned in falling.

706,920. REVOLVING VACUUM-FILTER FOR RECOVERING THE LIQUID FROM SLIMES, SANDS, PULP, OR SUCH LIKE IN CONNECTION WITH CYANID OR OTHER CHEMICAL APPLICATIONS. GEORGE FRASER, Jr., Auckland, and SAMUEL R. FRASER, Waikino, New Zealand. Filed Apr. 18, 1901. Serial No. 56,513. (No model.)

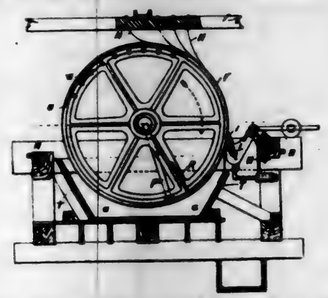

Claim.—1. The combination of a peripherally-perforated cylinder, a trough in which said cylinder is mounted to rotate, one or more blankets arranged to trail upon the periphery of said cylinder, and means for applying water to said blanket or blankets.

2. The combination of a peripherally-perforated cylinder, a trough in which said cylinder is mounted to rotate, one or more blankets arranged to trail upon the periphery of said cylinder, means for applying water to said blanket or blankets, and a knife arranged between the blanket or blankets and the trough and adapted to scrape said periphery.

3. The combination of a peripherally-perforated cylinder, a trough in which said cylinder is mounted to rotate, one or more blankets arranged to trail upon the periphery of said cylinder, means for applying water to said blanket or blankets, a hollow shaft for supporting said cylinder, and a plurality of pipes extending from said shaft and opening into the cylinder.

706,921. PROCESS OF MAKING BROMINDIGO. MEESS VON GALLADE, Höchst-on-the-Main, Germany, assignor to FARBWERKE, VORM. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany, a Corporation of Germany. Filed May 27, 1902. Serial No. 109,165. (No specimens.)

Claim.—The herein-described process for the manufacture of brominated indigo which consists in causing bromin to react on indigo-white in the proportion requisite for the formation of the product of substitution and in oxidizing the bromindigo-white thus obtained to bromindigo, substantially as set forth.

706,922. PREPAYMENT GAS-METER. JAMES OSEN, Hoboken, N. J. Filed Nov. 2, 1901. Serial No. 80,839. (No model.)

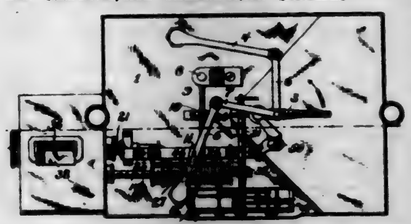

Claim.—1. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shifting device having rotatable and longitudinal movement, a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revolvable plate carrying a pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revolvable plate carrying a pawl for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft, and means for connecting said shifting device with one or the other of said revolvable plates, said shifting device carrying a cam for controlling a lever to indicate the position of said stop-bolt-controlling cam, substantially as described.

5. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement, a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revolvable plate carrying a pivoted pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revolvable plate carrying a pivoted pawl for engagement with the other of said ratchets said second plate being controlled from a normally disengaged but manually-operated shaft, and means for connecting said shifting device with one or the other of said revolvable plates, said means also controlling a supplementary stop-bolt.

6. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement, a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revolvable plate carrying a pawl for engagement with one of said ratchets said plate being driven from said spindle, a second revolvable plate carrying a yielding pawl for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft, which also operates a cam and thus a sliding bar for throwing said shifting device in connection with one or the other of said revolvable plates, said sliding bar also operating a supplementary stop-bolt, substantially as described.

7. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shifting device having both rotative and longitudinal movement and a cam carried thereby for controlling said stop-bolt, a ratchet-wheel on each end of said shifting device, a revolvable plate carrying a pivoted pawl having its lateral face beveled for engagement with one of said ratchets said plate being driven from said spindle, a second revolvable plate carrying a pivoted pawl having its lateral face beveled for engagement with the other of said ratchets said second plate being controlled from a manually-operated shaft, and means for connecting said shifting device with one or the other of said revolvable plates.

8. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shaft driven from said revolvable spindle, a second shaft manually controlled and in line with said first shaft, a shifting device having both rotative and longitudinal movement upon the adjacent ends of said shafts, ratchets carried by each end of said shifting device, spring-pressed pawls carried by ends of said shafts adjacent said ratchets, and means for throwing said shifting device into engagement with either one of said pawls, said shifting device controlling the movement of said stop-bolt, substantially as described.

9. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shaft driven from said revolvable spindle, a second shaft manually controlled and in line with said first shaft, a shifting device having both rotative and longitudinal movement upon the adjacent ends of said shafts, ratchets carried by each end of said shifting device, pivoted

pawls carried by each of said shafts adjacent said ratchets, and means for throwing said shifting device into engagement with either one of said pawls, and a sliding bar controlled from said manually-operated shaft by a cam for longitudinally moving said shifting device and at the same time actuating a supplementary stop-bolt.

10. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shifting device for controlling said stop-bolt, a shaft carrying a double-notched cam for operating said shifting device, a manually-controlled shaft, and means for connecting said manually-controlled shaft and said cam-carrying shaft whereby said shifting device is returned to its normal position without returning said manually-controlled shaft to its normal position, substantially as described.

11. In a device of the character described, a revolvable spindle, a movable stop-bolt therefor, a shifting device for controlling said stop-bolt, a shaft carrying a double-notched cam for operating said shifting device, a manually-controlled shaft, and means for connecting said manually-controlled shaft and said cam-carrying shaft whereby said shifting device is returned to its normal position without returning said manually-controlled shaft to its normal position, and a supplementary bolt controlled by said cam, substantially as described.

706,923. LAMP. CHARLES R. GERVAIS, New York, N. Y., assignor to Gervais Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Apr. 17, 1902. Serial No. 103,263. (No model.)

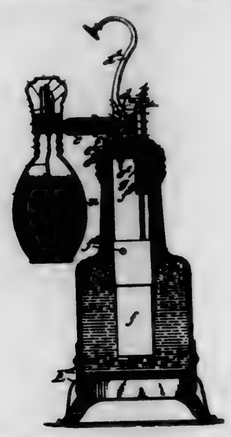

Claim.—1. In a lamp, the combination, with the lamp-body, of a head applied to the same and provided at its upper portion with a shoulder, a hollow guard-cap fitting at its lower end on said shoulder and extending upwardly from said head and provided with openings in its side walls and an opening at the top, a wick-tube extending from said lamp-body through the head and terminating in the upper part of the guard-cap near the top opening of the same, a wick in said tube and exposed at the upper end of the same within the guard-cap, a resistance-wire within the cap adjacent the upper end of said wick for lighting the same, a swinging arm, and an extinguishing-cap carried by said arm and adapted to close the upper opening of said hollow cap, substantially as set forth.

2. In a lamp, the combination, with a lamp-body, of a head applied to the same and provided at its upper portion with a shoulder, a hollow guard-cap fitting at its lower end on said shoulder and extending upwardly from said head and provided with openings in its side wall and an opening at the top, a vertical wick-tube extending from said lamp-body through the head at one side of the center of the same and provided at its upper end, near the top opening, with an overhanging guard, a wick in said tube and exposed at the upper end of the same within the guard-cap, beneath said guard, a resistance-wire within the cap adjacent the upper end of said wick for lighting the same, a swinging arm, and an extinguishing-cap carried by said arm and adapted to close the upper opening of said guard-cap, substantially as set forth.

3. In a lamp, the combination, with a lamp-body, of a head applied to the same and arranged at its upper portion with a shoulder, a removable hollow guard-cap fitting frictionally at its lower end on said shoulder and extending upwardly from said head, a battery-receptacle, a cap on the same, a head on said cap, a vertically-movable spring-actuated rod passing through said receptacle cap and head, a battery element secured to the lower end of said rod, a knob at the upper end of said rod, above said head, lateral extensions connecting the receptacle-head with the lamp-head, an arm pivoted to the receptacle-head and extending over said guard-cap, an extinguishing-cap secured to said arm and adapted to close the opening in the top of said guard-cap, and a rear portion extending from said arm beneath the knob of said rod, said rear portion and arm being movable independently of said rod, substantially as set forth.

4. In a lamp, the combination, with a lamp body and wick, of a battery-receptacle, a cap and head on the same connected with the lamp-body, a vertically-movable arm pivoted to said head and provided with an extinguishing-cap for said wick, a resistance-wire connected with the elements of the battery in said receptacle and located adjacent the wick, a rear portion projecting from said arm at the rear of said pivot, a battery-rod passing vertically through said cap and head adjacent said rear portion of the arm, a concave seat on the head between said rod and the pivot of said arm, and a knife-edge on said rear portion of the arm opposite said seat, substantially as set forth.

706,924. LAMP. CHARLES R. GERVAIS, New York, N. Y., assignor to Gervais Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Apr. 17, 1902. Serial No. 103,264. (No model.)

Claim.—1. In a lamp, the combination, with a suitable battery-receptacle, and an electric battery therein, of a cap on said receptacle, a head on said cap, a stem extending from said head, a lamp-body secured to said stem, a burner screwing into said lamp-body, a base arranged horizontally on said lamp-body at the upper end of the same, a clamping-plate, screws securing said plate to said base, an insulated contact-pin clamped in vertical position between said base and plate, and extending upwardly above the same, a conducting-wire attached to said pin and extending from the same to the battery, a base arranged horizontally on said burner, a clamping-plate, screws securing said plate to said base, a contact-piece, of spring metal, composed of an insulated upper portion clamped in approximately vertical position between said base and plate, and a lower portion extending horizontally from said upper portion and curved concentrically with the burner, a resistance-wire supported on the burner adjacent the wick, and a conductor connecting said resistance-wire with the insulated upper portion of said contact-piece, substantially as set forth.

2. In a lamp, the combination, with a suitable battery-receptacle, and an electric battery therein, of a lamp-body, a burner for the same, a wick-tube extending vertically through said burner, a wick in the wick-tube, a post attached to said wick-tube, a guard attached to said wick-tube, an insulated conductor in said guard, said wick-tube being provided in its side wall between said post and the upper end of the conductor with a notch extending downwardly from the upper end of the tube, and a resistance-wire extending between said post and conductor and in contact with or adjacent said wick at the notch, substantially as set forth.

706,925. TOY BOWLING-ALLEY. FRANK W. GIBSON, St. Louis Mo. Filed June 5, 1901. Serial No. 63,295. (No model.)

Claim.—In a toy bowling-alley, a bed composed of a single board and having side gutters fixed thereto on its under side, the said gutters being U-shaped in cross-section and having their inner legs flush with the side edges of the bed, substantially as described.

706,925.

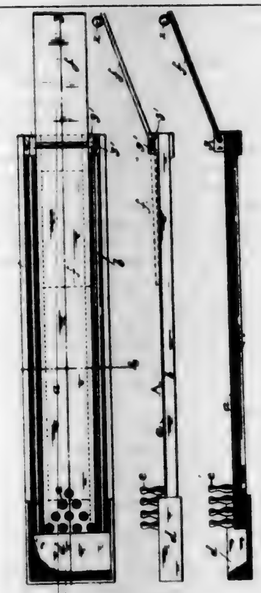

706,926. TILE-PRESS. XAVIER P. GILARDONI, Chatey-le-Rat, France, assignor to Ste Dite Gilardoni Fils, A. Brault et Cie., Chatey-le-Rat, France. Filed Nov. 12, 1901. Serial No. 82,083. (No model.)

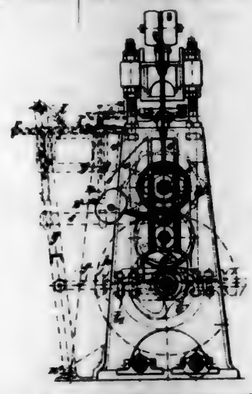

Claim.—1. A tile-press comprising, a frame, a mold-section carried thereby, a rotary mold-carrier adapted to carry a plurality of mold-sections, means for rotating the mold-carrier at intervals, means for raising and lowering the mold-carrier toward and from the first-named mold-section, a molding-fork coacting with the mold-sections and means for actuating the said fork, substantially as described.

2. A tile-press comprising, a frame, a stationary mold-section, vertically-movable slides mounted in the sides of the frame, a horizontal rotary polygonal mold-carrier mounted in said slides, means for rotating said polygonal mold-carrier to bring its faces successively under the stationary mold-section, means for raising the said carrier toward the fixed mold at intervals a molding-fork movable vertically with the said carrier and also movable horizontally to coact with the mold-sections, and means for so actuating said fork; substantially as described.

3. A tile-press comprising, a frame, a stationary mold-section thereon, vertically-movable slides on the frame, a polygonal mold-carrier journaled in said slides and provided with an operating star-wheel, a shaft provided with a cam for rotating the star-wheel to bring its faces successively under the fixed mold, and also provided with means for raising and lowering the polygonal mold; substantially as described.

4. A tile-press comprising, a frame, a mold-section thereon, a rotary polygonal mold-carrier, vertically-sliding bearings for said carrier, means for rotating the carrier to bring its faces successively under the first-named mold-section, means for raising and lowering the carrier, and a molding-fork coacting with the said molding-sections and means for actuating the fork; substantially as described.

5. A tile-press comprising, the frame, the upper mold-section, the polygonal mold-carrier therebelow, means for rotating the carrier to bring its successive faces under said mold-section, means for raising and lowering the polygonal carrier, a vertically-movable table, means for automatically raising and lowering the table, a horizontally-movable molding-fork mounted on said table, swinging arms or levers for moving the fork toward and from the mold-sections and a cam mechanism timed to actuate the fork; substantially as and for the purpose set forth.

706,927. ELECTRICAL FLOOR-KEY. EZEKIEL C. GOODRICH, Houghton, Mich., assignor to himself and Nicholas Britz, Houghton, Mich. Filed Apr. 21, 1902. Serial No. 103,923. (No model.)

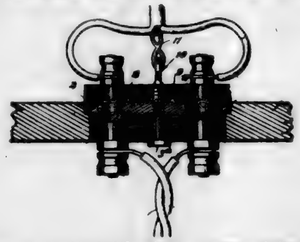

Claim.—1. An electrical floor-key, comprising a bottom plate provided with binding-posts insulated from each other and adapted to engage electric wires, a top plate provided with binding-posts insulated from each other and adapted to engage other electrical connections, a central link engaging said connections and also engaging said top plate, and snap-head contacts for temporarily connecting said binding-posts in said top plate with said binding-posts in said bottom plate.

2. An electrical floor-key, comprising a bottom plate provided with binding-posts insulated from each other and adapted to engage electric wires, a top plate provided with binding-posts insulated from each other and adapted to engage other electrical connections, a central link engaging said connections and also engaging said top plate, and a contact temporarily connecting each of said binding-posts in said upper plate with a binding-post in said lower plate, the arrangement being such that said contacts are detachable by strains upon said central link.

706,928. VALVE FOR GAS-FIXTURES. MICHAEL J. GRAHAM, Chicago, Ill., assignor to William G. King, Chicago, Ill. Filed Dec. 4, 1901. Serial No. 84,605. (No model.)

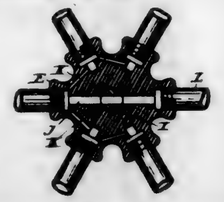

Claim.—A fitting for gas-fixtures comprising a shell made of a single piece of metal, provided with a plurality of gas-outlets and one gas-inlet, a conical valve mounted in the center of said shell, said valve being adapted to control the flow of gas through said fitting, and also adapted to be held to its seat by means of a screw in the small end of same, and said casing being provided with a gas-passage leading from said gas-inlet to said valve and also with a passage leading from said valve to one of said outlets, also with circumferential passages adapted to connect adjacent gas-outlets, to the end that all of said outlets will be supplied from the passage leading from said valve.

706,929. DISPLAY-RACK. BENJAMIN H. GRISWOLD, Pittsfield, Ill. Filed Feb. 6, 1902. Serial No. 92,834. (No model.)

Claim.—1. A display-rack comprising a post or pedestal, a head supported by the upper end of the post or pedestal, and a shelf consisting

of two parts arranged at angles to each other, one part being pivoted to the head, and a book-back-receiving frame for connecting the adjacent ends of the parts of the shelf together, substantially as set forth.

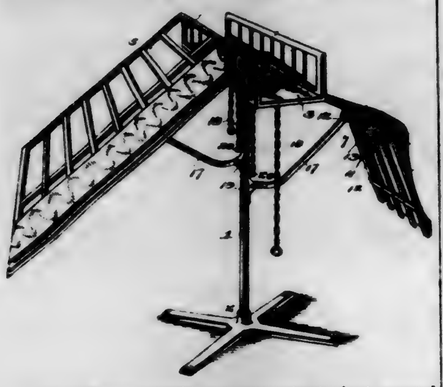

2. A display-rack comprising a post or pedestal, a head supported by the upper end of the post or pedestal, and a shelf consisting of two parts arranged at angles to each other, one part being pivoted to the head, a book-back-receiving frame for connecting the adjacent ends of the parts of the shelf together, and means for adjusting the shelf at various angles with respect to the post or pedestal, substantially as set forth.

3. A display-rack comprising a post or pedestal, a head supported at the upper end of the post or pedestal, a shelf consisting of two parts, one part hinged to the head, and combined book-supports and hinges, each consisting of a U-shaped frame having a lateral extension adapted to be secured to the inner part of the shelf, and a hinge extension adapted to be secured to the outer part of the shelf and provided with a stop adapted to abut against the U-shaped frame and support the outer part of the shelf at an angle to the inner part, substantially as set forth.

706,930. DISPLAY-RACK. BENJAMIN H. GREENAWAY, Pittsfield Ill. Filed Feb. 6, 1902. Serial No. 92,895. (No model.)

Claim.—1. In a display-rack of the character described, the combination with a post or pedestal, of a head secured thereto and consisting of side pieces 4 and a bottom piece 5 to form a tray, a shelf hinged at its forward end to the forward end of the head and adapted to serve as a cover for the tray, means for supporting the shelf in an inclined position, a second shelf, and book-holders connecting the second shelf with the head and adapted to receive and support the back of a book, and means for supporting the second shelf in an inclined position, substantially as set forth.

2. In a display-rack of the character described, the combination with a post or pedestal, of a head secured thereto and consisting of side pieces 4 and a bottom piece 5 to form a tray, a shelf hinged at its forward end to the forward end of the head and adapted to serve as a cover for the tray, means for supporting the shelf in an inclined position, a second shelf, and book-holders connecting the second shelf with the head and adapted to receive and support the back of a book, and means for supporting the second shelf in an inclined position, said means comprising a transversely-disposed shaft having a crank-arm slidably connected to the said second shelf, a hand-wheel for operating the shaft and provided with a ratchet, and a spring-pawl for engaging said ratchet, substantially as set forth.

706,931. CIGARETTE-FORMER. GEORGE S. HAMMOND, Chicago, Ill. Filed Oct. 15, 1901. Serial No. 78,637. (No model.)

Claim.—1. In a cigarette-former, the combination of a body or trough, a flap hinged to one edge of the body or trough, and end plugs or stops, one of which is adjustable for spacing the distance to suit the requirements of and furnish abutments for the ends of different lengths of paper, substantially as described.

2. In a cigarette-former, the combination of a body or trough for receiving the paper and tobacco, and a plug or stop at each end of the body or trough, for forming an abutment for each end of the paper against escape of tobacco in shaping the cigarette, one of the plugs being adjustable to vary the length of space in the body or trough, substantially as described.

3. In a cigarette-former, the combination of a body or trough for receiving the paper and tobacco, a clasp or socket at each end of the body or trough, and a plug or stop carried by each clasp or socket and forming an abutment for each end of the paper and the tobacco in shaping the cigarette, one of the plugs being adjustable to vary the length of space in the body of the trough, substantially as described.

4. In a cigarette-former, the combination of a body or trough for receiving the paper and tobacco, a clasp or socket at each end of the body or trough, one of which is hinged to the body or trough, and a plug or stop carried by each clasp or socket and forming an abutment for each end of the paper in shaping the cigarette and permitting the withdrawal of the cigarette by swinging the hinged clasp or socket out of line of the end of the body or trough, substantially as described.

5. In a cigarette-former, the combination of a body or trough, a flap hinged to one edge of the body or trough, a clasp or socket at each end of the body or trough, and a plug or stop carried by each clasp or socket and forming an abutment for each end of the paper in shaping the cigarette and for the inner face of the end of the flap, substantially as described.

6. In a cigarette-former, the combination of a body or trough, a flap hinged to one edge of the body or trough, a clasp or socket at each end of the body or trough, a plug or stop carried by each clasp or socket, one plug or stop adjustable in its clasp or socket for spacing the distance between the plugs or stops to furnish abutments for the ends of papers of varying lengths, substantially as described.

7. In a cigarette-former, the combination of a body or trough receiving the paper and tobacco, a flap hinged at one edge of the body or trough, a clasp or socket at each end of the body or trough, and a plug or stop adjustably carried by each clasp or socket for spacing the distance between the plugs or stops to furnish abutments for the ends of papers of different lengths, substantially as described.

706,932. VALVE MECHANISM FOR EXPLOSIVE-ENGINES. RASMUS P. HANSEN, Brønderup Støre, Denmark. Filed May 4, 1900. Serial No. 715,671. (No model.)

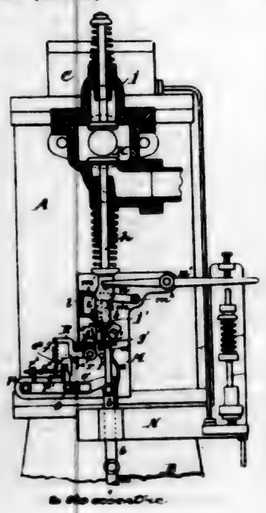

Claim.—1. In an explosive-motor, the combination with the cylinder, the admission and inlet valves, a rod operated from the crank-shaft of the motor making two rearward reciprocations to each opening of the admission-valve, a petroleum-pump, an operating-lever therefor, a head carried by the stem of the admission-valve, means carried by the head coacting with the lever to operate the same as said head is raised, means carried by said rod for lifting said head, and speed-regulating mechanism operated by said reciprocating rod, adapted to coact with said head independent of said means carried by the rod, substantially as described.

2. The combination in an explosive-motor with the admission-valve, and stem carrying the same, and a reciprocating rod, of a head secured to the valve-stem, means carried by the reciprocating rod coacting therewith to lift the same to open said valve, means for returning the valve and speed-regulating mechanism independent of the means carried by the rod and operated from said rod also adapted to engage said head to prevent the return of the valve, substantially as described.

3. The combination in an explosive-motor, with the admission-valve and stem carrying the same and the reciprocating rod of a head carried by said stem, an arm oscillated by the rod, a governor-arm pivoted thereto, a second arm adapted to be engaged by the governor-arm whereby the same is tilted on one stroke of the piston-rod, and a block yieldingly connected to said arm adapted to coact with the head on the valve-stem, substantially as described.

706,933. ATTACHMENT FOR SUSPENDERS. CHARLES R. HARER, Williamsport, Pa., assignor of one-half to Joseph B. Austrian, New York, N. Y. Filed Feb. 24, 1902. Serial No. 95,304. (No model.)

Claim.—1. The combination with a frame of metal in the form of an elongated endless loop the ends of which project inward toward each other, of a clamping-lever hinged to corresponding sides of said ends, the gripping edge of the lever coöperating with the main portions of the frame to clamp the suspender-strap.

2. An attachment for suspenders comprising a frame of wire having the form of an elongated endless loop, the sides of which are parallel and the ends of which project inwardly toward each other parallel with and opposite the intermediate portion and a sufficient distance therefrom to allow space for the passage of a suspender-strap between the central portion and the ends, in combination with a clamping-lever hinged to corresponding sides of the two ends and provided with a gripping edge which coöperates with the intermediate portion of the frame to clamp the suspender-strap between them.

3. The combination with a frame of wire in the form of an elongated endless loop the ends of which project inward toward each other, of a clamping-lever hinged to one strand of the ends, its gripping edge coöperating with the main portion of the frame to clamp the suspender-strap.

4. The combination with a frame of wire in the form of an elongated endless loop, the ends of which project inward toward each other, said ends having shoulders, of a clamping-lever hinged to one strand of the ends, its gripping edge coöperating with the main portion of the frame to clamp the suspender-strap.

5. The combination of a frame composed of a single piece of wire in the form of two parallel bars connected together at their ends, these end portions projecting inwardly parallel with the intermediate portion and a sufficient distance therefrom for the passage of a suspender-strap therebetween, of a clamping-lever having bearings mounted on corresponding strands or wires of said ends and provided with a gripping edge which coöperates with the intermediate portion of the frame to clamp the suspender-strap.

6. The combination with a wire frame, the wire of which is in the form of an endless elongated loop the ends of which loop bend toward each other, of a clamping-lever hinged to one wire of each end and resting on the opposite wire of each end when in clamping position.

706,934. TOY CART. FRANK H. HARER, Toledo, Ohio. Filed Mar. 18, 1901. Renewed June 12, 1902. Serial No. 111,312. (No model.)

Claim.—1. A toy vehicle, comprising a body, an axle therefor beneath the body, a draft member interposed between the body and axle and extending to the rear of the latter, said draft member being immediately adjacent to the body and fulcrumed upon the axle to support the forward and rear portions of said body, and vertical connections between the rear end of the draft member and the vehicle-body.

2. A toy vehicle, comprising a body, axle-bearings projecting below the body, an axle mounted in said bearings, a U-shaped draft-bar having its ends arranged beneath the rear portion of the body and extending forwardly intermediate the latter and the axle, and vertical projections on the bar ends extending within apertures formed in the body.

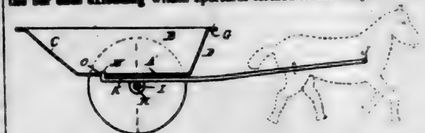

3. A body for toy vehicles, comprising a bottom section, upwardly-extending end members therefor, flanges projecting laterally from the upper edges of said members and extending beyond the opposite ends thereof, and vertical side sections having lateral flanges at their free edges extending beneath and bearing against the flange extensions upon the ends.

4. In a toy vehicle, the combination with a bottom section, upwardly-extending sides and ends therefor and integral therewith, and drop-bearings for the axle comprising oppositely arranged and apertured ears struck out from the bottom section in proximity to the sides of the latter and an axle-journal within the bearings.

706,935. PLOW-BRACE. DAVID W. HARER, Alamo, Tenn. Filed Mar. 18, 1902. Serial No. 98,866. (No model.)

Claim.—1. In a brace for plows, the combination with a plow-beam, a plow-standard and a colter-standard held in the socket or receptacle of the plow-beam, of a brace connected to the colter-standard and running through the plow-beam and through the plow-standard and connected thereto.

2. In a brace for plows, the combination with a plow-beam, a plow-standard, and a colter-standard held in the socket or receptacle of the plow-beam, of a brace having a loop or yoke which embraces the colter-standard, said brace running through the plow-beam and through the plow-standard, adjustable taps on the brace and on opposite sides of the plow-standard, and an adjustable tap on the brace and bearing against the plow-beam.

706,936. CASE AND BUTT-CUTTER FOR CIGARS. WILLIAM HEWLEY, Jackson township, Lebanon county, Pa., assignor of one-half to Henry R. Miller, Rehrersburg, Pa. Filed May 26, 1902. Serial No. 109,260. (No model.)

Claim.—1. A cigar-butt cutter, comprising a body-block having a channel in its upper face, a gage-bar crossing said channel, two cutting-blades, one blade having a guide thereon to slidably support the other blade, a spring pressing upon one cutting-blade for separating the cutting edges of both blades, a rockable handle-lever, a rock-arm on the lever, and

two link-bars pivoted at their ends on the rock-arm and cutting-blades for their reciprocal movement toward each other.

2. A cigar-bunt cutter, comprising a body-block, a face-plate held at one end of the body-block, a gage-bar adjustably held upon the body-block, two cutting-blades, each having a V-shaped notch adapted to form an angular cutting edge, guides on the face-plate wherein one cutting-blade is held to slide, means for slidably supporting the other cutting-blade so that it may be reciprocated on the first-mentioned cutting-blade, a fulcrum-stud projected from the face-plate through a slot in one of the cutting-blades, a connected rock-arm and handle-lever held to rock on the fulcrum-stud, two link-bars pivoted upon the ends of the rock-arm and respectively upon the cutting-blades, and a spring adapted to normally press the cutting edges of the blades apart.

706,937. DRUM-STAND. ALBERT B. HELLEBRAND, Cleveland, Ohio. Filed Apr. 26, 1901. Serial No. 57,626. (No model.)

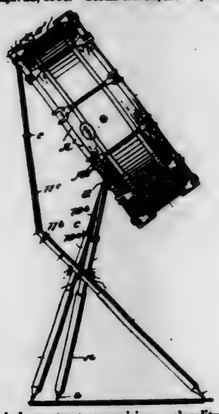

Claim.—1. A drum-stand, comprising a plurality of longitudinally-adjustable legs, and clamping devices for pivotally connecting one end of each leg with a drum-hoop, the said legs when in contracted position being adapted to fold upon the drum, inside of the hoop, the clamping devices being arranged to engage and hold the legs in the folded position.

2. A drum-stand, comprising a plurality of longitudinally-adjustable legs, and a clamping device on one end of each leg, adapted to be detachably secured on the edge of a hoop on a drum.

3. A drum-stand, comprising three longitudinally extensible and contractible legs, means for holding said legs crossed intermediate of their ends, when the legs are extended, and clamping devices for securing said legs at one end on the hoop of a drum so as to flex thereon, the said legs when in the contracted position being arranged to fold upon the drum and adapted to be held in folded position by engagement with the clamping devices.

4. A drum-stand, comprising three legs, each composed of a plurality of telescoping sections, a jointed clamping device on the outer end of the top section of each leg, and a coupling device adapted to hold the legs crossed intermediately of their ends.

5. A drum-stand, comprising three legs, two of said legs having three sections and one of said legs five sections, all the legs having their sections telescopically engaged, a point on the lower end of each leg, a jointed clamping device on the upper end of each leg, and a coupling device adapted to hold the legs crossed intermediately of their ends.

6. A drum-stand, comprising three legs, two of said legs having three sections and the other leg five sections, two intermediate sections of the longer leg being hinged together, all the legs having their sections telescopically engaged, a point on the lower end of each leg, and a coupling device adapted to hold the legs crossed intermediately of their ends.

7. The combination with a hoop on one end of a drum, of a three-legged stand, the legs of which are formed of sections telescopically engaged, a clamping device on one end of each leg, said clamping devices being adapted to be secured on the drum-hoop, and a coupling device adapted to hold the legs crossed when the stand is erected to form a tripod, said legs in contracted form being adapted to fold flat upon the drum inside of the hoop to which they are secured.

8. The combination with a hoop on one end of a drum, of a stand comprising a plurality of longitudinally-adjustable legs, and means for connecting one end of the legs with the drum-hoop, the said legs when in contracted form being adapted to fold upon the drum inside of the hoop.

9. In a drum-stand of the character described, the three telescoping legs, a clamping device for each leg, adapted to secure an end of the leg upon the hoop of a drum, a securing device adapted to hold the legs crossed when the frame is erected in tripod form, and a clamping-spring on one clamping device for holding the leg-securing device when the stand is not in use.

10. The combination with a hoop on one end of a drum, of a stand comprising three adjustable legs, a clamping device on one end of each leg, the said clamping devices being secured to the hoop at equal distances apart, the said legs being mounted to rock on the clamping devices, and adapted when in contracted form to fold upon the drum inside of the hoop, and means for holding the legs in the folded position.

11. A drum-stand, comprising a plurality of longitudinally-adjustable legs, and clamping devices adapted to be secured to a drum-hoop and on which one end of the legs are mounted to rock, the other end of each leg being pointed, the said legs being adapted when in contracted form to fold upon the drum inside of the hoop, and the clamping devices being provided with recesses adapted to receive the pointed ends of the legs.

706,938. BEARING. ELI R. HENDRICK, Carbondale, Pa. Filed Apr. 17, 1901. Serial No. 56,228. (No model.)

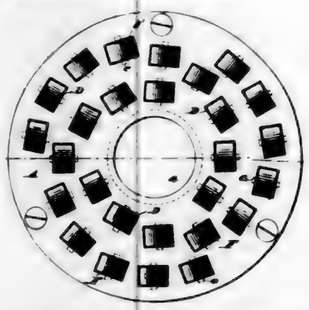

Claim.—1. In a bearing, the combination with two parallel separated disks, having mortises formed therein at varying distances from the center thereof, of rolls mounted between said disks, and the peripheries of which extend through and beyond said mortises and pins or studs upon said rolls, substantially as described.

2. In a bearing, the combination with two parallel disks separated to form a recess and having mortises arranged at varying distances from the center thereof, of rolls provided with studs or gudgeons located in the recess between said disks, said rolls having movement in said mortises and said recess, substantially as described.

3. In a bearing, the combination with two parallel separated disks, having mortises formed therein, the major axes of said mortises being substantially at right angles to the radii of said disks, of rolls located in said mortises and having studs or gudgeons located in the recess between said disks, substantially as described.

706,939. GAS-PRODUCER. JAMES A. HERRICK, Philadelphia, Pa. Filed Dec. 14, 1901. Serial No. 86,201. (No model.)

Claim.—1. A gas-producer open at the bottom for the direct downward discharge of ashes and having in the lower portion of the same a series of blast-boxes, separated from each other at the center of the producer so as to provide between their inner ends an intermediate space for the descent of ashes and clinkers, substantially as specified.

2. A gas-producer open at the bottom for the direct downward discharge of ashes and having in the lower portion of the same a series of blast-boxes which do not extend outwardly to the lining of the producer so as to provide for the descent of ashes and clinkers between said lining and the outer ends of the blast-boxes, substantially as specified.

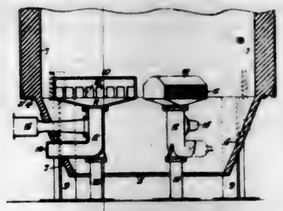

3. A gas-producer open at the bottom for the direct downward discharge of ashes and having in its lower portion a series of blast-boxes separated from each other at their inner ends and terminating some distance from the lining of the producer so as to provide for the descent of ashes between their inner ends and also between their outer ends and said lining, substantially as specified.

4. A gas-producer open at the bottom for the direct downward discharge of ashes and having in its lower portion a series of blast-boxes disposed between the center and the walls of the producer and above the open bottom of the producer and each provided with a central blast-pipe leading downwardly from the bottom of the box, substantially as specified.

5. A gas-producer open at the bottom for the direct downward discharge of ashes and having a series of blast-boxes located in the lower portion of the same and above the open bottom and disposed between the center of the producer and the lining, each of said boxes having side outlet-openings and a central air-blast pipe leading downwardly from the bottom of the box, substantially as specified.

6. The combination with a gas-producer, of a blast-box located in the lower portion of the same, an air-supply pipe communicating with the bottom of said box, said air-supply pipe comprising a vertical member connected to the bottom of the box and a horizontal member connected to said vertical member by an elbow and projecting outwardly through the wall of the ash-hopper, and an air-blast-supply pipe located above and vertically in line with the said horizontal member and communicating with the said vertical member of said air-supply pipe at a point above the said elbow, substantially as described.

706,940. MECHANISM FOR MEASURING COAL TO GAS-RETORTS. WALTER R. HERRIES, Edinburgh, Scotland. Filed Nov. 4, 1901. Serial No. 81,068. (No model.)

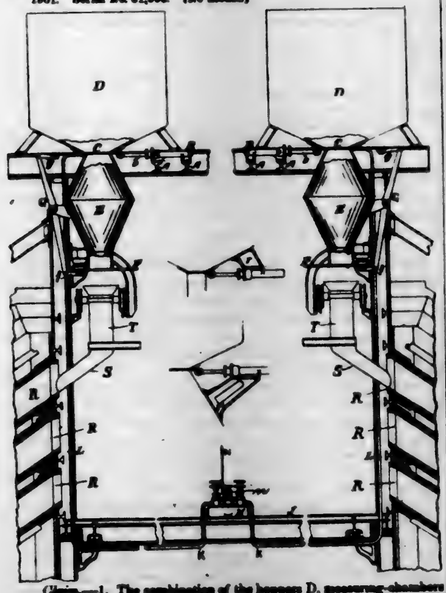

Claim.—1. The combination of the hoppers D, measuring-chambers E, coupled slides C and F hydraulic cylinders B having piston-rods *b* connected with the slides C for operating them, pipes L conveying operating-pressure to the several cylinders B; valves 1, 2, 3, &c., controlling the supply of fluid under pressure through the pipes L to the several cylinders B, water-supply valve M and operating-lever N, substantially as and for the purposes set forth.

2. The combination of hoppers D, measuring-chambers E, coupled slides C, F, hydraulic cylinder B having piston-rods *b* connected with the slides C for operating them, pipes L conveying operating-pressure to the several cylinders B; valves 1, 2, 3, &c., controlling the supply of fluid under pressure through the pipes L to the several cylinders B, water-supply valve M and operating-lever N, substantially as and for the purposes set forth.

3. The combination of hoppers D, measuring-chambers E, coupled slides C and F, hydraulic cylinders B, piston-rods *b* connected to the slides C, connecting-pipes L, pressure connection l^2, exhaust connection l^3, paired valves 1, 2, 3, 4, 5, 6, operating-lever N, rock-shaft *n*, arm *n'* carried thereby and pressure and exhaust valves n^2 operated by said arm, substantially as set forth.

706,941. TROLLING-BAIT. JOHN J. HILDEBRANDT, Logansport, Ind. Filed Nov. 21, 1901. Serial No. 83,115. (No model.)

Claim.—1. A device of the class described having a stem carrying the artificial bait, and a flat metallic plate having a direct connection with said stem and projecting solely from one side thereof to constitute a keel.

2. In a trolling-bait, the bait-stem having a looped offset, and a keel-piece consisting of a flat plate doubled over said stem and clinched into the looped offset thereof, said keel-piece having a projection solely at one side of the stem to constitute a keel for the bait.

3. A trolling-bait having a bait-stem carrying the spoons and the hook, and a keel-piece rigid with the stem and interposed between the spoons.

4. A trolling-bait having a single-length bait-stem carrying the hook, and a pair of spoons loose thereon, and a plate having a non-rotative connection with the stem between the spoons and projecting at one side of the stem to operate as a keel to prevent turning of the stem.

706,942. CULTIVATOR. FRANK G. HAAS, Battlebrook, Mich. Filed Mar. 4, 1902. Serial No. 96,610. (No model.)

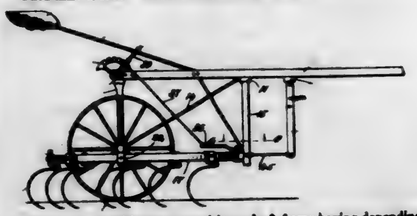

Claim.—1. A cultivator, comprising a draft-frame having depending hangers, side frames connected to said hangers, a removable frame-section having rearwardly-diverging arms attached to said side frames and having a forwardly-extending arm between the side frames, draft connections attached to said arm of the removable frame-section and to the hangers, and teeth secured to the side frames and the frame-section.

2. A cultivator, comprising a draft-frame having depending hangers, horizontal bolts secured in the lower parts of the hangers, rockable sleeves fitted individually on the bolts, shiftable collars fitted on said sleeves for adjustment lengthwise thereof and each having means for clamping the same fast with the sleeve to turn therewith, toothed frames having pivotal connection with the collars, and means for lifting said frames.

3. In a cultivator, the combination of a hanger formed by a pair of members, a horizontal bolt secured in said members of the hanger, a sleeve fitted loosely on the bolt and disposed between the members of the hanger, a collar shiftable lengthwise on the sleeve and having a clamp

for making the collar fast with the sleeve, a toothed frame, and a transverse pivotal connection between the collar and the frame.

4. In a cultivator, the combination with a hanger-supported sleeve, of a clip having a pivotal connection with said sleeve, a bowed toothed frame confined in said clip, and a lifting-arm having a pivotal and shiftable engagement with the clip.

5. In a cultivator, the combination with a sleeve, and a collar, of a clip united by a transverse pivot to the collar and having a lip or flange, a frame attached to the clip, and a lifting-arm connected to said transverse pivot and shiftably engaging with the flange of the clip.

6. A wheeled cultivator having a hanger-supported clip, a tooth-carrying frame attached to the clip, and a lifting-arm having a pivotal and shiftable connection with the clip.

7. A wheeled cultivator provided with a hanger, a collar supported therein and provided with an arm, a flanged clip pivoted to said arm of the collar, a tooth-carrying frame confined in the clip, a lifting-arm fitted to the pivotal bolt of the clip and having a finger which engages with said clip, and means for raising said lifting-arm.

706,943. DERRICK. ALVIN HOGGSON, South Ottumwa, Iowa. Filed Mar. 14, 1902. Serial No. 98,186. (No model.)

Claim.—In a derrick, a base comprising bottom rails, standards on the rails, a table supported on the standards and having an opening, a post having a step-bearing in the bottom rails, a plate secured to the post and having a bearing in said opening, a beam mounted to swing on the post, a winding-drum carried by the post, and rope connections between said drum and the end of the beam, substantially as specified.

706,944. PNEUMATIC-TIRE VALVE. HAROLD W. ROGERS, New Haven, Conn., assignor of one-half to William J. Hodgetts, Wallingford, Conn. Filed Dec. 23, 1901. Serial No. 86,582. (No model.)

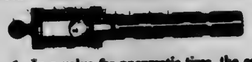

Claim.—1. In a valve for pneumatic tires, the combination with a tubular valve-body containing a valve-chamber formed at its outlet end with two annular valve-seats located one above the other, and one being larger in diameter than the other, of a ball-valve located in the said valve-chamber and adapted in diameter to be seated upon both of the said valve-seats, a tubular stem formed with a hub to which the said valve-body is secured, and with a grooved flange the groove of which receives the lower end of the said valve-body, a packing-washer located at the bottom of the groove in the said valve and prevented from being squeezed outwardly by the outer wall of the said groove, and means located in the longitudinal passage of the said stem for preventing the ball-valve from closing the said passage.

2. In a valve for pneumatic tires, the combination with a valve-body provided with a valve-chamber having a valve-seat at its outlet end, a cap for the said valve-body, a ball-valve located in the said chamber, a tubular stem formed with a hub to which the said valve-body is secured, and which contains a concavity adapted to receive the ball-valve and leading into the longitudinal passage of the stem, and a staple-shaped finger located in the said concavity and passage and preventing the ball-valve from seating upon the walls of the concavity so as to close the said passage.

3. In a valve for pneumatic tires, the combination with a valve-body containing a valve-chamber formed with a valve-seat, of a valve located within the said chamber, a stem to which the said valve-body is secured and which is formed with a longitudinal passage, and a finger adapted to be entered into the said passage in which it is retained by friction, and to prevent the valve from entirely closing the said passage when not on its seat.

706,945. MEANS FOR AUTOMATICALLY CLOSING SWINGING DOORS. EDWARD F. HUBER, Springfield, Mo. Filed May 20, 1901. Serial No. 62,380. (No model.)

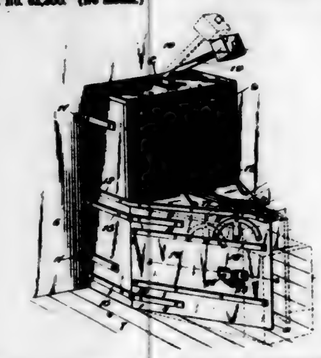

Claim.—1. The combination with an apertured wall of an ice-holding vault or the like, of a box-like antechamber in communication with said vault-opening and having an exit-opening that allines with the vault-opening, hinged twin doors arranged to normally seal said exit-opening from the antechamber into the vault, and means for automatically closing said doors after the passage of an ice block through said chamber, substantially as described.

2. The combination with an apertured wall of an ice-holding vault or the like, of a box-like antechamber in communication with said vault-opening and provided with an exit-opening that allines with the vault-opening, a wing-wall extended over said exit-opening of the antechamber, twin doors disposed in converging relation and mounted to swing toward or from the wing-wall, and means for automatically closing said doors, substantially as described.

3. The combination with an apertured wall of an ice-holding vault or the like, of a box-like antechamber in communication with said vault-aperture and having an exit-opening in line with the vault-aperture, a wing-wall projected over said outlet-opening in the antechamber, converging twin doors hold to swing toward and from each other, and when closed having their upper edges closely contacting with the wing-wall, and their forward edges sealed by a joint strip when in contact, and means to automatically close the doors, substantially as described.

4. The combination with a vault-wall having an inlet-opening, of a box-like antechamber in communication with said opening and provided with an exit-opening in allinement with the vault-opening, converging doors arranged to normally swing inwardly and to lie in the path of blocks of ice which are adapted to traverse said antechamber, and means for automatically closing said doors across the exit-opening from the antechamber, substantially as described.

5. The combination with a vault-wall having an inlet-opening, of a box-like antechamber in communication with said opening and provided with an exit-opening in allinement with said vault-opening, converging doors arranged to swing inwardly toward each other and provided on the facing surfaces with yieldable buffers that lie in the path of blocks of ice arranged to traverse the antechamber and to impinge said buffers, and means for automatically closing said doors across the exit-opening from the antechamber, substantially as described.

6. In combination with a wall having an opening therein, a horizontally-disposed wing-wall projecting inwardly from said wall, twin doors arranged normally in converging relation and lying in the path of objects which pass through said wall-opening, and means for automatically closing said doors toward the wing-wall and toward each other.

706,946. MECHANISM FOR EFFECTING VARYING TOUCH OF KEY OR MUSICAL INSTRUMENTS. LUDWIG HUPFELD, Leipsic, Germany. Filed Jan. 8, 1901. Serial No. 42,521. (No model.)

Claim.—1. A musical instrument embodying a key, an arm free at one end, said free end bearing against the key, a pivotally-supported frame, means to control the position of the frame, and a pusher for engaging said arm, guided toward the said arm by said frame.

2. A musical instrument embodying a key, a spring-arm free at one end, said free end bearing against the key, a pivotally-supported frame, means to control the position of the frame, and a pusher for engaging said arm, guided toward the said arm by said frame.

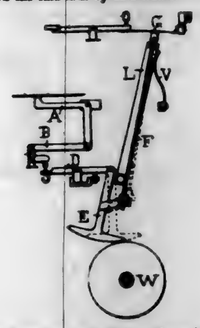

3. A musical instrument embodying a key, a yieldable arm one end free and said free end bearing against the key, a swinging frame, a spring bearing against said frame, means to move the frame in opposition to its spring, and a pusher to engage the arm, guided by said frame.

4. A musical instrument embodying a key, a yieldable arm bearing against the same, a swinging frame, a pusher for said arm guided by said frame a spring bearing against said frame, two operatively-connected levers one of which is attached to said frame, and a note-disk controlling the other lever.

5. In a musical instrument, the combination with the note-striking mechanism, of a spring through the medium of which said striking mechanism is actuated; and means to vary the operative length of such spring.

6. In a musical instrument, the combination with the note-striking mechanism; of a spring through the medium of which the said striking mechanism is operated, a striker arranged to operate on such spring and actuate the note-striking mechanism through the medium thereof; and means for altering the position of the striker relatively to the spring so as to vary the strength thereof.

7. In a musical instrument, the combination of a note-striking mechanism; a spring through the medium of which said striking mechanism may be operated; a mechanical striker arranged to operate on said spring and actuate the note-striking mechanism through the medium thereof; and means for shifting the striker relatively to the spring so as to vary the operative length and consequent strength of the latter.

706,947. SASH-LOCK. HOAS M. HUTTON, Chicago, Ill. Filed May 5, 1902. Serial No. 106,092. (No model.)

Claim.—1. A burglar-proof lock for window-sashes, comprising in combination with the rack-bar secured to the sash, a swiveled locking-lever carried by the meeting-rail of the sash, and means for gripping the opposite edges of the rack-bar to hold the sash locked together, as set forth.

2. A sash-lock, comprising in combination with a rack-bar, adapted to be attached to the sash of a window, a swiveled locking-lever mounted on the meeting-rail of the sash, and provided with a recessed portion having an inclined or cam-outlined wall adapted to receive one of the teeth of the rack-bar, and means actuated by said lever for gripping the opposite edge of the rack-bar, as set forth.

3. A sash-lock, comprising in combination with the rack-bar secured to the sash of a window, a swiveled locking-lever having a recess, the wall of which is inclined and adapted to receive one of the teeth of said rack-bar, and a second pivotal lever actuated by the first lever and adapted to grip the outer edge of the rack-bar, as set forth.

4. A sash-lock, comprising in combination with a rack-bar secured to the sash of a window, a swiveled lever having a recess adapted to receive one of the teeth of said rack-bar, a lug projecting from said lever, a pivotal hooked lever having a recess engaged by said projection and adapted to be rotated as said pivotal lever is swung upon its pivot, as set forth.

706,948. STAY-WIRE TIE. JOHN IMBLER, Clay township, Hamilton county, Ind. Filed Mar. 17, 1902. Serial No. 98,543. (No model.)

Claim.—1. A tie for crossing portions of wire fences, said tie consisting of a length of wire engaging one of the crossing wires near its middle; its ends wrapped about the other crossing wire upon opposite sides of the first wire; and then wrapped about the first wire on the opposite side of the second wire.

2. A tie for crossing portions of wire fences, said tie consisting of a length of wire engaging one of the crossing wires near its middle; its ends wrapped about the other crossing wire upon opposite sides of the first wire; and the said ends brought together upon the opposite side of the second wire and both wrapped about the first wire in the same direction.

706,949. LOOSE-SHEET BINDER. JAMES R. IRVINE, Kansas City, Mo., assignor of one-half to Joseph D. Havens, Kansas City, Mo. Filed Nov. 4, 1901. Serial No. 80,988. (No model.)

Claim.—In a loose-sheet binder, two members hinged to each other and provided each with a plurality of sheet-holding arms comprising each a sheet-metal body the lower end of which is provided with a plurality of projections extending through the body of the member for securing the arm thereto, and the upper portion of the said body curving upwardly toward the other member, the said arm above the upper edge of the member being, in cross-section concave on its upper and convex on its lower side, the arm being secured on the side of the member adjacent to the opposite member, substantially as described.

706,950. RAILWAY-SWITCH. CHARLES JOHNSTON, Memphis, Tenn. Filed May 3, 1902. Serial No. 105,899. (No model.)

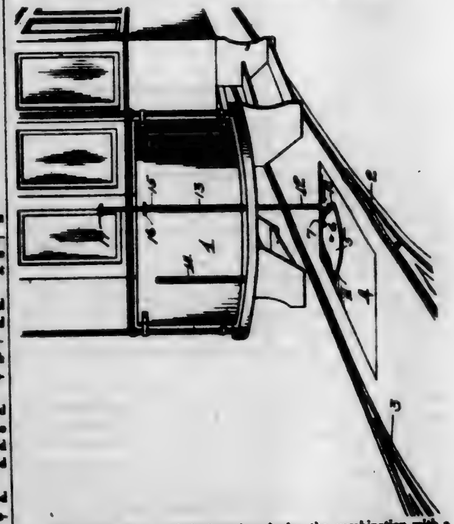

Claim.—1. In a switch-throwing device the combination with a throwing-lever a cam-bar pivoted to said lever a spring locking-bar, resting on said cam-bar, a locking-pin depending from said bar a switch-

throwing bar having holes therein to be engaged by said locking-pin, a slot in said throwing-bar and a pin in said throwing-bar and a pin in said throwing-lever a cam-plate having a pin depending therefrom to move said throwing-lever and means carried by the car for operating said cam-plate, substantially as shown and described.

2. In a switch-throwing device the combination with a depressed box, a throwing-lever in said box, a cam-bar operated by said lever, a locking-pin operated by said cam-bar, a switch-throwing bar, a slot in said bar and a pin in said lever having a limited motion in said slot, of a plate, pivoted on the top of said box a pin depending from said plate to operate said throwing-lever and means carried by the car of rotating said plate, substantially as described.

3. In a switch-throwing device the combination with a throwing-lever, a bar connecting said lever with the switch point and a cam-plate operating said lever, of the car, two tubular holders on the front of said car, a rod having a spring thereon resting in one of said holders and removable therefrom, and projecting through said holder, substantially as and for the purposes set forth.

706,951. HARROW. MORRIS E. JOHNSON, Laurel, Nebr. Filed Feb. 14, 1902. Serial No. 94,063. (No model.)

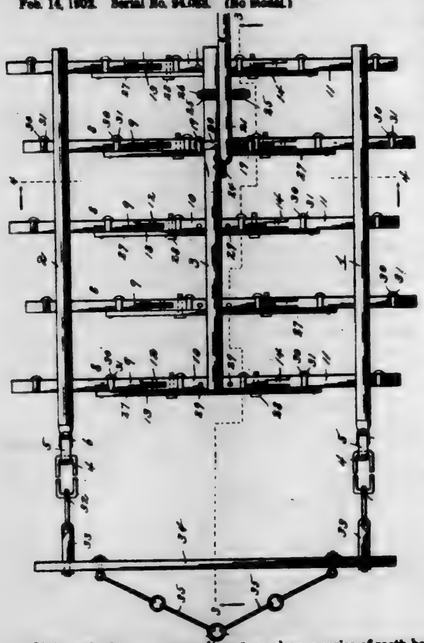

Claim.—1. A harrow comprising frame-bars, a series of tooth-bars each consisting of pivoted sections to adapt it to conform to inequalities of the ground-surface, the said tooth-bars being pivotally suspended from the frame-bars, and means for unitedly shifting the tooth-bars to rock them in relation to the frame-bars to vary the angle thereof and the teeth carried thereby.

2. A harrow comprising a plurality of pivotally-mounted tooth-bars which are adjustable to vary the angle of the teeth thereof relatively to the ground-surface, each of the said bars being made up of a series of pivoted sections and adapted to conform to irregularities in the contour of the ground-surface, and means for locking each tooth-bar to prevent the sections thereof from moving.

3. A harrow comprising a plurality of tooth-bars composed of pivoted sections, a locking-bar applied to each tooth-bar and pivoted at opposite extremities to the outer sections of said tooth-bar, and pins for insertion through the locking-bar and the intermediate section of the tooth-bar to prevent the sections of the latter from moving.

4. A harrow comprising a series of frame-bars, a plurality of tooth-bars pivotally suspended from the frame-bars, the said tooth-bars being composed of movable sections, means for adjusting all of the tooth-bars simultaneously to vary the angle of the teeth thereof relatively to the ground-surface, and means for locking the sections of the individual tooth-bars to prevent movement thereof.

706,952. ENGINE-STOP. HENRY JONES, Watertown, N. Y. Filed Sept. 27, 1901. Serial No. 76,791. (No model.)

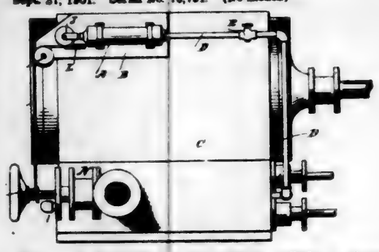

Claim.—1. An engine-stop, comprising a cylinder, a pipe leading to the cylinder from a motive-agent supply, a valve in the said pipe, a piston reciprocating in the said cylinder, a flexible connection between the piston and the throttle-valve, a governor, and means for opening the said pipe-valve from the governor when the stem thereof drops, as set forth.

2. An engine, comprising a cylinder, a pipe leading to the cylinder from a motive-agent supply, a valve in the said pipe, a piston reciprocating in the said cylinder, a flexible connection between the piston and the throttle-valve, means for opening the said pipe-valve in case of an emergency, and a vacuum-breaker actuated with the said valve for breaking the vacuum in the condenser-pump to prevent the pump from pumping water into the cylinder, as set forth.

3. An engine-stop, comprising a cylinder, a pipe leading to the cylinder from a motive-agent supply, a piston reciprocating in the said cylinder and carrying at the outer end of its piston-rod a pulley, a flexible connection passing over the said pulley and secured at one end to a fixed part, the other end of the flexible connection winding on a pulley attached to the stem of the throttle-valve, a valve in the said supply-pipe, a governor, and means for actuating the said valve from the governor-stem to open the latter and allow steam to pass through the pipe into the said cylinder, as set forth.

4. In an engine, the combination of a cylinder, a pipe leading to the cylinder from the motive-agent supply, a piston in the cylinder, a flexible connection between the piston-rod and throttle-valve stem, a valve in the motive-agent-supply pipe and provided with a lever on its stem, a governor, and an arm on the governor-stem and adapted to engage the lever of the valve-stem as set forth.

5. In an engine, the combination with a cylinder, a pipe leading to the cylinder from the motive-agent supply, a piston in the cylinder, a flexible connection between the piston-rod and the throttle-valve stem, a valve in the motive-agent-supply pipe and provided with a lever on its stem, a governor, and an arm on the governor-stem and adapted to engage the lever of the valve, of an exhaust-pipe, an air-valve connected with the exhaust, and a lever operated by the lever of the valve in the supply-pipe and operating the air-valve, as set forth.

6. In an engine, the combination with a cylinder, a piston reciprocating in the cylinder, and a connection between the piston and throttle-valve, for operating the latter from the former, of a pipe leading to the cylinder from the motive-agent supply, a valve in said pipe, means for automatically opening said valve in case of accident, and a vacuum-breaker actuated by the said valve whereby the vacuum will be broken at the time the steam is shut off, as set forth.

7. In an engine, the combination with a cylinder, a piston reciprocating in the cylinder, and a connection between the piston and throttle-valve for operating the latter from the former, of a pipe leading to the cylinder from the motive-agent supply, a valve in said pipe, a governor, means for operating said valve from the governor in case of accident thereto, and a vacuum-breaker, actuated from the said valve to break the vacuum at the time the valve is opened to admit the fluid agent to the cylinder, as and for the purposes set forth.

706,958. BROODER. WALTER P. JONES, Gloucester, Va. Filed May 8, 1902. Serial No. 106,288. (No model.)

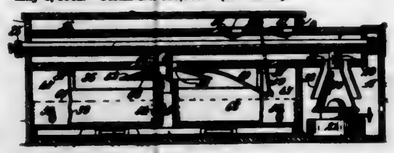

Claim.—1. In a brooder, a pipe for carrying off products of combustion, extending through the upper part of the brooding-chamber, a lamp communicating with said pipe at a point intermediate its ends, a branch leading from said pipe at a point intermediate its ends, and removable caps on the opposite ends of said pipe, as and for the purpose set forth.

2. In a brooder, a lamp or heating device, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a branch leading from said pipe at a point intermediate its ends, a removable cap on one end of said pipe having a restricted opening therein and a contracted neck, and a second cap removably mounted on said neck.

3. In a brooder, a lamp, a vertically-movable pipe extending through the brooding-chamber for carrying off the products of combustion from said lamp, and a chimney for said lamp carried by said pipe and communicating with the interior thereof.

4. In a brooder, a lamp, a pipe extending through the brooding-chamber for carrying off the products of combustion from said lamp, a chimney for said lamp carried by said pipe and communicating with the interior thereof, a vertically-movable conduit in which said pipe is mounted, the said conduit surrounding said pipe and forming therewith an annular passage which communicates with the brooding-chamber, and a funnel carried by said conduit, surrounding said chimney and communicating with said passage, for the admission of fresh air thereto.

5. In a brooder, a casing having openings in the ends thereof, a lamp, a pipe extending through the brooding-chamber for carrying off the products of combustion from said lamp, a chimney for said lamp carried by said pipe and communicating with the interior thereof, a vertically-movable conduit in which said pipe is mounted, the said conduit extending through the openings in the ends of said casing, surrounding said pipe and forming therewith an annular passage which communicates with the brooding-chamber, a funnel carried by said conduit, surrounding said chimney and communicating with said passage for the admission of fresh air thereto, and a pivoted flap or filling-piece at the upper end of the opening in one of the ends of said casing, as and for the purpose set forth.

6. In a brooder, a floor for the brooding-chamber having a space beneath the same, a lamp, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, connections between said pipe and the space beneath said floor, extending vertically through the center of the brooding-chamber, a conduit surrounding said pipe, forming an annular passage, the said conduit being provided with an opening adjacent to said lamp for the admission of air and with an opening communicating with the brooding-chamber, and escape-passages to the atmosphere leading from the lower part of said brooding-chamber and from said space at the corners of the brooder.

7. In a brooder, a floor for the brooding-chamber having a space beneath the same, a lamp, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a chimney for said lamp carried by said pipe and communicating with the interior thereof, a slip-joint connection between said pipe and the space beneath said floor, a vertically-movable conduit in which said pipe is mounted, the said conduit surrounding said pipe, forming therewith an annular passage, and having an opening therein adjacent to said lamp for the admission of fresh air and a second opening communicating with the brooding-chamber, and escape-passages to the atmosphere leading from the lower part of said brooding-chamber and from said space.

8. In a brooder, a lamp or heating device, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a conduit surrounding said pipe, forming an annular passage, the said conduit being provided with an opening adjacent to said lamp for the admission of air and with an opening communicating with the brooding-chamber, and a deflector in the brooding-chamber adjacent to the latter opening.

9. In a brooder, a lamp or heating device, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a conduit surrounding said pipe, forming an annular passage, the said conduit being provided with an opening adjacent to said lamp for the admission of air and with an opening communicating with the brooding-chamber, and a hood-shaped deflector in the brooding-chamber having a tubular stem thereon which fits within the latter opening.

10. In a brooder, a hover in the brooding-chamber, having an opening in the top thereof, and a conduit for hot air communicating with said opening for introducing a current of warm air from above the hover downwardly through the upper part thereof.

11. In a brooder, a hover in the brooding-chamber, means for introducing a current of warm air through the upper part thereof, and a deflector within said hover for causing the downward movement of said current of air.

12. In a brooder, a conduit for heated air having an opening therein communicating with the upper part of the brooding-chamber, a hover in said chamber beneath said conduit and surrounding said opening, and a hood-shaped deflector within said hover having a tubular stem thereon, which fits within said opening.

13. In a brooder, a conduit for heated air having an opening therein communicating with the upper part of the brooding-chamber, and a hover in said chamber beneath said conduit and surrounding said opening, the said hover having its top or cover made in sections pivoted to said conduit.

14. In a brooder, a conduit for heated air having an opening therein communicating with the upper part of the brooding-chamber, and a hover in said chamber beneath said conduit and surrounding said opening, the said hover comprising two cover-sections hinged to opposite sides of said conduit, transversely-extending strips secured to the lower sides of said sections, projecting beyond the inner edges thereof, cut away to receive said conduit and bearing against the under side of said conduit, whereby said sections are supported, and a hover-cloth attached to and projecting down from the lower edges of said strips and from the outer edges of said cover-sections.

15. In a brooder, the combination with the floor of the brooding-chamber having a space beneath the same, a lamp, means for conveying the products of combustion from said lamp to said space, and means for admitting fresh air to said brooding-chamber, of compartments in the brooder-casing outside said chamber, the said compartments communicating with the lower end of the brooding-chamber and discharging at their upper ends into the atmosphere, and escape-flues leading from said space and extending through said compartments.

16. In a brooder, the combination with the casing thereof, a floor therein having a space beneath it, a lamp, means for conveying the products of combustion from said lamp to said space, and means for admitting fresh air to the brooding-chamber, of compartments at the corners of said casing separate from the brooding-chamber but communicating therewith at the lower end of the latter, and discharging at their upper ends into the atmosphere, and vertically-disposed escape-flues leading from said space and extending through said compartments.

17. In a brooder, the combination with the casing thereof, a floor therein having a space beneath it, a lamp, means for conveying the products of combustion from said lamp to said space, and means for admitting fresh air to the brooding-chamber, of diagonally-arranged vertically-disposed partitions at the corners of said casing, forming compartments separate from the brooding-chamber, the said partitions having openings communicating with the lower part of said brooding-chamber and discharg at their upper ends into the atmosphere, and vertically-disposed escaping-flues leading from said space and extending through said compartments.

18. In a brooder, the combination with the casing thereof, a floor therein having a space beneath it, a lamp, means for conveying the products of combustion from said lamp to said space, and means for admitting fresh air to the brooding-chamber, of chimneys carried by and extending through the top or cover of said casing at the corners thereof, diagonally-arranged vertically-disposed partitions in said casing, forming compartments beneath said chimneys, the said partitions having openings therein communicating with the lower part of said brooding-chamber, and vertically-disposed escape-flues in said compartments communicating at their lower ends with said space and projecting at their upper ends into said chimneys.

19. In a brooder, a lamp or heating device, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a conduit surrounding said pipe, forming an annular passage, the said conduit being provided with three openings, one adjacent to said lamp for the admission of air, one communicating with the brooding-chamber, and the third at a point between the other two, and a damper controlling the latter opening.

20. In a brooder, a lamp or heating device, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a conduit surrounding said pipe, forming an annular passage, the said conduit being provided with three openings, one adjacent to said lamp for the admission of air, one communicating with the brooding-chamber, and the third at a point between the other two, a damper controlling the latter opening, and a thermostat in the brooding-chamber connected with said damper for operating it.

21. In a brooder, a casing having openings in the ends thereof and a removable top, a hollow floor in said casing having exit-flues leading therefrom, a lamp, a pipe for carrying off the products of combustion from said lamp having a detachable connection with said hollow floor, and a conduit surrounding said pipe, fitting within the openings in the ends of said casing, and having openings therein, one communicating with the brooding-chamber and the other located adjacent to said lamp for the admission of air to said conduit, the said pipe and conduit being permanently secured to each other and removable from said casing.

22. In a brooder, a casing having openings in the ends thereof and a removable top, a removable hollow floor in said casing having exit-flues

leading therefrom, a lamp, a pipe for carrying off the products of combustion from said lamp having a detachable connection with said hollow floor, a conduit surrounding said pipe, fitting within the openings in the ends of said casing, and having openings therein, one communicating with the brooding-chamber and the other located adjacent to said lamp for the admission of air to said conduit, and a lamp-box, the said pipe, conduit and lamp-box being permanently secured to each other and removable from said casing.

23. In a brooder, a floor for the brooding-chamber having a space beneath the same, a lamp, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a perforated cap on the end of said pipe opposite said lamp, a branch leading from said pipe at a point intermediate its ends and communicating with the space beneath said floor, a conduit surrounding said pipe, forming an annular passage, the said conduit being provided with an opening adjacent to said lamp for the admission of air and with an opening communicating with the brooding-chamber, and escape-passages to the atmosphere leading from the lower part of said brooding-chamber and from said space.

24. In a brooder, a floor for the brooding-chamber having a space beneath the same, a lamp, a pipe extending through the upper part of the brooding-chamber for carrying off the products of combustion from said lamp, a removable cap on the end of said pipe opposite said lamp, a branch leading from said pipe at a point intermediate its ends and communicating with the space beneath said floor, a valve or cut-off in said branch, a conduit surrounding said pipe, forming an annular passage, the said conduit being provided with an opening adjacent to said lamp for the admission of air and with an opening communicating with the brooding-chamber, and escape-passages to the atmosphere leading from the lower part of said brooding-chamber and from said space.

25. The combination with the brooding-chamber of a brooder, of a removable partition for dividing said chamber into a plurality of compartments.

26. The combination with the brooding-chamber of a brooder, having vertical openings in the floor thereof, of a partition for dividing said chamber into a plurality of compartments, the said partition having dowel-pins projecting from the lower edge thereof and adapted to fit within said openings.

27. In a brooder, the combination with the hollow floor of the brooding-chamber having a vertical pipe extending upwardly therefrom for conveying a heating medium to the interior of said hollow floor, of a partition for dividing the brooding-chamber into a plurality of compartments having means thereon for detachably connecting the same to said floor, the said partition comprising two sections and a semicircular flexible connecting-strap between said sections designed to embrace said pipe when the partition is in operative position.

28. In a brooder, a hover having the top or cover thereof made in sections pivoted to a common support and having openings therein for the admission of light to the interior of the hover.

706,954. HEATING AND VENTILATING APPARATUS. JOHN KALLGREN, New Haven, Conn. Filed Jan. 13, 1901. Serial No. 43,083. (No model.)

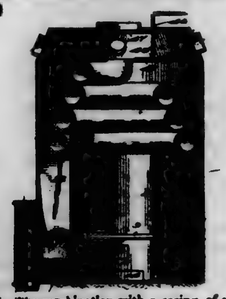

Claim.—1. The combination with a casing, of a fire-box therein inclosed by an air-chamber, an air-inlet to the chamber, a receptacle within the chamber adjacent to the inlet and adapted to contain water, a coil-pipe arranged above the fire-box and communicating with the interior of the air-chamber, a partition within the casing arranged about the outlet of the coil-pipe and means for closing said outlet.

2. The combination with a casing, of a fire-box therein, an air-chamber inclosing the fire-box, an air-inlet to said chamber, an ash-box, a smoke-chamber inclosing said ash-box, parallel flues communicating at their lower ends with the smoke-chamber, an inlet to one of the flues whereby the products of combustion from the fire-box are admitted thereto, outlets from said flues, means for closing the outlet in the flue communicating with the fire-box, a coil-pipe arranged above the fire-box and communicating with the interior of the air-chamber, an air-chamber within the top of the casing and above the fire-box, the coil-pipe opening into said chamber, an outlet from said chamber and means for closing the air-inlet and the said outlet alternately.

3. The combination with a casing, of a fire-box therein, an air-chamber inclosing the fire-box, an inlet to said chamber, a box inclosing the inlet, a door within said box, a receptacle within the air-chamber adjacent to the inlet, an ash-box, a smoke-chamber inclosing said ash-box, parallel flues communicating at their lower ends with the smoke-chamber, an inlet within one of the flues whereby the products of combustion from the fire-box are admitted thereto, an outlet from the remaining flue, a damper mounted adjacent to an aperture connecting the flues, said damper adapted to either close said aperture or the inlet-flue, a coil-pipe arranged above the fire-box and communicating with the interior of the air-chamber, an air-chamber arranged above the fire-box, said pipe opening therefrom, an outlet from the upper air-chamber and a damper within said chamber adapted to open and close the air inlet and outlet of said chamber alternately.

4. The combination with a heater, of a fire-box therein, an air-chamber inclosing the fire-box, an air-inlet to said chamber, a coil-pipe arranged above the fire-box and communicating with the interior of the air-chamber, an air-chamber arranged above the fire-box and adapted to receive air from the coil-pipe, an outlet from said chamber, a pipe inclosing and extending upward from said outlet, an air-inlet pipe communicating with the inlet of the heater, and air-distributing pipes extending from the sides of the upper air-compartment of the heater, and provided with outlets.

5. The combination with a heater, of a fire-box therein, an air-chamber inclosing the fire-box, an air-inlet to said chamber, a coil-pipe arranged above the fire-box and communicating with the interior of the air-chamber, an air-chamber arranged above the fire-box and adapted to receive air from the coil-pipe, an outlet from said chamber, a pipe inclosing and extending upward from said outlet, an air-inlet pipe communicating with the inlet of the heater and having inlets at opposite ends, branch inlet-pipes extending from the air-inlet pipe, a damper within the air-pipe below the branch pipes, dampers within the air-pipe to control the inlets thereof, air-distributing pipes extending from the walls of the upper air-chamber of the heater and having outlets and a damper within said chamber adapted to close the end of the coil-pipe and of the outlet-pipe alternately.

6. The combination with a structure having apartments therein, of a casing within one of said apartments, a fire-box within the casing, an air-chamber inclosing the fire-box, an air-inlet to said chamber, a coil-pipe arranged above the fire-box and communicating with the interior of the air-chamber, an air-chamber arranged above the fire-box, said coil-pipe being adapted to conduct air thereto, an outlet from the upper air-chamber, a damper within said chamber adapted to open and close the air inlet and outlet thereof alternately, a pipe inclosing and extending from the outlet and through the top of the structure, an air-inlet pipe extending from the top of the structure and communicating with the air-inlet of the casing, a branch pipe extending from the air-inlet pipe to a point within one of the apartments, an inlet to said pipe, an air-distributing pipe extending from the upper air-chamber in the casing, an outlet from said pipe suitably arranged within the apartment and dampers within the air inlet and distributing pipes.

706,955. NUT-LOCK. RALPH KAUFFMER, Pottsville, Pa., assignor of one-half to Otto Gintzler, Pottsville, Pa. Filed Dec. 31, 1901. Serial No. 87,900. (No model.)

Claim.—1. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, and means for holding the spring in place in its socket, substantially as described.

2. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog

slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, and a pin inserted in a transverse perforation in the nut and operating to hold the spring in place in its socket, substantially as described.

3. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket and oppositely-disposed longitudinal slots formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, and a pin inserted in a transverse perforation in the nut and passing through said slots, said pin operating to hold the spring in place in its socket and prevent the dog from turning, substantially as described.

4. The combination with a longitudinally peripherally grooved bolt, of a nut provided in one of its faces with a transverse perforation, a dog slidably arranged in said perforation and provided at its inner end with a beveled point arranged to engage one of said grooves and prevent the nut from turning in a backward direction, the outer end of said dog having a longitudinal socket and oppositely-disposed longitudinal slots formed therein, a coiled spring arranged in said socket and operating to force the dog into engagement with the bolt, a pin inserted in a transverse perforation in the nut and passing through said slots, said pin operating to hold the spring in place in its socket, one side of the inner end of the dog being recessed to form a shoulder, and a transverse perforation formed in the nut in alinement with said shoulder to permit the insertion of a key to retract the dog from engagement with the bolt, substantially as described.

706,956. GARMENT-FASTENER. OSWALD E. KAMELMAN, Detroit, Mich. Filed Feb. 11, 1902. Serial No. 93,548. (No model.)

Claim.—1. As a garment-fastener, the combination with an elongated pliable prong member having one end sharpened and adapted to be bent over at its extremity, and terminating at the other end in a hook and a cloth-penetrating point, said hook and point being arranged one opposite the other upon opposite sides of the prong member and extending in substantially parallel planes in the direction of the sharpened end of the prong, and a loop member.

2. In a garment-fastener, the combination with an elongated pliable prong member having one end sharpened and adapted to be bent over at its extremity and terminating at the other end in a hook and a cloth-penetrating point arranged one directly opposite the other, said hook and point being formed integral with and arranged upon opposite sides of the prong member and extending in substantially parallel planes in the direction of the sharpened end of the prong, and a loop member adapted to be engaged by the hook.

3. In a garment-fastener, the combination with two pliable and sharpened prong members opened from each other, of a connecting member integral with the prongs and joining the ends of the latter opposite the points, a hook and a cloth-penetrating point carried by and formed integral with the connecting member, said hook and point being arranged one directly opposite the other and projecting from the opposite sides of said connecting member in the direction of the sharpened ends of the prongs, and a loop member adapted to be engaged by the hook.

706,957. VEHICLE-HUB. ELIAS KERR, Mulberry, Pa. Filed Dec. 26, 1901. Serial No. 87,205. (No model.)

Claim.—The herein-described hub construction comprising the members 5 and 6 having interoperating members whereby when said members are brought together they will be held against relative movement, in combination with the boxing 17 having means upon its outer end to engage cooperating devices upon the outer hub-sections that said boxing may be held against rotation, and spoke-tightening cooperating with said hub and the spokes carried thereby comprising the thimble 25, the members 22 and 27, all operatively combined substantially as specified and for the purpose set forth.

706,957

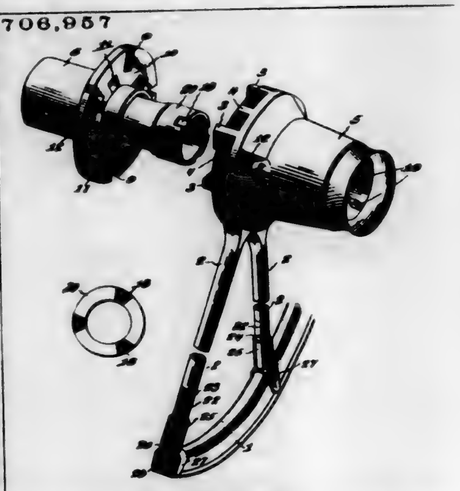

706,958. VEHICLE. ALBERT A. KELLOGG, Clinton, Mo., assignor of one-third to G. C. Raynor, Clinton, Mo. Filed May 3, 1902. Serial No. 105,767. (No model.)

Claim.—1. As an improvement in vehicles, the combination with the wagon-body, the body-springs, and the supporting-bar for each spring, said springs being connected to the wagon-body, and the front and rear axles; of a pair of crossed reach members, having their opposite ends pivotally joined with the front and rear axles, a fifth-wheel comprising an upper and a lower opposing plate, each plate having integral apertured lugs, adapted to engage sockets in their respective spring-bar, and axle-engaging members, and having integral angle members for engaging the inner sides of the spring-bar and the axle, said angle members having sockets, said sockets adapted to be in alinement and to receive the king-bolt, for the purposes specified.

2. As an improvement in vehicle running-gears, the combination with the axle, the crossed reaches pivotally connected at each end with the said axles, the body-springs, and the supports for the said springs; of the fifth-wheel connections, each comprising a pair of superimposed plates, one of which is rigidly secured to the axle, and the other is rigidly secured to the body-spring holder, each of said plates having sockets at a point inside of the said axle and holder members, to receive the king-bolt, and spring-metal braces rigidly connected to the upper one of said fifth-wheel members, said braces extending in a longitudinal plane of the wagon-body, and having their inner ends fixedly connected thereto, for the purposes specified.

706,959. WATER-GAGE ATTACHMENT. FRANK J. KNOX, Hartford, Conn. Filed Jan. 7, 1902. Serial No. 88,727. (No model.)

Claim.—1. An attachment having means for clamping to a water-gage and a reflector having a narrow central opening in front of the gage-glass and arranged to throw light backward toward the gage-glass, substantially as specified.

2. An attachment having means for clamping to a water-gage, a screen with an opaque stripe parallel with and back of the gage-glass and a reflector extending on each side of the glass and having reflecting-walls that converge toward a narrow opening in front of the glass and arranged to throw light backward toward the front of the glass, substantially as specified.

3. An attachment having means for clamping to a water-gage, an opaque stripe parallel with and back of the gage-glass and a reflector extending each side of the glass and having reflecting-walls that converge

toward a narrow opening in front of the glass and arranged to throw light backward toward the front of the glass, substantially as specified.

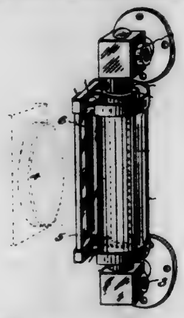

4. An attachment having means for clamping to a water-gage, a translucent screen with an opaque stripe back of and parallel with the gage-glass, and an opaque reflector with a central opening in front of the glass, substantially as specified.

706,960. **BURIAL-CASKET.** JULIUS KOBER, Newark, N. J. Filed Dec. 16, 1901. Serial No. 86,097. (No model.)

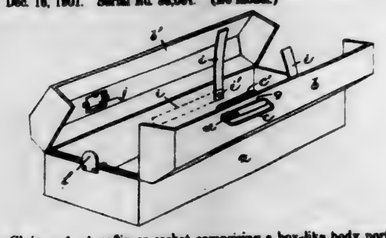

Claim.—1. A coffin or casket comprising a box-like body portion, covers hinged to the opposite side walls of said body portion at their outer edges and adapted to meet at their inner edges along a longitudinal line of the casket, and outer and inner handles pivoted on one cover to turn in unison and being adapted to project beyond the edge of said cover and engage the other cover.

2. A coffin having a body portion *a*, covers hinged to the opposite side walls of said body portion at their outer edges and adapted to meet at their inner edges, outer and inner locking-handles pivoted on one cover to operate in unison to engage the other cover, and springs arranged within the coffin on the body portion and adapted to engage said covers to throw them open.

3. A coffin having a body portion, a cover hinged thereto at one edge, and a leaf-spring secured at its lower end to the side wall of the body portion and extending vertically upward and adapted to be bent into fixed position by closing the cover, and means to exert strain to open said cover, said spring being at its said lower end secured to the side wall of the coffin-body by a single pivotal screw or bolt and being adapted to be turned on said screw or bolt in a plane parallel to the wall on which it is mounted and brought to lie wholly within the coffin-body out of any possible operative engagement with the cover.

4. In a coffin having a body portion *a*, and covers hinged thereto at their outer edges and adapted to meet at their inner edges, a bolt *d*, having a cylindrical middle portion passing through one of said covers and squared extensions projecting at both sides and handles secured on said extensions and adapted to cooperate to engage the other cover.

5. The combination with a coffin having oppositely-opening hinged covers adapted to meet at their free edges, of a handle pivoted on one cover and adapted to be turned to overreach the other cover, said handle having on its face next the covers a notch or recess, and a projecting spur or catch on the cover not having the handle pivoted thereon and adapted to enter said notch or recess in the handle.

6. The combination with a coffin having oppositely-opening covers hinged at their outer edges and adapted to meet at their inner edges when closed, of a handle recessed on its inner face and pivoted on one cover and adapted to be turned into transverse position to overlie the other cover, a projecting catch on said other cover to enter said recess of the handle, and a retaining-clasp A, longitudinally disposed upon said other cover and adapted to receive the handle when in locking position and engage the opposite sides of the same.

706,961. **PAINT-OIL AND PROCESS OF MAKING SAME.** JOHN F. KREBS, Colorado Springs, Colo., assignor of one-half to Constantine Casser, Colorado Springs, Colo. Filed May 3, 1902. Serial No. 105,840. (No specimens.)

Claim.—1. The process herein described, of producing a paint-oil, which consists in mixing together marine oil, acetic acid, white copperas and litharge, dissolving manganese dioxid in benzin by the aid of heat, adding said solution, together with sugar of lead, to the ingredients above mentioned, stirring all of the ingredients mentioned and allowing them to stand, then adding linseed-oil, turpentine and chlorid of lime.

2. The process herein described, of making paint-oil, which consists in dissolving manganese dioxid in benzin, mixing the solution thus made with acetic acid, zinc sulfate, litharge and sugar of lead, mixing the substance thus formed with a large proportion of marine oil, allowing the mixture to stand for some time, then adding linseed-oil, turpentine and chlorid of lime.

3. A paint-oil containing the following ingredients in the proportions stated: marine oil, two thousand pounds; acetic acid, thirty-five gallons; zinc sulfate, ten pounds; litharge, fifteen pounds; manganese dioxid, five pounds; benzin, five gallons; sugar of lead, five pounds; linseed-oil, ten gallons; turpentine, five gallons; chlorid of lime, one hundred pounds.

706,962. **AUTOMATIC TENSION DEVICE FOR CHAINS OR OTHER TRACTION MEANS.** MARTIN T. A. KUHLEMEIER, Berlin, Germany. Filed Oct. 17, 1901. Serial No. 78,832. (No model.)

Claim.—1. In a power-transmitting system, the combination with a flexible member made fast at each end, of two driving-wheels, and two smooth tension-wheels, one on each driving-wheel shaft and of larger diameter than the driving-wheels, said flexible member passing around both driving-wheels and both tension-wheels.

2. In a power-transmitting system, the combination with two driving-wheels, of two smooth tension-wheels, one on each driving-shaft and of larger diameter than the driving-wheels, and a chain or rope, or the like, made fast at each end and passing first around one driving-wheel, then around both tension-wheels, and then around the other driving-wheel.

706,963. **VALVE-LUBRICATOR.** PETER F. LABAR, Altona, Germany, assignor to Julius Labar, Brooklyn, N. Y. Filed Apr. 12, 1902. Serial No. 102,556. (No model.)

Claim.—1. A valve-lubricator, comprising a series of distributing-channels in the exposed face of the valve-seat and adjacent to the steam-ports therein, a feed-trough in an exposed part of the valve, distributing-passages formed in the valve so as to communicate at all times with the feed-trough and adapted to register with different distributing-channels on the movement of the valve, and means for supplying lubricant to said trough.

2. A valve-lubricator, comprising a valve-seat having parallel distributing-channels in the exposed surface thereof and between the series of ports, a valve having in its exposed face a trough and also provided with transverse channels which are normally in communication with said trough, said transverse channels arranged on the movement of the valve to register with different distributing-channels in the face of the valve-seat, and means for supplying lubricant to the distributing-trough.

3. A valve-lubricator comprising a valve-seat having distributing-channels in its exposed face and between the ports therein, a valve provided in its top face with a transverse trough, vertical passages in said valve, said passages communicating normally with the feed-trough and adapted to register with different distributing-channels on the movement of the valve, a feed-pipe having a nozzle disposed in overhanging relation to the feed-trough and adapted to deliver lubricant thereto at all points in the movement of the valve, and means for making a steam-tight connection between the feed-pipe and the valve-chest.

706,964. **MACHINE FOR REMOVING HAIR AND STIFF HAIRS FROM FURS OR SKINS.** GABRIEL LAFFARGUE, Paris, France, assignor to the Société Lafargue, Hudson et Cie., Paris, France. Filed Apr. 22, 1901. Serial No. 56,269. (No model.)

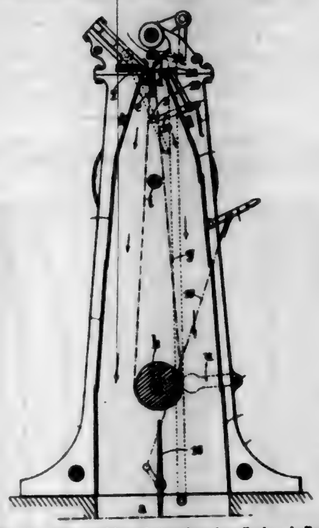

Claim.—1. In a machine of the class described, a hollow column constituting the framework of the machine, the walls of the column being imperforate to permit the direct passage through said column of an air-blast and a beam within the column, the beam being arranged between opposite walls of the column and one of said walls consisting of a plurality of vertically-slidable plates in overlapping relation.

2. In a machine of the class described, a hollow column constituting the framework of the machine, the walls of the column being imperforate to permit the direct passage through said column of an air-blast, and the front and rear walls consisting of a plurality of overlapping plates supported for vertical sliding movement by the side walls, a beam within the column, the beam being arranged between opposite walls of the column, an air-enhancing channel below and in communication with said hollow column, and a valve for controlling the admission of air into said channel.

3. In a machine of the class described, a beam mechanism for operating the beam including a pulley, a loose pulley, a belt shiftable from one of said pulleys to the other, a belt-shipper, means for positively operating the same in one direction, a holding device for engaging said belt-shipper, a pulley operative with the beam-operating mechanism, and a cord on said last-mentioned pulley connected with and adapted to operate said holding device.

706,965. **APPARATUS FOR CALCINING PLASTER.** ARMAND LAWRENCE, Acme, Tex. Filed Mar. 13, 1902. Serial No. 97,841. (No model.)

Claim.—1. An apparatus for calcining plaster, comprising a ventilative shaft open for the admission of air, a revolvable drum mounted loosely on the shaft, means for locking the shaft against rotation and for making the shaft fast with the drum to rotate therewith, and means for interrupting the direct circulation of air through said shaft.

2. An apparatus for calcining plaster, comprising a ventilative shaft open at one end and provided with hollow branches, a revolvable drum loose on said shaft, means for making the shaft rotate with the drum and to allow the shaft to remain at rest, and a valve fitted to the shaft and adapted to interrupt the direct circulation of air through the same.

3. An apparatus for calcining plaster, comprising a shaft, a revolvable drum, a series of scrapers carried by the shaft, and means for making the shaft fast to the drum and for locking the shaft in a non-revolvable condition to thereby sustain the scrapers in a stationary position within the drum.

4. An apparatus for calcining plaster, comprising a shaft having ventilative branches and scrapers, a revolvable drum having a clutch member, a stationary part having a clutch member, and a shiftable clutch member keyed to the shaft and arranged to engage with the clutch member either on the drum or the stationary part, as and for the purposes set forth.

5. An apparatus for calcining plaster, comprising a hollow shaft, a series of collars thereon, a drum, a series of internal bands fastened to the drum and united by arms to the collars, a series of longitudinal scrapers disposed in the spaces between the internal bands and in active relation to the inner surface of the drum, means connecting the scrapers to the shaft, hollow branches on the shaft, means for closing the shaft at a point intermediate of its length, and means for holding the shaft in a non-revolvable condition and for making said shaft fast with the drum.

6. An apparatus for calcining plaster, comprising a hollow shaft having hollow arms or branches in communication therewith, a drum mounted idly on said shaft, means for rotating said drum, means for locking the said shaft against rotation and for locking the shaft fast with the drum, and means for creating suction through said hollow shaft.

7. An apparatus for calcining plaster, comprising a tubular shaft having hollow arms, a drum mounted on the shaft, means for creating a suction through said shaft and its arms, and means for closing said shaft at a point between two of its arms.

706,966. **TEMPERING-BATH.** JAMES B. LAWRENCE, West Sheffield, Canada, assignor of one-half to Victor Marchessault, West Sheffield, Canada. Filed June 20, 1901. Serial No. 65,603. (No model.)

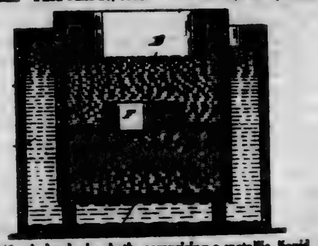

Claim.—1. A hardening-bath, comprising a metallic liquid, and a superimposed liquid of less specific gravity than the metallic liquid, as set forth.

2. A hardening-bath, comprising a metallic liquid and oil superimposed thereon, as set forth.

3. A hardening-bath, comprising mercury, and a superimposed liquid of less specific gravity than the mercury, as set forth.

4. The herein-described hardening-bath, consisting of oil superimposed on mercury, as set forth.

5. The herein-described hardening-bath, comprising a vessel containing oil, superimposed on mercury, and a second vessel in which the first-named vessel is set, the second vessel containing a cooling liquid, as set forth.

706,967. **POLISHING-BLOCK FOR LAUNDRY PURPOSES.** MAX LEHMANN, Berlin, Germany. Filed Aug. 20, 1900. Serial No. 27,442. (No model.)

Claim.—1. A polishing-block for laundry purposes, composed of talc, wax, and an aromatic compound, substantially as set forth.

2. A polishing-block for laundry purposes, composed of powdered talc, carnauba-wax, beeswax, and an aromatic compound, substantially as set forth.

3. In a block for laundry purposes, a composition consisting of talc, carnauba-wax and beeswax, substantially as herein described.

706,968. **SWIVELED HOSE-REEL.** GEORGE B. LE MOND, Detroit, Mich., assignor of two-thirds to Walter Bogart and Chester Given, Detroit, Mich. Filed May 2, 1902. Serial No. 105,880. (No model.)

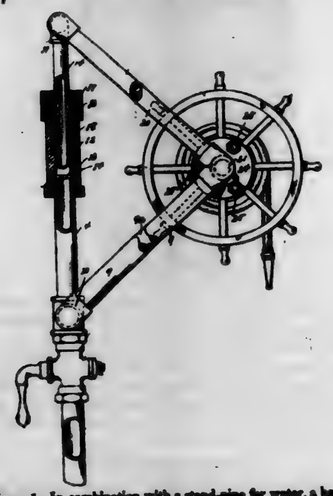

Claim.—1. In combination with a stand-pipe for water, a hose-reel, provided with a hollow drum, a bracket-support for said reel swiveled on the stand-pipe below its upper terminal, a revolvable pipe swiveled in a packing-coupling on said stand-pipe, bracket-arms connecting the upper end of said revolvable pipe to the reel, one of said bracket-arms being hollow and affording communication between the pipe and the reel-drum, substantially as described.

2. In combination with a stand-pipe for water, a hose-reel, an arm supporting said hose-reel and swiveled to the stand-pipe below its upper end, a second arm extending to a water-pipe in alinement with the stand-pipe and revolvable with respect thereto, substantially as described.

706,969. **BLACK SULFUR DYE AND PROCESS OF MAKING SAME.** IVAN LEVINSTEIN and CARL HERBERDEN, Manchester, England. Filed May 23, 1902. Serial No. 108,603. (No specimens.)

Claim.—1. The manufacture of black sulfur coloring-matters which consists in heating with sulfur and alkali sulfid, a nitro derivative of phenol-dinaphthylamin, substantially as set forth.

2. As products, the black sulfur coloring-matters obtained by heating with sulfur and alkali sulfid, a nitro derivative of phenol-dinaphthylamin in equimolecular proportion with para-oxy-dinitro-diphenylamin, substantially as set forth.

3. As products, the black sulfur coloring-matters obtained by heating with sulfur and alkali sulfid, a nitro derivative of phenol-dinaphthylamin in equimolecular proportion with para-oxy-dinitro-diphenylamin, which are insoluble in alcohol and in concentrated sulfuric acid, dissolve in caustic lye and more freely in sodium-sulfid solution with greenish-blue shade, and which dye unmordanted cotton deep greenish-black shades fast to light and to washing.

3. The manufacture of black sulfur coloring-matters, which consists in heating with sulfur and alkali sulfid, a nitro derivative of phenol-dinaphthylamin, substantially as set forth.

4. As products, the black sulfur coloring-matters obtained by heating with sulfur and alkali sulfid, a nitro derivative of phenol dinaphthylamin, which are insoluble in alcohol and in concentrated sulfuric acid, dissolve in caustic lye and more freely in sodium-sulfid solution with greenish-blue shades, and which dye unmordanted cotton deep black shades fast to light and to washing.

706,970. **WIRE MATTRESS.** CYRUS S. LLOYD, Sowerby Bridge, England, assignor to Marshall S. Lloyd, Minneapolis, Minn. Filed Apr. 8, 1901. Serial No. 54,519. (No model.)

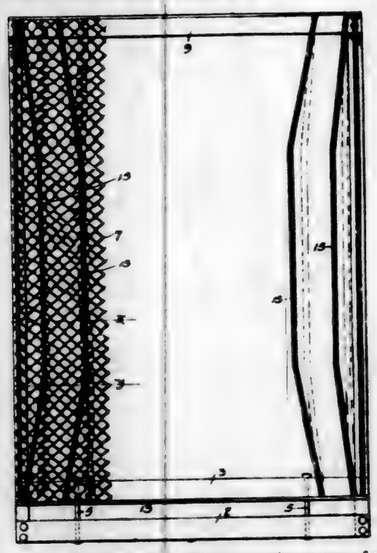

Claim.—The combination, with a woven-wire mattress, of a series of stretching devices connected thereto and consisting of wires or cables arranged at intervals throughout the fabric passing through coils of the fabric parallel to its sides and for a portion of its length, and then extending diagonally under the fabric and secured to the end rails of the mattress, means for adjusting one of said end rails in the direction of the length of the mattress, whereby as said rail is moved the mattress fabric is stretched both longitudinally and laterally, substantially as described.

706,971. **SLOP-PAIL.** ROBERT LOGAN, Sharpstown, N. J. Filed Nov. 20, 1901. Serial No. 83,022. (No model.)

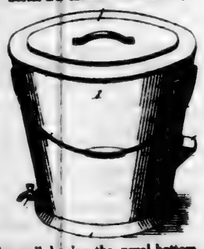

Claim.—A slop-pail having the usual bottom, an inclined supplemental bottom arranged at an elevation above the said pail-bottom to form a hot-water compartment, the body of the pail having an inlet-opening therethrough at the highest portion of the said compartment and from which point the supplemental bottom inclines downwardly toward the opposite portion of the pail to contract the said chamber, the portion of the pail-body above the supplemental bottom being free of obstructing devices and adapted to serve as a containing-receptacle, an outwardly-projected, upwardly-inclined inlet-spout around the inlet-opening of the body at a plane below the highest portion of the supplemental bottom and provided with a covering device, and a faucet communicating with the lowermost contracted portion of the said compartment at a point diametrically opposite the said opening.

706,972. **APPARATUS FOR THE PRODUCTION OF PURE CARBONIC-ACID GAS FROM CARBONATES IN A CONTINUOUS MANNER.** EDUARD LUHMANN, Münster, Germany. Filed Nov. 18, 1901. Serial No. 82,735. (No model.)

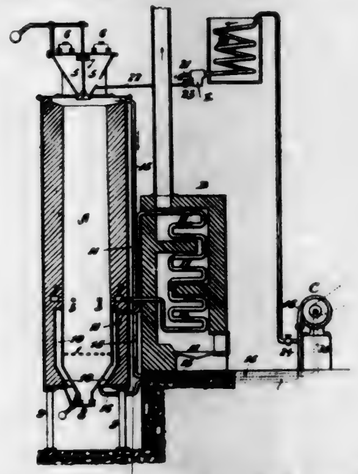

Claim.—1. In an apparatus of the class described, the combination with a shaft-furnace for the reception of the carbonate to be treated and having a jacket circumferentially arranged in its lower part, of the auxiliary heating-furnace having a coil arranged therein, a fan, a pipe leading from the top of said furnace to said fan, a pipe leading from the fan to one end of the jacket, a branch pipe leading from said last-named pipe for withdrawing gas from the apparatus, a pipe leading from the other end of the jacket to the coil, and a pipe leading from the other end of the coil to the lower part of the furnace, substantially as described.

2. In an apparatus of the class described, the combination with a shaft-furnace for the reception of the carbonate to be treated, of an auxiliary heating-furnace having a coil arranged therein, a fan, a pipe leading from the top of the shaft-furnace to said fan, a jacket circumferentially arranged in the lower end of the shaft-furnace, a pipe leading from the fan to one end of the jacket, a pipe leading from the other end of the jacket to the coil, and a pipe leading from the other end of the coil to the lower part of the furnace, a condenser and a pipe arranged to withdraw a portion of the gas as it is discharged from the fan and lead it to the condenser, substantially as described.

3. In an apparatus of the class described, the combination with a furnace for the reception of the carbonate to be treated, of an auxiliary heating-furnace having a coil arranged therein, a fan, a pipe 15 leading from the top of the furnace to said fan, a pipe 16 leading from the fan to one end of the coil, a pipe leading from the other end of the coil to the lower part of the furnace, a condenser, a branch pipe leading from the pipe 16 to the condenser, a water-separator, and a pipe leading from the condenser to said separator and from the latter to convey the gas to its place of consumption of storage, substantially as described.

4. In an apparatus of the class described, the combination with a furnace for the reception of the carbonate to be treated and provided with an internal hollow jacket in its lower end, of an auxiliary heating-furnace having a coil arranged therein, a fan, a pipe leading from the top of the furnace to said fan, a pipe leading from the fan to said jacket and from said jacket to one end of the coil, a pipe leading from the other end of the coil to the lower part of the furnace, and a pipe for withdrawing a part of the gas as it is discharged from the fan, substantially as described.

706,973. **GAS-BURNER.** GEORGE LOUD, Victoria, Canada. Filed Oct. 19, 1901. Serial No. 79,242. (No model.)

Claim.—1. The combination with a gas-burner, comprising a casing having outlets for the mixture of gas and air, and perforated pipes arranged within the said casing, of a gas-chamber connected with a valve-controlled gas-supply pipe, a pipe fitting into one end of the gas-chamber, and connected with the perforated pipes of the casing, and an air-pipe passing through the gas-chamber from the opposite end and extending into the pipe connected with said perforated pipes, the said air-pipe being provided with a valve near its point of entrance into the gas-chamber, as set forth.

2. In a gas-burner, a burner-casing comprising a pan, a lining of refractory material at the inside of the pan, a roof having perforations and also formed of refractory material, perforated pipes arranged within the casing, a gas-chamber connected with a gas-supply and communicating with the perforated pipes of the casing, an air-pipe also communicating with the perforated pipes, and valves for regulating the amount of gas and air, as set forth.

3. A gas-burner, having a burner-casing, comprising a pan, a lining at the inside of the pan, a roof integral with the said lining, and a support for the said roof, as set forth.

4. A gas-burner, having a burner-casing, comprising a metallic pan, a lining of refractory material on the inside of the said pan, a roof having perforations and formed of refractory material and integral with said lining, and a support for the said roof and formed of wires having legs resting on the said pan, as set forth.

5. A gas-burner, having a burner-casing comprising a metallic pan, a lining of refractory material on the inside of the pan, a roof having perforations and also formed of refractory material, perforated pipes arranged within the said casing, and a gas-inlet and an air-inlet for the said pipes, as set forth.

706,974. **CONDUIT FOR ELECTRIC WIRES.** ROBERT W. LYLE, Perth Amboy, N. J. Filed Apr. 10, 1902. Serial No. 102,168. (No model.)

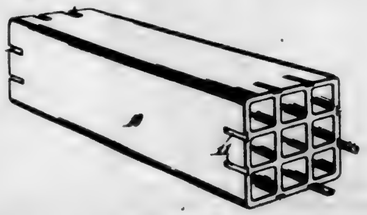

Claim.—1. A conduit-section having a relatively short external groove in its side wall at an end of the section, one end of said groove being closed and the other end opening into the end of the section, and the side walls of said groove being undercut, substantially as described.

2. A conduit-section having short external grooves at its opposite ends, one end of each groove being closed and the other end opening into the end of the section, the side walls of said grooves being undercut, substantially as described.

3. A conduit-section having a relatively short external groove in its side wall at an end of the section, one end of said groove being closed to form an abutment for a key, and the other end opening into the end of the section, and the side walls of said groove being beveled.

4. A hollow conduit, comprising abutting tile sections, each section having relatively short external grooves at its opposite ends, one end of each groove being closed and the other end opening into the end of its respective section, and the side walls of the grooves being undercut, and a key having side walls shaped to correspond with the undercut side walls of the grooves, the said keys being fitted in the grooves of abutting tile sections in such manner as to bridge the joint between said sections, the closed ends of the grooves acting as stops to prevent the keys from moving longitudinally.

5. A hollow conduit, comprising abutting tile sections, each section having a relatively short external groove at its opposite ends, one end of each groove being closed and the opposite end opening into the end of its respective section, and the side walls of the groove being beveled, combined with a key having beveled side walls to take under the beveled side walls of the grooves, the said keys being fitted in the grooves of abutting sections in such manner as to bridge the joint between said sections, the closed ends of the grooves constituting stops to prevent longitudinal movement of the keys.

706,975. DEVICE FOR PROTECTING THE EAR-DRUM. FRANK B. HAGNER, Baltimore, Md., assignor of one-half to William A. Bullock, Baltimore, Md. Filed June 6, 1901. Serial No. 62,260. (No model.)

Claim.—1. An appliance permanent in character for conducting sound, air, and water from the auditory canal, comprising a hollow curving inflatible by the heat of the body and having a longitudinally-extended tubular open-end portion, *a*, adapted to be inserted in the auditory canal, and a closed bulb-like hollow head, *b*, larger than the open-end tube and forming at the point of junction between said tube and said head an abrupt shoulder adapted to abut against the walls of the concha and thereby prevent the appliance from being pushed inwardly too far.

2. An appliance permanent in character for conducting sound, air, and water from the auditory canal, comprising a hollow rubber curving adapted to be inserted in the auditory canal and coated with paraffin; and a filling in said curving.

3. An appliance permanent in character for conducting sound, air, and water from the auditory canal, comprising a curving provided with a tubular body portion open at one end and having an exterior bead near its open end and said curving also provided at the other end of said body portion with a hollow bulged head having a protuberance, *c*, and fibrous material in said curving.

706,976. PACKING-HOLDER FOR PISTON-RODS. ALFRED E. HAGGERTY, Auckland, New Zealand. Filed July 30, 1901. Serial No. 70,132. (No model.)

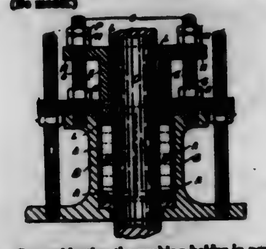

Claim.—In combination the packing-holder in parts fitted into the stuffing-box around the piston-rod with the flange of each part bored to pass over screws and kept in position by nuts, nuts for securing said packing-holder to said stuffing-box, screws and nuts for fitting said packing-holder above said stuffing-box, means for checking in said opposing parts of said packing-holder, gland and sleeve for fitting over said packing-holder and said stuffing-box, and nuts for securing said gland and sleeve all for the purpose set forth substantially as described and illustrated.

706,977. STOCK AND DIE. HENRY L. HAGNER and JOSEPH KAUFFMAN, Amsterdam, Netherlands. Filed May 6, 1902. Serial No. 106,668. (No model.)

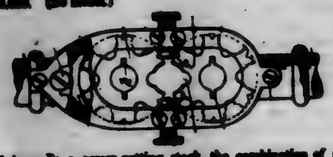

Claim.—In a screw-cutting stock, the combination of a recessed stock-plate, two circular die-plates mounted in the recess in said plate and having several pairs of screw-cutting openings on their edges and notches between said screw-cutting openings, two adjusting-screws mounted in the sides of the stock-plate, and central wheels on the inner ends of said adjusting-screws said central wheels being adapted to simultaneously engage in the edges of both die-plates, whereby said plates may be adjusted and locked as required.

706,978. MOTOR-VEHICLE. HARRY J. HAHN, New York, N. Y. Filed Sept. 28, 1901. Serial No. 76,608. (No model.)

Claim.—1. In combination a vehicle, a carrying-wheel upon which said vehicle travels, a motor hung on a transverse pivot at one side of its center of gravity and eccentric to said carrying-wheel, a spring-support for said motor, a driving-wheel concentric with said pivot and driven by said motor and vibrating with said motor on said pivot, a wheel substantially fixed with relation to said motor and transmitting power therefrom to said carrying-wheel and driven by said driving-wheel, and means to hold the centers of said driving-wheel and fixed wheel at a fixed distance from each other.

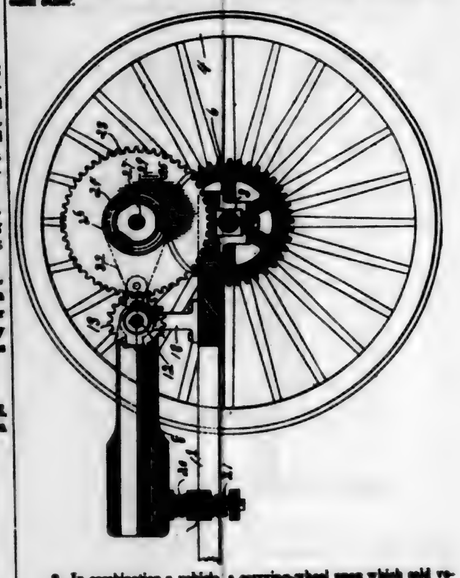

2. In combination a vehicle, a carrying-wheel upon which said vehicle travels, a motor hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a driving-wheel driven by said motor and eccentric to said carrying-wheel but substantially concentric with said pivot, and a connection between said driving-wheel and said carrying-wheel to drive the latter.

3. In combination a vehicle, a carrying-wheel upon which said vehicle travels, a motor hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a geared driving-wheel driven by said motor and eccentric to said carrying-wheel but substantially concentric with said pivot, and a connection between said driving-wheel and said carrying-wheel to drive the latter.

4. In combination a vehicle, a carrying-wheel upon which said vehicle travels, a motor hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a driving-shaft driven by said motor and eccentric to said carrying-wheel but substantially concentric with said pivot, and a connection between said driving-shaft and said carrying-wheel to drive the latter.

5. In combination a vehicle, a carrying-wheel upon which said vehicle travels, a motor hung on a transverse pivot at one side of its center of gravity, a spring-support for the other side of said motor, a driving-shaft driven by said motor and eccentric to said carrying-wheel but substantially concentric with said pivot, and a connection between said driving-shaft and said carrying-wheel to drive the latter.

6. In combination a vehicle, a plurality of independently-rotatable carrying-wheels located on either side of said vehicle and upon which said vehicle travels, a motor hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a driving-wheel driven by said motor and eccentric to said carrying-wheels but substantially concentric with said pivot, and a connection between said driving-wheel and said carrying-wheels to drive the latter, said connection including a compensating train to automatically rotate one of said carrying-wheels when the other one is held.

7. In combination a vehicle having a frame and an integral axle, a carrying-wheel on each end of said axle, at least one of which wheels is rotatable thereon, a motor pivoted at one side of its center of gravity on a transverse pivot concentric to said carrying-wheel and spring-supported from said frame, compensating mechanism located between said motor and carrying-wheels and including a pair of independently-rotatable wheels rotated by said motor, and connections between said latter wheels and carrying-wheels, whereby, when one of said carrying-wheels is held, the power of said motor is automatically applied to rotate the other wheel.

8. In combination a vehicle having a frame and a fixed integral axle, a carrying-wheel on each end of said axle and rotatable thereon, a motor pivoted at one side of its center of gravity on a transverse pivot concentric to said carrying-wheel and spring-supported from said frame, compensating mechanism located between said motor and carrying-wheels and including a pair of independently-geared wheels rotated by said motor, and geared connections between said latter wheels and carrying-wheels, whereby, when one of said wheels is held, the power of said motor is automatically applied to rotate the other wheel.

9. In combination a vehicle having a frame and an integral axle, a carrying-wheel on each end of said axle, at least one of which wheels is rotatable thereon, a motor pivoted at one side of its center of gravity on a transverse pivot concentric to said carrying-wheel and spring-supported from said frame, compensating mechanism located between said motor and carrying-wheels and including a pair of independently-geared wheels rotated by said motor, and geared connections between said latter wheels and carrying-wheels, whereby, when one of said wheels is held, the power of said motor is automatically applied to rotate the other wheel.

10. In combination a vehicle having a frame and a fixed integral axle, a carrying-wheel on each end of said axle and rotatable thereon, a motor pivoted at one side of its center of gravity on a transverse pivot concentric to said carrying-wheel and spring-supported from said frame, compensating mechanism located between said motor and the carrying-wheels and including a pair of independently-rotatable geared wheels rotated by said motor, and geared connections between said latter wheels and carrying-wheels, whereby, when one of said wheels is held, the power of said motor is automatically applied to rotate the other wheel.

11. In combination a vehicle having a frame and an integral axle, a carrying-wheel on each end of said axle, at least one of which wheels is rotatable thereon, a motor pivoted at one side of its center of gravity on a transverse pivot concentric to said carrying-wheel and spring-supported from said frame, compensating mechanism located between said motor and carrying-wheels and including a divided shaft, the divisions of which may be independently rotated by said motor, and connections between said divisions of said shaft and said carrying-wheels, whereby, when one of said carrying-wheels is held, the motive power is automatically applied to said other wheel to rotate the same.

12. In combination a vehicle having a frame and an integral axle, a carrying-wheel on each end of said axle, at least one of which wheels is rotatable thereon, a motor pivoted at one side of its center of gravity on a transverse pivot concentric to said carrying-wheel and spring-supported from said frame, compensating mechanism located between said motor and carrying-wheels and including a divided shaft, the divisions of which may be independently rotated by said motor, a geared wheel on each division of said shaft, and geared connections between said wheels on said shaft and said carrying-wheels, whereby, when one of said carrying-wheels is held, the motive power is automatically applied to said other wheel to rotate the same.

13. In combination a vehicle having a carrying-wheel, a motor carried by said vehicle and hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a driving-wheel driven by said motor and eccentric to said carrying-wheel but substantially concentric with said pivot, a connection between said driving and carrying wheels including a wheel engaging with said driving-wheel, and means holding the centers of said last two wheels substantially at a fixed distance from each other.

14. In combination a vehicle having a carrying-wheel, a motor carried by said vehicle and hung on a transverse pivot at one side of its center of gravity, a spring-support for the other side of said motor, a driving-wheel driven by said motor and eccentric to said carrying-wheel but substantially concentric with said pivot, a connection between said driving and carrying wheels including a wheel engaging with said driving-wheel, and means holding the centers of said last two wheels substantially at a fixed distance from each other.

15. In combination a vehicle having a carrying-wheel, a motor carried by said vehicle and hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a geared driving-wheel driven by said motor and eccentric to said carrying-wheel but substantially concentric with said pivot, a connection between said driving and carrying wheels including a geared wheel meshing with said driving-wheel, and means holding the centers of said last two wheels substantially at a fixed distance from each other.

16. In combination a vehicle having a fixed integral axle, a carrying-wheel at each end of the same and rotatable thereon, a motor carried on said vehicle and hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a geared driving-wheel driven by said motor and eccentric to said carrying-wheels but substantially concentric with said pivot, a geared connection located between said driving-wheel and carrying-wheels, a geared wheel meshing with said driving-wheel, and means holding the centers of said last two wheels at substantially a fixed distance from each other, said geared connection including a compensating mechanism having a pair of wheels independently rotatable by said motor and connected with said carrying-wheels, whereby, when one of said carrying-wheels is held, the motive power is automatically applied to the other carrying-wheel to rotate the same.

17. In combination a vehicle having a fixed integral axle, a carrying-wheel at each end of the same and rotatable thereon, a motor carried on said vehicle and hung on a transverse pivot at one side of its center of gravity, a spring-support for said motor, a geared driving-wheel driven by said motor and eccentric to said carrying-wheels but substantially concentric with said pivot, a geared connection located between said driving-wheel and carrying-wheels, a geared wheel meshing with said driving-wheel, and means holding the centers of said last two wheels at substantially a fixed distance from each other, said geared connection including a compensating mechanism having a divided shaft provided with a pair of wheels fixed thereon and independently rotated by said motor and geared to said carrying-wheels, whereby, when one of said carrying-wheels is held, the motive power is automatically applied to the other carrying-wheel to rotate the same.

706,979. COMPOUND AIR-COMPRESSOR. GEORGE H. MARTIN, Philadelphia, Pa., assignor to the Penbrit and Ayer Company, Philadelphia, Pa. Filed Aug. 13, 1901. Serial No. 72,115. (No model.)

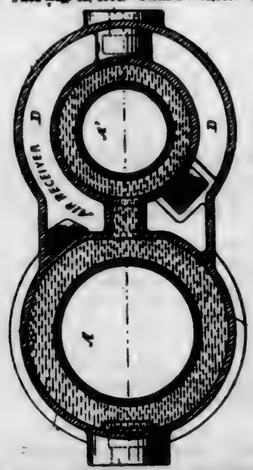

Claim.—1. A compound air-compressor provided with an air-receiver intermediate of and adjacent to the respective compression-cylinders having its inner wall in contact with the circulating water-jackets of said cylinders, and cooling-jackets inclosing the connecting air-spaces, whereby the air is in contact with cooled surfaces during the entire period of its passage, as set forth.

2. In a compound air-compressor, an air-receiver intermediate of and adjacent to the respective compression-cylinders having its inner wall in contact with the circulating water-jackets of said cylinders and its outer wall exposed to the atmosphere as set forth.

3. A compound air-compressor having an air-receiver intermediate of the respective compression-cylinders, its inner wall forming the outer surrounding wall of the circulating water-jacket of the smaller cylinder and adjacent wall of the water-jacket of the larger cylinder, as set forth.

706,980. SNOW-PLOW. PETER W. MARTIN, Thumb Lake, Mich. Filed May 3, 1902. Serial No. 105,761. (No model.)

Claim.—1. In a snow-plow, a body portion having runners, a plow-point or nosepiece, rearwardly-extended divergent mold-boards having swinging connection with said point or nosepiece, means for swinging the plow laterally with relation to the body portion, and means for adjusting the mold-boards inward and outward, substantially as specified.

2. A snow-plow comprising a body portion having runners, a turn-table mounted on the body portion, means for rotating said turn-table, a plow, arms extended from said plow and having pivotal connection with

the turn-table, a lever mounted on the turn-table, and a link connection between said lever and the plow, substantially as specified.

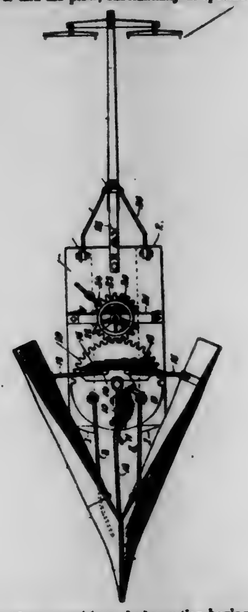

3. A snow-plow comprising a body portion having runners, a plow consisting of a point or nosepiece, moldboards arranged to swing laterally on said point or nosepiece, and means for moving said moldboards inward and outward independently one of the other, substantially as specified.

4. A snow-plow comprising a body portion having runners, a draft-pole extended rearward from the body portion, a turn-table arranged on the body portion, means for rotating the turn-table, a plow consisting of a point and moldboards mounted to spring laterally on said point, arms extended from the point and having pivotal connection with the turn-table, a lever mounted on the turn-table, means for holding the lever as adjusted, a link connection between said lever and the plow-point, levers mounted on the turn-table, means for holding said last-named levers as adjusted, and connections between said last-named levers and the moldboards, substantially as specified.

706,981. APPARATUS FOR HARVESTING POTATOES. EDWARD MAGNY, Holmes Chapel, England. Filed Feb. 14, 1900. Serial No. 5,190. (No model.)

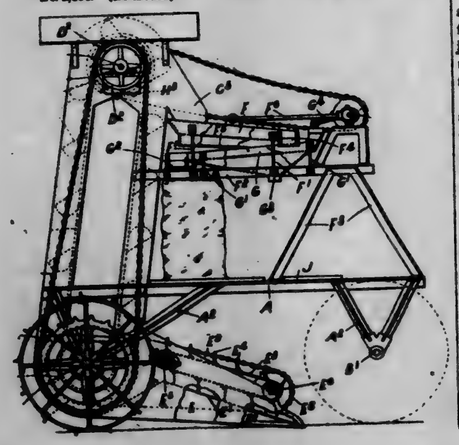

Claim.—In a potato-digger, the combination with a traveling carriage having a main frame, of a digging-blade, an inclined sieve receiving the earth dug up by the digging-blade, a conveyer for conveying the potatoes over the said sieve, all placed beneath said frame, of a second conveyer centrally located within said frame and extending from a point below to a point above said frame, of platforms on said frame, above and at each side thereof, a grading apparatus carried on brackets above said platforms and having delivery-spouts leading to convenient receptacles carried by said platforms, an eccentric device for vibrating said grading apparatus, said second conveyer adapted to convey the potatoes delivered by said first conveyer, to said grading device, and suitable chain mechanism operated by the wheels of the carriage for independently operating said conveyers and said eccentric device.

706,982. GALVANOMETER. CHARLES L. R. R. MEISSER, The Hague, Netherlands. Filed Dec. 22, 1897. Serial No. 663,342. (No model.)

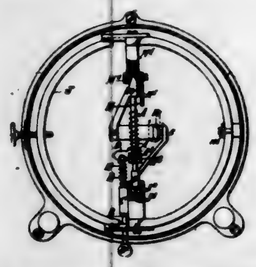

Claim.—1. The combination of a magnet, a movable electrically acting device situated in the magnetic flux produced by said magnet, means for measuring the said magnetic flux, and means for varying the said magnetic flux and adjusting it to the required magnitude as indicated by the said measuring means, substantially as described.

2. The combination of a magnet, a movable electrically-acting device in the field produced by said magnet, a magnetic circuit including an adjustable part and a movable part, and means for adjusting and measuring the magnetic attraction acting on said movable part so as to adjust the magnetic flux to the required magnitude as shown by the said means for measuring the magnetic attraction, substantially as described.

3. The combination of a magnet, a movable electrically-acting device arranged in the field of said magnet, a magnet-circuit provided with a movable part, means for measuring the magnetic attraction on that movable part, and means for varying the magnetic flux so that the magnetic attraction balances the effect of the counteracting force on the said movable part of the magnetic circuit, substantially as described.

4. The combination of a magnet, a magnetic circuit provided with a movable part and an adjustable part, means for varying the relative position of the said adjustable part in order to adjust the magnetic flux so as to produce a definite attraction on the movable part of the magnetic circuit, and means for measuring said attraction, substantially as described.

5. The combination of a magnet, a magnetic circuit provided with a movable part, an adjustable magnet-shunt to the magnetic circuit, means for adjusting said shunt relatively to said magnetic circuit in order to adjust the main magnetic flux so as to produce a definite attraction on the said movable part of the magnetic circuit, and means for measuring said attraction, substantially as described.

6. In a galvanometer, the combination of a magnet, an armature adjustable toward and from said magnet, pole-pieces projecting toward each other, a deflectable device arranged vertically between said pole-pieces, and means for raising said device toward the upper pole-piece to the position where the magnetic attraction counteracts the force of gravity, substantially as described.

7. In a deflectable device for a galvanometer, the combination of a vertical rod or spindle of non-magnetic material, a magnetic piece or pole extending from the top of said rod in an inclined direction and terminating in a curved piece, a stationary segmental coil or solenoid acting on said curved piece; and a second magnetic piece or pole extending upward from the lower end of the aforesaid rod, and terminating opposite the end of the curved portion of the first pole-piece, substantially as described.

8. In a galvanometer, the combination of a magnet, pole-pieces having recesses to receive the extremities of a deflectable device, a magnet-piece on said device forming an extension of the upper pole-piece and terminating in a curved portion, a segmental solenoid acting on said curved portion and a second magnetic piece forming an extension of the lower pole-piece, substantially as described.

706,983. OVERFLOW ATTACHMENT FOR BATH-TUBS OR THE LIKE. ENOS MERRIT and ALFRED B. DOBBITT, Jr., Cincinnati, Ohio. Filed May 19, 1902. Serial No. 108,025. (No model.)

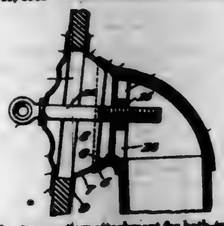

Claim.—1. An overflow attachment for bath-tubs and the like comprising two members one of which is adapted for connection with the overflow-pipe and has an annular concave seat and the other of which is formed from a piece of sheet-metal having a central opening and provided with a flat annular marginal portion adapted for engagement against the wall of the tub around the overflow-opening therein said last-named member having an annular projecting portion inside the flat marginal portion and surrounding its central opening with a semispherical convex surface adapted to fit inside the concave seat of the first-named member and means for holding said members in relation, substantially as set forth.

2. An overflow attachment for bath-tubs and the like comprising an overflow-pipe having a coupling member provided in its interior with a concave semispherical seating-surface, another coupling member formed from sheet metal with a central opening and a flat marginal portion adapted to fit against the wall of a tub around the overflow-opening therein and having a projecting portion formed exteriorly with a convex semispherical surface adapted for engagement within the first-named member and in contact with the concave seating-surface therein, and means for holding the coupling members to a bath-tub or the like, substantially as set forth.

3. An overflow attachment for bath-tubs and the like comprising an overflow-pipe having a coupling member provided in its interior with a semispherical seating-surface and having arms extended across its interior, an interiorly-screw-threaded part carried by said arms, an overflow-guard adapted to be rested on the inside of a bath-tub with its central portion extended across the overflow-opening therein, a screw passed through the guard and engaged in the screw-threaded part of the member on the overflow-pipe and another coupling member formed from thin metal with a flat-turned marginal portion adapted to fit outside the bath-tub around the overflow-opening thereof and with an annular projecting portion the outer surface of which is formed to correspond and fit upon the internal semispherical surface of the first-named member, substantially as set forth.

706,984. LIFTING GATE. ANDREW HILLIS, Shelbyville, Ind. Filed Feb. 13, 1902. Serial No. 93,670. (No model.)

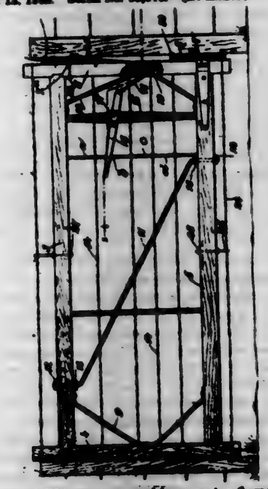

Claim.—1. A lifting gate comprising a post, a frame hinged thereto and free to move vertically, said frame comprising top, bottom and side members, a rod connecting said top and bottom members and serving to brace the same, a lever pivoted upon said rod, angle-braces secured to said top and bottom members at points adjacent to the ends of said rod and engaging one of said side members at a point intermediate of the ends thereof, a revoluble pulley mortised within said side member immediately adjacent to said post, and a flexible member engaging said lever and said post and partially encircling said pulley.

2. A lifting gate comprising a post, a rectangular frame hinged thereto and free to move vertically, said frame comprising top, bottom and side members, braces disposed diagonally of the corners of said frame, a longitudinal compression member secured to the top and bottom members and extending diagonally of the center of said frame, a rod connecting the top and bottom members and serving to brace the same, a lever mounted upon said rod, a pulley mortised within said side member and free to revolve, and a flexible member secured to said lever and to said post and partially encircling said pulley.

706,985. HEATING-ENGINE. FRANK P. MILLER, Downingtown, Pa. Filed June 6, 1902. Serial No. 110,933. (No model.)

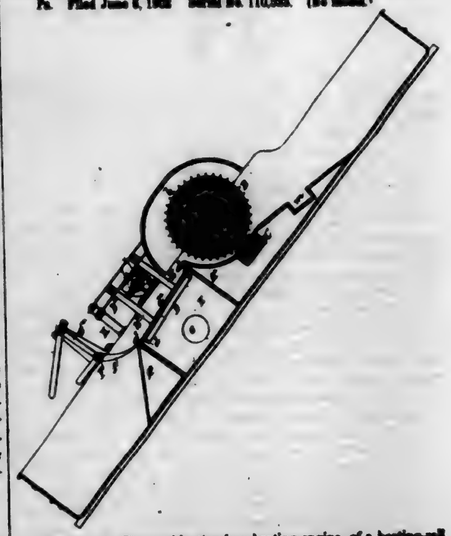

Claim.—1. The combination in a heating-engine, of a heating-roll, a screen back of the heating-roll, and a chest under the screen, substantially as described.

2. The combination in a heating-engine, of a vat, a heating-roll, a backfall, a screen at the rear of the backfall, and a chest under the screen so that the material will pass over the screen and the finished product will pass through the perforations of the screen and into the chest, substantially as described.

3. The combination in a heating-engine, of a heating-roll, a screen back of the heating-roll, a chest under the screen, and means for agitating the screen, substantially as described.

4. The combination in a heating-engine, of a heating-roll, a backfall, a screen at the rear of the backfall and below the level of the liquid in the vat, a chest under the screen, and means for agitating the screen, substantially as described.

5. The combination in a heating-engine, of a heating-roll, a backfall, an inclined screen at the rear of the backfall and below the level of the liquid in the vat, a chamber under the screen, an outlet for said chamber, spring members from which the screen is suspended, and a cam for actuating the spring members to agitate the screen, substantially as described.

6. The combination in a heating-engine, of a heating-roll, a backfall, a screen at the rear of the backfall, and a first back of the screen upon which strings and like material will collect, substantially as described.

7. The combination in a heating-engine, of a heating-roll, a backfall, a screen at the rear of the backfall, and a first back of the screen, with means for raising the first, substantially as described.

8. The combination in a heating-engine, of a heating-roll, a backfall, a screen at the rear of the backfall consisting of a frame, with notched plates forming slots when assembled, and a chamber directly under the screen, substantially as described.

9. The combination in a hunting-engine, of a hunting-cell, a backfall, a screen at the rear of the backfall, a lip on the backfall overlapping the screen, and means for agitating the screen, substantially as described.

10. The combination in a hunting-engine, of a hunting-cell, a backfall, a screen at the rear of the backfall, a continuation of the backfall beyond the screen, a flexible lip on the backfall overlapping the screen, and a flexible lip on the screen overlapping the continuation of the backfall, substantially as described.

706,986. LAWN-SPRINKLER. PAUL HEINEMANN, Fruitvale, Cal. Filed Nov. 7, 1901. Serial No. 81,416. (No model.)

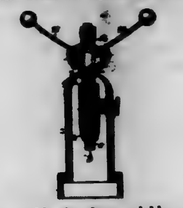

Claim.—1. The combination in a sprinkler of a nozzle, means for conducting water thereto, a stem or spindle supported in the line of the axis of said nozzle, and wings turnable with relation thereto and adapted to divert and spread the water discharged from the nozzle, said wings having two sets of members with the members of one set adapted to receive water on their outermost sides, and the members of the other set adapted to receive water on their innermost sides.

2. The combination of a discharge-nozzle, means for conducting water thereto, a spindle fixed axially in line with said nozzle, distributing-wings turnable upon the spindle exterior to the nozzle, and certain of said wings adapted to receive water on their outermost sides and certain other of the wings adapted to receive water on their innermost sides, and a diverging cone upon the spindle and located in the discharge-orifice.

3. A nozzle, means for conducting water thereto, a spindle supported axially in line with said nozzle, distributing-wings freely turnable upon the spindle exterior to the nozzle, and certain of said wings adapted to receive water on their outermost sides and certain other of the wings adapted to receive water on their innermost sides, a diverging cone located between the nozzle and the wings and means for adjusting said cone and regulating the discharge through the nozzle.

4. The combination with a nozzle and a support, of alternate concaved and convexed distributing-wings carried by the support in such manner that water is received upon the lower outer face of one set of vanes, and upon the upper and inner side of the other set of vanes, whereby the water discharged by one set of vanes falls within a lesser radius than the water that is discharged by the other vanes.

5. The combination in a sprinkler of a nozzle, a spindle fixed axially in line with the discharge-orifice thereof, distributing-wings upon said spindle, said wings having certain members adapted to receive the water on their outermost sides, and other of said members adapted to receive the water on their innermost sides.

6. The combination in a sprinkler of a nozzle, a spindle fixed axially in line with the discharge-orifice thereof, distributing-wings turnable upon said spindle, said wings having certain of their members adapted to receive the impingement of the water on their outermost faces, other of said members having their surfaces oppositely curved and alternating with the first-mentioned members, said second members having their lower edges disposed at a distance from the hub of the wings so that a passage is formed whereby the impingement of the water is upon the innermost of said wing-surfaces.

7. The combination in a sprinkler of a nozzle, distributing-wings supported and revolvable axially in line with said nozzle, said wings having two sets of members with the members of one set adapted to receive water on their outermost sides and the members of the other set adapted to receive water on their innermost sides, radial weighted arms revolvable with and carried by said wings, and means whereby a portion of the discharge-orifice of the nozzle is closed.

8. In a lawn-sprinkler, the combination of a nozzle having its walls at its discharge end converging sharply, a spindle supported within and in axial alinement with said discharge-orifice, said spindle having an outer groove coincident with the edges of the converging walls of said nozzle and distributing-wings revolvable upon said spindle, said wings arranged in two sets, one concaved and the other convexed, and one of said sets receiving water upon the outermost sides and the other set receiving water upon the innermost sides.

9. In a lawn-sprinkler, the combination of a nozzle, a spindle axially in line therewith, an annular discharge-orifice between the nozzle walls and the spindle, revolvable distributing-wings upon the spindle exterior to the nozzle, and a flexible band normally inclosing the nozzle and adapted to close a portion of said orifice to limit the flow of water therethrough.

706,987. COMBINED ADVERTISING MATCH-BOX AND CIGAR TIP CUTTER. WILLIAM B. HOOPER, Bloomingdale, N. Y. Filed Dec. 2, 1901. Serial No. 84,946. (No model.)

Claim.—In a match-box of the character described, the same being provided with the curvilinear short arm integral with the wall thereof having an aperture in its free end, the cover having a corresponding slot therein adapted to be closed by said arm, a double-edged cutting-blade secured to the inner side of the cover and located across said slot, whereby the tip of a cigar may be clipped off when passed through the aperture in the arm by said blade, in opening or in closing the cover, and vertically-arranged strips secured to the side of the box, substantially as and for the purpose set forth.

706,988. EMERGENCY-GEAR FOR LOCOMOTIVES. WILLIAM W. HUBER, Brooklyn, N. Y., assignor of one-half to John B. Parker, Brooklyn, N. Y. Original application filed Nov. 9, 1900, Serial No. 36,469. Divided and this application filed June 5, 1901. Renewed Jan. 16, 1902. Serial No. 89,959. (No model.)

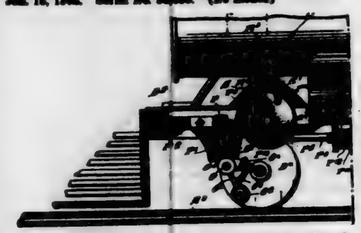

Claim.—1. A safety gear and signal system for railroads, comprising a track device and a controller for controlling signals and for controlling mechanism on a locomotive, to automatically shut off the motive agent and to apply the brakes, said device having a lever adapted to be depressed by a train-wheel, a cross-head, a connection between the lever and the cross-head to move the latter forward on the downward movement of the lever, and a rod attached to the cross-head and extending rearwardly, said rod carrying means for actuating said controller, to set the latter to danger position, as set forth.

2. A safety gear and signal system for railroads, comprising a track device and a controller for controlling signals and for controlling mechanism on a locomotive, to automatically shut off the motive agent and to apply the brakes, said device having a lever adapted to be depressed by a train-wheel, a cross-head, a connection between the lever and the cross-head to move the latter forward on the downward movement of the lever, a rod attached to the cross-head and extending rearwardly, said rod carrying means for actuating said controller, to set the latter to danger position, and a spring device for said connection, to move the latter and the lever back to a normal position after the cross-head is moved and the lever is relieved of pressure of the wheel, as set forth.

3. A safety gear and signal system for railroads, comprising a track device and a controller for controlling signals and for controlling mechanism on a locomotive, to automatically shut off the motive agent and to apply the brakes, said device having a lever adapted to be depressed by a train-wheel, a cross-head, a connection between the lever and the cross-head to move the latter forward on the downward movement of the lever, a rod attached to the cross-head and extending rearwardly, said rod carrying means for actuating said controller, to set the latter to danger position, and means connected with the rear end of said rod for moving the cross-head of the preceding track device into a normal position, as set forth.

4. A safety gear and signal system for railroads, comprising a track device and a controller for controlling signals and for controlling mechanism on a locomotive, to automatically shut off the motive agent and to apply the brakes, said device having a lever adapted to be depressed by a train-wheel, a cross-head, a connection between the lever and the cross-head to move the latter forward on the downward movement of the lever, a rod attached to the cross-head and extending rearwardly, said rod carrying means for actuating said controller, to set the latter to danger position, and signals connected with and set by said rod, as set forth.

5. A safety gear and signal system for railroads, having a track device, comprising a lever adapted to be engaged by a train-wheel, a link-lever engaging with one end the said wheel-lever and traveling freely at its outer end on a fixed incline, a spring-pressed piston, and a link connection between said lever and the piston-rod of said piston, as set forth.

6. A safety gear and signal system for railroads, having a track device provided with a track-lever adapted to be engaged by a train-wheel, a second lever hung on links and having a friction-roller engaged by the under side of said track-lever, an adjustable block having an incline engaged by another friction-roller on said link-lever, a cylinder, a spring-pressed piston therein, and a connection between said piston and said link, as set forth.

7. A safety gear and signal system for railroads, having a track device provided with a casing having an opening in the top, a lever fulcrumed within the casing and having a portion extending through said opening, and a packing in the walls of said opening, for engaging the portion of said lever extending in the opening, as set forth.

8. A safety gear and signal system, provided with a track device having a track-lever adapted to be engaged by a train-wheel, a shaft connected with and adapted to be turned by said lever, wipers on said shaft, and a cross-head mounted to slide longitudinally and having a rod extending rearwardly from the cross-head to actuate a controller and the signals, as set forth.

706,989. TWINE-SPINNING MACHINE. RICHARD A. MYERS, Dayton, Ohio, assignor to the Hoover & Gamble Company, Miamisburg, Ohio, a Corporation. Filed Jan. 28, 1902. Serial No. 91,570. (No model.)

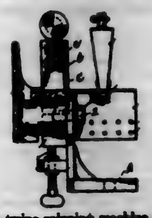

Claim.—1. In a twine-spinning machine the combination of a funnel-shaped receiver converging to a throat, a two-part nipper, the lower section having bifurcated limbs, the upper section fitting and engaging between said limbs telescopically in vertical planes, a throat and a nipper-point formed on the opposing surfaces of said nipper-sections, substantially as specified.

2. In combination with a twine-spinning machine, a funnel-shaped receiver having a converging throat, a cast formed in said receiver transversely to said throat, a lower nipper-section adjustably supported in said cast, said section having two upwardly-extended, bowded limbs, an upper nipper-section yieldingly and detachably engaging with said lower section telescopically in vertical planes, a throat formed between the meeting surfaces of said sections, the said upper section being substantially triangular-shaped, having the apex projected between the said limbs of the lower section, and a nipper-point formed on the lower end of said apex adapted to impinge upon the silver, substantially as specified.

706,990. WATER-CLOSET BOWL. PETER J. MCGUIRE, Hulmeville, Pa., assignor to the Crampton Sanitary Enamel-Ware Co., a Corporation of Pennsylvania. Filed Nov. 5, 1900. Serial No. 35,505. (No model.)

Claim.—1 The combination of a closet-bowl having a shouldered opening formed through the wall thereof, and having recesses extending from the shouldered portion into the lower portion of the opening, a shouldered flushing-spud fitted into said bowl-opening which is provided at its rear end with a nut to secure it thereto and lugs upon the rear or engaging side of the shoulder to enter said recesses, and a bridge formed upwardly across the shouldered face of the spud which is open at each side and is provided with an additional opening in its lower connecting end, the face of said spud around the bridge and at the lower edges of said openings being flush with and of the same concavity as that of the bowl-surface, as and for the purpose set forth.

2. The combination of a closet-bowl having a shouldered opening formed through the wall thereof, and having recesses extending from the shouldered portion into the lower portion, said shoulder having a greater depth at its lower side and decreasing proportionally therefrom at and toward the upper side in conformity with the concavity of the bowl-surface, a flushing-spud fitted into said bowl-opening which has a shouldered inner end to conform with and fill the shouldered portion of said opening, lugs formed upon the rear or engaging side of the spud-shoulder to enter the recesses in said bowl-opening, a bridge formed upwardly across the shouldered face of the spud which is open at each side and has an additional opening at its lower connecting end, and a nut arranged upon the rear end of the spud to secure it to said bowl, the face of said spud around the bridge and at the lower edges of its openings being flush with and of the same concavity as that of the bowl-surface, as and for the purpose set forth.

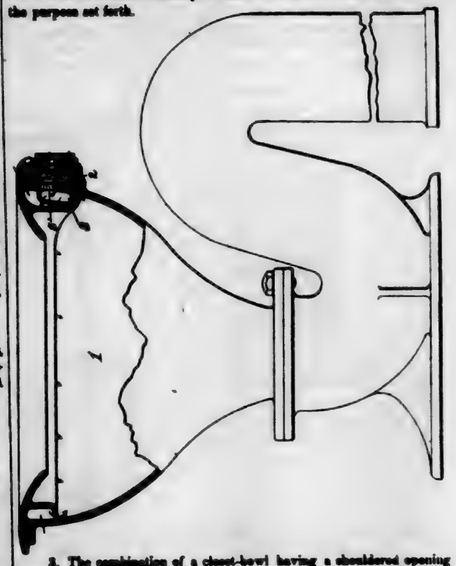

3. The combination of a closet-bowl having a shouldered opening formed through the rear wall thereof with recesses in said opening, a shouldered spud fitted into said opening flush with the inner surface of the bowl, lugs formed upon said spud to engage within the recesses of said opening, a bridge formed across the inner or shouldered end of said spud to cause water to issue from the sides thereof around the bowl, an opening in the lower end of said bridge through which a portion of the water flows downward, a nut arranged upon the rear of said spud to secure it to the bowl, and an abutment formed upon the interior of said spud.

706,991. AUTOMATIC ADJUSTABLE CHAIR. THOMAS H. MCKEE and GILES B. HAWKINS, Indianapolis, Ind., assignors to National Adjustable Chair Company, Greenfield, Ind., a Corporation of Indiana. Filed Sept. 30, 1901. Serial No. 77,088. (No model.)

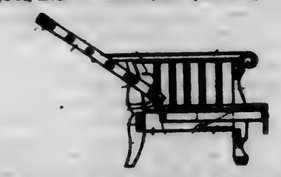

Claim.—1. An automatically-adjustable chair comprising a main frame provided with inclined supports having smooth surfaces, a seat-frame having the forward part thereof supported on the inclined supports, a back pivoted to the rear part of the seat-frame and thereby supporting the same, and pivots connecting the back to the main frame and thereby supporting the back and the rear part of the seat-frame, whereby the seat may be employed as a gravity force in operating the back and the back may be employed as a lever in operating the seat-frame.

2. In an adjustable chair, a main frame, a back pivoted near its lower end to the main frame, a seat-frame pivoted at its rear part to the lower

end of the back, inclined supporting members attached to the main frame near the forward parts thereof and supporting the forward part of the seat-frame, whereby the forward part of the seat may be caused to rise and fall and also to move longitudinally in unison with the rear part thereof.

3. In an adjustable chair, the combination of the main frame provided with the blocks having the inclined upper faces, the pivots connected to the upper portions of the rear legs, the back connected to said pivots above the lower ends thereof, the seat-frame having the forward end thereof mounted on said blocks, and the pivots connecting the lower end of the back to the rear part of the seat-frame, whereby an operator sitting on the seat may automatically cause the seat to recede and the back to rise, and also by leaning against the back cause the same to recede and the seat to rise.

4. In an adjustable chair, the combination of the main frame, the back pivoted to the rear legs of the main frame, the seat pivoted to the back, the inclined ways at the front part of the main frame, and the blocks attached to the seat-frame and bearing on said inclined ways.

706,992. PENDENT SOAP-HOLDER. ROBERT H. HARAHIN, New York, N. Y. Filed July 30, 1901. Serial No. 70,088. (No model.)

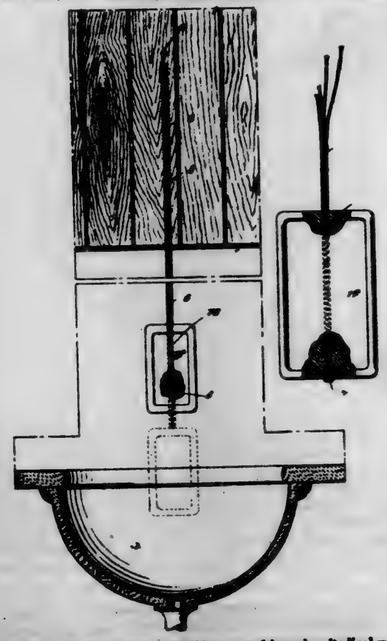

Claim.—1. A pendent soap-holder, comprising a longitudinal member provided with an anchor for holding a free bar of soap, and composed of a plurality of separate cords each capable of use independently of the other, for the purpose of removing dirt from the hands, and means for suspending said member from a fixture.

2. A pendent soap-holder, comprising a longitudinal inelastic section, consisting of a plurality of flexible but inelastic cords arranged parallel with each other so as to be readily separated by the insertion of a finger, and each provided with a rough surface for the purpose of removing dirt, an elastic section secured to one end of said inelastic section, and means for securing a bar of soap to the other end of said elastic section.

3. A pendent soap-holder, comprising a multifiber section of separate cords for the double purpose of cleansing the hands and of suspending a bar of soap, said multifiber section being provided with an anchor for holding said bar of soap.

4. As an article of manufacture, a soap-holder comprising a longitudinal member made in sections, one of the said sections being of material elastic in the direction of its length, and another section being made of rough cords; said cords being provided with a needle and threaded through the eye of the same, for purposes of passing said cords through a free bar of soap.

5. A pendent soap-holder, comprising a multifiber member consisting of hard and soft cords, and means upon such cords for securing a bar of soap.

6. A pendent soap-holder, comprising a multifilor member consisting of large and small cords, and means upon such cords for securing a bar of soap.

706,993. ROD-ROLLING MILL. CHARLES A. HIGGINS, Jersey City, N. J. Filed Jan. 2, 1902. Serial No. 88,095. (No model.)

Claim.—1. A rod-rolling mill having, in combination, a set of rolls having their pass-forming grooves constructed with rib-forming enlargements, means for guiding the rod by its ribs as it issues from said rolls to prevent any twisting thereof, and a set of rolls arranged to receive the ribbed rod from the guiding means and to roll the ribs into the body of the rod.

2. A rod-rolling mill having, in combination, a set of rolls having their pass-forming grooves constructed with rib-forming enlargements, a guide, conformed internally to the continuously-ribbed rod so produced, arranged to receive the ribbed rod as it issues from said rolls and to prevent any twisting thereof, and a set of finishing-rolls arranged to receive the ribbed rod from said guide and to roll the ribs into the body of the rod.

3. A rod-rolling mill having, in combination, a set of horizontal rolls having their pass-forming grooves constructed with rib-forming enlargements, a guide, conformed internally to the continuously-ribbed rod so produced, arranged to receive the ribbed rod as it issues from said rolls and to prevent any twisting thereof, and a set of vertical rolls arranged to receive the ribbed rod from said guide and to roll the ribs into the body of the rod.

4. A rod-rolling mill having, in combination, a set of rolls having their pass-forming grooves constructed at their lateral edges with rib-forming enlargements, a guide, conformed internally to the continuously-ribbed rod so produced, arranged to receive the ribbed rod as it issues from said rolls and to prevent any twisting thereof, and a set of rolls arranged to receive the ribbed rod from said guide and to roll the ribs into the body of the rod.

5. A rod-rolling mill having, in combination, breaking-down rolls, oval rolls, a guide for the oval rod, as hereinbefore specified, rib-rolls arranged to receive the oval rod through said guide with their pass-forming grooves perpendicular to the major diameter of such oval rod and constructed with rib-forming enlargements, a guide, conformed internally to the continuously-ribbed rod so produced, arranged to receive the ribbed rod as it issues from said rib-rolls and to prevent any twisting thereof, and finishing-rolls, arranged to receive the ribbed rod from said last-named guide, with their pass-forming grooves perpendicular to said ribs.

6. A rod-rolling mill having, in combination, a line-train composed of breaking-down rolls, oval rolls, and rib-rolls, the latter constructed with rib-forming passes, a guide arranged to feed the oval rod into a pass of said rib-rolls with a quarter-turn, a guide, conformed internally to the continuously-ribbed rod so produced, arranged to receive the ribbed rod as it issues from said rib-rolls and to prevent any twisting thereof, and vertical finishing-rolls arranged to receive the ribbed rod from said last-named guide and to roll the rib into the body of the rod.

7. A rod-rolling mill having, in combination with a set of horizontal rib-rolls having a number of passes of graduated size each constructed with rib-forming enlargements, a guide, conformed internally to the continuously-ribbed rod so produced, adjustable for rods of different sizes and movable horizontally into line with any pass of said rolls, a set of vertical rolls arranged to receive the ribbed rod from said guide and having a number of passes of graduated size, and means for moving said vertical rolls horizontally and vertically to bring any of their passes into alinement with the corresponding pass of said horizontal rolls and with said guide.

8. In a rod-rolling mill, the combination with a set of horizontal rolls and a set of vertical rolls, each having a number of passes, of a movable housing for said vertical rolls, means carried by said housing for alining the grooves of the respective vertical rolls with each other and for pressing these rolls into close contact with each other, an apron supporting said housing, means for sliding said housing upon said apron and thereby moving said vertical rolls horizontally into alinement, means for raising and lowering said apron and therewith said housing and vertical rolls, and a stationary main frame supporting said apron and housing.

9. In a rod-rolling mill, the combination with a set of horizontal rolls and a set of vertical rolls, each having a number of passes of a movable housing for said vertical rolls, means carried by said housing for alining the grooves of the respective vertical rolls with each other and for pressing these rolls into close contact with each other, an apron supporting said housing, means for sliding said housing upon said apron and thereby moving said vertical rolls horizontally into alinement, means for raising and lowering said apron and therewith said housing and vertical rolls, a stationary main frame, and means for fixedly clamping thereto said apron and therewith said housing.

10. In a rod-rolling mill, the combination with a set of horizontal rolls and a set of vertical rolls, each having a number of passes of graduated size, of a movable housing for said vertical rolls, means carried by said housing for alining the grooves of the respective vertical rolls with each other and for pressing these rolls into close contact with each other, an apron supporting said housing, means for sliding said housing upon said apron and thereby moving said vertical rolls horizontally into alinement, means for raising and lowering said apron and therewith said housing and vertical rolls, a stationary main frame, and means for fixedly clamping thereto said apron and therewith said housing.

706,994. METHOD OF ROLLING RODS. CHARLES A. HIGGINS, Jersey City, N. J. Filed Jan. 2, 1902. Serial No. 88,096. (No model.)

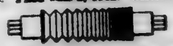

Claim.—1. The method of producing steel or iron rods by hot rolling which consists in breaking down an ingot into a square rod of suitable size, rolling said square rod into an oval shape, rolling such oval rod into a rod, partly of the final shape and size, having continuous laterally-projecting longitudinal ribs of uniform shape and of sufficient proportions to retain the rolling heat, guiding the ribbed rod and keeping it from twisting by means of said ribs, and finishing the product by rolling said ribs into the body of the rod, and thereby filling out and perfecting the rod.

2. In the method of producing steel or iron rods by hot rolling the improvement which consists in rolling the rod into a shape and size which are partly those of the final product, providing it from end to end at the same operation with laterally-projecting longitudinal ribs of uniform shape and of sufficient proportions to retain the rolling heat, guiding the ribbed rod and keeping it from twisting by means of said ribs, and finishing the rod by rolling said ribs into the body of the rod, and thereby filling out and perfecting the rod, substantially as hereinbefore specified.

706,995. FASTENING MEANS FOR DOORS OR WINDOWS. JOHN W. HUTCHIN, Forsyth, Mont. Filed Feb. 28, 1902. Serial No. 96,500. (No model.)

Claim.—A fastener for storm or screen doors and windows consisting of a keeper to engage a door or window frame formed from a single metal plate bent at an angle to correspond to the thickness of a door or window sash and the angularly-bent portion again bent in reverse and parallel with the front or main body of the plate and provided with a series of teeth, and a turn-button also made up from a single metal plate with opposite reduced terminals bent to form intermediate outwardly-projecting duplicate flanges, the said button being centrally pivoted to the front portion of the bracket.

706,996. HEAT-REFLECTOR FOR STOVES. ROBERT G. DUNLEVY and ALBERT H. G. BRATTY, Independence, Mo. Filed Aug. 10, 1901. Serial No. 72,547. (No model.)

Claim.—1. A stove having a smoke escape-opening in the top of its combustion-chamber, a reflector depending from its top and extending around its sides, said reflector being at its upper edge tightly joined to the top of the stove, having downwardly-converging sides and being open on its lower side, the smoke escape-opening being within the radius of the reflector and at one side thereof, and a ball of approximately the same diameter as the mouth of the reflector and disposed mouth downward below the reflector, whereby the ball and reflector become highly heated, retard the escape of unconsumed combustible gases and ignite the same, substantially as described.

2. A stove having a smoke escape-opening in the top of its combustion-chamber, a reflector depending from its top and extending around its sides, said reflector being at its upper edge tightly joined to the top of the stove, having downwardly-converging sides and being open on its lower side, the smoke escape-opening being within the radius of the reflector and at one side thereof, a ball of approximately the same diameter as the mouth of the reflector and disposed mouth downward below the reflector, whereby the ball and reflector become highly heated, retard the escape of unconsumed combustible gases and ignite the same, and means to adjust the ball vertically to vary the width of the space between the same and the reflector, and thereby regulate the draft, substantially as described.

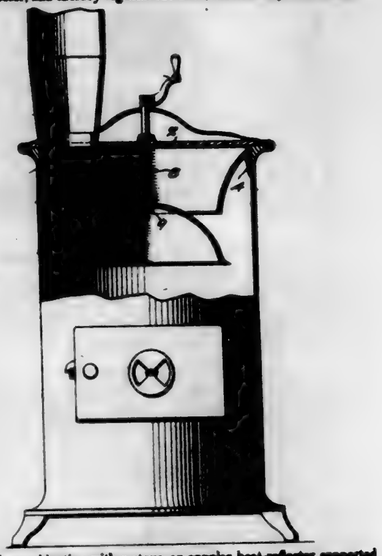

706,997. RAZOR-CLEANER. ERNEST F. OSBORN, Converse, Ind. Filed May 29, 1901. Serial No. 62,405. (No model.)

Claim.—1. A lather-cup formed of a single piece of flexible material and embodying an imperforate flat bottom, and a single transversely-flat marginal rim rising from the outer edge of the bottom and inclined inwardly and having a flat upper peripheral edge, the interior of the cup being entirely open between opposite sides of the rim from the top to the bottom thereof, whereby the inner downwardly and outwardly inclined face of the rim is exposed to facilitate the depositing of lather within the bottom of the cup.

2. A razor-cleaner comprising a cup having a bottom and an upstanding marginal rim, an elastic wrist-engaging loop-shaped strap carried by the bottom portion of the cup, and an elastic finger-engaging loop-shaped strap also carried by the bottom portion of the cup and located diametrically opposite the other loop.

706,998. PAPER CIGAR-POCKET. CRYELL L. PARRISH, Racine, Wis. Filed May 14, 1902. Serial No. 107,518. (No model.)

Claim.—1. A cylindrical roll formed by spirally rolling or winding a continuous sheet of compressed parallel detachably-connected paper cigar-pockets, in combination with a dispensing-holder shorter than and loosely receiving and displaying said roll, substantially as described.

2. A cylindrical roll formed of an elongated sheet of parallel de-

tachably-connected paper cigar-pockets all having their open ends at the upper end of the roll, in combination with an open-end display-stand having a side opening, said roll rotatable in and at one end projecting beyond said stand, as described.

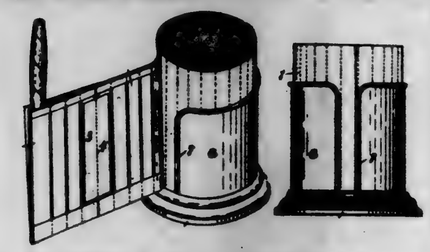

3. A continuous elongated sheet of parallel detachably-connected paper cigar-pockets wound into a cylindrical roll with the open ends of all the pockets at the upper end of the roll, in combination with a stand having a base and a vertical cylindrical wall with its ends separated to form a vertical side opening, said roll centered and rotatable in and projecting above said wall, for the purpose described.

706,999. RAIL-FASTENING. WILLIAM P. PATTERN, Moundsville, W. Va., assignor of two-thirds to Allen G. Scroggins, Jr., and James R. Heston, Moundsville, W. Va. Filed Mar. 24, 1902. Serial No. 99,746. (No model.)

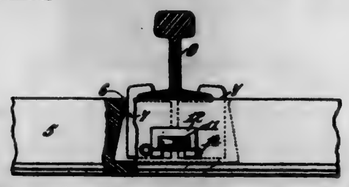

Claim.—1. In a rail-fastener, a pair of jaws adapted to grip a rail, a support for said jaws, a wedge adapted to enter between the jaws and to put them in their effective position, and the reduced end of the wedge having notches in its opposite sides, and a bifurcated key, the branches of which are adapted to enter said notches.

2. In a rail-fastener, a pair of jaws adapted to grip a rail, a support having a vertical recess to receive said jaws and the inner and outer faces of the walls of the recesses being inclined and converging toward the top of the support, and a wedge adapted to enter between the jaws and to put them in their effective position.

3. In a rail-fastener, a pair of jaws adapted to grip a rail, a support for said jaws, a wedge adapted to enter between the jaws and to operate the same, the reduced end of the wedge having notches at its opposite sides, a bifurcated key, the branches of which are adapted to be seated in said notches, and said branches having alined perforations, and a pin adapted to enter said perforations.

707,000. SPRING-GUN. WILLIAM H. PEASE, Joliet, Ill. Filed Feb. 10, 1902. Serial No. 93,561. (No model.)

Claim.—1. A spring-gun, comprising a barrel or body, projecting devices, a fork on the barrel and connected to the projecting devices, the fork having a collar fitted on the barrel to mount it, and a set-screw working in the collar, and having an enlarged head forming a footrest for facilitating the cocking operation.

2. A spring-gun, comprising a barrel or body, a fork attached to the end thereof, sleeves mounted loosely on the ends of the fork, an elastic structure connected to the sleeves, and fastening devices entered into the ends of the fork and having portions lying over the sleeves to hold them in place.

3. A spring-gun, comprising a barrel or body, a collar mounted thereon, means for fastening the collar in place, said means also having a projected portion serving as a footrest in cocking the gun, arms carried by the collar, said collar and arms forming a fork, sleeves mounted loosely on the ends of the arms, an elastic structure connected to the sleeves, and means for releasably holding the elastic structure.

4. A spring-gun, comprising a barrel or body, an elastic structure connected with the end portion of the body, a stop on the other end portion of the body, a keeper for holding the elastic structure engaged with the stop, said devices for actuating the keeper, the said stop having a rounding surface with a cavity therein, and the keeper having a tongue working in the cavity in the manner specified.

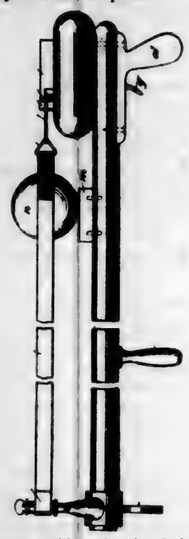

5. A spring-gun, comprising a barrel or body, an elastic structure connected with one end portion of the body, a stop on the other end portion of the body, a keeper for holding the elastic structure engaged with the stop, devices for actuating the keeper, the said actuating devices comprising a trigger-arm connected with the keeper, a trigger releasably holding the trigger-arm, and a spring connected with the parts and tending to release the keeper.

6. A spring-gun, comprising a barrel or body, an elastic structure connected with one end portion of the body, a stop on the other end portion of the body, a keeper for holding the elastic structure engaged with the stop, devices for actuating the keeper, the said actuating devices comprising a trigger-arm, a link connecting said arm with the keeper, a spring tending to release the keeper, and a trigger releasably engaging the trigger-arm.

7. A spring-gun, comprising a barrel or body, an elastic structure connected with one end portion of the body, a stop on the other end portion of the body, a keeper for holding the elastic structure engaged with the stop, devices for actuating the keeper, the said actuating devices comprising a trigger-arm, a link connecting said arm with the keeper, a spring tending to release the keeper, and a trigger releasably engaging the trigger-arm, the trigger-arm having a rounding end terminating in a square portion and the trigger having a hook coacting with the rounding end and square portion of the trigger.

8. A spring-gun, having a body part with a cavity therein, an elastic structure connected with the body part, casing-plates fitted in the cavity in the body to form a chamber between them, and means for releasably holding the elastic structure, said means including the inverted channel-iron keeper arranged on the top edges of the casing-plates, and the actuating devices arranged within said chamber.

9. A spring-gun having a body, an elastic structure, means for releasably holding said structure and actuating devices for said means, the actuating devices comprising a trigger-arm, a connection between the trigger-arm and the said holding means, a trigger working with the trigger-arm, and a spring actuating the parts normally to release the holding means.

10. A spring-gun having a body, an elastic structure, means for releasably holding said structure and actuating devices for said means, the actuating devices comprising a trigger-arm, a connection between the trigger-arm and the said holding means, a trigger working with the trigger-arm, and a spring actuating the parts normally to release the holding means, the trigger-arm having a rounding surface terminating in a square portion, and the trigger having a hook coacting with said rounding surface and square part of the trigger-arm.

707,001. HYDROCARBON-BURNER. CHARLES T. PEPPER, Los Angeles, Cal., assignor to Charles F. Pepper, Los Angeles, Cal. Filed Mar. 14, 1902. Serial No. 98,393. (No model.)

Claim.—1. A hydrocarbon-burner comprising a flame-spreader on the end of the fuel-supply pipe; a combustion-cup disposed below said flame-spreader, said cup having a central draft-opening in the bottom thereof, a perforated conical-shaped fuel-spreader in said cup having legs to hold it elevated above the bottom of the cup; a smaller imperforate conical-shaped fuel-spreader having legs to hold it elevated above the perforate spreader.

2. The combination of an imperforate bed-plate, having a central draft-opening therethrough, adapted to extend across the combustion-chamber of the structure in which the burner is to be used; a combustion-cup having a central draft-opening in the bottom thereof registering with the draft-opening in the bed-plate and resting thereon; a perforate conical-shaped fuel-spreader, having legs, in said combustion-cup; an imperforate conical-shaped fuel-spreader having legs adapted to rest upon the perforate spreader; a flame-spreader above said imperforate spreader having a central opening extending therethrough.

707,002. STEAM-BOILER. JOHN PLATER, Newton, Pa., assignor of one-fourth to Brix & Joseph, Bradford, Pa., a Firm. Filed Jan. 27, 1902. Serial No. 91,304. (No model.)

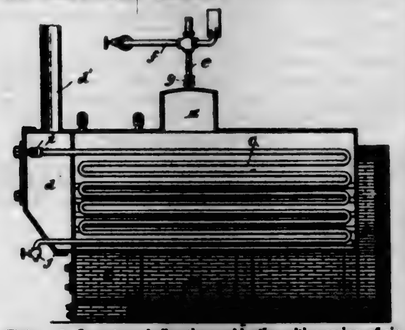

Claim.—1. In a steam-boiler, the combination with a casing, of air-flues passing therethrough, a horizontally-extending vertically-arranged coil between the air-flues and the upper end thereof having direct communication with the casing and the lower end with the outside atmosphere, substantially as described.

2. In a steam-boiler, the combination with a casing, of air-flues arranged therein and having a central open space, a horizontally-extending vertically-arranged coil with said open space and the upper end of said coil having direct communication with the casing and the lower end with the outside atmosphere, substantially as described.

3. In a steam-boiler, the combination with a casing, of air-flues extending therethrough on each side, and a coil within the casing between the flues and having one end in communication with the casing and the opposite end with the outside atmosphere, substantially as described.

4. In a steam-boiler, the combination with a casing, of a steam-dome carried by the upper portion thereof, a pipe in communication therewith and having a steam-gage, said pipe having its opposite end entering the end of the casing, and a coil with the casing having one end connected to said pipe and the opposite end in communication with the outside atmosphere, substantially as described.

5. In a steam-boiler, the combination with a casing, of a steam-dome carried by the upper portion of said casing, fire-tubes carried by each side of said casing, a coil within the casing between the fire-tubes, and having its lower end in communication with the outside atmosphere, a cock for closing said end, a pipe in communication with said dome, and connected to the upper end of said coil, a cock intermediate the coil and the dome, and a gage on each side of said cock, whereby the pressure in the boiler and the pressure in the coil is readily determined, substantially as described.

6. In a steam-boiler, the combination with a casing, of fire-tubes carried by said casing, a coil within the casing and having its lower end in communication with the outside atmosphere, a pipe in communication with the casing and the upper end of the coil, a cock intermediate the coil and the casing, and a gage on each side of said cock, whereby the pressure in the casing and the coil is readily determined, substantially as described.

7. In a steam-boiler, the combination with a casing, fire-tubes carried by each side of said tube, a horizontally-extending vertically-arranged coil within the casing between the fire-tube and having its lower end in communication with the outside atmosphere, a pipe in communication with the casing and the upper end of the coil, a cock intermediate the coil and the casing and a gage on each side of said cock, whereby the pressure in the boiler and the coil is readily determined, substantially as described.

707,003. ROTARY ENGINE. JAMES P. PELLARD, Silverlake, Wash. Filed Jan. 7, 1902. Serial No. 88,791. (No model.)

Claim.—1. In a rotary engine, the combination of a shell or casing, a piston concentrically mounted therein and having an annular chamber communicating with radial pockets, wings mounted in the said pockets and having abutments and blades dividing said pockets and movably extending into the body of the piston at a distance inward from the inner terminals of the pockets, and means for supplying a motive agent to the said chamber and the compartments formed between the wings.

2. In a rotary engine, the combination of a shell or casing comprising a piston-chamber and a chest for the reception of the motive agent, the chest having ports communicating with the piston-chamber and the latter also provided with exhaust-ports, a piston concentrically mounted in the said piston-chamber and having an annular steam-chamber inwardly from the periphery thereof and communicating with radial pockets opening outwardly through the periphery of said piston to receive a motive agent, a valve in the chest, and wings radially mounted in the piston and held projected by the motive agent and provided with means confined within the pockets for engagement by the motive agent entering the latter from the said annular chamber.

3. A rotary engine having a piston with an annular chamber and radial pockets in communication with said chamber, wings mounted in said pockets and having portions dividing the latter, and means for introducing a portion of the motive agent to the said chamber and divided pockets.

707,004. TAPE INSERTING AND STITCHING MECHANISM. MYRON H. POWELL, Chicago, Ill., assignor, by mesne assignments, to himself, Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois, and Edward P. Hatch, Lagrange, Ill. Filed Aug. 17, 1899. Renewed June 13, 1902. Serial No. 111,570. (No model.)

Claim.—1. In combination with the stitch-forming mechanism and feed of a sewing-machine, a tubular holder upon the exterior of which the edging is threaded and gathered, and through the interior of which the tape is passed, said holder being arranged with respect to the said feed to cause the edging and tape to be simultaneously drawn thereby from the holder and fed to the stitch-forming mechanism.

2. In combination with the stitch-forming mechanism and feed of a sewing-machine, a tubular holder upon the exterior of which the edging is threaded and through the interior of which the tape is passed, and a bearing or retarding device to hold the edging against a too free movement from off the holder, said holder being arranged with its discharge end adjacent to the feed to cause the latter to draw the taped edging from the holder and feed it to the stitching mechanism.

3. In combination with the stitch-forming mechanism and feed of a sewing-machine, an edging and tape feeding and threading mechanism comprising, a tape-reel, a tubular open-ended holder suspended from the reel-frame with its lower end in proper relation to the feed, the said holder being adapted to have the edging threaded upon its exterior and the tape pass through its interior, substantially as and for the purposes set forth.

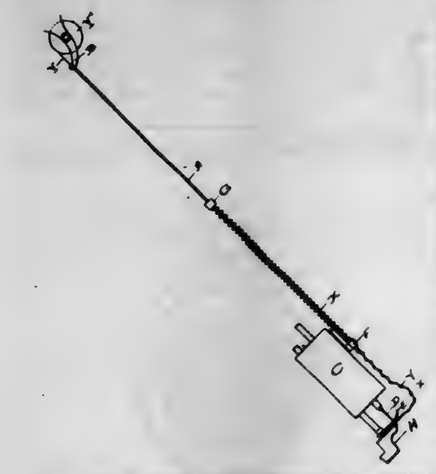

4. In combination with the stitch-forming mechanism and feed of a sewing-machine, a vertically-arranged tubular holder upon the exterior of which the edging is threaded and gathered, and through the interior of which the tape is passed, said holder being arranged with respect with the said feed to cause the edging and tape to be simultaneously drawn thereby over the holder and fed to the stitch-forming mechanism, and a sliding weight as G; substantially as described.

707,005. MACHINE FOR INSERTING TAPE INTO EDGING. EVERT H. POWELL, Chicago, Ill., assignor, by mesne assignments, to Emmett, Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois, and Edward P. Habich, Lagrange, Ill. Filed Aug. 17, 1899. Renewed June 12, 1902. Serial No. 111,571. (No model.)

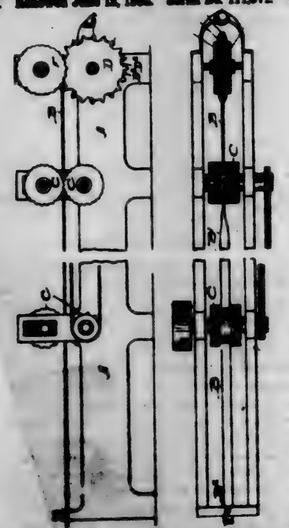

Claim.—1. The combination with an edging-holder, of the supporting-wheel and means located on the supporting-wheel for positioning the cross or connecting bars forming the meshes of the edging alternately at opposite sides of the forward end of the edging-holder, and means for threading the edging onto the holder, substantially as described.

2. In a machine of the kind described, the combination with the holder upon which the edging is to be strung, of a wheel having teeth adapted to enter the meshes of the edging, said teeth being constructed to position the cross-bars of said edging alternately at opposite sides of the forward end of the holder, substantially as described.

3. In a machine of the character described, the combination with the edging-holder, a rotatable supporting device for the edging arranged adjacent the forward end of the holder, said device being provided with means for positioning the cross-bars of the edging upon opposite sides of the forward end of the holder; substantially as described.

4. In a machine of the character described, the combination with the edging-holder, of a supporting-wheel for the meshed edging provided with teeth and having a series of alternately deep and shallow spaces between the teeth whereby the cross or connecting bars of the edging are alternately positioned upon opposite sides of the forward end of the edging-holder and means for threading the edging onto the holder; substantially as described.

5. In a machine of the character described, the combination with the edging-holder of a regulating-wheel having a peripheral groove in which the point of the holder may ride, a series of teeth spaced to conform to the meshes or openings in the edging, and a series of alternately deep and shallow spaces between the teeth whereby the cross or connecting bars of the edging are alternately positioned upon opposite sides of the forward end of the edging-holder, substantially as described.

6. In a machine of the character described, the combination with the edging-holder, of a supporting-wheel having a series of teeth spaced to conform to the meshes or openings in the edging, and a series of alternately deep and shallow spaces between the teeth whereby the cross or connecting bars of the edging are alternately positioned upon opposite sides of the forward end of the edging-holder, the deep spaces being provided with an undercut; substantially as described.

7. In a machine for threading edging, a bodkin or holder, a supporting device for the meshed edging, means for positioning the edging upon opposite sides of the plane of the bodkin, and a spreading device adapted to engage the meshes of the edging and exert the proper tension upon said edging; substantially as described.

707,006. WIRE-BENDING MACHINE. GEORGE F. PROSS and ANDREW P. TUCKER, Cincinnati, Ohio, assignors to Ernst H. Enzenhild, Cincinnati, Ohio. Filed Mar. 17, 1902. Serial No. 98,847. (No model.)

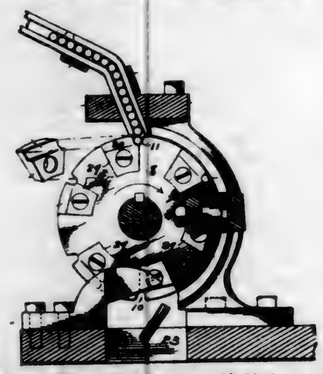

Claim.—1. The combination of a movable blank-receptacle and a rigidly-supported abutment adjacent to the end of the blank-receptacle and normally in the path of the protruding end of a blank carried by said receptacle, against which abutment, said protruding end of the blank is bent as the receptacle moves.

2. The combination of a rotary blank-receptacle and a rigidly-supported abutment at one end of said receptacle, against which the protruding end of the blank is bent as the receptacle rotates.

3. The combination of a rotary blank-receptacle and a rigidly-supported roller at one end of the receptacle against which the protruding end of the blank is bent.

4. The combination with a rotary blank-receptacle, of means for feeding blanks of greater length than the receptacle therefrom, and rigidly-mounted abutments at the ends of said receptacle against which the blank is bent as the receptacle rotates.

5. The combination with a rotary disk or cylinder having a blank-receptacle in its periphery, of a concave in proximity to said cylinder or disk and an abutment in the path of the blank and against which the blank is bent by the rotary disk or cylinder.

6. The combination with a rotary disk or cylinder having blank-receptacles in its periphery, of a concave in proximity to said cylinder or disk, a rigidly-supported abutment at one end of the cylinder or disk and in the path of the protruding ends of the blanks in said receptacles to bend said blanks as the receptacle or cylinder rotates and means for feeding the blanks to the cylinder or disk.

7. In a wire-bending machine, the combination with a shaft, of a series of disks or cylinders secured thereon and having slitted notches or pockets in their peripheries to receive wire blanks, means for feeding the blanks to said pockets, concaves to hold the blanks in the pockets, and an abutment in the path of the protruding ends of the blanks against which the ends are bent by the turning of said disks or cylinders.

8. In a wire-bending machine, the combination with a shaft, of a series of disks or cylinders keyed to said shaft and having slitted notches or pockets in their peripheries to receive the wire blanks and project the ends thereof beyond the end disks or cylinders, concaves in close proximity to the disks or concaves to hold the blanks in the pockets, and rollers mounted in the path of the protruding ends of the blanks and against which the blanks are bent.

9. In a wire-bending machine, the combination with a bed-plate, standards thereon, a grooved shaft mounted in the standards and means for driving said shaft, of a series of disks or cylinders keyed to said shaft and having slitted notches or pockets in their peripheries to receive wire blanks and project their ends beyond the end disks or cylinders, brackets secured to the standards, rollers mounted to revolve in the brackets and located in the path of the protruding ends of the wires, concaves to hold the wires in the pockets, and guide-strips to direct the wires into the pockets.

10. In a wire-bending machine, the combination with a bed-plate, standards thereon, a shaft mounted in the standards, means for driving the shaft, means for permitting the adjustment of the disks or cylinders and one standard and the disks or cylinders provided with slitted notches or pockets to receive wire blanks, of cross-bars connecting the standards and spaced apart, concaves secured to the bed-plate and one cross-bar and located in close proximity to the disks or cylinders, abutments carried by the standards against which the ends of the wires are bent, guide-strips projecting between the cross-bars to direct the wires into the pockets, guide-bars connected to the strips to guide the ends of the wires, a platform or tray carried by said strips, and a removable guide-bar and strips to be secured between the first-mentioned guide-bars to accommodate short wires.

11. In a wire-bending machine, the combination with a disk or cylinder having notches or pockets in its periphery for wire blanks and means for turning said disk or cylinder, a concave to hold the wires in the notches or pockets, an abutment beside the disk or cylinder and against which the wires are bent and hard-metal blanks secured in recesses in the disks or cylinders at the notches or pockets therein and having grooves in one side to permit play of the bent ends of the wires.

12. In a wire-bending machine, the combination with a rotary disk or cylinder having pockets therein for wire blanks, of a concave to hold the blanks in the pockets, an abutment in the path of the protruding ends of the wires against which the wires are bent, and inclined fingers to eject the wires from the pockets after the wires have passed the concave.

707,007. MULTIPLE TELEGRAPHY. MICHAEL I. PUPIN, New York, N. Y. Filed Feb. 23, 1894. Serial No. 501,022. (No model.)

Claim.—1. The method of distributing electrical energy which consists in throwing upon a common conductor a number of alternate currents of different frequencies and distributing the several energies of these currents each selectively to a separate electrical device, substantially as described.

2. The method of distributing electrical energy which consists in throwing upon a common conductor simultaneously a number of alternate currents of different frequencies and distributing the several energies of these currents each selectively to a separate electrical device, substantially as described.

3. The method of rendering selective by electrical resonance various parts of a set of interrelated conductors wherein each part to be made selective contains a condenser and a self-induction coil, which consists in properly proportioning the electromagnetic constants of the various parts to be made selective so that each such part becomes resonant to an electromotive force of predetermined periodicity, substantially as described.

4. The method of multiple telegraphy by rendering selective by electrical resonance the various parts of a multiple telegraphic system made up of a set of interrelated conductors and corresponding transmitting and receiving instruments in which each receiving instrument is controlled by one of the parts to be made selective and each such part contains a condenser and a self-induction coil, the method consisting in properly proportioning the electromagnetic constants of each selective part, so that it becomes resonant to an electromotive force of predetermined periodicity to be impressed on the line by the corresponding transmitting instrument, substantially as described.

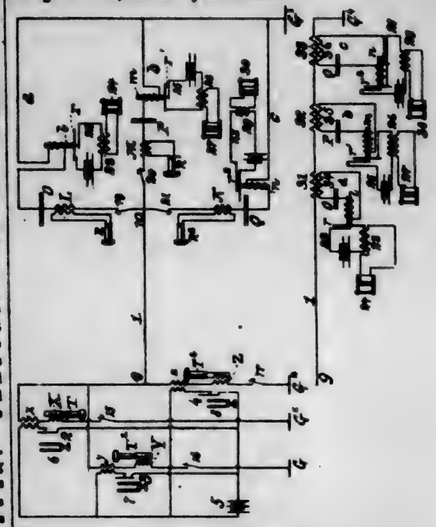

707,008. MULTIPLE TELEGRAPHY. MICHAEL I. PUPIN, Yonkers, N. Y. Filed Dec. 20, 1897. Serial No. 664,307. (No model.)

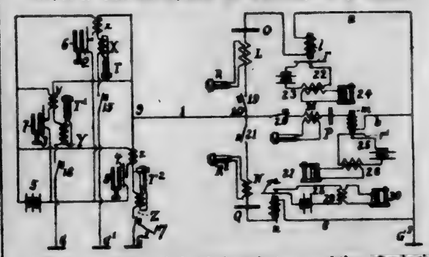

Claim.—1. A set of electrical conductors consisting of selective parts connected to each other, each such part containing a condenser and a self-induction coil, whereby it can be made resonant to an electromotive force of predetermined periodicity by properly proportioning its electromagnetic constants, and means for impressing upon the system electromotive forces of different predetermined periodicities, substantially as described.

2. A system of multiple telegraphy consisting of transmitting and receiving instruments and a set of electrical conductors made up of selective parts connected to each other, each selective part which controls a receiving instrument containing a condenser and a self-induction coil, whereby it can be made resonant to an electromotive force of predetermined periodicity by properly proportioning its electromagnetic constants, and means controlled by the transmitting instruments for impressing upon the system electromotive forces of predetermined periodicities, substantially as described.

3. A system of a set of conductors consisting of a common conductor and selective parts all directly connected to the common conductor, each part having directly connected therein a condenser and a self-induction coil whereby it can be made resonant to an electromotive force of predetermined periodicity by properly proportioning its electromagnetic constants, and means for impressing upon the system electromotive forces of predetermined periodicities, substantially as described.

4. A system of multiple telegraphy consisting of transmitting and receiving instruments, a common conductor, one or more conductors con-

taining transmitting instruments, and two or more conductors containing receiving instruments, all connected directly to the common conductor, each exhaustive conductor which controls a receiving instrument containing directly connected therein a condenser and self-induction coil, whereby it can be made resonant to an electromotive force of predetermined periodicity by properly proportioning its electromagnetic constants, and means controlled by the transmitting instruments for impressing upon the system from the transmitting conductor or conductor exhaustive forces of predetermined periodicity, substantially as described.

707,008. METHOD OF TESTING EGGS. CARL REINHARDT, Kattenhausen, Germany. Filed Aug. 17, 1901. Serial No. 72,396. (No specimens.)

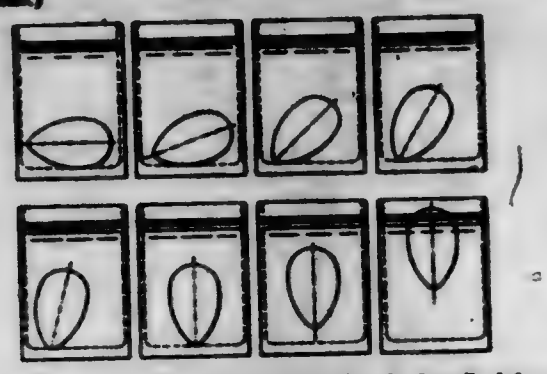

Claim.—The new and improved method herein described for ascertaining the age and condition of an egg or eggs, consisting in preparing a liquid by adding glycerin, common salt and salicylic alcohol to water in or about in the proportions mentioned, so as to obtain a liquid of about 1.035 specific weight and immersing the eggs to be tested in said liquid in proximity to a series of lines or marks which with the position assumed by the eggs in the liquid indicates the age or condition thereof.

707,010. AUTOMATIC RAILROAD-SWITCH DANGER-SIGNAL. CHARLES H. RENWICK, Roswell, N. Mex. Filed June 2, 1902. Serial No. 109,954. (No model.)

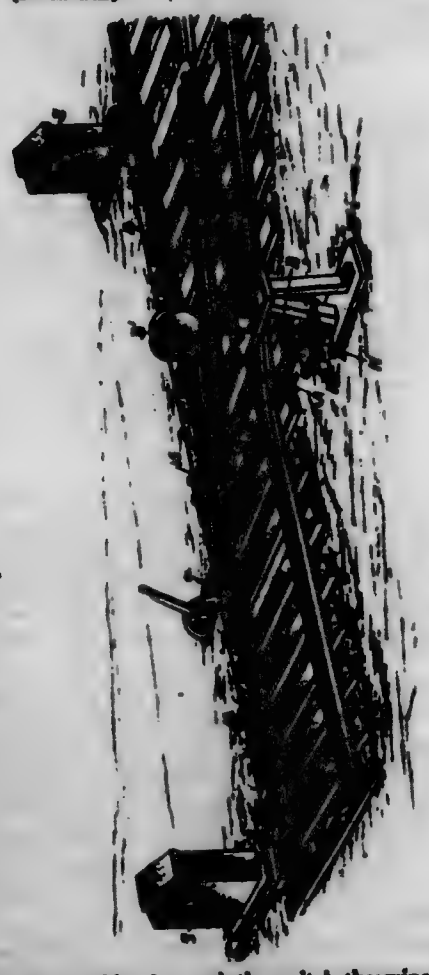

Claim.—1. The combination with the switch-throwing mechanism a signaling means, comprising a housing including a removable top section, a signal-head secured thereto and movable therewith, devices for normally holding the said top section in a closed position and the signal-head within the housing, and connections joining the said signal-head with the switch-throwing mechanism, and adapted to raise the said head with the detachable top section when the switch is shifted to its open position, substantially as shown and for the purposes described.

2. The combination with the switch-throwing mechanism; a signal, comprising a housing, a signal-head, means for normally holding the head within the housing and for returning it to its normal position, and flexible connections joining the said head with the switch-throwing mechanism, adapted to extend the head up above the housing when the switch is moved to an open position, as set forth.

3. The combination with the vertically-movable signal, a switch-throwing mechanism, a series of extensible levers connected with the vertically-movable signal; means for normally folding the said levers, whereby to lower the signal, and connections joining the said levers with the switch-throwing mechanism, adapted when the switch is moved to an open position to extend the levers and elevate the signal, substantially as shown and described.

4. The combination with the switch-throwing mechanism; of a signal, comprising a housing, a signal inclosed therein and movable vertically above the housing, means for actuating said signal held within the housing, said means including devices for automatically returning the signal to a point below the housing-top, and intermediate mechanism joining the signal-actuating means with the throw-bar, substantially as shown and for the purposes described.

5. A signal mechanism for the purposes described, comprising a housing, a signal-head normally held within the housing, and adapted to move vertically above the said housing, an actuating means for the signal within the housing, said means including a series of toggle-levers connected with each other and fulcrumed relatively to each other to extend in a vertical plane, means for normally adjusting the said levers at an angle to each other, and devices operable without the casing for moving the said levers to a vertically-extended position, for the purposes described.

6. In a signal mechanism of the character described, the combination of the housing, said housing including a detachable top section, a signal-head secured thereto, said head having a pendent lever member, slotted longitudinally, a fixed fulcrum in the housing for engaging the slot in the said lever, a second lever pivoted in the housing with its fulcrum in the vertical plane of the fulcrum for the first-mentioned lever, an intermediate lever pivotally joined to the adjacent ends of the other levers, a changeable fulcrum for the intermediate lever, automatically-operated means for normally pulling the said levers out of a vertical plane with each other, and manually-operated mechanism for extending the said levers in a vertical plane with each other, for the purposes specified.

7. In a signal mechanism, as described, the combination with the casing, said casing including a removable top section, a signal-head secured to said top section, and movable therewith, said head having a longitudinal slotted pendent shank, a fixed fulcrum in the casing for engaging the slot of said shank, a second lever fulcrumed in the vertical plane of the fixed fulcrum for the first lever, an intermediate lever pivotally connected with the adjacent ends of the two other levers, a curved slotway in the casing, said slot terminating in the vertical plane of the fulcrum of the two first-named levers, a fulcrum carried by the intermediate lever, and movable in the said curved slot, a counterpoise engaging the said levers for automatically holding the levers out of a vertical alinement with each other, and a pull member connected to the lowermost one of the levers at a point below its fulcrum, said pull member being extended outside of the casing, all being arranged substantially as shown and for the purposes described.

707,011. MILK-CAN. HENRY S. REYNOLDS, Brooklyn, N. Y., assignor to Elizabeth C. Seaman, New York, N. Y. Filed Sept. 30, 1901. Serial No. 76,782. (No model.)

Claim.—1. The combination of a can-mouth, a cover fitted thereto and means for maintaining the cover in place, comprised in part by a rotary yoke or cross-bar carried by the cover, a rotary jamming means adapted to bear upon the cover to put the cross-bar under strain and means connected to said jamming means and rotatable therewith for locking the said jamming means in its adjusted position.

2. In a milk-can the combination of a can-mouth provided exteriorly thereof with means adapted to be engaged by a yoke, a rotary cover

carrying a suitable yoke, rotatable therewith, and means carried by the yoke for putting the said yoke under stress to firmly hold the cover in place, substantially as described.

3. In a milk-can the combination of a mouth provided with means adapted to be engaged by a yoke, a cover provided with a yoke, means for putting the said yoke under stress to firmly hold the cover in place, and locking means carried by the yoke for the means for putting the said yoke under stress.

4. In a milk-can the combination of a can-mouth provided with means adapted to be engaged by a yoke, a cover provided with a rotary yoke, means for putting the yoke under stress to hold the cover firmly in place, and means carried by the yoke whereby the parts may be locked in their adjusted positions.

5. In a milk-can the combination of a can-mouth, lugs carried thereby, a cover fitted to the can-mouth, said cover being provided with a yoke and being adapted to rotate independently of the can-mouth, and means for putting the yoke under stress, comprising in its structure an adjusting-screw adapted to bear upon the cover and having a lever pivotally connected thereto.

6. In a can the combination of a cover, a rotary yoke, a screw adapted to put the yoke under tension to hold the cover firmly in place on the can, and a locking means for the screw connected thereto and adapted to be locked with a projection on the can.

707,012. VELOCIPEDE DRIVING-GEAR. FRANCIS A. RICH, Ea-rangahaka, New Zealand. Filed Oct. 31, 1900. Serial No. 35,022. (No model.)

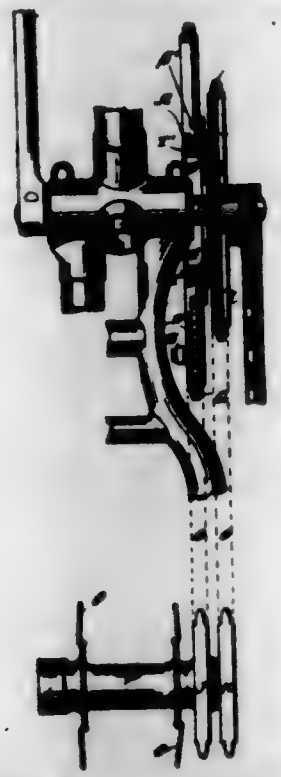

Claim.—1. A changeable-speed gear for velocipedes, comprising an ordinary friction-clutch free-wheel sprocket and a sprocket consisting of inner and outer members normally loose relative to each other, means for shifting a driven mechanism into operative engagement with said free-wheel sprocket or with said outer member at will, a rocking clutch for connecting together and for disconnecting said inner and outer members, a friction-roller revolubly mounted upon said rocking clutch, and a rocking plate provided with guides for engaging said roller for the purpose of shifting said clutch.

2. A changeable-speed gear for velocipedes, comprising an ordinary sprocket and a sprocket consisting of outer and inner members normally loose relatively to each other, traction members engaging said ordinary sprocket and said outer member, and also engaging the mechanism to be driven, a clutch for connecting together, and disconnecting, said inner and outer members, means for shifting the position of said clutch, and a spring for holding said clutch either in or out of gear.

3. A changeable-speed gear for velocipedes, comprising a sprocket free to rotate in one direction only, a sprocket comprising inner and outer members normally loose relatively to each other, means for shifting the driven mechanism at will into operative engagement with the first-mentioned sprocket or with said outer member, a clutch for connecting together and disconnecting said inner and outer members, a friction-roller revolubly mounted upon said clutch, and a rocking plate provided with guides for engaging said roller for the purpose of shifting said clutch.

4. A changeable-speed gear for velocipedes, comprising a middle sprocket and a sprocket consisting of inner and outer circular members, concentric and normally loose relatively to each other, means for shifting the driven mechanism into operative engagement with said middle sprocket or with said outer member at will, a radially-movable clutch for connecting together and disconnecting said inner and outer members, a friction-roller revolubly mounted upon said clutch, and a rocking plate provided with guides for engaging said roller for the purpose of shifting said clutch.

5. A changeable-speed gear for velocipedes, comprising a middle sprocket and a sprocket consisting of inner and outer members normally loose relatively to each other, means for shifting the driven mechanism into operative engagement with said middle sprocket or with said outer member at will, a rocking clutch for connecting together and disconnecting said inner and outer members, said rocking clutch being provided with oppositely-disposed beveled faces, means for shifting the position of said rocking clutch, a plunger for engaging either of said beveled faces, and a leaf-spring for holding said plunger into engagement therewith.

707,018. CORN-HUSKER. ARTHUR W. RICHARDS, Indianola, Iowa. Filed Dec. 13, 1900. Serial No. 39,731. (No model.)

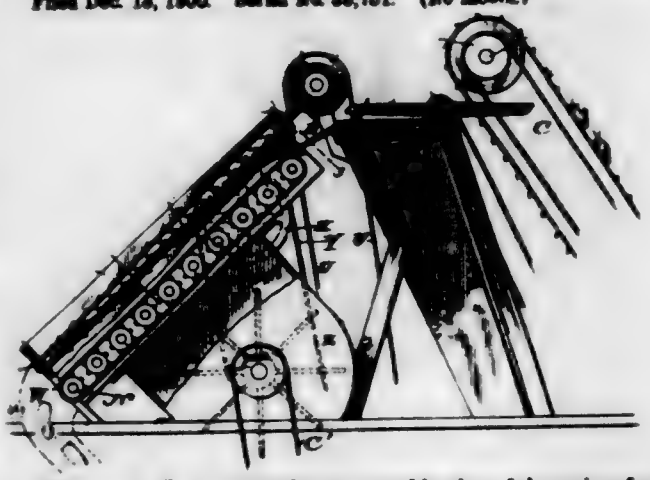

Claim.—1. In a corn-husker, the combination of the series of rollers provided with pointed teeth and a second set of toothed rollers arranged at right angles to the first set and underneath the same, both sets being in downwardly-inclined parallel planes, and means for rotating them simultaneously, whereby husks adhering to the corn-ears are pierced by the teeth and shredded and stripped from the latter as shown and described.

2. In a corn-husker, the combination of the rectangular frame having transverse slots in its lower portion, two sets of rollers arranged in said frame one beneath the other and at right angles as specified, the lower journals of the upper rollers having vertical play in said slots, as shown and described.

707,014. PAPER-MAKING MACHINE. JAMES F. RICHARDS, Lake, Md. Filed May 29, 1902. Serial No. 109,496. (No model.)

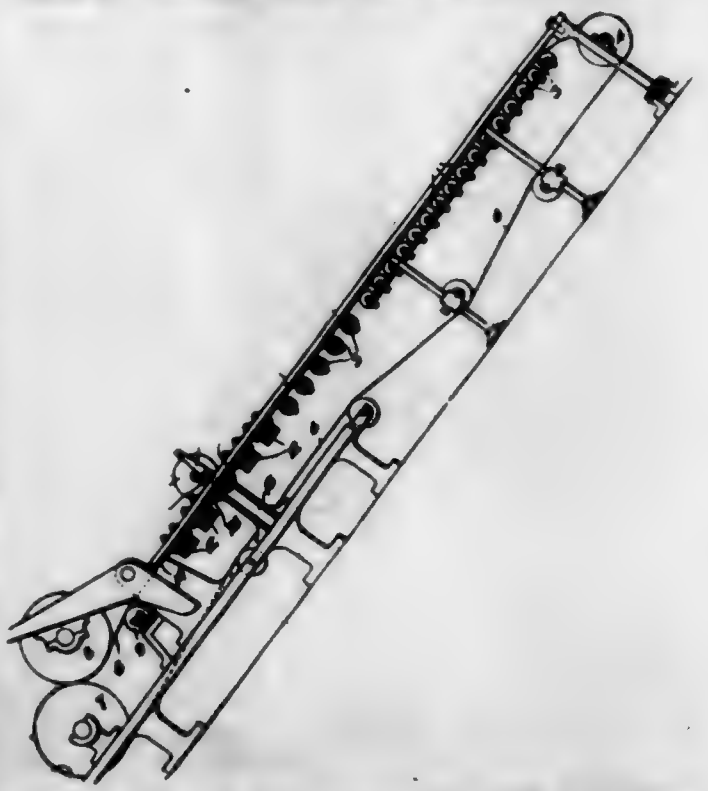

Claim.—1. In a Fourdrinier paper-making machine, the combination with a traveling apron, of a shaking-section pivotally mounted at a

point adjacent to one of its ends, and suction-boxes mounted upon the shaking-section at the front and rear of the pivotal connection, substantially as described.

2. In a Fourdrinier paper-making machine, the combination with a traveling apron, of a shaking-section pivotally mounted at a point adjacent to one of its ends, suction-boxes mounted upon the shaking-section at the front and rear of the pivotal connection, and means for varying the position of the pivotal connection, substantially as specified.

3. In a Fourdrinier paper-making machine, the combination with a traveling apron, and a shaking-section, of suction-boxes located at different points longitudinally of said shaking-section, and means for pivotally mounting the shaking-section at a point between the boxes, substantially as set forth.

4. In a Fourdrinier paper-making machine, the combination with the couch-frame, and a traveling apron, of posts mounted upon said frame, a shaking-section, means for pivotally connecting the shaking-section to the posts, and suction-boxes upon the shaking-section at the front and rear of the pivotal connection, substantially as and for the purpose set forth.

5. In a Fourdrinier paper-making machine, the combination with the couch-frame, and a traveling apron, of posts mounted upon said frame, pivot-bolts upon the posts, a shaking-table slotted to receive said bolts, suction-boxes upon the table at the front and rear of the pivotal point, and means for adjusting the bolts in said slots to vary the pivot-point, substantially as described.

6. In a Fourdrinier paper-making machine, the combination with a traveling apron, of a shaking-section pivotally mounted at a point adjacent to one of its ends, suction-boxes mounted upon the shaking-section at the front and rear of the pivotal connection, and means for securing the shaking-section against movement, substantially as described.

7. In a Fourdrinier paper-making machine, the combination with a traveling apron, of a shaking-section pivotally mounted at a point adjacent to one of its ends, suction-boxes mounted upon the shaking-section at the front and rear of the pivotal connection, means for varying the position of the pivotal connection, and means for securing the shaking-section against movement, substantially as specified.

707,015. FLUID-PRESSURE-ACTUATED HOIST, &c. ELLIS B. RIDGWAY, Centerville, Pa. Filed Oct. 22, 1901. Serial No. 79,566. (No model.)

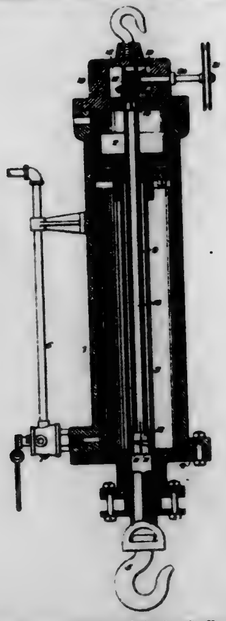

Claim.—1. The combination of the longitudinally-movable piston-rod of a fluid-pressure-actuated machine with a friction-clamp having a ball-race with balls constituting a contact-face of the clamp, substantially as specified.

2. The combination of the longitudinally-movable piston-rod of a fluid-pressure-actuated machine, with a friction-clamp therefor having a spiral ball-race with connection between the upper and lower ends thereof, a series of balls interposed between said race and the rod, and means for tightening and loosening the clamp, substantially as specified.

3. The combination of the hollow piston-rod of a fluid-pressure-actuated machine, with a friction-clamp located on the inside of said hollow rod, and means for expanding and contracting said clamp, substantially as specified.

4. The combination of the hollow piston-rod of a fluid-pressure-actuated machine, with a tube contained within said hollow piston-rod, and split at the lower end of the same so as to form a clutch, a wedge for expanding said clutch, a rod connected to said wedge, and passing through the clutch-tube, and means for projecting and retracting one of said clutch members, substantially as specified.

5. The combination of the hollow piston-rod of a fluid-pressure-actuated machine, with a tube contained within said hollow piston-rod, and split at the lower end of the same so as to form a clutch, a wedge for expanding said clutch, a rod connected to said wedge and passing through the clutch-tube but prevented from rotating therein, and means for projecting and retracting one of said clutch members, substantially as specified.

6. The combination of the hollow piston-rod of a fluid-pressure-actuated machine, with a tube contained within said hollow piston-rod, and split at the lower end of the same so as to form a clutch, a wedge for expanding said clutch, a rod connected to said wedge, and passing through the clutch-tube, but prevented from rotating therein, and gearing for projecting and retracting one of said clutch members, one of the wheels of said gearing forming a nut which is adapted to a threaded portion of the movable clutch member, substantially as specified.

707,016. METAL-BORING MACHINE. CHARLES C. ROGERS, Ansonia, Conn. Filed Mar. 15, 1902. Serial No. 98,416. (No model.)

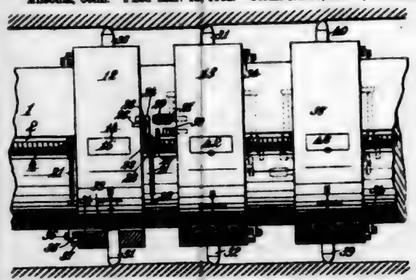

Claim.—1. In a boring-machine, a pair of cutter-heads operating toward each other, and means carried by one of the said cutter-heads and operated by the other of said cutter-heads for discontinuing the operation of one of the said cutter-heads.

2. In a boring-machine, a pair of rotary and longitudinally-moving cutter-heads operating toward each other, means for operating the said heads, and means operated by one of the said cutters for automatically discontinuing the operation of the other of said heads.

3. In a metal-boring machine, a pair of cutter-heads operating toward each other, means carried by the said heads for causing a rotary and longitudinal movement thereof, and mechanism operated by one of the said heads for discontinuing the cutting movement of the other of the said heads.

4. In a boring-machine, a pair of oppositely-moving cutter-heads, feed-nuts for operating the same, means engaging the feed-nuts for causing the operation of the heads, and mechanism operated by one of the heads for automatically disengaging one of the feed-nuts to arrest the movement of its respective cutter-head.

5. In a metal-boring machine, a pair of cutter-heads moving toward each other, a feed-nut carried by each of the said heads, means engaging the feed-nuts for causing the operation of the cutter-heads, means for retaining the feed-nuts in engagement with said operating means, and means carried by one of the said cutter-heads and adapted to engage and operate the said retaining means carried by the other of the cutter-heads for discontinuing the movement of the latter.

6. In a metal-boring machine, a pair of cutter-heads moving toward each other, mechanism carried by each of the said cutter-heads for imparting a longitudinal and a rotary movement thereto, and means carried by one of the cutter-heads and adapted to engage and operate the mechanism carried by the other of the cutter-heads for discontinuing the movement of the latter.

7. In a metal-boring machine, the combination with an operating-shaft carrying a pair of feed-screws, of a pair of cutter-heads mounted upon said shaft and adapted to move toward each other, feed-nuts carried by the cutter-heads and engaging the feed-screws for moving the said cutter-heads toward each other, a spring-actuated means carried by one of the cutter-heads for disengaging its feed-nut from its respective feed-screw, and means carried by the other cutter-head and engaging said mechanism for automatically operating the same.

8. In a metal-boring machine, cutter-heads adapted to move toward each other, mechanism carried by one of the cutter-heads and adapted when operated to discontinue the movement of the said cutter-head carrying said mechanism, and means carried by the other of said cutter-heads and adapted to engage said mechanism for operating it.

9. In a metal-boring machine, a pair of cutter-heads moving in opposite directions toward each other, means for rotating said cutter-heads, a feed-screw for imparting a longitudinal movement to said cutter-heads simultaneously with the rotary movement thereof, feed-nuts carried by the cutter-heads and engaging the said screws for causing the said longitudinal movement to be given thereto, a shaft provided with an eccentric carried by the cutter-heads and engaging the said nuts for releasing them from their engagement with the feed-screws, means for retaining the said nuts in engagement with the said screws, and means carried by one of the cutter-heads and adapted to engage the said retaining means for operating it to release one of the feed-nuts from its engagement with its respective screw to arrest the movement of one of the cutter-heads.

10. In a metal-boring machine, a pair of cutter-heads operating toward each other in opposite directions, and mechanism carried by one of the said heads and operated by the other of said heads for discontinuing the movement of one of the said heads.

11. In a metal-boring machine, a pair of cutter-heads operating in opposite directions and toward each other, mechanism carried by one of the said heads for discontinuing the movement thereof, and means carried by the other of the said heads and adapted to engage the said mechanism for automatically operating it.

707,017. MAIL-BAG CATCHING AND DELIVERING MECHANISM. WILLIAM B ROEHER, Bay St. Louis, Miss. Filed June 10, 1902. Serial No. 111,061. (No model.)

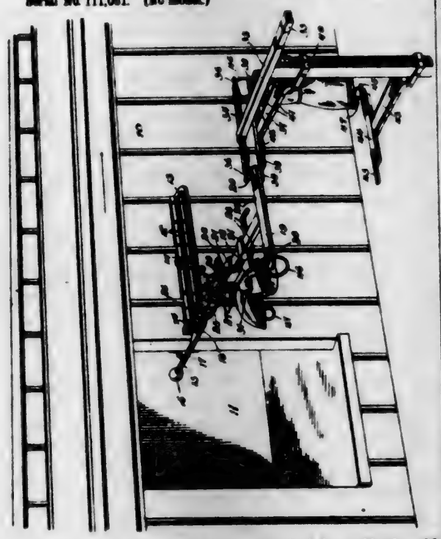

Claim.—1. In apparatus of the class described, the combination with a mail-bag-catcher arm adapted to receive and support a mail-bag, of a keeper slidably mounted upon the arm and arranged to retain the bag upon the catcher.

2. In apparatus of the class described, the combination with a catcher-arm having a cross-head arranged to engage the ring of a mail-bag, of a keeper slidably mounted upon the arm and having a retaining-finger arranged to prevent the detachment of the mail-bag ring from the head.

3. In apparatus of the class described, the combination with a catcher-arm having a cross-head arranged to engage the ring of a mail-bag, of a keeper slidably mounted upon the arm and having a retaining-finger that is movable into engagement with the cross-head to prevent the detachment of the mail-bag ring.

4. In apparatus of the class described, the combination with a catcher-arm having a cross-head arranged to engage the ring of a mail-bag, of a keeper slidably mounted upon the arm and having a retaining-finger that coacts with the cross-head to prevent the detachment of the mail-bag ring, and a spring for moving the keeper toward the cross-head.

5. In apparatus of the class described, the combination with a catcher-arm having a cross-head arranged to engage the ring of a mail-bag, of a keeper slidably mounted upon the arm and having a retaining-finger that coacts with said cross-head to prevent the detachment of the mail-bag ring, and a coiled spring surrounding the arm and bearing against the keeper to move the same.

6. In apparatus of the class described, the combination with a catcher-arm having a cross-head that extends beyond both sides of the same, said head being adapted to receive the ring of a mail-bag, of a keeper-sleeve slidably mounted upon the arm, said sleeve carrying outstanding fingers that coact with the oppositely-projecting portions of the head to prevent the detachment of the mail-bag ring, and a coiled spring surrounding the arm and bearing against the sleeve to move said sleeve and the fingers carried thereby into their coacting relations.

7. In apparatus of the class described, the combination with a car having a doorway, of a supporting-frame slidably mounted upon the side of the car and movable across the doorway, and a catcher-arm secured to the frame.

8. In apparatus of the class described, the combination with a car having a doorway, of a supporting-frame pivotally and slidably mounted upon the side of the car at oneside of the doorway, said frame being movable across the doorway, and a catcher-arm secured to the frame.

9. In apparatus of the class described, the combination with a car having a doorway, of a supporting-frame comprising spaced bars one of which is slidably and pivotally attached to the side of the car contiguous to the doorway, a catcher-arm attached to one end of the frame and projecting outwardly, and an operating-handle secured to the frame and extending through the doorway of the car.

10. In apparatus of the class described, the combination with a mail-bag catcher and deliverer, of a keeper mounted thereon and adapted when in operative position, to prevent the detachment of the bag caught, said keeper being automatically movable, means for holding the keeper in inoperative position, said means being released by the detachment of the bag to be delivered.

11. In apparatus of the class described, the combination with a mail-bag catcher and deliverer comprising an arm having a cross-head, of a keeper movably mounted upon the arm and movable toward and from the cross-head, means for moving the keeper toward the cross-head, and locking mechanism for holding the keeper retracted, said mechanism being released by the detachment of the bag to be delivered.

12. In apparatus of the class described, the combination with a mail-bag catcher and deliverer comprising an arm having a cross-head, of a keeper movably mounted upon the arm and movable toward and from the cross-head, means for moving the keeper toward the cross-head, and a holding device for maintaining the keeper in retracted position, said device being carried by the bag to be delivered.

13. In apparatus of the class described, the combination with a mail-bag catcher and deliverer comprising an arm having a cross-head, of a keeper movably mounted upon the arm and movable toward and from the cross-head, a spring bearing against the keeper to urge it toward the cross-head, eyes arranged respectively upon the keeper and the arm, said eyes being in alinement when the keeper is retracted, and a pin arranged to be passed through the eyes when alined to hold the keeper in its retracted position.

14. In apparatus of the class described, the combination with a mail-bag catcher and deliverer comprising an arm having a cross-head, of a keeper movably mounted upon the catcher and deliverer and comprising a sleeve slidably mounted upon the arm and having retaining-fingers movable into coacting relation with the cross-head, a coiled spring surrounding the arm and bearing against the sleeve to urge the keeper toward the cross-head, eyes arranged respectively upon the sleeve and the arm, said eyes being in alinement when the keeper is retracted, and a pin arranged to be passed through the eyes when alined to hold the keeper in retracted position, said pin being carried by the bag to be delivered.

15. In apparatus of the class described, the combination with a standard, of a deliverer-arm pivotally mounted at the top of the standard and having a bag-supporting cross-bar, a catcher-arm pivotally mounted upon the standard below the delivery-arm and having a bag-receiving cross-bar, and a positioning-arm pivotally mounted upon the standard below the catcher-arm, said positioning-arm being also provided with a cross-bar.

16. In apparatus of the class described, the combination with a standard, of a strap embracing the standard and having its terminals projecting beyond one face of the same, a bag-supporting arm, plates secured

to the opposite side faces of the arm and projecting beyond one end of the same, the projecting ends of the strap and plates being pivotally connected.

707,018. CONVERTIBLE CAR. HERMANN ROSENBERG, Newark, N. J., assignor to the Convertible Car Company, Bloomsbury, N. J. Filed Apr. 12, 1901. Serial No. 55,558. (No model.)

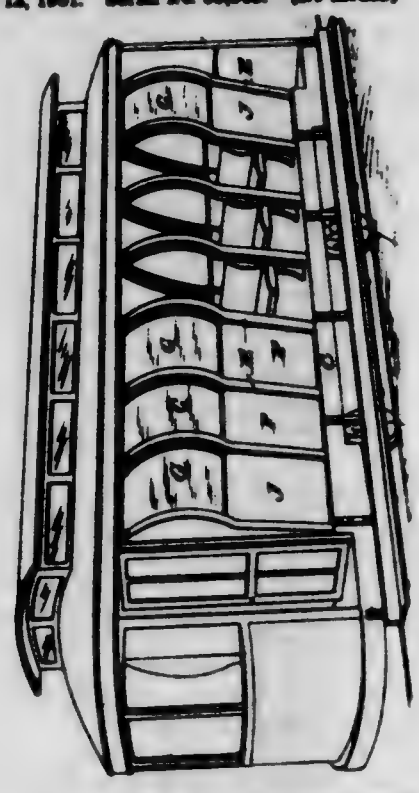

Claim.—1. A convertible car the sides of which are composed of grooved interchangeable and reversible metal posts and side sections consisting of window-sashes and side walls sliding therein and so arranged that when the sides are closed the sashes rest above the side walls and when the sides are open the sashes and side walls are separately raised and held in separate grooves in the upper part of said posts said grooves communicating with the lower groove by means of a lock substantially as set forth.

2. An interchangeable side post for convertible cars, the lower portion of which contains a groove for the side wall and the upper portion of which contains concentric grooves for the side wall and sash, the upper grooves communicating with the lower groove by means of a lock substantially as and for the purpose set forth.

3. A side post for convertible cars the grooved lower portion of which is substantially vertical and the upper portion runs on the arc of a circle and is provided with two concentric grooves the lower groove communicating with either of the upper grooves by means of a lock substantially as shown and described.

707,019. POTATO-CREAMER. FREDERICK W. RICHTOFEL and ADELE POHLMANN, New York, N. Y. Filed Feb. 3, 1902. Serial No. 92,312. (No model.)

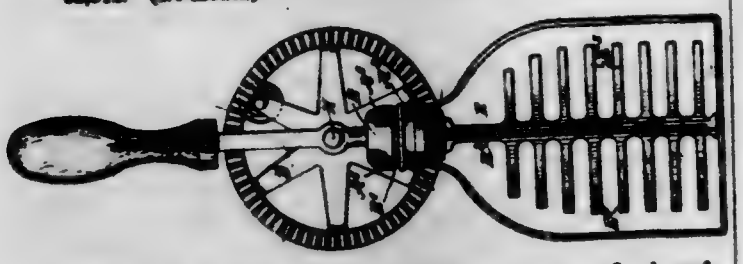

Claim.—1. A creamer comprising a frame, having a fixed perforate bottom for mashing potatoes, and a manually-controlled creamer-wheel journaled in the frame to rotate over the said bottom, to reduce the mashed potatoes to a creamy consistency, as set forth.

2. A creamer comprising a handled frame, having a perforate bottom provided with a central stop, a revolvable wheel set in the said stop and having laterally-extending arms or blades, a pinion journaled in the frame and engaged by the upper end of the said wheel, and a manually-controlled gear-wheel journaled on the frame and in mesh with the said pinion, as set forth.

3. In a creamer, the combination with a frame having a perforate bottom, side arms extending upward from the said bottom, a head having a depending bearing, and means for fastening the upper ends of the side arms to the said head, of a handled gear-wheel journaled on a stud carried by the said head, a pinion journaled on the said bearing and in mesh with the said gear-wheel, the pinion having a recess in its under side, a creamer-wheel having a central post stepped on the said bottom and engaging with its upper forked end the recess in the said pinion, and spaced, flat side arms extending from the said post on opposite sides thereof and in a horizontal direction, as set forth.

707,020. CALF-WEANER. LEWIS H. SAUNDERS, Colby, Kans. Filed Apr. 18, 1902. Serial No. 103,530. (No model.)

Claim.—1. A calf-weaner comprising a frame consisting of rigid side bars, a nosepiece bridging the said side bars at their front ends and arranged at an angle thereto, said nosepiece being arched and passing around and resting upon the upper jaw of an animal, a strap or band secured to the side bars at their front ends and extending around the lower jaw of an animal, spurs or points radiating from the nosepiece, and means for securing the rear end of the frame to the head of an animal, whereby when pressure is applied to the spurs from the front, the strap passing around the lower jaw will close said jaw.

2. A calf-weaner comprising an inner frame consisting of flat rigid cheek-pieces adapted to extend along the cheeks of an animal, an integral nose-yoke curved upwardly and forwardly from said cheek-pieces, an outer one-piece frame consisting of rigid side members pivoted to the inner frame and a yoke extending in front of the nose-yoke of the inner frame, a jaw-strap secured to the rear ends of the outer frame and passing around the lower jaw of an animal, spurs or barbs secured to the outer frame, whereby when pressure is applied to said spurs or barbs in an upward or downward direction, the jaw-strap will close the lower jaw, and means for securing the inner frame to the head of an animal.

3. In a calf-weaner, the combination with an inner frame provided with suitable attaching means, and consisting of flat cheek-pieces, and an upwardly-arched nose-yoke, of an outer barbed frame consisting of flat side pieces and a front curved yoke, said outer frame being pivoted to the inner frame at or about the base of the arched nose-yoke, a jaw-strap secured to the rear ends of the outer frame and passing around the lower jaw of an animal, spurs or barbs projecting from the yoke of the outer frame, whereby when said spurs or barbs are moved upwardly or downwardly the jaw-strap will close the lower jaw of the animal to which the device is attached.

4. A calf-weaner comprising an inner frame, consisting of flat cheek-pieces and an arched nose-yoke, said cheek-pieces being spread apart at their rear ends, an arched outer barbed frame pivoted to the inner arched frame and swinging in front of the inner frame, a jaw-strap secured to the rear ends of the outer frame and passing around the lower jaw of an animal, and means for securing the inner frame to the head of a calf or other animal.

707,021. COMBINED SUPERHEATER AND STEAM-GENERATOR. RICHARD SCHULZ, Berlin, Germany. Filed Sept. 20, 1901. Serial No. 75,832. (No model.)

Claim.—1. The combination with a water-tube boiler provided with a casing, a steam-drum, and a water-drum, and water-tubes connecting them, of a tubular superheater between the casing and water-tubes, and means to cause furnace-gases to pass downward between the water-tubes and the tubes on one side of the superheater and then between the casing and other side of the superheater-tubes, substantially as set forth.

2. The combination with a water-tube boiler having steam and water drums, and water-tubes connecting them, of a superheater comprising a series of tubes both ends connected to a head forming part of the steam-drum, one end of said tubes opening into the steam-space of the steam-drum and the other end into a steam-chamber formed in said drum, substantially as set forth.

3. In a water-tube boiler, the combination with the steam and water drums and water-tubes connecting them, of a superheater connected to the steam-drum and comprising a series of tubes, the water-tubes arranged to form a deflecting-wall with passages near the steam-drum, whereby furnace-gases will be admitted to the superheater at the top and means to direct the gases downward and then upward through the superheater, substantially as set forth.

4. In a water-tube boiler, steam and water drums, and water-tubes connecting them, a superheater comprising an upper and a lower water-head, steam-tubes connecting them, said tubes having the same general direction and located beside the water-tubes, said water-tubes arranged to form a wall with passages near the steam-drum to admit furnace-gases at the top of the superheater and means to direct said gases downward and then upward through the superheater, substantially as set forth.

5. In a water-tube boiler, the combination with the steam and water drums, and water-tubes connecting them, of a superheater comprising an upper head formed within the steam-drum and a lower head forming part of the water-drum, and steam-tubes connecting said heads, substantially as set forth.

6. The combination with a water-tube boiler having steam and water drums, and tubes connecting them, of a superheater comprising a head forming part of the steam-drum, one end of said tubes entering the steam-space and the other end terminating within a chamber forming part of and within the steam-drum, substantially as set forth.

7. In a water-tube boiler, the combination with the steam and water drums, and water-tubes connecting them, of a superheater comprising an upper and a lower head, and steam-tubes connecting them, the direction of said steam-tubes being substantially parallel to the water-tubes and located to one side of them, substantially as set forth.

8. In a water-tube boiler, the combination with the steam and water drums, and water-tubes connecting them, of a superheater comprising an upper and a lower head, and steam-tubes connecting them, some of said steam-tubes arranged to form a medial deflecting-wall, whereby furnace-gases will be directed down one side and up the other side of said superheater, substantially as set forth.

9. The combination with a water-tube boiler having steam and water drums and water-tubes connecting them, of a superheater comprising an upper head forming part of the steam-drum, and a lower head, said heads connected by steam-tubes, and a deflecting-wall in the superheater formed by the juxtaposition of some of said steam-tubes, substantially as set forth.

10. The combination with a water-tube boiler having steam and water drums, water-tubes connecting them and a fireplace, of a superheater comprising an upper head forming part of the steam-drum and a lower head, said heads connected by steam-tubes adjacent the fireplace, said steam-tubes having substantially the same direction as the water-tubes, substantially as set forth.

11. The combination with a water-tube boiler having steam and water drums and water-tubes connecting them, of a superheater comprising a divided upper head, a steam connection between one side thereof and the steam-space of the steam-drum, and a lower head, said heads connected by steam-tubes, substantially as set forth.

12. The combination with a water-tube boiler having steam and water drums and water-tubes connecting them, of a superheater comprising a divided upper head, a steam connection between one side thereof and the steam-space of the steam-drum, a lower head, suitably-curved tubes connecting the heads and a deflecting-wall formed by the juxtaposition of some of the steam-tubes intermediate their ends, substantially as set forth.

13. The combination with a water-tube boiler having a fireplace, steam and water drums, water-tubes connecting them, of a superheater, comprising a chamber formed in the steam-drum, a lower head, and steam-tubes connecting the steam-space of the boiler with the lower head and similar tubes connecting the lower head with said chamber, a protecting-wall of water-tubes between the fireplace and superheater bent at their ends to form passages for the furnace-gases and a damper controlling the passages of the gases therethrough, and a wall dividing the water-leg to separate the superheater from the water-tube portion, substantially as set forth.

14. The combination with a water-tube boiler having steam and water drums, and water-tubes connecting them, a wall dividing the water-tubes into two sets and a superheater comprising a lower head and an upper head forming part of the steam-drum, and a plurality of deflecting-walls formed by the juxtaposition of some of the steam-tubes intermediate their ends, substantially as set forth.

15. The combination with a water-tube boiler, comprising two steam and three water drums, water-tubes connecting them, of a superheater between the steam-drums comprising a divided upper head one side thereof connected to the steam-spaces of the steam-drums and the other side to a service-pipe, a lower head and steam-tubes connecting them, and dampers to control the admission of furnace-gases to the superheater, substantially as set forth.

707,022. **FLUE-STOP.** JACOB SEITZER, Keokuk, Iowa. Filed Jan. 11, 1902. Serial No. 89,358. (No model.)

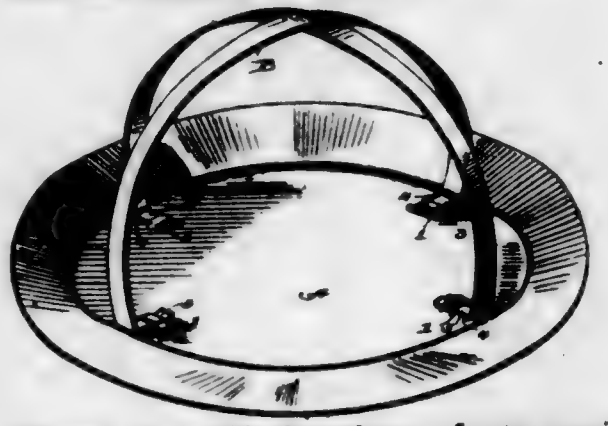

Claim.—1. As an article of manufacture, a flue-stop comprising a cap having sockets formed therein, said sockets open at each end, and a pair of bails crossing each other at or near the center, their ends extending through the sockets and bent to prevent their accidental withdrawal therefrom while admitting a limited movement therein.

2. As an article of manufacture a flue-stop, comprising a sheet-metal cap having flattened sockets formed on its inner surface, and a pair of bails composed of band-iron, crossing each other at the center and having sliding connection with the sockets at their ends, their extreme tips being constructed to prevent accidental removal from the sockets.

3. As an article of manufacture, a flue-stop, comprising a cap having sockets on its inner surface, and a pair of bails adapted to cross each other at the center, said bails having restricted ends adapted to fit said sockets, shoulders formed between the restricted ends and the body portion of the bails whereby to serve as stops to prevent further inward movement within the sockets.

707,028. **CREAM-SEPARATOR.** JACOB SEITZER, Keokuk, Iowa. Filed Feb. 4, 1902. Serial No. 92,576. (No model.)

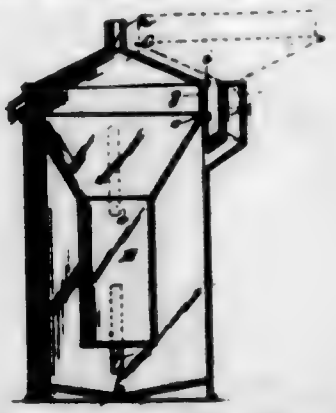

Claim.—1. The combination with a milk-can and a water-can, one adapted to fit into the other, the milk-can having a filling-tube and the water-can an outlet-spout, of a funnel-shaped cover having a spout adapted to enter the filling-tube whereby to facilitate the operation of pouring milk into the milk-can, and said spout adapted to reach to or nearly to the bottom of the water-can when used in the operation of filling the latter.

2. The combination with a milk-can, and a funnel-shaped water-can closed at the lower end and open at the upper end, said upper end of a size to fit the milk-can and constitute a cover therefor, and this upper end provided with a water-overflow spout, of a funnel-shaped cover capable of inversion to serve as a filling device as well as a cover, the spout of the funnel-shaped cover having an extension of sufficient length to discharge its contents at or near the bottom of the water-can.

3. The combination with a milk-can provided with a filling-tube, and a funnel-shaped water-can closed at its lower end and constructed at its upper end to fit the upper end of the milk-can whereby to close it, said water-can provided with an overflow-spout, of a cover of funnel shape and of a size to cover the water-can when placed thereon in either its normal or inverted position, and the spout of the cover of a size to fit the

filling-tube of the milk-can whereby when joined thereto it may be utilized in the operation of filling the milk-can with milk, and said spout adapted to reach to or nearly to the bottom of the water-can when placed therein whereby to discharge water at that point.

707,024. PROJECTILE. JOHN B. SEMPLE, Sewickley, Pa. Filed Aug. 12, 1901. Serial No. 71,863. (No model.)

Claim.—1. The combination of a projectile, a progressively-combustible and non-explosive pyrotechnic compound carried by the projectile in front of the sabot or bearing portion thereof and having its point of combustion during the flight of the projectile in front of the sabot or bearing portion thereof, and a part or member capable of movement independent of the projectile for igniting said compound, substantially as set forth.

2. The combination of a projectile, a strip or band of combustible non-explosive or pyrotechnic compound extending from a point at or near the front end of the projectile toward the rear end thereof and having the point or points of flame exposure or illumination in advance of the rear end of the projectile and means carried by the projectile for igniting said compound, substantially as set forth.

3. A projectile provided with a cavity extending from a point at or near the front end of the projectile toward the rear end thereof and having the point or points of flame exposure or illumination in advance of the rear end of the projectile, a combustible non-explosive or pyrotechnic compound arranged in said cavity, a movable part or member for causing ignition of said compound, substantially as set forth.

4. A projectile provided with an external groove at or near its front end, a combustible non-explosive or pyrotechnic compound arranged in said groove, a movable part or member to ignite the compound, substantially as set forth.

5. A projectile provided with a cavity extending from a point at or near the front end of the projectile toward the rear end of the same and having the point or points of flame exposure or illumination in advance of the rear end of the projectile, a combustible non-explosive or pyrotechnic compound arranged in said cavity, and a movable part or member arranged within the projectile to ignite the compound, substantially as set forth.

707,025. STOVE-DOOR HINGE. FRANKLIN L. SHEPPARD, Philadelphia, Pa. Filed Dec. 31, 1901. Serial No. 87,869. (No model.)

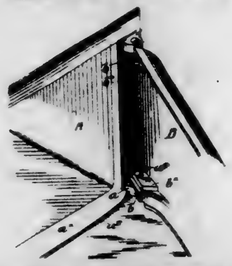

Claim.—1. The combination of a frame or body having hinge-lugs, said frame having a continuously-depressed portion formed concave from the outside and extending between said lugs, a door for the frame, and means for supporting said door from said lugs, the entire side of the door extending beyond the line of the said supporting means and being constructed to enter the depressed portion in the frame when the door is opened, substantially as described.

2. The combination of a frame or body having projecting hinge-lugs, said frame having a continuously-depressed portion adjacent to said lugs said portion being formed concave from the outside and extending between the lugs, a door for the frame and pins whereby said door is pivotally hung from said lugs, the entire side of the said door extending beyond the line of said pins and being constructed to enter the depressed portion in the frame when the door is opened, substantially as described.

3. The combination of a frame or body having in it an opening, hinge-lugs adjacent to the same, a door closing said opening and pins whereby said door is hung between said lugs, one of said pins passing from the door to the lip of a lug and the other pin passing from the upper lug into the door, the line of said pins being within the body of the door, and the edge of said door extending in an unbroken straight line between said lugs, substantially as described.

4. The combination of a frame or body of a stove having projecting hinge-lugs and provided with a single continuous cylindrical curved depressed portion extending between said lugs, a door and pins for holding the same to the lugs, the edge of the door being placed to rotate within said depression in the frame, substantially as described.

707,026. HOLDER FOR BLANK CARTRIDGES. MILTON J. SMINER, Freemansburg, Pa. Filed June 3, 1902. Serial No. 110,078. (No model.)

Claim.—1. A cartridge-holder, consisting of a body having a fixed jaw and a spring-controlled pivotally-mounted opposing jaw, the jaws having opposing longitudinal channels in their inner faces for the reception of a cartridge-shell, and transverse channels forming an opening for the exit of smoke, powder, &c., as described.

2. A cartridge-holder, consisting of a body constructed in two sections, one section having a jaw formed integral therewith, which jaw is provided with an inner vertical channel, the opposing section of the body having a longitudinal slot formed therein, a movable jaw adapted to enter said slot, and having a knuckle received in a channel formed in the two sections of the body, which movable jaw consists of a body carrying the said knuckle, a clamping-section below the knuckle, opposed to the fixed jaw and provided with longitudinal and transverse channels in its inner face, a spring having bearing against the upper end of the movable jaw and against a section of the body, and means, substantially as described, for connecting the sections of the body, as set forth.

707,027. CARBID-HOLDER. FLAVEL SIMONDS, Sterling, Ill. Original application filed Dec. 20, 1899, Serial No. 77,451. Divided and this application filed Jan. 31, 1902. Serial No. 91,996. (No model.)

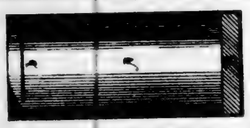

Claim.—1. A weighted carbid-holder for an acetylene-gas generator, formed of an imperforate body, an open top and a closed bottom with the body of greatly-increased length as compared with its width making a deep and narrow closed chamber with an open top for receiving the carbid and maintained by the weight in a vertical position when dropped for use, for presenting a small area of live carbid for surface exposure to the action of the water; clearing the holder of the residuum from the slaked carbid and maintaining the holder beneath the water, substantially as described.

2. A carbid-holder for a gas-generator, formed of an imperforate body, an open top, and a closed and weighted bottom with the body of greatly-increased length as compared with its width making a deep and narrow closed chamber with an open top for receiving the carbid and weighted at the bottom for maintaining the holder in a vertical position when dropped, presenting a small area of surface exposure for the live carbid to the action of the water, maintaining the holder beneath the water and clearing the holder from the residuum of the slaked carbid, substantially as described.

707,028. LOCK. HENRY W. SHEPPE, Ithaca, N. Y. Filed Nov 26, 1901. Serial No. 83,783. (No model.)

Claim.—1. The combination of a casing having a latch, tumblers for operating said latch, a hollow knob-spindle rigidly held in the casing and knobs having sleeves on said spindle operatively engaging the tumblers, said latch having mechanism whereby it may be operated by means of a key inserted through said hollow spindle, substantially as described.

2. The combination of a casing having a latch, tumblers for operating the same, a knob-spindle immovably held to said casing, sleeves revolubly carried on the spindle in operative engagement with the tumblers, knobs fixed to said sleeves, and antifriction-bearings between said spindle and the knobs, substantially as described.

3. The combination of a casing having a latch, tumblers for operating the same, a knob-spindle immovably held to said casing, extension-pieces for the spindle, sleeves revolubly carried on the spindle in operative engagement with the tumblers, knobs fixed to said sleeves and held in place by the extensions of the spindle, and antifriction-bearings between said spindle extensions and the knobs, substantially as described.

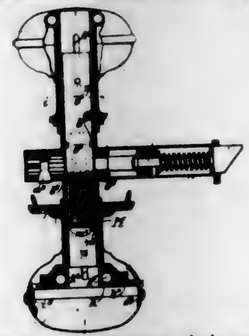

4. The combination of a casing having a latch, a tumbler for operating the latch, a hollow knob-spindle rigidly held in the casing, a knob having a sleeve engaging the tumbler and revolubly on the spindle, with locking mechanism in the casing for locking the said latch in its extended position, the same being constructed to be operated through said hollow spindle, substantially as described.

5. The combination of a casing having a latch, a tumbler for operating the latch, a hollow knob-spindle rigidly held in the casing, a knob having a sleeve engaging the tumbler and revolubly on the spindle, with locking mechanism in the casing for locking said latch in its extended position, the same being constructed to be operated through said hollow spindle, with a guide-piece in the hollow spindle for holding the key during its action upon said mechanism, substantially as described.

6. The combination of a casing having a latch, a tumbler for operating the latch, a hollow knob-spindle rigidly held in the casing, a knob having a sleeve engaging the tumbler and revolubly on the spindle, with locking mechanism in the casing for locking the said latch in its extended position, the same being constructed to be operated through said hollow spindle, with a guide-piece in the hollow spindle having a hole for the end of the key, said hole being eccentric to the bore of said spindle, substantially as described.

7. The combination of a casing having a latch, a tumbler for operating the latch, a hollow knob-spindle rigidly held in the casing, a knob having a sleeve engaging the tumbler and revolubly on the spindle, with locking mechanism in the casing for locking the said latch in its extended position, the same being constructed to be operated through said hollow spindle, a movable guide-piece in the hollow spindle, the same serving to hold the key during its operation upon said mechanism, irrespective of the end of the spindle through which said key is inserted, substantially as described.

8. The combination of a casing having a latch, a tumbler for operating the latch, a hollow knob-spindle rigidly held in the casing, knobs having sleeves engaging the tumblers and revolubly on the spindle, with locking mechanism in the casing for locking the latch in its extended position, the same being constructed to be operated through said hollow spindle, a guide-piece made to slide in said spindle, having means to prevent its rotation and being provided with a hole in each end eccentric to the bore of the spindle, said piece being movable by the key so that said key will be free to set upon the locking mechanism when inserted in the spindle from either end thereof, substantially as described.

9. The combination with a casing having a latch and mechanism for locking the same in an extended position, of a hollow spindle carrying knobs for operating the latch, said spindle having an opening where it passes through the casing, a pin fixed to the spindle and engaging a fixed part of said casing, whereby said spindle is held from longitudinal movement, substantially as described.

10. The combination with a casing having a latch and mechanism for locking the same in an extended position, of a hollow spindle carrying knobs for operating the latch, a portion of said spindle being cut away where it passes through the casing, a retaining-piece on the spindle engaging the casing, for preventing rotary motion of the spindle, and a projection also on the spindle and also engaging the casing for preventing longitudinal motion of said spindle, substantially as described.

11. The combination with a casing having a latch and mechanism for locking the same in an extended position, of a hollow spindle carrying knobs for operating the latch, the opening through said spindle being eccentric to the outside surface thereof, means for preventing motion of the spindle and means for guiding the key inserted into the same, to bring it into contact with the locking mechanism, substantially as described.

12. The combination with a casing having a latch and locking mechanism for retaining the latch in an extended position, of a hollow knob-spindle rigidly fixed to the casing, knobs operatively connected to the latch carried by the spindle, the bore of the spindle being eccentric to its outside surface, a key-guide piece within the spindle having means for engaging the key and for holding the same eccentric to the bore of said spindle, substantially as described.

13. A casing having a latch, a yoke-piece connected to the same, a tumbler engaging with said yoke, a knob having means connecting it to said tumbler, a locking-bar constructed to be engaged by a key, the same passing through the yoke and engaging a piece projecting from the latch, substantially as described.

14. A casing having a latch, a yoke-piece connected to the same, a tumbler engaging with said yoke, a knob having means connecting it to said tumbler, a locking-bolt constructed to be engaged by a key, said bolt passing through the yoke and engaging a piece projecting from the latch, means for preventing motion of the tumbler, a plate parallel to the said bolt and also passing through and connected to the yoke, the construction being such that motion of the plate will move the yoke independently of the tumblers, substantially as described.

15. The combination with a casing having a latch, a yoke connected thereto, and tumblers operated by the knobs, of a locking-bolt constructed to be moved by a key to prevent motion of the latch, a plate on each side of said locking-bolt said plates being pinned together and with the locking-bolt, passing through an opening in the yoke, a pin in the yoke passing through said plates and the locking-bolt, with means for preventing motion of the tumblers, substantially as described.

16. The combination of a casing, a latch, a tumbler, a yoke-piece connecting the latch and the tumbler, means for turning the tumbler so as to operate the latch, a locking-bolt for the latch having in it a notch, a plate sliding on the locking-bolt also having a notch, means for connecting the plate to the yoke whereby when the bolt and the plate are in position to lock the latch a single revolution of the key will operate the locking-bolt and the second revolution of the key will operate the latch independently of the tumblers, substantially as described.

17. The combination of a casing, a latch, a tumbler, a yoke-piece connecting the latch and the tumbler, means for turning the tumbler so as to operate the latch, means for locking the tumbler, a locking-bolt for the latch having in it a notch, a plate sliding on the locking-bolt also having a notch, a pin connecting the plate to the yoke, said plate having a slot through which said pin extends, said pin being at one end of the slot when the locking-bolt is in a position out of engagement with the latch, substantially as described.

18. In a latch mechanism of the character described, the combination of a yoke-piece, a locking-bolt, a plate lying on each side of the locking-bolt, a pin extending through the slot and rigidly holding said members together, a slot in each of the members, a pin in the yoke extending through said slots placed to engage one end of the same, whereby when the key engages said notched pair of members and is revolved, the yoke is moved back independently of the tumblers, substantially as described.

19. A casing having a latch, a yoke-piece connected to the same, a tumbler engaging with said yoke, a knob having means connecting it to said tumbler, a locking-bolt constructed to be engaged by a key, the same passing through the yoke and engaging a piece projecting from the latch, and an auxiliary lock-bolt operated by said locking-bolt, substantially as described.

20. A casing having a latch, a yoke-piece connected to the same, a tumbler engaging with said yoke, a knob having means connecting it to said tumbler, a locking-bolt constructed to be engaged by a key, the same passing through the yoke and engaging a piece projecting from the latch, and a bolt fixed to said locking-bolt and projecting beyond the casing when the locking-bolt is in its forward position, substantially as described

21. In a locking mechanism of the character described, a hollow knob-spindle having an opening for the passage of the key-blade, a movable key-guide in said spindle having two faces for the reception of a key, said faces being of a contour requiring said key to be of a definite form in order to operate the lock, with means for limiting the motion of said key-guide, substantially as described.

22. In a locking mechanism of the character described, a hollow knob-spindle having an opening for the passage of the key-blade, a movable key-guide in said spindle having two faces for the reception of a key, the said faces being provided with projections placed to correspond with depressions on the end of the key thereby requiring a key of definite form to operate the lock, and means for limiting the motion of the said key-guide, substantially as described.

23. In a locking mechanism of the character described, a hollow knob-spindle having an opening for the passage of the key-blade, a movable key-guide in said spindle having its face or faces engaged by the key, said faces being provided with a series of segmental projections, said guide

being constructed to hold the key-spindle eccentric to the knob-spindle, with means for limiting the motion of the key-guide so as to bring the blade of the key into operative relation to the opening in the knob-spindle, substantially as described.

24. The combination of a casing having a latch, tumblers for operating said latch, a hollow knob-spindle held in the casing, knobs having sleeves on said spindle in operative engagement with said tumblers, said latch having mechanism whereby it may be operated by means of a key inserted through either end of the spindle, substantially as described.

25. The combination of a casing having a latch, tumblers for operating said latch, a hollow knob-spindle held in the casing, knobs having sleeves on said spindle in operative engagement with said tumblers, said latch having mechanism whereby it may be operated by means of a key inserted through either end of the spindle, said spindle having within it means for closing the direct passage therethrough, substantially as described.

707,029. FILTER AND HYDRAULIC PRESS MEMBER. MYRON A. SMITH, New York, N. Y., assignor to International Machine Co., New York, N. Y. Filed May 25, 1901. Serial No. 61,851. (No model.)

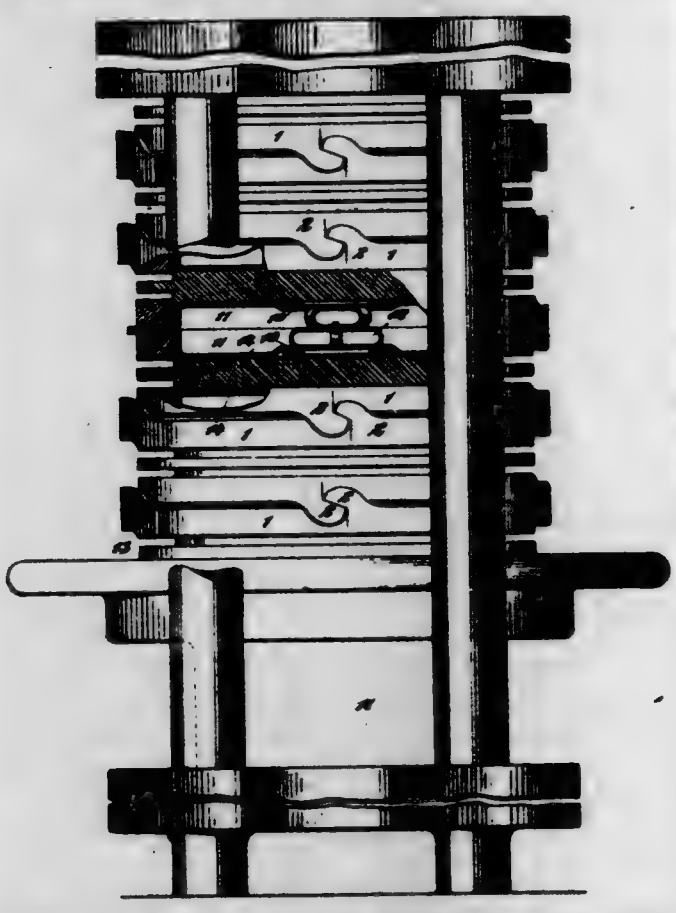

Claim.—1. A plurality of metallic rings or frames adapted and arranged to interchangeably form a part of a filter-press and of a hydraulic press, in combination with filter-cloths held between each pair of rings or frames, and means for holding said cloths apart at their centers, substantially as shown and described.

2. A plurality of metallic rings or frames adapted and arranged to interchangeably form a part of a filter-press and of a hydraulic press, in combination with separating-plates interposed between each pair of pairs of rings or frames.

3. The combination with a pair of interlocking rings or frames and interposed dividing-plates, of filter-cloths located between the rings or frames, and means for holding said cloths against the inner faces of the dividing-plates.

707,080. PAPER-BAG FASTENER. SAMUEL S. SMITH, Lewis township, Northumberland county, Pa. Filed Jan. 14, 1902. Serial No. 89,726. (No model.)

Claim.—1. A paper-bag fastener, consisting of a paper or cardboard blank having a pair of open slots therein, the body of said blank secured to the surface of the bag with the portion free in which the outer ends of the slots are located, in connection with a tongue secured to the opposite surface of the bag-mouth and passed through the two slots wherein it is held by the frictional engagement of its edges with the ends of the slots.

2. A paper-bag fastener, consisting of a tongue, and a blank having open slots in its ends, said slots having sharp angles at their outer edges adapted to receive the edges of the tongue and hold them by frictional engagement.

3. The combination with a tongue having a slight taper, said tongue adapted to be secured to one side of a bag at or near its mouth, of a blank secured to the opposite side of the bag, said blank having an open slot at each end, the outer angles of which slot are sharp or acute, they being adapted to receive and hold the edges of the tongue by frictional engagement.

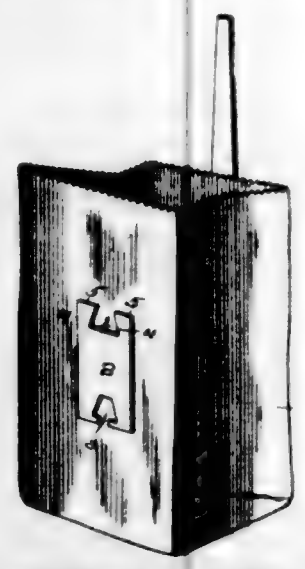

4. A bag or envelop having a tapering tongue on its flap, and a fastening device on the body portion, said fastening device provided with a pair of slots approximately triangular in shape in alinement with the tongue, in position to receive the tongue by inserting the tongue endwise successively first through one slot and then the other.

707,081. CURETTE. CHARLES W. SPAULDING, Carroll, Iowa. Filed Aug. 11, 1900. Serial No. 26,594. (No model.)

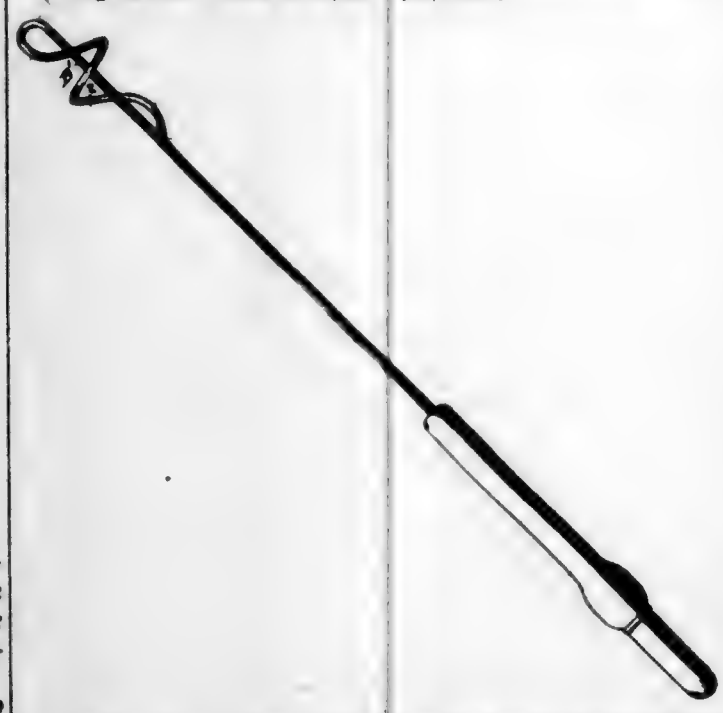

Claim.—1. A curette, comprising a shank and a spiral made from the shank extension, the shank and the outer end of the coils of the spiral being bent out of alinement sufficiently to secure easy entrance and enable the spiral to begin at once to draw on turning it into its place of use, the coils of the spiral being far enough apart to enable the curette to make its entrance with very little dilation of the parts, the spiral being at the end of the shank and enlarged to its greatest diameter, then decreased until it again enters the shank, being when complete, an instrument of oblong, oval shape, that will excavate a space of oblong oval shape, as set forth, both ends of the spiral being integral with the shank for the purpose of avoiding free ends.

2. A curette, comprising a hollow tubular, perforated shank, and a spiral made from the shank extension, the shank and outer end of spiral being bent out of alinement sufficiently to secure easy entrance and enable the spiral to at once begin to draw the instrument on turning the handle into its place of use, the end of the shank forming a center post for the spiral, the perforation enabling the device to be used as a douche, the coils of said spiral being far enough apart to enable the curette to make easy entrance with little distention, and the spiral being decreased in size at the end of the shank and enlarged at its greatest diameter, then decreased until it again enters the shank, and when complete, is an oblong oval in shape, as set forth.

3. A curette as above described with a spiral constructed with a groove in the inner and under side so arranged that the outer corner will form a scraping edge.

4. A curette, comprising a handle, a member of spring metal secured thereto at one of its ends and terminating at its other end in an endless loop for the purpose of avoiding free ends, a part of said loop being spirally wound so as to present a general egg shape, and another portion of said loop being straight for the purpose of acting as a snare.

5. A curette, comprising a handle, a member of spring metal secured by one of its ends thereto and terminating at its other end in an endless loop for the purpose of avoiding free ends, a portion of said loop being spirally wound into a general olive shape and provided with a scraping edge.

6. A curette, comprising a handle, and a member of spring metal mounted thereon and also terminating in an endless loop for the purpose of avoiding free ends, a part of said loop serving as an axis of rotation for another part of said loop, said other part being provided with a scraping edge.

7. A curette, comprising a handle, a member of spring metal secured thereto and terminating in an endless loop for the purpose of avoiding free ends, a part of said loop being straight and serving as an axis, and another part of said loop being provided with an operative edge and being wound around said part serving as an axis.

8. A curette, comprising a handle, and an endless loop of spring metal connected therewith, said loop consisting of a straight member and a spiral member bent into a general egg shape so as to surround said straight member, all parts of the apparatus being so constructed as to avoid free ends.

9. A curette, comprising a handle, a longitudinal member of spring metal connected therewith and terminating in an endless loop for the purpose of avoiding free ends, a part of said loop being straight and another part of said loop being wound spirally around said straight part, said straight part extending entirely through said spirally-wound part.

707,082. GARMENT-SUPPORTER. FERDINAND SPERING, Arlington, Minn. Filed Sept. 7, 1901. Serial No. 74,633. (No model.)

Claim.—A garment-supporter comprising two separable members formed of resilient material, one of which is provided with a central elongated vertical slot, the other member being constructed in hook form having on its front portion an outwardly-bent portion terminating in a reduced end provided with outwardly-extended curved arms whereby to coact with the slot of the first-mentioned member to connect the two members together, the upper end of the hook having a curved loop portion and an inwardly-bent or contracted portion below the same so as to form a spring-clamp between the front and rear wall of the hook, substantially as and for the purpose specified.

707,088. JOURNAL-BOX. ANDREW G. STEELSMITH, St. Louis, Mo., assignor of forty-nine one-hundredths to Sanford Northrop, St. Louis, Mo. Filed Apr. 29, 1901. Serial No. 59,041. (No model.)

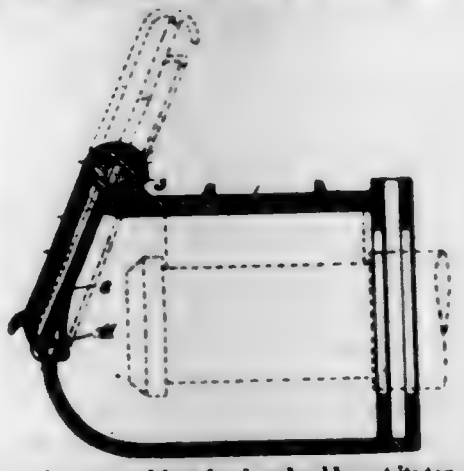

Claim.—1. In a journal-box having shoulders at its top, a vertically-movable cap having a curved lip at the top, a central upward and forward inclined enlargement 6 on the box, over which the said lip is adapted to fit to make a dust-proof joint, in combination with springs provided with bends at their lower ends adapted to engage the box when the cap is closed, the bends of said springs adapted to yieldingly bear against said shoulders when the cap is raised.

2. In a journal-box, a central upward and forward enlargement 6, having a groove in the top thereof, a vertically-movable cap, a flange on the cap adapted to enter said groove when the cap is closed, lips on the side of the cap adapted to engage flanges on the box, and springs secured to the cap and adapted to engage the forward edge of the top of the box when the cap is in its open position, said springs also adapted to engage the box when the cap is in its closed position, substantially as set forth.

707,084. CLAMP-BUCKLE OR FASTENER FOR BALE-TIES OR THE LIKE. WILBUR R. STURGESS, Conway, Ark. Filed Mar. 24, 1902. Serial No. 99,869. (No model.)

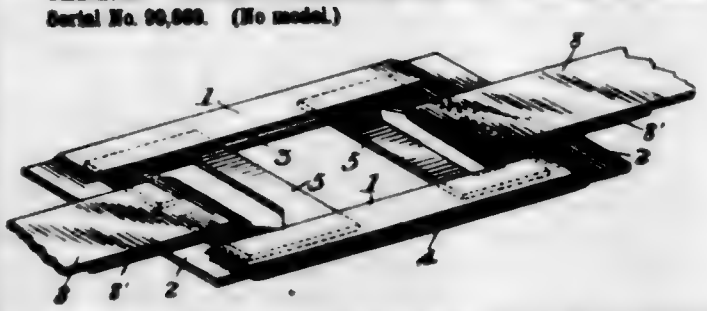

Claim.—1. A clamp or buckle for bale-ties and the like, comprising a rectangular base having an open center and grooved inner edges, and an open-centered slide operating in said grooves and serving to receive the looped end of the tie and bind the free end thereof against the end of said base.

2. A clamp or buckle for bale-ties and the like, comprising an open rectangular base, having grooves in its opposite inner edges and a pair of open slides operating in said grooves and serving to bind the free ends of a tie, which are looped through their respective centers, against the ends of the base.

3. A buckle or clamp for bale-ties and the like, comprising a base formed of side bars 1, each provided with a groove, 3, on its inner edge, and end bars, 2, connecting said side bars, and two flat rectangular, open-centered slides, 5, operating between said side bars and engaging said grooves, said slides serving to bind the free ends of a tie, which are looped through their centers, against the ends of the base.

707,085. METAL-WORKING TOOL. ADAM TINDEL, Philadelphia, Pa., assignor to Tindel-Morris Company, Eddystone, Pa., a Corporation of Pennsylvania. Filed Apr. 28, 1902. Serial No. 105,022. (No model.)

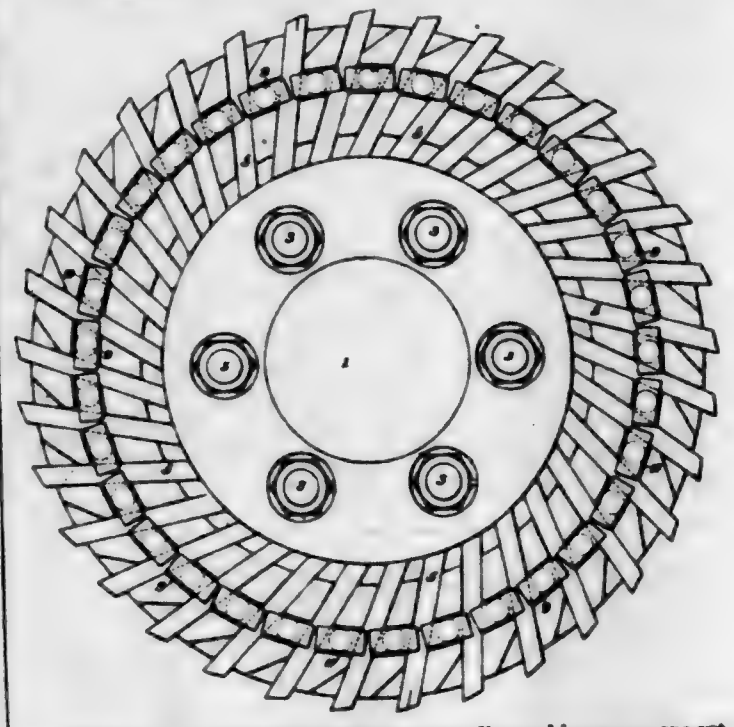

Claim.—1. A cutter-head having cutters disposed in groups, the cutters in each group being in different planes transverse to the axis of rotation of the cutter-head and securing-bolts for said cutters, each bolt having a head engaging with a pair of adjoining cutters, one side of the head being of greater depth than the other, substantially as specified.

2. A cutter-head having cutter-receiving grooves in the face of the same, an annular groove transverse to said cutter-receiving grooves, and openings extending from the base of said annular groove to the back of the cutter-head, a series of cutters adapted to the cutter-grooves, and cutter-securing bolts having heads overlapping the cutters and adapted to

said annular groove in the face of the cutter-head, the stems of the belts passing through the openings in the cutter-head, substantially as specified.

707,036. **PISTOL.** GUSTAVUS TROXLER, Jr., Newark, N. J., assignor to Charles F. Panhus, Newark, N. J. Filed Oct. 22, 1901. Serial No. 79,515. (No model.)

Claim.—1. In a pistol for firing paper or percussion caps, the combination, with the frame of the pistol having an opening in the top, and an anvil at or near said opening, said anvil having a striking-surface extending in a downward direction and tapering at an angle away from said opening, of a firing-hammer having a tapering striking end corresponding to the angle of the inclination of the striking-surface of the anvil, a cap-feeding mechanism, and means connected with said hammer for causing an intermittent feeding motion of said feeding mechanism, substantially as and for the purposes set forth.

2. In a pistol for firing paper or percussion caps, the combination, with the frame of the pistol having an opening in the top, and an anvil at or near said opening, said anvil having a striking-surface extending in a downward direction and tapering at an angle away from said opening, of a firing-hammer having a tapering striking end corresponding to the angle of the inclination of the striking-surface of the anvil, a pair of feed-rolls between which a strip of paper caps is passed and fed beneath the striking-surface of said anvil, and means connected with said hammer and engaging with one of said feed-rolls for causing an intermittent rotary feeding motion of the rolls, substantially as and for the purposes set forth.

3. In a pistol for firing paper or percussion caps, the combination, with the frame of the pistol having an opening in the top, and an anvil at or near said opening, said anvil having a striking-surface extending in a downward direction and tapering at an angle away from said opening, of a firing-hammer having a tapering striking end corresponding to the angle of the inclination of the striking-surface of the anvil, a pair of feed-rolls between which a strip of paper caps is passed and fed beneath the striking-surface of the anvil, ratchet-teeth on one of said feed-rolls, and a pawl pivotally attached to said hammer having a hook-shaped end in engagement with said ratchet-teeth for causing an intermittent rotary motion of said feed-rolls, substantially as and for the purposes set forth.

4. In a pistol for firing paper or percussion caps, the combination, with the frame of the pistol having an opening in the top, and an anvil at or near said opening, said anvil having a striking-surface extending in a downward direction and tapering at an angle away from said opening, of a firing-hammer having a tapering striking end corresponding to the angle of the inclination of the inputing surface of the anvil, a pair of feed-rolls between which a strip of paper caps is passed and fed beneath the striking-surface of the anvil, ratchet-teeth on one of said feed-rolls, and a pawl pivotally attached to said hammer having a hook-shaped end in engagement with said ratchet-teeth for causing an intermittent rotary motion of said feed-rolls, and means for operating said hammer, consisting, of a finger pivotally connected with said hammer, and a pivoted trigger adapted to be brought in active sliding engagement with said finger, substantially as and for the purposes set forth.

707,037. **PAPER-BINDER.** FERDINAND H. VOLKERT, Chicago, Ill. Filed Mar. 17, 1902. Serial No. 98,511. (No model.)

Claim.—1. In a binder for sheets of paper, the combination with clamping-bars, of a hollow post composed of telescopic sections attached at their outer ends to said bars and in sliding engagement at their inner ends, the inner section of said post being split at its end, a rod located within said inner section and in screw-threaded engagement therewith, a conical wedge integrally secured to the end of said rod and located within the split end of the inner section, and means for rotating said rod whereby said wedge expands the split end of the inner section into frictional contact with the interior surface of the outer section of said post.

2. In a binder for sheets of paper, the combination with clamping-bars, of a hollow post composed of telescopic sections attached at their outer ends to said bars and in sliding engagement at their inner ends to said post being split at its end, a rod located within said inner section and longitudinally movable therein, a conical wedge integral with the end of said rod and located within the split end of the inner section, and means for moving said rod longitudinally within the inner section whereby said wedge expands the split end of the inner section into frictional contact with the interior surface of the outer section of said post.

3. In a binder for sheets of paper, the combination with clamping-bars, of a hollow post composed of telescopic sections attached at their outer ends to said bars and in sliding engagement at their inner ends, the inner section of said post being split at its end, a rod extending through said inner section and in screw-threaded engagement with the portion thereof adjacent to the clamping-bar to which it is connected, a conical wedge on the end of said rod adapted to expand said split end of the inner section into frictional contact with the interior surface of the outer section of said post, and means for rotating said rod.

707,038. **MARINE-ENGINE GOVERNOR.** MARTIN F. VOLKMANN, Santa Monica, Cal. Filed Dec. 19, 1901. Serial No. 86,525. (No model.)

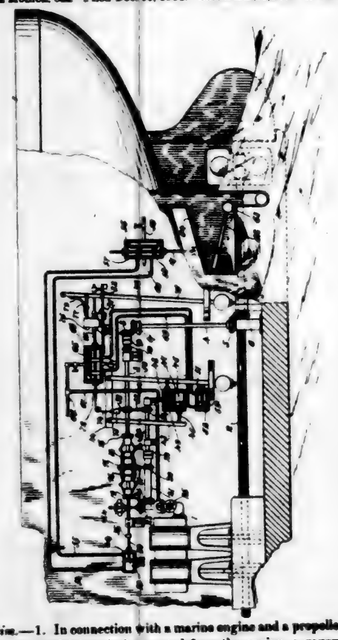

Claim.—1. In connection with a marine engine and a propeller-shaft driven thereby, a driving-shaft operated from the engine, a governor for the steam-valve of the engine and normally operated from said driving-shaft, and means for speeding the governor upon the rise of the propeller in the water, substantially as specified.

2. A marine-engine governor, comprising a governor having connection with the steam-controlling valve of the engine, a driving-shaft operated from the engine, a driven shaft operated from the driving-shaft, the said driven shaft consisting of two sections, one mounted to rotate on the other, a gear connection between the governor and said section mounted to rotate on the other section, a sprocket-wheel loosely mounted on the driving-shaft, a driving connection between said sprocket-wheel and the last-named member of the driven shaft, clutch devices carried by the driving-shaft and adapted for engagement with the sprocket-wheel, and means for engaging the clutch devices with said sprocket-wheel, substantially as specified.

3. In a marine-engine governor, a ball-governor having connection with the inlet-valve, a propeller-shaft driven by the engine, a driving-shaft, a gear connection between the propeller-shaft and driving-shaft, a driven shaft consisting of a main section and a tubular section, means for locking the two sections together, a gear connection between the tubular section and the governor, a sprocket-wheel loosely mounted on the driving-shaft and having driving connection with the sleeve-section, a driving connection between the driving-shaft and the main section of the driven shaft, a clutch device mounted to rotate with the driving-shaft and adapted for engagement with the loose sprocket-wheel thereon, a pendulum for moving said clutch, and a steam-controlled device for moving the pendulum, substantially as specified.

4. In a marine-engine governor, a governor for the engine, a propeller-shaft driven by the engine, a driving-shaft, a gear connection between the driving-shaft and propeller-shaft, a sprocket-wheel loosely mounted on the driving-shaft, a driven shaft consisting of a main section and a tubular section, a gear connection between the tubular section and the governor, a sprocket-chain connection between the driving-shaft and the main section of the driven shaft, a sprocket-wheel loosely mounted on the driving-shaft and having chain connection with the tubular section of the driven shaft, a clutch device mounted on the driving-shaft and adapted for engagement with said loose sprocket-wheel, a steam-cylinder, a piston in said cylinder having connection with the clutch device, a steam-cylinder arranged at the stern of the vessel and having pipe connection with the first-named cylinder, a rod movable in the last-named cylinder, valves on said rod for controlling the passage of steam through the pipes, a water-trunk supported at the stern of the vessel, and a float in said water-trunk having connection with said rod, substantially as specified.

5. In a marine-engine governor, a ball-governor having connection with the controlling-valve for the engine, a propeller-shaft operated by the engine, a driving-shaft, a gear connection between the propeller-shaft and the driving-shaft, a driven shaft consisting of a main section and a tubular section, the said tubular section being geared to the governor, a chain connection between the driving-shaft and the main section of the driven shaft, a sprocket-wheel loosely mounted on the driving-shaft and having driving connection with the tubular section of the driven shaft, a clutch member mounted on the driving-shaft and adapted for engagement with said loose sprocket-wheel, a pendulum having connection with said clutch, a main steam-cylinder, a supply-pipe leading therein, a slide-valve in said cylinder, a steam-chest having pipe connection with the supply-pipe, a slide-valve operating in said chest, a pendulum with which said slide-valve connects, a cylinder receiving steam from the steam-chest, a piston operating in said cylinder and adapted for engagement with the first-named pendulum, a steam-cylinder having connection with the main cylinder, and a piston in said cylinder having connection with the last-named pendulum, substantially as specified.

6. In a marine-engine governor, a ball-governor, a driving-shaft operated from the engine, a driven shaft consisting of a main section and a tubular section, the said tubular section having gear connection with the governor, a driving connection between the driving-shaft and the main section of the driven shaft, a sprocket-wheel loosely mounted on the driving-shaft and having driving connection with the tubular section of the driven shaft, a clutch on the driving-shaft adapted for engagement with said last-named sprocket-wheel, a pendulum having connection with the clutch, a main steam-cylinder, a valve mounted to slide in said steam-cylinder, a rod extended through the heads of the cylinder and to which the valve is connected, a weight at one end of said rod, teeth on the other end of said rod, a pendulum rearward of the first-named pendulum, a pawl mounted to swing on said pendulum and adapted for engagement with the teeth on said rod, means for lifting the pawl out of engagement with a tooth as the pendulum moves to normal position, and means controlled by said slide-valve for operating the first-named pendulum in one direction, substantially as specified.

7. A controlling device for the governor of a marine engine, comprising a steam-cylinder for receiving steam from the boiler, a slide-valve arranged in the cylinder, a rod connected to the slide-valve and extended through the heads of the cylinder, a weight attached to one end of said rod, teeth on the other end of said rod, a pendulum, a spring-pressed arm mounted to swing on the pendulum, a pawl carried by the arm for engaging with the teeth, a tappet extended downward from the pawl, and a block adapted for engagement with said tappet for raising the pawl out of engagement with a tooth, substantially as specified.

8. In connection with a governor for a marine engine, a driving-shaft driven from the engine, a driven shaft geared to the governor, and means operated from the driving-shaft for imparting different rates of motion to the driven shaft, substantially as specified.

9. In connection with a governor for a marine engine, a driving-shaft, a sprocket-wheel loosely mounted on the driving-shaft, a driven shaft geared to the governor and having connection with said sprocket-wheel, clutch devices on the driving-shaft at opposite sides of the sprocket-wheel, and means operated by the pitching of the vessel, for moving either one of said clutch devices into engagement with the sprocket-wheel, substantially as specified.

707,039. **WINDOW-LOCKING DEVICE.** JOHN WARLIER, Bay City, Mich. Filed Dec. 18, 1901. Serial No. 86,576. (No model.)

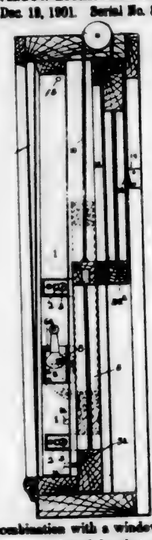

Claim.—1. In combination with a window-frame having a pair of transversely-movable stops; a slotted bracket secured to each stop, said bracket having a pair of outwardly-extending flanges; a cam pivotally mounted on the window-frame and operating between the flanges of each bracket to actuate the stops toward and away from the sash; a projecting pin secured to the sash, and recesses in the clamping edge of the stop to receive said pin when the stop is in contact with the sash.

2. In combination with a window-frame having a pair of transversely-movable stops secured thereto; a bracket secured to each stop, said bracket having a pair of outwardly-extending parallel flanges; a cam pivotally mounted on the window-frame and operating between the flanges of the bracket to engage said flanges thereby actuating the stops toward and away from the sash; a handle for said cam, together with a locking-latch pivoted to the handle and adapted to engage the flanges of the bracket.

3. A clamp for window-sash comprising in combination with a transversely-movable stop; a bracket having a transverse slot and a pair of flanges carried by said stop; a pin passing through the movable stop and the slot of the bracket; a cam mounted on said pin between the bracket-flanges; a locking-latch pivotally mounted on the cam; a projecting pin secured to the sash; together with recesses in the clamping edge of the stop, substantially as and for the purpose set forth.

707,040. **FAN-OPERATING DEVICE.** ROAB F. WARLICK, Chattanooga, Tenn. Filed Feb. 19, 1902. Serial No. 94,894. (No model.)

Claim.—1. A device of the class described comprising a frame designed to be mounted on a chair, an oscillatory fan-supporting bar or arm depending from the frame and located above the chair, a treadle supported from the frame and arranged to be engaged by the foot of a person occupying the chair, and an upright lever fulcrumed on the frame and connected at its lower end to the treadle and at its upper end with the fan-supporting bar or arm, substantially as described.

2. A device of the class described comprising a frame, an oscillatory fan-supporting bar or arm depending from the frame and located above the chair, a treadle arranged beneath the chair and extending in advance of the same, a hinged bar depending from the frame and supporting the front portion of the treadle, and an upright lever supporting the rear portion of the treadle and connected with the fan-supporting bar or arm, substantially as described.

3. A device of the class described comprising a frame, composed of a horizontal bar designed to be secured beneath the seat of a chair, an upright standard connected with the bar and adapted to be secured to the back of the chair, and a horizontal bar extending from the top of the standard, depending fan-supporting arms or bars hinged to the horizontal bar, a link connecting the fan-supporting bars, an upright lever fulcrumed on the standard and connected with the fan-supporting bars, a treadle extending beneath the chair and supported at its rear end by the upright lever, and a hinged bar connected with the frame and supporting the front portion of the treadle, substantially as described.

707,040.

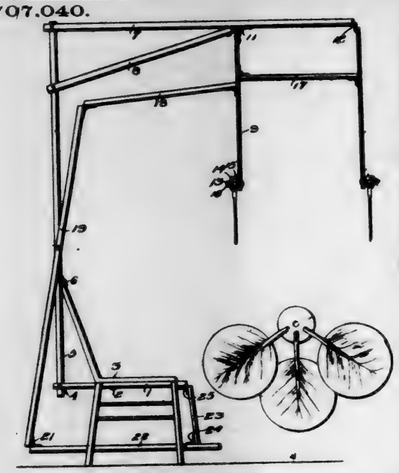

707,041. HARP. KARL WEIGEL, Hanover, Germany. Filed May 9, 1900. Serial No. 16,056. (No model.)

Claim.—1. A harp having a single-row chromatic arrangement of the strings, and a support for the harp having an inclined upper surface, the said inclined surface being adapted for engagement with the base of the harp.

2. A harp having a single-row chromatic arrangement of the strings, the strings ranging obliquely to the floor when the harp is standing, and a hand-support comprising a rail extending from the pillar of the harp to the resonance-box and ranging transversely of the strings, as set forth.

707,042. WATER-COOLING TOWER. CLIFTON H. WHEELER and LOUIS L. PRATT, Shorthills, N. J., assignors to Wheeler Condenser and Engineering Company, New York, N. Y., a Corporation of New Jersey. Filed Jan. 16, 1902. Serial No. 89,888. (No model.)

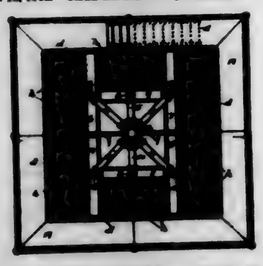

Claim.—1. In a cooling-tower of the open type, the combination with a reservoir, suction and discharge pipes, of independent series of vertically-placed mats arranged at right angles to each other and with intervening spaces between said series at right angles to each other, and means for independently distributing the circulating liquid to the mats of each series, substantially as specified.

2. In a cooling-tower of the open type, the combination with a reservoir, suction and discharge pipes, of independent series of vertically-placed mats in corresponding vertical planes, two short intermediate series of independent vertically-placed mats in corresponding vertical planes and at right angles to the aforesaid series with intervening and central spaces between said independent series of mats at right angles to each other, and means for independently distributing the circulating liquid to the said series of mats, substantially as specified.

3. In a cooling-tower of the open type, the combination with a reservoir, suction and discharge pipes, of long parallel series of independent vertically-placed mats in corresponding vertical planes, two short intermediate series of independent vertically-placed mats in corresponding vertical planes and at right angles to the aforesaid series with intervening and central spaces between said independent series of mats at right angles to each other, means for independently distributing the circulating liquid to the said series of mats, and means for holding the mats taut and vertical, substantially as set forth.

4. In a cooling-tower of the open type, the combination with a reservoir, suction and discharge pipes, of long parallel series of independent vertically-placed mats in corresponding vertical planes, two short intermediate series of independent vertically-placed mats in corresponding vertical planes, and at right angles to the aforesaid series with intervening and central spaces between said independent series of mats at right angles to each other, means for independently distributing the circulating liquid to the said series of mats, and means for holding the mats taut and vertical, substantially as set forth.

5. In a cooling-tower of the open type, the combination with a reservoir, suction and discharge pipes, of an open frame, mats placed in independent series, the said series being at right angles to each other, means for distributing the circulating liquid to any and all of the said independent series of mats, and means for holding the said mats taut and vertical, substantially as set forth.

6. In a water-cooling tower of the open type, the combination with a reservoir, suction and discharge pipes, of a frame, independent troughs at right angles to each other and means for supporting the same in said frame, mats arranged in independent series, the said series being at right angles to each other, and independent means for conveying the circulating water from the said discharge-pipe to the respective troughs and therefrom to the mats of the independent series, substantially as specified.

7. In a water-cooling tower the combination with a reservoir, suction and discharge pipes, of a frame, independent troughs at right angles to each other and means for supporting the same in said frame, mats arranged in independent series, the said series being at right angles to each other, independent means for conveying the circulating water from the said discharge-pipe to the respective troughs and therefrom to the mats of the independent series, radial baffles at right angles to each other and adjacent to the said discharge-pipe and dividing the spaces within the said series of mats, substantially as specified.

8. In a water-cooling tower of the open type, the combination with a reservoir, suction and discharge pipes, of a frame, independent troughs at right angles to each other and means for supporting the same in said frame, mats arranged in independent series, the said series being at right angles to each other, independent means for conveying the circulating water from the said discharge-pipe to the respective troughs and therefrom to the mats of the independent series, distribution-pipes extending between the said troughs and frame and from which the said mats are suspended, and pipes having valves therein connecting the discharge-pipe with the several independent troughs, substantially as specified.

9. In a water-cooling tower of the open type, the combination with a reservoir, suction and discharge pipes, of an open frame, a pair of independent troughs axially in line with one another, a similar pair of troughs parallel to and spaced apart from the said pair of troughs, a pair of independent troughs spaced apart, between and at right angles to the aforesaid pairs of troughs, all the troughs being secured in said frame, distribution-pipes extending from said troughs, independent series of mats suspended from said distribution-pipes, and means for conveying the circulating water from the discharge-pipe independently to each of said troughs, substantially as specified.

10. In a water-cooling tower, the combination with a reservoir, a suction-pipe and a central discharge-pipe, of an open frame, a pair of independent troughs axially in line with one another, a similar pair of troughs parallel to and spaced apart from the said pair of troughs, a pair of independent troughs spaced apart, between and at right angles to the aforesaid pairs of troughs, distribution-pipes extending outwardly from said troughs, independent series of mats suspended from said distribution-pipes, there being spaces left between the respective series of mats which are at right angles to one another, baffle-plates adjacent to the discharge-pipe extending radially from the same and at right angles to one another, and means for distributing the circulating water from the discharge-pipe independently to said troughs, substantially as specified.

707,048. OIL-RETAINING BOX. GEORGE W. WILMOT, ELIJAH HALST, and GEORGE T. BROWN, Freeland, Pa. Filed Nov. 7, 1901. Serial No. 81,419. (No model.)

Claim.—1. In a device of the class described, the combination of a hub provided at its inner end with an annular recess, a plate detachably secured to the inner end of the hub beyond the recess and forming an outer wall for the recess to provide a vertical way and extending entirely around the recess and closing the same at the top, bottom and sides of the hub, a spindle, and a vertical shield or ring arranged within the said way and presenting metallic faces to both of the walls of the same and to the spindle to form dust-proof and oil-tight joints at the spindle and at the inner end of the hub, said shield or ring terminating short of the periphery of the annular recess and being capable of radial movement in the way, whereby the shield or ring is prevented from being subjected to the weight of the spindle when the parts become worn, substantially as described.

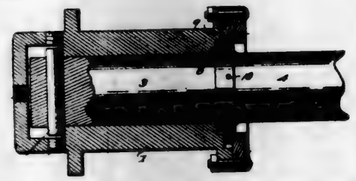

2. In a device of the class described, the combination of a hub provided at its inner end with an annular recess and having an annular flange extending outward from the hub in substantially the same plane as the annular recess, a plate detachably secured to the annular flange and forming an outer wall for the annular recess and extending entirely around the same and closing the said recess at the top, bottom and sides of the hub, a spindle, and a vertically-disposed shield or ring presenting metallic faces to the spindle and to the walls of the recess to prevent the escape of oil and to exclude dust, said shield or ring being of less diameter than the recess and spaced from the periphery thereof to permit it to move radially and to prevent it from coming in contact with the hub when the bearing becomes worn, substantially as described.

3. In a device of the class described, the combination of a hub provided at its inner end with an annular recess, a detachable plate secured to the inner end of the hub and extending entirely around the recess and forming an outer wall for the same to provide a vertical way, and an expansible shield or ring arranged in the way and composed of two metal side plates presenting metallic faces to the walls of the way and to the spindle, and an intermediate layer of compressed material adapted to hold the metal side plates in contact with the sides of the way, said shield or ring being of less diameter than the recess and spaced from the periphery thereof to permit it to move radially with the spindle without being subjected to the weight of the same, substantially as described.

707,044. SWING-BRIDGE. CHARLES WORTHINGTON, Pittsburg, Pa. Filed Oct. 28, 1901. Serial No. 80,241. (No model.)

Claim.—1. In a swing-bridge, the combination with a central tower and two girders or trusses hinged to said tower at their inner ends, of lifting mechanism and flexible connections between said mechanism and each of the girders or trusses.

2. The combination with end and middle piers, and trusses or girders supported thereby, of lifting mechanism on the middle pier and flexible connections between the same and the trusses or girders, said connections having lost motion in operation whereby each truss or girder is independently supported when in use.

3. In a swing-bridge, the combination with two trusses or girders independently supported in alinement and a structure to which their inner ends are hinged, of lifting mechanism and jointed connections between said mechanism and the respective trusses or girders, said connections having lost motion when said mechanism is operated.

4. In a swing-bridge, the combination with a central structure and two trusses or girders hinged thereto in alinement, of vertical struts, connections between the upper ends of said struts and the hinged trusses or girders, means for raising and lowering the struts and guides for insuring ease and accuracy of movement.

5. In a swing-bridge, the combination with a central structure and two trusses or girders hinged thereto in alinement, of a strut and two lifting-screws at each side of the structure, means for rotating the screws in unison and flexible connections between the struts and the hinged trusses or girders.

6. In a swing-bridge, the combination with a central structure and two trusses or girders hinged thereto in alinement, of two vertically-movable girders provided with struts, connections between the struts and the hinged trusses or girders, guides for the free ends of the struts and means for raising and lowering the girders on which the struts are mounted.

7. In a swing-bridge, the combination with a central structure and two trusses or girders hinged thereto in alinement, of two vertically-movable girders each having a vertical strut projecting upwardly therefrom and two stationary nuts, connections between the free ends of the struts and the hinged trusses or girders, guides for said free ends, screws operating in said nuts and means for rotating all of said screws in unison to effect the desired movement of the hinged trusses or girders.

8. In a swing-bridge, the combination with a central structure and two trusses or girders hinged thereto in alinement, of vertically-movable girders at the respective sides of the central structure each having a pair of stationary nuts and an intermediate strut, guides for the free ends of the struts, connections between said free ends and the hinged trusses or girders, screws coöperating with said nuts and gearing for rotating said screws in unison from a single source of power.

9. In a swing-bridge, the combination with a central structure and two trusses or girders hinged thereto in alinement, of a vertically-movable member at each side of said structure, means for preventing lateral and rotative movement of said members, connections between the upper ends of said members and the hinged trusses or girders and means for raising and lowering said members in unison.

10. In a swing-bridge, the combination with a central structure and trusses or girders hinged thereto in alinement, of two vertically-movable members, means for preventing lateral and rotative movement of said members, connections between said members and the hinged trusses or girders, a plurality of raising and lowering screws for each of said members, and mechanism for rotating all of said screws in unison.

707,045. GLASS-FINISHING MACHINE. LAFAYETTE T. KIMBERLY, Cumberland, Md., assignor of one-half to Henry Knierim, Cumberland, Md. Filed Mar. 26, 1902. Serial No. 100,049. (No model.)

Claim.—1. In a machine for fire-finishing the edges of tumblers or the like, the combination of means for supporting and turning tumblers, and the retort comprising the box or casing having its upper plate extending laterally outward beyond its lower plate forming an opening below the upper plate through which the tumblers may be passed, and provided with a vaporizing-pipe extending below the upper plate of the box or casing at the outer edge thereof, and forming an outer wall for the opening through which the tumblers are directed, and the burner-pipe and connections between the same and the vaporizing-pipe, substantially as set forth.

2. In an apparatus for fire-finishing the edges of tumblers and the like, a retort comprising a box or casing tapering toward one end and having at each end its upper plate extending laterally outward beyond its lower plate forming in the under side of the box or casing an opening to receive the tumblers, and having a vaporizing-pipe extending beneath

sash outward extension of the upper plate, substantially as and for the purposes set forth.

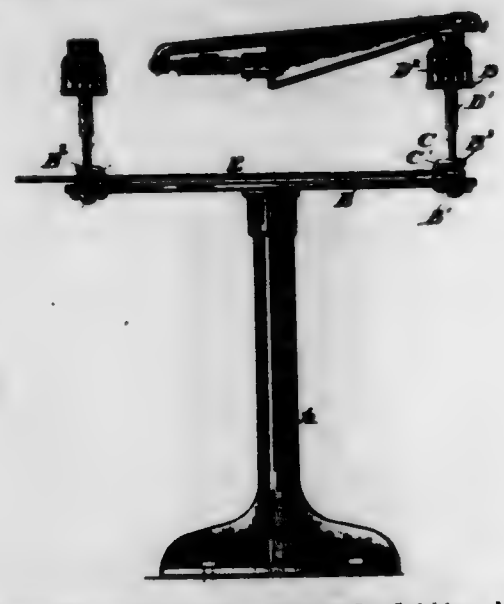

3. The combination in an apparatus for fire-finishing the edges of tumblers, of the table, devices thereon for supporting the tumblers and the retort composed of the box or casing having in its under side an opening forming the glory-hole, the vaporizing-pipe secured to the box and extending along the outer side of said opening, the feed-pipe connected with the vaporizing-pipe at one end of the latter, the burner-pipe, and the connecting-pipe between the burner-pipe and the vaporizing-pipe, substantially as set forth.

707,046. EYEGLASSES OR SPECTACLES. CHARLES O. BAILEY, Ogdensburg, N. Y. Filed Apr. 14, 1902. Serial No. 102,699. (No model.)

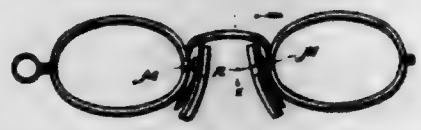

Claim.—1. The combination with the lenses, of a bridge having a forwardly-extending arched portion lying in a substantial horizontal plane, and merging at its rear into downwardly-extending arms located to the rear of the lenses, said arms being looped and slightly offset at an intermediate point and bent upwardly to form arms for securement to the lenses, said last-named arms adapted to move about said looped and offset portion as a point of fulcrum.

2. The combination with the lenses and the clamps carried thereby, of a bridge comprising an arched portion extending in a substantially horizontal plane and at its rear merging into downwardly-extending arms, said arms being looped at an intermediate point and converging in an upward direction to form arms adapted to be engaged by said clamps, the arched portion of the bridge extending to the front of the lenses, and the downwardly-extending arms located to the rear thereof, substantially as described.

3. The combination with eyeglasses and the like, of a bridge having an arc-shaped portion extending to the front of the eyeglasses and having its ends bent downwardly in a vertical direction to extend to the rear of the eyeglasses, looped, extending upwardly in a vertical direction and connected thereto, whereby the lenses when adjusted may have a purely horizontal movement, substantially as described.

4. In a device of the type set forth, the combination with the lenses, of a bridge having an arched portion lying in a substantially horizontal plane, and merging into downwardly-extending arms looped and bent upwardly and converging and secured to the lenses and located interiorly of the downwardly-extending arms.

5. In combination with the lenses, a bridge formed of an integral piece of metal comprising an arched portion carrying downwardly-extending arms lying in a transverse plane to that assumed by the arched portion and to the rear of the lenses, the arms being looped and extending upwardly and inwardly and clamped to the lenses whereby the upwardly-extending arms may move about the looped portion as a point of fulcrum, substantially as described.

707,047. BANANA-SHIPPING CASE. HARRY BITNER, Berwyn, Ill. Filed Jan. 18, 1902. Serial No. 90,264. (No model.)

Claim.—1. The combination with the bag, A, and the hoops, B, B', B², B³, B⁴, secured thereto and out of contact therewith, of the braces, D, made up of the U-shaped portions pivoted together and respectively to the respective hoops, and means for rigidly locking the portions of the braces against angular movement at the hinges; substantially as described.

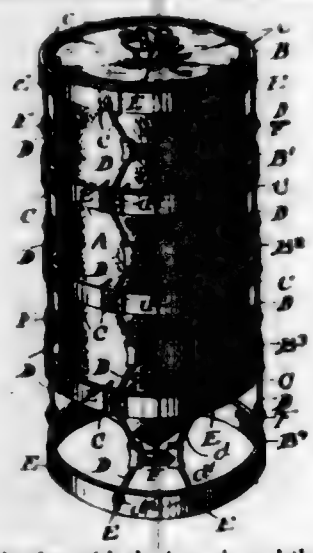

2. The combination with the bag, A, and the hoops, B, B', B², B³, B⁴, secured thereto out of contact therewith, of the braces, D, composed of the U-shaped portions, *d*, *d'*, having their ends hinged to the hoops and their middle portions to each other, and the slide, F, adapted to engage said portions against angular movement in one position, and to be moved so as to release said portions; substantially as described.

707,048. UNCOUPLING MECHANISM FOR CARS. JAMES A. CRUSE, Detroit, Mich., assignor of two-thirds to Delmar C. Ross and Edmund D. Bronner, Detroit, Mich. Filed Mar. 5, 1902. Serial No. 96,909. (No model.)

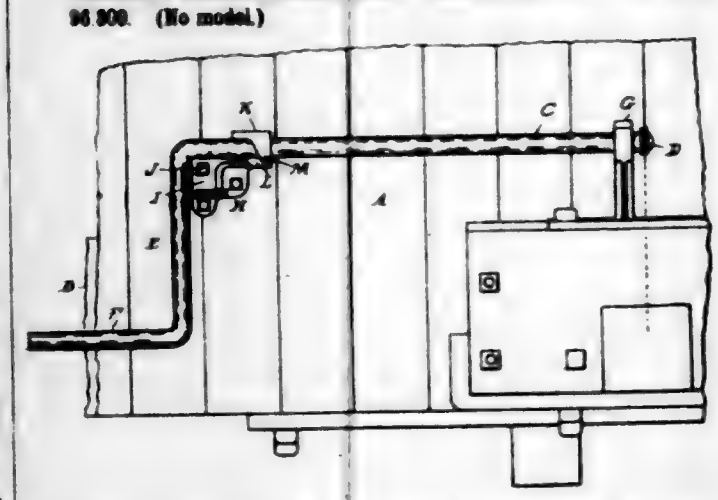

Claim.—1. In uncoupling mechanism for car-couplers, the combination with a rock-shaft having a crank-arm thereon, of a bearing for said shaft having formed therein, for the passage of said arm, a slot equal in width to the full diameter of said shaft, said bearing having portions upon opposite sides of said slot which together prevent lateral displacement of said shaft in any direction.

2. In uncoupling mechanism for car-couplers, the combination with a rock-shaft extending from the side to the center of said car at the end thereof, and having crank-arms at opposite sides thereof, of bearings for the inner and outer ends of said shaft adjacent to said respective cranks, and secured to the end sill of the car, said outer bearing being longitudinally slotted for the passage of said outer crank therethrough, and said slot being inclined to the axis of the bearing for the purpose described.

3. In an uncoupling mechanism for car-couplers, the combination with a rock-shaft having crank-arms at opposite ends thereof, of the bearing therefor comprising the securing-plate I and the journal K having the spiral slot L therethrough for the purpose described.

4. In uncoupling mechanism for car-couplers, the combination with a rock-shaft having a portion thereof bent to form a rock-arm, of a bearing for said shaft having a longitudinal slot therein, of a width equal to the diameter of said arm, said slot being bent to form projecting portions on opposite sides thereof for retaining said shaft from lateral displacement.

707,049. TERMINAL BOX FOR PROTECTED ELECTRICAL CIRCUITS. FRANK B. COOK, Chicago, Ill. Original application filed July 29, 1896, Serial No. 600,970. Divided and this application filed May 21, 1902. Serial No. 108,338. (No model.)

Claim.—1. A combined cable terminal and protector, comprising a suitable box, a plurality of thermal protectors arranged at each side of

the box, a pair of metal strips whereby the thermal protectors are each operative to establish connection to the ground, carbon lightning-arresters arranged in conjunction with said thermal protectors, and binding-posts arranged inside of said box and extending through the walls thereof, the outer ends of said binding-posts being connected with said thermal protectors and lightning-arresters.

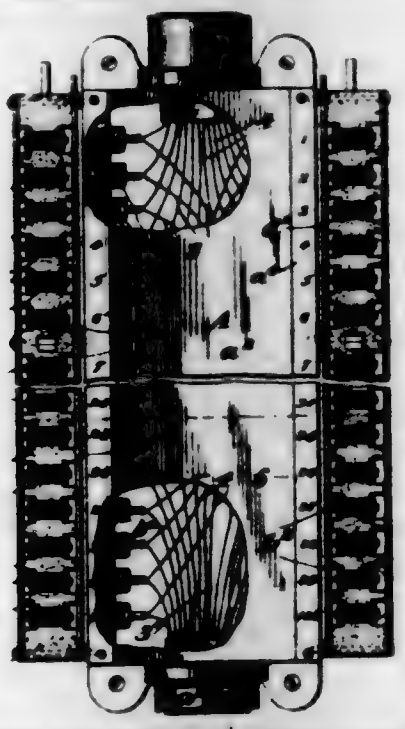

2. A combined cable terminal and protector, comprising a suitable box, binding-posts arranged inside of said box and extending through the walls thereof, a removable cover for said box, a plurality of heat-coils, a plurality of spring-switches upon which said heat-coils are supported, a plurality of metal strips whereby each spring-switch, when released by a heat-coil, is capable of establishing connection with the ground, and a plurality of carbon lightning-arresters associated with said heat-coils.

3. A combined cable terminal and protector, comprising a suitable box, binding-posts arranged within said box and extending through the walls thereof, said binding-posts being arranged in upper and lower rows, line-springs mounted upon the binding-posts in the lower rows, switchboard-conductor springs mounted upon the binding-posts in the upper rows, each line-spring being arranged to oppose a switchboard-conductor spring, heat-coils arranged to hold said springs under tension, metal strips arranged to serve as stops for limiting the movement of said line-springs, said metal strips being adapted to be connected to earth, spring-jaws mounted upon the binding-posts in the lower rows, other spring-jaws opposing those thus mounted, and carbon blocks with interposed insulation mounted between said jaws.

4. A combined cable terminal and protector, comprising a suitable box, a plurality of thermal protectors mounted at each side of said box, each thermal protector when operated by the passage of an abnormally large current being adapted to produce a gap in the circuit and establish connection with the ground, a carbon lightning-arrester associated with said thermal protectors, and also adapted to be connected with the ground.

5. A combined cable terminal and protector, comprising a metal box adapted to be connected with a grounded conductor, a plurality of thermal protectors arranged in parallel rows at opposite sides of said box, insulated binding-posts extending through the walls of the box and connected with said thermal protectors, line-wires leading through one end of the box and connected with a number of said binding-posts, switchboard-wires leading through the other end of the box and connected with the remaining binding-posts, each thermal protector being operative to break a circuit and simultaneously therewith establish connection with the ground through said box, and carbon lightning-arresters associated with said protectors and connected to allow lightning-discharges to jump to ground through said box.

6. A combined cable terminal and protector, comprising a metal box, a plurality of thermal protectors mounted upon said box, a grounded conductor connected with said box, insulated binding-posts extending through the walls of said box and connected with said thermal protectors, line-wires connected with part of said binding-posts, switchboard-wires connected with the remaining binding-posts, each thermal protector being operative to produce a gap in a circuit when operated by the passage of an abnormally large current, and spring switch devices adapted to establish connection between the line-wires and the said metal box.

7. A combined cable terminal and protector, comprising a metal box adapted to be connected with the earth, spring-jaws arranged in pairs and suitably mounted upon said box, a removable heat-coil device mounted upon each pair of jaws, suitable connections for including each heat-coil and its pair of jaws serially in a circuit, insulated binding-posts extending through the walls of said box and connected with said jaws, line-wires leading through one end of the box and connected with a number of said binding-posts, switchboard-wires leading through the other end of the box and connected with the remaining binding-posts, and contacts whereby certain of said spring-jaws, when released by the heat-coils, establish connection with the ground through said box.

8. A protective apparatus for telephone and telegraph systems, consisting of a terminal box, a plurality of quantitative protectors mounted on the exterior of the box, conductors entering into and passing out from the interior of said box, terminal holders and terminal conductors connecting the interior conductors with the exterior quantitative protectors, and a plurality of intensity-protectors also mounted on said box, together with conducting-strips, and spring contact-strips, also mounted on said box but each insulated from the others, the conducting-strips being adapted to be respectively connected to a ground-circuit and a signal-circuit, the spring contact-strips being normally disconnected from the conducting-strips.

9. A protective apparatus for telephone and telegraph systems consisting of a terminal box, a plurality of quantitative protectors mounted on the exterior of the box, spring-contacts for said quantitative protectors, a guiding and holding plate for said spring-contacts which is secured to the side of the terminal box, conductors entering into and passing through the interior of said box, terminal holders and terminal conductors connecting the interior conductors with the exterior quantitative protectors and a plurality of intensity-protectors also mounted on said box, which latter is connected with the ground, together with a conducting-strip attached to the guiding and holding plate, which conducting-strip is connected to ground, and two other conducting-strips also attached to the guiding and holding plate, which latter conducting-strips are connected to a signal-circuit.

10. The combination of a support, switch-springs mounted in pairs at each side of said support, a heat-coil mounted upon each pair of switch-springs, means for connecting one spring of each pair with a line conductor, suitable connections whereby each line-spring when released establishes connection between a line conductor and the ground, means for connecting the other spring of each pair with a switchboard-conductor, a pair of metal strips arranged at each side of said support, each pair of metal strips being adapted to be included in a signal-circuit, and means whereby each switchboard-spring when released operates to connect the two members of one of said pairs of metal strips.

11. The combination of a support, a pair of metal strips mounted at each side of said support, each pair of metal strips being adapted to be included in a signal-circuit, thermal protectors arranged in parallel rows at opposite sides of said support, each thermal protector being provided with means for establishing electrical connection between the members of the adjacent pair of metal strips, and means for grounding said support, each thermal protector being also provided with means for establishing connection between a line conductor and said grounded support.

12. The combination of a metal support, a pair of insulated metal strips adapted to be included in a signal-circuit, a plurality of heat-coil-protecting devices arranged in a row along said strips, each of said protecting devices being provided with means for establishing electrical connection between said strips and also with means for establishing connection between a line conductor and said support.

13. The combination of a suitable support, a pair of insulated meta strips adapted to be included in a signal-circuit, line and switchboard springs arranged in pairs along said strips, a heat-coil removably mounted on each pair of springs, each switchboard-spring being provided with means for establishing electrical connection between said strips, and each line-spring being provided with means for establishing connection between a line conductor and a grounded conductor.

14. The combination of a support, a strip of insulation mounted at each side of said support, a pair of metal strips extending lengthwise of each strip of insulation, line and switchboard springs arranged in a row along each strip of insulation, a heat-coil removably mounted on each pair of springs, each switchboard-spring being associated with means for establishing electrical connection between the two adjacent metal strips.

15. The combination of a grounded member, a plurality of carbon lightning-arresters supported by said member, heat-coil-protecting devices arranged in two parallel rows on opposite sides of said support, each heat-coil device being arranged opposite a carbon lightning-arrester, line conductors and switchboard-conductors, each thermal protector when operated establishing connection between a line conductor and said grounded member, means for including each line conductor serially in circuit with a carbon lightning-arrester and said grounded member, a pair of metal strips associated with each row of heat-coil-protecting devices, each pair of metal strips being adapted to be included in a signal-circuit, and each

protecting device being provided with means for establishing electrical connection between the members of the adjacent pair of metal strips.

707,050. ELECTRICAL PROTECTOR SET. FRANK B. COOK, Chicago, Ill. Original application filed July 29, 1898, Serial No. 690,970. Divided and this application filed May 21, 1902. Serial No. 108,329. (No model.)

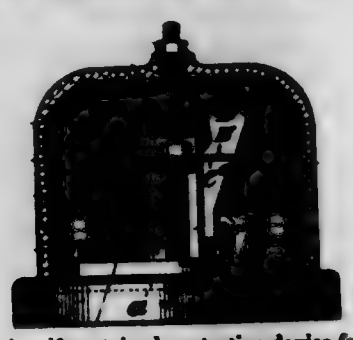

Claim.—1. A self-contained protecting device for complete metallic circuits, comprising a base composed of insulation, a post rising from said base, a dome-shaped glass cover clamped upon said base by a nut screwed upon the said post, and a plurality of protecting devices mounted upon said base and partially supported by said post.

2. A self-contained protector device for subscribers' stations, consisting of a plurality of heat-coil protectors, conductor-holders therefor and spring-contacts adapted to disrupt the circuit or circuits, together with high-tension protectors and holding-plate of insulating material secured by a central standard and serving to hold one side of contact-springs without movement in either direction, and a holding-plate for the high-tension protectors connected with the said central standard, the contact-points of which plate are held in the same position relative to the movable spring-contacts by the connection aforesaid.

3. The combination with a support, of a plurality of lines, carbon-holders mounted on said support, carbons in said holders, an earth branch connected with said holders, carbon-holders having carbons therein also mounted on said base, line branches connected with said last-named holders, and line-springs and heat-coils in series in the lines, the conducting earth branch being normally out of contact with said springs but adapted to contact therewith in the operation of the heat-coils, substantially as described.

4. The combination with a support, of a plurality of sets of opposing carbon-holders with normally separated carbons therein, sets of opposing line-springs also mounted on said support, heat-coils between the ends of said opposing springs, and a strip adjacent the free ends of one of said opposing sets of line-springs normally out of contact therewith but adapted to be engaged by any of said adjacent springs when the heat-coil in circuit therewith is operated by an abnormal current.

5. The combination with a base, of opposing carbon-holding spring-strips having normally separated blocks of carbon between their free ends opposing line spring-strips in line with the other strips, one member of each pair of line-strips being electrically connected with one of the holding-strips, heat-coils between the free ends of the line-strips, a stationary bar or strip mounted adjacent the free ends of one set of the line-strips with which they contact when the heat-coils are operated to release said free ends.

6. A device for protecting circuits against excessive current, consisting of a base, a post rising from said base, a cover resting upon said base, a nut applied to the outer end of said post and holding said cover upon said base, springs mounted upon said base, a stop arranged to limit the movement of said springs, said stop having an opening through which the said post extends, a nut clamping a portion of said stop upon a shoulder on said post, suitable connections for grounding said stop, one or more electric circuits including one or more of said springs, suitable connections for normally holding said springs away from said stop, one or more heat-concentrating members arranged to cause said last-mentioned connections to weaken or break upon the passage of excessive current through said circuit or circuits, said spring or springs, when released, operating to break said circuit or circuits and to establish connection with the ground through said stop.

7. The combination of a base having an annular groove, a post rising from said base, a glass cover seated in said groove, a nut applied to the outer end of said post for clamping said cover in place, automatic cut-out devices mounted upon said base and inclosed by said cover, and a member suitably connected with said post and arranged to coöperate with said cut-out devices in establishing connection with the ground.

8. The combination of a suitable base, a centrally-located post rising from said base, a cover and nut applied to the outer end of said post for clamping said cover upon the base, circuit connections mounted upon said base and including one or more springs held under tension, a stop connected with said post and adapted to limit the movement of said spring or springs, a binding-post for connecting said stop with a grounded conductor, heat-coil devices connected and arranged to release the connections holding said spring or springs under tension, the said spring or springs, when released as a result of the passage of excessive current through said heat-coils, operating to automatically establish connection with the ground through said stop.

9. The combination of a suitable base, a post rising from said base, a suitable cover, a nut applied to the outer end of said post for clamping said cover upon said base, suitable binding-posts mounted upon said base and inclosed by said cover, and automatic cut-out devices connected with said binding-posts and partially supported by said post.

10. A circuit-protector comprising a suitable base, a cover, a post rising from the base, a nut applied to the outer end of said post for clamping the cover upon the base, a stop mounted upon the base, a nut for clamping a portion of said stop upon a shoulder on the post, a plurality of springs, carbon blocks interposed between said springs and said stop, other springs held normally away from said stop, a binding-post for connecting said stop with the grounded conductor, suitable binding-posts for including said last-mentioned springs in one or more circuits, and means for automatically releasing said last-mentioned springs upon the passage of excessive current through said circuit or circuits, the springs, when released, establishing connection with the ground through said stop.

11. In a protector set for electrical circuits, the combination of a suitable base, a metal plate mounted thereon and adapted to be connected with a grounded conductor, a pair of carbon blocks suitably held against said plate, a binding-post adapted to be connected with a line conductor, the carbon blocks being normally separated but adapted to come together and establish connection between the line and the grounded conductor through the medium of said plate, a quantitative protector mounted to form part of the line-circuit, a member which when released by said quantitative protector establishes connection between the line conductor and the said plate, a post rising from said base, and a dome-shaped glass cover held in place upon said base by a nut screwed onto the threaded upper end portion of said base.

12. In a protector set for electrical circuits, the combination of a quantitative protector, an intensity-protector, means whereby the quantitative protector when operated produces a break in the circuit, and means whereby either protector when operated establishes connection between the line and a grounded member.

707,051. SYSTEM OF STRONG-CURRENT PROTECTION. FRANK B. COOK, Chicago, Ill. Original application filed July 29, 1898, Serial No. 690,970. Divided and this application filed May 21, 1902. Serial No. 108,331. (No model.)

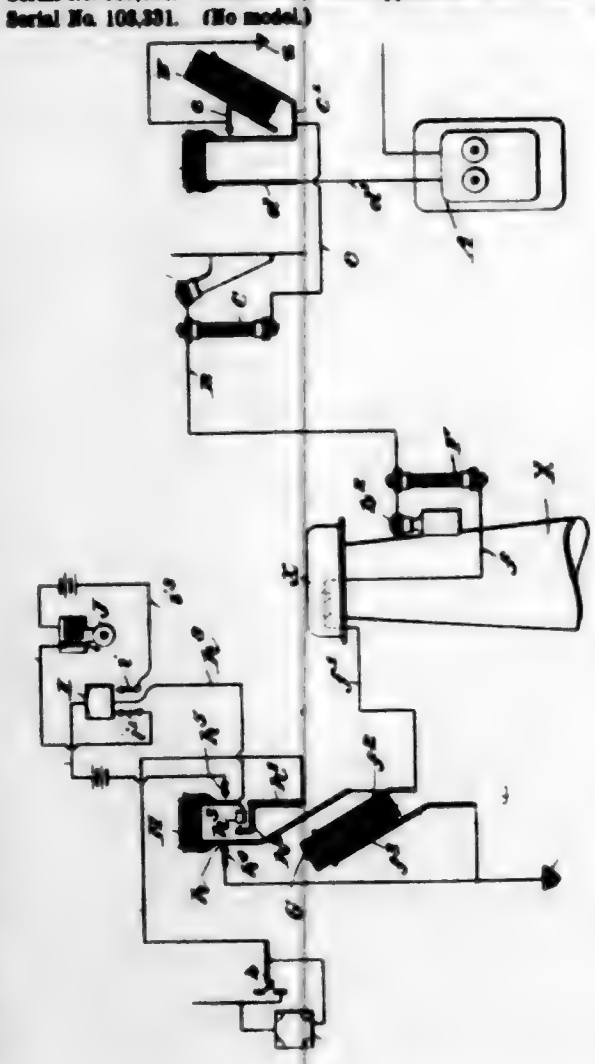

Claim.—1. In a system of protection for electrical circuits, the combination of a line-wire, a fuse hung on said wire, a pair of posts, a cylindric heat-coil removably mounted upon said posts, means for connecting the said fuse, heat-coil and posts in series between said line-wire and the instruments to be protected, an earth branch and carbon lightning-arrester connected at a point between the fuse and the heat-coil, and a grounded conductor connected with said lightning-arrester.

2. In a system of protection for electrical circuits, the combination of a line conductor, a fuse connected at one end with said line conductor, a pair of metal posts, a cylindric heat-coil device removably mounted upon the ends of said posts, one of said posts being flexible and held under tension by said heat-coil, means for connecting the said fuse, heat-coil and posts in series between the line conductor and the instruments to be protected, a grounded stop for limiting the movement of the said post which is held under tension, and a carbon lightning-arrester connecting said stop with the post under tension.

3. The combination of a line conductor, an insulator for supporting said line conductor, a fuse having its upper end clamped upon said line conductor, a line-spring connected with the lower end of said fuse, a post connected with the instruments to be protected, a heat-coil device connecting said post and spring and holding the latter under tension, a grounded stop for limiting the movement of said spring, and a carbon arrester connecting said stop with said spring.

4. In a protecting system, the combination of a line conductor, a fuse supported upon said line, a pair of metal strips, a heat-coil mounted upon the ends of said strips, one of said metal strips being bent to provide one jaw for holding a pair of carbon blocks, another jaw for holding said carbon blocks, said second jaw serving as a stop for limiting the movement of the portion of the strip supporting the heat-coil, a grounded conductor connected with said stop, suitable connection between the lower end of said fuse and the metal strip which partially supports both the heat-coil and the carbon blocks, and a conductor leading from the other metal strip to the instruments to be protected.

5. In a protecting system, the combination of a line conductor, insulators supporting said conductor, fuse-protectors clamped upon the line conductor adjacent the said insulators, a thermal protector connected up in series between one fuse and the instruments or electrical devices to be protected at one station, a heat-coil connected up in series between the other fuse and the instruments or electrical devices to be protected at the other station, and a signal at said last-named station adapted to be displayed upon the operation of said last-mentioned heat-coil.

6. In a protecting system, the combination of a plurality of line-circuits, a plurality of thermal protectors connected in said line-circuits and arranged in banks or sections, a visual indicator allotted to each bank or section, each indicator being adapted to display a signal when a thermal protector is operated, and a general signal connected and arranged to be operated by any one of the said visual signals.

7. A current-protective system for telephone, telegraph and other like stations, consisting of a plurality of circuit disrupting devices arranged in sections or banks, an indicating device for each section, the circuit of which is adapted to be established by any one of the disrupting devices when operated by excessive currents to point out the section in which the circuit is disrupted, and an alarm or indicator common to the whole station, the circuit of which is adapted to be established by any one of the indicators of the sections.

8. A current-protective system for telephone, telegraph and other like stations, consisting of a plurality of circuit-disrupting devices arranged in sections or banks, an indicating device for each section included in a local circuit, means for establishing the local circuit of a section when any line-circuit of that section is disrupted to operate the indicating device aforesaid, another local circuit including an indicator common to the whole station, and means for automatically establishing said latter local circuit.

9. A current-protective system for telephone, telegraph and other like stations, consisting of a plurality of circuit-disrupting devices arranged in sections or banks, an indicating device for each section included in a local circuit for each indicating device, means for establishing the local circuit of a section when any line-circuit of that section is disrupted to operate the indicating device aforesaid, and another local circuit including the indicator common to the whole station, which latter circuit is established in the act of establishing any one of the former local circuits of the sections or banks.

10. A current-protective system for telephone, telegraph and other like stations consisting of a plurality of circuit-disrupting devices arranged in sections or banks, an indicating device for each section included in local circuits, means for establishing the local circuit of a section when any line-circuit of that section is disrupted to operate the indicating device aforesaid, and another local circuit including an indicator common to the whole station adapted to be established by any one of the indicating devices of the sections.

11. In a telephone or telegraph circuit protective system, a plurality of current-protectors arranged in sections, sets or banks, an indicating device for each of the said sets, sections or banks, and a local circuit including the said indicating device together with means for closing the local circuit upon the disruption of any circuit of a set, section or bank of protectors, whereby the indicating device is operated to point to that section, set or bank of protectors in which the circuit is severed, and another indicator in an independent circuit common to the exchange as a whole by which attention is directed to the fact that a circuit of some set, section or bank of protectors is disrupted.

12. A plurality of thermal protectors arranged in banks or sections, a plurality of visual indicators arranged in a bank, one for each bank or section of thermal protectors, and circuit connections whereby each indicator may be operated by any protector in its allotted bank or section.

707,052. REGULATION OF ELECTRIC-LIGHTING SYSTEMS. JOHN I. CRETELLIN, New York, N. Y. Filed July 17, 1901. Serial No. 68,550. (No model.)

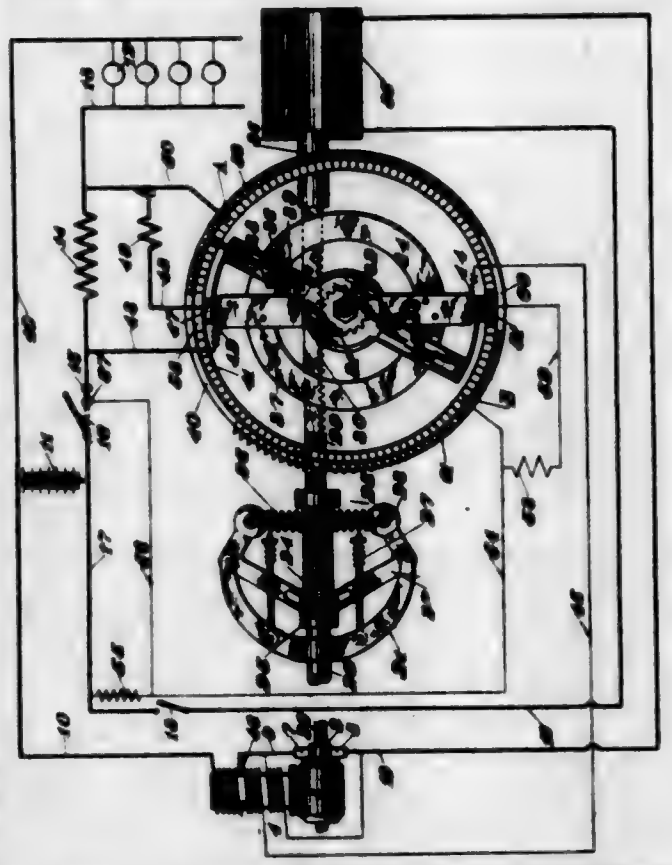

Claim.—1. In a system of electrical distribution the combination of a generator, a mechanical governor or regulator therefor and electric means for compounding for the lag of the governor.

2. In a system of electrical distribution the combination of a generator, a mechanically-operating governor therefor and electrical means under the control of the governor for compounding for the lag thereof.

3. In a system of electrical distribution the combination of a generator and an external circuit, a mechanical governor for the generator and the external circuit, and means for compounding for the lag of the governor.

4. In a system of electrical distribution the combination of a generator, a mechanical governor, regulating the field resistance and the resistance of the external circuit and means for compounding for the lagging tendency of the governor.

5. In a system of electrical distribution the combination of a generator, a mechanical governor therefor, means for regulating the external circuit actuated from the governor and means for causing the variations of the governor and the regulating means to occur in harmony with each other.

6. In a system of electrical distribution the combination of a generator, a mechanical governor and regulating means for the field-circuit of the generator and for the external circuit and means for causing variations in the governor and in the regulating means to occur in harmony with each other substantially as described.

7. In a system of electrical distribution the combination of a centrifugal governor, electromagnetic means in circuit with the generator for aiding the said governor in its action and circuit-controlling means operated by the governor.

8. In a system of electrical distribution the combination of a mechanical governor, a plurality of means for controlling the field-circuit and the external circuit, means for operating one controlling means from the gov-

ernor and the other controlling means from the first-mentioned controlling means.

9. In a system of electrical distribution the combination of a generator, a centrifugal governor and means for controlling the external circuit and the field-circuit of a generator from the said governor, comprising in its structure means for so operating the circuit-controlling means as to compensate for the lagging tendency of the generator.

10. In a system of electrical distribution the combination of a generator, variable resistances for controlling the output of the generator, a mechanical governor for the generator and means for controlling the variable resistances from the governor and compensating for the lagging tendency of the governor.

11. In a system of electrical distribution the combination of a generator, variable resistances for controlling the output of the generator, and a governor therefor constructed and arranged to augment the strength of the field when delivering current to the lamps.

707,053. AIR-FEEDING DEVICE. WILLIAM D. DOUGLAS, Chicago, Ill. Filed Mar. 5, 1902. Serial No. 96,846. (No model.)

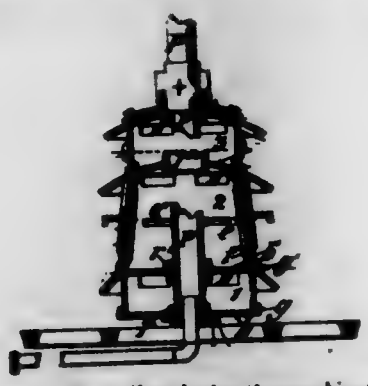

Claim.—1. In an air-feeding device, the combination with a casing having a plurality of openings in its walls, of an outwardly and downwardly projecting collar or piece located thereon above said openings, and a skeleton frame located on the lower portion of the casing, substantially as described.

2. In an air-feeding device, the combination with a casing having a plurality of openings in its walls, of an outwardly and downwardly projecting collar or piece located thereon above said openings, and a skeleton frame located on the lower portion of the casing, said frame comprising an inner and outer ring and a series of bars uniting said rings, substantially as described.

3. In an air-feeding device, the combination with a casing having a plurality of openings in its walls, and a number of openings in its top, of an apertured register movable on the top of the casing, and an outwardly and downwardly projecting collar or piece located on the casing above the openings in its walls, substantially as described.

4. In an air-feeding device, the combination with a casing having a plurality of openings in its walls and a number of openings in its top, of an apertured register movable on the top of the casing, an outwardly and downwardly projecting collar or piece located on the casing above the openings in the walls thereof, and a skeleton frame located on the bottom of the casing, said frame comprising an inner and outer ring and a series of bars uniting the same, substantially as described.

5. In an air-feeding device, the combination with a casing provided in its top with a number of openings and having in its walls a plurality of horizontal rows of openings, of an outwardly and downwardly projecting collar or piece located on the casing above each of its rows of openings, and an apertured register movable on the top of the casing, substantially as described.

6. In an air-feeding device, the combination with a casing having a plurality of horizontal rows of openings in its walls and a number of openings in its top, of an apertured register movable on the top of the casing, an outwardly and downwardly projecting collar or piece located on the casing above each of the rows of openings therein, a skeleton frame located on the bottom of the casing, a plurality of skeleton frames located within the casing between its bottom and top, each of said skeleton frames comprising an inner and outer ring and a series of bars uniting the same, substantially as described.

7. In an air-feeding device, the combination with a casing having a plurality of horizontal rows of openings in its walls and a number of openings in its top, of an apertured register movable on the top of the casing, and a downwardly and outwardly projecting collar or piece located on the casing above each of the rows of openings in the walls thereof, a pipe extending centrally and vertically through the casing and means to secure the casing thereon, substantially as described.

8. In an air-feeding device, the combination with a casing comprising a plurality of hollow sections, each provided with a plurality of openings arranged in a horizontal row, of an outwardly and downwardly projecting collar located on the casing above each of the rows of openings therein, a skeleton frame located on the bottom of the casing, and one or more skeleton frames located within the casing between its bottom and top, each of said skeleton frames comprising an inner and outer ring and a series of bars uniting the same, a pipe located in the inner rings of the skeleton frames and extending through the casing, and means to secure the casing on the pipe, substantially as described.

9. In an air-feeding device, the combination with a casing having a plurality of openings in its walls, of an outwardly and downwardly projecting collar or piece located thereon above said openings so as to shield the same, and a skeleton frame located on the lower portion of the casing, said frame comprising an inner and outer ring and a series of arched bars uniting said rings, substantially as described.

10. In an air-feeding device, the combination of a casing having a plurality of horizontal rows of openings in its walls, of an outwardly and downwardly projecting collar or piece located on the casing above each of the rows of openings therein so as to shield the same, a skeleton frame located on the bottom of the casing, a plurality of skeleton frames located within the casing between its bottom and top, the bottom skeleton frame comprising an inner and outer ring and a series of arched bars uniting the same, and the other skeleton frames each comprising an inner and outer ring, and a series of bars uniting the same, substantially as described.

11. In an air-feeding device, the combination with a grate, of a casing located thereabove and having a plurality of horizontal rows of openings in its walls and a number of openings in its top, of an apertured register movable on the top of the casing, an outwardly and downwardly projecting collar or piece located on the casing above each of the rows of openings therein, so as to shield said openings, a skeleton frame located on the bottom of the casing, a plurality of skeleton frames located within the casing between its bottom and top, each of said skeleton frames comprising an inner and outer ring and a series of bars uniting the same, a pipe located in the inner rings of the skeleton frames and extending through the casing, a feed-pipe communicating at one of its ends with the lower end of the first-named pipe, and a damper located in the feed-pipe, substantially as described.

707,054. FASTENER. WILLIAM B. H. DOWSE, Newton, Mass. Filed June 6, 1900. Serial No. 19,230. (No model.)

Claim.—1. A socket member of a snap-fastener comprising a cup having a perforated and rounded crown; and a stud-receiving cone having an annular flange, said casing being located within said cup with the imperforate material therebetween and held crimped between the cup and the edge of said flange, said cone having a stud-receiving chamber, the top of which is adapted to hold said material in close contact with the inner surface of said crown.

2. A socket member of a snap-fastener comprising a cup having a crown; and a stud-receiving cone lying within said cup with the material to which the member is attached lying between the cup and cone, said cone comprising a central stud-chamber, having a closed top, and a surrounding flange extending from the lower edge of the stud-chamber outward, the lower edge of the cup being turned inward under the flange of the cone and the confined flexible material, said top holding the material in close contact with the inner surface of the crown.

3. A socket member for a snap-fastener comprising a cup having a crown; and a stud-receiving cone lying within said cup with the material to which the member is attached lying between the cup and cone, said cone comprising a central stud-chamber having a closed top and a surrounding flange extending outward and upward from the lower edge of the stud-chamber, the lower edge of the cup being turned inward under the flange of the cone and the confined material, said top holding the material in close contact with the inner surface of the crown.

4. A socket member for a snap-fastener comprising a cup having a crown, said cup having its lower edge rolled and a stud-receiving cone lying within said cup with the material to which the member is attached lying between the cup and cone, said cone comprising a central stud-chamber having a closed top, and a surrounding flange extending outward and upward from the lower edge of the stud-chamber, the rolled edge of the cup being turned inward under the flange of the cone and the confined material, said top holding the material in close contact with the inner surface of the crown.

707,055. CABLE-SLEEVE. CHARLES M. EARL, Detroit, Mich., assignor of two-thirds to William J. Stapleton and Edward McBride, Detroit, Mich. Filed Dec. 6, 1901. Serial No. 84,886. (No model.)

Claim.—1. In a cable-sleeve the combination of the separable members, means for uniting said members of the sleeve to form a water-tight joint, the ends of the sleeve having reduced apertures through which the cable runs, and means for closing said apertures around the casing of the cable to prevent the entrance of water to the interior of the sleeve.

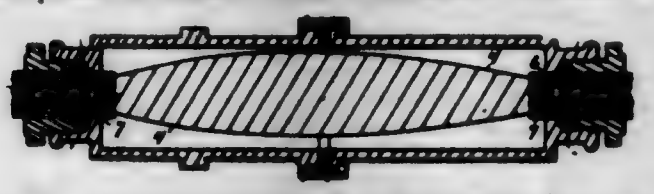

2. In a cable-sleeve the combination of the separable sleeve members forming, when united, an inclosed chamber adapted to embrace the splice of a cable, means for joining the members of the sleeve in a manner to exclude water from said joint, the ends of the sleeve having reduced apertures communicating with said chamber, through which the cable is adapted to run, compressible washers surrounding the casing of the cable within said apertures, and the glands surrounding the cable adapted to screw into said apertures to compress said washers therein.

3. In a cable the combination of the separable members adapted to be united by a union-joint whereby they are detachably connected, the ends of the sleeve having reduced apertures through which the cable is adapted to run, stuffing-boxes around said apertures, compressible washers embracing the cable within said stuffing-boxes, the normal diameter of said washers being such as to enable them to slide freely over the cable, and the glands surrounding the cable screwing into said stuffing-boxes against said compressible washers.

707,056. AUTOMATIC SELECTIVE SYSTEM. CORNELIUS D. EHRET, Philadelphia, Pa., assignor, by direct and mesne assignments, to American Wireless Telephone and Telegraph Company, a Corporation of Arizona Territory, and the Consolidated Wireless Telegraph and Telephone Company, a Corporation of Arizona Territory. Filed Jan. 10, 1902. Serial No. 89,211. (No model.)

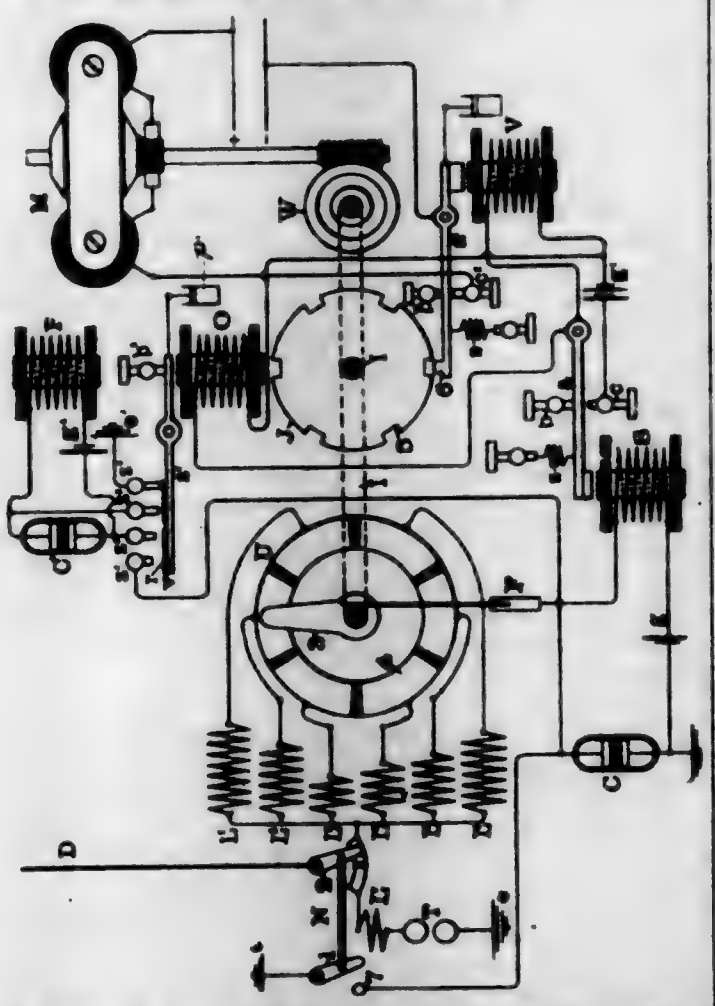

Claim.—1. In a signaling system, a plurality of frequency-determining elements, a sunflower, a frequency-determining element connected to each segment of the sunflower, means for rotating the trailer over the segments of said sunflower, and a wave-responsive device, in electrical communication with said trailer.

2. In a signaling system, a conductor influenced by energy transmitted through the natural media, a receiving device in communication with said conductor, and automatic means responsive to the received energy for locking the receiving device in position to receive a message from a desired station only.

3. In a signaling system the combination of a conductor for receiving the energy from the natural media, a pilot wave-responsive device and a main responsive device controlled by said pilot device.

4. In a signaling system, a conductor influenced by energy transmitted through the natural media, a plurality of elements for rendering the circuit of said receiving-conductor selective of energies of different frequencies, a receiving device controlled by the received energy, and means for locking the receiving mechanism in position to respond to energy of a desired and predetermined frequency.

5. In a signaling system, a conductor influenced by energy of a definite frequency transmitted through the natural media, a receiver controlled by such energy, and automatic means for locking said receiver in position to receive energy from a desired station only.

6. In a signaling system, a conductor influenced by energy of definite frequency transmitted through the natural media, a receiver controlled by such energy, and automatic means for locking said receiver in position to receive energy from a desired station only after the persistence of such energy for a definite interval of time.

7. In a wireless signaling system, the combination of a receiving-conductor, a pilot wave-responsive device, and a main responsive device brought into action by the pilot device.

8. In a wireless signaling system, the combination of a receiving-conductor, a pilot wave-responsive device, and a main wave-responsive device brought into action by the pilot device after the persistence of transmitted energy for a definite interval of time.

9. In a wireless signaling system, the combination of a receiving-conductor, a pilot wave-responsive device, and a main wave-responsive device brought into action by the pilot device after the persistence of a definite interval of time of transmitted energy of a definite frequency.

10. In a signaling system, a plurality of conductors, each selective of energy of definite frequency, a receiver, and means for maintaining the receiver in communication with a conductor during the persistence of energy of a frequency of which said conductor is selective.

11. In a signaling system, a plurality of conductors, each selective of energy of a definite frequency, a receiver, and automatic means for maintaining the receiver in communication with a conductor during the persistence of energy of a definite frequency of which said conductor is selective.

12. In a signaling system, a plurality of conductors each selective of energy of a definite frequency, a receiver, and means for locking the receiver in communication with a conductor during the persistence of energy of a frequency of which said conductor is selective.

13. In a signaling system, a plurality of conductors each selective of energy of definite frequency, a receiver, and automatic means for locking the receiver in communication with a conductor during the persistence of energy of a definite frequency of which said conductor is selective.

14. In a wireless signaling system, a plurality of conductors, a receiver, and automatic means for locking the receiver in communication with a certain conductor.

15. In a wireless signaling system, a plurality of conductors selective of energies of different frequencies, a receiver, and automatic means for locking the receiver in communication with a certain conductor.

16. In a wireless signaling system, a plurality of transmitting-stations, and automatic means for putting a receiver in communication with a certain station.

17. In a wireless signaling system, a plurality of transmitting-stations, each emitting a characteristic energy, and automatic means for putting a receiver in communication with a certain station.

18. In a wireless signaling system, a plurality of transmitting-stations, and automatic means for locking a receiver in communication with a certain station.

19. In a wireless signaling system, a plurality of transmitting-stations, each emitting a characteristic energy, and automatic means for locking a receiver in communication with a certain station.

20. In a wireless signaling system, a plurality of transmitting-stations, a receiver, a wave-responsive device and means controlled thereby for putting the receiver in communication with a certain station.

21. In a wireless signaling system, a plurality of transmitting-stations each emitting characteristic energy, a receiver, a wave-responsive device and means controlled thereby for putting a receiver in communication with a certain station.

22. In a wireless signaling system, a plurality of transmitting-stations, a receiver, a pilot wave-responsive device and means controlled thereby for putting the receiver in communication with a certain station.

23. In a wireless signaling system, a plurality of transmitting-stations, each emitting characteristic energy, a receiver, a pilot wave-responsive device and means controlled thereby for putting the receiver in communication with a certain station.

24. In a wireless signaling system, a plurality of transmitting-stations, a pilot wave-responsive device, a main wave-responsive device, and

means controlled by the pilot device for putting the main wave-responsive device into communication with a certain station.

25. In a wireless signaling system, a plurality of transmitting-stations each emitting characteristic energy, a pilot wave-responsive device, a main wave-responsive device, and means controlled by the pilot device for putting the main wave-responsive device into communication with a certain station.

707,057. APPARATUS FOR THE DEGERMINATION AND DECORTICATION OF INDIAN CORN. THOMAS T. GAFF, Barnstable, Mass., and JOSEPH F. GUTZ, Indianapolis, Ind.; said Gutz assignor of one-third of his right to said Gaff. Filed Oct. 26, 1901. Serial No. 80,208. (No model.)

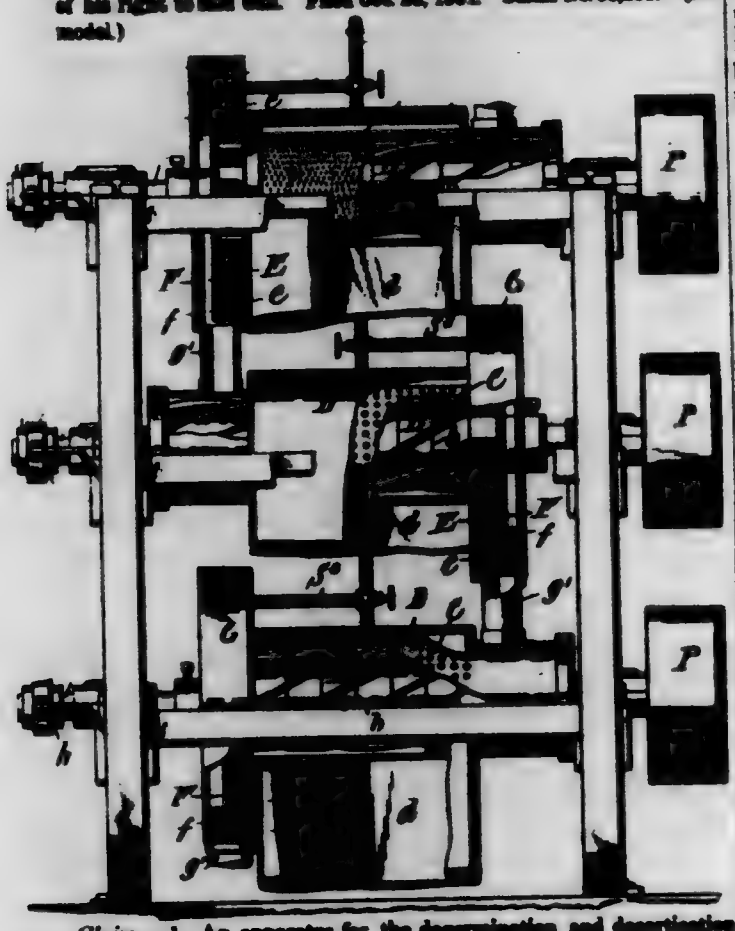

Claim.—1. An apparatus for the degermination and decortication of maize consisting of a plurality of breaking devices, through and out from which the grain will pass in uninterrupted flow, constructed and arranged to break or split the kernels into fragments of a size to insure the breaking away of the germ from the starch-bearing portions in contradistinction to grinding or comminuting the grain, and a plurality of screening devices arranged in alternating sequence with, and connected to, the breaking devices as described and adapted to separate out from the grain under treatment, such fragments of grain as are broken to the proper size, along with corresponding bits of germ and other bodies of the same or less size produced in the last preceding breaker before the grain enters the next succeeding breaker, substantially as and for the purposes hereinbefore set forth.

2. An apparatus for the degermination and decortication of maize, consisting of a connected series of breaking and screening devices arranged in alternating sequence, together with means for supplying moisture to the material under treatment at a number of points during its passage through the apparatus as and for the purposes hereinbefore set forth.

3. An apparatus for the degermination and decortication of maize consisting of a series of breaking and screening devices arranged in superposed pairs consisting each of a screening device and a breaking device having its inlet connected with one end of its own screening device and its outlet or discharge spout connected with the opposite end of the screening device of the pair next below, substantially as and for the purposes hereinbefore set forth.

4. An apparatus for the degermination and decortication of maize consisting of a connected series of breaking and screening devices arranged in alternating sequence, together with valve-controlled pipes which are connected with a suitable source of steam or water supply, and open into the interior of the breaking devices so as to supply moisture to the material there under treatment, substantially as and for the purposes hereinbefore set forth.

707,058. PROCESS OF DEGERMING MAIZE OR INDIAN CORN. THOMAS T. GAFF, Barnstable, Mass., and JOSEPH F. GUTZ, Indianapolis, Ind.; said Gutz assignor of one-third of his right to said Gaff. Filed Dec. 28, 1901. Serial No. 87,281. (No specimens.)

Claim.—1. In the treatment of maize or Indian corn for the production of hominy, flakes, grits and other products of corn-milling, the process of degerming the corn consisting in preliminarily moistening the corn to such an extent only as to toughen it without destroying the structural adhesion of the starch-cells and the glutinous principle of the grain; then subjecting the thus-moistened grain while moving in free and continuous flow to a succession of breaking or splitting operations whereby the kernels are broken into fragments of a size to insure the detaching of the germ from the starch-bearing portions, alternating with screening operations whereby after each breaking such fragments of grain as are broken to the proper size, along with corresponding bits of germ and other bodies, are separated out and carried off from the still-unreduced portion of the charge before the latter is subjected to the next succeeding breaking operation; and finally separating out and carrying off the thus-broken starch-bearing fragments or pieces from the germs and other lighter bodies, substantially as and for the purposes hereinbefore set forth.

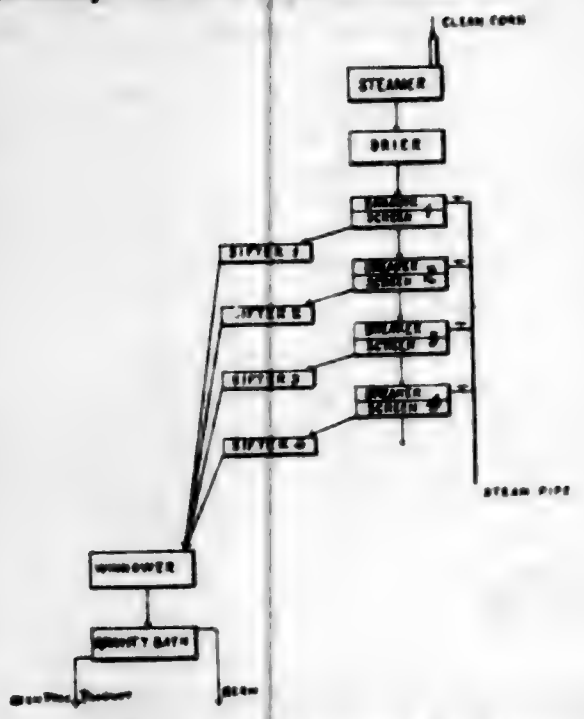

2. In the treatment of maize or Indian corn for the production of hominy, flakes, grits and other products of corn-milling, the process herein described of degerming the corn consisting in preliminarily moistening the corn to such an extent only as to toughen it without destroying the structural adhesion of the starch-cells and the glutinous principle of the grain; thus subjecting the thus-moistened grain while moving in free and continuous flow to a succession of breaking or splitting operations whereby the kernels are broken into fragments of a proper size to insure the detaching of the germs from the starch-bearing portions, alternating with screening operations whereby after each breaking those fragments broken to a proper size are separated out and carried off from the still-unreduced portion of the charge before the latter is subjected to the next succeeding operation, and furnishing to the charge at various points in its movement during this series of operations, additional moisture, to maintain it in properly moist condition; and finally separating out and carrying off the thus-broken starch-bearing fragments from the germs and other lighter bodies intermingled therewith, substantially as and for the purposes hereinbefore set forth.

707,059. TREATMENT OF MAIZE FOR THE PRODUCTION OF GRITS, FLAKES, &c. THOMAS T. GAFF, Barnstable, Mass., and JOSEPH F. GUTZ, Indianapolis, Ind.; said Gutz assignor of one-third of his right to said Gaff. Filed Apr. 23, 1902. Serial No. 104,237. (No specimens.)

Claim.—1. The hereinbefore-described improvement in the treatment of Indian corn for the production of corn-milling products, consisting in coarsely breaking the corn, separating out the starchy portions as far as possible by sifting and winnowing, further comminuting the residual mass of mixed germ and starchy matter, subjecting the thus-comminuted residue to the action of a solvent whereby the oil is removed therefrom, purging the thus-deoiled residue from all traces of the solvent, separating out as far as possible by sifting and winnowing the starchy portions from the remainder of the thus-purified residue, adding to and mixing with the thus-separated-out starchy matter an agglutinating material, and finally moistening and rolling the thus-prepared mixture, substantially as set forth.

2. In the treatment of Indian corn for the production of corn-milling products, the process of making flaked corn from the comminuted residual mixture of starchy and oil-bearing material known as "feed" which consists in subjecting said residue to the action of a solvent to extract and remove the oil as far as possible therefrom, then purging the thus-deoiled

residue from all traces of the solvent, then separating out as far as possible the starchy particles from the remainder of the thus distilled and purified residue, then adding to and mixing with the thus-recovered starchy matter an agglutinating material, and finally moistening the thus-prepared mixture and rolling it into flakes, substantially as hereinbefore set forth.

707,060. FOLDING OR COLLAPSIBLE BATH-TUB. WILLIAM H. SAMBLE, Miamisburg, Ohio, assignor of one-half to David H. Allen, Miamisburg, Ohio. Filed Apr. 8, 1901. Serial No. 54,913. (No model.)

Claim.—1. A collapsible tub composed of a sheet of flexible material, rims of less length than the sides of the sheet secured to the sides respectively, the ends of the sheet projecting beyond the said rims forming fastening-flaps, detachable end pieces adapted to be secured to said fastening-flaps, and means for supporting said side rims and end pieces, whereby when the latter are brought against the ends of the former respectively, the sheet collapses into a tub without folds or creases, substantially as specified.

2. A collapsible bath-tub composed of a sheet of flexible material, rims of less length than the sides of the sheet secured thereto leaving the sheet projected beyond the ends of the rims forming a fastening-flap at each end, detachable end pieces adapted to be secured to said fastening end flaps, legs pivoted to said side rims and brackets on said legs for supporting said end pieces in juxtaposition to the ends of the side rims, when the tub is erected, whereby the sheet collapses into a tub, without creases or folds, the supporting structure being adapted to be knocked down into straight parallel lengths shorter than the length of the sheet so as to be wrapped therein without projecting ends, substantially as specified.

3. In a bath-tub of the class described, the combination of the sheet A, the sectional top rim composed of the rails B and C, the legs D attached to two opposite rim-sections and the clamping devices attached to the legs D and adapted when the legs D are in opened position to bind the sections of the rim together, substantially as specified.

4. A collapsible tub composed of a sheet of flexible material, rims of less length than the side of the sheet secured to the sides respectively, the ends of the sheet projecting beyond the said rim forming fastening-flaps, means for securing the fastening-flaps adjacent to the respective ends of the side rims and means for supporting the said side rims in erect position whereby when the said fastening-flaps are secured against the ends of the said side rims, the sheet collapses into a tub without folds or creases, substantially as described.

707,061. MACHINE FOR INSERTING TAPE INTO EDGING. EDWARD P. HAVEN, Lagrange, Ill., assignor, by mesne assignments, to himself, Union Special Sewing Machine Company, Chicago, Ill., a Corporation of Illinois, and Myron H. Powell, Muskegon, Mich. Filed Jan. 5, 1897. Renewed June 12, 1902. Serial No. 111,312. (No model.)

Claim.—1. A machine for automatically inserting tape into meshed edging comprising a rotatable support for the edging having teeth registering with the spaces between the bars of said edging, a bodkin to which the tape is attached, feeding devices, and means for positioning the cross or connecting bars of the edging alternately at opposite sides of the forward end of the bodkin; substantially as described.

2. A machine for automatically inserting tape into meshed edging comprising a supporting-wheel for the edging having projecting teeth extending upwardly between the cross-bars of said edging, a stationary bodkin carrying a tape, means for feeding the edging toward the bodkin, and means for positioning the cross-bars of the edging alternately above and below the forward end of the bodkin; substantially as described.

3. A machine for automatically inserting tape into meshed edging comprising a supporting-wheel having teeth extending through the meshes and fitting between the cross-bars of the edging, a stationary bodkin carrying a tape and means for positioning the cross-bars of the edging alternately above and below the forward end of the bodkin, and feeding-rolls centrally grooved for the reception of the bodkin and toothed to grasp the sides of the meshed edging and feed it onto the bodkin; substantially as described.

4. A machine for automatically inserting tape or the like into edging or other material comprising a supporting-wheel, a stationary bodkin arranged with its point adjacent the supporting-wheel, feeding-rolls for grasping the material after it is on the bodkin, and means located between the bodkin-point and the supporting-wheel for positioning the cross bars of the edging alternately above and below the bodkin-point; substantially as described.

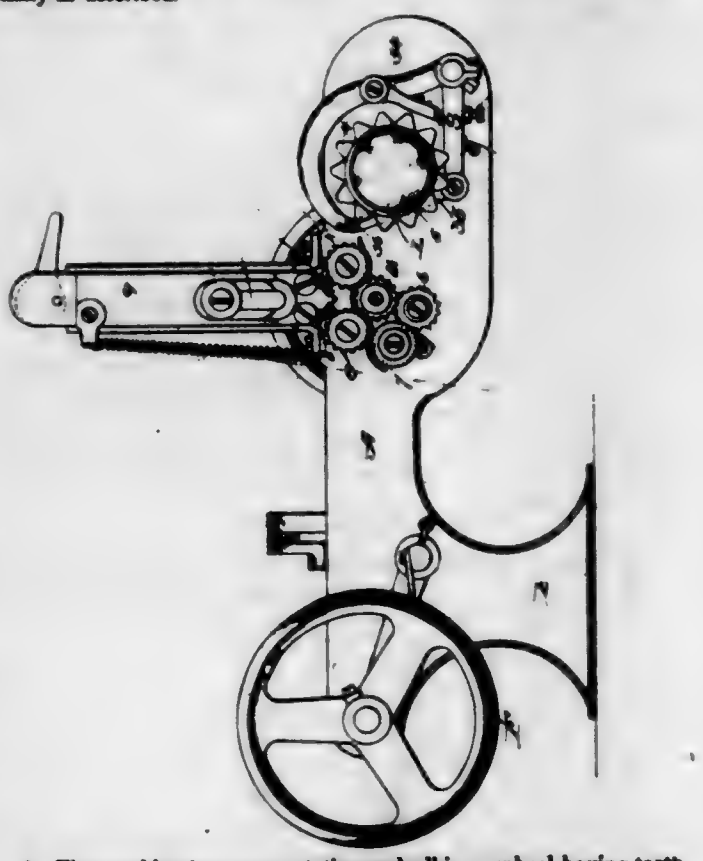

5. The combination with a stationary bodkin, a wheel having teeth adapted to enter the meshes of edging, vibrating fingers for positioning cross or connecting bars forming the meshes of the edging alternately at opposite sides of the forward end of the bodkin, said vibrating fingers being located between the wheel and the forward end of the bodkin, means for feeding edging upon the bodkin comprising rollers located back of the point of the bodkin and adapted to grasp the material; substantially as described.

6. In an apparatus for inserting tape into meshed edging, a bodkin carrying a tape, a rotatory support for the edging, having teeth registering with the meshes in the edging and a vibrating member between the support for the edging and the bodkin-point whereby the cross-bars of the edging are alternately positioned above and below the bodkin-point; substantially as described.

7. In combination, a bodkin, a support therefor, and a rotatory support for meshed edging having teeth registering with the meshes in said edging, means for alternately positioning the cross-bars of the edging above and below the bodkin-point, and means for feeding the meshed edging onto the bodkin; substantially as described.

8. An apparatus for inserting tape into meshed edging comprising a stationary bodkin carrying a tape, a supporting device for delivering the edging to the bodkin which supporting device has means for engaging the meshes of the edging, and a vibrating member arranged between the support for the edging and the bodkin-point, which vibrating member alternately positions the cross-bars of the edging above and below the bodkin-point; substantially as described.

9. In a machine for inserting tape or the like into edging or other material, means for feeding the material, a bodkin carrying the tape, fingers located adjacent the point of the bodkin between which the edging or other material passes, a rock-shaft with means for oscillating it, an arm rigidly attached to said rock-shaft to which arm one of said fingers is secured, and a second arm to which the other finger is secured sleeved on the rock-shaft and held normally in engagement with the first arm, whereby it is operated with said first arm, the fingers being thereby raised and lowered; substantially as and for the purpose specified.

10. In a machine for inserting tape or the like into edging or other material, means for feeding the material, a bodkin carrying the tape, fingers located adjacent the point of the bodkin between which the edging or other material passes, a rock-shaft with means for oscillating it, an arm rigidly attached to said rock-shaft to which arm one of said fingers is secured, and a second arm to which the other finger is secured sleeved on the rock shaft, a spring normally holding said second arm in position to be positively raised by the upward movement of the lower arm and for lowering it as the lower arm is dropped, whereby the fingers carried by the arms are raised and lowered; substantially as and for the purpose specified.

11. In a machine for inserting tape or the like into edging or other material, means for feeding the material, a bodkin carrying the tape, fingers located adjacent the point of the bodkin between which the edging

or other material passes, a rock-shaft with means for oscillating it, an arm rigidly attached to said rock-shaft to which arm one of said fingers is secured, and a second arm to which the other finger is secured sleeved on the rock-shaft, and having a projection or arm 24, a spring normally holding the projection 24 against the first arm whereby the arms and the fingers carried thereby are raised and lowered in unison; substantially as described.

12. In a machine of the character described, a bodkin, a supporting-wheel for meshed edging having vertically-projecting beveled teeth passing through the meshes of the edging and fitting between the cross-bars thereof, means for positioning the material alternately upon opposite sides of the forward end of the bodkin and feeding-rollers arranged above and below the bodkin and grooved to receive the same and adapted to feed the material onto the bodkin; substantially as described.

13. In a machine of the character described, a bodkin, a supporting-wheel for the meshed edging having projecting tapered teeth to fit between the bars of said edging, said teeth at their base being of width sufficient to snugly fit, or even slightly spread the cross-bars and means for positioning the material above and below the bodkin-point; substantially as described.

707,062. COUNTING-MACHINE. SOLOMON B. KEKEMIAH, Detroit, Mich., assignor to the Mors Capsule Company, Detroit, Mich. Filed Mar. 24, 1902. Serial No. 99,579. (No model.)

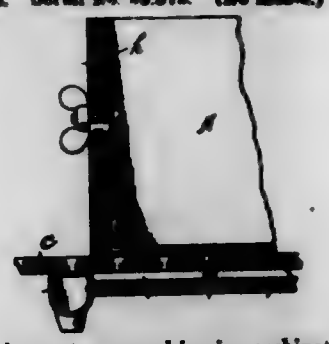

Claim.—1. A counter comprising in combination a hopper, a fixed base to said hopper, a slide arranged to slide under said hopper and above said fixed base, and provided with perforations, said fixed base provided with a serpentine groove, and a pin extending from said slide into said groove.

2. In a counter for small articles, the combination of a hopper with adjustable front and rib walls, a slide arranged to engage under the hopper and provided with a perforated and an imperforated section, and a raceway arranged to receive articles withdrawn from the hopper and dropping out from said perforations, substantially as described.

3. In a counter for small articles, the combination of a hopper, a slide arranged to slide under said hopper provided with a perforated section and an imperforate section and means for producing a lateral vibratory motion of the slide, substantially as described.

707,068. SPARK AND CINDER ARRESTER FOR LOCOMOTIVE SMOKE-STACKS. LOUIS C. LAUBERT, Denver, Colo. Filed Oct. 3, 1901. Serial No. 77,488. (No model.)

Claim.—1. The combination of a locomotive smoke-stack provided with cinder-escape openings at the bottom, a conduit leading downwardly therefrom on each side of the locomotive, a tube extending upwardly into the stack, the bottom of the tube having a flange extending outwardly forming the bottom for a chamber between the tube and the stack proper, and an arrester device located in the stack a suitable distance above the top of the tube, substantially as described.

2. The combination of a locomotive smoke-stack provided with cinder-escape openings at the bottom, a conduit leading downwardly therefrom on each side of the locomotive, a tube extending upwardly within the stack, the bottom of the tube having a flange extending outwardly forming the bottom of a chamber between the tube and the stack, an arrester device located in the stack a suitable distance above the top of the tube, an additional tube inserted in the stack above the arrester, said having an offset at its bottom partly closing a portion of the stack below and forming the bottom of a chamber between the last-named tube and the upper part of the stack, openings being formed around the lower portion of the upper part of the stack, a housing surrounding the stack and communicating at its lower extremity with the aforesaid downwardly-leading conduits, the top of the housing being closed around the stack above the openings in the bottom of the upper chamber, and a spark-arrester located in the stack above the upper tube.

3. The combination of a locomotive smoke-stack provided with cinder-escape openings at the bottom, a tube extending upwardly within the stack, the bottom of the tube having a flange extending outwardly forming the bottom of a chamber between the tube and the lower part of the stack, and an arrester device located in the stack a suitable distance above the top of the tube.

4. The combination of a locomotive smoke-stack provided with cinder-escape openings around its bottom, a tube extending upwardly within the stack, the bottom of the tube having a flange extending outwardly forming the bottom of a chamber between the tube and the lower part of the stack, the said tube receiving at the bottom the products of combustion from the furnace or fire-box, an arrester device located in the stack a suitable distance above the top of the tube, an additional tube inserted in the stack above the arrester and having an offset at its bottom partly closing a portion of the stack below, and forming the bottom of a chamber between the last-named tube and the upper part of the stack, openings around the lower portion of the upper part of the stack, a housing surrounding the stack and communicating with its outlet at the bottom, the top of the housing being closed around the stack above the outlet-openings of the upper chamber, substantially as described.

707,064. WIRELESS TELEGRAPHY. HARRY SHOEMAKER, Philadelphia, Pa., assignor of one-half to Gustave P. Gehring, Philadelphia, Pa. Filed June 1, 1901. Serial No. 62,717. (No model.)

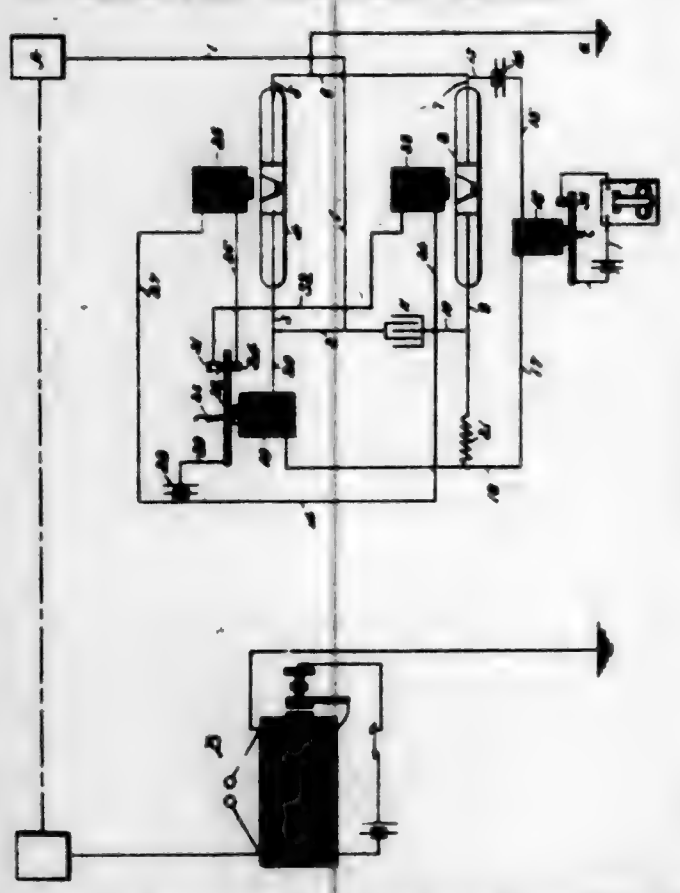

Claim.—1. In a system of wireless telegraphy, a transmitting and a receiving apparatus; said receiving apparatus, consisting of a series of coherers in the same main circuit and in parallel, and a decohering device for each coherer, said decohering devices being dependent upon the action of the coherers, one being operated when the coherers conduct and the other when one of the coherers has been decohered.

2. A receiving apparatus for wireless telegraphy, comprising a series of imperfect electrical contacts, said contacts being in the same main circuit, a relay in said main circuit, a receiving-instrument circuit controlled by the relay, another relay in said main circuit and decohering devices adapted to be operated in succession as the last-mentioned relay is magnetized and demagnetized.

3. A receiving apparatus comprising air and ground plates, a series of coherers in parallel and in circuit therewith, a relay in circuit with the coherers, a sounder-circuit operated by said relay, another relay in the coherer-circuit, and decohering means for each coherer adapted to be operated in succession as the last-mentioned relay is magnetized and demagnetized.

4. A receiving apparatus comprising a series of coherers in parallel

and in the same main circuit, a decoherer for each coherer, separate circuits for each decoherer and a relay in said main circuit for operating said decoherers one at a time in succession as the said relay is magnetized and demagnetized.

5. A receiving apparatus, comprising a series of coherers, air and ground plates connected therewith, a main circuit embracing said coherers which are in parallel, a relay in said circuit, a sounder-circuit operated by said relay, another relay in said main circuit and a decoherer for each coherer adapted to be operated in succession as the last-mentioned relay is magnetized and demagnetized.

6. In a receiver, a plurality of wave-responsive devices, a relay controlled by said devices, two circuits controlled by said relay, each including a decohering device.

7. In a receiver, a plurality of wave-responsive devices, a relay controlled by said devices, a decoherer circuit operated upon the energization of said relay, and a decoherer-circuit closed upon the deënergization of said relay.

8. In a receiver, a plurality of wave-responsive devices, a relay controlled by one of said devices, a decohering device for the wave-responsive device controlling said relay, actuated upon the energization of said relay, and a decoherer-circuit closed upon the deënergization of said relay.

9. A plurality of wave-responsive devices, a recorder-relay controlled thereby, a second relay controlled by a portion of said wave-responsive devices, a decoherer actuated upon the energization of the second relay, and decohering means for the remaining wave-responsive devices actuated upon the restoration of said first-mentioned portion.

10. In a receiver, a plurality of wave-responsive devices connected in parallel, an automatic decoherer for a portion of said devices, and means operative upon the restoration of said portion of said devices to decohere the remaining wave-responsive devices.

707,065. COIN-DELIVERY DEVICE. JAMES M. BUCKLEY and WILLIAM G. HARVEY, Chicago, Ill., assignors to the American Automatic Change Maker Company, Little Rock, Ark. Filed Feb. 15, 1902. Serial No. 94,224. (No model.)

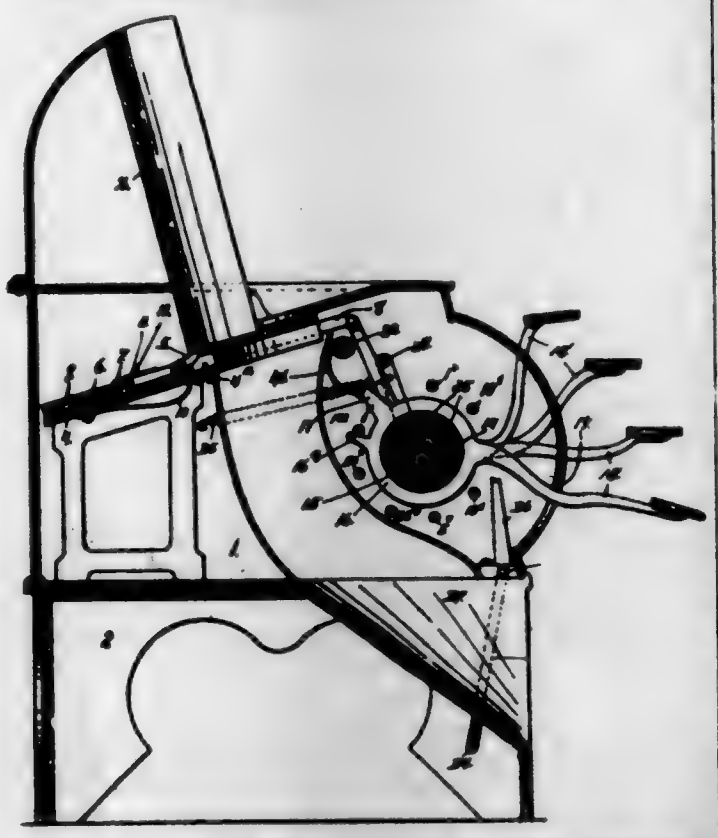

Claim.—1. In a coin-delivery device, the combination with a suitable casing, coin-holders and coin-displacing mechanism, of a suitable stationary support mounted in the casing, rings mounted to turn on said support and provided with keys passing through openings in the casing, and a suitable operative connection between the rings and the coin-displacing mechanism, substantially as described.

2. In a coin-delivery device, the combination with a suitable casing, coin-holders and coin-displacing mechanism, of a drum mounted in the casing, toothed rings mounted to turn on the drum and provided with keys passing through openings formed in the casing, and a suitable operative connection between the rings and the coin-displacing mechanism whereby the pressing of the keys actuates said mechanism, substantially as described.

3. In a device of the class described, the combination with a casing, coin-holders and coin-displacing mechanism, of a drum or shaft mounted in the casing, yieldingly-retained rings mounted to turn on said drum, and provided with keys passing through openings in the casing, and a suitable operative connection between the key-rings and the coin-displacing mechanism, whereby as the keys are pressed the said mechanism is actuated, substantially as described.

4. In a coin-delivery device, the combination with a suitable casing, coin-holders and coin-displacing mechanism, of a stationary shaft or drum mounted in the casing, rings mounted to turn on said drum, and provided with keys passing through openings formed in the casing, other rings also mounted to turn on the drum and connected with the coin-displacing devices, and an operative connection between the two sets of rings, whereby as the keys are operated, the coin-displacing mechanism is actuated, substantially as described.

5. In a device of the class described, the combination with a casing, coin-holders and coin-displacing mechanism, of a stationary shaft or drum mounted in the casing, rings mounted to turn on said drum and provided with keys protruding from the casing, other rings also mounted to turn on the drum, and connected with the coin-displacing devices, separating-washers fast on the drum between the rings, to prevent the movement of any ring by the frictional contact of an adjacent ring, and a suitable operative connection between a key-ring and one or more coin-displacing rings, whereby the operation of the key actuates the coin-displacing mechanism, substantially as described.

6. The combination with a casing, coin-holders, and coin-displacing devices, of a shaft or drum fast on the casing, rings mounted thereon, provided with one or more teeth or projections, and having keys protruding from the casing, other rings having teeth or projections, the last-named rings being also mounted to turn on the drum and connected with the coin-displacing devices, and rods mounted to oscillate on the drum and engaged by the projections of the two sets of rings from opposite sides, whereby as any key is operated and one or more rods actuated, the coin-displacing rings engaged by the said rods are also actuated.

7. The combination with a casing, coin-holders and coin-displacing mechanism, of a ring mounted to turn on the casing, provided with one or more projections, and a key projecting from the casing, other rings also mounted to turn in the casing and having projections, the last-named rings being connected with the coin-displacing devices, and rods mounted to oscillate in the casing and engaged by the projections of the key-rings and the coin-displacing rings, the projections of the key-rings, engaging the rods on the side opposite the projections of the other rings, substantially as described.

8. The combination with a casing, coin-holders and coin-displacing devices, of a ring movably mounted in the casing, provided with projections, and having a key protruding through an opening formed in the casing, rods mounted to oscillate in the casing and engaging the projections of the key-ring, other rings mounted in the casing and corresponding in number with the number of projections of the key-rings, each of the other rings being connected with coin-displacing mechanism and having a projection engaging a rod on the side opposite the projection of the key-ring, whereby as the latter is operated, all of the said coin-displacing rings will be actuated, substantially as described.

9. The combination with a casing, coin-holders and coin-displacing mechanism, of rings mounted to turn in the casing and provided with keys protruding from the casing, each ring having one or more projections, rods mounted to oscillate in the casing and engaged by the projections of the key-rings, other rings also mounted in the casing and provided with projections engaging the rods on the sides opposite the projections of the key-rings, the other rings having upwardly-projecting arms and links connecting the coin-displacing devices with said arms.

10. The combination with a casing and coin-holders, of coin-displacing dogs mounted to move forward in the plane of the lowermost coins of the coin-holders, and backward below the plane of said coins, rings mounted to turn in the casing and provided with keys projecting therefrom, other rings mounted to turn in the casing and provided with upwardly-projecting arms, a suitable connection between the said arms and the coin-displacing dogs, and a suitable connection between the key-rings and the other rings, whereby as the key-rings are operated the coin-displacing dogs are actuated.

11. In a device of the class described, the combination with a suitable casing and coin-holders, of dogs mounted to move forwardly in the plane of the lowermost coins, springs engaging said dogs from below, blocks with which the dogs are pivotally connected, pins projecting laterally from the blocks, rings mounted to turn in the casing and provided with upwardly-projecting arms, links connecting said arms with the pins, other rings mounted to turn in the casing and provided with protruding keys, and a suitable connection between the two sets of rings, whereby as the keys are operated the coin-displacing dogs are actuated, substantially as described.

12. The combination with a casing, coin-holders and coin-ejecting devices, of a drum made fast in the casing and provided with longitudinal

grooves, rock-shafts located in said grooves, rods occupying positions parallel with the shafts, arms connecting the shafts and the rods, rings surrounding the drum outside of the shafts, provided with projections engaging the rods, and having keys projecting from the casing, other rings mounted to turn on the drum, connected with the coin-displacing devices and having projections engaging the rods on the side opposite the projections of the key-rings.

13. The combination with a casing, coin-holders, coin-displacing devices and operating-keys protruding from the casing, of two sets of rings mounted to turn in the casing, one set of rings being connected with the coin-displacing devices, and the other set of rings with the keys, and a suitable connection between the two sets of rings, whereby as the keys are operated, the coin-displacing devices are actuated, substantially as described.

14. The combination with a casing, coin-holders and coin-ejecting devices, of rings mounted to turn in the casing and provided with projections, other rings mounted to turn in the casing and connected in operative relation with the key-rings and the coin-ejecting devices, whereby as the key-rings are actuated the other rings are operated to actuate the coin-ejecting devices, and suitable means for returning the coin-ejecting rings to their normal position after each coin-ejecting act.

15. The combination with a casing, coin-holders and coin-ejecting devices, of a stationary drum mounted in the casing, spring-actuated rings mounted to turn on said drum and provided with protruding keys, other rings mounted to turn on the drum and provided with upwardly-projecting arms connected with the coin-ejecting devices, a spring-held oscillating rod connected with the drum, and lying in the path of the upwardly-projecting arms of the coin-ejecting rings, whereby as soon as said rings are released, they are returned to their normal position by the spring-held rod, and a suitable operative connection between the key-rings and the coin-ejecting rings, substantially as described.

16. The combination with a casing, coin-holders and coin-displacing devices, of a drum fast on the casing, and provided with grooves, rock-shafts located in said grooves, rods parallel with the rock-shafts, arms connecting said rods with the shafts, spring-held rings having projections engaging said rods, and provided with keys protruding through openings formed in the casing, other rings also mounted to turn on the drum and provided with projections engaging the said rods on the side opposite the projections of the key-rings, the other rings having upwardly-projecting arms connected with the coin-displacing devices, and another rod lying in the path of said upwardly-projecting arms, crank-arms connecting a rock-shaft of the drum with the last-named rod, and a spring connected with said rod and with the casing, whereby the upwardly-projecting ring-arms and their connections are returned to their normal position after each coin-displacing act, substantially as described.

17. The combination with a casing, coin-holders and coin-displacing mechanism, of a device fast on the casing and provided with oscillating rods corresponding in number with the denominations of coins to be delivered by the machine, rings mounted on said drum and provided with keys protruding from the machine and provided at their free extremities with buttons upon which is indicated the amount of change to be delivered, other rings also mounted on the drum, connected with the coin-displacing mechanism and having projections engaging the rods on the side opposite from the projections of the key-rings, and means mounted on the drum, actuated by any key-ring, and adjustable at the will of the operator, for causing the operation of an additional rod when a key is operated, substantially as described.

18. The combination with a casing, coin-holders, and coin-displacing devices, and a coin-chute adapted to receive and discharge the displaced coins, of a drum fast on the casing and provided with grooves, rock-shafts located in said grooves, rods parallel with the rock-shafts, arms connecting said rods with the shafts, spring-held rings having projections engaging said rods, and provided with keys protruding through openings formed in the casing, other rings also mounted to turn on the drum and provided with projections engaging said rods on the side opposite the projections of the key-rings, the other rings having upwardly-projecting arms connected with the coin-displacing devices, another rod lying in the path of said upwardly-projecting arms, crank-arms connecting a rock-shaft of the drum with the last-named rod, a spring connected with said rod and with the casing, whereby the upwardly-projecting ring-arms and their connections are returned to their normal position after each coin-displacing act, a disk mounted to turn on one end of the drum, and provided with a projection lying in the path of the last named rod and engaging the same on the side opposite the upwardly-projecting arms of the rings, a plate slidably mounted on said disk and arranged to turn therewith, an additional rod, said plate being capable of adjustment to bring it into engagement with the additional rod, a spring normally holding the sliding plate in the inoperative position, and a lever having one arm projecting below the coin-chute, and the other arm arranged to engage the sliding plate for shifting the latter to the operative position, substantially as described.

19. The combination with a casing, and coin-holders, of a plate or platform located at the bottom of the coin-holders and forming a support for the stacks of coins, grooves formed in said platform, blocks slidably mounted in said grooves, dogs pivotally mounted in the blocks, a retaining-spring attached to the platform above the blocks, a spring attached to the lower surface of the platform and passing through an opening formed in the platform to engage the dog from below, the arrangement being such that when the dog is at its rearward limit of movement, the spring engages the dog in front of its pivot and holds its forward extremity in the plane of the lowermost coin of the stack, while when the dog has reached its forward limit of movement, the spring engages it in the rear of its pivot and throws its forward extremity downwardly below the lowermost coin, and suitable means for actuating the coin-displacing dog, substantially as described.

20. The combination with a casing, and coin-holders, of a platform located below the coin-holders and forming a support for the coin-stacks, grooves formed in the platform in line with the coin-holders, blocks slidable in said grooves, coin-displacing dogs pivoted in the blocks which are provided with recesses to receive them, retaining-plates attached to the platform above the blocks for holding the latter in place, the said plates being slotted to receive the dogs, the slots being enlarged at their rear extremities, the dogs being provided with cross-pieces at their rear extremities, adapted to pass through the enlarged part of the slot, and springs attached to the lower surface of the platform and engaging the dogs from below, the mechanism being constructed and arranged to operate, substantially as described.

707,066. UPRIGHT AUTOMATIC SWITCH-STAND. DAVID H FREEMAN, Denver, Colo., assignor of one-fourth to Arthur T. Hurt, Denver, Colo. Filed Mar. 13, 1899. Serial No. 708,868. (No model.)

Claim.—1. In an upright switch-stand construction the combination of the revolvable toggle-crank arranged to be rotated by hand, and suitably connected by a switch-rod to the switch-points, an upright main shaft secured to the toggle-crank, a jointed hand-lever secured to the shaft, and a semicircular flanged supporting-top provided with two diametrically opposite lever-locking slots with which the hand-lever is designed to register when in either completely-thrown position, thereby interlocking the toggle-crank against revolvable movement, the interlocking slots being in a plane at right angles to the line of switch-rod connection.

2. In an upright switch-stand construction, the combination with a revolvable, spring-actuated, flexible toggle-crank suitably connected with switch-points, adapted for automatic use and arranged to be rotated by hand, of a main shaft secured to said toggle-crank, a jointed hand-lever secured to the shaft and arranged to interlock the toggle-crank construction against revolvable movement when in position for automatic action, the hand-lever being interlocked to the supporting-standard in a plane at right angles to the line of automatic action of the toggle-crank.

3. In an upright switch-stand construction, the combination with a revolvable, spring-actuated, flexible toggle-crank suitably connected with switch-points, adapted for automatic use and also arranged to be rotated by hand, of an upright column or standard upon which the toggle-crank is mounted, said column having a flanged top provided with slots, an upright main shaft secured to the toggle-crank, and having free rotary and vertical sliding movement within said column, a retaining-spring mounted upon the main shaft between the toggle-crank and the supporting-top of the column, and a jointed hand-lever secured to the main shaft and arranged to interlock the main shaft and the flexible toggle-crank, when completely thrown and in position for automatic action, against revolvable movement, but to permit the free, vertical, sliding movement of the main shaft and the hand-lever during the automatic action.

4. The combination with the flexible toggle-crank, of an upright, hollow column, within and upon which said toggle-crank is mounted, said column having an opening in its top and an interior shoulder surrounding said opening, a sleeve located in said opening and adapted to protrude above the top of the column, said sleeve having a flange engaging the interior shoulder of the column, a shaft attached to one end member of the toggle-crank and protruding through said sleeve in which it is permitted both axial and rotary movement, a block K attached to the outer extremity of the shaft above the column, a hand-lever mounted on the block, and a spring interposed between a shoulder surrounding the lower extremity of the shaft, and the flanged sleeve near the top of the column, whereby the head-block K normally rests upon and forces said sleeve downwardly sufficiently to overcome the friction incident to the engagement of the flange of the sleeve with the top of the column during the turning of the toggle-crank and shaft by the use of the hand-lever.

5. In an upright switch-stand construction, the main supporting-standard, comprising an integral casting having the traverse base-flanges, the adjoining bored supporting-hanger, an upright cylindrical column with semicircular flanged covering, provided upon the periphery thereof with two diametrically opposite interlocking slots and upon the top thereof with suitably-disposed stops or lugs, and a raised, centrally-located bored seat and interior shoulder for supporting the main shaft, and signal-standard brackets for supporting a signal-standard shaft, one of which is provided with a semicircular locking-flange, substantially as described.

6. The combination with the upright hollow column having openings formed in its top and bottom, a flexible toggle-crank, a revolvable foot-block connected with one end member of the crank, said block engaging the opening in the base of the column, a revolvable sliding headpiece connected with the other end member of the toggle-crank, a suitable connection between the center member of the toggle-crank and the switch-point, a shaft secured to said headpiece and protruding through the opening in the top of the column, a spring surrounding the shaft and interposed between said headpiece and the top of the column, a hand-lever connected with the upper protruding extremity of said shaft and adapted to turn in a plane above the top of the column, which is provided with locking-slots for the engagement of the hand-lever.

7. In a switch-stand, the combination of an upright column, a revolvable toggle-crank arranged to be rotated by hand, a rod for connecting said crank with the switch-point, an upright main shaft secured to the toggle-crank, a jointed hand-lever secured to the upper protruding extremity of the shaft, and suitable means for locking the hand-lever to the column in a plane at right angles to the line of switch-rod connection when the toggle-crank is in either fully-thrown position.

8. In an upright automatic switch-stand construction, the combination of the main supporting-column, an upright main shaft, a hand-lever head-block, a revolvable, flexible, spring-retained toggle-crank, a constant high-tension retaining-spring interposed between the head-block and a stop on the column, and an elongated flanged sleeve, all constructed and arranged substantially as described.

707,067. TERRESTER-SCREEN. JOHN H. JOHNSON, Minden, Nebr. Filed July 16, 1900. Serial No. 23,767. (No model.)

Claim.—1. In a screen the combination of two relatively adjustable apertured plates arranged face to face, stringers arranged across the face of the upper one of said plates and extending longitudinally of the screen, stringers arranged under the lower one of said plates longitudinally of the screen and means for connecting said stringers together, substantially as set forth.

2. In a screen the combination of two apertured plates arranged face to face and being relatively adjustable, a plurality of stringers arranged at short intervals apart across the face of one of said plates and extending longitudinally of the screen, a plurality of stringers arranged at intervals across the face of the other of said plates and extending lengthwise of said first stringers, and means extending through said plates and connecting the stringers on one side thereof with the stringers on the other, substantially as set forth.

3. In a screen the combination of two relatively adjustable apertured plates arranged face to face, stringers secured under independently of and supporting the lower one of said plates, stringers arranged over the face of the upper one of said plates for holding it down and means connecting said second stringers with said first stringers and thereby holding said second stringers against movement with the upper one of said plates, substantially as set forth.

4. In a screen the combination of two relatively adjustable apertured plates, stringers arranged under the lower one of said plates, stringers extending over the upper one of said plates, cross-beams extending under and supporting said first stringers, and means supporting said cross-beams at intervals from said stringers, substantially as set forth.

5. In a screen the combination of two relatively adjustable screen-plates arranged face to face, stringers located across one of said plates, stringers arranged across the other of said plates and being fixed with relation to both of said plates, and connections passing through said plates and securing said stringers together, the adjustable one of said plates being movable longitudinally and transversely and having apertures for the passage of said connections of greater diameter than said connections in all directions whereby said adjustable plate may move transversely and longitudinally independently of said connections, substantially as set forth.

6. In a screen the combination of a screen proper, a plurality of stringers arranged at short intervals apart across one face of said screen and extending longitudinally of the screen, a plurality of stringers arranged at short intervals apart across the other face of said screen and extending lengthwise of said first stringers and means extending through said screen proper and connecting the stringers on one side thereof with the stringers on the other, substantially as set forth.

7. In a screen the combination of two apertured plates arranged face to face and being relatively adjustable, a plurality of stringers arranged at short intervals apart across the face of one of said plates and extending longitudinally of the screen, a plurality of stringers arranged at intervals across the face of the other of said plates and extending lengthwise of said first stringers, and means extending through said plates and connecting the stringers on one side thereof with the stringers on the other, substantially as set forth.

8. In a screen the combination of two apertured plates arranged face to face and being relatively adjustable transversely and longitudinally, a plurality of continuous stringers arranged across the face of one of said plates and extending longitudinally of the screen, and being fixed against movement with said plates, a plurality of stringers arranged across the face of the other of said plates, and means passing through said plates and securing said stringers together, substantially as set forth.

9. In a screen the combination of two apertured plates arranged face to face and being relatively adjustable transversely and longitudinally, a plurality of continuous stringers arranged across the face of one of said plates and extending longitudinally of the screen and being fixed against movement with said plates, a plurality of continuous stringers arranged across the face of the other of said plates and extending lengthwise of said first stringers and means passing through said plates and securing said stringers together, substantially as set forth.

10. In a screen the combination of upper and lower apertured plates arranged face to face, stringers extending longitudinally of the screen and bearing upon the face of the upper one of said plates, stringers extending longitudinally of the screen and bearing against the face of the lower one of said plates, means passing through said plates and connecting said stringers together, cross-bars extending under said lower stringers and means passing through said plates and connecting said cross-bars with said upper stringers, substantially as set forth.

11. In a screen the combination of a screen proper having apertures therein, stringers extending longitudinally of said screen and bearing against the upper face thereof, stringers extending lengthwise of said first stringers and bearing against the lower face of said screen proper, said stringers being located to one side of or between the apertures of said screen proper, means passing through the apertures of said screen proper and connecting said stringers together, cross-bars arranged under and supporting said lower stringers and connections passing through the apertures of the screen proper and secured at their upper and lower ends to said upper stringers and cross-bars respectively, substantially as set forth.

REISSUES.

12,019. ELECTROCHEMICAL GENERATOR. HARRY S. ASWARD, Camden, N. J., assignor to Charles H. Graham and George B. Burton, Philadelphia, Pa. Filed July 16, 1902. Serial No. 115,594. Original No. 702,709, dated June 17, 1902.

Claim.—1. An electrochemical generator consisting of a single fluid-cell, provided with a positive electrode and a negative fixed electrode, an electrolyte, and a current-conducting baffle-partition in said electrolyte, between said electrodes and normally insulated therefrom.

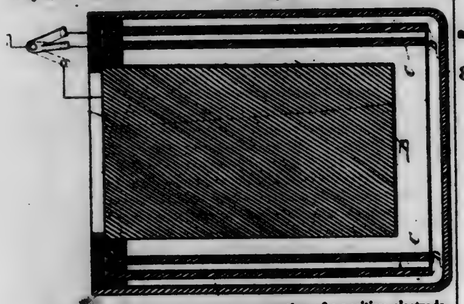

2. An electrochemical generator, consisting of a positive electrode, a negative fixed electrode, an electrolyte, an electric-current-conducting baffle-partition normally insulated from said electrodes and means for making said baffle-partition part of either of said electrodes to set therewith.

3. An electrochemical generator consisting of a single fluid-cell having positive and negative electrodes and a current-conveyer of high conducting or current-carrying capacity interposed as a modifier, screen or baffle between the positive and negative electrodes and adapted to control the rate of change of position of the electrolyte attacking the electrodes most to be acted upon without interfering with the current-flow between the electrodes in the case.

4. An electrochemical generator consisting of a single fluid-cell provided with a positive electrode and a negative fixed electrode, an electrolyte and a current-conducting baffle-partition in said electrolyte between said electrodes and normally insulated therefrom, providing means for causing a higher temperature of the electrolyte between the largest areas of the baffle-partition and the positive electrode and lower temperature between the smallest areas opposed.

5. An electrochemical generator consisting of a single fluid-cell, a positive electrode, a negative electrode, an electrolyte, and a current-conducting baffle, normally insulated from the electrodes, which baffle is in the electrolyte and surrounds one of the electrodes.

6. An electrochemical generator consisting of a single fluid-cell, a positive electrode, a negative electrode, an electrolyte, and a current-conducting baffle, in the electrolyte, which baffle surrounds one of the electrodes, is open at the bottom, and is normally insulated from the electrodes, substantially as described.

DESIGNS.

35,991. PENDENT PIN. GERRIT G. VAN RENSS, Philadelphia, Pa., assignor to J. E. Caldwell & Company, Philadelphia, Pa. Filed Dec. 14, 1901. Serial No. 85,982. Term of patent 14 years.

Claim.—The ornamental design for a pin as herein described and as illustrated in the accompanying drawings.

35,992. PICTURE-FRAME. ISAAC H. GOULD, Philadelphia, Pa. Filed Feb. 21, 1902. Serial No. 96,194. Term of patent 3½ years.

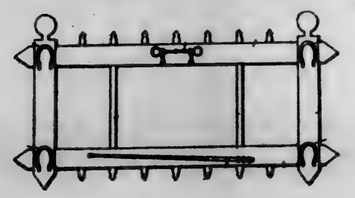

35,992.

Claim.—The ornamental design for a picture-frame, as herein shown and described.

35,993. BACK FOR MIRRORS, BRUSHES, OR SIMILAR ARTICLES. WALTER THORN, Arlington, N. J., assignor to Evans H. Eastwood, Charles W. Park, and Edward Hakins, copartners trading as Eastwood and Park, Newark, N. J. Filed June 24, 1902. Serial No. 113,041. Term of patent 7 years.

Claim.—The ornamental design for a back for mirrors, brushes or similar articles, substantially as herein shown and described.

35,994. HANDLE FOR SPOONS OR SIMILAR ARTICLES. ISSACHAR GREEN and CHARLES S. COREY, Providence, R. I., assignors to the Watson and Howell Company, a Corporation of Rhode Island. Filed June 20, 1902. Serial No. 113,562. Term of patent 7 years.

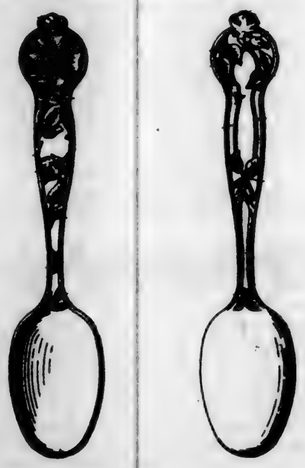

Claim.—The ornamental design for the handle of a spoon or similar article, as herein shown and described.

35,995. HANDLE FOR SPOONS OR SIMILAR ARTICLES. ISSACHAR GREEN and CHARLES S. COREY, Providence, R. I., assignors to the Watson and Howell Company, a Corporation of Rhode Island. Filed June 20, 1902. Serial No. 112,564. Term of patent 7 years.

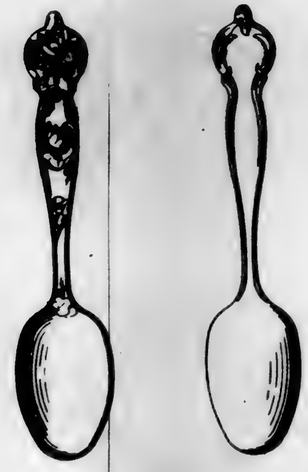

Claim.—The ornamental design for the handle of a spoon or similar article, as herein shown and described

35,996. HANDLE FOR SPOONS OR SIMILAR ARTICLES. ISSACHAR GREEN and CHARLES S. COREY, Providence, R. I., assignors to the Watson and Howell Company, a Corporation of Rhode Island. Filed June 20, 1902. Serial No. 113,565. Term of patent 7 years.

Claim.—The ornamental design for the handle of a spoon or similar article, as herein shown and described.

35,997. HANDLE FOR SPOONS OR SIMILAR ARTICLES. WILLIAM F. MARSHALL, North Attleboro, Mass., assignor to Henry H. Curtis, North Attleboro, Mass. Filed June 23, 1902. Serial No. 113,999. Term of patent 7 years.

Claim.—The ornamental design for the handle of a spoon, or similar article, as herein shown and described.

35,998. METAL ORNAMENT FOR SILVER OR PLATED WARE. SETH WILLIAM BARRETT, Meriden, Conn. Filed June 30, 1902. Serial No. 113,873. Term of patent 3½ years.

Claim.—The ornamental design for a metal ornament for silver and plated ware as herein shown and described.

35,999. SKIRT-HOLDER PLATE. LAGE WERTHEIMER, New York, N. Y. Filed Mar. 28, 1902. Serial No. 100,483. Term of patent 3½ years.

Claim.—The ornamental design for a skirt-holder plate, substantially as herein shown and described.

36,000. NEBULIZER-SUPPORT. WILLIAM BOEKEL and JULIUS BOEKEL, Philadelphia, Pa. Filed Apr. 12, 1902. Serial No. 102,653. Term of patent 14 years.

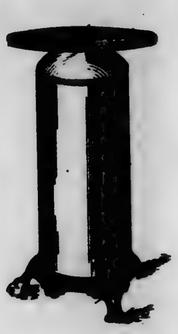

Claim.—The ornamental design for a nebulizer-support as herein shown and described.

36,001. PRESCRIPTION-BOTTLE. HENRY FOEHRY, East St. Louis, Ill., assignor to Obear-Nester Glass Company, a Corporation of Missouri. Filed May 10, 1902. Serial No. 106,841. Term of patent 14 years.

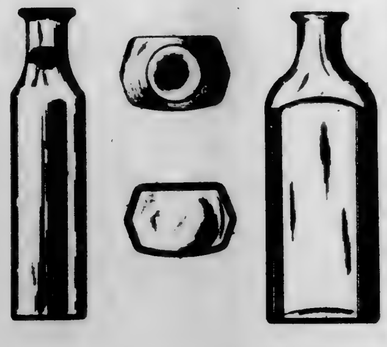

Claim.—The ornamental design for a prescription-bottle, as herein shown and described.

36,002. LAMP OR CANDLE SHADE. BERTHA STRASBURGER, New York, N. Y. Filed June 26, 1902. Serial No. 113,281. Term of patent 3½ years.

Claim.—The ornamental design for a lamp or candle shade, as herein shown and described.

36,003. SEWING-MACHINE TABLE. HERBERT J. ABRAHAM, Rockford, Ill. Filed June 23, 1902. Serial No. 112,940. Term of patent 3½ years.

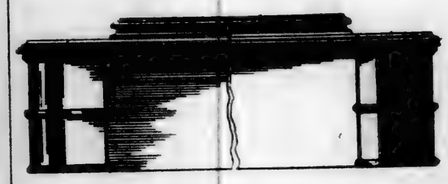

Claim.—The ornamental design for a sewing-machine table herein shown and described.

36,004. SEWING-MACHINE TABLE. FRANK G. ROSLAND, Chicago, Ill., assignor to Illinois Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed July 10, 1902. Serial No. 115,101. Term of patent 7 years.

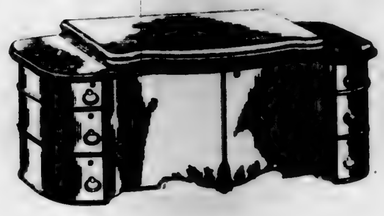

Claim.—The ornamental design for a sewing-machine table herein shown and described.

36,005. SCHOOL-DESK CASTING. MICHAEL A. DONOHUE, Jr., Chicago, Ill. Filed May 23, 1902. Serial No. 108,008. Term of patent 7 years.

Claim.—The ornamental design for a school-desk casting, substantially as herein shown and described.

36,006. RANGE. RICHARD H. WHITEFIELD, Easton, Ohio. Filed June 6, 1902. Serial No. 110,556. Term of patent 3½ years.

36,006

Claim.—The ornamental design for a range, as herein shown and described.

36,007. STOVE. HENRY D. PERRY, Niagara Falls, N. Y. Filed June 10, 1902. Serial No. 111,075. Term of patent 14 years.

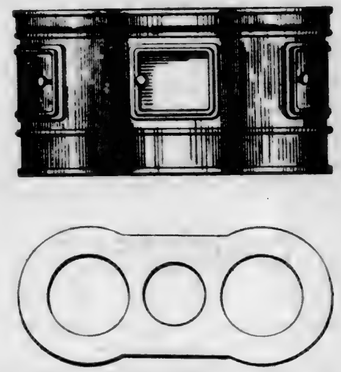

Claim.—The ornamental design for a stove, as herein shown and described.

36,008. AUTOMOBILE-BODY. CLOVIS M. TAYLOR, Columbus, Ohio. Filed June 23, 1902. Serial No. 112,927. Term of patent 14 years.

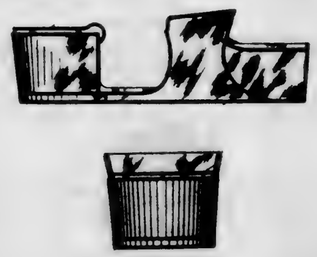

Claim.—The ornamental design for an automobile-body as herein shown and described.

TRADE-MARKS

REGISTERED AUGUST 12, 1902.

88,742. GLOVES. James McCreery & Co., New York, N. Y. Filed May 28, 1902.

LA ZARRE

The words "La Zarre." Used since November 6, 1901.

88,743. SUSPENDER-BELTS. Alfred J. Koch, New York, N. Y. Filed June 4, 1902.

MILITARY FORM

The words "Military Form." Used since January 14, 1902.

88,744. CERTAIN NAMED RAWHIDE GOODS. A. & G. W. Hathaway, Providence, R. I. Filed June 27, 1902.

CRUDEPELT

The word "Crudepelt." Used since January, 1893.

88,745. RUBBER BELTING, RUBBER HOSE, AND RUBBER PACKING. The Consolidated Rubber Co., Cleveland, Ohio. Filed May 31, 1902.

EUCLID

The word "Euclid." Used since October 23, 1900.

88,746. CAKE TOILET SOAP. Frank M. Collins, Los Angeles, Cal. Filed June 23, 1902.

The representation of a branch of a lemon-tree, with lemons, leaves, and blossoms thereon. Used since August 3, 1901.

88,747. THROAT-PASTILS. William Alfred Josse, West Kirby, England. Filed June 2, 1902.

THROATLETS

The word "Throatlets." Used since September 27, 1901.

88,748. REMEDY FOR TUBERCULOSIS. Dwight A. Harrison, Kalamazoo, Mich. Filed July 14, 1902.

TUBERBACILINE.

The word "Tuberbacilixe." Used since March 17, 1902.

88,749. CERTAIN NAMED MEDICAL COMPOUNDS. Edward T. Richards, Chicago, Ill. Filed May 20, 1902.

PINEOLES

The word "Pixoles." Used since 1892.

88,750. LIQUID MEDICINE FOR BLOOD DISEASES. James Le Roux, Toledo, Ohio. Filed June 7, 1902.

The representation of two angels on either side of a curved tube emanating from a heart and connecting with a retort, one end of the tube extending to the mouth of one angel, who is shown as pouring medicine from a bottle, the opposite end of the tube being grasped by the other angel, who is shown as dispensing a liquid flowing therefrom into a receptacle, the retort at the bottom of the circle being represented as catching the impurities which issue from the blood. Used since July 30, 1900.

88,751. BLOOD AND LIVER TONIC. William Jessoph, St. Louis, Mo. Filed Oct. 30, 1901.

Ton-Ka-Wah,

The hyphenated word "Ton-ka-wah" and a portrait of the registrant. Used since May 1, 1900.

88,752. TONIC MEDICINE. McKinley Tonic Medicine Company, Columbus, Ohio. Filed Oct. 14, 1901.

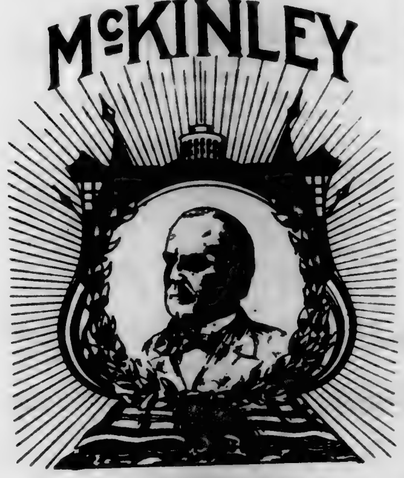

The name "McKinley," associated with a portrait of the late William McKinley, said portrait being arranged in the center of an ornamental border consisting of a wreath, draped flags, radiating rays, and the representation of the dome of the State Capitol building at Columbus, Ohio. Used since October 1, 1901.

88,753. REMEDIES FOR RHEUMATISM AND OTHER SIMILAR INFLAMMATORY DISEASES. Kadelina A. Hardwat, New York, N. Y. Filed June 18, 1902.

The words "Great Eastern," associated with the pictorial representation of a star, an anchor, a bottle, and a jar. Used since June 14 1902.

88,754. REMEDY FOR PILES AND OTHER RECTAL DISEASES. Volney C. Stoddard, Denver, Colo. Filed Apr. 19, 1902.

Three superimposed figures—namely, a pentagon, a triangle, and a quadrilateral having one reentering angle—the pentagon being at the bottom and the quadrilateral at the top, the uppermost figure having the word "INO" in its upper central field and the individual letters "INO" arranged at its respective corners, each being surrounded by concentric circles. Used since April 1, 1902.

88,755. OINTMENT FOR TREATING RECTAL AND SKIN DISEASES. George B. Ainsworth, St. Paul, Minn. Filed May 23, 1902.

The words "The President," and below the same the representation of a hand holding a tube from which is being discharged a stream of ointment, the cap of the tube lying adjacent. Used since May 16, 1902.

88,756. MEDICAL COMPOUNDS USED FOR SKIN DISEASES. J. D. McCabe Company, Hornellsville, N. Y. Filed Feb. 18, 1902.

HOKARA

The word "Hokara." Used since January, 1900.

88,757. DANDRUFF CURE. Reginald Platt, Silver City, N. Mex. Filed Apr. 14, 1902.

Micro-Nit

The hyphenated word "Micro-Nit." Used since December 1, 1901.

88,758. REMEDY FOR TREATMENT OF THE HAIR AND SCALP. The Altheimer Medical Dispensary, Cincinnati, Ohio. Filed May 13, 1902.

PosoFoam

The words "Poso Foam." Used since January 1, 1885.

88,759. REMEDY FOR THE HAIR AND SCALP. The Altheimer Medical Dispensary, Cincinnati, Ohio. Filed May 12, 1902.

FOSO

The word "Foso." Used since January 1, 1885.

88,760. REMEDIAL PASTE FOR BURNS, SCALDS, WOUNDS, AND RUNNING SORES. Sanders & Rice Sisters, Chicago, Ill. Filed Nov. 7, 1900.

The representation of a Greek cross having flames situated in the angles between its transverse members. Used since October 12, 1899.

88,761. ANTISEPTIC DETERGENT DISINFECTANT. Puroline Chemical Company, Boston, Mass. Filed July 14, 1902.

PUROLINE

The word "Puroline." Used since June 20, 1902.

88,762. REMEDIES FOR SPAVIN, RINGBONES, SPLINTS, AND CURBS. Charles A. Silver, Rosemont, N. H. Filed July 8, 1902.

A portrait of the registrant. Used since January 1, 1896.

88,763. VETERINARY REMEDIES FOR CHOLERA. The Bowell & Bircher Manufacturing Company, Rolling Prairie, Ind. Filed May 15, 1902.

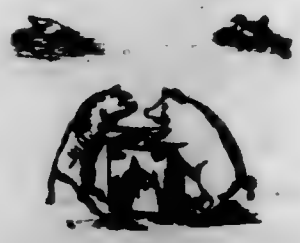

The representation of two pigs, one thin and ill-conditioned and the other fat and sleek, standing erect on opposite sides of a box-support bearing the registrant's present trade-mark, each pig resting one forefoot on the box and advancing the other to touch that of the other pig, and two hens, one small and thin, sitting with drooping wings on a nest, and the other large and plump on a nest overflowing with eggs. Used since March 18, 1902.

88,764. DYEING AND TANNING ASSISTANT. Wilhelm Behrens, New York, N. Y. Filed July 15, 1902.

VEGETALIN

The word "Vegetalin." Used since January 1, 1902.

88,765. FIREPROOF PAINT OR COATING. Chicago Fire Proof Covering Co., Chicago, Ill. Filed June 2, 1902.

ANTI-FLAME

The hyphenated word "Anti-Flame." Used since September 1, 1895

88,766. FIRE-EXTINGUISHER IN POWDER FORM. William H. Scott, Reading, Pa. Filed June 19, 1902.

The word "Pyrex" arranged on the representation of a hollow triangle. Used since January, 1902.

88,767. POLISH FOR METALS. Charles M. Kimball, Winthrop, Mass. Filed Apr. 18, 1902.

A fanciful monogram of the letters "C M K" inclosed in an ellipse. Used since 1896.

88,768. CRACKERS, BREAD, CAKES, AND PUDDINGS AND PIES. Epicure Baking Co., Detroit, Mich. Filed Jan. 24, 1902.

EPICURE

The word "Epicure." Used since February 19, 1901.

88,769. FRUIT-KING CHOCOLATE, CANDIES AND ICE-CREAM, AND RED COLOR. THE GLEN-ARMSTRONG CO., Chicago, Ill. Filed May 10, 1902.

The initial letters "G A C" of the registrant company's name, said letters being arranged in the order named in two intersecting series, with the intermediate letter "A" common to both series and disposed on a background of solid color and in the form of a Maltese cross, the intermediate common letter "A" being at the center of the intersection of the arms of the cross and the terminal letters "G" and "C" of the intersecting series being disposed, respectively, upon the arms of the cross. Used since March, 1902.

88,770. CANDIES, CHOCOLATE, AND PREPARATIONS OF CHOCOLATE AND COCOAS. ZIER, SUCHARD AND COMPANY, Neuchâtel, Switzerland. Filed June 24, 1902.

MILKA

The word "MILKA." Used since January 1, 1901.

88,771. DRIED AND EVAPORATED FRUITS AND VEGETABLES. LOUIS BERN, Dansville, N. Y. Filed May 17, 1902.

APELPI

The word "APELPI." Used since May 1, 1902.

88,772. SODA-WATER AND COMPOUNDS AND EXTRACTS FOR FLAVORING SAME. HANCE BROS. & WHITE, Philadelphia, Pa. Filed June 21, 1902.

PING PONG PUNCH

The words "PING PONG PUNCH." Used since February 1, 1902.

88,773. LAGER-BEER. JOS. SCHLITZ BREWING COMPANY, Milwaukee, Wis. Filed Apr. 11, 1902.

ATLAS

The word "ATLAS." Used since March 1, 1896.

88,774. WHISKY. JAMES BUCHANAN, London, England, and Glasgow, Leith, and Glenlivet, Scotland. Filed Jan. 27, 1902.

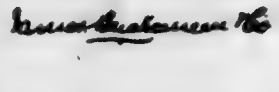

The facsimile signature of the firm-name "JAMES BUCHANAN & Co.," as written by the registrant. Used since June, 1893.

88,775. GIN. JAN HENDRIK HEIJER, Rotterdam, Netherlands. Filed Apr. 23, 1902.

The representation of a corn-flower (*Centaurea*) and the representation of two circular disks or plates, one having thereon a picture of a group of persons and representing one of said persons conferring an award upon some of the others and the other disk having upon it the representation of a wreath. Used since July 1, 1899.

88,776. CIGARS, CHEROOTS, AND CIGARETTES. MARKS BLASHOWER, San Francisco, Cal. Filed July 8, 1902.

The words "LORDS OF ENGLAND" and the pictorial representation of the House of Lords of England in session and a helmet and breastplate. Used since May 1, 1902.

88,777. SCHOOL-DESKS, SCHOOL-SEATS, AND OPERA-CHAIRS. SHERIDAN MANUFACTURING COMPANY, Chicago, Ill. Filed May 19, 1902.

A monogram of the letters "S M Co" inclosed in a circle. Used since May 1, 1902.

88,778. MACHINERY FOR PURIFYING AND SOFTENING WATER. WM. B. SCAIFE & SONS CO., Camden, N. J., and Pittsburg, Pa. Filed June 26, 1902.

38,778.

WE-FU-GO.

The hyphenated word "We-Fu-Go." Used since January 1, 1900.

38,779. INCANDESCENT ELECTRIC LAMPS. Bohemia Electric Co., Cleveland, Ohio. Filed Mar. 11, 1902.

The pictorial representation of the head of a buck inclosed within a circular band, over and beyond which the antlers extend. Used since December, 1901.

38,780. INCANDESCENT ELECTRIC LAMPS. The Columbia Incandescent Lamp Co., St. Louis, Mo. Filed Apr. 30, 1902.

The symbol "W. C. P." surrounded by the letter "C," which is made to form about three-fourths of a circle. Used since April 17, 1901.

38,781. INCANDESCENT ELECTRIC LAMPS. Peerless Incandescent Lamp Co., Cleveland, Ohio. Filed Mar. 11, 1902.

The monogram "F I L" inclosed within the letter "C," which is made to form about three-fourths of a circle. Used since December, 1901.

38,782. INCANDESCENT ELECTRIC LAMPS. Sherman Inc. Lamp Co., New York, N. Y. Filed Mar. 11, 1902.

A head of the shape of the letter "S," back of the middle portion of which and partly covered thereby is the pictorial representation of the sun with beams radiating therefrom. Used since December, 1901.

38,783. ICE-CREAM FREEZERS. Dana & Co., Cincinnati, Ohio. Filed June 2, 1902.

QUEEN

The word "Queen." Used since 1899.

38,784. COOKING STOVES AND RANGES. Arlington Stove Company, Jersey City, N. J. Filed June 25, 1902.

KOOL KITCHEN

The words "Kool Kitchen." Used since May 2, 1902.

38,785. COOKING STOVES AND RANGES. Arlington Stove Company, Jersey City, N. J. Filed June 25, 1902.

COOL COOK

The words "Cool Cook." Used since May 2, 1902.

38,786. RANGE-BOILERS AND HOT-WATER GENERATORS. Thurston Iron Works, Philadelphia, Pa. Filed June 10, 1902.

A monogram of the letters "T I W." Used since May 24, 1902.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

LABELS

REGISTERED AUGUST 12, 1902.

9,362.—*Title:* "FROM MILL TO CONSUMERS." (For Taffeta Silk.) Consumers Silk Mills and Coupons Exchange Co., Newark, N. J. Filed July 9, 1902.

9,363.—*Title:* "PRE-VENT-O." (For Medicine.) The Elite Medicine Co., St. Joseph, Mo. Filed July 21, 1902.

9,364.—*Title:* "SUPERIOR DENTAL FINISHING STRIPS." (For Dental Finishing-Strips.) Drs. F. Messerschmitt & C. C. Bachman, Rochester, N. Y. Filed June 30, 1902.

9,365.—*Title:* "DUNTON'S DENTAL CHEWING GUM." (For Dental Chewing Gum.) Walter L. Dunton, Boston, Mass. Filed July 21, 1902.

9,366.—*Title:* "COUNCIL BRAND." (For Cigars.) Edgar Travis, Fetterman, W. Va. Filed May 13, 1902.

9,367.—*Title:* "PERADENA." (For Cigars.) Chas. Stutz, a Firm, New York, N. Y. Filed July 19, 1902.

9,368.—*Title:* "WESTERN JEWEL." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,369.—*Title:* "LA PRECIADA." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,370.—*Title:* "FULL LEAF." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,371.—*Title:* "ROSE OF KANSAS CITY." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,372.—*Title:* "WESTERN MONARCH." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,373.—*Title:* "U. S. BABY." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,374.—*Title:* "BABY RIBBON." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,375.—*Title:* "ARCTIC MAID." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,376.—*Title:* "EL LUPUS." (For Cigars.) Schmidt & Co., New York, N. Y. Filed July 18, 1902.

9,377.—*Title:* "SALVATOR." (For Beer.) Terre Haute Brewing Co., Terre Haute, Ind. Filed July 21, 1902.

9,378.—*Title:* "PURITY BAKING POWDER." (For Baking-Powder.) David J. Hille, Castlerock, Wash. Filed July 19, 1902.

9,379.—*Title:* "PERFECT WATER ICE OR SHERBET POWDER." (For a Powder.) O. J. Weeks & Co., New York, N. Y. Filed May 20, 1901.

9,380.—*Title:* "LOCKYER'S CHILI-PEKA SEASONING." (For Seasoning.) Frank H. Lockyer, San Francisco, Cal. Filed July 17, 1902.

9,381.—*Title:* "MARYLAND LEADER." (For Canned Tomatoes.) Phillips Packing Co., Cambridge, Md. Filed June 26, 1902.

9,382.—*Title:* "IVORY." (For Paint.) Conger, Kahn & Gibbs Co., Ltd., Shreveport, La. Filed June 27, 1902.

9,383.—*Title:* "DIRECTIONS FOR APPLYING BARRETT'S WEATHERPROOF ROOFING." (For Roofing Material.) The Barrett Manufacturing Company, Cincinnati, Ohio. Filed November 23, 1901.

PRINTS

REGISTERED AUGUST 12, 1902.

541.—*Title:* "'RELDA' SECRET PROCESS." (For Taffeta Silk.) Consumers Silk Mills and Coupons Exchange Co., Newark, N. J. Filed July 9, 1902.

542.—*Title:* "THE SPECIAL." (For Overcoats.) Kuh, Nathan & Fischer Company, Chicago, Ill. Filed May 24, 1902.

543.—*Title:* "THE BEAUCAIRE." (For Overcoats.) Kuh, Nathan & Fischer Company, Chicago, Ill. Filed May 24, 1902.

544.—*Title:* "THE PRINCE HENRY." (For Overcoats.) Kuh, Nathan & Fischer Company, Chicago, Ill. Filed May 24, 1902.

545.—*Title:* "THE DIPP SACK." (For Sack Suits.) Kuh, Nathan & Fischer Company, Chicago, Ill. Filed July 21, 1902.

546.—*Title:* "DEWAR'S SCOTCH WHISKY." (For Whisky.) John Dewar & Sons, Limited, Perth and Edinburgh, Scotland; Bristol, Manchester, and London, England, and New York, N. Y. Filed July 17, 1902.

547.—*Title:* "H. W. BARKER'S COUGH CATARRH CONSUMPTION REMEDY." (For Medicine.) H. W. Barker, Elbow Lake, Minn. Filed June 16, 1902.

548.—*Title:* "SOZODONT." (For Dentifrice.) Hall & Ruckel, New York, N. Y. Filed June 26, 1902.

549.—*Title:* "THE MODERN LAUNDRESS." (For Soap.) Kaufmann & Strauss Co., New York, N. Y. Filed June 20, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

FUNK *v.* MATTESON *v.* HAINES.

Decided November 15, 1901.

1. INTERFERENCE—ORIGINALITY—BURDEN OF PROOF.

Where it is shown that H. independently built and operated a machine and filed an application for a patent on the same, H. must be presumed to be an original inventor, and it is incumbent upon F., who alleges prior disclosure to H., to establish his allegation by clear proof.

2. SAME—TESTIMONY AT VARIANCE WITH PRELIMINARY STATEMENT IS INADMISSIBLE.

A party is confined in his proofs to the dates set up in his preliminary statement as to conception and disclosure, and evidence tending to establish an earlier date is inadmissible. (*Cross v. Phillips*, 87 O. G., 1899.)

3. SAME—ORIGINALITY—PROOF OF DISCLOSURE.

When H. is the only party to establish an actual reduction to practice and when the testimony in behalf of F. not only does not support the allegation of F. that the invention was disclosed through his agent to H., but is quite persuasive that the invention disclosed to H. related to another structure, *Held* that priority of invention should be awarded to H.

APPEAL from Examiners-in-Chief.

HARVESTERS.

Application of Charles M. Funk filed June 12, 1900, No. 19,992. Application of Walter C. Matteson filed December 18, 1899, No. 740,737. Application of George W. Haines filed December 29, 1898, No. 700,644.

Messrs. Munn & Co. for Funk.

Messrs. Dewey, Strong & Co. for Matteson.

Mr. T. Walter Fowler for Haines.

MOORE, *Acting Commissioner:*

This is an appeal from the decision of the Examiners-in-Chief awarding priority of invention to Haines on the following issue:

1. In a sidehill-harvester, the combination with a main frame, of supporting-wheels, bearings for the wheels movable relative to the frame, screws connecting the main frame and the bearings for changing the vertical positions of the wheels relative to each other, and means for actuating said screws.

2. A thresher supported on wheels placed on opposite sides of it and having screws connected to the same combined with means to turn said screws together to move the said wheels simultaneously in opposite vertical directions whereby the thresher is maintained in a vertical position while working on a hillside.

3. In a traveling harvester and in combination with a threshing-machine frame thereof, bearing-wheels upon opposite sides of said frame having independent shafts and journal-boxes therefor, guides in which said journal-boxes are movable up or down with relation to the ground, vertical screw-shafts connecting with the wheel-boxes, mechanism by which the journal-boxes of one wheel are moved in the opposite direction to and in unison with those of the other wheel and mechanism for reversing said movement.

The Examiner of Interferences rendered a decision awarding priority of invention to Funk.

Haines, Matteson, and Funk, respectively, filed their allowable applications on December 29, 1898, December 18, 1899, and June 12, 1900, and they stand, therefore, in the order named as to their dates of constructive reduction to practice.

The lower tribunals concur in the finding that the award of priority depends upon the determination of the question whether or not the junior party, Funk, disclosed the invention of the issue through his agent Hughes to Haines before the date of Haines's proven conception. With this finding I also concur.

They differ, however, in their determination of this question. That the award of "priority of invention" depends on the question of originality is clear from the evidence presented by the several parties. The testimony has been carefully analyzed by the Examiner of Interferences and by the Examiners-in-Chief, and it is therefore unnecessary to again analyze that portion of the same which relates to the individual efforts of the parties Haines and Matteson, inasmuch as the findings of the lower tribunals are concurred in as to the following points:

Haines is the only party to prove an actual construction of an operative machine. He is entitled to an actual reduction to practice not earlier than the month of October, 1898, and a date of conception and disclosure of the invention not earlier than June 1, 1898. Matteson cannot be given a date of conception and disclosure earlier than September, 1898. He never actually reduced the invention to practice. He is only entitled to his date of filing, December 18, 1899, for a constructive reduction to practice.

Matteson having conceived and disclosed the invention after the proven date of Haines's conception and disclosure, and also being later by a year, less eleven days, in filing his allowable application and consequent constructive reduction to practice, cannot prevail over Haines. Besides this, even though it could be held, and I am convinced that it cannot, that Matteson conceived and disclosed his invention to his father, D. C. Matteson, in the year 1897, which is earlier than Haines's date of conception and disclosure, Matteson clearly would not be entitled to an award of priority over Haines, for the reason that he is guilty of the charge of lack of diligence in constructively reducing his invention to practice, Haines in the meantime having

entered the field and reduced his invention to practice. Matteson did nothing from his date of conception and disclosure to the date of his constructive reduction to practice on December 18, 1899, except to make some drawings, a model, and some patterns and castings for a full-sized machine. These castings were afterward broken up, and the machine was never completed. Matteson cannot be held to have shown diligence from the time of his conception and disclosure to the date of his constructive reduction to practice, which date is eleven days short of one year after the date of the constructive reduction to practice by Haines.

Funk never made an actual reduction to practice by his own efforts. He alleges that he conceived the invention, that he disclosed the same to others, more especially to one Hughes, who as his agent disclosed and explained the invention to Haines before Haines had conceived the same, and that Haines was not an independent inventor, and therefore that all of Haines's subsequent actions inure to the benefit of Funk. In other words, it is claimed by Funk that the complete and operative machine which it is clearly proven was built and successfully operated under the direction of Haines was not the invention of Haines, but was the invention of Funk.

Haines must be presumed to be an original inventor of the machine which he built and operated and for which he filed an application for a patent. Funk alleging otherwise, it is incumbent upon him to show it by clear proof.

The invention which is covered by the counts of the issue relates to a specific improvement in the wheel structure of a carriage for an agricultural implement. The wheels are so mounted on the carriage-body that they may be adjusted vertically with relation to each other. A structure permitting such an adjustment of wheels permits of its use either on hillsides or level ground. In either instance the mechanism upon the carriage-frame between the wheels is always kept level whatever be the nature of the ground over which the carriage is drawn. A type of the broad invention is disclosed in the patent to Holt, No. 496,311, granted April 25, 1893, and was well known to the parties to this interference before they filed their present applications. It is brought out in the evidence that it was the purpose of the parties to this interference to improve upon the structure disclosed in this patent to Holt.

Count 1 differs from the Holt structure in that screws are connected to the main frame and the bearings for the wheels for changing the vertical position of the wheels relative to each other. Means are provided for actuating said screws.

Count 2 differs from count 1 in that the means for actuating the screws is so constructed that the wheels are moved "simultaneously in opposite vertical directions."

The following patents have come to my knowledge which belong to an analogous art to the invention of the issue:

No. 295,788, March 25, 1884, McNary, Plows, wheel.

No. 499,853, June 20, 1893, Pirch, Plows, sidehill.

The devices shown in these patents are agricultural implements the carriages of which are so constructed that the machine may be used either on sidehills or level ground and in both instances the mechanism kept level at all times.

These machines are not only *analogous* machines, but they belong to the *same* broad art—that of agricultural implements—and they are constructed so that they are used for the *same* purpose. Though the agricultural machinery supported by the carriage-body is specifically different, the structure of the carriage is the same, and the uses to which it is put are the same.

For these reasons count 1 is anticipated by the patents to McNary and Pirch, and count 2 is anticipated by the patent to Pirch.

The patent to Warren, No. 225,668, March 16, 1880, Plows, wheels, may also be referred to as having another specific means for operating the wheels of the carriage in the same way for the same purpose.

After the termination of this interference the Examiner is directed to reject the claims corresponding to counts 1 and 2 in the applications involved in this interference on the state of the art above referred to.

Count 3 differs from count 2 by including in the combination the following elements: "guides for the journal-boxes" and "mechanism for reversing" the movement of the wheels. The combination of elements covered in count 3 is not found in the art above referred to; neither is it found in the structure disclosed in any of Funk's exhibits (1, 2, 3, 4, 5, 6, or 7) which have been placed in evidence by Funk to show a disclosure of the invention by him through his agent Hughes to Haines. Haines must therefore be held to be the prior inventor as between either of the other parties to this interference of the invention defined in count 3.

It remains now to consider the evidence relating to Funk's alleged disclosure to Haines and to determine whether or not Funk has maintained said allegation of disclosure to Haines of the invention defined in counts 1 and 2.

Funk testifies that he conceived the invention defined in the issue in—

the summer of 1893 while I (he) was to work on John Hoffman's place. (Answer 3.)

This statement is not corroborated by any witness. The harvester that he was then running was built on the lines of the Holt patent above referred to. He testifies that the *first* sketch made by him was on a leaf from a blank book. This leaf shows page number 128. It is afterward introduced in evidence as Funk's Exhibit 7. Funk's testimony is as follows on this point:

Q. 10. Did you ever make a sketch of that invention?
A. Yes; I made something that some one else might make a sketch from. There is the first sketch I ever made of it.
(Witness refers to a pencil-sketch on a leaf from blank book, No. 128, showing the page which he says is the first sketch he ever made of it.)
Q. 11. Did you ever disclose this invention of yours to any other person?
A. Yes, I did.
Q. 12. To whom?
A. To Severance. I showed the sketch to Severance, and to J. L. Hughes, too.

Q 13. State, if you can remember, about what time you made that sketch or showed it to Severance and Hughes.
A. The one to Severance and Hughes? I made it along about—when this sketch was made in full, the way it is now, it was along somewheres about the 1st of May, 1898, but then we had talked with Severance before that, and directed him in another sketch of this same thing, but never showed it to him in full. There was some things that he didn't know how it would work, and I showed him those.

It will be noted that Funk states in answer to question 10 that the sketch on page 128 is the first sketch he ever made; in answer 12, that he "showed the sketch to Severance," and in answer 13 that the sketch was made "about the 1st of May, 1898." The evidence as to this sketch on page 128 (Exhibit 7) and the sketch on page 170 (Exhibit 5) is very important, as they are the only two sketches which can be held to be disclosures of counts 1 and 2. Neither of them shows a disclosure of count 3. No mechanism for reversing the movement of the wheels is shown in the figures shown in Funk's Exhibits 5 and 7.

Funk further testifies as follows:

Q. 16. Did Severance ever make a sketch of this himself for you?
A. Yes.
Q. 17. Do you remember when he made the first sketch?
A. He made it along the first, second, or possibly the third of May, 1898, when he made that.
Q. 18. What was done with that sketch?
A. It was mailed to J. L. Hughes, to Stockton, California.
Q. 19. Who made that sketch?
A. Severance.
Q. 20. What did you mail it to him for?
A. I had a proposition from Mr. Hughes from the Haines-Houser people, to get them up a sidehill-machine.
Q. 21. What was that proposition?
A. If I got them up a sidehill-machine I was to have the exclusive right for Washington and Oregon.
Q. 22. Did you ever work on any other device before you got up this?
A. Yes; I had worked the same that Hughes had.
Q. 23. Ever made any sketch or drawing of this?
A. Yes.
Q. 24. What did you do with that?
A. I have got one of them yet.
Q. 25. Did you ever send one of them down to the Haines-Houser people?
A. Yes; I sent one down.
Q. 26. Was that before you got up this invention?
A. Yes; before I sent them this one.
Q. 27. You may look at these sketches and see whether these are the sketches that you sent them.
A. Yes; this is the one on cloth that I sent down to the Haines-Houser people.
Q. 28. This drawing is the one that you sent down to the Haines-Houser people?
A. Yes; to Stockton, California; but I think I sent it to J. L. Hughes, because he was their agent, and I was familiar with him but not with the company.
Q. 29. You sent it to him at California, to Stockton, California, to be shown to the Haines-Houser people?
A. Yes.
(Counsel for Funk offers in evidence drawings referred to, which are marked "Funk's Exhibit 1" and "Funk's Exhibit 2," respectively.)
Q. 35. You said that Severance made a sketch of this invention of yours, and you inclosed it in a letter and sent it to Hughes at Stockton, California?
A. Yes, sir.
Q. 36. Who wrote that letter?
A. Severance first wrote the letter in lead-pencil and then his daughter wrote it in ink.
Q. 37. And that, you think, was along about the first of May.
A. It was the 1st, 2d, or possibly the 3d of May, 1898.
Q. 38. Of 1898?
A. Yes, 1898.
Q. 39. Do you know whether Severance made any more sketches of that machine or any part of it?
A. Yes, he made some more.
Q. 40. What did he make it in?
A. In the same book that this here came out of.
Q. 41. The old blacksmith's book? This book?
A. Yes.
Q. 42. See if you can find any more sketches in that old book.
A. That sketch there; he made that.
Q. 43. Where?
A. On page 168, he made that. He made this one, too.
Q. 44. Another sketch at page 170?
A. Yes.
Q. 45. Another little sketch at page 171?
A. Yes; that shows where the joints was, and the upper and lower boxes.
(Counsel for Funk offers in evidence pages 168, 169, 171 and 128 of the old book, belonging to A. W. Severance, showing sketches. Received and marked "Funk's Exhibits 4, 5, 6 and 7.")
* * * * * * *

Q. 48. Did Hughes ever report to you, what he had done when he received that sketch?
A. He showed it to Haines, and Haines made a drawing of it later on, but said it was too late then for the harvest of 1898. He said he didn't believe it would work well—that the jack-screws would cramp. That is what Mr. Hughes told me when he came back.

From this it is clear, according to Funk's statement, that he made sketch No. 7 and that Severance made sketches Nos. 4, 5, and 6 and that Severance made *another* sketch, which was sent to Hughes at Stockton, Cal. These facts are corroborated by Severance, who testifies as follows:

Q. 21. Do you remember ever making another sketch, shortly after that, of Mr. Funk's device?
A. Yes, sir.
Q. 22. What did you do with that sketch?
A. Put it into a letter and sent it to Hughes.
Q. 23. Who wrote the letter?
A. My daughter.
Q. 24. Where was it mailed to; do you remember?
A. To Stockton, California.
* * * * * * *
Q. 33. Do you remember about what date it was that you mailed that letter to Mr. Hughes?
A. It was very close to the first of May, 1898.
Q. 34. May, 1898?
A. Yes, sir.

It may therefore be said to be proven that Funk disclosed the invention disclosed in counts 1 and 2 to Severance the early part of May, 1898, and that a sketch of something invented by Funk which was drawn by Severance was mailed to Hughes at Stockton, Cal., about May 1, 1898. With this sketch was inclosed a letter (Funk Exhibit 14) copied by the daughter of Severance, and the two were mailed to Hughes.

From the testimony of Funk and Severance it cannot be determined what this sketch sent on or about May 1, 1898, actually disclosed. All that can be determined from this testimony is that a sketch of some nature was sent.

From the above-quoted testimony it is certain that neither of the Exhibits 4, 5, 6, and 7 were sent to Hughes by Funk. This fact is stated to be true by Funk in his testimony. He testifies:

X-Q. 66. Were these Exhibits 4, 5, 6 and 7 ever sent to Mr. Hughes, while he was in Stockton?
A. No.
X-Q. 67. Did he ever see them?
A. Not that I know of.

It is also certain that Exhibit No. 2 was sent to Hughes at Stockton, Cal., in order to show it to Haines. The letter which was sent to Hughes, accompanied by some sketch, although it is not clearly stated what sketch, except that it is claimed that the sketch disclosed the issue and was made by Severance, reads as follows:

WALLA WALLA, *May 2, 1898.*

Mr. J. L. HUGS, *Stockton, Cal.*

Find enclosed drawing to overcome the sagment patent, you will see by the chain passing over shieve on top of circle-frame and down to the slide box that caries the main axel and through a shieve and back to top of circle-frame there to be held by tention spring on eyebolt and the same below as above.
The box or slide is to be webed to keep it in place and two rollers on back of slide to relieve the friction.
We think it would be best to key the shaft solid in the slides and let the drive wheel turn in place of the shaft.
The folks are all well.
Yours respectfully,
C. M. FUNK.

It is impossible to conceive that this letter describes the invention of the issue—such, for instance, as might be shown in a sketch similar to Funk's Exhibit 7. This letter would seem to more nearly describe a structure built upon the lines of the Holt patent or upon the lines of the device shown in Funk's Exhibit 2. This letter is dated May 2, 1898.

The Examiner of Interferences states with reference to this letter:

Counsel for Haines has attempted in his argument to show that no device such as called for by the issue is indicated in this letter and consequently it can have no weight. The letter was produced in evidence in the presence of counsel for Haines without objection, nor was any cloud cast upon it during cross-examination. Counsel for Funk has properly given an oral explanation of the bearing of this letter upon the device as shown in Funk's application.

The fact that the letter was introduced in evidence in the presence of counsel for Haines and without his objection is not indicative of the fact that the disclosure in the letter is admitted by Haines to be a disclosure of the issue. That counsel for Haines did not make objection to this piece of evidence on the ground of irrelevance to Funk's case is no reason that the letter is admitted to be relevant. It is not incumbent on Haines to assist Funk in proving his case. Though this letter is not conclusive, it throws strong doubt upon the matter sought to be proved—namely, that the sketch inclosed with this letter and duly forwarded to Hughes disclosed anything similar to sketch No. 7. On the other hand, it seems much more likely that the sketch accompanying this letter showed a structure similar to the Holt patent or the structure disclosed in Funk's Exhibit 2. The Examiner of Interferences states that Funk—

has properly given an oral explanation of the bearing of this letter.

No proper explanation of this letter is found in the record or the briefs filed in this case.

Hughes testifies that he received this letter—that it accompanied the "Funk drawing:"

Q. 27. Is this letter dated at Walla Walla, May 2d, 1898, addressed to you, the letter which you received from Walla Walla, and which contained that Funk drawing?

A. Yes, that is the letter.

(Counsel for Funk introduced in evidence a letter dated Walla Walla, May 2, 1898, addressed to J. L. Hughes, Stockton, California, and signed C. M. Funk. Received in evidence, and marked "Funk's Exhibit No. 14.")

There is no definite testimony on the part of Funk which shows what the invention was that was disclosed by Hughes to Haines. The testimony on the part of Funk not only fails to prove his allegation, but tends to throw a doubt on the fact that the invention of the issue was disclosed to Haines. It is quite clear that some structure was shown by Hughes to Haines, and from the letter, Exhibit No. 14, which accompanied the sketch the probabilities are that this disclosed structure was not the structure defined in counts 1 and 2 of the issue.

Hughes testifies:

Q. 14. Do you remember seeing a sketch of Funk's invention, something similar to this drawing here marked Funk's Exhibit 7, at any time, embracing these same ideas?

A. Yes, I saw that, and I presume that I saw the man that drew it.

Counsel for Funk contends that Hughes's statement that he saw *that* means that he saw sketch No. 7. In the brief filed by counsel for Funk it is stated on page 4:

It appears from the foregoing that Exhibits 4, 5, 6 and 7 were made in April and May of 1898, were *seen by Mr. Severance at that time;* in fact, that Severance aided in making most of the sketches, and that *Exhibit 7 was s en by Mr. Hughes,* and that Hughes took a sketch involving the invention to Mr. Haines, and that a further sketch, more clearly illustrating the invention, was sent to Hughes by Funk and shown by Hughes to the party in May, before the date of conception accorded to Haines.

This contention is not founded upon the evidence. Funk in his cross-examination states that Hughes never saw Exhibit 7. (X-Q. 66.) Not only is this explicitly stated by Funk, but it clearly appears to be a fact from the direct testimony of Funk and Severance.

In view of the testimony of Funk and Severance it cannot be held that sketch No. 7 was ever seen by Hughes. The only testimony to support such a holding is the very loose language used by Hughes in his answer to question 14.

The preponderance of evidence as to this point is in favor of Funk. The date of May 12, 1898, alleged by Funk in his preliminary statement as the date on which he made a drawing, is the earliest date that can be given to the sketch No. 7, the *first* sketch made by Funk. (*Cross* v. *Phillips*, 87 O. G. 1399.)

The letter accompanying the sketch which was made by Severance and sent to Hughes is dated May 2, 1898. The sketch which was sent must therefore have been made by Severance earlier than May 2, 1898. The sketches 4, 5, and 6 were made by Severance on the same evening. (Funk X-Q. 29.) The sketch No. 7 was made about the same time. (Q. and A. 5 and Q. and A. 6, Severance's testimony.)

It is not proven that any sketch showing the screw-rod construction—*i. e.*, the invention of the issue—was made by Funk or by Severance under his direction before the day on which sketches 3, 4, 5, 6, and 7 were made.

It is shown, however, that a sketch of a construction on the lines of the Holt machine or on the lines of Funk's Exhibit No. 2 was made earlier than May 2, 1898, and this is another reason to indicate that the letter of May 2, 1898, refers to a structure more nearly resembling the Holt construction or the construction Exhibit No. 2 than it does the invention of the issue.

The testimony on the part of Funk not only does not prove that Funk through Hughes disclosed the invention of the issue to Haines, but is quite persuasive that the invention really disclosed by Hughes to Haines related to a structure similar to the Holt machine or to that shown in Funk's Exhibit No. 2.

These conclusions are strengthened not only by the positive denial by Haines that the invention of the issue was ever disclosed to him by Hughes, but by his affirmative statement that the structure shown him by Hughes related to improvements on the Holt machine.

Haines's witnesses, Kincaid and Martyn, also testify that Hughes never said anything to them of the screw devices for adjusting the wheels when he was with them, and this was at the time of the alleged disclosure to Haines. Speaking of the testimony of Haines, Kincaid, and Martyn, the Examiners-in-Chief well say:

Each of these three testify that Hughes never spoke to him of any screw device. Yet Hughes states that he talked for days with Haines. It seems strange, that friendly as he was to all of them and to their company, that he did not also speak with the others of the screw device. He was there more than a week while his own device was being made and tried and Kincaid was with him much of the time. It is incredible that if he had this device that all of these men should not have heard of it, all being friendly and all disposed to help anything along which would help the company.

It is undoubtedly true that Funk had a conception of the issue and that when he saw the machine which was built by Haines it seemed to embody some of his ideas. That the two men conflicted in their inventions is not only probable but natural. This is a daily occurrence, as shown by the records of the Interference Division in this Office.

The allegations of Funk that the efforts of Haines were not independent, but grew out of a disclosure by him (Funk) to Haines, are not proven. Not only are the allegations not proven, but it seems quite clear that what Hughes really did show to Haines did not relate to the invention of the issue, but to some structure similar to the Holt machine.

Priority of invention is awarded to George W. Haines.

The decision of the Examiners-in-Chief is affirmed.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 8. TUESDAY, AUGUST 19, 1902. PRICE—$5 per year.

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Trade-Marks	44—No. 38,787 to No.	38,830, inclusive.
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Prints	3—No. 550 to No.	552, inclusive.
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Total issue	539	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	1		Nebraska	6	
Alaska Territory	1		Nevada	1	
Arizona Territory			New Hampshire		
Arkansas	3		New Jersey	17	3
California	7	1	New Mexico Territ'y	2	
Colorado	4		New York	58	11
Connecticut	14	2	North Carolina	1	
Delaware			North Dakota		
District of Columbia	4		Ohio	38	6
Florida			Oklahoma Territ'y		
Georgia	2	1	Oregon	2	
Hawaii Territory	1		Pennsylvania	69	3
Idaho			Philippine Islands	1	
Illinois	46	7	Rhode Island	10	
Indian Territory			South Carolina	1	
Indiana	10		South Dakota	1	
Iowa	8		Tennessee	3	1
Kansas	5		Texas	7	
Kentucky	2		Utah		
Louisiana	1		Vermont	1	
Maine	3	1	Virginia	2	3
Maryland	5		Washington	2	
Massachusetts	40	10	West Virginia	1	
Michigan	12	3	Wisconsin	7	
Minnesota	11		Wyoming	1	
Mississippi					
Missouri	14	2	Total to citizens of the United States	416	54
Montana	3				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina			Netherlands	1	
Austria-Hungary	2		Newfoundland		
Belgium			New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	4		Peru		
Cape Colony			Portugal		
Chile			Russia		
China			Santo Domingo		
Cocos Island			Scotland	3	
Colombia	1		South African Republic		
Cuba			South Australia		
Denmark			Spain		
Egypt			Sweden		
England	21	3	Switzerland		
France	6		Uruguay		
Germany	18	2	Victoria		
Guatemala			Western Australia		
India	1				
Ireland					
Italy	3		Total to citizens of foreign countries	60	5
Japan					

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5. Patents Nos. 12,480 to 99,999.
6. Patents Nos. 100,000 to 182,314.
7. Patents Nos. 182,315 to 284,999.
8. Patents Nos. 285,000 to 350,999.
9. Patents Nos. 400,000 to 486,999.
10. Patents Nos. 500,000 to 579,999.
11. Patents Nos. 580,000 to 639,999.
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Classification Bulletin.

CLASSIFICATION BULLETIN No. 7, containing the revision made during the months of May and June, 1902, has been published. Price, ten cents.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business August 12, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	In arrears—Under one month.			
258	X. Carriages and Wagons	July 31	July 28	55
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	July 25	July 31	46
106	II. Farm Products, etc., Lubricators, Presses, etc.	July 19	July 19	137
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	July 14	July 29	135
246	I. Tillage, etc., and Fences	July 14	July 7	338
30	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	July 14	July 5	356
	Between one and two months.			
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	July 5	July 21	246
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	July 3	July 10	195
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	June 30	July 12	282
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 30	July 1	256
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	June 27	July 16	260
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	June 27	July 15	322
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	June 27	July 12	177
223	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	June 25	July 15	146
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	June 25	July 1	511
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 24	July 14	278
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	June 21	June 30	427
218	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	June 17	July 8	230
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	June 16	July 3	287
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	June 14	July 14	338
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	June 14	July 8	304
192	XXIX. Wood-Working Machines, Coopering and Roofing.	June 13	June 30	202
123	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 13	June 25	245
109	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 12	July 5	297
	Between two and three months.			
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	June 9	July 7	366
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	June 9	July 5	200

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	June 4	June 11	402
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	June 2	May 29	419
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	May 24	May 17	363
248	XVIII. Steam-Engineering, etc.	May 19	May 16	545
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	May 17	June 12	512
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 16	June 12	732
91	XVI. Telegraphy and Telephony	May 16	May 21	335
92	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 16	May 20	469
	Between three and four months.			
109	XXII. Fire-Arms, Ordnance, Navigation.	May 10	June 23	198
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	May 10	May 10	627
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 1	May 26	629
	Between four and five months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Mar. 29	June 11	527

Total number of applications awaiting action 12,354

	Under one month.			
*Designs		Aug. 4	Aug. 6	35
†Trade-Marks		July 2	Aug. 4	187
‡Labels and Prints		July 8	Aug. 7	14

Photographic Copies of Drawings.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 1, 1902.

The Patent Office is now prepared to furnish black line on white ground copies of any unbound drawing, foreign or domestic, which may be in its possession, instead of the blue-prints heretofore furnished. Only the 7x11 (patent) size and the full or 10x15 size prints will hereafter be furnished, at 15 and 25 cents per sheet, respectively.

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When ordering copies of foreign patent drawings, either the serial number of the applications in which they were cited as references or the class and subclass where they may be found must be given. The title of the invention or the number of the division will not be sufficient. Bound volumes cannot be used for making prints. Failure to give the fullest data whereby the mounted drawing may be found will result in delay and unnecessary correspondence.

The work will be much facilitated if a separate order be made for each drawing. The Office will furnish, gratuitously, blanks for this purpose on request.

As a result of abolishing the small (5x8) size the requirement that duplicate prints must be ordered in certain cases will no longer be enforced. The requirement that less than all the sheets of a case will not be printed unless there is already a full set in the file will not be insisted upon; but applicants or attorneys are strongly urged to file a set of prints or order them to be made by the Office at the time of filing an application. Such procedure will save delay later if correction of the drawing is desired or required.

F. I. ALLEN,
Commissioner.

PATENTS

GRANTED AUGUST 19, 1902.

707,068. NON-REFILLABLE BOTTLE. EDWARD I. ALLEN, Beaumont, Tex. Filed Jan. 31, 1902. Serial No. 92,659. (No model.)

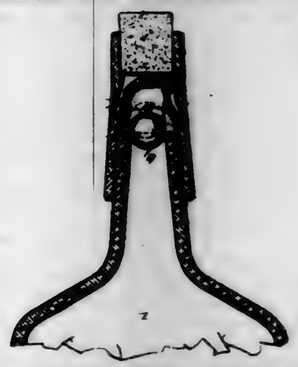

Claim.—An attachment for bottles provided at its bottom with a neck-receiving socket and composed of inner and outer shells, the outer shell being extended above the inner shell to receive a cork, and the inner shell being closed at the top and provided with a laterally-extending spout, substantially as described.

707,069. GLOVE. JOHN C. ALLEN, Gloversville, N. Y. Filed May 3, 1902. Serial No. 105,903. (No model.)

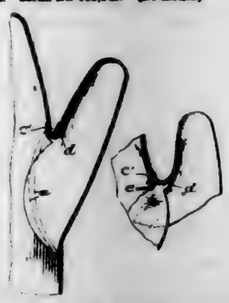

Claim.—In a glove, a body-blank having a stitching-tongue projecting therefrom and integral therewith and a thumb-blank having a stitching-tongue integral therewith and underlapping the body-blank and securing means, substantially as described.

707,070. GARMENT-SUPPORTER. DYRUS L. BADGER, Columbus, Ohio. Filed Jan. 27, 1902. Serial No. 91,269. (No model.)

Claim.—1. In a garment-support, the combination with the slip-body 1 having a slot in its forward member and a bar intersecting said member, of a lever having an enlarged head provided with substantially keyhole-shaped openings adapted to receive said bar as described and hooks projecting from said lever-head, substantially as specified.

2. In a garment-support, the combination with a slip-body 1 having a slot in its forward member and a bar intersecting said slot, of a lever 4 having its head portion provided with inwardly-projecting side flanges or wings 5, the latter having oppositely-located substantially keyhole-shaped openings therein to receive said bar and hooks projecting inwardly from the base of said lever-head, substantially as specified.

707,071. PNEUMATIC TIME-LOCK FOR PNEUMATIC-TUBE SYSTEMS. ROBERT C. RATHBONE, Philadelphia, Pa. Filed Oct. 11, 1900. Serial No. 32,631. (No model.)

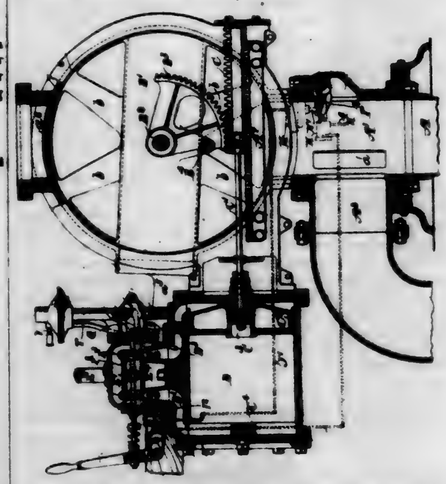

Claim.—1. In a pneumatic-tube system, a pneumatic cylinder and piston actuating a movable device forming part of the system, a lock for holding said movable device in one position, a pneumatic time-escapement device arranged to withdraw the said lock after the admission of compressed air to the escapement device, a source of air-supply having connections to the cylinder and escapement aforesaid and means for opening said connections to the source of supply or to exhaust.

2. In a pneumatic-tube system a pneumatic cylinder and piston actuating a movable device forming part of the system, in combination with a part leading to one end of the cylinder, a pneumatic time-escapement, a part leading thereto, a valve controlling the connection of said parts with a source of air under pressure and with an exhaust so that air is admitted to and exhausted from one end of the cylinder and to and from the escapement during the same positions of the valve, and a locking device actuated by said time-escapement.

3. In a pneumatic-tube system a pneumatic cylinder and piston actuating a movable device forming part of the system, in combination with a port leading to one end of the cylinder, a pneumatic time-escapement, a port leading thereto, a valve controlling the connection of said ports with a source of air under pressure and with an exhaust so that air is admitted to and exhausted from one end of the cylinder and to and from the escapement during the same positions of the valve, and a locking device actuated by said time-escapement and arranged to engage and prevent a second movement of the valve to admit air to the port for a determined time.

707,072. WASHING-MACHINE. THOMAS H. C. BEALL, Cicero, Ind. Filed Apr. 19, 1902. Serial No. 103,749. (No model.)

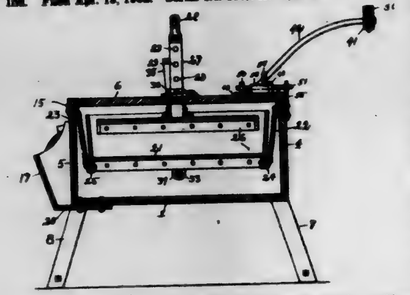

Claim.—1. In a washing-machine the combination of an oblong tank, a hinged cover thereon, a presser-receptacle located in said tank and provided with hangers 33 and clips 34 and 25, springs 22 and 23 secured to the ends of the tank and to the said clips, a presser rigidly suspended from said cover and extending into the presser-receptacle, a shaft mounted in said hangers, yokes 35 and 36 pivotally connected with said shaft and extending over the sides of the tank, said yoke being provided with axles at their outer ends, springs connected to said axles and to said tank, and a pair of arms pivotally connected to said axles and to said tank and connected at their outer ends by a handle.

2. In a washing-machine the combination of an oblong tank, a presser-receptacle in said tank provided with hangers 33, springs 22 and 23 attached to the upper edge of the tank and the lower part of the receptacle, the shaft 34 mounted in said hangers and extending across the under side of the presser-receptacle, a presser extending into the presser-receptacle, means for vertically adjusting said presser and means for vertically reciprocating said shaft.

3. In a washing-machine the combination of an oblong tank, a hinged cover thereon, a presser-receptacle located in said tank and provided with hangers 33 and clips 34 and 25, springs 22 and 23 secured to the ends of the tank and to the said clips, a shaft mounted in said hangers, yokes 35 and 36 pivotally connected with said shaft and extending over the sides of the tank, said yokes being provided with axles at their outer ends, springs connected to said axles and to said tank, a pair of arms pivotally connected to said axles and to said tank and connected at their outer ends by a handle, a presser in the presser-receptacle, the post 27 secured to presser 26 and extending upward through and beyond the cover 6 and means whereby said post may be secured to the cover at the point desired, all substantially as shown and described.

707,078. FOLDING BOX. ALEXANDER W. BERRY, Bayonne, N. J. Filed May 20, 1901. Serial No. 61,091. (No model.)

Claim.—1. A box comprising a foldable blank formed of a base, sides, and partially-closed top, all connected, and normally, in the unfolded condition, open at either end, and a supplemental base secured to the base of the foldable body and projecting beyond the same; and the upper members of the foldable body being provided at their normally open ends with flaps adapted to be interengaged.

2. A box comprising a blank formed of a bottom, two sides and a top portion comprising a partial closure, the said top portion being slitted centrally to form two hinged flaps which open outwardly and being slitted outwardly of the said flaps along rounded or curved lines to leave the said flaps connected or integrally hinged at specific points, and flaps upon the several portions adapted to overlap, the said flaps being provided with means for securing or connecting the same.

3. A box comprising a foldable blank formed of a base, sides and partially-closed top, all connected, and normally, in the unfolded condition, open at either end, and a supplemental base secured to the base of the foldable body and projecting beyond the same; and the upper members of the foldable body being provided at their normally open ends with flaps adapted to be interengaged, the flaps of the top portion of the box being extended beyond the other flaps and adapted to be inserted between the base of the foldable portion and the supplemental base of the box.

4. A box comprising a blank formed of a bottom, two sides and a top portion comprising a partial closure, the said top portion being slitted integrally to form two hinged flaps and being slitted outwardly of the said flaps along rounded or curved lines to leave the said flaps connected or integrally hinged at specific points, and flaps upon the several points adapted to overlap, the said flaps being provided with means for securing or connecting the same, and the flaps of the top or closure portion being extended beyond the other flaps; and a supplemental base secured to the bottom of the blank and connected thereto at specific points and adapted to receive the projecting portions of the flaps of the top portion between the bottom of the blank and the said supplemental base.

5. A box comprising a blank formed of a bottom, two sides, and a top portion comprising a closure; flaps upon the several portions adapted to overlap, the said flaps being provided with means for connecting the same; and a supplemental base secured to the bottom portion; the outermost of the said flaps being tapered and formed with a projecting tongue adapted to fold under the bottom of the box.

6. A box comprising a blank formed of a bottom, two sides, and a top portion comprising a closure; flaps upon the several portions adapted to overlap, the said flaps being provided with means for connecting the same; and a cover comprising a top portion formed with tapered flaps, sides, and side extensions adapted to be folded the latter over the former, and provided with flaps adapted to be interengaged, and the top flaps being provided with tongues adapted to engage between the side flaps; the said cover being adapted to inclose the top of the box.

7. A box formed of a bottom portion and sides provided with flaps, the bottom flap being lapped in front of the side flaps, and a top portion provided with a tapered flap having a projected tongue formed with an indented projection, and the bottom being formed with a corresponding indentation; and a supplemental base secured to the bottom portion and unconnected therewith at the point of entrance of the tongue.

8. A box formed of a suitable body portion and a cover comprising a top portion formed with flaps, sides and side extensions, adapted to be folded, the latter over the former, and each provided with flaps, the flaps of the sides being relatively short and those of the side extensions relatively long and continuous with the short flaps throughout a portion of the length thereof whereby when the cover is folded and the long flaps inserted between the opposite flaps the cover will be held in assembled position without other fastenings.

9. A box formed of a suitable body portion and a cover comprising a top portion formed with flaps, sides and side extensions, adapted to be folded, the latter over the former, and each provided with flaps, the flaps of the sides being relatively short and those of the side extensions relatively long and continuous with the short flaps throughout a portion of the length thereof whereby when the cover is folded and the long flaps inserted between the opposite flaps the cover will be held in assembled position without other fastenings; and top flaps provided with tongues adapted to engage between the side flaps.

10. A box formed of a suitable body portion and a cover comprising a top portion formed with tapered flaps, sides, and side extensions adapted to be folded the latter over the former, and each provided with flaps adapted to be interengaged, the flaps of the sides and side extensions being partially connected at the end or corners of the box, and the top flaps being provided with tongues adapted to engage between the side flaps; the said cover being adapted to inclose the top of the box.

11. A box comprising a blank formed of a bottom, two sides and a top portion comprising a parallel closure, the said top portion being slitted centrally to form two hinged flaps which open outwardly and being slitted outwardly of the said flaps by discontinuous slits whereby to leave the said flaps connected or integrally hinged at specific points and flaps upon the several parts adapted to overlap, the said flaps being provided with means for connecting the same.

707,074. ENVELOP. LYDIA A. BENNETT, Cleveland, Ohio. Filed July 22, 1901. Serial No. 69,260. (No model.)

Claim.—In an envelop of the type set forth the combination with the body thereof, of a closing-flap formed with inclined edges, one of said inclined edges terminating adjacent the upper edge of the body of the envelop in a horizontal edge which extends outward to the vertical edge of the envelop, a slip having gum on its outer face and formed integral with the said closing-flap and having inclined edges which merge in the inner edge of the said flap and the said horizontal edge thereof, the address side of the envelop having a single slot formed therein adjacent its upper edge adapted to receive said slip, the said slip engaging over the address side and having its end received in the slot, and sealed to the interior of the envelop, said exposed portion of the slip adapted to be covered by the stamp, for the purpose specified.

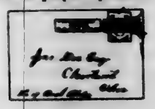

707,075. COMBINED OVERHEAD AND UNDERGROUND ELECTRIC RAILWAY. DANIEL S. BURNS, Chicago, Ill. Filed Feb. 10, 1902. Serial No. 93,419. (No model.)

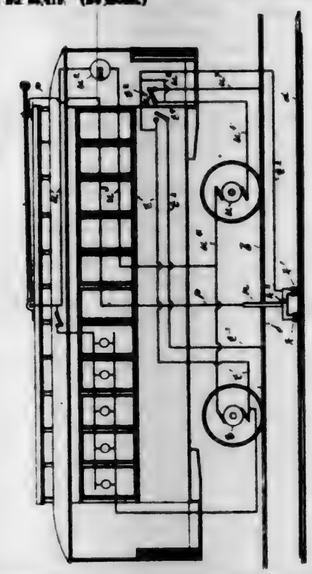

Claim.—1. In a combined overhead and underground electric-railway system, the combination of an overhead collector, a conduit having outgoing and return conductors therein, removable underground contact members for separately engaging said underground conductors, a conductor running from the positive member of said underground contact to an engaging member on top of the car, means for connecting said overhead collector with said engaging member, a motor, means for permanently connecting said overhead collector therewith, means for electrically connecting the terminal of said motor with the negative member of said contact element, means for connecting said terminal with the track-rails, and a switch for cutting out the latter.

2. In a system of the class described, the combination of underground conductors for outgoing and return currents respectively, overhead and underground contacts, a motor in permanent circuit with said overhead contact, a controller, means for electrically connecting said direct underground contact with the circuit of said overhead contact, means for connecting the negative terminal of said motor with the underground return-contact, and means for connecting the same terminal with the track-rails.

707,076. WELTS FOR BOOTS OR SHOES. JOHN O. BOZZELL, Weymouth, Mass. Filed Mar. 13, 1902. Serial No. 98,091. (No model.)

Claim.—1. A welt-strip having inclined lateral cuts, thereby forming tongues and admitting of bending, each of said tongues having a wedge-shaped portion removed, whereby the bending of the welt will not cause an increase of thickness, substantially as and for the purpose set forth.

2. A welt-strip having one vertical edge and one inclined edge, and having inclined lateral cuts extending from the inclined edges toward the center, substantially as and for the purpose set forth.

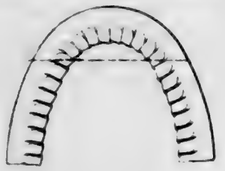

707,077. ACETYLENE-GAS GENERATOR. DAVID W. BISHOP, Lenox, Mass. Filed Mar. 7, 1902. Serial No. 97,155. (No model.)

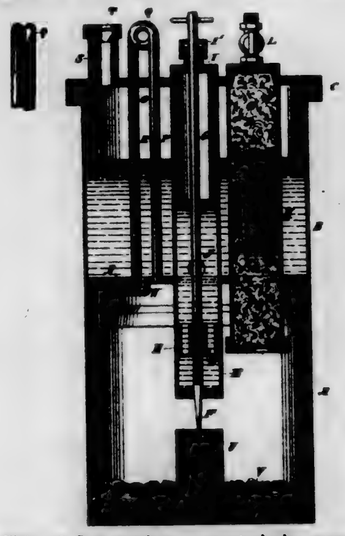

Claim.—1. In an acetylene-gas generator having an upper water-reservoir and a lower gas-generating compartment, means for regulating escape of water from said reservoir directly to said compartment, means for reducing the excess of flow of said water due to sudden increased movement of said generator, a gas-escape duct and means independent of said duct and controlled by the hydrostatic pressure in said apparatus for relieving the gas-pressure due to said excess of flow, substantially as described.

2. In an acetylene-gas generator having an upper water-reservoir and lower gas-generating compartment, a compartment having an opening communicating with said reservoir and hermetically sealed above said opening to form a chamber for air under pressure and having an aperture below said reservoir-opening communicating directly with said gas-compartment, and a valve in said opening adjustable in definite position to regulate the water flow from said reservoir to said compartment, substantially as described.

3. The combination in an acetylene-gas generator with a vessel for containing carbid, of a second vessel forming a water-reservoir, adapted to fit upon the said carbid vessel, and, in said water-reservoir, first, a conduit for liquid communicating with the interior thereof, and an escape-valve in the bottom of said conduit; second, a gas-conduit; third, a bent tube having one end opening through the bottom of said vessel, extending through the cover thereof and then extending downwardly and having an open end near said bottom, and, fourth, a gas-escape opening in said cover, substantially as described.

4. The combination in an acetylene-gas generator, having a lower carbid-compartment and an upper water-reservoir, disposed wholly above the same, of means for regulating the escape of water from said reservoir to said compartment, a gas-escape duct leading from said compartment, a tube communicating with the gas-space in said compartment rising upward through the reservoir, bent over above the same and extending downward into the reservoir and open above and in proximity to the bottom

thereof; the said reservoir being provided with an opening through its shell or wall located above the water-level for the escape of gas, substantially as described.

5. In an acetylene-gas generator having an upper water-reservoir and a lower gas-generating compartment, a tube E having an opening communicating with said reservoir and hermetically sealed above said opening to form a chamber for air under pressure and extending below said reservoir into said gas-compartment, and a valve seated in the closed lower end of said tube and positively adjustable to regulate the escape of water from said tube to said compartment, substantially as described.

6. In an acetylene-gas generator having an upper water-reservoir and a lower gas-generating compartment, a cylindrical gas-escape duct K leading from said gas-compartment and extending through said reservoir and filled over a portion of its length greater than the distance between the top and bottom of said reservoir with drying materials for the gas passing through it, substantially as described.

7. In an acetylene-gas generator having an upper water-reservoir and a lower gas-generating compartment, a cylindrical gas-escape duct K extending through said reservoir and projecting at its lower portion into said gas-compartment and containing materials for absorbing the moisture of the gas passing through it, substantially as described.

8. In an acetylene-gas generator having an upper water-reservoir and a lower carbid-compartment, a water-tube communicating with said reservoir at its lower portion and closed at its upper end to form a compressed-air chamber, a valve in said tube for admitting water therefrom to pass to said compartment, and a transverse partition in said tube above said valve having apertures and operating to check the sudden flow of water in said tube toward and from said valve, substantially as described.

9. The combination in an acetylene-gas generator having an upper water-reservoir B and a lower carbid-compartment A, of the tube E closed at its upper end to form a compressed-air chamber and communicating with said reservoir, a valve in the bottom of said tube, threaded valve-stem G, partition H in said tube receiving said stem, and having openings H', substantially as described.

707,078. ACETYLENE-GAS GENERATOR. DAVID W. BENNOT, Lenox, Mass. Filed Mar. 7, 1902. Serial No. 97,156. (No model.)

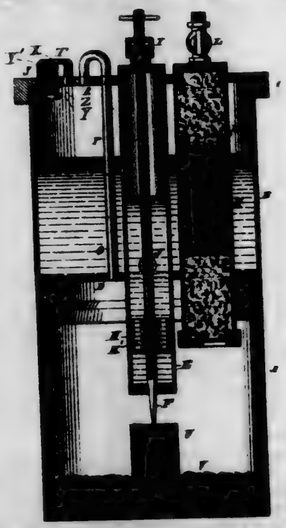

Claim.—1. In an acetylene-gas generator having an upper water-reservoir and a lower gas-generating compartment, a compartment having an opening communicating with said reservoir and hermetically sealed above said opening to form a chamber for air under pressure and having an aperture below said reservoir-opening communicating directly with said gas-compartment, a valve in said aperture adjustable in definite position to regulate water-flow from said reservoir to said compartment, and means for increasing the air-pressure in said air-chamber above that due to the hydrostatic pressure in said reservoir, substantially as described.

2. In an acetylene-gas generator having an upper water-reservoir and a lower gas-generating compartment, a compartment having an opening communicating with said reservoir and hermetically sealed above said opening to form a chamber for air under pressure and having an aperture below said reservoir-opening communicating directly with said gas-compartment, a valve in said aperture adjustable in definite position to regulate the water-flow from said reservoir to said compartment, a gas-escape duct leading from said gas-compartment, and means independent of said escape-duct for varying the water-pressure in said air-chamber controlled by the gas-pressure in said compartment, substantially as described.

3. In an acetylene-gas generator having an upper water-reservoir and a lower gas-generating compartment, a compartment having an opening communicating with said reservoir hermetically sealed above said opening to form a chamber for air under pressure and having an aperture below said reservoir-opening communicating directly with said gas-compartment, a valve in said aperture adjustable in definite position to regulate the water-flow from said reservoir to said compartment, a gas-escape duct leading from said gas-compartment, means independent of said escape-duct for normally increasing the air-pressure in said air-chamber above that due to the hydrostatic pressure of the water column in said reservoir, and means controlled by the gas-pressure in said gas-compartment for decreasing the said air-pressure when said gas-pressure shall exceed a predetermined limit, substantially as described.

4. In an acetylene-gas generator, having a closed upper water-reservoir and a lower gas-generating compartment, a valve-chamber communicating with said reservoir, a valve in said chamber for admitting water therefrom to said compartment, an air-chamber above the water column in said valve-chamber, a gas-escape duct leading from said gas-compartment and a tube independent of said gas-escape duct leading from said gas-compartment to said reservoir above the water-level thereof, substantially as described.

5. In an acetylene-gas generator having a closed upper water-reservoir and a lower gas-generating compartment, a gas-escape duct leading from said gas-compartment, means independent of said duct, for conducting gas under pressure from said compartment and into said reservoir above the water-level thereof, a valve-chamber within said reservoir closed at its upper end and receiving water at its lower portion, a valve for admitting water from said chamber to said compartment, and means for positively adjusting said valve to vary the water-flow, substantially as described.

6. In an acetylene-gas generator having an upper water-reservoir and a lower carbid-compartment, a valve for admitting water from said reservoir to said compartment, means for positively adjusting said valve to vary the water-flow, a tube adapted to lead gas from said compartment into said reservoir through the top wall or cover thereof, and a relief-valve in said wall or cover; the said valve being constructed and arranged to permit the escape of gas from said reservoir upon the gas-pressure therein reaching a predetermined limit in excess of that due to the normal working pressure in the apparatus, substantially as described.

7. In an acetylene-gas generator, in combination with a gas-generating compartment and a pipe for conducting gas therefrom, of a closed water-reservoir above said compartment, means for gradually admitting water from said reservoir to said compartment, a tube extending upwardly through said reservoir from the gas-space in said compartment and bent over above said reservoir and opening into said reservoir through the cover thereof, and a relief-valve in said reservoir above the water-line therein; the said valve being constructed and arranged to open and permit the escape of gas from reservoir upon the pressure thereof reaching a predetermined limit in excess of that due to the normal working pressure in the apparatus, substantially as described.

8. In an acetylene-gas generator, an upper water-reservoir and a lower gas-generating compartment, a tube in said reservoir having an opening in its wall communicating with and near the bottom of said reservoir, and extending upwardly above the water-level in said reservoir and closed at its upper end, a valve in the lower portion of said tube for admitting water therefrom into said gas-generating compartment, and means for equalizing pressures in said compartment and in the space above the water in said reservoir, substantially as described.

9. In an acetylene-gas generator, a closed upper water-reservoir B, lower gas-generating compartment A, tube E closed at its upper end extending through the top and bottom walls of said reservoir, and having an opening J communicating with said reservoir, a valve F in the bottom of said tube for admitting water therefrom into said gas-generating compartment, means for positively adjusting said valve, a gas-escape duct leading from said gas-compartment and a separate tube O for conducting gas from said compartment into said reservoir above the water-level thereof, substantially as described.

10. In an acetylene-gas generator, a closed upper water-reservoir B, lower gas-generating compartment A, tube E closed at its upper end extending through the top and bottom walls of said reservoir and having opening J communicating with said reservoir, a valve F in the bottom of said tube for admitting water therefrom into said gas-generating compartment, means for positively operating said valve, a gas-escape duct leading from said compartment, a separate tube O for conducting gas from said compartment into said reservoir, and above the water-level thereof, and relief-valve T in said reservoir, substantially as described.

707,079. FEED-PUMP AND COMBUSTION FOR HORSELESS CARRIAGES. JOHN C. BLEVNEY, Newark, N. J. Filed Jan. 2, 1901. Serial No. 42,462. (No model.)

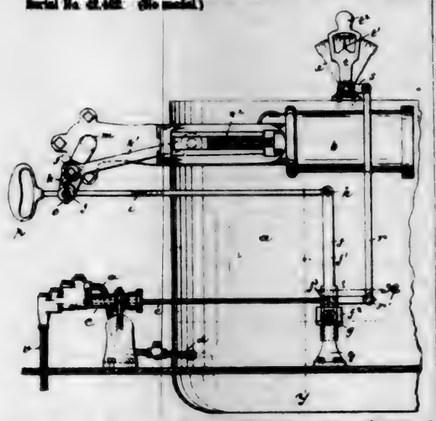

Claim.—1. The combination with the boiler, engine and pump, of a fulcrum, a lever *f*, formed in sections, one of which is permanently fulcrumed on said fulcrum, and the other of which is free to slide in the first said section, the free section being connected both to the piston of the pump, the piston of the engine and to a handle *p*, substantially as set forth.

2. The combination with the boiler, engine and pump, a handle and pump-stroke indicator, of a fulcrum, a lever *f*, formed in sections, one of which is free to slide lengthwise of the other, the free section being connected to the piston of the pump, the piston of the engine, the handle and to the pump-stroke indicator, substantially as set forth.

3. The combination with the engine, boiler and pump, of a fixed fulcrum, a sectional lever, one of the sections of which provides the bearings for the fulcrum of said lever, and the other section of which is connected to the pistons of said pump and the piston of the engine, and means for changing the relation of the said sections to increase or diminish the length of stroke of the pump, substantially as set forth.

4. The combination with the boiler and engine, of a pump, for supplying the said boiler with water, a piston moving reciprocally in said pump, a lever formed in sections, one of which is longitudinally adjustable in its relation to the other, the adjustable section being pivotally connected to the piston-rod of the piston, the said piston-rod being also connected to a connecting-rod *r*, said connecting-rod *r*, a hand-operable indicator connected with the rod *r* for adjusting the sections of the lever, a connecting-rod *i*, for operating said lever, and a connecting-rod *k'*, connecting the said connecting-rod *i*, with the piston of the engine, substantially as set forth.

5. The combination with the engine and pump and their respective piston-rods, of a fixed fulcrum, a sectional lever, one of the sections of which is free to slide longitudinally on the other, the pump piston-rod being connected to the sliding section, and said piston-rod extending into connection with a connecting-rod of an indicator, said connecting-rod and a hand-operable indicator serving both to indicate the stroke of the pump and to move the sliding section of the lever on the fulcrumed section and connections of said sliding section with the piston-rod of the engine, substantially as set forth.

6. The combination with the engine and its piston-rod k^2, and connecting-rod k', of the separable rod *i*, connected to the rod k', and having a handle *p*, a lever *f*, connected to said rod *i*, a fixed fulcrum for said lever, the pump and piston-rod *o*, the latter being connected to the lever and extending therefrom into connection with the rod *r*, said rod *r*, and a hand-lever for operating the same and changing the stroke of the pump piston-rod, substantially as set forth.

7. The combination with the boiler and engine, of a crank-shaft and connecting-rod of the engine, said rod having the screw *k*, the handled rod *i*, pivotally connected to said arm, the sectional lever, the section f^2, of which is fulcrumed on a fixture, and is provided with a groove to receive the section *f*, a pump piston-rod pivoted upon the section *f*, a pump and its piston, a connecting-rod *r*, and means for raising and lowering the same to change the stroke of the pump-piston, substantially as set forth.

707,080. MATCH. CHARLES M. BOWMAN, Lebanon, Pa., assignor to the Diamond Match Company, New York, N. Y., a Corporation of Illinois. Filed Feb. 3, 1900. Serial No. 3,818. (No model.)

Claim.—1. A match treated with oil of mint, substantially as and for the purpose described.

2. A match treated with paraffin containing oil of horsemint, substantially as and for the purpose described.

3. A match having a portion carrying oil of horsemint, as a repellent of rats or mice, substantially as described.

707,081. ATMOSPHERIC STEAM-CONDENSING APPARATUS. FREDERIC E. BRANDT, Dayton, Ohio. Filed Dec. 23, 1901. Serial No. 86,570. (No model.)

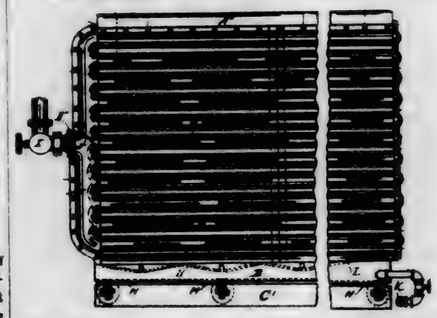

Claim.—1. In an atmospheric steam-condensing apparatus, the combination of two or more series of condenser-sections, each section consisting of two corrugated walls, a two-part front and rear upright head to which the vertical edges of said walls are united, the front head providing an inlet for the steam, a crown to which the upper horizontal edges of said walls are united, said crown having its sides tapering in order to direct water to the exterior surfaces of said walls, interior means for bracing and sustaining said walls, a base to which the lower horizontal edges of said walls are connected, and means within said base for cooling the water of condensation from contact with the steam, substantially as specified.

2. An atmospheric steam-condensing apparatus, consisting of two or more series of condenser-sections, the condensing-surfaces of each of said sections being corrugated and said corrugation serving to maintain each section in an operative condition and being of proper strength, the vertical ends of said sections being united to split heads, a base to which the lower horizontal edges of each section are connected, a crown to which the upper horizontal edges of said walls of each section is connected, the said crown having tapering sides which direct the inflowing water around the surfaces of each section, means for bracing and connecting the walls of each section throughout, and a manifold steam-header to which each condenser-section has its own independent connection, substantially as specified.

3. In an atmospheric steam-condensing apparatus, the combination with a manifold steam-header having a series of valves thereon, of one or more series of condenser-sections connected to said steam-header, each of said condenser-sections consisting of two corrugated walls which present two exterior and continuous corrugated surfaces, the said walls being connected to front and rear upright heads, the front head of each section connecting with the steam-header by suitable couplings, a crown or water-distributing head to which the upper horizontal edges of said walls are connected, a base to which the lower horizontal edges of said walls are connected, and roller-supports upon which each section is independently supported, substantially as specified.

4. In an atmospheric steam-condensing apparatus, the combination of a series of vertical walls corrugated throughout, and each two of such walls constituting a condenser-section, split upright front and rear heads to which the vertical edges of said walls are united, a steam-header connected to the front one of said upright split headers, a horizontal crown or water-distributing header to which the upper horizontal edges of said walls are connected, a base to which the lower horizontal edges of said walls are connected, the said base providing a chamber for the water of condensation, and a baffle-plate having a series of angles, the said baffle-plate being located throughout the length of said base and forming a seal

between the water of condensation and the steam, openings in said baffle-plate through which the water of condensation passes below said baffle-plate, substantially as specified.

5. In an atmospheric steam-condensing apparatus, a series of condenser-sections, each of which consists of two walls corrugated throughout to present continuous corrugated surfaces, interior braces and supports projecting from the interior surfaces of said walls and serving to prevent any undue bursting or collapsing pressures of said walls, upright heads connecting the vertical ends of said walls, said heads each consisting of two parts which are united, a crown or water-distributing head connecting the upper horizontal edges of said walls and providing a distributing-surface from which the water is directed to the outer surfaces of said walls, a base having an interior water-chamber, a baffle-plate having a series of angles with openings therein through which the water of condensation is discharged below said baffle-plate, the said baffle-plate forming a seal between the steam and water of condensation, an outlet from said chamber, and roller-supports upon which each condenser-section is mounted, substantially as specified.

6. In an atmospheric steam-condensing apparatus, the combination with a steam-header consisting of a series of sections, each of which is provided with a valve, of a series of condenser-sections each of which consists of two walls corrugated throughout, a front and rear head to which the vertical ends of said walls are united, the front head being connected to one of the sections of the steam-header and affording means for the passage of steam to the condenser, a crown to which the upper horizontal edges of said walls are connected, said crown having a tapering water-surface from which the water is directed to the outer side of the condensing-walls, a base to which the lower horizontal ends of said walls are connected, said base having a water-chamber therein, a baffle-plate located within said chamber and extending throughout the length thereof, the rearward end of said baffle-plate terminating on a higher plane than the forward end thereof, means for supporting the baffle-plate within the chamber, and a valve-controlled outlet at the rear end of said chamber, substantially as specified.

707,082. SHARPENER. CHARLES F. BROWN, Greenville, Texas. Filed Jan. 16, 1902. Serial No. 89,669. (No model.)

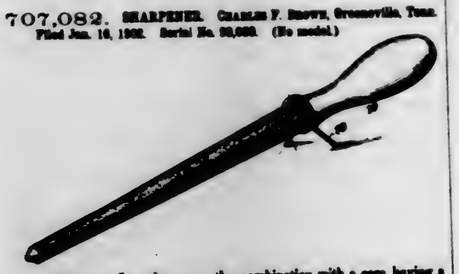

Claim.—1. In a sharpener, the combination with a core having a seat, of a cover removably fitted upon the core and having an outer abrasive face, and holding means engaging the cover and forcing a portion thereof into the seat of the core to hold the cover upon said core.

2. In a sharpener, the combination with a cylindrical core having an annular groove, of a cover removably fitted upon a core and having an outer abrasive face, and a clamping-ring surrounding the cover and forcing a portion of the same into the groove.

3. In a sharpener, the combination with a body having a tapering core at one end, and a handle at the other, said core being provided at its larger end with an annular groove or socket, of a tapering cover fitted upon the core and having an outer abrasive face, and an expansible and contractible clamping-ring fitted over the cover and forcing a portion thereof into the socket of the core.

4. In a sharpener, the combination with a body having a handle at one end and an abrasive surface at the other, of a support for the body comprising an expansible ring that surrounds the same, said ring being formed of a single wire the terminals of which are disposed in spaced projecting relation and constitute supporting-feet for the sharpener.

707,083. CAR-SEAL. JOHN H. BRENNER, Morrison Park, Minn. Filed Apr. 3, 1902. Serial No. 101,169. (No model.)

Claim.—1. A car-seal, comprising a socket of thin sheet metal having the edges of its wall and bottom on one side folded to interlock with a space between the fold so formed and the bottom of the socket, and a shackle having hooked ends adapted to interlock, and a lip or flange provided on one of said ends and adapted to enter the space between said folds and the bottom of the socket and be clamped therein by the crimping of said folds.

2. A car-seal, comprising a rectangular socket having a wall 5 at one end, the opposite end being open and a flange 7 provided on a side wall and having an inwardly-turned edge 8 to interlock with a correspondingly-turned edge 9 of the bottom 4, a space being provided between said flange 7 and said bottom, a shackle having hooked ends adapted to interlock, and a lip or flange provided on said shackle near one end and adapted to enter said space and be clamped therein by the crimping or pinching of said folds.

3. A car-seal, comprising a socket of comparatively thin sheet metal having its bottom and a side wall interlocked by turning the edge of the bottom over a flange on the wall and then folding the turned edge and flange toward the wall, a recess being provided between said flange and bottom, and a shackle having hooked ends adapted to interlock and a laterally-extending lip or flange to enter said recess and be secured therein.

707,084. IMAGE-PROJECTING APPARATUS. CHARLES W. CARHART, Chicago, Ill. Filed May 2, 1902. Serial No. 105,585. (No model.)

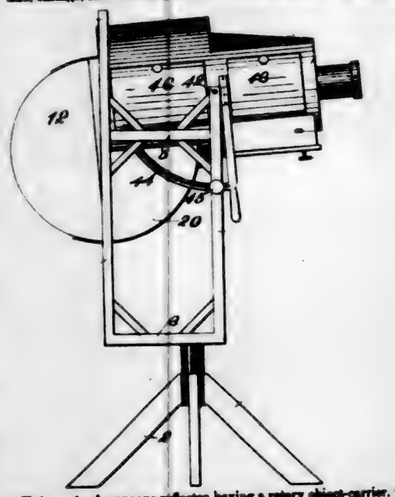

Claim.—1. An opaque reflector having a rotary object-carrier, provided with a plurality of radially-disposed object-holders, pivotally mounted at the periphery of the object-carrier and meeting at the axis thereof, movable toward and from the axis, and means for securing the object-holders in adjustment, substantially as described.

2. In an opaque reflector, a rotary object-carrier, comprising a pair of disks arranged parallel with one another intersecting plates forming radially-disposed supports, object-holders pivotally connected to the outer edges of the said supports, and adjusting means for securing swinging adjustment of the object-holders with respect to the plates, substantially as described.

3. An opaque reflector comprising a hollow body, consisting of a rear cylindric casing, a lens-tube extending forwardly from the casing, an object-carrier rotatably supported by the said casing, and including a plurality of radially-disposed supports, each provided with an object-holder, the said holders being pivotally secured to their supports, while the carrier is so mounted that the holders can be brought into projecting position in succession by the rotation of the carrier, lamp-boxes on opposite sides of the hollow body, lamps arranged in said boxes, and transparent walls between the lamps and the object-carrier, substantially as described.

4. In an image-projector, the combination with a rotary object-carrier, of a plurality of object-holders, pivoted at the periphery of the object-carrier, and movable toward and from the axis of rotation thereof, and means whereby the object-holders may be adjusted toward and from the axis of rotation, the said means including slotted stripe 17, one for each object-holder, and extending at right angles to the object-holder, and fastening-screws passing through the slots, substantially as described.

5. In apparatus of the class described, the combination with a plurality of image-projecting means, of a pivotally-mounted source of light adapted to be operatively associated with one or the other of the said image-projecting means by its rotation, the said image-projecting means serving to cast images in opposite directions with respect to each other, and a pivotal mounting for the aforesaid mechanism, whereby the apparatus may be adjusted to throw images upon the same screen at different times from both image-projecting means, substantially as described.

6. In apparatus of the class described, the combination with a plurality of image-projecting means serving to project images in opposite directions with respect to each other, of a source of light adjustably mounted, whereby it may be operatively associated with one or the other of the said image-projecting means, and a rotatable mounting for the above apparatus, whereby the apparatus may be adjusted to throw images upon the same screen at different times from both image-projecting means, substantially as described.

7. In apparatus of the class described, the combination with a plurality of image-projecting means serving to project images in opposite directions with respect to each other, of a source of light common to the plurality of image-projecting means, and a rotatable mounting for the above apparatus, whereby the apparatus may be adjusted to throw images upon the same screen at different times from both image-projecting means, substantially as described.

707,085. RECESSING OR GROOVING PLANE. FRED CLAYTON, Pudsey, England. Filed Apr. 1, 1902. Serial No. 100,915. (No model.)

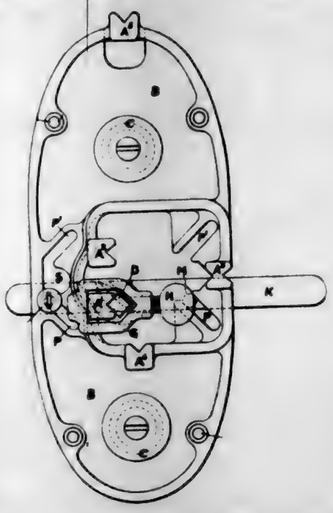

Claim.—1. The combination, with a plane-body provided with a series of separate tool-posts arranged in different planes, of a clamp for securing tools to the said posts, substantially as set forth.

2. The combination, with a plane-body provided with separate tool-posts arranged in different planes and having also oblique slots, of an adjustable slide provided with fastening devices which engage with the said slots, and a clamp for securing tools to the said posts, substantially as set forth.

3. The combination, with a plane-body provided with separate tool-posts arranged in different planes and having also two pairs of oblique slots for right and left hand side tools provided with fastening devices which engage with the said slots, and a clamp for securing the tools to the said posts, substantially as set forth.

707,086. FIREPROOF BUILDING. FRED W. COOLEY, Minneapolis, Minn., assignor of two-thirds to George T. Mountain, Minneapolis, Minn. Filed Mar. 26, 1902. Serial No. 99,532. (No model.)

Claim.—1. The combination with adjoining walls formed by fireproof blocks and interposed metal bars or beams, of a solid corner-column formed of concrete, which metal bars have projecting ends embedded in said corner-column, and a binder embedded in said column and anchored to the embedded ends of said bars, substantially as described.

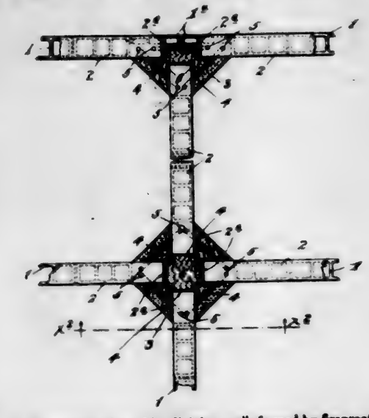

2. The combination with adjoining walls formed by fireproof blocks and interposed metal bars or beams, of a solid corner-column formed of cement, which metal bars have projecting ends embedded in said corner-column, and the tie-links 4 embedded in the said column and provided with ends 5 passed through perforations in the embedded ends of said bars, substantially as described.

3. The combination with adjoining walls formed by fireproof blocks and interposed metal bars or beams, of a solid corner-column formed by a solid body of cement, which metal bars have projecting ends bent or extended vertically and embedded in the said concrete corner-column, substantially as described.

4. The combination with walls formed of fireproof blocks and interposed metal bars or beams, of a corner-column formed by a solid body of cement, which metal bars have projecting ends bent or extended vertically and embedded in said concrete column, and a metal binder rigidly tying together the embedded ends of said bars, substantially as described.

5. The combination with adjoining walls formed by fireproof blocks and interposed metal bars or beams, of corner-columns formed of cement, which metal bars have projecting ends embedded in said columns, a metal binder rigidly connecting the embedded ends of said bars, and the angle-iron columns placed at the corners of the adjoining walls and embedded in said column, substantially as described.

707,087. DRIP-PAN FOR PAINTING METAL FURNITURE. HERMAN R. CROSS, Jersey City, N. J. Filed May 17, 1902. Serial No. 107,716. (No model.)

Claim.—1. A drip-pan for painting articles of furniture or parts thereof, said pan comprising two parts one of which is adapted to rest in a horizontal position and the other of which is normally held in a raised or inclined position, a shaft mounted transversely of said pan and in the end of the horizontal portion thereof adjacent to the other portion thereof, and a perforated plate connected with said shaft and adapted to rest on the bottom of the horizontal portion thereof, substantially as shown and described.

2. A drip-pan for painting articles of furniture or parts thereof, said pan comprising two parts one of which is adapted to rest in a horizontal position and the other of which is normally held in a raised or inclined position, a shaft mounted transversely of said pan and in the end of the horizontal portion thereof adjacent to the other portion thereof, and a perforated plate connected with said shaft and adapted to rest on the bottom of the horizontal portion thereof, and said plate being provided near said shaft with a bracket or support, substantially as shown and described.

3. A drip-pan for painting articles of furniture or parts thereof, said pan comprising two parts one of which is adapted to rest in a horizontal position and the other of which is normally held in a raised or inclined position a shaft mounted transversely of said pan and in the end of the

horizontal portion thereof adjacent to the other portion thereof, and a perforated plate connected with said shaft and adapted to rest on the bottom of the horizontal portion thereof, and said plate being provided near said shaft with a bracket or support, and said pan being provided adjacent to said shaft with a transverse screen, substantially as shown and described.

4. A drip-pan for use in painting cabins of furniture or parts thereof, said pan being oblong in form and composed of two parts, one of which rests in a horizontal position and the other of which is held in a raised or inclined position the transverse screen mounted in said pan at the junction of the two parts, a shaft transversely mounted in said pan adjacent to said screen and provided with a perforated plate which is secured thereto and adapted to normally rest on the bottom of the horizontal part of the pan, said plate being provided adjacent to said shaft with a transverse bracket and at the opposite end thereof with a recess, and said shaft being provided with a crank, substantially as shown and described.

707,088. MAGNETIC SEPARATOR. ALVIN DUNN, Milwaukee, Wis. Filed Apr. 8, 1901. Serial No. 54,771. (No model.)

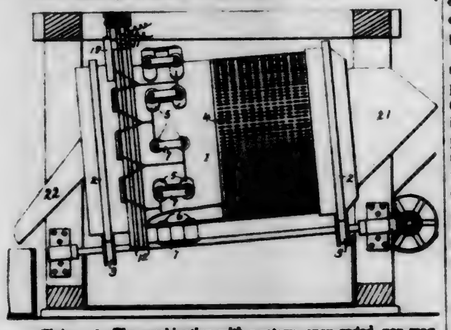

Claim.—1. The combination with a rotary, open-ended, non-magnetic cylinder; a series of electromagnets mounted thereon; magnet-cores extended through the cylinder and provided with rounded heads on the interior surface thereof; annular conducting-rings located on the cylinder; and brushes for connecting the same with a source of electrical energy, said magnets being electrically connected in series with rings; a resistant bar for each magnet also electrically connected with the rings, and adapted to serve as a shunt for its corresponding magnet when in contact with a terminal beyond such magnet; and a segmental shoe located in the path of the bar and adapted to force the bar downwardly into contact with the terminal when passing the shoe, said bar being normally out of contact with the terminal.

2. The combination with a diagonally-disposed, rotary, non-magnetic cylinder; of a cylindrical screen forming a continuation thereof, at its upper end; an annular series of electromagnets externally disposed around its lower end; conducting-rings connected with a source of electrical energy, and electrically connected with the magnets; and circuit-controlling mechanism adapted to energize and demagnetize the magnets consecutively, each of said magnets being provided with a core extending through the cylinder, and headed on the interior surface, said core and head being integral, and the head being rounded or cuneiform in form, whereby it not only serves to hold the magnet in position, but also concentrates the magnetic force over a small surface exposed to the material passing through the cylinder.

3. The combination with a rotary, non-magnetic cylinder provided with an annular row of magnets, and conducting-rings adapted to convey an electrical current through the magnets; of a series of resistant bars, each member of which is connected with the circuit on one side of one of the magnets; a terminal located in the circuit, on the other side of each magnet, and normally out of contact with its corresponding bar; and a segmental guide-shoe arranged in the path of the bars, and adapted to force them into contact with their terminals; said bars being arched and arranged for regular sliding contact with the guide-shoe.

707,089. CORE-PAD. IRA BENJAMIN, Fort Smith, Ark. Filed May 23, 1901. Serial No. 61,612. (No model.)

Claim.—A core-shield comprising a head having a recess formed on its inner face and walls gradually reduced in thickness from the bottom toward the top thereof, the outer face of said walls being smooth and unbroken, said recess having the walls thereof converging toward the top of said head, a thin covering extending over the top of said recess, and means for holding said head in adjusted position.

707,090. LACING-HOOK. WILLARD A. DURHAM, Weymouth, Mass. Filed Mar. 5, 1902. Serial No. 96,767. (No model.)

Claim.—1. The one-piece lacing-hook above described, comprising an attaching member, a shank and two tongues integral therewith, and projecting laterally from the same side of said shank, one B, of said tongues forming the head of said hook, and the other tongue C being stamped out of said tongue B, and both tongues projecting laterally from the same side of said shank, the tongue B lying over the tongue C and forming a protection therefor, and the tongue C being bent down somewhat to divide the space between the tongue B and the attaching member into two chambers, one over the other and both over the attaching member, each chamber being of sufficient size to receive a lacing-cord, as and for the purposes described.

2. A blank for a lacing-hook comprising a portion to form an attaching member, a portion extending laterally to form a shank, and a portion beyond said shank to form a lacing-receiving member, said attaching member, said shank portion and said lacing-receiving portion being located in the same straight line, said lacing-receiving portion being provided with two slits extending in a straight line from its extreme edge toward said attaching member parallel with the length of the blank whereby said lacing-receiving member may consist of two tongues, one of said tongues being forked, the other tongue being formed from the portion of the blank between said forks, the two tongues being capable of being bent, the one under the other, to form two parallel coextensive chambers, the one over the other and both directly over said attaching member, as described.

707,091. SUGAR-CANE STRIPPER. THOMAS A. DEVTON, Egypt. Filed Sept. 12, 1901. Serial No. 75,260. (No model.)

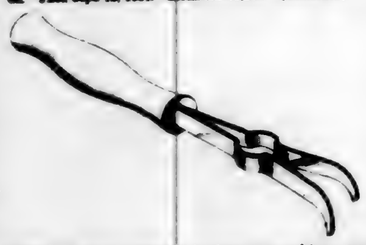

Claim.—1. A cane-stripping implement comprising a metal strip folded upon itself to form a shank or tang and having the folded portions outwardly diverged and terminating in hooked grabbing-points, and having portions intermediate of their ends oppositely curved, and having corresponding edges of the curved portions sharpened, substantially as described.

2. A cane-stripper consisting of a handle having an opening in one end, and a strip folded upon itself to form a shank or tang fitted in the opening of the handle, and having the folded portions outwardly diverged and terminating in hooked grabbing-points, and having portions intermediate of their ends oppositely curved, and having corresponding edges of the curved portions sharpened, substantially as specified.

707,092. DRAFT ATTACHMENT. CHARLES H. FALK, Hinsley, Kans. Filed Mar. 11, 1902. Serial No. 97,726. (No model.)

Claim.—1. In a draft attachment, the combination, with a main pole, and steering mechanism carried by it; of an auxiliary draft-pole having its rear end pivotally connected to the said main pole, substantially as set forth.

2. In a draft attachment, the combination, with a main pole, and steering mechanism carried by it; of a guide secured to the front end portion of the said main pole, and an auxiliary draft-pole having its rear end pivotally connected to the said main pole and its front end portion slidable in the said guide, substantially as set forth.

3. In a draft attachment, the combination, with a main pole, and steering mechanism carried by it; of a guide secured to the front end portion of the said main pole, an auxiliary draft-pole having its rear end pivotally connected to the said main pole and its front end portion slidable in the said guide, and a locking device for securing the said auxiliary draft-pole in the said guide in different positions, substantially as set forth.

4. In a draft attachment, the combination, with a main pole, and steering mechanism carried by it; of an auxiliary draft-pole having its rear end pivotally connected to the said main pole and arranged underneath it, and a doubletree pivoted to the front end portion of the said auxiliary draft-pole and arranged between it and the main pole, substantially as set forth.

707,093. METHOD OF BUILDING SUBAQUEOUS FOUNDATIONS. JAMES T. FORD, Cartagena, Colombia. Filed Apr. 10, 1902. Serial No. 102,260. (No model.)

Claim.—1. A method of constructing subaqueous foundations, consisting in first sinking a shaft, then tunneling beneath the water-bed, and then reinforcing said tunnel from within to convert it into a superstructure-supporting foundation.

2. A method of building subaqueous foundations consisting in first sinking a shaft beyond the water's edge and down to bed-rock, then excavating along bed-rock, walling said excavation, constructing on top of said foundation thus formed, and walling said second excavation.

3. A method of constructing subaqueous foundations consisting in first sinking shafts on opposite sides of the water's edge, down to bed-rock, then tunnelling along bed-rock from shaft to shaft walling or lining the tunnel as it is dug, then building another tunnel on top of the first and so on up to the desired height.

4. A method of constructing subaqueous foundations consisting in first sinking shafts on opposite sides of the water a safe distance from the water's edge and down to bed-rock, then tunnelling along bed-rock from shaft to shaft connecting the tunnel-walls to the desired thickness, and then building tunnel on tunnel until the desired height is reached.

5. A method of constructing subaqueous foundations consisting in sinking one or more shafts to the desired depth, then tunnelling from said shaft or shafts beneath the water-bed to the desired length for the foundation, then walling, lining or filling said tunnel or tunnels, and then erecting the dam or other structure on said tunnel or tunnels.

707,094. LOCK-STITCH SHOE-SEWING MACHINE. ALFRED B. FOSTER, Boston, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., a Corporation of New Jersey. Filed Nov. 4, 1901. Serial No. 81,805. (No model.)

Claim.—1. A lock-stitch shoe-sewing machine, having, in combination, stitch-forming mechanism including a take-up, an intermittently-acting thread-clamp which engages the thread between the supply and the take-up and holds the supply end against the pull of the take-up, and means for moving the thread-clamp while closed in the direction of the lead of the thread to pull off thread from the supply, substantially as described.

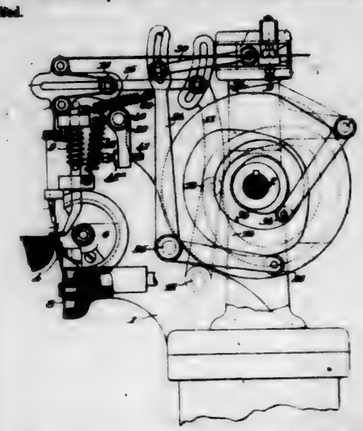

2. A lock-stitch shoe-sewing machine, having, in combination, stitch-forming mechanism including a take-up, an intermittently-acting thread-clamp which engages the thread between the supply and the take-up and holds the supply end against the pull of the take-up, and means for moving the thread-clamp while closed in the direction of the lead of the thread to pull off thread from the supply, said clamp remaining closed while the stitch is being set by the take-up, substantially as described.

3. A lock-stitch shoe-sewing machine, having, in combination, stitch-forming mechanism including a take-up, a presser-foot, an intermittently-acting thread-clamp which engages the thread between the supply and the take-up, and means for moving the thread-clamp while closed in the direction of the lead of the thread a distance governed by the position of the presser-foot to pull off an amount of thread from the supply proportional to the thickness of the work, substantially as described.

707,095. FEED MECHANISM FOR MILLING-MACHINES. WILLIAM R. FOX and MATTHEW LEES, Grand Rapids, Mich., assignors to the Fox Machine Company, Grand Rapids, Mich. Filed Dec. 6, 1901. Serial No. 84,911. (No model.)

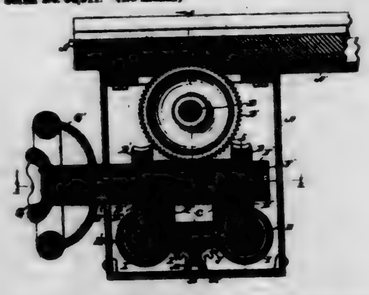

Claim.—1. In a feed mechanism for a milling-machine, the combination of a casing A; a shaft B supported in suitable bearings therein; a suitable feed-rack; a toothed wheel B' on said shaft B adapted to mesh with said rack; a frame C having guides K fitting within suitable vertical guideways within the casing; a shaft E having a worm E' thereon supported in the said framework adapted to mesh with said toothed wheel B'; flanges E'' central in form on said shaft E; worm-gears D, D', supported on the shaft E; a rod F through the center of said shaft screw-threaded at F' and provided with a head F'' to fit against the worm D; a hand-wheel G' on said shaft E adapted to fit against the worm-gear D'; a hand-wheel G within the hand-wheel G', whereby, by manipulating the hand-wheels G, G', either worm-gear D or D' can be readily fixed on the shaft E or both of them released; a tumbling-rod; a shaft I' car-

nected with said tumbling-rod by a suitable telescopic joint; a driving-gear J on said shaft I'; shafts I, I, arranged to each side of said shaft I'; gears J', J', on said shafts I, I, meshing with said gear J; worms H, H', on said shafts I, I, meshing with the worm-gears D, D', one of which worms is right-handed and the other left-handed; a bar M in the bottom of said casing having inclined planes M', M', secured thereto fitting against inclined surfaces in the bottom of the casing; a lever L provided with a suitable handle L' connected to the said bar M and provided with a notch in its upper end; a latch N, N', for engaging said notch; a pin P supported in a suitable guide resting on the end N' of the latch; a coiled spring *e* for forcing the same normally upward; a suitable stop on said carriage adapted to engage the said pin P and automatically disconnect the feed mechanism when the carriage has reached the end of its travel, all coacting substantially as described for the purpose specified.

2. In a feed mechanism for a milling-machine, the combination of the casing A; a shaft B supported in suitable bearings therein; a suitable feed-rack; a toothed wheel B' on said shaft B adapted to mesh with said rack; a frame C having guides K fitting within suitable vertical guideways within the casing; a shaft E having a worm E' thereon, supported in the said framework adapted to mesh with said toothed wheel B'; flanges E'' conical in form on said shaft E; worm-gears D, D', supported on the shaft E; a rod F through the center of said shaft screw-threaded at F' and provided with a head F''' to fit against the worm D; a hand-wheel G' on said shaft E adapted to fit against the worm-gear D'; a hand-wheel G within the hand-wheel G' whereby, by manipulating the hand-wheels G, G', either worm-gear D, or D' can be readily fixed on the shaft E, or both of them released; a tumbling-rod; a shaft I' connected with said tumbling-rod by a suitable telescopic joint; a driving-gear J on said shaft I'; shafts I, I adapted to mesh with the gear J; worms H, H' on said shafts I, I, meshing with the worm-gears D, D', one of which worms is right-handed and the other left-handed; a bar M in the bottom of said casing having inclined planes M', M', secured thereto, fitting against inclined surfaces in the bottom of the casing; means for automatically controlling said bar to disconnect the feed mechanism when the carriage has reached the end of its travel, all coacting substantially as described for the purpose specified.

3. In a feed mechanism for a milling-machine, the combination of the casing A; a shaft B supported in suitable bearings therein; a suitable feed-rack; a toothed wheel B' on said shaft B adapted to mesh with said feed-rack; a frame C having guides K fitting within suitable vertical guideways within the casing; a shaft E with a worm E' thereon supported in the said framework and adapted to mesh with said toothed wheel, B'; worm-gears D, D', supported on the shaft E; means for rigidly securing either worm-gear D or D' to the said shaft E or of releasing both of them; a tumbling-rod; a shaft I' connected with said tumbling-rod by a suitable telescopic joint; a driving-gear J on said shaft J'; shafts I, I, arranged to each side of said shaft I'; gears J', J' on said shafts I, I, adapted to mesh with said gear J; worms H, H', on said shafts I, I, meshing with the worm-gears D, D', one of which worms is right-handed and the other left-handed; a bar M in the bottom of said casing having inclined planes M', M', secured thereto, fitting against inclined surfaces in the bottom of the casing; means for automatically controlling said bar to disconnect the feed mechanism when the carriage has reached the end of its travel, all coacting substantially as described for the purpose specified.

4. In a feed mechanism for a milling-machine or lathe, the combination of a suitable casing; a suitable feed-rack on the carriage of said machine; a frame adjustable up and down within said casing; a worm-gear adapted to engage with said rack; a shaft; a worm thereon for actuating the said gear, the said shaft being carried in the movable frame; worm-gears on said shaft resting outside of suitable flanges; a screw through the center of said shaft with a head at its outer end for embracing one of said worm-gears and clamping it against the flange and a collar on the other end of the shaft to be forced against the flange by the said screw to clamp the worm-gear at the end, whereby either of the said worm-gears can be securely clamped in position while the opposite is left free, or both can be released; worms transverse to each of said gears, one of which is right-handed and the other left-handed; suitable gears J', J', on the shafts with the said transverse worms and a driving-wheel between them and meshing therewith, whereby the direction of the actuation of the carriage is changed by clamping one or the other of the worm-gears on the shaft bearing the main driving-worm, or the carriage is freed by releasing both of the said worm-gears, coacting for the purpose specified.

5. In a feed mechanism for a milling-machine or lathe, the combination of a suitable casing; a suitable feed-rack on the carriage of the machine; a frame adjustable up and down within said casing; a worm-gear adapted to engage with said rack; a shaft; a worm thereon for actuating the said gear, the said shaft being carried in the movable frame; worm-gears on said shaft resting outside of suitable flanges; a screw through the center of said shaft with a head at its outer end for embracing one of said worm-gears and clamping it against the flange by the said screw to clamp the worm-gear at that end, whereby either of the said worm-gears can be securely clamped in position while the opposite is left free, or both can be released; worms transverse to each of said gears, one of which is right-handed and the other left-handed; suitable gears J', J', on the shafts with the said transverse worms and a driving-wheel between them and meshing therewith, whereby the direction of the actuation of the carriage is changed by clamping one or the other of the worm-gears on the shaft bearing the main driving-worm, or the carriage is freed by releasing both of the said worm-gears, coacting for the purpose specified.

6. In a feed mechanism for a milling-machine or lathe, the combination of a main worm-gear; a hollow shaft with a worm thereon and meshing with said gear; worm-gears carried by said shaft, one of which is right-handed and the other left-handed; flanges on said shaft between said gears; a screw-threaded rod engaging a thread in the interior of said shaft with connections for clamping either one or the other of said gears against the flanges on said shaft or releasing both of the same, and a right-hand worm and a left-hand worm meshing with said worm-gears, with connections for driving the said worms, whereby the direction of the feed can be changed by clamping one of said worm-wheels or the other on the shaft carrying the main worm, as specified.

7. In a feed mechanism, the combination of a hollow shaft; right-hand and left-hand worm-gears thereon; a clamping means consisting of a screw-threaded rod extending through said hollow shaft and having connections at each end for clamping either of said gears securely to the shaft or releasing both of them; right-hand and left-hand worms engaging with the said gears whereby the direction of the rotation of the shaft is changed by clamping the one or the other of said worm-gears thereto, as specified.

8. In a feed mechanism, the combination of the shaft E with flanges E'', E'' thereon; gears to fit against said flanges; a screw-bolt through said shaft with a head at one end to engage the hub of the gear at that end to clamp the same and a collar on the opposite end for clamping the gear at that point; hand-wheels on the said bolt and on the shaft for turning the same and changing their relative position, whereby either of the said gears may be clamped or both freed; connections for driving the said gears in opposite directions whereby the direction of the shaft can be changed by clamping the one or the other, and whereby the shaft can be disconnected by releasing both of the said gears, coacting for the purpose specified.

9. In a feed mechanism, the combination of a casing; a driving-gear; a frame adapted to be adjusted in said casing; gearing carried by said frame for actuating the carriage of a milling or similar machine; a bar with inclined planes thereon adapted to raise or lower said frame-work to throw said gearing into or out of engagement with the driving-gears, for the purpose specified.

10. In a milling-machine, the combination of a casing A; a driving-wheel within said casing; a movable frame within said casing; suitable gearings carried by said casing; a bar with inclined planes for adjusting the said casing to throw said gearings into or out of engagement with the driving-wheel; a lever connected to said bar; a latch to engage said lever with a spring for holding the same normally into engagement; a trip-pin adapted to act on said latch and a stop on the carriage adapted to engage said trip-pin, whereby the carriage will automatically release the lever and throw the mechanism out of gear when it has reached the end of its travel, coacting for the purpose specified.

707,096. COTTON-GIN. JAMES T. FULLER, Calvert, Tex. Filed Aug. 24, 1901. Serial No. 73,117. (No model.)

Claim.—1. In a cotton-gin, a ginning-cylinder provided with ginning-points arranged in circumferential rows, in combination with stripping-fingers provided with blade-like end portions which project circumferentially over the surface of the cylinder between the rows of ginning-points below the ends thereof.

2. In a cotton-gin, a ginning-cylinder carrying circumferential rows of ginning-points, in combination with spaced stripping-fingers having blade-like end portions which project over the surface of the cylinder between the rows of ginning-points and extend upwardly above the points to form a slotted wall for the inner breast.

3. A stripping-finger for cotton-gins having a blade-like end portion shaped to extend circumferentially over the surface of the ginning-cylinder, and a body portion arranged at an angle to the end portion.

4. A stripping-finger for cotton-gins having a pointed end portion shaped to extend circumferentially over the surface of the ginning-cylinder, and a body portion arranged at an angle to the end portion.

5. In a cotton-gin, the combination of a ginning-cylinder provided with circumferential rows of independent pin-like ginning-points, and stripping-fingers having a blade-like end portion shaped to extend circumferentially over the surface of the cylinder and a body portion extending upwardly above the points to form a slotted wall for the inner breast.

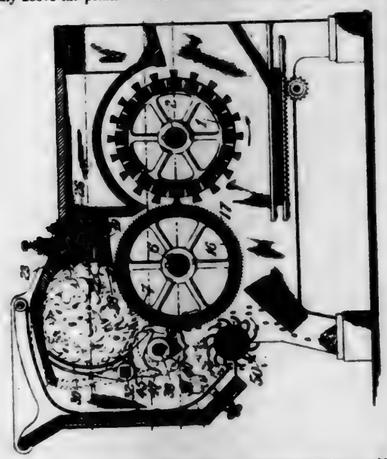

6. In a cotton-gin, the combination of a ginning-cylinder provided with circumferential rows of independent pin-like ginning-points in combination with stripping-fingers provided with blade-like end portions which project circumferentially over the surface of the cylinder between the rows of ginning-points and below their apices, substantially as shown and described.

7. A stripping-finger for cotton-gins having an end portion shaped to extend circumferentially over the surface of the ginning-cylinder and carrying at its extremity a downwardly-projecting lip.

8. A stripping-finger having a pointed end portion shaped to extend circumferentially over the surface of the ginning-cylinder and carrying at its point a downwardly-projecting lip.

9. In a cotton-gin, the combination of a ginning-cylinder provided with circumferential grooves, a row of ginning points between the grooves, stripping-fingers having an end portion which projects circumferentially over the surface of the cylinder between the ginning-points, and lips carried by the stripping-fingers and extending into said grooves.

10. In a cotton-gin, the combination of a ginning-cylinder provided with ginning-points arranged in circumferential rows, a surface of relatively yielding material between the ginning-points and stripping-fingers having end portions which project over such surface.

11. In a cotton-gin, the combination of a ginning-cylinder provided with ginning-points arranged in circumferential rows, a surface of relatively yielding material between the ginning-points and stripping-fingers having end portions which project over said surface and body portions arranged at an angle to the end portions and spaced to form a slotted wall for the inner breast.

12. In a cotton-gin, the combination of a ginning-cylinder provided with ginning-points arranged in circumferential rows, strips of relatively yielding material, of less width than the distance between the rows of ginning-points, secured to the cylinder between the rows, stripping-fingers extending over said strips and downwardly-projecting lips carried by said fingers at the sides of said strips.

13. In a cotton-gin, a ginning-cylinder provided with ginning-points arranged in circumferential rows, in combination with stripping-fingers provided with end portions which project circumferentially over the surface of the cylinder between the rows of ginning-points, below the ends thereof, and an adjustable bar to which said fingers are secured.

14. In a gin, the combination of a ginning-cylinder provided with ginning-points arranged in circumferential rows, stripping-fingers projecting between the rows, a bar to which said fingers are secured and means for adjusting the position of said bar vertically and longitudinally.

15. In a gin the combination of a ginning-cylinder provided with ginning-points arranged in circumferential rows, stripping-fingers projecting between the rows, a bar to which said fingers are secured and means for adjusting the position of said bar, comprising an adjusting-screw and a spring interposed between the screw and said bar.

16. In a gin the combination with a ginning-cylinder having ginning-points arranged thereon in circumferential rows, of a plurality of revolvable disks, coöperating with the ginning-points, and means for presenting the cotton to the action of the ginning-points below said disks.

17. In a gin the combination with the ginning-points and means coöperating therewith to separate the lint from the seed, of a plurality of revolvable disks arranged below the inner breast adjacent to the ginning-cylinder, and means for presenting the cotton to the action of the ginning-points below said disks.

18. In a gin the combination with the ginning-points and means coöperating therewith to separate the lint from the seed, of a plurality of revolvable disks having scalloped edges arranged below the inner breast adjacent to the ginning-cylinder.

19. In a gin the combination with a ginning-cylinder having ginning-points arranged thereon in circumferential rows, of a plurality of revolvable disks having scalloped edges which project between said rows.

20. In a gin, the combination with a ginning-cylinder having ginning-points arranged thereon in circumferential rows, of a plurality of revolvable disks, arranged in pairs, the edges of which project between said rows, and means for presenting the cotton to the action of the ginning-points below said disks.

21. In a gin the combination with a ginning-cylinder having ginning-points arranged thereon in circumferential rows, of a plurality of revolvable disks coöperating therewith, plates arranged between said disks and means for actuating said plates to engage the cotton in the gin-breast and lift it above said disks.

22. In a gin the combination with a ginning-cylinder having ginning-points arranged thereon in circumferential rows, of a plurality of revolvable disks which project between said rows, plates arranged between said disks and having projections for engaging the cotton in the gin-breast and means for moving said projections above the edges of the disks.

23. In a gin the combination with a ginning-cylinder having ginning-points arranged thereon in circumferential rows of a plurality of revolvable disks which project between said rows and means for lifting the cotton in the gin-breast clear of the disks.

24. In a gin the combination with the ginning-points and means coöperating therewith to separate the seed from the lint, of means for lifting the cotton relatively to the ginning-points and retarding its rotation in the breast to arrest the ginning action without stopping the gin.

25. In a gin the combination with the ginning-points and means coöperating therewith to separate the seed from the lint, of plates at the lower portion of the inner breast and means for lifting said plates to engage the cotton in the breast for the purposes set forth.

26. In a gin the combination with the ginning-points and means coöperating therewith to separate the seed from the lint, of means for engaging the cotton in the inner breast and carrying it to the ginning-points and means for retarding the movement of the cotton in the inner breast without stopping the gin.

27. In a gin the combination with the ginning-points and means coöperating therewith to effect the separation of the seed from the lint, of revolving devices for engaging the cotton in the inner breast and carrying it to the ginning-points and means for effecting the disengagement of such cotton and said devices.

28. In a gin the combination with the ginning-points and means coöperating therewith to effect the separation of the seed from the lint, of revolving devices for engaging the cotton in the inner breast and carrying it to the ginning-points and means for lifting the cotton out of engagement with said devices.

707,097. BEET-HARVESTER. WALTER GARY, Saginaw, Mich., assignor of one-half to Burton Ostrom, Saginaw, Mich. Filed Feb. 21, 1902. Serial No. 95,082. (No model.)

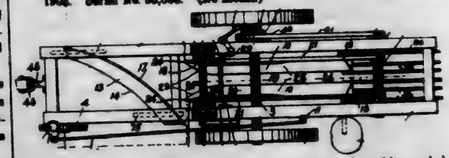

Claim.—1. In a harvester, a frame and a plow adjustably carried by said frame, the plow being formed by two inclined L-shaped parallel members separated by a parallel open space between the lower flanges, the side flanges being sharpened and the bottom flanges being cut away in front to form a point with the side flanges, substantially as shown and described.

2. In a harvester, a frame and a plow adjustably connected thereto, the front half of the plow being formed of two parallel inclined L-shaped members separated by a parallel open space between the bottom flanges, the rear portion of said members forming a V-shaped trough open at the bottom.

3. In a harvester, a plow composed of two parallel L-shaped members, with an open space between the bottom flanges, the side flanges being sharpened and the bottom flanges being cut on a curve in front to form a point with the side flanges, the rear portion of said members being shaped so as to form a V-shaped trough open at the bottom and having openings in the sides for relieving the plow of surplus earth, substantially as shown and described.

707,098. RIBBON-FASTENER FOR TYPE-WRITING MACHINES. FRANK O. GARRISON, Portland, Oreg. Filed Aug. 31, 1901. Serial No. 73,867. (No model.)

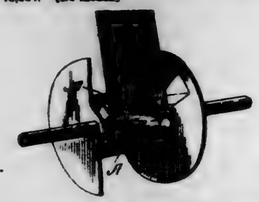

Claim.—1. A fastener for type-writer ribbons, comprising a substantially circular band, one of the ends of which is provided with inwardly and rearwardly extending spurs near its tip or extremity, substantially as described.

2. A fastener for type-writer ribbons comprising a substantially circular band, one of the ends of which is provided with three inwardly and rearwardly extending spurs, said spurs being at a distance from the tip, and the center one being farther from the tip than the other two.

3. In a type-writer-ribbon holder, a spool, and a substantially circular band thereon, the ends of the band being normally at a distance from each other, and one of them provided at a distance from its tip with inwardly and rearwardly extending spurs adapted to engage with the ribbon and hold it upon the spool.

707,099. INCANDESCENT ELECTRIC LAMP. EDGAR S. GARDNER, Boston, Mass., assignor to Bernstein Electric Manufacturing Company, Portland, Me., a Corporation of Maine. Filed July 23, 1901. Serial No. 69,168. (No model.)

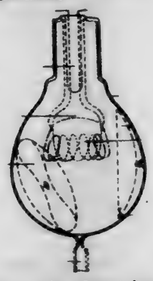

Claim.—1. An improved incandescent lamp consisting of an exhausted bulb a filament, leading-in wires supporting said filament, a glass tube extending into the exhausted bulb and sealed at the outer end to the neck of said bulb and at its inner end about the wires which support the filament, and a reflector inserted into the bulb before the neck is sealed and secured to the inside of said bulb and opposite the filament.

2. An improved incandescent lamp consisting of an exhausted bulb a filament, leading-in wires supporting said filament, a glass tube extending into the exhausted bulb and sealed at the outer end to the neck of said bulb and at its inner end about the wires which support the filament, and a reflector inserted into the bulb before the neck is sealed and secured to the inside of said bulb and lengthwise to it and opposite the filament.

707,100. PRINTING MACHINERY. SAMUEL G. GOSS, Chicago, Ill., assignor to the Goss Printing Press Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 16, 1897. Serial No. 619,423. (No model.)

Claim.—1. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms operable independently of each other to drive the same set or sets of printing mechanism, substantially as described.

2. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of independent driving mechanisms adapted to operate independently to drive the same set or sets of printing mechanism, and means for coupling said driving mechanisms together, substantially as described.

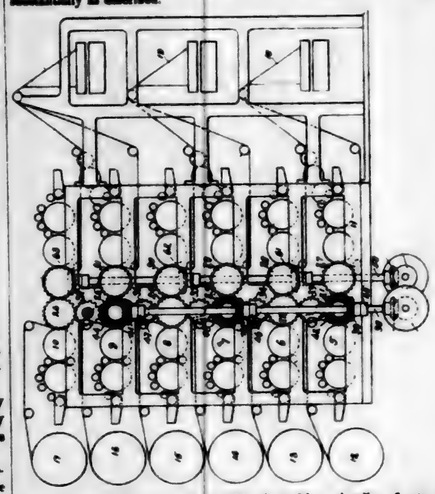

3. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another in a common frame, of a plurality of independent driving mechanisms, and means for driving certain of said sets of printing mechanisms by one of said driving mechanisms and certain of the same sets of printing mechanism by another of said driving mechanisms, substantially as described.

4. In a printing-press the combination with a plurality of sets of printing mechanism arranged one above another in a common frame, of a plurality of independent driving mechanisms, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and one of the same sets of printing mechanism by another of said driving mechanisms and means for coupling said driving mechanisms together, substantially as described.

5. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms independent of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain other of said sets of printing mechanism by another of said driving mechanisms, and means whereby the different sets of printing mechanism may be connected to the different driving mechanisms or disconnected therefrom, as may be desired, substantially as and for the purpose specified.

6. In a printing-press the combination with a plurality of sets of printing mechanism, of a plurality of independent driving mechanisms adapted to operate independently to drive the same set or sets of printing mechanism, means for coupling said driving mechanisms together, and folding devices adapted to operate in connection with the different sets of printing mechanism, substantially as described.

7. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms independent of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain other of said sets of printing mechanism by another of said driving mechanisms, and means for driving all of said sets of printing mechanism by one of said driving mechanisms, substantially as described.

8. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms operable independently of each other to drive the same set or sets of printing mechanism and a plurality of folding devices adapted to operate independently or together and in connection with one or more of the sets of printing mechanisms, substantially as described.

9. In a printing-press the combination with a plurality of sets of printing mechanism, of driving devices at each side of the press and independent driving-shafts for driving the same set or sets of printing mechanism from opposite sides of the press, substantially as described.

10. In a printing-press, the combination with a plurality of sets of printing mechanism, of driving-gears located at opposite sides of the press for driving said sets of printing mechanism from either side of the press and independent driving-shafts for communicating power to the driving gears at the opposite sides of the press, substantially as described.

11. In a printing-press, the combination with three or more sets of printing mechanism, of means whereby said sets of printing mechanisms may be connected together or disconnected from one another, beveled gears carried by alternate sets of printing mechanism at opposite sides of the press, and independent driving-shafts geared with said beveled gears, whereby the gears at each side of the press may be rotated at will, substantially as and for the purpose specified.

12. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving mechanisms operable independently of each other, and means for driving one or more of said sets of printing mechanism by either of said driving mechanisms independently of the operation of the other set or sets of printing mechanism, substantially as described.

13. In a printing-press, the combination with three or more sets of printing mechanism, and means whereby said sets of printing mechanism may be connected together or disconnected from one another, of a pair of driving-shafts, and means carried by said shafts and engaging alternate sets of printing mechanism for driving said sets of printing mechanism, substantially as described.

14. In a printing-press, the combination with three or more sets of printing mechanism, and means whereby said sets of printing mechanism may be connected together or disconnected from one another, of a pair of driving-shafts, means carried by said shafts and engaging alternate sets of printing mechanism for driving said sets of printing mechanism, and means for driving said driving-shafts from a common source of power, substantially as described.

15. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of driving-mechanisms operable independently of each other, and means for driving any one of said sets of printing mechanism by either of said driving mechanisms independently, substantially as described.

16. In a printing-press, the combination with a plurality of sets of printing mechanism, of a plurality of independently-operable driving-shafts, means for driving the same set or sets of printing mechanism from either of said driving-shafts, and coupling devices for coupling said shafts together, substantially as described.

17. In a printing-press the combination of two sets of printing mechanisms, two driving mechanisms and connections between each of said driving mechanisms and both sets of printing mechanism, the two driving mechanisms being independent of each other whereby either driving mechanism may be employed independently of the other to drive said sets of printing mechanism, substantially as described.

18. In a printing-press the combination of two sets of printing mechanism arranged one above the other in a common frame, two independent driving mechanisms and means for driving one of said sets of printing mechanism by one of said driving mechanisms and the other of said sets of printing mechanism by the other driving mechanism and means for driving both sets of printing mechanism by one of said driving mechanisms, substantially as described.

19. In a printing-press the combination with a plurality of sets of printing mechanism mounted in a common frame, of a plurality of driving mechanisms independent of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain of the same sets of printing mechanism by another of said driving mechanisms and a plurality of folding mechanisms, substantially as described.

20. In a printing-press the combination with a plurality of sets of printing mechanism mounted in a common frame, of a plurality of independent driving mechanisms adapted to operate independently of each other, means for driving certain of said sets of printing mechanism by one of said driving mechanisms and certain of the same sets of printing mechanism by another of said driving mechanisms, means for coupling said driving mechanisms together so that they will operate jointly to drive said sets of printing mechanism and a plurality of feeding mechanisms adapted to receive webs from said sets of printing mechanism, substantially as described.

21. In a printing-press, the combination with three or more sets of printing mechanism, and means whereby said sets of printing mechanism may be connected together or disconnected from one another, of two driving-shafts arranged substantially as described for driving said sets of printing mechanism, and means for connecting said shafts with common driving mechanism or for disconnecting them, substantially as described.

707,101. PRINTING-PRESS. SAMUEL G. GOSS, Chicago, Ill., assignor to the Goss Printing Press Company, Chicago, Ill., a Corporation of Illinois. Filed Apr. 26, 1897. Serial No. 633,491. (No model.)

Claim.—1. In a printing-press, the combination with a plurality of sets of printing mechanism mounted one above another in a common frame, of a common source of power for driving said sets of printing mechanism, and means for starting and stopping one of said sets of printing mechanism independently of the other and while each other is in motion, substantially as described.

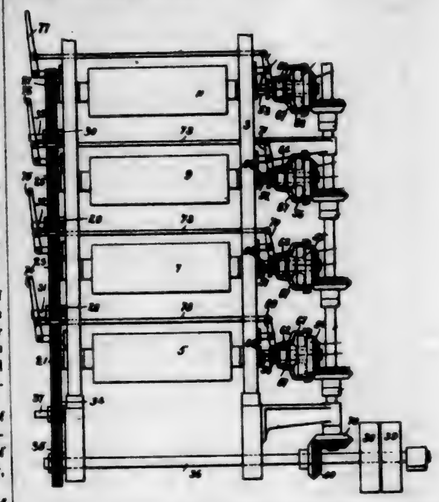

2. In a printing-press, the combination with a plurality of sets of printing mechanism mounted one above another in a common frame, of a common source of power for driving said sets of printing mechanism, means for coupling together certain of said sets of printing mechanism, and means for starting and stopping such coupled sets of printing mechanism simultaneously and independently of the condition of the other set or sets of printing mechanism composing the press as a whole, substantially as described.

3. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a driving-shaft, independently-operable devices for connecting each of said sets of printing mechanism to said driving-shaft while said shaft is in motion, and mechanism independent of said connecting devices for driving said sets of printing mechanism from said driving-shaft, substantially as described.

4. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a driving-shaft, a clutch operable while the shaft is in motion for connecting one of said sets of printing mechanism to said shaft, and coupling mechanism for coupling a plurality of said sets of printing mechanism together, whereby a plurality of sets of printing mechanism may be started by operating said clutch, substantially as described.

5. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a drive-shaft, a clutch operable while the shaft is in motion for connecting one of said sets of printing mechanism to said shaft, and gears for coupling a plurality of said sets of printing mechanism together, substantially as described.

6. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, and a series of gears connecting said sets of printing mechanism together in series, certain of said gears being movable out of engagement with other gears of the series to permit independent operation of certain of said sets of printing mechanism, of a driving-shaft, means for driving said gears from said driving-shaft, independent coupling devices for coupling said sets of printing mechanism independently to said driving-shaft, and means for operating said coupling devices while said shaft is in motion, substantially as described.

7. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, and a series of gears connecting said sets of printing mechanism together in series, certain of said gears being movable out of engagement with other gears of the series to permit independent operation of certain sets of printing mechanism, of a driving-shaft, means for driving said gears from said driving-shaft, a vertical driving-shaft, means for driving said latter shaft, a series of coupling devices independent of said gears between said vertical shaft and the sets of printing mechanism, and levers for operating said coupling devices independently of one another, substantially as described.

8. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a horizontal driving-shaft, a vertical driving-shaft arranged on one side of the press, a series of beveled pinions carried by said vertical shaft, a series of friction-clutches carried by said sets of printing mechanism and having beveled pinions adapted to mesh with said beveled pinions carried by said vertical shaft, means for operating said friction-clutches to connect and disconnect said sets of printing mechanism with said vertical shaft, and means independent of said clutches for coupling together a plurality of said sets of printing mechanism, substantially as described.

9. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a horizontal driving-shaft, a vertical driving-shaft arranged on one side of the press, a series of beveled pinions carried by said vertical shaft, a series of clutches carried by said sets of printing mechanism and having beveled pinions adapted to mesh with said beveled pinions carried by said vertical shaft, means for operating said clutches to connect and disconnect said sets of printing mechanism with said vertical shaft, a series of working gears for driving said sets of printing mechanism, adjustable intermediate pinions for connecting said sets of printing mechanism in series and for disconnecting them, and means for driving said gears from the horizontal driving-shaft, substantially as described.

10. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a horizontal driving-shaft, a series of working gears carried by said sets of printing mechanism at one side of the press, adjustable intermediate pinions for connecting said gears in series and for disconnecting them, a vertical shaft, means for driving said vertical shaft, a series of independent clutches connected to said sets of printing mechanism, and means whereby said clutches may be operated to connect them with said vertical shaft, substantially as described.

11. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a driving-shaft, independently-operable devices for connecting certain of said sets of printing mechanism to said driving-shaft while said shaft is in motion, a lever for operating each of said connecting devices, and means independent of said drive-shaft for coupling together certain of said sets of printing mechanism, whereby a plurality of sets of printing mechanism may be simultaneously connected to said drive-shaft by operating a single lever, substantially as described.

12. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a vertical driving-shaft, independent coupling devices for each of said sets of printing mechanism, and means for operating said coupling devices to connect or disconnect each of said sets of printing mechanism from said vertical driving-shaft while said shaft is in motion independently of the other sets of printing mechanism, substantially as described.

13. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a vertically-arranged driving-shaft, a series of independently-operating friction-clutches for independently connecting and disconnecting said sets of printing mechanism and said driving-shaft, and levers for operating said friction-clutches, substantially as described.

14. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a driving-shaft, independently-operable friction-clutches for connecting certain of said sets of printing mechanism to said drive-shaft while said shaft is in motion, a lever for operating each of said clutches, and gears for coupling together certain of said sets of printing mechanism, whereby a plurality of sets of printing mechanism may be simultaneously connected to said drive-shaft by operating a single lever, substantially as described.

15. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of means for starting and stopping different sets of printing mechanism independently, means for coupling together certain of said sets of printing mechanism, a plurality of folding mechanisms arranged one above another, and means for driving said folding mechanisms independently of one another and in combination with different sets of printing mechanism, substantially as described.

16. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a driving-shaft, independent clutches for driving said sets of printing mechanism from said shaft, means independent of said shaft for connecting certain of said sets of printing mechanism together, whereby a plurality of sets of printing mechanism may be started by operating a single clutch, and folding mechanism operating in connection therewith, substantially as described.

17. The combination with a set of printing mechanism, of a plurality of folding mechanisms, and means for operating said folding mechanisms independently of one another from and in combination with the printing mechanism, substantially as described.

18. The combination with a plurality of sets of printing mechanism, of a folding device, and means for driving said folding device from, and in combination with, different sets of printing mechanism operating separately, substantially as described.

19. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, and a series of gears connecting said sets of printing mechanism together in series, certain of said gears being movable out of engagement with other gears of the series to permit independent operation of certain of said sets of printing mechanism, of a driving-shaft, independent connecting devices for connecting certain of said sets of printing mechanism independently to said drive-shaft, said connecting devices being operable while said shaft is in motion, substantially as described.

20. In a printing-press, the combination with a plurality of sets of printing mechanism arranged one above another, of a vertical driving-shaft, a series of beveled pinions carried by said shaft, friction-clutches carried by certain of said sets of printing mechanism and having beveled pinions adapted to mesh with said beveled pinions carried by said shaft, means for operating said friction-clutches to connect and disconnect said sets of printing mechanism and said shaft, and means independent of said shaft for coupling together a plurality of said sets of printing mechanism, substantially as described.

21. In a printing-press the combination of three or more sets of printing mechanism arranged one above another in a common frame and capable of operation as distinct and independent presses, means for coupling together certain of said sets of printing mechanism and means for starting and stopping said coupled sets and the other set or sets of printing mechanisms independently of each other, substantially as described.

22. In a printing-press the combination of a plurality of sets of printing mechanism, means for starting and stopping certain sets of printing mechanism independently, a plurality of folding mechanisms and means for driving said folding mechanisms independently of each other and in combination with different sets of printing mechanism, substantially as described.

707,102. NUT-LOCK. WILLIAM GRAHAM, Dekoven, Ky. Filed Oct. 29, 1901. Serial No. 80,396. (No model.)

Claim.—1. A bolt and a nut, the one provided with a longitudinal groove and the other with a longitudinal groove arranged in a plane eccentric to the axis of the bolt and sloping in the direction in which the nut turns when being screwed home; in combination with a key adapted to be inserted into said grooves when they register, said key being made angular in cross-section to correspond to the angularity of the registering grooves and adapted, by a retrograde movement or turn of the nut, to be forced firmly into binding contact, substantially as set forth.

2. The combination with a bolt provided with a longitudinal groove arranged in a plane eccentric to the axis of the bolt, of a nut provided with a longitudinal groove arranged in a plane eccentric to the axis of the nut and at an angle to the first-named groove and sloping in the direction in which the nut turns when being screwed home, whereby when the groove of the nut is made to register with the groove of the bolt, the outline of the groove will be angular, and a key angular in cross-section to correspond with the angularity of the registering grooves, substantially as set forth.

707,108. FURNACE. ROBERT HALLEY, Chicago, Ill., assignor of one-fourth to the Flame Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Aug. 2, 1901. Serial No. 70,568. (No model.)

Claim.—1. In a device of the class described, the combination with the stationary support, of a furnace mounted to rotate thereon having the small central open portion and the passages radiating therefrom and leading to the outside of the furnace, supports for the articles to be heated adjacent to the openings terminating the passages, and a burner axially located with reference to said furnace and adapted to discharge the flame into said open central portion against a solid opposed wall by which it is deflected into said passages: substantially as and for the purpose described.

2. In a device of the class described, the combination with the stationary support, of a furnace mounted to rotate thereon having the small central open portion and the passages radiating therefrom and leading to the outside of the furnace, supports for the articles to be heated adjacent to the openings terminating the passages, and a stationary burner having oil and air supply pipes connected thereto and by which it is supported axially located in said furnace and adapted to discharge the flame into said open central portion against a solid opposed wall by which it is deflected into said passages; substantially as and for the purpose described

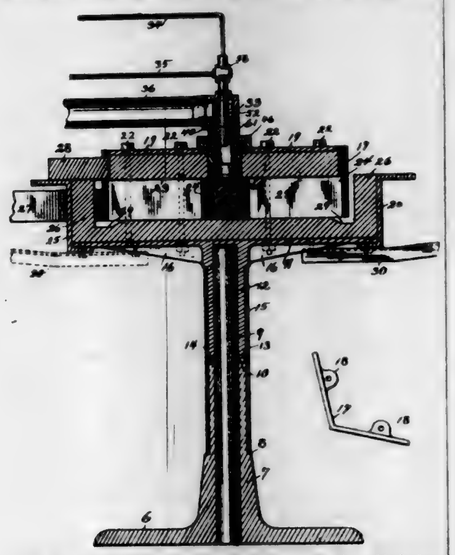

3. In a device of the class described, the combination with the base having the vertical shaft 9 therein, of the bottom plate 11 having the sleeve on the under side thereof rotating upon the shaft 9, the top plates 19, the angle-irons 17 bolted between said bottom and top plates and forming the apertures 24 of the burner located in the center of the top plates.

4. In a device of the class described, the combination with the base having the vertical shaft thereon, of the furnace adapted to rotate on the vertical shaft, the radial arms 30 secured to said furnace, the ring 32 secured to said arms, and the burner centrally mounted in the top of the furnace, substantially as described.

5. In a device of the class described, the combination with the burner of the furnace into which the flame of the burner is directed having the peripheral apertures, a support to hold articles adjacent to the apertures, and the fire-bricks cut away as at 29 to permit the flames to pass between said articles, substantially as and for the purpose described.

6. In a device of the class described, the combination with the furnace-body having the peripheral apertures, of the Z portions 25 secured to the bottom of the furnace-body opposite said apertures to support the fire-bricks in front and on top of said apertures, substantially as described.

7. In a device of the class described, the combination with the block having the channel therethrough of a burner adapted to discharge a stream of oil through said channel, and a series of openings in said block having their points meeting in the said channel in the line of discharge of the stream of oil, substantially as and for the purpose described.

707,104. ADJUSTABLE FURNACE. ROBERT HALLEY, Chicago, Ill., assignor of one-fourth to the Flame Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Aug. 2, 1901. Serial No. 70,569. (No model.)

Claim.—1. In a furnace, the combination with the stationary furnace member, of the movable furnace member, said members having the surfaces upon which the articles to be heated are placed in substantially the same plane, adjustable oil and air pipe connections between said members, and means for moving said movable member in the plane of the said surfaces so that the articles can be heated at points different distances apart, substantially as described.

2. In a furnace, the combination with the furnace member having a burner at one end thereof and the oil-pipe and air-pipe leading to the said burner, of the movable furnace member having a burner at one end thereof, the heating-surfaces of said members upon which the articles to be heated are placed being in substantially the same plane, the adjustable oil and air pipe connections between the air and oil pipes of the burner on the stationary member and the burner on the adjustable member, and means for moving said movable member in the plane of the said surfaces so that the articles can be heated at points different distances apart: substantially as described.

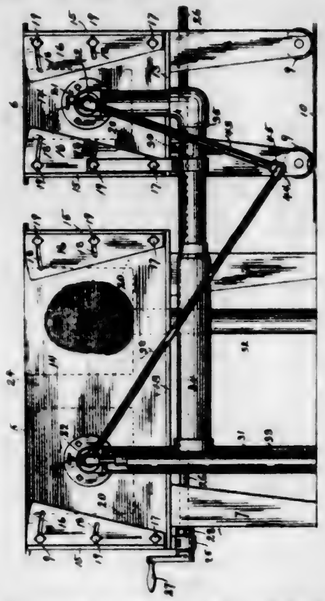

3. In a furnace, the combination with the stationary furnace member having a burner at one end thereof, and the air-pipe and oil-pipes leading to said burner, of the movable furnace member having a burner at one end thereof, the telescoping air-pipe connections between the burner on the movable member and the air-pipe for the stationary member, and the pipes 38 and 43 pivotally connected at both ends thereof between the oil-pipe on the stationary member and the burner on the movable member, all coöperating substantially as and for the purpose described.

4. In a furnace, the combination with the stationary furnace member, of the movable furnace member, burners for each of said members adjustable oil and air pipe connections between said members, and means for adjusting the movable member relative to the stationary member consisting of the screw-threaded rod secured to rotate in one of said members and coöperating with the screw-threaded aperture in the other of said members.

5. In a furnace, the combination with the stationary furnace member, of the movable furnace member mounted on rollers, adjustable oil and air pipe connections between said members, and means for adjusting the movable member consisting of the screw-threaded rod secured to rotate in one of said members and coöperating with the screw-threaded aperture in the other of said members.

6. In a furnace, the combination with the base-plate, of the stationary ends, and sides pivotally secured at their lower ends to the base-plate to increase or diminish the breadth of the furnace-top.

7. In a furnace, the combination with the base-plate, of the stationary ends, the sides provided with the segmental flanges overlapping the ends and pivoted thereto at their lower ends, and means for securing the sides in any desired position of adjustment.

8. In a furnace, the combination with the base-plate, of the stationary ends, the sides provided with the segmental flanges overlapping the ends and pivoted thereto at their lower ends, and means for securing the sides in any desired position of adjustment, consisting of the segmental slots in said flanges concentric with the pivotal points thereof and the bolts 19 passing through said slots into the ends substantially as and for the purpose described.

9. A furnace of the class described, having a rectangular fire-box with an oil-burner located so as to direct the flame inwardly from one end near one side, and another similar burner located so as to direct the flame inwardly from the other end near the other side, and adapted to have a temporary wall extending between the center of the ends.

707,105. BRAKE-BEAM. BRONISLAW HASKELL, Saginaw, Mich. Filed June 18, 1902. Serial No. 112,142. (No model.)

Claim.—1. In a brake-beam, the combination of a compression member of U or channel section, a tension member having hooked ends fitting between the side plates of the compression member, transverse connections, passing through the eyes of the hooked ends of the tension member and through the side plates of the compression member, and a strut interposed between the middle portions of the compression and tension members.

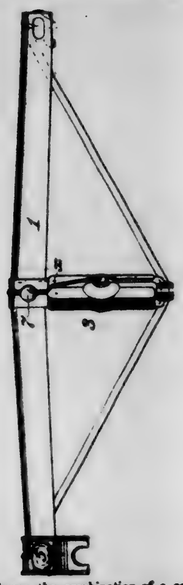

2. In a brake-beam, the combination of a compression member of U or channel section, a tension member having hooked ends fitting between the side plates of the compression member, transverse connections which are elongated in cross-section in the line of the compression member, and which pass through correspondingly-formed slots in the side plates of said member and through the eyes of the hooked ends of the tension member, and a strut interposed between the middle portions of the compression and tension members.

3. In a brake-beam, the combination of a compression member of U or channel section, a tension member having hooked ends fitting between the side plates of the compression member, brake-heads fitting over the ends of the compression member, transverse connections passing through the brake-heads, the side plates of the compression member, and the eyes of the hooked ends of the tension member, and a strut interposed between the middle portions of the compression and tension members.

4. In a brake-beam, the combination of a compression member of U or channel section, a tension member, having hooked ends fitting between the side plates of the compression member, brake-heads fitting over the ends of the compression and tension members, rivets passing through the brake-heads, the side plates of the compression member, and the eyes of the hooked ends of the tension member, and having heads abutting on the brake-heads, and a strut interposed between the middle portions of the compression and tension members.

707,106. WINDOW-SASH. ERNEST HINCK, Yannechine, Ontario. Filed Feb. 28, 1902. Serial No. 96,661. (No model.)

Claim.—1. The combination of a window-casing provided with pulley-pieces, sash-beads consisting of a fixed piece and a movable piece, a sash mounted to reciprocate between said beads, the movable piece being slidably mounted in oblique guides on the fixed piece and adapted to be pushed back to free the corresponding edge of the sash, and partible hinges carried by the sash and the window-casing about which the sash is adapted to turn.

2. The combination of a window-casing having sash slides or beads, a sash mounted to reciprocate therein between said slides, counterbalancing means removably attached to said sash and comprising a weight having a cord passing over a pulley, hinge-halves attached respectively to the casing and sash at one edge of the latter and about which it is adapted to be turned, means for releasing the opposite edge of the sash from its corresponding slide, means for releasing said counterbalancing means from the free end of the sash, and means operated by the movement of the sash-slide to lock said counterbalancing means in position.

3. The combination of a window-casing having slides the inner one of which at one side has a sliding piece adapted to have an oblique reciprocating movement and be pushed back flush with the casing-board, a set of oblique cam-shaped guides confining said sliding piece in its movement, a sash mounted to slide between said slides, and hinge-halves adjacent to one edge of the sash on the opposite side from said sliding piece, whereby the sash is adapted to be released from the slide at one side by pushing said slide up or down and to turn about the hinges at the opposite side.

4. The combination of a window-casing having sash-slides, a sash mounted to slide therebetween, hinge-sockets mounted in the window-casing adjacent to one edge of the sash, pintles carried by the edge of the sash adapted to engage in said sockets, a sliding piece forming a part of one of said sash-slides and adapted to be pushed back flush with the casing, means for counterbalancing said sash, said means being removable from said sash at one side thereof, and means operated by the movement of said sliding piece to lock said counterbalancing means in position.

5. In a combination sash and casing for a window, a sash-slide comprising a fixed piece, a removable piece having an oblique cam-slot therein, and a sliding piece having a tongue adapted to work in said cam-slot and a lower end guided obliquely by suitable guides upon the casing, whereby the raising of said sliding piece will cause it to be moved forward to act as a guide for the sash and the lowering of said sliding piece will cause it to be pushed back flush with the casing.

6. In a combination sash and casing for a window, a sash-slide comprising a fixed piece, a removable piece having an oblique cam-slot therein, and a sliding piece having a tongue adapted to work in said cam-slot and a lower end guided obliquely by suitable guides upon the casing, whereby the raising of said sliding piece will cause it to be moved forward to act as a guide for the sash and the lowering of said sliding piece will cause it to be pushed back flush with the casing, in combination with a second sash-slide, a sash mounted to reciprocate between the two slides, and partible hinges carried by the sash and window-casing to enable it to turn about the opposite edge thereof.

7. In a combination sash and casing for a window, a sash-slide comprising a fixed piece, a removable piece having an oblique cam-slot therein, and a sliding piece having a tongue adapted to work in said cam-slot and a lower end guided obliquely by suitable guides upon the casing, whereby the raising of said sliding piece will cause it to be moved forward to act as a guide for the sash and the lowering of said sliding piece will cause it to be pushed back flush with the casing, in combination with a second sash-slide, a sash mounted to reciprocate between the two slides, partible hinges carried by the sash and window-casing to enable it to turn about the opposite edge thereof, counterbalancing means consisting of a sash-cord, a pulley over which the cord passes, and a weight attached to the end thereof, and an attachment-piece for removably connecting the sash with said cord comprising a rod sliding in a suitable groove in the casing and having a tongue with a notch in the stile of the sash.

8. In a combination sash and casing for a window, a sash-slide comprising a fixed piece, a removable piece having an oblique cam-slot therein, and a sliding piece having a tongue adapted to work in said cam-slot and a lower end guided obliquely by suitable guides upon the casing, whereby the raising of said sliding piece will cause it to be moved forward to act as a guide for the sash and the lowering of said sliding piece will cause it to be pushed back flush with the casing, in combination with a second sash-slide, a sash mounted to reciprocate between the two slides, partible hinges carried by the sash and window-casing to enable it to turn about the opposite edge thereof, counterbalancing means consisting of a sash-cord, a pulley over which the cord passes, and a weight attached to the end thereof, an attachment-piece for removably connecting the sash with said cord comprising a rod sliding in a suitable groove in the casing and having a tongue with a notch in the stile of the sash, and means operated by the movement of said sliding piece to lock said attachment-piece comprising a pivoted latch adapted to be pushed by means of a cam edge on the sliding piece into engagement with a reduced portion of said attachment-piece.

9. The combination of a window-casing, sash slides or beads attached thereto and one of which has a sliding piece guided to move in an obliquely upward and downward direction, means for raising said sliding piece to a position overlapping the sash and for lowering it to position clearing the sash, a sash mounted to reciprocate between said slides, hinge-pieces mounted upon the opposite side of the casing adjacent to the sash, coöperating hinge-pieces mounted on the sash and adapted to engage with said fixed hinge-pieces, counterbalancing means for one side of the sash comprising a sash-cord passing over a pulley and a weight attached at the end thereto, a disconnectible attachment-piece to which the other end of the sash-cord is connected, said attachment-piece having a lug or tongue engaged by a notch in the edge of the sash-stile, and a sector-shaped latch pivotally mounted on the window-casing between said sliding piece and said attachment-piece, said sliding piece having an oblique cam-face adapted to operate said latch to cause it to engage with a reduced portion of said attachment-piece when the sliding piece is pushed downwardly and inwardly, whereby to lock said attachment-piece in position.

10. In a combination window sash and casing, a partible hinge comprising a stationary socket, a pivoted metallic plate carrying a pintle, and an adjusting-screw passing through an arcuate slot in said plate, whereby the same may be tightened to the requisite degree.

11. In a combination sash and casing, hinge means for permitting the sash to be turned about a vertical axis comprising a stationary socket attached to the casing, and a plate pivoted to the sash-stile and having an arcuate slot therein, an adjusting-screw passing through said slot, a pintle carried by said plate and adapted to be engaged by said socket when the plate is in one position and to be out of the way of said socket when the plate is turned to another position, and a thumb-piece projecting from said plate by which the latter may be turned.

12. In a combination sash and casing, hinge means for permitting the sash to be turned about a vertical axis comprising a stationary socket attached to the casing, and a plate pivoted to the sash-stile and having an arcuate slot therein, an adjusting-screw passing through said slot, a pintle carried by said plate and adapted to be engaged by said socket when the plate is in one position and to be out of the way of said socket when the plate is turned to another position, and a double-faced cam-piece attached to the casing of the window and adapted to strike said pivoted plate when the sash is moved past it to push said pintle out of position to be engaged by said socket, substantially as described.

707,107. PROCESS OF TREATING ORES. JOHN HERMAN, Canon City, Colo. Filed Mar. 26, 1902. Serial No. 100,457. (No specimens.)

Claim.—1. The process described which consists in roasting sulfid-of-copper ore at a low heat to form sulfates of the copper and some of the iron present, and produce a large percentage of ferrous sulfate, leaching the roasted ore, precipitating the metallic copper, and adding salt to the leaching solution, before or after the precipitation of the metallic copper, whereby the ferrous salts in the solution are converted to the chlorid and a solution having an excess of salt is produced, and the said solution is adapted to dissolve copper and silver out of carbonate and oxid ores.

2. The process described which consists in roasting sulfid-of-copper ore at a low heat to form sulfates of the copper and some of the iron present and produce a large percentage of ferrous sulfate, leaching the roasted ore, precipitating the metallic copper with iron scraps whereby the proportion of ferrous sulfate is increased, and adding salt to the leaching solution, before or after the precipitation of the metallic copper, whereby the ferrous salts in the solution are converted to the chlorid and a solution having an excess of salt is produced, and the said solution is adapted to dissolve copper and silver out of carbonate and oxid ores.

3. The process described which consists in roasting sulfid-of-copper ore at a low heat to form sulfates of the copper and some of the iron present, and produce a large percentage of ferrous sulfate, leaching the roasted ore, precipitating the metallic copper, adding salt to the leaching solution, before or after the precipitation of the metallic copper to convert the ferrous salts in the solution to the chlorid and a solution having an excess of salt is produced, leaching carbonate and oxid ores with the solution, and precipitating the metallic copper therefrom.

4. The process described which consists in roasting sulfid-of-copper ore at a low heat to form sulfates of the copper and some of the iron present, and produce a large percentage of ferrous sulfate, leaching the roasted ore, roasting the residue from the leaching in the presence of common salt, leaching the roasted residue with a salt solution, precipitating the metallic copper from the solutions, and commingling the two solutions before or after the precipitation of the metallic copper for the purpose described.

707,108. CAR-COUPLING. PHILLIP HIER, Chicago, Ill. Filed Sept. 16, 1901. Serial No. 75,608. (No model.)

Claim.—1. In a car-coupler, the combination with a coupler-head, of a knuckle pivotally supported therein, a locking-pin for said knuckle, means located on the opposite side of the locking-pin from the tail of the knuckle when the latter is in its closed position and engaged by the locking-pin when it is elevated and moved thereby into position beneath the pin to support the same, substantially as described.

2. In a car-coupler, the combination with a coupler-head, of a knuckle pivotally supported therein, a locking-pin, a dog pivotally supported on the opposite side of the pin from the tail of the knuckle when the latter is in its closed position engaged by the locking-pin when it is elevated and swung thereby into position beneath the pin to support the same, substantially as described.

3. In a car-coupler, the combination with a coupler-head, of a knuckle pivotally supported therein, a locking-pin for said knuckle having a vertical groove therein, a dog pivotally supported within the coupler-head on the opposite side of the pin from the tail of the knuckle when the latter is in its closed position, a lug on said dog projecting into said groove, whereby when the locking-pin is elevated the dog is swung through the engagement of the end of the groove with said lug into position beneath the pin to support the same, substantially as described.

4. In a car-coupler, the combination with a coupler-head, of a knuckle pivotally supported therein, a locking-pin for said knuckle, a dog pivotally supported within the coupler-head engaged by the locking-pin when it is elevated and swung thereby into position to support the pin, and a finger projecting from said dog through an opening in the coupler-head, whereby the dog may be manually swung out of engagement with the pin, substantially as described.

5. In a car-coupler, the combination with a coupler-head, of a knuckle pivotally supported therein, a locking-pin for said knuckle, a dog pivotally supported within said coupler-head adapted to be engaged by the locking-pin when it is elevated and swung thereby into position to support the pin, said dog projecting into the path of the tailpiece of the knuckle and adapted to be engaged thereby and removed from beneath the locking-pin when the knuckle is swung from its closed to its open position, a finger projecting from said dog through an opening in the coupler-head whereby the dog may be manually swung out of engagement with the pin, substantially as described.

6. In a car-coupler, the combination with a coupler-head, of a knuckle pivotally supported therein, a locking-pin for said knuckle having a vertical groove therein, a dog pivotally supported within the coupler-head having a lug projecting into said groove and adapted to be engaged by the lower end thereof when the locking-pin is elevated and thereby swung into position to support the pin, said dog projecting into the path of the tailpiece of the knuckle and adapted to be engaged thereby and removed from beneath the locking-pin when the knuckle is swung from its closed to its open position, and a finger projecting from said dog through an opening in the coupler-head whereby the dog may be manually swung out of engagement with the pin, substantially as described.

707,109. TEMPLE-ATTACHING DEVICE. FRANKLIN G. HIBBS, Philadelphia, Pa. Filed Oct. 17, 1901. Serial No. 78,916. (No model.)

Claim.—1. In a device of the character described, straps movably connected to clamp the lens, a temple-bar connected with one of said straps and engaging the other strap to operate the same.

2. In a device of the character described, a body portion, a strap rigidly secured to the body portion, a second strap pivotally attached thereto, a temple-arm pivoted to said body portion, and means on said arm for operating said pivoted strap.

3. In a device of the character described, a body portion, a strap rigidly secured thereto, a strap pivoted to said body portion, an arm pivoted to said body portion, and shoulders on said arm adapted to contact with said pivoted strap for operating the same.

4. In a device of the character described, a body portion, a strap attached thereto, a second strap pivoted thereto, a spring-arm on said pivoted strap, a temple-arm pivoted to said body portion, and shoulders on said temple-arm adapted to engage said spring-arm.

5. In a device of the character described, a body portion, a strap secured thereto, a second strap pivotally attached to said body portion, a temple-bar pivoted to said body portion, and means whereby said second-mentioned strap may be operated by said temple-bar.

6. In a device of the character described, a body portion, a strap secured thereto, a second strap pivotally attached to said body portion, and a temple-bar pivoted to said body portion and having means engaging with said second-mentioned strap to operate the same.

7. In a device of the character described, straps movably connected, to clamp the lens, a plate pivotally connected with one of said straps and engaging the other to operate the same, means for locking said plate in position and a temple-bar connected with said plate.

8. In a device of the character described, a body portion, a strap secured thereto, a second strap pivotally attached to said body portion, a plate pivoted to said body portion and engaging said second-mentioned strap to operate the same, and a temple-bar pivoted to said plate.

9. In a device of the character described, a body portion, a strap secured thereto, a second strap pivotally attached to said body portion, a plate pivoted to said body portion and engaging said second-mentioned strap to operate the same, a spring-arm adapted to engage said plate and lock the same in position and a temple-arm pivoted to said plate.

10. In a device of the character described, a body portion, a strap rigidly secured to said body portion, a second strap pivotally attached thereto, means for adjusting the position of said second-mentioned strap with respect to said body portion, a temple-arm pivoted to said body portion, and means on said arm for operating said pivoted strap.

11. In a device of the character described, a body portion, a strap attached thereto, a second strap pivoted thereto, a spring-arm on said pivoted strap, a temple-arm pivoted to said body portion, means on said temple-arm for operating said spring-arm and pivoted strap and a stop for limiting the movement of said spring-arm and pivoted strap.

12. In a device of the character described, straps movably connected to clamp the lens, a pivoted plate connected with one of said straps and engaging the other to operate the same, means for locking said plate in operative position and a temple-arm pivoted to said plate, whereby said temple-arm can be moved without moving said plate.

707,110. GLYCOLIC MENTHYL ESTER. FRITZ HOFMANN and JÜRGEN CALLSEN, Elberfeld, Germany, assignors to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Filed Apr. 30, 1902. Serial No. 105,308. (Specimens.)

Claim.—The herein-described new glycolic menthyl ester having the formula

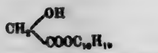

representing white lustrous needles melting at 87° centigrade, which are only sparingly soluble in water and readily soluble in most organic solvents, being split up into menthol and glycolic acid when reacted upon by caustic alkalies or alkaline carbonates and exhibiting valuable therapeutic properties, substantially as hereinbefore described.

707,111. COMPRESSED-AIR-HEATING APPARATUS. GEORGE W. HOPKINS, Cleveland, Ohio, assignor to the Terry Heater Company, Cincinnati, Ohio, a Corporation. Filed Apr. 10, 1902. Serial No. 102,196. (No model.)

Claim.—1. In a compressed-air-heating apparatus, a hollow air-confining member having inlet and outlet pipes, a delivery-tube for the air connected with said outlet-pipe and comprising jointed sections, a discharge-tip of non-heat-radiating material at the end of said delivery-tube, and means to heat the air in its passage through said hollow member, substantially as described.

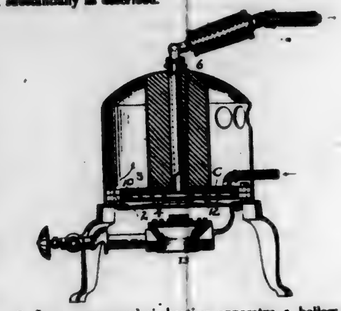

2. In a compressed-air-heating apparatus, a hollow air-confining member having an inlet and an outlet, an air-delivery tube attached to said outlet comprising rotatable and jointed sections, a protecting hand grip and cover on said tube, a removable vulcanized-fiber discharge-tip at the end of said tube, and means to heat the air in its passage through said hollow member, substantially as described

3. In a compressed-air-heating apparatus, a hollow air heating and confining member having an air-inlet pipe and an outlet-pipe at its center provided with a non-heat-conducting covering, and an inclosing casing about said parts, in combination with a jointed air-delivery tube connected with said outlet-pipe, and a burner to heat said hollow member, substantially as described.

4. In a compressed-air-heating apparatus, a hollow air heating and confining member having a circuitous air-passage over its bottom, an inlet and outlet pipe at each end of said passage, a burner beneath said member and an adjustable tube attached to said outlet-pipe, substantially as described.

707,112. MECHANISM FOR CONVERTING MOTION. JAMES HORROCKS, Manchester, England. Filed Jan. 10, 1902. Serial No. 89,148. (No model.)

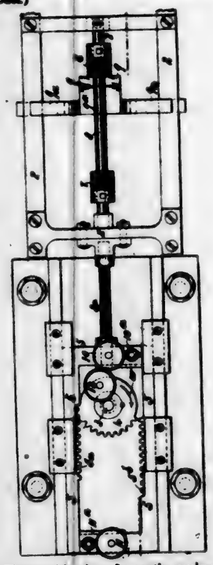

Claim.—1. The combination of a continuously-rotating shaft, a pinion with teeth of graduated lengths, a reciprocating traverse-block, having internal racks with teeth of graduated lengths, and buffers for minimizing shock and assisting the reversal of the reciprocating motion substantially as and for the purpose set forth and shown.

2. The combination of a reciprocating traverse-block, parallel opposed racks and an intervening driving-pinion, the said racks and pinion having the teeth where they first engage of progressively varying lengths substantially as and for the purpose set forth and shown.

3. The combination with a reciprocating traverse-block, operated by opposed racks, and an intervening continuously-rotating driving-pinion, of buffers rotatable on axes secured on the traverse-block and a buffer rotatable on an axis secured on and revolving with the pinion substantially as and for the purpose set forth and shown.

707,113. CATTLE-FOOD. GEORGE H. HUGHES, London, England. Filed Jan. 31, 1902. Serial No. 91,022. (No specimens.)

Claim.—1. A cattle-food comprising a comparatively dry mixture of the pith of the sugar-cane and molasses.

2. A meal for cattle-food comprising a comparatively dry mixture of the pith of the sugar-cane and molasses which is absorbed by the pith.

707,114. POTATO-PLOW. DAVID JACKSON, Tickhill, England. Filed Apr. 1, 1902. Serial No. 101,949. (No model.)

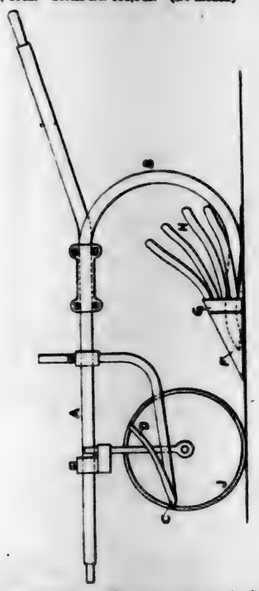

Claim.—The combination, with a plow-beam, and wheels supporting the front part thereof; of a divider having its point arranged centrally under the plow-beam between the said wheels and having two upwardly and rearwardly inclined arms which project in opposite directions, a share secured to the lower and rear part of the plow-beam, and spreading prongs projecting rearwardly from the said share, substantially as set forth.

707,115. COMBINED CURB AND GUTTER BLOCK. JOHN R. JECKLIN, Newburgh, N. Y. Filed May 1, 1902. Serial No. 105,627. (No model.)

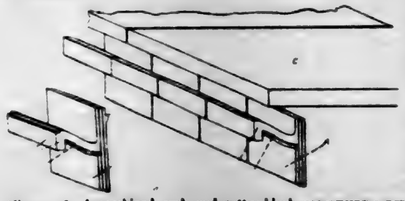

Claim.—1. A combined curb and gutter block comprising a perpendicular body portion having a flange on the opposite sides of each of the ends of each portion, a horizontally-disposed projection extending outwardly from the center of the face of the body, which projection is slightly conserved on its upper surface and which projection is provided on one end with a lip, and has on the upper and outer edge a longitudinal groove, all substantially as described and shown.

2. A combined curb and gutter block comprising a perpendicular body portion having a flange on the opposite sides of each of the ends of each portion, and having a longitudinal lip at the back and near the top, a horizontally-disposed projection extending outwardly from the center of the face of the body portion, which projection is slightly conserved on its upper surface and which projection is provided on one end with a lip, and has on the upper and outer edge a groove, all substantially as described and shown.

707,116. MACHINE FOR SECURING TOGETHER BOARDS BY MEANS OF CLEATS. CHARLES JOHNSON, Minneapolis, Minn., assignor of one-half to Arthur B. Rogers, Minneapolis, Minn. Filed Apr. 15, 1902. Serial No. 102,972. (No model.)

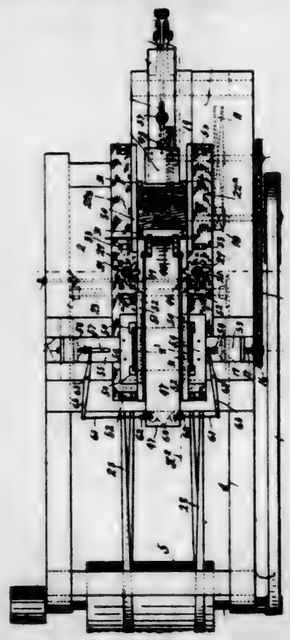

Claim.—1. The combination with a pair of groove-cutters, of means for feeding the blanks edgewise between said cutters to groove the opposite edges thereof, and a pair of pressing devices for pressing the cleats into the opposite grooved edges of said blank, which pressing devices react the one against the other, substantially as described.

2. The combination with means for feeding the grooved blanks, of means for supplying cleats to the opposite grooved edges of said blanks, and a pair of pressing devices for pressing into said grooved edges of the blanks, which pressing devices react the one against the other, substantially as described.

3. The combination with a pair of laterally-spaced magazines for the cleats, of means for feeding the grooved blanks between said magazines, and reversely-reciprocating feed plungers or blades coöperating with said magazines and serving to press said cleats into the grooves of said blanks, substantially as described.

4. The combination with a pair of laterally-spaced magazines for the cleats, of means for feeding the grooved blanks between said magazines, a pair of reversely-movable cleat-feeding plungers or blades, and means for simultaneously moving said plungers inward, involving a counter-shaft and a pair of cams, carried thereby, substantially as described.

5. The combination with a pair of laterally-spaced magazines for the cleats, one of which magazines is adjustable laterally with respect to the other, of means for supplying the grooved blanks between said adjustable magazines, and reversely-movable cleat-feeding plungers or blades coöperating with said magazines and serving to press the cleats into the grooves of said blanks, substantially as described.

6. The combination with a laterally-adjustable magazine for the blanks, of means for feeding said blanks, one at a time, from said mag-

axine, and a pair of laterally-spaced cleat-supplying magazines between which said blanks are fed, and reciprocating blades or plungers for pressing the cleats into the grooved edges of said blanks, substantially as described.

7. The combination with a magazine for the blanks, and means for feeding the blanks, one at a time, from the magazine, a cutter for grooving an edge of said blank as the same is fed from the magazine, and a cleat-supplying magazine past which the grooved edge of said blank is moved, and means for pressing the cleats from said magazine into the grooved edges of said blank, substantially as described.

8. The combination with a blank-supplying mechanism, and means for feeding the blanks therefrom, one at a time, of a pair of saws or cutters between which said blanks are fed edgewise of a pair of cleat-supplying magazines between which said blanks are fed, after passing said cutters, and means for pressing said cleats into the opposite grooved edges of said blanks, substantially as described.

9. The combination with a blank-supplying magazine and a reciprocating blank-feeding plunger or blade, of a pair of saws or cutters for grooving the edges of the blanks as they are fed from the magazine, a pair of laterally-spaced cleat-supplying magazines between which the grooved blanks are fed, and a pair of reversely-reciprocating plungers or blades for simultaneously pressing the cleats into the opposite edges of the blanks, substantially as described.

10. The combination with a blank-supplying magazine and means for feeding the blanks therefrom, one at a time, of a pair of laterally-spaced magazines for the cleats, means for pressing the cleats into the grooves of said blanks, and a pivoted gravity-held presser-board extending from said blank-supplying magazine between said cleat-magazines, and under which the blanks are caused to pass, substantially as described.

11. The combination with a pair of supports extending in the general direction of the feed of the machine, one of said supports being adjustable laterally with respect to the other, of an adjustable blank-supplying magazine, the sides of which are mounted one on each of said supports, means for feeding the blanks, one at a time, from said magazine, a pair of laterally-spaced cleat-magazines mounted one on each of said supports, and means for pressing the cleats from said cleat-magazines into the grooved edges of the blanks, substantially as described.

707,117. WITHDRAWN.

707,118. KNIFE AND PENCIL SHARPENER. LEMUEL JOHNSON, Chicago, Ill. Filed Dec. 18, 1901. Serial No. 86,301. (No model.)

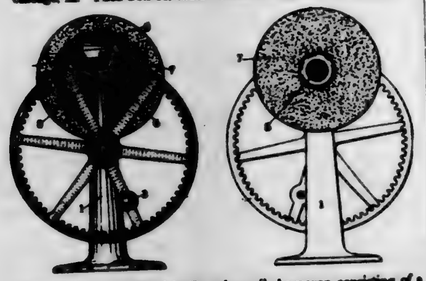

Claim.—1. A combined knife and pencil sharpener, consisting of a journal-box, a revolvable shaft, a rotary cutter and a grindstone mounted on the shaft which latter is mounted in the journal-box, a hollow pencil-holder, a longitudinal opening into the hollow portion of said holder, a boss attached to said holder and the said boss attached to the journal-box, and so disposed that the longitudinal opening in the pencil-holder is close to the rotary cutter, substantially as and for the purpose stated.

2. A combined knife and pencil sharpener consisting of a journal-box having a portion thereof exteriorly screw-threaded, a revolvable shaft, a rotary cutter and a grindstone, the cutter and grindstone mounted on the shaft and the latter mounted in the journal-box, a hollow pencil-holder, a longitudinal opening into one side of said holder and exposing the hollow portion thereof, a hollow boss interiorly screw-threaded and attached to the holder, said boss mounted on the screw-threaded portion of the journal-box with the longitudinal opening in the holder close to the rotary cutter, and means for revolving the shaft, substantially as stated.

3. In a combined knife and pencil sharpener, a supporting-post having a journal-box mounted thereon, a revolvable shaft mounted in the journal-box, a grindstone and a rotary cutter mounted on one end of the shaft and a pinion cog-wheel mounted on the other end thereof, a pin mounted on the supporting-post, an internal cog-wheel revolubly mounted on the pin and in engagement with the pinion cog-wheel, a hollow pencil-holder, one side of said holder having a longitudinal opening, said holder attached to the journal-box with said opening close to the rotary cutter, and means for revolving the internal cog-wheel substantially as and for the purpose stated.

707,119. HYDRANT-COCK. JOHAN H. KIDDER, Pueblo, Colo. Filed Dec. 27, 1900. Serial No. 41,297. (No model.)

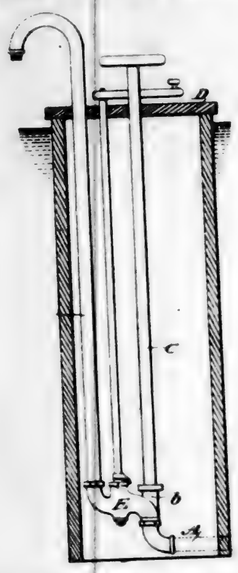

Claim.—The double-elbow hydrant-cock herein described, provided with the shoulder *b* combined with the key provided with the slot *a* and the ribs *c c*, as set forth.

707,120. CAR-WHEEL. GEORGE KILLIAN, Scranton, Pa. Filed Aug. 30, 1901. Serial No. 73,893. (No model.)

Claim.—1. A car-wheel, comprised of two separate body-disks, the inner one being smaller in diameter than the outer one, a tire provided with an inward-extending flange clamped between the adjacent edges of said plates or disks, said plates or disks being grooved for the reception of said flange, and said tire bearing upon the peripheries of said disks and having the portion bearing on the inner disk thicker than the portion bearing on the outer disk, for the purposes set forth.

2. A car-wheel, consisting of a pair of separate disks, one being smaller in diameter than the other, and a tire bearing upon and covering the peripheries of said disks and provided with an inward-extending flange having lateral subflanges, the inner subflange being nearer the center of the wheel and the inner part of the tire bearing on the inner disk being thicker than the outer part of the tire, for the purposes set forth.

3. A car-wheel consisting of a pair of separate body-disks the inner one being smaller in diameter than the outer one, and a tire bearing upon and covering the peripheries of said disks, the portion of the tire bearing on the inner body-disk being as much thicker than the part bearing on the outer disk as the outer disk is greater in diameter than the inner disk, and means for attaching said tire to said plates.

707,121. CYLINDER ROTARY SNOW-PLOW. HENRY H. KRYGER, Minneapolis, Minn. Filed May 3, 1897. Serial No. 634,973. (No model.)

Claim.—1. In a snow-plow, the combination of the forwardly-inclined twin cylinders, rotating in opposite directions upon forwardly-inclined shafts operated by covered or inclosed gearing; open knives, affixed upon the said twin cylinders, adapted to cut the snow parallel therewith; other knives or saw-teeth affixed to, and extending laterally from the said cylinders, adapted to cut the snow at an angle to the said open knives; carriers, affixed to and rotatable with the said twin cylinders adapted to carry the disintegrated snow from opposite directions inward and between them, and a partially-inclosed fan, revolving in the rear of the said twin cylinders; adapted to dissipate the disintegrated snow, and to force it outward through chutes in its case, to either side of the truck, substantially as shown and described.

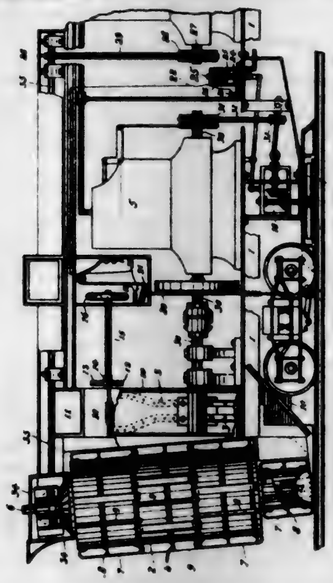

2. The combination in a snow-plow having revolving cylinders adapted to cut a path or passage therefor, and a revolving fan adapted to dissipate the disintegrated snow; of the automatically-controlled revolving flanger, substantially as shown and described.

3. In a snow-plow having a suitable frame or support, the revolving twin cylinders 2 rotating in opposite directions, said cylinders being armed with the open knives 7 adapted to cut the snow parallel therewith, with the laterally-revolving saws 8 adapted to cut the snow horizontally; and with the revolving carriers 9 adapted to carry the disintegrated snow from opposite directions between them; said cylinders being rotated by means of shafts, and gears, said shafts and gears being inclosed or inclosed to shield them from the snow, substantially as shown and described.

707,122. DEVICE FOR COUPLING TWO BICYCLES. JOHN KYNASTON, Liverpool, England. Filed Mar. 20, 1902. Serial No. 99,171. (No model.)

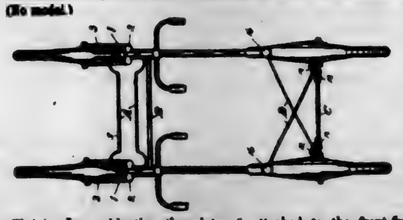

Claim.—In combination the plates 1 attached to the front-fork crowns, the guide-rods 5 forming with said plates a parallel steering movement, the yoke B hinged to brackets 6 clipped on the handle-bar stems, the strut C socketed in foot-steps on the rear axles, and the stays D hooked in eye-washers on the rear axles and attached by the tightening bolts and nuts 18, 20, to the clips 17 attached to the seat-pillars 16, forming a coupling for two bicycles, as described.

707,123. SILO. ELMER B. LACEY and ARTHUR J. FULLER, West Auburn, Pa. Filed May 15, 1902. Serial No. 107,503. (No model.)

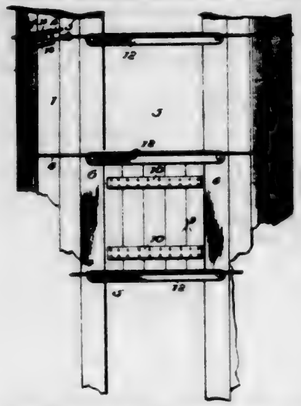

Claim.—A silo provided with a doorway and with jambs rabbeted to receive the door, in combination with a door consisting of a series of sections, division-strips extending horizontally across the door-opening and curved to conform to the curvature of the silo-walls, keeper-strips of greater width than the division-strips having their ends bolted to the door-jambs, and extending along the outer surface of the division-strips, and a series of door-sections curved to conform to the curvature of the silo-walls and adapted to fit flush between the door-jambs and division-strips, the said door-sections being separately and independently removable and adapted to be held in place by internal pressure, substantially as described.

707,124. BUTT-LOADING FOR WHIPS. HENRY W. LARSON, Springfield, Mass., assignor to Larson Whip Company, Springfield, Mass., a Corporation of Massachusetts. Filed Sept. 5, 1901. Serial No. 74,367. (No model.)

Claim.—1. In a whip or kindred device, the combination of a main portion; a surrounding annular portion whose larger free end extends toward the butt and a metal portion surrounding the main portion below said annular portion and having the latter portion embedded in it.

2. In a whip or kindred device, the combination of a main portion; a surrounding annular convolute covering of textile material, whose free end extends toward the butt, and a metal portion surrounding the main portion below said annular portion and having the latter portion embedded in it.

3. In a whip or kindred device, the combination of a main portion; a substantially funnel-shaped portion whose larger free end extends toward the butt, and a metal portion surrounding the main portion below said funnel-shaped portion and having the latter portion embedded in it.

4. In a whip or kindred device, the combination of a main portion; a substantially funnel-shaped portion whose larger free end extends toward the butt and whose walls taper toward the butt-end, and a metal

portion surrounding the main portion below said funnel-shaped portion and having the latter portion embedded in it.

5. In a whip or kindred device, the combination of a main portion; a substantially funnel-shaped convolute tunible portion whose larger free end extends toward the butt, and a metal portion surrounding the main portion below said funnel-shaped portion and having the latter portion embedded in it.

6. In a whip or kindred device, the combination of a stock having a wrapping of fabric thereon a short distance from the butt-end that tapers upwardly, and a casing of metal molded onto the stock and inclosing the butt-end and also the lower portion of the wrapping.

7. In a whip or kindred device, the combination of a stock; a covering that has an annular portion whose larger free end extends toward the butt and also an intermediate portion; and a metal portion surrounding the stock below said covering and having the annular portion embedded in it and also inclosing said intermediate portion.

8. In a whip or kindred device, the combination of a stock; a convolute tunible covering that has a substantially funnel-shaped portion whose larger free end extends toward the butt, and whose walls diminish in thickness from an intermediate part toward each end; and a metal portion surrounding the stock below the covering and having the funnel-shaped portion embedded in it.

9. In a whip or kindred device, the combination of a main portion; a substantially funnel-shaped portion whose larger free end extends toward the butt, a metal portion surrounding the main portion below said funnel-shaped portion and having the latter portion embedded in it, and a non-metallic elastic portion located between the upper part of the metal portion and the stock.

707,125. TILE. FREDERICK R. LAWRENCE, Brooklyn, N. Y. Filed Feb. 4, 1902. Serial No. 92,542. (No model.)

Claim.—A tile provided with recesses in its under surface and around the margins thereof, the floors or bottoms of said recesses being inclined or sloping so that the recesses are deeper at their outer ends than at their inner ends, and the side walls of said recesses being inclined together so that the recesses are wider at their inner ends than at their outer ends.

707,126. WASHBOILER. GEORGE LEHMER, Lake City, Minn. Filed Feb. 17, 1902. Serial No. 94,548. (No model.)

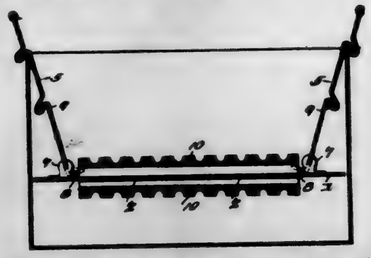

Claim.—1. A washboiler attachment comprising a plate conforming to the interior of the boiler and having parallel rows of elliptical perforations arranged longitudinally, said plate being provided with perforated washboiler guard-strips secured longitudinally to cover the rows of perforations therein, said guard-strips being disposed alternately on the upper and under sides of said plate and serving to brace the same longitudinally, and part of said guard-strips being disposed on the under side of said plate to form supports for the latter, substantially as set forth.

2. A washboiler attachment having means at the ends thereof whereby it may be elevated and suspended at various points of elevation, said plate being provided with longitudinally-disposed rows of perforations and with longitudinally-disposed guard-strips covering said perforations and serving also as braces to prevent the plate from flexing or yielding under the weight of the clothes disposed thereon, substantially as set forth.

707,127. BROODER. OTIS B. LITTELL, Fall River, Mass. Filed July 23, 1901. Serial No. 69,711. (No model.)

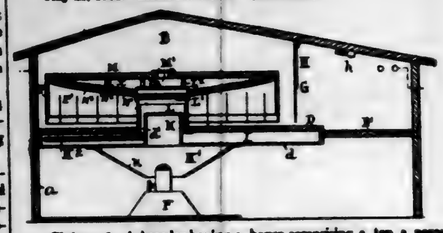

Claim.—1. A brooder having a hover comprising a top, a porous padding suspended below said top, and means for causing warm air to pass down through said padding.

2. A brooder having a hover comprising a top, a porous padding suspended below said top, means for supplying warm air above said padding and an impervious central portion for directing the warm air to the outer portions of said padding.

3. A brooder having a hover provided with padding and a tubular standard connecting with the space above the padding and forming the sole support for said hover, and means for furnishing warm air to said standard.

4. A brooder having a hover provided with padding, a tubular standard forming the sole support for said hover and made in telescopic sections and connecting with the space above the padding, means for adjustably uniting said sections and means for conveying warm air into said standard.

5. A brooder having a hover comprising a top provided with a double valance one being shorter than the other.

6. A brooder having a hover comprising a top provided with a double valance slit vertically at intervals.

7. A brooder having a hover provided with a padding composed of wire-matting, cotton-batting and a flannel cover.

8. A brooder having a double floor, a hover having a hollow top communicating therewith, and a heater having flues running through the double floor.

9. A brooder having a hinged roof carrying a depending curtain dividing the space into two compartments, a double floor for one of said compartments, a hover in said compartment communicating with the space between said double floors, and means for heating said space.

707,128. ROCK-CUTTING APPARATUS. FRED LOBNITZ, Renfrew, Scotland. Filed Apr. 2, 1902. Serial No. 101,060. (No model.)

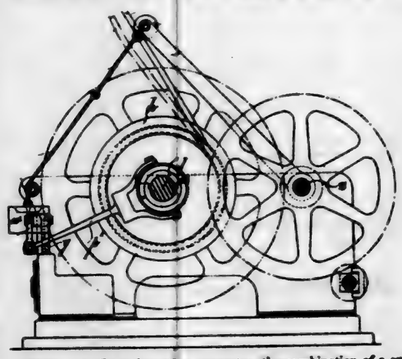

Claim.—1. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, winding means connecting the cutter with the winch-drum, a clutch in connection with the drum, and means set in operation by the winding means for applying the clutch.

2. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, winding means connecting the cutter with the winch-drum, a clutch in connection with the drum, and means set in operation by the winding means for automatically applying the clutch.

3. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, and means set in operation by the rope for applying the clutch.

4. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a coil-clutch in connection with the drum, a rope connecting the cutter with the drum, and means set in operation by the rope for applying the coil-clutch.

5. In rock-cutting apparatus, the combination of a cutter, a winch with winch-shaft, a drum loosely mounted on the shaft, a coil-clutch for clutching the drum to the shaft, a hoisting-rope connecting the cutter with the drum, and means set in operation by the rope for applying the clutch, substantially as set forth.

6. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, means for operating the clutch, and means set in operation by the rope for actuating said clutch-operating means, substantially as set forth.

7. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, a lever for operating the clutch, and means set in operation by the rope for actuating said lever, substantially as set forth.

8. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, a lever for operating the clutch, a rod connected with said lever, and means set in operation by the rope for operating said rod, substantially as set forth.

9. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, a lever for operating the clutch, a rod connected with the lever, a collar on the rod, a bell-crank lever capable of striking against said collar and operating said rod, and means for operating the bell-crank lever, substantially as set forth.

10. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, a lever for operating the clutch, a rod connected with the lever, a collar on the rod, a bell-crank lever capable of striking against said collar and operating said rod, a weight on the bell-crank, and means connecting said weight with the hoisting-rope, substantially as set forth.

11. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, a lever for operating the clutch, a rod connected with the lever, a collar on the rod, a bell-crank lever capable of striking against said collar and operating said rod, a weight on the bell-crank, a rope attached to said weight, and a roller secured to said rope and which runs upon the hoisting-rope, substantially as set forth.

12. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, a lever for operating the clutch, a rod connected with the lever, a collar on the rod, a bell-crank lever capable of striking against said collar and operating said rod, a weight on the bell-crank, a rope attached to said weight, a roller secured to said rope and means for supporting the roller so that it may rest upon the hoisting-rope, substantially as set forth.

13. In rock-cutting apparatus, the combination of a cutter, a winch with winding-drum, a clutch in connection with the drum, a rope connecting the cutter with the drum, a lever for operating the clutch, a rod connected with the lever, a collar on the rod, a bell-crank lever capable of striking against said collar and operating said rod, a weight on the bell-crank, a rope attached to said weight, a roller secured to said rope, and an arm movably secured to the winch for supporting the roller so that it may rest upon the hoisting-rope, substantially as set forth.

707,129. COMPOSITION FOR MAKING STONES OR MORTAR. JEAN LOEWENTHAL, Magdeburg, Germany, assignor to the Ceramital Company, New York, N. Y. Filed May 23, 1902. Serial No. 108,726. (No specimens.)

Claim.—1. The herein-described composition of matter consisting of clean quartz sand, pulverized quartz, alumin, magnesia, borax, graphite, mineral oil, poor in carbureted hydrogen, and water, substantially as described and for the purpose specified.

2. The herein-described composition of matter consisting of clean quartz sand eighty-five pounds, pulverized quartz four pounds, alumin one-half pound, magnesia one pound, borax two pounds, graphite one-half pound, mineral colors two pounds, mineral oil poor in carbureted hydrogen one-half gallon, and water one-fourth gallon, substantially as described.

707,130. STOPPING DEVICE FOR LOOMS. WILLIAM T. LOUIS, Easton, Pa. Filed Apr. 21, 1902. Serial No. 103,962. (No model.)

Claim.—1. In a stop-motion mechanism for narrow-ware looms, the combination, with the batten, of a reciprocating part on the batten movable transversely of the movement thereof, a spring-pressed part adapted to actuate the power-controlling mechanism of the loom, a stationary part having an opening, a plug adapted to be received by said opening, operative connecting means between the plug and said spring-pressed part, and means, controlled by said reciprocating part, for forcing said plug from the opening, substantially as described.

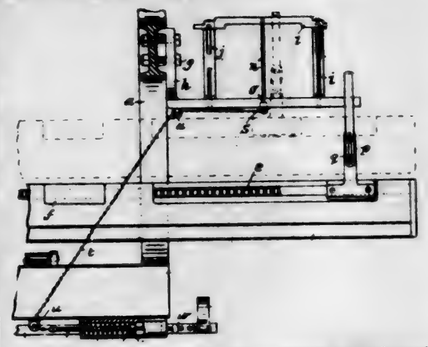

2. In a stop-motion mechanism for narrow-ware looms, the combination, with the batten, of a reciprocating part on the batten movable transversely of the movement thereof, a spring-pressed part adapted to actuate the power-controlling mechanism of the loom, a stationary part having an opening, a plug adapted to be received by said opening, operative connecting means between the plug and said spring-pressed part, and means, comprising coactive members carried the one by said reciprocating part and the other by said arm, for forcing said plug from the opening, substantially as described.

707,131. DOOR-HANGER. PETER H. LUTTIN, Milwaukee, Wis., assignor to Luttin and Sons Manufacturing Company, Milwaukee, Wis. Filed Apr. 16, 1902. Serial No. 103,499. (No model.)

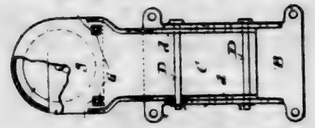

Claim.—A sliding-door hanger comprising two sheet-metal sections adjustable longitudinally one upon the other and each provided with integral outer vertical flanges perforated at intervals of their length, the flanges of one section being movable along those of the other section, bolts engaging registering perforations in all the flanges, means for preventing automatic displacement of the bolts, and a track-roller carried by one of the sections aforesaid.

707,132. CENTRIFUGAL LIQUID-SEPARATOR. WILBUR W MANNY, Waterloo, Iowa, assignor to Hackett & Dailey Creamery Supply Company, Waterloo, Iowa. Filed Dec. 5, 1901. Serial No. 84,736. (No model.)

Claim.—1. A liner for centrifugal liquid-separators, formed of separable parts arranged concentrically about and spaced from each other each part being composed of a series of superimposed annular imperforate plates and uprights with which all the plates in a series are rigidly connected, a bowl, and top and bottom plates therein independently connected to certain of said uprights.

2. A liner for centrifugal liquid-separators, formed of separable parts arranged concentrically about and spaced from each other, each part being composed of a series of superimposed annular imperforate plates and uprights with which all the plates in a series are rigidly connected, a bowl, and top and bottom plates therein independently connected to the outermost and innermost uprights, while the intermediate uprights are unattached to either part.

3. A liner for centrifugal liquid-separators, formed of separable parts arranged concentrically about and spaced from each other, each part being composed of a series of superimposed annular imperforate parts formed in the shape of truncated cones, the plates of one series inclined at an angle to the plates of the series adjacent, uprights along the edges of the plates in each series, and means for supporting said uprights.

4. A liner for centrifugal liquid-separators, formed of separable parts

arranged concentrically about and spaced from each other, each part being composed of a series of superimposed annular plates connected rigidly together by uprights, the outer series attached to a perforated bottom plate and the inner series attached to a perforated top plate containing a cream-tube, substantially as shown and described.

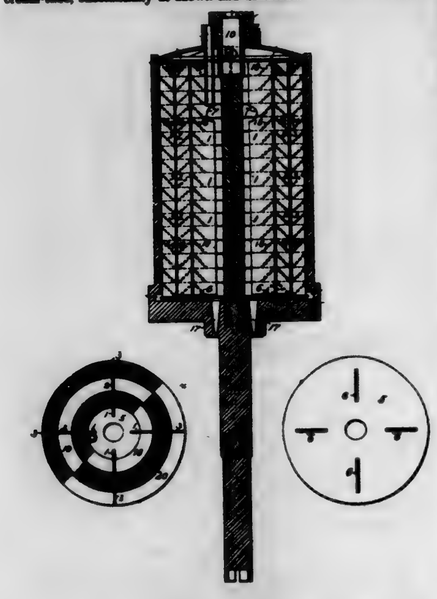

707,183. MACHINE FOR CIRCULATING AND SEPARATING WASTE FIBROUS MATERIALS. JAMES MARSHALL, Fall River, Mass. Filed Feb. 12, 1902. Serial No. 93,770. (No model.)

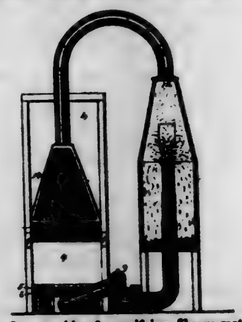

Claim.—1. In a machine for purifying fibrous materials, the combination therewith of an auxiliary system continuously circulating the waste or droppings therefrom, consisting of a receiving-pan into which said droppings fall, an exhaust-fan emptying said pan, a separating-chamber into which said pan delivers its exhaust, and a pipe leading the purified products from said separating-chamber back to the original machine, substantially as described and shown.

2. In an auxiliary machine for separating the waste made from purifying fibrous materials the combination with the outlet through which the waste products of the original machine are discharged, of a receptacle into which they fall, an exhaust-fan connected to said receptacle removing and conveying said waste forward, a separating-chamber adjoining, into which they are discharged and a return-passage from said chamber to the original machine substantially as described and shown.

3. In a machine for separating the waste made by purifying fibrous materials, the combination of an auxiliary separator consisting of a chamber into which the wastes are discharged, an inlet-pipe rising through said chamber to a suitable height for separating purposes, an outlet from said chamber, and means for generating an air-current by which said wastes are delivered into said chamber, purified, and removed from said chamber, substantially as described and shown.

4. In a machine for separating fibrous waste materials, the combination with the outlet through which the waste products of the original machine are discharged, of a receptacle into which they fall a transfer-fan connected therewith, a separating-chamber connected to the fan, a top exit from said chamber connected to a passage terminating in a wire cage erected over the feed-inlet of the original machine, through which passage, the recovered wastes are returned by means of the air-current generated by the fan, to the original machine, substantially as described and shown.

707,184. APPARATUS FOR CLEANING AIR FROM SAND-BLAST APPARATUS. JEREMIAH R. MATHEWSON, Broad Heath, near Manchester, England, assignor, by mesne assignments, to Benjamin C. Tilghman, Jr., and Richard Tilghman, trading as The Firm of B. C. & R. A. Tilghman, Philadelphia, Pa. Filed Sept. 20, 1901. Serial No. 75,742. (No model.)

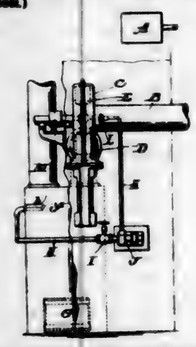

Claim.—1. The combination with a sand-blast plant and an exhaust-conduit pipe leading from said plant and adapted to draw dust-laden air from said locality, of an exhaust-fan coupled to said conduit and a nozzle arranged to throw a jet or jets of water upon the rotating blades of the fan, whereby said water is finely divided and thoroughly mixed with the dust-laden air.

2. The combination with a sand-blast plant and an exhaust-conduit pipe leading from said plant and adapted to draw dust-laden air from said locality, of an exhaust-fan coupled to said conduit, a nozzle arranged to throw a jet or jets of water upon the rotating blades of the fan, whereby said water is finely divided and thoroughly mixed with the dust-laden air, and a receptacle connected with the delivery side of the fan to receive the mud mixed with the air and permit the cleaned air to escape.

3. The combination with a sand-blast plant and an exhaust-conduit pipe leading from said plant and adapted to draw dust-laden air from said locality, of an exhaust-fan coupled to said conduit, a nozzle arranged to throw a jet or jets of water upon the rotating blades of the fan whereby said water is finely divided and thoroughly mixed with the dust-laden air, a water-tank having means for maintaining water at approximately the same level, and a delivery-pipe leading from the fan to a point in the tank above the water-level.

707,185. DEVICE FOR THE PREVENTION OF EROSION IN ORDNANCE. HERMAN MAHIN, New York, N. Y. Filed Nov. 13, 1899. Serial No. 736,927. (No model.)

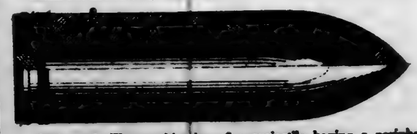

Claim.—1. The combination of a projectile having a peripheral shoulder and a conical rearwardly-tapering rear portion, a pressure-ring surrounding and capable of longitudinal movement on said rear portion, and an obturating-ring of plastic material between the pressure-ring and said shoulder on the projectile.

2. The combination of a projectile having a peripheral shoulder near its base and a conical rearwardly-tapering rear portion, a pressure-ring surrounding and capable of longitudinal movement on said rear portion, a gas-check ring or seat between said pressure-ring and rear portion and an obturating-ring of plastic material between the pressure-ring and said shoulder on the projectile.

3. The combination of a projectile having a peripheral shoulder and a draw-hook groove formed in an integral portion of the projectile, and also having a conical rearwardly-tapering rear portion with a pressure-ring surrounding and capable of longitudinal movement on said tapering rear portion but leaving said groove exposed, and a plastic obturating-ring between said pressure-ring and the shoulder of the projectile.

4. The combination of a projectile having a reduced rear portion with a draw-hook groove formed therein, a peripheral shoulder on the projectile, a pressure-ring surrounding said reduced rear portion and cut away so as to expose said draw-hook groove and an obturating-ring between said pressure-ring and peripheral shoulder.

5. The combination with a projectile of an obturating-ring composed of fibrous material interwoven with metallic wire or gauze and impregnated with a plastic material.

6. The combination with a projectile of an obturator composed of a plurality of rings of fibrous material interwoven with metallic wire or gauze and impregnated with a plastic material, said rings having laminæ of such metal interposed between them.

707,186. NAIL-ASSORTING MECHANISM. BENJAMIN F. MAYO, Salem, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed June 15, 1896. Serial No. 693,670. (No model.)

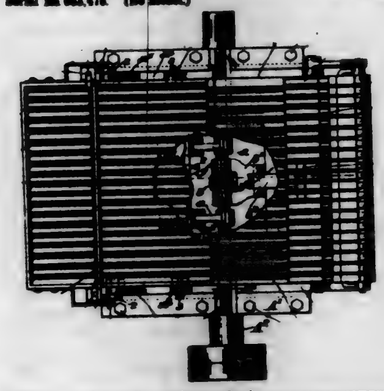

Claim.—1. In a nail-assorting mechanism, a raceway composed of a plurality of grooved transversely-arranged plates and means to move them independently simultaneously in opposite directions, substantially as described.

2. In a nail-assorting mechanism, a raceway composed of a plurality of transversely-arranged grooved plates, a shaft, and means connecting said shaft and plates to move them simultaneously independently one of the other in the direction of the length of the grooves therein, substantially as described.

3. A plurality of inclined raceway-plates, grooved to receive and guide nails, one of said plates occupying a position in a lower plane than the other of said plates, and means to impart motion independently to each of said plates but in opposite directions simultaneously, for the purposes set forth.

4. A raceway presenting a plate having a series of wide and deep grooves, and a second plate in continuation of it having a series of narrow grooves with wider spaces at the sides of said grooves, said second plate being located in a plane below the plane of the former plate, whereby the plate having the narrow grooves may always be kept well filled from the plate having the wide and deep grooves, substantially as described.

5. A raceway presenting an inclined plate having a series of wide and deep grooves, and a second plate having a series of narrow grooves with wider spaces at the sides of said grooves, and discharge-openings, said second plate being located in a plane below the plane of the plate having the wide and deep grooves, whereby the plate having the wide and deep grooves may always keep filled the narrow grooves of the second plate, substantially as described.

6. A raceway presenting an inclined plate having a series of wide and deep grooves, and a second plate having a series of narrow grooves with wider spaces at the sides of said grooves and discharge-openings, said second plate being located in a plane below the plane of the plate having the wide and deep grooves, whereby the plate having the wide and deep grooves may always keep filled the narrow grooves of the second plate, and a returning-plate to receive the nails discharged through said opening, substantially as described.

7. In a nail-assorting mechanism, the following instrumentalities, viz: a raceway composed of a plurality of grooved plates arranged transversely of the machine, a shaft, and connections between it and said plates to move them simultaneously in opposite directions, thus shaking them in the direction of the lengths of the grooves therein; a nail-lifter located at the lower end of said raceway, means to actuate it, raceway-terminals, and a suitable controlling device to provide for the delivery in the proper direction as to their heads and points of the nails leaving the terminal, substantially as described.

8. In a nail-assorting mechanism, a raceway-plate, and an inclined returning-plate to receive upon it surplus nails discharged from said raceway-plate; combined with a nail-feeding plate substantially equal in width to said returning-plate and normally occupying an inclined position at the end of said returning-plate to receive upon it nails leaving said returning-plate, a guide for said feeding-plate, and means to lift said feeding-plate vertically from a position at or below the delivery end of the returning-plate into a position at or above the receiving end of the raceway-plate and to tilt said plate, in order that nails coming upon the feeding-plate may be automatically transferred therefrom to said raceway-plate.

9. A nail-assorting mechanism comprising a raceway consisting of a plurality of parts arranged to feed nails and means to move said parts independently, combined with mechanism for receiving nails from said raceway and delivering them all pointing the same way.

10. In a nail-assorting mechanism, the following instrumentalities, viz: a raceway, a returning-plate grooved to receive and guide the nails, combined with a nail-feeding plate having a series of grooves and arranged transversely with relation to said returning-plate, means to move said feeding-plate, it being supported independently of said returning-plate, a suitable transverse space being left between said returning-plate and said feeding-plate for the passage therethrough of nails coming down said returning-plate crosswise of its grooves, substantially as described.

11. A raceway to guide nails presenting a plurality of parts, divided transversely of the direction of travel of the nails, and means to move said parts independently in the direction of the travel of the nails.

12. A raceway consisting of a plurality of parts located at different levels and each having a series of grooves, and means to move said parts independently.

13. A raceway consisting of a plurality of parts, each part having a series of grooves for nails, means to move said parts independently, and means to supply automatically one of said parts with nails to be assorted.

14. A raceway consisting of a plurality of parts, each part having a series of grooves for nails, means to move said parts independently, and a suitable controlling device to provide for the delivery of the nails with their heads and points in the proper directions.

15. In a nail-assorting mechanism, a plurality of oppositely-inclined plates to receive and guide nails, and means for reciprocating said plates simultaneously in opposite directions to cause nails to travel along said plates in the directions of said inclinations.

16. A nail-assorting mechanism comprising a raceway and a returning-table and being divided into a plurality of parts; and means for reciprocating said parts simultaneously in opposite directions to cause the nails to travel on the raceway and returning-table.

17. In a nail-assorting mechanism, a plate to receive and guide nails, a returning-table, and means for reciprocating said plate and table simultaneously in opposite directions to cause the nails to travel thereon.

18. In a nail-assorting mechanism, a plate for receiving and guiding nails, said plate having provision for rejecting nails not properly lodged thereon; a second plate for receiving and conveying the rejected nails, and means for reciprocating said plates in opposite directions to cause the nails to travel thereon.

707,187. NAIL-ASSORTING APPARATUS. BENJAMIN F. MAYO, Salem, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed Oct. 26, 1896. Serial No. 609,708. (No model.)

Claim.—1. A grooved raceway having provision to automatically assort the nails entering the upper runs of its grooves head and point first indiscriminately, and put said nails into the lower parts of said grooves all head first, combined with a device to receive the endmost nails, a step to position said nails on said device, a series of pockets to receive and conduct the inserted nails, and means to move said device to deliver the nails coming upon it directly from the raceway into said pockets, substantially as described.

2. A raceway presenting a series of continuous grooves in two levels inclined in the same direction and having a transverse groove between said levels to form a series of shoulders, the upper level receiving nails with their heads and points arranged indiscriminately; and a nail-point receiver crossing the grooves of said lower level whereby those nails which

are head first continue to travel forwardly into the grooves of the lower level of the raceway, the nails with their points leading in the grooves of the higher level crossing said transverse groove until their heads leave said higher level, when said nails are reversed and thereafter continue to travel forwardly in the grooves of the lower level of the raceway.

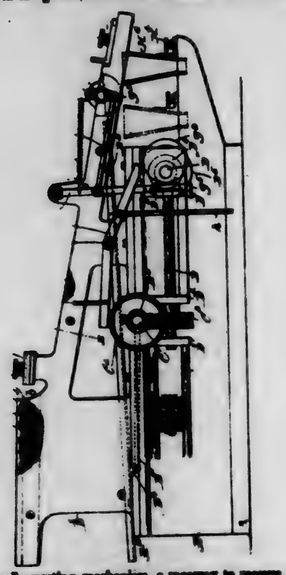

2. In a nail-inserting mechanism, a raceway to receive and guide nails, means to reciprocate said raceway, a device to transfer nails from said raceway, mechanism for actuating said device to transfer nails, and means for stopping the reciprocations of the raceway while said transferring device is being operated.

4. In a nail-inserting apparatus the following instrumentalities, viz: a raceway, a device located near the lower end thereof to receive the nails from said raceway, an independent step to position the nails on said device, and means to tip the said device to effect the discharge of the nails therefrom, substantially as described.

5. In an apparatus of the class described, a raceway to receive, conduct, and deliver nails head first, a series of pockets to receive said nails, a grooved table located intermediate the delivery end of said raceway and the said pockets to receive all said nails head first, and a step to position the nails thereon, combined with means to tip said table to effect the discharge of its nails into said pockets, substantially as described.

6. A raceway adapted to receive and guide nails, a series of pockets in which the inserted nails are finally to be discharged, combined with a device located intermediate the said raceway and the said pockets to receive said nails, an independent step to position said nails on said device, and means to actuate said device to deliver the nails into said pockets either head first or point first, substantially as described.

7. In an apparatus of the class described, a raceway to receive and conduct nails, a series of adjustable pockets, and a device located between said raceway and adjustable pockets to receive the nails from said raceway, and means adapted to be changed as to position to tip said device in either direction when it is desired to deliver the nails therefrom either head first or point first, substantially as described.

8. In an apparatus of the class described, a step to receive against it the head of a nail after the same has entered a grooved table, a grooved table having journals, a cam, and means intermediate said cam and one of said journals to oscillate said table to effect the discharge of nails therefrom, substantially as described.

9. In an apparatus of the class described, a raceway grooved to conduct nails, said raceway having provision to assort the nails put into said groove with heads and points indiscriminately, so that said nails may follow in a continuation of said groove head first, a grooved table to receive the nails head first, a pocket, a cam, means to actuate it, and means actuated by said cam to tip said table and effect the discharge of the nails therefrom, substantially as described.

10. In a nail-inserting apparatus, the following instrumentalities, viz: a raceway having its surface at different levels and provided with continuous grooves, and having a shoulder to leave a transverse space intermediate the two ends of said grooves, an adjustable nail-point receiver located near the said shoulder and below the said transverse space, combined with a device to receive the nails asserted on said raceway head first, and a step to position the said asserted nails on said device, and means to actuate said device to discharge the nails therefrom, substantially as described.

11. In a nail-inserting apparatus, the following instrumentalities, viz: a raceway to receive and guide a series of nails, a rotating shaft having a clutch adapted when in operative engagement therewith to effect the reciprocations of said raceway, a device to receive a series of nails from said raceway, a second shaft having a clutch, means intermediate said second shaft and the device for receiving said series of nails to effect the discharge of said series of nails from said device when the latter clutch is engaged, and means whereby when one of said clutches is in its operative position to rotate one of said shafts, the other of said clutches will be disengaged to leave at rest the shaft with which it cooperates, substantially as described.

12. A raceway to conduct nails, a tipping table to receive nails from said raceway, an independent step for the ends of the nails leaving said raceway and coming onto said table, combined with a series of pockets, and means to tip the said table and cause one edge thereof to pass below the level of the delivery end of said raceway in order that the nails on said table may slide therefrom into said pockets, substantially as described.

13. A raceway to receive and guide a series of nails, a device arranged at the lower end thereof and provided with a double set of nail-receiving grooves, one being wider than the other, the narrower of said grooves receiving nails from said raceway which are to be utilized, a step to position said nails on said device in its narrower grooves, an overflow-pan, a series of pockets, and means to actuate said device whereby the nails left in the broader grooves enter the overflow-pan, the nails which lie in the narrower grooves entering said pockets, substantially as described.

14. In a nail-inserting apparatus, the following instrumentalities, viz: a raceway to receive and guide a series of nails, a rotating shaft having a clutch and adapted to effect the reciprocations of said raceway when said clutch is in engagement with said shaft, a device to receive the nails from said raceway, means to actuate said device and means to arrest the reciprocations of said raceway while the said device is being actuated to discharge from it the nails thereon, substantially as described.

15. A raceway adapted to receive and guide nails, means to reciprocate said raceway, a device to receive nails from said raceway, means to actuate said device to deliver nails, and means to stop the reciprocation of the raceway during the delivery of nails, substantially as described.

16. A raceway adapted to receive and convey nails, means to cause the nails all to point the same way on said raceway, a device to transfer the nails from said raceway, and means to operate said device whereby the nails may be delivered therefrom either head first or point first, substantially as described.

17. A raceway composed of a grooved plate having its surface in two different levels to thereby constitute an upper and a lower section, said raceway having a transverse groove or space to leave a shoulder, said sections having nail-conducting grooves in line, the said grooves being deepest at said shoulder, combined with a nail-point receiver crossing the lower section of said raceway above the grooves and below said shoulder, to operate, substantially as described.

18. In a nail-inserting mechanism, an inclined raceway to receive and guide nails, means to reciprocate the raceway and cause the nails to descend, and means for intermittently stopping the reciprocation of the raceway to arrest the forward movement of the nails.

19. In a nail-inserting mechanism, a raceway to receive and guide nails, means to reciprocate said raceway, a device to transfer nails from said raceway, mechanism to actuate said device to transfer nails, and means controlling said reciprocating means and said actuating mechanism whereby one is made inoperative when the other is operative.

20. In a nail-inserting mechanism, a raceway to receive and guide nails with their heads and points arranged indiscriminately, means to cause said nails all to point the same way on said raceway, a device to transfer the nails from said raceway, and means to actuate said transferring device to deliver nails.

21. In a nail-inserting mechanism, a nail-controller grooved to receive nails, and means to actuate said controller whereby it may be made to deliver the nails from its grooves either head first or point first.

22. In a nail-inserting mechanism, means to guide and direct a series of nails, a device to receive said series of nails therefrom at one operation, and means to actuate said device whereby it may be made to deliver the nails either head first or point first as may be desired.

23. In a nail-inserting mechanism a raceway, a device to transfer nails from the raceway, means to reciprocate the raceway, and means for intermittently stopping the reciprocation of the raceway while the transferring device operates.

24. In a nail-inserting mechanism, a raceway presenting nail-guiding grooves arranged at different levels, the upper level of the raceway receiving nails with their heads and points arranged indiscriminately, means between said levels to reverse some of the nails to insure that all the nails on the lower level of the raceway may have their heads all in the same direction, means to reciprocate said raceway, to cause the nails to travel thereon, and a device under the control of the operator to emit a stroke of the raceway leaving the raceway at rest temporarily when it is desired to stop the movement of the nails on the raceway.

25. In a nail-inserting mechanism, a raceway presenting nail-guiding grooves arranged at different levels, the upper level of the raceway receiving nails with their heads and points arranged indiscriminately, means between said levels to reverse some of the nails to insure that all the nails on the lower level of the raceway may have their heads all in the same direction, means to reciprocate said raceway, and a device under the control of the operator to emit a stroke of the raceway to leave the raceway at rest temporarily, and means for moving said device to start again the reciprocations of said raceway.

26. In a nail-inserting mechanism, a raceway to receive nails with their heads and points arranged indiscriminately and having provision to arrange all said nails during their travel along said raceway with their heads in the same direction, means to reciprocate said raceway to cause the travel of nails thereon, a device located at the end of said raceway to receive and sustain a series of nails delivered from the raceway, and means to stop the reciprocations of said raceway while the series of nails is discharged from said device.

27. In a nail-inserting mechanism, a raceway having an inclined receiving-section to receive and guide nails with their heads and points arranged indiscriminately and having a secondary section at a greater inclination, means for causing the nails to travel on said raceway, and means for causing the nails delivered from the receiving-section to point all in the same direction on the secondary section.

28. In a nail-inserting mechanism, an inclined raceway to receive and guide nails, means for causing the nails to move down said raceway, means for causing said nails all to point the same way on said raceway, a device to transfer the nails from said raceway, and means to actuate said transferring device.

707,188. NAIL-ASSORTING MECHANISM. BENJAMIN F. MAYO, Salem, and ALVIN D. ELLIOTT, Winchester, Mass., assignors to United Shoe Machinery Company, Paterson, N. J., and Boston, Mass., a Corporation of New Jersey. Filed Apr. 26, 1902. Serial No. 104,373. (No model.)

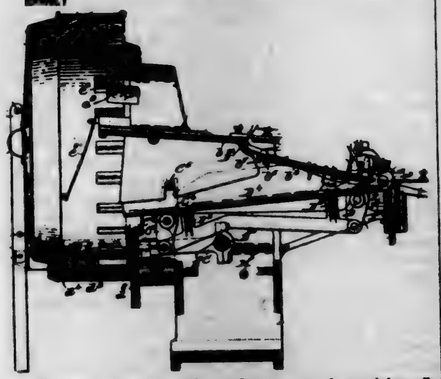

Claim.—1. In a nail-inserting mechanism, means for supplying nails, mechanism for delivering nails, a raceway to receive nails from the supplying means and guide them to the delivering mechanism, a reversing-table, and means for reciprocating said raceway and table simultaneously in opposite directions to cause the nails to travel thereon.

2. In a nail-inserting mechanism, means for supplying nails, mechanism for delivering nails, a raceway for receiving nails from the supplying means and guiding them to the delivering mechanism, said raceway having provision for rejecting nails not properly lodged thereon; a second raceway for receiving and conveying the rejected nails; and means for reciprocating said raceways in opposite directions, to cause the nails to travel on said raceways.

3. In a nail-inserting mechanism, a raceway having grooves to receive and guide nails, mechanism for depositing nails upon said raceway, and a bridge interposed between said mechanism and the raceway to assist in distributing the nails uniformly upon the raceway, said bridge having a plurality of open spaces for the passage of the nails.

4. In a machine of the class described, a rotary magazine containing at one end a series of nail-lifting shelves and at the other end a series of obliquely-arranged blades to guide the nails toward the end of the magazine having the shelves.

5. In a machine of the class described, a magazine, and a frame to hold said magazine in operative position, said frame being also adapted to be tipped into position to sustain said magazine on its side so that it may be supplied with nails.

6. In a machine of the class described, a chute comprising a bar provided with a series of nail-passages, a second bar closing the open sides of said passages, and a series of tubes sustained by said bars in line with the nail-passages.

7. In a nail-inserting mechanism, a raceway comprising an upper section to receive nails with their heads and points arranged indiscriminately, a section arranged at a lower level to receive the nails from said upper section, and a nail-reverser located adjacent to the contiguous ends of said sections, and having grooves to receive the ends of the point-first nails and permit them to travel until their heads are unsupported, said grooves being extended and deflected to receive slivers or imperfect nails and discharge them from the lower end thereof.

8. In a machine of the class described, a raceway to receive and guide nails, means to reciprocate the raceway to cause the nails to travel thereon, mechanism for delivering a series of nails from the raceway, means to detain positively the series of nails next to the series being delivered, and means to suspend the reciprocations of the raceway while the detaining means is operative.

9. In a machine of the class described, a raceway for receiving and guiding nails, said raceway having provision for rejecting nails not properly lodged thereon, a returning-table for receiving and conveying the rejected nails, and a rotary magazine for supplying nails in built to the raceway and having an opening in one side to permit the return of nails to the magazine by the returning-table.

10. In a nail-inserting mechanism, a raceway to receive and guide nails, a device to discharge nails from the raceway, reversing means for causing the nails so discharged to point in the opposite direction, and mechanism for imparting to said reversing means a reciprocating movement to facilitate the delivery of nails therefrom.

707,189. NAIL-ASSORTING MECHANISM. BENJAMIN F. MAYO, Salem, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed Feb. 25, 1898. Renewed Jan. 28, 1902. Serial No. 93,011. (No model.)

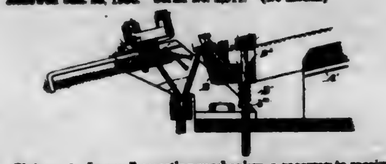

Claim.—1. In a nail-inserting mechanism, a raceway to receive and guide nails, a device to reverse the nails traveling point first on said raceway, and means to prevent said device from acting on the nails traveling head first on said raceway.

2. In a nail-inserting mechanism, a raceway to receive and guide nails, means to present an abutment to stop nails traveling head first on the said raceway and allow them to drop, and means to withdraw said abutment and allow the nails traveling point first to continue their forward movement.

3. In a nail-inserting mechanism, a raceway to receive and guide nails, a device to transfer nails from said raceway, means to actuate said device to stop the nails coming head first on said raceway and allow them to drop, and means to actuate said device to allow the nails coming point first to continue their forward movement.

4. A raceway-terminal, a nail-arrester located a short distance therefrom and adapted to receive against it the point and one side of a nail next said point, and means to move said arrester away from said terminal to enable the heads of the nails yet supported on the raceway to leave said raceway, the arrester detaining the points of the nails until the heads have fallen sufficiently far to lead in the further movement of the nails.

5. In a nail-inserting mechanism, a plurality of raceways, and a raceway-section provided with a plurality of grooves to receive nails with their heads and points arranged indiscriminately, a series of nail-pockets, and a nail-arrester to receive against it and arrest only the nails leaving said section point first, said arrester being adapted to be moved to effect the discharge of the arrested nails head first into the pockets, substantially as described.

6. A series of pockets to receive nails, a nail plate or gage having a series of grooves one for each of said pockets; combined with a nail-

arrester located between said gage and pockets and composed of two parts, one part movable on or with relation to the other part, means to move said arrester that one part may be made to underlie the points of the point-first nails prior to the removal of the same from the said gage, substantially as described.

7. A nail-gage having a series of raceways and located near a series of pockets, a raceway for each pocket, combined with a nail-arrester, composed of two parts one part movable on or with relation to the other part in order that one part may be made to underlie the points of the nails, said arrester being thereafter movable as an entirety away from said gage to enable the heads of the nails supported on said gage to leave it and drop head foremost into said pockets, substantially as described.

8. In a machine of the class described, a nail-arrester composed of plates, and means to move one of said plates on or with relation to the other to expose a portion of one of said plates to constitute a stop to receive upon it the under edge of a point of a nail, combined with a nail-gage to support the heads of a series of nails the points of which are sustained by the said arrester, substantially as described.

9. A nail-gage having a series of raceways and located near a series of pockets, a raceway-section for said pockets, combined with a nail-arrester composed of parts one movable on or with relation to the other part in order that one part may be made to underlie the points of said nails, said arrester being thereafter movable as an entirety away from said gage to enable the heads of the nails supported on said gage to leave it and drop head foremost into said pockets, a slide having holes and coöperating with said pockets, and means to move said slide to permit the discharge from said pockets of the nails contained therein, substantially as described.

10. A nail-asserting mechanism comprising raceways to receive and guide nails, suitable receptacles to receive nails having said raceways head first, and a device intermediate said raceways and said receptacles to first support temporarily the points of the nails having said raceways point first and to thereafter support the under sides of said nails near said points that they may be discharged from said raceways head first.

11. In a nail-asserting mechanism raceways to receive and guide nails, means to present an obstument to stop nails traveling head first on the raceways and allow them to drop head first, and means to withdraw said obstument and allow the nails traveling point first on the raceways to continue their forward movement until their heads have left the raceways, said nails then being free to drop head first.

12. In a nail-asserting mechanism raceways to receive and guide nails, means to present an obstument to stop nails traveling head first on the raceways and allow them to drop, means to withdraw said obstument and allow the nails traveling point first to continue their forward movement, suitable receptacles for the nails, and gates in said receptacles arranged first to sustain the nails and then to allow them to leave said receptacles.

707,140. NAIL-ASSORTING APPARATUS. ALVIN D. ELLIOTT, Lawrence, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed June 15, 1901. Serial No. 63,686. (No model.)

Claim.—1. In a nail-asserting apparatus, the following instrumentalities, viz: a terminal to receive a series of nails with their heads and points arranged in grooves therein indiscriminately, a circularly-movable controller having a series of grooves to receive the nails having said terminal head first, a gate to receive against its edge the points of the nails having the terminal point first, and means to actuate said controller to carry said gate away from said terminal to thereby enable the heads of the nails on said terminals to drop therefrom into said grooves head first, substantially as described.

2. In a nail-asserting apparatus, the following instrumentalities, viz: a terminal to receive a series of nails with their heads and points arranged indiscriminately, a controller having a series of grooves into which the nails leaving the terminal head first enter by gravity, a notched gate carried by said controller and standing normally with the unnotched edge of the gate crossing said grooves to receive against it the points of the nails having the terminal point first, and means to move said gate to place its notches in position to be entered by the points of the nails, substantially as described.

3. In a nail-asserting apparatus, the following instrumentalities, viz: a terminal to receive a series of nails with their heads and points arranged indiscriminately, a controller having a series of grooves into which the nails having the terminal head first enter by gravity, a notched gate carried by said controller and standing normally with the unnotched edge of the gate crossing said grooves to receive against it the points of the nails having the terminal point first, and means to move said gate to place its notches in position to be entered by the points of the nails, means to impart a circular movement to said controller, and a chute to receive the nails from said controller, substantially as described.

4. In a nail-asserting apparatus, the following instrumentalities, viz: a circularly-movable controller having grooves to receive a series of nails head first, a chute-mouth having two sets of nail-receiving passages, and actuating means to move said controller, said means containing provisions for moving said controller forwardly or backwardly to discharge said nails therefrom either head first or point first into one or the other of said passages as desired, substantially as described.

5. In a nail-asserting apparatus, a controller having a series of grooves, a notched gate arranged parallel therewith and crossing said grooves, means to impart circular motion to said controller combined with means to move said gate longitudinally on or with relation to said controller to place the notches of the gates alternately in line with and then out of line with relation to said grooves, substantially as described.

6. In a nail-asserting mechanism, means to guide and direct a series of nails with their heads and points arranged indiscriminately, a device to receive said series of nails therefrom at one operation, and means to actuate said device whereby it may be made to deliver said series of nails either head first or point first as may be desired.

7. In a nail-asserting machine, means to receive and guide nails, a double series of pockets, a nail controller or device located between the means to receive and guide the nails and the receiving ends of said double series of pockets, and means adapted by change of position to move said controller either forward or backward, as may be desired to discharge the nails in the grooves of the controller into said pockets head or point first, substantially as described.

8. In a nail-asserting machine, a lifting device to lift a series of nails having their heads and points arranged indiscriminately, a grooved terminal to receive and guide the nails deposited thereon from said lifting device, a circularly-movable nail controller or device having grooves some of which receive nails which leave the terminal head first, and means to stop temporarily the nails leaving said terminal point first, and means to thereafter enable said nails to move somewhat longitudinally in order that their heads may be removed from the said terminals and dropped head first into the unoccupied grooves of said device, a plurality of series of pockets, and means to turn said device in one or the other direction as may be desired to deliver the nails either head or point first into one or the other of said series of pockets, substantially as described.

9. In a nail-asserting mechanism, a nail-controller, means to present to said controller nails having their heads and points arranged indiscriminately, a series of pockets on said controller, a device to arrest temporarily the points of those nails coming to the controller point first, means to actuate said device and said controller, whereby the pockets therein may be provided with nails with their points in one direction, and means for actuating said controller to deliver all the nails from its pockets either head or point first.

10. In a nail-asserting mechanism, a nail-controller having a series of nail-receiving grooves, and a guide arranged longitudinally thereof and adapted to arrest the nails coming to said controller point first, means to move said guide to allow the point-first nails to continue their movement, and means to move said controller to enable the arrested point-first nails to drop into the grooves of the controller head first.

707,141. NAIL-ASSORTING MECHANISM. CHESTER C. SMALL, Newton, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed July 2, 1900. Renewed Feb. 3, 1902. Serial No. 3,807. (No model.)

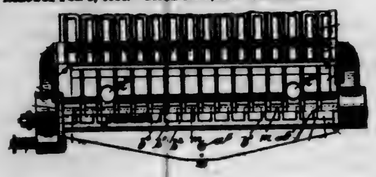

Claim.—1. In a nail-asserting apparatus, the following instrumentalities, viz: a throat having a series of nail-passages, raceways leading nails to said passages, and a stop having a series of rests to support temporarily the heads of those nails which leave the raceways head first, and means to move said stop to remove said rests from under the heads of said nails, letting said nails, under the action of gravity, drop head first into said nail-passages, substantially as described.

2. In a nail-asserting apparatus, the following instrumentalities, viz: a throat having a series of nail-passages, and nail-receiving grooves in alinement with said passages, raceways leading nails into said nail-receiving grooves, and a stop having a series of grooves, the said stop normally occupying a position to close the said nail-receiving grooves, a gage, and means to move said stop to bring its grooves in line with the nail-receiving grooves of the throat, thus permitting the nails resting point first against said stop and lying in the said nail-receiving grooves to move longitudinally under gravity and meet the gage, the heads of such nails leaving the ends of the raceways and said nails under the action of gravity entering said nail-passages head first, substantially as described.

3. In a nail-asserting apparatus, the following instrumentalities, viz: a throat having a series of nail-passages, a stop having a series of notches and a series of rests, a raceway having a series of grooves to lead nails into said nail-passages, the heads of those nails leaving the raceway head first coming upon and being supported by said rests, the series of nails leaving said raceways point first bearing by their points against said stop between its notches, means to move said stop to remove said rests from under the nails arrested thereby head first, and to bring the notches of said stop opposite the ends of the nails directed point first to let said nails enter said notches, said nails by the act of entering said notches removing their heads from the said raceways, thereby permitting their heavier heads, while their points are temporarily supported, to turn down by gravity into the nail-passages, thus effecting the delivery of all of said nails through the passages of said throat head first, substantially as described.

4. In a nail-asserting apparatus, a throat having a series of passages a stop having a series of surfaces coöperating with each of said nail-passages, said stop having notches between the said surfaces, means to move said stop, and a gage to arrest the ends of those nails passing through said notches, substantially as described.

5. In a nail-asserting apparatus, a throat having nail-passages, and a movable stop having projections and rests and notches, said projections and rests sustaining respectively the points and heads of nails coming to said stop point and head first, combined with means to move said stop to remove the rests from under the heads of nails arranged head first and bring the notches of said stop opposite the points of the nails arranged point first, whereby the nails arranged head first no longer supported by said rests drop into said nail-passages and the nails arranged point first slide into said notches so that their heads may preponderate and enable them to drop head first into said nail-passages, substantially as described.

6. In a nail-asserting mechanism, raceways to receive and guide nails with their heads and points arranged indiscriminately, a device to arrest and sustain temporarily all the nails before they leave the raceways, and means to actuate said device to deliver all the nails pointing the same way.

7. In a nail-asserting mechanism, raceways to receive and guide a series of nails, a series of passage-ways for the reception of said nails, a stop presenting an upright wall and a laterally-extended notched rest, a portion of said rest normally standing in the upper part of each of said passages to sustain the head ends of the nails passing from the raceways head first, and means to move said stop to put a notch at one side of a rest under the head of the nail that said head may drop through said notch and permit the nail to enter the passage.

8. In a nail-asserting mechanism, raceways to receive and guide a series of nails, a series of passages to receive said nails, a device having a series of projections separated by notches, said projections normally obstructing the entrance of point-first nails into said passages, and means to move said device to put a notched part thereof in line with the points of the nails which rest against said projections and are yet sustained by their head ends in said raceway, permitting the said point-first nails to enter said notches and slide therein sufficiently to enable the head ends of said nails to leave said raceways.

9. In a nail-asserting mechanism, raceways to receive and guide nails with their heads and points arranged indiscriminately, a device to arrest all the nails before they leave the raceways, and means to move said device to allow the head-first nails to drop from the raceways and to allow the point-first nails to travel on said device until their heads leave the raceways.

707,142. RACEWAY FOR NAIL-ASSORTING MACHINES. BENJAMIN F. HAYS, Salem, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed May 24, 1898. Serial No. 681,612. (No model.)

Claim.—1. A raceway presenting a groove provided in its bottom with an uncovered slot arranged in the general direction of said groove, said slot being longer than the nail being handled.

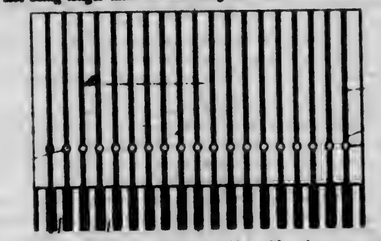

2. A raceway having a groove provided with a slot arranged in the general direction of said groove, with an enlargement at the end of said slot, said slot being longer than the nail being handled.

3. A raceway having a groove provided with a slot arranged in the general direction of said groove, and with an enlargement at the end of said slot.

4. A raceway having a groove provided with a tapered slot arranged in the general direction of said groove.

5. A raceway having a groove provided with a tapering slot located in the general direction of said groove, and a hole intersecting said slot, to operate substantially as described.

6. A raceway having a groove, and a tapering slot made therein in the general direction of the length of said groove, said slot removing more stock from one than from the other side of said groove.

7. A raceway having a groove provided with a slot arranged in the general direction of the groove, and a hole intersecting said slot, said hole being of greater diameter than the width of the groove and located in the bottom of said groove.

8. A raceway having a groove provided with a tapered slot formed therein in the general direction of the length of said groove, the wider end of said slot being located nearest the lower end of the raceway-groove.

9. A raceway having a groove provided with a tapered slot formed therein in the general direction of the length of said groove, said slot being of greater length than the nail being handled.

707,143. MEANS FOR DETAINING OR RELEASING TOP LIFTS IN HEEL-NAILING MACHINES. EDWIN A. LOCKE, Haverhill, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed June 19, 1896. Renewed Apr. 19, 1900. Serial No. 13,513. (No model.)

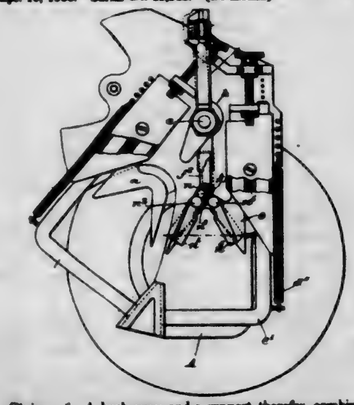

Claim.—1. A heel gage and a support therefor, combined with a detainer and means to actuate it that said detainer may at times overlap part of the space of the heel gage and at other times be moved to uncover said space.

2. A heel gage to receive the rear end of a top lift, and a support for said gage, combined with a detainer to overlap the edge of the heel gage and a top lift therein, and means to open said detainer to effect the release of a top lift.

3. A top-lift heel gage, a support therefor, and levers operatively connected together and constituting a top-lift detainer, combined with means to actuate said levers in unison to release the top lift.

4. A top-lift back gage, a support for said gage, and two levers pivoted on said back gage and operatively connected together to constitute a top-lift detainer, combined with means to actuate one of said levers, causing both of said levers to be moved in unison toward and from each other.

5. In a machine of the class described, a top-lift carrier, means for positioning a top lift on the carrier, a detainer extending over the top lift, and means to withdraw said detainer before the top lift is spanked onto a head.

6. A pivoted plate, a forked back gage for a top lift, a breast-gage acting against the breast of a top lift, means moving with said plate and operating automatically to retain the top lift temporarily in the back gage, and means to turn the top-lift-retaining means to release the top lift when it is to be spanked on an attached head.

7. The plate A provided with means for holding a head, and means having a back gage for holding a top lift; a lever pivoted above said plate and provided with a guide; and a link in said guide; combined with a top-lift detaining and releasing mechanism operatively connected with said link, said mechanism cooperating with the back gage of the top-lift holder, to at times overlap and hold, and to then release the top lift.

8. A back gage, and a support therefor, combined with a detainer located above and acting to partially cover the space in said back gage, a device connected with said detainer and means to actuate said device to move said detainer in a horizontal plane to uncover the space in the back gage.

707,144. **HEEL-NAILING MACHINE.** BENJAMIN F. MAYO, Salem, Mass., assignor, by mesne assignments, to the United Shoe Machinery Company, a Corporation of New Jersey. Filed Aug. 14, 1897. Serial No. 648,202. (No model.)

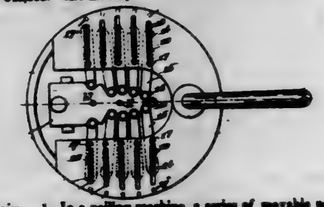

Claim.—1. In a nailing-machine, a series of movable nail-deliveries, means to support said deliveries, and a pattern adapted to cooperate with said deliveries to maintain the latter in position to accord with a desired form or outline of nailing, substantially as described.

2. In a nailing-machine, a series of movable nail-deliveries, means to support said deliveries, a series of nail-guiding tubes connected to and movable with said deliveries to supply nails thereto, and a pattern adapted to cooperate with said deliveries to maintain them in position to accord with a desired form or outline of nailing, substantially as described.

3. A plate, a series of deliveries mounted loosely thereon and springs to normally move said deliveries in one direction, combined with a pattern plate or device adapted to be applied to said deliveries to place them at proper distances apart and maintain them in the position designated by the contour of said pattern-plate, said springs operating to maintain the deliveries in contact with the pattern-plate, substantially as described.

4. In a nailing-machine, a series of nail-deliveries to inclose nails, means to support said deliveries, and a pattern to position simultaneously all said deliveries in the desired outline for nailing.

5. In a heeling-machine, a foot-plate, nail-inserting mechanism, a series of independent movable nail-deliveries, a series of flexible tubes connected each with one of said nail-deliveries and with said nail-inserting mechanism, and a pattern to position independently said nail-deliveries according to the arrangement of holes to be filled with nails and the outline of nailing desired.

6. In a nailing-machine, a series of spring-held nail-deliveries, and a pattern-plate adapted to act simultaneously on said position each delivery independently.

7. In a nailing-machine, a series of pivoted, slidable, normally yielding nail-deliveries, and a pattern-plate to simultaneously insure the placing of said nail-deliveries in position to enable nails to be arranged in accordance with a desired outline.

8. In a nailing-machine, a plate, a series of nail-tubes and arms sustaining them, a slot-and-pin connection between said plate and arms, and a pattern-plate acting against said nail-tubes to position them and their arms in accordance with the outline of nailing desired.

9. In a nailing-machine, a series of independently-movable nail-deliveries, combined with a pattern having a series of notches to receive and determine the position of said nail-deliveries to accord with a desired outline of nailing.

10. In a nailing-machine, a foot-plate comprising a bottom plate having an enlarged throat, a series of independent nail-deliveries adapted to be moved to place their lower ends in different portions of said throat, and a pattern to position said nail-deliveries with relation to said throat.

707,145. **TAKE-UP FOR SEWING-MACHINES.** FRANK W. MERRICK, Boston, Mass. Filed Aug. 11, 1900. Serial No. 726,871. (No model.)

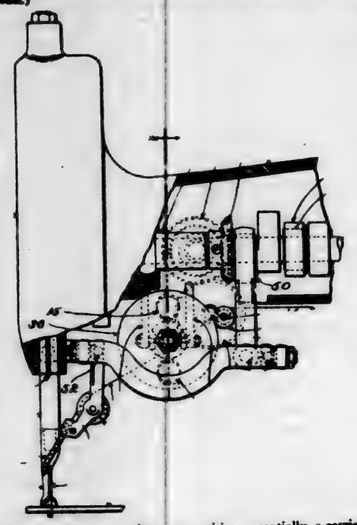

Claim.—1. A rotary take-up comprising, essentially, a carrier making successive complete rotations in the same direction, means to rotate said carrier, diametrically opposite pins with which said carrier is provided, and means to occasion intersection of the path of the thread by that of the pins, whereby oppositely-extending loops are formed in the thread by the rotation of the pins, and subsequent separation of the said paths, whereby the said loops are released during the continued rotation of the carrier, substantially as described.

2. A rotary take-up comprising, essentially, a carrier, means to rotate the same, diametrically opposite pins with which said carrier is provided, means to project said pins transversely across the path of the thread, whereby the engagement of the pins with the thread operates to form oppositely-extending loops therein, and subsequently retract said pins transversely out of the said loops to release the latter, substantially as described.

3. A rotary take-up comprising, essentially, a carrier, means to rotate the same, diametrically opposite pins with which said carrier is provided, means to occasion intersection of the path of the thread by that of the pins, whereby oppositely-extending loops are formed in the thread by the rotation of the pins, and subsequent separation of the said paths, whereby the said loops are released during the continued rotation of the carrier, and a yielding follower to prevent flying of the thread after its disengagement from the pins, substantially as described.

4. A take-up for sewing-machines, comprising a rotary carrier, oppositely-located thread-engaging pins engaging with the thread to form oppositely-extending loops, means to project said pins to engage with the thread and retract the same to free the thread, and the yielding follower alongside said carrier.

5. A rotary take-up for sewing-machines, comprising oppositely-located thread-engaging pins engaging with the thread to form oppositely-extending loops, a head through which said pins work, a second head with which the said pins are connected, and operating means whereby projection of the said pins relatively to the head first mentioned is commenced to effect their engagement with the thread intermittingly.

6. A take-up for sewing-machines comprising a rotary carrier having a fixed head, oppositely-located thread-engaging pins working through said fixed head, a movable head with which the said pins are connected, and means to adjust the said pins toward and from each other, and means to operate the said movable head and thereby project and retract the thread-engaging ends of the said pins at the side of the fixed head.

7. A take-up for sewing-machines, comprising a rotary carrier having radial guides, oppositely-located thread-engaging pins applied to the said guides, a head with which the said pins are connected, an adjusting-disk having cam-surfaces to regulate the distance of the said pins from each other, and means to operate the said head and thereby move the said pins endwise to engage and disengage the thread.

8. A take-up for sewing-machines, comprising a rotary carrier having a fixed head, oppositely-located thread-engaging pins working through said fixed head, a movable head with which the said pins are connected, means to operate the said movable head and thereby project and retract the thread-engaging ends of the said pins at the side of the fixed head, and the adjusting-plate having the eccentric-slots through which the said pins pass.

9. The rotary take-up consisting of the carrier comprising essentially the fixed head, the oppositely-located pins working through openings in the said fixed head, and the movable head with which the said pins are connected, means to rotate the said carrier, the rocker in operative connection with the said movable head, means to operate the rocker, and the spring-pressed follower at the side of the said fixed head.

10. The rotary take-up consisting of the carrier comprising essentially the sleeve, the head fixed to the said sleeve, the oppositely-located pins working through openings in the said fixed head, the movable head on the said sleeve having the said pins connected therewith, means to rotate the said carrier, the rocker in operative connection with the said movable head, means to operate the rocker, and the spring-pressed follower splined to the said sleeve.

707,146. **GAS-PRODUCER.** LEONARD L. MERRYFIELD, Toronto, Canada, assignor to Edwin James Chesbrough, trustee, and Economical Gas Apparatus Construction Company, Limited, Toronto, Canada. Filed June 24, 1901. Serial No. 65,855. (No model.)

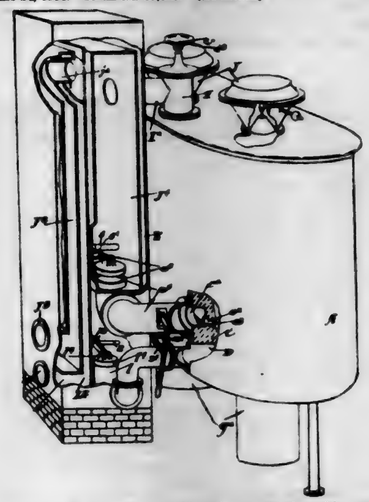

Claim.—1. In a peat-gas machine, the combination with a suitable casing and lining therefor and two peat-burning chambers formed therein adjacent to each other and provided with suitable grates, feeding-retorts located above the peat-burning chambers and designed to contain peat preparatory to burning, a series of passage-ways extending upwardly from the upper portion of each peat-burning chamber circularly arranged and surrounding the retorts, and annular chambers connected therewith, a cross passage-way connecting the annular chambers, a series of passage-ways or flues leading radially outwardly near the bottoms of the peat-burning or fire chambers, annular passage-ways surrounding the bottom of the chambers and connecting with said radially-extending flues and gas-outlets from each annular chamber as and for the purpose specified.

2. In a peat-gas machine, the combination with a suitable casing and lining therefor and two peat-burning chambers formed therein adjacent to each other and provided with suitable grates, feeding-retorts located above the peat-burning chambers and designed to contain peat preparatory to burning, a series of passage-ways extending upwardly from the upper portion of each peat-burning chamber circularly arranged and surrounding the retorts and annular chambers connected therewith, a cross passage-way connecting the annular chambers, a series of passage-ways or flues leading radially outwardly near the bottoms of the peat-burning or fire chambers, annular passage-ways surrounding the bottom of the

chambers and gas-outlets from each annular chamber and valves for controlling the same and draft flues or pipes leading to beneath the grates and connected with the central gas-flues of each retort and valves controlling the same as and for the purpose specified.

3. In a peat-gas machine, the combination with a suitable casing and lining therefor and two peat-burning chambers formed therein adjacent to each other and provided with suitable grates, feeding-retorts located above the peat-burning chambers and designed to contain peat preparatory to burning, a series of passage-ways extending upwardly from the upper portion of each peat-burning chamber circularly arranged and surrounding the retorts and annular chambers connected therewith, a cross passage-way connecting the annular chambers, a series of passage-ways or flues leading radially outwardly near the bottoms of the peat-burning or fire chambers, annular passage-ways surrounding the bottom of the chambers and gas-outlets from each annular chamber, and valves for controlling the same, and draft flues or pipes leading to beneath the grates and connecting with the central gas-flues of each retort and valves controlling the same and means whereby when the gas-outlet valve at the bottom of one chamber is open the draft-pipe at the bottom beneath the grate of the other chamber is likewise opened and the other two controlling the outlet and draft pipes are closed as and for the purpose specified.

4. The combination with two peat-fire chambers and the separate gas-flues surrounding each chamber at the bottom and communicating therewith, of the outlet-pipes leading from each gas-flues, the draft-pipes leading from beneath the grates, two shafts suitably supported one above the other, a cross-arm on one shaft connected by cross connecting-bars to the cross-arm on the lower shaft and arms on each shaft located on the same plane, cross-arms and caps connected to each arms and designed to extend over the ends of the gas-outlet pipes or flues and inlet draft-flues as and for the purpose specified.

5. The combination with two peat-fire chambers and the separate gas-flues surrounding each chamber at the bottom and communicating therewith, of the outlet-pipes leading from each gas-flues, the draft-pipes leading from beneath the grates, two shafts suitably supported one above the other, a sleeve on the upper cross-shaft, two arms connected to the sleeve and extending outwardly to one side of the upper cross-shaft, two arms secured on the shaft, the cross-arms on the bottom shaft, caps pivotally connected to one cross-arm and covering the ends of the draft-pipes and caps pivotally connected to one arm on the sleeve of the upper shaft and to an oppositely-extending arm on the shaft itself, screwed connecting-rods pivotally connected at the bottom to the ends of a cross-arm on the lower shaft and to one arm on the sleeve and one on the upper shaft, said connecting-rods being formed in two parts with lower socket portions and pins extending therethrough and the solid portion of the connecting-rods, means for manipulating such pins, so as to withdraw them and allow of the cross-arm on the lower shaft being operated independently of the arms on the upper sleeve and shaft as and for the purpose specified.

6. The combination with the outlet-flue and inner draft-flue, of the casing, a partition extending the major portion of the height of the casing into which such flue extends, a gas-conduit flue at one side of the partition, a corresponding flue on the opposite side of the partition, a pipe connecting the same, an outlet-pipe for the gas at the bottom of the outer gas-conduit flue, are inner air-flues surrounding the gas-conduit flues and forming passage-ways up around the outer gas-conduit flue and over the partition and down around the inner gas-conduit flue and communicating with the draft-tubes as and for the purpose specified.

707,147. **JOURNAL-BEARING.** ISAAC MEYERS, Winfield, Iowa. Filed Mar. 5, 1901. Serial No. 49,963. (No model.)

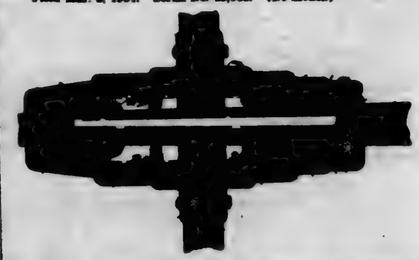

Claim.—1. The combination of a spindle, a hub journaled thereon and having a sleeve fitting around the spindle and projecting toward the inner end thereof, a cup-shaped flange secured to the spindle and projecting outwardly longitudinally thereof around said sleeve and into said hub, a loose bearing-ring interposed between said sleeve and cup-shaped flange

and surrounding said sleeve and having abutment against a part fixed with relation to said flange, and packing interposed between said ring and a part movable with the hub, substantially as set forth.

2. The combination of a spindle, a hub journaled thereon and having a sleeve formed integrally therewith and a portion overhanging and surrounding said sleeve and constituting therewith an enlarged packing-chamber, a cup-shaped flange secured to the inner end of said spindle and projecting over said sleeve and into said packing-chamber, a supporting and bearing flange carried by the hub at about the mid-length of said cup-shaped flange and bearing thereagainst and a packing surrounding said cup-shaped flange at a point between said second flange and the end of said sleeve, substantially as set forth.

707,148. TOY BOAT. ERNEST E. MITCHELL, Washington, D. C., assignor to Hattie Ingraham, Wabasha county, Minn. Filed Feb. 24, 1899. Serial No. 706,712. (No model.)

Claim.—1. The combination with a separable structure comprising a base having the structure built thereon, said structure comprising a support having parts of the structure resting thereon, a plunger passed through the base and having a head adapted to receive an explosive cap, a projection on said support adapted to coöperate with the plunger-head to explode a cap carried by the latter, a spring arranged to throw the plunger upwardly, a perforation in the plunger, a pin passed through the perforation to hold the plunger retracted, wheels for the structure and connections between said wheels and pin to withdraw the latter and release the plunger, whereby it may rise and explode the cap and throw the parts of the structure apart.

2. A toy of the class described which represents a battle-ship provided with a central detachable deck portion on which the turrets, masts, davits and other deck-fixtures are loosely placed, and means upon and beneath said detachable deck portion for causing the representation of an explosion and the lifting of said detachable deck portion, substantially as shown and described.

707,149. BRAKE. ANDREW B. MOORE, Charlotte, Mich., assignor of one-half to Lyman H. McCall, Charlotte, Mich. Filed Mar. 19, 1902. Serial No. 98,602. (No model.)

Claim.—1. A brake comprising curved bars or shoes provided at one end with divergent guides arranged to carry the shoes inward and outward when the same are moved longitudinally, said bars or shoes being provided at their other ends with arms and designed to extend over the major portion of the periphery of the wheel to be engaged, and operating mechanism connected with the arms and adapted to move the brake shoes or bars both inward and outward and longitudinally, substantially as described.

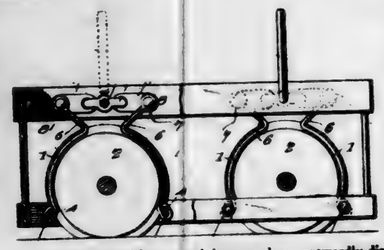

2. A brake comprising curved bars or shoes, outwardly-divergent guides arranged at one end of the bars or shoes and adapted to move the same inward and outward when the said bars or shoes are moved longitudinally, and operating mechanism connected with the other ends of the bars or shoes and adapted to move the same longitudinally and inward and outward, substantially as described.

3. A brake comprising curved bars or shoes provided at one end with divergent loops and having divergent arms at the other end, fastening devices passing through the loops, links connected with the arms, and a lever provided with arms connected with the links, substantially as described.

4. A brake comprising curved brake bars or shoes provided at one end with divergent loops and having divergent arms at the other end, fastening devices passing through the loops, a rock-shaft provided with arms, and links connecting the arms of the rock-shaft with the arms of the brake-shoes, substantially as described.

707,150. SYSTEM OF ELECTRICAL DISTRIBUTION. WALTER S. MOODY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed June 6, 1898. Serial No. 119,416. (No model.)

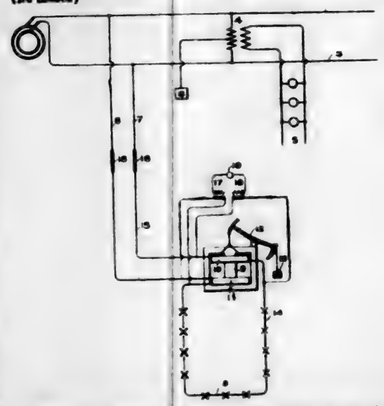

Claim.—1. The combination of constant-potential mains, leads extending therefrom, windings adapted to generate reactive electromotive force in series with said leads, and translating devices connected in circuit between said windings.

2. The combination of constant-potential mains, leads extending therefrom, a reactive coil having windings in series with said leads, and translating devices connected in circuit between said windings.

3. The combination of constant-potential mains, leads extending therefrom, a reactive coil in circuit with said leads, and translating devices connected between portions of the winding of said reactive coil.

4. The combination of a grounded constant-potential supply system, a series circuit supplied therefrom, translating devices in said circuit, and inductively-related windings, one of said windings in circuit with one of the leads extending to said translating devices and another of said windings in circuit with the other lead extending to said translating devices.

5. The combination of a grounded constant-potential supply system, a series circuit supplied therefrom, translating devices in said circuit, and inductively-related relatively movable windings, one of said windings in circuit with one of the leads extending to said translating devices and another of said windings in circuit with the other lead extending to said translating devices.

6. The combination of a constant-potential system grounded at a neutral point, a divided reactive coil traversed by current therefrom, and translating devices connected in circuit between the divisions of said winding.

7. The combination of constant-potential mains, a divided reactive coil traversed by current therefrom, translating devices in circuit between portions of the winding of such divided reactive coil, and an indicating device responsive to relative reversal of polarity at the terminals of the portions of said winding.

8. The combination of a divided reactive coil, means for passing current therethrough, and means for indicating when the polarity of one portion of the winding of the reactive coil reverses with respect to the other portion of the winding of the reactive coil.

707,151. ADJUSTABLE MIRROR. MYER H. MEAD, Chicago, Ill. Filed Feb. 27, 1902. Serial No. 96,906. (No model.)

Claim.—In a device of the class described, the combination with a mirror having its sides provided with sockets, of a yoke adapted to embrace the mirror, having its end portions bent in and adapted to fit in the sockets on the mirror and having frictional engagement with the said sockets, an arm bent to project horizontally and having a vertical portion that is rotatably mounted, the horizontal portion of the arm being formed in telescoping sections d, d', d^2, the front section d having pivotal connection with the yoke while the remaining telescoping sections are tubular, a flexible connector 9 passing through the hollow sections of the arm and engaging the front section d, the rear end of the said flexible connector having attached thereto a button 11 and a stop 13 located in the section d^2 above the button, whereby the extent to which the sections may be separated is limited, substantially as described.

707,152. PLASTER. ROBERT NUMPHY, Canisteo, N. Y. Filed July 13, 1901. Serial No. 67,004. (No model.)

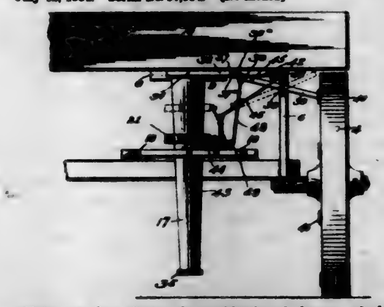

Claim.—1. In a plaster, the combination of a hopper, a feed-spout, valves at the top and bottom of the spout, a vibrating lever for imparting a sliding movement to the upper valve, a swinging lever connected to the lower valve, means for operating said vibrating lever, a connection between the two levers for effecting the simultaneous operation of the valves, means auxiliary to said levers for automatically and simultaneously retracting the same, a furrow-opener, furrow-coverers, a lever for simultaneously throwing said furrow-opener and furrow-coverers into and out of operation, and a connection between said lever and the vibrating lever for throwing said vibrating lever into and out of operation simultaneously with the furrow opener and coverers, substantially as described.

3. In a plaster, the combination with a frame, of a lever pivoted thereon, a furrow-opener adjustably connected with the lever, a flexible connection between said furrow-opener and a fixed part of the plaster, furrow-coverers pivoted to the frame, flexible connections between said furrow-coverers and the frame to limit the rearward movement of said coverers, flexible connections between the coverers and the lever, whereby when said lever is operated the furrow openers and coverers will be simultaneously thrown into and out of operation, and means for holding the said lever elevated, substantially as described.

4. In a plaster, the combination with a frame and hopper, of a feed-spout, a slide-valve between the hopper and the spout, a swinging valve at the lower end of the spout, a vibrating lever pivoted to the frame and connected with the slide-valve, a swinging lever connected with the swinging valve, a connection between the two levers for effecting the simultaneous operation of the valves, means for actuating the vibrating lever in one direction, springs for automatically retracting the levers, furrow opening and covering devices, and an operating-lever for simultaneously throwing said furrow opening and covering devices and the vibrating lever into and out of operation, substantially as described.

707,153. CLAMP FOR MARBLE WASH BOWLS OR BASINS. WILLIAM MCCLINTOCK, New York, N. Y. Filed Jan. 2, 1902. Serial No. 88,141. (No model.)

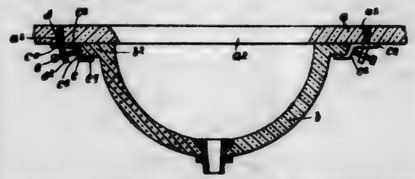

Claim.—1. The herein-described means for securing a bowl or basin to a marble slab or table comprising an angular clamp-piece, the ends of which are parallel and project in opposite directions and the central portion of which is at an angle to said ends, one of said ends being provided with a slot or opening, and a clamp bolt or member passed therethrough and adapted to be secured in the marble slab or table, said clamp bolt or member being provided in the outer end thereof with a set-screw which is passed therethrough and adapted to bear on the angular portion of the clamp, substantially as shown and described.

2. The herein-described means for securing a bowl or basin to a marble slab or table comprising a clamp c provided with parallel end portions c^2 and c^4 which project in opposite directions and which are connected by an angular portion c^3, the end portion c^2 being provided with a slot or opening c^5, and a clamp bolt or member passed therethrough and secured in the slab or table, the outer end of said clamp bolt or member being provided with a set-screw e, substantially as shown and described.

707,154. FRUIT-STEMMER. JAMES A. ROGERS, Lowry City, Mo. Filed Aug. 28, 1901. Serial No. 73,203. (No model.)

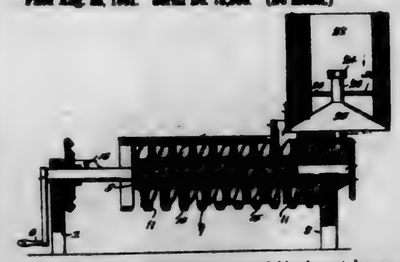

Claim.—1. The combination of a revolvable element having a peripheral spirally-disposed feed-channel, and a coacting cutter disposed against one side of said revolvable element, to retain fruit in said channel until it reaches the discharge end thereof and cut off the projecting stems

of the fruit during its passage through the channel, said cutter comprising a plurality of transversely-disposed bars spaced apart and having cutting edges, substantially as described.

2. The combination of a revolvable element having a peripheral spirally-disposed feed-channel, and a coacting cutting element, to retain fruit in said channel until it reaches the discharge end thereof and cut off the projecting stems of the fruit during its passage through the channel, said cutter comprising a plurality of transversely-disposed bars spaced apart and having cutting edges, and means to move one of said elements longitudinally, substantially as described.

3. The combination of a revolvable element having a peripheral spirally-disposed feed-channel, and a coacting cutter disposed against one side of said revolvable element, to retain fruit in said channel until it reaches the discharge end thereof and cut off the projecting stems of the fruit during its passage through the channel, said cutter comprising a plurality of transversely-disposed bars spaced apart and having cutting edges, and means to impart reciprocatory longitudinal movement to one of said elements, substantially as described.

4. The combination of a revolvable element having a peripheral spirally-disposed feed-channel, a coacting cutter disposed against one side of said revolvable element, to retain fruit in said channel until it reaches the discharge end thereof and cut off the projecting stems of the fruit during its passage through the channel, said cutter comprising a plurality of transversely-disposed bars spaced apart and having cutting edges, and means to feed fruit to the channel, substantially as described.

5. In a machine of the class described, the combination of a feed element having a feed-channel open on one side, and a coacting cutting element disposed against the open side of said channel, one of said elements being movable to urge fruit through the channel, said cutter comprising a plurality of transversely-disposed bars spaced apart and having cutting edges, whereby the projecting stems of the fruit will be cut off, substantially as described.

6. In a machine of the class described, the combination of a feed element, having a feed-channel open on one side, a coacting cutting element disposed against the open side of said feed-channel, said cutter comprising a plurality of transversely-disposed bars spaced apart and having cutting edges, and means to move one of said elements so that said cutting element crosses said channel, to cut off fruit-stems projecting therefrom, substantially as described.

7. A stemming-machine, comprising a frame, a rotatable spiral feed-roller mounted thereon, a reciprocatory bowed cutting device embracing the feed-roller, means for operating the feed-roller, and an operative connection between the feed-roller and the cutting device for reciprocating the latter.

8. A stemming-machine, comprising an open substantially horizontal frame, an intermediate longitudinal spiral feed-roller rotatably mounted within the frame, a reciprocatory cutting device embracing the lower side of the roller and slidably mounted upon the frame, a removable cover embracing the top of the roller and carried by the cutting device, a transverse shaft mounted upon the frame and having opposite terminal crank-arms, connecting-links between the crank-arms and the cutting device, and an operative connection between the shaft and the feed-roller.

9. In a stemming-machine, the combination with a rotatable spiral feed device, of a reciprocatory cutting device embracing the feed device and having a plurality of bowed cutting-bars provided with cutting edges.

10. In a stemming-machine, the combination with a frame, of a rotatable spiral feed device, and a reciprocatory cutting device, comprising a knife-frame having opposite flanges slidably mounted upon the frame, and transverse bowed knife-bars embracing one side of the feed device and having their opposite edges beveled to cutting edges.

707,155. LATHE. JOHN L. GREGG, Buffalo, N. Y. Filed Feb. 23, 1900. Serial No. 6,168. (No model.)

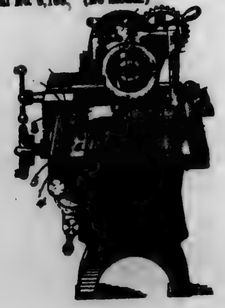

Claim.—1. In a lathe, a bed or frame having grooves, rails of hardened metal fitted in said grooves and having portions extending above the surface of the bed, a carriage having grooves on its under surface, rods of hardened metal fitted in said grooves and having depressions in which the extensions of the rails project.

2. In a lathe, a bed or frame having grooves, rails of hardened metal fitted in said grooves and having portions extending above the surface of the bed, a carriage having grooves on its under surface semicircular in cross-section, rods of hardened metal fitted in said grooves and corresponding in form to the semicircular cross-section of the groove; said rods having bottom depressions in which the extensions of the rails project.

3. In a lathe, a bed or frame having grooves, rails of hardened, tempered and true-ground metal fitted in said grooves, and having portions extending above the surface of the frame and a carriage having grooves on the under surface in which the extensions of the rails project.

707,156. MAGAZINE-CAMERA. WALTER G. PERES and HENRY G. M. FLETCHER, Hayle, England. Filed Aug. 31, 1901. Serial No. 73,905. (No model.)

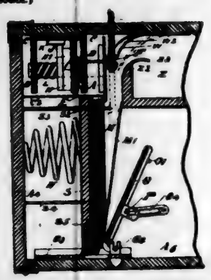

Claim.—1. In a magazine-camera comprising a casing, a vertically-movable slide mounted therein, a follower mounted rearwardly of said slide, an axle mounted above said follower and a separating-disk connected with said axle and means whereby the axle is turned in opposite directions as the slide is raised and lowered, substantially as shown and described.

2. In a magazine-camera, a casing, a vertical and movable slide mounted therein, levers pivoted in front of said slide, a horizontal slide pivotally connected with the lower ends of said levers and through which the first-named slide is adapted to pass, means whereby the levers are held in a forwardly-directed position when the vertical slide is raised and in a backward position when said slide is lowered, devices for holding a pack of films adjacent to the back of the vertical slide and for pressing the same forwardly, an axle mounted above said devices, a separating-disk connected with said axle and devices whereby said axle is turned in opposite directions as the vertical slide is raised or lowered, substantially as shown and described.

3. In a magazine-camera, an axle, a separating-disk connected therewith, a vertical slide mounted in front of said axle, and devices whereby said axle is turned in opposite directions as said slide is raised or lowered, substantially as shown and described.

4. In a magazine-camera, a casing, a vertical and vertically-movable slide mounted therein, a horizontal slide mounted beneath said first-named slide, means for holding said levers in an upright position and against the vertical slide when the latter is in its lowest position and for holding said levers in a forwardly and upwardly inclined position when the vertical slide is in its raised position and means for pressing a pack of films against the back of said slide and for separating one of said films from said pack when said slide is raised, substantially as shown and described.

5. A magazine-camera provided with a specified vertical and vertically-movable slide G, a follower S, a horizontal slide O², levers pivotally connected with the front of said horizontal slide, an axle B mounted above said follower and movable forwardly and backwardly, a separating-disk connected with the front end of said axle and devices for turning said axle in opposite directions as said first-named slide is raised or lowered, substantially as shown and described.

6. A magazine-camera provided with a suitably-supported axle, a separating-disk A connected therewith, means for turning said axle in opposite directions, a cam connected partly with said axle and partly with the support thereof, and a spring L, mounted on said axle, substantially as shown and described.

7. In a magazine-camera, a casing, a vertically-removable slide mounted therein, devices for supporting a pack of films back of said slide and pressing the same forwardly, an axle mounted above said devices and provided with a separating-disk and devices for turning said axle in opposite directions as the slide is raised or lowered, substantially as shown and described.

707,157. FURNACE. JAMES REAGAN, Philadelphia, Pa. Filed May 27, 1902. Serial No. 109,163. (No model.)

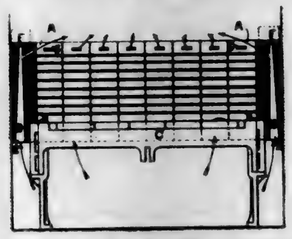

Claim.—1. In combination with a furnace, a hollow block independent of the walls, sheets, linings, or grates, having an air-measuring outlet and adapted to be removed or replaced without interfering with or changing the walls, grates, or supports, substantially as described.

2. In a furnace a hollow block independent of the walls, sheets, linings, or grates, and adapted to be removed or replaced without in any way interfering with or changing the walls, grates or supports, and having a vertically-disposed tapering passage extending through its body with an opening at the upper end and an inclined outlet to deliver the air into the combustion-space above the fire as described.

3. In a furnace a hollow block independent of the walls, sheets, linings, or grates and adapted to be removed or replaced without in any way interfering with or changing the walls, grates, or supports having a vertically-disposed tapering passage extending through its body with an opening at the upper end and an inclined outlet to deliver air into the combustion-space above the fire, such passage and outlet being proportioned to deliver air at the outlet in such quantity as shall be desirable for the proper combustion of the fuel.

4. In a furnace hollow blocks independent of the walls, sheets, linings, or grates and adapted to be removed or replaced without in any way interfering with or changing the walls, grates, or supports and having each a vertically-disposed tapering passage extending through its body with an opening at the upper end and an inclined outlet to deliver air into the combustion-space above the fire, each passage being proportioned so as to deliver air at the outlet in such quantity as shall be desirable for the proper combustion of the fuel, said blocks being adapted to be constructed and applied to a furnace in a series of units so that any or all may be used at will.

5. In a furnace a hollow block independent of the walls, sheets, linings, or grates having a vertically-disposed tapering passage and an inclined outlet, a groove in one edge and a tongue upon the opposite edge thereof substantially as described.

6. In a furnace a hollow block independent of the walls, or of the grate, with a vertically-disposed tapering passage and inclined outlet, a groove in one edge and a tongue upon the opposite edge thereof and grooves upon the face thereof for the reception of ashes and at its lower end a transverse shoulder substantially as described.

7. A hollow block for furnaces having an air-passage in its body and a restricted air-measuring outlet communicating with said air-passage and adapted when in place to discharge air into, or toward the interior of, the body of gases within the combustion-space, substantially as described.

8. A hollow block for furnaces having a tapered air-passage in its body and an air-measuring outlet communicating with said air-passage and adapted when in place to discharge air into, or toward the interior of, the body of gases within the combustion-chamber substantially as described.

707,158. FURNACE. JAMES REAGAN, Philadelphia, Pa. Filed May 29, 1902. Serial No. 109,689. (No model.)

Claim.—1. A combination of a hollow block having a passage therethrough for the delivery of air, of a steam-superheating chamber situated at the discharge end of said passage and having a perforated wall of somewhat extended area lying in substantially the same plane as the face of said hollow block substantially as described.

2. A hollow block having in one of its faces a cavity communicating with the passage in said block, of a steam-pipe leading to said cavity, and a superheating-chamber communicating with said pipe and lying within said cavity, said superheating-chamber having a perforated face lying substantially flush with the face of the block and being so disposed within said cavity as to leave a passage for air around it, substantially as described.

3. The combination of a series of adjacent hollow blocks each of which has a groove in its upper end, of a steam-pipe lying within said groove, a series of steam-superheating chambers situated within the bodies of the bricks and communicating with said steam-pipe, and air-discharge openings communicating with the passages in said blocks, substantially as described.

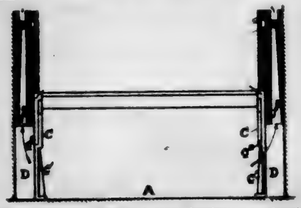

4. The combination with a furnace having a combustion-space provided with a series of adjacent hollow blocks in which are disposed air heating and feeding passages, of a series of perforated superheaters situated in the discharge ends of said passages and being exposed to the heat of the combustion-space.

5. The combination with a furnace having a combustion-space provided with a series of adjacent hollow blocks in which are disposed air heating and feeding passages, of a series of perforated superheaters situated in the discharge ends of said passages, the said passages and superheaters being disposed at the front of the furnace above the feed-doors thereof and at the sides of the furnace, substantially as described.

707,159. METHOD OF POLISHING AND DRYING BROOM-HANDLES. CHARLES A. RIDLON, Alba, Mich., assignor of two-thirds to Willis K. Jackson and George A. Jackson, Buffalo, N. Y. Filed Apr. 12, 1902. Serial No. 102,506. (No model.)

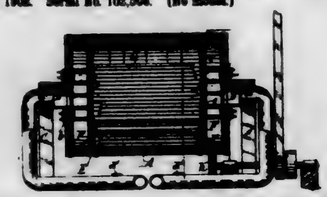

Claim.—In the manufacture of broom-handles and similar articles, the herein-described polishing and drying method, which consists in rolling or tumbling a mass of the handles in an inclosing chamber, the axes of the handles being substantially parallel to that of the chamber, and simultaneously forcing opposing air-currents lengthwise through the interstices between the contiguous handles from opposite ends of the chamber, whereby the meeting air-currents produce a pressure which causes the air and moisture to be forced laterally through the mass of handles in different directions, substantially as set forth.

707,160. CUSHIONING DEVICE FOR VALVES. ERNST KOEP, Dresden, Germany. Filed Sept. 16, 1901. Serial No. 75,516. (No model.)

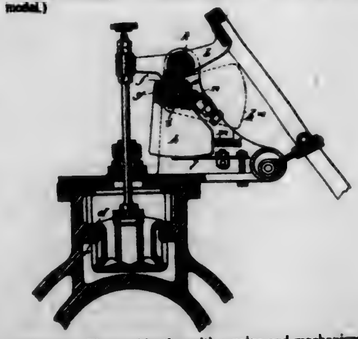

Claim.—1. The combination with a valve and mechanism for moving the same, of a movable weight and means on the valve-moving mechanism for moving the weight to check the movement of the valve.

2. The combination with the valve and mechanism for moving the same, of a movable weight and means on the valve-moving mechanism for moving the weight to check the movement of the valve, and means for returning the weight to its normal position in opening the valve.

707,161. SURVEYING AND RECONNAISSANCE INSTRUMENT. JOSEPH G. SALA, San Francisco, Cal. Filed May 20, 1902. Serial No. 108,329. (No model.)

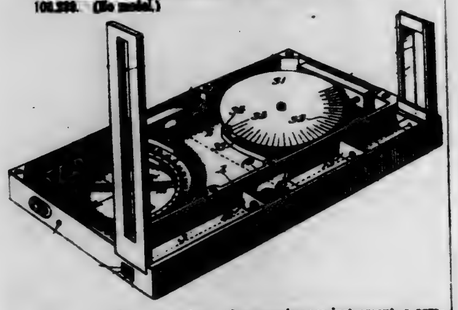

Claim.—1. In a surveying and reconnaissance instrument, a compartment extending lengthwise of the instrument having end walls and intermediate transverse partitions, said end walls and partitions being provided with sight-apertures increasing in area from the eye-sight to the object-sight.

2. In a surveying and reconnaissance instrument, a compartment extending the length of the instrument having end walls and intermediate transverse partitions, said end walls and partitions being provided with sight-apertures increasing in area from the eye-sight to the object-sight, and wires across the object-aperture, adjusted to determine stadia measurements.

3. In a surveying and reconnaissance instrument, a compartment extending the length of the instrument having end walls and intermediate transverse partitions, said end walls and partitions being provided with sight-apertures increasing in area from the eye-sight to the object-sight, wires across the object-aperture adjusted to determine stadia measurements, and a spirit-level so arranged that the rays therefrom reflected will bisect the line of sight, and a prism-mirror to reflect the position of the bubble.

4. In a surveying and reconnaissance instrument, a compartment extending the length of the instrument, having end walls and intermediate transverse partitions, said end walls and partitions being provided with sight-apertures increasing in area from the eye-sight to the object-sight, wires across the object-aperture, sight-standards hinged to the end walls of the compartment having longitudinal slits therein, a mirror in the eye-sight standard having its backing removed in alinement with the slit in the sight, and a wire in the sight end of the compartment, substantially as and for the purposes specified.

5. In a surveying and reconnaissance instrument, a rectangular casing, a compass secured therein, an eye-sight standard, hinged to the casing, formed with a sight-slit, a mirror on the inside of the standard having the backing removed at determined distances in alinement with the sight-slit, an object-sight standard hinged to the other end of the casing and formed with a slot, and a wire strutched lengthwise in the slot.

6. In a surveying and reconnaissance instrument, a rectangular casing, a compartment in the casing, transverse partitions in the compartment, the end walls of the compartment and the partitions being provided with alining sight-apertures, a vernier pivotally mounted, and a spirit-level mounted to turn with the pivot of the vernier, whereby the level is brought into a position making any desired angle with the horizontal within the limits of the prescribed arc.

707,162. LUMBER LOADING OR UNLOADING DEVICE. WILLIAM BARTEY, Stillwater, Minn. Filed May 22, 1902. Serial No. 108,631. (No model.)

Claim.—1. A loading and unloading device, comprising a base composed of longitudinal sills forming runways and cross-bars bracing the said sills, a derrick formed of converging beams secured together at their upper ends by means of a ring or band and having their lower ends hinged to said sills, side braces loosely connected to said beams, cables connected to the derrick, a windlass to which the cables are secured, said windlass being mounted upon the base, a sheave mounted upon the apex of said derrick, a hoisting-drum mounted upon the base, a hoisting-cable wound upon said drum, passed over said sheave and carrying a overhead cable having log-engaging hooks and placing-ropes secured to its ends, substantially as set forth.

2. The combination with two or more flat-bottom cars, of a hoisting-rig supported by runners adapted to be slid from one car-bottom to the other, a windlass carried by said rig, a pulley supported by one of the cars other than that upon which the rig is supported, a cable, one end of which is fixed to the frame of said rig, runs about said pulley and having its opposite end connected to said windlass whereby upon the rotation of the windlass in the proper direction the rig will be drawn from one car to the other, substantially as set forth.

707,163. ASH-CART. WILHELM SCHALLER, New York, N. Y. Filed June 19, 1902. Serial No. 112,263. (No model.)

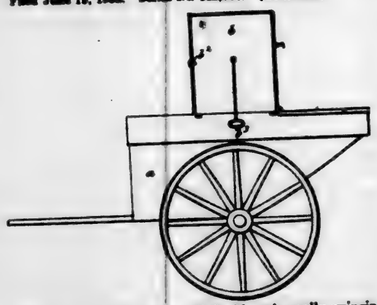

Claim.—1. An ash-cart provided with an inwardly-swinging door, an outwardly-swinging lid, and means for attaching an ash-can to the lid, substantially as specified.

2. An ash-cart provided with an inwardly-swinging door hinged to the top of the cart-body, an oppositely-hung outwardly-swinging lid hinged in front of said door, and means for attaching an ash-can to the lid, substantially as specified.

3. An ash-cart provided with a hinged lid, a bracket having an inclined lower side, and a bent spring-influenced folding catch adapted to engage said side, substantially as specified.

4. An ash-cart provided with a hinged lid, a bracket, a bent spring-influenced folding catch adapted to engage the bottom of an ash-can, a second catch adapted to engage the top of said can, and a spring-influenced cover adapted to close the can, substantially as specified.

5. An ash-cart provided with an inwardly-swinging door, an outwardly-swinging lid, means on the lid for supporting an ash-can, and a spring-influenced cover for closing said can, substantially as specified.

707,164. INSTRUMENT FOR MEASURING THE DEGREE OF EXPOSURE TO LIGHT. FELIX SCHMIDT, Berlin, Germany. Filed Feb. 17, 1902. Serial No. 94,511. (No model.)

Claim.—An exposure-meter comprising a tube one end of which is adapted to be placed light-tight against the eye, a concave lens at the other end, a plate of varying translucency and of uniform thickness adapted to be moved through the tube at right angles to its axis at a point between the eye and lens and in the focal plane of the latter, and a graduated scale on the edge of said plate, substantially as and for the purpose set forth.

707,165. DRAWING-BOARD LEG APPLIANCES. PHILIP SCHLAGETER, Sr., and ALONZO W. ALLEN, Streator, Ill., assignors of one-third to Philip Schlageter, Jr., Streator, Ill. Filed Feb. 11, 1902. Serial No. 93,858. (No model.)

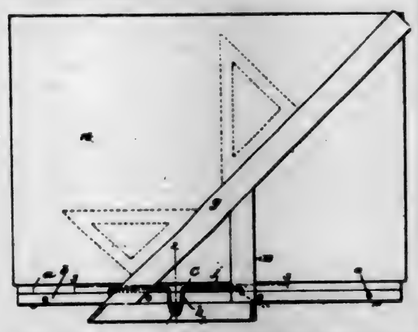

Claim.—1. The combination of a drawing-board having a groove and a portion overhanging said groove, a slide arranged on the board and having a head bearing against one edge of the portion overhanging said groove, and a spring connected to the head of the slide and having a portion arranged below and in engagement with the portion of the board which overhangs the groove so as to hold the slide down on the board.

2. The combination of a drawing-board having a groove and a portion overhanging the same, a slide arranged on the board and having a head bearing against one edge of the portion overhanging said groove, and a spring connected at an intermediate point of its length to the head of the slide, and having oppositely-extending arms disposed in the groove of the board and terminating in hooks engaging the portion of the board which overhangs said groove.

3. The combination of a drawing-board having a groove and a portion overhanging the same, a slide arranged on the board and having a head bearing against one edge of the portion overhanging said groove, and also having a recess in the inner side of the head, and an aperture intersecting said recess, a spring having a loop disposed in the recess of the slide-head, and arms extending in opposite directions from the loop and disposed in the groove of the board and terminating in hooks engaging the portion of the board which overhangs the groove, and a removable pin resting in the aperture of the slide-head and the loop of the spring.

4. An attachment for drawing-boards comprising a strip having a groove, a straight edge connected to the strip and overhanging the groove thereof, a slide having a head bearing against the straight edge, and a spring connected at an intermediate point of its length to the head of the slide and having oppositely-extending arms disposed in the groove of the strip and terminating in hooks engaging the portion of the straight edge which overhangs said groove.

707,166. HORSE-PROTECTOR. ROSCOE H. SMITH, Kansas City, Kans. Filed Sept. 30, 1901. Serial No. 76,974. (No model.)

Claim.—In a horse-protector, the combination of a body-frame and a head-frame, the head-frame being pivotally connected to the body-frame and adapted to swing laterally with the movement of the horse's head, supporting-bows having their depending ends adapted to engage staples on a harness, said body-frame comprising the longitudinal central supporting-rib 2 and the longitudinal side supporting-ribs connected at the front and rear to the central rib, the head-frame comprising the central supporting-rib 1' and the side supporting-ribs connected therewith, and a covering carried by the bows and ribs of the two frames said covering having an adjustable portion at the point where the two frames are pivotally connected.

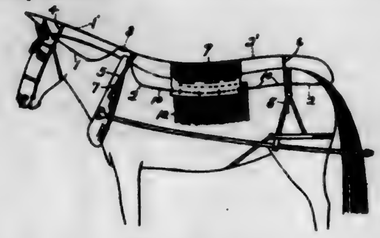

707,167. BEARING FOR SHAFTS OF MACHINES. ERNEST H. SMITH, Winchester, Mass. Filed Feb. 7, 1901. Serial No. 46,413. (No model.)

Claim.—In a machine-frame having a main member F through which its driving-shaft extends, the combination of that shaft; member F provided with a boss F' integral therewith and having a cylindrical interior; a sleeve with a cylindrical exterior to fit the interior of the boss F' and a cylindrical interior to fit the shaft; and means to hold the sleeve from moving in the cylindrical interior of the boss F' when in use substantially such as described.

707,168. RECIPROCATING-BEAM MACHINE. ERNEST H. SMITH, Winchester, Mass. Filed Sept. 30, 1901. Serial No. 76,734. (No model.)

Claim.—1. In combination a beam; a driving-shaft; means connecting the shaft and beam; a power-driven wheel loose on the shaft; a clutch with one member fast to the power-driven wheel and the other member splined on the shaft; a shipping-lever fulcrumed near its middle and connected by its lower arm with the latter clutch member; a treadle connected with the lower end of the shipping-lever; and a cam carried by the beam and operating on the upper end of the shipping-lever; all substantially as described.

2. In combination a shaft; a beam; means connecting the shaft and beam; a sleeve on the shaft; means for fastening the sleeve to the shaft with provision for longitudinal adjustment of the sleeve on the shaft; a power-driven wheel loose on that sleeve; a clutch member fast to the power-driven wheel; a second clutch member splined on the shaft; a rock-shaft; a treadle for rocking it against the force of a spring; that spring; and means for connecting the rock-shaft with the second clutch member; all substantially as described.

3. In combination a beam; a driving-shaft; means connecting the shaft and beam; a power-driven wheel loose on the shaft; a clutch with

one member fast to the power-driven wheel and the other member splined on the shaft; a shipping-lever fulcrumed near its middle and connected by its lower arm with the latter clutch member; toggle-arms, one connected at its outer end with the lower end of the shipping-lever, the other connected at its outer end with a fixed support, and both connected at their inner ends with a link; that link connected at its upper end with the toggle-arms and at its lower end to one arm of a rock-shaft; that rock-shaft; a treadle for rocking it; and a treadle-spring on that treadle; all substantially as described.

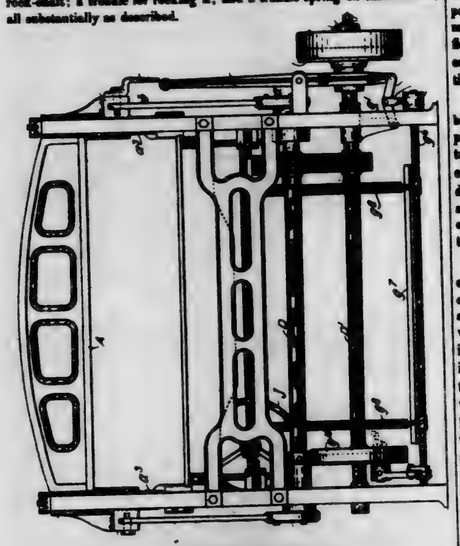

707,169. SPRING-TIRE FOR VEHICLE-WHEELS. HENRY C SHEARMAN, Providence, R. I. Filed Aug. 5, 1899. Serial No. 601,746. (No model.)

Claim.—1. In combination, a wheel-rim having one central or two parallel grooves along its bed; a depression or well sunk below the surface of said bed or rim with an opening passing through the center of said depression; a tubular-tire or pneumatic-tube cover; and a boxing, occupying said depression or well in said rim, having a perpendicular shaft passing through said opening, said shaft having a bevel-gear head gearing with two bevel-gear-headed screws, threaded alike, passing through opposite sides of boxing for the purpose of closing the telescoping ends of the tire or pneumatic-tube cover with which ends said screws engage, substantially as described.

2. A flexible outer cover for a tubular-spring-tire or pneumatic-tire tube with ends, having the same outer periphery, provided with inwardly-projecting and transversely-extending shoulders forming flanges adapted to abut continuously together overlapping, substantially as shown and described.

3. A flexible outer cover for a tubular-spring-tire or pneumatic-tire tube with ends, having the same outer periphery provided with inwardly-projecting and transversely-extending shoulders forming flanges adapted to abut continuously together having embedded in, or made integral with, each of said ends a transverse band of spring-wire or suitable non-stretching material, substantially as described.

4. In combination with a detachable tubular spring-tire constructed of bands of spring material, a cover with its ends having the same outer periphery, adapted to abut together continuously over a telescoping spring-band, made an integral part of one end of the tire, to guide the opposite end of the tire-cover to its place of continuous abutting contact transversely over said telescoping spring-band when the tire is adjusted onto the rim of a wheel, and provided with suitable means for closing and fastening the same while on the rim of a wheel, substantially as described.

5. In combination with a tubular spring or other tire or flexible outer cover for a pneumatic-tire tube with free ends, having the same periphery, a rim-retaining band, or bands, extending around the longitudinal circumference of tire provided with a flexible band with ends secured at an extremity of said retaining band, or bands, and extending within and around the transverse end of tire to which it is attached, and projecting from said end to guide the opposite end of said tire or pneumatic-tire cover to its continuous transverse abutting contact over said flexible band in the adjustment of said tire to the rim of a wheel; the ends of said retaining band, or bands, being secured to the ends of said tire or pneumatic-tube cover, substantially as described.

6. In combination with a tubular spring or other tire or outer flexible cover for a pneumatic-tire tube with free ends, having the same outer periphery, a rim-retaining band, or bands, extending around the longitudinal circumference of tire, provided with a flexible band attached to each extremity of said retaining band, or bands, one being of such larger dimensions as to allow the other transverse band to telescope within it, and the ends of said tire, or cover, to which said ends of retaining band, or bands, together with their transverse bands are secured, to abut continuously over the aforesaid telescoping band, substantially as described.

7. In combination with a tubular spring or other tire, or flexible outer cover for a pneumatic-tire tube with free ends, having the same outer periphery, a rim-retaining band, or bands, extending longitudinally around said tire, provided with adjusting end plates screwed, or otherwise fastened, to the ends of said retaining band, or bands, to regulate its length; which end plates are provided with a flexible band conforming to the transverse curve of ends of tire, or tire-cover, one of which transverse bands being of such lesser diameter as to allow it to telescope within the other and the free ends of tire, or tire-cover, with same outer periphery to which said transverse bands are secured to abut continuously over the said telescoping band; said end plates being furnished with any suitable device to secure them together, substantially as described.

8. In a pneumatic tire, the combination of an outer flexible cover having free ends of the same outer periphery adapted to abut over a flexible transverse band attached to, or an integral part of, one end of cover; a longitudinally-extending rim-retaining band, or bands, with ends secured to ends of said outer cover; an inflatable inner tube; and suitable means for securing the ends of said retaining-band together, substantially as described.

9. A flexible or hollow tire with ends adapted to telescope together by abutting over or under a telescoping spring-band, and provided with a bevel-gear device consisting of a bevel-gear shaft gearing with two bevel-gear-headed screws which engage with the ends of the tire for the purpose of drawing and holding the ends together, substantially as described.

10. A tubular spring-tire constructed of bands of spring metal, or other suitable material, attached to an assembling rim band, or bands, with ends of said tire adapted to telescope by abutting over a telescoping spring-band, and provided with a bevel-gear attachment whereby the ends of the tire are drawn together or forced apart by the action of a bevel-gear shaft gearing with two bevel-gear-headed screws, threaded alike, which engage with the ends of the tubular spring-tire, substantially as described.

11. A flexible cover for a pneumatic tube, or tire, with ends adapted to telescope together by abutting over a telescoping spring-band, and provided with a rim band, or bands, and a bevel-gear attachment whereby the ends of cover are drawn together or forced apart by the action of a bevel-gear shaft gearing with two bevel-gear-headed screws, threaded alike, which engage with the ends of the rim band, or bands, substantially as described.

12. A tubular spring or other tire made attachable to, and detachable from, the rim of a wheel by means of a bevel-gear device consisting of a bevel-gear shaft gearing with two bevel-gear-headed screws which engage with the abutting ends of the tire, said ends abutting over a flexible band, and cause said ends to approach or recede from each other and also hold said ends firmly together over the said band by the turning of said bevel-gear shaft, substantially as described.

13. A tubular spring or other tire made attachable to and detachable from the rim of a wheel by means of a bevel-gear device consisting of a bevel-gear shaft gearing with two bevel-gear-headed screws which engage with the abutting ends of the tire and cause them to approach or recede from each other and also hold said ends firmly together by the turning of said bevel-gear shaft, substantially as described.

14. A detachable bevel-gear device for closing the ends of a tire, or other purpose, consisting of a boxing inclosed within which are geared three bevel-gear-headed shafts, two of which pass through opposite sides of boxing which furnishes a bearing for their bevel-gear heads; the external portion of each of the two separate shafts is threaded the same; the third bevel-gear has a solid or hollow shaft that, passing through an intervening side of the boxing, is provided with a thumb-piece or wrench which revolves the bevel-gear-headed screws, and will cause nuts, or other similarly-threaded objects, engaged one on ends of said bevel-gear-headed screws to simultaneously approach toward, or recede from, the boxing, substantially as described.

15. In combination, a bevel-gear device consisting of a boxing inclosed within which are geared three bevel-gear-headed shafts, two of which pass through opposite sides of boxing which furnishes a bearing for their bevel-gear heads, the external portion of each of the two separate shafts is threaded the same, the third bevel-gear has a hollow or solid shaft that, passing through an intervening side of the boxing, is provided with thumb-piece, or wrench, a nut carrying two longitudinally-extending guiding-arms engaged on each screw-threaded bevel-gear shaft, the extension guiding-arms of each nut sliding along the opposite sides of the boxing as the nuts approach or recede from each other by the turning of the bevel-gear-operating shaft, substantially as described.

16. The combination of the bevel-gear device consisting of a boxing inclosed within which are geared three bevel-gear-headed shafts, two of which pass through opposite sides of boxing which furnishes a bearing for their bevel-gear heads, the external portion of each of the two separate shafts is threaded the same, the third bevel-gear has a hollow shaft that, passing through an intervening side of the boxing, is provided with a thumb-piece or wrench, and a valve-stem of an inner pneumatic tube passing through said thumb-shaft; which combination allows the said thumb-shaft or operating-shaft to be revolved around said valve-stem without interfering with its functions, substantially as described.

17. A detachable tubular spring-tire consisting in combination of two series of spring-bands of metal or other suitable material, of circular or other form; said spring-bands to be placed at right angles to the plane of the tire and so adjusted and attached together that they lap edges and mutually support one another by interlocking in the same series; the spring-bands of the inner series being assembled on a rim-retaining-band to form a close series; the spring-bands of the outer series having the corners of each end cut out to form a shoulder, said ends of said ends attached to a separate assembling rim-band forming an open series of springs with edges below the shoulder abutting along the assembling rim-bands but with edges being overlapped and interlocked along the curvature of the springs; said outer open series closing over and clasping the inner series along its rim-assembling band and made attachable to and separable from it; together with a cover of canvas, rubber or other suitable material inclosing said tire, substantially as described.

18. A detachable tubular spring-tire constructed of two series of annular spring-bands, of metal or other suitable material, bent in circular or other form, placed at right angles to the plane of the tire; the edges of the spring-bands of the inner series being overlapped by the spring-bands of the outer series, causing them to mutually support one another, and both series attached to an assembling rim-band along the inner, or rim, circumference of tire with edges of springs in each series abutting along said assembling-band but only approximately abutting elsewhere along the transverse curve of tire to allow of a slight interplay of springs at tread when yielding to road contact, substantially as described.

19. A detachable tubular-spring-tire constructed of two series of separate spring-bands, of metal or other suitable material, bent in circular or other form, placed at right angles to the plane of the tire; the edges of the spring-bands of the inner series being overlapped by the spring-bands of the outer series causing them to mutually support one another; the ends of the spring-bands being attached to separate assembling rim-bands with their edges abutting along said assembling rim-bands in each series to form a tire continuously open along its rim-circumference, substantially as described.

20. In a tubular spring-tire, a series of spring bands, or loops, with their edges abutting along the inner rim-circumference of tire but overlapping edges along the transverse curve of tire—due to the width of each spring, or loop, being less at this place of their abutting contact with adjacent ones along the rim-circumference of tire than the remaining wider and shouldered portion of each spring, or loop; which overlapping of shouldered portion may extend sufficiently to cause the edges of alternate springs to approximately meet and form two series elsewhere than at place of abutting contact along the rim-circumference of tire, substantially as described.

21. A tubular spring-tire constructed of a series of spring bands, or loops, of metal or other suitable material, of circular or other form, attached to an assembling band, or bands, in such manner that said spring bands, or loops, abut along the said assembling band, or bands, but overlap edges along the transverse curve of tire—due to the width of each spring band, or loop, being less at place of attachment to said assembling band, or bands, than the remaining shouldered portion of each spring band, or loop, substantially as described.

22. A tubular spring-tire consisting of a series of spring-bands of metal, or other suitable material, of circular or other form attached to an assembling band or bands in such manner that said spring-bands abut along the said assembling band or bands but overlap edges along the transverse curve of tire—due to the width of each spring being less at place of attachment to said assembling band or bands than the remaining shouldered portion of each spring; which overlapping may extend sufficiently to cause the edges of alternate springs to approximately meet and form a series overlapped by intermediate springs elsewhere than at place of attachment to said assembling band or bands, substantially as described.

23. A tubular spring-tire consisting of a series of spring bands, or loops, of metal or other suitable material, of circular or other form, attached to an assembling band, or bands, by such a curvature of the springs, or loops, as will cause them to firmly clasp said assembling band, or bands, and secure such an interlocking of individual springs by means of each spring abutting against adjacent ones along the said assembling band, or bands, but overlapping edges along the transverse curve of tire—due to the width of each spring, or loop, being less at place of attachment to said assembling band, or bands, than the remaining shouldered portion of each spring, or loop; together with an adjusting end plate screwed or otherwise fastened to the ends of said assembling-band to regulate its length and secure the abutting contact of the spring-bands, substantially as described.

24. A tubular spring-tire consisting of a series of spring bands, or loops, of metal or other suitable material, of circular or other form, removably attached to an assembling band, or bands, by such a curvature of the springs, or loops, as will cause them to firmly clasp said assembling band, or bands, and secure such an interlocking of individual springs, or loops, by means of each spring, or loop, abutting against adjacent ones along the assembling band, or bands, but overlapping edges along the transverse curve of tire—due to the width of each spring, or loop, being less at place of attachment to said assembling band, or bands, than the remaining shouldered portion of each spring, or loop; which overlapping of shouldered portion may extend sufficiently to cause the edges of alternate springs to approximately meet and form two series of springs elsewhere than at place of attachment to said assembling band, or bands substantially as described.

25. In a tubular spring-tire, the combination of one or more series of springs with two assembling-bands; the springs to be removably attached to said assembling-bands by curving the ends of each spring so that they will firmly clasp, by approximately surrounding, said assembling-bands and allow each spring of a series to be moved along said assembling-bands in its attachment to, and removal from, them, substantially as described.

26. In a tubular spring-tire, the combination of two overlapping series of springs with two assembling-bands; the springs to be removably attached to said assembling-bands by curving the ends of each spring so that they will firmly clasp, by approximately surrounding, said assembling-bands and allow each spring of a series to be moved along said assembling-bands in its attachment to, and removal from, them, substantially as described.

27. In a tubular spring-tire, the combination of one or more series of springs with an assembling-band; the springs to be removably attached to said assembling-band by a reserveture of the springs at the place of attachment enabling them to partially surround and firmly clasp it, and allow said tire to be adjusted to and removed from the rim of a wheel without disturbing the attachment of springs to their assembling-band, substantially as described.

28. In a tubular spring-tire closed along its rim circumference, the combination of one or more series of springs, or spring-loops, with one assembling-band; the springs to be removably attached to said assembling-band by a reserveture of the springs at the place of attachment enabling them to partially surround and firmly clasp it, and allow said tire to be adjusted to and removed from the rim of a wheel without disturbing the attachment of springs to their assembling-band, substantially as described.

29. In a tubular spring-tire, the combination of an assembling band, or bands, on which the removable springs of a tire are assembled, together with an end plate screwed, or otherwise adjustably fastened, to each end of the assembling band, or bands, to secure the abutting contact of the springs along the said assembling band, or bands, substantially as described.

30. In a tubular spring-tire, or covering for a pneumatic-tire tube composed of overlapping sections, a tubular spring or section of said tire or covering provided with one or two recesses formed by curvatures in its material such as will enable it to firmly clasp an assembling band, or bands; the width of material being less at said curvatures than remaining portion of said spring or section—due to the removal of material along one or both edges to form a shoulder, substantially as, and for the purposes described.

31. A tubular spring-tire constructed of two or more series of spring bands, or loops, having a layer of suitable flexible material between two

series of said bands or hoops of said tire; which material may be confined to the tread-circumference of tire or extend laterally around it, substantially as, and for the purposes described.

32. A flexible cylinder for a wheel-tire, or other purpose, consisting of a series of annular bands, or hoops, which are provided with a reservature of transverse outline and which are of such inner width at said reservature as will allow said bands or hoops to abut at said reservature and interlock by overlapping transversely elsewhere, substantially as shown and described.

33. In a tubular spring-tire, or covering for a pneumatic-tire tube, made up of adjustable parts, a segmental portion of said tire or covering consisting of an outer and an inner transverse band with a layer of flexible and elastic material between, an edge or edges of either band of said segmental portion projecting beyond edge or edges of other band to form a telescoping band adapted to lap the edge of an adjacent segment, substantially as shown and described.

34. In combination with a tubular spring or other tire having a reserved recess along the tread-circumference of said tire, a cover with edges calculated to turn into and hug the sides of the said reserved recess, a tread-band having laterally-extending wings lapping over approximate edges of cover, said tread-band to be separable from said cover and calculated to hold said edges of cover firmly in place in the reserved recess along tread-circumference of tire and also to keep the wear and tear of road from said cover, substantially as described.

35. A tubular spring-tire in combination with a cover open along the tread and a detachable tread-band constructed to fit into a reserved recess along the tread of the tubular spring-tire and hold in place the edges of the said tire-cover, substantially as described.

36. In combination with a tubular spring or other tire having a recess along its tread-circumference, a cover consisting of two separate longitudinal parts—the outer edges of which are calculated to turn into and hug the sides of the said recess, the flanking portions of cover extending to any desired limit, together with a tread-band occupying the space between the approximate outer edges of cover within said recess to hold them in place, substantially as described.

37. In combination with a tubular spring or other tire or covering for a pneumatic tube having its outer transverse unbroken contour reserved to form a recess or groove longitudinally extending along its tread, which recess or groove shall have its side walls reserved to form a throat at tread narrower than interior of said recess or groove, at tread-band, occupying such recess or groove and firmly clasped by its walls, with laterally-extending wings which hug the curves of said tire both laterally and longitudinally and which may extend laterally to any desirable extent—even to meeting below said tire, substantially as shown and described.

38. In combination with a detachable tread-band, a tubular spring-tire constructed of one or more series of independently-acting and overlapping springs attached along the smaller longitudinal circumference of tire to a rim-retaining band, or bands, calculated to bind the springs of the tire to the rim of a wheel; said tire having a ⋃-shaped recess along its tread-circumference with its side walls formed by such a reservature in the body of each spring as to produce a throat at tread narrower than the interior of said recess to adapt it to hold securely in place by lateral or longitudinal pressure said detachable tread-band, substantially as described.

39. In combination with a tubular spring, or other, tire having a recess along its tread-circumference so reserved in sectional outline as to form a throat at tread narrower than the interior of said recess, a cover continuously open along the tread to admit of the insertion of the tire, and with its free edges calculated to turn into and occupy said recess, substantially as described.

40. A tire constructed of one or more series of independently-acting and overlapping springs attached along the smaller longitudinal circumference of tire to a rim-retaining band, or bands, calculated to bind the springs of the tire to the rim of a wheel; said tire having a ⋃-shaped recess along its tread-circumference with its side walls formed by such a reservature in the body of each spring as to produce a throat at tread narrower than the interior of said recess, substantially as and for the purposes described.

41. In combination with an inner pneumatic tube, a tubular spring-tire constructed of two series of independently-acting springs so arranged and attached to an encircling rim band, or bands, that the edges of the springs of a series are overlapped by the springs of the same or the other series; the springs of the outer series being so reserved and reserved at the tread of the complete tire as to form a continuous ⋃-shaped recess along the tread circumference of tire; the springs of the inner series not being reserved at the tread but calculated to confine the pressure of the inner pneumatic tube and allow the reserved recess of the outer series to perform its peculiar functions apart from, and independently of, any pressure derived from the inner pneumatic tube, substantially as described.

42. In combination, a tubular spring-tire constructed of independently-acting springs attached to a retaining band, or bands, calculated to bind the tire to the rim of a wheel, said tire having a recess along the tread-circumference formed by such a reservature in the body of each spring as to form a throat at tread narrower than the interior of said recess; an inner flexible but non-stretchable membrane, of circular transverse section, attached to said rim-retaining band, or bands, together with an inner inflatable pneumatic tube, substantially as described.

43. In combination with a tubular spring, or other flexible and elastic, tire or outer cover for an inner pneumatic-tire tube, having a ⋃-shaped recess along its tread-circumference formed by a depression or groove in the material of said tire or outer cover, which recess by a reservature of its side walls has a throat at tread narrower than the interior of said recess; a detachable tread-band occupying said recess with laterally-extending wings which hug the curves of said tire both laterally and longitudinally, which wings may extend to any desirable extent around the transverse curve of tire, substantially as described.

44. A tubular spring or other tire or covering for a pneumatic-tire tube having its outer transverse unbroken contour reserved to form a recess or groove longitudinally extending along its tread, which recess or groove shall have its side walls reserved to form a throat at tread narrower than interior of said recess, substantially as shown and described.

45. In a tubular spring-tire, or covering for a pneumatic-tire tube made up of adjustable parts, a spring or segmental portion of said tire or covering having its outer transverse unbroken contour reserved to form a recess or groove longitudinally extending along its tread, which recess or groove shall have its side walls reserved to form a throat at tread narrower than interior of said recess, substantially as shown and described.

46. A detachable tread-band or tire-cover having an inwardly-projecting longitudinal ⋃-shaped tongue with reserved sides caused by a thickening of its solid material along its inner or lower longitudinal periphery, and laterally-extending wings which following a curve in section may extend sufficiently to meet and form a cover open along its inner longitudinal circumference, substantially as, and for the purposes described.

47. In a sectional cover, for a tubular spring or other tire, provided with an inwardly-projecting longitudinal tongue with reserved sides caused by a thickening of its solid material along its inner or lower longitudinal periphery and laterally-extending wings which following a curve in section may extend sufficiently to meet, a section comprising a longitudinal half of said cover, substantially as shown and described.

48. The combination of a detachable tread-band, or tire-cover, having an inwardly-projecting longitudinal tongue, with a thickened periphery along its inner tread-circumference, and a series of transverse spring bands or leaves curved to clasp said tongue with edges abutting along said tongue but owing to a lesser width at abutting middle portion of each spring the remaining shouldered portions are caused to overlap edges of adjacent springs or leaves forming a flexible spring lining to the inner surface of said tread-band or cover, substantially as described.

49. The combination of a tread-band, or tire-cover, provided with a longitudinal tongue inwardly projecting from its inner tread-circumference and one or more series of laterally-extending springs or spring-leaves adjustably attached to said tongue by means of a reservature in the body of each spring enabling it to firmly clasp said tongue and allow of an interplay of the ends of springs either laterally or longitudinally, substantially as described.

50. A detachable, puncture-proof tread-band composed of one or more series of spring-leaves having a reserved recess at their middle portion occupied by the reserved inwardly-projecting tongue of its combination-parking which is made integral with or detachable from it, substantially as shown and described.

51. In a detachable, sectional tread-band provided with laterally-extending wings and a reserved inwardly-projecting longitudinal tongue, the combination of a segmental portion of said tread-band with a reserved spring-leaf, made integral with it or detachable from it, to form a puncture-proof section; which spring-leaf may project longitudinally if desired, to adapt it to overlap an adjacent section, substantially as shown and described.

52. Two or more series of transverse spring-leaves with edges abutting in each series but overlapped by spring-leaves of another series, each spring-leaf being provided with a reservature in its middle portion such as to enable it to clasp firmly abutting springs of overlapping series and form a flexible, sectional, puncture-proof tread-band, substantially as described.

53. A series of transverse spring-leaves provided with a reservature in their middle portion such as to allow edges of adjacent springs to abut along such reservature but, owing to a lesser width at such abutting reserved middle portion of each spring-leaf, the remaining shouldered portions are caused to overlap edges of adjacent spring-leaves forming a flexible sectional puncture-proof tread-band, substantially as shown and described.

54. Spring-leaves having a reserved recess at their middle convex, or concave, portion capable of clasping the tongue of a tread-band, or rim-band, which reserved middle portion is of lesser width than the remaining shouldered portions to permit edges of adjacent leaves of a series to abut at middle reserved portion but overlap at remaining shouldered portion, substantially as shown and described.

55. Spring-leaves having a reserved recess at their middle concave portion capable of clasping the tongue of a rim-band to firmly attach themselves thereto, substantially as shown and described.

56. Spring-leaves having a reserved recess at their middle convex portion capable of clasping the tongue of a tread-band to firmly attach themselves thereto and of clasping one another to form a flexible band of one or more series of spring-leaves, substantially as shown and described.

57. Spring-leaves having a recess at their middle convex or concave portion, which recessed middle portion is of lesser width than shouldered remaining portion to permit edges of adjacent leaves of a series to abut at middle recessed portion but overlap at remaining shouldered portion, substantially as shown and described.

58. A flexible cover, for a tubular spring or other tire, of unbroken transverse contour provided with an outwardly-projecting longitudinally-extending tongue at its outer rim-circumference having a reserved recess at its inner rim-circumference with its throat narrower than interior of recess caused by a thickening of material of said tongue enabling it to clasp a correspondingly-reserved rim band or tongue of tire at rim and act as a packing between tire and rim of wheel, substantially as shown and described.

59. A sectional cover, for a tubular spring or other tire, provided with an outwardly-projecting longitudinally-extending tongue at its outer rim-circumference having a reserved recess at its inner rim-circumference with its throat narrower than interior of recess caused by a thickening of material of said tongue enabling it to clasp a correspondingly-reserved rim band or tongue at rim of said tire and act as a packing between tire and rim of wheel, substantially as shown and described.

60. A longitudinal section of a cover, for a tubular spring or other tire, provided with an outwardly-projecting longitudinal tongue at its outer rim-circumference having a reserved recess at its inner rim-circumference enabling it to clasp a correspondingly-reserved tongue at rim of said tire and act as a packing between tire and rim of wheel; which section may be divided longitudinally at its middle portion if desired, substantially as shown and described.

61. A flexible cover, for a tubular spring or other tire, provided with an outwardly-projecting longitudinally-extending tongue at its outer rim-circumference having a reserved recess at its inner rim-circumference with its throat narrower than interior of recess caused by a thickening of material of said tongue enabling it to clasp a correspondingly-reserved rim band or tongue of tire at rim and act as a packing between tire and rim of wheel, said tongue being divided longitudinally through its center to produce a cover open at rim, substantially as shown and described.

62. A flexible cover, for a tubular spring or other tire, provided with a reserved inwardly-projecting longitudinal tongue at inner tread-circumference divided longitudinally through said tongue to produce a cover open at tread, substantially as shown and described.

63. In a sectional cover, for a tubular spring or other tire, provided with an inwardly-projecting longitudinal tongue at its inner tread-circumference with reserved sides caused by a thickening of its solid material along its inner or lower longitudinal periphery, and an outwardly-projecting longitudinally-extending tongue at its outer rim-circumference having a reserved recess at its inner rim-circumference with its throat narrower than interior of recess caused by a thickening of material of said tongue enabling it to clasp a correspondingly-reserved tongue of a tire and act as a packing between tire and rim of wheel, a section forming a longitudinal half of said cover, substantially as shown and described.

64. A detachable bevel-gear device for closing the ends of a tire, or other purpose, consisting of a boxing inclosed within which are geared three bevel-gear-headed shafts, two of which pass through opposite sides of boxing which furnishes a bearing for their bevel-gear heads; the external portion of each of the two opposite shafts is threaded the same; the third bevel-gear has a solid or hollow shaft that, passing through an intervening side of the boxing, is provided with a thumb-piece or wrench which revolves the bevel-gear-headed screws, and will cause nuts or other similarly-threaded objects, engaged one on each of said bevel-gear-headed screws to simultaneously approach toward, or recede from, the boxing; together with a loose bevel-gear placed opposite the thumb-shaft to steady the other geared shafts, substantially as described.

65. A bevel-gear device for closing the ends of a tire, or other purpose, consisting of a boxing inclosed within which, and completely housed by it, are geared two bevel-gear-headed shafts passing through adjacent sides of boxing which furnishes a bearing for their bevel-gear heads; the external portion of one of the shafts is threaded, the other solid or hollow shaft is provided with a thumb-piece or wrench which revolves the bevel-gearing and will cause a nut or other similarly-threaded object engaged on said bevel-gear-headed screw to approach toward, or recede from, the boxing, together with a loose bevel-gear placed opposite the thumb-shaft to steady the other geared shafts, substantially as described.

66. A detachable bevel-gear device for closing the ends of a tire, or other purpose, consisting of a boxing inclosed within which are geared three bevel-gear-headed shafts, two of which pass through opposite sides of boxing which furnishes a bearing for their bevel-gear heads; the external portion of each of the two separate shafts is threaded the same; the third bevel-gear has a solid or hollow shaft that, passing through an intervening side of the boxing, is provided with a thumb-piece or wrench which revolves the bevel-gear-headed screws, and will cause nuts or other similarly-threaded objects, engaged one on each of said bevel-gear-headed screws to simultaneously approach toward, or recede from, the boxing; said boxing being provided with oppositely and laterally projecting and longitudinally-extending flanges, substantially as described.

67. A flexible outer cover for a tubular-spring-tire or pneumatic-tire tube with ends, having the same outer periphery, provided with inwardly-projecting and transversely-extending shoulders forming flanges adapted to abut continuously together, and a projecting band of flexible material attached to or made integral with one end of cover to form a telescoping band over which the ends of tire-cover abut, substantially as described.

68. A flexible outer cover for a tubular-spring-tire or pneumatic-tire tube with ends, having the same outer periphery, provided with inwardly-projecting and transversely-extending shoulders forming flanges adapted to abut continuously together, having embedded in, or made integral with, each of said ends a transverse band of suitable non-stretching material together with a projecting band of flexible material attached to or made integral with one end of cover to form a telescoping band over which the ends of tire-cover abut, substantially as described.

69. A detachable tubular-tire or pneumatic-tire cover, of canvas or other suitable material, continuously open at rim with free ends adapted to abut together over a telescoping flexible band attached to or made an integral part of one end, substantially as described.

70. A detachable tubular-tire, or pneumatic-tire cover, of canvas or other suitable material, continuously open at rim, with free ends adapted to abut together over a telescoping flexible band attached to or made an integral part of one end, and provided with suitable means for adjustably attaching and securing together the edges at approximate ends, and the ends at approximate edges, of said tire, substantially as described.

71. A detachable tubular-tire, or pneumatic-tire cover, of canvas or other suitable material, continuously open at rim, with free ends adapted to abut together, and provided with a flexible open band at each approximate rim, edge, substantially as described.

72. A detachable tubular-tire, or pneumatic-tire cover, of canvas or other suitable material, continuously open at rim, with free ends adapted to abut together, and provided with a reinforcement of material with a flexible open band at approximate edges and ends, substantially as described.

73. In combination with a tubular-tire, or pneumatic-tire cover, having free ends adapted to abut together, one or more detachable rim-bands provided with means for regulating the amount of compression of material of tire or cover along said rim band or bands to secure an impact of material at tread on the complete transverse abutting contact of ends, substantially as described.

74. In combination with a tubular-tire, or pneumatic-tire cover, having free ends, one or more detachable rim-bands made attachable by adjustably securing ends of bands to ends of tire or cover to allow independent longitudinal movement of band and provided with means for regulating the amount of compression of material of tire or cover along said rim band or bands to secure a longitudinal impact or compression of material at tread on the inflation of tire or cover, substantially as described.

75. The combination of a tire or pneumatic-tire cover, having free ends, with a detachable rim-retaining band provided with an adjusting end plate at each end and each end plate, secured to an end of tire or cover, by eating as a sleeve being adapted to regulate the length of tire or cover at rim by being thrust toward or away from the other along the said retaining-band together with means for securing said end plate to said retaining-band when the tire is detached from the wheel-rim and its ends are disengaged, substantially as shown and described.

76. The combination of a tire or pneumatic-tire cover, having free ends and continuously open at rim, with two independently-acting detachable rim-retaining bands, one within each rim edge, provided with an adjusting end plate at each end of said bands and each end plate; secured to an end of the or cover at its rim edge, by eating as a sleeve being adapted to regulate the length of the tire or cover at its rim by being thrust toward, or away from, the other along the same retaining-band when the tire is detached from the wheel-rim and its ends are disengaged, together with a detachable nut or block at each end of tire securing to-

gether laterally the end plates of each end of tire or cover, substantially as shown and described.

77. In an open tire having free ends, the combination of a detachable nut or block with two laterally-placed adjusting end plates; the nut or block being provided with lateral flanges and made attachable to each end plate by dovetailing, substantially as shown and described.

78. In a pneumatic tire, the combination of an outer cover, of canvas or other suitable material, provided with free ends and one or more detachable rim-retaining bands made attachable by adjustably securing ends of band to ends of cover to allow independent longitudinal movement of band, substantially as shown and described.

79. In combination with a tubular-tire, or pneumatic-tire cover, provided with free ends, a transverse flexible band, preferably open at rim, over which the free ends of tire or cover are adapted to abut, substantially as described.

707,170. ARTIFICIAL SAND AND METHOD OF PRODUCING SAME. JOSEPH A. SEIBT, Pittsburg, Pa. Filed Oct. 21, 1901. Serial No. 79,482. (No specimens.)

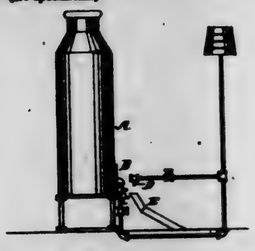

Claim.—1. The method of reducing slag to a comminuted condition consisting in subjecting the molten slag to two streams of water applied simultaneously on opposite sides of the slag.

2. The method of producing slag-sand consisting in applying to the stream of slag as it flows from the furnace duplicate jets of water under pressure and on approximately opposite sides of the stream of slag.

3. As a new article of manufacture slag-sand produced solely by the action of water on approximately opposite sides of a stream of molten slag.

707,171. FOLDING TABLE. GEORGE R. SEIBERT, Fairfield, Ala. Filed Jan. 20, 1902. Serial No. 90,513. (No model.)

Claim.—A folding table, comprising a top, a channel-piece secured longitudinally in the center of the under side thereof, a pair of dogs extending in opposite directions pivotally mounted in said channel-piece, a stop-pin adjacent to the end of each dog in the channel-piece, legs arranged in pairs pivotally secured to the top and adapted to swing inward, a brace-rod carried by each pair of legs having its free end slidably mounted in the channel-piece, and a spring to hold each brace in the channel-piece at all times, to hold the braces in contact with the stop-pins while the dogs fall by gravity to engage the extreme ends of the braces when the legs are opened, and to hold the braces flat upon the dogs when the legs are closed.

707,172. PLATE-HANDLING MACHINE. RALPH R. STEARNS, Wheeling, W. Va. Filed June 22, 1901. Serial No. 65,574. (No model.)

Claim.—1. In a plate-handling machine of the character described, the combination with a support, of a plurality of plate-carriers movable therewith, and provided with gripping devices for engaging the edge of a plate, and means for imparting intermittent movement to said support to effect the successive presentation of the carriers in position to receive a plate.

2. In a plate-handling machine of the character described, the combination with a movable support, of a plate-carrier movable therewith, and independently movable thereon, and means controlled by the independent movement of the plate-carrier for effecting the movement of the support.

3. In a plate-handling machine of the character described, the combination with a movable support, of a plate-carrier independently movable thereon, and means for moving the carrier horizontally from the receiving-point to the delivering-point, said transferring mechanism being controlled by the vertical movement of the carrier.

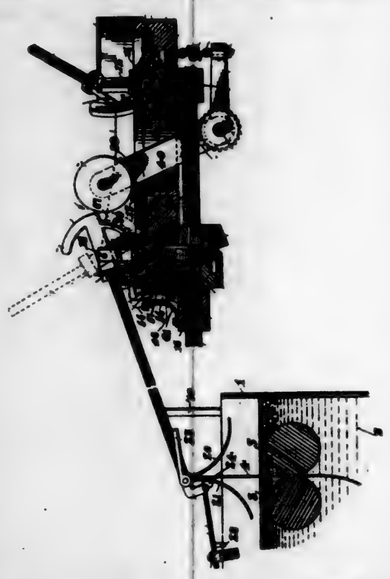

4. In a plate-handling machine of the character described, the combination with a movable support, of a plate-carrier independently movable thereon, and means controlled by the individual movement of the carrier for effecting the intermittent movement of the support.

5. In a plate-handling machine of the character described, the combination with a movable support, of an independently-movable plate-carrier mounted thereon, and equipped with a gripping device disposed to grip the edge of a plate, means for effecting the independent movement of the plate-carrier, and means for operating the support to transfer the carrier from the receiving-point to the point of delivery.

6. In a plate-handling machine of the character described, the combination with a movable support, of a plate-carrier independently movable thereon, means for imparting independent movement to the plate-carrier, and means for moving the support to transfer the carrier from the receiving-point to the point of delivery, said last-named means being controlled by the independent movement of the carrier.

7. In a plate-handling machine of the character described, the combination with a movable support, of a pivoted plate-carrier mounted thereon, means for swinging said plate-carrier upon its pivot to lift a plate from the bath, and means for moving the support to transfer the carrier to the point of delivery.

8. In a plate-handling machine of the character described, the combination with a movable support, and a swinging plate-carrier movable therewith, of driving mechanism, gearing intermediate of the driving mechanism and carrier, to swing the latter for the purpose of lifting a plate from the bath, and independent gearing between the driving mechanism and support for moving the latter to transfer the carrier to the point of delivery.

9. In a plate-handling machine of the character described, the combination with a movable support and a plate-carrier mounted thereon for independent movement, of driving mechanism, a trip device controlling the operative connection between the driving mechanism and support, and means for operating said trip device through the independent movement of the carrier.

10. In a plate-handling machine of the character described, the combination with a movable support, driving mechanism and a trip device controlling the operative engagement between the driving mechanism and support, of a swinging plate-carrier mounted on the support and arranged to operate the trip device, and means for swinging said carrier.

11. In a plate-handling machine of the character described, the combination with a movable support, of a plurality of independently-movable plate-carriers movable therewith, and means for imparting an intermittent movement to the support to effect the successive presentation of the carriers in position to receive a plate.

12. In a plate-handling machine of the character described, the combination with an intermittently-movable support and operating mechanism therefor, of a plurality of plate-carriers movable with the support to effect the successive presentation of said carriers in position to receive a plate, and means for elevating said carriers to lift the plate from the bath.

13. In a plate-handling machine of the character described, the combination with an intermittently-movable support, and means for imparting such movement thereto, of a plurality of plate-carriers movable with the support and capable of independent movement thereon, said plate-carriers being designed for successive presentation in position to receive a plate by the intermittent movement of the support, and carrier-elevating mechanism located opposite the receiving-point for presentation to the carriers successively.

14. In a plate-handling machine of the character described, the combination with an intermittently-movable support, a trip device controlling the movement thereof and means for moving said support, of a plurality of carriers movable with the support and capable of movement independently thereof, means for operating the trip device by each of the carriers successively to effect the intermittent movement of the support, and means for successively elevating the carriers to cause them to withdraw the plates from the bath.

15. In a plate-handling machine of the character described, the combination with a movable carrier designed to engage and remove a moving plate from the bath, of carrier-operating mechanism disposed to be engaged by the carrier through the initial movement of the latter under the impulse of the moving plate.

16. In a plate-handling machine of the character described, the combination with a swinging plate-carrier disposed for engagement with a moving plate, of carrier-elevating mechanism arranged in the path of the carrier and designed for operative engagement therewith, as the carrier is swung under the impulse of the moving plate.

17. In a plate-handling machine of the character described, the combination with a movable plate-carrier, and carrier-operating mechanism for moving the carrier to remove a plate, of means for effecting the operative disconnection of the plate-carrier from its operating mechanism when undue resistance is opposed to the movement of the carrier.

18. In a plate-handling machine of the character described, the combination with a movable plate-carrier, of carrier-operating mechanism in frictional engagement therewith, whereby the movement of the carrier will be stopped when undue resistance is opposed thereto, said carrier-operating mechanism serving to move the carrier for the purpose of withdrawing the plate from the bath.

19. In a plate-handling machine of the character described, the combination with a movable plate-carrier, of carrier-operating mechanism comprising a friction-wheel having frictional contact with the carrier to operate the same, and means for yieldingly urging said elements into frictional engagement, said carrier-operating mechanism serving to move the carrier for the purpose of withdrawing the plate from the bath.

20. In a plate-handling machine of the character described, the combination with a swinging plate-carrier, of carrier-elevating mechanism comprising a friction-wheel disposed for contact with the carrier to elevate the same, and adjustable tension mechanism for yieldingly urging the friction-wheel into contact with the carrier.

21. In a plate-handling machine of the character described, the combination with a swinging plate-carrier, provided with a segment having an arcuate bearing-face, of carrier-elevating mechanism comprising a movable frame, a friction-wheel mounted on the frame and disposed for engagement with the bearing-face of the carrier, means for rotating said wheel to effect the elevation of the carrier, and tension mechanism connected to the frame.

22. In a plate-handling machine of the character described, the combination with a movable support, driving mechanism and means for effecting the intermittent engagement of the support with the driving mechanism, of a swinging plate-carrier mounted upon the support, a friction-wheel disposed to contact with the carrier to effect the swinging thereof, and gearing intermediate of the driving mechanism and said friction-wheel.

23. In a plate-handling machine of the character described, the combination with a movable support, driving mechanism, and means for effecting the intermittent engagement of the driving mechanism with the support, of a swinging plate-carrier mounted on the support and provided with an arcuate bearing-face, a friction-wheel disposed to engage with said bearing-face, a movable frame supporting said wheel, tension mechanism for urging the friction-wheel into engagement with the carrier, and gearing intermediate of the friction-wheel and driving mechanism.

24. In a plate-handling machine of the character described, the combination with a frame and a carrier-ring rotatably mounted thereon, of a plurality of plate-carriers mounted upon the carrier-ring, and means for imparting an intermittent movement to the ring to effect the successive presentation of the carriers in position to receive a plate.

25. In a plate-handling machine of the character described, the combination with a supporting-frame, of a carrier-ring rotatably mounted thereon, a plurality of independently-movable carriers mounted upon the ring, means controlled by the carriers for imparting intermittent movement to the carrier-ring, and means for imparting independent movement to the carriers.

26. In a plate-handling machine of the character described, the combination with a supporting-frame, of a carrier-ring rotatably mounted thereon, plate-carriers supported by the ring and disposed radially with respect thereto, and means for rotating the carrier-ring to effect the successive presentation of the carriers in position to receive a plate.

27. In a plate-handling machine of the character described, the combination with a supporting-frame, and a carrier-ring rotatably mounted thereon, of a series of swinging radially-disposed plate-carriers mounted on the ring for movement therewith, means for successively elevating the plate-carriers, and means for intermittently operating the carrier-ring.

28. In a plate-handling machine of the character described, the combination with a carrier-ring and plate-carriers mounted thereon, of a driving-shaft, a pinion loosely mounted on said shaft for engagement with the carrier-ring, a pawl for effecting an operative engagement between the pinion and shaft, and means for automatically operating the pawl intermittently to effect the intermittent operation of the carrier-ring.

29. In a plate-handling machine of the character described, the combination with a carrier-ring, and plate-carriers mounted thereon, of a driving-shaft, a pinion mounted loosely on the shaft and disposed to engage the carrier-ring, a pawl arranged to effect an operative engagement between the pinion and the driving-shaft and provided with a projection, and a pivoted trip provided with a cam designed to engage said projection for the purpose of moving the pawl.

30. In a plate-handling machine of the character described, the combination with a carrier-ring and an independently-movable plate-carrier mounted thereon, of a driving-shaft, a pinion loosely mounted on said driving-shaft and disposed for engagement with the carrier-ring, a pawl arranged to effect an operative engagement between the pinion and driving-shaft, said pawl being provided with a projection, and a pivoted trip provided with a cam disposed to engage the projection for the purpose of operating the pawl to release the pinion from the driving-shaft, said pivoted trip being disposed for retention by a plate-carrier to permit the pawl to move to its engaging position.

31. In a plate-handling machine of the character described, the combination with a carrier-ring, and plate-carriers thereon, of driving mechanism, a spring-pressed pawl controlling the engagement of the driving mechanism with the carrier-ring, said pawl being provided with a projection, a pivoted trip provided with a pawl-elevating cam and a stop-flange located at one end of the cam, and means for swinging the trip out of engagement with the projection through the movement of a carrier.

32. In a plate-handling machine of the character described, the combination with a carrier-ring and plate-carriers mounted thereon, of a driving-shaft, a pinion loosely mounted on the shaft and disposed to engage the carrier-ring, a sleeve fixed to the pinion, a spring-pressed pawl carried by the sleeve, a toothed collar fixed to the driving-shaft and disposed for engagement with the pawl, and means for operating the pawl to effect its engagement with and disengagement from said collar.

33. In a plate-handling machine of the character described, the combination with a movable support and a pivoted plate-carrier mounted thereon, of means for swinging said carrier to an upright position, and means for sustaining said carrier in its upright position except at the receiving-point and the point of delivery.

34. In a plate-handling machine of the character described, the combination with a supporting-frame, and an upstanding cam-flange, of a rotary carrier-ring mounted on the frame, and a plurality of swinging plate-carriers movable with the ring and resting on the cam-flange.

35. In a plate-handling machine of the character described, the combination with a supporting-frame and a cam-flange upstanding therefrom, said flange being cut away and provided with an abrupt inclined face adjacent to the receiving-point and provided with a depression defined by oppositely-disposed inclined faces opposite the delivering-point, a carrier-ring rotatably mounted upon said frame, swinging plate-carriers movable with the carrier-ring and designed to rest upon the cam-flange during the travel of the carrier-ring, and carrier-elevating mechanism located opposite the receiving-point.

36. In a plate-handling machine of the character described, the combination with a movable plate-carrier, of a pair of relatively movable grippers, a movable cam disposed to urge the grippers together, and means for operating the cam.

37. In a plate-handling machine of the character described, the combination with a plate-carrier and relatively movable grippers, of a cam

disposed to urge one of the grippers toward the other, and a weighted arm connected to said cam to move the same.

38. In a plate-handling machine of the character described, the combination with a movable plate-carrier provided with grippers, of a cam disposed to urge the grippers together, and means for automatically operating the cam through the movement of the carrier.

39. In a plate-handling machine of the character described, the combination with an intermittently-moving support and a plate-carrier provided with a fixed gripper and with a movable gripper, said movable gripper being provided with a weight disposed to urge it to its open position, of means for moving said movable gripper toward the fixed gripper in opposition to the weight.

40. In a plate-handling machine of the character described, the combination with a plate-carrier provided with a fixed gripper and with a movable gripper, said movable gripper being provided with a weight disposed to move it to its open position, a cam opposed to the movable gripper to move said gripper to its closed position, and a weighted arm connected to the cam to operate the same.

41. In a plate-handling machine of the character described, the combination with a support, of a movable plate-carrier provided with grippers designed to engage a moving plate emerging from the bath, carrier-elevating mechanism, means for automatically closing the grippers through the movement of the plate to be handled, and means for effecting an operative connection between the carrier and carrier-elevating mechanism through the continued movement of the plate after the closing of the grippers.

42. In a plate-handling machine of the character described, the combination with a supporting-arm, of a movable plate-carrier provided with grippers designed to engage a moving plate emerging from the bath, carrier-elevating mechanism, means for automatically closing the grippers through the movement of the plate to be handled, means for effecting an operative connection between the carrier and carrier-elevating mechanism through the continued movement of the plate after the closing of the grippers, transferring mechanism for transferring the carriers from the receiving-point to the point of delivery, and means for starting said transferring mechanism through the movement of the carrier under the impulse of the carrier-elevating mechanism.

43. In a plate-handling machine of the character described, the combination with a rotary support, of a plurality of plate-carriers mounted on the support for movement therewith as the support is rotated, said carriers being also mounted for movement independently of the support to lift a plate from the bath while the support is at rest, and means for rotating the support to present the carriers successively in the receiving position.

44. In a plate-handling machine of the character described, the combination with a movable support, of a plurality of independently-swinging plate-carriers mounted on the support for movement therewith, means for swinging the carriers to effect their elevation for the purpose of lifting the plates from the bath, and means for moving the support to effect the successive presentation of the carriers to the receiving-point.

45. In a plate-handling machine of the character described, the combination with a rotary support, of a plurality of plate-carriers independently pivoted upon said support and disposed radially with respect thereto, means for effecting the independent swinging of the carriers, and means for rotating the support to present the carriers successively at the receiving-point.

46. In a plate-handling machine of the character described, the combination with a movable support, of a plurality of independently-swinging plate-carriers mounted thereon, and grippers mounted at the outer ends of the said carriers to engage the plates, said plates being first elevated by the swinging of the carriers and subsequently transferred by the movement of the support.

47. In a plate-handling machine of the character described, the combination with a movable support, and means for moving the same, of a plurality of independently-swinging plate-carriers provided with grippers and mounted on the support for movement therewith, and means operated by the carriers for effecting the movement of the support.

48. In a plate-handling machine of the character described, the combination with a support mounted to rotate around a vertical axis, of a plurality of radially-disposed plate-carrying arms independently pivoted upon said support and provided with grippers at their outer ends, means for rotating the support, and mechanism established by said arms for operatively connecting said means with the support.

707,173. APPARATUS FOR SEPARATING STONES, &c. JOHN C. W. BRAMER, London, England. Filed July 1, 1901. Serial No. 66,922. (No model.)

Claim.—1. In an apparatus for separating stones, &c., from seed, the combination of an inclosing casing having a vertical partition dividing it into two chambers, a perforated plate supported in one chamber above the bottom thereof, means to feed the material to be treated onto one end of said plate, means to move it along said plate, means for introducing air under pressure below said perforated plate, and means to deflect the seed carried up by the air from the perforated plate into the other chamber, substantially as set forth.

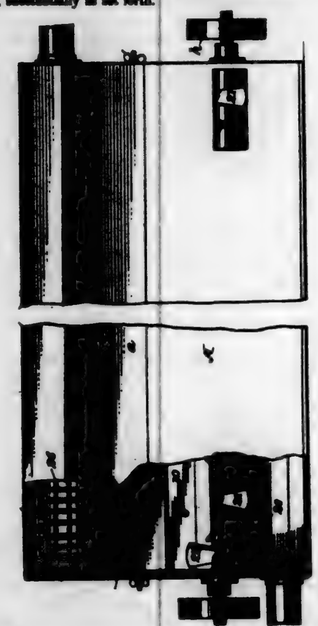

2. In an apparatus for separating stones, &c., from seed, the combination of an inclosing casing having a cover formed of inclined sides, a vertical partition dividing said casing into two chambers communicating at their upper portions, a perforated plate in one chamber above the bottom thereof, means to feed the material to be treated to one end of said plate, means to move the material along said plate, means for introducing air under pressure below said plate, and a perforated plate in the upper part of the casing for the exit of the air, substantially as set forth.

3. In an apparatus for separating stones, &c., from seed, the combination of an inclosing casing having a cover formed of inclined sides, a vertical partition dividing said casing into two chambers communicating at their upper portions, a deflecting-plate hinged to the upper edge of said partition and inclined over one chamber, a perforated plate supported in the latter chamber above the bottom thereof, means to feed the material to be treated to one end of said plate, means to move the material along said plate, means for introducing air under pressure below the said plate, and an air-exit in the inclined side of the roof above the other chamber, substantially as set forth.

4. In an apparatus for separating stones, &c., from seed, the combination of an inclosing casing having a vertical partition dividing it into two chambers, a perforated plate supported in one chamber above the bottom thereof, means to feed the material to be treated to one end of said plate, a shaft journaled above said plate, a series of separated blades connected to said shaft and arranged spirally thereon to move the material along said plate, means for introducing air under pressure below said plate, and means to deflect the seed carried up by the air into the other chamber, substantially as set forth.

5. In an apparatus for separating stones, &c., from seed, the combination of an inclosing casing having a vertical partition dividing it into two chambers, a perforated plate supported in one chamber above the bottom thereof, means to deliver the material to be treated to one end of said plate, means to move the material along said plate, means for introducing air under pressure below the plate, means to deflect the seed carried up by the air into the other chamber, a perforated plate in said casing for the exit of the air, and means to remove material tending to adhere to the latter plate, substantially as set forth.

707,174. ROTARY ENGINE. WILLIAM F. STARKEY, South Norwood, England. Filed Apr. 17, 1901. Serial No. 56,143. (No model.)

Claim.—1. In combination with a ring-casing having a channel, pivoted flaps extending across said channel from opposite sides and bearing against each other at their adjacent ends, said channel being of tapered cross-section, a piston similarly tapered and having curved sides against which the flaps work, substantially as described.

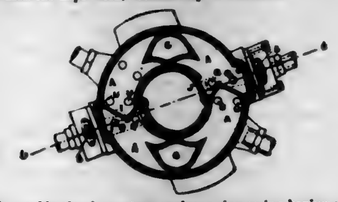

2. In combination in a rotary engine, a ring-casing having a channel therein, a piston working in said channel, a covering-plate above the channel connected with the piston and valve mechanism comprising a valve and a cam R attached to the covering-plate and arranged to operate the valve, substantially as described.

3. In combination, a ring-shaped casing having a channel therein, a piston in said channel, a shaft extending down through the casing, means for connecting the shaft with the piston extending down into the channel of the ring-shaped casing and an adjustable bearing for the lower end of the shaft whereby the piston may be adjusted vertically in respect to the channel, substantially as described.

4. In combination, a ring-shaped casing arranged horizontally, a shaft extending vertically and axially of the casing, a covering-plate, a piston connected with said covering-plate and extending into the channel of the ring-shaped casing and a fly-wheel on the shaft, the weight of the same tending to keep the covering-plate bearing upon its seat to keep the annular channel closed, substantially as described.

707,175. GLAZED STRUCTURE. JOHAN E. STUPPET, Boston, Mass., assignee to E. Van Bourdon Company, Boston, Mass., a Corporation of Massachusetts. Filed Apr. 19, 1902. Serial No. 103,711. (No model.)

Claim.—1. In a glazed structure the combination of a trough, a glass-support extending therefrom to above the main top level of its sides, a bolt extending crosswise the trough to hold the said support in adjusted position, a bolt headed to said glass-support and extending therefrom between the edges of the panes of glass, and a bow-nut and draw-nut to combine therewith for holding the panes of glass in adjusted position, substantially as described.

2. In a glazed structure, the combination of main troughs having cross-cut recesses, laterally-extending glass-supports resting at their ends within said recesses, the said supports being provided with side channels emptying into the main trough, the bottoms and exterior walls of which are adapted to fit against the bottom and walls of the said recesses in the main trough sides, and hold the said glass-supports in fixed position, substantially as described.

3. In a glazed structure, the combination of main troughs having cross-cut recesses, laterally-extending troughs resting with their ends within said recesses so as to pour into the main trough-channels, and comprising the exterior flanges *c*, the sides *c'*, the bottoms *c''*, and the interposed central glass-support having the sides c^3 and the glass-rest c^4, substantially as described.

707,176. BEARING. MARTIN STRIEBY, Erie, Pa. Filed Oct. 5, 1901. Serial No. 77,731. (No model.)

Claim.—1. A wheel, a bearing-tube fastened in said wheel to rotate therewith and having series of holes from end to end extending through the same from side to side, and wooden plugs filling said holes and having their ends flush with the inside bearing-surface of the said tube, whereby both metallic and wooden bearing and contact surfaces are obtained for said wheels, substantially as described.

2. In wheels, a metallic wheel having a cylindrical bore through its axis, a bearing-tube fixed in said bore and a metallic contact therewith from end to end, said tube having wooden plugs filling the same from end to end and flush with both the inner and outer surfaces thereof, and

wooden bearing-plugs set into the ends of said tube and flush with the end surfaces thereof, in combination with means for engaging the plugs in the ends of the tube, substantially as described.

707,177. HYDROCARBON-LAMP. GEORGE R. STILLMAN, Philadelphia, Pa. Filed Apr. 24, 1902. Serial No. 104,441. (No model.)

Claim.—1. A hydrocarbon lamp or oil foot, comprising a wick-chamber, the wall whereof is perforated, an oil-chamber arranged below the lower open end of said wick-chamber, a third chamber surrounding the perforated wall of said wick-chamber and arranged above the oil-chamber, the base of said third chamber being perforated, and a cap or housing arranged at the top of the foot and adapted to surround and receive the upper open end of the wick-chamber.

2. A lamp-foot, comprising an inverted-frusto-conical casing divided into upper and lower compartments by a horizontal perforated partition, and a perforated tube traversing the upper horizontal compartment and in open communication at its base with the lower compartment.

707,178. METHYLENE DI-ACETO DI-SALICYLIC ACID AND PROCESS OF MAKING SAME. SAMUEL L. SCHEIBER, Philadelphia, Pa. Filed May 10, 1902. Serial No. 106,068. (No specimens.)

Claim.—1. The new product described, which may be denominated methylene di-aceto di-salicylic acid, is white in color, is of microscopically small crystalline structure, tasteless, melts at about 145° centigrade, has the empiric formula $C_{19}H_{16}O_8$, and is insoluble in water but soluble in ether and alcohol.

2. The process described, of producing the di-acetyl derivative of methylene di-salicylic acid, which consists in subjecting the last-named body as a starting material to an acetylizing reaction by means of acetic anhydrid under heat and pressure, then crystallizing the resultant product and finally purifying the same.

707,179. ATTACHMENT FOR CUTTING FELLIES OR THE LIKE. WILLIAM R. SCHNELL, Moberly, Mo. Filed May 16, 1902. Serial No. 107,632. (No model.)

Claim.—1. In a device for the purposes set forth, a center-shaped frame for carrying the stock, a hinged gate mounted at one side of said frame, and a segmental plate, adapted to be carried by said frame, for supporting the stock, the material of said plate being soft enough to be penetrated by the saw; substantially as described.

2. In a device for the purposes set forth, a center-shaped frame for carrying the stock, a segmental plate, adapted to be carried by said frame, for supporting the stock, the material of said plate being soft enough to be penetrated by the saw, curved guides, forming a curved slot, secured to the periphery of said frame, bolts passing through said slots, and guide-pieces 23 held by said bolts against said curved guides; substantially as described.

3. In a device for the purposes set forth, the combination with a saw-table of a longitudinally-slotted arm adapted to be secured to the table, a center-shaped frame for carrying the stock, a slotted casting secured to the converging sides of said frame, a pivot-bolt depending through the slot in said arm and having a portion projecting upwardly through the slot in said casting, a rack having inwardly-pointed teeth secured to one side of said casting, and a block having a perforation therein adapted to

receive the upper end of said pivot-bolt and a point adapted to enter between any two of said teeth; substantially as described.

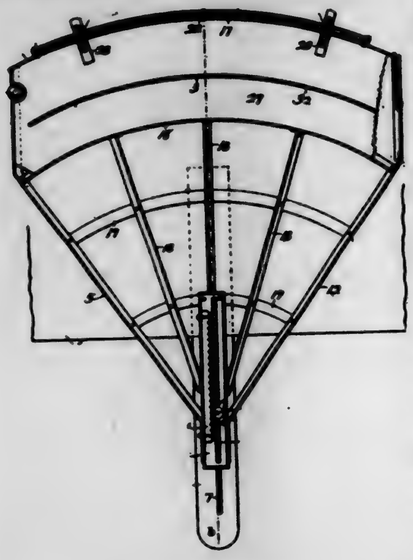

707,180. SELECTOR FOR RAILWAY SIGNALING APPARATUS. JOHN D. TAYLOR, Buffalo, N. Y., assignor to Taylor Signal Company, Buffalo, N. Y., a Corporation of New York. Filed Nov. 16, 1900. Serial No. 36,613. (No model.)

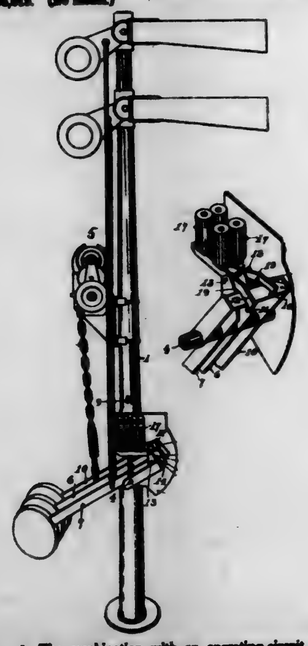

Claim.—1. The combination with an operating-circuit, a signal-motor, gearing, and a plurality of signals, of a counterweight-lever, a set of signal-levers actuating said signals, mechanism for engaging any one of said signal-levers with said counterweight-lever, and a set of magnets to actuate said mechanism engaging said signal-levers with said counterweight-lever, substantially as and for the purposes set forth.

2. The combination with an operating-circuit, a signal-motor, gearing, and a plurality of signals, of a counterweight-lever, signal-levers and magnets in number corresponding to and in operation actuating said signals, mechanism for engaging said counterweight-lever with any one of said signal-levers actuated by said magnets, and means for closing any one of said magnets in the motor-circuit, substantially as and for the purposes set forth.

3. The combination with an operating-circuit, a signal-motor, gearing, and a plurality of signals, of a counterweight-lever actuated by said motor, signal-levers corresponding in number to and actuating said signals, clutches pivoted to said signal-levers, a pallet secured to said counterweight-lever capable of engaging any one of said clutches, magnets corresponding in number to said signals, means for closing any one of said magnets in the motor-circuit to throw its clutch into engagement with said pallet, substantially as and for the purposes set forth.

4. The combination with an operating-circuit, a signal-motor, gearing, and a plurality of signals, of a counterweight-lever actuated by said motor, signal-levers corresponding in number to and actuating said signals, a clutch pivoted to said signal-levers, a pallet secured to said counterweight-lever capable of engaging any one of said clutches, magnets corresponding in number to said signals, means for closing any one of said magnets in the motor-circuit to throw its clutch into engagement with said pallet, and means for disengaging said clutch from said pallet in the movement of the counterweight-lever to normal, substantially as and for the purposes set forth.

5. In combination with a signal-motor, an operating-circuit, a plurality of signals, a counterweight-lever, gearing connecting said counterweight-lever and said motor, signal-levers corresponding in number to the number of said signals, a corresponding number of magnets, clutches on said levers, a pallet on said counterweight-lever to engage said clutches, said magnets having one terminal connected with controlling-levers corresponding in number to said magnets, and the remaining terminals of said magnets being connected to one terminal of the signal-motor, to close any one of said magnets in the operating-circuit and throw its clutch into engagement with the counterweight-lever coincident with the energizing of the motor, substantially as and for the purposes set forth.

6. The herein-described system of operating a plurality of electric signals by the action of one signal-motor and one train of gearing, consisting of said motor and gearing and motor-circuit and a plurality of signals, of a series of magnets equal in number to said signals, controlling-levers for operating said signals connected with one terminal of each of said magnets, the other terminals of said magnets connecting with said motor, a set of levers connected to said signals, a counterweight-lever actuated by said motor, and a clutch on each one of said signal-levers to engage said counterweight-lever by energizing one of said magnets coincident with the closing of the circuit through the motor, substantially as and for the purposes set forth.

7. The herein-described system of electric railway-signals consisting of a plurality of signals, a single motor and mechanism connecting it with a single counterweight-lever, a counterweight-lever, signal-levers connected with said signals, a set of magnets corresponding in number to said signals, clutches carried by said signal-levers and adapted to engage with said counterweight-lever, means for energizing said magnets for throwing said signal-levers into engagement with said counterweight-lever, and means for mechanically disengaging said clutches on the return of the signal to normal, substantially as and for the purposes set forth.

707,181. RAILWAY SWITCHING AND SIGNAL INTERLOCKING APPARATUS. JOHN D. TAYLOR, Buffalo, N. Y., assignor to Taylor Signal Company, Buffalo, N. Y., a Corporation of New York. Filed Nov. 10, 1900. Serial No. 36,080. (No model.)

Claim.—1. The combination of an electric switch and a lever-bar actuating the same, consisting of a bar pivoted to said switch, a bar pivoted to said lever-bar, means for engaging said bars and means for throwing said bars in and out of engagement consisting of a solenoid and an armature actuated thereby, substantially as and for the purposes set forth.

2. The combination of an electric switch and a lever-bar actuating the same, consisting of a bar pivoted to said switch, a bar pivoted to said lever-bar, a solenoid energized by the indication-current of the system, an armature actuated by said solenoid, beveled notches in said bar pivoted to said lever-bar which take over said armature, a lug on said bar pivoted to said switch, said bar pivoted to said lever-bar being normally out of engagement with said bar pivoted to said switch and thrown into engagement by carrying a full part of said bar over said armature and finally thrown out of engagement by said solenoid carrying said armature under one of said beveled notches, substantially as and for the purposes set forth.

3. In combination with an interlocking mechanism, an electric switch, a lever-bar actuating the same, means for effecting the movement of one member of said interlocking mechanism by the movement of said lever-bar, locking the other connected members of said interlocking mechanism, a bar pivoted to said lever-bar, a bar pivoted to said switch, a solenoid energized by the indication-current of the system, an armature actuated by said solenoid, beveled notches in said bar pivoted to said lever-bar which engage over said armature, a lug on said bar engaging in a notch in said bar pivoted to said switch, said bars being normally out of engagement and thrown into engagement by carrying a full part of said bar having said beveled notches over said armature, and finally thrown out of engagement by said solenoid carrying said armature under one of said beveled notches, permitting the final throw of said lever-bar, and means for producing the final throw of said member of said interlocking mechanism by the final throw of said lever-bar, substantially as and for the purposes set forth.

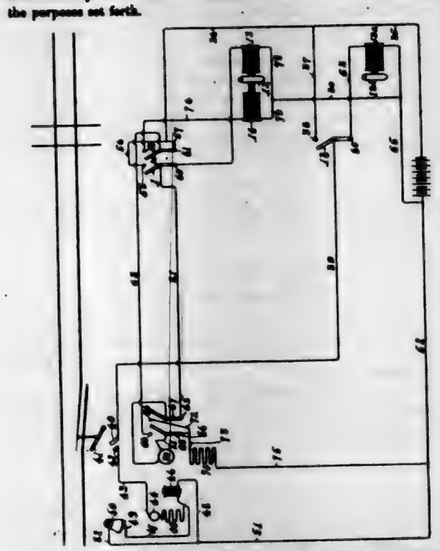

4. In combination with an interlocking mechanism, an electric switch, a lever-bar actuating the same, means for effecting the movement of one member of said interlocking mechanism by the movement of said lever-bar, locking the other connected member of said interlocking mechanism, a bar pivoted to said lever-bar, a bar pivoted to said switch, a solenoid energized by the indication-current of the system, an armature actuated by said solenoid, beveled notches in said bar pivoted to said lever-bar which engage over said armature, a lug on said bar engaging in a notch in said bar pivoted to said switch, said bars being normally out of engagement and thrown into engagement by carrying a full part of said bar having said beveled notches over said armature, a step engaging said bar pivoted to said switch preventing the final movement of the lever-bar until released from said switch, said bars being finally thrown out of engagement by said solenoid carrying said armature under one of said beveled notches, permitting the final throw of said lever-bar, and means for producing the final movement of said member of said interlocking mechanism by the final throw of said lever-bar, substantially as and for the purposes set forth.

5. In combination with an electric switch and an interlocking mechanism, of a lever-bar actuating said switch and actuating a member of said interlocking mechanism to lock all conflicting switches and signals by the initial movement of said lever-bar, a bar pivoted to said switch, a bar pivoted to said lever-bar, a solenoid energized by the indication-current, an armature engaging said bar pivoted to said lever-bar, beveled notches in said bar taking over said armature, and having a lug capable of engagement in a notch in said bar pivoted to said switch, said levers being normally out of engagement, and thrown into engagement by the initial movement of the lever-bar carrying said bar pivoted thereto so that the armature engages a full part of said bar, means for preventing the final movement of the lever-bar while in engagement with said switch, means for preventing disengagement with said switch in the case of a false indication, and means for carrying said member of said interlocking mechanism to a final position by the final movement of said lever-bar after the same has been released by the action of the solenoid under the indication-current, substantially as and for the purposes set forth.

6. In combination with an electric switch and an interlocking mechanism, of a lever-bar actuating said switch and actuating said interlocking mechanism upon the initial movement of said lever-bar to look all conflicting switches and signals, a bar pivoted to said switch, a bar pivoted to said lever-bar, a double-throw solenoid, an armature reciprocated thereby and engaging said bar pivoted to said lever-bar, beveled notches in said bar taking over said armature and having a lug capable of engagement in a notch in said bar pivoted to said switch, said levers being normally out of engagement and thrown into engagement by the initial movement of the lever-bar in either direction, so that said armature engages a full part of said bar having said beveled notches, means for preventing the final movement of said lever-bar in either direction while in engagement with said switch, and means for carrying said member of said interlocking mechanism to a final position in either direction by the final movement of said lever-bar after the same has been released by the action of the solenoid under the indication-current, substantially as and for the purposes set forth.

7. In an interlocking switch and signal system, an interlocking mechanism, an electric switch, a lever-bar controlled in its initial movement by said interlocking mechanism, independent thereof in its intermediate movement, controlled in its final movement by a solenoid energized by an indication-current, and governing said interlocking mechanism in the final movement of said lever-bar, and means for preventing said final movement in case of a failure of indication, substantially as and for the purposes set forth.

8. In an interlocking apparatus for switches and signals, interlocking mechanism, an electric switch, a lever-bar, means for actuating said interlocking mechanism by the movement of said lever-bar, mechanism for controlling the throw of said lever-bar, a solenoid for controlling the action of said mechanism governing the mechanism controlling the throw of said lever-bar, and means for preventing the final movement of said lever-bar in case of a failure of indication, substantially as and for the purposes set forth.

9. The combination of an electric switch and a lever-bar actuating the same, of a bar pivoted to said switch, a bar pivoted to said lever-bar actuating said switch, means for throwing said bar so pivoted in and out of engagement, consisting of a solenoid and an armature actuated thereby, and means for preventing the final throw of said lever-bar in case of a failure of indication consisting of a pawl pivoted to the bar pivoted to said lever-bar and arranged to engage the armature of said solenoid and throw the same to the position which prevents the final throw of said lever-bar, substantially as and for the purposes set forth.

10. In an electric switch and signal apparatus the combination with an electric switch or signal, a lever-bar which actuates the same, a solenoid and its armature of means for controlling the apparatus comprising a bar pivoted to said switch and provided with a notch on its lower side, a bar pivoted to said lever-bar which takes over the upper end of said armature and is provided on one side with a lug adapted to engage with said notch and on the other so notched that said armature when actuated by the current will throw said lug in and out of engagement with the first-mentioned notch whereby the switch or signal is locked and released and the armature being subject to but slight friction is easily actuated by the current, substantially as and for the purposes set forth.

11. In an electric switch and signal apparatus the combination with an electric switch or signal, a lever-bar which actuates the same, a solenoid and its armature of means for controlling the apparatus comprising a bar pivoted to said switch and provided with a notch on its lower side, a bar pivoted to said lever-bar, which takes over the upper end of said armature and is provided on one side with a lug adapted to engage with said notch, and on the other side so notched that said armature when actuated by the current will throw said lug in and out of engagement with said first-mentioned notch, a pawl pivoted at one side of the notched portion of the last-mentioned bar and provided on the upper portion of one end with a shouldered lug adapted to engage with and be thrown by a lug secured to the casing of the switch-lever and adapted at its other end to engage with a lug on the armature whereby the armature is locked in its position and a failure of indication is prevented, substantially as and for the purposes set forth.

12. In an electric switch and signal apparatus, the combination with an electric switch or signal, a lever-bar which actuates the same, and a solenoid and its armature of means for controlling the apparatus comprising a bar pivoted to said switch and provided with a notch on its lower side, a bar pivoted to said lever-bar which takes over the upper end of said armature, and is provided on one side with a lug adapted to engage with said notch and on the other side so notched that said armature when actuated by the current will throw said lug in and out of engagement with the first-mentioned notch, a V-shaped head on the lower end of the armature, a bolt having an oppositely V-shaped head, a chamber in which said bolt is adapted to move, a spring contained within said chamber between the head of said bolt and the bottom of said chamber whereby the

bolt is pressed against the armature and when it is suddenly thrown by the actuating-current this pressure is sufficient to prevent a rebound of the armature and a consequent failure of indication, substantially as and for the purposes set forth.

707,182. **RAILWAY SIGNALING APPARATUS.** JOHN D. TAYLOR, Buffalo, N. Y., assignor to Taylor Signal Company, Buffalo, N. Y., a Corporation of New York. Filed Nov. 10, 1900. Serial No. 36,081. (No model.)

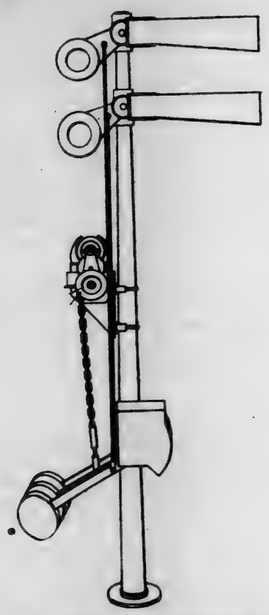

Claim.—1. In combination with a motor, a signal and a train of gearing actuating the signal, a reciprocating bar, pallets carried by said bar, a reciprocating block placed between lugs on said reciprocating bar, a contact-spring carried by said block, a spiral spring held between said block and one of the lugs of said bar, a detent engaging said block, a lug on said detent engaging with a lug on said reciprocating bar for releasing said detent and throwing said block by the action of said spiral spring, a disk mounted in rotation with said gearing, a wiper carried by said disk and adapted to engage with one of said pallets, said wiper and said pallet being so located with reference to each other as to produce the throw of the contact-spring which breaks the operating-circuit and closes the distant-signal circuit, substantially as and for the purposes set forth.

2. In combination with a motor, a signal and a train of gearing actuating the signal, of a reciprocating bar, pallets carried by said bar, a reciprocating block placed between lugs on said reciprocating bar, a contact-spring carried by said block, a spiral spring held between said block and one of the lugs of said bar, suitable means for engaging and releasing said block, a disk in rotation with said gearing, a wiper carried by said disk and adapted to engage with one of said pallets to produce the throw of the contact-spring which breaks the operating-circuit and closes the distant-signal circuit, a second disk mounted in rotation with said gearing, a wiper carried by said second disk and adapted to engage another pallet on said reciprocating bar for replacing said reciprocating bar and said contact-spring to their normal position, thereby reëstablishing the operating-circuit and closing the indication-circuit, substantially as and for the purposes set forth.

3. In combination with a motor, a signal, a train of gearing for actuating said signal, a circuit-controller, comprising a reciprocating bar, pallets carried by said bar, a disk in rotation with the gearing, a wiper on said disk and engaging one of said pallets to move said reciprocating bar to its reversed position, a second disk in rotation with said gearing, a wiper on said second disk engaging with another of said pallets to replace said reciprocating bar to its normal position, a third pallet carried by said reciprocating bar adapted to engage said first-mentioned wiper to replace said reciprocating bar to its normal position in case it has been carried beyond such position by an excess of movement due to momentum, substantially as and for the purposes set forth.

4. In combination with a motor, a signal and a train of gearing actuating the signal, a circuit-controller, comprising three contact-plates, a contact-spring adapted to engage at any one time with only two of said contact-plates, a reciprocating bar, a reciprocating block carrying said contact-spring, pallets carried by said bar, a disk in rotation with said gearing, a wiper on said disk engaging one of said pallets to move said reciprocating bar to its reversed position, a second disk in rotation with said gearing, a wiper on said second disk engaging with another of said pallets to replace said reciprocating bar to its normal position, means for adjusting said disk, a spiral spring interposed between said reciprocating bar and said reciprocating block adapted to throw said reciprocating block forward and thus break the operating-circuit and close the distant-signal circuit, a detent adapted to engage said reciprocating block and hold the same against the action of said spiral spring, a lug on said detent adapted to engage with the lug end of said reciprocating bar and to release said spiral spring at the close of the movement of the signal to safety, a third pallet carried by said reciprocating bar adapted to engage with said first-mentioned wiper to replace said reciprocating bar to its normal position in case it has been carried beyond such position by an excess of movement due to momentum whereby the operating-circuit is reëstablished and the indication-circuit closed, substantially as and for the purposes set forth.

707,183. **PACKING CASE OR BOX.** CAMILLE THIBAUT, St. Germain-en-Laye, France. Filed Mar. 26, 1902. Serial No. 100,116. (No model.)

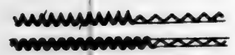

Claim.—1. A wrapper comprising a body of flexible material plaited and readily compressible at a right angle to the length of the plaits, and a sheet of thin flexible fabric joined to the spaces of the plaits and foldable between the same.

2. A wrapper comprising a body acutely corrugated and readily compressible at a right angle to the corrugations, and sheets of thin flexible fabric joined to the spaces of the corrugations throughout the length thereof on both sides of the body and foldable between the same.

707,184. **TWIN-SAW SLABBING-MACHINE.** EDWIN E. THOMAS, St. Paul, Minn., assignor of one-half to Union Iron Works, Minneapolis, Minn., a Corporation of Minnesota. Filed Apr. 7, 1902. Serial No. 101,895. (No model.)

Claim.—1. The combination, with a steam-feed cylinder and its piston, of a sliding log-carriage connected with said piston, said carriage being adapted to accommodate a single log thereon, guides for said carriage, fixed and movable dogs provided on said carriage, power means within control of the sawyer at a fixed point for operating the movable dog at any point in the stroke or travel of said carriage, a lever and valve for controlling the movement of said piston, and twin circular saws between which said carriage and the log thereon are projected, substantially as described.

2. The combination, with a steam-feed cylinder, its piston and the valves for controlling the admission of steam to the same, of a longitudinally-sliding bar connected with said piston, a fixed and a movable dog provided on said bar between which the log to be slabbed is placed, an engine located on said bar and having its piston connected with said movable dog, power means within control of the sawyer at a fixed point for regulating the admission of steam to said engine and the movement of said movable dog at any point in the travel of said bar, and twin circular saws between which said bar and the log thereon are advanced to remove the slabs.

3. The combination, with a steam-feed cylinder, its piston and the valves for controlling the admission of steam thereto, of a sliding bar connected with said piston and driven thereby said bar being adapted to receive a log to be slabbed and form a carriage therefor, fixed and movable dogs provided on said bar and between which the ends of the logs are clamped, an engine provided on said bar and having its piston connected with the movable dog, a rocking rod upon stationary supports, an arm slidable on said rod and connected with the valve of said engine for regulating the admission of steam thereto, and a lever mechanism within control of the sawyer for rocking said rod and operating said engine-valve to operate said movable dog at any point in the travel of said bar.

4. The combination, with a steam-feed cylinder, its piston and the sawyer's valves for controlling the admission of steam thereto, of a longitudinally-movable carriage, fixed and movable dogs provided thereon and between which the ends of the log are clamped, a fluid-pressure motor device provided on said carriage and connected with said movable dog, and power means within control of the sawyer at a fixed point for regulating the admission of pressure to said motor device and controlling the movement of said dog at any point in the travel of said carriage.

5. The combination, with a steam-feed cylinder and its piston having a hollow piston-rod, of a carriage connected with said rod, a clamping mechanism, an engine having suitable connections with said hollow rod to receive steam-pressure therefrom, the pistons of said engine being connected to said clamping mechanism, means connected with the valve of said engine and within control of the sawyer at a fixed point for regulating the admission of steam to said engine-cylinder and controlling the movement of said clamping mechanism at any point in the travel of said carriage, and a sawyer's lever and valves for said feed-cylinder.

6. The combination, with the steam-feed cylinder, having suitable valves and a hollow piston and rod, of a sliding carriage-bar connected to said rod, a fixed and a movable dog provided on said bar and between which the log to be slabbed is clamped, an engine provided on said bar and having its piston connected with said movable dog for operating the same, a pipe connecting said hollow piston-rod with said engine, a rocking rod provided upon stationary supports near said bar, an arm splined thereon and connected with the valve of said engine to control the admission of steam thereto from said hollow piston-rod, suitable lever mechanisms within control of the sawyer for operating the valves of said feed-cylinder and for rocking said rod to control the movement of said movable dog, and twin saws provided near the forward end of said bar and between which it is driven with the log, substantially as described.

7. The combination, with a steam-feed cylinder having suitable valves, a piston and a hollow piston-rod, of a carriage whereon the log to be slabbed is placed, saws provided near the forward end of said carriage, means for moving said saws toward or from each other to change their set, means for clamping the log upon said bar to prevent movement of the same during the slabbing operation, power means provided on said carriage for controlling the clamping operation of said clamping means, and means within control of the sawyer at a fixed point for actuating said controlling means to operate the clamp connected therewith at any point during the movement of said carriage.

8. The combination, with a steam-feed cylinder, its piston and the sawyer valves, of a carriage, a clamping mechanism thereon, a fluid-pressure device provided on said carriage and connected with said clamping mechanism, and power means within control of the sawyer at a fixed point for regulating the admission of pressure to said motor device and controlling the movement of said clamping mechanism at any point in the travel of said carriage.

9. The combination, with a suitable base, of a steam-feed cylinder supported thereon and provided with valves for controlling the admission of steam thereto and a lever mechanism for operating said valves, of twin circular saws provided near one end of said cylinder, a longitudinally-slidable bar provided above said feed-cylinder, guides for said bar upon opposite sides of the saws, brackets whereon said guides are supported, a fixed and a movable dog provided on said bar and adapted to clamp the ends of the log placed between them, an engine mounted on said bar and having its piston connected with said movable dog, a rocking rod supported on said brackets near said bar, a sliding arm splined on said rod and connected with the valves of said engine, and a lever mechanism provided near the lever for operating said feed-cylinder valves and connected with said rocking rod for operating the same to actuate said movable dog at any point during the travel of said bar.

10. The combination, with a steam-feed cylinder provided with a hollow piston and rod and valves for controlling the admission of steam thereto, of a sliding bar provided above said feed-cylinder, suitable guides between which said bar is slidable, twin circular saws provided opposite the forward end of said bar, a fixed dog provided on said bar and having a sliding dog also mounted on said bar, guides between which said sliding dog is movable parallel to the direction of movement of said bar, an engine mounted on said bar and connected with said hollow piston-rod to receive steam therefrom, the piston of said engine being attached to said movable dog, a lever mechanism within control of an attendant for operating said feed-cylinder valves and for regulating the admission of steam to said engine at any point during the travel of said bar.

707,185. **INCANDESCENT GAS-LAMP.** GUSTAV TREIBEREUTER, Berlin, Germany. Filed Dec. 6, 1900. Serial No. 38,957. (No model.)

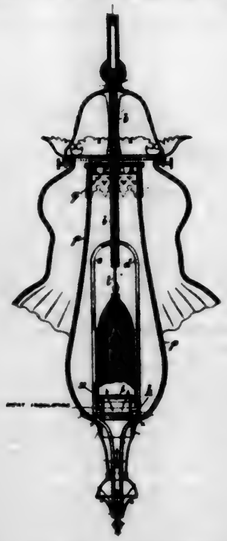

Claim.—1. In a gas-lamp, a burner, a mantle suspended over the same, a chimney and one or more gas-feed pipes between the chimney and the mantle, substantially as set forth.

2. In a gas-lamp, a burner, a mantle suspended over the same, a chimney, a burner-support forming a mixing-chamber and provided with air-inlets, an air-tight chamber forming part thereof and gas-pipes proximate the exterior of the mantle, passing through the chimney and the mixing-chamber to the air-tight chamber, means for admitting gas from the air-tight chamber to the mixing-chamber and a pilot-flame burner proximate the exterior of the mantle fed by one of said pipes, substantially as set forth.

3. In a gas-lamp, a mixing-chamber, a burner connected therewith and an incombustible mantle surrounding the burner, a bifurcated gas-feed pipe whose branches are in communication with said mixing-chamber, one of said branches provided with a jet-orifice proximate to the mantle, and means for arbitrarily controlling the supply of gas to the mixing-chamber; in combination with a chimney surrounding the burner and feed-pipe, for the purposes set forth.

4. A gas-lamp comprising a mixing-chamber, a burner connected therewith, an incandescible mantle surrounding the burner and a bifurcated gas-feed pipe in communication with said mixing-chamber and having an extension between its branches provided with a hook for supporting the aforesaid mantle, for the purpose set forth.

5. In a gas-lamp, a mixing-chamber, a burner connected therewith, an incandescible mantle surrounding said burner, a bifurcated gas-feed pipe whose branches are in communication with said mixing-chamber, an extension from said pipe between its branches and a hook screwed into said extension for supporting the incandescible mantle; in combination with a chimney surrounding the mantle and feed-pipe, for the purpose set forth.

6. In a gas-lamp, a burner, a mantle suspended over the same, a chimney, gas-feed pipes in the form of a rectangle between the chimney and mantle, and a jet-orifice in one of said pipes proximate the lower portion of the mantle, substantially as set forth.

7. In a gas-lamp, a burner, a mantle suspended over the same, a burner-support of insulating material, a mixing-chamber forming part of the support and provided with air-inlets, a gas-chamber below and forming part of the mixing-chamber, a chimney, gas-pipes proximate the exterior of the mantle passing through the chimney and the mixing-chamber to the gas-chamber, one of said pipes provided with a pilot-flame orifice and a needle-valve to control the exit of gas from the gas-chamber to the mixing-chamber and burner, substantially as set forth.

707,186. PEDESTAL-EXTENSION-TABLE LOCK. BELL TYDER, Hastings, Mich. Filed Feb. 19, 1902. Serial No. 94,747. (No model.)

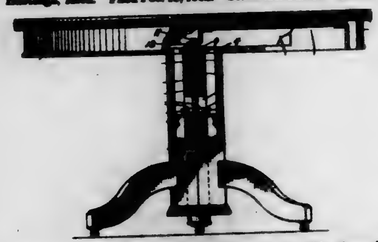

Claim.—1. In a pedestal extension-table, in combination with the separable parts and the pedestal parts pertaining thereto, respectively, an element mounted so as to be inclosed in the pedestal and to reciprocate vertically; a pair of links pivoted to said element; brackets on the pedestal parts at a substantial distance below the table-top in position to be encountered by the free ends of the links when the reciprocating element is moved endwise, whereby said ends after such encounter are limited to lateral movement, each bracket having means for engaging the encountering link whose lateral movement is toward the opposite pedestal part, to check such lateral movement, and means for giving endwise movement to the reciprocating element.

2. In a pedestal extension-table in combination with the separable parts and pedestal parts pertaining thereto respectively, an element mounted on the center leg and adapted to reciprocate vertically; a pair of links pivoted to said element; brackets on the pedestal parts at a substantial distance below the table-top in position to be encountered by free ends of the links when the reciprocating element is moved endwise; whereby said ends after such encounter are limited to lateral movement, each bracket having means for engaging the encountering link whose lateral movement is toward the opposite pedestal part, to check such lateral movement, and means for giving endwise movement to the reciprocating element.

3. In a pedestal extension-table, in combination with the separable parts and the pedestal parts pertaining thereto respectively, an element mounted so as to be inclosed by the pedestal adapted to reciprocate vertically; a spring tending to uphold it and a means for depressing it against the spring; a pair of links pivoted to said element, brackets on the pedestal parts respectively at a substantial distance below the table-top in position to be encountered by the free ends of said links when the reciprocating element is depressed and to guide said ends laterally; each bracket having therein for stopping the lateral movement of the link whose said movement is toward the opposite pedestal part, whereby continued depression of the reciprocating element draws the pedestal parts together.

4. In a pedestal extension-table in combination with the slide connecting-bridge, the separable parts and pedestal parts pertaining thereto respectively, an element carried by the slide connecting-bridge mounted so as to reciprocate vertically; a pair of links pivoted to the lower part of said element; brackets on the pedestal parts respectively at a substantial distance below the table-top in position to be encountered by the free ends of said links in the endwise reciprocation of the reciprocating element and to guide said ends laterally after such encounter, means by which the brackets respectively in such lateral movement of the links become engaged each with the link whose movement is toward the opposite pedestal part; and means mounted upon the slide connecting-bridge for giving endwise movement of the reciprocating element.

5. In a pedestal extension-table, in combination with the separable parts and the pedestal parts pertaining thereto respectively, an element mounted on the center leg and adapted to reciprocate vertically; a pair of links pivoted on said element and adapted to extend off therefrom in opposite directions; stops by which the links are checked at substantially horizontal position while left free to swing upward from such position; brackets on the pedestal parts respectively at a substantial distance below the table-top in position to be encountered by the free ends of the links when the reciprocating element is depressed, whereby said ends after such encounter are limited to lateral movement, the links having hooked ends for engaging such brackets when they encounter them whereby the further descent of the reciprocating element draws the pedestal members together; and means for locking the reciprocating element at its depressed position when the pedestal members are closed.

6. In a pedestal extension-table in combination with the upper structure consisting of the separable parts of the table and the extension devices which connect them, the pedestal parts pertaining to said separable table parts, respectively; devices for releasably connecting and disconnecting pedestal parts at a substantial distance below the table-top; means for operating such devices, comprising a thrust-rod connected thereto at its lower end; a pair of links connected together and connecting the upper end of said thrust-rod to the upper structure; means operating on the links to fold and straighten them, the links being free to fold in one direction, and a stop to arrest their folding in the other direction just beyond their straightened position.

7. In a pedestal extension-table in combination with the separable parts, the extension-slides connecting them, and the pedestal parts pertaining to the said separable table parts, respectively; devices carried by the extension-slides for releasably connecting and disconnecting the pedestal members at a substantial distance below the table-top; a means for operating said devices comprising a vertically-movable rod connected therewith at its lower end; pivot carried by the extension-slides; a pair of links connecting the upper end of the rod to such pivot, the links being free to fold in one direction and a stop to arrest their folding in the opposite direction just beyond their straightened position; and means operating on the links to fold and straighten them.

8. In a pedestal extension-table in combination with the separable members, the extension-slides connecting them and the pedestal members pertaining to said separable members, respectively; devices carried by the extension-slides for releasably connecting and disconnecting the pedestal members at a substantial distance below the table-top; a means for operating said devices comprising a vertically-movable rod connected therewith at its lower end; a pivot carried by the extension-slides; a pair of links connecting the upper end of the rod with such pivot, said links being free to fold in one direction, a stop to arrest their folding in the opposite direction just beyond their straightened position, and an operating-rod mounted on a table member at the side toward which the links fold without restraint, said rod having a slot adapted to engage the pivot which connects the links, and being mounted so as to be rocked in its bearings to effect engagement and disengagement of the slot with the pivot; whereby the longitudinal operation of the rod folds and straightens the links to effect the locking and unlocking of the device.

9. In a pedestal extension-table in combination with an upper structure consisting of the separable members and extension devices connecting them, the pedestal members pertaining to said separable members, respectively; devices carried by the upper structure for releasably connecting and disconnecting the pedestal members at a substantial distance below the table-top; means for operating said devices comprising a vertically-movable rod connected therewith at its lower end; a spring tending to uphold the rod, and devices carried by the upper structure operating on the upper end of the rod for depressing the rod and locking it in depressed position against the action of the spring, and means for unlocking it to permit the spring to lift the rod.

10. In a pedestal extension-table in combination with an upper structure consisting of the separable members of the table and the extension-slides which connect them; the pedestal members pertaining to said separable members, respectively; devices for releasably connecting and disconnecting the pedestal members at a substantial distance below the table-top; a means for operating such devices comprising a thrust-rod connected therewith at its lower end; a spring tending to uphold the thrust-rod; a pair of links connected together and connecting the upper end of the rod with the upper structure; a means operating on the links to fold and straighten them, the links being free to fold in one direction and a stop to arrest their folding in the other direction just beyond their straightened position.

11. In a pedestal extension-table in combination with the separable parts and pedestal parts pertaining thereto respectively, an element mounted so as to be inclosed in the pedestal and to reciprocate vertically, a pair of links pivoted to the said element at the lower part, brackets on the pedestal parts respectively at a substantial distance below the table-top arranged to be encountered by the free ends of the links in the endwise movement of the reciprocating element and to guide them laterally after such encounter, said brackets being provided with means for becoming engaged each with the link whose said movement is toward the opposite pedestal part; a pair of links pivoted together one of them being pivoted to the reciprocating element and the other to a pivot fixed with respect to the support of said reciprocating element substantially in line therewith; a spring to uphold the reciprocating element and fold the links, and means extending under the table-top for forcing the pivot at which the links are connected together toward the line of the other pivot of said links, to depress the reciprocating element against the action of this spring.

12. In a pedestal extension-table in combination with the separable parts and pedestal parts pertaining thereto respectively, an element mounted so as to be inclosed in the pedestal and to reciprocate vertically, a pair of links pivoted to the said element at the lower part, brackets on the pedestal parts respectively, at a substantial distance below the table-top, arranged to be encountered by the free ends of the links in the endwise movement of the reciprocating element and to guide them laterally after such encounter, said brackets being provided with the means for becoming engaged each with the link whose said movement is toward the opposite pedestal parts a pair of links pivoted together one of them being pivoted to the reciprocating element and the other to a pivot fixed with respect to the support of said reciprocating element substantially in line therewith; a spring to uphold the reciprocating element and fold the links, and means extending under the table-top for forcing the pivot at which the links are connected together past the line of the other pivots of the links and a stop to arrest such movement when said line is passed by said pivot.

13. In a pedestal extension-table in combination with the separable parts and pedestal parts pertaining thereto respectively an element mounted so as to be inclosed in the pedestal and to reciprocate vertically; a pair of links pivoted to the said element at the lower part, brackets on the pedestal parts respectively at a substantial distance below the table-top arranged to be encountered by the free ends of the links in the endwise movement of the reciprocating element and to guide them laterally after such encounter, said brackets being provided with means for becoming engaged each with the link whose said movement is toward the opposite pedestal part; and the pair of links pivoted together one of them being pivoted to the reciprocating element and the other to a pivot fixed with respect to the support of said reciprocating element substantially in line therewith; a spring to uphold the reciprocating element and fold the links; a rod mounted under the table above the bridge adapted to be reciprocated endwise to force the joint or pivot of the links to each other toward the line of the other two pivots of said links.

14. In a pedestal extension-table in combination with the separable parts and pedestal parts pertaining thereto, respectively; an element mounted so as to be inclosed in the pedestal and to reciprocate vertically; a pair of links pivoted to the said element at the lower part; brackets on the pedestal parts respectively at a substantial distance below the table-top arranged to be encountered by the free ends of the links in the endwise movement of the reciprocating element and to guide them laterally after such encounter said brackets being provided with means for becoming engaged each with the link whose said movement is toward the opposite pedestal part; a pair of links pivoted together one of them being pivoted to the reciprocating element and the other to a pivot fixed with respect to the support of said reciprocating element substantially in line therewith; a spring to uphold the reciprocating element and fold the links, and a shaft or rod mounted on one part of the table, adapted to be reciprocated in its bearings, having a lateral fork for engaging the joint or pivot of the two links to each other and adapted to be rocked in its bearings to engage and disengage the fork.

707,187. ROTARY BAKE-OVEN. FRANK H. VAN HOUTEN, Fishkill-on-the-Hudson, N. Y., assignor to Dutchess Tool Company, Fishkill-on-the-Hudson, N. Y., a Corporation of New York. Filed Oct. 10, 1901. Serial No. 78,233. (No model.)

Claim.—1. In an oven, the combination with the circular bake-chamber having top and bottom walls inclined in one direction, a circular flue beneath the bottom wall, a circular chamber above the top wall, an uptake connecting the highest point in said flue and chamber respectively, a stack leading from the lowest point in the circular chamber and a fire-box located at the lowest point in the circular flue, of a central support around which said circular flue passes and an inclined circular rotary hearth mounted on said support in the bake-chamber, the inclination of said hearth being substantially coincident with the inclination of the top and bottom walls of the bake-chamber and means for rotating said hearth extending out through the walls of the oven; substantially as described.

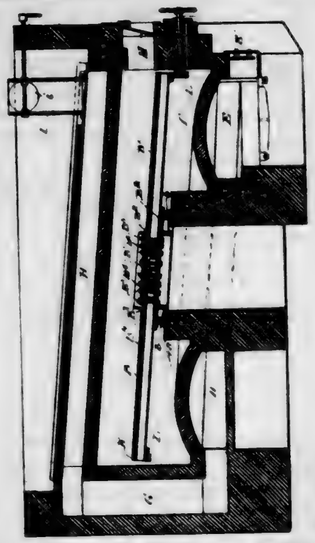

2. In a bake-oven, the combination with an inclined flat rotary hearth mounted on a central support to rotate in an inclined plane, of an inclined circular flue underlying said hearth, a circular chamber overlying said hearth, an uptake connecting said flue and chamber and a valved exit leading from said chamber to the smoke-stack; substantially as described.

3. A bake-oven embodying the following construction, to wit, a circular exterior wall, a central circular bake-chamber formed by inclined top and bottom walls, said bottom wall constituting an arch for an inclined flue and said top wall constituting the floor of an inclined unobstructed chamber overlying the bake-chamber, a top wall for said overlying chamber, an uptake connecting the highest point in the inclined flue and overlying chamber respectively, a fire-box at the lowest point in the flue, a smoke-exit at the lowest point in the overlying chamber, a flat rotary hearth mounted on inclined bearings in the bake-chamber and an entrance-door to said bake-chamber located at the lower front side thereof; substantially as described.

4. In an oven, the combination with the oven-wall having a circular bake-chamber within the same, a circular flue arranged beneath said chamber, a fire-box at one side of said circular flue, an uptake at the opposite side thereof, a circular chamber overlying the circular bake-chamber and with which said uptake communicates and a smoke-stack communicating with said circular chamber at a point opposite the uptake, an inclined circular rotary hearth mounted in the bake-chamber and means for rotating said hearth extending through the wall of the oven; substantially as described.

5. In a bake-oven, a flat rotary hearth formed with a central hub having a bearing-flange and a central cylindrical portion provided with apertures, I-beams passing through said apertures, a flange on the inside of the hub, plates overlying the inner ends of the beams, bolts passing between the beams through the plates and flange on the inside of the hub, and shoe mounted on the beams; substantially as described.

707,188. FORCE-DRAFT ATTACHMENT FOR STOVES. SAMUEL J. WALKER, Louisville, La. Filed Apr. 26, 1902. Serial No. 104,680. (No model.)

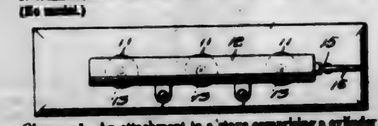

Claim.—1. An attachment to a stove comprising a cylinder having one or more outlets in alinement with the draft-apertures, a piston movably disposed within said cylinder, and means whereby air is admitted to the cylinder during the movement of the piston in one direction and dis-

charged from said outlets when said piston is moved in the opposite direction, substantially as described.

2. An attachment to a stove comprising a cylinder having one or more outlets communicating with the draft-chamber, a piston movably disposed within said cylinder, and means whereby air is admitted to the cylinder during the movement of the piston in one direction and discharged from said outlets when said piston is moved in the opposite direction, substantially as described.

3. The combination with a stove having draft-apertures, of a cylinder with lateral outlets in alinement with said apertures, a piston movably disposed within said cylinder, and means for operating said piston, substantially as described.

707,189. FIFTH-WHEEL. JOHN WATTS, Akron, Ohio. Filed Mar. 29, 1902. Serial No. 100,508. (No model.)

Claim.—1. An improved fifth-wheel less than a circle, the lower half of which has a round ball-channel open at the top less in width than the greatest diameter of the channel, one end of said channel being closed by an integral stop, and the other by a detachable plug, substantially as shown and described.

2. An improved fifth-wheel, less than a circle, the lower half of which has a round ball-channel open at the top, the top opening being less in width than the greatest diameter of the channel, said channels being closed at one end with a detachable plug, with balls fitted to run in said lower half and project above its top, and an upper half concentric with the lower, having a flat under face to ride on said balls, and having flanges to overhang the edges of the lower half, substantially as shown and described.

707,190. CARBURETING-LAMP. GEORGE WEDDERBURN, Dunn Loring, Va. Filed Nov. 2, 1901. Serial No. 81,542. (No model.)

Claim.—1. A lamp embodying a fluid-receptacle, a tube leading therefrom to the point of ignition, a globe closed at its lower end, a burner in said globe, and means for generating gas by the exhaustion of the air in the globe by the ignition of the burner and drawing the same upward from the generator to the point of ignition.

2. A lamp embodying a fluid-receptacle, a tube leading therefrom to the point of ignition, a globe inclosing the upper end of said tube and closed at all points except its upper end, a flue leading from the upper portion of the globe, and means for generating gas by exhaustion created in the globe when the lamp is ignited.

3. A lamp embodying a fluid-receptacle below the point of ignition, a tube leading therefrom to the point of ignition, a globe inclosing the upper end of the said tube, means for creating an exhaustion in said globe when the lamp is ignited and for drawing the generated gas upward through said tube to the point of ignition within the globe.

4. A lamp comprising a fluid-receptacle located at a point below the point of ignition, a globe, a tube leading from the said receptacle and terminating within said globe, and means for drawing air into said receptacle over the fluid therein and up through the said tube and into the globe upon the ignition of the lamp.

5. A lamp comprising a fluid-receptacle below the point of ignition, a globe above said receptacle, a tube leading from the receptacle to the globe, means for admitting air to the receptacle over the surface of the fluid therein to evaporate the latter, means for generating gas by exhaustion created in the globe when the lamp is ignited, a tube leading from the top of the globe, and a mantle over the upper end of the first-mentioned tube within the globe.

707,191. NEEDLE-THREADER. ONORATO A. AICARDI, San Francisco, Cal. Filed Apr. 14, 1902. Serial No. 102,758. (No model.)

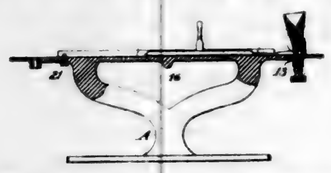

Claim.—1. In a device of the character described, the combination of a stand, a horizontal guide-bar provided with a socket for the eye end of the needle, a carrier reciprocable on said guide-bar, a barbed threader-point on said carrier and means in connection with said bar by which a needle may be held at an angle to, but in a vertical plane with, the threader-point, to automatically present its eye to said threader.

2. In a threading device, the combination of a horizontal guide-bar provided with a socket for the eye end of the needle, a carrier reciprocable on said guide-bar, a barbed threader on said carrier, a needle-holder disposed in the path of said threader, said holder arranged at an angle to, but in a vertical plane with, the threader-point, for centering the needle.

3. The combination in a threading device, of a guide-bar, a carrier slidable thereon, a threader-point on said carrier, a guide means for holding a needle in the path of said threader and means for lateral adjustment of said needle-holder.

4. In a threading device, the combination of a guide-bar, a carrier slidable thereon, a barbed threader-point on said carrier, a needle-holder on said bar, and means by which the eye of the needle will automatically position itself in the holder and always present itself in the path of the threader.

5. The combination in a threading device, of a guide-bar, a carrier slidable thereon, a threader-point on said carrier, a needle-holder, said needle-holder having a perforation adapted to receive the needle and means by which the needle may be raised or lowered to bring the eye of the needle into the path of the threader.

6. The combination in a threading device of a guide-bar, a carrier slidable thereon, a threader-point on said carrier, a needle-holder disposed in the path of said carrier and having a transverse adjustment on said guide-bar, means by which the vertical adjustment of the needle is effected, and means by which the needle is made to turn automatically to present its eye in the path of said threader-point.

7. The combination in a threading device, of a guide-bar provided with an adjustable socket to receive the eye end of the needle, a carrier slidable on said guide-bar, a threader-point on said carrier and a needle-holder adapted to hold a needle at an incline in relation to the line of movement of said threader but in the same vertical plane therewith.

8. The combination in a threading device, of a guide-bar, a threader reciprocable thereon, a needle-holder disposed in the path of said threader, said holder having an inclined perforation adapted to receive and hold the needle whereby the needle is made always to present its eye to the threader and cutting means upon the holder for severing the thread.

9. The combination in a threading device, of a support, a horizontal guide-bar vertically adjustable thereon, a reciprocable threader on said bar, a needle-holder, lateral and vertical adjusting mechanism whereby a needle is centered in said holder in relation to the threader and a spool-holding means on said support.

707,192. TROUSERS-SUPPORTER. JOSEPH D. AIKEN, Taftville, Conn. Filed May 13, 1901. Serial No. 59,908. (No model.)

Claim.—In a device of the character described, a bracket formed from a sheet-metal blank, said blank comprising horizontally oppositely-arranged wings having alining perforations, and vertical oppositely-arranged ears, said wings being bent to form parallel supporting-arms and the ears to provide means to secure the bracket to a support, and spring-metal arms projected through the perforations in the wings and projecting on either side thereof and having their opposite ends bent upwardly to form trousers-supporting members.

707,193. BOTTLE-STOPPER. JAMES J. ALLISON, Rockhills, Ill. Filed Nov. 21, 1901. Serial No. 83,100. (No model.)

Claim.—1. In a stopper for bottles, the combination, with such bottle, of an elastic cork, adapted to be secured in the neck of the bottle; a tube, extending lengthwise of the cork, providing means of discharge for the contents of the bottle; a valve at the inner end of said tube adapted to prevent discharge of said contents when said valve is in contact with said cork; means for retaining such valve movably against said cork; and a wedge-shaped plug inserted centrally of the cork, and adapted to force such cork against the inner face of the neck of the bottle, and also prevent friction of such cork upon said tube for the greater part of the length of said cork; substantially as shown and set forth.

2. In a stopper for bottles the combination with such bottles of an elastic cork, adapted to be secured in the neck of the bottle; a tube extending lengthwise of the cork providing means of discharge for the contents of the bottle; a valve at the inner end of said tube adapted to prevent discharge of such contents when said valve is in contact with said cork; means for retaining such valve movably against such cork; a wedge-shaped plug inserted centrally of the cork and adapted to force such cork against the inner face of the neck of the bottle, and also prevent friction of such cork upon said tube for the greater part of the length of said cork; and an annular recess in the inner face of the neck of such bottle substantially as described.

707,194. ELECTRIC RHEOSTAT OR HEATER. HENRY P. BALL, Brooklyn, N. Y., assignor, by mesne assignments, to H. Ward Leonard, Bronxville, N. Y. Filed Nov. 2, 1898. Serial No. 610,796. (No model.)

Claim.—1. In an electric rheostat or heater, the combination of a metallic support comprising two plates having irregular outer surfaces and grooved inner surfaces, a layer of insulating material in said grooves, and a separate resistance-step in each groove, and an edge of one plate projecting beyond the other to expose the ends of the resistances.

2. In an electric rheostat or heater, the combination of a metallic support comprising two plates having irregular outer surfaces and grooved inner surfaces, a layer of insulating material in said grooves, a separate resistance-step in each groove, and an edge of one plate projecting beyond the other to expose the ends of the resistances, and a series of binding-posts mounted on the projecting edge and to which the resistance-steps are secured.

3. A rheostat or electric heater having a series of resistances, two similar, thin sheets of metal to inclose the resistances in close proximity thereto, thin insulating material applied to the opposing faces of said sheets, and means to secure said sheets together face to face with the edge of each projecting beyond the edge of the other to expose the ends of the resistances.

4. In an electric rheostat or heater, the combination of two metallic plates having a series of grooves or corrugations, a layer of insulating material on the inner sides thereof, a separate resistance-step in each groove, said plates having the ends projecting beyond each other so as to expose the ends of the resistances, and binding-posts for said resistances at the projecting ends of the plates.

5. In an electric rheostat or heater, the combination of two metallic plates having a series of grooves or corrugations, a layer of insulating material on the inner sides thereof, a separate coiled resistance-step in each groove, said plates having the ends projecting beyond each other so as to expose the ends of the resistances, and binding-posts for said resistances at the projecting ends of the plates.

707,195. CASH-REGISTER. FAYETTE B. BARNARD, Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed July 11, 1898. Serial No. 685,655. (No model.)

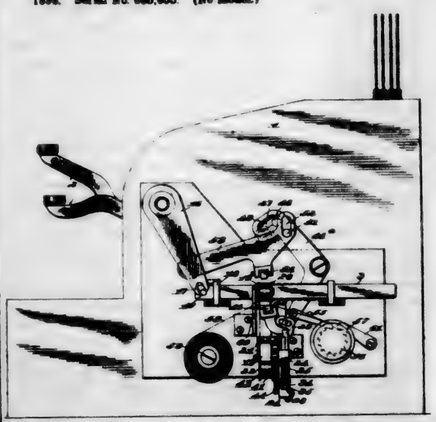

Claim.—1. In a cash-register, the combination with a recording mechanism, of a series of operating-keys, a plurality of graduated plates mounted independently of the keys but so as to be engaged by the same, means connecting the plates to the recording mechanism, and a locking means for said plates for preventing any movement of the same until after the initial movement of a key.

2. In a cash-register, the combination with a recording mechanism, of a series of operating-keys arranged in banks, cam-plates also arranged in banks and connected to said mechanism and arranged to be engaged by said keys, and an independent locking device for each bank of plates for preventing any movement of the latter until a key in the respective bank is operated.

3. In a cash-register, the combination with a recording mechanism, of a series of operating-keys arranged in banks, operating devices connected to the recording mechanism and adapted to be engaged by said keys, a pivoted yoke for each bank of keys and arranged to be operated by said keys and a locking means mounted on each yoke and adapted to

engage its respective operating device to lock the latter until a key has been operated.

4. In a cash-register, the combination with a printing mechanism, of an inking-ribbon, winding-reels for said ribbon, devices connected to said ribbon and pivoted on said reels and arranged to be positively moved by the ribbon and feeding means for said ribbon adapted to be shifted by said pivoted devices to reverse the feed.

5. In a cash-register, the combination with a printing device, of an inking-ribbon, winding-reels for said ribbon, a slide carrying operating means for said reels and means connecting the ribbon to the reels for automatically and positively moving the slide to shift the direction of movement of the ribbon.

6. In a feeding device for inking-ribbons, the combination with a ribbon, of winding-reels for the same, a slide carrying retaining-pawls and means connecting the ribbon to the reels for automatically and positively moving said slide to reverse the feed when the ribbon is exhausted from one or the other reel.

7. In a feeding device for inking-ribbons, the combination with a ribbon, of winding-reels for the opposite ends of the same, levers mounted on said reels and connected to said ribbon, a winding device for said reels and means arranged to be operated by said reel-levers to shift the winding devices.

8. In a feeding device for inking-ribbons, the combination with a ribbon, of winding-reels therefor, a slide, operating-pawls for said reels carried by said slide, locking-pawls for said reels and means mounted on the reels and connected to the ribbon for automatically moving said slide to reverse the feed of the ribbon when the ribbon has become exhausted and its tension is exerted on said means.

9. In a feeding device for inking-ribbons, the combination with a ribbon, of winding-reels for the same, an operating-slide for said reels and a shifting slide mounted on the operating-slide and arranged to be automatically shifted to reverse the feed.

10. In a feeding device for inking-ribbons, the combination with a ribbon, of winding-reels for the same, movable devices connecting the ribbon to the reels, an operating-slide and means arranged to be struck by the movable devices for shifting said slide to reverse the feed.

11. In a feeding device for inking-ribbons, the combination with a ribbon, of winding-reels for the same, an operating-slide, means mounted on the reels and connected to the ribbon for shifting the slide to reverse the feed, and a latching device for holding said slide in its adjusted positions.

12. In a cash-register the combination with a recording mechanism, of a series of graduated cams for operating said mechanism, a series of keys engaging said cams during their full strokes but moving the same different distances according to the formation of the cams, and a locking means for said cams adapted to be released by the operation of a key.

13. In a cash-register, the combination with a series of keys, of printing devices arranged to be operated by the same, an inking-ribbon, winding-reels for said ribbon, pivoted devices mounted on said reels and connected to said ribbon, and means operated by the printing devices for feeding said ribbon and adapted to be shifted by said pivoted devices to shift the feed.

14. In a cash-register the combination with a series of keys, of a movable member common to said keys, printing devices arranged to be set by said keys on their downstrokes, a platen operated by the movable member, an inking-ribbon and a slide connected to the platen and arranged to feed the ribbon as the keys and printing devices move back toward normal position.

707,196. POSTAL BOX AND SIGNAL. FRANCIS C. BATH, San Jose, Cal., assignor to Bates-Hawley Postal Box Signals Company, San Jose, Cal., a Corporation of California. Filed Mar. 31, 1902. Serial No. 100,708. (No model.)

Claim.—1. The combination in a postal box of parallel hinged doors extending along the front, one above the other, a lock for the lower door and springs by which the upper door is normally closed, said upper door being opened for the reception of mail by pushing it inwardly against the spring-pressure, and a table pivoted parallel with the hinged edge of the upper door and means connecting its free edge with the free edge of said door, said table serving as a guard to close the opening behind the door, and being actuated in unison with said door to receive the mail and deposit it in the lower part of the box when the door is closed.

2. A mail-box having a door closing the upper part of the front and hinged at the lower edge; springs by which said door is normally closed; a table pivoted at the lower edge within and parallel with the door and with its axis approximately in line horizontally at the rear of the door-hinge; and connections between the free edges of the door and table whereby the latter moves in unison with and in the same direction with the door, and forms a tubular receiving-surface substantially in line with the door when the latter is opened.

3. A postal box having a door opening into the upper part of one side, said door having the lower edge horizontally hinged, springs by which the upper edge is normally closed from the inside, a table having its lower edge pivoted within the box parallel with and behind the door-hinges and approximately in line horizontally therewith, links connecting the movable edges of the door and table whereby the table forms substantially a horizontal continuation thereof and moves in unison and in the same direction with the door so that when the door is opened the table serves to receive anything introduced and to discharge it into the lower part of the box when the door closes, and the table resumes its normal position.

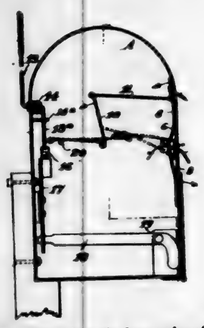

4. A postal box having a door, the lower edge of which is horizontally hinged approximately central of one side of the box, springs by which said door is normally closed outwardly against the box-front, a receiving-table and guard consisting of a plate, the lower edge of which is pivoted parallel with the hinged edge of the door, links connecting the movable edges of the door and the table whereby the latter is forced downwardly and backwardly to form a guard and close the opening behind the door when the latter is opened, said table being moved into its normal inclined position when the door is closed.

5. A postal box having parallel admission and discharge doors, the lower edges of which are hinged one above the other horizontally across the front of the box, a guard-plate and table pivoted parallel with the hinged edge of the upper door, and in the same direction, said plate forming substantially a horizontal continuation of the upper door when the latter is open, links and springs by which the two are movable in unison and approximately in line horizontally with said hinged edge of the door, a signal-carrying arm journaled in the side of the box having the inner end extending into the line of travel of the table edge whereby the signal is thrown up into view when the receiving-door is opened, and a spring-latch by which the signal is retained in exposed position after the door is closed.

6. A postal box having superposed parallel doors hinged horizontally along the front by their lower edges, a hinged swinging guard and table connected with and actuated by the opening of the upper door, and movable in the same direction with the door, and forming substantially a horizontal continuation thereof when the door is opened; a signal-carrying arm journaled in the side of the box having the interior end projecting into the path of travel of the movable table whereby the signal is raised into an exposed position when the admission-door is opened, a spring-latch, a vertically-movable slide upon which it is carried, said latch engaging the arm and holding the signal exposed after the admission-door is closed and a falcrumed lever having one end engaging the slide and the opposite end connected with the lower door whereby the signal is released and allowed to fall into a concealed position by the opening of said door.

7. A postal box having parallel doors one above the other hinged by their lower edges, the lower door opening outwardly about its hinges and normally secured by a lock, the upper door opening inwardly about its hinges, springs by which said upper door is normally closed against the front of the box a swinging guard-table pivoted parallel with and interior to the admission-door, links by which the two are connected to swing in unison, a signal-carrying arm exterior to the box journaled therein having an interior arm, an arm carried by the swinging table adapted to engage the interior portion of the signal-carrying arm when the admission-door is opened whereby the signal is thrown up into view, a vertically-guided slidable bar, a spring-latch carried thereby, a bell-crank lever, the long arm of which engages said slide and the short arm is engaged by the lower door when the latter is closed whereby the slide and the spring are thrown upward so as to engage the signal-arm and retain the signal exposed after the admission-door is closed, said bell-crank lever and slide falling by gravitation when the lower door is opened to release the lever and allow the signal to drop and disappear.

707,197. SASH-WEIGHT. GILES A. BURGWIN, Waterford, and CHARLES L. LAMPHERE, Berwick, Conn. Filed Oct. 28, 1901. Serial No. 79,530. (No model.)

Claim.—A sash-weight having one end hooked and slotted vertically at its upper end and having also side slots, and a pulley having oppositely-extending axial projections engaging in the said side slots, the pulley-body being disposed in the slot at the end of the hook all substantially as shown and described.

707,198. STAMP-AFFIXER. EDGAR A. ROBINSON, St. Louis, Mo. Filed May 27, 1901. Serial No. 62,603. (No model.)

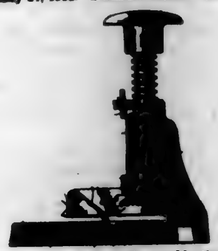

Claim.—1. In a stamp-affixer, the combination with a support for the article to be stamped, of an overhanging frame, a pivoted wiper mounted in said frame, and depending toward the supporting-surface for the article to be stamped, whereby said article can pass between said frame and said wiper, and a bar with which said wiper coöperates to force said wiper upon the article to be wiped; substantially as described.

2. In a stamp-affixer, the combination with a support for the article to be stamped, a flange arranged upon the side of said support, an overhanging frame, a guiding-lodge on said frame and above said flange, a pivoted wiper mounted in said overhanging frame and depending toward the supporting-surface for the article to be stamped, whereby said article can pass between said surface and said wiper, and a bar $a^{\prime}$ for coöperating with the wiper to force said wiper upon the article to be wiped; substantially as described.

3. In a stamp-affixer, the combination with a support for the article to be stamped, of a plunger for affixing the stamp, a recovering-spring for said plunger, and a pilot-plunger projecting beneath the main plunger immediately above the stamp to be affixed when said stamp is in position to be affixed; substantially as described.

4. In a stamp-affixer, the combination with a support for the article to be stamped, of a stamp-affixing plunger, means exerting pressure against said plunger to hold it constantly in an elevated position, a pilot-plunger telescopically mounted in the lower end of said first-mentioned plunger and arranged within the area of the lower face of said stamp-affixing plunger, and means coöperating with said pilot-plunger tending to hold the same constantly in a lowered position; substantially as described.

5. In a stamp-affixer, the combination with a support for the article to be stamped, of a plunger provided with a head on its lower end designed to cover the stamp to be affixed, a spring for holding said plunger in an elevated position above the support, a pilot-plunger projecting through said head, which head is recessed on its under side to receive the pilot-plunger, and a spring for holding said pilot-plunger in a lowered position; substantially as described.

6. In a stamp-affixer, the combination with a support for the article to be stamped, of a way for receiving a strip of stamps, said way being located on a plane above the support for the article to be stamped so as to form a shoulder a^{10}, a vibrating plate mounted to travel in said way, a group of pawls mounted on said vibrating plate, a main plunger for severing or severing the stamp at the shoulder a^{10}, a pilot-plunger for holding the stamp upon the article to be stamped while the main plunger is operating on the stamps, and a connection between said main plunger and the vibrating plate; substantially as described.

7. In a stamp-affixer, the combination with a main plunger, of a presser-frame yieldingly mounted thereon and normally located on a lower plane than the face of the main plunger, and a pilot-plunger; substantially as described.

8. In a stamp-affixer, the combination with a main plunger, of a way for a strip of stamps, a shoulder a^{10} over which the stamps are advanced in the path of the main plunger, a pilot-plunger mounted in the main plunger for holding the stamps in position while said stamps are being operated upon by the main plunger, means for advancing the stamps in the paths of the main and pilot plunger, and a yielding presser-frame mounted on the main plunger for engaging the adjacent stamp before the main plunger severs the stamp to be affixed, substantially as described.

9. In a stamp-affixer, the combination with a support for the article to be stamped, of a moistening device, a way for receiving a strip of stamps, said way terminating at a shoulder a^{10}, means for advancing the stamps over said shoulder, a plunger operating in juxtaposition to the shoulder, a pilot-plunger for engaging the stamp to be affixed and forcing it onto the article to be stamped, and a presser-frame for engaging the adjacent stamp and holding it while the plunger severs the stamp to be affixed from its companions; substantially as described

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707,199. NON-REFILLABLE BOTTLE. SAMUEL D. BLOCKER, Columbus, Ohio, assignor of one-half to William J. Greene, Columbus, Ohio. Filed Nov. 11, 1901. Serial No. 81,672. (No model.)

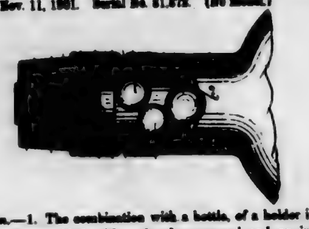

Claim.—1. The combination with a bottle, of a holder in the neck thereof, a tube provided with a closed upper end and an intermediate opening, said tube being adjustably fitted in the holder and the holder being capable of inclosing said opening, and a cap fastened to the upper end of the tube and inclosing the major part of the tube, said cap extending downward and being movable with the tube into and out of engagement with the upper end of the neck of the bottle.

2. The combination with a bottle, of a holder in the neck thereof, and a tube with a closed upper end and an intermediate opening, said tube being adjustably fitted in the holder and the holder being capable of closing the said opening, a spout projecting upward from the neck of the bottle and surrounding the tube, and a cap fastened to the tube and inclosing the spout, for the purpose specified.

3. The combination with a bottle, of a cup set into the neck thereof and having a contraction at its upper end forming a holder, the cup also having an opening in its bottom, a tube set in the holder, said tube being closed at its upper end and having an opening intermediate its ends, a spring-actuated means in the tube for commanding the liquid flow through the opening, and a weight in the cup, said weight normally closing the opening in the bottom of the cup and being capable of rolling into the tube to actuate said spring-actuated means therein.

4. The combination with a bottle, of a holder in the neck thereof, a tube having a closed upper end and an opening intermediate its ends said tube being adjustably fitted in the holder and the holder being capable of closing said opening, a spring-actuated valve in the tube, and a weight arranged below the valve and capable of entering the tube to open the valve.

5. The combination with a bottle, of a holder in the neck thereof, and a tube with a closed upper end and an intermediate opening, said tube being adjustably fitted in the holder and the holder being capable of closing the said opening, a spout projecting outward from the neck of the bottle and surrounding the tube, a cap fastened to the tube and inclosing the spout, for the purpose specified, a valve arranged in the tube, and a weight located below the valve and capable of entering the tube to open the valve.

6. The combination with a bottle, of a cup set into the neck thereof and having a contraction at its upper part forming a holder, the cup also having an opening in its bottom, a tube located adjustably in the holder, the tube having a closed upper end and an intermediate opening, a valve arranged in the tube, and a weight carried in the cup and capable of entering the tube to open the valve.

707,200. CAR-HAUL. SIDNEY W. BOLLINGER, Pittsburg, Pa. Filed Sept. 20, 1901. Serial No. 75,917. (No model.)

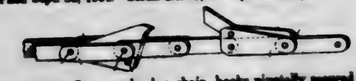

Claim.—1. In a car-haul, a chain, hooks pivotally secured thereto and arranged so that alternate hooks engage a step on a car in opposite directions.

2. In a car-haul, a chain-support, a slot in said support, a chain, a hook pivotally secured to said chain and a second chain-support, said chain-supports and said slot providing means for lowering and raising the end of said hook.

3. In a car-haul chain, a hook pivotally secured at one end to the link of said chain, a slot in said hook and a pin through said slot and secured to said link.

4. In a car-haul, a car having a step, a chain, a hook pivotally secured thereto and means for raising the hook independent of the chain so as to engage the step on said car.

707,201. FIREPROOF CEILING AND FLOOR. SEBASTIAN G. BUTSKRAM, New York, N. Y. Filed Aug. 2, 1901. Serial No. 70,613. (No model.)

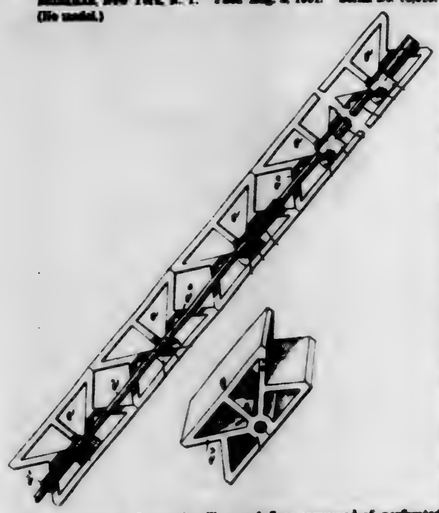

Claim.—1. A fireproof ceiling and floor composed of perforated blocks arranged in rows, longitudinal rods engaging the perforated blocks, means for locking the rods to the blocks, and transverse braces at right angles to the rods, substantially as specified.

2. A fireproof ceiling and floor composed of perforated blocks arranged in rows, longitudinal rods engaging the perforated blocks, hooks engaging the longitudinal rods, and transverse rods between the hooks, substantially as specified.

3. A fireproof ceiling and floor composed of perforated blocks arranged in rows, longitudinal rods engaging the perforated blocks, hooks engaging the rods, transverse rods engaging the hooks and blocks, and couplings for forcing the hooks against the longitudinal rods, substantially as specified.

4. A fireproof ceiling and floor composed of blocks provided with perforations and grooves arranged at right angles to each other, longitudinal rods engaging the perforations, and transverse rods engaging the grooves, substantially as specified.

5. In a fireproof ceiling or floor, a block composed of a top plate, a bottom plate, an intervening perforated hub, and diagonal braces that extend in the same direction as such hub, combined with a rod passing through the perforated hub, and means for supporting the ends of the rod, substantially as specified.

707,202. MECHANICAL MOVEMENT FOR NUT-MAKING OR OTHER MACHINERY. OSCAR C. BERRY and BERTRAM C. GARDNER, Buffalo, N. Y.; said Gardner assignor to said Berry. Filed Nov. 1, 1902. Serial No. 30,112. (No model.)

Claim.—1. The combination of a slide, actuating mechanism for said slide including a lost-motion connection, a stop for arresting said slide before said actuating mechanism thereafter reaches the end of its stroke, a second slide, parts carried by said slides and arranged one in advance of the other in a plane parallel to the direction of movement of said slides, and means for reciprocating said second slide, whereby the part carried thereby approaches the part carried by said first slide while the latter is at rest, substantially as set forth.

2. The combination of two slides arranged one in advance of the other in substantially the same plane, actuating mechanism for one of said slides including a lost-motion connection, a stop for arresting said slide before said actuating mechanism thereafter reaches the end of its stroke, and means for reciprocating said second slide whereby the same approaches the first-mentioned slide while the latter is at rest, substantially as set forth.

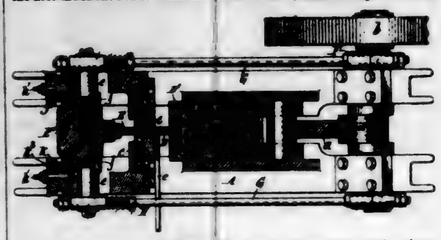

3. The combination of two slides mounted to reciprocate in substantially the same plane and arranged one in advance of the other, actuating mechanism for the front slide including a lost-motion connection, a stop for arresting said first slide before said actuating mechanism thereafter reaches the end of its stroke, and means for reciprocating said rear slide whereby the same approaches the front slide while the latter is at rest, substantially as set forth.

4. The combination of a slide, a rotary shaft, operating connections between said slide and said rotary shaft including a lost-motion device, a second slide, operative connections between said second slide and said shaft, parts carried by said slides and arranged one in advance of the other in a plane parallel to the direction of movement of the slides, and a stop for arresting said first-mentioned slide before said second-mentioned slide reaches the end of its stroke, substantially as set forth.

5. The combination with a slide, of rotary eccentrics, pitmen connected to said eccentrics and loosely connected to said slide, shoulders on said pitmen, springs interposed between said shoulders and said slide at one side, shoulders on said pitmen at the other side of said slide, and a stop adapted to arrest the movement of said slide before said eccentrics reach the end of their stroke, substantially as set forth.

707,203. BOILER OR WATER-HEATER. DAVID M. BURNS and ALEXANDER B. BURNS, Greenbay, Wis. Filed May 5, 1902. Serial No. 105,902. (No model.)

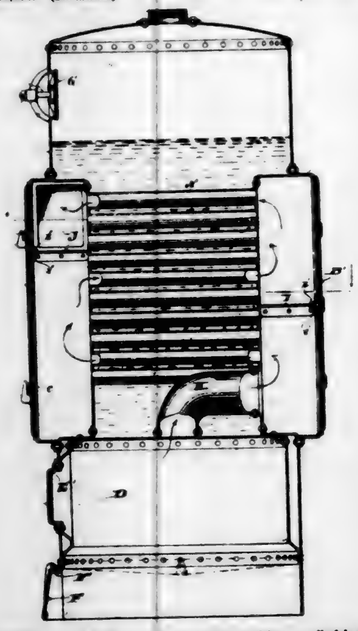

Claim.—1. A boiler or water-heater comprising a cylindrical shell, boxes extending into the shell and provided with outer doors, flues in tiers connecting the boxes, a baffle-plate dividing one of the boxes into approximately equal upper and lower compartments, a similar plate in the other box at a greater elevation than the plate aforesaid, the minor upper compartment of the latter box being open at one end for communication with a smoke-stack, a fire-chamber of less diameter than said shell built therein central of same, and pipes, leading from the fire-chamber into the lower compartment of the box aforesaid.

2. A boiler or water-heater comprising a cylindrical shell, boxes extending into the shell and provided with outer doors, flues in tiers connecting the boxes, a baffle-plate dividing one of the boxes into approximately equal upper and lower compartments, a similar plate in the other box at a greater elevation than the plate aforesaid, the minor upper compartment of the latter box being open at one end for communication with a smoke-stack, flanges on the box-doors arranged to lap the baffle-plates, a fire-chamber of less diameter than said shell built therein central of same, and pipes leading from the fire-chamber into the lower compartment of the first aforesaid box.

707,204. RECORDER FOR PHONOGRAPHS, &c. HUBERT V. BUTTERWORTH, Newark, N. J. Filed Mar. 25, 1901. Serial No. 52,696. (No model.)

Claim.—1. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment pivotally arranged and secured within said tubular member, having its recording-diaphragm extending beyond said tube-plate, and an adjusting-screw in the tubular member of said tube-plate in engagement with a portion of said pivotally-arranged recording attachment for the angular adjustment of the diaphragm of said recording attachment, relative to the surface of the phonograph-cylinder, substantially as and for the purposes set forth.

2. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment arranged and secured within said tubular member, having its recording-diaphragm extending beyond said tube-plate, and an adjusting-screw 14 arranged in said tubular member and in supporting engagement with a portion of said recording attachment for the angular adjustment of the recording-diaphragm relative to the surface of the phonograph-cylinder, substantially as and for the purposes set forth.

3. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment arranged and secured within said tubular member, having its recording-diaphragm extending beyond said tube-plate, and an adjusting-screw in said tubular member having its point in supporting engagement with a portion of said recording attachment, substantially as and for the purposes set forth.

4. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment within said tubular member, having its recording-diaphragm extending beyond said tube-plate, and means connected with and within the said tubular member for securing said recording attachment in oscillatory relation within said tubular member, substantially as and for the purposes set forth.

5. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment within said tubular member, having its recording-diaphragm extending beyond said tube-plate, and means connected with and within the said tubular member for securing said recording attachment in oscillatory relation within said tubular member, consisting, of a pair of pivots arranged in the opposite sides of said tubular member, and having their inner ends in pivotal supporting engagement with said recording attachment, substantially as and for the purposes set forth.

6. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment within said tubular member, having its recording-diaphragm extending beyond said tube-plate, means connected with said tubular member for securing said recording attachment in oscillatory relation within said tubular member, and an adjusting-screw in said tubular member, having its point in supporting engagement with a portion of said recording attachment, substantially as and for the purposes set forth.

7. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment within said tubular member, having its recording-diaphragm extending beyond said tube-plate, means connected with said tubular member for securing said recording attachment in oscillatory relation within said tubular member, consisting, of a pair of pivots arranged in the opposite sides of said tubular member, and having their inner ends in pivotal supporting engagement with said recording attachment, and an adjusting-screw in said tubular member, having its point in supporting engagement with a portion of said recording attachment, substantially as and for the purposes set forth.

8. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment, consisting, of a tube 10, having a ball-shaped end, arranged within said tubular member, and means in said tubular member and in engagement with said ball-shaped end for the oscillatory arrangement of said tube 10 within said tubular member, and a recording-diaphragm on the opposite end of said tube 10, substantially as and for the purposes set forth.

9. In a recorder for phonographs or the like, the combination, with a tube-plate and its tubular member, of a recording attachment, consisting, of a tube 10, having a ball-shaped end, arranged within said tubular member, means in said tubular member in engagement with said ball-shaped end for the oscillatory arrangement of said tube 10 within said tubular member, a recording-diaphragm on the opposite end of said tube 10, and an adjusting-screw in said tubular member, having its point in supporting engagement with a portion of said tube 10, substantially as and for the purposes set forth.

10. In a phonograph, the combination, with a record-receiving cylinder and the frame in which the recorder is arranged, of a recording attachment comprising a tube-plate secured to said frame, a tubular member connected with said tube-plate, a second tubular member pivotally connected with the tubular member of said tube-plate, said second tubular member having its opposite end extending beyond the said tube-plate, a recording-diaphragm on the free end of said second tubular member, and a stylus on said recording-diaphragm, the said stylus, the recording-diaphragm and said second tubular member, all being arranged in such relation to the cylindrical surface of the record-receiving cylinder, that an imaginary plane through the point of pivotal support of said second tubular member and the point of contact of the stylus with the cylindrical surface of the recording-cylinder will produce a cosine with the recording-cylinder, substantially as and for the purposes set forth.

707,205. ADVERTISING DEVICE. WILLIAM D. BUTT, Kansas City, Mo. Filed July 23, 1901. Serial No. 69,251. (No model.)

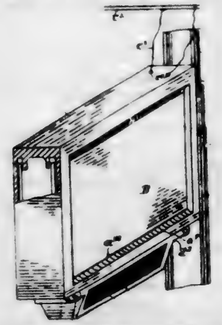

Claim.—1. An advertising frame or case having a longitudinal opening in the bottom thereof and transparent sides, a luminous body within said case and an auxiliary box removably secured to the under surface of the bottom of said case.

2. An advertising-case having a longitudinal opening in the bottom thereof, a luminous body within said case, and an auxiliary box hinged at one end to the under surface of the bottom of said case and securing devices upon said frame and box for the other end of said box.

3. In an advertising-frame having removable panels, and an opening in the bottom of said frame for the insertion of said panels, a pendent member of said frame covering said opening, having longitudinal openings in the sides of said pendent member and grooves in the sides of said openings, and openings in one end of said pendent member and removable signs adapted to be inserted through the openings in the end of said pendent member.

707,206. BODY FOR MOTOR-VEHICLES. FERDINAND CHARRON and LÉONCE GIRARDOT, Paris, France. Filed Apr. 22, 1902. Serial No. 104,008. (No model.)

Claim.—1. A body for motor road-vehicles with a back rotunda-

seat arranged at the hook part *c* of the carriage, closed at the sides and at the back, in combination with a front seat or driver's seat *a* one part of which can be lifted sidewise by pivoting on the stationary part, in combination with a door *d* arranged at the side of the movable part of the seat *a*, and in combination with a lever *h* arranged beneath the movable part of the seat and pivoted to a stationary point *o* intermediate of its length and with a bent rod *k* pivoted by one end to the small arm of the lever *h* and by the other end to the door *d*, near the hinge thereof substantially as and for the purpose set forth.

2. A body for motor road-vehicles with a hook-pivoted seat arranged in a part *c* of the carriage, closed at the sides and at the back, in combination with a front seat *a* made of two parts, one stationary and the other movable and pivoted to the stationary part, in combination with a petroleum-reservoir *b* arranged beneath the seat *a* and provided with a vertical recess *i* and a horizontal recess at the under part *l*, in combination with a door *d* arranged at the side of the movable part of the seat *a*, in combination with the lever *h* pivoted at *o* to the wall of the reservoir *b*, located in the recess *i* and carrying at the end of its long arm a roller *j* which bears constantly against the bottom of the movable part of the seat *a* and rolls on the way *s* when the seat is raised or lowered, in combination with a bent rod *k* located in the recess *l* and pivoted by on.. end to the small arm of the lever *h* and by the other end to the inner surface of the door at a certain distance from the hinge, substantially as and for the purpose set forth.

707,207. CAN-OPENER. JAMES GRIMMER, Fort Liscum, Alaska. Filed Jan. 20, 1902. Serial No. 90,282. (No model.)

Claim.—1. A can-opener having a body provided with a curved undercut shoulder, a slotted extension or projection, the cutting-blade adjustably arranged in said slotted extension, and an operating-handle connected to the body, as set forth.

2. A can-opener comprising a body portion having a curved undercut shoulder, an obliquely-slotted extension or projection, a cutting-blade having its shank arranged in said slotted extension, and means arranged within the slot and connected to the shank for the purpose of adjusting the blade, as set forth.

3. A can-opener comprising a body portion having a curved edge and a curved undercut shoulder, the obliquely-slotted extension or projection, the cutting-blade having its shank located in said slot, the adjusting-screw working in the slot and passing through the shank and the operating-handle integral with the body portion, substantially as set forth.

707,208. SIDE-AND CENTER-BEARING FOR CAR-TRUCKS. EDWARD CLIFF, Newark, N. J., assignor to Voss and Cliff Manufacturing Company, New York, N. Y., a Corporation of New York. Filed July 2, 1902. Serial No. 114,023. (No model.)

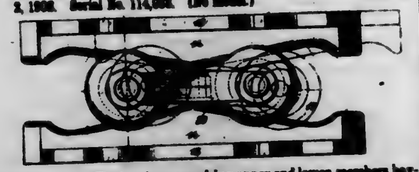

Claim.—1. The bearing comprising upper and lower members having at each side of a vertical transverse line the oppositely-inclined track-surfaces, combined with the rollers located between said surfaces, and means for keeping said rollers a definite distance apart; substantially as set forth.

2. The bearing comprising upper and lower members having at each side of a vertical transverse line the oppositely-inclined track-surfaces diverging toward the outer ends of the bearing, combined with the rollers located between said surfaces, and means for keeping said rollers a definite distance apart; substantially as set forth.

3. The bearing comprising upper and lower members having at each side of a vertical transverse line the oppositely-inclined track-surfaces, combined with the rollers located between said surfaces, and having the end flanges extending over the edges of said surfaces, and means for keeping said rollers a definite distance apart; substantially as set forth.

4. The bearing comprising the upper and lower members having at each side of a vertical transverse line the oppositely-inclined track-surfaces, combined with the rollers located between said surfaces, and the roller-frame connecting said rollers and having the axles extending into the bores of said rollers; substantially as set forth.

5. The bearing comprising upper and lower members having at each side of a vertical transverse line the oppositely and equally inclined track-surfaces, combined with the rollers located between said surfaces, and means for keeping said rollers a definite distance apart; substantially as set forth.

707,209. TOE-CLIP FOR BICYCLES. GEORGE W. COLE, Asbury Park, N. J., assignor to G. W. Cole Company, a Corporation of New Jersey. Filed Nov. 20, 1901. Serial No. 83,466. (No model.)

Claim.—1. In a toe-clip for bicycles, the combination with a loop formed of wire or other suitable material, a plate uniting the ends of said loop to hold the same in position, tongues bent out from said plate; a strip of leather or other material, one end of which is secured to said plate by said tongues and the other end secured to said loop.

2. In a toe-clip for bicycles, the combination of a loop formed of wire or other suitable material, and provided with a laterally-projecting offset at or about the middle of said loop; a plate uniting the ends of said loop to hold the same in position; tongues bent out from said plate; a strip of leather or other suitable material, one end of which is secured to said plate by said tongues, and the other end secured to said loop.

3. In a toe-clip for bicycles, the combination with a loop formed of wire or other suitable material, and provided with a laterally-projecting offset at or about the middle of said loop, the ends of said wire being bent out of said loop to form part of the fastening means to secure said clip to a pedal; a plate uniting the ends of said loop to hold the same in position, said plate being provided with tongues bent out from said plate; a strip of leather one end of which is secured to the laterally-projecting offset in said loop and the other end secured to said plate by said tongues.

4. In a toe-clip for bicycles, the combination with a loop formed of wire or other suitable material, a clamp consisting of a bolt and nut or other suitable construction for fastening the clip to a pedal, a plate uniting the ends of said loop to hold the same in position, tongues bent out from said plate; a strip of leather or other suitable material, one end of which is secured to the plate by said tongues and the other end secured to said loop.

707,210. FIREPROOF BUILDING. FRED W. COOLEY, Minneapolis, Minn., assignor of two-thirds to George T. Houstain, Minneapolis, Minn. Filed Dec. 13, 1901. Serial No. 86,726. (No model.)

Claim.—1. In a fireproof wall, the combination with tile blocks and interposed metal bars, of anchoring devices locked to said bars and embedded in the cement interposed between said bars and tile blocks.

2. In a fireproof wall, the combination with tile blocks and interposed metal bars, of anchoring devices overlapping the edges of said bars and embedded in the cement interposed between said bars and tile blocks.

3. In a fireproof wall, the combination with tile blocks and interposed metal bars, of the anchoring-hooks 3' embedded in the cement interposed between the said bars and tile blocks and provided with the hooked ends 3* which overlap the edges of said bars.

4. In a fireproof wall, the combination with tile blocks and metal bars laid double and interposed between the layers of tile blocks, of anchoring devices embedded in the cement interposed between said tile blocks and bars and engaging over the edges of said bars to prevent lateral movements of the one bar with respect to the other, substantially as described.

5. In a fireproof wall, the combination with the tile blocks and metal bars laid double and interposed between said layers of tile blocks, of the anchoring-hooks 3 embedded in the cement interposed between said tile blocks and metal bars and provided with hooked ends 3* which engage over the edges of said bars and hold the same against lateral movements, one with respect to the other.

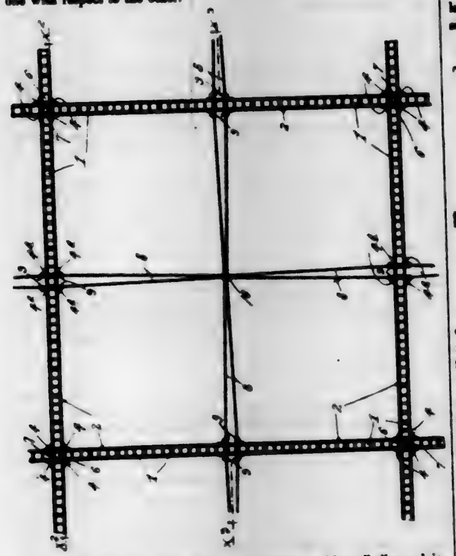

6. In a fireproof structure, the combination with wall-tiles and interposed metal bars which bars overlap at the corners of the bin, of metal columns placed in the corners formed at the junctions of said walls, and devices for tying the said columns together, substantially as described.

7. In a fireproof structure, the combination with wall-tiles and interposed metal bars overlapped at the corners of the bins, of metal angle-columns placed in the corners at the junctions of said walls, and metal tie-straps connecting the opposite angle-columns and with their ends bent to embrace the flanges thereof, substantially as described.

8. In a fireproof structure, the combination with wall-tiles and interposed metal bars overlapped at the corners of the bins, of the angle-iron columns 4 placed in the corners at the junctions of the walls, and the tie-straps 5 connecting the opposite angle-columns and having their ends bent over the flanges thereof, substantially as described.

9. In a fireproof structure, the combination with the wall-tiles 1 and interposed metal bars 2 the latter being overlapped at the corners of the bins, the corner-tiles 6 placed at the corners of the bins, the angle-columns 4 placed in the corners formed by adjoining walls, and the tie-straps 5 embracing said corner-tiles and with their ends bent around the flanges of opposite angle-columns, substantially as described.

10. In a fireproof structure, the combination with wall-tiles of the interposed and overlapped metal bars 2 provided at the corners of the bins with notches 2* and lock-bolts placed within said notches 2* for interlocking the parts, substantially as described.

11. The combination with the walls of a bin or similar structure, of truss-rods or bars arranged in approximately parallel pairs connecting the opposite sides thereof, and means for drawing the central portions of said truss-rods together to tighten the same, substantially as described.

12. The combination with the walls of a rectangular bin or structure made up of tile blocks and interposed metal bars, of intermediate columns reinforcing the walls of said bin and internally-spaced metal bars or rods connecting opposite members of said intermediate columns which tie bars or rods are arranged in pairs and are drawn together at their intermediate portions, substantially as described.

13. The combination with a bin or similar structure, the walls of which are made up of tile blocks and interposed metal bars or beams, of columns applied to the intermediate portions of said interposed bars or beams, and tie bars or rods connecting the opposite or distant intermediate columns.

14. The combination with the walls of a rectangular bin or similar structure made up of layers of tile blocks and interposed metal bars or beams, of intermediate columns arranged in groups of four positioned in pairs on the opposite sides of said interposed bars, and pairs of tie bars or rods connecting opposite pairs of said intermediate columns, substantially as described.

15. The combination in a fireproof wall, of layers of tile blocks and interposed and overlapped metal bars provided with coincident notches, and lock-pins placed in the said coincident notches whereby the said overlapped bars are locked against endwise movements, one upon the other, substantially as described.

707,211. RICE-HULLING MACHINE. JOHN R. CRESWELL, Moline, Ill., assignor to Barnard and Leas Manufacturing Company, Moline, Ill. Filed May 6, 1901. Serial No. 58,886. (No model.)

Claim.—1. The combination of a casing, a longitudinal hulling plate or knife, and a revoluble hulling-cylinder having tapered longitudinal hulling-ribs adapted in conjunction with the knife to effect a shear cut in either direction of revolution of the cylinder.

2. In a rice-huller, the combination of the casing, the hulling plate or knives, and hulling-cylinder provided with longitudinal tapering hulling-ribs adapted in conjunction with said plates to effect a shear cut in either direction, with transversely-disposed baffles within the casing, substantially as described.

3. In a rice-huller, the combination of the casing, the hulling plate or knives therein, the hulling-cylinder having longitudinal tapering hulling-ribs adapted to effect a shear cut in either direction, and force-feed flanges at its feed end, all substantially as described.

4. In a rice-huller, the combination of the casing, the hulling plates or knives therein, the conical hulling-cylinder having longitudinal tapering hulling-ribs adapted to effect a shear cut in either direction, and the removable force-feed-screw casting supporting the smaller end of the cylinder upon the main shaft, all constructed and adapted to operate substantially as described.

5. In a rice-huller, the combination of the casing, the main shaft, and the hulling plates or knives at opposite sides of the casing; with the hulling-cylinder intermediate the knives having longitudinal tapered hulling-ribs adapted to effect a shear cut in either direction, and transversely-disposed baffle-ribs within the casing all adapted to operate substantially as described.

6. In a rice-huller, the combination of the casing, the main shaft, and the hulling plates or knives at opposite sides of the casing, and the conical hulling-cylinder intermediate the knives having longitudinal tapered hulling-ribs adapted to effect a shear cut in either direction; with transversely-disposed baffles above and below the cylinder, and a force-feed screw at the smaller end of the cylinder, all adapted to operate substantially as described.

7. In a rice-huller, the combination of the frame, the arch-bar suspended therefrom, having an internal inwardly-projecting baffle-rib, the screen-plates having their inner ends supported by said bar; the hulling plates or knives, and the hulling-cylinder, substantially as described.

8. In a rice-huller, the combination of the frame, the arch-bar suspended therefrom, having an internal inwardly-projecting baffle-rib, the screen-plates having their inner ends supported by said bar; the hulling plates or knives, and the hulling-cylinder; with the removable force-feed screw on said shaft supporting and interlocked with the adjoining end of the cylinder, substantially as described.

9. In a rice-huller, the combination of the frame, the arch-bar suspended therefrom, having an internal inwardly-projecting baffle-rib, the screen-plates having their inner ends supported by said bar and the upper half of the casing having internally-projecting baffle-ribs; with the hulling plates or knives, the main shaft, the conical hulling-cylinder thereon having longitudinal tapered hulling-ribs, and the removable force-feed screw on said shaft supporting and interlocked with the smaller end of the cone, all constructed and adapted to operate substantially as and for the purpose described.

707,212. SOLDERING-IRON. JAMES C. OWENS, Watervliet, N. Y. Filed Apr. 14, 1902. Serial No. 103,013. (No model.)

Claim.—1. In a soldering-iron, the combination with a holder having separated arms at its ends each formed with penetrating edge flanges on its inner face, said flanges having cross-grooves therein and a bow

formed on the outer face of one of the arms having a threaded interior, a point having a tongue fashioned to fit between the arms and be engaged by the flanges at or near the outer edge of the tongue, and a screw-bolt passing through the arms and tongue having its end seated in the boss; substantially as described.

2. In a soldering-iron, the combination with a holder having separated arms at its end each provided with engaging flanges having a series of cross-grooves the edges of the walls of which constitute teeth therein, a soldering-point having a flat-sided tongue, and means for securing the tongue between the flanges of the arms, substantially as described.

3. In a soldering-iron, the combination with a holder having separated arms at its ends each formed with holding edge flanges on its inner face, and a boss formed on the outer face of one of the arms having a threaded interior, a point having a tongue fashioned to fit between the arms and be engaged by the flanges at or near the outer edge of the tongue, and a screw-bolt passing through the arms and tongue having its end seated in the boss, substantially as described.

4. In a soldering-iron, the combination with a holder having separated arms formed with holding-flanges and a pivot secured between the flanges, of a handpiece into which the end of the shank of the holder fits, and a series of teeth on the opposite edges of the end of the shank having inclined outer and straight upper edges for engaging the handpiece.

707,218. METHOD OF MOLDING SPOKE-WHEELS AND THE PRODUCT THEREOF. GEORGE H. DOCKERSON and JOHN M. GORDON, Columbus, Ind. Filed May 28, 1902. Serial No. 109,265. (No model.)

Claim.—1. The art of molding spoke-wheels, which consists in forming a non-parting green or damp sand mold within the confines of a rim-pattern having ribs at the inner side thereof and adapted to be parted transversely of the rim, placing boss-patterns loosely upon separate spokes and setting the spokes at the ribs of the rim-pattern and also setting the boss-patterns against the ribs of the rim-pattern while forming the mold, setting up sectional prepared molds or patterns for the hub while forming the green-sand mold, parting the rim-pattern and withdrawing the same outwardly as from its axis from the green-sand mold, removing the boss-patterns from the spokes and also from the green-sand mold, and setting a separate mold about the green-sand mold, substantially as described.

2. The art of molding spoke-wheels, which consists in forming a non-parting green-sand mold within the confines of a rim-pattern having holes therein to receive the ends of the spoke-patterns, setting the spoke-patterns in the holes in the rim-pattern while forming the mold, drawing the spoke-patterns longitudinally from the holes in the rim-pattern after forming the sand mold, withdrawing the rim-pattern from the sand mold, drawing the spoke-patterns oppositely to their former movements, and setting a separate mold about the green-sand mold, substantially as described.

3. The art of molding spoke-wheels, which consists in setting a rim-pattern and a pattern for the lower end of the hub, placing separate spoke-patterns in connection with the rim and the hub patterns, setting companion hub-patterns, placing other separate spoke-patterns in connection with the rim and the companion hub patterns, gaging and adjusting the rim-pattern relatively to the hub-patterns, forming a green-sand mold between the rim-pattern and the hub-patterns, drawing the spoke-patterns longitudinally toward the axis of the hub-patterns, drawing the rim-pattern outwardly as from its axis from the sand mold, setting the mold for the outer face of the rim, and setting a plate-cover upon the mold, substantially as described.

4. The art of making spoke-wheels, which consists in setting a sectional rim-pattern and also a separated sectional hub-pattern, placing boss-patterns loosely upon separate spoke-patterns and setting the spoke-patterns in connection with the rim and the hub patterns, setting the boss-patterns against the rim-pattern, forming a sand mold without a parting, shifting the spoke-patterns longitudinally, removing the rim-pattern from the mold without disturbing the hub-pattern, shifting the spoke-patterns, removing the boss-patterns from the spoke-patterns and also from the mold, setting a pattern for the outer face of the rim, and pouring the metal between two separate plates to form the sides of the rim, substantially as described.

5. The art of making spoke-wheels, which consists in building up a sectional hub-exterior pattern, setting a sectional rim-pattern of full width of face, setting spoke-patterns separately in connection with the hub and the rim patterns, forming a non-parting solid green-sand mold, shifting the spoke-patterns inwardly, removing the rim-pattern without disturbing the hub-pattern, shifting the spoke-patterns outwardly, setting the rim-face chills, setting a band concentrically about the rim-face chills, placing dry sand between the rim-face chills and the band, setting opposing chill-plates so as to form the sides of the rim, casting the metal between the opposing chill-plates and also within the hub-exterior pattern, and then removing the chills and the hub-pattern and the sand mold, leaving the spoke-patterns attached to the castings.

6. The art of molding spoke-wheels having ribs at the inner face of the rim, which consists in setting a rim-pattern having ribs thereon and a pattern for the lower end of the hub, placing separate spokes in connection with the hub-pattern and also with the rim-pattern at the ribs, setting boss-patterns loosely on the spokes against the rim-ribs, setting companion hub-patterns, placing other spokes in connection with the rim-ribs and the hub-patterns, forming a green-sand mold between the rim-pattern and the hub-patterns, parting the rim-pattern transversely thereof and drawing the parts thereof outwardly as from its axis away from the peripheral face of the sand mold, removing the boss-patterns from the mold, and setting the mold for the outer face of the wheel-rim, substantially as described.

707,214. ART OF TREATING REBELLIOUS ORES OF THE PRECIOUS METALS. WILLIAM F. DOWN, Jersey City, N. J. Filed Nov. 27, 1901. Serial No. 83,835. (No specimens.)

Claim.—1. The process of treating ores containing precious metals and rebellious elements which consists in intimately mixing the ore with a sodium compound and an agent capable of releasing metallic sodium therefrom, heating the mixture to a temperature sufficient to release the sodium, whereby a combination of the sodium with the rebellious elements of the ore results and leaves the precious metal distributed in a free state throughout the mass, permitting the volatile impurities and compounds to escape and finally recovering the precious metal from the mass.

2. The process of treating ores containing precious metals and rebellious elements which consists in intimately mixing the ore with a sodium compound and an agent capable of releasing metallic sodium therefrom, heating the mixture to a temperature sufficient to release the sodium, whereby a combination of the sodium with the rebellious elements of the ore results and leaves the precious metal distributed in a free state throughout the mass, permitting the volatile impurities and compounds to escape, removing the non-volatile compounds formed and finally recovering the precious metal from the mass.

3. The process of treating ores containing precious metals and rebellious elements which consists in roasting the same, in intimately mixing the roasted ore with a sodium compound and an agent capable of releasing metallic sodium therefrom, heating the mixture to a temperature sufficient to release the sodium, whereby a combination of the sodium with the rebellious elements of the ore results and leaves the precious metal distributed in a free state throughout the mass, permitting the volatile impurities and compounds to escape and finally recovering the precious metal from the mass.

4. The process of treating ores containing precious metals and rebellious elements which consists in roasting the same, in intimately mixing the roasted ore with a sodium compound and an agent capable of releasing metallic sodium therefrom, heating the mixture to a temperature sufficient to release the sodium, whereby a combination of the sodium with the rebellious elements of the ore results and leaves the precious metal distributed in a free state throughout the mass, permitting the volatile impurities and compounds to escape, removing the non-volatile compounds formed and finally recovering the precious metal from the mass.

5. The process of treating ores containing precious metals and rebellious elements which consists in intimately mixing the ore with a sodium compound and carbon, heating the mixture to a temperature sufficient to release the sodium, whereby a combination of the sodium with the rebellious elements of the ore results and leaves the precious metal distributed in a free state throughout the mass, permitting the volatile impurities and compounds to escape and finally recovering the precious metal from the mass.

6. The process of extracting gold from ores containing arsenic, tellurium, sulfur or similar impurities which consists in roasting the ores; reducing the roasted mass to a finely-divided state; making the powder so formed into briquets with suitable proportions of a sodium compound and carbon; heating the briquets to a temperature sufficient to release the sodium; removing the remaining compounds of sodium and the impurities, and recovering the gold from the residue.

707,215. YARN-SPINNING APPARATUS. GEORGE O. DRAPER, Hopedale, Mass., assignor to Draper Company, Portland, Me., and Hopedale, Mass. Filed Oct. 26, 1900. Serial No. 34,421. (No model.)

Claim.—1. An annular seat having a plurality of radial recesses therein, a rotatable ring capable of axial and radial movement relatively to said seat, an overhanging lint-guard on the ring, and a stop extended through each recess in the seat to engage the ring beneath the guard and limit upward movement of the ring.

2. An annular seat having attaching ears on the exterior thereof, and a radial recess through the seat opposite each ear, a rotatable ring axially movable relatively to the seat, and having an external annular groove, a limiting-stop secured to each ear of the seat and extended through the annular recess of the ring, and a lint-guard on the latter overhanging the ring-recess.

707,216. STEAM-BOILER. HENRY A. DOE, Jr., Charleston, S. C. Filed Sept. 3, 1901. Serial No. 74,149. (No model.)

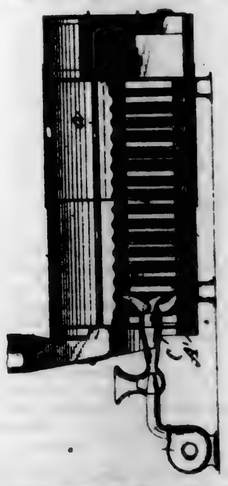

Claim.—1. The combination of an internal cylindrical furnace, an annular fire-brick chamber therein having tangentially-arranged passages for the escape of the gases, and means for introducing fuel into said chamber, substantially as and for the purpose described.

2. In a furnace, the combination of a cylindrical internally-corrugated fire-chamber, and a jet-head located within the fire-chamber through which the fuel is introduced thereto, said head causing the burning gases to gyrate in the fire-chamber, substantially as and for the purpose set forth.

3. The combination of the boiler, a cylindrical internally-corrugated furnace arranged within the same, a jet-head located within the furnace for causing the burning gases to gyrate violently within said furnace and against the walls thereof, and means for feeding fine fuel to the jet-head, substantially as set forth.

4. The combination of the boiler, a cylindrical internally and annularly corrugated furnace arranged within the same, a jet-head located within the furnace for causing the burning gases to gyrate violently within and circumferentially of said furnace and against the walls thereof, and means for feeding fine fuel to the jet-head, substantially as and for the purpose set forth.

5. In a boiler-furnace, the combination of a boiler, a cylindrical furnace therein, and a cylindrical fire-brick chamber within said furnace provided with tangentially-disposed openings for the escape of gases whereby the latter are caused to circulate circumferentially within the furnace, substantially as and for the purpose set forth.

6. The combination of a boiler, a corrugated cylindrical furnace therein, a cylindrical fire-brick chamber within said furnace provided with a series of tangentially-disposed openings for the escape of gases, whereby the latter are directed against the inner wall of the furnace and caused to circulate circumferentially within the furnace and around said fire-brick chamber, substantially as and for the purpose described.

7. In a boiler-furnace, the combination of a boiler, a cylindrical furnace therein, a cylindrical fire-brick chamber within the furnace composed of a series of annular fire-bricks having tangential gas-passages, and means for feeding fuel into said chamber, the gases jetted from said chamber being caused to gyrate in the annular space between the outer walls of said chamber and the inner wall of the furnace, substantially as described.

8. In a boiler-furnace, the combination of a boiler, an internal circumferentially-corrugated cylindrical furnace, a cylindrical fire-brick chamber within the furnace, said chamber being composed of a series of annular fire-bricks having tangential flue-passages, and provided with external lugs spacing them from the walls of the furnace, and means for feeding fuel into said chamber, the gases jetted from said chamber being caused to gyrate in the annular space between the outer walls of said chamber and the inner wall of the furnace, substantially as and for the purpose set forth.

707,217. STEAM COOKING UTENSIL. GEORGE F. EDMUNDS, Chicago, Ill., assignor of one-half to Guy R. Ainsworth, Wilmette, Ill. Filed Oct. 31, 1901. Serial No. 80,800. (No model.)

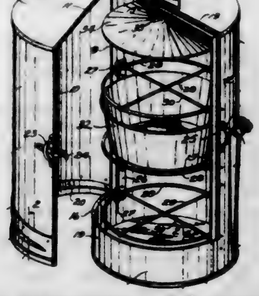

Claim.—1. In a steam cooking utensil, the combination of a tank, a semicylindrical casing formed therewith and provided with a top, a door of semicylindrical form hinged to said casing, and provided at its upper end with a top, and at its lower end with a hood extending inwardly over the tank, an extension secured to the door and arranged to close the space between the door and the tank, said extension being deflected inwardly so as to rest upon said tank when the door is closed, substantially as described.

2. In a steam cooking utensil, the combination of a tank, a semicylindrical casing formed therewith and provided with a top, a door of semicylindrical form hinged to said casing and provided at its upper end with a top, and at its lower end with a hood extending inwardly over the tank, socket-strips secured to the inner face of the casing, circular shelves supported by said socket-strips and arranged one above the other for supporting the pans, and a canopy suspended from the top of the cylindrical casing to gather condensed moisture and conduct the same to the side walls of the casing and door, substantially as described.

707,218. GATE. HANS P. HANSEN, Thor, Iowa. Filed May 28, 1902. Serial No. 108,713. (No model.)

Claim.—1. The combination of a swinging gate having a latch, operating ropes or cables connected with the gate, slidable blocks capable of upward and downward movement and located at opposite sides of the gate, supplemental latches movably mounted on the blocks, and means for connecting the supplemental latches with the operating ropes or cables, substantially as described.

2. The combination of a swinging gate having a latch, slidable blocks located at opposite sides of the gate and capable of upward and downward movement, supplemental latches movably mounted on the blocks, and operating mechanism connected with the gate and with the latches, substantially as described.

3. The combination of a swinging gate having a latch, slidable blocks mounted at opposite sides of the gate, supplemental latches carried by the blocks, and operating mechanism connected with the gate and with the latches, substantially as described.

4. The combination of a swinging gate, inclined bars located at opposite sides of the gate, blocks slidably mounted on the inclined bars and capable of upward and downward movement, supplemental latches pivotally mounted on the blocks and arranged to swing horizontally, and operating mechanism connected with the gate and with the latches, substantially as described.

5. The combination of a swinging gate having a latch, a hinge-post, a horizontal bar extending from the hinge-post, inclined braces supporting the horizontal bar and provided with slots, blocks slidably mounted in the slots, supplemental latches mounted on the blocks and carried by the same, operating ropes or cables secured at the back of the gate and connected with the same and with the latch of the gate, said ropes or cables having their outer portions supported by the horizontal bar, and means for connecting the supplemental latches with the operating ropes or cables, substantially as described.

6. The combination of a swinging gate, blocks slidably mounted at opposite sides of the gate, supplemental latches mounted on the blocks, inclined rods connected with the supplemental latches, links supporting the rods, and operating mechanism connected with the gate and with the rods, substantially as described.

707,219. GLUING-MACHINE. Willis F. Efferson, Ladoga, Ind. Filed Nov. 19, 1901. Serial No. 82,881. (No model.)

Claim.—1. The combination, in a gluing-machine, of a suitable receptacle for the glue, and a gluing-wheel mounted to revolve in said receptacle and composed of disks, one of which is of slightly-greater diameter than the others and has a serrated edge, the points or teeth whereof are adapted to engage with the article being glued as the same passes over the wheel, whereby the surfaces are caused to move in unison, the periphery of said wheel being otherwise free of parts extending above its bearing-face, all substantially as set forth.

2. The combination, in a gluing-machine, of a suitable receptacle for the glue, and a gluing-wheel mounted to revolve in said receptacle and composed of three disks, the two side disks having circumferential grooves in their periphery but being otherwise smooth, and the central disk being of somewhat greater diameter than the side disks and having a serrated edge the points or teeth whereof are adapted to engage with the article being glued as the same passes over the wheel, whereby the surfaces are caused to move in unison, while a suitable supply of glue is distributed over said article on both sides of the point where they engage.

707,220. FEEDING ATTACHMENT FOR TYPE-WRITING MACHINES. Matthew S. Sylan, New York, N. Y., assignor to Elliott & Hatch Book Typewriter Company, a Corporation of New York. Filed Nov. 18, 1901. Serial No. 82,421. (No model.)

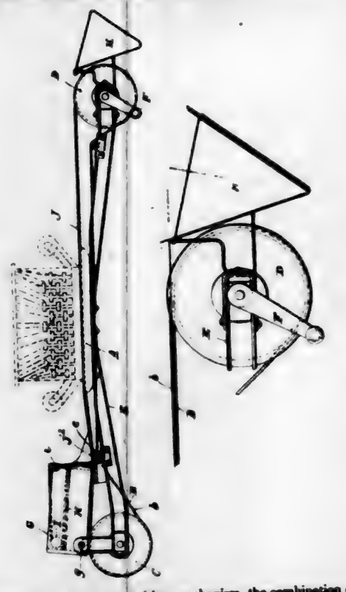

Claim.—1. In a type-writing mechanism, the combination of a flat bed or platen, a writing mechanism located thereover, acting in a downward direction, an endless carrier-belt extending over and bearing upon the surface of the platen and returned thereunder, a manual device for advancing said belt intermittingly at will, a magazine arranged to deliver cards automatically to the belt at one end, and a holder arranged to receive the cards from the belt at the opposite end.

2. In a type-writing machine, the combination of a flat bed or platen, a downwardly-acting writing mechanism located thereover, an endless belt extending across the surface of the platen beneath the writing mechanism and returned beneath the platen, a supplemental frame and rolls to sustain the said belt, and means for imparting an intermitting movement thereto at will.

3. A portable card-feeding attachment for a flat-bed type-writer, comprising the frame E, rolls sustained in the ends of said frame, one of them provided with a manual operating device, an endless apron extended around said rolls, a magazine for cards mounted upon the frame over one end of the belt, and a card-receiver attached to the frame at the opposite end of the belt.

4. In a type-writing machine, the combination of the flat bed or platen, the downwardly-acting writing mechanism located thereover, the endless feed-apron extending over the surface of the platen, the hinged graduating mechanism G resting upon the belt, and a follower I therein, substantially as described and shown.

5. In a card-feeding attachment for type-writing machine, an endless apron B to deliver the cards, and a retaining-drum D for said apron, in combination with a V-shaped receiver arranged adjacent to the drum and below the upper surface of the belt, substantially as described, whereby each incoming card is adapted to tip backward in the receiver the preceding card.

6. In a type-writing machine and in combination with a downwardly-acting mechanism, a flat bed or platen thereunder, a carrier-apron mounted to travel upon and around the platen, a magazine mounted over one end of the apron and arranged to deliver the cards thereto, guides to determine the course of the cards as they are advanced by the apron, and an overlying pressure device acting on the edge of the cards to hold them flatly upon the apron.

707,221. MACHINE FOR BENDING SCYTHE-SNATHS. Orson M. Fish, Charlotte, Mich. Filed Mar. 18, 1902. Serial No. 98,332. (No model.)

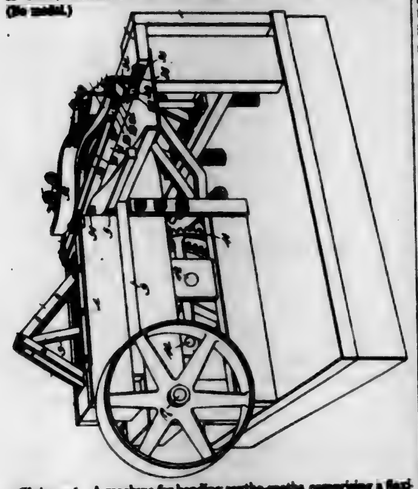

Claim.—1. A machine for bending scythe-snaths, comprising a flexible jacket for inclosing opposite sides of the blank, means for imparting the horizontal bends to the blank, means for imparting progressive end pressure to the blank while the said bends are being formed, and means for imparting the vertical bends to the blank.

2. A machine for bending scythe-snaths, comprising a flexible jacket for inclosing opposite sides of the blank, means coacting therewith to impart the horizontal bends to the blank, mechanism operated by the said means for imparting end pressure to the blank while the said bends are being formed, and means for imparting vertical bends to the blank.

3. In a machine for bending scythe-snaths, the combination of means for imparting the horizontal bends to the blank, a flexible jacket for inclosing opposite sides of the blank, means coacting with the jacket to impart end pressure to the blank, and means for forcing the blank from the jacket and for imparting the vertical bends thereto.

4. In a machine for bending scythe-snaths, the combination of means for imparting the horizontal bends to a snath-blank, an adjustable flexible jacket for inclosing the opposite sides of the blank, mechanism actuated by the said means for imparting progressive end pressure to the blank, and means for forcing the blank from the jacket and for imparting the vertical bends thereto.

5. A machine for bending scythe-snaths, comprising means for imparting the horizontal bends to the snath-blank, a jacket for inclosing the opposite sides of the blank and to be flexed by the said means, and vertically-movable means for forcing the blank from the jacket and for imparting the vertical bends thereto.

6. A machine for bending scythe-snaths, comprising an adjustable flexible jacket for inclosing opposite sides of the blank, means coacting with the jacket to impart horizontal bends to the blank, and mechanism operated by the said means for imparting end pressure to the blank while the said bends are being formed.

7. A machine for bending scythe-snaths comprising a flexible jacket for receiving the blank, a plunger for imparting the horizontal bends to the blank, means for imparting progressive end pressure to the blank while the said bends are being formed, and means for imparting the vertical bends to the blank.

8. A machine for bending scythe-snaths comprising a flexible jacket for receiving a blank, a plunger coacting therewith to impart the horizontal bends to the blank, means operated by the plunger for imparting end pressure to the blank while the said bends are being formed, and means for imparting the vertical bends to the blank.

9. A machine for bending scythe-snaths comprising a flexible jacket for inclosing opposite sides of the blank, a plunger coacting therewith to impart the horizontal bends to the blank, and means operated by the plunger for imparting end pressure to the blank while the said bends are being formed.

10. In a machine for bending scythe-snaths, the combination of a movable plunger for imparting the horizontal bends to a snath-blank, a flexible jacket to receive the blank, means coacting with the jacket to impart end pressure to the blank, and means for forcing the blank from the jacket and for imparting the vertical bends thereto.

11. In a machine for bending scythe-snaths, the combination of a plunger for imparting the horizontal bends to a snath-blank, an adjustable flexible jacket to receive the blank, means actuated by the plunger for imparting progressive end pressure to the blank, and means for forcing the blank from the jacket and for imparting the vertical bends thereto.

12. A machine for bending scythe-snaths comprising a plunger for imparting the horizontal bends to a snath-blank, a jacket to receive the blank and to be flexed by the plunger, and a vertically-movable plunger for forcing the blank from the jacket and for imparting the vertical bends thereto.

13. In a machine for bending scythe-snaths, a plunger for imparting the horizontal bends to a snath-blank, a toggle-lever associated with the plunger, continuously-operating driving mechanism operatively connected with the lever, a jacket to receive a snath-blank, a vertically-movable plunger for imparting the vertical bends to the snath-blank, and intermittently-operating mechanism connecting the latter plunger with the said driving mechanism.

14. In a machine for bending scythe-snaths, a plunger for imparting the horizontal bends to a snath-blank, continuously-operating mechanism associated therewith for imparting reciprocatory movements thereto, a blank-receiving jacket coacting with the plunger, a vertically-reciprocatory plunger for imparting the vertical bends to the blank, and intermittently-operating mechanism connecting the latter plunger with the said continuously-operating mechanism.

15. In a machine for bending scythe-snaths, a plunger for imparting the horizontal bends to a snath-blank, a jacket to receive the blank, means coacting with the jacket for imparting end pressure to the blank, a former for imparting the vertical bends to the blank and for forcing it from the jacket, means disposed in the path of travel of the jacket and actuated by the forward movement of the plunger to operate the end-pressure-imparting means, and means connecting the end-pressure-imparting means and the plunger whereby upon rearward movement of the latter to return the pressure-imparting means to its normal position.

16. In a machine for bending scythe-snaths, the combination with a flexible jacket for inclosing opposite sides of a snath-blank, of means coacting with the jacket for imparting end pressure to a contained blank.

17. In a machine for bending scythe-snaths, the combination with a flexible jacket for inclosing opposite sides of a snath-blank and having its members adjustable, of adjustable means coacting with the jacket for imparting end pressure to a contained blank.

18. In a machine for bending scythe-snaths, the combination of a horizontally-movable plunger, a flexible blank-receiving jacket disposed in advance thereof, means actuated by the plunger for imparting end pressure to the contained blank, a stationary head, a vertically-movable plunger for imparting the vertical bends to the snath-blank and for forcing it from the jacket, and a form disposed below the latter plunger to receive the blank as it is forced from the jacket.

19. A machine for bending scythe-snaths embodying in its construction, a stationary head or die, the operative face of which contains all of the horizontal bends of a scythe-snath, a movable former or plunger, the operative face of which also contains all of the said bends, a vertically-reciprocatory former, the operative face of which contains all of the vertical bends of the snath, and a removable frame or form, the bottom of which contains all of the vertical bends and its sides all of the horizontal bends of the snath.

20. A machine for bending scythe-snaths embodying in its construction a blank-receiving jacket, means coacting therewith to impart end pressure to the snath-blank, a stationary head or die, the operative face of which contains all of the horizontal bends of the snath, a movable former or plunger, the operative face of which also contains all of the said bends, a vertically-reciprocatory former, the operative face of which contains all of the vertical bends of the snath, and a removable frame or form, the bottom of which contains all of the vertical bends and its sides all of the horizontal bends of the snath.

21. In a machine for bending scythe-snaths, means for imparting

the horizontal bends to the snath-blank, continuously-operating mechanism associated with said means for imparting reciprocatory movements thereto, a blank-receiving jacket coacting with the bending means, vertically-reciprocatory means for imparting the vertical bends to the blank, and intermittently-operating mechanism connecting the latter means with the continuously-operating mechanism.

22. In a machine for bending scythe-snaths, the combination with reciprocatory belly-bend-forming means and a flexible jacket for inclosing opposite sides of a snath, of end-pressure-applying mechanism, and a head connected with the said mechanism and disposed within the range of flexure of the said jacket.

23. In a machine for bending scythe-snaths, the combination with reciprocatory belly-bend-forming means and a flexible jacket for inclosing opposite sides of a snath-blank, of end-pressure-applying mechanism, and a head adjustably connected with the said mechanism, and disposed within the range of flexure of the said jacket.

24. In a machine for bending scythe-snaths, the combination with a reciprocatory belly-bend-forming member provided with a slot, and a flexible jacket for inclosing opposite sides of a snath-blank, of end-pressure-applying mechanism, a head adjustably connected with the said mechanism and disposed within the range of flexure of the said jacket to close the said mechanism on the forward movement of the said member, and a bar having one end connected with the said mechanism and its other end disposed within the slot of the said member and operating on the backward movement thereof to open the end-pressure-applying mechanism.

25. In a machine for bending scythe-snaths, the combination with the belly-bend-forming means, of end-pressure-exerting mechanism comprising pivoted levers having their forward terminals formed to constitute abutments to engage the ends of the snath-blanks, and their rear terminals slotted, and a bar having one terminal disposed within the slotted ends of the levers and its other terminal operatively associated with the belly-bend forming means.

26. In a machine for bending scythe-snaths, the combination of a stationary head and a movable plunger each having its operative face containing all of the horizontal bends of a scythe-snath, of a vertical plunger having its under face containing all of the vertical bends of a snath.

27. In a machine for bending scythe-snaths, the combination of a stationary die and a horizontally-reciprocatory plunger, each having its operative face provided with all of the horizontal bends of a scythe-snath, of a vertically-reciprocatory plunger having its under face provided with all of the vertical bends of the snath, and a removable form or frame disposed below the latter plunger, the bottom of the form having all of the vertical bends and its sides all of the horizontal bends of a snath.

28. In a machine for bending scythe-snaths, the combination with the belly-bend-forming means, of end-pressure-exerting mechanism actuated by the said means, and a flexible jacket associated with the said mechanism for inclosing opposite sides of a snath-blank.

29. In a machine for bending scythe-snaths, the combination with the belly-bend-forming means, of end-pressure-exerting mechanism actuated by the said means, and a two-membered flexible blank-receiving jacket associated with the said mechanism, one terminal of one of the members of the jacket having a slide-bearing associated therewith.

30. In a machine for bending scythe-snaths, belly-bend-forming means having toggle mechanism associated therewith, vertical-bend-forming means having toggle mechanism associated therewith, positively-driven master-wheels operatively connected with the toggle mechanism of the belly-bend-forming means, said wheels being connected by a wrist-pin, a bar having one end connected with the toggle mechanism of the vertical-bend-forming means, and its opposite end provided with a nose disposed in the path of movement of the wrist-pin, means for supporting the latter end of the bar in operative position with relation to the wrist-pin, and a lever fulcrumed to the frame of the machine and having one terminal operatively connected with the bar and its other terminal disposed in the path of movement of the belly-bend-forming means.

31. In a machine for bending scythe-snaths, belly-bend-forming means having toggle mechanism associated therewith, vertical-bend-forming means having toggle mechanism associated therewith, positively-driven master-wheels operatively connected with the first-named toggle mechanism, said wheels being connected by a wrist-pin, springs coacting with the second-named toggle mechanism and operating normally to hold the vertical-bend-forming means normally raised, a bar having one end connected with the toggle mechanism of the vertical-bend-forming means and its opposite end provided with a nose disposed in the path of movement of the wrist-pin, means for supporting the latter end of the bar in operative position with relation to the wrist-pin, and a lever fulcrumed on the frame of the machine and having one terminal operatively connected with the bar and its other terminal disposed in the path of movement of the belly-bend-forming means.

707,222. AUTOMATIC LINE-CATCH FOR TROLLEY-WIRES.

GEORGE R. FLOYD, Cincinnati, Ohio. Filed Dec. 31, 1901. Serial No. 87,890. (No model.)

Claim.—1. In combination with a trolley-wire an automatic safety device consisting of a supplemental wire or rod, connected to the trolley-wire at opposite sides of and beyond a point of probable breakage, by suitable holding-ears, said wire having a limited longitudinal movement in said ears.

2. In combination with a trolley-wire having holding-ears fixed to it at opposite sides of and beyond a point of probable breakage, an automatic safety device consisting of a supplemental wire or rod connected to said ears, the ends of said wire or rod having a limited longitudinal movement in said ears.

3. In combination with a trolley-wire and holding-ears thereon at opposite sides of and beyond a point of probable breakage, an automatic safety device consisting of a supplemental wire or rod leading from a fixed point and connected to the ears and having a limited longitudinal movement therein.

707,223. RAZOR. CHARLES FREITAG, Brooklyn, N. Y. Filed Jan. 11, 1902. Serial No. 89,263. (No model.)

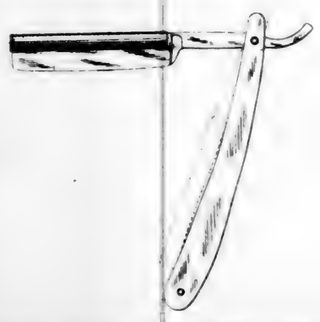

Claim.—A removable gage for razor-blades, consisting of a hollow thin sheet-metal cylinder slotted longitudinally for the reception of the back of the blade, the free edges of the cylinder being folded to present an increased frictional bearing-surface upon the blade, to hold the gage firmly in place and prevent the cylindrical body from rocking on the blade, as set forth.

707,224. PROCESS OF PRESERVING WOOD. TOMASO GIUSSANI, Milan, Italy. Filed June 26, 1901. Serial No. 66,154. (No specimens.)

Claim.—1. The process for preserving wood, consisting in first immersing the wood in a mixture of anthracene and pitch, heated to a temperature over 100° centigrade whereby the water contained in the pores of the wood is vaporized and a layer of the mixture is deposited upon the surface of the wood and then in immersing the wood in a second cold bath whereby the surface layer remaining from the first bath is made to penetrate the surface of the wood and thereby form a dense protecting-layer, substantially as described.

2. The process for preserving wood, consisting in first immersing the wood in a mixture of anthracene and pitch heated to a temperature over 100° centigrade, whereby the water contained in the pores of the wood is vaporized, and then in immersing the wood in a second bath consisting of two liquids of different densities and incapable of being mixed mechanically whereby the latter liquids penetrate the wood and become mixed with the material of the first bath, within the pores of the wood and form a dense protecting-layer, substantially as described.

3. The process for preserving wood, consisting in first immersing the wood in a mixture of anthracene and pitch heated to a temperature over 100° centigrade whereby the water contained in the pores of the wood is vaporized, and then immersing the wood in a second bath consisting of layers of a solution of chlorid of zinc and creosote whereby the latter liquids penetrate the wood and become mixed with the material of the first bath within the pores of the wood and form a dense protecting-layer, substantially as described.

707,225. EXTENSION-FITTING FOR LEVELING-RODS. GEO S. GOODALE, Houghton, Mich. Filed Dec. 9, 1901. Serial No. 85,375 (No model.)

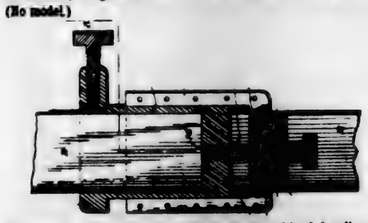

Claim.—1. The combination with the front and back leveling-rods; of a casing fixed to the front rod and through which the back rod slides, a collar slidably mounted upon the back rod above said casing, a frame sliding in the casing and fixed to the collar, a fastening carried by the collar for locking it in adjusted position on the back rod, and a screw swiveled to the base of the casing and working in said frame for setting the rod to exact adjustment after the collar has been locked thereto, substantially as set forth.

2. The combination with the front and back leveling-rods; of a casing fixed to the front rod and through which the back rod slides, a collar mounted to slide upon the back rod above the casing, a frame sliding in the casing and to which the collar is connected, means for locking the collar in adjusted position, a screw swiveled to the bottom of the casing and operatively connected to said frame for setting the rod to exact adjustment after the collar has been locked thereto, and means upon the casing for locking said screw in adjusted position, substantially in the manner set forth.

3. The combination with the front and back leveling-rods; of a casing fixed to the front rod and through which the back rod slides, a collar slidably mounted upon the back rod above said casing, a frame sliding in the casing and fixed to the collar, a fastening carried by the collar for locking it in adjusted position on the back rod, an adjusting-screw connecting the casing and sliding frame for adjusting the sliding frame, said screw having a collar swiveled in an aperture in the bottom of the casing, a plate closing said aperture, and means upon said plate for locking the screw in adjusted position, substantially as set forth.

707,226. ELECTRIC BLOCK SYSTEM FOR RAILWAY-TRAINS. JAMES T. HARDAY, New York, N. Y. Filed Mar. 15, 1902. Serial No. 98,405. (No model.)

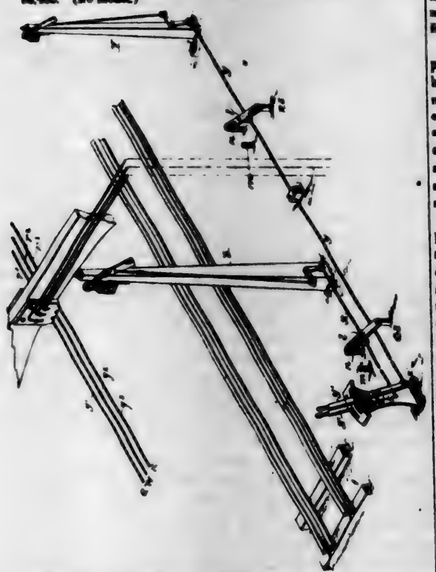

Claim.—1. In an electric block-signal system for railway-trains, a normally open signal-circuit completed through contacts on the locomotive whenever and so long as the latter is on the block, and having branch circuit connections including the one a safety-signal and the other a caution or danger signal, both of which are on the locomotive and in convenient proximity to the engineer, and means controlled from the tower or cabin appropriate to the block for completing the circuit through either one of said signals to the exclusion of the other.

2. In an electric block-signal system for railway-trains, a normally open signal-circuit completed through contacts on the locomotive whenever and so long as the latter is on the block, and having branches including the one a safety-signal and the other a caution or danger signal, both of which are on the locomotive and in convenient proximity to the engineer, a track-signal or semaphore, an electrical switch and connections between the same and the track-signal whereby the electrical switch shall be thrown to complete the circuit through that branch which includes the safety or the caution or danger signal on the locomotive according as the track-signal is brought to safety or danger substantially as hereinbefore set forth.

3. An electrical block-signal system in which the block is subdivided into caution and danger sections each having a signal-circuit electrically independent of the other, each circuit being normally open and completed through contacts on the locomotive whenever and so long as the latter is on the block-section to which the circuit pertains, and having branches including the one a safety-signal and the other a caution or a danger signal as the case may be, all of said signals being on the locomotive, in combination with means controlled from the tower or cabin appropriate to the block for completing either circuit at will through either one of its branches substantially as and for the purposes hereinbefore set forth.

707,227. CHAIN-STITCH SEWING-MACHINE. HENRY J. HANCOCK, New York, N. Y., assignor of one-half to William S. Jessup, New York, N. Y. Filed Dec. 4, 1901. Serial No. 84,606. (No model.)

Claim.—1. A chain-stitch sewing-machine comprising a frame, a crank-shaft provided at one end with a crank, means to rotate said shaft, two needle-bars carrying needles mounted on said crank, a cam-lever positively operated by said crank and controlling one of said needle-bars, a cloth-plate, and a presser-foot provided with a slot adapted to carry one needle back, or at one side of the other in its descent, and to hold the needles parallel during the descent of the other needle, for the purpose set forth.

2. A chain-stitch sewing-machine comprising a frame, a crank-shaft provided at one end with a crank, means to rotate said shaft, two needle-bars carrying needles mounted on said crank, a cam-lever pivotally connected with the frame above said shaft and provided with a slot, said crank being provided with a projection in engagement with the walls of said slot in the cam-lever, said cam-lever being in engagement with one of said needle-bars, a cloth-plate, and a presser provided with a slot adapted to carry one needle back, or at one side of the other in its descent, and to hold the needles parallel during the descent of the other needle, as and for the purpose set forth.

3. A chain-stitch sewing-machine comprising a frame, a crank-shaft provided with a crank and means to rotate said shaft, a cross-bar fixed on said crank, a needle-bar pivotally mounted on said crank, a second needle bar pivotally mounted on the free end of said cross-bar and carrying an eye-pointed needle, a presser-foot provided with a slot adapted to carry the respective needle back of the eye-pointed needle during its descent and to hold the needles parallel during the descent of the eye-pointed needle, a cam-lever mounted on the frame and provided with a cam-slot and a stud engaging a slot in one of said needle-bars, and a shoulder on said crank adapted to engage said cam-lever to positively control said needle-bars, as and for the purpose set forth.

4. A chain-stitch sewing-machine comprising a frame, a crank-shaft provided with a crank having a shoulder, two needle-bars mounted on said crank, a cam-lever adapted to positively control said needle-bars, a presser-foot provided with a slot adapted to control the movement of the needles during a portion of their movement, a lever pivoted on the frame, a cloth-plate mounted thereon, and a cam-lever provided with serrations or teeth adapted to engage said last-named lever, as and for the purpose set forth.

707,228. SUPPORT FOR SUSPENDED-CABLE-TRACK ROADS. HENRY M. HARDING, New York, N. Y. Filed Dec. 22, 1899. Serial No. 741,228. (No model.)

Claim.—1. In combination with a suspended stationary wire-cable trackway, for a suspended car or truck, of a bracket, the end portions of which are constructed of elastic material making them flexible, substantially as described, and for the purpose set forth.

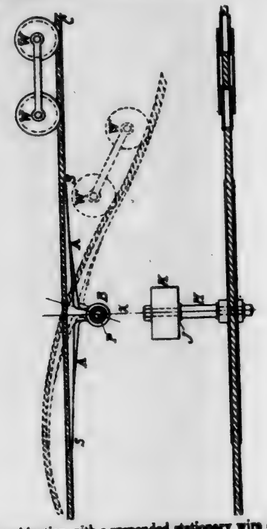

2. In combination with a suspended stationary wire cable for a suspended car or truck of a bracket, being both flexible and pivoted, substantially as described.

707,229. **SECTIONAL HEATING-BOILER.** ELBERT O HASKINS, Rutherford, N. J. Filed Nov. 1, 1901. Serial No. 80,795. (No model.)

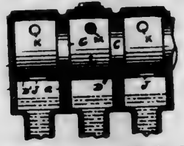

Claim.—In a heating-boiler, the combination with a series of sections provided with openings in their faces for establishing communication with adjacent sections, push-nipples inserted in said openings and a partition within each section, forming a compartment around said openings and push-nipples, and extending from one wall to the other of said section, and made integral therewith, this partition having an opening for establishing communication between the compartment formed by said partition and the interior of the section within which said compartment is formed, said sections each having an opening in the edge wall adjacent to the opening in said partition, substantially as set forth.

707,230. **AUTOMOBILE.** JOHN C. HENRY, Denver, Colo.; Susie A. Henry, executrix of said John C. Henry, deceased, assignor to Stanley Electric Manufacturing Company, a Corporation of New Jersey. Filed Apr. 1, 1901. Serial No. 53,996. (No model.)

Claim.—1. In combination with an electric motor and a pressure-operated motor, a planetary gear intermediate and connected to said motors, and to a device to be driven, and clutch devices arranged so that any one of said motors may be held stationary for the purpose set forth.

2. In a motor-vehicle, the combination of a planetary gear connected to drive the vehicle, a fluid-pressure motor and an electric motor connected respectively to different parts of said gear all arranged so that either of said motors may drive the vehicle independently.

3. In a motor-vehicle, the combination of a planetary gear connected to drive the vehicle, a fluid-pressure motor and an electric motor connected respectively to different parts of said gear, and clutching means for arresting either of said gear parts all arranged so that either or both of said motors may drive the vehicle.

4. The combination of an electric motor and an engine, a planetary gear connecting said parts to one another and to a device to be driven, means for clutching either one of these parts so as to arrest either of the motors or the driven part, and a storage battery connected to the motor so as to be charged by the same as a dynamo, when the driven part is arrested.

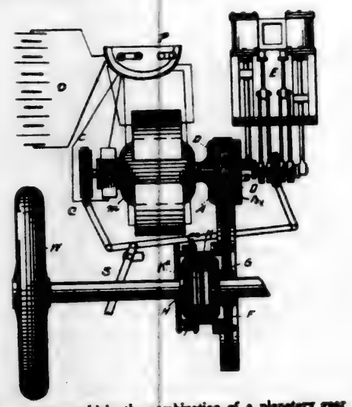

5. In a motor-vehicle, the combination of a planetary gear connected to drive the vehicle, an electric motor, and a pressure-engine connected with different parts of said gear, clutches adapted to arrest either of said gear parts, means for arresting the motion of the vehicle, and a storage battery connected with the electric motor, whereby the vehicle may be driven from either or both of said motors, or on arresting the vehicle, the pressure-engine may be caused to drive the electric motor as a dynamo to charge the battery.

6. In a motor-vehicle, an engine and a motor, a planetary gear having a central pinion keyed to the armature-shaft of the motor, the planetary pinions and a part carrying same and connected to the engine, an internal gear, engaging said planetary, gear to which the vehicle-driving mechanism is connected, and clutches arranged to arrest the movement of the central pinion, planetary gear or the driving-gear of the vehicle.

707,231. **PROCESS OF MANUFACTURING ARTIFICIAL FUEL.** EDWARD J. HOFFMAN, Chicago, Ill., assignor of one-half to Charles W. ADAMS, Chicago, Ill. Filed Nov. 29, 1901. Serial No. 84,116. (No specimens.)

Claim.—1. The process, substantially as described, of manufacturing artificial fuel, consisting in combining hydrocarbon oil with caustic soda and non-siliceous, non-kaoliferous earth in about the proportions specified, agitating the mixture and subjecting the same to moderate heat until a complete chemical combination is effected between the oil and alkali, and a complete admixture is effected with said earthy absorbent.

2. The process, substantially as described, of manufacturing artificial fuel, consisting in mixing hydrocarbon oil with a sufficient proportion of alkaline salt to produce complete concretion of all the oil and a sufficient quantity of non-siliceous, non-kaoliferous earth to fully absorb the oleaginous mixture, heating and agitating the ingredients until complete concretion and admixture results, and finally compressing the same in molds.

3. The process, substantially as described, of manufacturing artificial fuel, consisting in mixing hydrocarbon oil, caustic soda and an earthy absorbent, in the proportion by weight of about eight parts of oil, one part of soda, and two hundred and fifty parts of non-siliceous, non-kaoliferous earth, and heating and agitating the ingredients until a complete chemical reaction is effected between the oil and soda, and a thorough admixture is made with the earthy absorbent.

4. The process, substantially as described, of manufacturing artificial fuel, consisting in mixing hydrocarbon oil, caustic soda and vegetable loam in the proportion by weight of about eight parts of oil, one part of soda, and two hundred and fifty parts of loam, heating the mixture to from about 180° to about 212° Fahrenheit, and agitating the same until complete concretion results.

5. As an improved article of manufacture, an artificial fuel consisting of hydrocarbon oil and caustic soda chemically combined and mechanically mixed with an absorbent material in about the proportions specified.

6. As an improved article of manufacture, an artificial fuel compressed in the form of briquets molded from a compound consisting of hydrocarbon oil and caustic-soda salt chemically combined with each other and mechanically mixed with an absorbent material in about the proportions specified.

707,232. **FRICTION-BRAKE.** HENRY A. HOUSE, Jr., Hampstead, England. Filed Feb. 25, 1902. Serial No. 95,696. (No model.)

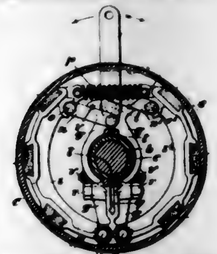

Claim.—In combination, a cylinder *c*, a fixing secured to the axle and extending above and below the said axle, a pair of brake-levers pivoted to the lower end of the fixing and extending thence upwardly and in proximity to the inner face of the cylinder, an operating-lever pivoted to the upper end of the fixing, links connecting the operating-lever above and below its pivot with the free ends of the brake-levers and a spring between the free ends of the brake-levers, substantially as described.

707,233. **SCREW-CUTTING DIE.** CHARLES J. JACKSON, Erie, Pa., assignor, by mesne assignments, to Reuben G. Wright, Westfield, N. Y. Filed Oct. 5, 1900. Serial No. 32,112. (No model.)

Claim.—In a screw-cutting die, the combination of the cast die-plate A having depressions and shoulders, and the chasers B cast therein having their cutting-faces arranged next to the depressions and the opposite faces against the shoulders.

707,234. **HOLDER.** HARVEY P. JOHNS, Chicago, Ill. Filed Apr. 17, 1902. Serial No. 103,371. (No model.)

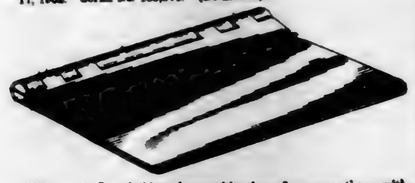

Claim.—1. In a holder, the combination of cover-sections, with a pintle comprising a spring connected with one of said covers, and pintle-sections attached to the ends of said spring and connected with the opposite cover.

2. In a holder, the combination of cover-sections, with a pintle comprising a spring with reverse-wound spiral coils attached at its central portion to one of said covers, pintle-sections attached to the ends of said spring and connected with the opposite cover.

3. In a holder, the combination of cover-sections, with a pintle comprising a spring with reverse-wound spiral coils provided at its central portion with a loop to secure said spring to one of said cover-sections and lateral straight extensions, and pintle-sections having longitudinal grooves, said grooves serving to receive said extensions, said pintle-sections being connected with the opposite cover.

4. In a holder, the combination of cover-sections having annular projections, said projections having thereon opposed shoulders or offsets, and a pintle comprising a spring with reverse-wound coils connected with one of said cover-sections and pintle-sections attached to said spring, said pintle-sections being connected with the other one of said cover-sections.

5. In a holder, the combination of cover-sections, with a pintle composed of a spring with reverse-wound coils attached at its central portion to one of said covers and pintle-sections attached to said spring extending approximately to the edge of said covers, means for turning the pintle-sections and means for securing the pintle-sections to the opposite cover when the spring is adjusted.

6. In a holder, the combination of cover-sections provided with pintle-receiving perforations, with a pintle composed of a torsion-spring connected with one of said sections at the pintle, a pintle-section connected with said spring and serving to produce tension in the spring, and means for securing said pintle-section while under stress to the other cover-section, substantially as described.

707,285. **MOP-WRINGER.** JOHN VON KAHL, Akron, Ohio. Filed July 3, 1901. Serial No. 67,013. (No model.)

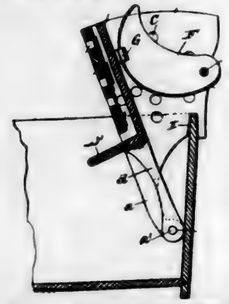

Claim.—1. In a mop-wringer, a perforated box portion, an imperforate presser portion pivoted to said box portion, a water-guide fixed to said presser portion, and a cam adapted to reciprocate said presser portion, substantially as shown and described.

2. In a mop-wringer, a box portion, a presser portion pivoted thereto, a water-guide secured to said presser portion, a cam adapted to oscillate said presser portion, a flaring edge on said cam, and a dovetail slot on said presser portion to receive the flaring edge on the cam, substantially as shown and described.

3. In a mop-wringer, a perforated box portion, an imperforate presser portion pivoted thereto, a water-guide secured to said presser portion, a cam to oscillate said presser portion, a flaring edge on said cam, and a dovetail slot on said presser portion to receive the flaring edge on the cam, substantially as shown and described.

4. In a mop-wringer, a perforated box portion, a rock-shaft journaled therein, a presser-board pivoted in said box portion, a water-guide on the lower edge of said presser-board, a cam keyed to said rock-shaft having a flaring edge, and a dovetail slot on the back of said presser-board to receive the flaring edge on the cam, substantially as shown and described.

707,286. **INDICATING MECHANISM FOR POST-OFFICE BOXES.** THOMAS F. KELLY, Adair, Iowa. Filed Nov. 27, 1901. Serial No. 83,873. (No model.)

Claim.—1. The combination with a plurality of mail-boxes or pigeonholes, of an indicating-arm pivotally mounted in connection with each box, means for simultaneously swinging all of said arms into indicating position and means for severally restoring them to initial position, substantially as described.

2. The combination of a plurality of pigeonholes or compartments, of an indicator movably mounted in connection with each compartment, and a movable piece or member for moving each indicator, means for simultaneously operating all of said pieces in one direction, and means for severally moving them in the opposite direction.

3. The combination with a plurality of pigeonholes or compartments, of a plurality of pivoted indicating-arms, one for each pigeonhole, a rocking piece in connection with each arm, means for simultaneously rocking

all the said pieces in one direction, and means for severally rocking them in the opposite direction, substantially as described.

4. The combination with a plurality of pigeonholes or compartments, of pivoted indicating-arms mounted in connection with each compartment, a rocking piece adapted to operate each indicating-arm, a sliding rod for rocking said pieces in one direction, and means whereby said pieces may be severally rocked in the opposite direction, substantially as described.

5. The combination with a plurality of pigeonholes or compartments, of a plurality of indicating-arms pivotally mounted in connection with said boxes, a rocking piece pivoted in proximity to each arm and having a projection designed to abut against the indicating-arm, a sliding rod passing in proximity to the said rocking pieces, means whereby the movement of the rod in one direction engages and rocks said pieces, and a key for severally rocking said pieces in the opposite direction, substantially as described.

707,287. UMBRELLA-RUNNER. WILLIAM W. KENNEY and JOHN W. FOSLER, New London, Conn. Filed Oct. 3, 1901. Serial No. 77,423. (No model.)

Claim.—1. In an umbrella, in combination with ball-end ribs, a tube with split ends turned back to form sockets for said ribs, a retaining-washer mounted upon said tube, and means consisting of projections c^3, as herein set forth, for locking the said washer in its operative position.

2. In an umbrella, the combination of the ribs, the tubes having the long and short split ends forming sockets for the ribs, and the washers having recesses to receive the ends of the long ends, said ends locking the washers in place.

3. In an umbrella, the combination of the ribs, the tubes having the long and short split ends turned under to form sockets for said ribs, and said long ends having their terminals turned under, and a washer secured by said long ends.

707,288. ANTISLIPPING FOOT FOR LADDERS OR THE LIKE. ALBERT KERR, St. Louis, Mo. Filed Nov. 14, 1901. Serial No. 82,187. (No model.)

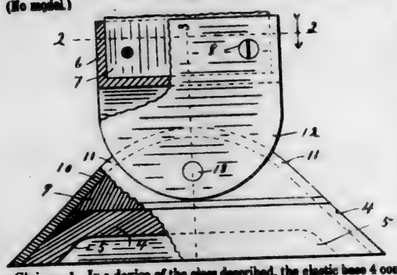

Claim.—1. In a device of the class described, the elastic base 4 composed of vulcanized rubber and having the recess 5 in its lower face, the socket 6 adapted to receive the lower end of the ladder-post, the metal ear 9 placed on top of the elastic base, and the strap 10 holding the ear 9 in position, said ear 9 being pivoted to the socket 6.

2. In a device of the class described, an elastic base having a smooth lower contacting surface, and having a recess centrally located in said lower surface, a metal ear secured to said elastic base by means of a strap, and a socket pivoted to said ear.

3. In a device of the class described, an elastic base 4 composed of vulcanized rubber, and having a smooth lower face, and having the recess 5 centrally located in said lower face, the socket 6 adapted to receive the lower end of the ladder-post, the metal ear 9 placed on top of the elastic base, the strap 10 securing said ear in position, said strap passing above the ear, and the ends of said strap being attached to the base, the flanges 11 extending upwardly beside the strap, the ears 12 extending downwardly from the socket 6, and the pin 13 connecting said ears 12 to the ear 9.

707,289. LONG-WAIST FORMER. JAMES C. KIMBEY, Philadelphia, Pa. Filed Nov. 6, 1901. Serial No. 81,223. (No model.)

Claim.—1. As an improved article of manufacture, a long-waist former, comprising a plate having means for attaching the same to a corset or other garment, V-shaped slots in the sides of the plate, and a cord attached to the lower end of the plate, substantially as shown and described.

2. As an improved article of manufacture, a long-waist former, comprising a plate having means for attaching the same to a corset or other garment, a hook at the lower end of the plate, V-shaped slots in the sides of said plate, and a cord attached to the lower end of the plate, substantially as shown and described.

3. As an improved article of manufacture, a long-waist former, comprising a plate having means for attaching the same to a corset or other garment, a hook at the lower end of the plate, a cross-bar, and a cord in looped engagement with the cross-bar, substantially as shown and described.

4. As an improved article of manufacture, a long-waist former, comprising a plate having means for attaching the same to a corset or other garment, a hook and cross-bar at the lower end of the plate, and V-shaped slots in the sides of the plate; together with a cord in looped engagement with the cross-bar, substantially as shown and for the purpose set forth.

5. As an improved article of manufacture, a long-waist former, comprising a plate provided with means of attaching the same to a corset or other garment, a hook stamped from the lower end of the plate, a cross-bar below the hook, and spring members at the sides of the plate curved forwardly to provide V-shaped slots or openings; together with a cord or tape attached to the cross-bar, substantially as shown and for the purpose set forth.

6. As an improved article of manufacture, a long-waist former, comprising a plate having keyhole-slots in its upper end, a hook at its lower end, and V-shaped slots in its sides; together with a cord attached to the lower end of the plate, substantially as shown and described.

707,240. SHADE ADJUSTMENT. FRED H. KNAPP, Chicago, Ill. Filed Nov. 16, 1901. Serial No. 82,550. (No model.)

Claim.—1. In a device of the character described, a shade provided at one end with suitable actuating means, vertical guide-rods, and guiding means for the free portion of the shade, comprising slides on said rods, and slide-supporting means on said shade near the free end thereof and engaging said slides, the slide and slide-supporting means of each set being capable of relative movement in a plane parallel with the shade, substantially as described.

2. In a device of the character described, a shade provided at one end with suitable actuating means, vertical guide-rods, and guiding means for the free portion of the shade, comprising slides on said rods, and slide-supporting means on said shade near the free end thereof and engaging said slides, one of said last-named parts of each set bearing a pivoted tongue and the other a recess for receiving said tongue, substantially as described.

3. In a device of the character described, a shade suitably attached at one end, guide-rods, and guiding means for the free part of the shade, comprising slide-supporting members connected with said shade, and having suitable recesses, and slides on said guide-rods provided with pivoted tongues engaging said recesses, substantially as described.

4. In a device of the character described, a shade provided at one end with suitable actuating means and at the opposite end with a binding member, clips connected with said shade at said binding member and forming sockets beneath said member, guide-rods, and slides on said rods having projections engaging said sockets, substantially as described.

5. In a device of the character described, the combination of vertical guide-rods, roll-supporting slides connected therewith, a roll supported from said slides, and bearing a shade, slides connected with said rods and with the shade near its free end, fixed slide-stops intermediate said first-named slides and said second-named slides, and means for actuating said roll-supporting slides, whereby the roll may be raised and the shade drawn at one operation, substantially as and for the purpose set forth.

707,241. CORD-HOLDING DEVICE. FRED H. KNAPP, Chicago, Ill. Filed Dec. 4, 1901. Serial No. 84,648. (No model.)

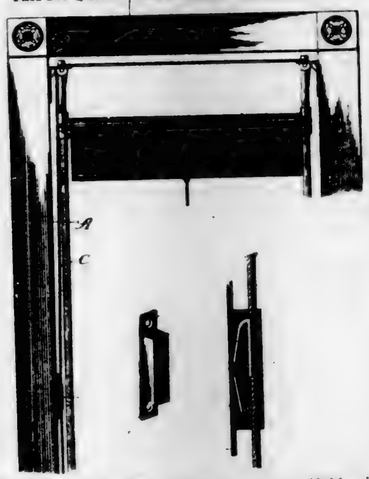

Claim.—1. In combination, a hollow member provided interiorly at one side with a spring-retainer, an unattached spring having ends turned toward the wall supplied with said retainer, and a cord confined between said spring and the opposed wall of said first-named member.

2. In combination, a tube of rectangular cross section provided with suitable attaching means and having one wall cut transversely on two lines and the intermediate portion bent inwardly to afford a retainer, and a spring having its two ends bent to engage said retainer and its intermediate portion serving to engage a cord, substantially as described.

3. In combination, a hollow member provided interiorly at one side with a spring-retainer, an unattached spring having convergent ends turned toward the wall supplied with said retainer and a back supplied with a longitudinal groove, and a cord confined in said groove between said spring and the opposed wall of said first-named member, substantially as and for the purpose set forth.

707,242. WASHING-MACHINE. JAMES M. LAWRENCE, Commerce, Tex. Filed Sept. 12, 1901. Serial No. 75,217. (No model.)

Claim.—A washing-machine comprising a frame having open bearings, a rotary table mounted on the frame and provided at its lower face with teeth, an oscillatory lever arranged centrally of the frame and located above the rotary table, a pounder carried by the lever, a transverse crank-shaft removably arranged in the open bearings and connected with the said lever, an upright lever arranged at one side of the machine and fulcrumed between its ends, a connecting-bar extending from the upper arm of the upright lever to the crank-shaft, and an actuating-pawl pivoted between its ends on the lower arm of the upright lever and wholly supported by the same, said pawl engaging the teeth of the table at one end and having its other arm weighted, the weighted arm holding the pawl in its engaging position and being also adapted to hold the pawl out of engagement, substantially as described.

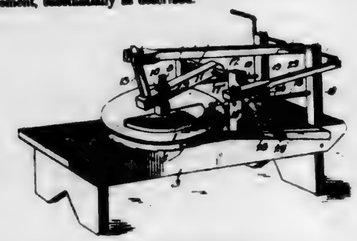

707,248. PORTABLE STOVE. EVA C. LEONARD, Thompson, Pa. Filed Apr. 24, 1902. Serial No. 104,494. (No model.)

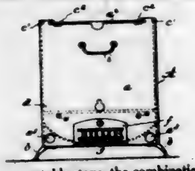

Claim.—1. In a portable stove, the combination, of the sheet-metal body A, having a sliding top, and the bottom curved up at the corners of the front, a perforated plate forming the grate, rods supporting the grate and bearing at their ends in the walls of the body of the stove, and a door in the front provided with a damper, the said stove being supported upon feet, substantially as shown and described.

2. In a portable stove, the combination, of the body A made up of sheet metal and having a bottom curved upward at its front corners, a sliding plate forming the top of the stove, a perforated plate forming the grate and supported upon rods extending from the front to the rear, one of the rods being located away from the adjoining side, and a door covering an opening in the front, said door having a sliding damper and inwardly-projecting flanges, substantially as shown and described.

3. In a portable stove, the combination, of the body A, made up of sheet metal and rectangular in cross-section, a bottom curved upward at its front corners, openings through the body of the stove below said curved corners, the sides of the body of the stove being turned into beads reinforced by wires which rest upon the front and back, and said sides extended to provide the flanges, and a sliding top supported upon said flanges; together with a door in the front of the stove having flanges and a damper, the said stove being provided with supporting-feet, and with handles, as shown and described.

707,244. RESISTANCE FOR RHEOSTATS, ELECTRIC HEATERS, &c. HARRY W. LEONARD, Bronxville, N. Y. Filed Aug. 28, 1901. Serial No. 73,241. (No model.)

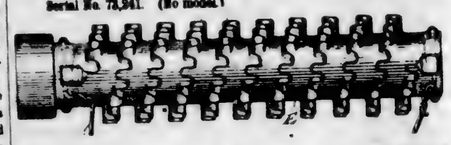

Claim.—1. As a new article of manufacture, a metallic electrical conductor in the form of a ribbon arranged edgewise under tension around an electrical insulating-surface capable of withstanding heat.

2. As a new article of manufacture, a metallic electrical conductor in the form of a reflexed ribbon arranged edgewise under tension around an electrical insulating-surface capable of withstanding heat.

3. As a new article of manufacture, a metallic electrical conductor in the form of a ribbon wound edgewise around an electrical insulating-surface capable of withstanding heat.

4. As a new article of manufacture, a metallic electrical conductor

in the form of a ribbon wound edgewise under tension around an electrical insulating-surface capable of withstanding heat.

5. As a new article of manufacture, a metallic electrical conductor in the form of a reflexed ribbon wound edgewise under tension around an electrical insulating-surface capable of withstanding heat.

6. As a new article of manufacture, a metallic electrical conductor in the form of a ribbon arranged edgewise under tension around a cylindrical electrical insulating-surface capable of withstanding heat.

7. As a new article of manufacture, a metallic electrical conductor in the form of a reflexed ribbon arranged edgewise under tension around a cylindrical electrical insulating-surface capable of withstanding heat.

8. As a new article of manufacture, a metallic-ribbon conductor arranged edgewise upon a support of mineral insulating material, said conductor being secured to the support by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on the support as to materially change its position thereon.

9. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise upon a support of mineral insulating material, said conductor being secured to the support by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on the support as to materially change its position thereon.

10. As a new article of manufacture, a metallic-ribbon conductor arranged edgewise around a cylindrical electrical insulating-surface capable of withstanding heat, and said conductor being secured to said surface by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on said surface as to materially change its position thereon.

11. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise around a cylindrical electrical insulating-surface capable of withstanding heat, and said conductor being secured to said surface by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on said surface as to materially change its position thereon.

12. As a new article of manufacture, a metallic-ribbon conductor wound edgewise upon a support of mineral insulating material and provided with one or more terminals or leads, said conductor being secured to the support by means of a vitreous glass.

13. As a new article of manufacture, a metallic-ribbon conductor arranged edgewise upon a support of mineral insulating material, and having one or more terminals or leads, and metal clamping-plates for maintaining electrical connection between the conductor and each lead, said conductor being secured to the support by means of a vitreous glass.

14. As a new article of manufacture, a metallic-ribbon conductor arranged edgewise upon a tubular support of mineral insulating material, said conductor being secured to the support by means of a vitreous glass.

15. As a new article of manufacture, a metallic-ribbon conductor arranged edgewise upon a pottery-tube, said conductor being secured to the tube by means of a vitreous glass.

16. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise upon a tubular support of mineral insulating material, said conductor being secured to the support by means of a vitreous glass.

17. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise upon a pottery-tube, said conductor being secured to the tube by means of a vitreous glass.

18. As a new article of manufacture, a metallic-ribbon conductor arranged edgewise upon a tubular support of mineral insulating material, said conductor being secured to the support by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on the support as to materially change its position thereon.

19. As a new article of manufacture, a metallic-ribbon conductor arranged edgewise upon a pottery-tube, said conductor being secured to the tube by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on the tube as to materially change its position thereon.

20. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise on a tubular support of mineral insulating material, said conductor being secured to the support by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on the support as to materially change its position thereon.

21. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise upon a pottery-tube, said conductor being secured to the tube by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on the support as to materially change its position thereon.

22. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise upon a pottery-tube, and provided with one or more terminals or leads, said conductor being secured to the tube by means of a vitreous glass having a fusing-point so low that it fuses before the conductor becomes so loose on the tube as to materially change its position thereon.

23. As a new article of manufacture, a metallic-reflexed-ribbon conductor arranged edgewise upon a pottery-tube, and having one or more terminals or leads, and metal clamping-plates for maintaining electrical connection between the conductor and each lead, said conductor being secured to the tube by means of a vitreous glaze having a fusing-point so low that it fuses before the conductor becomes so loose on the tube as to materially change its position thereon.

24. As a new article of manufacture, two or more metallic conductors arranged in multiple between terminal leads upon a support of mineral insulating material, said conductors being secured to the support by means of a vitreous glaze.

25. As a new article of manufacture, two or more metallic-ribbon conductors arranged in multiple between terminal leads upon a support of mineral insulating material, said conductors being secured to the support by means of a vitreous glaze.

26. As a new article of manufacture, two or more metallic-reflexed-ribbon conductors arranged in multiple between terminal leads upon a support of mineral insulating material, said conductors being secured to the support by means of a vitreous glaze.

27. As a new article of manufacture, two or more metallic conductors arranged in multiple between terminal leads upon a support of mineral insulating material, said conductors being secured to the support by means of a vitreous glaze of low fusing-point.

28. As a new article of manufacture, two or more metallic-ribbon conductors arranged in multiple between terminal leads upon a support of mineral insulating material, said conductors being secured to the support by means of a vitreous glaze of low fusing-point.

29. As a new article of manufacture, two or more metallic-reflexed-ribbon conductors arranged in multiple between terminal leads upon a support of mineral insulating material, said conductors being secured to the support by means of a vitreous glaze of low fusing-point.

30. As a new article of manufacture, two or more metallic conductors arranged in multiple between terminal leads under tension upon an electrical insulating-surface.

31. As a new article of manufacture, two or more metallic conductors arranged in multiple between the terminal leads under tension upon a cylindrical electrical insulating-surface.

32. As a new article of manufacture, two or more metallic conductors wound like a double thread in multiple between terminal leads under tension upon an electrical insulating-surface.

33. As a new article of manufacture, two or more metallic conductors wound like a double thread in multiple between terminal leads under tension upon a cylindrical electrical insulating-surface.

707,245. FILTER-PRESS. FRED M. LOCKE, Victor, N. Y. Filed May 17, 1901. Serial No. 60,709. (No model.)

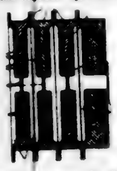

Claim.—1. A plate for filter-presses having a yielding bearing-surface made of absorbent material for engaging the sacks and preventing injury thereto, and permitting escape of the water.

2. In combination with a filter-press plate having a corrugated surface, a yielding disk adjacent to the corrugated surface for preventing injury to the sack, said disk being made of absorbent material, for permitting easy outlet for the water.

3. The combination with the plates and bags of a filter-press of layers of absorbent material between the bags and plates for taking up the liquid and conducting the same from the material to be treated.

707,246. PNEUMATIC POWER-HAMMER. HAROLD F. MABEY, Withington, England. Filed Mar. 1, 1901. Serial No. 49,384. (No model.)

Claim.—1. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders.

2. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and means to open such openings more or less and close them.

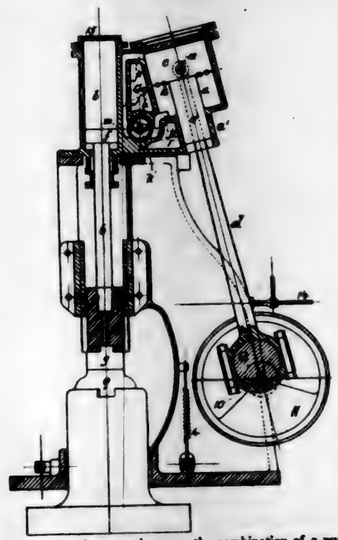

3. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a valve provided in connection with one of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction.

4. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders, a valve provided in connection with one of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction and a valve provided in connection with the other of the said passages connecting the said cylinders to stop at times the flow of air therethrough in one direction.

5. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings.

6. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders a passage connecting the said openings and means to close or open more or less the said passage and so the said openings.

7. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings and a valve to close or open more or less the said passage and so the said openings.

8. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings, a valve provided in connection with the said passage to close or open it more or less and so to close or open more or less the said openings, and a valve provided in connection with one of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction.

9. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings, a valve provided in connection with the said passage to close or open it more or less and so to close or open more or less the said openings, a valve provided in connection with one of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction and a valve provided in connection with the other of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction.

10. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings, a valve provided in connection with the said passage to close or open it more or less and so to close or open more or less the said openings, and a valve provided in connection with one of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction.

11. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings, a valve provided in connection with the said passage to close or open it more or less and so to close or open more or less the said openings, a valve provided in connection with one of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction and a valve provided in connection with the other of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction.

12. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings, a valve provided in connection with the said passage to close or open it more or less and so to close or open more or less the said openings, a valve provided in connection with the said passage to stop at times the flow of air therethrough in one direction, a valve provided in connection with one of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction, and a valve provided in connection with the other of the passages connecting the said cylinders to stop at times the flow of air therethrough in one direction.

13. In a pneumatic power-hammer the combination of a pump-cylinder and a hammer-cylinder with passages to connect the two ends of the one with the two ends of the other and furnished with openings to be opened more or less or closed in order to regulate the flow of air between such cylinders and a passage connecting the said openings, a plug provided with a valve to close or open more or less the said passage and so the said openings and a valve carried on the said plug and so inserted at times into the said passage to stop the passage of air therethrough in one direction and a second valve carried on the said plug and so inserted at times into one of the passages connecting the said cylinders to stop the flow of air therethrough in one direction.

14. In a pneumatic power-hammer having a pump-cylinder and a hammer-cylinder the combination with the hammer-cylinder of a cover provided with a cavity forming an extension of the interior of the said hammer-cylinder and made to fit the piston working in the said hammer-cylinder for the purposes hereinbefore described.

15. In a pneumatic power-hammer provided with valves the combination with such valves and the means employed to operate them of an elastic connection in the said means and a catch on part thereof and a catch which is movable upon a fixed part and provided with means to engage a moving part of the hammer and being moved thereby disengage the catches and permit the movement of said valves for the purposes hereinbefore described.

707,247. PLANT-PROTECTOR. LEONARD J. MERRIHAN, Ivanhoe, N. C. Filed Aug. 19, 1901. Serial No. 72,465. (No model.)

2. A plant-protector comprising a series of stiff or rigid lapping sections, and means located at a predetermined one of the series whereby the whole number thereof are operated to be raised or lowered together.

3. The combination of a plurality of plant-protectors having transversely-curved rigid bodies lying parallel with each other, a reciprocatable bar lying transversely above them, and a series of crossed pairs of flexible connections extending diagonally from the bar to the protectors severally connecting the same relative lower edges of the latter to the bar, so that reciprocation of the latter effects either the raising or lowering of the connected edges of the protectors substantially as and for the purpose set forth.

4. A plant-protector comprising a series of stiff or rigid lapping sections, and means connecting the overlapping end sections of a series whereby all the end sections of a series may be raised or lowered simultaneously.

5. A plant-protector comprising one or more sections movably anchored in the ground at one edge and provided with eyes at the sides thereof near the lower edge, wires or cords connecting with said eyes and crossing each other at the top of said sections, and a movable operating-bar to which the ends of the wires are connected.

6. A plurality of series of plant-protectors, each series being composed of veneer sections comprising bodies having successively overlapping ends, the first member of each series having eyes located near its edge on opposite sides; a raising means passing over said plurality of series; and flexible crossed means connecting said eyes to said means.

707,248. AXLE-NUT WRENCH. Robert A. Moody, Solsus, Ind. Filed Aug. 10, 1901. Renewed May 3, 1902. Serial No. 105,822. (No model.)

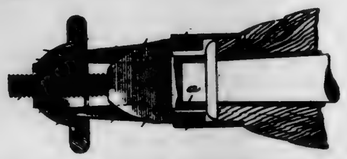

Claim.—1. In a wrench of the kind described, the combination of a socket portion having one end terminating in a threaded shank, clamping-jaws pivoted to the said socket portion, and a hand-wheel nut adapted for engagement with the jaws, substantially as shown and described.

2. In a wrench of the kind described, the combination of a socket portion having a threaded shank formed integral therewith, and a rectangular recess formed therein, clamping-jaws pivoted upon opposite sides of the said socket portion, a hand-wheel nut having its hub provided with a tapering annular recess and adapted for engagement with the clamping-jaws, substantially as shown and described.

3. In a wrench of the kind described the combination of a socket portion having a rectangular recess produced in one end and a threaded shank protruding from the opposite end thereof, ears formed on the said socket portion, clamping-jaws pivoted in the said ears, the heads of said jaws having their outer surfaces convexed and serrated, and the shanks thereof extending past the end of the said socket portion, a hand-wheel hub adapted to operate on the said threaded shank, the hub thereof having a tapering annular recess, the inner surface of which being adapted for engagement with the shanks of the said clamping-jaws, substantially as shown and described.

707,249. APPARATUS FOR INCREASING COMBUSTION IN FURNACES. James H. McConnell, Evanston, Ill. Filed Feb. 24, 1902. Serial No. 95,295. (No model.)

Claim.—1. The combination with the combustion-chamber of a furnace and with a smoke pipe or flue leading therefrom, said smoke pipe or flue having an opening in its wall and having a damper located above said opening, of an open-ended unobstructed air-delivery pipe extending inwardly and downwardly from said opening and away from the wall of the smoke-flue, whereby said pipe shall be surrounded by outgoing products of combustion, said pipe terminating adjacent to but outside the combustion-chamber and adjacent that part of the wall of the smoke-flue farthest from the direct path of the outgoing products of combustion.

2. The combination with the combustion-chamber of a furnace and with a smoke pipe or flue leading therefrom, said smoke pipe or flue having an opening in its wall and having a damper located above said opening, of an air-delivery pipe extending inwardly and downwardly from said opening whereby said pipe shall be surrounded by outgoing products

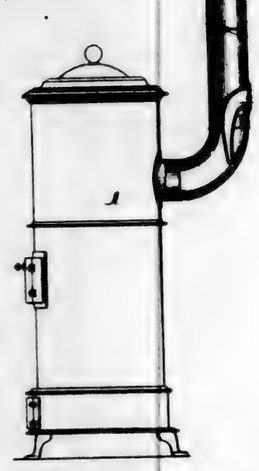

707,250. ROOF, CEILING, AND FLOOR CONSTRUCTION. Barnett McDougall, San Francisco, Cal. Filed Feb. 19, 1902. Serial No. 94,810. (No model.)

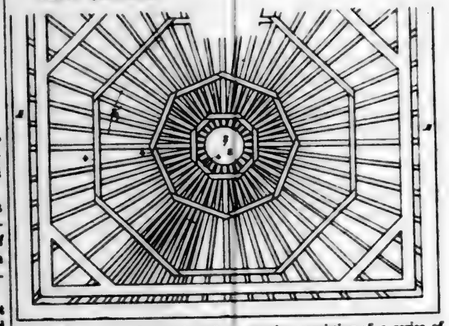

Claim.—1. A floor and roof construction consisting of a series of joists or bars radiating from a common center, said bars or joists unsupported except at their outer ends, and concentric bands or rings engaging said bars or joists and uniting them into a rigid structure.

2. A floor and roof construction consisting of a series of joists or bars radiating from a common center, said bars or joists supported only at their outer ends, concentric polygonal bands secured to said bars or joists and uniting them into a rigid structure.

3. A floor and roof structure consisting of a series of joists or bars radiating from a common center, and a plurality of concentric, polygonal bands secured to and uniting said joists or bars, said bands lying in break-joint courses.

4. A floor and roof structure consisting of a series of joists or bars radially disposed in relation to a common center, the contiguous ends of said joists inclosing a central opening, a curbing of steel or like suitable material against which the said contiguous ends abut, and a plurality of concentric binding rings or bands.

5. A floor and roof structure consisting of a series of joists or bars radially disposed in relation to a common center, each of said joists comprising a plurality of superposed strips or plates lying in the same vertical plane, concentric bands or rings alternately disposed between said strip and means whereby the rings and strips are rigidly united.

6. A floor and roof structure consisting of a series of joists radially disposed in relation to a common center, each of said joists composed of a plurality of superposed, interposed strips or plates, concentric bands or rings in the spaces between said strips, and said strips and interlocking bands or rings rigidly secured together.

707,251. GRAIN-SEPARATOR. Christian Otto, Hastings, Pa. Filed Sept. 30, 1899. Serial No. 732,457. (No model.)

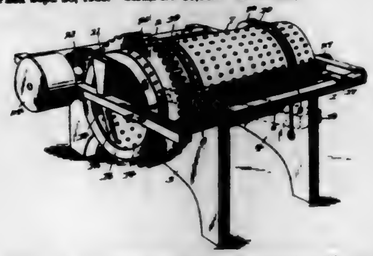

Claim.—1. In combination with a frame, supporting-rollers mounted thereon for revolution and having annular peripheral grooves, a revolvable cylinder supported on said rollers and having annular peripheral track-ribs engaging the grooves in the rollers, and curved rods secured to the frame, arched over and bearing on the cylinder, said rods preventing the cylinder from moving from the rollers and coacting with the respectively ribbed and grooved cylinder and rollers to prevent longitudinal movement of the cylinder on the rollers, substantially as described.

2. The combination of a frame, supporting-rollers mounted thereon for revolution and having annular peripheral grooves, a revolvable cylinder supported on said rollers and having annular peripheral track-ribs engaging the grooves in the rollers, curved rods secured to the frame, arched over and bearing on the cylinder to prevent the latter from moving from the rollers and to coact with the respectively ribbed and grooved cylinder and rollers to prevent longitudinal movement of the former on the latter, a gear 20 on said cylinder, a power-shaft 22 having its bearings on said frame and provided with a pinion engaging said gear, a pulley 25 on said power-shaft, a fixed cockle-receiving trough extending longitudinally through the cylinder at one side thereof, a revolvable conveying-screw in said trough, having a shaft journaled in bearings in the frame and provided with a pulley 27, and an endless belt connecting said pulleys 25, 27, substantially as described.

707,252. TOY PISTOL. Charles F. Parker, Newark, N. J. Filed Dec. 18, 1901. Serial No. 86,402. (No model.)

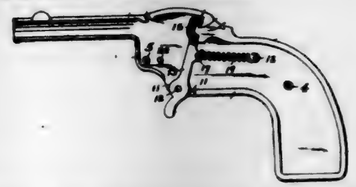

Claim.—1. In a toy pistol, the combination, with a chambered pistol-frame having an opening in its upper surface through which a cap can be inserted, of a pivoted hammer within said pistol-frame, provided in its upper portion with a cap-receiving part, adapted to register with the said cap-inserting opening in the pistol-frame, and means within said pistol-frame against which said cap-receiving part is brought for exploding the cap, substantially as and for the purposes set forth.

2. In a toy pistol, the combination, with a chambered pistol-frame having an opening in its upper surface through which a cap can be inserted, of a firing-anvil and a firing-pin on said anvil, both said anvil and firing-pin being arranged within said pistol-frame, a pivoted hammer within said frame, a cap-receiving part upon the upper portion of said hammer, said cap-receiving part having a hole or perforation, and the said cap-receiving part being adapted to register, first, with the said cap-inserting opening in the upper surface of the pistol-frame, and, secondly, with the firing-pin on said anvil for the explosion of the cap, substantially as and for the purposes set forth.

707,253. CAN-OPENER. James W. Pierce, Bolton, Tex. Filed Nov. 20, 1901. Serial No. 83,051. (No model.)

Claim.—1. A can-opener, comprising a pointed stem, a freely-reciprocatory weighted driving-handle slidably mounted upon the stem, a stop engagement between the stem and the handle to limit the inward movement of the latter, and a cutter carried by the handle.

2. A can-opener, comprising a pointed stem having a longitudinal slot or groove, a freely-reciprocatory weighted driving-handle slidably mounted upon the stem and having a projection working in the slot or groove for contact with the opposite ends thereof, and a cutter carried by the handle.

3. A can-opener, comprising a stem provided at its outer end with a hooked pointed terminal, and also having an intermediate longitudinal groove or slot, a hollow metallic handle slidably mounted upon the stem, and provided with a transverse pin working in the slot or groove and adapted to engage the opposite ends thereof, the inner end of the handle being reduced, and a rotatable cutting-disk mounted upon the reduced inner end of the handle, the outer end of the reduced portion of the handle being upset to prevent displacement of the disk.

4. A can-opener, having weighted freely-reciprocatory means working upon the stem thereof and forming a driving-handle to drive the point of the stem into a can.

707,254. APPARATUS FOR INDICATING WHEN CERTAIN PREDETERMINED SPEEDS ARE EXCEEDED BY VEHICLES. Auguste F. Poillevillain dit P. Villain, Paris, France. Filed May 10, 1901. Serial No. 59,554. (No model.)

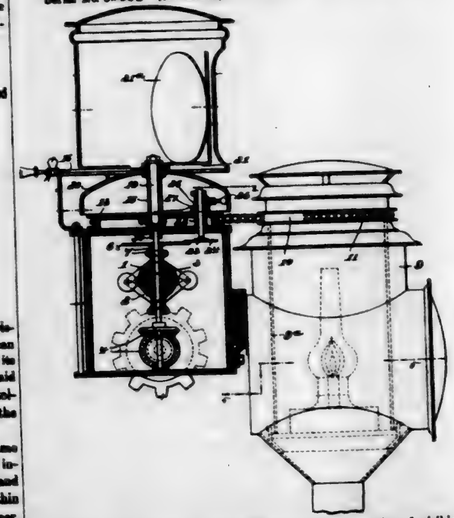

Claim.—In a device of the character described, a series of visible signals adapted to be displayed singly to indicate visually the limit of speed of the vehicle, a hand-lever adapted to set said visible signals, a governor controlled by the speed of the vehicle, a disk adapted to be rotated and to be elevated and depressed by the governor, an audible signal, a spin-

dle adapted when rotated to operate said audible signal, a disk carried by said spindle and arranged adjacent to the governor-disk and means controlled by the movement of the hand-lever for varying the distance between the two disks independently of the up-and-down movement of the governor-disk.

707,255. SAFETY-RAIL FOR TRAM PROTECTING-ROLLERS. EMANUEL RAHN, Prague, Austria-Hungary. Filed Apr. 30, 1902. Serial No. 105,319. (No model.)

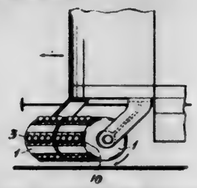

Claim.—1. The combination with tramway protecting-rollers having undercut or dovetailed longitudinal grooves, of elastic balls or fingers 3 having rectangular soles with beveled longitudinal edges engaging the longitudinal grooves in the periphery of said rollers, substantially and for the purpose as set forth.

2. The combination with tramway protecting-rollers, having undercut or dovetailed longitudinal grooves, of elastic balls or fingers having rectangular soles, with beveled longitudinal edges, engaging said longitudinal grooves, and bands 9 encircling the rollers and clamping over the projecting ends of said soles in the annular spaces between the balls.

3. The combination with tramway protecting-rollers having undercut or dovetailed longitudinal grooves, of elastic balls or fingers having rectangular soles, with beveled longitudinal edges, engaging said longitudinal grooves, bands 9 encircling the rollers in the annular spaces between the balls and above the projecting ends of said soles and bars 10 attached to the car-frame and embracing said bands.

707,256. SWINGING GATE. JOHN W. REAMES and CALVIN F. HEFFINGTON, Corley, Ark. Filed Apr. 24, 1902. Serial No. 104,531. (No model.)

Claim.—1. In a swinging gate, the combination with suitable keepers located in line with the gate in its closed position and on opposite sides of the gate; of suitable operating means and connections whereby the gate may be swung in either direction to an open or closed position from either side of the gateway, a gravity-latch upon the gate to engage the keepers, a spring-arm connected with the latch, and a cam movable with the gate and adapted to push back the spring-arm to effect the disengagement of the latch, said cam having recesses in which the arm may seat itself at proper times to allow the latch to move into engagement with the keepers, substantially as specified.

2. In a swinging gate, the combination with suitable keepers located in line with the gate in its closed position and on opposite sides of the gate; of suitable operating means and connections, whereby the gate may be swung in either direction to an open or closed position from either side of the gateway, a pivoted L-shaped latch-lever mounted upon the gate and having one of its arms forming a latch to engage the keepers, a spring-arm, a connection between the spring-arm and other arm of the lever, and a cam movable with the gate and adapted to push back the spring-arm to effect the disengagement of the latch, said cam having recesses in which the arm may seat itself at proper times to allow the latch to move into engagement with the keepers, substantially as and for the purpose described.

707,257. RAIL-FASTENER. CALVIN M. REED, Shrewsbury, Pa. Filed Dec. 27, 1901. Serial No. 87,478. (No model.)

Claim.—1. A railway-tie comprising two arched metallic beams superposed the one upon the other, means carried by said beams for grasping the opposite edges of the flanges of the rails, and means for locking said beams against endwise movement relatively one to the other, substantially as described.

2. A railway-tie comprising two arched metallic beams superposed one upon the other, each provided on their opposite edges with depending and flaring flanges, tongues struck up from the upper sides of said beams and arranged to grasp the opposite edges of the flanges of the rails, and means for preventing the endwise movement of said beams relatively to one another, substantially as described.

3. A metallic railway-tie comprising two sheet-metal beams superposed one upon the other, each consisting of a flat body portion provided on its opposite edges with depending and flaring flanges, each of said beams being provided on its upper side with upwardly and horizontally projecting tongues, the tongues of each beam extending in the same direction, and the tongues of one beam extending in an opposite direction to the tongues of the other beam to grasp the opposite sides of the flanges of the rails, and means for locking said beams against endwise movement relatively one to the other substantially as described.

4. A railway-tie comprising two sheet-metal beams superposed the one upon the other, each consisting of a flat body portion provided on its opposite sides with depending and outwardly-flaring flanges, each of said beams being provided near its opposite ends with rectangular slits, the metal between said slits being struck up to form upwardly and horizontally projecting tongues, the tongues of one beam extending in a direction opposite to the tongues of the other beam to grasp between them the opposite edges of the flanges of the rails, and the tongues of the lower beam projecting through the slots of the upper beam, and means for locking said beams against endwise movement relatively one to the other substantially as described.

5. A railway-tie comprising two sheet-metal beams superposed the one upon the other, and each consisting of a flat body portion provided on its opposite sides with depending flanges, said beams being provided with upwardly and horizontally projecting tongues arranged to grasp between them the opposite edges of the flange of the rails, the depending flanges of the under beams being provided with inwardly-projecting anchor-plates to prevent longitudinal movement of the tie in the road-bed substantially as described.

6. A railway-tie comprising two sheet-metal beams superposed the one upon the other, each consisting of a flat body portion provided on its opposite edges with depending flanges, tongues carried by said beams for grasping between them the opposite edges of the flanges of the rails, means for locking said beams against endwise movement relatively one to the other, the flanges of the under beam being vertically slitted, and the metal on one side of each slit being bent inward to form an anchor-plate to hold the tie against endwise movement in the road-bed substantially as described.

7. A railway-tie comprising two arched sheet-metal beams slidably superposed the one upon the other, said beams being provided with upwardly and horizontally projecting tongues, the tongues of one beam being disposed in the opposite direction to the tongues of the other beam to grasp the opposite edges of the flanges of the rail between them, each of said beams being provided at one end with a bolt-hole, said bolt-holes being arranged to register when the beams are in position to hold the rails thereto, and a bolt passing through said bolt-holes, and operating to hold said beams against endwise movement relatively one to the other, substantially as described.

707,258. LEG-IMPROVER. HARRY A. RHODENUS, Springfield, Ohio, assignor to S. F. Rhodenus, Springfield, Ohio. Filed Mar. 13, 1902. Serial No. 98,023. (No model.)

Claim.—1. A leg-improver consisting of an elongated concave-convex sheet of substantially rigid material, straight longitudinally, and extending along the side of the leg from a point slightly above or in line with the knee to a point below the same, being shaped to fit against the side of the lower leg and extend over the hollow at the side of the knee, and means for securing the same to the leg, substantially as described.

2. A leg-improver consisting of an apertured, elongated, concave-convex sheet of substantially rigid material, straight longitudinally, extending along the side of the leg from a point slightly above or in line with the knee to a point below the same, and provided with an aperture, being shaped to fit against the side of the lower leg and extend over the hollow at the side of the knee, and a retaining device consisting of a flexible band or garter connected with said apertured sheet and fastening around the leg, substantially as described.

3. A leg-improver consisting of an apertured, elongated, concave-convex sheet of substantially rigid material, straight longitudinally, extending along the side of the leg from a point slightly above or in line with the knee to a point below the same, and provided with an aperture near its top, its lower end being adapted to be inserted between the sock and leg, and a retaining device consisting of a flexible band or garter connected with said apertured sheet, fastening around the leg, and having a depending portion to engage and support the sock, substantially as described.

707,259. STAMP-TAPPET. CHARLES C. RUSSER, Butte, Mont. Filed June 5, 1901. Serial No. 63,242. (No model.)

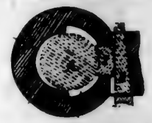

Claim.—1. A stamp-stem tappet adapted to receive independent and separated gibs and keys upon one side, and having the bore opposite the gibs of less, and the bore upon the side adjacent to the keys of greater diameter than that of the stamp-stem upon which the tappet is fitted.

2. A stamp-tappet having a bore longitudinally through it approximately half of said bore being of such radius as to fit tightly about the stem, and the other and opposite portion of the bore having a larger diameter to form a clearance between itself and the stem, keyways passing through the tappet at two or more points removed from each other upon the side contiguous to the larger bore, and gibs and keys by which the smaller part of the bore is caused to seat about the stamp-stem.

3. A stamp-tappet having a longitudinal bore of two different radii, the smaller of which is adapted to seat tightly around the stamp-stem, openings made transversely through the tappet upon the opposite side, gibs fitting said openings, and occupying portions only of the clearance-space formed by the larger bore, and seating against the stamp-stem, and independent keys for each gib adapted to lock them in position.

4. A stamp-tappet having a longitudinal bore, one portion of which is of smaller radius than that of the stamp-stem, and the opposite portion of larger radius, independent gibs and chambers removed from each other and into which they fit in the portion opposite the smaller portion of the bore, keys bearing on approximately the entire back surface of the gibs, and keyways through which they are driven to force the gibs against the stem and seat the latter in the opposing smaller bore of the tappet.

707,260. APPARATUS FOR LINING CASKS, BARRELS, OR LIKE VESSELS. HERBERT S. RUSSELL, London, England. Filed Aug. 23, 1900. Serial No. 27,862. (No model.)

Claim.—1. In an apparatus for lining casks, barrels and the like, the combination of a tank for the lining material, a cylinder inclosed by the tank, a plunger working in said cylinder, a valve in said cylinder opening inward, an outlet-pipe leading from the cylinder and provided with a spray-nozzle at its outer end, a back-pressure valve in the outlet-pipe, a source of compressed air, a pipe forming communication between said source and said outlet-pipe, and a back-pressure valve in said pipe.

2. In an apparatus for lining casks, barrels and the like, the combination of a tank for the lining material, a heating-coil in said tank, a cylinder within the tank, a plunger working in the cylinder, an inwardly-opening valve in the cylinder, an outlet-pipe leading from the cylinder, and having a spray-nozzle at its outer end, a back-pressure valve in the outlet-pipe to prevent the return of the lining material, a source of compressed air, a pipe leading from said source to the outlet-pipe between the back-pressure valve and the nozzle, and a back-pressure valve in the connecting-pipe.

3. In an apparatus for lining casks, barrels and the like, the combination of a tank for the lining material, means to heat the same, a pump within said tank, a spray-nozzle in connection with said pump, whereby the liquid is conveyed from the tank by the pump to the spray-nozzle and a source of compressed air connected to the spray-nozzle.

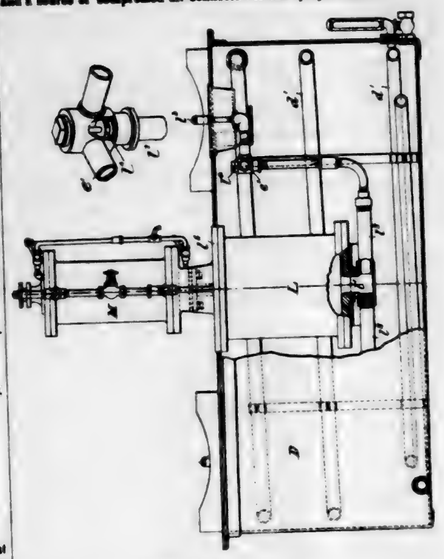

707,261. MIXING-MACHINE. ERNEST RUTTKAMP, Allegheny, Pa., assignor of one-half to Charles Ruttkamp, Allegheny, Pa. Filed Feb. 24, 1902. Serial No. 95,201. (No model.)

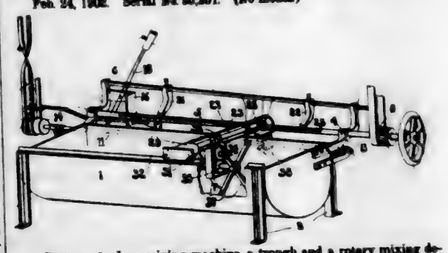

Claim.—1. In a mixing-machine, a trough and a rotary mixing device having relative longitudinal movement, and means for reversing said movement, said device being capable of removal by oscillation from over said trough.

2. In a mixing-machine, a trough and a rotary mixing device having relative longitudinal movement, and means for reversing said movement, said device being removable from over said trough by oscillation on an axis substantially parallel to the line of said longitudinal movement.

3. In a mixing-machine, a trough and rotary mixing-blades having relative longitudinal movement, a shaft for producing the longitudinal movement, a shaft external to the trough for rotating the blades, and means supporting the blades and slidable on the latter shaft.

4. In a mixing-machine, a trough, a carriage provided with rotary mixing blades and having longitudinal and vertical movements, and means for reversing the longitudinal movement.

5. In a mixing-machine, a trough, a carriage provided with rotary mixing-blades and having longitudinal and vertical movements, and automatic means for reversing the longitudinal movement.

6. In a mixing-machine, a trough and rotary mixing-blades having relative longitudinal movement, said blades being capable of removal from over the trough and any selected point therein rotating transversely of the line of said longitudinal movement.

7. In a mixing-machine, a trough, a carriage provided with mixing-blades, a driving-shaft, driving connections between said shaft and blades permitting the travel of the carriage on said shaft, a rotatable screw-shaft, a nut in said carriage to receive the screw-shaft, and means controlled by the carriage for reversing the rotation of the screw-shaft.

9. In a mixing-machine, a trough, a carriage provided with mixing-blades, a driving-shaft, driving connections between the shaft and the blades, permitting the travel of the carriage on said shaft, a second driving-shaft, connections between the latter and the carriage for causing travel of the carriage, and means for automatically reversing the rotation of the second driving-shaft.

9. In a mixing-machine, a trough, a carriage provided with mixing-blades and having longitudinal travel over said trough, a driving-shaft, a bevel-gear splined on the shaft, a second shaft mounted on the carriage and having a bevel-gear meshing with the splined gear, a worm on the second shaft, and gearing between the worm and the blades for driving the latter.

10. In a mixing-machine, a trough, a carriage provided with mixing-blades, means for driving the carriage, a sliding bar, stops on the bar, connections from said bar for reversing the movement of the carriage, and an overthrow-lever associated with the bar.

707,262. CUSHION-FRAME FOR BICYCLES OR LIKE VEHICLES. JAMES H. SAGER and GEORGE D. GREEN, Rochester, N. Y. Filed Jan. 13, 1902. Serial No. 89,266. (No model.)

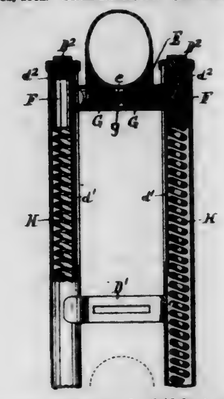

Claim.—1. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; tubular rear braces flexibly connected with said fork; a slot in each of said braces at its upper end; a spring within each of said braces; a seat for the bottom of each of said springs; a cross-bar flexibly connected with the front frame and passing through said slots; a block within each of said braces resting on the spring in the brace and secured to said bar and free to slide within said brace; and a stop in each brace above the block.

2. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; parallel tubular braces flexibly connected with said fork; a slot in each of said braces at its upper end; a spring within each of said braces; a seat for the bottom of each of said springs; a cross-bar flexibly connected with the front frame and passing through said slots; a block within each of said braces resting on the spring in the brace and secured to said bar and free to slide within said brace; and a stop in each brace above the block.

3. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; tubular rear braces flexibly connected with said fork; a slot in each of said braces at its upper end; a spring within each of said braces; a seat for the bottom of each of said springs; an adjustable cross-bar flexibly connected with the front frame and passing through said slots; a block within each of said braces resting on the spring in the brace and secured to said bar and free to slide within said brace; and a stop in each brace above the block.

4. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; tubular rear braces flexibly connected with said fork; a slot in each of said braces at its upper end; a spring within each of said braces; a seat for the bottom of each of said springs; a separable cross-bar flexibly connected with the front frame and passing through said slots; a block within each of said braces resting on the spring in the brace and secured to said bar and free to slide within said brace; and a stop in each brace above the block.

5. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; tubular rear braces flexibly connected with said fork; a slot in each of said braces at its upper end; a spring within each of said braces; a seat for the bottom of each of said springs; a bracket rigidly connected with the front frame; an adjustable cross-bar revolubly supported within said bracket and entering said slots; a block within each of said braces resting on the spring in the brace and secured to said bar and free to slide within said brace; and a stop in each brace above the block.

6. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; tubular rear braces flexibly connected with said fork; a slot in each of said braces at its upper end; a spring within each of said braces; a seat for the bottom of each of said springs; a bracket rigidly connected with the front frame; a separable cross-bar revolubly supported within said bracket and entering said slots; a block within each of said braces resting on the spring in the brace and secured to said bar and free to slide within said brace; and a stop in each brace above the block.

7. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; the tubular braces D, D, flexibly connected with said fork and having respectively longitudinal slots d', d'; the bracket E; blocks F, F, free to slide within said braces; arms G, G, rotatively secured within said bracket and attached to said blocks; springs H, H, inclosed within said braces respectively and a stop in each brace above the block, substantially as shown and described.

8. The combination of a rigid front section; a rear-wheel fork flexibly connected therewith at the crank-hanger; the parallel tubular braces D, D, flexibly connected with said fork and having respectively longitudinal slots d', d', the caps D^2, D^2, in the top of said tubular braces, the bracket E rigidly secured to the front section; arms G, G, rotatively secured within said bracket; the screw g for adjustably connecting said bars; blocks F, F, free to slide within said braces; springs H, H, within said braces, and seats for said springs respectively, substantially as shown and described.

707,263. GOLF-BALL. ADDISON T. SAUNDERS, Akron, Ohio, assignor of one-half to Frank A. Seiberling, Akron, Ohio. Filed Sept. 11, 1900. Serial No. 29,734. (No model.)

Claim.—1. A golf-ball comprising an air-tight shell having a central cavity adapted to contain a body of fluid under pressure to form an elastic core, said shell being of such material and thickness and having such rigidity as to maintain its sphericity under light impact, such as the blows used in putting, but being depressible under the impact of heavier blows, substantially as described.

2. A golf-ball comprising an air-tight shell of such material and thickness and having such rigidity as to maintain its sphericity under light impact and having a central cavity adapted to contain a compressed fluid and provided with self-sealing means to retain the compressed fluid therein, substantially as described.

3. A golf-ball comprising an outer shell of such material and thickness and having such rigidity as to maintain its sphericity under light impact and having a central cavity to contain a compressed fluid and a self-sealing fluid-tight lining for said cavity, substantially as described.

4. A golf-ball comprising an inner hollow rubber ball, adapted to be filled with an elastic fluid, a fibrous reinforcing-covering surrounding said ball, and an inclosing shell of gutta-percha, or similar material, substantially as described.

5. A golf-ball comprising an inner hollow rubber ball, adapted to be filled with an elastic fluid, a covering of reinforcing material, as friction-thread wound thereabout, said covering being suitably treated to increase its specific gravity, and an outer shell of gutta-percha, substantially as described.

6. A golf-ball comprising an inner hollow rubber ball, adapted to be filled with an elastic fluid, a covering of reinforcing material, as friction-thread wound thereabout, said covering being suitably treated to increase its specific gravity, and an outer shell of gutta-percha, mixed with strength and weight giving substances, substantially as described.

707,264. APPARATUS FOR SETTING OR REMOVING TILES. HERMAN SCHMIDT, Jr., Swanton, Nebr. Filed Oct. 16, 1901. Serial No. 78,823. (No model.)

Claim.—1. In a device for handling tilings or tubes, the combination, of a shaft having upper and lower cross-arms, a cylinder or pipe connected to said arms, spring-catches in the sides of the cylinder or pipe and adapted to project normally therefrom, and jaws projecting from the lower end of the shaft, said jaws having points at their outer ends adapted to enter the joint between two tiles, substantially as shown and described.

2. In a device for handling tilings or tubes, the combination, of a shaft having upper and lower cross-arms, a pipe connected to said arms, said pipe being contracted at its lower end, spring-catches projecting from the sides of the pipe and adapted to support a tile, and spring-actuated jaws projecting at an upward inclination from the lower end of the shaft, substantially as shown and described.

3. In a device for handling tilings or tubes, the combination, of a shaft having cross-arms, a pipe connected to said arms and adjustable vertically thereon, said pipe being contracted at its lower end, spring-catches projecting from the sides of the pipe, jaws hinged to the lower end of the shaft, and springs forcing the jaws outward, said jaws being adapted to be engaged by the lower end of the pipe when the device is used for setting tiles, substantially as herein shown and described.

707,265. NON-REFILLABLE BOTTLE. THOMAS R. SHORTELL, Pittsburg, Pa. Filed July 29, 1901. Serial No. 70,019. (No model.)

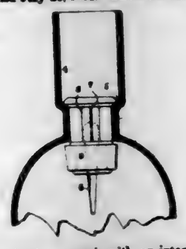

Claim.—A bottle having a neck with an integral contracted portion, a shoulder at each end of said contracted portion, the lower shoulder having grooves or passages, a stopper having a neck adapted to fit the neck of the bottle and the grooves adapted to register with the grooves in said lower shoulder, a flange at the upper end of said stopper adapted to fit the upper shoulder of said contracted portion, and a head on the lower end of the stopper adapted to expand under said lower shoulder to prevent the withdrawal of the stopper.

707,266. WAVE-DETECTING DEVICE. HARRY BROOKSHIRE and GREENLEAF W. PICKARD, Philadelphia, Pa., assignors to American Wireless Telephone and Telegraph Company, a Corporation of Arizona Territory. Filed June 3, 1902. Serial No. 109,574. (No model.)

Claim.—1. A wave-responsive device comprising carbon terminals bridged by metallic needles.

2. A wave-responsive device comprising carbon terminals bridged by steel needles.

3. A wave-responsive device comprising carbon terminal blocks, recesses in said blocks, and metallic needles bridging said blocks and resting in said recesses.

4. A wave-responsive device comprising carbon terminal blocks, recesses in said blocks, and steel needles bridging said blocks and resting in said recesses.

5. A wave-responsive device comprising carbon terminals, metallic needle bridging said terminals, and an envelop for said blocks and needles.

6. A wave-responsive device comprising carbon and metallic needles, an envelop for said carbon and needles, a chamber communicating with said envelop, and desiccating material in said chamber.

7. A wave-responsive device comprising carbon plates, perforations in said plates, and needles resting in said perforations.

8. A wave-responsive device comprising carbon plates, perforations in said plates, and steel needles resting in said perforations.

9. A wave-responsive device comprising thin carbon disks, perforations in said disks arranged symmetrically about the centers thereof, metallic needles bridging said disks and resting in said perforations.

10. A wave-responsive device comprising thin carbon disks, and metallic needles bridging said disks.

11. A wave-responsive device comprising thin carbon disks and steel needles bridging said disks.

12. A wave-responsive device comprising carbon disks, perforations in said disks, means for securing said disks in definite relation with respect to each other, and metallic needles resting in said perforations and bridging said disks.

13. A wave-responsive device comprising carbon disks, perforations in said disks, means for securing said disks in definite relation with respect to each other, metallic needles resting in said perforations and bridging said disks, and an envelop inclosing said disks and needles.

14. A wave-responsive device comprising metallic disks, perforations in said disks, means for securing said disks in definite relation with respect to each other, metallic needles resting in said perforations and bridging said disks, an envelop inclosing said disks and needles, a chamber communicating with said envelop, and desiccating material in said chamber.

15. A wave-responsive device comprising terminals of carbon, and a metallic member in loose contact with said terminals.

16. A wave-responsive device comprising terminals of carbon, and a metallic member bridging said terminals.

17. A wave-responsive device comprising terminals of carbon, and a metallic member in loose contact with and bridging said terminals.

18. A wave-responsive device comprising terminals of carbon, and a metallic rod in loose contact with said terminals.

19. A wave-responsive device comprising terminals of carbon, and a metallic rod bridging said terminals.

20. A wave-responsive device comprising terminals of carbon, and a steel rod in loose contact with said terminals.

21. A wave-responsive device comprising terminals of carbon, and a steel rod bridging said terminals.

22. A wave-responsive device comprising carbon blocks, and a metallic rod loosely bridging said blocks.

23. A wave-responsive device comprising carbon blocks, and a steel rod loosely bridging said blocks.

24. A wave-responsive device comprising carbon blocks, and a metallic needle loosely bridging said blocks.

25. A wave-responsive device comprising carbon blocks and a steel needle loosely bridging said blocks.

26. A wave-responsive device comprising carbon blocks, recesses in said blocks, and a metallic needle bridging said blocks and resting in said recesses.

27. A wave-responsive device comprising carbon blocks, recesses in said blocks, and a steel needle bridging said blocks and resting in said recesses.

28. A wave-responsive device comprising carbon blocks, a metallic needle in loose contact with and bridging said blocks, and means for varying the sensitiveness of the contacts.

707,267. MAIL-BAG CATCHER. GEORGE W. SMITH, Rochester, N. Y., assignor to Smith Railway Mail Service Company, Rochester, N. Y., a Corporation of Delaware. Filed May 1, 1901. Serial No. 58,263. (No model.)

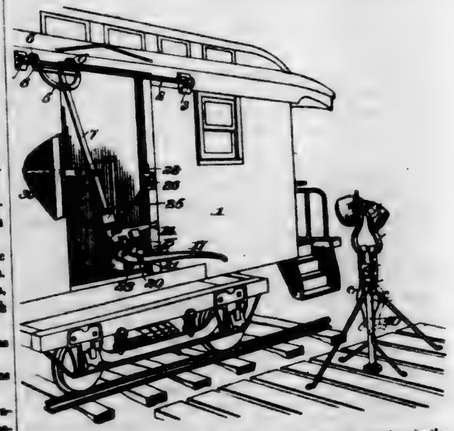

Claim.—1. The combination with a car having an opening in the side and a support above the latter and extending longitudinally of the car, of a suspended frame movable on the support and capable of swinging laterally of the car, and a bag-catcher mounted on the frame.

2. The combination with a car having an opening in the side and a support above the latter extending longitudinally of the car, of a suspended

frame movable longitudinally on the support and capable of moving laterally of the car, and a reversible bag-catcher arm mounted on the frame and adapted to be extended in either direction substantially parallel with the side of the car.

3. The combination with a car having an opening in the side and a support above the latter, of a suspended frame movable on the support longitudinally of the car and capable of moving laterally thereof, a reversible bag-catcher on the frame, and a tension member extending between the catcher and the car on the opposite side of the opening from that on which the catcher is located.

4. The combination with a car having an opening in the side and a support extending parallel with the side of the car and removed from the opening, of a suspended frame movable longitudinally of the support and capable of swinging laterally thereon and a bag-catcher on the frame.

5. The combination with a car having an opening in the side, and the support at the upper portion of the opening and extending longitudinally of the car, of a suspended frame movable longitudinally upon the support and capable of swinging laterally thereon, a bag-catcher mounted on the lower end of the frame and means for swinging the catcher toward and from the side of the car.

6. The combination with a car, of a frame pivoted at its upper end on the car and capable of swinging on the pivot laterally of the car, and a mail-bag catcher at the lower end of the frame having the forwardly and downwardly projecting catcher-arm.

7. The combination with a car, of a frame pivoted at its upper end on the car and capable of swinging on the pivot laterally of the car, and a mail-bag catcher at the lower end of the frame having the forwardly and downwardly projecting catcher-arm, and the bag-retaining device at the inner end of said arm.

8. The combination with a car, of a bag-catcher thereon movable bodily laterally of the car and embodying a forwardly-projecting catcher-arm extending downwardly in a plane substantially parallel with the car side.

9. The combination with a car, of a bag-catcher thereon movable bodily laterally of the car and embodying a forwardly-projecting catcher-arm extending downwardly in a plane substantially parallel with the car side and a bag-retaining device at the rear end of said arm.

10. The combination with a car, of a bag-catcher thereon movable bodily laterally of the car and embodying a forwardly and downwardly projecting catcher-arm, and a tension member connected to the catcher and to the car.

11. The combination with a car, and a frame pivoted thereto to swing laterally therefrom, of a mail-bag catcher embodying a forwardly and downwardly extending catcher-arm pivoted at the free end of the frame on a horizontal pivot extending substantially parallel with the side of the car.

12. The combination with a car, and a frame movable laterally therefrom, of a mail-bag catcher pivoted on said frame on a horizontal axis extending in a plane substantially parallel with the side of the car.

13. The combination with a car, and a frame movable laterally therefrom, of a reversible mail-bag-catcher arm pivoted on said frame on a horizontal axis extending in a plane substantially parallel with the side of the car.

14. The combination with a car, and a frame pivoted thereon to swing laterally therefrom, of a mail-bag catcher on the free end of said frame embodying a forwardly and downwardly extending catcher-arm pivoted on an axis extending in a plane substantially parallel with the side of the car.

15. The combination with a car, and a frame pivoted thereon to swing laterally therefrom, of a mail-bag catcher mounted on the free end of the frame, and a toggle having its members pivoted to the car and frame respectively for swinging and holding the frame with the catcher toward and away from the side of the car.

16. The combination with a car, and a frame pivoted thereon to swing laterally therefrom, of a mail-bag catcher mounted on the free end of the frame, and a toggle flexible in one direction only and having its members pivoted to the car and frame for swinging and holding the frame with the catcher away from the side of the car.

17. The combination with a car, a support extending parallel with the side of the car, a suspended frame adjustable longitudinally of the support and capable of swinging laterally, a reversible mail-bag-catcher arm mounted on the free end of the frame and having its inner bag-engaging surface inclined relative to a horizontal plane.

18. The combination with a car, and a frame pivoted thereto at the upper end, of a bag-catcher arm pivoted on the end of said frame on a horizontal axis parallel with the side of the car.

19. The combination with the car, and a frame pivoted thereon, a reversible head mounted on the free end of the frame, and a catcher-arm pivoted on the head on an axis parallel with the pivot of the frame.

20. In a mail-bag catcher, the combination with a support, and a suspended frame pivoted thereon, of a bag-catcher mounted on the free end of the frame and embodying a catcher-arm movable bodily transversely of the support and having its bag-engaging surface inclined relatively to a horizontal plane when in operative position.

21. In a mail-bag catcher, the combination with a support and a frame pivoted thereon, of a bag-catcher mounted on the free end of the frame and embodying a catcher-arm pivoted on an axis parallel with that of the frame and having its bag-engaging surface inclined relatively to a horizontal plane.

22. The combination with a support, and a frame pivoted thereon at its upper end, of a head mounted on the free end of the frame having a laterally-extended arm, and a bag-catcher arm pivoted to the head on a substantially horizontal axis and extending in the same direction as the arm on the head.

23. The combination with the car having the opening, the rod supported above the opening, and the frame movable longitudinally on the rod and capable of swinging thereon, of a reversible bag-catcher arm connected to the free end of the frame, a tension member connected thereto and to the car and means for swinging the catcher outwardly and holding it.

24. The combination with the car having the opening, the support, the frame sliding and swinging thereon, and a catcher-arm on the free end of the frame, of a toggle-arm detachably connected to the frame and to opposite sides of the opening in the car.

25. The combination with the car, having the opening, the frame movable across the opening and swinging toward and from the side of the car and having a bag-catcher at its free end, of a toggle-arm one member of which is detachably connected to the frame, and engaging devices on opposite sides of the door with which the other member of the toggle is adapted to be detachably connected.

26. The combination with a car and a bag-catcher laterally movable therefrom and embodying a catcher-arm extending in the direction of movement of the car and when in operative position having its bag-engaging surface inclined relative to a horizontal plane, of a relatively stationary bag-holder embodying two separated substantially vertically extending bag-supporting arms between which the catching-arm passes when removing the mail-bag therefrom.

27. The combination with a car having a mail-bag catcher thereon embodying the catching-arm extending in a vertical plane, of a bag-holder embodying a support and vertically-extending separated bag-holding arms between which the catcher-arm is adapted to pass, said arms being pivoted to turn on the support on a horizontal axis at right angles to the movement of the car.

28. In a bag-holder, the combination with a support or standard, the frame journaled therein on a horizontal axis and having two vertically-extending and separated supporting-arms on which a bag is held, and means for yieldingly holding the frame with the arms in vertical position.

29. In a bag-holder, the combination with the base or standard, of the frame pivoted thereon on a horizontal axis and embodying the vertically-extending separated arms and the spring-arm arranged between the frame and standard for holding the frame yieldingly with the arms in vertical position.

30. In a bag-holder, the combination with the base or standard, of the frame pivoted thereon on a horizontal axis and embodying the vertically-extending separated arms, the spring-arm mounted on the frame and frictionally engaging the standard to hold the frame yieldingly with the arms extending vertically.

707,268. SMOKING-PIPE. ALBERT S. SPEERS, Chicago, Ill. Filed Nov. 26, 1901. Serial No. 83,782. (No model.)

Claim.—1. A tobacco-pipe having a tobacco-receptacle and a smoke-orifice, and a movable wiper having its stem mounted in said orifice and having an arm arranged within the tobacco-receptacle to traverse the surface of its wall.

2. A tobacco-pipe having a tobacco-receptacle and a smoke-orifice, and a rotary wiper having its stem mounted in said orifice and having an arm arranged within the tobacco-receptacle to traverse its wall.

3. A tobacco-pipe having its bowl provided with a tobacco-receptacle and a smoke-orifice in the bottom thereof, and a rotary wiper having its stem mounted in said orifice and having an arm extending laterally therefrom to traverse the surface of the bottom of the receptacle adjacent to said orifice.

4. A tobacco-pipe having its bowl provided with a tobacco-receptacle and a smoke-orifice in the bottom thereof, a saliva-receptacle in communication with the smoke-orifice, and a stem-opening in the wall of the saliva-receptacle, and a wiper having its stem extending through said saliva-receptacle and smoke-orifice provided with a lateral wiper-arm arranged within the tobacco-receptacle for traversing the bottom of the latter adjacent to the smoke-orifice and provided with a handle located exteriorly of the bowl.

5. A tobacco-pipe having its bowl provided with tobacco and saliva receptacles connected by a smoke-orifice and having a stem-opening communicating with the saliva-receptacle at its side, a filling-plug closing the lower end of the saliva-receptacle, and a wiper carried by said plug extending through said smoke-orifice and having an arm for traversing the inner surface of the bottom of the smoke-receptacle.

6. A tobacco-pipe having its bowl provided with tobacco and saliva receptacles connected by a smoke-orifice and having a stem-opening communicating with the saliva-receptacle at its side, and a movable filling-plug fitted in the bottom of the saliva-receptacle, and a wiper having its stem attached to said plug and extending through the smoke-orifice into the tobacco-receptacle and having an arm for traversing the inner surface of the tobacco-receptacle.

7. A tobacco-pipe having its bowl provided with tobacco and saliva receptacles connected by a smoke-orifice and having a stem-opening in the side of the saliva-receptacle, a cleaning-plug removably fitted in the lower end of the saliva-receptacle, a wiper carried by the plug and extending through the smoke-orifice into the tobacco-receptacle, and a strainer or filter arranged in the saliva-receptacle between the smoke-orifice and the stem-opening.

8. A tobacco-pipe having its bowl provided with tobacco and saliva receptacles connected by a smoke-orifice and having a stem-opening in the side of the saliva-receptacle, a cleaning-plug removably and revolubly fitted in the bottom of the saliva-receptacle, a wiper carried by the plug and having its stem extended through the smoke-orifice into the tobacco-receptacle and provided with a wiper-arm arranged within the tobacco-receptacle to traverse the wall thereof, and a strainer or filter carried by the stem of the wiper.

9. A tobacco-pipe having its bowl provided with tobacco and saliva receptacles connected by a smoke-orifice and having a stem-opening in the side of the saliva-receptacle, a plug fitted in the lower end of the saliva-receptacle, a wiper having its stem attached to the plug and extending through the smoke-orifice into the tobacco-receptacle and carrying a wiper-arm, and a straining or filtering medium carried by said stem and projecting into the smoke-orifice.

10. A tobacco-pipe having its bowl provided with a tobacco-receptacle, a saliva-receptacle arranged below the tobacco-receptacle and in communication therewith by a smoke-orifice, and a cavity below the saliva-receptacle and communicating therewith by an opening through which the contents of the saliva-receptacle may be removed, the saliva-receptacle having a stem-opening in its wall, a plug removably fitted in the opening in the bottom of the saliva-receptacle, and having a handle or grip projecting beyond the bottom of the saliva-receptacle and arranged wholly in said cavity below the saliva-receptacle, and a wiper carried by the plug and extending through the smoke-orifice into the tobacco-receptacle to clean the same.

11. A tobacco-pipe having its bowl provided with tobacco and saliva receptacles and a communicating smoke-orifice, and having a stem-opening in communication with the saliva-receptacle, and a wiper having its stem extending from the saliva-receptacle through the smoke-orifice and provided at its inner end with a flexible wiper-arm arranged within the tobacco-receptacle and insertible and removable through the smoke-orifice.

12. A tobacco-pipe having tobacco and saliva receptacles connected by a smoke-orifice and provided with a stem-opening in communication with the saliva-receptacle, and a wiper having a stem extending from the saliva-receptacle through the smoke-orifice, provided at its inner end with a lateral flexible wiper-arm arranged within the tobacco-receptacle, and having its stem provided with a straining or filtering medium arranged within the saliva-receptacle.

13. A tobacco-pipe having tobacco and saliva receptacles connected by a smoke-orifice and provided with a stem-opening in communication with the saliva-receptacle, and a wiper having a stem extending from the saliva-receptacle through the smoke-orifice, provided at its inner end with a lateral flexible wiper-arm arranged within the tobacco-receptacle, and having its stem provided with a straining or filtering medium arranged within the saliva-receptacle and projecting into the smoke-orifice.

707,269. AUTOMATIC CAR-COUPLING. JOHN H. STANLEY, Wakenda, Mo., assignor of one-half to George R. Stanley and Joseph G. Watson, Wakenda, Mo. Filed Dec. 31, 1901. Serial No. 87,966. (No model.)

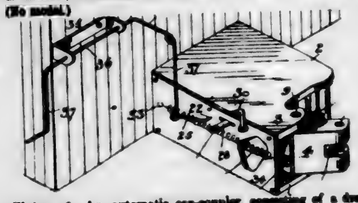

Claim.—1. An automatic car-coupler, consisting of a draw-head, preferably in the shape of a covered box, with the front end open and having a V-shaped recess in its right-hand wall; a perforated lug extending forwardly from the inner face and rear wall of the draw-head; a lock-block hinged to said lug by means of rearwardly-perforated lugs; said lock-block provided in its right and under edge with depressions to receive the locking-arm, and near its left edge with a vertical slot; a bolt passing across said slot; a keeper longitudinally secured to the upper face of said lock-block; a lock-bar provided with a notch and hinged to the upper wall of the draw-head, and adapted to work in said slot and its notch to catch over the bolt crossing said slot; a spring-actuated knuckle hinged in bearings to the front end of the draw-head; a locking-arm secured to the rear face of said knuckle and adapted to pass under said lock-block and into the recesses of the same; a V-shaped extension, extending from the right face of said locking-arm into the V-shaped recess in the right-hand wall of the draw-head; a lever pivoted to the lower face of the top wall of the draw-head and adapted to operate the lock-bar; an elbow-lever pivoted near the center of the draw-head; a U-shaped loop integral with said lever, and extending downwardly and slightly forwardly, and under the said keeper, and adapted to lock said lock-block down, or to raise the same up, substantially as shown and described and for the purposes set forth.

2. An automatic car-coupler, consisting of a draw-head, preferably in the shape of a box with its front end open; a lock-block hinged to the rear wall of said draw-head, and provided in its front end with a vertical slot; a bolt passing across said slot; a keeper longitudinally secured to the upper face of said lock-block; a lock-bar provided with a notch and hinged to the upper wall of the draw-head, and adapted to work in said slot, and catch over said bolt; a spring-actuated knuckle hinged to one side and front end of the draw-head; a locking-arm secured to the rear face of said knuckle, and adapted to pass under said lock-block, and to one side thereof; a lever pivoted to the lower face of the top wall of the draw-head, and adapted to operate the lock-bar; an elbow-lever pivoted near the center of the draw-head; a U-shaped loop integral with said lever, and extending downwardly and slightly forwardly, and under the said keeper, and adapted to lock said lock-block down, or to raise the same up, substantially as shown and described and for the purposes set forth.

3. An automatic car-coupler, consisting of a draw-head, preferably in the shape of a box with its front end open, and having a V-shaped recess in its right-hand wall; a lock-block hinged to the rear wall of said draw-head; the front end of said lock-block adapted to be raised or lowered, and provided near its front end with a vertical slot; a bolt passing across said slot; a keeper longitudinally secured to the upper face of said lock-block; a depending lock-bar provided with a rear notch and hinged to the upper wall of the draw-head, and adapted to work in said slot, and its notch to catch over the bolt across the said slot; a knuckle hinged in bearings to one side and the front end of the draw-head; a locking-arm secured to the rear face of said knuckle, and to pass under said lock-block, and to one side thereof; a V-shaped extension extending from the right face of the locking-arm, and into the V-shaped recess in the right-hand wall of the draw-head; a lever pivoted to the lower face of the top wall of the draw-head, and adapted to operate said lock-bar; an elbow-lever pivoted near the center of the draw-head; a U-shaped loop integral with said lever, and extending downwardly and slightly forwardly under the keeper, and adapted to lock said lock-block down, or to raise the same up; a spring having one end secured to the draw-head, the other to the knuckle, and adapted to swing the knuckle open; walls housing said spring; a double-elbow lever secured to the front end of the couch, and adapted to operate the lever that operates the lock-block, substantially as shown and described and for the purposes set forth.

707,270. PROCESS OF MAKING CAMPHENE. KARL SPIEHAL, Berlin, Germany, assignor to Chemische Fabrik auf Actien, vorm. E. Schering, Berlin, Germany. Filed Jan. 18, 1902. Serial No. 90,264. (No specimens.)

Claim.—1. Process of manufacturing camphene, which consists in heating hydrogen-haloid compounds of pinene with bases of the aliphatic group and isolating by known methods the camphene thus produced, substantially as set forth.

2. Process of manufacturing camphene, which consists in heating hydrogen-haloid compounds of pinene with bases of the aliphatic group, binding the excess of the base with an acid and isolating by known methods the camphene produced, substantially as set forth.

707,271. PROCESS OF MAKING CAMPHENE. KARL SCHAAL, Berlin, Germany, assignor to Gesellschaft Fabrik auf Actien, vorm. E. Schering, Berlin, Germany. Filed Jan. 13, 1902. Serial No. 89,209. (No specimens.)

Claim.—Process of manufacturing camphene, which consists in causing ammonia to react upon hydrogen-haloid compounds of pinene for a long time at a high temperature and isolating in the usual manner the camphene thus produced, substantially as set forth.

707,272. METAL-DRESSING MACHINE. FLAVEL P. SCRIPS, Buffalo, and GUELLE C. SCRIPS, North Tonawanda, N. Y. Filed July 30, 1901. Serial No. 70,316. (No model.)

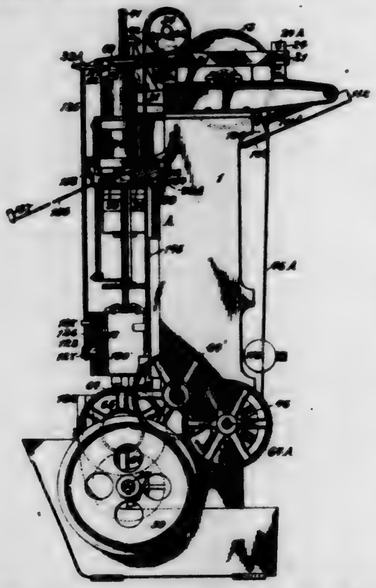

Claim.—1. The combination with dies constantly rotating in one direction only, and intermittently opening, of a hollow head for the dies, an open tubular spindle vertically located and carrying said head, and a bolt-carrier intermittently rotating in one direction only, longitudinally reciprocating to and from the dies, and adapted to suspend the bolt vertically over said hollow head and spindle.

2. The combination with dies, of a bolt-carrier intermittently rotating in one direction only, for bringing the bolts successively to predetermined positions, a cam and lever for forcing said bolt-carrier to and from the dies, and a driver connected up with the above-named elements for automatically operating the same.

3. The combination of a die-carrying head constantly rotating in one direction only and having a vertical axis, a reciprocating bolt-carrier intermittently rotary around a vertical axis, in one direction only, for bringing successive bolts with their axes vertical centrally over the dies, a device movable with said bolt-carrier for forcing said bolts successively to the rotating dies, and means applied only to the heads of the bolts to prevent them from rotating on their axes.

4. The combination of a die-carrying head constantly rotating in one direction only, and provided with openable jaws which support the dies, a bolt-carrier intermittently rotary in one direction only, for bringing one bolt at a time centrally over the dies, means for forcing said bolt-carrier toward the dies, and an adjustable device governed by said means for opening said jaws at predetermined intervals, and devices connected up with said bolt-carrier for respectively and intermittently preventing the same from turning, said device consisting of a pin, and a slotted lever adapted to catch said pin.

5. The combination with constantly-rotating and intermittently-opening dies, of a slide, a bolt-carrier supported by said slide and intermittently rotary in one direction only, for bringing the bolts to predetermined positions, the axes of the above elements being vertical, means for reciprocating said slide relatively to the dies, a driver connected up with the above-named elements for automatically driving the same, and a cross-head supporting said dies, and movable to and from said carrier.

6. The combination with dies constantly rotating in one direction, of a reciprocating slide for supporting a bolt, an adjustable connecting operating element between said slide and said dies for opening the latter, and a driver connected up with the above-named elements for automatically operating the same, racks on the frame of the machine, a cross-head supporting said dies, and pinions on the cross-head gearing into said racks for varying the distance between said carrier and said dies, and a second driver connected up with all the above-named elements.

7. The combination with dies, of a bolt-carrier rotary around and reciprocating along its axis, a slide supporting said carrier, means for opening and closing said dies, a connecting-rod between said slide and said means, and a yielding cam 14 for starting said slide.

8. The combination with dies, of a head for the same adjustable to different heights, a bolt-carrier, a reciprocating slide supporting said carrier, and an adjustable connection between said dies and said slide.

9. The combination with rotating dies, of a notched carrier-wheel whose axis is vertical, for receiving bolts to hang vertical, and rotary around and reciprocating along its axis to and from said dies whose axis of rotation is vertical, a spindle to which said wheel is attached, a reciprocating slide forming a bearing for said spindle at one side of the center of said slide, means for moving said slide to and from said dies, and devices for bringing the centers of the bolts over the center of the dies.

10. The combination with rotating dies, of a bolt-carrier wheel rotary around and reciprocating along a vertical axis to and from said dies whose axis of rotation is vertical, said carrier consisting of a wheel having notches in its periphery equally spaced from one another, and large enough to receive bolts, and so arranged as to shape and position that the heads of the bolts rest by gravity alone upon the carrier around the edges of the notches, and means for pressing the heads of the bolts against the carrier, and a device independent of the carrier for guiding the heads of the bolts in a predetermined manner.

11. The combination with dies, rotating about a vertical axis, of a bolt-carrier, rotating about a vertical axis, means for discharging a bolt from said carrier, and a device simultaneously feeding a bolt with its axis vertical to said carrier, mechanism successively feeding said bolts while hanging with their axes vertical, to and from said dies, and a driver connected up with said elements and automatically driving the same.

12. The combination with dies rotating about a vertical axis, of a bolt-carrier for receiving, holding and discharging bolts consisting of a wheel having a vertical axis and having notches in its periphery equally spaced from one another, a hub on the wheel, a spindle passing through and connected to and detachable from said hub, a bearing for the spindle, and means for reciprocating said bearing to and from said dies, said means pressing upon the head of a bolt when held centrally over said dies.

13. The combination with dies, of a bolt-carrier with its axis vertical and having notches in its periphery equally spaced, a feeding-chute terminating normally at one notch, a discharge-chute beginning near a second notch which is centrally over said dies, and an openable gate between and in addition to the feeding-chute and the carrier.

14. The combination with dies, of a bolt-carrier adapted to receive, hold, transport, and discharge a bolt, a feeding-chute terminating normally at one portion of the carrier, a discharge-chute beginning near that portion of the carrier which is centrally over said dies, means for moving the said first portion of the carrier to the position of the second portion thereof named, and for bringing a new portion to the position of the said first portion and mechanism for reciprocating said carrier relatively to said dies, and a gate for said chute as an additional element to said chute and said carrier.

15. The combination with dies, of a bolt-carrier wheel with the plane of the wheel horizontal and having notches in its periphery equally spaced, and having the head of the bolt above said wheel, and the shank thereof below said wheel, a feeding-chute terminating normally at one notch with the bolts hanging by their head by gravity alone, a discharge-chute beginning near a second notch which is centrally located over said dies, devices for rotating said wheel, and guides jointly acting with the rotating force of said wheel only upon the head of a bolt for steering the same from its notch to said discharge-chute, which is adapted to support the heads only of the bolts with their shanks hanging vertical by gravity alone.

16. The combination with dies, of a bolt-carrier wheel with a vertical axis having notches in its periphery equally spaced, a feeding-chute terminating normally at one notch, a gate between the chute and carrier, means for opening and closing said gate, a declined discharge-chute with the upper portion horizontal beginning near a second notch which is centrally located over said dies, devices for rotating said wheel, and guides in addition to the other elements named for directing and moving the heads of the bolts tangentially away from said wheel and leading them to said discharge-chute, said guides being so arranged that bolts ahead are driven horizontally into the chute by bolts behind them ahead.

17. The combination with dies, of a bolt-carrier wheel with a vertical axis having notches in its periphery, a feeding-chute terminating normally at one notch, a discharge-chute beginning normally near the next notch which is centrally over said dies, said notches receiving the shanks of said bolts, the heads of the bolts resting by gravity alone upon the wheel around the notches, with the shanks hanging loosely vertical, stationary curved guides on opposite sides of the heads only, for guiding the heads of the bolts and extending between the two notches, the shanks of the bolts dangling entirely free, and another guide for the heads extending horizontally from the position of said second notch to said discharge-chute which is declined, the second guides being continuous with the first-named guides, and acting only on the heads of the bolts.

18. The combination with dies, of a bolt-carrier wheel for bringing the bolt centrally over the dies, and having notches in its periphery, a feeding-chute terminating normally at one notch, a discharge-chute beginning normally near the next notch, a horizontal chute leading from the carrier to said discharge-chute, the notches being only large enough to receive the vertically-hanging shanks of the bolts, the heads resting entirely by gravity on top of the wheel around the notches, means for rotating said wheel for carrying a bolt from the feeding-chute to said horizontal chute leading to the discharge-chute, and a guide-piece just above said wheel and having a groove for the bolt-heads extending between the two notches and shaped concentrically around the center of said wheel, the groove then becoming straight, instant of curved, from the position of said second notch to said discharge-chute, for the purpose of forming a part of said horizontal chute, and a vertically-reciprocating slide supporting said carrier-wheel, and said guide-piece, which is so arranged and shaped that the head of a bolt is maintained at a predetermined angle with respect to the discharge-chute.

19. The combination with dies, of a bolt-carrier wheel having means for holding a bolt, a feeding-chute and a discharge-chute terminating and beginning at different portions of said wheel, a guide for the head of the bolt between the two portions named and extending beyond that portion at which the discharge-chute is located, and having a hole, a slide supporting said wheel, and having a plunger-head passing through said hole and acting upon the head of the bolt, and means for depressing said slide together with the bolt-carrier endwise to said dies.

20. The combination with dies, of a bolt-carrier wheel having notches in its periphery, a feeding-chute terminating normally at one notch, a discharge-chute beginning normally near the next notch, which is centrally over said dies, said notches receiving the shanks of bolts, the heads of the bolts resting upon the wheel and around the notches, a stationary curved guide-piece for guiding the head of the bolt and located between the two notches and extending beyond the second notch to said discharge-chute, said guide-piece having a hole centrally over the dies, a slide for supporting said carrier, and a plunger-head attached to said slide and adapted to bear upon the head of a bolt which is located just below said hole.

21. The combination of a rotating wheel having peripheral notches, a feeding-chute declined toward said wheel and normally terminating at one of said notches and adapted to hold bolts with their axes substantially vertical, a gate independent of the carrier and chute for retaining bolts in said chute and located between the latter and said wheel, a device for intermittently stopping said wheel, means for opening said gate, and a constantly-rotating cam for governing the intermittent stopping of said wheel.

22. The combination of a bolt-carrier rotating about a vertical axis, adapted to receive bolts, a feeding-chute normally terminating at said carrier and declined in a straight line, a gate for retaining bolts in said chute and located near the latter and near said carrier, and devices for intermittently stopping said carrier and opening said gate, which alone is adapted to release only one bolt at a time to fall by gravity upon said carrier, and means for adjusting the time of opening of said gate.

23. The combination of a rotating bolt-carrier adapted to receive bolts, a feeding-chute normally terminating at said carrier, a gate for retaining bolts in said chute and located between the latter and said carrier, devices for intermittently stopping said wheel and opening said gate, a single shaft connected up with the above-named elements for automatically operating the same, a second driving-shaft connected up with the first-named shaft, and means for changing the relative speed of the two shafts.

24. The combination of a bolt-carrier wheel having peripheral notches and its axis vertical, a feeding-chute in which are located bolts which are free to slide with their axes vertical by gravity alone entirely from said chute into said notches, a gate acting to stop said bolts, and projecting under said chute to set upon the shanks of said bolts, means for intermittently opening said gate, and devices for intermittently moving said carrier-wheel, the carrier being on a lower level than the delivery end of said feeding-chute, and said gate being so timed to set, that only one bolt is released at each opening and the parts being so proportioned and arranged that the gate in closing enters the space between the shanks of two bolts which are respectively on the carrier and in the chute.

25. The combination of a bolt-carrier wheel having peripheral notches, a feeding-chute in which are located bolts which are free to slide by gravity alone, entirely from said chute into said notches, a gate acting to stop said bolts, means for intermittently opening said gate, devices for intermittently moving said carrier-wheel, and a stop 54ª above said wheel so located and shaped as to maintain the heads of the bolts at predetermined angles relatively to said wheel, and said chute holding the heads at predetermined angles relatively to said stop.

26. The combination of a bolt-carrier wheel having peripheral notches, a feeding-chute in which are located bolts which are free to slide by gravity alone entirely from said chute into said notches, a gate acting to stop said bolts, means for intermittently moving said carrier-wheel, a stop 54ª above said wheel so located and shaped as to maintain the heads of the bolts at predetermined angles relatively to said wheel, and said chute holding the heads at predetermined angles relatively to said stop, guides for said heads having a curved guiding-surface leading from the stop 54ª to near the position of a given discharge-chute, and then continuing as a rectilinear guide 54ª to said discharge-chute.

27. The combination with dies, of a bolt-carrier wheel having notches in its periphery, a feeding-chute terminating normally at one notch, a discharge-chute beginning normally near the next notch which is centrally over said dies, said notches receiving the shanks of said bolts, the heads of the bolts resting upon the wheel around the notches, a stationary curved guide for guiding the heads of the bolts and extending between the two notches, another guide for the heads extending from near the position of said second notch to said discharge-chute, the second guides being continuous with the first-named guides, said feeding-chute being adapted to contain bolts which are free to slide by gravity alone, entirely from said chute into said notches, a gate acting to stop said bolts, means for intermittently opening said gate, and devices for intermittently moving said carrier-wheel.

28. The combination with dies, of a bolt-carrier wheel having notches in its periphery, a feeding-chute terminating normally at one notch, a discharge-chute beginning normally near the next notch, which is centrally over said dies, said notches receiving the shanks of bolts, the heads of the bolts resting upon the wheel and around the notches, a curved guide stationary relatively to said wheel for guiding the head of the bolt and located between the two notches and extending beyond the second notch to said discharge-chute, said guide-piece having a hole centrally over the dies, a slide for supporting said carrier and said guide, a plunger-head attached to said slide and adapted to bear upon the head of a bolt which is located just below said hole, said feeding-chute being adapted to contain bolts which are free to slide by gravity alone, entirely from said chute successively into said notches, a gate acting to stop said bolts, means for intermittently opening said gate and devices for intermittently rotating said carrier-wheel.

29. The combination with dies, of a bolt-carrier having peripheral notches, said notches receiving the shanks of said bolts, the heads of the bolts resting upon the wheel around the notches, stops 54ª bearing loosely against the opposite sides of the head of a bolt to prevent the same from turning, a plunger pressing upon the top of the head of the bolt, and means for depressing said plunger and said carrier to the dies.

30. The combination with dies, of a bolt-carrier having peripheral notches for receiving the shanks of said bolts, the heads of the bolts resting upon the wheel around the notches, stops 54ª to prevent the bolts from turning and located at the sides of the heads thereof, a plunger pressing upon the top of the heads, a slide supporting said carrier, stops and plunger, and means for depressing said slide toward the dies.

31. The combination with dies, of an intermittently-rotating bolt-carrier having a series of notches adapted to receive the circular shank of a bolt, so that the head thereof rests by gravity alone, on said carrier, at the receiving position thereof, and stops acting on the squared or hexagonal head of the bolt only at the threading position, for resisting the rotating force of the dies, a plunger-head pressing on the bolt only at the threading position, and means for carrying and forcing said plunger with the bolt to the dies.

32. The combination with dies, of a bolt-carrier having a notch adapted to receive the shank of the bolt so that the head thereof rests by gravity

on said carrier, means for resisting the rotating force of the dies upon said bolt, said means consisting of parallel steps 54^b at the sides of the head of said bolt, said steps following the bolt in its descent to said dies.

33. The combination with dies, of a bolt-carrier having a notch adapted to receive the shank of the bolt so that the head thereof rests by gravity on said carrier, and means for resisting the rotating forces of the dies, upon said bolt, a slide supporting said carrier, a barrel in which said slide reciprocates, and a discharge-chute secured to said barrel and having parallel guides which are a continuation of said steps.

34. The combination with dies, of a bolt-carrier wheel having notches in its periphery, a feeding-chute terminating normally at one notch, a discharge-chute beginning normally near the next notch, which is centrally over said dies, said notches receiving the shanks of said bolt, the heads of the bolt resting upon the wheel and around the notches, a curved guide-piece for guiding the head of the bolt located between the two notches and extending beyond the second notch to said discharge-chute, said guide-piece having a hole centrally over the dies, a slide for supporting said carrier, a plunger-head attached to said slide and adapted to bear upon the head of a bolt which is located just below said plunger, said feeding-chute being adapted to contain bolts which are free to slide by gravity alone, entirely from said chute successively into said notches, devices for intermittently moving said carrier-wheel, a gate consisting of a hook in front of the front bolt in said chute, a lever of which said hook forms an extension, a pivot for said lever secured upon said chute, a spring attached to said lever so that its free end bears against said chute for holding the gate normally closed, a pin and roller carried by said lever, an inclined plane bearing against said roller, a rod to which said inclined plane is attached, bearings extending from said chute and supporting said rod and permitting longitudinal movements thereof, said inclined plane being adjustable along said rod, and mechanism for reciprocating said rod at predetermined intervals.

35. The combination of a bolt-carrier adapted to receive bolts, a feeding-chute terminating at said carrier, a gate consisting of a hook in front of the front bolt of said chute, a lever of which said hook forms an extension, a pivot for said lever secured upon said chute, a retractile spring attached to said lever, for holding the gate normally closed, a pin and roller carried by said lever, an inclined plane bearing against said roller, a rod to which said inclined plane is attached, bearings for said rod and permitting only longitudinal movements thereof, said inclined plane being adjustable along said rod, and mechanism for reciprocating said rod at predetermined intervals for opening said gate.

36. The combination of a bolt-carrier wheel having peripheral notches, a feeding-chute in which are located bolts which are free to slide by gravity alone, entirely from said chute into said notches, devices for intermittently moving said wheel, a stop 54^b above said wheel so located and shaped as to maintain the heads of the bolts at predetermined angles with respect to said wheel, and said chute holding the heads at predetermined angles relatively to said stop, a gate consisting of a hook in front of the front bolt in said chute, a lever of which said hook forms an extension, a pivot for said lever, a retractile spring attached to said lever for holding said gate normally closed, a pin and roller carried by said lever, an inclined plane bearing against said roller, a rod to which said inclined plane is attached, bearings for said rod, permitting longitudinal movements thereof, said inclined plane being adjustable along said rod, and mechanism for reciprocating said rod at predetermined intervals for opening said gate.

37. The combination of a chute having a longitudinal groove on the under side thereof, adapted to hold the heads of bolts and inclined sufficiently for the bolts to slide down by gravity alone, a gate in front of the front bolt, and bearing against the shank of said bolt, the heads being within said groove, means for opening and closing the gate, a carrier opposite said gate and immediately adjacent thereto and having a notch for receiving the shank of one bolt at a time, a stop 54^b above said carrier against which the head of a bolt strikes, is stopped, and bears, and eccentric guides above said carrier, one of said guides being a continuation of said stop.

38. In a bolt-machine, a bolt-chute, adapted to contain bolts which are free to slide by gravity from the chute, an angle-plate 98 serving as a lever, a gate in front of the bolts and fastened adjustably to said lever, whose pivot-pin is 101 located in the hole 98^c on top of the chute, a pin and roller carried by said lever, a retractile spring fastened to said lever for holding said gate closed, a rod movable longitudinally, an inclined plane carried by said rod and bearing against said roller, a slide on said rod and guides for said slide, a lug 108 on the slide and a constantly-rotating tripping-finger 20 in whose path said lug is located.

39. In a bolt-machine, a bolt-chute, adapted to contain bolts which are free to slide by gravity from the chute, an angle-plate 98 serving as a lever, a gate in front of the bolts and fastened adjustably to said lever, whose pivot-pin is 101 located in the hole 98^c on top of the chute, a pin and roller carried by said lever, a spring fastened to said lever so that its free end presses against said chute for holding said gate closed, a rod movable longitudinally, an inclined plane carried by said rod and bearing against said roller, a slide on said rod and guides for said slide on said chute, a lug 108 on the slide and a constantly-rotating tripping-finger 20 in whose path said lug is located, said slide being adjustably fixed to said rod, a retractile spring 111^a surrounding said rod and abutting against said slide, a constantly-rotating shaft for operating said tripping-finger 20 and a driver for turning said shaft.

40. In a bolt-machine, the combination of a bolt-feeding chute having a gate, means for opening said gate, a retractile spring for closing the same, a second retractile spring for returning said means to its normal position, and an intermittently-actuating element for operating said means to open said gate.

41. In a bolt-machine, the combination of a bolt-chute, a gate consisting of a pivoted hook provided with a pin and roller, and a reciprocating inclined plane acting on said roller for opening the gate at intervals.

42. In a bolt-machine, the combination of a bolt-chute, a gate consisting of a pivoted hook, a pin said roller provided therefor, a reciprocating rod, and an inclined plane carried by said rod and bearing on said roller.

43. The combination with dies, of a rotary bolt-carrier wheel having notches in its periphery, a feeding-chute terminating normally at one notch, a discharge-chute beginning normally near the next notch, which is centrally over the dies, said notches receiving the shanks of said bolt, the heads of the bolt resting upon the wheel and around the notches, a stationary curved guide-piece for guiding the head of the bolt and located between the two notches and extending beyond the second notch to said discharge-chute, said guide-piece having a hole centrally over the dies, a slide for supporting said carrier, a plunger attached to said slide, passing through said hole, and adapted to bear upon the head of the bolt which is located just below said hole, a pivoted gate for releasing bolts, and standing across the exit of said chute, means for opening said gate, a retractile spring for closing the same, and an intermittently-actuating element for operating said means to open said gate, and consisting of a constantly-rotating tripping-finger, and a lug in the path thereof connected up with said means.

44. In a bolt-machine, the combination of a declined chute in which the bolts have their axes substantially vertical, an openable gate for releasing bolts from said chute, a pivot on top of the chute for said gate to turn upon, a longitudinally-reciprocating rod connected up with said gate, a stop for limiting the motion of said rod, a slide attached to said rod and having bearings supported by said chute, means for returning said rod to its normal position, said chute being located on a higher level than that of said gate, which bears against the shank of the lowest bolt, while the heads of the bolts rest by gravity on the upper surface of said chute.

45. In a bolt-machine, the combination of a chute, an openable gate for releasing bolts from said chute, a longitudinally-reciprocating rod connected up with said gate, a stop for limiting the motion of said rod, a slide attached to said rod and having a bearing, a retractile spring for returning said rod to its normal position, a lug on said slide, and an intermittently-actuating finger in whose path said lug is located.

46. In a bolt-machine, a discharge-chute consisting of inclined tracks 155 and 156, a bracket 153 to which said tracks are bolted, a stationary support for said bracket, a rotating carrier-wheel having notches and having its upper periphery adjacent to and substantially in the same plane with the upper surfaces of said tracks, and parallel guides 54^a on a guide-piece 54 which is above said wheel and movable therewith and whose surfaces are in line with the vertical edges of said tracks, and tracks 54^a serving to guide the bolt-head, by the action of the rotation of said wheel, to a position between said tracks 54^a.

47. The combination of a bolt-feeding chute in which the bolts hang substantially vertical, the one behind the other, and which is inclined, a gate in front of the bolts at the exit of the chute, a notched bolt-carrier for receiving bolts from said chute, devices for turning said carrier to bring the bolt centrally over the dies of the bolt-machine, means for holding the bolt from turning on its axis when over said dies, a plunger bearing upon the head of said bolt, a reciprocating slide supporting said plunger and said carrier, mechanism controlled by said slide for opening said dies, a discharge-chute, guides for directing said bolt from the carrier to said discharge-chute, and a single driver connected up with all of the above-named elements for automatically operating the same.

48. The combination with constantly-rotating and intermittingly-opening dies, of a slide 38, a bolt-carrier, supported thereby, a ratchet-wheel for said carrier, a pawl adapted to engage with said wheel, a slide 21 supporting said pawl, a cam 13, a lever connected with the slide 38 and having a pin and roller engaging with said cam, and a second cam 19, engaging with the slide 21.

49. The combination with constantly-rotating and intermittingly-opening dies, of a slide 38, a bolt-carrier, a spindle therefor, a ratchet-wheel supported on said spindle, a pawl adapted to engage with said wheel, a slide 21 supporting said pawl, cams connected up respectively with said slides, and a constantly-rotating shaft for said cams.

50. The combination with constantly-rotating and intermittingly-opening dies, of a slide 38, a bolt-carrier, a spindle therefor, a ratchet-wheel supported on said spindle, a pawl adapted to engage with said wheel, a slide 21 supporting said pawl, cams connected up respectively with said slides, a constantly-rotating shaft for said cams, and a catch governed by the motions of the slide 21 and 38 for intermittently locking said ratchet-wheel.

51. The combination of a bolt-carrier wheel having notches, a reciprocating slide, a spindle supporting said wheel and extending through the whole length thereof and projecting above the top thereof, a ratchet-wheel fixed on the upper end of said spindle and having as many teeth, consisting of pins on the top thereof, as there are notches in said bolt-carrier, said teeth projecting downward to form projections on the under side of said wheel, and adapted to be locked by a pivoted catch, which consists of a lever having a hole for receiving one of said pins, a spring constantly pressing said catch upward for locking said pin, a horizontally-reciprocating pawl extending at certain phases into the path of said catch, said pawl being adapted in its forward position to engage with one of said pins on said ratchet-wheel, a constantly-rotating shaft, a cam thereon, a slide 21 supporting said pawl, and a pin and roller supported on said slide and bearing on said cam.

52. The combination with constantly-rotating and intermittently-opening dies, of a slide 38, a bolt-carrier, a ratchet-wheel for said carrier, a pawl adapted to engage with said wheel, a slide 21 supporting said pawl, cams connected up respectively with said slides, a constantly-rotating shaft for said cams, a catch for said wheel governed by the motions of said slide for intermittently locking said wheel, an inclined bolt-feeding chute for supplying said carrier with bolts, and located on a higher level than said carrier, and directly opposite a notch provided in said carrier at its normal position, a gate for releasing said bolt and consisting solely of a hook standing across the exit of said chute for feeding said bolts from said chute to said carrier, a lever supporting said gate and having a pivot-pin, a pin and roller carried by said lever, a spring fastened to said lever to act as a retractile spring therefor for holding said gate closed, a rod movable longitudinally, an inclined plane carried by said rod and bearing against the roller upon said lever, a slide 107 for said rod, guides for said slide 107, a constantly-rotating tripping-finger on one of the above-named cams, and a lug on the slide 107 in the path of said finger.

53. The combination with constantly-rotating and intermittently-opening dies, of a reciprocating slide 38, a bolt-carrier governed longitudinally thereby, a slide 21 governing the rotary motions of said carrier, cams connected up respectively with said slides, a chute for supplying said carrier with bolts, a gate in addition to said slide 38 at the exit of said chute, and means for opening and closing said gate.

54. The combination with constantly-rotating and intermittingly-opening dies, of a reciprocating slide 38, a rotary bolt-carrier governed longitudinally thereby, a slide 21 governing the rotary motions of said carrier, cams connected up respectively with said slide, a chute for supplying said carrier with bolts, a gate for the exit of said chute, means for opening and closing said gate, and connected up with one of said cams, and a common shaft for both of said cams.

55. The combination with constantly-rotating and intermittently-opening dies, of a reciprocating slide 38, a bolt-carrier governed longitudinally thereby, a slide 21 governing the rotary motions of said carrier, cams connected up with said slides respectively, a chute for supplying said carrier with bolts, a gate for the exit of said chute, means for opening and closing said gate, and connected up with one of said cams, a common shaft for both of said cams, a connecting-rod between said dies and the slide 38, a shaft for rotating said dies, and intermediate driving mechanism between the said two shafts.

56. In a bolt-machine, the combination of a bolt-carrier, a slide having a bearing, a spindle for the carrier extending through said bearing, a ratchet-wheel consisting of a disk made rigid with said spindle, pins passing through the disk at equal intervals circularly, and projecting out, both from the upper surface and from the lower surface, the upper portions forming teeth 81, and the lower portions forming stumps 81^a which are adapted to be held and released by a catch, a pawl 99 in whose path the teeth 81 are located successively as often as the bolt rises out of the dies to its highest point, a pivoted lever or catch having a hole in the path of the stumps 81^a, and pivoted to said slide, a spring continually pressing said catch upward toward said stump, an upwardly-formed hook 82^c in the path of said pawl, means for reciprocating said pawl, and a device for re-ciprocating said slide.

57. In a bolt-machine, a rotary bolt-carrier having a ratchet-wheel, a slide carrying a pawl for intermittently rotating said wheel, a pin and roller on said slide, guides consisting of slotted brackets, having notches 23^a, covered by holding-plates 24, a cam with which said roller engages and consisting of a disk having tracks spaced to the diameter of said roller and having the first portion of its curvature an arc equal to about ninety degrees for maintaining said pawl directly over that tooth which is to be caught by it, a second portion of the curvature of said tracks for moving the slide back so as to turn said ratchet-wheel, the next curvature in order being an arc and serving to maintain said pawl in a free position away from said ratchet-wheel, and the fourth portion of the curve being a spiral gradually approaching said center, for moving the pawl again directly over said ratchet-wheel, and means for constantly rotating said cam.

58. In a bolt-machine, the combination of a bolt-carrier, a reciprocating slide supporting said carrier, a lever pivoted to the frame of said machine and pivotally connected to said slide, a constantly-rotating wheel, cams supported thereby and engaging with said lever alternately, for reciprocating the same, and a third cam rotating with the first-named cams, and a pawl and ratchet-wheel connected up with said carrier and with said third cam.

59. In a bolt-machine, the combination of a bolt-carrier, a reciprocating slide supporting said carrier, a lever pivoted to the frame of said machine and pivotally to said slide, a constantly-rotating wheel, cams supported thereby and engaging with said lever alternately, for reciprocating the same.

60. In a bolt-machine, a bolt-carrier, a yielding cam connected up with said carrier, a stop positively limiting the motion of the cam in one direction, a spring for limiting the motion in the other direction in a cushion-like manner, and a pivot-support for said cam.

61. In a bolt-machine, a reciprocating bolt-carrier, a yielding cam connected up with said carrier, for depressing the same, a stop positively limiting the motion of the cam in one direction, a spring for limiting the motion in the other direction in a cushion-like manner, a shaft and wheel carrying said cam, a second cam on said shaft adapted to engage by intermediate devices with said carrier, and a pivot-support for said cam.

62. In a bolt-machine, a bolt-carrier, a reciprocating slide supporting the same, a counterweight for the slide which has a central opening, tracks 80, a sliding block 77 on said tracks and movable back and forth and movable up and down with said slide, a lever pivotally connected to said block, and fulcrumed at the other end to the frame of the machine, a pin and roller on said lever, a cam 14 upon which said roller is adapted to bear, a pivot 14^a, a spring holding said cam away from the center of its rotation, a stop limiting the action of said spring, a wheel carrying said spring and said cam, means for adjusting said spring and consisting of an adjustable lever which supports said spring, said cam being movable toward the center of said wheel, and a cam 15^c carried by said wheel in the path of said roller.

63. In a bolt-machine, a chute consisting of the combination of an inclined beam having a slot on the under side thereof, and having holes 112^a located at intervals, plates 113 serving as tracks for the heads of the bolts and attached to said beam extending toward each other partly beyond the edges of the slot to form a groove in said beam, a spring-guide at one end of the chute, in said slot, opposite said tracks and attached at one end to said beam, and means for adjusting said guide.

64. In a bolt-machine, the combination of a reciprocating element, and means for reciprocating said element, consisting of a wheel, a cam pivoted eccentrically thereon, a spring resisting inward motions of said cam, a stop positively resisting outward movements of said spring, a second cam fixed permanently to said wheel and curving spirally from its periphery part way to the other cam, and means for adjusting the pressure of said spring against the first-mentioned cam.

65. In a bolt-machine, the combination of a reciprocating slide for taking the bolt to and from the dies of the machine, a rotary carrier supported thereon and supporting a ratchet-wheel by which said carrier is rotated, a longitudinally-reciprocating pawl for turning said wheel, and a catch pivoted to said slide, connected up with said wheel for locking the same, and governed, in its movements of locking and unlocking said wheel, by the joint action of said slide and said pawl.

66. In a bolt-machine, the combination of a hollow head for holding the dies and having a hollow spindle, a shaft connected up therewith for rotating the head, a rotary and longitudinally-reciprocating bolt-carrier, a shaft connected up therewith through the medium of cams and levers, for operating the same, means for communicating motion from the first shaft to the second, change-gear and cone-pulleys forming the essential elements of said means.

67. The combination of a rotating head, a bolt-carrier a moving device for manipulating the bolt-carrier with respect to said head and intermediate mechanism between said head and said device for changing the speed of said device relatively to the speed of said head, said mechanism consisting essentially of change-gear wheels, in combination with bolted cone-wheels, and of cams which act jointly upon said carrier, respectively imparting thereto an intermittent rotary motion and a reciprocating longitudinal motion.

68. The combination with dies, of a bolt-carrier wheel for bringing the bolt centrally over the dies, and having notches in its periphery, a

feeding-chute terminating normally at one notch, a discharge-chute terminating normally at the next notch, the notches being only large enough to receive the shanks of the bolts, the heads resting on top of the wheel around the notches, means for rotating said wheel for carrying a bolt from the feeding-chute to the discharge-chute, and a guide-piece just above said wheel and having a groove for the bolt-heads extending between the two notches and shaped concentrically around the center of said wheel, the groove then becoming straight, instead of curved, from the position of said second notch to said discharge-chute.

707,273. **SLIDE FOR METAL-DRESSING MACHINES.** PLATUS P. STIKER, Buffalo, and ORVILLE C. BURTON, North Tonawanda, N. Y. Filed July 30, 1901. Serial No. 70,312. (No model.)

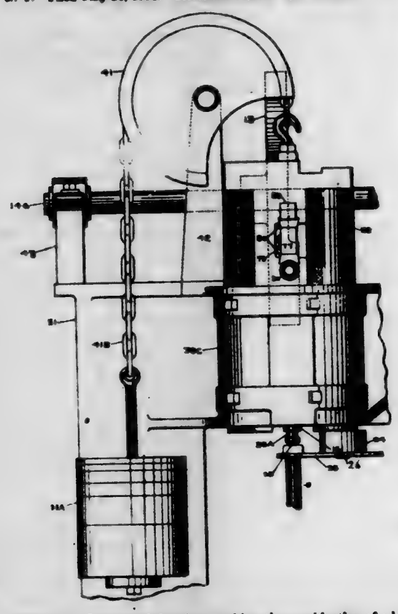

Claim.—1. In a metal-dressing machine, the combination of a barrel having internal circular and radial surfaces, a slide having corresponding circular and radial surfaces and free to reciprocate within said barrel, a plunger-head, projecting centrally from the lower end of said slide, and a carrier supported at one side of the plunger for supporting the object, to be worked upon, centrally under said plunger, the said carrier being supported by the said slide.

2. In a metal-dressing machine, the combination of a barrel having internal circular and radial bearing-surfaces, a slide having corresponding circular and radial surfaces and free to reciprocate within said barrel, a plunger-head projecting from the lower end of said slide, a counterweight arranged to counterbalance the weight of said slide, and a carrier for supporting said object, and movable with said slide, the said carrier being supported by the said slide.

3. In a metal-dressing machine, the combination of a barrel, gibs therein running longitudinally thereof, and having radial bearing-surfaces, said barrel having circular bearing-surfaces between said gibs, a reciprocating slide within said barrel, and provided with circular and radial bearing-surfaces which bear upon the circular and radial surfaces in said barrel, and a carrier rotary about a spindle located eccentrically to said plunger.

4. In a metal-dressing machine, the combination of a barrel, gibs therein running longitudinally thereof, and having radial bearing-surfaces, said barrel having circular bearing-surfaces between said gibs, a reciprocating slide within said barrel, and provided with circular and radial bearing-surfaces which bear upon the circular and radial surfaces in said barrel, a plunger carried by said slide, a spring for pressing upon said plunger, adjustable stops for limiting the action of said plunger and means for adjusting the pressure of said spring upon said plunger.

5. In a metal-dressing machine, the combination of a plunger supported thereby and consisting of the combination of a rod 55ᵃ threaded at its upper portion and movable up and down in said slide, a threaded rod 141 fixed to said slide, and having a hollow lower portion into which partially extends the rod 55ᵃ, adjustable stop jam-nuts 159 and 160 on said rod 55ᵃ, two other adjustable jam-nuts 150 and 158 on the same rod, a nut 143 on the rod 141, and a spring between said nut and the jam-nuts 150 and 158.

707,274. **MACHINE FOR SETTING BUTTONS.** EDWIN B. STIMPSON, Brooklyn, N. Y. Filed Sept. 30, 1901. Serial No. 76,609. (No model.)

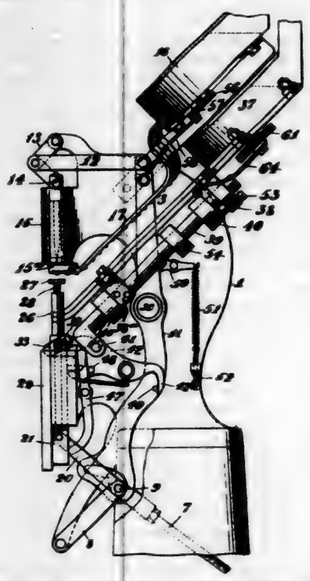

Claim.—1. In a machine for the purpose specified, a work-bed, a perforating and clenching plunger, means for operating the same to perforate the fabric, means for locking the plunger in its advanced, perforating position in order that it may serve as a clenching device, means for feeding buttons to the setting-point at the plunger, means for feeding the eyeleting-eyelets to the other side of the fabric and in alinement with the plunger, a yielding eyelet-spindle alined with the plunger, a tubular anvil embracing said spindle, and means for operating said spindle and anvil for driving the eyelet through the fabric and button, the eyelet being driven and clenched after the locking of the depressed plunger, substantially as set forth.

2. In a machine for the purpose specified, a work-bed, a perforating and clenching plunger, means for operating the same to perforate the fabric, means for locking the plunger in its advanced perforating position in order that it may serve as a clenching device, means for feeding buttons to the setting-point at the plunger, means for feeding the eyeleting-eyelets to the other side of the fabric and in alinement with the plunger, a yielding eyelet-spindle alined with the plunger, a tubular anvil embracing said spindle, means for operating said spindle and anvil for driving the eyelet through the fabric and button, means, operating simultaneously with the plunger, and moving the work-bed to clamp the fabric during the setting operation, and means for positively locking the supports for the work-bed against depression during the setting operation, substantially as set forth.

3. In a machine for the purpose specified, the combination with a work-bed, a pointed piercing and clenching plunger, means for operating the latter to pierce the fabric, means for locking the said plunger in its advanced, perforating position, means for feeding the apertured buttons or the like into alinement with the plunger, and means operating substantially simultaneously with the plunger for moving the work-bed up to clamp the fabric, of means for positively locking the supports of the work-bed when elevated, said means for driving an eyelet up over the plunger and through the fabric and button and clenching the eyelet, substantially as set forth.

4. In a machine for the purpose specified, the combination with the perforating and clenching plunger and its guide, the toggle coupled thereto, the lever 11, the link coupling said lever to the knuckle of the toggle, means for operating said lever to straighten the toggle and form a positive lock for the plunger when it is depressed, means for feeding apertured buttons or the like into alinement with the plunger, a work-bed to support the fabric, and means operating substantially simultaneously with the plunger for moving the work-bed up to clamp the fabric, whereby the said plunger is operated to perforate the fabric and thereafter lock it in its advanced position in order that it may serve as a clenching device, of means for supplying the eyelets and driving them up over the plunger and through the fabric and button, substantially as set forth.

5. In a machine for the purpose specified, the combination with a pointed perforating and clenching plunger and its guide, means for operating the latter to pierce the fabric, means for locking the said plunger in its advanced, perforating position, means for supplying apertured buttons or the like to a position of alinement with the plunger, a work-bed to support the fabric, and means for moving said bed upward substantially simultaneously with the descent of the plunger, means for locking the supports of the elevated bed against depression, of a sliding block 21 and its guide, means for moving said block upward under the work-bed, the tubular anvil 23 in said block, the eyelet-spindle 24, in the hollow of said anvil, its spring 25, and means for feeding the eyelets into the path of said spindle, substantially as set forth.

6. In a machine for the purpose specified, the combination with the plunger 14 and its guide, the toggle 13, coupled to said plunger, the lever 11, having in it the slot 10 with a shoulder 10ᵃ, the link coupling the upper end of said lever with the knuckle of the toggle, the operating-rod 7, coupled to the free end of a rocker 9, the said rocker, and a stud 9 in said rod engaging the slot and shoulder in the lever, of a work-bed, means for supplying buttons into alinement with the plunger over the work-bed, and means for supplying and setting the eyeleting-eyelets, substantially as set forth.

7. In a machine for the purpose specified, the combination with means for supporting and holding the fabric, for piercing the latter, for advancing a clenching-plunger, for locking the said plunger in its advanced position during the clenching operation, and for supplying buttons or the like to be set, of the block 21 and its guide, the rod 7 and link 20 for operating said block, the tubular anvil 23, set in said block, the eyelet-spindle 24 and its spring, said spindle being carried by said block and occupying the bore in the anvil, the eyelet-trunk and bar slidably mounted, and means between the block 21 and said trunk whereby the former, in its upward movement, moves back the trunk, substantially as set forth.

8. A machine for the purpose specified having the following instrumentalities, namely, the fixed guide 22, the block 21 slidably mounted in said guide and having the slots 31, with cam-like branches 31ᵃ, the cam-like supports 26 mounted in said block, the toggle-plates 33, pivotally mounted on said supports through said slots 31 and bearing on the guide 22, said plates being each provided with a stud 34 which engages the slot, the work-bed mounted on said supports 26, and means for moving said block 21 in its guide, substantially as set forth.

9. A machine for the purpose specified having the following instrumentalities, namely, the eyelet-box, a trunk 36 carrying said box, the slide 30 and its guides, the eyelet-trunk being secured to said slide, the rocker 42, connected by a slotted coupling to said slide and having a jaw 43, the sliding block 21 having a stud or projecting part 45 to engage said jaw, and an automatic detent to prevent the return of the slide 30, said detent being actuated for disengagement by the block 21, substantially as set forth.

10. A machine for the purpose specified having the following instrumentalities, namely, a plunger and its guide, a toggle for operating said plunger, the lever 11, the link coupling said lever to the toggle, means for operating said lever to straighten the toggle, a rocker 42 having a hook 42ᵃ to engage a stud 49 in the lever and hold the lever against movement, and means for operating the said rocker, substantially as set forth.

11. A machine for the purpose specified having the following cooperating instrumentalities, namely, a plunger and its guide, a toggle for operating said plunger, a main toggle-operating lever, a link coupling one arm of said lever to the knuckle of the toggle, a rocker, means for operating said lever and rocker, and means cooperating with the said lever and rocker whereby the latter locks the former in position after the toggle is straightened for advancing the plunger.

12. A machine for the purpose specified having the following instrumentalities, namely, a fixed guide, a block slidably mounted in said guide, a tubular anvil fixed in said block, means for moving said block, a movable work-bed, and means, actuated by said block during the initial portion of its upward movement, for moving said work-bed a limited distance and for locking it when moved, substantially as set forth.

13. In a machine of the character specified, an inclined box or reservoir to contain buttons or the like to be supplied to the machine, said box having a hopper-like inlet at its upper end, an oscillating brush in a semi-circular compartment at its lower end, a lateral outlet for the buttons from the brush-compartment, and a substantially level apertured partition 59 between the inlet and the brush-compartment, in combination with the trunk which receives buttons from the box, substantially as set forth.

707,275. **BRICK-MACHINE.** WALTER F. STIMPSON, Milan, Mich. Filed Oct. 7, 1898. Serial No. 693,826. (No model.)

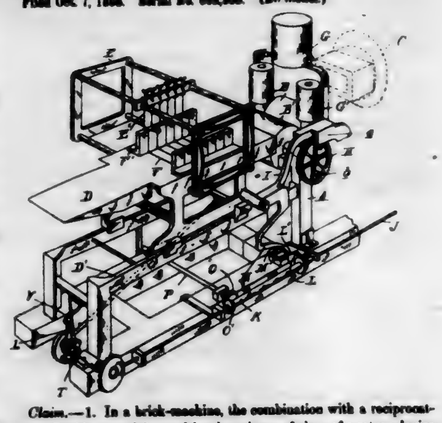

Claim.—1. In a brick-machine, the combination with a reciprocating cut-off table moved forward by the column of clay, of a return device therefor comprising a crank, and a lost-motion connection between said crank and table adapted to return the latter in one half-revolution of said crank, and to permit of the free rotation of said crank through the other half-revolution.

2. In a brick-machine, the combination with a reciprocating cut-off table, moved forward by the column of clay, of a return device therefor comprising a two-part telescoping connecting-rod, one part being connected to the table, a crank to which the other part of the rod is connected and means for intermittently actuating the crank for the purpose described.

3. In a brick-machine, the combination with a reciprocating cut-off table moved forward by the column of clay, of a return power mechanism therefor comprising a rod, connecting the table to the power mechanism, one part of the rod being connected to the table and the other part to the actuating device therefor, with a sliding connection between the two parts, and means for intermittently reciprocating the rod connected to the power mechanism, for the purpose described.

4. In a brick-machine, the combination with a reciprocating cut-off table, of a rotating support over which the clay is fed onto said table, a gear-wheel connected with said rotating support, a connecting-bar pivotally attached at one end to said table, and extending over said gear-wheel, the under side of said bar having a rack-face, means for holding said rack, out of engagement with said gear-wheel, during a partial revolution thereof and then allowing the former to drop into engagement with the latter, and means for locking said bar from forward movement while out of engagement with said gear-wheel and for automatically unlocking said bar upon the dropping thereof into engagement.

5. In a brick-machine, the combination with a reciprocating cut-off table, of a rotating support over which the clay is fed onto said table, a gear-wheel connected with said rotating support, a connecting-bar pivotally attached to said table and extending over said gear-wheel, the under side of said bar being provided with a rack-face, means for holding said rack above and out of engagement with the gear-wheel during a partial revolution thereof and then dropping the same into engagement, a flange extending laterally from said bar, and a stop arranged to be in the path of the forward end of said flange while said bar is held in its raised position, the dropping of said bar being adapted to clear said flange from said stop.

6. In a brick-machine, the combination of the roller B, upon which the clay is fed from the clay-mill, and a reciprocating table adapted to be moved forward by the clay through the motion of the roller, of connecting mechanism consisting of the gear-wheel H, having the lug *f* and pin *h*, the connecting-bar I, having the rack-bars *a*, and the flange or cam *e*, cooperating with the pin on the gear-wheel for the purpose described.

7. The combination with a reciprocating table and its transversely-reciprocating cut-off carriage, of an actuating device therefor, comprising the rack-bar B' and its connecting-gear to the carriage, of a vertically-reciprocating actuating device for the rack-bar and a sliding connection between such difference device and the rack-bar whereby the actuation of the rack-bar takes place during the forward travel of the carriage, substantially as described.

8. In a brick-machine, the combination with the reciprocating table of a transversely-reciprocating cut-off carriage thereon, of an actuating device for the cut-off frame comprising a drive-chain, means for tempera-

rily connecting the drive-shaft with a suitable source of power, the slotted plate Q' adapted to be reciprocated by connection with the drive-shaft, means for holding the slotted plate in a horizontal position and a vertical reciprocating actuating device for the cut-off carriage having sliding engagement with the slotted plate, substantially as described.

9. In a brick-machine, the combination with the transversely-reciprocating cut-off, a reciprocating table upon which the cut-off is carried, of a reciprocating device for the cut-off comprising the vertically-reciprocating rack-bar S' carried by the table, the gear connection from the rack-bar to the cut-off, the slotted head Q', the links R supporting the slotted head continually in a horizontal position, means for intermittently and positively actuating the slotted head and a sliding connection between that head and the rack-bar.

707,276. BRICK-MACHINE. WALTER F. STEPSON, Detroit, Mich. Filed June 25, 1901. Serial No. 65,911. (No model.)

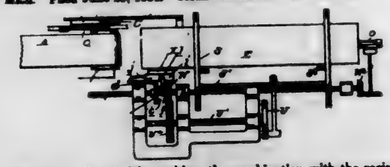

Claim.—1. In a brick-machine, the combination with the reciprocating cutting-table, the cutter mechanism and a rotary driver therefor, of a clutch for automatically coupling said driver to said cutter mechanism, and having a projecting tripping-finger, and a member carried by said table projecting into the path of said tripping-finger to form a stop for disengaging said clutch, said member being cut away at one point to permit of the disengagement of said finger therefrom in the initial movement of said table.

2. In a brick-machine, the combination with the reciprocating cutting-table, the cutter mechanism and a rotary driver therefor, of a clutch for automatically coupling said driver to said cutting mechanism and having a projecting tripping-finger, a member carried by said table projecting into the path of said tripping-finger to form a stop for disengaging said clutch, said member being cut away to permit of the disengagement of said tripping-finger in the initial movement of said table and having a portion for arresting said tripping-finger after the completion of the cut and for maintaining it in its tripped position during the return movement of the table.

3. In a brick-machine, the combination with the reciprocating cutter-table, the cutter mechanism and a rotary driver therefor, of a clutch for automatically coupling said cutter mechanism to said driver, and having a projecting tripping-finger, a member secured to said table comprising two flanges arranged to extend parallel to the plane of movement but in separate planes, one of said flanges forming a stop for said finger in the initial position of said table, and adapted to release the same in the initial forward movement, and the other flange being adapted to rearrest said finger after the completion of the cut, and to guide the same into reengagement with said first flange in the return movement of said table.

4. In a brick-machine, the combination with a cutting-table, and a drive mechanism therefor deriving its movement from the traveling column of clay, of a segmental gear connected with said drive mechanism and a rack-bar connected with said table for engaging with said gear-wheel, said rack-bar having an enlarged forward tooth adapted to first drop into engagement with said gear-wheel.

5. In a brick-machine, the combination with a cutting-table and a forward drive mechanism therefor deriving its movement from the traveling column of clay, of a segmental gear-wheel connected with said drive mechanism, a rack-bar connected to said table adapted to drop into mesh with said segmental gear-wheel when brought in registration therewith, a hinged stop-arm adjacent to said rack and a roll upon said arm forming a stop for said rack and adapted when the latter falls in mesh to ride over the upper face thereof until said table is returned.

707,277. COMBINATION MATCH-BOX. CAMILLE ST. JACQUES, Cranbrook, Canada. Filed Jan. 26, 1902. Serial No. 91,174. (No model.)

Claim.—1. A combination match-box comprising an outer box-casing, an inner box attached concentrically therein, and a ball hinged upon one side of the inner box carrying a roll of paper thereon.

2. A combination match-box comprising an outer box and inner box attached concentrically therein, a roll of paper pivotally mounted on one end of said box and fitting in the space between the outer and inner boxes, and a sheath carried by the side of the inner box adapted to receive a pair of tweezers.

3. In a combination match-box, a sheath attached to the under side of the box and having a slot in its upper side, and a knife-blade sliding in said sheath and having a lug projecting through said slot, in combination with a plate-spring pivotally attached to the upper side of the sheath so as to turn in a lateral plane, and adapted to overlie the slot so as to hold the plate in extended or retracted position.

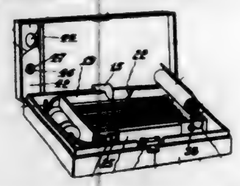

4. A combination match-box comprising an outer box, an inner box concentrically secured therein and adapted to hold matches, and a roll of cleaning material mounted on a bail pivotally attached to one end of the inner box and folding into the intermediate space between the two boxes, and one or more pipe-cleaners folded into the annular space between the two boxes.

5. A combination match-box comprising an outer box, an inner box concentrically secured therein and adapted to hold matches, a roll of cleaning material mounted on a bail pivotally attached to one end of the inner box and folding into the intermediate space between the two boxes, adapted to hold a pair of tweezers, a sheath provided on the outer side of said inner box and a cigar-cutter carried by the cover.

6. A combination match-box comprising an outer box, an inner box concentrically secured therein and adapted to hold matches, a roll of cleaning material mounted on a bail pivotally attached to one end of the inner box and folding into the intermediate space between the two boxes, and a knife-blade sliding in a sheath mounted on the bottom of the box.

7. A combination match-box comprising an outer box, an inner box secured therein and adapted to hold matches, a bail pivotally mounted on said inner box and carrying a roll of paper rotatably mounted thereon, a spring-bar pressing against the lower side of said roll and springs formed on the ends of said bar adapted to press the bar against the roll.

8. A combination match-box comprising an outer box having a cover hinged at the rear side thereof, a spring-plate secured to the bottom of the box and bent outwardly at each side of the box so as to form a spring to hold the cover open at the rear side and a spring-catch at the front side engaging a flanger on the cover to hold it shut, said spring-plate having holes formed therein, in combination with an inner box having a part of its bottom cut away over said spring-plate and tabs 21 on said cut-away portion adapted to hook into the holes 18 and hold the cover to the bottom.

9. In a combination match-box, the combination of a sheath attached to the under side of the box, said sheath having a slot in its upper side and being open at one end, a knife-blade arranged to slide in said sheath and to be projected from said open end and having a lug projecting through said slot, and a plate-spring pivoted to said sheath at one end thereof and adapted to overlie said slot, said plate-spring having its free end formed with a downwardly-turned finger 57 adapted to spring into the said slot and hold the spring in engagement therewith and with a transverse notch at its opposite end adapted to receive and hold said lug when said blade is in projected position.

707,278. CAMPHORIC-ACID ESTER OF METHYLENE DIGUAIACOL AND PROCESS OF MAKING SAME. SAMUEL L. SCHEREK, Philadelphia, Pa. Filed May 31, 1902. Serial No. 109,727. (No specimens.)

Claim.—1. The new product described, which is the crystalline camphoric-acid ester of methylene diguaiacol, a stable compound of camphoric acid chemically united with the diguaiacol derivative of methene; crystallizing in white lustrous scales, tasteless, having the empirical formula $C_{29}H_{32}O_6$, melting at about 130° centigrade, insoluble in dilute alkaline solution, and soluble in ether, benzene and hot ethyl alcohol.

2. The process described, of producing the camphoric-acid ester of methylene diguaiacol, which consists in passing formaldehyde gas through an admixed heated solution of camphoric acid, guaiacol, and phosphorus oxychlorid preliminarily dissolved in a suitable solvent; and then isolating it from the mother-liquor and crystallizing it; substantially as described.

707,279. INGOT-MOLD. JOHN B. DUNN, Syracuse, N. Y. Filed Mar. 20, 1902. Serial No. 100,204. (No model.)

Claim.—An ingot-mold for metal castings, consisting of identical halves finished at the same time in a machine by the same operation, free from all attached means for securing the halves together, each half provided with engaging means fitting the other half for preventing transverse displacement, and interlocking means for preventing longitudinal displacement, each upon the other, substantially as specified.

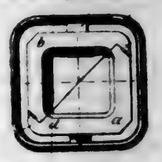

707,280. CORN-SHOCK LOADER FOR VEHICLES. WILLIAM A. TEA, Bellevue, Ohio; Mary J. Tea administratrix of said William A. Tea, deceased. Filed Nov. 15, 1901. Serial No. 82,262. (No model.)

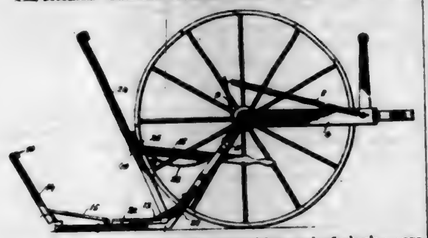

Claim.—1. A corn-shock loader, comprising a pair of wheels, means for temporarily securing the same to a wagon, a rocking frame pivotally mounted upon said wheels, means for rigidly connecting said frame directly to said wheels so as to be rocked by the rotation thereof, and means for automatically disconnecting said frame from said wheels.

2. A corn-shock loader, comprising carrier-wheels connected by cross-bars, a main frame pivotally connected with said wheels, means for temporarily connecting said frame and said cross-rods rigidly together for the purpose of raising said frame by the rotation of said wheels, a series of folding frames pivotally connected with said main frame and movable relatively thereto, and a hand-lever engaging said main frame and one of said folding frames, for controlling the relative positions of said folding frame.

3. A corn-shock loader, comprising carrier-wheels, a yoke-frame for connecting said carrier-wheels to an exterior movable object, a main frame pivotally connected with said wheels, means for temporarily connecting said main frame and said carrier-wheels rigidly together for the purpose of raising said main frame by the rotation of said wheels, and springs connecting said yoke-frame and said main frame together for compensating the weight of said frame.

4. A corn-shock loader, comprising carrier-wheels, a yoke-shaped frame connected therewith and provided with a roller, a main frame pivotally connected with said wheels and normally movable relatively thereto, means for temporarily connecting said wheels and said main frame rigidly together for the purpose of raising said main frame by the rotation of said wheels, a folding frame flexibly connected with said main frame and free to engage said roller, and flexible connections between said main frame and said folding frame for limiting the play of the said folding frame.

5. A corn-shock loader, comprising carrier-wheels, a yoke-shaped frame provided with a roller, a main frame connected with said wheels and normally movable relatively thereto, means for rigidly connecting said main frame with said wheels for the purpose of raising said main frame, a folding frame pivotally mounted upon said main frame and free to engage said roller, and means for limiting the movement of the said folding frame relatively to said roller.

6. A corn-shock loader, comprising carrier-wheels, a yoke-shaped frame, a main frame pivotally mounted upon said wheels, a locking device for rigidly connecting said main frame and said wheels for the purpose of raising said main frame, and a hand-lever for releasing said locking device, thus enabling the said main frame to be lowered to its original position.

707,281. GROOVING-PLANE. JOSEPH A. TRAFF, New Britain, Conn. Filed Apr. 26, 1902. Serial No. 104,973. (No model.)

Claim.—1. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, and means supported substantially in line with the cutting edge of said bit for engaging a curved surface of the work operated upon, said means consisting of a screw having a curved head.

2. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, and means on the gage substantially in line with the cutting edge of said bit for engaging a curved surface of the work operated upon, said means including a screw working in an opening in the gage and having a curved head.

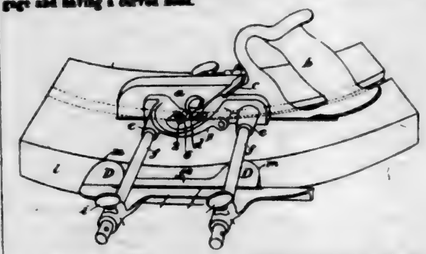

3. A grooving-plane structure comprising a stock having a bit, means lateral to the stock both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, and a screw supported substantially in line with said cutting edge and having a curved head also engaging the curved surface of the work.

4. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, and a screw supported by the gage substantially in line with the said cutting edge and having a curved head also engaging the curved surface of the work.

5. A grooving-plane structure comprising a stock having a bit, means lateral to the stock both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, and a screw supported in line with said cutting edge and having a curved head also engaging the curved surface of the work, said means each being adjustable toward the other.

6. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, and a screw supported by the gage substantially in line with the cutting edge and having a curved head also engaging the curved surface of the work, said means each being adjustable toward the other.

7. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, and a screw supported by the gage substantially in line with said cutting edge and having a curved head also engaging the curved surface of the work, said gage being adjustable toward and from the stock.

8. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, and a screw supported by the gage substantially in line with said cutting edge and having a curved head also engaging the curved surface of the work, said gage being adjustable toward and from the stock, and said means each being adjustable toward the other.

9. A grooving-plane structure comprising a stock having a bit, means lateral to the stock both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, a screw supported substantially in line with the cutting edge and having a curved head also engaging the curved surface of the work, and scoring devices located beyond the ends and in advance of the said cutting edge.

10. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon, a screw supported by the gage substantially in line with the cutting edge and having a curved head also engaging the curved surface of the work, and scoring devices located beyond the ends and in advance of the said cutting edge.

11. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, a block on the gage both in advance of and to the rear of the cutting edge of said bit and having a curved surface for engaging a curved surface of the work operated upon, and a screw supported by the gage intermediate of said blocks and having a curved head also engaging the curved surface of the work.

12. A grooving-plane structure comprising a stock having a bit, a gage lateral to the stock, a block on the gage both in advance of and to the rear of the cutting edge of said bit and having a curved surface for engaging a curved surface of the work operated upon, and a screw supported by the gage intermediate of said blocks and having a curved head

also engaging the curved surface of the work, said blocks being adjustable toward each other longitudinally of the gage, and said screw being adjustable toward and from the stock.

13. A grooving-plane structure comprising a stock having a bit, a gage parallel with and lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon and adapted to deflect the structure laterally in the planing movements thereof to cause said cutting edge to follow a path parallel with such curved surface, and similar means substantially in line with said cutting edge, said gage being adjustable toward and from the stock, and each of the means specified being adjustable on the gage and consisting of a lateral bearing or block having a curved surface.

14. A grooving-plane structure comprising a stock having a bit, a gage parallel with and lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon and adapted to deflect the structure laterally in the planing movements thereof to cause said cutting edge to follow a path parallel with such curved surface, and a screw supported by the gage substantially in line with said cutting edge and having a curved head also for engaging the curved surface of the work, said gage being adjustable toward and away from the stock, and said means each being adjustable on the gage and consisting of a lateral bearing or block having a curved surface.

15. A grooving-plane structure comprising a stock having a bit, a gage parallel with and lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon and adapted to deflect the structure laterally in the planing movements thereof to cause said cutting edge to follow a path parallel with such curved surface, similar means substantially in line with said cutting edge, and steering devices located beyond the ends and in advance of the cutting edge, said gage being adjustable toward and from the stock, and each of the means specified being adjustable on the gage and consisting of a lateral bearing having a curved surface.

16. A grooving-plane structure comprising a stock having a bit, a gage parallel with and lateral to the stock, means on the gage both in advance of and to the rear of the cutting edge of said bit for engaging a curved surface of the work operated upon and adapted to deflect the structure laterally in the planing movements thereof to cause said cutting edge to follow a path parallel with such curved surface, a screw supported by the gage substantially in line with said cutting edge and having a curved head also for engaging the curved surface of the work, and steering devices located beyond the ends and in advance of the cutting edge, said gage being adjustable toward and from the stock, and said means each being adjustable on the gage and consisting of a lateral bearing or block having a curved surface.

707,282. NEBULIZER. CHARLES TISAX, Chicago, Ill. Filed Mar 28, 1900. Serial No. 10,542. (No model.)

Claim.—1. In a nebulizer, the combination with a standard and air-tube communicating therewith, of a nebula-tube, a plurality of flasks connected with the nebula-tube, a stop-cock between each flask and the nebula-tube, a plurality of connecting-pipes between the air-tube and the flasks, independent stop-cocks in said pipes, and a discharge-nozzle connected with the nebula-tube provided with a cut-off, substantially as described.

2. A nebulizer, comprising a standard and air-tube connected therewith for receiving air under pressure, a nozzle having a cut-off connected to said air-tube, a nebula-tube, a plurality of flasks connected to said nebula-tube, a stop-cock between each flask and the nebula-tube, connecting-pipes between the air-tube and the flasks, a stop-cock for each pipe, and a nozzle connected to the nebula-pipe provided with a cut-off, substantially as described.

3. In a nebulizer, a nebulizing-tube comprising two portions one of which is closed at its end and is provided with a circumferentially-reduced portion above the end and a lateral opening communicating with the interior of the tube, and an enlarged head thereon having a slot, the other portion fitting over the first portion, forming an annular chamber at the reduced portion and also having a lateral opening, substantially as described.

4. In a nebulizer, a nebulizing-tube comprising two portions one of which is closed at its end and is provided with a circumferentially-reduced portion above the end and a lateral opening communicating with the interior of the tube, and an enlarged head with a longitudinal groove, the other portion fitting over the first portion, forming an annular chamber at the reduced portion and also having a lateral opening, one portion being provided with a stud and the other with a notch for holding the parts in adjustment, substantially as described.

707,288. OPERATING-SHEET FOR AUTOMATIC MUSICAL INSTRUMENTS. EDWIN S. VOREE, Summit, N. J., assignor to the Aeolian Company, a Corporation of Connecticut. Filed Oct. 30, 1900. Serial No. 34,917. (No model.)

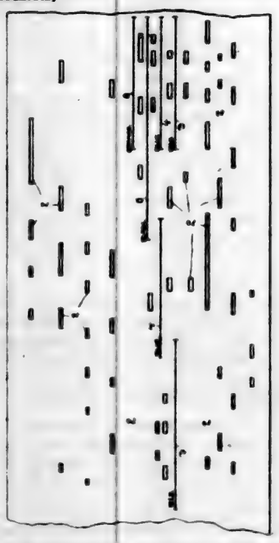

Claim.—1. As a new article of manufacture, an operating-sheet for automatic musical instruments provided with a plurality of sounding-device denoting lines, each of a distinct color, and each of a variably-predetermined length, indicating by its length the period of action of the sounding device it represents.

2. In an automatic musical instrument, the combination with the steps of same, controlling each a register of sounding devices, of an operating-sheet having a plurality of indication-lines, each of a distinct color and each of a variably-predetermined length, each of said lines denoting, by its color, a particular step to be opened for a certain register of sounding devices, and, by its length, the period of action of such step.

3. In an automatic musical instrument, the combination with an operating-sheet, having a plurality of indication-lines, each of a distinct color, and of variably-predetermined lengths, of a plurality of steps on the instrument, colored to correspond with the colored lines on the sheet, the period of action of each step being denoted by the length of its correspondingly-colored line.

707,284. HYDRAULIC PUMP. WILHELM WAGNER, Hamefeld, Germany. Filed Feb. 6, 1901. Serial No. 46,189. (No model.)

Claim.—1. A hydraulic pump comprising a fluid-column cylinder having a discharge-pipe, the lower pressure-cylinder, the upper pressure-cylinder, the housing whereby the upper pressure-cylinder is supported on the lower pressure-cylinder, the lower and upper pipes whereby the lower and upper pressure-cylinders are connected with the fluid-column cylinder, the valve-casing, connecting the lower pressure-cylinder with the fluid-column cylinder, having suction and pressure valves, a suction-pipe connected with the valve-casing, the pistons working in the lower and upper pressure-cylinders, the rod, connecting the pistons, having a coupling-pin and an operating hand-lever pivoted to the housing and engaging the coupling-pin for reciprocating the pistons, substantially as set forth.

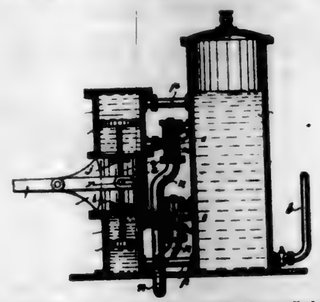

2. A hydraulic pump comprising a fluid-column cylinder having a discharge-pipe, the lower pressure-cylinder, the upper pressure-cylinder of larger diameter than the lower pressure-cylinder, the housing whereby the upper pressure-cylinder is supported on the lower pressure-cylinder, the lower and upper pipes whereby the lower and upper pressure-cylinders are connected with the fluid-column cylinder, the valve-casing connecting the lower pressure-cylinder with the fluid-column cylinder, having suction and pressure valves, a suction-pipe connected with the valve-casing, the differential pistons working in the lower and upper pressure-cylinders, the rod, connecting the pistons, having a coupling-pin and an operating hand-lever pivoted to the housing and engaging the coupling-pin for reciprocating the pistons, substantially as set forth.

3. A hydraulic pump comprising a fluid-column cylinder having a discharge-pipe, the lower pressure-cylinder, the upper pressure-cylinder, the housing whereby the upper pressure-cylinder is supported on the lower pressure-cylinder, the lower and upper pipes whereby the lower and upper pressure-cylinders are connected with the fluid-column cylinder, the valve-casings connecting the lower and upper pressure-cylinders with the fluid-column cylinder, each having suction and pressure valves, suction-pipes connected with the valve-casings, the pistons working in the lower and upper pressure-cylinders, the rod, connecting the pistons, having a coupling-pin and an operating hand-lever pivoted to the housing and engaging the coupling-pin for reciprocating the pistons, substantially as set forth.

707,285. BURNER. MILO S. WALKER, Chicago, Ill., assignor of two-thirds to Max Herskovitz and Abraham I. Herskovitz, Chicago, Ill. Filed Oct. 7, 1901. Serial No. 77,228. (No model.)

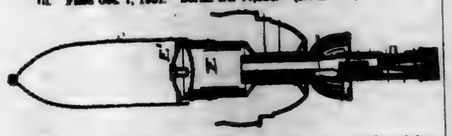

Claim.—1. In a gas-burner of the general class described a mixing-chamber having a small orifice for the admission of a jet of gas under pressure, a tubular passage open at both ends, supported within said chamber in line with said orifice, having a series of perforations in its wall, and means for admitting a supply of air to the mixing-chamber, whereby the jet of gas flows through said tubular passage and carries with it the air so admitted to the mixing-chamber; substantially as described.

2. In a gas-burner of the general class described, a mixing-chamber having a nozzle of small diameter adapted to admit a jet of gas under pressure, a perforated tube open at both ends within said chamber and in line with said nozzle and means for admitting a supply of air to the mixing-chamber, whereby the jet of gas flows through said tube and carries with it the air so admitted to the mixing-chamber; substantially as described.

3. In a gas-burner of the general class described, the combination with the tubular chamber of a Bunsen burner, having an opening in its wall for the admission of air, of a diaphragm below said opening, a perforated tube extending through said diaphragm, a nozzle in line with said tube and in communication with a source of supply of gas under pressure, whereby a jet of gas may be discharged from said nozzle, through said tube and into said chamber, and means for admitting a supply of air to be carried by and with said jet into said chamber; substantially as described.

4. In a gas-burner of the general class described, the combination with the tubular chamber of a Bunsen burner, having an opening in its wall for the admission of air, and provided with a perforated inlet-tube below said openings said tube being of less diameter than the tube of the burner, of a nozzle of small diameter, in line with said tube and opening into a source of supply of gas under pressure, whereby a jet of gas may be discharged from said nozzle through said tube and into said chamber, and means for admitting a supply of air to be carried by and with said jet into said chamber; substantially as described.

707,286. BURNER. MILO S. WALKER, Chicago, Ill., assignor of two-thirds to Max Herskovitz and Abraham I. Herskovitz, Chicago, Ill. Filed Oct. 7, 1901. Serial No. 77,229. (No model.)

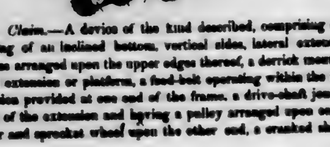

Claim.—1. In a gas-burner, the combination with suitable walls inclosing a mixing chamber, of a gas-nozzle entering said chamber, the lateral walls of said chamber being independently perforated above and below the end of said nozzle and the top wall thereof being perforated in line with said nozzle, and a suitable extension inclosing a chamber beyond the perforation in said top wall; substantially as described.

2. In a gas-burner, the combination with an inlet-nozzle, of an inclosed mixing-chamber which said nozzle enters, provided with a lower series of openings below the end of the nozzle and having means for adjustment and an upper series of openings above the end of the nozzle, a hood arranged about the upper series of openings, a chamber above the mixing-chamber and a diaphragm between the two having a connecting-opening in line with the nozzle; substantially as described.

3. In a gas-burner, the combination with a tubular chamber having two sets of perforations, the upper set of which is inclosed by a suitable hood, of a nozzle opening between said two sets of perforations, a diaphragm in said chamber above the perforations and a reduced tube secured in said diaphragm and in alinement with the nozzle; substantially as described.

4. In a gas-burner, the combination with the tubular casing, A, having perforations, a', a^3, at different points in its length, of a nozzle, b, opening between said perforations, a hood, a^2, inclosing the uppermost of said perforations, a diaphragm, D, extending across the tubular casing, A, and a tubular passage, E, connected to said diaphragm; substantially as described.

707,287. ATTACHMENT FOR THRESHING-MACHINES. JAMES S. WALKER, Mero, Oreg. Filed Sept. 21, 1901. Serial No. 76,068. (No model.)

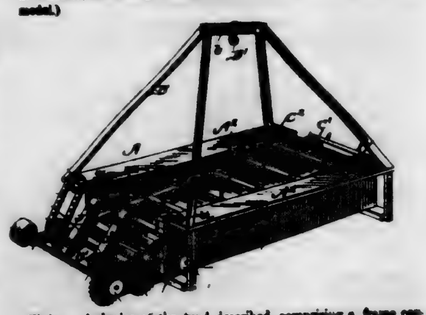

Claim.—A device of the kind described, comprising a frame consisting of an inclined bottom, vertical sides, lateral extensions or platforms arranged upon the upper edges thereof, a derrick mounted upon the said extensions or platform, a feed-belt operating within the frame, an extension provided at one end of the frame, a drive-shaft journaled in the end of the extension and having a pulley arranged upon one end, and a gear and sprocket wheel upon the other end, a crushed shaft journaled

in the extension and having a sprocket-wheel at one end and a gear mounted upon the opposite end that meshes the gear of the drive-shaft and a cranked shaft mounted in the frame and having a sprocket-wheel thereon, that connects through a chain belt to the sprocket of the cranked shaft in the said extension, bars connected to the cranked portions of the shafts and having toothed cross-bars connected thereto one of the shafts of the feed-belt having a sprocket that connects to the sprocket of the drive-shaft, substantially as shown and for the purpose specified.

707,288. FOLDING FURNITURE. WILLIAM WEBBER, Weehawken, N. J. Filed Aug. 19, 1899. Renewed May 20, 1902. Serial No. 108,620. (No model.)

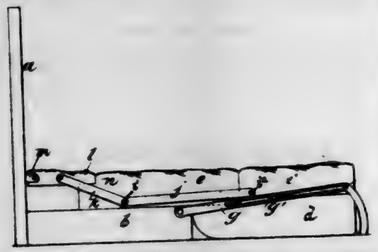

Claim.—1. In folding furniture, a base, a slidable seat mounted thereon, a back independent of said seat, and arms or levers pivoted near the top of said back and to the sides of said seat near the rear thereof, whereby, when in extended position, the upper edge of the back impinges against the front edge of said seat, substantially as described.

2. In folding furniture, the combination with a base and a folding headpiece, of a slidable seat mounted on said base, a movable back and arms or levers pivoted near the top of said back and to said seat, whereby said back may be moved into the same horizontal plane as, and in front of said seat, substantially as described.

3. In folding furniture, a rigid back, a folding headpiece journaled thereon, and a base; in combination with folding arms, a movable seat mounted on said base and a movable back connected to said seat by arms or levers; arms or levers connecting said seat to said headpiece, and means, actuated by said back for moving said seat, substantially as described.

4. In folding furniture, a rigid back, a movable headpiece journaled thereon and a base; in combination with a movable seat mounted on said base and a movable back; levers connecting said back and seat, and the seat and the headpiece; and means actuated by said movable back for moving the seat and levers, substantially as described.

5. The combination with a rigid back having a movable headpiece journaled thereto, a base and a shaft carrying pinions journaled in said base; of a seat-frame provided with racks engaging said pinions; a movable back, the top thereof being connected with the rear of said seat by levers, and pins projecting from the bottom thereof through slotted levers rigidly connected to the said shaft; and levers pivoted to the seat and to the headpiece, substantially as described.

707,289. WALL-PAPER MACHINE. CHARLES R. WHITON, Brooklyn, N. Y. Filed Apr. 5, 1902. Serial No. 101,606. (No model.)

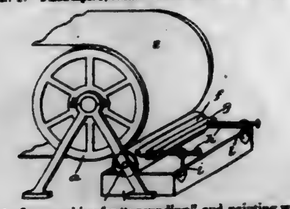

Claim.—1. In a machine for "grounding" and painting wall-paper, a cylinder around which the paper is passed, a printing-roller supported adjacent thereto and adapted to bear thereon, a paint-roller supported adjacent to the printing-roller and adapted to bear thereon, said paint-roller being supported in a trough or other receptacle, substantially as shown and described.

2. In a machine for "grounding" and painting wall-paper, a cylinder around which the paper is passed, a printing-roller supported adjacent thereto and adapted to bear thereon, a paint-roller supported adjacent to the printing-roller and adapted to bear thereon, said paint-roller being supported in a trough or other receptacle, and being also provided with an adjustable scraper or equalizer which is adapted to bear thereon, substantially as shown and described.

3. In a machine for "grounding" and painting wall-paper, a cylinder around which the paper is passed, a paint-applying roller composed of two longitudinal parts secured together and provided with a covering of textile material, and a scraper and equalizer composed of textile material, and supported adjacent to said roller and adapted to bear thereon and adjustable with reference thereto, substantially as shown and described.

707,290. PACKING-AUGER. ELMER E. LINDSTROM, Halstead, Kans. Filed Jan. 23, 1902. Serial No. 90,989. (No model.)

Claim.—1. In a packing-auger, a gate for closing the space between the flights hinged to the flight above said space and adapted to swing under said flight when the auger is in operation, substantially as set forth.

2. In a packing-auger, an automatically-closing gate for the space between proximal ends of the flights, said gate being hinged to the upper end and adapted to close against the lower end of the said flights, substantially as set forth.

3. In a packing-auger, a gate for closing the space between the proximal ends of the flights, a pintle-rod having connection with the gate, a barrel applied to the stem of the auger, and a spiral spring located in said barrel and having one end connected thereto and its opposite end connected with the pintle-rod, substantially as specified.

4. In a packing-auger, a gate for closing the space between proximal ends of the flights, a barrel applied to the stem of the auger, a spiral spring located within the barrel having its outer end connected thereto, a pintle-rod having the gate connected therewith and having its inner end fitted into the barrel and connected to the inner end of the spiral spring, a packing-washer secured to the inner end portion of the pintle-rod, and a cap coöperating with the said barrel to inclose the said washer, substantially as set forth.

707,291. GAME APPARATUS. STEPHEN A. AKINS, Marvin, Mo. Filed Dec. 13, 1900. Renewed July 7, 1902. Serial No. 114,641. (No model.)

Claim.—1. A game apparatus comprising a runway, a gun at one end of the runway, a plurality of alleys leading laterally from the runway, and a reversible tumbler pivoted above each alley and having a portion depending into the alley for engagement by a body passing through the alley to reverse the tumbler and a common support disposed to receive the tumblers in their reversed positions.

2. A game apparatus comprising a runway, a plurality of alleys leading laterally from the runway, a gun at one end of the runway and adapted to discharge a ball along the runway, the outermost alley being unobstructed, a ball, a striker for the ball pivotally mounted with one end in an alley for engagement by a body discharged from the gun and passing through the alley to operate the striker, and a reversible tumbler for each of the remaining alleys, each of said tumblers having a depending portion lying normally in its respective alley for engagement by a body discharged from the gun, to operate the tumbler.

3. A game apparatus comprising a runway, a plurality of alleys leading laterally from the runway, a gun at one end of the runway to discharge a body through the runway, a ball mounted above a runway, a pivoted clapper or striker having a portion depending into an alley for operation by a body passing through the alley, a pivot-rod disposed transversely of the alleys, a reversible tumbler for each of the remaining alleys mounted upon the pivot-rod and adapted for reversal, a depending portion on each tumbler lying normally in its respective alley for engagement by a body passing through the alley to operate it, and a common rest-bar disposed to receive the tumblers in their reversed positions.

707,292. TUBE-EXPANDER. HENRY M. RAIR, Wadsworth, Nev. Filed Mar. 27, 1902. Serial No. 100,181. (No model.)

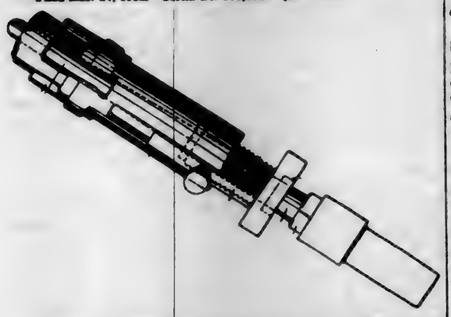

Claim.—1. The combination in a flue-expander, of a casing, a tubular series of rods, a mandrel, and means in connection with said casing by which the mandrel may be automatically retracted.

2. The combination in a flue-expander, of a casing, a tubular series of rods, a mandrel, means by which the inward movement of said mandrel may be limited and means by which said mandrel may be retracted automatically.

3. The combination in a flue-expander, of a casing, revolvable rods carried thereby, a spreader, stop means upon the casing by which the inward movement of the spreader is limited and means by which the spreader is retracted automatically on engaging said stop.

4. The combination in a flue-expander, of a casing, rollers carried thereby, a left-threaded sleeve concentric with said casing and a mandrel adapted to be inserted through said sleeve and casing.

5. The combination in a flue-expander, of a casing, rollers thereon, a sleeve provided with left threads and turnable in said casing and eccentric therewith, and a mandrel adapted to be inserted in said sleeve and casing to spread the rollers.

6. The combination in a flue-expander, of a casing, rollers thereon, a sleeve threaded and turnable in said casing, a mandrel, and engaging stop, means upon the mandrel and sleeve whereby the mandrel is retracted as it is turned in opposition to the threads on the sleeve.

7. The combination in a tube-expander, of a casing, rollers thereon, a mandrel, a left-threaded sleeve in said casing and turnable in opposition to the mandrel, and an adjustable gage-plate in relation to said sleeve.

8. The combination in a tube-expander, of a casing, rollers thereon, a mandrel, a sleeve having a left-hand thread and in which said mandrel is slidable, a recess in the head of said sleeve, a projection on the mandrel adapted to engage said recess to turn the sleeve and retract the mandrel, and a gage-plate slidable upon the casing and engaging the sleeve.

707,293. HYDRAULIC DREDGE. LEMUEL W. BATES, Chicago, Ill. Filed July 19, 1900. Serial No. 24,203. (No model.)

Claim.—1. In combination with a pontoon, a discharge-pipe carried thereby; a shore discharge-pipe; a flexible connection intermediate said pipes; a pivotal support for the shore discharge-pipe; and means for raising and lowering said support.

2. In combination with a pontoon, a discharge-pipe carried thereby; a shore discharge-pipe; a flexible connecting-section intermediate said pipes; a pivotal support for said shore discharge-pipe supported from the pontoon; and means for changing the height of said support.

3. In combination with a pontoon; a discharge-pipe carried thereby; a shore discharge-pipe; a flexible connecting-section intermediate said pipes; a pivotal support for said shore discharge-pipe supported from the pontoon; and means for relieving said intermediate section from the thrust of the shore discharge-pipe.

4. In combination with a pontoon, a discharge-pipe carried thereby; a shore discharge-pipe; a flexible connecting-section intermediate said pipes; a pivotal support for said shore-pipe supported from the pontoon; means for adjusting the height of said support; and means for relieving the intermediate flexible section from the thrust of the shore discharge-pipe.

5. In combination with a pontoon, a discharge-pipe carried thereby; arms or levers extending outwardly from said pontoon; a bridge-piece extending across between said arms; a shore discharge-pipe; pivotal connections between said pipe and the bridge-piece; thrust-bars extending from said pivotal connection back to the pontoon; and a flexible section interposed between the discharge-pipe of the pontoon and the shore discharge-pipe.

6. In combination with a pontoon, a discharge-pipe carried thereby; arms or levers C extending outwardly from said pontoon; a bridge-piece extending across between said arms; eyebolts extending down from and adjustably secured to the said bridge-piece; a shore discharge-pipe F; trunnions connected to said pipe and bearing in the eyes of the eyebolts; radius-bars connected to said trunnions and pivotally connected at their opposite ends to the pontoon; and a flexible section H interposed between the discharge-pipe on the pontoon and the shore discharge-pipe.

707,294. PAPER-CUTTING MACHINE. CHARLES D. BLACKHALL, Buffalo, N. Y. Filed Nov. 22, 1901. Serial No. 83,253. (No model.)

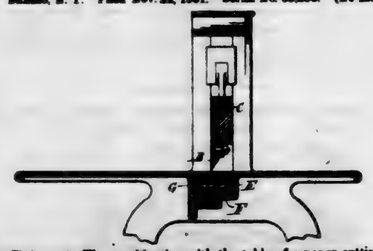

Claim.—1. The combination with the table of a paper-cutting machine provided with a groove, of a knife arranged over said groove, a cutting-stick seated in the groove and made narrower than the same, but wider than the distance between the edge of the knife and either wall of the groove, whereby when seated at either side of said groove it will oppose the knife, and a retaining device for holding the cutting-stick against lateral displacement, substantially as set forth.

2. The combination with the table of a paper-cutting machine provided with a groove, of a laterally-adjustable cutting-stick seated in said groove and made narrower than the same, a knife arranged over said groove and located at a shorter distance from both walls of the groove than the width of the cutting-stick, whereby when seated at either side of the groove the cutting-stick will oppose the knife, and a filling strip or strips arranged in the portion of said groove not occupied by the stick, substantially as set forth.

707,295. STEAM-TRAP. JAMES BOHAN, Pittsburg, Pa. Filed Aug. 5, 1901. Serial No. 70,662. (No model.)

Claim.—1. A steam-trap, comprising a steam-tight receptacle, arranged on a fulcrum, an open chamber in said receptacle extending on both sides of the fulcrum, a steam-inlet to said receptacle, and a water-outlet from said receptacle having a valve controlled by the tilting of the receptacle on its fulcrum; substantially as described.

2. A tilting steam-trap, having a steam-tight reservoir extending on both sides of the fulcrum, a steam-inlet leading into one side of said receptacle, a water-outlet from the other side of said receptacle, and a valve in said outlet controlled by movement of the reservoir; substantially as described.

3. A tilting steam-trap having a reservoir on both sides of the fulcrum, and an inner water-pocket on one side of the fulcrum arranged to discharge water to the other side when it reaches a certain level; substantially as described.

4. A tilting steam-trap having a reservoir on both sides of the fulcrum, an inlet-pipe leading to a pocket on one side, an outlet-pipe leading from the other side, and an automatic valve controlling the outlet-pipe: substantially as described.

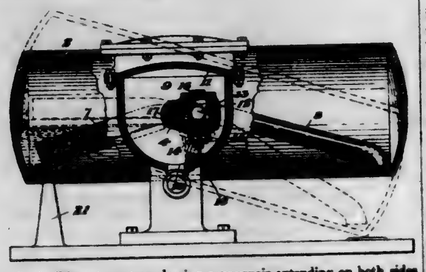

5. A tilting steam-trap, having a reservoir extending on both sides of the fulcrum, the portion of the reservoir above the fulcrum being extended up to a greater distance from the fulcrum than the lower part of the reservoir beneath the fulcrum, to serve as an overbalance-weight, a steam-inlet to said receptacle and a valved water-outlet from said receptacle; substantially as described.

6. A tilting steam-trap, having a steam-tight water-receptacle extending on both sides of its fulcrum, a steam-inlet to said receptacle, a hollow trunnion on one side of said receptacle, a valve-chamber surrounding the trunnion, and an outlet-valve within the chamber, said valve distinct from but operatively connected to said trunnion; substantially as described.

7. A tilting steam-trap, having a steam-tight water-receptacle extending on both sides of its fulcrum, a steam-inlet to said receptacle, a hollow trunnion on one side of said receptacle, a valve-chamber surrounding the trunnion and containing a valve-seat, a valve normally resting by gravity on the seat, and mechanism for lifting the valve, controlled by movement of the receptacle.

707,296. AMALGAMATOR. GEORGE H. BEETHAM, Toledo, Ohio. Filed Aug. 12, 1901. Serial No. 71,714. (No model.)

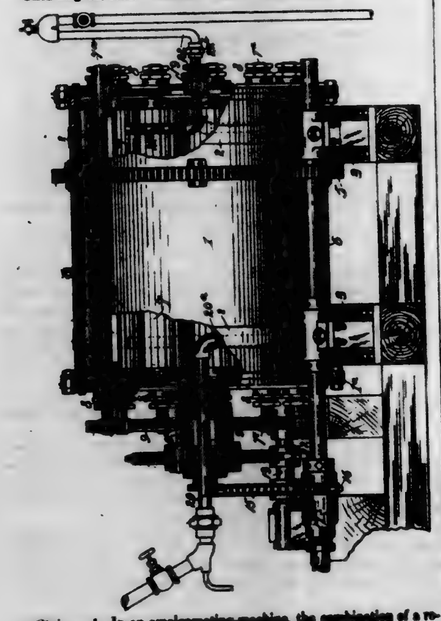

Claim.—1. In an amalgamating-machine, the combination of a rotary cylinder and suitable trunnions therefor, inlet and outlet pipes leading through said trunnions and having bent ends within the cylinder adapted to be turned either upward or downward, a series of agitators within the cylinder, means for hermetically sealing said cylinder, operating means for the cylinder and agitators, separate driving connections between the cylinder and agitators and the operating means, and means for throwing either driving connections out of operation.

2. In an amalgamating-machine, the combination of a rotatable cylinder having an axial inlet and axial outlet, means for hermetically sealing said cylinder, means for placing the contents of the cylinder under hydraulic pressure, agitators disposed within the cylinder, operating means for the cylinder and agitators, separate driving connections between the cylinder and agitators and the operating means, and means for throwing either driving connections into or out of engagement with the operating means whereby both the cylinder and agitators may be axially rotated in unison or the one held stationary while the other is rotated.

3. In an amalgamating-machine, the combination of a cylinder having suitable trunnions, an inlet-pipe leading into the cylinder through one of said trunnions, an outlet-pipe leading from the cylinder through the other of said trunnions, each of said pipes having the ends within the cylinder bent and adapted to be turned upward or downward within the cylinder, the outlet-pipe having an upturned U-shaped bend outside of said cylinder, a series of agitators within said cylinder, operating means for the cylinder and agitators, separate driving connections between the cylinder and agitators and the operating means, and means for throwing either driving connections into or out of engagement with the operating means.

4. In an amalgamating-machine, the combination of a cylinder having an axial inlet and an axial outlet, means for hermetically sealing said cylinder, a series of agitators mounted for rotation within said cylinder, means for rotating said cylinder, a clutch for connecting and disconnecting the cylinder with its operating means, independent mechanism for imparting axial rotation to said agitators, and a clutch for connecting and disconnecting the agitators to their operative mechanism whereby the cylinder and agitators may be given axial rotation or held at rest the one independent of the other.

707,297. CHUTE FOR LOADING WHEAT OR FLOUR ON SHIPS. FRANK W. BELEW, Tacoma, Wash. Filed Mar. 4, 1902. Serial No. 96,708. (No model.)

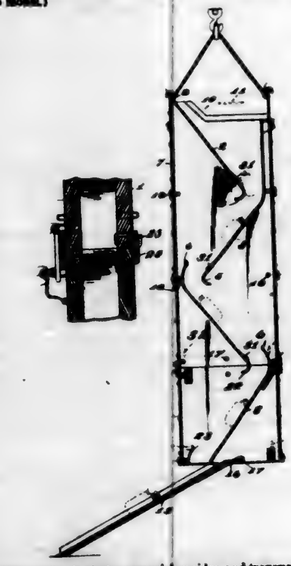

Claim.—1. A chute, comprising sides and transversely-arranged inclined floors extending between the said sides, one floor leading to another consecutively in opposite directions for directing packages, the upper ends of the floors lapping and curving about the ends of the next floors above, cleats or the like from one floor to another, substantially as described.

2. A chute comprising sides, inclined floors extending between the sides and arranged alternately in different inclined planes, curved end portions on some of the floors lapping the ends of the next floors above for turning packages over and directing them from one floor to the other until they reach the bottom of the chute, substantially as described.

3. A chute comprising a casing formed with a series of inclined floors arranged therein, the said chute being made up of a series of removable sections so that the chute may be made of different lengths, in accordance with the position in which it is to be used, a removable tongue-chute arranged to be pivotally hooked to the lower end of any of the chute-sections so that it may be employed at the bottom of the chute, no matter what its length, for directing packages or sacks from the lower end of the chute to a suitable floor or other support, substantially as described.

4. A chute comprising sides and inclined floors, the said inclined floors having their meeting ends lapped and curved so as to direct packages and parcels from one to the other, means for reinforcing and bracing the sides with respect to each other, and means for raising and lowering or supporting in position the said chute, substantially as described.

5. A chute made up of a series of sections adapted to fit one upon the other, each of said sections comprising side pieces and inclined floors adjoining the same, one floor leading to another, the floors of the different sections fitting against the ends of the floors of adjoining sections, so as to continuously direct the packages through the chute, and a tongue-chute at the bottom adjustably supported at the bottom of the lowest chute-section, substantially as described.

6. A sectional chute, comprising a main body portion, and one or more sections adapted to be added thereto, each added section having loops at its upper end adapted to engage hooks upon the next section above, and locking means for further supporting the said section, substantially as described.

7. A chute, comprising sections adapted to be joined together, the meeting edges of said sections carrying hooks and loops along one edge while upon the other side of the chute hasps and staples are employed for removably fastening the parts together, substantially as described.

8. A chute, comprising a series of sections fitting one upon the other, inclined package-directing floors within the chutes, means for detachably securing the ends of the sections together so that the floors will register with each other, and eyes arranged at the lower ends of each chute for receiving anchor rods or cables to hold the lower end of the said chute in position, substantially as described.

707,298. BALL-BEARING FOR LAWN-MOWERS. ADELBERT B. CASE, Springfield, Mass. Filed June 20, 1901. Serial No. 65,330. (No model.)

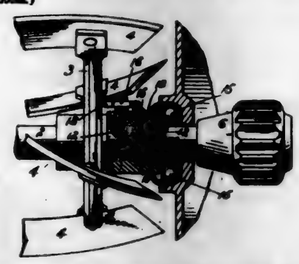

Claim.—1. In lawn-mowers the combination with the ball-bearing adjustable cone thereof, of two cone-adjusting screws therein and means connected with one of said screws whereby both are locked in non-rotatable positions, substantially as described.

2. In lawn-mowers the combination with the ball-bearing adjustable cone thereof, of two cone-adjusting screws therein, side by side, and a lock-nut on one of said screws whose edge extends over the end of the second one, for screw engagement therewith, whereby said nut becomes locked with both screws, substantially as described.

707,299. MACHINE FOR MOLDING INCANDESCENT-LAMP SOCKETS. CHARLES A. CRASE, Chicago, Ill. Filed Mar. 20, 1902. Serial No. 99,125. (No model.)

Claim.—1. In a machine for molding incandescent-lamp sockets, the combination of a mold-shell with two dies which approach each other within the shell, one of said dies duplex and containing parts one of which reciprocates and rotates while the other reciprocates but does not rotate.

2. In a machine for molding incandescent-lamp sockets, the combination of a mold-shell with two dies which approach each other within the shell, one of said dies duplex and containing parts one of which reciprocates and rotates, while the other reciprocates but does not rotate; the other of said dies adapted to reciprocate but not rotate.

3. In a machine for molding incandescent-lamp sockets, the combination of a mold-shell with two dies which approach each other within the shell, one of said dies duplex and containing parts one of which reciprocates and retains while the other reciprocates but does not rotate, and an additional die-piece which forces the finished product out of the mold.

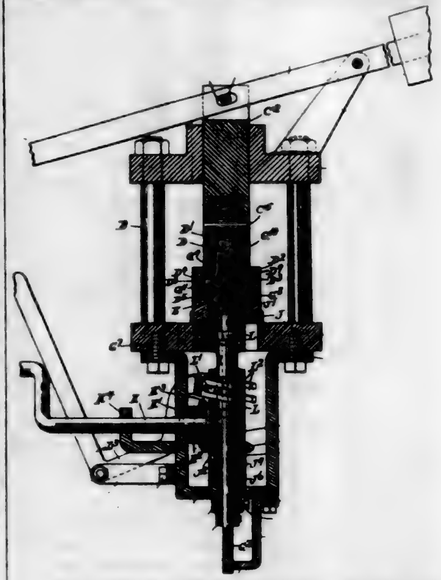

4. In a machine for molding incandescent-lamp sockets, the combination of a mold-shell with two dies which approach each other within the shell, one of said dies duplex and containing parts one of which reciprocates and rotates while the other reciprocates but does not rotate, and one of which forces the finished product out of the mold, and an opposed die which reciprocates but does not rotate.

5. In a machine for molding incandescent-lamp sockets a die having three parts, concentric with each other, the intermediate part adapted to rotate while it reciprocates, the other parts adapted to reciprocate only.

6. In a machine for molding incandescent-lamp sockets a die having three parts, concentric with each other, the intermediate part adapted to rotate while it reciprocates, the other parts adapted to reciprocate only, and an opposed die-surface which reciprocates only.

7. In a machine for molding incandescent-lamp sockets a mold-shell with dies to form the socket within the mold-shell, and means for withdrawing both of said dies and a die portion adapted to be reciprocated to remove the finished socket from the mold.

8. In a machine for molding incandescent-lamp sockets the combination with the mold and opposed die of a duplex die portion having a cylinder the upper end of which forms the inner screw-threaded surface of the socket, with an interior die portion adapted to be rotated on by the cylinder but to travel with the cylinder and having an upper surface which forms the irregular parts of the socket, the inner portion held from rotation but free to reciprocate, the cylinder provided with means for making it rotate when it is reciprocated.

9. In a machine for molding incandescent-lamp sockets the combination with the mold and opposed die of a duplex die portion having a cylinder the upper end of which forms the inner screw-threaded surface of the socket, with an interior die portion adapted to be rotated on by the cylinder but to travel with the cylinder and having an upper surface which forms the irregular parts of the socket, the inner portion held from rotation but free to reciprocate, the cylinder provided with means for making it rotate when it is reciprocated, and an exterior reciprocating cylinder for lifting the finished product from the mold.

707,300. CONTROLLER FOR ELECTRIC MOTORS. WILLIAM H. CRAPHAM, Portland, Me. Filed Mar. 12, 1902. Serial No. 97,988. (No model.)

Claim.—1. In a controller for electric motors, the combination with the armature of a pair of differential rheostats each terminal of each rheostat being connected with one armature-terminal, a rheostat-arm for each rheostat and means for operating said arms in unison with each other.

2. In a controller for electric motors, the combination with the armature of a pair of differential rheostats each terminal of each rheostat

being connected with one armature-terminal, a rheostat-arm for each rheostat, a connecting-rod connecting the two arms and means for operating said arms.

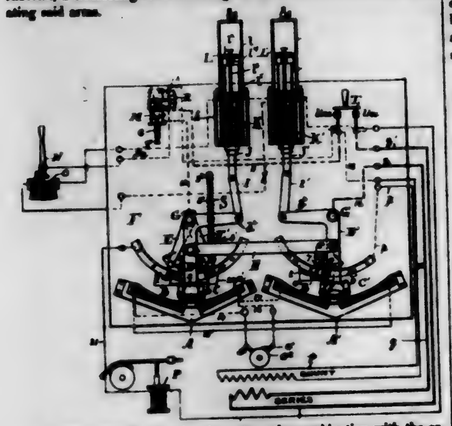

3. In a controller for electric motors, the combination with the armature, of a pair of differential rheostats each terminal of each rheostat being connected with one armature-terminal, a rheostat-arm for each rheostat, a connecting-rod connecting said arms, a pair of solenoids, each adapted to throw said arms in opposite directions.

4. In a controller for electric motors, the combination with the armature, of a pair of differential rheostats each terminal of each rheostat being connected with one armature-terminal, an inverted-L-shaped rheostat-arm for each rheostat, a connecting-rod connecting said arms, a pair of solenoids connecting with the horizontal portion of said arms.

5. In a controller for electric motors, the combination with the armature of a pair of differential rheostats connected with the armature, a pair of connected rheostat-arms for said rheostats, a set of segments adjacent to one of said arms, a contact-finger on said arm adapted to slide on said segments, said segments being connected with the shunt-winding of the motor and said rheostat-arm connecting with the line-terminal.

6. In a controller for electric elevator-motors, the combination with the armature, of a pair of differential rheostats connected with the armature, a pair of connected rheostat-arms for said rheostats, a set of segments adjacent to one of said arms, a contact-finger on said arm adapted to slide on said segments, said segments being connected with the brake-solenoid and thence to one pole of the line and said rheostat-arm being connected with the other pole of the line.

7. In a controller for electric elevator-motors, the combination with the armature, of a pair of differential rheostats connected with the armature, a pair of connected rheostat-arms for said rheostats, a set of segments adjacent to one of said arms, a pair of auxiliary arms adjustably connected with said rheostat-arm, contact-fingers on each of said auxiliary arms adapted to slide on said segments, said segments being connected with the brake-solenoid and thence to one pole of the line and the rheostat-arm being connected with the other pole of the line.

8. In a controller for electric motors, the combination with the armature, of a pair of differential rheostats each terminal of each rheostat being connected with one armature-terminal, a pair of connected rheostat-arms for said rheostats, a pair of solenoids for operating said arms and a spring for holding said arms in their central or normal position.

9. In a controller for electric motors the combination of a pair of differential rheostats connecting with the armature, a pair of connected rheostat-arms for said rheostats, one of said arms being connected with one line-terminal, a pair of solenoids for operating said arms, solenoid-circuits connecting the line-terminals with said solenoids, an emergency-rheostat in said circuit, a solenoid for operating said rheostat in the circuit between said rheostat-arms and the line-terminal, the emergency-rheostat being adapted to throw resistance into the solenoid-circuit when there is an excess of current passing through the main rheostat-arm and means for controlling the solenoid-circuit.

10. In a controller for electric elevator-motors, the combination of a pair of differential rheostats connected with the armature, a pair of connected rheostat-arms for said rheostats, a set of segments adjacent to each of said arms, one set connected to the brake-solenoid and the other connected with the shunt-winding, contact-fingers operated by said arms adapted to slide on said segments, a pair of solenoids for operating said rheostat-arms, circuits for said solenoids connecting with the line-terminals, a spring for bringing said arms to their central or normal position, an emergency-rheostat and an emergency-solenoid operating the same, the resistance in said emergency-rheostat being included in said solenoid-circuits, means for varying the solenoid-circuits, one of said rheostat-arms being connected with one line-terminal through said emergency-solenoid and the rheostat-arm being connected with the other terminal through the series winding of the motor.

707,801. ENGINEER'S SQUARE. WILLIAM CHESTERMAN, Sheffield, England. Filed Nov. 16, 1901. Serial No. 82,549. (No model.)

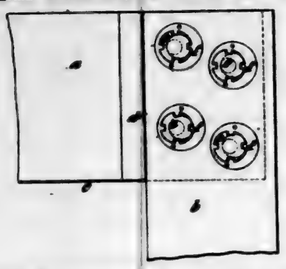

Claim.—An engineer's square having a stock with a transverse shoulder, a blade having recesses and centered to the stock by screws, and eccentric washers in said recesses beneath the screw-heads arranged to press the blade against the shoulder, substantially as described.

707,802. RAILWAY-CAR. GARDNER W. CHIPLEY, Chicago, Ill. Filed Jan. 17, 1901. Serial No. 43,363. (No model.)

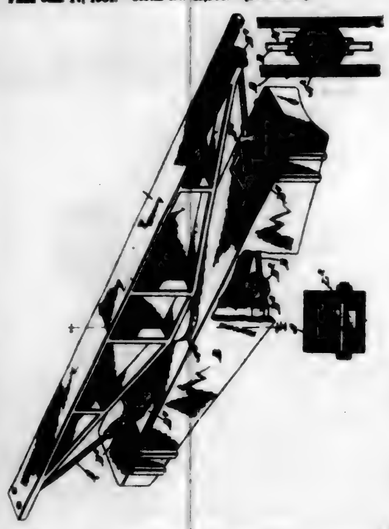

Claim.—1. In a railway-car, the combination of upper and lower bolsters, a center-bearing between the two bolsters adapted to normally sustain the entire weight of a car-body resting upon the upper bolster, and downwardly-converging brace-rods connecting the lower bolster with the upper bolster, said rods being adapted to prevent lateral tilt or rolling motion of the car-body and upper bolster upon said center-bearing.

2. In a railway-car, the combination of a lower bolster having a center-bearing, an upper bolster having its middle portion resting firmly on said center-bearing, and downwardly-converging brace-rods for preventing lateral tilt or rolling motion of the said upper bolster upon the said center-bearing, said brace-rods having their upper ends engaging the outer end portions of the upper bolster, and the lower ends of said rods being arranged to engage the middle portion of the lower bolster.

3. In a railway-car, the combination of a lower bolster, provided with a center-bearing, an upper bolster having its middle portion resting firmly upon said center-bearing, a king-pin made integral with said upper bolster and extending downwardly through said center-bearing, and downwardly-converging brace-rods for preventing lateral tilt or rolling motion of the upper bolster upon said center-bearing.

4. In a railway-car, the combination of an upper bolster adapted to support a car-body, a lower truck-bolster, a center-bearing intermediate the two bolsters and located at the longitudinal center of the same, a king-pin extending through said bearing, said bearing sustaining the weight of a car-body resting on said upper bolster, and a pair of downwardly-converging brace-rods arranged to connect the outer end portions of the upper bolster with the center portion of the lower or truck bolster structure, said rods being connected and adapted to sustain either a tensile or endwise compressive strain, according to the direction in which the said car-body tilts or rocks.

5. In a railway-car, the combination of an upper bolster adapted to support a car-body, a lower truck-bolster, a center-bearing intermediate of the two bolsters and located at the longitudinal center of the same, said bearing being adapted to sustain the weight or downward pressure of a car-body resting upon said upper bolster, a king-pin associated with said bearing and serving as a pivotal connection between the two bolsters, and a pair of downwardly-converging brace-rods arranged to connect the outer end portions of the said upper bolster with the central portion of the lower truck-bolster structure, and adjusting devices whereby said rods may be made normally subject to tensile strain.

6. In a railway-car, a car or body bolster, a truck-bolster, brace-rods extended from the center-bearing of said truck-bolster to the outer ends of the car or body bolster, and means of connection between the said ends of the car or body bolster consisting in receiving members on said ends and yielding pressure devices between the ends of the brace-rods and the car or body bolster.

707,803. INSULATING-JOINT FOR PIPES. FINDLEY E. CLELAND and EDWARD B. MURRAY, Des Moines, Iowa, assignors of one-third to Joseph Gass, Des Moines, Iowa. Filed Mar. 10, 1902. Serial No. 97,621. (No model.)

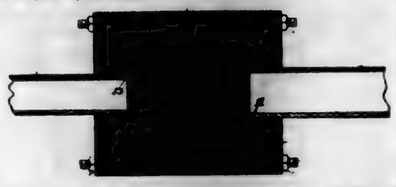

Claim.—1. An improved insulating-joint for pipes, comprising in combination two pipes having flanged adjacent ends, two insulating-blocks having openings in their outer faces to admit the pipes and recesses on the inner faces to receive the flanges, insulating-fillers in said recesses having central openings therein in alinement with the pipes, an insulating packing-sheet having a central opening placed between the blocks, and means for clamping said blocks together.

2. In a device of the class described, the combination of two pipes having flanges at their ends, two insulator-blocks having openings extending through them and recesses surrounding said openings in their inner faces with the flanges resting in said recesses, insulating-fillers in said recesses, said fillers having openings therein, a number of permanent horseshoe-magnets embedded in the inner face of one of said blocks and having the insulating-filler surrounding the end portions and having their ends extending to the opening in the insulating-filler, an insulating-sheet having a central opening placed between the insulating-blocks, bolts passed through the insulating-blocks and the nuts on said bolts, substantially as and for the purposes stated.

707,804. MOTOR LAWN-MOWER. THOMAS COLDWELL and WILLIAM H. COLDWELL, Newburgh, N. Y. Filed Mar. 7, 1902. Serial No. 97,095. (No model.)

Claim.—1. The combination with a motor-carrying frame, provided with traction and lawn-rolling rollers, supporting said frame, of a cutter-frame, located in front of, the said traction and lawn-rolling rollers and provided with cutting mechanism and with ground-engaging devices in constant engagement with the ground when the cutter is in operation for regulating the height of the cut, devices for raising the said cutter-frame for transportation from place to place, and connections between the motor-frame and cutter-frame for transferring substantially the whole weight of the cutter-frame when in operative position to the motor-frame, to add to the effectiveness of the traction-rollers, substantially as described.

2. The combination with a motor-carrying frame provided with traction and lawn-rolling rollers, supporting said frame, of a cutter-frame arranged in front of the said traction and lawn-rolling rollers and provided with cutting mechanism and ground-engaging devices in constant engagement with the ground when the cutter is in operation for regulating the height of cut, devices for enabling the operator to raise said cutter-frame out of operative position at will, and means connected to the motor-frame for supporting substantially the whole weight of the cutter-frame from said motor-frame when the said cutter-frame is in operative position, whereby the ground-engaging devices are prevented from cutting the sod or materially depressing the long grass, substantially as described.

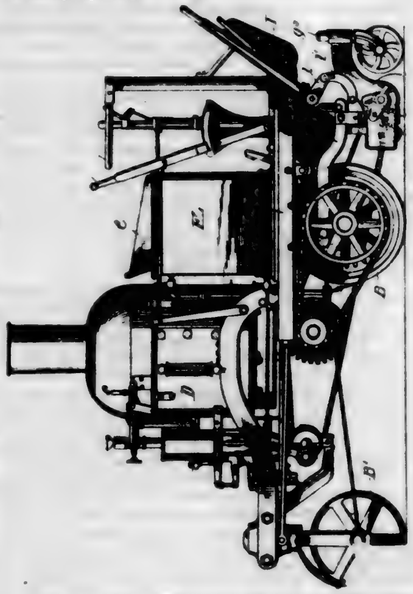

3. The combination with a motor-carrying frame provided with traction and lawn-rolling rollers, supporting said frame, of a cutter-frame arranged in front of the said traction and lawn-rolling rollers, and provided with cutting mechanism and with ground-engaging devices for regulating the height of cut, connections between said frame permitting them to rock transversely with respect to each other, devices enabling the operator to raise the cutter-frame at will, and means connected to the motor-frame for supporting substantially the whole weight of the cutter-frame when the said cutter-frame is in operative position whereby the efficiency of the traction-rollers is increased and the ground-engaging devices of the cutter-frame are prevented from cutting the sod, substantially as described.

4. The combination with a motor-carrying frame provided with traction and lawn-rolling rollers supporting said frame of a cutter-frame arranged in front of said traction and lawn-rolling rollers and provided with cutting mechanism and with ground-engaging devices for regulating the height of cut, connections between said frames permitting them to rock transversely in respect to each other, devices enabling the operator to raise the cutter-frame at will, and means connected to said motor-frame and to said cutter mechanism forward of the line of cut, for transferring substantially the whole weight from the ground-engaging devices to the motor-frame, substantially as and for the purposes set forth.

5. The combination with a motor-carrying frame provided with traction and lawn-rolling rollers entirely supporting said frame, of a cutter-frame located in front of the said traction and lawn-rolling rollers and provided with cutting mechanism and with ground-engaging devices for regulating the height of cut, push-bars connected to the said motor-frame and to said cutter-frame for propelling the cutter-frame, means for enabling the operator to raise said cutter-frame, and springs connected to the motor-frame and supporting substantially the entire weight of the said cutter-frame from the said motor-frame, substantially as described.

6. The combination with a motor-carrying frame provided with traction and lawn-rolling rollers entirely supporting said frame, of a cutter-frame arranged in front of the traction and lawn-rolling rollers, provided with cutting mechanism and with ground-engaging devices forward of the transverse line of cut for regulating the height of cut, push-bars pivoted to said motor-frame and to said cutter-frame, said connections permitting the said frames to rock transversely and longitudinally in respect to each other, means enabling the operator to raise the cutter-frame at will, and springs connecting said push-bars and motor-frame for transfer-

ring substantially the entire weight of the cutter-frame from the ground-engaging devices to the motor-frame, substantially as described.

7. In a lawn-mower, the combination with the motor-frame provided with traction and lawn-rolling rollers entirely supporting said frame, of a cutter-frame arranged in front of the said traction and lawn-rolling rollers and provided with ground-engaging devices forward of the transverse line of cut to regulate the height of cut, push-bars connecting the motor-frame and cutter-frame, means for enabling the operator to raise the cutter-frame at will, and springs connecting the motor-frame with the cutter-frame and acting to lift the forward part of the cutter-frame and supporting substantially the entire weight of the cutter-frame, substantially as described.

8. In a motor lawn-mower, the combination with the motor-frame provided with traction and lawn-rolling rollers, entirely supporting said frame, of a cutter-frame arranged in front of said rollers and provided with ground-engaging devices forward of the transverse line of cut to regulate the height of cut, push-bars connecting the said motor-frame and cutter-frame, the connections between said push-bars and the motor and cutter frames permitting said frames to rock transversely and longitudinally with respect to each other, means for enabling the operator to raise the cutter-frame at will and springs connecting the motor-frame with the cutter-frame for supporting substantially the entire weight of the said cutter-frame, substantially as described.

9. In a motor lawn-mower, the combination with the motor-frame provided with traction and lawn-rolling rollers entirely supporting said frame, of a cutter-frame arranged in front of said rollers and provided with cutting mechanism and with ground-engaging devices for regulating the height of cut, connections between said frames for propelling the cutter-frame from the motor-frame, means for enabling the operator to raise the cutter-frame at will, springs connecting the motor-frame with the cutter-frame and arranged to transfer substantially all of the weight from the cutter-frame ground-engaging devices, means for adjusting the tension of said springs, and means for adjusting said ground-engaging devices with respect to the cutter-frame, substantially as described.

10. In a motor lawn-mower, the combination with the motor-frame provided with traction and lawn-rolling rollers entirely supporting said frame, of a cutter-frame arranged in front of said rollers and provided with ground-engaging devices forward of the transverse line of cut to regulate the height of cut and a guard-roller in rear of the line of cut, push-bars pivoted to the motor-frame and provided at their forward ends with pins disposed longitudinally of said bars, said cutter-frame being provided with parts having vertically-elongated apertures to receive said pins, and springs for supporting substantially the entire weight of said cutter-frame, substantially as described.

707,805. ELECTRIC SIGNAL FOR ELEVATORS. LEWIS K. CORLETT, Chicago, Ill., assignor of one-half to William D. Allen, Chicago, Ill. Filed Nov. 7, 1901. Serial No. 81,404. (No model.)

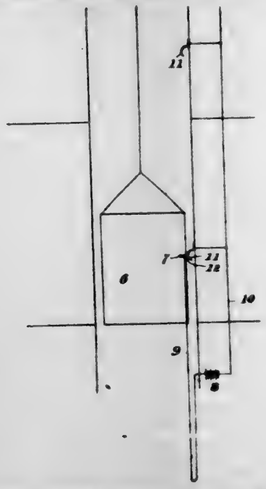

Claim.—1. A signal for elevators, comprising an electrically-operated signal carried by the car, and car-actuated contact devices to operate the signal when the floor of the car is flush with a floor of the building.

2. A signal for elevators comprising an electric circuit, an electric signal carried by the car in said circuit, a contact-piece at a floor of the building, and a contact-piece carried by the car in such position as to close the circuit and actuate the signal when the floor of the car is flush with the floor of the building.

707,806. METHOD OF ELECTRODEPOSITING METAL ON LACE. JOHN A. DALY, Washington, D. C. Filed Oct. 15, 1901. Serial No. 78,725. (No specimens.)

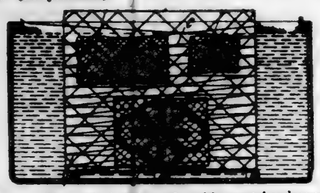

Claim.—1. The method of electrodepositing metal on lace and other flexible articles, which consists in preparing the surface of the flexible article to be coated with an electrical conductor, then binding the article to an open-work metallic base by coils of wire having metallic connection to said base, then immersing in a plating-tank for a primary deposit, then removing the wire and base and completing the deposit in usual manner.

2. The method of electroplating metal on lace, which consists in preparing the surface of the lace with an electrical conductor, holding the lace in extended position between wires and making a slight electrodeposit thereon, then removing the wires and completing the deposit in usual manner.

707,807. CARPENTER'S TOOL. MICHAEL F. DOYLE, Scranton, Pa. Filed Mar. 28, 1902. Serial No. 100,128. (No model.)

Claim.—A carpenter's tool, comprising a horizontal ruling-bar having a slot adjacent to one end thereof, said slot extending longitudinally of the bar to a point approximate the center thereof, a guiding-block having an adjustable connection with said bar, the length of adjustment being limited by said slot, and a vertical auxiliary bar extending laterally from said bar at a point adjacent to the non-slotted end thereof, the portion of the horizontal bar beyond the point of connection with the auxiliary bar forming an extension of the horizontal bar and in alinement therewith, whereby a straight edge will be formed along the outer side of said horizontal bar and extension, said extension having a plurality of openings, said block being of a length less than the length of the horizontal bar and movable to a point on either side thereof and free from contact with said auxiliary bar, substantially as and for the purposes set forth.

707,808. ENVELOP. CHARLES A. DUNN, West Homestead, Pa. Filed Mar. 21, 1902. Serial No. 99,365. (No model.)

Claim.—1. An envelop-blank consisting of a front and back, the front being of greater length than the back to form wings adapted to fold on said back, and securing-strips formed integral with the front and back and adapted to be doubled so as to engage both the front and back, substantially as described.

2. An envelop comprising a blank having a front forming one side of the envelop and a back forming the other side of said envelop, the front being of greater length than the back and adapted to have its extensions folded over to engage the back, a tongue carried by the front adapted to engage with the back, and end-securing strips carried by the blank, one of said strips adapted to engage the one end of the envelop, and the other strip adapted to engage the opposite end and the edge of the envelop, substantially as described.

3. In an envelop, the combination of an upper and a lower securing-flap, one of said flaps carrying a securing-tongue and the other of said flaps having a cut-away portion adapted to receive said securing-tongue, securing ends carried by said flaps intermediate their ends, said securing ends adapted to be creased and bent upwardly to inclose the sides of the upper and lower securing-flap, one of said securing ends adapted to be bent over the upper sides of the said upper and lower securing-flaps and adapted to inclose said securing-tongue, substantially as described.

707,809. ADDING-MACHINE. HALCOLM ELLIS and NATHAN W PERKINS, Jr., St. Louis, Mo., assignors to Charles H. Filley, St. Louis Mo. Filed Nov. 9, 1901. Serial No. 81,735. (No model.)

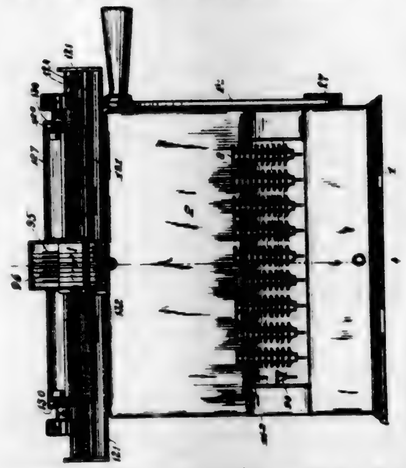

Claim.—1. The combination in an adding-machine of a column of keys, a separate pivoted stop-bar connected to be operated by each key, a printing device and an adding device, and a moving part to which the printing and adding devices are connected, the travel of said moving part being limited by the stop-bars when in operation, substantially as described.

2. The combination in an adding-machine of a printing device, an adding device, and a moving part to which the printing and adding devices are each connected, pivoted stop-bars of graded length which in operation limit the travel of the said moving part, substantially as described.

3. The combination in an adding-machine of series of columns of keys, a separate pivoted stop-bar connected to each key, latches for holding said stop-bars in their operative position, means for releasing said latches independently, and means for releasing said latches simultaneously, substantially as described.

4. The combination in an adding-machine of a series of columns of keys, a separate pivoted stop-bar connected to each key, a rack for turning the adding mechanism, and a rack-engaging mechanism operated by the stop-bars, substantially as described.

5. The combination in an adding-machine of two racks connected to the same moving part, an adding device, means for alternately engaging the said racks so that they will rotate the adding device in opposite directions, and pivoted stop-bars of graded length which in operation limit the travel of said moving part, substantially as described.

6. The combination in an adding-machine of type-bearing sectors, pivoted to moving arms, means for raising the type-surface of all sectors that print above the type-surface of the sectors that do not print, and a platen which presses the paper against the raised type, substantially as described.

7. The combination in an adding-machine of a total-key, a paper roll about which the paper to be printed passes, and means for automatically rotating the said roll an extra space when the total-key is operated, substantially as described.

8. The combination in an adding-machine of a total-key and a paper-feeding device and means for automatically operating the paper-feed device an extra space whenever the total-key is operated, substantially as described.

9. The combination in an adding-machine of a handle, a rack, and a two-pointed pawl, means for holding said pawl out of engagement with said rack when the handle makes its full stroke in each direction, and means for bringing said pawl into engagement with said rack whenever said handle is reversed before completing its stroke in either direction.

10. The combination in an adding-machine of type-bearing sectors having fixed type thereon numbered "0," "1," "2," "3," and to "9," all the type being normally below the printing-line, an automatic device for raising the type-sector to the printing-line whenever a sector is moved to bring figure "1," or a higher number into printing position, on the sector so moved and all type-sectors to the right, and an inking device which operates to ink the type before the same are brought to the printing-line.

707,810. BICYCLE-LOCK. JOYCE C. FISHER, Mussoorie, India. Filed Apr. 5, 1902. Serial No. 101,577. (No model.)

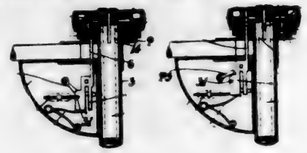

Claim.—In a bicycle, the combination with the head or socket and the steering-post therein, of a transversely-arranged disk at the upper end of said socket, a second disk carried by the post adjacent to said first-named disk, and a locking-bolt slidingly supported, said bolt passing through an opening in the first disk and engaging a recess in the second disk, substantially as described.

707,811. SAFETY DEVICE FOR ELEVATORS. JOSEPH W. FLEMING, Philadelphia, Pa., assignor of one-half to Hiram Horter, Jr., Philadelphia, Pa. Filed Apr. 30, 1902. Serial No. 105,956. (No model.)

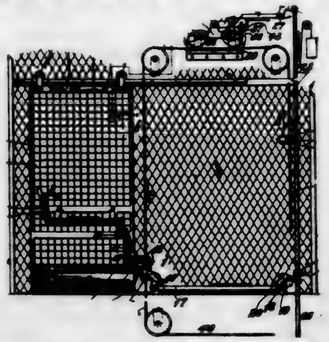

Claim.—1. In an elevator, a door of the elevator-shaft provided with a foot projecting laterally therefrom, a secondary lever adapted to engage said foot, a cable for operating the power mechanism of the elevator, means connected with said lever for clamping and releasing said cable, and a primary lever adapted to operate said secondary lever to remove the latter from the path of said foot.

2. In an elevator, a door of the elevator-shaft, a primary lever mounted thereon, a secondary lever mounted on the elevator-shaft, a foot on the door adapted to be engaged by said secondary lever, means on the door for operating said primary lever and thereby removing the secondary lever from the path of said foot, and means connected with the secondary lever for operating mechanism that engages and releases the starting and stopping cable of the elevator.

3. In an elevator, a bar, mechanism controlling the same operated from the door of the elevator-shaft, a starting and stopping cable, mechanism connected with said bar adapted to engage said cable, a lock on the elevator-shaft adapted to engage said bar, and means on said cable adapted to engage said lock and throw back the same.

4. In an elevator, a starting and stopping cable, means for controlling the same, a lock adapted to engage a member of said means, and a

device on said cable adapted in its motion to engage said lock and throw back the same from said member.

5. In an elevator, a starting and stopping cable, a bed over which the same passes, an eccentric-roller opposite to said bed, a support for said roller, means for lowering and raising said roller, and connections for said means with devices extending from the door of the elevator and the elevator-shaft, whereby the support of said roller is moved in opposite direction.

6. In an elevator, a starting and stopping cable, a locking device therefor, and means for releasing a member of said device from the lock itself consisting of a shoulder on said cable, and a projection on the bolt of said lock, said projection being adapted to be engaged by said shoulder.

7. In an elevator, a bar, a starting and stopping cable, a door provided with means for operating said bar, and a clamping device for said cable adapted to be operated by said bar, in combination with a lock on the elevator-shaft adapted to engage said bar and means on said cable adapted to engage the bolt of said lock.

8. In an elevator, a door of the elevator-shaft, a primary lever mounted thereon, a secondary lever mounted on the elevator-shaft, a foot on said door adapted to be engaged by said secondary lever, said secondary lever being adapted to be moved from the path of said foot by said primary lever, a movable bar connected with said secondary lever and a device adapted to be operated by said movable bar and grip the starting and stopping cable of the elevator and to be released therefrom.

707,812. AUTOMATIC CIRCUIT-CLOSER FOR TELEGRAPH-KEYS. JOHN R. FOLSOM, Mitchell, Ill. Filed Aug. 23, 1901. Serial No. 73,766. (No model.)

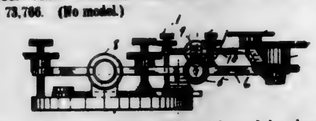

Claim.—1. The combination with a telegraph-key having a key-lever, of the binding-posts 9 attached to and extending upwardly from the key-lever, a circuit-closing lever 10 pivotally mounted between said binding-posts, the central portion of the circuit-closing lever being above and parallel with the key-lever and the forward end of the said circuit-closing lever being turned to the right, the set-screw 11 fixed in the forward end of the said circuit-closing lever and extending downwardly in position to contact with the manual circuit-closer, and a button upon the rear end of the said lever in position to be engaged by the operator when he grasps the key-lever button to operate the key, substantially as specified.

2. The combination with a telegraph-key, of binding-posts mounted upon and extending from the key-lever, a circuit-closing lever pivotally connected to the binding-posts, a spring in position to operate the circuit-closing lever, a set-screw in the forward end of the circuit-closing lever in position to make a contact and close the circuit and a button carried on the rear end of the circuit-closing lever, in position to be engaged by the operator when he operates the key substantially as specified.

3. The combination with a telegraph-key of a circuit-closing lever pivotally connected to the key-lever, a set-screw carried by the circuit-closing lever in position to make a contact and close the circuit, a button carried by the circuit-closing lever in position to be engaged by the operator when he operates the key, and a spring in position to hold the circuit-closing lever normally in its closed position, substantially as specified.

4. The combination with a telegraph-key of a circuit-closing lever pivotally connected to the key-lever, a set-screw carried by the circuit-closing lever in position to make a contact and close the circuit, a button carried by the circuit-closing lever in position to be engaged by the operator when he operates the key, and a spring in position to hold the circuit-closing lever normally in its closed position, and a manually-operated slide for holding the circuit-closing lever in its open position, substantially as specified.

707,813. ADJUSTABLE AND THROW-OFF ROLLER-TRACK FOR PRINTING-PRESSES. ADOLPH W. PEITZ, Burlington, Iowa. Filed Dec. 13, 1901. Serial No. 85,695. (No model.)

Claim.—1. The combination with a printing-press, of an impression-throw-off shaft having cam-grooves, and a frame arranged at each side of the press and adapted to be operated by said cam-grooves, each of such frames comprising a roller-track member and a carrying-plate connected thereto and means for adjustably securing the roller-track member and the carrying-plate to regulate the pressure of the inking-roller on the type.

2. In an attachment of the class set forth, comprising a rear plate having a forwardly-projecting tongue formed by reducing the outer portion of the plate, a track member provided with track extensions and having a socket to adjustably receive said tongue, and screw adjusting devices engaging portions of the said plate and track member.

3. An attachment of the class set forth, comprising a roller-track member guided at each side of the bed of the press, a plate, means for adjustably securing said plate to said roller-track member to regulate the respective planes of the roller-track member and the surface of the type, and means for operatively connecting said plate to the impression-throw-off shaft, substantially as specified.

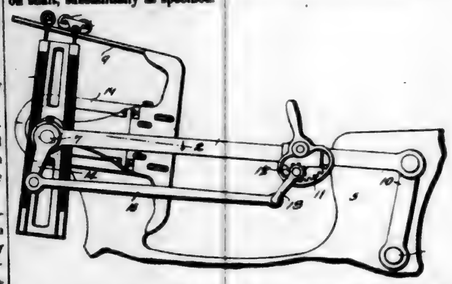

4. The combination with inking-rollers and a form-bed, of guard devices at opposite sides of the form-bed, adjustable track attachments at opposite sides of the form-bed having slots to receive said guard devices, and means for causing the attachments to move forwardly and rearwardly.

5. The combination with a printing-press having an impression-throw-off shaft provided with cam-grooves, of a roller-track member situated at each side of the press and provided with horizontally-disposed slots, guiding bolts or screws adapted to said slots and carried by the frame of the press, a plate having its rear end adapted to the cam-groove, adjustable screws connecting the plate and track member, and means for connecting the plate and track member to prevent independent lateral movement, substantially as specified.

707,814. CABLE-SUPPORT. JONAH K. GAHALIELSON, Kaumana, Hawaii. Filed Aug. 24, 1901. Serial No. 73,141. (No model.)

Claim.—1. A support for cables comprising a head with a grooved edge lengthwise and a central opening for a support, and provided with an extension at one end, a cable resting on the upper edge of the head and extension and a clip over the cable locked on the extension and confining the cable on said support, substantially as described.

2. A supporting-head for cables having a head with a central hole and an arm in said hole on which the head is loosely mounted, said head having grooves lengthwise in its opposite edges and adapted to be reversed, and provided with an extension at one end constructed to receive a clip for confining a cable on said head, substantially as described.

3. The combination of the supporting-arm, the head rotatably mounted thereon at its center and having an extension at one end, a cable resting on the upper edge of the head and its extension and a clip engaged over the cable and the said extension and holding the cable in place, substantially as described.

707,815. BARB-WIRE MACHINE. HENRY GAUERMAN and DAVID PRYDE, Braddock, Pa. Filed Nov. 13, 1901. Serial No. 82,629. (No model.)

Claim.—1. In a barb-wire machine, a strand-feed mechanism, a rotary coiler, a main shaft carrying one or more offset or staggered threads, a worm-wheel meshing with the threads and driving the strand-feed mechanism, and rotary gearing on the main shaft for driving the coiler.

2. In a barb-wire machine, a strand-feed mechanism, a barb-wire-feed mechanism, a coiler, a main shaft carrying one or more offset or staggered threads and rotary gearing on said main shaft for driving the coiler, and connections from said main shaft for driving the barb-wire-feed mechanism.

3. In a barb-wire machine, a strand-feed mechanism, a rotary coiler, a main shaft carrying one or more offset or staggered threads, a worm-wheel meshing with the threads and driving the strand-feed mechanism, and gearing on the main shaft driving the coiler continuously in the same direction.

4. In a barb-wire machine, a coiler, stationary supports therefor, an independent slide, means for positively reciprocating the slide in both directions, and connections between the coiler and the slide.

5. In a barb-wire machine, a coiler, stationary supports therefor, an independent slide, means for positively reciprocating the slide in both directions, connections between the coiler and the slide, a strand-wire-feed mechanism, and a staggered thread for intermittently driving said mechanism.

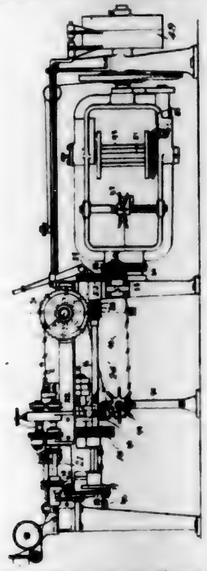

6. In a barb-wire machine, a coiler, stationary supports therefor, a strand-wire-feed mechanism, a staggered thread for driving said mechanism, a barb-wire-feed mechanism, means for severing the barb-wire, an independent slide, means for positively reciprocating the slide in both directions, and connections between the coiler and the slide.

7. In a barb-wire machine, a sprocket-wheel for feeding the strand-wire, one or more threads for driving said wheel intermittently, and interchangeable gearing between the threads and the wheel for varying the speed of the latter

8. In a barb wire machine, a sprocket-wheel for feeding the strand-wire, a staggered worm for driving the sprocket-wheel intermittently, and means between the worm and the wheel for varying the speed of the latter consisting of a worm-wheel meshing with the worm, a spur-wheel rigid with the worm-wheel, a pinion rigid with the sprocket-wheel, and two removable wheels meshing with said spur-wheel and pinion.

9. In a barb-wire machine, a strand-wire-feed mechanism, a barb-wire-feed mechanism, a reciprocating and rotary coiler, a main shaft having an offset thread for intermittently driving the strand-wire-feed mechanism, and a gear-wheel connected to the coiler for reciprocating and rotating the same, and a pawl-and-ratchet connection between said shaft and said barb-wire-feed mechanism.

707,816. BOTTLE-SEALING MACHINE. HERMAN T. GAY, Baltimore, Md., assignor, by mesne assignments, to the Aluminum-Cork Seal Company, Camden, N. J., a Corporation of New Jersey. Filed May 13, 1901. Serial No. 59,916. (No model.)

Claim.—1. In a machine for expanding a sealing-plug of substantially the character described, in the mouth of a bottle, and compressing a joint-forming gasket between the said plug and a seat formed in the bottle-throat, a vertically-moving head comprising a central plunger having near its lower end a projecting annulus, a system of distensible jaws arranged around the said plunger, and fulcrumed on the said projecting annulus, adapted to enter the said sealing-plug, a shell situated exteriorly of the said plunger and the distensible jaws, the same having an inclined inner surface which, in the downward movement of the shell, independently of the jaws, serves to effect the distention of the portion of the jaws which are within the said plug, substantially as specified.

2. In a machine for expanding a sealing-plug of substantially the character described, in the mouth of a bottle, and compressing a joint-forming gasket between the said plug and a seat formed in the bottle-throat, a head comprising a central plunger having near its lower end a projecting annulus, a system of distensible jaws fulcrumed on the said annulus, the lower ends of the said jaws being adapted to enter the said sealing-plug, a spring device to yieldingly hold the lower ends of the said jaws in contact with the said central plunger, and means to effect the closing in of the upper ends of the said jaws, whereby the lower ends below the annular fulcrum are distended, substantially as specified.

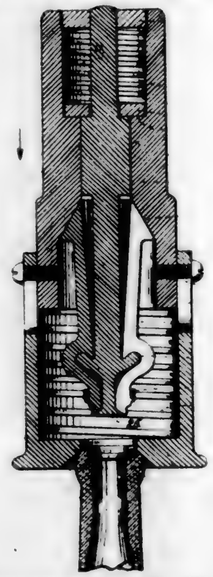

3. In a machine for expanding a sealing-plug of substantially the character described, in the mouth of a bottle, and compressing a joint-forming gasket between the said plug and a seat formed in the bottle-throat, a centering device for the bottle, a centrally-supported annulus situated above the bottle-centering device the said annulus carrying a series of jaws with their lower ends adapted to enter the sealing device to be expanded, the said centering device and the plug-expanding jaws having a movement one toward the other, and means whereby the said jaws are diametrically contracted at a point above the annular fulcrum, and their lower ends thereby expanded, substantially as specified.

4. In a machine for expanding a sealing-plug of substantially the character described, in the mouth of a bottle, and compressing a joint-forming gasket between the said plug and a seat formed in the bottle-throat, a head comprising a shell having an inclined inner surface, a bottle-centering sleeve connected to the lower end of the said shell and adapted to have a vertical movement independently of the same, a spring to retain the said shell and the bottle-centering sleeve in a distended position one with the other, a plunger susceptible of a sliding movement within the said shell and which extends into the said sleeve, having near its lower end a projecting annulus, a system of jaws fulcrumed to the said annulus with their lower ends provided with a spring-band to keep them normally in a contracted condition and cause their upper ends to stand away from the inclosed plunger, the said upper ends being exteriorly beveled to correspond with the beveled surface in the said shell, a follower and a spring to yieldingly hold the said plunger in its lowest position with reference to the said shell, substantially as specified.

707,817. ROD-REEL. BURTON H. GUNDE, Anderson, Ind. Filed Apr. 26, 1900. Serial No. 14,253. (No model.)

Claim.—1. A rod-reel having a friction-wheel secured to the driven shaft, a vertically-movable friction-ring having the same axis as and arranged to connect with and be driven by the said wheel, hook-shaped fingers arranged to receive the rod, and connections between the fingers and the friction-ring arranged to move them in and out upon its vertical movement; substantially as described.

2. A rod-reel having a friction-wheel secured to a driven shaft, a vertically-movable friction-drum arranged to contact with the friction-wheel and be driven thereby, a friction brake-wheel arranged to contact with the friction-drum and raise and lower it, and means for moving the brake-wheel vertically; substantially as described.

3. A rod-reel having a series of outwardly-movable hook-fingers, a brake arranged to stop the rotation of the reel, and actuating connections

between the brake and the hook-fingers arranged to retract the fingers whenever the brake is applied; substantially as described.

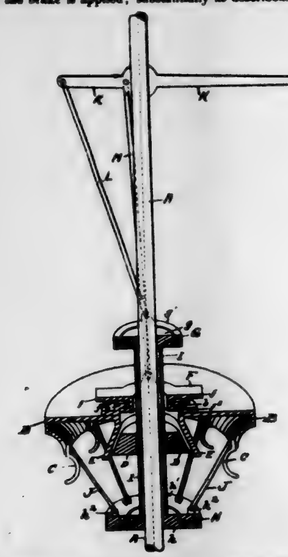

4. The combination in a rod-reel, of a vertical driven shaft; a friction-wheel rigidly attached thereto, a friction-ring adapted to engage the friction-wheel and so mounted as to be capable of vertical movement; a coiling-drum connected with the friction-ring; coiling-hooks mounted on the drum; connections between the hooks and a slidable collar on the shaft; means for raising the friction-ring and drum; and means for simultaneously raising the collar on the shaft to withdraw the hooks; substantially as described.

5. The combination in a rod-reel, of a vertical driven shaft; a friction-wheel rigidly attached thereto; a friction-ring adapted to engage the friction-wheel and so mounted as to be capable of vertical movement; a coiling-drum connected with the friction-ring; braking and lifting members connected with the friction-ring; a brake-wheel adapted to engage the braking and lifting members; coiling-hooks mounted on the drum; connections between the hooks and a slidable collar on the shaft; means for raising the brake-wheel; and means for simultaneously raising the collar on the shaft to withdraw the hooks, substantially as described.

6. The combination in a rod-reel, of shaft A; friction-wheel D; friction-ring E; coiling-drum B; hooks C; brake-wheel F; collars G and H; rods I; links J; lever K and links L and M, substantially as described.

707,318. **PRESSURE-REDUCER FOR GAS OR OTHER PIPES.** JOHN L. GETZE and ROBERT A. PRIME, Cincinnati, Ohio. Filed Apr. 14, 1902. Serial No. 102,799. (No model.)

Claim.—1 A pressure-reducing device for gas-pipes and the like comprising a shell or casing having end portions adapted for connection with gas-pipe sections and having a tapered bore, a hollow body portion exteriorly tapered to fit the bore of the shell or casing and having an end portion extended beyond one end of the shell or casing, said body portion having a hollow adapted to receive a packing of fibrous material and having openings at its ends for the passage of gas through said hollow, a sheet of foraminous material extended across one end of said body portion to hold the packing in the hollow thereof and a cup-shaped valve movably held on the extended end of the body portion and arranged to control the opening at the other end of said body portion, substantially as set forth.

2. A pressure-reducing device for gas-pipes and the like comprising a shell or casing having end portions adapted for connection with gas-pipe sections and having a tapered bore, a hollow body portion exteriorly tapered to fit in the bore of the shell or casing and having one end open and having at its other end an end wall formed with a cut-out portion for the passage of gas and a valve held to turn on said last-named end of the body portion and having a wall formed with a cut-out portion adapted for registry with the cut-out portion of the end wall of said body portion, substantially as set forth.

3. In a pressure-reducing device for gas-pipes and the like, the combination of a shell or casing having ends adapted for connection with pipe-sections and having a tapered bore, a body portion tapered to fit the bore in said shell or casing and having a gas-passage formed in it and provided with pressure-reducing means, and means for holding said body portion in position in said bore, substantially as set forth.

4. In a pressure-reducing device for gas-pipes and the like, the combination of a shell or casing having ends adapted for connection with pipe-sections and having a passage formed through it, one portion of said passage being reduced and made tapered and having a shoulder extended around its larger end, a body portion having a gas-passage formed in it and provided with pressure-reducing means, said body portion being exteriorly tapered to fit in the conical bore of the shell or casing and a sheet of foraminous material extended across the larger portion of the passage of the shell or casing at the end of said body portion with edge portions rested on the shoulder of said passage, said sheet being arranged to hold the body portion in place in the shell or casing, substantially as set forth.

707,319. **PHOTOGRAPHIC CAMERA.** HENRY W. HALSE, Ridgewood, N. J. Filed Sept. 5, 1901. Serial No. 74,387. (No model.)

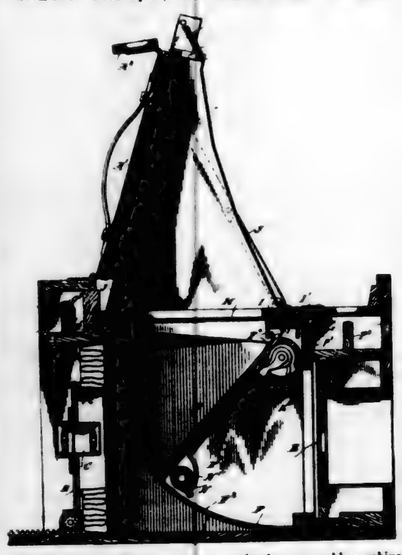

Claim.—1. A photographic camera, having a movable combination mirror and shutter, and an air-chamber located at one side of the shutter-pivot and having a passage that communicates with the mirror and shutter chamber, for relieving air-pressure when imparting a swinging motion to the mirror and shutter, as set forth.

2. A photographic camera having a pivoted swinging shutter, and an air-outlet chamber O located as shown and provided with a passage o' that communicates with the shutter-chamber at a point below the limit of movement of the shutter as shown, whereby the air issues rapidly in the initial movement of the shutter but a portion is confined between the shutter and the side of the chamber just before the movement of the shutter is completed, as shown and described.

3. A photographic camera, having a movable shutter, and air-chambers opening to the outside for relieving the shutter of air-pressure when moving the shutter into an open or a closed position, as set forth.

4. A photographic camera, having a movable shutter, and air-chambers opening to the outside for relieving the shutter of air-pressure when moving the shutter into an open or a closed position, the said air-chambers having means for preventing rays of light from passing to the interior of the camera-casing, as set forth.

5. A photographic camera, having a movable shutter, and a safety-curtain for the shutter, which is extensible and attached to the outer end of the shutter and has an initial movement relative to that of the shutter, as set forth.

6. A photographic camera, having a movable shutter, and a safety-curtain for the shutter, which is attached to the outer end of the shutter and extensible as specified and arranged to regulate the size of the shutter-opening, as set forth.

7. A photographic camera, having a swing-shutter, a mirror carried thereby, a safety-curtain carried by the said swing-shutter and supported and arranged transversely on the outer end of the shutter and adapted for extension as specified, and means for moving the safety-curtain into a closed position previous to starting the said shutter, as set forth.

8. A photographic camera, having a swing-shutter, a mirror carried thereby, a safety-curtain carried by and arranged transversely upon the outer free end of the swing-shutter, means for moving the safety-curtain into a closed position previous to starting the said shutter, and to release the safety-curtain at the option of the operator after the shutter is moved into a set position, as set forth.

9. A photographic camera, comprising a casing having a segmental apertured partition, a segmental swing-shutter in the said casing and having its aperture adapted to register with the aperture in the partition, and an adjustable safety-curtain carried by the said shutter and arranged transversely upon the outer free end of the shutter and adapted for independent adjustment thereon to allow of regulating the size of the shutter-aperture, as set forth.

10. A photographic camera, comprising a casing having a segmental apertured partition, a segmental swing-shutter in the said casing and having its aperture adapted to register with the aperture in the partition, an adjustable safety-curtain carried by the said shutter and independently adjustable thereof to allow of regulating the size of the shutter-aperture, and means for imparting an initial movement to the curtain previous to swinging the shutter into a set position to close the shutter-opening while moving the shutter into a set position, as set forth.

11. A photographic camera, having a spring-pressed swing-shutter, a sleeve on which the shutter is mounted to swing loosely, the sleeve having an arm for imparting a swinging motion to the shutter, a safety spring-roller curtain journaled on the shutter, and an arm carried by the said sleeve and connected with the said curtain, as set forth.

12. A photographic camera, having a spring-pressed swing-shutter, a sleeve on which the shutter is mounted to swing loosely, the sleeve having an arm for imparting a swinging motion to the shutter, a safety spring-roller curtain journaled on the shutter, an arm carried by the said sleeve and connected with the said curtain, and a cam device under the control of the operator for setting the said arm and sleeve, as set forth.

13. In a photographic camera, the combination, with the casing and the cover hinged thereto, of a hood formed of flexible material and an eyepiece which is secured to its outer edge and free from and movable independently of the cover, and springs connecting the eyeplate with the cover and serving as the sole support for the eyepiece and means for stretching the hood, as shown and described.

14. In a photographic camera, the combination, with the movable cover and flexible focusing-hood provided at its outer end with an eyepiece which is adapted to slide parallel to the cover, of yielding supports for said eyepiece which are connected with the free end of the cover whereby the said parts are adapted to operate as shown and described.

707,320. **SCREW-CAP CLOSURE.** HENRY J. S. HALL, New York N. Y. Filed Feb. 12, 1902. Serial No. 93,740. (No model.)

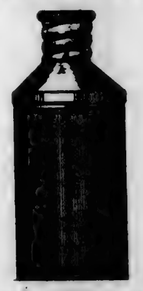

Claim.—1. A closure formed by a screw-threaded nozzle constructed with an outlet in its front near its lower end and provided with a stop above the plane of said outlet, and an imperforate screw-cap having an inwardly-projecting stop to engage with said stop on the nozzle when the outlet is fully opened.

2. A closure formed by a screw-threaded nozzle constructed with an outlet in its front near its lower end and provided with a stop above the plane of said outlet, and an imperforate screw-cap having an inwardly-projecting stop at its lower edge to engage with said stop on the nozzle when the outlet is fully opened.

3. A closure formed by a screw-threaded nozzle constructed with an outlet in its front near its lower end and provided with a stop above the plane of said outlet, and an imperforate screw-cap having an inwardly-projecting stop integral with the body of the cap to engage with said stop on the nozzle when the outlet is fully opened.

4. The combination, in a powder-box, of a suitable body, a cover for the same having a conical top and a screw-threaded nozzle having an outlet in its front near its lower end and provided with a stop on its outer surface above the plane of said outlet, and an imperforate screw-cap having its lower edge provided with a stop to engage with said stop on the nozzle when the outlet is fully opened, and adapted to close powder-tight against said conical top.

5. The combination, in a powder-box having a screw-cap closure of a suitable body having its front designated, a cover, inseparably attached to said body, having a screw-threaded nozzle provided with a closed upper end and an outlet in its front near its lower end, and a screw-cap inclosing said closed upper end; said nozzle and said cap being provided respectively with stops arranged to engage each other when the outlet is fully opened and to prevent the removal of the cap, substantially as hereinbefore specified.

707,321. **TUG SHEAVE-CLUTCH.** HIRAM B. HARDING, Los Angeles, Cal. Filed Oct. 19, 1901. Serial No. 79,230. (No model.)

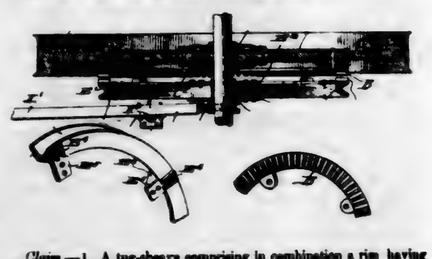

Claim.—1. A tug-sheave comprising in combination a rim having a circumferential groove and provided with clutch-teeth at regular intervals, said rim having sockets, the spokes having their outer ends secured in said sockets the hub to which the inner ends of said spokes are attached, said hub having a circumferential groove, a shifting-lever adapted to fit said groove and the hand-wheel provided with clutch-teeth, substantially as described.

2. A tug-sheave comprising in combination a rim having a circumferential groove and provided with clutch-teeth upon the inner face of said rim at regular intervals, the inwardly-projecting ears or lugs integral with the rim and in alinement with the clutch-teeth, the parallel flanges connecting the rim and ears or lugs thereby providing sockets, the spokes shouldered at their outer ends and fitting into the said sockets and embracing the edge of the rim, the hub formed with a collar to which the inner ends of the spokes are secured, and the hand-wheel provided with clutch-teeth, substantially as shown and described.

707,322. **GALVANIZING-MACHINE.** RICHARD HEATHFIELD, London, England. Filed Feb. 24, 1902. Serial No. 96,446. (No model.)

Claim.—1. In a galvanizing-machine, the combination of a bath containing molten metal, a pair of clearing-rolls wholly submerged in the molten metal, and a pair of exit-rolls partially submerged in the molten metal, the clearing-rolls being arranged below and in close proximity to the exit-rolls in order that after the submerged rolls have cleared away superfluous metal from the sheet undergoing galvanization, the sheet may pass through as little molten metal as possible, substantially as described.

2. In a galvanizing-machine, the combination of a bath containing molten metal, a pair of clearing-rolls wholly submerged in the molten metal, and a pair of exit-rolls submerged up to the nip in the molten metal, the clearing-rolls being arranged below and in close proximity to the exit-rolls in order that after the submerged rolls have cleared away superfluous metal from the sheet undergoing galvanization, the sheet may pass through as little molten metal as possible, substantially as described.

3. In a galvanizing-machine, the combination of a bath containing molten metal, a pair of clearing-rolls, wholly submerged in the molten metal, and a pair of exit-rolls partially submerged in the molten metal, the clearing-rolls being arranged below and in close proximity to the exit-

rolls in order that after the submerged rolls have cleared away superfluous metal from the sheet undergoing galvanization, the sheet may pass through as little molten metal as possible, and guides arranged between the pair of clearing-rolls substantially as described.

4. In a galvanizing-machine, the combination of a bath containing molten metal, a pair of clearing-rolls wholly submerged in the molten metal, and a pair of exit-rolls partially submerged in the molten metal, and frames arranged on the bath and supporting said pairs of rolls, the said clearing-rolls being arranged below and in close proximity to the exit-rolls in order that after the clearing-rolls have cleared away superfluous metal from the sheet undergoing galvanization, the sheet may pass through as little molten metal as possible, and guides arranged between the pair of clearing-rolls and the pair of exit-rolls, and upper and lower sets of guides leading to the clearing-rolls, the upper set of which guides is fixed to the frames supporting the rolls and the lower set of which is at one end supported on the edge of the bath and at the other end is hooked over a tie-bar passing between the frames supporting the pairs of rolls, substantially as described.

5. In a galvanizing-machine, the combination of a bath containing molten metal, a pair of clearing-rolls wholly submerged in the molten metal, and a pair of exit-rolls partially submerged in the molten metal, and frames arranged on the bath and supporting said pairs of rolls, the said clearing-rolls being arranged below and in close proximity to the exit-rolls in order that after the clearing-rolls have cleared away superfluous metal from the sheet undergoing galvanization, the sheet may pass through as little molten metal as possible, and a set of guides arranged between the two pairs of rolls on each side of the path of the sheet undergoing galvanization, each set being provided with and supported by hooks hooked over tie-bars passing between the frames supporting the pairs of rolls, substantially as described.

6. In a galvanizing-machine, the combination of a bath containing molten metal, a pair of clearing-rolls wholly submerged in the molten metal, and a pair of exit-rolls partially submerged in the molten metal, and frames arranged on the bath and supporting said pairs of rolls, the said clearing-rolls being arranged below and in close proximity to the exit-rolls in order that after the clearing-rolls have cleared away superfluous metal from the sheet undergoing galvanization, the sheet may pass through as little molten metal as possible, and a set of guides arranged between the two pairs of rolls on each side of the path of the sheet undergoing galvanization, each set being provided with and supported by hooks hooked over tie-bars passing between the frames supporting the pairs of rolls, and upper and lower sets of guides leading to the clearing-rolls, the upper set of which guides is fixed to the frame supporting the rolls and the lower set of which is at one end supported on the edge of the bath and at the other end is hooked over a tie-bar passing between the frames supporting the pairs of rolls, substantially as described.

707,823. APPARATUS FOR DRYING, COOLING, OR OTHERWISE TREATING GRAIN, &c. GEORGE H. HESS, Jr., Chicago, Ill. Filed Jan. 24, 1901. Serial No. 44,092. (No model.)

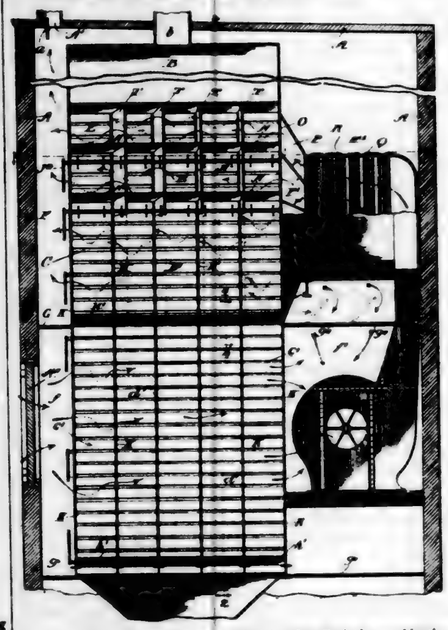

Claim.—1. In an apparatus of the class described, the combination of a pair of upright grain-racks arranged side by side and having in their sides openings for the passage of air, a supply-chamber between said racks, said chamber being open at one end for the admission of air, means for causing a blast of air to enter said chamber horizontally, and a vertical baffle within the chamber for deflecting the air outward toward the racks, substantially as described.

2. In an apparatus of the class described, the combination of a pair of upright grain-racks arranged side by side and having in their sides openings for the passage of air, a supply-chamber between said racks, said chamber being open at its end for the admission of air, a fan for causing a blast of air to enter said chamber horizontally, and an upright baffle located within the chamber equidistant from the racks for deflecting the air outward toward the racks, substantially as described.

3. In an apparatus of the class described, the combination of a pair of upright grain-racks having in their sides openings for the passage of air and having uprights dividing them into separate vertical sections, a supply-chamber between said racks, said chamber being open for the admission of air, means for causing a blast of air to enter said chamber, and a series of baffles arranged in said chamber opposite the uprights for deflecting the air outward toward the racks, substantially as described.

4. In an apparatus of the class described, the combination of a pair of upright grain-racks having in their sides openings for the passage of air, a supply-chamber between said racks, said chamber being open for the admission of air, means for causing a blast of air to enter said chamber, and a reticulated diaphragm in the path of the entering air, substantially as described.

5. In an apparatus of the class described, the combination of an upright grain-rack having in its sides openings for the passage of air, a supply-chamber located at one side of said rack, a horizontal valve dividing the rack into a plurality of separate horizontal sections, a horizontal bulkhead dividing the supply-chamber into a plurality of horizontal sections corresponding with those of the rack, means common to all of said sections for heating air, means for causing a blast of the heated air to pass from said chamber into and through all of the several sections of the rack in the same direction, and separate means for controlling the passage of air into the separate sections of the chamber, substantially as described.

6. In an apparatus of the class described, the combination of an upright grain-rack having in its sides openings for the passage of air, a supply-chamber located at one side of the rack, a horizontal valve dividing the rack into a plurality of separate horizontal sections, a bulkhead dividing the supply-chamber into a plurality of horizontal sections corresponding with the sections of the rack, means common to all of said sections for heating air, separate flues leading therefrom and communicating with the separate sections of the supply-chamber, respectively, separate valves in said flues, and means for causing a blast of air to pass from the heater into the supply-chamber and thence into and through all of the several sections of the racks in the same direction, substantially as described.

7. In an apparatus of the class described, the combination of an upright grain-rack having in its sides openings for the passage of air, a horizontal valve dividing the rack into a heating-section and a cooling-section, a valve located at the bottom of the cooling-section, a valve located between the top and bottom of the cooling-section, and dividing it into a plurality of separate horizontal sections, a valve between the top and bottom of the heating-section and dividing it into a plurality of separate horizontal sections, means for causing a blast of cold air to pass through all parts of the cooling-section of the rack in the same direction, and means for causing a blast of heated air to pass through all parts of the heating-section of the rack in the same direction, substantially as described.

8. In an apparatus of the class described, the combination of a pair of upright grain-racks arranged side by side, having in their sides openings for the passage of air, a supply-chamber located between said racks, horizontal valves dividing the racks into a plurality of separate horizontal sections, means common to all of said sections for heating air and means for causing a blast of the heated air to pass through all of the several sections of each of the racks in the same direction, substantially as described.

9. In an apparatus of the class described, the combination of a pair of upright grain-racks arranged side by side having in their sides openings for the passage of air, horizontal valves dividing said racks into a plurality of separate horizontal sections, a supply-chamber located between the racks, a bulkhead located in the supply-chamber and dividing it into a plurality of horizontal sections corresponding with the sections of the racks, means common to all of said sections for heating air and means for separately supplying said sections of the supply-chamber with the heated air and causing it to pass through all of the several horizontal sections of each of the racks in the same direction, substantially as described.

10. In an apparatus of the class described, the combination of a pair of upright grain-racks arranged side by side having in their sides openings for the passage of air, horizontal valves dividing said racks into a plurality of separate horizontal sections, a supply-chamber located between the racks, a plurality of bulkheads dividing the supply-chamber into a plurality of separate horizontal sections corresponding with the sections of the racks, a separate air-flue communicating with each of said sections of the supply-chamber, means for separately controlling each of said flues, means common to all of said sections for heating air, and means for causing a blast of the heated air to pass through said flues and into the separate sections of the supply-chamber and thence through all of the several sections of each of the drying-racks in the same direction, substantially as described.

11. In an apparatus of the class described, the combination of a pair of upright grain-racks arranged side by side having in their sides openings for the passage of air, horizontal valves dividing the racks into heating-sections and cooling-sections, a housing inclosing the racks, means located at about the level of said valves and dividing the interior of the housing into compartments corresponding respectively with the heating-sections and the cooling-sections of the racks, horizontal valves dividing the heating-sections of the racks into a plurality of separate horizontal sections, horizontal valves dividing the cooling-sections of the racks into a plurality of separate horizontal sections, a supply-chamber located between the heating-sections of the racks, a supply-chamber located between the cooling-sections of the racks, exhaust-chambers located upon opposite sides of the heating-sections of the racks, exhaust-chambers located upon opposite sides of the cooling-sections of the racks, means for causing a blast of air to enter the supply-chamber of the cooling-sections and pass thence through all of said cooling-sections of each rack in the same direction and thence into the exhaust-chambers at the sides thereof, thence to the supply-chamber of the heating-sections of the racks, thence through all of said sections of each of the racks in the same direction and thence into the exhaust-chambers at the sides thereof, and means for heating the air in transit between the cooling and heating sections, substantially as described.

12. In an apparatus of the class described, a grain-rack comprising a plurality of uprights, each having two vertical rows of flanges, the flanges of the two rows being staggered, a plurality of slats permanently secured to the flanges of one row, and a plurality of slats resting upon the flanges of the other row and having hooks engaging said flanges, substantially as described.

13. In an apparatus of the class described, the combination of a pair of grain-racks, each having a plurality of slats, a chamber between said racks, and a horizontal bulkhead closing said chamber and supported by the slats of the rack, substantially as described.

14. In an apparatus of the class described, the combination of a pair of grain-racks, each having a plurality of slats, and a chamber between said racks, a horizontal bulkhead of inverted-V shape in cross-section closing said chamber and supported by the slats of the rack, substantially as described.

15. In an apparatus of the class described, the combination with a grain-rack having two vertical rows of staggered slats, of a valve mounted to move adjacent to the lower edge of a slat of one row and opposite an intermediate part of an adjacent slat of the other row, substantially as described.

16. In an apparatus of the class described, the combination with a grain-rack having two vertical rows of staggered slats, of a valve mounted to move adjacent to the lower edge of a slat of one row and opposite an intermediate part of an adjacent slat of the other row, and a shield located inside of the latter slat and terminating at its lower edge in close proximity to the valve, substantially as described.

17. In an apparatus of the class described, the combination with a grain-rack having a pair of uprights, of a valve mounted to slide between said uprights, flanges projecting from the uprights and extending over the ends of the valve, and flanges carried by the uprights and supporting the valve, substantially as described.

18. In an apparatus of the class described, the combination with a grain-rack having a pair of uprights, of a valve mounted to slide between said uprights, flanges projecting from the uprights and extending over the ends of the valve, and flanges carried by the uprights and supporting the valve, said flanges being provided with openings for the escape of grain, substantially as described.

19. In an apparatus of the class described, the combination with a plurality of grain-racks, of a plurality of heating-drums, a radiator in each of said heating-drums, and a header common to said radiators, substantially as described.

20. In an apparatus of the class described, the combination with a plurality of grain-racks, of a plurality of heating-drums, separate radiating-pipes in said drums, a header common to the radiating-pipes of said drums, and means for supplying said header with steam, substantially as described.

21. In an apparatus of the class described, the combination with a plurality of grain-racks, of a plurality of drums, a radiator in each of said drums, a header common to said radiators, a central inlet for steam, and a diaphragm dividing the header, substantially as described.

707,824. LAWN-MOWER. WILLIAM H. H. HEYDRICK, Philadelphia, Pa. Filed Apr. 20, 1901. Serial No. 56,126. (No model.)

Claim.—1. In a lawn-mower a cutting mechanism a sweeper located in advance of said cutting mechanism and elevated to be out of contact with the ground, a receptacle in advance of said sweeper and means for revolving said sweeper which latter is adapted to deflect the weeds, &c., to the cutting mechanism and receive the cut weeds, &c., and discharge the same into said receptacle.

2. In a lawn-mower, a frame, a shaft mounted therein, a cutting mechanism carried by said shaft, a brush disposed above the point of action of the cutting mechanism to deflect the grass, &c., thereto a receptacle in advance of the cutting mechanism a brush-actuating mechanism connected with said shaft means connected with said actuating mechanism for rotating said brush and rollers located under the brush and supported from said frame.

3. In a lawn-mower, a cutting mechanism, a receptacle located in advance of the said cutting mechanism, a sweeper located intermediate of said cutting mechanism and receptacle, and means for rotating said sweeper which latter is adapted to deflect the weeds and the like to said cutting mechanism and to receive the cut weeds and the like from said cutting mechanism and discharge the same into said receptacle.

4. The combination in a lawn-mower, of a framework, cutting mechanism mounted therein, a brush rotatably mounted in advance of said cutting mechanism, rollers located under said brush for supporting the same, a hood located over said cutting mechanism and brush, arms projecting

forwardly from said framework and a receptacle for the cut grass mounted on said arms.

5. In a lawn-mower, a cutting mechanism, a receptacle in advance of said cutting mechanism a sweeper intermediate of said cutting mechanism and said receptacle, means for rotating said sweeper, and a guard located over said cutting mechanism and said sweeper to deflect the cut grass into said receptacle.

6. In a lawn-mower, cutting mechanism, a sweeper located in advance thereof, a receptacle in advance of the cutting mechanism and extending above the same and a guard located over said cutting mechanism and said sweeper.

7. In a lawn-mower, a cutting mechanism, a receptacle in advance of said cutting mechanism and a brush located between said cutting mechanism and said receptacle which is adapted to be rotated and which depresses the grass and the like to the cutting mechanism and is adapted to convey the cut grass and the like from the cutting mechanism to the receptacle.

8. In a lawn-mower, a cutting mechanism, a receptacle in advance of said cutting mechanism, a brush located between said cutting mechanism and said receptacle, and constructed and arranged to depress the grass and guide it to the cutting mechanism and to assist in throwing the cut grass into said receptacle, and a hood extending over said cutting mechanism and said brush.

707,825. COMPARTMENT-BOX FOR CHECKS OR THE LIKE. JOHN T. KING, Boston, Mass. Filed Mar. 6, 1902. Serial No. 96,927. (No model.)

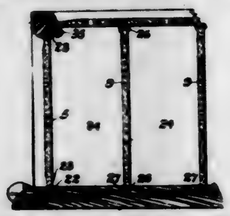

Claim.—1. In a compartment-box, the combination with the base and skeleton frame thereon, of the front plate, the lower edge of which enters a grooved strip of rubber lying in a groove in the base while the upper edge engages a rabbet in the frame, and is provided with a grooved strip of rubber having a series of slots said rabbet in the frame having an inclined face for making a tight joint, and a series of transparent partitions engaging the aforesaid slots in the rubber strip.

2. The combination with the grooved base, and the frame mounted thereon, of the front plate having strips of grooved rubber on the edges, the strip on its top edge having a series of slots, the top plate having strips of grooved rubber on the edges, the end plates likewise provided with strips of grooved rubber, and the glass partitions having strips of grooved rubber at top and bottom, said partitions engaging the slots in the rubber strip on the front plate.

3. The combination with the grooved base, and the skeleton frame thereon, of the top and plates, the front plate having on its upper edge a grooved strip of rubber provided with a series of slots, the series of transparent partitions which subdivide the box into compartments, said partitions engaging the aforesaid slots in the rubber, and the removable slide.

707,826. GRIP-CARRIER FOR BUTTON-MAKING MACHINES. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 4, 1902. Serial No. 101,436. (No model.)

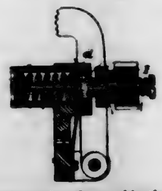

Claim.—1. In a grip-carrier, the combination with a fixed jaw of a movable jaw composed of a plurality of separately-movable members, of means for moving said members simultaneously but independently toward said fixed jaw, with a yielding pressure.

2. In a grip-carrier, the combination with a fixed jaw of a movable jaw composed of a plurality of separately-movable members, of means for moving said members simultaneously but independently toward said fixed jaw, with a yielding pressure, said means consisting of a pinion mounted upon a screw, a universally-jointed bearing intermediate the pinion and the members of the movable jaw and a spring acting against the pressure of the pinion.

3. In a grip-carrier the combination with a fixed jaw, of a movable jaw consisting of separate members, means for opening and closing the jaws consisting of a pinion mounted upon a screw, a spring acting against the thrust of the pinion, and bearing-pieces interposed between the pinion and the movable jaw adapted to freely oscillate with relation to the jaw, the pinion and each other.

4. In a grip-carrier, the combination with a fixed jaw and a movable jaw consisting of separate members, of means for opening and closing the jaws consisting of a screw, means for moving it yieldingly in the direction of the closing of the jaws, means for moving it positively in the opposite direction and a universally-jointed bearing between the positive means and the movable jaw.

707,827. LOCKING DEVICE FOR WORK-CARRIERS. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 4, 1902. Serial No. 101,437. (No model.)

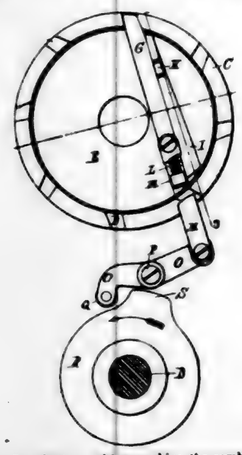

Claim.—1. In a button-making machine, the combination with the intermittently-rotating turret and a notched ring carried thereby, of a stationary disk in the notched ring provided with a transverse groove which registers *coincides* with the notches, a locking-bolt supported throughout its length in said groove, and means for causing the bolt to automatically engage in the notches of the ring.

2. In a button-making machine, the combination with the intermittently-rotating turret, and a notched ring carried thereby, of a stationary disk in the notched ring provided with a transverse groove which registers *coincides* with the notches, a locking-bolt supported throughout its length in said groove, means for causing the bolt to automatically engage the notches when they register with the groove, and means for withholding the bolt from the notches while the turret is in motion.

3. In a button-making machine, the combination with the intermittently-rotated turret, and a notched ring carried thereby, of a stationary plate within said ring and transversely grooved, a locking-bolt in said groove normally spring-pressed into said notches *coincides*, a cam-shaft parallel to the axis of rotation of the turret, a cam-disk on said shaft, and connections between the cam-disk and bolt whereby the latter is withdrawn from the notches after each period of rest of the turret.

707,828. SEGMENTAL GEAR FOR BUTTON-MAKING MACHINES. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 4, 1902. Serial No. 101,438. (No model.)

Claim.—1. In a button-making machine the combination with a grip-tightening screw and a pinion thereon, of a driving-gear, intermeshing with the pinion, and means for moving said driving-gear toward the grip-pinion in substantially the direction of a radius of the latter.

2. In a button-making machine the combination with a grip-tightening screw and a pinion thereon, of a driving-gear intermeshing with the pinion and means for moving said driving-gear away from the grip-pinion in substantially the direction of a radius of the latter.

3. In a button-making machine the combination with a grip-tightening screw, and a pinion thereon, of a driving-gear intermeshing with the pinion, and means for moving the driving-gear toward and away from the grip-pinion in substantially the direction of a radius of the latter.

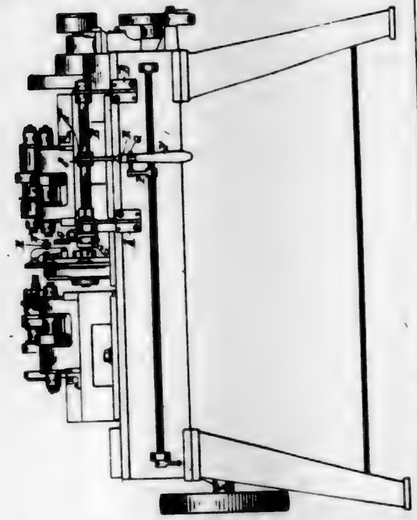

4. In a button-making machine the combination with a grip tightening and releasing screw and a pinion thereon, of a driving-gear intermeshing with the pinion and means for moving the driving-gear toward the axis of rotation of the grip-pinion at the beginning of the releasing movement.

5. In a button-making machine, the combination with a grip tightening and releasing screw and a pinion thereon, of a driving-gear intermeshing with the pinion, and means for moving the driving-gear away from the axis of rotation of the pinion at the end of the tightening movement.

6. In a button-making machine, the combination with a grip tightening and releasing screw and a pinion thereon, of a driving-gear intermeshing with the pinion, means for moving the driving-gear away from the axis of rotation of the pinion at the end of the tightening movement and in the opposite direction at the beginning of the releasing movement.

7. In a button-making machine, the combination with a grip tightening and releasing screw, of a shaft parallel with the screw, eccentric bushings serving as bearings for the shaft, a driving-gear carried by the shaft, and means whereby the bushings are slightly rotated at the beginning of the releasing movement in a direction to move the shaft and driving-gear nearer to the axis of rotation of the pinion.

8. In a button-making machine, the combination with a grip-tightening screw and a pinion thereon, of a shaft parallel with the screw, eccentric bushings serving as bearings for the shaft, a driving-gear carried by the shaft, and means whereby the bushings are slightly rotated at the ending of the tightening movement in a direction to carry the shaft and driving-gear away from the axis of rotation of the pinion.

9. In a button-making machine, the combination with a grip tightening and releasing screw, and a pinion thereon, of a shaft parallel with the screw, eccentric bushings serving as bearings for the shaft, a driving-gear on the shaft, and means whereby the bushings are slightly turned to move the shaft and driving-gear toward the axis of rotation of the pinion at the beginning of the releasing movement and in the opposite direction at the end of the tightening movement.

10. In a button-making machine, a grip releasing and tightening mechanism comprising a shaft, a segmental gear thereon, a friction-collar on the shaft provided with a pair of lugs, an eccentric bushing serving as a bearing for the shaft, said bushing having a lateral lug projecting between the lugs of the collar and with a recessed flange, and a pin projecting from the shaft into the recess of the flange of the bushing.

11. In a button-making machine, the combination with a horizontal rock-shaft, a segmental gear and a hand-lever projecting therefrom on opposite sides, a parallel rock-shaft, an arm thereon, a lateral bar on said arm in the path of movement of the hand-lever, and a spring-pin projecting from the arm arranged to contact with the frame of the machine to keep the hand-lever off the bar.

707,829. BUTTON-FEEDING MECHANISM. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 12, 1902. Serial No. 102,843. (No model.)

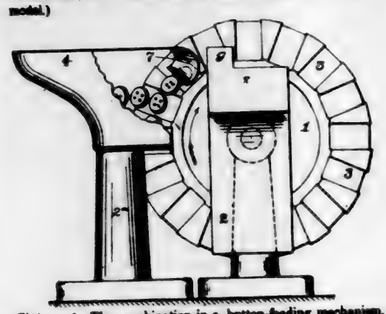

Claim.—1. The combination in a button-feeding mechanism, of a runway, a frustum of a cone mounted to rotate on a horizontal axis and provided with grooves in its external periphery each of which is parallel with the runway when at the point of delivery, a hopper one side of which is formed by the face of the frustum, and a guard projecting from, and in the plane of the top of, the hopper with its end tangential to the grooved external surface of the frustum.

2. A button-feeding mechanism comprising a runway, and a conic frustum mounted to rotate upon a horizontal axis and provided with grooves in its external surface each of which is parallel with the runway when at the point of delivery, in combination with a hopper one side of which is formed by the face of the frustum, a guard projecting from the top of the hopper and whose outer surface is parallel with the external surface of the frustum, and a runway-plate placed in front of the smaller side of the frustum and provided with a projecting guard whereby the buttons are retained upon the conic frustum until the point of delivery is reached.

3. A button-feeding mechanism comprising a conic frustum provided with button-receiving grooves in its face and mounted to rotate on a horizontal axis, a hopper by the side of the frustum having the side adjacent to the face of the frustum open whereby the contents of the hopper lie on said surface of the frustum, and an elastic guard upon the top of the hopper projecting over the face of the frustum having its end turned under and backward with the edge thereof parallel to the grooves of the frustum when passing under it, said edge being normally at the proper distance from the frustum to permit of the passage of only one button at a time and in its proper position.

4. A button-feeding mechanism comprising a grooved conic frustum mounted to rotate upon a horizontal axis, a hopper of a width equal to the thickness of the frustum located adjacent to one side of said frustum, and having the side next to the frustum open, a guard projecting from the hopper over the frustum into a position to permit of the passage of but one button at a time thereunder, a runway at the smaller end of the frustum in position to receive the buttons in the grooves of the frustum as they reach their uppermost position, and a guard projecting from the runway adjacent to the smaller end of the frustum into position to prevent the discharge of buttons from the grooves of the frustum while between the hopper and their uppermost positions.

707,830. SPINDLE ADJUSTMENT FOR BUTTON-MAKING MACHINES. JOHN HORNBY, Woonsocket, R. I. Filed Apr. 19, 1902. Serial No. 103,810. (No model.)

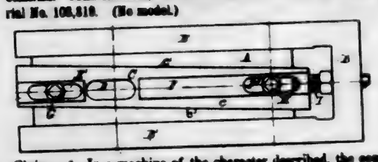

Claim.—1. In a machine of the character described, the combination with the spindle-bearing, of means for laterally adjusting it, said means consisting of a bar guided in the longitudinal plane of the head, and means for sliding said bar in a laterally-inclined groove in the bottom of the bearing.

2. In a machine of the character described, the combination with the spindle-bearing provided with a laterally-inclined groove in its bottom, of a bar fitted to slide in said groove, slots in the bar in the longitudinal plane of the bearing and bolts in said slots threaded into the bearing.

3. In a machine of the character described, the combination with the spindle-bearing provided with grooves at the edges of its bottom face having inclined top walls, of a block having wedge-shaped arms extending into said grooves, means for moving the block and arms longitudinally with relation to the bearing, and means for preventing lateral displacement of or strain upon the arms.

4. In a machine of the character described, the combination with the spindle-bearing provided with side grooves in its bottom having inclined top walls and an intermediate groove having laterally-inclined side walls, of wedge-shaped arms in the side grooves, a bar with parallel inclined sides in the intermediate groove, and means for adjusting the arms and bar longitudinally in lines parallel with each other and with the sides of the bearing.

707,331. CAR-BRAKE. WILLIAM HOUSE, Syracuse, N. Y. Filed Jan. 16, 1902. Serial No. 89,935. (No model.)

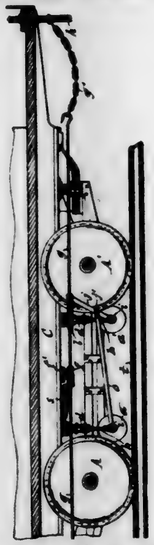

Claim.—1. The combination, with a car-truck, of extensible hangers pivotally connected to the truck, springs contracting said hangers, rollers pivoted to the free ends of said hangers, and mechanism for imparting motion to the hangers to carry the rollers to and from simultaneous contact with the car-wheels and track as set forth.

2. The combination, with a car-truck, of hangers pivotally connected to said truck and movable vertically toward and from the track-rails, springs lifting said hangers, brake-rollers pivotally supported on the lower ends of said hangers, means for swinging the hangers toward and from the car-wheels, and a coupling transmitting simultaneous movement to the hangers as set forth.

707,332. SMOKE AND SPARK PREVENTING DEVICE. WILLIAM S. HUSHER, Philadelphia, Pa., assignor to Edward A. Willard, New York, N. Y. Filed Jan. 7, 1902. Serial No. 88,712. (No model.)

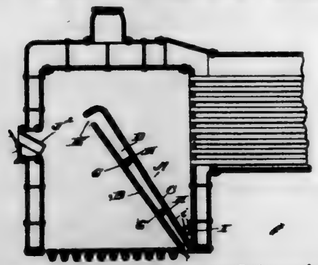

Claim.—1. In a device of the character described, an arched structure arranged within the fire-box and extending entirely across the same, said structure composed of a front and rear wall commencing at the lower rear corner of the fire-box and extending upward and forward and terminating at a point above the line of the furnace-door, said walls so arranged as to form a gradually-widening passage in between the same, the narrowest portion being at the inlet and the widest portion being at the upper end, the forward wall being provided at the upper end with an opening, a series of nozzles secured to the forward wall and extending through the passage in between the walls, said nozzles being provided with openings therethrough, the rear wall having openings opposite the nozzles but of larger diameter than the same, a damper or valve arranged at the inlet end of the passage for regulating the supply of air, an opening formed through the furnace-door, a hood secured to the inner face of the door and projecting inward in a downwardly-inclined direction, substantially as and for the purpose specified.

2. In a device of the character described, an arched structure arising from the lower rear corner of the fire-box and inclined forward and terminating at a point above the furnace-door, a tapering air-passage formed in the structure, said passage opening through the bed of the fire-box, the structure provided with an opening at its upper end so arranged as to discharge the air slightly downward, a series of nozzles having openings formed longitudinally through the same secured to the forward portion of the structure and extending through the passage, the rearward portion of the structure being provided with openings registering with the nozzles but of larger diameter than the same, an opening formed through the furnace-door, a baffle-plate or hood arranged upon the interior for directing the air passing through the opening downward toward the fire-bed, a damper or supplementary door for regulating the inflow of air through such opening, a steam-pipe arranged in the angle between the rear of the structure and the rear fire-bed wall, said steam-pipe having openings formed in the upper portion thereof so as to eject the steam upward, as and for the purpose specified.

707,333. FILTER. CHURCHILL HUGGERFORD, Philadelphia, Pa. Filed May 9, 1902. Serial No. 106,545. (No model.)

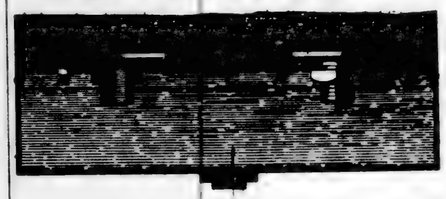

Claim.—1. In a sand-valve for filters, a body having a top plate, a side wall, and a port between said wall and plate, said plate being movable in part as a flap, whereby said port is adapted to be automatically reduced in area during the filtering process and which is automatically increased in area during the cleansing process.

2. In a sand-valve for filters, a body formed of a plate, a side wall and a port between said wall and plate, said plate being movable in part as a flap which is adapted to be automatically reduced in area during the filtering process, whereby the water is compelled to flow at a rapid rate through the port by reason of said decreased area, reducing the tendency of any foreign matter remaining therein, and said port being adapted to be automatically opened during the cleansing process by reason of the mobility of said plate of the valve thereby increasing the area to such an extent that the water passing therethrough is not materially retarded by friction, nor is it possible for any foreign substances to be held in said port.

3. A sand-valve for a filter consisting of a plate and a side wall with a port between said wall and plate, said plate having a portion of the same severed forming a movable flap which is integral with said plate and adapted to regulate the area of said port.

707,334. SYSTEM OF DISTRIBUTION. JOHN F. KELLY, Pittsfield, Mass. Filed May 20, 1902. Serial No. 108,160. (No model.)

Claim.—1. In a system of distribution, the combination of a constant-potential alternating-current generator, an alternating-current motor connected in parallel thereto and a constant-current generator operated by said motor supplying translating devices in series.

2. In a system of distribution, the combination of a constant-potential generator, a synchronous motor supplied thereby, a constant-current generator operated by said motor and supplying translating devices in series.

3. In a system of distribution, the combination of a constant-potential generator, a synchronous alternating-current motor supplied thereby, an alternating-constant-current generator operated by said motor and supplying translating devices in series.

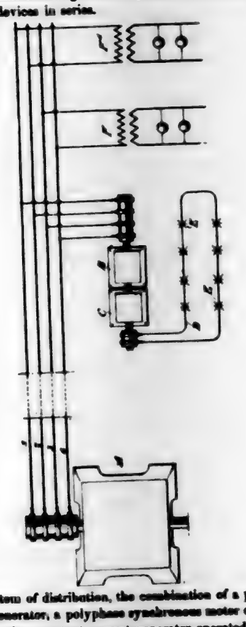

4. In a system of distribution, the combination of a polyphase constant-potential generator, a polyphase synchronous motor operated thereby and an alternating-constant-current generator operated by said motor and supplying current to translating devices in series.

5. In a system of distribution by alternating currents, the combination of a constant-potential alternating-current generator, a synchronous alternating-current motor supplied thereby, an alternating-constant-current generator operated by said motor, and a series of arc-lamps supplied by said constant-current generator.

707,335. LOCOMOTIVE DRIVING-WHEEL. LOWELL H. KENYON, Allegheny, Pa. Filed Jan. 6, 1902. Serial No. 88,513. (No model.)

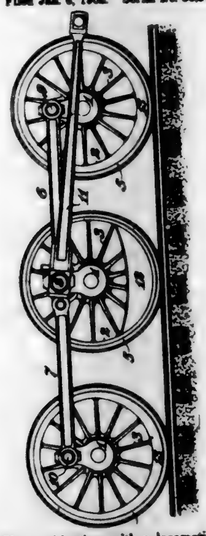

Claim.—1. The combination, with a locomotive driving-wheel, of an annular counterbalance having its center of gravity eccentric to that of the driving-wheel.

2. The combination, with a locomotive driving-wheel, of an annular counterbalance having its center of gravity eccentric to that of the driving-wheel and located on the side of the center thereof opposite to the crank-pin hub.

3. The combination, with a locomotive driving-wheel, of an annular counterbalance fixed upon the rim of the wheel and having a circumferential contour surface which is partly concentric and partly eccentric to that of the driving-wheel.

4. The combination, with a locomotive driving-wheel, of an annular counterbalance fixed upon the rim of the wheel and having a portion of its inner circumferential contour on the side of the center of the driving-wheel opposite to the crank-pin hub, eccentric to the driving-wheel.

5. The combination, with a locomotive driving-wheel, of an annular counterbalance fixed upon the rim of the wheel and having a greater portion of its weight located on the side of the center of the driving-wheel opposite to the crank-pin hub than on the other side thereof.

6. The combination, with a coupled locomotive driving-wheel, of an annular counterbalance having its center of gravity eccentric to that of the driving-wheel and which is made of such weight that the aggregate of its weight and those of the coupled wheel and connected revolving parts shall be substantially equal to that of the main driving-wheel, its counterbalance, and the connected revolving parts.

707,336. MACHINE FOR MAKING BRAIDS AND TRIMMINGS. JAKOB K. KIENZLE, Philadelphia, Pa., assignor to Hensel, Colladay Company, a Corporation of Pennsylvania. Filed Sept. 23, 1900. Serial No. 31,252. (No model.)

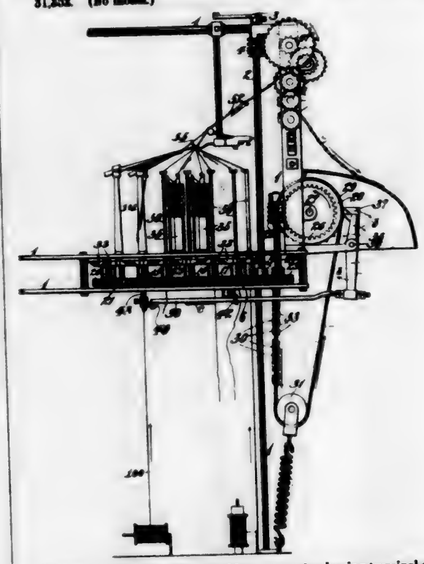

Claim.—1. In a braiding-machine, a race-ring having terminal elongated looped extensions leading therefrom, means for feeding a warp looping-thread through one of said extensions, means for changing the course of the racers or bobbin-holders to cause them to pass around the said extension-raceways to form an elongated loop in the warp-thread at the edge of the braid.

2. In a braiding-machine, a race-ring having terminal elongated looped extensions leading therefrom, means for feeding a warp looping-thread through one of said extensions, and means for changing the course of the racers or bobbin-holders to cause them to pass around the said extension-raceways to form an elongated loop in the warp-thread at the edge of the braid and means for automatically controlling the same.

3. In a braiding-machine, a race-ring having an elongated loop extension, a bobbin-holder in said race-ring, means for feeding a warp looping-thread through said extension, and means for preventing the bobbin-holder from traveling in the extended portion of said race-ring.

4. In a braiding-machine, a race-ring having an elongated looped extension, a bobbin-holder, means for feeding a warp looping-thread through one of said extensions, means for causing said holder to travel a certain course in said ring or through said extensions and means for automatically controlling the same.

5. In a braiding-machine, a race-ring having an elongated looped extension, switches therein, means for feeding a warp looping-thread through the extension and a jacquard for operating said switches.

6. In a braiding-machine, a race-ring having an elongated looped extension, a bobbin-holder, means for feeding a warp looping-thread through the extension and a switch in said race-ring for controlling the movement of the racers through said extension.

7. In a braiding-machine, a race-ring having an elongated looped extension, a bobbin-holder, means for feeding a warp looping-thread through the extension, a switch in said race-ring for controlling the movement of the racers through said extensions and means for controlling said switch.

8. In a braiding-machine, a race-ring having an elongated looped extension, bobbin-holders, means for operating said holders, means for feeding a warp looping-thread through the extension, a switch in said race-ring for controlling the movement of the racers through said extensions, and pattern-blocks for operating said switch.

9. In a braiding-machine, a race-ring having an elongated looped extension, bobbin-holders, means for operating said holders, means for feeding a warp looping-thread through the extension, a switch for changing the course of said holders and controlling their movement through said extensions, rods suitably connected with said switches, and means for moving said rods, whereby said switches are opened and closed.

10. In a braiding-machine, a race-ring having an elongated looped extension, a bobbin-holder, means for operating the same, means for feeding a warp looping-thread through the extension, a switch in said race-ring for controlling the movement of the holder through said extensions, rods connected with said switches, arms secured to said rods, and means for operating said arms to open and close the switches.

11. In a braiding-machine, race-rings having an elongated looped extension, bobbin-holders, means for operating said holders, means for feeding a warp looping-thread through the extension, a switch in said rings for controlling the movement of the bobbin-holders through said extensions rods secured to said switches, arms secured to said rods, and a jacquard or bobbin-blocks adapted to operate said arms.

12. In a braiding-machine, a race-ring having an elongated looped extension, bobbin-holders therein, means for operating said holders, means for feeding a warp looping-thread through the extension, switches in said race-ring for controlling the movement of said holders through said extensions, means for operating said switches, bobbin-blocks, and means for operating the same.

707,837. VALVE. JOHN H. KOCH, Scranton, Pa. Filed Aug. 5 1901. Serial No. 70,991. (No model.)

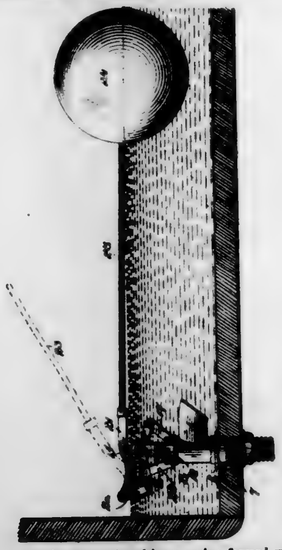

Claim.—1. A tank-valve, comprising a casing formed with an interior valve-seat, a plunger adapted to move longitudinally within said casing, a valve upon the inner end of said plunger designed to engage said valve-seat, the upper end of said plunger projecting beyond said casing and slotted transversely, a standard projecting from said casing, a lever fulcrumed to said standard and extending through the slot in said plunger, a relatively long slotted standard projecting from the opposite side of said casing to that of the first-mentioned standard and to a point above the parallel plane of the top of said plunger, the free end of said lever being passed through the slot of said slotted standard and guided thereby, a float-lever pivoted to the upper end of said slotted standard above said plunger-operating lever and extending parallel thereto transversely across the upper end of said plunger and means pivotally securing one end of said float-lever to the free end of said first-mentioned lever, projecting beyond the said slotted standard, the construction and arrangement being such that a lowering of the float-lever will raise the plunger, by means of its lever, the upward movement of said plunger being limited by contact with said float-lever, substantially as described.

2. In a valve for tanks, the combination of a suitable casing having a valve-seat formed therein, a cap for said casing provided with a vertical bore, a vertically-slidable plunger in said bore, adapted at its lower end to engage said valve-seat and provided at its upper end with a transverse slot, a relatively long radially-extending fulcrum-standard formed on the side of said cap, and extending above the horizontal plane of the top of said cap, a shorter standard formed on said cap opposite the relatively long standard, its top portion lying in the same horizontal plane as the slot in the plunger, a lever pivoted to the shorter standard and extending transversely through the slot of the plunger to a point beyond the extended standard, the portion of such lever in said slot being broadened to fit snugly therein, a float-lever pivoted intermediate its ends to the extended fulcrum-standard and lying transversely above the plunger, and a link connecting the short end of the float-lever with the free end of the plunger-lever.

707,838. TROLLEY. PERRY E. LOREE, Dayton, Ohio. Filed Mar. 31, 1902. Serial No. 100,745. (No model.)

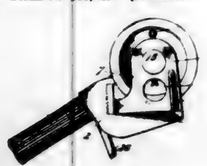

Claim.—1. In a trolley, the combination, with a pole provided with a head having rearwardly-extending lugs and rearwardly-extending flanges connected near their rear ends by a transverse piece or way, of a carriage pivotally mounted at its forward end between said lugs and provided at its rear end with an antifriction-wheel to bear upon the way and with a lug located between the flanges and extending under the way, said carriage having mounted thereon rearward of its pivot a trolley-wheel, substantially as described.

2. In a trolley, the combination, with a head having rearwardly-extending lugs and rearwardly-extending flanges, of a carriage provided with a trolley-wheel pivotally mounted at its forward end between the lugs and provided near its rear end on opposite sides with downwardly-diverging projections forming guards to prevent the engagement of the trolley-wire with the flanges, substantially as described.

707,839. TROLLEY-LUBRICATOR. PERRY E. LOREE, Dayton Ohio. Filed May 31, 1902. Serial No. 109,705. (No model.)

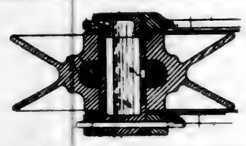

Claim.—1. A lubricator for trolley and other wheels, comprising a wheel provided with an internal circumferential groove having a filling of asbestos or other heat-resisting and flow-retarding material, and a non-rotating hollow spindle provided at one end with a removable closure for the introduction of a lubricant and having in its under side an aperture communicating with the groove of the trolley-wheel, substantially as described.

2. A lubricator for trolley and other wheels, comprising a wheel having an internal circumferential groove provided with a filling of asbestos or other heat-resisting and flow-retarding material, and a non-rotating hollow spindle provided with a removable closure at one end for the introduction of a lubricant, said spindle being provided with an aperture in its lower portion communicating with the groove of the trolley-wheel, a filling-aperture being formed to extend through said closure from its upper portion downward to the interior of the spindle, substantially as described.

3. In a lubricator for trolley and other wheels, the combination, with cheek-pieces having apertures, of a trolley-wheel having an internal circumferential groove provided with a filling of asbestos or other heat-resisting and flow-retarding material, a hollow spindle closed at one end, a key passing through one cheek-piece and the closed end of the spindle therein, a closure having a threaded connection with the other end of the spindle to close the open mouth thereof, said spindle being provided with an aperture in its under side communicating with the groove of the trolley-wheel, and said closure and the adjacent cheek-piece having an engaging projection and recess to insure the proper positioning of the spindle, substantially as described.

707,840. RUNNING-GEAR FOR AUTOMOBILES. ALBERT A MEDINA, East San Jose, Cal. Filed June 10, 1902. Serial No. 111,051. (No model.)

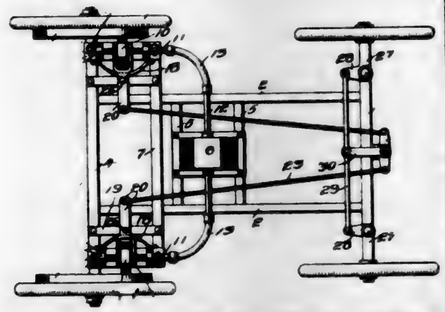

Claim.—1. In a device of the class described, the combination with rear wheels provided with friction-wheels, of friction-pinions engaging the same, means for driving the friction-pinions, steering mechanism, and means operated by the steering mechanism for moving the pinions simultaneously in opposite directions to arrange them at different distances from the centers of the friction-wheels, whereby the rear wheels are driven at different speeds, substantially as described.

2. In a device of the class described, the combination of a frame, rear wheels, friction-wheels connected with the rear wheels, friction-pinions engaging the friction-wheels, means for driving the friction-pinions, and means for automatically moving the friction-pinions simultaneously in opposite directions to arrange them at different distances from the centers of the friction-wheels when the vehicle is being turned, substantially as described.

3. In a device of the class described, the combination of a frame, rear wheels provided with friction-wheels, longitudinal shafts supported by the frame, a motor connected with the said shafts, friction-pinions slidably mounted on the shafts and engaging the friction-wheels, levers fulcrumed on the frame and arranged to engage the friction-pinions and means for simultaneously oscillating the levers in opposite directions when the vehicle is turned, substantially as described.

4. In a device of the class described, the combination of a frame, rear wheels, friction-wheels connected with the rear wheels, friction-pinions engaging the friction-wheels and capable of movement to carry them toward and from the centers of the friction-wheels, and means for arranging the friction-pinions at different distances from the centers of the friction-wheels when the vehicle is being turned, substantially as described.

5. In a device of the class described, the combination of a frame, rear wheels provided with friction-wheels, plates slidably mounted on the frame, shafts journaled on the plates, friction-pinions slidably mounted on the shafts, springs engaging the plates and holding the pinions yieldably in engagement with the friction-wheels, a motor connected with the shafts and means for sliding the pinions on the shafts, substantially as described.

6. In a device of the class described, the combination of a frame, rear wheels provided with friction-wheels, plates slidably mounted on the frame, shafts carried by the plates, springs engaging the plates, a motor connected with the shafts, levers having forked or bifurcated portions receiving the pinions, and steering mechanism connected with the levers, substantially as described.

7. In a device of the class described, the combination of a frame, rear wheels provided with friction-wheels, slidable plates mounted on the frame and provided with bearings and arranged longitudinally, friction-pinions slidably mounted on the shafts, a motor having a transverse shaft provided with flexible sections connected with the longitudinal shafts, transverse levers fulcrumed on the frame and connected with the pinions, springs engaging the said plates and means for operating the levers, substantially as described.

8. In a device of the class described, the combination of a frame, rear wheels provided with friction-wheels, longitudinal shafts mounted on the frame, friction-pinions slidably mounted on the longitudinal shafts and engaging the friction-wheels, a motor having a transverse shaft provided with flexible sections connected with the longitudinal shaft, and means for sliding the pinions on the longitudinal shafts when the vehicle is turned, substantially as described.

707,841. SMOKE-CONSUMER. LEWIS R. MORGAN, Washington, D. C., assignor of one-half to Charles B. Cropley, Washington, D. C. Filed May 24, 1902. Serial No. 108,808. (No model.)

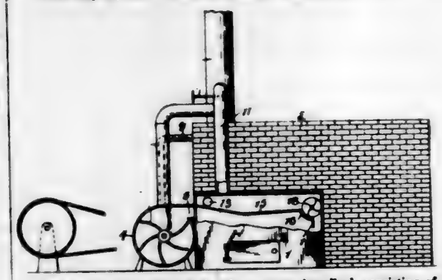

Claim.—1. A device of the character as described, consisting of a box, a concaved diaphragm located in said box and being secured at one end and at its longitudinal edges to the inner sides of the box, and at its other end terminating at a distance from the inner side of the box and leaving a space between the said end and the said inner side of the box, a fan journaled at the end of the diaphragm, and substantially filling the space between the end of the diaphragm and the inner side of the box, a means for introducing smoke below said diaphragm and a smoke-exit located above the said diaphragm.

2. A device of the character as described, consisting of a box, a diaphragm located in said box, said diaphragm having at its end a downwardly-curved portion, a revolving fan located above said curved portion, said box having a smoke-entrance located below the diaphragm and a smoke-exit located above the diaphragm.

3. A device of the character as described, consisting of a box, a diaphragm located in said box, said diaphragm having a downwardly-curved portion and a perpendicular end extending substantially parallel with the end of the box and at a distance from the said end, a revolving fan located above the downwardly-curved portion of the diaphragm, said box having a smoke-entrance located below the diaphragm and smoke-exit located above the diaphragm.

4. A device of the character as described, consisting of a box, a concaved diaphragm located in said box, said diaphragm having a downwardly-curved portion and a perpendicular end extending substantially parallel with the end of the box and at a distance from the same, a revolving fan located above the downwardly-curved portion of the diaphragm, said box having a smoke-entrance located below the diaphragm and a smoke-exit located above the diaphragm.

707,842. CAR-DOOR MECHANISM. EDGAR J. MÜLLER, Pittsburg, Pa., assignor to Pressed Steel Car Company, Jersey City, N. J., a Corporation of New Jersey. Filed Apr. 16, 1902. Serial No. 103,175. (No model.)

Claim.—1. A car having a hinged downwardly-swinging door at its bottom, an incline upon the door, and a roller device arranged to act upon the incline to raise or lower the door; substantially as described.

2. A car having a series of downwardly-swinging transversely-extending doors, inclines upon the doors, rollers bearing upon the inclines, and connections for simultaneously moving the rollers to open or close the doors; substantially as described.

3. A car having a series of downwardly-swinging doors hinged to transverse pintles, inclines upon the doors, moving elements contacting with the inclines, and connections for moving said elements simultaneously to open or close the doors; substantially as described.

4. A car having a series of transverse downwardly-swinging doors with transversely-extending hinges, inclines on said doors, rollers bearing upon the inclines, swinging links carrying the rollers, and a connection for swinging the links simultaneously; substantially as described.

5. A car having downwardly-swinging doors in its bottom mounted

on transverse pintles, inclines on the bottom portions of the doors, depending links pivoted to the car and provided with rollers bearing upon the inclines, connections between the links on at least one side, and mechanism for swinging the links to open or close the doors; substantially as described.

6. A car having transverse downwardly-swinging doors hinged to transverse supporting shapes in a car-bottom and arranged end to end longitudinally of the car, said doors having inclines, rollers contacting with the inclines, and connections for simultaneously actuating the rollers to open or close the doors; substantially as described.

7. A car having a series of downwardly-swinging transverse doors extending longitudinally of the body, inclines on said doors, rollers contacting with the inclines, and a rock-shaft having connections arranged to move the rollers simultaneously to open or close the doors; substantially as described.

8. A car having a center sill, two series of doors arranged longitudinally between the center sill and the car sides, said doors swinging downwardly on transverse axes, depending links having rollers bearing upon inclines on the doors, and rock-shafts having connections with the links, each shaft being arranged to swing the links of one set of doors simultaneously; substantially as described.

707,848. LEER. ROBERT HAYSMITH and BENJAMIN F. REMER, Kittanning, Pa. Filed June 24, 1901. Serial No. 65,788. (No model.)

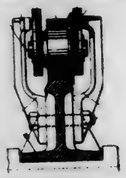

Claim.—1. A glass-leer having chain carriers having an upper and lower path of travel and provided with rollers, part of said rollers having flanges on one side, and others having flanges on the opposite side, and longitudinal supports for the rollers in the upper path of the chain; substantially as described.

2. A glass-leer having endless-chain carriers arranged with an upper and lower path of travel, side guides arranged to engage the links of the chain in the upper part of their travel, and mechanism for operating the chains; substantially as described.

3. A glass-leer having endless-chain carriers, mechanism for actuating the same, the links having flat upper edges forming a substantially continuous surface to receive the glass, supporting-rollers at each joint, the peripheries of the rollers being below the said edges of the links in the upper path of travel, and tracks upon which the rollers move in said upper path of travel; substantially as described.

4. A glass-leer having endless-chain carriers, mechanism for actuating the carriers, curved shoes over which the chains pass at the front end of their travel and mechanism for adjusting the shoes; substantially as described.

5. A glass-leer having endless-chain carriers arranged with an upper and lower path of travel, longitudinal rails supporting the chains in the upper part of their travel, and guides arranged to direct the pieces of glass into the intermediate spaces between the chains; substantially as described.

6. A glass-leer having endless-chain carriers, and heating-flues extending between the upper and lower paths of the chains; substantially as described.

7. A glass-leer having endless-chain carriers with an upper and lower path of travel and provided with rollers, and rails supporting the chains throughout the upper part of their travel, the succeeding rollers having flanges on alternate sides; substantially as described.

8. A glass-leer having longitudinal chain carriers, with an upper and lower path of travel provided with rollers, longitudinal rails upon which the rollers rest throughout the upper path of their travel, said rails having expansion-joints, and side guides arranged to engage the links of the chains and hold the chains against lateral movement; substantially as described.

707,844. BURGLAR-PROOF SAFE. DAVID HEALE, Fort Calhoun, Nebr. Filed Nov. 19, 1901. Serial No. 82,931. (No model.)

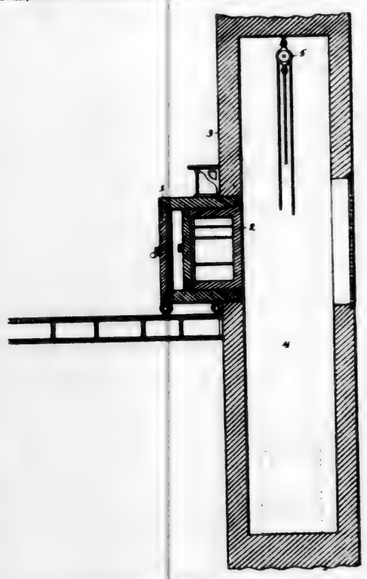

Claim.—A safe of the class described composed of a casing having its rear side open; a second casing located within the first-mentioned casing and inserted through the rear side, and a pit located to the rear of the safe for receiving the second-mentioned casing when an attempt has been made to explode the safe, substantially as specified.

707,845. COMBINATION BRAKE, FENDER, AND STEP. DAVID HEALE, Fort Calhoun, Nebr. Filed Feb. 10, 1902. Serial No. 93,817. (No model.)

Claim.—1. In a device of the class described, a suitable plate attached to the bed of the carriage in a horizontal position, and in position convenient to be used as a step for entering or leaving the carriage; a second plate mounted below the first plate by suitable framework to form a chamber between the two plates; two jaws pivotally mounted side by side in a horizontal position within said chamber, the rear ends of said jaws being adapted to grip the side face of the metal tire of the carriage-wheel; a wedge mounted to slide between the forward ends of the jaws as required to open and close the jaws, there being a spring-recess formed in the lower face of said wedge; a coil-spring mounted in said recess one end of the coil-spring engaging the wedge, and the other end of the coil-spring connected to the frame to press the wedge backwardly and allow the jaws to open to release the tire; springs mounted in the frame and engaging the forward ends of the jaws; the tension of said springs being exerted to open said jaws and release the tire; a post extending downwardly from said wedge through the frame; a guide-pulley mounted in the frame below the forward end of the wedge; a second guide-pulley mounted in the lower part of the frame below the rear end of the wedge; a third guide-pulley mounted under the bed of the carriage; a cord attached to said post, extending around said guide-pulleys; and a lever at the forward end of said cord for operating the brake, substantially as specified.

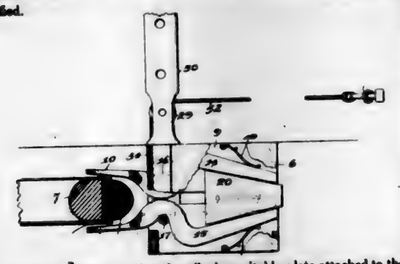

2. In a device of the class described, a suitable plate attached to the bed of the carriage in a horizontal position, and in position convenient to be used as a step for entering or leaving the carriage; a second plate mounted below the first plate by suitable framework to form a chamber between the two plates; two jaws pivotally mounted side by side in a horizontal position within said chamber, the rear ends of said jaws being adapted to grip the side face of the metal tire of the carriage-wheel; a wedge mounted to slide between the forward ends of the jaws as required to open and close the jaws, there being a spring-recess formed in the lower face of said wedge; a coil-spring mounted in said recess one end of the coil-spring engaging the wedge, and the other end of the coil-spring connected to the frame to press the wedge backwardly and allow the jaws to open to release the tire; springs mounted in the frame and engaging the forward ends of the jaws, the tension of said springs being exerted to open said jaws and release the tire; a post extending downwardly from said wedge through the frame; a guide-pulley mounted in the frame below the forward end of the wedge; a second guide-pulley mounted in the lower part of the frame below the rear end of the wedge; a third guide-pulley mounted under the bed of the carriage; a cord attached to said post, extending around said guide-pulleys; a lever at the forward end of said cord for operating the brake; and a fender extending upwardly from said step-plate, substantially as specified.

707,846. FIRE-ESCAPE. DAVID HEALE, Fort Calhoun, Nebr. Filed Mar. 25, 1902. Serial No. 99,903. (No model.)

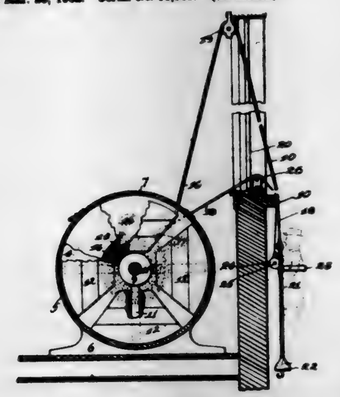

Claim.—1. A fire-escape comprising a suitable frame; a carrying-shaft mounted in the frame; a carrying-rope attached to the carrying-shaft and adapted to be wound thereon; a carrying-shaft speed-governor attached to the carrying-shaft; a brake connected to the shaft; a brake-rope connected to the brake; a carrying-frame attached to the opposite end of the carrying-rope from the carrying-shaft; a brake-shaft mounted in said carrying-frame, said brake-rope being attached to and wound upon said brake-shaft; and a brake-rope speed-governor upon said brake-shaft, substantially as specified.

2. In a fire-escape, the base 6; the casing 5 mounted upon the base; the end pieces 4 closing the casing; the door 7 providing access to one end of the casing; the slot 8 providing access to the other end of the casing; the carrying-shaft 9 mounted in the bearings in the end pieces 4; the carrying-rope 10 wound upon the shaft and passing outwardly through the slot 8; the arms 11 extending radially from the shaft 9, the centrifugal weights 12 slidingly mounted upon said arms to engage the inner face of the casing; the brake-wheel 14 fixed upon the shaft 9; the brake-band 15 engaging the brake-wheel; the brake-rope 18 attached to the brake-band; the carrying-frame 21 attached to the lower end of the carrying-rope; a brake-shaft mounted in the carrying-frame upon which the brake-rope is wound; and a governor controlling the brake-shaft, substantially as specified.

707,847. TENT. JOHN P. NELSON, Waltham, Mass. Filed Dec. 5, 1901. Serial No. 84,786. (No model.)

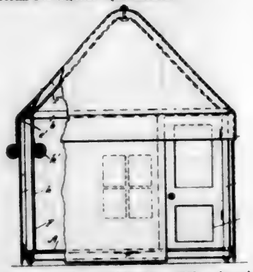

Claim.—In a tent, the combination, with a knockdown frame, of an outer covering of textile material extending over the exterior of the top and sides of the frame and provided with window-openings, an inner covering of textile material extending over the interior of the top and sides of the frame and provided with window-openings opposite the aforesaid window-openings, air-spaces being formed of the width of the elements of the said frame between the two said coverings, and curtains of textile material for closing the said window-openings arranged inside the inner covering and outside the outer covering respectively, substantially as set forth.

707,848. BOTTLE-STOPPER. ALONZO C. PACKER, Pittsburg, Pa., assignor of two-thirds to John A. Young and William R. Patterson, Pittsburg, Pa. Filed July 9, 1900. Serial No. 22,892. (No model.)

Claim.—In a bottle, a stopper, a cap, a recess in the lower end of said cap, an elastic ball, said ball compressed into and so secured in said recess that it can be rotated in any direction of its axis to present new bearing-surfaces when sealed and a bail extending from said cap to said bottle.

707,849. WATER-HEATER. THOMAS L. PHILLIPS, Aurora, Ill. Filed Mar. 3, 1902. Serial No. 96,530. (No model.)

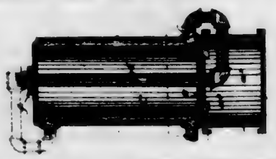

Claim.—1. A water-heater comprising a vertical, narrow fire-box, a grate at the bottom of the fire-box, and a water-conducting pipe extending from the center of the grate throughout the entire length of the fire-box and in the center thereof, substantially as set forth.

2. A water-heater comprising a long, narrow, vertical fire-box, a grate at the bottom of said box, and a water-conducting pipe extending upwardly through said grate, and throughout the entire length of the fire-box, as set forth.

3. A water-heater comprising a fire-box, a water-chamber surrounding said box, a pipe communicating with said chamber, passing through the grate from below, and extending throughout the entire length of said fire-box and in the center thereof, as set forth.

4. In a water-heater, a vertical fire-box narrow in cross-section and adapted to be entirely filled with fuel, a water chamber or jacket surrounding the fire-box, a water-pipe communicating with said chamber and passing throughout the entire length of the fire-box and in the center thereof, said pipe and chamber communicating with a system of water-pipes and radiators substantially as set forth.

5. In a water-heater, a vertical fire-box, narrow in cross-section and provided at the top with means for introducing fuel, at the bottom with a grate and ash-pan, and without openings in its sides; a water-chamber surrounding the fire-box, and water-conducting pipe communicating with said chamber, passing under said grate and up through the center thereof, and extending throughout the length of the fire-box, for the purpose described.

707,850. PNEUMATIC HAMMER. CHARLES K. PICKLER, St. Louis, Mo., assignor, by mesne assignments, to Chicago Pneumatic Tool Company, a Corporation of New Jersey. Filed Jan. 27, 1900. Serial No. 2,982. (No model.)

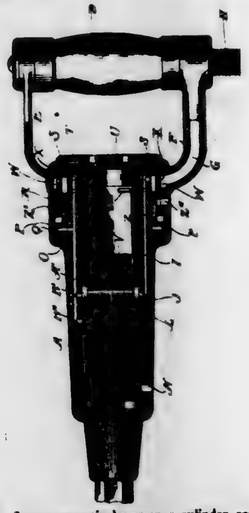

Claim.—1. In a pneumatic hammer, a cylinder containing a live-air passage opening into the piston-chamber by a suitable port, a piston reciprocating in said chamber and provided with a passage whose rear end is brought into communication with the live-air port at the forward end of the stroke of the piston and serves to admit the motive fluid, through the piston, to the front end of the piston-chamber, to drive the piston rearward, in combination with an independent valve located in a chamber separate from the piston-chamber and operating to control the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, substantially as described.

2. In a pneumatic hammer, a cylinder containing a live-air passage opening into the piston-chamber by a suitable port, a piston reciprocating in said chamber and provided with a circumferential groove adapted to register with said port as the piston approaches the forward end of its stroke, and with a central longitudinal passage communicating at its rear end by a lateral passage with said groove and extending forwardly through the piston, and serving to convey the motive fluid through the piston to the front end of the piston-chamber, to drive the piston rearward, in combination with an independent valve operating to control the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, substantially as described.

3. In a pneumatic hammer, a cylinder containing a live-air passage opening into the piston-chamber by a port about midway of the length of said chamber, a piston reciprocating in said chamber and provided near its rear end with a circumferential groove adapted to register with said port at the end of the forward stroke of the piston, and with a transverse passage communicating with said groove and with a longitudinal passage extending forwardly through the piston from said transverse passage, for the purpose of conveying the motive fluid through the piston to the front end of the piston-chamber, in combination with an independent valve located in a chamber separate from the piston-chamber for controlling the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, substantially as described.

4. In a pneumatic hammer, a cylinder containing a live-air passage communicating at its rear end with the source of supply and opening at its forward end into the piston-chamber by a port about midway of the length of said chamber, a piston reciprocating in said chamber and provided near its rear end with a circumferential groove adapted to register with said live-air port at the end of the forward stroke of the piston, and with a passage communicating at its rear end with said groove and extending forwardly through the piston, for conveying the motive fluid through the piston to the front end of the piston-chamber, in combination with an independent differential valve for controlling the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, said valve being shifted in one direction by a constant pressure upon its smaller area, and in the opposite direction by motive fluid admitted to its larger area through a passage extending through the cylinder-wall and opening into the piston-chamber by a port which is placed in communication with the live-air port by the groove in the piston at the end of the forward stroke of the latter, substantially as described.

5. In a pneumatic hammer, a cylinder containing a piston-chamber having a uniform diameter throughout its length, a piston of corresponding diameter reciprocating in said chamber and operating as its own valve to control the inlet of the motive fluid to the front end of the piston-chamber, in combination with an independent valve located in a chamber separate from the piston-chamber for controlling the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, substantially as described.

6. In a pneumatic hammer, a cylinder containing a piston-chamber of uniform diameter throughout its length, a piston of corresponding diameter reciprocating in said chamber, and provided with a circumferential groove and a central longitudinal passage cooperating with a live-air passage and port in the cylinder-wall to cause the piston to operate as its own valve for controlling the inlet of the motive fluid at the front end of the piston-chamber, in combination with an independent valve for controlling the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, substantially as described.

7. In a pneumatic hammer, a cylinder containing a piston-chamber of uniform diameter throughout its length, a piston of corresponding diameter reciprocating therein and operating as its own valve to control the inlet of the motive fluid to the front end of the piston-chamber, in combination with an independent annular valve reciprocating in the line of movement of the piston in a chamber separate from the piston-chamber for controlling the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, substantially as described.

8. In a pneumatic hammer, a cylinder containing a piston-chamber of uniform diameter throughout its length, a piston of corresponding diameter reciprocating therein and operating as its own valve to control the inlet of the motive fluid to the front end of the piston-chamber, in combination, with a differential annular valve reciprocating in the line of movement of the piston for controlling the inlet and exhaust of the motive fluid at the rear end of the piston-chamber, said valve being shifted in one direction by constant pressure of the motive fluid upon its smaller area, and in the opposite direction by motive fluid intermittently admitted to its larger pressure area through a passage in the cylinder-wall placed in communication with the live-air supply by a groove in the piston at the end of the forward stroke of the latter and opened to the exhaust at the end of the rearward stroke thereof, substantially as described.

9. In a pneumatic hammer, the combination of the cylinder A containing the live-air passage I opening into the piston-chamber by the port J, the piston B provided with the passage L M and groove K coöperating with the port J, and the differential valve P controlled by the piston through the passage A′ connecting the valve-chamber with the piston-chamber, substantially as described.

10. In a pneumatic hammer, the cylinder A provided with the live-air passage I and port J, passage A′ communicating at its rear end with the valve-chamber and opening at its forward end into the piston-chamber by the two ports B′ B″, and an exhaust-port N for the front end of the piston-chamber, in combination with the piston B provided with the passage L M and with the groove K coöperating with the ports J and B′, and the differential valve P controlled by the piston through the medium of the passage A′, substantially as described.

11. In a pneumatic hammer, the combination of the cylinder having the tool-receiving bore at its forward end, to receive the shank of the working tool, and the intermediate disk of non-resilient material located wholly within and fitting the forward end of the piston-chamber and closing said opening, substantially as described.

707,851. LEATHER-SKIVING MACHINE. JOHN W. POOLE, Lynn, Mass., assignor to the Poole Skiving Company, Kittery, Me., a Corporation of Maine. Filed Dec. 4, 1901. Serial No. 84,689. (No model.)

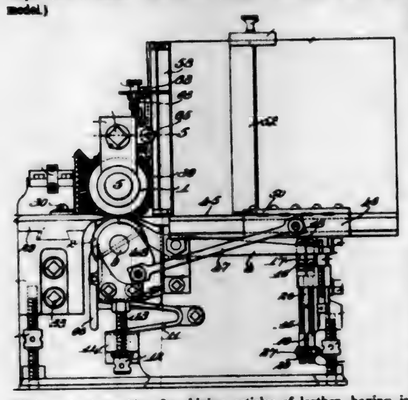

Claim.—1. A machine for skiving articles of leather, having, in combination, a die-roller, a series of pressure-levers, springs acting upon the levers, a stop-bar for limiting the movement of the levers under the force of the springs, a bar to which the springs are secured, and means for simultaneously adjusting said bars, substantially as described.

2. A machine for skiving articles of leather, having, in combination, a die-roller, a series of pressure-levers, springs acting upon the levers, an adjustable stop-bar for limiting the movement of the levers under the force of the springs, and a bar to which the springs are secured movable with the stop-bar, substantially as described.

3. A machine for skiving articles of leather, having, in combination, a die-roller, a series of pressure-levers, springs acting upon the levers, a stop-bar for limiting the movement of the levers under the force of the springs, a bar to which the springs are secured, and an adjustable support common to both bars, substantially as described.

4. A machine for skiving articles of leather, having, in combination, a die-roller, a series of pressure-levers, a spring acting upon each lever, an adjustable stop-bar for limiting the movement of the levers under the force of the springs, a bar to which the springs are secured movable with the stop-bar, and means for adjusting the tension of the springs separately, substantially as described.

5. A machine for skiving articles of leather, having, in combination, a die-roller, a pressure device, a support adjustable perpendicularly to the plane of feed, a knife-carrier mounted in guideways on said support to move transversely to the direction of feed, a skiving-knife secured to said carrier, a lever, a link connecting the lever and carrier, and means for oscillating the lever, substantially as described.

6. A machine for skiving articles of leather, having, in combination, a die-roller, a pressure device, a skiving-knife adjustable perpendicularly to the plane of feed, and means for vibrating the knife transversely to the direction of feed, substantially as described.

7. A machine for skiving articles of leather, having, in combination, a die-roller, a die-roller shaft, a pressure device, a knife-carrier mounted to move transversely to the direction of feed, a skiving-knife secured thereto, a lever, a link connecting the lever and knife-carrier, a shaft and intermediate connections for oscillating the lever and gearing connecting said shaft and the die-roller shaft, substantially as described.

8. A leather-skiving machine, having, in combination, a die-roller, a pressure device, a feed-table, mechanism for feeding blanks to the die-roller and pressure device, and a hopper comprising a side wall and a front wall, said front wall being pivotally mounted to swing toward and from the side wall, substantially as described.

9. A leather-skiving machine, having, in combination, a die-roller, a pressure device, a feed-table, mechanism for feeding blanks to the die-roller and pressure device, a hopper comprising a side wall and a front wall, said front wall being pivotally mounted to swing toward and from the side wall, and means for adjusting the front wall bodily toward and from the feed-table, substantially as described.

10. A leather-skiving machine, having, in combination, a die-roller, a pressure device, a feed-table, mechanism for feeding blanks to the die-roller and pressure device, a hopper comprising a side wall and a front wall, said front wall being pivotally mounted to swing toward and from the side wall, and means for adjusting the front wall toward and from the side wall, substantially as described.

11. A leather-skiving machine, having, in combination, a die-roller, a pressure device, a feed-table, mechanism for feeding blanks to the die-roller and pressure device, a hopper comprising a side wall and a front wall, said front wall being pivotally mounted to swing toward and from the side wall, and means for adjusting the front wall toward and from the side wall, substantially as described.

707,852. METHOD OF FORMING JOINTS FOR INTERJECTING WIRES OR RODS. JOHN C. PORT and WILLIS J. PORT, Piano, Ill. Filed Feb. 8, 1901. Serial No. 46,548. (No model.)

Claim.—The herein-described method of casting joints and immediately using the flask for further casting, which consists in disposing the elements to be joined within a flask inclosing a removable chill, flowing molten metal within the chill and around the said elements, removing the flask from the chill and then supplying it with another chill and repeating the operation.

707,858. EMBROIDERY FRAME AND HOLDER. JOHN H. POST, Hartford, Conn., assignor, by mesne assignments, to the Leader Manufacturing Company, Hartford, Conn., a Corporation of Connecticut. Filed Apr. 6, 1899. Serial No. 711,908. (No model.)

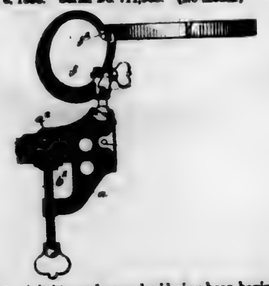

Claim.—1. A holder and an embroidering-hoop having as elements an interengaging groove and flange, one of said elements being located on and extending circumferentially of the hoop, whereby a rotary movement of the hoop on its support is permitted.

2. A holder for embroidery-hoops or the like including branching arms, and a hoop, said hoop and arms having as elements an interengaging groove and flange, one of said elements being located on and extending circumferentially of the hoop, whereby a rotary movement of the hoop on its support is permitted.

3. An embroidering-hoop holder including branching arms, and an embroidering-hoop adapted to be adjustably secured to said holder, one of said parts having a groove and the other a projection each adapted to engage the other whereby the hoop is frictionally held by and adjustable in a circumferential direction on said arms.

4. An embroidering-hoop holder having branching arms, recesses formed in the outer face of said arms, and a hoop having a rib extending circumferentially about the hoop and adapted to engage said recesses.

5. In an embroidering-hoop holder, in combination, a bracket having means of attachment to a fixed object, a holder adjustably secured to the bracket, and an embroidering-hoop, said hoop and holder having as elements an interengaging flange and groove, one of said elements being located on and extending circumferentially of the hoop, whereby a rotary movement of the hoop on its support is permitted.

6. In an embroidering-hoop and holder, in combination, a bracket having means of attachment to a fixed object, a holder adjustably secured to the bracket and having branching arms, and an embroidering-hoop supported by the holder, said holder and hoop having as elements an interengaging flange and groove, one of said elements being located on and extending circumferentially of the hoop, whereby a rotary movement of the hoop on its support is permitted.

707,854. PROCESS OF DEODORIZING. FRANK M. PRATT, Decatur, Ill. Filed Apr. 5, 1902. Serial No. 101,583. (No specimens.)

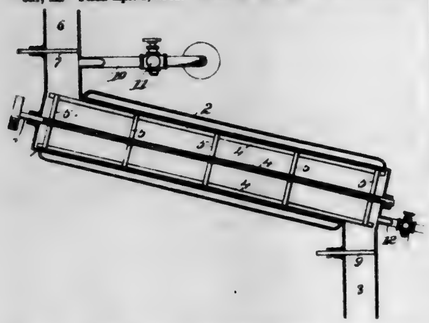

Claim.—1. The process of deodorizing which consists in supplying a batch of the material to be treated to an externally-heated chamber, holding the material in the chamber until the temperature of the material is high enough to avoid condensation of steam, and then passing live steam through the material; the material being continuously stirred and external heat being continuously applied to the chamber during the several steps of the process.

2. The process of deodorizing which consists in supplying the material to be treated to an externally-heated chamber, stirring the material in the heated chamber, closing the chamber against admission of air and passing live steam through the material in the chamber while continuing the stirring and the application of external heat.

707,855. CONVEYING-BELT. JOHN J. RIDGWAY, Rosebank, N. Y. Filed Dec. 7, 1901. Serial No. 85,069. (No model.)

Claim.—1. A conveyer-belt adapted to be bent along lines parallel to its length to form a conveying-trough and consisting of a fabric core and an elastic covering thickened along the lines of flexure between the center and the edge portions of the belt, the center and edge portions of the belt-covering being thinner than such thickened portions.

2. A conveyer-belt adapted to be bent along lines parallel to its length to form a conveying-trough and consisting of a fabric core and a rubber covering thickened on both sides of the belt along the lines of flexure between the center and the edge portions of the belt.

3. A belt having a fabric core and a rubber covering with thickened portions on both sides of the belt along lines parallel to its length between the center and the edge portions of the belt, the fabric core being correspondingly thinner at such portions and the belt being of substantially even thickness throughout.

4. A conveyer-belt having a fabric core, and a rubber cover with thickened portions along lines parallel to its length, on both sides of the belt, and between the center and the edge portions of the belt.

5. A conveyer-belt having a fabric core, and a rubber cover with thickened portions along lines parallel to its length, on both sides of the belt, in combination with means for supporting different portions of said belt so as to bend same reversely and move same in opposite directions.

707,856. PLANE-LIFT. CHARLES H. RISCHER and HENRY S. WALTER, New Britain, Conn., assignors to Stanley Rule and Level Company, New Britain, Conn., a Corporation of Connecticut. Filed Apr. 26, 1902. Serial No. 104,806. (No model.)

Claim.—1. In a plane, an elevating device projecting beyond the front end of the plane and means of connection between said elevating device and a portion of the plane, and means to normally cause said elevating device to project below the sole of the plane.

2. In a plane, an elevating device projecting beyond the end of the plane and means of connection between said elevating device and a portion of the plane, and a spring to normally cause said elevating device to project below the sole of the plane.

3. A plane having a front and a rear handle, an elevating device secured to the plane by the front handle said connection including a yielding spring-blade.

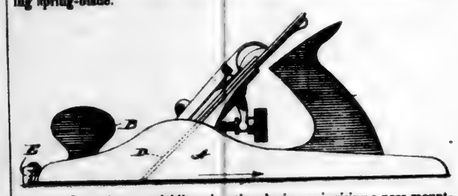

4. In a plane, a yielding elevating device comprising a nose mounted on the plane in front of the forward end thereof, and a spring for normally causing said elevating device to project below the sole of the plane, the operative edge of said elevating device being rounded.

5. An elevating device for a plane comprising a carrier, blades projecting forwardly therefrom and carrying a nose portion projecting downward therefrom, substantially as described.

6. An elevating device for a plane comprising a carrier portion G, a downwardly-projecting nose portion E, and means for connecting said carrier and said nose portion.

7. An elevating device for a plane comprising a downwardly-projecting nose portion, adapted to project beyond the end of a plane, a spring-blade attached thereto and means carried by said blade portion whereby said elevating device may be attached to a plane on top of its sole portion.

707,857. POWER-SHAFT COUPLING. OLE RUDD, West Duluth, Minn. Filed Mar. 17, 1902. Serial No. 98,613. (No model.)

Claim.—1. In a shaft-coupling the combination of coöperating collars respectively secured to the opposing ends of opposite sections of a shaft, said collars each being provided with longitudinally-projecting dovetail tenons having arcs of less length than the respectively intervening spaces, the tenons on one collar being adapted to project into the recessed spaces formed by and between the tenons of the opposite collar and to engage the tenons of said opposite collar, a sufficient space being left between the edges of said tenons for the introduction of securing means, and securing means within said space, substantially as described.

2. In a shaft-coupling, the combination of coöperating collars respectively secured to the opposing ends of opposite sections of a shaft, said collars being provided with longitudinally-projecting radially-disposed dovetail tenons, having arcs of less length than the respectively intervening recessed spaces, the tenons of one collar being adapted to project into recessed spaces formed by and between the tenons of the opposite collar and to engage the tenons thereof in interlocked position, means being interposed between one set of contiguous edges of said tenons for securing the same together, substantially as described.

3. A shaft-coupling, comprising coöperating collars adapted to receive a shaft, each collar being provided with longitudinally-projecting radially-disposed dovetailed tenons of a less width than the spaces between the said tenons on each collar, the tenons of one collar being adapted to project into the recessed spaces formed between the tenons of the opposite collar, but not entirely filling the same, and means for filling the remainder of said spaces not occupied by said tenons for securing the said tenons of the opposing collars in interlocked position, substantially as described.

4. A shaft-coupling comprising coöperating collars adapted to receive a shaft, each collar being provided with longitudinally-projecting radially-disposed dovetail tenons having arcs of less length than the spaces intervening between the respective tenons of the opposite collar, the tenons of one collar being adapted to project into recessed spaces formed between the tenons of the opposite collar and to engage said tenons of said opposite collar in interlocked position; wedges between the edges of said tenons for securing the tenons of said opposite collars in interlocked position, substantially as described.

5. A shaft-coupling comprising coöperating collars adapted to receive a shaft, each collar being provided with longitudinally-projecting radially-disposed dovetail tenons having arcs of less length than the spaces intervening between the respective tenons of the opposite collar, the tenons of one collar being adapted to project into recessed spaces formed between the tenons of the opposite collar and to engage said tenons of said opposite collar in interlocked position; radially-disposed wedges adapted to fill the remaining space between adjoining interlocked tenons and to secure the same in interlocked position, substantially as described.

6. A shaft-coupling comprising coöperating collars adapted to receive a shaft, each collar being provided with longitudinally-projecting radially-disposed dovetail tenons of less width, respectively than the spaces intervening between the respective tenons of the opposite collar, the tenons of one collar being beveled laterally at one upper corner, the tenons of one collar being adapted to engage and interlock with the tenons of the opposite collar; and key-wedges for securing said tenons in interlocked position each formed with a disengaging lip at its upper end, substantially as described.

7. A shaft-coupling comprising coöperating collars secured to the ends of the shaft-sections which are to be coupled, the said collars having upon their meeting faces tenons formed with dovetailed edged faces, key-wedges having shanks formed with beveled faces corresponding with the beveled faces of the said tenons, the said wedges fitting between the edges of the tenons of the coöperating collars for completing a dovetail joint between said collars, substantially as described.

707,858. COAL-BAGGER. HIRAM B. SACKETT, Chicago, Ill. Filed Dec. 29, 1900. Serial No. 41,422. (No model.)

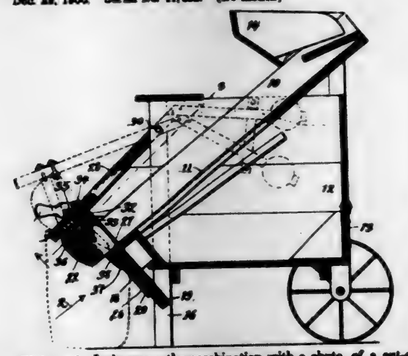

Claim.—1. In baggers, the combination with a chute, of a cut-off gate therefor, a handle connected to said gate to positively shift the same both to its open and closed positions and a bodily-movable spreader for the bag connected to said handle to simultaneously shift therewith and with said gate, said spreader being arranged to move inwardly as the gate is opened to hold the inner edge of the bag close to the open end of the chute and to move outwardly to release the bag as said gate is closed.

2. In baggers, the combination with an inclined chute, of a sliding cut-off gate therefor, a swinging operating-lever and handle to which said cut-off is pivotally connected and a spreader for the bag rigidly connected to said operating-lever.

3. In baggers, the combination with an inclined chute, of a sliding cut-off gate therefor having a discharge-opening and spout, guides for said gate, a swinging operating-lever above said chute to which said gate is pivotally connected and a bag-spreader rigidly connected to said lever and arranged to embrace said spout.

707,859. CHANGEABLE GEAR FOR BICYCLES. PETER J. SCHARBACH, Po Ell, Wash. Filed Jan. 3, 1902. Serial No. 88,346. (No model.)

Claim.—1. The combination in a changeable gear for cycles and with the rear wheel thereof having a gear-disk provided with a plurality of gears thereon, a driving-shaft, a plurality of gears supported on said shaft and meshing with the gears carried by the rear wheel, gear-clutches, clutch-levers, and triggers for operating said clutch-levers, said triggers arranged to be thrown into inactive position, substantially as described.

2. The combination in a changeable gear for cycles and with the rear wheel thereof having a plurality of gears, of a drive-shaft, a plurality of gears supported by said shaft and meshing with the gears carried by the said rear wheel, clutches coacting with said gears, clutch-levers, a series of triggers coacting with said clutch-levers and means for operating said triggers, substantially as described.

3. The combination in a changeable gear for cycles and with the rear wheel thereof having a plurality of gears, of a drive-shaft, having a plurality of gears meshing with the gears carried by the rear wheel, a series of clutches and clutch-levers for the same, a plurality of triggers coacting with said clutch-levers, and two levers and intermediate connections for operating said triggers, one of said levers arranged to throw said triggers into inactive positions, substantially as described.

4. The combination in a changeable gear for cycles and with the rear wheel thereof having a plurality of gears thereon, of a drive-shaft carrying a plurality of gears meshing with the aforesaid gears, a plurality of clutches and clutch-levers coacting with said gears, a bar slidingly arranged with relation to said clutch-levers, a plurality of triggers supported by said bar, and two levers and intermediate connections for operating said bar and triggers, one of said levers arranged to slide said bar, and the other lever arranged to move said triggers into inactive position, substantially as described.

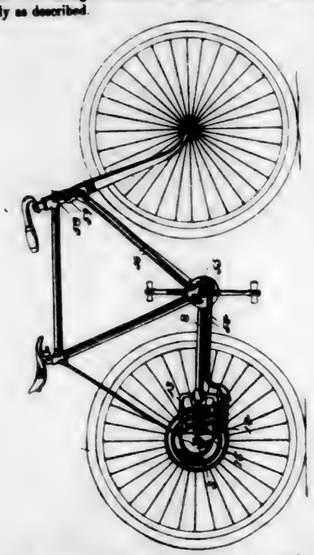

5. The combination in a changeable gear for cycles and with the rear wheel thereof having a plurality of gears thereon, of a drive-shaft carrying a plurality of gears and clutches, a plurality of clutch-levers, a plurality of triggers for operating said clutches, a lever arranged to throw said triggers into inactive position, and a spring arranged to hold said lever in position, substantially as described.

6. The combination in a changeable gear for cycles and with the rear wheel thereof carrying a plurality of gears, a drive-shaft carrying a plurality of gears and clutches for the same, a plurality of suitably-supported clutch-levers, a bar suitably supported near such clutch-levers, a second bar slidingly supported by said first bar and carrying a plurality of triggers, two levers, and intermediate connections between said levers and the sliding bar and the triggers, substantially as described.

707,860. SWITCH-STAND. JOHN J. SCHRAM, Toledo, Ohio, assignor of one-half to Thomas L. Gourley, Toledo, Ohio. Filed Mar. 20, 1902. Serial No. 98,134. (No model.)

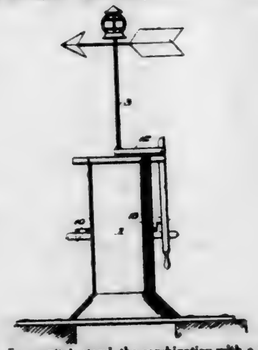

Claim.—1. In a switch-stand, the combination with a frame or casing, of a switching-lever, a device on the frame or casing adapted for engagement and locking with said lever when the latter is in a predeter-

mined position in relation thereto, and a movable abutment adapted to be positioned in advance of the lever to arrest the movement of said lever and prevent it from assuming said predetermined position.

2. In a switch-stand, the combination with a frame or casing, of a switching-lever, a projecting member on the casing, provided with a socket, a lock on the lever adapted to engage said socket, and a movable latch on the casing or frame which is adapted to be fitted into the socket and to constitute an abutment to prevent the lever from assuming a position where its lock will engage the socket.

3. In a switch-stand, the combination with a frame or casing, of a switching-lever, a projecting member on the casing, provided with a socket, a lock on the lever adapted to engage said socket, a pivoted latch having a head adapted to be made to fit into the socket and to constitute an abutment for the lever to prevent the latter from assuming a position where its lock will engage the socket.

707,861. RAILWAY-CAR-HEATING APPARATUS. John O. C. Searle, Chicago, Ill.; Julia R. Searle executrix of said John O. C. Searle, deceased. Filed Mar. 22, 1898. Renewed Aug. 26, 1901. Serial No. 626,514. (No model.)

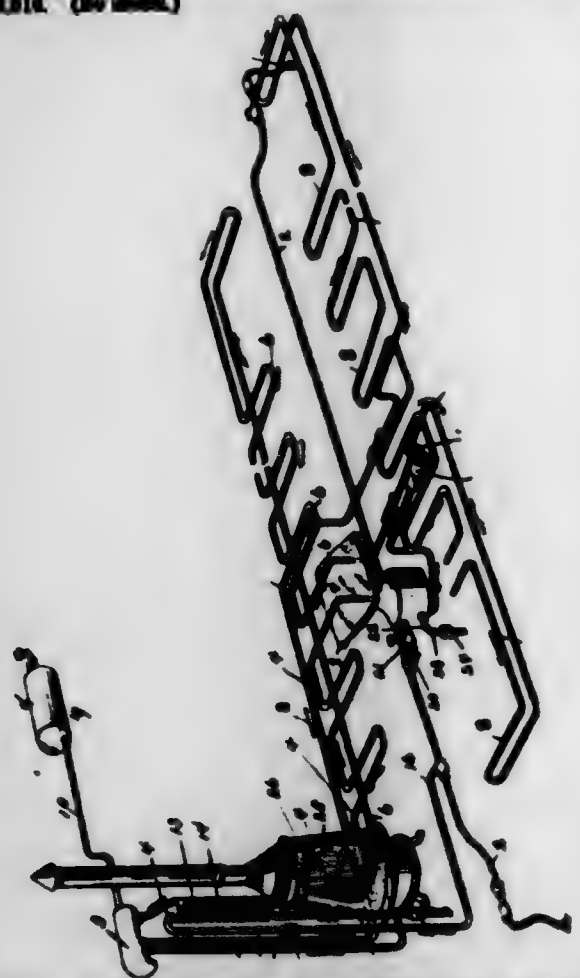

Claim.—1. The combination, of a circulatory system that includes a heat-radiating portion and has an ascending pipe on one side thereof and a descending pipe on the other side thereof, a heater in the ascending pipe or upon one side thereof, and a second heater located below the first-named heater and at substantially the lowest point of the circuit.

2. The combination, of a circulatory system that includes a heat-radiating portion and has an ascending pipe on one side thereof, a descending pipe on the other side thereof and an expansion-chamber located above said pipes and having communication therewith, an emergency-heater having a combustion-chamber inclosing a portion of the ascending pipe of said system, a primary heater located at substantially the lowest point of the circuit, and means for transferring heat derived from a main source of heat-supply into operative contact with the circulating liquid in said last-named heater.

3. In combination, a water-circulating system having a radiating portion in the descending pipe or upon one side thereof, a heater in the ascending pipe or upon the other side thereof, and a second heater located below the first-named heater and at substantially the lowest point of the circuit.

707,862. TIE-PLATE. Charles S. Shallenberger, Milwaukee, Wis., assignor of one-half to Edward S. Marshall, St. Louis, Mo. Filed Nov. 14, 1901. Serial No. 82,212. (No model.)

Claim.—1. The improved metallic tie-plate comprising the plate 1 having spike-openings 2, a step 3 located on the upper side of said plate, a series of longitudinal projections 5 formed integral with the under side of said plate and extending more than half the length thereof, and a series of shorter projections 6 arranged at one end of the said projections 5 but out of alinement therewith, substantially as herein specified.

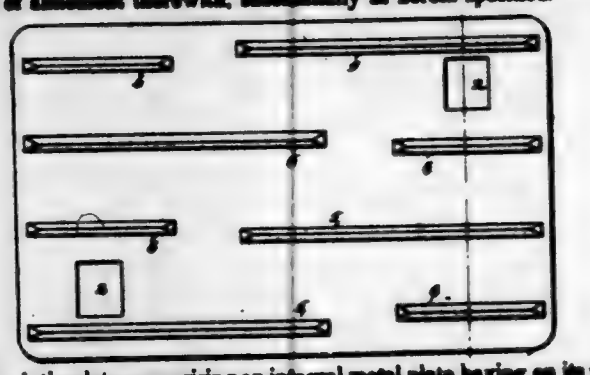

2. A tie-plate, comprising an integral metal plate having on its under surface two series of thin, parallel ribs, one series extending from near one edge to beyond the middle transverse line of the plate, and the other series extending from near the opposite edge of the plate to beyond the middle transverse line of the plate, the two series overlapping each other at their inner ends at the middle portion of the plate.

3. A tie-plate consisting of an integral metal plate having on its under surface two series of ribs, one series extending from near one edge to beyond the middle transverse line of the plate, the two series overlapping each other at their inner ends at the middle portion of the plate, and similar elongated but shorter ribs supplemental to said long ribs in the spaces at the ends of the long ribs but separated a distance therefrom.

4. A tie-plate comprising an integral metal plate having on its under surface two series of parallel ribs, one series extending from near one edge to beyond the middle transverse line of the plate, and the other series extending from near the opposite edge of the plate to beyond the middle transverse line of the plate, the two series overlapping each other at their inner ends at the middle portion of the plate, and similar elongated but shorter ribs supplemental to said long ribs in the spaces at the ends of the long ribs but separated a distance therefrom, the ribs being severally out of endwise alinement with every other rib on the plate.

707,868. GALVANIC BATTERY. Hazen L. Sloour, Pawtucket, R. I. Filed July 1, 1901. Renewed July 23, 1902. Serial No. 116,066. (No model.)

Claim.—1. In a galvanic battery a carbon or negative element made a four divisions, each division having in cross-section the form of a letter W forming ribs on both the outside and inside of the carbon in combination with zinc elements held in the spaces between the divisions, and a containing-jar, substantially as described.

2. In a galvanic battery the combination of a plurality of positive elements, a containing-jar having a separate amalgamating-cup for each positive element made in its bottom, a carbon element made in four divisions, each division having in cross-section the form of a letter W with said positive or zinc elements held in the spaces between said divisions, substantially as described.

3. In a galvanic battery, a carbon element composed of inside and outside vertical ribs separated into sections and joined together at the top the whole having a hollow center, the zinc electrodes in combination with a suitable jar for containing said carbon and the zinc electrodes, substantially as described.

4. In a galvanic battery, a carbon element with a hollow center, inwardly and outwardly extending vertical ribs, tapering in cross-section, separated into two or more sections joined together at the top in combination with a jar having a plurality of cups in its lower end, a plurality of positive electrodes or zinc rods held in said cups substantially as described.

5. In a galvanic battery, a jar having its bottom made of a plurality of cups, a carbon element with a hollow center, a series of internal and external vertical ribs, joined together at their upper ends and divided at their lower parts into groups, in combination with a plurality of positive elements set between said ribs with their lower ends extending down into said cups substantially as described.

707,864. HEATING APPARATUS. Isaac D. Shead, Cincinnati, Ohio. Filed July 30, 1901. Serial No. 70,137. (No model.)

Claim.—1. In a furnace, the combination of a grate having a central perforate collar; a shell located below the grate and having two compartments or chambers V and W, the latter opening into the collar; a feed-screw mounted in said upper chamber W; means for forcing air into the lower chamber; and a sleeve surrounding the shell, said sleeve serving to form a passage for air passing from chamber V to the perforate collar.

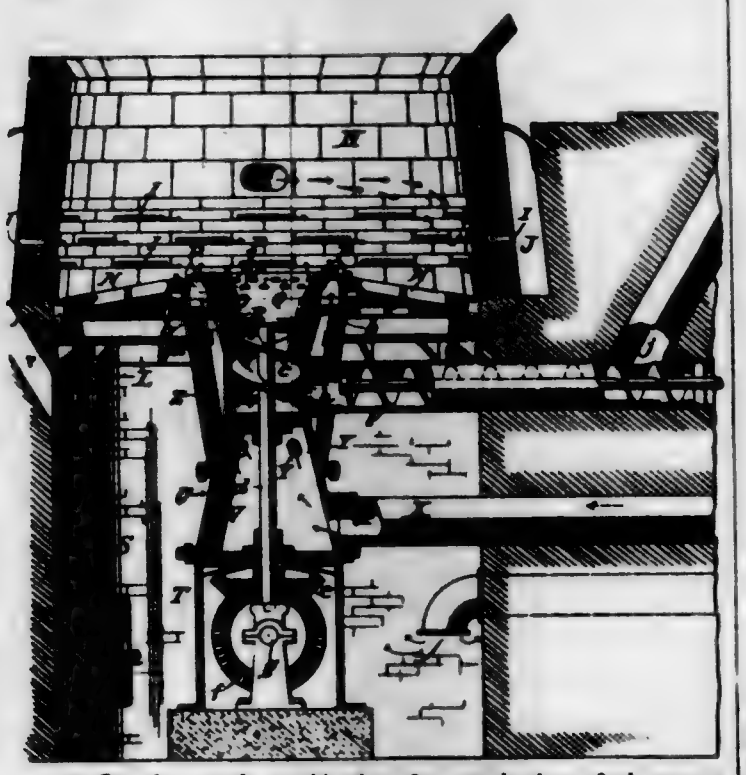

2. In a furnace, the combination of a grate having a feed-opening; a fuel-chamber located beneath the grate and in line with the opening; a feed-screw located in said chamber; and a separate and independent feed-conduit leading to the upper side of the grate, substantially as and for the purpose specified.

3. In a furnace, the combination of a grate; an under fuel-feed for said grate; and a conduit or pipe leading from the fuel-supply and discharging at a point above the grate.

4. In a furnace, the combination of a grate having a central feed-opening; means for forcing fuel from below up through said opening to the grate; a boiler drum or section located above the grate; and a fuel conduit or pipe extending through said boiler-section and discharging upon the upper side of the grate.

5. In a furnace, the combination of a grate having a central opening; a chamber located below the grate and in line with said opening; a feed-screw mounted in said chamber; means for feeding fuel into the chamber; a boiler-section mounted above the grate; and a fuel-feed conduit extending through said section and discharging onto the upper face of the grate.

707,865. PLANE. ALIX W. STANLEY, New Britain, Conn., assignor to the Stanley Rule & Level Company, New Britain, Conn., a Corporation of Connecticut. Filed Mar. 5, 1902. Serial No. 96,772. (No model.)

Claim.—1. In a plane, the combination with the stock, a frog, a plurality of bearings on said stock for said frog, and a clamping device located between said bearings, a slot or throat in the bottom or floor of said stock portion, the bottom or floor of said stock portion to the rear of said throat being thinned out up to the edge thereof, and means for strengthening said thinned-out floor.

2. In a plane, the combination with a stock having a plurality of seats for a detachable frog of a throat extending transversely of the stock and in the bottom thereof, the floor of said stock directly to the rear of said throat being of thin metal, and strengthening-ribs extending from the heavy part of said stock to said thinned-out portion, substantially as described.

3. A stock for a plane having a transverse slot therein forming a throat for the passage of the plane-iron, the floor to the rear of said throat being thin, the stock to the rear of said thin portion of the floor being heavy, and a rib extending from said heavy portion to said thin portion, and strengthening and supporting the latter.

4. In a plane, a stock, a transverse slot therein forming a throat for the passage of the plane-iron, the floor to the rear of said throat being thin, the stock to the rear of said thin portion of the floor being heavy, and a plurality of ribs extending from said heavy portion to said thin portion and strengthening and supporting the latter.

5. A plane having a stock portion provided with a throat, a frog, said stock portion being provided with two bearings for said frog, a rib connecting said two bearings, said frog being correspondingly grooved.

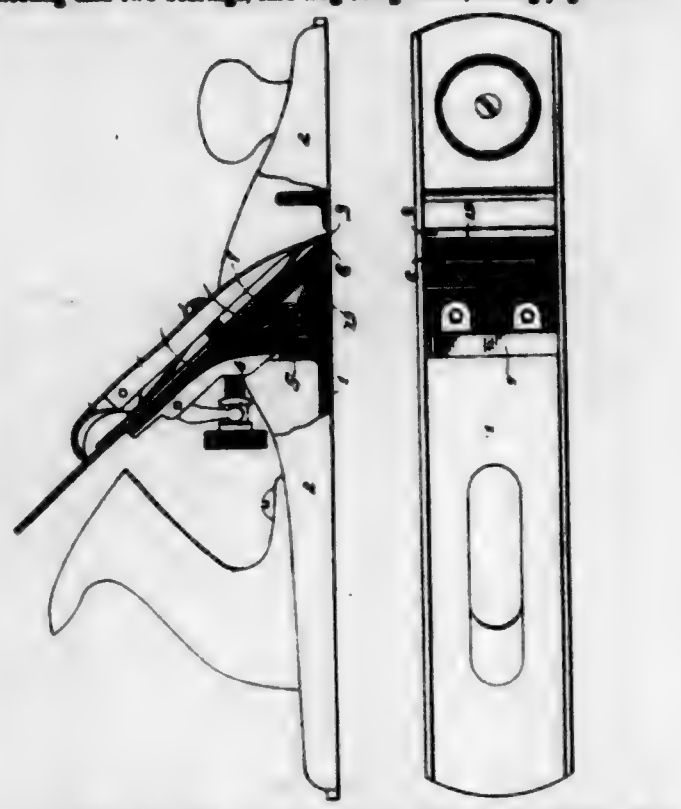

6. A plane having a stock portion provided with a throat, a frog, said stock portion being provided with an upper and a lower bearing for said frog, a rib connecting said two bearings, said frog being correspondingly grooved.

7. A plane having a stock portion provided with a throat, a frog, said stock portion being provided with an upper and a lower bearing for said frog, a screw having a seat between said bearings for securing said frog to said stock, a rib connecting said two bearings, said frog being correspondingly grooved.

707,866. STOVE-DAMPER ATTACHMENT. JAMES R. STOVER, Curwensville, Pa. Filed Feb. 21, 1902. Serial No. 95,116. (No model.)

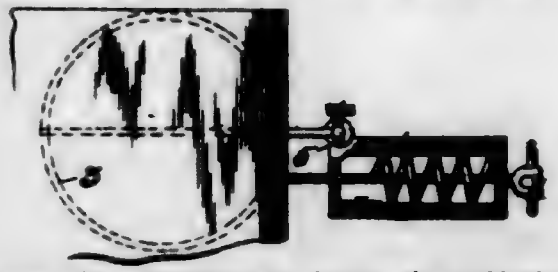

Claim.—1. In an attachment for dampers, the combination of a damper and the damper-casing, a handle secured to said damper, a casing, a spring-pressed plunger within the casing, an angular arm secured to the casing and having an opening in its end to receive the damper-handle, and means for retracting the said plunger.

2. In an attachment for dampers and the like, the combination with the damper having a handle, a casing attached to said handle, a spring-pressed plunger secured in said casing and adapted to normally engage the damper-casing, and an operating-handle fulcrumed upon said casing for retracting said spring-pressed plunger, substantially as described.

3. In an attachment for dampers, the combination with the damper, and a handle secured thereto, of a casing, an angular extension on one end of the said casing and having an opening in its end to receive the damper-handle, a thumb-screw secured in the said extension adjacent the opening therein, a spring-pressed plunger secured in said casing and adapted to normally engage the damper-casing, and an operating-handle fulcrumed upon said casing for retracting said plunger.

707,867. MACHINE FOR CLEANING STREETS. JOSEPH THIRY, Joliet, Ill. Filed Dec. 23, 1901. Serial No. 86,901. (No model.)

Claim.—1. A machine for cleaning streets of snow and ice, composed of a wedge-shaped combustion-chamber having a grated bottom and with openings at the top for the escape of the products of combustion, a frame secured at the rear of said chamber, ground-wheels supporting said frame, a fan-case supported on said frame and having a tapering nozzle extending therefrom, a rotatable fan mounted within the fan-case and means for driving said fan, and means communicating with said in-

porous nozzle whereby the air from said case may be distributed throughout said chamber.

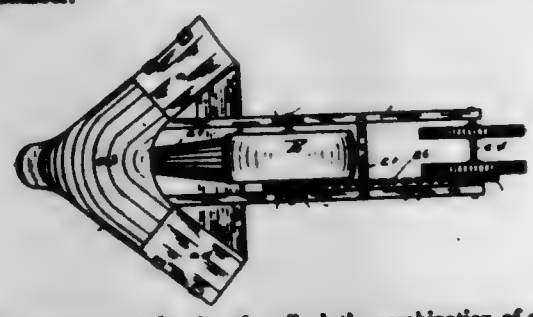

2. In a machine of the class described, the combination of a wedge-shaped combustion-chamber having a grated bottom and with openings at the top for the escape of products of combustion, a frame secured at the rear of said chamber, ground-wheels supporting said frame, a fan-case secured to said frame, a rotatable fan mounted in said case, means for driving said fan from the ground-wheels, a nozzle projecting from and communicating with the fan-case, pipes located within the combustion-chamber, having air-openings therein and communicating with said nozzle, substantially as set forth.

707,868. PLANE-IRON CAP. JUSTUS A. TRAUT and HENRY S. WALKER, New Britain, Conn., assignors to Stanley Rule and Level Company, New Britain, Conn., a Corporation of Connecticut. Filed Apr. 28, 1902. Serial No. 104,811. (No model.)

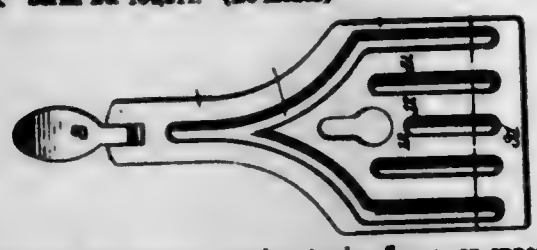

Claim.—1. In a plane, a cap-iron having flanges on opposite sides at its upper end, and ribs extending longitudinally of said iron.

2. A plane-iron cap for a plane having corrugations or ribs extending longitudinally thereof, substantially as described.

3. A plane-iron cap for a plane having corrugations or ribs 12 and 12 in the body and extending longitudinally thereof, as described.

4. A plane-iron cap for a plane having corrugations or ribs 11 extending up the shank and 12, 12 in the body extending longitudinally thereof, substantially as described.

707,869. FASTENER. JAY R. TRAVER, Naugatuck, Conn., assignor to the Goodyear's Metallic Rubber Shoe Company and the Goodyear's India Rubber Glove Manufacturing Company, Naugatuck, Conn., Corporations of Connecticut. Filed July 6, 1900. Serial No. 22,894. (No model.)

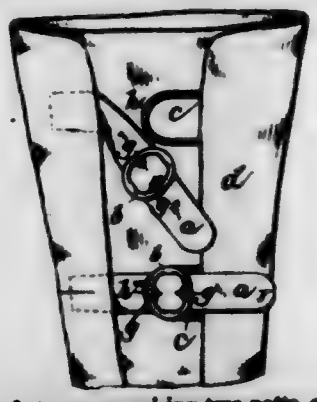

Claim.—1. A fastener comprising two parts, one part consisting of a tab with an adjustable slide thereon and the other part consisting of a loop provided with an opening therein, the dimensions of the slide and opening being so related that in one position thereof, with the slide and loop substantially parallel, the slide may be passed through the opening in the loop, and in the normal position thereof, with the slide and loop engaged, a portion of the margin of the slide will bear against the loop about the opening, the slide having a cross-bar with one or more projections thereon whereby it grips the tab and retains the position to which it is adjusted upon the tab and is not disturbed therefrom by engagement or disengagement of the slide and loop, substantially as set forth.

2. The combination with a tab and a slide thereon, the slide having a cross-bar with one or more projections thereon, of a loop constructed to engage between the tab and slide and having an opening therein narrower than the slide and longer than the greatest dimension thereof, substantially as set forth.

3. A fastener comprising two parts, one part consisting of a tab and a slide, such slide *b* having a middle cross-bar *e* with projections *f* thereon and outer curved cross-bars *g*, *g*, and the other part consisting of a loop having an opening narrower than the slide and longer than the greatest dimension of the slide and wider than the tab, substantially as set forth.

707,870. SAWMILL SET-WORKS. JOHN WALTON, Erie, Pa., assignor of one-half to Allis-Chalmers Company, a Corporation of New Jersey. Filed Apr. 28, 1900. Serial No. 14,757. (No model.)

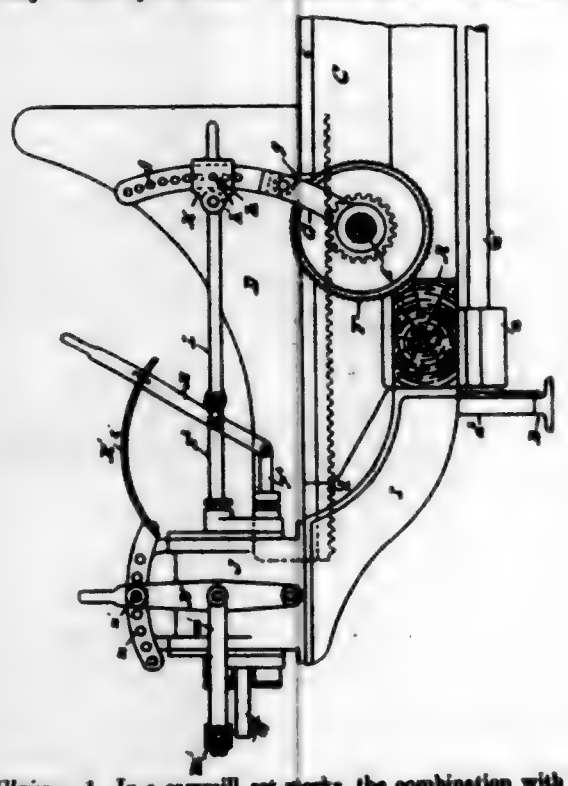

Claim.—1. In a sawmill set-works, the combination with the log-moving mechanism; of an engine for actuating said mechanism comprising a working piston; a cylinder in which said piston operates; and means for lengthening or shortening the working portions of said cylinder for varying the movement of the set-works.

2. In a sawmill set-works, the combination with the log-moving mechanism; a working piston for actuating said mechanism; a cylinder in which said piston operates; a setting-piston in said cylinder; and means for locking the setting-piston in different positions in said cylinder varying the working length of said cylinder.

3. In a sawmill set-works, the combination with the knee; a ratchet-lever for effecting a movement of said knee; a block on said ratchet-lever; means for locking said block at different points upon said lever to vary the movement of said lever with an equal movement of the block; a working piston connected with said block; a cylinder in which said piston is arranged to operate; and means for lengthening or shortening the working portions of said cylinder for varying the movement of said piston.

4. In a sawmill set-works, the combination with the knee; a ratchet lever for effecting movement of said knee; a block on said ratchet-lever; means for locking said block at different points upon said lever to vary the movement of said lever with an equal movement of the block; a working piston connected with said block; a cylinder in which said piston is arranged to operate; a setting-piston in said cylinder; and means for locking said piston in different positions in said cylinder for varying the working length of said cylinder.

5. A sawmill set-works comprising the combination with a log-moving mechanism; of an engine arranged to operate said log-moving mechanism; and automatic means for causing a variation from the speed at which the log-moving mechanism would be driven but for said means by the active power of the engine from a rapid intermediate movement to a slow end movement.

6. A sawmill set-works involving the combination with a log-moving mechanism; an engine arranged to operate said log-moving mechanism; means for causing a variation from the speed at which the log-moving mechanism would be driven but for said means by the active power of the engine, from a rapid intermediate movement to a slow end movement; and a positive stop for engaging said mechanism during the slow end movement.

7. A sawmill set-works involving the combination with a log-moving mechanism, comprising a ratchet device; of an engine arranged to operate said log-moving mechanism through said ratchet device; and means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement.

8. A sawmill set-works, involving the combination with a log-moving mechanism; of an engine comprising a working piston arranged to operate said log-moving mechanism; and means for causing a variation from the speed at which the log-moving mechanism would be driven but for said means by the active power of the engine from a rapid intermediate action to a slow end movement, by similarly varying the speed of the piston.

9. A sawmill set-works involving the combination with a log-moving mechanism, comprising a ratchet device; of an engine to operate said log-moving mechanism through said ratchet device; and means for causing a variation in the speed at which said log-moving mechanism is driven, from a rapid intermediate movement to a slow end movement, by similarly varying the speed of the piston.

10. A sawmill set-works involving the combination with the log-moving mechanism comprising a ratchet device; of an engine comprising a working piston for operating said log-moving mechanism through said ratchet device; means for causing a variation from the speed at which the log-moving mechanism would be driven but for said means by the active power of the engine from a rapid intermediate movement to a slow end movement; and means for varying the extent of movement of the log-moving mechanism with a single movement of the piston.

11. A sawmill set-works involving the combination with the log-moving mechanism, comprising a working piston for operating the said log-moving mechanism; means for causing a variation from the speed at which the log-moving mechanism would be driven but for said means from a rapid intermediate movement to a slow end movement; means for varying the extent of movement of the log-moving mechanism with a single movement of the piston; and a positive stop arranged to come into engagement during the slow end movement of the mechanism.

12. A sawmill set-works involving the combination with the log-moving mechanism comprising a ratchet device; of an engine comprising a working piston for operating said log-moving mechanism through said ratchet device; means for causing a variation from the speed at which the log-moving mechanism would be driven but for said means by the active power of the engine from a rapid intermediate movement to a slow end movement by a similarly varying speed of the piston; and means for varying the extent of a single movement of the log-moving mechanism by varying the extent of movement of the piston.

13. A sawmill set-works involving the combination with the log-moving mechanism, comprising a ratchet device; of an engine comprising a working piston for operating said log-moving mechanism through said ratchet device; means for causing a variation from the speed at which the log-moving mechanism would be driven but for said mechanism by the active power of the engine from a rapid intermediate movement to a slow end movement; means for varying the extent of movement of the log-moving mechanism with a single movement of the piston; and a positive stop for engaging said mechanism during a slow end movement.

14. A sawmill set-works, involving the combination with a log-moving mechanism, comprising a ratchet device; an engine for actuating said mechanism through said ratchet device comprising a working piston; and a means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement comprising a cushion device arranged to operate only at the end of the stroke of the piston.

15. A sawmill set-works involving the combination with a log-moving mechanism, comprising a ratchet device; an engine for actuating said mechanism through said ratchet device comprising a working piston; and means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushion device arranged to operate only at the end of the stroke of the piston; and a positive stop for the engine.

16. A sawmill set-works involving the combination of a log-moving mechanism, comprising a ratchet device; an engine for actuating said mechanism, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushion device arranged to operate only at the end of the stroke of the piston; and means for varying the movement given to the log-moving mechanism by a single stroke of the piston.

17. A sawmill set-works involving the combination of a log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism through said ratchet device, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushion device arranged to operate only at the end of the stroke of the piston; and means for varying the stroke of the piston to vary the movement given to the log-moving mechanism.

18. A sawmill set-works involving the combination of the log-moving mechanism; an engine for actuating said mechanism, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushion device arranged to operate only at the end of the stroke of the piston; a positive stop; and means for adjusting the position of said stop to vary the stroke of the piston.

19. A sawmill set-works involving the combination with the log-moving mechanism, comprising a ratchet device; an engine for actuating said mechanism through said ratchet device, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushioning device arranged to operate only at the end of the stroke of the piston; a positive stop; and means for adjusting the position of said stop to vary the stroke of the piston.

20. A sawmill set-works involving the combination of the log-moving mechanism; an engine for actuating said mechanism, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushioning device arranged to operate only at the end of the stroke of the piston; a positive stop; and means for adjusting the cushion device and positive stop to vary the stroke of the piston and the point in the stroke of the piston at which the cushion device begins to operate.

21. A sawmill set-works involving the combination with the log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism through said ratchet device comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushioning device arranged to operate only at the end of the stroke of the piston; a positive stop; and means for adjusting the cushioning device and positive stop to vary the stroke of the piston and the point in the stroke of the piston at which the cushioning device begins to operate.

22. A sawmill set-works involving the combination of the log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushion device arranged to operate only at the end of the stroke of the piston, said cushion device comprising a plunger and fluid-chamber arranged to be brought into action only at the end of the stroke of the piston, and to impriscn a cushioning fluid by said action; means for permitting a gradual escape of said cushioning fluid to allow the mechanism to move to a positive stop; said stop; and means for adjusting said stop to vary the stroke of the piston and the action of the log-moving mechanism.

23. A sawmill set-works involving the combination of the log-moving mechanism; an engine for actuating said mechanism, comprising a working piston; a positive stop arranged to limit the stroke of the piston; means for adjusting said stop to vary the stroke of the piston and the action of the log-moving mechanism; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushioning device on said stop arranged to be brought into action only at the end of the stroke of the piston, said cushion device being arranged to be adjusted with the stop.

24. A sawmill set-works involving the combination of the log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism through said ratchet device, comprising a working piston; a positive stop arranged to limit the stroke of the piston; means for adjusting said stop to vary the stroke of the piston and the action of the log-moving mechanism; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow end movement, comprising a cushioning device on said stop arranged to be brought into action only at the end of the stroke of the piston, said cushioning device being arranged to be adjusted with the stop.

25. A sawmill set-works involving the combination of the log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism through said ratchet device, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven, from a rapid intermediate movement to a slow movement at each end, comprising a cushioning device arranged to operate only at the ends of the stroke of the piston; positive stops at both ends of the stroke of the piston for controlling the length of the stroke; and means for adjusting the position of one of said stops to vary the stroke of the piston and the action of the log-moving mechanism.

26. A sawmill set-works involving the combination of the log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism through said ratchet device, comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow movement at each end, comprising a cushioning device arranged to operate only at the ends of the stroke of the piston; positive stops at the end of the stroke

of the piston for controlling the length of the stroke; means for varying one of said stops and the cushion device to vary the stroke of the piston and the point in the stroke of the piston at which the cushion device is brought into action.

27. A sawmill set-works involving the combination of the log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism through said ratchet device comprising a working piston; means for causing a variation in the speed at which the log-moving mechanism is driven, from a rapid intermediate movement to a slow movement at each end, comprising cushion devices arranged to operate only at the ends of the stroke of the piston, said cushion devices each comprising a plunger and fluid-chamber arranged to be brought into action only at the ends of the stroke of the piston and to imprison a cushioning fluid by said action; means for permitting a gradual escape of said cushioning fluid to allow the mechanism to move to positive stops for each end of the stroke; and means for adjusting one of said stops to vary the stroke of the piston and the action of the log-moving mechanism.

28. A sawmill set-works involving the combination of the log-moving mechanism comprising a ratchet device; an engine for actuating said mechanism through said ratchet device comprising a working piston; stops arranged at each end of the piston and in position to limit the stroke of the piston; means for causing a variation in the speed at which the log-moving mechanism is driven from a rapid intermediate movement to a slow movement at each end, comprising cushioning devices carried by said stops, said cushioning devices each comprising a plunger and fluid-chamber, arranged to be brought into action only at the ends of the stroke of the piston and to imprison a cushioning fluid by said action; means for permitting a gradual escape of said cushioning fluid to allow the mechanism to move to a positive stop; and means for adjusting one of said stops and cushioning mechanism to vary the stroke of the piston at the point at which the cushion device is brought into action.

29. In a sawmill set-works, the combination of the log-moving mechanism; a working piston for actuating said mechanism; a cylinder in which said piston operates; a setting-piston arranged in said cylinder; means for locking the said setting-piston in different positions in said cylinder; an exhaust-port extending through said setting-piston; a plug on the working piston arranged to enter said exhaust-port, said port and plug being of such size relatively to each other that the plug approximately but not entirely closes said port.

30. In a sawmill set-works, the combination with the log-moving mechanism; of an engine for actuating said set-works comprising a working piston, and a cylinder in which said piston operates; means for lengthening or shortening the working portions of said cylinder for varying the movement of said working piston; a valve for controlling the movement of fluid to and from said cylinder; a valve-lever for operating said valve; a connection for connecting said lever with the working piston, whereby said piston forms a moving fulcrum for the lever.

31. In a sawmill set-works, the combination with the log-moving mechanism; of an engine for actuating said set-works comprising a working piston and a cylinder in which said piston operates; means for lengthening or shortening the working portions of said cylinder for varying the movement of said working piston; a valve for controlling the movement of fluid to and from said cylinder; a valve-lever for operating said valve; a connection for connecting said lever with the working piston; and means for locking said lever at various positions in proper relation to the means varying the length of the working cylinder to effect a secondary movement of the valve after the setting of said valve-lever to bring the valve to normal.

32. In a sawmill set-works, the combination of a log-moving mechanism; the working piston, K, for moving said mechanism; a cylinder in which said working piston operates; a setting-piston in said cylinder; piston-rod, *m*, extending from said setting-piston; the lever, N; means for connecting said lever with the piston-rod, *m*; the quadrant, N'; means for locking the lever, N, with the quadrant, N'; a valve for controlling the movement of steam to and from the cylinder; a lever, R, for operating said valve; a connection between said lever and the working piston; the quadrant, R'; means for setting the lever, R, on said quadrant at different positions relatively to the different positions of the setting-piston, M, to effect a secondary movement of the valve, through the movement of the lever, as effected by the movement of the working piston, after the setting of the lever, R, to bring the valve to normal.

33. In a sawmill set-works, the combination of the log-moving mechanism; the working piston, K, for effecting the movement of said mechanism; a cylinder in which said piston operates; a setting-piston, M; piston-rod, *m*, extending therefrom; the lever, N; means for connecting said lever with said rod, *m*; a quadrant, N'; means for locking the lever, N, with said quadrant; steam-chests having ports leading therefrom to the opposite ends of the cylinder; means for conveying the steam by the setting-piston, M; a valve in the steam-chest; and means for actuating said valve.

34. In a sawmill set-works, the combination of a log-moving mechanism; a working piston for effecting the movement of said mechanism; a cylinder in which said piston operates; a setting-piston in said cylinder; means for locking said setting-piston in various positions in said cylinder; means for conveying the live steam by said setting-piston; an exhaust-port extending through said setting-piston; a plug on the working piston arranged to enter said exhaust-port and to approximately but not entirely close said port.

35. In a sawmill set-works, the combination of the log-moving mechanism; a working piston, K, for effecting the movement of said mechanism; a cylinder in which said piston operates; a setting-piston arranged in said cylinder and having the opening, m^3; means for locking said setting-piston in various positions in said cylinder; a port tube, Q, arranged in the setting-piston; a steam-chest; means for connecting the port-tube, Q, therewith; the plug, *k'*, arranged in relation to the opening, m^3, as described.

36. In a sawmill set-works, the combination of the log-moving mechanism; a working piston, K, for effecting the movement of said mechanism; a cylinder in which said piston operates; a setting-piston arranged in said cylinder and having the opening, m^3, and port, m^3, connecting the portions of the cylinder on the opposite sides of the setting-piston, M; means for locking said setting-piston in various positions in said cylinder; a port-tube, Q, arranged in the setting-piston; a steam-chest; and means for connecting the port-tube, Q, therewith.

37. In a sawmill set-works, the combination with the log-moving mechanism; the ratchet-lever, G, for effecting this movement; the block, H, thereon; the connecting-rod, L, secured to said block; the piston-rod, *k*, secured to said connecting-rod; the piston, K, also secured to the piston-rod; the cylinder, J, in which the said piston operates; the setting-piston, M, also in said cylinder; piston-rod, *m*, extending from the setting-piston and having the opening, m^3, and port m^3, therein; the lever, N; means for connecting the piston-rod, *m*, with said lever; the quadrant, N', means for locking the lever, N, with said quadrant; the port-tube, Q, extending through the piston, M; steam-chest, O, having the ports, *o*, *o'* and o^3, leading therefrom to the ends of the cylinder; the port, *o*, connecting with the port-tube, Q, the port, *o'*, with the rear end of the cylinder, the port, o^3 and o^3, with the front end of the cylinder; the valves, *p'* and p^3, controlling said ports; the central portion, *p*, into which the port, p^3, enters; the lever, R, connected with said valve; the link, *r*, connecting said valve-lever with the rod, *k*; the quadrant, R', having the notches, *r*, arranged as described and for the purposes described.

707,871. APPARATUS FOR REMOVING MATERIAL FROM BOATS, &c. ALFRED M. ACKLIN, Pittsburg, Pa. Filed Sept. 5, 1901. Serial No. 74,438. (No model.)

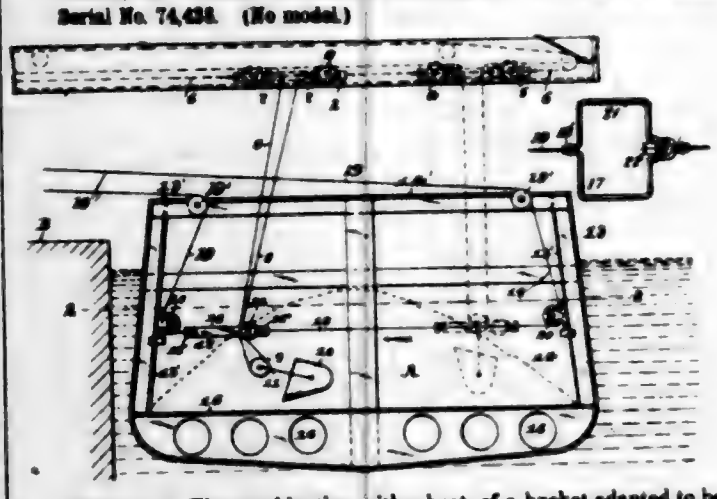

Claims.—1. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a deflecting-frame, and means connected to said frame for moving the same to tilt the bucket and move the same in a horizontal course to gather the material therein.

2. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a movable deflecting-frame, drums or sheaves within said hold, and a rope or cable connected to said frame and drums or sheaves for moving said frame to tilt the bucket and move the same in a horizontal course to gather the material therein.

3. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, and a movable deflecting-frame adapted to engage with the bucket to tilt and move the same in a horizontal course to gather the material therein, said frame having an opening therein to permit the bucket to be lowered and raised through the same to and from the material in the hold.

4. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat by ropes or cables, a movable deflecting-frame adapted to engage with the bucket to tilt and move

the same in a horizontal course to gather the material therein, said frame having an opening therein to permit the bucket to be lowered and raised through the same to and from the material in the hold, and a sheave on said frame for engaging with the ropes or cables during the movement of said frame and bucket.

707,872. ELECTROCHEMICAL GENERATOR. HARRY S. ANWAKE, Camden, N. J., assignor to Charles H. Graham and George D. Bouton, Philadelphia, Pa. Filed June 13, 1902. Serial No. 111,556. (No model.)

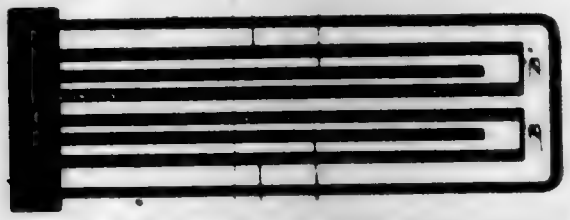

Claim.—1. An electrochemical generator consisting of a single-fluid cell, provided with a positive electrode, a negative electrode, an electrolyte and current-conducting baffles in said electrolyte respectively surrounding each of said electrodes and normally insulated therefrom, substantially as described.

2. An electrochemical generator consisting of a single-fluid cell, provided with a positive electrode, a negative electrode, and an electrolyte, current-conducting baffles in said electrolyte respectively surrounding each of said electrodes and normally insulated therefrom, and means for placing in parallel circuit each electrode and its surrounding baffle.

3. An electrochemical generator consisting of a single-fluid cell provided with a positive electrode, a negative electrode, an electrolyte and mechanically-connected current-conducting baffles in said electrolyte respectively surrounding each of said electrodes and normally insulated therefrom, substantially as described.

707,873. ANTHRACENE DYE AND PROCESS OF MAKING SAME. OSCAR BALLY, Mannheim, Germany, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen, Germany, a Corporation of Germany. Filed July 2, 1901. Serial No. 66,897. (No specimens.)

Claim.—1. The process of manufacturing coloring-matters by condensing halogenized amido-anthraquinone substances with the sulfo-acids of primary aromatic amins.

2. The process of manufacturing coloring-matters by condensing halogenized amido-anthraquinone substances with the sulfo-acids of primary aromatic amins and sulfonating the products thus obtained.

3. The new coloring-matters such as can be obtained by condensing halogenized amido-anthraquinone substances with the sulfo-acids of primary aromatic amins, and sulfonating if increased solubility in water is desired, and which are characterized by the following properties: soluble in water giving a blue-green to violet solution; soluble in concentrated sulfuric acid in the presence of boric acid giving greenish to bluish or violet solutions; soluble in concentrated sulfuric acid alone giving reddish to bluish or violet colored solutions.

707,874. ANTHRACENE DYE AND PROCESS OF MAKING SAME. OSCAR BALLY, Mannheim, Germany, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen, Germany, a Corporation of Germany. Filed July 2, 1901. Serial No. 66,898. (No specimens.)

Claim.—1. The process of manufacturing coloring-matter of the anthracene series by condensing sulfo-acids of primary aromatic amins with nitro-anthraquinone substances.

2. The process of manufacturing coloring-matter of the anthracene series by condensing sulfanilic acid with nitro-anthraquinone substances.

3. As a new product the coloring-matters of the anthracene series which can be obtained by condensing a sulfo-acid of a primary aromatic amin with a nitro-anthraquinone substance; which are soluble in water with a reddish-brown to violet-blue color; soluble in glacial acetic acid with a reddish to orange color; soluble in concentrated sulfuric acid with a yellow-brown to violet color.

707,875. KNOB ATTACHMENT. WILLIAM S. BARTHOLOMEW, Wyncote, Pa., assignor to the Adams & Westlake Company, of Illinois. Filed Apr. 16, 1902. Serial No. 103,194. (No model.)

Claim.—1. In combination, a lock-casing having a threaded depression in its side, a rose provided with an integral extension having a threaded bore and adapted under certain conditions to enter said depression in the lock-casing, and a threaded thimble connecting said depression with said extension, substantially as set forth.

2. In combination, a lock-casing provided with a threaded depression in its side, a rose having an inwardly-projecting cylindrical extension with a threaded bore and being also circumferentially threaded to adapt said extension to engage under certain conditions the said threaded depression, and a threaded thimble connecting said depression with said extension, substantially as set forth.

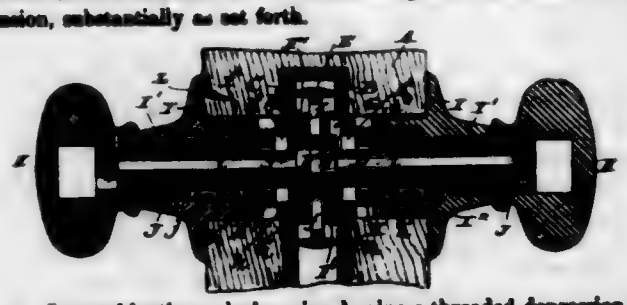

3. In combination, a lock-casing having a threaded depression in its side, a cylindrical extension projecting inwardly from a rose, having a threaded bore and being circumferentially threaded, and a threaded thimble of greater diameter at one end than at the other, and adapted to connect said depression with said cylindrical extension, substantially as set forth.

4. In combination, a lock-casing having a threaded depression in its side, a rose provided with an extension having a threaded bore, a thimble having two diameters for connecting said casing with said extension, a sleeve passing through the rose and adapted to rotate therein, and a knob or handle secured to the sleeve, substantially as set forth.

5. In combination, a lock-casing having a threaded depression in its side, a rose having a cylindrical extension projecting inwardly and provided with a threaded bore, a thimble, having a greater diameter at one end than at the other, for connecting the casing with the rose, a polygonally-bored sleeve passing through the rose and adapted to rotate therein, a knob or handle secured to the sleeve, and a spindle, polygonal in cross-section, adapted to slide in the sleeve, substantially as set forth.

6. In combination with a lock-casing and its cover-plate, each having a threaded depression G formed with a flanged axial opening *g*, a hub or stump for operating a latch, said hub being journaled in the flanged openings *g*, substantially as set forth.

7. In combination in a lock, a casing and its cover-plate, each having a threaded depression formed therein, two thimbles, each being of greater diameter at one end than the other and adapted to engage each with one of said depressions, a rose on each side of the lock provided with a cylindrical extension having a threaded bore to engage the thimble on the same side of the lock, a sleeve passing through each rose and adapted to rotate therein, a knob or handle secured to each sleeve, and a polygonal spindle adapted to slide in a similarly-shaped bore in each sleeve, substantially as set forth.

707,876. GUN-CARRIAGE. OTTO BEHNKE, Essen, Germany, assignor to Fried. Krupp, Essen, Germany. Filed Feb. 18, 1901. Serial No. 47,715. (No model.)

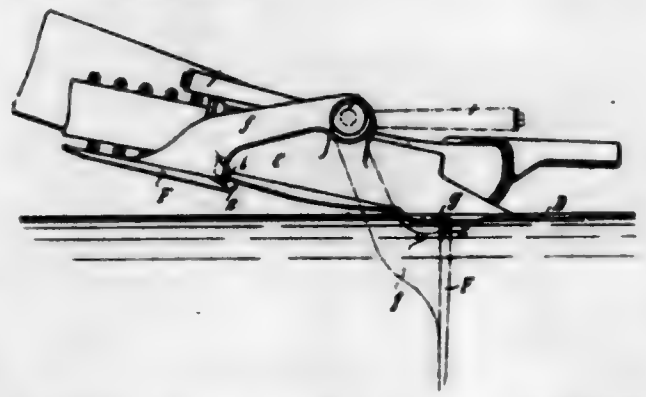

Claim.—1. In combination with a gun-carriage, a brake-spur swinging upon a pivot to and from its braking position, an eccentric bolt forming said pivot, having a rotation independent of the swinging movement of the spur, and means through which the spur engages the carriage, for locking the spur in braking and in inoperative positions, moved into and out of both locking engagements by the eccentric bolt.

2. The combination with a gun-carriage, of a pivotal eccentric bolt placed in connection with the carriage, a spur swung on said eccentric bolt, and interlocking parts placed respectively on the spur-carrier and on the spur to hold the spur in braking and in inoperative positions and adapted to be thrown into and out of engagement by the movements of the bolt, substantially as described.

3. In combination with a gun-carriage, a brake-spur swinging upon a pivot to and from its braking position, an eccentric bolt forming said pivot, having a rotation independent of the swinging movement of the

spur, means through which the spur engages the carriage for locking the spur in braking and in inoperative positions, moved into and out of both locking engagements by the eccentric of said bolt, and a lever for rotating the eccentric.

4. In combination with a gun-carriage, a braking-spur adjustable to braking position upon a pivot on said carriage, and also having a movement essentially radial to its pivot, and means for positively moving the spur radially and throwing it into engagement with the carriage for locking the spur in braking and in inoperative positions.

5. In combination with a gun, a braking-spur swinging about a pivot on said gun, from transport position to braking position, and having at each end of its swinging movement, a movement essentially radial to its pivot, and locking means at each end of the spur's path of swinging, by which the spur engages the carriage, engaged and disengaged with the spur by the latter's radial movement.

6. In combination with a gun-carriage; a braking-spur swinging about a pivot on said carriage, and also having a movement essentially radial in relation to its pivot, into and out of locking relation to the gun-carriage, locking means carried by the carriage and spur to lock the spur in braking and in inoperative positions, and brought into and out of engagement by the said radial movement of the spur, and a bolt carrying an eccentric providing the pivot for the spur, and having a rotating movement independent of the swinging movement of the spur.

7. In combination with a gun-carriage; a braking-spur swinging about a pivot on said carriage, and also having a movement essentially radial in relation to its pivot, into and out of locking relation to the gun-carriage, means adapted to lock the spur in braking and in inoperative positions and carried by the carriage and spur consisting of a projection on one part and a recess on the other brought into and out of engagement by the said radial movement of the spur, and a bolt carrying an eccentric providing the pivot for the spur, and having a rotating movement independent of the swinging movement of the spur.

707,877. WEIGHT-MOTOR AND GOVERNOR MECHANISM.

WILLIAM D. BELL, Slayton, Minn. Filed Oct. 10, 1901. Serial No. 78,214. (No model.)

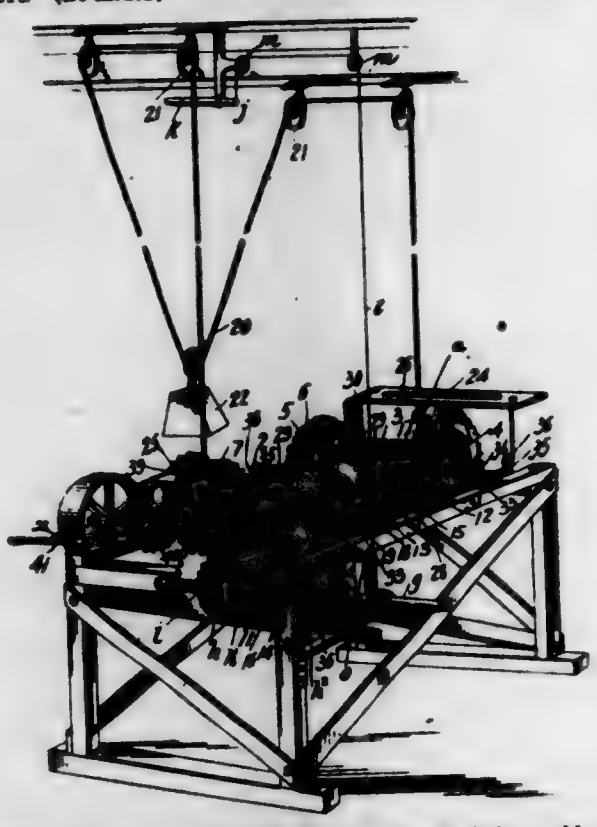

Claim.—1. In a machine of the character described, the combination with suitably-journaled drums, of a rope or cable having its ends attached to said drums, a weight supported by said rope, a drive-shaft, and a shaft to be driven, gearing for transmitting motion from the drums in alternation, and means for applying the power to said drums from the drive-shaft, in alternation, substantially as set forth.

2. In a machine of the character described, the combination with suitably-journaled drums, of a rope or cable having its ends attached to said drums, a weight supported by said rope, a drive-shaft and a shaft to be driven, gearing for transmitting motion from the drums in alternation, means for applying the power to said drums from the drive-shaft, in alternation, and means for automatically shifting said first-named means, substantially as set forth.

3. In a machine of the character described, the combination with drums, of a rope or cable, the ends of which are secured to said drums, a weight supported by said rope or cable intermediate its ends, gear-wheels having a pawl-and-ratchet connection with said drums, a shaft to be driven, a gear constantly in mesh with the gears carried by said drums and geared up with the shaft to be driven, and means for rotating said drums in alternation, whereby as one drum rotates to wind up the rope or cable, the other drum may rotate to unwind the rope or cable, substantially as set forth.

4. In a machine of the character described, the combination with drums, beveled gear-wheels fixed to one end of said drums, gear-wheels having a pawl-and-ratchet connection with the opposite ends of said drums, a shaft to be driven, gearing interposed between the shaft to be driven and the last-named gear-wheels, a drive-shaft, mechanism for transmitting the movement from said drive-shaft to either one of the beveled gears, and means carried by the rope or cable for automatically actuating said mechanism, substantially as set forth.

5. In a machine of the character described, the combination with suitably-journaled drums, of gear-wheels carried thereby, a rope having its ends connected to said drums, a weight supported by said rope or cable, a drive-shaft, pinions loosely mounted on said drive-shaft and in mesh with said beveled gears, a clutch for locking either pinion to rotate said drive-shaft, pivoted bars having slots through which the rope passes, knots formed upon said rope of greater diameter than the slots, a clutch-shipper lever, and a connection between the clutch-shipper lever and the bars whereby, when one of said bars is elevated by the engagement therewith of one of the knots, the clutch will be shifted to throw one of the pinions out of operative engagement and the other pinion into operative engagement, substantially as set forth.

707,878. TIRE FOR VEHICLE-WHEELS.

EDOUARD BELLEDIGEAS and FREDERICK SONAURLIN DE MONDRAN, Paris, France. Filed May 10, 1902. Serial No. 106,805. (No model.)

Claim.—1. An elastic tire for vehicle-wheels comprising superposed flat springs, a tread-surface with which such springs are connected at their periphery, said springs being curved to follow the inner profile of the mass constituting the tread, a series of central rings, one ring for each set of superposed springs with their respective central rings: substantially as described.

2. An elastic tire for vehicle-wheels comprising sets of springs, each composed of an outer and inner spring with interposed flexible pieces between them, a suitable flexible tread-surface connected at the periphery of said springs, central rings, one for each set of springs, and rods connecting the springs with the rings: substantially as described.

3. An elastic tire for vehicle-wheels comprising sets of springs, each composed of an outer and inner spring with interposed flexible pieces between them, a suitable flexible tread-surface connected at the periphery of said springs, central rings, one for each set of springs, and rods connecting the springs with the rings, the vacant spaces longitudinal of the tire between each two sets of superposed springs, being provided with flexible filling material.

707,879. APPARATUS FOR QUENCHING OR COOLING COKE.

LÉON BERTRAND, Paris, France. Filed Feb. 3, 1902. Serial No. 92,732. (No model.)

Claim.—1. In an apparatus for quenching or cooling coke, the combination with a tank provided with a closed casing, of a hopper suitably attached to said tank, means in the casing of said tank for continuously discharging coke, means in said tank for submerging all the coke fed thereinto and means in said tank for carrying off the fluid generated by the coke while being immersed in the liquid contained in said tank.

2. In an apparatus for quenching or cooling coke, the combination with a water-tank provided with a closed casing, of a hopper hinged to said water-tank, an endless carrier in the casing of said water-tank, means in said water-tank for carrying off the steam generated by the coke while being immersed in the water contained in said water-tank, and means in said water-tank adjacent to the lower end of said hopper for causing the immersion of all the coke fed into said hopper.

3. In an apparatus for quenching or cooling coke, the combination with a suitably-supported water-tank, of a hopper hinged to said water-tank, an endless carrier in the casing of said water-tank, a fan in the upper end of said water-tank, and a paddle in the lower end of said water-tank adjacent to said hopper.

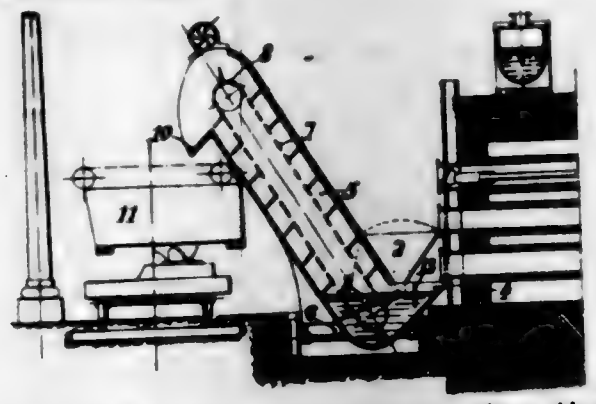

4. In an apparatus for quenching or cooling coke, the combination with a suitably-supported water-tank, of a hopper hinged to said water-tank, an endless carrier in the casing of said water-tank, a fan in the upper end of said water-tank for carrying off the steam generated by the coke while being immersed in the water contained in said water-tank, a paddle in said water-tank adjacent to said hopper for causing the immersion of all the coke fed into said hopper, and means for operating said carrier, fan and paddle.

5. In an apparatus for quenching or cooling coke, the combination with a suitably-supported water-tank, of a hopper hinged to said water-tank, an endless carrier in the casing of said water-tank, a fan in the upper end of said water-tank for carrying off the steam generated by the coke while being immersed in the water contained in said water-tank, a paddle in said water-tank adjacent to said hopper for causing the immersion of all the coke fed into said hopper, and suitable electrical means and gearing for operating said carrier, fan and paddle.

707,880. CASH-REGISTER. FRANK H. BICKFORD, Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 17, 1898. Serial No. 688,801. (No model.)

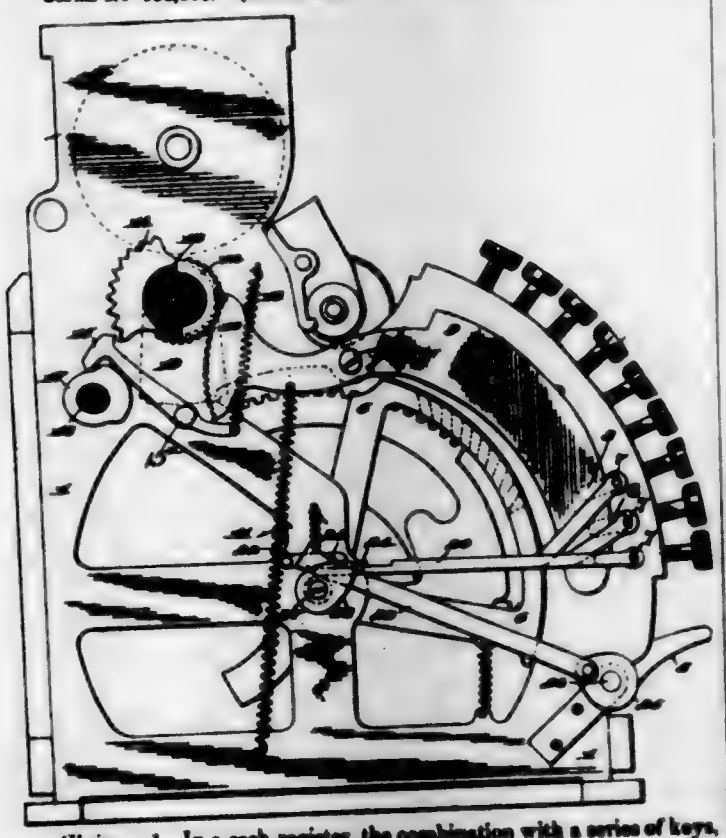

Claim.—1. In a cash-register, the combination with a series of keys, of locking devices for said keys, a release for said locking devices and means connecting said release with the operating parts of the machine for preventing its operation except when the mechanism is in normal position.

2. In a cash-register, the combination with a series of keys, a locking device for said keys, a driving mechanism, means for releasing said locking device independently of said driving mechanism and a lever arranged to coöperate with the driving mechanism to lock the releasing means except when the machine is in normal position.

3. In a cash-register the combination with a series of keys, of independent longitudinally-movable locking-bars pivoted respectively to said keys and each formed with a hook, and a single locking-pawl adapted to be moved by each of said hooks when the same engages therewith to release any previously-operated key.

4. In a cash-register the combination with a series of keys and a driving mechanism, of a series of movable locking-bars pivoted respectively to said keys, a single pawl arranged to be moved by each of said bars when it engages therewith and means for operating said pawl to disengage it from said bars when the machine is operated.

5. In a cash-register, the combination with a series of keys, and a driving mechanism, of locking-bars connected respectively to a portion of said keys, a detent arranged to lock said bars, means for releasing said detent and devices for raising said detent independently of the operation of the machine.

6. In a cash-register, the combination with a series of keys, of a detent having projections with which a part of said keys engage when operated and a reduced portion through which the remainder of the keys project when operated, independent detents for these latter keys, and an operating mechanism for operating all of the detents to release the keys.

7. In a cash-register the combination with a series of keys, of independently-movable actuating locking-bars pivoted to said keys, and a single retaining-pawl to which said bars become latched and adapted to be moved by each of the same when it engages therewith to release any previously-latched bar.

8. In a cash-register, the combination with a series of keys, of a locking device for said keys, a release for said locking device, an operating-lever for said release, and a controlling-lever connected to the operating-lever and engaging the operating parts of the machine for preventing any movement of said operating-lever except when the mechanism is in normal position.

9. In a cash-register, the combination with a series of keys, of locking devices for said keys, means for releasing said devices upon the operation of the machine, independent means for releasing said devices upon the operation of the machine, independent release means for said latter locking devices, and devices for preventing the operation of the latter release means except when the machine is in normal position.

10. In a cash-register, the combination with a series of keys, of locking devices for said keys, means for releasing said devices at will, a lever controlled by said means, and a notched wheel connected to the movable parts of the machine and coöperating with said lever for preventing the operation of the release devices except when the register mechanism is in normal position.

707,881. KEYHOLE-GUARD. FLORIS H. BOS, Hoogland, Netherlands. Filed Feb. 24, 1902. Serial No. 96,490. (No model.)

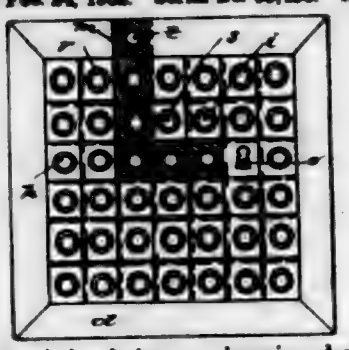

Claim.—1. A keyhole closing or obscuring device, comprising a base or mounting plate, a plurality of connected movable plates arranged over said base-plate, and a plurality of slide-pieces carrying upon their outer surfaces certain of said first-mentioned plates, and means for guiding said slide-pieces; substantially as described.

2. A keyhole closing or obscuring device, comprising a mounting-plate, a plurality of small square plates arranged in a regularly-divided field over said plate, means of engagement between said small plates adapted to permit them to move laterally relatively to each other, a plurality of slide-pieces arranged in such manner that one of them cannot be moved until the next has been moved, a plurality of said small square plates arranged on the outer surface of each slide-piece, means for guiding said slide-pieces and means for connecting said small square plates to the mounting-plate and the slide-pieces from the rear.

3. A keyhole closing or obscuring device, comprising a plurality of small interengaging square plates arranged in a regularly-divided field, a plurality of sliding plates arranged in such manner that one of them cannot be moved until the next has been moved, and upon each of which sliding plates a plurality of said small square plates are mounted, a spindle passing through each small square plate, a rectangular piece upon the inward end of each spindle, a rectangular space somewhat larger than each rectangular piece in the surface of the back plate around each rectangular piece, a knob attached to the outward end of each spindle in front of the small square plates, and locking devices for the said sliding

plates, said locking devices being adapted to be operated by the limited rotation of certain of said knobs.

4. A keyhole closing or obscuring device, comprising a plurality of small interengaging square plates arranged in a regularly-divided field, a plurality of sliding plates arranged in such manner that one of them cannot be moved until the next has been moved, and upon each of which sliding plates a plurality of said small square plates are mounted, a spindle passing through each small square plate, means for allowing a limited rotation in both directions to each of said spindles, a knob on the outer end of each spindle, lever-arms connected to certain of said spindles behind said small plates, bolts adapted to be operated by said certain spindles, and slots in said sliding plates into which the ends of said bolts are adapted to enter.

5. A keyhole closing or obscuring device, comprising a plurality of small interengaging square plates arranged in a regularly-divided field, a plurality of sliding plates arranged in such manner that one of them cannot be moved until the next has been moved, and upon each of which sliding plates a plurality of said small square plates are mounted, a spindle passing through each small square plate, means for allowing a limited rotation in both directions to each of said spindles, a knob on the outer end of each spindle, means adapted to be operated by a rotation in one direction of certain of said knobs for locking said sliding plates, and means adapted to be operated by a rotation in the reverse direction of certain other of said knobs for locking said sliding pieces.

707,882. STEERING MACHINERY. ANDREW R. BROWN, Edinburgh, Scotland. Filed Dec. 21, 1901. Serial No. 86,220. (No model.)

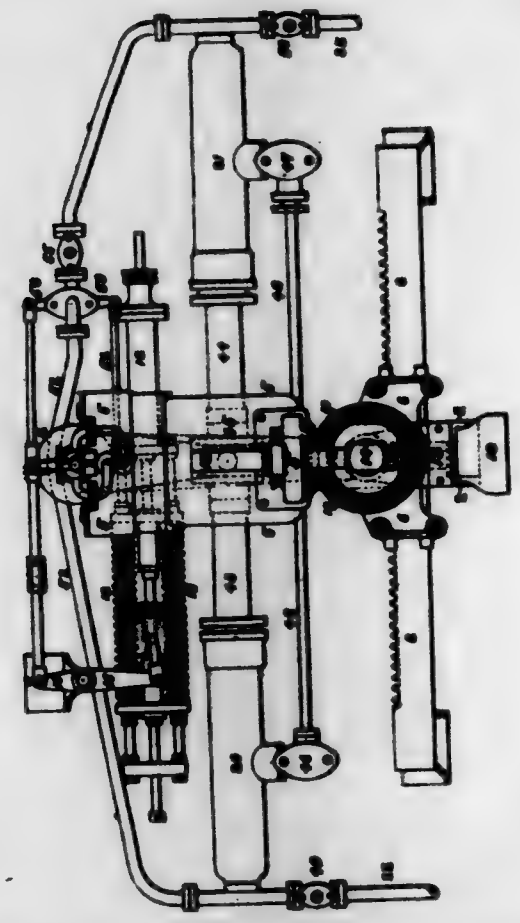

Claim.—1. Steering machinery comprising a rudder-head, two tiller-arms, a motor on one of the arms and hydraulic rams secured to the other arm, hydraulic cylinders for the rams, said motor-arm having a slotted end, a carriage in said slotted end, a pinion and shaft carried by said carriage and a rack secured to the deck engaged by the pinion, a shaft actuated by the motor and movable radially on the tiller-arm and gearing connecting said shaft with the pinion-shaft, substantially as described.

2. Steering machinery comprising a rudder-head, two tiller arms, a motor on one of the arms and hydraulic rams secured to the other arm, hydraulic cylinders for the rams, said motor-arm having a slotted end, a carriage in said slotted end, a pinion and shaft carried by said carriage and a rack secured to the deck engaged by the pinion, a shaft actuated by the motor and movable radially on the tiller-arm and gearing connecting said shaft with the pinion-shaft, in combination with a distribution-valve, a pump, a hand-wheel and piping connecting said valve and hydraulic cylinders, substantially as described.

3. Steering machinery comprising a rudder-head, two tiller-arms, a motor on one of the arms and hydraulic rams secured to the other arm, hydraulic cylinders for the rams, said motor-arm having a slotted end, a carriage in said slotted end, a pinion and shaft carried by said carriage and a rack secured to the deck engaged by the pinion, a shaft actuated by the motor and movable radially on the tiller-arm and gearing connecting said shaft with the pinion-shaft, in combination with a distribution-valve, a three-cylinder pump, a hand-wheel, piping from the valve to the hydraulic cylinders, stop-valves in said pipes, a valve for the motor, piping connecting the two hydraulic cylinders, a valve in said piping and means to control both the motor-valve and the cylinder-valve together so that they open and close simultaneously, as and for the purpose described.

4. Steering-gear, comprising a rudder-head, a rack on the deck, a tiller-arm, a motor mounted on the arm, a pinion carried by the arm and meshing with the rack and gearing between the motor and the pinion, a second tiller-arm extending from the rudder-head toward the rack but of less length than the first tiller-arm and a hand-wheel and means connecting the wheel and said second arm by which it is operated, substantially as described.

5. Steering-gear, comprising a rudder-head, a tiller-arm, a rack on the deck, a motor on the arm, a pinion on the arm meshing with the rack and gearing between the motor and pinion, a valve to control the motor, hydraulic rams and cylinders secured to the tiller-arm, a valve and piping connecting the cylinders and means for operating the motor-valve and cylinder-valve, simultaneously, substantially as described.

6. Steering-gear, comprising a rudder-head, a tiller-arm, a rack on the deck, a steam-engine on said arm, a radially-movable shaft on said arm adapted to be rotated by the engine, a pinion meshing with the rack, a carriage carried by the arm and gearing between the pinion and radially-movable shaft, and a steam-valve, substantially as described.

7. Steering machinery having a rudder-head, a tiller-arm, a swivel-block for the arm and rams secured to the block, hydraulic cylinders for the rams, a distribution-valve, pump and piping connected with the cylinders and a second tiller-arm and a motor to operate it, substantially as described.

8. Steering machinery having a rudder-head, a tiller-arm, a swivel-block for the arm, and rams secured to the block, hydraulic cylinders for the rams, a three-cylinder pump and a distribution-valve and piping connected with the hydraulic cylinders, a second tiller-arm and a motor to normally operate the rudder-head through such second arm, substantially as described.

9. Steam-steering machinery, comprising a rudder-head and a tiller-arm, a steam-engine and a valve, two hydraulic cylinders, and rams, connected to the tiller, piping connecting the cylinders, a valve in the piping, and a connection between the steam-valve and the valve in the piping whereby they are opened or closed together, substantially as described.

10. Steering machinery, comprising a rudder-head and a tiller-arm, hydraulic cylinders and rams connected to the tiller-arm, in combination with three single-acting pumps, a circular distribution-valve, piping from the pumps to the valve and piping from the valve to the hydraulic cylinders, a hand steering-wheel, a shaft therefor, eccentrics on the shaft, as and for the purpose described.

707,888. ELECTRIC-ARC LAMP. CLIFTON L. BUNDY, Philadelphia, Pa., assignor to himself and Albert H. Mauwering, Philadelphia Pa., copartnership, trading as Philadelphia Electrical and Manufacturing Company. Filed Feb. 12, 1902. Serial No. 93,702. (No model.)

Claim.—1. The combination in an arc-lamp, of the carbons, a vertically-movable rod, a connection between said rod and the upper carbon magnets, an armature pivotally connected to the core of one of said magnets, said armature arranged to rise when the magnets are energized, and a clutch between said armature and the vertically-movable rod whereby the movement of the upper carbon may be varied to strike the proper arc, said clutch consisting of a split collar surrounding the vertically-movable rod, and a pivoted member carried by said collar and adapted to engage the rod, said member being connected to the armature and engaging said rod when the armature is moved.

2. In an arc-lamp of the character described, the combination of the magnets supported at one end by connections entering their cores, and means for varying the voltage of the arc, said means serving to vary the distance between the cores of the magnets at the free ends of the same.

3. In an arc-lamp of the character described, the combination of the magnets supported at the top by connections entering their cores, and means for varying the voltage of the arc, said means consisting of adjusting devices carried by the lower ends of the magnet-cores and serving to vary the distance between the cores at the free ends of the same.

4. The combination in an arc-lamp, of the frame, magnets secured thereto by connections entering the cores of the same, a centrally-depending member, and adjusting-screws passing through the cores of said magnets at their lower ends and bearing upon said depending member, said cores serving to vary the distance between the cores of the magnets at their lower ends only thereby varying the voltage of the arc.

5. In an arc-lamp, the combination of the carbons, a fixed support for the lower carbon, an adjustable support for the upper carbon, a carbon-rod attached to said adjustable support, magnets, an armature pivotally mounted on the core of one of said magnets and movable from and toward the other magnet, and a clutch connection provided with an adjusting-nut arranged between said armature and the carbon-rod, said clutch consisting of a split collar surrounding the vertically-movable rod, and a pivoted member carried by said collar and adapted to engage the rod, said member being connected to the armature, and engaging said rod when the armature is moved.

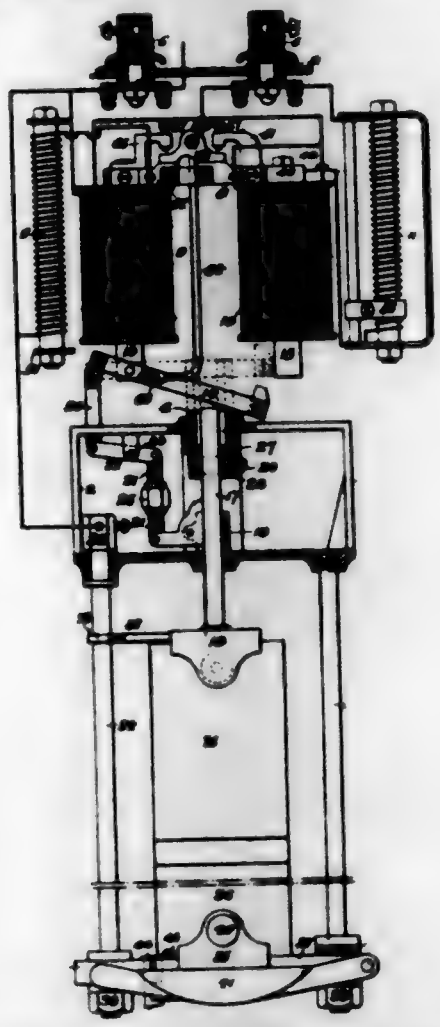

6. The combination in an arc-lamp, of the carbon-holding frame, a clamping-support for the lower carbon secured to said frame, and binding-screws carried by said support for securing the carbon therein, said holder having tapered inner walls whereby the carbon carried thereby may be adjusted by said binding-screws with relation to the other carbon.

7. The combination in an arc-lamp, of the carbons, a frame in which said carbons are supported, a holder for the upper carbon, a binding-screw carried thereby for securing the carbon therein, said holder being vertically movable, side rods connecting the carbon-holding frame together, and a guide piece or arm carried by the upper-carbon holder and having a forked end engaging one of said rods.

8. The combination in an arc-lamp, of the magnets, an armature, cut-out contacts carried by the lamp-frame and properly insulated therefrom, a shoe for engaging said contacts and a connection passing through the magnet-holding frame and pivotally connected to the shoe and the armature, whereby said shoe may be actuated by the armature to short-circuit the lamp.

9. The combination in an arc-lamp, of the magnets, an armature, cut-out contacts carried by the lamp-frame and insulated from the magnets, a shoe adapted to engage said cut-out contacts to short-circuit the lamp, a vertically-movable connection between said armature and the shoe, said connection being pivotally mounted on said members, and adjustable engaging means carried by said cut-out contacts.

10. The combination in an arc-lamp, of the frame, magnets carried thereby, an armature, cut-out contacts carried by the lamp-frame, a short-circuiting member adapted to engage said cut-out contacts, a vertically-moving pivotal connection between said member and the armature whereby said member is positively moved as the armature rises and falls, a coil of fixed resistance, and a coil of adjustable resistance arranged in the lamp-circuit, substantially as and for the purpose set forth.

11. The combination in an arc-lamp, of the carbons, magnets, connections between said carbons and magnets, resistance-coils carried by the lamp-frame, auxiliary brackets in which said coils are mounted, a movable contact carried by one of said coils whereby a shunt-circuit may be established around the main magnets, a rod carried by the auxiliary frames to which said movable contact is adapted, and means for adjusting said contact on its supporting-rod.

12. The combination in an arc-lamp of the character described, of the carbon-holding frame, a support for the lower-carbon holder, a dust-pan hinged to one side of said support and at the outside of the carbon-holding frame, and a spring-catch carried by the opposite side of said support for holding the dust-pan in position, said dust-pan having forked ends which pass on either side of the carbon-holding frame.

707,884. HOMINY, MEAL, AND GRITS DRIER. WILLIAM L. BURRER, Columbus, Ohio, assignor to the Case Manufacturing Company, Columbus, Ohio, a Corporation of Ohio. Filed May 24, 1901. Serial No. 61,734. (No model.)

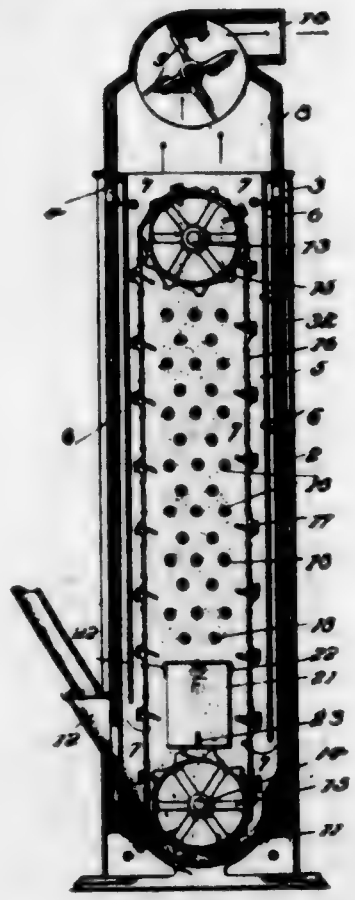

Claim.—1. In a grain-drier, the combination of the outer shell having air-inlet openings, a depending shell within and spaced apart from the outer shell and forming air-passages on two sides of the machine, said inner shell so constructed as to permit said passages to communicate at their lower ends with the drying-chamber for heating the grain, said shells forming a casing for said drying-chamber, and means for dropping the grain in the upper portion of the drying-chamber to permit it to gravitate therein, substantially as set forth.

2. In a grain-drier, the combination of the outer shell 2 having openings 3 and 4, the inner metallic shell 5 forming with said outer shell air-passages and terminating short of the bottom of the machine to bring the passages into communication with the drying-chamber 7, said shells forming a casing for said drying-chamber, means for elevating and dropping material within the drying-chamber, the heating-pipes 18 within the drying-chamber, and means for delivering and discharging material from the machine.

3. In a grain-drier, the combination of the outer shell having air-inlet openings, a depending shell within and spaced apart from the outer shell and forming air-passages on two sides of the machine, said inner shell so constructed as to permit said passages to communicate at their lower ends with the drying-chamber for heating the grain, said shells forming a casing for said drying-chamber, of shafts extending longitudinally through said drying-chamber and carrying sprocket-wheels, chains traveling on the sprocket-wheels, elevator-buckets extending the length of the drying-chamber and mounted on said chains, and a coil of heating-pipes for drying material as it gravitates from the point of discharge of the elevator-buckets, substantially as set forth.

4. In a grain-drier, the combination of the outer shell having air-inlet openings, a depending shell within and spaced apart from the outer shell and forming air-passages on two sides of the machine, said inner shell so constructed as to permit said passages to communicate at their

lower ends with the drying-chamber for heating the grain, said shells forming a casing for said drying-chamber, of shafts extending longitudinally through the drying-chamber and carrying sprocket-wheels, chains mounted upon the sprocket-wheels, elevator-buckets extending the length of the machine mounted upon the chains and a coil of heating-pipes extending longitudinally the machine in the path of the gravitating material which is elevated and discharged by the buckets, substantially as set forth.

5. In a grain-drier, the combination of the outer shell having air-inlet openings, a depending shell within and spaced apart therefrom and forming air-passages on two sides of the machine, said inner shell so constructed as to permit said passages to communicate at their lower ends with the drying-chamber for heating the grain, said shells forming the drying-chamber, sprocket-wheels suitably mounted to rotate in the upper and lower portions of said drying-chamber, chains traveling upon the sprocket-wheels, elevator-buckets mounted upon the chains elevating the material from the bottom of the machine and dropping it at the top, so that it is permitted to gravitate through the drying-chamber, a coil of heating-pipes for drying the grain as it gravitates, and a series of cant-boards by which the material is caused to progress through the machine as it repeatedly gravitates, for the purpose set forth.

6. In a grain-drier, the combination of the outer shell having air-inlet openings, a depending shell within and spaced apart therefrom and forming air-passages on two sides of the machine, said inner shell so constructed as to permit said passages to communicate at their lower ends with the drying-chamber for heating the grain, said shells forming the drying-chamber, elevator-buckets suitably mounted within the drying-chamber and extending the length thereof, a coil of heating-pipes grouped in the path of gravitating material which is elevated and discharged by the buckets, cant-boards located beneath the group of heating-pipes, an inlet-spout at one end of the machine and a tailing-spout at the other end of the machine.

7. In a drier, the combination of the casing formed of an outer non-conducting or wooden shell 2, and an inner metallic heat-conducting shell 5 forming with the outer shell a passage 6, which communicates at its upper end with the outer atmosphere, and at its lower end with the drying-chamber of the machine, said shells forming a casing for said drying-chamber, a hood 8 provided with a fan 9 above the machine for setting up a circulation of air downward through the passage 6 and upward through the drying-chamber, the endless-chain elevator having buckets extending the length of the drying-chamber continually raising and dropping material therein, the group of longitudinal heating-pipes extending through the drying-chamber grouped in the path of the gravitating material discharged by the elevator-buckets, the intake-spout at one end of the machine, the tailing-spout at the other end of the machine, a series of cant-boards 21 located in the path of the gravitating material, an incline 25 at the tailing end of the machine and directing material to the tailing-outlet, substantially as set forth.

8. In a grain-drier, the combination of a suitable drying-chamber and means for elevating and precipitating grain into said drying-chamber, said means comprising suitably-arranged sprocket-wheels, chains carried by said wheels, said chains having solid links interposed at suitable intervals therein and buckets carried by said chains comprising slotted angle-bars, said slots adapted to receive said chains whereby said buckets are capable of being rivoted to said solid links.

707,885. ORE-BREAKER. ALBERT C. CALKINS, Los Angeles, Cal., assignor to Frederick W. Braun, Los Angeles, Cal. Filed June 8, 1901. Serial No. 63,732. (No model.)

Claim.—1. In an ore-crusher, the combination with an inclosing casing open at one end and having perforated lugs at its said open end on each side; of a removable jaw having corresponding perforated lugs adapted to register with the lugs of the casing, and two pins passing through said registering lugs to secure the jaw in place substantially as described.

2. In an ore-crusher, the combination with an inclosing casing open at one end and having perforated lugs at said open end on each side; of a removable jaw having corresponding perforated lugs adapted to register with the lugs of the casing, two pins passing through said registering lugs to secure the jaw in place, and set-screws passing through the jaw and bearing against the casing to take up looseness in the joints between the jaw and casing substantially as shown and described.

3. In an ore-crusher, the combination with the stationary jaw, and the vibratory jaw having a heel at its lower end; of an adjustable heel-block having a fulcrum-cast for the heel of the jaw in front and guide-lugs in the rear, a main frame or casing having on each side an inwardly-projecting lug arranged behind the heel-block and having a screw-threaded hole through it, and an adjusting screw on each side tapped through said lug and bearing against the heel-block and extending outside of the casing and provided with a handle, substantially as described.

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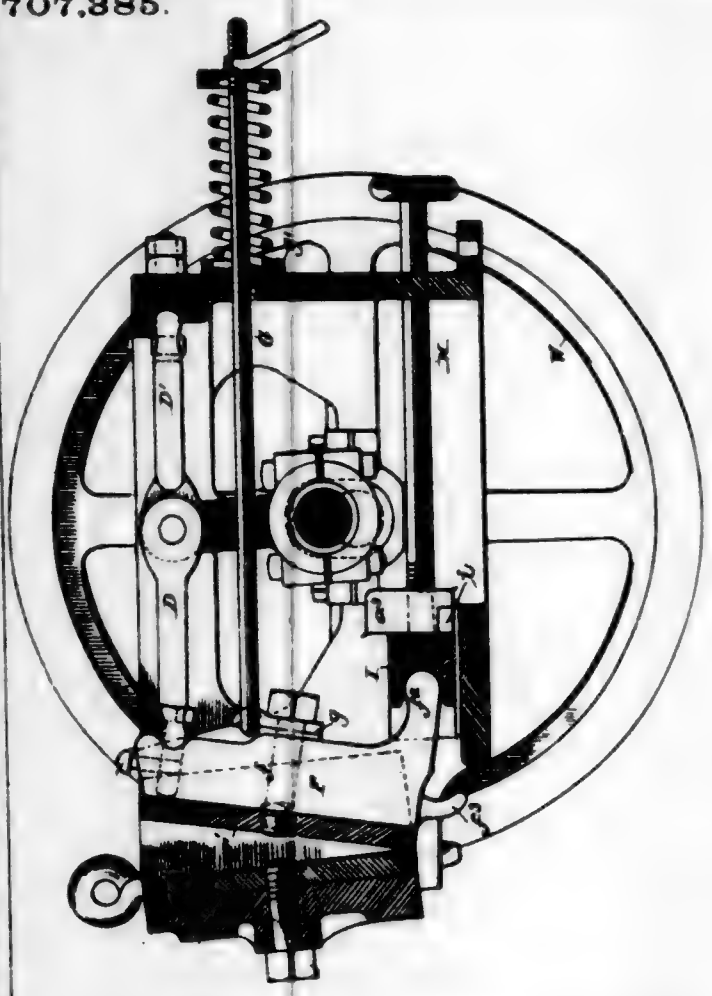

707,886. COUPLING FOR PITMEN. JOHN R. CARTER, Augusta, Ky., assignor to Ernst H. Huenefeld, Cincinnati, Ohio. Filed Apr. 19, 1902. Serial No. 103,815. (No model.)

Claim.—1. The combination of two hooks to be locked on a shaft, and means on the side face of one hook between the outer and inner edges thereof to engage the adjacent side of the other hook and lock the hooks together.

2. The combination of two hooks to be locked on a shaft, a lug on the side face of one hook and the other hook channeled on one face to receive this lug and lock the hooks against removal from the shaft when turned out of their position for assembling.

3. The combination of two hooks to be locked on a shaft, a lug on the side face of one of the hooks and the other hook having a channel and an entrance to said channel for the lug to lock the hooks together when the lug is moved into the channel and away from the entrance.

4. The combination with a single hook and double hooks to be locked upon a shaft, the single hook having a channel on one side, of a lug on the inner face of one of the double hooks to enter the channel and lock the hooks together when either is turned.

5. The combination of double hooks and a single hook to be locked upon a shaft, there being channels in the side faces of the single hook having entrances to said channels at the base of the hook and lugs or segments on the inner faces of the double hooks at the base portions thereof to enter the channels in the single hook through said entrances and move into the channels when either hook is turned out of its position for assembling.

707,887. SKIRT-PROTECTOR. JOSEF CATHREIN, Munich, Germany, assignor to Ignaz Friedinger, Oberthal, near Linz, Austria-Hungary. Filed Apr. 28, 1902. Serial No. 105,112. (No model.)

Claim.—1. A skirt-protector consisting of a series of rows of overlapping brush-like braid secured to the under side of the skirt and having the bristles projecting rearwardly and downwardly.

2. A skirt-protector consisting of a series of rows of brushes secured to the under side of the skirt, the bristles of each row overlapping the ad-

jacent row and projecting in the general direction of the edge of the skirt at less than a right angle to the skirt-body at the point of attachment.

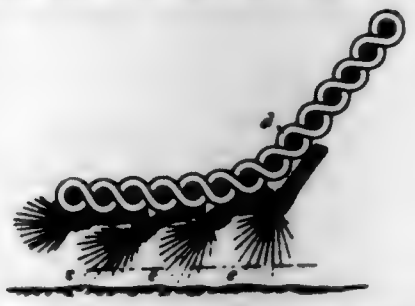

3. A skirt-protector consisting of a series of overlapping rows of brush-like fabric secured to the under side of the skirt and extending for an appreciable distance upward from the bottom edge thereof, so arranged that the bristles will lie approximately parallel with the skirt and project toward the edge of the skirt.

707,888. ELASTIC CONNECTION FOR CHECKREINS. JOHN M. CHAPPIE, Redcloud, Neb. Filed Mar. 4, 1902. Serial No. 96,602. (No model.)

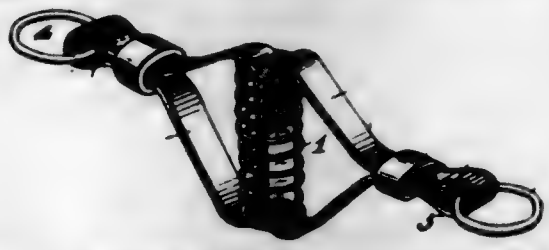

Claim.—1. In a checkrein device, the combination of a coiled spring, two loops engaging said spring, and means for attaching each of said loops to a checkrein, said means being arranged to exert a pull on the loops at right angles to the longitudinal axis of said spring, substantially as described.

2. In a checkrein device, the combination of a coiled spring, two loops engaging said spring, reins engaged by said loops and arranged so that the pull thereon will be at right angles to the axis of the spring, substantially as described.

707,889. SYNCHRONOUS ALTERNATING-CURRENT MOTOR. ALEXANDER CHURCHWARD, Fort Wayne, Ind. Filed Oct. 1, 1898. Renewed May 1, 1901. Serial No. 58,264. (No model.)

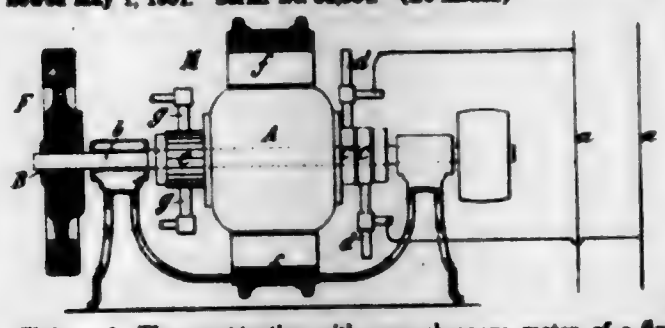

Claim.—1. The combination with a synchronous motor of a fly-wheel driven thereby through the medium of a yielding connection for producing the effect described.

2. The combination with a synchronous motor of a fly-wheel mounted on its shaft and driven thereby through the medium of a yielding connection.

3. The combination with a synchronous motor of a fly-wheel driven thereby, free to turn on its driving-shaft, and a yielding connection between such fly-wheel and the motor, for producing the effect described.

4. The combination with a synchronous motor of a fly-wheel driven thereby, free to turn on its driving-shaft, and springs interposed between the fly-wheel and shaft for producing the effect described.

5. The combination with a synchronous motor of a fly-wheel driven thereby, free to turn on its driving-shaft, a collar fixed to said shaft, and springs constituting a yielding connection between the fly-wheel and collar.

6. The combination with a synchronous motor of a fly-wheel driven thereby free to turn on its driving-shaft, a collar fixed to said shaft, springs constituting a yielding connection between the fly-wheel and collar, and a stop to limit the strain on said springs.

7. The combination with a synchronous motor of a fly-wheel F driven thereby, a collar C fixed on the driving-shaft and having projections A A, and springs S S interposed between said projections and the fly-wheel.

8. The combination with a synchronous motor of a fly-wheel F driven thereby having arc-shaped chambers *i i*, a collar C fixed on the driving-shaft and having projections A A projecting into said chambers, and springs S S interposed between said projections and the fly-wheel and inclosed in said chambers.

9. The combination with a synchronous motor of a fly-wheel F driven thereby, a collar C fixed on the driving-shaft and having projections A A, and springs S S interposed between said projections and the fly-wheel, and said fly-wheel and collar formed with mutually-abutting stops to limit the compression of said springs.

10. A synchronous motor and a load tending to maintain speed independently of the motor and coupled therewith by a yielding connection.

11. A synchronous motor and a load therefor tending to maintain speed independently of the motor and provided with means for affording a yielding engagement between the same and the said machine.

12. In a system of electrical distribution, the combination with a generator of alternating currents, of a motor supplied with current from the generator, a load for the motor tending to maintain speed independently of the motor, and means whereby the said load is yieldingly connected with the motor, substantially as described.

13. In a system of electrical distribution, the combination with a generator of alternating currents, of a motor supplied with current from the generator, a load for the motor tending to maintain speed independently of the motor, and spring mechanism whereby said load is yieldingly connected with the motor, substantially as described.

14. The combination with a synchronous dynamo-electric machine, of a fly-wheel driven thereby through the medium of a yielding connection, for producing the effect described.

15. The combination with a synchronous dynamo-electric machine, of a load operated thereby through the medium of a yielding connection, said load tending to maintain speed independently of the dynamo.

16. The combination with a rotary conveyer, of a fly-wheel driven thereby through the medium of a yielding connection for producing the effect described.

17. The combination with a rotary converter, of a load operated thereby through the medium of a yielding connection, said load tending to maintain speed independently of the converter.

707,890. SYNCHRONOUS ALTERNATING-CURRENT MOTOR. ALEXANDER CHURCHWARD, Fort Wayne, Ind. Filed Jan. 11, 1899. Renewed Feb. 21, 1901. Serial No. 48,279. (No model.)

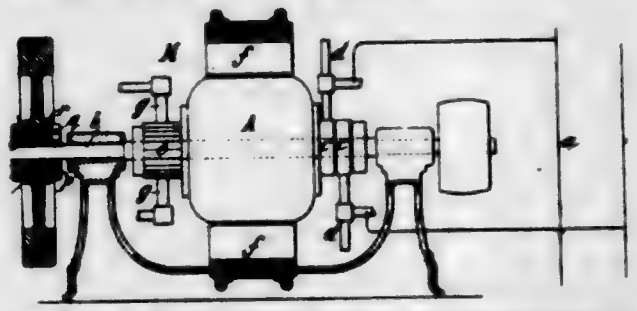

Claim.—1. The combination with a synchronous motor of a fly-wheel driven thereby through the medium of a yielding frictional connection for producing the effect described.

2. The combination with a synchronous motor of a fly-wheel driven thereby, free to turn on its driving-shaft, and a yielding frictional connection between such fly-wheel and the motor, for producing the effect described.

3. The combination with a synchronous motor of a fly-wheel driven thereby, free to turn on its driving shaft, and connected thereto by means of an adjustable friction-brake.

4. The combination with a synchronous motor of a fly-wheel driven thereby, free to turn on its driving-shaft, and a yielding frictional connection between said fly-wheel and its shaft consisting of friction-plates and springs pressing said plates together.

5. The combination with a synchronous dynamo-electric machine, of a fly-wheel driven thereby through the medium of a yielding frictional connection for producing the effect described.

6. The combination with a synchronous dynamo-electric machine, of a load operated thereby through the medium of a yielding frictional connection and tending to maintain speed independently of the dynamo.

7. The combination with a rotary converter, of a fly-wheel driven thereby through the medium of a yielding frictional connection for producing the effect described.

8. The combination with a rotary converter, of a load operated thereby through the medium of a yielding frictional connection, said load tending to maintain speed independently of the converter.

707,891. WRENCH. ROBERT J. CUMMINGS, Leadville, Colo., assignor of one-half to Leonard M. Smith, Leadville, Colo. Filed Mar. 28, 1902. Serial No. 100,544. (No model.)

Claim.—1. The combination with a lever-bar having a fixed jaw on one end, of a loose jaw, a wedge-block held to slide on the lever-bar and pivoted near one end upon an extension of the loose jaw, and means for holding the wedge block releasably clamped upon the lever-bar.

2. The combination with a lever-bar having a fixed jaw on one end, of a loose jaw having an extension rockable in a slot in the lever-bar, a wedge-block held to slide on the lever-bar and pivoted near one end upon the extension of the loose jaw, and means for releasably clamping the wedge-block upon the lever-bar.

3. The combination with a lever-bar having a convex-faced jaw on one end, and a loose jaw rockable in a slot in the lever-bar and having a concave face, of a slotted wedge-block bearing upon the lower edge of the lever-bar, a clamping-block having members engaging the lever-bar, and a screw-bolt passing through the clamping-block and slot in the wedge-block, its inner end screwing into the lever-bar.

4. The combination with a lever-bar having a convex-faced jaw on one end, and a loose jaw rockable in a slot in the lever-bar and having a concave face, of a slotted wedge-block, a fulcrum-box on one end of the wedge-block wherein one end of the convex-faced jaw is pivoted, and a clamping-block the top face of which is inclined oppositely from the inclined surface of the wedge-block upon which it bears, and a screw-bolt passing through the clamping-block and through the slot in the wedge-block and having screwed engagement with the lever-bar.

5. In a wrench of the character described, the combination with the lever-bar having a fixed jaw on one end, and a mating rockable jaw, of a wedge-block slidable on an edge of the lever-bar and having a longitudinal slot therein, one end of the wedge-block being pivoted upon a depending end of the rockable jaw, and a clamping-block having two spaced studs passing loosely through the slot in the wedge-block and entering sockets in the lever-bar, and a screw-bolt having a winged head, the threaded body of said bolt passing loosely through the clamping-block and the slot in the wedge-block, its inner end screwing into a tapped hole in the lever-bar.

6. In a wrench of the character described, the combination with the lever-bar, and a fixed jaw and a rockable jaw, of a slotted wedge-block, a clamping-block having a bearing-face inclined oppositely to the inclined face of the wedge-block upon which it bears, studs on the clamping-block, holding the wedge-block and said clamping-block from lateral displacement on the lever-bar, and a screw-bolt passing through the clamping-block and wedge-block into the lever-bar.

707,892. MACHINE FOR TRIMMING CURLED HAT-BRIMS.

FRANK C. CRAW, South Norwalk, Conn., assignor of one-half to Willis R. Austin and William H. Craw, doing business under firm-name of Austin and Craw, South Norwalk, Conn. Filed Apr. 19, 1900. Serial No. 13,457. (No model.)

Claim.—1. In a machine of the character described, the combination with a curling-block carrier having a recess to receive the crown of a hat and also having means for connecting a hat-curling block therewith with the hat-crown in said recess, of a cutter, an element by which said cutter is carried and with reference to which the cutter has oscillatory movement, and mechanism whereby said cutter is moved vertically and longitudinally to conform to the curvature of the brim.

2. In a machine of the character described the combination with a curling-block carrier and means for holding a curled hat rigidly while on a curling-block and with the crown downward, of a cutter acting from below the brim and means for causing said cutter to act in a plane tangential to the curve of the brim.

3. In a machine of the character described the combination with means for holding a curled hat with the crown downward, of a cutter acting from below the brim and mechanism whereby said cutter is moved vertically and longitudinally to conform to the curvature of the brim.

4. In a machine of the character described the combination with means for holding a curled hat, of a rotating arm, a longitudinally-moving head on said arm, a longitudinally-moving block J within the head, a vertically-moving block M carried by block J and an oscillating cutter carried by block M.

5. In a machine of the character described the combination with a longitudinally-movable head, a block J longitudinally movable within the head, a block M vertically movable in block J and an oscillating cutter carried by block M, of a carrier for a curled hat, and an arm by which the head is carried and means whereby one of said parts may be rotated.

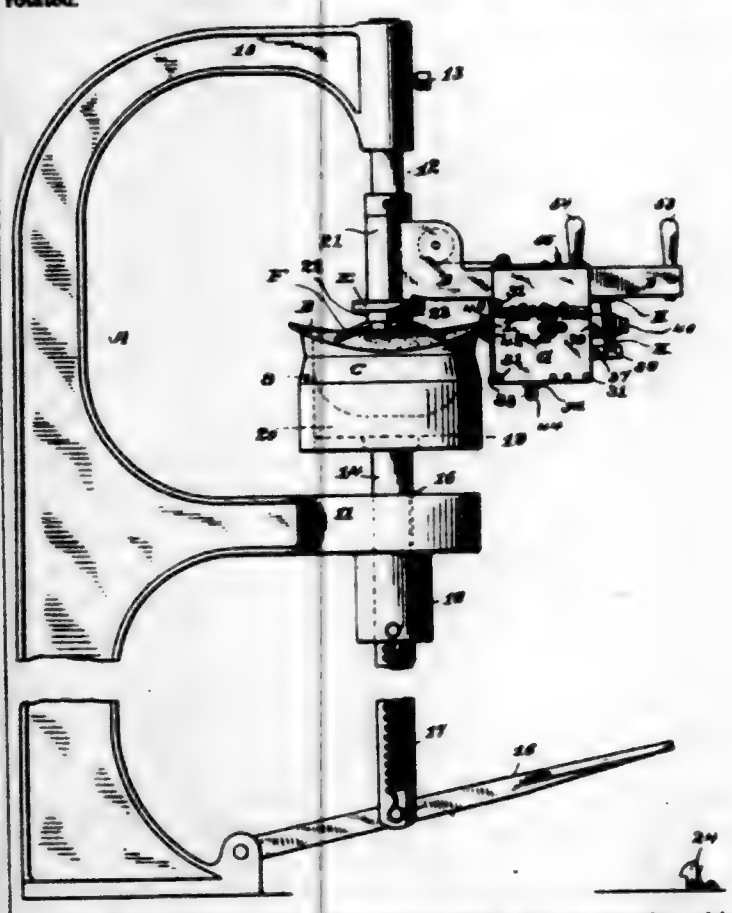

6. In a machine of the character described the combination with means for holding a curled hat and a bevel gear-wheel E, of arm D, a head longitudinally movable on said arm and carrying a shaft with a bevel gear-wheel engaging gear-wheel E, a block J within the head, connections intermediate the shaft and the block whereby the latter is moved longitudinally independently of the head, a block M vertically movable in block J and an oscillating cutter carried by block M.

7. In a machine of the character described the combination with means for holding a curled hat and a bevel gear-wheel E, of arm D, a head longitudinally movable on said arm, a shaft journaled in said arm and carrying a bevel-pinion engaging the gear-wheel, pinion H having a groove 29, said pinion being carried by the shaft but free to slide thereon and said head having a lug engaging the groove, a block J within the head, an arm extending from said block and having a groove 38, a stud extending from the head, a cam-gear mounted on said stud and engaging the sliding pinion and groove 38, a block M vertically movable in block J and an oscillating cutter carried by block M.

8. In a machine of the character described the combination with means for holding a curled hat, arm D and the sliding head having a front adapted to engage a hat-brim, of a spring for holding the front of the head in engagement with the hat-brim, a block J, block M vertically movable in block J, an oscillating cutter carried by block M, a spring for holding said block up so that the cutter will always engage the brim and means for imparting longitudinal movement to block J independently of the head so that the curl may be given any required width at the ends and sides.

9. In a machine of the character described, the combination with arm D, a shaft journaled therein and a pinion carried by said shaft and adapted to slide thereon and having a groove 29, of a head adapted to slide on said arm and having a lug engaging groove 29, a block J in said head, an arm extending from said block and having a groove 38, a stud extending from the head, a cam-gear mounted on said stud and engaging the sliding pinion and groove 38 whereby longitudinal movement is imparted to block J independently of the head, a vertically-movable block M in block J and an oscillating cutter carried by block M.

10. In a machine of the character described the combination with arm D, a shaft journaled therein and a pinion carried by said shaft and adapted to slide thereon and having a groove 29, of a head adapted to slide on said arm and having a lug engaging groove 29, a spring for moving said head forward on the arm, means for locking said head in the retracted position against the power of the spring, a block J in said head, an arm extending from said block and having a groove 38, a stud extending from the head, a cam-gear mounted on said stud and engaging the sliding pinion and groove 38, a vertically-movable block M in block J and an oscillating cutter carried by block M.

11. In a machine of the character described the combination with arm D, a shaft journaled therein and a pinion carried by said shaft and adapted to slide thereon and having a groove 29, of a head adapted to slide on said arm and having a lug engaging groove 29, a block J in said head, connections intermediate block J and the sliding pinion whereby said block is moved longitudinally independently of the head, a vertically-movable block M in block J, an oscillating cutter carried by block M, a spring for holding block M and the cutter in operative position and means for locking block M in the retracted position against the power of the spring.

12. In a machine of the character described the combination with arm D, a shaft journaled therein and a pinion carried by said shaft and adapted to slide thereon and having a groove 29, of a head adapted to slide on said arm and having a lug engaging groove 29, a spring for moving said head forward on the arm, a block J in said head, connections intermediate block J and the sliding pinion whereby said block is moved longitudinally independently of the head, a vertically-movable block M in block J and an oscillating cutter carried by block M.

13. In a machine of the character described the combination with arm D, a shaft journaled therein and a pinion carried by said shaft and adapted to slide thereon and having a groove 29, of a head adapted to slide on said arm and having a lug engaging groove 29 and a slot 36, a block J in said head having an arm 37 which extends through slot 36 and is provided with a groove 38, a stud extending from the head, a cam-gear mounted on said stud and engaging the sliding pinion and groove 38, a vertically-movable block M in block J and an oscillating cutter carried by block M.

14. In a machine of the character described the combination with arm D, a shaft journaled therein and a pinion carried by said shaft and adapted to slide thereon and having a groove 29, of a head adapted to slide on said arm and having a lug engaging groove 29 and a slot 35, a block J in said head, connections intermediate block J and the sliding pinion whereby said block is moved longitudinally independently of the head, a block M lying in block J and extending through said slot, a spring by which block M is held up, an oscillating cutter carried by block M and means for retaining said block and the cutter at a retracted position against the power of the spring.

15. In a machine of the character described the combination with arm D, a shaft journaled therein and a pinion carried by said shaft and adapted to slide thereon and having a groove 29, of a head adapted to slide on said arm and having a lug engaging groove 29 and a slot 34, a block J in said head having a slot 43, connections intermediate block J and the sliding pinion whereby said block is moved longitudinally independently of the head, a vertically-movable block M in block J, said block M having an arm 42 extending through slots 43 and 34 and an oscillating cutter carried by said arm.

16. In a machine of the character described the combination with arm D, a head adapted to slide thereon and a block within the head having an arm extending therefrom with a groove 38, of a shaft journaled in the arm, a pinion carried by said shaft and free to slide thereon, means for connecting the sliding pinion to the head so that the head will move the pinion on the shaft, a stud extending from the head and a cam-gear mounted on the stud and engaging the sliding gear and groove 38 whereby the block is moved longitudinally independently of the head.

17. In a hat-brim-trimming machine, the combination with the cutter L having a shank 41 and a cutting edge radial to the axis of the said shank, of means for supporting a hat with its brim in position to be trimmed by said cutter.

18. In a hat-brim-trimming machine, the combination with the cutter L having a shank 41, a flange 46, and a cutting edge above the flange and extending radial to the axis of the shank, of means for supporting a hat with its brim in position to be trimmed by said cutter.

19. In a machine of the character described the combination with a carrier adapted to receive a hat upon a curling-block, a holder F and means for pressing the hat against the holder, of arm D, the sliding head, sliding block J within the head, sliding block M within block J and an oscillating cutter carried by block M.

20. In a machine of the character described the combination with a carrier adapted to receive a hat upon a curling-block, a holder F, means for pressing the hat against the holder and means for lowering the carrier against the power of the spring and for locking the carrier out of operative position, of arm D, the sliding head, sliding block J within the head, sliding block M within block J and an oscillating cutter carried by block M.

707,898. BAND-CUTTER AND FEEDER. WILLIAM E. CROW, Cromwell, Ind. Filed Oct. 28, 1901. Serial No. 80,248. (No model.)

Claim.—1. In a band-cutter and feeder and in combination, a closure-frame, an endless-platform feeder, means for cutting the sheaf-bands, a pair of spreader-arms, a pair of hangers, one for each spreader-arm in the opposite walls of the frame, a crank-shaft connecting the outer end of each spreader, at the opposite sides of the closure, means for operating each crank-shaft, for causing each spreader to have opposite inward and outward movement upon their hangers, the outward movement of one alternating with the inward movement of the other, a toothed roll delivering the grain to the spreaders and a toothed roll drawing the grain from the spreaders.

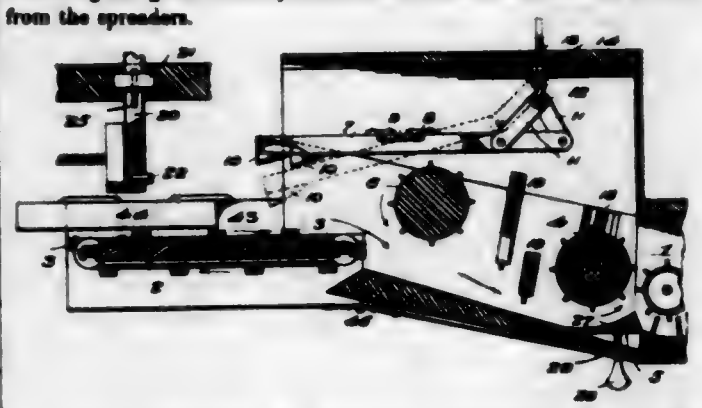

2. In a band-cutter and feeder, the combination with an endless-platform feeder and sheaf-band cutters, of a pair of grain-spreading arms, each mounted in the opposite sides of the frame in parallel lapping relation to each other, means for causing each spreader to have a horizontal movement in opposite directions, a toothed feed-roll between the delivering end of the platform-feeder and the spreaders and a toothed feed-roll at the rear of the spreaders the two spreader-arms evening the grain alike from the center to the sides.

3. In a band-cutter and feeder, and in combination, an endless-platform feeder, band-cutting arms, a pair of toothed feed-rolls, a pair of spreader-arms, each arm separately fulcrumed in the opposite sides of the closure, a crank-shaft separately connecting the outer end of each spreader-arm at the opposite sides of the closure, gear 40 41 separately connecting each crank-shaft, with the feed-roll 6, a belt 33 connecting the pair of feed-rolls and the power-driven pulley 42 on the shaft of the feed-roll at the delivery end of the closure.

4. In a band-cutter and feeder and in combination, an endless-platform feeder, a downwardly-inclined fixed bottom supplemented by a sheet-metal surface terminating at its delivering end in a raised curved part, a toothed roll at the end of said fixed bottom and screws in the fixed bottom engaging the sheet-metal part to adjust it in relation to the roll.

5. In a band-cutter and feeder and in combination, a closure-frame, an endless slatted traveling platform, cutters for severing the sheaf-bands, a toothed roll at the delivering end of the closure, a fixed bottom having a smooth surface extending from the traveling platform and terminating in an integral upward-curved part, and means for adjusting said integral bottom part in its relation to the teeth of the roll.

6. In a band-cutter and feeder and in combination, an endless-platform feeder, a downwardly-inclined fixed feed-bottom having a smooth surface and terminating in a raised curved end, a toothed feed-roll arranged to pull the grain over said raised curved end, a toothed spreader-arm supported in each side of the closure, and means separately connecting and operating each spreader-arm to cause it to spread and even the grain from the center toward the sides of the closure as the grain is moved to said roll.

7. In a band-cutter and feeder and in combination with a closure-frame, an endless-platform feeder, band-cutters and a feed-roll at the delivering end of the platform-feeder, a pair of spreader-arms passing through each side of the closure, a pair of hangers one for each spreader-arm secured in the wall-opening through which the arm passes, means for vertically adjusting the fulcra of the hangers, and means whereby the spreader-arms are reciprocated and vertically rocked upon their respective hangers toward and from each other.

707,894. BACK-BAND BUCKLE. ELI H. CRUM, Cloverbend, Ark. Filed May 24, 1901. Serial No. 61,763. (No model.)

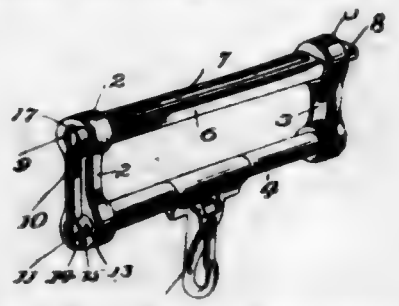

Claim.—1. The herein-described back-band attachment comprising the frame members 2, 3 and 4 rigidly secured together, a slotted mem-

ber 6 rotatably mounted in the end members of said frame; an extension 9 formed on the end of said rotatable member and provided with a recess in its end, combined with an outwardly-movable detent adapted to engage said recess and means to normally hold the detent in place whereby when said detent is withdrawn the rotatable member 6 may be turned to release or tighten the back-band, all substantially as specified and for the purpose set forth.

2. The herein-described back-band attachment comprising the end sections 2 and 3, and the member 4 rigidly connecting said end sections combined with the member 6 having the longitudinally-disposed slot rotatably mounted in said end sections and provided at one end with a handle portion 8 and at the opposite end with the recessed extension 9, and a spring-controlled detent normally held in engagement therewith whereby the upper end of said detent will rest in the recess provided in the extension 9 and may be manually withdrawn therefrom as desired, all substantially as specified and for the purpose set forth.

3. A back-band attachment comprising a suitable frame-section combined with a slotted rotatable member 6, carried in the frame and having an operating-handle at one end extending outward from the frame and provided with the extension 9 upon the opposite end said extension 9 being provided with a recess in its extreme end, and a detent pivoted upon the outer side of the frame and having its free end extending into said recess combined with a suitable spring to hold the free end of the detent normally inward whereby the slotted rotatable member 6 may be adjustably secured by means of said handle and said coöperating detent, all combined substantially as specified and for the purpose set forth.

707,895. AUTOMATIC VALVE. HELMER CURTIS, Boston, Mass., assignor to the Sumner & Goodwin Company, Boston, Mass., a Corporation of Massachusetts. Filed Oct. 26, 1900. Serial No. 34,497. (No model.)

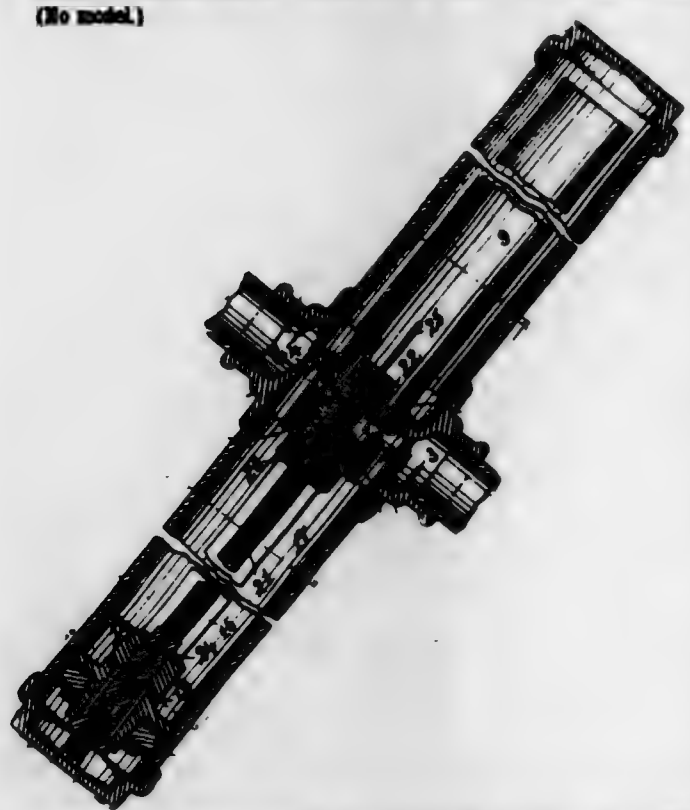

Claim.—1. In an automatic valve, a casing having inlet and outlet openings, a cylindrical chamber at each end of said casing, said chambers being of different cross-sectional areas, pistons in said chambers, coupled together so as to move in unison, a chamber intermediate the pistons, the smaller end chamber in open communication with the inlet-opening, the intermediate chamber in open communication with the outlet-opening, ports forming communication between the smaller end chamber and intermediate chamber controlled by the movements of the pistons, a cavity and contracted port forming a discharge-passage for the larger end chamber, a valve controlling communication between the larger end chamber and said cavity, and a spring to open said valve, for the purpose set forth.

2. In an automatic valve, a casing having inlet and outlet openings, a cylindrical chamber at each end of said casing said chambers being of different cross-sectional areas, pistons one in each of said chambers coupled together so as to move in unison, a chamber intermediate the pistons, the smaller end chamber in open communication with the inlet-opening, the intermediate chamber in open communication with the outlet-openings, ports forming communication between the smaller end chamber and intermediate chamber controlled by the movements of the pistons, a cavity forming communication between the larger end chamber and intermediate chamber, a valve controlling communication between the larger end chamber and said cavity, and a spring to open said valve, for the purpose set forth.

3. In an automatic valve, a casing having inlet and outlet openings, a cylindrical chamber at each end of said casing said chambers being of different cross-sectional areas, pistons one in each of said chambers coupled together so as to move in unison, a chamber intermediate the pistons, the smaller end chamber in open communication with the inlet-opening, the intermediate chamber in open communication with the outlet-opening, communication between the smaller end chamber and intermediate chamber controlled by the movement of the pistons, a cavity and contracted port forming a discharge-passage for the larger end chamber, a valve controlling communication between the larger end chamber and said cavity, and a spring to open said valve, for the purpose set forth.

4. In an automatic flushing device, a casing having inlet and outlet openings, a chamber at each end of said casing said chambers being of different cross-sectional areas, pistons in said chambers coupled together so as to move in unison, a chamber intermediate the pistons in open communication with the outlet-opening, the smaller end chamber in open communication with the inlet-opening, ports forming communication between the smaller end chamber and the intermediate chamber through which the flushing-water passes, the piston in the smaller end chamber controlling said ports, and means to cause the reciprocation of said pistons in their chambers, for the purpose set forth.

5. In an automatic valve, a casing having inlet and outlet openings, a chamber at each end of said casing said chambers being of different cross-sectional areas, pistons in said chambers coupled together so as to move in unison, a chamber intermediate the pistons in open communication with the outlet-opening, the smaller end chamber in open communication with the inlet-opening, ports forming communication between the smaller end chamber and the intermediate chamber, the piston in the smaller end chamber controlling said communication, a regulating device to regulate the size of said communication, and means to cause the reciprocation of said pistons in their chambers, whereby the amount discharged through the outlet-opening at each operation of the valve is regulated, for the purpose set forth.

6. In an automatic valve, a casing having inlet and outlet openings, a chamber at each end of said casing said chambers being of different cross-sectional areas, a piston in each of said chambers, coupled together so as to move in unison, a chamber intermediate the pistons in open communication with the outlet-opening, the smaller end chamber in open communication with the inlet-opening, ports forming communication between the smaller end chamber and the intermediate chamber, the piston in the smaller end chamber controlling said port, a sleeve having ports therein to control the size of the unobstructed opening through the ports which form communication between the smaller end chamber and the intermediate chamber, and means to cause the reciprocation of said pistons in their chambers, whereby the amount of discharge at each operation of the valve is regulated by the adjustment of said sleeve, for the purpose set forth.

7. In an automatic valve, a casing having inlet and outlet openings, a chamber at each end of said casing said chambers being of different cross-sectional areas, a piston in each of said chambers coupled together so as to move in unison, a chamber intermediate the pistons in open communication with the outlet-opening, the smaller end chamber in open communication with the inlet-opening, communication between the smaller end chamber and the intermediate chamber controlled by the movements of the piston in the smaller end chamber, a port through said pistons forming communication between the two end chambers to cause the movement of said pistons in one direction, a rod within said port movable longitudinally therein to contract said port and to prevent it from clogging, a discharge-passage from the larger end chamber to control the movement of the pistons in the opposite direction, a valve controlling said discharge-passage, and means to operate said valve, for the purpose set forth.

8. In an automatic valve, a casing having inlet and outlet openings, a chamber at each end of said casing said chambers being of different cross-sectional areas, a piston in each of said chambers coupled together so as to move in unison, a chamber intermediate the pistons, a port through said pistons forming communication between the end chambers to cause the movement of said pistons in one direction, an outlet-passage from the larger chamber, a valve controlling said outlet-passage, and means to operate said valve to cause the movement of the pistons in the opposite direction, for the purpose set forth.

9. In an automatic valve, a casing consisting of a central portion having inlet and outlet openings and a partition separating said openings, two tubes attached to said central portion, end caps on said tubes, and a central tube attached within a perforation in and extending on each side of said partition open at its ends, two pistons of different areas coupled together to move in unison, one piston reciprocating in one of the two tubes

attached to said central portion and the other piston reciprocating in said central tube, a chamber formed between the two pistons in open communication with the outlet-opening, ports through the central tube forming communication between said tube and outlet-opening, a sleeve regulating the size of the unobstructed openings through said ports, a cavity in the piston of the greater area and a contracted port forming communication between the two sides of said piston, a valve controlling the entrance to said cavity of increased area over the port from said cavity, a valve-stem for said valve extending through and beyond the opposite piston, a spring on said valve-stem, a port forming communication through the piston and between the chambers on opposite sides thereof, and a rod to contract said port and move longitudinally therein at each end of the movements of the pistons, all combined, for the purpose set forth.

10. In an automatic valve, a casing having inlet and outlet openings, a chamber at each end of said casing and of different cross-sectional areas, pistons coupled together and reciprocating in said chambers, the smaller chamber in open communication with the inlet-opening, communication between the end chambers to cause the reciprocation of the pistons in one direction, a discharge-passage from the larger end chamber, a contracted port in said passage, a valve controlling said passage and of greater area than the contracted port, means operated by the reciprocations of said pistons to open and close said valve, and a spring to open said valve to its fullest extent when raised from its seat by said pistons, for the purpose set forth.

707,396. **REVERSING-PULLEY MECHANISM.** JOSEPH DARLING, Chicora, and CHARLES C. ELLENBERGER, Jr., Peachville, Pa. Filed June 21, 1901. Serial No. 65,448. (No model.)

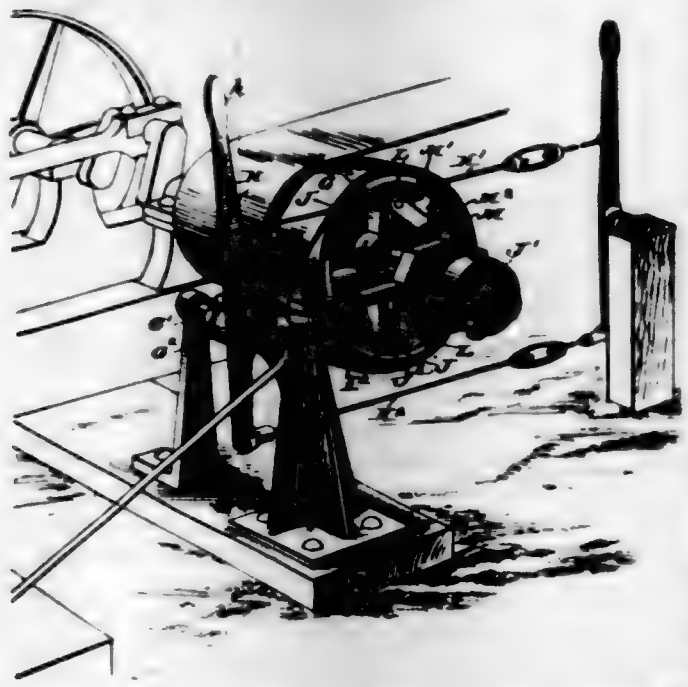

Claim.—1. An apparatus substantially as described comprising the shaft, a wheel or pulley loose on the shaft and having a gear-ring, a gear-wheel fixed to the shaft, intermediate pinions meshing with and connecting the gears of both the shaft and the pulley, a support for the said pinions, such support being loose on the shaft and provided with a drum, a brake-band encircling the said drum, clutch devices operating within the drum, and a lever connected with and arranged to operate the brake-band, and means whereby the said lever may also operate the clutch devices substantially as set forth.

2. An apparatus substantially as described comprising the shaft, the pulley or wheel thereon and having a gear ring, a gear-wheel on the shaft, intermediate pinions between said gears, a support for said pinions normally loose on the shaft, a drum in connection with said support, a clutch body or carrier, clutch-blocks movable radially therein lever-links pivoted to the clutch-body, and engaged between their ends with the clutch-blocks, the rockers having arms pivotally connected with the outer ends of the lever-links, and the clutch-collar to which said rockers are jointed substantially as set forth.

3. In an apparatus substantially as described the combination with the shaft and the pulley or wheel of gearing between the said pulley and shaft including intermediate pinions, a support for said pinions, a drum in connection with said support, a brake operating upon said drum, clutch devices operating within the drum, a bell-crank lever having one arm connected with the clutch devices, and a second arm for engagement with the operating-lever and the operating-lever engaged with such arm of the bell-crank lever and connected with and arranged to operate the brake substantially as set forth.

4. In an apparatus substantially as described, the combination of the shaft, the wheel or pulley loose on the shaft and having a gear-ring, a gear-ring fixed on the shaft, intermediate pinions meshing with and connecting the gears, a support for said pinions loose on the shaft and provided with a drum, clutch-blocks operating within the drum a sliding clutch-collar, and links pivoted together and connected respectively with the clutch-blocks and the clutch-collar and arranged for adjustment into locked position when set to throw the clutch-blocks into engagement with the drum, substantially as set forth.

5. As a means for reversing a pulley on a shaft driven in one direction, the combination of the wheel or pulley having a gear-ring, the shaft on which said gear-ring is loosely fitted, an opposite gear-ring fixed to the shaft, said gear-rings being located within the pulley, the bevel gear-wheels between said opposite gears and within the wheel, a support for said bevel-pinions extending at one end within the pulley, a drum on the other end of said support and provided with a brake-surface, the brake operating upon said surface, and the clutch devices operating within the drum, substantially as set forth.

6. The combination of the shaft, the wheel or pulley loose thereon, and having a gear-ring, reversing devices operating in connection with said gear-ring and including a brake-drum, a brake-band operating upon said drum, clutch devices arranged for operation in connection with the drum, a lever connected with the ends of the brake-band, an operating-lever having its arms connecting with the corresponding arms of the first lever, and means for operating the clutch devices from the said first lever, substantially as set forth.

707,897. **PATTERN-PLATE.** CALVIN R. DAVIS, South Bend, Ind., assignor to Oliver Chilled Plow Works, South Bend, Ind. Filed Mar. 25, 1902. Serial No. 99,235. (No model.)

Claim.—1. A pair of coöperating pattern-plates for casting two differently-formed faces of an article, each plate having depressions conforming respectively to the contour of the faces of the article to be molded, and a pattern removably secured to each of said plates.

2. A pair of coöperating pattern-plates for casting two differently-formed faces of an article, said plates having depressions therein conforming respectively to the front and rear faces of the article to be molded, patterns mounted on said plates, each pattern having a contour on one side conforming to the contour of the depression in the plate on which it is mounted and having a contour on its other side conforming to the contour of the depression in the other plate, and means for removably securing said patterns in place on said plates.

3. A pair of coöperating pattern-plates for casting two differently-formed faces of an article and having, respectively, depressions conforming to the contour of respective sides of the article to be cast, one of said plates having a groove surrounding the depression therein, a pattern having a contour for casting one side of an article, located in said depression, Babbitt metal filling the surrounding groove and another pattern having an exterior contour for casting the other side of the article, removably secured in the depression in the other plate.

4. A pattern-plate, comprising a plate having a depression therein, and having a groove surrounding said depression, pins located in said groove, a pattern located in said depression and Babbitt metal located in said groove and embedding said pins, said Babbitt metal serving to secure the pattern to the plate.

707,898. **GUN-CARRIAGE.** ARTHUR T. DAWSON and GEORGE T. BUCKHAM, Westminster, London, England, assignors to Vickers Sons & Maxim, Limited, Westminster, London, England. Filed Feb. 11, 1902. Serial No. 93,566. (No model.)

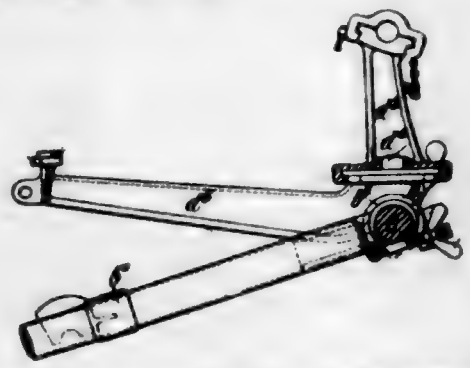

Claim.—1. In a gun-carriage, the combination with the wheel-axle the trail and the top carriage, of U-shaped brackets on the trail, D-shaped

lugs on the axle, means for locking the trail-brackets and lugs together, and a U-shaped bracket on the pivot-plate adapted to rotatably engage with a cylindrical portion of the axle and with bearings in the trail-brackets, for the purpose specified.

2. In a gun-carriage, the combination with the wheel-axle, the trail and the top carriage, of U-shaped brackets on the trail, D-shaped lugs on the axle, hinge-bolts and nuts on the trail-brackets for locking the trail to the axle, and a U-shaped bracket on the pivot-plate rotatably engaging with a cylindrical portion of the axle between the D-shaped lugs thereon, and with concentric lateral and gapped recesses in the trail-brackets said recesses being so disposed relatively to the axle that the trail-brackets and pivot-plate bracket coöperate to lock the trail and the pivot-plate to the axle substantially as described.

3. In a gun-carriage, the combination with the wheel-axle and the top carriage, of a trail composed of two parallel telescopic metal tubes, of cross-pieces connecting together said parallel tubes, U-shaped brackets on said tubes to engage with D-shaped lugs on the axle, means for detachably locking said brackets to said lugs, collars on said axle for preventing lateral movement of the trail on the axle, and a U-shaped bracket on the pivot plate of the top carriage, engaging with a cylindrical part of the axle and with semicircular or gapped lateral recesses in the trail-brackets substantially as and for the purpose specified.

707,399. GUN-CARRIAGE. ARTHUR T. DAWSON and GEORGE T. BUCKHAM, Westminster, London, England, assignors to Vickers Sons & Maxim, Limited, Westminster London, England. Filed Feb. 11, 1902. Serial No. 93,596. (No model.)

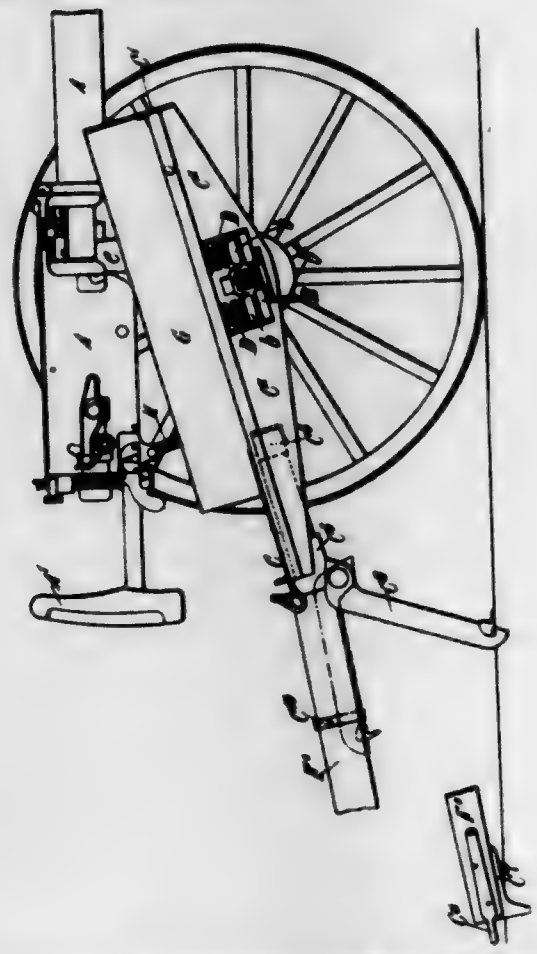

Claim.—1. In a gun-carriage, the combination with the wheel-axle and the frame, of springs interposed between said axle and frame, a cross-piece capable of sliding vertically on said axle, a screw-spindle carried by the axle and adapted to actuate said cross-piece when revolved, and brackets on the frame against which said cross-piece can be caused to firmly abut substantially as and for the purpose specified.

2. In a gun-carriage, the combination with the wheel-axle and the frame, of a draft-pole secured in brackets on said frame, a spade-shoe and a limbering-up eye at the outer end of said pole, a hinged prop of U-section on one of said brackets and means for retaining said prop in its raised position when the carriage is traveling substantially as described.

3. In a gun-carriage, the combination with the wheel-axle and the frame, of ammunition-boxes carried by the frame on opposite sides of the gun and divided into compartments, adjustable inner lids or covers within said compartments and means for locking said lids in the desired adjusted position relatively to the ammunition in the compartments substantially as and for the purpose described.

4. In a gun-carriage, the combination with the wheel-axle and the frame, of ammunition-boxes carried by the frame on opposite sides of the gun and divided into compartments, adjustable inner lids or covers within said compartments, a stud at one end of each of said lids and a bolt at the other end for engaging with a series of vertical notches within the compartments, an eye on the lid for a curved portion of the bolt to engage with, a tongue for passing through said eye to retain the bolt in its engaging position and a handle for facilitating the movement of said lid substantially as and for the purpose described.

707,400. TRANSMISSION-GEAR FOR AUTOMOBILES. GEORGE P. DORRIS, St. Louis, Mo. Filed Apr. 4, 1901. Serial No. 54,294. (No model.)

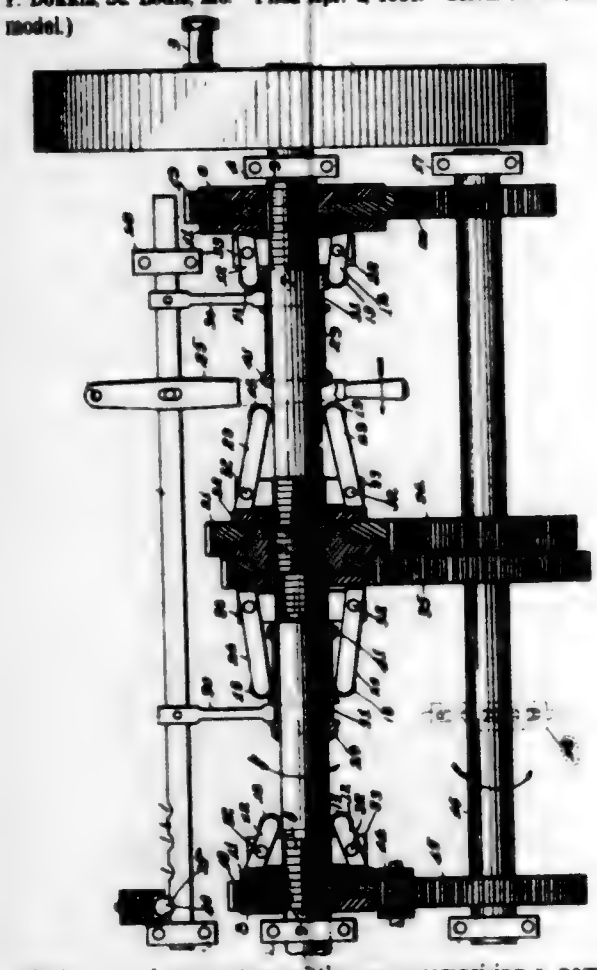

Claim.—1. A power-transmitting gear, comprising a power-shaft, a number of forward-propelling gears of various sizes and a rearward-propelling gear mounted loosely upon the power-shaft, a number of arms pivotally supported adjacent to each of said gears, a friction-plate interposed between each of said gears and its adjacent arms, sleeves mounted to slide upon the shaft and each sleeve being adapted to operate the arms at a plurality of the gears at different times when the said sleeves are moved continuously in a given direction, to set the friction-plates against the gears to hold the latter, so they will turn with the shaft, a clutch-bar, means for operating said clutch-bar, and connections between the clutch-bar and the sleeves, whereby they will all be moved simultaneously when the clutch-bar is operated, substantially as specified.

2. The combination in a power-transmitting gear, of a number of forward-propelling gears of various sizes and a rearward-propelling gear, a friction-clutch for each of said gears, sleeves constructed to set and release the clutches successively when said sleeves are moved continuously in a given direction and thereby move the driven mechanism forward at various speeds or reverse the same, a clutch-bar and connections between the clutch-bar and the said sleeves and a locking device for holding the clutch-bar in any position, substantially as specified.

3. The combination of a number of forward-propelling gears of various sizes arranged in regular order from the smallest to the largest and a rearward-propelling gear, all mounted on a single shaft, a series of friction-clutches mounted upon the same shaft with the gears, sleeves mounted to slide upon said shaft, each sleeve being adapted to operate a number of the clutches and thereby move the driven mechanism forward at various speeds or reverse the same by setting the clutch of the rearward-propelling gear, a clutch-bar and connections between the clutch-bar and the sleeves, whereby the latter will be operated to set and release all of said clutches successively when the clutch-bar is moved to the limit of its motion in a given direction, substantially as specified.

4. The combination of a series of three or more forward-propelling friction-clutches adapted to transmit variable speeds, a rearward-propelling clutch "double-ended" sleeves adapted to successively engage said clutches when moved continuously in one direction, and operative connections for moving said sleeves, substantially as specified.

707,401. ORDNANCE POWDER BAG. CARL T. DÖRR, Ehlige, Germany, assignor to Fried. Krupp, Essen, Germany. Filed Mar. 31, 1902. Serial No. 100,859. (No specimens.)

Claim.—1. An ordnance powder-bag consisting of a fabric constructed of threads of smokeless powder, and of textile threads associated in proportions corresponding to inflammability and combustibility desired.

2. An ordnance powder-bag consisting of a fabric produced from threads of smokeless powder, and of textile threads provided with a solution of smokeless powder.

707,402. ATROPINIUM ALKYL NITRATE. HEINRICH DREHER and JÜRGEN CALLSEN, Elberfeld, Germany, assignors to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Filed Apr. 30, 1902. Serial No. 105,283. (No specimens.)

Claim.—1. The herein-described new atropinium alkyl nitrates having the formula:

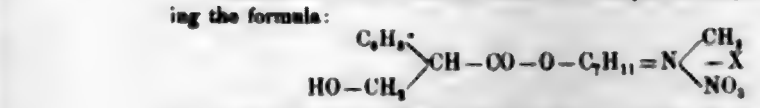

X meaning an alkyl radical, which bodies represent valuable pharmaceutical compounds, being readily soluble in water and in alcohol and soluble with difficulty in chloroform and ether, substantially as hereinbefore described.

2. The herein-described new atropinium methyl nitrate having the formula:

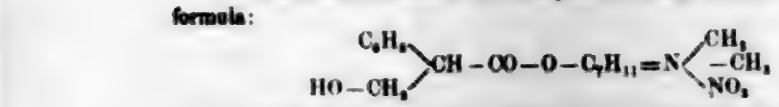

being a white crystalline body melting at from 163° to 164° centigrade, which is readily soluble in water and in alcohol, soluble with difficulty in ether, acetone and chloroform and exhibiting valuable therapeutic properties, substantially as hereinbefore described.

707,403. PHOTOGRAPHIC DEVELOPER. ARTHUR EICHENGRÜN, Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Original application filed Dec. 17, 1901, Serial No. 86,305. Divided and this application filed May 23, 1902. Serial No. 108,702. (No specimens.)

Claim.—The herein-described new developing agent containing a reducing agent, an alkaline agent and acetone alkali bisulfites, substantially as hereinbefore described.

707,404. MIXING-MACHINE. JOHN H. ELWARD, Pretty Prairie, Kans. Filed Mar. 31, 1902. Serial No. 100,853. (No model.)

Claim.—1. In a mixing-machine, for bread and other purposes, the combination with a casing which is substantially cylindrical around a vertical axis of propeller-like rotary arms having their sides inclined relative to vertical planes to produce a horizontal rotation of the mass to be mixed, and means for supporting and turning said arms on a horizontal axis, substantially as set forth.

2. In a mixing-machine for bread and other purposes, the combination of propeller-like rotary arms turning in vertical planes having their sides inclined relative to vertical planes to produce a horizontal rotation of the mass to be mixed and bent longitudinally in the direction of the axis of rotation, a casing which is substantially cylindrical around a vertical axis and means for supporting and turning said arms, substantially as set forth.

3. In a mixing-machine, a casing formed of two parts connected together and relatively adjustable to vary the diameter of the casing.

4. In a mixing-machine, the combination of a casing formed of separate parts adjustable to vary the diameter of the casing, a horizontal shaft passing through the casing, one of the parts of the casing being adjustable on the shaft, and stirrer-blades carried by said shaft.

5. In a mixing-machine, the combination of a casing formed in parts adjustable relative to each other, and means for securing said parts together in their adjusted position.

6. In a mixing-machine, a casing formed of separate parts adjustable to vary the diameter of the casing, and means for connecting said parts consisting of arms *a* and bearings *a'*.

7. In a mixing-machine, a casing formed of separate parts adjustable to vary the diameter of the casing and having supports for resting the same upon the rim of a vessel.

8. In a mixing-machine, a casing formed of separate parts adjustable to vary the diameter of the casing and having supports for resting the same on the rim of a vessel, combined with holding devices adapted to engage beneath such rim.

9. In a mixing-machine, a casing formed of separate parts adjustable to vary the diameter of the casing and having supports for resting the same upon a vessel, combined with elastic and adjustable holders for engaging beneath the rim of such vessel.

10. A portable mixing vessel open at the top and having an open bottom adapted to be detachably fitted to other portable receptacles, and a horizontal mixing-shaft mounted in the lower part of the said vessel and provided with mixing-arms adapted to project to points below the horizontal plane of the top of a lower receptacle when connected to said upper vessel, substantially as set forth.

11. In a mixing-machine, the combination of a vessel, a removable casing above the same, and a horizontal rotary shaft mounted in said casing independent of the vessel and having stirrer-blades or arms extending into said vessel.

12. In a mixing-machine for bread and other purposes, the combination of a vessel, a horizontal shaft and arms carried by the latter operating downwardly and upwardly in the vessel, said arms being curved inwardly and inclined relatively to the planes of rotation, the arms being arranged at one side only of the vessel, the other side of the vessel being free for the circulation of material, substantially as set forth.

13. In a mixing-machine for bread and other purposes, the combination of a vessel which is substantially cylindrical around a vertical axis, a horizontal shaft and arms carried by the latter operating downwardly and upwardly in the vessel, said arms being inclined relative to the planes of rotation, and the arms at one side of the shaft being inclined in a direction opposite to the inclination of the arms at the other side of the shaft, and means for supporting and actuating said arms.

14. In a mixing-machine, the combination of a vessel, a horizontal shaft therein, a sleeve longitudinally adjustable on said shaft and adapted to be rotated thereby, means for connecting the sleeve and shaft against relative longitudinal movement and blades carried by said sleeve, whereby said blades may be adjusted nearer to or farther from the center of the vessel, substantially as set forth.

15. In a mixing-machine, the combination of a casing which is substantially cylindrical around a vertical axis, a horizontal shaft therein, means for rotating the shaft, and propeller-like means on said shaft acting horizontally on the material to produce a circulation of the same in planes substantially parallel with the shaft.

16. In a mixing-machine, the combination of a casing, a horizontal shaft therein, means for rotating the shaft, and propeller-like means on said shaft acting horizontally on the material to produce a circulation of the same in planes substantially parallel with the shaft, said blades acting to force the material in one longitudinal direction on one side of the shaft and in the other direction on the other side of the shaft.

17. An open-bottom casing adapted to be applied to a vessel, and rotary stirring means mounted in said casing and extending below the casing.

18. An open-bottom casing substantially circular around a vertical axis adapted to be applied to a vessel, a rotary shaft extending across the casing, means for turning the shaft, and stirrers on said shaft, substantially as set forth.

19. In a mixing-machine, the combination with the vessel having vertical walls and adapted to hold fluid materials to be mixed, of a horizontal agitating-shaft mounted across said vessel above the normal level of the materials to be mixed, and vertically-rotating arms carried by said shaft and situated between the center and one end thereof, the remainder of the shaft being free of means for engaging with the material, substantially as set forth.

20. In a mixer, the combination of a vessel having a shaft-bearing in each side thereof, a sleeve having stirring-blades, a shaft insertible from the outside of the vessel into said bearings and said sleeve, the latter being arranged horizontally within the vessel, and means for holding said sleeve on the shaft to turn therewith, substantially as set forth.

707,405. AUTOMATIC RAILROAD-SIGNAL. ALBERT ERICSON and AUGUST S. HOVANDER, Williamsport, Pa. Filed Jan. 22, 1902. Serial No. 90,849. (No model.)

Claim.—1. An apparatus of the class described comprising an upright lever provided at its upper end with a roller or wheel, a spring connected with the lever, an air-pump, and a spring-actuated lever connected with the air-pump and provided with a wheel arranged to be engaged by the upright lever, substantially as described.

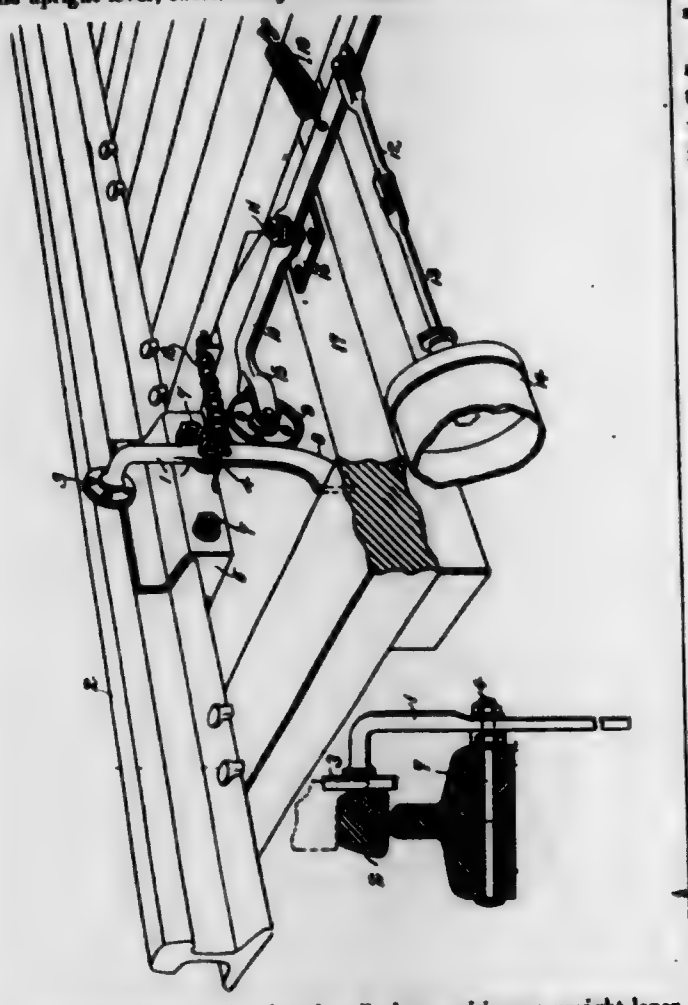

2. An apparatus of the class described comprising an upright lever designed to be arranged at the inner side of a rail and fulcrumed between its ends and having a convex edge at its lower arm, an air-pump, and a spring-actuated lever connected with the air-pump and arranged to be engaged by the upright lever, substantially as described.

3. In an apparatus of the class described, the combination of a clamp composed of inner and outer sections conforming to the configuration of the lower portion of a rail, an upright lever fulcrumed between its ends on the clamp, a spring for actuating the lever in one direction, said lever being adapted to be moved in the opposite direction by the wheels of a train, a transverse lever having an antifriction device arranged to be engaged by the lower portion of the upright lever, and means for connecting the transverse lever with the device to be operated, substantially as described.

4. In an apparatus of the class described, the combination of an upright lever fulcrumed between its ends and designed to be arranged at one side of a rail in position to be engaged by the wheels of a train, the lower portion of the upright lever being provided with a curved edge, a lever designed to be connected with the device to be operated and arranged at an angle to the upright lever and provided with an antifriction device to be engaged by the curved edge of the same, and a spring connected with the upright lever, substantially as described.

5. An apparatus of the class described comprising an upright lever designed to be located adjacent to a rail and fulcrumed between its ends, the upper arm of the lever being provided with a roller or wheel and the lower arm of the lever having a curved edge, a device designed to be connected with a signal and arranged to be engaged by the lower arm of the upright lever, the latter being also adapted to swing away from the said device, and a spring for holding the lower arm of the upright lever normally in engagement with the said device, substantially as described.

707,406. PICKER-STICK STRAP. CHARLES FABER, Fall River, Mass. Filed Feb. 6, 1902. Serial No. 92,632. (No model.)

Claim.—1. A picker-stick strap for looms, comprising longitudinally-adjustable parts formed at their outer ends with heads, one of which is formed with vertical and transverse apertures and the other with a transverse aperture, means for locking said parts in adjusted position, a yoke, a bolt for engagement with either the transverse or vertical aperture located in the head, whereby the yoke may be attached to a horizontal or vertical swinging rocker-arm of the loom, and a second yoke bolted to the other head and adapted to engage the picker-stick, substantially as set forth.

2. A picker-stick for looms having one end provided with vertical and transverse apertures, of a yoke, a bolt for engagement with either the transverse or vertical aperture, whereby the yoke may be attached to a vertical or horizontal swinging rocker-arm of a loom, substantially as set forth.

707,407. SAFETY-STOP FOR ELEVATORS. WILLIAM PEHLER, Mountainville, Pa. Filed Apr. 10, 1902. Serial No. 102,276. (No model.)

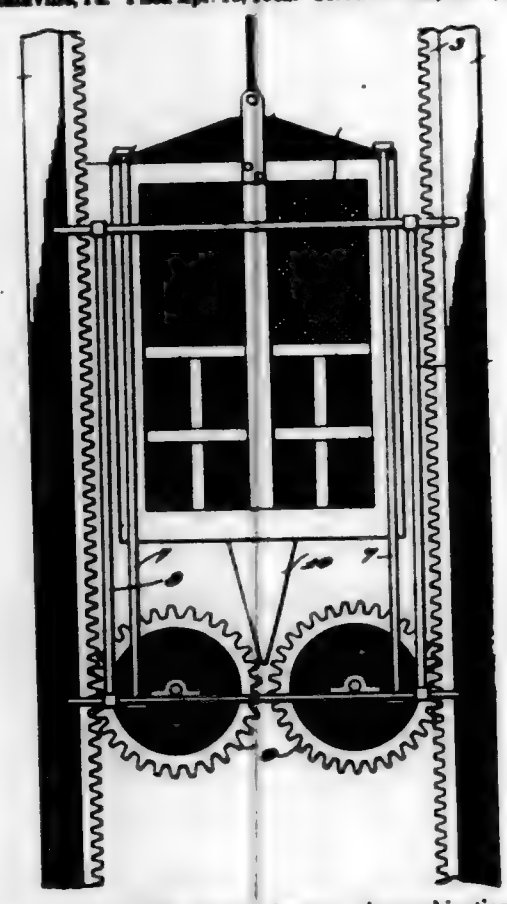

Claim.—1. In a safety-stop for elevators, the combination of toothed guides, a frame carrying gear-wheels engaging the guides, a car or cage slidably connected to said frame, and a wedge upon the car adapted to come between and lock the gear-wheels against rotation upon a downward movement of the car when the hoisting-cable breaks, substantially as and for the purpose set forth.

2. In a safety-stop for elevators, the combination of toothed guides, a car, tie-bolts connected to the car and projecting downward therefrom and having stops at their lower ends, a frame in which said bolts are fitted to slide, the upward sliding movement of the bolts being limited by said stops, gear-wheels carried by the frame and engaging the toothed guides, and a wedge fixed to the bottom of the car and adapted to come between and lock the gear-wheels against rotation upon a downward movement of the car when the hoisting-cable breaks, substantially as specified.

707,408. CASH-REGISTER. GEORGE S. GREEN, Dayton, Ohio assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 19, 1898. Serial No. 688,989. (No model.)

Claim.—1. In a cash-register, the combination with the driving mechanism and type-carriers, of a platen coöperating with the latter, operating means for the platen and an auxiliary operating mechanism arranged to actuate said platen independently of and subsequently to the aforesaid operating means.

2. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen and means arranged to depress said levers and release them successively so as to give the platen two distinct operations.

3. In a cash-register the combination with the driving mechanism and type-carriers, of a movable member carrying a platen, a primary mover for operating said member, and an independent secondary mover operated by the primary mover and arranged to actuate said member after it has been operated by the primary mover.

4. In a cash-register, the combination with a series of keys and the

type-carriers arranged to print upon a paper check, of the platen and a segment or rack arranged to be moved in one direction to feed the check between the platen and type-carriers and in the opposite direction to eject said check.

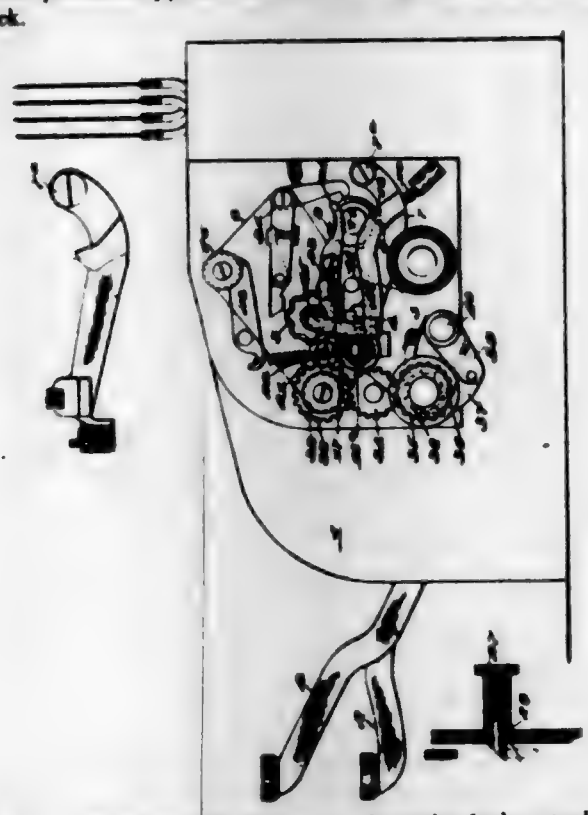

5. In a cash-register which is arranged to print both a check and detail-strip, the combination with the series of keys and the type-carriers, of a platen, means actuated by the keys for performing the following operations in their assigned order, viz: feeding a loose check forward between the type-carriers and platen, forcing the check against the type-carriers, feeding the check backward, and forcing the detail-strip against the type-carriers.

6. In a cash-register, the combination with the series of keys and the type-carriers arranged to print upon a paper check, of the platen and a lever for operating the platen carrying a segment or rack arranged to feed the check.

7. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen, means for successively operating said levers, and check-ejecting devices arranged to be operated by one of said levers.

8. In a cash-register the combination with a printing mechanism, of a platen, a check-ejector means, a lever for operating the platen, and means carried by the lever for operating the check-ejector means.

9. In a cash-register the combination with a printing mechanism, of a platen, a lever for operating said platen, a check-ejector means, and a segment or rack carried by said lever and arranged to operate said check-ejector means.

10. In a cash-register, the combination with a printing mechanism, of a platen, a lever for operating said platen, check-feeding disks operated by said lever and arranged to clamp the check between them and means coöperating with the said disks to separate them and release the check when it is to be ejected.

11. In a cash-register the combination with a printing mechanism, of a check-feeding disk, movable spring-pressed means carrying another feeding-disk arranged to contact with the first-named disk, devices for moving said disks to first feed a check forward and then to retract it, and means for automatically separating the disks to release the check when it is to be ejected.

12. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen, springs for normally forcing said levers toward the printing mechanism and a cam connected to the movable parts of the machine and arranged to depress said levers against the tensions of their springs and then successively release them so that each in turn will cause a printing action of the platen.

13. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen and a cam arranged to retract both levers and to afterward successively release them.

14. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for imparting a double stroke to said platen, a rack mounted on one of said levers and check-feeding devices meshing with said rack.

15. In a cash-register, the combination with a printing mechanism, of an operating-lever carrying a platen, an independent lever for operating said platen, and a cam engaging said levers and arranged to disengage therefrom at different times so that said levers are successively operated.

16. In a cash-register, the combination with a printing mechanism, of a platen, platen-operating means and an auxiliary independent operating device for said platen arranged to actuate the platen subsequent to its operation by the first-mentioned platen operating means.

17. In a cash-register, the combination with a printing mechanism, of a check-feeding mechanism comprising a feeding-roller, a projection mounted on said roller and arranged to act as a check-stop and a check-ejecting means.

18. In a cash-register the combination with the series of keys and type-carriers arranged to print upon a paper check, of the platen and devices arranged to move in one direction to feed the check between the platen and the type-carriers and in the opposite direction to eject said check.

19. In a cash-register the combination with a printing mechanism, of a platen, two independent levers for operating said platen, means for successively operating said levers, and check-ejecting devices arranged to be operated between the operations of the levers.

20. In a cash-register the combination with a printing mechanism, check-feeding disks, means arranged to operate said disks first in one direction and then in the other and devices coöperating with the said disks to separate them and release the check when it is to be ejected.

21. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a second lever for operating said platen carrying a rack, a check-feeding disk carrying a pinion meshing with said rack, and a spring-pressed companion disk movable toward and from the first-mentioned disk.

22. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a second lever for operating said platen carrying a rack and a check-feeding disk carrying a pinion which meshes with said rack.

23. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a check-ejector means, a second lever for operating the platen and a rack carried by said second lever and arranged to operate the check-ejector.

24. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a check-ejector means, a second lever for operating the platen and means carried by said second lever for operating the check-ejector means.

25. In a cash-register, the combination with a printing mechanism, of check-feeding devices arranged to be moved first in one direction to feed a check into coöperative relation with said mechanism and then in an opposite direction to eject said check.

26. In a cash-register, the combination with a series of keys, of type-carriers moved thereby, a platen, and devices arranged to be moved in one direction to feed a check and in the opposite direction to eject said check.

27. In a cash-register the combination with the series of keys, arranged to be operated by hand-pressure upon the same, of type-carriers arranged to be moved by said keys, a platen coöperating with said type-carriers and independent devices actuated by the keys for bringing said type-carriers and platen together twice during each operation of the keys.

28. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a second lever for giving the platen a second operation and means for locking said second lever out of operative position at will.

29. In a cash-register, the combination with a printing mechanism, of a platen, independent devices for giving the platen two operations at each single operation of the machine and means for preventing one of said platen operations at will.

30. In a cash-register, the combination with a printing mechanism, of a platen, a lever for operating said platen independently of its regular operation, and means for rendering said lever inoperative at will.

31. In a cash-register, the combination with a printing mechanism, of a platen, two independent spring-pressed levers for operating said platen and means arranged to depress said levers against the tensions of their springs and release them successively so as to give the platen two distinct operations.

32. In a cash-register, the combination with a printing mechanism, of two independent spring-pressed levers, a platen mounted on one of said levers, a projection mounted on the remaining lever and arranged to engage the first-mentioned lever, and means arranged to depress said levers against the tensions of their springs and release them successively so as to give the platen two distinct operations.

33. In a cash-register, the combination with a printing mechanism, of a platen, two independent spring-pressed levers for operating said platen, and two cams arranged respectively to engage said levers, depress them against the tensions of their springs and release them successively so as to give the platen two distinct operations.

34. In a cash-register, the combination with a driving mechanism and type-carriers, of a platen coöperating with the latter, operating means for the platen connected to the driving mechanism, and an independent operating device for the platen also connected to the driving mechanism and arranged to automatically operate said platen subsequent to its operation by the first-mentioned means.

35. In a cash-register, the combination with a driving mechanism and type-carriers, of a platen coöperating with the latter, operating means for the platen connected to the driving mechanism, an independent operating device for the platen also connected to the driving mechanism, and check-feeding devices arranged to be operated by said independent platen-operating devices.

707,409. WASHING-MACHINE. OREN GUTAR, Columbia, Mo. Filed Nov. 1, 1900. Serial No. 35,705. (No model.)

Claim.—In a washing-machine of the class described, the combination, with the cylindrical rods-holder, of the rotatable clothes-holder comprising four radial, rectangular receptacles having perforations in their parallel sides and outer ends, and curved flanges which are arranged at the outer corners of said receptacles, their convex sides being placed in contact and thus curving in opposite directions, as shown and described for the purpose specified.

707,410. SAFETY SUSPENDING APPARATUS FOR ELEVATORS OR THE LIKE. BARTHOLOMEW HARRWOOD, Hull, England. Filed Apr. 29, 1902. Serial No. 105,944. (No model.)

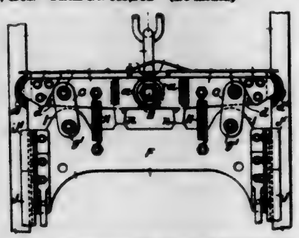

Claim.—A safety apparatus for mine and lift cages, skips and the like, consisting of a pair of toggle-levers in angular relation to each other, united by a common pivotal joint connected to the hoisting-rope, and terminating at their outer ends in dogs of V form with narrow pyramidally-toothed cutting faces in immediate proximity to the faces of the cage-guides, in combination with a cross-beam, pairs of connecting-links pivoted to the toggle-levers and to the cross-beam, springs connected to the cross-beam and applied to act on the toggle-levers in opposition to the pull of the hoisting-rope, so as to tend to straighten the toggle-levers and cause their cutting faces to be thrust into forcible contact with the cage-guides, abutments on the cross-beam and stops on the levers counting with the connecting-links, to limit the normal angular relation of the toggle-levers under the pull of the rope, and a stop to prevent the descent of the common pivotal axis of the toggle-levers below the common line of centers of these levers, substantially as herein described.

707,411. MEANS FOR MOORING PROPELLERS OF SHIPS. JAMES HAMILTON, Glasgow, Scotland. Filed Apr. 8, 1902. Serial No. 101,923. (No model.)

Claim.—1. A ship having a propeller and shaft adapted to be moved longitudinally, and after portions of the ship in line with the propeller-blades, said after portions being shaped to conform with the propeller-blades, substantially as and for the purpose described.

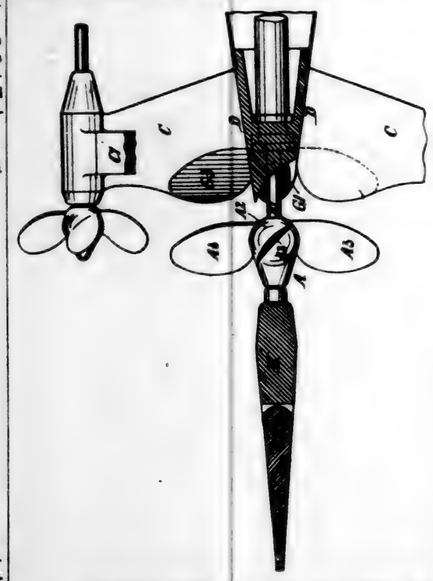

2. A ship having a plurality of propellers, one propeller longitudinally movable, after portions of the ship in the way of each propeller, angular parts or surfaces on said after portions and shaped as counterparts of the blades to fit the surfaces of the blades, the propeller being adapted to be drawn up against the said angular or counterpart surfaces, substantially as set forth.

3. A ship having a central propeller and two wing propellers, a stern-post, with a bracket on each side of it adapted to carry the wing propellers, angular parts on the stern-post and brackets shaped as counterparts of the propeller-blades to fit the forward surfaces of the blades of the central propeller, a recess in the stern-post and for the boss of said propeller, the propeller being adapted to be drawn inward or forward from its working position till its blades engage against the angular or counterpart surfaces provided for them as aforesaid on the stern-post and side brackets, substantially as and for the purpose set forth.

707,412. RECEIVING AND DELIVERING APPARATUS FOR MAIL-BAGS. AUGUSTUS P. HAHN, New Albany, Ind. Filed May 27, 1902. Serial No. 108,182. (No model.)

Claim.—1. In an apparatus for receiving and delivering mail-bags, a receiving-arm having a receiving-slot and retaining-hole, a dog adapted to move forward across the receiving-slot, a stop for said dog, and a trip-lever located in the retaining-hole and adapted to actuate the dog, said trip-lever being operated by contact of the mail-bag therewith.

2. In an apparatus for receiving and delivering mail-bags, a receiving-arm having a receiving-slot and retaining-hole, a dog adapted to swing outward across the receiving-slot, a slot for said dog, and a curved trip-lever pivoted to the receiving-arm in the rear part of the retaining-hole, one end of said lever being adapted to engage and throw the dog and the other end located for contact of the mail-bag therewith, substantially as shown and described.

3. In an apparatus for receiving and delivering mail-bags, a receiving arm or fork one member of which is provided with a shoulder forming a stop, a dog pivoted to the other member of the fork and adapted to be swung forward across the fork and engage the said stop, and a trip-lever for actuating the dog, said trip-lever being pivoted in the rear end of the fork and having one end in the path of the mail-bag.

4. In a receiving and delivering apparatus for mail-bags, a receiving-arm or catcher-fork, a dog pivoted in a recess in one member of the fork and adapted to extend across and engage a recess in the other member, and a curved trip-lever located in a recess in the fork, one end of said lever being adapted to engage the dog and the other end projected in the path of the mail-bag, so as to throw the dog when said projecting end is struck.

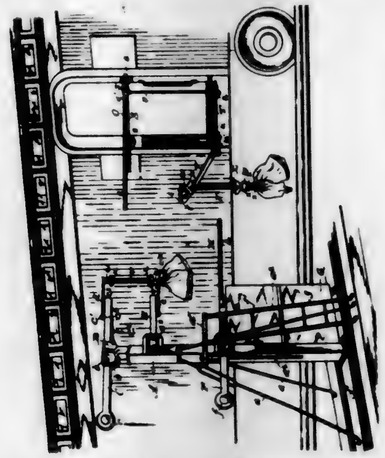

5. In a receiving and delivering apparatus for mail-bags, a crane, comprising a post or standard having delivering means at its upper end, a receiving-arm carrying a plate, and a wall or guide-plates between which the aforesaid plate is adapted to move, the said plates reinforcing the receiving-arm and forming a buffer for the mail-bag.

6. In a receiving and delivering apparatus for mail-bags, a crane comprising a post or standard, a pivoted supporting-arm carrying a receiving-arm, a plate attached to said supporting-arm, and a stationary guide-plate on a line with the aforesaid plate, the said plates reinforcing the receiving-arm and forming a buffer for the mail-bag.

7. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard, an arm pivoted in the upper end thereof and weighted at its rear end, a bar swiveled to the arm and provided with a clamping-jaw at its outer end, a second arm pivoted to the standard below the aforesaid arm and having a bar with a clamping-jaw, an arm pivoted in a slot in the standard, said arm being weighted at its rear end and provided with receiving-arms at its forward end, a plate attached to the last-mentioned arm, and a stationary guide-plate located on a line with the aforesaid plate, substantially as shown and described.

8. In a receiving and delivering apparatus for mail-bags, the combination with the crane, of a standard or post having delivering mechanism at its upper end and slotted near its lower end, a supporting-arm pivoted in said slot and carrying receiving-arms, a plate attached to said supporting-arm, and stationary guide-plates between which the aforesaid plate works, substantially as shown and described.

9. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard having a vertical slot therein, a supporting-arm pivoted in said slot and weighted at its rear end, a plate attached to said supporting-arm, and stationary guide-plates for the aforesaid plate, substantially as shown and described.

10. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard having a vertical slot therein, a supporting-arm pivoted in said slot, receiving-arms at the forward end of said supporting-arm, a plate attached to the supporting-arm, and stationary guide-plates for the aforesaid plate, substantially as shown and described.

11. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard, a supporting-arm pivoted thereto and carrying a receiving-arm at its forward end, and a plate attached to and depending from said arm.

12. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard, a supporting-arm pivoted thereto, a plate attached to said supporting-arm and means for bracing the lower or free end of said plate.

13. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard, a supporting-arm pivoted thereto, a plate attached to said supporting-arm and depending therefrom, and means for bracing the lower end of the plate.

14. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard, a supporting-arm pivoted thereto and weighted at its rear end, catcher-arms at the forward end of said supporting-arm, a plate attached to the supporting-arm below the catcher-arms, and means for bracing the outer end of said plate.

15. In a receiving and delivering apparatus for mail-bags, the combination, of a post or standard slotted at its lower end, a supporting-arm pivoted in said slot and weighted at its rear end, catcher-arms secured to the forward end of said supporting-arm, a plate attached to the supporting-arm below the catcher-arms and bearing at its rear end in the aforesaid slot, and guide-plates attached to the post or standard below the aforesaid plate, and between which the lower end of the aforesaid plate is guided.

16. In a delivering and receiving mechanism for mail-bags, a suspending means for the mail-bag, comprising a flexible rod having rings at its ends, and disk-forming stops at either side of the center of said rod.

17. A suspending means for mail-bags, comprising a rope having rings attached to the ends thereof, disks secured to the rope at either side of the center thereof to form stops, and a leather and canvas covering between the stops, substantially as shown and described.

707,418. ADJUSTABLE WINDOW-SHADE HOLDER. PRESCOTT D. HEWES and FREDERICK J. RITTER, New York, N. Y. Filed Apr. 19, 1902. Serial No. 103,700. (No model.)

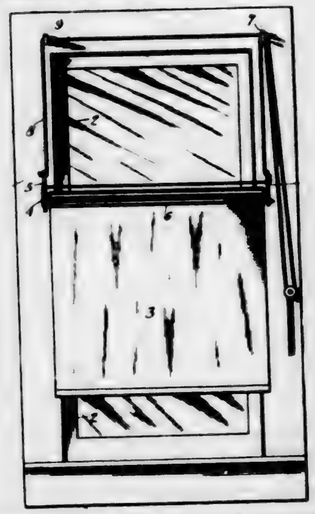

Claim.—1. In a device of the class described, a plate provided with a central round opening to receive a gudgeon at one end of a roller and with a perforation above and below said opening, a plate provided with a central rectangular opening to receive the rectangular gudgeon at the other end of the roller and with a perforation above and below such rectangular opening, a flexible member threaded through such perforations and retaining the plates in operative position, and adjustably mounted on the window-frame and a second flexible member secured to one of such plates and adjustably mounted upon the window-frame.

2. In a device of the class described, a plate provided with a central round opening to receive the gudgeon at one end of a roller and with a perforation above and below such opening, a plate provided with a central rectangular opening to receive the gudgeon at the other end of the roller and with a perforation above and below such opening and with a projection on the inner side of its upper portion, a cord secured at one end in the lower perforation of the first-mentioned plate and threaded through the perforations in the other plate and then through the upper perforation in the first-mentioned plate and secured near the upper end of said last-mentioned plate, a cord secured to said projection, and pulleys secured at the upper part of the window-frame to receive said cords.

707,414. LEVELING-MACHINE. JOHN J. HEYD, Lynn, Mass., assignor of one-half to Maurice V. Brosnahan, Lynn, Mass. Filed Apr. 25, 1901. Serial No. 57,431. (No model.)

Claim.—1. In a leveling-machine, a mold arranged to travel in a uniform arc, a complemental yieldingly-mounted last arranged to travel in a complemental arc, and means controlled by the bottom of the sole of the boot or shoe for limiting the movement of the last up or down whereby the sole of the boot or shoe upon the last is caused to move in the same arc, irrespective of the thickness of the sole.

2. In a leveling-machine, a mold arranged to travel in the arc of a circle, a complemental last and its standard, a pivoted support provided with two pivoted arms that are pivotally connected to said standard, and adjustable yielding connections between one of said arms and the support whereby the last may be given a predetermined yielding resistance and adjustment without changing the position of the bottom of the sole of the boot or shoe with relation to the axis of said support while the said sole is under pressure.

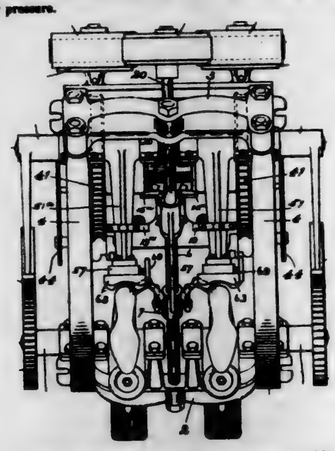

3. In a leveling-machine, two independent sets of molds and lasts confined to movement in the arc of a circle, and means connected with the lasts for automatically regulating the amount of pressure applied to the sole of the boot or shoe without changing the arc of movement of the mold or of the surface of said sole when under pressure.

4. In a leveling-machine, a mold-bed adapted for attachment to an arm or support, a mold formed with a locking member at one end, and at its other end carrying an adjusting member, said members being adapted to engage complemental members upon the mold-bed.

5. In a leveling-machine, a mold-bed adapted for attachment to an arm or support, a mold formed with a locking member at one end, and at its other end carrying an adjusting member, said members adapted to engage complemental members upon the mold-bed and means for locking the mold to the bed.

6. A mold for a leveling-machine, formed with a locking member at one end, and at its other end with an adjusting member.

7. In a leveling-machine, a last, a standard having provisions for attaching a last thereto, and an adjustable stop carried by the standard arranged to engage complemental means upon the last, whereby the sole of the last may be maintained in a predetermined plane irrespective of the size or shape of the last or the wear of its crown due to pressure, &c.

8. In a leveling-machine, two sets of pivoted molds and complemental lasts confined to movement in the arc of a circle, and automatic means for causing either of said sets to perform a predetermined number, one or more, of pressing operations and then stop with the last in a position of clearance.

9. In a leveling-machine, a last having provisions for attachment to a standard and a pressure-resisting face upon the crown of said last adapted for engagement with a complemental support upon the jack or standard.

10. In a leveling-machine, a mold, a last, means for moving said parts in complemental arcs, comprising a last-standard, a pivoted support carrying two pivoted arms that are pivotally connected to said standard and yielding means engaging one of said arms whereby the last is yieldingly supported and will recede from or advance toward the mold in parallel lines irrespective of the point of contact between the mold and last.

11. In a leveling-machine, two sets of molds and complemental lasts, means for moving the last and mold of each set in complemental arcs and means whereby the last at the completion of the pressing operation is automatically brought to a vertical position of clearance.

707,415. CELLULAR PACKING STRUCTURE. HOWARD H. HOBAR, Philadelphia, Pa. Filed June 27, 1900. Serial No. 21,001. (No model.)

Claim.—1. A cellular structure consisting of upper and lower cellular portions composed of interlocking cross-strips and connecting portions of less thickness than the strips in said cellular portions, the upper and lower portions of said connecting-strips being doubled and cemented together throughout the extent of the doubled portion in order to impart to them the thickness necessary for the strips of the cellular structure, substantially as specified.

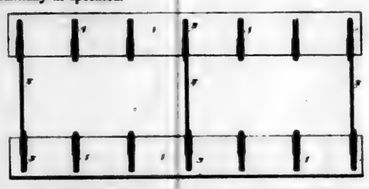

2. A cellular packing structure composed of interlocking cross-strips each consisting of two or more thicknesses of material cemented together throughout their extent and a bottom sheet having upturned and folded edges also cemented together throughout the extent of the fold, and each constituting one of the strips of the cellular portion of the structure, substantially as specified.

707,416. METALLIC RAILWAY-CAR. RAYMOND H. HORSENDEN, Philadelphia, Pa., and WILLIAM H. WOODCOCK, Canton, Ohio. Filed Oct. 18, 1901. Serial No. 78,885. (No model.)

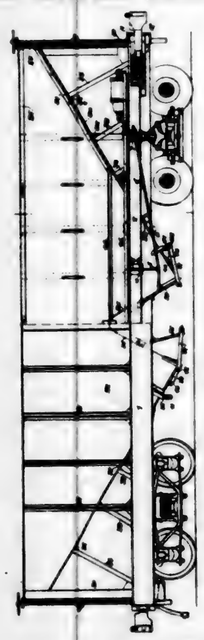

Claim.—1. A metallic car-frame having longitudinal side sills composed of channel-bars and a center sill composed of channel-bars of less depth than the side sills but provided with longitudinal truss-rods, substantially as specified.

2. The combination of the opposite channel-bars of the center sill, the transverse body-bolsters and longitudinal truss-rods bearing upon struts depending from the sill, said truss-rods passing through the body-bolsters and having nuts bearing thereupon, substantially as specified.

3. The combination of the opposite channel-bars, of the center sill with the body-bolsters, separator-plates interposed between and secured to the bars of the center sill, struts secured to and depending from said separator-plates, and longitudinal truss-rods bearing upon said struts and passing through the body-bolsters, substantially as specified.

4. The combination in a metallic car-frame, of side and center sills, with an end sill having inner and outer angle-bars secured to said center and side sills, substantially as specified.

5. The combination in a metallic car-frame, of side and center sills, with an end sill having inner and outer angle-bars at the top, and an outer angle-bar at the bottom, all of said bars being secured to the center and side sills, substantially as specified.

6. The combination in a metallic car-frame, of center and side sills with an end sill having inner and outer angle-bars at the top, an outer angle-bar at the bottom, and a transverse plate extending from top to bottom, said bars and plate being secured to the center and side sills, substantially as specified.

7. The combination in a metallic car-frame of the side sills and the end sills with diagonal braces extending from the corners of the frame and having bent ends connected to the said side sills, and a channel-bar connected to the brace and to both side and end sills, substantially as specified.

8. The combination in a metallic car-frame of the side sills, the center sills, the end sills, and the transverse body-bolster with diagonal braces extending from the corners of the frame formed by the junction of the end sills and the side sills to the angles formed by the junction of the center sill and body-bolsters, said diagonal braces presenting horizontal flanges secured to the flanges on the bolster and vertical flanges secured to the bolster and center sills, substantially as specified.

9. The combination of the upright sides of a metallic car with the transverse top braces consisting of rods having end eyes, angle-bars secured to the inner sides of the car and serving as vertical braces therefor, and bolts whereby the eyes at the ends of the transverse rods are secured to the said angle-bars, substantially as specified.

10. The combination of the end sills and upright corner-posts of a metallic car-frame, plates secured to and projecting inwardly from said corner-posts, and stay-rods extending diagonally from post to post and having shackles whereby they are secured to said inwardly-projecting plates, substantially as specified.

707,417. ICE-SANDAL FOR FLAT HORSESHOES. ISRAEL G. HOWELL, Hopewell, N. J., assignor of one-half to Matteo di Puglia, Hopewell, N. J. Filed Apr. 18, 1902. Serial No. 103,594. (No model.)

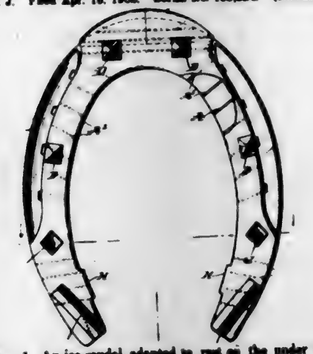

Claim.—1. An ice-sandal adapted to rest on the under side of a horseshoe, and provided with depending points and heels, belts for securing the sandal to the shoe at or about the quarters thereof, and a flange on the toe of the sandal, to engage a recess on the edge of the horseshoe-toe, as set forth.

2. An ice-sandal adapted to rest on the under side of a horseshoe, and provided with depending points and heels, belts for securing the sandal to the shoe at or about the quarters thereof, a flange on the toe of the sandal, to engage a recess on the edge of the horseshoe-toe, and lugs on the inside of the sandal, to fit the inner edges of the sides of the shoe, at or about the quarters or heels, as set forth.

3. An ice-sandal fitting the under side of a horseshoe and formed on its side edges with cut-out portions, to leave the nail-grooves of the horseshoe unobstructed, the said sandal being provided with depending points and heels, belts for securing the sandal to the shoe, and a flange on the toe of the sandal to engage a recess in the rim of the horseshoe-toe, as set forth.

707,418. PLIERS. MATTHEW M. HOWLAND, Providence, R. I. Filed Feb. 3, 1902. Serial No. 92,802. (No model.)

Claim.—1. In pliers, the combination of an upper jaw and handle made in one piece, a lower handle having a fork at its front end pivoted to the upper jaw, a lower jaw held in said fork and connected with the upper handle by a plate, or plates pivoted to the lower jaws at their front ends, and connected to the upper handles by a pin passing through the plates and a slot in said handle, means to prevent said pin from moving in said slot when the jaws are opened by their front ends, a main pivot passing through said plates and fork, substantially as described.

2. In pliers, the combination of an upper jaw and handle made in one piece, a lower handle having a fork at its front end pivoted to the upper jaw, a lower jaw held in said fork and connected with the upper handle by a plate, or plates, pivoted to the lower jaw at their front ends and connected to the upper handles by a pin passing through the plates, and a slot in said handle, teeth made in the upper side of said slot, one or more teeth made in said pin, a main pivot passing through said fork and the plates, substantially as described.

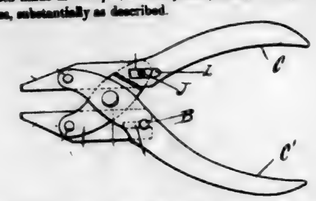

3. A device of the character described, comprising a one-piece jaw and handle member; a separate handle member pivoted at one end to said member near its jaw portion; a separate jaw member having a slot at its inner end portion; a pin on the said handle member engaging the walls of said slot and slidable therein; said jaw and handle member having a slot at an intermediate portion; and a connecting member having a pin at one end slidable in said last-mentioned slotted portion; the connecting member having its other end pivoted to said separate jaw member at an intermediate part thereof; said separate handle member being pivoted intermediate of its said attaching parts to the intermediate part of the said connecting member.

4. In a device of the character described, the combination of a jaw and handle in one piece, a separate jaw, a separate handle, means for giving said jaws a parallel motion, and means for automatically locking the jaws on an object in the same.

5. In a device of the character described, a jaw and handle in one piece, a separate handle, a separate jaw, means for giving said jaws a parallel motion, in combination with means for automatically locking said jaws.

6. In parallel pliers, a jaw and handle in one piece, a separate jaw, a plate or plates having pins in each end engaging said separate jaw and said one-piece jaw and handle, and a separate handle pivoted on said separate jaw and the one-piece jaw and handle.

7. In parallel pliers, a jaw and handle in one piece, a separate jaw, a plate or plates having pins in each end engaging said separate jaw and said one-piece jaw and handle, a separate handle pivoted on said plate or plates having pins engaging said separate jaw and the one-piece jaw and handle, substantially as described.

707,419. SKYLIGHT. EDGAR J. HULSE, Washington, D. C. Filed Jan. 20, 1902. Serial No. 90,573. (No model.)

Claim.—1. The ridge-bar of a skylight provided with a supporting member having a central web with gutters at the lower end on opposite sides thereof, outturned flanges 3, 3, below the gutters, and a clamping-strip folded over at the edges to grip said flanges, substantially as set forth.

2. The ridge-bar provided with a bearing member consisting of a metallic sheet doubled on itself to form a doubled vertical web, extended outward at each side at the lower end of the web and bent to form upwardly-extending flanges of double thickness, and with downwardly-extending converging portions having outturned flanges 3, and means for connecting together said flanges 3, substantially as set forth.

3. The ridge-bar provided with a bearing member consisting of a metallic sheet doubled on itself to form a doubled vertical web, extended outward at each side at the lower end of the web, and bent to form upwardly-extending flanges 2 of double thickness, and with downwardly-extending converging portions having outturned flanges 3, and a clamping-strip for connecting together said flanges 3, substantially as set forth.

4. The combination with a glass of a skylight, of a bearing consisting of a metallic strip bent to form parallel supporting-ribs, said ribs resting on said glass and forming a support for an overlapping glass, and the outer side of the outer rib extending downwardly and held in contact with the supporting-glass by the weight of the overlapping glass, substantially as set forth.

5. The combination with a glass of a skylight, of a bearing consisting of a metallic strip bent to form parallel supporting-ribs, said ribs resting on said glass and forming a support for an overlapping glass, the outer side of the outer rib extending downwardly and held in contact with the supporting-glass by the weight of the overlapping glass, and said strip having a downturned flange to fit over one end of the supporting-glass, substantially as set forth.

6. The combination with the glass of a skylight structure, of a member having a flange substantially perpendicular to said glass and a seal-

ing-piece consisting of a bent metallic strip having parallel ribs between which the edge of the flange is seated, substantially as set forth.

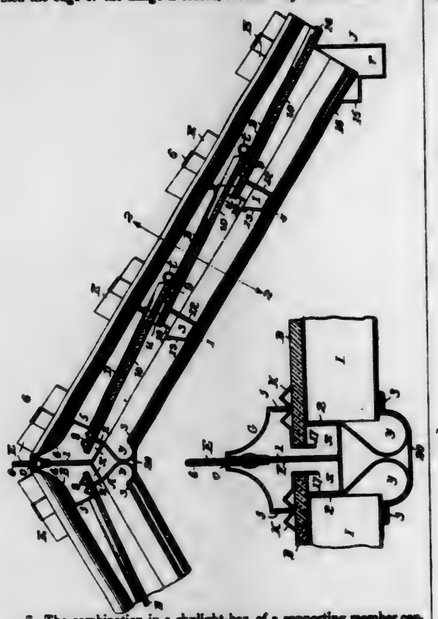

7. The combination in a skylight-bar, of a supporting member consisting of a strip bent to form a central web and two side flanges, each of double thickness, and with downwardly-extending converging parts with outwardly-extending lower flanges, and a clamping-strip folded over at the edges to grasp said flanges, substantially as set forth.

8. The combination in a skylight-bar, of a supporting member consisting of a strip bent to form a central web and two side flanges, each of double thickness, and with downwardly-extending converging parts with outwardly-extending lower flanges bent upward to form side gutters, and means for connecting together the converging parts, substantially as set forth.

9. The combination in a skylight-bar, of a supporting member consisting of a strip bent to form a central web and two side flanges, each of double thickness, and with downwardly-extending converging parts with outwardly-extending lower flanges, and a clamping-strip extending beneath said parts and connected with the edges thereof, substantially as set forth.

10. The combination with the supporting and cap members, of the sealing-pieces consisting of corrugated strips, the flanges of the cap members seated in the corrugations of said pieces, substantially as set forth.

11. The double cross-gutter consisting of a strip bent to form gutters *p* and *q* and doubled flanges, 18 and 19 and seat 20, substantially as set forth.

12. The inclined supporting-bar consisting of a strip of metal bent to form side bearings with vertical flanges 2, 2, each with a series of inclined edges and intermediate shoulders, combined with glass panes resting on said edges and projecting below said shoulders overlapping each other and with intermediate corrugated parting-strips, substantially as set forth.

13. The inclined supporting-bar consisting of a strip of metal bent to form side bearings with vertical flanges 2, 2, each with a series of inclined edges and intermediate shoulders, combined with glass panes resting on said edges and projecting below said shoulders overlapping each other and with intermediate corrugated parting-strips, consisting each of a strip of metal having corrugations and a flange extending across the edge of the lower pane, substantially as set forth

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707,420. APPARATUS FOR WETTING EMERY-WHEELS. ELWIN E. HYDE, Bridgeport, Conn. Filed July 31, 1901. Serial No. 70,884. (No model.)

Claim.—The combination with a tank and a reservoir, of a pipe extending from near the bottom of the reservoir to the normal water-line in the tank, an air-pump and a pipe leading therefrom into the reservoir, whereby water may be maintained at the normal water-line in the tank by displacing water in the reservoir.

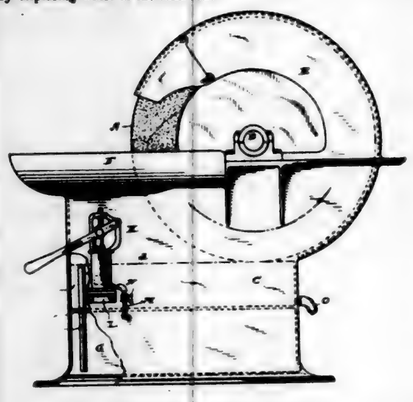

707,421. PROCESS OF PRODUCING TRICHROMATIC HALF-TONE-PROCESS NEGATIVES. FREDERIC E. IVES, Philadelphia, Pa. Filed June 30, 1902. Serial No. 113,732. (No specimens.)

Claim.—1. The mode herein described of producing trichromatic half-tone-process negatives, said mode consisting in simultaneously exposing three elements of the color-record through three half-tone-process screens having different dispositions of pattern and with dioptric light adjustment to meet the requirements of screen half-tone-process negative-making, substantially as specified.

2. The mode herein described of producing trichromatic half-tone-process negatives, said mode consisting in simultaneously exposing the three images of a color-record through the three half-tone-process screens having different dispositions of pattern and with dioptric light adjustment to meet the requirements of screen half-tone-process negative-making, and independent of adjustment for equalizing the chromatic light action upon the three images, substantially as specified.

3. The mode herein described of producing trichromatic half-tone-process negatives, said mode consisting in simultaneously exposing the three elements of a color-record through a single lens and diaphragm, and through three half-tone-process screens having different dispositions of pattern, substantially as specified.

707,422. PHOTOGRAPHIC ATTACHMENT FOR OPTICAL INSTRUMENTS. FREDERIC E. IVES, Philadelphia, Pa. Filed June 30, 1902. Serial No. 113,733. (No model.)

Claim.—1. The combination of an optical instrument having an eye-piece, with a camera complete with lens having a fixed focus similar to the image distance of the instrument, whereby the image seen in the eye-piece is reproduced without alteration of focus, definition or amplification, substantially as specified.

2. A camera focused for parallel rays and movable to and fro in the line of its optical axis, in combination with a support whereby said camera is mounted in position for use in connection with an optical instrument, substantially as specified.

3. A camera focused for parallel rays and movable to and fro as a rigid whole in the line of its optical axis, in combination with a support whereby said camera is mounted in position for use in connection with an optical instrument, substantially as specified.

4. A camera focused for parallel rays and movable to and fro in the line of its optical axis, in combination with a support whereby said camera is mounted in position for use in connection with an optical instrument, said support having as an element a base constructed to engage the base of said instrument, substantially as specified.

5. A camera focused for parallel rays and movable to and fro in the line of its optical axis, in combination with a support whereby the camera is mounted in position for use in connection with an optical instrument, one of the elements of said support being a strut whereby the support is braced and stiffened when the camera is in position for use, substantially as specified.

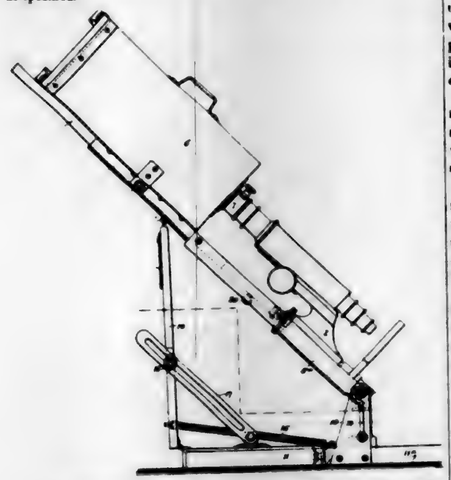

6. A camera focused for parallel rays and movable to and fro in the line of its optical axis, in combination with a support whereby the camera is mounted in position for use in connection with an optical instrument, one of the elements of said support being a pivoted strut whereby the support is braced and stiffened when the camera is in position for use, substantially as specified.

7. A camera focused for parallel rays and movable to and fro in the line of its optical axis, in combination with a support whereby the camera is mounted in position for use in connection with an optical instrument, elements of said support being a base constructed for engagement with the base of said instrument, and a strut whereby the support is braced and stiffened when the camera is adjusted in position for use, substantially as described.

8. A camera focused for parallel rays and movable to and fro in the line of its optical axis, in combination with a support whereby the camera is mounted in position for use in connection with an optical instrument, elements of said support being a base constructed for engagement with the base of said instrument, and a pivoted strut whereby the support is braced and stiffened when the camera is adjusted in position for use, substantially as specified.

9. A camera focused for parallel rays and movable to and fro in the line of its optical axis, and a support whereby said camera is mounted in position for use in connection with an optical instrument, elements of said support being a base engaging the base of the instrument, and a strut interposed between said base and that portion of the support upon which the camera is mounted, substantially as specified.

10. A camera focused for parallel rays and movable to and fro in the line of its optical axis, whereby said camera is mounted in position for use in connection with an optical instrument, elements of said support being a base engaging the base of the instrument, and a pivoted strut interposed between said base and that portion of the support upon which the camera is mounted, substantially as specified.

11. The combination of a pivotally-mounted optical instrument, with a camera movable in the line of its optical axis, and a pivoted and swinging support for said camera having its pivotal axis concentric with the pivotal axis of the instrument, substantially as specified.

12. The combination of a pivotally-mounted optical instrument, with a camera focused for parallel rays and movable in the line of its optical axis, and a pivoted and swinging support for said camera having its pivotal axis concentric with the pivotal axis of the instrument, substantially as specified.

13. The combination of a pivotally-mounted optical instrument, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, and a pivoted and swinging support for said camera having its pivotal axis concentric with the pivotal axis of the instrument, substantially as specified.

14. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising a base engaging the base of the instrument, and a camera-carrying element pivotally mounted upon said base in line with the pivotal axis of the instrument, substantially as specified.

15. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, and a support for said camera, comprising a base engaging the base of the instrument, and a camera-carrying element pivotally mounted upon said base in line with the pivotal axis of the instrument, substantially as specified.

16. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, a pivoted and swinging support for said camera having its pivotal axis concentric with that of the instrument, and a strut for bracing said pivotal camera-support when the camera is adjusted for use, substantially as specified.

17. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, a pivoted and swinging support for said camera having its pivotal axis concentric with that of the instrument and a strut for bracing said pivotal camera-support when the camera is adjusted for use, substantially as specified.

18. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, a pivoted and swinging support for said camera having its pivotal axis concentric with that of the instrument and a pivotal strut for bracing said pivotal camera-support when the camera is adjusted for use, substantially as specified.

19. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, a pivoted and swinging support for said camera having its pivotal axis concentric with that of the instrument, and a pivoted strut for bracing said pivotal camera-support when the camera is adjusted for use, substantially as specified.

20. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising a base constructed to engage the base of the instrument, a camera-carrying element pivoted to said base in line concentrically with the pivot of the instrument, and a strut interposed between the said camera-carrying element of the support and the base, substantially as specified.

21. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, and a support for said camera comprising a base constructed to engage the base of the instrument, a camera-carrying element pivoted to said base in line concentrically with the pivot of the instrument, and a strut interposed between said camera-carrying element of the support and the base, substantially as specified.

22. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising a base constructed to engage the base of the instrument, a camera-carrying element pivoted to said base in line concentrically with the pivot of the instrument, and a pivoted strut interposed between the said camera-carrying element of the support and the base, substantially as specified.

23. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, and a support for said camera comprising a base constructed to engage the base of the instrument, a camera-carrying element pivoted to said base in line concentrically with the pivot of the instrument, and a pivoted strut interposed between the said camera-carrying element of the support and the base, substantially as specified.

24. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, a support for said camera, and pivotal mountings for said support located on opposite sides of the camera-mounting, and providing pivotal axes for the camera-support concentric with that of the instrument, substantially as specified.

25. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, a support for said camera, and pivotal mountings for said support located on opposite sides of the camera-mounting and providing pivotal axes for the camera-support concentric with that of the instrument, substantially as specified.

26. The combination of an optical instrument having pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising a camera-carrying element and a base engaging the base of the instrument and having pivotal bearings for the camera-carrying element concentric with that of the instrument-mounting, said base also having an adjustable member for bearing upon the base of the instrument, substantially as specified.

27. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising a camera-carrying element and a base engaging the base of the instrument and having on opposite sides of the latter pivotal bearings for the camera-carrying element which bearings are concentric with that of the instrument-mounting, substantially as specified.

28. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, and a support for said camera comprising a camera-carrying element and a base engaging the base of the instrument and having on opposite sides of the latter pivotal bearings for the camera-carrying element, which bearings are concentric with that of the instrument-mounting, substantially as specified.

29. The combination of an optical instrument having pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera detachably mounted in pivotal bearings concentric with those of the instrument-mounting, substantially as specified.

30. The combination of an optical instrument having pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, and a support for said camera detachably mounted in pivotal bearings concentric with those of the instrument-mounting, substantially as specified.

31. The combination of an optical instrument having pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising a camera-carrying element and a base engaging the base of the instrument, said camera-carrying element being detachably mounted in pivotal bearings on said base, which bearings are concentric with that of the instrument-mounting, substantially as specified.

32. The combination of an optical instrument having pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising the camera-carrying element, a base engaging the base of the instrument and having pivotal bearings for said camera-carrying element which are concentric with the axis of the instrument-mounting, a pivoted strut interposed between the base and said camera-carrying portion of the support, a spring for acting upon said strut and causing it to accommodate itself to the various angular adjustments of said camera-carrying element of the support, and means for locking said strut in its different positions of adjustment, substantially as specified.

33. The combination of an optical instrument having a pivotal mounting, with a camera movable in the line of its optical axis, and a support for said camera comprising a camera-carrying element, a base engaging the base of the instrument and having pivotal bearings for the camera-carrying element concentric with the axis of the instrument-mounting, a pivoted strut interposed between the base and the camera-carrying element of the support, and means for locking said strut in its different positions of adjustment, substantially as specified.

34. The combination of an optical instrument having a pivotal mounting, with a camera focused for parallel rays and movable as a rigid whole in the line of its optical axis, and a support for said camera comprising a camera-carrying element, a base engaging the base of the instrument and having pivotal bearings for the camera-carrying element concentric with the axis of the instrument, a pivoted strut interposed between the base and the camera-carrying element of the support, a spring for acting upon said strut and causing it to accommodate itself to the various angular adjustments of said camera-carrying element of the support, and means for locking said strut in its different positions of adjustment, substantially as specified.

707,423. PROCESS OF OBTAINING ALBUMINOUS SUBSTANCES. ADOLF JOLLES, Vienna, Austria-Hungary. Filed May 29, 1902. Serial No. 109,567. (Specimens.)

Claim.—1. A process of obtaining an albuminous substance from magma or blood-corpuscles consisting in destroying oxydases in the material, bringing the material to a suitable degree of alkalinity, suitably oxidising the alkalined material, and then suitably precipitating the albumen.

2. A process of obtaining an albuminous substance from magma or blood-corpuscles consisting in destroying the oxydases in the material by the suitable addition thereto of sulfurous acid, then bringing the material to a suitable degree of alkalinity, suitably oxidizing the alkalined material, and then suitably precipitating the albumen.

3. A process of obtaining an albuminous substance from magma or blood-corpuscles, consisting in destroying the oxydases in the material by suitably adding thereto a sulfurous acid, then bringing the material to a suitable degree of alkalinity by the addition thereto of ammonia, suitably oxidizing the alkalined material, and then suitably precipitating the albumen.

4. A process of obtaining an albuminous substance from magma or blood-corpuscles consisting in destroying the oxydases in the material by the addition thereto of sulfurous acid, then bringing the material to a suitable degree of alkalinity by the addition thereto of ammonia, suitably oxidizing the alkalined material by the addition thereto of hydrogen peroxid and the boiling of the mass, and then suitably precipitating the albumen.

707,424. BOX-FASTENER. WILLIAM JORDAN, Winona, Minn. Filed Sept. 27, 1901. Serial No. 76,733. (No model.)

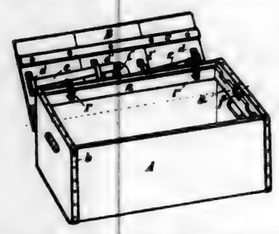

Claim.—1. The combination, with a box-body and its cover, of the fastener described, comprising slidable locking-bars, a countersunk plate let into the cover and provided with stops arranged as shown, and an intermediate raised surface within the sunken portion, a lever-handle arranged in the latter and having a central pin passing through the plate, a spring-washer applied to said pin, a lever below the plate which is pivoted to the locking-bars and provided with a notched boss, and a pin which locks the pin of the lever-handle to said boss, as shown and described.

2. The combination, with the box body and cover, of slidable locking-bars, a recessed plate secured to the upper side of said cover and having a stop and adjacent raised surface in its recessed portion, a lever-handle arranged in the recess of the plate and provided with a pendent pin, a spring-washer applied to said pin, and a lever arranged below the plate, and means for securing it to said handle so that both rotate together, as shown and described.

3. The combination, with the box-body and its cover, of the recessed plate secured in a hole in the cover flush with the surface of the latter, a lever-handle arranged in the recess and having a pin that passes through the plate, a lever arranged under the latter and having a central recess, means for securing the lever to said pin, a washer encircling the handle-pin and arranged in the recess of the lever, and slidable bars connected with the ends of the latter, as shown and described.

4. The combination, with a box-body and its cover, of slidable bars, a lever with which said bars are connected, a lever-handle having a pendent pin, means for securing the lever to said pin, a plate secured to the upper side of the cover and having projections between which the said handle may lie, and a spring-washer which encircles the handle-pin and tends to hold the handle locked between the said projections, as shown and described.

707,425. MANUFACTURE OF PLAYING-BALLS. ELBERT KENDRALL, Boston, Mass. Filed June 23, 1902. Serial No. 112,741. (No model.)

Claim.—1. A process in producing a playing-ball, consisting in winding in miscellaneous directions under high tension upon a center piece a multitude of layers of approximately pure acid-cured sheet-rubber which is drawn by the tension to such thinness that the layers pack together to form a solid body, and applying upon said body under heat and compression a cover of plastic material, the heat and compression being carried to an extent to cause at least the outer layers of rubber to cleave to one another.

2. A process in producing a playing-ball, consisting in winding in miscellaneous directions under high tension upon a center piece a multitude of layers of approximately pure acid-cured sheet-rubber which is drawn by the tension to such thinness that the layers pack together to form a solid body, and applying upon said body under heat and compression a cover of gutta-percha, the heat and compression being carried to an extent to cause at least the outer layers of rubber to cleave to one another and also cause the outer layer of rubber to adhere to the gutta-percha cover.

3. A process in producing a playing-ball, consisting in winding under high tension upon a center piece a multitude of layers of approximately pure acid-cured sheet-rubber which is drawn by the tension to such thinness that the layers pack together to form a solid body, and applying upon said body under heat and great compression a cover of plastic material, and maintaining the compression while the cover cools and hardens.

707,426. COMPRESS. MARX M. KERR, Cincinnati, Ohio. Filed Apr. 10, 1902. Serial No. 102,308. (No model.)

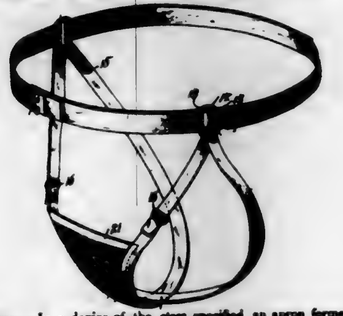

Claim.—In a device of the class specified, an apron formed of a triangular section of netting having reinforced edges, and a supporting device comprising a pair of straps crossing each other at the lower corner of the netting and secured to the opposite edges thereof, said straps having terminal fastening devices at points above the top of the apron, a supporting-belt, adjustable buckles carried by the belt, the straps from each side of the apron at the front of the body extending continuously to the buckle of the belt at the opposite side of the body and thence to the fastening devices above the apron.

707,427. CUFF-HOLDER. WILLIAM C. KEWER, Rochester, N. Y. Filed Aug. 5, 1901. Serial No. 70,977. (No model.)

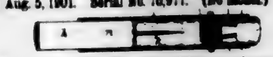

Claim.—1. A cuff-holder comprising an elongated hollow body formed with an opening, and with parallel flanges near one end, a catch-piece shorter than the body held longitudinally between said flanges, and a transverse pintle in the body piercing the catch-piece, with means for turning the latter on said pintle to engage the body, and a pointed shaft or pin adapted to move longitudinally in the body adjacent to said opening in the latter, substantially as and for the purpose specified.

2. A cuff-holder comprising a hollow body having an opening in its side, a pivotal catch-piece held by said body, a sliding piece or slide adapted to move longitudinally within the body, a pin carried by said slide to cross said opening in the body, and means for actuating the catch-piece, substantially as shown and described.

3. A cuff-holder comprising a hollow body formed with a side opening, a pin adapted to move longitudinally in said body to cross said opening, parallel flanges on the body carrying a transverse pintle, a catch-piece held pivotally on said pintle, and a spring controlled by said pintle, with its extreme ends pressing the catch-piece and said body respectively, substantially as and for the purpose specified.

4. A cuff-holder having a body formed with an opening, a catch-piece held pivotally by said body and adapted to engage the latter, a pin adapted to slide longitudinally within the body adjacent to said opening, and means for turning said catch-piece against the body, the catch-piece and said opening being on opposite sides of the body, substantially as shown and described.

5. A cuff-holder comprising a hollow body formed with an opening, a pivotal catch-piece held by the body, a slide adapted to move longitudinally in said body, a pin carried by the slide to cross said opening in the body, and stops to limit the longitudinal motions of said slide, substantially as set forth.

6. A cuff-holder comprising a hollow body formed with an opening, a pivotal catch-piece held by the body, a slide adapted to move longitudinally in said body, a pin carried by the slide to cross said opening in the body, the slide being bent transversely or doubled with ends of unequal length, the longer one projecting from the body and the other confined within the body, substantially as shown and described.

707,428. APPARATUS FOR REMOVING BARK FROM TREES. WELLINGTON P. KINSER, Boston, Mass., assignor, by mesne assignments, to himself, George R. Matthews, and Frank H. Goodyear and Charles W. Goodyear, doing business under the firm-name of F. H. & C. W. Goodyear, Buffalo, N. Y. Filed Nov. 5, 1900. Serial No. 35,562. (No model.)

Claim.—1. In apparatus for removing bark from standing trees, the combination of a tree-engaging, reach-guide support; a reach-guide on said support; a bark-stripper; and a flexible reach attached to said bark-stripper and passing over said guide.

2. In apparatus for removing bark from standing trees, the combination of a pair of independent tree-engaging, reach-guide supports; a reach-guide on each support; a double-ended bark-stripper intermediate said guides; a pair of independent flexible reaches, each attached to the bark-stripper and each passing over a guide.

3. In apparatus for removing bark from trees, a web having a bark-separating edge and a pair of bark-cutters which project forwardly of said web at opposite ends of the web, in combination with a rectangular frame; means for connecting said web to the frame; and a roller journaled in said frame and parallel with said bark-separating edge.

707,429. INSULATOR FOR ELECTRIC WIRES. THEODORE F. KIRK, Nashville, Tenn. Filed Sept. 21, 1901. Serial No. 76,082. (No model.)

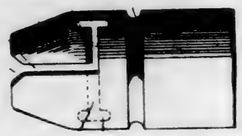

Claim.—An insulator having an opening, or slot, extending from its upper end downward, a lateral slot extending outwardly upon opposite sides of the insulator, said lateral slot terminating in a vertical orifice, or bed, for the wire, said orifice extending upwardly and downwardly upon opposite sides of said lateral slot.

707,480. WATCHCASE. RICHARD KUHN, East Orange, N. J., assignor to GUSTAV BUHRE and ERNST BUHRE, New York, N. Y. Filed Mar. 6, 1902. Serial No. 96,949. (No model.)

Claim.—A watchcase, the body portion of which is composed of a single piece of metal, a flange formed therewith and partly inclosing one

side of the same, said flange having countersinks for the movement-fastenings, and the said body portion being adapted for the attachment of a rear plate and a bezel.

707,481. GATE. ANDREW M. LABOR, Paris, Pa. Filed Mar. 17, 1902. Serial No. 98,594. (No model.)

Claim.—1. The combination of a gate, a support on which the same swings, a supplemental support adjacent to the first-mentioned support but separate and distinct therefrom, and a turning connection between the supplemental support and the free or swinging portion of the gate, whereby the front portion of the gate is sustained by the said supplemental support, and the first-mentioned support is relieved of tendency to sag.

2. The combination of a gate, a support on which the same swings, a supplemental support above the first-mentioned support and separate and distinct therefrom, and a longitudinally-compensating, inclined, turning connection between the supplemental support and the free or swinging portion of the gate, said supplemental support and connection sustaining the free front portion of the gate and relieving the first-mentioned support of tendency to sag.

3. The combination of a gate, a support on which the same swings, a supplemental support adjacent to the first-mentioned support but independent thereof, a rope movable over the supplemental support and connected at one end to the free or swinging portion of the gate, and a weight secured to the opposite end of the rope and exerting a constant pull thereon, said weight being of sufficient size to counterbalance the forward or swinging portion of the gate and thereby relieve the support upon which the gate swings of tendency to sag.

4. The combination of a gate, a post on which the gate swings, a supplemental post adjacent to the first-mentioned post but separate and distinct therefrom, a pulley in said supplemental post and a second pulley at the rear thereof, a line extending over said pulleys and at its forward end connected to the swinging portion of the gate, and a weight on the opposite end of the line.

5. The combination of a swinging gate, a support at the hinged end of the gate, a weighted rope movable over the support and connected to the gate, a vertically-oscillating latch on the gate, an upwardly-extending lever adapted to oscillate laterally on the latch, the upper end of said lever being connected to the said rope, and means for exerting lateral pull on the rope.

6. The combination of a swinging gate including a gate-post, posts 14, 15 and 16 at one side of the roadway and substantially in line with the gate-post, the gate being adapted to open against post 14, rope 26 extending from the gate to post 15, rope 27 extending from the gate to post 14 and from thence to post 16, gate latch mechanism, and an operative connection between the same and the gate ends of ropes 26 and 27.

7. The combination of a swinging gate including a gate-post, post 14 against which the gate opens, a gravity-latch on post 14 adapted to automatically engage the gate and hold it open, longitudinally-movable rod 30, and a cam device on said rod adapted to be moved thereby beneath and elevate the gravity-latch.

707,482. COMBINED AXLE-SEAT AND SHIELD FOR GUN-CARRIAGES. OTTO LAUBER and FRIEDRICH STOCK, Essen, Germany, assignors to Fried. Krupp, Essen, Germany. Filed Sept. 13, 1901. Serial No. 75,302. (No model.)

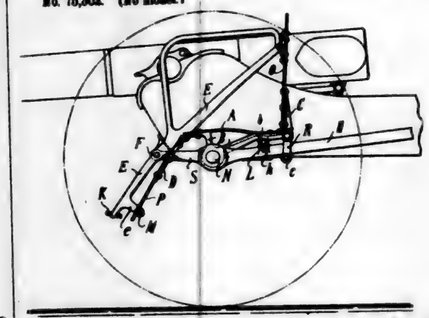

Claim.—1. In a wheeled gun-carriage, the combination with a plate revoluble on the carriage, of plates permanently hinged at their inner ends to said revoluble plate, and means locking the plates either in a bent position to form a seat or in a nearly-extended position to form a shield, substantially as specified.

2. In wheeled gun-carriages the combination of a seat-plate revoluble on the carriage, a back plate hinged to said seat-plate, arm-supports hinged to the back plate and to the carriage, the seat, back, arm-supports and carriage forming a jointed quadrangle, and means for rigidly connecting two adjacent sides of the jointed quadrangle, both in the bent and nearly-extended position of the seat and back plate, substantially as specified.

3. In wheeled gun-carriages the combination of a seat-plate revoluble on the carriage, a back plate hinged to said seat-plate, arm-supports hinged to the back plate and to the carriage, a leg-support plate hinged to the seat-plate and having sliding connection with the arm-supports, the seat, back, arm-supports and carriage forming a jointed quadrangle, and means for rigidly connecting two adjacent sides of the jointed quadrangle, both in the bent and in the nearly-extended position of the seat, back and leg-support plate, substantially as specified.

707,438. SHADE-SUPPORT. ERNEST A. LIVET, London, England, assignor to the Hiram Maxim Lamp Company, Limited, London, England. Filed Mar. 19, 1901. Serial No. 51,691. (No model.)

Claim.—1. The herein-described means for directly and detachably affixing a shade, reflector, or screen to an electric-lamp bulb, said means consisting of longitudinally-extensible helical springs attached in tension and in one place to the shade, reflector or screen, and occupying therein the position of the sides of an inscribed regular polygon, so as to be capable of being stretched and deflected in order to pass over the part of the bulb of greatest diameter, and of contracting about the neck of the bulb so as to retain the shade, reflector or screen in position thereon, substantially, as specified.

2. The combination with means for attaching a shade, reflector, or screen to an electric-lamp bulb consisting of spiral springs distended in the form of a regular polygon and carried by the shade, reflector or screen, of means of steadying the latter consisting of an eye carried by the shade, reflector or screen and adapted to receive the sealing-off point of the bulb, substantially, as specified.

3. The combination with a shade reflector or screen for electric lamps, of spiral springs carried by the shade reflector or screen and distended in the form of a polygon so as to be capable of being stretched or deflected in order to pass over the part of the bulb of greatest diameter and of contracting about the neck of the bulb, as set forth.

707,484. PROCESS OF MAKING PIGMENTS. JOSEPH LOWES Smethwick, England, assignor of two-thirds to Jabez Lowes and Edward Holden, Smethwick, England. Filed Dec. 5, 1901. Serial No. 84,616. (No specimens.)

Claim.—1. A process of manufacturing white pigments from zinc ores which consists in converting the ore into crude zinc oxid, suitably dissolving the oxid to form a solution of acetate of zinc, precipitating from the said solution any lead which may be contained therein, crystallizing out of the solution zinc acetate, suitably dissolving the crystals, precipitating from the said solution zinc sulfid, and then suitably treating the zinc sulfid to form a pigment.

2. A process of manufacturing white pigments from ores or compounds containing zinc which consists in heating the zinc ore so as to convert it into crude zinc oxid, dissolving the said zinc oxid in strong hot acetate acid so as to form a solution of acetate of zinc, then precipitating from the clear liquid any lead which the zinc ore may have contained and which the acetate acid may have dissolved, by the addition to the solution of sheet-zinc, crystallizing out of the solution zinc acetate, dissolving the crystals in water, passing sulfureted hydrogen into the solution thereby precipitating the zinc as zinc sulfid and then treating the zinc sulfid with free sulfur out of contact with air forming thereby a white pigment.

707,485. STEERING-GEAR FOR AUTOMOBILES. JOHN G. MACPHERSON, Philadelphia, Pa., assignor to MacPherson Automobile Company, Philadelphia, Pa. Filed Oct. 28, 1901. Serial No. 80,120. (No model.)

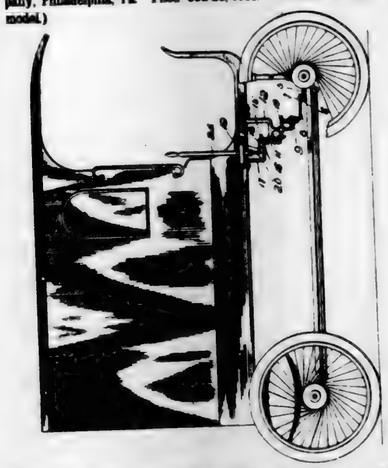

Claim.—1. In combination with a vehicle, of a steering-gear therefor comprising a hand-lever, a bell-crank lever operated thereby, a segmental gear operated by said bell-crank lever, a vertical shaft, a gear carried thereby and meshing with said segmental gear, a worm-gear operated by said shaft, a large gear meshing with said worm-gear, and means operated by said large gear to steer the front wheels of the vehicle.

2. In combination with a vehicle of a steering-gear therefor comprising a hand-lever, a bell-crank lever operated thereby, a segmental gear operated by said bell-crank lever, a vertical shaft, a gear carried thereby and meshing with said segmental gear, a worm-gear operated by said shaft, a large gear meshing with said worm-gear, a rod or arm connected to said large gear, and means connected to said arm for steering the front wheels of the vehicle.

3. In combination with a vehicle of a steering-gear therefor comprising a hand-lever, a bell-crank lever operated thereby, a segmental gear operated by said bell-crank lever, a vertical shaft, a gear carried thereby and meshing with said segmental gear, a worm-gear operated by said shaft, a large gear meshing with said worm-gear, a rod or arm connected to said large gear, a connecting-rod connected to said arm, and levers carried by the front wheels' axles connected to the connecting-rod so as to be moved in unison.

707,486. LACE-MACHINE. CHARLES MARTIN, Nottingham, England. Filed Nov. 17, 1900. Serial No. 36,900. (No model.)

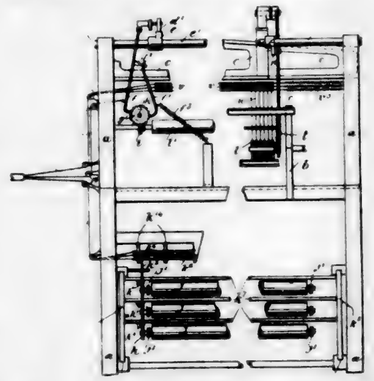

Claim.—1. In a lace-machine, the combination of devices for turning the work-beam in either direction, devices for turning the warp-beams in a backward direction, a jacquard for controlling said devices, and means for partially rotating the bobbins to take up slack threads, substantially as described.

2. In a lace-machine, the combination of the lace-beam, a worm-wheel thereon, a worm, worm-spindle, a pair of clawkers for turning said wheels in opposite directions, a spring for drawing one of said clawkers into engagement with its ratchet, and jacquard mechanism for disengaging said clawkers and bringing the other one into action at the proper times, substantially as described.

3. In a lace-machine, the combination of the warp-beams, ratchet-wheels at the ends of said beams, pawls engaging said ratchet-wheels, and jacquard mechanism for controlling the engagement of said pawls, substantially as described.

4. In a lace-machine, the combination of the warp-beams, beam-arms carrying the same, ratchet-wheels on said beams, pawls engaging said ratchet-wheels, means for connecting said pawls with spring-controlled sliding plates, and jacquard mechanism for operating said sliding plates, substantially as described.

5. In a lace-machine, the combination of the bobbins, the bobbin-carriers, pivoted grippers adapted to clip the edges of said bobbins, means for reciprocating said grippers, and jacquard mechanism for causing said grippers to act on the bobbins, substantially as described.

6. In a lace-machine, the combination of the bobbins, the bobbin-carriers, a catch-bar therefor, teeth on said catch-bar for properly spacing said bobbins, spring-grippers for engaging said bobbins above their centers, and means for operating said grippers, substantially as described.

7. In a lace-machine, the combination of the bobbins, grippers for engaging the same having bifurcated spring ends, a carrier-bar in which said grippers are pivoted, mechanism for reciprocating said carrier-bar from the main cam-shaft of the machine, jacquard wires connected to said grippers, spring-controlled sliding plates to which said wires are connected, and jacquard mechanism for operating said plates, substantially as described.

707,487. HOT-AIR FURNACE. THOMAS J. MARCH, Pottstown, Pa. Filed Feb. 5, 1902. Serial No. 92,729. (No model.)

Claim.—1. In a furnace, the combination with a combustion-cham-

ber, of a series of hot-air tubes abutting against the combustion-chamber and open at their lower ends, a plate covering the upper ends of said hot-air chambers, and means on said plate for the direct connection with said chambers of hot-air-circulating flues.

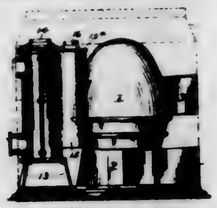

2. In a furnace, the combination with a combustion-chamber and a drum located a short distance from and communicating with said combustion-chamber, of hot-air chambers located between and abutting against the combustion-chamber and said drum, said chambers open at their lower ends, means at the upper ends of said chambers for the direct attachment of hot-air flues, a sleeve or tube extending through the said drum and open at both ends, and means at the upper end of said sleeve or tube for the direct attachment of a hot-air flue.

3. In a furnace, the combination with a furnace-casing and a combustion-chamber therein, of a drum located near the combustion-chamber and communicating therewith, a sleeve or tube open at its ends and located in said drum, said sleeve having flaring ends closing the ends of the chamber between said sleeve or tube and the wall of the drum, a cap on the upper end of said drum, communicating with the sleeve or tube and means on said cap for the direct attachment of a hot-air flue.

4. In a furnace, the combination with a combustion-chamber and an inclosing casing, of a sleeve forming a hot-air chamber, an annular chamber inclosing the sleeve and having an inlet and an outlet at its upper end on opposite sides thereof, a partition or partitions projecting down a proper distance into said annular chamber, a flue connecting the inlet of said annular chamber with the combustion-chamber, and a funneled cap on said sleeve adapted to be connected with a hot-air flue.

707,438. MEDICAL ELECTRODE. GEORGE G. MARSHALL, Wallingford, Vt. Filed May 2, 1902. Serial No. 105,630. (No model.)

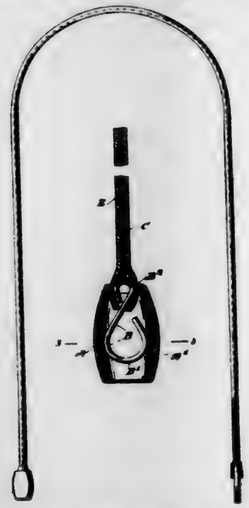

Claim.—1. An electrode comprising a cap of non-conducting material, having a passage from one end of the cap to the other, and a metallic conductor held in the said cap and adapted to pass into the said passage at the large end thereof, and held against outward movement through the small end of the passage by the sides of the conductor engaging the side walls of the passage between the ends, as set forth.

2. An electrode comprising a cap of non-conducting material and having a tapering opening or passage, and a metallic conductor held in the said cap and engaging the walls of the passage at the widest portion thereof, as set forth.

3. An electrode comprising a cap having an opening or passage lengthwise through the cap, and a conductor removably held in the said passage, as set forth.

4. An electrode comprising a cap of non-conducting material, formed with an opening or passage contracted at one end, and a conductor in the cap, engaging the walls of the passage, the reduced outer end of the said conductor extending through an end opening of the cap, as set forth.

5. An electrode comprising a cap of non-conducting material, formed with a tapering opening, and a conductor in the form of a tapering metallic plate, engaging the side walls of the opening, between the ends of the opening, as set forth.

6. An electrode comprising a cap of non-conducting material, formed with a tapering opening, and a conductor in the form of a tapering metallic plate, engaging the side walls of the opening, between the ends of the opening, the plate having a shank and a nut screwing thereon and seated on the cap at the reduced end of the opening, as set forth.

707,439. CARRIAGE-POLE ATTACHMENT. PATRICK MASTERSON, Newington, Canada. Filed Feb. 8, 1902. Serial No. 93,194. (No model.)

Claim.—1. The combination with the pole and cross-arm, of a pair of converging draw-rods having suitable sockets at their rear ends, braces secured at their front ends to said pole and formed with enlarged portions at their rear ends, said enlarged portions being bent to form guideways for said draw-rods, means for securing the outer ends of said braces to said cross-arm, and means for securing said draw-rods adjustably in said guideways as and for the purpose specified.

2. The combination with the pole and cross-arm of a pair of draw-rods having suitable sockets at their rear ends, braces secured at their front ends to said pole and formed at their rear ends with enlarged portions said enlarged portions being bent to form guideways for said draw-rods, and flat portions to overlap said cross-arm, screws or bolts passing through said flat portions and said cross-piece and set-screws extending through said enlarged portion of the braces to hold said adjustable draw-rods in position as and for the purpose specified.

3. The combination with the pole and cross-arm, of a pair of adjustable draw-rods having recesses formed therein, the distance of each of said recesses on one rod from the end of its rod, being equal to the distance of a corresponding recess on the other rod from the end of its rod, braces secured at their front ends to said pole and formed with enlarged portions at their outer ends, said enlarged portions being bent to form guideways for said draw-rods and flat portions to overlap said cross-arm, screws or bolts to secure said flat portions to said cross-arm and set-screws extending through said enlarged portion and engaging the recesses in said draw-rods as and for the purpose specified.

707,440. WATER-TUBE STEAM-BOILER. ALFRED MEILBORN, Dietrichsdorf, Germany. Filed Mar. 28, 1902. Serial No. 100,467. (No model.)

Claim.—1. In a steam-generator, the combination with lower drums or compartments *a*, *e*, *i*, and upper drums or compartments *b*, *f*, of a series of heating-tubes I, connecting the compartments *a*, *b*, a series of heating-tubes II connecting the compartments *e*, *f*, a series of heating-tubes III connecting the compartments *f*, *i*; pipes *c*, *d*, connecting compartments *a*, *e*, with compartment *b*; pipe *g* connecting compartments *e*, *f*, and pipe *h* connecting the compartment *i* and pipe *g*, the various series of heating-tubes being so arranged that the series III will be acted upon first by the heating-gases, and the other series II, I, in succession thereafter and said heating-gases caused to take a direction contrary to that of the water.

2. In a steam-generator, the combination with the masonry, of lower drums or compartments *a*, *e*, *i*, and upper drums or compartments *b*, *f*, arranged within the space inclosed by the masonry, a series of heating-tubes I connecting the compartments *a*, *b*, a series of heating-tubes II connecting the compartments *e*, *f*, a series of heating-tubes III connecting the compartments *f*, *i*; pipes *c*, *d*, connecting compartments *a*, *e*, with compartment *b*; pipe *g*, connecting compartments *e*, *f*, and pipe *h* connecting the compartment *i* and pipe *g*, said pipes *c*, *d*, *g*, *h*, being arranged outside of the masonry, the various series of heating-tubes I, II, III, being so arranged that the series III will be acted upon first by the heating-gases, and the other series II I in succession thereafter, and said heating-gases being caused to take a direction contrary to that of the water.

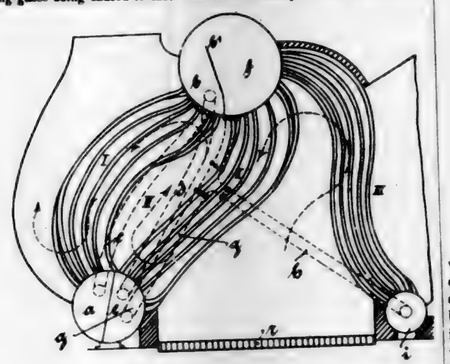

707,441. TELEPHONE-RECEIVER. LEMUEL MELLETT, Somerville, Mass., assignor to the American Otophone Company, Boston, Mass., a Corporation of Maine. Filed July 5, 1901. Serial No. 67,080. (No model.)

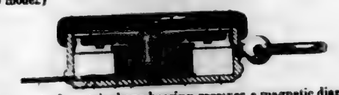

Claim.—1. In a telephone hearing-receiver, a magnetic diaphragm, electromagnetic means exerting attraction on said diaphragm, the receiver being provided with such means on one side only of the diaphragm, spring means exerting an outward pressure on the diaphragm in opposition to the magnetic attraction, and spring means exerting inward pressure on the diaphragm in opposition to the pressure of the first said spring means, substantially as and for the purpose described.

2. In a telephone hearing-receiver, a magnetic diaphragm free at its edges, a magnet coöperating with the diaphragm on one side thereof and springs acting in opposition to each other on the diaphragm.

3. In a telephone hearing-receiver, a magnetic diaphragm, a magnet coöperating with said diaphragm on one side thereof, a spring on the inner side of the diaphragm acting in opposition to the attraction of the magnet, a spring on the outer side of the diaphragm acting in opposition to the first said spring, and an apertured cover for the outer side of the diaphragm forming an outer support for the last said spring.

4. In a telephone-receiver, a diaphragm, a magnet operating behind the diaphragm to directly vibrate the same, and a series of differently-tuned harmonic vibrators located behind the diaphragm.

707,442. BRAKE FOR MOTOR-SHAFTS OF ELEVATORS. EDWARD W. MOOR, St. Louis, Mo. Filed Mar. 7, 1902. Serial No. 97,102. (No model.)

Claim.—1. In a brake of the class described, the combination with a brake-wheel, of a pair of brake-straps located at the rim of said wheel, a rock-shaft, a pair of inner cam members having connection with said brake-straps and through which said rock-shaft passes, and a pair of outer cam members non-rotatably mounted on said rock-shaft and arranged in engagement with said inner cam members, substantially as described.

2. In a brake of the class described, the combination with a brake-wheel, of a pair of brake-straps located at the rim of said wheel, a rock-shaft, a pair of inner cam members having connection with said brake-straps and through which said rock-shaft passes, a pair of outer cam members non-rotatably mounted on said rock-shaft and arranged in engagement with said inner cam members, and an expansible spring located between said inner cam members, substantially as described.

3. In a brake of the class described, the combination with a brake-wheel, of a pair of brake-straps located at the rim of said wheel, a pair of inner cam members having inclined faces and connected to said brake-straps, a spring located between said inner cam members, outer cam members having inclined faces arranged to engage the inclined faces of said inner cam members, and a rock-shaft passing loosely through said inner cam members and having non-rotative connection with said outer cam members, substantially as described.

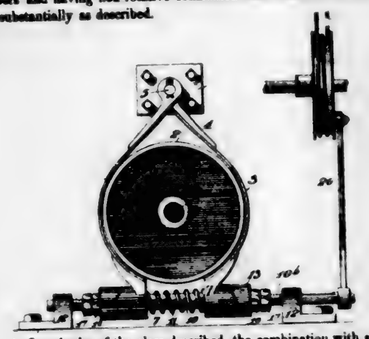

4. In a brake of the class described, the combination with a brake-wheel, of a pair of brake-straps located at the rim of said wheel, a pair of inner cam members having inclined faces and connected to said brake-straps, a spring located between said inner cam members, outer cam members having inclined faces arranged to engage the inclined faces of said inner cam members, a rock-shaft passing loosely through said inner cam members and having non-rotative connection with said outer cam members, and means on said rock-shaft for adjusting said outer cam members to said inner cam members, substantially as described.

707,448. DISH-WASHING APPARATUS. JOSEPH D. MORLEY, Lake Pleasant, N. Y. Filed Dec. 14, 1901. Serial No. 85,906. (No model.)

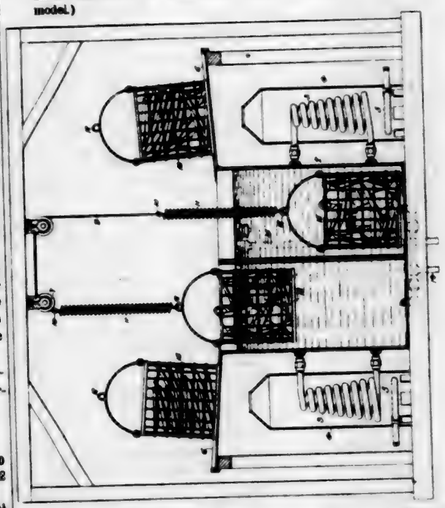

Claim.—1. The combination in dish-washing apparatus, of a tank for containing wash-water, a dish-receptacle movable up and down in said tank, and a reciprocable suspension device for said receptacle having as one of its elements a vertically expansible and contractible spring, substantially as specified.

2. The combination in dish-washing apparatus, of a tank for containing wash-water, a circular dish-receptacle movable up and down in said tank, and a supporting device from which said receptacle is suspended by means of an eye, whereby it is free to turn back and forth, said suspension device being also susceptible of up-and-down movement, substantially as specified.

3. The combination in dish-washing apparatus, of a tank for containing wash-water, a dish-receptacle movable up and down in said tank, and a suspension device on which said receptacle is mounted so as to be free to turn back and forth, said suspension device being also susceptible

of up-and-down movement, and having as an element a spring capable of expanding and contracting vertically, substantially as specified.

4. The combination in dish-washing apparatus, of a pair of tanks located side by side, one for containing wash-water and the other for containing rinse-water, a pair of dish-receptacles, one in each tank, and a suspension device extending from one dish-receptacle to the other, whereby one is caused to counterbalance the other, and up-and-down movements of the receptacle can be readily effected by hand, substantially as specified.

5. The combination in dish-washing apparatus, of a pair of tanks located side by side, one for containing wash-water and the other for rinse-water, a pair of dish-receptacles one in each tank, a pair of pulleys located one above each tank and a flexible connection passing over said pulleys and having a dish-receptacle suspended from each end, substantially as specified.

6. The combination in dish-washing apparatus, of a pair of tanks located side by side, one for containing wash-water and the other for rinse-water, a pair of dish-receptacles one in each tank, a pair of pulleys located one above each tank and a flexible connection passing over said pulleys and having a dish-receptacle suspended from each end by means of a coiled spring, substantially as specified.

7. The combination in dish-washing apparatus, of a pair of tanks disposed side by side, one for containing wash-water and the other for containing rinse-water, a pair of dish-receptacles one in each tank, a pair of pulleys located one above each tank, and a flexible connection passing over said pulleys and having a dish-receptacle suspended from each end of it, said flexible connection having enlargements whereby its movement over the pulleys is restricted, substantially as specified.

707,444. MASONRY WALL AND BRICKS FOR SAME. ALFRED H. MOSES, St. Louis, Mo., assignor to J. H. Moses & Co., St. Louis, Mo. Filed Oct. 10, 1901. Serial No. 78,263. (No model.)

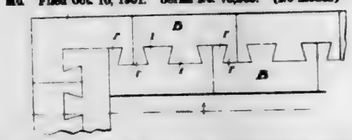

Claim.—1. In a wall, a brick having a series of tongues and grooves disposed on one of the vertical faces thereof, and suitable marginal grooves for "pointing" purposes, substantially as set forth.

2. A wall composed of a series of layers or courses interlocking along their vertical faces with a similar adjacent series, the individual bricks being provided with alining openings disposed parallel to each interlocking face and collectively forming flues through the completed wall, substantially as set forth.

3. A wall composed of a series of layers or courses of brick, a second adjacent and similar series, and keys disposed in different planes from said courses for locking the series together, substantially as set forth.

4. In a wall, a brick having a series of tongues and grooves disposed on one of the vertical faces thereof, a series of marginal grooves along the opposite vertical face, and an additional dovetail groove disposed along the face of the brick, substantially as set forth.

5. In a wall having a series of interlocking and overlapping bricks, a corner-brick having its faces disposed at an angle to one another, and having a groove on the inner face of one member thereof, said groove being adapted to receive the adjacent ends of the abutting bricks located at the corner of the wall, substantially as set forth.

6. In a wall, a corner-brick having its faces disposed at an angle to one another and having grooves disposed along the inner faces of its respective members adapted to interlock simultaneously with corresponding tongues of the adjacent bricks of two courses of the walls meeting at such corner, substantially as set forth.

7. A wall comprising a series of overlapping bricks interlocking with one another by tongues and grooves disposed along the vertical faces of the bricks, in combination with corner-bricks, one member of each of which is provided with a groove on the inner face thereof for the reception of the adjacent ends of the abutting bricks located at the corner of the wall, substantially as set forth.

8. In a wall, a brick having a dovetail groove disposed on one of the vertical faces thereof, terminal fractional tongues forming the outer bounding walls of the groove, and a tongue or lug projecting from one end of the brick adapted to lock with the vertical member of a window-frame, substantially as set forth.

707,445. INHALER. JOHN H. MCCULLOCH, Sewerville, Pa. Filed Apr. 10, 1902. Serial No. 102,310. (No model.)

Claim.—1. A medicator, comprising parallel side nasal tubes, and a mouth-tube communicating therewith and rotating upon an axis transverse to the side tubes, whereby said mouth-tube may be folded to lie in the same plane with the side tubes; substantially as described.

2. A medicator, comprising parallel side nasal tubes, and an intermediate mouthpiece having transverse oppositely-projecting tubes, communicating with and pivotally attached to the side tubes; substantially as described.

3. A medicator, comprising parallel side nasal tubes with projecting lower portions, and a mouth-tube having projecting lower portions adapted to rotatably engage the said projecting lower portions; substantially as described.

4. A medicator, comprising parallel side nasal tubes, elbows to which the same are attached, a mouth-tube having projecting lower portions pivotally attached to said elbows; substantially as described.

5. A medicator, comprising parallel side nasal tubes having projecting lower portions with a peripheral opening, and a mouth-tube, having projections rotatably secured to said projecting lower portions, and having a peripheral opening registering with the peripheral opening in the projecting lower portion of the nasal tube; substantially as described.

707,446. BOX OF BUILDING MATERIAL. OTTO NESTWIG, Neustadt, Germany. Filed Sept. 5, 1901. Serial No. 74,447. (No model.)

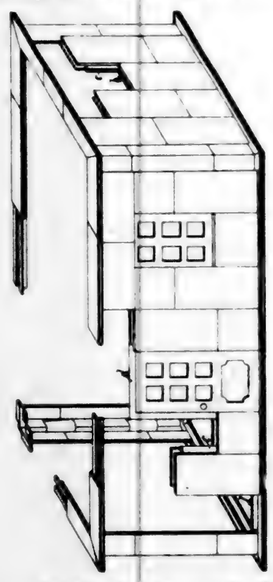

Claim.—1. Toy building-blocks representing wall-surfaces, doors, windows, and roof-covering having tongues and grooves on their respective edges, in combination with T-shaped strips, whose stem or tongue portion is adapted to fit the grooves of the said blocks and hold them in line, substantially as and for the purposes set forth.

2. Toy building-blocks representing wall-surfaces, doors, windows, and roof-covering having tongues and grooves, in combination with T-shaped strips, whose stem or tongue portion is adapted to fit the grooves of the said blocks and hold them in line, of channeled bars adapted to slide over the flange portion of the T-shaped strip and rigidly tie the same together, substantially as and for the purposes set forth.

3. Toy building-blocks representing wall-surfaces, doors, windows, and roof-coverings having tongues and grooves, in combination with corner-blocks provided with hollow tongues adapted to fit the grooves of the said building-blocks and hold them in line vertically, and splice-plates fitting the said hollow tongues of the corner-blocks, substantially as and for the purposes set forth.

707,447. RAIL-JOINT. DANIEL H. NOBLE, Sheridan, Mont. Filed Oct. 18 1901. Serial No. 79,099. (No model.)

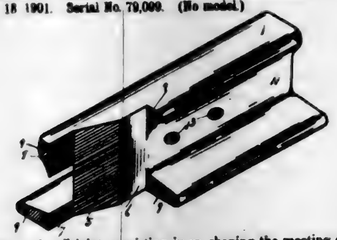

Claim.—A rail-joint consisting in so shaping the meeting ends of each rail that each end will be provided with an obliquely-disposed surface 5 in its central or rib portion, each rail also having the longitudinally-disposed surfaces 6, 7 and 8 paralleling each other, each rail being further provided with the transversely-disposed surfaces 9, said parts on each rail being parallel with the parts on the other rail all substantially as specified and for the purpose set forth.

707,448. WATER DISTRIBUTION. WESLEY O'NEILL and WILLIAM H. GORDON, Russellville, Pa. Filed June 24, 1901. Serial No. 65,734. (No model.)

Claim.—1. The combination with the tank A; of the water-supply pipe C; the valve-casing D, fixed in communication with said supply-pipe, and provided with the main port D'; the lever fulcrumed on said casing; the valve-head D^2, upon said lever arranged to register with said port D'; the vent-port d^3, in said lever; the pipe D^3, connecting said port d^3, with the atmosphere; and the flexible connectors E, E', operatively attached to said pipe D^3, upon the opposite sides thereof, substantially as set forth.

2. In a valve, the combination with a casing provided with a main port; of a bracket-arm projecting from said casing; a lever fulcrumed in said bracket-arm; a valve-head upon said lever arranged to register with said main port; a vent-port extending through said valve-head and lever, in communication with the atmosphere; and flexible connectors attached to the opposite sides of said vent-pipe, substantially as set forth.

3. In a valve, the combination with a casing provided with a main port; of a bracket-arm projecting from said casing; a lever fulcrumed in said bracket-arm; a valve-head upon said lever arranged to register with said main port; a vent-port extending through said valve-head and lever, in communication with the atmosphere; and an abutment fixed upon said casing to limit the motion of said valve-head with respect to said main port, substantially as set forth.

4. In a valve, the combination with a casing provided with a main port; of a bracket-arm projecting from said casing; a lever fulcrumed in said bracket-arm; a valve-head upon said lever arranged to register with said main port; a vent-port extending through said valve-head and lever, in communication with the atmosphere; an abutment fixed upon the bracket-arm of said casing, arranged to limit the motion of said valve-head with respect to said main port; and guides upon said valve-casing for said valve-head, substantially as set forth.

707,449. WINDOW-SCREEN. OVIDE OUELLETTE, Lowell, Mass. Filed Dec. 5, 1901. Serial No. 84,776. (No model.)

Claim.—1. A window-sash having screen-guides on its inner side, and a screen having runners engaged frictionally with said guides, whereby the screen may be raised and lowered either with the sash or independently thereof.

2. A window-sash having screen-guides on its inner side, a screen having runners engaged with said guides, and adapted to be raised or lowered either with the sash or independently thereof, and a flexible continuous inwardly-projecting guard on the bottom rail of the sash, formed to bear yieldingly on the outer side of the screen.

3. A window-sash having screen-guides on its inner side, a screen having runners engaged with said guides, and flexible guards on the edges of the screen, formed to bear on the window-casing.

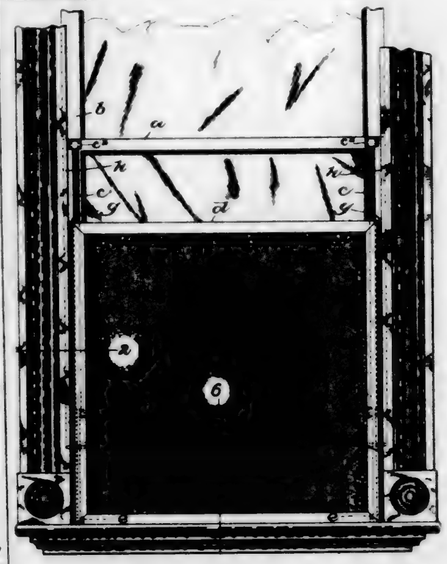

4. A window-sash having screen-guides on its inner side, a screen having runners engaged frictionally with said guides, and flexible guards on the bottom rail of the sash, formed to bear yieldingly on the outer side of the screen, and flexible guards on the edges of the screen, formed to bear on the window-casing.

5. A window-sash having slots in the bottom of its lower rail, detents on the top of its meeting-rail, and sash-guides having boot ears at their lower ends formed to enter said slots, and spring-hooks at their upper ends formed to spring into engagement with said detents.

6. A window-sash having screen-guides on its inner side, and a screen having runners engaged with said slides, said runners having hooks at their ends adapted to detachably engage the upper and lower ends of the screen.

707,450. PHOTOGRAPHIC DEVELOPING APPARATUS. EMILE REMAILHO, Paris, France. Filed Nov. 15, 1897. Serial No. 658,553. (No model.)

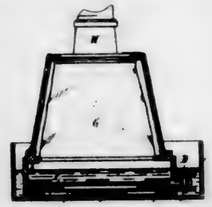

Claim.—1. A holder for use in developing photographic negatives in full daylight, comprising a frame provided with a closable opening to admit a photographic plate and having passages arranged to admit liquid from the exterior of the frame to the interior thereof and at the same time prevent light from entering within the frame, a dark chamber combined with said frame and having a closable inspection-aperture at the end opposite to the frame and a non-actinic glass plate forming the bottom of the frame and secured in grooves therein, substantially as set forth.

2. A holder for use in developing photographic negatives in full daylight, comprising a frame with a closable opening through which a photographic plate is adapted to be inserted and having passages arranged to admit liquid from the exterior of the frame to the interior thereof and at the same time prevent light from entering within the frame, means for sealing said closable opening against the admission of light after the photographic plate has been inserted and a non-actinic glass plate forming the bottom of the frame and secured in grooves in the latter, substantially as set forth.

3. A holder for use in developing photographic negatives in full

daylight, comprising a frame having passages arranged to admit liquid from the exterior of the frame to the interior thereof and at the same time prevent light from entering within the frame, a projection on the frame having an opening through which the plate is adapted to be inserted, a plug having a slot to correspond to the width and thickness of the plate and adapted to register with an opening in the projection, and a non-actinic glass plate forming the bottom of the frame and secured in grooves in the latter, substantially as set forth.

4. A holder for use in developing photographic negatives in full daylight, comprising a frame with a closable opening to admit a photographic plate and having passages arranged to admit liquid from the exterior of the frame to the interior thereof and at the same time prevent light from entering within the frame, and a non-actinic glass plate forming the bottom of the frame and secured in grooves in the latter, in combination with a second frame into which the first frame is adapted to be placed, and a receptacle M carried by said second frame, all as and for the purposes specified.

5. A holder for use in developing photographic negatives in full daylight, comprising a frame with a closable opening to admit a photographic plate and having passages arranged to admit liquid from the exterior of the frame to the interior thereof and at the same time prevent light from entering within the frame, and a non-actinic glass plate forming the bottom of the frame and secured in grooves in the latter, in combination with a second frame into which the first frame is adapted to be placed and means for detachably securing the two frames together.

707,451. FOLDING UMBRELLA. ADAM SCHAEFER and FREDERICK SCHAEFER, Williamsport, Pa. Filed Feb. 23, 1903. Serial No. 96,161. (No model.)

Claim.—1. A folding umbrella, comprising a stick composed of an outer and an inner tubular member, a tubular cap-piece fixedly secured upon the upper end of the outer tubular member, extensible ribs pivotally secured to said cap-piece, the inner and outer tubular members each including an upper and a lower section, the lower sections of the said inner and outer tubular members being fixedly connected, the two sections of the inner member having a hinged joint, the upper section of the outer member with its attached cap being slidable upon the upper end of the inner tubular member, whereby to project above the tip end of the stick when the parts are folded, the cover secured to the cap, a single runner slidable on the stick, the braces joined with the said runner and the extensible ribs, and spring-actuated detents, one on the upper and one on the lower end of the stick for coöperating with the single runner, all being arranged substantially as shown and for the purposes described.

2. A foldable umbrella, comprising in combination, a stick consisting of an outer tubular member, formed of an upper and a lower section a single runner slidable upon the stick, a detent on the lower section for engaging with the runner when the latter is pulled down, a tubular cap-piece fixedly mounted on the upper end of the outer tubular member, the other section of said outer tubular member having an upper slot 18 and a lower slot 18ª, an inner tubular member slidable within the outer tubular member, and composed of an upper and a lower section, the two sections being hinged together, and the lower section fixedly joined with the lower section of the outer tubular member, a spring-detent mounted on the upper section of the said inner member, adapted to project through the slot 18 of the outer member, when the inner and outer members are adjusted in vertical alinement, a spring-detent on the lower section of the inner member, adapted to engage the slot 18 of the outer member, and lock the lower section of the inner member with the upper section of the outer member, whereby to hold the inner and outer stick portions from movement upon each other, said detents being arranged to automatically extend within the tubular member when the stick portions are adjusted to their folded position, the extensible ribs secured to the tubular cap-piece, the cover secured to said cap and ribs, and the brace secured to the single runner and the ribs, all being arranged substantially as shown and for the purposes described.

707,452. VALVE-MOTION. GEORGE M. SEWELL, Birmingham, Ala. Filed Oct. 9, 1901. Serial No. 77,975. (No model.)

Claim.—1. The combination with the cylinder, cylinder-heads, inclosed piston-head, exhaust-recesses in the inner faces of said cylinder heads, having valve-seats, exhaust-valves working in said recesses, coiled springs attached to the front ends of said valves, stems secured to the valves, cross-heads attached to the valve-stems, connecting-rods secured to the cross-heads, cavities or grooves in the outer faces of the cylinder-heads adapted to receive the cross-heads, passages leading from the exhaust-recesses in the cylinder-heads through the same, a jacket or casing partly or wholly inclosing the steam-cylinder, said casing inclosing an exhaust-steam-cylinder heating-space, having communication with exhaust-passages in the cylinder-heads, an opening in said jacket or casing communicating with the atmosphere or condenser, and means for alternately admitting live steam to each end of the cylinder, substantially as shown and described.

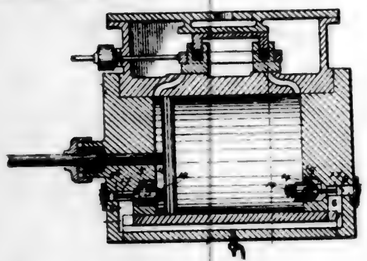

2. The combination with a steam-cylinder having cylinder-heads and inclosed piston, of exhaust recesses or cavities in the cylinder-heads, valve-seats in the said exhaust-recesses, scallops or pockets adjacent to and surrounding said valve-seats, exhaust-valves comprising a head, coiled springs secured to the head of said exhaust-valves and projecting forwardly therefrom, a stem projecting rearwardly from the valve-heads, cross-heads secured to the valve-stems, a cavity or groove in the rear face of each cylinder-head, adapted to receive the cross-heads, passages leading from the exhaust-recesses, downwardly and forwardly through the cylinder-heads, exhaust-steam spaces surrounding the cylinder and communicating with the exhaust-passages, rods connecting the cross-heads of the exhaust-valves, said rods passing through the cylinder-heads and within the exhaust-steam space surrounding the cylinder, and means substantially as described for admitting steam alternately to the ends of the cylinder.

3. In a steam-engine, the combination with a cylinder and cylinder-heads, exhaust-recesses in said heads, passages leading from the recesses through the cylinder-heads, valve-seats in said recesses, scallops or pockets adjacent to and surrounding said valve-seats, and an inclosed piston, of exhaust-valves adapted to be seated in said valve-seats, and each having rearwardly-extending stem, cross-heads attached to the stems, and rods connecting the said cross-heads, whereby the valves are adapted to be alternately opened and closed by the impact of the piston against the faces of said valves.

4. A steam-engine comprising a cylinder, cylinder-heads, a jacket separated from and surrounding said cylinder, exhaust-recesses in the cylinder-heads communicating with the space formed between the jacket and the cylinder, a piston, and steam-chest provided with a steam-inlet, exhaust-valves in said exhaust-recesses, rods connecting said exhaust-valves, whereby the said valves are adapted to alternately open and close, and means in the steam-chest for admitting steam directly therefrom, alternately to the ends of the cylinder.

5. In a steam-engine, cylinder-head exhaust-valves located in each cylinder-head and adapted to alternately project into the cylinder, said valves each consisting of a head, a stem and a spring projecting forwardly from the face of the valve into the cylinder, said projecting springs being adapted to receive the impact of the piston-head and be compressed thereby, whereby the exhaust-valves will be gently moved to their seats, and rods connecting said exhaust-valves.

6. In a steam-engine, the combination with a cylinder, cylinder-heads, inclosed piston, exhaust-passages in the cylinder-heads, valve-seats in the said exhaust-passages, scallops or pockets adjacent to and surrounding said valve-seats, of exhaust-valves comprising a head, a stem, forwardly-projecting compressible cushions secured to the front face of the valve, and rods connecting the said valves, whereby they are adapted to alternately open and close the exhaust-passages in the cylinder-heads by the impact of a piston.

7. A cylinder having its heads provided with sockets in their inner faces adapted to receive exhaust-valves, scallops or pockets adjacent to and surrounding said sockets, said valves carrying forwardly-projecting springs adapted to receive and be compressed by the impact of a piston, whereby the faces of said valves will be caused to lie flush with the inner faces of the heads, when moved to their seats.

8. A steam-engine comprising a cylinder, cylinder-heads, exhaust-ports in said cylinder-heads, a piston, a steam-chest provided with a steam-inlet, exhaust-valves in the said exhaust-ports, rods connecting said exhaust-valves whereby they are adapted to alternately open and close, and means wholly within the steam-chest for admitting steam directly therefrom, alternately to the ends of the cylinder between the cylinder-heads and piston.

707,453. SHAFT-COUPLING. ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed June 23, 1902. Serial No. 112,912. (No model.)

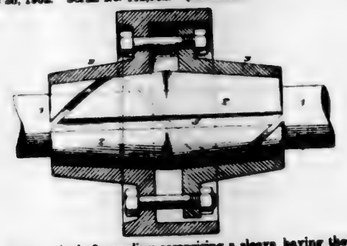

Claim.—1. A shaft-coupling comprising a sleeve having therein a spiral slot substantially encircling the same, in combination with means for compressing said sleeve so as to tighten the same upon the shafts to be coupled.

2. A shaft-coupling consisting of a sleeve having a spiral slot substantially encircling the same and having an exterior double-cone formation in combination with a pair of compressing-cones acting upon said sleeve, substantially as specified.

3. A shaft-coupling consisting of a sleeve having therein a spiral slot substantially encircling the same and having between the ends of said slot a substantially uninterrupted longitudinal portion with key-seat formed therein, in combination with means for compressing the sleeve, substantially as specified.

707,454. HORSESHOE. FRED SHEELEY, Fleischmanns, N. Y. Filed Dec. 27, 1901. Serial No. 87,414. (No model.)

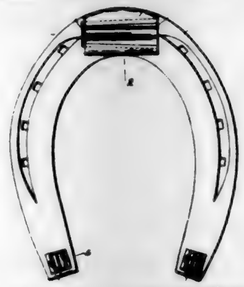

Claim.—1. In a horseshoe, a block secured to the toe portion of the shoe, and having a slot, the opposite side walls of this slot being undercut, a toe-calk, a base on said toe-calk having its edges designed to engage with said undercut walls, and a lip on one end of the base adapted to be turned against the block.

2. In a horseshoe, a block on the toe portion of said horseshoe, and having a channel or groove, the opposite side walls of which are undercut and converged at one end, a wedge-shaped toe-calk, a base on said calk having beveled edges for engaging with said walls of the channel, and a lip on one end of the base adapted to be turned against the end of the block.

707,455. WIRE FENCING. MADISON D. SHIPMAN, DeKalb, Ill. Filed Apr. 28, 1897. Renewed Apr. 14, 1902. Serial No. 102,959 (No model.)

Claim.—In a wire fence, the combination of twisted wire cables and intersecting tie-wires, the latter having loops, the crowns of which are passed between the strands of the cable to closely embrace one of said strands.

707,456. BUTTON AND PROCESS OF MAKING SAME. MADISON D. SHIPMAN, DeKalb, Ill. Filed May 1, 1900. Serial No. 15,103. (No model.)

Claim.—1. A plastic button having a fastener clenching recess in its back surface, said recess having a smooth round inner wall and a contracted opening thereto, said button being secured to the material by a fastener having a closed upper end passed through the material into the recess and clenched by the inner wall of the recess, the contracted opening engaging the fastener on a line with the upper surface of the material, substantially as described.

2. A plastic button having a smooth round recess in its back surface to form an upsetting-anvil for a fastener, and a contracted entrance to said recess, to hold the fastener in place, in combination with a fastener having a closed upper end forced into the recess and spread against the wall of the recess, substantially as described.

3. The process of molding plastic buttons which consists in forming a fastener-clenching recess or anvil in the back surface of the button-blank, said recess being of equal extent from its entrance-opening to the round clenching-surface, at the base of the recess, and subsequently compressing the plastic material around the opening of said recess prior to the attachment of the button to the material by a fastener to form a contracted entrance to said recess, substantially as described.

707,457. WIRE FENCE. MADISON D. SHIPMAN, DeKalb, Ill. Filed June 1, 1901. Serial No. 62,716. (No model.)

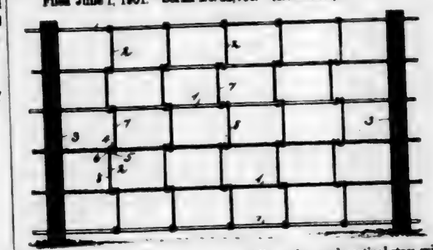

Claim.—A wire fence consisting of line-wires and vertical stay-wires secured thereto by loops in the stay-wires, said loops being doubled and clamped tightly around the line-wires and forming double arm-clamps extending around one-half of the circumference of the line-wires, and the vertical portions at opposite sides of the loop lying upon opposite sides of the line-wires and in parallel vertical planes.

707,458. AUTOGRAPHIC REGISTER. JAMES C. SHOUP, New York, N. Y., assignor to Henrietta Prewett Shoup, New York, N. Y. Filed July 30, 1901. Serial No. 69,096. (No model.)

Claim.—1. In an autographic register, a two-part writing-tablet and a plurality of reels bearing strips of paper, in combination with primary gripping-rolls for feeding strips of paper over the tablet out of the machine, and secondary gripping-rolls located below and actuated by the primary rolls for feeding a strip of paper over a portion of the tablet to a storage-roll.

2. In an autographic register, a two-part writing-tablet and a plurality of leaves bearing strips of paper, in combination with primary gripping-rolls for feeding strips of paper over the tablet out of the machine secondary gripping-rolls below the primary rolls for feeding a strip of paper over a portion of the tablet to a storage-roll and reducing-gearing between the primary and the secondary rolls.

3. In an autographic apparatus, divided in two parts hinged together, a tablet, a pair of gripping-rolls supported in one part in combination with a second pair of gripping-rolls, having one roll supported in the part carrying the first pair of gripping-rolls, and one of the gripping-rolls forming the second pair supported in the other part of the casing.

4. In an autographic register, a stationary portion having mounted therein a spring-pressed frame carrying a storage-roll, and a series of dispensing-reels, in combination with a movable portion carrying a two-part writing-tablet and a supplemental dispensing-reel, mechanism for feeding the paper from the reels over the writing-tablet without the machine, and a guide-roll for feeding the paper from the supplemental reel over a portion of the tablet and winding it upon the storage-reel.

5. In an autographic register employing a check-strip and a record-strip, the combination of a tablet-plate adapted to have the check-strip

passed over the entire length of it and provided with an opening through which the record-strip may be passed and led over only a portion of the plate, and a transfer-sheet between the two strips, whereby only a part of the matter written upon the check-strip will be duplicated upon the record-strip.

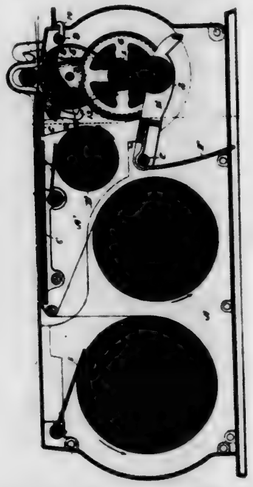

6. In an autographic register employing a check-strip and a record-strip, the combination of a tablet-plate adapted to have the check-strip passed over the entire length of it and provided near one end with a transverse slot through which the record-strip may be passed from the under side of the plate and led over only a portion of the plate, and a transfer-sheet between the strips, whereby only a part of the matter written upon the check-strip will be duplicated upon the record-strip.

7. In an autographic register employing a check-strip and a record-strip, the combination of a tablet-plate adapted to have the check-strip passed over the entire length of it and provided with an opening through which the record-strip may be passed and led over only a portion of the plate, a transfer-sheet between the strips, and a storage-reel for winding up the record-strip, substantially as described.

707,459. OPERATING DEVICE FOR CAR-DOORS. JACKSON S. HOSTON, Altoona, Pa. Filed May 17, 1902. Serial No. 107,747. (No model.)

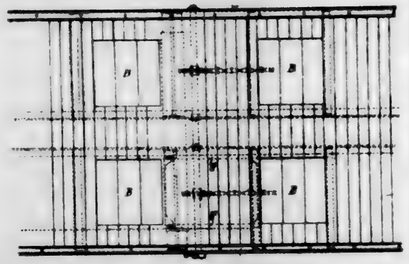

Claim.—1. The combination of a car having an opening or openings through the bottom thereof, sliding doors for said openings, a revoluble shaft supported by the car, and a series of links having its free ends connected respectively to said shaft and to the doors, the said series being constructed to operate positively and directly both to open and to close said doors, substantially as described.

2. The combination of a car having an opening or openings through the bottom thereof, sliding doors for said openings, a revoluble shaft carried by the car, an operating-wheel on the shaft and a link or links connected at one end to the said wheel and connected at the other end with the doors, with means whereby said wheel and links are caused to operatively move said doors irrespective of the direction of revolution of the shaft, substantially as described.

3. The combination of a car having an opening or openings through the bottom thereof, sliding doors for said openings, a revoluble shaft carried by the car, a toothed wheel on the shaft and a link or links positively connected at one end to the wheel and connected at the other end with the door or doors and constructed to be engaged by the teeth of the wheel, with means for causing said parts to operate directly upon the doors when the shaft is revolved in either direction, substantially as described.

4. The combination of a car having an opening or openings through the bottom thereof, sliding doors for said openings, a revoluble shaft carried by the car, a toothed wheel on said shaft, a series of links extending between said wheel and one of the doors, said links having on them means whereby they are retained in a substantially straight line when subjected to a compressive strain in operating said doors, substantially as described.

5. The combination of a car having openings therein, a door or doors for the same, a revoluble shaft supported by the car, a wheel thereon, links pivoted together and connecting said wheel with the door, certain of said links having sockets and others having portions constructed to engage said sockets when the links are subjected to a compressive strain, whereby they are maintained in a substantially straight line, substantially as described.

6. The combination of a car having openings therein, a door or doors for the same, a revoluble shaft supported by the car, a wheel thereon, links loosely pivoted together and connecting the wheel with the door, certain of said links having sockets and others having portions constructed to engage the same, the said connections between the links including means whereby they are maintained in a substantially straight line when subjected to a compressive strain while being free to turn on their pivots when under a tensile strain, substantially as described.

7. The combination of a car having openings, a door or doors for the same, a revoluble shaft supported by the car, a toothed wheel thereon, a series of loosely-connected links connecting the said wheel and the doors, arms on the links placed to be engaged by the teeth of the wheel and be thereby subjected to a compressive strain, with means for maintaining the links in a substantially straight line when so operated, substantially as described.

8. The combination of a car having openings, a door or doors for the same, a revoluble shaft supported by the car, a toothed wheel thereon, a series of loosely-connected links connecting the said wheel and the doors, arms on the links placed to be engaged by the teeth of the wheel and be thereby subjected to a compressive strain, certain of said links being free to move longitudinally relatively to each other and having means whereby they are held in a substantially straight line when so moved under a compressive strain, substantially as described.

9. The combination of a car, a plurality of openings therein, sliding doors for said openings, means operatively connecting certain of the doors, a revoluble shaft, a wheel thereon, links connecting the wheel with said connected system of doors, with means whereby said links are caused to transmit power to operate the system of doors both when subjected to a compressive strain and when under tensile strain applied through said wheel, substantially as described.

10. The combination of actuating mechanism, a system of links for transmitting power from said means both when subjected to compression and when under tension, the same consisting of individual links pivoted together so as to have a certain amount of lost motion, certain of the links being provided with sockets and others having portions constructed to engage with said sockets when the system is under compression, the sockets being constructed to retain the system of links in a substantially straight line as long as said system is under compression, with a device constructed to be operated by motion of a system of links, substantially as described.

707,460. FINGER-BAR FOR HARVESTING-MACHINES. JOHN F. STEWARD, Chicago, Ill. Filed July 11, 1902. Serial No. 115,198. (No model.)

Claim.—1. A platform-bottom for harvesting-machines having a downward depression immediately below the conveyer driving-rollers, substantially as described.

2. A finger-bar for harvesting-machines having a downward depression immediately below the conveying-canvas rollers, substantially as described.

3. A platform for harvesting-machines, having a finger-bar with a downward depression and a bottom with a downward depression corresponding therewith, said depression being immediately below the endless conveyer-rollers, substantially as described.

707,461. COMBINED BEVEL AND MITER. CHARLES R. STEDMAN, Cleveland, Ohio. Filed Nov. 30, 1901. Serial No. 84,231. (No model.)

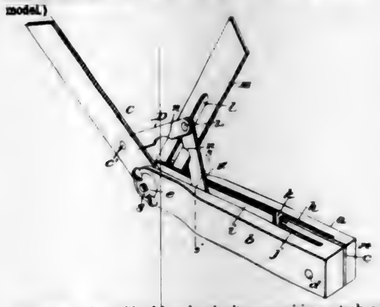

Claim.—1. A combined bevel and miter comprising a stock, a blade pivotally connected thereto, a second blade pivotally connected to the stock and having a longitudinal slot, and leaves pivotally connected together and to the first-named blade and stock, and having a lateral projection arranged to be pushed endwise into and withdrawn from the slot of the second-named blade.

2. A combined bevel and miter comprising a stock, a blade pivotally connected thereto, a second blade pivotally connected to the stock and having a longitudinal slot, resilient leaves pivotally connected to the first-named blade and the stock, respectively, and a pintle pivotally connecting the adjacent ends of the leaves and having an extended portion adapted, by reason of the resiliency of the leaves, to be sprung endwise into and out of the slot of the second-named blade.

3. A combined bevel and miter comprising a stock, a blade pivotally connected thereto, a second blade pivotally connected to the stock, and having a longitudinal slot, leaves pivotally connected together and to the first-named blade and stock, and having a lateral projection arranged to be pushed endwise into and withdrawn from the slot of the second-named blade, means for adjustably fixing the first-named blade and the leaves with respect to the stock, and means for adjustably fixing the second-named blade with respect to the stock.

4. A combined bevel and miter comprising a stock having a division-plate and side sections, and also having the pockets *h i j* and the notch *k*, blades B, C, the former of which is slotted, a transverse bolt pivotally connecting said blades and the stock, and having screw-threaded ends and nuts thereon, and leaves pivotally connected together and to the stock and blade C, respectively, and having a lateral projection arranged to be pushed endwise into and withdrawn from the slot of blade B.

5. A combined bevel and miter comprising a stock having a division-plate and side sections, and also having the pockets *h i j* and the notch *k*, blades B, C, the former of which is slotted, a transverse bolt pivotally connecting said blades and the stock, and having the collar *f*, and also having screw-threaded ends, and nuts thereon, and leaves pivotally connected together and to the stock and blades C, respectively, and having the notches *n* in their inner edges, and also having a lateral projection arranged to be pushed endwise into and withdrawn from the slot of blade B.

6. A combined bevel and miter comprising a stock, blades pivotally connected to the stock upon a common axis, and leaves pivotally connected together and one of them to one of the blades and the other to the stock, and adjustably connected to the other blade; the said leaves being of a greater length than the distance between the points at which they are connected to the stock and blade and the point where the blades are connected to the stock, whereby an increased range of action is afforded.

707,462. SPINNING OR ROVING MACHINE. WILLIAM V. TERRELFALL, Biddeford, Me., assignor to Saco & Pettee Machine Shops, Newton, Mass., a Corporation of Massachusetts. Filed Apr. 19, 1902. Serial No. 103,759. (No model.)

Claim.—1. In a machine of the character specified, the combination of a driven gear, an eccentric on its face, a second gear meshing with and driven by the first, a cam, constructed as specified, upon its face, a lever provided at one end with a hole to fit the eccentric on the first-named gear and at its other end with a slot to receive the cam upon said second gear, adapted to have an endwise movement imparted to it by the eccentric and a continuous crosswise and quick reversing movement by contact of said cam with coöperating surfaces of said slot, the said cam being adapted to impart substantially a single complete reciprocation to said lever at each rotation of the eccentric, the traverse slide or rail and a connection between said traverse slide or rail and said lever.

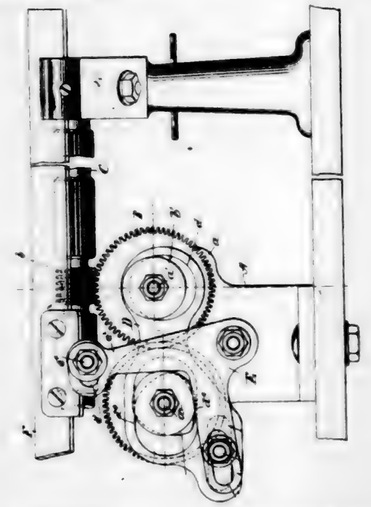

2. In a machine of the character specified, the combination of a driven gear, an eccentric on its face, a second gear meshing with and driven by the first but at a rate of rotation differing from that of the first, a cam, constructed as specified, upon its face, a lever provided at one end with a hole to fit the eccentric on the first-named gear and at its other end with a slot to receive the cam upon said second gear, adapted to have endwise movement imparted to it by the eccentric and a continuous crosswise and quick reversing movement by contact of said cam with coöperating surfaces of said slot, the said cam being adapted to impart substantially a single complete reciprocation to said lever at each rotation of the eccentric, the traverse slide or rail and a connection between said traverse slide or rail and said lever.

3. In a machine of the character specified, the combination of a stand, a driven gear mounted thereon, an eccentric on its face, a second gear mounted upon the stand meshing with and driven by the first at a rate of rotation differing from that of the first, a cam, constructed as specified, upon its face, a lever provided at one end with a hole to fit the eccentric on the first-named gear and at its other end with a slot to receive the cam upon said second gear, adapted to have endwise movement imparted to it by the eccentric and a continuous crosswise and quick reversing movement by contact of said cam with coöperating surfaces of said slot, the said cam being adapted to impart substantially a single complete reciprocation to said lever at each rotation of the eccentric, the traverse slide or rail and a connection between said traverse slide or rail and said lever.

4. In a machine of the character specified, the combination of a driven gear, an eccentric on its face, a second gear meshing with and driven by the first and at a rate of rotation varying from that of the first, a cam, constructed as specified, upon its face, a lever connected with said eccentric and with said cam, to be continuously moved and rapidly reversed by their conjoint action, a second lever, an adjustable connection between the two levers, a traverse slide or rail and an adjustable connection between the second lever and said slide or rail.

5. In a machine of the character specified, the combination of a driven gear, an eccentric on its face, a second driven gear adapted to be rotated at a rate varying from that of the first, a cam, constructed as specified, upon its face, a lever connected with said eccentric and with said cam to be positively and continuously moved and rapidly reversed by their conjoint action, the said cam being adapted to impart substantially a single complete reciprocation to said lever at each rotation of the eccentric, a traverse slide or rail and a connection between said slide or rail and said lever.

6. In a machine of the character specified, the combination of an eccentric, a cam, constructed as specified, and adapted to be rotated at a speed varying from that of the eccentric, a lever connected with said eccentric and with said cam, to be positively moved and with a continuous and variable stroke and to be quickly reversed by their conjoint action, said cam being adapted to impart substantially a single complete reciprocation to said lever at each rotation of the eccentric, a traverse slide or rail and said lever.

7. In a machine of the character specified in combination with the

drawing-rolls, a traversing thread slide or rail and means for imparting to it strokes varying in length but of uniform speed throughout and with a quick reversing movement at the end of each stroke, said means comprising an eccentric, a cam and a lever connecting said eccentric and said cam, and means operated thereby for imparting motion to said traversing thread-slide, said cam being constructed to impart substantially a single complete reciprocation to said lever at each rotation of the eccentric.

8. In a machine of the character specified, the combination of a driven gear, an eccentric on its face, a second driven gear, a cam, constructed as specified, upon its face, a lever connected with said eccentric and said cam to be positively and continuously moved by their conjoint action, a second lever having arms bearing an angular relation to each other, a connection between one of said arms and the first-named lever, a second connection between its other arm and the traverse slide or rail, and said traverse slide or rail.

9. In a machine of the character specified, the combination of a stand, a driven gear, an eccentric on its face, a second driven gear mounted upon said stand, having a rotation varying from that of the first gear, a cam, constructed as specified, upon its face, a lever connected with said eccentric and with said cam to be positively and continuously moved in strokes varying in length, and having a quick reversal by their conjoint action, a second lever pivoted to said stand, having arms angularly arranged with relation to each other, an adjustable connection between one of said arms and said lever, a connection between the other of said arms and the traverse slide or rail, and said traverse slide or rail.

10. In a machine of the character specified, the combination of an eccentric, a cam independent of the eccentric, constructed as specified and rotated at a speed varying from that of the eccentric, means for operating said eccentric and said cam, a lever connected with said eccentric and with said cam, to be positively and continuously moved in variable strokes at substantially the same speed throughout by their conjoint action, said cam being adapted to impart substantially a single complete reciprocation to said lever at each rotation of the eccentric, a traverse slide or rail, and an adjustable connection between said traverse slide or rail and said lever.

11. The combination in a machine of the character specified of a stand, two gears mounted thereon substantially side by side and so as to mesh with each other and having their faces exposed and one of which gears is driven by a worm, an eccentric-fulcrum on the face of one of said gears, a vibrator-cam upon the face of the other of said gears, a lever mounted upon said fulcrum and cam having a hole at one end to receive the fulcrum and an elongated slot at the other end to receive the cam, the said lever also having a slot in which an engaging pin or stud is adapted to play, a rock-lever mounted upon said stand having two arms, one of which has a longitudinal slot carrying a pin or stud which enters the pin-slot of said lever, and the other of which has a cross-slot which carries a pin connecting it with the traverse slide or rail, and the said traverse slide or rail.

707,463. ROLLER-BEARING. JOHN D. TWEED, Jr., New York N. Y. Filed Feb. 17, 1900. Renewed May 16, 1902. Serial No. 107,684. (No model.)

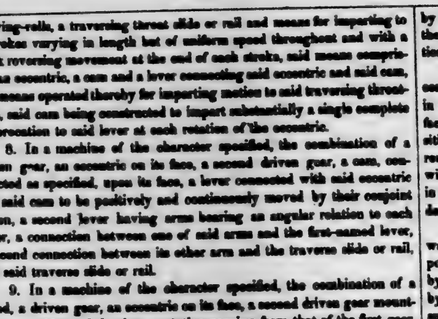

Claim.—1. A roller-bearing, comprising a block made in sections removably connected together and formed with an annular raceway, rollers mounted in said raceway and adapted to travel therein and on the peripheral surface of the journal, and a retaining device carried by the upper section of the block for holding the rollers in position in the upper section of the said block when the lower section is removed, substantially as shown and described.

2. A roller-bearing, comprising a block made in sections removably connected together and formed with an annular raceway, rollers mounted in said raceway and adapted to travel therein and on the peripheral surface of the journal, and automatically-movable retaining devices carried by the upper section of said block, and arranged to automatically retain the rollers in the upper section in position upon removing the lower section, substantially as shown and described.

3. A roller-bearing, comprising a block made in sections removably connected together and formed with an annular raceway, rollers mounted in said raceway and adapted to travel therein and on the peripheral surface of the journal, and a retaining device for holding the rollers in position on the upper section of the said block when the lower section is removed, the retaining device being normally held out of engagement with the rollers by the lower block-section as long as the latter is secured in place in connection with the upper section, substantially as shown and described.

4. A roller-bearing, comprising a block formed with an annular raceway, rollers mounted in said raceway, and a lubricant-reservoir on the top portion of the block and extended lengthwise of the rollers and connected by conducting-channels with the annular raceway to lubricate the rollers by a lubricant flowing by gravity from the reservoir, substantially as specified.

5. A roller-bearing comprising a block formed with an annular raceway, rollers mounted in said raceway, a lubricant-reservoir on the top of the upper portion of the block and extended lengthwise of the rollers, the said reservoir communicating with the raceway, and a casing or box containing said block and having filling-holes for filling the said reservoir with lubricant, substantially as specified.

6. A roller-bearing, comprising a block made in sections removably connected together and formed with an annular raceway, rollers mounted in said raceway, and adapted to travel therein and on the peripheral surface of the journal, a retaining device for holding the rollers in position in the upper section of the said block when the lower section is removed, said retaining device comprising a retaining-plate mounted to slide on the under side of the upper block-section at one side of the rollers, and a weighted lever fulcrumed on the upper section and engaging the said plate, to shift the latter inward under the lowermost roller in the upper section upon removing the lower section, substantially as shown and described.

7. A roller-bearing, comprising a block made in sections removably connected together and formed with an annular raceway, rollers mounted in said raceway and adapted to travel therein and on the peripheral surface of the journal, a retaining device for holding the rollers in position in the upper section of the block when the lower section is removed, said retaining device comprising a retaining-plate mounted to slide on the under side of the upper block-section at one side of the rollers, and a weighted lever fulcrumed on the upper section and engaging the said plate, to shift the latter inward under the lowermost roller in the upper section upon removing the lower section, the weight on the lever normally resting on the lower section, substantially as shown and described.

707,464. LOCKING DEVICE FOR VEHICLE STEERING MECHANISM. CORNELIUS S. VAN WAGONER, Cleveland, Ohio, assignor to M. L. Van Wagoner, Brooklyn, N. Y. Filed Sept. 6, 1901. Serial No. 74,533. (No model.)

Claim.—1. In a locking device for vehicle steering mechanism the combination of a friction-clutch comprising a non-rotatable member adapted to be secured to the frame or body of a vehicle, and a rotatable member surrounding said non-rotatable member and adapted to be secured to a vehicle steering mechanism, means for normally maintaining said members in frictional engagement, and means for releasing such engagement and imparting rotary motion to said rotatable member for moving said steering mechanism, substantially as described.

2. In a locking device for vehicle steering mechanism, the combination of a friction-clutch comprising a fixed member adapted to be secured to the frame or body of a vehicle, a rotatable member surrounding said fixed member and adapted to normally grasp the same, means for connecting said rotatable member to the vehicle steering mechanism, and means for releasing it from and rotating it around said fixed member, substantially as described.

3. In a locking device for vehicle steering mechanism, the combination of a clutch, means for connecting the fixed member thereof to the frame or body of a vehicle, a rotatable case inclosing said clutch, means for connecting said case to a vehicle steering mechanism, suitable connections between said clutch and case for normally holding the latter against rotation, and means for releasing said clutch and rotating said case, substantially as described.

4. In a locking device for vehicle steering mechanism, the combination of a fixed clutch member, means for rigidly securing said member to the frame or body of a vehicle, a rotatable clutch member surrounding said fixed member and adapted to normally grasp the same, means for connecting said rotatable member to a vehicle steering mechanism, a rotatable shaft, and suitable connections from said shaft to said rotatable clutch member whereby the latter will be released from and rotated around said fixed member by the rotation of said shaft, substantially as described.

5. In a locking device for vehicle steering mechanism, the combination of a cylindrical clutch member, means for rigidly securing said member to the frame or body of a vehicle, hinged clutch-sections surrounding said fixed member and adapted to normally grasp the same, means for connecting said clutch-sections to a vehicle steering mechanism, and means for separating said sections and rotating them around said fixed member, substantially as described.

6. In a locking device for vehicle steering mechanism, the combination of a cylindrical clutch member, annular wedge-shaped projections thereon, means for rigidly securing said member to the frame or body of a vehicle, hinged clutch-sections surrounding said fixed member and adapted to frictionally engage the same, said sections being provided with grooves for receiving the annular projections on the fixed clutch member, means for connecting said sections to a vehicle steering mechanism, and means for separating said sections and rotating them around the fixed clutch member, substantially as described.

7. In a locking device for vehicle steering mechanism, the combination of a cylindrical clutch member, means for rigidly securing said member to the frame or body of a vehicle, hinged clutch-sections surrounding said fixed clutch member, means for connecting said sections to a vehicle steering mechanism, a shaft journaled in said fixed member, and connections from said shaft to said hinged sections whereby the latter will be moved from and rotated around said fixed member by the rotation of said shaft, substantially as described.

8. In a locking device for vehicle steering mechanism, the combination of a cylindrical clutch member, means for rigidly securing said member to the frame or body of a vehicle, clutch-sections surrounding said fixed member and adapted to normally grasp the same, a rotatable case inclosing said sections and connected thereto, means for connecting said case to a vehicle steering mechanism, and means for separating and rotating said sections, substantially as described.

9. In a locking device for vehicle steering mechanism, the combination of a cylindrical clutch member, means for rigidly securing said member to the frame or body of a vehicle, hinged clutch-sections surrounding said fixed member and adapted to normally grasp the same, a rocking lever between said sections for separating the same, a rotatable case inclosing said sections and coupled thereto, means for connecting said case to a vehicle steering mechanism, a shaft journaled in said fixed clutch member, and a projection therefrom for moving said rocking lever and thereafter rotating said case, substantially as described.

707,465. EMERGENCY-BRAKE. CARL VOGEL, Newburgh, N. Y. Filed Mar. 7, 1902. Serial No. 97,995. (No model.)

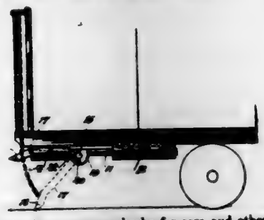

Claim.—1. An emergency-brake for cars and other vehicles, comprising a brake-bar having a body portion consisting of curved members and mounted to turn at its ends, the said body portion being provided with an arm at an angle to the body of the bar and in the same plane with said body, a beak extending downwardly and outwardly from the arm at an obtuse angle to the same, and means for limiting the turning movement of the brake-bar to hold it in operative position, the movement of the vehicle forcing the beak into the surface over which the vehicle is passing, as set forth.

2. In emergency-brakes, cylinders adapted for attachment to a car, pistons for the cylinders, bearings secured to the pistons, a brake-bar having its ends journaled in said bearings and provided with an arm at an angle to the body of the bar and in the same plane therewith, a beak extending at an obtuse angle from the arm in a downward and outward direction, and means for operating the piston-rods in one direction through the rotation of the brake-bar, as described.

3. In emergency-brakes, cylinders arranged in pairs, the cylinders of a pair being one behind the other, which cylinders are adapted for attachment to a car, springs located in the inner cylinders, pistons operating in the cylinders of a pair and against the springs in the inner cylinders, bearing-boxes secured to the pistons at points between the cylinders, said bearing-boxes having angular recesses in their side surfaces, facing in opposite directions and extending from the front and rear faces of the boxes to a connection with the bores thereof, a brake-bar the ends of which are journaled in the bores of the said boxes, the brake-bar being provided with lugs at its journaled ends at right angles to each other, a lug being adapted to operate in each recess of the bearing-boxes, an arm extending at an angle from the brake-bar, which arm is in the same plane with the body of the brake-bar, a beak extending downward and outward from the arm at an obtuse angle thereto, and means for raising the said brake-bar, which brake-bar is adapted to drop through gravity, as and for the purpose specified.

4. The combination with the body of a car, of a gravity emergency-brake, comprising a bar journaled at its ends in bearings carried by a support mounted to slide beneath the car, the said bar being provided with a beak at an obtuse angle to the body of the car and having a downward and outward inclination, means for raising the said brake, the brake being arranged to drop through gravity and the beak being adapted to strike and dig into the surface over which the car is passing, at an obtuse angle to the body of the car, means for limiting the turning movement of the brake-bar in its bearings, to hold the brake in operative position, and a cushion device for the sliding support for the bearings for the brake-bar, as set forth.

5. The combination with the body of a car, of a gravity emergency-brake comprising a bar pivoted at its ends in bearings beneath the car and provided with a beak at an obtuse angle to the body of the car and having a downward and outward inclination, which beak is adapted to strike the surface over which the car is passing, at an obtuse angle to the horizontal of the car, means for limiting the turning movement of the brake-bar in its bearings, and cushions operated by the movement of the brake-bar to check the car, as and for the purpose set forth.

6. In emergency-brakes, the combination with the body of a car or other vehicle, of cylinders secured to the under surface of the body of the vehicle one behind the other, a piston-rod provided with heads operating in the cylinders, a bearing on the piston-rod at a point between the cylinders, and a gravity-brake journaled in the bearing and adapted to engage the surface over which the vehicle is passing, as described.

7. In emergency-brakes, cylinders adapted for attachment to a car or other vehicle, pistons for the said cylinders, bearings secured to the piston-rods, and a brake-bar having its ends journaled in said bearings and provided with a member adapted to engage the surface over which the vehicle may be traveling, and means for operating the piston-rods in one direction from the brake-bar as set forth.

8. An emergency-brake for cars and other vehicles, comprising a brake-bar having a body portion consisting of curved members, the body portion being mounted to turn at its ends and provided at said ends with means for limiting their turning movement, the brake-bar having an outwardly-extending arm at an angle to the body of the bar and in the same plane with said body, and a beak extending downwardly and outwardly from the outer end of said arm at an obtuse angle to the same, for the purpose set forth.

9. The combination with the body of a car or other vehicle, of a gravity emergency-brake journaled beneath the car and provided with a beak adapted to engage the surface over which the car is passing, and a clutch connection between the brake and the bearing in which it is journaled, to limit the turning movement of the brake and hold it in operative position, as set forth.

707,466. WAGON-BODY LIFTER. GEORGE H. WARE, Greeley Hehr. Filed Nov. 21, 1901. Serial No. 83,161. (No model.)

Claim.—1. In a wagon-body lifter, a crane comprising a jib, hoisting-tackle, a sectional post, and braces, the lower section of the post being fixed and the upper section being journaled thereto to turn about a vertical axis, and braces between the upper turnable section of the post and the support upon which the crane is placed, substantially as set forth.

2. In a wagon-body lifter, a crane comprising a jib, hoisting-tackle, a sectional post having its lower portion fixed and its upper part mounted to turn upon the lower section, braces between the lower section of the post and the post-support, a ring fitted to the upper section of the post, and braces between the said ring and the said post-support, substantially as set forth.

3. In combination, a sectional post, the lower section being fixed and the upper section mounted to turn upon the lower section about a verti-

cal line, hoisting-rope passing through the joint between the sections of the post, and a windlass journaled to the fixed section of the post and adapted to wind up the hoisting-rope, substantially as set forth.

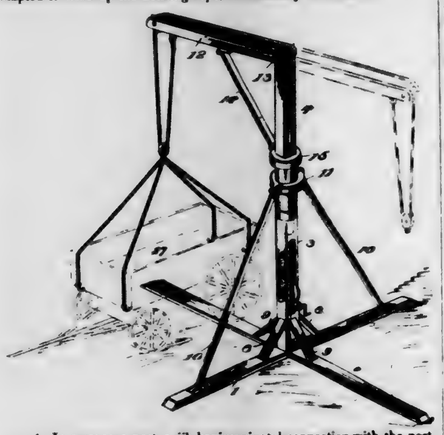

4. In a crane, a post, a jib having pivotal connection with the post, and braces having pivotal connection at its upper end with the jib, and an automatic clamp movable upon the post and having the lower end of the aforesaid braces pivoted thereto, substantially as set forth.

5. The herein-described wagon-body lifter comprising a base, a sectional post secured at its lower end to the base and having its upper portion mounted to turn upon the lower fixed portion, a jib pivoted to the turnable section of the post, and braces between the jib and the outer portion of the post and adjustable for varying the elevation of the outer end of the jib, a ring applied to the upper portion of the post, braces between the said ring and base, a windlass applied to the fixed section of the post, and a hoisting-rope passing through the joint between the sections of the post and adapted to have its lower end wind upon the windlass, substantially as specified.

707,467. CARBURETER. EDWARD WALTHER, Washington Iowa. Filed Apr. 24, 1902. Serial No. 104,450. (No model.)

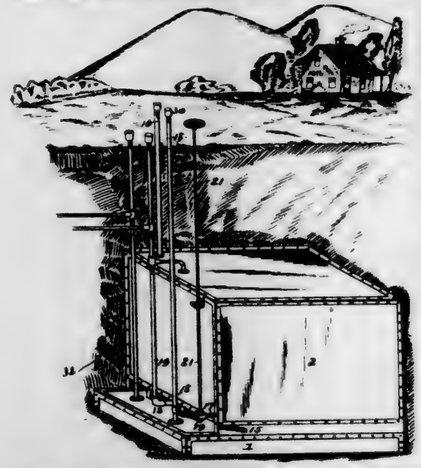

Claim.—1. In a carbureter, the combination with a vapor-generator located below the surface of the ground, of a perforated pipe screwed into a threaded aperture in said generator and extending up to the surface of the ground, an oil-shut-off valve mounted in said pipe and carrying a float located in said generator, a pipe surrounding said first-mentioned pipe and extending to the surface of the ground and supplied with a detachable cap, and gasolene connections for said last-mentioned pipe, substantially as described.

2. In a carbureter, the combination with a vapor-generator and a gasolene-supply tank both located below the surface of the ground, of a pipe connected to said generator and extending above the ground, said pipe having a detachable cap thereon, a pipe connecting said gasolene-supply tank and said pipe, a perforated pipe inclosed in said first-mentioned pipe and containing a valve arranged to be operated by the gasolene in said generator to regulate the flow of gasolene from said supply-tank to said generator, said last-mentioned pipe being mounted to be removed to obtain access to said valve, substantially as described.

707,468. RAILWAY-JOINT. THORSTON L. WATTS, Muncy Valley, Pa. Filed Jan. 18, 1902. Serial No. 90,348. (No model.)

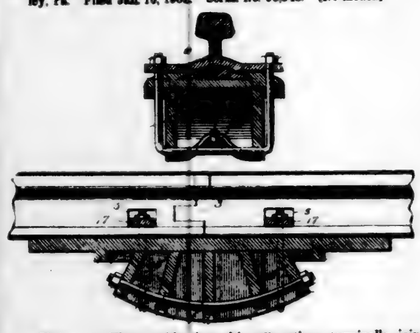

Claim.—1. The combination with rail-sections terminally joined and having slots extending transversely therethrough, of a truss attachment disposed under the joint, and clip-bars projecting through the said slots and secured to the truss attachment.

2. The combination with rail-sections terminally joined and having slots extending therethrough, of a truss attachment disposed under the joint, clip-bars extending through the slots, and tie-clamps surrounding the truss attachment and terminally secured in the opposite extremities of the clip-bars.

3. The combination with rail-sections terminally joined and having slots extending transversely therethrough, of a truss attachment comprising a brace member, means partially extending through said slots for securing the brace member to the rail-sections, and a bonding-rod extending through said brace member.

4. The combination of rail-sections terminally joined and having transversely-extending slots therethrough, a chair in which the joint-terminals of the rail-sections are seated, a brace member disposed against the under side of the chair, clip-bars extending through the slots of the rail-sections, tie-clamps surrounding the brace member and terminally secured in the opposite extremities of the clip-bars, and a bonding-rod extending longitudinally through the lower portion of the brace member.

5. The combination with a railroad-rail joint, of a brace member disposed thereunder and secured thereto, said brace member having depending partitions with connecting side webs, and a bonding-rod extending centrally through the partitions, the said brace member having its greatest depth directly under the joint.

6. The combination with a railroad-rail joint, of a brace member disposed thereunder, means for securing the said brace member to the rail-sections and surrounding the brace member adjacent to the ends of the latter, and a bonding-rod extending longitudinally through the center of the lower portion of the brace member.

7. The combination with a railroad-rail joint, of a chair applied to the rail-sections under the joint and having opposite transversely-extending ribs at the bottom, a brace member having a top plate disposed against the bottom of the chair and terminally engaging the said ribs, means for connecting the brace member to the rail-sections and the chair, and means for longitudinally bonding said brace member.

707,469. GAME. WILLIAM M. WATTS, Detroit, Mich. Filed Oct. 23, 1901. Serial No. 80,242. (No model.)

Claim.—The herein-described game comprising a map having represented thereon given cities, railway routes of different railway systems connecting the different cities, and distances between adjacent cities on any railway-line indicated on that line, a playing-piece for each player for advancement along the railway routes from city to city at a single jump, and a pack of cards each bearing the name of only one city represented on the map and corresponding in number to the cities represented on the map and used to indicate the starting-point and continuous course of travel of the playing-pieces over the map in traveling from one city to another according to the city represented on succeeding cards used by the player

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707,470. SOLDER FOR SOLDERING ALUMINIUM. JOSEPH C. WEBSTER, Philadelphia, Pa. Filed Nov. 18, 1901. Serial No. 82,566. (No specimens.)

Claim.—The herein-described solder for soldering aluminium, which consists, respectively, of from five to six parts of tin, four to five parts of lead, six to four parts of aluminium, and one part of zinc, as described.

707,471. RAIL-JOINT. OLIVER R. WEDDELL, McKeesport, Pa. Filed Apr. 21, 1902. Serial No. 103,967. (No model.)

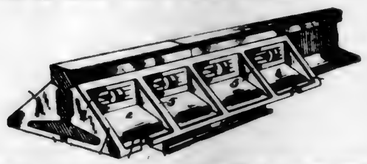

Claim.—1. In combination with the rails having apertures, fish-plates having underlying portions provided with oblong apertures and provided with cam-surfaces on their outer faces, means extending through the apertures in said underlying portions and engaging said cam-faces, and means extending through apertures in the webs of the fish-plates and through the apertures in the rails and wedging against the outer faces of the fish-plate webs, substantially as described.

2. In combination with rails having apertures in the web thereof, fish-plates provided with ribs and having oblong apertures, underlying portions carried by said fish-plates and having oblong apertures therethrough, the outer faces of the fish-plates and the underlying portions having cam-surfaces, and means extending through the fish-plates and apertures in the rails for wedging action against the cam-faces, substantially as described.

3. In a rail-joint, a fish-plate provided in its web portion with a series of oblong apertures and having cam-faces above and below said apertures, and an underlying portion carried by said fish-plate provided with oblong apertures and having cam-faces above and below said apertures substantially as described.

4. In a rail-joint, a fish-plate having a series of strengthening-ribs and provided with oblong apertures, cam-faces formed on the outer face of the web of said fish-plate, and an underlying portion carried by the fish-plate with oblong apertures therethrough and cam-faces on the outer face of said underlying portion, as and for the purpose specified.

5. In a rail-joint, the combination with the rails having apertures, of fish-plates having apertures to register with the apertures in the rails, double-headed bolts passing through said apertures and wedging against the outer face of both fish-plates, underlying portions carried by the fish-plates and provided with apertures, and double-headed bolts passing through said last-named apertures and wedging against the outer face of the underlying portions, substantially as described.

6. The combination with the rails, of a pair of fish-plates having oblong openings which are enlarged near one end, each fish-plate having inclined recesses in the outer face to form countersunk inclined walls above and below the oblong openings, a series of strengthening-ribs on each of said plates, bolts having a substantially T-shaped head on each end and having shanks square in cross-section, the said rails having openings of a diameter substantially equal to the greatest diameter of the bolt-heads, the shanks of said bolts engaging the walls of the oblong openings in the fish-plates and free from engagement with the walls of the openings in the rails when the bolts are in the locked position, and the inner faces of the bolt-heads adapted to wedge against the countersunk inclined walls of the fish-plates, substantially as described.

707,472. TOOL-HOLDER. SAMUEL WELTER and JOHN ARMSTRONG, Chicago, Ill., assignors to Armstrong Bros. Tool Co., a Corporation of Illinois. Filed Mar. 27, 1901. Serial No. 53,156. (No model.)

Claim.—In a tool-holder for planing-machines, in combination, a shank, a head carried by the shank and having a curved slot, a bolt passing through the slot for securing the head to the shank, an adjustable stop entering the slot and adapted to engage the bolt, and a plurality of cutting-tools secured in and arranged in a line parallel to the head, the head being adapted to be adjusted so that the cutting edges of the tools will be in a line at an angle to the direction of travel.

707,478. FLUID-PRESSURE BRAKE. HENRY H. WESTINGHOUSE, Edgewood Park, Pa., assignor to the Westinghouse Air Brake Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Dec. 8, 1900. Serial No. 39,182. (No model.)

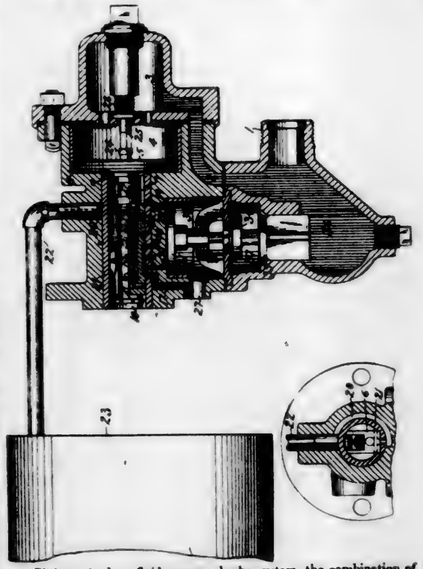

Claim.—1. In a fluid-pressure brake system, the combination of a train-pipe, a brake-cylinder, an auxiliary reservoir, a supplemental reservoir, a valve-chamber in communication with the auxiliary reservoir, a valve, a movable abutment for operating the valve according to variations of pressure in the train-pipe, and a port leading from the supplemental reservoir to the valve-chamber and adapted to be opened when

the valve is moved either to "release" position or to emergency position, and closed when the valve is at an intermediate position.

2. In a fluid-pressure brake system, the combination with a train-pipe, a brake-cylinder, an auxiliary reservoir and a supplemental reservoir, of an automatic valve mechanism operated by variations of the pressure in the train-pipe, said valve adapted to open communication from the supplemental reservoir to the auxiliary reservoir when in "release" position and also when in "emergency" position, and to close communication from the supplemental reservoir when in an intermediate position.

3. In a fluid-pressure brake system, the combination of a train-pipe, a brake-cylinder, an auxiliary reservoir, a supplemental reservoir, a valve-chamber communicating with the auxiliary reservoir, a valve, a movable abutment operated by variations in the train-pipe pressure for moving said valve to open communication from the auxiliary reservoir to the brake-cylinder and to close communication from the supplemental reservoir, when the valve is in an intermediate position, and to open communication from the supplemental reservoir to the valve-chamber when the valve is moved either to "release" position or to "emergency" position.

4. In a fluid-pressure brake system, the combination with a train-pipe, a brake-cylinder, an auxiliary reservoir and a supplemental reservoir, of an automatic valve mechanism operated by variations of pressure in the train-pipe and adapted, when in one position, to open communication from the train-pipe to the auxiliary reservoir and to the supplemental reservoir, and when in another position to open communication from the auxiliary reservoir to the brake-cylinder and to close communication to or from the supplemental reservoir, and when in a third position to open communication from the auxiliary reservoir to the brake-cylinder and from the supplemental reservoir to the auxiliary reservoir.

5. In a fluid-pressure brake system, the combination with a train-pipe, auxiliary reservoir, brake-cylinder and supplemental reservoir, of a valve device having a movable abutment operated by variations in train-pipe pressure, a main valve actuated thereby and adapted when in release position to open communication between the supplemental and auxiliary reservoirs, and when in service position to close communication from the supplemental reservoir and to open communication from the auxiliary reservoir to the brake-cylinder, and a graduating-valve having a movement relative to the main valve for controlling the fluid-supply to the brake-cylinder in service applications.

6. In a fluid-pressure brake system, the combination with a train-pipe, auxiliary reservoir, brake-cylinder, supplemental reservoir, of a valve-chamber in communication with the auxiliary reservoir, ports leading from the valve-chamber to the supplemental reservoir and to the brake-cylinder, a movable abutment operated according to variations in train-pipe pressure, a main valve actuated thereby to open said port leading to the supplemental reservoir when in release position, and to close said port and open the port leading from the auxiliary reservoir to the brake-cylinder when in service position, and a graduating-valve actuated by said abutment and having a movement relative to the main valve for controlling the supply-passage to the brake-cylinder.

7. In a fluid-pressure brake system, the combination with a train-pipe, auxiliary reservoir, brake-cylinder, and supplemental reservoir, of a triple-valve device having a valve-chamber in communication with the auxiliary reservoir, a port leading from the valve-chamber to the supplemental reservoir, a valve adapted to open said port at both release and emergency positions and to close said port at service position, and an emergency-valve controlling a passage from the train-pipe to the brake-cylinder in the train-pipe, a passage having a non-return valve for feeding the supplemental reservoir, and a port leading from the valve-chamber to the supplemental reservoir, said abutment-operated valve being adapted to close said port at "release" and "service-stop" positions and to open said port at "emergency" position.

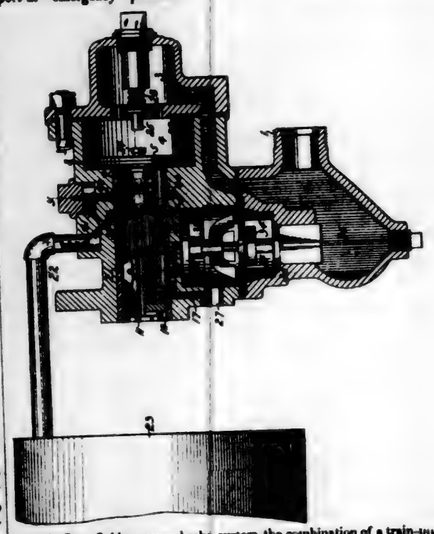

4. In a fluid-pressure brake system, the combination of a train-pipe, a brake-cylinder, an auxiliary reservoir, a supplemental reservoir, a valve-chamber in communication with the auxiliary reservoir, a valve, a movable abutment or piston for operating said valve according to variations of pressure in the train-pipe, a port leading from the valve-chamber to the supplemental reservoir and provided with a non-return valve, and another separate port leading from the valve-chamber to the supplemental reservoir and adapted to be closed by said abutment-operated valve when in "release" and "service-stop" positions and opened when the valve is moved to "emergency" position.

5. In a fluid-pressure brake system, the combination with an automatic triple-valve device having a valve-chamber and a valve therein, of a supplemental reservoir and two ports leading from the interior of the valve-chamber to the supplemental reservoir, said valve being adapted to close both said ports when in "service-stop" position.

6. In a fluid-pressure brake system, the combination with an automatic triple-valve device having a valve-chamber and a valve therein, of a supplemental reservoir and two ports leading from the interior of the valve-chamber to the supplemental reservoir, said valve being adapted, when in "release" position, to open one of said ports and close the other, and when in "service-stop" position, to close both of said ports.

707,474. FLUID-PRESSURE BRAKE. HENRY H. WESTINGHOUSE, Edgewood Park, Pa., assignor to the Westinghouse Air Brake Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Dec. 13, 1900. Serial No. 39,675. (No model.)

Claim.—1. In a fluid-pressure brake system, the combination of a train-pipe, a brake-cylinder, an auxiliary reservoir, a supplemental reservoir, a feed-passage for said supplemental reservoir with means for preventing backflow through said passage, a valve-chamber, a valve with a movable abutment for operating the same according to variations of pressure in the train-pipe, and a port leading from the valve-chamber to the supplemental reservoir, said valve being adapted to close said port when in "service-stop" position and to open said port when in "emergency" position.

2. In a fluid-pressure brake system, the combination with an automatic triple-valve device having a valve-chamber in constant open communication with the auxiliary reservoir, of a supplemental reservoir and two passages leading from the valve-chamber to the supplemental reservoir, one of said passages having a non-return valve.

3. In a fluid-pressure brake system, the combination of a train-pipe, a brake-cylinder, an auxiliary reservoir, a supplemental reservoir, a valve-chamber in communication with the auxiliary reservoir, a valve, a movable abutment for operating the valve according to variations of pressure

707,475. WEED-PULLER. JOSEPH A. WHELAN, Rock Springs, Wyo. Filed Oct. 23, 1901. Serial No. 79,731. (No model.)

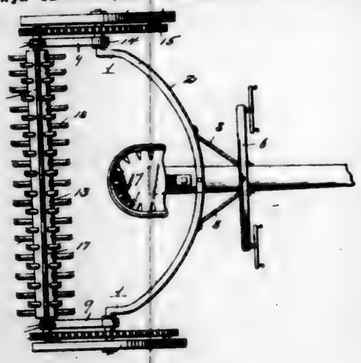

Claim.—1. The combination with a frame having its ends outturned to form axles, of wheels journaled thereon, gear-wheels secured to said wheels, depending arms loosely mounted on said axles between the wheels and the frame and provided with bearings at their lower ends, a shaft journaled in said bearings, a toothed roller carried by said shaft, pinions mounted on said shaft to mesh with said gear-wheels, upwardly-extending arms on the lower ends of the said depending arms and having openings in their upper ends, and a rod mounted in the openings of the said arms for clearing the roller-teeth.

2. The combination with a frame formed with axles, of wheels journaled thereon, depending arms loosely mounted on said axles and provided with bearings at their lower ends, a shaft journaled in said bearings, a toothed roller carried by said shaft, an upwardly-extending arm formed integral with the lower ends of each of the said depending arms, and having openings in their upper ends, and a rod mounted in the openings of the said arms for clearing the roller-teeth.

707,476. EQUALIZING-VALVE. PAUL WHITING, East Las Vegas, N. Mex. Filed Oct. 3, 1901. Serial No. 77,970. (No model.)

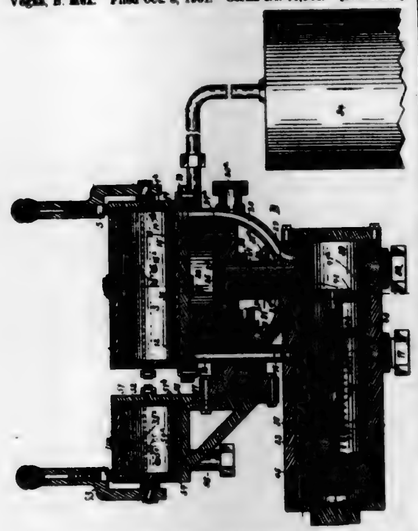

Claim.—1. In a valve of the class described, the combination of a cylinder divided into front and rear compartments by a transverse partition, an adjustable head fitted into the rear end of said cylinder and provided with a stem, a piston located in said front compartment and having a hollow stem mounted in said partition and fitting over said stem, and a spring mounted on said hollow stem and bearing on said adjustable head, substantially as described.

2. In a valve of the class described, the combination of a cylinder divided into front and rear compartments by a transverse partition, an adjustable head fitted into the rear end of said cylinder and having a grooved stem, a piston located in said forward compartment and having a hollow stem slidingly mounted in said partition, and fitting over said stem, and a spring mounted on said hollow stem, substantially as described.

3. In a valve of the class described, the combination of a casing divided into front and rear compartments by a transverse partition, each of said compartments having an air-passage connected thereto, a piston mounted in said front compartment and having a hollow stem which is slidingly mounted in said partition, a valve-seat located in said rear compartment in position to close said hollow stem when seated thereon, a spring mounted on said hollow stem and arranged to hold it normally unseated, and a cylinder-valve comprising an outer and inner cylinder having ports located to be brought into register by turning said inner cylinder, said cylinder-valve being connected to regulate the flow of air through said air-passage, substantially as described.

4. In a valve of the class described, the combination of a lower cylinder divided into front and rear compartments by a transverse partition, a valve-seat mounted in said rear compartment, a piston mounted in said front compartment and provided with a hollow stem slidingly mounted in said partition and constructed to fit said seat, a spring surrounding said stem and arranged to normally hold it unseated, an exhaust-passage connected to said front compartment, an upper cylinder a piston mounted in said upper cylinder and provided with a stem constructed to regulate the exhaust of air through said passage, a passage connecting said upper and lower cylinder, air-passages connected to said upper cylinder and to the front and rear compartment of said lower cylinder, and means for regulating the flow of air through said passages, substantially as described.

5. In a valve of the class described, the combination of a lower cylinder divided into front and rear compartments by a transverse partition, a valve-seat mounted in said rear compartment, a piston mounted in said front compartment and provided with a hollow stem slidingly mounted in said partition and constructed to fit said seat, a spring constructed to normally hold said stem unseated, an air-passage connected to said rear compartment, means for regulating the flow of air through said passage, a pipe and an exhaust-passage connected to said front compartment, an upper cylinder, a piston mounted in said upper cylinder and provided with a stem constructed to serve as a valve to regulate the flow of air through said exhaust-passage, and an air-passage connecting said upper cylinder and said forward compartment, substantially as described.

6. In a valve of the class described, the combination of a lower cylinder comprising front and rear compartments, a valve-seat mounted in said rear compartment, a piston mounted in said front compartment and provided with a hollow stem extending into said rear compartment and constructed to fit said seat, a spring mounted to normally hold said stem unseated, an exhaust-passage and a pipe connected to said front compartment, an upper cylinder, a piston mounted in said upper cylinder and provided with a stem constructed to serve as a valve to regulate the flow of air through said exhaust, a reservoir connected to said upper cylinder to increase the capacity thereof, air-passages connected to said rear compartment and said upper cylinder, means for regulating the flow of air through said passages, and an air-passage connecting said upper cylinder and said front compartment, substantially as described.

7. In a valve of the class described, the combination with a cylinder, of a piston mounted in said cylinder and having a hollow stem forming a valve, a valve-seat located to coöperate with said hollow stem to regulate the flow of air from one side of said piston to the other, a spring mounted to regulate the amount of pressure necessary to move said piston to operate said valve, a passage connecting said cylinder to the open air, a second cylinder, connected to said first-mentioned cylinder by a passage, a piston mounted in said second cylinder and provided with a stem constructed to serve as a valve to open and close said passage to the open air, substantially as described.

8. In an air-brake system, the combination with a cylinder, of a piston mounted in said cylinder and having a hollow stem, a valve-seat mounted to close said stem when seated thereon, a spring mounted to oppose the seating of said hollow stem on said valve-seat, a main reservoir connected to said cylinder in the rear of said piston, a train-line connected to said cylinder at a point in front of said piston, a second cylinder, a piston mounted in said cylinder and bearing a stem mounted to serve as a valve to open and close an exhaust-passage communicating with the forward end of said first-mentioned cylinder, said second cylinder being connected to said first-mentioned cylinder at a point in front of the said piston therein, and means for regulating the flow of air into and out of said second cylinder, substantially as described.

707,477. QUADRUPLE VALVE. PAUL WHITING, East Las Vegas, N. Mex. Filed Oct. 9, 1901. Serial No. 78,168. (No model.)

Claim.—1. In a valve of the class described, the combination, of a casing divided transversely into upper, middle and lower compartments, pistons located in said upper and lower compartments, a piston-rod connecting said pistons, an air-passage connected to each of said compartments, and a valve located in each of said compartments and connected to be simultaneously operated by said pistons to regulate the flow of air through said passages, substantially as described.

2. The combination with an auxiliary reservoir, of a valve-casing divided by transverse partitions into upper, middle, and lower compartments, a piston mounted in each of said upper and lower compartments, a piston-rod slidingly mounted in said partitions and connecting said pistons, an air-passage connecting said upper compartment and said reservoir, a valve mounted in said upper compartment and connected to operate in unison with said piston-rod, said valves being located to regulate the flow through said passage, a pipe connected to said upper compartment, a passage connecting said reservoir and said lower compartment, a passage connected to said lower compartment, and a valve mounted in said lower compartment, said valve being connected to operate in unison with said piston-rod, to regulate the flow of air through said last-mentioned passage, substantially as described.

3. In a valve of the class described, the combination of a casing divided transversely into upper, middle and lower compartments, pistons

located in said upper and lower compartments, a piston-rod mounted to slide and connecting said pistons, a pipe connected to said middle compartment and communicating with a passage communicating with said lower compartment, said passage having a triangular port, a slide-valve mounted to operate in unison with said piston-rod to open and close said triangular port, a passage connecting said upper and lower compartments, and a valve mounted in said upper compartment and designed to close said passage, substantially as described.

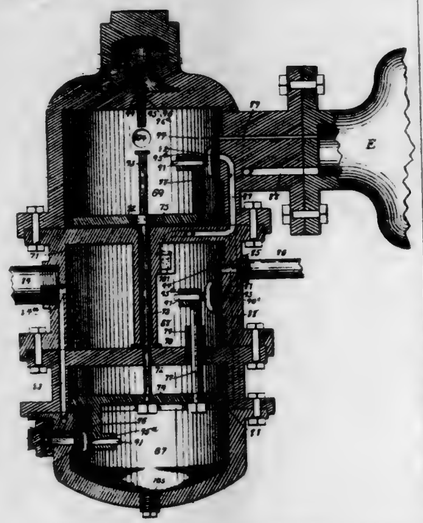

4. In a valve of the class described, the combination of a casing divided transversely into upper, middle and lower compartments, a piston-rod located in each of said upper and lower compartments, a piston-rod mounted to slide and connecting said pistons, an auxiliary reservoir, a passage connecting said auxiliary reservoir and said upper compartment, a passage connecting said upper and middle compartments, a slide-valve mounted in said upper compartment and arranged to operate in unison with said piston-rod to open and close said passages, a pipe adapted to be connected to a brake-cylinder, and communicating with said middle compartment, and a spring-actuated stem mounted in line with said piston-rod at the upper end thereof, said stem being constructed to normally serve as a bumper to limit the movement of said rod, but to be displaced by the contact of the piston-rod when an abnormal reduction of pressure is made in the said upper compartment, substantially as described.

5. In a device of the class described, the combination with a valve-seat, having a port and a longitudinal groove therein, a slide mounted in said groove and having transverse dovetailed slots in the back thereof, a transversely-apertured arm, a stem slidingly mounted in said arm and provided with dovetailed feet mounted in said dovetailed grooves, and a spring mounted on said stem and designed to hold said slide in its seat, substantially as described.

6. The combination with an auxiliary reservoir, of a valve-casing having an upper, a middle and a lower compartment, said upper compartment being connected by a first passage to said reservoir and by a second passage to said middle compartment, said middle compartment being constructed to communicate with the open air and to be connected to the main train-line, said lower compartment being connected by a passage to said reservoir and by a second passage to said middle compartment, pistons mounted in said upper and lower compartments, and connected to operate in unison, and valves mounted in said compartments and connected to be operated in unison with said piston to regulate the flow of air through said passages, substantially as described.

7. In a valve of the class described, the combination of a casing having an upper and a lower compartment, said upper compartment being constructed to be connected to a main train-line and to an auxiliary reservoir, said lower compartment being constructed to be connected to said auxiliary reservoir and to a brake-cylinder, pistons of equal area mounted in said upper and lower compartments, said pistons being connected to move in unison, and a valve mounted in each of said compartments, said valves being located to regulate the flow of air to said auxiliary reservoir and to said brake-cylinder, and connected to be actuated in unison with said pistons, substantially as described.

707,478. VALVE MECHANISM FOR STEAM-CARRIAGE BURNERS. ROLLIN H. WHITE, Cleveland, Ohio, assignor to the White Sewing Machine Company, Cleveland, Ohio, a Corporation of Ohio. Filed Apr. 19, 1901. Serial No. 56,542. (No model.)

Claim.—1. A valve-casing having an inlet-opening, a discharge-nozzle, and a valve-seat between them, and a valve having a screw-threaded connection with said casing, combined with a bracket having two integral bearing-sleeves, two shafts respectively mounted in said sleeves, intermeshing bevel-gears secured to said two shafts, and operative connection between one of said shafts and said valves, substantially as specified.

2. A valve-casing having an inlet-opening, a discharge-nozzle, and a valve-seat between them, combined with a valve having a screw-threaded connection with said casing, a rotatable shaft, and a universal-joint connection between said shaft and valve, and mechanism carrying said shaft and liable to be out of alinement with said valve, substantially as specified.

3. A valve-casing having an inlet-opening, a discharge-nozzle and a valve-seat between them, combined with a valve having a screw-threaded connection with said casing, a rotatable shaft, a universal-joint connection between said shaft and valve, the intermediate link being connected with said shaft or valve by pivot-pins, fast to one of the parts so connected, and passing through longitudinal slots in the other part, and mechanism carrying said shaft and liable to be out of alinement with said valve, substantially as specified.

4. In combination, a valve-casing having the following integral parts, viz. a vertical tube and an integral horizontal tube which extends across the end of said vertical tube, and a housing, said vertical tube having an inlet-opening and a valve-seat between said opening and the horizontal tube, the horizontal tube having at one end a discharge-nozzle and a valve-seat between said nozzle and the vertical tube, a valve in the vertical tube, a bell-crank lever pivoted in said housing and engaging with said valve, a rod for operating said bell-crank lever, a valve screwed into the horizontal tube, and a shaft operatively connected with said valve, substantially as specified.

5. A valve-casing comprising the following parts, viz. a vertical tube having an inlet-opening, a discharge-opening at its lower end, and a transverse valve-seat between said openings, a horizontal tube on the lower end of said vertical tube and communicating therewith through said discharge-opening, said horizontal tube having a discharge-nozzle and a valve-seat, and a laterally-projecting housing on said vertical tube and communicating therewith, combined with a valve screwed into the horizontal tube, operating mechanism therefor, a vertically-movable valve in the vertical tube, a collar adjustably secured upon the stem of this valve, a bell-crank lever pivoted in said housing with its horizontal arm beneath said collar, a plate secured to the end of said housing, a rod passing through said plate and engaging with the vertical arm of said bell-crank lever, said rod being part of a thermostat which is secured to said plate, and a steam-pipe embracing this thermostat, substantially as specified.

6. A valve-casing comprising the following parts, viz. a vertical tube having a screw-threaded opening through its upper end, a discharge-opening at its lower end, an inlet-opening between said ends, and a transverse valve-seat between said inlet and discharge openings, a plug screwed into the upper end of said vertical tube, a horizontal tube on the lower end of said tube and communicating therewith through said discharge-opening, said horizontal tube having a discharge-nozzle and a valve-seat, and a laterally-projecting housing on said vertical tube and communicating therewith, combined with a valve screwed into the horizontal tube, operating mechanism therefor, a vertically-movable valve in the vertical tube, a collar adjustably secured upon the stem of this valve, a bell-crank lever pivoted in said housing with its horizontal arm beneath said collar, a plate secured to the end of said housing and having a hole through it and a concentric circular rabbet in its inner face, a thermostat comprising an outer tube which passes through said hole and has on its inner end an external flange which lies in said rabbet, and a rod in said tube, which rod engages with the vertical arm of the said bell-crank lever, a screw-plug embracing said rod and screwing into said rabbet against the end of said thermostat-tube, and a steam-pipe embracing said thermostat, substantially as specified.

707,479. RIBBON AND STOCK SUPPORTER. JOSEPH H. WHITTINGTON, Buffalo, N. Y., assignor to The New York Supply Company, Buffalo, N. Y., a Firm. Filed Dec. 10, 1901. Serial No. 85,408. (No model.)

Claim.—1. An improved means for holding a ribbon, stock, or other article in place around the neck of a person, comprising a back member and a front member, each formed in one integral piece and having a plurality of retaining-fingers separated by slots through which the ribbon or other article is adapted to be passed, substantially as set forth.

2. An improved means for holding a ribbon, stock or other articles in place around the neck of a person, comprising a back member formed in one piece and having a body portion provided with a buttonhole adapted to engage the rear button of a garment and upwardly-extending fingers between which the ribbon or other article is adapted to be passed, and a front member formed in one piece provided with a buttonhole adapted to engage the front button of a garment and downwardly-extending fingers between which the ribbon or other article is adapted to be passed, substantially as set forth.

3. An improved means for holding a ribbon, stock, or other article in place around the neck of a person, comprising a back member and a front member, each having a plurality of retaining-fingers separated by slots through which the ribbon or other article is adapted to be passed, and one of said members having slits through which the band of the garment is adapted to pass, substantially as set forth.

707,480. BICYCLE. WILLIAM E. WHITELY, Springfield, Ohio. Filed Jan. 13, 1897. Serial No. 619,086. (No model.)

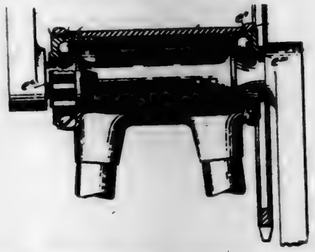

Claim.—1. A barrel or hub of a vehicle-bearing, having a straight internal screw-threaded portion, and an enlarged plain tapered portion at the end, in combination with a ball-cup screwed into said screw-threaded portion, having an enlarged plain tapered end fitting the taper of said barrel or hub, for the purpose of securely connecting said ball-cup to said barrel or hub, substantially as specified.

2. In a vehicle-bearing, a barrel or hub, a shouldered axle extending through the same, ball-cups arranged adjacent to said shoulders, and balls between said cups and shoulders, each of said ball-cups being screw-threaded on a portion of the periphery and a plain extension on the remainder of the periphery, one of said ball-cups having its plain extension tapered and the other ball-cup having its extension grooved, the barrel being formed at each end to conform to said extended portions, and means on each of said cups for turning the same into said barrels, and a set-screw adapted to engage the grooves on one of said cups, substantially as specified.

707,481. BRAKE FOR PIVOTAL RUNNING-GEAR OF VEHICLES. WILLIAM WIDDOWSON, Norristown, Pa. Filed June 6, 1902. Serial No. 110,505. (No model.)

Claim.—1. The combination of a vehicle having a body portion and running-gear, two bearing-surfaces carried by said members respectively, a pivot connecting the same, a device having means for simultaneously acting upon the pivot and one of the bearing-surfaces whereby the pressure of the bearing-surfaces upon each other may be varied, and mechanism for throwing said device into and out of action, substantially as described.

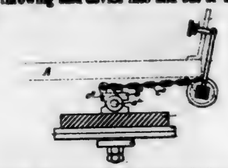

2. The combination of a vehicle having a body portion and running-gear, two bearing-surfaces carried by said members respectively, a pivot connecting the same and in positive engagement with one of said surfaces, a device for moving said pivot longitudinally and simultaneously pressing the second of the bearing-surfaces against the surface engaged by the pivot, and mechanism for operating said device to any desired extent and thereby varying the amount of friction between the two surfaces, substantially as described.

3. The combination in a vehicle having a body portion and running-gear pivotally connected together, a bearing-surface lying in a horizontal plane connected to each of said members, operating means carried by the body, and a device whereby the said pivotal connection may be moved and thereby made to vary the amount of friction between said surfaces, substantially as described.

4. The combination in a vehicle having a body portion and running-gear, a bearing-surface attached to one of said members, a pivotal piece connecting the members, a piece coacting with said bearing-surface and operated by the pivotal piece to press against the bearing-surface, with a device operative upon said pivotal piece for moving the same longitudinally and thereby controlling the movement of the body upon the running-gear, substantially as described.

5. The combination of a vehicle having a body portion and running-gear, a bearing-surface on each of said members, a bar having a projecting portion and attached to one of said members, a shaft having an eccentric portion operative upon said projecting part of the bar, a lever on the body and means for connecting the lever to said shaft whereby said eccentric-portion thereof is made to operate upon the bar and vary the amount of friction between the two bearing-surfaces when the lever is manipulated, substantially as described.

6. The combination of a body, running-gear therefor, a lever pivotally carried by the body, a shaft having an eccentric portion and a projecting arm, means for connecting the arm to the lever, pieces having bearing-surfaces carried by the body and the running-gear respectively, and a member or members operated by the eccentric portion of the shaft and operative upon one of the said pieces whereby the motion of the pieces relatively to each other may be controlled, substantially as described.

707,482. NEEDLE FOR BINDERS. EDDIE WILL, Bigstone, S. D. Filed Aug. 30, 1901. Serial No. 73,857. (No model.)

Claim.—A needle for knotting mechanism comprising an arc-shaped head and a stem formed integral from sheet metal, the metal of the head being bent upon itself to form spaced members and a connecting-web, the spaced members at the front of the head being bent inwardly into mutual contact to form a point, guide-rollers having shafts mounted in the spaced members within the head and a guide-roller mounted upon the stem.

707,488. CANOPY. FRANK C. WILMETH, Dallas, Tex. Filed Sept. 23, 1899. Serial No. 731,995. (No model.)

Claim.—1. A portable carriage-cover consisting of a portable frame having a base, supporting-posts secured to said base, plates 6, bows 7 journaled on said plates, a center bow adjustably secured to said supporting-frame, said plates adjustably secured to said center bow, a cover made of canvas or other suitable material, covering said frame, ropes secured to said canvas cover at the bottom of the ends thereof, pulleys secured to said center bow, said ropes passing through said pulleys and over each side of said cover substantially as shown and described.

2. A portable carriage-cover consisting of a supporting-frame, plates 6, bows 7 journaled on said plates, the center bow adjustably secured to

said supporting-frame, said plate adjustably secured to said center bow, a cover made of canvas or other suitable material, covering said frame, said cover having drop-curtains at each end, said curtains having a series of loops or rings secured thereto, pulleys secured to said center bow, operating-ropes secured to one end of said drop-curtains passing through said rings or loops and pulleys and over each side of said cover, substantially as shown and described.

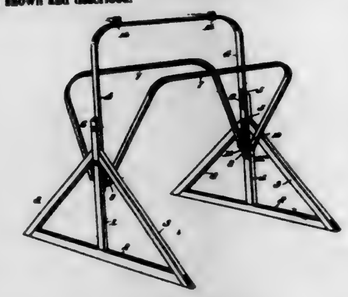

707,484. HOISTING-BUCKET MECHANISM. ANDREW WIRSING, Milwaukee, Wis. Filed June 9, 1902. Serial No. 110,728. (No model.)

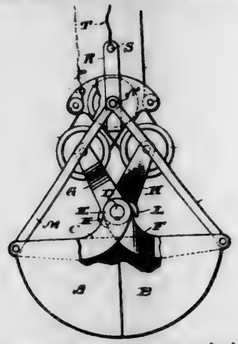

Claim.—1. A separable hoisting-bucket mechanism comprising a center spindle, crank-arms fast on the spindle, a bucket-section fast to said arms, sleeves loose on said spindle and having lower outer arms as well as inner upper arms, a bucket-section fast to the lower outer sleeve-arms, a bracket fast on the aforesaid spindle intermediate of said sleeves, an upper shell having central and end pulleys, link-rods connecting the outer corners of the bucket-sections with the shell central of the same, pulleys in suspension from the inner upper sleeve-arms and the spindle-bracket, a suspension-cable in connection with the aforesaid shell, and a draft-cable trained in contact with the several pulleys to control opening and closing of the bucket.

2. A separable hoisting-bucket mechanism comprising a center spindle, a bucket-section crank-arms rigid with the spindle, other bucket-section crank-arms loose on said spindle, upper arms radiating in opposite directions from the spindle over bucket-sections and respectively fast and loose in their connection with said spindle, pulleys in suspension from these arms, an upper shell having central and end pulleys, link-rods connecting the outer corners of the bucket-sections with the shell central of the same, a suspension-cable in connection with the aforesaid shell, and a draft-cable trained in contact with the several pulleys to control opening and closing of the bucket.

3. A separable hoisting-bucket mechanism comprising a center spindle, a bucket-section crank-arms rigid with the spindle, other bucket-section crank-arms loose on said spindle, upper arms radiating in opposite directions from the spindle over bucket-sections and respectively fast and loose in their connection with said spindle, pulleys in suspension from these arms, an upper shell having central and end pulleys, link-rods connecting the outer corners of the bucket-sections with the shell central of the same, a suspension-cable in connection with the aforesaid shell, and a draft-cable that being also in connection with the shell is trained in contact with the several pulleys to control opening and closing of the bucket.

4. A separable hoisting-bucket mechanism comprising a center spindle, a bucket-section crank-arms rigid with the spindle, other bucket-section crank-arms loose on said spindle, upper arms radiating in opposite directions from the spindle over bucket-sections and respectively fast and loose in their connection with said spindle, pulleys in suspension from these arms, an upper shell having central and end pulleys, link-rods connecting the outer corners of the bucket-sections with the shell central of the same, a suspension-cable in connection with the aforesaid shell, a draft-cable trained in contact with the several pulleys to control opening and closing of the bucket, and meeting stops on the arms that radiate in opposite directions over said bucket-sections.

707,485. SAFETY-VALVE. WILLIAM WIBKART and BRUNO SEIDEL, Chicago, Ill., assignors to the Adams & Westlake Company, a Corporation of Illinois. Filed Oct. 25, 1901. Serial No. 79,968. (No model.)

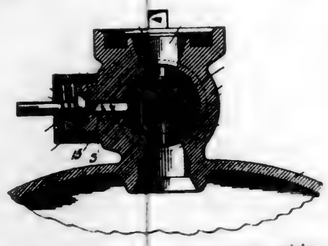

Claim.—1. In an apparatus for generating or containing a fluid under pressure, in combination, a normally closed relief-valve, a movable element independent of the valve and which is an essential part of the generating or other apparatus, and an operative connection between the movable element and the valve whereby the said valve is tripped at each operation of the movable element.

2. In an apparatus for generating or containing a fluid under pressure, in combination, a spring-closed relief-valve, a movable element of the apparatus and which is independent of the valve, and an adjunct of the valve in the path of and which is tripped by the movable element during its ordinary operation to move the valve from its seat.

3. The combination of a pipe or nipple, a port in the wall thereof, a valve normally closing the port, a valve in the pipe or nipple, and means tripped by the latter valve for moving the former from its seat.

4. The combination of a pipe or nipple, a port in the wall thereof, a reciprocating valve normally closing the port, an oscillating valve in the pipe or nipple, and means tripped by the oscillating valve for moving the reciprocating valve from its seat.

5. The combination of a pipe or nipple, a port in the wall thereof, a spring-pressed valve normally closing the port, an oscillating valve in the pipe or nipple, a passage in the oscillating valve leading to the port, and a stem projecting from the port-valve and which is tripped by the oscillating valve to move the port-valve from its seat.

6. The combination of a pipe or nipple, a port in the wall thereof, a spring holding the valve normally closed, a stem projecting from the valve and into the passage of the pipe, an oscillating valve in the pipe and which engages the stem to move the port-valve from its seat, a passage through the oscillating valve communicating with the port in the wall of the pipe, and a recess in the oscillating valve to receive the end of the valve-stem when the oscillating valve is open.

7. In a generating-tank, the combination with a spring-closed blow-off valve, of a part movable in bringing the generator into service, and connection between such valve and movable part for unseating the valve as such part is moved.

8. In a generating-tank, in combination, a valve controlling the throat of the tank, a blow-off port, and a spring-closed valve therefor, the controlling-valve being provided with a tripping adjunct engaging the blow-off valve.

9. In an apparatus for generating or containing a fluid under pressure, in combination, a spring-closed relief-valve, a movable element of the apparatus independent of the valve, and a valve-unseating trip in the path of the movable element.

707,486. VENTILATED HAT. JULIUS WOLBRIGHT, Manila, Philippine Islands. Filed Jan. 22, 1902. Serial No. 90,795. (No model.)

Claim.—A hat having a soft crown and provided in the top of said crown on opposite sides of a median line drawn from front to rear with ventilators arranged approximately midway between the front and rear edges of the crown, whereby when the hat is creased from front to rear in alpine form the ventilators will be within the crease and in the opposite walls thereof approximately midway between the front and rear sides of the crown and will be obscured and in position to receive air coming from either side.

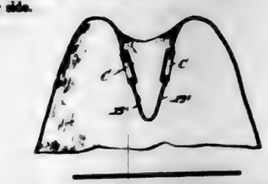

707,487. APPARATUS FOR ELEVATING OR CONVEYING AND TRANSFERRING ICE, &c. EDGAR A. WRIGHT, Canton, Ohio, assignor to the Aultman Company, Canton, Ohio, a Corporation of Ohio. Filed Feb. 15, 1900. Serial No. 4,370. (No model.)

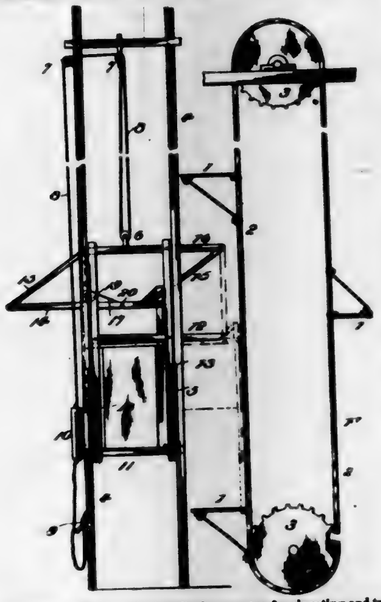

Claim.—1. The herein-described apparatus for elevating and transferring or storing ice, consisting of the combination of an elevator and an automatic transferring device having means for engaging the ice at its farther side for removing the ice from said elevator.

2. In an apparatus for elevating and transferring ice, and for other purposes, the combination of an elevator, a receiving means within the storage-chamber or otherwise suitably situated, and an automatic laterally-acting transferring device having means for engaging the ice on its farther side while on said elevator, to remove it therefrom, and transfer it to said receiving means.

3. The combination of an elevator, a cage for receiving the ice from said elevator movable in the direction of movement of the ice, a means for engaging and transferring the ice carried by said cage and operated by the movement of the cage, a bar or stop carried by the cage and adapted to be engaged by the ice, and means for receiving the ice from said cage.

4. The combination of an elevating or conveying means, a receiving-cage having a tilting platform, means for automatically transferring the ice from said conveying means to said platform, and means for tilting said platform automatically to deliver the ice.

5. The combination with an elevating or conveying means, a receiving-cage having a tilting platform hinged on said cage and connected with a fixed point, means for engaging and transferring the ice from said conveying means to said platform operated by the movement of the cage, and a bar or stop carried by the cage and adapted to be engaged by a part moved by said elevating means to operate said cage.

6. The combination with the storage-chamber having a receiving-opening *a* of a frame situated near said opening, a cage movable in said frame, an elevator, and means for automatically transferring the ice from said elevator to said cage, and means for automatically delivering the ice from said cage through said opening.

7. The combination of the storage-chamber having a series of openings *a* one above the other, a frame extending by said openings, a cage movable in said frame and adjustable with respect to each of said openings, an elevating or conveying device, means for automatically transferring the ice from said conveying device to said cage, and means for automatically delivering the ice from said cage to one of said openings.

8. The combination of a storage-chamber having an opening *a*, a frame extending by said opening, a receiving-cage movable in said frame, an automatic transferring device adapted to engage the ice and movable toward and from the cage, means for delivering the ice from the cage to said opening, and a conveying or elevating means adapted to carry the ice and acting to actuate said transferring device.

9. The herein-described apparatus for elevating and transferring or storing ice, consisting of the combination of an elevator and an automatic reciprocating transferring device having means for engaging the ice at its farther side for removing the load from said elevator.

10. The herein-described apparatus for elevating and transferring or storing ice, consisting of the combination of a receiving-elevator, a discharging-elevator and a reciprocating automatic transferring device operated by the movement of one of said elevators and acting to remove the load from the receiving-elevator and permit its transfer to the discharging-elevator.

11. The herein-described apparatus for elevating and transferring or storing ice, consisting of the combination of an elevator, an automatic transferring and draft device having means for positively engaging the ice to draw the same from the elevator platform or support, and means whereby the movement of the elevator is caused to actuate said device.

707,488. APPARATUS FOR ELEVATING OR CONVEYING AND TRANSFERRING ICE, &c. EDGAR A. WRIGHT, Canton, Ohio, assignor to the Aultman Company, Canton, Ohio, a Corporation of Ohio. Filed Feb. 15, 1900. Serial No. 5,371. (No model.)

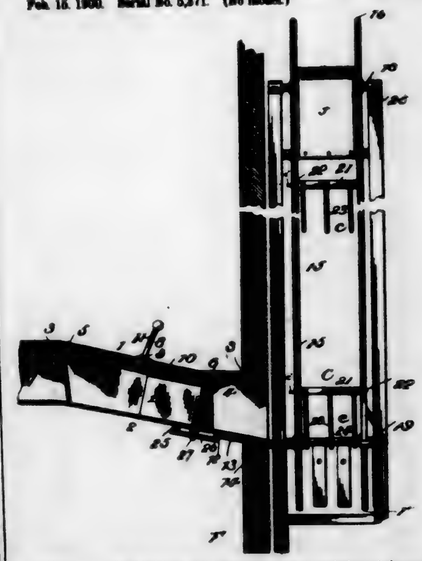

Claim.—1. The herein-described apparatus consisting of the combination with a storage-chamber, of an air-lock having inner and outer doors and an intermediate ice-space, and an elevating or conveying means within said chamber for receiving ice or other material from said lock.

2. The combination with a storage-chamber, of an air-lock having inner and outer doors and an intermediate ice-space, and an elevating or conveying means within the chamber acting to open said lock and adapted to receive the ice or other material therefrom.

3. The combination with a storage-chamber, of an inclined air-lock having inner and outer doors and an intermediate ice-space, and an endless conveying or elevating device within the chamber and acting to receive the ice or other material from said lock.

4. The combination with a storage-chamber, of an air-lock, a means for loosening a cake of ice therein, and an elevating or conveying means within said chamber acting to operate said loosening means and adapted to receive the ice or other material from said lock.

5. The combination of a conveying or elevating means, an inclined chute or platform, a device for loosening a cake of ice or other material therefrom, and an actuating means whereby the conveyer or elevator operates said loosening device.

6. The combination, with the elevator having a carrier provided with a space or spaces, of a discharging device having a supporting arm or arms in line with said spaces, and means for adjusting said discharging device bodily longitudinally of the elevator.

7. The combination with the elevator C, of the chute 1 having an air-lock with inner and outer doors and an intermediate ice-space and an indicator 8, having an arm extending into said lock between the doors.

8. The combination of the elevator C having carriers provided with hooks 23, the support 24, the chute having an air-lock and adapted to deliver a cake of ice to said support, and a vertically-adjustable discharging device D.

9. The combination of the storage-chamber, an elevator within the same, means for directing the ice through the wall of said chamber to the elevator comprising a passage-way, a door or stop for holding the ice, a latch or fastening device for said door, and means whereby the elevator releases said latch.

10. The combination with the endless elevator and the swinging carriers *c*, of the shield J arranged between the upper wheels or pulleys of said elevator and adapted to engage the under side of the carriers.

11. The combination of an endless elevator comprising two chains or members, a swinging carrier *c* suspended and adapted to swing between said members and having its line of pivotal connection with the elevator situated at one side of the load-supporting portion of the carrier, means for discharging the load situated longitudinally of the elevator in line with said carrier, and a guide for holding said carrier out of its normal suspended position and in line with the discharging means.

12. The combination of an elevator having a carrier provided with a space or spaces and a discharging device having an arm or arms in line with said spaces and inclined in a direction toward the end of said carrier.

13. The combination of an elevator having a carrier provided with a space or spaces, a discharging device having an arm or arms in line with said spaces, and inclined in a direction toward the end of said carrier, and guides in which said discharging device is adjustable longitudinally of the elevator.

707,489. APPARATUS FOR ELEVATING OR CONVEYING AND TRANSFERRING ICE, &c. EDGAR A. WRIGHT, Canton, Ohio, assignor to the Aultman Company, Canton, Ohio, a Corporation of Ohio. Filed Mar. 13, 1900. Serial No. 8,562. (No model.)

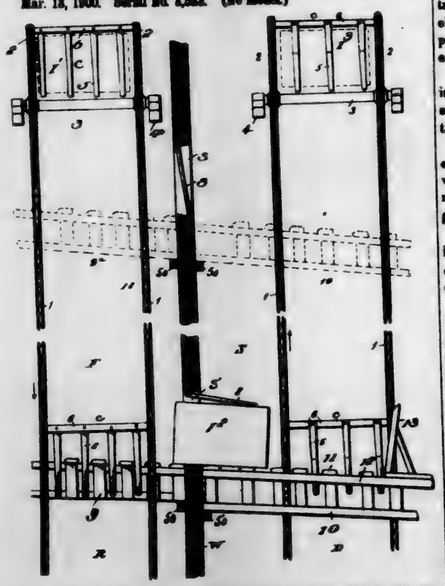

Claim.—1. The herein-described elevating or conveying and transferring apparatus comprising a receiving-elevator, a delivering-elevator and means in a position intermediate between the ends of the receiving-elevator for transferring the load from the former to the latter.

2. The herein-described elevating or conveying and transferring apparatus comprising a receiving-elevator, a delivering-elevator and means for transferring the load from the former elevator to the latter, such means being adjustable relative to both said elevators, substantially as set forth.

3. The combination of an endless elevator or carrier, a second endless elevator or carrier, and means for transferring the load from the descending leg of the first elevator to the ascending leg of the second elevator, said transferring means being adjustable relative to both said elevators.

4. The combination with the storage-chamber 8 having a wall provided with a contracted opening, an elevator or carrier without said wall, a second elevator, or carrier on the inside of said wall, and means for transferring the load from the first elevator through said opening to the second elevator, in a direction substantially transverse to that which is imparted to the load by the first elevator.

5. The combination with the storage-chamber 8, having a wall provided with a contracted opening, an endless elevator or carrier without said wall, a second endless elevator or carrier on the inside of the said wall, and means for transferring the load from the first elevator through said opening to the second elevator, in a direction substantially transverse to that imparted to the load by the first elevator.

6. The combination of the receiving elevator or carrier, an automatic discharging device by which the load is taken from said elevator, a second elevator or carrier, a receiver adapted to support the load and arranged between the ends of the second elevator or carrier and from which the latter is adapted to take the load, and means for transferring the load from said discharging device to said receiver.

7. The combination of an endless receiving-elevator, an automatic discharging device arranged between the ends of said elevator by which the load is taken from said elevator, a second endless elevator, a receiver from which the latter is adapted to take the load, and means for transferring the load from said discharging device to said receiver.

8. The combination with the storage-chamber 8 having a wall provided with an opening, of an endless elevator without said wall, an automatic discharging device situated adjacent to the said opening by which the load is taken from said elevator, a second endless elevator within said chamber, a receiver from which the latter is adapted to take the load, and means for transferring the load from said discharging device through said opening to the receiver.

9. The combination with a storage-chamber having a wall provided with an opening through which the material elevated is adapted to be passed; of an endless elevator having its ascending and its descending legs arranged in a plane substantially parallel with the wall, and means for transferring the load from the elevator situated between the ends of the elevator and arranged to move the load in a direction transverse to the plane in which the elevator moves, a portion of said transferring means extending within the path of parts of the elevator.

10. The combination of a receiving-elevator provided with swinging carriers having hooks 5, a discharging-elevator having substantially similar carriers *c*, and means for transferring the load from said hooks of the receiving-elevator to said hooks of the discharging-elevator.

11. The combination of a plurality of elevators each comprising two elevating-chains, suitable carriers thereon, and two independent chain-wheels, a gear-wheel connected with each of said chain-wheels, a connecting-shaft extending past both elevators and pinions on said shaft engaging the gear-wheels of all of said chain-wheels.

12. The combination with an elevator having endless chains, swinging carriers thereon, and separate chain-wheels at the upper terms of said chains, gear-wheels connected respectively with the chain-wheels, and a connecting-shaft having a pinion for each of said gear-wheels.

13. The combination, in an elevator, of the endless chains or connections, swinging carriers thereon arranged to swing between the chains or connections, and the guides 18 for the carriers arranged to hold them out of their normal position and in proper position to receive a load, substantially as set forth.

707,490. ENAMEL-SIFTING APPARATUS. CARL H. EWERHARD, Baltimore, Md. Filed May 13, 1902. Serial No. 107,122. (No model.)

Claim.—1. An enameling apparatus, comprising a tiltable and rotatable table to support the article to be enameled; a plurality of sifting-boxes adapted to contain enamel and mounted above said table and each box free from direct connection with the other boxes; and independent jarring means for each box, as set forth.

2. An enameling apparatus, comprising a tiltable and rotatable table for the support of the article to be enameled; standards rising above said table; a frame supported on said standards; a plurality of sifting-boxes mounted in said frame and free from direct connection with each other; and an independent jarring device for each of said boxes, as set forth.

3. An enameling apparatus, comprising a support for the article to be enameled; a frame above said support; a plurality of sifting-boxes mounted in said frame and free from direct connection with each other; and an independent jarring device for each of said boxes, as set forth.

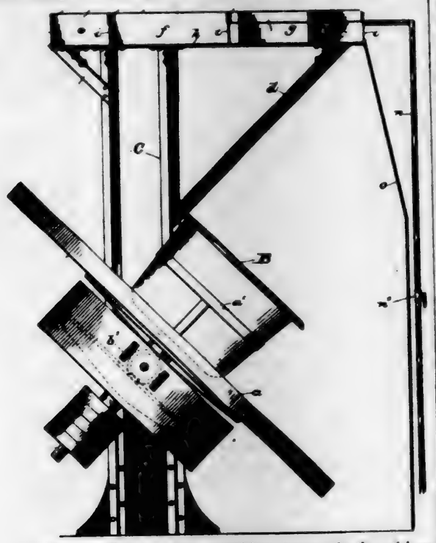

4. An enameling apparatus, comprising a support for the article to be enameled; standards rising above said support; a frame of angle material supported on said standards; a plurality of stationary sifting-boxes mounted and supported within said frame, said boxes being contiguous to each other, but free from direct connection with each other; and an independent jarring device for each of said boxes as set forth.

707,491. APPARATUS FOR REMOVING MATERIALS FROM BOATS, &c. ALFRED M. ADELIS, Pittsburg, Pa. Filed Mar. 17, 1902. Serial No. 98,622. (No model.)

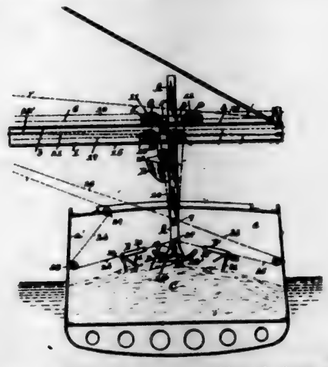

Claim.—1. A hoisting apparatus comprising a bucket or scoop suspended by a cable, and a swinging frame normally free from but adapted to engage with said bucket to move and fill the same.

2. A hoisting apparatus comprising a swinging frame, and a bucket or scoop suspended by a cable from a trolley and adapted to come in contact with and be moved by said frame and be filled by the swinging of said frame.

3. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, and means within said hold adapted to come in contact with said bucket to swing the same and gather the material therein.

4. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, and means within said hold adapted to engage with said bucket as it is lowered into the hold to tilt and swing the same to gather the material therein.

5. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, and a swinging frame extending within said hold adapted to engage with said bucket as it is lowered into the hold to tilt and swing the same to gather the material therein.

6. The combination with a boat, of a bucket having projections thereon and adapted to be lowered and raised to and from the hold of said boat, and a swinging frame within said hold adapted to engage with the projections on said bucket as it is lowered into the hold to tilt and swing the same to gather the material therein.

7. The combination with a boat, of a bucket having projections thereon and adapted to be lowered and raised to and from the hold of said boat, and a swinging frame within said hold having slots therein adapted to engage with the projections on said bucket as it is lowered into the hold to tilt and swing the same to gather the material therein.

8. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket as it is lowered into the hold to tilt and swing the same to gather the material therein, and means for swinging said frame.

9. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket as it is lowered into the hold to tilt and swing the same, and means within the hold of said boat for swinging said frame.

10. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket to tilt and swing the same to gather the material therein, and a cable within said hold and connected to said swinging frame to swing the same.

11. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket to tilt and swing the same to gather the material therein, and a cable within said hold passing around sheaves therein and connected to said swinging frame to swing the same.

12. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold, and projections on said bucket adapted to engage with seats or slots in said frame to tilt said bucket and swing it to gather the material therein.

13. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold, and projections on said bucket adapted to engage with curved seats or slots in said frame to tilt said bucket and swing it to gather the material therein.

14. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame having side members within said hold, projections on said bucket adapted to engage with seats or slots in the lower end of said side members, and a hinged or pivoted portion on the lower end of said side members containing said seats or slots.

15. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame having side members within said hold, projections on said bucket adapted to engage with seats or slots in the lower end of said side members, a hinged or pivoted portion on the lower end of said side members containing said seats or slots, and a bar pivoted to said hinged portion and engaging by a slot therein with a pin on the side members.

16. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket to tilt and swing the same to gather the material therein, and scraping devices within said hold adapted to move with said frame and scrape the material toward the bucket.

17. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket to tilt and swing the same to gather the material therein, a cable within said hold and connected to said frame for swinging the same, and scraping devices on said cable adapted to move with the frame and scrape the material toward the bucket.

18. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket to tilt and swing the same to gather the material therein, a cable within said hold and connected to said frame for swinging the frame, frames on said cable, and a hinged or pivoted scraper on said frames adapted to move with said swinging frame and scrape the material toward the bucket.

19. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat, a swinging frame within said hold adapted to engage with said bucket to tilt and swing the same to gather the material therein, a cable within said hold and connected to said frame for swinging the same, frames on said cable, a hinged or pivoted scraper on said frames adapted to move with said swinging frame

and scrape the material toward the bucket, and a step on said frames adapted to hold said scraper in position for operating.

707,492. APPARATUS FOR REMOVING MATERIALS FROM BOATS, &c. ALFRED M. ACKLEY, Pittsburg, Pa. Filed Mar. 19, 1902. Serial No. 98,914. (No model.)

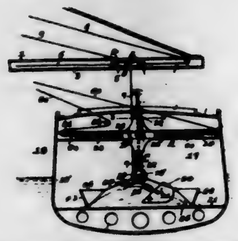

Claim.—1. The combination of a runway, a trolley thereon, a rising and falling bucket adapted to raise material and having its support independent of said trolley, said trolley being adapted to engage the bucket-cables to assist in gathering the material therein.

2. The combination of a bucket adapted to raise material and to be lowered and raised by suspending-lines, a runway or frame, and a trolley on said frame normally free but adapted to engage said suspending-lines to move said bucket and gather the material therein.

3. The combination with a boat, of a bucket adapted to be lowered and raised to and from the hold of said boat and elevate material therefrom, a runway or frame, and a trolley movable on said frame and normally free from but adapted to engage with said bucket to move the same and assist in gathering the material therein.

4. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said hold, and a trolley on said frame adapted to move or travel thereon to engage with said bucket to move the same and gather the material therein.

5. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move or travel thereon, and a frame on said trolley adapted to move or travel therewith to engage with said bucket to move the same and gather the material therein.

6. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move or travel thereon, and an adjustable frame on said trolley adapted to move or travel therewith to engage with said bucket to move the same and gather the material therein.

7. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said hold, a trolley on said frame adapted to move or travel thereon, and a frame on said trolley adapted to be raised and lowered in guides therein and move or travel with said trolley to engage with the bucket to move the same and gather the material therein.

8. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said hold, a trolley on said frame adapted to move or travel thereon to engage with said bucket to move the same and gather the material therein, and means for moving said trolley.

9. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move or travel thereon to engage with said bucket to move the same and gather the material therein, and a power-driven rope or cable connected to said trolley for moving the same.

10. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move or travel thereon, a frame on said trolley adapted to be raised and lowered in guides therein and move or travel with said trolley to engage with the bucket to move the same and gather the material therein, and means for raising and lowering said last-named frame.

11. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move or travel thereon, a frame on said trolley adapted to be raised and lowered in guides therein and move or travel with said trolley to engage with said bucket to move the same and gather the material therein, a screw-bar supported within said last-named frame, and means engaging with said screw-bar for raising and lowering said last-named frame.

12. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move or travel thereon, a frame on said trolley adapted to be raised and lowered in guides therein and move or travel with said trolley to engage with said bucket to move the same and gather the material therein, a screw-bar supported within said last-named frame, a nut engaging with said screw-bar, and means engaging with said nut to turn the same and raise or lower said last-named frame.

13. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to be raised and lowered in guides therein and move or travel with said trolley to engage with said bucket to move the same and gather the material therein, a screw-bar supported within said last-named frame, a nut engaging with said screw-bar and provided with a gear-face thereon, a gear-wheel mounted on a rod and engaging with said gear-face, and a handle on said rod for turning the same to raise and lower said last-named frame.

14. The combination with a boat, of a scoop or bucket adapted to be lowered and raised by power-driven cables to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move or travel thereon, a frame on said trolley adapted to move or travel therewith, and sheaves on the lower end of said last-named frame adapted to engage with the said bucket-cables to tilt and move said bucket to gather the material therein.

15. The combination with a boat, of a scoop or bucket, a bracket on the bail of said bucket, sheaves on said bracket, power-driven cables passing around said sheaves to raise and lower said bucket to and from the hold of said boat, a frame within said boat, a trolley on said frame and adapted to move or travel thereon, a frame on said trolley adapted to move or travel therewith, and sheaves on the lower end of said last-named frame adapted to engage with said bucket-cables to tilt and move said bucket to gather the material therein.

16. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move and travel thereon, a frame on said trolley adapted to move and travel therewith to engage with said bucket to move the same and gather the material therein, and scrapers connected to and adapted to move with said last-named frame to scrape the material toward the bucket.

17. The combination with a boat, of a scoop or bucket adapted to be lowered and raised to and from the hold of said boat, a frame within said boat, a trolley on said frame adapted to move and travel thereon, a frame on said trolley having vertical standards thereon and adapted to move and travel with said trolley, said standards adapted to engage at their lower ends with said bucket to move the same and gather the material therein, and a scraper on each side of said standards and connected to the lower end thereof to scrape the material toward the bucket.

707,493. DETONATING COMPOUND. UGO ALVISI, Rome, Italy. Original application filed Dec. 17, 1898, Serial No. 699,562. Divided and this application filed Oct. 10, 1901. Serial No. 78,345. (No specimens.)

Claim.—1. A detonating compound containing fulminate of mercury and perchlorate of ammonium.

2. A detonating compound containing 17.20 per cent. of perchlorate of ammonium and 82.80 per cent. of fulminate of mercury.

707,494. RAIL-JOINT FOR RAILWAYS. EDWARD R. AVERY, Peny, Mont., assignor of one-half to Charles Elmer Morris and Philip Harry Gohn, Peny, Mont. Filed Apr. 30, 1902. Serial No. 105,335. (No model.)

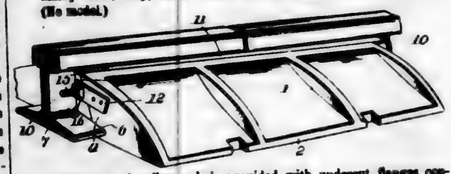

Claim.—1. A railway-chair provided with undercut flanges constructed to embrace the base-flanges and webs of two abutting rails, one of said flanges being parallel with the rail-webs and the other oblique thereto, a wedge-shaped key fitted between said oblique flange and the rails, a slotted resilient bracket-plate fitted to the end of the oblique flange, a bolt fitted in the smaller end of the wedge-shaped key and projecting through the slot in the spring bracket-plate and a nut fitted on the bolt and bearing against the spring bracket-plate, substantially as described.

2. A railway-chair provided with undercut flanges constructed to embrace the base-flanges and webs of two abutting rails, one of said flanges being parallel with the rail-web and the other oblique thereto, a wedge-shaped key fitted between said oblique flange and the rails, a slotted resilient bracket-plate fitted to the end of the oblique flange, a bolt removably fitted in the smaller end of the wedge-shaped key and projecting through the slot in the spring bracket-plate, and a nut fitted on the bolt and bearing against the spring bracket-plate, substantially as described.

3. A railway-chair provided with undercut flanges constructed to embrace the base-flanges and webs of two abutting rails, one of said flanges being parallel with the rail-webs and the other oblique thereto, a wedge-shaped key fitted between said oblique flange and the rails, a slotted resilient bracket-plate fitted to the end of the oblique flange and projecting inwardly in front of the smaller end of the wedge-shaped key, a bolt fitted in the smaller end of said wedge-shaped key and projecting through the slot in the spring bracket-plate, and a nut fitted on the bolt and bearing against the spring bracket-plate, substantially as described.

4. A railway-chair provided with undercut flanges constructed to embrace the base-flanges and webs of two abutting rails, one of said flanges being parallel with the rail-web, and the other oblique thereto, a wedge-shaped key fitted between said oblique flange and the rails, a slotted resilient bracket-plate fitted to the end of the oblique flange and projecting inwardly in front of the smaller end of the key, said key being provided on the inner face of its smaller end with a T-shaped groove, a headed bolt removably seated in said groove and projecting through the slot in the spring bracket-plate, and a nut fitted on said bolt and bearing against the spring bracket-plate, substantially as described.

707,495. STEAM-BOILER FURNACE. JOHN B. BAILEY, Baltimore, Md., assignor to Maurice Lamphelmer, Baltimore, Md. Filed Apr. 7, 1902. Serial No. 101,816. (No model.)

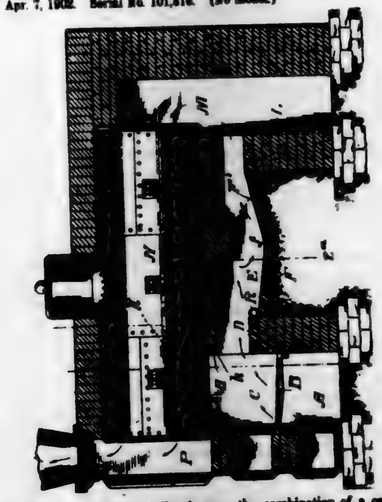

Claim.—In a steam-boiler furnace, the combination of a casing, a fuel-chamber at one end thereof, a front bridge-wall behind said chamber, a combustion-chamber having a concave bottom behind said bridge-wall, a rear bridge-wall at the other end of said chamber, a boiler mounted in said casing and extending over said fuel-chamber and said bridge-walls, an arch extending from the front of said front bridge-wall to the rear of said rear bridge-wall and tangent to said boiler at its highest point, a partition-wall resting upon the front of said arch and extending up to and inclosing the lower part of said boiler, a baffle-wall extending downwardly from about the center of said arch toward the lowest part of said combustion-chamber, and a perforated air-pipe behind said front bridge-wall and adapted to supply air to the products of combustion after they have left the fuel-chamber, substantially as described.

707,496. STEAM-BOILER FURNACE. JOHN B. BAILEY, Baltimore, Md., assignor to Maurice Lamphelmer, Baltimore, Md. Filed Apr. 7, 1902. Serial No. 101,817. (No model.)

Claim.—1. In a steam-boiler furnace, the combination of a fuel-chamber, front and rear bridge-walls, a combustion-chamber between said walls provided with an inclined floor, an arch extending over said walls, a boiler located above said arch and contacting with its highest point, and a baffle-plate extending downwardly from about the center of said arch, said baffle-plate being provided with recesses or pockets on its front projecting surface, substantially as described.

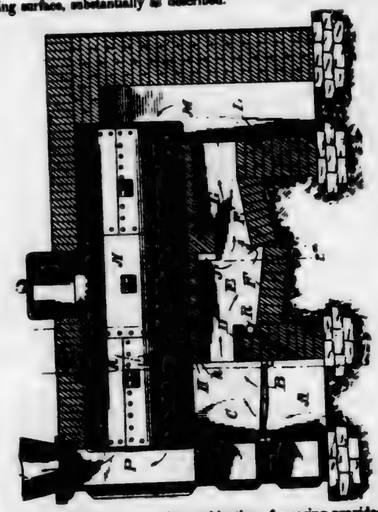

2. In a boiler-furnace, the combination of a casing provided with a fuel-chamber near one end, front and rear bridge-walls, an arch extending completely over said bridge-walls and supported by the sides of the casing, a boiler extending over said fuel-chamber and touching said arch at its highest point, a wall or partition extending upwardly from the front of said arch and around the lower part of said boiler, and a baffle-plate extending downwardly from substantially the center of said arch and provided with recesses or hollows on its front face, substantially as described.

3. In a boiler-furnace, the combination of a casing, a fuel-chamber near one end thereof, front and rear bridge-walls, a double inclined floor extending between said bridge-walls, one part of said floor being higher than the other so as to form a retarding-corner, an arch sprung from the side walls of said casing and extending over said bridge-walls, a boiler mounted in said casing and extending over said fuel-chamber and said arch and touching the highest point of said arch, a partition extending upwardly from the front of said arch and inclosing the lower part of said boiler, and a baffle-plate located near the center of said arch and extending downwardly, said baffle-plate being provided with hollows or recesses on its forward face and being located above the corner in the floor between said bridge-walls, substantially as described.

4. In a boiler-furnace, the combination of a casing, a fuel-chamber near one end thereof, front and rear bridge-walls, a double inclined floor, extending between said bridge-walls, one part of said floor being higher than the other so as to form a retarding-corner, an arch sprung from the side walls of said casing and extending over said bridge-walls, a boiler mounted in said casing and extending over said fuel-chamber and said arch and touching the highest point of said arch, a partition extending upwardly from the front of said arch and inclosing the lower part of said boiler, a baffle-plate located near the center of said arch and extending downwardly, said baffle-plate being provided with hollows or recesses on its forward face and being located above the corner in the floor between said bridge-walls, and a perforated air-pipe located behind the front bridge-wall and adapted to supply air to the products of combustion after they have left the fuel-chamber, substantially as described.

707,497. HAME-FASTENER. ERNEST G. ERNEST, Atlanta, Ga. Filed Aug. 20, 1901. Serial No. 73,858. (No model.)

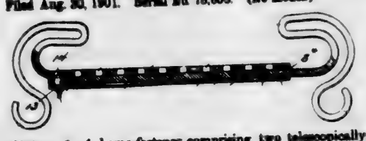

Claim.—1. A hame-fastener comprising two telescopically-related plates each having an outer terminal hook device, the one plate being

provided with a series of openings and the other plate having a revolubly spring-controlled dog slidingly mounted therein adjacent to one end, the dog having a clearance at its upper extremity to permit the one plate to slide thereover in varying the adjustment.

2. A hame-fastener comprising two plates with outer terminal hook devices, the one plate being superimposed on the other and both plates telescopically related, the one plate having a series of separated openings therethrough in longitudinal alinement, a dog revolubly and slidingly mounted in the other plate and normally projected through one of the openings of the first plate, said dog having a clearance structure at its upper extremity to permit the upper plate to slide thereover in varying the adjustment of the two plates, and a spring secured to the plate carrying the dog and having a bifurcated end in engagement with the latter.

3. A hame-fastener comprising an outer perforated plate having its edges bent inward to form grooves, and one of its ends bent inward, then outward, and downward to form a hook, to engage a ring, and a depending finger-piece, an inner plate adjustably supported in said grooves and formed with an opening, and having one of its ends bent inward, then outward and downward to form a hook to engage a ring, and a depending finger-piece, and a spring-pressed dog extending through said opening.

707,498. PEGGING-MACHINE. JOHN F. BERRYMAN, Whitman, Mass. Filed Mar. 16, 1901. Serial No. 51,552. (No model.)

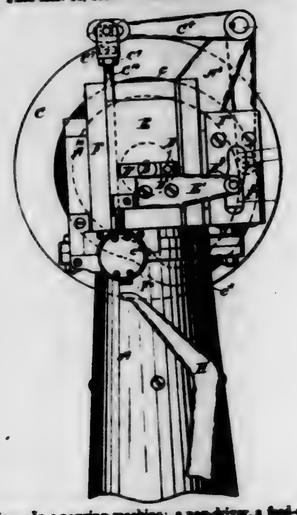

Claim.—In a pegging-machine; a peg-driver, a feed-plate mounted for lateral movement in the machine-head, feed devices carried by said feed-plate, an awl-plate mounted for vertical movement in said feed-plate, an awl carried by said awl-plate, means to vertically reciprocate said awl-plate, a laterally-projecting arm on said awl-plate, a cam-roll carried by said arm, a plate attached to the machine-head and provided with an adjustable cam-groove, whereby, as said awl-plate is vertically reciprocated, it and the feed-plate will be given a simultaneous lateral movement to feed the work, the extent of said feed movement being dependent upon the adjustment of the cam-groove, substantially as and for the purpose set forth.

707,499. NUT-LOCK. JOHN P. BERRYMAN, Lexington, Va., assignor to David G. Humphreys, trustee, Lexington, Va. Filed Dec. 14, 1901. Serial No. 86,078. (No model.)

Claim.—A nut-lock comprising in combination with the nut having a recess in one of its faces adjacent to the object to which the lock is applied, the walls of said recess tapering near its outer end, a flexible locking-pin mounted loosely in said recess, its free end projecting a slight distance beyond the outer end of the recess adapted to contact with an object to cause the pin to buckle in opposite directions accordingly as the nut is screwed upon or unscrewed from a bolt, as set forth.

707,500. MAIL RECEIVING AND DELIVERING MECHANISM FOR RAILWAYS. FRANKLIN H. BURR, Atlantic, Iowa, assignor to Fast Mail Delivery Company, Council Bluffs, Iowa, a Corporation of South Dakota. Filed July 5, 1902. Serial No. 114,494. (No model.)

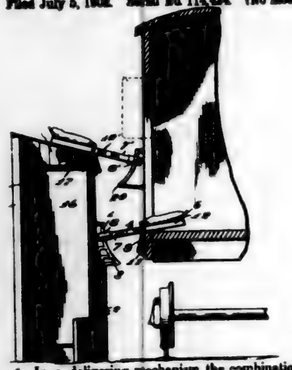

Claim.—1. In a delivering mechanism the combination of a supporting-frame, means for pivotally supporting the said frame, the said pivotal mechanism being capable of lengthening the throw of the frame, and means for automatically swinging said frame upon its pivotal support, substantially as described.

2. In a delivering mechanism, the combination of a delivering-frame, an intermediate, pivotally-mounted link pivotally carrying the same for increasing the throw of the frame, both of the pivots being positioned in the same vertical plane, and means for swinging the frame upon said link, substantially as described.

3. In a delivering mechanism, the combination with a delivering-frame, comprising a suitable framework and a bail for forming an abutment at one end thereof to prevent pouches being thrown from the frame by centrifugal force, means pivotally supporting said delivering-frame, and means for swinging the delivering-framework upon its pivot, substantially as described.

4. In a delivering mechanism, the combination of a delivering-frame comprising a suitable framework, a pivotally-mounted apron carried thereby, and an abutment formed at the end of the framework, pivotal means supporting said delivering-frame capable of lengthening the throw thereof, and means for swinging said delivering-frame upon its pivot, substantially as described.

5. In a delivering mechanism, the combination of a car, an intermediate link pivotally attached thereto, a delivering-frame pivoted to said link, and means fixed relative to said car for swinging said delivering-frame upon said link and its pivot, substantially as described.

6. In a delivering mechanism, the combination of a delivering-frame pivoted to the car, means for swinging said frame upon its pivot, a suitable shield fixed at an angle relative to the car, and a housing contiguous to said shield for receiving an article delivered by said frame, substantially as described.

7. In a delivering mechanism the combination of a frame larger at one end than at the other and contracted within its central portion, a pivoted-link frame pivoted to said delivering-frame at its contracted part, the said pivoted-link frame being also pivoted to a suitable support, a tilting arm projecting from the said delivering-frame, and means for engaging the same to throw the frame upon its pivotal point, the pivotal-link frame lengthening the throw and action of the said arm, substantially as described.

707,501. DRAFT-RIGGING. WALTER H. COFFIN, Cleveland, Ohio, assignor to the National Malleable Castings Company, Cleveland, Ohio, a Corporation of Ohio. Filed Jan. 16, 1902. Serial No. 90,054. (No model.)

Claim.—1. The combination of draft-irons, end sill and head-block, of separating-blocks formed on the draft-irons, fitting between the end sill and head-block; substantially as described.

2. The combination of the head-block and end sill, and a frame set on these parts and having a separating portion which fits between them, and having also a lateral socket to receive a deck-board; substantially as described.

3. The combination with an end sill, of a buffing-plate formed with a central buffer, and with lips 20 at each side of the buffer adapted with the buffer to constitute spaces for the draft-irons which bear at one side against the buffer and at the other side against the lips; substantially as described.

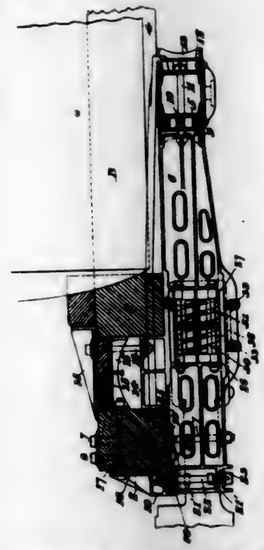

4. The combination with an end sill, of a buffing-plate formed with a central buffer, and with lips 20 at each side of the buffer adapted with the buffer to constitute spaces for the draft-irons which bear at one side against the buffer and at the other side against the lips, said buffing-plate having laterally-projecting portions extending along the end sills and adapted to distribute the buffing blows; substantially as described.

5. The combination with the draft-irons, of chafing-blocks removably set on the opposite inner faces of the draft-irons, said chafing-blocks having transverse lugs and vertical bolts passing through the lugs and securing them to the draft-irons; substantially as described.

6. The combination with the draft-irons, of chafing-blocks removably set on the opposite inner faces of the draft-irons, said chafing-blocks having lugs and bolts passing through the lugs and securing them to the draft-irons, and a carry-iron also held by said bolts; substantially as described.

7. The combination with the end sill, of a buffing-plate applied thereto and having a flange extending under the end sill, and a draft-iron fitting under said flange and against the same, a space being afforded between the edge of said flange and a shoulder on the draft-iron for adjustment; substantially as described.

8. The combination of a draft-iron having a lateral opening or window for removal of the springs, a draw-bar and a yoke having its arms above and below the spring mechanism, and a carry-iron supporting the yoke; substantially as described.

9. The combination of a draft-iron having a lateral opening or window for removal of the spring, a draw-bar, a yoke having arms above and below the spring affording a lateral opening for its removal, and a carry-iron supporting the yoke and having cheeks which constitute lateral bearings for the yoke; substantially as described.

707,502. PEDESTAL FOR LOCOMOTIVES. THOMAS R. COLLINS, Philadelphia, Pa., assignor to George Burnham, William P. Henneay, John H. Converse, William L. Austin, Samuel M. Vauclain, Alba B. Johnson, and George Burnham, Jr., doing business under firm-name of Burnham, Williams and Company, Philadelphia, Pa. Filed Dec. 13, 1900. Serial No. 39,754. (No model.)

Claim.—1. The combination of a pedestal having side members provided with slots in their lower ends, a cross-bar mounted between said members having threaded extensions constructed to enter said slots, nuts for said threaded extensions, a wedge mounted on one of the pedestals, and a screw in movable engagement with said wedge, passing through a threaded opening in said cross-bar, said screw having an irregular head whereby it may be turned, substantially as described

2. The combination of a pedestal, side members having slots in their lower ends, a cross-bar mounted between said side members having screw-threaded extensions for engaging said slots, nuts and washers on the extensions whereby said cross-bar is retained in position, one of said extensions being shaped to fit the slot in one of the side members, so as to prevent the turning of the cross-bar, substantially as described.

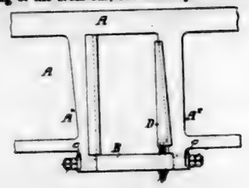

707,503. GRAVE-FILLER. URIAH H. DERRING, Cleburne, Tex., assignor of one-half to Jacob D. Olger, Cleburne, Tex. Filed Dec. 24, 1901. Serial No. 87,069. (No model.)

Claim.—1. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon and having its discharge end located outside of the plane of the truck-wheels, and means for operating said platform, substantially as described.

2. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon, a headboard at or near one end of said platform, and means for operating said platform, substantially as described.

3. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon, supporting-rollers beneath said platform, and means for operating the platform, substantially as described.

4. In a grave-filler, the combination with a truck, of an extension-frame, means for adjusting said extension-frame, and a roller-platform mounted on the extension-frame, substantially as described.

5. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon, and means for operating said platform consisting of a winding-shaft, and flexible connections between said winding-shaft and the roller-platform, substantially as described.

6. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon, a stretching-cable connecting the opposite ends of said roller-platform, and means for operating said platform, substantially as described.

7. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon, a stretching cable or chain connecting the opposite ends of the platform, rollers around which the platform travels, and platform-operating means consisting of a winding-shaft, and flexible connections interposed between said shaft and the platform, substantially as described.

8. In a grave-filler, the combination with a truck, of a slatted and flexible roller-platform mounted thereon, means for operating said platform, supporting-rollers located beneath the platform, and a covering-sheet for said platform, substantially as described.

9. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon, means for operating said platform, and side-boards between which the platform operates, substantially as described.

10. In a grave-filler, the combination with a truck, of a roller-platform mounted thereon, means for operating said platform, extension side-boards between which the platform is located, and yoke-braces detachably associated with said extension-boards, substantially as described.

11. In a grave-filler, the combination with a truck, of antifriction-rollers journaled therein, an extension-frame supported on said rollers, and means for adjusting the extension-frame, substantially as described.

12. In a grave-filler, the combination with a truck, of antifriction-rollers journaled therein, an extension-frame supported on said rollers, means for adjusting said extension-frame, antifriction-rollers journaled in the extension-frame, a roller-platform supported on the last-named rollers, and means for operating said platform, substantially as described.

707,504. FASTENER. WILLIAM B. H. DOWER, Newton, Mass., assignor to Consolidated Fastener Company, Portland, Me. Filed June 7, 1902. Serial No. 110,572. (No model.)

Claim.—1. A stud member of a snap-fastener consisting of a ring, a hollow stud having a central crown, a neck below the crown, a shoulder and depending flange, the depending flange lying within the ring, and separated therefrom by the material to which the stud member is attached, the edge of the flange being turned outward so that the ring is held between the outward-turned edge of the flange and shoulder, substantially as shown and described.

2. A stud member of a snap-fastener consisting of a ring, a hollow stud having a central crown, a neck below the crown, a shoulder and depending flange, the flange lying within the ring and separated therefrom by an imperforate flexible material to which the stud member is attached, the flange being turned outward and the shoulder crushed downward, so as to bind the ring and confined material between the outwardly-turned edge of the flange and the shoulder, substantially as shown and described.

3. A snap-fastener consisting of a stud member and a socket member adapted to mutual engagement, the stud member consisting of a ring, a hollow stud having a central crown a neck below the crown, a shoulder and depending flange, the depending flange lying within the ring, and separated therefrom by the material to which the stud member is attached, the edge of the flange being turned outward so that the ring is held between the outward-turned edge of the flange and shoulder, and the socket member consisting of a cup, a stud-engaging collar lying within the cup, and separated therefrom by the material to which the socket member is attached, the edge of the cup being turned under the edge of the collar, and the material confined thereby, substantially as shown and described.

4. A stud member of a snap-fastener consisting of a tubular ring, a hollow stud having a central crown, a neck below the crown, a shoulder and depending flange, the depending flange lying within the ring, and separated therefrom by the material to which the stud member is attached, the edge of the flange being turned outward so that the ring is held between the outward-turned edge of the flange and shoulder, substantially as shown and described.

5. A stud member of a snap-fastener consisting of a split tubular ring, a hollow stud having a central crown, a neck below the crown, a shoulder and depending flange, the depending flange lying within the ring, and separated therefrom by the material to which the stud member is attached, the edge of the flange being turned outward so that the ring is held between the outward-turned edge of the flange and shoulder, substantially as shown and described.

6. A stud member of a snap-fastener consisting of a tubular ring, a hollow stud having a central crown, a neck below the crown, a shoulder and depending flange, the flange lying within the ring and separated therefrom by an imperforate flexible material to which the stud member is attached, the flange being turned outward, and the shoulder crushed downward, so as to bind the ring and confined material between the outwardly-turned edge of the flange and the shoulder, substantially as shown and described.

7. A stud member of a snap-fastener consisting of a split tubular ring, a hollow stud having a central crown, a neck below the crown, a shoulder and depending flange, the flange lying within the ring and separated therefrom by an imperforate flexible material to which the stud member is attached, the flange being turned outward, and the shoulder crushed downward, so as to bind the ring and confined material between the outwardly-turned edge of the flange and the shoulder, substantially as shown and described.

707,505. ELECTRICAL SWITCH. LEONARD L. BLOCH, Boston, Mass., assignor of one-half to Sears B. Condit, Jr., Somerville, Mass. Filed Apr. 15, 1901. Serial No. 55,945. (No model.)

Claim.—1. In an electric switch, contacts for a line-circuit, independent contacts for a polyphase system, a single rotary hand-lever, and means for transferring the line-circuit by a single straight-ahead movement of the hand-lever from any one phase of the polyphase system to any other thereof.

2. An electric switch, having a plurality of contact-makers in a successive series for transferring a circuit from one source of supply to another, and a series of contacts coöperating therewith, said contact-makers being movable in an unvarying path only, into successive contact with said series of contacts, said switch having a break position between every two make positions.

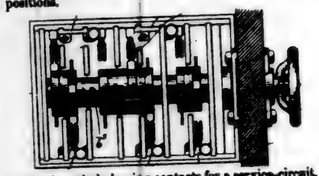

3. An electric switch, having contacts for a service-circuit, and other contacts for a plurality of interrelated supply-conductors, a single hand-lever, and means for transferring by a single simple and unchangeable movement of the hand-lever said service-circuit from any two of said supply-conductors to any other two thereof.

4. An electric switch, having a rotatable shaft, provided with a series of contact-makers connected in pairs out of longitudinal alinement, coöperating contacts arranged in different circumferential positions to be simultaneously engaged by the contact-makers of a given pair and to be successively engaged by the contact-makers of successive pairs, as the shaft is rotated, and means for rotating said shaft.

5. An electrical apparatus, comprising a rotatable shaft, contact-makers carried thereby and connected by conductive material in pairs out of circumferential alinement with each other, contacts in position to be simultaneously engaged by the respective contact-makers of a given pair, and operating means for rotating said shaft.

6. An electrical apparatus, comprising a rotatable shaft, contact-makers adjustably carried thereby out of circumferential alinement with each other and connected in pairs by conductive material, contacts in position to be simultaneously engaged by the respective contact-makers of a given pair, and operating means for rotating the shaft.

7. An electrical apparatus, comprising a rotatable shaft, contact-makers carried thereon by rings adjustably mounted on the shaft, said contact-makers being out of circumferential alinement with each other and connected in pairs by conductive material, contacts in position to be simultaneously engaged by the respective contact-makers of a given pair, and means for rotating the shaft.

8. An apparatus containing make-and-break devices, including a rotatable shaft having contact-makers, and contacts mounted in position to be engaged by said contact-makers, one set of contacts being connected to the terminals of a service-circuit, and another set of contacts being connected to interrelated supply-conductors, as, for example, the wires from a polyphase generator, each of said service-circuit terminals having separate connection to contacts in its set one less in number than the number of supply-conductors in the said opposite set of contacts with which it coöperates.

707,506. METHOD OF TREATING MIXED SULFID ORES. ERNESTO FERRARIS, Monteponi, Italy. Filed July 23, 1902. Serial No. 117,390. (No specimens.)

Claim.—1. The process of decomposing mixed sulfid ores by means of concentrated sulfuric acid without the aid of extraneous heat.

2. The process of decomposing mixed sulfid ores containing zinc, and the production therefrom of zinc sulfate soluble in water, by means of concentrated sulfuric acid without the aid of extraneous heat.

3. The process of decomposing mixed sulfid ores containing zinc, and the production therefrom of zinc sulfate soluble in water, by means of concentrated sulfuric acid, employed in the ratio of two molecules of the acid to each molecule of the metallic sulfids contained in the ore, without the aid of extraneous heat.

707,507. DRILLING-MACHINE. FREDERICK H. GARDNER, Beloit, Wis. Filed Nov. 5, 1901. Serial No. 81,566. (No model.)

Claim.—1. The combination with a vertical column, of a revolving work-table support, annularly arranged, rotative drill-spindles which revolve with said work-table support, work-tables located severally beneath said drill-spindles and provided with stems which have sliding, non-rotative engagement with said work-table support, a concentric stationary cam-ring below said work-table support provided on its cylindric surface with an upwardly-facing cam-shoulder, laterally-directed bearing-rollers on the lower ends of said stems which have bearing on said cam-shoulder, and means for vertically adjusting said bearing-rollers on said stems.

2. The combination with a vertical column, of a revolving work-table support, annularly arranged, rotative drill-spindles which revolve

with the work-table support, work-tables located severally beneath said drill-spindles and provided with stems which have sliding, non-rotative engagement with said work-table support, a stationary concentric cam-ring below said work-table support and provided on its cylindric surface with an upwardly-facing cam-shoulder, laterally-directed bearing-rollers on the lower ends of said stems which have bearing on said cam-shoulder, means for vertically adjusting said bearing-rollers on said stems, and means on said stems for limiting the vertical adjustment of the bearing-rollers thereon.

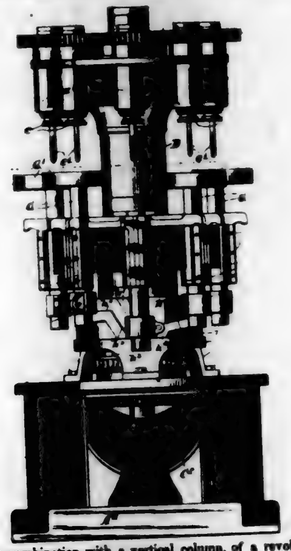

3. The combination with a vertical column, of a revolving work-table support, annularly arranged, rotative drill-spindles revolving with said work-table support, work-tables located severally beneath said drill-spindles and provided with stems which have sliding, non-rotative engagement with said work-table support, a concentric, stationary cam-ring below said work-table support and provided on its cylindric surface with an upwardly-facing cam-shoulder, laterally-directed bearing-rollers on said stems, laterally-directed bearing-rollers on said collars adapted for engagement with said cam-shoulder, said collars being provided with inwardly-projecting parts adapted to enter longitudinal grooves in said stems, and being capable of longitudinal movement with respect to the stems to permit vertical adjustment of the collars.

4. The combination with a vertical column, of a revolving work-table support, annularly arranged, rotative drill-spindles revolving with said work-table support, work-tables located severally beneath said drill-spindles and provided with stems which have sliding, non-rotative engagement with said work-table support, a concentric, stationary cam-ring below said work-table support and provided on its cylindric surface with an upwardly-facing cam-shoulder, collars surrounding the lower ends of said stems, laterally-directed bearing-rollers on said collars adapted for engagement with said cam-shoulder, said collars being provided with inwardly-projecting parts adapted to enter longitudinal grooves in said stems and being capable of longitudinal movement on the stems to permit vertical adjustment of the collars, and stops in said grooves adapted for engagement with the projecting parts of the collars to limit the vertical adjustment of the collars on said stems.

707,508. ELECTRIC ROLLER FOR MASSAGE AND THERAPEUTICAL PURPOSES. JOHN W. GIBBS, New York, N. Y. Filed Apr. 17, 1899. Serial No. 713,243. (No model.)

Claim.—1. An electric roller of the class described, embodying a stationary armature attached to a stationary shaft, and a revolvable magnetic field surrounding the same and carried within and by a revolvable metallic cylinder comprising the roller proper, and a holder forming an operating-handle and electrically connected to said stationary armature-shaft, said cylinder having insulated bearings upon said shaft, substantially as shown and described.

2. An electric roller of the class described, embodying a stationary armature in electrical connection with an operating-handle, and a revolvable magnetic field inclosed within and carried by a revolvable metallic cylinder surrounding said armature, said cylinder comprising the roller proper and being insulated from the stationary armature, substantially as shown and described.

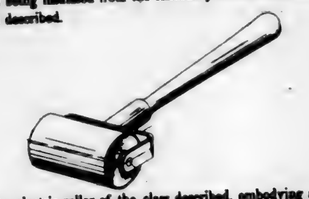

3. An electric roller of the class described, embodying a revolvable metallic cylinder comprising the roller proper, a field-magnet carried by and contained therein, a stationary armature within said field-magnet, a metallic handle in electrical connection with the said armature, and insulated bearings for said cylinder, substantially as shown and described.

4. As a therapeutical appliance, the combination of a stationary armature attached to a stationary shaft and in electrical connection therewith, a metallic handle in electrical connection with said shaft, a revolvable magnetic field surrounding said armature, a revolvable metallic cylinder forming the roller proper and inclosing the said magnetic field and in electrical connection therewith, insulated collars upon and carrying said stationary shaft, and bearings carried by said cylinder and operating upon said collars, substantially as shown and described.

5. In a device for applying electricity superficially, the combination of a mechanical generator of electricity and a roller for contact with the body, the construction being such that the motion of the roller causes the operation of the generator of electricity.

6. In a device for the therapeutic application of electricity, the combination of a hollow roller-shell, said means for generating a current of electricity within said roller-shell, and also means for electrically connecting the said electricity-generator with the shell.

7. In a device for the therapeutic application of electricity, the combination of a roller, and means for generating electricity mechanically said electricity-generating means being constructed and arranged to be operated by the motion of the roller, and means for electrically connecting the said electricity-generator with the roller.

8. In a device for the therapeutic application of electricity, the combination of a hollow roller-shell, and means for generating a current of electricity within said roller-shell contained within said shell, and also means for electrically connecting said electricity-generator with the shell.

9. In a device for the therapeutic application of electricity, the combination of a roller, and means for generating a series of induced currents of electricity mechanically, contained within said roller, said electricity-generating means being constructed and arranged to be operated by the motion of the roller and means for electrically connecting the electric generator with the roller.

10. In a device for the therapeutic application of electricity, the combination with a movable roller-shell, of a relatively stationary part forming one member of the electricity-generating system, of another member of the generator of electricity secured to said shell, to cause the operation of the generator of electricity by the motion of the shell and means for electrically connecting the said generator with the shell.

11. In a device for the therapeutic application of electricity, a roller, a coil of wire contained within the same, and means to set up in said coil an induced current of electricity by the motion of the roller and means for electrically connecting the coil with the roller.

12. In a device for the therapeutic application of electricity, the combination of a roller, a coil of wire located adjacent to the roller, means to set up a series of induced currents of electricity in said coil by the motion of the roller and means for electrically connecting the said coil with the roller.

13. In a device for the therapeutic application of electricity, a roller, and a coil of wire, and means to set up in said coil an induced current of electricity by the motion of the roller contained in said roller.

707,509. BOILER AND ITS FURNACE. SAMUEL A. GRAHAM Sheffield, England, assignor of one-half to John Brown and Company Limited, Sheffield, England. Filed Apr. 10, 1902. Serial No. 102,604. (No model.)

Claim.—1. A water-tube boiler having a fire-chamber and a bridge-wall at the rear and extending upwardly from the bottom thereof, a combustion-chamber for the gases in the rear of the fire-chamber, water-tubes above both chambers, a depending bridge from the tubes between the two chambers, the said depending bridge and the bridge-wall forming a contracted passage between the two chambers, and means for directing air from the lower part of the bridge-wall across the contracted passage and toward the front of the depending bridge, substantially as described.

2. A water-tube boiler having a fire-chamber and a bridge-wall at the rear and extending upwardly from the bottom thereof, a combustion-chamber for the gases in the rear of the fire-chamber, water-tubes above both chambers, a hollow depending bridge from the tubes between the two chambers, the said depending bridge and the bridge-wall forming a contracted passage between the two chambers, and means for directing air from the lower part of the bridge-wall across the contracted passage and toward the front of the depending bridge, substantially as described.

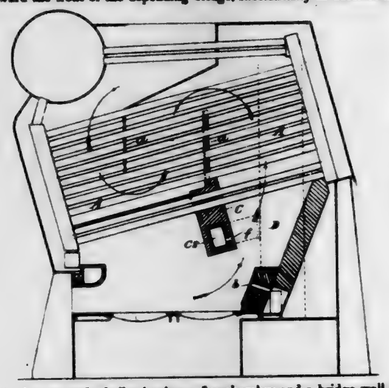

3. A water-tube boiler having a fire-chamber and a bridge-wall at the rear and extending upwardly from the bottom thereof, a combustion-chamber for the gases in the rear of the fire-chamber, water-tubes above both chambers, a depending hollow bridge from the tubes between the two chambers and having openings into the rear combustion-chamber for directing air therefrom, the said bridge-wall and depending bridge forming a contracted passage between the two chambers and the bridge-wall having air-inlet openings near the bottom for directing air across said passage and toward the front of the depending bridge, substantially as described.

4. A water-tube boiler having a fire-chamber and a combustion-chamber in the rear of the same, water-tubes above said chamber and extending beyond it, a bridge-wall extending from one end of the fire-chamber to the extending ends of said tubes, a depending bridge from the water-tubes forming with the bridge-wall a contracted passage between the two chambers, and air-inlets near the bottom of the bridge-wall for directing air across said contracted passage and toward the front of the depending bridge, substantially as described.

5. A water-tube boiler having a fire-chamber and a combustion-chamber in the rear of the same, water-tubes above said chamber and extending beyond it, a bridge-wall extending from one end of the fire-chamber to the extending ends of said tubes, a depending bridge from the water-tubes forming with the bridge-wall a contracted passage between the two chambers, means for directing air through said depending bridge into the combustion-chamber, and air-inlets near the bottom of the bridge-wall for directing air across said contracted passage and toward the front of the depending bridge, substantially as described.

707,510. LIQUID-FUEL BURNER. ROBERT HALLET, Chicago, Ill., assignor of one-fourth to the Piano Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Original application filed Aug. 2, 1901, Serial No. 70,583. Divided and this application filed Nov. 5, 1901. Serial No. 81,231. (No model.)

Claim.—In a device of the class described, the combination with the stationary burner consisting of the shell adapted to be connected to the air-passage and having the circular recess 31 therein, the burner-tube connected to the oil-supply, of the block 36 having a passage therethrough and the circular portion 30 fitting into the recess 31 and adapted to rotate therein.

707,511. MANIFOLDING-TABLET. BENJAMIN F. HOARD, New York, N. Y. Filed June 18, 1901. Serial No. 65,046. (No model.)

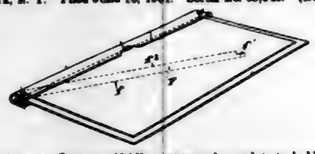

Claim.—1. In a manifolding-tablet, a base-plate to hold the sheets, in combination with a clamping device secured thereto, means to hold said clamping device in a rocking relation so as to move away from the front face of the base to insert the sheets thereunder, and with means to lock the clamp, sheets and base-plate immovably together along or near the edge of said base.

2. In a manifolding-tablet, a base-plate to hold the sheets, in combination with a clamping device secured thereto, means to hold said clamping device in a rocking relation, so as to move away from the front face of the base to insert the sheets thereunder, and with means pivoted to the base-plate to lock the clamp, sheets and base-plate immovably together along or near the edge of said base.

3. In a manifolding-tablet, a base-plate to hold the sheets, in combination with a clamping device secured thereto, means to hold said clamping device in a rocking relation, so as to move away from the front face of the base to insert the sheets thereunder, and with means whereby the said clamp may grasp the sheets along or near the edge of said base consisting of a locking-piece to engage the clamp on the rear face of the base.

4. In a manifolding-tablet, a base-plate to hold the sheets, in combination with a rocking U-shaped clamping device secured thereto, means to hold the clamp in a rocking relation so as to move from the front face of the base to insert the sheets thereunder, and with means to engage the clamp and front face of said plate along or near the edge of said base, consisting of a locking-bar to engage the clamping device on the rear face of the base.

5. In a manifolding-tablet, a base-plate to hold the sheets, provided with orifices, in combination with a rocking U-shaped clamping device secured thereto and provided with holding pins or rivets to work loosely in said orifices, and with means to engage the said clamp along or near the edge of the base, consisting of a locking-bar to engage the clamping device on the rear face of the base.

6. In a manifolding-tablet, a base-plate to hold the sheets, in combination with a U-shaped clamping device inclosing the edge thereof, means to hold said clamping device in a rocking relation so as to move away from the front face of the base to insert the sheets thereunder, and with manually-actuated means to coact with the clamping device so as to hold the same together with the sheets tightly against the said plate or to allow it to rock thereon at will.

7. In a manifolding-tablet, a base-plate to hold the sheets, in combination with a clamping device secured thereto, means to hold said clamping device in a rocking relation so as to move away from the front face of the base to insert the sheets thereunder at one edge of said plate, and with manually-actuated means to operate the clamping device so as to hold the same together with the sheets tightly against the said plate or to allow it to rock thereon, at will, consisting of a pivoted locking-piece constructed and arranged to clamp the parts when it is parallel with the clamping device and to release the same when it is at an angle thereto.

707,512. NON-REFILLABLE BOTTLE. EDWARD HORRIGAN, Baltimore, Md., assignor of two-thirds to Thomas A. Bryan and Charles H. Boone, Baltimore, Md. Filed June 11, 1901. Serial No. 64,138. (No model.)

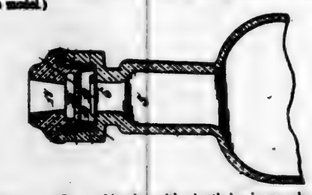

Claim.—1. In combination with a bottle having a valve-seat formed in its neck, a spring-controlled flap-valve located on said seat and provided with a weight, so that when the valve is moved from its seat against the resistance of the spring by the weight of the liquid it will remain open during the time the neck portion of the bottle is turned downward beyond the horizontal and the liquid is being poured therefrom, but will close in all other positions of the bottle, and an apertured plug secured in said neck and adapted to hold the valve in place and prevent access thereto.

2. In combination with a bottle having its neck provided with a valve-seat, a valve on said seat comprising a valve member 6 of metal having a spring member, a weight on said valve whereby when the valve is moved from its seat against the resistance of its spring by the weight of the liquid it will remain open during the time the neck portion of the bottle is turned downward beyond the horizontal and the liquid is being poured therefrom, but will close in all other positions of the bottle, and a plug secured in said neck above said valve and having a circuitous passage therein.

3. In combination with a bottle having its neck provided with a valve-seat, a valve on said seat comprising a valve member 6 of metal having an integral spring member, a weight on said valve, whereby when the valve is moved from its seat against the resistance of its spring by the weight of the liquid it will remain open during the time the neck portion of the bottle is turned downward beyond the horizontal and the liquid is being poured therefrom, but will close in all other positions of the bottle, and a plug secured in said neck above said valve and having a circuitous passage therein.

4. In combination with a bottle having its neck provided with a valve-seat, a valve on said seat comprising a valve member 6 of metal having a spring tending normally to close the valve, a weight on said valve whereby when the valve is moved from its seat against the resistance of the spring by the weight of the liquid it will remain open during the time the neck portion of the bottle is turned downwardly beyond the horizontal and the liquid is being poured therefrom, said spring having power sufficient to close the valve against the resistance of the weight when the valve is in an upright position, and a plug secured in said neck above said valve and have a circuitous passage therein.

5. In combination with a bottle having its neck provided with a valve-seat, a valve on said seat comprising a flat valve member of metal having an integral spring-arm provided with an upward extension, an apertured plug secured in said neck above said valve and separate therefrom, said plug having a portion bearing on said spring-arm and clamping said upward extension between itself and the wall of the neck.

6. In combination with a bottle having a valve-seat in its neck, a flap-valve located on said seat, and a plug secured in said neck and having a portion of each side cut away, said plug having a longitudinal opening or mouth extending part way through the plug, a passage extending at right angles to said opening from side to side of the plug and communicating with said opening and a space or recess provided in its bottom to permit movement of the valve.

707,513. BURGLAR-ALARM. JAMES H. HOWARD, Kansas City, Kans., assignor of one-third to H. Gordon Harris, Kansas City, Kans. Filed Apr. 1, 1902. Serial No. 100,963. (No model.)

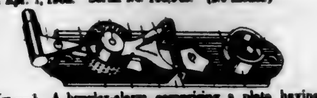

Claim.—1. A burglar-alarm, comprising a plate, having a socket near one end, a hammer pivoted to said plate, and provided with a head to enter said socket, a spring for operating said hammer and causing said head to enter said socket, and a foraminous cap carried by the hammer and concentrically surrounding its head and adapted to cover and envelop the socket when the hammer-head is engaged therewith.

2. A burglar-alarm, comprising a plate, having a socket near one end, a hammer pivoted to said plate, and provided with a head to enter said socket, a spring for operating said hammer and causing said head to enter said socket, a foraminous cap carried by the hammer and concentrically surrounding its head and adapted to cover and envelop the socket when the hammer-head is engaged therewith, and a trigger mechanism, normally overlapping and holding the hammer cocked.

3. A burglar-alarm, comprising a plate having a notched socket at one end, a hammer pivoted to said plate and adapted to extend through said notches, and provided with a head to enter said socket between said notches, a foraminous cap secured to the hammer concentrically of its head and provided with an opening through which one end of the hammer projects and a notch through which the hammer at the opposite side of the head extends; said foraminous cap being adapted to envelop the socket when the hammer occupies the latter, a spring for operating the hammer, and a trigger holding the hammer normally cocked.

4. A burglar-alarm, comprising a plate, having a socket near one end, a hammer pivoted to said plate, and provided with a head to enter said socket, a spring for operating said hammer and causing said head to enter said socket, a foraminous cap carried by the hammer and concentrically surrounding its head and adapted to cover and envelop the socket when the hammer-head is engaged therewith, and a trigger pivoted to the plate and normally holding the hammer cocked, and provided with a compressible friction-block.

5. A burglar-alarm, comprising a plate, having a socket near one end, a hammer pivoted to said plate, and provided with a head to enter said socket, a spring for operating said hammer and causing said head to enter said socket, a standard movable with one of the window-sashes, and a rod pivoted to operate vertically upon said standard, and provided at one end with a friction-shoe engaging the other sash, and at its opposite end with a sliding plate for overlapping and holding the trigger cocked.

707,514. HANDLE-BAR SUPPORT. LAZARUS S. KALLAJIAN, Boston, Mass. Filed June 28, 1901. Serial No. 66,322. (No model.)

Claim.—1. In a bicycle, a reversible handle-bar post, both ends of which are adapted to be inserted in the steering-head, an expander on the interior of said steering-head and adapted to coöperate with that end of the handle-bar post inserted into the said head, means to operate said expander from the exterior of the steering-head, and means to secure the handle-bar to the projecting end of the said handle-bar post.

2. In a bicycle, a rigid one-piece handle-bar post of substantially L shape, both arms of which are constructed to be capable of insertion in the steering-head of the bicycle, an expanding device on the interior of said steering-head and adapted to coöperate with the end of that arm of the handle-bar post which is inserted in the steering-head to clamp said handle-bar post in position, and a reversible bar-holder secured to the projecting arm of the handle-bar post, said handle-bar holder having an elongated stem to the end of which the handle-bars are secured.

3. In a bicycle, a substantially L-shaped handle-bar post, both arms of which are constructed so as to be capable of insertion in the steering-head, an expander on the interior of the steering-head adapted to receive the end of that arm of the handle-bar post which is inserted in the said steering-head, means extending through the said arm of the handle-bar post to render said expander operative to clamp the handle-bar post in position, combined with a bar-holder secured to the projecting end of the said handle-bar post.

4. In a bicycle, a rigid, substantially L-shaped handle-bar post, both arms of which are constructed to be capable of insertion into the steering-head of the bicycle, an expander on the interior of said steering-head, adapted to coöperate with that arm of the handle-bar post which is inserted in said head, and means accessible from the exterior of said head to operate the expander, combined with a reversible handle-bar holder detachably connected to the projecting end of the handle-bar post.

5. In a bicycle, a substantially L-shaped handle-bar post, both arms of which have conical ends and are constructed to be capable of insertion into the steering-head of the bicycle, an expander on the interior of said head, constructed to receive the conical end of that arm of the handle-

bar post inserted into the head, said expander operating to clamp the handle-bar post in position, means accessible from the exterior of said head to operate the expander, and a handle-bar holder adapted to be secured to the conical end of the projecting arm of said handle-bar post.

6. In a bicycle, a rigid one-piece handle-bar post of substantially L shape, both arms of which are constructed to be capable of insertion in the steering-head, an expanding device on the interior of the said steering-head and adapted to coöperate with the end of that arm of the handle-bar post which is inserted in the steering-head to clamp said handle-bar post in position, means to operate the said expander from the exterior of the steering-head, and a reversible bar-holder secured to the projecting arm of the handle-bar post.

7. In a bicycle, a substantially L-shaped handle-bar post, both arms of which are constructed to be inserted in the steering-head of a bicycle, means on the interior of said steering-head to coöperate with either arm of the handle-bar post and clamp the same in the said steering-head, said means being operable from the exterior of the head, a bar-holder having an elongated stem to the end of which the handle-bars are secured, and means whereby the bar-holder may be detachably secured to the projecting end of the handle-bar post with the stem of the said bar-holder either depending from the projecting end of the handle-bar post or extending upwardly therefrom.

8. In a bicycle, a substantially L-shaped handle-bar post, each arm thereof having a conical end portion and adapted to be inserted in the steering-head of the bicycle, an expander adapted to engage that arm which is in the head, and a bar-holder having a conical eye to receive the end of the other arm.

9. In a bicycle, a substantially L-shaped handle-bar post having arms of different length, each arm having a conical end portion and adapted to be inserted in the steering-head of the bicycle, an expander adapted to engage that arm which is in the head, and a bar-holder having a conical eye to receive the end of the other arm.

10. In a bicycle, a reversible handle-bar post having both ends thereof substantially conical in shape, an expander having an exterior shaped to fit the interior of the steering-head of a bicycle, said expander having a conical bore adapted to receive either end of the handle-bar post, and an adjusting-bolt passing longitudinally through the handle-bar post and having a screw-threaded engagement with the expander, combined with a bar-holder constructed to be secured to the projecting end of the handle-bar post.

707,515. PNEUMATIC HAMMER. HENRY J. KINMAN, Chicago, Ill., assignor to the Chicago Pneumatic Tool Company, Trenton, N. J., a Corporation of New Jersey. Filed June 24, 1901. Renewed July 19, 1902. Serial No. 116,243. (No model.)

Claim.—1. In a tool of the class described, the combination of a cylinder provided with a reciprocating piston-hammer, a handle-base provided with a cylindrical projection extending into the rear end of the cylinder to close the same and provide an annular valve-chamber between it and the cylinder, and a tubular controlling-valve reciprocatingly mounted in such valve-chamber to govern the admission of the motive fluid to the cylinder, substantially as described.

2. In a tool of the class described, the combination of a cylinder provided with a reciprocating piston-hammer, a handle-base provided with a tubular projection extending into the rear end of the cylinder to close the same and provide an annular valve-chamber between it and the cylinder, and a tubular controlling-valve reciprocatingly mounted on such projection to govern the admission of motive fluid, substantially as described.

3. In a tool of the class described, the combination of a cylinder provided with a reciprocating piston-hammer, a handle-base provided with a tubular projection extending into the rear end of the cylinder to close the same forming a continuation of the supply-channel and providing an annular chamber between it and the cylinder, a partition in such tubular projection providing a by-pass for admitting the motive fluid to the cylinder, and a tubular controlling-valve surrounding such projection and reciprocatingly mounted in the annular valve-chamber to admit the motive fluid to the cylinder, substantially as described.

4. In a tool of the class described, the combination of a cylinder provided with a reciprocating piston-hammer, a handle provided with an integral tubular projection extending into the rear end of the cylinder to close the same form a continuation of the supply-channel and provide an annular valve-chamber between it and the cylinder and provided with perforations communicating with the continuous opening to furnish motive fluid for the front end of the cylinder, a transverse partition in such tubular projection forming in connection therewith a by-pass through which the motive fluid passes to the rear end of the cylinder, and a tubular controlling-valve surrounding such projection and reciprocatingly mounted in the valve-chamber to govern the admission of the motive fluid to the rear chamber of the cylinder, substantially as described.

5. In a tool of the class described, the combination of a cylinder provided with a reciprocating hammer, a handle-base provided with a tubular projection extending into the rear end of the cylinder to close the same and provide in connection therewith an annular valve-chamber, a tubular differential controlling-valve slidingly mounted in the annular valve-chamber to govern the admission of the motive fluid to the cylinder, means for admitting a constant supply of motive fluid to the smaller area of the tubular differential controlling-valve, and means arranged to be operated by the movements of the piston-hammer to intermittently admit motive fluid to the larger superficial area of the differential valve to reciprocate the same, substantially as described.

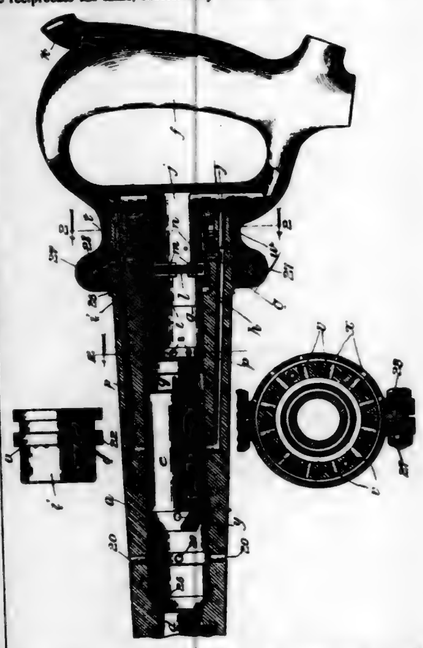

6. In a tool of the class described, the combination of a cylinder provided with a reciprocating piston-hammer, a handle-base provided with a tubular projection extending into the rear end of the cylinder to close the same and form the connection with an annular valve-chamber, a shouldered tubular differential valve in such valve-chamber, a main supply-passage formed in the hammer-handle and extending into the axial tubular opening of the projection, by-passes in such tubular projection, a transverse partition arranged in such tubular projection to assist in forming such by-passes and admit motive fluid to the rear of the piston-hammer, constant-supply passages *n* in the tubular projections, constant-supply passages *o* in the tubular valve to furnish a constant supply of motive fluid to the smaller superficial area of the shoulder, a passage *r* in the walls of the cylinder connecting the operating-chamber with the valve-chamber to the rear of the face of the valve and arranged to be opened and closed by the movements of the piston-hammer to furnish an intermittent supply of motive fluid to the larger area of the differential valve and reciprocate the same, substantially as described.

7. In a tool of the class described, the combination of a cylinder provided with a reciprocating piston-hammer, a handle-base provided with a tubular projection extending into the rear end of the cylinder to close the same and form in connection therewith an annular valve-chamber, a tubular differential valve slidingly mounted in such valve-chamber, means for furnishing a constant supply of motive fluid to the smaller area of the differential valve, means arranged to be operated by the movements of the piston-hammer to furnish an intermittent supply of motive fluid to the larger area of the differential valve and reciprocate the same, an annular exhaust-channel *u* connecting with the open air, a second exhaust-channel *t* connected with passages through the cylinder with the rear end of the operating-chamber and arranged to be opened and closed by the movements of the reciprocating controlling-valve, substantially as described.

8. In a tool of the class described, the combination of a cylinder provided with a reciprocating hammer, a handle-base provided with a tubular projection extending into the rear end of the cylinder to close the same and form an annular valve-chamber in connection therewith, a tubular differential valve slidingly mounted in such valve-chamber, means furnishing a constant supply of motive fluid to operate such differential valve in one direction, means for furnishing an intermittent supply of motive fluid to the larger superficial area thereof to move it in the opposite direction, an exhaust-passage in the rear end of the cylinder arranged to be opened and closed by the movements of the differential valve, a supplementary valve-exhaust opening connected with the front end of the annular valve to release any air confined therein, and an emergency exhaust-passage in the walls of the cylinder connected with the front end of the operating-chamber and the exhaust-openings in the annular chamber to exhaust any air in the front end of such operating-chamber, substantially as described.

9. In a tool of the class described, the combination of a cylinder provided with a reciprocating hammer and a rear outer threaded portion, a handle-base provided with a central tubular projection extending into the rear end of the cylinder to close the same and provide an annular chamber between it and the walls of the cylinder, an outer annular tubular projection having an internal threaded bore engaging with the threads on the rear end of the cylinder, and bolt mechanism for locking the threaded tube of the handle-base in engagement with the threaded surface of the cylinder, substantially as described.

707,516. PLUG-RECEPTACLE. CHARLES J. KLEIN, New York N. Y., assignor to the C-K Manufacturing Company, New York, N. Y., and Jersey City, N. J., a Corporation of New Jersey. Filed Apr. 5, 1902. Serial No. 101,474. (No model.)

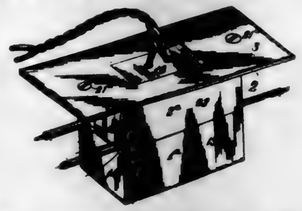

Claim.—1. A plug-receptacle provided with a face-plate having a plug-opening therein; and closure means for said plug-opening embodying a pivoted, tensionally-actuated member arranged to be swung inwardly of the receptacle upon the insertion of the plug.

2. A plug-receptacle provided with a face-plate having a plug-opening therein; and closure means for said plug-opening comprising two oppositely-disposed, pivoted, tensionally-actuated members arranged to be swung oppositely and inwardly of the receptacle upon the insertion of the plug.

3. A plug-receptacle provided with a face-plate having a plug-opening therein; closure means for said plug-opening embodying a pivoted, tensionally-actuated member arranged to be swung inwardly of the receptacle upon the insertion of the plug; and means for maintaining said pivoted member normally flush with the outer surface of said face-plate.

4. A plug-receptacle provided with a face-plate having a plug-opening therein; closure means for said plug-opening comprising two oppositely-disposed, pivoted, tensionally-actuated members arranged to be swung oppositely and inwardly of the receptacle upon the insertion of the plug; and means for maintaining said pivoted members normally flush with the outer surface of said face-plate.

5. A plug-receptacle provided with a face-plate having a plug-opening therein; and closure means for said plug-opening opening inwardly of the receptacle and operated by the insertion of the plug.

6. A plug-receptacle provided with a face-plate having a plug-opening therein; closure means for said plug-opening comprising two tensionally-actuated members which are pivoted to said face-plate at opposite sides of said plug-opening and are arranged to be swung oppositely and inwardly of the receptacle upon the insertion of the plug; and means for maintaining said tensionally-actuated members normally flush with the outer surface of said face-plate.

7. An improved plug-receptacle, comprising an inner body member and an outer body member jointly forming an inner receptacle-chamber; receptacle-contacts arranged within said receptacle-chamber; a face-plate covering said outer body member and having a plug-opening formed therein; closure means for said plug-opening comprising two spring-projected, pivoted members connected with said face-plate and arranged to be swung oppositely and inwardly of the receptacle upon the insertion of the plug; and means for maintaining said spring-projected members normally flush with the outer surface of said face-plate; said inner body member and said outer body member being grooved in registration to receive line-wires in position for connection with said receptacle-contacts.

8. In an improved plug-receptacle, an inner body member and an outer body member jointly forming an inner receptacle-chamber; receptacle-contacts arranged within said receptacle-chamber; grooves formed in registration in said inner body member and said outer body member and adapted to receive the line-wires in connection with said receptacle-contacts; and means for securing the said body members in operative connection.

707,517. HYDROCARBON-VAPOR-BURNING APPARATUS. AUGUS. B. MACKLIN, Brooklyn, N. Y. Filed Dec. 11, 1900. Renewed June 13, 1902. Serial No. 111,577. (No model.)

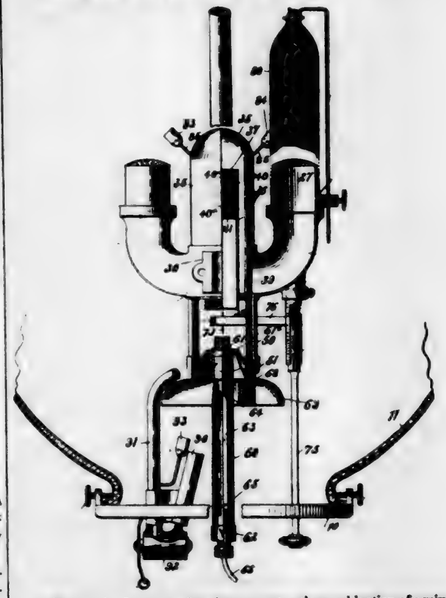

Claim.—1. In a vapor-burning apparatus, the combination of a mixing-chamber having an inlet for vapor and air, a burner communicating with the mixing-chamber, and a vaporizer having a fuel-supply and a vapor-discharge nozzle arranged adjacent to and separated from the mixing-chamber with a free air-space between the mixing-chamber and vaporizer, with a movably-mounted nozzle-clearing needling device located exteriorly to the vaporizer and mixing-chamber, said nozzle-clearing device carrying a needle which is normally supported away from the vapor-nozzle in the air-space outside the zone of great heat and is adapted to be moved into the free air-space between the mixing-chamber and vaporizer in operative relation to the vapor-nozzle, substantially as set forth.

2. In a vapor-burning apparatus, the combination of the vertically-arranged mixing-chamber and vaporizer having a free space between them, the former having an inlet for air and vapor and the latter a fuel-supply and a vapor-discharge nozzle, and a vapor-burner communicating with the mixing-chamber, with a nozzle-clearing needle operating in the free space between the mixing-chamber and vaporizer, and a movable support for said needle, mounted upon the exterior of the apparatus, whereby the needle may be moved into and out of operative relation with the nozzle, and be supported normally outside the zone of greatest heat, substantially as set forth.

3. In a vapor-burning apparatus, the combination of a mixing-chamber, a vapor-burner communicating therewith, and a vaporizer having a fuel-supply and a vapor-discharge nozzle, with a nozzle-cleaning needle, and a horizontally-rotatable and vertically-movable support carrying the nozzle-needle, said needle-support being mounted upon the exterior of the apparatus at a point removed from the zone of greatest heat, substantially as set forth.

4. In a vapor-burning apparatus, the combination of a mixing-chamber, a vapor-burner communicating therewith, and a vaporizer having a fuel-supply and a vapor-discharge nozzle, with a nozzle-needle, a rod or bar having an arm extending from it in which the needle is mounted, a support for said rod or bar, a horizontally-and vertically extending guide

groove or slot on one of said parts and a projection on the other engaging said guide groove or slot, whereby the rod or bar may be rotated and moved vertically upon its support, substantially as and for the purpose set forth.

5. In a vapor-burning apparatus, the combination of a mixing-chamber, a vapor-burner communicating therewith, and a vaporizer having a fuel-supply and a vapor-discharge nozzle, with a nozzle-needle, a tubular support having a vertically and horizontally extending guide groove or slot, a rod or bar mounted in said tubular support, and an arm extending from said rod or bar through said guide groove or slot and supporting the needle, substantially as and for the purpose set forth.

6. In a vapor-burning apparatus, the combination of a mixing-chamber, a vapor-burner communicating therewith, a vaporizer having a fuel-supply and a vapor-discharge nozzle, parts connecting the mixing-chamber and vaporizer, whereby one is supported by the other with a free space between them, with a nozzle-needle operating in the free space between the mixing-chamber and vaporizer, a vertically-movable rotatable supporting-piece mounted adjacent to one of the parts connecting the mixing-chamber and vaporizer, and a curved arm extending from said supporting-piece and carrying the needle and adapted to project around one of said connecting parts to present the needle in proper relation with the vapor-nozzle, substantially as set forth.

7. In a vapor-burning apparatus, the combination of a mixing-chamber, and a vapor-burner with a vertically-arranged vaporizer, having a fuel-inlet at its lower end, and a vapor-discharge nozzle at its upper end, an inner bell-shaped section arranged in the vaporizer between the fuel-inlet and vapor-discharge nozzle, to form a cushioning-chamber to equalize the flow of fuel into the vaporizer, substantially as and for the purpose set forth.

8. In a vapor-burning apparatus, the combination of a mixing-chamber, and a vapor-burner, with a vertically-arranged vaporizer comprising an outer tubular section and an inner bell-shaped section which is open at its lower end and closed at its upper end to form an equalizing cushioning-chamber, said inner bell-shaped section communicating adjacent to its open end with the outer tubular section of the vaporizer, a fuel-supply leading to the open end of the inner section, and a vapor-discharge nozzle arranged in the upper end of the outer section, substantially as set forth.

9. In a vapor-burning apparatus, the combination of a mixing-chamber, and a vapor-burner, with a vertically-arranged vaporizer comprising two tubular sections arranged one within the other and communicating at or near their lower ends, said inner section having a fuel-inlet at its lower end to form an air-cushioning chamber, a vapor-discharge nozzle leading from the upper end of the outer section, and means for applying heat to the outer section.

10. In a vapor-burning apparatus, the combination of a mixing-chamber, and a vapor-burner, with a vertical vaporizer comprising an outer tubular section, a vapor-discharge nozzle leading from the upper end of the outer section, an inner tubular section closed at its upper end and arranged concentrically within the outer section and having ports or openings adjacent to its base which communicate with the chamber of said outer section, a fuel-supply communicating with the base of the inner section, and an auxiliary vapor-burner supported adjacent to the vaporizer and having suitable vapor communication with the mixing-chamber, substantially as set forth.

11. In a vapor-burning apparatus, the combination of the vertically-arranged mixing-chamber and vaporizer having a free air-supply space between them, a vapor-burner communicating with the mixing-chamber, a fuel-supply and a vapor-discharge nozzle for the vaporizer, an auxiliary vapor-burner arranged beneath said free air-supply space adjacent to the vaporizer to heat the same, an exteriorly and movably mounted needling device operating in the free space between the mixing-chamber and vaporizer, and a shield surrounding the auxiliary burner to prevent the products of combustion from being drawn into the mixing-chamber by the vapor-current, substantially as set forth.

12. In a vapor-burning apparatus, the combination of the vertically-arranged mixing-chamber and vaporizer having a free air-supply space between them, a vapor-burner communicating with the mixing-chamber, a fuel-supply and a vapor-discharge nozzle for the vaporizer, an auxiliary vapor-burner surrounding the vaporizer beneath the said free air-supply space, tubes communicating between the mixing-chamber and said auxiliary burner, an exteriorly and movably mounted needling device operating in the free space between the mixing-chamber and vaporizer, and a shield surrounding said auxiliary burner to prevent the products of combustion being drawn into the mixing-chamber, substantially as set forth.

707,518. COMBINED PLUMB-BOB, LEVEL, &c. DAVID L. MCDERMOTT, Carlisle, Pa., assignor of one-half to J. A. Graham, Carlisle, Pa. Filed May 17, 1901. Serial No. 60,722. (No model.)

Claim.—As a new article of manufacture, a combined plumb-bob, level, &c., consisting of a rectangular piece or board having notched lower corner edges, and, ranging in substantially vertical alinement with said notched corner edges, indicia or graduations in inches &c., a centrally-pivoted straight-edge or bar, with its upper edge provided with a spirit-level, and near the end adapted to register or play over said indicia or graduations, said board or piece having upon its opposite surface a pivoted plumb pendulum or rod arranged to operate in the direction of the length of said board, with its normally upper end working in connection with a spirit-level, and a keeper for the retention of said plumb pendulum or rod, substantially as set forth.

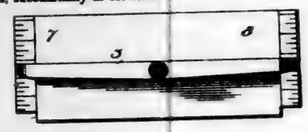

707,519. BOILER. AUGUST W. OPELDT, Newark, N. J., assignor, by direct and mesne assignments, to Salamandrine Boiler Company, New York, N. Y., a Corporation of New York. Filed Sept. 28, 1901. Serial No. 76,975. (No model.)

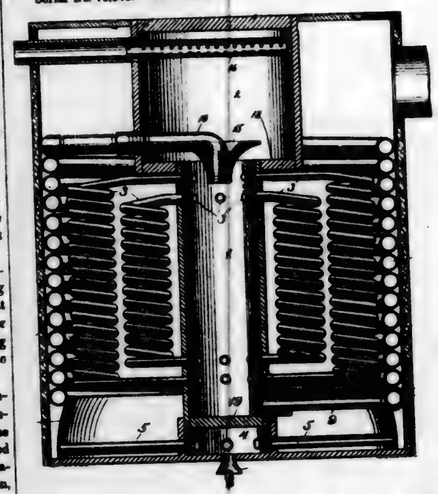

Claim.—1. In a boiler, the combination with a steam and water chamber, of generating-tubes connected therewith, a coiled generating-tube surrounding said steam and water chamber and first-mentioned generating-tubes, and connected with said chamber, said coiled outer tube having closely-wound coils forming substantially a wall adapted to confine within itself the products of combustion and heated gases by which said generating-tubes are heated, and a combustion-chamber beneath the generating-tubes provided with an encircling flame-guard structurally separate from and independent of the generating-tubes of the boiler, extending substantially to the inner side of said outer coiled tube inclosing the entire space within which combustion takes place, and serving to prevent the passage of the products of combustion and heated gases to the outside of said coiled tube.

2. In a boiler, the combination with a steam and water chamber, of generating-tubes connected therewith, a coiled generating-tube surrounding said steam and water chamber and first-mentioned generating-tubes, and connected with said chamber, said coiled outer tube having closely-wound coils forming substantially a wall adapted to confine within itself the products of combustion and heated gases by which said generating-tubes are heated, said coil having a feed connection through which feed-water may be introduced, and a combustion-chamber beneath the generating-tubes provided with an encircling flame-guard structurally separate from and independent of the generating-tubes of the boiler, extending substantially to the inner side of said outer coiled tube inclosing the entire space within which combustion takes place, and serving to prevent the passage of the products of combustion and heated gases to the outside of said coiled tube.

3. In a boiler, the combination with a steam and water chamber,

of generating-tubes connected therewith, a generating-coil surrounding said steam and water chamber and generating-tubes, and connected with said chamber, the upper portion of said coil projecting into said chamber and bent downwardly, and a baffle-plate upon the end of said coil.

4. In a boiler, the combination, with a tubular steam and water chamber, closed at the top and bottom, and generating-tubes around the same and connected thereto, of a casing surrounding the generating-tubes, and a bottom plate having an annular flange whereby it is secured to said steam and water chamber, the space within said flange forming a distributing-chamber for a burner, and having burners connected thereto.

707,520. RUNNING-GEAR FOR WAGONS. FRANK H. PICKARD, Hill City, Tenn., assignor of one-half to Paul W. Trewhitt, Hill City, Tenn.; T. W. Stanfield administrator of said Frank H. Pickard, deceased. Filed Dec. 31, 1900. Serial No. 41,748. (No model.)

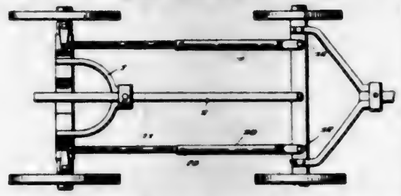

Claim.—1. In a device of the type set forth, the combination with the front and rear axles of a vehicle, of a pair of plates secured to the rear axles and extending beyond the ends thereof, a spindle carrying a vertical member comprising an enlarged portion received between said plates and rounded shanks extending through the plates, with squared shanks on the ends of the rounded shanks, levers connected to the squared shanks above and below the axle, and rods carrying a forked end movably secured to said levers, the other end of the rods being pivoted to the front axle, said rods being movable in parallel relation with each other.

2. In a device of the type set forth, the combination with the front and rear axles of a vehicle, of a spindle having a vertical member pivotally secured to each end of the rear axle, levers connected to the ends of the vertical member, and rods movable in parallel relation with each other pivoted to the front axle and carrying forked rear ends pivotally connected to said levers.

707,521. CENTRIFUGAL MACHINE. HARALD DE RAASLOFF, New York, N. Y. Filed Nov. 1, 1901. Serial No. 80,709. (No model.)

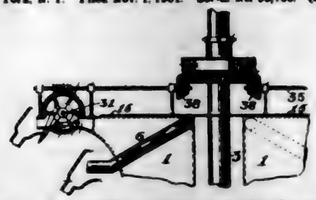

Claim.—1. In a centrifugal machine, the combination with a rotary separating-chamber provided with a discharge-outlet, of a continuously-operating rotary valve in the said discharge-outlet sealing the outlet and adapted to transfer separated material, substantially as described.

2. The combination in a centrifugal separator, of a nozzle for the discharge of separated material, a chambered rotary valve in said nozzle, and side and peripheral walls of said nozzle which make water-tight fit with the valve, said peripheral walls being of greater extent than the opening of the chamber in the valve, substantially as described.

3. The combination in a centrifugal separator, of a nozzle for the discharge of separated material, a valve in said nozzle having a plurality of chambers for said material, side and peripheral walls of said nozzle which make water-tight fit with said valve, and said peripheral walls being of greater area than the opening of any chamber of the valve, substantially as described.

4. In a centrifugal machine, the combination with a rotary separating-chamber provided with a discharge-outlet, of a continuously-operating rotary valve in said discharge-outlet, and independently-rotating means for operating said valve, substantially as described.

5. In a centrifugal machine, the combination with a rotary separating-chamber provided with a discharge-outlet, of a continuously-operating rotary valve in said outlet, and independently differentially speeded means for operating said valve, substantially as described.

6. In a centrifugal machine, the combination with a plurality of rotary separating-chambers symmetrically disposed around the axis of rotation of the said chambers, and provided with discharge-outlets, of a continuously-operating rotary valve in each outlet, and independently differentially speeded means for operating said valves, substantially as described.

7. In a centrifugal machine, the combination with a rotary separating-chamber provided with a discharge-outlet, of a continuously-operating valve in said discharge-outlet sealing the same and adapted to transfer separated material, and an independently differentially speeded gear revolving around the center of rotation of said separating-chamber and operatively connected with said valve to rotate the same, substantially as described.

8. In a centrifugal machine, the combination with a rotary separating-chamber provided with a discharge-outlet, of a continuously-operating rotary valve in said discharge-outlet sealing the same and adapted to transfer separated material, independently-speeded means rotating around the axis of rotation of said chamber for actuating said valve, and devices for varying the speed of said means, substantially as described.

9. In a centrifugal machine, the combination with a plurality of rotary separating-chambers symmetrically disposed around the axis of rotation of the chambers and provided with discharge-outlets, of a continuously-operating rotary valve in each outlet sealing said outlet and adapted to transfer separated material, independently-speeded means rotating around said axis for operating said valves, and devices for varying the speed of said means, substantially as described.

10. The combination in a centrifugal separator, of a plurality of nozzles for the discharge of separated materials, a valve having a plurality of chambers for separated material in each nozzle, a gear adapted to rotate around the center of rotation of the separator, means to vary the velocity of said gear, a worm actuated by said gear, and a worm-wheel on each valve meshing with said worm, substantially as described.

707,522. TYPE-CHASE FOR MAKING MATRIX-PLATES. JOHN R. REYNOLDS, Hartford, Conn., assignor, by mesne assignments, to Goodson Graphotype Company, a Corporation of New Jersey. Filed Dec. 5, 1901. Serial No. 84,778. (No model.)

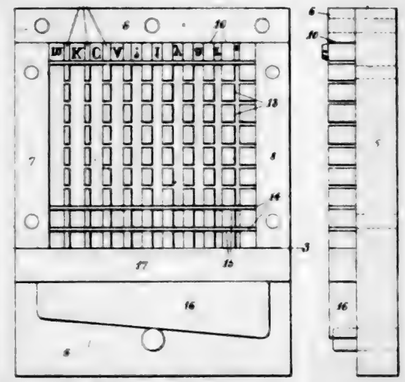

Claim.—1. A chase or form for type, consisting of a base, a series of projecting independent abutments integral with the base for locating the type in lines and columns, and means for locking the type against the abutments.

2. A chase or form for type, consisting of a base, a series of projecting abutments integral with the base, of a width substantially equaling the pointwise dimensions of the type, and means for locking the type against the abutments.

3. A chase or form for type, consisting of a base, a series of projecting abutments integral with the base, of a width substantially equaling the pointwise dimensions of the type, and of varying thicknesses inversely proportioned to the setwise dimensions of the respective type, and means for locking the type against the abutments.

4. A form or chase for the purpose specified, provided with fixed partitions for locating the respective pieces of type in predetermined setwise relation and alinement, in accordance with a standard index-plate.

5. A form or chase for the purpose specified, provided with a series of fixed partitions for independently locating the respective pieces of type in alined vertical columns and setwise spacing, in accordance with a standard index-plate.

6. A type-chase, provided with a series of fixed partitions for inde-

pendently locating the pieces of type in alined vertical columns, and in alined horizontal lines, spaced in accordance with a standard index-plate, and means for locking the type against the partitions.

7. A type-chase provided with a series of fixed partitions for independently spacing the individual type in straight lines and alined columns, rules located between the partitions, for spacing and alining the type thereof in lateral lines at right angles with the columns, and means for locking the type against the partitions.

8. A type-chase, provided with a series of fixed partitions forming compartments for independently locating the separate pieces of type in alined vertical columns, the partitions being interrupted by transverse seats for rules, for alining and separating the lines, and means for locking the type against the partitions.

9. A type-chase, provided with a series of partitions substantially equaling in width the pointwise dimensions of the type-bodies, separated by a series of transverse seats for rules, for separating and alining the lines.

10. A type-chase, provided with a series of partitions of a width substantially equaling the pointwise dimensions of the type-bodies, and of a thickness substantially equaling the desired linear spacing of the type, less the respective thicknesses of those type.

11. A type-chase, provided with a series of separate partitions arranged in columns, separated by transversely-disposed rules, the thickness of the partitions in the respective columns increasing from one side to the other of the chase, in accordance with the decreasing thicknesses of the type to be held therein.

12. A type-chase, provided with a series of fixed partitions separated by transversely-disposed rules forming separate compartments for independently locating the respective pieces of type in alined vertical columns and lines, and means for locking the type against the partitions.

13. A type-chase, provided with a series of column-partitions separated by a series of transversely-disposed line-rules forming separate compartments for the respective pieces of type, the compartments for the succeeding columns being arranged in the order of their decreasing width.

707,528. MASTER TYPE-BAR FOR MATRIX-PLATES. JOHN R. REYNOLDS, Hartford, Conn., assignor, by mesne assignments, to Goodson Graphotype Company, a Corporation of New Jersey. Filed Dec. 5, 1901. Serial No. 84,779. (No model.)

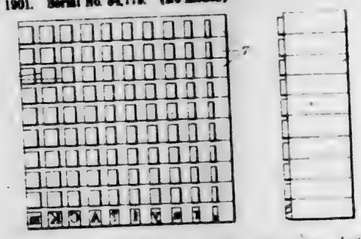

Claim.—1. A master-type-bar blank provided with projections for the characters spaced and alined in accordance with the predetermined positions of those characters.

2. A master-type-bar blank provided with projections spaced and alined in accordance with the predetermined positions of the desired letters, the width of the said projections transversely of the bar being substantially in accordance with the pointwise dimensions of the desired type-bodies.

3. A blank for a line of master-type, having a thickness equaling the desired pointwise spacing of the lines provided with projections of a width substantially equaling the required pointwise dimensions of the master-type.

4. A blank for master type-bars, provided with a line of projections for the type-faces, the working sides of the said projections being equally spaced from one end of the bar.

5. A blank for master type-bars provided with alined projections arranged in the order of their decreasing setwise dimensions from one end of the bar toward the other, the gaging or working sides of the projections being also spaced at equal intervals from one end of the bar.

6. A blank for master type-bars provided with alined projections for the type-faces, spaced longitudinally of the bar, one face of each of said projections being coincident with one face of the bar.

7. A blank for master type-bars provided with a line of spaced projections for the type-faces, having one face of each projection coincident with the side of the type-bar, and having the working sides of the respective projections spaced at equal intervals from one end of the bar.

8. A series of blanks for master type-bars, provided with alined projections for a line of master-type, the projections being similarly spaced on all of the bars, whereby the series of bars when engraved and assembled form a column of master type-faces alined in both directions.

707,524. COIN-ACTUATED VENDING MECHANISM. FRANK M. SEARS, Charlevoix, Mich., assignor of one-half to August Chaloupka, Charlevoix, Mich. Filed Apr. 26, 1901. Serial No. 57,396. (No model.)

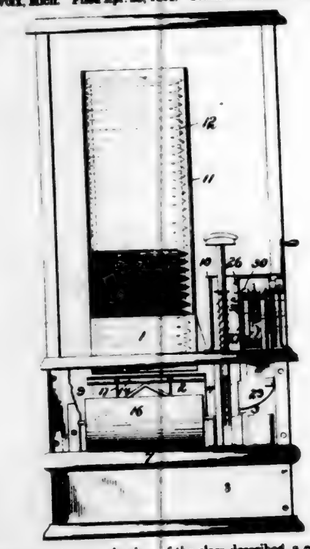

Claim.—1. In a mechanism of the class described, a coin-receiving member, a main coin-guide, a supplemental coin-guide, said coin-guides consisting each of an upright coin-tube, the coin-receiving member being arranged to deposit the coin directly into the main coin-guide, a coin-actuated member projecting at one end into the coin-tube of said supplemental coin-guide, an operating member projecting into the coin-tube of said supplemental coin-guide and above said coin-actuated member, and the coin-tube of the main coin-guide communicating with the coin-tube of the supplemental coin-guide at a point between said coin-actuated member and said operating member.

2. In a mechanism of the class described, a coin-guide consisting of a coin-tube provided at a predetermined point with an inwardly-projecting spring-finger and provided at its top with a curved guide device, a rotary coin-receiving member arranged above the coin-tube and provided with a contracted coin-slot in which the coin is temporarily held, devices for rotating the coin-receiving member to deposit the coin in the coin-tube and over said curved guide device, and a cam-like device carried by the coin receiving member for forcing the coin past said spring-finger, the relative arrangement of parts being such that two coins may be simultaneously accommodated in upright file in the coin-tube between said coin-receiving member and said spring-finger, said cam-like device carried by the coin-receiving member operating to force the lowermost of said coins past said spring-finger.

3. In a mechanism of the class described, a coin-tube provided at its top with a curved guide device, a rotary coin-receiving member arranged above the coin-tube and provided with a contracted coin-slot in which the coin is temporarily held, devices for rotating the coin-receiving member to deposit the coin in the coin-tube and over said curved guide device, and tensional means for opposing the rotation of the coin-receiving member.

4. In a mechanism of the class described, a coin-guide, devices for temporarily checking the passage of a coin through the coin-guide, a pivoted coin-receiving member arranged above the coin-guide and provided with a contracted coin-slot in which the coin is temporarily held, devices for tilting the coin-receiving member to deposite the coin in the coin-guide, and devices carried by the coin-receiving member for forcing the temporarily-checked coin through the coin-guide, the relative arrangement of parts being such that two coins may be simultaneously accommodated in the coin-guide between said coin-receiving member and said devices for temporarily checking the passage of a coin through the coin-guide.

5. In a mechanism of the class described, a coin-actuated member; and an operating member comprising a coin-guide devices for temporarily checking the passage of a coin through the coin-guide, a movable coin-receiving member arranged to deposite the coin in the coin-guide, devices for operating the coin-receiving member, devices carried by the coin-receiving member for forcing the temporarily-checked coin through the coin-guide, (the relative arrangement of parts being such that the coin is deposited by the coin-guide in a position with respect to the coin-actuated member,) and means for actuating the coin-actuated member through the medium of the coin.

6. In a mechanism of the class described, a coin-actuated member; and an operating member comprising a coin-guide, a pivoted coin-receiving member arranged above the coin-guide and provided with a contracted coin-slot in which the coin is temporarily held, devices for operating the coin-receiving member, (the relative arrangement of parts being such that the coin is deposited by the coin-guide in a position with respect to the coin-actuated member,) and means for actuating the coin-actuated member through the medium of the coin.

7. In a mechanism of the class described, a coin-tube provided with an elongated slot, a movable delivery member, a connection-lever operatively connected with the delivery member and projecting at one end through said elongated slot, an operating-plunger, and a second coin-tube communicating with the first coin-tube at a point between the projecting end of the connection-lever and plunger whereby the connection-lever may be operated to move the delivery member through the medium of an interposed coin.

8. In a mechanism of the class described, a movable delivery member, a main coin-guide, a coin-receiver located in juxtaposition to the top of the main coin-guide and adapted to deposit the coin directly into the main coin-guide, a supplemental coin-guide, provided with a vertical slot, a pivoted lever operatively connected with the delivery member and projecting into said slot below the connection of the main and supplemental coin-guides, and an operating member projecting into said slot above such connection.

707,525. PROCESS OF MANUFACTURING COKE. JOHN W. SEAVER, Cleveland, Ohio, assignor to the Wellman-Seaver-Morgan Engineering Company, Cleveland, Ohio, a Corporation of Ohio. Filed June 9, 1902. Serial No. 110,751. (No specimens.)

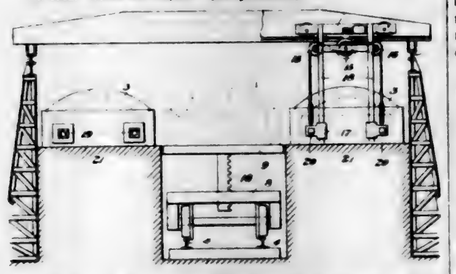

Claim.—1. The process of manufacturing coke, consisting in assembling the charge to be coked, assembling the charge and the dome, moving the assembled charge and dome onto a fixed hearth, and coking the charge.

2. The process of manufacturing coke consisting in assembling the charge to be coked, introducing the said charge into a dome, moving said dome with its charge to a fixed hearth, and coking the charge.

3. The process of manufacturing coke, consisting in assembling the charge to be coked, introducing said charge into the bottom of the dome, moving said dome with its charge to a fixed hearth, and coking the charge.

4. The process of manufacturing coke consisting in assembling the charge to be coked, bringing the charge to a charging position, removing the dome from the coking-hearth to a position over said charge, placing the charge in the dome, replacing the dome on the hearth, and coking the charge.

707,526. WIRE-STRETCHER. MARTIN R. SHIVE and FREDERICK J. HERBERT, Chicago, Ill.; said Shive assignor to said Herbert. Filed Nov. 22, 1901. Serial No. 83,260. (No model.)

Claim.—1. In a wire-stretcher, the combination of a shank having at one end a wire-clamp, a member slidably mounted on said shank, a wire-clamp secured to said member, a rack and spiral gear for moving said member along said shank, and means for throwing said rack and spiral out of mesh with each other to permit the movement of said member along said rack, independently of the rotation of said spiral.

2. In a wire-stretcher, the combination of a shank having at one end two independent wire-clamps, a member slidably mounted on said shank, a wire-clamp secured to said member, a rack and spiral gear for moving said member along said shank, and means for throwing said rack and spiral out of mesh with each other to permit the movement of said member along said rack, independently of the rotation of said spiral.

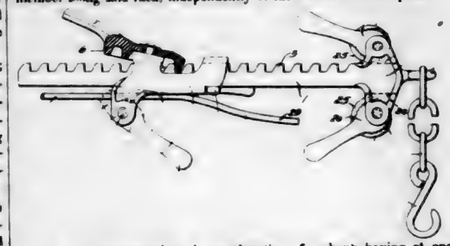

3. In a wire-stretcher, the combination of a shank having at one end a wire-clamp, a member slidably mounted on said shank, a wire-clamp secured to said member, a rack and spiral gear for moving said member along said shank, said member being adapted to be tilted on said shank so as to throw said rack and spiral out of mesh with each other, and a movable stop for preventing the accidental tilting of said member.

4. In a wire-stretcher, the combination of a shank having thereon a series of rack-teeth, a wire-clamp secured to one end of said shank, a member mounted on said shank and slidable longitudinally thereof, a wire-clamp secured to said member, a plate journaled on said member and having on one face a spiral thread in mesh with the teeth on said shank, a handle for rotating said plate and thereby causing said member to move along said shank, said member being adapted to be tilted on said shank so as to throw said spiral thread out of mesh with said rack-teeth, and a movable stop for preventing the accidental tilting of said member.

5. The combination of a rack, a member mounted on said rack and slidable longitudinally thereof, a plate pivoted to said member and having on one face a spiral thread in mesh with said rack, means for rotating said plate and thereby causing said member to move along said rack, and means for shifting said thread out of mesh with said rack to permit the movement of the member along the rack, independently of the rotation of the said plate.

707,527. SAND-BLAST APPARATUS. AMBROSE G. WARREN, Philadelphia, Pa., assignor of one-half to J. W. Paxson Company, Philadelphia, Pa., a Corporation. Filed Apr. 1, 1902. Serial No. 100,900. (No model.)

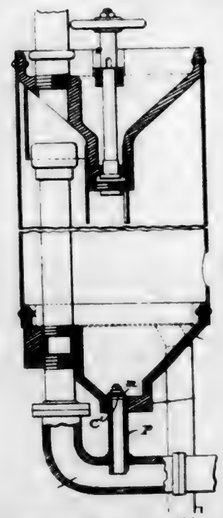

Claim.—1. A sand-blast apparatus comprising a closed casing or reservoir, having a substantially cone-shaped hopper-base, a sand-discharge opening therein, a communicating tubular sand-conduit leading therefrom to a combining-tube, a hand-hole opening in the inclined wall

of the conical hopper contiguous to said discharge-opening therein, and a removable cover therefor; said elements being constructed, combined and operating, substantially as set forth.

2. In a sand-blast apparatus, a closed casing from which sand is discharged by the impact of fluid-pressure to a combining-tube, said casing having a substantially cone-shaped hopper-base, a central discharge-opening at the apex of the conical hopper, and flat basal portion contiguous to said opening, a valve-plate covering said opening, a valve-spindle passing through said casing, and means to rotate said spindle and operate the valve-plate; substantially as described.

707,528. CHEESE-MARKER. JOSEPH WOLFINGER, Dundas, Wis. Filed June 2, 1902. Serial No. 109,842. (No model.)

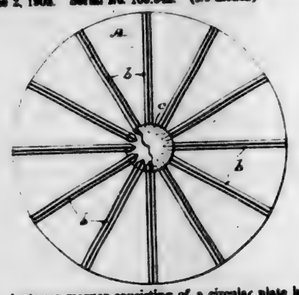

Claim.—A cheese-marker consisting of a circular plate having one face thereof provided at regular intervals with radial ridges out of touch with one another at their inner ends, and a center disk covering said inner ends of the plate-ridges.

707,529. CANAL TOWING MECHANISM. STEPHEN W. WOOD, New York, N. Y. Filed Apr. 21, 1902. Serial No. 103,223. (No model.)

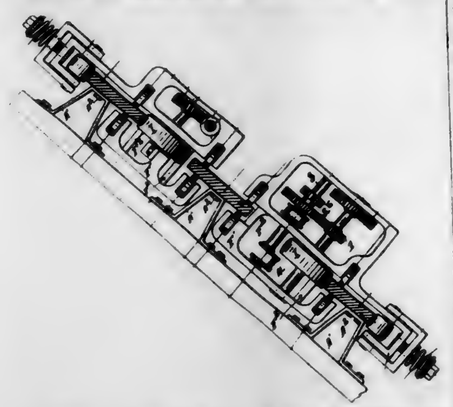

Claim.—1. The combination, in canal towing mechanism, of supporting-posts, parallel traction-rails supported in a vertical plane from such posts, an intermediate guide-rail supported from the posts, and motors grasping the traction-rails, each motor bearing with guide-wheels on the intermediate guide-rail.

2. The combination, in canal towing mechanism, of the posts, brackets extending therefrom, upper and lower traction-rails supported by said brackets, the upper rail extending downward and the lower rail extending upward from the face of their brackets, and an intermediate guide-rail supported by brackets, and having its edges projecting upwardly and downwardly in the direction of the traction-rails

3. The combination, in canal towing mechanism, of three track-rails arranged in parallelism beside the canal, suitable supports for said rails, motors arranged to move independently in the spaces between the two outer track-rails and the inner rail, and separate towing connections from said motors.

4. The combination with supporting-posts and upper and lower traction-rails, of independent motors on each rail, the upper motor having a traction-wheel at one edge and a gripping-wheel at the opposite edge of its rail, and the lower motor having its traction and gripping wheels in reverse relation to its rail.

5. The combination with the supporting-posts, and upper and lower traction-rails, of an intermediate guide-rail, a motor on the upper rail having wheels bearing on each edge thereof and guide-wheels bearing on the guide-rails, and a motor on the lower traction-rail with wheels bearing on each edge thereof and guide-wheels bearing on the guide-rail.

6. In canal traction mechanism, the posts having upper and lower traction-rails and an intermediate guide-rail, motors on each traction-rail having wheels gripping both edges of said rail and guide-wheels bearing on the outer and inner faces thereof, each of said motors having guide-wheels engaging the outer and inner faces of the guide-rail, all combined.

7. A towing-way consisting of three rails arranged in parallelism on suitable supports, and independent motors arranged to run in the spaces between said rails, traction-wheels on each motor arranged to bear on the appropriate rails, and guide-wheels arranged to bear on the guide-rail, all combined.

8. In combination with the parallel traction and guide rails, a motor-frame having a section located so as to move on the inner side of said rails, said frame-section being of greater height than the space between the rails.

9. The combination in a towing apparatus, of posts having traction-rails and a guide-rail supported therefrom, a motor-frame having a section within and a section without the plane of said rails, and a hooked extension of said frame extending around the traction-rail, a gripper-wheel supported by said extension and bearing on the traction-rail, and guide-wheels bearing on both rails.

10. A towing-way consisting essentially of three rails arranged in parallelism along a canal, independent motors arranged to travel in either direction in the spaces between the outer rails and the inner rail, and to pass in one space without contact with motors in the other space, separate towing connections from each motor, and means for driving the different motors at different and variable speeds, all combined.

11. In a towing apparatus for canals, suitable supports alongside the canal and a plurality of traction-rails at different elevations on said supports, motors independently driven along said traction-rails, means for gripping each motor to its rail, means for towing a boat or boats leading from each motor, and means for regulating the speed of each motor independently of the speed of any other motor.

12. The combination, in canal towing mechanism, of an upper and a lower traction-rail, suitable supports therefor, independent motors traveling and moving in said rails on different horizontal planes, and tow-lines extending from the motors, so that one tow can pass over the other line.

13. The combination, in canal towing mechanism, of traction-rails arranged in different horizontal planes, independent motors moving along said rails, tow-lines extending from the motors so as to pass as described, and gripper mechanism by which the motors can be made to grip their respective rails.

707,530. STOCK-TANK. WAYNE C. WRIGHT, Amarillo, Tex. Filed Sept. 30, 1901. Renewed June 30, 1902. Serial No. 113,834. (No model.)

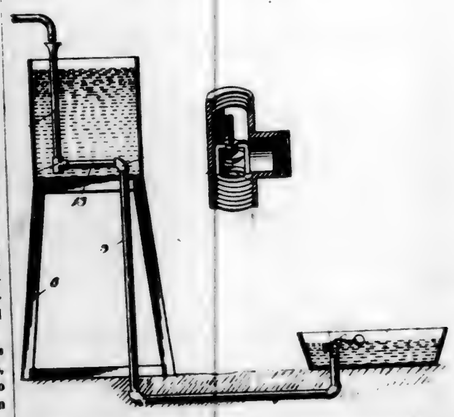

Claim.—1. In a device of the class described, the combination of a tank, a reservoir, a pipe connected with the tank and extending through the reservoir, said pipe having an opening leading from the reservoir, an inwardly-opening valve for the opening, and means for supplying water to the pipe above the valve.

2. In a device of the class described, the combination with a tank, of a reservoir, a pipe connected with the tank and leading upwardly through the reservoir, a float-valve mechanism for the pipe in the tank for controlling the passage of water from the pipe to the tank, an opening in the pipe communicating with the reservoir and having an inwardly-opening valve, said pipe extending above the water-level of the reservoir and having a flared upper end, and a supply-pipe leading to the flared end.

REISSUES.

12,020. BUTTON. GEORGE W. BUCHANAN, Chicago, Ill. Filed May 16, 1902. Serial No. 107,698. Original No. 673,698, dated May 7, 1901.

Claim.—1. The combination of two stud-buttons each comprising a base and a head, the base of one provided on its under side within the confines of its edge with means for engaging the head of the other.

2. The combination of two stud-buttons each comprising a base and a head, the base of one provided on its under side with a recess adapted to receive the head of the other button, and retaining mechanism for holding said head in said base, said retaining mechanism being within the confines of the edge of the base.

3. The combination of a pair of stud-buttons each comprising a base and a head, the base of one being provided with a recess adapted to receive the head of the other, and head-retaining mechanism contained entirely in the base, within said recess.

4. As a new article of manufacture the combination with a stud-button comprising a head, shank, and base, of a recess in said base adapted to receive the head of another stud-button, and head-retaining mechanism contained entirely in the base, within said recess.

12,021. GAS AND STEAM CONVERTIBLE ENGINE. GUSTAVE DAHLBERG, McDonald, JACOB CLICQUENNOI, Taylorstown, and ERNEST UHLIN, McDonald, Pa., assignors, by direct and mesne assignments, to D. C. & U. Gas Engine Company, Washington county, Pa. Filed Aug. 7, 1901. Serial No. 71,279. Original No. 633,338, dated Sept. 19, 1899.

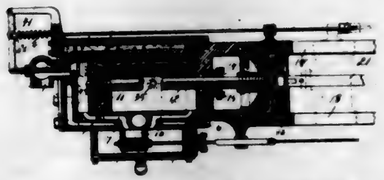

Claim.—1. In a convertible engine, the combination, with a cylinder having a piston therein, of a steam-chest or fluid-chamber in communication with the cylinder, means for introducing and compressing an explosive mixture in the chest, and a passage for the compressed explosive mixture leading from the chest to the cylinder, substantially as set forth.

2. In a convertible engine, the combination, with a cylinder having a piston therein, of a steam-chest, steam-passages leading from the chest to opposite ends of the cylinder one of which is provided with a valve for closing the passage, said chest also provided with an inlet explosive-mixture passage, and with an outlet explosive-mixture passage leading to the cylinder, said passages arranged in conjunction with the piston and the steam-passages to permit an explosive charge to be drawn into the chest, compressed therein and the compressed explosive charge passed to the combustion end of the cylinder, substantially as set forth.

3. In a convertible engine, the combination, with a cylinder having a piston therein, of a steam-chest in communication with the cylinder adapted to receive an explosive mixture, a passage for the explosive mixture from the chest to one end of the cylinder, an inlet-port in the cylinder for admitting a compressed explosive charge, and a passage from the chest to the inlet-port, substantially as set forth.

4. In a convertible engine, the combination, with a cylinder having a piston therein, of a steam-chest in communication with the cylinder adapted to receive an explosive mixture, a gas-mixer provided with a valve, a connection between the mixer and the chest for the passage of an explosive mixture, a passage from the interior of the chest to one end of the cylinder, an inlet-port in the cylinder for admitting a compressed explosive charge, and a passage from the chest to the inlet-port, substantially as set forth.

5. In a convertible engine, the combination, with a cylinder having a piston therein, a steam-chest in communication with the cylinder by steam-passages leading from the chest to opposite ends of the cylinder, a valve located in one of the passages, means for admitting an explosive mixture to the chest, an inlet-port in the cylinder for the admission of a compressed explosive charge, a pipe connecting the chest with the inlet-port, said connecting-pipe and one of the steam-passages forming an explosive-mixture passage from one side of the piston to the other through the chest, substantially as set forth.

12,022. PNEUMATIC STACKER. JOHN H. ELWARD, Hutchinson, Kans., assignor, by direct and mesne assignments, to the Indiana Manufacturing Company, Indianapolis, Ind., a Corporation of West Virginia. Filed May 5, 1902. Serial No. 105,917. Original No. 688,400, dated Dec. 10, 1901.

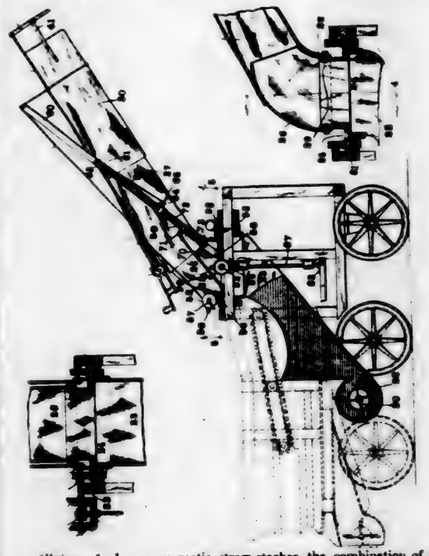

Claim.—1. In a pneumatic straw-stacker, the combination of an ejector-fan, a rotary base, a duct-section upon and rotating with said base, a second duct-section supported upon and having its lower end vibratable relative to the rotary base, and connected with the base duct-section to form a continuation thereof, a third, outer, duct-section telescopically connected to the second section, said second and third sections being adapted to have their outer ends raised and lowered relatively to the base, means rotatable around the axis of the base for adjustably supporting the outer duct-section at different elevations, and means for positively moving the third outer duct-section longitudinally outward relative to the second section and also positively moving it inward relatively thereto, whereby the operator can, while the machine is in operation, move the outer duct-section to elongate or shorten the total duct, substantially as set forth.

2. In a pneumatic straw-stacker the combination of an ejector-fan, a rotary base, a duct-section supported upon and rotating with the base, a second duct-section supported upon and having its lower end vibratable relative to the rotary base, and connected with the base duct-section, a third outer duct-section telescopically connected to the second duct-section, said second and third sections being adapted to have their outer ends raised and lowered relatively to the base, means rotatable around the axis of the base, for adjustably supporting the outer duct-section at different elevations, and an adjusting mechanism having one member connected to the second duct-section, and a second member connected to the third outer duct-section, said members engaging with each other and being adapted to advance the third outer duct-section outward and to draw said duct-

section inward positively while the machine is in operation, substantially as set forth.

3. In a pneumatic straw-stacker, the combination of an ejector-fan, a duct leading therefrom, a base arranged to rotate around a vertical axis, an upwardly-extending duct-section connected to the base and rotating therewith, a second duct-section supported upon the rotary base and having its lower end connected with the base duct-section to form a continuation thereof, a third, outer, duct-section telescopically connected to the second duct-section, said second and third duct-sections being adapted to have their outer ends raised and lowered relatively to the base, means rotatable around the axis of the base for supporting the outer duct-section at different elevations, an adjusting mechanism having a longitudinally-movable member secured to, and upon the outside of, the third outer duct-section and a second member supported in rear of said outer duct-section, said two members mutually engaging with each other, and a crank, for actuating the last said member of said adjusting mechanism, substantially as set forth.

4. In a pneumatic stacker, the combination of an ejector-fan, a horizontally-rotary base or turn-table, a duct-section mounted on said base, a second duct-section connected with said base-section, a third outer, duct-section, telescopically connected with said second duct-section, devices for positively moving said outer duct-section longitudinally to either increase or decrease the length of the total duct, said devices comprising a movable member connected with the outer duct-section and extending longitudinally thereof and of the second section, to points adjacent to the inner end of said second section, and a relatively stationary member arranged adjacent to the base-section and engaging with the said movable member, whereby the operator can either increase or diminish the length of the duct from a point near the inner end thereof, while the machine is in operation, substantially as set forth.

5. In a pneumatic stacker, the combination of an ejector-fan, a turn-table or rotary base mounted to turn about a vertical axis, a tubular neck or stump secured to said base, a second duct-section having its inner end connected with said neck and having its outer end movable vertically, a third, outer, duct-section telescopically connected to said second duct-section, means adapted to turn about the axis of the rotary base, for supporting said third duct-section in line with the said second duct-section and the discharge-opening in the neck, means for adjusting both said second and third duct-sections vertically, and a rod connected at its outer end with the outer duct-section, and extending to points beyond the inner end of said third duct-section, for positively pushing the said third duct-section outwardly to lengthen the total duct and to draw said outer duct-section inwardly to shorten the total duct, substantially as set forth.

6. In a pneumatic stacker, the combination of an ejector-fan, a turn-table or rotary base mounted to turn about a vertical axis, a longitudinally-curved neck or stump mounted on said rotary base, an intermediate duct-section connected with said neck, an outer duct-section telescopically connected to said second duct-section, auxiliary upwardly-extending supports for said outer duct-section mounted on the rotary base, and extending to points beyond the outer end of the second duct-section, one or more winding-ropes bearing upon said auxiliary upwardly-extending supports and connected with said outer duct-section at a point near the outer end thereof, means for winding said rope or ropes to adjust both said outer and intermediate duct-sections vertically, and means extending to a point adjacent to the said neck for positively moving the outer duct-section outwardly to increase the length of the total duct and for positively moving said outer duct-section inwardly to shorten the total duct, substantially as set forth.

7. In a pneumatic stacker, the combination of an ejector-fan, a turn-table or rotary base adapted to rotate about a vertical axis, a duct-section mounted on said base to rotate therewith, a second duct-section communicating with said base-section, a third outer section telescopically connected with the said second duct-section, an auxiliary support having a member adapted to rotate about the axis of said rotary base and a member longitudinally adjustable of the first said member and extending to points beyond the outer end of said second duct-section, connections between the outer adjustable member of said auxiliary support and the third outer duct-section, means for simultaneously adjusting the outer and second duct-sections vertically, and means connected with the outer duct-section to positively move said section outwardly to increase the total length of the duct and to positively move said outer duct-section inwardly to shorten the total duct, substantially as set forth.

8. In a pneumatic stacker, the combination of a turn-table or rotary base, or main support, a fan below said support, a neck or "stump" mounted on and rotating with said rotary base, a stationary conduit connecting the said neck with the fan-chamber, a second duct-section connected with said base-section, an outer duct-section telescopically connected to the last-said duct-section, a deflector adapted to direct the path of material issuing from said outer duct-section, independent means for positively moving said outer duct-section outward to lengthen the total duct and positively moving said outer duct-section inward to shorten the total duct, and adjusting means connected with the deflector, and extending to a point adjacent to the turn-table or rotary base, whereby the operator can, while the machine is in operation, elongate or shorten the duct and adjust the deflector as desired, substantially as set forth.

9. In combination with the telescopic trunk, the deflector hinged to the outer trunk-section, an operating-rod attached to said deflector and extending back along the trunk, and operating means connected to said rod and mounted on and carried by the inner trunk-section, substantially as and for the purpose hereinbefore set forth.

10. In combination with the telescopic trunk and the guide attached to the outer section, a deflector hinged to said outer section, an operating-rod attached to said deflector and extending back through and beyond the guide, and operating means connected to the said rod, and mounted on the inner trunk-section, substantially as and for the purpose hereinbefore set forth.

11. In a pneumatic straw-stacker, the combination of an ejector-fan, a trunk or duct for wind and straw communicating with the fan-casing and having an inner section and an outer section telescopically connected to the inner section, a deflector at the outer end of the telescopic section, means for positively moving said outer telescopic section together with the deflector longitudinally of the duct, and means for adjusting the deflector independently of the telescoping section, whereby the deflector can be adjusted bodily toward and from the fan and also into different positions relative to the path of the air and straw, substantially as set forth.

12. In a pneumatic straw-stacker, the combination of an ejector-fan, a discharge trunk or duct communicating with the fan-casing and having an outer section adapted to be adjusted longitudinally of the trunk to vary its length, a horizontally-vibrating base-support for said trunk, a deflector at the outer end of the trunk, and two independent sets of adjusting devices carried by the vibrating base-support, one set for positively moving the outer section of said trunk inward or outward to vary the total length of the trunk, and the second set for positively adjusting the deflector relatively to the discharge end of said trunk, substantially as set forth.

13. In a pneumatic straw-stacker, the combination of an ejector-fan, a discharge trunk or duct communicating with the fan-casing, and having an outer section adapted to be adjusted longitudinally of the trunk to vary its length, a horizontally-vibrating base-support for said trunk, a deflector at the outer end of the trunk movable independently thereof and three independent sets of adjusting devices carried by the vibrating base-support, one set for positively moving the outer section of said trunk and the deflector inward or outward, a second set for positively adjusting the deflector relatively to the discharge end of said trunk, and a third set for adjusting the outer end of the trunk vertically bodily, substantially as set forth.

14. In a pneumatic straw-stacker, the combination of an ejector-fan, a discharge-trunk having an inner section communicating with the fan-casing, and an outer section adapted to be telescoped longitudinally on the inner section, a deflector at the outer end of said telescoping section, and adjusting mechanism for moving the telescoping section longitudinally, comprising a toothed wheel and rack one of which is supported stationarily relatively to the inner trunk-section, and the other of which is connected to the telescoping section, and devices independent of said wheel and rack for adjusting the deflector relatively to the telescoping section, substantially as set forth.

15. In a pneumatic straw-stacker, the combination of an ejector-fan, an escape-duct leading from the fan, a trunk adapted for the passage therethrough of wind and straw having its outer end vertically adjustable and its inner end supported at the end of the fan-duct to move vertically relatively thereto, said trunk being formed in two parts of which one can slide on the other and having its outer delivery end movable longitudinally while in operation to vary the position of the edge over which the straw escapes, a deflector situated at the outer end of the sliding part of the trunk, and adjustable relatively to the longitudinal axis thereof, adjusting mechanism for moving the deflector and the sliding part of the trunk toward and from the fan comprising two mutually-engaging devices, one connected to the inner part of the trunk and the other connected to the sliding part, and a crank for actuating the said adjusting mechanism, substantially as set forth.

16. In a pneumatic straw-stacker, the combination of an ejector-fan, a turn-table or rotary base mounted above said fan, a duct-section mounted on said base to rotate therewith and communicating with said fan-casing, a discharge-trunk having its inner end communicating with and movable relatively to the upper end of the base duct-section, ropes or cables for supporting the outer end of said trunk, means for adjusting said ropes to raise or lower the outer discharge end of the trunk, a pivotally-mounted deflector at the outer end of said trunk, a rod connected to said deflector and extending rearward along the trunk, and a locking device engaging said rod to hold the deflector in any position of adjustment, substantially as set forth.

17. In a pneumatic straw-stacker, the combination of an ejector-fan, a discharge trunk or duct communicating with the fan-casing, and having an outer section adapted to be adjusted longitudinally of the trunk to vary its length, a vibrating base-support for said trunk, a deflector at the outer end of the trunk movable independently thereof, and three independent sets of adjusting devices, one set for positively moving the outer section of said trunk and the deflector inward and outward, a second set for positively adjusting the deflector relatively to the discharge end of said trunk, and a third set for adjusting the outer end of the trunk vertically bodily, substantially as set forth.

18. In a pneumatic straw-stacker, the combination of an ejector-fan and its casing, a turn-table or rotary base mounted above said fan, a duct-section mounted upon said base to rotate therewith and communicating with said fan-casing, a discharge-trunk having its inner end communicating with and movable relatively to the upper end of the base duct-section, ropes or cables for supporting the outer end of said trunk, means for adjusting said ropes to raise or lower the outer discharge end of the trunk, a pivotally-mounted deflector at the outer end of said trunk, an operating member connected to said deflector and extending rearward along the trunk, and a locking device engaging said operating member to hold the deflector in any position of adjustment, substantially as set forth.

19. The combination with a threshing-machine of a pneumatic stacker adapted to remove and convey away the treated material therefrom, comprising a blast mechanism, a vibratably-movable longitudinally-extensible delivery-duct communicating with the blast mechanism, and means connected therewith for vibratably moving and other means for longitudinally extending and retracting said duct at will during the operation of the machine.

20. The combination with a threshing-machine of a pneumatic stacker, comprising a blast mechanism, a horizontally-swiveled vertically-adjustable longitudinally-extensible material-delivery duct communicating with the blast mechanism, and means for horizontally moving vertically adjusting and positively extending and retracting the movable portion of said duct during operation, substantially as set forth.

21. The combination, in a pneumatic stacker adapted to convey away the treated material from a threshing-machine, of a suitable stationary fan-housing, a fan therein, a stationary duct-section connected to the fan-housing, a second duct-section vibratably connected to said stationary duct-section, a third duct-section telescopically connected to said second duct-section, a deflector secured to the outer end of said telescopic section, means for adjusting said deflector, means for adjusting said telescopic section in respect to said second duct-section, and means for swinging said second duct-section carrying said telescopic section and said deflector in respect to said stationary duct-section, whereby said duct may be swung to various positions, its total length varied, and the delivery of straw therefrom adjustably controlled, all while the machine is in operation.

22. The combination, with a threshing-machine, of a pneumatic conveyer, adapted to convey material away from said machine, comprising a fan-housing fixedly mounted in respect to said machine at its delivery end, a fan in said housing, a duct leading from said fan-housing, comprising a fixed section, a second section flexibly united to said fixed section, a third section telescopically connected to said second section, a deflector mounted on the discharge end of said third section, means for adjusting and moving said second and third sections both horizontally and vertically in respect to said stationary section, and other means for moving said third section longitudinally in respect to said second section, whereby the delivery or discharging point may be raised or lowered, swung from side to side, and moved in and out toward and from the machine, thus enabling the material to be delivered at any desired point on the stack, and enabling the stack to be made of any desired dimensions, substantially as set forth.

23. In a pneumatic stacker, the combination of a blast-fan, its housing, a conduit leading therefrom to a ring or turn-table, said turn-table, a stump or neck mounted thereon, a main delivery trunk or duct vibratably mounted in respect to said neck and composed of two sections one telescopically mounted in respect to the other, means for rotating said turn-table carrying the delivery trunk or duct, means for vibrating said trunk or duct, and means for telescopically moving one duct-section on the other, all said operating means being arranged at or near the base of the structure whereby the same can be conveniently manipulated from a convenient point during the operation of the machine.

24. In a pneumatic stacker adapted to remove and convey away the treated material from a threshing-machine, the combination of a blast-fan, its housing, a primary conduit or duct section leading therefrom, a main conduit or duct composed of two duct-sections telescopically connected, a union intermediate said primary duct and said main duct comprising two joints whereby motion in two directions is provided for, means for swinging said main duct in respect to said primary duct, and means for telescopically moving one of the main-duct sections in respect to the other, whereby the material can be delivered at points gradually farther from the thresher without altering the elevation of the conduit or chute and whereby the vertical position of the delivery end of the chute can be varied at any time, so that the material cannot only be carried first nearer to and then farther from the thresher, but can also be piled higher and higher, as well as taken farther and farther out.

25. The combination with a threshing-machine, of a pneumatic stacker adapted to convey away the treated material therefrom, comprising a fan-housing, a fan therein, a duct-section leading from said housing, a second duct-section flexibly connected to said first duct-section, a third duct-section telescopically connected to said second duct-section, a deflector adjustably mounted at the discharging end of said third duct-section, means for adjusting said deflector, means extending down to near the lower end of the second duct-section for adjusting said third or telescopic duct-section in respect thereto, whereby said adjustment may be effected while the machine is in operation, and means for swinging the structure comprising said second and third duct-sections both vertically and horizontally.

26. In a pneumatic straw-stacker, the combination of a fan-housing, a fan therein, a rotary base or turn-table, a duct-section leading from said fan to said base, a duct-section supported upon and rotating with the base, a second duct-section supported upon said base and united to the base duct-section by a movable or yielding connection, a third outer duct-section telescopically connected to the second duct-section, said second and third duct-sections being adapted to have their outer ends raised and lowered relatively to the base, means for adjustably supporting the outer duct-section at different elevations, a duct-section telescopically-adjusting mechanism having one member connected to the second duct-section and a second member connected to the third outer duct-section, said members engaging with each other and being adapted to advance the third outer duct-section outwardly and to draw said duct-section inwardly, positively, while the machine is in operation, a deflector at the discharge end of the delivery-duct, and means for adjusting said deflector.

27. The combination, with a threshing-machine, of a pneumatic stacker adapted to remove and convey away the treated material therefrom, comprising an ejector-fan, a turn-table or rotary base, a duct-section leading from said fan to said base, a second duct-section connected thereto by motion-permitting joint construction, a third outer duct-section telescopically connected with said second duct-section, devices for positively moving said outer duct-section longitudinally to either increase or decrease the total length of the duct, said devices comprising a movable member connected with the outer duct-section and extending longitudinally thereof and of the second duct-section to a point adjacent to the inner end of said second duct-section, and a relatively stationary member arranged adjacent to the base-section and engaging with and adapted to impart motion to said movable member, whereby the operator can either increase or diminish the length of the duct from a point near the inner end thereof while the machine is in operation, substantially as set forth.

12,028. FUEL-FEEDING APPARATUS. WILLIAM G. STOBBS, Blackburn, England, assignor to Smoke Preventer Company, Limited, Blackburn, England. Filed Mar. 29, 1902. Serial No. 100,631. (Original No. 680,818, dated Aug. 20, 1901.

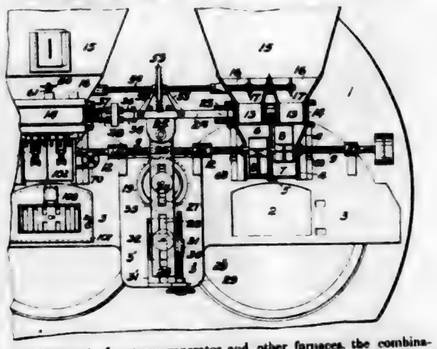

Claim.—1. In steam-generator and other furnaces, the combination therewith of one or more slides, or fuel-feed boxes, working at right angles to the boiler-front; a fan-box and fan, or fans, beneath said slides; a fuel-feed hopper above said fan-box and slide or slides; a bed or base plate carrying said fan-box and hopper; a rocking lever with variable fulcrum; means for imparting the motion of said lever to the said slides and controlling the movements of said slide or slides; inclined articulated fuel-distributing plates, a supporting-bracket therefor and means for adjusting

and indicating the position of such plates and supporting-bracket, as set forth.

2. In steam-generator and other furnaces, the combination of one or more slide-boxes; a screw upon the end of each box; a nut on said screw with finger or extension formed with an opening, a "swivel" or crank with fork engaging with said finger; a rod with pin engaging with fork on said swivel; a bracket carrying said rod; a cross-bar carrying said bracket; a lever suspended from said cross-bar; a fulcrum engaging with said lever; an adjustable bracket or block carrying said fulcrum; a screw for adjusting said block; an eccentrically-mounted block engaging with the upper portion of said lever; a wheel carrying said block and driven by any suitable means, as set forth.

3. In steam-generator and other furnaces, the combination of a supporting-bracket; a distributing-plate hinged at an angle thereto; a further distributing-plate hinged to the top edge of said plate, and means for maintaining said plates in proper relation to each other, as set forth.

4. In combination, a supporting bracket or brackets, two sets of inclined articulated distributing-plates; a lever or levers for supporting said bracket, or brackets, and plates; means for effecting the adjustment of said lever or levers; a set of links or rods connected with said plates, a screwed boss through which each of said rods passes; a support or bracket for carrying said boss; and a hand-wheel for operating said boss with index and pointer, as set forth.

5. In combination, the fuel-box and slide, a rocking lever connected to the slide; a fulcrum engaging said lever; a block carrying said fulcrum; a screw for adjusting said block; a worm-wheel; a pin or stud eccentrically mounted upon the worm-wheel engaging the upper portion of said lever; a worm gearing with said worm-wheel; a shaft carrying said worm; and means for driving the said shaft.

6. In combination, a cross-bar, a rocking lever, a fulcrum engaging with said lever, a sliding block carrying said fulcrum, a screw for adjusting said block, a bracket through which said screw passes, a collar for preventing said screw traveling, as set forth.

7. In combination, a cross-bar, a pawl or pawls upon said cross-bar; a shaft above said pawls; a face ratchet-wheel upon said shaft; a set of feed-hoppers, and a set of agitators on the said shaft situated in the throats of the feed-hoppers, as set forth.

8. In combination, a set of bed-plates and fan-boxes, one plate for each fan-box, and one for supporting the gearing mechanism, so arranged as to allow for their independent expansion or contraction, as set forth.

9. In combination, a fan-casing with tapered sides, a vertical partition for dividing the said fan-casing, a frame upon the said casing with an opening for inspection of the feed, a lid or cover for the said opening, a relief-door in the fan-casing, a fixed bracket and spring for holding the said door normally closed, and a casing for containing slide-box-operating mechanism, as set forth.

10. The herein-described center motion comprising a lever, a rising-and-falling fulcrum therefor with means for adjusting the same, worm-gearing and an eccentric pin for connecting the worm-gearing with the lever, substantially as described.

DESIGNS.

36,009. RING. ANDREAS BECKER, Vallsburg, N. J., assignor to Bracher, Becker & Barnett, Newark N. J., a Firm. Filed June 14, 1902. Serial No. 111,735. Term of patent 7 years.

Claim.—The ornamental design for a ring, substantially as shown and described.

36,010. HANDLE FOR BUTTON-HOOKS, PAPER-CUTTERS, OR SIMILAR ARTICLES. THEODORE W. FOSTER, Providence, R. I. Filed June 30, 1902. Serial No. 113,581. Term of patent 7 years.

Claim.—The ornamental design for the handle of a button-hook, paper-cutter or similar article, as herein shown and described.

36,011. BACK FOR TOILET-BOXES, MIRRORS, OR SIMILAR ARTICLES. THEODORE W. FOSTER, Providence, R. I. Filed June 30, 1902. Serial No. 113,582. Term of patent 7 years.

Claim.—The ornamental design for the back of a toilet-box, mirror or similar article, as herein shown and described.

36,012. BACK FOR HAND-MIRRORS, BRUSHES, OR SIMILAR ARTICLES. LOUIS C. PORTER, Attleboro, Mass., assignor to the James R. Blake Company, Attleboro, Mass. Filed Dec. 12, 1901. Serial No. 85,710. Term of patent 3½ years.

36,012

Claim.—The ornamental design for the back of a hand-mirror, brush, or similar article, as herein shown and described.

36,013. SOUVENIR-PLATE. LOUISA WOHLTMAN, New York, N. Y. Filed June 26, 1902. Serial No. 112,308. Term of patent 14 years.

Claim.—The ornamental design for a souvenir-plate as herein shown and described.

36,014. COFFEE OR TEA POT. HENRY HUTZLER, New York, N. Y. Filed June 19, 1902. Serial No. 112,295. Term of patent 7 years.

Claim.—The ornamental design for a coffee or tea pot herein shown and described.

36,015. ZITHER-BODY. CARL E. BROWN, Columbus, Ohio. Filed June 13, 1902. Serial No. 111,588. Term of patent 14 years.

Claim.—The ornamental design for a zither-body as herein shown and described.

36,016. BOX OR CARTON. FRANK GORTZ, Manchester, Conn. Filed May 27, 1902. Serial No. 109,949. Term of patent 7 years.

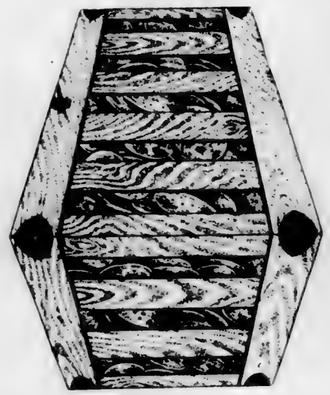

Claim.—The ornamental design for a carton or box as herein shown and described.

36,017. FONT OF LOWER-CASE PRINTING-TYPE. BERNE NABALL, Chicago, Ill., and GUSTAVE A. BARBER, London, England, assignors to the Linotype Company, Limited, London, England. Filed Jan. 17 1902. Serial No. 116,008. Term of patent 14 years.

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Claim.—The ornamental design for a font of lower-case printing type substantially as herein shown and described.

36,018. FONT OF UPPER-CASE PRINTING-TYPE. BERNE NABALL, Chicago, Ill., assignor to the Linotype Company, Limited, London, England. Filed July 17, 1902. Serial No. 116,007. Term of patent 14 years.

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J K L M N O P Q R

S T U V W X Y Z &

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Claim.—The ornamental design for a font of upper-case printing-type substantially as herein shown and described.

36,019. FOLDING-BED CASE. CHARLES L. GAMER, Chicago, Ill. Filed June 23, 1902. Serial No. 112,953. Term of patent 7 years.

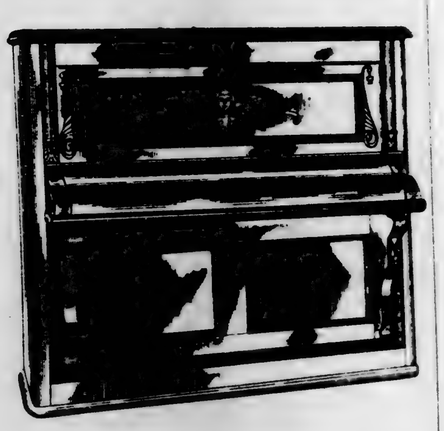

Claim.—The ornamental design for a folding-bed case, substantially as herein shown and described.

36,020. LACE CURTAIN. ARTHUR BURGESS, Philadelphia, Pa., assignor to Joseph H. Bromley, Philadelphia, Pa. Filed June 25, 1902. Serial No. 113,174. Term of patent 7 years.

Claim.—The ornamental design for a lace curtain substantially as shown and described.

36,021. LACE CURTAIN. ARTHUR BURGESS, Philadelphia, Pa., assignor to Joseph H. Bromley, Philadelphia, Pa. Filed June 25, 1902. Serial No. 113,175. Term of patent 7 years.

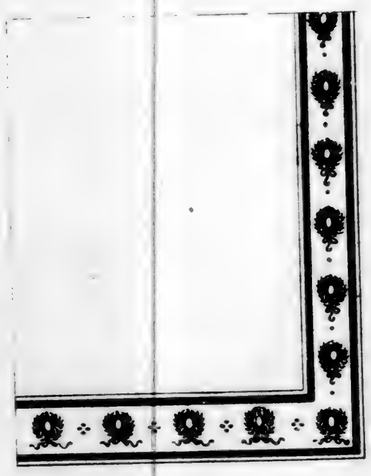

Claim.—The ornamental design for a lace curtain substantially as shown and described.

TRADE-MARKS

REGISTERED AUGUST 19, 1902.

38,787. DRESS-SILKS. LIBERTY SILK CO., New York, N. Y. Filed Mar. 10, 1902.

GRANDMOTHER

The word "GRANDMOTHER." Used since February 6, 1902.

38,788. MOHAIR, ALPACA, AND LUSTER-WOOL LININGS. R. G. WILLIAMS & CO., Bradford, England, and New York, N. Y. Filed July 1, 1902.

The word "AURORA," produced in a circle above the representation of a sunrise, also appearing in the circle. Used since 1899.

38,789. COTTON THREAD. NEW ENGLAND COTTON YARN COMPANY, Jersey City, N. J., and New Bedford, Mass. Filed July 5, 1902.

The word "QUAKER" and a circle inclosing the same. Used since June 1, 1901.

38,790. COTTON THREAD. NEW ENGLAND COTTON YARN COMPANY, Jersey City, N. J., and New Bedford, Mass. Filed July 5, 1902.

The word "MAXIMA" and a circle inclosing the same. Used since June 1, 1901.

38,791. ELASTIC OR CUSHION HEELS AND SOLES FOR BOOTS AND SHOES. FRANK W. WHITCHER & CO., Boston, Mass. Filed July 12, 1902.

NOJAR

The word "NOJAR." Used since March 1, 1900.

38,792. CHILDREN'S SHOES. WATSON PLUMMER SHOE CO., Chicago, Ill. Filed Mar. 31, 1902.

The representation of a little district school-house having printed across one side thereof the words and numeral "DISTRICT NO. 3," set in the midst of a landscape scene, the foreground of which consists of a playground with school-children at play therein, while the background is a perspective of meadow, trees, and hills, the whole being inclosed in an oval-shaped border of solid color and considerable and uniform thickness. Used since July 24, 1883.

38,793. BOOTS AND SHOES. FRANK M. FARGO, Philadelphia, Pa. Filed May 24, 1902.

"Ping=Pong"

The compound word "PING-PONG" in quotation-marks and the representation of two crossed rackets and a ball between the ends of the rackets. Used since April 1, 1902.

38,794. LEATHER SHOES. ANGLO-SAXON SHOE CO., Boston, Mass. Filed June 2, 1902.

The representation of an eagle holding in its beak and claws a ribbon on which is the hyphenated word "ANGLO-SAXON." Used since May 1, 1902.

38,795. LEATHER. Brown & Cobb, Boston, Mass. Filed Feb. 15, 1902.

WAVE

The word or term "WAVE." Used since February 7, 1902.

38,796. HAT-CLEANING COMPOUNDS. RIVERSIDE CHEMICAL COMPANY, Paterson, N. J. Filed July 22, 1902.

PAN-STRAW

The hyphenated word "PAN-STRAW." Used since July 11, 1902.

38,797. WRITING-INKS. THE CARTER'S INK CO., Boston, Mass., and New York, N. Y. Filed Mar. 31, 1902.

The representation of two leaves of old parchment attached to each other along one side by a lacing-cord and having the representation of a seal securing a folded ribbon imprinted upon the outer leaf, the seal representing an old ink-horn crossed by a quill, by the side of the leaves of parchment appearing the representation of an old ink-horn with its holding and attaching means and a quill, the quill being imposed upon the ink-horn, all appearing upon a contrasting rectangular background. Used since March 21, 1902.

38,798. SALVES. HANNAH WELCH, Philadelphia, Pa. Filed June 10, 1902.

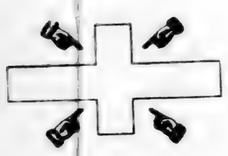

The representation of a cross having two wings thereof longer than the others and of hands pointing thereto. Used since December 16, 1871.

38,799. CERTAIN NAMED MEDICAL COMPOUNDS. GEORGE R. WHITE, Boston, Mass. Filed June 3, 1902.

IRONOIDS

The word "IRONOIDS." Used since January 1, 1902.

38,800. CERTAIN NAMED MEDICAL COMPOUNDS. FARBWERKE, VORM. MEISTER, LUCIUS & BRÜNING, Höchst-on-the-Main, Germany. Filed Apr. 25, 1902.

VALYL

The word "VALYL." Used since October, 1901.

38,801. CERTAIN NAMED AMMUNITION. THE PETERS CARTRIDGE CO., Cincinnati, Ohio. Filed Mar. 22, 1902.

PREMIER

The word "PREMIER." Used since March 22, 1902.

38,802. LAXATIVE MEDICINES. THE PRUNETTA PHARMACAL CO. New York, N. Y. Filed June 24, 1902.

PRUNETTA

The word "PRUNETTA." Used since May 15, 1902.

38,803. LIQUID RHEUMATIC CURE. FRANK J. A. WALL, Kansas City, Mo. Filed June 23, 1902.

A photograph of John Wall, registrant's father, arranged in a panel in the representation of a red brick wall. Used since February 1, 1902.

38,804. TABLETS FOR BLOOD AND NERVOUS DISORDERS. PEARSON DRUG CO., Chicago, Ill. Filed Feb. 20, 1902.

IRON-UP

The hyphenated word "IRON-UP." Used since October, 1901.

38,805. BLOOD-TONIC. MARTIN D. PERKINS, Jamestown, N. Y. Filed July 1, 1893.

CACITO

The word "CACITO," overarching the representation of a growing cactus. Used since June 10, 1893.

38,806. TONIC. FRANK L. BEGUE, Newark, Ohio. Filed July 1, 1902.

CEL-PEP-KO

The hyphenated word "CEL-PEP-KO." Used since February 28, 1900.

38,807. TONIC. INDEPENDENT BREWING ASSOCIATION, Chicago, Ill. Filed June 27, 1902.

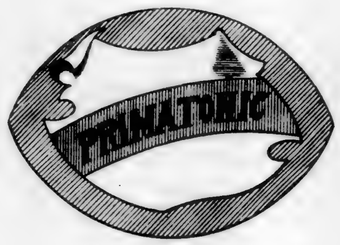

The word "PRIMATONIC," arranged on a panel or band extending on a curved line diagonally across a shield, with a surrounding border for the shield having curved edges coming to a central point on each end of the panel or band, the shield, the border, and the letters forming the arbitrary word "Primatonic" having contrasting colors. Used since 1900.

38,808. LAGER-BEER. INDEPENDENT BREWING ASSOCIATION, Chicago, Ill. Filed July 1, 1902.

Prima

The word "PRIMA." Used since 1892

88,809. BEER. INDEPENDENT BREWING ASSOCIATION, Chicago, Ill. Filed July 3, 1902.

The representation of a lady in the costume of a prima donna draped in a loose garment falling from the shoulders, with sandals on her feet and having her arms and hands extended and carrying a garland of flowers wreathed over her head and falling from one shoulder. Used since 1892.

88,810. GINGER-ALE. STANDARD BOTTLING & EXTRACT CO., Boston, Mass. Filed Aug. 10, 1901.

The words "WHITE HOUSE," with the representation of the White House. Used since May 13, 1901.

88,811. WHISKY. JAMES GORDON LITZ, Cincinnati, Ohio. Filed May 6, 1902.

THREE · RIBBONS

The words "THREE RIBBONS," associated with the representation of three ribbons united at their upper ends and hanging loosely at their lower ends. Used since April 4, 1902.

88,812. WINES AND BRANDIES. SIEGEL-COOPER CO., New York, N. Y. Filed July 2, 1902.

QUEEN QUALITY

The words "QUEEN QUALITY" and the representation of three crowns. Used since June 2, 1902.

88,813. VINEGAR. H. J. HEINZ CO., Allegheny, Pa. Filed July 8, 1902.

REX AMBER

The words "REX AMBER." Used since June 1, 1902.

88,814. COFFEE. WOOLSON SPICE COMPANY, Toledo, Ohio. Filed Apr. 19, 1902.

The words "BETSEY ROSS" and the representation of a woman seated at a table sewing on an American flag, framed in a wreath of laurel, the whole being surrounded by a rectangular panel-border ornamented with scrollwork. Used since June 25, 1901

88,815. COCOA AND COCOA PREPARATIONS. KAKAO-COMPAGNIE THEODOR REICHARDT, GESELLSCHAFT MIT BESCHRÄNKTER HAFTUNG, Wandsbek, Germany. Filed May 19, 1902.

VIRGIN

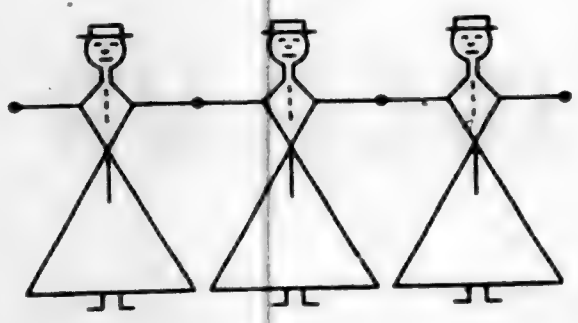

The word "VIRGIS" and a diagrammatic representation of three female figures with outstretched arms and joining hands. Used since September, 1898.

38,816. BREAD. C. F SCHUPP & SON, Albany, N. Y. Filed May 14, 1902.

B B B

Three capital "B's," as follows: "B B B." Used since May 1, 1902.

38,817. PERIODICALS. THE PHELPS PUBLISHING COMPANY, Springfield, Mass. Filed May 21, 1902.

GOOD HOUSEKEEPING

The words "GOOD HOUSEKEEPING." Used since 1889.

38,818. PAPER BAGS AND WRAPPING-PAPER. EAGLE PAPER CO., Richmond, Va. Filed Apr. 4, 1902.

The representation of an ox. Used since July 1, 1898.

38,819. CERTAIN NAMED PHOTOGRAPHIC GOODS. CENTURY CAMERA COMPANY, Rochester, N. Y. Filed Mar. 21, 1902.

CENTURY

The word "CENTURY." Used since February, 1901.

38,820. TYPE-WRITER RIBBONS. THE MILLER, BRYANT, PIERCE CO., Aurora, Ill. Filed June 13, 1902.

The representation of the head of an elk together with the word "ELK." Used since May 1, 1902.

38,821. CERTAIN NAMED SPECTACLE AND EYEGLASS FRAMES AND MOUNTINGS. DUPAUL YOUNG OPTICAL CO., Southbridge, Mass. Filed May 29, 1902.

A small circle with a straight line extending outward therefrom. Used since April 1, 1902.

38,822. CERTAIN NAMED SPECTACLE AND EYEGLASS FRAMES AND MOUNTINGS. DUPAUL YOUNG OPTICAL CO., Southbridge, Mass. Filed May 29, 1902.

A T-shaped figure. Used since May 1, 1902.

38,823. RAZORS, KNIVES, SCISSORS, AND SHEARS. ALBERT L. SILBERSTEIN, New York, N. Y. Filed June 11, 1902.

The words "CARBO MAGNETIC" and the conventional representation of flashes. Used since May, 1895.

38,824. RAZOR-STROPS. A. J. JORDAN CUTLERY CO., St. Louis, Mo. Filed July 12, 1902.

The words "DRY CLIMATE" and a circular figure intended as a representation of the sun, there being a series of lines extending radially from the figure. Used since April 25, 1902.

38,825. INCANDESCENT ELECTRIC LAMPS. NATIONAL ELECTRIC LAMP CO., Cleveland, Ohio. Filed July 23, 1902.

NATIONAL

The word "NATIONAL." Used since June, 1901.

38,826. GAS-BURNERS. GEO. BRAY & CO., Leeds, England. Filed July 22, 1902.

MYTA

The word "MYTA." Used since November 15, 1901.

38,827. GAS-BURNERS. GEO. BRAY & CO., Leeds, England. Filed July 22, 1902.

ELTA

The word "ELTA." Used since November 15, 1901.

38,828. GAS-BURNERS. DEMETRIUS M. STEWARD, Chattanooga, Tenn., and New York, N. Y. Filed July 12, 1902.

WONDER

The word "WONDER." Used since March 1, 1897.

38,829. HYDRAULIC AIR-PUMPS. THE CLEVELAND FAUCET CO. Cleveland, Ohio. Filed July 5, 1902.

MONITOR

The word "MONITOR." Used since May 20, 1892.

38,830. HARD-WOOD FLOORING AND HARD-WOOD AND BASS-WOOD CEILINGS AND SHINGLES. WISCONSIN LAND & LUMBER CO., Hermansville, Mich. Filed June 30, 1902.

IXL

The letters "I X L." Used since 1888.

THE NORRIS PETERS CO. PHOTO LITH WASHINGTON D.C.

LABELS

REGISTERED AUGUST 19, 1902.

9,384.—*Title:* "EL DIMO." (For Cigars.) A. GUTIERREZ CO., New York, N. Y. Filed July 18, 1902.

9,385.—*Title:* "LA CINTILLO." (For Cigars.) A. C. HENSCHEL & Co., Chicago, Ill. Filed July 21, 1902.

9,386.—*Title:* "ANGLO-EGYPTIAN." (For Cigarettes.) DEMETRIUS J. VLASTO, New York, N. Y. Filed April 29, 1902.

9,387.—*Title:* "EAT-A-BISCUIT." (For Cereal Food.) THE GROCERS' SPECIALTY CO., LTD., Battlecreek, Mich. Filed July 28, 1902.

9,388.—*Title:* "HATCH'S BISCUIT." (For Biscuits.) BANGOR BISCUIT COMPANY, Bangor, Me. Filed July 24, 1902.

9,389.—*Title:* "DR. MURRI'S IRON-NERVE PILLS." (For Medicine.) ALTINE CHEMICAL CO., San Francisco, Cal. Filed July 28, 1902.

9,390.—*Title:* "BABY EASE." (For Medicine.) T. P. MARSHALL, Macon, Ga. Filed July 24, 1902.

9,391.—*Title:* "ROYCROFT LINIMENT." (For Liniment.) MARGARET REBECCA STUART, Brooklyn, N. Y. Filed June 12, 1902.

9,392.—*Title:* "OLYMPIA SHOE CO." (For Shoes.) WALTER EDELSTEIN, Boston, Mass. Filed April 26, 1902.

9,393.—*Title:* "A POCKET HAT LUER." (For Hat-Luers.) CHARLES E. SACKETT, Danbury, Conn. Filed June 26, 1902.

9,394.—*Title:* "A POCKET HAT LUER." (For Hat-Luers.) CHARLES E. SACKETT, Danbury, Conn. Filed June 26, 1902.

9,395.—*Title:* "THE ELECTRIC DYSPEPTIC PAD." (For Therapeutic Apparatus.) THE ELECTRIC DYSPEPTIC PAD CO., Battlecreek, Mich. Filed July 12, 1902.

PRINTS

REGISTERED AUGUST 19, 1902.

550.—*Title:* "WINE THAT MAKETH GLAD THE HEART OF MAN." (For Champagne.) GEORGE RUTLEDGE, New York, N. Y. Filed July 1, 1902.

551.—*Title:* "A COOL BEARING." (For Frictionless Bearing Metal.) FRICTIONLESS METAL CO., Richmond, Va. Filed July 28, 1902.

552.—*Title:* "BEST ON EARTH." (For Frictionless Metal.) FRICTIONLESS METAL CO., Richmond, Va. Filed July 29, 1902.

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DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

REYNOLDS v. BEAN.

Decided July 2, 1902.

INTERFERENCE—PRELIMINARY STATEMENT BY ASSIGNEE.

Where an inventor refuses to file a preliminary statement and the records show that the assignee was diligent in endeavoring to obtain a statement from the inventor, *Held* that a statement made by the assignee should be accepted even though filed shortly after the expiration of the time for filing preliminary statements.

APPEAL on motion.

CAR-LOADER.

Application of Earl H. Reynolds filed September 5, 1901, No. 74,427. Patent granted John C. Bean April 24, 1900, No. 648,064.

Mr. Wm. O. Belt for Reynolds.

Messrs. Hensey & Gough for Bean.

ALLEN, *Commissioner:*

This is an appeal by Reynolds from a decision of the Examiner of Interferences granting the motion of the Ideal Car Loader Company for leave to file a preliminary statement and accepting the said statement.

The records show that the Ideal Car Loader Company is the assignee of the patentee Bean and that when this interference was declared the officers of the assignee company did not know his whereabouts. Efforts were made to locate him which were not successful until after the time for filing the preliminary statement had expired. The time for filing the preliminary statement was consequently extended.

Bean was subsequently located; but a misunderstanding seems to have arisen between him and his assignee with regard to the preliminary statement.

It appears from a letter filed by J. R. Martin, the president of the Ideal Car Loader Company, that Bean was willing to make affidavit that he is the inventor of the car-loader and to the date of his invention, but that he would not state that he is a party to this interference, as he had disposed of his entire interest in the patent which is involved.

A copy of the statement presented to Bean for execution was filed, but returned for signature. The time for filing the statement was again extended.

It would seem that a statement could have been prepared which would have satisfied the requirements of this Office and the conscience of Bean.

Three weeks after the time had expired a statement was filed by J. R. Martin, the president of the assignee company. This statement concludes as follows:

> That the dates named in the foregoing paragraph were furnished by the said Bean, who refused to sign a preliminary for the reason that having no interest in the said Letters Patent he declines to be a party to the interference which is adjudged to exist with a pending application of Earl H. Reynolds.

It clearly appears that the failure to file a statement by Bean within the proper time was not due to negligence and that the admission of the statement now on file will not injure Reynolds, except as the true state of facts will injure him. To refuse to admit the statement might result in granting a patent to Reynolds, when he is not the prior inventor. Such a contingency should be guarded against.

It is believed that in justice to all parties concerned the statement now on file should be accepted. (*Whitney* v. *Gibson*, 86 O. G., 1983; *Silver* v. *Eustis*, 98 O. G., 2361.)

The decision of the Examiner of Interferences is affirmed.

EX PARTE WHITMAN GROCERY COMPANY.

Decided June 30, 1902.

TRADE-MARK—"MINUTE" FOR COFFEE—DESCRIPTIVE.

The word "Minute" should not be registered as a trade-mark for malted cereal coffee, since it is descriptive of a quality or characteristic of the coffee, meaning that it is of such a character as to be prepared for use in a minute.

ON appeal.

TRADE-MARK FOR MALTED CEREAL COFFEE.

Application filed April 28, 1902, No. 65,682.

Mr. Ellis Spear for the applicant.

ALLEN, *Commissioner:*

This is an appeal from a decision of the Examiner of trade-marks refusing to register the word "Minute" as a trade-mark for malted cereal coffee.

Registration has been refused because, in the opinion of the Examiner, the word is descriptive of a quality or characteristic of the goods, meaning that the coffee is of such a character as to be prepared for use in a minute.

The decision of the Examiner was right and is in accordance with the decision of the circuit court of appeals in the case of *Bennett et al.* v. *McKinley et al.*, (65 Fed. Rep., 505,) in which it was held that—

the word "Instantaneous" is not a valid trade-mark, as applied to a preparation of tapioca which is distinguished from other preparations of that article by reason of its adaptability for immediate use, without the preliminary soaking required by other preparations. (Syllabus.)

The decision of the Examiner of Trade-Marks is affirmed.

DECISIONS OF THE U. S. COURTS.

Court of Appeals of the District of Columbia.

FUNK *v.* MATTESON *v.* HAINES.

Decided June 23, 1902.

1. INTERFERENCE—SENIOR APPLICANT—JUNIOR APPLICANT—BURDEN OF PROOF—PRIORITY OF INVENTION.

H. being the senior party, the first to apply to the Patent Office, has *prima facie* the priority of right, and the *onus* of proof is upon any junior applicant to show not only priority of invention, but he must also show that he has used reasonable diligence in adopting and perfecting his invention, for in such a case the mere conception without actual reduction to practice within a reasonable time does not avail a junior party making the claim.

2. SAME—SAME—SAME—SAME.

Whoever first perfects a machine is entitled to the patent therefor and is the real inventor, although others may have previously had the idea and made some experiments toward putting it in practice, subject, however, to this qualification, that if the party who conceives the invention was at the time of a second invention by another party using reasonable diligence in perfecting the same he is entitled to be recognized as the first inventor, although the second to conceive may have been the first to reduce to practice, either actual or constructive. (*Agawam Co.* v. *Jordan*, 7 Wall., 583.)

3. SAME—PRIORITY—REDUCTION TO PRACTICE—WHAT IS NECESSARY.

In order to constitute a patentable invention, there must be more than mere progress to an end, however near that progress may have approximated to the end in view. The law requires not conjection, but certainty, and where the question relates to a machine the conception must have been clothed in substantial form, which demonstrated at once its practical efficiency and utility. (*Coffin* v. *Ogden*, 18 Wall., 120.)

4. SAME—SAME—PROOFS—ALLEGATION IN PRELIMINARY STATEMENTS.

In the production of proof in matters of interference the parties must be held strictly to the dates set forth in their preliminary statements.

5. SAME—SAME—CONCEPTION—DELAY IN REDUCTION TO PRACTICE—EFFECTS OF.

Assuming the truth of the statement contained in the preliminary statement of F. or even that contained in his testimony as to the time of conception of the invention, the great delay in attempting to complete and reduce the invention to practical operation is entirely without explanation and must consequently give rise to a strong presumption against his pretensions.

6. SAME—SAME—BURDEN OF PROOF.

H. being the first to reduce to practice and the first to apply to the Office must be presumed to be an original inventor of the machine which it is conceded he built and operated and for which he was the first to make an application for a patent. F. controverts this right of H., and it is incumbent upon him to show by clear and indubitable proof that the presumption in favor of H. is not well founded and that the right is in himself. Such proof F. has failed to produce, and priority of invention is therefore awarded to H.

Messrs. Munn & Co. for the appellant.
Mr. T. Walter Fowler for the appellee.

ALVEY, *C. J.*:

This is an appeal from the Commissioner of Patents, in the matter of interference between the application of Charles M. Funk, filed June 12, 1900; the application of Walter C. Matteson, filed December 18, 1899, and the application of George W. Haines, filed December 29, 1898. The number of this interference is 20,436, and relates to improvement of harvesters.

The declaration of the issue is formulated in three counts, as follows:

1. In a side-wheel harvester, the combination with a main frame, of supporting-wheels, bearings for the wheels movable relative to the frame, screws connecting the main frame and the bearings for changing the vertical position of the wheels relative to each other, and means for actuating said screws.
2. A thresher supported on wheels placed on opposite sides of it, and having screws connected to the same combined with means to turn said screws together to move the said wheels simultaneously in opposite vertical directions, whereby the thresher is maintained in a vertical position while working on a hillside.
3. In a traveling harvester and in combination with a threshing-machine frame thereof, bearing-wheels upon opposite sides of said frame having independent shaft and journal boxes therefor, guides in which said journal-boxes are movable up or down with relation to the ground, vertical screw-shafts connecting with the wheel-boxes, mechanism by which the journal-boxes of one wheel are moved in the opposite direction to and in unison with those of the other wheel and mechanism for reversing said movement.

On the issue of this interference priority of invention was awarded to Haines, the senior party to the interference proceeding

Funk being the junior party, the *onus* of proof is upon him to establish priority of invention by clear and distinct proof.

The case is one principally of fact; but upon the application of facts, a few well-settled principles of law must be kept in view.

According to well-settled principles, Haines, being the senior party, the first to apply to the Patent Office, has, *prima facie*, the priority of right, and the *onus* of proof is upon any junior applicant to show, not only priority of invention, but he must also show that he has used reasonable diligence in adapting and perfecting his invention; for, in such case, the mere conception without actual reduction to practice within a reasonable time, does not avail a junior party making the claims. This principle is settled by many decisions, both of the Patent Office and of this court. It is also a settled principle in patent law, that whoever first perfects a machine is entitled to the patent therefor, and is the real inventor, although others may have previously had the idea and made some experiments toward putting it in practice; subject, however, to this qualification, that if the party who first conceives the invention was, at the time of a second invention by another party, using reasonable diligence in perfecting the same, he is entitled to be recognized as the first inventor, although the second to conceive may have been the first to reduce to practice, either actual or constructive. (*Agawam Co.* v. *Jordan*, 7 Wall., 583.) In order to constitute a patentable invention, there must be more than mere progress to an end, however near that progress may have approximated to the end in view. The law requires, not conjecture, but certainty; and where, as in the present case, the question relates to a machine, the conception must have been clothed in substantial form, which demonstrates at once its practical efficiency and utility. (*Coffin* v. *Ogden*, 18 Wall., 120.)

In the production of proof, in matters of interference, the parties must be held strictly to the dates set forth in their preliminary statements. In the preliminary statement filed by Funk, which is made under oath, he states that he conceived the invention contained in claims 9, 10 and 11, of his application, declared to be involved in this interference, on or about the 15th day of August, 1893, as near as he could fix the time; that he first made a sketch, illustrating the invention, on or about the 12th day of May, 1898; that he first disclosed the invention to another person on or about the 2d day of April, 1898, as near as he could recollect; that he never made any small-sized model embodying the invention; but that the construction of a full-sized, operative device, embodying said invention, was commenced on or about the 1st of January, 1899, and was completed on or about the 20th of March, 1899, and was put into practical and successful operation during the harvest of 1899, and was manufactured for sale and commercial use.

The subject-matter of the interference is a device for harvesting standing grain on hillsides or unlevel ground, and is designed to be used in combination with a preëxisting machine for cutting, threshing, and winnowing grain, and transferring it from one part of the machine to another. The parties to this interference do not profess or claim to be the pioneers or first inventors of the means for this particular purpose, but they all appear to have been, as shown by the facts and found by the Examiner of Interferences, well acquainted with the invention of Benjamin Holt at the time of their first efforts at improvement. As found and stated by the Examiner of Interferences, Funk was an operator of a harvester containing the Holt invention, and which he attempted to improve. Matteson and Haines were independent manufacturers in the same town in which the Holt people carried on the manufacture of harvesters; and they directed their efforts to getting something in the way of improvement, but, in so doing, they desired to avoid infringement of the Holt patent. The Matteson & Williams Manufacturing Company, with which Matteson was connected, went into insolvency before Matteson filed his application, and was then put into the hands of trustees for the creditors. Among the principal creditors were the Holt concern. About the time this interference was originally declared the Holt concern absorbed the Houser-Haines Company, so that the Holt concern are real parties in interest in this proceeding as against Funk. The Examiner of Interferences then states the case of Funk, as shown by the facts, and says that it consists of his, Funk's, unsupported allegation of conception of the matter in issue, in the fall of 1895, while operating the Holt machine, though he alleges in his preliminary statement that he conceived the invention in 1893; but he does not claim in his testimony, to have made any effort to reduce his invention to practice at that time, nor for a considerable time there after. In the winter or spring of 1898, he worked with J. L. Hughes, an agent of the Houser-Haines Company, helping him to make some models of devices gotten up by Hughes for accomplishing the same purpose as the device of the present interference. Sketches and models of these latter devices were sent to the Houser-Haines Company, but were discarded or abandoned, either because they were deemed worthless or that they might conflict with the Holt patent.

It was not until sometime in the latter part of April, 1898, that Funk disclosed his alleged invention of the matter in issue to Hughes, and to Severance, the village blacksmith, and a number of imperfect sketches were made about that time. Four sketches are in evidence as Funk's Exhibits 4, 5, 6 and 7, which are claimed to show the matter in issue. The Examiner of Interferences, in his opinion in the record, has reviewed the evidence in detail, and has stated the evidence as favorably to Funk as possible, and he came to the conclusion that Funk had proven conception, disclosure, and the making of sketches as early as the fore part of May, 1898, but did not reduce his conception to practice until he filed his application, June 12, 1900; and therefore, because of the want of reasonable diligence, or the failure to show a valid excuse for the long delay, he would necessarily fail in this interference, unless it could be found as a fact, that he had disclosed the matter in issue to Haines, the senior party, and the latter, by adopting and completing the invention, and reducing the same to actual practical operation, had thus entitled Funk to claim as his own the completed invention. And, upon review of the evidence bearing upon the fact of the alleged disclosure to Haines, by Hughes acting for Funk, the Examiner of Interferences thought he was justified in concluding that disclosure had been made to Haines, and that the latter had unjustifiably appropriated the invention as his own, and manufactured and tested the machine as early as October, 1898; and it was put upon the market and extensively used in the harvest of 1899. This conclusion was reached in opposition to the clear and positive denial of Haines, as to the alleged disclosure made to him, and in regard to which he is corroborated by two other unimpeached witnesses. The conclusion of the Examiner is based largely upon the testimony of Hughes; and the result was that priority of invention was awarded to Funk.

One of the witnesses produced by Haines was Martyn, who was in the employ of the Houser-Haines Company in the year 1898, as foreman of the construction of machines; and he testifies that about the latter part of April, 1898, as near as he can recollect, the company commenced figuring on a harvesting-machine, having screws by which the wheels were raised and lowered; that Haines first disclosed that construction to the witness, and how it was to be made and operated, one day, and the next day, he (the witness) made a sketch of it and showed it to Haines; that he made the drawings, Haines's Exhibits A and B, during the summer of

1898, to show the machine they were getting up, and which were afterward completed in accordance with these exhibits; that the machine was begun sometime during the month of June: that these Exhibits A and B disclosed every count of this issue.

This witness also testified that the machine was built in the summer of that year, 1898, and was tested in 1898, and operated in fieldwork in 1899, and that twenty-one machines of that kind were built and put into use in the year 1899. He also testified that he made the Exhibits A and B from sketches made by Haines.

The witness Kincaid also testified to facts strongly corroborative of the testimony of Haines.

From the award of priority to Funk by the Examiner of Interferences appeals were taken to the Board of Examiners-in-Chief, by both Haines and Matteson. And, upon very full and careful review and analysis of the evidence, that tribunal reversed the award of the Examiner of Interferences, and adjudged priority of invention in favor of Haines. From this determination both Funk and Matteson appealed to the Commissioner of Patents, and these last appeals were heard and decided by Acting Commissioner Moore. The Acting Commissioner went carefully and fully over the evidence, and his conclusion was in affirmance of the findings and judgment of the Examiners-in-Chief. It is from this latter decision that Funk has appealed to this court.

Both the Examiners-in-Chief and the Acting Commissioner, upon careful analysis of the evidence, concluded that Funk in fact had never made or operated any machine containing the invention of the issue of this interference. That the allegations of Funk, in his preliminary statement, to the effect that he had invented, made, and operated the machine within the description of the present interference are founded wholly upon his contention that he first conceived the invention, and that his conception was disclosed to Haines, and that the actual reduction to practice of the invention by Haines was only the practice of his, Funk's, invention, and that he, Funk, is entitled to it as the production of his invention. But the Examiners-in-Chief and the Acting Commissioner conclude otherwise, and in their conclusion, upon careful examination of the evidence, we entirely concur. They find and conclude from the evidence, that all that Funk ever did toward making and completing the invention in issue, was the making a pencil sketch, and the causing other pencil sketches to be made, and the delivery of two of those sketches to his witness Hughes. That there was no evidence to establish the fact, other than the testimony of Funk himself, that he ever had any possession of the invention here at issue prior to the year 1898. And if we assume the truth of the statement contained in the preliminary statement of Funk, or even that contained in his testimony, as to the time of conception of the invention, the great delay in attempting to complete and reduce the invention to practical operation, is entirely without explanation, and must, consequently, give rise to a strong presumption against his pretension.

As very properly said by the Acting Commissioner, Haines being the first to reduce to practice, and first to apply to the Office, must be presumed to be an original inventor of the machine, which, it is conceded, he built and operated, and for which he was first to make an application for a patent. Funk controverts this right of Haines, and it is incumbent upon him to show, by clear and indubitable proof, that the presumption in favor of Haines is not well founded, and that the right is in himself, as against both Haines and Matteson. Such proof he has failed to produce.

Upon the record before us, and in view of the legal principles applicable to the case, and to which we have referred, we hold that the decision appealed from is correct, and must therefore be affirmed. The proceeding of this court and this opinion will be certified to the Commissioner of Patents, as directed by the statute. Decision affirmed.

Court of Appeals of the District of Columbia.

FUNK *v.* HAINES.

Decided June 25, 1902.

INTERFERENCE—PRIORITY—DECISION AFFIRMED.

As the parties to this interference are also parties to the pending interference, No. 20,436, and as this case depends in all respects upon the same facts and the evidence is the same, *Held* that for the reasons in that case assigned H. is the prior inventor.

Messrs. Munn & Co. for the appellant.

Mr. T. Walter Fowler for the appellee.

ALVEY, *C. J.:*

This is an appeal from the Patent Office in matter of interference between an application of Funk filed June 12, 1900, and an application by Haines, filed December 29, 1898. The applications relate to harvesters, and the interference is No. 20,670, and is a companion case to No. 20,436, which has just been decided by this court.

There is but a single issue, and that is defined as follows:

In a traveling harvester, a supporting-frame, upper and lower boxes, the upper boxes being supported by the lower boxes, supporting-wheels journaled in the lower boxes, screw devices for raising and lowering the boxes, and means for reversely turning the screw devices belonging to the respective boxes of the supporting-wheels.

The parties to this interference are also parties to the preceding interference No. 20,436, which we have just decided. The evidence in both cases is the same, and the issues differ only in including the upper boxes for the ruts. The cases were argued together, and treated as substantially one case.

We have held in the preceding case, No. 20,436 affirming the decision of the Acting Commissioner of Patents, that Haines is entitled to priority of invention. And as this case depends, in all respects, upon the same facts as the preceding case, we must, for the reasons in that case assigned, hold in this case likewise that Haines is entitled to priority of invention, and therefore affirm the decision appealed from by Funk. The proceeding in this court and the decision here made will be certified as directed by the statute. Decision affirmed.

Patents Nos. 707,531 to 707,999.

THE

OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 9. TUESDAY, AUGUST 26, 1902. PRICE—$5 per year.

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Designs	12	No. 36,022 to No. 36,033, inclusive.
Trade-Marks	29	No. 38,831 to No. 38,859, inclusive.
Labels	14	No. 9,396 to No. 9,409, inclusive.
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Total issue	527	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	2		Nebraska	9	
Alaska Territory			Nevada		
Arizona Territory			New Hampshire	1	
Arkansas			New Jersey	20	5
California	11	2	New Mexico Territ'y		
Colorado	3		New York	70	6
Connecticut	7	2	North Carolina	2	
Delaware	2	1	North Dakota	1	
District of Columbia	9		Ohio	20	2
Florida	2		Oklahoma Territ'y	1	
Georgia	5		Oregon	1	
Hawaii Territory			Pennsylvania	45	3
Idaho			Philippine Islands		
Illinois	36	9	Rhode Island	9	1
Indian Territory	1		South Carolina		
Indiana	15	1	South Dakota		
Iowa	12		Tennessee	3	
Kansas	6		Texas	7	
Kentucky	3		Utah	1	
Louisiana	1		Vermont		
Maine		1	Virginia	3	
Maryland	7	1	Washington	3	
Massachusetts	30	2	West Virginia	1	
Michigan	7	1	Wisconsin	7	
Minnesota	13	1	Wyoming		
Mississippi	3				
Missouri	12	2	Total to citizens of the United States	408	40
Montana					

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina			Netherlands	1	
Austria-Hungary	2		Newfoundland		
Belgium			New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	5		Peru		
Cape Colony			Portugal		
Chile			Russia	3	
China			Santo Domingo		
Cocos Island			Scotland		
Colombia			South African Republic		
Cuba			South Australia		
Denmark			Spain		1
Egypt			Sweden	4	
England	18	1	Switzerland	4	
France	10		Uruguay		
Germany	25	1	Victoria	1	
Guatemala			Western Australia		
India					
Ireland			Total to citizens of foreign countries	73	3
Italy	1				
Japan					

Preparation of Specifications, Entry of Amendments, Etc.

LEGIBLE WRITING REQUIRED.

The specification and claims must be plainly written or printed on but one side of the paper. All interlineations and erasures must be clearly referred to in marginal or foot notes on the same sheet of paper. Legal-cap paper with the lines numbered is deemed preferable, and a wide margin must always be reserved upon the left-hand side of the page.

AMENDMENTS MUST BE SPECIFIC—HOW WRITTEN.

In every amendment the exact word or words to be stricken out or inserted in the application must be specified, and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper. Erasures, additions, insertions, or mutilations of the papers and records must not be made by the applicant.

SPECIFICATIONS REWRITTEN.

When an amendatory clause is amended, it must be wholly rewritten, so that no interlineation or erasure shall appear in the clause, as finally amended, when the application is passed to issue. If the number or nature of the amendments shall render it otherwise difficult to consider the case, or to arrange the papers for printing or copying, the Examiner or Commissioner may require the entire specification to be rewritten.

Classification Bulletin.

CLASSIFICATION BULLETIN No. 7, containing the revision made during the months of May and June, 1902, has been published. Price, ten cents.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business August 19, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	In arrears—Under one month.			
253	X. Carriages and Wagons	Aug. 9	Aug. 9	50
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	Aug. 2	Aug. 2	55
106	II. Farm Products, etc., Lubricators, Presses, etc.	July 24	July 19	163
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	July 22	Aug. 1	158
223	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	July 21	July 31	154
30	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	July 21	July 16	332
246	I. Tillage, etc., and Fences	July 21	July 10	292
	Between one and two months.			
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	July 12	July 25	204
231	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	July 12	July 12	190
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	July 11	July 22	242
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	July 7	Aug. 1	202
140	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	July 2	July 15	313
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	July 1	July 14	268
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 30	July 2	276
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	June 30	July 1	548
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	June 28	July 22	355
231	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	June 27	July 24	331
218	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	June 26	July 15	222
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	June 26	June 30	131
195	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	June 25	July 21	342
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	June 23	July 10	268
128	XXIX. Wood-Working Machines, Coopering and Roofing.	June 21	June 30	217
	Between two and three months.			
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	June 14	July 9	236
103	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 13	July 10	342
122	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 13	July 8	256
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	June 9	July 14	280

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	June 4	May 19	402
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	June 3	June 6	436
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	June 2	June 24	407
248	XVIII. Steam-Engineering, etc	June 2	June 17	542
91	XVI. Telegraphy and Telephony	May 24	May 22	334
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 20	June 17	726
	Between three and four months.			
100	XXII. Fire-Arms, Ordnance, Navigation.	May 17	June 28	194
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	May 17	June 12	520
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 17	May 22	492
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	May 16	May 16	593
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 1	June 5	652
	Between four and five months.			
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Apr. 16	June 11	518

Total number of applications awaiting action 12,608

In arrears—Under one month.			
*Designs	Aug. 13	Aug. 18	82
Between one and two months.			
†Trade-Marks	July 8	Aug. 4	219
Under one month.			
‡Labels and Prints	Aug. 12	Aug. 8	19

Punctuation and Amendments.

Attention is called to Order 789, dated November 26, 1892, which is as follows:

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

This order is still in force.

Examiners are prohibited from making any change in the claims or specification of an application without the consent of applicants or their attorneys; but when amendment becomes necessary the Office will duly advise, by letter, the applicant or his representative before passing a case to issue.

Women Inventors.

The Patent Office has published and has for sale a volume containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

An Appendix to the above, covering the period from July 1, 1888, to October 1, 1892. One volume, 18 pages. Paper covers, 25 cents.

Appendix No. 2, October 1, 1892, to March 1, 1895. One volume, 98 pages. Paper covers, 25 cents.

PATENTS

GRANTED AUGUST 26, 1902.

707,581. APPARATUS FOR SEPARATING THE PITH OR CORE FROM THE RIND PORTION OF FIBROUS MATERIAL. ANDREW J. ADAMSON, Chicago, Ill., assignor, by direct and mesne assignments, to the Adamson Manufacturing Company, Chicago, Ill., a Corporation of West Virginia. Filed July 19, 1901. Serial No. 68,906. (No model.)

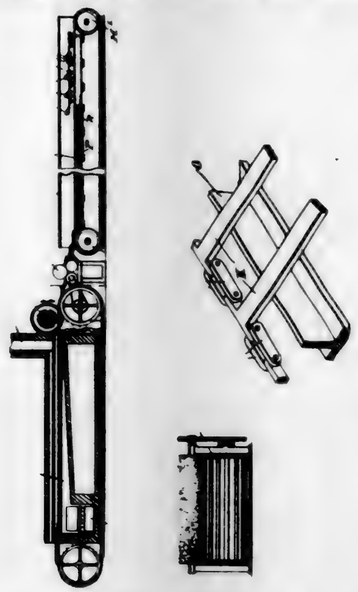

Claim.—1. In an apparatus for separating the pith or core from fibrous or other material, the combination of roasting, compressing, drying and beating apparatus, arranged and operating in the manner and for the purpose set forth.

2. In an apparatus of the class described, a roasting-furnace, means for feeding the material to be roasted therethrough, a compressing apparatus to which said feeding means delivers the roasted material, a drier arranged to receive the compressed material from said compressing mechanism, and beaters operating to separate the pith or core from the rind portion of the material treated, as and for the purpose set forth.

3. In an apparatus of the class described, a roasting-furnace provided with a chamber extending therethrough, a carrier operating through said chamber, a compressing mechanism to which said carrier delivers, a drying-chamber, a carrier operating therethrough and arranged to receive the material from the compressing apparatus, and beaters arranged to complete the separation of the pith or core from the rind portion of the material treated, all combined and arranged as and for the purpose set forth.

4. In an apparatus of the class described and in combination with roasting and compressing mechanisms, of a drier comprising a chamber, a carrier operating through said chamber, means for heating said chamber, shafts transversely journaled in said chamber and provided with beaters, and means for rocking said shafts, as and for the purpose set forth.

5. In an apparatus of the class described and in combination with roasting and compressing mechanism, of a drier, a carrier operating through said drier, shafts journaled above said carrier and having arms, transverse slats carried by said arms, and means for rocking said shafts whereby said slats exert a beating effect over said carrier, as and for the purpose set forth.

6. In an apparatus of the class described and in combination with roasting and compressing mechanism, of a drier, a carrier operating therethrough, shafts transversely mounted in said drier and carrying arms, slats connecting the arms of each shaft, said slats extending transversely of the carrier and above the same, crank-arms carried by said shafts, cams arranged to rock said arms, means for actuating said cams, and means for opposing the action of said cams, as and for the purpose set forth.

7. In an apparatus of the class described and in combination with roasting and compressing apparatus, of a drier, supports extending longitudinally therethrough, a carrier operating upon said supports and comprising transverse slats connected at their ends by links, heating-coils arranged beneath the path of travel of said carrier and adjacent thereto, and beaters operating over the upper surface of said carrier adjacent to the rear end thereof to pound or beat the material conveyed by said carrier, as and for the purpose set forth.

8. In an apparatus of the class described, a furnace, a carrier operating therethrough, a compressing mechanism to which said carrier delivers, and a scraping device interposed between the furnace and compressing mechanism and operating to remove any charred or burned fragment from the material operated on, as and for the purpose set forth.

9. In an apparatus of the class described, a furnace, a carrier operating therethrough and a compressing mechanism to which said carrier delivers, in combination with a drum-brush arranged transversely across and above said carrier and between said furnace and compressing mechanism, as and for the purpose set forth.

10. In an apparatus of the class described, a furnace, a carrier operating therethrough, a compressing mechanism to which said carrier delivers, in combination with a rotary brush arranged transversely across the path of travel of said carrier and above the same, said brush adapted to be rotated in the direction of travel of the carrier but at a higher rate of speed, as and for the purpose set forth.

707,582. MEASURING-FAUCET AND AUTOMATIC GRADUATE. GEORGE J. ADAMS, Brooklyn, N. Y. Filed Aug. 24, 1899. Serial No. 728,271. (No model.)

Claim.—1. In combination, the two-way faucet, a measuring vessel connected therewith, a valve controlling the passage of liquid from the faucet to the vessel, a slotted tubular extension above said vessel, a stem or rod extending upward from the valve through said vessel and into said tubular extension, a float within the vessel having an extension also extending into said tubular extension, means for adjustably securing said stem and float extension together, and a pointer connected with the float extension and coacting with a scale on the tubular extension, substantially as described.

2. In combination the two-way faucet, the measuring vessel connected therewith, the valve-chamber between said vessel and faucet, the valve in said chamber having an extension, the rod having a limited sliding connection with said extension, said rod extending up through the measuring vessel, the float within the vessel having an extension extending up in proximity to the said rod, and means for adjustably securing said rod and float extension together, substantially as described.

3. In combination the two-way faucet, the valve-chamber detachably connected thereto, the measuring vessel detachably connected with said valve-chamber, the valve located in said chamber and having a tubular extension extending up into said vessel, the tubular extension above said measuring vessel, the rod having its lower end seated in the valve extension and having a limited sliding movement therein, the upper end of said rod extending into the extension of the vessel, the float within the vessel having a tubular sleeve or extension extending upward above the vessel, and the set-screw passing through a slot in the extension of the vessel and adjustably securing said sleeve and rod together, substantially as described.

4. In combination, the two-way faucet, a measuring vessel connected therewith, a valve to close the opening to said vessel, a float connected with said valve, a tube arranged parallel to the vessel and connected therewith at top and bottom, said bottom connection including a plunger-chamber, a plunger working in said plunger-chamber, and an adjustable indicator adjacent to said tube, substantially as described.

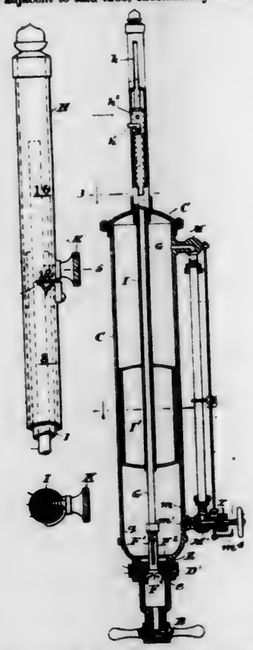

5. In combination with the faucet having a two-way valve or plug, a measuring vessel connected therewith, a valve, interposed between said vessel and faucet, a float controlling said valve, a hollow extension M at the lower part of said vessel and communicating with the interior thereof, a glass tube arranged parallel with the cylinder and having its lower end communicating with the interior of said extension and its upper end in communication with the upper portion of the vessel, and a displacement-plunger located in said extension, substantially as described.

707,583. CHECK-HOOK KEEPER. THOMAS ALBEE, Hallstead, Pa. Filed Apr. 1, 1902. Serial No. 100,978. (No model.)

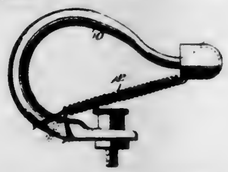

Claim.—As a new article of manufacture, a checkrein-hook attachment consisting of a spring having a cap at one end adapted to engage the free end of the checkrein-hook and with two normally distended loops upon the other end adapted to engage the shank of the hook and exert a gripping force thereon, substantially as described.

707,584. SMOKE-CONSUMING APPLIANCE FOR FURNACES. JOHN ALVIN, London, England. Filed Feb. 11, 1901. Serial No. 46,688. (No model.)

Claim.—1. In a steam-boiler or other furnace, a fire-chamber, a rabbet or recess in each side wall of the said chamber and extending above and below the fire-bars, a longitudinal casting set in each said recess, vertical slots in the upper part or bar of the said casting whereof the sides converge from the bottom to the top and the upper and lower ends incline upward, a steam-jet pipe traversing the recess behind the slots, openings in the lower part of the said casting and dampers in said openings whereby the admission of air to the recess or chamber behind the casting is regulated, substantially as herein described.

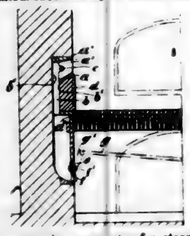

2. In smoke-consuming apparatus for steam-boiler and other furnaces, the combination with the dampers *f f* of the trunnions *f' f'*, lever *f''* at the front of the furnace, connecting-rod *g* and levers *g'* substantially as and for the purposes specified.

707,585. MOLDING-MACHINE. JAMES F. APPLEBY, Hopkins, Minn. Filed Mar. 31, 1902. Serial No. 100,886. (No model.)

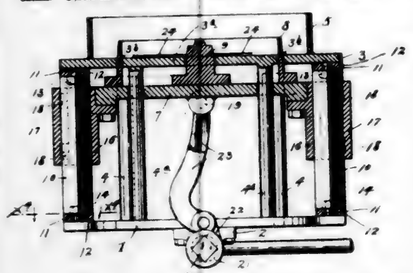

Claim.—1. In a molding-machine, the combination with a frame including a stripper-plate, of vertical guide-posts mounted on said frame with freedom for universal adjustments in a horizontal plane, a pattern-plate guided by said adjustable guide-posts, and means for imparting vertical movements to said pattern-plate, substantially as and for the purposes set forth.

2. In a molding-machine, the combination with a frame including a stripper-plate rigidly supported therefrom, of vertical guide-posts provided with trunnions at their ends, anchoring-brackets having seats closely fitting said trunnions, and screws for securing said brackets to said frame, which screws work through relatively large holes in said brackets, whereby said brackets are made adjustable, substantially as described.

3. In a molding-machine, the combination with a frame including a stripper-plate 3, of the square guide-posts 10 having the trunnions 11, the brackets 12 having seats closely fitting said trunnions, the machine-screws 13 and 14 working through the relatively large perforations 15, in the upper brackets 12 and adjustably securing the same, and the vertically-movable pattern-plate provided with keeper-brackets working on said guide-posts 10, substantially as described.

707,586. CIGAR-BUNCH-ROLLING MACHINE. GEORGE W. ARNOLD and WILLIAM M. CRANSTON, Philadelphia, Pa., assignors of one-third to Joseph E. Lutz, Philadelphia, Pa. Filed June 12, 1902. Serial No. 111,284. (No model.)

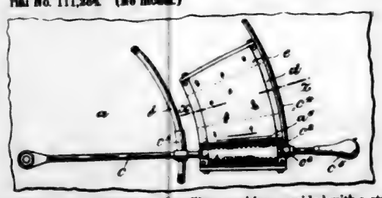

Claim.—1. A cigar-bunch-rolling machine provided with a stationary bed having a recess and a substantially semicylindrical depression, a series of springs supported in vertical position from said bed, a sheet supported by said springs and secured to said bed and forming a spring balanced or cushioned table, an apron secured by its ends to said table, and means for manipulating said apron on said sheet within said depression and over other portions to bunch and roll a filler material, substantially as and for the purposes described.

2. A cigar-bunch-rolling machine provided with a stationary bed having a recess and a substantially semicylindrical depression, and legs in which are mounted helical or coiled springs, a metal sheet spanning the recess and depression of said bed and supported under uniform tension by said springs, an apron secured at both ends to said bed and a roller for manipulating said apron on the sheet within the depression of said bed and over other portions of said table, substantially as and for the purposes described.

3. A cigar-bunch-rolling machine provided with a stationary bed having a depression, a series of springs projecting from said bed, a thin metal sheet secured to said bed and supported by said springs in position under uniform tension, an apron secured at both ends to said bed, and a traveler-roller adapted to roll a mass of filler material in said depression under spring tension into a uniform or even bunch, substantially as and for the purposes described.

707,587. FILTERING APPARATUS. CARL BARCHLER, Zurich, Switzerland. Filed July 22, 1901. Serial No. 69,297. (No model.)

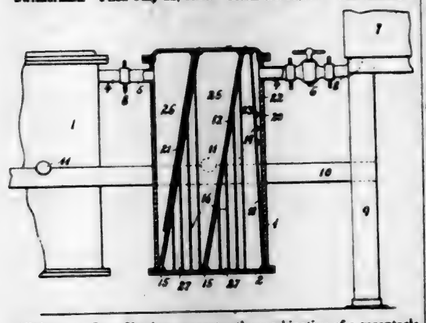

Claim.—1. In a filtering apparatus the combination of a receptacle containing an inlet and outlet, with filter-screens dividing said receptacle into compartments, upright slabs forming narrow openings with said filter-screens, a partition containing openings, said openings having hoods directly above them, and means for connecting said apparatus to a pouring-basin, substantially as described.

2. In a filtering apparatus the combination of a receptacle containing an inlet and an outlet, said receptacle being pivotally mounted on rails attached to upright, with a filter screen or screens dividing said receptacle into compartments, upright slabs, a partition containing triangular holes, said holes having triangular hoods above them and a shield for forcing a downward flow of the fluid, substantially as described.

707,588. RIM AND FELLY FOR RUBBER VEHICLE-TIRES. JOHN BAKER, Meacham, Ill. Filed Apr. 9, 1902. Serial No. 102,023. (No model.)

Claim.—1. The combination with a tire having in part a smaller diameter than the rim to receive the same, of a laterally-split rim provided on both its side edges with devices adapted to receive and retain a rubber tire in place thereon and provided with a beveled inner face, said rim being adapted to be contracted to enter the tire and expanded to receive the latter, and a felly having a beveled outer face adapted to receive and expand said rim and hold same in its expanded position.

2. The combination with a pneumatic tire having an inflating-valve projecting therefrom, of a rim having an opening to receive said valve, said rim being split at a point diametrically opposite said opening and adapted to be contracted to enter the tire and expanded to receive and hold the latter, and a felly having an opening to receive said valve, said rim and felly being partially beveled on their contact-surfaces opposite said openings.

3. The combination with a tire having in part a smaller diameter than the rim to receive the same, of a laterally-split rim provided on both its side edges with devices adapted to receive and retain a rubber tire in place thereon and provided with a beveled inner face, said rim being adapted to be contracted to enter the tire and expanded to receive the latter, openings in the inner face of said rim adjacent one edge thereof, adapted to receive expanding devices, and a felly having a beveled periphery adapted to receive said rim, said rim being adapted to be partially inserted into position on said felly while the expanding devices are held in place thereon and subsequently, after removal of said expanding devices, forced into proper position on said felly and completely expanded by the latter.

4. The combination with an endless tire, of a split rim adapted to be contracted to enter said tire and expanded to receive and hold the latter, the joint in said rim being on a bevel and having a tongue and groove interfitting with each other to prevent relative lateral movement of those parts of said rim on each side of said joint, and a felly adapted to receive said rim and hold same in its expanded position.

707,589. DRAFT-EQUALIZER. THOMAS W. BARTA, New Richmond, Ind. Filed Dec. 23, 1901. Serial No. 87,557. (No model.)

Claim.—1. The combination with the plow-beams and cross-clevis, a draft-clevis attached to the end of said cross-clevis, a spring-bar connected to the end of said plow beam around the end of cross-clevis and the yielding connection between the side draft-clevis and the end of spring-bar, substantially as set forth.

2. The combination with the plow-beams and cross-clevis, one end of said cross-clevis projecting laterally beyond the plow-beam, of a draft-clevis attached to the projecting end of the cross-clevis, a spring-bar connected to the opposite end of said plow-beam A', a yielding connection between the said spring-bar and draft-clevis, said yielding connection comprising a twisted link, a folded strap or bar, a longitudinally-slotted plate, and an angular plate having a hook at one end, substantially as described.

3. In a device of the kind described, the combination with the angular plate having a hook at one end, the longitudinally-slotted bar or plate connected to said link, the folded strap having a bolt passing through its ends and also through the slotted plate or bar, the twisted link and the spring-bar having an eye or loop at one end adapted for engagement with the twisted link, substantially as set forth.

707,540. PRINTING-PRESS. ALPHONS BARDES, Hamburg, Germany. Filed Aug. 10, 1901. Serial No. 71,641. (No model.)

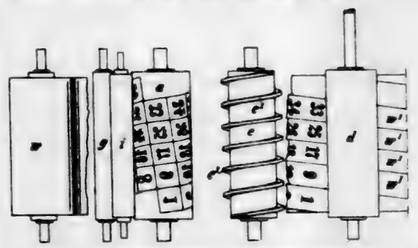

Claim.—1. In a printing-press, a printing-surface containing columns of symbols set at an angle to the length of the material to be printed upon and arranged to successively print said column of symbols, the bottom of one column to register with the top of another column, whereby a plurality of columns of symbols will be successively printed in alinement, and means for feeding the material, substantially as and for the purpose set forth.

2. In a printing-press, a printing-surface containing parallel columns of symbols set at an angle to the length of the material to be printed upon and to register the foot of a column with the top of the next adjacent column, whereby the columns of symbols will be successively printed in

alinement, and means to feed the material, substantially as and for the purpose set forth.

3. In a printing-press, a printing-cylinder, columns of symbols thereon spirally arranged and the symbols arranged at an angle to the elements of said cylinder to simultaneously print all the columns of symbols and cause the bottom of one column to register with the top of an adjacent one, whereby the columns of symbols will be successively printed in alinement, an impression-cylinder and means to feed the material to be printed upon, substantially as and for the purpose set forth.

4. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of one column to register with the top of the next adjacent column in the next succeeding impression, whereby the columns of symbols will be successively printed in alinement, an impression-cylinder and means to feed a continuous web, substantially as and for the purpose set forth.

5. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of one column to register with the top of the next adjacent one, whereby the columns of symbols will be successively printed in alinement, an impression-cylinder, means to feed a continuous web and means to cut the columns of symbols into diagonal strips, substantially as and for the purpose set forth.

6. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of one column to register with the top of the next adjacent one, an impression-cylinder, means to feed a continuous web and a spiral cutter having the same pitch as the symbols on the printing-cylinder to cut the web into diagonal strips, substantially as and for the purpose set forth.

7. In a printing-press, a printing-cylinder, parallel columns of symbols arranged spirally thereon to print diagonal columns of symbols and to cause the bottom of a column to register with the top of the next adjacent column, an impression-cylinder, means to feed a continuous web and coöperating spiral cutters having the same pitch as the columns of symbols on the impression-cylinder, one above and the other below the continuous web to cut said web into columns of symbols diagonally and between the columns, substantially as and for the purpose set forth.

707,541. METHOD OF PRODUCING PRINTED MATTER. ALFONS RABDOR, Hamburg, Germany. Original application filed Aug. 10 1901, Serial No. 71,641. Divided and this application filed Dec. 18, 1901. Serial No. 86,381. (No specimens.)

Claim.—1. The method of printing continuous strips, which consists in arranging the printing-surfaces in rows at such an angle to the length of the material to be printed upon, that the end or foot of each row will register with the top or beginning of the next adjacent row at the next succeeding impression, and taking successive impressions from the printing-surface to produce columns of printed matter longer than a row of printing-surfaces, substantially as described.

2. The method of printing symbols in continuous strips, which consists in arranging the printing-surfaces in parallel rows at such an angle to the length of the material to be printed upon, that the foot or bottom of each parallel row will register with the top of the next adjacent row when the material is moved lengthwise an amount equal to the length of the impression, and separating said material between the continuous rows of symbols into strips, substantially as and for the purpose set forth.

3. The method of printing continuous strips, which consists in arranging the printing-surfaces in parallel rows at such an angle to the length of the material to be printed upon, that the foot or bottom of each parallel row will register with the top of the next adjacent row, simultaneously taking an impression from all the rows, moving the material lengthwise the distance of a printed row preparatory to taking the next impression and cutting the material into strips between the diagonal continuous rows of impressions thus made, substantially as and for the purpose set forth.

707,542. MEANS FOR RAISING OR LOWERING MATERIALS. HERBERT A. L. BARRY, Westminster, England. Original application filed May 7, 1900, Serial No. 15,797. Divided and this application filed Nov. 30, 1900. Serial No. 38,284. (No model.)

Claim.—1. The improved winch constructed or operating substantially as herein described and comprising a shaft, two drums arranged axially but loosely thereon, two carriers, the one fast and the other loose on the said shaft, one or pairs of epicyclic toothed pinions mounted on each carrier, two stationary toothed wheels and a toothed wheel secured to each winding-drum; one wheel of each pair of toothed pinions meshing with one of the stationary toothed wheels and the other wheel of each pair of toothed pinions meshing with one of the toothed wheels respectively secured to the winding-drums.

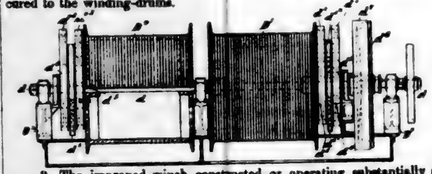

2. The improved winch constructed or operating substantially as herein described and comprising a shaft, a drum on said shaft, a carrier keyed to a sleeve in which the shaft rotates, two sets of epicyclic toothed pinions mounted on said carrier, a stationary toothed wheel wherewith one set of toothed pinions meshes, a toothed wheel secured to the winding-drum wherewith the other set of toothed pinions meshes, a friction-clutch whereof one part is keyed on the sleeve while the other or movable part is carried by the shaft and means for operating the said clutch.

3. In apparatus for raising and lowering materials, the combination with the framing of the drums D^9, D', carriers d', $d'^{\times}$, epicyclic pinions d^2, d^3 on said carriers, central toothed wheels d^4, d^5 respectively carried by the framing and the drums and meshing with the epicyclic pinions mounted on each side of the respective carriers, sleeve d^6, clutch d^7 d^8 and means for operating the clutch, substantially as set forth.

707,543. GRINDING-MACHINE. JOHN BATH, Waltham, Mass. Filed Mar. 3, 1900. Serial No. 96,367. (No model.)

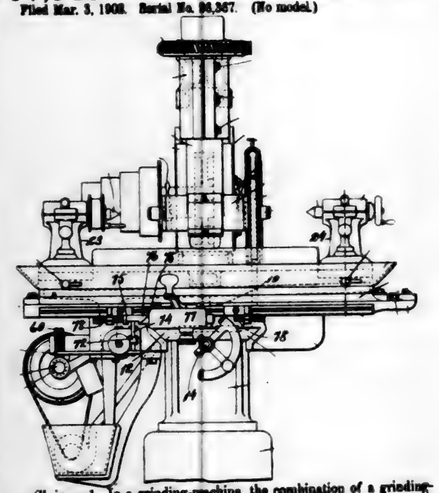

Claim.—1. In a grinding-machine, the combination of a grinding-wheel arbor, a bearing therefor formed with a sliding bearing-face laterally opposite the arbor, a complemental fixed bearing face or guide, provisions for clamping said arbor-bearing to the guide on any point along the latter, a sliding stem or post connected with said arbor-bearing, a fixed guide or bearing for said post, and mechanism for imparting a longitudinal movement to said post.

2. In a grinding-machine, the combination of a guide for a grinding-wheel-arbor bearing, a support mounted for an angular or swinging adjustment about an axis parallel to said guide, heads provided with means for holding the work and mounted on said support with the line of centers of said means in a plane at right angles to the axis of movement of said support, a grinding-wheel arbor, a bearing therefor mounted to slide on said guide and capable of movement which carries said arbor across said plane, mechanism for imparting a longitudinal movement to said bearing along its guide, and provisions for clamping said bearing to the guide at any point along the latter.

3. In a grinding-machine, the combination of a grinding-wheel arbor, a bearing therefor, a stem or post connected with said bearing and formed with a screw-thread, a rotatable cap-and-nut member comprising a nut engaged with said thread and a cap covering the end of the post, and means for preventing axial movement of said nut.

4. In a grinding-machine, the combination of a grinding-wheel arbor, a bearing therefor, a stem or post connected with said bearing and formed with a screw-thread, a rotatable cap-and-nut member comprising a nut engaged with said thread and a cap covering the end of the post, a bearing engaged with said member on the end thereof nearest the arbor-bearing, and a second bearing engaged with the opposite end of the cap-and-nut member, said bearings preventing axial movement of the member.

5. In a grinding-machine, the combination of a C-shaped frame formed with a substantially flat tool-clamping rest on one arm of the C, a post guide or bearing on the opposite arm of the C, a post mounted to slide in said bearing and having an arbor-bearing located in the gap of the C, a grinding-wheel arbor mounted in said bearing, and a work-support mounted opposite the gap of the C.

6. In a grinding-machine, the combination of a C-shaped frame having a lower part provided with an upper clamping-face the forward part of which forms an exposed tool-clamping rest, an upper part detachably clamped to the rear part of said clamping-face, a grinding-wheel arbor, and a bearing therefor slidingly mounted on the upper part of said frame.

7. In a grinding-machine, a feed-carriage, opposite driving members connectible alternately with the carriage, carriage-actuated means adapted to connect and disconnect said carriage with the members and having a neutral or carriage-stopping position, and mechanism embracing the range of said means and having provisions for neutralizing said means in any part of its said range.

8. In a grinding-machine, a feed-carriage, opposite driving members connectible alternately with the carriage, carriage-actuated means adapted to connect and disconnect said carriage with the members and having a neutral or carriage-stopping position, said means including a reciprocating member, and a neutralizing lever, one of the last said two parts being formed with oppositely-acting cam-faces arranged to coact with the other part in any portion of the range of said reciprocating member, whereby to neutralize the said carriage-actuated means.

9. In a grinding-machine, the combination of a grinding-wheel arbor having a belt-pulley, a vertically-movable bearing carrying said arbor, a driving belt-pulley stationarily journaled, a substantially horizontal belt connecting said pulleys, a support having a vertical guide, a holder mounted to slide thereon, a belt-tightener mounted in said holder, and means for clamping said holder at any point along said guide.

10. In a grinding-machine, the combination of a support, a table pivoted thereon, work-holding means mounted on said table, stop-abutments on said table, relatively stationary oppositely-acting stop-screws coacting with said stop-abutments, and frictional clamping devices for securing said screws at any adjustment.

11. In a grinding-machine, the combination of a split clamping-sleeve having free lips, a stem screwing in one of said lips and having outer and inner shoulders embracing the other lip, the last said lips having a screw-threaded socket, a bearing-sleeve for the stem complementally threaded and screwing in said socket, and an adjustable frictional holding device acting laterally against said threaded sleeve.

707,544. MACHINE FOR FILLING BAGS. ADELBERT M. BATES, Chicago, Ill. Filed Jan. 20, 1901. Serial No. 44,681. (No model.)

Claim.—1. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism whereby the material is introduced into the bag in a relatively small stream, with an upper support whereby the bag is secured at its upper end while open, a bottom-support whereby the bag is supported at its lower end, and means for positively moving and thus releasing both supports to free the bag.

2. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism whereby the material is introduced into the bag in a relatively small stream, with an upper support whereby the bag is secured at its upper end while open, a bottom-support whereby the bag is supported at its lower end, a vibrator of which the bottom-support forms part, and means for moving and thus releasing both supports to free the bag.

3. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism whereby the material is introduced into the bag in a relatively small stream, with an upper support whereby the bag is secured at its upper end, a bottom-support whereby the bag is supported at its lower end, and means for simultaneously or successively moving and thus releasing the supports to free the bag.

4. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism whereby the material is introduced into the bag in a relatively small stream, with a duplex upper support whereby the bag is secured at its upper end with a variable grip, a bottom-support whereby the bag is supported at its lower end, and means for positively moving and thus releasing the heavy grip of the upper support and the lower support to free the bag.

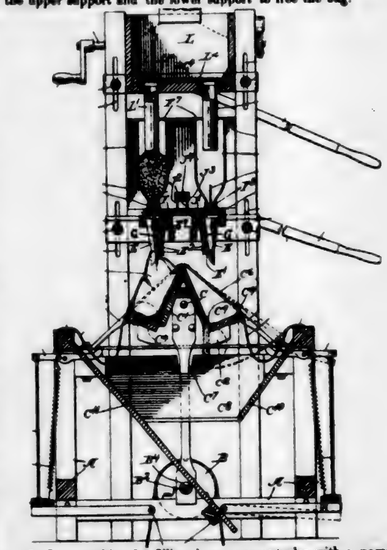

5. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism whereby the material is introduced into the bag in a relatively small stream, with a duplex upper support whereby the bag is secured at its upper end with a variable grip, a bottom-support whereby the bag is supported at its lower end, and means for positively moving and thus releasing the supports to free the bag and for successively releasing the two parts of the duplex upper support.

6. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance to be treated is fed into the bag in a relatively small stream, with bag-supports separated so as to leave the sides of the bag loose, the upper support adapted to hold the bag near one corner, the lower support adapted to receive one side and the bottom of the bag, mechanism for tilting the bottom-support to discharge the bag when it is full, and mechanism for vibrating such tilting bottom-support.

7. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance to be treated is fed into the bag in a relatively small stream, with bag-supports, the upper support adapted to hold the bag near one corner, the lower support adapted to receive one side and the bottom of the bag, and a mechanism for vibrating the bag and its lower support by a positive downward and upward motion in a line through the lower corner of the bag and at an angle to its length.

8. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance to be treated is fed into the bag in a relatively small stream, with bag-supports, the upper support adapted to hold the bag near one corner, the lower support adapted to receive one side and the bottom of the bag, mechanism for vibrating the bag and its lower support by a positive upward and downward motion in a line through the lower corner of the bag and at an angle to its length, the upper support comprising a clamping device which clamps the exterior of the bag to the filling-tube near the upper corner of the bag and above the discharge end of the filling-tube within the bag.

9. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism adapted to introduce the material in a relatively small stream into the bag, with a bottom-support for the bag, and a trip mechanism for such support whereby it may be removed to permit the bag to fall, an upper support whereby the upper part of the bag is retained in proper relation to its filling-tube, and a positive release mechanism to release the bag from its tube, said release mechanism being independent of the trip mechanism, so that the bag may be released at the top and its support removed from the bottom simultaneously or otherwise.

10. In a machine for filling bags or receptacles with a powdery or

granular substance, the combination of a bag-support with a feed mechanism comprising a relatively small tube-like part which leads from the supply to the bag, and an agitator within the passage from the supply to the bag, said agitator consisting of a long, thin, flexible wire, and means external to the tube for rapidly oscillating said wire so that by such oscillation and the flexibility of the wire it is kept in violent agitation and the contracted feeding-passage thus kept free.

11. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a bag-support with a feed mechanism comprising a relatively small tube-like part which leads from the supply to the bag, and an agitator within the passage from the supply to the bag, said agitator consisting of a long, thin, flexible wire, means external to the tube for rapidly oscillating said wire so that by such oscillation and the flexibility of the wire it is kept in violent agitation and the contracted feeding-passage thus kept free, said passage-way from the feed-supply to the bag being practically continuous, and the agitator projecting through the wall of said passage-way.

12. In a machine for filling bags or receptacles, the combination of a bag-support for holding the bag while it is being filled, a vibrating pitman to which it is secured and whereby it is supported directly above the pivot of such pitman, and a spring-support for the bag-support working outwardly in the direction of the length of the pitman, to keep the bag-support from being displaced.

13. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a filling-tube which introduces the substance into the bag, with an agitator therein, and means for rapidly moving said agitator within the tube to prevent the material from packing, said agitator consisting of a wire adapted to be rapidly oscillated, and a vibrator for the bag, and means connected with said wire and vibrator to keep both in operation simultaneously.

14. In a machine for filling receptacles, the combination of a supporting-frame with a supply-hopper-discharge portion vertically adjustable on the frame, a bag-supporting device on the frame, a series of devices for receiving the material from the hopper-discharging portion and conveying it to the bag, said series of devices vertically adjustable along the supporting-frame and containing parts which, with the discharge portion, form a measuring device adapted to be varied by the adjustment of the hopper-discharge portion with reference to the devices which receive the material from the hopper-discharge and convey it to the bag, and a windlass on the frame connected with the hopper-discharge portions so as to raise or lower the same.

15. In a machine for filling receptacles, the combination of a supporting-frame with a supply-hopper-discharging portion vertically adjustable on the frame, a bag-supporting device on the frame, a series of devices for receiving the material from the hopper-discharging portion and conveying it to the bag, said series of devices vertically adjustable along the supporting-frame and containing parts which, with the discharge portion, form a measuring device adapted to be varied by the adjustment of the hopper-discharge portion with reference to the devices which receive the material from the hopper-discharge and convey it to the bag, a windlass on the frame connected with the hopper-discharge portions so as to raise or lower the same, and means for attaching the devices which receive the material from the hopper-discharge portion and convey it to the bag to the hopper-discharge portion so that both can be moved simultaneously with the action of such windlass.

16. In a machine for filling receptacles, the combination of a receptacle-support with a receptacle-supplying passage-way, an agitator in the said passage-way to keep the material from packing, a driving mechanism, and connections from the receptacle-support and agitator to the driving mechanism, whereby the receptacle-support is rapidly vibrated and the agitator rapidly operated to keep the passage free and fill the receptacle.

17. In a machine for filling receptacles, the combination of a receptacle-support, having a hinged bottom, with a driving mechanism and a connection from the same to the support, whereby the latter is rapidly vibrated, a spring-support for the receptacle-support, and trip mechanism whereby the hinged bottom is operated to discharge the filled receptacle.

18. In a machine for filling receptacles, the combination of a series of filling tubes or funnels with a series of supply-sections associated therewith, there being twice as many filling tubes or funnels as supply-sections, and means for moving the supply-sections and funnels with reference to each other so that each supply-section is alternately placed in connection with one and then another of the filling tubes or funnels.

19. In a machine for filling receptacles, the combination of a series of filling tubes or funnels with a series of supply-sections associated therewith, there being twice as many filling tubes or funnels as supply-sections, and means for moving the supply-sections and funnels with reference to each other so that each supply-section is alternately placed in connection with one and then another of the filling tubes or funnels, the parts arranged so that the supply-section is closed at the bottom during the period intervening between its connection with one tube or funnel and the next.

20. In a machine for filling receptacles, the combination of a series of filling tubes or funnels with a series of supply-sections associated therewith, there being twice as many filling tubes or funnels as supply-sections, and means for moving the supply-sections and funnels with reference to each other so that each supply-section is alternately placed in connection with one and then another of the filling tubes or funnels, the parts arranged so that the supply-section is closed at the bottom during the period intervening between its connection with one tube or funnel and the next, and means for filling such supply-section when so closed.

21. In a machine for filling bags, the combination of a series of filling tubes or funnels, with a series of clamps adapted to clamp the bag against the side of such tube or funnel, and a cam device adapted to simultaneously release a series of such clamps.

22. In a machine for filling bags, the combination of a series of filling tubes of funnels, with a series of clamps adapted to clamp the bag against the side of such tube or funnel, and a cam device adapted to simultaneously release a series of such clamps, said tubes or funnels arranged in series, each series consisting of each alternate funnel, and said cam device adapted to release the clamps associated with each of said series alternately.

23. In a machine for filling bags, the combination of a series of filling tubes or funnels, with a series of weak clamps, one for each tube or funnel, and a series of strong clamps, one for each funnel, and a controlling device whereby the strong clamps are alternately thrown in and out of action in groups.

24. In a machine for filling bags, the combination of a series of filling tubes or funnels, with a series of clamps, and a longitudinal wavy cam device associated with said clamps, each successive swell of the cam being opposed to the second filling tube or funnel, and means for moving the filling tubes or funnels and cam device with reference one to the other, so that the clamps are operated to release or secure the bag in alternately-acting groups.

25. In a machine for filling valve bags or receptacles with a powdery or granular substance, the combination of a feed mechanism, comprising a feeding-tube, whereby the material is introduced into the bag, with an upper support for said bag forming part of the feeding-tube and comprising a part which bears against the inside of the bag near the top, and an outer part opposed thereto which bears against the outside of the bag near the top, said outer part adapted to clamp the material of the bag against the part within the bag and above the lower end of the feed-tube within the bag, a support for the bottom of the bag, a vibrator adapted to give the bag an up-and-down motion, the excursion of such vibrator related to the distance from the end of the feeding-tube to the point where the bag is clamped so that when the bag is nearly full the upper part of the bag about the feeding-tube will be free to have an accordion-like movement to prevent injury to the material of the bag.

26. In a machine for filling valve bags or receptacles with a powdery or granular substance, the combination of a feed mechanism comprising a feed-tube whereby the material is introduced into the bag, with an upper support for said bag forming part of the feeding-tube and comprising a part which bears against the inside of the bag near the top, and an outer part opposed thereto which bears against the outside of the bag near the top, said outer part adapted to clamp the material of the bag against the part within the bag and above the lower end of the feed-tube within the bag, a support for the bottom of the bag, a vibrator adapted to give the bag a laterally-vibratory motion, the excursion of such vibrator related to the distance from the end of the feeding-tube to the point where the bag is clamped so that when the bag is nearly full the upper part of the bag about the feeding-tube will be free to have an accordion-like movement to prevent injury to the material of the bag.

27. In a machine for filling valve bags or receptacles with a powdery or granular substance, the combination of a feed mechanism, comprising a feed-tube, whereby the material is introduced into the bag, with an upper support for said bag forming part of the feeding-tube and comprising a part which bears against the inside of the bag near the top, and an outer part opposed thereto which bears against the outside of the bag near the top, said outer part adapted to clamp the material of the bag against the part within the bag and above the lower end of the feed-tube within the bag, a support for the bottom of the bag, a vibrator adapted to give the bag an up-and-down and a laterally-vibratory motion, the excursion of such vibrator related to the distance from the end of the feeding-tube to the point where the bag is clamped so that when the bag is nearly full the upper part of the bag about the feeding-tube will be free to have an accordion-like movement to prevent injury to the material of the bag.

28. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance to be treated is fed into the bag in a relatively small stream,

with bag-supports adapted to support the bag so as to leave its sides relatively loose, and a vibrator comprising the bottom-support, a rod therefrom, and an eccentric whereby a rapid vibratory motion is imparted to the bag and contents, the rod being pivoted below on such eccentric and attached above to the bottom-support, and a spring device acting outwardly and in the line of the pitman away from its pivot and so as to hold the pitman in position.

29. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance is fed into the bag in a relatively small stream, with bag-supports adapted to support the bag so as to leave its sides relatively loose, and a vibrator which contains a spring member and which imparts a rapid laterally-vibratory motion to the bag and contents and thus breaks down the pyramid or column of material within the bag.

30. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance is fed into the bag in a stream much smaller than the cross-section of the bag, with bag-supports adapted to support the bag so as to leave its sides relatively loose during the process of filling, and a vibrator which contains a spring member and which imparts a rapid vertical motion to the bag and contents and thus breaks down the pyramid or column of material in the bag.

31. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance is fed into the bag in a relatively small stream, with bag-supports adapted to support the bag so as to leave its sides relatively loose, and a vibrator which contains a reciprocating and a spring member and which imparts a rapid combined vertical and lateral vibratory motion to the bag and contents and thus breaks down the pyramid or column within the bag.

32. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feeding mechanism whereby the substance is fed into the bag in a stream much smaller than the cross-section of the bag, with bag-supports adapted to support the bag so as to leave the sides relatively loose during the process of filling, and a vibrator which includes the bottom-support for the bag and a spring member, and which is adapted to impart a rapid motion to the bag and contents so as to break down the pyramid or column of material within the bag.

33. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism whereby the substance is fed into the bag in a stream much smaller than the cross-section of the bag, such mechanism containing a funnel or tube which projects down into the bag, with bag-supports to support the bag so as to leave its sides relatively loose during the process of filling, and a vibrator which contains a spring member and which has a rapid positive upward-and-downward motion aided by said spring member so as to impart a rapid motion to the bag and contents.

34. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism adapted to introduce the material into the bag in a relatively small stream, with a bottom-support for the bag and a top support for the bag, the two separated from each other so as to leave the sides of the bag loose, and non-automatic trip mechanism for the bottom-support whereby the latter may be removed at the will of the operator to permit the bag to fall when the operator so desires.

35. In a machine for filling bags or receptacles with a powdery or granular substance, the combination of a feed mechanism adapted to introduce the material into the bag in a relatively small stream, with a bottom-support for the bag, a vibrator of which the bottom-support forms part, and a trip mechanism for such vibrator-support whereby the latter may be removed to permit the bag to fall.

36. In a machine for filling bags or receptacles, the combination of a bag-filling device with means for supporting the top of the bag and a bag-support for the bottom of the bag and a spring-support on which the bag-support rests while the bag is being filled, and a vibrator to give such bottom-support a rapid vibratory motion while the bag is being filled.

37. In a machine for filling bags or receptacles, the combination of a bag-filling device with means for supporting the top of the bag and a bag-support for the bottom of the bag and a spring-support on which the bag-support rests while the bag is being filled, and a vibrator to give such bottom-support a rapid vibratory motion while the bag is being filled, said vibrator consisting of a pitman secured to the lower bag-support and moving in one direction in opposition to the spring-support.

38. In a machine for filling bags or receptacles, the combination of a bag-filling device with means for supporting the top of the bag and a bottom-support for the bag, spring-bars upon which bottom-support rests, and a vibrator which tends to move the bag-support up and down while the bag is being filled.

39. In a machine for filling bags or receptacles, the combination of a bag-filling device with means for supporting the top of the bag and a bottom-support for the bag, spring-bars upon which bottom-support rests, and a vibrator which tends to move the bag-support up and down while the bag is being filled, said vibrator consisting of a pitman secured to the bag-support and working substantially at right angles to the length of the spring-bars.

40. In a machine for filling bags or receptacles, the combination of means for filling the bags with an upper bag-support for holding the bag while it is being filled, a lower bag-support for holding the bag while it is being filled, a pitman rigidly attached to the lower bag-support at one end and driven by an eccentric at the other end so as to give the bag-support a combined vertical and lateral motion, and a spring-support which operates upon the bottom bag-support in the direction outwardly along the line of the pitman while the bag is being filled.

41. In a machine for filling receptacles, the combination of a supporting-frame with a supply-hopper-discharging portion vertically adjustable on the frame, a bag-supporting device on the frame, a series of devices for receiving the material from the hopper-discharging portion and conveying it to the bag, said series of devices vertically adjustable along the supporting-frame and containing parts which, with the discharge portion, form a measuring device adapted to be varied by the adjustment of the hopper-discharge portion with reference to the devices which receive the material from the hopper-discharge and convey it to the bag, and means for connecting such series of devices with the hopper-discharging portion so that the two can be vertically adjusted together on the frame.

42. In a machine for filling receptacles, the combination of a suitable support for the receptacle, with a discharge part to discharge the material into the receptacle, a supply part to contain the supply of material, a measuring device interposed between the discharge and the supply, and consisting of two telescopic portions, a means for adjusting the two telescopic portions with reference to each other, means for varying the distance between the support and the discharge, and means for adjusting the supply part and the discharge part simultaneously with reference to the support for the receptacle.

43. In a machine for filling receptacles, the combination of a receptacle-support with a discharge device adapted to discharge the material into the receptacle, and a supply device adapted to hold the supply, a measuring device comprising two telescopic parts, one associated with the discharge device, and the other with the supply device, and means for adjusting the supply part and the discharge part simultaneously with reference to the support for the receptacle.

44. In a machine for filling bags or receptacles with powdery or granular substance, the combination of a feed mechanism adapted to introduce the material into the bag in a relatively small stream, with a bottom-support for the bag and a top-support for the bag and trip mechanism operable at will for the bottom-support whereby the latter may be removed at the will of the operator to permit the bag to fall when the operator so desires.

707,545. SIGNAL-LANTERN. GEORGE H. BRADBY, St. Paul, Minn., assignor of one-half to George Gobiisch, St. Paul, Minn. Filed Mar. 10, 1902. Serial No. 97,633. (No model.)

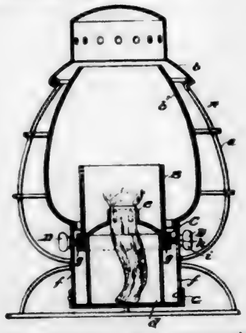

Claim.—The herein-described signal-lantern consisting essentially of the white shade, the casing *c* provided at diametrically opposite points with the vertical slots *f*, the removable oil-cup, of less diameter than the casing *c*, arranged in said casing, the colored-glass shade B surrounding the oil-cup and adjustable vertically between the same and the casing *c*, the heavy metallic band C secured on the exterior of the lower portion of the shade, whereby weight is lent to the shade, and the same is enabled to quickly fall when released; said band C having threaded sockets at diametrically opposite points, and being also adapted to prevent breakage of the shade B when the same falls, and the screws D having

threaded shanks extending through the slots *f* of the casing *c* and into the threaded sockets in the metallic band C, and also having heads arranged to bind against the outer side of the casing *c*, all as and for the purpose set forth.

707,546. **DOOR-PLATE.** CHARLES D. BROOKS, Coshocton, Ohio. Filed June 28, 1901. Serial No. 66,317. (No model.)

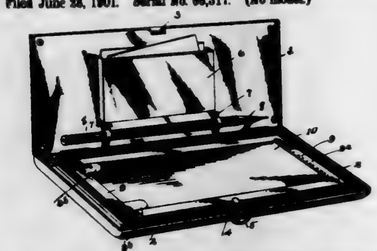

Claim.—In a door-plate, the combination with a plate-section 1 adapted to be fixed in connection with a door, a card-receptacle thereon, and pencil-holding keepers secured to said door adjacent to said receptacle, of a plate-section 2 hinged to the section 1 and having a pad-receiving frame on its inner side, fingers 9^a projecting inward from said frame and adapted to aid in holding the pad within the same, and means for detachably latching said sections in connection with each other, substantially as specified.

707,547. **HINGE-JOINT FOR SEATING.** FIRLEY S. BROOKS, Cincinnati, Ohio. Filed May 5, 1902. Serial No. 105,950. (No model.)

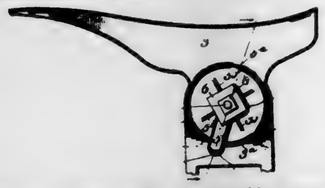

Claim.—1. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members, one hinge member having radial ball-grooves, the other hinge member having transverse ball-grooves, antifriction-balls located at the crossing of the ball-grooves and limiting the movement of the seat-bracket, and adapted to interlock, and travel in the ball-grooves of both hinge members to provide an antifriction-bearing between the meeting faces thereof, and means for securing the parts of the hinge-joint together.

2. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members, one hinge member having radial ball-grooves, the other hinge member having transverse ball-grooves, with their ends turned inward toward the outer ends of the radial grooves, antifriction-balls located at the crossing of the ball-grooves and limiting the movement of the seat-bracket, and adapted to interlock, and travel in the ball-grooves of both hinge members to provide an antifriction-bearing between the meeting faces thereof, and means for securing the parts of the hinge-joint together.

3. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members, one hinge member having radial ball-grooves, the other hinge member having transverse ball-grooves, inclines leading to the bearing-faces at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves, and adapted to interlock, and travel in, the ball-grooves of both hinge members, and yielding means for securing the parts of the hinge-joint together.

4. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members having radial and transverse ball-grooves respectively, inclines leading to the bearing-faces at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves and adapted to interlock, and travel in, the ball-grooves of both hinge members and yielding means for securing the parts of the hinge-joint together.

5. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members, one hinged member having radial ball-grooves, the other hinge member having transverse ball-grooves, inclines leading to the bearing-faces at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves and adapted to interlock, and travel in, the ball-grooves of both hinge members and means for securing the parts of the hinge-joint yieldingly together.

6. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members, one hinge member having radial ball-grooves, the other hinge member having transverse ball-grooves provided with inclines leading to the bearing-face at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves and adapted to interlock, and travel in, the ball-grooves of both hinge members and means for securing the parts of the hinge-joint yieldingly together.

7. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members, one hinge member having radial ball-grooves, the other hinge member having transverse ball-grooves provided with inturned ends, inclines leading to the bearing-faces at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves and adapted to interlock, and travel in, the ball-grooves of both hinge members and yielding means for securing the parts of the hinge-joint together.

8. A hinge-joint for seating comprising a support, a seat-bracket, inner and outer hinge members one hinge member having three radial ball-grooves, the other hinge member having three transverse ball-grooves arranged in approximately triangular form, inclines leading to the bearing-faces at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves, and adapted to interlock, and travel in, the ball-grooves of both hinge members, and yielding means for securing the parts of the hinge-joint together.

9. A hinge-joint for seating comprising a support having a boss, a seat-bracket having a housing provided with a web formed with a thimble fitting around the boss, a member of the hinge-joint, having radial ball-grooves and located within the housing, the other member of the hinge-joint having transverse grooves and located within the housing, inclines leading to the bearing-faces at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves, and yielding means for securing the parts of the hinge-joint together.

10. A hinge-joint for seating, comprising a support having a stop-lug a recessed lug, and a boss, a seat-bracket having a web provided with a segmental opening receiving the stop-lug, and a thimble fitting around the boss, a member of the hinge-joint having radial ball-grooves and secured to the seat-bracket, the other member of the hinge-joint having transverse ball-grooves and a radial arm provided with a hook engaging with the recessed lug, inclines leading to the bearing-faces at the ends of the ball-grooves, antifriction-balls located at the crossing of the ball-grooves, and yielding means for securing the parts of the hinge-joint together.

11. A hinge-joint for seating comprising a support having a boss, and a recessed lug, a seat-bracket having a housing formed with an annular shoulder having a retaining-lug, and a web formed with a thimble fitting around the boss, a movable member of the hinge-joint having a peripheral recess receiving the retaining-lug, and radial ball-grooves, the other fixed member of the hinge-joint having transverse ball-grooves, inclines leading to the bearing-faces at the ends of the ball-grooves, and a radial arm provided with a hook engaging the recessed lug, antifriction-balls located at the crossing of the ball-grooves, and means for securing the parts yieldingly together.

707,548. **TYPE-WRITER.** WALTER H. CAMPBELL, Kiev, Russia. Filed Mar. 31, 1902. Serial No. 100,796. (No model.)

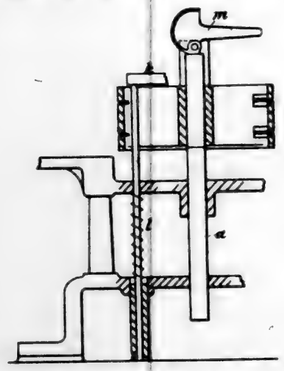

Claim.—1. In type-writing machines, the combination of a fixed circular anvil, two or more shuttles around the circumference thereof, fins on such shuttles, gaps in such fins, and a spring driving-arm engaging the said gaps, substantially as herein set forth.

2. In type-writing machines, the combination of two or more shuttles one above the other in a circular anvil, a driving-arm for said shuttles, means for bringing into gear with the driving-arm the one required at the level of impression by altering the position axially of the anvil on its shaft and causing the other to remain idle, and stops for holding the idle shuttle centrally so that it shall come truly into gear with the driving-arm when brought into action, substantially as herein set forth.

707,549. **MACHINE FOR GRINDING TWIST-DRILLS.** CLARENCE A. CHANDLER, Worcester, Mass. Filed Dec. 22, 1899. Serial No. 741,270. (No model.)

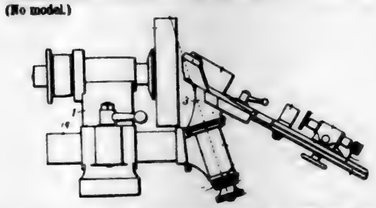

Claim.—1. In a drill-grinding machine, the combination of a supporting-stand for a drill-holder and provided with a journal-bearing, an oscillating drill-holder provided with a spindle passing through said journal-bearing, an eccentric sleeve inclosing said spindle and journaled in said bearing, means for adjustably attaching said sleeve to said spindle, substantially as described.

2. In a drill-grinding machine, the combination with a supporting-stand, a grinding-wheel, and a drill-holder journaled in said stand, whereby it is capable of an oscillating motion to rock the lip of the drill in contact with the grinding-wheel, of a sleeve journaled in said supporting-stand and adjustably attached to the drill-holder, whereby the axis of oscillation of the drill-holder is varied, substantially as described.

3. The combination of a supporting-stand, a drill-holder having a screw-threaded spindle, an eccentric sleeve held on said spindle and journaled in said stand, a clamping-nut on said spindle, whereby said sleeve is held from rotating on said spindle, and a graduated collar having a spline connection with the spindle and held between said nut and said sleeve, whereby the position of said sleeve relatively to said spindle is determined, substantially as described.

4. The combination of a stand, a drill-holder provided with a spindle, an eccentric sleeve adjustably held on said spindle and journaled in said stand, means for rotating said sleeve on said spindle and means for holding said sleeve from rotation on said spindle, and allowing it to oscillate in said stand, whereby the axis of oscillation of the drill-holder is varied, substantially as described.

707,550. **SELF-HEALING MATERIAL.** GEORGE H. CHISHOLM, Brooklyn, N. Y., assignor, by direct and mesne assignments, to J. J. Nichols and H. H. Janderf, New York, N. Y., and S. S. Ryckman, Grimsby, Ontario, Canada. Filed Apr. 24, 1896. Serial No. 588,969. (No specimens.)

Claim.—A composition of matter, consisting of a pasty mass of gum-caoutchouc, wax, resinous gums and volatile oils in suitable proportions, hermetically sealed between layers of rubber and inserted within the walls of the article in which it is to be used, in substantially the manner set forth.

707,551. **METHOD OF ELIMINATING METALS FROM MIXTURES OF METALS.** GUILLIAN H. CLARKE, Philadelphia, Pa. Filed Jan. 15, 1902. Serial No. 89,866. (No specimens.)

Claim.—1. The method of eliminating and replacing part of an alloy, which consists in fusing the alloy and a flux and a chemical metallic compound of which the base is to replace the part to be eliminated and of which the heat of formation is less than that of the part to be eliminated, whereby the chemical compound is reduced and its base enters the alloy and whereby the part to be eliminated enters into the chemical compound and is taken up by the slag, substantially as described.

2. The method of eliminating zinc from alloys of copper containing zinc and replacing it by lead, which consists in heating the alloy in contact with oxid of lead held in solution by a flux, whereby the zinc reduces the oxid of lead to metallic lead which enters the alloy forming an alloy of copper containing lead and whereby the zinc enters the slag in solution as zinc oxid, substantially as described.

3. The method of eliminating and replacing part of a copper alloy, which consists in fusing the alloy and a flux and a chemical metallic compound of which the base is to replace the part to be eliminated and of which the heat of formation is less than that of the part to be eliminated, whereby the chemical compound is reduced and its base enters the alloy, and whereby the part to be eliminated enters into the chemical compound and is taken up by the slag, substantially as described.

707,552. **AUTOMATIC STOP AND LOCK FOR OIL-WELL-CASING PERFORATORS.** THOMAS E. CLARK, Visalia, Cal. Filed Aug. 10, 1901. Serial No. 71,664. (No model.)

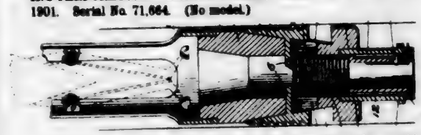

Claim.—1. In an oil-well tool of the class described, the combination of a tubular body, vertically-movable locking devices thereon, to engage the casing and lock the tool against descent therein, a sleeve detachably connected to the lower end of the body and having an inwardly-extending flange at its lower end, a vertically-movable plunger in said sleeve, a spring-pressed detent, carried by said plunger, to engage the flange and lock the plunger in an elevated position, and a yielding connection between the plunger and the locking devices, whereby the latter are operated by the plunger, substantially as described.

2. In an oil-well tool of the class described, the combination of a tubular body having downwardly-converging slotted sides forming slideways, wedge-clutches, on said slideways having guide-pins in the slots of the body, a vertically-movable plunger, projecting from the lower end of the body, means to lock the plunger in an elevated position, and a spring, compressed by the upward movement of the plunger and connected to the wedge clutches, substantially as described.

3. An oil-well tool of the class described having a plunger at its lower end, locking devices to engage the casing and lock the tool against descent therein, a spring, compressed by the upward movement of the plunger and connected to the locking devices to actuate the same, and means to lock the plunger in an elevated position, substantially as described.

4. An oil-well tool of the class described, having a plunger at its lower end, wedge-clutches, a spring connecting said plunger and said wedge-clutches, and a spring-pressed detent to lock said plunger in an elevated position, substantially as described.

5. In an oil-well tool of the class described, the combination of locking devices to engage the casing and lock the tool against descent therein, a vertically-movable plunger, a yielding connection between the plunger and the locking devices, and means to lock said plunger in an elevated position, substantially as described.

6. In an oil-well tool of the class described, the combination of locking devices to engage the casing and lock the tool against descent therein, a vertically-movable plunger, a yielding connection between the plunger and the locking devices, and a spring-pressed detent to lock said plunger in an elevated position, substantially as described.

7. In an oil-well tool of the class described, the combination of locking devices to engage the casing and lock the tool against descent therein, a vertically-movable plunger, a spring, compressed by the ascent of the plunger and connecting the latter to said locking devices, and a spring-pressed detent to lock said plunger in an elevated position, substantially as described.

707,553. **PRESSURE-EXERTING MACHINE.** JOSEPH A. COSTELLO and WILLIAM S. BUHLE, Cleveland, Ohio. Filed June 2, 1902. Serial No. 109,961. (No model.)

Claim.—1. The combination, with the stationary portion of the machine; a pressure-exerting member capable of reciprocation; means for guiding the said pressure-exerting member; a toggle-joint operatively connected, at one end, with the said pressure-exerting member and attached, at its opposite end, to the stationary portion of the machine; a slide arranged to travel at one side of and toward and from the travel of the aforesaid pressure-exerting member and provided, at the bottom, with an extension which is rigid with the slide and projects toward the travel of the said pressure-exerting member; means for guiding the slide, and means for actuating the slide, of another and laterally-yieldable toggle-joint arranged over the said slide extension and operatively connected with the slide at one end and operatively attached, at its opposite end, to the first-mentioned toggle-joint and normally having its links somewhat out of line; a stop-forming member provided upon the slide extension and ar-

ranged to prevent the movement of the said links into line, and yieldable means acting to retain the said links in their normal position.

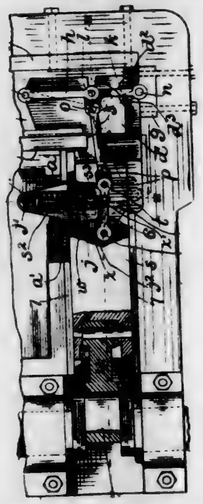

2. The combination, with the stationary portion of the machine; a pressure-exerting block capable of reciprocation; means for guiding the said block; a toggle-joint operatively connected, at one end, with the said block and attached, at its opposite end, to the stationary portion of the machine; a slide arranged to travel at one side of and toward and from the travel of the aforesaid block and provided, at the bottom, with an extension which is rigid with the slide and projects toward the travel of the said block and has a stop-forming lug upon its upper side; means for guiding the slide, and means for actuating the slide, of another and laterally-yieldable toggle-joint arranged over the slide extension and operatively connected with the slide at one end and operatively attached, at its opposite end, to the first-mentioned toggle-joint; yieldable means acting to retain the second-mentioned toggle-joint in its normal position, and the arrangement of the parts being such that the links of the said second-mentioned toggle-joint, in the normal position of the parts, abut against the aforesaid lug and are somewhat out of line in the direction opposite to the direction of action upon the said toggle-joint by the means which, as aforesaid, acts to retain the said toggle-joint in its normal position.

3. The combination, with the stationary portion of the machine; a pressure-exerting block capable of reciprocation; means for guiding the said block; a toggle-joint operatively connected, at one end, with the said block and attached, to the stationary portion of the machine; a slide capable of reciprocation and arranged to travel at one side of and toward and from the travel of the aforesaid block; means for guiding the slide, of another and laterally-yieldable toggle-joint operatively connected with the slide at one end and operatively and directly attached, at its opposite end, to the first-mentioned toggle-joint and having its links normally out of line laterally in one direction; a stop arranged to prevent the movement of the said links into line in the opposite direction, and yieldable means acting to retain the said second-mentioned toggle-joint in engagement with the said stop.

4. The combination, with the stationary portion of the machine; a pressure-exerting block capable of reciprocation; means for guiding the said block; a toggle-joint operatively connected, at one end, with the said block and attached, at its opposite end, to the stationary portion of the machine; a slide capable of reciprocation and arranged to travel at one side of and toward and from the travel of the aforesaid block; means for guiding the said slide, and means for actuating the slide, of another and yieldable toggle-joint operatively connected with the slide at one end and operatively attached, at its opposite end, to the first-mentioned toggle-joint and having its links normally out of line; a stop arranged to prevent the movement of the said links into line and carried by the slide; a rod pivotally attached, at one end, to one of the said links; a case surrounding the said rod; a spiral spring confined and coiled upon the said rod within the said case and acting to retain the second-mentioned toggle-joint against the aforesaid stop, and the said case being pivotally supported from the slide and the arrangement of the parts being such that the said case shall be capable of oscillating during the yielding of the second-mentioned toggle-joint against the action of the aforesaid spring.

5. The combination, with the stationary portion of the machine; a pressure-exerting block capable of reciprocation; means for guiding the said block; a toggle-joint operatively connected, at one end, with the said block and attached, at its opposite end, to the stationary portion of the machine; a slide capable of reciprocation and arranged to travel at one side of and toward and from the travel of the aforesaid block, which slide is provided, at the bottom, with an extension which projects toward the travel of the pressure-exerting block, of another and laterally-yieldable toggle-joint arranged over the slide extension and vertically pivoted to the slide at one end and directly attached, at its opposite end, to the first-mentioned toggle-joint and having its links normally somewhat out of line; a stop provided upon the slide extension and arranged to prevent the movement of the said links into line and a suitably-applied spring acting to retain the second-mentioned toggle-joint in engagement with the said stop.

6. The combination, with the stationary portion of the machine; a pressure-exerting block capable of reciprocation; means for guiding the said block; a toggle-joint operatively connected, at one end, with the said block and attached, at its opposite end, to the stationary portion of the machine; a slide capable of reciprocation and arranged to travel at one side of and toward and from the travel of the aforesaid block and provided, at the bottom, with an extension which projects toward the travel of the pressure-exerting block and is provided, at one side, with two arms arranged one above the other and a suitable distance apart, and has a stop-forming lug; means for guiding the slide, and means for actuating the slide, of another and laterally-yieldable toggle-joint arranged over the slide extension and operatively connected with the slide at one end and operatively attached, at its opposite end, to the first-mentioned toggle-joint and normally having its links somewhat out of line and engaging the aforesaid lug; a case arranged longitudinally between and pivoted vertically to the aforesaid arms; a rod pivoted vertically at one end to one of the said links and extending into and longitudinally of the said case, which rod is provided at its free end with a head or shoulder; a ring surrounding the rod at the free end of and attached to the case, and a spiral spring coiled around the rod between the said ring and the aforesaid shoulder or head.

707,554. LETTER-BOX. JACOB E. COURSEN, Wilmington, Del. Filed Dec. 7, 1901. Serial No. 85,026. (No model.)

Claim.—1. The combination with a box having a cut-off arranged within the letter drop-opening, of a signal-carrier operatively connected with the said cut-off, whereby a signal is displayed when the cut-off is turned to allow ingress to the box through the drop-opening and withdrawn when said cut-off is turned to its opposite position to close the said drop-opening, substantially as shown and described.

2. The combination with a box having a cut-off, at the letter drop-opening, of a reversible signal-carrier connected with the said cut-off, whereby the cut-off is operated and a signal displayed and withdrawn, substantially as described.

3. The combination with a box having a cut-off at the letter drop-opening, and an outwardly-opening door at one side of the box, of a reversible signal-carrier connected with the cut-off, and adapted to display and withdraw a signal, one end of said carrier being adapted to extend across the door when the signal is displayed, substantially as described.

4. In a letter-box having a drop-opening formed in the front thereof, a cylinder arranged therein and adapted for opening and closing the drop-opening, an arm connected to the cylinder and carrying a signal device, whereby through the movement of the arm the drop-opening will be closed or opened and the signal respectively withdrawn or displayed, substantially as shown and described.

5. In a letter-box having a drop-opening arranged in the front and a door arranged upon the side thereof, a shaft journaled in the front of said box, a cylinder arranged upon the shaft and having a portion of its periphery cut away a tubular link-shaped arm arranged upon one end of the shaft, a signal carried by the said arm, and means for opening and closing the said drop-opening and respectively displaying or withdrawing the signal, substantially as shown and described.

6. A letter-box having a drop-opening arranged in the front thereof, a door hinged to the side of said box, a shaft mounted in the front of the box and having a cylinder mounted thereon which is adapted to operate in the said drop-opening, a tubular link-shaped arm arranged upon the shaft and having one portion thereof cut out, rollers journaled in the ends of the arm, a cord or cable held within the said arm and having a flexible signal secured thereto, and a weight arranged upon the cord, substantially as shown and described.

7. A letter-box having a drop-opening arranged in the front and a door upon the side thereof, a shaft journaled in the front of said box and having a cylinder mounted thereon whose periphery is cut away upon one side, a signal-carrying arm arranged upon the shaft and means arranged within the said arm for carrying a signal and adapted to be displayed when the cylinder is turned to allow ingress to the box and adapted to be withdrawn when the cylinder is revolved to close the said drop-opening and preventing ingress to the box, the said arm being held across or in alinement with the door when the cylinder is in position to allow ingress to the box, and a stop-pin arranged upon the box for holding the arm in such position substantially as shown and described.

8. A letter-box having a drop-opening formed in the front thereof, an arm mounted upon the side of the box, a cord arranged within the arm and having a signal thereon and a cylinder arranged within the drop-opening and adapted to be turned by the arm, the said cylinder having a portion of its periphery cut away and means arranged within the arm whereby to cause the signal to be displayed when the arm is turned to revolve the cylinder to allow ingress through the opening in the box and the said signal withdrawn when the arm is turned to cause the said cylinder to close the said drop-opening, substantially as shown and described.

707,555. MERRY-GO-ROUND, SEESAW, AND JOGGER-BOARD ATTACHMENT. WALTER W. CURTRIGHT, Atlanta, Ga. Filed Sept. 16, 1901. Serial No. 75,555. (No model.)

Claim.—1. In a device of the kind described, the combination of an essentially spherical-shaped casting having arms projecting downwardly therefrom, and an aperture produced centrally therein, supporting-legs connected to the arms and having their lower ends terminating in lateral foot portion, a bracket having a slot produced centrally therein, arms projecting from the periphery of the said bracket and having their outer ends terminating in rest portions from which project finger portions that form guides, a board held upon the rests, and a bolt passing through the said slot in the bracket and engaging the aperture in the casting, substantially as shown and described.

2. In a device of the kind described, the combination of a spherical-shaped casting having an aperture arranged therein and downwardly-projecting arms integrally formed upon the edges thereof, a spherical-shaped bracket fitting upon the casting and having a slot arranged therein, a bolt passing through the said slot and aperture, arms projecting from the bracket and having their upper ends terminating in rest portions, a board held by the said arms and resting upon the rest portions, a bracket hinged to one end of the said board and having its lower end provided with shoulders, extensions pivoted to the bracket and a ball-shaped arm carried by the bracket and a clip arranged on the said board for holding the bracket in an open position, substantially as shown and described.

3. In a device of the kind described, the combination of a tripod-shaped stand, the legs of which are connected at their upper ends to descending arms of a casting, the upper surface of which is essentially spherical-shaped and provided with an aperture, a bracket having a recess formed therein to snugly fit over the spherical-shaped surface of the casting, and having a slot arranged therein, a bolt protruding through the aperture and slot for holding the said bracket to the stand, arms protruding from the bracket, and a board supported by the bracket-arms, substantially as shown and described.

4. The combination of a tripod-shaped stand, the legs of which are connected at their upper ends to a casting the upper surface of which is essentially spherical-shaped and provided with an aperture, a bracket having a recess to snugly fit the said casting and having a slot arranged therein, a bolt protruding through the said aperture and slot for holding the said bracket in position, arms protruding from the bracket and having guides formed at their upper ends, a board adapted to slide in the said guides and held thereby and means for holding the board in a steady position, substantially as shown and described.

5. In a supporting-bracket for a device of the kind described, the combination of a board, a bracket hinged thereto at one end and having its opposite or free end provided with shoulders, extensions pivoted to the said bracket and adapted to rest against the said shoulders when adjusted outwardly or extended, a ball connected to the bracket, a clip carried by the said board and adapted for engagement by the ball when the rest is extended or opened, and a hook for engagement with the bracket to hold it in a closed or folded position against the said board, substantially as shown and described.

707,556. TROUSERS. GEORGE M. DARE, Worcester, Mass. Filed Mar. 7, 1901. Serial No. 50,230. (No model.)

Claim.—1. As an article of manufacture, the two-seam trousers constructed as hereinbefore described, each leg and body half comprised in a single piece without a seam at the outer side of the leg or thigh, and having at the side or along the median fold-line, from about the knee upward, an outwardly-inclined lateral deflection of the fabric relatively to the portion below, affording in the unseamed outer side portions an outward conformation for fitting the outer thigh, the said pieces being formed and fitted with permanent upwardly-distended areas in the fabric at the inner thigh, adjacent to and below the crotch, substantially as and for the purposes set forth.

2. The two-seam trousers hereinbefore described, each half or leg comprised in a single piece without a seam at the outer side of the leg or thigh, and having the cloth at the inner thigh portions, from near the median line to the seaming edges, adjacently below the crotch, formed with upwardly-distended areas of the fabric, as specified, the side portions from above the knee upward, having a bodily lateral deflection outward beyond the normal side fold *x'*, thereby giving the unseamed fabric an outstanding conformation and fullness at the thigh along the median side line, relatively to the portions below, and having its hip-form reduced and fitted with a closed-in excision at the back, said excision being disposed transverse to the back seam, below and approximately parallel with the top or waist line, substantially as set forth.

3. A trousers-garment comprising a united pair of leg-blanks, each consisting of a single piece of fabric devoid of an outer leg-seam, the blank for each half having its edges and crotch-points cut to the form shown and described, and having its upper front and back portions skewed toward the median line and presenting at the thigh an outstanding convergent fullness 20 beyond the normal plane or fold, said blank provided with longitudinally-distended areas of the fabric at *b* and *f*, corresponding to the inner thigh, adjacently below the crotch-points, substantially as and for the purpose set forth.

707,557. TELEGRAPHIC APPARATUS. CHARLES M. DAVIS, Chicago, Ill. Filed July 27, 1901. Serial No. 69,998. (No model.)

Claim.—1. In a telegraphic apparatus, a main-line circuit including a fixed contact, a vibrating lever coöperating therewith, devices for controlling the vibrating movements of said lever to open or close said main-

line circuit, a relay, a sounder, and means actuated by said relay for operating said controlling devices, as and for the purpose set forth.

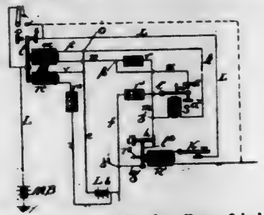

2. In an apparatus for avoiding the effects of leaks or escapes in telegraph-lines, the combination with the main line including a main battery, of a circuit-breaker interposed in the main line and intermediate the leak or escape and the battery and comprising a fixed contact and a vibrating lever arranged to coöperate therewith to open and close the main line, and means controlled by the opening of a key in the main line on one side of the leak or escape for rocking said lever to open the line connection with the main battery on the other side of the leak or escape, whereby all current is withdrawn from the line between said key and circuit-breaker, as and for the purpose set forth.

3. In an apparatus for avoiding the effects of leaks or escapes in telegraph-lines, a main line including a main battery, in combination with a vibrating lever, and a coöperating contact interposed in the main-line connection with said battery and between the battery and the leak or escape, means normally tending to hold said vibrating lever in closed relation with respect to its coöperating contact, and means actuated coincidently with the opening of a key in the main line on the opposite side of the leak or escape for rocking said lever out of coöperating relation with said contact momentarily to break the main-line connection with the battery, as and for the purpose set forth.

4. In an apparatus for avoiding the effects of leaks or escapes in telegraph-lines, a main-line connecting terminal or battery stations, a circuit-breaking device interposed in the main line intermediate said line and its battery connection and comprising a fixed contact and a vibrating lever coöperating therewith, electrical devices operating to normally maintain said lever in closed relation with respect to said contact, means operating upon said lever and constantly tending to withdraw said lever from said contact, a local circuit for controlling said electrical devices, and means actuated by the opening of a key in said main line on the opposite side of the leak or escape for controlling said local circuit, as and for the purpose set forth.

5. In an apparatus of the class described, a main line, a main-battery connection therefor, a pivoted switch-lever and a coöperating fixed contact arranged in said main-battery connection, electrical devices for rocking said switch-lever toward and from said contact, a local circuit for said electrical devices, and means controlled by the opening of a key at a distant transmitting-station for controlling the circuit of said electrical devices to momentarily open said switch-lever to break said main-line connection with the main battery, as and for the purpose set forth.

6. In an apparatus of the class described, a main line, a battery connection therefor, a line-adjuster mechanism including a switch arranged in said battery connection, magnets arranged to actuate said switch, one of said magnets tending to open the switch and the other to close the same, local circuits for said magnets, and means actuated by the opening of said line-circuit at a distant transmitting-station for controlling the circuit of one of said magnets, as and for the purpose set forth.

7. In an apparatus of the class described, a main line, a battery connection therefor, a fixed contact and a lever arranged in said battery connection, said lever coöperating with said fixed contact to make and break the connection of said battery to said main line, an attracting-coil and a retracting-coil operating on said lever, local circuits for said coils, and means actuated by the opening of said line-circuit at a distant transmitting-station for controlling the circuit of said attracting-coil, as and for the purpose set forth.

8. In an apparatus of the class described, a main line, a main-battery connection therefor, a switch-lever arranged in said connection, electrical devices for controlling said switch-lever, a local battery, a sounder-circuit including said battery, said sounder-circuit having a branch which also includes said electrical devices, and a local relay for controlling said sounder-circuit, as and for the purpose set forth.

9. In an apparatus of the class described, a main line, a main-battery connection therefor, a switch-lever arranged in said connection, an attracting-coil and a retracting-coil for said lever, a local battery, a circuit for said retracting-coil including said battery, a sounder, a circuit therefor including said local battery, said sounder-circuit having a branch including said attracting-coil, an auxiliary circuit for said attracting-coil, said auxiliary circuit being controlled by said sounder, and a relay for controlling said sounder-circuit, as and for the purpose set forth.

10. In an apparatus of the class described, a main line, a main battery connected thereto, a circuit-breaking lever arranged in said battery connection, an attracting-coil and a retracting-coil for actuating said lever, a local battery, circuit connections from said local battery for said retracting-coil, a sounder, a circuit for said sounder including said battery, said sounder-circuit having a branch including said attracting-coil, a relay arranged in the main line for controlling said sounder-circuit and its branch, an auxiliary circuit for said attracting-coil, said auxiliary circuit being controlled by said sounder, and resistances arranged in said attracting and retracting coils circuits whereby the currents therein may be varied, as and for the purpose set forth.

11. In an apparatus for avoiding the effects of leaks or escapes in telegraph-lines, a main line including a main battery, a circuit-breaker interposed between said battery and main line, means actuated by the opening of a key in the main-line circuit at a distant transmitting-station for temporarily actuating said circuit-breaker to open said line-circuit to battery, a shunt around said circuit-breaker, and devices arranged in said shunt for diminishing the current to the main line when said circuit-breaker is open, as and for the purpose set forth.

707,558. COMBINED UNDERVEST AND CORSET-COVER. CORINNE DUFOUR, Savannah, Ga. Filed Aug. 26, 1901. Serial No. 73,227. (No model.)

Claim.—1. A combined undervest and corset-cover, comprising a body having front and rear flaps at the upper end of the body, means for securing the outer corners of the flaps together to form a scye, and sleeves for removable connection with the said scye, as set forth.

2. A combined undervest and corset-cover, comprising a tubular body having a front and rear flap extending from its upper end, tying-bands at the corners of each of the flaps, said bands serving to secure the corners of the flaps together when extended to form scyes and to independently secure them in position when folded down, and sleeves for detachable connection with the said scyes, as set forth.

707,559. HIDE-SECURING APPARATUS. HUGH Y. B DUFF, Cheswick, Pa. Filed Dec. 30, 1901. Serial No. 87,701. (No model.)

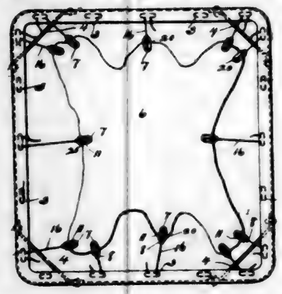

Claim.—1. An apparatus for the purpose set forth, comprising in combination a metal frame, a plurality of hide-engaging clips, having flexible extensions, and means for adjustably connecting said clip extensions with said frame.

2. An apparatus for the purpose set forth, comprising in combination a metal frame, a plurality of spring hide-engaging clips provided with flexible extensions, and means carried by said frame to adjustably engage said clip extensions.

3. An apparatus for the purpose set forth, comprising in combination a metal frame having fasteners on one side thereof, and hide-engaging clips provided with flexible extensions to adjustably engage with said frame-fasteners.

4. An apparatus for the purpose set forth, comprising in combination a metal frame having a series of fasteners on one side thereof each consisting of two oppositely-inclined tongues, and a plurality of spring hide-engaging clips having flexible extensions to engage said frame-tongues.

707,560. CAN-OPENER. MAX R. DUNCAN, New York, N. Y., assignor to Byron R. Bacon, South Orange, N. J. Filed Apr. 6, 1901. Serial No. 54,572. (No model.)

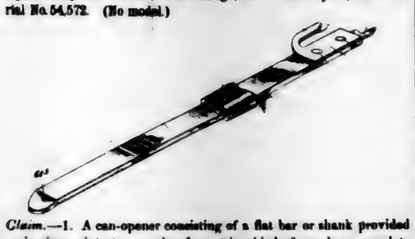

Claim.—1. A can-opener consisting of a flat bar or shank provided with a piercing-point at one end and a cutting-blade formed upon a plate attached to the said flat bar or shank, in combination with a sliding piece having overlapping flanges which are adapted to engage around the edges of the said shank and a cutting-blade formed upon a projecting shank extending from the said sliding piece and engaging along the under side of the shank, substantially as described.

2. In a can-opener a flat bar or shank provided with a piercing-point at one end and a cutting-blade formed upon a plate attached to the said flat bar or shank, in combination with a sliding piece adapted to move along the said shank, overlapping flanges formed upon the sliding piece and adapted to engage around the edge of the shank and hold the sliding piece upon same, a projecting shank formed upon the said sliding piece and engaging along the under side of the shank and a cutting-blade formed upon the end of the said shank, substantially as described.

707,561. CAN-OPENER. MAX R. DUNCAN, New York, N. Y., assignor to Byron R. Bacon, South Orange, N. J. Filed May 1, 1901. Serial No. 56,236. (No model.)

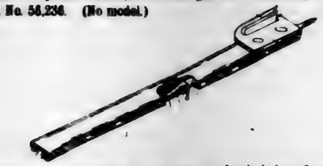

Claim.—In a can-opener comprising a shank, ledges formed by the turned-over edges of said shank, a cutting-blade formed upon a plate and attached to the end of said shank and a piercing-point formed integrally upon said plate, in combination with a sliding cutting-blade adapted to move along said shank and held upon same by means of the aforesaid ledges or turned edges, substantially as described.

707,562. ELECTROTHERAPEUTIC BATTERY. THOMAS J. DUNN, Jersey City, N. J. Filed Jan. 3, 1902. Serial No. 88,308. (No model.)

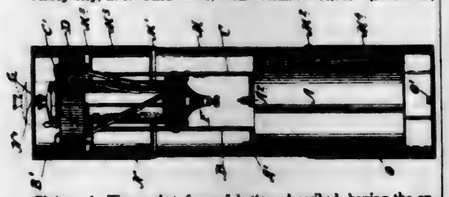

Claim.—1. The pocket form of battery described, having the cylindrical battery A, with the vibrator and regulator and connections at one end thereof, and having a head D of slightly-larger diameter, in combination with the cylindrical casing M, extensions M' M³, external stops M² M⁴ and internal stop M⁵, all arranged to serve substantially as herein specified.

2. The pocket form of battery described, having the cylindrical battery A, with the vibrator and regulator, and connections at one end thereof, and having a head D of slightly-larger diameter, in combination with the casing M, end portions M' M³, external beads M² M⁴, and internal bead M⁵, and with the caps N N', O O', adapted to perform the double function of coverings to inclose the other parts and of handles to be grasped by the patient, all substantially as herein specified.

707,563. COMB. ALFRED B. DURGIN, Medford, Mass. Filed Oct. 19, 1901. Serial No. 79,256. (No model.)

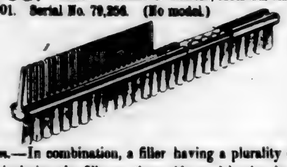

Claim.—In combination, a filler having a plurality of openings, a metal cap inclosing the filler on three sides and having its edge portions inwardly bent and spaced from the back of the filler, the space being of uniform area throughout the length of the filler, the cap having openings in register with the openings of the filler, tufts fitted in the openings of the cap and filler, and a comb having external ribs along the outer edge of its back to engage under the bent edges of the said cap by a longitudinal sliding movement, substantially as described.

707,564. COMB. ALFRED B. DURGIN, Medford, Mass. Filed Oct. 19, 1901. Serial No. 79,257. (No model.)

Claim.—1. In combination, a brush, a cap embracing the face and sides of the brush-back and having a portion of the rim extended, and a comb having its back fitted into the cap by springing the extended portion of the rim thereover, substantially as described.

2. In combination, a strip, a metal cap fitted to and embracing three sides of the strip and indented to hold the said strip in place, tufts fitted into openings in the strip and face of the cap, and a comb having its back fitted into the cap by springing a portion of the rim thereover, substantially as specified.

707,565. RENDERING APPARATUS. EUGENE R. EDSON, Cleveland, Ohio. Filed Oct. 19, 1901. Serial No. 79,200. (No model.)

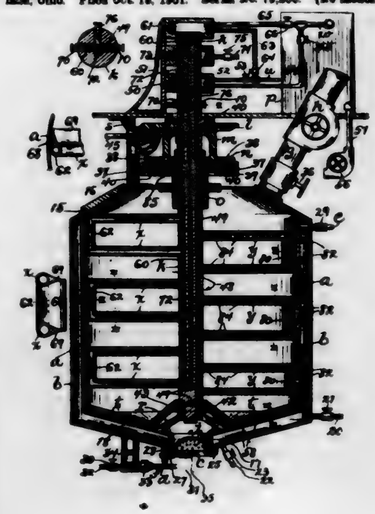

Claim.—1. Apparatus of the character indicated, comprising a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, a pump having its inlet in open relation with the said vapor-outlet; means for heating the receptacle; a shaft extending into the receptacle and provided, within the receptacle, with laterally-projecting arms having passage-ways formed therein and extending longitudinally thereof, which arms have orifices discharging into the receptacle; means for supporting the shaft; means for operating the shaft; and means for supplying the aforesaid passage-ways with a gaseous or aeriform fluid.

2. Apparatus of the character indicated, comprising a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, which receptacle has its lower end provided with a suitably-closed outlet; a pump having its inlet in open relation with the said vapor-outlet; means for heating the receptacle; an upright shaft extending into the receptacle and provided, within the receptacle, with laterally-projecting and radially or approximately radially arranged arms which have passage-ways formed therein and extending longitudinally thereof, means for supporting the shaft; means for operating the shaft; and means for supplying the aforesaid passage-ways with a gaseous or aeriform fluid.

3. Apparatus of the character indicated, comprising a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; means for heating the receptacle; a shaft extending into the receptacle and provided, within the receptacle, with laterally-projecting perforated arms having passage-ways formed therein and extending longitudinally thereof, which arms have orifices discharging into the receptacle; means for supporting the shaft; means for operating the shaft, and means for supplying the aforesaid passage-ways with a gaseous or aeriform fluid.

4. Apparatus of the character indicated, comprising a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, which receptacle has its lower end provided with a suitably closed outlet; a pump having its inlet in open relation with the said vapor-outlet; means for heating the receptacle; a vertically-arranged shaft extending into and centrally of the receptacle and provided, within the receptacle, with laterally-projecting radially or approximately radially arranged perforated arms having passage-ways formed therein and extending longitudinally thereof; means for supporting the shaft; means for operating the shaft, and means for supplying the aforesaid passage-ways with a gaseous or aeriform fluid.

5. Apparatus of the character indicated, comprising the following a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, a shaft extending into the receptacle and provided, within the receptacle, with laterally-projecting arms having passage-ways formed therein and extending longitudinally thereof, which arms have discharge-orifices; means for supporting the shaft; means for operating the shaft, and means for supplying air under pressure to the said passage-ways, substantially as and for the purpose set forth.

6. Apparatus of the character indicated comprising the following: a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, which receptacle has its lower end provided with a suitably-closed outlet; a suction-creating device adapted, when operating, to create suction within the vapor-outlet; an upright shaft extending into the receptacle and provided, within the receptacle, with laterally-projecting arms having passage-ways formed therein and extending longitudinally thereof, which arms have discharge-orifices; means for supporting the shaft; means for operating the shaft, and means for supplying air under pressure to the said passage-ways, substantially as and for the purpose set forth.

7. Apparatus of the character indicated, comprising the following: a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, which receptacle is provided, at its lower end, with a suitably-closed outlet; an upright shaft extending into the receptacle and provided, within the receptacle, with arms *l* projecting laterally of the shaft at or near the lower end of the shaft, which arms extend over and in close proximity to the bottom of the chamber of the receptacle, and are provided, respectively, with a scraper arranged to operate in close proximity to the said bottom; means for supporting the shaft, and means for rotating the shaft.

8. Apparatus of the character indicated, comprising the following: a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, which receptacle is provided, at its lower end, with a suitably-closed outlet; an upright shaft extending into the receptacle and provided, within the receptacle, with perforated hollow arms *l* projecting laterally of the shaft at or near the lower end of the shaft, which arms have discharge-orifices arranged to discharge downwardly against the bottom of the chamber of the receptacle; means for supplying fluid under pressure to the said arms; means for supporting the shaft, and means for rotating the shaft.

9. Apparatus of the character indicated, comprising the following: a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, which receptacle is provided, at its lower end, with a suitably-closed outlet; an upright shaft extending into the receptacle and provided, within the receptacle, with perforated hollow arms *l* projecting laterally of the shaft at or near the lower end of the shaft, which arms have discharge-orifices arranged to discharge downwardly against the bottom of the chamber of the receptacle; means for supplying fluid under pressure to the said arms; guards upon the arms and overhanging the discharge-orifices of the said arms; means for supporting the shaft, and means for rotating the shaft.

10. Apparatus of the character indicated, comprising the following: a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; a shaft extending into the receptacle and provided with a fluid-conducting passage-way formed in and extending longitudinally of the shaft, which shaft has radially or approximately radially arranged hollow arms at suitable intervals longitudinally of the shaft, with each of the said arms in direct communication, at its inner end, with the aforesaid passage-way; means for supplying the fluid to the said passage-way; means for supporting the shaft, and means for rotating the shaft.

11. Apparatus of the character indicated, comprising the following: a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet, a shaft extending into the receptacle and provided with a fluid-conducting passage-way formed in and extending longitudinally of the shaft, which shaft has hollow perforated arms in open relation, interiorly, with the said passage-way; means for supplying air under pressure to the said passage-way; means for supporting the shaft, and means for operating the shaft.

12. Apparatus of the character indicated, comprising the following: a closed receptacle provided, at its upper end, with a suitably-closed charging-aperture and a vapor-outlet, which receptacle is provided, at its lower end, with a suitably-closed outlet; a suction-creating device adapted, when operating, to create suction in the vapor-outlet; an upright shaft arranged centrally of the receptacle and provided with a fluid-conducting passage-way formed in and extending longitudinally of the shaft, which shaft has hollow perforated arms in open relation interiorly with the said passage-way; means for supplying air under pressure to the said passage-way; means for supporting the shaft, and means for operating the shaft.

13. Apparatus of the character indicated, comprising a closed receptacle, a shaft extending into the receptacle and provided with a fluid-conducting passage-way formed in and extending longitudinally of the shaft, which shaft has hollow perforated arms projecting laterally of the shaft and in open relation interiorly with the aforesaid passage-way; a chest surrounding the shaft and having its chamber in open relation with the aforesaid passage-way; a valved pipe arranged to control the supply of fluid to the said chest; means for supporting the shaft, and means for rotating the shaft.

14. Apparatus of the character indicated comprising the following: a closed receptacle provided, at its upper end, with a suitably-closed charging-aperture and a vapor-outlet, which receptacle is provided, at its lower end, with a suitably-closed outlet; an upright shaft extending into the receptacle and provided with a fluid-conducting passage-way formed in and extending longitudinally of the shaft, which shaft has hollow perforated arms projecting laterally of the shaft and in open relation interiorly with the aforesaid passage-way; a chest surrounding the shaft outside of the receptacle and having its chamber in open relation with the aforesaid passage-way; a valved pipe arranged to control the supply of fluid to the said chest; means for supporting the shaft, and means for rotating the shaft.

15. Apparatus of the character indicated, comprising the following: a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; an upright shaft arranged within the receptacle and having a passage-way formed in and extending longitudinally of the shaft, which shaft is provided, within the receptacle, with laterally-projecting hollow imperforate arms arranged radially or approximately radially at intervals longitudinally of the shaft and in direct communication, at their inner ends, with the said passage-way; means for supplying a heating fluid to the said passage-way; means for supporting the shaft, and means for rotating the shaft.

16. Apparatus of the character indicated, comprising a receptacle; a shaft extending into the receptacle, and provided, within the receptacle, with laterally-projecting arms arranged a suitable distance apart and in pairs, with a web connecting together the outer ends of the arms of each pair of arms and provided with a scraper arranged to travel in close proximity to the surrounding wall of the chamber of the receptacle during the operation of the shaft.

17. In apparatus of the character indicated, a closed receptacle having a suitably-closed charging-aperture, and a vapor-outlet; a shaft extending into the receptacle, and having a fluid-supply passage-way formed therein and extending longitudinally thereof, which shaft is provided, within the receptacle, with laterally-projecting hollow imperforate arms in open relation interiorly with the said passage-way; means for supplying the heating fluid to the said passage-way, and a valved exhaust passage-way formed in and extending longitudinally of the shaft and connected with the first-mentioned passage-way.

18. In apparatus of the character indicated, a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; a shaft extending into the receptacle and provided, within the receptacle, with laterally-projecting hollow perforated arms; a compressed-air reservoir; a valved pipe leading from the said reservoir, and means for conducting air from the said pipe to the interior of the aforesaid arms.

19. In apparatus of the character indicated, a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; a shaft extending into the receptacle and having a fluid-conducting passage-way 49 formed therein and extending longitudinally thereof, which shaft is provided, within the receptacle, with laterally-projecting hollow perforated arms in open relation interiorly with the said passage-way; a chest surrounding the shaft and having its chamber in open relation with said passage-way; a compressed-air reservoir, and a valved pipe leading from the said reservoir to and in open relation with the said chamber.

20. In apparatus of the character indicated, a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; a shaft extending into the receptacle, and provided, within the receptacle, with laterally-projecting perforated arms arranged in pairs, with a web connecting together the outer ends of the arms of each pair of arms, and means for supplying fluid to the said arms.

21. In apparatus of the character indicated, a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; a shaft extending into the receptacle, and provided, within the receptacle, with laterally-projecting perforated arms arranged in pairs, with a hollow web connecting together the outer ends of and establishing open relation between the arms of each pair of arms and having orifices arranged to discharge against the surrounding wall of the chamber of the receptacle, and means for supplying fluid to the said arms.

22. In apparatus of the character indicated, a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; a shaft extending into the receptacle and having a series of laterally-projecting hollow imperforate arms *z* and another series of laterally-projecting hollow perforated arms *y*; means for supplying a heating agent to the imperforate arms, and means for supplying air under pressure to the perforated arms.

23. In apparatus of the character indicated, a closed receptacle having a suitably-closed charging-aperture and a vapor-outlet; a suction-creating device adapted, when operating, to create suction in the vapor-outlet; means for draining the receptacle; a shaft extending into the receptacle and having a series of laterally-projecting hollow imperforate arms and another series of laterally-projecting hollow perforated arms, and means for supplying fluid to the said arms.

24. In apparatus of the character indicated, a receptacle provided, at its lower end, with a downwardly-discharging duct 17; a door normally closing the said duct from below; means for holding the door in its closed position, and a drain-pipe *f* comprising a pipe-section 31 attached to the door and in open relation with the aforesaid duct, another pipe-section 32 and a union 33 for coupling the said pipe-sections together.

25. In apparatus of the character indicated, a receptacle provided, at its lower end, with a downwardly-discharging duct 17; a door normally closing the said duct from below; means for holding the door in its closed position; a strainer or screen at the inner side of the door and bulging upwardly, and a guard-forming frame extending over the said screen or strainer.

26. In apparatus of the character indicated, a closed receptacle having a downwardly-discharging duct 17; a door normally closing the said duct from below; means for holding the door in its closed position; a drain-pipe comprising a pipe-section attached to the door and in open relation with the aforesaid duct; a concave-convex strainer or screen at the inner side of the door and bulging upwardly, and a guard-forming frame *r* extending over the said screen or strainer.

707,566. PROCESS OF REDUCING OR RENDERING FISH OR OTHER MATERIAL. EUGENE R. ENGS, Cleveland, Ohio. Filed Mar. 20, 1902. Serial No. 99,130. (No specimens.)

Claim.—1. An improvement in obtaining a liquid product from material of the character indicated, comprising the heating of the material within a closed receptacle and placing and maintaining the material, during its treatment within the receptacle, under a pneumatic pressure greater than the pressure which results from the heating of the material, and, whenever the mass within the receptacle begins to cake or pack to such an extent as to materially retard the flow or liberation of the liquid product from the material, introducing, into the mass, air or aeriform fluid under a pressure greater than the first-mentioned pressure without interruption of the said first-mentioned pressure.

2. An improvement in obtaining a liquid product from material of the character indicated, comprising the heating of the material within a closed receptacle and subjecting the material, during its treatment within the receptacle, to a pneumatic pressure placed on top of the mass within the receptacle and greater than the pressure which results from the heating of the material, and, whenever the mass begins to cake or pack to such an extent as to materially retard the flow or liberation of the liquid product from the material, introducing, into the lower end of the receptacle, air or aeriform fluid under a pressure greater than the first-mentioned pneumatic pressure without interruption of the said first-mentioned pressure.

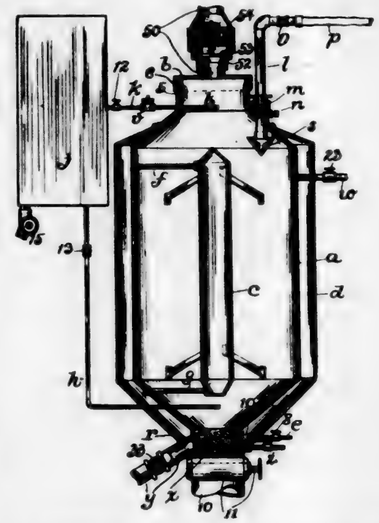

3. An improvement in obtaining a liquid product from material of the character indicated, comprising the heating of the material within a closed receptacle and placing and maintaining the material, during its treatment within the receptacle, under a pressure greater than the pressure which results from the heating of the material, and, whenever the mass within the receptacle begins to cake or pack to such an extent as to materially retard the flow or liberation of the liquid product from the material, introducing, into the mass, air or aeriform fluid under a pressure greater than the first-mentioned pressure, and relieving the receptacle of any pressure in excess of the said first-mentioned pressure.

4. An improvement in obtaining a liquid product from material of the character indicated, comprising the heating of the material within a closed receptacle and subjecting the material, during its treatment within the receptacle, to a pressure placed on top of the mass within the receptacle and greater than the pressure which results from the heating of the material, and, whenever the mass begins to cake or pack to such an extent as to materially retard the flow or liberation of the liquid product from the material, introducing, into the lower portion of the receptacle, air or aeriform fluid under a pressure greater than the first-mentioned pressure, and relieving the receptacle, at the upper end thereof, of any pressure in excess of the aforesaid first-mentioned pressure.

707,567. RENDERING APPARATUS. EUGENE R. ENGS, Cleveland, Ohio. Filed Mar. 31, 1902. Serial No. 100,751. (No model.)

Claim.—1. In rendering apparatus, the combination, with a closed receptacle having a material-receiving inlet; means for heating the receptacle, and means for conducting the extracted liquid from the receptacle, of means for introducing, into the receptacle, a pneumatic pressure greater than the pressure which results from the heating of the material, and means for passing air or an aeriform body through the mass treated within the receptacle while the mass is acted upon by the aforesaid pneumatic pressure, substantially as and for the purpose set forth.

2. In rendering apparatus, the combination, with a closed receptacle having a material-receiving inlet; means for heating the receptacle, and means for conducting the extracted liquid from the receptacle, of means for maintaining, on top of the mass introduced into the receptacle, a pneumatic pressure greater than the pressure which results from the heating of the material, and means for passing air or an aeriform body upwardly through the mass treated within the receptacle while the mass is main-

tained under the aforesaid pneumatic pressure, substantially as and for the purpose set forth.

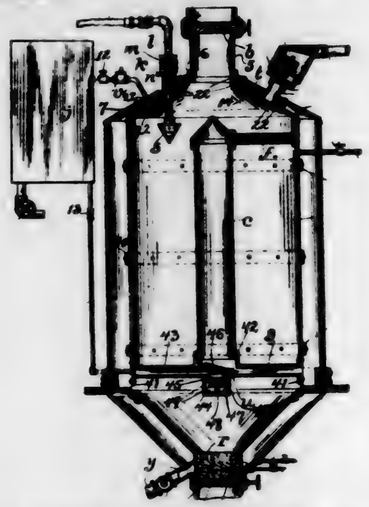

3. In rendering apparatus, the combination, with a closed receptacle having a material-receiving inlet; means for heating the receptacle, and means for conducting the extracted liquid from the receptacle, of means for maintaining, in the receptacle, a pneumatic pressure greater than the pressure which results from the heating of the material; means for introducing, into the lower portion of the receptacle, air or an aeriform body which is under a pressure greater than the aforesaid pneumatic pressure; an air-outlet extending from the upper portion of the chamber of the receptacle, a relief-valve normally closing the said outlet, and means acting to retain the said valve in its closed position and being powerful enough to prevent the said valve from being opened by the pneumatic pressure maintained within the receptacle as aforesaid, but adapted to yield upon an addition to the said last-mentioned pressure by the air or aeriform body introduced into the lower portion of the receptacle.

4. In rendering apparatus, the combination, with a closed receptacle having a material-receiving inlet; means for heating the receptacle, and means for conducting the extracted liquid from the receptacle, of a compressed-air reservoir externally of the aforesaid receptacle; a pipe in open relation with the said reservoir and discharging into the aforesaid receptacle; a pressure-regulating valve in the line of the said pipe, and means for affecting the passage of air or an aeriform body upwardly through the mass treated within the first-mentioned receptacle while the said mass is maintained under a pneumatic pressure conducted to the said receptacle by the aforesaid pipe, substantially as and for the purpose set forth.

5. In rendering apparatus, the combination, with a closed receptacle having a material-receiving inlet; means for heating the receptacle, and means for conducting the extracted liquid from the receptacle, of a compressed-air reservoir outside of the aforesaid receptacle; a pipe in open relation with the said reservoir and discharging into the upper portion of the aforesaid receptacle; a pressure-regulating valve in the line of the said pipe; a pipe in open relation with the compressed-air reservoir and discharging into the lower portion of the first-mentioned receptacle; a cut-off valve in the line of the last-mentioned pipe; an air-outlet connected with the upper portion of the chamber of the first-mentioned receptacle; a valve normally closing the said outlet, and means acting to retain the said last-mentioned valve in its closed position and just powerful enough to maintain the said valve closed against the pneumatic pressure maintained on the mass to prevent boiling of the most.

6. Rendering apparatus comprising a receptacle into which the material requiring treatment is placed; a heating-jacket surrounding the said receptacle; an annular section *f* interposed between and rigidly secured to the casings of the jacket and aforesaid receptacle at the upper end of the receptacle; a charging-pipe attached to the said annular section and in open relation, at its lower end, with the chamber of the aforesaid receptacle, a liquid-conducting pipe extending into the upper portion of the said receptacle, and a stuffing-box surrounding the said pipe and having its casing rigid with the aforesaid annular section.

7. Rendering apparatus comprising a receptacle into which the material requiring treatment is placed; a heating-jacket surrounding the said receptacle; an annular section *f* interposed between and rigidly secured to the casings of the jacket and aforesaid receptacle at the upper end of the receptacle; a valved charging-pipe attached to the said annular section and in open relation, at its lower end, with the chamber of the aforesaid receptacle, and a pipe for conducting air under pressure into the upper portion of the chamber of the said receptacle and attached to the aforesaid annular section.

8. Rendering apparatus comprising a receptacle into which material requiring treatment is placed; a heating-jacket surrounding the said receptacle; means for conducting the heating agent into the chamber of the jacket; an upright heating-drum arranged centrally of the aforesaid receptacle; a head attached to the lower end of the drum and having a tubular arm communicating, at its inner end, with the chamber of the drum and in open relation, at its outer end, with the chamber of the jacket, which head is provided with another tubular arm adapted to conduct air or any aeriform body into the lower portion of the receptacle below the drum, and a pipe for conducting the air or other aeriform body into the last-mentioned arm.

9. Rendering apparatus comprising a receptacle into which material requiring treatment is placed; a heating-jacket surrounding the said receptacle; means for conducting the heating agent into the chamber of the jacket; an upright heating-drum arranged centrally of the aforesaid receptacle; a valved pipe for conducting air to the receptacle; a head attached to the lower end of the drum and having two tubular arms and a partition separating the passage-ways formed by the said arms, and one of the said arms establishing open relation between the chamber of the jacket and the chamber of the drum, and the other arm being in open relation with the aforesaid air-conducting pipe and arranged to conduct air into the lower portion of the aforesaid receptacle.

10. Rendering apparatus comprising a receptacle into which material requiring treatment is placed; a heating-jacket surrounding the said receptacle; means for conducting the heating agent into the chamber of the jacket; a valved pipe arranged to conduct air to the lower portion of the aforesaid receptacle; an upright heating-drum arranged centrally of the said receptacle and provided, at its lower end, with a head having two oppositely-arranged tubular arms and a partition separating the passage-ways formed by the said arms, which arms are attached to and reinforce the lower portion of the aforesaid receptacle, and one of the said arms establishing open relation between the chamber of the drum and the chamber of the jacket, and the other arm being in open relation with the aforesaid air-conducting pipe and arranged to conduct air into the aforesaid receptacle below the drum.

707,568. MACHINE FOR BOXING MATCHES. AUGUSTUS E. ELLERWOOD, Akron, Ohio. Filed Mar. 20, 1901. Serial No. 53,658. (No model.)

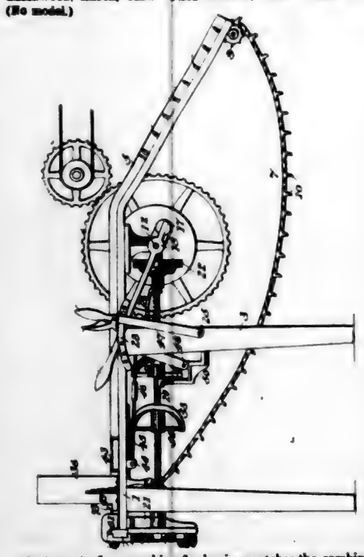

Claim.—1. In a machine for boxing matches the combination with a supporting-table, an intermittingly-moving means to convey drawers forward on said table, independent separate means for successively feeding cases downwardly on said table on either side of said first-named means, means to feed forward said cases on said table into alinement with the most advanced of said drawers, and a transversely-reciprocating slide to force said drawers into the cases, substantially as shown and described.

2. In a machine for boxing matches, the combination with a supporting-table, of a device for successively feeding cases alternately on opposite sides of said table, a carrier to intermittingly convey drawers into alinement with said cases, a reciprocating slide to alternately force the drawers severally into the cases, and mechanism for causing said parts to perform their respective functions, substantially as shown and described.

3. In a machine for boxing matches, the combination with a supporting-table, of a device for successively feeding cases alternately on opposite sides of said table, a carrier to intermittingly convey drawers into alinement with said cases, a reciprocating slide to alternately force the drawers severally into the cases, and abutment-blocks to support said cases against the thrust of the drawers, substantially as shown and described.

4. In a machine for boxing matches, the combination with a supporting-table having a device for successively feeding cases alternately on opposite sides of said table, and a carrier to intermittingly deliver drawers into alinement with said cases, a reciprocating slide to alternately push said drawers severally into said cases, abutment-blocks to support said cases against the thrust of the drawers, of a locking device for holding said abutment-blocks to receive said thrust, and devices connected with said slide to release said locking device, to permit the abutment-blocks to move with the slide, substantially as shown and described.

5. A machine for boxing matches, consisting of means to progressively feed forward filled drawers of matches, means to alternately force them to either side of their path and into cases therefor, means for feeding into suitable position said cases, substantially as shown and described.

6. In a machine for boxing matches, the combination with a supporting-table, openings in said table to permit the filled boxes to escape by gravitation, means to sustain cases over said openings to receive drawers, means to feed cases singly onto said supports, transversely-operating means to force alternate drawers into said cases and means to withdraw said supports from said cases when said drawers are within said cases, substantially as shown and described.

7. In a machine for boxing matches, the combination of devices to receive and progressively carry forward filled drawers of matches, means to carry forward empty cases for said drawers in a parallel line and on each side of said drawers, and a transversely-reciprocating plate to alternately force said drawers into alternate cases, substantially as shown and described.

8. In a machine for boxing matches, consisting of an endless traveling agent to convey drawers filled with matches intermittingly forward, means as a reciprocating transversely-moving carriage to cause said drawers to pass sidewise to the line of said endless traveling agent, means situated on either side of said traveling agent to convey cases for said drawers forward in a direction parallel to said traveling agent and devices on said carriage to cause said drawers to enter said cases.

9. A machine for boxing matches, consisting of an endless intermittingly traveling agent to carry drawers filled with matches progressively forward, means for storing, holding and retaining cases for said drawers independent means for feeding forward cases singly from said drawers o supply alternately, and means as a transversely-reciprocating carriage for forcing said drawers alternately in either direction into said cases, substantially as shown and described.

10. A machine for boxing matches consisting of a definite traveling agent to carry forward filled drawers of matches, mechanism as hoppers for holding supplies of cases for said drawers, independent, but definitely-actuated mechanism for removing cases, singly and alternately from each hopper, and means for causing said drawers to enter their respective cases, substantially as shown and described.

11. A machine for boxing matches consisting of a table, traveling means for feeding forward the drawers with a step-by-step motion, suitable means as hoppers arranged to hold supplies of cases therefor, means as reciprocating sliding blocks to remove cases singly from said hoppers and carry said cases forward into alinement with the most advanced of said drawers, and a reciprocating carriage moving transversely to the line of said advancing drawers to insert advancing drawers in said cases, substantially as shown and described.

12. A machine for boxing matches consisting of a definite traveling agent to carry forward filled drawers of matches, mechanism as hoppers for holding supplies of cases for said drawers, independent, but definitely-actuated mechanism for removing cases singly and alternately from each hopper, a shaft mounted in said machine, a double cam mounted thereon, mechanism as a sliding frame provided with spring-dogs to engage said agent and move it a definite distance arranged to be actuated by said cam, and means for causing said drawers to enter their respective cases, substantially as shown and described.

13. A machine for boxing matches consisting of a definite traveling agent to carry forward filled drawers of matches, mechanism as hoppers for holding supplies of cases for said drawers, means as projecting fingers for retaining temporarily said cases in said hoppers, independent but definitely-actuated mechanism for removing cases singly and alternately from each hopper consisting of divided blocks adapted to pass said fingers sliding in said machine, a shaft mounted therein, a double cam mounted on said shaft, a pair of rocking arms actuated by said cam alternately to reciprocate said blocks, and means for causing said drawers to enter their respective cases, substantially as shown and described.

14. In a machine for boxing matches, the combination of a supporting-table provided with openings for the escape of filled boxes of matches, a definite traveling agent to carry forward said filled boxes of matches, mechanism as hoppers for holding supplies of cases for said drawers, independent but definitely-actuated mechanism for removing cases singly and alternately from each hopper, means as projecting fingers to retain said cases in said hoppers temporarily, divided sliding blocks to clear said projecting fingers and having projecting fingers thereon to receive the cases as they descend and retain them over the openings in said table, means to reciprocate said blocks alternately, and transversely-reciprocating means for causing said drawers to enter their respective cases, substantially as shown and described.

15. A machine for boxing matches consisting of an endless traveling agent arranged to move at definite times and for definite spaces to cause drawers to feed forward singly, suitable means for storing, holding and retaining cases therefor consisting of two hoppers mounted in said machine provided with depending fingers to receive the lowest case in said hoppers, separate means for feeding forward cases singly from said sources of supply alternately and, means as a reciprocating carriage for forcing said drawers into said cases, substantially as shown and described.

16. A machine for boxing matches consisting of an endless traveling agent arranged to move at definite times and for definite spaces to cause drawers to feed forward singly, suitable means for storing, holding and retaining cases therefor, consisting of two hoppers mounted in said machine provided with cross-bars to prevent the escape of more than one case at a time, separate means for feeding forward cases singly from said sources of supply alternately and means as a reciprocating carriage for forcing said drawers into said cases, substantially as shown and described.

17. In a machine for boxing matches, the combination with a table having openings to permit the filled boxes to escape by gravitation, provided with movable supports to sustain cases to receive drawers, mechanism to feed cases singly onto said supports, consisting mechanism to force said drawers into said cases, means as a series of fingers resting temporarily above the openings in said table to hold said cases securely while said drawers are inserted in said cases, means to withdraw said supports when said drawers are completely within said cases, and means as slightly-reciprocating abutment-blocks to afford a stop to said cases during the insertion of said drawers, substantially as shown and described.

18. A machine for boxing matches consisting of a table, a traveling means for feeding forward the drawers with a step-by-step motion, suitable means as hoppers arranged to hold supplies of cases therefor, means as reciprocating sliding blocks to remove cases singly from said hoppers and carry said cases forward into alinement with the most advanced of said drawers, a shaft mounted in said machine bearing at one end a cam, a segmental gear mounted in said machine, a pair of rollers mounted in said gear, and adapted to be actuated by said cam, a reciprocating carriage operated by said gear, a projecting blade carried by said carriage arranged to force said drawers into said cases, substantially as shown and described.

19. A machine for boxing matches consisting of a table, a traveling means for feeding forward the drawers with a step-by-step motion, suitable means as hoppers arranged to hold supplies of cases therefor, means as reciprocating sliding blocks to remove cases singly from said hoppers and carry said cases forward into alinement with the most advanced of said drawers, a shaft mounted in said machine bearing at one end a cam, and at the other a device for changing the speed of said shaft, a segmental gear mounted in said machine, a pair of rollers mounted in said gear, and adapted to be actuated by said cam, a reciprocating carriage operated by said gear, a projecting blade carried by said carriage arranged to force said drawers into said cases, substantially as shown and described.

20. In a machine for boxing matches, the combination with a supporting-table of a device for successively feeding cases alternately on opposite sides of said table, a carrier to intermittingly convey drawers into alinement with said cases, and a reciprocating slide to alternately force the drawers severally into the cases, and abutment-blocks arranged to move in unison in either direction to force the case on one side inward and to carry, with the assistance of the reciprocating slide the case on the opposite side with its drawers outward over an opening in said table, substantially as shown and described.

21. In a machine for boxing matches, the combination with a supporting-table of a device for successively feeding cases alternately on opposite sides of said table, a carrier to intermittingly convey drawers into alinement with said cases, a reciprocating slide to alternately force the drawers severally into cases, and abutment-blocks to support said cases against the thrust of the drawers, said abutment-blocks arranged to simultaneously move in the same direction and arranged on one side to draw the cases inward upon suitable guides for directing the entrance of said drawers and on the other side to release the case on that side with its drawer from said guides and convey it over a suitable opening in said table, substantially as shown and described.

707,569. QUICK-FEED ARRANGEMENT FOR GEARS. WILLIAM T. BENDER, Cincinnati, Ohio. Filed Nov. 18, 1901. Serial No. 82,347. (No model.)

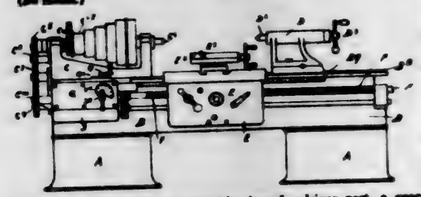

Claim.—1. In a lathe, the combination of a driven part, a gear-wheel, means connected with the source of power for rotating said gear-wheel, and means for enabling this gear-wheel to slide along on a line coincident with the axis of its revolution, a graduated disk and handle adapted to engage the graduations of the disk, means for enabling the movement of the handle to move said gear-wheel laterally, and a second graduated disk, means for causing the handle aforesaid to move said graduated disk, a swinging holder or box, a series of gear-wheels within this holder and adapted when the box is elevated to engage by one of its gears the first-named gear-wheel, and means for enabling the swinging box to be hoisted according to the graduations of the second graduated plate, a shaft on which the series of gears are located, this shaft being adapted when these gears are raised to operate the driven part, substantially as and for the purposes specified.

2. In a lathe, the combination of a driven part, a gear-wheel, means connected with the source of power and adapted to rotate said gear-wheel, a shaft on which this gear-wheel is slidable and with which it is rotatable, a graduated disk Q^2 and handle adapted to engage the graduations of the disk, a second disk with graduations, means adapted to give simultaneously to the said gear-wheel and the said disk a rectilinear and a rotatory motion respectively, a swinging holder or box, a series of gears supported thereby and adapted when the box is raised, to have one of its gears engage the first-named gear-wheel, and means for enabling the swinging box when elevated to engage the second disk in accordance with the graduations thereof, and support the series of gears, the shaft of said gears, means for communicating the motion of this shaft to the driven part, substantially as and for the purposes specified.

3. In a lathe, a shaft adapted to be operated by the power whereby the lathe is operated, a gear-wheel adapted to slide upon such shaft and to be rotated thereby, a handle and a graduated disk, adapted to engage the handle relatively to its graduations, a shaft rotatable by said handle, a gear-wheel on said shaft, a sliding rack adapted to be operated by said gear-wheel, a finger or projection on the rack, a projection in connection with the first-named gear-wheel adapted to engage such projection of the rack, and thus enable the sliding gear-wheel to be slid along its shaft, a swinging box or holder, a series of gears supported therein, that one of such gears which is opposite the sliding gear-wheel meshing with the latter when the swinging box or holder is raised, a latch connected to the swinging holder, a second plate, means connecting the handle-shaft aforementioned and the second plate, so that the rotation of the handle shall operate to move such plate relatively to the handle and to the movement of the sliding gear-wheel, and a series of means on the second plate for enabling the swinging holder to be latched thereto relatively to the rotation of said handle, and to the movement of said slidable gear-wheel, and to the amount of movement necessary for the swinging box to cause the desired gear of the swinging holder to mesh with the slidable gear-wheel, a driven part of the lathe and means between the gear of the swinging holder and the driven part for enabling said gear to operate such driven part, substantially as and for the purposes specified.

4. In a lathe, a shaft adapted to be operated by the power whereby the lathe is operated, a gear-wheel adapted to slide on such shaft and to be rotated thereby, a handle and a graduated disk, adapted to engage the handle relatively to its graduations, a shaft rotatable by said handle, a gear-wheel on said shaft, a sliding rack adapted to be operated by said gear-wheel, a finger or projection on the rack, a projection in connection with the first-named gear-wheel, adapted to engage such projection on the rack, and thus enable the sliding gear-wheel to be slid along its shaft, a miter-gear on the handle-shaft, a swinging box or holder, a series of gears supported therein, and that one thereof, when the swinging holder is lifted, which is opposite the slidable gear-wheel becoming ready for engagement with the slidable gear-wheel, a latch connected to the swinging holder, a miter gear-wheel meshing with the first-named miter-gear, a shaft on which the latter gear is carried, a second plate rotatable by this latter shaft, and a series of means on the second plate for engagement of the latch relative to the setting of the first-named handle, and the corresponding gear-wheel in the swinging holder, which latter gear-wheel, in that instance, engages the slidable gear-wheel, a driven part and means for enabling that gear-wheel of the series of gears in the holder to operate such driven part, substantially as and for the purposes specified.

5. In a lathe, the combination of a shaft H, suitable fixed supports in which this shaft is journaled, and the gear-wheel K adapted to slide thereon, a rod L parallel to shaft H, a sliding rod or sleeve M, the rack M^3 carried thereby, and in connection with the rack the shaft I^6, duly journaled, and the lever or handle Q carried thereby, a pin Q^2 on this handle, a graduated disk Q^3 with whose graduations the pin is adapted to engage, a gear-wheel P on the shaft I^6 and engaging the teeth of the rack M^3, a miter-gear I^5 on the shaft I^6, a shaft V^2, at an angle to the shaft I^6 and a miter-gear V thereon engaging the miter-gear I^5 of shaft I^6, a graduated plate V^3 adapted to be rotated by the shaft V^2, the swinging holder pivoted at S^2, shaft T^2, journaled in the swinging holder, and the set of cone-gears T, T^5, T^6, &c., on said shaft, and the gear T^{12} on the same shaft, the driven part, connections for enabling the gear T^{12} to rotate the driven part, means for lifting the swinging holder S and a latch S^3, S^{10}, for engaging any one of those graduations of the plate V^3 which is in position, having been set by the handle Q at the desired point on the graduated disk Q^3, substantially as and for the purposes specified.

6. In a lathe, the combination of a train of interchangeable gears C^5, C^7, &c., a shaft H, a gear-wheel slidable thereon, a rack M^3 slidable parallel to shaft H, a shaft I^6, a handle or lever carried thereby, and a gear engaging said rack, a miter-gear, a shaft V^2, a miter-gear thereon and engaging the first-named miter-gear, and a graduated plate V^3, adapted to be rotated by shaft V^2, a swinging holder, a set of cone-gears carried thereby, the shaft T^2, means for lifting the holder and for enabling the holder to be duly connected to the proper graduation of such plate, a gear (C^{10} on the shaft H, in connection with the said train of interchangeable gears C^5, C^7, &c., a driven part, means for enabling the mechanism aforedescribed to operate the driven part, substantially as and for the purposes specified.

7. In a lathe, a part to be driven, a swinging holder, a set of cone-gears therein, a shaft for said gears, means for enabling the part to be driven to be rotated by the said shaft, and a graduated plate as V^3 having graduations, and means on the swinging holder when raised to engage the desired one of those graduations, a shaft for rotating this disk, a shaft, a gear-wheel slidable thereon, a sliding finger or connection for sliding the gear-wheel, a lever, a shaft carrying this lever, and means for enabling the latter shaft to simultaneously operate both the sliding gear-wheel and the shaft operating the first-named graduated plate, by which connection with the box-holder is made, and a series of graduations for setting the lever aforesaid so that by the means mentioned, the proper gear in the swinging holder shall engage the slidable gear-wheel, substantially as and for the purposes specified.

707,570. WATER COOLING AND CIRCULATING APPARATUS FOR EXPLOSIVE-ENGINES. ERNEST BRYANT, South Hampstead, London, England. Filed Jan. 22, 1902. Serial No. 2,264. (No model.)

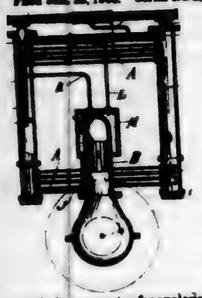

Claim.—Water-circulating apparatus for explosive-engines, comprising a series of water-circulating pipes above and below the cylinder-jacket opening into upright conduits one of which is blanked, a transverse conduit connecting the upper ends of said upright conduits and having a funnel-tube on one end passing into the lower part of the blanked upright conduit, with means for allowing the escape of surplus water and generated steam and for trapping the water carried by the steam, and pipes connecting the cylinder-jacket to the water circulating system, all arranged substantially in the manner and for the purpose hereinbefore described and illustrated in the accompanying drawings.

707,571. DUPLICATOR. ABRAHAM H. FISHER, Brooklyn, and CHARLES A. KENWORTHY, New York, N. Y. Filed Jan. 8, 1902. Serial No. 88,922. (No model.)

Claim.—1. In a duplicator, the combination with a box, of a duplicating-band the working portion of which extends substantially from end to end of said box and the remainder of which lies wholly below, and between the ends of, the working portion of said band, and means located between the ends of, and covered by, said working portion for supporting the band and for shifting the same to expose different working portions thereof.

2. In a duplicator, the combination with a box having a bed extending substantially from end to end thereof, of a duplicating-band the working portion of which rests on said bed and the remainder of which lies wholly below, and between the ends of, said bed, and means located between the ends of, and covered by, said bed for shifting said band to expose different working portions thereof.

3. In a duplicator, the combination with a box, of a duplicating-band the working portion of which extends substantially from end to end of said box and the remainder of which lies wholly below, and between the ends of, the working portion of said band, and band supporting and shifting means embodying delivery and take-up rollers also located below, and between the ends of and covered by, said working portion of said band.

4. In a duplicator, the combination with a box having a bed extending substantially from end to end thereof, of a duplicating-band the working portion of which rests on said bed and the remainder of which lies wholly below, and between the ends of, said bed, and delivery and take-up rollers disposed below, and between the ends of and covered by, said bed.

5. In a duplicator, the combination with a box having a hinged side section, of a bed extending substantially from end to end of said box, a duplicating-band the working portion of which lies on said bed and the remainder of which lies wholly below, and between the ends of, the working portion of said band, and a pair of band-supporting rollers between the ends of said bed one of which rollers is pivotally supported at one end in said side section.

6. In a duplicator, the combination with a box having a hinged side section and an adjacent hinged end section, of a bed extending substantially from end to end of said box, a duplicating-band the working portion of which rests on said bed and the remainder of which lies wholly below, and between the ends of, the working portion of said band, and a pair of band-supporting rollers between the ends of said bed one of which rollers is pivotally supported at one end in said side section.

7. In a duplicator of the class specified, the combination with a box having at one side thereof a pair of hinged sections, of a duplicating-band the working portion of which extends substantially from end to end of said box, and band supporting and shifting means embodying delivery and take-up rollers each pivotally supported at one of its ends in one of said hinged sections.

8. In a duplicator, the combination with a box divided by partitions into three transverse compartments and having three hinged side sections for closing the ends of said compartments, of a duplicating-band the working portion of which extends substantially from end to end of said box, and band supporting and shifting means embodying delivery and take-up rollers each pivotally supported at one of its ends in one of said hinged sections.

9. In a duplicator, the combination with a box having a bed extending substantially from end to end thereof, of a pair of parallel guides rising from said bed at opposite sides thereof, a duplicating-band the working portion of which rests on said bed and fills the space between said guides and the remainder of which lies wholly below, and between the ends of, said bed, and means also located below said bed and between the ends thereof and covered thereby for shifting said band to expose different working portions thereof.

10. In a duplicator, the combination with a box having a hinged side section, of a bed extending substantially from end to end of said box, a duplicating-band the working portion of which rests on said bed and the remainder of which lies wholly below, and between the ends of, the working portion of said band, a pair of band-supporting rollers between the ends of said bed one of which rollers is pivotally supported at one end in said side section and also has at said end a ratchet-wheel, and a stop-pawl pivoted on said hinged section and coöperative with said ratchet-wheel.

707,572. REVERSING-VALVE FOR REGENERATIVE OR SIMILAR FURNACES. ALBERT FISCHER, Oberhausen, Germany. Filed Aug. 3, 1901. Serial No. 71,370. (No model.)

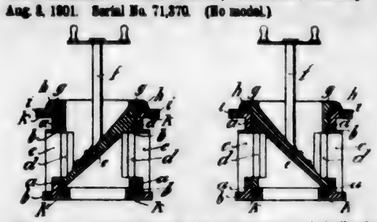

Claim.—1. A reversing-valve for regenerative and similar furnaces characterized by two cylinders *a b* arranged one to turn inside the other open at both ends and provided with openings *c d* opposite one another to and from the furnace, the inner *b* of which cylinders being divided into two parts by an inclined partition *e*, circular sand packings on the outer cylinder and lips on the inner cylinder working in the said sand packings.

2. A reversing-valve for regenerative and similar furnaces, comprising a cylinder *b* with a diagonal partition, valve-cheeks *m* partly surrounding the cylinder and made in two separate parts of fire-clay, and incasing plates *p q* holding the cheeks together in such a manner that they can be adjusted and pressed up against the cylinder *b* to form a good joint.

3. A reversing-valve for regenerative and similar furnaces, comprising an inner cylinder with openings and a diagonal partition, and an outer cylinder made of two divided plates *r* which are provided at the top and bottom with bent-in flanges and with sliding noses *w*, in front of the openings *d* in the inner cylinder *b*, for the inlet and outlet conduits, springs *x* tending to draw the two parts of the outer cylinder together.

707,578. CENTERING ATTACHMENT FOR LATHES. JOHN M. FLEMING, Ottawa, Canada, assignor of one-half to William Bothwell, Ottawa, Canada. Filed Oct. 17, 1901. Serial No. 78,969. (No model.)

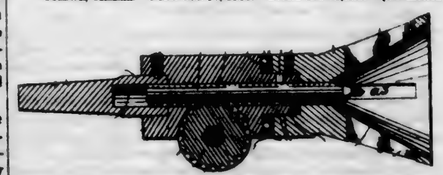

Claim.—1. In combination, a body portion having a cylindrical extension at the front end, a cup-shaped portion having its rear end rotatably mounted on said cylindrical extension, a supporting-piece at the rear of said body portion, said cup-shaped portion, body portion and supporting-piece having an axial passage, a drill longitudinally movable in said passage, means for holding the same against rotary movement relative to the body, and means for advancing and retracting the drill substantially as described.

2. In combination, the body portion having a cylindrical extension at the front end with a circumferential groove formed thereon, a cup-shaped portion having its rear end rotatably mounted on said cylindrical extension, a key extending through the rear end of said cup-shaped portion and into said groove, a supporting-piece at the rear end of said body portion, said cup-shaped portion, body portion and supporting-piece having an axial passage, a drill longitudinally movable in said passage, means for holding the same against rotary movement relative to the body, and means for advancing and retracting the drill, substantially as described.

707,574. COMBINATION BRUSH AND COMB. CARL B. FLEMMING, Schönebeck, Germany. Filed June 26, 1901. Serial No. 66,073. (No model.)

Claim.—1. The combination with a hair-brush, of a comb secured to the same face of the back or handle of the brush as the bristles and extending about the body of the bristles adjacent the edge of the back.

2. The combination with a hair-brush, of a series of combs secured to the same face of the back or handle of the brush as the bristles and extending about the body of bristles adjacent the edge of the back and on parallel lines through said body of bristles, said combs acting to stiffen or limit the lateral movement of the free end of the bristles.

707,575. FEED-WATER HEATER. GOTTFRIED FLORACK, Düsseldorf, Germany. Filed Oct. 15, 1901. Serial No. 78,691. (No model.)

Claim.—1. A feed-water heater composed of a pair of cylindrical casings, a series of intervening radial partitions to form communicating water-passages, a steam-chamber inclosed by the inner casing, and a communicating steam-chamber surrounding the outer casing, substantially as specified.

2. A feed-water heater composed of a pair of cylindrical casings, a series of intervening radial partitions to form communicating water-passages, a steam-chamber inclosed by the inner casing, a communicating steam-chamber surrounding the outer casing, and ribs projecting from the casings into both of the steam-chambers, substantially as specified.

707,576. CHANNELING-MACHINE. ALFRED B. FOWLER, Central Falls, R. I., assignor, by mesne assignments, to United Shoe Machinery Company, Paterson, N. J., a Corporation of New Jersey. Filed June 19, 1897. Serial No. 641,495. (No model.)

Claim.—1. A channeling-machine, having, in combination, a vibrating channeling-knife arranged to cut transversely to the line of feed and having a portion of its cutting edge oblique to the line of the feed and means for actuating said knife, substantially as described.

2. A channeling-machine, having, in combination, a vibrating channeling-knife arranged to cut transversely to the line of feed and having a portion of its cutting edge at an angle to the line of feed against which the work is forced by the action of the feed, means for actuating the knife and suitable feeding mechanism, substantially as described.

3. A channeling-machine, having, in combination, mechanism for continuously feeding the work, a vibrating channeling-knife arranged to cut transversely to the line of feed and having a cutting edge against which the work is forced by the action of the feed, and means for actuating the knife, substantially as described.

4. A channeling-machine, having, in combination, a vibrating channeling-knife arranged to cut transversely to the line of feed and obliquely to the surface of the work to form a continuous channel and lip, means for actuating the knife, and means for feeding the work, substantially as described.

5. A channeling-machine, having, in combination, a vibrating channeling-knife arranged to cut transversely to the line of feed and a lip-turning device in close proximity to and movable with said vibrating channeling-knife, substantially as described.

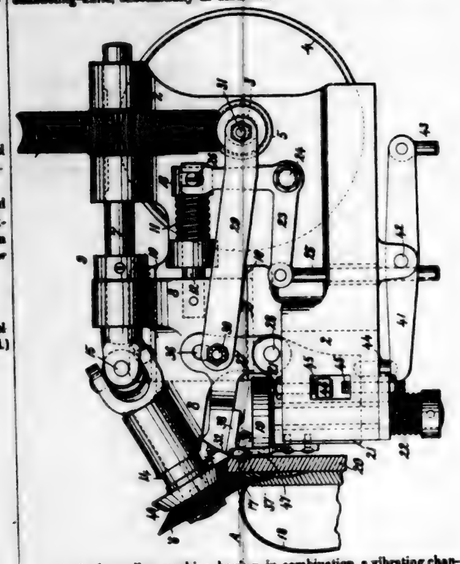

6. A channeling-machine, having, in combination, a vibrating channeling-knife, a vibrating lip-turning device following said knife to turn over the lip formed thereby, and means for actuating the knife and lip-turning device, substantially as described.

7. A channeling-machine, having, in combination, means for continuously feeding the work, a vibrating lip-turning device provided with a working face shaped to turn up the lip when forced against it by the feed, and means for actuating the lip-turning device, substantially as described.

8. A channeling-machine, having, in combination, a beveled feed-wheel arranged to enter the crease between the upper and welt, and an edge-gage consisting of a wheel mounted concentrically with the feed-wheel, substantially as described.

9. A channeling-machine, having, in combination, an oscillating channeling-knife, a channel-knife lever, and means for moving the fulcrum of the channel-knife lever during the operation of the machine to vary the position of the channel, substantially as described.

10. A channeling-machine, having, in combination, a vibrating channeling-knife arranged to cut transversely to the line of feed, and means for changing the path of movement of the knife during the operation of the machine, substantially as described.

11. A channeling-machine, having, in combination, a channeling-knife and feed mechanism comprising a shaft arranged to slide and rotate, a beveled feed-wheel engaging the crease between the upper and welt rotated by said shaft, means to rotate said shaft, and a spring acting to impart a sliding movement to said shaft and hold the feed-wheel in contact with the welt, substantially as described.

12. A channeling-machine, having, in combination, a vibrating channeling-knife, a vibrating lip-turning device, and means for actuating the knife and lip-turning device, substantially as described.

707,577. TOY. CHARLES H. FOX, East Orange, and WILLIAM H. RANDOLPH, Jr., Rahway, N. J. Filed Nov. 9, 1901. Serial No. 81,659. (No model.)

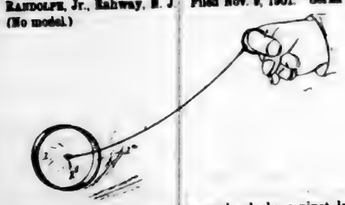

Claim.—A toy comprising an annular body, a pivot located in an opening at the axis thereof and having a head on one side of the body and an eye on the other side, the head and eye being adjacent to the body to limit the movement of the pivot in said opening, and a cord or the like connected with said eye on the side opposite the head whereby the cord is kept from being worn by the body, substantially as described.

707,578. GRAIN-DRILL SHOE. HENRY FUHR, Paris, Ill. Filed June 17, 1902. Serial No. 112,074. (No model.)

Claim.—1. In a grain-drill shoe, a runner provided with a grain-tube having an elbow at its lower or discharge end rearwardly faced, substantially as set forth.

2. In a grain-drill shoe, a runner, a grain-tube applied to the runner, and wings extended from the runner and arranged wholly above the delivery end of the grain-tube, substantially as set forth.

3. In a grain-drill shoe, a runner having its rear portion separated or spread, a grain-tube fitted in the space formed between the separated parts of the runner and having its lower end rearwardly extended, and wings projected rearwardly and upwardly from the runner and located wholly above the delivery end of the grain-tube, substantially as set forth.

4. In a grain-drill shoe, a runner comprising separated parts and integral wings projected upwardly and rearwardly from the separated parts, and a grain-tube fitted in the space between the separated parts of the runner and having its lower end rearwardly extended and located wholly below said wings, substantially as set forth.

707,579. STENCIL-PRINTING APPARATUS. DAVID GESTETNER, London, England. Filed July 16, 1901. Serial No. 68,536. (No model.)

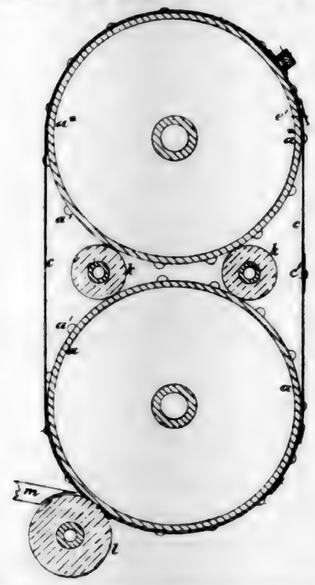

Claim.—1. In stencil-printing apparatus, the combination of two unperforated rollers mounted in a suitable framing, endless bands passed around said rollers, a porous sheet, such as yoshino paper, carried by said bands, a stencil, means for attaching one end of the stencil to the endless bands, ink-distributing rollers in contact with said main rollers and a pressure-roller arranged outside the stencil and porous sheet, substantially as set forth.

2. In stencil-printing apparatus, the combination of a frame, two main rollers mounted in said frame, means for rotating said main rollers, studs on said rollers, endless bands carried by said rollers, holes in said bands to engage with said studs, a fixed bar and a spring-bar carried by said bands, a sheet of porous material attached to said bars, a clamp carried by said bands to which one end of a stencil is attached, a pressure-roller arranged outside of the sheet of porous material, and ink-distributing rollers in contact with the main rollers, substantially as set forth.

3. In stencil-printing apparatus, the combination of a frame, two main rollers mounted in said frame, means for rotating said rollers, studs on said rollers, endless bands carried by said rollers, holes in said bands to engage the studs, spring-clips carried by said bands, a removable bar attached to the endless bands by said spring-clips, pins fixed to said bar, fastenings carried by said bands, a plain bar removably attached to said fastenings, springs connecting the plain bar with said fastenings, a sheet of porous material carried by the said bars, undercut projections attached to the endless bands, a stencil-carrying clamp attached to said undercut projections, ink-distributing rollers in contact with the main rollers, and a pressure-roller arranged outside of the sheet of porous material, substantially as set forth.

707,580. ELLIPSOGRAPH. DANIEL L. GREGORY, Chicago, Ill. Filed Nov. 13, 1901. Serial No. 82,127. (No model.)

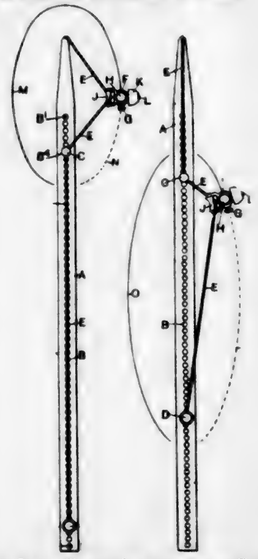

Claim.—1. In an ellipsograph, a supporting-staff and a series of holes in the staff, pins adapted to removably engage said holes, and a guide-cord having one end attached to one end portion of the staff, and the other end portion of the cord attached to one of the pins, the intermediate portion of the cord engaging the other of the pins, and a tool slidingly mounted on the cord, for the purpose stated.

2. In an ellipsograph, a supporting-staff and a guide-cord, the latter adjustably attached to the staff, a tool-holder and a roller pivotally mounted thereon, the guide-cord in engagement with the roller, the roller so disposed relative to the guide-cord that the latter subtends an angle to plane of revolution of the roller and spirally contacts the latter, in the manner and for the purpose stated.

707,581. BRAKE-VALVE. GEORGE GREGORY, Colwich, Iowa. Filed Apr. 26, 1902. Serial No. 104,602. (No model.)

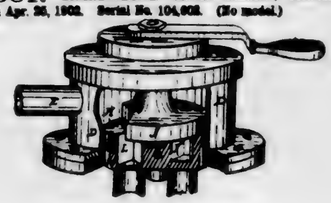

Claim.—In a device for operating air-brakes, a valve provided with a recess on its under side and set in a casing, a valve-seat having three ports, one to furnish air direct to operate the tender and engine brakes, a port to operate the automatic air-brakes of the train and the third for exhaust, and a lever for rotating the valve to utilize the ports simultaneously for operating the brakes on the tender and engine, and the automatic train-brakes.

707,582. VEHICLE-TIRE. WALTER I. GRISCOM, Springfield Mass. Filed Jan. 18, 1901. Serial No. 43,667. (No model.)

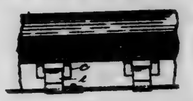

Claim.—1. In a vehicle-wheel, in combination with the rim, a ribbon encircling the rim and secured thereto, a tire, ribbon-attaching loops and clips adapted to secure the tire to the ribbon.

2. In a vehicle-wheel, in combination with the rim having a peripheral groove, a ribbon adapted to be secured in said groove, a tire, and attaching loops and clips securing the tire to the ribbon.

3. In a vehicle-wheel, in combination with the rim having a peripheral groove, a ribbon arranged to be secured within the groove, attaching-clips secured by the ribbon, the tire, and attaching-loops secured to the tire and adapted to be engaged with said clips.

4. In a vehicle-wheel, in combination with the rim having a peripheral groove, a ribbon having each of its meeting ends bent at an angle to the plane of the ribbon, a socket-piece consisting of a flat piece of metal embracing the body part of the ribbon and having a slot adapted to receive each of said bent ends of the ribbon, a tire, and means for securing the tire to the ribbon.

5. In a wheel, in combination with the rim having a peripheral groove, a ribbon having its ends bent to receive a socket-piece, the socket-piece adapted to secure the ribbon within the groove, a tire, attaching-loops secured to the tire, and attaching-clips passing underneath the ribbon and in engagement with the attaching-loops

6. In a vehicle-wheel, in combination with the rim having a peripheral groove, a ribbon adapted to be secured within said groove, a tire, attaching-loops secured to the tire, and clips passing underneath the ribbon and engaging with the loops at a point within the groove in the rim.

7. In a vehicle-wheel, in combination with the rim having a peripheral groove, a ribbon adapted to be secured within said groove, a tire, attaching-loops embedded within the tire and projecting on each side, and attaching-clips passing underneath the ribbon and in engagement with the ends of said loops.

8. In a vehicle-wheel, in combination with the rim having a peripheral groove, a tire having a broad end tread overlying the edges of the groove and a base of a width less than the width of the groove, a ribbon adapted to be secured within the groove and underneath the tire, and means for securing the tire to said ribbon.

9. In a vehicle-wheel, in combination with the rim having a peripheral groove, a ribbon adapted to be secured within said groove, a tire of elastic material having one or more layers of textile fabric embedded in and near the tread portion of the tire, and clips and loops adapted to secure the ribbon and tire together.

10. In a vehicle-wheel, in combination with the rim having a peripheral groove, a ribbon having each of its meeting ends bent at an angle to the plane of the ribbon, a socket-piece consisting of a flat piece of metal having its ends bent over opposite edges of the ribbon and containing slots each of which receives the two bent ends of said ribbon, a tire, and means for securing the tire to the ribbon.

707,583. TIME-RECORDER. THOMAS D. GREER, Syracuse, N. Y. Filed Apr. 6, 1901. Serial No. 54,631. (No model.)

Claim.—1. In a time-recorder the combination with a grooved platen of revolving rollers carrying a record-sheet movable across the groove of the platen, means for rotating one of the rollers, a vertically-movable yoke supporting the other roller and mounted on the platen, a head movable lengthwise of the platen, independently-movable handpieces mounted on the head, a puncturing-pin alined with the groove of the platen and adapted to puncture the record-sheet and a single pawl carried by the head and actuated by either of the handpieces for operating the puncturing-pin.

2. In a time-recorder, the combination with an inclosing case having substantially parallel slots and a series of employee designating characters for each slot, a revolving feed-roll carrying a record-sheet, a platen, a sliding head having handpieces pivoted thereto and projecting through said slots, a puncturing-pin registered with the platen and adapted to puncture the record-sheet, and a single pawl adapted to be actuated by either of the handpieces for forcing the puncturing-pin to its operating position.

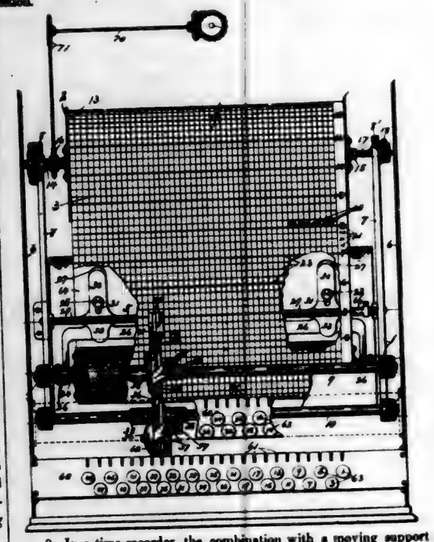

3. In a time-recorder, the combination with a moving support for the record-sheet, a fixed platen of a puncturing or marking device consisting of a rock-arm having a puncturing or marking point, a manually-operated pawl for engaging and moving said arm to its operative position and means whereby the continued movement of the pawl releases it from engagement with the arm after the puncturing-point has been moved to its operative position.

4. In a time-recorder, the combination with an inclosing case, of a platen having employee-designating characters and recesses corresponding with said characters, a revolving feed-roll having an endless record-sheet mounted thereon and depending therefrom, an idler suspended within and upon the depending loop of the record-sheet, said record-sheet being provided with lengthwise and transverse divisions, the lengthwise divisions corresponding to the characters on the plate and the transverse divisions representing intervals of time, a fixed platen transverse of the record-sheet between the roll and idlers, a transverse bar parallel with the plate, a head mounted on and movable lengthwise of the said bar, a single movable member mounted on the head and provided with a puncturing-pin for puncturing the record-sheet between the feed-roll and idler, a pawl detachably engaged with said member for forcing the same to its operative position and a plurality of handpieces also mounted on the head for operating the pawl, and means for forcing the pawl out of engagement with said member as the pawl is moved to its operative position.

707,584. DRILL-SHAPER. DAN GREENWALT and JAMES B. DAWSON, Breckenridge, Colo. Filed Nov. 11, 1901. Serial No. 81,836. (No model.)

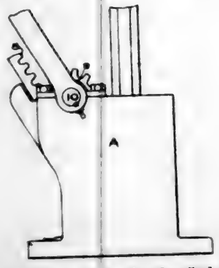

Claim.—1. In a machine of the class described, the combination of suitable framework provided with a vertical drill-opening arranged to admit a drill from the top thereof, a bed-plate at the bottom of said opening, a knife arranged at an angle with said opening, and means for actuating said knife.

2. In a machine of the class described, the combination with suitable framework provided with a vertical drill-opening arranged to admit a drill from the top thereof, a knife slidably supported at an angle therewith, and provided with a rack, roller-bearings supporting said knife, a pinion intermeshing with said rack, and an actuating-handle for said pinion.

3. In a machine of the class described, the combination of suitable framework provided with a vertical drill-opening, and a horizontal opening at the lower end of said vertical opening, a bed-plate slidable in said horizontal opening, a lug arranged in said opening, an arm hinged to said bed-plate and having notches interlocking with said lug, a knife slidable at an angle with said drill-opening, and means for actuating said knife

4. The combination in a drill-shaper in which a drill is held in vertical position, a horizontally-slidable bed-plate provided with an inclined abutting wall for the bit end of the drill, means for holding said bed-plate in adjusted position, an upwardly-inclined knife provided with a rack, roller-bearings for said knife, a pinion engaging with the rack-teeth upon said knife, and an actuating-lever for said pinion.

5. The combination in a drill-shaper in which a drill is held in upright position, an adjustable bed-plate provided with an inclined abutting wall for the bit end of said drill, a knife, and means for moving said knife toward and from said bed-plate.

707,585. MACHINE FOR THREADING TAPE INTO EDGINGS. DAVID GROTTA, Newark, N. J., assignor to Weingarten Bros., a copartnership composed of Levi Weingarten, Oscar Weingarten, and David Weingarten, New York, N. Y. Filed Aug. 1, 1901. Serial No. 70,451. (No model.)

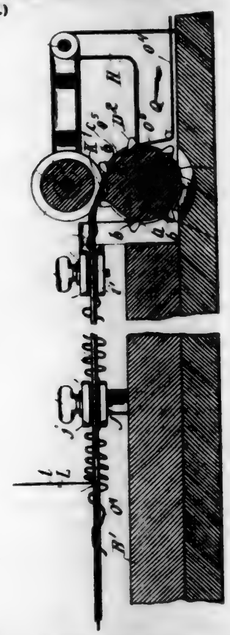

Claim.—1. As an article of manufacture, a roller adapted to be used in a machine for passing ribbon through insertion, said roller having a series of spurs or sprockets thereon, said spurs being slotted and having an incline or cam-surface at the bottom of each slot.

2. As an article of manufacture, a roller adapted to be used in a machine for passing ribbon through insertion, said roller having a groove around the periphery thereof, a series of spurs in the groove projecting beyond the periphery of the roller and having longitudinal slots therein, a cam or incline at the bottom of each slot.

3. As an article of manufacture, a roller adapted to be used in a machine for passing ribbon through insertion, said roller having a groove around the periphery thereof, a series of spurs in the groove at equal distances apart projecting beyond the periphery of the roller and having slots therein, and a cam or incline at the bottom of each slot.

4. In a machine for passing ribbon through insertion, a roller having spurs thereon adapted to enter every other hole in the insertion through which the ribbon is to pass, a needle carrying a ribbon, and means for vibrating the needle so that it may enter one of said holes from one side of the insertion and pass through the next hole from the other side of the insertion.

5. In a machine for passing ribbon through insertion, a roller having a groove around the periphery thereof, a series of spurs in the groove adapted to enter every other hole in the insertion through which the ribbon is to pass, each spur projecting beyond the periphery of the roller and having a slot therein, a cam or incline at the bottom of the slot, a needle the end of which rests in the bottom of the groove and adapted to be raised by a cam so that the needle is vibrated to enter one of the openings in the insertion from one side thereof and the next opening from the other side as the roller rotates.

6. In a machine for passing ribbon through insertion, a roller having a groove around the periphery thereof, a series of spurs in the groove adapted to enter every other hole in the insertion through which the ribbon is to pass, each spur projecting beyond the periphery of the roller and having a slot therein, a cam or incline at the bottom of the slot, a needle the end of which rests in the bottom of the groove and adapted to be raised by a cam so that the needle is vibrated to enter one of the openings in the insertion from one side thereof and the next opening from the other side as the roller rotates, and a guide-roll above the roller.

7. In a machine for passing ribbon through insertion, a roller having a groove around the periphery thereof, a series of spurs in the groove adapted to enter every other hole in the insertion through which the ribbon is to pass, each spur projecting beyond the periphery of the roller and having a slot therein, a cam or incline at the bottom of the slot, a needle the end of which rests in the bottom of the groove and adapted to be raised by a cam so that the needle is vibrated to enter one of the openings in the insertion from one side thereof and the next opening from the other side as the roller rotates, a guide-roll above the said roller adapted to bear upon the surface of the insertion when passing through the machine and having a groove around the periphery thereof through which the spurs pass.

8. In a machine for passing ribbon through insertion, a roller having a groove around the periphery thereof, a series of spurs in the groove adapted to enter every other hole in the insertion through which the ribbon is to pass, each spur projecting beyond the periphery of the roller and having a slot therein, a cam or incline at the bottom of the slot, a needle the end of which rests in the bottom of the groove and adapted to be raised by a cam so that the needle is vibrated to enter one of the openings in the insertion from one side thereof and the next opening from the other side as the roller rotates, a pivoted frame, a guide-roll mounted in the frame and adapted to bear upon the upper surface of the insertion when passing through the machine and having a circular groove around the periphery thereof through which the needle and the spurs pass.

9. In a machine for passing ribbon through insertion, a roller having a circular groove around the periphery thereof, spurs projecting from said groove at equal distances apart, each spur being slotted, a cam or incline at the bottom of each slot, a pivoted clamp, a needle carried by said clamp and resting in the bottom of the groove at its lowest position, means for rotating the roller so that the cam will pass under the needle to raise its end and permit said end to pass through that opening of the insertion through which the spurs pass, and then lowered to pass through the next opening in the insertion from the opposite direction.

10. In a machine for passing ribbon through insertion, a roller having a circular groove around the periphery thereof, spurs at equal distances apart projecting from said groove beyond the periphery of the roller, each of said spurs having a slot therein, a cam-surface at the bottom of the slot, clamps for holding a needle, one of the clamps being pivoted to permit the vibration of the end of the needle, a needle, the end of which rests at the bottom of the groove and adapted to be raised by the cam-surface in the slot, as and for the purpose specified.

11. In a machine for passing ribbon through insertion, a roller having a circular groove around the periphery thereof, spurs at equal distances apart projecting from said groove beyond the periphery of the roller, each of said spurs having a slot therein, a cam-surface at the bottom of the slot, clamps for holding a needle, one of the clamps being pivoted to permit the vibration of the end of the needle, a needle, the end of which rests at the bottom of the groove and adapted to be raised by the cam-surface in the slot, and a guide-roll above the said roller and adapted to bear upon the upper surface of the insertion as it passes through the roll, as and for the purpose specified.

12. In a machine for passing ribbon through insertion, a roller having a circular groove around the periphery thereof, spurs at equal distances apart projecting from said groove beyond the periphery of the roller, each of said spurs having a slot therein, a cam-surface at the bottom of the slot, clamps for holding a needle, one of the clamps being pivoted to permit the vibration of the end of the needle, a needle, the end of which rests at the bottom of the groove and adapted to be raised by the cam-surface in the slot, a guide-roll having a circular groove around the pe-

riphery thereof through which pass the needle and the spurs, and a pivoted frame carrying said roll, as and for the purpose specified.

13. In a machine for passing ribbon through insertion, a supply-roll adapted to carry insertion to be operated upon, a roller having a circular groove around the periphery thereof, spurs projecting at equal distances apart from the groove and above the circumference of the roller, each spur having a slot therein and adapted to enter every other opening in the insertion through which the ribbon is to be passed, an incline or cam at the bottom of each slot, means for guiding the insertion to the roll, clamps, one of which is pivoted, a hollow needle, having a slot therein, carried by said clamps, the end of which rests in the bottom of the groove of the roller and is adapted to be raised by the cam in the spurs, a guide-roll having a circular groove around the periphery thereof and in which the spurs and needle enter when the roller is in its lowered position, a pivoted frame carrying said guide-roll, a ribbon-spool adapted to feed the ribbon through the slot in the hollow needle, a take-up roll adapted to receive and take up the insertion and ribbon as they come from the needle, substantially as described.

14. In a machine for passing ribbon through insertion, a supply roll adapted to carry insertion, a feed-roller having spurs thereon adapted to enter every other opening in the insertion through which the ribbon is to be passed, means for guiding the insertion to said roller, a vibrating needle, means for raising and lowering the needle to permit it to pass through one of the openings in the insertion from one side thereof and to enter the next opening through the other side thereof, a take-up roll, and means for permitting the ribbon to pass through the insertion while on the needle, substantially as and for the purpose described.

15. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a roll, spurs on said roll with which the point of said needle is in sliding engagement, said spurs being constructed to alternately raise and lower the point of the needle, substantially as and for the purpose set forth.

16. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a roll, cams or inclines on said roll with which the point of the needle is in sliding engagement, said cams or inclines being constructed to alternately raise and lower the point of the needle, and means on said roll for feeding the lace or insertion upon said needle, and causing it to be gathered upon the needle, substantially as and for the purpose set forth.

17. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a roll, cams or inclines on said roll with which the point of the needle is in sliding engagement, said cams or inclines being constructed to alternately raise and lower the point of the needle, and spurs or sprockets on said roll adapted to enter the openings of said insertion and feed the same upon the needle, and to be gathered on said needle, substantially as and for the purpose set forth.

18. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a roll, spurs or sprockets on said roll adapted to enter the openings of said insertion, said sprockets or spurs being provided with cams or inclines with which the end of the needle is brought into sliding engagement to cause said end of the needle to enter the openings of the lace or insertion and gather the same upon the needle, substantially as and for the purpose set forth.

19. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a roll, cams or inclines on said roll with which the point of the needle is in sliding engagement, said inclines being constructed to alternately raise and lower the point of the needle, and an upper roll bearing upon said first-named roll, said upper roll being provided with an annular groove, and means on said first-mentioned roll extending into the groove on said upper roll for feeding the meshes of the lace upon said needle and causing the insertion to be gathered on said needle, substantially as and for the purpose set forth.

20. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a lower roll, cams or inclines on said roll with which the point of the needle is in sliding engagement, said inclines being constructed to alternately raise and lower the point of the needle, and an upper roll bearing upon the lower roll, said upper roll being provided with an annular groove, and sprockets on said lower roll extending into the groove on said upper roll and adapted to enter the openings of the insertion and feed the lace upon the needle and causing the insertion to be gathered on said needle, substantially as and for the purpose set forth.

21. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a lower feed-roll, cams or inclines on said roll with which the point of the needle is in sliding engagement, said cams or inclines being constructed to alternately raise and lower the point of the needle, and an upper feed-roll bearing upon the said lower roll, said upper roll being provided with an annular groove and sprockets or spurs on said roll extending into the groove on said upper roll and adapted to enter the openings of the insertion and feed the insertion upon the needle, and to be gathered on said needle, substantially as and for the purpose set forth.

22. In a machine for passing ribbon through insertion or lace, the combination with a needle, of a lower feed-roll and an upper feed-roll bearing upon the said lower roll, said upper roll being provided with an annular groove, and spurs or sprockets on said roll extending into the annular groove in said upper roll, said spurs being provided with a curved surface with which the end of the needle is brought in sliding engagement to cause said needle to enter the openings of the insertion and gather it upon the needle, substantially as and for the purpose set forth.

23. In a machine for passing ribbon through insertionor lace, the combination with a base provided with a support and a needle in said support, of a second support, having bearings, a lower roll rotatively arranged in one of said bearings, and a frame pivotally connected with a spindle in another of said bearings, an upper feed-roll in said frame provided with an annular groove, and means on said lower roll extending into the groove in said upper roll for feeding the insertion upon said needle, and causing the insertion to be gathered upon the needle, substantially as and for the purpose set forth.

24. In a machine for passing ribbon through insertion or lace, the combination with a base provided with a support and a needle in said support, of a second support, having bearings, a roll rotatively arranged in one of said bearings, and a frame pivotally connected with a spindle in another of said bearings, an upper feed-roll in said frame provided with an annular groove, and sprockets or spurs on said lower roll extending into the groove in said upper roll and adapted to enter the openings of said insertion and feeding the insertion upon the needle, and to be gathered on said needle, substantially as and for the purpose set forth.

25. In a machine for passing ribbon through insertion or lace, the combination with a base provided with a support and a needle in said support, of a second support, having bearings, a lower roll rotatively arranged in one of said bearings, and a frame pivotally connected with a spindle in another of said bearings, an upper feed-roll in said frame provided with an annular groove, and sprockets or spurs on said lower roll extending into the groove in said upper roll, said sprockets having inclined surfaces with which the end of the needle is brought in sliding engagement to cause said end of the needle to enter the openings and gather the same upon the needle, substantially as and for the purpose set forth.

26. In a machine for passing ribbon through insertion or lace, the combination of a base provided with a support and a needle in said support, of a guide and a roll on said base, cams or inclines on said roll with which the point of the needle is in sliding engagement, and said inclines being constructed to alternately raise and lower the end of the needle, and means on said roll for feeding the openings of the insertion upon said needle, and causing it to be gathered upon the needle, substantially as and for the purpose set forth.

27. In a machine for passing ribbon through insertion or lace, the combination with a base provided with a support and a needle in said support, of a guide and a roll on said base, cams or inclines on said roll with which the point of said needle is in sliding engagement, said inclines being constructed to alternately raise and lower the point of the needle, and spurs or sprockets on said roll adapted to enter the openings of said insertion and feed it upon the needle, and cause it to be gathered upon the needle, substantially as and for the purpose set forth.

28. In a machine for passing ribbon through insertion or lace, the combination with a base provided with a support and a needle in said support, of a guide and a roll on said base and sprockets or spurs on said roll adapted to enter the openings of said insertion, said spurs being provided with an incline having surfaces with which the end of the needle is brought in sliding engagement to cause said end of the needle to enter the openings of the insertion, and cause the insertion to be gathered upon the needle, substantially as and for the purpose set forth.

29. In a machine for passing ribbon through insertion or lace, the combination with a base provided with a support and a needle in said support, of a guide on said base, a second support having bearings, a lower roll rotatively arranged in one of said bearings, and a frame pivotally connected with a spindle in another of said bearings, an upper roll in said frame provided with an annular groove, and means on said lower roll extending into the groove in said upper roll for feeding the openings of the insertion upon said needle, and causing the insertion to be gathered upon the needle, substantially as and for the purpose set forth.

30. In a machine for passing ribbon through insertion or lace, the combination with a base provided with a support and a needle in said support, of a guide on said base, a second support having bearings, a lower roll rotatively arranged in one of said bearings, and a frame pivotally connected with a spindle in another of said bearings, an upper roll in said frame provided with an annular groove and sprockets or spurs on said lower roll extending into the groove in said upper roll and adapted to enter the openings of said insertion and feed it upon the needle, and cause it to be gathered upon the needle, substantially as and for the purpose set forth.

31. In a machine for passing ribbon through insertion or lace, the combination with a base provided with a support and a needle in said support, of a guide on said base, a second support having bearings, a lower roll rotatively arranged in one of said bearings, and a frame pivotally connected with a spindle in another of said bearings, an upper roll in said frame provided with an annular groove, and sprockets or spurs on said lower roll extending into the groove in said upper roll, said sprockets being provided with inclines having surfaces with which the end of the needle is brought in sliding engagement to cause said end of the needle to enter the openings of the insertion, and gather the same upon the needle, substantially as and for the purpose set forth.

32. In a machine for passing ribbon through insertion or lace, the combination with a roll, cams or inclines on said roll, of a needle having its pointed end in sliding engagement with said inclines, said inclines being constructed to alternately raise and lower the point of said needle and thereby gather the insertion upon said needle, substantially as and for the purpose set forth.

33. In a machine for passing ribbon through insertion or lace, the combination with a base, of a support provided with a pair of holding-jaws, a needle detachably secured between said jaws, means on said base for feeding and gathering insertion upon said needle, a second support on said base having a bearing and a holding clamp or dog provided with jaws adapted to grasp the end of the needle, substantially as and for the purpose set forth.

34. In a machine for passing ribbon through insertion or lace, the combination with a needle and means for feeding and gathering insertion upon said needle, of a support having a bearing, a holding-clamp in said bearing provided with jaws, and means for fixing said jaws about the needle, substantially as and for the purpose set forth.

35. In a machine for passing ribbon through insertion or lace, a roll, cams or inclines on said roll, and means cooperating with said cams or inclines for picking up and gathering the insertion, substantially as and for the purpose set forth.

36. In a machine for passing ribbon through insertion or lace, the combination, with a base, of a support provided with a pair of holding-jaws, a needle detachably secured near one end between said jaws, means on said base for feeding and gathering lace upon said needle, a second support upon said base having a bearing, and a movable holding-dog arranged in said bearing provided with holding-jaws adapted to grasp the gathering end of the needle, substantially as and for the purpose set forth.

37. In a machine for passing ribbon through insertion or lace, the combination, with a base, of a support provided with a pair of holding-jaws, a needle detachably secured near the rear end between said jaws, means on said base for feeding and gathering the lace upon the said needle, a second support on said base having a bearing, and a holding-dog pivotally arranged in said bearing provided with holding-jaws adapted to grasp the gathering end of the needle, substantially as and for the purpose set forth.

38. In a machine for passing ribbon through insertion or lace, the combination, with a needle and means for feeding and gathering lace upon said needle, of a support having a bearing, a movable holding-dog arranged in said bearing provided with holding-jaws, and means for fixing said jaws about the needle, substantially as and for the purpose set forth.

39. In a machine for passing ribbon through insertion or lace, the combination, with a needle and means for feeding and gathering lace upon said needle, of a support having a bearing, a holding-dog pivotally arranged within said bearing provided with holding-jaws, and means for fixing said jaws about the needle, substantially as and for the purpose set forth.

40. In a machine for passing ribbon through insertion or lace, the combination, with a feed-roll having feed-sprockets arranged with spaces between them, inclines or cams between said sprockets provided with curved surfaces, of a needle having a curved end in sliding engagement with said curved surfaces of said inclines, as and for the purpose set forth.

707,586. METAL FENCE-POST. CHARLES C. HAGERMAN, Marion, Iowa, assignor to Hagerman & Williams, Marion, Iowa, a firm composed of Charles C. Hagerman and Benjamin R. Williams. Filed Apr. 12, 1902. Serial No. 102,680. (No model.)

Claim.—A fence-post comprising a central plate having wings at its side edges lying at obtuse angles thereto, said plate having a longitudinal slot, a wire-clamping hook having a threaded stem passed through the slot and between the wings, a malleable washer disposed upon the stem and having a diameter greater than the width of the central plate, and a nut screwed upon the stem and adapted to impinge the washer and bend the latter against the edges of the nut to prevent unscrewing thereof, and to draw the stem through the slot.

707,587. INSERTING-MACHINE FOR NEWSPAPERS. SAMUEL R. HAYDEN, Kansas City, Mo., assignor to Anthony L. Clark and Charles W. Lake, Kansas City, Mo. Filed Feb. 13, 1902. Serial No. 93,985. (No model.)

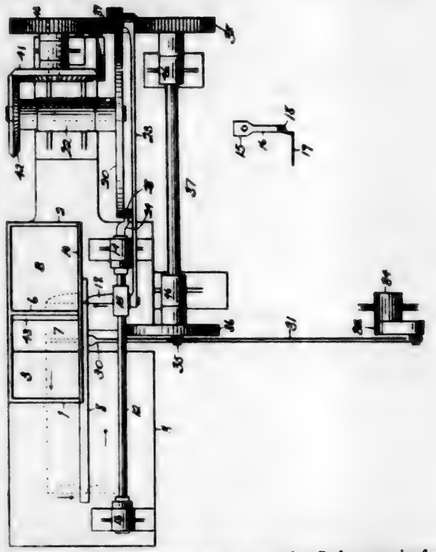

Claim.—1. In a machine for the purpose described, a magazine for inner sections, an adjacent magazine 1 for outer sections, and a reciprocating blade, and means for inserting said blade between the folds of an inner section and then moving said blade so as to insert said inner section between the folds of an outer section, substantially as described.

2. In a machine for the purpose described, a magazine 2 for inner sections, an adjacent magazine 1 for outer sections, a rock-shaft, a cross-head mounted slidably and non-rotatably on said rock-shaft, a horizontal inserter-blade connected pivotally to said cross-head, and means for reciprocating said cross-head and rocking said rock-shaft, whereby said inserter-blade is inserted into said magazine 2 between the folds of an inner section, is then moved into said magazine 1, pulling after it said inner section and inserting it into an outer section, is then withdrawn from said inner section, and is then returned to starting position, ready to be inserted into another inner section, substantially as described.

3. In a machine for the purpose described, a magazine 1 for outer sections, a magazine 2 for inner sections, an oscillating finger for depressing the lower fold of each outer section, a reciprocating blade, and means for inserting said blade between the folds of an inner section and then moving said blade so as to insert said inner section between the folds of said outer section; substantially as described.

4. In a machine for the purpose described, a magazine 1 for outer sections, a magazine 2 for inner sections, the bottom of said magazine 1 having an opening and a shelf therein, a guide-bar secured to said magazines as shown, and having a longitudinal slit therein, a rock-shaft having a crank on one end thereof, a cross-head mounted slidably and non-rotatably on said rock shaft, an inserter-blade connected pivotally to said cross-head and projecting into or through said slit in said guide-bar, a wheel, a pair of cam-lips 28, 29, on said wheel, an opening adjacent to each of said cam-lips, and a pitman connected to said wheel and to said cross-head, whereby said rock-shaft is rocked and said cross-head is reciprocated, by revolution of said wheel, substantially as described.

5. In a machine for the purpose described, a magazine 1 for outer sections, a magazine 2 for inner sections, the bottom of said magazine 1 having an opening and a shelf therein, a guide-bar secured to said magazines as shown, and having a longitudinal slit therein, a rock-shaft having a crank on one end thereof, a cross-head mounted slidably and non-rotatably on said rock-shaft, an inserter-blade connected pivotally to said cross-head and projecting into or through said slit in said guide-bar, a wheel, a pair of cam-lips 28, 29 on said wheel, an opening adjacent to

each of said lips and a pitman connected to said wheel and to said cross-head, whereby said rock-shaft is rocked and said cross-head is reciprocated, by revolution of said wheel, a shaft parallel to said rock-shaft, a crank-shaft, a crank-wheel on said shaft, a separator-finger connected at one end to a rocker-arm and between its ends to the face of said crank-wheel, said separator-finger being so adjusted as to enter between the folds of an outer section and depress the lower fold thereof through said opening in the bottom of the magazine, the end of the upper fold being supported by said shelf, and means for rotating said crank-wheel and said cam-wheel synchronously, substantially as described.

707,588. ATTACHMENT FOR HARNESS. NIKOLAUS HEBRAND, Coldspring, Minn., assignor of one-half to Frank Paul, Coldspring, Minn. Filed June 3, 1901. Serial No. 63,671. (No model.)

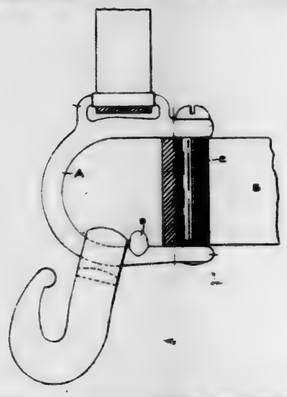

Claim.—A harness attachment consisting of a frame supported from the harness and provided with a detachable tug-connecting bolt, a hook loosely hung upon said frame, and an upwardly-extending step upon the lower side of the frame, said hook being formed with an elongated eye to allow it to be carried past said step, as and for the purpose set forth.

707,589. STARCH-PRINTER. DANIEL M. HOLMES, Arlington, N. J., assignor to Charles S. Fowler and Lucius A. Rockwell, New York, N. Y. Filed Jan. 2, 1902. Serial No. 88,104. (No model.)

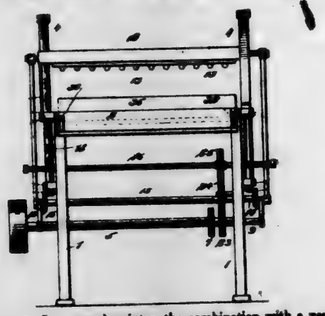

Claim.—1. In a starch-printer, the combination with a vertically-movable platen, of means for imparting a horizontal, eccentric movement to the same.

2. In a starch-printer, the combination with a vertically-movable platen, of rotatable, eccentric guides therefor.

3. In a starch-printer, the combination with the bed and a starch-tray, of horizontally-movable bars bearing spring-actuated fingers arranged to pass beneath a tray and engage therewith, substantially as shown and described.

707,590. DOUBLE-STROKE DEPOSITOR. DANIEL M. HOLMES, Arlington, N. J., assignor to Charles S. Fowler and Lucius A. Rockwell, New York, N. Y. Filed Jan. 2, 1902. Serial No. 88,105. (No model.)

Claim.—1. The combination with a material hopper or holder provided with exit orifices or ports, of a discharging device in which is comprised two independently, partially-rotatable, oscillatory members located in a common throat, one of said members being provided with ports or orifices.

2. The combination with a material hopper or holder provided with exit orifices or ports and a division or partition, of discharging devices in each of which is comprised two independently, partially-rotatable, oscillatory members, located in a common throat one of said members having openings or ports therethrough.

3. In a depositor, a discharging device in which is comprised two independently, partially-rotatable members, located in a common throat, as set forth, one of said members being perforated and arranged to come in contact with a projection extending into the throat.

4. In a depositor, the combination with a discharging device in which is comprised two independently, partially-rotatable, oscillatory members, located in a common throat, of means for varying the oscillation of said members.

5. In a depositor, the combination with a material hopper or holder provided with exit orifices or ports and discharging devices at the bottom of the hopper, of directing devices in each of which is comprised a central exit-tube having communication with one side of the material-hopper, and a chamber surrounding said exit-tube having communication with the other side of the material-hopper, discharge-openings leading from said chamber, and means for rotating the bottom and inner wall of the chamber.

6. The combination with a fixed shell at the bottom of the material-hopper, of a central discharge-tube and a thimble rotatably held thereon; a supply-port at the top of the thimble and discharge-openings at the bottom of the thimble, and means for rotating the thimble.

7. The combination with a fixed shell at the bottom of the material-hopper, of a central discharge-tube and thimble rotatably held thereon, the thimble having a supply-port at the top and discharge-openings at the bottom, a pin located within the thimble, and means for rotating the thimble.

707,591. UNDERGROUND-TROLLEY SYSTEM. FRED A. HOWARTH, Johnstown, N. Y., assignor of one-half to Henry L. Shaver, Cohoes, N. Y. Filed Nov. 23, 1901. Serial No. 83,297. (No model.)

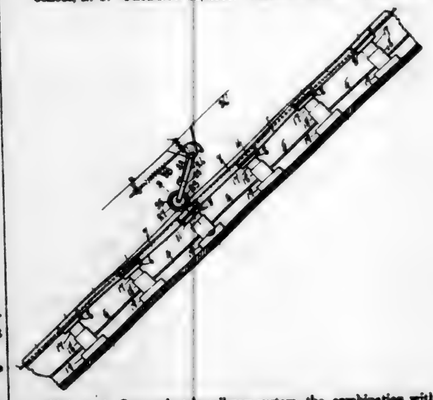

Claim.—1. In an electric-railway system, the combination with a supply-conductor; of a flexible tubular inclosure therefor comprising a series of insulated conductive sections; supports for said conductor extending through transverse apertures in the tubular inclosure wall, and means for yieldingly supporting said inclosure-sections out of contact with said conductor, substantially as described.

2. In an electric-railway system, the combination with a supply-conductor; of a flexible tubular inclosure therefor comprising a series of insulated conductive sections; supports for said conductor extending through transverse apertures in the tubular inclosure wall exteriorly of said inclosure; and springs for yieldingly supporting the inclosure-sections out of contact with said conductor and permitting said sections to be successively forced into contact therewith, substantially as described.

3. In an electric-railway system, a conduit of conductive material adapted to form a return-conductor; a supply-conductor contained therewithin and insulated therefrom; a flexible covering for said supply-conductor made up of sections of conductive material insulated from each other yieldingly supported out of contact with said supply-conductor and adapted to be successively forced into contact therewith while not in contact with the conductive portion of the conduit; in combination with a trolley or the like having parts of different polarity one adapted to contact with the conduit, and the other to contact with the sections of the flexible covering successively and depress them into contact with the supply-conductor.

4. In an electric-railway system, the combination with a plurality of stationary supports; of a plurality of supply-conductor sections detachably secured at their ends to the respective supports and connected thereby in a conductive series; a series of insulated tubular conductive inclosures for the intermediate portions of the respective supply-conductor sections; detachable tubular splice mechanism for connecting together the adjacent ends of the respective inclosure-sections, and a yielding support for the several splice mechanisms, substantially as described.

5. In an electric-railway system, the combination with a plurality of stationary supports, of a plurality of supply-conductor sections detachably secured at their ends to the respective supports and forming a conductive series; a series of insulated, conductive, tubular inclosures for the intermediate portions of the respective supply-conductor sections; sectional splice-boxes each inclosing a stationary supply-conductor and comprising a body provided with seats for the neighboring ends of neighboring supply-conductor inclosures; and a detachable cap adapted to clamp said ends in said seats; and yielding supports for said splice-boxes, substantially as described.

6. In an electric-railway system, the combination with a supply-conductor and fixed supports for the same; of a tube-section inclosing said conductor; a splice-box having separable clamping members; a splice-bushing projecting from the tube-section and inserted between the members of the splice-box; and an insulating-sleeve inclosing the inserted portion of the bushing and serving to insulate the tube-section from the splice-box, substantially as described.

707,592. ANTIFRICTION-COVER FOR BICYCLE-SADDLES. WILLIAM W. HUGHES, Urbana, Ohio. Filed Dec. 5, 1901. Serial No. 84,733. (No model.)

Claim.—1. An antifriction device for bicycle-saddles comprising a bifurcated cover firmly secured to the front and loosely secured to the rear ends of the saddle, substantially as described.

2. An antifriction device for bicycle-saddles comprising a cover slidingly secured to the saddle and having its rear portion bifurcated, substantially as described.

707,598. CLUTCH. FREDERICK W. JONES, London, England. Filed Aug. 13, 1900. Serial No. 26,731. (No model.)

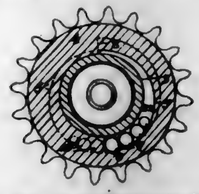

Claim.—In a clutch, the combination of a driving part, a driven part, a concentric surface of the driven part, a double eccentric surface on the driving part, a taper intermediate gripping-piece adapted to engage in one direction, a taper intermediate gripping-piece adapted to engage in the other direction, and a stop on the driving part dividing the double eccentric surface, the said stop being located between the larger ends of the two taper gripping-pieces, substantially as and for the purpose set forth.

707,594. HORSESHOE. CARL A. JUDSEN, Chicago, Ill. Filed Feb. 17, 1902. Serial No. 94,483. (No model.)

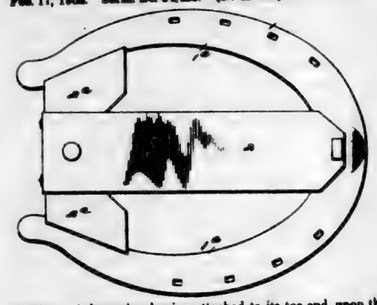

Claim.—A horseshoe having attached to its toe end, upon the inner upper edge a steel or metal guard-plate, having its rear end unattached to the shoe and provided with a transverse member, at said rear end, with its ends resting or bearing freely upon the shoe laterally, and a cushion of frictional or elastic material, said guard-plate and transverse member having downwardly-bent portions embracing or engaging said cushion and having passing therethrough fastenings securing in place said cushion, substantially as set forth.

707,595. MANUFACTURE OF PLAYING-BALLS. ELEAZER KEMPSHALL, Boston, Mass. Filed June 25, 1902. Serial No. 113,057. (No model.)

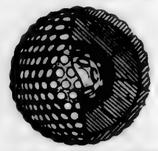

Claim.—1. A process in producing a playing-ball, consisting in inclosing a hard perforated sphere in a shell or layer of soft, resilient material, and compressing upon said layer a shell of hard plastic material, the compression being carried to an extent to force portions of said soft layer permanently into the perforations in said hard sphere.

2. A process in producing a playing-ball, consisting in providing a hard shell with perforations, enveloping said shell in soft rubber, and applying to said soft rubber under pressure plastic material which is rendered soft by heat, the pressure being carried to an extent to force portions of said soft rubber into said perforations, and being maintained while said plastic material hardens.

3. A process in producing a playing-ball, consisting in inclosing the perforated shell of hard material in an envelop of soft rubber, and welding upon said envelop by means of heat and compression a shell consisting of segments of plastic material, carrying the compression to an extent to force portions of said rubber into the perforations in said shell, and maintaining the compression until said shell hardens by cooling.

4. A process in producing a playing-ball, consisting in winding in miscellaneous directions upon a hard spherical center piece having openings, a strip of approximately pure sheet india-rubber, and then forming thereon under compression a shell of hard material, the compression carried to an extent to cause portions of said india-rubber to protrude into said openings.

5. A process in producing a playing-ball, consisting in winding under high tension in miscellaneous directions, upon a hard spherical hollow center piece having apertures, a continuous strip of thin approximately pure sheet india-rubber, and forming thereon a shell of plastic material by means of heat and compression, carrying the compression to an extent to cause portions of said india-rubber to protrude into said apertures, and maintaining the compression while the shell hardens.

6. A process in producing a playing-ball, consisting in inclosing a hard perforated sphere in a shell or layer of soft rubber, and compressing upon said layer a shell of gutta-percha, the compression being carried to an extent to force portions of said rubber layer permanently into the perforations in said hard sphere.

7. A process in producing a playing-ball, consisting in providing a hard shell with perforations, enveloping said shell in windings of soft rubber, and applying to said windings under pressure plastic material which is rendered soft by heat, the pressure being carried to an extent to force portions of said windings into said perforations, and being maintained while said plastic material hardens.

8. A process in producing a playing-ball, consisting in inclosing the perforated shell of hard material in tense windings of soft rubber, and welding upon said envelop by means of heat and compression a shell consisting of segments of gutta-percha, carrying the compression to an extent to force portions of said windings into the perforations in said shell, and maintaining the compression until said shell hardens by cooling.

9. A process in producing a playing-ball, consisting in winding in miscellaneous directions upon a hard spherical center piece having openings, approximately pure sheet india-rubber, and then forming thereon under pressure a shell of gutta-percha, the pressure being carried to an extent to cause portions of said india-rubber to protrude into said openings.

10. A process in producing a playing-ball, consisting in winding in miscellaneous directions, upon a hard spherical hollow center piece having apertures, a continuous strip of thin approximately pure sheet india-rubber under sufficient tension to cause the windings to adhere to one another, and forming thereon a shell of gutta-percha by means of heat and compression, carrying the compression to an extent to cause portions of said windings to protrude into said apertures, and maintaining the compression while the gutta-percha shell hardens.

11. A process in producing a playing-ball, consisting in inclosing a depressible shell of rubber windings between segments of plastic material, and applying heat and compression to said segments so as to reduce said rubber sphere in bulk and also cause said segments to weld.

12. A process in producing a playing-ball, consisting in inclosing a depressible shell of tense windings of soft rubber between segments of plastic material, applying heat and compression to said segments so as to cause them to soften and weld and also to cause said rubber sphere to become reduced in diameter, and maintaining the compression while the shell cools and hardens.

13. The process in producing a playing-ball, consisting in forming a depressible shell by winding approximately pure soft rubber, the latter being wound, under sufficient tension to cause the rubber to adhere layer to layer, surrounding said sphere by heated plastic material, subjecting the whole to compression to an extent to cause said sphere to be reduced in bulk, and maintaining the compression while the plastic material hardens.

707,596. FOUNDRY PATTERN-CLAMP. ERNST J. KIRK, Fort Wayne, Ind. Filed July 18, 1901. Serial No. 68,763. (No model.)

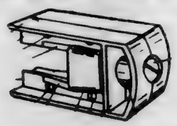

Claim.—1. A foundry pattern-clamp consisting of a pair of centrally-slotted plates, having inclined ways upon their outer faces adjacent to said slot as shown; a clamp or key provided upon its opposite ends with a pair of inclined faces, arranged in said slot and adapted for a binding engagement with the said inclined ways; and the means described for securing said plates in such engagement.

2. In a pattern-clamping device a pair of plates having a longitudinal recess therein, and inclined ways adjacent to said recess; a clamp slidably mounted in said recess and having upon each end thereof a pair of inclined faces adapted to engage the said inclined ways as shown; and means for forcing the said clamp upward on said ways and for securing the same in such position for the purpose specified.

3. A pattern-clamp consisting of a pair of plates provided with inclined ways; an interlocking clamp mounted on said ways and provided with faces adapted to engage said ways; and means for forcing said wedge upward on said ways.

4. In a pattern-clamp the combination of a pair of plates rigidly secured to the pattern-sections, each of which plates is provided upon its outer face with a pair of inclined ways; a clamp having upon two opposite sides thereof a pair of oppositely-arranged inclined faces adapted to engage said ways; and a screw mounted within said plates and adapted to force the said wedge into a holding engagement with the said ways.

707,597. AMALGAMATOR. ERNST J. KIRK, Fort Wayne, Ind. Filed Aug. 12, 1901. Serial No. 71,723. (No model.)

Claim.—1. In an amalgamator, a rotary open-topped cylindrical tank; a tilting adjustable support for the said tank; a revolvable spiral agitator mounted in said tank in vertical arrangement and adapted to impart a positive downfeed to the contents thereof; means for draining said tank while in operation; and means for actuating said tank.

2. An inclined rotary tank having a concave bottom and a peripheral overflow-trough; a tilting adjustable support for said tank; an upright spiral agitator revolubly mounted in said tank and adapted to impart a positive downfeed; means for centrally draining said tank while in operation consisting of an inner and an outer sleeve, the inner sleeve having a lateral outlet-opening, and being adapted to be fixed to said tank, the outer sleeve having a vertical adjustment on the inner sleeve and adapted to close said lateral opening; and means for operating the said outer sleeve.

707,598. COMB. WOLF KRONHEIM, Hanover, Germany. Filed Dec. 28, 1901. Serial No. 87,320. (No model.)

Claim.—A comb with straight teeth having the back on one side of the straight teeth, so that the spaces between the latter reach from the points of the teeth along one side of the back to the rear side of the comb, substantially as set forth.

707,599. LEAD FOR MEASURING DEPTHS. ERNST KRUHSOW, Soutra, Germany. Filed Feb. 7, 1902. Serial No. 93,054. (No model.)

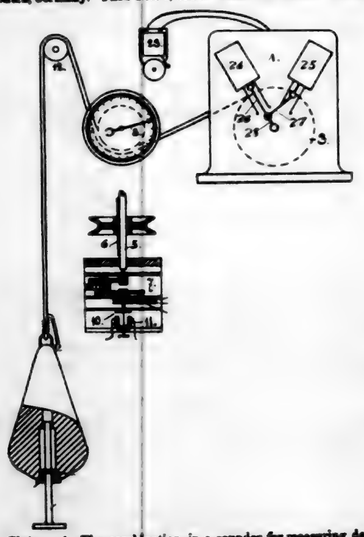

Claim.—1. The combination, in a sounder for measuring depths, of a lead weight having a hole lengthwise and inside contacts, with a movable piston provided with a plate-like end, the said lead weight secured to a rope having electric wires, an electrical ringing apparatus and an electromagnet, in connection with said wires, a counter operated by the aforesaid electromagnet, all as shown and described.

2. The combination, in a sounder for deep-sea measuring, of a lead weight having a movable piston and inside contacts, with a counter for the length of rope run out, having an electromagnet and an armature consisting of an iron plate attached to a hand having a claw grasping over the hand of the counter all as and for the purpose set forth.

707,600. REDLESS PROPELLER. ADAM KUHVE, Colby, Wis. Filed Dec. 21, 1901. Serial No. 86,801. (No model.)

Claim.—1. An endless carrier provided with folding paddles having extensions and a guard arranged parallel with and immediately below the upper portion of the said carrier for the aforementioned extensions of the paddles to travel upon to hold the paddles folded, substantially as and for the purpose set forth.

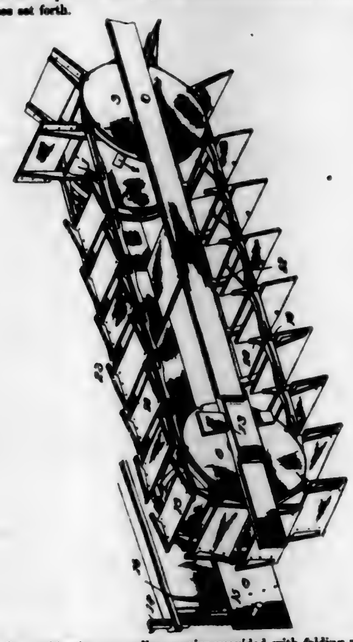

2. In combination, an endless carrier provided with folding paddles having extensions, rotary supports for opposite ends of the said carrier, means for adjusting one of the supports vertically to change the horizontal inclination of the carrier, and a guard located parallel with and immediately below the upper portion of the carrier for the aforesaid extensions of the paddles to travel upon to hold said paddles folded, said guard being attached to and movable with the aforesaid rotary support to preserve a fixed position with reference to the carrier, substantially as set forth.

3. In combination, an endless carrier comprising companion chains and cross-bars tying the chains and pivotally connecting the links thereof, paddles, cleats secured to the end portions of the paddles and having their inner ends extended and transversely apertured to receive the cross-bars upon which the paddles are mounted to swing, said cleats having their rear end portions cut away to admit of the paddles folding close, substantially as set forth.

4. In combination, an endless carrier, folding paddles applied to said carrier, and arms secured to the end portions of the paddles and adapted to bear against links of the carrier-chains and to hold the paddles in an approximately vertical position, substantially as set forth.

5. In combination, an endless carrier provided with paddles or blades, rotary supports for the end portions of the said carrier, mountings for one of the rotary supports having right-angularly-disposed intersecting openings, bearing-blocks for the last-mentioned rotary support having open slots in one end, and keys coöperating with the slots of the bearing-blocks and with the vertical openings of the said mountings to hold the bearing-blocks in place and admit of adjustment thereof, substantially as set forth.

6. In combination, an endless carrier provided with paddles, rotary supports for the end portions of said carrier, a pivoted frame for one of the said rotary supports, an interlocking rib and groove formed on the arc of a circle concentric with the pivotal center of said frame, and means for adjusting the said pivoted frame consisting of a set-screw and coöperating nut, each having a swivel-mounting, substantially as specified.

707,601. SMELTING-FURNACE. CHARLES LAUDELIN, St. Louis, Mo. Filed Apr. 11, 1901. Serial No. 55,331. (No model.)

Claim.—1. A smelting-furnace having double walls, and a tube extending through said walls for the tuyer-opening, said tube being beaded on each side of the wall-plates, substantially as described.

2. A smelting-furnace comprising a tuyer-pipe having a hole in the bottom thereof, and a lever pivotally mounted on the under side of said pipe alongside of said hole, said lever having on one arm a plate provided with a hole adapted to register with said first-mentioned hole and having its other arm weighted, whereby said lever acts automatically to clamp a sheet of paper between the tuyer-pipe and said plate and over the holes therein, substantially as described.

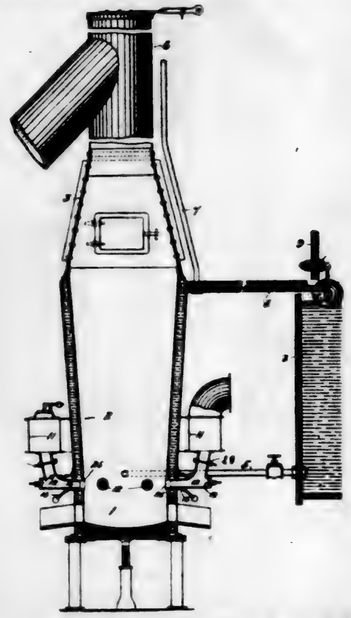

3. A smelting-furnace comprising a tuyer-pipe, an end plate therefor having an inspection-hole therein, said end plate having downwardly-converging lugs, and a wedge-shaped plate fitting in said lugs and having a hole adapted to register with the inspection-hole, and said plate being arranged to clamp a sheet of mica over the inspection-hole, substantially as described.

707,602. SMELTING-FURNACE. CHARLES LAUDELIN, St. Louis, Mo. Filed Dec. 23, 1901. Serial No. 87,576. (No model.)

Claim.—1. The combination with a smelting-furnace having hollow walls constituting a water-jacket, of a water-tank on a level therewith, a pipe connecting the lower portion of said water-tank with the lower portion of said water-jacket, and a pipe connecting the upper portion of said water-jacket with the upper portion of said water-tank, substantially as described.

2. The combination with a smelting-furnace having hollow walls constituting a water-jacket, of a water-tank, a pipe connecting the lower portion of said water-tank with the lower portion of said water-jacket, and a pipe connecting the upper portion of said water-jacket with the upper portion of said water-tank, and means for maintaining the level of water in said tank below the upper portion of said pipe, substantially as described.

3. The combination with a smelting-furnace having hollow walls constituting a water-jacket, of a water-tank, a pipe connecting the lower portion of said water-tank with the lower portion of said water-jacket, and a pipe connecting the upper portion of said water-jacket with the upper portion of said water-tank, and automatically-acting means for maintaining the level of water in said tank nearly even with the upper portion of said pipe, substantially as described.

4. The combination with a smelting-furnace having hollow walls constituting a water-jacket, of a water-tank, a pipe connecting the lower portion of said water-tank with the lower portion of said water-jacket above the bottom of said jacket, and a pipe connecting the upper portion of said water-tank with the upper portion of the water-jacket, substantially as described.

5. The combination with a smelting-furnace having hollow walls constituting a water-jacket, of a water-tank, a pipe connecting the lower portion of said water-tank with the lower portion of said water-jacket, and a pipe connecting the upper portion of said water-tank with the up-

per portion of the water-jacket, said upper pipe having a vertical branch open to the atmosphere, substantially as described.

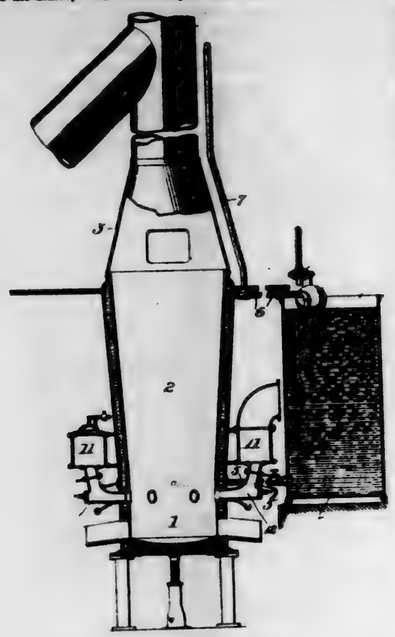

707,608. LOCKING DEVICE FOR THE OPERATING-CRANKS OF CASH-REGISTERS. CARL LAUBICH, Berlin, Germany. Filed June 5, 1900. Serial No. 19,094. (No model.)

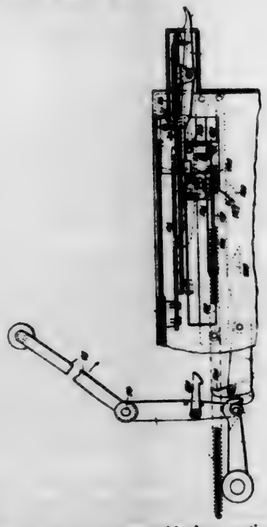

Claim.—1. The combination with the operating-crank of a cash-register, of a locking device for holding the same against movement, a slide for releasing said locking device, a spring tending to retract said slide, means for holding the slide normally advanced, and check-controlled means for releasing said holding means, substantially as described.

2. The combination with the operating-crank of a cash-register, of a locking device for holding the same against movement, a slide adapted to release said locking device on its rearward movement, a spring for drawing said slide backward, a catch-lever for holding said slide advanced against the tension of the spring and check-controlled means for holding said catch-lever normally locked, substantially as described.

3. The combination with the operating-crank of a cash-register, of a locking device for holding the same against movement, a slide adapted to release said locking device on its rearward movement, a spring for drawing said slide backward, a catch-lever for holding said slide advanced against the tension of the spring, a locking-finger engaging said catch-lever to hold it normally against movement a check-receiving space in said slide, and a finger projecting into the path of the check and operatively connected with said locking-finger, substantially as described.

4. The combination with the operating-crank of a cash-register, of a locking device therefor, a slide adapted to release said locking device, a spring tending to retract said slide, a catch-lever pivoted to the slide and engaging a rigid portion of the casing to hold the slide against movement, the rear end of said catch-lever projecting through an opening in the slide, a rock-shaft above the slide having a locking-finger engaging the rear end of said lever, said slide having a check-receiving space or guide, and a finger carried by said rock-shaft and projecting into the path of the check, substantially as described.

5. In combination with the operating-crank of a cash-register, of a locking device therefor, a slide adapted to release said locking device on its backward movement, a spring for retracting said slide, a catch-lever pivoted to the slide and adapted to project through an opening in the casing and automatically engage the edge thereof at the limit of its forward movement to prevent backward movement of the slide, the rear end of said lever projecting into an opening in the slide, a rock-shaft having a locking-arm engaging said rear end, said slide having a check-receiving space or guide, an arm or finger on the shaft projecting into the path of the check, and a hook for engaging the check when the slide is retracted whereby said check is removed from the slide on the forward movement of the latter, substantially as described.

6. The combination with the operating-crank of a cash-register, of a pivoted hook for holding said arm against movement, an oscillating lever adapted to disengage said hook, a slide adapted to oscillate said lever on the backward movement of the slide, a spring tending to retract said slide, a catch-lever normally locked against movement for holding said slide advanced against the tension of the spring, and check-controlling means for unlocking said lever, substantially as described.

7. The combination with the operating crank-shaft of a cash-register, of an arm carried by said shaft, having a pin, a pivoted hook engaging said pin, an oscillating lever, a pawl on the rear end thereof engaging said hook, check-controlled slide adapted to operate said oscillating lever to disengage the hook from the pin, and a hook-shaped pawl on the arm adapted, on one rotation of the arm to disengage the pawl from the hook, substantially as described.

8. The combination with the operating-crank of a cash-register, of a device for locking the same against movement, an oscillating lever adapted to release said locking device, a slide having a check-receiving space or guide, means released by the insertion of a check for holding said slide normally locked, a supplemental slide having a projection for operating said oscillating lever, a retracting-spring connected to said supplemental slide, a projection on the supplemental slide adapted to engage a projection on the check-carrying slide to move said check-carrying slide rearwardly, a pawl carried by the supplemental slide adapted to engage the rear face of the projection whereby forward movement of the supplemental slide secures forward movement of the main slide, and means whereby said pawl is released at a determined point to permit the supplemental slide to move forward without affecting the main slide, substantially as described.

9. The combination with the operating-crank of a cash-register, of a device for locking the same against movement, an oscillating lever adapted to release said locking device, a slide having a check-receiving space or guide, means released by the insertion of a check for holding said slide normally locked, a supplemental slide having a projection for operating said oscillating lever, a retracting-spring connected to said supplemental slide, a projection on the supplemental slide adapted to engage a projection on the check-carrying slide to move said check-carrying slide rearwardly, a pawl carried by the supplemental slide adapted to engage the rear face of the projection whereby forward movement of the supplemental slide secures forward movement of the main slide, said pawl having a straight lower edge, a guide against which the said straight lower edge bears during the rear portion of the movement of said slide, said guide having a cut-away portion to permit rocking of the pawl to disengage it from the projection on the main slide, substantially as described.

707,604. RAILROAD-CROSSING AND SWITCH FOR SAME. CHARLES LEIBENGOOD, Lawrenceburg, Ind. Filed Apr. 13, 1901. Serial No. 55,444. (No model.)

Claim.—1. In a construction where tracks cross, track B having rails substantially continuous, track A whose sections of rails between the rails A are pivotally connected to each other by parallel rods, and are adapted to turn together as a unit, and a bolt having a bolt H, a sleeve or holder J^3 therefor, a spring for advancing the bolt, the stationary mechanism the inner side of the stationary rail provided with the recess for engaging the bolt, means for operating the rail-sections located between the stationary rails, and adapted to withdraw the bolt as the rail-sections are opened away from track B, substantially as and for the purposes specified.

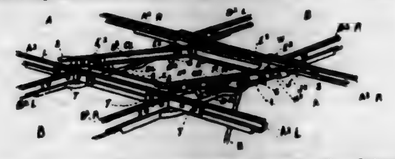

2. In a construction where tracks cross, the rail-sections between track A adapted to turn simultaneously, and provided with a locking-bolt adapted to engage a recess of the fixed mechanism, and a pivoted lever having arms adapted to alternately impinge against the mechanism of the rail-sections, each arm provided with an adjusting device for increasing or shortening its play relative to such fixed mechanism, and a connection between their lever and the locking-bolt whereby a movement of the lever unlocks the bolt, and a continued movement of the lever operates the rail-sections, substantially as and for the purposes specified.

3. In the construction of two tracks crossing one another, the combination of the continuous rails of one and the movable rail-sections of the other, these rail-sections located between the rails of the other track, the rail-sections pivoted as D^2 to their respective beds, connecting-rods E, pivoted to the rail sections, bearings O on which the sections rest, the connecting-rods each pivoted to one side of one rail-section and to the opposite or farther side of the other section, but one rod being pivoted on the inner side of one rail-section while the other rod is pivoted on the outer side of that section, means for opening and closing the rail-sections, and means for locking and unlocking these sections, substantially as and for the purposes specified.

4. In the construction of two tracks crossing one another, the combination of the continuous rails of one and the movable rail-sections of the other, these rail-sections located between the rails of the other track, the rail-sections pivoted at D^2 to their respective beds, connecting-rods E, pivoted to the rail-sections, bearings O on which the sections rest, the connecting-rods each pivoted to one side of one rail-section and to the opposite or farther side of the other section, but one rod being pivoted on the inner side of one rail-section while the other rod is pivoted on the outer side of that section, and lever M pivoted at M^2 to the rail, and having arms M^3 and M^4, each provided with an adjusting-screw M^5, a bolt H, sliding in sleeve and adapted to engage recess W, of the fixed mechanism, a spring K, for advancing the bolt, a connection H^2 between the bolt H and the sleeve J^3, substantially as and for the purposes specified.

5. In the construction of two tracks, crossing one another, the combination of the continuous rails of one track and the movable rail-sections of the other, these rail-sections located between the rails of the other track, and pivoted to their respective beds, connecting-rods pivoted to the rail-sections, a bolt H sliding in sleeve J^3 and adapted to engage the recess W located on the inside of the rail A^2, a spring for advancing the bolt, the sleeve J^3 being provided with the extension J^5 for connecting it to the rail, and means for withdrawing the bolt and moving the sections opening and closing the rail-sections, substantially as and for the purposes specified.

707,605. MACHINE FOR MAKING BASKET-WEBS. PHILLIP F. LUBY, St. Joseph, Mich. Filed Oct. 16, 1901. Serial No. 78,229. (No model.)

Claim.—1. In a machine for use in making baskets, the combination of a hopper or holder in which strips of material are held flatwise one upon another, and a rotary member carrying automatically-actuated pins or fingers adapted and arranged for engaging and successively releasing said strips of material and distributing or arranging the same in suitable web form upon the top of said rotary member, substantially as described.

2. In a machine for making basket-webs, the combination of means for properly holding the strips of material, rotary means for distributing and arranging the strips of material in suitable web form, said distributing means comprising a plurality of automatically-actuated pins or fingers adapted and arranged to engage and successively release the said strips of material, the relative movement between the said pins or fingers and the means for supporting the strips of material causing each released strip of material to stand at an angle with reference to the remaining or unreleased strips, and means for causing the desired rotary movement on the part of said distributing means, the axis of such rotary movement extending transversely through the center of the strips of material, substantially as described.

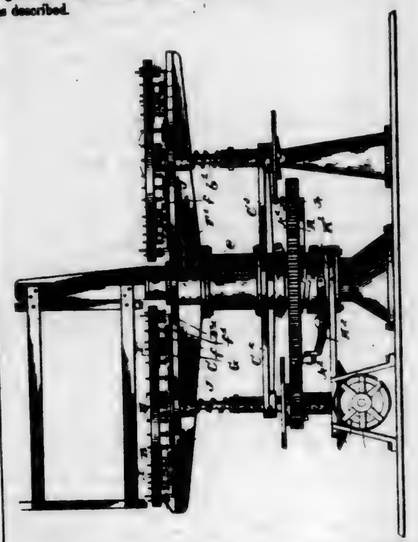

3. An automatic machine for distributing and arranging suitable strips of material in suitable web form, comprising a holder adapted to hold the strips of material in a superimposed condition, or one on top of the other, a plurality of automatically-actuated pins or fingers adapted and arranged in position to engage and successively arrange or position the said strips of material, and pivotal connections whereby to permit relative rotary movement between the said holder and the said pins or fingers, said rotary movement being about an axis extending transversely through the stock of superimposed slats or strips of material, said strips of material when released from the holder being arranged crosswise to provide a basket-web of substantially disk form, substantially as described.

4. In a machine for making basket-webs, the combination of a holder for holding the strips of material, a rotary table adapted to receive the said strips of material, pins or fingers mounted upon said rotary table, and a cam for automatically engaging and operating said pins or fingers, so as to automatically remove the strips of material from the bottom of said holder, substantially as described.

5. In a machine for making basket-webs, the combination of a holder for holding the strips of material, a rotary table adapted to receive the said strips of material, pins or fingers projecting upwardly from said table, means for actuating said pins, said actuating means being adapted to cause two of said pins or fingers to rise at a time, so as to engage and remove the lowermost strip of material from the said holder, and suitable gearing for rotating said table, substantially as described.

6. In a machine for making basket-webs, the combination of a suitable hopper or holder for holding the strips of material, a rotary table adapted and arranged to rotate about a vertical axis below said hopper or holder, upwardly-projecting pins or fingers suitably mounted for vertical reciprocation in the rim or peripheral portion of said table, springs for keeping said pins normally depressed, cams for automatically raising said pins, said cams being adapted and arranged to raise two of said pins at a time, the upper ends of the pins thus actuated or raised engaging the lowermost strip of material in said hopper or holder, gearing for rotating said table, and a clutch for automatically disconnecting the driving power from said table, substantially as described.

7. A machine for making basket-webs comprising a plurality of rotary tables, suitable means for holding the strips of material in a superimposed condition, means for rotating one table at a time, each table being provided with upwardly-projecting pins or fingers, said pins being adapted to engage the lowermost strip of material, a carrier for intermittingly and successively bringing said tables into position to receive a suitable number of said strips of material, suitable cams or actuating devices for actuating said pins or fingers, the rotation of either table causing the pins or fingers of such table to rise two at a time, so as to release the lowermost strip of material and deposit the same upon the surface of the rotating table, suitable means for rotating said table and also said ta-

blo-carrier, and suitable clutch devices for automatically connecting and disconnecting the power to and from said table and table-carrier, substantially as described.

8. A machine for making basket-webs, comprising a suitable hopper or holder for holding the strips of material, a pair of rotary tables mounted for rotation upon a rotary table-carrier, upwardly-projecting pins or fingers carried by each rotary table, cams or actuating devices adapted to engage the lower ends of said pins, the upper ends of said pins being adapted to engage the lowermost strip of material in said hopper or holder, stems or spindles on said tables, clutch members carried by said stems or spindles, a power device provided with a constantly-rotating clutch member, the clutch member carried by the table stems or spindles being adapted to alternately engage the said lower clutch member which is constantly rotating, suitable gearing between said power device and said table-carrier, a suitable clutch device between said gearing and said table-carrier, and means for automatically operating said clutch, so as to automatically disconnect the power from the rotating table and at the same time automatically connect the power with the rotary table-carrier, so as to stop the rotation of the table and start the rotation of the table-carrier, the two tables thereby being interchanged, substantially as described.

9. In a machine for making basket-webs, the combination of means for suitably holding the strips of material, a rotary table adapted to receive the said strips of material, upwardly-projecting pins or fingers carried by said table, suitable cams for engaging the lower ends of said pins, said cams being shiftable toward and away from the center of said table, so as to prevent the said pins from being engaged in direct succession, substantially as described.

10. In a machine for making basket-webs, the combination of suitable means for holding the strips of material, a rotary table adapted to receive said strips of material, suitable pins or fingers projecting upwardly from said table, said pins or fingers being arranged in a plurality of sets or series, cams for engaging the lower ends of said pins or fingers, said cams causing the fingers to move upwardly and engage the lowermost strips of material, rotary cams shifting said cams which actuate the said pins or fingers, such shifting or moving of the finger-actuating cams causing the latter to engage and operate said sets or series of fingers in succession, and means whereby the rotation of said table will cause the said rotary cams to turn or rotate to the desired extent, substantially as described.

11. In a machine for making basket-webs, the combination of a suitable holder or hopper for holding the strips of material, a rotary table adapted to receive said strips of material, suitable pins or fingers projecting upwardly from said table, said pins or fingers being arranged in a plurality of sets or series and having their upper ends adapted to engage the lowermost strips of material, actuating devices for forcing said pins upward, rotary cams for shifting said actuating devices in a direction toward and away from the center of said table, so as to cause the different sets or series of fingers to be operated in succession, finger-wheels rigid with said rotary cams, and projections on said table adapted to engage the fingers of said finger-wheels, so as to rotate said cams, substantially as and for the purpose set forth.

12. In a machine for making baskets, the combination of a holder and of a plurality of pins or fingers, the said holder and the said pins or fingers being constructed and arranged for relative movement, so as to cause the strips of material to be deposited or arranged in the desired manner, and the said pins or fingers being arranged in a plurality of sets or series, and means for operating the sets in succession, substantially as described.

13. In a machine for making basket-webs, the combination of suitable means for holding strips of material, rotary means for causing the said strips of material to arrange themselves in suitable web form, and a plurality of pins or fingers adapted and arranged to engage and determine the relative positions of the said strips of material, said pins or fingers being arranged in a plurality of sets or series, and means for operating the different sets or series successively, substantially as described.

14. In a machine for making basket-webs, the combination of a holder for holding the strips of a material in a superimposed condition, a plurality of suitably-actuated pins or fingers for engaging and determining the relative positions of the strips of material, said pins or fingers being arranged in a plurality of sets or series, and a rotary member for causing relative movement between the said holder and the said pins or fingers, so as to cause the said strips of material to arrange themselves in suitable web form, the said rotary means being adapted to rotate a number of times for the purpose of operating the different sets or series of fingers in succession, thereby effecting the desired arrangement of the strips of material forming the web, substantially as described.

15. In a machine for making basket-webs, a rotary table adapted and arranged to receive and hold the strips of material and provided with means for determining the relative positions of said strips, and a hopper arranged above said table and adapted to hold a stack or bundle of strips, the strips then held in the hopper being successively released therefrom by the said means for determining the relative positions of the strips, substantially as described.

16. In a machine for making basket-webs, the combination of a holder for suitably holding the strips of material, rotary means for causing the strips of material to arrange themselves in suitable web form, and a series of devices for placing the strips and determining the proper relative positions of the latter, said rotary means being adapted and arranged for a plurality of rotations in effecting the desired arrangement or disposition of the strips of material forming the web, substantially as described.

17. A machine for forming webs for baskets, consisting of a frame, means for supporting a stack of staves and for imparting a relative circular motion around the transverse center of the stack to one or more staves in such stack, and means for automatically successively restraining one or more staves in such stack in successive series.

18. In a machine for making basket-webs in which the slats or strips of material are arranged crosswise to the form of a web or disk, the combination of a member adapted to hold the slats or strips of material in a superimposed or one-on-top-of-the-other condition, the slats or strips of material in this condition being parallel and in the form of a stack, automatically-actuated devices adapted to engage said slats or strips of material and successively release them from the position in which they are held by the said member, and pivotal connections whereby to permit of a relative rotary movement between said member and said automatically-actuated devices for engaging the slats or strips of material, such rotary movement being about an axis extending transversely through the stack or bundle of slats or strips of material.

707,606. TROLLEY FOR USE IN ELECTRIC TRACTION. JOHN G. LAYCOCK, Sheffield, England. Filed Dec. 14, 1901. Serial No. 85,896. (No model.)

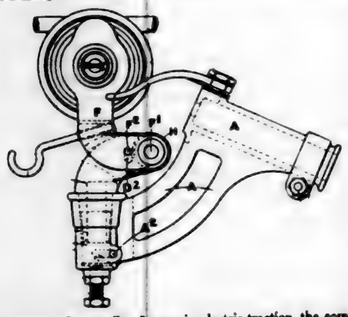

Claim.—1. In a trolley for use in electric traction, the combination of a socket, a spindle therein, a lever pivoted to said spindle, a spring acting between the spindle and the lever and a trolley-wheel mounted on the lever, for the purpose set forth.

2. In a trolley for use in electric traction the combination of a socket, a spindle therein bent above the socket, a bent lever pivoted to the spindle, a spring acting between the spindle and lever and a trolley-wheel mounted on the lever for the purpose set forth.

3. In a trolley for use in electric traction the combination of a socket, a spindle therein, a lever pivoted to the spindle, a spring acting between the spindle and lever, a trolley-wheel mounted on the lever and a hook on the lever for operating the boom for the purpose set forth.

4. In a trolley for use in electric traction the combination of a socket, a spindle therein, a lever pivoted to the spindle, a spring acting between the lever and spindle, a trolley-wheel mounted on the lever, and a fork mounted adjacent to and embracing the trolley-wheel for the purpose set forth.

5. In a trolley for use in electric traction the combination of a socket, a spindle therein, a lever pivoted to the spindle, a spring acting between the spindle and lever, a trolley-wheel mounted on the lever, a hook on the lever for operating the boom, and a fork mounted adjacent to and embracing the trolley-wheel for the purpose set forth.

6. In a trolley for use in electric traction the combination of a socket, a spindle therein, a lever pivoted to the spindle, a spring acting between the spindle and lever, a trolley-wheel mounted on the lever, a circumferential groove extending partially around the spindle and a pin engaging the groove by passing through a hole in the socket for the purposes set forth.

7. In a trolley for use in electric traction the combination of a conical socket, a conical spindle therein a lever pivoted to the spindle, a spring acting between the spindle and lever, a trolley-wheel mounted on the lever and an adjustable pivot-point at the bottom of the socket for the purpose set forth.

8. In a trolley for use in electric traction the combination of a conical socket, a conical spindle therein a lever pivoted to the spindle, a spring acting between the spindle and lever, a trolley-wheel mounted on the lever, a circumferential groove extending partially around the spindle, a pin passing through the socket and engaging the groove and an adjustable pivot-point at the bottom of the socket for the purpose set forth.

9. In a trolley for use in electric traction the combination of a conical socket, a conical spindle therein, a lever pivoted to the spindle, a spring acting between the spindle and lever, a trolley-wheel mounted on the lever, a hook on the lever for operating the boom, a fork mounted adjacent to and embracing the trolley-wheel, a circumferential groove extending partially around the spindle, a pin passing through the socket and engaging the groove and an adjustable pivot-point at the bottom of the socket for the purpose set forth.

707,607. SHIP'S STEERING APPARATUS. MAURICE B. LOWELL, Beverly, Mass. Filed Jan. 17, 1902. Serial No. 90,206. (No model.)

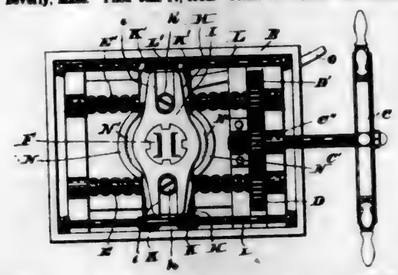

Claim.—1. In a ship's steering apparatus, a rudder-post having secured to it a toothed ring M, in combination with pivoted levers N, N, having toothed inner surfaces adapted to be interlocked with said toothed ring, a pivoted brake-lever O, connected to the levers N, N, as described and means for adjusting and securing said brake-lever in position substantially as and for the purpose set forth.

2. In a ship's steering apparatus, a rudder-post, a wheel-box inclosing the same and a removable cover combined with a rudder-indicator journaled in said cover and detachably connected to the rudder-post substantially as and for the purpose set forth.

707,608. STAIR-PAD. MARTIN H. MARCUS, New York, N. Y. Filed Dec. 13, 1901. Serial No. 85,750. (No model.)

Claim.—1. A stair-pad comprising two connected layers of cloth or other flexible sheet material forming a pocket, stuffing within said pocket, quilting which extends through the stuffing and said two layers, and a stiffener arranged exteriorly of said pocket and covering the quilting on the outer face of one of said layers.

2. A stair-pad comprising three layers of cloth or other flexible sheet material connected at one end and located in superposed, substantially parallel planes, and forming two separate pockets between them, stuffing in one of said pockets, quilting which extends only through said stuffing and through the two layers which inclose it between them, but not through the other pocket, and a stiffener located in said other pocket so as to cover the quilting on the middle layer.

3. A stair-pad comprising three superposed layers of cloth or other flexible sheet material connected at one end and forming two separate pockets, stuffing in one of said pockets, a stiffener in the other pocket, additional stuffing between the stiffener and the central layer, and quilting which extends through the stuffing in the first-named pocket and terminates at the central layer so as to be covered by the stuffing in the pocket which contains the stiffener.

4. A pad comprising two connected pieces of cloth or other flexible sheet fabric one of which is about twice as wide as the other, the wide piece being doubled to form two layers, one of which has a projecting flap, stuffing between the narrow piece and the flap layer of the wide piece, and a stiffener between the narrow piece and the other layer of the wide piece, the flap of the wide piece extending over the end of the stiffener and over the free ends of the two flexible pieces.

5. A pad comprising three layers of cloth or other flexible sheet material, one of said layers having a projecting flap at its free edge, stuffing between the upper and middle layers, and a stiffener between the lower and middle layers, the said flap being bent around and over the end of the stiffener and the adjacent portions of the other layers.

6. A pad comprising three layers of cloth or other flexible sheet material, one of said layers having a projecting flap at its free edge, quilted stuffing between the upper and middle layers, and a stiffener located between the lower and middle layers, and bent at one end to form a nose for the pad, the said flap being bent around and under the nose of the pad.

7. A pad comprising three layers of flexible sheet material connected to form two pockets and having their raw edges at the seams located within the pad so that they will not be exposed to view, quilted stuffing in one of said pockets and a stiffener in the other pocket.

8. A pad comprising three layers of flexible sheet material stitched together along their sides and having their raw edges arranged interiorly of the pad, said three layers forming two pockets, stuffing located in one of said pockets and a stiffener located in the other pocket and bent at one of its ends to form a nosing for the pad.

707,609. DEVICE FOR HOLDING SPRING-ACTUATED CURTAINS. JOSEPH H. MILAM, Washington, D. C., assignor to Curtain Supply Company, Jersey City, N. J., and Chicago, Ill., a Corporation of New Jersey. Filed May 25, 1901. Serial No. 61,897. (No model.)

Claim.—1. A head for shade-holding fixtures of the character described provided with a friction-surface comprising an endless band arranged to have a portion projecting beyond the head, and means on the head for carrying the band; substantially as described.

2. In a curtain-holding device, the combination with a shade-stick and a fixed guide, of a friction-head carried by the stick having rollers in its opposite ends, an endless band extending around the rollers and projecting beyond the guide, and means for creating a frictional engagement between the stationary guide and the endless band; substantially as described.

3. In a curtain-holding device, the combination with a shade-stick and a fixed guide, of a friction-head carried by the stick having rollers at its opposite ends, an endless band extending around the rollers and projecting beyond the guide, means for creating a frictional engagement between the stationary guide and the endless band, and an intermediate support for the band; substantially as described.

4. A head for shade-holding fixtures provided with separated guides, and a revolubie friction-band adapted to work around said guides and projecting outwardly slightly beyond the plane of the end of the head; substantially as described.

5. A shade-holding fixture comprising a stick adapted to be attached to the shade, heads at the opposite ends of the stick, a friction-band carried by each head, and adjusting means for imparting the desired holding-pressure to the bands; substantially as described.

6. A shade-holding fixture comprising a stick adapted to be attached to the shade, oppositely-disposed heads at the ends of the stick, separated guides in each head, and a band carried by each head and adapted to move longitudinally thereof around said guides; substantially as described.

7. A shade-holding fixture comprising a stick adapted to be attached to the shade, oppositely-disposed heads at the ends of the stick, separated guides in each head, a band carried by each head and adapted to move longitudinally thereof around said guides, and adjusting means for imparting the desired holding-pressure to the bands; substantially as described.

8. A shade-holding fixture comprising a stick adapted to be attached to the shade, oppositely-disposed heads at the ends of the stick, guide-rollers at the ends of each head, a friction-band carried by each head and

adapted to move longitudinally thereof around said rollers, and means for imparting to said bands the desired holding-pressure; substantially as described.

9. In combination with a stick adapted to be attached to a shade, holding means including a head carried by the stick and provided with separated guides, and a friction-band adapted to work over said guides substantially as described.

10. In combination with a stick adapted to be attached to a shade, holding means including a head carried by the stick and provided with separated guides, and a revolable flat friction-band adapted to work over said guides; substantially as described.

11. In combination with a stick adapted to be attached to a shade, holding means including a head carried by the stick and provided with a flat movable friction-band, and guiding means for said band; substantially as described.

12. In combination with a stick adapted to be attached to a shade, holding means including a head carried by the stick and provided with a friction-band movable independently of the head; substantially as described.

13. In combination with a stick adapted to be attached to a shade, holding means including a head carried by the stick and provided with a friction device adapted to travel along the face of the head when the stick is moved up or down; substantially as described.

707,610. CARRYING DEVICE. JULIUS MOELLER, Moscow, Russia. Filed Aug. 23, 1901. Serial No. 72,861. (No model.)

Claim.—In combination, a belt, shoulder-straps crossing at the back and secured to the back of said belt at their rear ends, adjustable connections between the front ends of said straps and the front portion of said belt, an adjustable connection for the ends of said belt and loops connected to said belt and comprising a pair of straps A secured one to each side of the belt where it rests on the hips and a second pair of straps *i* secured to the belt near the adjoining ends, said straps A and *i* having means for detachably connecting their free ends, substantially as described.

707,611. SAND-SCREEN FOR WELL-TUBES. CLEOPHAS MONJEAU, Middletown, Ohio. Filed Feb. 25, 1902. Serial No. 95,549. (No model.)

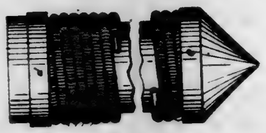

Claim.—1. A "tube-point" sand-screen for tube-wells, consisting of a perforated cylindrical core having spirally wound thereon a hollow strip of any suitable cross-section, leaving a substantially continuous spiral opening between contiguous edges, said strip being provided with external channels communicating with said spiral opening, and a binding element extending through the spiral opening and holding the coil, substantially as set forth.

2. A "tube-point" sand-screen for tube-wells consisting of a perforated cylindrical core having spirally wound thereon a continuous tubular coil of wire, and a binding-wire extending longitudinally through the coil, substantially as set forth.

3. A "tube-point" sand-screen for tube-wells consisting of a perforated cylindrical core having spirally wound thereon a continuous tubular coil of wire, said coil containing an interior binding-wire of less diameter than the opening through the coil, substantially as set forth.

707,612. PAGE-PRINTING TELEGRAPH. GIUSEPPE MUSSO, S. Angelo del Lombardi, Italy. Filed July 3, 1901. Serial No. 67,054. (No model.)

Claim.—1. In a printing-telegraph, the combination with a main line or circuit and transmitting means for producing electrical impulses of different strength therein, of a receiver comprising an armored solenoid rotatably mounted and adapted to take different positions corresponding to the intensity of the impulse or current, a circuit-closing arm operatively connected with said solenoid, and type-writer-operating circuits controlled by the movement of said arm, substantially as described.

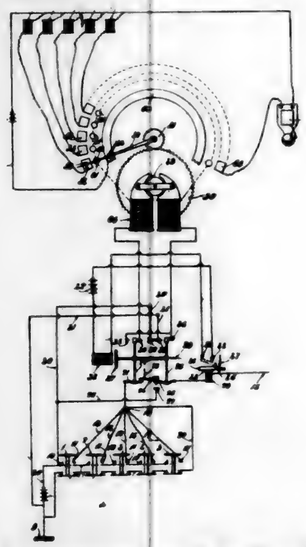

2. In a printing-telegraph, the combination with a main line or circuit and transmitting means for producing electrical impulses of different strength therein, of a receiver comprising an electromagnet included in said circuit, a solenoid rotatably mounted in proximity thereto and designed to be operated according to the strength of the electrical impulse, a contact-carrying arm operatively connected with said solenoid, type-writer-operating circuits controlled by said arm, an auxiliary circuit and battery, and means operated by the initial current on the main line for connecting said auxiliary circuit with the magnet, substantially as described.

3. In a printing-telegraph, the combination with a main line or circuit and transmitting means for producing electrical impulses of different strength therein, of a receiver comprising an electromagnet included in said circuit, a solenoid rotatably mounted in proximity thereto and designed to be operated according to the strength of the electrical impulse, a contact-carrying arm operatively connected with said solenoid, type-writer-operating circuits controlled by said arm, an auxiliary circuit and battery, and means controlled by the initial current in said main line for reversing the flow of current through said magnet and reinforcing it by said auxiliary battery, substantially as described.

4. The combination with the main line of a combined transmitter and receiver comprising a plurality of keyboard-controlled contacts, variable resistances interposed between said contacts and the line, an electromagnet 66 having electrical connection with the line, current-reversing means included in said connections, an electromagnet 38 for operating reversing means, means controlled by the initial current on the main line for energizing said magnet 38, type-writer-controlling circuits and means whereby the varying impulses in said magnet 66 operates said controlling circuits substantially as described.

707,618. ENDLESS CONVEYER. WILLIAM I. MCCABE, Seattle, Wash. Filed Nov. 21, 1901. Serial No. 83,207. (No model.)

Claim.—1. An endless conveyer, comprising a suitable framework, a single cable carried thereby, pulleys at either end of said framework, the said cable being wound a number of times about said pulleys and forming a continuous carrier-belt, a similar cable forming a belt and interlacing with said first-mentioned cable on one of its pulleys, and means for imparting motion to said interlacing cable, substantially as described.

2. In an endless conveyer, the combination with a suitable framework, of a circumferentially-grooved pulley mounted at each end of said framework, one of said pulleys having a greater number of circumferential grooves than the other, a series of strands of cable passed over and moving within the grooves of said pulleys, a belt composed of a number of strands of cable passed about and operating within some of the circumferential grooves in one of said pulleys and interlacing with said first-mentioned cable, substantially as described.

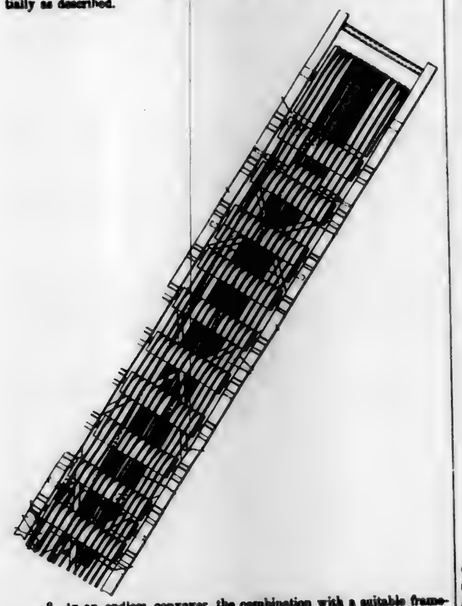

3. In an endless conveyer, the combination with a suitable framework, of a circumferentially-grooved pulley mounted at each end of said framework, a continuous cable passed over said pulleys, a circumferentially-grooved pulley mounted within said framework, means for imparting motion thereto, and a continuous cable moving within the grooves of said last-mentioned pulley and passed about and operating within circumferential grooves in one of said end pulleys and interlacing with said first-mentioned cable, substantially as described.

4. In an endless conveyer, the combination with a suitable framework, of a pulley mounted at one end thereof and provided with a plurality of circumferential grooves, a pulley mounted at the opposite end of said framework and provided with similar grooves on the same vertical plane, and also provided with a plurality of similar grooves spaced between said first-mentioned grooves, a continuous carrier-belt carried by said pulleys and formed of a single cable moving within the grooves of said pulleys on the same plane, and a second belt formed of a single cable moving within said second-mentioned grooves, and means for imparting motion to said second-mentioned belt, substantially as described.

706,614. DRIVING MECHANISM FOR PORTABLE ELECTRIC CONVEYERS. WILLIAM I. MCCABE, Tacoma, Wash. Filed Dec. 17, 1901. Serial No. 86,201. (No model.)

Claim.—1. A portable conveyer comprising a suitable frame, an endless conveyer-belt mounted upon the same, a driving-drum mounted within said frame transversely thereof, a tension-drum also mounted transversely of the frame within the same, and spaced from said driving-drum longitudinally of the frame, the said belt being passed over one end of the frame, over the driving-drum and then lapped upon itself in an opposite direction to that of its general movement, and passed over the tension-drum, and then passed in the direction of its general movement to the opposite end of the frame, and means for moving said tension-drum bodily longitudinally of said frame, substantially as described.

2. A portable conveyer comprising a suitable frame, an endless belt mounted thereon, means for driving said belt, a pulley mounted in said frame and engaging a portion of said belt for directing the same in opposite direction to that of its general movement, and means for adjusting said last-mentioned pulley longitudinally of said frame for increasing or decreasing the distance of said movement, whereby the tension of said belt may be governed, substantially as described.

3. A portable conveyer comprising a suitable frame, an endless conveying-belt, pulleys for supporting the belt on the frame, an actuating-drum and a tension-drum also engaging the said belt at a point near the center of the conveyer-frame, a motor mounted centrally in the said frame and geared directly to the actuating-drum whereby the device is well balanced, substantially as described.

4. In a portable conveyer, the combination with a frame and an endless conveyer-belt, of an actuating-pulley and a tension-pulley engaging said belt, bearing-boxes engaging the journals of said tension-pulley, the said bearing-boxes being mounted in the frame, slidable longitudinally thereof and bolts secured to said boxes for adjusting the same longitudinally of the frame, whereby the tension of the belt may be controlled, substantially as described.

5. A portable conveyer comprising a suitable frame, an endless conveyer-belt mounted thereon, a driving-drum actuating said belt, means for driving said drum, a tension-drum engaging said belt, journal-boxes slidably mounted in said frame, and carrying the journals of said tension-drum, and means for adjusting said journal-boxes for moving said tension-drum, substantially as described.

707,615. CUFF-HOLDER. SPENCER MCCAY, Topeka, Kans. Filed Dec. 30, 1901. Serial No. 87,793. (No model.)

Claim.—1. In combination, a member having a jaw extended therefrom at about a right angle, a second member movable toward and from the first-mentioned member and having a part projected therefrom at approximately a right angle and comprising an inclined portion and a jaw, the said inclined portion riding upon a part of the first-described member to effect an opening and a closing of the jaws in a direction at a right angle to the plane of movement of the said members, substantially as described.

2. In combination, a member having a jaw extended therefrom at about a right angle, and a second member movable toward and from the first-mentioned member and having a part projected therefrom at approximately a right angle and comprising an inclined portion, a jaw and a stop between said inclined part and jaw, the said inclined portion riding upon a part of the first-mentioned member to effect an opening and a closing of the jaws in a direction at a right angle to the plane of movement of the said members and the said stop limiting the outward movement of the members when the jaws are closed, substantially as specified.

3. In combination, a member having a jaw, extended therefrom at about a right angle, and a second member movable toward and from the first-mentioned member and having a part projected therefrom at approximately a right angle and comprising an inclined portion, an oppositely-inclined jaw and a crimp between the said inclined part and jaw to form a stop for limiting the outward movement of the said members, the jaws

opening and closing in a direction at a right angle to the plane of movement of the said members by the inclined part riding upon the first-mentioned member when the said members are moved laterally, substantially as set forth.

4. In combination, a member having a jaw extended therefrom at about a right angle, and having a guide in line with said jaw, and a second member movable toward and from the aforementioned member and having a part projected therefrom at approximately a right angle and comprising a jaw and an inclined part, the latter adapted to operate in the guide to effect an opening and a closing of the jaws in a plane at a right angle to the plane of movement of the said members, substantially as specified.

5. In combination, a member having a jaw extended therefrom at about a right angle and composed of spaced parts, and having an eye in line with the space between the parts of the jaw to form a guide, and a second member having a part projected therefrom at approximately a right angle and comprising a jaw to enter the space between the parts of the first-mentioned jaw and an inclined portion mounted in the said guide and adapted to effect an opening and a closing of the jaws in a direction at a right angle to the plane of movement of the members, substantially as described.

6. A cuff-holder constructed of a single length of wire and comprising a button for engagement with the cuff, spring members, a jaw and guide at the end of one of the said members, oppositely-inclined parts at the end of the other member, one of said inclined parts constituting a jaw and the other mounted to reciprocate in the said guide to effect an opening and a closing of the jaws by a lateral movement of the members, and a crimp between the said oppositely-inclined parts to form a stop, substantially as set forth.

707,616. SHARPENER FOR MOWER OR REAPER KNIVES. SPENCER MCCAY, Topeka, Kans. Filed Jan. 10, 1902. Serial No. 89,192. (No model.)

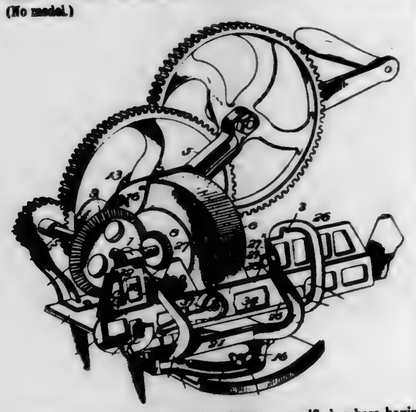

Claim.—1. In a machine of the character specified, a base having lugs, a swinging frame comprising arms and a connecting tie-bar, the latter having extensions forming journals mounted in the aforesaid lugs, and a clamp carried by the swinging frame, substantially as set forth.

2. In a machine of the character described, a clamp for the work comprising a frame, spaced jaws coöperating with the frame, and means for simultaneously operating both jaws to effect a gripping of the work, substantially as set forth.

3. In a machine of the character described, a clamp for the work comprising a frame, spaced jaws coöperating with the frame, a tie connecting the jaws, and means for applying force to the said tie to effect a simultaneous operation of the jaws, substantially as set forth.

4. In a machine of the type specified, a clamp for the work comprising a frame, spaced jaws coöperating with the frame for gripping the work, a spring-tie connected to the jaws for simultaneous operation, and means for applying pressure to the spring-tie, substantially as and for the purpose set forth.

5. In a machine of the character described, a clamp for the work comprising a frame, spaced jaws, a tie having loose connection with each of the jaws to effect simultaneous movement thereof and permit each to adapt itself to any variation in thickness of the work to be clamped, and means for applying pressure to the said tie, substantially as set forth.

6. In a machine of the character described, a clamp comprising a frame, spaced jaws coöperating with the frame, a rod or bar having its ends seated in notches or depressions of the said jaws, and means for applying force to the said tie to effect simultaneous actuation of the jaws, substantially as set forth.

7. In a clamp, a frame, spaced jaws having pivotal connection with the frame and comprising elbow-shaped portions and having seats in the elbows closed at their outer ends by reinforcing-plates, a tie rod or bar having its ends fitted in said seats, and means for applying pressure to the said tie to effect simultaneous movement of the jaws, substantially as set forth.

8. In a clamp, a frame having slots, spaced jaws having a portion passed through the said slots and notched to make pivotal connection therewith, a tie rod or bar connecting the jaws, and means for applying pressure to said tie, substantially as specified.

9. In a clamp, a frame, spaced jaws pivotally mounted upon the frame, a tie rod or bar connecting said jaws, and a cam-lever pivotally attached to the frame and adapted to exert a pressure upon the tie-rod intermediate of its ends, substantially as set forth.

10. In a grinding-machine, and in combination with the bed provided with a rotary grinder, a base mounted upon the bed for angular adjustment, means for securing the base in the required position, a swinging frame mounted upon the base, and a clamp having adjustable pivotal connection with the swinging frame and having its upper portion cut away intermediate of its ends, substantially as and for the purpose set forth.

707,617. TARGET. JOHN L. MCCULLOUGH, Brooklyn, N. Y. Filed June 15, 1901. Serial No. 64,635. (No model.)

Claim.—1. A target for a target apparatus having a face-plate, a movable indicator adapted to move in and out from behind said plate, a lever which actuates said indicator, means for holding said indicator out of sight, normally, behind said face-plate, and an electromagnet which moves the lever in the direction to expose said indicator to view, substantially as set forth.

2. A target having superposed plates with spaces between them, an electromagnet, its armature, its armature-lever, its spring, and a disk carried by said armature-lever and adapted to move into and out of view in a space between said plates by the movements of said lever and its spring, substantially as set forth.

3. A target having a face-plate, a movable disk adapted to move in and out from behind said plate, a lever which actuates said disk, a spring which moves said lever in one direction, and an electromagnet which moves it in the opposite direction, substantially as set forth.

4. A target for a target apparatus comprising the superposed and separated face-plates 11, 12 and 13, a frame supporting same, electromagnets mounted in the frame back of said plates, the armatures, armature-levers of said magnets, the springs of said levers, and indicators carried by the respective armature-levers and held normally behind the respective face-plates by said springs and the electromagnets adapted to move the indicators into view, substantially as set forth.

707,618. DUMPING-WAGON. WILLIAM MCINTOSH, Clinton, Mass. Filed Dec. 21, 1901. Serial No. 86,748. (No model.)

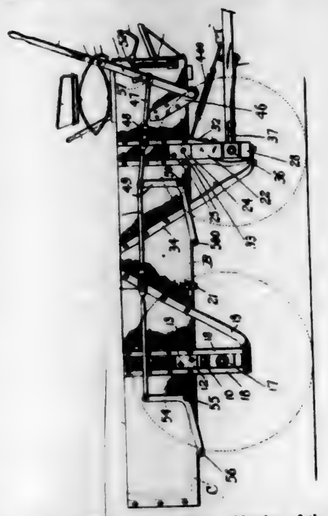

Claim.—1. In a dumping-wagon, the combination of the wagon-body, front and rear axles rigidly secured thereto without a reach or intermediate connection, and a dumping-board pivoted on each axle construction.

2. In a dumping-wagon, the combination of the wagon-body, front and rear axles secured thereto without a reach or intermediate connection, axle-blocks pivoted to the front axle, and a dumping-board pivoted on each axle construction.

3. In a dumping-wagon, the combination of the wagon-body, front and rear axles secured thereto, axle-blocks pivoted to the ends of the front axle, a pole pivoted to the front axle and connected to operate the axle-blocks, and a dumping-board pivoted on each axle construction.

4. In a dumping-wagon, the combination of the wagon-body, front and rear axles secured thereto, axle-blocks pivoted to the front axle, arms extending from said axle-blocks, a pole pivoted to the front axle, connections from the pole to the axle-blocks, and a dumping-board pivoted on each axle construction.

5. In a dumping-wagon, the combination of the wagon-body, a rocker-bolster connected thereto, a rear axle supporting said rocker-bolster, a front-axle construction comprising a bolster secured to the wagon-body, and a dumping-board pivoted on each of said bolsters.

6. In a dumping-wagon, the combination of the wagon-body, a rocker-bolster secured thereto, a rear axle supporting said rocker-bolster braces extending down from the wagon-body on each side of the rear axle, a front-axle construction, and a dumping-board pivoted on each axle construction.

7. In a dumping-wagon, the combination of the wagon-body, a rocker-bolster secured thereto, a rear axle supporting said rocker-bolster, rods extending down from said wagon-body and bearing on each side of said rear axle, a brace-bar connected to the ends of said rods and to the wagon-body, a front-axle construction, and a dumping-board pivoted on each of said axle constructions.

8. In a dumping-wagon, the combination of the wagon-body, a rear axle construction, a front-axle construction comprising a bolster, a supplemental bolster, blocks separating said bolster and said supplemental bolster, a pole connected to said bolsters, axle-blocks pivoted between the ends of said bolster and said supplemental bolster, connections from the same to the pole, and a dumping-board pivoted on each axle construction.

9. In a dumping-wagon, the combination of the wagon-body, front and rear axles secured thereto without a reach or intermediate connection, a dumping-board pivoted on each axle, a lever pivoted on the wagon-body, bell-crank levers connected to operate the dumping-boards, and connections from the lever to operate the bell-crank levers.

10. In a dumping-wagon, the combination of the wagon-body, front and rear axles secured thereto without a reach or intermediate connection, a dumping-board pivoted on each axle, a shaft mounted in brackets secured to the wagon-body, a handle or operating-lever on said shaft, bell-crank levers pivoted to each side of the wagon-body, rods connected thereto to support the rear ends of the dumping-boards, a handle on said shaft, and connections therefrom to said bell-crank levers, a lever on the other end of the shaft, and connections therefrom to the other set of bell-crank levers.

11. In a dumping-wagon, the combination of the wagon-body, front and rear axles secured thereto without a reach or intermediate connection, a dumping-board pivoted on each axle, a shaft mounted in brackets secured to the wagon-body, a handle or operating-lever on said shaft, bell-crank levers pivoted to the sides of the wagon-body, and having rods supporting the rear ends of the dumping-boards, a handle on said shaft, connections to said bell-crank levers, and a catch for holding said handle in position to keep the dumping-boards in horizontal position.

12. In a dumping-wagon, the combination of the wagon-body, front and rear axles secured thereto, dumping-boards pivoted on said axles, an operating-handle made in two sections pivoted together, a locking-pin for locking the two sections of the handle together, and connections from the handle to the dumping-boards.

707,619. HERNIAL TRUSS. JOSEPH H. MCKAGUE, Columbia Heights, Minn. Filed Mar. 24, 1902. Serial No. 99,653. (No model.)

Claim.—1. The combination with a truss-pad having an oblong opening in its body, of a plate secured to one side of the pad and covering the opening, a screw adapted to turn in said plate without moving axially, and an oblong auxiliary pad in said opening provided with a tapped socket to receive the screw, whereby the auxiliary pad may be adjusted axially toward or away from the main pad, substantially as set forth.

2. The combination with an oblong truss-pad having an oblong opening in its body and having one of its surfaces flat and the other rounded and tapering from thicker middle and lower portions to thinner and narrower upper portions, of a plate secured to said flat surface and covering said opening, a screw adapted to turn in said plate without moving axially, and an oblong auxiliary pad in said opening provided with a tapped socket to receive the screw, whereby the auxiliary pad may be adjusted axially toward or away from the main pad, substantially as set forth.

3. The combination with a pad-plate, of an oblong pad adjustably secured thereon and having its contact-surface flat and its other surface rounded and tapering from thicker middle and lower portions to thinner and narrower upper portions and having an opening in its body, a plate secured to said flat surface and covering said opening, a screw adapted to turn in said plate without moving axially, and an oblong auxiliary pad in said opening provided with a tapped socket to receive the screw, substantially as set forth.

707,620. MACHINE FOR APPLYING COATINGS. JOSEPH B. MCKEOWN, Union Hill, N. J. Filed Oct. 18, 1901. Serial No. 79,166. (No model.)

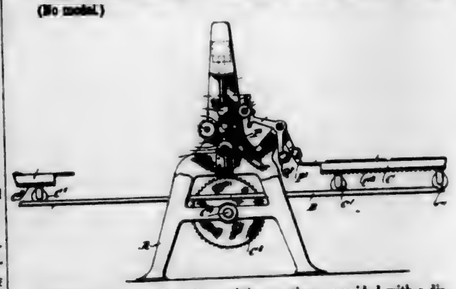

Claim.—1. A machine for applying coatings, provided with a distributer for the coating material, a coating-material supply for the said distributer, a fluid-pressure supply connected with the said distributer for forcing the coating material under pressure out of the distributer onto the surface to be coated, and means for alternately connecting the said coating-material supply and the said fluid-pressure supply with the said distributer, as set forth.

2. A machine for applying coatings, provided with a distributer for the coating material, a coating-material supply for the said distributer, a fluid-pressure supply connected with the said distributer, for forcing the coating material under pressure out of the distributer onto the surface to be coated, means for alternately connecting the said coating-material supply and the said fluid-pressure supply with the said distributer, a table for

carrying the surfaces to be coated, and means for moving the table past the said distributer at a uniform rate of speed, as set forth.

3. A machine for applying coatings, comprising a table mounted to travel and adapted to carry the surfaces to be coated, means for moving the table, a distributer extending over the table at an angle to the line of movement of the table, the distributer having discharge-openings for the coating material to pass from the distributer onto the surfaces to be coated, a coating-material supply connected with the said distributer, and a pressure-supply for forcing the material out of the distributer by pressure, as set forth.

4. A machine for applying coatings, comprising a table mounted to travel and adapted to carry the surfaces to be coated, means for moving the table, a distributer extending over the table at an angle to the line of movement of the table, the distributer having discharge-openings for the coating material to pass from the distributer onto the surfaces to be coated, a coating-material supply connected with the said distributer, a pressure-supply for forcing the material out of the distributer by pressure, and beating means in the said distributer, as set forth.

5. A machine for applying coatings, comprising a table mounted to travel and adapted to carry the surfaces to be coated, means for moving the table, a distributer extending over the table at an angle to the line of movement of the table, the distributer having discharge-openings for the coating material to pass from the distributer onto the surfaces to be coated, a coating-material supply connected with the said distributer, a pressure-supply for forcing the material out of the distributer by pressure, and means for controlling the coating-material supply and the said pressure-supply, as set forth.

6. A machine for applying coatings, comprising a table mounted to travel and adapted to carry the surfaces to be coated, means for moving the table, a distributer extending over the table at an angle to the line of movement of the table, the distributer having discharge-openings for the coating material to pass from the distributer onto the surfaces to be coated, a coating-material supply connected with the said distributer, a pressure-supply for forcing the material out of the distributer by pressure, and means for alternately connecting the said coating-material supply and the said pressure-supply with the said distributer, as set forth.

707,621. ABRADING MECHANISM. JOHN M. NASH, Milwaukee, Wis. Filed Nov. 4, 1901. Serial No. 81,089. (No model.)

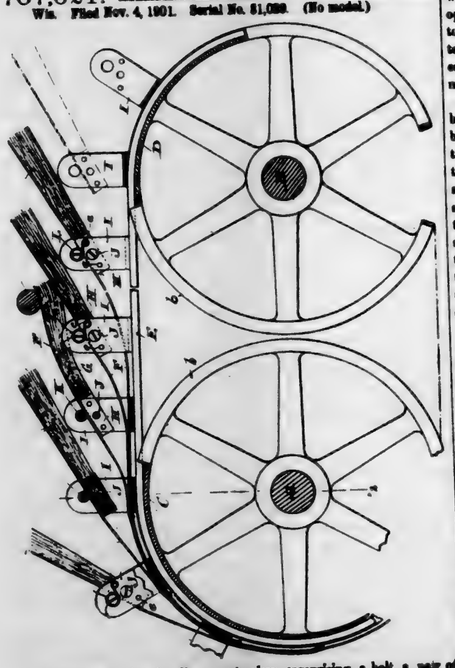

Claim.—1. An abrading mechanism comprising a belt, a pair of pulleys on which the belt is run, and flexible-backed abrading material carried with said belt to extend tangentially from the same at intervals thereof.

2. An abrading mechanism comprising a belt, a pair of pulleys on which the belt is run, strips of abrading material carried with said belt, brushes that being rigid with the aforesaid belt at intervals of the same tangent thereto constitute flexible backings for the abrading-strips, and means for clamping said strips against the brush-butts.

3. An abrading mechanism comprising a belt, a pair of pulleys on which the belt is run, brackets rigid on the outer face of said belt at intervals of the same, brushes fast in the brackets tangent to the belt, abrading-strips carried with the aforesaid belt in opposition to the brushes, and means for clamping the strips against the brush-butts.

4. An abrading mechanism comprising a belt run on pulleys, brackets rigid on the outer face of the belt at intervals of the same, brushes fast in the brackets tangent to said belt, abrading-strips carried with the aforesaid belt in opposition to the brushes, and spring-controlled rotarily-adjustable cam-rods mounted in the brackets to clamp said strips against the brush-butts.

5. An abrading mechanism comprising a belt run on pulleys, brackets rigid on the outer face of the belt at intervals of the same, brushes bolted in the brackets, bracket-pins on inclined planes in opposite directions from the brush-bolts engaging brush-butt apertures, abrading-strips carried by said belt, and means for clamping the strips against the brush-butts.

707,622. SNAP PUSH-BUTTON SWITCH. WILLIAM J. NEWTON, New York, N. Y., assignor to Frank M. Dyer, New York, N. Y. Filed Oct. 17, 1901. Serial No. 79,087. (No model.)

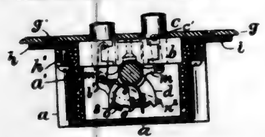

Claim.—1. In a snap push-button switch having a spindle with contact-arms insulated upon its opposite ends and an operating-lever pivoted to turn upon the spindle, of a locking device for the spindle comprising a segmental plate secured to the spindle and having a curved slot with notches at its opposite ends, a spring placed under tension by the operating-lever to turn the spindle, and a locking-plate pivoted adjacent to the segmental plate and provided with studs to engage the notches alternately, and having its ends projected in line with the ends of the operating-lever to be moved alternately thereby, and thus release the segmental plate and spindle while under the spring-pressure.

2. In a snap push-button switch, the combination, with two push-buttons and their guide-block, of a post supported upon such guide-block between the buttons, a spindle fitted to turn in the post and having contact-arms insulated upon its opposite ends, an operating-lever fitted to turn upon the spindle with the push-buttons connected to its ends, and an arm projected from one side of such lever with a lug to engage a spring, a spring wound around the spindle with one of its ends applied to the lug on the arm, a segmental plate attached to the spindle with a curved slot having notches at its opposite ends, and having a lug to engage with the other end of the spring, and a locking-plate pivoted upon the post next the segmental plate and provided with studs to engage the notches alternately, and having its ends projected in line with the ends of the operating-lever to be moved alternately thereby.

3. In a snap push-button switch, the combination, with two push-buttons and their guide-block, of a thin post supported upon such guide-block between the buttons, a spindle fitted to turn in the post with contact-arms insulated upon its opposite ends, an operating-lever fitted to turn upon the spindle and having the push-buttons connected to its opposite ends, and an arm projected from one side of such lever with a lug to engage a spring, a barrel upon the spindle with a spring wound around the same and one of its ends applied to such lug, a segmental plate attached to the spindle with a curved slot having notches at its opposite ends and a lug to engage one end of the spring, and a locking-plate pivoted upon the post next the segmental plate and provided with studs to engage the notches alternately, and having its ends projected in line with the ends of the operating-lever to be moved alternately thereby.

4. In a snap push-button switch, the combination, with two push-buttons and their guide-block, of the thin flat post supported upon such guide-block between the buttons, the spindle *j* fitted to turn in the post with insulating-hubs upon its opposite ends and contact-arms mounted thereon, the operating-lever *m* fitted to turn upon the spindle next the post and having the push-buttons connected to its opposite ends, and having the arm upon its outer side with the stud *o'* projected over the spindle, the barrel upon the spindle adjacent to such stud with spring *s* wound around the same and one end applied to the stud *o'*, the segmental plate *l'* attached to the spindle upon the opposite side of the post and formed

with a curved slot having notches at its opposite ends and having a lug *o* projected over the end of the post adjacent to the lug *o'* and engaged with the opposite end of the spring *s*, the locking-plate *n* pivoted upon the post between the segmental plate and post, the spring *t* extended around the spindle with pins *t'* upon the segmental plate to hold the ends of the spring against the locking-plate, and studs upon the locking-plate to engage the notches of the segmental plate alternately, with the ends of the locking-plate bent to project past the post in line with the ends of the operating-lever, substantially as herein set forth.

5. In a snap push-button switch, the combination, with two push-buttons, of a guide-block perforated for the movement of the same, a post supported upon the guide-block, the spindle *j* fitted to turn in the post with insulating-hubs *j'* upon its opposite ends and contact-arms mounted thereon with extension-plates *k'* at one side of the same, the contact-springs *f* supported upon two corners of the block to constantly engage such extension-plates, and the contact-springs *f'* supported upon the opposite corners of the block, and means connected with the push-buttons for turning the spindle to move the contact-arms to and from the contact-springs *f'*.

6. In a snap push-button switch, the combination, with two push-buttons, of an insulating guide-block *b* perforated for the movement of the same, a post supported upon the guide-block, the spindle *j* fitted to turn in the post with insulating-hubs *j'* upon its opposite ends and contact-arms *k* mounted thereon with segmental wings *k'* at one side of each the double spring-contacts *f* supported upon two corners of the block to constantly engage such segmental wings, the contact-springs *f'* supported upon the opposite corners of the block, means connected with the push-buttons for turning the spindle to move the contact-arms to and from the contact-springs *f'*, spring-plates *e'* clamped by the feet of the contact-springs *f* and *f'* at the four corners of the block, and a casing *a* having a recess upon the front to receive the guide-block, and binding-posts in its four corners with spring-plates *e* projected therefrom to contact with the spring-plates upon the switch when the switch is inserted in the casing.

7. In a snap push-button switch, the combination, with the guide-block having the switch mechanism mounted wholly thereon, and having spring-contacts with spring-plates *e'* projected therefrom as set forth, of the casing having a cavity upon the front to receive the guide-block, and recesses in its four corners with passages for the conductor leading thereto, binding-posts secured in such recesses with spring-plates *e* projected therefrom to contact with the spring-plates upon the switch, such binding-posts having each a grooved seat therein with grooved gib or block fitted over the seat and passage, and into contact with the end of the recess, and a set-screw to press the gib toward the seat to clamp the conductor thereon, whereby the conductors may be pushed automatically into the binding-posts from the passages when the set-screws are slackened, substantially as herein set forth.

8. In a snap push-button switch, the combination, with the metallic casing *a* having recess *a'* adapted to wholly inclose the switch, of the insulating guide-block *b* forming the base of the switch and fitted detachably to such recess and having the switch mechanism supported thereon, the push-buttons *c* extended through the guide-block and formed each with the chamber extended from its inner end beyond the middle of its length with pivot *c'* across its inner end, the links *m* extended into the chamber and jointed upon such pivots, and the switch mechanism having an operating-arm attached to the opposite ends of the links, and provided with spindle close to the insulating guide-block, whereby the operating-arm may be pivoted close to the guide-block and vibrated by the alternate movement of the push-buttons, and the link carried wholly within the guide-block and the push-button when the push-button is protruded, substantially as herein set forth.

707,623. ELASTIC ANESTHETIC APPARATUS. HERMANN HIRSIGER, Zurich, Switzerland. Filed Dec. 27, 1901. Serial No. 87,495. (Model.)

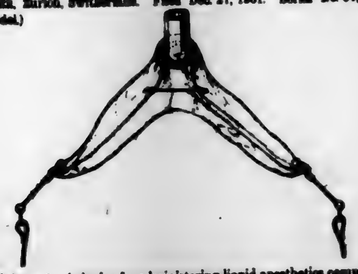

Claim.—1. A device for administering liquid anesthetics comprising layers of textile material secured at their edges forming a pocket or space within and having a small opening at one edge, spring-wire means within the pocket for stiffening and shaping the same, and means for securing the device to the head of the patient, substantially as described.

2. A device for administering liquid anesthetics comprising layers of textile material secured at their edges forming a pocket or space within and having a small opening at one edge, spring-wire means within the pocket for stiffening and shaping the same, means for drawing together the two lateral wings of the device, and means for securing the device to the head of the patient, substantially as described.

707,624. TOOTH-FASTENER FOR WEEDERS. GEORGE A. HILES, Utica, N. Y., assignor to Standard Harrow Company, Utica, N. Y. Filed June 25, 1902. Serial No. 113,623. (No model.)

Claim.—1. The combination in a tooth-fastener of an angle-bar, a tooth having a horizontal, U-shaped bend at its attaching end, the fastener adapted to be applied on the inside of the angle-bar, having a recess opening toward the top to receive the U-shaped end of the tooth and a bolt passing through the fastener, the bend of the tooth and the flange of the angle-bar, substantially as set forth.

2. The combination of the angle-bar, the tooth having the hook-bend on the shank, the fastener having the side walls 2^a, 2^a, and the projection 3^a and the bolt passing through the fastener, the bend of the tooth and the flange of the angle-bar, substantially as set forth.

707,625. INK-FOUNTAIN FOR PRINTING-PRESSES. WILS HILSON, San Francisco, Cal. Filed Apr. 10, 1901. Serial No. 55,265. (No model.)

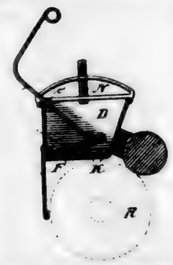

Claim.—1. In an ink-fountain for printing-presses, the combination of the ink-receptacle having discharges in its bottom, the hinged valved plate in the bottom of the receptacle and controlling the supply of ink to the discharges, the handle by which the valve-plate is lifted to an inclination with the bottom, and means for adjustably locking said handle to hold the valve-plate at different inclinations.

2. In an ink-fountain for printing-presses, the combination of the ink-receptacle having discharges in its bottom, the freely-swinging spreading-roller carried by the ink-receptacle on one side and the guard-plate depending from said receptacle on the other side.

3. In an ink-fountain for printing-presses, the combination of the ink-receptacle having discharges in its bottom, the adjustable valve-plate within the ink-receptacle for controlling the supply of ink to the discharges, the freely-swinging spreading-roller carried by the ink-receptacle on one side and the guard-plate depending from said receptacle on the other side.

4. In an ink-fountain for printing-presses, the combination of the ink-receptacle having suitable discharges, fixed hangers, screw-studs adjustably fitted to the receptacle and passing freely through the hangers, and springs encircling the screw-studs whereby the receptacle is adjustably and yieldingly suspended.

5. In an ink-fountain for printing-presses, the combination of the ink-receptacle having discharges, the freely-swinging spreading-roller carried by the receptacle on one side, the guard-plate depending from the receptacle on the other side, fixed hangers, and adjustable suspending devices connecting the receptacle with the hangers, for regulating the height of the receptacle relatively to the part to be inked.

6. In an ink-fountain for printing-presses, the combination of the ink-receptacle having discharges, the freely-swinging spreading-roller carried by the receptacle on one side, the guard-plate depending from the receptacle on the other side, fixed hangers, and spring-controlled adjustable suspending devices yieldingly connecting the receptacle with the hangers, for regulating the height of the receptacle relatively to the part to be inked

7. In an ink-fountain for printing-presses, the combination of the ink-receptacle having discharges in its bottom, the adjustable valve-plate within said receptacle for controlling the supply of ink to the discharges, the spreading-roller swung from one side of the ink-receptacle, the guard-plate depending from its other side, fixed hangers, and adjustable suspending devices connecting the ink-receptacle with the hangers for regulating the height of the receptacle relatively to the part to be inked.

8. In an ink-fountain for printing-presses, the combination of the ink-receptacle having discharges in its bottom, the adjustable valve-plate within said receptacle for controlling the supply of ink to the discharges, the spreading-roller swung from one side of the ink-receptacle, the guard-plate depending from its other side, fixed hangers, and spring-controlled adjustable suspending devices yieldingly connecting the ink-receptacle with the hangers for regulating the height of the receptacle relatively to the part to be inked.

707,626. ELECTRIC MINE-EXPLODER. WILHELM HOEBER, Schalke, Germany. Filed Mar. 22, 1902. Serial No. 100,455. (No model.)

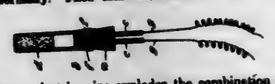

Claim.—In an electric mine-exploder the combination with a conical firing-stopper *a* containing the fuse composition, of metal pipe *c* fixed within the said stopper, conducting-wires *g* inserted into the said metal pipes, and an explosive-shell having a splitted open edge by means of which the said shell is simply set upon the conical firing-stopper *a*, substantially as described.

707,627. APPARATUS FOR COMBUSTION OF FUEL. CHRISTIAN OLSTED, Wyandotte county, Kans., assignor to Edward Haven, Kansas City, Kans. Filed Oct. 26, 1901. Serial No. 80,078. (No model.)

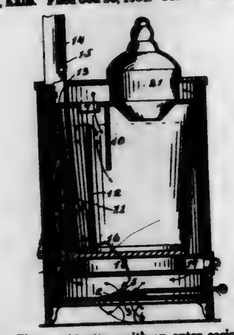

Claim.—1. The combination with an outer casing provided in the lower end with a draft-opening, of an inner casing provided at its lower end with an ash-receiving chamber, having a discharge-passage leading through the outer casing, a closure for said discharge-opening, a grate in the inner casing above the ash-receiving chamber, a fuel-passage leading through the outer and inner casings, an air-inlet and a gas-discharge passage in the upper end of the inner casing, two transverse partitions one on each side of the said air-inlet and extending downward toward the bottom of the inner casing, and a transverse partition located between the said two partitions and extending upward from the bottom of the inner casing to a point below the top thereof and above the lower ends of the said two partitions, substantially as described.

2. The combination with an outer casing provided with a draft-opening, of an inner casing, a fuel-supply passage leading through the two casings, a closure for the said passage, an air-inlet opening in the upper end of the inner casing, and a gas-passage leading past the said air-inlet and thence downward and thence upward to the exterior of the inner casing, substantially as described.

3. The combination with an outer casing provided with a draft-opening, of a register controlling the said draft-opening, an inner casing, a fuel-supply passage leading through the two casings, a closure for the said passage, an air-inlet opening in the upper end of the inner casing, and a gas-passage leading past the said inlet-opening and thence downward and thence upward through the exterior of the inner casing, substantially as described.

4. The combination with an outer casing provided with a draft-inlet opening, of a register controlling the said draft-opening, an inner casing provided in the upper end with an air-inlet and provided at the lower end with a passage for the removal of ashes, an upwardly-extending partition in the inner casing located below the said air-inlet, a horizontal partition located above the said ash-passage and at the lower end of the said partition and having perforations at one side of the said partition but imperforate on the other side thereof, and a gas-passage leading past the upwardly-extending partition and past the said air-inlet and thence downward and thence upward to the exterior of the inner casing, substantially as described.

5. The combination with an outer casing provided with a draft-inlet opening, of a register controlling the said inlet-opening, an inner casing having two chambers and an air-inlet discharging into both chambers, an opening connecting the two chambers adjacent to the air-inlet, a discharge-opening leading from one of the chambers, and two partitions, one in each chamber extending downward from the upper end of the casing below the opening connecting the two chambers, substantially as described.

6. The combination with an outer casing provided with a draft-inlet opening, of an inner casing provided with two chambers, an opening connecting the two chambers, an air-inlet opening discharging into the two chambers across the said connecting-opening, a discharge-opening leading through the inner casing from one of the chambers, the chamber having the discharge-opening being provided with an imperforate bottom and the other chamber having a perforated bottom, a closed ash-receiving chamber located below the perforated bottom of the said chamber and provided with a passage for the discharge of ashes, and a closure for the said ash-discharge passage, substantially as described.

7. The combination with an outer casing provided with a draft-inlet opening, of a register controlling the said opening, an inner casing provided with two chambers, an opening connecting the two chambers, an air-inlet discharging into the said connecting-opening, a fuel-supply opening leading through the inner casing into one of the said chambers, a discharge-opening leading through the inner casing from the other chamber, the chamber having the discharge-opening being provided with an imperforate bottom, the chamber having the fuel-supply passage being provided with a perforated bottom, an ash-receiving chamber placed so as to receive ashes through the said perforations and having an ash-discharge passage leading therefrom, a closure for the said ash-discharge passage, and a closure for the fuel-supply passage, substantially as described.

8. The combination with a casing provided with two chambers having an opening connecting them, two partitions, one in each chamber, extending downward from the upper end of the casing past the said connecting-opening, an air-inlet between the said two partitions, an outlet-opening leading from one of said chambers, the chamber having the outlet-opening being provided with an imperforate bottom and the other chamber having a perforated bottom, of an ash-receiving chamber located below the perforated bottom of the said chamber and having an ash-discharge opening leading therefrom, substantially as described.

9. A combustion-chamber provided with an air-inlet opening in the upper end, two downwardly-extending partitions located one on each side of the said air-inlet opening, a partition extending upwardly from the bottom of the chamber, between the said two partitions and above the lower ends thereof, and a discharge-opening in the upper end of the casing, substantially as described.

10. A combustion-chamber comprising a casing provided with two downwardly-extending partitions, an air-inlet in the casing between the two said partitions, an upwardly-extending partition located between the two downwardly-extending partitions and extending from the bottom of the chamber above the lower ends of the said two partitions, and a discharge-opening in the upper end of the casing, the bottom of the chamber at one side of the upwardly-extending partition being perforated and imperforate upon the other side thereof, substantially as described.

11. A combustion-chamber provided with an inlet-opening for air in its upper end, a gas-discharge opening also in its upper end, a partition extending downwardly from the upper end of the chamber and located between the two said openings, and a partition extending from the bottom of the chamber upwardly above the lower end of the other partition and having its upper end adjacent to the air-inlet opening, substantially as described.

12. A combustion-chamber provided in its upper end with an air-inlet, a damper controlling the said air-inlet, two downwardly-extending partitions located one on each side of the said air-inlet, a partition extending upwardly from the bottom of the said chamber between the two said downwardly-extending partitions and above the lower ends thereof, and a discharge-opening at one side of one of the downwardly-extending partitions, substantially as described.

707,628. COMBINED COUCH AND FOLDING BED. DAVID T. OWEN, Cleveland, Ohio. Filed Aug. 24, 1901. Serial No. 73,168. (No model.)

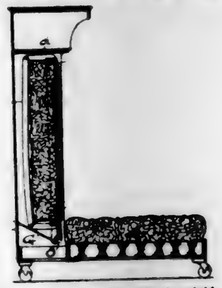

Claim.—1. In a combined couch and bed, a rigid right-angled couch and bed frame having a fixed couch in the horizontal portion thereof and a mattress pivoted in the upright portion above the plane of the couch and having its bottom upholstered and provided with independent folding supports at its outer edge, whereby the top side of the mattress is adapted for use as a bed and its bottom as a back for the couch, and the bed folds over the couch and is supported, substantially as described.

2. A couch and bed frame having a horizontal portion for a couch and an upright portion for a bed, in combination with a bed-mattress having a spring-cushioned top and upholstered bottom and pivoted in said upright portion to be raised and lowered and legs pivoted to its outer edge, and a couch-seat having a fixed rest in the horizontal portion of said frame, whereby the bed is adapted to fold over the couch in use, substantially as described.

3. A combined couch and bed frame having an upright portion for the bed and a horizontal portion for the couch, in combination with a bed-frame adapted to be lowered over the couch, head and foot frames for the bed and mechanism connecting said frames with the bed-frame and constructed to fold said frames when the bed-frame is raised, substantially as described.

4. A rigid right-angled frame for a combined couch and bed, in combination with a folding bed pivoted in said frame and constructed to be lowered over the couch for use as a bed and to be folded up in said frame when out of use as a bed and having its bottom finished to form the back of the couch, head and foot sections of the bed pivoted in said frame and arranged to rest behind the bed when in a raised position, and means to fold said head and foot sections automatically when the bed is folded, substantially as described.

5. The combined couch and bed comprising a bed adapted to be separately folded down over the couch, head and foot frames independently pivoted and mechanism between said frames and said bed to fold and unfold the frames when the bed is raised and lowered, substantially as described.

707,629. INSECT-DESTROYER. CHARLES T. FARRIER, Portsmouth, Va. Filed Jan. 3, 1901. Serial No. 41,735. (No model.)

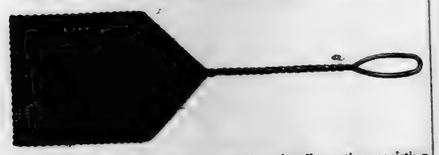

Claim.—An insect-destroyer comprising a handle portion consisting of a wire bent upon itself and having the two members twisted together, the ends of the wire extending outward from the twisted portion at an angle thereto, and a striking portion of wire-gauze rectangular in shape and having the two corners at one end bent over the arms of the handle portion and secured in place, the striking portion being at an angle to the handle portion, substantially as described.

707,680. BILLING-MACHINE. BENJAMIN W. PERKINS, South Bend, Ind. Filed Mar. 10, 1902. Serial No. 97,653. (No model.)

Claim.—1. In a printing-machine, a type-carrier having a type-surface projecting through a table, said table, an indicating-plate mounted on said table, an operating-lever traversing said plate and adapted for engagement therewith at predetermined points, said lever and said carrier being operatively connected to have corresponding movement, a movable platen, a foot-lever, and a toggle connection between said platen and said lever whereby two complete oscillatory movements of the platen will be provided during one complete movement of the foot-lever, whereby the printing-surface and its supporting and operating parts will be held stationary during the printing movement.

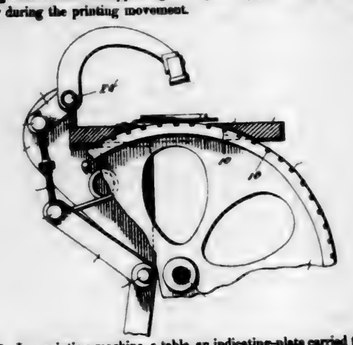

2. In a printing-machine, a table, an indicating-plate carried thereby and having semicircular indicating-marks and a concentrically-arranged notched flange, an operating-lever traversing said plate and having a pin adapted to be removably engaged with one of the notches of said plate, a rotating type-carrier having a type-surface projecting through an opening in said table, means for connecting said operating-lever and said type-carrier to provide a coöperating movement therebetween, an impression-arm having a platen, a foot-lever, and a toggle connection between said foot-lever and impression-arm, whereby the printing-surface and its supporting and operating parts will be held stationary during the printing movement.

3. In a printing-machine, a table, an indicating-plate carried thereby and having semicircular indicating-marks and a concentrically-arranged notched flange, an operating-lever traversing said plate and having a pin adapted to be removably engaged with one of the notches of said plate, a rotating type-carrier having a type-surface projecting through an opening in said table, means for connecting said operating-lever and said type-carrier to provide a coöperating movement therebetween, an impression-arm having a platen, a foot-lever, a toggle connection between said foot-lever and impression-arm, and a yielding support and guide for the material to be printed, whereby the printing-surface and its supporting and operating parts will be held stationary during the printing movement.

707,681. BOTTLE-LABELING MACHINE. WILLIAM R. PETTIS, Newton, Mass. Filed Mar. 2, 1901. Serial No. 49,548. (No model.)

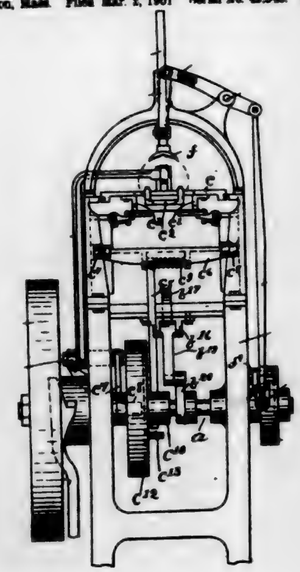

Claim.—1. In a bottle-labeling machine, the combination of a label-carrier having a pair of label-carrying shoes, separated to provide a passage between them for the bottle, a pair of yielding label-engaging plates over which the label is brought by said label-carrier, which project beyond the shoes, into the path of movement of the bottle, and which occupy a plane directly beneath a label borne by said label-carrier to thereby impinge the label against the bottle and hold it in correct position thereon while said label is being detached from the label-carrying shoes by a downward movement of the bottle, and which thereafter act as wipers for applying the pasted edges of the label to the bottle, and forward extensions on the frame bearing said label-engaging plates which provide an unobstructed passage for the bottle substantially as described.

2. In a bottle-labeling machine, the combination of a label-holder, a paste-box containing paste-rolls, and a reciprocating label-carrier having a pair of label-carrying shoes, separated to provide a passage between them for the bottle, means for moving said paste-box and label-holder successively toward and from said label-carrier, a pair of pivotally-supported label-engaging plates over which the label is brought by said label-carrier, which project beyond the shoes, into the path of movement of the bottle, and which occupy a plane directly beneath a label borne by said label-carrier, to thereby impinge the label against the bottle and hold it in correct position thereon while said label is being detached from the label-carrying shoes by a downward movement of the bottle, and which thereafter act as wipers for applying the pasted edges of the label to the bottle, and forward extensions on the frame bearing said label-engaging plates which provide an unobstructed passage for the bottle, substantially as described.

3. In a bottle-labeling machine, the combination of a label-carrier having a pair of label-carrying shoes separated to provide a passage between them for the bottle, a pair of pivotally-supported label-engaging plates over which the label is brought by said label-carrier, which project beyond the shoes into the path of movement of the bottle and which occupy a plane directly beneath the label borne by said label-carrier, to thereby impinge the label against the bottle and hold it in correct position thereon while said label is being detached from the label-carrying shoes by a downward movement of the bottle and which thereafter act as wipers for applying the pasted edges of the label to the bottle, and stationary supports for said label-engaging plates constructed and arranged to provide an unobstructed passage for the bottle, substantially as described.

4. In a bottle-labeling machine, a label-carrier, and a pair of label-engaging plates over which the label is brought by said carrier, each label-engaging plate comprising the yielding plate a, pivoted spring-supported frame bearing it, the plate a' to which said frame is pivoted, and the plate a^2 to which said plate a' is adjustably connected to afford adjustment of said label-engaging plates toward and from each other, substantially as described.

5. In a bottle-labeling machine, a label-carrier having a pair of label-carrying shoes, a pair of pivoted label-engaging plates over which the label is brought by said carrier, means for holding said label-engaging plates in horizontal position beneath the label-carrier, and for releasing them whereby they may swing on their pivots into approximately vertical position, substantially as described.

6. In a bottle-labeling machine, a label-carrier having a pair of label-carrying shoes, a pair of pivoted label-engaging plates over which the label is brought by said carrier, springs, movable into and out of engagement with said label-engaging plates, for holding said plates in horizontal position beneath the label-carrier when in engagement therewith and for permitting said label-engaging plates to occupy a position remote from said label-carrier when disengaged therefrom, substantially as described.

7. In a bottle-labeling machine, a rising-and-falling paste-box, a rocking cross-bar having fingers engaging said paste-box, a lever positively connected to said cross-bar, and means for moving it to in turn move the cross-bar and thereby lift the paste-box, substantially as described.

707,632. BOWLING-ALLEY PIN. ELWOOD G. PHILLIPS, Chicago, Ill., assignor of three-fourths to Charles R. Barrett, Chicago, Ill. Filed May 15, 1902. Serial No. 107,441. (No model.)

Claim.—1. The combination in a bowling-alley pin, of a main body portion having a central cylindrical extension at its lower end and a cylindrical enlargement at the end of such cylindrical extension, and an elastic base formed with a central chamber to receive said cylindrical enlargement and with an annular internal flange at the upper end of said chamber which is adapted to fit the cylindrical extension aforesaid of the main body, substantially as set forth.

2. As an improved article of manufacture, an elastic base for bowling-alley pins formed with a central chamber, an annular internal flange at the upper end of said chamber and a bottom web at the lower end of said chamber which web is provided with a vent-orifice, such base being adapted to have engagement with a central headed shank on the lower end of a bowling-alley pin, substantially as set forth.

707,633. ART OR PROCESS OF LIQUEFYING AIR OR OTHER GASES AND COOLING BY MEANS THEREOF. JAMES F. PLAGE, Glenridge, N. J. Filed Feb. 15, 1901. Serial No. 47,468. (No model.)

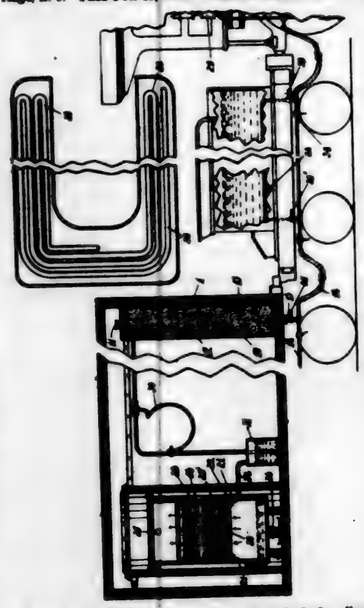

Claim.—1. The art or process herein described of cooling by liquid air or other liquid gas which consists in delivering to the space to be cooled a supply of dry cold gas evaporating from an initial charge of liquid air or other liquid gas, and allowing said evaporated gas to subsequently escape from the said space to be cooled, and subjecting compressed air or other compressed gas to the cooling action of said dry cold evaporated gas in successive counter-currents—the first carrying the dry evaporated liquid air or other gas after it has been delivered to the space to be cooled and before or during the time it is allowed to escape therefrom; and the second carrying said dry cold evaporated liquid air or other gas before its delivery to the space to be cooled; and then conducting during the process said cooled compressed air or other compressed gas to and subjecting the same to the cooling action of said initial charge or a replenished charge of liquid air or other liquid gas, and successively liquefying said cooled compressed air or other gas and delivering same to said liquid charge and evaporating the same; thus continuously replenishing said liquid charge and continuously supplying dry cold evaporated liquid air or other evaporated gas to the counter-currents and the space to be cooled, substantially as set forth.

2. The art or process herein described of liquefying air or other gases and cooling thereby, which consists in subjecting a column or current of compressed air or other gas to the cooling action of a counter-current of air or gas escaping from the space to be cooled, and absorbing the moisture therefrom by the chemical action of calcium chlorid then successively subjecting said dry compressed air or other gas to the cooling action of the cold dry gas derived from a charge of liquid air or other liquid gas, in a counter-current, and to the further cooling action of said liquid charge by passing same through a conduit submerged therein, and successively liquefying said cooled dry compressed air or other gas, and delivering same to said liquid charge, and thus continuously replenishing said liquid charge and continuously supplying dry cold evaporated liquid gas from said charge to the counter-currents and space to be cooled, substantially as set forth.

3. The art or process herein described of liquefying air or other gas and cooling thereby, which consists in subjecting a column or current of compressed air or other compressed gas to the cooling action of a counter-current of air or other gas escaping from the space to be cooled; and in also subjecting the same to the drying action of a hygroscopic or moisture-absorbing substance, or bringing same in contact therewith, and thereby absorbing moisture from said compressed air or other compressed gas; and then successively subjecting said dry compressed air or other gas to the cooling action of the cold dry gas derived from a charge of liquid air or other liquid gas, in a counter-current; and to the further cooling action of said liquid charge by passing same through a conduit submerged therein, and successively liquefying said cooled dry compressed air or other gas, and delivering same to said liquid charge; and thus continuously replenishing said liquid charge and continuously supplying dry cold evaporated gas from said charge to the counter-currents and space to be cooled substantially as set forth.

707,634. VESSEL FOR HOLDING AND SHIPPING LIQUID AIR OR OTHER LIQUID GASES. JAMES F. PLAGE, Glenridge, N. J. Filed Feb. 10, 1902. Serial No. 93,239. (No model.)

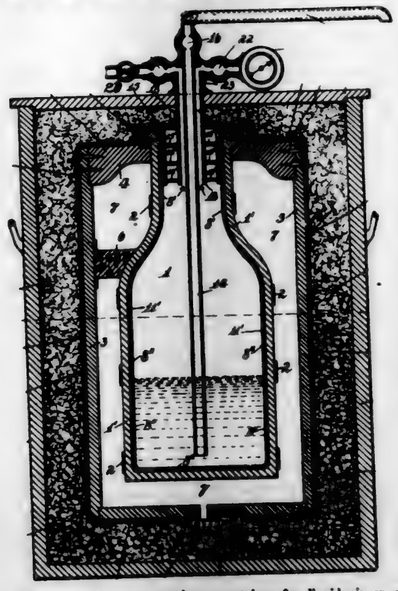

Claim.—1. In a receptacle or container for liquid air or other liquefied gas, comprising an inner liquid-holding bottle or vessel and an outer case; an air-tight covering or impervious inclosure inclosing said receptacle, one part of which is infolded within itself in form of a cul-de-sac, and which serves as a lining to the inner liquid-holding bottle, and the other part or fold of which incloses a vacuum jacket or chamber around said liquid-holding bottle or vessel, substantially as shown and described.

2. In a receptacle or container for liquid air or other liquefied gas, comprising an inner liquid-holding bottle and an outer case; an inside impervious lining within said inner bottle, and an impervious covering over the outside of and inclosing said outer case—said lining and said covering being closed or soldered together so as to form an air-tight inclosure, substantially as shown and described.

3. In a receptacle or container for liquid air or other liquefied gas, comprising an inner liquid-holding bottle and an outer case; an inside impervious lining within said inner bottle, and a sack or impervious covering over the outside of and inclosing said outer case—said lining at or near the neck of same being soldered or made fast and air-tight to the mouth of said covering or sack, so as to leave the mouth or neck of said lining open, and so as to close the mouth of the outer-case covering or sack, thus forming around said outer case an air-tight inclosure, substantially as shown and described.

4. In a receptacle or container for liquid air or other liquefied gas, comprising an inner liquid-holding bottle and an outer case; the combination of an inside lining within said inner bottle, and a covering over the outside of and inclosing said outer case—said lining and said covering being impervious and closed or soldered together so as to form an air-tight inclosure; and a vacuum chamber or space between the said inside lining within said liquid-holding bottle and the said air-tight covering or inclosure around the said outer case, substantially as shown and described.

5. In a receptacle or container for liquid air or other liquefied gas, comprising an inner liquid-holding bottle and an outer case; the combination of an inside impervious lining within said inner bottle and a sack or impervious covering over the outside of and inclosing said outer case—said lining at or near the neck of same being soldered or made fast and air-tight to the mouth of said covering or sack, so as to leave the mouth or neck of said lining open, and so as to close the mouth of the outer-case covering or sack, thus forming around said outer case an air-tight inclosure; and a vacuum chamber or space between the said inside impervious lining within said liquid-holding bottle and the said air-tight covering or inclosure around the said outer case, substantially as shown and described.

6. In a receptacle or container for liquid air or other liquefied gas, the combination of an inner bottle or liquid-holder inclosed in or surrounded by an outer case; with a vacuum chamber or space between said inner bottle and said outer case; and an air-tight covering of suitable material inclosing said outer case, and infolding over the rim of the neck or mouth of and passing down into said inner bottle as an inside lining thereto, in form of a cul-de-sac, substantially as shown and described.

7. In a receptacle or container for liquid air or other liquefied gas, the combination of an inner liquid-holding bottle inclosed in or surrounded by an outer case, both said inner bottle and said outer case being made of wood or fiber or some other material of relatively low heat conductivity; with an air-tight covering or impervious inclosure which incloses said outer case, and infolds within itself or passes down into said inner liquid-holding bottle as an inside impervious lining thereto; and a vacuum chamber or space between said inclosed outer case and said inner liquid-holding bottle, substantially as shown and described.

8. In a receptacle or container for liquid air or other liquefied gas, the combination of an inner liquid-holding bottle inclosed in or surrounded by an outer case, both said inner bottle and said outer case being made of wood or fiber or other suitable material of relatively low heat conductivity; with an air-tight covering or impervious inclosure of sheet metal or other suitable material, which incloses said outer case and infolds within itself or passes down into said inner liquid-holding bottle as an inside impervious lining thereto; and a vacuum chamber or space between said inclosed outer case and said inner liquid-holding bottle, substantially as shown and described.

9. In a receptacle or container for liquid air or other liquefied gas the combination of an inner bottle or liquid-holder inclosed in or surrounded by an outer case; with a vacuum chamber or space between said inner bottle and said outer case; and an air-tight covering of suitable material inclosing said outer case, and infolding over the rim of the neck or mouth of and passing down into said inner bottle as an inside impervious lining thereto, in form of a cul-de-sac, the whole being insulated from the heat of the outside atmosphere by packings of hair felt or other material of relatively low heat conductivity, and inclosed in an outside protecting-case, substantially as shown and described.

10. In a receptacle or container for liquid air or other liquefied gas, the combination of an inner liquid-holding bottle inclosed in or surrounded by an outer case, both said inner bottle and said outer case being made of

wood or fiber or some other material of relatively low heat conductivity; with an air-tight covering or impervious inclosure which inclosure said outer case, and infolds within itself or passes down into said inner liquid-holding bottle as an inside impervious lining thereto; and a vacuum chamber or space between said inclosed outer case and said inner liquid-holding bottle, the whole being insulated from the heat of the outside atmosphere by packings of hair felt or other material of relatively low heat conductivity, and inclosed in an outside protecting-case, substantially as shown and described.

11. In a receptacle or container for liquid air or other liquefied gas, the combination of an inner liquid-holding bottle inclosed in or surrounded by an outer case, both said inner bottle and said outer case being made of wood or fiber or other suitable material of relatively low heat conductivity; with an air-tight covering or impervious inclosure of sheet metal or other suitable material, which inclosure said outer case and infolds within itself or passes down into said inner liquid-holding bottle as an inside impervious lining thereto; and a vacuum chamber or space between said inclosed outer case and said inner liquid-holding bottle, the whole being insulated from the heat of the outside atmosphere by packings of hair felt or other material of relatively low heat conductivity, and inclosed in an outside protecting-case, substantially as shown and described.

12. In a receptacle or container for solidified carbon dioxid or other solid substances which require to be insulated from the heat of the atmosphere, the combination of an inner bottle or receptacle, and an outer case; with an air-tight covering or impervious inclosure which inclosure said outer case, and infolds within itself or passes down into said inner bottle as an inside air-tight lining thereto; and a vacuum chamber or space between said air-tight-covered outer case and said air-tight-lined bottle, substantially as shown and described.

13. In a receptacle or container for solidified carbon dioxid or other solid substances which require to be insulated from the heat of the atmosphere, the combination of an inner bottle or receptacle and an outer case; with an air-tight covering or impervious inclosure which inclosure said outer case, and infolds within itself or passes down into said inner bottle as an inside air-tight lining thereto; and a vacuum chamber or space between said air-tight-covered outer case and said air-tight-lined inner bottle, and a removable receptacle adapted to slip into said air-tight-lined inner bottle, substantially as shown and described.

14. In a receptacle or container for solidified carbon dioxid or other solid substances which require to be insulated from the heat of the atmosphere the combination of an inner bottle or receptacle and an outer case; an inside impervious lining within said inner bottle, and an impervious covering over the outside of and inclosing said outer case—said lining and said covering being closed or soldered together so as to form an air-tight inclosure; and a removable substance-holding receptacle adapted to slip into said air-tight-lined inner bottle, substantially as shown and described.

15. In an insulated receptacle or container for liquid air or other liquefied gas, the combination of an inner liquid-holding bottle or vessel; with an outer receptacle inclosing said inner bottle; and an air-tight sack or covering inclosing said outer receptacle, one part of which covering is infolded within itself in form of a cul-de-sac, and which serves as an inside lining to the inner liquid-holding bottle, substantially as shown and described.

16. In a receptacle or container for insulating and preserving liquid air or other matter against the normal heat of the atmosphere, the combination of an outer receptacle inclosed by an air-tight sack or covering; with an inner bottle or vessel fixed within said outer receptacle, and having an air-tight inside lining—said covering and said lining forming one complete inclosure; and a vacuum jacket or space around said inner bottle between the lining thereof and the air-tight sack or covering of said outer receptacle, substantially as shown and described.

17. In a receptacle or container for insulating and preserving liquid air or other matter against the heat of surrounding atmosphere, the combination of an outer receptacle inclosed by an air-tight sack or covering; with an inner bottle or vessel fixed within said outer receptacle, and having an air-tight inside lining—said covering and said lining forming one complete inclosure; a vacuum jacket or space around said inner bottle, between said covering and said inside lining; and means for siphoning out or delivering from said inner bottle the liquid air or other liquefied gas therein as required, and for allowing the vapor thereof to escape, both at varying predetermined pressures, substantially as shown and described.

707,685. SLAB OR TILE FOR BUILDING PURPOSES. HIRAM PERLSON, Brooklyn, N. Y. Filed Jan. 10, 1902. Serial No. 89,194. (No model.)

Claim.—1. A slab or tile consisting of a core of a composition of earthy and fibrous materials, and a surface coating consisting of a composition of earthy material and finely-comminuted vegetable matter, substantially as set forth.

2. A slab or tile consisting of a core of a composition of earthy and fibrous materials, a grid embedded therein, and a surface coating consisting of a composition of earthy material and finely-comminuted vegetable matter, substantially as set forth.

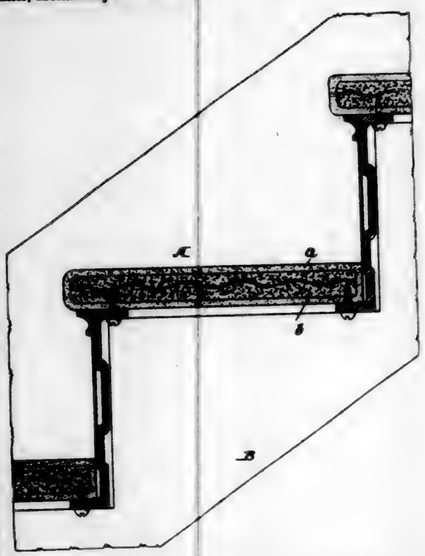

707,686. OIL-SPRAYING APPARATUS. WINFIELD S. PROSSER, Ocala, Fla. Filed Jan. 21, 1901. Renewed Jan. 30, 1902. Serial No. 91,903. (No model.)

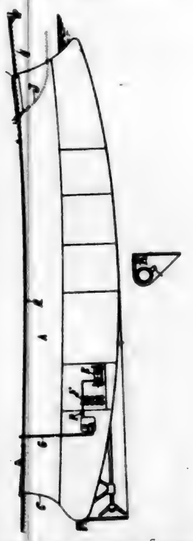

Claim.—1. In an oil-delivery system for vessels the combination of a source of supply of oil, means for regulating the pressure thereof, pipes leading from said source of supply, a series of branches connected with said pipes for delivering laterally and rearwardly over the stern of the vessel, and a second series of branches connected with said pipes for delivering forwardly and laterally over the bow of the vessel, each branch of said second series being provided with a shield arranged in front thereof.

2. In an oil-delivery system for vessels in combination with a suitable source of supply of oil and means for regulating the same, of pipes leading to the bow and stern of the vessel, the pipes leading to the stern being provided with series of vents or nipples adapted to deliver the oil downwardly, and the pipes leading to the bow being provided with series of vents or nipples adapted to deliver the oil downwardly and forwardly and with shields arranged in front of said vents or nipples, substantially as and for the purposes set forth.

3. In an oil-delivery system for vessels, the combination of a nozzle in operative connection with a receptacle for oil and provided with a series of vents or nipples adapted to deliver downwardly and forwardly, and a shield arranged in front of said nozzle, substantially as and for the purposes described.

4. In an oil-delivery system for vessels, the combination of a receptacle for oil, a pipe leading therefrom toward the bow of the vessel, branches projecting from said pipe beyond the bow of the vessel, vents or nipples projecting obliquely forward from said branches, and shields situated in front of said branches, substantially as and for the purposes described.

707,687. SLIDING DOOR. GEORGE A. PROVOST and EDWIN F. CARPENTER, Janesville, Wis. Filed Oct. 14, 1901. Serial No. 78,562. (No model.)

Claim.—1. In a sliding door, a frame, L-shape hangers, tracks interlockingly connected therewith, a flange on the upper track projecting from the bearing-face, said flange having enlargements tapered from each end toward the center and an intermediate enlargement oppositely tapered to the surface of the tracks, said tapered portions forming cams for moving the door into engagement with the side of a car or into its frame, as and for the purpose described.

2. In a sliding door an upper track having a flange projecting from the bearing-face said flange having thickened portions forming cams and a lower guide having enlargements, said enlargements being tapered to form cam-surfaces which force the door inwardly, as and for the purpose described.

707,688. PROCESS OF PRODUCING STEEL DIRECT FROM OXID-OF-IRON ORE. DEXTER REYNOLDS, Albany, N. Y. Filed May 14, 1902. Serial No. 107,830. (No specimens.)

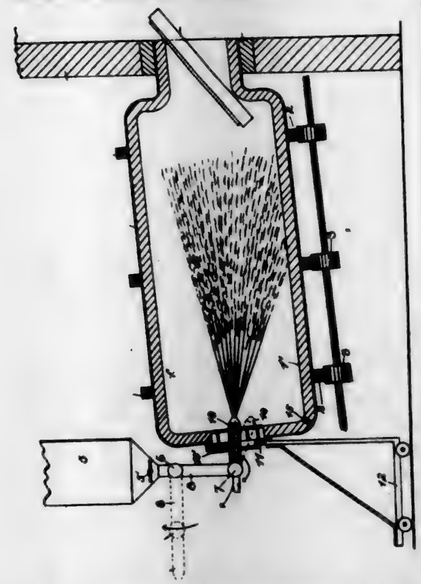

Claim.—1. The process of treating oxid-of-iron ores to produce therefrom wrought iron or steel, which consists, first; in mixing granulated ore with sufficient granulated carbonaceous material to deoxidize the ore and then duly carbonize the iron in it and introducing and distributing this mixture in a suitable closed furnace; second, subjecting this mixture in said closed furnace to the surface action of a neutral heating-flame until the oxid of iron is deoxidized and the iron duly carbonized; third, introducing and distributing into said furnace granulated fluxes suitable in character and amount to remove impurities; fourth, subjecting the resultant mass to the forcible direct impact of a blast-flame directed down and upon the same until the metal is fused, and fifth, separating the slag therefrom, all in one and the same furnace substantially as described.

2. The process of treating oxid-of-iron ores to produce therefrom wrought iron and steel, which consists, first; in mixing granulated ore with sufficient granulated carbonaceous material to deoxidize the ore and then duly carbonize the iron in it and introducing and distributing this mixture in a suitable furnace; second, subjecting this mixture in said furnace to the surface action of a neutral heating-flame until the oxid of iron is deoxidized and the iron duly carbonized; third, introducing and distributing into said furnace granulated fluxes suitable in character and amount to remove impurities; fourth, subjecting the resultant mass to the action of a neutral heating-flame until the metal is fused and fifth, separating the slag therefrom, all in one and the same furnace for the purposes described.

707,689. ELECTRICAL SAFETY ALARM AND SIGNAL MECHANISM FOR RAILWAYS. JOHN L. RICKETTS, Philadelphia, Pa., assignor to Leonard R. Fletcher, Philadelphia, Pa.; Eliza J. Fletcher administratrix of said Leonard R. Fletcher, deceased. Filed Mar. 19, 1900. Serial No. 9,286. (No model.)

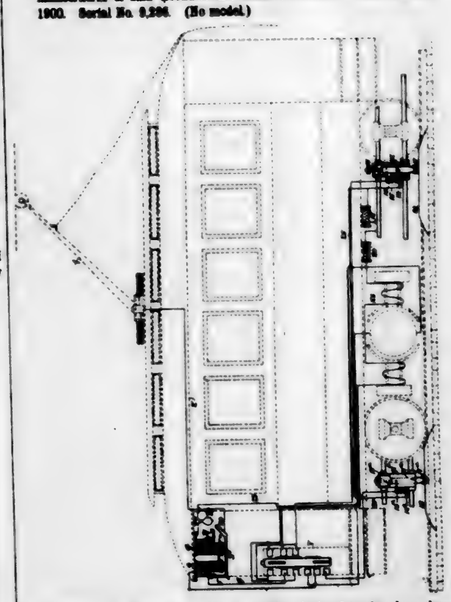

Claim.—1. The combination in an electrical safety signal or alarm system for railways, of a normally closed car-circuit containing a magnet, a track-circuit having a contact whereby it is connected in series with the car-circuit when the engine or car reaches said contact, and means whereby such track-circuit is automatically thrown in circuit with a relatively high resistance magnet when the engine or car leaves said contact, substantially as specified.

2. The combination in an electrical safety signal or alarm system for railways, of a normally closed car-circuit containing a magnet, a track-circuit having a contact whereby it is connected in series with the car-circuit when an engine or car reaches the same, means whereby said track-circuit is automatically thrown in circuit with a relatively high resistance magnet when the engine or car passes said contact, and means whereby said track-circuit is automatically restored to its normal condition when the engine or car passes a track-contact forwardly beyond that which opened the circuit, substantially as specified.

3. The combination in an electrical safety signal or alarm system for railways, of a normally closed car-circuit containing a magnet, a number of track-circuits forming successive blocks, contacts in each of said track-circuits, and means whereby the engine or car in entering each block is caused to first connect the car-circuit in series with the track-circuit of that block and then to connect said track-circuit of said block in series with a relatively high resistance magnet, substantially as described.

4. The combination in an electrical safety signal or alarm system for railways, of a normally closed car-circuit containing a magnet, a number of track-circuits forming successive blocks, contacts in each of said track-circuits, and means whereby the engine or car in entering each block is caused to first connect the car-circuit in series with the track-circuit of that block and then to connect the track-circuit of said block in series with a high-resistance magnet, said track-circuit being connected to a contact in the block ahead of said engine or car, substantially as specified.

5. The combination in an electrical safety signal or alarm system for railways, of a car-circuit containing a magnet and a track-circuit having a contact whereby it is connected in series with the car-circuit when the engine or car reaches the same, said track-circuit including a normally closed switch provided with independent sets of pawl-and-ratchet mechanism, together with means for operating the same, each of said sets being operative upon the switch to move the same independently of each other in opposite directions, one set operating when a car-circuit is connected to the track-circuit and the other operating whenever a car-circuit is disconnected from said track-circuit, substantially as described.

6. The combination in an electrical safety signal or alarm system for railways, of a car-circuit, a track-circuit having a contact whereby it is connected in series with said car-circuit when the engine or car reaches the same, a rotary switch in said track-circuit provided with pawl-and-ratchet operating mechanism, together with a device whereby a portion of said mechanism is caused to positively move forward the switch to the extent of one tooth on each action thereof of the car-circuit of a car in a block, and means for causing the second portion of said mechanism to positively move the switch one tooth backward for each car-circuit leaving the block, substantially as described.

7. An electrically-driven car having a normally closed circuit containing a magnet which controls a switch in the motor-circuit, in combination with a track-circuit adapted to be connected in series with the car-circuit whereby the motor will be stopped when the track-circuit is open, substantially as specified.

8. An electrically-driven car having a circuit with magnet controlling a switch in the motor-circuit, said car-circuit having a switch on the trolley pole or arm, one element of said switch being a supplementary trolley adapted to strike a contact in the track-circuit and to connect said track-circuit in series with the car-circuit, substantially as specified.

9. The combination of an electrically-driven car having a circuit with magnet controlling a switch in the motor-circuit, said car-circuit having as elements a switch on the trolley-pole, a pair of contact-rings on the car, and contact-shoes carried by the rotating pole-carrier of the car, and means whereby said car-circuit can be connected in series with a track-circuit, substantially as specified.

10. An electrically-driven car having a circuit containing a magnet which controls a switch in the motor-circuit, a motor-field circuit adapted to be closed by said switch when the armature-circuit of the motor is opened, and a track-circuit adapted to be connected in series with the car-circuit, whereby, when said track-circuit is open, the motor-circuit will cause the fields of the motor to act as a magnetic brake, substantially as specified.

11. An electrically-driven car having a normally closed circuit containing a magnet which, when in one position, closes the motor-circuit, and when in the other position, closes a circuit containing a signal-lamp on the car, in combination with a track-circuit adapted to be connected in series with the car-circuit whereby, when said track-circuit is open, the motor will be stopped and the signal-lamp lighted, substantially as specified.

12. The combination in an electromagnetic switch, of a circuit containing a magnet with armature for opening and closing said circuit, a second circuit containing a magnet with armature for acting upon the armature of the first magnet to lock the same or restore it to circuit-closing position, a third circuit containing a magnet and adapted to be closed by the armature of the first magnet when the latter opens the circuit in which said magnet is contained, and a switch operated by said third magnet and serving to open the circuit containing the second magnet, substantially as specified.

13. The combination in an electromagnetic switch, of a rotary member consisting of a toothed circuit making and breaking device capable of being turned in opposite directions, a pair of magnets each having an armature with independent pawls adapted to act upon different sections of said toothed device whereby the action of one magnet will move it in one direction and the other in the opposite direction, two electric circuits one containing one magnet, and the other containing the other magnet, and means whereby the passage of a car is caused to close first one of these circuits and then the other, substantially as described.

14. The combination, in an electromagnetic switch, of a circuit-breaker having a disk provided with two sets of teeth with a series of teeth in each set, two magnets each having an armature with pawl, one for engaging one set of teeth and the other for engaging the other set of teeth of the circuit-breaker, two circuits, one for each magnet, and means whereby a car passing along the track is caused to open and close these circuits whereby there may be a succession of movements of the circuit-breaker in one direction caused by the action of one magnet and then a succession of movements of the circuit-breaker in the opposite direction caused by the action of the other magnet, substantially as specified.

15. The combination in an electromagnetic switch, of four electrical circuits each containing an electromagnet, a switch in the first circuit controlled by the armature of the magnet contained in said circuit, an armature operated by the magnet in the second circuit, and acting upon the armature of the magnet in the first circuit to close said circuit and hold it closed, a switch in the third circuit closed by the armature of the first magnet when the same moves so as to open the first circuit, a circuit maker and breaker operated by the magnet in the third circuit so as to open the second circuit and close the fourth circuit, and a magnet in the latter circuit for moving said circuit-breaker so as to again close the second circuit, substantially as specified.

707,640. TRAMWAY-SWITCH. ARTHUR B. ROBINSON, Dickinson, N. D. Filed Oct. 1, 1901. Serial No. 77,260. (No model.)

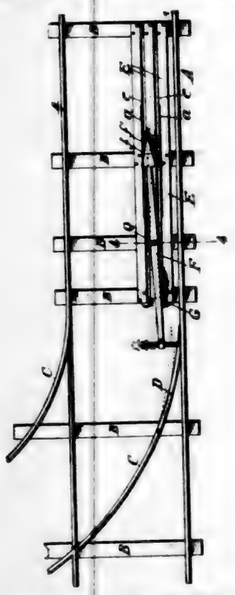

Claim.—1. The combination of the main rails, branch rails having a pivoted rail-section, straight parallel rails or plates having parallel guide-slots between them, the operating-lever having an enlarged spear-shaped head at one end arranged between the guide-slots; yielding connections between the opposite ends of said lever and the pivoted rail-section, and plates having upwardly-inclined surfaces placed between the head of the lever and the end thereof which is connected with the pivoted rail-section.

2. The combination of the main rails, the branch rails, one of which has a pivoted rail-section, a pivoted operating-lever arranged between the main rails, in position to be operated from the car, a spear-shaped head on the operating-lever, a yielding connection between the operating-lever and the pivoted rail-section, a casing attached to the car, and having a plow-shaped lower end, vertically-moving rods N, arranged in guides n' of the casing, footpieces on the upper ends of the rods, springs interposed between the footpieces and the top of the casing, a pin extending through slots in the vertically-moving rods, and a brace P attached to the lower end of the casing and the car-body, for the purpose specified.

707,641. EDGING DEVICE. JOHN ROSTOCHIL, Chicago, Ill. Filed Mar. 30, 1901. Serial No. 53,685. (No model.)

Claim.—1. A device for edging lumber, comprising a saw and saw-table, a slide arranged for forward-and-backward movement in a way extending alongside said saw, a dog or jaw mounted for sliding adjustment along the forward portion of said slide, a dog pivotally connected with the rear end of said slide and adapted to extend forward and engage the upper surface of the lumber, and an upwardly-extending handle rigid with said pivoted dog and adapted to afford a grip for moving the slide in both directions without releasing the lumber, substantially as described.

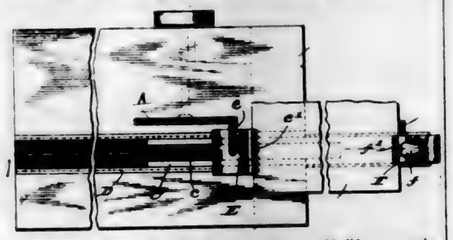

2. A saw-slide, a dog slidably mounted upon said slide, a rear pivoted dog adapted to engage the upper surface of the lumber, an upwardly-extending handle rigid with said pivoted dog, the pivot of the latter being located back of a line extending lengthwise through said handle, so that when force is exerted upon the handle for moving the slide back and forth it will be imparted downwardly to the pivoted dog and hold same in engagement with the lumber substantially as described.

3. A saw, a slide, an upright handle pivoted to the rear end of said slide, a dog slidingly mounted upon said handle and provided with means for rendering it rigid with said handle.

4. A saw, a slide, forwardly-adjustable dog, rear pivoted dog engaging the upper surface of the lumber, the pivoted dog being attached and so formed as to provide space between its engaging point or end and its pivot, so as to admit of variation in the length of lumber without necessitating readjustment of the forward dog, and an upwardly-projecting handle rigid with said pivoted dog and affording a grip for moving the slide back and forth, said handle extending in a line forward of the pivot for the jaw, so that when force is exerted upon the handle for moving the slide back and forth it will be imparted downwardly to the pivoted dog and hold same in engagement with the lumber, substantially as described.

5. In a lumber-edging device, a saw-table, a slide fitted in a way formed in the table, a jaw on the slide forming a member of the clamp, said jaw having an undercut edge facing the opposite member of the clamp and into which the ends of the boards are seated, a set-screw extending through the block and engaging the slide, a clamping-dog pivotally connected with the slide, said dog having an engaging edge formed therewith, a suitable distance forward of the pivot and a handle extending upwardly and forward of the pivot of said dog, whereby the force used in manipulating the slide can be utilized simultaneously to maintain the dog in engagement with the lumber, substantially as described.

6. In a lumber-edging device, a saw-table, a slide fitted in a way formed in the table, a jaw on the slide forming a member of a clamp, said jaw comprising a block having an undercut edge facing the opposite member of the clamp and into which the ends of the boards are seated, a screw run through the block and seated in the slide, a clamping-dog having its end pivoted to the slide, said dog having an engaging member formed therewith a distance from the pivot and a handle extending upwardly and forward of the pivot whereby the force used in manipulating the slide can be utilized simultaneously to maintain the dog in engagement with the lumber, substantially as described.

707,642. INSOLE. ALBERT G. ROGERS, Buffalo, N. Y., assignor of one-half to Udo V. Schaarschuh, Buffalo, N. Y. Filed Oct. 25, 1900. Serial No. 34,332. (No model.)

Claim.—1. The herein-described insole for shoes consisting of the body of the same thickness throughout its width, the hard abutment formed separate from the body and disposed below the same, means rigidly connecting the abutment to the body, and a cover straddling the abutment and having portions arranged adjacent to the under side of the body, whereby two thicknesses of said cover will be engaged by inseam-stitches passed between the major portion of the abutment and the under side of the body.

2. The herein-described insole for shoes consisting of the body of the same thickness throughout its width, the hard abutment of circular form in cross-section, formed separate from the body and disposed below the same, means rigidly connecting the circular abutment to the body, and a cover straddling the abutment and having portions arranged adjacent to the under side of the body, whereby two thicknesses of said cover will be engaged by inseam-stitches passed between the major portion of the abutment and the under side of the body, and spaces are formed between the circular-covered abutment and the under side of the body, substantially as and for the purpose specified.

707,642.

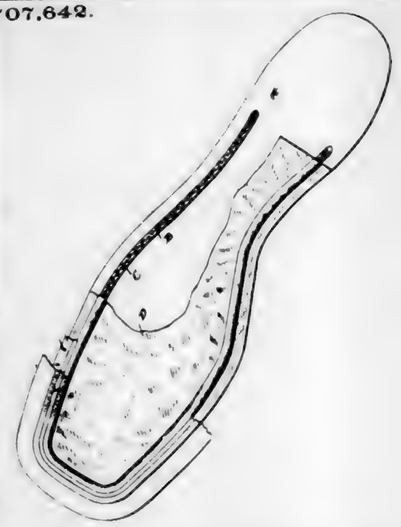

707,648. MACHINE FOR SETTING EYELETS. FRED A. ROBBY, East Somerville, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., a Corporation of New Jersey. Filed Jan. 22, 1901. Serial No. 44,256. (No model.)

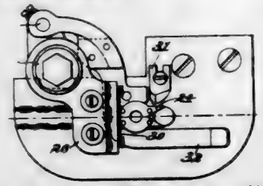

Claim.—1. An eyeleting-machine, having, in combination, a punch acting to feed the material, a setting-die yieldingly mounted in the path of movement of the punch, a coöperating die and means for actuating the punch to feed the material and displace the setting-die, and thereafter allow said die to return to setting position between its coöperating die and the punch substantially as described.

2. An eyeleting-machine, having, in combination, a punch acting to feed the material, a setting-die located in the path of movement of the punch and movable from and to setting position, a coöperating die, means for actuating the punch to feed the material and displace the setting-die, and means for returning the die to setting position between its coöperating die and the punch substantially as described.

3. An eyeleting-machine, having, in combination, a punch acting to feed the material, a setting-die yieldingly mounted in the path of movement of the punch, a coöperating die, and means for actuating the punch to feed the material and displace the setting-die, and thereafter allow said die to return to setting position, the punch being constructed and arranged to form an abutment for said die during the setting operation, substantially as described.

4. An eyeleting-machine, having, in combination, a divided setting-die, means for holding the parts of the die in contact and means for separating said parts, substantially as described.

5. An eyeleting-machine, having, in combination, a divided annular setting-die and means for yieldingly holding the parts of the die in contact, substantially as described.

6. An eyeleting-machine, having, in combination, a divided annular setting-die, pivoted levers to which the parts of the die are secured and means acting on the levers to yieldingly hold the parts of the die in contact, substantially as described.

7. An eyeleting-machine, having, in combination, a punch acting to feed the material, a divided setting-die located in the path of movement of the punch, a coöperating die, means to hold the parts of the setting-die in contact, and means for actuating the punch to feed the material and separate the parts of the setting-die, substantially as described.

8. An eyeleting-machine, having, in combination, a punch acting to feed the material, a divided setting-die located in the path of movement of the punch, a coöperating die, means to yieldingly hold the parts of the setting-die in contact, and means for actuating the punch to feed the material and separate the parts of the setting-die, and thereafter allow said parts to come in contact, the punch being constructed and arranged to form an abutment for said die during the setting operation, substantially as described.

9. An eyeleting-machine, having, in combination, a punch, movable toward and from the work, actuating mechanism therefor, a setting-die, a coöperating die, means for moving the setting-die into a position between its coöperating die and the punch when the punch has been moved from the work, and means for relatively actuating the dies to set the eyelet, substantially as described.

10. An eyeleting-machine, having, in combination, a punch movable toward and from the work, actuating mechanism therefor, a setting-die, a coöperating die, means for moving the setting-die into a position between its coöperating die and the punch when the punch has been moved from the work, and means for relatively actuating the dies to set the eyelet, the punch being constructed and arranged to form an abutment for the setting-die during the setting operation, substantially as described.

11. An eyeleting-machine, having, in combination, a setting-die, a coöperating die, a punch acting to form a hole in and feed the material, means for actuating the punch to bring the hole formed thereby into alinement with the dies, means for moving the setting-die into a position between its coöperating die and the punch and means for actuating said coöperating die, substantially as described.

12. An eyeleting-machine, having, in combination, a setting-die, a coöperating die, a punch acting to form a hole in and feed the material, means for actuating the punch to bring the hole formed thereby into alinement with the dies, means for moving the setting-die into a positon between its coöperating die and the punch, and means for actuating said coöperating die, the punch being constructed and arranged to form an abutment for the setting-die during the setting operation, substantially as described.

13. In an eyeleting-machine, a punch and means for producing longitudinal and lateral movements thereof to punch and feed the material; a reciprocating setting device to supply eyelets and to contribute in the setting operation; and a coöperating setting device arranged to be positioned over the punched hole and supported by the punch-rod prior to the return movement thereof after the material has been punched and fed.

14. In an eyeleting-machine, a punch and means for producing longitudinal and lateral movements thereof to punch and feed the material; a reciprocating setting device to supply eyelets and to contribute in the setting operation; a coöperating setting device normally standing substantially over said first-named setting device but arranged to permit the lateral feed movement of the punch; and an engaging portion of said punch to support said coöperating setting device in the setting operation.

15. In an eyeleting-machine, a punch and means for producing longitudinal and lateral movements thereof to punch and feed the material; a reciprocating setting device to supply eyelets and to contribute in the setting operation; a coöperating setting device normally standing substantially over said first-named setting device; and a spring to permit a yielding movement of said coöperating setting device when engaged by the punch in the lateral or feed movement thereof and to restore the said device to operative condition when the punch rises from the material.

16. The combination with the longitudinally and laterally movable punch; of the lower set, the upper set normally standing substantially in line therewith; a spring normally holding said upper set, said spring yielding when the said upper set is engaged by the punch and restoring said upper set when the punch rises from the material; and a shoulder carried by the punch and adapted to overlie and engage a portion of the upper set when the latter is in operative position.

707,644. MACHINE FOR SETTING EYELETS. FRED A. RUMSEY, East Somerville, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., a Corporation of New Jersey. Filed Mar. 7, 1901. Serial No. 50,240. (No model.)

Claim.—1. An eyeleting-machine, having, in combination, a punch, means for actuating the punch to form a hole in the work to receive an eyelet, a setting-die, a coöperating die, means for moving the setting-die into a position between its coöperating die and the punch, means for moving the setting-die toward the work, and means for relatively actuating the dies to set the eyelet, substantially as described.

2. An eyeleting-machine, having, in combination, a punch, means for actuating the punch to form a hole in the work to receive an eyelet, a setting-die, a coöperating die, means for moving the setting-die into a position between its coöperating die and the punch, the punch being constructed and arranged to form an abutment for the setting-die, means for actuating the punch to move the setting-die toward the work, and means for actuating said coöperating die, substantially as described.

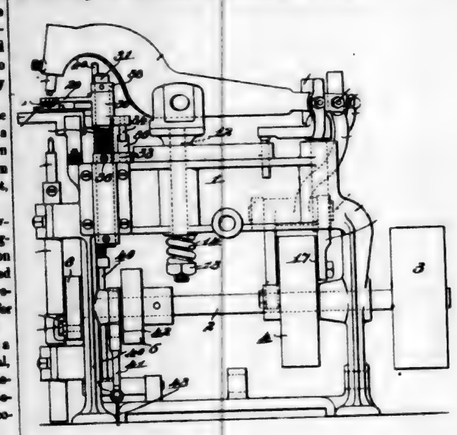

3. An eyeleting-machine, having, in combination, a punch acting to feed the work, means for actuating the punch to form a hole in the work to receive an eyelet, a setting-die movable toward and from the work yieldingly mounted in the path of movement of the punch, a coöperating die, means for actuating the punch to feed the work and displace the setting-die and thereafter allow the setting-die to move to a position between its coöperating die and the punch, the punch being constructed and arranged to form an abutment for the setting-die, means for actuating the punch to move the setting-die toward the work and means for actuating said coöperating die, substantially as described.

4. An eyeleting-machine, having, in combination, a punch acting to feed the work, means for actuating the punch to form a hole in the work to receive an eyelet, a setting-die, a coöperating die, means for actuating the punch to feed the work, means for moving the setting-die to a position between its coöperating die and the punch, the punch being constructed and arranged to form an abutment for the setting-die, means for actuating said coöperating die, substantially as described.

5. An eyeleting-machine, having, in combination, a punch, actuating mechanism therefor, an integral setting-die, a coöperating die, means for moving the setting-die into a position between its coöperating die and the punch and means for relatively actuating the dies to set the eyelet, substantially as described.

6. An eyeleting-machine, having, in combination, a punch, actuating mechanism therefor, an integral setting-die, a coöperating die, means for moving the setting-die into a position between its coöperating die and the punch, and means for actuating said coöperating die, the punch being constructed and arranged to form an abutment for the setting-die during the setting operation, substantially as described.

7. An eyeleting-machine, having, in combination, a punch acting to feed the work, means for actuating the punch to form a hole in the work to receive an eyelet, an integral setting-die yieldingly mounted in the path of movement of the punch, a coöperating die, means for actuating the punch to feed the work and displace the setting-die to one side of the punch, and thereafter allow the setting-die to move to a position between its coöperating die and the punch, the punch being constructed and arranged to form an abutment for the die during the setting operation and means for actuating said coöperating die, substantially as described.

8. An eyeleting-machine, having, in combination, a punch acting to feed the work, means for actuating the punch to form a hole in the work to receive an eyelet, an integral setting-die, a coöperating die, means for actuating the punch to feed the work, means for moving the setting-die into a position between its coöperating die and the punch, the punch being constructed and arranged to form an abutment for the setting-die, and means for actuating said coöperating die, substantially as described.

707,645. LINOTYPE-MACHINE. SAFE DEPOSIT AND TRUST COMPANY OF BALTIMORE and ABNER GREENLEAF, executors of Ottmar Mergenthaler, deceased, and WILLIAM T. HOOFNAGLE, Baltimore, Md.; said Hoofnagle assignor to the Ott. Mergenthaler Company, Baltimore, Md., a Corporation of Delaware. Filed Dec. 13, 1900. Serial No. 749,732. (No model.)

Claim.—1. In a linotype-machine, the combination of a knife-block having a seat for the trimming-knife, a slug-trimming knife movably seated on said block, a spring arranged to hold said knife firmly to its seat, and means for adjusting the knife laterally upon its seat.

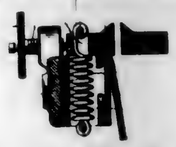

2. In a linotype-machine, the combination of a knife-block, a laterally-adjustable slug-trimming knife movably seated on said block, means for adjusting the knife laterally on the block, and a spring arranged to hold the knife to its seat, said spring being connected to, and movable with, the knife.

3. In a linotype-machine, the combination of a knife-block having openings therethrough, a slug-trimming knife movably seated on said block and spanning said openings, springs extending through the openings in the knife-block and connected to the knife, and means for adjusting the knife laterally, said springs having freedom for lateral movement in the openings of the knife-block whereby they are permitted to follow the knife in its adjustment.

4. In a linotype-machine, the combination of a knife-block, a slug-trimming knife movably seated on said block, springs arranged to hold the knife to its seat, means for adjusting the knife positively in one direction, and springs arranged to hold the knife against said adjusting means.

5. In a linotype-machine, the combination of a knife-block, a slug-trimming knife movably seated on said block, adjusting-screws arranged to impart to said knife a parallel movement, and set-screws carried by the adjusting-screws for alining the knife.

6. In a linotype-machine, the combination of a knife-block, a slug-trimming knife movably seated on said block, a spring to hold said knife to its seat, a pair of adjusting-screws operating on the back of said knife, a spring to hold the knife against the adjusting-screws, pinions on said screws, a gear connecting said pinions, and a device for locking said gear in predetermined positions, for the purpose set forth.

7. In a linotype-machine, the combination with the knife-block, and the adjustable knife, of adjusting-screws for imparting to said knife a parallel movement, and the set-screws carried by and arranged axially in said adjusting-screws, for the purpose set forth.

8. In a linotype-machine, the combination of a knife-block, a slug-trimming knife movably seated on said block, adjusting-screws connected to move simultaneously, set-screws carried by said adjusting-screws and bearing on the back of the knife, springs arranged to constantly press the knife against said set-screws, and springs arranged to constantly hold the knife to its seat upon the block.

707,646. SOUP MATERIAL AND METHOD OF MAKING SAME. WALTER T. SCHEELE, Catonsville, Md., assignor of two-thirds to Hermann Knollenberg and William F. Arms, Baltimore, Md. Filed Sept. 10, 1901. Serial No. 74,977. (No specimens.)

Claim.—1. The process of preparing a desiccated food product which consists in comminuting a quantity of fresh meat; mixing therewith a quantity of flour, a small quantity of yeast, and sufficient water to reduce the whole to a pasty condition; permitting the pasty mass thus prepared to stand for several hours subject to a temperature suitable to cause fermentation to take place; and finally drying the mass at a low temperature.

2. The process of preparing a desiccated food product which consists in mixing together comminuted fresh meat, flour, yeast and water substantially in the proportions of one hundred pounds of meat, one hundred and fifty pounds of flour, twenty-five ounces of yeast, and sufficient water to form a pasty mass; fermenting the mass at a temperature of about 120° for several hours; spreading the mass and drying the same at a temperature of about 140°, and finally grinding or comminuting the product thus formed.

3. The desiccated pulverized food product consisting of fermented uncooked meat and flour, the fibrin of the meat being digested and the albumen uncoagulated, substantially as described.

707,647. TELESCOPIC COMPOUND ENGINE. WILLIAM SCHEIBER, Chicago, Ill., assignor to the Whitfield Company, Memphis, Tenn., a Corporation of Mississippi. Filed Mar. 23, 1901. Serial No. 52,628. (No model.)

Claim.—1. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment and a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; of a valve-casing arranged axially in said cylinders, a steam-chest in communication with the live-steam inlet surrounding said casing, the latter provided with ports in communication with the steam-chest and the high and low pressure cylinder, and a valve in said casing organized to control said ports to cause the engine to work compound, for the purpose set forth.

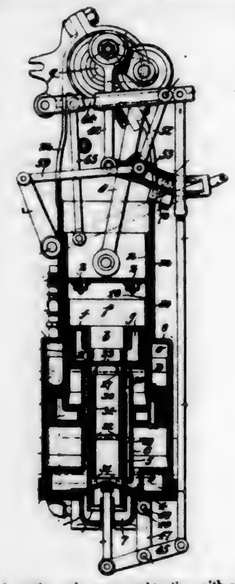

2. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment and a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; of a valve-casing arranged axially in said cylinders, a steam-chest in communication with the live-steam inlet surrounding said casing, the latter provided with ports in communication with said steam-chest and the high and low pressure cylinders, and a valve movable in said casing and organized to control said ports to cause the engine to work compound or semicompound, for the purpose set forth.

3. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment and a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; of a valve-casing arranged axially in said cylinders, a steam-chest in communication with the live-steam inlet surrounding said casing, the latter provided with ports in communication with the steam-chest and with the high and low pressure cylinders, a valve in said valve-casing organized to control said ports and cause the engine to work either compound or semicompound and means for varying the travel of said valve to change the operation of the engine from compound to semicompound and vice versa, for the purposes set forth.

4. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment, a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment and the crank-shaft connected with the high-pressure cylinder; of a valve-casing arranged axially in said cylinders, a steam-chest, in communication with the live-steam inlet, surrounding said valve-casing, the latter provided with ports in communication with said steam-chest and with the high and low pressure cylinders, a valve in said casing organized to control said ports to cause the engine to work compound, and a reversing-gear connected with said valve for changing the direction of rotation of the engine, for the purposes set forth.

5. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment, a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment, and the crank-shaft connected with said high-pressure cylinder; of a valve-casing arranged axially in said cylinders, a steam-chest, in communication with the live-steam inlet, surrounding said valve-casing, the latter provided with ports in communication with said steam-chest and with the high and low pressure cylinders, a valve in said casing organized to control said ports and cause the engine to work either compound or semicompound, a reversing-gear connected with the valve for changing the direction of rotation of the crank-shaft whether the engine works compound or semicompound, and

mechanism controlled by the reversing-gear for varying the travel of the valve and thereby changing the operation of the engine from compound to semicompound or vice versa, for the purposes set forth.

6. In a telescopic engine, the combination with the low-pressure cylinder having a chambered head connectible with a source of live-steam supply, a chambered stationary abutment, and the high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; of a valve-casing arranged axially in said cylinders, a steam-chest encompassing said valve-casing, said steam-chest in perpetual communication with the chambers in the low-pressure cylinder-head and stationary abutment, said valve-casing provided with suitable ports in communication with the steam-chest and with the high and low pressure cylinders, and a valve in said casing constructed to control said ports, substantially as and for the purpose set forth.

7. In a telescopic engine, the combination with the low-pressure cylinder having a chambered head connectible with a source of live-steam supply, a chambered stationary abutment, and the high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; of a tubular valve-casing secured to said chambered head of the low-pressure cylinder and carrying the abutment, a steam-chest encompassing the valve-casing, said steam-chest in perpetual communication with the chambers in the low-pressure cylinder-head and the abutment, said valve-casing provided with suitable ports in communication with the steam-chest and with the high and low pressure cylinders and a valve in said casing constructed to control said ports, substantially as and for the purpose set forth.

8. In a telescopic engine, the combination with the low-pressure cylinder having a chambered head connectible with a source of live-steam supply, a chambered stationary abutment, and the high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; of a tubular valve-casing secured to said chambered head of the low-pressure cylinder and carrying the abutment, a steam-chest encompassing the valve-casing, said steam-chest in perpetual communication with the chambers in the low-pressure cylinder-head and the abutment, said valve-casing provided with suitable ports in communication with the steam-chest and with the high and low pressure cylinders and a tubular valve closed at both ends and constructed to control said ports, substantially as and for the purpose set forth.

9. A telescopic engine, comprising a stationary cylinder provided with an extension, a crank-shaft mounted in said extension, a stationary abutment, a piston-cylinder having reciprocating motion in said stationary cylinder and on said abutment, said piston-cylinder likewise provided with an extension guided by the extension of the low-pressure cylinder, and a connection connecting the extension of the piston-cylinder with the crank-shaft, for the purpose set forth.

10. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment, a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment, an air-intake in communication with the outer end of the low-pressure cylinder whereby air is drawn into said end of the low-pressure cylinder on the instroke of the high-pressure piston-cylinder, and means preventing the air from escaping through said intake on the return stroke of said high-pressure piston-cylinder; of a pipe in communication with the air-chamber in said low-pressure cylinder and with the exhaust-passage of the engine, and means for diverting the flow of air from said exhaust-passage, for the purpose set forth.

11. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment, a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment, and an air-chamber in the outer end of said high-pressure piston-cylinder adapted to exhaust into the corresponding end of the low-pressure cylinder on the instroke of said high-pressure piston-cylinder, an air-intake for said air-chamber and means preventing the air therein from escaping through said intake on the outstroke of said high-pressure piston-cylinder; of a pipe in communication with the air-space in the low-pressure cylinder and with the exhaust-passage of the engine, and means for diverting the flow of air from said exhaust-passage, for the purposes set forth.

12. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment, a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment, an air-intake in communication with the outer end of the low-pressure cylinder whereby air is drawn into the same on the instroke of the high-pressure piston-cylinder, and means for preventing such air from escaping through said intake on the outstroke of said high-pressure piston-cylinder, a pipe-coupling and pipes leading therefrom to the outer end of the low-pressure cylinder and to the exhaust-passage of the engine, and a branch pipe leading from said coupling; of a check-valve in the pipe leading from the coupling to the aforesaid exhaust-passage, for the purposes set forth.

13. In a telescopic engine, the combination with a low-pressure cylinder, a stationary abutment, a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment, an air-intake in communication with the outer end of the low-pressure cylinder whereby air is drawn into the same on the instroke of the high-pressure piston-cylinder, and means for preventing such air from escaping through said intake on the outstroke of said high-pressure piston-cylinder, a pipe-coupling and pipes leading therefrom to the outer end of the low-pressure cylinder and to the exhaust-passage of the engine, and a branch pipe provided with a regulating-cock leading from said coupling; of a check-valve in the pipe leading from the coupling to the aforesaid exhaust-passage, for the purpose set forth.

14. A locomobile-engine comprising twin telescopic compound engines having a common exhaust-passage and comprising each a low-pressure cylinder, a stationary abutment and a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; air-intakes in communication with the outer ends of the high and low pressure cylinders whereby air is drawn into the same on the instroke of the high-pressure piston-cylinder, and means for preventing such air from escaping through said intakes on the outstroke of said high-pressure piston-cylinder; in combination with a four-way pipe-coupling, and pipes connected thereto and in communication with the air-spaces in the high and low pressure cylinders, a third pipe connected with the said coupling and in communication with the exhaust-passage of the engines, and pressure-controlled means for diverting the flow of air from said exhaust-passage through a fourth pipe connected with said coupling, substantially as and for the purposes set forth.

15. A locomobile-engine comprising twin telescopic compound engines having a common exhaust-passage and comprising each a low-pressure cylinder, a stationary abutment and a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment, air-intakes in communication with the outer ends of the high and low pressure cylinders whereby air is drawn into the same on the instroke of the high-pressure piston-cylinder, and means for preventing such air from escaping through said intakes on the outstroke of said high-pressure piston-cylinder; in combination with a four-way pipe-coupling, and pipes connected thereto and in communication with the air-spaces in the high and low pressure cylinders, a third pipe connected with the said coupling and in communication with the exhaust-passage of the engines, a pressure-controlled check-valve in said pipe, and a fourth pipe connected with coupling and provided with a regulating-cock, substantially as and for the purposes set forth.

16. The combination with the power cylinder and piston of a steam-engine; of an air-chamber, means for drawing air into and forcing such air from said chamber by the movements of the piston, a pipe connecting the air-chamber with the exhaust-passage of the engine, and means for diverting the flow of air from said exhaust-passage, for the purpose set forth.

17. The combination with the power cylinder and piston of a steam-engine; of an air-chamber, means for drawing air into and forcing such air from said chamber by the movements of the piston, a relief-pipe connecting the air-chamber with the exhaust-passage of the engine, a branch pipe connected with said relief-pipe, and a pressure-controlled check-valve in the last-named pipe on the exhaust side of the branch pipe, for the purposes set forth.

18. In a telescopic engine, the combination with the low-pressure cylinder, the stationary abutment and the high-pressure piston-cylinder both said cylinders closed at their outer ends; of means for preventing compression of air in the said cylinder ends, for the purposes set forth.

19. The combination with a telescopic engine comprising a low-pressure cylinder, a stationary abutment and a high-pressure piston-cylinder working in said low-pressure cylinder and on said abutment; of a pump-chamber, and means for drawing air into and forcing such air from said chamber by the reciprocating movements of the piston-cylinder, for the purposes set forth.

707,648. MACHINE FOR TAPERING THE ENDS OF CORRUGATED PIPES. JULIUS H. SCHLAFLY, Canton, Ohio, assignor to The Berger Manufacturing Company, Canton, Ohio. Filed Mar. 31, 1902. Serial No. 100,742. (No model.)

Claim.—1. In a machine of the class described, a base or support, frames carried thereby, a power-shaft provided with a pinion, cog-wheels driven from the pinion upon the power-shaft, a series of shafts located around the power-shaft, dies capable of reciprocating movement, and means for forcing the dies inward or toward each other, and a mandrel provided with a tapered portion, substantially as and for the purpose specified.

2. In a machine of the class described, a base or support, frames carried thereby, a power-shaft provided with a pinion, cog-wheels driven from the pinion upon the power-shaft, a series of shafts located around the power-shaft, dies capable of reciprocating movement, and means for imparting a reciprocating movement to the dies and a mandrel, substantially as and for the purpose specified.

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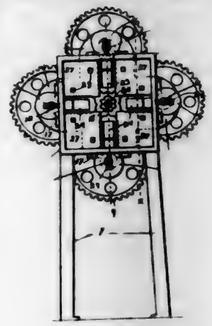

707,649. **BALLAST-SPREADING CAR.** WILLIAM R. SCOTT, Fort Worth, Tex. Filed Aug. 2, 1901. Serial No. 70,868. (No model.)

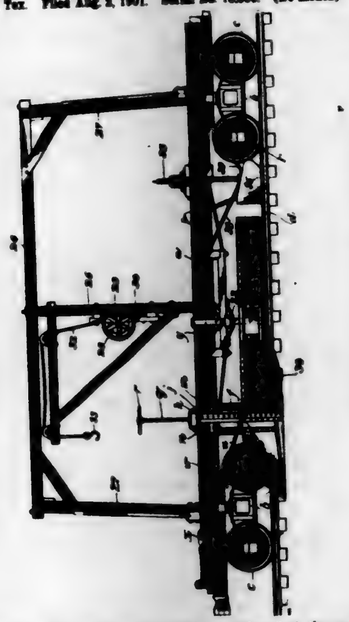

Claim.—1. In a ballast-spreader of the class described, the combination of a car provided with a set of plows arranged underneath in a horizontal plane, one at each side of the car and extending at an angle from a point outside the supporting-wheels rearwardly and inwardly to a point inside the wheels, and foldably secured to the car-frame so that they may be moved outwardly and upwardly above the car, substantially as described.

2. In a ballast-spreader of the class described, the combination of a car provided with a set of movable plows at its forward end arranged underneath the same and in a horizontal plane extending from a point outside the supporting-wheels backwardly and inwardly to a point inside the wheels and providing a space between their rear inner ends, and means for moving the plows outwardly and upwardly above the car-frame, substantially as described.

3. In a ballast-spreader of the class described, the combination of a car, a pair of plows foldably secured thereto and arranged underneath the same and extending from a point outside the supporting-wheels of the car backwardly and inwardly to a point inside the wheels and providing a space between their rear inner ends, and beams pivotally securing the plows to the car-frame so as to swing them outwardly and upwardly above the same, substantially as described.

4. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged at the forward end of such car underneath the same extending from a point outside the wheels of the supporting-car backwardly and inwardly to a point inside such supporting-wheels and providing a discharging-space between the rear inner ends of the plows, and a supplementary plow secured to the car underneath the same with its apex arranged back of and substantially in line with the center of the space between the rear ends of the forward pair of plows, substantially as described.

5. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the wheels of the supporting-car backwardly and inwardly to a point inside of such wheels, outwardly-extending beams or arms pivotally secured to the car, and upright beams on such plows secured to the pivoted swinging beams, for swinging the plows outwardly and upwardly above the car-frame, substantially as described.

6. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the wheels of the supporting-car backwardly and inwardly to a point inside of such wheels, outwardly-extending beams or arms pivotally secured to the car, and an upright beam on each of such plows adjustably secured to the swinging arms or beams, substantially as described.

7. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the wheels of the supporting-car backwardly and inwardly to a point inside of such wheels, outwardly-extending beams or arms pivotally secured to the car, an upright beam on each of such plows provided with a rectangular frame portion at the upper part thereof, and means for securing the rectangular frame portion of the plow-beam to the hinged or swinging beams, substantially as described.

8. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the supporting-wheels of the car backwardly and inwardly to a point inside of such supporting-wheels and providing a discharging-space between their rear inner ends, a pair of swinging arms or beams secured to the frame of the car, an upright plow-beam on each of such plows, means for adjustably securing such upright plow-beams to the swinging beams, and a pair of supplementary plow-beams pivotally secured to the frame of the car to assist in supporting the plows in position, substantially as described.

9. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the supporting-wheels of the car backwardly and inwardly to a point inside of such supporting-wheels and providing a discharging-space between their rear inner ends, a pair of swinging arms or beams secured to the frame of the car, an upright plow-beam on each of such plows, means for adjustably securing such upright plow-beams to the swinging beams, a pair of supplementary plow-beams pivotally secured to the frame of the car to assist in supporting the plows in position, and means for locking the supplementary plow-beams in operative position, substantially as described.

10. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the supporting-wheels of the car backwardly and inwardly to a point inside of such supporting-wheels and providing a discharging-space between their rear inner ends, a pair of swinging arms or beams secured to the frame of the car, an upright plow-beam on each of such plows, means for adjustably securing such upright plow-beams to the swinging beams, a pair of supplementary plow-beams pivotally secured to the frame of the car to assist in supporting the plows in position, a pair of outwardly-extending arms in the car-frame adapted to receive the supplementary plow-beams when in operative position, and means for locking the supplementary plow-beams in engagement with the outwardly-extending arms on the car-frame, substantially as described.

11. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the supporting-wheels of the car backwardly and inwardly to a point inside of such supporting-wheels and providing a discharging-space between their rear inner ends, a pair of swinging arms or beams secured to the frame of the car, an upright plow-beam on each of such plows, means for adjustably securing such upright plow-beams to the swinging beams, a pair of supplementary plow-beams pivotally secured to the frame of the car to assist in supporting the plows in position, a pair of outwardly-extending arms 20 on the car-frame provided with lugs 21 to receive the supplementary plow-beams between them, and a recessed plate 22 for locking the supplementary plow-beams in engagement with the outwardly-extending arms, substantially as described.

12. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same and extending from a point outside the supporting-wheels thereof backwardly

and inwardly to a point inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging arms pivotally secured to the car-frame and extending outwardly from each side thereof, plow-beams secured to such swinging arms, by which the plows are swung outwardly and upwardly above the car-frame, a pair of chains—one secured to each plow-beam, and a rotatable drum on which such chains are wound to tighten and loosen the same and hold the plows in proper operative position, substantially as described.

13. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged at or near the front portion thereof and extending from points at each side of the car outside of the supporting-wheels thereof backwardly and inwardly underneath the car to a point inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging beams pivotally secured to the car-frame and extending out from each side thereof, a plow-beam for each plow adjustably secured to its proper swinging beam, a pair of chains—one for each plow-beam, a drum upon which each chains are wound, a vertically-arranged shaft operating each drum, and pawl-and-ratchet mechanism for holding the shaft against rotation at the proper time or times, substantially as described.

14. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels backwardly and inwardly to points inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging beams pivotally secured to the frame of the car and extending outwardly from each side thereof, a plow-beam for each plow provided with rectangular frame portions at their upper ends, and a U-shaped bolt for each swinging beam provided with nut mechanism and adjustably securing each plow-beam to its respective swinging beam, substantially as described.

15. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels backwardly and inwardly to points inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging beams pivotally secured to the frame of the car and extending outwardly from each side thereof, a plow-beam for each plow provided with rectangular frame portions at their upper ends, a U-shaped bolt for each swinging beam provided with nut mechanism and adjustably securing each plow-beam to its respective swinging beam, two-part stay-rods hinged together and pivotally secured to the forward end of the car extending backwardly and outwardly and pivotally secured to each plow, respectively, substantially as described.

16. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels backwardly and inwardly to points inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging beams pivotally secured to the frame of the car and extending outwardly from each side thereof, a plow-beam for each plow provided with rectangular frame portions at their upper ends, a U-shaped bolt for each swinging beam provided with nut mechanism and adjustably securing each plow-beam to its respective swinging beam, and a two-part stay-rod hinged together and provided with a turnbuckle for each plow pivotally secured thereto and to the car-frame, substantially as described.

17. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels backwardly and inwardly to points inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging beams pivotally secured to the frame of the car and extending outwardly from each side thereof, a plow-beam for each plow provided with rectangular frame portions at their upper ends, a U-shaped bolt for each swinging beam provided with nut mechanism and adjustably securing each plow to its respective swinging beam, two-part stay-rods hinged together and pivotally secured to the forward end of the car extending backwardly and outwardly and pivotally secured to each plow, respectively, supplementary plow-beams adjustably secured to each plow and pivotally secured to the car-frame, and means for locking such supplementary plow-beams at their downward limit of motion and operative position, substantially as described.

18. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels backwardly and inwardly to points inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging beams pivotally secured to the frame of the car and extending outwardly from each side thereof, a plow-beam for each plow provided with rectangular frame portions at their upper ends, a U-shaped bolt for each swinging beam provided with nut mechanism and adjustably securing each plow-beam frame to its respective swinging beam, two-part stay-rods hinged together and pivotally secured to the forward end of the car extending backwardly and outwardly and pivotally secured to each plow, respectively, supplementary plow-beams adjustably secured to each plow and pivotally secured to the car-frame, means for locking such supplementary plow-beams at their downward limit of motion and operative position, a supplementary plow in the rear of the first-named plows having its apex substantially in line with the central portion of the discharging-space between such plows and underneath the car, and a post on which such supplementary plow is mounted extending up through the car, and spring mechanism for holding such post at its downward limit of motion, substantially as described.

19. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels backwardly and inwardly to points inside of such wheels and providing a discharging-space between their rear inner ends, a pair of swinging beams pivotally secured to the frame of the car and extending outwardly from each side thereof, a plow-beam for each plow provided with rectangular frame portions at their upper ends, a U-shaped bolt for each swinging beam provided with nut mechanism and adjustably securing each plow-beam frame to its respective swinging beam, two-part stay-rods hinged together and pivotally secured to the forward end of the car extending backwardly and outwardly and pivotally secured to each plow, respectively, supplementary plow-beams adjustably secured to each plow and pivotally secured to the car-frame, means for locking such supplementary plow-beams at their downward limit of motion and operative position, a supplementary plow in the rear of the first-named plows having its apex substantially in line with the central portion of the discharging-space between such plows and underneath the car, a post on which such supplementary plow is mounted extending up through the car, spring mechanism for holding such post at its downward limit of motion, and crane mechanism pivotally mounted on each car and provided with the usual winding-drum, rope and hook for raising and lowering the plows out of and into position, substantially as described.

20. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels of the car backwardly and inwardly to points inside of such wheels, means for foldably securing such plows to the car, whereby they may be moved upwardly and inwardly to be carried thereby, chain and stay-rod mechanism to assist such plows in resisting the strains incident to work, a supplementary plow arranged underneath the car in the rear of the forward pair of plows to complete the spreading of the ballast, a vertically-arranged post upon which such supplementary plow is mounted movably mounted in the platform of the car and extending up therefrom, spring mechanism for holding such post and its plow at the downward limit of motion, stay-rod mechanism for such plow to assist it in resisting the strains incident to use, and a clip or similar element secured to the movable post by which the post and plow may be raised out of operative position, substantially as described.

21. In a ballast-spreader of the class described, the combination of a supporting-car, a pair of plows arranged underneath the same at the forward end thereof extending from points outside the supporting-wheels of the car backwardly and inwardly to points inside of such wheels, means for foldably securing such plows to the car, whereby they may be moved upwardly and inwardly to be carried thereby, chain and stay-rod mechanism to assist such plows in resisting the strains incident to work, a supplementary plow arranged underneath the car in the rear of the forward pair of plows to complete the spreading of the ballast, a vertically-arranged post upon which such supplementary plow is mounted movably mounted in the platform of the car and extending up therefrom, spring mechanism for holding such post and its plow at the downward limit of motion, stay-rod mechanism for such plow to assist it in resisting the strains incident to use, a clip or similar element secured to the movable post by which the post and plow may be raised out of operative position, a longitudinally-arranged beam above the platform of the car and supported at or near each end of such car, and a crane having its vertical post pivotally mounted in the platform of the car and in the longitudinal beam to raise and lower the plow mechanisms out of and into operative position, substantially as described.

707,650. ANTIFRICTIONAL BEARING. FREDERIC S. SEAGRAVE and HOMER P. ELLIOTT, Columbus, Ohio; said Elliott assignor to said Seagrave. Filed Nov. 29, 1899. Serial No. 737,849. (No model.)

Claim.—The combination with a spindle having peripheral groove, of a ring formed of semicircular sections hinged at their adjacent ends and having a flange portion engaged in said groove and portions embracing the periphery of the spindle, a recessed ring bearing against one side of the sectional ring, a ring bearing against the shoulder of the spindle, and rollers having projecting end pins seated in channels in the last-mentioned rings, an inclosing boxing, and thrust-bearings, all substantially as shown and described.

707,651. FLUID-PRESSURE REGULATOR. ROBERT W. SETZE and FRANK PRATT, Indianapolis, Ind. Filed Nov. 27, 1901. Serial No. 83,826. (No model.)

Claim.—1. A fluid-pressure regulator including a hollow case having a chamber and opposing stop members, a main valve having a valve-seat therein and a passage-way therethrough and operating between the opposing stop members, and a secondary valve mounted in the main valve below the seat therein.

2. A fluid-pressure regulator including a hollow case, a main valve in the case composed of flexible material having a passage-way therethrough and a valve-seat, a secondary valve mounted in the main valve opposite the valve-seat, and stop members limiting the movements of the valves.

3. A fluid-pressure regulator including a case, a flanged main valve mounted in the case and adapted to permit the passage of fluid under low pressure and to be actuated by increased pressure, a stop member in the path of the valve-flange adapted to be engaged thereby whereby the flow of fluid may be limited, a passage-way through the main valve, and a secondary valve mounted in the main valve opposite the inlet-orifice of the passage-way.

4. In a fluid-pressure regulator, the combination of the case having the internal annular stop member, the opposing stop member, a main valve seated against the annular stop member and adapted to be moved against the opposing stop member, a passage-way through the main valve, a secondary valve carried by the main valve opposite the inlet-orifice of the passage-way, a stem attached to the secondary valve and extending through the passage-way, a stop member attached to the stem, and a duct extending from the passage-way to the exterior of the main valve.

5. In a fluid-pressure regulator, the combination of the hollow case, the main valve having the valve-chamber in the lower part thereof and the smaller chamber above the valve-chamber, the annular external flange on said valve, the passage-way through said valve, the secondary valve mounted in said valve-chamber, the valve-stem, the stop member on said stem, and the stop members limiting the movements of said main valve whereby when engaged by said flange the flow of the fluid through the case shall be limited.

707,652. CALCULATOR. EDWARD W. SIBLEY, Providence, R. I., assignor of two-thirds to Henry Dunster, Jr., and Horace Thurston, Providence, R. I. Filed July 3, 1901. Serial No. 67,005. (No model.)

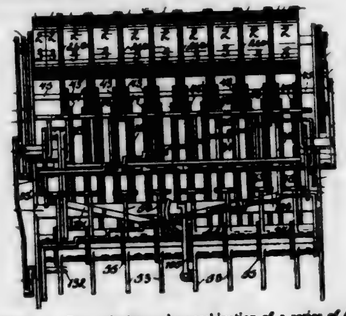

Claim.—1. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a shaft having a series of pawls thereon; each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; means for causing the operation of any of said keys to move the pawl-carrying shaft and thereby so move an indicator that the latter registers the digit of the operating-key; and means for bringing any desired pawl into position of engagement with its ratchet-wheel to operate the connected indicator.

2. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of said ratchet-wheels; a shaft having a series of pawls thereon; each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; a rotatable sleeve connected with said shaft and arranged to rock the pawls in succession; means for rotating the sleeve and thereby bring any desired pawl into position of engagement with its ratchet-wheel to operate the connected indicator; and means for causing the operation of any of said keys to move the pawl-carrying shaft and thereby operate an indicator so that the latter registers the digit of the operating-key.

3. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a shaft having a series of pawls, each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; a rotatable sleeve connected with said shaft and arranged to engage the pawls; said sleeve have a helical series of notches each located at a pawl-engaging portion of the sleeve; means for rotating the sleeve, and thereby bring any of the notches into engagement with its pawl and place the latter in position to operate the connected indicator; and means for causing the operation of any of the said keys to move an indicator so that the latter registers the digit of the operated key.

4. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of said ratchet-wheels; a shaft having a series of pawls thereon, each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; a rotatable sleeve connected with the shaft and arranged to rock the pawls in succession; a second set of keys; means for causing the operation of each latter key to rotate the sleeve and thereby bring a pawl into position of engagement to operate the indicator corresponding to the latter key operated; and means for causing the operation of any of the said digit-keys to move the pawl-carrying shaft and thereby move an indicator so that the latter registers the digit of the operated key.

5. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven

from one of the ratchet-wheels; a shaft having a series of pawls thereon each pawl being disposed in alinement with one of said ratchet-wheels means for bringing any desired pawl into engagement with its ratchet-wheel; a pair of levers; means for causing the levers to rock said pawl-carrying shaft; a step-bar connecting said levers; a set of movable digit key-bars; means for retaining the key-bars normally in alinement; the key-bars being so disposed as to engage respectively the steps of the step-bar and thereby rock said levers.

6. In a calculator, the combination of a series of digit-indicators; separate means for moving each of the indicators and cause it to register any digit; a pair of levers; a step-bar connecting said levers; a set of key-bars, each having a gear thereon; means for retaining the key-bars normally in alinement; a rock-bar located opposite each key-bar and having a gear thereon; the said gear on each key-bar engaging the gear on the opposite rock-bar; said step-bar being located between the set of key-bars and the set of rock-bars, with the steps disposed to be each engaged by a key-bar and its opposite rock-bar; a set of digit-keys; one of said levers being arranged to cause any one of said indicator-moving means to be operated by any of said digit-keys when operated, and thereby register the digit of the operated key.

7. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a shaft having a series of pawls thereon, each pawl being disposed in alinement with one of said ratchet-wheels; a rotatable sleeve connected with said shaft and arranged to rock the pawls in succession; a gear on said sleeve; a pair of levers; means for causing one of said levers to rotate said gear; a step-bar connecting said levers; a set of key-bars, each having a gear thereon; means for retaining the key-bars normally in alinement; a rock-bar located opposite each key-bar and having a gear thereon; the said gear on each key-bar engaging the gear on the opposite rock-bar; said step-bar being located between the set of key-bars and the set of rock-bars with the steps disposed to be each engaged by a key-bar and its opposite rock-bar; a set of digit-keys; and means for causing the operation of any of said latter keys to move the pawl-carrying shaft and thereby operate an indicator so that the latter registers the digits of the operating-key.

8. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a pair of pivoted arms; a shaft carried by the free extremity of said arms; a series of pawls mounted on said shaft; each pawl being disposed in alinement with one of said ratchet-wheels; a rotatable sleeve mounted on said shaft; means on the sleeve for rocking said pawls in succession upon the rotation of the sleeve; a set of digit-keys; means for causing the depression of any of said keys to rock said arms and thereby cause a pawl to move a ratchet-wheel and operate an indicator; and means for causing the return movement of said arms and pawls upon the release of a depressed key, to rotate said sleeve and thereby move the pawl just operated away from its engaging ratchet-wheel, and also move the adjacent pawl into position to engage its ratchet-wheel.

9. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a pair of pivoted arms; a shaft carried by the free extremity of said arms; a series of pawls mounted on said shaft; each pawl being disposed in alinement with one of said ratchet-wheels; a rotatable sleeve mounted on said shaft and arranged to bring successive pawls into position of engagement; a pivoted lever having a pawl mounted thereon; a ratchet-wheel arranged to engage said pawl; a gear mounted on said sleeve; a pin-wheel connected with said ratchet-wheel and normally in engagement with said sleeve-gear; a second pivoted lever having a notched portion arranged to engage one extremity of said lever; the first-mentioned lever being arranged to bring its extremity into engagement with the notched portion of the second lever; the second lever having its extremity disposed so as to be moved by one of said arms on the return movement of the latter after having operated one of its supporting-pawls, and thereby cause the first lever to be tripped from said notch; means for moving the first lever in a reverse direction; said pawl and ratchet-wheel being so arranged that on the said reverse movement of said first lever the pawl engages and moves its ratchet-wheel, and thereby rotates the sleeve to bring an adjacent pawl into position of engagement; a set of digit-keys; and means for causing the depression of any of said keys to rock said arms and connected pawl and operate an indicator.

10. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a set of digit-keys; means for causing the depression of any of said keys to rock said arms and pawls and cause a ratchet-wheel to move an indicator; a pair of pivoted arms; a shaft carried by the free extremity of said arms; a series of pawls mounted on said shaft, each pawl being disposed in alinement with one of said ratchet-wheels; a rotatable sleeve mounted on said shaft; and arranged to bring successive pawls into position of engagement; a pivoted lever having a pawl mounted thereon; a ratchet-wheel arranged to engage said pawl; a gear mounted on said sleeve; a pin-wheel connected with said ratchet-wheel, and normally in engagement with said sleeve-gear; a second pivoted lever having a notched portion arranged to engage one extremity of said lever; the first-mentioned lever being arranged to bring its extremity into engagement with the notched portion of the second lever; the second lever having its extremity disposed so as to be moved by one of said arms on the return movement of the latter after having operated one of its supporting-pawls and thereby cause the first lever to be tripped from said notch; means for moving the first lever in a reverse direction; said pawl and ratchet-wheel being so arranged that on the said reverse movement of said first lever the pawl engages and moves its ratchet-wheel, and thereby rotates the sleeve to bring an adjacent pawl into position of engagement; means for causing the operation of any of said keys to rock said first lever and thereby cause the sleeve to bring an adjacent pawl into position of engagement.

11. In a calculator, the combination of a shaft; a series of sleeves loosely mounted on said shaft and secured together; a series of digit-cylinders each having a disk portion; means for causing the digit-cylinders to register any desired digit; each disk being loosely mounted on one of said sleeves; a second disk secured to each of said sleeves and having a notch in its periphery; a ratchet-wheel secured to said second disk, a pawl pivoted on the first disk and arranged to engage said second disk on an adjacent cylinder at its notched portion, and to also engage the adjacent ratchet-wheel; a gear on each of said cylinders; means for rotating each of said cylinders; said disk being arranged to normally hold the pawl from engaging the adjacent ratchet-wheel; said disk having its notch arranged to permit the pawl when traveling in a certain direction to engage a tooth when rotated and thereby move the ratchet-wheel and attached cylinder for one-tenth of a revolution, and thereupon force the pawl from engagement with the ratchet-wheel; said disk having its notch also arranged to engage the pawl when the latter is moving in the same direction and be carried around with it.

12. In a calculator, the combination of a shaft; a series of sleeves loosely mounted on said shaft and secured together; a series of digit-cylinders each having a disk portion; means for causing the cylinders to register any desired digit; each disk being loosely mounted on said sleeves; a second disk secured to each of said sleeves and having a notch in its periphery; a ratchet-wheel secured to said first disk; a pawl pivoted on the first disk and arranged to engage said second disk on an adjacent cylinder at its notched portion and to also engage the adjacent ratchet-wheel; a gear on each of said cylinders; means for rotating each of said cylinders; said disk being arranged to normally hold the pawl from engaging the adjacent ratchet-wheel; said second disk having its notch arranged to permit the pawl when traveling in a certain direction to engage a tooth when rotated, and thereby move the ratchet-wheel and attached cylinder for one-tenth of a revolution, and thereupon force the pawl from engagement with the ratchet-wheel; said second disk having its notch also arranged to engage the pawl when the latter is moving in a certain direction and be carried around with it; a gear secured to said sleeve; and a pivoted key-bar having a segment-gear arranged to engage said gear and rotate it one revolution on the depression of the key-bar, and thereby cause the said sleeve and disks to engage with the registering-cylinders and move them through the balance of a revolution.

13. In a calculator, the combination of a series of digit-indicators; a set of ratchet wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a pair of pivoted arms; a shaft carried by the free extremities of said arms; a series of pawls mounted on said shaft, each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; means for causing the depression of any of said keys to bring a pawl to move a ratchet-wheel and thereby move an indicator; means for returning all of said indicators to "0;" and means for causing said latter operation to throw all of the pawls out of engagement with the ratchet-wheels.

14. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a shaft having a series of pawls thereon; each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; a rotatable sleeve connected with said shaft and arranged to rock the pawls in succession; means for causing the operation of any of the keys to move the pawl-carrying shaft and thereby move an indicator so that the latter registers the digit of the operating-key; means for rotating the sleeve and thereby bring any desired pawl into position of engagement with its ratchet-wheel to operate the connected indicator; means for returning all said indicators to "0;" and means for causing said latter operation to move said sleeve and thereby throw all the pawls out of position of engagement with their ratchet-wheels.

15. In a calculator, the combination of a set of indicators, a second set of indicators; a plurality of digit-keys; means for causing the operation of said keys to register a certain number on the first set of indicators; means for causing the operation of said keys to register a certain number on the second set of indicators; a third set of indicators; and means for causing the operation of the keys that caused those two numbers to be registered to automatically register the product of the two said numbers on the third set of indicators.

16. In a calculator, the combination of a set of indicators; a second set of indicators; a plurality of digit-keys; means for causing the operation of said keys to register a certain number on the first set of indicators; means for causing the operation of said keys to register a certain number on the second set of indicators; a third set of indicators; and means for causing the operation of the keys that caused those two numbers to be registered to automatically register the product of the two said numbers on the third set of indicators; means for setting the second set of indicators at "0;" and means for causing the set of again setting up a number on the second set of indicators, when reset, without disturbing the other registered number or the said product, to cause the product of the said number registered on the first set of indicators by the number last registered on the second set of indicators, to be automatically added to the said product, thereby registering the sum of the two products on the third set of indicators.

17. In a calculator, the combination of a set of digit-indicators; means for causing any of the indicators to register any digit; a second set of digit-indicators; means for causing any of the latter indicators to register any digit; a third set of digit-indicators; and means for causing the operation of registering a digit on the second set of indicators, when a digit has been registered on any of the first set of indicators, to automatically move one of the indicators in the third set through a number of its digit-spaces equal to the product of the number of digit-spaces through which the first said indicator moved to register the said number, multiplied by the number of digit-spaces through which the second indicator moved to register the second number.

18. In a calculator, the combination of a set of digit-indicators; means for causing any of the indicators to register any digit; a second set of indicators; a third set of indicators; means for causing any of the second set of indicators to register any digit; and means for causing the movement of one of said second indicators through each of its digit-spaces, when a digit has been registered on the first set of the indicators, to automatically move one of the third set of indicators through a number of digit-spaces equal to the digit that was caused to register on a digit-indicator of the first set.

19. In a calculator, the combination of a set of digit-indicators; means for causing the indicators to register any digit; a second set of indicators; a third set of indicators; means for causing any of the second set of indicators to register any digit; and means for causing the movement of any one of the second indicators through each of its digit-spaces, when a number has been registered on the first set of indicators, to automatically move a plurality of adjacent indicators in the third set, equal in number to the digits of said number, each through a number of digit-spaces equal respectively to the digit corresponding in order in the said number.

20. In a calculator, the combination of a set of digit-indicators; means for causing the indicators to register a given number; a second set of digit-indicators; a third set of digit-indicators; means for causing the second set of indicators to register a given number; means for causing the act of registering the left-hand digit of a number, on the second set of indicators, when a number has been registered on the first set of indicators, to automatically register on the third set of indicators, the product of the first number by a number composed of the said left-hand digit with the remaining digits of the number replaced by naughts.

21. In a calculator, the combination of a set of indicators; a second set of indicators; a plurality of digit-keys; means for causing the operation of said keys to register a certain number on the first set of indicators; means for causing the operation of the said keys to register a certain number on the second set of indicators; a third set of indicators; means for causing the operation of the keys that caused those two numbers to be registered, to automatically register the product of the said two numbers of the third set of indicators; means for setting the second set of indicators at "0;" and means for causing the act of again setting up a number on the second set of indicators when reset, without disturbing the other said number, or the said product, to cause the product of the said number on the first set of indicators by the number last caused to register on the second set of indicators, to be automatically added to the said product, thereby registering the sum of the two products on the third set of indicators; said latter means being arranged to the operation of resetting and registering of subsequent numbers on the second set of indicators to multiply the first number by these numbers and add the product in each instance to the aggregate on the preceding products.

22. In a calculator, the combination of a set of digit-indicators; means for causing the indicators to register a given number; a second set of digit-indicators; a third set of digit-indicators; means for causing the second set of indicators to register a given number; operating means for causing the act of registering the left-hand digit on the second set of indicators, when a number has been registered on the first set of indicators, to automatically register on the third set of indicators the product of the said first number by a number composed of the said left-hand digit with the remaining digits of the number replaced by naughts; said operating means being also arranged to cause the registering of the next digit of the said number to multiply the first number by a number composed of the latter digit with the remaining digits to the right in the said number replaced by naughts, and adding this latter product to the said product, causing their sum to replace the said product on the third set of indicators; and means for causing the registering of the remaining digits of the second number to likewise multiply the first number by the digit with as many naughts as there are remaining digits to the right in the number, and adding their products to the aggregate of the preceding products, thereby causing the product of the first number by the second number to be registered on the third set of indicators.

23. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a shaft having a series of pawls slidable thereon but rotatable therewith; each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; means for causing the operation of any of said keys to move the pawl-carrying shaft and thereby so move an indicator that the latter registers the digit of the operating-key; and means for bringing any desired pawl into position of engagement with its ratchet-wheel to operate the connected indicator; a second series of digit-indicators; a second set of ratchet-wheels; means for causing each of the latter indicators to be driven from one of said latter ratchet-wheels; and means for bringing said pawls into position to operate either of said sets of ratchet-wheels.

24. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of the ratchet-wheels; a shaft having a series of pawls slidable thereon but rotatable therewith; each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; means for causing the operation of any of said keys to move the pawl-carrying shaft and thereby so move an indicator that the latter registers the digit of the operating-key; and means for bringing any desired pawl into position of engagement with its ratchet-wheel to operate the connected indicator; a second series of digit-indicators; a second set of ratchet-wheels; means for causing each of the latter indicators to be driven from one of said latter ratchet-wheels; and means for sliding said pawls on said shaft to bring them opposite either of said sets of indicators.

25. In a calculator, the combination of a series of digit-indicators; a set of ratchet-wheels; means for causing each of the indicators to be driven from one of said ratchet-wheels; a shaft having a series of pawls thereon, each pawl being disposed in alinement with one of said ratchet-wheels; a set of digit-keys; a rotatable sleeve connected with said shaft and arranged to engage the pawls; means on the sleeve for rocking the pawls in succession; a second set of keys, one for each of the indicators; means for causing the operation of each latter key to rotate the sleeve and thereby bring a pawl into position of engagement to operate the indicator corresponding to the latter key operated; means for causing the operation of any of the said digit-keys to move the pawl-carrying shaft and thereby move an indicator so that the latter registers the digit of the operating-key; and means for reciprocating said pawls and sleeves to bring them opposite either set of ratchet-wheels.

26. In a calculator, the combination of a series of digit-indicators; means for causing the indicators to register; means for returning the indicators to "0;" a second set of digit-indicators; means for causing the latter indicators to register; means for returning the second set of indicators to "0;" and means for causing said latter means to operate said former returning means.

27. In a calculator, the combination of a set of digit-keys; a series of digit-indicators; means for causing the operation of each of the keys to actuate any of the indicators and thereby register the digit of the operating-key; and means actuated on the operation of a said key for causing the succeeding operation of a said key to move an indicator adjacent the indicator last operated and thereby register the digit of the latter key; the series of indicators being divided into two sets; means for returning one set of indicators to "0" without disturbing the other set of indicators; and means for causing the said latter operation to cause the succeeding operation of any of said keys to register its digit on an indicator of the set returned to "0."

28. In a calculator, the combination of a shaft; a series of sleeves loosely mounted on the shaft and secured together; a ratchet-wheel on each sleeve; a series of digit-cylinders each having a ratchet-wheel secured thereto and also having a notched disk; a gear mounted loosely on

each of said sleeves and located between each of said cylinders; a pawl on each of said gears, and arranged to engage the ratchet-wheel of a cylinder and to also engage the ratchet-wheel of an adjacent sleeve; a pawl on each of the sleeve ratchet-wheels and arranged to engage said notched disks; said first-mentioned pawl being arranged to rotate an adjacent cylinder on the operation of its supporting-gear and to also rotate the series of sleeves; said pawls on the sleeve-disk being arranged to each engage the notch on its adjacent disk on the rotation of said sleeves and thereby bring all of the cylinders to "0."

29. In a calculator, the combination of a series of digit-indicators; means for causing any of the indicators to register any digit; a wheel connected with said indicators; and means for causing the rotation of each of the indicators to rotate said wheel for a distance proportional to the number of digit-spaces through which the indicator moves.

30. In a calculator, the combination of a series of digit-indicators; means for causing any of the indicators to register any digit; a wheel connected with said indicators; means for causing the registering of any of the indicators to rotate said wheel for a distance proportional to the number of digit-spaces through which the indicator moved; and means for causing the rotation of said wheel in a direction the reverse of that in which it was moved by the indicators, to bring all of said indicators to the position of "0."

31. In a calculator, the combination of a set of digit-indicators; a second set of digit-indicators; a third set of digit-indicators; a set of ratchet-wheels; means for causing any of the first and second set of digit-indicators to be driven from one of said ratchet-wheels; a shaft having a series of pawls thereon; each pawl being in alinement with one of said ratchet-wheels; a set of digit-keys; means for causing the operation of each of the keys to move the pawl-carrying shaft a distance proportional to the digit of the operating-key; means for bringing any desired pawl into position of engagement with its ratchet-wheel; a second shaft; a series of gears mounted on said second shaft and each arranged to operate an indicator of the third set; a ratchet-wheel connected with each of said gears; a lever loosely mounted on said second shaft adjacent to each of said gears; a pawl pivoted on each of said levers and arranged to engage one of the latter ratchet-wheels; an extension on each latter pawl; a third shaft; a sleeve arranged to slide on the third shaft but rotated thereby; a carriage arranged to move said sleeve axially when reciprocated; a series of arms on said sleeve each arranged to engage and move one of said levers on the rotation of the sleeve and thereby cause the pawls on these levers to rotate their ratchet-wheels and move the third set of indicators; a series of movable shields mounted on said carriage and arranged to engage the extensions of said pawls respectively and normally hold these pawls out of engagement; the pawls that operate the first set of indicators each having an arm thereon arranged to engage one of said shields and move it a certain distance to permit a lever-carried pawl to engage its ratchet-wheel, and when moved by a said arm move an indicator a number of spaces equal to the digit of the key depressed to operate a pawl of the first set; and means for causing the operation of any of the second set of indicators to rotate said third shaft and cause said arm-carrying sleeve to rotate and thereby rock the pawl-carrying arms once for each movement of the latter indicator through one space.

32. In a calculator, the combination of a set of digit-indicators; a second set of digit-indicators; a third set of digit-indicators; a set of ratchet-wheels; means for causing any of the first and second set of digit-indicators to be driven from one of said ratchet-wheels; a shaft having a series of pawls thereon, each pawl being in alinement with one of said ratchet-wheels; a set of digit-keys; means for causing the operation of each of the keys to move the pawl-carrying shaft a distance proportional to the digit of the operating-key; means for bringing any desired pawl into position of engagement with its ratchet-wheel; a second shaft; a series of gears mounted on said second shaft and each arranged to operate an indicator of the third set; a ratchet-wheel connected with each of said gears; a lever loosely mounted on said second shaft adjacent to each of said gears; a pawl pivoted on each of said levers and arranged to engage one of said latter ratchet-wheels; an extension on each latter pawl; a third shaft; a sleeve arranged to slide on the third shaft but rotated thereby; a carriage arranged to move said sleeve axially when reciprocated; a series of arms on said sleeve each arranged to move one of said levers on the rotation of the sleeve and thereby cause these levers to rotate their ratchet-wheels and move the third set of indicators; a series of movable shields mounted on said carriage and arranged to engage the extensions of said pawls respectively and normally hold these pawls out of engagement; the pawls that operate the first set of indicators each having an arm thereon arranged to engage one of said shields and move it a certain distance to permit a lever-carried pawl to engage its ratchet-wheel, and when moved by said latter arm to move an indicator a number of spaces equal to the digit of the key depressed to operate a pawl of the first set of indicators; means for causing the operation of any of the second set of indicators to rotate said third shaft and cause said arm-carrying sleeve to rotate and thereby rock the pawl-carrying arms once for each movement of the latter indicator through one space; and means for causing the act of registering a number on certain of the indicators of the first and second sets to move the carriage into position of coöperation with other of the said gears.

33. In a calculator, the combination of a set of digit-indicators; a second set of digit-indicators; a third set of digit-indicators; a set of ratchet-wheels; means for causing any of the first and second sets of digit-indicators to be driven from one of said ratchet-wheels; a shaft having a series of pawls thereon; each pawl being in alinement with one of said ratchet-wheels; a set of digit-keys; means for causing the operation of each of the keys to move the pawl-carrying shaft a distance proportional to the digit of the operating-key; means for bringing any desired pawl into position of engagement with its ratchet-wheel; a series of gears mounted on said second shaft and each arranged to operate an indicator of the third set; a ratchet-wheel connected with each of said gears; a lever loosely mounted on said second shaft adjacent to each of said gears; a pawl pivoted on each of said levers and arranged to engage one of said latter ratchet-wheels; an extension on each latter pawl; a third shaft; a sleeve arranged to slide on the third shaft but rotated thereby; a carriage arranged to move said sleeve axially when reciprocated; a series of arms on said sleeve each arranged to move one of said levers on the rotation of the sleeve and thereby cause these levers to rotate their ratchet-wheels and move the third set of indicators; a series of movable shields mounted on said carriage and arranged to engage the extensions of said pawls respectively and normally hold these pawls out of engagement; the pawls that operate the first set of indicators each having an arm thereon arranged to engage one of said shields and move it a certain distance to permit a lever-carried pawl to engage its ratchet-wheel, and when moved by said latter arm to move an indicator a number of spaces equal to the digit of the key depressed to operate a pawl of the first set of indicators; means for causing the operation of any of the second set of indicators to rotate said third shaft and cause said arm-carrying sleeve to rotate and thereby rock the pawl-carrying arms once for each movement of the latter indicator through one space; a carriage for said sleeve; means for causing the movement of said carriage; a series of curved guides mounted on the carriage in transverse alinement; a curved shield slidable on each guide and arranged to reciprocate; means for holding each shield at one limit of its movement; a pawl on each shield; and a pivoted rack-bar arranged to engage with each said pawl and retain the shield in the positions to which moved from said limit of movement.

34. In a calculator, the combination of a carriage; a series of curved guides mounted on the carriage in transverse alinement; a curved shield slidable on each guide and arranged to reciprocate; means for holding each shield at one limit of its movement; a pawl on each shield; and a pivoted rack-bar arranged to engage with each said pawl and retain the shield in the positions to which moved from said limit of movement.

35. In a calculator, the combination of a set of digit-indicators; means for causing the indicators to register; a second set of digit-indicators; means for causing the second set of indicators to register; a third set of indicators; means for moving the third set of indicators; a carriage having a series of members thereon arranged to coöperate with the indicator-moving means of the third set; means for causing the registering of one or more indicators of the first set to adjust an equal number of said members in positions relative to the digits registered; and means for causing the movement of registering on an indicator of the second set through each of its digit-spaces to cause said adjusted members to each engage an indicator-moving means of the third set and thereby cause its connected indicator to move through a number of digit-spaces equal to the digit registered on the first set when the said member was adjusted.

36. In a calculator, the combination of a set of digit-indicators; means for causing the indicators to register; a second set of digit-indicators; means for causing the second set of indicators to register; a third set of indicators; means for moving the third set of indicators; a carriage having a series of members thereon arranged to coöperate with the indicator-moving means of the third set; means for causing the registering of one or more indicators of the first set to adjust an equal number of said members in positions relative to the digits registered; and means for causing the movement of registering on an indicator of the second set through each of its digit-spaces to cause said adjusted members to each engage an indicator-moving means of the third set and thereby cause its connected indicator to move through a number of digit-spaces equal to the digit registered on the first set when the said member was adjusted; and means for resetting the indicators of the second set without affecting the said adjusted members.

37. In a calculator, the combination of a set of digit-indicators; means for causing the indicators to register; a second set of digit-indicators; means for causing the second set of indicators to register; a third set of indicators; means for moving the third set of indicators; a carriage having a series of members thereon arranged to coöperate with the indicator-moving means of the third set; means for causing the registering of one or more indicators of the first set to adjust an equal number of said members in positions relative to the digits registered; means for causing the movement of registering on an indicator of the second set through each of its digit-spaces to cause said adjusted members to each engage an indicator-moving means of the third set and thereby cause its connected indicator to move through a number of digit-spaces equal to the digit registered on the first set when the said member was adjusted; means for causing said latter operation after the registering of the indicators of the third set, to move the carriage and bring each said adjusted member into position for coöperation with an indicator-moving means next adjacent the one last operated; and thereby cause the subsequent movement of registering on an indicator of the second set, through each of its digit-spaces to cause said adjusted members to each engage a said latter indicator-moving means and thereby cause its connected indicator to move through a number of digit-spaces equal to the digit registered on the first set when the said member was adjusted.

707,653. ELECTRIC-LAMP SUPPORT. CLARENCE M. STEAD, Leeds, England. Filed Dec. 17, 1901. Serial No. 86,284. (No model.)

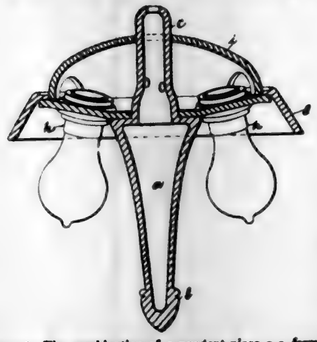

Claim.—1. The combination of a pendent piece *a c*, formed as an inverted cone or conoid over its lower part, and as a hollow cylinder over its upper part *c* having side strand-holes *d*; with an approximately flat lamp-plate *f*, having a central opening fitting over the cylindrical part *c* close to the base of the conical or conoidal part *a* and lamp-holder openings, and an annular conoidal reversible reflecting or shading part *g*; and a basin or dome-shaped cap-piece *i*, having a central opening and rim-recesses, and, all substantially as set forth.

2. The combination of a pendent piece *a c*, formed as an inverted cone or conoid over its lower part *a* and as a hollow cylinder over its upper part *c*; with a reversible lamp-plate *f* having a central opening fitting over the cylindrical part *c* close to the base of the conical or conoidal part *a* and lamp-holder openings, and a cone-shaped reflecting or shading part *g*; all substantially as set forth.

3. The combination of a pendent piece *a c* formed over its lower part *a* as an inverted cone or conoid and over its upper part as a hollow cylinder provided with end aperture *c* and strand side openings *d*; with an annular lamp-plate *f* having a central opening fitting over the cylindrical part *c* close to the base of the conical or conoidal part *a* and lamp-holder openings; and with a truncated cone-shaped reflector or shade *g* fitting with its smaller end the circumferential edge of the plate *f*, the said parts *f g* being independently reversible substantially as set forth.

707,654. TREATMENT OF CRUDE RUBBER. JAMES THAM, London, England, assignor to South Western Rubber Company, Limited, London, England. Filed Dec. 3, 1901. Serial No. 84,825. (Specimens.)

Claim.—1. A process of treatment of crude rubber consisting of the soaking of the rubber in a hot alkaline solution to remove deleterious matter from the exterior thereof, the submergence of the rubber in small pieces in a solvent of the matter to be removed, so that the interstices of the rubber are in contact with the said solvent, the subsequent submergence of the solvent-charged rubber in water or other inert liquid of less specific gravity than the solvent for such time as will allow the solvent to act upon the internal surfaces, and the removal of the dissolved matter and any residual free solvent by washing, substantially as described.

2. A process of treatment of crude rubber to remove deleterious matter therefrom, consisting of the supporting of the rubber in small pieces within a closed space, the submergence of the said rubber in a solvent of the said deleterious matter within the closed space, so that the surfaces of the interstices of the material are in contact with the solvent, the subsequent submergence of the solvent-charged rubber in water or other inert liquid of less specific gravity than the solvent for such a time as will allow the solvent to act upon the internal surfaces and the removal of the dissolved matter and any residual free solvent by washing, substantially as described.

707,655. SAFE-DOOR LOCK. HOVEY H. TRELOW, Petersburg, Ind., assignor of one-half to Philip K. Hearing, Petersburg, Ind. Filed Dec. 2, 1901. Serial No. 84,415. (No model.)

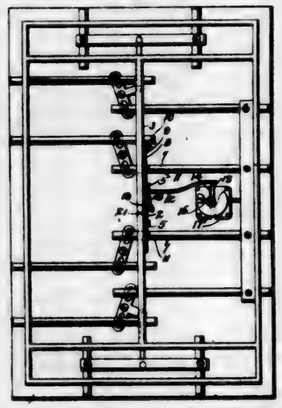

Claim.—1. In a safe-lock, a rest removably associated with the operating-spindle, in combination with emergency locking mechanism having means to engage the rest, and means operating automatically to secure the locking mechanism when in locked engagement with the bolts.

2. In a safe-lock, the combination with the operating-spindle and the bolts, of a bolt-locking plate, a removable rest supported by the spindle, and an arm on the locking-plate to engage the rest and thus hold the plate out of engagement with the bolts.

3. In a safe-lock, the combination with the operating-spindle and the bolts, of a spring-actuated locking-plate, a removable rest supported by the spindle, an arm on the locking-plate to engage the rest to hold the plate out of engagement with the bolt, and means operating automatically to lock the plate against lifting when in locked engagement with the bolts.

4. In a safe-lock, the combination with the bolts provided with recesses, of a spring-actuated locking-plate through which the bolts project, an arm carried by the plate, and a removable rest supported by the operating-spindle and upon which the arm bears to hold the locking-plate normally out of engagement with the recesses of the bolts.

707,656. TRUCK-BOLSTER. CORNELIUS VANDERBILT, New York, N. Y. Filed Feb. 17, 1902. Serial No. 94,412. (No model.)

Claim.—1. A truck-bolster comprising a plurality of flanged beams secured together by spring-seats which engage both faces of the webs of said beams at a plurality of points along their lengths, substantially as described.

2. A truck-bolster comprising a plurality of flanged beams, having their ends cut down by the removal of one flange and a portion of the web, said ends having parallel upper and lower edges and being secured together by spring-seats, substantially as described.

3. A spring-seat for a truck-bolster, comprising a base and upstanding walls forming a plurality of horizontal grooves to receive the webs of bolster-beams, substantially as described.

4. A stationally-constructed truck-bolster, comprising a plurality of beams, having center portions with upper and lower flanges, intermediate portions whose sectional areas decrease gradually, and end portions formed by cutting away one flange and a portion of the web on a line parallel to the other flange, substantially as described.

5. A spring-seat for a truck-bolster comprising a base having upstanding grooved side walls and upstanding end walls between and flush with said grooves, substantially as described.

707,657. LOCOMOTIVE-BOILER. CORNELIUS VANDERBILT, New York, N. Y. Filed Mar. 3, 1902. Serial No. 96,490. (No model.)

Claim.—In a locomotive-boiler, the combination with the boiler-shell and rear head, of a cylindrical, corrugated combustion-chamber having a flat circular rear head and three cylindrical, corrugated furnace-flues communicating with the combustion-chamber and supported by the rear head of the combustion-chamber and the rear head of the boiler and located within the circumference of the rear head of the combustion-chamber, one of the furnace-flues being disposed above and between the other two, substantially as shown and described.

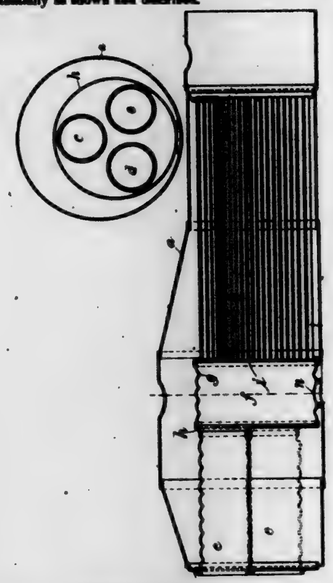

707,658. BRAKE-BEAM. CORNELIUS VANDERBILT, New York N. Y. Filed Mar. 14, 1902. Serial No. 98,146. (No model.)

Claim.—1. In a brake-beam, a beam having an I-shaped body and integral T-shaped ends, brake-shoe heads fitted upon the webs of the ends, and a lever-bracket provided with a T-shaped opening therethrough whereby the bracket is fitted upon the web and flanges of one end of the body, and fastening means passing through the bracket and through the beam, substantially as described.

2. In a brake-beam, a beam having an I-shaped body and integral T-shaped ends, brake-shoe heads fitted upon the ends, and a lever-bracket provided with an opening therethrough whereby the bracket is fitted upon the body, and means for securing the bracket to the beam, substantially as described.

3. In a brake-beam, a flanged beam, brake-shoe heads secured to the ends of said beam, and a lever-bracket closely fitting the flange of the beam, a portion of the beam being cut away to permit the removal of the lever-bracket, substantially as described.

4. In a brake-beam, a flanged beam, brake-shoe heads secured to the ends of said beam, and a lever-bracket closely fitting the flange of the beam, a portion of the said flange being cut away to permit the removal of the lever-bracket, substantially as described.

5. In a brake-beam, a flanged beam having a flange at one end shorter than the web of the beam, a lever-bracket closely fitting the said flange, and brake-shoe heads fitted to the portions of the web beyond the flange extremities and spaced away from said extremities to permit the removal of the lever-bracket, substantially as described.

6. In a brake-beam, a flanged beam, a lever-bracket secured to said beam and brake-shoe heads fitted to the web of the beam and extending beyond the flange extremities, said heads being spaced away from said extremities to permit the removal of the lever-bracket, substantially as described.

707,659. SEAMED STOCKING. WALTER F. WARE, Camden, N. J., and WILMOT B. GABELMAN, Philadelphia, Pa. Filed Mar. 3, 1902. Serial No. 96,497. (No model.)

Claim.—1. A new article of manufacture, an elastic stocking comprising a substantially cylindrical leg portion having a selvage edge at its lower end and closed at the back by a longitudinal seam, a cylindrical foot portion having a selvage edge at its upper end closed by a seam at the bottom, a heel-band seamless at the rear having an upper selvage edge, the foot portion being stitched to the leg portion for substantially one-half their peripheries by elastic stitching the heel-band being attached to the other half of the periphery of the leg portion by elastic stitching and its ends to the adjacent foot portion, substantially as described.

2. A new article of manufacture, an elastic stocking comprising a substantially cylindrical leg portion having a selvage edge at its lower end and closed at the back by a longitudinal seam, tape covering said seam, a cylindrical foot portion having a selvage edge at its upper end and closed by a seam at the bottom, tape covering said seam, and a heel-band seamless at the rear having an upper selvage edge, the foot portion being stitched to the leg portion for substantially one-half their peripheries by elastic stitching, the heel-band being stitched to the other half of the periphery of the leg portion by elastic stitching, and its ends to the adjacent foot portion, substantially as described.

707,660. HOISTING APPARATUS. EDGAR H. WATLINGTON, Ridgewood, N. J., assignor to Sprague Electric Company, New York, N. Y., a Corporation of New Jersey. Filed Jan. 13, 1902. Serial No. 89,450. (No model.)

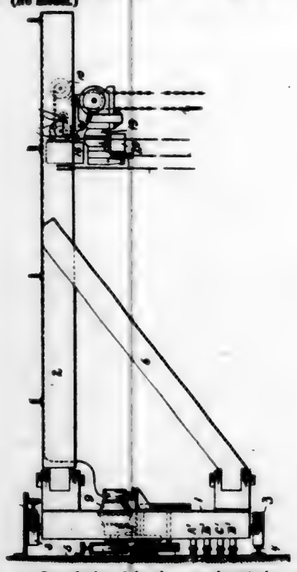

Claim.—1. In a device of the character described, a carrier, a boom carried thereby, a truck riding upon said boom, a motor carried by said carrier, another motor carried by said truck, means to shift the position of the truck upon said boom said means being carried by said truck, controllers for said motor said controllers being also carried by said truck and depending operating-cords for said controllers and for said shifting means.

2. In a device of the character described, a traveling carrier, a motor mounted thereon for operating the same, a boom carried by said carrier, a truck riding upon said boom, a motor carried by said truck for operating said truck, a hoisting apparatus carried by said truck, mechanism for operating said hoisting apparatus, controllers carried by said truck for operating the said motors and the said hoisting operating mechanism, and depending operating-cords for said controllers and said hoisting mechanism, substantially as described.

707,661. PNEUMATIC TIRE. MORITZ WEISS, Vienna, Austria-Hungary. Filed May 14, 1902. Serial No. 107,208. (No model.)

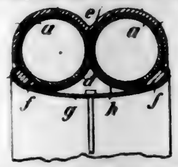

Claim.—1. The combination with a rim, two connecting air-tubes seated therein, a cover inclosing the tubes, adapted to be secured to the edges of the rim and a ring between the two tubes above the transverse center line thereof adapted to draw said cover below the bearing-surfaces of the tubes, for the purpose set forth.

2. The combination with a rim, of air-tubes seated therein, a cover inclosing the tubes, a lining to the cover adapted to surround each of said tubes, and flanges on the edges of the cover adapted to clamp the lining, for the purpose specified.

3. The combination with a vehicle-rim, of a ring seated therein, two air-tubes supported on the ring, a cover inclosing the tubes, a lining interposed between the cover and tubes and adapted to surround the latter, and flanges on the edges of the cover adapted to clamp the outer edges of the lining between said flange and rim, for the purpose specified.

4. The combination with a vehicle-rim, of a ring formed with two concave surfaces centrally mounted in the rim, air-tubes mounted in the rim and resting on both surfaces of said ring, a cover inclosing said tubes, linings secured to the cover adapted to surround each of the tubes, flanges secured to the cover adapted to clamp the edges of both linings, for the purpose specified.

5. The combination with a metallic vehicle-rim provided with side flanges, of a saddle-shaped ring centrally mounted in said rim, air-tubes mounted on said ring, a cover inclosing said tubes, flanges formed on the edges of the cover adapted to take under the rim-flanges, linings secured to the cover adapted to surround each of the tubes and be clamped by the cover-flanges, and a ring embedded in said cover to draw the central part thereof below the bearing-surfaces of the air-tubes, for the purpose specified.

707,662. COPY-HOLDER. JAMES C. WHITTEMARVER, Cameron Mo. Filed Mar. 5, 1901. Serial No. 49,577. (No model.)

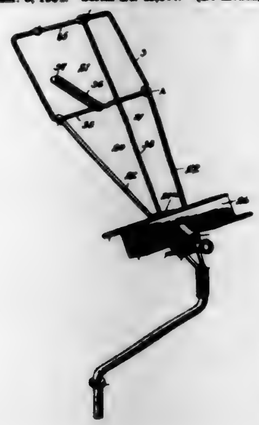

Claim.—1. In a copy-holder, the combination with a rack comprising a lower stationary section and an upper movable section pivoted to the upper end of the stationary section, of a support for the rack attached to the lower section, a copy-supporting device also secured to the lower section, and means for holding the upper section in angular relation to and in rear of the lower section, whereby said upper section will constitute a rest or shelf for the leaves of copy thrown backwardly over the top of the lower section.

2. In a copy-holder, the combination with a rack comprising a lower stationary section, and an upper movable section pivoted to the upper end of the stationary section, of a support for the rack attached to the lower sections, a copy-supporting device also secured to the lower section, and means for holding the two sections in alinement, said means also serving to hold the upper section in angular relation to and in rear of the lower section, whereby said upper section will constitute a rest or shelf for the leaves of copy thrown backwardly over the top of the lower section.

3. In a copy-holder, the combination with a rack comprising a lower stationary section and an upper movable section pivoted to the lower stationary section, of a support for the rack attached to the lower section, a copy-supporting ledge extending across the lower section, a locking-rod pivoted to the upper section and movably engaged with the lower section, and stops mounted upon the movable upper section and engaging the rod to hold it against movement and thereby secure the movable section either in alinement with the stationary section or in angular relation thereto.

4. In a copy-holder, the combination with a support, of a rack comprising a main section mounted upon the support, a supplementary section pivotally connected to the upper end of the main section, a locking-rod pivotally and slidably connected to the upper end of the supplementary section and having its lower end engaging the main section, and holding means for the rod located between the engaging portions thereof and arranged to detachably engage said rod to hold it against its pivotal movement and maintain the supplementary section in cooperative relation with the main section.

5. In a copy-holder, the combination with a support, of a rack comprising a main section mounted upon the support, and having a pair of diverging side rods provided with hinge-eyes at their upper ends, said main section carrying a supporting-ledge, a supplementary section comprising a frame having a cross-bar which passes through the eyes of the main section, whereby the two sections are pivotally connected, said cross-bar being provided with an offset portion forming a guide-slot, and a locking-rod pivotally and slidably connected to the upper end of the supplementary section and slidably engaging the main section at its lower portion, said rod being adapted to engage the cross-bar of the supplementary section to hold the two sections against relative movement, and being also adapted to aline with the guide-slot to permit the backward swinging of the supplementary section.

6. In a copy-holder, the combination with a rack having a supporting-ledge contiguous to its lower end, of a stem passing transversely through the rack, and having a frictional engagement therewith, and a spring carried by the stem and adapted to bear against the copy placed upon the ledge.

7. In a copy-holder, the combination with a rack having a supporting-ledge at its lower end, and provided below said ledge with a transversely-projecting sleeve, of a stem slidably mounted in said sleeve and projecting from the front side of the rack, and an upstanding bearing-spring secured to the projecting end of the stem, and adapted to engage and bear against the copy placed upon said ledge.

707,663. RAIL-BOND. HOSEA F. WHITON, Hingham, Mass. Filed Feb. 3, 1902. Serial No. 92,342. (No model.)

Claim.—1. A rail-bond composed of a laminated strip having flat feet and an intermediate extensible portion, solder interposed between the several layers composing said flat feet, a rivet passing through said layers and a strip of sheet-solder attached at one end to the bottoms of said flat feet, substantially as described.

2. A rail-bond composed of a laminated strip having flat feet and an intermediate extensible portion, solder interposed between the several layers composing said flat feet, a rivet passing through said several layers and a strip of sheet-solder attached at one end to the bottoms of said flat feet having a hole through it for the protruding end of said rivet, substantially as described.

707,664. ASH-TRAY AND ADVERTISING DEVICE. OLIVER J. WILLMOT, Malvern, England. Filed Nov. 8, 1901. Serial No. 81,563. (No model.)

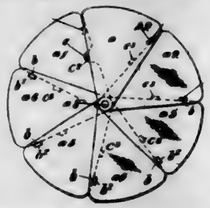

Claim.—1. An ash-tray composed of separate superposed sectoral parts pivotally connected at the smaller ends, said separate parts being curved downwardly midway and transversely thereof and said parts being also provided with means for holding them in an extended or circular tray form, consisting of recesses and lugs or projections adapted to enter said recesses, substantially as shown and described.

2. An ash-tray composed of separate superposed sectoral parts pivotally connected at the smaller end thereof, said parts being curved downwardly midway thereof and transversely thereof, and said parts being also provided with means for holding them in an extended position or in tray form, said parts being also adapted to be folded together one above another and to be extended into a circular or tray form.

707,665. SHIPPING-CRATE. ROBERDEE R. WILLIAMS, Nevada, Mo., assignor of one-fourth to Anson Lynn Wood, Nevada, Mo. Filed Feb. 28, 1902. Serial No. 96,144. (No model.)

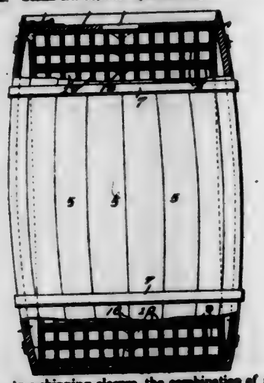

Claim.—1. In a shipping-closure, the combination of a casing having sides that are bulged intermediate the ends of such closure, vertical interior guides extending through the entire length of said casing, and a plurality of superimposed disks having recesses engaging said guides whereby the said disks are movable through the entire length of the casing, substantially as set forth.

2. In a shipping-closure the combination of a casing having bulging sides, vertical interior guides extending through said casing, superimposed disks having recesses engaging said guides, and openings in said disks forming handles and admitting of the passage of ventilation therethrough, substantially as set forth.

3. In a shipping-closure a casing having apertures through the ends and provided with vertical interior guides in combination with a series of superimposed disks having recesses engaging said guides and provided with approximately centrally located ventilating-openings forming handles, and collular-castings interposed between said disks and separating the same, substantially as set forth.

4. In a shipping-closure, a casing, a series of superimposed trays supported within said casing and formed with transverse division-strips forming compartments thereon, a cover to said casing having a depending flange engaging said casing when in position thereon, and adapted to engage said compartments on said tray and afford means for receiving and supporting the contents of one of said trays when inverted, substantially as described.

707,666. ELECTRODE FOR STORAGE BATTERIES. HENRY WOODWARD, London, England. Filed Jan. 15, 1901. Serial No. 43,316. (No model.)

Claim.—An accumulator-plate comprising a plurality of strips crossing each other and pivotally connected together to permit expansion and contraction.

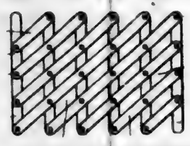

707,667. ATTACHMENT FOR WASHBOILERS. SAMUEL B. WOODFORD, Imperial, Pa., assignor of one-half to Carl B. Hamilton, Coraopolis, Pa. Filed Dec. 3, 1901. Serial No. 84,464. (No model.)

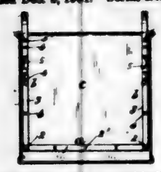

Claim.—The combination with a washboiler, of a clothes-holder consisting of a bottom grate, and two opposite side grates hinged to the bottom grate, the said grates having respectively two parallel bars intersected at right angles by rods fixed to the said bars, and means for adjustably attaching the side grates to the upper edge of the boiler for holding the bottom grate at a varying distance from the bottom of the boiler, substantially as described.

707,668. GATE. WILLIAM H. WRIGHT, Cadiz, Ohio. Filed Jan. 14, 1902. Serial No. 89,694. (No model.)

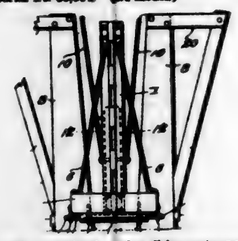

Claim.—1. The combination of a tilting gate, posts located at opposite sides of the gate and arranged adjacent to the same, a transverse block or bar secured to the rear end of the gate and arranged in rear of the posts and provided with bearings, a pintle-rod located in rear of the posts and arranged in the bearings and secured to and connecting the said posts, and means for operating the gate, substantially as described.

2. The combination of a tilting gate, the tapered posts located at opposite sides of the gate and arranged close to the same, the transverse block or bar secured to the gate at the bottom thereof and located in rear of the posts and provided with bearings, a pintle-rod arranged in the bearings and provided at its ends with arms secured to the posts, inclined fulcrum-bars extending upward from the outer sides of the posts and connected with the same at the upper portions thereof, operating-levers fulcrumed on the fulcrum-bars, and rods connecting the inner ends of the operating-levers with the gate, substantially as described.

707,669. DETACHABLE HANDLE FOR CASKETS, BOXES, &c. CHARLES YOUNG, Chicago, Ill. Filed Oct. 11, 1901. Serial No. 78,312. (No model.)

Claim.—1. A detachable handle or lifter comprising the combination with a handle provided with a flat contact-surface and an interlocking lug, of a plate having a slot therein, said slot comprising an enlarged portion wherethrough the lug can be inserted, another portion wherein the lug will be held, and a connecting portion formed so the lug can be passed therethrough by twisting, and whereby the lug will be held against withdrawal by longitudinal movement in the slot.

2. A detachable handle or lifter comprising the combination with a handle, provided with a flat contact-surface, and an interlocking lug having beveled sides, of a plate having a slot therein, said slot having sides correspondingly beveled to hold said lug, said slot comprising an enlarged portion wherethrough the lug can be inserted, another portion out of alinement with said enlarged portion and a connecting portion formed so the lug can be passed therethrough by twisting, and whereby the lug will be held against withdrawal by longitudinal movement in the slot.

3. A detachable handle or lifter comprising the combination with a handle provided with a flat contact-surface and with a lug having beveled sides, of a plate having a slot therein, said slot having correspondingly-beveled sides wherewith said lug will engage and having an enlarged portion, wherethrough said lug can be inserted, said plate having a flat contact-surface wherewith the handle will engage, said lug being of substantially the same thickness as the plate, so the inner surface of the lug will form a surface flush with the inner side of the plate, and which will engage the plane surface of the casket or box whereto the plate may be secured.

707,670. TREATMENT OF REFRACTORY BRICKS. SYLVESTER ECKENBRECHT, Staasfurt, Germany. Filed May 9, 1901. Serial No. 58,581. (No specimens.)

Claim.—The process herein described of increasing the refractory properties of baked bricks and the like, which consists in saturating them with a solution of magnesium chlorid, then subjecting them to the action of heat to dissolve the salts and evolve the hydrochloric acid, substantially as set forth.

707,671. MUSIC-LEAF TURNER. GEORGE E. ADAMS, Glens Falls, N. Y., assignor to William D. Earl, Lowell, Mass. Filed Aug. 23, 1901. Serial No. 73,007. (No model.)

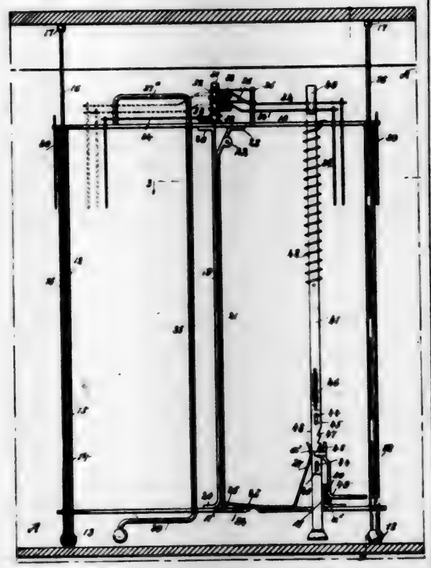

Claim.—1. In a music-leaf turner, a frame comprising upper and lower cross-bars, tubular side bars connecting the cross-bars and a spring-controlled rod located in each side bar, each rod extending beyond the upper portion of the frame and terminating in a head, and a foot located at the lower end of each tubular side bar, for the purpose set forth.

2. In a music-leaf turner, a frame, a post carried by the frame, a series of spring-controlled music-turning arms mounted to turn on said post, clamps carried by the said arms, a sliding controlling-bar adapted to engage and hold the said arms at one side of the frame, a spring for the controlling-bar and tending to move said bar upward out of engagement with the turning-arms, and a releasing device connected with the controlling-bar for releasing the said bar to permit it to be moved upward by its spring at predetermined intervals, as set forth.

3. In a music-leaf turner, the combination, with a frame, a post carried by the upper portion of the frame, spring-controlled music-carrying arms mounted on the said post, and clamps carried by the said arms, the clamps consisting of downwardly-extending parallel rods, of a controlling-bar mounted to slide in the frame, extending above and below it, a spring exerting an upward tension on the said controlling-bar, a hook located at the upper portion of the said controlling-bar, engaging with the music-carrying arms when at the right-hand side of the frame, a slide having limited movement on the controlling-bar, which slide is provided with teeth in one of its longitudinal edges, corresponding with teeth produced in a corresponding edge of the controlling-bar, a laterally-reciprocating releasing-lever provided with a yoke which receives between its members the slide and the controlling-bar, the said lever having a projection adapted for engagement with the teeth on the slide or the teeth on the controlling-bar, and a spring attached to the controlling-bar and to the said slide, adapted to draw the slide upward after the controlling-bar has been moved in the same direction.

4. In a music-leaf turner, the combination, with a frame having an opening in its lower portion, a central clamping-bar attached to the top and bottom of the frame, a parallel clamping-bar free at its lower end and having hinged connection with the frame at its upper end, and a spring secured to the frame adjacent to the opening thereof and adapted for engagement with the free end of the second clamping-bar to hold it in close relation to the fixed clamping-bar, as and for the purpose specified.

5. In a music-leaf turner, the combination with a frame, and a plurality of spring-controlled turning-arms mounted on the frame, of a sliding and spring-pressed controlling-bar mounted in the frame and adapted to hold the turning-arms at one side of the frame, a spring-pressed slide having limited movement on the bar, and an operating-lever adapted to engage either the bar or slide, as and for the purpose set forth.

6. In a music-leaf turner, the combination with a frame, and a plurality of spring-actuated turning-arms mounted on the frame, of a sliding and spring-pressed controlling-bar mounted in the frame and adapted to hold the turning-arms at one side of the frame, said bar being provided with teeth, a spring-pressed slide having limited movement on the bar and provided with teeth adapted to register with the teeth of the bar, and an operating-lever provided with a projection or tooth adapted to engage the teeth of either the bar or slide, as set forth.

7. In a music-leaf turner, the combination with a frame, and a plurality of turning-arms mounted on the frame, of a sliding and spring-pressed bar provided with a hook at its upper end with which the turning-arms engage, and with teeth at its lower portion, a spring-pressed slide mounted on the bar to have limited movement thereon, and a pivoted and spring-pressed operating-lever having a yoke at its upper end between the members of which the bar and slide extend, and with a projection adapted to engage the teeth of either the bar or slide, as set forth.

707,672. WHEEL-GEAR. GEORGE S. BAKER, London, England. Filed Dec. 3, 1901. Serial No. 84,667. (No model.)

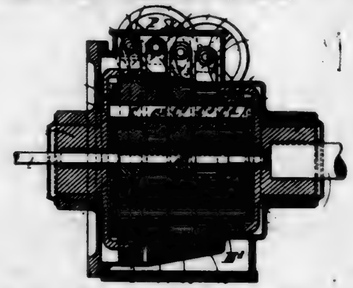

Claim.—1. In a speed-gear the combination of a driving-pinion, a compound planet-pinion gearing therewith having several portions of greater and of less diameter than the last portion, an internally-toothed rotatable ring engaging with each portion, a driven shaft connected to the last ring and a locking device for each of the other rotatable rings.

2. In a speed-gear the combination of a driving-pinion, a compound planet-pinion gearing therewith having several portions of greater and of less diameter than the last portion, rotatable means for supporting the compound pinion, an internally-toothed rotatable ring engaging with each portion, a driven shaft connected to the last ring and a locking device for each of the other rotatable rings.

3. In a speed-gear the combination of a driving-shaft, a toothed

pinion mounted thereon, a plurality of compound planet-pinions gearing therewith each having several toothed portions of greater diameter, and one toothed portion of smaller diameter than the last portion, an internally-toothed rotatable ring engaging with each portion, a driven shaft positively connected to the last ring and a locking device for each of the other rotatable rings.

4. In a speed-gear the combination of a driving-shaft, a toothed pinion mounted thereon, a plurality of compound planet-pinions gearing therewith each having several toothed portions of greater diameter and one toothed portion of smaller diameter than the last portion, a rotatable floating frame supporting the compound pinions, an internally-toothed rotatable ring engaging with each portion, a driven shaft positively connected to the last ring and a locking device for each of the other rotatable rings.

5. In a speed-gear the combination of a driving-shaft, a toothed pinion mounted thereon, a plurality of compound planet-pinions gearing therewith each having several toothed portions of greater diameter and one toothed portion of smaller diameter than the last portion, a rotatable floating frame supporting the compound pinions, an internally-toothed rotatable ring engaging with each portion a driven shaft positively connected to the last ring and a band-brake, consisting of a split ring encircling each of the other rotatable rings.

6. In a speed-gear the combination of a driving-shaft, a toothed pinion mounted thereon a plurality of compound planet-pinions gearing therewith each having several toothed portions of greater diameter and one toothed portion of smaller diameter than the last portion, a rotatable floating frame supporting the compound pinions, an internally-toothed rotatable ring engaging with each portion, a driven shaft positively connected to the last ring, a casing inclosing the gear, and a band-brake consisting of a split ring encircling each of the other rotatable rings, the brakes being cast in one piece with the casing.

7. In a speed-gear the combination of a driving-shaft, a toothed pinion mounted thereon, a plurality of compound planet-pinions gearing therewith each having several toothed portions of greater diameter and one toothed portion of smaller diameter than the last portion a rotatable floating frame supporting the compound pinions an internally-toothed rotatable ring engaging with each portion, a driving-shaft positively connected to the last ring, a casing inclosing the gear, a band-brake consisting of a split ring encircling each of the other rotatable rings the brakes being cast in one piece with the casing and a tightening-screw engaging with lugs on each split ring projecting through an aperture in the casing.

707,673. SHAFT OR AXLE BEARING. JOHN C. BLEVNEY, Hoxart, N. J. Filed Dec. 20, 1902. Serial No. 41,499. (No model.)

Claim.—1. The combination with a shaft and its box, one having a rotary relation to the other, of a thin, flexible and resilient sheet of hard metal loosely interposed between said shaft and box and extending in a single piece substantially around the whole periphery of the shaft, the said sheet being free to either turn with the rotary member, or to remain at rest with the stationary member, substantially as set forth.

2. The combination with a shaft and its box, one having a rotary relation to the other, of a thin, flexible and resilient sheet of hard metal loosely interposed between said shaft and bearing, the said sheet of hard metal, being free to turn with the rotary member, substantially as set forth.

707,674. COUPLING. JOHN R. GARVIN, Augusta, Ky., and JOSEPH R. HAMMERLE, Cincinnati, Ohio, assignors to Ernst H. Hunnefeld, Cincinnati, Ohio. Filed Dec. 23, 1901. Serial No. 86,987. (No model.)

Claim.—1. A coupling comprising two members, one member having a journal provided with a transverse groove, and the other member having an open bearing provided at one end with a tongue concentric with and having a bearing on said journal.

2. A coupling consisting of two members, one having a bearing thereon open on one side and a tongue projecting from one end of said open portion, the other member having a journal grooved or recessed to allow the passage of the tongue and permit the insertion of the journal into the bearing.

3. A coupling consisting of two members, one having a bearing thereon open on one side and an integral tongue projecting from said bearing, the other member comprising a pinion having a slotted enlargement at one end projecting at an angle thereto, a journal extending across the bifurcated end of the pinion and grooved or recessed in one side to receive the tongue when alined therewith and permit the insertion of the journal into the bearing.

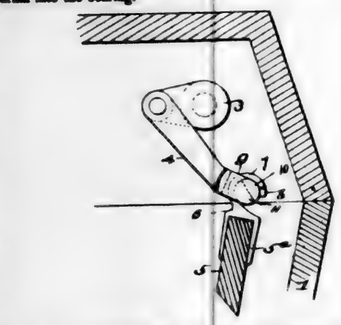

4. The combination with a device to be moved and a crank-shaft, of a pitman connected at one end to the crank-shaft, a journal at the other end of said pitman, a bearing secured to said device open in one side and having a tongue projecting therefrom and said journal grooved to permit its insertion into the bearing when the pitman is disposed so as to aline the groove with the tongue on the bearing.

707,675. CIRCULAR SAWING MACHINE. HENRY J. OLBERS, Toledo, Ohio; Ellen A. Olbers and Irving W. Olbers, executors of said Henry J. Olbers, deceased; Irving W. Olbers, administrator, assignor to Ellen A. Olbers, Toledo, Ohio. Filed Dec. 12, 1901. Serial No. 85,969. (No model.)

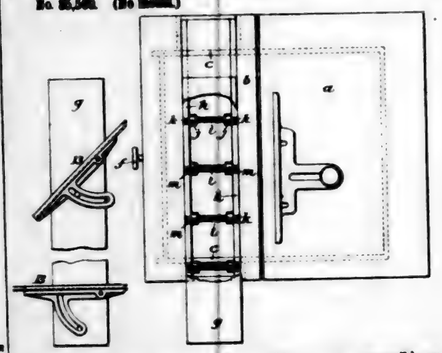

Claim.—1. In a circular sawing machine, a rotary reversible saw-frame, means for reversing the same, revolubie saws in one plane carried by said frame, journal-supports for said frame on each side of the plane of the saws, and a journaled yoke, embracing the saw plane, connected with said frame, and forming with its journal the outer support of said saw-frame, substantially as specified.

2. In a circular sawing machine, a rotary reversible saw-frame, means for reversing said frame, revolubie saws in one plane carried by said frame, journal-supports for said frame, on each side of the plane of the saws, a journaled yoke embracing the saw plane connected with said frame, forming with its journal the outer support of said saw-frame, and means for adjustably securing said yoke to said frame at an angle in any desired axial plane relative to the frame plane, substantially as specified.

3. In a circular sawing machine, a journaled reversible saw-frame, carrying revolubie saws in one plane, a yoke embracing said saw plane, connecting the journaled portions of said saw-frame, a sleeved connection rotarily adjustable, between said yoke and said frame, and means for releasing and clamping said sleeved connection in any desired angular position between the yoke plane and the frame plane respectively, substantially as specified.

4. In a circular sawing machine, a rotary reversible saw-frame carrying revolubie saws mounted in one plane, a table having a fixed portion, a movable portion adjustable toward and from the fixed portion, a sliding portion between said fixed and adjustable portions, movable in a direction parallel to the plane of the saws, and means for positively adjusting the distance between the adjustable and fixed portions, substantially as specified.

5. In a circular sawing machine, a main frame, a rotary reversible saw-frame carrying revolubie saws mounted in one plane, a table having a fixed portion, a movable portion adjustable toward and from the fixed portion, a sliding portion between said fixed and adjustable portions, mounted on the latter, movable in a direction parallel to the plane of the saws, and laterally adjustable with said adjustable portion to regulate the width of the saw crevice, and pivotal means for tilting said tables and retaining them in a tilted position, substantially as specified.

6. In a circular sawing machine, a rotary reversible saw-frame carrying revolubie saws mounted in one plane, a worm-gear axially mounted on said reversible frame, a resilient worm-shaft carrying a worm in engagement with said worm-gear, a means for operating said worm-shaft, and bearings for said worm-shaft, one of which is adjustable and located intermediate between the other bearing and the worm, at some distance from the latter, whereby when the worm is adjusted in close mesh with the worm-gear it is retained in elastic contact therewith by the resiliency of the worm-shaft, substantially as specified.

7. In a circular sawing machine, a main frame, a rotary reversible saw-frame, carrying revolubie saws mounted in one plane, a table having a fixed portion, a movable portion adjustable toward and from the fixed portion, a sliding portion in substantially the same plane with the said adjustable portion, movable on rollers in a direction at right angles to the movement of the adjustable portion, and a cutting-off gage mounted on said sliding portion, substantially as specified.

8. In a circular sawing machine, reversible saws mounted in one plane, a fixed table, a movable table adjustable toward and from the fixed table, a transversely-sliding table between said fixed and adjustable tables, adjustable with the latter, supporting-rollers beneath said sliding table, carried on said adjustable table, and means for maintaining said sliding table and rollers in operative parallelism with the plane of the saws, substantially as specified.

707,676. PERMUTATION-PADLOCK. DAVID H. COOGLER, Concordia, Kans. Filed May 13, 1902. Serial No. 107,070. (No model.)

Claim.—1. In a lock the combination of a shackle having a movable member provided with notches, a series of rotary tumblers mounted on the shackle and arranged to engage the notches of the movable member, and a rotary setting-ring adjustably mounted on the shackle and provided with an indicator and adapted to shift the same to change the combination, substantially as described.

2. In a lock the combination of a shackle having a movable member provided with notches, a series of rotary tumblers provided with characters, a rotary setting-ring adjustably mounted on the shackle and having an indicator and capable of rotation for shifting the position of the same, and means for clamping the setting-ring in its adjusted position, substantially as described.

3. In a device of the class described, the combination with a permutation-lock having a series of rotary tumblers provided with characters, of a rotary setting-ring adjustably mounted on the shackle and provided with an indicator and capable of rotation to shift the position of the indicator to change the combination, and means for securing the setting-ring in its adjusted position, substantially as described.

4. In a lock the combination of a shackle having a movable member and provided with a grooved core, said shackle being also provided at the inner end of the core with an annular flange, a flanged setting-ring adjustably mounted on the flange of the core and provided with an indicator, a clamping device for holding the setting-ring in its adjusted position, a series of rotary tumblers mounted on the core and provided with notches or recesses and means for securing the tumblers on the core, substantially as described.

5. In a lock the combination, of a shackle having a grooved core, a series of tumblers mounted on the core and provided with recesses, a rotary setting device having an indicator and a key for holding the tumblers while the setting device is being adjusted, substantially as described.

6. A lock provided with outer tumblers and having a pair of inner tumblers of greater diameter than the outer tumblers, the latter being of greater diameter than the adjacent fixed portions of the lock to provide projecting edges, substantially as described.

707,677. PAINT. FREDERICK H. GRAM, Murfreesboro, Tenn. Filed Oct. 10, 1901. Serial No. 78,246. (No specimens.)

Claim.—1. The composition herein described, consisting of carbonized and pulverized raw cotton, and coal-tar in the proportions substantially as specified.

2. The process of compounding a carbon-paint composition which consists in carbonizing raw cotton, then pulverizing the carbonized cotton, and then thoroughly mixing the carbonized cotton with coal-tar, in the proportions as specified.

707,678. METALLIFEROUS STAMPING MILL OR MACHINE. JAMES G. DAW, Llanelly, England. Filed June 25, 1901. Serial No. 65,990. (No model.)

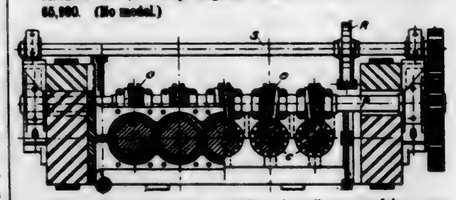

Claim.—In a stamp-mill, a plurality of anvils arranged in a row, worm-gears connected with said anvils, a shaft carrying a plurality of worms meshing with said worm-wheels, pawl-and-ratchet mechanism for rotating said shaft, and stamps cooperating with said anvils, substantially as described.

707,679. COTTON-COMPRESS. JESSE L. DARRAS, Whitewright, Tex., assignor of one-half to McMillin & Lively, Whitewright, Tex., a Firm. Filed Mar. 17, 1902. Serial No. 98,572. (No model.)

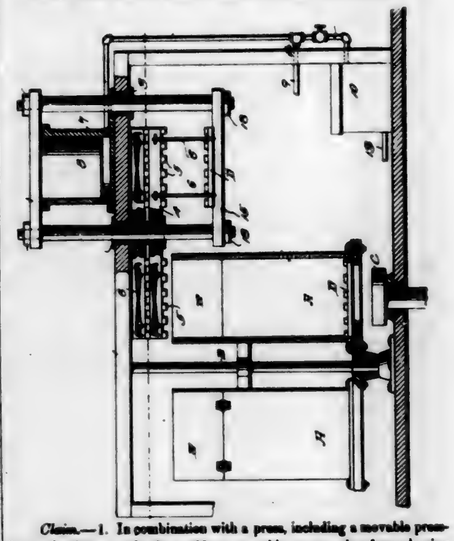

Claim.—1. In combination with a press, including a movable press-box, a fixed support having guides, a movable compressing-frame having parallel guide-bars operating in said guides, a fluid-pressure mechanism disposed between said guides on said support and connected to an element of the movable frame at a point intermediate the guide-bars thereof, and a revolubie element mounted on one of the guides to carry a bale from the press to the compressing-frame, for the purpose set forth, substantially as described.

2. In combination with a press, including a movable press-box, a fixed support having guides, a movable compressing-frame having parallel guide-bars operating in said guides, a fluid-pressure mechanism disposed between said guides on said support and connected to an element of the movable frame at a point intermediate the guide-bars thereof and a plurality of revolubie elements independently mounted for revolution on one of the guides, for the purpose set forth, substantially as described.

3. In combination with a press, including a movable press-box, a fixed support having a guide, a movable compressing-frame having an element to travel in said guide, means to operate said compressing-frame, and a revolubie element mounted on the guide to carry a bale from the press to the compressing-frame, substantially as described.

707,680. CLAMP. WILLIAM T. DE WORTH, Bordentown, N. J. Filed Apr. 10, 1902. Serial No. 102,208. (No model.)

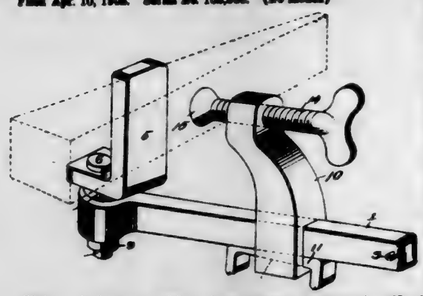

Claim.—A clamp comprising a beam having a transversely-orificed head, an L-shaped head-block having its longer member disposed at right angles to the beam and its shorter member disposed parallel therewith and provided with an orifice of greater diameter than that in the head, a bolt having that portion of its length engaging the orifice in the head-block circumferentially enlarged, presenting thereby a shoulder to rest upon the beam and to limit the movement of the bolt with relation thereto, a washer interposed between the head-block and the beam, the washer being of a thickness to permit free swiveled movement of the head-block without rocking, thereby to render it automatically adjustable to tapered surfaces, a tail-block carrying a clamping-screw, and a locking-wedge associated with the tail-block and provided with lateral extensions to present means for locking and unlocking the wedge, substantially as and for the purpose specified.

707,681. SHELL-BASE FOR CARTRIDGES. ARTHUR T. DUNCAN, Clinton, Mo. Filed Apr. 26, 1901. Serial No. 57,633. (No model.)

Claim.—As a new article of manufacture, a removable base for a cartridge-shell, said base being made of paper or other light material, of cylindrical form, with unobstructed peripheral surface, whereby it is adapted to be readily fitted in and removed from the breech of a cartridge-shell, said base having a funnel-shaped powder-receiving cavity on one side and a central bore communicating with said cavity, said bore being adapted to receive the primer-chamber in the base of the cartridge-shell, the surface of the base which is exposed to the powder being lined with thin metal, substantially as described.

707,682. FASTENING DEVICE. FREDERIC A. FAIRBROTHER Jr., Providence, R. I. Filed Nov. 14, 1901. Serial No. 82,304. (No model.)

Claim.—In a fastening device, the combination of male and female members one of which is yielding and provided with opposite studs, and the other with engaging shoulders adapted to be engaged by said studs, the latter member being also provided with oppositely-inclined edges which serve to cause the release of the members from each other, substantially as described.

707,683. ANCHORING-POST. MARY F. FARWELL, Astoria, Ill., assignor to Country Home Telephone Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Aug. 1, 1901. Serial No. 70,504. (No model.)

Claim.—1. The combination with a hollow post, of a bar thereon provided at one end with a claw and at the other end with an enlargement serving to fill the bore of the post and constituting a butt to be struck in forcing the claw into the surrounding soil, substantially as described.

2. The combination with a hollow post provided at its lower end with an aperture, of a covering for the said aperture, a bar located within the post, and a claw provided upon the bar and adapted by a movement of the bar to be forced through the said covering into the surrounding soil, substantially as described.

3. The combination with a hollow post, provided at its lower end with an aperture, of a bar in the post, a claw provided upon the bar and adapted to be forced through the said aperture, and an anchoring screw-cap for engagement with the upper end of the post, substantially as described.

4. The combination with a hollow anchor-post, provided at its lower end with an aperture, of a bar in the post, a claw provided upon the bar and adapted to be forced through the said aperture, and a screw-cap for engagement with the upper end of the post and provided with an aperture for engagement with a rope or cable, substantially as described.

5. A post comprising a tubular structure having its lower end provided with an earth-penetrating device and also provided with an aperture and made hollow throughout its length above such device, a bar or rod arranged within said tubular structure and provided at its lower end with a claw or like device adapted for projection through said aperture in the post, the said bar or rod extending to substantially the top of the post when the claw is projected, and means for engaging the bar or rod and locking the same in the post after the claw has been projected, substantially as set forth.

6. A tubular or hollow post, containing an anchoring device adapted for projection from the post into the earth and a stop or abutment having interlocking engagement with the post so as to be prevented from removal by longitudinal slippage and engaging the anchoring device to prevent the retraction of the anchoring device and means for attaching a rope or cable to the post, substantially as described.

707,684. WINDING-MACHINE. RISDON C. FAY, Pawtucket, R. I., and FREDERICK L. FAY, East Brookfield, Mass., assignors to the Easton & Burnham Machine Company, Pawtucket, R. I. Filed Oct. 10, 1901. Serial No. 78,315. (No model.)

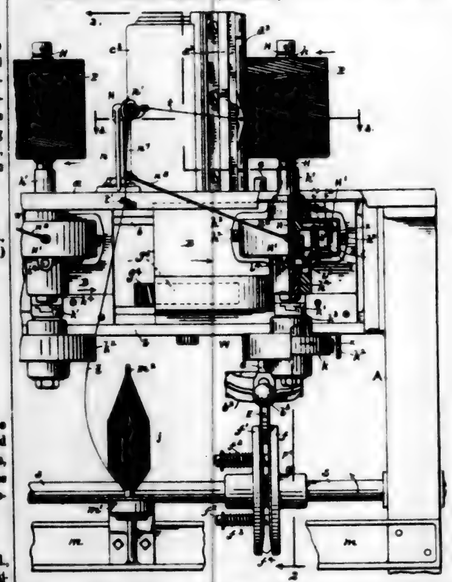

Claim.—1. In a winding-machine of the class described, the combination of a revolvable spindle adapted to carry a cop tube or quill on which the cop is to be built, a reciprocating yarn-guide for laying the yarn in successive spiral convolutions and layers in building up the cop, a freely-turning guide-roll located contiguous to said yarn-guide and spindle, a plate or frame member carrying said spindle capable of moving in a lateral direction in unison with and by means of the increasing diameter of the cop and having the peripheral surface of the latter in substantially continuous engagement with said guide-roll, a tension device for the yarn arranged whereby the tension is automatically relaxed as the cop increases in size, and driving mechanism for actuating said spindle having its speed automatically reduced by said increase in the cop's diameter.

2. In a winding-machine, the combination with a suitable driving-pulley, a cop-spindle and a variable pulley secured thereon, of an initial driven pulley, an endless driven belt leading from the latter pulley to said cop-spindle pulley, and a movable shipper wheel or member interposed between and adapted to be in simultaneous engagement with the driving and driven pulleys, substantially as hereinbefore described and for the purpose set forth.

3. In a winding-machine, the combination with the revolvable cop-spindle, a slidable plate or carriage having said spindle mounted therein, and a reciprocating guide for laying the yarn on the cop, of suitably-mounted yielding driving and driven pulleys through which power is transmitted to said spindle, a shipper-wheel interposed between and in frictional engagement with said pulleys, a movable arm or lever carrying said shipper-wheel, and means coacting with said carriage and lever arranged whereby the movement of the carriage, due to the increasing diameter of the cop, automatically changes the position of the shipper-wheel with respect to the said pulleys and produces a variation in the speed of the cop-spindle, substantially as described.

4. In a winding-machine, the combination of a vertically-arranged revolvable cam, a reciprocating yarn-guide actuated by said cam adapted to lay the yarn on the cop, a vertical cop-carrying spindle arranged to automatically move in a lateral direction away from the cam as the cop increases in size, an endless belt arranged to simultaneously actuate said cam and cop spindles, and mechanism substantially as described for automatically reducing the speed of the traveling belt as the cop increases in diameter.

5. In a winding-machine, the combination with the cop-spindle and a movable plate or frame carrying said spindle, of suitably-mounted driver and driven pulleys, a movable shipper device arranged to engage said pulleys having its action controlled by said plate, and a driving-belt mounted on said driven pulley and rotating the cop-spindle.

6. In a winding-machine, the combination of a revolving cam-C having a fixed axis, a vertically-reciprocating yarn-guide *d* in engagement with and having its movements controlled by said cam, a suitably-mounted revolvable cop-spindle capable of lateral movement in unison with and by means of the gradually-increasing diameter of the cop, and a freely-turning guide-roll d^2 located contiguous to the yarn-guide and in substantially continuous engagement with the cop's surface.

7. In a winding-machine, the combination of oppositely-revolving pulleys F and f^6, independently-mounted cam and cop carrying spindles c^2 and H respectively, a pulley secured to said cop-spindle, an endless power-transmitting belt *x* in engagement with the said pulleys, intervening mechanism actuated by the said pulley f^6 for revolving the cop-spindle, and a reciprocating yarn-guide arranged with respect to the spindle H and having its movements controlled by the cam-spindle, substantially as described.

8. In a winding-machine, the combination with the revolvable vertically-arranged cam-carrying shaft or spindle c^2 and a pulley f^6, through which power is transmitted for actuating said spindle, of the revolvable vertically-mounted and laterally-movable cop-carrying spindle H, a pulley secured thereto for actuating the spindle, an adjustably-mounted idler-pulley *k* adapted to revolve in a horizontal plane below said cop-spindle pulley, an initial driven pulley adapted to be actuated by any suitable driving means, and an endless open belt *x* in continuous engagement with said four pulleys, whereby when in use the cam and cop spindles are rotated at different rates of speed, substantially as described.

9. In a winding-machine, the combination with the suitably-mounted revolvable laterally-movable cop-spindle and the vertically-reciprocating yarn-guide *d*, of the yarn-tension device N provided with a pair of yielding friction-disks *n'* between which the yarn or thread passes, and a cam or wedge moving in unison with said cop-spindle, whereby as the cop increases in diameter the tension-cam gradually reduces the pressure upon the yarn between the friction-disks, substantially as described.

10. In a winding-machine, the combination of a cop-spindle and a slidable plate or carriage having said spindle revolubly mounted therein, means for driving said spindle, a reciprocating yarn-guide, a yielding tension device for the yarn having a member thereof connected with said movable carriage arranged to automatically reduce the tension upon the yarn as the cop increases in diameter, and means connected with the carriage and with said spindle-driving mechanism, whereby the speed of the spindle is automatically and gradually changed as the cop, which is being built thereon, increases in diameter, substantially as described.

11. In a winding-machine, the combination of a vertically-reciprocating yarn-guide, a freely-turning guide-roll mounted contiguous to the delivery side of said yarn-guide, and a laterally-movable and revolvable cop-spindle having the surface of the cop, while being produced thereon, in substantially continuous engagement with the said guide-roll, substantially as described.

707,685. ADJUSTABLE OR SEPARABLE PULLEY. RISDON C. FAY, Pawtucket, R. I., assignor to the Easton & Burnham Machine Company, Pawtucket, R. I. Filed Mar. 25, 1902. Serial No. 99,002. (No model.)

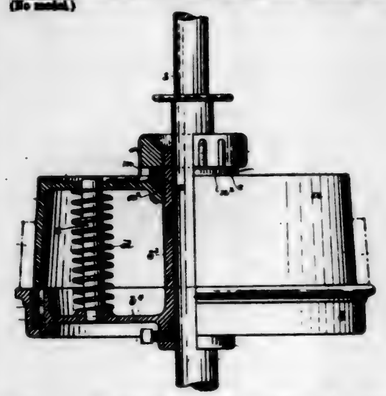

Claim.—1. The adjustable or separable pulley herein described, the same comprising a main or head member provided with a guide-flange having a comparatively deep annular peripheral recess therein, an endwise-movable rim member having a beveled face arranged to enter said recess, said two members when in action always revolving in unison, and means for changing the relation or relative position of the head and rim members, thereby varying the speed of the belt or pulley, as the case may be, substantially as hereinbefore described.

2. In a pulley of the class described, a head member adapted to be secured to a shaft, having an outer or peripheral guide-flange for the adjacent edge of the belt and a comparatively deep annular recess or groove contiguous to said flange, in combination with a rim member having a beveled face adapted to enter said recess, means uniting or connecting said head and rim members whereby when in action they revolve in unison, and adjusting mechanism for changing the position of the rim endwise or longitudinally with respect to the flange member, substantially as hereinbefore described and for the purpose set forth.

3. In a pulley of the class described, a head member provided with a peripheral guide-flange for the belt and also having a screw-threaded hub and guide-pins, in combination with a rim member having a beveled face slidably mounted on said hub and pins, springs interposed between the head and rim members, and a nut fitting said screw-threaded portion of the hub, substantially as described and for the purpose set forth.

4. An adjustable or separable pulley provided with longitudinally-separated spring-pressed head and rim members arranged when in use to always revolve in unison, said rim having a beveled face, a lock-nut fitted to the hub of said head member, whereby the relation of the rim to the head member may be adjusted longitudinally of the shaft and maintained in position, and having that portion of the said rim adapted to enter a comparatively deep annular recess formed in said head member, thereby changing the working diameter of the pulley, substantially as described.

707,686. COKE-DRAWER. DAVID FERGUSON, Pittsburg, Pa., assignor of one-half to Oliver G. Ferguson. Filed Apr. 1, 1901. Serial No. 53,773. (No model.)

Claim.—1. In a coke-drawer, a frame, a drum mounted therein, a reach-rod, a flexible device operatively connecting the drum and the rod, a conveyer, disconnectible driving connections between the conveyer and the drum, and means secured to the rod to which power may be applied for driving the rod and the drum when the rod is entering the coke-oven.

2. In a coke-drawer, a frame, a drum mounted therein, a support having a slot parallel to the axis of the drum, a swiveled forked bearing adjustable in the slot, an axially-rotatable reach-rod in the forked bearing, a flexible device on the drum and secured to the reach-rod, and means on the latter to which power may be applied for driving the rod and the drum when the rod is entering the coke-oven.

3. In a coke-drawer, a frame, a winding-drum therein, a support beneath the drum, a swiveled bearing adjustable on the support independently and longitudinally of the axis of the drum, a reach-rod seated in the bearing, a flexible device operatively connecting the drum and the rod, and means for operating the drum.

4. In a coke-drawer, a frame, a winding-drum, and a support independently mounted therein, a swiveled forked bearing adjustable along

the support independently and longitudinally of the axis of the drum, an axially-rotatable reach-rod seated in the forked bearing, a flexible device wound on the drum and having its ends fastened to the reach-rod, and means for moving the rod longitudinally.

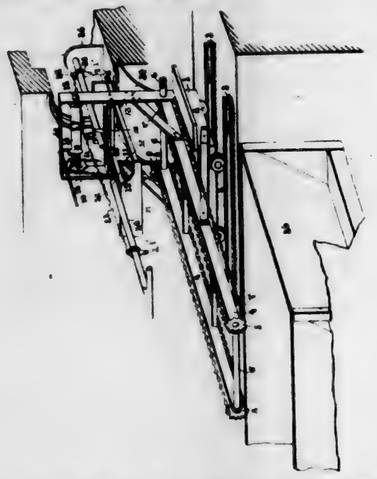

5. In a coke-drawer, a frame, a drum and a slotted support independently mounted therein, a swiveled forked bearing adjustable in the slot of the support independently and longitudinally of the axis of the drum, an axially-rotatable reach-rod seated in the forked bearing, a flexible device wound on the drum, and having its ends fastened to the rod, and means for longitudinally moving the rod.

6. In a coke-drawer, a reach-rod, a fulcrum-support therefor, and a slidable rod-rest below the same.

7. In a coke-drawer, a reach-rod, a fulcrum-support therefor, a slidable rod-rest below the rod, and means on the rod for sliding the rest.

8. In a coke-drawer, a reach-rod, a support therefor, a slidable rod-rest and projections on the rod for sliding the rest.

9. In a coke-drawer, the combination of a rotatable reach-rod, said rod having a downwardly-projecting rod, a support for the rod, a movable rod-rest below said rod, a drum, a chain secured to said drum and to the forward end of said reach-rod, and means for withdrawing said rod.

10. In a coke-drawer, a power-driven endless conveyor, a winding-drum, a driving device loose thereon and geared to the conveyor, a collar slidably held thereon, means for interlocking and disconnecting said device and collar, a reach-rod, a flexible device secured to said rod and wound on the drum, a blade on the rod, and a chain leading to the conveyor.

707,687. AUTOMATIC GOVERNOR FOR FLUID-COMPRESSORS. JOSEPH P. PILLINGER, Bellevue, Mich., assignor of nine-tenths to Richard B. Hicks and Eugene L. Markey, Bellevue, Mich. Filed Oct. 12, 1901. Serial No. 78,469. (No model.)

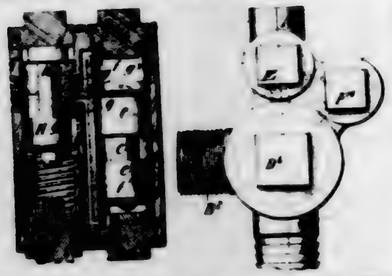

Claim.—1. The combination of the pump-chamber, the relief-port communicating therewith, and with the atmosphere, a relief-valve chamber into which said port opens, and a relief-valve in said chamber, adapted to close said relief-port in one position and open same in another position; with a governor-valve chamber, a passage for admitting air which has been compressed by the pump into one end of said governor-valve chamber, a governor-valve operated one way by air-pressure, a spring for forcing said governor-valve in the other direction, adjoining pairs of ports leading respectively from the governor-valve chamber to the atmosphere, and to opposite ends of the relief-valve chamber, said governor-valve being adapted to establish communication through said ports between one end of the relief-valve chamber and the governor-valve chamber, and between the other end of the relief-valve chamber and the atmosphere, or vice versa, all substantially as and for the purpose described.

2. The combination of the pump, the relief-valve chamber, the valve therein, the adjoining governor-valve chamber, the piston therein, a spring for moving said piston in one direction, and means for admitting air which has been compressed by the pump into said chamber to move the piston against the spring, air-ports opening near their adjoining ends into the air-space of the governor-valve chamber, and at their other ends into opposite ends of the relief-valve chamber, and exhaust or venting ports adjacent to the air-ports and respectively opening at one end into the air-space of the governor-valve chamber near the mouths of the air-ports and at their other ends into the atmosphere; with a governor-valve in the governor-valve chamber, operated by the piston therein, having a central passage communicating with the air-space of the governor-valve chamber and adapted to register with either of the said air-ports, said governor-valve also having two pockets respectively adapted to alternately establish communication between the respective air-ports and the related venting-ports, substantially as and for the purpose set forth.

3. The combination of the pump, the relief-valve chamber communicating therewith, the double-ended relief-valve in said chamber, and an outlet-port from said chamber communicating with the atmosphere; with the governor-valve chamber beside the relief-valve chamber, a passage for admitting air which has been compressed by the pump into said governor-valve chamber, air-ports leading from the governor-valve chamber to the opposite ends of the relief-valve chamber, and two vent-ports adjacent to the air-ports leading from said governor-valve chamber to the atmosphere; with the slide-valve having passage g^3, communicating with the air-space in the governor-chamber, and pockets g, g' respectively adapted to establish communication between adjacent air and vent ports, a piston carrying said slide-valve, and an adjustable spring for holding the piston against the air-pressure, substantially as and for the purpose described.

4. The combination of an air-pump, an air-storing reservoir communicating therewith, and the main air inlet and outlet valves; with a relief-valve chamber adjacent to said valves, ports connecting the same with the pump and with the atmosphere, a relief-valve in said chamber adapted to normally close said ports, a governor-valve chamber communicating at one end with the reservoir; a piston in said governor-valve chamber adapted to be depressed by the pressure of the air which has been compressed by the pump, a spring for raising said piston opposite ports leading from the air-space of the governor-valve chamber to the opposite ends of the relief-valve chamber above and below the relief-valve; vent-ports leading from the governor-valve chamber to the atmosphere, a governor-valve in said governor-valve chamber actuated by the piston, and adapted to establish communication between either relief-valve port and the governor-valve chamber, and the other relief-valve port and the atmosphere so as to cause the compressed air to actuate the relief-valve and render the pump effective or ineffective in operation, substantially as described.

5. The combination of the working cylinder or pump-cylinder, its inlet and outlet valves, a relief-port communicating with said cylinder intermediate the valves, a relief-valve, a governor-valve chamber beside the relief-valve casing, a piston therein, operated one way by the air which has been compressed by the pump; a spring for forcing said piston in the opposite direction; opposite air-ports leading from the air-chamber in the governor-valve casing to the relief-valve casing and opening thereinto on opposite sides of the relief-valve, adjacent vent-ports in the walls of the governor-valve chamber, and a governor-valve operated by the piston controlling said opposite air-ports and adjacent vent-ports, and means for venting one end of the governor-valve casing when air is admitted to the opposite end thereof.

6. The combination of the pump-cylinder, the pump-valve chamber, the adjacent valves therein, the relief-valve chamber, a relief-port leading from the pump-valve chamber between the valve therein to the atmosphere, a relief-valve adapted to close said relief-port in one position and open it in another position; a governor-valve chamber, air-ports leading from the governor-valve chamber to the relief-valve chamber and opening therein, at opposite sides of the relief-valve, and vent-ports leading from the governor-valve chamber to the atmosphere, a slide-valve in the governor-valve chamber for controlling said air and vent ports, a piston connected to and actuating said slide-valve, a passage connecting the pump-valve chamber with the governor-valve chamber to admit air which has been compressed by the pump into the governor-valve chamber above the piston, and a spring for holding the piston against the air-pressure, substantially as described.

7. The combination of the pump-cylinder, the crank-case, the relief-valve chamber, a port leading from said chamber to the pump, and a second port leading from said relief-valve chamber to the crank-case; with a relief-valve in said chamber, and means controlled by the air-pressure whereby said relief-valve is opened when the pressure rises above the desired degree, substantially as described.

8. The combination of the pump, the pump-valves at one side thereof, the compressed-air reservoir, and the crank-case, the relief-port for the pump; a relief-valve chamber communicating therewith, a port or passage connecting said relief-valve chamber with the crank-case, a relief-valve in said chamber, a governor-valve chamber, ports connecting the governor-valve chamber with the relief-valve chamber, and ports leading from the governor-valve chamber to the atmosphere; a valve in the governor-valve chamber controlling all ports thereof, a spring for holding the governor-valve against the air-pressure, and an air-channel leading from the reservoir to the governor-valve chamber above the valve therein, all substantially as and for the purpose described.

9. The combination of the pump-cylinder, the crank-case, the relief-valve chamber, a port leading from said chamber to the pump, another port leading through said cylinder-wall to the crank-case, a relief-valve in said chamber adapted to close said ports in one position and open them in another position; a governor-valve chamber beside the relief-valve chamber, ports leading from the governor-valve chamber to the relief-valve chamber and opening therein at opposite sides of the relief-valve, a slide-valve in the governor-valve chamber for controlling said ports, a piston connected to and actuating said slide-valve, a passage for admitting compressed air into the governor-valve chamber above the piston, and a spring for holding the piston against the air-pressure, substantially as and for the purpose described.

10. The combination of the pump, its crank-case, the pump-valves at one side of the cylinder, the compressed-air reservoir, a relief-valve chamber directly communicating with the pump, a port or passage leading from said relief-valve chamber to the crank-case, a relief-valve in said chamber, a governor-valve chamber beside the relief-valve chamber, ports connecting the governor-valve chamber with opposite ends of the relief-valve chamber, and ports leading from the governor-valve chamber to the atmosphere, a slide-valve in the governor-valve chamber, controlling all ports thereof; a piston in said governor-valve chamber actuating said slide-valve, a spring for holding the piston against the air-pressure, and an air-passage leading from the reservoir to the governor-valve chamber above the piston, all substantially as and for the purpose set forth.

707,688. CONVEYING APPARATUS. JOHN W. FOREMAN, Healdsburg, Cal. Filed Jan. 23, 1902. Serial No. 91,561. (No model.)

Claim.—1. A conveying apparatus including, in combination, a rigid track; standards upon which said track may be supported; a carriage adapted to travel upon said track; a grip comprising pivoted members having arm extensions; a pivoted yoke engaging said extensions and holding the grip members closed; a fall-block engaged by said grip; and a stop in the path of the yoke for actuating the grip to release the fall-block at a predetermined point along the track.

2. The combination in a conveying apparatus of an inclined trackway, and supports therefor; a carriage; a grip comprising opposing members pivoted to the carriage and having radial arm extensions; a yoke pivoted between its ends and engaging said radial extensions, to hold the grip members closed; a fall-line having one end secured to the carriage; a burden-carrier to be raised and lowered by the fall-line and to be engaged by the grip members; and means by which the yoke is moved about its pivotal connection whereby the members of the grip may be automatically opened at a predetermined point along said trackway.

3. The combination in a conveying apparatus of a trackway; a carriage; means for advancing the same along the trackway; a grip on the carriage and including opposing pivoted members having radial arm extensions; a horizontal holding member for said extensions said member pivotally mounted; a burden-carrier to be engaged by said grip members; and a means for automatically tripping said member and causing it to open the grip members at a point along the trackway.

4. The combination in a conveying apparatus, of a track, a carriage thereon, gripping members pivoted on said carriage, arm extensions on said members, a pivoted yoke connecting with said extensions, trippers on the track extending into the path of said yoke by which the grip members are opened and a fall-line and a fall-block in connection with said carriage.

5. The combination in a conveying apparatus, of a track, a carriage thereon, gripping members pivoted on said carriage, divergent arm extensions on said members, a yoke pivoted intermediate of said members and engaging the ends of said arms, trippers disposed on opposite sides of the track adjacent to the points of loading and unloading, said trippers extending into the path of the yoke by which the grip members are opened, and a fall-line and a fall-block in connection with the carriage.

6. The combination in a conveying apparatus of a track, a carriage thereon, grip members pivoted on the carriage, arms on said members by which the latter are moved to open, other arms or extensions rigid with said members and means thereon for engaging a fixed support to hold the carriage stationary and a fall-line and fall-block or burden-carrier in connection with said carriage.

7. In a conveying apparatus, the combination of a track, a carriage having pivoted grip members thereon, arms on said members, a yoke connecting said arms whereby they may be moved simultaneously to open the jaws, means in the path of the yoke for tripping the same, and a cable and fall in connection with said carriage.

8. In a conveying apparatus, the combination of a track, a carriage having grip members pivoted thereon, arms on said members, a yoke or bar pivotally connected to each of said arms, and trippers having fixed points of supports adapted to extend into the path of said bar whereby the latter may be oscillated and the grip members opened.

9. In a conveying apparatus, the combination of a track, a carriage, grip members pivoted thereon, arms on said grip members and means including an oscillating member and a trip device in the path thereof by which said members may be automatically operated to open the jaws.

10. In a conveying apparatus the combination of a carriage having a longitudinal slot; a grip including opposing pivoted members having horizontal and vertical arm extensions lying within said slot; a yoke upon the carriage and engaging said vertical extensions; means for tripping the yoke to release the extensions; a fall line and block attached to the carriage; and means carried by the block to be engaged by the grip members.

11. In a conveying apparatus, a fall-block having a rigid bail secured thereto, and means upon said block consisting of a point of attachment at one side of the fall-block and a guide at the opposite side of the fall-block whereby said bail is made always to stand vertical when the block is suspended upon the portion of the line or cable between said point of attachment and guide.

12. In a conveying apparatus, the combination with the track and a carriage thereof, of a fall-block, having a rigid bail, said bail including a horizontal portion essentially triangular in cross-section and adapted to engage grip members on said carriage and a line or cable secured to said carriage at one side of the fall-block and a guide-pulley at the other side of the fall-block said line or cable passing through said block and over said pulley by which the block is raised and lowered and the carriage moved along the track.

13. In a conveying apparatus, a carriage having a longitudinal slot, grip members pivoted therein, vertical and horizontal arm extensions on each of said members, a yoke connecting said vertical arms, and projections upon said horizontal arms.

14. In a conveying apparatus, the combination with a track of a wheeled carriage thereon, having a longitudinal slot-opening, jaws pivoted therein, arms upon said jaws, a yoke pivotally connected with each arm, trippers having a fixed point of support, each of said trippers including a pivoted arm adapted to have one arm extend into the path of the yoke and to engage and oscillate the yoke to open the jaws when the carriage moves in one direction and said trip-arm adapted to allow the yoke to pass without disturbing the jaws when the carriage moves in the other direction.

15. In a conveying apparatus, the combination with a track, of a carriage having a longitudinal slot-opening, jaws pivoted therein, vertical and horizontal arm extensions on each of said members, means by which the latter are normally kept closed, means connected with the vertical arms whereby the jaws are moved in unison, tripping devices upon the track whereby the movement of said jaws is automatically effected, a fall-line attached to the carriage, a fall-block adapted to be raised and lowered by said line, and means upon the track engaging said horizontal-arm extensions whereby the carriage may be held stationary.

707,689. VAPOR-GENERATING APPARATUS FOR HYDROCARBON-BURNERS. THOMAS J. FORDE, Geneva, Ohio. Filed Apr. 11, 1901. Serial No. 55,284. (No model.)

Claim.—1. Apparatus of the character indicated, comprising a vapor-generator having an oil-inlet at the lower end and a vapor-outlet at its upper end, means for supplying oil to the said oil-inlet, a generator-heater arranged between the upper and lower ends of the generator and provided with a vapor-inlet, a pipe-line for supplying oil-vapor-laden air to the generator-heater, and a valve-casing having the following: an upper tubular vapor-receiving member in open relation with the aforesaid vapor-outlet of the generator and extending laterally of the generator outwardly from the said vapor-outlet, a lower tubular vapor-discharging member arranged to discharge into the vapor-inlet of the generator-heater, an upright tubular member having the passage-way therethrough connecting the passage-ways formed in the aforesaid vapor-receiving member and vapor-discharging member of the valve-casing, a valve for interrupting and for establishing a flow of vapor from the generator through the said valve-casing, a tubular member having the passage-way formed therein connected with the passage-way of the aforesaid vapor-discharging member of the valve-casing and connected and in open relation with the aforesaid pipe-line, a needle-valve for regulating the discharge of vapor from the vapor-discharging member of the valve-casing, and a valve for establishing and for interrupting the flow of vapor-laden air from the said pipe-line to the said vapor-discharging member of the valve-casing, substantially as and for the purpose set forth.

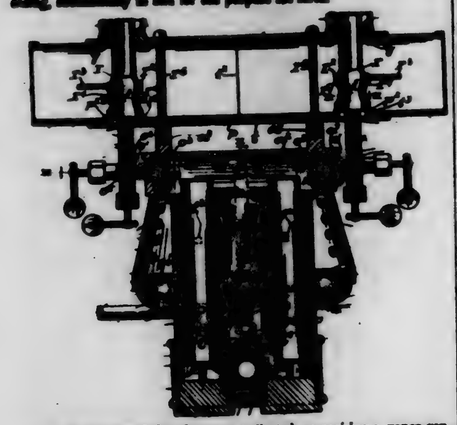

2. Apparatus of the character indicated, comprising a vapor-generator having an oil-inlet at the lower end and a vapor-outlet at its upper end, means for supplying oil to the said oil-inlet, a generator-heater arranged between the upper and lower ends of the generator and provided with a vapor-inlet, a pipe-line for supplying oil-vapor-laden air to the generator-heater, and a valve-casing having the following: an upper tubular vapor-receiving member in open relation with the aforesaid vapor-outlet of the generator and extending laterally of the generator outwardly from the said vapor-outlet, a lower tubular vapor-discharging member arranged to discharge into the vapor-inlet of the generator-heater, an upright tubular member having the passage-way therethrough connecting the passage-ways formed in the aforesaid vapor-receiving member and vapor-discharging member of the valve-casing, a valve for interrupting and for establishing the flow of vapor from the generator through the valve-casing, a tubular member depending from the aforesaid vapor-discharging member of the valve-casing and having the passage-way formed therein connected with the passage-way of the said vapor-discharging valve-casing member, which depending valve-casing member has a laterally-projecting tubular arm connected and in open relation with the aforesaid pipe-line, a needle-valve for regulating the discharge of vapor from the vapor-discharging member of the valve-casing and another valve for establishing and for interrupting the flow of vapor-laden air from the said pipe-line into the said vapor-discharging member of the valve-casing, substantially as and for the purpose set forth.

3. Apparatus of the character indicated, comprising a vapor-generator having an oil-inlet at the lower end and a vapor-outlet at its upper end, means for supplying oil to the said oil-inlet, a generator-heater arranged between the upper and lower ends of the generator and provided with a vapor-inlet, a pipe-line for supplying oil-vapor-laden air to the generator-heater, and a valve-casing having the following: an upper tubular vapor-receiving member arranged to receive vapor from the aforesaid vapor-outlet of the generator and extending laterally of the generator outwardly from the said vapor-outlet, stub-valve within the said vapor-receiving member of the valve-casing, a lower tubular vapor-discharging member arranged to discharge into the vapor-inlet of the generator-heater, a needle-valve within the said vapor-discharging member of the valve-casing, an upright tubular member having the passage-way therethrough connecting the passage-ways formed in the aforesaid vapor-receiving member and vapor-discharging member of the valve-casing, a tubular member depending from the said vapor-discharging member and having the passage-way formed therein connected with the passage-way in the said vapor-discharging member, which depending member has a laterally-projecting tubular arm connected with and in open relation with the aforesaid pipe-line, and a stub-valve within the said depending member, substantially as and for the purpose specified.

4. The combination, with a vapor-generator comprising a chambered bottom section having an oil-inlet, a chambered top section having vapor-outlets, and an upright tubular central section establishing open relation between the chamber of the bottom section and the chamber of the top section, and means for supplying oil to the aforesaid inlet, of a generator-heater comprising a coil extending around the central section of the generator and provided with perforations arranged to discharge against the said central section, which coil has a vapor-inlet; a shelf bearing the said coil and having air-supply perforations, and means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil, substantially as and for the purpose set forth.

5. The combination, with a vapor-generator comprising a chambered bottom section having an oil-inlet, a chambered top section having vapor-outlets, and an upright tubular central section establishing open relation between the chamber of the bottom section and the chamber of the top section, and means for supplying oil to the aforesaid oil-inlet, of a generator-heater comprising a coil which is provided, at the top, with perforations arranged to discharge against the said central section, and has a vapor-inlet; a shelf bearing the said coil and having air-supply perforations, which shelf is provided with an upwardly-projecting flange extending around the coil, and means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil, substantially as shown, for the purpose specified.

6. The combination, with a vapor-generator comprising a chambered bottom section having an oil-inlet, a chambered top section having vapor-outlets, and an upright tubular central section establishing open relation between the chamber of the bottom section and the chamber of the top section, and means for supplying oil to the aforesaid oil-inlet, of a generator-heater comprising a coil extending around the central section of the generator and provided, at the top, with perforations arranged to discharge against the said central section, which coil has a vapor-inlet; means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil; a shelf bearing the said coil and supported from the generator, which shelf has air-supply perforations, and a guard-forming laterally-perforated casing extending around the central section of the generator between the top section of the generator and the said shelf and secured to the said shelf, substantially as and for the purpose set forth.

7. The combination, with a vapor-generator comprising a chambered bottom section having an oil-inlet, a chambered top section having vapor outlets, and an upright tubular central section establishing open relation between the chamber of the bottom section and the chamber of the top section, and means for supplying oil to the aforesaid oil-inlet, of the generator-heater comprising a coil extending around the central section of the generator, and provided, at the top, with perforations arranged to discharge against the said central section, which coil has a vapor-inlet; means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil, a shelf bearing the said coil and extending around and supported from the central section of the generator, which shelf has air-supply perforations and a surrounding upwardly-projecting flange, and a guard-forming laterally-perforated casing extending around the central section of the generator and secured to the said flange, substantially as and for the purpose set forth.

8. The combination, with a vapor-generator comprising a bottom section having an oil-inlet, a chambered top section having vapor-outlets and an external laterally-projecting flange and an upright tubular central section establishing open relation between the chamber of the bottom section and the chamber of the top section, and means for supplying oil to the aforesaid oil-inlet, of a generator-heater comprising a coil extending around the central section of the generator, and provided, at the top, with perforations arranged to discharge against the said central section, which coil has a vapor-inlet; means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil and extending around and supported from the central section of the generator, a shelf bearing the said coil and having air-supply perforations, and a guard-forming laterally-perforated casing surrounding the central section of the generator and extending from the aforesaid flange of the top section of the generator to the said shelf and attached to the shelf, substantially as and for the purpose set forth.

9. The combination, with a vapor-generator comprising a chambered bottom section having an oil-inlet, a chambered top section having vapor-outlets, and an upright tubular central section establishing open relation between the chamber of the bottom section and the chamber of the top section, and means for supplying oil to the aforesaid oil-inlet, of a generator-heater comprising a coil surrounding the central section of the generator, and provided, at the top, with perforations arranged to discharge against the said central section, which coil has a vapor-inlet; means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil; a shelf bearing the said coil and adjustable vertically, and means for securing the said shelf in the desired adjustment to the central section of the generator, substantially as and for the purpose set forth.

10. Apparatus of the character indicated, comprising a vapor-generator having a chambered top section provided with vapor-outlets, an upright tubular central section in open relation at its upper end, with the chamber of the top section, and a chambered bottom section having its chamber in open relation with the lower end of the central section and provided with an oil-inlet, which bottom section has the lower wall of its chamber provided with an aperture in registry with the central section of the generator, a removable plug closing the said aperture, a drum arranged internally and centrally of the central section of the generator and extending from within the bottom section to within the top section of the generator, means for holding the said drum centrally of the central generator-section, means for holding the drum elevated above the lower wall of the bottom section of the generator, the generator-heater having a vapor-inlet, and means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the generator-heater and the aforesaid plugged aperture being large enough to accommodate the introduction into, or removal from, the central generator-section, of the aforesaid drum.

11. Apparatus of the character indicated, comprising a vapor-generator having a chambered bottom section provided with an oil-inlet, a chambered top section having vapor-outlets, and pipes arranged a suitable distance apart laterally and establishing open relation between the chamber of the bottom section and the chamber of the top section, a generator-heater comprising a coil extending around the aforesaid pipes and having perforations arranged to discharge against the said pipes and provided with a vapor-inlet, and means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil.

12. Apparatus of the character indicated, comprising a vapor-generator having a chambered bottom section provided with an oil-inlet, a chambered top section having vapor-outlets, and upright pipes arranged a suitable distance apart laterally and establishing open relation between the chamber of the bottom section and the chamber of the top section, a generator-heater comprising a coil extending around the said pipes and closed at one end and having a vapor-inlet at its other end, which coil is provided, at the top, with perforations arranged to discharge against the said pipes, and means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil.

13. Apparatus of the character indicated, comprising a vapor-generator having a chambered bottom section provided with an oil-inlet, a chambered top section having vapor-outlets, and two upright pipes arranged a suitable distance apart laterally and establishing open relation between the chamber of the bottom section and the chamber of the top section, a generator-heater comprising an S-shaped coil surrounding both of the said pipes and extending between the pipes and provided, at the top, with perforations arranged to discharge against the said pipes, which coil is closed at one end and has its other end terminating in a vapor-inlet, and means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil.

14. Apparatus of the character indicated, comprising a vapor-generator having a chambered bottom section provided with an oil-inlet, a chambered top section having vapor-outlets, and two upright pipes arranged a suitable distance apart laterally and establishing open relation between the chamber of the bottom section and the chamber of the top section, a generator-heater comprising an S-shaped coil surrounding both of the aforesaid pipes and extending between the pipes and provided, at the top and at suitable intervals longitudinally of the coil, with perforations arranged to discharge against the said pipes, which coil is closed at one end and has its other end forming a vapor-inlet means for controlling and regulating the supply of vapor from one of the aforesaid vapor-outlets of the generator to the vapor-inlet of the said coil, a shelf instrumental in supporting the coil and secured to both of the aforesaid pipes, which shelf has air-supply perforations, and a laterally-perforated guard-forming casing extending around the generator next above and attached to the said shelf, substantially as and for the purpose set forth.

15. In apparatus of the character indicated, a vapor-generator having its upper end provided with a vapor-outlet, a saddle elevated above the generator so as to form an air-space between it and the top of the generator, an air-receiving casing arranged in a horizontal plane and seated on the aforesaid saddle, an upwardly-extending service-pipe, an upright tube arranged to discharge into the said service-pipe and having an air-inlet arranged to receive air from within the air-receiving casing, and a valve-casing interposed between the aforesaid vapor-outlet of the generator and the lower end of the said tube and having valved passage-ways for controlling and regulating the passage of vapor from the generator to the said tube.

16. In apparatus of the character indicated, a vapor-generator provided with a chambered vapor-receiving top section having two lateral vapor-outlets arranged diametrically opposite each other; upwardly-projecting lugs formed upon the said top section; a saddle mounted on the said lugs, an air-receiving casing arranged in a horizontal plane and mounted on the said saddle; two upwardly-extending service-pipes arranged a suitable distance apart longitudinally of the top of the said casing; two upright tubes arranged to discharge upwardly into the different service-pipes, respectively, and extending approximately through the aforesaid air-receiving casing and provided, respectively, with a lateral air-inlet, and two valve-casings interposed between the different vapor-outlets, respectively, of the generator and the lower end of the different aforesaid tubes, respectively, and having valved passage-ways for controlling and regulating the passage of vapor from the generator to the said tubes.

17. In apparatus of the character indicated, a vapor-generator having two vapor-outlets arranged a suitable distance apart; an air-receiving casing arranged in a horizontal plane and supported above the generator; two upwardly-extending service-pipes arranged a suitable distance apart longitudinally of the top of the said casing; two upright tubes arranged to discharge upwardly into the different service-pipes, respectively, and extending approximately through the aforesaid air-receiving casing and provided, respectively, with lateral holes or apertures; two sleeves movably mounted upon the different aforesaid tubes, respectively, and having lateral holes or apertures arranged to render them capable of registering with the lateral holes or apertures of the respective tubes, and two valve-casings interposed between the aforesaid vapor-outlets of the generator and the lower end of the different aforesaid tubes, respectively, and having valved passage-ways for controlling and regulating the passage of vapor from the generator to the said tubes, substantially as and for the purpose set forth.

18. In apparatus of the character indicated, a vapor-generator provided with a chambered vapor-receiving top section having two lateral vapor-outlets arranged a suitable distance apart; two upwardly-projecting lugs formed upon the said top section and arranged a suitable distance apart; a saddle mounted on the said lugs and having two apertures arranged a suitable distance apart and upwardly-projecting flanges extending about the apertures; an air-receiving casing arranged in a horizontal plane and seated on the saddle and perforated at the bottom to accommodate the location of the aforesaid flanges; two upwardly-extending service-pipes arranged above the said casing over the different saddle-apertures, respectively; two upright tubes arranged to discharge upwardly into the different service-pipes, respectively, and extending into the different saddle-apertures, respectively, and provided, respectively, with a lateral air-inlet, and two valve-casings interposed between the different vapor-outlets, respectively, of the top section of the generator and the lower end of the different aforesaid tubes, respectively, and having valved passage-ways for controlling and regulating the passage of vapor from the generator to the said tubes, substantially as and for the purpose set forth.

19. In apparatus of the character indicated, a vapor-generator provided, at its upper end, with two vapor-outlets arranged a suitable distance apart; upwardly-projecting lugs formed upon the upper end of the generator, a saddle mounted upon the said lugs; an air-receiving casing arranged in a horizontal plane and composed of two tubular sections arranged end to end and seated in the aforesaid saddle; a top plate extending over and resting upon both of the said sections; bolts or screws extending through the said top plate into the aforesaid lugs; two upwardly-extending service-pipes arranged above and a suitable distance apart longitudinally of the said casing; two upright tubes arranged to discharge upwardly into the different service-pipes, respectively, and extending approximately through the said casing, and provided, respectively, with an air-inlet in open relation with the chamber of the aforesaid casing, and two valve-casings interposed between the different vapor-outlets, respectively, of the generator and the lower end of the different aforesaid tubes, respectively, and having valved passage-ways for controlling and regulating the passage of vapor from the generator to the said tubes.

20. In apparatus of the character indicated, a vapor-generator provided, at its upper end, with a vapor-outlet; upwardly-projecting lugs

formed upon the upper end of the generator; a saddle mounted upon the said lugs; an air-receiving casing arranged in a horizontal plane and seated in the saddle; a layer of fireproof material, which is a good non-conductor of heat, covering the lower portion of the said casing; means for supplying oil to the generator; a generator heater extending around the generator; a service-pipe extending upwardly above the aforesaid air-receiving casing; an upright tube arranged to discharge upwardly into the service-pipe and extending approximately through the said air-receiving casing and provided with a lateral air-inlet in open relation with the chamber of the said casing, and a valve-casing interposed between the vapor-outlet of the generator and the lower end of the aforesaid tube and having valved passage-ways for controlling and regulating the passage of vapor from the generator to the said tube, substantially as and for the purpose set forth.

707,690. LOOM-FIXER'S KNIFE. CHARLES FOSTER, West Warren, Mass. Filed Dec. 6, 1900. Serial No. 38,962. (No model.)

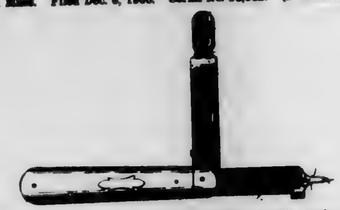

Claim.—1. A loom-fixer's knife comprising a handle having a blade mounted therein and provided with a terminal awl-blade and a hook adjacent to the base of the awl-blade at one side of the blade of the knife, said hook lying in a plane beyond the side edge of the knife-blade, and projecting beyond the side face of the knife-blade, said hook being adapted for engagement with eyelet-screws to remove them.

2. A tool comprising a handle having blades pivoted therein upon a common pivot and adapted to open to aline with the handle, one of said blades having a terminal punching-gouge and the other blade having no sharp side edges whereby it may be grasped in connection with the handle to rotate the punching-blade, the punching-blade being longer than the other blade so that it may be employed for punching when both blades are open to the same degree.

707,691. HEATING APPARATUS. EDWARD GERRARD, Indianapolis, Ind., assignor to the National Dry Kiln Company, Indianapolis, Ind., a Corporation of Indiana. Filed Apr. 3, 1901. Serial No. 54,110. (No model.)

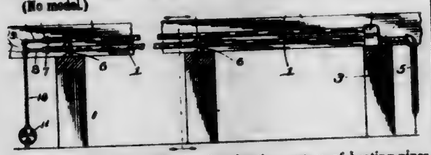

Claim.—1. The combination, in a heating system, of heating-pipes of uniform length, a discharging-header at one end to which said pipes are connected, a steam-receiving header at the other end, small pipes leading from said header and running substantially at right angles to and communicating with the ends of said heating-pipes, elbows and couplings connected to the small pipes and the heating-pipes respectively, and right and left hand threaded nipples uniting said couplings and said elbows, substantially as and for the purposes set forth.

2. The combination, in a heating system, of a framework, a discharging-header for the pipes fixedly secured to said framework, two series of comparatively large heating-pipes connected to and held by said header and arranged in two horizontal planes; suitable supports for said heating-pipes on which they are loosely mounted, a steam-receiving header arranged in a different plane from that wherein said heating-pipes are positioned, and slender flexible pipes run in the same vertical plane connecting said header with said heating-pipes, substantially as and for the purposes set forth.

707,692. BRAKE-HANDLE. HOWARD W. GIBBS, Boston, Mass., assignor to William Hall & Co., Boston, Mass., a Firm. Filed June 20, 1902. Serial No. 112,546. (No model.)

Claim.—1. A brake-operating device comprising a handle having a cylindrical chamber at its inner end provided with vertical ratchet-teeth, a brake-staff having its upper end inclosed within said chamber and provided therein with a transverse slot extending diametrically therethrough, and a horizontally-sliding pawl fitted in said slot and adapted to be moved in opposite directions by the alternate contact of its opposite ends with the inclined faces of said ratchet-teeth, whereby one or the other of the ends of said pawl will be always projected into a position to engage the ratchet-tooth next in advance of the same when the handle is moved in a direction to set the brakes.

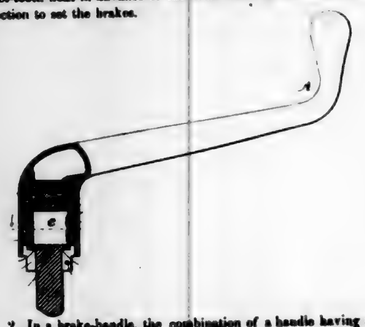

2. In a brake-handle, the combination of a handle having a cylindrical chamber at its inner end, the inner wall of which is provided with vertical ratchet-teeth, a brake-staff having its upper end inclosed within said chamber and provided therein with a transverse slot extending diametrically therethrough, and a horizontally-sliding pawl fitted within said slot and having its ends beveled on opposite sides, said ends being adapted to be alternately brought into contact with the inclined faces of said ratchet-teeth on the backward movement of the brake-handle, whereby when said handle is moved in a direction to set the brakes, one end or the other of said pawl will be projected laterally into a position to engage the first ratchet-tooth in advance of the same to bring the handle into locking engagement with the brake-staff, and means for holding together the said handle and brake-staff.

3. The combination of a brake-handle having a cylindrical chamber at its inner end and provided with ratchet-teeth, a brake-staff having its upper end inclosed within said chamber and provided therein with a transverse slot extending diametrically therethrough, a horizontally-sliding pawl fitted in said slot and adapted to be moved in opposite directions by the alternate contact of its opposite ends with the inclined faces of the ratchet-teeth on the inside of said chamber, and a vertically-divided nut embracing the brake-staff and screwed into the open end of the chamber in the handle to hold together said handle and brake-staff.

4. The combination of a handle having a cylindrical chamber at its inner end, a hard-metal bushing within the same provided with vertical ratchet-teeth, a brake-staff having at its upper end a portion of increased diameter inclosed within said chamber and provided with a transverse slot extending diametrically therethrough, a horizontally-sliding pawl fitted in said slot and adapted to be moved in opposite directions by the alternate contact of its opposite ends with the inclined faces of the ratchet-teeth, and a nut embracing the brake-staff beneath said enlarged portion and screwed into the open end of the chamber in the handle to hold together said handle and brake-staff.

707,693. WASHING-MACHINE. JAMES G. GIBB, Nemaha, Iowa. Filed Apr. 21, 1902. Serial No. 103,962. (No model.)

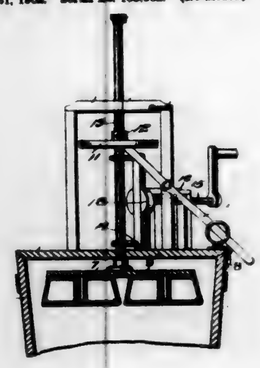

Claim.—1. In a washing-machine, the combination with a receptacle having a cover, of a frame mounted thereon, a pounder or plunger having a rod guided on the frame, a disk mounted on the rod, a lever fulcrumed on the frame and arranged to engage the disk to hold the pounder or plunger elevated, a catch mounted on the cover and provided with resilient coils forming jaws for engaging the lever, and means for holding the lever out of engagement with the disk, substantially as described.

2. In a washing-machine, the combination with a receptacle, of a guide-frame, a pounder or plunger having a rod guided on the frame, a disk mounted on the rod, a lever fulcrumed on the guide-frame and arranged to engage the disk to hold the pounder or plunger elevated, and means for holding the lever in and out of engagement with the disk, substantially as described.

707,694. SHOE-FASTENER. JOHN F. HAWKES, Jersey City, N. J., assignor of one-half to Samuel Blatt, Jersey City, N. J. Filed Nov. 30, 1901. Serial No. 83,983. (No model.)

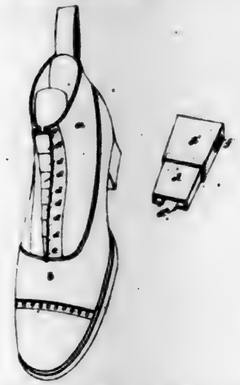

Claim.—1. A shoe provided along the edge of its opening with engaging means, combined with a fastening, the latter comprising a series of telescoping sections graduated in size and adapted at their opposite sides for engaging the said engaging means of the shoe.

2. A shoe provided along the edge of its opening with engaging means, combined with a fastener comprising a series of sections coupled together and graduated in size, whereby they are adapted to telescope, each of said sections being adapted to removably engage said engaging means of the shoe.

3. A fastener, comprising a series of sections graduated in size, whereby they are adapted to telescope one within the other, and means for preventing their separation, said sections being adapted at their opposite edges to engage removably with projections on a shoe and close the opening in the latter.

4. A shoe, the opening of which is provided with engaging means, combined with a fastener comprising a series of non-separable sections loosely coupled together, graduated in size and therefore adapted to telescope one within the other, and means for locking the said sections against telescoping.

5. A shoe, the opening of which is provided with engaging means, combined with a fastener, comprising a series of non-separable loosely-coupled sections graduated in size, and therefore adapted to telescope one within the other, and means for securing the lowermost section to the lower end of the shoe-opening and for locking the fastener against telescoping.

6. A shoe, the opposite edges of the opening in which is provided with engaging means, combined with a fastener comprising a series of non-separable tapered graduated sections adapted to telescope one within the other, said sections being adapted to removably engage said engaging means of the shoe, and means for securing said fastener against telescoping.

7. A shoe provided along the opposite edges of its opening with the prong *a*, combined with the fastener, consisting of the series of tapered and graduated sections *d* loosely connected and adapted to telescope the one within the other, the rod *c* connected to the shoe-upper at the lower end of the opening and at its upper end to the lower section *d* of the series, and the upper section of the series being provided with the notches *f* and opposite side slots *f'*.

8. A shoe-fastener, consisting of a series of sections held in engagement with each other, each of which sections is provided with legs to form recesses in which prongs on the shoe may be held, and each of said sections being so formed that the sections immediately below it may be inserted into it, substantially as specified.

707,695. MOTOR-VEHICLE. JOSEPH H. HOADLEY, New York, N. Y., assignor to the Pneumatic Carriage Company, New York, N. Y., a Corporation of West Virginia. Filed Dec. 27, 1900. Serial No. 41,211. (No model.)

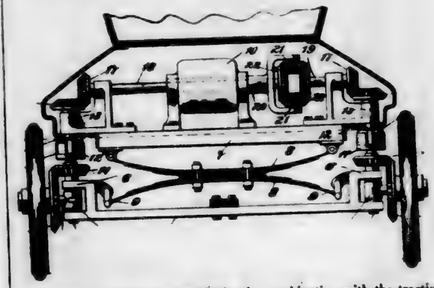

Claim.—1. In a motor-vehicle, the combination with the traction-wheels and their independent shafts, and the truck-frame to which said shafts are pivotally connected, of a vehicle-frame spring-supported on the truck-frame, a motor carried by said vehicle-frame, a shaft connected to said motor, shafts on the spring-supported vehicle-frame in line with the pivotal shafts for the traction-wheels, connections comprising bevel-gears from the motor-shaft to the other spring-supported shafts, extensible couplings between the last-named shafts and the pivotal shafts for the traction-wheels, and bevel-wheels on said pivotal shafts and on the traction-wheels, whereby the motor drives both traction-wheels while pivotal and vertical movements of the latter relative to the motor are permitted.

2. In a motor-vehicle, the combination with the traction-wheels and their independent shafts, and the truck-frame to which said shafts are pivotally connected, of a vehicle-frame spring-supported on the truck-frame, a motor carried by said vehicle-frame, a shaft connected to said motor, shafts on the spring-supported vehicle-frame in line with the pivotal shafts for the traction-wheels, connections comprising bevel-gears from the motor-shaft to the other spring-supported shafts, the connection to one of said shafts also comprising a compensating gear, extensible couplings between the last-named shafts and the pivotal shafts for the traction-wheels, and bevel-wheels on said pivotal shafts and on the traction-wheels, whereby the motor drives both traction-wheels while pivotal and vertical movements of the latter relative to the motor are permitted.

707,696. MAIL-CATCHER. CALEB E. P. HOBART, Meriden, Iowa. Filed Mar. 1, 1902. Serial No. 96,274. (No model.)

Claim.—1. In a mail-bag catcher, a bail in loop shape provided with a clamping-bar for holding the mail-bag.

2. In a mail-bag catcher, a loop-shaped bail fitted to hold a mail-bag and narrowed at its upper end and a spring projecting within the narrowed portion.

3. In a mail catcher and deliverer for exchanging mails at a railway-station through the medium of postal cars in transit the combination with a mail-bag holder or bail 33, loop-shaped and narrowed at the top, provided with a clamp for holding a mail-bag within, and having a protecting-spring in the narrow upper end for the purpose of engaging it with the catching and delivering rods when placed on them for use, of a shaft 20 journaled to rotate and to slide in bearings fixed to the postal-car doorway, a crane-bar 24 fixed to shaft 20 and to shaft 23 at its middle point, the crane-bar extending beyond rod 23 to aid in removing the mail from the crane, the other end of the crane-bar extending beyond shaft 20 for a handle for the use of the operator, and fixed or anchored to the floor or preferably to the ceiling over the door when in use, shaft 20 being provided also with protecting-springs at its ends to overcome the shock when removing the mail from the crane, and the catching-rod 23 being provided with protecting-collars on its ends for the purpose of holding the mail secure when deposited within the postal car.

4. In a vertical crane made to revolve in a platform, two arms and a locking-bar in line above each other, the locking-bar being just above the platform; arm 7 being provided with a receiving-rod 10, having protecting-collars at its ends, the arm extending beyond the receiving-rod a sufficient distance to aid in removing the mail from the catcher, provided with resisting cushions or springs, an arm 6 being located near the top of the vertical shaft having a delivering-rod 9, provided with regulating-collars near its ends.

707,696.

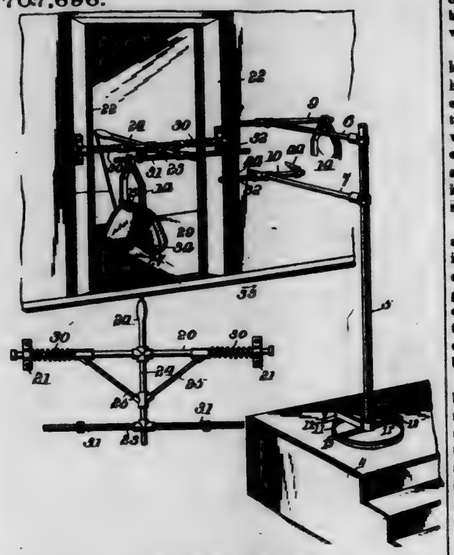

collar slidable upon and revolvable with the sleeve and in unison with the balls, rods connecting said collar with the balls, and a clutch-lever by which the collar and the balls may be moved up or down.

3. The combination in a governor of the spindle, valve-stem, revolvable sleeve, a collar slidable on and revolvable with said sleeve, guides having the lower ends flexibly connected with the sleeve, and the upper end with springs, balls slidable upon the guides having connections between them and the collar whereby they may be moved up or down to vary the leverage upon the fulcrumed guides and the consequent speed of the engine, a fulcrumed clutch-lever by which the sleeve is movable, a spring acting upon the governor-valve, and means intermediate between it and the lever whereby its tension is increased or diminished by the movement of the lever.

4. The combination in a governor of a vertical hollow spindle a valve-stem turnable therein, a sleeve turnable upon the spindle, rigid guides having their lower ends flexibly connected with the sleeve, and the upper ends with the upper end of the valve-stem, and springs by which the guides are normally drawn together, weights slidable upon the guides, a collar turnable with and slidable upon the sleeve, connections between the weights and collar, a lever by which the weights may be moved to or from the fulcrum-points of the guides, and a segment-rack and pawl by which any adjustment is retained.

5. The combination in a governor of weights capable of separation by centrifugal force, springs by which they are normally drawn together, rigid guides extending between the springs and a revolvable fulcrum connection between the weights and a collar slidable upon and revolvable with the governor-sleeve, a lever by which the collar and weights are movable, a supplemental spring and lever through which it acts upon the valve-stem, and a connection between said spring and the collar and weight-actuating lever, whereby the tension of the spring is changed, in unison with the movements of the weights.

707,697. VARIABLE-SPEED GOVERNOR. CHARLES A. HUFFMASTER, San Leandro, Cal. Filed Nov. 29, 1901. Serial No. 84,026. (No model.)

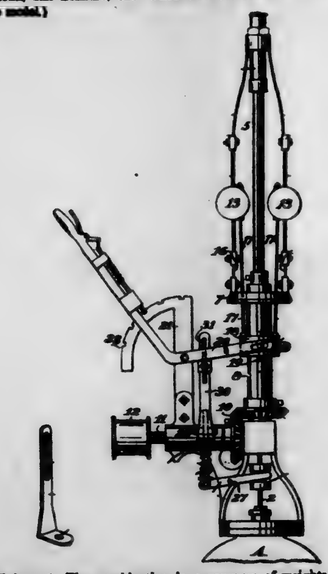

Claim.—1. The combination in a governor of weights capable of separation by centrifugal force, springs by which they are normally drawn together, guides extending between said springs and a revolvable fulcrum connections between the weights and a slidable revolvable collar upon the governor-sleeve, and means whereby the weights may be moved up or down upon the guides.

2. A governor consisting of a stationary hollow spindle, a valve-stem extending therethrough, a revolvable cap at the top of the spindle within which the upper end of the valve-stem terminates, a sleeve revolvable upon the spindle, guides having the lower ends flexibly connected with a disk carried by the sleeve, springs connecting the upper ends of the guides with the revolvable cap, weights slidable upon the guides, a

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707,698. MANUFACTURE OF CHEESE. FREDERICK A. HUEB, Cookshire, Canada, assignor to Charles Cleveland Bailey, Cookshire, Canada. Filed Dec. 16, 1901. Serial No. 86,078. (No specimens.)

Claim.—1. The process of making cheese which consists in mixing buttermilk churned from sour cream with sweet fresh skimmed milk to precipitate curd, draining the curd and exposing the strained curd to the atmosphere until it assumes a cheese flavor, then slightly pressing the same, drying a sufficient time to solidify the mass, then disintegrating the same, and finally re-pressing the cheese, substantially as set forth.

2. The process of making skim-milk cheese which consists in precipitating curd by mixing sour buttermilk and sweet fresh skim-milk, drawing off the whey and draining the curd, aerating the strained curd, and salting to taste, then lightly pressing the aerated curd to remove whey and solidifying it by drying, then disintegrating the cured cheese and firmly re-pressing the same for market, substantially as set forth.

707,699. CHARGING-SWITCH. MILLER R. HUTCHISON, New York, N. Y., assignor, by mesne assignments, to Hutchison Acoustic Company, a Corporation of New Jersey. Filed Nov. 15, 1901. Serial No. 82,260. (No model.)

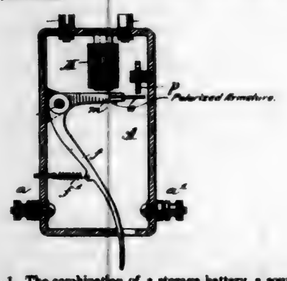

Claim.—1. The combination of a storage battery, a source of electricity, a charging-switch consisting of a polarized electromagnet and contacts controlled thereby, a circuit including the battery, the source of electricity, the magnet and the contacts in series and means for manually closing the contacts to complete the circuit.

2. The combination of a storage battery, a source of electricity, a charging-switch consisting of a polarized electromagnet and contacts controlled thereby, a circuit including the battery, the source of electricity, the magnet and the contacts in series, means for manually closing the contacts to complete the circuit and an indicator adapted to show whether the circuit remains closed.

3. A charging-switch for storage batteries, consisting of an electromagnet and a polarized armature, contacts controlled by said armature and covered from view and an indicator showing the position of the contacts.

4. A charging-switch consisting of a box or casing, containing an electromagnet, a polarized armature for the electromagnet, contacts controlled by the polarized armature, the armature extending to the outside of the box and thus showing its position, and means for connecting a source of electricity and a battery in series with the magnet and contacts, substantially as described.

707,700. APPLE-PARER. JESSE JACOBS, Hanley, Cal. Filed June 14, 1901. Serial No. 64,551. (No model.)

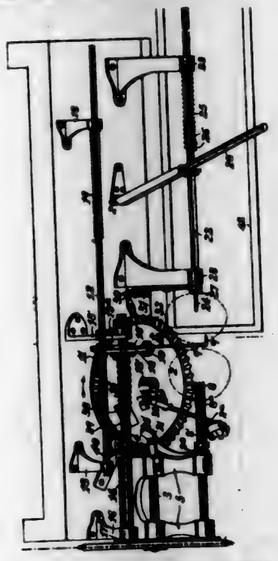

Claim.—1. In a machine of the character described, the combination of a revolvable carriage and means for operating the same, a fork upon which an apple is capable of being held and revolved, a normally retracted, spring-pressed member axially in line with the fork and slidable in relation to the fork, a lever fulcrumed between its ends and having one end to engage said slidable member and a cam on the carriage adapted to engage the other end of said lever thereby oscillating the lever to cause the slidable member to eject the apple from the fork.

2. In a machine of the character described the combination with a revolvable carriage, a fork and means for rotating the same, and a paring mechanism, of a spring-pressed sliding bar disposed in line with the fork and having a point upon which the fruit is placed, means for retracting the bar and holding it in its retracted position, and a trigger mechanism actuated by the carriage to release the bar and allow the latter to place the fruit upon the fork.

3. In a machine of the character described the combination in a single organism of a normally retracted spring-pressed means for positioning the fruit; axially in line with fruit-holding devices; means for releasing the fruit-positioning devices to enable the latter to transfer the fruit to holding devices; means for holding and paring the fruit; a coring mechanism, means for slicing the fruit; means for ejecting the fruit; a revolvable carriage and connections for operating the paring and slicing mechanism; and a single power-wheel in operative connection with the carriage, the fruit-holding devices and coring mechanism.

4. In a paring, coring and slicing machine the combination of a revolvable fork, an axially-alined carrier-bar by which the apple is placed upon said fork, means by which said bar is retracted, a trigger mechanism whereby said bar is held in such retracted position, a revolvable table having a part to contact with said trigger by which said trigger is released and the apple driven upon the fork, and a single power mechanism for rotating the fork and table and effecting the release of the carrier-bar.

5. In a paring, corer and slicer, the combination of a revolvable fork, an axially-alined carrier-bar upon which the apple is first impinged, a spring in conjunction with said bar, a lever by which said bar is retracted and the spring compressed, a trigger mechanism by which said bar is held in such retracted position, a revolvable member for releasing said trigger whereby the apple is driven upon the fork, a single power mechanism for operating the fork and revolvable member, and means for removing the apple from the fork.

6. In a paring, corer and slicer, the combination with a fork and a means including a normally retracted, spring-actuated bar disposed in line with the fork for automatically placing the fruit upon said fork, of a revolvable carriage, and connections between the same and the bar whereby said bar is automatically released during the revolution of the carriage, a paring thereon, said paring having a projection beneath the carriage and a semicircular cam with which said projection is adapted to engage whereby the paring is held out of contact with the apple after the process of paring is complete, and a single power mechanism for operating the fork, carriage and paring.

7. In a paring, corer and slicer, the combination of a fork, a turn-table, a paring thereon, a vertically-disposed knife having a horizontal projecting portion, means including a worm-shaft and devices carried by the knife and engaging said shaft, for advancing said knife periodically toward the head of the machine whereby the apple or like fruit is simultaneously sliced and cored, said horizontal portion of the knife capable of severing the core from the sliced fruit and means by which said fork, turn-table and knife are operated in unison.

8. In an apple paring, corer and slicer, the combination of a slidable and rotatable shaft, a knife secured thereon a second shaft parallel with the first shaft, a worm-gear on said second shaft, means by which the latter is revolved, and a fingered guide on said knife, said guide adapted to engage said worm whereby the knife is made to travel horizontally.

9. In a combined paring, corer and slicer, a turn-table, a paring thereon, means for holding an apple in relation to said paring, a slicing and coring knife turnable in a plane at right angles to the axis of the machine and movable in the line of direction of said axis, a second shaft having a worm thereon, a lever-arm by which said knife is held in a raised position during a portion of the revolution of the turn-table, and means by which said arm is released to allow said knife to fall, and means carried by the knife and adapted to engage said worm whereby the knife is advanced horizontally.

10. In a combined paring, corer and slicer, a turn-table, a paring thereon, means for holding an apple or the like in relation to said paring, a rotatable and slidable shaft, a knife thereon, a horizontal projecting cutting portion on said knife, a second shaft in relation to the first shaft, a worm on said second shaft, a lever-arm by which said knife is periodically held out of contact with said worm, means by which said arm is released to allow said knife to fall, means by which said knife is advanced upon said worm, and means whereby the first shaft and knife are retracted at the completion of the slicing and coring operation.

11. An apple paring, slicing and coring machine, consisting in the combination of an inclined support, a turn-table, a hollow fork upon which the apple to be pared, sliced and cored is held, a plunger operating in said fork, means including a normally retracted spring-pressed bar in line with the fork for automatically delivering the apple upon said fork, means for holding the bar retracted said means automatically releasing said bar by the revolution of the turn-table, a paring on said turn-table, a vertically and horizontally operating knife whereby the apple is sliced and simultaneously cored, and means for operating the plunger whereby the pared, sliced and cored fruit is ejected from the fork, and a single power mechanism for rotating the turn-table, fork and cutting in operation the knife, the delivering means and the ejector.

707,701. SEPARATOR. GEORGE M. JACKSON, Catharine, N. Y. Filed Apr. 26, 1901. Serial No. 57,453. (No model.)

Claim.—1. In a separating-machine, the combination of a pair of inclined separating-rollers disposed apart but in proximity to each other, to permit small particles to drop through the space between them, means to rotate said rollers in opposite directions so that their opposing sides move upwardly to prevent larger particles from becoming crushed between them, laterally-adjustable bearings for the rollers, to vary the width of the space between them, a hopper to discharge onto the upper ends of said rollers, and a horizontally-disposed endless traveling conveyer having its inner side disposed under the lower ends of said rollers, substantially as described.

2. In a combination in a separating-machine, of a pair of inclined separating-rollers, pulleys carried by said rollers, a hopper to discharge onto the elevated portions of said rollers, an agitator in said hopper, connections between said agitator and one of said pulleys, whereby said agitator is operated, an endless traveling horizontally-disposed conveyor, onto which said rollers discharge, said conveyor extending outwardly from said rollers, a power-shaft and connections between the same and said conveyor and roller-pulleys, substantially as described.

707,701.

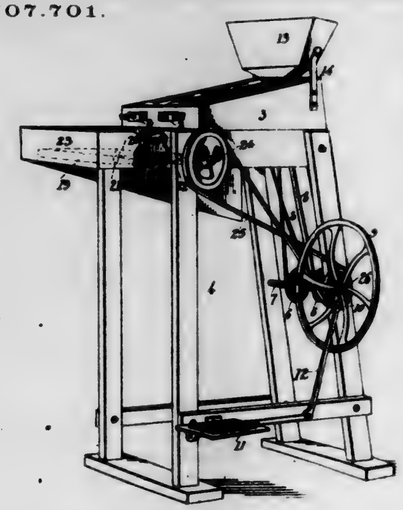

707,702. UNDERFRAME FOR RAILWAY-CARS. HERBERT R. KETHLEY, Buffalo, N. Y. Filed June 14, 1902. Serial No. 111,660. (No model.)

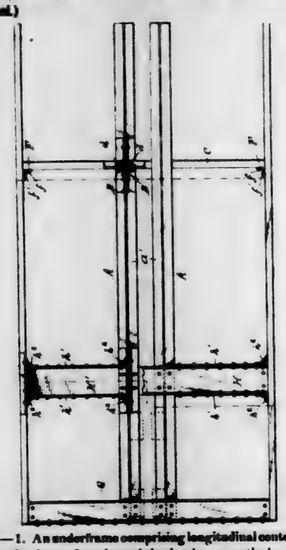

Claim.—1. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate and upper and lower flanges, transverse transoms which extend through the web-plates of said center sills and are connected thereto, and bolsters connected to said center sills, substantially as set forth.

2. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate and upper and lower flanges, transverse transoms which extend through the web-plates of said center sills and are connected thereto, side sills supported by said transoms, and bolsters connected to said center and side sills, substantially as set forth.

3. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate and upper and lower flanges, the web-plate of said girder being deeper at its central portion than at its end portions, transverse transoms which extend through the web-plates of said center sills and are connected thereto, and bolsters connected to said center sills, substantially as set forth.

4. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate, upper and lower flanges, and vertical flanged bars riveted to the web-plate, transverse transoms which extend through openings in the web-plates of said center sills and are riveted to said vertical flanged bars, and bolsters connected to said center sills, substantially as set forth.

5. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate, upper and lower flanges and vertical flanged bars riveted to the web-plate, transverse transoms which extend through openings in the web-plates of said center sills and are riveted to said vertical flanged bars, side sills supported by said transoms, and bolsters connected to said center and side sills, substantially as set forth.

6. An underframe comprising longitudinal center sills spaced apart each in the form of a plate-girder having a vertical web-plate, upper and lower flanges, and vertical angle-bars riveted to the web-plate, transverse transoms each in the form of a flanged beam which extends through openings in the web-plates of the center sills and is riveted to the vertical angle-bars, angle-bars riveted to said transoms and to said web-plates of the center girders, side sills supported by said transverse transoms, and bolsters connecting said center and side sills, substantially as set forth.

7. In an underframe, longitudinal center sills spaced apart and bolsters each comprising a flanged beam resting on the center sills and secured to the same, a flanged beam arranged beneath and secured to the center sills, and members connecting said flanged beams at opposite sides of said center sills, substantially as set forth.

8. An underframe comprising longitudinal center sills spaced apart, transverse transoms which are supported by and extend to opposite sides of said center sills, side sills supported by said transoms, and bolsters connecting said center and side sills, each bolster comprising a flanged beam resting on the center sills and secured to the same and to the side sills, a flanged beam arranged beneath and secured to the center and side sills, and plates connecting said flanged beams at opposite sides between the center and side sills, said plates being connected to the center and side sills, substantially as set forth.

9. An underframe comprising longitudinal center sills spaced apart and each formed with tension and compression members, a plate connecting the central portions of said tension and compression members, transverse transoms which extend through openings in said plates and are secured thereto, and bolsters connected to said center sills, substantially as set forth.

707,708. SHOE-POLISHING MACHINE. MORITZ LEVY, New York, N. Y. Filed June 12, 1902. Serial No. 111,266. (No model.)

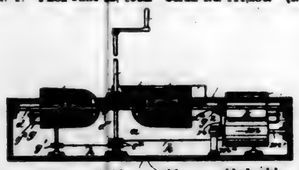

Claim.—1. A shoe-polishing machine provided with a slotted top, and a hollowed rotating brush projecting partly above the same and having inwardly-extending bristles, substantially as specified.

2. A shoe-polishing machine provided with a slotted top, an endless polishing-cloth projecting through the same, and a rotating drum engaging said cloth, substantially as specified.

3. A shoe-polishing machine provided with a box having a slotted top, an endless polishing-cloth projecting through the same, frames for supporting the cloth above the slotted top, and a rotating drum within the box that engages the cloth, substantially as specified.

707,704. FIRE TRUCK AND LADDER. HARVEY W. LLOYD, Southwest City, Mo. Filed May 19, 1902. Serial No. 108,000. (No model.)

Claim.—1. In an apparatus of the character described, the combination of a supporting-frame, a derrick thereon, adapted to be raised and lowered, a telescopic ladder pivotally mounted in the frame, means for raising and lowering the derrick, means operating in connection with the derrick for elevating the ladder from a horizontal to a vertical position, means for adjusting the ladder to the horizontal position, and means for projecting and retracting the telescopic sections of the ladder, substantially as described.

2. In an apparatus of the character described, the combination with a supporting-frame provided with sockets; of a derrick-frame adapted to be raised and lowered and having movable arms adapted to be seated when the derrick is raised in said sockets, an extensible ladder, means operating with the derrick-frame for elevating and adjusting the ladder to a position for use, means for elevating and lowering the derrick-frame, and elevating devices for lifting the arms of the derrick out of said sockets preliminary to the operation of the means for lowering said derrick, substantially as set forth.

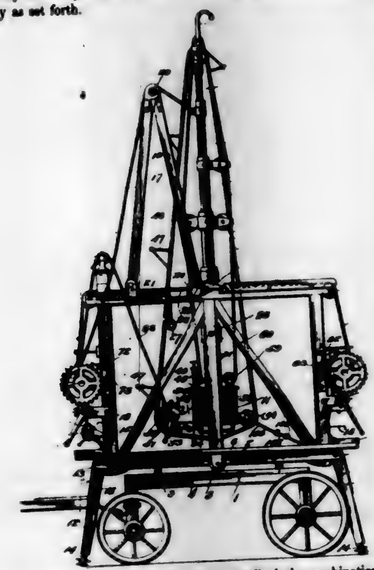

3. In an apparatus of the character described, the combination with a supporting-frame; of winding-shafts upon the front and rear of said frame, each of said shafts carrying sheave-drums, a derrick adapted to be raised and lowered, an extensible ladder mounted to swing vertically in the frame and adapted to be adjusted to a horizontal position to project its sections and to a vertical position for use, cables connected to certain of the winding-drums upon said winding-shafts to raise and lower the derrick, other cables connected to other drums upon one of the winding-shafts and coöperating with the derrick to elevate the ladder to a vertical position for use, and cables also connected with the winding-drums on the two shafts for adjusting the ladder to a horizontal position and steadying it in a vertical position, substantially in the manner described.

4. In an apparatus of the character described, a ladder composed of tubular telescoping sections, each section comprising tubular side rails, couplings connected to said rails and forming reducing-tubes for the rails of the connecting-section to slide through, cross-bars connecting said couplings, ladders having a detachable pivotal connection with the cross-bars and adapted to slide one down upon the other when the sections are retracted and notched to provide cam-shoulders to engage the cross-bars, and springs fixed at one end to the cross-bars and bearing at their free ends on rounds of the ladders for retaining the ladders yieldingly in position with the cam-shoulders engaging the cross-bars, substantially as and for the purpose specified.

5. In an apparatus of the character described, the combination with a supporting-frame having guideways upon the upper rear portion thereof and stops at the forward ends of said guideways; of a derrick-frame adapted to be raised and lowered and having movable arms slidable in said guideways and adapted to engage said stops, a ladder mounted to swing within the frame, means coöperating, in part, with the derrick-frame for adjusting the ladder, means for raising and lowering the derrick-frame, pivoted plates for elevating the free arms of the derrick-frame out of engagement with said stops, and means for operating the said plates, substantially as specified.

707,705. MECHANICAL MOVEMENT. THOMAS J. LOCKWOOD, Muncie, Ind., assignor to Jennnette M. Lockwood, Muncie, Ind. Filed Dec. 4, 1901. Serial No. 84,603. (No model.)

Claim.—1. In a mechanical movement, the combination with a support, of a movable reciprocating member to which power is adapted to be applied, a second movable member arranged at right angles to the first-mentioned movable member, the second movable member being provided with a cut-out portion having sides converging toward each other at their inner ends, a dog pivoted within the cut-out portion, the inner side portions of the dog and the sides of the cut-out portion forming oppositely-extending grooves, the inner end of the dog being adapted to close either one of the grooves according to the position of the dog, a pin carried by the first movable member adapted to work in either one of the grooves, and means carried by the first movable member for reversing the position of the dog at each full reciprocation of the same.

2. In a mechanical movement, the combination with a support, of a movable reciprocating member to which power is adapted to be applied, a second movable member arranged at right angles to the first-mentioned movable member, the second movable member being provided with a cut-out portion having sides converging toward each other at their inner ends, the inner ends being spaced apart forming an end for the cut-out portion, a dog pivoted within the cut-out portion, the inner side portions of the dog and sides of the cut-out portion forming oppositely-extending grooves, the inner end of the dog being adapted to close either one of the grooves according to the position of the dog, a pin carried by the first movable member adapted to work in either one of the grooves, the pin adapted to strike against the end of the cut-out portion when the first movable member is in one position thereby limiting the movement of the same, and means carried by the first movable member for reversing the position of the dog at each full reciprocation of the same.

3. In a mechanical movement, the combination with a support, of a movable reciprocating member to which power is adapted to be applied, a second movable member arranged at right angles to the first-mentioned movable member, the second movable member being provided with a cut-out portion having sides converging toward each other at their inner ends, shoulders on the sides located adjacent the open ends of the same, a dog pivoted within the cut-out portion, the upper side portions of the dog and sides of the cut-out portion forming oppositely-extending grooves, the inner end of the dog being adapted to close either one of the grooves according to the position of the dog, a pin carried by the first movable member adapted to work in either one of the grooves, the pin adapted to strike against either one of the shoulders when the first movable member is in one position thereby limiting the movement of the same and means carried by the first movable member for reversing the position of the dog at each full reciprocation of the same.

4. In a mechanical movement, the combination with a support, of a movable reciprocating member to which power is adapted to be applied, a second movable member arranged at right angles to the first-mentioned movable member, the second movable member being provided with a cut-out portion having sides converging toward each other at their inner ends, a dog pivoted within the cut-out portion, the inner side portions of the dog and sides of the cut-out portion forming oppositely-extending grooves, the inner end of the dog being adapted to close either one of the grooves according to the position of the dog, the outer side portions of the dog converging in opposite directions from the inner side portions of the dog, a pin carried by the first movable member adapted to work in either one of the grooves, and a second pin carried by the first movable member adapted to bear against each outer side of the dog alternately at each full reciprocation of the first movable member.

707,706. EXTENSION-PEDAL FOR PIANOS. EUGENE F. LOTSPEICH, Los Angeles, Cal., assignor of one-third to W. F. Botsford, Los Angeles, Cal. Filed Feb. 12, 1902. Serial No. 93,795. (No model.)

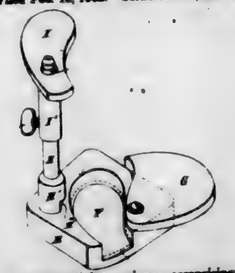

Claim.—An extension-pedal for pianos, comprising a base having therein a recess adapted to receive the pedal of the piano; a lid pivoted

to said base and adapted to be turned over the pedal when placed therein and hold the pedal firmly in the recess; an upright on said base; an auxiliary pedal, having a downwardly-projecting socket to receive the upright and rest thereon, and an adjusting hand-screw in said socket.

707,707. ADJUSTABLE STANDARD FOR MIRROR-FRAMES, &c. JACOB LOWENTHAL, Chicago, Ill. Filed Feb. 3, 1902. Serial No. 92,142. (No model.)

Claim.—1. The combination of a frame, a backing, such backing secured in the frame, a bracket, such bracket provided with a hole adjacent to one end thereof and provided with a circular and concentric with the hole, a U-shaped piece, a pivot, such U-shaped piece provided with a hole near the bend therein and attached to the bracket by extending the pivot through the holes in the U-shaped piece and in the bracket, a shaft, such shaft flattened at its ends and arranged relative to the U-shaped piece and bracket to be interposed between the bend of the U-shaped piece and the circular end of the bracket, a base, such base provided with friction springs stamped out of and forced up therefrom, and such base interposed between the shaft and the backing of the frame, and means to attach the base and the flattened ends of the shaft to the backing; substantially as described.

2. The combination of a frame, a backing, such backing secured in the frame, a bracket, such bracket provided with a hole adjacent to one end thereof and with recesses in its sides near the hole, and provided with a circular end concentric with the hole, a U-shaped piece, a pivot, such U-shaped piece provided with a hole near the bend therein and attached to the bracket by extending the pivot through the holes in the U-shaped piece and in the bracket, springs interposed between the bracket and the U-shaped piece and held in the recesses in the bracket by the U-shaped piece, a shaft, such shaft flattened at its ends and arranged relative to the U-shaped piece and the bracket to be interposed between the bend of the U-shaped piece and the circular end of the bracket, a base, such base provided with friction-springs stamped out of and forced up therefrom, and such base interposed between the shaft and the backing, and means to attach the base and the flattened ends of the shaft to the backing; substantially as described.

707,708. ROLLER-GRATE. JOHN MACCORMACK, Bayonne, N. J., assignor to Royal C. Peabody, Brooklyn, N. Y. Filed Dec. 18, 1901. Serial No. 86,290. (No model.)

Claim.—1. A roller-grate bar having in combination a shaft, a sectional supporting-frame removably secured thereto, and a sectional screen-surface removably secured to said supporting-frame, substantially as set forth.

2. In a roller-grate bar, the combination with the two semicircular supporting-frames clamped together, of two semicircular screen-sections having inwardly-turned edges clamped between the meeting edges of the sections of the supporting-frame, substantially as set forth.

3. A roller-grate bar having in combination the shaft, the semicircular frames secured to said shaft, and the semicircular screen-sections clamped between the meeting edges of the semicircular frames, substantially as set forth.

707,709. HAY-BALING PRESS. ROBERT S. MEAD, Winona, Minn. Filed Oct. 28, 1901. Serial No. 79,609. (No model.)

Claim.—1. In a baling-press, the longitudinal closure or box having an admission-opening for the hay, and an end abutment, the chamber of such box having a flare from admission-opening to abutment, substantially as specified.

2. The head hay-press, consisting of the longitudinal box, having a door forming an end abutment, the chamber of such box having a flare toward such abutment, substantially as specified.

3. The head hay-press, consisting of the longitudinal box having a door forming an end abutment, a hopper near one end, the press-head having a rack extension, and the crushed shaft carrying a pinion in mesh with such rack, the chamber of such box having a flare toward such abutment, substantially as specified.

707,710. ROOFING COMPOUND. FRANK A. MITCHELL, Washington, D. C. Filed Dec. 10, 1901. Serial No. 85,397. (No specimens.)

Claim.—The herein-described roofing composition of bolted slate-flour, powdered soapstone, coal-tar, sour milk and creosotine in the proportions, substantially as specified.

707,711. WHEEL-CLAMP. EDWARD J. HAFNER, Westernport, Md. Filed May 3, 1902. Serial No. 105,831. (No model.)

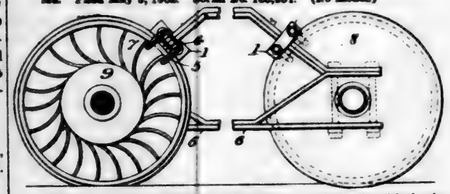

Claim.—1. In a portable car-wheel clamp, a yoke, hooks with shanks therefor, said shanks adapted to be adjustably secured to said yoke, a link loosely mounted upon said shanks and in advance of said yoke, the whole providing means whereby the device may be clamped upon a portion of a car-truck frame and lock a wheel thereof rigidly to said frame, substantially as described.

2. In a wheel-clamp, a rod or shank bent into the form of a hook at one end, and screw-threaded at the other, a block adapted to be secured to a vehicle-frame, and to receive the threaded end of said shank, and the hooked end to engage the vehicle-wheel, substantially as described.

3. In a wheel-clamp, a perforated block or yoke, shanks bent into the form of a hook at one end, and screw-threaded at the other, adapted to adjustably engage the perforations in said yoke, screw-nuts for securing said shanks to said yoke, and a link loosely mounted on said shanks, substantially as described.

707,712. FLOW-REDUCING DEVICE. JOSEPH W. HETHERY, Indianapolis, Ind., assignor to the Hethery Hydraulic Valve Company, Indianapolis, Ind., New York, N. Y., and Jersey City, N. J., a Corporation of New Jersey. Filed Dec. 18, 1901. Serial No. 86,373. (No model.)

Claim.—1. The combination, with the pipes of a fluid-distribution system, of a flow-reducing device consisting of a conical tube secured within such pipe and arranged with its smaller end pointing toward the direction from which the flow comes, substantially as set forth.

2. A flow-reducing device adapted to be secured within the pipe of a fluid-distribution system, consisting of a conical tube provided with graduation-marks indicating pressure quantity, and adapted to be cut off at such score-marks and thereby adapted to be used at the pressure indicated, substantially as set forth.

3. The combination, in a fluid-distribution system, with the pipes thereof, of a flow-reducing device consisting of a conical tube adapted to be placed within said pipe, said device being provided with a flange whereby it may be secured at the union or pipe-coupling, substantially as set forth.

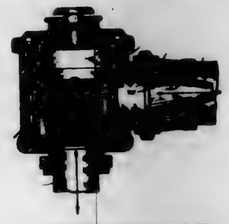

707,713. STOVEPIPE-CLEANER. BARRETT C. OBLINGER and ALBERT H. C. BEATTY, Independence, Mo. Filed July 8, 1901. Serial No. 67,571. (No model.)

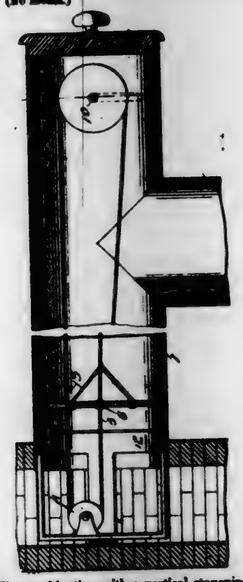

Claim.—The combination with a vertical stovepipe and a horizontal stovepipe connected thereto, the latter having its outer end extending outwardly beyond the junction with the vertical pipe and provided at its outer end with a removable cap and being further provided at its inner end with an open frame which enters the chimney, wheels mounted respectively in the outer extension of the horizontal pipe and in the said open frame, the first-mentioned wheel having a crank by which it may be rotated, an endless chain connecting said wheels and extending through the horizontal pipe, and a scraper connected to one lead of said chain, said scraper being adapted to be drawn by said chain through the horizontal pipe into the chimney, for the purpose set forth, substantially as described.

707,714. KEYBOARD-MACHINE. THEODORE W. OTTO, Stamford, Conn. Filed Oct. 23, 1901. Serial No. 79,676. (No model.)

Claim.—1. A keyboard-machine provided with depressible keys and key-bars, a member mounted transversely of the machine rearwardly of the keyboard, electrical devices for moving said member forwardly when one or more of the keys are given an initial downward movement, devices connected with the key-bars and operated upon by said member for completing the downward movement of the key or keys and means for moving said member backwardly, substantially as shown and described.

2. A keyboard-machine provided with key-bars and keys, a key-bar locking and depressing device mounted rearwardly of the keyboard and transversely of the machine and movable forwardly and backwardly, electrical devices for moving said first-named device forwardly and for depressing such key-bars as have been given an initial downward movement and for locking the others, and means for moving said first-named device backwardly, substantially as shown and described.

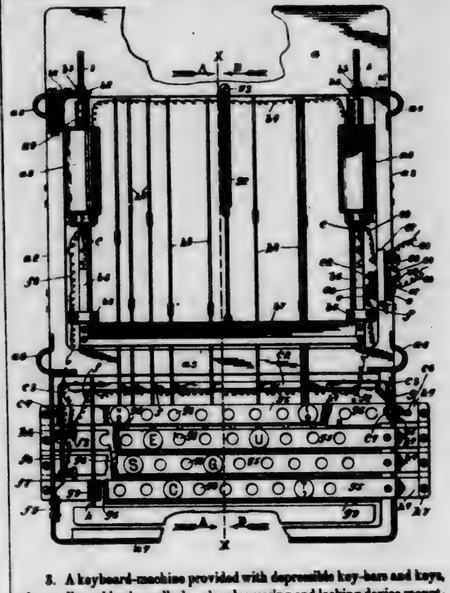

3. A keyboard-machine provided with depressible key-bars and keys, a forwardly and backwardly key-bar depressing and locking device mounted transversely of the machine rearwardly of the keyboard and adapted to depress the key-bars after they have been given an initial downward movement and lock those which have not been given an initial downward movement, said device being in an electric open circuit which is closed by an initial downward movement of the key bar or bars at which time said device is drawn forwardly and means for moving said device backwardly, substantially as shown and described.

4. A keyboard-machine provided with depressible key-bars and keys, a forwardly and backwardly key-bar depressing and locking device mounted rearwardly of the keyboard and transversely of the machine, electrical devices for moving said first-named device forwardly when a key-bar has been given an initial downward movement and means for moving said device backwardly, substantially as shown and described.

5. A keyboard-machine provided with depressible key-bars and keys, an electrically-operated device for completing the depression of one of the key-bars after it has been given an initial downward movement and means whereby the said device locks all the key-bars which are not given an initial downward movement, substantially as shown and described.

6. A keyboard-machine provided with depressible key-bars and keys, a key-bar depressing and locking device mounted transversely of the machine and rearwardly of the keyboard and movable forwardly and backwardly, said device being in an open electric circuit which is closed by an initial movement given to one or more of the key-bars and by which said device is drawn forwardly, and means for moving said device backwardly, said key-bars being also provided with devices operating in connection with said first-named device whereby the forward movement of said first-named device depresses the key-bars that have been given an initial movement and locks the remainder thereof, substantially as shown and described.

7. A keyboard-machine provided with depressible key-bars and keys, solenoids mounted at the opposite sides of the rear portion of the machine and provided in their rear ends with longitudinally-movable plungers, bars passing into the front ends of the said solenoids and connected by a transverse key-bar, depressing and locking device, a transverse bar pivoted beneath the rear portion of the keyboard and normally held against the bottom of the key-bars, contact devices at one side of the keyboard, one of which is connected with said pivot-bar, said contact devices being in electrical connection with said solenoids, and means whereby the key-bar depressing and locking device operates to complete the depression of one of said bars after it has been given an initial downward movement and to lock the other bars, substantially as shown and described.

8. A keyboard-machine provided with depressible key-bars and keys.

solenoids mounted at the opposite sides of the rear portion of the frame of the machine and provided at their rear ends with plungers a^6, slide-bars b^6 mounted in the front ends of said solenoids and connected by a cross-bar b^7, a vertically-movable transverse bar c^3 mounted beneath the rear portion of the keyboard and provided with forwardly-directed members c^4 which are pivoted to the opposite sides of the frame of the machine, means for holding said bar c^3 in the raised position against the bottom of the key-bars, electrical contact devices at one side of the keyboard, one of which is connected with said bar c^3 said contact devices being also in electrical connection with said solenoids, and said solenoids being in electrical connection, and a switch device placed at one side of the machine and in a circuit formed by the solenoids, the connecting-wires and said contact devices, said switch device being provided with circuit-wires, substantially as shown and described.

9. A keyboard-machine provided with depressible key-bars and keys, a forwardly and backwardly movable device mounted rearwardly of the keyboard, devices whereby the forward movement of the said first-named device depresses a key-bar after it has been given an initial downward movement and locks all the other key-bars, said device being mounted in an open electrical circuit the closing of which moves said device forwardly, means whereby the depression of a key opens and closes said circuit and means for moving said device backwardly, substantially as shown and described.

10. A keyboard-machine provided with depressible key-bars and key-tubes by which the keys are supported, stationary transverse plates in which said tubes are mounted and vertically movable, movable plates mounted beneath said tubes and provided with openings adapted to receive the same, said tubes being provided with springs in the lower ends thereof and with slots and said key-bars being provided with members which pass through said slots between said stationary plates, substantially as shown and described.

11. A keyboard-machine provided with depressible key-bars and key-tubes by which the keys are supported, stationary transverse plates in which said tubes are mounted and vertically movable, movable plates mounted beneath said tubes and provided with openings adapted to receive the same, said tubes being provided with springs in the lower ends thereof and with slots and said key-bars being provided with members which pass through said slots between said stationary plates, and devices whereby said key-bars are automatically depressed to the desired extent after they have been given an initial downward movement, substantially as shown and described.

12. A keyboard-machine provided with depressible key-bars and key-tubes by which the keys are supported, stationary transverse plates in which said tubes are mounted and vertically movable, movable plates mounted beneath said tubes and provided with openings adapted to receive the same, said tubes being provided with springs in the lower ends thereof and with slots and said key-bars being provided with members which pass through said slots between said stationary plates, and devices whereby said key-bars are automatically depressed to the desired extent after they have been given an initial downward movement, the key-bars which have not been given an initial downward movement being at the same time locked by said devices, substantially as shown and described.

13. A keyboard-machine provided with the usual key-bars, vertically-arranged tubes forming key-supports, said tubes being arranged in rows, transversely-arranged plates through which said tubes pass and in which said tubes are free to move, movable plates mounted beneath said tubes, and provided with openings adapted to receive said tubes, said key-bars being provided with members which pass through slots formed in said tubes and springs placed in said tubes and upon which said members bear, substantially as shown and described.

14. A machine of the class described provided with a plurality of key-bars and vertically-movable key-tubes, said tubes being slotted and adapted to receive members connected with said bars, movable plates mounted beneath said key-tubes and provided with openings adapted to receive the same and devices adapted to depress said key-bars to the desired extent after they have been given an initial downward movement, substantially as shown and described.

15. A keyboard-machine provided with key-supporting tubes which are vertically movable, stationary transverse plates through which said tubes pass, movable plates mounted below said tubes and provided with openings adapted to receive the same, and means whereby the key-bars, after they have been given an initial downward movement, are automatically depressed to the desired extent, substantially as shown and described.

16. A keyboard-machine provided with key-supporting tubes which are vertically movable, stationary transverse plates through which said tubes pass, movable plates mounted below said tubes and provided with openings adapted to receive the same, and means whereby the key-bars, after they have been given an initial downward movement, are automatically depressed to the desired extent, said devices also serving to lock the key-bars which are not depressed, substantially as shown and described.

707,715. FIRE-ESCAPE. Simon B Parker, Springfield, Mass. Filed June 9, 1902. Serial No. 110,827. (No model.)

Claim.—1. A fire-escape consisting of a flexible wire cable or rope comprising a series of links loosely connected together, and suitable means upon the upper ends of said links whereby one link is held against laterally sliding upon the adjacent link to which it is connected, substantially as and for the purpose set forth.

2. A fire-escape consisting of a flexible wire cable or rope, comprising a series of loosely-jointed links, and stops upon the upper ends of the links to hold the same against laterally sliding upon each other, substantially as and for the purpose described.

3. A fire-escape consisting of a flexible wire cable or rope comprising a series of links provided with shanks having means for engaging the shanks with the adjacent links, and stops upon the upper ends of the links to hold the same against sliding laterally upon each other, substantially as and for the purpose specified.

4. A fire-escape consisting of a flexible wire cable or rope comprising a series of links provided with twisted shanks at their lower ends terminating in hooks or other like means for engaging the adjacent link, and stops upon the upper ends of the links to hold said links against laterally sliding upon each other, substantially as and for the purpose set forth.

707,716. COMPOUND STEAM-ENGINE. John Patten, New York, N. Y. Filed July 16, 1901. Serial No. 68,461. (No model.)

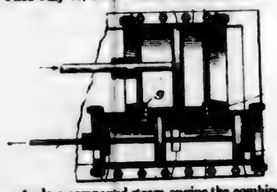

Claim.—1. In a compound steam-engine the combination of a high-pressure cylinder having a valve-controlled steam-inlet port at one end and a central exhaust-port, a low-pressure cylinder having a port at one end communicating with the high-pressure cylinder between the steam inlet and exhaust ports of the latter, a piston within the low-pressure cylinder and a pair of connected piston-heads in the high-pressure cylinder, one of said heads being movable between said steam and exhaust ports and adapted to pass beyond the port communicating with the low-pressure cylinder in each direction of its movement, thereby connecting said communicating port alternately with the steam-space of the high-pressure cylinder and with the exhaust-port, and the other head being movable between the exhaust-port and the opposite end of the cylinder.

2. In a compound steam-engine the combination of a high-pressure cylinder having a valve-controlled steam-inlet port at one end and a central exhaust-port, a low-pressure cylinder having a port at one end communicating with the high-pressure cylinder between the steam inlet and exhaust ports of the latter, a piston within the low-pressure cylinder and a pair of connected piston-heads in the high-pressure cylinder, one of said heads being movable between said steam and exhaust ports and adapted to pass beyond the port communicating with the low-pressure cylinder in each direction of its movement, thereby connecting said communicating port alternately with the steam-space of the high-pressure cylinder and with the exhaust-port, and the other head being movable between the exhaust-port and the opposite end of the cylinder, a crank-shaft and cranks to which the pistons in the high and low pressure cylinders are connected, the angular relation of the cranks being less than one hundred and eighty degrees.

3. In a compound steam-engine the combination of a high-pressure cylinder having valve-controlled steam-inlets at both ends and a central exhaust-port, a low-pressure cylinder having ports at both ends communicating with the high-pressure cylinder at opposite sides of said central port, a piston in the low-pressure cylinder movable between the communicating ports and two pistons in the high-pressure cylinder movable across said communicating ports and operating as valves therefor.

4. In a compound steam-engine the combination of a high-pressure cylinder having valve-controlled steam-inlets at both ends and a central exhaust-port, a low-pressure cylinder having ports at both ends communicating with the high-pressure cylinder at opposite sides of said central port, a piston in the low-pressure cylinder movable between the communicating ports, two pistons in the high-pressure cylinder each movable across one of said communicating ports, a crank-shaft, and cranks to which said pistons are connected, the angular relation of the cranks being less than one hundred and eighty degrees.

5. In a compound steam-engine the combination of a high-pressure cylinder having valve-controlled steam-inlet ports at both ends and a central exhaust-port, a low-pressure cylinder having ports at both ends communicating with the high-pressure cylinder at opposite sides of said exhaust-port, a piston in said low-pressure cylinder, and two connected pistons in the high-pressure cylinder on opposite sides of said exhaust-port, each piston in the high-pressure cylinder being movable across one of said communicating ports and operating as a valve therefor.

707,717. GARMENT-SUPPORTER. Sally C. Pearson, Montgomery, Ala. Filed Nov. 23, 1901. Serial No. 83,430. (No model.)

Claim.—1. In a garment-supporter, the combination of a belt or waistband, suspender-straps connected thereto, upwardly and outwardly directed skirt-supporting projections carried by the back of the belt to form a ledge over which a skirt is adapted to be snugly drawn, and hose-supporters connected to the front of the belt.

2. In a garment-supporter, the combination of a belt or waistband, suspender-straps connected thereto, a plate secured to the back of the belt and having upwardly and outwardly directed skirt-supporting projections to form a ledge over which a skirt is adapted to be snugly drawn, and hose-supporters connected to the front of the belt.

3. In a garment-supporter, the combination of a belt or waistband, suspender-straps connected thereto, hose-supporters connected to the front of the belt and at the points of attachment of the shoulder-straps, and upwardly and outwardly directed skirt-supporting projections carried by the back of the belt and located at the points of attachment of the rear ends of the shoulder-straps.

4. In a garment-supporter, the combination of a belt or waistband, shoulder-straps crossed at the back and having their ends connected respectively to the front and rear of the belt, the straps being connected at their point of crossing, a button carried by the front portion of one of the shoulder-straps, a tab carried by the corresponding portion of the other shoulder-strap and provided with a buttonhole for the reception of the button, hose-supporters hang from the front portion of the belt, and skirt-supporting projections carried by the rear portion of the belt and inclined upwardly and outwardly therefrom.

707,718. COUPLING MECHANISM FOR WINDMILLS AND PUMPS. William F. Pflueger, Altona, Nebr. Filed Jan. 24, 1902. Serial No. 91,134. (No model.)

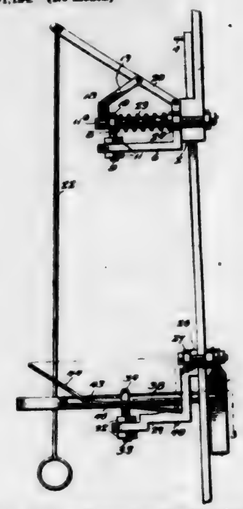

Claim.—1. In a coupling mechanism of the class set forth, the combination of a windmill reciprocating bar having a socket, a pump-rod slidably engaging said socket, a spring-actuated coupling-bolt for connecting the said rod, and a loosely-depending pull-rod and lever mechanism connected to and adapted for withdrawing the bolt into uncoupling position.

2. In a coupling mechanism of the class set forth, the combination of a windmill reciprocating element, a pump-rod arranged in operative relation to said element, a spring-actuated bolt for detachably connecting the said pump-rod and element, a lever-and-link mechanism for withdrawing the said bolt, a pull-rod attached to said latter mechanism, a lower coupling-bolt slidably engaging the lower extremity of the pump-rod and through a part of which the said pull-rod depends, and a pump-operating element also engaging the said lower coupling-bolt.

3. In a coupling mechanism of the class set forth, the combination with a reciprocating element, of a supporting-frame secured thereto and having an adjustable guide-eye, and a bolt movable through the said eye, a part of the frame and the reciprocating element.

4. In a coupling mechanism of the class set forth, the combination with a reciprocating element, of a supporting-frame secured to said element and having a horizontal member with a slot therein, a guide-eye held on the said member, and a sliding bolt engaging the eye and having a pin extending into the slot, the one extremity of the bolt passing through the frame and the reciprocating element and the opposite extremity serving as guiding means for a part of adjacent mechanism.

5. In a coupling mechanism of the class set forth, the combination with a supporting element, of a supporting-frame having a guide-eye thereon, a bolt slidably mounted in said eye and a portion of the frame, a part of the frame being formed with an upward incline leading to a catch-shoulder, and a catch device having an angular extremity to ride over the said incline and engage the shoulder.

707,719. CUTTER FOR GEAR-TEETH. Oliver W. Platt, Providence, R. I. Filed Mar. 15, 1902. Serial No. 98,208. (No model.)

Claim.—1. A cutter of the class described, consisting of two members; each member comprising a sleeve having spaced teeth arranged to occupy the spaces respectively between the teeth of the other member; and means connected with the teeth arranged to peripherally incline the space between the opposing faces of the sleeves in different relative axial positions of the members.

2. A cutter of the class described, consisting of two members; each

member comprising a sleeve with radial spaced teeth on its periphery that have lateral extensions, which extensions occupy the spaces respectively between the teeth of the other member; each said tooth being arranged to have the inner face of its said extension in engagement with the periphery of the sleeve of the other member in different relative axial positions of the members.

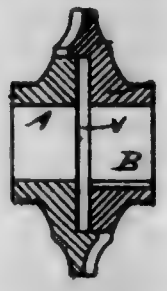

707,720. RAIL-JOINT. William R. Randle, Yorkana, Pa. Filed Apr. 10, 1902. Serial No. 102,293. (No model.)

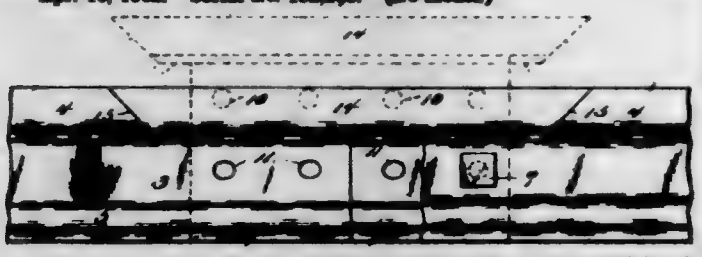

Claim.—1. In a railway-rail joint, a pair of rails provided with longitudinal mortises in their abutting ends extending vertically through the web and base and having the heads cut away on a miter to expose the mortises and leave horizontal seats, in combination with a coupling or bridge-piece embodying a central tongue to fit the mortises in the rails, and a cap or head terminally mitered to fit the extremities of the rail-heads, said cap being extended beyond the tongue at both ends to form shoulders which rest on the horizontal seats, and bolts passing through the tongue and rail ends, substantially as described.

2. In a railway-rail joint, a pair of rails provided with longitudinal mortises in their abutting ends extending vertically through the web and base and having the heads cut away on a miter to expose the mortises, in combination with a coupling or bridge-piece embodying a central tongue to fit the mortises in the rails, and a cap or head terminally mitered to fit the extremities of the rail-heads, and bolts passing through the tongue and rail ends, substantially as described.

707,721. SHEET-TRANSFERRING MECHANISM. George F. Read, New York, N. Y., assignor to Robert Hoe, New York, N. Y. Filed Sept. 14, 1901. Serial No. 75,290. (No model.)

Claim.—1. In a sheet-accelerating mechanism, the combination with a forwarding mechanism running at one speed, of a forwarding mechanism running at a different speed, a transferring mechanism between the two and arranged to run at a varying speed which at times corresponds to the speed of each of the forwarding mechanisms, said transferring mechanism including a sheet-carrier having a suction-channel and an air-chamber lying along the path of movement of the carrier with which the channel is in communication, and adjustable means for interrupting the communication between the channel and the chamber, substantially as described.

2. In a sheet-accelerating mechanism, the combination with a forwarding mechanism running at one speed, of a forwarding mechanism running at a different speed, a transferring mechanism between the two and arranged to run at a varying speed which at times corresponds to the speed of each of the forwarding mechanisms, said transferring mechanism including a sheet-carrier having a suction-channel and an air-chamber lying along the path of movement of the carrier with which the channel is in communication, and an adjustable block located in the chamber for interrupting the communication between the channel and the chamber, substantially as described.

3. The combination with a sheet-carrier driven at a constant speed, said carrier having a suction-channel, of a sheet-carrier driven at a varying speed, said carrier having a suction-channel, an air-chamber for each of said carriers located along the path of movement thereof and with which the channel is in communication, and adjustable means for interrupting the communication between the channels and the chambers, whereby a sheet may be taken by the first carrier and delivered to the second carrier, substantially as described.

4. The combination with a sheet-carrier driven at a constant speed, said carrier having a suction-channel, of a sheet-carrier driven at a varying speed, said carrier having a suction-channel, an air-chamber for each of said carriers located along the path of movement thereof and with which the channel is in communication, and an adjustable block located in the chamber for interrupting the communication between the channels and the chambers, whereby a sheet may be taken by the first carrier and delivered to the second carrier, substantially as described.

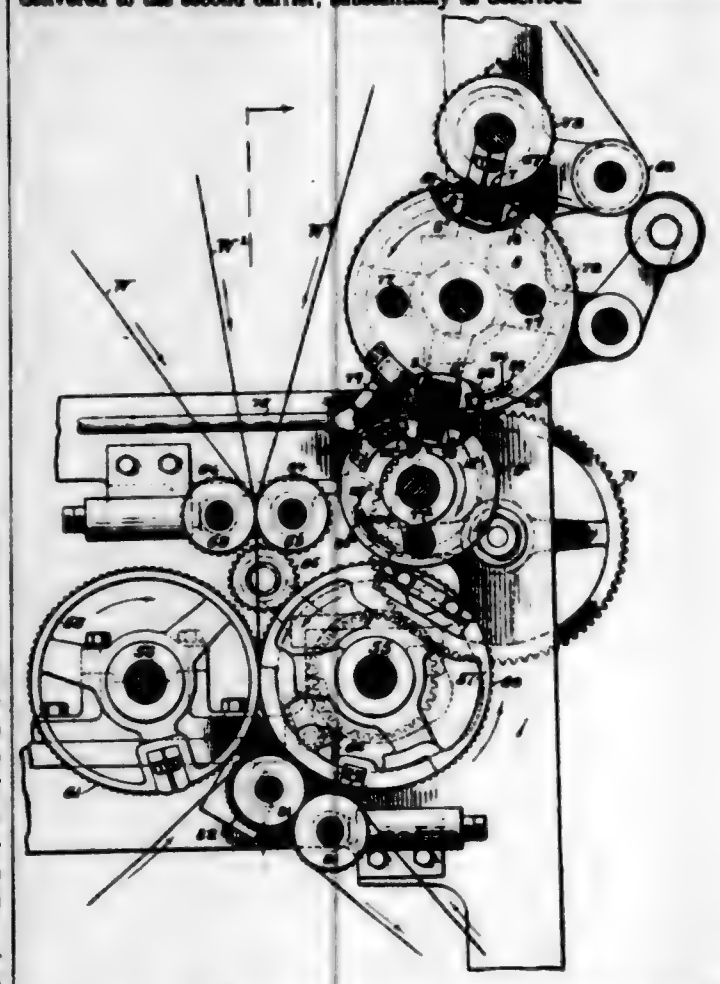

5. The combination with a cylinder driven at a constant speed, said cylinder having a suction-channel, of a cylinder driven at a varying speed, said cylinder having a suction-channel, stationary heads having air-chambers with which the channels communicate, means for exhausting the air from the chambers, and an adjustable block located in each chamber for interrupting the communication between the channels and the chambers, substantially as described.

6. The combination with a sheet-carrier, of a second sheet-carrier, said carriers being constantly driven at different speeds, an intermediate transfer-carrier driven at a varying speed which corresponds at times with the speed of one carrier and at times with the speed of the other carrier, said transfer-carrier having a suction-channel, an air-chamber with which said channel is in communication lying along the path of movement of the carrier, and an adjustable block in the chamber for interrupting the communication between the channel and the chamber, substantially as described.

7. The combination with a sheet-carrying cylinder having sheet-taking devices, of a second sheet-carrying cylinder having a suction-channel, said cylinders being driven at different speeds, a stationary head having an air-chamber with which said channel communicates, a transfer-cylinder located between the sheet-carrying cylinders and having a suction-channel, a stationary head having an air-chamber with which said channel communicates, and an adjustable block in each of the chambers for interrupting the communication between the channels and the chambers, and means for driving the transfer-cylinder at a varying speed which corresponds at times with the speed of each of the sheet-carrying cylinders, substantially as described.

8. The combination with a sheet-carrying cylinder driven at a constant speed, said cylinder having a suction-channel, of a cylinder driven at a varying speed which corresponds at times with the speed of the carrying-cylinder, said cylinder having a suction-channel, air-chambers with which the suction-channels are in communication, a suction-pipe, connections from said pipe with each of the chambers, and means for interrupting the communication between the suction-channels and the air-chambers, substantially as described.

9. The combination with a sheet-carrying cylinder driven at a constant speed, said cylinder having a suction-channel, of a cylinder driven at a varying speed which corresponds at times with the speed of the carrying-cylinder, said cylinder having a suction-channel, air-chambers with which the suction-channels are in communication, a suction-pipe, connections from said pipe with each of the chambers, and means in the cham-

bers for interrupting the communication between the suction-channels and the air-chambers, substantially as described.

10. The combination with a sheet-carrying cylinder driven at a constant speed, said cylinder having a suction-channel, of a cylinder driven at a varying speed which corresponds at times with the speed of the carrying-cylinder, said cylinder having a suction channel, air-chambers with which the suction-channels are in communication, a suction-pipe, connections from said pipe with each of the chambers, and an adjustable block in each chamber for interrupting the communication between the suction-channels and the air-chambers, substantially as described.

11. The combination with a sheet-carrying cylinder driven at a constant speed, said cylinder having a suction-channel, of a grooved head with which said channel is in communication, a cylinder having a suction-channel, a grooved head with which said suction-channel is in communication, said second cylinder being driven at a varying speed which at times corresponds with the speed of the sheet-carrying cylinder, a suction-pipe, connections from said pipe to the groove in each of the heads, and means for interrupting the communication between the grooves and the channels, substantially as described.

12. The combination with a sheet-carrying cylinder driven at a constant speed, said cylinder having a suction-channel, of a grooved head with which said channel is in communication, a cylinder having a suction-channel, a grooved head with which said suction-channel is in communication, said second cylinder being driven at a varying speed which at times corresponds with the speed of the sheet-carrying cylinder, a suction-pipe, connections from said pipe to the groove in each of the heads, and means in the grooves for interrupting the communication between the grooves and the channels, substantially as described.

13. The combination with a sheet-carrying cylinder driven at a constant speed, said cylinder having a suction-channel, of a grooved head with which said channel is in communication, a cylinder having a suction-channel, a grooved head with which said suction-channel is in communication, said second cylinder being driven at a varying speed which at times corresponds with the speed of the sheet-carrying cylinder, a suction-pipe, connections from said pipe to the groove in each of the heads, and an adjustable block in each groove for interrupting the communication between the grooves and the channels, substantially as described.

14. The combination with a sheet-carrying cylinder having sheet-taking devices, of a sheet-carrying cylinder having a suction-channel, means for driving these cylinders at different speeds, a transfer-cylinder having a suction-channel, said cylinder being arranged between the two sheet-carrying cylinders, grooved heads, the grooves of which are in communication with the suction-channels of the sheet-carrying cylinder and the transfer-cylinder, a suction-pipe, connections from said pipe to the grooves in the heads, an adjustable block in each groove for interrupting the communication between the channels and the grooves, and means for driving the transfer-cylinder at a varying speed which corresponds at times with the speed of each carrying-cylinder, substantially as described.

707,722. FUEL COMPOUND. JAMES H. RICKER, Fort Worth, Tex., assignor of two-thirds to Samuel Percival Greene and John Alfred Turney Evans, Fort Worth, Tex. Filed Feb. 8, 1902. Serial No. 93,197. (No specimens.)

Claim.—An artificial fuel consisting of the following thoroughly-associated ingredients, by volume, in about the proportions as follows: crude petroleum eighteen and three-fourths per cent., resin two and one-half per cent., sawdust twelve and one-half per cent., clay twelve and one-half per cent., liquid glass two and one-half per cent. and lignite or coal-dust fifty-one and one-fourth per cent.

707,723. COMBINATION-TOOL. FRANK A. ROBBINS, Worcester, Mass. Filed Jan. 20, 1902. Serial No. 90,291. (No model.)

Claim.—1. A combined surface gage and beam-trammel, comprising in combination the rod A, base B, trammel C, the latter secured to the opposite end of said rod from said base, and carrying the compass-point *e* and adjustable caliper-leg *f*, and trammel D, the latter consisting of the slide-block *g'*, carrying the compass-point *e'* and adjustable caliper-leg *f'*, slide-block *j*, its set-screw *k* and adjusting-screw *i*, the latter fitted to turn in said slide-blocks *g'* and *j*, substantially as and for the purpose set forth.

2. Rod or beam A, trammel C, compass-point *e*, and caliper-leg *f*, said trammel consisting of block *g*, fitted and secured to said rod or beam, and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking them in position, in combination with the trammel D, compass-point *e'* and caliper-leg *f'*, said trammel consisting of block *g'*, fitted to slide on the rod or beam and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking the same, also having a threaded opening in one of the hubs parallel to the rod or beam to receive the adjusting-screw *i*; said trammel further consisting of the block *j*, also fitted to slide on rod or beam A, and having threaded hubs, one at right angles and the other parallel thereto, to receive respectively, the set-screw *k* and said adjusting-screw *i*, and said set and adjusting screws, substantially as and for the purpose set forth.

3. Rod or beam A, trammel C, compass-point *e* and caliper-leg *f*, said trammel consisting of block *g*, fitted and secured to said rod or beam and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking them in position, in combination with the trammel D, compass-point *e'* and caliper-leg *f'*, said trammel consisting of block *g'*, fitted to slide on the rod or beam and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking the same, also having a threaded opening in one of the hubs parallel to the rod or beam to receive the adjusting-screw *i*, and also having a hub g^4 and set-screw g^5, said trammel further consisting of the block *j*, also fitted to slide on rod or beam A and having threaded hubs, one at right angles and the other parallel thereto, to receive respectively the set-screw *k*, and said adjusting-screw *i*, and said set and adjusting screws, substantially as and for the purpose set forth.

4. The combination of rod or beam A, with trammel D, compass-point *e'*, and caliper-leg *f'*, said trammel consisting of block *g'*, fitted to slide on said rod or beam and having threaded hubs at right angles thereto, to receive and hold the threaded ends of said compass-point and caliper-leg, and means for locking the same, also having a threaded opening in one of the hubs parallel to the rod or beam to receive the adjusting-screw *i*, and also having a hub g^4 and set-screw g^5, said trammel further consisting of the block *j*, also fitted to slide on rod or beam A, and having threaded hubs, one at right angles, and the other parallel thereto, to receive respectively the set-screw *k*, and said adjusting-screw *i*, and said set and adjusting screws, substantially as and for the purpose set forth.

707,724. AUTOMATIC COUPLING FOR RAILWAY-CARS. ANDERS A. ROSENQVIST, Malmö, Sweden, assignor of one-half to Per Hansson, Dalköpings, Trollenberg, Sweden. Filed June 10, 1901. Serial No. 63,996. (No model.)

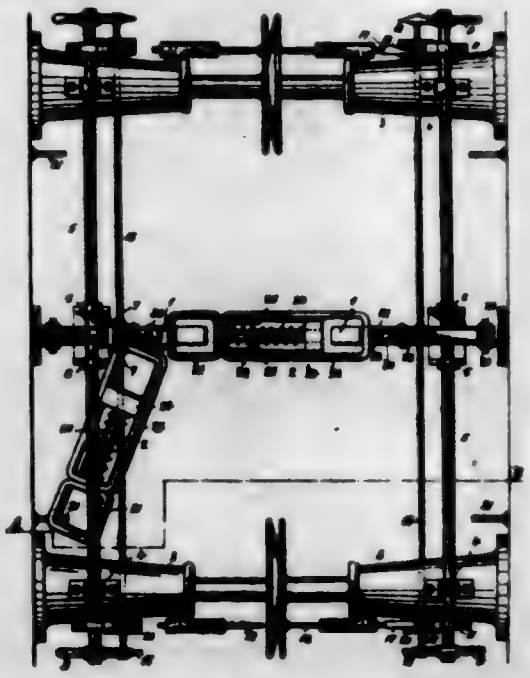

Claim.—1. In a car-coupler, the combination with a hook and a link one of said parts being rigid and the other pivoted, of means for elevating said pivoted part, pawl-and-ratchet devices for holding it raised, sliding rods designed to be operated by the buffer-heads, and adjustable members or arms connected to the pawls and designed to be adjusted or moved into or out of the path of the sliding rods, substantially as described.

2. In a car-coupler, the combination with a hook and a link, one of said parts being rigid and the other pivoted, of means for elevating said

pivoted part, pawl-and-ratchet devices for holding it raised, sliding rods designed to be operated by the buffer-heads, and adjustable members or arms connected to the pawls and designed to be adjusted or moved into or out of the path of the sliding rods and a transverse shaft carrying the adjustable members or arms whereby the arms at each side of the car may be simultaneously adjusted from one side of the car, substantially as described.

3. In a car-coupler, a hook carried by one car, a link carried by the other, one of said parts being pivoted, a rock-shaft having connections for operating said pivoted part, a ratchet device on said shaft, a pawl engaging said ratchet device, a second rock-shaft journaled in the ends of said pawls, contact-arms carried by said second shaft, and sliding rods arranged to partake of the movement of the buffers, said contact-arms being arranged to be thrown into or out of the paths of the sliding rods by the rotation of said second shaft, substantially as described.

4. In a car-coupler, a hook carried by one car, a link carried by the other, one of said parts being pivoted, a rock-shaft having connections for operating said pivoted part, a ratchet-wheel on said shaft, a pawl engaging said ratchet-wheel, a second rock-shaft journaled in the lower ends of said pawls, contact-arms carried by said second shaft, and sliding rods arranged to partake of the movement of the buffers, said contact-arms being arranged to be thrown into or out of the paths of the sliding rods, and lugs for supporting said arms in either position, substantially as described.

5. In a car-coupler, the combination with the pivotally-supported coupling-link having a transversely-hinging portion or shank 27, of a bow 32 for engaging the same for preventing transverse swinging, substantially as described.

6. In a hook-and-link car-coupler, the combination with the buffer-beam of a coupling-link, and a double link 29 pivotally connecting said link to said beam, substantially as described.

707,725. CLOTH-STEAMING MACHINE. ALEXANDER T. SARPERT, Chemnitz, Germany, assignor to David Gessner, Worcester, Mass. Filed Apr. 20, 1900. Serial No. 13,577. (No model.)

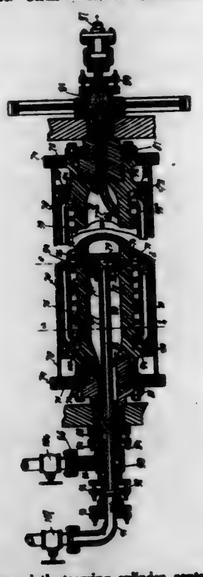

Claim.—1. In a cloth-steaming cylinder, containing a perforated shell, the combination within said shell, of a steam-discharger, a radiator, a water-shield surrounding the same and a perforated distributer whereby the steam from within said water-shield is distributed outside of the same, substantially as described.

2. In a cloth-steaming cylinder, in combination, a perforated shell, a steam-chambered radiator-casting upon which said shell is mounted and means whereby the steam for steaming is conducted through said casting, and means whereby said steam is confined in contact with the outer surface of said casting, substantially as described.

3. In a cloth-steaming machine, in combination, two steaming-cylinders, means for driving the same, a steam-pervious apron having its opposite ends secured to said steaming-cylinders, a presser intermediate said cylinders and mechanism whereby said presser may be moved toward either cylinder, substantially as described.

4. In a cloth-steaming machine, in combination a steaming-cylinder, an apron having one end secured on said steaming-cylinder, a cylinder on which the opposite end of said apron is secured, a presser in contact with which said apron travels between said cylinders and means whereby said presser is moved to or from said steaming-cylinder, substantially as described.

5. In a cloth-steaming cylinder, in combination, a perforated shell 70, a chambered body 72 containing a laterally-extending passage 71, a pipe 90 conveying the steaming-steam through a journal of the cylinder to said passage 71, a water-shield in the path of the steaming-steam between said passage 71 and the perforations of the shell and a pipe for conveying the heating-steam into said body, substantially as described.

6. In a cloth-steaming cylinder, in combination, a perforated shell 70, a chambered body 72 containing a laterally-extending passage 71, a pipe 90 conveying the steaming-steam through a journal of the cylinder to said passage 71, a water-shield in the path of the steaming-steam between said passage 71 and the perforations of the shell and a pipe for conveying the heating-steam into said body and heat-radiating members in the path of the steaming-steam between said passage 71 and the perforations of the shell, substantially as described.

7. In a cloth-steaming cylinder, in combination, a perforated shell 70, a body containing the chambers 77 and 77ª, respectively, at opposite ends thereof, means for supplying heating-steam to said chamber 77, a steam-passage from said chamber 77 to said chamber 77ª, an exit for the heating-steam from said chamber 77ª, a laterally-extending passage 71 located between said chambers and a pipe 90 for supplying the steaming-steam to said passage 71, substantially as described.

8. In a cloth-steaming machine, the combination of two steaming-cylinders adapted to receive the cloth thereon, and a pressing-cylinder, with swinging cylinder-supports whereby the pressing and steaming cylinders may have relative movement toward and from each other, substantially as described.

9. In a cloth-steaming machine, the combination of two steaming-cylinders adapted to receive the cloth thereon, and a pressing-cylinder, with swinging cylinder-supports whereby the pressing and steaming cylinders may have relative movement toward and from each other and a yielding power connection to said swinging supports, substantially as described.

10. In a cloth-steaming machine, the combination of two rotatable steaming-cylinders, a steam-pervious apron connected to both cylinders to be alternately wound thereon together with a piece of cloth, with a pressing-cylinder intermediate the steaming-cylinders, swinging supports for the journals thereof, and means for applying power to said pressing-cylinder to spring it toward either steaming-cylinder, substantially as described.

11. In a cloth-steaming machine, the combination of plural steaming-cylinders adapted to receive the cloth thereon, with a pressing-cylinder adapted to engage the cloth as wound upon each steaming-cylinder, guides for the journals of the pressing-cylinder, and means for moving said journals in said guides toward and from the steaming-cylinders, substantially as described.

12. In a cloth-steaming machine, the combination of two steaming-cylinders adapted to receive the cloth thereon, with a pressing-cylinder between the steaming-cylinders, guides for the journals of the pressing-cylinder adapted to permit the engagement of said cylinder with either steaming-cylinder and a power connection with said pressing-cylinder to move it in said guides, substantially as described.

13. In a cloth-steaming machine, the combination of two steaming-cylinders adapted to receive the cloth thereon, with a pressing-cylinder between the steaming-cylinders, guides for the journals of the pressing-cylinder adapted to permit the engagement of said cylinder with either steaming-cylinder, swinging yokes embracing the journals of the pressing-cylinder and extending transversely of said guides and means for swinging said yokes, substantially as described.

14. In a cloth-steaming machine, the combination of two steaming-cylinders adapted to receive the cloth thereon, with a pressing-cylinder between the steaming-cylinders, guides for the journals of the pressing-cylinder adapted to permit the engagement of said cylinder with either steaming-cylinder, swinging yokes embracing the journals of the pressing-cylinder and extending transversely of said guides, a segment-gear upon each yoke, gears engaging said segments and rotative power connections to said gears, substantially as described.

15. In a cloth-steaming cylinder, in combination, a perforated shell, a steam-chamber, an induction-passage into said steam-chamber, an eduction-passage from said steam-chamber, a steaming-steam passage leading to substantially the center of said cylinder and steaming-steam passages extending from the center to the periphery.

16. In a cloth-steaming cylinder, in combination, a perforated shell, two steam-chambers within the same, induction-passages to both of said chambers, an eduction-passage from one of said chambers discharging the steaming-steam within said shell and an eduction-passage from the other of said chambers discharging outside of said shell.

17. In a cloth-steaming cylinder, in combination, a perforated shell, a core provided with two longitudinal and induction steam-passages, a steam-chamber, a lateral passage connecting with said chamber.

18. In a cloth-steaming cylinder, in combination, a perforated shell, end journals, a core of greater diameter than said journals provided with a steam-chamber, means for supplying said chamber with steam and separate means for supplying said perforations with steam.

19. In a cloth-steaming cylinder, in combination, a perforated shell, end journals, a core having a steam-chamber of greater diameter than said journals, means for supplying said steam-chamber with steam and separate means for supplying said perforations with steam.

20. In a cloth-steaming cylinder, in combination, a perforated shell, means for supplying said perforations with steam and a core having a steam-chamber; the external diameter of said core exceeding two-thirds of the internal diameter of said shell whereby the requisite temperature of the steaming-steam may be maintained by the heat from said core until it reaches the perforations of said shell.

21. In a cloth-steaming cylinder, in combination, a perforated shell, means for supplying steam to said perforations and a core having a steam-chamber, the diameter of said steam-chamber exceeding one-third the internal diameter of said shell whereby a sufficient body of steam is maintained in said chamber to maintain the space within the shell at the requisite temperature for the steaming-steam.

22. In a cloth-steaming cylinder, in combination, a perforated shell, a core containing a steam-chamber, means for supplying heating-steam thereto and a steaming-steam passage extending along the chambered portion of said core.

23. In a cloth-steaming cylinder, in combination, a perforated shell, a core containing a steam-chamber extending substantially to both ends and a steaming-steam passage extending along a chambered portion of said core.

24. In a cloth-steaming cylinder, in combination, a perforated shell, a core provided with a steam-chamber, means for supplying heating-steam to said chamber and a steaming-steam passage extending through said chamber.

25. In a cloth-steaming cylinder, in combination, a perforated shell, a core provided with a steam-chamber, means for supplying heating-steam to said chamber, a steaming-steam passage extending through said core along a chambered portion thereof and thence out to the periphery thereof.

26. In a cloth-steaming cylinder, in combination, a perforated shell, a core provided with a steam-chamber, means for supplying heating-steam to said chamber and separate means for supplying steaming-steam to the interior of said shell.

27. In a cloth-steaming cylinder, in combination, a perforated shell provided with a steam-chamber near each end, a heating-steam supply passage leading into one of said chambers, a water-of-condensation passage leading from the other of said chambers, a steam-passage connecting the two chambers and means for supplying steaming-steam to the interior of said shell.

28. In a cloth-steaming cylinder, in combination, a perforated shell, a core containing adjoining induction-passages for the steaming-steam and heating-steam, respectively, a passage by which said heating-steam is conducted around said steaming-steam after leaving said induction-passage.

29. In a cloth-steaming cylinder, in combination, a perforated shell, a steaming-steam chamber located a substantial distance within the end of the cylinder, a passage whereby heating-steam is conducted outside of and in contact with the walls of said chamber and means whereby said chamber is supplied with steaming-steam.

30. In a cloth-steaming cylinder in combination, a perforated shell, a core or drum therein containing separate chambers for the reception of the heating-steam and the steaming-steam, said chambers being designed for the transfer of heat from the heating-steam to the steaming-steam.

31. In a cloth-steaming cylinder, in combination, a perforated shell, a steam-chambered heater within the same provided with a longitudinal depression in its exterior surface and a steaming-steam passage in said depression.

32. In a cloth-steaming cylinder, in combination, a perforated shell, a steam-chambered heater within the same, a steaming-steam-distributing pipe between it and said perforated shell, a nozzle projecting from said pipe nearer the center than parts of greatest diameter of said heater whereby the water is trapped substantially within the field of said heater and an induction steaming-steam-supply pipe.

33. A cloth-steaming-cylinder core containing, in combination, the heating-steam chambers 77 and 77ª adjacent to opposite ends, a passage 77ª connecting the same, a laterally-extending steaming-steam passage intermediate said end chambers and an induction-passage to said lateral passage.

34. A cloth-steaming-cylinder core containing, in combination, the heating-steam chambers 77 and 77ª adjacent to opposite ends, a laterally-extending steaming-steam passage intermediate said end chambers and an induction-passage to said lateral passage.

35. A cloth-steaming-cylinder core containing, in combination, the heating-steam chambers 77 and 77ª adjacent to opposite ends, a laterally-extending steaming-steam passage intermediate said end chambers and an induction-passage to said lateral passage; said induction-passage passing through one of said end chambers.

36. A cloth-steaming-cylinder core containing, in combination, the end heating-steam chambers 77, 77ª, a steaming-steam chamber 79 intermediate the same, a passage from said chamber 79 to the periphery and an induction-passage to said chamber 79.

37. A cloth-steaming-cylinder core, containing in combination, the end heating-steam chambers 77 and 77ª, an intermediate laterally-extending steaming-steam passage, a steaming-steam induction-passage and means whereby water is trapped in passing laterally outward from said induction-passage.

38. In a cloth-steaming cylinder, in combination, a perforated exterior shell, a core containing the end heating-steam chambers 77 and 77ª and a laterally-extending steaming-steam passage intermediate the same, an induction-passage to said intermediate passage and a trap for holding back the water of condensation as the heating-steam passes from said induction-passage to said perforated shell.

39. In a cloth-steaming cylinder, in combination, a perforated exterior shell, a rotating core carrying the same and provided with journals and with the end heating-steam chambers 77 and 77ª and with an intermediate laterally-extending steaming-steam passage, induction heating-steam and steaming-steam passages through one of said journals and an eduction-passage from said heating-steam chamber through the other of said journals.

40. In a cloth-steaming cylinder, the combination with an outer perforated cylinder, of an inner heating-core having therein distinct chambers for the reception of the heating and the steaming steam, means for discharging the steaming-steam from its chamber into the perforated cylinder and means for separately supplying each chamber with its steam.

41. In a cloth-steaming cylinder, the combination with an outer perforated cylinder, of an inner heated core having therein distinct chambers for the reception, respectively, of the heating and steaming steam, means provided with a water-trap for discharging the steaming-steam from its chamber into the perforated cylinder and means for supplying each chamber with its steam.

42. In a cloth-steaming cylinder, in combination, a perforated shell, a heating-core containing a heating-steam chamber and a laterally-extending steaming-steam passage, an induction-passage to said lateral passage and a longitudinally-extending perforated distributer whereby the steam is distributed outside of said core.

43. In a cloth-steaming cylinder, in combination, a perforated shell, a heating-core containing a steaming-steam chamber and a laterally-extending steaming-steam passage, an induction-passage to said lateral passage, a longitudinally-extending distributer between said core and said perforated cylinder and means whereby the water is trapped as said steam passes from said induction-passage to said longitudinal distributer.

44. In a cloth-steaming cylinder, in combination, a perforated shell, a heating-core containing a heating-steam chamber, means whereby the steaming-steam is conducted through said core and means whereby said steaming-steam is caused to flow against the surface of said heating-core.

707,726. PLOW. ADOLPH SCHULZ, Chicago, Ill. Original application filed Sept. 3, 1901, Serial No. 74,208. Divided and this application filed Feb. 7, 1902. Serial No. 93,070. (No model.)

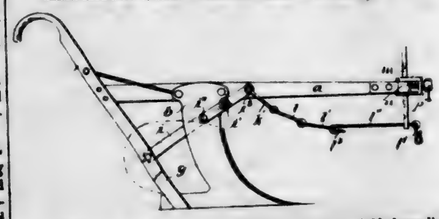

Claim.—1. In a plow, in combination, a beam, a rigid depending standard, a plow secured to the standard, braces arranged on opposite sides of and secured to the standard and extending upwardly and forwardly there-

from with their front ends on opposite sides of the beam, a swinging clevis, a bolt passing transversely through the beam, braces and clevis and securing the braces and clevis to the beam, an adjustable support at the front end of the beam, and a draft connection passing loosely through said support and at its rear end secured to said clevis and having draft-attaching means at its front end, substantially as described.

2. In a plow in combination, a beam, a depending standard, a plow secured thereto, handles, two inclined braces on opposite sides of and secured to the beam, one of said braces extended rearwardly and secured to a handle, the two braces extending forwardly on opposite sides of the beam, a support at the front end of the beam, a draft connection passing through said support, a cross-bolt passing through the beam and said braces and confining the rear end of said connection to the beam and front ends of the braces, said connection including rods, one having an open link or eye and another a hook detachably engaging said eye, substantially as described.

3. A plow-beam having a rigid transversely-elongated loop at its front end, in combination with a U-shaped clip fitting above and below said loop and adjustable horizontally thereon and having vertical openings in its horizontal portions above and below the loop-opening, a screw passing through the front end of the clip into engagement with the front side of the loop, the vertical bar passing through said loop and clip-openings and having the vertical series of transverse notches in its rear face to receive the edges of the clip, said bar having a guide at its lower portion, and a draft connection secured to the beam and extending forwardly beneath the beam and through said guide, the parts operating, substantially as described.

707,727. STEAM-TURBINE. RICHARD SCHULZ, Berlin, Germany. Filed May 10, 1901. Serial No. 59,661. (No model.)

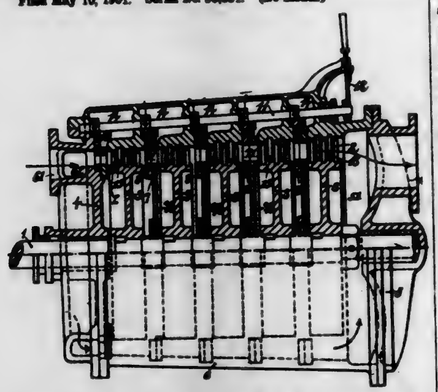

Claim.—1. In a turbine, the combination with a ring-shaped valve-seat provided with ports, of a ring-valve having ports successively decreasing in area and coöperating with these in the seat, and means for rotating both valve and seat, substantially as described.

2. In a turbine, the combination with a ring-shaped valve-seat provided with ports, of a ring-shaped valve having ports successively decreasing in area and coöperating with these in the seat, and means for rotating both valve and seat in opposite directions, substantially as described.

3. In a steam-turbine, the combination with a valve-seat having equidistant ports therethrough, said ports larger at their entering than at their delivery side, of a ring-valve, divided into a suitable number of divisions and provided with a number of ports in each division, the ports in each division successively decreasing in area, substantially as described.

4. In combination, an annular valve-seat provided with ports, a ring-valve coöperating therewith, the ports through said valve in each quadrant successively wider, substantially as described.

5. In combination, an annular valve-seat provided with ports equidistant from one another and larger at their entering than at their delivery side, and a ring-valve whose ports in each quadrant are successively larger, substantially as described.

6. In combination, a valve-seat provided with ports equidistant from one another and a valve provided with ports on its periphery, the ports in each quadrant successively larger, both valve and seat organized to be rotated, substantially as described.

7. In a steam-turbine, in combination with the several turbine-wheels, of partitions separating the several wheels and provided with valve-seats, said partitions independently rotatable and a series of ring-valves coöperating with said seats and each provided with gear-teeth, and pinions arranged on a common shaft gearing with the respective valves to simultaneously move an equal extent, substantially as described.

8. In a turbine, the combination with a plurality of wheels, of partitions independently rotatable and a rod pivoted to each partition and extending through the casing of said turbine, a series of ports arranged in said partitions to form valve-seats, ring-valves coöperating with said seats and means for simultaneously moving said valves, substantially as described.

9. In a turbine, the combination with a tubular ring-shaped valve-seat, of a tubular ring-shaped valve coöperating therewith, both having ports arranged in their peripheries and each adjustable with respect to the other, substantially as described.

707,728. OIL-SEPARATOR. RICHARD SCHULZ, Berlin, Germany. Filed Sept. 7, 1901. Serial No. 74,672. (No model.)

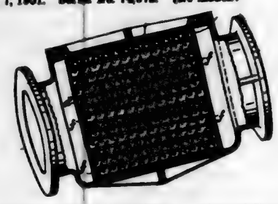

Claim.—An oil-separator, comprising a substantially rectangular chamber adapted to be inserted in a steam-conduit so that its longitudinal axis will be inclined thereto, vertical plates therein, straight ribs on said plates inclined in the direction of the entering steam and extending from top to bottom of said chamber, the ribs of adjacent plates overlapping to direct steam in thin sheets in a zigzag manner along opposite sides of the plates and from end to end of said chamber and to deposit oil in the re-entrant angles formed by said ribs, an entering and exit union to said chamber, the latter above the inclined bottom of the chamber, and means to draw off the separated oil below said union and from between the plates, substantially as set forth.

707,729. APPARATUS FOR TEACHING GUN PRACTICE. CARL A. STORNOW, Stockholm, Sweden, assignor, by mesne assignments, to Ernst Lundgren and Alfred Richardson, Brooklyn, N. Y., and James Whitcomb, New York, N. Y. Filed Sept. 4, 1901. Serial No. 74,297. (No model.)

Claim.—1. The combination of the gun-support adapted for the application of a gun for use in connection with it, as in sighting the gun and shooting, and provided with a trigger for use in lieu of the gun-trigger, the universally-jointed mounting of said support, a pointer having a universally-jointed support, and connected with the gun-support so as to maintain parallelism with the deviating line of the gun-sight, a ball's-eye mark located in the line which the pointer occupies when the gun is truly sighted with relation to the object aimed at, an automatic clamp to lock the parts in the positions occupied when the trigger is pulled, setting devices for holding the clamp in readiness for action, and tripping mechanism for said holding devices actuated by the trigger.

2. The combination of the gun-support adapted for the application of a gun for use in connection with it, as in sighting the gun and shooting, and provided with a trigger for use in lieu of the gun-trigger, the universally-jointed mounting of said support, a pointer having a universally-jointed support, and connected with the gun-support so as to maintain parallelism with the deviating line of the gun-sight, a ball's-eye mark

located in the line which the pointer occupies when the gun is truly sighted with relation to the object aimed at, and having a transparent support, an automatic clamp to lock the parts in the positions occupied when the trigger is pulled, setting devices for holding the clamp in readiness for action, and tripping mechanism for said holding devices actuated by the trigger.

3. The combination of the gun-support, trigger connected with said support, universally-jointed mounting of said support, a pointer having a universally-jointed support, and connected with the gun-support so as to maintain parallelism with the deviating line of the gun-sight, automatic locking-clamp for said support, setting devices for holding said clamp in readiness for action, tripping-lever of said setting devices, tripping-lever-actuating rod carried in the gun-support-mounting devices, the arm of the trigger adapted to actuate said rod, and means to retire the rod.

4. The combination of the gun-support, trigger connected with said support, universally-jointed mounting of said support, a pointer having a universally-jointed support, and connected with the gun-support so as to maintain parallelism with the deviating line of the gun-sight, automatic locking-clamp for said support, means for releasing said clamp, setting devices for holding said clamp in readiness for action, tripping-lever of said setting devices, tripping-lever-actuating rod carried in the gun-support-mounting devices, the arm of the trigger adapted to actuate said rod, and means to retire the rod.

5. The combination of the gun-support and its standard, the block and the step-support carrying the standard, bearings carrying the block-pivots and adapted to clamp the block, clamping-sleeve and bolts connecting said sleeve and bearings, clamping-screw, screw-actuating lever and spring, the screw setting and tripping devices, the trigger of the gun-support adapted for actuating the tripping devices and a pointer having a universally-jointed support, and connected with the gun-support so as to maintain parallelism with the deviating line of the gun-sight.

6. The combination with the universal-joint-supported gun-support which is subject to direct manipulations of the operator in firing the gun, of the universal-joint-supported pointer, means connecting the gun-support and pointer whereby parallelism of the pointer with the deviating line of the gun-sight results from the deviations of the gun and a substitute bull's-eye mark in close proximity to the pointer.

7. The combination with the universal-joint-supported gun-support, the universal-joint-supported pointer, and means connecting the gun-support and pointer whereby parallelism of the pointer is maintained with the deviating line of the gun-sight, of the bull's-eye mark located in the line which the pointer occupies when the gun is truly sighted with relation to the object aimed at, and an adjustable mirror adapted for reflecting the images of the pointer and the bull's-eye into the visual range of the instructor in the requisite proximity to the operator for directing him.

707,730. SCREW-JACK. CHARLES F. STONER, Wilmington, Del. Filed June 12, 1902. Serial No. 111,276. (No model.)

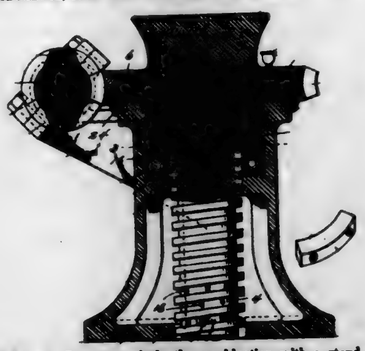

Claim.—1. In a screw-jack, the combination with a stand, of a worm-wheel mounted thereon, a worm meshing with the worm-wheel, a screw-post extending centrally through the worm-wheel and provided between the threads thereof with a series of holes, and an adjustable segmental step fitting between the threads of the screw-post and held in place by fasteners adapted to engage the holes between the threads, substantially as described.

2. In a screw-jack, the combination with a stand, of a worm-wheel mounted thereon, a worm meshing with the worm-wheel, a screw-post passing centrally through the worm-wheel and having a threaded engagement therewith, and a segmental step adjustably mounted between the threads of the screw-post, substantially as set forth.

707,731. ELECTRIC BATTERY. ERNEST A. G. STRIEBY, Paris, France, assignor to Société Anonyme le Carbone, Levallois-Perret, near Paris, France. Filed Apr. 22, 1902. Serial No. 104,194. (No model.)

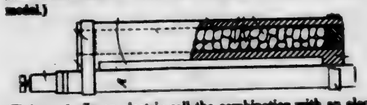

Claim.—1. In an electric cell the combination with an electrode of a receptacle containing depolarizing material and connected directly to said electrode but having a recess on the side adjacent to the electrode, said recess being freely open to the electrolyte, and means for detachably securing said receptacle to the electrode, substantially as described.

2. In an electric cell the combination with an electrode, of a terminal connected directly to the electrode, a permeable receptacle composed of the same or a similar material to that of the electrode, depolarizing material in said receptacle, and elastic bands for detachably securing said receptacle to the electrode, substantially as described.

3. In an electric cell the combination with the carbon electrode of a porous carbon receptacle, depolarizing material in said receptacle, and elastic bands adapted to detachably secure said receptacle to the electrode, substantially as described.

4. In an electric cell, the combination with the carbon electrode of a porous carbon receptacle, lugs on said receptacle adapted to abut against the electrode, a filling of depolarizing material in said receptacle and elastic bands for detachably securing said receptacle to said electrode, substantially as described.

707,732. WIRE-STRETCHER. ERNST R. SWARD, Calamus, Iowa, assignor to the Sward Fence Builder Tool Company, Davenport, Iowa. Filed Dec. 12, 1901. Serial No. 85,664. (No model.)

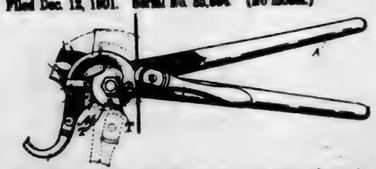

Claim.—1. A wire-stretching tool, comprising a lever A, a hook pivoted to the head of said lever, ratchet-teeth on the face of the lever adjacent to its pivotal point, a second lever pivoted to the hook-carrying lever, having a face in contact with said ratchet-teeth, clamping means for holding the wire to be stretched, a pawl carried by said second lever and adapted to engage the ratchet-teeth of the hook-carrying lever, as set forth.

2. A wire-stretching tool, comprising two levers pivoted together, one of said levers having ratchet-teeth on its face, which is in contact with the face of the second lever, a spring-actuated pawl pivoted to the second lever, and engaging said ratchet-teeth, a curved and grooved segment, secured to, or integral with the pawl-carrying lever, and a pivoted lever, having serrated jaw and adapted to coöperate with the curved end of said segment, to hold a wire while being stretched, as set forth.

707,733. CORN-PLANTER. WILLIAM F. TALBERT, Frankstown, Md. Filed June 18, 1902. Serial No. 112,266. (No model.)

Claim.—1. In a machine of the class described, the upper frame composed of side members having inwardly-bent and overlapping rear ends, downwardly and inwardly curved front ends, brackets secured to the inner sides of said side members and having inwardly-bent overlapping ends and suitable connecting means, substantially as set forth.

2. In a machine of the class described, the upper frame composed of side members having overlapping rear ends, brackets secured to said side members and having overlapping ends, the tongue supported upon the overlapping parts of the frame, and clips embracing the latter and connecting them to the tongue, substantially as set forth.

3. In a machine of the class described, the upper frame composed of separable side members, laterally adjustable with relation to each other, the tongue supported upon said frame, clips engaging the overlapping members of the latter and connecting them with the tongue and a lower frame having pivotal connection with the downwardly and inwardly curved side members of the upper frame by a transverse connecting-rod, substantially as set forth.

4. In a machine of the class described, the upper frame having side members laterally adjustable with relation to each other and provided with downwardly-curved front ends, a transverse connecting-rod extending through said ends, plow-beams having bifurcated, transversely-perforated front ends engaging said connecting-rod, and a yoke composed of separa-

ble and adjustable members, transversely perforated at their ends and engaging the transverse connecting-rod and the bifurcated front ends of the plow-beams, substantially as set forth.

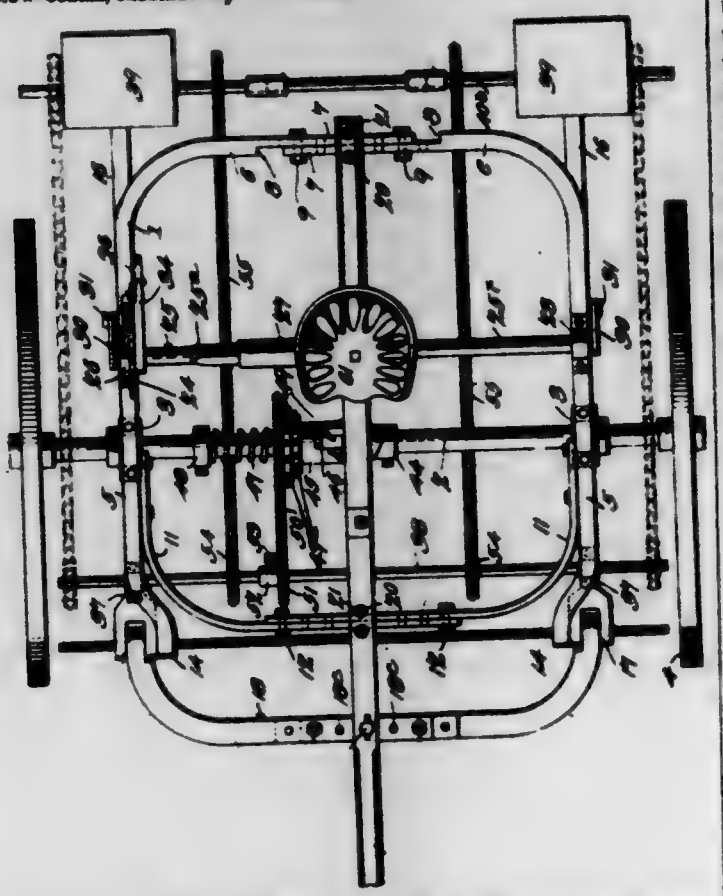

5. In a machine of the class described, the combination of an upper frame composed of separable and relatively adjustable side members, a tongue supported upon said frame and having clips embracing the overlapping members thereof, a transverse connecting-rod extending through perforations at the front ends of the downwardly-curved side members of the upper frame, the plow-beams having bifurcated and transversely-perforated front ends pivotally engaging said connecting-rod, a yoke composed of separable, relatively adjustable members having transversely-perforated ends engaging the connecting-rod and the bifurcated front ends of the plow-beams, a connecting rod or bolt forming a vertical connection between the yoke and the tongue of the machine, and a bracket mounted upon said bolt and having a transverse perforation engaging the transverse connecting-rod, substantially as set forth.

6. In a machine of the class described, the combination of an upper frame composed of separable and relatively adjustable side members, a tongue supported upon said frame and having clips embracing the overlapping members thereof, a transverse connecting-rod extending through perforations at the front ends of the downwardly-curved side members of the upper frame, the plow-beams having bifurcated and transversely-perforated front ends pivotally engaging said connecting-rod, a yoke composed of separable relatively adjustable members having transversely-perforated ends engaging the connecting-rod and the bifurcated front ends of the plow-beams, a vertical bolt forming a connection between the yoke and the tongue of the machine, and a spring coiled upon said bolt to space said tongue and yoke apart, substantially as set forth.

7. In a machine of the class described, the combination of a frame composed of separable and relatively adjustable side members, connecting means for the overlapping ends of said side members, an axle journaled in boxes attached to the side members of said frame and having supporting-wheels thereon, plow-beams having pivotal connection with the depending front ends of the side members of said frame, seeding mechanism supported at the rear ends of said plow-beams, a transverse shaft journaled in boxes near the front ends of the plow-beams, and means for transmitting motion between said shaft and the axle and between said shaft and the seeding mechanism, substantially as set forth.

8. In a machine of the class described, the upper frame composed of relatively adjustable side members having overlapping parts, a tongue supported upon said overlapping parts and having clips embracing the same, plow-beams having pivotal connection with said upper frame, a yoke composed of separable, relatively adjustable members connecting the front ends of said plow-beams, a shaft supported upon the side members of the upper frame and composed of two members slidably connected, cranks at the ends of said shaft, suitable connections between said cranks and the plow-beams, and means for operating the crank-shaft, substantially as set forth.

9. In a machine of the class described, the combination of an upper frame composed of separable relatively adjustable side members, a wheeled axle supporting said frame, plow-beams having pivotal connection with said frame, a transverse shaft supported in bearings upon the plow-beams near their front ends, seed-hoppers supported upon said plow-beams near their rear ends, a transverse shaft journaled in said hoppers, said shaft being composed of three members connected at their meeting ends by couplings which permit them to revolve independently of each other, means for transmitting motion between the end sections of said shaft and the transverse shaft supported at the front ends of the plow-beams, means for transmitting motion between the latter shaft and a clutch-sleeve mounted slidably upon the axle of the machine, and means for operating said clutch-sleeve to throw the latter into or out of engagement with a fixed clutch member upon the axle, substantially as set forth.

707,734. MITERING-MACHINE. JOSEPH L. TYLER, Lynn, Mass. Filed Oct. 16, 1901. Serial No. 78,789. (No model.)

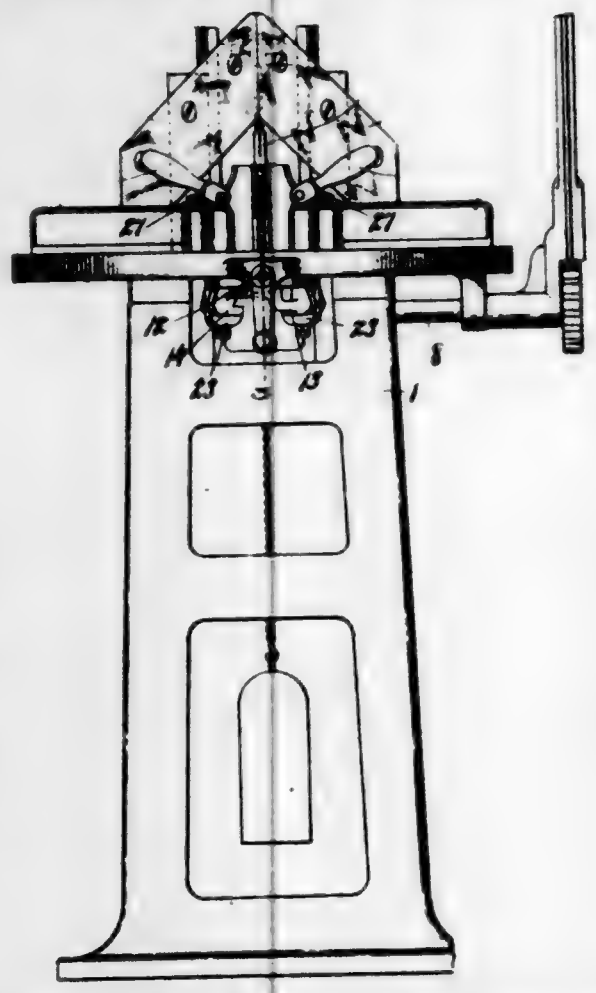

Claim.—1. In a mitering or similar machine, a cutter, a gage-support having an aperture, and a gage structure pivoted to assume different angles with respect to the cutter and comprising a gage mounted above the support, an arm mounted below the support and connected with the gage through said aperture, said arm having a hub portion pivoted to the support and constituting a clamping member, a pivotal bearing for said hub portion on the support constituting a complemental clamping member, and clamp-operating means to vary the pressure between said clamping members.

2. In a mitering or similar machine, a cutter, a gage-support having an aperture, and a gage structure mounted on said support and comprising a gage above the support, an arm below the support having a pivotal bearing on the support and constituting a clamping member, a telescopic connection between the gage and arm extending through said aperture and constructed to permit relative vertical movement but to prevent relative rotary movement of the gage and arm, and clamp-operating means to vary the pressure between said arm and gage and the support.

3. In a mitering or similar machine, a cutter, a gage-support having an aperture, and a gage structure pivoted to said support and adapted to assume different angles with respect to the cutter, said structure comprising a gage above the support, a clamping member below the support, a telescopic connection between said gage and clamping member extending through said aperture, a washer having both a vertical sliding bearing and a horizontal bearing on the clamping member, a clamp-operating stem extending through the telescopic connection and engaging the washer, and means to impart a longitudinal movement to said stem.

4. In a mitering or similar machine, a gage-support, and two gage structures provided with arms having pivotal bearings on said support lo-

united in substantially the same plane one outside of the other, the arm with the inner bearing being offset to pass around the outer bearing.

5. In a mitering-machine, a work-supporting table, a cutter-head having a knife operating across the inner edge of the table, and a back-gage structure mounted upon the cutter-head and comprising a vertical stem, a gage-arm thereon having a gage portion movable toward and from the table edge by rotation of the stem, and oppositely-directed adjustable stop devices adapted to limit the rotary movement of said stem in both directions.

707,785. FLUID-PRESSURE-OPERATED TOOL. HENRY H. VAUGHAN, Chicago, Ill., assignor to Ridgely and Johnson Tool Company, a Corporation of Illinois. Filed July 3, 1901. Serial No. 66,948. (No model.)

Claim.—1. In a fluid-pressure-operated tool, the combination with a cylinder, of a reciprocating piston therein, a die movably fitted in the end of said cylinder, yielding means for retaining said die within the end of the cylinder, and means for automatically removing the die from the path of the piston to prevent the ejectment of the die from the cylinder by a blow from the piston, substantially as described.

2. In a fluid-pressure-operated tool, the combination with a cylinder, of a reciprocating piston therein, a die movably fitted in the end of said cylinder, yielding means for retaining said die within the end of the cylinder, a shoulder extending into the cylinder to limit the throw of the piston, and means for withdrawing the die from the path of the piston, to prevent the ejectment of the die from the cylinder by a blow from the piston, substantially as described.

3. In a fluid-pressure-operated tool, the combination with a cylinder, of a reciprocating piston therein, a die movably fitted in said cylinder, yielding means for retaining said die within the end of the cylinder, a shoulder extending into the cylinder to limit the throw of the piston, and a spring-actuated collar engaging said die and withdrawing the same from the path of the piston to prevent the ejectment of the die from the cylinder by a blow from the piston, substantially as described.

4. In a fluid-pressure-operated tool, the combination with a cylinder having ports therethrough, of a reciprocating piston in said cylinder, a die movably fitted in said cylinder, and a spring-actuated collar closing said ports through the cylinder when the die is forced against an object, and uncovering said ports when the die is not in contact with an object, substantially as described.

5. In a fluid-pressure-operated tool, the combination with a cylinder having ports therethrough, of a reciprocating piston in said cylinder, a die movably fitted in said cylinder, a spring-actuated collar surrounding the end of said cylinder and engaging said die, said collar being moved so as to cover said ports when the die is forced against an object and being moved by spring-pressure to uncover said ports when the die is not in contact with an object, substantially as described.

6. In a fluid-pressure-operated tool, the combination with a cylinder having ports therethrough, of a reciprocating piston in said cylinder, a die movably fitted in said cylinder, a collar surrounding the end of said cylinder and engaging said die, a spring interposed between said cylinder and collar whereby the die when forced against an object compresses said spring and moves said collar over the ports and when the die is disengaged from an object said spring expands and thereby moves said collar to uncover the ports, substantially as described.

7. In a fluid-pressure-operated tool, the combination with a cylinder having ports therethrough, a reciprocating piston in said cylinder, a shoulder extending into said cylinder to limit the throw of the piston, a die movably fitted in said cylinder, a collar controlling said ports and engaging said die, and a spring interposed between the cylinder and collar, substantially as described.

8. In a fluid-pressure-operated tool, the combination with a cylinder having an exhaust-port therethrough, of a reciprocating piston in said cylinder, and automatic means for closing and opening said exhaust-port when the tool is respectively pressed against and out of contact with an object, substantially as described.

9. In a fluid-pressure-operated tool, the combination with a cylinder having ports therethrough, of a reciprocating piston therein, a die movably fitted in said cylinder, and a spring-actuated collar closing said ports through the cylinder when the die is pressed against an object, and uncovering said ports and withdrawing said die from the path of the piston when the die is not in contact with an object, substantially as described.

10. In a fluid-pressure-operated tool, the combination with a cylinder having ports therethrough, of a reciprocating piston in said cylinder, a die movably fitted in said cylinder, a collar surrounding the end of said cylinder and engaging said die, a spring interposed between said cylinder and collar whereby the die when forced against an object compresses said spring and moves said collar over the ports and when the die is disengaged from an object said spring expands and thereby moves said collar to uncover the ports and coincidentally withdraws the die from the path of the piston, substantially as described.

11. In a fluid-pressure-operated tool, the combination with a cylinder, of a reciprocating piston therein, a die movably fitted in the end of said cylinder and yieldingly retained therein, and means for automatically moving the die out of the range of impact of the piston to prevent its ejectment from the cylinder by the piston.

707,786. GARMENT-SUPPORTER. WILLIAM G. WALTON and DANIEL W. HARNER, Philadelphia, Pa., assignors of one-third to Elias W. Evans, West Philadelphia, Pa. Filed Mar. 4, 1902. Serial No. 96,583. (No model.)

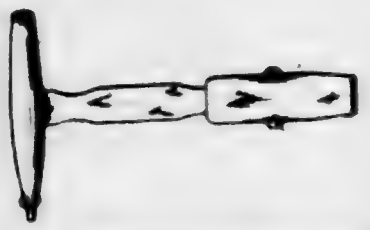

Claim.—1. A garment-supporter, comprising two fastening devices united in an integral structure by a flat oblong flexible strip, said fastening devices projecting respectively from opposite faces of said strip, and one of said devices consisting of a spring-clip, comprising two spring-controlled jaws and the other device consisting of a safety-clasp, comprising a rigid bar having a pin adapted to engage and to be disengaged from the rear face of said bar, substantially as described.

2. A garment-supporter, comprising two fastening devices, whereof one has a solid face with a transversely-arranged fastening-pin and whereof the other has a fixed face and a spring-controlled movable jaw, a long, narrow and flexible strip formed integral with the solid face of one of said fasteners and integral with the fixed jaw of the other of said fasteners and the operative members of said fastening devices projecting from opposite faces of said strip, substantially as described.

707,787. BOTTLING-MACHINE. CLINTON J. WARREN, Chicago, Ill. Filed May 16, 1901. Serial No. 60,594. (No model.)

Claim.—1. The combination with an endless carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for moving said carrier, devices for successively operating to clean said bottles, fill the same, insert corks in the bottle-necks, and wire said corks in place, means for causing said devices to engage said bottles and while so engaged to be moved a limited distance with the bottles, devices for applying labels to said bottles, and means for operating said various devices, substantially as specified.

2. The combination with an endless carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for moving said carrier, devices for successively operating to clean said bottles,

fill the same, insert corks in the bottle-necks, and wire said corks in place, means for causing said devices to engage said bottles and while so engaged to be moved for a limited distance with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to said bottles, and means for operating said various devices, substantially as specified.

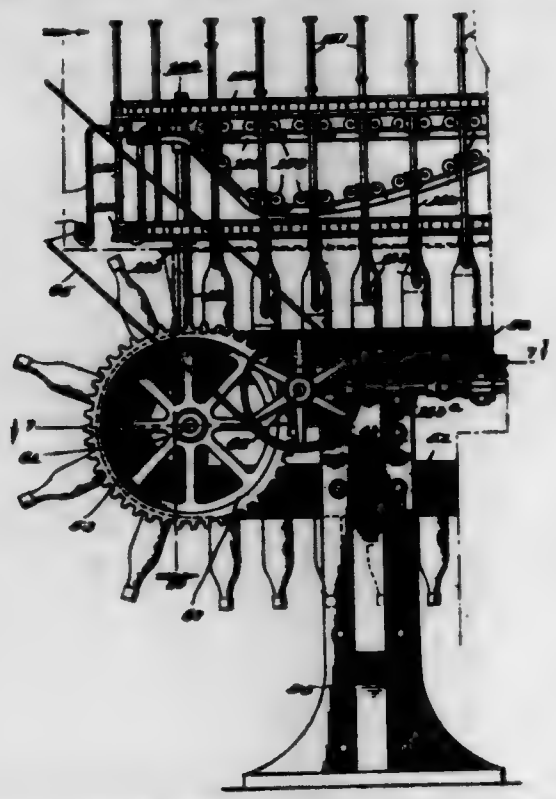

3. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices adapted to operate simultaneously upon different bottles on the carrier and acting to clean, fill and cork the bottles, and wire the corks in place, means for causing said devices to travel for a limited distance in engagement with the bottles, devices for applying labels to said bottles, and means for operating said various devices simultaneously, substantially as specified.

4. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices adapted to operate simultaneously upon different bottles on the carrier and acting to clean, fill and cork the bottles, and wire the corks in place, means for causing said devices to travel for a limited distance in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to said bottles, and means for operating said label-applying devices simultaneously with the operation of the said other devices, substantially as specified.

5. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, a series of devices each adapted to perform a different function and to operate simultaneously on different bottles on the carrier, means for causing said devices to travel a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with said bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as specified.

6. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, means for causing said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with said bottles, other devices for operating on said bottles after being washed, means for causing said second-named operating devices to also travel for a limited distance in engagement with the bottles, and means for operating them while so engaged, substantially as specified.

7. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, means for causing said washing and filling devices to travel for a limited distance in engagement with the bottles, and means for operating such devices while they are traveling in engagement with the bottles, substantially as specified.

8. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, means for causing said washing and filling devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as specified.

9. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking the said bottles after they have been filled, means for causing said washing, filling and corking devices to travel for a limited distance in engagement with the bottles, and means for operating such devices while they are traveling in engagement with the bottles, substantially as described.

10. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking the said bottles after they have been filled, means for causing said washing, filling and corking devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, and means for withdrawing such devices in a direction opposite to the movement of the carrier, substantially as described.

11. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, means for causing said filling and corking devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as described.

12. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, and means for operating said devices while they are traveling in engagement with the bottles, substantially as described.

13. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as described.

14. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, devices for applying labels to the bottles after they have been wired, and means for operating said labeling devices, substantially as specified.

15. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for filling said bottles, devices for corking said bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating such devices while they are traveling in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to the bottles after they have been wired, and means for operating said labeling devices, substantially as specified.

16. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said washing, filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, and means for operating said devices while they are traveling in engagement with the bottles, substantially as described.

17. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling

said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing said washing, filling, corking and wiring devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, and means for withdrawing said devices in a direction opposite to the movement of the carrier, substantially as described.

18. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, devices for applying labels to said bottles after they have been wired, and means for operating the said labeling devices, substantially as specified.

19. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing said bottles, devices for filling said bottles after they have been washed, devices for corking said bottles after they have been filled, devices for wiring said bottles after they have been corked, means for causing the said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to said bottles after they have been wired, and means for operating the said labeling devices, substantially as described.

20. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing the bottles, devices for filling said bottles after they have been washed, devices for corking the bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, devices for applying labels to the bottles after they have been wired, devices for capping the tops of the bottles after they have been labeled, and means for operating the said labeling and capping devices, substantially as described.

21. The combination with a carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, devices for washing the bottles, devices for filling said bottles after they have been washed, devices for corking the bottles after they have been filled, devices for wiring the bottles after they have been corked, means for causing said devices to travel for a limited distance in engagement with the bottles, means for operating said devices while they are traveling in engagement with the bottles, means for withdrawing said devices in a direction opposite to the movement of the carrier, devices for applying labels to the bottles after they have been wired, devices for capping the tops of the bottles after they have been labeled, and means for operating the said labeling and capping devices, substantially as specified.

707,738. MACHINE FOR APPLYING LABELS TO BOTTLES.

CLIFTON J. WARREN, Chicago, Ill. Filed Dec. 7, 1901. Serial No. 85,000. (No model.)

Claim.—1. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a label-supporting device secured over the carrier and adapted to contain a pile of labels, a movable paste-reservoir carrying an adhesive substance and adapted to be moved up and against one of said pile of labels for temporarily attaching it thereto, and means for withdrawing said reservoir carrying the label and causing said reservoir to present said attached label in the path of the bottle while said bottle is being moved.

2. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a movable paste-holder carrying an adhesive substance and formed with two branches or legs so as to permit a bottle to pass between the same, a label-supporting device secured over the carrier and adapted to contain a pile of labels, means for moving said paste-holder against one of said pile of labels for temporarily attaching it thereto, and means for withdrawing said paste-holder so that its legs or branches will be at opposite sides of the moving bottle and the label carried thereby be directly in the path of the moving bottle so that each bottle forces it from the paste-holder as said bottle moves between the branches or legs thereof, substantially as specified.

3. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a movable paste-holder carrying an adhesive substance and formed with two branches or legs so as to permit a bottle to pass between the same, a label-supporting device secured over the carrier and adapted to contain a pile of labels, means for moving said paste-holder against one of said pile of labels, for temporarily attaching it thereto, means for withdrawing said paste-holder so that its legs or branches will be at opposite sides of the moving bottle and the label carried thereby be directly in the path of the moving bottle so that each bottle forces it from the paste-holder as said bottle moves between the branches or legs thereof, and means for pressing said label firmly into position on said bottle, substantially as specified.

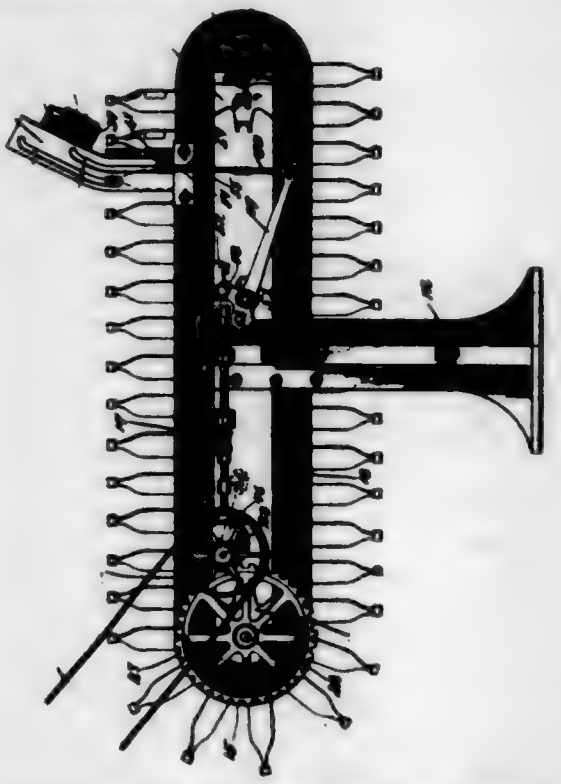

4. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a movable paste-holder carrying an adhesive substance and formed with two branches or legs so as to permit a bottle to pass between the same, a label-supporting device secured over the carrier and adapted to contain a pile of labels, means for moving said paste-holder against one of said pile of labels, for temporarily attaching it thereto, means for withdrawing said paste-holder so that its legs or branches will be at opposite sides of the moving bottle and the label carried thereby be directly in the path of the moving bottle so that each bottle forces it from the paste-holder as said bottle moves between the branches or legs thereof, and a brush for smoothing said label onto said bottle as it is carried forward, substantially as specified.

5. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a movable paste-holder carrying an adhesive substance and formed with two branches or legs so as to permit a bottle to pass between the same, a label-supporting device secured over the carrier and adapted to contain a pile of labels, means for moving said paste-holder against one of said pile of labels, for temporarily attaching it thereto, means for withdrawing said paste-holder so that its legs or branches will be at opposite sides of the moving bottle and the label carried thereby be directly in the path of the moving bottle so that each bottle forces it from the paste-holder as said bottle moves between the branches or legs thereof, and pivoted vertically-arranged rollers adapted to press on the label and smooth it into position against the moving bottle, substantially as specified.

6. The combination with a carrier adapted to receive and hold a bottle, means for moving said carrier, two oppositely-located supports provided with slots, means for holding a supply of labels near the upper ends of said supports, and a paste-holder having legs or extensions through which a bottle is adapted to pass and secured between the supports by pins projecting into said slots, of a rod slotted at its upper end, into which one of the guiding-pins of the paste-holder is adapted to enter, means for moving said rod to carry the paste-holder up and down between said supports, means for causing a label to adhere to said paste-holder and be there held, and means for causing the actuating-rod connected with the paste-holder to continue to move downward without being disengaged from the paste-holder after said paste-holder has reached its lowermost position, substantially as specified.

7. The combination with a movable carrier adapted to receive and hold a bottle, and means for moving the carrier, of a support adapted to contain a supply of labels, a paste-holder provided with legs adapted to embrace a bottle and provided on its face with means for the escape of paste from its interior, whereby upon being pressed against a label such label will be caused to adhere thereto, and means for reciprocating said

paste-holder to bring said label in the path of the bottle, substantially as specified.

8. In a labeling-machine, the combination with an endless carrier, and means for moving the same, of devices attached to said carrier for securing thereto a series of bottles with their neck ends projected, a pair of standards inclined at their upper ends in the direction of travel of the carrier, means for holding a supply of labels near the upper ends of said standards, a reciprocating bifurcated paste-holder located between said standards, means for reciprocating said paste-holder and directing it against the supply of labels at the inclined upper ends of the standards and causing a label to be attached thereto and thereafter presented across the path of travel of the bottles, and means for temporarily stopping said paste-holder while a bottle passes therethrough, substantially as specified.

9. In a labeling-machine, the combination with an endless carrier, and means for moving the same, of devices attached to said carrier for securing thereto a series of bottles with their neck ends projected, a pair of standards, means for holding a supply of labels near the upper ends of said standards, a paste-applying device having legs or extensions through which a bottle is adapted to pass, said paste-applying device being movable between said standards, a rod connected with said paste-applying device, means for moving said rod to move the paste-applying device up and down between said standards, means for causing a label to adhere to said paste-applying device, and means for causing said rod to continue to move downward without being disengaged from the paste applying device after said paste-applying device has reached its lowermost position, substantially as specified.

10. In a labeling-machine, the combination with a carrier for the objects to be labeled and a support therefor, of a pair of standards mounted upon the support, a label-holding device carried by the standards, a reciprocating paste-holder operating between said standards and adapted to engage and feed the labels from the label-holding device to the path of the object to be labeled, means for operating said paste-holder, and means carried by the operating means for the paste-holder for operating the label-holding device to present labels to the paste-holder to be engaged thereby.

11. In a labeling-machine, the combination with a carrier for the objects to be labeled and a support therefor, of a pair of standards mounted upon the support, a label-holding device carried by the standards, a reciprocating paste-holder operating between said standards and adapted to engage and feed the labels from the label-holding device to the path of the object to be labeled, means for operating said paste-holder, means carried by the operating means for the paste-holder for operating the label-holding device to present labels to the paste-holder to be engaged thereby, a pair of vertical rollers mounted at the front of said standards, and a pair of brushes mounted at the front of the said standards above said rollers.

12. In a labeling-machine, the combination with a carrier for the objects to be labeled and a support therefor, of a pair of standards mounted upon the said support and each provided with guide-slots, a label-holding device carried by the standards, a reciprocating paste-holder operated between said standards and adapted to engage and feed the labels from the label-holding device to the path of the object to be labeled, guide-pins carried by the paste-holder and operating in the slots of the standards, and means for suitably operating said paste-holder and label-holding device.

707,789. MACHINE FOR WIRING CORKS IN BOTTLES. CLIFTON J. WARREN, Chicago, Ill. Original application filed May 16, 1901, Serial No. 60,594. Divided and this application filed Dec. 7, 1901. Serial No. 85,001. (No model.)

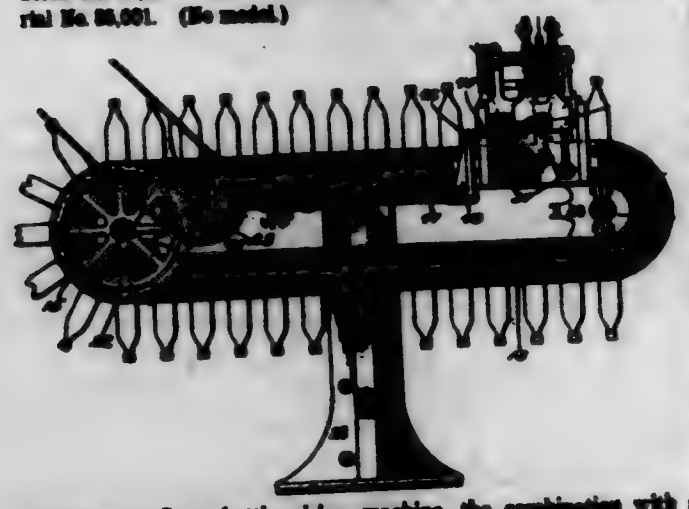

Claim.—1. In a bottle-wiring machine, the combination with a movable carrier adapted to receive and hold a series of bottles thereon with their neck ends projected, of means for moving said carrier, and means for successively wiring said series of bottles while they are moving, substantially as specified.

2. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, a wire leading therefrom, devices for grasping said wire and securing it over the end of the bottle while said bottle is moving with its carrier, means for moving said wiring devices for a limited distance parallel with and over said carrier during the operation of securing the wire to the bottle, and means for severing the wire, substantially as specified.

3. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, a wire leading therefrom, devices for grasping said wire and securing it over the end of the bottle while said bottle is moving with its carrier, means for moving said wiring devices down adjacent to one side of the neck of the bottle and at the same time moving them for a limited distance parallel with and over said carrier during the operation of securing the wire to the bottle, and means for severing the wire, substantially as specified.

4. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, a wire leading therefrom, devices for grasping said wire and securing it over the end of the bottle while said bottle is moving with its carrier, means for moving said wiring devices down adjacent to one side of the neck of the bottle and at the same time moving them for a limited distance parallel with and over said carrier during the operation of securing the wire to the bottle, means for severing the wire, and means for raising said wire-securing devices after the wire has been severed and withdrawing them for a limited distance in a direction opposite to the movement of the said carrier, substantially as specified.

5. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, wire-directing devices located over the carrier, wires leading therefrom, a fixed screw suitably supported above and parallel with the carrier, wire grasping and twisting devices carried by said screw, means for reciprocating said wire grasping and twisting devices on said screw, means for forcing said devices down and over the wires carried by said wire-directing devices and twisting them against the neck of the moving bottle, means for severing said wires when twisted, and means for raising and retracting said devices, substantially as specified.

6. The combination with a frame, a carrier supported thereby and adapted to receive and hold a bottle with its neck end projected, wire-directing devices located over the carrier, and wires leading therefrom, of a fixed screw-threaded bar arranged parallel with the carrier, a gear having an extended hub mounted on said screw-threaded bar, arms mounted on said hub on opposite sides of said gear and adapted to be turned on said hub, means for reciprocating said hub on its screw-threaded bar whereby said hub and its gear will be retained, means for turning said arms for a limited distance on said hub as said hub moves lengthwise of the screw-threaded bar, a gear carried between said arms and meshing with said first-named gear, a pair of levers carried by each of said arms, cams acting upon the upper ends of said levers, a divided gear supported in the lower ends of the two pairs of levers and adapted to be opened and closed, and when closed adapted to engage the wires from the wire-directing devices and twist said wires at one side of the head of a bottle, and means for severing said twisted wires, substantially as specified.

7. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, means for moving said carrier, a frame supporting said carrier, wire-directing devices located over the carrier, and wires leading therefrom, of a slide supported by said frame, means for reciprocating said slide, a screw-threaded bar rigidly supported by said frame and parallel with the line of travel of the carrier, a gear having an extended hub, said hub being screw-threaded to fit and move upon said screw-threaded bar, a pair of cam-plates carried by arms supported from said slide, a pair of arms each having at its inner end a friction-band secured around said extended hub at each side of said gear and carrying between them at their outer ends another gear and also having pivoted to them at their outer ends two pairs of bent levers, the upper ends of which are adapted to engage the said cams, a divided gear supported between the lower ends of said two pairs of levers, the two parts of said divided gear being adapted to be brought together on the downward movement of their carrying-arms and rotated by the rotation of the other gears so as to grasp and twist at one side of a moving bottle the wires from the wire-directing devices, and means for severing said twisted wires, substantially as specified.

707,740. BOTTLE-WASHING MACHINE. CLIFTON J. WARREN, Chicago, Ill. Original application filed May 16, 1901, Serial No. 60,594. Divided and this application filed Dec. 7, 1901. Serial No. 85,004. (No model.)

Claim.—1. The combination with a carrier, and a clamping device

attached thereto and adapted to hold a bottle, of means for moving said carrier, bottle-cleansing devices, means for carrying the bottle-cleansing devices, means for moving said bottle-cleansing devices toward the bottle to be cleaned so that the cleansing devices are brought into operative position, means for moving the bottle-cleansing devices for a limited distance parallel with the moving carrier, means for operating said cleansing devices, and means for withdrawing the cleansing devices from operative position, substantially as specified.

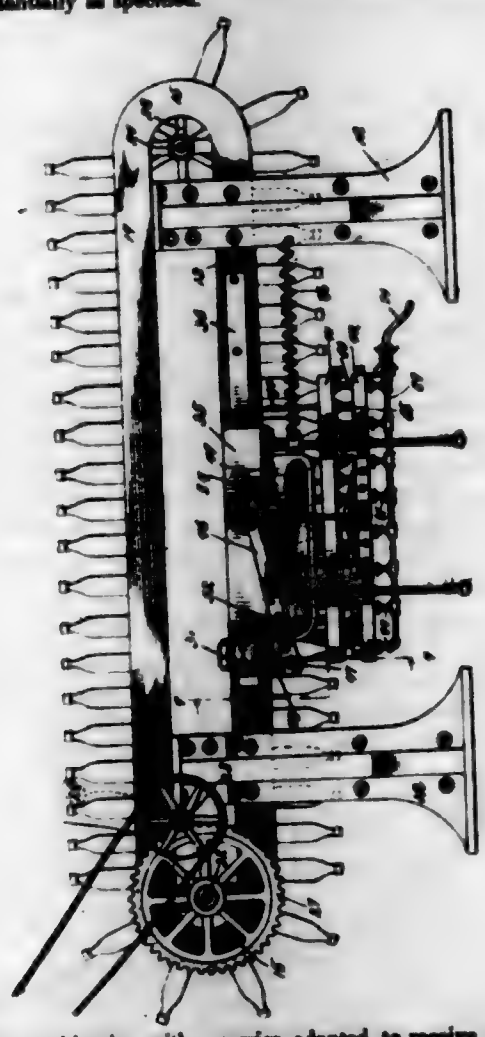

2. The combination with a carrier adapted to receive and hold a bottle with its neck end projected beyond the carrier, of means for moving said carrier, reciprocating mechanism carrying a water-conducting tube adapted to enter the bottle, means for conveying water to said tube, means for moving said reciprocating mechanism toward the bottle to cause the water-conducting tube to enter therein, means for moving said mechanism for a limited distance parallel with the moving carrier, and means for drawing the said mechanism away from the bottle and withdrawing the said tube from the interior of the bottle, substantially as specified.

3. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a plate carrying a water-conducting tube adapted to enter the bottle, means for supplying water to and through said tube, means for moving said plate toward the bottle to cause the water-conducting tube to enter therein, means for rotating the water-conducting tube while in the bottle, means for moving the said plate for a limited distance parallel with the moving bottle-carrier, and means for drawing the plate away from the bottle and withdrawing the said tube from the interior thereof, substantially as specified.

4. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a plate carrying a water-conducting tube adapted to enter the bottle, means for moving said plate toward the bottle to cause the water-conducting tube to enter therein, a rotatable gear carried by said plate and adapted when turned to rotate said water-conducting tube when in the bottle, means for rotating said gear, means for moving the plate for a limited distance parallel with the moving carrier, and means for drawing the plate away from the bottle and withdrawing the said tube from the interior thereof, substantially as specified.

5. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a plate carrying a water-conducting tube adapted to enter the bottle, means for moving said plate toward the bottle to cause the water-conducting tube to enter therein, a gear-wheel secured to said water-conducting tube and carried by said plate, a second gear-wheel also carried by said plate and meshing with the first-named gear-wheel, a screw-threaded rod carried by said second-named gear-wheel, a fixed threaded sleeve through which said screw-threaded rod passes, whereby as said rod is moved through said sleeve motion will be imparted to the said gear-wheels, means for moving the plate for a limited distance parallel with the moving bottle-carrier, and means for drawing said plate away from the bottle and withdrawing the said water-conducting tube from the interior thereof, substantially as specified.

6. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a movable frame carrying a water-conducting tube adapted to enter a bottle, a guide carried by said frame through which said water-conducting tube is adapted to pass and be supported, means for moving said frame toward the bottle to cause the water-conducting tube to enter therein, means for moving said frame for a limited distance parallel with the moving bottle-carrier, and means for drawing the frame away from the bottle and withdrawing the said water-conducting tube from the interior thereof, substantially as specified.

7. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a frame carrying a flexible water-conducting tube adapted to enter a bottle, a guiding and supporting rod within said flexible tube, means for moving said carrier toward the bottle to cause the water-conducting tube to enter therein, means for moving the frame for a limited distance parallel with the moving bottle-carrier, and means for drawing the frame away from the bottle and withdrawing the said flexible tube and its interior guiding and supporting rod from the interior of the bottle, substantially as specified.

8. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, means for moving said carrier, and a frame consisting of an upper and a lower part, both adapted to move in the direction of travel of the carrier, and the lower part having an independent vertical movement, of a water-conducting tube adapted to enter a bottle, said tube being carried by the lower part of the frame, a guide attached to the upper part of the frame, through which guide the water-conducting tube is adapted to pass, means for moving said frame with the line of travel of the carrier, means for moving the lower part of said frame at the same time toward the bottle to cause the water-conducting tube to enter therein, and means for drawing the frame away from the bottle and withdrawing the said tube from the interior thereof, substantially as specified.

9. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, means for moving said carrier, and a frame consisting of an upper and a lower part, both adapted to move in the direction of travel of the carrier, and the lower part having an independent vertical movement, of a water-conducting tube adapted to enter a bottle, said tube being carried by the lower part of the frame and projecting through the upper part of the frame, means for moving said frame in the direction of the line of travel of the carrier, means for moving the lower part of said frame at the same time toward the bottle to cause the water-conducting tube to enter therein, and means for drawing the frame away from the bottle and withdrawing the said tube from the interior thereof, substantially as specified.

10. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, means for moving said carrier, and a frame consisting of an upper and a lower part, both adapted to move in the direction of travel of the carrier, and the lower part having an independent vertical movement, of a water-conducting tube adapted to enter a bottle, said tube being carried by the lower part of the frame, a sleeve surrounding said water-conducting tube and located in an opening in the upper part of the frame and provided on its upper end with a head adapted to fit over the head of a bottle, means for moving said frame within the line of travel of the carrier, means for moving the lower part of said frame vertically, a device for forcing up the said sleeve to cause the head thereon to come over the head of the bottle on said carrier, means for directing the water-conducting tube into the bottle as the lower part of the frame rises, and means for drawing the frame away from the bottle and withdrawing the said tube from the interior thereof, substantially as specified.

11. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a frame, bottle-cleansing devices carried by said frame, means for moving said frame toward the bottle to be cleansed so that the cleansing devices are brought into operative position, means carried by the carrier for moving the bottle-cleansing devices with the movement of the carrier for a limited distance, means for moving the bottle-cleansing devices away from the bottle, and means for releasing the engagement between the carrier and the frame that carries the bottle-cleansing devices, substantially as specified.

12. The combination with a carrier adapted to receive and hold a bottle, means for moving said carrier, a frame, and bottle-cleansing devices carried by said frame, of means for moving said frame toward the

bottle to be cleaned so that the cleaning devices are brought into operative position, means carried by the carrier for moving the bottle-cleaning devices with the movement of the carrier for a limited distance, means for moving the bottle-cleaning devices away from the bottle, means for effecting the engagement between the carrier and the frame that carries the bottle-cleaning devices, and means for returning said frame after its disengagement from the carrier, said frame on its return moving in a direction opposite to that of the travel of the carrier, substantially as specified.

13. The combination with a carrier adapted to receive and hold a bottle, means for moving said carrier, a slide adapted to move for a short distance parallel with said carrier, bottle-cleaning devices, and a frame adapted to carry said bottle-cleaning devices, of means for causing said frame to travel toward the bottle on the carrier to bring the bottle-cleaning devices into operative position, an engaging device on the movable carrier, a pivoted dog carried by the slide and adapted to be engaged by the engaging device of the carrier, whereby said slide and attached frame can move with the carrier, a device for lifting said pivoted dog out of engagement with the carrier, and means for forcing the said frame away to carry the bottle-cleaning devices out of operative position, substantially as specified.

14. The combination with a carrier adapted to receive and hold a bottle, of a slide adapted to be engaged by the carrier and move therewith, a frame secured to said slide, a lever pivotally connected at one end with the slide and at the other end with the said frame, a fixed plate having a groove in the face thereof, the upper portion of said groove being diagonal and the lower portion horizontal, a roller carried by said lever and adapted to travel in said groove, and means for disengaging the slide from the moving carrier, substantially as specified.

15. The combination with a carrier adapted to receive and hold a bottle, of a slide adapted to be engaged by the carrier and move therewith, a frame secured to said slide, a lever pivotally connected at one end with the slide and at the other end with the said frame, a fixed plate having a groove in the face thereof, the upper portion of said groove being diagonal and the lower portion horizontal, a roller adapted to travel in said groove, said roller being loosely mounted on a pin projecting from the side of said roller and being held in position by a coiled spring around said pin between said roller and lever, and a device for disengaging the slide from the moving carrier, substantially as specified.

16. The combination with a carrier adapted to receive and hold a bottle, of a slide adapted to be engaged by the carrier and move therewith, a frame secured to said slide, a lever pivotally connected at one end with the slide and at the other end with the said frame, a fixed plate having a groove in the face thereof, the upper portion of said groove being diagonal and the lower portion horizontal, a roller adapted to travel in said groove, said roller being rotatably secured to said lever, and a device for disengaging the slide from the moving carrier, substantially as specified.

17. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, devices for cleaning the outside of the bottle, a frame for carrying said cleaning devices, means for moving said frame toward the bottle to cause the bottle-cleaning devices to be brought into operative position opposite the bottle, means for moving said frame for a limited distance parallel with the moving bottle-carrier, and means for drawing the said frame away from the bottle and withdrawing from operative position the said bottle-cleaning devices, substantially as specified.

18. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, devices for throwing water against the outer surface of the bottle, a frame for carrying said water-throwing devices, means for moving said frame toward the bottle to cause the water-throwing devices to be brought opposite said bottle, means for moving the frame for a limited distance parallel with the bottle-carrier, and means for drawing the frame away from the bottle and thereby withdrawing the said water-throwing devices out of operative position, substantially as specified.

19. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a cleaning-brush adapted to contact with the outside of the bottle, a frame for carrying said brush, means for rubbing said brush while in contact with the bottle, means for moving the frame for a limited distance parallel with the moving bottle-carrier, and means for drawing the frame away from the bottle and withdrawing the said brush from contact therewith, substantially as specified.

20. The combination with a carrier adapted to receive and hold a bottle, of means for moving said carrier, a device for discharging water against the outside of the bottle, a brush adapted to be brought in contact with the outside of the bottle, a frame for carrying both said water-discharging device and brush, means for moving said frame toward the bottle in order to bring said water-discharging device and brush into operative position with reference to the bottle, means for rotating said water-discharging device and brush, means for moving the frame for a limited distance parallel with the moving bottle-carrier, and means for drawing the frame away from the bottle and withdrawing the said water-discharging device and brush from operative position with reference to the bottle, substantially as specified.

707,741. THILL-COUPLING. THOMAS F. WARE, Cuba, Cal. Filed May 1, 1902. Serial No. 105,472. (No model.)

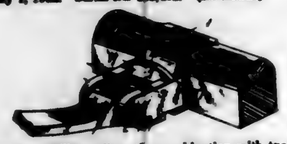

Claim.—In a thill-coupling, the combination with the ears having upon their inner faces L-shaped slots, of a thill-iron, a pivotal bolt for the thill-iron located in the horizontal portion of said L-shaped slots, an angular spring provided with studs journaled in bearings formed in the lower edges of the ears, a hard-rubber washer having a dovetail connection with the lower end of said spring, a bolt having a flattened portion at its upper end terminating in laterally-projecting lugs which are adapted to engage the upper edges of the ears, said flattened portion being provided with a transverse dovetail recess, a rubber packing seated in said recess, the lower end of said bolt projecting through the lower end of the spring and the hard-rubber washer, and a nut screwed upon the lower end of said bolt, substantially as set forth.

707,742. CIGAR-BUNCHING MACHINE. WILLIAM WEIBEZAHN and EDWARD S. DENNIS, Pittsburg, Pa., assignors to the Pittsburgh Cigar Machine Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Dec. 13, 1900. Serial No. 39,505. (No model.)

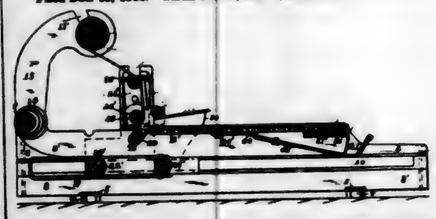

Claim.—1. In a cigar-bunching machine, the combination of a stationary main supporting-frame having tracks therein, a bunching-table within said frame, an apron passing over said table and adapted to form a pocket therein, a roller-carrying mechanism and a binder-table mechanism adapted to travel on said tracks, means connected to said roller-carrying mechanism for moving the same forward, connections from said roller-carrying mechanism to the binder-table mechanism, to permit the former to strike against the latter, and a leaf-spring connected to said frame and roller-carrying mechanism for permitting the latter and binder-table mechanism to move forward over the table to form a bunch in said pocket and be returned to place.

2. In a cigar-bunching machine, the combination of a stationary main supporting-frame having tracks therein, a bunching-table within said frame, an apron passing over said table and adapted to form a pocket therein, a roller-carrying mechanism and a binder-table mechanism provided with slides thereon adapted to travel on said tracks, handles connected to said roller-carrying mechanism for moving the same forward, slotted arms on said binder-table mechanism adapted to engage with said roller-carrying mechanism to permit the latter to strike against the former, move forward and return to place with it, and a leaf-spring connected to said frame and roller-carrying mechanism for permitting the latter and the binder-table mechanism to move forward over the table to form a bunch in said pocket and be returned to place.

3. In a cigar-bunching machine, the combination of a frame, a bunching-table on said frame, a rigid portion extending down in front of said table having a lip at its upper end secured to the bottom of said table, an extension on the lower end of said rigid portion secured to the bottom of said table, and an adjustable spring portion extending up in front of said rigid portion and secured to the extension to form a bunch-catcher.

4. In a cigar-bunching machine, the combination of a frame, a bunching-table on said frame, a rigid portion extending down in front of said table having a lip at its upper end secured to the bottom of said table, an extension on the lower end of said rigid portion secured to the bottom of said table, a spring portion extending up in front of said rigid portion to form a bunch-catcher therewith, and a spring extension on said spring portion, and a bolt engaging with a slot in the extension of the rigid portion and spring portion to adjust the latter.

5. In a cigar-bunching machine, the combination of a frame, a bunching-table within said frame, an apron or cloth mounted in said frame and adapted to form a pocket before passing over the bunching-table, a binder-table on said frame, a bunching-roll journaled on said frame, an apron-guiding roll mounted above said bunching-roll, and a binder-stretching roll mounted in front of and on substantially the same horizontal level with the bunching-roll, said stretching-roll being adapted to reciprocate horizontally with the binding-roll.

6. In a cigar-bunching machine, the combination of a stationary main supporting-frame having recesses therein, bearing-blocks on said frame provided with slots in their lower ends, and a bunching-roll adapted to be held in said slots and be removed therefrom into the recesses in the frame.

7. In a cigar-bunching machine, the combination of a frame, and a bunching-table mounted on said frame, said table having a series of grooves in its upper face at the rear end thereof for compacting the bunch and a smooth upper face at the front end thereof for smoothing the bunch after being compacted.

8. In a cigar-bunching machine, the combination of a frame, a bunching-table within said frame, a reciprocating bunching-roll mounted on said frame having tapered and enlarged cylindrical portions thereon, and an apron or cloth mounted on said frame and adapted to engage with the enlarged portions before forming a pocket and passing on to the bunching-table.

707,743. WOVEN-WIRE FENCING. ARTHUR W. WELLMAN, Madison, Wis. Filed Mar. 5, 1901. Serial No. 49,894. (No model.)

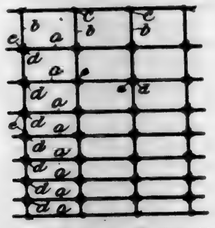

Claim.—1. In a fence-tie, the combination with strand and stay wires, of a tie-wire continuously coiled in one direction and having its opposite ends formed in two coils at an angle to each other and respectively parallel to and engaging the adjacent strand and stay wires, and a connecting portion between the coils extending across the angle from one coil to the other and at one side of the point of intersection between the strand and stay wires; substantially as specified.

2. In a fence-tie, the combination with strand and stay wires, of a tie-wire having its opposite end formed in two coils at an angle to each other and respectively parallel to and engaging the adjacent strand and stay wires, a connecting portion between the coils extending across the angle from one coil to the other and at one side of the point of intersection between the strand and stay wires, and a duplicate tie-wire disposed at the opposite side of the point of intersection between the strand and stay wires to the first-mentioned tie-wire; substantially as specified.

707,744. MACHINE FOR CUTTING AND BENDING RULES. JOEL WELTY, Fort Wayne, Ind. Filed May 31, 1901. Serial No. 62,602. (No model.)

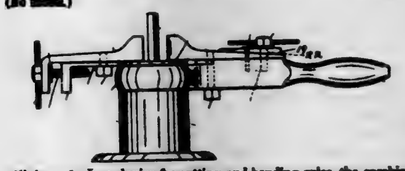

Claim.—1. In a device for cutting and bending rules, the combination with a standard provided at its upper end with a neck, of an operating-handle having at one of its ends a collar mounted upon said neck, a plate secured to said standard and overlapping the collar of said handle for securing the collar upon said neck, said plate being provided with an outwardly-extending arm having its outer end bent downwardly, a removable die fitted in said standard, a gripper adjustably mounted upon said plate, an adjusting-screw mounted in the outer end of said gripper and engaging the downwardly-bent end of said plate, and a former adjustably mounted upon said operating-handle, the faces of said gripper and former being arranged in parallel relation and maintaining such relation during the adjustments thereof.

2. In a device for cutting and bending rules, the combination with a standard provided at its upper end with a neck, of an operating-handle having at one of its ends a collar mounted upon said neck, a plate secured to said standard and overlapping the collar of said handle for securing the collar upon said neck, said plate being provided with an outwardly-extending arm having its outer end bent downwardly, a removable die fitted in said standard, a gripper adjustably mounted upon said plate, an adjusting-screw mounted in the outer end of said gripper and engaging the downwardly-bent end of said plate, a former adjustably mounted upon said operating-handle and provided with a longitudinal slot, a plate mounted on said former and provided with a lug engaging the operating-handle, and a screw passing through said plate and the former and engaging the operating-handle for securing the plate and former on the handle.

707,745. MATTRESS-FILLING MACHINE. KARL WIESEL, St. Paul, Minn., assignor to the Curled Fibre Manufacturing Company, St. Paul, Minn., a Corporation of Delaware. Filed Aug. 16, 1901. Serial No. 72,377. (No model.)

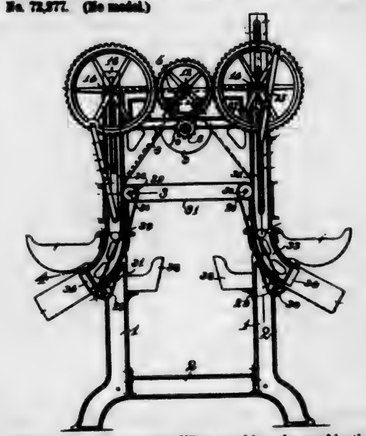

Claim.—1. In a mattress-filling machine, the combination with a forming-chute, means for adjusting the width thereof, a reciprocating feeding and packing plunger arranged to operate in said chute, means for continuously reciprocating said plunger, and means whereby the width of said plunger is varied to correspond with the adjusted width of the forming-chute.

2. In a mattress-filling machine, the combination with a forming-chute adjustable in width, of a reciprocatory feeding and packing plunger also and correspondingly adjustable in width, means for continuously reciprocating said plunger, and means for simultaneously effecting the adjustments in width of said chute and plunger.

3. In a mattress-filling machine, the combination with a forming-chute, and means for adjusting the width thereof, of a plunger movable into and out of said forming-chute and adjustable in width, means for continuously reciprocating said plunger, and connection between said plunger and said adjusting means for adjusting the width of said forming-chute, whereby said plunger will be adjusted in width simultaneously with said forming-chute.

4. In a mattress-filling machine, the combination with a forming-chute having laterally-movable side walls whereby the same is made adjustable in width, of a reciprocating plunger movable into and out of said chute, means for presenting filling material to the action of said plunger, whereby said filling material is compressed into said chute in successive increments, means for adjusting the width of said plunger, connection between said plunger and said side walls of said forming-chute whereby the plunger will be adjusted in width simultaneously with said forming-chute, and means for continuously reciprocating said plunger.

5. In a mattress-filling machine, the combination with a forming-chute and a reciprocating plunger movable therein, said plunger being adjustable in width, means for continuously reciprocating said plunger, and means for constantly presenting the filling material to the action of said plunger, of devices common to both said forming-chute and said plunger for simultaneously adjusting the width of each.

6. In a mattress-filling machine, the combination with a forming-

chute, means for continuously feeding a filling thereto in successive increments, compressing said filling therein and forcing same therethrough, of devices for adjusting the width of said forming-chute and said feeding and compressing means, and means controlling the degree of compactness or compression imparted to said filling.

7. In a mattress-filling machine, the combination of a feed chute or passage adapted to receive a mattress or other cover over the discharge end thereof, and means for feeding a filling material through said chute or passage, the sides of said feed chute or passage having openings therethrough to permit the application of a lining to the surface of said material whereby the lining is engaged by the surface of the filling material and is drawn therewith into and through the chute or passage, as and for the purpose set forth.

8. In a mattress-filling machine, a feed chute or passage adapted to receive a mattress or other cover over the discharge end thereof, means for continuously compressing a filling-material into and feeding the same through said chute or passage and into said cover, said feed chute or passage having openings therethrough whereby a lining may be introduced into said chute or passage, applied to the surface of said filling material and engaged by said fed along with said material into said cover, as and for the purpose set forth.

9. In a mattress-filling machine, a chute or passage, a reciprocating plunger operating therein for feeding a filling material therethrough, a mattress or other cover adapted to receive said filling material from the discharge end of said chute or passage, said chute or passage provided with slots or openings, to receive linings therethrough whereby said lining is engaged by said fed along with said material into said cover, as and for the purpose set forth.

10. In a mattress-filling machine, a chute or passage constructed to receive a mattress-cover over the delivery end thereof, means for delivering a filling material into said chute or passage, means for continuously feeding said material through said chute or passage and into said cover, said chute or passage provided with slots adjacent the delivery end thereof through which a lining material for the surface of said material may be introduced into said chute or passage, said lining material being adapted to be engaged by said filling material and drawn into and through said chute or passage and into said cover, as and for the purpose set forth.

11. In a mattress-filling machine, the combination with a forming-chute, a plunger, means for reciprocating the same into and out of one end thereof and adapted to force continuously filling in successive increments into and through said chute and compress same therein, of means for introducing a lining into said chute between the ends of the latter to be engaged by the surface of said forced through said chute with said filling.

12. In a mattress-filling machine, the combination with a reciprocating plunger, of a forming-chute in which said plunger moves and through which it is adapted to force a filling, a telescopically-adjustable mouth on said forming-chute adapted to have a mattress-cover drawn over same, and lateral slots in said forming-chute for introducing cotton to cover said filling and be drawn into the mattress-cover therewith.

13. In a mattress-filling machine, the combination with a reciprocating plunger comprising a plurality of parallel plates mounted side by side and relatively movable, whereby said plunger is adjustable in width, of a forming-chute in which said plunger moves and through which it is adapted to force a filling, means for adjusting the inner width of said forming-chute, a telescopically-adjustable mouth on said forming-chute adapted to have a mattress-cover drawn over same, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

14. In a mattress-filling machine, the combination with a reciprocating plunger comprising a plurality of plates laterally movable and connected together by lazy-tong levers, whereby, by adjusting the distance between any two of said plates, the entire series will be similarly adjusted, of a forming-chute in which said plunger moves and through which it is adapted to force a filling, means for adjusting the inner width of said forming-chute, and a telescopically-adjustable mouth on said forming-chute adapted to have a mattress-cover drawn over same, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

15. In a mattress-filling machine, the combination with a forming-chute, and plates laterally movable therein for adjusting the inner width thereof, of a plunger reciprocally movable in said forming-chute and adjustable in width to correspond with the width of said forming-chute, said plunger being connected with said plates and laterally rigid therewith, whereby said forming-chute and said plunger are simultaneously adjusted, and a laterally telescopically adjustable mouth on said forming-chute adapted to have a mattress-cover drawn over same, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

16. In a mattress-filling machine, the combination with a forming-chute and plates laterally movable therein for adjusting the inner width thereof, of a plunger reciprocally movable in said forming-chute comprising a plurality of parallel plates mounted side by side and which are laterally movable and connected together by lazy-tong levers, whereby by adjusting the distance between any two of said plates the entire series will be similarly adjusted, said plunger being connected with the adjustable plates in said forming-chute and laterally rigid therewith, whereby said forming-chute and said plunger are simultaneously adjusted in width, and a laterally telescopically adjustable mouth on said forming-chute adapted to have a mattress-cover drawn over same, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

17. In a mattress-filling machine, the combination with a forming-chute curved at its delivery-end portion and carrying a laterally telescopically adjustable mouth adapted to have a mattress-cover drawn over same, of laterally-movable plates fitting within said forming-chute and adapted to adjust the inner width of same, a plunger longitudinally movable in said forming-chute and laterally adjustable, said plunger being laterally rigid with said plates and adjustable by moving said plates.

18. In a mattress-filling machine, the combination with a forming-chute curved at its delivery-end portion and carrying a laterally telescopically adjustable mouth adapted to have a mattress-cover drawn over same, of laterally-movable plates fitting within said forming-chute and adapted to adjust the inner width of same, a plunger longitudinally movable in and adapted to force a filling through said forming-chute, comprising a series of parallel slats mounted side by side and connected with a set of lazy-tong levers whereby by adjusting the distance between any two of said slats the entire series will be similarly adjusted, the two outer slats of said series being laterally rigidly connected to said laterally-movable plates in said forming-chute, whereby when said plates are adjusted said plunger is simultaneously adjusted in width to correspond with the width of said forming-chute.

19. In a mattress-filling machine, the combination with a forming-chute curved at its delivery-end portion and carrying a laterally telescopically adjustable mouth adapted to have a mattress-cover drawn over same, of laterally-movable plates fitting within said forming-chute and adapted to adjust the inner width of same, a plunger longitudinally movable in and adapted to force a filling through said forming-chute, comprising a series of parallel slats mounted side by side and connected with a set of lazy-tong levers whereby by adjusting the distance between any two of said slats the entire series will be similarly adjusted, the two outer slats of said series being laterally rigidly connected to said laterally-movable plates in said forming-chute, whereby when said plates are adjusted said plunger is simultaneously adjusted in width to correspond with the width of said forming-chute, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, said filling being adapted to engage said covering to draw same through said forming-chute.

20. In a mattress-filling machine, the combination with a reciprocating plunger adjustable in width, of a laterally-adjustable forming-chute coacting with said plunger to form a mattress-filling, said plunger being adapted to continuously deliver said filling in increments into and move the same through said forming-chute, said forming-chute being provided with lateral slots for the introduction of cotton or other suitable covering for said filling, the surface of said filling being adapted to engage said covering to draw same through said forming-chute.

21. In a mattress-filling machine, the combination with a vertically-reciprocating plunger, of a forming-chute coacting with said plunger, said forming-chute being curved at its delivery end so as to deliver said mattress-filling laterally, at an angle, to that portion of said forming-chute in which said plunger operates.

22. In a mattress-filling machine, the combination with a plunger, of a forming-chute coacting with said plunger, said forming-chute being curved at its delivery end, whereby the passage of the filling is resisted and the latter compressed to a given compactness.

23. A mattress-filling machine, comprising a forming-chute, means for adjusting the width of said forming-chute, a reciprocating plunger movable into and out of one end of said forming-chute, and means for continuously presenting mattress-filling material in front of the mouth of said forming-chute and between the limits of motion of said plunger, means for forcing said filling into the path of said plunger, and devices at the mouth of said forming-chute adapted to be moved out of the path of the incoming filling and project behind the same to prevent said filling from leaving said mouth of said forming-chute, the delivery end of said forming-chute being adapted to receive a mattress-cover, whereby said filling will enter said mattress-cover thereover and withdraw same from said forming-chute, substantially as described.

24. A mattress-filling machine, comprising a forming-chute, means for adjusting the width of said forming-chute, a plunger movable into and out of one end of said forming-chute, means for continuously presenting filling material in front and into the path of said plunger, said forming-chute being provided with a slot adjacent the rear end of same through which a cotton fabric or top is adapted to be inserted to be engaged by the surface of said filling, the rear end of said forming-chute comprising an open-ended casing adapted to receive a mattress-cover which said filling and said cotton fabric or top are adapted to enter and which serve to withdraw said cover from said forming-chute, substantially as described.

25. In a mattress-filling machine, the combination with a forming-chute, adjustable in width and having an open-ended casing forming a delivery end adapted to receive a mattress-cover telescoped thereover, of devices for continuously presenting filling material into said forming-chute and forcing same therethrough and into said mattress-cover, said forming-chute being provided with a slot between its ends adapted to admit a layer of suitable material adapted to form a top for said filling, the latter being engaged by the surface of said filling and drawn thereby through said forming-chute and into said mattress-cover therewith, substantially as described.

26. In a mattress-filling machine, the combination with a forming-chute adjustable in width and having an open-ended casing forming a delivery end adapted to receive a mattress-cover telescoped thereover, and provided between its ends with a transverse slot adapted to admit a lining material, of a reciprocating plunger adapted to receive a separate head to correspond with each variation in the width of said forming-chute and operating into and out of the other end of said forming-chute, and means for continuously presenting filling material into the path of said plunger, whereby said filling is forced into and through said forming-chute into said mattress-cover, the surface of said filling engaging said lining material and drawing same therewith into said mattress-cover, substantially as described.

707,746. MATTRESS-FILLING MACHINE. Karl Wiesel, St. Paul, Minn., assignor to the Curled Fibre Manufacturing Company, St. Paul, Minn., a Corporation of Delaware. Filed Aug. 16, 1901. Serial No. 72,273. (No model.)

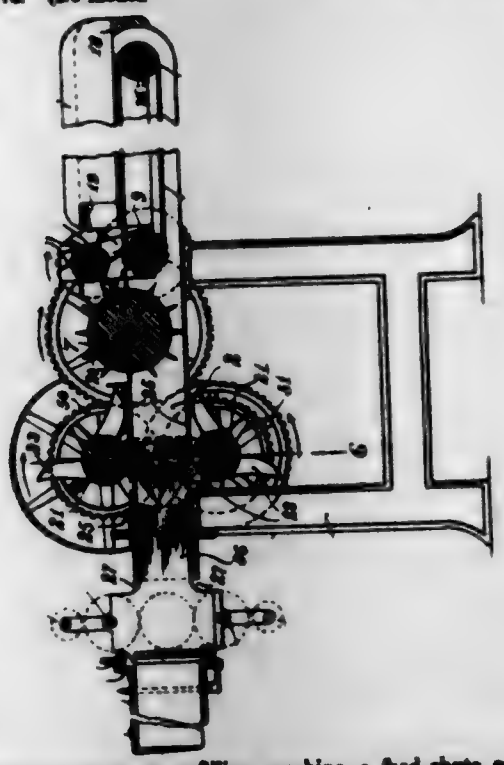

Claim.—1. In a mattress-filling machine, a feed chute or passage adapted to receive a mattress or other cover over the discharge end thereof, and having openings or slots in the wall thereof, in combination with a shaft arranged to extend transversely of said chute or passage and carrying fingers arranged to project through said slots or openings and into said chute or passage, and means for rotating said shaft whereby the filling material introduced to said chute or passage is engaged by said fingers and is continuously fed thereby through and discharged from said chute or passage into said cover, as and for the purpose set forth.

2. In a mattress-filling machine, a feed chute or passage adapted to receive a mattress or other cover over the discharge end thereof, shafts arranged on opposite sides of said chute or passage and to extend transversely thereof, fingers mounted upon said shafts and arranged to project into said chute or passage, and means for rotating said shafts in opposite directions, whereby the filling material introduced into said chute or passage is continuously fed through and discharged from said chute or passage and into said cover, as and for the purpose set forth.

3. In a mattress-filling machine, the combination with a feed chute or passage, of feed-shafts extending transversely of said chute or passage and carrying feed-fingers arranged to project into said chute or passage, means for delivering the filling material into said chute or passage, and means for rotating said feed-shafts whereby such filling material is continuously fed through said chute or passage, as and for the purpose set forth.

4. In a mattress-filling machine, the combination with a feed chute or passage having a discharge end, means for delivering a filling material into said feed chute or passage, and movable feeding-fingers arranged to project into said chute or passage and having rearwardly-curved front or feeding edges, as and for the purpose set forth.

5. In a mattress-filling machine, the combination with a feed chute or passage having a discharge end, the walls of said chute or passage being slotted, feed-shafts transversely arranged and having feed-fingers arranged to operate through said slots, the forward or feeding edges of said fingers being curved rearwardly with reference to the direction of rotation of said shafts, means for rotating said shafts, and means for delivering a filling material into said feed chute or passage, as and for the purpose set forth.

6. In a mattress-filling machine, a feed chute or passage, means for delivering the filling material into said chute or passage, means for straightening or combing said filling material, and feed-fingers arranged to project into said chute or passage and means for actuating the same to continuously and uniformly feed the material through said passage or chute, as and for the purpose set forth.

7. In a mattress-filling machine, a feed chute or passage, means for delivering the filling material thereto, feeding devices arranged to project into said chute or passage for continuously feeding the material therethrough, in combination with restraining devices arranged on the delivery side of said feeding devices for restraining the discharge of the material without arresting the action of said feeding mechanism while a filled mattress is being removed, as and for the purpose set forth.

8. In a mattress-filling machine, the combination with mechanism for continuously feeding the filling material, of restraining-fingers arranged on the delivery side of said feeding mechanism, and adapted to be projected into the path of the material for restraining the discharge thereof without arresting the action of said continuous-feeding mechanism, as and for the purpose set forth.

9. In a mattress-filling machine, a feed chute or passage, means for delivering the filling material thereto, means for continuously feeding such material through said passage or chute, and rock-shafts having arms arranged to be projected into the path of said material to restrain the discharge thereof while a filled mattress is being removed, as and for the purpose set forth.

10. In a mattress-filling machine, the combination with a feeding chute or passage, means for delivering the filling material thereto, rotating fingers arranged to project into said chute or passage to continuously feed the material therethrough, and means for adjusting the transverse width of said chute or passage, as and for the purpose set forth.

11. In a mattress-filling machine, the combination with a feed chute or passage adapted to receive a mattress or other cover over the discharge end thereof, said chute or passage being adjustable in transverse width, feed-fingers arranged to project into said chute or passage, and means for moving said fingers to continuously feed the material and discharge the same into said cover, as and for the purpose set forth.

12. In a mattress-filling machine, the combination with a feed chute or passage, means for delivering a filling material thereto, said chute or passage provided with slots in the top and bottom walls thereof, shafts journaled above and below said chute or passage through said slots, said arms or fingers cooperating to feed the filling material toward the delivery end of said chute or passage, and means for rotating said shafts, as and for the purpose set forth.

13. In a mattress-filling machine, a delivery-carrier, combing devices arranged adjacent to the point of delivery of said carrier, a feed chute or passage, fingers arranged to project into said chute or passage to continuously feed the material therethrough, whereby the filling material is continuously progressed toward the discharge end of said feed chute or passage, as and for the purpose set forth.

14. In a mattress-filling machine, a delivery-carrier, combing or straightening devices arranged adjacent to the delivery end of said carrier, a feed passage or chute adapted to receive the filling material from said straightening or combing devices, feed-fingers arranged to project into said feed chute or passage, and means for actuating these several parts, as and for the purpose set forth.

15. In a mattress-filling machine, a delivery-carrier, means arranged adjacent to the delivery end thereof for straightening and combing the filling material delivered therefrom, a feed chute or passage adapted to receive the filling material from said scraping or combing devices, movable feed-fingers arranged to operate in said chute or passage for continu-

ously feeding the filling material toward the discharge end of said chute or passage, means for rotating these several parts, and means for applying a lining to the surface of said filling material as it progresses through said chute or passage, as and for the purpose set forth.

707,747. STONE OR PLATE FOR PHOTOMECHANICAL PRINTING AND FOR OTHER PURPOSES, AND METHOD OF PREPARING SAME. GERALD F. WETHERMAN and GEORGE HOLMATHER, Redcar, England. Filed Jan. 31, 1902. Serial No. 92,073. (No model.)

Claim.—1. A process of sensitizing a stone, plate or the like by applying thereto first a dilute sensitizing compound or mixture and then an undiluted or full-strength sensitizing compound or mixture.

2. A process of sensitizing a stone plate or the like by applying thereto a preparatory coating, then a "priming" of dilute sensitizing compound or mixture, and finally an undiluted or full-strength sensitizing compound or mixture.

3. A process of preparing sensitized plates stones or the like by first coating the same with a solution of silicate of potash and tannin in beer, drying the same and when dry "priming" the surface, after which it is coated with full-strength sensitizer.

4. A process of preparing plates stones or the like by a solution of silicate of potash and tannin in beer, priming the same with a dilute sensitizing compound or mixture and, before the priming dries, coating them with undilute sensitizing compound or mixture.

5. A process for sensitizing plates stones or the like with a compound or composition the base of which is gelatin sensitized by chrome salts, preparing such compound or composition in full strength, a like composition or compound greatly diluted, "priming" the surface to be sensitized with the dilute compound or composition, and then coating it with the compound or composition of full strength.

6. A process of sensitizing plates stones or the like by first coating the same with a solution of silicate of potash and tannin in beer, drying this first coating, priming the surface with a dilute compound or composition the base of which is gelatin, and then coating it with a sensitive coating of full-strength compound or composition the base of which is gelatin sensitized by chrome salts.

707,748. CIGAR-BUNCHING MACHINE. JOHN R. WILLIAMS, East Orange, N. J., assignor to the John R. Williams Company, New York, N. Y., a Corporation of New York. Filed June 13, 1902. Serial No. 111,508. (No model.)

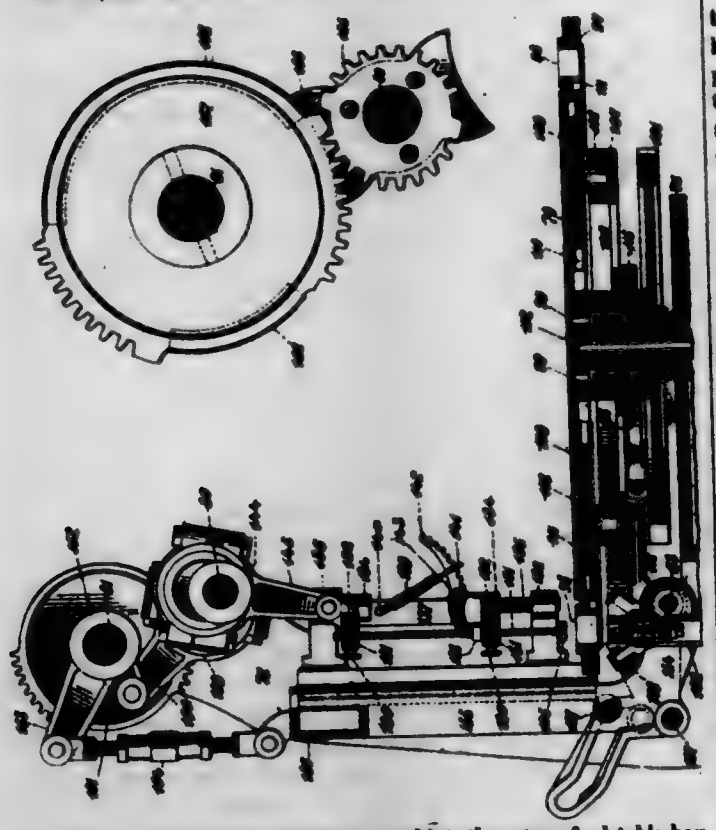

Claim.—1. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, means for imparting an intermittent rotary motion to said table, and means for locking said table at the end of each of its movements, combined with the sectional plunger adapted to the pockets or molds of said table for pressing the filler-tobacco through the same, means for operating said sectional plunger, rolling mechanism, and means for conveying the filler-tobacco pressed through said molds to said rolling mechanism; substantially as set forth.

2. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, means for imparting an intermittent rotary motion to said table, and means for locking said table at the end of each of its movements, combined with the sectional plunger adapted to the pockets or molds of said table for pressing the filler-tobacco through the same, the series of knife-blades carried below said table for severing the surplus filler-tobacco in said molds from that portion thereof intended for the bunches, means for maintaining said knife-blades below said molds to close the latter at their lower end except when one of said molds is below said plunger, means for operating said knife-blades when below said plunger for first withdrawing the knife-blade from below the mold and then driving it outward to its former position to enable said knife-blade to sever the filler-tobacco and again close the lower end of the mold, means for operating said sectional plunger, and rolling mechanism to receive the filler-tobacco pressed through said molds and below said blades, the surplus tobacco remaining within said molds above said blades; substantially as set forth.

3. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, means for imparting an intermittent rotary motion to said table, and means for locking said table at the end of each of its movements, combined with the plunger adapted to the pockets or molds of said table for pressing the filler-tobacco through the same, the series of knife-blades carried below said table, means for maintaining said knife-blades below said pockets or mold for closing the lower end of the latter except when a mold and its knife-blade are below said plunger, means for withdrawing the knife-blade when below said plunger from below its pocket or mold and then driving said knife-blade outward to sever the filler-tobacco and again close the lower end of the mold, means for operating said plunger, and rolling mechanism to receive the filler-tobacco pressed through said molds and below said blades, the surplus tobacco remaining within said molds above said blades; substantially as set forth.

4. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, and means for imparting an intermittent rotary motion to said table, combined with the plunger adapted to the pockets or molds of said table for pressing the filler-tobacco through the same, the series of knife-blades carried below said table and normally closing the lower ends of said pockets or molds, the series of rollers connected with said knife-blades, a knife-cam 106 having a groove receiving the said rollers and also having the oppositely inclined surfaces 113 and 114 for acting on said knives in succession as they pass into position below said plunger, whereby to withdraw said knife-blades in succession and then drive the same outward through the filler-tobacco pressed downward by said plunger, means for compelling said knife-cam to rotate with said table for a predetermined distance and then perform a reverse motion for carrying said surfaces 113 and 114 against the roller of the knife-blade then below said plunger, means for operating said plunger, and rolling mechanism, to receive the filler-tobacco pressed through said molds and below said blades, the surplus tobacco remaining within said molds above said blades; substantially as set forth.

5. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, and means for imparting an intermittent rotary motion to said table, combined with the plunger adapted to the pockets or molds of said table for pressing the filler-tobacco through the same, the series of knife-blades carried below said table and normally closing the lower ends of said pockets or molds, the series of rollers connected with said knife-blades, the knife-cam 106 having a groove receiving the said rollers and also having the oppositely-inclined surfaces 113 and 114 for acting on said knives in succession as they pass into position below said plunger, whereby to withdraw said knife-blades in succession and then drive the same outward through the filler-tobacco pressed downward by said plunger, means for compelling said cam to rotate with said table for a predetermined distance and then to perform a reverse rotation in two divisions to its former position whereby said cam during the first part of its reverse motion will bring one of said inclined surfaces against the roller of the knife-blade below the plunger and then, after a stoppage, carry the other inclined surface against said roller while performing the second division of its reverse rotation, means for operating said plunger, and rolling mechanism, to receive the filler-tobacco pressed through said molds and below said blades, the surplus tobacco remaining within said molds above said blades; substantially as set forth.

6. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, the plate 101 secured to said table and having the series of radial slots 104 corresponding in number with said molds, the crank-arm 126 having the roller 127 adapted to enter said slots and effect the intermittent rotation of said plate and said feed-table, and means for turning said crank-arm 126 to perform a complete rotation, whereby upon said roller 127 emerging from one of said slots, it may be enabled to rotate to another one thereof, said plate and said table remaining in stationary position during the travel of said

roller 127 from one slot to another of said plate, combined with the plunger adapted to the pockets or molds of said table for pressing the filler-tobacco through the same, means for operating said plunger, and rolling mechanism; substantially as set forth.

7. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, the plate 101 connected with said table and having the series of radial slots 104 corresponding in number with the said pockets or molds and also having intermediate said slots the recesses 129, crank-arm 126 having the roller 127 adapted to enter and travel within the aforesaid slots, means for turning said crank-arm 126 to compel said roller to enter said slots and impart an intermittent motion to said plate and said table, and the flange 128 connected with said crank-arm for moving in and engaging said recesses during the period that said roller 127 is free of said plate whereby to lock said plate and said table at the end of each of their intermittent motions, combined with the plunger for pressing the filler-tobacco through the said pockets or molds, means for operating said plunger, and rolling mechanism; substantially as set forth.

8. In a cigar-bunching machine, the rotary feed-table having the series of pockets or molds for receiving the filler-tobacco, and means for imparting an intermittent rotary motion to said table, combined with the series of plungers 105 constituting a sectional plunger adapted to the said pockets or molds, the independent rods 131 carrying said plungers, the vertically-movable frame supporting and adapted to guide said rods, the blocks 136 on said rods and engaging a portion of said frame for normally maintaining said plungers in their initial position, the pivoted levers 142 at one end engaging said blocks and at their other end having the recessed edges, the series of springs 139 fastened at their upper end to said frame and at their lower end carrying the stirrups 141 in engagement with the recessed end of said levers for yieldingly pressing the said plungers downward, and rolling mechanism, the said stirrups being adjustable along said levers for independently regulating the tension of said springs; substantially as set forth.

9. In a cigar-bunching machine, a feed-table having a mold or pocket to receive the filler-tobacco, a knife-blade below and normally closing said pocket at its lower end, the series of plungers 105 forming a sectional plunger adapted to said mold or pocket, the independent rods 131 carrying said plungers, the vertically-movable frame supporting and guiding said rods, the blocks 136 on said rods and engaging a portion of said frame, the pivoted levers 142 at one end engaging said blocks, the series of springs 139 engaging the other end of said levers for causing the latter to exert downward pressure against said blocks, and means for moving said frame and plungers in a vertical direction, combined with means for actuating said knife-blade to sever the surplus filler-tobacco placed in said mold or pocket, rolling mechanism, and means for conveying the filler-tobacco pressed through said mold or pocket by said plungers to said rolling mechanism; substantially as set forth.

10. In a cigar-bunching machine, a feed-table having a mold or pocket to receive the filler-tobacco, a knife-blade below and normally closing said pocket at its lower end, the series of plungers 105 forming a sectional plunger adapted to said mold or pocket, the independent rods 131 carrying said plungers, the vertically-movable frame supporting and guiding said rods, the blocks 136 on said rods and engaging a portion of said frame, the pivoted levers 142 at one end engaging said blocks, the series of springs 139 engaging the other end of said levers for causing the latter to exert downward pressure against said blocks, means for independently adjusting the tension of said springs for independently regulating the pressure to be exerted by said plungers, means for moving said frame carrying said plungers in a vertical direction, combined with means for actuating said knife-blade to sever the surplus filler-tobacco placed in said mold or pocket, rolling mechanism, and means for conveying the filler-tobacco pressed through said mold or pocket by said plungers to said rolling mechanism; substantially as set forth.

11. In a cigar-bunching machine, a feed-table having a pocket or mold to receive the filler-tobacco, a plunger for pressing the filler-tobacco through said mold, rolling mechanism for rolling the bunch, and a receiver for receiving the charge of filler-tobacco pressed through said mold and conveying the same to the said rolling mechanism, said receiver comprising the frame 169, a plunger 172 forming the bottom of the cavity in the said receiver, and hinged lids 178 for closing over the upper end of said receiver after the filler-tobacco is therein, combined with the shaft 153 upon which said receiver is mounted, a vertically-movable frame carrying said shaft 153, the racks 168 connected with said plunger 172, the gear-wheels 167 on said shaft for engaging said racks and moving said plunger, means for rotating said shaft to turn said wheels 167, the sleeve 184 on said shaft and connected at one end to said receiver and at the other end having a gear-wheel 185, means for engaging said gear-wheel 185 for turning the same and reversing the said receiver, the sleeve 181 on said sleeve 184 and having at its ends the gear-wheels 180, 182, respectively, gears connected with said lids and in engagement with said gear-wheel 180 to be operated by the latter for opening and closing said lids, and means connected with said gear-wheel 182 for turning the same and effecting thereby the rotation of said gear-wheel 180 and the opening and closing of said lids; substantially as set forth.

12. In a cigar-bunching machine, the feed-table having a pocket or mold approximately in the outline of a cigar to receive the filler-tobacco, a plunger approximately in the outline of a cigar for pressing the filler-tobacco through said mold, rolling mechanism for rolling the bunch, and a receiver having a cavity approximately in the outline of a cigar for receiving the charge of filler-tobacco pressed through said mold and conveying the same to the said rolling mechanism, said receiver comprising the exterior casing or frame 169, the plunger 172 forming the bottom of the cavity in said receiver and being approximately in the outline of a cigar, and the lids for closing over the upper end of said receiver after the filler-tobacco is therein, combined with the vertically-movable frame carrying said receiver, means for moving said frame, means for opening and closing said lids, means for reversing said receiver during its vertical movement, and means for actuating the plunger within said receiver; substantially as set forth.

13. The rotary feed-table having the pockets or molds for receiving the filler-tobacco, means for imparting an intermittent rotary motion to said table, a plunger adapted to the said pockets or molds for pressing the filler-tobacco through the same, rolling mechanism, and means for conveying the filler-tobacco pressed through said molds to said rolling mechanism, said rolling mechanism comprising the flexible apron 208, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, and a pressure-blade 214 mounted to travel with and follow said roller and to engage the loop to be formed in said apron, combined with a slidable frame carrying said roller and blade, means for moving said frame, means for preventing the rotation of said roller 212 until after said blade has passed over the loop to be formed in said apron around the filler-tobacco, means for then giving said roller a rapid rotation for winding up said apron and drawing said loop down to rise against the edge of said blade, and means for then imparting a substantially uniform and less rapid rotation to said roller 212 during its continued outward travel for gradually winding up said apron; substantially as set forth.

14. The rotary feed-table having the pockets or molds for receiving the filler-tobacco, means for imparting an intermittent rotary motion to said table, a plunger adapted to said pockets or molds for pressing the filler-tobacco through the same, rolling mechanism, and means for conveying the filler-tobacco pressed through said molds to said rolling mechanism, said rolling mechanism comprising the flexible apron 208, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, the pressure-blade 214 mounted to travel with and follow said roller and to engage the loop to be formed in said apron, and a spring exerting its force against said blade in a direction opposed to the direction of travel of said blade during the rolling of a bunch, combined with a slidable frame carrying said roller and blade, means for moving said frame and means for taking up the slack in said apron; substantially as set forth.

15. The rotary feed-table having the pockets or molds for receiving the filler-tobacco, means for imparting an intermittent rotary motion to said table, a plunger adapted to the said pockets or molds for pressing the filler-tobacco through the same, rolling mechanism, and means for conveying the filler-tobacco pressed through said molds to said rolling mechanism, said rolling mechanism comprising the flexible apron 208, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, and a pressure blade 214 mounted to travel with and follow said roller and to engage the loop to be formed in said apron, combined with a slidable frame carrying said roller and blade, means for moving said frame, the gear-wheel 246 connected with said roller, the gear-wheel 248 indirectly geared to said wheel 246 and having the locking-plate 249, the rack-bar 245 having the upper teeth 251 to engage said gear-wheel 246 and also the flat plate 250 to engage said locking-plate 249 and also the lower gear-teeth 253, the segment 252 for engaging said teeth 253 of said rack-bar, and means for actuating said segment to shift said rack-bar for causing said roller to wind up said apron and draw the loop therein down to rise against said pressure-blade, said locking-plate 249 during the first portion of the outward travel of the roller 212 being in engagement with the said plate 250 and preventing the rotation of said roller, and thereafter leaving said flat plate 250 and enabling the teeth 251 of said rack-bar to engage said gear-wheel 246, the latter being then permitted to rotate and to effect the rotation of said roller 212; substantially as set forth.

16. The rotary feed-table having the pockets or molds for receiving the filler-tobacco, means for imparting an intermittent rotary motion to said table, a plunger adapted to said pockets or molds for pressing the filler-tobacco through the same, rolling mechanism, and means for conveying the filler-tobacco pressed through said molds to said rolling mech-

anism, said rolling mechanism comprising the flexible apron 209, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, the pressure-blade 214 mounted to travel with and follow said roller and to engage the loop to be formed in said apron, and means for exerting a yielding force against said blade in a direction opposed to the direction of travel of said blade during the rolling of a bunch, combined with a slidable frame carrying said roller and blade, means for moving said frame, and means for taking up the slack in said apron; substantially as set forth.

17. In a cigar-bunching machine, a feed-table having a pocket or mold to receive the filler-tobacco, a plunger for pressing the filler-tobacco through said mold, rolling mechanism, and means for conveying the filler-tobacco pressed through said mold to said rolling mechanism, said rolling mechanism comprising the flexible apron 209, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, the pressure-blade 214 mounted to travel with said roller and to engage the loop to be formed in said apron, and means for exerting a yielding force against said blade in a direction opposed to the direction of travel of said blade during the rolling of a bunch, combined with a slidable frame carrying said roller and blade, means for moving said frame, the adjusting-screws and stops for regulating the initial position of said blade with respect to said roller, and means for taking up the slack in said apron; substantially as set forth.

18. In a cigar-bunching machine, a feed-table having a pocket or mold to receive the filler-tobacco, a plunger for pressing the filler-tobacco through said mold, rolling mechanism, and means for conveying the filler-tobacco pressed through said mold to said rolling mechanism, said rolling mechanism comprising the flexible apron 209, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, the pressure-blade 214 mounted to travel with said roller and to engage the loop to be formed in said apron, and means for exerting a yielding force against said blade in a direction opposed to the direction of travel of said blade during the rolling of a bunch, combined with the slidable frame comprising the sides 223 carrying said roller, the transverse frame 238 connecting said sides, the studs secured to said blade and guided in apertures in said frame 238, adjusting means for regulating the initial position of said blade with respect to said roller, and means for moving the said frame carrying said roller and blade; substantially as set forth.

19. In a cigar-bunching machine, a feed-table having a pocket or mold to receive the filler-tobacco, a plunger for pressing the filler-tobacco through said mold, rolling mechanism, and means for conveying the filler-tobacco pressed through said mold to said rolling mechanism, said rolling mechanism comprising the flexible apron 209, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, the pressure-blade 214 mounted to travel with said roller and to engage the loop to be formed in said apron, and means for exerting a yielding force against said blade in a direction opposed to the direction of travel of said blade during the rolling of a bunch, combined with the slidable frame carrying said roller and comprising the sides 223 having the toothed lower edges, the transverse frame 238 connecting said sides, the studs connected with said blade and guided in said frame 238, adjusting means for regulating the initial position of said blade with respect to said roller, means for taking up the slack in said apron, and driving-gear engaging the lower toothed edges of said sides for moving the same and the parts carried thereby; substantially as set forth.

20. In a cigar-bunching machine, a feed-table having a pocket or mold to receive the filler-tobacco, a plunger for pressing the filler-tobacco through said mold, rolling mechanism, and means for conveying the filler-tobacco pressed through said mold to said rolling mechanism, said rolling mechanism comprising the flexible apron 209, a rolling-table upon which said apron is arranged, the roller 212 to which one end of said apron is connected, the pressure-blade 214 mounted to travel with said roller and to engage the loop to be formed in said apron, the belt 215 below said apron, and means for moving said belt in a direction reversely to that taken by said apron during the rolling of a bunch, combined with a slidable frame carrying said roller and blade, means for moving said frame, and means for taking up the slack in said apron; substantially as set forth.

707,749. PHONOGRAPH. HEINRICH WIENHAHN, BRUNSWICK, Germany. Filed Nov. 19, 1901. Serial No. 82,961. (No model.)

Claim.—1. A phonograph provided with a pair of endless chains, a series of connecting-bolts extending with one end laterally beyond the chains, and with cylinders mounted upon such laterally-projecting bolt ends, substantially as specified.

2. A phonograph provided with a pair of endless chains, a series of connecting-bolts extending with one end laterally beyond the chains, cylinders mounted upon the laterally-projecting bolt ends, a crank-shaft for rotating the chains, and an index intergeared with the crank-shaft, substantially as specified.

3. A phonograph provided with a pair of endless chains, a series of connecting-bolts extending with one end laterally beyond the chains, cylinders mounted upon the laterally-projecting bolt ends, a crank-shaft for rotating the chains, a notched disk mounted upon said shaft, a lever having a projection adapted to engage the disk, and an arm on the lever adapted to arrest the running-gear of the phonograph, substantially as specified.

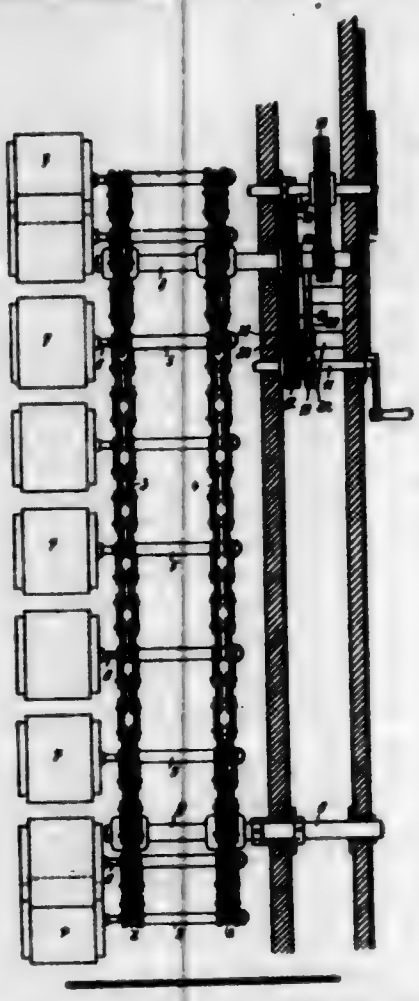

707,750. MACHINE FOR MAKING CHAIN. LUIS WERTH, London, England. Filed Feb. 25, 1902. Serial No. 95,587. (No model.)

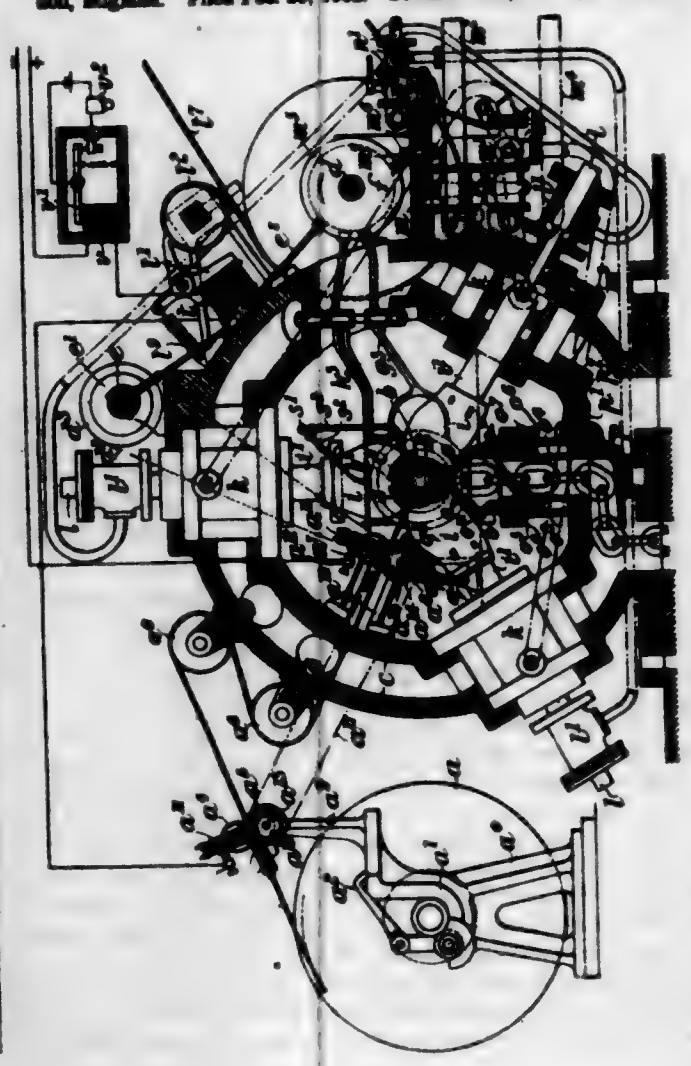

Claim.—1. In a machine for the manufacture of chain, the combination of wire-feeding mechanism, of a grooved die on which the wire is coiled, of means for rotating the die, of a series of outer dies for entering the groove and pressing the coils so as to weld them together to form a link and means for operating the dies, substantially as described.

2. In a machine for the manufacture of chain, the combination of means for heating wire, of a grooved die onto which the heated wire is coiled, the said die being in halves to release the link subsequently formed thereon, of means for moving the halves relatively, of means for rotating the die, of a series of outer dies for entering the groove and pressing the coils so as to weld them together to form a link, of means for operating the said outer dies, of rams or supports for the halves of the die while the pressure is being exerted and of means for operating them substantially as described.

3. In a machine for the manufacture of chain the combination of means for heating a wire and feeding the same to a grooved die on which the heated wire is coiled, the said die being in halves to release the link subsequently formed thereon and having slots to embrace the last-formed link, of means for moving the halves of the die relatively, of means for rotating the die, of a series of outer dies for entering the groove and pressing the coils so as to weld them together to form a link, of means for operating the said outer dies, of rams or supports for the halves of the die while the pressure is being exerted, the said rams having projections for entering the slots in the grooved die, and of means for operating the said rams, substantially as described.

4. In a machine for the manufacture of chain the combination of means for electrically heating a wire, and for feeding the same, of a grooved die on which the heated wire is coiled, the said die being in halves to release the link subsequently formed thereon and having slots to embrace the last-formed link, of means for rotating the die, of a series of outer dies for entering the groove and pressing the coils so as to weld them together to form a link, of means for operating the said outer dies, of rams or supports for the halves of the die while the pressure is being exerted, the said rams having projections for entering the slots in the grooved die, of means for operating the said rams, of a support for receiving the finished link and turning and lowering it into position to be engaged by the next formed link and of means for operating the support, substantially as described.

5. In a machine for the manufacture of chain the combination of means for electrically heating a wire and for feeding the same, of a grooved die on which the heated wire is coiled, the said die being formed in halves to release the link subsequently formed thereon and with slots to embrace the last-formed link, of means for moving the halves of the die relatively, of means for rotating the die, of a series of outer dies for entering the groove and pressing the coils so as to weld them together to form a link, of means for operating the said outer dies, of rams or supports for the halves of the die while the pressure is being exerted, the said rams having projections for entering the slots in the grooved die, of means for operating the said rams, of a support for receiving the finished link and turning and lowering it into position to be engaged by the next formed link, of means for operating the said support, of a table to receive the chain as it is formed and turn it to correspond with the movement of the last-formed link and of means for turning the table, substantially as described.

707,751. **REGISTER.** JESSE ALEXANDER, Brooklyn, N. Y., assignor of one-half to Harsden S. Skidmore, Brooklyn, N. Y. Filed Dec 20, 1901. Serial No. 86,626. (No model.)

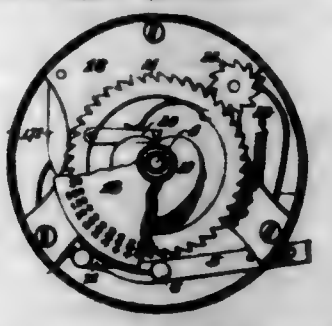

Claim.—1. In a registering apparatus, a pointer adapted to traverse a series of unit graduations, a disk having a sleeve extended therefrom and revolubly mounted upon a central arbor said pointer being carried by said sleeve, a toothed wheel lying adjacent to said disk, and means intermediate of the disk and the wheel for engaging said parts when said parts are close to each other, and means for moving one of said parts away from the other to disengage the same, and a lever for actuating said toothed wheel, and a pawl between the said lever and said toothed wheel, said pawl having a forward extension for actuating and advancing said wheel, and a rearward extension for checking said wheel to prevent its overrunning.

2. In a registering apparatus, a stationary units-dial, and graduations thereon, a rotatable internal dial below said stationary dial, and multiples of said units thereon, an opening in the stationary dial directly above the multiple graduations on the inner dial, a central arbor carrying a toothed wheel, a disk above said toothed wheel and loosely mounted on said central arbor, a sleeve carried by said disk and extended to a point above the stationary dial, a shoulder on said sleeve, a stationary internal frame, a tension-frame loosely mounted upon said sleeve and a spring between said tension-frame and said disk one end of said spring being fastened to said tension-frame and the other end to said disk, and means for letting down the tension of said spring step by step.

3. In a registering apparatus, a stationary dial having a window therein and a rotatable dial beneath the same, a central arbor, a sleeve revolubly mounted thereon, an index-hand or pointer on said sleeve, reversing devices for said sleeve and dial, movable connections between the same, a toothed wheel connected to the arbor and means for rotating said toothed wheel step by step to increase the tension of the reversing devices, and means for disconnecting said wheel from said tension devices, substantially as described.

4. In a registering device, a dial, a sleeve centrally mounted relatively thereto, a pointer carried thereby, a shoulder on said sleeve bearing against the under side of a stationary part, a disk at the lower end of said sleeve, a tension frame and spring between the stationary part and said disk, a toothed wheel loosely mounted on said sleeve, an internal dial carried by said toothed wheel, a central spindle loosely projecting through said sleeve and bearing a toothed wheel at its lower end, and means for detachably engaging said toothed wheel with said lower disk, an operating-lever and a two-armed pawl for actuating and checking the movement of the lower toothed wheel and its associated parts, and a countershaft bearing a gear in engagement with the toothed wheel on the internal dial, and another toothed wheel arranged adjacent to the lower disk when in normal position, and a tooth on said lower disk, all arranged substantially as and for the purpose described.

5. In a registering apparatus, a stationary dial bearing units-marks, a movable dial bearing marks indicating multiples of said units, a pointer and means for causing the same to traverse the stationary dial, and means for causing the internal dial to advance one step at each complete revolution of the pointer, a tension-frame and spring-actuated means to turn all of said parts back to the zero position, and means to separate the parts adjacent to said springs to afford freedom of action.

707,752. **MANUFACTURE OF SHEETS OF FLEXIBLE ELASTIC MATERIAL WHICH CANNOT BE READILY PUNCTURED.** VICTOR E. BELLEMÈRE, Paris, France. Filed Mar. 29, 1901. Serial No. 53,093. (No specimens.)

Claim.—1. The process herein described of making sheets of flexible elastic material, which comprises the steps of cleaning and dehairing the hide of a suitable animal, immersing said hide in a bath of cold crude petroleum, then immersing the same in a bath of mineral or fatty oil, permitting the hide to dry, cutting from said hide a sheet of suitable width, curling and curving said sheet, immersing the same in benzin, immersing the same in a bath of chlorid of lime, drying the sheet, and immersing the same in a solution of caoutchouc in benzin, substantially as set forth.

2. The process herein described of making sheets of flexible elastic material, which comprises the steps of cleaning and dehairing the hide of a suitable animal, immersing said hide in a bath of cold crude petroleum, then immersing the same in a bath of mineral or fatty oil, permitting the hide to dry, immersing the same in a bath of sodium or potassium silicate, cutting from said hide a sheet of suitable width, curling and curving said sheet, immersing the same in benzin, immersing the same in a bath of chlorid of lime, drying the sheet, immersing the same in a solution of caoutchouc in benzin, substantially as set forth.

707,753. **LETTER-PRESS-COPYING CLOTH AND FRAME.** LOUIS REISSAUS, Milwaukee, Wis., assignor of one-half to Karl Mueller, Milwaukee, Wis. Filed Dec. 4, 1901. Serial No. 84,897. (No model.)

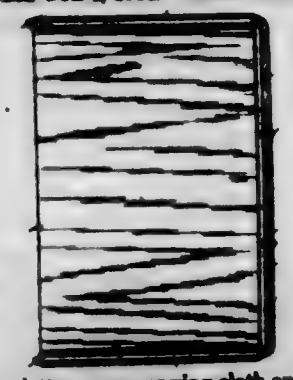

Claim.—1. In a letter-press-copying cloth and frame, the combination with a copying-cloth, of a frame comprising a main member and two

arms extending in the same direction and at angles from opposite ends of the main member, said arms having the opposite end edges of the cloth secured thereto, and the cloth drawn tight thereby, the length of the arms being such that the main member will lie parallel with and outside of the outer side edges of the leaves of the copying-press book, when the device is applied between said leaves, and the distance apart of the arms being such that said arms will lie parallel with and outside of the opposite end edges of the leaves of the book.

2. In a letter-press-copying cloth and frame, the combination with a copying-cloth, of a frame comprising a main member and two arms extending in the same direction and at angles from opposite ends of the main member, said arms having the opposite end edges of the cloth removably secured thereto and the cloth drawn tight thereby, the length of the arms being such that the main member will lie parallel with and outside of the outer side edges of the leaves of the copying-press book, when the device is applied between said leaves, and the distance apart of the arms being such that said arms will lie parallel with and outside of the end edges of the leaves of the book.

3. In a letter-press-copying cloth and frame, the combination with a copying-cloth having its opposite end edges provided with loops, of a frame comprising a main member and two arms extending in the same direction and at angles from opposite ends of the main member, said arms adapted to have the end loops of the cloth removably fitted thereon and the cloth drawn tight thereby, the length of the arms being such that the main member will lie parallel with and outside of the outer side edges of the leaves of the copying-press book, when the device is applied between said leaves, and the distance apart of the arms being such that said arms will lie parallel with and outside of the end edges of the leaves of the book.

4. In a letter-press-copying cloth and frame, the combination of a frame comprising a main member consisting of two sections extensibly fitted together, and each section having an arm extending therefrom at an angle, means for holding the sections of the main member in adjusted position, and a copying-cloth secured at opposite end edges of the arms.

5. In a letter-press-copying cloth and frame, the combination of a frame comprising a main member consisting of two sections slidably fitted together, and each section provided with apertures, any two of which may be brought into registration, and each section also provided with an arm extending at an angle therefrom, a pin adapted to be fitted in the registering apertures to thereby hold the sections in adjusted position, and a copying-cloth secured at opposite end edges to the arm.

707,754. BRUSH MECHANISM FOR DYNAMOS. WILLIAM L. RAE, Brooklyn, N. Y., assignor to Rae Electric Car Lighting Company, New York, N. Y., a Corporation of New Jersey. Filed Feb. 3, 1902. Serial No. 92,692. (No model.)

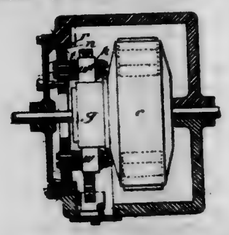

Claim.—1. The combination with a rotary armature and commutator, of brush-holders, a rocking support for the brush-holders and a removable stop for limiting the rocking movement of said support, substantially as set forth.

2. In a brush mechanism for dynamos, a rotating member, brush-holders provided with brushes, a rocking support for the said brush-holders, means for transmitting a rotatory movement to said support from said rotating member, and a removable stop for limiting the rotatory movement of said support, substantially as set forth.

3. In a brush mechanism for dynamos, a rotating member, brush-holders provided with brushes, a rocking support for said brush-holders, means for transmitting a rotatory movement to said support from said rotating member, and a removable stop for limiting the rotatory movement of the said support in each of two opposite directions, substantially as set forth.

4. The combination with a casing provided with an opening in its base and a rotary armature and commutator mounted within the casing, of brush-holders, a rocking support for the brush-holders and a removable stop for limiting the rocking movement of the said support whereby access to the several brush-holders and brushes may be obtained through the bottom of the casing, substantially as set forth.

5. Brush mechanism for dynamos comprising a ring, rolling bearings at the periphery of the ring, brush-holders carried by the ring and means for limiting the rotary movement of the ring in each of two opposite directions, substantially as set forth.

6. Brush mechanism for dynamos comprising a rotary ring, a stationary ring, a raceway intermediate of the two rings, bearing-balls located in said raceway and serving to hold the rings in rotatable relation with each other, brush-holders carried by the rotary ring and means for limiting the rotatory movement of the said rotary ring, substantially as set forth.

7. Brush mechanism for dynamos comprising an inner rotary ring, an outer stationary ring, a raceway intermediate of the two rings, bearing-balls located in said raceway, brush-holders carried by the inner ring and means for limiting the rotary movement of the inner ring in each of two opposite directions, substantially as set forth.

8. A brush mechanism for dynamos comprising a stationary outer ring, a rotary inner ring, a raceway intermediate of the two rings, bearing-balls located in said raceway and serving to hold the inner ring in position within the outer ring, brush-holders carried by the said inner ring and means for limiting the rocking movement of the inner ring in each of two opposite directions, substantially as set forth.

9. The brush mechanism for a dynamo comprising an outer ring provided with one part of a raceway in its inner face, a hole leading from the exterior surface of the ring to the part raceway, means for plugging the hole to complete the wall of the raceway, an inner ring fitted to rotate within the outer ring and provided with part of a raceway in its periphery, bearing-balls located in the raceway and serving to hold the inner ring in position with respect to the outer ring, brush-supports carried by the inner ring and means for limiting the rocking movement of the inner ring, substantially as set forth.

10. The combination with a casing and a rotary armature and commutator mounted within the casing, of an outer stationary ring fitted in an opening at the front of the casing, a removable cover for closing the opening in front of the casing, an inner ring fitted to rotate within the said outer ring, the said inner and outer rings being each formed on their adjacent faces with parts of a raceway, bearing-balls serving to hold the inner ring in position within the outer ring and means for limiting the rocking movement of the inner ring, substantially as set forth.

11. The combination with a casing and a rotary armature and commutator mounted within the casing, of an outer stationary ring fitted in an opening at the front of the casing, a removable cover for closing the opening in the front of the casing, an inner ring fitted to rotate within the said outer ring, the said inner and outer rings being each formed on their adjacent faces with parts of a raceway, bearing-balls serving to hold the inner ring in position within the outer ring and a stop carried by the said removable cover for limiting the rocking movement of the inner ring, substantially as set forth.

12. The combination with a casing provided with an open front and an opening in its base, of a rotary armature and commutator mounted within the casing, a removable cover for the front of the casing and provided with a bearing for the armature and commutator and shaft, a removable plate forming a cover for the opening in the base of the casing, an outer stationary ring fixed in the opening at the front of the casing, an inner rocking ring mounted within the outer stationary ring, brush-holders carried by the inner rocking ring in position to be manipulated through the opening in the base of the casing and a removable stop for limiting the rocking movement of the inner ring, substantially as set forth.

707,755. LUGGAGE-CARRIER. JAMES A. BRITTON, Bethlehem, Pa. Filed Oct. 17, 1901. Serial No. 78,908. (No model.)

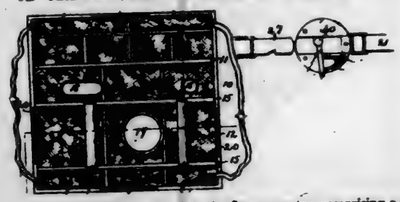

Claim.—1. A luggage-carrier for fire apparatus comprising a metallic framework, the top bars of which are provided with loops, and securing-straps connected to said framework and arranged to coact with said loops, as set forth.

2. A luggage-carrier for fire apparatus comprising a framework, the top bars of which are provided with loops, securing-straps attached to said framework and arranged to coact with said loops, and means for detachably connecting the free ends of said straps, as set forth.

3. A luggage-carrier comprising a framework forming a deep receptacle the bottom of which is curved to form a shallow extension, loops arranged upon the top bars of said framework, and securing-straps connected to said framework and arranged to coact with said loops, substantially as set forth.

4. A luggage-carrier for fire apparatus comprising a framework forming a deep receptacle the bottom of which is curved to form a shallow extension, pads or cushions arranged transversely across said deep receptacle, loops arranged upon the top bars of said framework, securing-straps connected to said framework and arranged to coact with said loops, and loops or pockets secured to the sides of said framework, substantially as set forth.

5. A luggage-carrier comprising a basket or receptacle, loops formed on the top edges thereof, straps secured to said basket, plates secured to the free ends of said straps, spring-pressed catches carried by said plates, additional straps secured to juxtaposition to said former straps, and notched members carried by the free ends of said latter straps and arranged to be engaged by said catches, substantially as set forth.

707,756. SPRING KEY OR COTTER. THOMAS S. BROWN, Poughkeepsie, N. Y. Filed May 2, 1902. Serial No. 105,594. (No model.)

Claim.—1. A spring cotter comprising a pair of arms suitably united, said arms being set out edgewise the one from the other, so that each has an edge portion projecting edgewise beyond the adjacent edge of the other.

2. A spring cotter comprising a pair of arms suitably united, said arms being at their outer ends such in outline as to its external face of approximately semi-circular outline, and as to its inner face approximately flat, said arms being set out edgewise the one from the other, but adapted to be moved edgewise to a position in which their opposing edges are in registry.

3. A spring cotter consisting of a pair of arms united by a loop, said arms being set out edgewise the one with respect to the other, the outer edge of each having an elongated recess or depressed region terminating in a shoulder near the outer end of the arm.

4. A spring cotter consisting of a pair of arms united by a loop, said arms being set out edgewise the one with respect to the other, the outer edge of each having an elongated recess or depressed region terminating in a shoulder near the outer end of the arm, and which shoulder terminates, circumferentially of said arm, at a point on the back of said arm.

5. A spring cotter consisting of a pair of arms united by a loop, said arms being of approximately semi-cylindrical section, the outer edge portion of each arm having an elongated depression terminating in a circumferentially extending shoulder at its outer end, said shoulder being of increasing height from a point at the back of the arm to a point at the edge of the arm.

6. A spring cotter consisting of a pair of arms united by a loop, said arms being set out edgewise the one with respect to the other, said arms being of approximately semi-cylindrical section, the outer edge portion of each arm having an elongated depression terminating in a circumferentially extending shoulder at its outer end, said shoulder being of increasing height from a point at the back of the arm to a point at the edge of the arm, the inner edge portion of each arm in the region opposite the shoulder being of uniform dimensions from end to end of such region.

7. A spring cotter having two arms each of approximately semi-cylindrical section, suitably united, set out edgewise from each other, each throughout its body on a line perpendicular to the plane of its flat face, of a diameter approximately half the breadth of its inner flat face at the broadest portion of the latter, each as to one lateral half of its external face of uniform dimensions from end to end, and each as to the other lateral half provided with an elongated depression terminating in a shoulder in the vicinity of its outer end.

8. A spring key or cotter consisting of a pair of arms suitably united, said arms being set out edgewise the one with respect to the other, the outer edge of one arm having a recess or depressed region terminating in a shoulder near the outer end of the arm.

9. A spring cotter or key, consisting of a pair of arms united by a loop, said arms being set out edgewise the one with respect to the other, the outer edge of one of said arms having a recess or depressed region terminating in a shoulder near the outer end of the arm, and which shoulder terminates, circumferentially of said arm, at a point on the back of said arm.

10. A spring cotter or key consisting of a pair of arms united by a loop, said arms being set out edgewise the one with respect to the other, said arms being of approximately semi-cylindrical section, the outer edge portion of one arm having an elongated depression terminating in a circumferentially extending shoulder at its outer end, said shoulder being of increasing height from a point at the back of the arm to a point at the edge of the arm.

707,757. LOCK. HENRY REYER, Woonsocket, R. I. Filed Nov. 8, 1901. Serial No. 81,776. (No model.)

Claim.—In a lock, the combination with the casing, a sliding bolt therein having a shank provided with upper edge notches, a segmental recess formed in the face of the shank, a spring having a projecting free end arranged to slide between the rear wall of the casing and rear surface of the shank, a second spring having a shoulder and a tongue, the former seated in the notches and the latter having its terminal end mounted on the free end of the first-mentioned spring, of a key having hooks on its operating end with a space between them, said space adapted to straddle the edge of the shank below the recess to permit the hooks of the key, one of which coacts with the under surface of the free projecting end of one of the springs to raise the tongue of the other spring to disengage the shoulder thereof from the notches, the other hook of the key adapted to engage the recess in the shank so as to slide the bolt forward or rearward, substantially as specified.

707,758. VALVE MECHANISM FOR WATER-HEATERS. ARTHUR ROSENAU, Allegheny, Pa. Filed Jan. 28, 1901. Serial No. 44,331. (No model.)

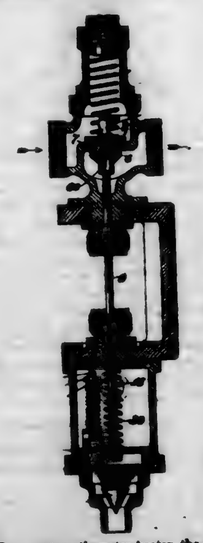

Claim.—1. In an automatic water-heater, the combination of a water-receptacle having supply and discharge pipes, burners for applying heat to the receptacle, a valve controlling the flow of gas to the burners, a valve-motor arranged in the line of flow of water to and from the receptacle and adapted to be operated by variations of pressure in the distributing-pipes and mechanism interposed between the valve and motor whereby after a certain initial movement of the motor, independent of the valve, a movement is imparted to the valve by the motor, substantially as set forth.

2. In an automatic water-heater, the combination of a water-receptacle having supply and discharge pipes, burners for applying heat to the same, a valve controlling the flow of gas to the burners, means for closing the valve to a closed position, a motor for opening the valve arranged in the line of flow of water to and from the receptacle, and adapted

to be operated by variations of pressure in the distributing-pipes, means for shifting the motor in opposition to the pressure in the distributing-pipes, and means whereby after a certain initial movement the movement of the motor is imparted to the valve, substantially as set forth.

3. In an automatic water-heater, the combination of a water-receptacle having supply and discharge pipes, burners for applying heat, to the receptacle, a valve controlling the flow of gas to the burners, means for shifting the valves to closed position, a piston operating in a cylinder arranged in the line of flow of water to and from the receptacle, said piston being operated in one direction by a flow of water through the cylinder, means for shifting the piston in the opposite direction against the pressure of water in the distributing-pipes and a rod extending from the piston to open the valve, said rod being constructed to permit an initial movement of the piston independent of the valve, substantially as set forth.

4. A water-distributing system for houses, &c., having in combination, a supply-pipe, a cold-water pipe provided with faucets connected to the supply-pipe, a water-receptacle connected to the supply-pipe, a pipe provided with faucets extending from the receptacle, burners for applying heat to the receptacle, a valve controlling the flow of gas to the burners, a valve-motor arranged in the line of flow of water to or from the receptacle and adapted to be operated by variations of pressure in the distributing-pipes, and mechanism interposed between the valve and motor whereby after a certain initial movement of the motor independent of the valve a movement is imparted to the valve by the motor, substantially as set forth.

707,759. **BOB-REFILLABLE BOTTLE.** EDWARD BURKE, Kearney, Neb. Filed Jan. 20, 1902. Serial No. 91,594. (No model.)

Claim.—1. In combination with a bottle or like package, a detector, and an inflatable suspending device connecting the detector with the cork, substantially as set forth.

2. In combination with a bottle or like package, a detector, and an expansible bulb forming a part of suspending means connecting the detector with the cork, substantially as set forth.

3. In combination with a bottle or like package, a detector for suspension therein, the same comprising a ring and a plurality of wires pivoted intermediate of the ends to the lower portion of one side of the ring and having an end of each made heavier to cause the wires to assume a horizontal position, the light ends of the said wires adapted to abut against the opposite side of the ring, substantially as set forth.

4. In combination with a bottle or like package, a detector comprising a series of pivoted wires, a cooling-cork having an extracting-loop, and suspending means between the detector and cork comprising an inflated bulb, substantially as set forth.

707,760. **OIL HEATER, STRAINER, AND SEPARATOR.** EDGAR A. BURROW, Rice, Tex. Filed Feb. 21, 1902. Serial No. 95,139. (No model.)

Claim.—1. An apparatus of the character specified, comprising a receiving or purifying chamber, heating means arranged therein, a storage or supply chamber, a pressure-chamber arranged in the last-named chamber and communicating with the receiving-chamber, connections between the receiving and storage chambers, and pressure-indicating means connected with the pressure-chamber.

2. An apparatus of the character specified, comprising a purifying-chamber, heating means arranged therein, means for supplying oil and water to the purifying-chamber, a storage-chamber, a pressure-chamber arranged in the last-named chamber and communicating with the purifying-chamber, and a pipe including straining means connecting the purifying and storage chambers.

3. An apparatus of the character specified comprising a purifying-chamber having a bottom provided with an opening, a heating-chamber secured in the opening and having its upper end closed, a closed-top storage-chamber supported by the purifying-chamber and separated therefrom by a plate having an opening, a pressure-chamber having its lower end secured in the opening and communicating with the purifying-chamber and its upper end closed, connections between the purifying and storage chambers, and a pressure-gage operatively connected with the pressure-chamber.

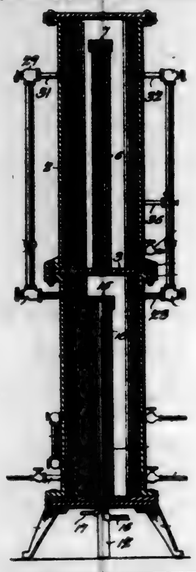

707,761. **CIRCUIT-CLOSING DEVICE.** ALBERT B. CRANDE, Centralia, Mo. Filed July 26, 1901. Serial No. 69,673. (No model.)

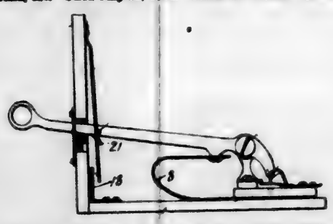

Claim.—A circuit-closing device comprising a terminal, a vertically-disposed spring-metal contact-strip secured at one end and having its free end arranged normally out of engagement with the terminal and adapted to be moved into contact therewith, a pivoted switch-lever having a long arm and a short arm, a spring acting on the long arm of the lever for normally forcing said arm upwardly, an obliquely-disposed contact-piece fixed to the strip and projecting beyond the front and rear sides of the strip, the upper and lower surfaces thereof forming reversely-inclined cams, and a contact member upon the long arm of the switch-lever adapted, when the long arm of the lever is depressed, to ride over the upper cam-surface to force the free end of the strip into engagement with the terminal, and, when said lever swings upwardly, to ride over the lower cam-surface to force the contact-piece out of the way, allowing said contact member to close said contact-piece without impediment, the resiliency of the strip causing the free end thereof to spring out of engagement with the terminal upon the disengagement of said contact piece and member, substantially as specified.

707,762. **STARTING-GATE FOR RACES.** JOSEPH P. CHEHANAL, Chantilly, France. Filed Feb. 6, 1902. Serial No. 92,732. (No model.)

Claim.—1. In a starting-gate for races, the combination of supporting-posts, a gate having arms pivotally mounted adjacent to their centers on said posts, springs oppositely disposed on each side of the pivotal centers of said arms, tilting levers having detents, lever mechanisms for bringing the gate into engagement with said detents against the tension of said springs, and means for releasing said detents, substantially as set forth.

2. In a starting-gate for races, the combination of supporting-posts, a gate having weighted arms fulcrumed adjacent to their centers, springs oppositely disposed on each side of the fulcrumed centers of said arms and secured on said supporting-posts, means for locking the gate in closed position, means for releasing the arms, pivotally-mounted cushion-frames on said posts, and means on said cushion-frames for locking the gate in open position, substantially as set forth.

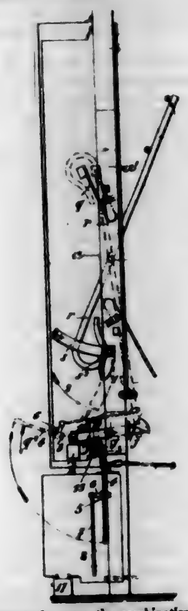

3. In a starting-gate for races, the combination of supporting-posts, a gate having arms pivotally mounted adjacent to their centers on said posts, springs oppositely disposed on each side of the pivotal centers of said arms, tilting levers having detents, lever mechanisms for bringing the gate into engagement with said detents against the tension of said springs, levers for actuating said tilting levers, and suitable electrical devices for actuating said last-mentioned levers, substantially as set forth.

707,763. **ELECTROMAGNETIC SWITCH.** JOHN L. CHEVALIER, New York, N. Y., assignor to Safety Car Heating & Lighting Company, a Corporation of New Jersey. Filed Nov. 16, 1901. Serial No. 83,716. (No model.)

Claim.—1. An electromagnetic switch including a coil receiving current from a generator, a coil adapted to receive current from a battery, the said coils being on opposite sides of an air-gap and serving to set up a plurality of fluxes diverging at the air-gap, and a device controlled from the generator for allowing means for the passage of current through the battery-coil at predetermined times.

2. An electromagnetic switch having an air-gap and adapted to close the generator-circuit and comprising in its structure a plurality of coils adapted to receive current from a generator, one of the said coils tending to set up a flux on one side of the air-gap, a coil adapted to receive current from a battery and tending to set up a flux on the other side of the air-gap, and means controlled by the generator for manipulating the circuit of the battery-coil.

3. An electromagnetic switch having a permanent air-gap and comprising in its structure a generator-coil and a battery-coil, each tending separately to set up a flux through the magnetic circuit, and whose joint effort is to set up fluxes on opposite sides of the air-gap, which fluxes diverge at the air-gap.

4. An electromagnetic switch having a permanent air-gap comprising in its structure a generator-coil and a battery-coil, each tending separately to set up a flux through the magnetic circuit, and whose joint effort is to set up fluxes on opposite sides of the air-gap, whereby the fluxes diverge at the air-gap, and means for controlling the battery-switch coil.

5. In a system of electrical distribution, the combination of a generator and battery, and electromagnetic means for controlling a circuit, comprising a generator-switch coil, a battery-switch coil whose joint effort is to set up fluxes on opposite sides of the air-gap, and diverging at the air-gap, and automatic means for manipulating the circuit of the battery-switch coil.

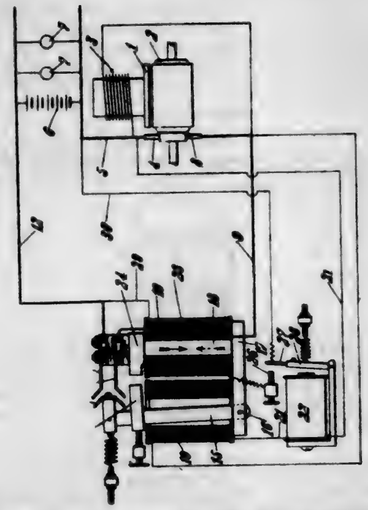

6. In a system of electrical distribution, the combination of a generator and battery, with a switch having a permanent air-gap, a coil in shunt to the generator, a coil in shunt to the battery and opposing the first-named coil, and whose joint effort is to set up fluxes on opposite sides of the air-gap, and diverging at the air-gap, a coil in series with the generator, and means for manipulating the current through the said coil, so that the said coil will oppose the battery-coil when current flows from the generator to the battery, and will aid the battery-coil when current flows from the battery to the armature of the generator.

7. In a system of electrical distribution, the combination of a generator and battery, an electromagnetic switch having a permanent air-gap and receiving current from the generator and the battery, the influence of said currents setting up separate magnetic fluxes on opposite sides of the permanent air-gap in the magnetic circuit of said switch.

8. A main switch containing a magnetic circuit of high permeability, and an air-gap, and receiving current from a battery and from a generator, each of said currents when acting alone tending to establish fluxes throughout said circuit in opposite directions, but the resultant effort causing diversion of the magnetic fluxes at the air-gap.

9. A circuit containing a generator and storage battery, and an electromagnetic switch having a permanent air-gap, a coil in shunt to the generator, and a coil in series with the generator, and a coil in shunt to the battery establishing a single flux in the switch when all the coils are active, and tending to set up independent fluxes in different limbs of the magnetic circuit when the coil in series with the generator is inactive.

10. A switch having a magnetic circuit comprising two members with an air-gap between them, one member having its flux established by a winding in shunt to the generator, the other member having a winding deriving current from a battery and a winding in series with the generator.

11. A system of electrical distribution embodying a line-switch comprising in its structure a coil in shunt to the generator-mains, a coil deriving current from the battery, the said coils opposing each other and tending to initiate a plurality of fluxes on opposite sides of the air-gap of the magnetic circuit and a coil in series with the generator.

12. An electromagnetic switch comprising a magnetic circuit including two limbs separated by a permanent air-gap, a coil establishing a flux through one limb on one side of the air-gap, an opposing coil establishing a flux through the other limb on the opposite side of the air-gap, and a coil opposing one of the said coils and tending to set up a single flux in the magnetic circuit.

13. The combination in a switch of two members of high permeability with a permanent air-gap, one fixed and the other movable, one member being surrounded with a coil in shunt to the generator, and the other member being surrounded with a coil in series with the generator and a coil in shunt to the battery.

14. A line-switch embodying fixed and movable parts separated by a permanent air-gap, a coil in shunt to a generator, and a coil receiving

current from a battery, the said coils tending to set up independent fluxes in the switch, and diverging at the air-gap, one of the said coils tending to polarize the movable part.

15. A line-switch embodying fixed and movable parts separated by a permanent air-gap, polarizing-coils therefor, the said coils tending to set up independent fluxes, and an opposing coil for one of the said coils, whereby when two of the coils are in action, a plurality of fluxes will be established, and when all three of the coils are in action they will jointly tend to establish a single flux.

707,764. EXPANSIBLE STOPPER. REINALD L. S. DOERRY, East Orange, N. J., assignor to Standard Varnish Works, New York, N. Y., a Corporation of New York. Filed Apr. 3, 1902. Serial No. 101,870. (No model.)

Claim.—1. An expansible stopper comprising a plug having a circumferential groove around its top, an elastic ring seated in said groove and projecting above the top of the plug in tapered form, a pressure-plate engaging the ring and a handle-screw passing through the pressure-plate and engaging the plug for drawing the plate and plug together to expand the ring, substantially as set forth.

2. An expansible stopper comprising a plug, an elastic ring having its lower portion stretched around the top of the plug and its upper portion brought into tapered form by the stretching of the ring over the plug, a pressure-plate engaging the upper edge of the ring, and a handle-screw passing through the pressure-plate and engaging the plug for drawing the plate and plug together to expand the ring, substantially as set forth.

3. An expansible stopper comprising a plug, a pressure-plate, an interposed elastic ring, a screw for drawing the plate and plug together to expand the ring, the said plate having a depending annular flange engaging the ring, and an uprising annular flange engaging the handle of the said screw, substantially as set forth.

707,765. DRIER. DAVID W. BLAKE, Minneapolis, Minn. Filed Aug. 23, 1901. Serial No. 73,093. (No model.)

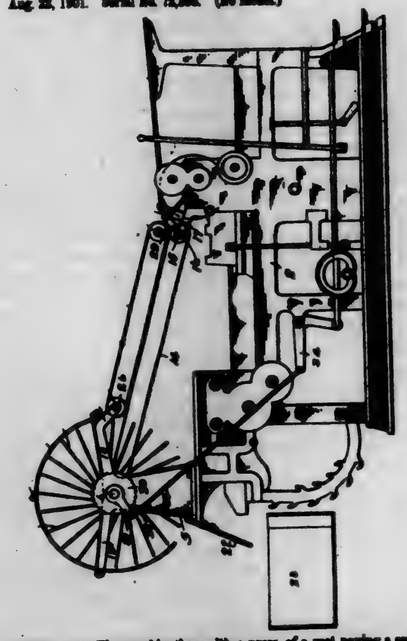

Claim.—1. The combination, with a press, of a reel having a series of fingers, means for revolving said reel step by step, carrier-belts extending between the fingers for automatically conveying the printed sheets therein where they are picked up by said fingers, one row being appropriated for each sheet, substantially as described.

2. The combination, with a press, of a reel having a series of fingers, means extending between the fingers for revolving said reel step by step, means for automatically conveying the printed sheets therein to be picked up one at a time by the moving fingers, one row being appropriated for each sheet, and means for preventing the premature discharge of the sheets from said reel.

3. The combination with a press, of a reel having hollow fingers, means for revolving said reel step by step, means for delivering the printed sheets to said fingers, one row of fingers being appropriated for each sheet, means for delivering hot air to said hollow fingers, and means for holding the sheets thereon, substantially as described.

4. The combination with a press, of a reel comprising a shaft, provided with a series of hubs arranged at intervals thereon and having fingers substantially tangential with respect to their hubs and said shaft, means for revolving said reel step by step, feed-belts extending between said hubs, the upper sections of said belts at their points of delivery being substantially parallel with the adjacent horizontal row of fingers, substantially as described and for the purpose specified.

5. The combination with a press, of a reel having a series of fingers, means for revolving said reel step by step, carrier-belts extending between the vertical rows of fingers and wherefrom the sheets are picked up one at a time by said fingers as the reel revolves, guide-belts provided above said carrier-belts, and means for preventing the premature discharge of the sheets from said reel, substantially as described.

6. The combination with a press, of a reel having a hollow shaft and hollow fingers communicating therewith and provided with perforations, means for delivering hot air to said shaft, means for slowly revolving said reel, means for delivering the printed sheets to said fingers, one row being appropriated for each sheet, and a suitable guard inclosing the upper portion of said reel and having a discharge-opening for the sheets in its lower side, substantially as described.

7. The combination with a press, of a reel mounted thereon and comprising a shaft provided with a series of hubs arranged at intervals and having a series of fingers, means for revolving said shaft step by step, pulleys provided on said shaft between said hubs and on the press-frame, and feed-belts connecting the opposite pulleys, substantially as described.

8. The combination with a press, of a reel mounted thereon and comprising a shaft provided with a series of hubs arranged at intervals and having a series of fingers, means for revolving said shaft step by step, pulleys provided on said shaft between said hubs and on the press-frame, feed-belts connecting the opposite pulleys, and guiding-belts provided above said feed-belts, substantially as described.

9. The combination with a press, of a shaft mounted thereon, means for revolving said shaft step by step, hubs secured on said shaft, a series of fingers for each hub, a guard extending above said fingers and having a discharge-opening in its lower side, pulleys adjustably arranged on said shaft between said hubs, corresponding pulleys provided on the press-frame, and feed-belts connecting the opposite pulleys and adapted to carry the printed sheets from the press in between the horizontal rows of fingers to be gathered up thereby, substantially as described.

10. The combination, with a press, of a revolving paper-drier having a series of paper-supports, moving carriers projecting into the space between the fingers for automatically conveying the freshly-printed sheets thereon to be lifted up thereby, one row being appropriated for each sheet and each sheet being out of contact with the other sheets.

11. The combination, with a press, of a revolving drier having a series of paper-supports, means extending into the space between said supports for conveying the freshly-printed sheets thereon to be picked up as said supports pass said means, each sheet being kept out of contact with the others, and means for preventing the premature discharge of the sheets from said supports.

707,766. CIGARETTE-MACHINE. GUIO FERRARI, Philadelphia, Pa. Filed Mar. 31, 1902. Serial No. 99,341. (No model.)

Claim.—1. In a cigarette-machine, a paper-feeding mechanism, comprising a table over which the paper is adapted to travel, a block, an arm, means for holding said block in frictional contact with said arm, means for reciprocating said arm and block in a horizontal plane on and above said table, and means for limiting the reciprocatory movement of said block, substantially as and for the purposes described.

2. In a cigarette-machine, a paper-feeding mechanism, comprising a block, an arm controlling said block, means for raising and lowering said arm, means for reciprocating the arm and block in a horizontal plane, and means for holding the block in frictional engagement with said arm, substantially as and for the purposes described.

3. In a cigarette-machine, a paper-feeding mechanism, comprising a table over which the paper is adapted to travel, a frame secured to said table, a block arranged within the frame, an arm adapted to raise and lower and to reciprocate said block in a horizontal plane within said frame, said frame being adapted to limit the reciprocatory movement of said block and to shift the same on said arm, substantially as and for the purposes described.

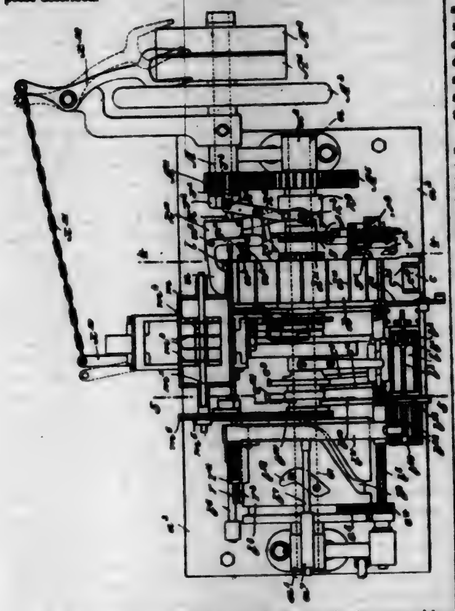

4. In a cigarette-machine, a paper-feeding mechanism, comprising a table over which the paper is adapted to be fed, a frame secured to said table, a block, an arm adapted to raise and lower and to reciprocate said block in a horizontal plane within said frame, and adjustable means carried by said frame and adapted to limit and regulate the forward movement of said block in said frame, substantially as and for the purposes described.

5. In a cigarette-machine, a paper-feeding mechanism, comprising a block, an arm adapted to raise and lower and to reciprocate said block, a bar carried by said block adjacent to said arm, a spring resting on said bar, and a screw adjustable in said block, said screw being adapted to regulate the frictional contact of said bar with said arm and to allow the shifting of said block on said arm, substantially as and for the purposes described.

6. In a cigarette-machine, a paper-feeding mechanism, comprising a block, an arm having notches and adapted to raise and lower and to reciprocate said block, a bar carried by said block having projections at either end and resting on said arm, a spring adapted to depress said bar into engagement with said arm, an adjusting-screw adapted to engage said spring, a table, and a frame secured to said table and within which said block is adapted to reciprocate, said frame constituting a means for shifting said block on said arm so as to bring one of the projections of said bar into engagement with one of the notches of said arm at the backward movement of said block and to disengage the same at the completion of the forward movement of said block, substantially as and for the purposes described.

7. In a cigarette-machine, a paper-feeding mechanism, comprising a table over which the paper is adapted to travel, a block, an arm adapted to raise and lower said block and to reciprocate the same in a horizontal plane to thereby bring at intervals said block into and out of engagement with the paper and to shift the paper in one direction only, a frame within which said block travels and beneath which the paper is fed, and adjusting-screws located in the frame and adapted to limit the reciprocatory movement of said block and to vary the travel of said block to feed the paper forward for varying lengths, substantially as and for the purposes described.

8. In a cigarette-machine in combination with a tube-holder and tube-forming mechanism, a paper-feeding mechanism, comprising a table, a second table arranged adjacent thereto and over both of which tables the paper is adapted to travel, a block adapted to feed the paper forward from one table to the other, a latch adapted to oscillate between said tables and to cover the paper thereon, and means adapted to shift the covered portion of said paper transversely over the second table into said tube-holder and into engagement with said tube-forming mechanism, substantially as and for the purposes described.

9. In a cigarette-machine, a tube-holder, comprising a disk carrying a projecting rim or annulus, openings or mobile arranged in said annulus, said mobile being slotted through the periphery of the annulus, a ring secured to said disk, a continuously-rotating power-shaft upon which the disk is loosely supported, means controlled by said power-shaft to engage said ring and to transmit to the same and the disk an intermittent motion and to lock the ring and disk after each intermittent movement, substantially as and for the purposes described.

10. In a cigarette-machine, a tube-holder, comprising a disk having a laterally-projecting rim or annulus, mobile arranged in said rim and provided with slots traversing the annulus, a ring secured to said disk and having alternate notches and curved portions, a continuously-rotating power-shaft loosely supporting said tube-holder, and means controlled by said shaft adapted alternately to engage said notches and curved portions to impart to the ring and tube-holder an intermittent motion and to lock the same after each consecutive movement, substantially as and for the purposes described.

11. In a cigarette-machine, a tube holder or carrier, comprising a disk and a projecting rim or annulus integral therewith, slotted mobile formed in said rim or annulus, a ring carried by said disk and having alternate notched and curved portions at its inner edge, said curved portions being of a radius less than the radius of said disk, a wheel having a tooth adapted to engage the notches and having its periphery intermittently in engagement with the curved portions of said ring, substantially as and for the purposes described.

12. In a cigarette-machine, a tube holder or carrier, comprising a disk carrying an annulus in which the slotted mobile are formed, a continuously-rotating power-shaft upon which said disk and annulus are loosely supported, a ring carried by said disk and having notches in its interior periphery and curved portions between said notches, a single-toothed wheel of a radius corresponding to the radius of the curved portions of said ring, a gear-wheel adapted to travel with said single-toothed wheel, a shaft carrying both of said wheels and a gear-wheel secured to said power-shaft and meshing with the gear-wheel secured to said single-toothed wheel so as to transmit the motion of the power-shaft to said single-toothed wheel and to cause the same to engage with its teeth the notches of said ring and to change the rotary movement of said power-shaft into an intermittent movement of the tube-holder, substantially as and for the purposes described.

13. In a cigarette-machine, a tube holder or carrier comprising a disk and a projecting rim or annulus in which the slotted mobile are formed, a ring having alternate notched and curved portions and secured to said disk, a continuously-rotating power-shaft upon which the tube-holder is loosely supported, a shaft arranged below said power-shaft, a single-toothed wheel carried by said shaft and alternately engaging with its teeth the notches and with its periphery the curved portions of said ring, gear-wheels connecting the power-shaft and toothed-wheel shaft so as to transmit the rotary movement of said power-shaft to said single-toothed wheel and to impart through the same to the ring and tube-holder a step-by-step movement and to lock the same and the tube-holder against movement, substantially as and for the purposes described.

14. In a cigarette-machine, a mechanism for tucking in the end of a paper tube, comprising a wedge and a latch, means for imparting to said wedge a lateral and forward movement independent of the latch and means adapted to reciprocate said latch and oscillate the same independently of the wedge, substantially as and for the purposes described.

15. In a cigarette-machine, a tucking mechanism, comprising a wedge, a plate supporting said wedge and means adapted to move said plate and wedge both laterally and forwardly, substantially as and for the purposes described.

16. In a cigarette-machine, a tucking mechanism, comprising a wedge, a plate supporting said wedge and having an oblique slot, a horizontally-reciprocating slide adapted to engage the oblique slot of said plate and to impart to said plate and wedge reciprocatory and lateral movements in succession, substantially as and for the purposes described.

17. In a cigarette-machine, a tucking mechanism, comprising a wedge, a plate supporting said wedge having an oblique slot and angular-shaped slots arranged therein, a horizontally-reciprocating slide adapted to engage said oblique slot, a standard, bolts carried by said standard adapted to engage said angular slots, said angular slots being arranged so that when a reciprocatory movement is imparted to said plate by said slide the plate and wedge are first moved laterally and then forward, substantially as and for the purposes described.

18. In a cigarette-machine, a tube shifting and clamping mechanism, comprising a rod adapted to engage the tube at one end, an arm carried by said rod adapted to engage the paper tube at the opposite end,

and means adapted to reciprocate said rod, arm and tube, substantially as and for the purposes described.

19. In a cigarette-machine, a tube shifting and clamping mechanism comprising a rod adapted to engage the tube at one end, an arm adapted to engage the tube at the other end, a ferrule, a spring normally tending to shift said rod, arm and tube until the tube and arm are in engagement with said ferrule, and means adapted to retract said rod and arm and to bring said paper tube out of engagement with said ferrule, substantially as and for the purposes described.

20. In a cigarette-machine, a tube shifting and clamping mechanism, comprising a rod having an arm, said rod and arm adapted to engage a tube at opposite ends, a housing within which said rod and arm are adapted to reciprocate, and a clamp carried by said housing and adapted to be controlled by said arm so as to engage said tube, substantially as and for the purposes described.

21. In a cigarette-machine, a combined tube shifting and clamping mechanism, comprising a rod carrying an arm, said rod and arm adapted to engage a tube at opposite ends, a housing within which said rod and arm are adapted to slide, a clamp carried by said housing, means adapted to normally hold said clamp out of engagement with said tube, and means adapted to bring said clamp into engagement with said tube, substantially as and for the purposes described.

22. In a cigarette-machine, a combined tube shifting and clamping mechanism, comprising a rod and an arm adapted to engage a tube at opposite ends, a tube-holder, a housing within which said rod and arm are adapted to slide, a clamp carried by said housing and having an engagement with said arm, a spring normally tending to hold said clamp out of engagement with the paper tube in said tube-holder, a ferrule, a spring adapted to shift the arm and tube into engagement with the ferrule, and means adapted to retract said rod and arm to thereby disengage said tube from said ferrule and bring said arm into engagement with said clamp and to move the clamp into engagement with said tube, whereby the tube is held against displacement in said tube-holder, substantially as and for the purposes described.

23. In a cigarette-machine, a clamping mechanism, comprising two pivoted arms each having a jaw, a ferrule, means normally tending to close said jaws to bring the same into engagement with said ferrule, and means adapted to open said jaws and to disengage the same from said ferrule, substantially as and for the purposes described.

24. In a cigarette-machine, a clamping mechanism, comprising two arms each provided with a jaw and an indentation or groove, a ferrule adapted to receive the end of a paper tube, a spring normally tending to move the arms toward each other to bring the jaws into engagement with the paper tube so as to clamp said tube to said ferrule, a bolt normally tending in conjunction with the indentations or grooves to open said arms and to disengage the same from the ferrule and tube, and means adapted to alternately bring said bolt into and out of engagement with said indentations or grooves, substantially as and for the purposes described.

25. In a cigarette-machine, a combined tobacco feeding and compressing mechanism, comprising a chamber, a block forming one side of the chamber and having an obliquely-projecting rib, a slide arranged in said chamber opposite said block, a hopper adapted to contain tobacco located above said block and slide, an outlet-opening arranged in said hopper adapted to feed the tobacco partially to said projecting rib and in part directly to the chamber, and means controlled by the power-shaft of the machine adapted to reciprocate said block and slide within said chamber, substantially as and for the purposes described.

26. In a cigarette-machine, a combined tobacco feeding and compressing mechanism, comprising a chamber, a block at one side of the chamber having an obliquely-projecting rib, a slide arranged opposite said block in said chamber, a groove arranged in the bottom of said chamber, a hopper adapted to contain tobacco and located above said block and slide, an outlet-opening arranged in said hopper adapted to feed tobacco in part directly to said chamber and partially on the projecting rib, said rib being adapted to guide the greater quantity of tobacco toward the front of said chamber, substantially as and for the purposes described.

27. In a cigarette-machine, a combined tobacco feeding and compressing mechanism, comprising a block having a projecting rib located in a chamber, a slide arranged opposite said block in said chamber and having a groove, a groove arranged in the bottom of said chamber below said slide, a hopper adapted to contain tobacco and to feed the same to said chamber and to said rib, said block being adapted to shift said tobacco in said chamber toward and into said groove, and said slide adapted to compress the tobacco shifted into said groove, substantially as and for the purposes described.

28. In a cigarette-machine, a combined tobacco feeding and compressing mechanism, comprising a block having a projecting rib located in a chamber, a slide arranged in said chamber having a groove, a groove arranged in the bottom of said chamber opposite said slide, a hopper located above the chamber and adapted to feed tobacco to the same, means adapted to reciprocate said block and slide within said chamber to shift the tobacco into said groove and to compress the same therein, and means adapted to regulate the degree of compression imparted to the tobacco in said groove, substantially as and for the purposes described.

29. In a cigarette-machine, a combined tobacco-compressing mechanism, comprising a tobacco feeding and compressing chamber, a slide arranged within said chamber, a second slide arranged outside of said chamber and adapted to actuate said first slide, and means adapted to clamp the same together and to adjust their position with respect to each other, substantially as and for the purposes described.

30. In a cigarette-machine, a combined tobacco-compressing mechanism, comprising a slide located in a chamber and adapted to compress tobacco fed thereto, an opening arranged in said compressing-slide, a bolt engaging the opening in said compressing-slide, a slide adapted to actuate said compression-slide having an elongated opening, a bushing engaging said elongated opening in said actuating-slide and having an eccentrically-arranged opening through which said bolt passes, said bushing adapted when turned in the elongated opening to adjust said bolt and said compression-slide in a vertical plane with respect to the actuating-slide to regulate the degree of compression imparted to the tobacco by said compression-slide, substantially as and for the purposes described.

31. In a cigarette-machine, a combined tobacco-ejecting mechanism, comprising a plunger-rod, a chamber, a compression-slide adapted to hold tobacco under compression therein, in combination with a ferrule registering with the compressed tobacco in said chamber, a holder adapted to present a tube to said ferrule, arms adapted to clamp the end of said tube to said ferrule, and means adapted to impart to said plunger-rod, a reciprocatory and step-by-step movement to eject said tobacco from said chamber into said paper tube, substantially as and for the purposes described.

32. In a cigarette-machine, a combined tobacco-ejecting mechanism, comprising a plunger-rod, a chamber, a compression-slide adapted to hold the tobacco under compression therein in a position in alinement with the plunger-rod, in combination with a ferrule carried by the housing of said chamber and arranged in alinement with said tobacco, a tube-holder adapted to present a paper tube to said ferrule, arms adapted to clamp the end of the paper tube to said ferrule, a bail, loosely supporting said plunger-rod, a bracket carried by said bail, having a slide to which said plunger-rod is fastened, a drum adapted to impart to said bail and plunger-rod a forward movement and an auxiliary cam secured to said drum adapted to impart to said slide and plunger-rod a movement at the completion of the forward movement of the plunger-rod by said drum, substantially as and for the purposes described.

707,767. TOBACCO-MEASURING MECHANISM FOR CIGARETTE-MACHINES. Guzzo Ferrari, Philadelphia, Pa. Original application filed Mar. 21, 1902, Serial No. 99,341. Divided and this application filed May 12, 1902. Serial No. 106,967. (No model.)

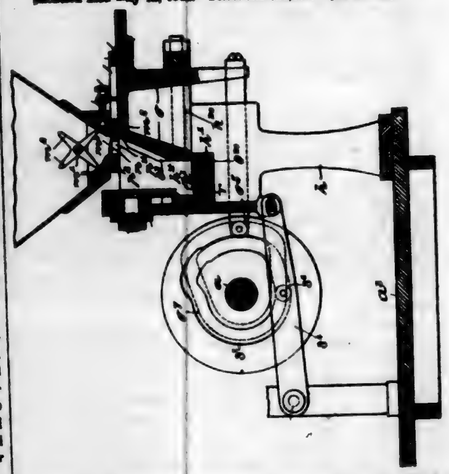

Claim.—1. In a cigarette-machine, a combined tobacco agitating feeding and measuring mechanism having a hopper, in combination with a knife normally closing an opening arranged in the hopper of said mechanism, a frame provided with a chamber arranged below said knife and adapted to receive the tobacco fed from the hopper and measure the same, a block arranged below said frame and forming in conjunction with said frame the measuring-chamber, and means adapted to reciprocate said block and knife, substantially as and for the purposes described.

2. In a cigarette-machine, a combined tobacco agitating feeding and measuring mechanism, comprising a hopper adapted to contain the tobacco, a continuously-rotating shaft arranged in the hopper, arms or wings secured to the shaft adapted to loosen and to break up the tobacco in said hopper, an outlet-opening arranged in said hopper, a knife adapted to normally close said opening, a reciprocating slide to which said knife is fixed, a frame secured to an extension of said hopper and having a bar arranged below said knife, said extension, frame and bar forming a tobacco-measuring chamber, and means adapted to shift said frame and bar with respect to the extension of said hopper to increase or decrease the size of said chamber and to thereby regulate the quantity of tobacco received therein, substantially as and for the purposes described.

3. In a cigarette-machine, a combined tobacco agitating, feeding and measuring mechanism, comprising a hopper adapted to contain the tobacco, an outlet-opening arranged in said hopper, means located in said hopper adapted to loosen the tobacco and to feed the same to said outlet-opening, means located below said outlet-opening adapted to open and close the same, means located below and opposite said outlet-opening having a chamber adapted to receive the tobacco fed thereto from said hopper, means adapted to reciprocate the means for closing the outlet-opening of said hopper and means adapted to disengage said closing means from the operating means to maintain said outlet-opening closed and to cut off the tobacco fed from said hopper into the tobacco-receiving chamber, substantially as and for the purposes described.

4. In a cigarette-machine, a combined tobacco agitating, feeding and measuring mechanism, comprising a hopper adapted to contain the tobacco, a continuously-rotating shaft located in said hopper, arms or wings secured to said shaft and rotating therewith to loosen the tobacco in said hopper, an outlet-opening arranged in said hopper, a reciprocating slide having a knife adapted to open and close said opening, a frame secured to an extension of said hopper having a bar arranged below said knife, said extension, frame and bar forming a tobacco-measuring chamber, a screw engaging said frame and adapted to shift the same with respect to the extension of said hopper to thereby increase or decrease the size of said chamber and the quantity of tobacco to be received therein, a block arranged below said frame adapted to close the same at its lower end, a bar securing said block to the slide having said knife, and means adapted to reciprocate said block actuating said slide and knife to alternately open the outlet-opening of said hopper or to close the same, substantially as and for the purposes described.

707,768. AUTOMATIC STOP MECHANISM FOR CIGARETTE-MACHINES. Guzzo Ferrari, Philadelphia, Pa. Original application filed Mar. 21, 1902, Serial No. 99,341. Divided and this application filed May 12, 1902. Serial No. 106,968. (No model.)

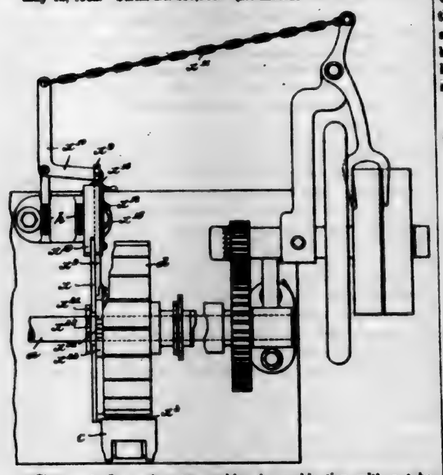

Claim.—1. In a cigarette-machine, in combination with a tube-holder, an automatic stop mechanism, comprising a lever having a knife, means normally tending to elevate said lever and knife, means controlled by the power-shaft for alternately depressing and freeing said lever to permit of a raising of the same, said knife being arranged to be arrested in its upward movement by paper fed to said tube-holder, means connected with said lever and a bolt-shifter, and means operated by the power-shaft adapted to actuate said means and bolt-shifter, when said lever and knife are not arrested by the paper, substantially as and for the purposes described.

2. In a cigarette-machine, in combination with a tube-holder, an automatic stop mechanism, comprising a lever carrying a knife, means normally tending to elevate said lever and knife, means actuated by the power-shaft, said means adapted to arrest the knife in its upward movement when paper is fed to said tube-holder, means connected with said lever and a bolt-shifter adapted to be raised by said lever, means operated by the power-shaft adapted to engage said means raised by said lever and to shift the same and the bolt-shifter, when said knife is not interrupted in its upward movement by said paper, substantially as and for the purposes described.

3. In a cigarette-machine, in combination with a tube-holder, an automatic stop mechanism, comprising a lever carrying a knife, means normally tending to elevate said lever and knife, means arranged on said power-shaft, which during a certain period of its rotation is adapted to arrest the upward movement of said lever and knife, means connected with a bolt-shifter and said lever and operated by said lever, means controlled by the power-shaft adapted to engage said means controlled by said lever and to shift the same and the bolt-shifter, when said lever is not arrested in its upward movement by paper normally fed to said tube-holder, and means adapted to lock the bolt-shifting means in its operative position, substantially as and for the purposes described.

4. In a cigarette-machine, in combination with a tube-holder, an automatic stop mechanism, comprising a lever having a knife, a spring normally tending to elevate said lever, a cam arranged on the power-shaft adapted to alternately depress said lever and to permit of the raising of the same by said spring, said knife being arranged to be arrested by paper fed to said tube-holder, a pawl in engagement with said lever, a disk arranged on said shaft having teeth, a slide connected with said pawl, a bell-crank lever connected with said slide, a bolt-shifter, a chain connecting said bolt-shifter with said bell-crank lever, said lever being adapted to raise the pawl of said slide and to bring the same into engagement with the teeth of said disk when not arrested in its upward movement by said paper, substantially as and for the purposes described.

5. In a cigarette-machine, in combination with a tube-holder, an automatic stop mechanism, comprising a lever having a knife, a spring normally tending to elevate said lever, a cam controlled by the power-shaft and adapted to alternately depress said lever and to permit of the raising of the same by said spring, a pawl connected with said lever, a slide connected with said pawl, a bell-crank lever connected with said slide, a bolt-shifter, a chain connecting said bolt-shifter and bell-crank lever, a latch normally held out of engagement with said slide, and a disk controlled by said power-shaft, said lever and knife adapted to be arrested in their upward movement by paper fed to said tube-holder, and when said paper is not in position to allow of the upward movement thereof to bring said pawl into engagement with the teeth of said disk and to impart to said pawl and slide a forward movement to operate said bolt-shifter and to bring said latch into engagement with said slide to lock the same and the bolt-shifter in operative position, substantially as and for the purposes described.

707,769. CLUTCH MECHANISM. Guzzo Ferrari, Philadelphia, Pa. Filed May 12, 1902. Serial No. 106,969. (No model.)

Claim.—In a clutch mechanism, a driven shaft provided with an internal chamber and slot, a pin or bolt extending through said shaft, a ratcheted sleeve mounted on said shaft, a pin or bolt arranged in said sleeve and passing through the slot of said shaft, a ratcheted gear-wheel loosely mounted on said shaft, and a spring mounted in the chamber of said shaft, the respective ends of which are connected with the pins of said shaft and sleeve, substantially as and for the purposes described.

707,770. PRINTING-PRESS. Herbert Gally, Brooklyn, N. Y. Filed Apr. 16, 1902. Serial No. 103,022. (No model.)

Claim.—1. In the form-roller carriage of a printing-press, a roller journal-box; having a catch-pin forming a part thereof, and projecting from its side; a lever-latch crossing the side face of the box to articulate

with the catch-pin; one arm of the lever-latch extending beyond the front of the journal-box to articulate with a tripping-step.

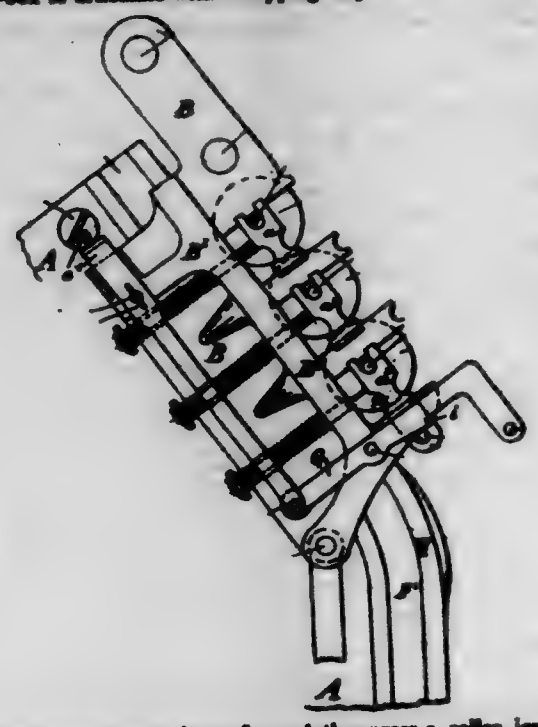

2. In the form-roller carriage of a printing-press a roller journal-box; a depression in the box, forming a finger-socket for moving the box by hand; a tripping device formed of a lever-latch and catch-pin; and an extension of the journal-box reaching below the box proper as a base for the catch-pin, to prevent the lever-latch from obstructing the finger-socket.

3. In a form-roller trip; a journal-box with latch-pin; a lever-latch, and an operating-bar movably attached thereto; the bar provided with a spring-tension device, and an opposing stop; the spring device for securing connection of the latch with its latch-pin, and the opposing stop for releasing the latch from the pin.

4. In a form-roller-tripping device for printing-presses; the combination with the roller journal-box and lever-latch; of the holding-catch; and the operating-bar with spring, connected to the lever-latch, to keep the latch in engagement with its holding-catch during the time the roller is prevented from inking the form.

5. In a form-roller-tripping device for printing-presses the combination of the roller journal-box; the lever-latch; the operating-bar movably attached to the lever-latch; the tripping-stop for giving motion to the operating-bar in one direction; and the spring for producing the return movement of the bar.

6. In a form-roller-tripping device for printing-presses; the combination with the lever-latch, of the operating-bar; the socket-spring, the follower, and means for adjusting the tension of the spring.

707,771. CURE-PLASTER. Levi P. Graham, Decatur, Ill. Filed July 8, 1902. Serial No. 114,512. (No model.)

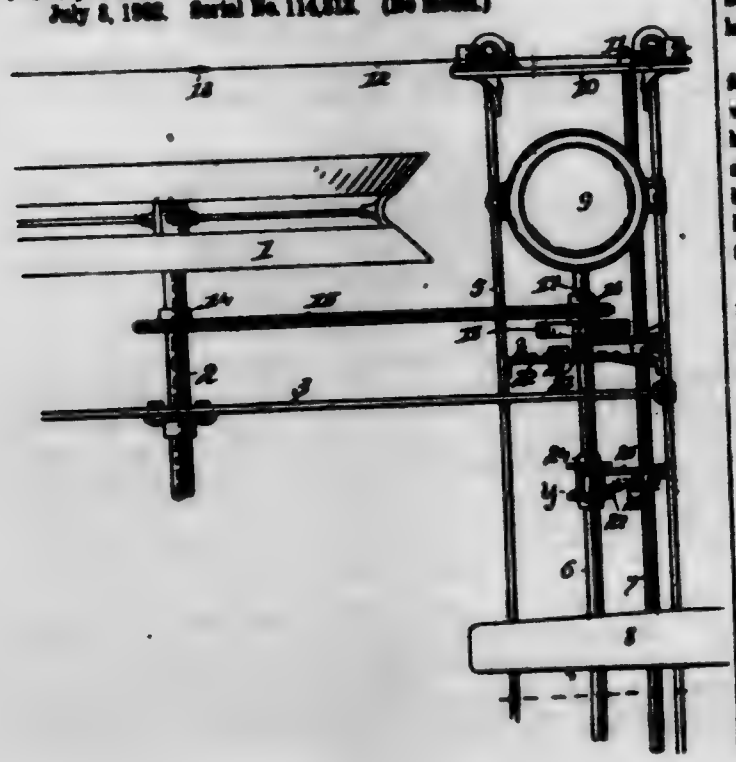

Claim.—1. In a plaster, the combination of a covering-wheel, a rotating drill-shaft, a rocking check-row shaft, a wheel journaled on the drill-shaft, means for transmitting motion from the covering-wheel to the wheel on the drill-shaft, means for rocking the check-row shaft backward, means actuated by the wheel on the drill-shaft for rocking the check-row shaft forward, and means for converting the rocking motion of the check-row shaft into intermittent rotary motion in the drill-shaft.

2. In a plaster, the combination of a covering-wheel, a rotating drill-shaft, a rocking check-row shaft, a wheel journaled on the drill-shaft means for transmitting motion from the covering-wheel to the wheel on the drill-shaft, means for rocking the check-row shaft backward, means actuated by the wheel on the drill-shaft for rocking the check-row shaft forward, means for converting the rocking motion of the check-row shaft into intermittent rotary motion in the drill-shaft, an arm on the check-row shaft and a spring exerting stored force lengthwise of the arm while the check-row shaft is rocked forward.

707,772. FOLDING BABY-CARRIAGE. Annie S. Green, Brooklyn, N. Y. Filed Dec. 12, 1901. Serial No. 86,267. (No model.)

Claim.—1. In a folding baby-carriage, the combination with a body capable of folding longitudinally and laterally, of axles formed of jointed sections, embodying body portions and side portions at right angles to the body portions which side portions overlap at the central joints of the axles when the axles are in operative position and prevent further movement.

2. In a folding baby-carriage, a combination with a body capable of folding longitudinally and laterally and of running-gear connected therewith and comprising side bars, of axles formed of jointed sections embodying body portions and side portions at right angles to the body portions which side portions are turned back at their outer ends and bear against the side bars when the axles are in operative position.

3. In a folding baby-carriage, the combination with a body capable of folding longitudinally and laterally and of running-gear connected therewith and comprising side bars, of axles formed of jointed sections embodying body portions and side portions at right angles to the body portions which side portions are turned back at their outer ends and bear against the side bars when the axles are in operative position and at their inner ends overlap each other.

4. In a folding baby-carriage, the combination with a body capable of folding longitudinally and laterally and of running-gear connected therewith and comprising side bars, of axles formed of jointed sections embodying body portions and side portions at right angles to the body portions which side portions are turned back at their outer ends and bear against the side bars when the axles are in operative position and at their inner ends overlap each other, and a coupling the opposite ends of which form the central joints of the axles and whereby the axles may be moved together.

5. In a baby-carriage provided with a folding body, a supporting-frame comprising side pieces connected with said body, and hinged cross-pieces pivoted at their outer ends to said side pieces and embodying a body portion and a side portion extending at right angles to said body portion and bent back at the outer end to bear against the side piece and one of said side portions overlapping the other when the cross-pieces are extended.

6. In a baby-carriage provided with a folding body, a supporting-frame comprising side pieces connected to said body, and hinged pivoted cross-pieces embodying a body portion and a side portion bent at one end at right angles to said body portion and the side portion of one part of said cross-pieces adapted to overlap the side portion of the other part when said cross-pieces are extended.

7. In a baby-carriage provided with a folding body, a supporting-frame comprising side pieces connected to said body, hinged pivoted cross-pieces embodying a body portion and a side portion bent at one end at right angles to said body portion and the side portion of one part of said

cross-pieces adapted to overlap the side portion of the other part when said cross-pieces are extended, and means connecting said cross-pieces.

8. In a baby-carriage provided with a folding body, a supporting-frame comprising side pieces connected to said body, cross-pieces each embodying a pair of angle-irons having their flanges at one end cut back and bent at right angles to the web which at that end is pivoted to the side pieces and at the other end the flange on one of each pair projecting and on the other of each pair cut back, and a rod pivotally connected at its opposite ends to the ends of the angle-irons having the projecting and cut-back flanges.

707,778. COIN-CONTROLLED MACHINE. PETER J. HALL and PETER S. STAUFFER, Springfield, Mass. Filed Feb. 1, 1901. Serial No. 45,620. (No model.)

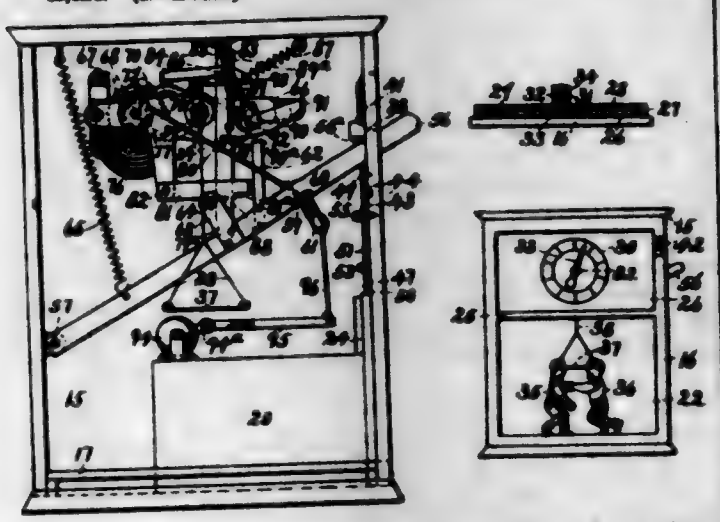

Claim.—1. In combination, a dial and a spindle carrying a pointer and a roller, a spring-actuated shoe adapted to sweep over said roller and whirl said pointer, a clock-movement having an eccentric member, one or more automatons connected with said eccentric member, an operating-lever, and means dependent for action on said lever for locking, winding and releasing said clock-movement, actuating said shoe against its spring simultaneously with the locking of the clock-movement, and releasing said shoe to the action of its spring simultaneously with the releasing of the clock-movement, substantially as set forth.

2. In combination, a clock-movement provided with an eccentric member and a spool, one or more automatons connected with said eccentric member, a bell having a lever, an operating-lever, and a cord extending between said spool and bell-lever and so connected to said operating-lever as to leave a portion of said cord slack when the operating-lever is depressed, adapted to ring said bell when wound upon the spool, substantially as set forth.

3. In combination with a lever, a second lever and a detent therefor both dependent for action upon the first lever, a rocker-arm operatively connected with said second lever, a shoe on said rocker-arm, and a spindle carrying a roller and pointer, said roller being in the path of said shoe, substantially as set forth.

4. In combination, an operating-lever 56, a lever 79 a detent for said lever 79, the two latter operated by the former, a rocker-arm operatively connected with said lever 79, a spring-actuated shoe pivotally attached to said rocker-arm, a stop on the lever 79 to limit the rocking movement of said shoe in one direction, and a spindle carrying a roller and a pointer, said roller being in the path of the shoe, substantially as set forth.

5. In combination with a clock-movement as shown, a spring-actuated lever 79, a detent 81, a lock-arm pivoted to said lever and adapted to engage and release a toothed wheel of said clock-movement, and an operating-lever arranged to actuate the first lever against its spring and permit the detent to engage this lever, and to force the detent out of such engagement again, substantially as set forth.

6. In combination with a clock-movement as shown having a spool, a spring-actuated lever 79, a detent 81, a lock-arm 84 pivoted to said lever and adapted to engage and release a toothed wheel of said clock-movement, an operating-lever 56 adapted on its downward travel to engage the lower terminal of the lever 79 and actuate it against its spring and permit said detent to engage this lever, and on its upward travel to force the detent out of such engagement again, and a cord between said operating-lever and spool to wind up the clock-movement while held by said lock-arm, substantially as set forth.

7. In combination with a clock-movement as shown having a spool and an eccentric member, a spring-actuated lever 79, a detent 81, a lock-arm 84 pivoted to said lever and adapted to engage and release a toothed wheel of said clock-movement, an operating-lever 56 adapted in its downward travel to engage the lower terminal of the lever 79 and actuate it against its spring and permit said detent to engage this lever, and on its upward travel to force the detent out of such engagement again, a cord between said operating-lever and spool to wind up the clock-movement while held by said lock-arm, and one or more automatons operatively connected with the aforesaid eccentric member, substantially as set forth.

8. In combination, a spring-actuated lever and a detent therefor, a clock-movement having a spool, a lock-arm pivotally attached to said lever, an operating-lever adapted to actuate the first lever against its spring to cause said lock-arm to engage said clock-movement, and to release said first lever from said detent to release the clock-movement, a bell provided with a lever, cord connections between said spool and bell-lever, loosely attached to said operating-lever, and a weight fastened to the same below the operating-lever, whereby the clock-movement spring is wound up by the movement in one direction of the cord connections and the bell sounded by the movement in the other direction of said connections, substantially as set forth.

9. In combination, a spring-actuated lever and a detent therefor, a clock-movement having a spool and an eccentric member, a lock-arm pivotally attached to said lever, an operating-lever adapted to actuate the first lever against its spring to cause said lock-arm to engage said clock-movement, and to release said first lever from said detent to release the clock-movement, one or more automatons operatively connected with said eccentric member, a bell provided with a lever, cord connections between said spool and bell-lever, loosely attached to said operating-lever, and a weight fastened to the same below the operating-lever, whereby the clock-movement spring is wound up by the movement in one direction of the cord connections and the bell sounded by movement in the other direction of said connections, substantially as set forth.

10. The combination, of an operating-lever, a second lever and a detent therefor both dependent for action upon the first lever, a clock-movement, a rocker-arm operatively connected with and a lock-arm pivotally attached to said second lever, a shoe on said rocker-arm, a spindle carrying a roller and pointer the former being in the path of said shoe, said lock-arm adapted to engage and release said clock-movement, one or more automatons operatively connected with the latter, and a cord between said first lever and a spool on the clock-movement to wind up the spring of the same, the actuating movement of said shoe occurring simultaneously with the initial operation of the clock-movement, substantially as described.

11. The combination, of an operating-lever, a second lever and a detent therefor both dependent for action upon the first lever, a clock-movement, a rocker-arm operatively connected with and a lock-arm pivotally attached to said second lever, a shoe on said rocker-arm, a spindle carrying a roller and pointer the former being in the path of said shoe, said lock-arm adapted to engage and release said clock-movement, one or more automatons operatively connected with the latter, a bell having a lever, and a cord or cords connecting the bell-lever and a spool on the clock-movement with said first lever and weighted below the latter, the actuating movement of said shoe occurring simultaneously with the initial operation of the clock-movement and the ringing of said bell occurring at or near the end of said operation, substantially as described.

12. A lever-controlled mechanism comprising a spring-actuated lever 79 having a cam-surface 79ª at its free terminal and provided with a pivoted lock-arm 84 and stop 86 below the same, a shouldered dog 81 adapted to engage and release said lever, and an operating-lever 56 provided with a member to engage said cam-surface during the first part of the downward travel of said operating-lever, and actuate the lever 79 until locked by said dog, and to engage and force said dog out of locking engagement with the lever 79, at the end of the upward travel of the operating-lever, substantially as shown.

13. A lever-controlled mechanism comprising a spring-actuated lever 79 having a cam-surface 79ª at its free terminal and provided with a pivoted lock-arm 84 and stop 86 below the same, a shouldered dog 81 adapted to engage and release said lever, an operating-lever 56 provided with a member to engage said cam-surface during the first part of the downward travel of said operating-lever, and actuate the lever 79 until locked by said dog, and to engage and force said dog out of locking engagement with the lever 79, at the end of the upward travel of the operating-lever, and a shoe-carrying rod 89 having a downwardly-extending terminal in operative connection with the lever 79, substantially as shown.

14. In combination with a clock-movement, a lever-controlled mechanism comprising a spring-actuated lever 79 having a cam-surface 79ª at its free terminal and provided with a pivoted lock-arm 84 and stop 86 below the same, a shouldered dog 81 adapted to engage and release said lever, and an operating-lever 56 provided with a member to engage said cam-surface during the first part of the downward travel of said operating-lever, and actuate the lever 79 until locked by said dog, and to engage and force said dog out of locking engagement with the lever 79, at the end of the upward travel of the operating-lever, substantially as shown.

15. In combination with a clock-movement, a lever-controlled mech-

anism comprising a spring-actuated lever 79 having a cam-surface 79ª at its free terminal and provided with a pivoted lock-arm 84 and stop 86 below the same, a shouldered dog 81 adapted to engage and release said lever, an operating-lever 56 provided with a member to engage said cam-surface during the first part of the downward travel of said operating-lever, and actuate the lever 79 until locked by said dog, and to engage and force said dog out of locking engagement with the lever 79, at the end of the upward travel of the operating-lever, and a shoe-carrying rod 89 having a downwardly-extending terminal in operative connection with the lever 79, substantially as shown.

16. A clock-spring-winding mechanism consisting of a spool on the clock-movement, an operating-lever 56, a cord fastened at one end to said spool and at the other end operatively connected with said lever, a spring-actuated lever 79 having a cam-surface 79ª at its free lower terminal and provided with a pivoted lock-arm 84 adapted to engage a toothed wheel of said clock-movement, a detent 81 for said lever 79, and a projection on said operating-lever to engage said cam-surface and actuate the lever 79 to cause the locking of the clock-movement while the descent of the operating-lever winds up the clock-spring, and to force said detent out of locking engagement with the lever 79 when the operating-lever ascends, substantially as shown.

707,774. GAS-FILTER. Barney W. Harris, Waveland, Ind. Filed May 3, 1902. Serial No. 105,726. (No model.)

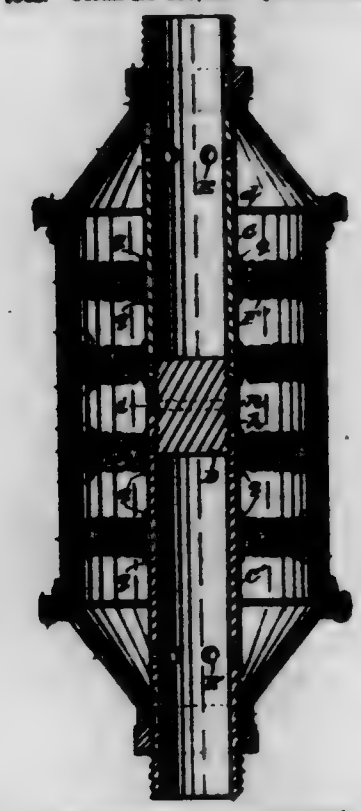

Claim.—1. A gas-filter comprising an outer tube, an inner tube having perforations therein near the ends of the outer tube, a partition in the inner tube, frames attached to the inner tube, strainers supported by the frames, and caps detachably secured to the outer tube and also to the inner tube.

2. A gas-filter adapted to be connected to a pipe-line and comprising a tube having a partition therein and also perforations at either side of the partition, elongated screw-threads at the ends of the tube, strainer-frames secured to the exterior of the tube between the perforations, an outer tube extending over the strainer-frames, strainers supported by the strainer-frames, and caps having screw-threads engaging the elongated screw-threads and adapted to operate thereon and detachably secured to the ends of the outer tube, substantially as set forth.

3. In a gas-filter, the combination of the inner tubes abutting together in alinement and having the screw-threads at their ends, the plug attached to the inner ends of the tubes, the tubes having the perforations at either side of the plug, the strainer-frames secured to the exterior of the tubes between the perforations, the strainers supported by the strainer-frames, the caps attached to the outer threaded ends of said tubes, and the outer tube or casing extending about and beyond said strainers and detachably connected to said caps, substantially as set forth.

4. In a gas-filter, the combination of the outer tube having the perforated flanges at the ends thereof, the perforated inner tubes extending together through said outer tube and having the screw-threads at the ends thereof, the threads at the outer ends being elongated, the threaded plug attached to the threads at the inner ends of said inner tubes, the strainer-frames secured to said inner tubes, the strainers supported by said frames, the caps having the perforated flanges abutting with the flanges of said outer tube, the bolts securing said flanges together, the packing-washers between said flanges, and the threaded nuts secured to said caps and engaging said elongated threads on said inner tubes, substantially as set forth.

707,775. EMBALMING-CATHETER. William W. Harris, New York, N. Y., assignor to the Max Hanuke Chemical Company, New York, N. Y., a Corporation of Delaware. Filed Mar. 22, 1902. Serial No. 99,473. (No model.)

Claim.—1. In a catheter for draining and embalming purposes, the combination of a metal tube, a relatively long coiled spring normally of less diameter than the aforesaid tube and secured to the end of the same, the construction and arrangement of the parts being such that when the spring is distended a continuous passage between the tube and the aforesaid spring is formed, substantially as described.

2. In a catheter for draining and embalming purposes, the combination of a metal tube provided at its outer end with an enlargement to receive and hold any suitable coupling means, a relatively long flexible coiled spring, normally of less diameter than the aforesaid metal tube, and secured to the same, but adapted when distended to form a continuous passage with the interior of such tube, and a flexible wire extending through said tube and spring, whereby the catheter may be temporarily stiffened during its insertion, substantially as described.

707,776. OSCILLATING ELECTRIC FURNACE. Paul L. T. Héroult, La Praz, France, assignor to Société Electro Metallurgique Française, Froges, Isère, France. Filed Aug. 21, 1901. Serial No. 72,752. (No model.)

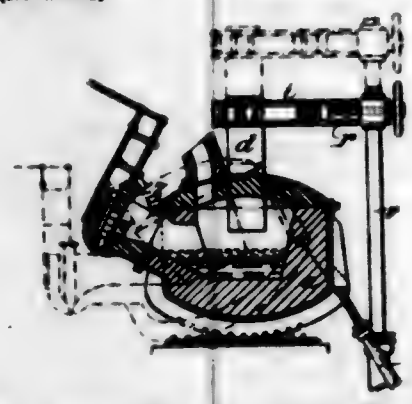

Claim.—1. In an oscillatory electric furnace, the combination of an electrode, a support, a collar or loop surrounding said electrode and holding it on said support, copper wedges pressed against said electrode by said collar, and a connection between said wedges and the electric circuit.

2. The combination with an oscillatory electric furnace, of an electrode movable relatively thereto and oscillating therewith, hydraulic means for oscillating said furnace and electrode, and hydraulic means for moving said electrode relatively to said furnace.

3. The combination with an electric furnace carrying arched cogged rails on its bottom, of similarly-cogged rails engaging said arched rails and supporting said furnace and upon which said furnace may be oscillated or tipped, an electrode movable relatively to said furnace and oscillating therewith, hydraulic means for oscillating said furnace and electrode, and hydraulic means for moving said electrode relatively to said furnace.

707,777. CHOCOLATE COATING OR DIPPING MACHINE. George J. Hires, New York, N. Y. Filed Dec. 14, 1899. Serial No. 740,262. (No model.)

Claim.—1. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with a confection-holder, means for operating said chain or carrier with a continuous movement and guiding the same to pass the confection-holder through the coating substance in said receptacle, and means independent of the holder for retaining the confection in said holder and permitting its discharge from the latter at a certain predetermined point.

2. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with a pivotally-supported holder for supporting the confection to be coated, and means for operating said chain or carrier and guiding the same to pass the confection-holder through the coating substance in said receptacle, for the purpose set forth.

3. In a machine of the character described, the combination, with

a receptacle for containing the coating substance, of an endless chain or carrier provided with a detachably-connected confection-holder, and means for operating said chain or carrier and guiding the same to pass the connected confection-holder through the coating substance in said receptacle for the purpose set forth.

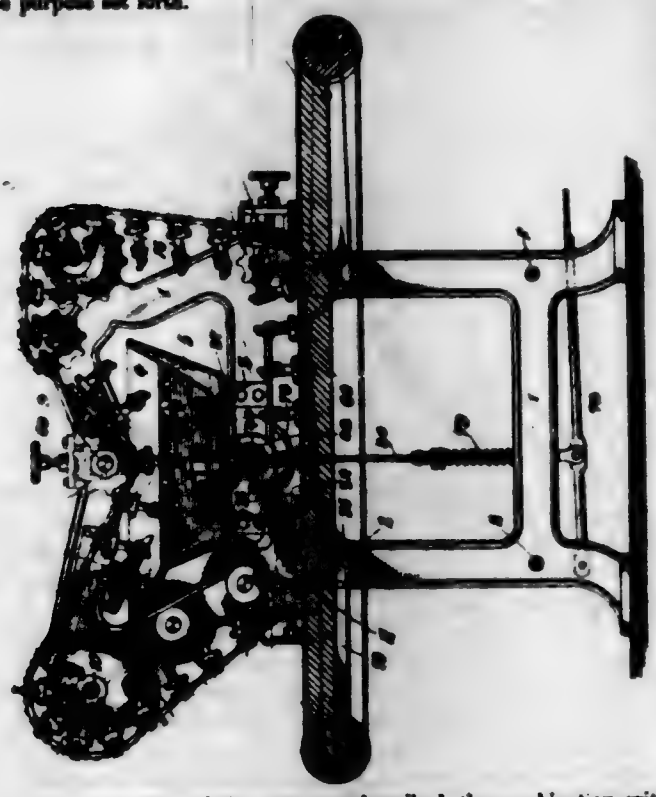

4. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with a confection-holder, a support for receiving the coated confections, means for operating said chain or carrier with a continuous movement and guiding the same to pass the confection-holder through the coating substance in said receptacle and then to a position adjacent to said support, and means, independent of the holder, for retaining the confections therein after being coated and subsequently permitting their discharge upon said support at a predetermined point.

5. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with a confection-holder, an endless apron for receiving the coated confections, means for operating said chain or carrier with a continuous movement and guiding the same to pass the confection-holder through the coating substance in said receptacle and then to a position adjacent to said endless apron, means independent of the holder for retaining the confections therein after being coated and subsequently permitting their discharge upon said apron, and means for moving said apron with an intermittent movement, for the purpose set forth.

6. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with a confection-holder, a support for receiving the coated confections, means for operating said chain or carrier and guiding the same to pass the confection-holder through the coating substance in said receptacle and then to a position above said support, and means for communicating a shaking or jarring movement to the holder for the purpose of loosening the coated confections therein.

7. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with a confection-holder, a support for receiving the coated confections, means for operating said chain or carrier and guiding the same to pass the confection-holder through the coating substance and then to a position above said support, plates located adjacent to a portion of the path of movement of said holder for holding the confections therein, and a reciprocating plate or finger operating at the terminal end of said retaining-plates, for the purpose set forth.

8. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with confection-holders, a support for receiving the coated confections, means for operating said chain or carrier and guiding the same to pass the confection-holders through the coating substance and to a position above said support, means for subjecting said holders to a shaking or jarring movement above the said receptacle, and means for subjecting said holders to a second shaking or jarring movement above the said support, for the purpose set forth.

9. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of an endless chain or carrier provided with confection-holders, means for operating said chain or carrier and guiding the same to pass the confection-holders through the coating substance in said receptacle, and means for vertically adjusting the path of movement of the holders relative to said receptacle and regulating the slack of the chain or carrier, for the purpose set forth.

10. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of two endless chains or carriers moving in a path parallel with each other, and each being provided with a series of bracket-arms, confection-holders supported by and between said bracket-arms of the opposite carriers, and means for operating said carriers and guiding the same to pass the confection-holders through the coating substance in said receptacle, for the purpose set forth.

11. In a machine of the character described, the combination, with a receptacle for containing the coating substance, of two endless chains or carriers moving in a path parallel with each other, each being provided with a series of pivotally-supported bracket-arms, confection-holders removably supported by and between said bracket-arms of the opposite carriers, a support for receiving the coated confections, and means for operating said carriers with a continuous movement and guiding the same to pass the confection-holders through the coating substance in said receptacle and then to a position to deposit the coated confections upon the said support.

12. A confection-holder, comprising a supporting-bar having two upper oppositely-sloping surfaces, and an open-sided cup located upon the upper side of said bar.

13. A confection-holder, comprising a supporting-bar having two upper oppositely-sloping surfaces, and an open-sided cup located upon the upper side of said bar, the said cup being composed of a ring and two side pieces connecting at one end with said ring and at their opposite end connected with said bar at a point distant from each other.

707,778. TOBACCO-CUTTING MACHINE. MAX HIRSCH, New York, N. Y. Filed Nov. 20, 1899. Serial No. 737,580. (No model.)

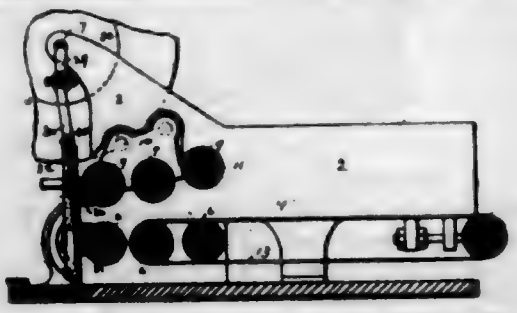

Claim.—1. The combination of a frame provided with means for containing material to be cut, and a stationary knife, with a crank-shaft, a knife-holder connected therewith, and guides having curved ways for guiding the lower end of the holder, the concave sides of said curved ways facing the stationary knife, substantially as described.

2. The combination of a frame provided with a feeding-trough having a mouth and a stationary knife, with a crank, a knife-holder connected therewith, a pair of adjustable guides provided with curved ways to which the lower end of the holder is connected, the concavity of said curved ways facing toward the mouth of the trough, substantially as described.

3. The combination of a main frame, a movable frame supported by the main frame, a roller carried by the movable frame, a mouthpiece 38 carried by the movable frame adjacent to said roller, a mouthpiece beneath the same carried by the main frame, a roller adjacent to said mouthpiece and opposed to the other roller, a knife-holder, means for guiding and reciprocating the same, and means for depressing the movable roller and the adjacent mouthpiece and regulating the pressure between the rollers, substantially as described.

707,779. WHIFFLETREE-HOOK. CLAUDE V. HOOVER, Chattanooga, Tenn. Filed July 10, 1902. Serial No. 115,078. (No model.)

Claim.—In a device of the character described, the combination with a loop terminating in a neck having a bearing-slot, said neck terminating in a hook, of a second hook to coact with the first-named hook, said second hook being provided with a lateral stud having a head, said

stud being seated in the slot and its head being of greater diameter than the slot, whereby, when the loop is engaged with the whiffletree, the stud will be prevented from withdrawing from the slot, substantially as set forth.

707,780. LABEL-AFFIXING DEVICE. GEORGE E. HOWARD, Washington, D. C. Filed Mar. 31, 1902. Serial No. 101,706. (No model.)

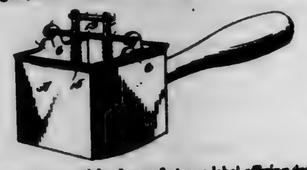

Claim.—1. As an article of manufacture a label-affixing device comprising a box or receptacle open at the bottom for the discharge of the labels, a handle extending out laterally from one side, and a spring-actuated follower adapted to slide in the box or receptacle and force forward the labels contained in the box or receptacle.

2. As an article of manufacture, a label-affixing device comprising a box or receptacle, open at the top and bottom and closed at the sides, a handle extending out laterally from one side, and a spring-actuated follower adapted to slide in the box or receptacle.

707,781. LABEL-AFFIXER. GEORGE E. HOWARD, Washington, D. C. Filed Mar. 31, 1902. Serial No. 101,707. (No model.)

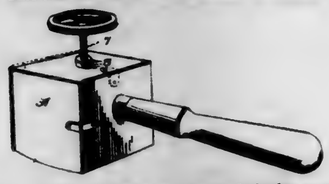

Claim.—1. The combination of a receptacle having an open face for the discharge of its contents, and lips projecting inwardly from opposite sides or edges of the opening, of a follower, a screw turning in threads in the side of the receptacle opposite the open face and swiveled in the follower, a thumb-nut or wheel on the screw by which to turn it and a handle by which the entire device is moved in the operation of labeling.

2. The combination with a receptacle having an open face for the discharge of its contents, and lips projecting inwardly from opposite sides or edges of the opening, of a follower, a screw turning in threads in the side of the receptacle opposite the open face and swiveled in the follower, means whereby to turn the screw, and a handle extending in a direction parallel with the open face of the receptacle by means of which the receptacle is swung bodily in the operation of applying the label.

3. A label-affixing device consisting of a receptacle having an open face and lips projecting inwardly from opposite sides thereof, a pair of followers, a spring interposed between said followers, and a screw-feed for the outer follower and a handle extending laterally from the receptacle whereby the device is wielded in the operation of applying a label.

4. The combination with a receptacle adapted to contain labels, said receptacle having one open face, the other faces all being closed, a handle connected with the box or receptacle by which the latter is lifted and swung bodily in the operation of applying a label, a follower, a screw connected therewith and extending through a hole in one of the closed sides of the box or receptacle, and means for feeding the screw inward or outward through the hole whereby to move and control the position of the follower.

5. The combination with a receptacle adapted to contain labels, said receptacle having one open face, the other faces all being closed, a handle connected with the box or receptacle by which the latter is lifted and swung bodily in the operation of applying a label, a follower, a screw connected therewith and extending through a hole in one of the closed sides of the box or receptacle, and means for feeding the screw inward or outward through the hole whereby to move and control the position of the follower, the screw and follower permanently retained in the box or receptacle.

6. The combination with a receptacle adapted to contain labels, said receptacle having one open face, the other faces all being closed, a handle connected with the box or receptacle by which the latter is lifted and swung bodily in the operation of applying a label, a follower, a screw connected therewith and extending through a hole in one of the closed sides of the box or receptacle, and a nut through which the screw turns for feeding the screw inward or outward through the hole whereby to move and control the position of the follower.

707,782. LABEL-HOLDER. GEORGE E. HOWARD, Washington, D. C. Filed Apr. 8, 1902. Serial No. 101,982. (No model.)

Claim.—1. As an article of manufacture, a label-holder, consisting of a box having the bottom and rear disposed at an acute angle to each other, and a gravity-weight adapted to rest upon the labels, having sliding connection with the box and carrying a guard-plate in front of the outer edge of the labels.

2. As an article of manufacture, a label-holder consisting of a box having bottom, rear and sides and open at the front and top, a weight having sliding connection with the sides and a guard-plate connected with the weight and having sliding connection with the forward edge of the box.

3. As an article of manufacture, a label-holder comprising a box adapted to receive the labels, a gravity-weight adapted to rest loosely on the labels and retain them in the box, a frame connected with the weight and carrying a guard-plate which extends in front of the labels and prevents their sliding bodily from the holder.

4. As an article of manufacture, a label-holder comprising a box having sides and bottom adapted to receive the labels, a gravity-weight adapted to rest loosely on the labels and retain them in the box, and a frame connected with the weight and carrying a guard-plate which extends in front of the labels and cooperates with the sides and bottom of the box to prevent their sliding bodily from the holder.

5. As an article of manufacture, a label-holder consisting of a box open at the forward end and a gravity-weight having a sliding connection with the box and resting upon the labels held in the box, a frame connected with the weight and extending forwardly to embrace the forward edge of the uppermost labels and a guard-plate secured to this frame and extending downwardly therefrom and having sliding connection with the box, whereby the frame, weight and plate maintain a uniform relative position in their descent with respect to the box.

6. As an article of manufacture, a label-holder consisting of a box, a weight having sliding connection therewith, a frame carrying a curved or rounded lip at its outer end over which the labels are slid and a guard-plate depending from the frame and having sliding connection with the box.

7. The combination with the box of a label-holder, of a weight, frame and guard-plate connected together, having sliding connection with the box at front and rear thereof and removably connected with the box.

8. The combination with a box having slotted sides and bottom, of a weight having bearings which extend through the slotted sides of the box, a guard-plate extending through the slot in the bottom, and a frame connecting the guard-plate with the weight.

9. The combination with a box having slotted sides and bottom, of a weight having bearings which extend through the slotted sides of the box, a guard-plate extending through the slot in the bottom, a frame connecting the guard-plate with the weight and means for retaining the weight, frame and guard-plate removably in place.

10. The combination with a box having slotted sides and bottom, of a weight having bearings which extend through the slotted sides of the box, a guard-plate extending through the slot in the bottom, a frame connecting the guard-plate with the weight, and antifriction-rollers journaled on the bearings and fitted to the slots in the sides of the box.

11. In a label-holder the combination with a receptacle having sides and bottom, of a keeper or guard-plate against which and the sides the edges of the labels rest, said keeper or guard-plate having sliding connection with the holder and constructed and adapted to descend automatically as the labels are withdrawn from the holder.

12. In a label-holder the combination with a receptacle having sides and bottom, of a keeper or guard-plate against which and the sides the edges of the labels rest, said keeper or guard-plate having sliding connection with the holder and constructed and adapted to descend automatically as the labels are withdrawn from the holder, and means resting on the labels in the holder for regulating and controlling the descent of the keeper or guard-plate.

13. The combination with a box adapted to receive labels, said box having an open top and front, of a keeper or guard-plate located at and having sliding connection with the forward portion of the box, and means connected therewith and resting on the labels for controlling the descent of the keeper or guard-plate.

14. The combination with a box constructed and adapted to receive labels, of a frame and a guard carried thereby beyond the outer edges of the labels, said frame supported upon the labels whereby the guard is lowered automatically by the removal of the labels.

707,788. PROCESS OF MANUFACTURING ILLUMINATING-GAS. CHARLES W. ISSELL, New York, N. Y. Filed June 13, 1901. Serial No. 64,363. (No specimens.)

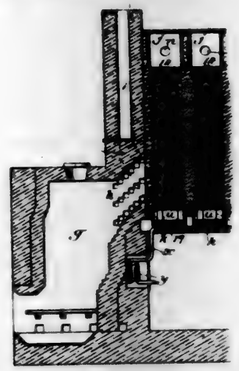

Claim.—In the process of manufacturing illuminating-gas from bituminous coal, the loosening of the residual incandescent coke remaining in the generating-retort after the expulsion of said gas to the extent desired, by the introduction into said retort around the said coke of a sufficient quantity of steam to produce the decomposition or combustion and conversion into gas of that portion of said coke contiguous to the sides of the retort, substantially as herein described.

707,784. SWEAT-BAND FOR HATS. CHARLES L. JOHNSON, Woodburn, Oreg. Filed Apr. 30, 1900. Serial No. 715,042. (No model.)

Claim.—1. As an article of manufacture, a hat comprising a body portion, a stiffening-strip of non-absorbent material arranged within and in contact with the body portion, a sweat-band of perforated, resilient, non-absorbent, non-elastic material within the first strip and separated therefrom by tubular separating-strips, substantially as described.

2. The combination with a hat, of a strip of non-absorbent material secured to the inner portion thereof at the zone usually occupied by the sweat-band, a sweat-band formed of a strip of resilient, non-absorbent and non-elastic material, and a plurality of tubular perforated separating-strips secured to the said strip and to the sweat-band, the said strip constituting a stiffening-band, substantially as described.

707,785. FASTENING DEVICE. PETER KLEBER, Wiesbaden, Germany. Filed Nov. 27, 1901. Serial No. 83,013. (No model.)

Claim.—1. A fastening device having two sets of bayonet-slots, one set being arranged in a central body, the other set being provided in a sleeve surrounding said central body, a corresponding set of noses provided on a ring slidingly arranged on the surrounding sleeve, each of said noses entering one slot in the surrounding sleeve and one corresponding slot in the central body, a spring arranged on the surrounding sleeve and engaging the said ring substantially as and for the purpose described.

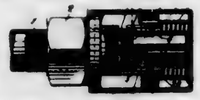

2. A fastening device having two sets of bayonet-slots, one set being arranged in a central body, the other set being provided in a sleeve surrounding said central body, a corresponding set of noses provided on a ring slidingly arranged on the surrounding sleeve, each of said noses entering one slot in the surrounding sleeve and one corresponding slot in the central body, a spring arranged on the surrounding sleeve and engaging the said ring, a casing fixed to an outwardly-extending disk of the said surrounding sleeve substantially as and for the purpose described.

707,786. NECKTIE-FASTENER. OTTO KRAUS, New York, N. Y. Filed May 12, 1902. Serial No. 107,080. (No model.)

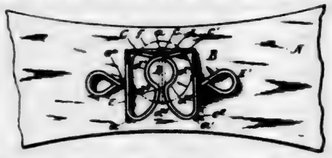

Claim.—1. A wire necktie-fastener comprising bracing provision having its members horizontally separated for receiving a button-head, means at one side of said provision for attachment to the shield, a pair of bent arms connected to said provision at the other side thereof and presenting a bearing-eye and contracted entrance for said bearing-eye, the latter being closed contiguous to the connection of the arms with the separated members to present a closed stop for a button-shank bearing in the eye.

2. A wire necktie-fastener comprising horizontal bracing provision having its members separated for receiving a button-head, means at one side of said provision for attachment to the shield, a pair of bent arms at the other side of said provision and presenting a bearing-eye and contracted entrance for said bearing-eye, the latter being closed contiguous to the separated members to present a closed stop for a button-shank bearing in the eye; and provision for independently bracing said arms relative to the shield.

3. A wire necktie-fastener comprising horizontal bracing provision having its members separated for receiving a button-head, and crossed at one side, means for attaching the provision to the shield, and a pair of bent arms connected to the crossed members and presenting a bearing-eye and contracted entrance for said bearing-eye, the latter being immediately contiguous to the crossed members.

4. A wire necktie-fastener comprising horizontal bracing provision having its members separated for receiving a button-head and crossed at one side, means at one side of said provision for attachment to the shield, a pair of bent arms connected to the members at the crossed side thereof and presenting a bearing-eye and contracted entrance for said bearing-eye, the bearing-eye being immediately contiguous to the crossed members; and provision for independently bracing said arms relative to the shield.

5. A wire necktie-fastener comprising a narrow contracted securing-tongue and a distended or expanded horizontal loop immediately contiguous thereto and adapted to bear against the shield for serving as a stop for the tongue, said horizontal loop forming a braced support for a pair of arms bent to present a bearing-eye and contracted entrance therefor, crossed members yieldingly contracting said entrance, and independent bracing provision for said arms relative to the shield.

6. A wire necktie-fastener comprising horizontal bracing provision having its members separated for receiving a button-head, means at one side of said provision for attachment to the shield, a pair of bent arms at the other side of said provision and presenting a bearing-eye and contracted entrance for said bearing-eye, the latter contiguous to the separated members; and laterally-extended reinforces bearing against the shield and contributing to maintain both the arms and separated bracing members in their normal positions.

7. A wire necktie-fastener comprising a narrow contracted securing-tongue and a distended or expanded horizontal loop immediately contiguous thereto and adapted to bear against the shield for serving as a stop for the tongue, said horizontal loop embodying crossed members, a pair of arms supported by said crossed members and bent to present a bearing-eye and spring-yielding contracted entrance for said bearing-eye, and

independent provision for bracing said arms relative to the shield, said bracing provision including laterally-extended reinforces for bearing against the shield.

8. A wire necktie-fastener comprising a horizontal spring-loop designed to bear at one side against the shield and having at the opposite side crossed members, arms connected to said crossed members and bent to present a bearing-eye, said crossed members constituting a barrier between said eye and loop, and means for securing said parts to the shield.

9. A wire necktie-fastener comprising horizontal bracing provision having its members separated for receiving a button-head, and crossed at one side, and relatively movable with respect to each other, means for attachment to the shield, and a pair of bent arms connected to the crossed members and presenting a bearing-eye and contracted entrance for said bearing-eye, those portions of the arms at the inner side of the entrance being more abrupt than those constituting the approach thereto.

10. A wire necktie-fastener comprising a narrow contracted securing-tongue and a horizontal spring-loop designed to bear at one side against the shield and having at the opposite side crossed members relatively movable with respect to each other, arms connected to said crossed members and bent to present a bearing-eye and contracted entrance for said bearing-eye, those portions of the arms at the inner side of the entrance being more abrupt than the parts constituting the approach thereto.

11. A wire necktie-fastener comprising horizontal bracing provision having its members separated for receiving a button-head, means at one side of said provision for attachment to the shield, a pair of bent arms at the other side of said provision and presenting a bearing-eye and contracted entrance for said bearing-eye, the latter being contiguous to the separated members; and lateral reinforces bearing against the shield and having their wires twisted together at their inner connections with the rest of the fastener.

707,787. MACHINE FOR AFFIXING LABELS. WILLIAM F. HARRINGTON, New York, N. Y. Filed July 2, 1901. Serial No. 66,826. (No model.)

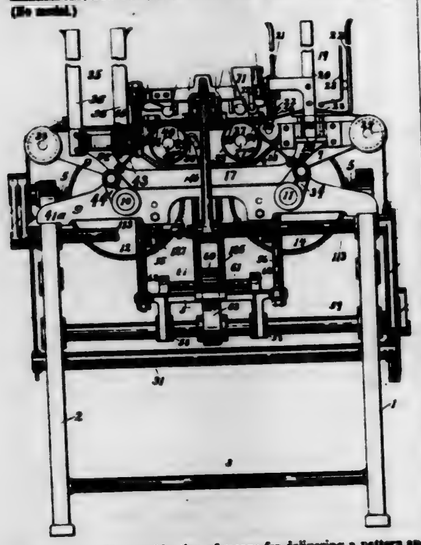

Claim.—1. The combination of means for delivering a pattern and a label to each other, means for causing the pattern and label to register edge to edge with each other, means for securing the folds of the pattern and the label together, and means for causing the successive operation of each of said above-named means, substantially as described.

2. The combination of separating means for separating a pattern and a label from respective supply-hoppers, means for delivering the pattern and the label to each other, means for causing the pattern and the label to register, means for attaching them together, means for securing the folds of the pattern, and means for causing the successive operation of each of said above-named means, substantially as described.

3. The combination of means for delivering a pattern and a label to each other, means for applying paste to the label, means for causing them to register, means for pressing them together, means for securing the folds of the pattern, and means for causing the successive operation of each of said above-named means, substantially as described.

4. The combination of means for separating a pattern and a label from respective supply-hoppers, means for delivering the label and pattern to each other, means for printing upon the pattern, means for pasting the label to the pattern, means for securing the folds of the pattern, and means for causing the successive operation of each of said above-named means, substantially as described.

5. The combination of separating means for separating a pattern and a label from respective supply-hoppers, means for delivering the same to each other, means for causing them to register, means for pasting the pattern and label to each other, securing means for fastening the folds of the pattern, and means for causing the successive operation of each of said above-named means, substantially as described.

6. The combination of separating means for separating a pattern and a label from respective supply-hoppers, securing means for fastening the folds of the pattern, means for pasting the label to the pattern, and means for causing the successive operation of each of said above-named means, substantially as described.

7. The combination of a securing means for fastening the folds of a pattern, means for delivering the pattern and a label to each other, means for attaching them together, and means for causing the successive operation of each of said above-named means, substantially as described.

8. The combination of a securing means for fastening the folds of a pattern, means for delivering the pattern and a label to each other, means for causing them to register, means for attaching them together, and means for causing the successive operation of each of said above-named means, substantially as described.

9. The combination of means for delivering a pattern and a label to each other, means for securing the folds of said pattern at the side thereof, means for attaching the label and the pattern together, and means for causing the successive operation of each of said above-named means, substantially as described.

10. The combination of means for delivering a pattern and a label to each other, means for securing the folds of the pattern at a side thereof, means for applying paste to the label, means for pressing the pattern and label together, and means for causing the successive operation of each of said above-named means, substantially as described.

11. The combination of means for delivering a pattern and a label to each other, of a paste-roller, means for raising a portion of the label into contact with the paste-roller on its way to the pattern, means for pressing the pattern and label together, means for securing the folds of the pattern, and means for causing the successive operation of each of said above-named means, substantially as described.

12. The combination of means for delivering a pattern and a label to each other, of a paste-roller, means for bringing the label in contact with the paste-roller on its way to the pattern, means for securing the folds of the pattern, and means for causing the successive operation of each of said above-named means, substantially as described.

13. The combination of a reciprocating carrier-strap, an open-ended hopper having a supporting-shelf for the hopper contents, means for moving said hopper so that its contents are intermittently brought into contact with the carrier-strap while moving in the direction to disengage the contents from the shelf and for maintaining the contact while moving in opposite direction to remove the disengaged contents, and means for operating said carrier-strap, substantially as described.

14. The combination of a reciprocating carrier-strap, an open-ended hopper having a supporting-shelf for the hopper contents and arranged to receive the said contents at an angle to the sides of the hopper, and means for intermittently moving the hopper to bring its contents into engagement with the strap while moving in the direction to disengage the contents from the shelf and for maintaining the contact to remove the disengaged contents, substantially as described.

15. The combination of a reciprocating strap, of an open-ended hopper having a forward shelf and a rear shelf transversely located with respect to said strap, the contents of said hopper being adapted to rest upon said shelves, and means for moving said hopper to bring its contents into engagement with the strap, substantially as described.

16. The combination of a reciprocating strap, of an open-ended hopper having a forward shelf and a rear shelf, the contents of said hopper being adapted to rest upon said shelves, and means for moving said hopper to bring its contents into engagement with the strap shortly before the strap has completed its rearward movement, and means for moving the hopper contents out of engagement with the strap when the lowermost sheet is removed from the hopper, substantially as described.

17. The combination of a hopper having an open-ended bottom and a shelf adapted to support one edge of a pile of sheets of paper when contained in said hopper, and means for moving the lowermost sheet in one direction to remove it from said shelf, and means for moving the sheet in the opposite direction to move it under said shelf and from the hopper, substantially as described.

18. The combination of a hopper having an open-ended bottom and a shelf for supporting one edge of the contained sheets of paper, a reciprocating strap or straps, and means for bringing the open-ended bottom in contact with the strap or straps while moving in one direction to disengage the lowermost sheet from said shelf and maintaining the contact when the strap moves in the opposite direction to remove the sheet from the hopper, substantially as described.

19. The combination of a hopper for patterns and a hopper for labels, means for separating the patterns and labels from their respective hoppers and for bringing them together, means for attaching the pattern and label together, and means for moving the pattern and label together to said attaching means, substantially as described.

20. The combination of a hopper for patterns and a hopper for labels, means for separating the patterns and labels from their respective hoppers and for bringing the separated pattern and label together, means for securing the folds of the pattern, means for attaching the pattern and label together, means for moving the pattern and label together to said securing and attaching means, and means for causing the successive operation of each of said above-named means, substantially as described.

21. The combination of means for delivering a pattern and a label to each other, means for causing the same to register, binder-forming mechanism and binder-clenching mechanism, means for delivering the pattern and label to said binder-clenching mechanism, and means for causing the successive operation of each of said above-named means, substantially as described.

22. The combination of means for delivering a pattern and a label to each other, means for causing the pattern and label to register, means for forming a binder at one side of said pattern and label, and means for clenching said binder around the edge of said pattern and label, substantially as described.

23. The combination of means for delivering a pattern and a label to each other, means for causing the same to register, a wire-feeding mechanism, mechanism for forming a binder of the wire from said wire-feeding mechanism, means for delivering the pattern and label to the binder-forming mechanism, a clencher-head adapted to bend the binder around the edge of the pattern and label, and means for operating said clencher-head, substantially as described.

24. The combination of means for delivering a pattern and a label to each other, means operative upon the edges of said pattern and label for causing the same to register edge to edge with each other, means for securing them together, and means for causing the successive operation of each of the above-named means, substantially as described.

25. The combination of means for delivering a pattern and a label to each other, means for causing the same to register, means for applying paste to said label, a guide-plate, means for delivering said pattern and label upon said guide-plate, a binder-forming mechanism, a clencher-head adapted to attach the binder to the pattern and label, means for operating said clencher-head, and means for causing the successive operation of each of the above-named means, substantially as described.

26. In a machine of the character described, the combination with a bed-plate, means for delivering a pattern thereto, means for clamping the pattern to the bed-plate, a clencher-head, mechanism for moving the clencher-head around the edge of said bed-plate and down upon the pattern, clencher-head-removing clamping means, substantially as described.

27. In a machine of the character described the combination with a bed-plate, of means for delivering a pattern thereto, means for clamping the pattern to the bed-plate, a clencher-head, and cam mechanism for moving said clencher-head around the edge of said bed-plate and down upon the pattern, the said clencher-head removing the said clamping means before contacting with the pattern, substantially as described.

28. In a machine of the character described the combination with a bed-plate, of means for delivering a pattern thereto, means for clamping the pattern to the bed-plate, a clencher-head, cam mechanism for moving the clencher-head around the edge of said plate and down upon the pattern, the said clencher-head removing the said clamping means before contacting with the pattern, and means for adjusting the height to which said clencher-head may travel, substantially as described.

29. In a machine of the character described the combination with a bed-plate, of means for delivering a pattern thereto, a clencher-arm carrying a clencher-head, a pivoted arm to which said clencher-arm is pivoted, and two cams operating respectively upon the ends of the clencher-arm and said second-mentioned arm, said cams acting to raise and lower said clencher-arm and to move said clencher-arm upon its pivot, substantially as described.

30. The combination of a chute, a trough, a packer-plate traveling between said chute and said trough and having an opening therein, a retainer-hook adapted to engage the end of the trough and itself projecting through said opening, and means whereby as the said packer-plate moves toward said trough the said hook will be momentarily snapped away from the end of the trough, substantially as described.

31. The combination of a chute, a trough, a packer-plate rocking between said chute and the end of said trough, a retainer-hook normally engaging the end of said trough, and means for disengaging said retainer-hook when the packer-plate rocks toward the end of the trough, substantially as described.

32. The combination of a chute, a trough, a packer-shaft carrying a packer-plate, means for rocking said shaft whereby said packer-plate is rocked between said chute and the end of the trough, a retainer-hook normally engaging the end of said trough, and a cam on said packer-shaft adapted to disengage said retainer-hook, substantially as described.

33. The combination of a slotted guide-plate, means for delivering a pattern and a label to the respective slots in said plate, a chute, and a traveler-arm adapted to move said pattern and label from said slots to said chute, substantially as described.

34. The combination of a slotted guide-plate, means for delivering a pattern and a label to the respective slots in said plate, presser mechanism, a chute, and a traveler-arm adapted to move said pattern and label from said slots to said presser mechanism and from said presser mechanism to said chute, substantially as described.

35. The combination of a slotted guide-plate, means for delivering a pattern and a label into the respective slots, means for causing them to register, presser mechanism, a chute, a traveler-arm adapted to move said pattern and label from said slots to said presser mechanism and from said presser mechanism to said chute and means for raising said guide-plate to bring the pattern and label into engagement with the traveler-arm, substantially as described.

36. The combination of a hopper open at the bottom and having a forward and a rear supporting-shelf adapted to support a pile of labels in said hopper, and means for first disengaging a label from one of said shelves, then from the other shelf, and then removing the label from the hopper, substantially as described.

37. The combination of a hopper open at the bottom and having a forward and a rear supporting-shelf adapted to support a pile of labels in said hopper, and a reciprocating strap or straps adapted to first disengage a label from one of said shelves, then from the other shelf, and then remove the label from the hopper, substantially as described.

38. The combination of a hopper for paper patterns, mechanism for successively separating patterns from said hopper, means for printing upon one face of said folded patterns, means for securing the folds of said patterns, and means for delivering said patterns from the separating means to the printing and securing means, substantially as described.

39. The combination of means for securing the folds of a pattern, means for delivering a folded pattern thereto, presser mechanism for clamping the pattern at said securing means, and means for operating said securing means, substantially as described.

40. The combination of a supply-hopper for folded paper patterns, a feed-plate, means for delivering patterns from said hopper to the feed-plate, means for moving said pattern along said feed-plate to a stapling mechanism, stapling mechanism and means for operating the same, substantially as described.

41. The combination of a supply-hopper for folded paper patterns, a stapling mechanism, wire-feeding mechanism therefor, a feed-plate leading to said stapling mechanism, and means for separating a pattern from said hopper, delivering it to said feed-plate and moving it along said feed-plate to said stapling mechanism, substantially as described.

42. The combination of a supply-hopper for folded paper patterns, a staple-forming mechanism, a wire-feeding mechanism therefor, means for separating a pattern from said hopper and delivering it to said stapling mechanism, a clencher-head adapted to attach a staple to said pattern, and means for operating said clencher-head, substantially as described.

707,788. COMPOSITION OF MATTER. JOHN MURPHY, Columbus, Ohio. Filed Mar. 7, 1902. Serial No. 97,098. (No specimens.)

Claim.—The herein-described composition of matter consisting of crushed hard iron slag, pulverized high-limed cinders, Portland cement, liquor of flints and water, substantially as described.

707,789. AUTOMATIC DRAFT-REGULATING DEVICE. JAMES A. MCATEE, Mahanoy Plane, Pa. Filed Aug. 6, 1901. Serial No. 71,047. (No model.)

Claim.—1. The combination with a heating apparatus formed with a damper-casing; of a pivoted damper mounted in said casing and normally in position to allow a free draft, a rovolvable shaft, a plate mounted on said shaft, and adapted to be moved by a current passing through the damper-casing, an angular extension on said shaft, a chain and a weight attached to said angular extension, and adapted in conjunction with said current to move the said plate, a chain connecting said plate and said damper and enabling them to act simultaneously so that said damper may be closed by the said plate and retained so closed, until restored to normal position

by the hand of an operator, and means for affording facility for such operator to restore said damper and plate to normal position, all substantially as shown and described.

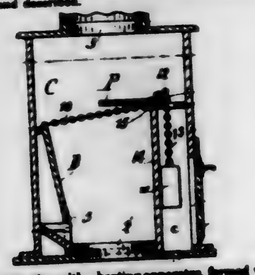

2. The combination with a heating apparatus, formed with a damper-casing, a revolvable shaft mounted in said casing and formed with an angular extension; a plate mounted on said shaft and arranged so that when in normal position, it will not hinder the free flow of the gaseous matter comprising the products of combustion through the said casing, and so that it may be moved in part by said gaseous matter to shut off the draft, a chain and weight attached to said extension, and in connection with said gaseous matter moving said plate to shut off the draft; of a shaft journaled in the said casing, a damper mounted upon said shaft, and arranged to control the draft from the apparatus, a chain connecting said damper and said plate, and enabling them to work simultaneously and to bring said plate into open, and said damper into closed position, so to remain, until restored to normal position by the hand of an operator; and a handle on said last-named shaft to afford facility for said operator to restore said plate and said damper to normal position; all substantially as and for the purpose set forth.

707,790. GRATE AND GRATE-BAR. WILLIAM MCCLAVE, Scranton, Pa., assignor, by mesne assignments, to H. G. Dunham and George G. Brooks, trustees. Filed Dec. 28, 1901. Serial No. 87,614. (No model.)

Claim.—1. A grate comprising grate-bars, a series of fire-bearing finger-caps on some of said bars with ventilating-spaces between them, the said caps being closed on their upper surfaces against a vertical movement of the fuel, and means projecting from the body portion of the bars beneath the spaces between the said finger-caps for preventing the running of fine fuels between the caps before said fuels become coked, while other bars are formed with vertical slots arranged at right angles to the body portions of the bars for introducing more air to the fuel at points where the fuel has become coked sufficiently to prevent the same from running through the grate, substantially as described.

2. An inclined grate comprising side bearer-bars and laterally-extending stationary grate-bars and movable grate-bars supported thereon, the grate-bars at one end of the grate-surface being provided with removable finger-caps having ventilating-openings between their head portions, supporting-fingers upon the grate-bars beneath said ventilating-openings for preventing loose fine fuel from running through the grate at this point, the grate-bars at the lower end of the grate-surface being provided with vertical slots for admitting air to the fuel after the same has become coked, substantially as described.

3. In a grate, the combination of stationary grate-bars and movable grate-bars, the upper bars of the said grate being formed with removable finger-caps having imperforated upper surfaces to prevent fine fuel from running through them, and means projecting from the body portions of the said bars beneath the adjacent edges of the finger-caps to support the caps and prevent a flow of fuel between them, substantially as described.

4. A grate-bar formed with a body portion having flaring recesses formed therein, fingers projecting laterally from the upper edge of said bar, laterally-extending lugs on said fingers, removable caps adapted to rest upon said fingers, means carried by the said caps for engaging the said lugs for holding the caps in position, and means for preventing the caps from becoming disengaged from said lugs, substantially as described.

5. A grate-bar for a furnace, comprising a body portion, and laterally-extending supporting-fingers projecting therefrom, holding-lugs on the said fingers and upon the body portions of the bar, removable caps forming fuel-supporting surfaces on the bar, said caps having laterally-extending lugs for engaging the holding-lugs on the bar, the forward ends of the said caps being also provided with overhanging portions for engaging the holding-lugs on the body portions of the grate-bar, and means for locking the said caps against accidental displacement, substantially as described.

6. In a grate, a series of grate-bars, some stationary, some movable, some also of said bars being formed with a body portion having laterally-extending supporting-fingers, removable finger-caps resting on the said supporting-fingers, lugs for spacing them from said fingers so as to form draft-inlet openings, the top or upper surfaces of said caps being imperforate and extending close to adjacent finger-caps but having air-passages between their adjacent edges, the inner ends of the said caps being inclined and formed with laterally-extending fingers and locking-clips for holding the caps in position, substantially as described.

7. A grate-bar having a body portion formed with laterally-projecting supporting-fingers, a series of fuel-supporting finger-caps arranged with their edges overhanging the edges of adjacent fingers, the said caps having web portions and being spaced a sufficient distance above the said supporting-fingers to form air-passages between the caps and the fingers, spaces being also left between the web portions of the fingers and the said supporting-fingers to provide sufficient draft for fuel carried by the bar, substantially as described.

8. A grate-surface made up of grate-bars having body portions and enlarged supporting end portions projecting laterally therefrom, a series of cap-supporting fingers also projecting laterally from said body portion, and a series of fuel-supporting finger-caps mounted between the said supporting-fingers and overlapping their edges, the caps adjacent to the end supporting portions of the bars overlapping the same, substantially as described.

707,791. APPARATUS FOR DEVELOPING PHOTOGRAPHIC FILMS. ARTHUR W. MCCURDY, Washington, D. C., assignor to Eastman Kodak Company, Rochester, N. Y., a Corporation of New York. Filed Mar. 29, 1900. Serial No. 10,663. (No model.)

Claim.—1. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a rotary device mounted therein; a flexible apron connected at one end to said rotary device, said apron consisting of a web provided with means for holding the apron in a series of separated layers when wound up; a rotary device connected to the opposite end of said apron; and means for connecting the ends of a flexible photographic film to said rotary devices and maintaining the film in position upon the apron.

2. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against actinic rays; a flexible apron or support mounted therein having its body portion formed of a sheet of celluloid and provided with means for holding the apron in a series of separated layers when wound up; and means for winding the apron about itself in opposite directions.

3. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against actinic rays; a flexible apron or support mounted therein, the body portion of said apron consisting of a sheet of celluloid having openings near its edges; projections extending up from the edges of said apron; and means for winding said apron about itself.

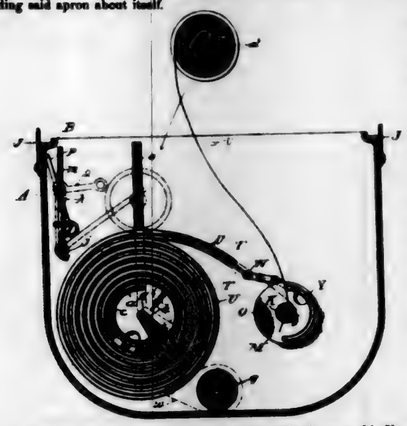

4. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a flexible apron or support mounted therein, said apron having its body portion formed of celluloid; projections extending up from said apron near its side edges; means for winding said apron about itself in opposite directions; and means also mounted within the box for holding the ends of a photographic film and maintaining the body of the film proper in close contact with the body of the apron.

5. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle; a cover therefor having an opening formed therein; actinic-proof material mounted within said opening; and lids G, H, pivotally connected to the cover over said actinic-proof material.

6. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle; a cover therefor having an opening formed therein; a sheet of actinic-proof celluloid mounted in the opening, one portion of said sheet being treated so that it will diffuse the light-rays; and lids pivotally connected to the cover over said celluloid sheet.

7. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle; a cover therefor having an opening therein; a sheet of celluloid mounted in said opening and proof against the passage of actinic rays, one portion of the celluloid sheet being ground; and lids G, H, pivotally mounted upon the cover over said celluloid sheet.

8. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle; a cover therefor having an opening formed therein; a sheet of celluloid proof against the passage therethrough of actinic rays, one portion of the sheet being ground; and means for cutting off the direct admission of light-rays to the interior of the apparatus through the unground portion while permitting the operator to view the film through said portion.

9. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a flexible apron or support mounted within said box; means for winding said apron about itself with a flexible photographic film thereon; a shaft *j* mounted within the box and provided with outwardly-extending arms, one of said arms being adjustable along the length of the shaft; and a spring for normally rotating said shaft and pressing the arms in a downwardly direction.

10. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a flexible apron or support mounted therein; means for winding said apron about itself in a series of separated layers with a flexible photographic film thereon; a shaft *j* mounted within the box and provided with outwardly-extending arms *l*, *m*, said arm *m* being adjustable lengthwise of the shaft; a spring for normally pressing said arms in a downwardly direction; and means for locking said shaft to hold the arms in an upright position.

11. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; means for admitting liquid to said box; and a hollow screw-plug mounted in the box, said plug being formed with an angular or circuitous passage therein to provide for the exit of the air within said box as the liquid enters the same, substantially as and for the purpose described.

12. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against admission of actinic rays; a shaft K mounted therein; disks loosely mounted upon said shaft; means for locking said shaft and the disks together; a flexible apron or support connected at one end to said disks, the body portion of said apron being formed of celluloid and provided with means for holding the same in a series of separated layers when wound up; disks *a*, *b*, rotatably mounted within the box in rear of said shaft K and likewise connected to the opposite end of the apron; and means carried by said disks *a*, *b*, for holding a spool-axle.

13. In a portable apparatus for developing flexible photographic films, the combination of a suitable box closed against the admission of actinic rays; a shaft K mounted therein and having an opening extending therethrough, the body portion of the shaft being cut away adjacent to said opening, substantially as set forth; disks mounted upon said shaft; means for connecting said disks and the shaft together; a flexible apron or support connected to said disks; a second pair of disks *a*, *b* mounted in the box in rear of said shaft and connected to the opposite end of the apron; and means carried by said disks *a*, *b* for engaging and holding a supporting-shaft for a photographic spool.

14. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against admission of actinic rays; a shaft K mounted therein; disks mounted upon said shaft; a series of seats or sockets P formed in the face of one of said disks; a pin connected to the said shaft and adapted to enter said sockets or seats; means for permitting endwise movement of the shaft and holding it in its adjusted position; a flexible apron connected to the disks; a rotatable device mounted in the box in rear of said shaft and connected to the opposite end of the apron; and means carried by said rotatable device for holding a support for a photographic cartridge-spool.

15. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a flexible apron or support mounted therein; a rotatable device connected to one end of said apron; a second rotatable device connected to the opposite end of the apron; means carried by said second device for engaging a shaft or axle; and means for unlocking said devices and permitting the withdrawal of the axle, substantially as and for the purpose described.

16. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a rotatable device mounted in the forward end of said box; a flexible apron or support connected at one end to said device; disks *a*, *b*, rotatably mounted in the box in rear of said forward rotary device; locking-levers carried by said devices; and arms *p* pivotally secured within the box and adapted and arranged to be thrown down in line with the outer ends of the locking-levers, substantially as and for the purpose described.

17. An apron or support for use in the development of flexible photographic films consisting of a sheet of celluloid having projections extending up therefrom adjacent to its side edges.

18. An apron or support for use in the development of flexible photographic films, consisting of a sheet of celluloid having strips of flexible material secured thereto adjacent to its side edges.

19. An apron or support for use in the development of flexible photographic films, consisting of a sheet of celluloid having strips or bands of rubber secured thereto adjacent to its side edges.

20. An apron or support for use in the development of flexible photographic films consisting of a sheet of celluloid having perforations extending therethrough near its side edges, and a strip of flexible material secured to the face of the sheet intermediate the openings and the edges.

21. An apron or support for use in the development of flexible photographic films, consisting of a sheet of celluloid having projections extending up therefrom adjacent to its side edges, in combination with means for holding a flexible photographic film thereon intermediate said raised edges.

22. An apron or support for use in the development of flexible photographic films, consisting of a sheet of celluloid, having perforations formed therein near its side edges, and strips of rubber sewed to the face of said sheet intermediate the perforations and the edges thereof.

23. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a rotatable device mounted therein; a flexible supporting-web connected to said rotatable device; means for holding successive layers of said web in a separated position; and means for connecting the end of a flexible photographic film to said rotatable device.

24. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a rotatable device mounted therein; a self-containing flexible web connected to said device; means for holding successive layers of said web in a separated position; and means for connecting the end of a flexible photographic film to said rotary device.

25. In a portable apparatus for developing flexible photographic films, the combination of a suitable box or receptacle closed against the admission of actinic rays; a rotatable device mounted therein; a self-containing flexible web connected to said device; means for holding successive layers of said web in a separated position; means for connecting the end of a flexible photographic film to said rotary device; and means for maintaining a cartridge in proper position with relation to said web.

707,792. ADJUSTER FOR CENTRIFUGAL GOVERNORS. JOHN B. MCINTOSH and JAMES A. SETHOUS, Auburn, N. Y. Filed Oct. 3, 1900. Serial No. 32,333. (No model.)

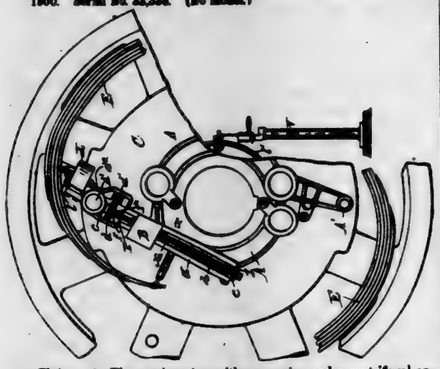

Claim.—1. The combination with an engine and a centrifugal engine-governor controlling the motor fluid and rotating with the engine-shaft, said engine-governor including a weight adjustable to vary the centrifugal effect of the governor, and a screw for adjusting said weight, of electrically-controlled mechanism rotating with the governor for rotating said screw to adjust the weight while the engine is running.

2. The combination with an engine and a centrifugal engine-governor controlling the motor fluid and rotating with the engine-shaft, said engine-governor including a weight adjustable to vary the centrifugal effect of the governor, and a screw for adjusting said weight, of an electric motor rotating with the governor and connections for rotating said screw, and electrical connections for actuating said motor.

3. The combination with an engine, a centrifugally-acting rotating device including a weight adjustable to vary the centrifugal effect, an eccentric and connections for moving the eccentric by the centrifugally-acting device, connections for controlling the motor fluid by said eccentric, and a screw for adjusting said weight, of electrically-controlled mechanism for rotating said screw to adjust the weight while the engine is running.

4. The combination with an engine, of a centrifugally-acting rotating weight, a pivoted arm carrying said weight, an auxiliary weight carried by and adjustable longitudinally of said arm, an eccentric and connections for moving the eccentric by the centrifugally-acting weight, connections for controlling the motor fluid by said eccentric, a screw for adjusting said auxiliary weight, electrically-controlled mechanism for rotating said screw to adjust the weight while the engine is running.

5. The combination with an engine, of a centrifugally-acting device rotating with the engine-shaft and including a weight adjustable to vary the centrifugal effect, an eccentric and connections for moving the eccentric by the centrifugally-acting device, connections for controlling the motor fluid by said eccentric, a screw for adjusting said weight, and means for rotating said screw to adjust the weight while the engine is running.

6. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide, a nut on said weight, a screw passing through said nut and pivotally supported on the main centrifugal weight, a gear connected to said screw, a pinion engaging said gear, an electric motor carried on said main centrifugal weight actuating said pinion, and means for controlling said motor.

7. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide and formed with a nut disposed axially parallel with the guide, a screw passing through said nut, spring-buffers disposed to cushion the auxiliary weight at the ends of its travel, an electric motor carried on the governor-wheel, gearing transmitting motion from said motor to the screw, and means for controlling said motor.

8. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide and formed with a nut disposed axially parallel with the guide, a screw passing through said nut, spring-buffers disposed to cushion the auxiliary weight at the ends of its travel, an electric motor carried on said main centrifugal weight and actuating said screw, and means for controlling said motor.

9. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide, a screw moving said weight, stops in the path of said weight to limit the travel thereof, an electric motor carried on the governor-wheel, gearing transmitting motion from said motor to the screw and comprising a friction-drive to allow the motor to slip and continue running after the auxiliary weight has reached the end of its travel, and means for controlling said motor.

10. The combination with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide, a screw moving said auxiliary weight, stops in the path of said weight to limit the travel thereof, an electric motor carried on said main centrifugal weight, gear transmitting motion from said motor to the screw and comprising a friction-drive to allow the motor to continue running after the auxiliary weight has reached the end of its travel, and means for controlling said motor.

11. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide and formed with a nut disposed axially parallel with the guide, a screw passing through said nut, spring-buffers disposed to cushion the auxiliary weight at the ends of its travel, an electric motor carried on the governor-wheel, gear transmitting motion from said motor to the screw, a friction-drive interposed in said gearing to allow the motor to slip and continue running after the auxiliary weight has reached the end of its travel, and means for controlling said motor.

12. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide and formed with a nut disposed axially parallel with the guide, a screw passing through said nut, spring-buffers disposed to cushion the auxiliary weight at the ends of its travel, an electric motor carried on said main centrifugal weight, gear transmitting motion from said motor to the screw and comprising a friction-drive to allow the motor to continue running after the auxiliary weight has reached the end of its travel, and means for controlling said motor.

13. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide and formed with a nut disposed axially parallel with the guide, a screw passing through said nut, and mounted in bearings on the main centrifugal weight, a disk fastened to said screw, a companion disk mounted longitudinally movable on the screw and locked from turning thereon, a gear sustained by the interposition of its web between said disks, a nut connected to the aforesaid screw, a spring interposed between said nut and movable disk to clamp the gear between the disks, a motor carried on said arm actuating the gear, and means for controlling said motor.

14. The combination, with the rotary frame, eccentric and the main centrifugal weight, of a guide carried on said weight, an auxiliary weight mounted longitudinally movable on said guide and formed with a nut disposed axially parallel with the guide, a screw passing through said nut, spring-buffers disposed to cushion the auxiliary weight at the end of its travel, a friction-drive consisting of a disk fastened to the screw, a companion disk mounted longitudinally movable on the screw and locked from turning thereon, a gear sustained by the interposition of its web between said disks, a nut connected to the aforesaid screw, a spring interposed between said nut and movable disks, a motor carried on said arm and actuating the gear, and means for controlling said motor.

707,793. GASOLENE-ENGINE. ELOY T. MCKAIG, Chicago, Ill. Filed Aug. 26, 1901. Serial No. 73,256. (No model.)

Claim.—1. In a gasolene or hydrocarbon engine, the combination with the cylinder having an inlet-valve, and an outlet-valve having a stem, of a governor for controlling the engine, consisting of a rotating disk or wheel having spring-held weighted arms pivoted thereto and adapted to move in unison and provided with a brake, and of a collar, having a socket to receive the valve-stem and a sleeve with which the brake connects to move the collar into the path of the valve-stem.

2. In a gasolene or hydrocarbon engine, the combination with the cylinder having inlet and outlet valves, of a governor for controlling the engine, consisting of a rotating disk or wheel having connected weighted arms pulled toward each other by spring tension and adapted to be forced apart by centrifugal action of the weights as the wheel revolves and provided with a brake, and of a collar on the shaft of the wheel, having a sleeve in the path of the brake and a socket-piece provided with a recess in the path of the stem of the outlet-valve, said collar and brake being adapted to move together when the weights overcome the tension of their associated spring.

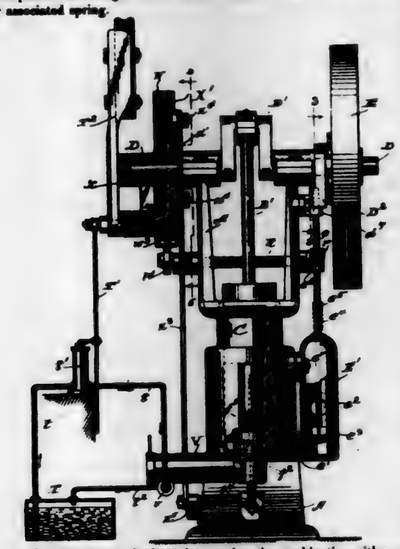

3. In a gasolene or hydrocarbon engine, the combination with a cylinder having an inlet-valve and an exhaust-valve provided with a stem, springs holding said valves normally in their seats, the spring of the exhaust-valve being somewhat stronger than the spring of the inlet-valve, of a governor for controlling the inlet-valve, consisting of a rotating disk or wheel having spring-held weighted arms pivoted thereto and moving outwardly and inwardly from the shaft thereof in unison under spring and centrifugal force, respectively, and provided with a brake-shoe, and of a collar loosely mounted on said shaft, having a sleeve with which the brake-shoe is adapted to cooperate, and provided with a socket-piece embracing the upper end of the valve-stem and having a buffer adapted to be projected within the path of the valve-stem to retain the valve in open position when the collar and brake-shoe move together.

4. In a vapor-engine, the combination with a cylinder and piston having a shaft, and an exhaust-valve for said cylinder having a valve-stem, of a collar loose on the shaft and having a flange and a socket-piece yieldingly held against movement with the shaft, said socket-piece being adapted to cooperate with the valve-stem for the purpose described, a disk or wheel provided with connected spring-pressed weighted arms pivoted thereto, and a brake on one of the arms and adapted to engage the flange.

5. In a vapor-engine, the combination with a cylinder and piston provided with a shaft, and an exhaust-valve for said cylinder having the valve-stem, of a collar yieldingly held against movement therewith and comprising a flange and a socket-piece, said socket-piece being adapted to cooperate with the valve-stem for the purpose described, a disk or wheel, weighted arms pivoted thereto and carrying a brake normally held out of engagement with the collar by spring-pressure and adapted to engage therewith by the centrifugal action of the weights.

6. In a vapor-engine, the combination with a cylinder and a piston connected to a shaft, of a collar loose on the shaft and having a sleeve and a socket-piece provided with a buffer, a guide within the socket, an interposed spring, a reciprocating valve-stem in the guide, and a disk or wheel having weighted arms pivoted thereto provided with a brake, a link connecting the arms, and a spring for normally counteracting the centrifugal action of the weights.

7. In a vapor-engine, the combination with a cylinder, a piston, and a crank-shaft, of a collar on the shaft having an annular flange and a socket-piece provided with a recess, a buffer-plate in the recess, a spring-chamber in one side of the socket-piece, a guide within the socket, a spring in the chamber holding the buffer out of alinement with the guide, a valve-stem within the guide, and a disk or wheel having spring-pressed weighted arms pivoted thereto and provided with a brake engaging the flange under the centrifugal action of the arms.

8. In a vapor-engine, the combination with the cylinder having an inlet-valve and an outlet-valve having a stem, a spring for moving said outlet-valve in one direction, and governing mechanism for holding the outlet-valve open, comprising a rotating disk, weighted arms pivoted thereto and carrying a brake, a link connecting said arms, a spring for normally counteracting the centrifugal action of said weights, and a collar movable on the shaft adapted to be engaged by said brake and moved into the path of the stem.

9. In a vapor-engine, the combination of a cylinder having an inlet and an outlet valve, a stem upon the outlet-valve, a spring for moving said valve in one direction, and a governor for holding said outlet-valve open, comprising a rotating-disk or wheel having weighted arms D^4 pivoted thereto and provided with a brake d, a link D^5 connecting said arms, a spring D^6 for normally counteracting the centrifugal action of said arms, a collar D^2 having a sleeve d^3 and a socket-piece provided with a recess, a buffer d^5 in the recess, and a spring d^6 holding the buffer out of the path of the valve-stem.

10. In an engine of the class described, the combination with the cylinder having an inlet and an outlet valve, of a governor for controlling the engine consisting of a rotating disk or wheel, a spring-held weighted arm pivoted thereto and provided with a brake, and mechanism operated by said brake to hold the outlet-valve open.

11. In an engine of the class described, the combination with the cylinder having inlet and outlet valves, of a governor for controlling the engine consisting of a rotating disk or wheel having a spring-held weighted arm adapted to be moved outward by centrifugal action and provided with a brake, and a collar on the shaft of the wheel, having a sleeve in the path of the brake and a socket-piece in the path of the stem of the outlet-valve, said collar and brake being adapted to move together when the weight overcomes the tension of the associated spring.

12. In an engine of the class described, the combination with a cylinder and piston provided with a shaft, of a collar yieldingly held against movement therewith and comprising a sleeve and socket-piece, a disk or wheel, a weighted arm pivoted thereto and carrying a brake normally held out of engagement with the collar by spring-pressure and adapted to engage therewith by the centrifugal action of the weight

13. In an engine of the class described, the combination with the cylinder having an inlet-valve and an outlet-valve having a stem, a spring for moving said outlet-valve in one direction, and a governor for holding said valve open comprising a rotating disk, a weighted arm pivoted thereto and carrying a brake, a spring normally counteracting the centrifugal action of said weight, and a collar movable on the shaft and adapted to be engaged by said brake and moved into the path of the stem.

707,794. LUBRICATING APPARATUS FOR ENGINES. ELOY T. MCKAIG, Chicago, Ill. Filed Dec. 9, 1901. Serial No. 86,184. (No model.)

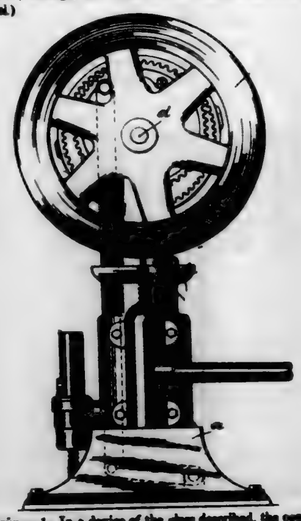

Claim.—1. In a device of the class described, the combination with the cylinder, of the piston adapted to reciprocate therein, a channel con-

nected with the cylinder and adapted to receive a supply of the lubricant, and a wick extending into said channel and having its other end in position to contact with the piston; substantially as described.

2. In a device of the class described, the combination with the cylinder, of the piston adapted to reciprocate therein, a channel connected with the cylinder and adapted to receive a supply of the lubricant, a wick extending into said channel and having its other end in position to contact with the piston, and means for holding said wick in said channel; substantially as described.

3. In a device of the class described, the combination with the cylinder, of the piston adapted to reciprocate therein, a channel connected with the cylinder and adapted to receive a supply of the lubricant, a wick extending into said channel and having its other end in position to contact with the piston, and means for holding said wick in said channel consisting of the annular spring-clip *j*; substantially as described.

707,795. WHIFFLETREE. ROBERT W. MCKINLEY, Ripley, Ohio. Filed Jan. 20, 1902. Serial No. 90,566. (No model.)

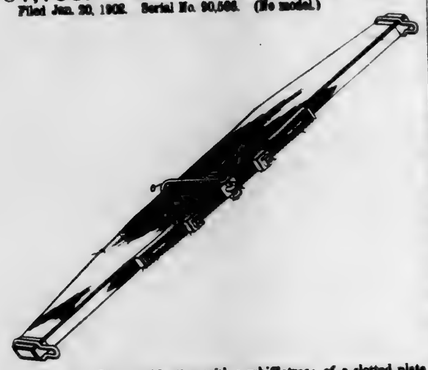

Claim.—1. The combination with a whiffletree; of a slotted plate slidably mounted thereon, teeth upon said plate, toothed blocks normally engaging the teeth of the plate, means for clamping said blocks against the plate whereby said plate is locked in adjusted position, and a pivot-bolt for the whiffletree, secured to the slidable plate.

2. The combination with a whiffletree; of bolts extending therefrom, a slotted plate slidably mounted thereon, teeth upon the plate, toothed blocks upon the bolts and engaging the teeth of the plate, nuts upon the bolts for clamping the blocks and plate together, a pivot-bolt for the whiffletree, secured to the plate.

707,796. ACETYLENE-GAS GENERATOR. SYRANDA L. NEWLIN and JESS MATHESON, Kingriver, Cal.; said Newlin assignor to said Matheson. Filed Mar. 27, 1902. Serial No. 100,239. (No model.)

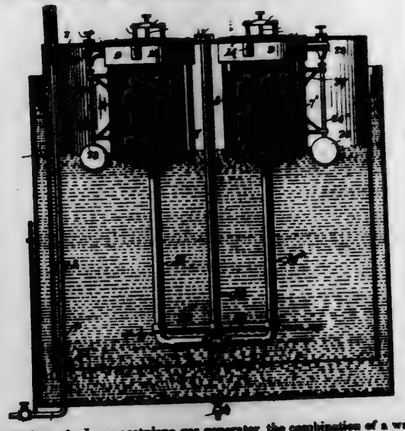

Claim.—1. In an acetylene-gas generator, the combination of a water-tank, a gas-holder movably mounted therein, a gas-generator carried by the gas-holder and comprising a casing having an inlet for water and a discharge for the generated gas, means for closing the inlet to prevent access of water to the generator, a valve controlling the outlet, means for automatically opening said valve, and means for holding said valve closed against the pressure of the opening device, substantially as described.

2. In an acetylene-gas generator, the combination of a water-tank, a bell or gas-holder movable therein, a generator carried by the bell and comprising a casing having an inlet for water and an outlet for the generated gas, a carbid-basket arranged within the casing, a valve for opening and closing the inlet to regulate the supply of water to the casing, means for holding the outlet-valve closed, and a float carrying a tappet device adapted to open said valve in a predetermined position of the valve when the said valve-closing device is retracted, substantially as specified.

3. In an acetylene-gas generator, the combination of a water-tank, a bell or gas-holder arranged therein, a generator carried by the gas-holder and comprising a casing having a carbid-basket arranged therein and provided with a depending pipe for the inlet of water thereto, a valve-controlled discharge regulating the outflow of gas from the generator, a rod for opening the valve of said discharge, a float for operating said rod, and means for holding the valve seated against the pressure of the rod, substantially as set forth.

4. In an acetylene-gas generator, the combination of a water-tank, a bell or gas-holder arranged therein, generators carried by the gas-holder and each comprising a casing having a carbid-basket arranged therein and provided with a depending water-supply pipe, the water-supply pipes of the two generators having their lower ends arranged in close relation, a valve-controlled discharge regulating the outflow of gas from each generator, means for holding the valves thereof closed against their seats, means for opening the valves in a predetermined position of the gas-holder when said valve-holding means are retracted, and means common to both pipes for opening or closing either of the water-inlet pipes at will, substantially as specified.

5. In an acetylene-gas generator, the combination of a water-tank a gas-holder arranged therein, generators carried by the gas-holder, each generator comprising an imperforate casing containing a perforate carbid-holder and having a pendent water-inlet pipe, the two pipes having their lower ends arranged in close relation, a valve-controlled discharge regulating the outflow of gas from each generator-casing, means for holding the valves thereof closed against their seats, rods for opening the valves when the valve-closing means are retracted, floats for bringing said rods into action when the gas-holder descends to a predetermined position, a valve adapted to close the lower end of either of the aforesaid water-inlet pipes, a rod connected to said valve, and means for operating the rod, substantially as set forth.

707,797. ROTARY APPARATUS FOR THE PRODUCTION OF DIFFUSED ELECTRIC DISCHARGES. MARIUS OTTO, Neuilly, France. Filed Nov. 12, 1901. Serial No. 82,080. (No model.)

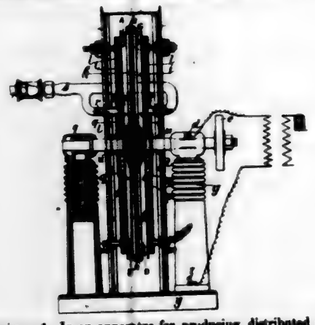

Claim.—1. In an apparatus for producing distributed electric discharges, the combination with electrodes moving relatively to each other, of dielectric material interposed between said electrodes, substantially as described.

2. In an apparatus for producing distributed electrical discharges, a pair of stationary conducting-disks having each a covering or facing of dielectric material, and a conducting-disk movably mounted between the dielectric-covered faces of the stationary conducting-disks, substantially as described.

3. In an apparatus for producing distributed electrical discharges, a pair of hollow stationary conducting-disks arranged parallel to each other, means for supplying a cooling medium thereto, a covering or facing of dielectric material on the opposing faces of said disks, and a disk of conducting material rotatably mounted between said dielectric-covered faces, substantially as described.

707,798. PARER AND SLICER. GEORGE W. PAUL, Pittsburg, Pa. Filed Mar. 16, 1901. Serial No. 51,510. (No model.)

Claim.—A paring and slicing implement which comprises a handle and frame formed of a single piece of wire doubled upon itself, the ends of the two strands being extended in parallel relation to one another, a slicer comprising an integral sheet-metal plate having an elongated slot formed therein extending in proximity to the sides of said plate, an integral curved extension having a knife-edge on its lower face carried by one side of said slicer, the said ends of the frame engaging the outer face of said slicer and extending to a point below said slot, the sides of said plate being bent over to engage said frame except at the point of the curved extension, the part above said slot being bent at an angle and having its sides doubled upon themselves from a point at the ends of said frame, the upper end, of said inclined part being straight, the walls of said slot being bent in opposite directions, and a knife-edge on one of said walls, substantially as described.

707,799. GRAIN-DRILL. OCTAVE A. POIRIER, Minneapolis, Minn. Filed June 9, 1902. Serial No. 110,902. (No model.)

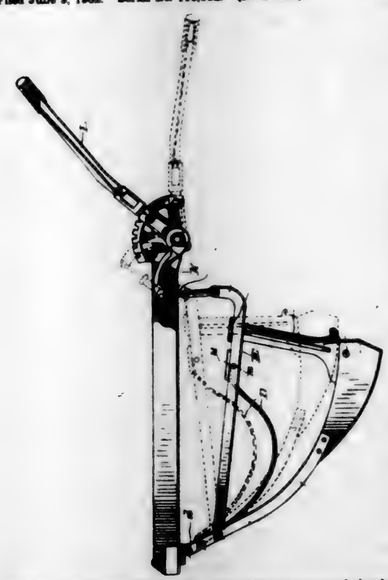

Claim.—1. The combination, with a suitable frame and the draw-bars pivotally connected to said frame, of guide-bars pivotally connected to said draw-bars, a head-block secured to the forward ends of the draw-bars and a spring having one end connected to said head-block, its opposite end forming a sliding bearing with a plate on the guide-bars and its intermediate portion bearing upon the draw-bars, substantially as described.

2. The combination, with the frame and the draw-bars pivoted thereto, of the guide-bars pivoted to said draw-bars and provided with means for adjusting them and the spring having one end secured to said draw-bars and its other end forming a sliding bearing with a plate on the guide-bars, substantially as described.

3. The combination, with the pivoted draw-bars, of the head-block arranged between the forward ends of said draw-bars, the guide-bars pivotally connected to said draw-bars and a spring having one end secured to said head-block and its other end forming a sliding bearing with a plate on the guide-bars, substantially as described.

4. The combination, with the draw-bars, of the head-block secured to the forward portions of said draw-bars, the guide-bars arranged above said draw-bars and the spring having one end connected to said head-block and the other end forming a sliding bearing with a plate on said guide-bars, the intermediate portion of spring forming a bearing on said draw-bars, substantially as described.

707,800. SPELLING-MANUAL. ROBERT B. ELGIDON, Washington, D. C., assignor to William B. Stockett & Co., a firm consisting of William B. Stockett and Charles A. Stockett, Washington, D. C. Filed Feb. 13, 1902. Serial No. 93,867. (No model.)

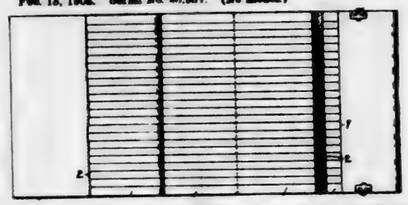

Claim.—1. A book consisting of a cover provided at one edge with a pocket opening toward the central fold of the cover, a plurality of leaves permanently secured or bound at said central fold of the cover, and having a weakened line parallel with the bound edge and approximately midway between the bound and free edges; the pocket of the cover being of a size to receive the half-leaves that may be severed, substantially as described.

2. A book consisting of a cover extended at one edge and folded to form a pocket, a plurality of leaves permanently secured or bound at the central fold of the cover and having a weakened line approximately midway between the edges; the pocket of the cover being of a size to receive the half-leaves that may be severed on said weakened line, substantially as described.

707,801. WEED-CUTTING ATTACHMENT FOR PLOWS. JOHN M. ROBINSON, Goldthwaite, Tex. Filed May 29, 1902. Serial No. 108,467. (No model.)

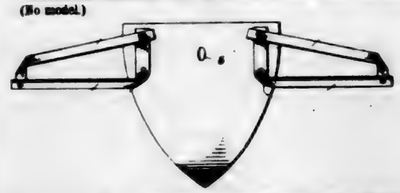

Claim.—1. In a cutting attachment for plows, the combination of the plow-shovel, the cutting-blades attached to the shovel, and brace-rods connecting the outer ends of said blades with said shovel, substantially as set forth.

2. In a weed-cutting attachment for plows and cultivators, the combination of the plow-shovel, the cutting-blades attached to the shovel and having their attaching ends bent and twisted at an angle to said blades so that when bolted to said shovel the blades will lie at the proper cutting angle, and brace-rods connecting the outer ends of said blades to the plow-shovel, substantially as set forth.

707,802. BALING-PRESS. JOHN P. SHAW, Aberdeen, Miss. Filed Feb. 20, 1901. Serial No. 48,982. (No model.)

Claim.—In a baling-press, the combination with the casing having a sliding top and hinged side doors and the ends of the casing having vertically-elongated slots therein; of a follower having arms projecting through said slots, a drive-shaft mounted on top of the casing having gear-wheels on opposite ends, brackets secured to the opposite ends of the casing having stub-shafts provided with drums journaled therein and in the ends of the casing, said stub-shafts having on their outer ends gear-wheels meshing with the gear-wheels on the drive-shaft, the inner ends of said stub-shafts being provided with ratchet-wheels meeting with suitably-arranged pawls, and ropes secured to the drums and the bearings of the projecting arms of the follower, and the cranks secured to the stub-shafts to rotate the same so as to wind the ropes on the drums thereby moving the follower vertically upward toward the top of the press, substantially as specified.

707,802.

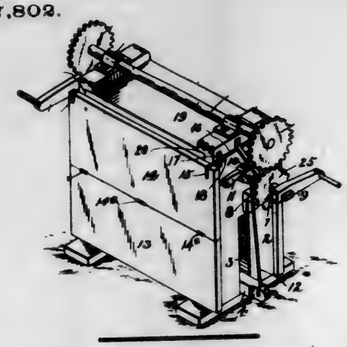

707,808. CLAMP. JOHN A. SMITH, Dayton, Ohio. Filed Dec. 12, 1901. Serial No. 85,562. (No model.)

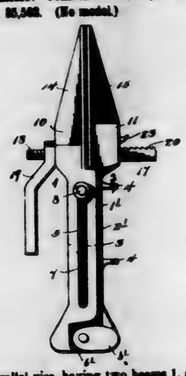

Claim.—A parallel vise, having two beams 1, and 2; beam 1, consisting of a vise-jaw 14, and below said jaw and integral therewith, a square part 10, provided with a smooth-bore horizontal perforation 12, and extending from the lower end and front face of said square part, a longitudinally-slotted arm 1', just one-half the thickness of said square part; a short arm extending rearwardly from the lower end of said arm; a bearing 6', extending inwardly from the rear end of said short arm; beam 2, consisting of a vise-jaw 15, a square part 11, provided with a smooth-bore rectangular perforation 13, a slotted arm 2', extending from the rear face of said square part; a short arm, extending inwardly from the lower end of said arm; a bearing extending inwardly from the front end of said arm; cross toggle-levers 5, and 6, their lower ends pivoted to the bearings 5', and 6', respectively, their upper ends perforated; bolts 8, and 9, passing through the perforations in the upper ends of said arms, and through the slots 3, and secured loosely, so that they may slide up and down in said slots; a bar 17, having one end cylindrical and threaded, and working in said smooth-bore perforation 12; a lever-handle nut working on the threads of the cylindrical part of said bar 17, and against the outer face of said beam, the other end of said bar working in the rectangular smooth-bore perforation 13, and having in its upper edge, notches 20; a dog 21, provided with a thumb-lift 23, and with teeth 22, adapted to catch in the notches 20, of said bar; said beams adapted to be moved to the right and left in parallel lines, and to be held in place by said bar, a dog and lever-handle nut, substantially as shown and described and for the purposes set forth.

707,804. ELECTROLYTIC CELL. ADOLPH SOMER, Cambridge, Mass. Filed Aug. 17, 1899. Serial No. 727,681. (No model.)

Claim.—1. In an apparatus for the electrolysis of saline solutions, an anode-compartment, a cover therefor, a cathode, an anode in said compartment having a non-conducting horizontal flat upper surface, and a tube for the introduction of material to be electrolyzed, said tube leading through said cover and terminating above said anode.

2. In an apparatus for the electrolysis of saline solutions, an anode-compartment, a cover therefor, an anode in said compartment, a cathode, and a liquid seal or water-joint leading through said cover, said liquid seal or water-joint having a high outer wall or cup, and a relatively low inner tube providing an unobstructed passage to permit of the introduction of a liquid into the compartment and the discharge of the liberated gas.

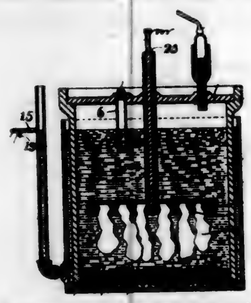

3. In an apparatus for the electrolysis of saline solutions, an anode-compartment, a cover therefor, a cathode, a tube for the discharge of gas, a cup surrounding said tube and forming therewith an annular receptacle for the reception of liquid, the outer wall of said cup projecting above said tube so that liquid introduced in said cup will flow through said tube into the compartment, and a gas-conducting pipe having its end placed in said annular receptacle whereby the escape of gas except through said pipe is prevented by the liquid in said receptacle.

4. In an apparatus for the electrolysis of saline solutions, an anode a cathode, a diaphragm consisting of a layer of insoluble granular non-conducting material and a foraminous non-fibrous sheet of conducting material supporting said granular material, and means for maintaining said sheet out of contact with said cathode.

5. In an apparatus for the electrolysis of saline solutions, an anode, a cathode, a diaphragm consisting of a layer of insoluble granular non-conducting material, a foraminous non-fibrous sheet of conducting material supporting said granular material, means for maintaining said sheet out of contact with said cathode, and a gas-tight non-conducting tube which forms the vertical wall of the anode-compartment and is placed upon the said foraminous sheet.

6. In an apparatus for the electrolysis of saline solutions, an anode, a cathode, a diaphragm consisting of a layer of insoluble granular non-conducting material and a foraminous non-fibrous sheet of conducting material, a gas-tight non-conducting tube which forms the vertical wall of the anode-compartment and is placed upon the said sheet, and electrically non-conducting means for supporting the said sheet and tube, and maintaining said sheet out of contact with said cathode.

7. In an apparatus for the electrolysis of saline solutions, a conductive receptacle, a wall forming an anode-compartment, an anode in said compartment, a cathode, a diaphragm separating the anode and cathode and located at the bottom of the anode-compartment, and a support for the said wall and diaphragm, said support being made of a non-conducting material and having openings on a plane with the lower surface of the diaphragm, substantially as described.

8. An apparatus for the electrolysis of saline solutions comprising a metallic tank which alone constitutes the cathode, an open-ended tube in said tank, the walls of which are non-conducting and impermeable to gas, an anode in said tube, a porous diaphragm closing the bottom of said tube, and a separable cover closing the top of said tube, substantially as described.

9. An apparatus for the electrolysis of saline solutions, comprising a metallic tank, which constitutes the cathode, a non-conducting impervious tube in said tank, an anode in said tube, a non-conducting open support for said tube, and a diaphragm consisting of a foraminous non-fibrous sheet closing the bottom of said tube and held between said tube and said support, and a layer of sand or other insoluble granular non-conducting material on said sheet.

707,805. MILL. ADOLPH THIESS, Paris, France. Filed Apr. 11, 1901. Serial No. 55,343. (No model.)

Claim.—In the improved grinding-mill, the combination with a cylindrical casing and perforated cover-plate removably secured on the same of a stationary inverted cup within the casing, stepped annular rows of grinding-teeth, having curved bodies described in the arc of the annulus on the inner wall of said cup, a rotatable grinding-cone arranged in said cup, correspondingly-stepped annular rows of curved grinding-teeth on the outer wall of said cone and extending into the intermediate spaces between the teeth of said cup, a vertical shaft carrying said cone and suitably journaled in bearings, means for actuating said shaft, a hopper mounted on the cover-plate of the casing, a circular screen arranged beneath said hopper and secured to and rotating with said vertical shaft to uniformly distribute grains to the cup and cone, means for preventing grains from dropping upon the upper surface of the cups, and means for adjusting said shaft vertically, substantially as and for the purpose set forth.

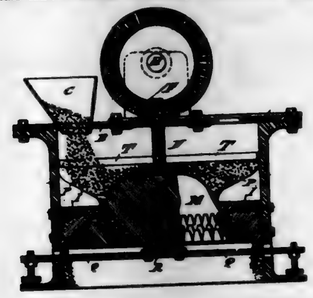

707,806. LUMBER-CONVEYER. EDWIN E. THOMAS, St. Paul, Minn., assignor of one-half to Union Iron Works, Minneapolis, Minn., a Corporation of Minnesota. Filed Jan. 21, 1902. Serial No. 90,060. (No model.)

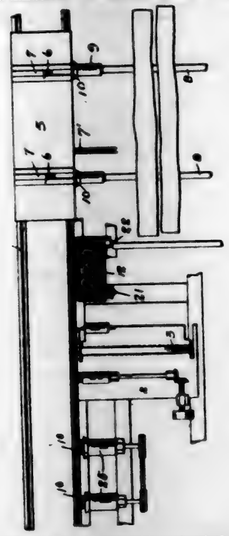

Claim.—1. The combination, with a saw, log-deck and carriage, of an endless conveyer belt or bed arranged below the level of the carriage-blocks and whereon the lumber falls that is cut on the backward or return movement of the carriage, said bed being composed of a series of slats or bars arranged at intervals, ribs provided lengthwise of said bars, and faces provided at or near the inner ends of said bars and inclined toward the middle of the same to receive the lower edges of the lumber as it falls from the carriage.

2. The combination, with a double-cutting band-mill and the log-carriage, of rolls arranged to receive the lumber as it falls from the carriage, cone-shaped or beveled faces provided near the inner ends of said rolls to receive the lower edges of the lumber and direct it to its proper flatwise carrying position on said rolls and an endless lumber-conveying bed or belt having slats provided near their inner ends with inwardly-inclined surfaces.

3. In a sawmill, a lumber-conveyer comprising a series of bars or slats and links connecting the same, said bars being provided near one end with inclined faces to engage the lumber and direct it to its proper carrying position on said bars, and means for driving said conveyer.

4. The combination, with a band-saw mill, of a lumber-conveyer bed or belt provided near the saw and comprising a series of metal bars or slats and links connecting the same, and projections or teeth provided near the inner ends of said bars and having inclined faces to receive and direct the lumber to the proper carrying position on said bars and said projections being also adapted to act as guides to prevent the lumber from coming in contact with the saw while traveling over said conveyer.

707,807. COUCH-BED. FRANCIS H. TINKHAM, Springfield, Mass. Filed Apr. 26, 1901. Serial No. 104,844. (No model.)

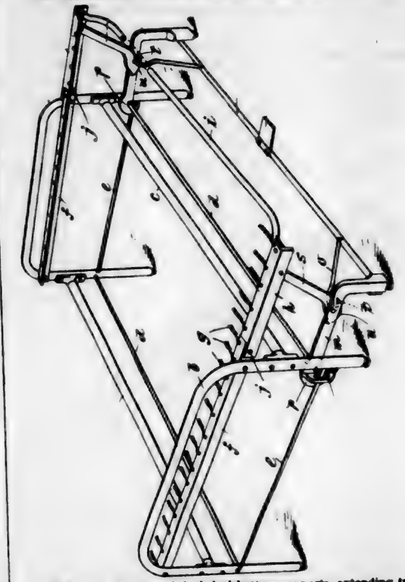

Claim.—1. In a couch-bed, bed-bottom supports extending transversely of the couch, a side frame pivotally attached to the ends of said bed-bottom supports, arms depending from the side frames, a support for said side frames slidable in and out from beneath the couch on the floor, devices on said side-frame support, and on said arms adapted to become engaged by the upward-swinging movement of the side frame, whereby the side-frame support may be withdrawn from under the couch, together with automatically-operating interlocking means between said arms and the side-frame support operable at the limit of the outward movement of the latter.

2. In a couch-bed frame, bed-bottom supports, a side frame pivotally attached thereto and adapted to swing from a horizontal, downwardly to a vertical position, or vice versa; a frame slidable on the floor and on the frame of the couch, in and out under the latter, a device on said sliding frame for interlocking with the frame of the couch at the limit of its outwardly-sliding movement, and a connection between the sliding frame and the side frame, whereby the upwardly-swinging movement of the latter will operate to draw out said sliding frame from under the couch.

3. In a couch-bed frame, bed-bottom supports, a side frame pivotally attached thereto and adapted to swing from a horizontal to a vertical position downwardly, and vice versa; a frame slidable toward and from the couch under said side frame, an arm on the latter to engage said slidable frame on the outward movement of the latter, whereby said slidable frame is rigidly supported in horizontal position; a device on said slidable frame for interlocking with the couch-frame when the side frame is extended, and means for pivotally rocking said slidable frame on said arm to disengage the former from its engagement with the couch-frame.

4. In a couch-bed frame, bed-bottom supports, a side frame pivotally attached thereto and adapted to swing from a horizontal downwardly to a vertical position, or vice versa; a frame slidable on the floor and on the frame of the couch, in and out under the latter; a device on said sliding frame for interlocking with the frame of the couch at the limit of its outwardly-sliding movement, an interlocking connection between the sliding frame and the side frame, and means whereby, upon the inward movement of the sliding frame, the disengagement of the interlocking connection between said side frame and said sliding frame may be effected.

5. The combination in a couch-bed, of a side frame pivotally attached thereto, which may be swung upward into horizontal position in the plane of the top of the couch; of a frame slidable on the floor in and out from under the couch, and a pivoted arm constituting a vertical brace between said side frame and slidable frame and adapted to engage the sliding frame, to draw it outwardly by the upward movement of the side frame, and interlocking devices between said arm and the sliding frame to lock the arm in frame-supporting position at the limit of the upwardly-swinging movement of said frame.

6. The combination in a couch-bed, of a side frame pivotally attached thereto, which may be swung upward into horizontal position in the plane of the top of the couch, of a frame slidable on the floor in and out from under the couch, and a pivoted arm constituting a vertical brace between said side frame and slidable frame, adapted to be automatically locked in side-frame-supporting position by the outward movement of the sliding frame, and means on the couch whereby said arm may be automatically disengaged from the sliding frame by the inward movement of the latter.

707,808. WINDOW. HUGO VETTEL, Newark, N. J. Filed June 20, 1902. Serial No. 112,466. (No model.)

Claim.—1. The combination of a window-casing provided with parallel front and rear guide-grooves and parting-strips having recesses adjacent to the window-sill, switch-tongues pivoted in said recesses and adapted to form inclined channels with the parting-strips, and sashes guided along said grooves and provided with pivots at their lower ends and locking devices at their upper ends, the lower of said sashes being permitted to be shifted from one guide-groove into the other by means of the switch-tongues, substantially as set forth.

2. The combination, with a window-casing provided with parallel guide-grooves, of switch-tongues located between said guide-grooves near the sill, said switch-tongues being pivoted at their lower ends to the window-casing, sashes guided along the guide-grooves and provided with pivots at their lower ends projecting into said guide-grooves, and shiftable rollers at the upper ends of the sashes adapted to move in said guide-grooves, substantially as set forth.

3. The combination of a window-casing provided with parallel front and rear guide-grooves, pivoted switch-tongues located in recesses in the parting-strips near the window-sill, said rear guide-grooves having adjacent to the window-sill sliding sashes, pivot-rollers at the lower corners of said sashes, and locking devices having rollers at the upper corners of said sashes, said rollers being adapted to move in said guide-grooves, each sash being adapted to be tilted inwardly when the locking-pins are withdrawn and the lower rails of the same are placed in the recesses of the window-casing, substantially as set forth.

4. The combination of a window-casing provided with independent front and rear guide-grooves and recesses at the rear guide-grooves, sashes guided along the same, pivot-rollers at the lower ends of the sashes, weighted sash-cords connected with said pivot-rollers, switch-tongues located in recesses in the parting-strips, said switch-tongues forming inclined channels for shifting the lower sash from the front guide-grooves into the rear guide-grooves and into said recesses of the casing so as to permit the tilting of the sashes for cleaning without interference with the sash-cords, substantially as set forth.

707,809. MOTOR. MAXIMILIAN VILLARDI, New Haven, Conn. Filed Aug. 25, 1901. Serial No. 73,003. (No model.)

Claim.—1. A motor comprising a shell or case formed with a series of chambers in opposite sides opening into the shell but otherwise closed, a wheel mounted in said shell and formed with a series of peripheral parabolic buckets arranged in line with said chambers across the mouths of which they pass, a tangential inlet-opening through the shell directly in line with and against the tips of said buckets, and an exhaust or discharge opening in the bottom of the shell.

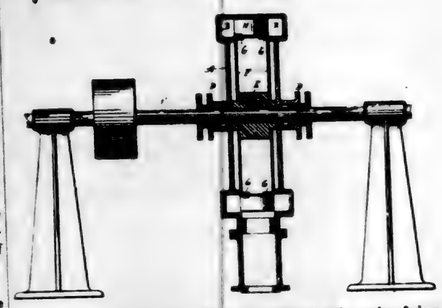

2. A motor comprising a shell or case formed with a series of chambers in opposite sides, a wheel mounted in said shell, said wheel comprising a hub and flanges supported on opposite sides thereof, said flanges turned inward at their outer edges, a series of parabolic buckets secured to the said turned-in edges, said buckets being arranged in line with said chambers across the mouths of which they pass, and an inlet-opening through the case directly in line with and against the tips of the said buckets, substantially as described.

707,810. DENTAL FORM FOR HOLDING TEETH. RAYMOND J. WISNER, Milwaukee, Wis. Filed Jan. 11, 1902. Serial No. 89,204. (No model.)

Claim.—1. As a new manufacture, a so-called dummy jaw or dental form for demonstrating or experimental purposes, provided with a plurality of recesses or sockets for the reception of the roots or covered portions of teeth, substantially as set forth.

2. As a new manufacture, a so-called dummy jaw or dental form for demonstrating or experimental purposes, provided with a plurality of recesses or sockets for the reception of the roots of teeth; teeth located in said sockets or recesses; and means for retaining said teeth in their sockets as set forth.

3. As a new manufacture, a dummy jaw or dental form for demonstrating or experimental purposes, provided with a plurality of sockets or recesses for the reception of the roots of teeth; teeth located in said sockets or recesses; and a packing of adhesive material interposed between the walls of said sockets and the teeth therein, and adapted to adhere to and rigidly retain said teeth in their respective sockets, as set forth.

4. As a new manufacture, a dummy jaw or dental form for demonstrating or experimental purposes, formed of flexible material and provided with a series of sockets or recesses for the reception of the roots of teeth; teeth located in said sockets or recesses; and means for retaining said teeth in their sockets, substantially as set forth.

707,811. LAMP-BURNER. THOMAS B. ARNOTT, Sale, Victoria, Australia. Filed Dec. 6, 1901. Serial No. 84,902. (No model.)

Claim.—1. The combination with a burner comprising a body portion and a separable crown, of a lifting device fixedly connected to the crown and having a sliding connection with the body portion, and means carried by the lifting device for engaging the wick-tube of the body portion and holding the separable crown in elevated adjustment above the body portion, substantially as set forth.

2. The combination with a burner comprising a body portion and a separable crown, of a lifting device consisting of an angular strip fixed to the separable crown and having a sliding engagement with the body portion, the upper end of said strip projecting laterally to form a finger-piece and the inner or lower end being formed of spring metal and adapted to engage the wick-tube of the body portion and support the crown portion in elevated position above the same, substantially as set forth.

707,811.

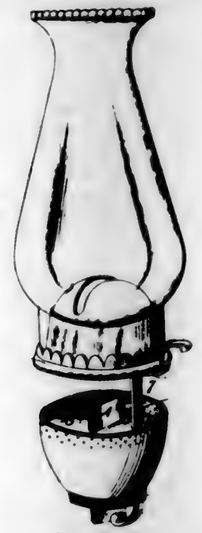

707,812. ALKOXY-CAFFEIN AND PROCESS OF MAKING SAME. FRITZ ACH, Mannheim, Germany, assignor to The Firm of C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Filed Apr. 16, 1898. Serial No. 677,857. (Specimens.)

Claim.—1. In the art of preparing the alkoxy derivatives of chloro-caffein, the process which consists in reacting upon 3'-8-dichloro-caffein with an alcohol.

2. In the art of preparing the alkoxy derivatives of chloro-caffein, the process which consists in boiling 3'-8-dichloro-caffein with methyl-alcohol.

3. In the art of preparing the alkoxy derivatives of chloro-caffein the process which consists in heating chloro-caffein under pressure, together with phosphorus-penta-chlorid and phosphorus-oxy-chlorid in the proportions and under the conditions substantially as stated, then cooling, and then evaporating the resultant liquor and boiling the residue, together with methyl-alcohol, in a reflux, in the proportions and at the temperature, substantially as stated.

4. As a new series of chemical compounds, alkoxy-chloro-caffeins, that is, alkoxy derivatives of chloro-caffein, said compounds being others which may be obtained in the form of crystals and which have the group

$$C_nH_{2n}+1.O.CH_2$$

bound to the atom N in the position (3,) said compounds, moreover, all melting above 100°, centigrade, and all giving a murexid reaction.

5. As a new chemical compound, 3'-methoxy-8-chloro-caffein having the formula above given, and the following properties: it crystallizes in fine shining felted needles, having the melting-point 129° to 130°, centigrade; it is soluble in boiling water, hot alcohol, benzene, aceton, acetic ether and chloroform, and in fuming hydrochloric acid; it gives a strong murexid reaction with dilute nitric acid or chlorin water.

707,813. TRIPHENYL-METHANE DYE AND PROCESS OF MAKING SAME. FRITZ ACH, Mannheim, Germany, assignor to The Firm of C. F. Boehringer & Soehne, Mannheim, Waldhof, Baden, Germany. Filed Dec. 23, 1900. Serial No. 40,702. (Specimens.)

Claim.—1. The process of preparing dyes which consists in oxidizing a mixture of an amido-phenyl-tartronic acid and an aromatic base.

2. The process of preparing dyes of the triphenyl-methane series which consists in heating the mixture of an amido-phenyl-tartronic acid with an aromatic base in the presence of an oxidizing agent.

3. The process of preparing dyes of the triphenyl-methane series which consists in heating the mixture of an amido-phenyl-tartronic acid with an aromatic base and hydrochloric acid in the presence of an oxidizing agent.

4. The process of preparing dyes which consists in heating the mixture of an amido-phenyl-tartronic acid with an aromatic base in the presence of a nitro compound, and a ferrous salt.

5. The process of preparing dyes of the triphenyl-methane series which consists in heating the mixture of an amido-phenyl-tartronic acid with an aromatic base and hydrochloric acid in the presence of a nitro compound, and a ferrous salt.

6. The process of preparing dyes of the triphenyl-methane series, which consists in oxidizing a mixture of an amido-phenyl-tartronic acid and a primary aromatic amin.

7. The process of preparing dyes of the triphenyl-methane series, which consists in heating an amido-phenyl-tartronic acid together with a primary aromatic amin and hydrochloric acid in the presence of a nitro compound, and a ferrous salt.

8. The process of preparing dyes which consists in heating an amido-phenyl-tartronic acid together with ethyl-benzyl-anilin and hydrochloric acid in the presence of an oxidizing agent.

9. The process of preparing dyes which consists in heating dimethyl-amido-phenyl-tartronate of potassium mixed with ethyl-benzyl-and hydrochloric acid, in the presence of nitrobenzene and ferric chlorid.

10. As a new dye compound, dimethyl-diethyl-dibenzyl-triamido-triphenyl-carbinol which has hitherto not been obtained in crystalline form, but tends to become resinous on exposure to air, is insoluble in water but readily soluble in alcohol is of a light-gray color but rapidly darkens in the air, and which when treated with feebly-fuming sulfuric acid at water-bath temperature yields a violet dyestuff.

707,814. COLLAR FOR HORSES OR THE LIKE. JOHANNES AHRENDT, Hamburg, Germany. Filed Feb. 5, 1901. Serial No. 46,086. (No model.)

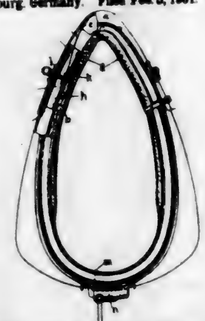

Claim.—A collar comprising an upper portion to fit over the neck and having socketed lower ends, said upper portion consisting of an elastic upper piece bent to the form of an inverted U, a stiffened under neck-pad of similar shape, and a short middle piece between these bent parts, the lower portion of the collar having ends to fit the sockets of the upper portion, and means for adjusting and securing said ends in said sockets, substantially as described.

707,815. COMBINED BRICK AND TILE FOR WALLS &c. DAVID W. ANDERSON, Richmond, Va. Filed Jan. 23, 1902. Serial No. 90,947. (No model.)

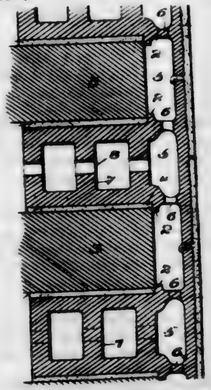

Claim.—1. A combined brick and tile having a shoulder projecting from the body portion beyond the inner face of an intermediate brick

to serve as a guide for said intermediate brick, and to prevent the mortar from being pressed out from between the bricks.

2. A combined brick and tile having a concavity in both the upper and lower edge of the tile portion to form a pocket for any excess of mortar.

3. A brick or tile having an enlarged edge and a concavity in both the upper and lower edge thereof to form pockets to contain the mortar keyage.

4. A combined brick and tile consisting of a hollow body portion, an extended tile surface, shoulders between the tile surface and the body portion, the edges of the tile portions having concavities or mortar-pockets.

5. A wall or similar structure composed of combined brick and tile having shoulders, intermediate bricks seated against the shoulders, extended tile surfaces on the combined brick and tile, and concave meeting edges on said extended surfaces, substantially as described.

707,816. EQUALIZER FOR CABLE-ROPES. WALTER H. BENNE, New York, N. Y. Filed Nov. 16, 1901. Serial No. 82,502. (No model.)

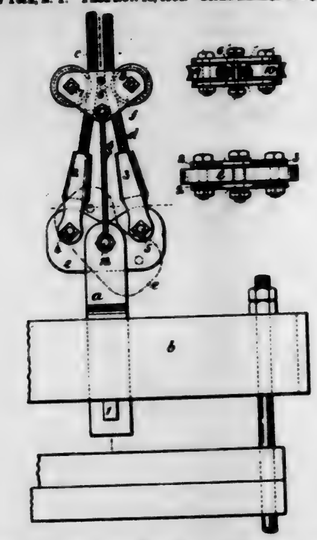

Claim.—1. The combination with the counterweight or car and two ropes or cables, of a device to which adjacent ends of said ropes or cables are pivotally connected, and a pivotal connection between said device and the counterweight or car, and means substantially as shown and described for holding the said ropes or cables above and adjacent to their point of connection in a predetermined relation to one another and at the same time permitting freedom of movement, substantially as set forth.

2. The combination with the cross-bar of an elevator-car or counterweight, the yoke connected therewith and ropes or cables, of a rocker-bar pivotally connected to the said yoke and devices at the respective ends of the ropes or cables for pivotally connecting the same to the rocker-bar at opposite sides of its pivotal connection to the yoke, and a frame of plates between which the ropes or cables pass, devices between and carried by said frame of plates and against which the cables bear to maintain the cables in a predetermined relation to one another, and means for connecting the said frame of plates to the aforesaid yoke, substantially as set forth.

3. The combination with the cross-bar of an elevator-car or counterweight, a yoke connected therewith, a pair of ropes or cables and rocker-heads connected to the ends of the ropes or cables and having strap prolongations with eyes, of a rocker-bar and a bolt for centrally and pivotally connecting the rocker-bar to the yoke and bolts for pivotally connecting the strap prolongations of the rocker-heads of the ropes or cables to the said rocker-bar at opposite points to its pivotal connection with the yoke, said rocker-bar having rounded corners and a central depression in said upper edge between the rounded corners, substantially as and for the purposes set forth.

4. The combination with a cross-bar of an elevator-car or counterweight and the yoke connected therewith, of a rocker-bar and a bolt for pivotally connecting the same centrally to said yoke, ropes or cables, rocker-heads connected to the ends of the ropes or cables and having prolongations with eyes, bolts for connecting the rocker-head prolongations to the rocker-bar adjacent to its ends, plates and bolts connecting the same and forming a frame between which said ropes or cables pass, grooved rollers pivotally mounted between said plates and against which the said ropes or cables bear, and bars extending from the said yoke to the said frame of plates connected at one end to the bolt of the yoke to which the rocker-bar is pivoted and at the other end to one of the securing-bolts of the frame of plates, substantially as and for the purposes set forth.

707,817. TYPE-WRITING MACHINE. ERNST M. ERNEST, Boston, Mass., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y., a Corporation of New York. Filed June 28, 1900. Serial No. 21,871. (No model.)

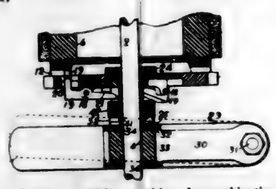

Claim.—1. In a type-writing machine, the combination with a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a line-space wheel adjoining said fine-toothed wheel, and a detent extending through the line-space wheel to engage the said fine-toothed wheel.

2. In a type-writing machine, the combination with a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a space-wheel adjoining said fine-toothed wheel, and a detent pivoted upon the opposite side of said line-space wheel and extending through the latter to engage the said fine-toothed wheel.

3. In a type-writing machine, the combination with a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a line-space wheel adjoining said fine-toothed wheel, and a series of radially-arranged and independently spring-pressed detents pivoted upon the opposite side of said line-space wheel and extending through the latter to engage the said fine-toothed wheel.

4. In a type-writing machine, the combination with a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a line-space wheel adjoining said fine-toothed wheel, a series of detents pivoted upon the opposite side of said line-space wheel and extending through the latter to engage said fine-toothed wheel, each of said detents having an arm, and a spring arranged between each of said arms and said line-space wheel.

5. In a type-writing machine, the combination with a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a line-space wheel, cars fixed upon the latter, and a series of spring-pressed detents pivoted in said cars and engaging said fine-toothed wheel.

6. In a type-writing machine, the combination with a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a platen-shaft, a line-space wheel loosely mounted upon said shaft, a movable detent engaging said fine-toothed wheel and mounted upon the line-space wheel, a collar supported upon the shaft and engaging said detent, and means for moving said collar along the said shaft to disengage the detent.

7. In a type-writing machine, the combination with a platen-frame and a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a platen-shaft, a line-space wheel loosely mounted upon said shaft, a movable detent engaging said fine-toothed wheel and mounted upon the line-space wheel, and a lever mounted upon the platen-frame and connected to disengage said detent.

8. In a type-writing machine, the combination with a platen-frame and a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a platen-shaft, a line-space wheel loosely mounted upon said shaft, a movable detent engaging said fine-toothed wheel and mounted upon the line-space wheel, a collar engaging said detent, and a lever mounted upon the platen-frame and constructed to move said collar along said shaft so as to disengage said detent.

9. In a type-writing machine, the combination with a cylindrical platen, of a fine-toothed wheel secured to the end thereof, a platen-shaft, a line-space wheel loosely mounted upon said shaft, a movable detent engaging said fine-toothed wheel and mounted upon the line-space wheel, a collar engaging said detent and supported upon said shaft, a platen-frame, a horizontally-swinging lever mounted upon said platen-frame, and an ear on said lever connected to said detent.

10. In a type-writing machine, the combination with a cylindrical platen, a fine-toothed wheel, a platen-shaft, a hand-wheel connected to turn said shaft, a line-space wheel, a detent, a platen-frame, and a lever

mounted upon the platen-frame and connected to move said detent to release the platen.

11. In a type-writing machine, the combination with a platen-frame, a cylindrical platen, and a line-space wheel, of a toothed wheel connected thereto, a releasable detent, a lever mounted upon the platen-frame, and connections between said lever and said detent.

12. In a type-writing machine, the combination with a platen and a line-space wheel, of an adjustment-wheel having teeth, and a series of detents connecting said wheels, said detents being so constructed and arranged as not to simultaneously fall between said teeth.

13. In a type-writing machine, the combination with a platen and a line-space wheel, of a wheel having evenly-spaced teeth, and releasable locking devices engaging said teeth and so constructed and arranged as to enable the platen to be adjusted relatively to the line-space wheel through finer intervals than the intervals between said teeth, and to be relocked to the line-space wheel at such finely-adjusted positions.

14. In a type-writing machine, the combination with a platen and a line-space wheel, of a spring-pressed releasable device for locking the platen to the line-space wheel, a lever or finger-piece operatively connected to said releasable device, whereby the latter may be moved to an inoperative position, and a frictional device for holding said lever and said releasable device during the adjustment of the platen relatively to the line-space wheel.

707,818. ICE-CARRIER. RICHARD BRADLEY, Branford, Conn. Filed Feb. 24, 1902. Serial No. 96,343. (No model.)

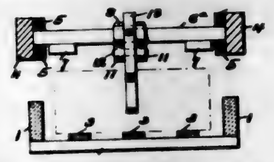

Claim.—1. The combination in an ice-carrier; of a frame; a dog-bracket fastened securely thereto and having a stop-lug thereon; and a dog pivotally secured to said bracket and so arranged as to engage said stop-lug whereby said dog is held against movement in one direction, all constructed and operating substantially as described.

2. The combination in an ice-carrier; of a carrier-frame comprising cross-pieces 6 6' and longitudinal tie-beams 7 7 connecting said cross-pieces; a dog-bracket 9 fixed to one of said cross-pieces; and a dog 13 pivotally secured within said bracket and depending below said frame, all constructed and operating substantially as shown and described.

707,819. POLISHING-MACHINE. JOHN W. BROWN, Jr., and HERBERT W. YEAGER, Philadelphia, Pa., assignors to The Enterprise Manufacturing Company of Pennsylvania, Philadelphia, Pa., a Corporation of Pennsylvania. Filed May 16, 1902. Serial No. 107,953. (No model.)

Claim.—1. The combination in a machine for polishing the edges of sad-irons and other objects, of a polishing-wheel, a carrier, a spindle mounted in bearings in the said carrier, means for turning the carrier, means for turning the spindle, a shaft geared to the spindle, and a chuck carried by said shaft for engaging the article to be polished, substantially as described.

2. The combination of a polishing-wheel, a standard, a carrier mounted on the standard, a series of spindles having their bearings in the carrier, a series of shafts arranged at right angles to the spindles and geared thereto, a chuck on each shaft for engaging a sad-iron or like object, a worm-wheel on each spindle, and a worm arranged to engage the spindles as they are brought into polishing position, with means for intermittently turning the carrier, substantially as described.

3. The combination in a polishing-machine, of a polishing-wheel, a carriage on which the shaft of the polishing-wheel is mounted, a standard, a carrier mounted on the standard, a spindle on the carrier, a shaft mounted on the carrier at an angle to the spindle and geared thereto, a chuck on the shaft for engaging a sad-iron or like object, a cam on the spindle, and a lever connected to the carriage and actuated by the cam for moving the carriage and its polishing-wheel toward and from the work carried by the chuck, substantially as described.

4. The combination in a polishing-machine, of a carriage, a polishing-wheel mounted on the carriage, a standard, a carrier on the standard, means for rotating the carrier, a series of shafts having chucks for engaging a sad-iron or like object to be polished, means for turning the shafts, and means for moving the polishing-wheel toward and from the work, substantially as described.

5. The combination in a polishing-machine, of a polishing-wheel, a carriage on which the wheel is mounted, a standard, a carrier mounted on the standard, means for intermittently rotating the carrier, a series of spindles having their bearings in the carrier, a shaft arranged at an angle above each spindle and geared thereto, a clutch for engaging a sad-iron or like object, means for releasing said clutch, and means for turning the spindles when the work is in position in respect to the polishing-wheel, substantially as described.

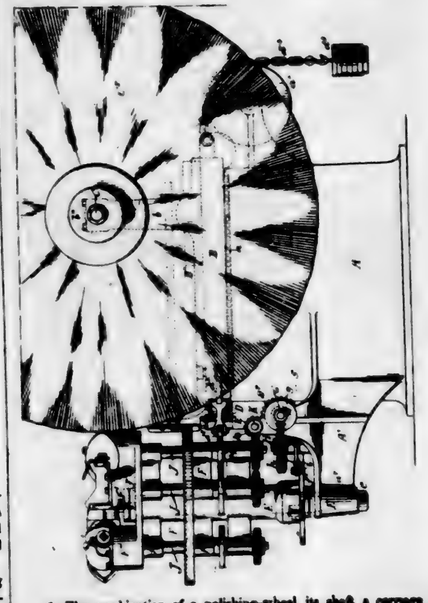

6. The combination of a polishing-wheel, its shaft, a carriage on which the shaft is mounted, a standard, a carrier mounted on the standard, a series of spindles having their bearings in the carrier, a cam on each spindle, and a lever actuated by the cams in rotation so as to move the polishing-wheel to and from the work, substantially as described.

7. The combination in a polishing-machine, of a polishing-wheel, a carrier, means for intermittently rotating the carrier, a series of spindles on the carrier, means for turning the spindles when in position, a series of heads secured to the carrier, a shaft on each head, each shaft being geared to a spindle, a chuck on the end of the shaft for engaging the sad-iron or other article to be polished, and a lever for actuating the chuck to release the iron, substantially as described.

8. The combination in a polishing-machine, of a base, a carriage, a driven shaft, a polishing-wheel mounted on said shaft, a bracket projecting from the base, a standard secured to the bracket, a carrier mounted on the standard, a driven shaft, a star-wheel gear by which the carrier is driven from the said shaft, a series of spindles on the carrier, a hand above each spindle, a shaft in said head and geared to the spindles, chucks on the shafts for the reception of the article to be polished, a cam on each spindle, and connecting means by which the cams operate the carriage on which the polishing-wheel is mounted, substantially as described.

9. The combination in a polishing-machine, of the base, a polishing-wheel, a bracket, a standard on the bracket, a carrier mounted on the standard, a star-wheel secured to the carrier, a driven shaft, a worm on said shaft, a worm-wheel on the standard, a disk connected to the worm-wheel and having a pin which enters the slots in the star-wheel and through which the carrier is given an intermittent rotary motion, a series of slots on the carrier, a shaft in each head, a chuck on the shaft for engaging the article to be polished, and means for rotating one of the shafts when the iron is in line with the polishing-wheel, substantially as described.

10. The combination in a polishing-machine, of the base, a polishing-wheel, a standard, a carrier mounted on the standard, a driven shaft, a worm, worm-wheel, and a star-gear in one of said driving-shafts, a carrier by which an intermittent rotary motion is given to the carrier, a series of slots on the carrier, a shaft in each head, a chuck mounted in each shaft for engaging the article to be polished, a series of spindles having their bearings in the carrier and geared to the said chuck-shaft, a

worm-wheel on each spindle, a driven shaft, and a worm thereon engaging one of the worm-wheels when the article to be polished is brought in line with the polishing-wheel, substantially as described.

11. The combination in a polishing-machine, of the base, a carriage, a weight for moving the carriage away from the work, a standard, a carrier mounted on the standard, means for intermittently rotating the carrier, a series of spindles, a shaft-shaft geared to each spindle, means for rotating the spindle, a cam on each spindle, a lever pivoted to the frame of the machine having one arm resting against the cam of the spindle in line with the rotating spindles, the other end of the said lever being connected to the carriage so as to move the polishing-wheel toward and from the work as the work is turned, substantially as described.

707,820. **FRICTION DRAW-GEAR AND BUFFING APPARATUS FOR RAILROAD-CARS.** SAMUEL P. BUSH, Columbus, Ohio, assignor to the Buckeye Malleable Iron and Coupler Co., Columbus, Ohio. Filed Mar. 22, 1902. Serial No. 99,461. (No model.)

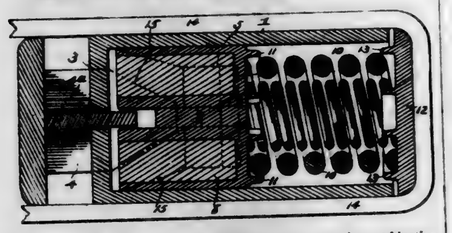

Claim.—1. In a draw-gear and buffing apparatus, the combination with opposing wedges mounted to move simultaneously in the same direction, a resisting-spring behind one of said wedges and a transversely-movable device interposed between said wedges.

2. In a draw-gear and buffing apparatus, the combination with opposing wedges in line with each other in a plane coincident with that of the draft devices, said wedges mounted to move together in the same direction, a resisting-spring behind one of said wedges and a transversely-movable device interposed between said wedges.

3. In a draw-gear and buffing apparatus, the combination with opposing wedges arranged in line with each other and mounted to move simultaneously in the same direction, and a resisting-spring behind one of said wedges, of a transversely-movable part interposed between said opposing wedges, and means for preventing longitudinal movement of said transversely-disposed device, in a direction parallel with the movement of the wedges.

4. In a draw-gear and buffing apparatus, the combination with a casing having shoulders or abutments separated from each other, of opposing wedges movable in unison in the same direction in said casing, intermediate transversely-movable devices separating said wedges and located within the casing between said shoulders or abutments, and a spring bearing against one of said wedges.

5. In a draw-gear and buffing apparatus, the combination of opposite wedges movable together in the same direction, a transversely-movable part intermediate of and separating said wedges, a resisting-spring, and a case to hold the parts.

6. In a draw-gear and buffing apparatus, the combination of opposing wedges movable together in the same direction, an intermediate transversely-movable part disposed between and separating said wedges and against which the wedges bear, a spring in line with the wedges, a case to hold the parts, and a follower-plate against which the spring bears.

7. In a draw-gear and buffing apparatus, the combination of a follower-plate having a wedge-shape projection, an opposite wedge in line with the first wedge, an intermediate transversely-movable part separating said wedges and against which the wedges bear from opposite sides, and a resisting-spring in line with the wedges.

8. In a draw-gear and buffing apparatus, the combination of a wedge in positive contact with the draw-bar, an opposite wedge in the same line and having a seat to receive one end of a spring, and an intermediate transversely-movable part separating said wedges and against which the wedges bear from opposite sides.

9. In a draw-gear and buffing apparatus, the combination of opposite wedges that move together in the same direction, and an intermediate transversely-movable part that is forced laterally positively in one direction as the wedges move forward and laterally in the opposite direction as the wedges are moved back.

10. In a draw-gear and buffing apparatus, the combination of opposite wedges in line with the draw-bar, an intermediate transversely-movable part separating said wedges and against which the wedges bear from opposite sides, a spring in line with the wedges and holding the latter in contact with the transversely-movable part, and a case to hold the parts.

11. In a draw-gear and buffing apparatus, the combination of opposite wedges that move together in the same direction, an intermediate transversely-movable part separating said wedges, a follower-plate, a spring, one end of which bears against a wedge and the other against the follower-plate, and a case to hold the parts.

12. In a draw-gear and buffing apparatus the combination with two followers restrained against outward movement, of a sliding casing intermediate the followers, opposite wedges that move in unison in the same direction in buffing, an intermediate transversely-movable part separating said wedges, and a spring.

707,821. **AIR-PUMP.** THEODORE N. CASE, Mount Vernon, N. Y. Filed Dec. 4, 1901. Serial No. 84,598. (No model.)

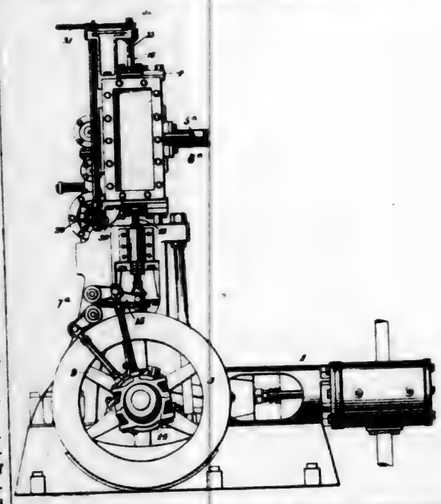

Claim.—1. In an air-pump the combination of a pumping-cylinder, a pumping-piston therein, a governor air-chamber, a connection between said pumping-cylinder and said governor air-chamber and positively-actuated means for opening said connection just prior to the opening of the pumping-cylinder discharge-ports and maintaining it closed at all other times, said means being independent of said pumping-piston.

2. In an air-pump the combination of a pumping-cylinder, a pumping-piston therein, a governor air-chamber, a connection between the extreme end of said pumping-cylinder and said governor air-chamber and positively-actuated means for opening said connection just prior to the opening of the discharge-ports of said pumping-cylinder and maintaining it closed at all other times.

3. In an air-pump the combination of a pumping-cylinder, a pumping-piston therein, and main and release valves therefor, a governor air-chamber having a piston therein, one end of said governor air-chamber being connected to the pumping-cylinder and the other subjected to receiver-pressure, means actuated by said governor-air-chamber piston for adjusting said release-valves and positively-actuated means for opening said connection just prior to the opening of the discharge-ports of said pumping-cylinder and maintaining it closed at all other times, said means being independent of said pumping-piston.

4. In an air-pump the combination of a pumping-cylinder, a piston therein, a positively-actuated main discharge-valve, a positively and independently actuated release-valve, a governor for determining the action of said release-valve, a governor air-chamber, a piston therein, a connection between one end of said air-chamber and both ends of said pumping-cylinder, and positively-actuated means for opening the connection with the pumping-cylinder just prior to every discharge of the pumping-cylinder and maintaining it closed at all other times.

5. In an air-pump the combination of a pumping-cylinder, a piston therein, a positively-actuated main valve, a positively-actuated release-valve, and means controlled by the pressure in said cylinder for automatically adjusting said release-valve relatively to said main valve

6. In an air-pump the combination of a pumping-cylinder, a piston therein, a positively-actuated main valve, a positively and independently actuated release-valve, an air-controlled governor for adjusting said release-valve and pressure-ports connecting said pumping-cylinder with said governor and controlled by said release valve.

7. In an air-pump the combination of a pumping-cylinder, a piston therein, a positively-actuated main valve, a positively and independently actuated release-valve, a fluid-cylinder containing a piston for adjusting said release-valve, an air-chamber and piston controlling said fluid-cylinder, and a connection between said air-cylinder and said pumping-cylinder controlled by said release-valve.

8. In an air-pump the combination of a positively-actuated main valve, a positively-actuated release-valve movable relatively thereto, a governor for automatically adjusting said release-valve and means controlled by the positions of said main and release valves for actuating said governor.

9. In an air-pump the combination of a main valve, a release-valve, a governor for automatically adjusting said release-valve relatively to said main valve, and air-ports leading to said governor which are controlled by the positions of said main and release valves.

10. In an air-pump the combination of an air-cylinder, a piston therein, a main valve, a positively-actuated release-valve, movable relatively thereto, a governor for automatically adjusting said release-valve relatively to said main valve, said governor being controlled by air-pressure exerted through ports controlled by said release-valve.

11. In an air-pump the combination of a cylinder, a main valve, a positively-actuated release-valve, a rod for actuating said release-valve, means for adjusting said valve by the rotation of said rod and a governor for automatically rotating said rod.

12. In an air-pump the combination of a main valve and a release-valve movable relatively thereto, a rod for adjusting said release-valve by its rotary movement and means for automatically rotating said rod in either direction controlled by the positions of said main and release valves.

13. In an air-pump, a governor consisting of an air-cylinder and piston therein, a revolvable screw-threaded nut actuated by said piston, a rod moved therein, a fluid-valve actuated by said rod controlling the entrance and egress of said fluid-pressure in and to the operating-cylinder of the governor.

14. In an air-pump the combination of the cylinder, a piston therein, a main valve, a positively-actuated release-valve consisting of two members, a rod for actuating said members and also adjusting their relative positions.

15. In an air-pump the combination of a cylinder, a piston therein, a main valve, a positively-actuated release-valve consisting of two members, a rod for actuating said members by its longitudinal movement and adjusting their relative positions by its axial rotation.

16. In an air-pump a governor for adjusting a release-valve having a fluid-operating cylinder, a piston therein, a fluid-valve controlling the ports to said cylinder, a movable rod for actuating said valve through a lever connected by a link to the rod of the piston in the operating-cylinder and to said valve.

17. In an air-pump the combination of a cylinder, a reciprocating piston therein, a positively-actuated main valve, a positively-actuated release-valve, a positively-actuated equalizing-valve establishing a connection between the two ends of the cylinder when the main-valve ports are out of register with the cylinder-ports.

18. In an air-pump the combination of a cylinder, a piston therein, a main valve, a release-valve having a chamber connected with a low-pressure source and acting to hold said valve to its seat.

19. In an air-pump the combination of a cylinder, a piston therein, a main valve, a release-valve having a chamber connected with the suction-chamber of said pump and acting to hold said valve to its seat.

20. In an air-pump, the combination of the cylinder 4, a piston 4*, the main valve 7, the release-valve 12 and equalizing-valve 37, and means for actuating the same.

21. In an air-pump the combination of the cylinder 4, the piston 4*, a main valve 7, a release-valve 12, a governor therefor having an air-chamber and an air-passage leading thereto controlled by the positions of said valve 12 and said main valve 7.

707,822. **HOOF-TRIMMER.** WARREN S. CASTERLIN, Pittston, Pa. Filed May 10, 1902. Serial No. 106,827. (No model.)

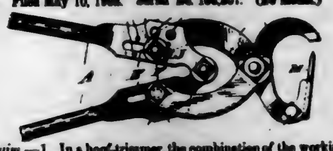

Claim.—1. In a hoof-trimmer, the combination of the working members pivoted together, the lever members pivoted together and provided with longitudinal slots, and pivot-bolts inserted through the ends of the working members and the said slots of the lever members.

2. In a hoof-trimmer, the combination of the working members pivoted together, the lever members pivoted together and having lateral offsets provided with a series of transverse openings and also having longitudinal slots between said transverse openings and their inner edges, and pivot-bolts adapted to be inserted through the ends of the working members and the said slots or the said transverse openings.

3. In a hoof-trimmer, the combination of the working members pivoted together, the lever members pivoted together and having longitudinal slots and notches or recesses adjacent to the edges of the said slots, pivot-bolts inserted through the ends of the working members and through the said slots, washers fitted on the said bolts and provided with lugs adapted to engage the said notches or recesses, and retaining-nuts on the bolts adapted to be turned against the said washers whereby the pivot-bolts may be permitted to move along said slots or held against such movement at will.

4. In a hoof-trimmer, the combination of the lever members, the working members pivoted to the lever members and to each other, one of the working members having its end centrally divided and provided with a dovetailed groove in its outer face, a knife fitted in said groove and having teeth on its edges adapted to take into the walls of the same, and a clamping-bolt inserted transversely through the member to secure the knife.

707,828. **METHOD OF DRYING COLLARS.** ROBERT CLOTT, Troy, N. Y., assignor to Clott, Peabody & Co., Troy, N. Y., a Corporation. Filed Mar. 31, 1902. Serial No. 100,733. (No model.)

Claim.—1. That improvement in the art of drying, preparatory to ironing, previously-starched collars, and like articles, each having buttonholes arranged to be a predetermined distance apart, which consists in arranging each of such articles with the buttonholes thereof fixed at said predetermined distance apart, and then drying the article and at the same time maintaining the buttonholes thereof in said fixed relation to each other, until the article is dried, substantially as described.

2. That improvement in the art of drying, preparatory to ironing previously-starched collars and like articles having buttonholes arranged at a predetermined distance apart, which consists in suspending the article while wet upon supports inserted through said buttonholes and spaced a distance apart equal to the predetermined distance apart of the buttonholes and drying the article while so suspended.

3. That improvement in the art of drying, preparatory to ironing, previously-starched collars and like articles having end buttonholes arranged at a predetermined distance apart which consists in suspending the article while wet upon supports inserted through said buttonholes and

spaced to equal the predetermined distance apart of the buttonholes and located substantially in the same horizontal plane, whereby the extremities below the supports are caused to gravitate to a relatively uniform shape and position and drying the article while so suspended.

707,824. CLOTHES-HOOK. ALPHEUS H. COBB, Asheville, N. C. Filed Jan. 14, 1902. Serial No. 89,761. (No model.)

Claim.—1. A hook comprising a single piece of wire bent to the desired form, and provided with a fastening device formed by one end of the wire being bent rearwardly and doubled back upon itself and secured, said doubled extension being sharpened at its looped end.

2. A hook comprising a single piece of wire bent to the desired form and provided with a fastening device comprising a reinforced looped extension formed by one end of said wire being bent upwardly and rearwardly and doubled back upon itself and secured, said reinforced extension being sharpened at its looped end.

3. A hook of the character described, composed of one piece of wire having a body portion comprising the upper and lower hooks, a downwardly-projecting looped extension carried by the hook, formed by the wire being bent upon itself and secured to the body portion of the hook, and a chisel-point formed upon the end of said looped extension.

4. A device of the character described comprising a single piece of wire bent to form a plurality of hooks forming the body portion of the device, and a fastening extension formed by one end of the wire being bent rearwardly at an angle to said body portion and doubled back upon itself and secured to the body portion, said extension being sharpened at its looped end.

5. A device of the character described comprising a single piece of wire bent to form a plurality of hooks and a plurality of rearwardly-projecting looped extensions, said extensions being sharpened at their looped ends and adapted to be driven into a support.

707,825. WATER-GATE. DAVID M. B. COFFIN, Newton, Mass., assignor to Coffin Valve Company, Boston, Mass., a Corporation of Massachusetts. Filed Oct. 19, 1901. Serial No. 79,213. (No model.)

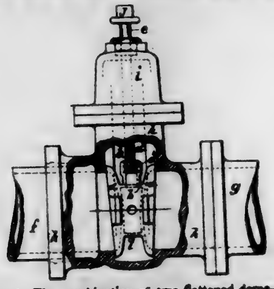

Claim.—1. The combination of two flattened-dome-shaped valve-disks having seat-faces in relatively angular relation to each other and the annular union or ring connection uniting them, said union being concentrically arranged in relation to the valve-faces or bases of resistance and to the valve-center, substantially as shown and described.

2. In a gate for water and other fluids, having double or twin valve-seats, the two spring valve-disks having seat-faces at their periphery and an annular union or connection concentrically connecting said disks and seat-faces substantially as shown and described.

3. In a water-gate, or gate for any fluid, having two relatively angular-faced valve-seats, a valve constructed with two spring valve-disks having faces corresponding to the seat-faces and an annular union or connection arranged midway from center to seat-faces and concentrically to the seats connecting them together, substantially as shown and described.

4. In a gate for water or other fluids having twin valve-seats between which is forced a taper valve for closing and from between which the valve is withdrawn for opening, by a valve-stem, the two spring valve-disks united together by an annular connection arranged midway between center and seats and concentrically in relation to both center and seat-faces, substantially as shown and described.

5. The twin disks constructed each with its own attached part of the annular union separate from the other and having within the circle of the union a web or plate *c* joined to each such separate part of the union by which it may be bolted to the other part, and bolt-holes and the bolts *d* bolting them together and so completing the union, substantially as shown and described.

707,826. KNOT-TYING IMPLEMENT. HOWARD D. COLMAN, Rockford, Ill. Filed Oct. 23, 1900. Serial No. 34,099. (No model.)

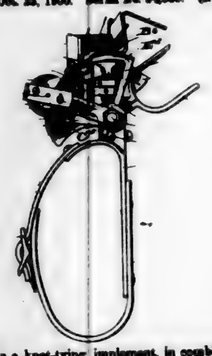

Claim.—1. In a knot-tying implement, in combination, means for forming a loop in a thread; which means comprises a rotatable winding-spindle; means for passing a bight of said thread through said loop; and means for introducing a second thread into said bight.

2. In a knot-tying implement, in combination, means for forming a loop in a thread; which means comprises a rotatable winding-spindle; means for passing a bight of said thread through said loop; and means for holding a second thread in such position that the bight thus formed may be pulled over said second thread.

3. In a knot-tying implement, in combination, means for looping a thread in helical form; which means comprises a rotatable winding-spindle and a movable thread-guide; means for passing a bight from one of the windings of the helix inwardly through the central loop of the latter; and means for introducing a second thread into said bight.

4. In a knot-tying implement, in combination, mechanism for forming a loop in a thread; which mechanism comprises a rotatable bifurcated winding-spindle; means for passing a bight of the thread through the formed loop; and means for introducing a second thread into said bight.

5. In a knot-tying implement, in combination, a winding-spindle for forming a loop in a thread; a shearing and clamping jaw pivotally mounted on said spindle; means for passing a bight of said thread through the formed loop; and means for introducing a second thread into said bight.

6. In a knot-tying implement, in combination, a winding-spindle having an opening therein; a shearing and clamping jaw pivotally mounted on said spindle; means for rotating said spindle and winding a thread thereon; means adapted to pass through the opening in said spindle, for passing a bight of said thread through the loop formed by winding it about said spindle; and means for holding a second thread in such position that the bight thus formed may be pulled over said second thread.

7. In a knot-tying implement, in combination, a winding-spindle having an opening therein, also having a shearing and clamping jaw; means for rotating said spindle and winding a thread thereon; means adapted to pass through the opening in said spindle, for passing a bight of said thread through the loop formed by winding said thread about the spindle; and a shearing and clamping jaw for holding a second thread in such position that the bight thus formed may be pulled over said second thread.

8. In a knot-tying implement, in combination, means for forming a loop in a thread; which means comprises a rotatable winding-spindle having a shearing and clamping jaw; a finger adapted to pass a bight of said thread through said loop; and means for introducing a second thread into said bight.

9. In a knot-tying implement, in combination, means for forming a loop in a thread, said means comprising a shearing and clamping jaw; a tumbler-finger adapted to pass a bight of said thread through said loop; and means for introducing a second thread into said bight.

10. In a knot-tying implement, in combination, means for forming a loop in a thread, said means comprising a shearing and clamping jaw; a tumbler-finger adapted to pass a bight of said thread through said loop; and means for holding a second thread in such position that the bight thus formed may be pulled over said second thread.

11. In a knot-tying implement, in combination, means for forming a loop in a thread, said means comprising a shearing and clamping jaw; a tumbler-finger adapted to pass a bight of said thread through said loop and a clamping-jaw for holding a second thread in such position that the bight thus formed may be pulled over said second thread.

12. In a knot-tying implement, in combination, means for forming a loop in a thread; a tumbler-finger adapted to pass a bight of said thread through said loop; and a shearing and clamping jaw on said tumbler-finger, for cutting off a second thread, and for holding it in such position that said bight may be pulled over said second thread.

13. In a knot-tying implement, in combination, a winding-spindle having an opening therein; means for rotating said winding-spindle; a tumbler-finger adapted to pass through the opening in said winding-spindle; means for turning said tumbler-finger; and means for holding a second thread adjacent to said winding-spindle.

14. In a knot-tying implement, in combination, a winding-spindle having an opening therein; a shearing and clamping jaw on said spindle; means for rotating said spindle; a tumbler-finger adapted to pass through the opening in said spindle; means for turning said tumbler-finger; and a shearing and clamping jaw on said finger.

15. In a knot-tying implement, in combination, a winding-spindle having an opening therein; a shearing and clamping jaw on said spindle; a thread-guide adapted to have a longitudinal movement with relation to said spindle while the same is being rotated; a tumbler-finger adapted to pass through the opening in said spindle; means for turning said tumbler-finger; and a shearing and clamping jaw on said tumbler-finger.

16. In a knot-tying implement, in combination, a winding-spindle having an opening therein; a shearing and clamping jaw on said spindle; a thread-guide adapted to have a longitudinal movement with relation to said spindle during the rotation of the latter; a tension-arm; a tumbler-finger adapted to pass through the opening in said spindle; a gear for turning said tumbler-finger; and a shearing and clamping jaw on said finger.

17. In a knot-tying implement, in combination, a winding-spindle having an opening therein; a shearing and clamping jaw on said spindle; intermeshing gear for rotating said spindle; said spindle also having a cam-groove; a thread-guide adapted to be actuated by said grooved cam; a tension-arm; a cam for actuating said tension-arm; a tumbler-finger adapted to pass through said opening in said spindle; a gear for turning said tumbler-finger; and a shearing and clamping jaw on said finger.

18. In a knot-tying implement, in combination, a winding-spindle having an opening therein, and a cam-groove; a shearing and clamping jaw on said spindle; a pinion and a delay-shoe for the spindle; a sector-gear; gear-teeth and two delay-fingers on said sector; a thread-guide adapted to be actuated by said grooved cam; a tumbler-finger adapted to pass through the opening in said spindle; means for turning said tumbler-finger; and a shearing and clamping jaw on said finger.

19. In a knot-tying implement, in combination, a winding-spindle having an opening therein; a shearing and clamping jaw on said spindle; said spindle also having a pinion and a delay-shoe thereon, and a cam-groove therein; a guide-arm for the thread, adapted to be moved by said grooved cam; a sector-gear having gear-teeth for said pinion, and two delay-fingers for said delay-shoe; a tension-arm; a cam for actuating said tension-arm; a thumb-lever for moving said sector and said cam; a projection on the sector-gear for opening and closing the shearing and clamping jaw; a tumbler-finger adapted to pass through the opening in said spindle; means for turning said tumbler-finger; and a shearing and clamping jaw on said finger.

20. In a knot-tying implement, in combination, a winding-spindle having an opening therein and a cam-groove; said spindle also having a pinion, a delay-shoe, and a shearing and clamping jaw; a fixed guide for holding said shearing and clamping jaw closed; a sector-gear having gear-teeth for said pinion and two delay-fingers for said delay-shoe, also having a projection for opening and closing said shearing and clamping jaw; a shaft for said sector-gear; a sector-cam loosely mounted on said shaft, but movably connected with said gear-sector; a tension-arm adapted to be actuated by said sector-cam; a thread-guide adapted to be moved by the grooved cam of said winding-spindle; a thumb-lever having a rigid connection with said cam-sector; a tumbler-finger adapted to pass through the opening in said spindle; means for turning said tumbler-finger; and a shearing and clamping jaw on said finger.

21. In a knot-tying implement, in combination, a winding-spindle having an opening therein; means for rotating said spindle; a tumbler-finger adapted to pass through the opening in said spindle; a supporting-shaft for said tumbler-finger; a pinion and a delay-shoe on said shaft; a fixed sector having gear-teeth for said pinion, and a peripheral delay-surface for said delay-shoe; and a shearing and clamping jaw for said tumbler-finger.

22. In a knot-tying implement, in combination, a winding-spindle having an opening therein; means for rotating said spindle; a shaft; a thumb-lever on said shaft; an arm fixed with relation to said shaft; a frame on said arm; a tumbler-finger adapted to pass through the opening in said spindle; a shaft for said tumbler-finger; said frame being provided with a channel concentric with the bearing for said tumbler-finger, said channel having a pocket near its end; a pinion and a delay-shoe on said tumbler-finger shaft; a fixed sector having gear-teeth for said pinion and a peripheral delay-surface for said delay-shoe; a shearing and clamping jaw having a pivotal connection with said tumbler-finger, also having an integral arm; a stud on said arm, adapted to engage the concentric channel in said frame; and a pivotal engagement between said tumbler-finger and said arm, whereby the stud on said arm is thrown into the pocket in said channel to open said shearing and clamping jaw.

707,827. EYEGLASS-GUARD. JAMES F. COOMBS, Chicago, Ill., assignor of one-fourth to Frederick Kendall Lawrence, Chicago, Ill. Filed June 8, 1901. Serial No. 63,662. (No model.)

Claim.—1. The combination in an eyeglass, of an attaching-stud formed with a screw-threaded orifice and projecting flanges at opposite sides of said orifice, which flanges have open-top recesses that extend at right angles to the axis of said orifice, a guard-piece formed with an orifice alining with the orifice of the attaching-stud and with lateral lugs to engage said open-top recesses, and an attaching-screw engaging in said orifices to hold the parts in place, substantially as set forth.

2. The combination in an eyeglass, of an attaching-stud formed with a screw-threaded orifice and projecting flanges at opposite sides of said orifice, which flanges have open-top recesses that extend at right angles to the axis of said orifice, a guard-piece formed with an orifice alining with the orifice of the attaching-stud and with lateral lugs to engage said open-top recesses, the said lugs having angular extensions adapted to fit outside the flanges of the attaching-stud, and an attaching-screw engaging in said orifices to hold the parts in place, substantially as set forth.

3. The combination in an eyeglass, of an attaching-stud, a guard of ductile material comprising a flat reduced extension which extends downwardly in an oblique direction toward an adjacent lens, a loop portion at the lower end of such oblique portion and located between the same and the adjacent lens and a rearwardly and upwardly extended portion of said loop portion carrying at its free end a nose-pad, and means for attaching the guard to the stud, substantially as herein described.

4. The combination in an eyeglass, of a pair of attaching-studs, an integrally-formed guard of ductile material comprising a middle spring-bow portion, a pair of flat reduced extensions which extend downwardly in oblique directions toward the respective lens, loop portions at the lower ends of such oblique portions and located between the same and the adjacent lens and rearwardly and upwardly extended portions of said loop portions carrying at their free ends the nose-pads, and means for attaching the guard to the studs, substantially as herein described.

707,828. ENGINE. WILLIAM G. COWAN and ALONZO JEWETT, Saginaw, and JOHN G. WARDELL, East Tawas, Mich. Filed Mar. 6, 1902. Serial No. 96,972. (No model.)

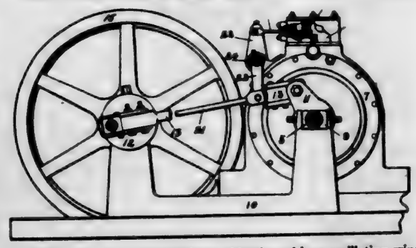

Claim.—1. In an engine the combination with an oscillating wing-piston, a valve-chest, ports connecting the valve-chest with the piston-chamber and a slide-valve for controlling the flow through said ports; of a trunnion having a pair of by-pass ports, each arranged to connect the

steam-spaces on opposite sides of a wing when the wing is near the bottom of its stroke; an exhaust-port in said trunnion, arranged to discharge steam from the space underneath the wing when the wing is near the top of its stroke; and an exhaust-passage in the engine-cylinder, arranged to register with the exhaust-port of the trunnion when the wing is near the top of its stroke, substantially as described and for the purposes set forth.

2. In an engine the combination of an oscillating trunnion mounted within the engine-cylinder and carrying diametrically opposite wings; ports for admitting and discharging steam from the spaces above said wings; a slide-valve for controlling said ports; a pair of by-pass ports formed in the trunnion, each port being arranged to connect the steam-spaces on opposite sides of a wing when the wing is near the bottom of its stroke; an exhaust-port in the lower side of the trunnion, arranged to discharge steam from the space underneath the wing when the wing is near the top of its stroke; an exhaust-passage in the engine-cylinder, arranged to register with the exhaust-port of the trunnion when the wing is near the top of its stroke; an oscillating arm secured to said trunnion and arranged to actuate a rotating shaft, together with means operated by said shaft for actuating the slide-valve.

707,829. **TELEGRAPHY.** ALBERT C. CREHORE, Tarrytown, N. Y. Filed Oct. 21, 1901. Serial No. 79,353. (No model.)

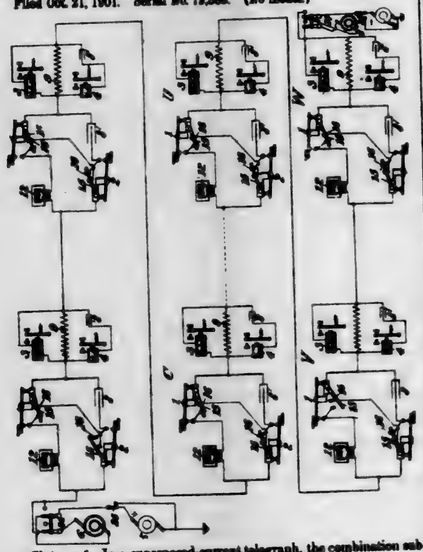

Claim.—1. In a superposed-current telegraph, the combination substantially as described with continuous and pulsatory current receivers arranged in shunt relation to one another and having a condenser in the pulsatory-current branch, of transmitters for the two sides of the system arranged in shunt relation to one another, an inductance in the branch with the continuous-current transmitter, and a condenser in the branch with the pulsatory-current transmitter, said transmitter branches being independent of those containing the receivers.

2. In a superposed current telegraph, the combination of transmitters for the pulsatory and continuous sides of the system respectively, arranged in shunt relation to one another, and an inductance in the shunt or branch containing the continuous-current transmitter whereby when the latter transmitter is closed the transmitter in the other branch opens and closes a shunt around the branch which offers an impedance to the flow of the pulsatory current.

3. In a superposed-current telegraph, a single main line having transmitting apparatus for the continuous and pulsatory sides of the system respectively, arranged in shunt relation to one another, in combination with an inductance in the shunt containing the continuous-current transmitter and a condenser in the shunt containing the pulsatory-current transmitter.

4. In a superposed-current system of telegraphy, the combination with the continuous-current and pulsatory-current transmitters at a station, of means for short-circuiting the transmitting apparatus for the pulsatory-current and continuous-current sides of the system respectively, said short-circuiting devices being connected in series as described so that neither shall be effective to short-circuit until both are thrown to short-circuiting position.

5. In a superposed-current telegraph, the combination substantially as described, of a continuous-current transmitter and a pulsatory-current transmitter placed in shunt relation to one another upon the same circuit but both in series relation to the portion of circuit containing the receivers said transmitter branches or shunts containing respectively a condenser and an inductance as and for the purpose described.

6. In a superposed-current telegraph, two branches of the line-circuit in shunt relation to one another, one containing a Morse key and inductance, and the other a condenser and Morse key, said keys being arranged at opposite ends of the branches respectively, with their short-circuiting switches connected direct to line, and supplemental contacts for said switches connected together as and for the purpose described.

7. In a superposed-current telegraph, the combination substantially as described of a transmitter for the continuous-current side of the system and an inductance arranged in one shunt or branch of the circuit, a transmitter for the pulsatory-current side of the system and a condenser arranged in another branch which is in shunt relation to the first-named branch said transmitters being placed at opposite ends of their shunts or branches respectively, a switch for each transmitter whereby it may be short-circuited without short-circuiting the reactance or condenser as the case may be, and supplemental contacts for said switches connected as described so that only when both switches are closed both the inductance and condenser will be short-circuited.

8. In a superposed-current system of telegraphy, the combination substantially as described, with suitable continuous-current and pulsatory-current receivers, of continuous-current and pulsatory-current transmitters, a condenser in a shunt to a branch containing the continuous-current transmitter and an inductance in a shunt to the branch containing the pulsatory-current transmitter, said transmitter branches being independent of those branches or parts of the circuit in which the said receivers are located.

9. In a superposed-current telegraph, transmitters for the continuous-current and pulsatory-current sides of the system respectively, arranged in shunt relation to one another and each adapted to make and break the shunt in which it is placed, in combination with an inductance in the shunt containing the continuous current transmitter and a condenser in the shunt containing the pulsatory-current transmitter.

10. In a superposed-current telegraph, the combination of a pulsatory-current generator, a continuous-current generator, transmitting-keys adapted to make and break circuit and normally short-circuited, a condenser, a reactance and means for introducing the keys into circuit, one in a condenser-shunt around the reactance and the other in a shunt around a condenser.

11. In a superposed-current system of telegraphy, the combination with way-station receiving apparatus comprising a continuous-current receiver in shunt to a condenser and the pulsatory-current receiving apparatus while the apparatus is in the condition for receiving, of transmitters for the two sides of the system both normally short-circuited, branches or shunts of the circuit, one a condenser shunt or branch around a reactance, and the other an inductance shunt or branch around a condenser, and means for including said transmitters respectively in the branches.

12. The combination with the continuous and pulsatory current transmitters in shunt relation to one another, of a reactance, a condenser, and two interdependent circuit-closing devices, one for each key, co-operating as described to short-circuit the condenser and reactance.

13. In a superposed-current system of telegraphy, the combination with two branches of the circuit one containing an inductance and transmitter, and the other containing a condenser and transmitter, of a short-circuiting device for each branch, one adapted to shunt the inductance and the other to shunt the condenser said short-circuiting devices being connected in series as described.

14. In a superposed current system of telegraphy, two branches of line-circuit in shunt relation to one another, one containing an inductance and Morse key, the other a condenser and Morse key combined with key-switches having supplemental contacts, and a connection between said contacts forming a short circuit for both the inductance and the condenser, as and for the purpose described.

15. In a superposed-current telegraph, the combination of transmitting apparatus for the pulsatory-current side of the system, an inductance-shunt therefor, transmitting apparatus for the continuous-current side of the system, a condenser-shunt therefor and circuit-closing devices for said transmitting apparatus adapted to form a short circuit around both the inductance and the condenser when said transmitting apparatus is out of use.

16. In a superposed-current telegraph, the combination of a continuous-current receiver, a pulsatory-current receiver, a condenser, an inductance, continuous-current transmitting apparatus in a branch of the circuit independent of the continuous-current receiver and forming a shunt to the condenser, pulsatory-current-transmitting apparatus in a branch of the circuit independent of the pulsatory-current receiver and forming a shunt to the inductance, and circuit-closing devices adapted to short-circuit both said inductance and condenser when either transmitting apparatus is not in use.

17. In a superposed-current telegraph, the combination of an inductance, a pulsatory-current transmitter adapted to transmit signals by opening and closing a branch of the main line around said inductance, a condenser in the branch with the pulsatory-current transmitter, a continuous-current transmitter adapted to open and close a branch of the main line around said condenser, and circuit-closing devices for shunting either the condenser or inductance out of the line-circuit when either transmitter is not in use.

18. In a superposed-current telegraph, the combination with a pulsatory-current generator and a Morse key controlling the connection of said generator with the line of a circuit-closer for said key, and a contact therefor connected to a branch leading from the key to the line around the coils of said generator.

19. In a superposed-current telegraph, the combination of an inductance in a main line and a pulsatory-current transmitter adapted to close and open a shunt around the same, a continuous-current receiver, and a condenser in said shunt for obviating disturbances in the continuous-current receiver through variations of line-resistance produced by the action of said transmitter.

707,830. **TELEGRAPHY.** ALBERT C. CREHORE, Tarrytown, N. Y. Filed Oct. 21, 1901. Serial No. 79,347. (No model.)

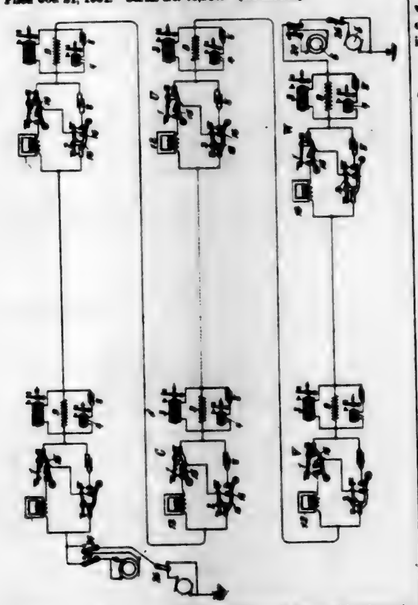

Claim.—1. In a superposed-current telegraph, the combination substantially as described of a pulsatory-current generator adapted to generate an approximate sine-wave electromotive force and condenser shunts or branches around apparatus for the continuous-current side of the system each said shunt having its capacity balanced by inductance, as and for the purpose set forth.

2. In a superposed-current telegraph, the combination with an approximate sine-wave pulsatory-current generator for the pulsatory-current side of the system, a transmitter for the continuous current side of the system a condenser-shunt around the latter and a balancing-inductance in said shunt, said inductance, condenser capacity and frequency of pulsations being related to one another as described, as and for the purpose set forth.

3. In a superposed-current telegraph, the combination with a pulsatory-current generator adapted to generate electromotive force of the sine-wave type, a continuous-current receiver and transmitter, and a shunt to the same containing a condenser and inductance related to one another and to the frequency of the pulsations in the manner described to reduce the impedance of said shunt, as and for the purpose set forth.

4. In a superposed-current system of telegraphy, a condenser-shunt containing a receiver for the pulsatory-current side of the system in combination with a pulsatory-current generator of the sine-wave type, the frequency of the pulsations, the reactance of the receiver and the capacity of the condenser being related to one another as described to increase the strength of current permissible at the transmitting end of the line.

5. A superposed-current system of telegraphy having a sine-wave generator for the pulsatory-current side and shunts around the continuous-current apparatus at way-stations comprising a condenser and balancing-inductance related to one another as and for the purpose described.

6. In a superposed-current telegraph, the combination with a pulsatory-current generator adapted to generate an electromotive force of sine-wave type, a continuous-current transmitter and receiver and a shunt around said transmitter and receiver containing a condenser, and an inductance whose reactance is adapted to balance the reactance of said condenser.

7. In a superposed-current telegraph, the combination substantially as described with a continuous-current transmitter and its condenser-shunt, of a balancing-inductance in the condenser-shunt adapted to furnish a reactance that will balance the opposing reactance of the condenser, as and for the purpose described.

8. In a superposed-current telegraph, the combination substantially as described with the continuous-current apparatus, of a condenser-shunt having a balancing-reactance composed of a coil wound on an iron core magnetically closed except for the presence of a narrow gap, as and for the purpose set forth.

9. In a superposed-current system of telegraphy, the combination with a condenser shunt through which the pulsatory currents flow for operating on the pulsatory-current receiver, of a suitable inductance having a reactance adapted to balance the reactance of said condenser.

707,831. **COMBINED TILE-MACHINE AND PUG-MILL.** WILLIAM R. CUNNINGHAM, Bucyrus, Ohio, assignor to the American Clay Working Machinery Company, Bucyrus, Ohio, a Corporation of Ohio. Filed Apr. 16, 1902. Serial No. 103,236. (No model.)

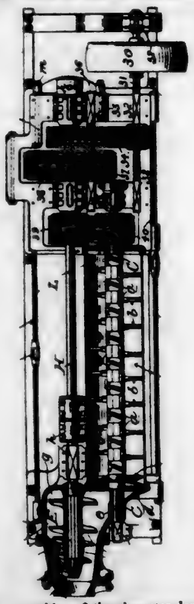

Claim.—1. In a machine of the character described the combination of two separate and independent cylinders placed substantially in the same horizontal plane and means connecting the discharge end of one cylinder with the inlet end of the other cylinder, one of said cylinders having clay-tempering devices and the other cylinder having a clay-expressing mechanism and said devices and mechanism extending parallel and in the same direction.

2. In a machine of the character described the combination of two separate and independent cylinders placed in different vertical planes and substantially in a common horizontal plane, and a forwardly-inclined lateral passage connecting the outlet end of one cylinder with the inlet end of the other cylinder; a shaft extending through one of the cylinders and provided with mixing and tempering devices; a shaft passing through

the other cylinder, and provided with an expressing mechanism, said mixing and tempering devices and expressing mechanism extending parallel in the same direction, and a prime mover and power-transmitting mechanism between the same and the said shafts, for rotating the latter.

2. In a machine of the character described, the combination of two separate and independent cylinders of unequal length extending in the same direction and placed horizontally substantially side by side, and with the outlet of one cylinder connecting horizontally with the inlet of the other cylinder; a shaft extending through one of said cylinders and provided with mixing or tempering blades, and a propeller or auger arranged proximate to the discharge end of the cylinder; a shaft passing through the other cylinder; and a propeller or auger on said second shaft and receiving the discharge from the first-named propeller and expressing it through the outlet of the second cylinder; said shafts extending in the same direction and means for operating said shafts.

4. In a machine of the character described the combination of a horizontally-disposed cylinder; a shaft passing therethrough, and provided with clay mixing and tempering blades, and a propeller on said shaft proximate to the discharge end of the cylinder; a second cylinder offsetting in a horizontal plane the first-named cylinder, and extending forward of and in the same direction as the first-named cylinder, and having a horizontally-curved wall forming a lateral, forwardly-inclined, throat between the discharge end of one cylinder and the inlet end of the other cylinder; a shaft passing through the second cylinder and provided with an expressing propeller or auger, adapted to receive the clay forced through said throat by the first-named propeller and express it through the discharge end of the second cylinder without materially changing the direction of travel of the clay; and power-transmitting mechanism for operating said shafts.

707,882. BLUE DYE AND PROCESS OF MAKING SAME. CHAS. DE LA HARPE, Basle, Switzerland, assignor to The Firm of Dye Works formerly L. Durand, Huguenin & Co., Basle, Switzerland. Filed Feb. 27, 1902. Serial No. 96,998. (Specimens.)

Claim.—1. An improvement in the manufacture of blue dyestuffs, consisting in treating a sulfonic gallocyanin derived from a nitrosoalkylbenzylanilinsulfonic acid, by sulfurous acid.

2. An improvement in the manufacture of blue dyestuffs, consisting in treating a sulfonic gallocyanin derived from the nitrosoethylbenzylanilinsulfonic acid by sulfurous acid.

3. As a new article of manufacture, the herein-described blue dyestuff obtained from a gallocyanin derived from a nitrosoalkylbenzylanilinsulfonic acid, the said dyestuff being soluble in sodium acetate with a pale-blue coloration and giving with concentrated sulfuric acid a reddish solution turning to blue by addition of an oxidizing agent, this dyestuff dyeing chromium-mordanted fibers in blue shades.

707,883. BLUE DYE AND PROCESS OF MAKING SAME. CHAS. DE LA HARPE, Basle, Switzerland, assignor to Firm of Dye Works formerly L. Durand, Huguenin & Co., Basle, Switzerland. Filed Feb. 27, 1902. Serial No. 96,994. (Specimens.)

Claim.—1. The herein-described improvement in the manufacture of blue dyestuffs, consisting in condensing a phenol with a sulfonic gallocyanin.

2. The herein-described improvement in the manufacture of blue dyestuffs, consisting in condensing a phenol with a sulfonic gallocyanin derived from a nitrosoalkylbenzylanilin-sulfonic acid.

3. The herein-described improvement in the manufacture of blue dyestuffs, consisting in condensing resorcin with a sulfonic gallocyanin derived from a nitrosoalkylbenzylanilin-sulfonic acid.

4. The herein-described improvement in the manufacture of blue dyestuffs, consisting in condensing resorcin with a sulfonic gallocyanin derived from the nitrosoethylbenzylanilin-sulfonic acid.

5. As a new article of manufacture, the herein-described blue dyestuff obtained by the condensation of the resorcin with a gallocyanin resulting from a nitrosoalkylbenzylanilin-sulfonic acid, the said dyestuff constituting in dry state a bluish powder very sparingly soluble in cold water, soluble in sodium acetate and alkalies and dying chromium mordanted fibers in pure blue shades.

707,884. PLATE-GLASS-ANNEALING APPARATUS. HENRY L. DERST, Pittsburg, Pa. Filed May 6, 1901. Serial No. 58,570. (No model.)

Claim.—1. The combination with a lear having longitudinally-movable bars, of transfer mechanism arranged to lift a glass plate and carry it longitudinally to a position over the bar-supports; substantially as described.

2. In plate-glass-annealing apparatus, a lear having movable bars with supports therefor at the front end of the lear, a supporting floor or platform in front of the lear, and transfer mechanism arranged to lift the glass plate from the floor or platform and carry it rearwardly to a point over the bar-supports; substantially as described.

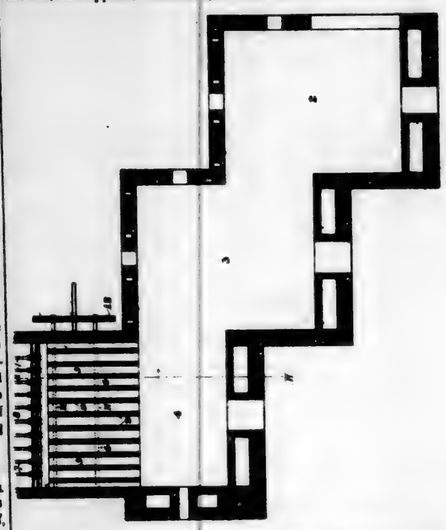

3. The combination with a lear, of a tile floor or platform in front of it, and having transfer-bars therein, and rock-arms arranged to lift the bars and plate and carry them rearwardly over the front supports for the lear-bars; substantially as described.

707,885. MEANS FOR GENERATING COUNTER ELECTROMOTIVE FORCE. HERBERT H. DOW, Midland, Mich. Filed Apr. 21, 1900. Serial No. 13,707. (No model.)

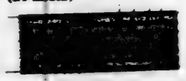

Claim.—1. A voltaic element comprising electrodes and a suitable electrolyte, the opposing faces of said electrodes being of opposite sign and of a granular construction, said electrodes and their faces being of similar material.

2. A voltaic element comprising electrodes and a suitable electrolyte, such electrodes having their respective opposing faces of opposite sign and provided with a covering of granular material, said electrodes and covering being of similar material.

3. A voltaic element comprising electrodes and a suitable electrolyte, such electrodes consisting of sheets of carbon having their opposing faces provided with a covering of granular carbon, said faces being of opposite sign.

4. A voltaic element comprising electrodes, a suitable electrolyte and bibulous material, opposing faces of such electrodes being of opposite sign and having a granular construction and in contact with opposite faces of such bibulous material, said electrodes and their faces being of similar material.

5. A voltaic element comprising electrodes, a suitable electrolyte and bibulous material, such electrodes consisting of sheets of carbon having their opposing faces of opposite sign and formed of a covering of granular material of a character similar to that of the electrodes, such material being in contact with opposite faces of such bibulous material.

6. A series of voltaic elements each comprising electrodes and an electrolyte, opposing faces of adjacent electrodes being of opposite signs and formed with a covering of granular material of a character similar to that of the electrodes, opposite faces of such electrodes constituting the anode and cathode respectively of two adjacent elements.

7. A series of voltaic elements each comprising electrodes, an electrolyte and bibulous material, opposing faces of adjacent electrodes being of opposite signs and formed with a covering of granular material of a character similar to that of the electrodes upon opposite sides of said bibulous material, opposite surfaces of such electrodes constituting the anode and cathode respectively of two adjacent elements.

707,886. GRAIN-HARVESTER. HOMER P. FISLEY, Ann Arbor, Mich. Filed Nov. 1, 1901. Serial No. 80,794. (No model.)

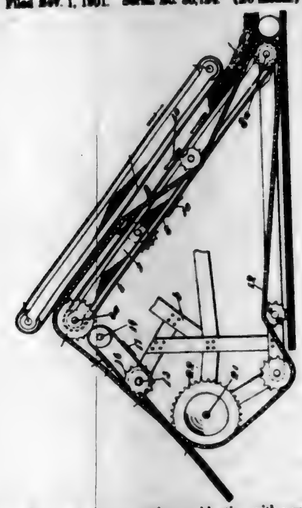

Claim.—In a grain-harvester the combination with a grain-elevator and a stationary deck arranged stubbleward of the top portion thereof, of a movable grain-deck held between the elevator and the stationary deck and comprising two rollers mounted respectively in proximity to said elevator and the stationary grain-deck, and an endless belt or conveyer mounted on said rollers and of a width equal to the width of the grain-deck and means for moving the endless belt, at a higher speed than the elevator, substantially as shown and described.

707,887. SHEET-PILING. LUTHER P. FRIESNER, Chicago, Ill. Filed Dec. 2, 1901. Serial No. 84,602. (No model.)

Claim.—1. A metal sheet-piling, comprising a series of beams having interlocking flanged edges and joined together in the relative alternating position shown, and presenting a single wall at all points, substantially as set forth.

2. A metal sheet-piling, comprising a series of channel-beams having engaging interlocking flanged edges, the joining faces of said flanges being beveled and which draw together with a wedging action as the beams are assembled in their alternating position in forming a structure presenting a single wall at all points, substantially as set forth.

3. A metal sheet-piling, composed of channel-beams joined edgewise and having the back and face sides thereof positioned alternately with reference to each other, and presenting a wall structure of a single thickness at all points, substantially as set forth.

4. A metal sheet-piling, composed of beam-sections assembled edgewise and presenting a single wall at all points, and means for locking said beams together, substantially as set forth.

5. In metal sheet-piling, the combination with a series of channel-beams positioned alternately and interlocked along their flanged edges in continuous order of succession, of an angle Z-bar joining and bracing the beam-sections, substantially as set forth.

6. In metal sheet-piling, the combination with a series of channel-beams joined together in a continuous unbroken sheet, by having the respective flanged edges interlock, of the double angle-bars, and the angle-plates positioned opposite to said bars and providing a space for the insertion of a packing substance, substantially as set forth.

707,888. UMBRELLA-RUNNER. WILLIAM H. GAMBLE, Philadelphia, Pa., assignor to Samuel W. Evans, Jr., Philadelphia, Pa. Filed Nov. 16, 1900. Serial No. 36,573. (No model.)

Claim.—1. In a spring-case for an umbrella, a tube, and a ring having a collar, the latter being provided with an annular groove on the exterior thereof, the contiguous metal of said tube being deflected into said groove and secured to the wall thereof.

2. In a spring-case for an umbrella, an exterior tube, a ring having a collar, said collar being provided with an annular groove on the exterior thereof, the contiguous metal of the exterior tube being deflected into said groove and engaging with the surface of said collar on opposite sides of said groove.

3. In a spring-case for an umbrella, a ring having a collar, a groove on the exterior of said collar, and an exterior tube having its upper extremity knurled or otherwise deflected into said groove, the lower portion of said exterior tube being of reduced diameter.

4. A runner for a self-opening umbrella, consisting of a body portion having a ring attached thereto, said ring having an outer downwardly-deflected peripheral lip or flange, and an inner annular strengthening device between said lip and the inner wall of said ring whereby the upper portion of said ring is prevented from being crushed inwardly in the act of wiring the stretchers in position.

5. As an improved article of manufacture, a runner having an annular groove at its upper portion, said groove being closed at its top and open at its bottom, and annularly-disposed strengthening means on the inner wall of said groove between the inner and outer walls of the ring, whereby the upper portion of the device is prevented from being crushed inwardly during the wiring of the stretchers in position.

6. A spring-case for an umbrella consisting of an interior tube, a notched ring having a collar, said ring and collar being carried by said tube, said collar being provided with an annular groove on the exterior thereof, and an exterior tube, the metal of which latter is deflected into said groove and engaged with the portion of said collar on the opposite sides of said groove.

707,889. ELEVATOR. EDWIN R. GILL, New York, N.Y., assignor to Invention Developing Company, a Corporation of New Jersey. Filed Dec. 16, 1899. Serial No. 740,594. (No model.)

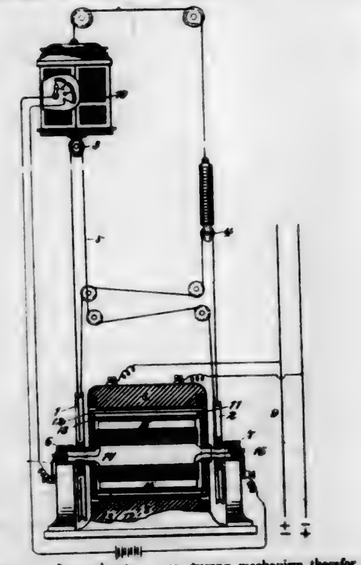

Claim.—1. In an elevator, a car, driving mechanism therefor, rotary magnetizable poles adapted to turn therewith, a magnetizing-circuit for said poles, means on the car for varying the current in said circuit, a closed rotatable circuit close to said magnetizable poles and means for imparting rotary movement to said closed circuit.

2. In an elevator, a car balanced so as to tend by gravity to move in one direction, driving mechanism therefor, constantly-moving motive means adapted to operate through said driving mechanism to counteract said gravitative tendency and means for regulating the power of said motive means from zero to a maximum sufficient to move said car against

said gravitative tendency without substantially changing the speed of said mechanism.

3. In an elevator, a car, driving mechanism therefor, rotary magnetizable poles adapted to turn therewith, a magnetizing-circuit for said poles, a closed rotatable circuit close to said magnetizable poles, an electric motor for driving said closed circuit continuously, a generator operated by said motor and supplying current to said magnetizing-circuit and means for controlling said magnetizing-current.

4. In an elevator, a car, driving mechanism therefor, rotary magnetizable poles adapted to turn therewith, a magnetizing-circuit for said poles, a closed rotatable circuit close to said magnetizable poles, an alternating-current motor for driving said closed circuit continuously, a generator operated by said motor and supplying current to motor field-magnets and to said magnetizing-circuit, and means for controlling said magnetizing-current.

5. In an elevator, a car, driving mechanism therefor, constantly-rotating motive means, an inducing and an induced electromagnetic transmission member, one of said members being operatively connected to said driving mechanism and the other to said motive means, and means for operatively varying the electromagnetic reaction between said transmission members.

707,840. METHOD OF BALLASTING RAILWAY-TRACKS. WILLIAM GOLDER, Wilkinsburg, Pa. Filed Jan. 10, 1902. Serial No. 89,147. (No model.)

Claim.—1. The method of surfacing railroad-tracks, consisting in injecting cement under the ties to form supporting-beds therefor, said cement being moistened sufficiently to cause the same to set but not sufficiently to render the same fluid or mobile.

2. The method of surfacing railroad-tracks, consisting in injecting cement under the ties to form supporting-beds therefor, and simultaneously therewith supplying sufficient moisture thereto to cause the same to set but not to become fluid or mobile.

3. The method of surfacing railroad-tracks, consisting in injecting cement under the ties to form supporting-beds therefor, and simultaneously therewith moistening the same with a spray of atomized water.

4. The method of surfacing railroad-tracks, consisting in raising the tie and then injecting cement under the same to form supporting-beds therefor, said cement being slightly moistened to cause the same to set but not sufficiently to cause the same to become fluid or mobile.

5. The method of surfacing railroad-tracks, consisting in tamping the ballast under the ends of the ties, and injecting cement under the ties underneath the rails to form supporting-beds therefor, said cement being moistened sufficiently to cause it to set but not sufficiently to cause it to flow or become plastic.

6. The method of surfacing railroad-tracks, consisting in placing dam-plates at the sides of the ties underneath the rails and injecting cement under the ties to form supporting-beds therefor, said cement being moistened sufficiently to cause it to set but not sufficiently to cause it to flow or become plastic.

7. The method of surfacing railroad-tracks, consisting in injecting under the ties by means of fluid-pressure cement to form supporting-beds therefor, and simultaneously therewith admitting a small stream of water to the fluid-pressure pipe whereby the water is atomized and mingled with the cement.

8. The method of surfacing railroad-tracks, which consists in injecting under the ties by means of fluid-pressure cement in a practically dry state, and simultaneously therewith drawing by means of said fluid-pressure a small stream of water into the fluid-pressure pipe whereby the water is atomized and mixed with the cement.

707,841. PORTABLE FOLDING CHAIR. BENJAMIN J. HARRISON, Whitestone, N. Y., assignor to Anna May Harrison, Whitestone, N. Y. Filed Dec. 23, 1901. Serial No. 87,222. (No model.)

Claim.—1. The combination with the pairs of pivoted folding X-legs, of a back-frame, a flexible seat secured at one end to the inner frame of the pairs of X-legs, a cross-bar connected to the lower ends of the back-frame and to which the other end of the flexible seat is secured, the flexible seat being longitudinally of full width and agreeing in width with its supports, and devices for pivotally connecting the said back-frame to and between the inner surfaces of the outer pair of pivoted X-legs at a point forward of the back-frame and above the point of attachment to the cross-bar of the flexible seat, substantially as set forth.

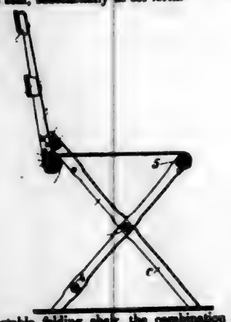

2. In a portable folding chair, the combination with the pairs of folding X-legs, the back-frame and the flexible seat, of plates secured to the outer faces of the side bars of the back-frame and projecting forward of the edge face of the side bars, and pivot-bolts connecting said plates to the upper end of the longer members of the X-legs, whereby the flexible seat in width agrees with the width of the back-frame and leg-frame and the back-frame is adapted to fold over upon the flexible seat and leg-frame, substantially as set forth.

3. In a portable folding chair, the combination with the pairs of folding X-legs and the back-frame pivoted thereto, of a cross-bar longer than the width of the back-frame, a part adapted to be connected thereto and means for securing the cross-bar to the lower ends of the back-frame side bars below and beyond the points of pivotal connection of the said back-frame to the folding X-legs, and a flexible seat secured at one end to the inner frame of the pairs of X-legs and at the other end and in its full width to the said cross-bar of the back-frame between the same and the parts adapted to be connected thereto, substantially as set forth.

4. In a portable folding chair, the combination with the pairs of pivoted folding X-legs, the back-frame pivoted thereto and the flexible seat, of a cross-bar having a longitudinally-flattened surface, and notches providing faces in the axial plane of the bar, a strip of wood and means for securing the same to the cross-bar with one end of the flexible seat intervening, said end of the flexible seat also intervening between the notched ends and the lower ends of the back-frame side bars, substantially as set forth.

5. In a portable folding chair, the combination with the pairs of pivoted folding X-legs and the flexible seat connected at one end thereto, of the back-frame side bars having notches at their lower ends at inclinations which are substantially acute angles to the edge faces, pivotal connections for the side bars to the longer members of the pairs of X-legs adjacent to said notched ends but appreciably distant therefrom, a cross-bar of circular form in cross-section with a longitudinally-flattened portion and ends notched to provide faces in axial planes, a strip of wood and screws for securing part of one end of the flexible seat to the said cross-bar between the side bars of the back-frame, the said flexible seat being notched at the corners of the angular notches at the ends of the side bars and the sides of the flexible seat at the same end being between the notched ends of the side bar and the notched ends of the cross-bar, whereby this end of the flexible seat is securely held over its entire length both at the end where the same is notched and adjacent thereto over an unbroken portion, substantially as set forth.

707,842. ELECTRIC FAN. GARDNER C. HAWKINS, Boston, and HERBERT L. PLIFF, Cambridge, Mass., assignors to Boston Electric Heating and Power Company, Portland, Me., and Boston, Mass., a Corporation of Maine. Filed Mar. 20, 1901. Serial No. 52,402. (No model.)

Claim.—1. In an electric fan, a telescopic standard carrying at its upper end a motor having a vertically-arranged armature-shaft, means to clamp the sections of the standard together in any adjusted position, a fan secured to the upper end of said shaft, extensible conductors within the standard and connected to the motor, and a controller for the motor carried by said standard, the construction being such that the motor may be operated at any adjusted position of the standard.

2. In an electric fan, a standard, comprising a base and a motor-frame having a hollow stem, said stem being vertically adjustable in the base, a motor in said frame having a vertically-arranged armature-shaft, a fan attached to said shaft and telescopic electrical connections inclosed in the hollow stem and connected to the motor.

3. In an electric fan, a standard comprising a fixed base and a vertically-adjustable motor-frame, said frame having a hollow stem which telescopes into the base of the standard, a motor in said frame, and a fan operated by said motor, means to clamp said base and standard together to hold the fan at any desired vertical elevation, fixed terminals in said base and frame respectively, extensible electrical connections inclosed by said hollow stem and connecting the terminals in the base with those of the frame, and a controller in said base for regulating the speed of the fan.

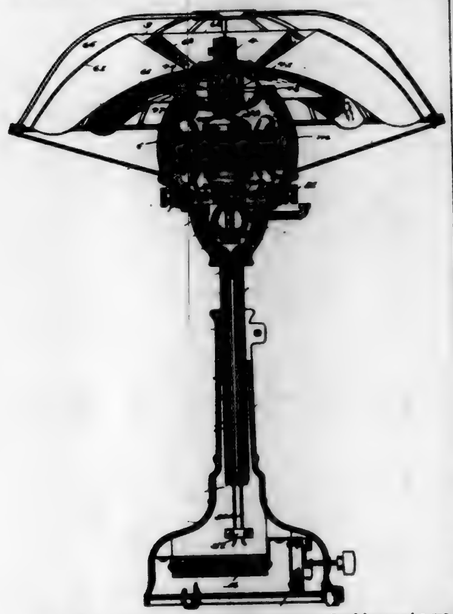

4. In an electric fan, a standard comprising a fixed base and a motor-frame, said frame having a hollow stem which is vertically adjustable in the base, a motor in said frame, a fan operated by said motor, a switch in said base, and extensible electrical conductors inclosed by said hollow stem and connecting the switch and motor.

5. In an electric fan, a standard comprising a fixed base and a motor-frame having a hollow stem, said stem being vertically adjustable in said base, a motor in said frame, a fan operated by said motor, a resistance-coil and a switch in said base, and extensible conductors between the switch and motor whereby the motor may be operated at any adjusted position of the motor-frame.

6. In an electric fan, a standard comprising a base and a motor-frame having a hollow stem, said stem being vertically adjustable in said base, a motor in said frame having a vertically-arranged armature-shaft, a fan attached to said shaft, a switch in said base, and telescopic electrical connections inclosed in the hollow stem and connecting the switch and motor.

7. In an electric fan, a standard comprising a base and a motor-frame having a hollow stem, said stem being vertically adjustable in said base, a motor in said frame having a vertically-arranged armature-shaft, a fan attached to the upper end of said shaft, a switch in said base, and extensible electrical connections between said switch and motor and inclosed by said hollow stem, said connections comprising conductors fixed to the frame and base and having a sliding connection with each other.

8. In an electric fan, a standard comprising a base and a motor-frame having a hollow stem, said stem being vertically adjustable in said base, a motor in said frame having a vertically-arranged armature-shaft, a fan attached to the upper end of said shaft, a switch in said base, and extensible electrical connections between said switch and motor and inclosed by said hollow stem, said connections comprising tubes inclosed in said hollow stem, and wires attached to the base and telescoping in the said tubes.

9. In an electric fan, a motor having a vertically-arranged armature-shaft, a fan attached to said shaft at the upper end thereof, a step-bearing between the motor and fan for supporting the armature-shaft, said bearing comprising a stationary cup member having an aperture larger than the shaft and through which the shaft projects, and a collar fast on the shaft and having a depending flange which rests in the cup-bearing but is spaced from the inner wall thereof, and a centering device for the lower end of the shaft, said centering device comprising a vertical oil-cup with a closed bottom and into which the lower end of the shaft projects, said oil-cup engaging the shaft on the circumference thereof only.

10. In an electric fan, a motor having a vertically-arranged armature-shaft, a fan attached to the upper end of said shaft, a step-bearing between the fan and the motor for supporting said shaft, an oil-cup adapted to receive the lower end of the shaft and having means to center said shaft, and a collar or flange fixed to said shaft, said collar being smaller than and situated within the mouth of the oil-cup whereby oil is prevented from working up the armature-shaft past the collar.

11. In an electric fan, a standard comprising a base portion, and a motor-frame having a hollow stem, said stem being vertically adjustable in the base, a motor in said frame having a vertically-arranged armature-shaft, a fan attached to said shaft, said fan operating to deliver a current of air at an angle to its axis of rotation, and extensible electrical connections inclosed in said hollow stem, and a controller in the base of the motor, the said construction being such that by varying the height of the motor frame the circular area affected by the fan may be increased or diminished.

707,843. ELECTRIC SWITCH OR CUT-OUT. JOHN A. HENRY, Philadelphia, Pa., assignor to the Peter Henry Developing Company, Charleston, W. Va., and Philadelphia, Pa., a Corporation of West Virginia. Filed Dec. 11, 1901. Serial No. 85,494. (No model.)

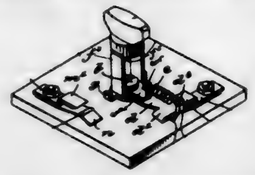

Claim.—1. In an electric switch or cut-out, a traveling contact-bar, a series of stationary contacts, means for locking the contact bar to each contact, an operating-plate, a spring connecting the operating-plate to the contact-bar, means controlled by the movement of the operating-plate for distending the spring, and means carried by said operating-plate and adapted to engage and force the contact-bar from the contact to permit the distended spring to further move the contact-bar into locking engagement with the next contact in series.

2. In an electric switch or cut-out, the combination of a traveling contact-bar pivoted at one end in an insulating-base, the free end of said bar having locking means, a plate also pivoted upon the pivotal connection of the contact-bar, a spring connecting the free ends of the contact-bar and said plate, lugs formed on the contact-bar adjacent to its pivotal connection and adapted to be engaged by the plate in the turning of said plate, and a series of stationary contacts, each adapted to receive the free end of the contact-bar and to lock the same in the contact, all arranged so that when the plate is turned, the spring is distended until the plate strikes a lug upon the traveling contact-bar and thereafter the bar is released from a contact and is snapped into locking engagement with the next contact by said spring.

707,844. ELECTRIC-RAILWAY SYSTEM. JOHN C. HENRY, Denver, Colo.; Dante A. Henry, executrix of said John C. Henry, deceased, assignor to Stanley Electric Manufacturing Company, a Corporation of New Jersey. Filed Apr. 9, 1901. Serial No. 55,102. (No model.)

Claim.—1. In a distribution system for electric railways, where the working conductors are located below the cars, an I-beam arranged along the roadway having the working conductors protected by its flanges, said conductors being supported in position by a plastic insulating material and insulated thereby.

2. In a third-rail system, working conductors supported and protected by an I-beam, and insulated therefrom, said beam having its flanges arranged in a horizontal direction, the latter being bent in a curved form substantially as shown so as to stiffen the beam and to leave a downtaled aperture to retain the insulating material and conductors.

3. In a third-rail system conductors arranged and insulated within the side openings of an I-beam, said beam having its flanges bent together, substantially as shown.

4. An electric-railway system comprising trunk-sections, sectional working conductors, a direct-current-supply circuit and switching devices connecting same with the working conductors, and a plurality of local circuits each connected to a trunk-section and including a converting de-

vice whereby it is energized inductively from the supply-circuit, and means in said local circuit for controlling said switching device.

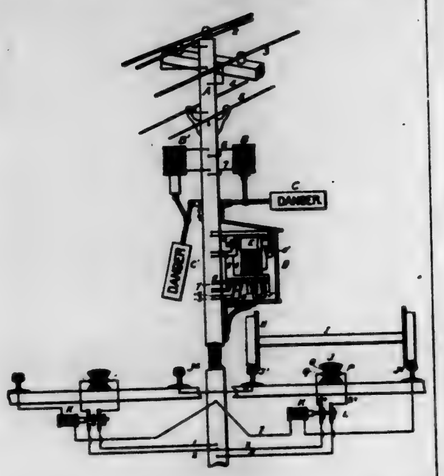

5. An electric railway comprising trunk-sections, sectional working conductors, and electromagnetically-controlled switching devices connecting same with the working conductors, electromagnetic sumaphore devices, and a plurality of local circuits connected to the trunk-sections and including the controlling-magnets of said switch and sumaphore devices, and subdivided and distributed induction devices connected to the supply-circuit and to the local circuits to energize the latter.

6. An electric-railway system comprising trunk-sections, sectional working conductors, direct-current-supply conductors and electromagnetically-controlled switches controlling the connection from the supply-conductors to the working conductors, and subdivided and distributed converters energized by the supply-circuit and connected to the trunk-sections and to the electromagnetic switches to control the latter.

7. An electric-railway system comprising trunk-sections, a direct-current-supply circuit, sectional conductors and switches controlling their connection with the supply-circuit, local circuits connected to the trunk-sections and including electromagnets controlling such switches, rotary converters connected to the direct-current-supply circuit, and distributing-circuits receiving alternating current from the rotary converters and including stationary converters connected to energize, by induction, the local trunk-section circuits.

8. An electric-railway system comprising trunk-sections, a direct-current-supply circuit, sectional conductors and switches controlling their connection with the supply-circuit, local circuits connected to the trunk-sections and including electromagnets controlling such switches, electromagnetic sumaphore devices included in the local circuits, rotary converters connected to the direct-current-supply circuit, and distributing-circuits receiving alternating current from the rotary converters and including stationary converters connected to energize, by induction, the local trunk-section circuits.

9. The combination with the sectional working conductors and the direct-current-supply circuit of electromagnetically-controlled switches controlling the connection from said supply-circuit to the working conductors, trunk-sections, subdivided and distributed induction devices connected to said trunk-sections and switching devices, to operate the latter, and means for supplying alternating current to energize said induction devices.

707,845. VEHICLE-AXLE. HARRY EDWARD and ARTHUR E. MATTHEWS, Dundee, Tay. Filed Mar. 6, 1902. Serial No. 96,955. (No model.)

Claim.—The combination with a vehicle-axle provided with an enlarged screw-threaded end; of a spindle provided with an enlarged internally-threaded cap to be screwed upon said end, and a spring-arm projecting inwardly from said spindle-end, in the act of screwing the spindle to the axle, adapted to freely pass the corners of the axle, and a clip for changing the arm into engagement with the axle, substantially as described.

707,845.

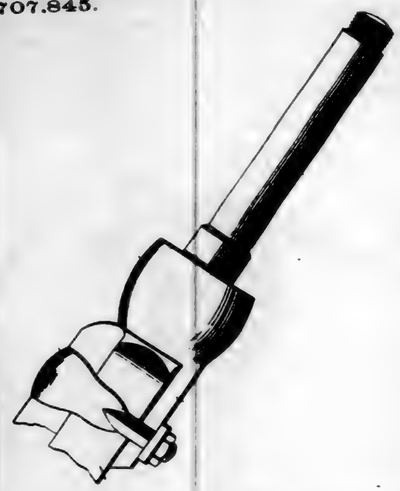

707,846. REEDING-MACHINE. EDWARD M. HEYLMAN, Janesville, Wis., assignor to Janesville Machine Company, Janesville, Wis. Filed Feb. 13, 1902. Serial No. 94,894. (No model.)

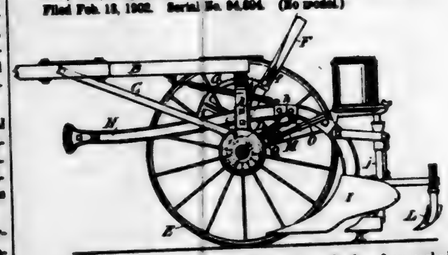

Claim.—1. The combination with carrying-wheels, of an arched axle, a gear-casing journaled on said axle and provided with a sleeve, and a driving-gear journaled on said sleeve and operated by one of said carrying-wheels, substantially as shown and described.

2. The combination with carrying-wheels, of a crank-axle, a driving-gear, a gear-casing mounted on said axle, a pinion-housing pivoted to said casing, and a rotating shaft provided with a pinion and journaled in said housing, substantially as shown and described.

3. The combination with carrying-wheels, of an arched axle, a gear-casing mounted on said axle, a driving-gear, a pinion-housing pivoted to said casing, a rotating shaft provided with a pinion journaled in said housing, a clutch adapted to slide on said shaft, and means for sliding said clutch on said shaft, substantially as shown and described.

4. The combination with carrying-wheels, of an arched axle, a gear-casing mounted on said axle, a driving-gear, a pinion-housing pivoted to said casing, a rotating shaft journaled in said housing and provided with a pinion, a sliding clutch mounted on said rotating shaft and adapted to engage said pinion, a pivoted lever adapted to slide said clutch longitudinally of said shaft, and an inclined flange arranged in close proximity to one end of said lever, substantially as shown and described.

5. The combination with carrying-wheels, of a crank-axle, a gear-casing journaled on said axle, a driving gear journaled in said casing, a pinion-housing pivoted to said casing, a rotating shaft journaled in said casing, a pinion adapted to rotate on said shaft, and a clutch adapted to slide on said shaft and to have a locking engagement with said pinion, substantially as shown and described.

6. The combination with a pivoted housing, of a rotating shaft having one end journaled in said housing, a pinion adapted to rotate on said shaft and provided with a hub having a shoulder adapted to bear against said housing, and a collar rigidly secured to said shaft and arranged between said pinion and housing, substantially as shown and described.

7. The combination with carrying-wheels, of a crank-axle, a plow-beam mounted on said axle, a gear-casing journaled on said axle, a driving-gear journaled on said casing, a pinion-housing pivoted to said gear-casing, a rotating shaft journaled in said housing, a pinion loosely mounted on said shaft and journaled in said housing, a clutch having a sliding engagement with said pinion, an inclined flange, and a lever adapted to engage said clutch and flange and remove said clutch from engagement with said pinion, substantially as shown and described.

707,847. CLOTHES-LINE HOLDER. ALFRED H. JOHN, Brooklyn, N. Y. Filed Jan. 15, 1902. Serial No. 89,988. (No model.)

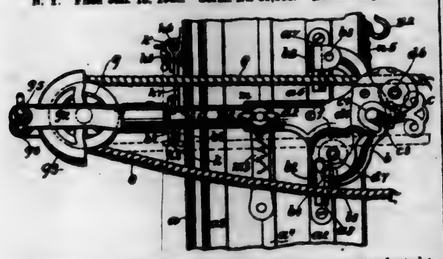

Claim.—1. A clothes-line holder comprising a support adapted to be connected with a window-frame, and an arm connected with one end of said support by a ball-and-socket joint, so as to be swung diagonally of the frame, said arm being provided at its opposite end with a pulley and at the end thereof connected with said support with two pulleys, one of which is above and the other below said ball-and-socket joint, substantially as shown and described.

2. A clothes-line holder comprising a support adapted to be connected with a window-frame, and an arm connected with said support at one end by a ball-and-socket joint so as to be swung diagonally of the frame and provided at its opposite end with a detachable pulley, said arm being also provided at the end thereof which is connected to said support with two pulleys, one end of which is arranged above and the other below the ball-and-socket joint, and said detachable pulley being supported at a lateral angle to the said arm, substantially as shown and described.

3. A clothes-line holder comprising a support adapted to be connected with a window-frame so as to swing laterally, means for adjusting said support to any desired lateral position, an arm connected at one end with said support by a ball-and-socket joint so as to be swung at an angle to the side of the frame and provided at said end with two pulleys, one of which is arranged above and the other below said ball-and-socket joint, said arm being also provided at its free end with a pulley, substantially as shown and described.

4. A clothes-line holder comprising a support adapted to be connected with a window-frame and to swing laterally thereon, an arm connected at one end with said support by a ball-and-socket joint so as to swing at an angle to said frame and provided above and below said joint with a pulley, said arm being also provided in its opposite end with a pulley, and a clamp adjustable transversely of the window-frame and adapted to hold said arm, substantially as shown and described.

5. A clothes-line holder comprising a support adapted to be connected with a window-frame and to swing toward and from said frame, means for adjusting the position of said support, an arm connected at one end with said support by a ball-and-socket joint and provided above and below said joint with pulleys, a detachable pulley mounted in the opposite end of said arm, and a clamp adjustable transversely of the window-frame and adapted to receive said arm, substantially as shown and described.

6. A clothes-line holder comprising a support adapted to be connected with a window-frame and to swing toward and from said frame, means for adjusting the position of said support, an arm connected at one end with said support by a ball-and-socket joint and provided above and below said joint with pulleys, a detachable pulley mounted in the opposite end of said arm, and a clamp adjustable transversely of the window-frame and adapted to receive said arm, said detachable pulley being supported at an inclination to a horizontal plane, substantially as shown and described.

7. A clothes-line holder comprising a spanner-yoke adapted to be connected with a window-frame so as to swing in a horizontal plane, devices for adjusting the position of said yoke with reference to said frame, part of which devices are detachably connected with said frame, an arm connected with one end of said spanner-yoke by means of a ball-and-socket joint and provided at said end and above and below said joint with pulleys, and a pulley mounted in the opposite end of said arm, substantially as shown and described.

8. A clothes-line holder comprising a spanner-yoke adapted to be connected with a window-frame and to swing in a horizontal plane, devices for holding said yoke in any desired position and part of which are detachably connected with said frame, an arm connected at one end with said support by means of a ball-and-socket joint and provided above and below said joint with pulleys, a detachable pulley mounted in the opposite end of said arm, and a clamp adapted to be connected with the window-frame and adjustable transversely thereof and adapted to receive said arm, substantially as shown and described.

9. In a device of the class described, a support connected with the window-frame and adapted to swing in a horizontal plane, an arm connected with said support by a ball-and-socket joint, and a clamp adjustable transversely of the window-frame and comprising a jaw adapted to swing in a horizontal plane, and a supplemental jaw pivotally connected therewith and adapted to swing in a vertical plane, said clamp being adapted to receive and hold said arm, substantially as shown and described.

10. In a clothes-line holder, a yoke adapted to be connected with a window-frame so as to swing in a horizontal plane, means for regulating the position of said yoke, an arm connected at one end with said yoke by means of a universal joint, said arm being provided at said end and above and below said joint with a pulley, a pulley connected with the opposite end of said arm, and a brace pivotally connected with said arm and adapted to be connected with said yoke, substantially as shown and described.

11. In a clothes-line holder comprising a yoke adapted to be connected with a window-frame so as to swing in a horizontal plane, devices for adjusting the position of said yoke, a part of which is adapted to be detachably connected with said frame, an arm connected with said yoke by a ball-and-socket joint and provided above and below said joint with a pulley and a supplemental pulley mounted in the opposite end of said yoke and detachable therefrom, substantially as shown and described.

12. In a clothes-line holder, a yoke adapted to be connected with a window-frame and to swing in a horizontal plane, devices for securing said yoke in any desired position, part of which consists of a plate hinged to the window-frame by means of a detachable pintle, an arm connected with said yoke by a ball-and-socket joint and provided above and below said joint with a pulley and a detachable pulley mounted in the opposite end of said arm, substantially as shown and described.

13. In a clothes-line holder, an arm provided with a yoke, the sides of which are segmental in cross-section and provided with inwardly-directed shoulders or projections and a pulley support provided with side members which are also segmental in cross-section and through which the shaft of the pulley is passed, said pulley-support being also provided with a swiveled eye and said yoke with a pin or bolt which is passed through the ends of the sides thereof and through said eye, substantially as shown and described.

14. In a device of the class described, an arm d provided with a sleeve d^2 composed of separate parts d^3, said sleeve being provided with an oblong head d^4 having pulleys d^5 and d^6 in the opposite ends thereof, said arm being also provided at the opposite end with a yoke g^2, substantially as shown and described.

15. In a clothes-line holder, the combination with a window-frame of a yoke connected therewith and adapted to be swung in a horizontal plane, an arm connected with one end of said yoke by a ball-and-socket joint and provided above and below said joint with a pulley, said arm being also provided in the opposite end with a pulley and means for adjusting said end of said arm laterally with reference to the window-frame, substantially as shown and described.

16. In a clothes-line holder, the combination with a window-frame of a yoke connected therewith and adapted to swing in a horizontal plane, means for adjusting the position of said yoke, an arm connected with said yoke by means of a ball-and-socket joint and provided above and below said joint with a pulley, a pulley detachably connected with the opposite end of said arm and held thereto at a lateral inclination to a vertical plane and a device connected with and adjustable transversely of the window-frame and provided with a clamp which is adapted to swing in a horizontal plane and receive and hold the free end of said arm, substantially as shown and described.

707,848. STAIR-CARPET SECURER. WILLIAM KERNOCHAN, New York, N. Y. Filed Sept. 23, 1901. Serial No. 76,148. (No model.)

Claim.—1. A device of the class described comprising angular brackets or supports, a main outer tube secured thereto and open at one side, and a supplemental inner tube placed in the main outer tube and also open at one side and provided at one side of the opening thereto

with projecting teeth, said inner tube being adapted to be turned and means for locking the tubes together, substantially as shown and described.

2. A device of the class described comprising a main tube open at one side and provided with means for securing it in the corners of a stairway, and a supplemental inner tube placed in the main outer tube and also open at one side and means for securing the inner tube against rotation, substantially as shown and described.

707,849. ASH-RECEPTACLE. JULIUS KRAMER and MAX KRAMER, New York, N. Y. Filed May 16, 1902. Serial No. 107,642. (No model.)

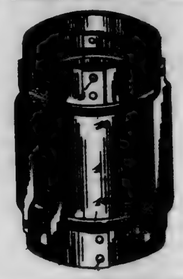

Claim.—In a receptacle of the character specified, the combination with the receptacle proper having a suitable bottom-section, of a pair of protecting collars or flanges, one for each end of said receptacle; suitable means to secure said collars in position; a plurality of reinforcing-sections 9 radially disposed around the body-section and in engagement with said flanges and a plurality of integral reinforcing-tongues carried by the lower collar-section and extending into engagement with the bottom of the receptacle, all combined substantially as specified and for the purpose set forth.

707,850. PHOTOGRAPH-HOLDER. EBENEZER J. G. LAMBERSON and CARL SCHELLER, Hopton, Ill. Filed Nov. 14, 1901. Serial No. 82,669. (No model.)

Claim.—1. The combination with a photograph-receptive means or pocket, of a cord having one end secured to the center of the lower wall of the said means or pocket, and a photograph having an opening in the center of the upper portion thereof through which the cord is loosely passed, a portion of the cord being exteriorly exposed for withdrawing the photograph.

2. The combination with a photograph-receptive means or pocket, of a cord secured at one end in a portion of the pocket or means, and a photograph having an opening in the upper portion thereof through which the cord is passed, the cord having loose movement through the photograph and lying wholly in rear of the latter and adapted to have its free extremity exteriorly exposed.

707,851. BEARING-SWINGING ATTACHMENT FOR HOISTING-ENGINES. ARTHUR LAMBERT, Bernard, N. J. Filed June 7, 1901. Serial No. 63,594. (No model.)

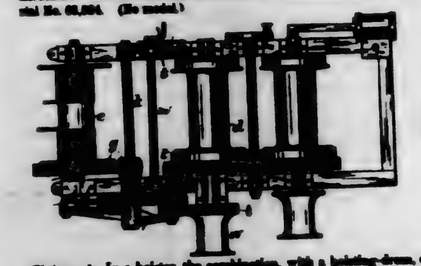

Claim.—1. In a hoister, the combination, with a hoisting-drum, of the means for swinging a boom-derrick, consisting of the swing-drum *e* having the swing-ropes *f*, *f'* wound thereon in reverse directions, a friction-wheel upon the shaft of the hoisting-drum, a lever pivoted upon the frame of the hoister, two friction-wheels geared together and mounted upon such lever, and suitable gearing connecting one of such friction-wheels with the swing-drum.

2. The combination, with a hoisting-drum and drum-shaft, and a grooved friction-wheel *i* upon said drum-shaft, of a swing-drum journaled adjacent to the hoisting-drum and having the swing-ropes *f*, *f'* wound thereon in reverse directions, the shaft *k* journaled between the hoisting-drum and swing-drum and a pair of gear-wheels connecting such shaft with the swing-drum, the cog-wheel *g'* and reverse-lever *j* upon the shaft *k*, the friction-wheels *k'* pivoted upon the reverse-lever, pinions *l* connecting such friction-wheels, one of such pinions engaging the gear-wheel *g'*, and means for operating the reverse-lever to press the friction-wheels at pleasure upon the wheel *i*.

3. The combination, with a hoisting-drum and drum-shaft, and a grooved friction-wheel *i* upon said drum-shaft, of a swing-drum journaled adjacent to the hoisting-drum and having the swing-ropes *f*, *f'* wound thereon in reverse directions, the shaft *k* journaled between the hoisting-drum and swing-drum, a pair of gear-wheels connecting shaft *k* with the swing-drum, the cog-wheel *g'* and reverse-lever *j* upon the shaft *k*, the friction-wheels *k'* pivoted upon the reverse-lever and the pinions *l* connected therewith, the gear-wheel *g'* having one of such pinions engaged therewith, the bell-crank *q* upon the drum-shaft *c* with pin engaging the reverse-lever, the shaft *m'*, the link *p* connecting the shaft *m'* with the bell-crank, and the latch *n* and segment *o* for adjusting and securing such shaft, the whole arranged and operated substantially as herein set forth.

4. The attachment for hoisters having a hoisting-drum provided with the friction-wheel *i*, comprising the frames R, the drum *e* and shaft *k* journaled thereon, a pair of gear-wheels connecting the drum and the shaft *k*, the gear-wheel *g'* and the reverse-lever *j* upon said shaft *k* outside of the frame, the friction-wheels *k'* pivoted upon the reverse-lever, the pinions *l* connecting said friction-wheels, and one of such pinions engaging the gear-wheel *g'*, and means mounted upon the frame R for actuating the reversing-lever, as and for the purpose set forth.

5. The combination, with the hoister having the parallel frames S, a shaft extended across the same, a hoisting-drum upon such shaft, and gearing to drive such drum, of the detachable swing-drum attachment comprising the frames R set at the same distance apart as the frames S to be bolted upon the same timbers or skids, the shaft *c* extended between the frames R and having the swing-drum *e* mounted thereon, a train of gearing connecting the hoisting-drum with the swing-drum and adapted to reduce the speed of the swing-drum, and a reversing-lever to reverse the swing-drum as required, the attachment being constructed separately and adapted for application to such hoisters when first manufactured or after they have been erected and used, substantially as herein set forth.

6. The combination, with a hoisting-drum, of the means for swinging a boom-derrick, consisting of a swing drum or winch having swinging ropes wound thereon in reverse directions, a driving friction-wheel suitably connected to the hoisting-drum to be revolved therewith, and a lever carrying two intermediate friction-wheels geared together to be pressed at pleasure upon the driving friction-wheel, and one of the intermediate friction-wheels connected by suitable gearing to the swing drum or winch, to rotate the same at pleasure in opposite directions, or to wholly disconnect the same from the hoisting-drum.

707,852. HEATING DEVICE FOR HYDROCARBON-BURNERS. GEORGE LAMB, Poughkeepsie, N. Y. Filed Feb. 3, 1902. Serial No. 92,262. (No model.)

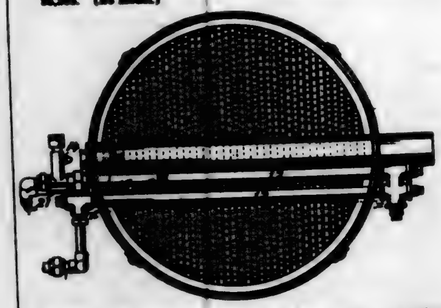

Claim.—1. In combination with a hydrocarbon-burner, a closed combustion-chamber within which the burner is situated, a secondary blue-flame burner located within said combustion-chamber, and means for feeding said secondary blue-flame burner with the air used for combustion from within said chamber.

2. In combination a hydrocarbon-burner, a closed combustion-chamber within which the burner is situated, a secondary hydrocarbon-burner located within said chamber, the mixer of said secondary burner drawing its air-supply from within said chamber.

3. In combination with a hydrocarbon-burner, a closed combustion-chamber, a secondary blue-flame burner located within said combustion-chamber, means for supplying the main burner and the secondary burner with fuel, and means for supplying the secondary burner with the air used for combustion from within the combustion-chamber.

4. In combination with a hydrocarbon-burner, vaporizing-tubes for the fuel-supply thereto, a closed combustion-chamber within which said burner and tubes are located, and a secondary blue-flame burner located within said combustion-chamber and under said vaporizing-tubes, and means for supplying said secondary burner with the air used for combustion from within the combustion-chamber.

5. In combination with a hydrocarbon-burner, a closed combustion-chamber within which the burner is situated, a secondary blue-flame burner located within the combustion-chamber, means for independently controlling the supply of fuel to said burners, and means for feeding the secondary burner with the air used for combustion from within the combustion-chamber.

6. In combination an injector-burner for hydrocarbon fuel, a closed combustion-chamber within which the burner is situated and a secondary injector-burner located within the combustion-chamber, the secondary burner drawing its air-supply from within said combustion-chamber.

7. An injector-burner adapted to use vapor hydrocarbon fuel, a closed combustion-chamber, a vapor-generator within said combustion-chamber and a secondary injector-burner arranged to keep said generator hot irrespective of the operation of the main burner, said secondary burner drawing its entire air-supply from inside the combustion-chamber of the main burner.

8. A hydrocarbon-burner, a closed combustion-chamber within which the burner is situated, a secondary injector-burner located within the combustion-burner, said secondary burner drawing its fuel-supply from without, and its air-supply from within said combustion-chamber.

9. A hydrocarbon-burner with an inclosing casing, a secondary injector-burner attached to the wall of said casing and having apertures for the admission of air from within said casing.

10. A hydrocarbon-burner with an inclosing casing, a secondary burner attached at one end to the wall of said casing and extended inward and provided with apertures for the admission of air from within said casing, and a fuel-supply pipe adapted to deliver vapor fuel from without the casing into the interior of the secondary burner.

707,858. DOOR-HANGER. WILLIAM LOUDEN, Fairfield, Iowa. Filed Jan. 13, 1902. Serial No. 89,868. (No model.)

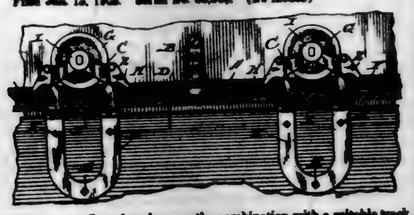

Claim.—1. In a door-hanger, the combination with a suitable track, of a hanger-frame carrying a rotary wheel mounted on said track and pivotally secured to a door, the pivotal points of support being laterally out of line with the line of the center of gravity, whereby the lower portion of said frame is free to move toward said line of gravity or to be moved therefrom and the door will tend to move laterally toward said point of support, substantially as described.

2. The combination with a suitable track of a door-hanger comprising two sections having a jointed or pivotal connection between them the upper section carrying a track-wheel adapted to run upon said track, and the lower section adapted to be secured to a door; said upper section being free to assume an angular position relatively to the vertical, and the joint or pivot between the sections being located so that the center of gravity will be out of line with the point of support, whereby the door will tend to move laterally, said lateral movement being facilitated by the angular movement of the upper section.

3. The combination with a track adapted to be secured to a wall, of a door-hanger consisting of two sections having a jointed or pivotal connection between them, the upper section carrying a track-wheel and being adapted to oscillate laterally upon said track, and the lower section being adapted to be secured to a door; said joint or pivot being situated to one side of the point of support of the wheel upon the track, whereby the door will tend to move laterally, said lateral movement being facilitated by the oscillation of the upper section upon the track.

4. The combination with a track adapted to be secured to a wall, of a door-hanger comprising two sections having a jointed or pivotal connection between them, the upper section carrying a trunk-wheel adapted to run centrally on said trunk and to oscillate laterally thereon, and the lower section being adapted to be secured to a door; said joint or pivot being located on a line with one side of said wheel, whereby the door will tend to move laterally, substantially as described.

5. A door-hanger consisting of two separate sections hinged together, the upper section carrying a track-wheel and having a rectangular-shaped loop on each of its lower corners set more or less outside of the periphery of said wheel, and the lower section being adapted to be secured to a door and having hooks or reserved ends on its upper corners adapted to hook into said loops and swing on the pivots formed thereby.

6. In door-hangers a trunk-supporting bracket being L-shaped in its general contour, and having its upper end thickened and rounded off both longitudinally and laterally and fitted with an eye, and its central portions recessed and perforated, its edges fitted with strengthening-flanges, and its lower end flattened, thickened and shouldered, substantially as described.

7. In door-hangers a frame carrying a trunk-wheel to run on a trunk-rail, and having cheek-pieces to support the wheel, the ends of said cheek-pieces being contracted so as to fit together, and having lower extensions which are spread apart and adapted to straddle the trunk-rail, substantially as described.

707,854. PROCESS OF EXTRACTING OILS. ANDERS F. LUNDSTRÖM, Stockholm, Sweden. Filed Nov. 7, 1899. Serial No. 736,169 (No specimens.)

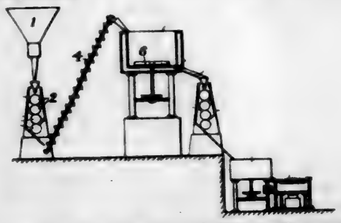

Claim.—The herein-described method of extracting vegetable oils, which consists in first crushing the seed while cold, then heating it, then crushing it a second time, and finally pressing it.

707,855. GRATE. GEORGE HAAS, Akron, Ohio, assignor to the XXth Century Heating and Ventilating Company, Akron, Ohio. Filed Feb. 7, 1902. Serial No. 92,997. (No model.)

Claim.—1. The combination in a grate for furnaces and stoves, consisting of a two-part grate pivotally hinged together, a pivot for the entire grate mounted on one of said portions, an arm mounted on the other portion and means as a swinging bail to vary the inclination of one of said portions.

2. The combination in a grate for furnaces and stoves of a two-part grate a lever mounted on one of said parts a swinging bail mounted in said ash-pit arranged when swung in one position to keep said grate level, and when swung in the other direction to lower one of the portions of said grate into an inclined position.

707,856. RANGE-FINDER. ARTHUR H. MARINDIN, Droitwich, England. Filed Mar. 11, 1902. Serial No. 97,718. (No model.)

Claim.—1. In a range-finder, the combination of a case, a fixed reflector at one end of the case, a movable reflector at the other end of the case, a spring carried by the case upon which such movable reflector is mounted, a micrometer-screw acting upon the outer end of the spring, a central combination of erecting-prisms receiving the images from the reflectors, erecting the same, and throwing half of each image at right angles to the case, and an eyepiece through which the half-images are viewed, substantially as set forth.

2. In a range-finder, the combination of a case, a fixed prism at one end thereof, a movable prism at the other end thereof, an objective connected to the adjacent faces of said prisms, a spring carried by the case upon which such movable prism is mounted, a micrometer-screw acting upon the outer end of the spring, a central combination of erect-

ing-prisms receiving the images from the end prisms, creating the same, and throwing half of each image at right angles to the case, and an eye-piece through which the half-images are viewed, substantially as set forth.

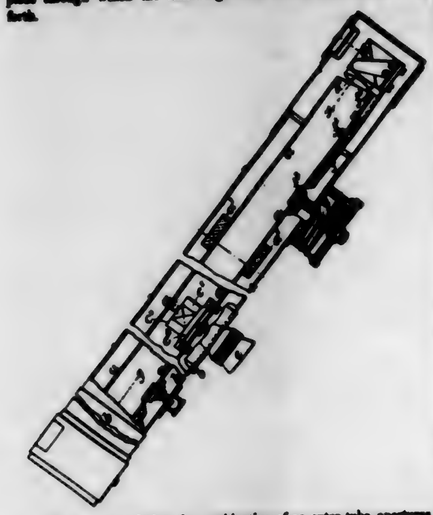

3. In a range-finder, the combination of an outer tube, apertures in said outer tube, an inner tube, a fixed prism at one end of said inner tube, a movable prism at the other end of said inner tube, an object-glass connected to the adjacent faces of said prisms, a spring fixed at one end to the inner tube upon which said movable prism is mounted, a weaker portion of said spring projecting therefrom, a micrometer-screw acting upon the outer end of such weaker portion, thereby giving motion to the prism, a combination of prisms receiving the images from the end prisms, creating the same, and throwing half of each image at right angles to the case, and an eyepiece through which the half-images are viewed, substantially as set forth.

4. In a range-finder, the combination of a case, a fixed reflector at one end thereof, an adjustable reflector at the other end thereof, a vertical prism having one end at right angles and one end sloping at an angle of forty-five degrees, a horizontal prism having one flat end and one end sloping at an angle of forty-five degrees, two oppositely-directed right-angle prisms arranged one above another, each having a sloping end at an angle of forty-five degrees, the lower of said right-angle prisms occupying the space between the upper face of the horizontal prism and the inner face of the vertical prism, and an eyepiece adjacent to the combination of prisms, through which the half-images are viewed, substantially as set forth.

5. In a range-finder, the combination of an outer tube, an inner tube, rubber rings stretched around the inner tube and fitting the outer tube, a fixed prism at one end of the inner tube, an adjustable prism at the other end of the inner tube, a spring fixed at one end of the inner tube upon the same end of which the adjustable prism is mounted, a weaker portion of said spring projecting therefrom, a micrometer-screw acting upon the end of the said weaker portion, thereby giving motion to the prism, a combination of prisms consisting of two rectangular prisms, each having one end at right angles and one end sloping at an angle of forty-five degrees, and two oppositely-directed right-angle prisms each having a sloping end, and an eyepiece adjacent to the combination of prisms, through which the half-images are viewed, substantially as set forth.

707,857. SUBMERGED WATER-WHEEL. Gustav Marburg, Vienna, Austria-Hungary. Filed Apr. 21, 1902. Serial No. 103,803. (No model.)

Claim.—1. The combination of a submerged water-wheel vertically divided in the middle and means for allowing the two parts of the same to swing apart substantially as described.

2. The combination of a water-wheel divided into two parts vertically, a horizontally-disposed stub-shaft to support each part of the same at the outer end, means for coupling the two parts together and means for allowing the supporting-shafts to swing apart in the horizontal plane and separate the two wheel parts substantially as described.

3. The combination of a water-wheel divided into two parts, means for supporting each part of the same at the outer end and floats to entake the inner ends of the same, a coupling to connect the two parts at their adjacent ends and means for allowing the two parts to swing apart horizontally in the manner and for the purpose substantially as described.

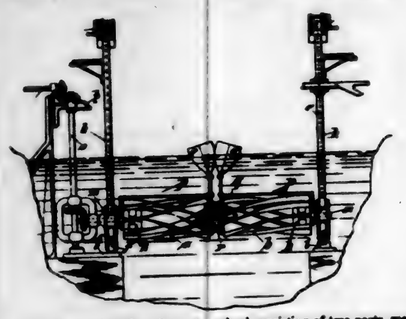

4. The combination of a water-wheel consisting of two parts, means for coupling the two parts at their adjacent ends, stub-shafts at the outer ends one to carry each wheel-half, vertically-adjustable bearings for the said stub-shafts in the manner and for the purpose substantially as described.

5. The combination of a water-wheel consisting of two parts, means for supporting each part rotatably at its outer end, a coupling to couple the said parts at their adjacent ends and means for adjusting the length of each part to suit currents of different breadths substantially as described.

707,858. DOOR-FASTENER. Aaron B. Meggendall, Anderson, Ind. Filed Dec. 2, 1901. Serial No. 84,641. (No model.)

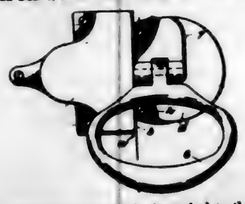

Claim.—A door-latch having the journal-plate, the catch-plate, having a vertical inner face provided with a recess therein, having an inclined or cam wall, the latch-bolt having the cam designed to engage said recess and cooperate with the cam-wall thereof, said cam having the radial stiffening-rib and the stop-shoulder projecting from the upper face of the cam, said cam having also the handle-lugs, and the handle pivoted to said lugs, said stop-shoulder being designed to engage the vertical face of the catch-plate when the handle is in vertical position and the cam of the latch-bolt is in engagement with the catch-plate, substantially as specified.

707,859. HAND TRIMMING-MACHINE. Roland A. Mills, Oconto, Nebr. Filed Nov. 15, 1900. Renewed Apr. 15, 1902. Serial No. 103,631. (No model.)

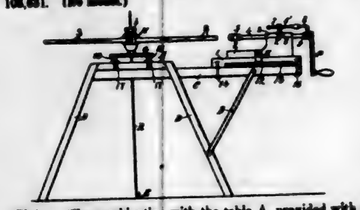

Claim.—The combination with the table A, provided with the supporting-legs B, of the projecting bar C secured below said table A, the adjustable holder *a* secured to said table A, the base 1 secured to said bar C provided with the extending slot 13, the head 2 slidably secured to said base 1, the depending ears 11 secured to said head 2, the bolt 18 passing through said ears and said base, the handle 12 threading upon said bolt 18, the shaft 4 revolubly and slidably held within said head 2, the operating-handle 10 secured to said shaft 4, the collar 9 secured to said shaft 4, the striking bar 8 secured between said collar 9 and handle 10, and the pivoted lever 7, said striking bar being secured to said lever, as and for the purpose set forth.

707,860. FOOT OR HEAD SUPPORTER. David R. Morgan, Phœnix, Ala. Filed May 14, 1902. Serial No. 107,391. (No model.)

Claim.—1. In a portable folding combined foot and head supporter, the combination, with the fixed disk having forks extending from the edge thereof, and the turnable disk, of a bolt connecting the disks and having a head provided with a slot or opening therethrough, an arm having a foot-rest, and a set-screw on the bolt-head whereby the arm is adjustably secured in said slot or opening independent of the disk adjustment.

2. In a portable folding combined foot and head supporter, the combination, with a disk having forks extending from the edge thereof and provided with a set-screw for attaching the disk, and a turnable disk, of a set-bolt having a slotted head extending through the disk by means of which they are clamped together, and an angular arm adjustable in the bolt-head independent of the disk adjustment and having a U-shaped opening.

707,861. WASHBOARD. William R. McPherson and Harry R. Burgs, Tarentum, Pa. Filed Mar. 20, 1902. Serial No. 100,640. (No model.)

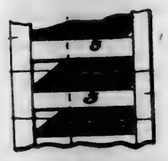

Claim.—1. In a reversible washboard, the combination with the frame having recessed side bars, of slats arranged at right angles to the plane of the frame and having their ends received in the said recessed sides, each of said slats having one of its long edges beveled and the other long edge rounded, and blocks arranged between the ends of the said slats.

2. In a reversible washboard, the combination of the frame, and slats spaced apart and arranged at right angles to the plane of the frame, each of said slats having one of the long edges rounded, and the opposite edge inclined outwardly and downwardly, substantially as described.

707,862. STANDARD FOR MEASURING HORSES. William H. Sutherland, Louisville, Ky. Filed Dec. 11, 1901. Serial No. 85,569. (No model.)

Claim.—1. In a standard for measuring horses, the combination with a case, of a metal tape perforated on its median line with a row of holes of such a size and shape as to fit snugly the teeth of a pinion which enter said holes; a pinion, having gear-teeth which mesh with said holes of said tape as with a rack, and continuously actuated thereby; a non-adjustable idler articulating with said pinion in such a manner as to keep said tape always in contact with the trough of said pinion; a second pinion, moving with said pinion; a center gear meshing with said second pinion; a center shaft passing through and moving with said center gear; a hand or indicator attached to the outer end of said center shaft; and a dial having graduations indicating hands and fractions of a hand and constituting the entire front cover of the case, substantially as and for the purpose specified.

2. In a standard for measuring horses, the combination of a case, a graduated dial constituting the front cover of said case, a hand or indicator adapted to traverse said dial, a gear-train for actuating said hand or indicator, and an ungraduated metal tape having a median line of holes of such a size and shape as to fit accurately articulating gear-teeth of a pinion, and a suspension-ring on the top of said case, substantially as and for the purpose specified.

3. As a new article of manufacture, a standard for measuring horses, consisting of a case suspended at a predetermined and fixed height above the object the height of which is to be measured, a graduated dial on the surface of said case, a hand or pointer traversing said graduated dial, and a tape perforated on its median line with a row of equidistant holes and adapted to be drawn down to the object to be measured, also counting so as to automatically subtract the distance of said case above the object to be measured from the height of said case, and show immediately on said dial the height of said object, substantially as specified.

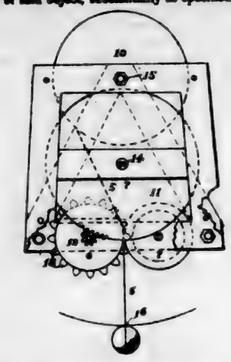

707,863. APPARATUS FOR COOLING OR HEATING LIQUIDS. Jean Heinecker, Offenbach-on-the-Main, Germany. Filed Oct. 12, 1901. Serial No. 78,468. (No model.)

Claim.—1. The combination of the successive batteries of tubes, arranged one above and inclined to the other in opposite directions, and means for delivering a larger quantity of liquid to the upper side and a lesser quantity to the under side of said batteries, as and for the purpose set forth.

2. An apparatus for cooling liquids, consisting of a series of batteries of cooling-pipes arranged one above another, said batteries being inclined successively in opposite directions, and means interposed between the successive batteries partially arresting the liquid flowing from the surface of one battery to that of the next below and delivering a larger quantity of liquid to the upper surface and a lesser quantity to the under surface of each battery, as explained.

3. The combination of successive batteries of tubes, said batteries being arranged one above and inclined to the other and in opposite directions; and troughs having two rows of holes above the successive batteries for distributing liquid over the upper and under sides of said batteries, the capacity of holes for distributing liquid over the upper side exceeding that of those distributing liquid over the under side, as and for the purpose set forth.

707,864. CANDY-COATING DEVICE. Pasquale Pasquilla, New York, N. Y. Filed Dec. 30, 1901. Serial No. 87,715. (No model.)

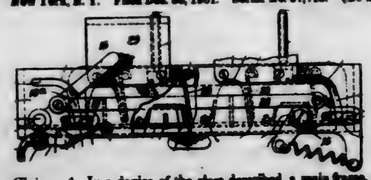

Claim.—1. In a device of the class described, a main frame, a supplemental frame mounted thereon and vertically and horizontally movable thereon, and means for giving said supplemental frame an oscillating or vibratory movement in a horizontal plane, substantially as shown and described.

2. In a device of the class described a main frame, wires or rods supported therein longitudinally and transversely thereof whereby said frame is divided into separate spaces, each of which is provided with upwardly-directed spring fingers or holders, a supplemental frame mounted in the main frame and vertically and horizontally movable therein, said supplemental frame being also provided over each of said spaces with a spring finger or holder and means for giving the supplemental frame an oscillating movement in a horizontal plane, substantially as shown and described.

3. A device of the class described comprising a main rectangular frame divided into rectangular spaces, devices for holding the candies in said spaces, a supplemental frame mounted in the main frame and vertically and horizontally movable, supplemental candy-holding devices connected with the supplemental frame and provided with downwardly-directed members and laterally-directed members adapted to overlap the candies, means for raising the supplemental frame and moving it in a horizontal plane and devices for giving the supplemental frame an oscillating or vibratory movement in a horizontal plane, substantially as shown and described.

4. A device of the class described comprising a main frame, a supplemental frame mounted therein and movable vertically and in a horizontal plane, candy-holding devices secured in the main frame, supplemental candy-holding devices connected with the supplemental frame, means for raising the supplemental frame, and moving it in a horizontal plane, and devices for giving the supplemental frame an oscillating or vibratory movement in a horizontal plane, substantially as shown and described.

5. A device of the class described comprising a main rectangular frame provided in the bottom thereof with wires or rods arranged longitudinally therein and transversely thereof, whereby said frame is divided into separate spaces, candy-holding devices connected with said wires or rods at three sides of said spaces, a supplemental frame mounted in the main frame over said wires or rods and movable vertically and in a horizontal plane, supplemental candy-holding devices connected with the supplemental frame and comprising members adapted to overlap the candies and downwardly-directed portions or projections adapted to bear on one side thereof opposite one of said holders, means for raising and moving the supplemental frame horizontally and devices for giving said supplemental frame an oscillating or vibratory movement, horizontally, substantially as shown and described.

6. In a device of the class described, a main frame, a supplemental frame mounted therein, and vertically and horizontally movable, means for locking the supplemental frame within the main frame, devices for raising the supplemental frame and moving it horizontally and other devices for giving said supplemental frame an oscillating or vibratory movement, in a horizontal plane, substantially as shown and described.

7. In a device of the class described, a main frame provided with candy-holding devices, a supplemental frame mounted therein and vertically and horizontally movable and devices connected with the supplemental frame and movable irregularly over the candies, whereby said candies are provided with an irregular drip-mark or formation, substantially as shown and described.

8. In a device for coating candy with chocolate or other material, a frame provided with candy-holding devices, a supplemental frame mounted in said first-named frame and movable vertically and horizontally therein, and devices connected with the supplemental frame and operating in connection with said candy-holding devices for holding the candies in position when the supplemental frame is in its lowermost position, said last-named devices being adapted to disarrange the chocolate covering of the candies and make a mark thereon when the supplemental frame is raised and moved horizontally, substantially as shown and described.

9. In a device for coating candy with chocolate or other material, a frame provided with candy-holding devices and a member mounted in said frame and movable vertically and horizontally therein, said member being provided with devices which operate when said member is moved horizontally to disarrange the chocolate coating of the candies and to form a drip-mark thereon, substantially as shown and described.

707,865. STEAM-BOILER FURNACE. HERMON H. PATTERSON, Norfolk, and JOHN T. BURKE, Omaha, Nebr. Filed Dec. 24, 1901. Serial No. 87,088. (No model.)

Claim.—1. A steam-boiler furnace formed with means for maintaining a pressure within the fire-box and combustion-chamber of the same, comprising a mechanism for forcing air into the ash-pit of the furnace, means for controlling the amount of air forced in, and means for controlling the draft in the chimney the said means cooperating so that when less air is allowed to enter the ash-pit, the means in the chimney will be operated to release the pressure somewhat at that point simultaneously, substantially as described.

2. A mechanism for producing and regulating the pressure within the ash-pit, fire-box and combustion-chamber of a furnace comprising piping for introducing air under pressure into the ash-pit, a valve for controlling the amount of air thus introduced, a check-damper in the chimney-flue, means for operating the valve and damper simultaneously to increase or diminish the pressure maintained within the fire-box and combustion-chamber, substantially as described.

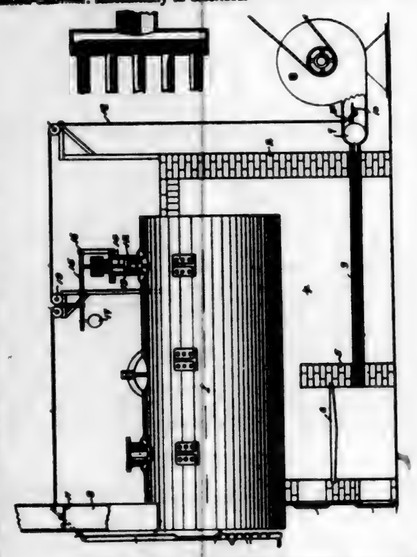

3. Means for producing and maintaining a suitable pressure within a furnace, comprising a series of pipes passing through the combustion-chamber of a furnace and the bridge-wall thereof into the ash-pit, a blower or other air-forcing means for delivering air to said pipes, a gate or valve for controlling the amount of air introduced into the furnace, a check-damper in the chimney-flue of the furnace, means operated by the boiler-pressure and connected with the said gate and the said check-damper so that when the gate is moved to cut off the incoming supply of air, the damper in the chimney-flue will be correspondingly opened to diminish the back pressure upon the draft at the same time thus diminishing the pressure maintained within the fire-box and combustion-chamber of the furnace, substantially as described.

4. A mechanism for producing and regulating the pressure within a furnace comprising a series of pipes passing through the combustion-chamber and bridge-wall of the furnace into the ash-pit, a header for connecting said pipes, a blower for forcing air through the pipes, a gate or valve for controlling the inlet of air to the ash-pit, a check-damper in the smoke-flue of the furnace, a steam-operated pressure mechanism on the boiler of the furnace connected with the said inlet-gate and check-damper for causing the increasing or diminishing of the pressure maintained in the furnace, substantially as described.

5. A pressure producing and maintaining mechanism, comprising means for forcing air into the ash-pit of a furnace, a gate for controlling the same, a check or damper in the smoke-flue, a hand-operated lever for operating said check-damper, a lever operated by the boiler-pressure, cords connecting the said gate and the said check-valve with the said lever so that when the gate is closed the check-damper will be correspondingly opened to control the pressure within the combustion-chamber of the furnace, substantially as described.

707,866. BERRY-BOX. CHARLES B. PROCTOR, Indianola, Iowa. Filed May 6, 1901. Serial No. 58,948. (No model.)

Claim.—A box made of sheet material consisting of a piece or plate of uniform width that has an open slot at one end and the slot widened at its inner end to produce shoulders and a T-head at its other end adapted to enter said open slot and to engage said shoulders and a bottom fitted in the lower portion of the wall and provided with extensions at its ends to overlie parallel sides of the wall and means for detachably connecting the ends of said extensions with the top edge portions of parallel sides of the wall, for the purposes stated.

707,867. WASHING-MACHINE. CHARLES F. SHERLEY, Philadelphia, Pa., assignor of one-half to Charles Kleinknecht, Philadelphia, Pa. Filed Mar. 26, 1902. Serial No. 100,003. (No model.)

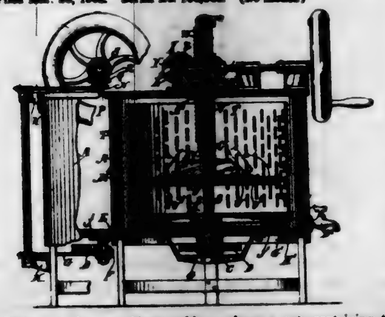

Claim.—1. In a washing-machine, a drum, a tub containing the same, a rising-and-falling head in said drum, a shaft connected with said drum, means for rotating said shaft, a sleeve connected with said head, and means for raising said sleeve and permitting the same to drop, said rotary shaft passing freely through said sleeve.

2. In a washing-machine, a drum, a head therein, a sleeve connected with said head, and carrying a rack, a mutilated gear-wheel adapted to gear with said rack, and means for rotating said wheel, whereby said head is raised and permitted to drop, in combination with a shaft which is connected with said drum, and means for rotating said shaft, the latter passing freely through said sleeve.

3. In a washing-machine, a tub, a drum in said tub, a shaft connected with the drum, gearing for operating said shaft, a rising-and-falling head, a sleeve connected with said head, said shaft freely entering said sleeve, means for raising said sleeve and permitting the same to drop, and a lock on the tub adapted to engage with said sleeve.

4. In a washing-machine, a drum, a shaft connected therewith, a rising-and-falling head in said drum, a sleeve connected with said head, means for raising and lowering said head, a boss on the top of the tub, said sleeve being exteriorly of angular form, and said boss having an angular opening receiving said sleeve, and a bolt on the top of the tub, the same being adapted to enter an opening in said sleeve when the latter is in elevated position.

5. In a washing-machine, a tub, a rotary drum therein, a shaft connected with said drum, means for rotating said shaft, a rising-and-falling head in said drum, a sleeve connected with said head, said sleeve freely receiving said shaft, a rack secured to said sleeve, a mutilated wheel engaging said rack, means for rotating said wheel, and a guide on the top of the stationary tub through which said sleeve is vertically passed without capability of rotation.

707,868. CRUPPER. GEORGE SHEPHERD, Newport, Ky. Filed Oct. 22, 1901. Serial No. 79,703. (No model.)

Claim.—1. A crupper having a thin body portion with outwardly-flanged edges, substantially as specified.

2. A crupper having a thin body portion with outwardly-flanged flexible edges, substantially as specified.

3. A crupper consisting of a small piece of leather attached to a larger piece of leather and having the edges of the larger piece bent over those of the smaller piece, to form flanges, substantially as specified.

707,869. LEATHER-STRETCHING CLAMP. JOHN SHEPHERD, Newark, N. J. Filed July 1, 1902. Serial No. 113,594. (No model.)

Claim.—1. The improved grip for stretching leather, comprising two jaws having each a cross-head and shank, the shank being adapted to receive a cord or connection and the cross-head being provided with gripping-teeth, and means for joining the two jaws at their gripping edges, substantially as set forth.

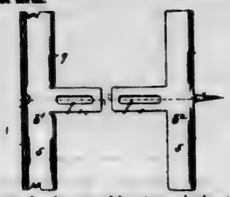

2. The improved grip, comprising two gripping-jaws, one with an eye near its gripping edge and the other with a pointed prong at its gripping edge, substantially as set forth.

3. The improved grip, comprising two jaws having turned gripping edges provided with teeth, one of said jaws being provided with an eye in the line of the gripping-teeth thereof, and the other of said jaws having a prong to enter said eye, and means to hold said jaws together, under tension, substantially as set forth.

4. The improved grip, comprising a pair of separable jaws, each having a shank and cross-head, the latter being provided with gripping-teeth and one of said jaws being provided with an eye at the forward edge and a rib at its rearward edge, and the other of said jaws being provided with a prong to enter the said eye, and the cross-head thereof being adapted to enter between the said rib and the gripping-teeth of the said one jaw first mentioned, substantially as set forth.

707,870. FURNACE. CHARLES F. SMITH, Pittsburg, Pa. Filed Mar. 18, 1902. Serial No. 98,761. (No model.)

Claim.—1. In a furnace, the combination of an outer casing, an inner combustion-chamber, a central pipe communicating therewith, a cold-air pipe, a series of product-chambers in communication with each other, a pipe communicating with the upper of said product-chambers, and with the said central pipe, and the lower chamber being in communication with a flue.

2. In a furnace, the combination of an outer casing, an inner combustion-chamber, a central product-pipe communicating therewith, a cold-air pipe entered in said central pipe communicating with the open air, a series of circular product-chambers communicating with said product-pipe, and a series of product-pipes communicating with said circular product-chambers and said combustion-chamber, substantially as described.

3. In a furnace, the combination of an outer casing, an inner combustion-chamber, a central product-pipe communicating therewith, a cold-air pipe arranged in said central product-pipe and communicating with the open air, a vertically-arranged series of product-chambers provided with transversely-arranged partitions and communicating with each other, and with the said product-pipe, a series of pipes communicating with the lower of the said product-chambers and arranged above the said combustion-chamber, and a flue communicating with one of the said product-chambers.

4. In a furnace, the combination of an outer casing, a hood carried by said casing, distributing-pipes connected to said hood, an interior casing having formed therein a series of circular product-chambers communicating with one another, partitions formed in said chambers, a combustion-chamber, a hood secured to said combustion-chamber, a product-pipe

a cold-air pipe extending in said product-pipe, connections between said product-pipe and circular product-chambers, a series of product-pipes communicating with the lowermost circular product-chamber, all parts being arranged and operating substantially as described.

5. In a furnace, the combination of an outer casing, an inner combustion-chamber, a head secured to the said combustion-chamber, a central product-pipe having its lower end secured to the said head, a central cold-air pipe arranged in the said product-pipe and communicating with the open air, said cold-air pipe having its lower end closed and arranged in the combustion-chamber, and a series of product-chambers communicating with the said central product-pipe.

707,871. WOVEN FABRIC. WILLIAM T. SMITH, Philadelphia, Pa. Filed Feb. 17, 1902. Serial No. 94,054. (No specimens.)

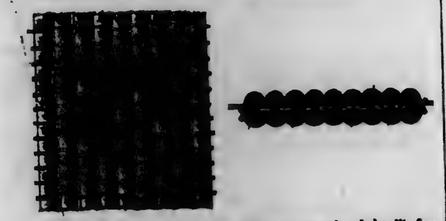

Claim.—1. A woven fabric composed of party-colored chenille face weft-threads, back weft-threads of open yarn, and binding warp-threads uniting the face and back weft-threads, said back weft-threads being large and soft whereby they can be beaten up so closely as to prevent any showing of chenille threads on the back of the fabric, thereby imparting to the latter a matting effect, substantially as specified.

2. A woven fabric composed of party-colored chenille face weft-threads, back weft-threads of open yarn, beaten up so closely as to prevent any showing of chenille threads on the back of the fabric and binding warp-threads uniting the face and back weft-threads, said binding warp-threads being covered and hidden by the chenille for of the face weft-threads and, being of color or colors differing from and contrasting with that of the back weft-threads, whereby a striped effect upon the back of the fabric is produced, substantially as specified.

3. A woven fabric composed of party-colored chenille face weft-threads, back weft-threads of open yarn, similar warp-threads separating the face and back weft-threads, and binding warp-threads uniting the face and back weft-threads, said back weft-threads being large and soft whereby they can be beaten up so closely as to prevent any showing of chenille threads on the back of the fabric, thereby imparting to the latter a matting effect, substantially as specified.

4. A woven fabric composed of party-colored chenille face weft-threads, back weft-threads of open yarn beaten up so closely as to prevent any showing of chenille threads on the back of the fabric, similar warp-threads separating the face and back weft-threads, and binding warp-threads uniting the face and back weft-threads, said binding warp-threads being covered and hidden by the chenille for of the face weft-threads and being of color or colors differing from and contrasting with that of the back weft-threads whereby a striped effect upon the back of the fabric is produced, substantially as specified.

707,872. BICYCLE DRIVING MECHANISM. GEORGE H. SPALDING, Chicago, Ill., assignor of one-half to George Hodenpyle, Chicago, Ill.; Lois L. Spalding administratrix of said George H. Spalding, deceased. Filed Mar. 20, 1902. Serial No. 98,763. (No model.)

Claim.—1. In a bicycle, the combination with the frame, the speed-gearing frame, the crank-shaft or prime-motor shaft having journal-bearings in the speed-gearing frame, said gearing-frame being made rigid at the ends of said journal-bearings with the bicycle-frame; a gearing-case having journals encompassing said journal-bearings of said shaft and encompassed at its ends by the terminals of the bicycle-frame; the speed-train having its first wheel fixed on the crank-shaft and its last wheel concentric with said shaft and fixed to said case, said gearing-case being exteriorly constructed to operate as a wheel communicating power to the drive-wheel.

2. In a bicycle, in combination with the main frame, a speed-gear frame; a two-part gearing-case which may be parted to admit the speed-gear and train, the case having hollow trunnions and being journaled thereby in the main frame; the speed-gearing frame also having hollow trunnions, said trunnions extending through the hollow trunnions of the case, and coupling-sleeves extending between the respective trunnions of the case and the speed-gear frame, each coupling-sleeve having flanges at the outer ends extending past the ends of the hollow trunnions of the case to connect the speed-gearing frame non-rotatably with the fork-arms of the crank-hanger.

3. In a bicycle, in combination with the main frame having a bifurcated crank-hanger, a speed-gear frame, a two-part gearing-case which may be parted to admit the speed-gear frame and train, the case having hollow trunnions by which it is journaled in the arms of the crank-hanger, and the speed-gearing frame having also hollow trunnions extending through the hollow trunnions of the case, and coupling-sleeves extending between the respective trunnions of the case and the speed-gear frame, each coupling-sleeve having flanges at the outer ends extending past the ends of the hollow trunnions of the case to connect the speed-gearing frame non-rotatably with the fork-arms of the crank-hanger.

4. In combination with a bicycle-frame, a speed-gear case having hollow trunnions, which are journaled in the bicycle-frame; a speed-gear frame within the case; the prime-motor shaft journaled in the speed-gear frame and extending out through the hollow trunnions of the case, a speed-gear train having its prime wheel fixed on the shaft between the bearings of the latter in the speed-gear frame, and the last wheel rigid and concentric with the case; and couplings which connect the bicycle-frame, outside the case-bearings non-rotatably with the speed-gear frame.

707,878. GAUNTREE. GEORGE H. STORMER, Washington, D. C. Filed Oct. 5, 1901. Serial No. 77,894. (No model.)

Claim.—1. In combination with a canteen, of a device fitting in the neck thereof, consisting of a stopper having an opening with grooved sides having a closed upper end provided with perforations fitting in said opening, a rim upon the exterior of said tube above the stopper, a vent-cap surrounding said tube and held upon the stopper by the rim of the tube, and a filtering-cup detachably connected to the lower end of the tube.

2. In combination with a canteen of a device fitting in the neck thereof, consisting of a stopper having a central opening with grooved sides, a tube fitting in said opening and allowing said grooved sides to provide a series of vertical channels therearound, a cap mounted upon said tube provided with a series of perforations to fit on the stopper, and means for filtering the water carried at the lower end of the tube.

3. In combination with a canteen, of a device fitting in the neck thereof consisting of a stopper provided with a central opening, a tube fitting in said opening in such a manner so as to provide a series of vent-channels about the tube, a rim carried by said tube, a vent-cap fitting upon said tube and over the stopper, and a detachable filtering means carried by the lower end of the tube.

4. In combination with a canteen, of a device fitting in the neck thereof consisting of a stopper having a channel with grooved sides therethrough, a tube fitting in said channel in such a manner as to cause the grooves to provide a series of air-vents therearound, an exterior rim carried by the tube above the stopper, a vent-cap carried by the tube below the rim to fit over the vent-openings of the stopper, and a filtering means detachably connected to the lower end of the tube.

707,874. ROVING-GUIDE. FREDERICK STEVENS, Philadelphia, Pa., assignor to Thomas Wolstenholme, Sons & Company, Philadelphia, Pa., a firm composed of Thomas Wolstenholme, Albert Wolstenholme, and Robert Wolstenholme. Filed Jan. 14, 1902. Serial No. 89,763. (No model.)

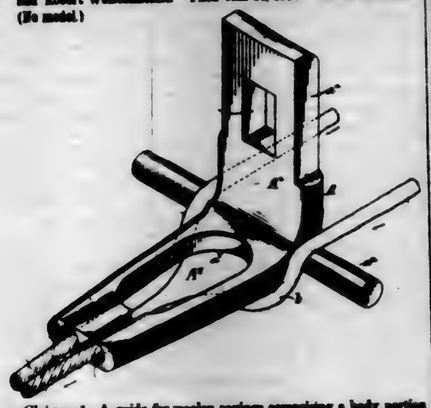

Claim.—1. A guide for woolen rovings comprising a body portion having an opening provided with a passage or passages extending therefrom, with means other than said passages for imparting a false twist to strands of material passing through the same, substantially as described.

2. A guide for woolen rovings comprising a body portion having an opening and a plurality of substantially straight passages extending from said opening, with means other than said passages for imparting a false twist to strands of material passing through the same, substantially as described.

3. A guide for woolen rovings comprising a body portion having an opening and a plurality of passages extending from said opening, with projections on the body portion whereby a false twist is given to strands of material prior to their entrance into said passages, substantially as described.

4. A guide for woolen rovings comprising two portions joined together, one portion having through it an opening, and a plurality of passages extending from the side walls of said opening through the body of the guide to the outer edge thereof, means other than said passages for imparting a false twist to strands of material passing through the same, the second portion of said guide being constructed to be engaged by a securing device, substantially as described.

5. A guide for woolen rovings comprising two portions joined together, one portion having through it an opening and a plurality of passages extending from said opening, the other portion having an opening for the passage of a securing device, and projections formed integral with the guide and extending in a plane substantially parallel to one of the portions thereof, substantially as described.

6. A guide for woolen rovings comprising two portions joined together along one edge, an opening through one of the portions, two passages extending from one side of said opening to the end of the guide and two substantially cylindrical bars projecting at right angles to the said passages, the other portion of the guide having means for attaching it to a support, substantially as described.

7. A guide for woolen rovings comprising a body portion having an opening provided with a passage or passages extending therefrom and a projecting portion whereby a false twist is imparted to strands of material passing through the same, substantially as described.

707,875. SAVINGS-BANK. CHARLES B. SELWELL, Philadelphia, Pa. Filed Apr. 14, 1902. Serial No. 102,904. (No model.)

Claim.—1. In a bank or money-receptacle, a tripartite inclosing case, comprising an upper hemispherical part, an intermediate spherical zone and a lower spherical segment; means to join the hemispherical and zone parts at their junction, to prevent rotating movement; and means to join the zone and segment and permit the segment to rotate on the zone.

2. In a bank or money-receptacle, a tripartite inclosing structure, the lower member of which is rotatable on the intermediate member, a coin-receiving opening in the upper member, and a guard-plate within and extending toward the center of the receptacle.

3. In a savings-bank, a tripartite spherical receptacle, an upper part having a slot therein, an angular chute removably secured therein; an intermediate part, a bottom for this part, and means entering the bottom, upwardly passing, and engaging the chute and adapted to hold all of the aforesaid parts to each other in their proper positions.

4. In a savings-bank, a tripartite receptacle having a slot leading into the receptacle, a chute, a dovetail on the chute fitting into the receptacle, a screw inserted into the intermediate part of the receptacle and means for its entering the chute to draw the dovetail aforesaid in its seat, and the upper and intermediate parts of the receptacle to each other.

5. In a savings-bank, a tripartite spherical receptacle, comprising a hemispherical part, a spherical zone and a spherical segment, means to secure the hemispherical and zone parts to each other, and means to uncover the securing attachment when the bank is to be opened, and to cover it when the bank is locked.

6. In a savings-bank, a tripartite inclosing case, the intermediate and lower parts pivotally united to allow the lower part to rotate on the intermediate part; flat seats for the intermediate and lower parts at their junction, and having grooves within each seat.

7. In a savings-bank, a tripartite receptacle, the intermediate and lower parts being rotatably united, and at the junction having their faces closely approaching in parts and provided with radial and diagonal grooves which correspond in rotative direction.

8. In a savings-bank, an intermediate part, a lower part, pivotal connection for the lower to the intermediate part each part having a series of grooves and balls in the grooves.

9. In a savings-bank, a tripartite receptacle, the intermediate and lower parts pivotally joined; the intermediate part having having an outer circular channel, a radial groove joining the channel, a diagonal groove joining the channel, a radial groove having a circular groove joined thereto; the lower part having radial grooves and a diagonal groove, said grooves coinciding with similar grooves in the intermediate part; a pocket in the lower part in communication with the inner circular groove of the intermediate part; a ball in each radial groove, a ball in the diagonal groove, and a ball in the inner circular groove and adapted to enter the pocket aforesaid.

10. In a savings-bank, a tripartite receptacle, the lower part pivotally secured below the intermediate part; a screw seated in the intermediate part, upwardly reaching and entering the upper and intermediate parts to each other; an opening in the lower part through which the screw is turned; a series of grooves being formed in the intermediate part and in the lower part; balls in the grooves and resting in the groove to permit the rotation of the lower part on the intermediate part when in certain positions, and permit access to the screw aforesaid, and when placed in certain other positions to lock the lower part, prevent its rotation, and conceal the screw aforesaid.

11. In a coin-receptacle, a hollow structure in three principal parts, the upper and intermediate parts being adapted to receive and hold coins, the lower part adapted to rotate on the intermediate part; with a series of grooves in the intermediate and lower parts; balls in the grooves, and means to support the structure in an upright position.

707,876. GARMENT-SUPPORTER. JAMES SHERMAN, New York, N. Y. Filed June 3, 1901. Serial No. 62,857. (No model.)

Claim.—1. In a garment-supporter, the combination of a frame having its opposite sides nearer together at one point than at another, a tongue connected with said frame and having a longitudinal sliding movement on the same, and provided at its free end with a yielding hook consisting of two disks of yielding material secured together and to the tongue, and having their edges extending beyond the side edges of the tongue for engagement with the sides of the frame only at its narrow portion, and said tongue and hook also having a free radial movement through the frame whenever the edges of the disks are out of engagement with the nar-

tracted portion of the frame, whereby either side of the supporter may be readily applied to a portion of a garment with the latter caught and held between the edges of the disks and contracted sides of the frame.

2. In a garment-supporter, the combination of a frame having its opposite sides nearer together at one point than at another, a tongue connected with said frame and having a longitudinal sliding movement on the same, and provided at its free end with a yielding knob consisting of two disks of yielding material secured together and to the tongue and having a groove between said edges and said edges extending beyond the side edges of the tongue for engagement with the sides of the frame only at its narrow portion, and said tongue and knob also having a free radial movement through the frame whenever the edges of the disks are out of engagement with the contracted portion of the frame, whereby either side of the supporter may be readily applied to a portion of a garment with the latter caught and held between the edges of the disks and contracted sides of the frame.

3. In a garment-supporter, the combination of a frame having its opposite sides nearer together at one point than at another, a cross-bar connected to said frame and said cross-bar and frame constructed to have a sliding movement relative to each other, and longitudinally with respect to the frame, a tongue attached to said cross-bar, and provided at its free end with a yielding knob having its edges extending beyond the side edges of the tongue for engaging with the sides of the frame only at its narrow portion, and said tongue and knob also having a free radial movement through the frame whenever the knob is out of engagement with the contracted portion of the frame, whereby either side of a supporter may be readily applied to a portion of a garment with the latter caught and held between the knob and contracted sides of the frame.

4. In a garment-supporter, the combination of a frame having its opposite sides nearer together at one point than at another, a cross-bar connected to said frame, and said cross-bar and frame constructed to have a sliding movement relative to each other and longitudinally with respect to the frame, a tongue attached to said cross-bar and provided at its free end with a yielding knob having curved edges extending beyond the side edges of the tongue for engagement with the sides of the frame only at its narrow portion, and said tongue and knob also having a free radial movement through the frame whenever the edges of the disks are out of engagement with the contracted portion of the frame, whereby either side of the supporter may be readily applied to a portion of a garment with the latter caught and held between the edges of the disks and contracted sides of the frame.

5. In a garment-supporter the combination of a frame with its opposite sides nearer together at one point than at another, a cross-bar connected to said frame, and said cross-bar and frame constructed to have a sliding movement relative to each other and longitudinally with respect to the frame, a tongue attached to said cross-bar and provided at its free end with a yielding knob consisting of two disks of yielding material secured together and to the tongue, and having their edges extending beyond the side edges of the tongue, and said tongue and disks having a free radial movement through the frame, whenever the edges of the disks are free from engagement with the contracted portion of the frame, whereby either side of the supporter may be readily applied to a portion of a garment with the latter caught and held between said edges of the disks and the contracted sides of the frame.

6. In a garment-supporter, a knob member for engagement with the loop or contracted member, said knob member consisting of two rigid disks covered with yielding material and concentrically secured together substantially as and for the purposes set forth.

7. In a garment-supporter, the combination with a tongue member, of two yielding disks secured together and to said tongue member, and said disks having their edges extending beyond the side edges of the tongue, all as and for the purposes set forth.

8. In a garment-supporter, the combination with a tongue member, of two yielding disks concentrically secured together and to said tongue member, and said disks having their edges extending beyond the side edges of the tongue, all as and for the purposes set forth.

9. In a garment-supporter the combination with the tongue member, of two disks secured to the tongue member on opposite sides of the same, and concentric with each other, all as set forth.

10. In a garment-supporter the combination with the tongue member, of two yielding disks secured to the tongue member on opposite sides of the same, and concentric with each other, all as set forth.

11. In a garment-supporter a knob member for engagement with the loop or contracted member, said knob member consisting of two rigid disks covered with rubber and concentrically secured together, substantially as and for the purposes set forth.

12. In a garment-supporter, the combination of a frame having its opposite sides nearer together at one part than at another, a cross-bar connected to said frame, and said cross-bar and frame constructed to have a sliding movement relative to each other and longitudinally with respect to the frame, a tongue attached to said cross-bar, and having a free radial movement on said bar, and two yielding disks secured opposite to each other and to the tongue on opposite sides of its free end, and extending beyond said tongue, whereby a portion of the garment may be readily applied to and be caught and held in the recess between the edges of said disks and between it and the contracted sides of the frame.

13. In a garment-supporter, the combination of a frame having its opposite sides nearer together at one part than at another, a cross-bar connected to said frame, and said cross-bar and frame constructed to have a sliding movement relative to each other and longitudinally with respect to the frame, a tongue attached to said cross-bar, and having a free radial movement on said bar, and two rubber disks secured opposite to each other and to the tongue on opposite sides of its free end, and extending beyond said tongue, whereby a portion of the garment may be readily applied to and be caught and held in the recess between the edges of said disks and between it and the contracted sides of the frame.

14. In a garment-supporter, the combination of a frame having two of its opposite sides nearer together at one point than at another, a tongue having a parallel movement and a transverse radial movement relative to the frame, and two yielding disks secured opposite to each other and to the tongue on opposite sides of its free end, and extending beyond said tongue, whereby a portion of the garment may be readily applied to and be caught and held in the recess between the edges of said disks, and between it and the contracted sides of the frame.

707,877. CLASP OR BUCKLE. JEROME SILBERGHEIM, New York, N. Y. Filed June 12, 1901. Serial No. 64,314. (No model.)

Claim.—1. A clasp or buckle comprising two attachable and detachable members, one of which is provided with two opposite walls meeting the other part of the member, and the other member having edges struck up from the same and extending above the surface of said member and corresponding with the inner sides of said walls of the other member whereby the two members may be united, with said edges of one closely held by the inner walls of the other.

2. A clasp or buckle comprising two attachable and detachable members one of which is provided with a hook-tongue, extending above the surface of said member and the other member having a sleeve for surrounding and for engagement with the tongue when said members are attached, and said sleeve provided with a bearing-surface at or near its free end for the free end of said tongue, and the side edges of said tongue corresponding with the inner walls of said sleeve, whereby the two members may be united, with the side edges of the tongue closely held by the inner walls of the sleeve.

3. A clasp or buckle comprising two attachable and detachable members one of which is provided with a hook-tongue, extending above the surface of said member and the other member having a sleeve for surrounding and for engagement with said tongue when said members are attached, and said sleeve provided with a bearing-surface at or near its free end for the free end of said tongue, and the side edges of said tongue corresponding with the inner walls of said sleeve, whereby the two members may be united, with the side edges of the tongue closely held by the inner walls of the sleeve.

4. A clasp or buckle comprising two attachable and detachable members one of which is provided with a spring hook-tongue, extending above the surface of said member and the other member having a sleeve for surrounding and for engagement with said tongue when said members are attached, and the side edges of said tongue corresponding with the inner walls of said sleeve, whereby the two members may be united, with the side edges of the tongue closely held by the inner walls of the sleeve.

707,878. PLOW. SILVUS H. THOMAS, Davenport, Iowa, assignor to the Imperial Manufacturing Company, Davenport, Iowa, a Corporation of Iowa. Filed Oct. 29, 1901. Serial No. 79,612. (No model.)

Claim.—1. A wheeled plow comprising a suitable plow and plow-beam, a plurality of crank-axles, furrow and land side wheels mounted on said axles, a rear caster-wheel, a shifting connection between the caster-wheel and plow-beam, a lever connected and arranged for simultaneously rotating both of said axles and operating said shifting connection, so as to cause a bodily rise and fall of the plow, and a second lever connected and arranged for operating said land-side wheel independently of the others.

2. A frameless high-lift sulky-plow, comprising a suitable plow and plow-beam, a plurality of crank-axles, furrow and land side wheels mounted on said axles, a rear caster-wheel, a shifting connection between said rear wheel and said plow-beam, a lever mounted on one of said axles and arranged for simultaneously rotating both axles and operating said shifting connection, and a second lever arranged for operating said land-side wheel independently of the other wheels.

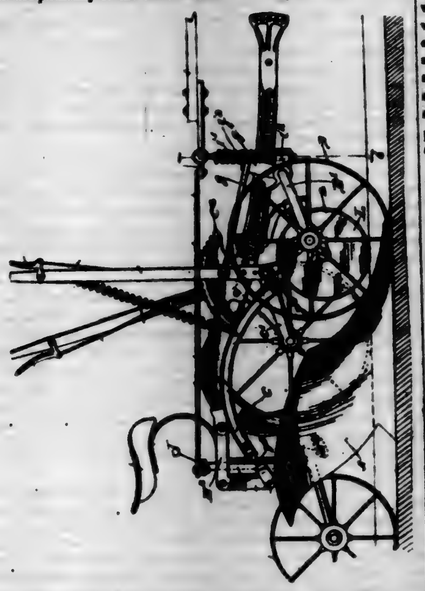

3. A wheeled plow comprising a suitable plow and plow-beam, a pair of crank-axles arranged one in front of the other, a hand-lever secured rigidly to one crank-axle, an arm rigidly secured to the other crank-axle, a connecting-rod extending between said arm and said lever, a land-side wheel mounted on this axle to which the said lever is rigidly secured, a furrow-side wheel mounted on the axle to which the said arm is secured, a rear supporting-wheel capable of bodily shift or movement relatively to the plow or plow-beam, and suitable connection between said lever and said rear supporting-wheel, the said lever being thereby operative to cause both the front and rear supporting-wheels to shift or move relatively to the plow or plow-beam for the purpose of either raising or lowering the plow, substantially as described.

4. A wheeled plow comprising a suitable plow, a beam, a pair of crank-axles, wheels on said axles, a hand-lever secured rigidly to one of said crank-axles, a crank-arm on the other axle, a rod connecting said arm with said lever, a wheeled structure for supporting the rear end of the plow and beam, a rack bolted to the beam, and a locking device on the lever adapted to engage said rack, substantially as described.

5. In a wheeled plow, the combination of a suitable plow and beam, a pair of crank-axles arranged one in front of the other at the forward portion of the plow-beam, furrow and land side wheels on said axles, a trailing caster-wheel adapted and arranged to support the rear end of the plow and beam, a lever rigidly secured to the land-side axle and connected and arranged for simultaneously controlling or adjusting all three wheels, and a second lever loosely mounted upon the land-side axle and adapted to independently shift or adjust the land-side wheel, substantially as described.

6. In a wheeled plow, the combination of a suitable plow and beam, a pair of crank-axles, wheels on said axles, a lever suitably connected and arranged for rocking or rotating said axles, a rear supporting-wheel having a shifting connection with said plow-beam, suitable connection between said lever and rear supporting-wheel, and a spring arranged to connect said lever with said plow-beam, the tension of the spring tending to draw the lever back and thereby shift or adjust all the supporting-wheels relatively to the plow and beam in such manner as to raise the plow from the ground, substantially as described.

7. In a wheeled plow, the combination of a suitable plow and beam, a pair of crank-axles, a pair of levers mounted on one axle and adapted and arranged for rocking said axles, supporting-wheels on said axles, a rack secured to the plow-beam and adapted to engage a locking device on one of said levers, a segmental rack rigid with the axle on which the said levers are mounted and adapted to engage a locking device on the other lever, and a rear trailing wheel having suitable connection with one of said levers, substantially as described.

8. In a wheeled plow the combination of a suitable plow and beam, a pair of crank-axles, supporting-wheels on said axles, a rear supporting-wheel for supporting the rear end of said plow and beam, a lever rigid with one of said axles, a rack secured to the plow-beam, a manually-operated locking device mounted on said lever and adapted to engage said rack, suitable connection between said axles adapted to cause the axles to rotate in unison, and suitable connection between said lever and said rear supporting-wheel, the lever thereby being operative to cause all the supporting-wheels to shift or move relatively to the plow and plow-beam for the purpose of either raising or lowering the plow, substantially as described.

9. In a wheeled plow, the combination of a suitable plow and beam, forward supporting-wheels, a rear trailing caster-wheel, a suitable sleeve for the spindle of said caster-wheel, and swinging arms for connecting the said sleeve with the rear portion of said plow-beam, said swinging arms being arranged in pairs, one at each side of the beam and the sleeve, and the swinging connection thereby provided being in the nature of a parallel movement for permitting relative shift or movement on the part of said caster-wheel and the said plow and beam, substantially as described.

10. In a wheeled plow, the combination of a suitable plow and beam, a plurality of crank-axles, forward supporting-wheels, mounted on said axles, a rear trailing caster-wheel, a suitable sleeve providing a bearing for the spindle of said caster-wheel, an upper pair of swinging arms arranged one at each side of the said sleeve and adapted to connect the latter with the rear portion of the plow-beam, a lower and similar pair of swinging arms adapted and arranged to connect the lower portion of said sleeve with the plow-beam, the members of each pair of arms in this way being arranged one at each side of the sleeve and the beam, and constituting a parallel movement for permitting relative shift or movement on the part of said plow and caster-wheel, substantially as described.

11. In a wheeled plow, the combination of a suitable plow and beam, a plurality of crank-axles, forward supporting-wheels mounted on said axles, a rear trailing caster-wheel for supporting the rear end of said plow and beam, a suitable sleeve adapted to provide a bearing for the spindle of said caster-wheel, an upper pair of swinging arms arranged at each side of the sleeve and adapted to connect the latter with the plow-beam, a lower and similar pair of arms arranged one at each side of the sleeve and adapted to connect the same with the plow-beam, a swinging hand-lever, an arm projecting downwardly from the rear end of one of the upper swinging arms, the swinging arm thus provided with a downwardly-projecting extending arm constituting a bell-crank, and a suitable rod for connecting said lever with the lower end of said downwardly-projecting arm of the bell-crank, the lever thereby being operative to exert a pull upon said rod for the purpose of causing the caster-wheel to shift relatively to the plow and beam for the purpose of lifting and raising the plow from the ground, substantially as described.

12. In a wheeled plow, the combination of a suitable plow and beam, a pair of crank-axles adapted to provide suitable spindles for the land-side and furrow-side wheels, two hand-levers for causing relative shift on the part of said wheels and also for causing simultaneous shift on the part of each wheels relatively to the plow and beam, a rear trailing or supporting wheel adapted and arranged to support the rear end of said plow and beam, a bell-crank forming part of a swinging connection between said rear supporting-wheel and the plow-beam, a pitman or connecting rod adapted to serve as a pull-rod for connecting one of said levers with said bell-crank, the lever thus connected with the bell-crank being also suitably connected with both crank-axles, whereby all three supporting-wheels may be controlled or adjusted through the medium of a single lever, and the other of said levers being suitably mounted and arranged for independent movement for the purpose of adjusting the land-side wheel independently of the balance of the machine, substantially as described.

13. In a wheeled plow, the combination of a suitable plow and beam, a pair of crank-axles, supporting-wheels on said axles, a lever on one of said axles, a crank-arm mounted upon the other of said axles and provided with a fastening device which permits longitudinal or end movement on the part of said axle relatively to the crank-arm, a rod or the like for connecting said lever with said crank-arm, a wheeled structure for supporting the rear part of said plow and beam, and connecting means whereby said lever is operative to simultaneously adjust or shift all the supporting-wheels relatively to the plow and beam for the purpose of either raising or lowering the plow, substantially as described.

14. In a wheeled plow, the combination of a suitable plow and beam, forward supporting-wheels, a wheeled structure for supporting the rear end of said plow and beam, and a turntable adapted and applied for causing relative shift on the part of said plow and said wheeled sup-

porting structure, so as to tilt the plow forward and thereby prevent its heel from dragging in the furrow, substantially as described.

707,879. SULKY-PLOW. SAMUEL H. TYRRELL, Davenport, Iowa, assignor to the Implement Manufacturing Company, Davenport, Iowa, a Corporation of Iowa. Filed Jan. 27, 1902. Serial No. 91,314. (No model.)

Claim.—1. In a wheeled plow, the combination of a suitable plow and plow-beam, a crank-axle journaled in a bearing on said plow-beam, a land-side wheel mounted on said axle, a furrow-side wheel having a shifting connection with the said plow-beam, a rear caster-wheel having a shifting connection with said plow-beam, a swinging hand-lever secured to said crank-axle, and suitable connections between said lever and the furrow-side wheel and the caster-wheel, the said lever thereby being operative to simultaneously control all of said wheels, so as to bodily raise and lower said plow.

2. In a wheeled plow, the combination of a suitable plow and plow-beam, a crank-axle journaled in a bearing on said plow-beam, a supporting-wheel on said crank-axle, an upright spindle, a supporting-wheel carried by said spindle, a rear caster-wheel, a sliding connection intermediate of said plow-beam and said spindle, a hand-lever secured to said crank-shaft, suitable connections between said lever and said caster-wheel, suitable connections between said lever and said spindle, the said lever thereby being operative to simultaneously control said wheels, so as to bodily raise and lower said plow.

3. In a wheeled plow, the combination of a suitable plow and plow-beam, a plurality of supporting-wheels all capable of movement relatively to the plow and plow-beam, a crank-axle upon which one of said wheels is mounted, a crank-axle bearing secured to said plow-beam, a hand-lever rigidly secured to said crank-axle, and suitable connections between the lever and the other supporting-wheels, the said lever thereby being operative to simultaneously control all of said wheels, so as to bodily raise and lower the plow.

4. In a wheeled plow, the combination of a suitable plow and plow-beam, a crank-axle journaled in a bearing on said beam, a land-side wheel on said crank-axle, a vertical spindle, a furrow-side wheel carried by said spindle, a sliding connection intermediate of said plow-beam and said spindle, a rear caster-wheel, upper and lower links connecting said caster-wheel with the rear portion of said plow-beam, a lever rigidly secured to said crank-axle, a link and rock-shaft for connecting said lever with the upper end of said spindle, a link and a bell-crank for connecting said lever with the rear caster-wheel, the said lever thereby being operative to simultaneously control all of said wheels, so as to bodily raise and lower said plow.

5. In a frameless high-lift wheeled plow, the combination of a suitable plow and plow-beam, a furrow-side wheel having a shifting connection with said plow-beam, a crank-axle journaled in a bearing on said plow-beam, said crank-axle being arranged back of said furrow-side wheel, a land-side wheel mounted on said crank-axle, a rear caster-wheel having a shifting connection with the rear upright portion of the plow-beam, a lever rigidly secured to said crank-axle, suitable connection between said lever and said caster-wheel, suitable connection between said lever and the furrow-side wheel whereby all three wheels may be controlled by said lever, and a second lever for independently controlling the said land-side wheel.

6. In a wheeled plow, a suitable plow and plow-beam, a rear caster-wheel having a stem, a bearing in which said stem is free to turn, upper and lower links connecting said bearing with said plow-beam, said links being arranged in pairs at opposite sides of the plow-beam, a land-side wheel and a furrow-side wheel having shifting connections with the plow-beam, a swinging lever having suitable connections with both the furrow and the land side wheels, and a pull-rod connecting said lever with one of said links, the said lever thereby being operative to simultaneously control all of said wheels, so as to bodily raise and lower the plow.

7. In a wheeled plow the combination of a suitable plow and plow-beam, forward supporting-wheels having shifting connections with the plow-beam, a rear caster-wheel provided with a stem, a bearing in which said stem is free to turn, links connecting said bearing with said plow-beam, said links being arranged in upper and lower pairs one at each side of the plow-beam, and a lever connected and arranged for causing relative shift between the plow-beam and the said bearing, so as to raise or lower the rear end of the plow-beam.

8. In a wheeled plow the combination of a suitable plow and plow-beam, forward supporting-wheels, a rear caster-wheel provided with a stem, a bearing in which said stem is free to turn, upper and lower links connecting said bearing with said plow-beam, one of the upper links being constructed to serve as a bell-crank, a swinging lever, and a pull-rod arranged to connect said bell-crank with said lever, the pull exerted by the said rod upon the bell-crank operating to lift the plow.

9. In a wheeled plow, the combination of a suitable plow and plow-beam, a furrow-side wheel having a shifting connection with the plow-beam, a crank-axle journaled in a bearing on said plow-beam, a land-side wheel on said crank-axle, a rear caster-wheel having a stem, a bearing in which said spindle is free to turn, upper and lower links connecting said bearing with said plow-beam, one of the upper links being adapted to serve as a bell-crank, a swinging lever rigidly secured to said crank-shaft, a pull-rod arranged to connect said lever with said bell-crank, and a link and a rock-shaft forming medium of connection between said lever and the said furrow-side wheel, the said lever thereby being operative to simultaneously control all of said wheels, so as to bodily raise and lower the plow.

10. In a wheeled plow, the combination of a suitable plow and plow-beam, forward supporting-wheels having shifting connections with the plow-beam, a rear caster-wheel having a shifting connection with the plow-beam, a swinging lever having suitable connection with the forward supporting-wheels, and an arched pull-rod arranged to connect the lower end of said lever with the connecting means between the caster-wheel and the plow-beam, the said lever thereby being operative to simultaneously control all of said wheels, and to raise and lower the plow.

11. In a wheeled plow, the combination of a suitable plow and plow-beam, forward supporting-wheels having shifting connections with said plow-beam, a rear caster-wheel having a shifting connection with said plow-beam, a swinging lever suitably connected with said forward supporting-wheels, a pull-rod serving as medium of connection between the lower end of said lever and the said caster-wheel, and a spring arranged and connected to exert a pull upon said pull-rod, the said lever thereby operating to simultaneously control all of said wheels, so as to raise and lower the plow-beam, the pull of the said spring existing in raising the plow.

12. In a wheeled plow, the combination of a suitable plow and plow-beam, forward supporting-wheels, a rear caster-wheel having a shifting connection with said plow-beam, a swinging hand-lever connected and arranged to cause relative shift or movement between said caster-wheel and the plow and plow-beam, and a spring connected and arranged to assist said lever in causing relative shift between the caster-wheel and the plow beam, the spring and lever cooperating to lift the plow.

13. In a wheeled plow, the combination of a suitable plow and plow-beam, supporting-wheels whereof one is a land-side wheel, a crank-axle journaled in a bearing on the said plow-beam, said crank-axle being made in two sections, said land-side wheel being mounted on the outer of said sections, a rank rigid with the section of the axle journaled in said bearing, a coupling holding the two sections end to end, the coupling being rigid with the outer section and arranged to turn on the inner section, a lever rigid with said coupling and a locking device carried by said lever and adapted to engage said rank, whereby the land-side wheel can be adjusted independently of the balance of the machine.

14. In a wheeled plow, the combination of a suitable plow and plow-beam, a plurality of supporting-wheels whereof one is a land-side wheel, a crank-axle upon which said land-side wheel is mounted, said crank-axle being composed of two sections, a segmental rank rigid with one section, a coupling holding the two sections end to end, said coupling being rigid with one section and capable of turning or rotating upon the other section, a lever rigid with said coupling, and a locking device carried by said lever and adapted to engage said rank, whereby the land-side wheel is capable of movement relatively to the plow.

15. In a wheeled plow, the combination of a suitable plow and plow-beam, a plurality of supporting-wheels whereof one is a furrow-side wheel, a vertically-disposed spindle upon which said furrow-side wheel is mounted, a bearing rigidly connected with the plow-beam and adapted to slide up and down upon said spindle, a swinging lever, a rock-shaft extending through an ear on said bearing, said rock-shaft being provided with two crank-arms, one of said crank-arms being connected with the upper end of said spindle, and a link connecting the other crank-arm with the said lever, whereby the adjustment of said lever causes the said bearing to slide up or down upon said spindle, so as to raise or lower the forward portion of the plow-beam.

16. In a wheeled plow, the combination of a suitable plow and plow-beam, a plurality of supporting-wheels whereof one is a furrow-side wheel, a vertically-disposed spindle upon which said furrow-side wheel is mounted, a bracket secured to said plow-beam, a bearing adjustably secured to said bracket and adapted to slide up and down upon said spindle, a swinging lever, a rock-shaft extending through an ear on said bearing, said rock-shaft being provided with two crank-arms, one of said crank-arms being capable of adjustment along the said rock-shaft, a link or rod for connecting one of said crank-arms with the upper end of said spindle, and a connecting-rod arranged to connect the other crank-arm with the said lever, the latter thereby being capable of raising and lowering the bearing upon the spindle, so as to raise and lower the forward portion of the plow-beam, and the adjustable connection between the bearing and the said bracket permitting the line of travel of the furrow-side wheel to be changed at will.

17. In a wheeled plow, the combination of a suitable plow and plow-beam, a plurality of supporting-wheels whereof one is a furrow-side wheel, a vertically-disposed rotary spindle having its lower end provided with a laterally-extending arm upon which the said furrow-side wheel is mounted, a bracket secured to said plow-beam, a bearing adjustably secured to said bracket and adapted to slide up and down upon said spindle, a swinging lever, a link and a quadrant rock-shaft serving as medium of connection between the upper end of said spindle and the said bearing, and a link arranged to connect the crushed rock-shaft with the said lever, the adjustment of the lever thereby causing the bearing and the bracket and forward portion of the plow-beam to move up and down upon said spindle, and the adjustable connection between the bearing and the said bracket permitting the line of travel of the furrow-side wheel to be changed at will.

18. In a wheeled plow, the combination of a suitable plow and plow-beam, forward supporting-wheels having shifting connections with the plow-beam, a rear caster-wheel having a stem, e, and bearing in which said stem is free to turn, relatively short links connecting the lower portion of said bearing with the plow-beam, relatively long links connecting the upper portion of the bearing with the plow-beam, the difference in length of the upper and lower links causing the stem to incline rearwardly when the plow is lifted from the ground, a suitable tongue, a suitable connection between said tongue and said caster-wheel, whereby the latter is locked in alinement with the plow-beam when the machine is running straight ahead, regardless of whether the plow is up or down, the tongue when swung to one side automatically releasing the caster-wheel, so as to permit the latter to trail loosely.

19. In a wheeled plow, the combination of a suitable plow and plow-beam, forward supporting-wheels, a rear caster-wheel having a vertically-swinging connection with said plow-beam, the said swinging connection being such that the stem of the caster-wheel tilts or inclines rearwardly when the plow is raised from the ground, a suitable tongue, suitable connection between said tongue and said stem of the caster-wheel, the tongue holding the caster-wheel rigid when the machine is running straight ahead, whether the plow is up or down, a swinging lever, and suitable connections between said lever and said wheels, the lever thereby being operative to simultaneously control all of said wheels, so as to bodily raise and lower the plow.

20. In a wheeled plow, the combination of a suitable plow and plow-beam, forward supporting-wheels, a rear caster-wheel provided with a stem, a shifting connection between said stem and said plow-beam, the connection being such that the stem tilts or inclines to the rear when the plow is raised from the ground, a suitable tongue, connections whereby the tongue holds the caster-wheel against lateral side swing while the machine is running straight ahead, the connections permitting the tongue when swung to one side to automatically release the caster-wheel, a swinging lever, and connections whereby the adjustment of the lever causes the plow to rise or fall.

21. In a wheeled plow, the combination of a suitable plow and plow-beam, a crank-axle journaled in a bearing on said plow-beam, a furrow-side wheel having a shifting connection with said plow-beam, a rear caster-wheel having a shifting connection with said plow-beam, a hand-lever rigidly secured to said crank-axle, a land-side wheel mounted upon said crank-axle, a pull-rod for connecting said lever with the rear caster-wheel, suitable connection between said lever and the said furrow-wheel, the said lever thereby being operative to simultaneously control all of said wheels, so as to raise and lower the plow, and a second lever for independently adjusting the land-side wheel.

22. In a wheeled plow, the combination of a suitable plow and plow-beam, a crank-axle journaled in a bearing on said plow-beam, a land-side wheel on said crank-axle, a lever rigidly secured to said crank-axle, a suitable furrow-side wheel, a rear caster-wheel having a shifting connection with the plow-beam, a pull-rod serving as medium of connection between said lever and said caster-wheel, the lever thereby being operative to simultaneously control both the caster and the land-side wheel, and a second lever for independently adjusting or controlling the land-side wheel.

23. In a wheeled plow, the combination of a suitable plow and plow-beam, a rear caster-wheel provided with a vertically-disposed stem, a suitable bearing in which said stem is free to turn, upper and lower links connecting said bearing with the plow-beam, a crank-axle journaled in the bearing on said plow-beam, a land-side wheel mounted on said crank-axle, a lever connected and arranged for adjusting the land-side wheel without turning the portion of the crank-axle which is mounted in said bearing on the plow-beam, a furrow-side wheel having a shifting connection with said plow-beam, and a second hand-lever connected and arranged for simultaneously controlling all of said wheels, so as to raise and lower the plow.

24. In a wheeled plow, the combination of a suitable plow and plow-beam and a plurality of supporting-wheels, a pivoted lever, a bell-crank arranged to raise the rear portion of the plow-beam, and a pull-rod serving as medium of connection between said lever and said bell-crank, the pull exerted by said rod operating to raise the plow.

25. In a wheeled plow, the combination of a suitable plow and plow-beam and a plurality of supporting-wheels, a crank-axle upon which one of said supporting-wheels is mounted, a vertically-disposed spindle upon which one of said supporting-wheels is mounted, a lever which is rigidly secured to said crank-axle, a shifting connection between the plow-beam and said spindle, and a link and a crank-shaft for connecting said lever with said shifting connection, the adjustment of the lever thereby causing the forward portion of the plow-beam to move up or down.

26. In a wheeled plow, the combination of a suitable plow and plow-beam, a crank-axle journaled in a bearing on said plow-beam, a land-side wheel mounted on said crank-axle, a furrow-side wheel having a shifting connection with the plow-beam, a rear caster-wheel having a shifting connection with the plow-beam, a lever rigidly secured to said crank-axle and provided with a downwardly-extending and relatively short arm, a pull-rod arranged to connect said relatively short and downwardly-extending lever-arm with the rear caster-wheel, and a second lever for independently adjusting or controlling the land-side wheel.

27. A frameless high-lift sulky-plow, comprising furrow and land side wheels capable of relative adjustment, a rear caster-wheel capable of relative shift or adjustment, a crank-axle upon which one of said wheels is mounted, a lever rigidly secured to said crank-axle, link connections between said hand-lever and the other wheels, the said lever thereby being operative to simultaneously control all of said wheels, so as to raise and lower the plow.

28. In a wheeled plow, the combination of a suitable plow and plow-beam, forward supporting-wheels, a rear supporting-wheel, a pivoted lever, said lever having a downwardly and rearwardly projecting arm, a connection between said arm and said rear supporting-wheel, suitable connections between said lever and the forward supporting-wheels, the connections and relative arrangement being such that the plow-point is always below the heel when the plow is in the ground.

29. In a wheeled plow, the combination of a suitable plow and plow-beam, supporting-wheels, a pivoted lever provided with a downwardly and rearwardly projecting arm, a link connecting said arm with one of said wheels, suitable connection between the lever and the other supporting-wheels, the connections and relative arrangement being such that the plow-point is always below the heel when the plow is in the ground.

30. In a wheeled plow, the combination of a suitable plow and plow-beam, a rear caster-wheel, a bell-crank serving as a medium of connection between said caster-wheel and said plow-beam, a crank-axle, a land-side wheel mounted on said axle, a lever rigidly secured to said axle, said lever being provided with a downwardly and rearwardly extending arm, a link for connecting said arm with said bell-crank, a furrow-side wheel having a shifting connection with said plow-beam, suitable connections between said lever and said furrow-side wheel, said lever thereby being operative to simultaneously control all of said wheels, so as to raise or lower the plow, and the connections and relative arrangement being such that the plow-point is always below the heel when the plow is in the ground.

31. A plow and beam, a front furrow-wheel, a rear caster-wheel, a land-side wheel, a hand-lever connected and arranged for simultaneously controlling all of said wheels, so as to raise and lower the plow and maintain the plow-point below the heel while the plow is in the ground, and another lever for independently controlling the said land-side wheel.

32. A wheeled plow comprising a suitable plow and plow-beam, forward supporting-wheels, a rear caster-wheel, a pivoted lever connected and operative to simultaneously control all of the wheels, so as to raise

and lower the plow, the connections and relative arrangement being such that a throw of said lever beyond a certain point confines the adjustment or relative movement to the forward wheels.

33. A frameless high-lift sulky-plow, comprising a suitable plow and plow-beam, a rear caster-wheel having a shifting connection with the rear upright portion of the plow-beam, land-side and furrow-side wheels having shifting connections with the horizontally-disposed portion of the plow-beam, a lever connected and arranged for simultaneously operating all of said shifting connections, so as to cause a bodily rise and fall of said plow, and a second lever connected and arranged for operating the shifting connection between the plow-beam and land-side wheel independently of the others.

34. A frameless high-lift sulky-plow, comprising a suitable plow and plow-beam, a rear caster-wheel having a shifting connection with the plow-beam, a forward furrow-wheel having a shifting connection with the plow-beam, a crank-axle mounted in a bearing on said plow-beam, a lever suitably mounted upon said axle and connected for simultaneously rotating the latter and operating both of said shifting connections, a land-side wheel mounted upon said axle, and a second lever connected and arranged for controlling said land-side wheel independently of the other wheels.

35. A wheeled plow comprising a plow and plow-beam, land-side and furrow-side wheels having shifting connections with the plow-beam, a rear caster-wheel having a shifting connection with the plow-beam, a lever connected and arranged for simultaneously controlling all three wheels, so as to raise and lower the plow, a driver's seat mounted on the caster-wheel, and a tongue connected and arranged to control the furrow-side and caster wheels.

36. The combination of a plow and beam, a rear caster-wheel, a land-side wheel, a furrow-side wheel, a tongue connected and arranged to control the caster-wheel and furrow-side wheel, a lever for simultaneously adjusting all three wheels, so as to raise and lower the plow and beam, a driver's seat mounted on the caster-wheel, and a second lever for independently adjusting the land-side wheel.

707,880. CLOTHES-HANGER. ARTHUR W. VAN DEMARK, Lestershire, N. Y. Filed Apr. 16, 1902. Serial No. 103,123. (No model.)

Claim.—1. A hanger of the class described, comprising a support, hook-screws adapted to be screwed therein to, a plate-spring mounted on said screws, and a rod inserted in the heads of the hook-screws and bearing on the said spring, said rod being provided with hooks, substantially as shown and described.

2. A device of the class described comprising a support, keepers secured thereto, a vertically-adjustable member mounted in said keepers, and provided with a plurality of hooks and a spring placed between said support and said vertically-adjustable member, substantially as shown and described.

707,881. FLANGING-MACHINE. JOHN H. VANDERSLICE, Centerville, Pa., assignor to Lukens Iron and Steel Company, Centerville, Pa., a Corporation of Pennsylvania. Filed Aug. 2, 1901. Serial No. 70,594. (No model.)

Claim.—1. The combination as a flanging-machine, of a head, means for clamping a plate to be flanged to said head, means for flanging the plate, a slide on said carriage having rollers, said rollers being relatively apart from one another, with means for moving said slide whereby either of the rollers may be brought into contact with the plate operated upon, substantially as described.

2. The combination in a flanging-machine, of a head, means for clamping a plate on said head, means for flanging said plate, a carriage independent of said flanging means, a frame pivoted to said carriage, a slide mounted on said frame, means for adjusting the frame, means for adjusting the slide, and a roller carried by the slide arranged to bear upon the plate to be flanged, substantially as described.

3. The combination in a flanging-machine, of a head, means for clamping a plate on said head, means for flanging said plate, a carriage, a frame pivoted to said carriage, a slide mounted on said frame, means for adjusting the frame, means for adjusting the slide, with two rollers mounted on the slide independently of the flanging means, one arranged to bear upon one side of the plate and the other to bear upon the opposite side of the plate, substantially as described.

4. The combination in a flanging-machine, of a head, means for clamping a plate on the head, means for flanging said plate, a carriage, a frame pivoted to the carriage, a shaft for adjusting said frame, a slide mounted on the frame, a rack on said slide, an operating-shaft, a gear-wheel on said shaft meshing with the teeth of the rack, and a roller carried by said slide, substantially as described.

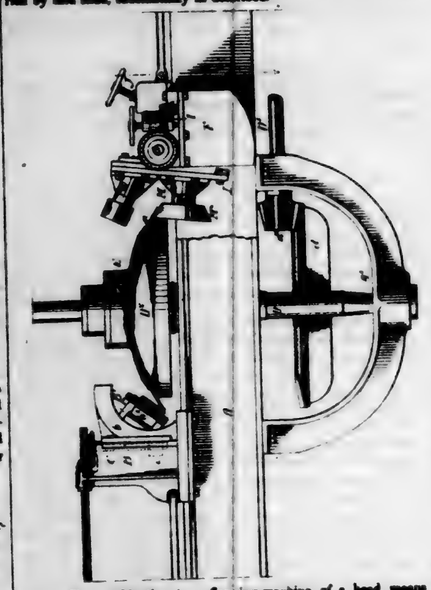

5. The combination in a flanging-machine, of a head, means for clamping a plate on the head, means for flanging said plate, a carriage, a frame pivoted to the carriage, a shaft for adjusting said frame, a slide mounted on the frame, a rack on said slide, an operating-shaft, a gear-wheel on said shaft meshing with the teeth of the rack, and a roller carried by said slide, with a wheel on the said shaft, a counterbalance-weight suspended from said wheel to counterbalance the slide and its roller, and means for operating said shaft, substantially as described.

6. The combination in a flanging-machine, of a head, means for clamping a plate to the head, means for flanging said plate, with two rollers independent of said means, bearings therefor, said rollers being so mounted in respect to the plate to be flanged that during the first part of the process of flanging one roller can be adjusted to bear against the under side of the plate, and during the last part of the process of flanging the other roller can be adjusted to bear upon the opposite side of the plate, substantially as described.

707,882. TYPE-WRITING MACHINE. JOHANNES H. VIEK, Deventer, Netherlands. Filed Apr. 10, 1902. Serial No. 102,264. (No model.)

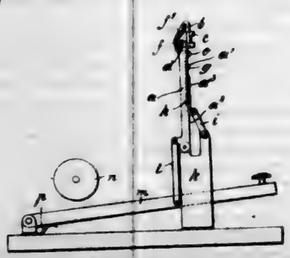

Claim.—1. The combination of the key-lever *m*; standard *k*; type-lever *a*, formed with two parallel sides providing a longitudinal cavity between them and fulcrumed on the standard; connecting-rod *l* imparting movement from the key-lever *m* to the type-lever *a*; type-bar carrier *b* pivoted to the end of the lever *a*; and the guided bar *g* sliding in the cavity of the type-lever *a*, connected at one end by the rod *i* to the standard *k* and at the other end to the type-carrier *b* and imparting oscillatory motion to said type-carrier by the movement of the lever *a*, as explained.

2. The combination of the standard *k*; key-lever *m*; type-lever *a*, and connecting-rod *l* pivoted to the standard *k*; oscillating type-bar carrier *b*, having a curved slot *f* and pivoted on the free end of the lever *a*; type-bar *c* mounted on the carrier *b*; sliding bar *g* connected at one end to rod *i* and guided in the lever *a* by pins *o* and *h* and the slide *f* working in the slot *f* and communicating oscillatory motion to the type-bar carrier by the movement of the lever *a* on standard *k*, substantially as described.

707,883. SOSPIECE FOR EYEGLASSES. CHARLES F. WALL, Philadelphia, Pa. Filed Feb. 7, 1902. Serial No. 93,923. (No model.)

Claim.—1. In an eyeglass, a nosepiece-clamp and a compound spring in addition to and having both portions connected with said nosepiece-clamp, one portion of said spring carrying the clamp and the other having yielding connection therewith, said springs being disposed to act one against or in opposition to the other at opposite ends of said clamp.

2. In an eyeglass, a nosepiece-clamp, a compound spring formed independent of said nosepiece-clamp and composed of independent members of different tension, one attached to said clamp and the other having movable connection therewith, said springs mounted one at each end of said clamp to act one against the other, the one to regulate and to modify the pressure at the lower end and the other to regulate and increase the pressure at the upper end of said clamp.

3. In an eyeglass, a nosepiece-clamp, a compound spring formed of independent members of different tension formed separate from said nosepiece-clamp, one member being connected with the upper end of said clamp and doubled up upon itself and the other member with the lower end thereof, both members having a common connection with the post of the glasses.

4. In an eyeglass, a nosepiece-clamp and a compound spring formed of independent members of different tension, said members each having an end connected with the post of the glasses, by means common to both of said ends, one member being movably connected with the lower end of the clamp and the other member doubled upon itself and having its other end secured to the upper end of said clamp.

707,884. FOLDING RECLINING-CHAIR. PETER B. WATSON, Philadelphia, Pa. Filed Feb. 13, 1902. Serial No. 93,932. (No model.)

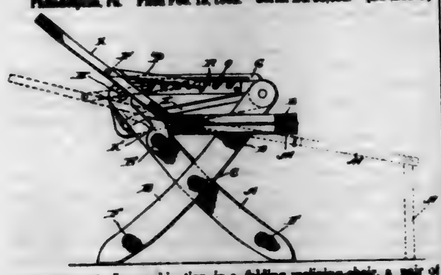

Claim.—1. In combination in a folding reclining-chair, a pair of cross-legs arranged upon each side of the chair, said legs pivoted together upon a common cross-rod, cross-rods D and E connecting the two sets of legs together above the pivotal point, an arm pivoted at one end to the upper end of one leg of each set, said arm provided with a slot, pins or rollers secured to the upper end of each of the other legs of the set, said pins or rollers lying within the slot, a back pivoted to the cross-rod E, a seat hinged to the lower end of the back, braces pivoted to each side of the back, means secured to the arms for locking the forward end of the braces in whatever position placed, as and for the purpose specified.

2. In combination in a folding reclining-chair, a set of cross-legs A and B located upon opposite sides of the chair, a cross-rod extending across the chair upon which the legs are pivoted together, a cross-rod E extending between the two legs above the pivotal point, a cross-rod D extending between and connecting the two legs B above the pivotal point, two arms, each pivoted to the upper end of one of the legs A, said arms provided with a slot I, rollers or pins secured in the upper end of the legs A, said rollers or pins lying within the slots I, a back pivoted to the rod E, a seat hinged to the lower end of the back, said seat adapted to be supported by the cross-rod D, a leg-rest pivoted to the forward end of the seat, folding supports for said leg-rest, a rack provided upon the arms, braces pivoted to each side of the back, the forward end of said braces adapted to engage the teeth of said rack and hold the back in certain positions, as and for the purpose specified.

3. In a chair of the character described, two sets of cross-legs arranged upon each side of the chair, each set composed of the legs A and B, a cross-rod C extending across the chair upon which each set of legs is pivoted, a cross-rod E connecting the legs A of each set together above the pivotal point, a second cross-rod D connecting the legs B of each set together above the pivotal point, cross-rods F extending between the legs of each set below the pivotal point, two arms pivoted to the outside of the upper end of each of the legs A, rollers or pins secured in the upper end of each of the legs B, slots I provided in the arms in which the rollers or pins work, said slots being so arranged and so formed that the arms will be caused to assume a position in a straight line with the legs when the legs are folded together, a back pivoted to the cross-rod E, a seat hinged to the lower end of the back and adapted to fold upward against the same, said seat supported by the cross-rod D, a leg-rest hinged to the forward edge of the seat, recesses O formed in each side of the leg-rest, legs N pivoted in the forward end of said recesses and adapted to be folded entirely within the recesses when not in use, the arms provided with recesses, racks arranged within the recesses, the teeth of said rack being inclined forward, braces or supplementary arms P pivoted to the back upon each side, a catch provided upon the forward end of the braces or supplementary arms and adapted to engage the teeth, a space being provided between the upper edge of the teeth and the upper wall of the recess to allow the catches to pass to and fro above the teeth, substantially as and for the purpose specified.

707,885. MACHINE FOR PERFORATING PAPER. SETH WHEELER, Albany, N. Y. Filed May 10, 1901. Serial No. 59,562. (No model.)

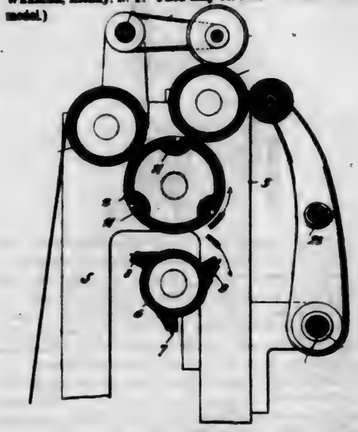

Claim.—1. In a machine for perforating paper, the combination with suitable perforating mechanism, of a swinging frame adapted to support a rewinding-shaft, a rewinding-shaft supported thereby, a revolvable bushing with which the said shaft has a removable connection, and a sliding bearing-bushing arranged to engage the opposite end of the said shaft.

2. In a machine for perforating paper, the combination with suitable perforating mechanism, of a rewinding-shaft, a revolvable bushing with which said shaft has a removable connection, means for locking the shaft in its engagement with the revolvable bushing, and a sliding bearing arranged to normally support the opposite end of the said shaft and to be slid out of engagement therewith when desired.

3. In a machine for perforating paper, the combination with suitable perforating mechanism, of a rewinding-shaft, a revolvable bushing with which one end of the said shaft has a removable connection, a sliding pin concentrically arranged within the said bushing and adapted to extend into the said shaft, a sliding bearing arranged to normally support the opposite end of the said shaft, and means whereby the said bearing may be moved out of engagement with the said shaft when desired.

4. In a machine for perforating paper, the combination of a rotary die and a rotary cutter connected together by gear-wheels, one of said gear-wheels comprising a hub and a gear-ring adjustably mounted thereon.

5. The combination in a machine for perforating paper of a rotary

die and a rotary cutter connected together by gear-wheels, one of the said gear-wheels having two gear-rings rotatably adjustable with relation to each other.

6. The combination in a machine for perforating paper of a rotary die and a rotary cutter connected together by gear-wheels, one of said gear-wheels comprising a hub and two gear-rings mounted thereon, said gear-rings being rotatably adjustable relatively with each other and with the hub, together with means for locking the gear-rings and the hub together in the position to which they have been adjusted.

707,886. PROCESS OF MANUFACTURING MANURE FROM APATITE OR SIMILAR MINERAL PHOSPHATE. JOHAN G. WESTMAN and WILHELM PALMAER, Stockholm, Sweden. Filed Oct. 22, 1900. Serial No. 33,995. (No specimens.)

Claim.—The process herein described of manufacturing manure from apatite or similar mineral phosphate, said process consisting in passing an electric current through an electrolytic bath having an anode and cathode and containing an electrolyte consisting of a solution of a salt disengaging at the anode an acid which forms a soluble salt with lime, while at the cathode a basic hydrate is formed, dissolving the mineral phosphate by the acid disengaged and precipitating the same in the alkaline liquid of the cathode as phosphate of calcium, but in another more soluble form, all substantially as set forth.

707,887. WATCHMAKER'S STAKING-TOOL. LEWIS J. WILLIAMS, Lebanon, N. H., assignor to Frank B. Kendrick and William F. Davis, Lebanon, N. H., partners trading as The Firm of Kendrick & Davis. Filed May 10, 1902. Serial No. 106,762. (No model.)

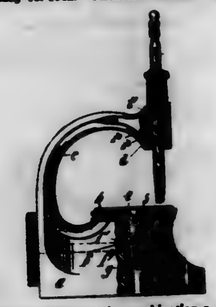

Claim.—1. In a staking-tool, in combination a perforated base, a punch or plunger, a guide therefor, and means adapted to frictionally engage said punch or plunger whereby said punch or plunger may be sustained in said guide in any desired position relative to said base.

2. In a staking-tool, in combination a perforated base, a punch or plunger, a guide therefor, and means comprising a plurality of spring-tongues adapted to engage said punch or plunger whereby it may be sustained in said guide in any desired position relative to said base.

3. In a staking-tool, in combination a perforated base, a punch or plunger, a guide therefor, a means comprising a sleeve countersunk in said guide and a plurality of spring-tongues carried thereby and adapted to engage said punch or plunger whereby it may be sustained in said guide in any desired position relative to said base.

4. In a staking-tool, in combination a perforated base, a punch or plunger, a guide therefor, and means comprising a sleeve countersunk in said guide a plurality of spring-tongues carried thereby and bearing-surfaces carried by said tongues and adapted to engage said punch or plunger whereby it may be sustained in any desired position relative to said base.

5. In a staking-tool, in combination, a perforated base, a punch or plunger, a retentive face-plate carried by said base, a pivot-pin connecting said base and said plate, a cam whereby said pivot-pin is reciprocated to release or clamp said face-plate and means comprising an adjustable contact carried by said pivot-pin and acting against said cam whereby the throw of said pivot-pin by said cam may be regulated.

6. In a staking-tool, in combination, a perforated base, a punch or plunger, a retentive face-plate carried by said base, a pivot-pin connecting said base and said plate, a cam whereby said pivot-pin is reciprocated to release or clamp said face-plate and a set-screw carried by said pivot-pin.

7. In a staking-tool, in combination a perforated base, a punch or plunger, a retentive face-plate carried by said base, a pivot-pin connecting said base and said face-plate having an opening extending therethrough, a shaft seated in said base and extending through said opening a portion of said shaft being reduced and eccentric, said portion being within the opening in said pivot-pin, whereby shoulders are formed to bear upon the reverse sides of said pivot-pin, and said face-plate may be released from or clamped against said base.

707,888. STOP-MOTION FOR STEAM-ENGINES. OWEN WILLIAMS, Fall River, Mass. Filed Nov. 30, 1899. Serial No. 38,162. (No model.)

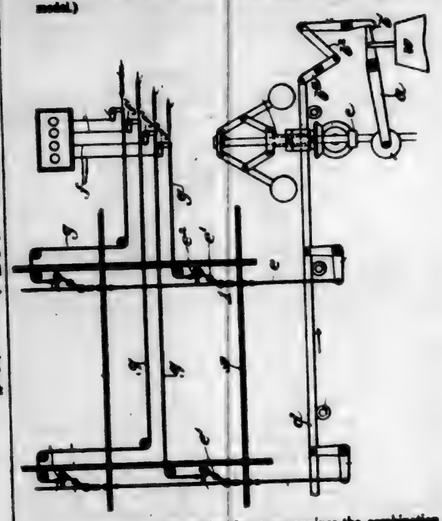

Claim.—1. In a stop-motion for steam-engines the combination of the steam-controlling device, the weighted lever arranged to engage and actuate the steam-controlling device to cut off the steam, a detent arranged to hold the weighted lever normally against movement, and connecting mechanism connecting said detent with various locations whereby the detent may be operated from different locations to release the weighted lever in order that it may act on the steam-controlling device, substantially as described.

2. In a stop-motion for steam-engines the combination of the steam-controlling device, means for actuating the same to cut off the steam, the main slide-rod having connection with the means for actuating the steam-controlling device, the bell-crank lever, the vertical connections for operating said bell-crank lever, the pulls or hooks arranged to form a supporting and lifting means for moving the vertical connecting-rods to actuate the slide-rod, substantially as described.

3. In a stop-motion for steam-engines the combination of the steam-controlling device, means for actuating it to cut off the steam, the slide-rod having connection with said actuating means, connecting-rods by which the slide-rod may be moved from different locations, the indicator and its actuating means arranged to be operated by devices connected with the vertical connecting-rods, substantially as described.

4. In a stop-motion for a steam-engine, the combination with a governor or steam-regulating device of a weighted lever arranged to engage and actuate said governor to cut off the steam, a detent arranged to engage said weighted lever, a longitudinal slide-rod having connection with said detent in order to release it from engagement with said weighted lever, means having engagement with said slide-rod at various points thereon for actuating the slide-rod, an indicator device so connected that the slide-rod-actuating means has to be operated by the operation of the actuating means at any point, substantially as described.

707,889. PROCESS OF EXTRACTING SUGAR FROM ITS SOLUTIONS. ALFRED WEIL, Christiansberg, Germany. Filed Dec. 21, 1900. Serial No. 372,294. (No specimens.)

Claim.—1. The process for extracting sugar from molasses and other impure after-products obtained in the manufacture of sugar, which consists in mixing molasses with a watery solution of an alkali acid, stirring the mixture together with finely-ground protecid of lead, allowing the mixture to stand until a viscous mass has formed, and washing with water, substantially as and for the purpose stated.

2. In the process for extracting sugar by the agency of lead protecid from molasses and other impure after-products obtained in the manufacture of sugar, the method of freeing the lead sucrate from the adhering impurities by diluting the mixture with water of a temperature of 40° to 50° centigrade, filter-pressing and washing the contents of the filter-press first with water of 40° to 50° centigrade and then with water the temperature of which is gradually raised to 70° to 75° centigrade, substantially as and for the purpose stated.

3. In the process for extracting sugar by the agency of lead protecid from molasses and other impure after-products obtained in the manufacture of sugar, the method of removing the last traces of lead from the sugar liquor obtained by the carbonating process, which consists in concentrating the sugar liquor, adding one-fourth to one-half per cent. of calcium hydrate, treating with carbonic acid at a temperature of 80° to 90° centigrade, and separating the liquor from the precipitate, substantially as described.

4. The process for extracting sugar from molasses and other impure after-products obtained in the manufacture of sugar, which consists in mixing the molasses, &c., in the proportion of not more than three parts of water for every one part of molasses, &c., with an excess of lead protecid as free as possible from the red modification of lead protecid, adding a hydrated alkali; allowing the mixture to stand at ordinary temperature until a homogeneous viscous mass has formed containing the sugar in the form of lead sucrate, thinning the mass with water having a temperature of 40° to 50° centigrade, filter-pressing the mass, washing the contents of the filter-press with water having an initial temperature of 40° to 50° centigrade which is then gradually raised up to 70° to 75° centigrade, decomposing the washed lead sucrate, separating the precipitate from the sugar liquor, concentrating the liquor, adding one-fourth to one-half per cent. of calcium hydrate, carbonating at a temperature of from 80° to 90° centigrade, and filtering, substantially as described.

707,890. VARIABLE-SPEED CLUTCH. WILLIAM A. WOOD, Ansonia, Conn. Filed Nov. 22, 1901. Serial No. 83,260. (No model.)

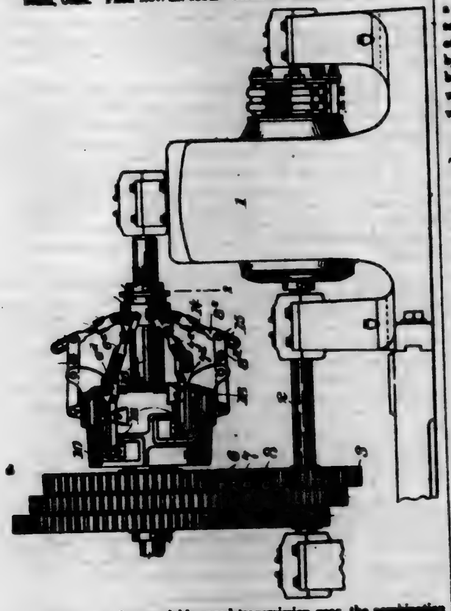

Claim.—1. In a variable-speed-transmission gear, the combination of a driving-shaft, a driven shaft, a plurality of sleeves loosely mounted on the driven shaft, gearing connecting said sleeves to the driving-shaft and so proportioned as to rotate said sleeves at different rates of speed, separate clutching means for locking each of said sleeves to the driven shaft, and interconnecting means whereby when any one of said means is locked to its corresponding sleeve the remaining sleeves are free, said locking means consisting of a pulley with a V-shaped rim carried by the sleeve and a V-shaped clutch-block supported from the driven shaft.

2. In a variable-speed-transmission gear, the combination of a rotating shaft, a plurality of sleeves seated one within another and loosely mounted on said shaft, a plurality of clutch-pulleys mounted one on each of said sleeves, a head fastened to the shaft, surrounding said clutch-pulleys and provided with radial openings opposite the said pulleys, clutch-blocks carried in said openings in said head, and means for forcing the clutch-blocks opposite any one pulley into and out of engagement therewith.

3. In a variable-speed-transmission gear, the combination of a rotating shaft, a plurality of sleeves seated one within another and loosely mounted on said shaft, a plurality of clutch-pulleys mounted one on each of said sleeves, a head fastened to the shaft, surrounding said clutch-pulleys and provided with radial openings opposite the said pulleys, clutch-blocks carried in said openings in said head, and means for forcing the clutch-blocks opposite any one pulley into and out of engagement therewith, together with a single lever and connections therefrom to all of said clutch-blocks, so that only those blocks opposite any one pulley can be thrown into engagement at any one time.

4. In a multiple-clutch mechanism, the combination of a rotating shaft, a series of clutch-blocks mounted on and rotating with said shaft, a series of levers carrying said blocks and mounted on pivots carried by said shaft, a ring adapted to slide longitudinally of said shaft, and a series of links connecting said ring with each of said levers, whereby the sliding of said ring longitudinally of the shaft will cause the clutch-blocks to consecutively approach toward or recede from the shaft, together with suitable clutch members adapted to coöperate with said clutch-blocks whenever the same approach the shaft.

5. In a multiple clutch device the combination of a rotating shaft, a plurality of sleeves loosely mounted on said shaft, a clutch member carried by each sleeve, a series of movable clutch-blocks rotating with the shaft and adapted to grasp or release the respective clutch members, a ring adapted to slide longitudinally of the shaft and toggle-joint connections from said ring to said movable blocks, whereby said blocks are consecutively forced into and released from engagement with their respective coöperating clutch members, as the ring is slid along the shaft.

6. In a multiple-clutch mechanism, the combination of a rotating shaft, a series of clutch-blocks mounted on and rotating with said shaft, a series of levers carrying said blocks and mounted on pivots carried by said shaft, a ring adapted to slide longitudinally of said shaft, and a series of adjustable links connecting said ring with each of said levers, whereby the sliding of said ring longitudinally of the shaft will cause the clutch-blocks to consecutively approach toward or recede from the shaft, together with suitable clutch members adapted to coöperate with said clutch-blocks whenever the same approach the shaft.

707,891. MEANS FOR CERTIFYING CHECKS OR OTHER INSTRUMENTS. JOHN S. ALEXANDER, New York, N. Y. Filed Mar. 20, 1901. Renewed Aug. 1, 1902. Serial No. 117,902. (No model.)

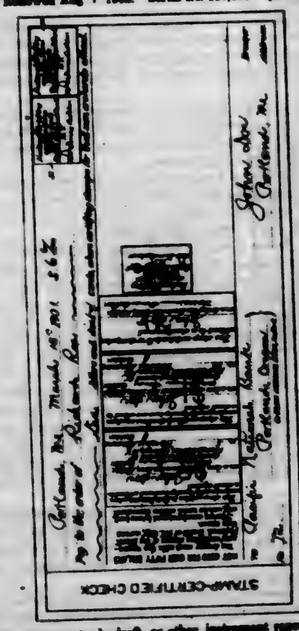

Claim.—1. A check, draft, or other instrument representing value or property, said instrument having affixed thereto a stamp or stamps is-

used by another than the drawer or the instrument, and bearing matter certifying to or guaranteeing the amount for which it is drawn, and also containing an identifying-mark applicable only to the drawer or purchaser of the stamp or stamps and identifying and differentiating said stamp or stamps from other stamps of the same value issued by the same certifier to other purchasers.

2. A certifying-stamp for a check, draft or other instrument representing value or property, said stamp bearing matter certifying to or guaranteeing the face value of said stamp and said stamp having an identifying-mark, other than that of the certifier, applicable only to the purchaser and identifying and differentiating it from other stamps of the same value issued by the same certifier to other purchasers.

3. A certifying-stamp for a check, draft or other instrument representing value or property, said stamp bearing matter certifying to or guaranteeing the face value of said stamp and said stamp having an identifying-signature, other than that of the certifier, applicable only to the purchaser and identifying and differentiating it from other stamps of the same value issued by the same certifier to other purchasers.

4. A check, draft, or other instrument, representing value or property, said instrument having affixed thereto stamps issued by another than the drawer of the instrument, and certifying to or guaranteeing the amount for which it is drawn, each of said stamps having marked upon it in figures, the amount represented by it, the figures upon the stamps representing units of value occupying a different lateral relation thereto from those upon the stamps which represent fractional parts of said unit and figures of the same denomination being in vertical alignment.

707,892. ART OF TREATING STARCH MATERIAL. ALEXANDER P. ANDERSEN, New York, N. Y. Filed Feb. 12, 1902. Serial No. 93,797. (No specimens.)

Claim.—1. The process of treating starch material, which consists in heating such material in a substantially air-dry condition under pressure and then reducing the pressure with such rapidity that the liquid contained in the starch-granules is suddenly gasified.

2. The process of treating starch material, which consists in heating such material in a substantially air-dry condition, under pressure to a point below the boiling-point of the liquid contained in the granules of the starch material at the pressure applied and thereupon suddenly removing said pressure.

3. The process of treating starch material, which consists in heating such material in a substantially air-dried condition and under gas-pressure to a temperature above the boiling-point of the liquid contained in the starch material at normal pressure, and thereupon suddenly reducing the pressure.

4. The process of treating starch material, which consists in heating said material in a substantially air-dry condition and under pressure to a temperature above the boiling-point of water at normal pressure and thereupon suddenly reducing the pressure.

5. The process of treating starch material, which consists in subjecting the material in a substantially air-dry condition to a continuously-increasing pressure while raising its temperature above the boiling-point of water, and then suddenly reducing said pressure.

6. The process of treating starch material, which consists in raising the material in a substantially air-dry condition to a temperature of substantially 120° centigrade, while simultaneously subjecting it to a fluid-pressure above the normal, and then suddenly reducing said pressure.

7. The process of treating starch material, which consists in raising the material in a substantially air-dry condition to a temperature not exceeding 200° centigrade, while simultaneously subjecting it to fluid-pressure above the normal, and then suddenly reducing said pressure.

8. The process of treating starch material, which consists in raising the material in a substantially air-dry condition above the boiling-point of water in a closed vessel and then suddenly opening said vessel.

9. The process of treating starch material, which consists in raising the material in a substantially air-dry condition to a temperature not exceeding 200° centigrade, in a closed vessel, and then suddenly opening said vessel.

10. The process of treating starch and material containing starch, which consists in raising the material in a substantially air-dry condition to a temperature not exceeding 200° centigrade, in a closed vessel whose capacity is in excess of the space occupied by the material, and then suddenly opening said vessel.

11. The process of treating cereal grains, which consists in heating the same in a substantially air-dry condition and under pressure to a point above the boiling-point of water at normal pressure and thereafter suddenly reducing the pressure.

12. The process of treating cereal grains, which consists in heating the same in a substantially air-dry condition and under pressure to a temperature not exceeding 300° centigrade, and thereupon suddenly reducing the pressure to a point at which the liquid in the starch granules of the cereal grains will gasify.

707,893. DRAFT-EQUALIZER. ANDREW ANDERSON, Hoda, Minn. Filed June 6, 1902. Serial No. 110,846. (No model.)

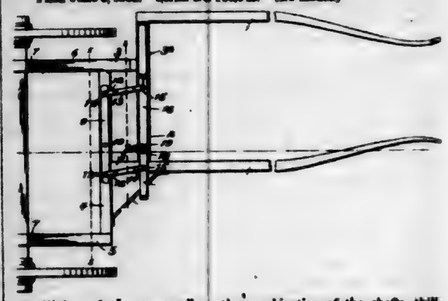

Claim.—1. In an equalizer, the combination of the shafts, thill-pieces set to one side of the shafts and connected together, an evener-bar supported between the thill-pieces, a singletree supported between the shafts, and strap connections between the singletree and evener-bar, substantially as described.

2. In an equalizer, the combination of the shafts, thill-pieces set to one side of the shafts, a cross-bar connecting the thill-pieces, an evener-bar pivoted on the cross-bar, a singletree supported between the shafts, and strap connections between the singletree and evener-bar, substantially as described.

3. In an equalizer, the combination of the shafts, thill-pieces set to one side of the shafts, a cross-bar connecting the thill-pieces, an evener-bar pivoted on the cross-bar, a second cross-bar connecting the shafts, a singletree pivoted on the second cross-bar, and strap connections between the singletree and evener-bar, substantially as described.

4. In an equalizer, the combination of the shafts, thill-pieces set to one side of the shafts, a cross-bar connecting the thill-pieces, an evener-bar pivoted eccentrically on the cross-bar, a second cross-bar connecting the shafts, a jointed singletree pivoted on the second cross-bar, and strap connections between the singletree and the evener-bar, substantially as described.

5. In an equalizer, the combination of the shafts, thill-pieces set to one side of the shafts, a cross-bar connecting the thill-pieces, an evener-bar pivoted eccentrically on the cross-bar, a second cross-bar connecting the shafts, a singletree comprising two levers jointed together and pivoted on the second cross-bar, and straps connecting the evener-bar with the levers of the singletree, substantially as described.

6. In an equalizer, the combination of the shafts, thill-pieces set to one side of the shafts and connected to the front axle of the vehicle, a cross-bar connecting the thill-pieces, an evener-bar pivoted on the cross-bar to one side of the central line of the vehicle, a second cross-bar connecting the shafts, a jointed singletree pivoted on the second cross-bar coincident with the central line of the vehicle, and straps connecting the evener-bar and the singletree, substantially as described.

7. The combination with the shafts of a vehicle, thill-pieces set to one side of the shafts, a cross-bar connecting the thill-pieces and fastened to one of the shafts, and a second cross-bar connecting the shafts and fastened to one of the thill-pieces, the end of one cross-bar projecting beyond the end of the other cross-bar, substantially as described.

707,894. AUTOMATIC CUT-OUT. GEORGE R. ANDREWS, Providence, R. I. Filed Nov. 1, 1901. Serial No. 80,797. (No model.)

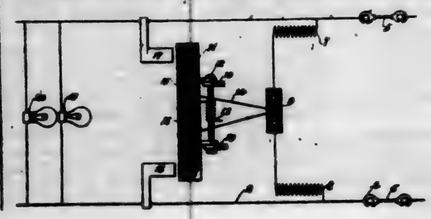

Claim.—1. An automatic cut-out, comprising mains carrying currents of different potential and provided with separate fuses, a fuse connected with both of said mains by means of shunt-wires leading thereto, contact-lugs connected with said mains respectively, and a fuse-controlled member for automatically connecting said lugs together.

2. An automatic cut-out, comprising a plurality of contact-lugs to be connected with respective mains carrying currents of opposite sign, a contact-plate normally out of engagement with said lugs, a spring for forcing said plate into engagement with said lugs, a fuse adjacent to said plate, and a flexible member connecting said fuse and said plate.

3. An automatic cut-out, comprising a plurality of contact-lugs connected with conductors, a plate pivotally mounted adjacent to said lugs a member located adjacent to said plate and provided with a fusible wire, and a flexible member connected with said fusible wire and with said plate.

4. An automatic cut-out, comprising a pair of contact-lugs connected with conductors, a swinging plate for short-circuiting said contact-lugs, a spiral spring for actuating said plate into engagement with said lugs, a member provided with a fusible wire adjacent to said plate, and a longitudinal member secured by its ends to different parts of said plates and engaging said fusible wire.

5. An automatic cut-out, comprising mains provided with fuses connected serially therewith and also connected with contact-lugs, a fuse connected with both of said mains by shunt-conductors, and a fuse-controlled conducting mem- ber connected with the last-mentioned fuse.

6. An automatic cut-out, comprising mains provided with fuses connected serially therewith and also connected with contact-lugs, a fuse connected with both of said mains by shunt-conductors, artificial resistances interposed in the shunt-circuit thus formed for the purpose of modifying the potential of the current passing from said mains to said last-mentioned fuse, and a fuse-controlled conducting member connected with said fuse.

707,895. WRENCH. CLARENCE J. BAKER, Liverpool, N. Y. Filed Jan. 22, 1902. Serial No. 90,261. (No model.)

Claim.—1. A wrench, comprising a handle-bar, a jaw pivoted thereto, and a slidable jaw operatively related to said handle-bar and to the pivoted jaw, said jaws having their opposing active surfaces disposed in converging relation, and the two jaws adapted to be drawn toward each other by the operation of the handle-bar.

2. A wrench, comprising a handle-bar, a swinging jaw pivoted thereto, and a second jaw fitted slidably to a part of the first jaw and having operative connection with the handle-bar, the two jaws having a closing movement relative one to the other on the operation of the handle-bar to turn the work.

3. A wrench, comprising a handle-bar, a swinging jaw provided with a shank which is pivoted to said handle-bar, and a second jaw slidably fitted on the shank of the first-named jaw, and having lever connection with said handle-bar for adjustation thereby.

4. A wrench, comprising a handle-bar, a hinged jaw provided with a shank which is pivoted to said handle-bar, and a movable jaw slidably fitted to the shank of the hinged jaw and having pivotal connection with said handle-bar, said jaws having converging active faces.

5. A wrench comprising a handle-bar, a hinged jaw provided with a straight shank which has pivotal attachment to the handle-bar, and a movable jaw slidably fitted to the shank of the hinged jaw, and having a pivotal connection with the handle-bar at a point to one side of the hinged connection of the first jaw with said handle-bar said jaws having converging active faces.

6. A wrench comprising a handle-bar, a hinged jaw, and another jaw disposed in opposing relation to the hinged jaw and fitted removably and slidably thereto said jaws having converging active faces.

7. A wrench comprising a handle-bar, a hinged jaw, a movable jaw connected with said handle-bar and disposed in cooperative relation to the first-named jaw, and a spring acting against one of said jaws to normally close them together.

8. A wrench comprising a handle-bar, a jaw provided with a shank which is pivoted to the handle-bar, said jaw having a curved active face which lies eccentrically to the pivot, a movable jaw connected with said handle-bar and having an active face in opposing relation to said eccentric active face of the hinged jaw, and a spring acting against one of said jaws.

9. A wrench comprising a handle-bar, a hinged jaw having an active face, and a movable jaw connected with said handle-bar and having a convex face disposed in continuous opposing relation to the active face of the hinged jaw, said convex face of the movable jaw being provided with a plurality of seats of different sizes.

10. A wrench comprising a handle-bar having rounded heads, a hinged jaw, and a movable jaw provided with recesses arranged to receive said rounded heads of the handle-bar.

11. A wrench comprising a handle-bar, a hinged jaw having its shank formed with an offstanding lug which is pivoted to the handle-bar, and a slidable jaw provided with flanged guide-plates having slidable and detachable engagement with the shank of the hinged jaw.

707,896. RUNNING-GEAR FOR WAGONS. JAMES E. BENNETT, Hennessey, Ill. Filed Nov. 13, 1901. Serial No. 82,462. (No model.)

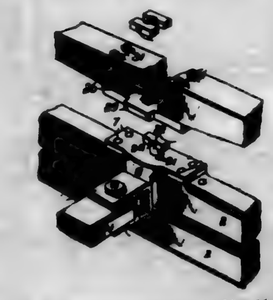

Claim.—1. A reach-coupler constructed with a king-bolt or wear-plate, a drop-piece, and lower and upper plates extending from the drop-piece and having pin-holes for the reception of a coupling-pin whereby the end of a reach is fastened to the upper and lower plates.

2. A reach-coupler constructed with a wear-plate adapted to be fastened to the top of the sand-bar, a drop-piece adapted to fit against a side of the sand-bar, and lower and upper plates extending from the drop-piece, and having pin-holes for the reception of a coupling-pin whereby the end of a reach is fastened to the plates.

3. A reach-coupler constructed with a wear-plate adapted to be fastened to the top of a sand-bar, a drop-piece adapted to fit against a side of the sand-bar, lower and upper plates extending from the drop-piece, and having pin-holes for the reception of a coupling-pin whereby the end of a reach is fastened to the plates, a king-bolt secured to the wear-plate having radial lugs providing a T-shaped head and a removable divided locking-piece fastened to the king-bolt.

5. The combination of an axle, a sand-bar, coröperating and fastened to the axle, a reach-coupler constructed with a wear-plate fastened to the top of the sand-bar, a drop-piece fitting against a side of the sand-bar, and lower and upper plates having pin-holes and extending from the drop-piece, and a coupling-pin extending through the pin-holes for removably fastening the end of a reach to the lower and upper plates.

6. The combination of an axle, a sand-bar, coröperating and fastened to the axle, a reach-coupler constructed with an inner part formed with a wear-plate fastened to the top of the sand-bar, and a drop-piece fitting against a side of the sand-bar, and an outer part fastened to the drop-piece and sand-bar, and formed with lower and upper plates having pin-holes and extending from the drop-piece, and a coupling-pin extending through the pin-holes for removably fastening the end of a reach to the lower and upper plates.

7. The combination of an axle, a sand-bar coröperating and fastened to the axle, a reach-coupler constructed with a lower wear-plate fastened to the sand-bar, a king-bolt, a bolster having a central recess at the under side, an upper wear-plate having a central opening and fastened to the bolster across the recess, and a locking-piece detachably secured to the king-bolt within the recess.

8. The combination of an axle, a sand-bar coröperating and fastened to the axle, a reach-coupler constructed with a lower wear-plate fastened to the sand-bar, a king-bolt having a head formed with radial lugs in line

with the wear-plate, and an axial bolt-hole, a holster having a central recess at the under side, an upper wear-plate having a central opening transverse thereof corresponding in shape to the head of the king-bolt, a divided locking-piece within the recess and a bolt extending through the locking-piece and through the bolt-hole of the head for detachably securing the locking-piece to the head.

707,897. CARBURETER. WILLIAM F. REESE, Portsmouth, Va., assignor of one-half to Robert T. Thorp, Norfolk, Va. Filed May 8, 1902. Serial No. 105,608. (No model.)

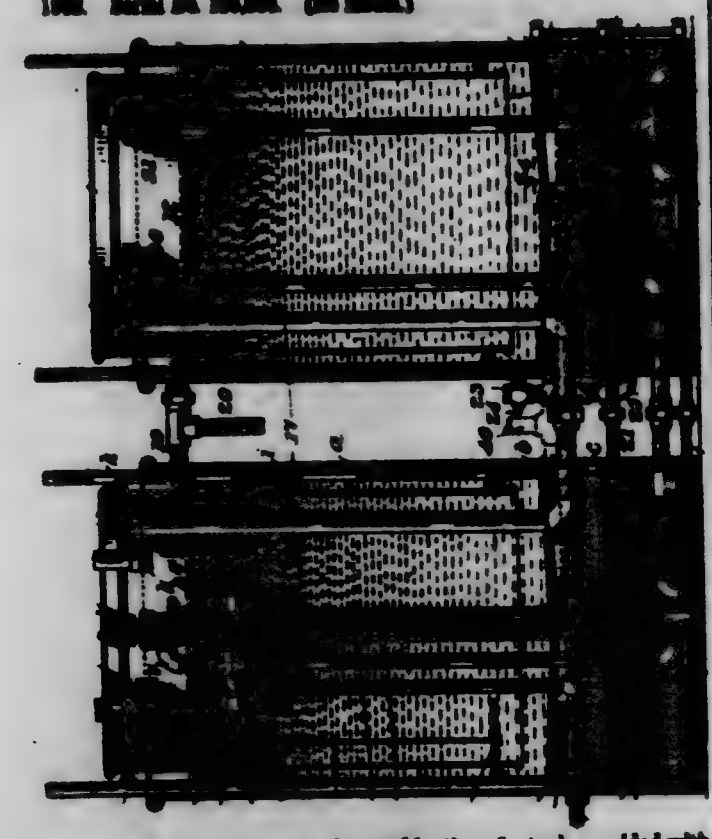

Claim.—1. In a carbureter, the combination of a tank provided with separate chambers, a perforated pipe spirally coiled in each of said chambers, a pipe connected to both ends of the spiral coil in one of said chambers, means for forcing air through said pipe, and connections running from the first chamber to both ends of the spiral pipe in the second chamber.

2. In a carbureter, the combination of a tank provided with a carbureting-chamber, a bell in said tank, a perforated spiral coil in said chamber, an air-pipe connected by branch pipes to both ends of said spiral pipe, said air-pipe extending up inside of said bell, and means for forcing air into said bell.

3. In a carbureter, the combination of a plurality of similarly-shaped tanks and pipes connecting the same, one of said pipes running to the top of said tanks and provided with a check-valve, carbureting-chambers in said tanks, bells in said tanks, spirally-arranged perforated pipes in said chambers and air-pipes connected by branch pipes to each end of each of said spiral pipes, said air-pipes running nearly to the top of one of said tanks, and means for forcing air from one of said tanks into the other.

4. In a carbureter, the combination of a plurality of similar tanks each provided with a plurality of carbureting-chambers, bells in said tanks, liquid and air pipes connecting said chambers and tanks, spirally-arranged perforated pipes in the lower one of said chambers in each of said tanks, air-pipes connected to both ends of each of said spirally-arranged pipes, spirally-arranged perforated pipes in the upper carbureting-chambers in each of said tanks, connections leading from said lower chambers to both ends of the spiral pipes arranged in the upper of said above-mentioned chambers, means for introducing gasolene and water into said tanks, and means for causing air to enter said bells.

707,898. ARTIFICIAL STONE. FRANCIS BAAS, St. Eustatius, Canada. Filed Aug. 26, 1901. Serial No. 73,201. (No specimens.)

Claim.—1. The process for manufacturing artificial stone which consists in mixing silicate of magnesia of any degree of subdivision with a small amount of lime and a sufficient quantity of water to impart plasticity to the mixture, then dividing the plastic mixture into parts of any desired shape and size, and submitting the same directly to the action of steam.

2. The process of manufacturing artificial stone, which consists in crushing any kind of magnesia rock into any degree of subdivision, mixing the same with sand and a small amount of lime, making moldings therefrom and treating the moldings with steam.

3. In the process of manufacturing artificial stone, treating material containing magnesia in excess by weight of lime with steam, substantially as described.

4. In the process of producing artificial stone, slaking lime and treating the same with steam in presence of an excess of magnesia by weight, as compared with the amount of lime, and in presence of sand, substantially as described.

5. The process for manufacturing artificial stone, which consists in mixing an excess by weight of sand with a small amount of lime, adding magnesia in any form or condition thereto, the magnesia being in excess of lime by weight, and treating the mixture with steam, substantially as described.

6. In the process of manufacturing artificial stone, slaking lime, mixing the same with material containing magnesia as a chief component and in any state or degree of subdivision, adding sand and molding the mixture, substantially as described.

7. As a new article of manufacture, an artificial stone, containing silicate of magnesia and lime, the magnesia being in excess of lime by weight, substantially as described.

8. A composition of matter, comprising sand, largely in excess by weight, silicate of magnesia and silicate of lime, the magnesia being in excess of lime by weight, substantially as described.

707,899. FILTER. FERDINAND BUSHARENS, New Orleans, La. Filed Dec. 31, 1901. Serial No. 87,268. (No model.)

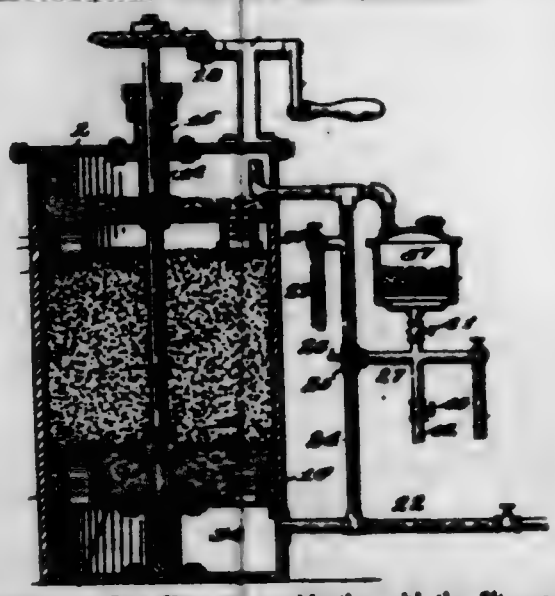

Claim.—1. In a filter, the combination with the filter-casing having an inlet in its upper end and an outlet in its lower end, of a perforated diaphragm fitted in the upper part of the casing below the inlet, slitted tubes fitted at their upper ends in said perforations and closed at their lower ends, a collecting-chamber arranged in the lower end of the casing and connecting with the outlet, slitted tubes projecting upwardly from said collecting-chamber and closed at their upper ends, and filtering-beds arranged respectively above and below the diaphragm in the upper portion of the filter-casing, substantially as described.

2. In a filter, the combination with the filter-casing having an inlet in its upper end and an outlet in its lower end, of a perforated diaphragm fitted in the upper part of the casing below the inlet, slitted tubes fitted at their upper ends in said perforations and closed at their lower ends, a collecting-chamber arranged in the lower end of the casing and connecting with the outlet, slitted tubes projecting upwardly through said collecting-chamber and closed at their upper ends, and means for reversing the passage of the water through the filter, substantially as described.

3. In a filter, the combination with the filter-casing having an inlet in its upper end and an outlet in its lower end, of a perforated diaphragm fitted in the upper part of the casing below the inlet, slitted tubes fitted at their upper ends in said perforations and closed at their lower ends, a collecting-chamber arranged in the lower part of the casing and communicating with the outlet, slitted tubes projecting upwardly from said collecting-chamber and closed at their upper ends, a filter-bed of iron filings arranged in the casing above the upper diaphragm, and a filter-bed of sand arranged in the casing below the upper diaphragm, substantially as described.

4. In a filter, the combination with the filter-casing having an inlet in its upper end, and an outlet in its lower end, of a perforated diaphragm fitted in the upper part of the casing below the inlet, slitted tubes fitted at their upper ends in said perforations and closed at their lower ends, a collecting-chamber arranged in the lower end of the casing and communicating with the outlet, slitted tubes projecting upwardly from said collecting-chamber and closed at their upper ends, filter-beds arranged above

and below the diaphragm in the upper portion of the filter casing, a vertical shaft arranged centrally in the filter-casing and projecting through the top of the latter, perforated stirrer-arms fixed on the lower portion of said shaft above the collecting-chamber, and gearing arranged externally of the casing for rotating said shaft and stirrer-arms, substantially as described.

5. In a filter, the combination with the filter-casing having an inlet in its upper end and an outlet in its lower end, of a perforated diaphragm fitted in the upper part of the casing below the inlet, slitted tubes fitted at their upper ends in said perforations and closed at their lower ends, a collecting-chamber arranged in the lower end of the casing and communicating with the outlet, slitted tubes projecting upwardly from said collecting-chamber and closed at their upper ends, a valved discharge-pipe leading from the outlet, a feed-pipe leading from the discharge-pipe to the inlet, a service-pipe connected with said feed-pipe intermediate the ends of the latter and a three-way valve for diverting the water from the service-pipe to either branch of the feed-pipe, substantially as described.

6. In a filter, the combination with the filter-casing having an inlet in its upper end and an outlet in its lower end, of a perforated diaphragm fitted in the upper part of the casing below the inlet, slitted tubes fitted at their upper ends in said perforations and closed at their lower ends, a collecting-chamber arranged in the lower end of the casing and communicating with the outlet, slitted tubes projecting upwardly from said collecting-chamber and closed at their upper ends, filter-beds arranged respectively above and below the diaphragm in the upper part of the casing, a valved discharge-pipe leading from the outlet, a feed-pipe leading from the discharge-pipe to the inlet, a service-pipe connected with said feed-pipe intermediate the ends of the latter, a three-way valve for diverting the water from the service-pipe to either branch of the feed-pipe, and a valved waste-pipe connected with the feed-pipe above said three-way valve, substantially as described.

7. In a filter, the combination with a filter-casing having an inlet in its upper end and an outlet in its lower end, and a collecting-chamber in its lower end communicating with said outlet, of a valved discharge-pipe leading from the outlet, a feed-pipe connected with one end of said discharge-pipe and at its other end with the upper end of the filter-casing, and provided with a valved waste-pipe, a service-pipe connected with the feed-pipe intermediate the ends of the latter, a three-way valve for diverting the water from the service-pipe to either branch of the feed-pipe or for shutting off the communication between said pipes altogether, a reservoir connected at its lower end by a valved communication with said service-pipe and at its upper end communicating by a pipe with the upper branch of the feed-pipe, a strainer arranged in the lower end of said reservoir, and a bed of iron filings supported on said strainer, substantially as described.

707,900. SHADE-HANGER. MARYLAND E. BOYCE, Baltimore, Md., assignor of one-half to Robert McClintock, Baltimore, Md. Filed June 6, 1902. Serial No. 110,655. (No model.)

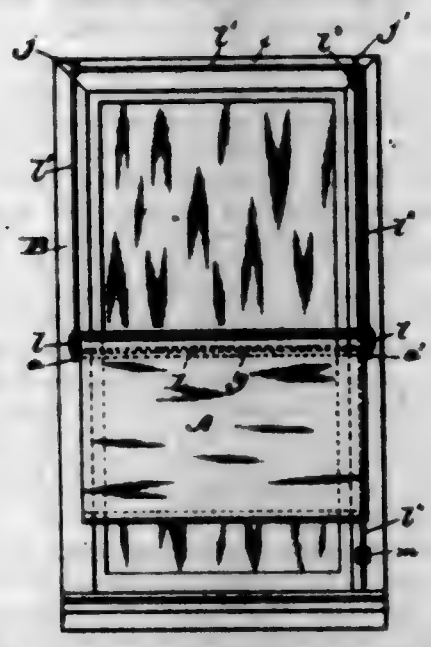

Claim.—1. A vertically-adjustable shade-hanger, comprising two brackets arranged to receive the pintles of the shade-roller and each provided with two apertures, *b*, *b'*, and a socket, *c*; a rod inserted in said sockets whereby to connect one bracket with the other; eyes, *j*, *j''*, adapted to be secured to the window-frame; and a cord extending from one bracket to the other out through one aperture in said brackets and inwardly through the other aperture, one portion of said cord extending upwardly and inwardly through one eye, *j*, and screws to and through the other eye, *j''*, and the other portion of said cord passing upwardly and inwardly through the adjacent eye, *j''*, and connected to the first-named portion by a knot, whereby to limit the movement of the cord in one direction through said eyes, as set forth.

2. A vertically-adjustable shade-hanger, comprising two brackets arranged to receive the pintles of the shade-roller and each provided with two apertures, *b*, *b'*, and a socket, *c*, whose walls are surrounded by tongs, *d*, in two opposite of which are formed holes, *d'*; a rod inserted in said sockets; nails or screws passed through said holes, *d'*, into said rod; eyes, *j*, *j''*, adapted to be secured to the window-frame; and a cord extending from one bracket to the other out through one aperture in said brackets and inwardly through the other aperture, one portion of said cord extending upwardly and inwardly through one eye, *j*, and screws to and through the other eye, *j''*, and the other portion of said cord passing upwardly and inwardly through the adjacent eye, *j''*, and connected to the first-named portion by a knot, whereby to limit the movement of the cord in one direction through said eyes, as set forth.

707,901. STOCK FOR TOOLS. OWEN L. CHENEY, Bloomington, Ill. Filed Apr. 30, 1902. Serial No. 105,107. (No model.)

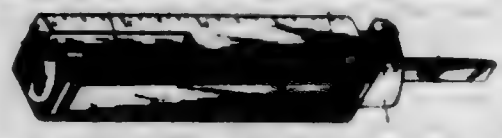

Claim.—A stock for holding a plurality of tools having a clamping-head at one end, and a series of longitudinally-extending seats at the opposite extremity which have an extent greater than a semicircle and open outwardly through the faces of the stock and the end of the latter opposite that carrying the clamping-head, the tools which are placed in the stock being of greater diameter than the width of the slots formed by the seats in relation to the faces of the stock, and a movable keeper for holding the tools in the seats, said keeper being provided with a slot to permit the tools to be withdrawn from the seats.

707,902. SULKY-HARROW. PAUL B. CHEMERINSKY, Sprockets Cal. Filed Nov. 20, 1901. Serial No. 83,026. (No model.)

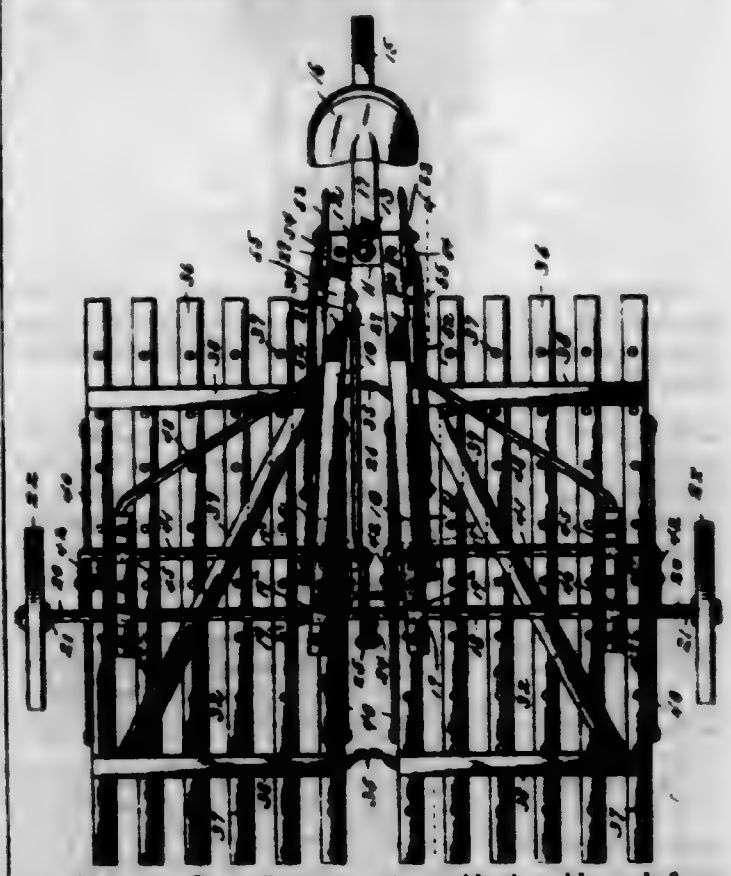

Claim.—1. In a sulky-harrow, the combination with a main frame, of bearing-hangers 19ª secured thereto and provided with bearings 19 and 19ª, an arched axle journaled in the bearings 19, wheels mounted upon the axle, means for rocking the arched axle, bearing-hangers 46 supported by the arched axle and having bearings 45, brace-rods connecting the hangers 46 to the main frame, rock-shafts journaled in the bearings 19ª and 45, harrow-sections carried by the rock-shafts, and means for raising and lowering the harrow-sections independent of the wheels.

2. In a sulky-harrow, the combination with the machine-frame, of an arched axle connected therewith and having the forward carrying-wheels journaled thereon, bearing-hangers connected with said axle at one end having their opposite ends rigidly connected with the machine-frame,

a plurality of harrow-sections suspended beneath the machine-frame, an individual rock-shaft for each harrow-section journaled in the bearing-hangers and pivotally connected with its respective harrow-section, and means for rocking said shaft independently of the movement of the arched axle, substantially as described.

3. In a sulky-harrow, the combination with the machine-frame, and an arched axle forming one of the supports for said frame, of a series of bearing-hangers mounted on the machine-frame and the arched axle, certain of said hangers being connected at the opposite ends directly with the machine-frame and others connected indirectly with the machine-frame by means of interposed braces, individual rock-shafts for each harrow-section journaled in the bearing-hangers, and means for operating each of said individual rock-shafts independently of any movement of the arched axle, substantially as described.

707,908. PROCESS OF CONVERTING WOOD INTO SUGAR. Alexander Classen, Aachen, Germany. Filed July 30, 1901. Serial No. 70,395. (Specimens.)

Claim.—A process of converting cellulose into sugar which consists in mixing one hundred parts by weight of the moist material with thirty to thirty-five parts of an aqueous solution of sulfurous acid, heating the mixture in a closed vessel at 120° to 145° centigrade for thirty to sixty minutes, blowing off the free sulfurous acid and finally lixiviating the mass with water, substantially as described.

707,904. ENGINE. Thomas Ogilby, Mount Savage, Md. Filed Oct. 10, 1901. Serial No. 78,202. (No model.)

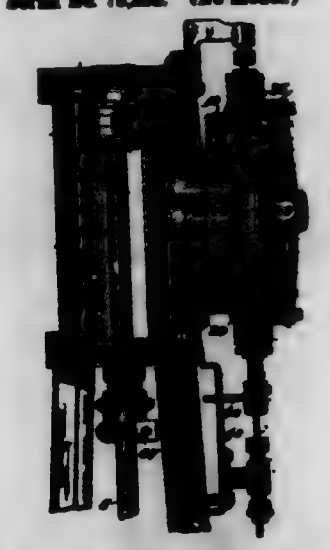

Claim.—1. In an engine the combination with a cylinder, piston, and means of supply and exhaust, of automatic means of constricting the means of exhaust, alternately with each stroke of the piston, substantially for the purpose specified.

2. The combination with a cylinder and piston, a pair of ports communicating with the cylinder, and a supply-port and common exhaust, of a movable valve, means for alternately establishing communication between the two ports and the supply and exhaust, and means for constricting one of said ports each time it makes communication with the exhaust, substantially for the purpose specified.

3. The combination with a cylinder and piston, a pair of ports communicating with the cylinder, and a supply-port and common exhaust, of a movable valve, means for alternately establishing communication between the two ports and the supply and exhaust, and means for constricting one of said ports each time it makes communication with the exhaust, said means being adjustable independently of the movement of the valve, substantially for the purpose specified.

4. The combination with a cylinder, piston and valve-shell, of a pair of ports communicating with the bore of the shell, an exhaust communicating therewith, and a supply-port, of a valve provided with a longitudinal bore, movable within the bore of the shell, means of alternate communication between the supply-port and the ports of the cylinder around the bore of the valve, and means of alternate communication between the ports of the valve and the discharge-port through the bore of the valve.

5. The combination with a cylinder, piston and valve-shell, of a pair of ports communicating with the bore of the shell, an exhaust communicating therewith, and a supply-port, of a valve provided with a longitudinal bore, movable within the bore of the shell, means of alternate communication between the supply-port and the ports of the cylinder around the bore of the valve, means of alternate communication between the ports of the valve and the discharge-port through the bore of the valve, and plugs within the bore of the valve carried by the shell, independent of the movement of the valve.

6. The combination with a cylinder, piston and valve-shell, of a pair of ports communicating with the bore of the shell, an exhaust communicating therewith, and a supply-port, of a valve provided with a longitudinal bore, movable within the bore of the shell, means of alternate communication between the supply-port and the ports of the cylinder around the bore of the valve, means of alternate communication between the ports of the valve, and independently-adjustable plugs within the bore of the valve carried by the shell independent of the movement of the valve.

7. The combination with a cylinder, piston and valve-shell, of a pair of ports communicating with the bore of the shell, an exhaust communicating therewith, and a supply-port, of a valve provided with a longitudinal bore movable within the bore of the shell, means of alternate communication between the supply-port and the ports of the cylinder around the bore of the valve, means of alternate communication between the ports of the valve and the discharge-port through the bore of the valve, and plugs within the bore of the valve carried by the shell, independent of the movement of the valve, and means for shifting the position of the valve by fluid-pressure derived from said supply-port.

8. The combination with a cylinder, piston and valve-shell, of a pair of ports communicating with the bore of the shell, an exhaust communicating therewith, and a supply-port, of a valve provided with a longitudinal bore movable within the bore of the shell, means of alternate communication between the supply-port and the ports of the cylinder around the bore of the valve, means of alternate communication between the ports of the valve and the discharge-port through the bore of the valve, plugs within the bore of the valve carried by the shell, independent of the movement of the valve, and means for shifting the position of the valve by fluid-pressure derived from said supply-port, said means being actuated by the movement of the piston-rod.

707,905. COOLER. Charles F. Conover, New York, N. Y. Filed May 15, 1902. Serial No. 107,360. (No model.)

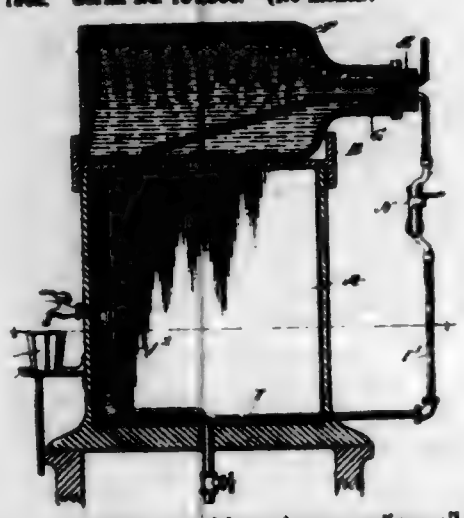

Claim.—1. A cooler comprising a box, a cooling-coil therein, a receptacle, a stopper insertible in said receptacle, a siphon-pipe having a length arranged horizontally in said receptacle and inclined lengthwise thereof to a point close to the bottom of the same, said siphon-pipe extending through the stopper and communicating with the cooling-coil, and a vent-pipe extending through the stopper and inclined upwardly within said receptacle, the outer end of said vent-pipe being normally open for the free ingress of air to the upper part of the receptacle.

2. A cooler comprising a box, a cooling-coil therein, a support C on the top of the casing, a receptacle placed horizontally on the support, a stopper in the mouth of the receptacle, a siphon-pipe having an inclined length disposed within the receptacle and extended through the stopper, a flexible tube connecting the outer end of the siphon-pipe and the cooling-coil, a closing device on the flexible tube to compress the latter and cut off communication between the siphon-pipe and the cooling-coil, and a vent-pipe extending through the stopper and into the receptacle and having a normally open outer end.

3. A cooler comprising a box, a cooling-coil therein, a receptacle, a stopper for said receptacle, a siphon-pipe connected to said coil and extended through the stopper into the receptacle, and a vent-tube revolubly fitted in the stopper and having an inclined length within the receptacle and a normally open outer end, said vent-tube being adjustable in the stopper to bring its inclined length into close relation to a length of the siphon-pipe.

707,906. SHOE-LINING TRIMMER. Charleton B. Corwin, Jefferson City, Mo. Filed Mar. 6, 1902. Serial No. 96,906. (No model.)

Claim.—1. A shoe-lining trimmer, comprising a frame, a table, a revolvable cutter mounted on the frame, a cutting-block mounted on the table and having an undercut overhanging end forming a space between

itself and the table, and a gage adjustably secured upon said cutting-block and extending beyond the overhanging end thereof.

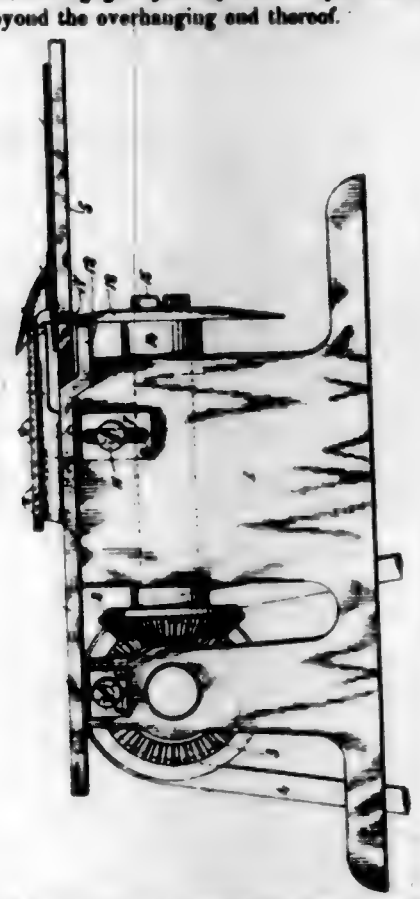

2. A shoe-lining trimmer, comprising a frame, a table, a revoluble cutter mounted on the frame and a cutting-block and a gage both mounted on the frame adjacent to said revoluble cutter and adjustable relatively thereto, said cutting-block having an undercut overhanging end forming a space between itself and the table, and said gage extending beyond said overhanging end of the cutting-block.

3. A shoe-lining trimmer, comprising a frame, a table, a revoluble cutter mounted on said frame, means for adjusting said table relatively to said cutter, a cutting-block mounted on said table and provided with an overhanging end forming a space between itself and the table, said end of the cutting-block terminating in an angular edge which is in opposing relation to the face of the cutter, and means whereby said block may be adjusted relatively to said revoluble cutter to vary the distance between the angular edge of the block and the face of the cutter.

4. A shoe-lining trimmer, comprising a frame, a revoluble cutter mounted thereon, a table, a cutting-block adjustably secured to said table, said cutting-block being provided with an overhanging end forming a space between itself and the table, and said end terminating in an angular edge, means whereby said cutting-block may be adjusted relatively to the face of said cutter, and a gage projecting over the overhanging end of the cutting-block and beyond the angular edge thereof.

5. A shoe-lining trimmer, comprising a table, a revoluble cutter mounted adjacent thereto, a cutting-block to be secured upon said table, said cutting-block being provided with an angular edge, and a gage provided with a substantially spoon-shaped end to be secured upon said cutting-block, the arrangement being such that said gage overhangs said cutter and is adjustable relatively thereto.

6. A shoe-lining trimmer, comprising a table, a revoluble cutter mounted adjacent thereto, a cutting-block to be secured upon said table, said cutting-block being provided with an angular edge, a gage mounted upon said cutting-block and provided with a downwardly-projecting end overhanging the edge of said cutter, and means for adjusting the height of the table relatively to the operating edge of said cutter.

7. A shoe-lining trimmer, comprising a table, a revoluble cutter mounted adjacent thereto, a cutting-block provided with an angular surface and also provided with a mutilation adjacent to said surface, and means for adjustably securing said cutting-block upon said table, the arrangement being such that said cutting-block may be so adjusted as to present said angular edge immediately adjacent to said revoluble cutter by leaving a vacant space between said angular surface and said table.

707,907. METHOD OF RETTING RAMIE OR SIMILAR FIBER. EUGÈNE DEPETRO, Paris, France. Filed May 26, 1902. Serial No. 109,094. (No specimens.)

Claim.—The process for removing from the fibers of ramie, aloes, wood and the like incrusting matters such as gums and the like, which consists of treating these bodies with natural sea-water or with a solution of salts prepared so as to have nearly the composition of the sea-water substantially as described.

707,908. FOOT-WARMER FOR VEHICLES. GEORGE W. DUNHAM and JOHN W. FOX, East Cleveland, Ohio. Filed Oct. 26, 1901. Serial No. 79,934. (No model.)

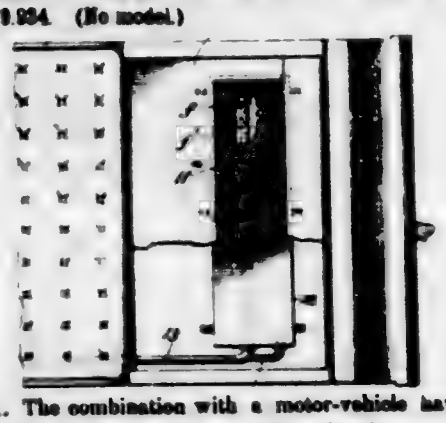

Claim.—1. The combination with a motor-vehicle having a protected aperture in its footboard, of a receiving-chamber, means for suspending the receiving-chamber from the footboard below the aperture thereof, a pipe leading to the receiving-chamber for supplying a heating medium to said chamber, and a pipe leading from said chamber and extending rearwardly to discharge the spent heating medium at the rear of the vehicle, as set forth.

2. A foot-warmer for vehicles, comprising a rectangular plate-metal receiver, adapted to be hung in an opening in the footboard of the vehicle, two two-way valves hung with nipples below corresponding openings in the bottom of the receiver at opposite ends thereof, a by-pass pipe connected by fittings upon like ends of the valves, a conduit-pipe for a heating agent engaging the other end of one of the two-way valves, and an escape-pipe extending from the corresponding end of the other two-way valve.

3. The combination with a vehicle having an aperture in its footboard, of a receiving-chamber having a top plate extending beyond the chamber and resting upon the footboard, nipples projecting from the bottom of the chamber at opposite ends thereof, a two-way valve connected with each nipple, a by-pass pipe connected with one end of the said valves, a conduit-pipe connected with the other end of one of the two-way valves, and an escape-pipe connected with the corresponding end of the other two-way valve, as set forth.

707,909. SOUND-MODIFIER. NELSON C. DURAND, Scranton, Pa., assignor to International Text Book Company, Scranton, Pa., a Corporation of Pennsylvania. Filed June 14, 1902. Serial No. 111,673. (No model.)

Claim.—1. The combination of a divided sound-conveyer, and a perforated tube interposed therein.

2. In combination with a divided sound-conveyer, a perforated tube interposed therein, said conveyer being adjustable on said tube to regulate the escape of sound from the conveyer.

707,910. RIGHT AND LEFT OPENING DOOR. FERDINAND FISCHER and LUDWIG KIEFER, Carlsruhe, Germany. Filed Aug. 4, 1902. Serial No. 118,187. (No model.)

Claim.—1. The combination with the door and its frame provided with sockets, having an L-shaped opening, of bell-crank latches pivotally connected to said door, springs carried by the door and bearing against one arm of each of the bell-crank latches for normally retaining them in a latching position, vertically-adjustable rods arranged in the door-frame and operated by the said latches when the latter are operated, pins forming pivots carried by the rods and adapted to engage in the said sockets when the door is opened in one direction or the other, and hook-like projections carried by the rods and adapted to be passed through the L-shaped openings when the rods and door are operated.

2. The combination with the door and its frame provided with sockets, provided with a vertically and laterally extending opening, of bell-crank latches pivotally connected to said door, springs carried by the door and bearing against one arm of each of the bell-crank latches for normally retaining them in a latching position, vertically-adjustable rods arranged in the door-frame and operated by the said latches when the latter are operated, pins forming pivots carried by the rods and adapted to engage in the said sockets when the door is opened in one direction or

the other, and means carried by the rods and adapted to operate in the said openings to permit of the disengagement of the acting pivots during the opening or closing of the door.

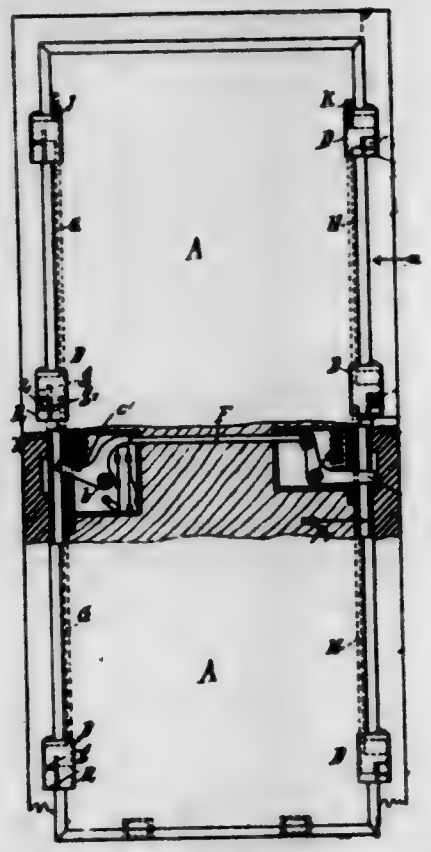

3. The combination with the door and its frame provided with sockets, provided with L-shaped openings, of bell-crank latches pivotally connected to said door, springs carried by the door and bearing against one arm of each of the bell-crank latches for normally retaining them in a latching position, vertically-adjustable rods arranged in the door-frame and operated by the said latches when the latter are operated, pins forming pivots carried by the rods and adapted to engage in the said sockets when the door is opened in one direction or the other, hook-like projections carried by the rods and adapted to operate in said openings to permit the disengagement of the acting pivots during the opening or closing of the door, a rod pivotally connected to one end of one arm of one of the bell-crank latches and adapted to bear against one arm of the other of the said bell-crank latches to prevent the simultaneous operation of the said latches, and means for operating said latches.

4. The combination with the door and its frame provided with sockets, of bell-crank latches pivotally connected to said door, springs carried by the door and bearing against one arm of each of the bell-crank latches for normally retaining them in a latching position, vertically-adjustable rods arranged in the door-frame and operated by the said latches when the latter are operated, lugs forming pivots carried by the rods and adapted to engage in the said sockets when the door is opened in one direction or the other, means carried by the rods and adapted to permit the disengagement of the acting pivots during the opening or closing of the door, a rod pivotally connected to one end of one arm of one of the bell-crank latches and adapted to bear against one arm of the other of the said bell-crank latches to permit the simultaneous operation of the said latches, means for operating said latches, and means carried by the rods to permit of closing the door independently of the operating means for the latches.

5. A right and left opening door having slide-rods G and H, hinge-pins and lugs carried by the rods, and hinge-knuckles having longitudinal and lateral cuts, said pins when lifted by the rods clearing the knuckles and said lugs when lifted passing through the longitudinal to the lateral or clearing cut so as to leave the adjacent edge of the door free to open, and said lugs when the hinge-pins are not lifted being made to swing or move under the knuckles to prevent the adjacent edge of the door lifting out of place.

707,911. COMBUSTION APPARATUS FOR STEAM-BOILERS. Joseph R. Fraser, Dayton, Ohio. Filed Oct. 24, 1901. Serial No. 79,328. (No model.)

Claim.—1. The combination, with a steam-boiler, of the furnace attachment described, the same comprising an air-compressor, an oil-tank having a pipe extending therefrom, an air-pipe connecting the tank with the compressor, whereby air-pressure is applied upon the surface of the oil, a combustion-chamber, or fire-box, extending into the boiler and opening below the normal water-level therein, an air-pipe arranged in the fire-box, and an oil-pipe within the air-pipe, both having nozzles, located in the upper portion of the combustion-chamber, which are provided with coincident end openings for escape of air and oil, and an electrical igniting device arranged in the combustion-chamber directly below the air-pipe, where the oil is atomized, substantially as shown and described.

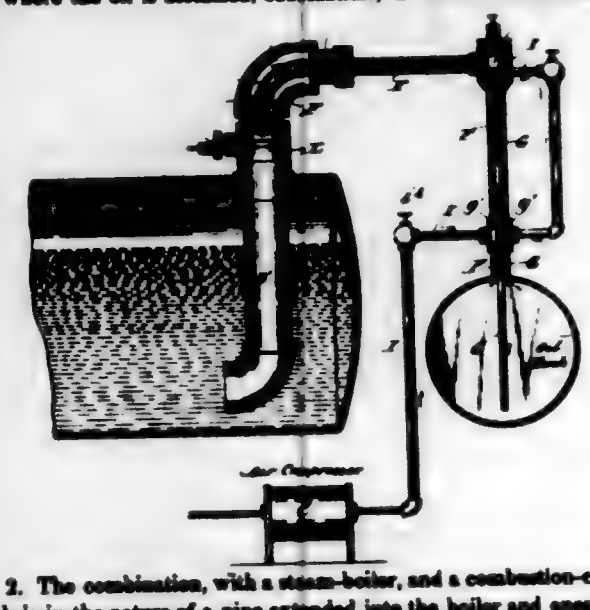

2. The combination, with a steam-boiler, and a combustion-chamber which is in the nature of a pipe extended into the boiler and opening below the normal water-level therein, of an electrical igniter, an air-pipe terminating just above the igniter, and an oil-discharge pipe having its nozzle within the air-pipe, the two pipes being separated by a space which allows the free passage of air, the air-pipe having lateral discharge-openings for supporting combustion, and means for forcing air and oil to such burner, substantially as shown and described.

3. The combination with a steam-boiler, a furnace attachment comprising a fuel-combustion chamber projecting into the boiler and opening below the normal water-level therein, of an electrical igniter arranged in the upper portion of said chamber, an air-pipe entering such chamber and terminating at a point adjacent to the igniter where it is provided with discharge-openings, an oil-pipe arranged within the air-pipe and separated therefrom by a space which allows the free passage of air and provided at its terminal with an opening for allowing escape of oil so that it may be carried out of the air-pipe and atomized as described, a series of valves applied to the said air and oil pipes for controlling the passage of the respective fluids therein, the oil-tank with which the air-pipe connects and into which the air-pipe projects to a point near the bottom thereof, and an air-compressor for maintaining in the tank and in the oil-pipe a pressure greater than the steam-pressure in the boiler, substantially as shown and described.

707,912. FOUNTAIN-SPITTOON. Chester M. Freeman, Baltimore, Md. Filed July 24, 1901. Serial No. 69,558. (No model.)

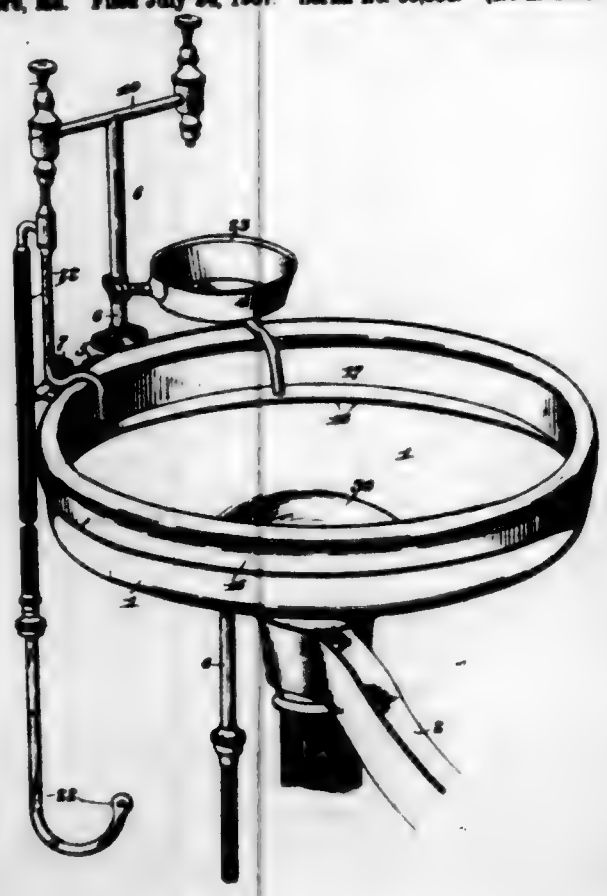

Claim.—1. A flushing-spittoon, comprising a bowl, an annular projection inside the bowl for distributing liquids evenly over the surface thereof, a flushing-pipe arranged within the bowl above said projection and provided with a series of apertures for directing streams of water against the surface of the bowl, the said apertures being arranged in radial lines and delivering streams against the bowl before they spatter or break, the arrangement of the apertures assisting in the proper spreading of the liquid upon the bowl-surface, together with the annular projection, substantially as described.

2. A flushing-spittoon, comprising a bowl, a flushing-tube arranged within the same and provided with a series of radially-located discharge-apertures for directing streams of water against the bowl from the inside thereof, and an annular spreading projection upon the inner surface of the bowl below the flushing-tube to coöperate with the arrangement of the apertures in the tube for perfectly covering every portion of the surface of the bowl with water and without noise, substantially as described.

3. A flushing-spittoon, comprising a bowl, a flushing-pipe extending into the bowl at the upper edge thereof, its inner end being located upon the entering portion of the said tube, the said tube having a series of discharge-apertures arranged to deliver streams of water against the inner surface of the bowl at an angle of about thirty-five degrees, and a spreading rib or projection inside the bowl for further distributing the water on the surface of the bowl, substantially as described.

4. A fountain-spittoon for dental purposes, comprising a bowl adapted to discharge into a suitable outlet, a removable rim inclosing the upper edge of the said bowl and lying against the inner surface thereof, a flushing-tube supported inside the said removable rim, and an upper overhanging inclosing rim for covering the said inner rim and the flushing-tube, substantially as described.

5. A fountain-spittoon comprising a discharging-bowl, a removable inner rim carrying projections extending into the bowl, a flushing-tube resting on the said projections and adapted to deliver water or other liquid within the bowl, and an outer inclosing rim for overhanging and covering the said removable rim so as to be supported in position thereby, said tube being the flushing-tube, substantially as described.

6. A flushing-spittoon, comprising a discharging-bowl, means for delivering water or other liquid within the said bowl, and means for evenly distributing the said liquid over the entire inner surface of the bowl, comprising an inwardly-projecting annular flange or rib arranged within the bowl beneath the water-supply, substantially as described.

7. A flushing-spittoon, comprising a discharging-bowl, and a water-supply at its upper edge, a wire arranged within the bowl beneath the water-supply so as to form an inwardly-projecting rib for thoroughly spreading and distributing the water over the surface of the bowl, substantially as described.

8. A flushing-spittoon, comprising a bowl, and a flushing-tube arranged within the upper part thereof, an annular rib or projection supported on the inner surface of the bowl at a suitable distance below the discharge-pipe, whereby all the water entering the bowl will be forced to run over the said rib, and will thereby be thoroughly distributed over the surface of the bowl, substantially as described.

9. A flushing-spittoon, comprising a bowl, a removable rim inclosing its upper edge and projecting into the same, a flushing-pipe arranged within the said rim for delivering water into the bowl, and an annular flange carried by the lower edge of the said removable rim inside the bowl for spreading water over the surface of the bowl, substantially as described.

10. A flushing-spittoon, comprising a bowl, a flushing-tube entering the same at the upper portion thereof, and entering in curved lines, the inner end extending around the bowl and lapping the tube where it enters the bowl, a plug closing the inner end of the tube, the lapping arrangement of the said tube facilitating the removal and insertion of said plug, while the coiling of the pipe in the bowl facilitates its being sprung into position, substantially as described.

11. A flushing-spittoon, comprising a bowl, an annular projection inside the bowl for distributing liquids evenly over the surface thereof, a flushing-pipe arranged within the bowl and provided with a series of apertures for directing streams of water against the surface of the bowl, the said apertures being arranged in radial lines and delivering streams against the bowl before they spatter or break, the arrangement of the apertures assisting in the proper spreading of the liquid upon the bowl-surface, together with the annular projection, substantially as described.

12. A flushing-spittoon, comprising a bowl, a flushing-tube arranged within the same and provided with a series of radially-located discharge-apertures for directing streams of water against the bowl from the inside thereof, and an annular spreading projection upon the inner face of the bowl to coöperate with the arrangement of the apertures in the tube for perfectly covering every portion of the surface of the bowl with water

707,918. GUN-CLEANER. GEORGE H. GARRISON, Ruceda, Wash.

Filed Apr. 12, 1902. Serial No. 102,552. (No model.)

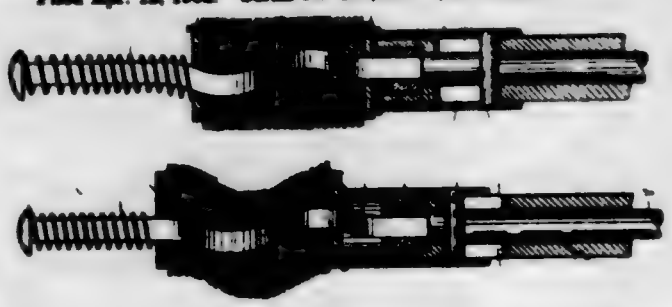

Claim.—1. In a gun-cleaner, a swab, and a resilient vermicular core extended lengthwise through the swab, substantially as specified.

2. In a gun-cleaner, a swab, a vermicular core on which the swab is mounted, and means for moving the swab lengthwise of the core, whereby the swab may be caused to take the form of the core to increase its diameter, substantially as specified.

3. In a gun-cleaner, a swab formed of a plurality of disks, a vermicular spring-yielding core in the swab, and means for moving the swab lengthwise of the core, whereby the disks may be thrown out of alinement to increase the diameter of the swab, substantially as specified.

4. In a gun-cleaner, a swab consisting of disks formed of metal fabric, a vermicular core extended through the swab, a disk on the end of the swab having an opening, the core being extended through the opening, a spring arranged between said disk and a head on the end of the core, and means at the opposite end of the swab for moving it on the core to force the disks out of alinement, substantially as specified.

5. In a gun-cleaner, a tubular rod, a push-rod movable therein, a sleeve movable on the end of the tubular rod and adapted to be moved by the push-rod, a perforated disk arranged loosely on the end of the sleeve, a vermicular core extended through the perforation of the disk, a swab material on said core, a perforated disk engaging with the outer end of the swab and through which the core passes, and a spring arranged between said last-named disk and a head on the end of the core, substantially as specified.

707,914. COKE-OVEN. WILLIAM T. GATES, Simpson, W. Va.

Filed Mar. 31, 1902. Serial No. 100,806. (No model.)

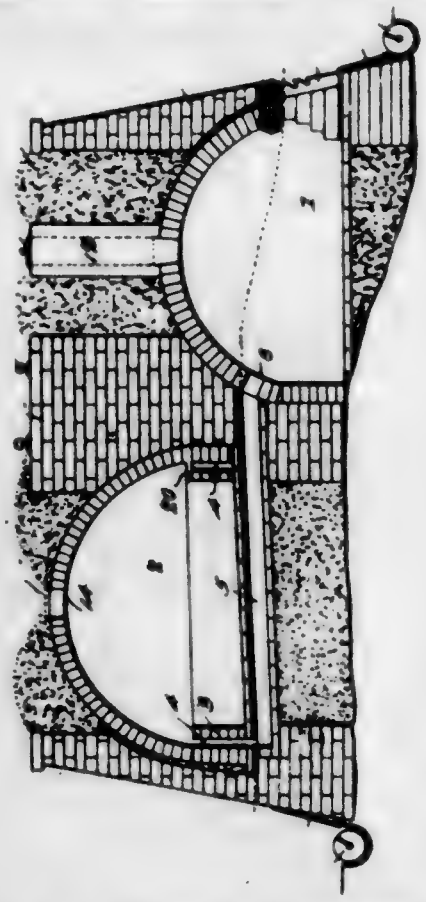

Claim.—1. An apparatus for producing different grades of coke comprising a plurality of ovens, and means for conveying the products of combustion from a point above the floor of an oven producing a lower grade of coke into and beneath the floor of an oven producing a higher grade of coke.

2. An apparatus for producing different grades of coke, comprising a plurality of ovens, and means for conveying the products of combustion from a point above the floor of an oven producing a lower grade of coke

into and beneath the floor and around the sides of an oven producing a higher grade of coke.

3. An apparatus for producing different grades of coke, comprising a plurality of ovens, the floor of an oven producing a lower grade of coke being disposed below the plane of the floor of an oven producing a higher grade of coke, and means for conveying the products of combustion from the first-named to the last-named oven.

4. An apparatus for producing different grades of coke, comprising a plurality of ovens, and a tortuous duct for conveying the products of combustion from a point above the floor of an oven producing a lower grade of coke into and beneath the floor of an oven producing a higher grade of coke.

5. An apparatus for producing different grades of coke, comprising a plurality of ovens, a tortuous duct for conveying the products of combustion from a point above the floor of an oven producing a lower grade of coke into and beneath the floor of an oven producing a higher grade, and a flue communicating with the duct for conveying the said products around the walls of the last-named oven.

6. An apparatus for producing different grades of coke, comprising a plurality of ovens, a tortuous duct for conveying the products of combustion from a point above the floor of an oven producing a lower grade of coke into and beneath the floor of an oven producing a higher grade, and a flue communicating with the duct for conveying the said products around the interior wall of the last-named oven.

7. An apparatus for producing different grades of coke, comprising two ovens arranged back to back and having their floors arranged on different planes, a tortuous duct arranged beneath the floor of the higher oven and communicating with the lower oven at a point above its floor, and a flue communicating with the duct for conveying the said products around the wall of the higher oven.

8. An apparatus for producing different grades of coke, comprising two ovens arranged back to back and having their floors arranged on different planes, and a tortuous duct arranged beneath the floor of the higher oven and communicating with the lower oven at a point above its floor

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707,915. CARRIAGE TOP AND CURTAIN. WILLIAM B. GLEBE, Crystalsprings, Kans. Filed June 3, 1902. Serial No. 110,099. (No model.)

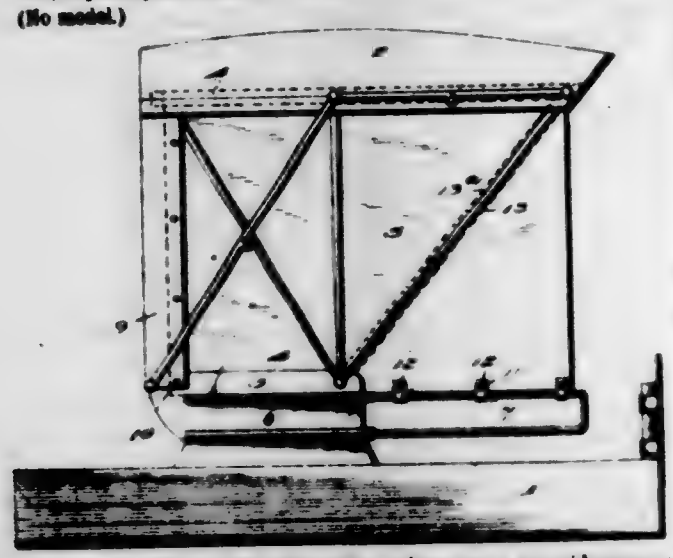

Claim.—1. The combination with a vehicle-seat; of guideways arranged on the end thereof; a frame or support adjustably supported within said guideways; and a curtain adapted to be attached at its lower edge to said support; and means for rolling said curtain after it is detached from the frame or support.

2. The combination with a vehicle seat and top; of guideways arranged on the ends of the seat; frames or supports adjustably supported within said guideways; curtain-rollers pivotally supported at one end, whereby the rollers may be turned down after the curtains have been rolled up.

3. The combination with a vehicle seat and top; of parallel guideways arranged on the ends of the seat; frames each comprising a rod bent to U shape, adjustably supported within said guideways; curtain-rollers pivotally supported at one end; curtains on said rollers, and means for detachably securing the curtains to the frames and vehicle-top.

707,916. CORSET-COVER. WILLIAM GOLDSTEIN, New York, N. Y. Filed Mar. 8, 1901. Serial No. 50,452. (No model.)

Claim.—As an article of manufacture, a corset-cover, having at its side and back seams provided with a plurality of transversely-arranged strips, of elastic material, said strips extending from the upper edge of the cover to within a distance from the lower edge thereof, and having a reinforcing and protecting strip of plaited fabric secured to the inside of the cover and arranged over the seams, substantially as described.

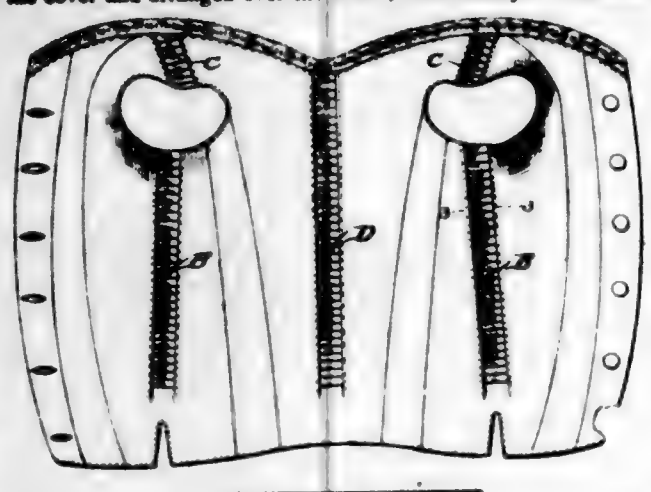

707,917. BALING-PRESS. THADEUS A. GOODWYN, Madill, Ind. Ter., and PHILLIP R. STOVALL, Waxahachie, Tex. Filed Jan. 29, 1902. Serial No. 91,702. (No model.)

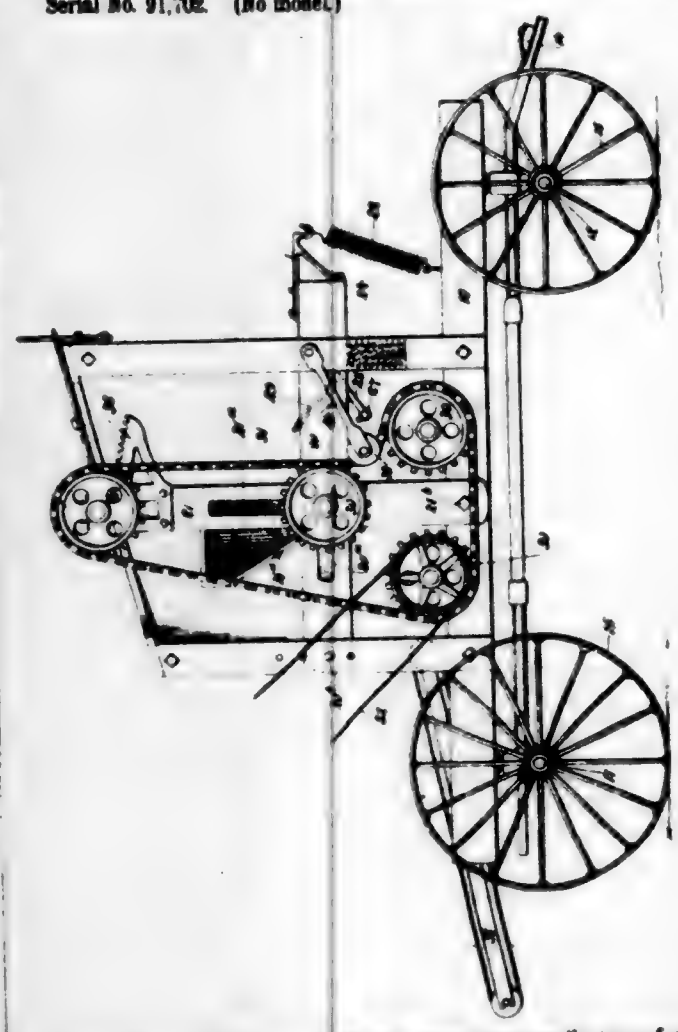

Claim.—1. A baling-press, having three baling-rolls, two of which are mounted in stationary bearings and the third of which is movable toward and from the center of the bale to accommodate the increasing size thereof, a swinging beam engaged with the axis of the third roll to press the same inward toward the bale, means for actuating the beam, and gearing for uninterruptedly driving the rolls.

2. A baling-press, comprising a roll working against the bale, two longitudinally-slotted levers receiving the journals of the roll in the slot thereof, whereby to allow the roll transverse movement longitudinally of the levers, for the purpose specified, and means pressing against the lever to hold the roll in operative position.

3. A baling-press, comprising a roll adapted to press against a bale, crossing levers having sliding connection with the axis of the roll, means pressing on one lever to hold the roll in operative position, and means for throwing the other lever sidewise to release the bale.

4. A baling-press, comprising a roll adapted to press against a bale, crossing levers having sliding connection with the axis of the roll, means pressing on one lever to hold the roll in operative position, and means for throwing the other lever sidewise to release the bale, said means comprising a toothed sector on the lever, a pinion meshed therewith, and means for throwing the pinion into and out of action.

5. A baling-press, comprising a roll adapted to press against a bale,

crossing levers having sliding connection with the axis of the roll, means pressing on one lever to hold the roll in operative position, means for throwing the other lever sidewise to release the bale, said means comprising a toothed sector on the lever, a pinion meshed therewith, and means for throwing the pinion into and out of action, said means for throwing the pinion into and out of action being in the path of movement of the first-named lever, to be actuated thereby.

6. A baling-press, comprising a roller bearing on the bale, crossing levers each having sliding connection with the axis of the roller, means bearing on one lever to press the roller into operative position, means for throwing the other lever sidewise for the purpose specified, and operating devices for said other lever, the operating devices being arranged in the path of the first-named lever to be actuated thereby.

7. A baling-press, having a roll adapted to bear on a bale, crossing levers each having sliding connection with the roll, means bearing on one lever to hold the roll against the bale, and means for removably holding the other lever in fixed position.

8. A baling-press, comprising three rolls, two of which are mounted in relatively stationary bearings, crossing levers having sliding connection with the third roll, means bearing on one lever to hold said roll against the bale, and means for removably holding the second lever in fixed position.

9 A baling-press, comprising a roll adapted to bear against a bale, two members movable in crossing lines, said members having connection with the axis of the roll, means for pressing one member to hold the roll in operative position, and means for throwing the other members sidewise to release the bale.

707,918. CHECK-ROW PLANTER. LEVI P. GRAHAM, Decatur, Ill. Filed July 3, 1902. Serial No. 114,207. (No model.)

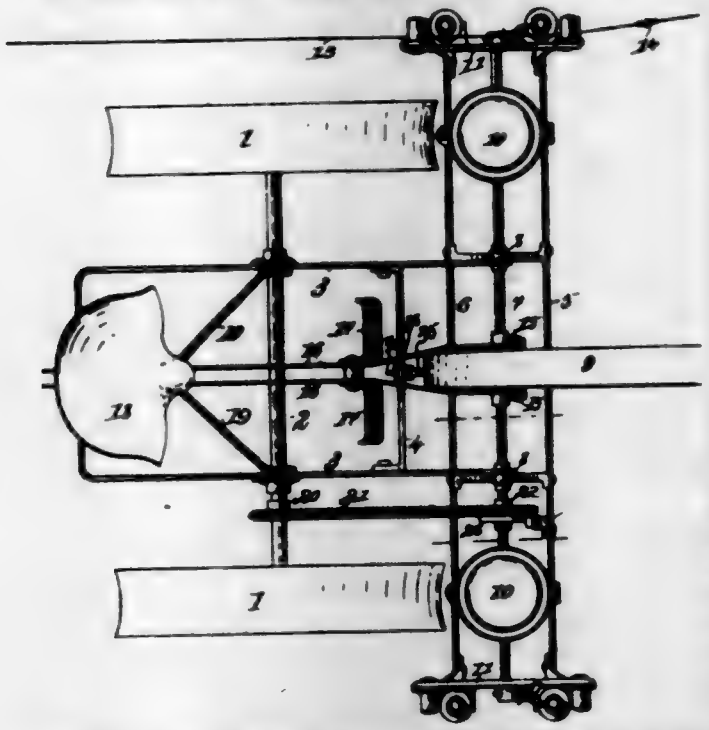

Claim.—1. In a check-row planter, the combination of a rear frame mounted on wheels, a front frame provided with planting mechanism and pivotally conjoined with the rear frame, a rock-shaft in the front frame, means for transmitting motion from a wheel of the rear frame to rock the shaft in one direction, and a connection between the rock-shaft and the rear frame adapted to lift upward on the front frame when the rock-shaft is rocked by the wheel.

2. In a check-row planter, the combination of a rear frame mounted on wheels, a front frame provided with planting mechanism and pivotally conjoined with the rear frame, a rock-shaft in the front frame, means for transmitting motion from a wheel of the rear frame to rock the shaft in one direction, an arm on the rock-shaft, and a connection between the arm and the rear frame adapted to lift upward on the front frame when the rock-shaft is rocked by the wheel.

3. In a check-row planter, the combination of a rear frame mounted on wheels, a front frame provided with planting mechanism and pivotally conjoined with the rear frame, a rock-shaft in the front frame, means for transmitting motion from a wheel of the rear frame to rock the shaft in one direction, an arm on the rock-shaft, a link pivotally connected with the arm on the rock-shaft and forming with the arm a dead-center lock when the front frame is raised, and a connection between the link and the rear frame whereby the front frame is lifted when the shaft is rocked by the wheel.

4. In a check-row planter, the combination of a rear frame mounted on wheels, a front frame provided with planting mechanism and pivotally conjoined with the rear frame, a rock-shaft in the front frame, means for transmitting motion from a wheel of the rear frame to rock the shaft in one direction, an arm on the rock-shaft, a lever fulcrumed in the front frame a link connecting an end of the lever with the arm on the rock-shaft, and a connection between the other end of the lever and the rear frame back of the pivotal conjunction of the two frames.

5. In a check-row planter, the combination of a rear frame mounted on wheels, a front frame provided with planting mechanism and pivotally conjoined with the rear frame, a rock-shaft in the front frame, means for transmitting motion from a wheel of the rear frame to rock the shaft in one direction, a connection between the rock-shaft and the rear frame adapted to lift upward on the front frame when the shaft is rocked by the wheel, and a forked lever connected with the shaft and adapted to be actuated by knots on a check-row wire.

6. In a check-row planter, the combination of a rear frame mounted on wheels, a front frame provided with planting mechanism and pivotally conjoined with the rear frame, a rock-shaft in the front frame, means for transmitting motion from a wheel of the rear frame to rock the shaft in one direction, a connection between the rock-shaft and the rear frame adapted to lift upward on the front frame when the shaft is rocked by the wheel, an arm on the rock-shaft extending forward and downward when the front frame is raised and extending forward and upward when the front frame is lowered, and a seat-carrying bar pivotally connected at its front end with the arm of the rock-shaft.

7. In a check-row planter, the combination of a rear frame mounted on wheels, a front frame provided with planting mechanism and having up-and-down motion, means for actuating the seed-dropping mechanism of the front frame simultaneous with the fall of the front frame, and means, set in motion by the fall of the front frame, for raising the front frame by force derived from a wheel of the rear frame.

707,919. FOLDING CRATE. SHERMAN GREER and JAMES H. GORE, Lincoln, Nebr. Filed Dec. 30, 1901. Serial No. 87,775. (No model.)

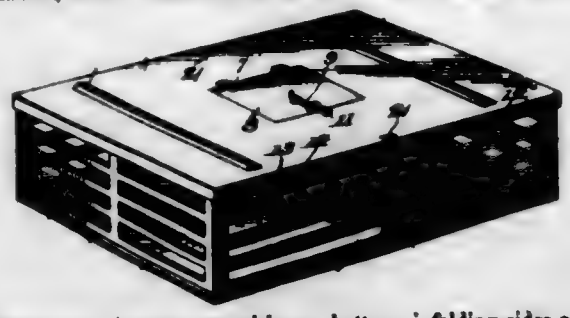

Claim.—1. A crate comprising a bottom, infolding sides and ends secured to said bottom and slatted, the sides having central bars projected at their free terminals beyond the width of said sides, a top of imperforate construction having a surrounding rim and provided with slots therein adjacent the opposite sides to removably receive the projected ends of the said bars, the top also having a central door-opening supplied with a hinged closure, and spring-catches secured to the inner portions of the sides of the rim and provided with lower inturned angular ends to engage the upper rails of the sides of the crate or the under portion of the bottom.

2. A crate comprising a bottom, infolding slatted sides and ends hinged to said bottom, the sides having central vertically-disposed bars which are extended at their upper extremities, a top having a surrounding rim and raised ribs on the upper surface adjacent the opposite ends extending transversely of the top, the bottom also having similar transverse ribs near the opposite ends, and spring-catches secured to the top and housed within the rim and adapted to engage under the lower edges of the uppermost slats of the sides or the under portion of the bottom, the top also having slots at the center near the opposite sides to removably receive the projected ends of the bars.

707,920. PNEUMATIC HAMMER. CHARLES H. HAMBLER, Philadelphia, Pa. Filed June 20, 1901. Serial No. 65,342. (No model.)

Claim.—1. In a pneumatic hammer, the combination of a handle provided with a cylindrical portion having an internal screw-thread and a larger portion having an internal screw-thread of the opposite pitch, with a cylinder having a screw-threaded end adapted to engage the smaller screw-thread in the handle, and a nut adapted to engage the larger screw-thread in the handle.

2. In a pneumatic hammer, the combination of a handle provided with a cylindrical portion having an internal right-handed screw-thread and a larger internal left-handed screw-thread, of a cylinder having an enlarged end provided with a right-handed screw-thread and a circular nut having a left-handed screw-thread adapted to engage with the left-handed screw-threads in the handle.

3. In a pneumatic hammer, the combination of a handle provided with a cylindrical portion having internal right-handed screw-threads and a larger portion having internal left-handed screw-threads, with a cylinder having an enlarged end forming a shoulder, said end being provided with right-handed screw-threads, and a circular nut surrounding said cylinder and provided with left-handed threads, said nut screwing into the left-handed screw-threads on said handle and abutting against the shoulder on said cylinder, and means for preventing the rotation of said nut.

4. In a pneumatic hammer, the combination of a handle, a cylinder screwed therein, a circular nut screwed into said handle to prevent disengagement of said cylinder and said handle, said nut being provided with internal teeth at one end, and means engaging said teeth to prevent the rotation of said nut.

5. In a pneumatic hammer, the combination of a handle, a cylinder and a circular nut holding said handle and cylinder together, said nut being provided with internal teeth at one end, and a toothed dog located in a slot in said cylinder and engaging said nut.

6. In a pneumatic hammer, the combination of a handle, a cylinder and a circular nut holding said handle and cylinder together, said nut being provided with internal teeth at one end, with a spring-operated toothed dog located in a slot in said cylinder and engaging said nut.

7. In a pneumatic hammer, the combination of a handle provided with a cylindrical portion having an internal screw-thread, a cylinder screwed therein, a circular nut engaging said handle and said cylinder, said nut being provided with internal teeth at one end with a toothed dog located in a slot in said cylinder and engaging said nut, and a spring for normally holding said dog and said nut in engagement, said dog being provided with pins.

8. In a pneumatic hammer, the combination of a handle, a cylinder provided with a shoulder and screw-threaded into said handle and a circular nut confining said handle and said cylinder together, said nut being provided with internal teeth at one end, with a toothed dog adapted to normally engage said nut and prevent its rotation, and means whereby said dog may be held out of contact with said nut.

9. In a pneumatic hammer, the combination of a handle, a cylinder and a nut confining said handle and cylinder together, said nut being provided with internal teeth at one end, and said cylinder being provided with a cylindrical slot, a larger circular slot, and smaller vertical slots, with a toothed dog provided with pins located in said cylindrical slot, and a spring engaging said dog and tending to force it into engagement with said nut.

10. In a pneumatic hammer, the combination of a cylinder and a sliding valve therefor, said valve being moved in one direction by the jar of the hammer when it is operated, and in the other direction by the compression of the air in said cylinder consequent upon the return stroke of the piston.

11. In a pneumatic hammer, the combination of a cylinder, a sliding cylindrical valve located at one end of said cylinder, said valve being provided with ports and a piston, the ports being so arranged that the valve is moved in one direction by the jar of the hammer in its operation, and in the opposite direction by the compression of the air incident to the return stroke of the piston.

12. In a pneumatic hammer, the combination of a cylinder open at both ends, a tool closing one end of said cylinder and a handle closing the other end, the bore of said cylinder having an enlargement at one end, a sliding cylindrical valve located in said enlargement and a piston in said cylinder, the parts being so arranged that the valve is slid in one direction by the impact of said piston upon said tool, and whereby the valve is slid in the other direction by the return stroke of the piston.

13. In a pneumatic hammer, the combination of a cylinder the bore thereof having an enlargement at one end, said cylinder being provided with air-passages, a sliding cylindrical valve provided with ports located in said enlargement and a piston in said cylinder, the air-passages, ports and cut-away portions of said valve and cylinder being so arranged that the valve is moved in one direction by the jar of the hammer as it is operated, and moved in the other direction by the compression of the air incident to the return stroke of the piston.

14. In a pneumatic hammer, the combination of a cylinder, a piston therein and means for supplying a motor fluid thereto to move said piston back and forth, including a sliding cylindrical valve provided with ports and located in said cylinder, said cylinder being provided with an opening running from the bore thereof to the outer air and located near one end thereof, whereby the pressure of the motor fluid upon the piston will be considerably diminished just before the piston strikes the tool.

15. In a pneumatic hammer, the combination of a cylinder provided with air-passages and a stepped cylindrical bore, a piston in said cylinder and a sliding stepped cylindrical valve located in one end of said cylinder, said valve being provided with air openings and ports, and the parts being so arranged that the valve is moved in one direction by the impact when the hammer is in operation, and is moved in the other direction by the compression of the air in the bore of the said cylinder caused by the return stroke of said piston.

16. In a pneumatic hammer, the combination of a handle, a cylinder secured thereto, a piston and a valve located in said cylinder, of an air-passage in said handle, a valve normally closing said air-passage, and means for positively locking said valve in said closed position.

17. In a pneumatic hammer, the combination of a handle provided with an air-passage, a cylinder secured to said handle provided with air-passages, a piston in said cylinder, a heavy cylindrical valve provided with air-ports in said cylinder, a valve for cutting off the air in the air-passage of said handle, means for positively locking said valve in its closed position, and means for releasing said valve from its locked position.

18. In a pneumatic hammer, the combination of a handle provided with an air-passage, a cylinder provided with air-passages secured to said handle, a valve provided with air-ports located in said cylinder, a piston in said cylinder, a valve normally closing the air-passage in said handle, means for positively locking said valve in its closed position, and means operable by the hand of the workman for releasing and operating said valve.

19. In a pneumatic hammer, the combination of a handle provided with an air-passage, a cylinder provided with air-passages, a valve provided with air-ports in said cylinder, a piston in said cylinder, a tool mounted at one end of said cylinder, a valve controlling the air-passage in said handle, and means for normally holding said valve positively locked.

20. In a pneumatic hammer, the combination of a handle provided with an air-passage, a cylinder, a valve and piston therein, a tool at one end of said cylinder, a valve for normally closing the air-passage in said handle, means for positively locking said valve in its closed position, and means operable by the workman for releasing and opening said valve.

21. In a pneumatic hammer, the combination of a handle provided with an air-passage, a cylinder provided with air-passages secured to said handle, a valve provided with air-ports located in said cylinder, a piston in said cylinder, a valve for normally closing the valve-passage in said handle, means for normally holding said valve locked in its closed position, and a pivoted lever for operating said valve.

22. In a pneumatic hammer, the combination of a handle provided with an air-passage, a cylinder provided with air-passages secured to said handle, a nut securing said cylinder and said handle together, a valve provided with air-ports located in said cylinder, a piston in said cylinder, a valve normally closing the air-passage in said handle, means for positively locking said valve in its closed position and means operable by the workman for opening said valve.

23. In a pneumatic hammer, the combination of a cylinder provided with air-passages, a piston in said cylinder, a tool, and a valve for regulating the action of the motor fluid, said cylinder being provided near the front end with an exit opening or port, whereby the pressure behind the piston is considerably diminished just before said piston strikes said tool.

24. In a pneumatic hammer, the combination of a cylinder provided with a screw-threaded head and with air-passages, a piston in said cylinder, a handle screwed upon said cylinder, a tool, and a valve for regulating the action of a motor fluid, said cylinder being provided near the front end with an exit opening or port, whereby the pressure behind the piston is considerably diminished just before it strikes said tool.

25. In a pneumatic hammer, the combination of a handle secured to said cylinder, said handle being provided with an inlet air-passage, a sliding stepped valve and a piston in said cylinder, a valve for controlling the passage of the air in the air-passage in said handle, means for normally holding said valve locked, and means for unlocking and opening said valve.

26. In a pneumatic hammer, the combination of a cylinder having a bore enlarged at each end, a tool in one end of said cylinder and a valve in the other end of said cylinder, said cylinder and valve being provided with air-passages, a piston in said cylinder, a handle provided with an air-passage, a valve for opening and closing the air-passage in said handle, and means for securing said handle and cylinder together.

27. In a pneumatic hammer, the combination of a cylinder provided with a bore enlarged at both ends with air-passages and an exit-opening near one end, a tool located in one end of said cylinder, a cylindrical valve provided with air-ports and located in the other end of said cylinder, a piston in said cylinder, and means for admitting air to said cylinder, and for cutting it off as desired.

28. In a pneumatic hammer, the combination of a cylinder having a bore enlarged at each end, a sleeve in one end of said cylinder and a cylindrical valve in the other end of said cylinder, said cylinder and valve being provided with air passages and ports, a piston in said cylinder, a tool in said sleeve, a handle provided with an air-passage, and a valve for normally closing the air-passage in said handle.

29. In a pneumatic hammer, the combination of a cylinder having an enlargement at each end, a tool in one end of said cylinder, a sliding cylindrical valve provided with air ports and passages located in the other end of said cylinder, said cylinder being provided with air-ports and vent-openings and one of said passages being nearly the whole length of said cylinder, a handle secured upon said cylinder and provided with an air-passage, a valve for governing said air-passage, means for normally holding said valve locked, and means for unlocking and opening said valve.

30. In a pneumatic hammer, the combination of a cylinder provided with an enlarged screw-threaded end, a screw-threaded handle engaging said end, a circular nut screwed into said handle and serving to aid in holding said handle and cylinder together, a washer provided with a projecting portion of the same size as the main bore of the piston, said cylinder being provided with a bore enlarged at each end, and a sliding cylindrical valve located in the enlargement at one end of said cylinder, part of said valve surrounding the extension of said washer.

31. In a pneumatic hammer, the combination of a handle provided with an air-passage, a cylinder provided with air-passages secured thereto, a circular nut surrounding said cylinder and screwed into said handle, said cylinder having a bore enlarged at each end, a stepped cylindrical valve provided with air ports and passages located in one end of said cylinder, and a piston in said cylinder.

32. In a pneumatic hammer, the combination of a cylinder provided with a sleeve at one end, a tool in said sleeve, a piston in said cylinder, a valve in one end of said cylinder, said cylinder-valve being provided with air ports and passages, a handle secured to said cylinder and provided with an air-passage, a valve for controlling said air-passage, means for normally holding said valve locked, and means for unlocking and opening said valve.

33. In a pneumatic hammer, the combination with a cylinder and a tool, a piston and a valve in said cylinder, of a handle provided with an air-passage secured to said cylinder, a perforated cylindrical screw-threaded plug passing through said air-passage, a valve working in said plug, means for normally holding said valve locked, means for unlocking said valve, and a pivoted lever for moving said valve after it has been unlocked.

34. In a pneumatic hammer, the combination of a cylinder, a tool, a piston and a valve in said cylinder with a handle secured to said cylinder and provided with an air-passage, a perforated cylindrical screw-threaded plug passing through said air-passage, a valve adapted to reciprocate in said plug, a spring in said plug engaging one end of said valve, said valve being provided with a cut-away portion, means engaging said cut-away portion for normally holding said valve locked, means for unlocking said valve, and a lever pivoted in said handle for operating said valve.

35. In a pneumatic hammer, the combination with a cylinder and a tool, a piston and a valve located in said cylinder, of a handle provided with an air-passage secured to said cylinder, said handle being also provided with a valve-passage and a plunger-passage, a perforated cylindrical screw-plug crossing the air-passage in said handle, a valve provided with a cut-away portion adapted to reciprocate in said valve-passage and plug, a plunger adapted to engage said cut-away portion to normally lock said valve, a stem and finger-piece secured to said plunger, and a pivoted lever for operating said valve.

36. In a pneumatic hammer, the combination of a cylinder and a tool, a piston and a valve located in said cylinder with a handle secured to said cylinder and provided with an air-passage, a valve-passage and a plunger-passage, a perforated cylindrical screw-plug crossing said air-passage, a spring in said plug, a valve provided with a cut-away portion adapted to reciprocate in said valve-passage and plug, a plunger adapted to engage the cut-away portion in said valve, a spring acting to force said plunger into said cut-away portion, a finger-piece and stem connected to said plunger, and a lever pivoted in said handle and engaging one end of said valve.

37. In a pneumatic hammer, the combination of a cylinder provided with air-passages and with a bore having enlargements at each end, a tool located in one of said enlargements, a piston located in said cylinder and a sliding cylindrical valve provided with air-ports located in the other end of said cylinder, a handle screwed upon said cylinder, a nut for securing said handle and said cylinder together, said handle being provided with an air-passage, a valve-passage, a plunger-passage and a slot, a cylindrical perforated screw-threaded plug crossing said air-passage, a valve provided with a cut-away portion adapted to be reciprocated in said plug and said valve-passage, a spring engaging one end of said plug, a plunger operating in said plunger-passage, a finger-piece and stem connected to said plunger, a spring engaging one end of said plunger, and an operating-lever pivoted in said slot.

38. In a pneumatic hammer, the combination of a cylinder, a tool, piston and valve in said cylinder with a handle secured to said cylinder, a circular nut surrounding said cylinder and screwed into said handle, means for preventing the rotation of said nut the handle being provided with an air-passage, a valve-passage, a plunger-passage and a slot, a perforated cylindrical screw-threaded plug crossing said air-passage, a spring in said plug, a valve provided with a cut-away portion, a spring-operated plunger adapted to engage the cut-away portion in said valve, and a lever pivoted in said slot and engaging one end of said valve.

39. In a pneumatic hammer, the combination of a cylinder having a bore enlarged at each end, a tool in one end of said cylinder and a sliding cylindrical valve in the other end of said cylinder, a piston in said cylinder, said valve and cylinder being provided with air ports and passages and said cylinder having an enlarged screw-threaded end with a handle screwed upon said cylinder, a nut surrounding said cylinder and screwed into said handle, said nut having teeth at one end, a toothed dog engaging said teeth, said handle being provided with an air-passage, a valve-passage, a plunger-passage and a slot, a perforated cylindrical screw-threaded plug in said air-passage, a spring in said plug, a valve having a cut-away portion, a spring-operated plunger for engaging the cut-away portion of said valve, a stem and finger-piece secured to said plunger, and a lever pivoted in the slot in said handle.

40. In a pneumatic hammer, the combination of a cylinder having a bore enlarged at each end, a tool in one end of said cylinder and a cylindrical valve in the other end of said cylinder, a piston in said cylinder, said cylinder and valve being provided with air ports and passages, and said cylinder being provided with enlarged screw-threaded ends with a handle screwed to said cylinder, a circular nut having teeth at one end screwed into said handle, a toothed dog located in the slot in said cylinder, and a spring adapted to force said dog into engagement with the teeth on said nut, said handle being provided with an air-passage.

41. In a pneumatic hammer, the combination of a cylinder, a piston, a valve, a handle screwed upon said cylinder, a nut screwed into said handle, said nut being provided with teeth at one end, a dog provided with teeth and with pins located in a slot in said cylinder, a spring engaging said dog, said handle being provided with an air-passage, a valve-passage, a plunger-passage and a slot, a screw-threaded perforated plug crossing said air-passage, a spring in said plug, a valve provided with a cut-away portion, a plunger adapted to engage said portion, a spring engaging one end of said plunger, a finger-piece and stem attached to said plunger, and a lever pivoted in the slot in said handle.

42. In a pneumatic hammer, the combination of a cylinder having an enlargement on each end, a tool in one end of said cylinder, a stepped cylindrical valve in the other end of said cylinder, a piston in said cylinder, said cylinder and valve being provided with air ports and passages, and said cylinder being provided with an enlarged screw-threaded end, a handle screwed upon said cylinder, a circular nut screwed into said handle and provided with teeth at one end, a dog provided with teeth and pins located in a slot in said cylinder, and a spring engaging said dog, said handle being provided with an air-passage.

43. In a pneumatic hammer, the combination of a cylinder provided

with an internal bore having enlargements at each end, a tool in one end of said cylinder, a sliding cylindrical valve in the other end of said cylinder, a piston in said cylinder, said cylinder and valve being provided with air ports and passages, and a handle secured to said cylinder, said handle being provided with an air-passage.

44. In a pneumatic hammer, the combination of a cylinder open at both ends and having a bore enlarged at each end, a tool in one end of said cylinder, a sliding cylindrical valve in the other end of said cylinder, a piston in said cylinder, a washer closing one end of said cylinder, a handle encircling said washer at one end of said cylinder, a nut screwed into said handle, means for preventing the rotation of said nut, said handle being provided with an air-passage, a valve-passage, a plunger-passage and a slot, a perforated cylindrical screw-threaded plug located in said air-passage, a spring in said plug, a valve having a cut-away portion, a spring-operated plunger adapted to engage said cut-away portion, a finger-piece and stem secured to said plunger, and a valve pivoted in said slot.

45. In a pneumatic hammer, the combination of a cylinder open at each end and provided with an internal bore enlarged at each end, a tool in one end of said cylinder, a sliding cylindrical valve in the other end of said cylinder, a piston in said cylinder, a washer closing one end of said cylinder, a handle secured to said cylinder, a nut screwed into said handle, and means for preventing the rotation of said nut, said handle being provided with an air passage.

46. In a pneumatic hammer, the combination of a cylinder open at each end and provided with a cylindrical bore enlarged at each end, a tool in one end of said cylinder, a sliding cylindrical valve in the other end of said cylinder, said valve and cylinder being provided with air ports and passages, and said cylinder being provided with an enlarged screw-threaded head, of a perforated washer closing one end of said cylinder, a handle screwed over said washer upon the enlarged end of said cylinder, a nut screwed into said handle, and means for preventing the rotation of said nut, said handle being provided with an air-passage.

47. In a pneumatic hammer, the combination of a cylinder open at both ends and having a central bore enlarged at both ends, a shell in one end of said cylinder, a sliding cylindrical valve in the other end of said cylinder, a passage in said cylinder, said cylinder and valve being provided with air passages and ports and said cylinder being also provided with an enlarged screw-threaded end, a handle screwed upon said cylinder, a nut screwed into said handle and having teeth at one end, a toothed dog engaging said nut, a spring engaging said dog, a perforated washer between said handle and said cylinder, said handle being provided with an air-passage, and a valve.

707,921. MACHINERY FOR MAKING SLABS WITH PLAIN OR ORNAMENTAL SURFACES OF PLASTIC CEMENT OR COMPOSITION. GEORGE B. HALL, London, England. Filed Apr. 30, 1902. Serial No. 105,526. (No model.)

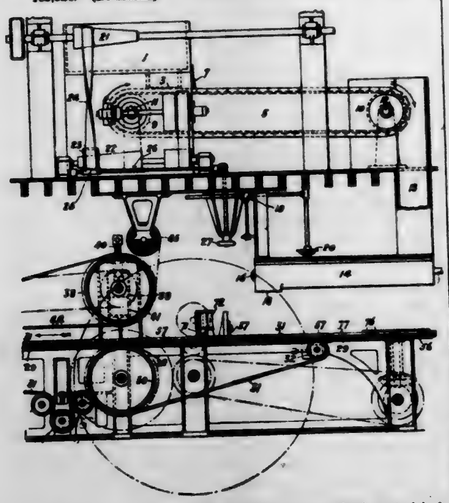

Claim.—1. A machine for the production from plastic material of a continuous sheet or slab adapted to be divided into predetermined lengths, comprising a flat table, an endless traveling band for receiving the plastic material, means for causing said band to travel continuously over the table, side fences for determining the width of the sheet or slab, a striker for spreading the plastic material upon the band, and a vertically-adjustable screeding-bar mounted to reciprocate in the direction of its own length over the surface of the sheet or slab transversely of the direction of the travel thereof so as to consolidate and level the plastic material to the required thickness, as described.

2. A machine for the continuous production from plastic material of separate slabs, comprising an endless band, a succession of molds for the slabs constituted as to the bottom of each mold by said endless band, as to the sides of the molds by a pair of endless chains of blocks traveling as one with the band, and as to the ends of said molds by cross-division bars engaging with said chains and serving to separate adjacent molds of the series, combined with means for spreading, consolidating and gaging the plastic material fed into the molds, substantially as described.

3. A machine for the continuous production from plastic material of separate slabs, comprising an endless band, cross-division bars extending at intervals across the band, the endless side chains traveling over sprocket-wheels rotating in vertical planes and provided with ribs for molding frogs in the edges of the slabs; said bands, side chains and division-bars cooperating to form a series of molds; and means for causing the side chains to diverge so as to effect the disengagement of said chains from the cross-division bars and of the frog-molding ribs on the chains, from the slabs, substantially as described.

707,922. FUEL OR OTHER RESERVOIR FOR INTERNAL-COMBUSTION ENGINES. CARL O. HEDSTROM, Portland, Conn., assignor to George M. Hendee, Springfield, Mass. Filed Oct. 28, 1901. Serial No. 80,163. (No model.)

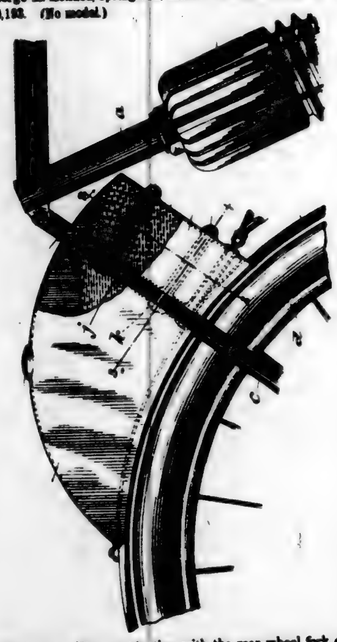

Claim.—1. The combination with the rear-wheel fork of a motor-cycle, of a reservoir located on each side of said fork, longitudinally of the machine, and means for securing said reservoirs one to the other, and whereby they may be securely clamped to the said fork, both of said reservoirs having an outlet one side of the vertical center of the rear wheel, the outlet of one reservoir passing through the other reservoir.

2. The combination with the rear-wheel fork of a motor-cycle, of a reservoir located on each side of said fork, longitudinally of the machine, tubular passages extending through one of said reservoirs, an outlet-pipe connected with the other reservoir extending through one of said passages, and a screw extending through another of said passages for securing said reservoirs together, and to said fork.

707,923. CHAIR-ADJUSTING DEVICE FOR MOTOR-VEHICLES. CARL O. HEDSTROM, Portland, Conn., assignor to George M. Hendee, Springfield, Mass. Filed Oct. 28, 1901. Serial No. 80,165. (No model.)

Claim.—1. In combination with the crank-hanger of a motor-cycle, a hub eccentrically supported thereon one end of which projects beyond the end of said hanger, and means for rotatably adjusting said hub; and one or more sprocket-wheels loosely mounted on said projecting end of the hub.

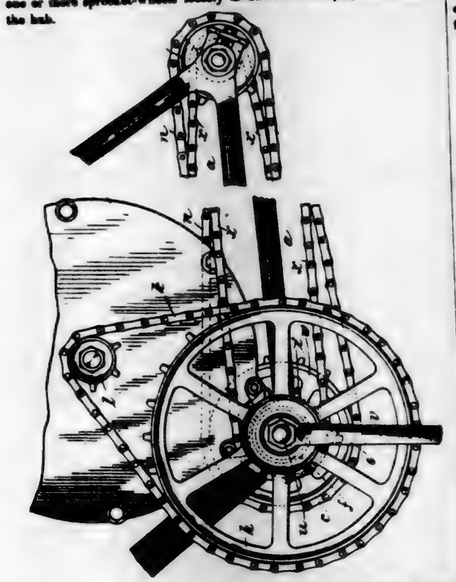

2. In combination with the crank-hanger of a motor-cycle, of a hub eccentrically supported therein, one end of which projects beyond the end of said hanger, and means for rotatably adjusting said hub; a driving and a driven sprocket-wheel secured on the same hub mounted on said projecting end of said eccentric hub and freely rotatable thereon, to which chains run both horizontally and vertically, whereby the rotatable adjustment of said eccentric hub may effect the adjustment of one of said chains without affecting the adjustment of the other.

707,924. CEILING STRUCTURE COMPOSED OF BETON AND IRON. FRANÇOIS HENNEBIQUE, Paris, France. Filed May 22, 1902. Serial No. 108,574. (No model.)

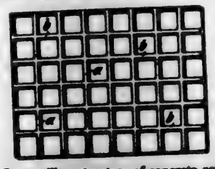

Claim.—1. In a ceiling structure of concrete and metal the combination of a series of concrete beams with another series of concrete beams lying crosswise to and in one plane with the first, and metal rods extending through both series of beams from the points of support through the tensile zones of the beams, and another set of metal rods from the points of support through the zones of compression and dipping at their middle points into the tensile zones of the beams, both sets of metal rods being embedded in the concrete beams.

2. In ceiling structures a series of concrete beams and with another series of concrete beams crossing the first in combination with metal rods embedded in the beams and extending from the points of support through the tensile zones of the beams, another set of metal rods similarly embedded and extending from the zone of compression at the points of support to the tensile zone at their middle portion and metal stirrups also embedded in the beams and embracing both rods in each beam and extending up into the zone of compression.

707,925. SAFETY ATTACHMENT FOR FIREARMS. JESSE F. HERRON, Sebastian, Fla., assignor of one-half to Frank R. Hunter, Sebastian, Fla. Filed Sept. 28, 1901. Serial No. 76,207. (No model.)

Claim.—In a safety device for firearms, the combination with a trigger having a shoulder formed on its lower end, of a catch pivoted to the guard in the rear of the trigger and adapted to engage said shoulder, said catch having its pivoted end squared, and a spring secured at its lower end to the guard, its free end being adapted to bear against the squared face of the pivoted end of the catch when the catch is thrown up.

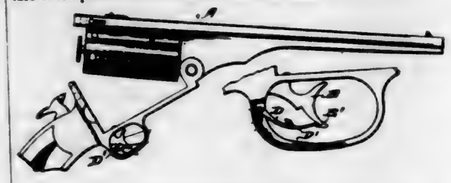

707,926. PROCESS OF EXTRACTING PRECIOUS METALS. WILMER HILT, Colon, Cal., and CLARENCE H. LAKE, Ashland, Oreg. Filed Mar. 20, 1902. Serial No. 99,036. (No specimens.)

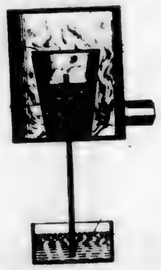

Claim.—1. The process herein described, of extracting precious metals from solutions thereof, which consists in producing zinc-vapor and conducting the same beneath the surface of said solutions, where it immediately replaces said precious metals, thereby precipitating the same.

2. The process herein described, of extracting precious metals from solutions thereof, which consists in producing cyanid solutions of said metals, vaporizing metallic zinc by means of heat, and conducting the vapor thus formed to a point beneath the surfaces of said solutions, thus producing finely-divided zinc which replaces the precious metals and thereby causes their precipitation.

3. The process herein described, of extracting precious metals from solutions thereof, which consists in producing zinc-vapor and condensing the same beneath the surfaces of said solutions, thereby causing the zinc to replace said precious metals in said solutions.

707,927. LOADING DEVICE FOR LOCOMOTIVES. GEORGE HOFFMAN, Fontanet, Ind. Filed May 1, 1902. Serial No. 105,512. (No model.)

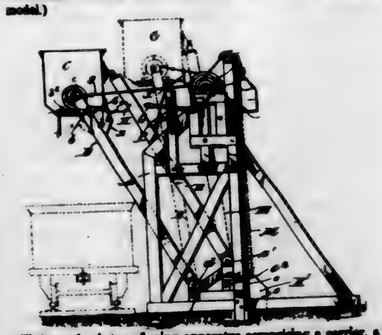

Claim.—1. A transferring apparatus comprising a carrier, a tilting frame supporting the carrier at its upper end, a conical compensating drum and a cable connecting the carrier mechanism to the said drum and resting on the smaller circumferences of the cone when the frame is extended as described.

2. A transferring apparatus comprising a carrier, a tilting frame supporting the carrier at its upper end, a conical compensating drum, a cable

connecting the carrier mechanism to the said drum and resting on the smaller circumference of the cone when the frame is extended, a second conical drum rigidly connected to the first-named drum, and a weight and cable passing around said second conical drum and resting on the larger circumference of the drum when the frame is extended substantially as described.

3. A transferring apparatus comprising a carrier, a tilting frame supporting the carrier at its upper end, a horizontal shaft bearing a pair of conical compensating drums with spiral grooves, cables connecting the same to the carrier mechanism, and another conical compensating drum with cable wound reversely to the first-named and having attached thereto a balance-weight substantially as and for the purpose described.

4. The combination with the carrier and its tilting frame; of grooved and conical compensating drum with cable and weight, and a strap-brake embracing and lying inside the groove in said drum substantially as and for the purpose described.

5. The combination with the carrier and its parallel-motion supporting-frame; of spring-hinged trap-doors for the carrier having extended lugs at the ends, a bevel-faced hook-bolt, a rock-shaft with weighted crank-arm, and a rod connecting the crank-arm to its hook-bolt substantially as shown and described.

707,928. ATTACHMENT FOR PLANTERS. MAJOR JOHNSON, Coleman, Tex. Filed June 14, 1902. Serial No. 111,719. (No model.)

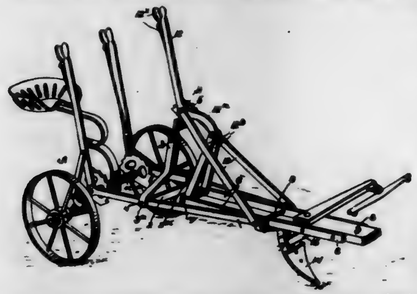

Claim.—1. An attachment for plows, comprising a frame having its rear end arranged to pivotally join with the cross-axle of a planter carriage or truck, a supplemental frame having its front end arranged to join with a draft-tongue, the two frames being pivotally joined to swing in independent vertical planes, a lever mechanism mounted on the main frame, and connected with the supplemental frame at a point to the rear of its connection with the main frame, and a sweep-carrying stock mounted on the outer end of the main frame, as specified.

2. The combination with the main frame, adapted to connect with the cross-axle of a planter-truck, to swing in a vertical plane; of a supplemental frame adapted to connect with the rear end of the draft-tongue and pivoted in the forward end of the main frame to swing in a vertical plane, a sweep-carrying stock hung on the fulcrum member that connects the two frames, said stock including a brace member adapted to fasten to the draft-tongue, a lever mechanism mounted on the main frame, and connections joining the said lever mechanism with the rear end of the supplemental frame, for the purposes described.

3. In an attachment for planters of the character described, the combination with the main frame, consisting of a pair of rearwardly-diverging bars, a bracket extended vertically from the rear part of said frame, a vertically-disposed rack member fixedly held on the upper end of the said bracket, and a lever fulcrumed on the said rack to swing in a longitudinal plane, said lever having a pawl to engage the rack and provided with a forwardly and downwardly curved extension; of the supplemental frame pivotally connected with the front end of the main frame to swing in a vertical plane between the sides of the said main frame, the front end of the supplemental frame being arranged to receive and secure the rear end of the draft-tongue, a pivoted link joining the lower curved end of the lever, and the rear end of the supplemental frame; and a plow-carrying stock mounted on the forward end of the main frame, all being arranged substantially as shown and for the purposes described.

4. The combination with the main frame, consisting of the diverging bars apertured at their outer ends, the bracket member extended vertically from the rear end of the main frame and secured to the side bars thereof, the upper end of said bracket carrying a segmental rack, and the fulcrum-pin *B* mounted in the front ends of the main frame; of the supplemental frame comprising two parallel bars mounted on the fulcrum-pin *B* to swing in a vertical plane between the side bars of the main frame, the front end of the said supplemental frame being extended and arranged to connect with the rear end of the draft-tongue, a sweep-stock hung on the aforesaid fulcrum member, said sweep-stock having a forwardly-extended brace to connect with the rear end of the draft-tongue, the link-arm members pivotally connected at their ends to the segmental rack and to the fulcrum member in the front end of the main frame, the lever 12 fulcrumed on the rack, said lever having a forwardly and downwardly curved extension 13ª, and pivotal links joining the said extension with the rear end of the supplemental frame, all being arranged substantially as shown and described.

707,929. SWITCH-OPERATING DEVICE. FRANK S. JOHN, Expert, Pa. Filed Dec. 14, 1901. Serial No. 85,902. (No model.)

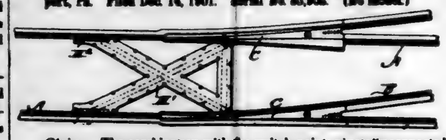

Claim.—The combination with the switch-points pivotally connected by a cross-bar, of operating-rods pivotally secured to the cross-bar, and crossing each other, said rods bent away from each other at the point of crossing, the free ends of the rods provided with upwardly-projecting portions, said portions resting against the inner faces of the rails, means for contacting the upwardly-projecting portions, whereby the points are shifted, and a protecting-casing arranged about the cross-bars and the operating-rods.

707,930. PACKING-RING. HERMANN KIRCHHEIM, Berlin, Germany. Filed Mar. 7, 1902. Serial No. 97,094. (No model.)

Claim.—1. The combination, substantially as and for the purpose set forth, of a packing-ring cut or stamped from asbestos or ordinary paste board or other suitable material, and flat strips of copper, zinc or other suitable metal to be inserted edgewise in this ring, the width of the strip being in the direction of the axis of the ring.

2. The combination, substantially as and for the purpose set forth, of a packing-ring cut or stamped from asbestos or ordinary paste board or other suitable material, and edgewise-inserted strips of copper, zinc or other material, this insertion extending throughout the entire thickness of the ring and all parts of the opposite edges being parallel with the opposite surfaces of the ring.

3. The combination, substantially as and for the purpose set forth, of a packing-ring cut or stamped from asbestos or ordinary paste board or other suitable material, and flat edgewise-inserted strips having corrugations.

4. The combination substantially as and for the purpose set forth, of a packing-ring provided with holes for the passage of flange-bolts, and edgewise-inserted strip, the central opening of the ring and also the bolt-holes being surrounded by the strip.

707,931. STEAM-GENERATOR. WILLARD A. KITTS, Sr., and WILLARD A. KITTS, Jr., Oswego, N. Y., assignors to Kitts Semi-Flash Boiler Company, Oswego, N. Y., a Corporation. Filed Mar. 22, 1902. Serial No. 99,433. (No model.)

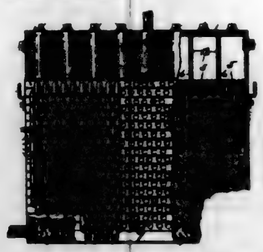

Claim.—1. A steam-generator comprising a water-containing shell having a series of upright water-containing compartments, and a plurality of tubes projecting laterally and downwardly from opposite faces of the shell and having their inner ends communicating with the compartments and their outer ends closed.

2. A steam-generator comprising a water-containing shell having inlet and outlet passages and provided with a series of upright transverse partitions dividing the shell into a series of compartments, each partition

having a passage connecting adjacent compartments and a series of tubes projecting from the opposite walls of the compartments and communicating therewith, the outer ends of the tubes being closed.

3. A steam-generator comprising a water-containing shell having inlet and outlet passages and provided with a series of upright transverse partitions dividing the shell into a series of compartments, each partition having a passage connecting adjacent compartments and a series of tubes projecting from the opposite walls of the shell and having their inner ends almost with said partitions and communicating with adjacent compartments and their outer ends closed.

4. A steam-generator comprising a water-containing shell having inlet and outlet passages and divided into a series of substantially parallel upright compartments, said shell having restricted passages connecting the compartments and a plurality of tubes projecting outwardly and downwardly from the opposite side walls of the shell and having their inner ends communicating with the compartments and their outer ends closed.

5. A steam-generator comprising an upright shell of less transverse width than length and provided with a series of upright water-compartments arranged side by side and communicating with each other, one of the end walls of each compartment being provided with an opening and a closure for said opening, and a series of water-tubes projecting laterally and downwardly from the opposite side walls of the shell and having their inner ends communicating with the compartments and their outer ends closed.

6. A steam-generator comprising an upright elongated shell having a series of substantially parallel upright water-compartments arranged side by side in the direction of greatest length of the shell, and a series of laterally-projecting water-tubes arranged in staggered relation with each other and having their corresponding ends communicating with the compartments and their outer ends closed.

707,932. FORCING-FRAME OR LIKE SASH OR WINDOW. GUSTAV KNOCHENHAUER, Schenia, near Rudolstadt, Germany. Filed Aug. 11, 1902. Serial No. 119,476. (No model.)

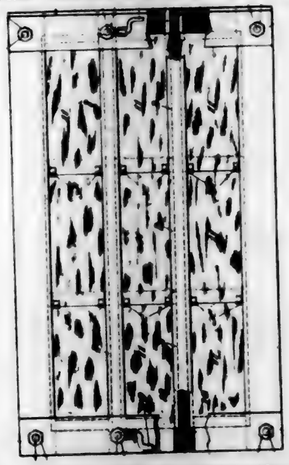

Claim.—1. A forcing or like sash or window with readily-removable parts comprising wooden longitudinal side bars wooden longitudinal intermediate bars connected together at their upper and lower ends by easily-removable metal bars and screw-bolts the bars being provided with longitudinal grooves adapted to receive the glass plates and with water-discharge passages immediately beneath the grooves the spaces between the longitudinal bars being filled up by wooden blocks forming together with the metal cross-bars the cross-bars of the frame substantially as described.

2. A forcing or like sash consisting of longitudinally-extending side bars, longitudinally-extending intermediate bars, said bars provided with grooves adapted to receive glass plates and further provided with water-discharge passages, cross-bars connecting said longitudinally-extending bars together, and closure-blocks supported by the cross-bars and arranged between the longitudinally-extending bars.

707,933. PLANTING-MACHINE. HILLARY F. KOOB, New York N. Y. Filed Apr. 17, 1902. Serial No. 103,243. (No model.)

Claim.—1. In a planting-machine, an inclined bed, a hooding and pressing box, a rock-shaft, means for imparting motion to the rock-shaft, carrier-blocks mounted to slide on a horizontal plane in the machine-frame above the bed-plate, a blade-carrying bar mounted to swing in said carrier-blocks, a plate consisting of a plurality of sections attached to said bar, arms depending from the rock-shaft, and link connections between said arms and the said blade-carrying bar, substantially as specified.

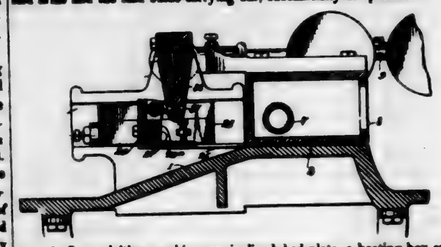

2. In a planting-machine, an inclined bed-plate, a hooding-box arranged to swing above the machine, carrier-blocks mounted to slide above the bed-plate, a blade-carrying bar having swinging connection with said carriers, a planting-blade attached to said bar, a rock-shaft, arms depending from said rock-shaft, link connections between the arms and said bar, and means for imparting motion to the rock-shaft, substantially as specified.

3. A planting-machine comprising an inclined bed-plate, carrier-blocks mounted to slide above said bed-plate, guides in which the blocks are movable, yielding walls for said carrier-blocks for engaging with walls of the guideways, a blade-carrying bar having swinging connection with said carrier-blocks, a rock-shaft, arms depending from said rock-shaft, link connections between the arms and said bar, and means for rocking the rock-shaft, substantially as specified.

4. A planting-machine comprising a bed-plate, a weighted hooding-box mounted to swing over the bed-plate, carrier-blocks mounted to slide over the bed-plate, a blade-carrying bar having swinging connection with said carrier-blocks, a blade secured to the bar, a rock-shaft arranged above the bar, arms depending from said rock-shaft, link connections between said arms and said bar, a driving or power shaft, an adjustable wrist-pin carried by said driving or power shaft, a crank on the rock-shaft, and a pitman connection between said wrist-pin and said crank-arm, substantially as specified.

707,934. PROJECTING-KINETOSCOPE. WOODVILLE LATHAM, New York, N. Y., assignor, by mesne assignments, to E. & H. T. Anthony & Co., New York, N. Y., a Corporation of New York. Filed June 1, 1896. Serial No. 593,747. (No model.)

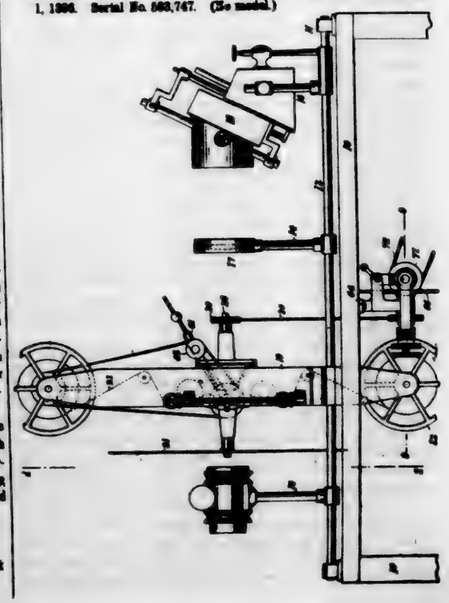

Claim.—1. The combination with devices for supporting the bulk of a flexible film before and after exposure, of feeding mechanisms located between the devices for supporting the film and separate and distinct therefrom, one of said feeding mechanisms being constructed to uniformly feed the film and produce a predetermined supply of slack, and the other adapted to intermittently feed the slack across the exposure-window.

2. The combination with devices for supporting the bulk of the film before and after exposure, of feeding mechanisms located between the devices for supporting the film and separate and distinct therefrom, one of said feeding mechanisms being constructed to uniformly feed the film and produce a predetermined supply of slack, and the other adapted to intermittently feed the slack film across the exposure-window, and constructed also to cause the intervals of rest of the film to exceed its intervals of movement.

3. The combination with devices which support the bulk of the film and supply it for exposure and receive it after exposure, of positively-driven devices separate and distinct from the film-supporting devices, located between them and at opposite sides of the exposure-window, and which respectively engage with and accurately and uniformly feed the film, and which respectively produce and take up slack in it, and an intermittently-acting device located between said last-named devices which intermittently moves the slackened part of the film across the exposure-window.

4. The combination with devices which support the bulk of a flexible strip or film and supply it for exposure and receive it after exposure, of positively-driven devices separate and distinct from the film-supporting devices and which engage the film and accurately compel its movement, and which feed the film by uniform and continuous rotary action, and an intermittently-acting device located between said last-named devices and which moves the slackened part of the film picture by picture across the exposure-window and causes its period of rest to exceed its period of movement.

5. The combination with devices which support the bulk of a flexible film and supply it for exposure and receive it after exposure, of positively-driven devices separate and distinct from the film-supporting devices and located between them at opposite sides of the exposure-window, and which engage the film and accurately insure its feeding, which last-named devices respectively produce and take up slack in the film, and an intermittently-acting device provided with teeth which engage in holes in the film whereby it feeds the film across the exposure opening.

6. The combination with devices which support the bulk of a flexible film and supply it for exposure and receive it after exposure, of a positively-driven device entirely disconnected from the said film-supporting devices located between the film-supplying device and the exposure-window and which produces a loop of slack film, and an intermittently-acting device which engages with the film and feeds the slackened part of it across the exposure-window, and causes its period of rest to exceed its period of movement.

7. The combination with devices adapted to support the bulk of a flexible film and supply it for exposure and receive it after exposure, of positively-driven toothed rotary devices located between and entirely disconnected from said supporting devices and at opposite sides of the exposure-window, said toothed devices being adapted to carry and feed the flexible film by the engagement of their teeth with equally-spaced holes made in the edges of the film and to respectively produce and take up slack in the film, and an intermittently-acting rotary feeding device also provided with teeth which engage with the holes in the film, whereby the film is intermittently fed across the exposure-opening.

8. The combination with two reels which support the bulk of a flexible film, one of which supplies it for exposure and the other receives it after exposure, of a positively-driven device separate and distinct from the said reels and located between the supply-reel and the exposure-window and which produces a loop of slack film, and an intermittently-acting device likewise positively driven which moves the film picture by picture into the optical axis at the exposure-window and causes each picture to remain momentarily at rest in the optical axis.

9. The combination with two rotary reels which support the bulk of a flexible film, one of which supplies the film for exposure and the other coils it up after exposure, of two rotary feeding mechanisms located between said reels and separate and distinct from them, one constructed to feed the film intermittently and cause it to move picture by picture across the axis of the lens and to come to rest in said axis, the other constructed to feed the film continuously and uniformly and thus provide a constant supply of slack film and gearing positively connecting the said two feeding mechanisms for maintaining a fixed relation between them.

10. The combination with two rotary reels adapted to support the bulk of a flexible film, one of which supplies the film for exposure and the other receives it after exposure, of two toothed rotary feeding-rollers located between said film-supporting reels and separate and distinct therefrom and adapted to carry and feed the film by the engagement of their teeth with equally-spaced holes in the edges of the film, actuating mechanism and connecting-gearing between said feeding-rollers which positively actuates one of the feeding-rollers so as to feed the film intermittently and cause its interval of rest to exceed its interval of motion and which positively actuates also the other feeding-roller continuously and thus provides a constant supply of slack film.

11. The combination with the main shaft provided with a broken gear mounted in eccentric bearings and a feed-drum whose shaft is provided with a broken gear which meshes with the first-named broken gear, of means for adjusting said bearings to regulate the contact between said gears.

707,985. SINGLETREE ATTACHMENT. JOHN W. MAGARVY, Newburn, Tenn., assignor of one-half to L. G. Tidwell, Newburn, Tenn. Filed Feb. 13, 1902. Serial No. 93,894. (No model.)

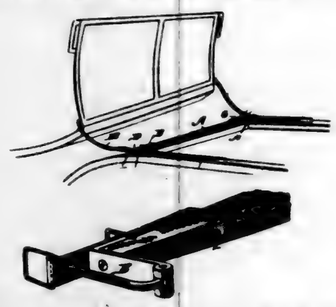

Claim.—1. In a device of the character described, the combination with a singletree, having a pivoted rearwardly-curved hook member, a spring attached to the end of said singletree and adapted to engage said hook member, and means for releasing the hook member from such engagement.

2. In a device of the character described, the combination with a singletree, having an L-shaped plate attached to each end thereof, and a rearwardly-curved hook member pivoted to each plate, of flat rectangular springs attached to the rear portion of the singletree and extending beyond the ends of same, means for normally holding said hook members in engagement with said springs, and means for withdrawing the springs from such engagement.

707,986. VARIABLE-SPEED GEAR. HAMILTON F. HORTEROP, New York, N. Y. Filed June 3, 1902. Serial No. 110,077. (No model.)

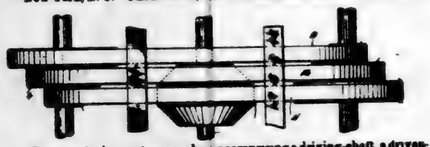

Claim.—1. A variable-speed gear comprising a driving-shaft, a driven-shaft, step-pulleys on the shafts arranged in reverse order, belts connecting opposite pulleys, a take-up pulley mounted to slide transversely of the first-named pulleys, the said take-up pulley having cam-shaped or tapered sides, and means for shifting said take-up pulley, substantially as specified.

2. A variable-speed gear comprising a driving-shaft, a driven shaft, step-pulleys arranged on said shafts in reverse order, band connections between opposite pulleys, means for preventing lateral movement of the bands on the pulleys, a shaft mounted to slide transversely of the pulleys, a take-up pulley mounted on said sliding shaft and having inclined sides, a lever for shifting said shaft, and fixed rods extending downward between adjacent belts, substantially as specified.

707,987. COFFEE-POT. HENRY HUTKINS, Henderson, N. C. Filed Jan. 20, 1902. Serial No. 90,503. (No model.)

Claim.—The combination with a coffee-pot, of a cylinder arranged therein resting upon the bottom and rigidly secured to said bottom, the lower portion of said cylinder being perforated, said cylinder having an inwardly-projecting annular bead at a point above the perforations, and a perforated follower adapted to rest upon said bead, said follower having a handle, the upper end of which is adapted to rest substantially even with the top of the cylinder, substantially as specified.

707,987

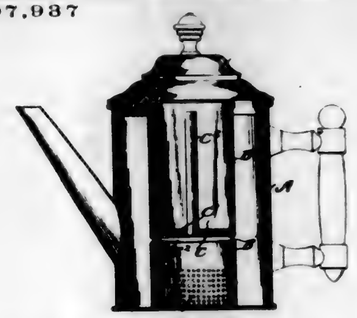

707,988. ELECTRICALLY-OPERATED VALVE-GATE. ALEXANDER ORR, Gloversville, N. Y. Filed Apr. 21, 1902. Serial No. 103,909. (No model.)

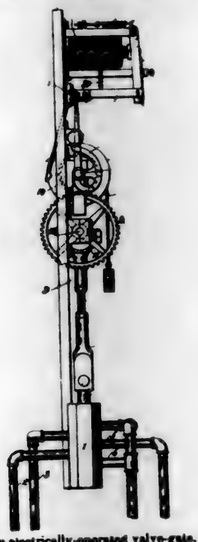

Claim.—1. An electrically-operated valve-gate, comprising a valve-stem for operating a valve, motor mechanism for actuating said valve-stem, said motor mechanism being provided with a revoluble arm, a lever provided with a boss for engaging said arm, thereby normally restraining said motor mechanism, and means controllable at will for actuating said lever, thus causing said boss to momentarily disengage said arm.

2. An electrically-operated valve-gate, comprising a valve-stem for operating a valve, motor mechanism for actuating said valve-stem, said motor mechanism being provided with a revolvable arm and with a cam, a lever provided with a boss for normally engaging said arm for the purpose of restraining said motor mechanism, and also provided with a surface to be engaged by said cam, and means controllable at will for releasing said lever.

3. An electrically-operated valve-gate, comprising a valve-stem for operating a valve, motor mechanism for actuating said valve-stem, said motor mechanism being provided with a revolvable arm and with a cam, a lever provided with a boss for normally engaging said arm, thus restraining said motor mechanism, and also provided with a surface to be engaged by said cam, an electromagnet, means for energizing the same, an armature for said magnet, and mechanism controllable by said armature for momentarily releasing said lever.

707,989. ARMOR FOR VEHICLE-TIRES. CHARLES H. PASCHEN, Buffalo, N. Y. Filed Feb. 26, 1902. Serial No. 96,713. (No model.)

Claim.—1. The combination with a wheel-rim, and a tire-ring, of an armor-ring mounted upon the periphery of the tire-ring and provided with notches in its edges, a wire coil-ring seated on the tire-ring and engaging the notches of the armor-ring, and means secured to the wheel-rim and engaging the coil-ring for securing the latter to the former.

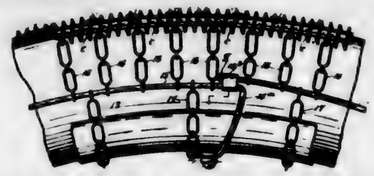

2. The combination with a wheel-rim, and a tire-ring, of an armor-ring mounted upon the periphery of the tire-ring, a spring coil-ring held on each edge of the armor-ring and seated on the periphery of the tire-ring, one at each side of the center thereof and means secured to the wheel-rim and engaging the coil-rings for holding the latter in position on the former.

3. The combination with a wheel-rim, and a tire-ring thereon, of a plate-metal armor-ring seated upon the tire-ring and having perforations and notches at each edge thereof, coil-rings held in the perforations and notches of the armor-ring and engaging the periphery of the tire-ring, and means for securing the armor-ring to the wheel-rim.

4. The combination with a wheel-rim, an inflatable tire-ring seated upon the wheel-rim, an armor-ring on the tire-ring, and coil-rings held in perforations and notches at the sides of the armor-ring so as to seat upon the tire-ring, of tension-rings secured upon the wheel-rim and disposed at opposite sides of the tire-ring, flexible connections extended between the tension-rings and the coil-rings, and flexible connections extended from the tension-rings beneath the wheel-rim and secured thereto.

5. The combination with a wheel-rim, an inflatable tire-ring seated upon the wheel-rim, a plate-metal armor-ring mounted upon the tire-ring, two coil-rings held at the side edges of the armor-ring, and spaced tread-plates having their ends engaged with the coil-rings and seating upon the armor-ring, of two tension-rings disposed oppositely at the sides of the tire-ring, arms extended from the tension-rings beneath the wheel-rim, means for securing the ends of said arms upon the wheel-rim, pliable connections extended between the coil-rings and the tension-rings, and pliable connections extended from the wheel-rim to the tension-rings.

6. The combination with a wheel-rim, and a tire-ring, of tension-rings arranged on opposite sides of the tire-ring and each having an arm extending therefrom, said arms extending beneath the wheel-rim and secured thereto.

7. In a device of the character described, the tension-rings, arranged on opposite sides of the tire-ring, each tension-ring having its ends held together by a coupling-block, and each provided with a lateral arm which projects beneath and is secured to the wheel-rim.

8. In a device of the character described, a plate-metal armor-ring having perforations and notches in each edge, and a coil wire-ring on each edge of the armor-ring, the coils of the wire ring being passed through the perforations and seated in the notches of the armor-ring.

9. In a device of the character described, the wire coil-rings held interlocked with the side edges of the plate-metal armor-ring, and the spaced tread-plates having perforations in their ends which receive the coils of the wire coil-rings.

10. An armor for vehicle-tires, comprising an armor-ring, a coil-ring on each edge of the armor-ring, transverse tread-plates on the outer face of the armor-plate, and means for securing the armor-plates to the wheel-rim, as set forth.

11. An armor for vehicle-tires, comprising an armor-ring, tread-plates on the outer face of the armor-ring, a coil-ring on each edge of the armor-ring and securing the tread-plates to the armor-ring, oppositely-arranged tension-rings secured to the wheel-rim, and connections between the tension-rings and the coil-rings of the armor-ring, as set forth.

12. An armor for vehicle-tires, comprising an armor-ring, tread-plates on the outer face of the armor-ring, a coil-ring on each edge of the armor-ring and securing the tread-plates in position, oppositely-arranged tension-rings secured to the wheel-rim, flexible connections between the tension-rings and the coil-rings and flexible connections between the wheel-rim and tension-rings, as set forth.

13. In an armor for vehicle-tires, an armor-plate provided with notches in its edges and openings near said edges, coil-rings engaging the openings and notches of the armor-ring, and transversely-extending tread-plates on the armor-ring and having openings in their ends to receive the coils of the said rings, as set forth.

707,940. SASH-LOCK. BOBBIE A. PATTERSON, Dunbar, Nebr. Filed Apr. 3, 1902. Serial No. 101,250. (No model.)

Claim.—1. In a sash-lock, the combination of a casing having a slot

arranged thereon throughout its entire length, and notches arranged in the casing and communicating with the slot, of a spring-actuated sliding bolt held within the casing, an arm pivotally held to the said bolt and having its inner end provided with a finger portion that is adapted for engagement with the said notches, substantially as shown and for the purpose specified.

2. In a sash-lock, the combination of a casing having a slot arranged thereon and notches arranged upon either side of the slot and communicating therewith, lateral extensions arranged upon the casing, a bolt operating within the casing and having a shoulder or collar formed integral therewith, an enlargement formed upon one side of the collar that is adapted to protrude through the slot, a spring arranged upon the inner end of the said bolt and adapted to bear at one end against the casing and at its opposite end against the said shoulder or collar, an arm pivotally held upon the said enlargement and having its outer end terminating in an angular portion and its inner end terminating in an inwardly-bent finger portion, substantially as and for the purpose specified.

707,941. EAVES-TROUGH HANGER. HOWARD FOUT, Hollidaysburg, Pa. Filed Mar. 15, 1902. Serial No. 98,370. (Eq model.)

Claim.—1. A device of the kind described comprising the hanger member having a depending vertical slotted portion, the inner face of which is provided with notched ribs, and a bracket-arm having a T-shaped pin, and a perforated lug adapted to be passed through the said slotted member, and a pin adapted to be passed through the said perforated lug, and engage the notched ribs, substantially as specified.

2. The combination with the hanger member, the depending portion of which is slotted vertically and provided with notched ribs upon opposite sides of the said slot, of a bracket-arm having a T-shaped pin adjacent to its upper end and a perforated lug adjacent to its lower end, said lug being adapted to be passed through the vertical slot, and a locking-pin adapted to be passed through the perforated lug, for the purpose described.

3. The combination with a hanger member having its depending portion slotted vertically and provided with notched ribs upon opposite sides of the slot, the bracket member comprising the curved supporting-arm having the forwardly-projecting lip, and the plate having the T-shaped pin at its upper end, and a rearwardly-projecting perforated lug adjacent to its lower end, and the locking-pin adapted to be passed through the said perforated lug for the purpose specified.

4. The combination with the plate having the tapering guides, of a hanger member having tapering wings adapted to fit said tapering guides, said member being slotted vertically and provided with notched ribs on opposite sides of the slot, and the bracket member having rearwardly-projecting T-shaped pin adjacent to its upper end, and a perforated lug adjacent to its lower end, and the locking-pin adapted to be passed through said perforated lug for the purpose specified.

707,942. WRITING OR COPYING PAD. FRIEDRICH G. J. PUST, Hamburg, Germany. Filed Apr. 12, 1902. Serial No. 102,643. (No model.)

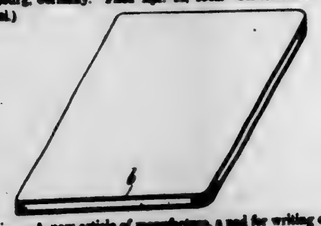

Claim.—A new article of manufacture, a pad for writing or copying purposes comprising a layer of soft felt having a sheet of oiled paper cemented to one or both its faces, as set forth.

707,948. WATER-GAGE FOR STEAM-BOILERS. DAVID W. ROCKWELL, Brockton, Mass. Filed Dec. 17, 1901. Serial No. 86,226. (No model.)

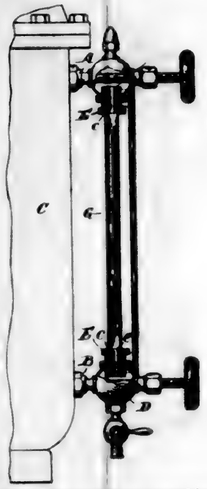

Claim.—A water-gage comprising upper and lower arms each provided with a valve, gage-tube sockets or couplings screwed into the valve-casings and provided with chambers closed at their inner ends, a gage-tube having its ends fitted within said chambers, inlet-nozzles projecting from the inner ends of said chambers and extending into the end portions of the gage-tube, packing-rings interposed between the ends of the gage-tube and the closed ends of the chambers, and check-nuts turning on the exterior threaded portions of the sockets and adapted to be screwed against the valve-casings.

707,944. TWO-SPEED DRIVING MECHANISM. FRANCIS I. SANDERS, Nottingham, England. Filed July 31, 1902. Serial No. 116,407. (No model.)

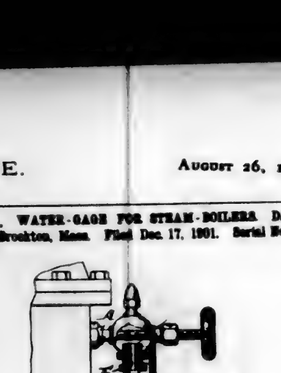

Claim.—1. The combination with a driving-axle and a crank fixed thereon, of a cylindrical journal-block grooved on one end to straddle the crank eccentrically to the axle and secured to the crank, a roller-clutch on the periphery of the journal-block, a collar rotatable on the axle, a ratchet-wheel and gear-wheel rigid on the collar, a sprocket-wheel rotatable on the collar and provided with an internal gear, an intermediate gear-wheel rotatably mounted on the journal-block and held against rotation thereon in one direction by said clutch, a pawl arranged to normally hold said ratchet-wheel against rotation, and means under the control of the operator for throwing and holding the pawl out of engagement with the ratchet-wheel, substantially as described.

2. The combination with a driving-axle and a crank fixed thereon, of a collar rotatable on the axle, a sprocket-wheel rotatable on the collar and provided with an internal gear, a ratchet-wheel and a gear-wheel fixed on the collar on opposite sides of the sprocket-wheel, an intermediate gear-wheel rotatably mounted on the crank eccentrically to the axle and gearing with said internal gear and the gear-wheel on the collar, means for preventing the rotation of the intermediate gear-wheel about its axis in one direction, and means under the control of the operator for holding the ratchet-wheel against rotation, substantially as described.

2. The combination with a driving-axle and a crank fixed thereon, of a collar rotatable on the axle, a sprocket-wheel rotatable on the collar and provided with an internal gear, a ratchet-wheel and a gear-wheel fixed on the collar on the opposite sides of the collar, said ratchet-wheel and gear-wheel being recessed on their adjacent faces for the reception of the hub of the sprocket-wheel to give a broad bearing to the latter, an intermediate gear rotatably mounted on the crank eccentrically to the axle and gearing with said internal gear and the gear-wheel on the collar, means for preventing rotation of the intermediate gear-wheel about its axis in one direction, and means under the control of the operator for holding the ratchet-wheel against rotation, substantially as described.

707,945. MACHINE FOR COAL-BREAKING. LÉON DE BOESTIER DE SAUVIGNY, Paris, France. Filed July 18, 1901. Serial No. 68,576. (No model.)

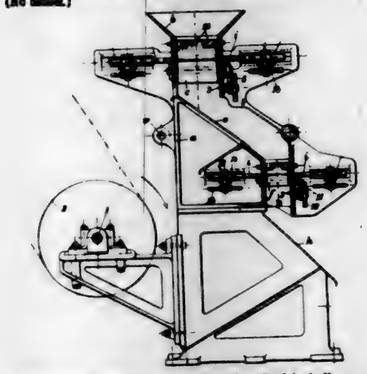

Claim.—1. A machine of the class described including a plurality of superposed jaws arranged in pairs, means for actuating said jaws, picks also arranged in pairs and adapted to coact with the respective pairs of jaws, means for actuating the picks and a sieve adapted to receive the crushed material from the upper jaws and serving to separate the fine material from the coarse and to direct the latter toward the lower jaws.

2. A machine of the class described including a plurality of superposed oscillatory jaws arranged in pairs and polygonal in cross-section, picks also arranged in pairs and adapted to coact with the respective pairs of jaws, means for actuating the picks, and a sieve adapted to receive the crushed material from the upper jaws and serving to separate the fine material from the coarse and to direct the latter to the lower jaws.

3. A machine of the class described including a plurality of superposed jaws arranged in pairs, means for actuating said jaws, picks also arranged in pairs and adapted to coact with the respective pairs of jaws, means for actuating the picks, a sieve adapted to receive the crushed material from the upper jaws and serving to separate the fine material from the coarse and to direct the latter toward the lower jaws, and means bridging the adjacent jaws of the respective pairs to prevent the passage of material therebetween.

4. A machine of the class described including jaws arranged in pairs, picks arranged in pairs adapted to travel toward and from each other, and mechanism for coördinately reciprocating the picks and oscillating the jaws.

5. A machine of the class described including jaws arranged in pairs, picks arranged in pairs adapted to travel toward and from each other, mechanism for coördinately reciprocating the picks and oscillating the jaws, and means for bridging the jaws of the respective pairs to prevent the passage of material between the same.

6. A machine of the class described including a plurality of superposed oscillatory jaws, picks also arranged in pairs to cooperate with the respective pairs of jaws, a sieve arranged to receive the crushed material from the upper jaws and serving to separate the fine material from the coarse and to direct the latter toward the lower jaws, and mechanism for oscillating the upper and lower jaws in opposite directions and for simultaneously reciprocating said picks in opposite directions.

707,946. FOUR-HORSE EVENER. JAMES W. SAYRE, Benson, Mo. Filed Sept. 14, 1901. Serial No. 75,304. (No model.)

Claim.—In an evener, the combination with the pole of a vehicle, of an arm pivotally secured to the upper face of said pole, a brace pivoted to the under face of said pole and to the free end of said arm, an evener-bar centrally pivoted to the free end of said arm, clevises secured by bolts to the outer ends of said evener-bar and not embracing the same, doubletrees pivoted on said bolts and embraced by said clevises, a sheave mounted on said pole, a flexible member passing around said sheave and attached at its ends to said clevises, said sheave being inclined to prevent said flexible member from binding, substantially as described.

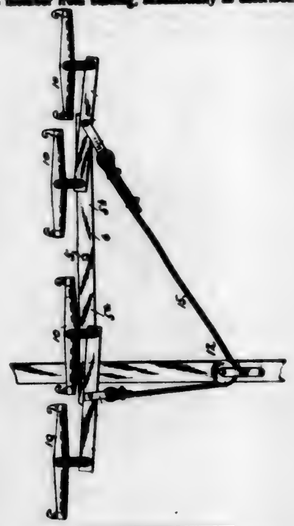

707,947. ANIMAL-STALL. RICHARD SMITH, Fort William, Canada. Filed Dec. 2, 1901. Serial No. 84,339. (No model.)

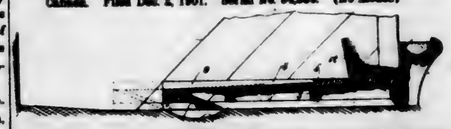

Claim.—1. In a stall, a floor-section having channels in its upper surface, extending lengthwise of the stall, and openings in which the channels terminate, and an inclined deflector secured to the rear end of the floor-section and extending forwardly under said openings, substantially as specified.

2. A stall constructed to receive two animals and provided with two slidable floor-sections each having channels terminating in openings at their rear ends, the channels of one section extending nearly the length of the section, and the channels of the other extending about one-fourth the length of the same, and inclined deflectors secured to the sections under the said openings, as set forth.

707,948. SHOVEL ATTACHMENT. WILLIAM T. SPILLANE, Red Lake Falls, Minn. Filed Mar. 26, 1902. Serial No. 100,094. (No model.)

Claim.—1. The combination with a fork, of a removable shovel attachment comprising a strip of sheet metal reboot under its lower end and

struck downwardly, reinforcing such end and forming a pocket receiving and inclosing the extremities of the fork, the downwardly-struck portions of the attachment providing a rear shoulder having a series of apertures receiving the extremities of the fork, and fastening means on the attachment to engage the upper part of the fork.

2. The combination with a fork, of a removable shovel attachment comprising a sheet-metal strip which is bowed longitudinally and has the lower end rabbeted under and struck downwardly for reinforcing such end and forming a pocket receiving and inclosing the forward extremities of the fork-tines, a clip in the center of the under side of the attachment through which the center fork-tine is inserted, and an upper yoke having bendable arms to engage the head of the fork.

707,949. GEARING FOR WASHING-MACHINES. JASPER H. STANFIELD, Muskegon, Mich. Filed Mar. 22, 1902. Serial No. 99,479. (No model.)

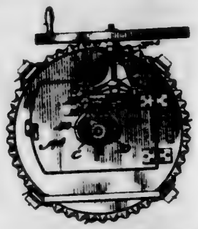

Claim.—1. In a machine of the kind described, the combination with a base-plate, of a casting pivoted thereon, said casting having internal and external gear-teeth, a reciprocating rack-bar adapted to engage the external teeth, a pinion arranged for engagement with the internal teeth, and means for operating the reciprocating rack-bar, substantially as described.

2. The combination with a base-plate provided with a rib and guide-lug, of a casting pivoted thereon, said casting having interior and exterior gear-teeth, a pinion arranged for engagement with the interior gear-teeth, a reciprocating bar adapted to slide upon the rib formed upon the base-plate, and through the guide-lug connected to the said base-plate, said rack-bar and exterior gear-teeth intermeshing with each other, a drive-shaft mounted upon the base-plate, and having a crank-arm attached to its inner end, a roller pivotally connected to said crank-arm, a frame integral with the rack-bar and in which the roller operates, all arranged and adapted to operate substantially as described.

707,950. TRUCK. GEORGE H. STEER, Cincinnati, Ohio. Filed Mar. 3, 1902. Serial No. 96,534. (No model.)

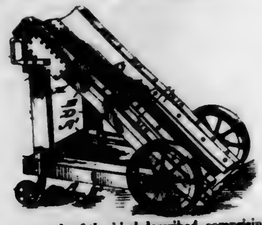

Claim.—1. A truck of the kind described, comprising the horizontal base or platform, the front wheels and drop-axle, caster-wheels for supporting the rear end, the upright standards arranged at the rear end of the frame or platform, the inclined side beams, and the plate connecting the said side beams, all of said parts being rigidly connected for the purpose specified.

2. A truck of the kind described, comprising the base or platform, the axle and wheels for supporting the forward end, the caster-wheel for supporting the rear end, the upright standards, the inclined side beams, the curved metallic plate connecting the said inclined side beams, and the roller arranged between the forward ends of said inclined side beams, and the handles attached to the upper ends of said side beams, substantially as specified.

3. A truck comprising a horizontal base or platform, the axle and wheels for supporting the forward end of said base or platform, the caster-wheels for supporting the rear end of the same, the upright standards, the inclined side beams, the curved metallic plate supported by the said side beams, the transverse and longitudinal brace-pieces, the metallic straps arranged upon the side pieces, the roller arranged at the forward end of the side beams and secured by means of the metallic straps, and the tapering straps arranged upon the curved metallic plate adjacent to its forward end, for the purpose described.

707,951. LOG OR FREIGHT DUMPING APPARATUS. TONY ALEXANDER, Bismarck, Miss., assignor of one-half to Gideon Alexander, New Orleans, La. Filed Oct. 7, 1901. Serial No. 77,781. (No model.)

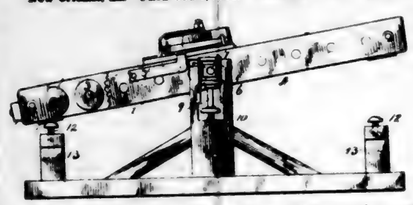

Claim.—1. An apparatus for receiving and discharging logs or other freight, which comprises the fixed frame, having supports, or stops, at each end as described, a tiltable frame, pivoted and supported in the fixed frame at about the middle of its length, and weighted at its front end, and having a bed over which logs may slide as described; means for guiding said logs lengthwise of said tiltable frame, the latter being held normally depressed or inclined downward in the direction of travel of the logs, as shown and described.

2. An apparatus for the purpose specified, comprising a tiltable frame which is pivoted at or near its middle, and means for adjusting its pivoted bearings vertically, whereby the said frame may be adjusted bodily higher or lower and set at any required inclination transversely, substantially as shown and described.

3. An apparatus for the purpose specified, comprising the pivoted discharger or frame lateral trunnions projecting from said frame at or near its middle, trunnion guides or supports adapted for sliding vertically and screws connected with such supports for adjusting the latter higher or lower, substantially as shown and described.

4. An apparatus for the purpose specified, comprising the pivoted discharger-frame central trunnions for such pivoted frame, bearings for said trunnions which are in turn provided with lateral gudgeons, a frame in which said bearings are pivoted, guide-posts having slots or ways in which said frames are adapted to slide vertically, and screws connected with the said frame and working in nuts fixed in the posts, substantially as shown and described.

5. An apparatus for the purpose specified, comprising a discharger-frame pivoted at or near its center and tiltable as specified, and a screw top or buffer which is adjustable vertically and arranged beneath the end of said frame for arresting and supporting the same when in use, as shown and described.

6. An apparatus for the purpose specified, comprising a fixed supporting-frame, a tiltable frame pivoted therein, and devices arranged on such tiltable frame and adapted to move laterally, and springs bearing upon said devices and serving to hold them pressed normally inward over a portion of the bed, for receiving a log or other freight between them and yielding and guiding the log in the manner described.

7. An apparatus for the purpose specified, comprising a pivoted tiltable frame and dogs or guide-blocks pivoted upon the sides of said frame, and means for holding them projected inward over the bed of said frame, their rear ends being approximated for the purpose of receiving or engaging a log or other freight, substantially as shown and described.

8. An apparatus for the purpose specified, comprising a pivoted and tiltable discharger-frame, and dogs pivoted upon the side bars of the same and springs engaging said dogs for holding them projected normally into the path of the log or other freight received upon the frame, substantially as shown and described.

9. An apparatus for the purpose specified, comprising a frame having pivoted dogs whose rear ends are adapted to engage hooks or grapples by which the logs or other freight are suspended and carried, substantially as shown and described.

10. An apparatus for the purpose specified, comprising a pivoted tiltable frame having dogs pivoted upon the upper side of the same and their front ends being of angular form and springs for holding the dogs normally in position to receive and engage the log or other freight, substantially as shown and described.

11. An apparatus for the purpose specified, comprising a frame, bars pivoted at their front ends upon the upper sides of said frame, and dogs pivoted to said bars, and springs for holding both bars and dogs in the position required for yielding engagement with a log or other freight, substantially as shown and described.

12. In an apparatus substantially as described, the combination with a tiltable frame pivoted at or near its middle and weighted at its front end, of dogs which are pivoted to bars and the said bars in turn pivoted upon the said frame, stops for arresting both bars and dogs, and springs for pressing them inward, in the manner described.

707,952. CIRCUIT-BREAKER. FREDERICK RENSINGER, Union Hill, N. J., assignor to General Incandescent Arc Light Company, a Corporation of New York. Filed Jan. 29, 1902. Serial No. 91,738. (No model.)

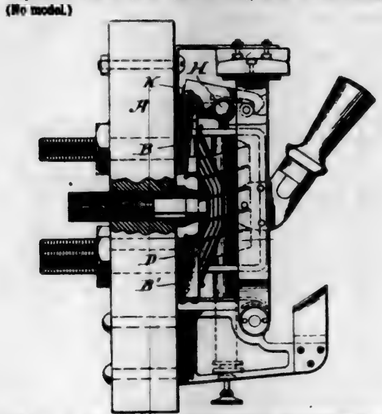

Claim.—1. In an automatic circuit-breaker, the combination of a switch-lever, a latch for said lever, mechanism for lifting the latch a limited distance, and mechanism for releasing the latch.

2. In an automatic circuit-breaker, the combination of a switch-lever, a latch for said lever, mechanism energized by a magnet for releasing said latch, and mechanism interposed between said latch and magnet mechanism for aiding said magnet mechanism to release the latch.

3. In an automatic circuit-breaker, the combination of a switch-lever, a latch carrying a pivoted lever adapted to coact with said switch-lever, and mechanism for acting upon said pivoted lever and latch to release the switch-lever.

4. In an automatic circuit-breaker, the combination of a pivoted latch, a pivoted lever carried in said latch, a pivoted arm located under such latch and lever, and means for causing an upward movement of said arm.

5. In an automatic circuit-breaker, the combination of a pivoted latch, a pivoted lever carried in said latch and having its fulcrum near to the forward end of the latch and the long end of said lever normally situated below the under surface of said latch, and means for causing an upward movement of said lever and latch.

6. In an automatic circuit-breaker, a pivoted latch having a recess in the under portion of its forward end, and provided with a lever pivoted in said recess in such manner that the long end of the lever will normally lie below the under surface of the latch.

707,953. DEPILATING COMPOUND. HORACE S. BLISS, Omaha, Nebr. Filed Oct. 17, 1901. Serial No. 79,010. (No specimens.)

Claim.—1. The herein-described composition of matter for removing superfluous human hair and preventing the subsequent growth thereof, the same consisting of calcium oxid or quicklime, arsenic sulfid and hyposulfite of soda, in substantially the proportions stated.

2. The herein-described composition of matter for removing human hair and preventing the subsequent growth thereof, the same consisting of about eighty to ninety-two parts calcium oxid, eight to twenty parts of arsenic sulfid and ten parts sulfite of soda mixed with water to form a thick paste.

707,954. DEPILATING PROCESS. HORACE S. BLISS, Omaha, Nebr., assignor to himself, Ezra H. McCutcheon, Holstein, Iowa, and Fred C. McCutcheon, Iowa City, Iowa, copartners under firm-name of International Chemical Company, Iowa City, Iowa. Filed Feb. 10, 1902. Serial No. 93,220. (No specimens.)

Claim.—1. The process of retarding or destroying the growth of hair upon the human body, consisting in the removal of the hair from above the surface of the skin and subsequently applying a paste consisting of sulfur and hyposulfite of soda mixed with oil of turpentine.

2. The herein-described process of weakening or destroying the growth of human hair, consisting in the removal of the hair from above any part of the surface of the body, subsequently applying a composition consisting of sulfur and hyposulfite of soda, mixed with oil of turpentine to form a paste of sufficient consistency to adhere to the skin; and in finally removing said paste.

3. The process of weakening or destroying the hair growth consisting in the removal of hair from the surface of the human body by means of hair-dissolving chemicals; then removing said chemicals and the dissolved hair; then applying a composition consisting of sulfur, hyposulfite of soda and oil of turpentine to form a paste; and then finally removing said paste.

4. The process of enfeebling or destroying the growth of hair upon the human body, consisting in applying a composition composed of calcium oxid and arsenic sulfid mixed with water to form a paste; then removing said paste after the hair is dissolved; then rinsing the parts to which the paste has been applied in water after a period of from ten to forty minutes; then applying a composition consisting of sulfur and hyposulfite of soda mixed with oil of turpentine to form a paste; and subsequently removing said last-mentioned paste.

5. The process of enfeebling or destroying the growth of hair upon the human body, consisting in applying a composition consisting of calcium oxid, and arsenic sulfid mixed with water to form a thick paste for dissolving the hair above the surface of the skin; then removing said composition from the skin and cleansing the skin by rinsing in water; then applying a composition composed of sulfur, hyposulfite of soda and oil of turpentine; and finally removing said last-mentioned composition.

707,955. DEPILATING COMPOUND. HORACE S. BLISS, Omaha, Nebr., assignor to himself, Ezra H. McCutcheon, Holstein, Iowa, and Fred C. McCutcheon, Iowa City, Iowa, copartners under firm-name of International Chemical Company, Iowa City, Iowa. Filed Feb. 15, 1902. Serial No. 94,155. (No specimens.)

Claim.—1. The herein-described composition for destroying the roots or follicles of hair in the human skin, the said composition consisting of sulfur, hyposulfite of soda and oil of turpentine, in substantially the proportions stated.

2. The herein-described composition for permanently destroying the roots or follicles of human hair, said composition consisting of about sixty parts of sulfur, thirty parts hyposulfite of soda and ten parts of oil of turpentine.

707,956. HEAD-COVERING. AUGUST BOUILLY, Chicago, Ill. Filed Feb. 12, 1902. Serial No. 93,736. (No model.)

Claim.—In a head-covering having an opening formed in the crown thereof, a ring encircling said opening on the upper side of the crown and carrying peripheral projections bent downwardly and passing through the crown, a second ring arranged on the interior of the crown and secured in position by engagement with said projections, and an imperforate plate of translucent material arranged in the said opening between the rings, and extending entirely over the opening for admitting light to the interior of the covering but excluding air, and a shutter hinged to the second ring for excluding the light.

707,957. SMOKE-CONSUMING APPARATUS FOR STEAM-BOILER OR LIKE FURNACES. ROBERT D. BEATT, London, England, assignor of one-half to Thomas Percival Wood, London, England. Filed June 9, 1902. Serial No. 110,984. (No model.)

Claim.—1. A smoke consuming or preventing device for steam-boiler and like furnaces, comprising a shallow box having superposed slits inclined respectively away from and toward the center line of said box, and means for conducting air under pressure to the interior of said box, substantially as described.

2. The combination, in a furnace, of a shallow box mounted in the upper part of said furnace, said box having slits formed therein at different levels and inclined respectively away from and toward the center line of said box, an outward extension of said box having approximately the same cross-section as said box, and having a flaring aperture, a steam-pipe arranged centrally in said flaring aperture, said steam-pipe having a flattened flaring aperture, substantially as described.

3. The combination, in a furnace, of a shallow box mounted in the upper part of said furnace, said box having narrow laterally-extended slits formed therein at different levels and inclined respectively away from and toward the center line of the said box, said slits opening substantially

in the direction in which the gases flow through the furnace, and means for conducting air under pressure into the interior of said box, substantially as described.

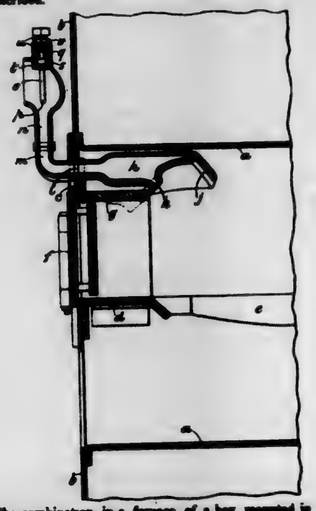

4. The combination, in a furnace, of a box mounted in the upper part of said furnace, said box having narrow laterally-extended slits formed therein at different levels and inclined respectively away from and toward the center line of said box, said slits opening substantially in the direction in which the gases flow through the furnace, a pipe forming an outward extension of said box and corresponding approximately in cross-section with said box, said pipe having a flaring aperture, and a steam-pipe arranged centrally in said aperture and having a laterally-extended and flared slit, substantially as described.

5. A smoke consuming or preventing device for steam-boiler and like furnaces, comprising a shallow box having a pair of converging slits facing forwardly and arranged at different levels, and a pair of divergent slits also facing forwardly but arranged on the same level as each other, said slits being arranged symmetrically to each other, and means for conducting air under pressure into the interior of said box, substantially as described.

707,958. GRAIN-DRILL. GEORGE W. COUPER, East Moline, Ill., assignor to the Fuller Manufacturing Company, East Moline, Ill. Filed Dec. 4, 1901. Serial No. 84,674. (No model.)

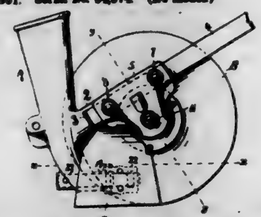

Claim.—1. In combination with a seed-spout having a forwardly-extending arm at its lower end, a disk mounted to rotate in advance of said spout, a support pivotally connected to said arm the pivotal axis of said support being vertical, a scraper on the outer side of and carried by said support and bearing against one side of the disk, and a spring connected to said spout and to said support at a point in advance of the pivot of the latter on the inner side thereof, substantially as described.

2. In combination with a seed-spout having its lower end laterally inclined and provided with a forwardly-extending arm, a disk, a support pivotally connected to said arm, the pivotal axis of said support being vertical, a scraper on the outer side of and carried by said support and bearing against the convex side of the disk, and a spring connected to said spout and to said support, at a point in advance of the pivot of the latter, on the inner side thereof, substantially as described.

3. In combination with a seed-spout, having a forwardly-extending arm at its lower end, a concavo-convex revolvable disk, a spring-pressed scraper bearing on the concave side of the disk and attached to one side of the spout and a spring-pressed scraper pivotally connected to said arm and bearing on the convex side of the disk, substantially as described.

4. A seed-spout having the rearward-extending arm 18 and the forward-extending arm 19 at its lower end, in combination with a disk a scraper-plate, a support therefor pivotally connected to said arm 19, a spring connected to said support and bearing against said scraper-plate, and a screw connecting the rear end of said spring to said arm 18, substantially as described.

5. A seed-spout having the rearward-extending arm 18, the forward-extending arm 19 and the bearing-rib 20 between said arms, in combination with a disk, a scraper-plate, a support therefor pivotally connected to said arm 19, a spring connected to said support and bearing on said bearing-rib and against said scraper-plate, and an adjusting-screw connecting the rear end of said spring to said arm 18, substantially as described.

707,959. TELEGRAPHY. ALBERT G. DAVIS, Tarrytown, N. Y. Filed Oct. 21, 1901. Serial No. 79,385. (No model.)

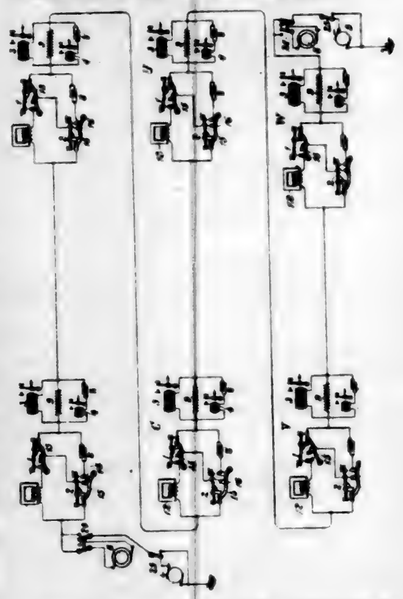

Claim.—1. In a superposed-current telegraph, the combination with a continuous-current receiver and pulsating-current receiver in shunt relation to one another upon the main line as described and having a condenser in the branch containing the pulsating-current receiver, of transmitters for the two sides of the system placed in branches or portions of the circuit independent of the branches containing said receivers.

2. In a superposed-current telegraph, the combination of a continuous-current receiver in a shunt or branch of the main line, a pulsatory-current receiver in a shunt or branch of the main line, a condenser in said main-line shunt, and a transmitting apparatus for the continuous-current side of the system in a branch or portion of the circuit outside of both receiver branches.

3. In a superposed-current telegraph, the combination substantially as described upon the same line, of means for producing pulsatory currents for sending one class of signals over said line, pulsatory-current receivers for said signals, continuous-current receivers for the continuous-current side of the system, and branches around the coils of said continuous-current receivers forming non-inductive shunts of comparatively low resistance, as and for the purpose described.

4. In a pulsatory-current telegraph, the combination of a continuous-current receiver in a branch of the circuit continually closed, a shunt to said receiver containing a pulsatory-current receiver and condenser, and a non-inductive resistance in multiple-arc relation to the branches of the circuit containing respectively said pulsatory-current and continuous-current receivers.

5. In a superposed-current telegraph, the combination of a pulsatory-current receiver and a continuous-current receiver in shunt relation to one another, a condenser in the branch with the pulsatory-current receiver and a non-inductive resistance in a shunt around the continuous-current receiver.

6. In a superposed-current telegraph, the combination with the continuous-current receivers, of non-inductive protective shunts connected directly around the receiver-coils and of comparatively low resistance as described so as to protect the said receiver from the disturbing action of pulsatory or variable currents and to also permit the system to be operated with pulsatory currents of comparatively small strength, as and for the purpose set forth.

7. In a superposed-current telegraph, the combination with the continuous-current receivers and their condenser-shunts for the pulsatory currents, of protective non-inductive shunts for said continuous-current receivers adapted to shunt the condenser discharge and to permit pulsatory current to flow down the line to the more distant stations.

8. In a superposed-current telegraph, the combination with a continuous-current receiver and a condenser in shunt to the same for forming a path around said receiver for the pulsatory-current side of the system, of a protective non-inductive shunt to said receiver adapted to form a diverting path for the discharge of the condenser whereby said receiver may be protected from disturbance from the condenser discharge.

9. In a superposed-current system of telegraphy, receiving apparatus for the continuous and pulsatory current sides of the system comprising a pulsatory-current receiver and condenser in one branch of the circuit, a direct-current receiver in a branch forming a shunt to said pulsatory-current receiver and condenser, and a compensating shunt around the direct-current receiver adapted to afford a path for diverting the discharge-currents of the condenser around the said direct-current receiver, as and the purpose described.

10. In a superposed-current telegraph, the combination with a pulsatory-current generator adapted to generate electromotive force of the sine-wave type, a continuous-current receiver, a non-inductive shunt to said receiver, a continuous-current transmitter in the main line outside of the said shunt, and a shunt or branch around both the transmitter and receiver containing a condenser and an inductance.

11. In a superposed-current telegraph, the combination with the continuous-current receivers at a way-station, of an artificial shunt containing a condenser and an inductance in series with one another.

12. In a superposed-current telegraph, the combination with the continuous-current transmitter and receiver apparatus at a way-station, of an artificial shunt taken around both the transmitter and the receiver containing a condenser and inductance in series with one another.

13. The combination in a superposed-current telegraph with the continuous-current transmitter, of a shunt thereto containing a condenser and inductance and an artificial load-coil in the branch with the transmitter for interposing artificial inductance when the key rests to shunt the branch or shunt containing the condenser.

707,960. APPARATUS FOR REFINING OILS. EDOUARD DUBLEY, La Garenne-Colombes, France. Original application filed June 14, 1901, Serial No. 64,585. Divided and this application filed Sept. 9, 1901. Serial No. 74,782. (No model.)

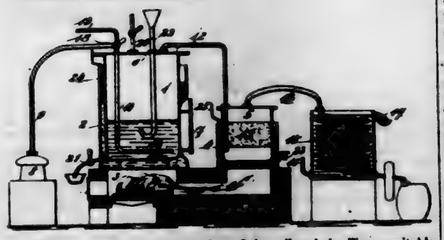

Claim.—1. In an apparatus for refining oil and the like, a suitable purifying or filtering apparatus, means for heating the same, a serpentine connected to said purifying or filtering apparatus, a suitable source of steam-supply, means connected thereto for subjecting the mass under treatment to the action of the steam, an alembic, and means connected thereto for subjecting the mass under treatment to alcoholic vapors, substantially as described.

2. In an apparatus for refining oil and the like, the combination of a furnace, a tank 1, a tank 2 surrounding said tank 1, a vessel 5 arranged in a casing forming a space between said vessel, an alembic, a pipe connected to said alembic and passing through the cover of said tank 1, extending downwardly into said tank, said pipe being bent near the bottom of tank 1 and having perforations formed therein, a pipe 12 forming an outlet from tank 1 at its top and downwardly extending into the bottom of said vessel 5, a filtering agent in said vessel 5, an outlet-pipe 14 connected with a serpentine arranged within a suitable vessel, and a suitable outlet, all parts being arranged substantially as shown for the purpose set forth.

3. In an apparatus for refining oil and the like, a tank, a tank of less diameter mounted therein, an alembic, a pipe connected thereto and extending into said inner tank, a pipe communicating with a suitable steam-supply and connected to said pipe, a purifier comprising a tank mounted within a tank, a furnace for heating both of said outer tanks, a cooling-serpentine within a suitable vessel connected to said purifier, and an outlet in said vessel, substantially as described.

707,961. SORTING AND ADDRESSING MACHINE. STERLING ELLIOTT, Boston, Mass., assignor to the Elliott Company, Boston, Mass., a Corporation of Maine. Filed Jan. 19, 1900. Renewed May 11, 1901. Serial No. 59,222. (No model.)

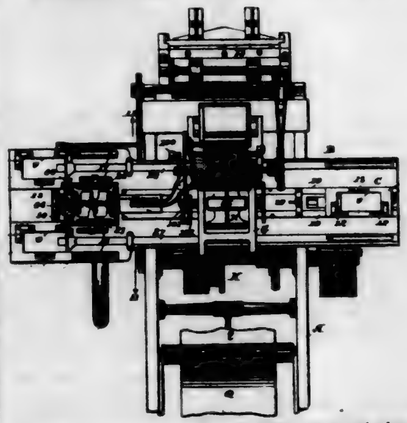

Claim.—1. An apparatus for sorting address-plates and other articles comprising means for directing said plates to different receptacles, said plates having differently-disposed bearings arranged to determine the number of times the plates shall pass through the machine, a sorter upon the machine, and devices whereby said sorter counts with all the plates to vary the operations of the directing means, according to the positions of the bearings, substantially as described.

2. An apparatus for sorting address-plates and other articles comprising means for directing said plates to different receptacles, said plates having differently-disposed bearings, and a sorter upon the machine, devices whereby said sorter varies the operations of the directing means, according to the positions of the bearings, and means whereby the relative positions of the plates and sorter may be changed from time to time, substantially as described.

3. In an apparatus for sorting address-plates and other articles, having differently-arranged bearings, the combination of devices for distributing said plates to different receptacles, a sorter upon the machine adjustable progressively to different positions to count progressively with different bearings, and devices intermediate the sorter and the plate-distributing devices for varying the action of the latter, substantially as described.

4. In an apparatus for sorting address-plates and other articles having bearings, differently and progressively arranged, the combination of plate shifters or distributers for moving different plates in different directions, a sorter progressively adjustable upon a moving part of the machine and adjustable to count progressively with the bearings, and means controlled by said sorter for throwing the shifters into and out of operation upon the plates, substantially as described.

5. In an addressing-machine, the combination of a receptacle for a series of printing-plates having bearings progressively disposed according to the number of times for which the plate is to be used, means for bringing the plates successively into printing action, plate shifters or distributers for directing the plates in different directions, a sorter carried by a moving part of the machine and progressively adjustable to different positions to count with the bearings, and means for varying the action of the shifters according to the relative positions of the sorter and bearings, substantially as described.

6. A sorting-machine provided with a receptacle for plates to be sorted, means for feeding the plates successively therefrom, means for

shifting the plates to distribute them in different directions and a sorting device constructed to coact with differently-disposed bearings of the plates to bring into action the shifting means, substantially as set forth.

7. A sorting-machine provided with a receptacle for plates to be sorted, means for feeding the plates successively therefrom, means for shifting the plates to distribute them in different directions and to reverse them in so doing, a sorting device constructed to coact with differently-disposed bearings of the plates to bring into action the shifting means, and receptacles to which the sorted plates are directed, substantially as set forth.

8. The combination in a sorting and printing machine, of a receptacle for printing-plates, printing means, devices for feeding the plates successively from the receptacle to the printing means, shifting means for directing the plates in different directions from the printing means, and sorting devices coacting with the plates to vary the action of the sorting devices, substantially as set forth.

9. The combination with means for feeding onward a succession of plates having bearings differently disposed, to regulate the number of times each plate shall pass through the machine, a means for shifting the plates in different directions, and a sorting device constructed to coact with all the plates to control the action of the shifting means, substantially as set forth.

10. The combination with means for feeding onward a succession of plates having regulating-bearings differently disposed, of a shifting or distributing device provided with arms arranged to carry the plates in different directions, and a sorting device and connections whereby to bring the different arms into action, substantially as set forth.

11. The shifting or distributing device consisting of rock-shafts provided with arms extending in different directions beneath a path traversed by a succession of plates, a sorting device coacting with the plates, and connections whereby to control the rock-shafts from the sorting device, substantially as set forth.

12. The shifting or distributing device consisting of rock-shafts provided with arms extending in different directions beneath a path traversed by a succession of plates, catches or detents for holding the plates on the arms, a sorting device coacting with the plates, and connections whereby to control the rock-shafts from the sorting device, substantially as set forth.

13. The shifting or distributing device consisting of rock-shafts provided with arms extending in different directions beneath a path traversed by a succession of plates, catches or detents for holding the plates on the arms, a sorting device coacting with the plates, connections whereby to control the rock-shafts from the sorting device, and detents to engage the plates delivered thereto by the arms, substantially as set forth.

14. The combination with means for feeding forward a succession of plates having bearings differently arranged, of a sorter provided with an adjustable pin and support therefor adapted to make contact with said bearings, means for reciprocating said pin and support, and distributing means controlled from said sorter, substantially as set forth.

15. The combination with the shifting or distributing means, of a sorter provided with a reciprocating arm, and a pin adjustable thereon, substantially as set forth.

16. The combination with the shifting or distributing means, of a sorter provided with a reciprocating arm having a series of openings, and a pin adapted to said openings, substantially as set forth.

17. The combination of the table having different channels, means for feeding a succession of plates in said channels, means for conveying the plates from one channel to another, and a sorter and connections for controlling the action of said means, substantially as set forth.

18. The combination of a receptacle for holding a series of plates, means for removing the plates successively from the bottom of said receptacle, other receiving-receptacles, sorting and distributing devices, and means for feeding the sorter-plates successively to the said receiving-receptacles and below the plates therein, substantially as set forth.

19. The receiving-receptacles arranged above feeding-channels for the plates, and provided with plates 29 having inclined forward edges, substantially as set forth.

20. The receiving-receptacles arranged above feeding-channels for the plates, and provided above said channels with plates 29 having inclined forward edges combined with pushers having shoulders for engaging the plates, substantially as set forth.

21. The distributing-receptacle having a base with an opening for the descent of plates therethrough, a channel below said opening, and a downward central projection o' at the end of the opening, combined with a pusher-bar having inclined upper faces and a pusher-shoulder, substantially as set forth.

22. The combination of the plate feeding and shifting devices, a sorter having a reciprocating arm and adjustable pin, a movable contact-plate arranged in position to contact with the said pin, and connections between said plate and the shifting devices, substantially as set forth.

23. The combination with the rock-shafts of the shifting device, of pinions thereon, racks engaging said pinions, a sorter, and connections for controlling the operations of the racks, substantially as set forth.

24. The combination of the rock-shafts, pinions and racks having lugs, a reciprocating pawl, a sorter, and connections whereby the pawl is shifted by the action of said sorter, substantially as set forth.

25. The combination of the rock-shafts, pinions, racks, provided with lugs having inclined upper edges, reciprocating pawl, sorter, and connection for shifting the pawl by the action of said sorter, substantially as set forth.

707,962. COLLAPSIBLE BOX. OTTO FEIL, Atlanta, Ga. Filed Apr. 9, 1902. Serial No. 102,072. (No model.)

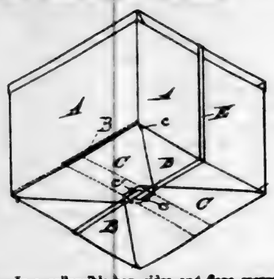

Claim.—In a collapsible box, sides and flaps secured thereto and adapted to fold across the rectangle bounded by said sides when formed and to lap their inner edges, one pair of opposite flaps being each provided with two holes adapted to register when said sides are lapped and the other opposite pair being each provided with one hole adapted when said sides are lapped to register with the hereinbefore-mentioned registered holes and of such length as to reach when lapped just up to the holes in each other, and a tape passed through the three holes in conjunction in contact with the ends of the last-named flaps and fastened.

707,963. ENVELOP. JOHN R. FITZGERALD, Boston, Mass. Filed Dec. 10, 1901. Serial No. 85,305. (No model.)

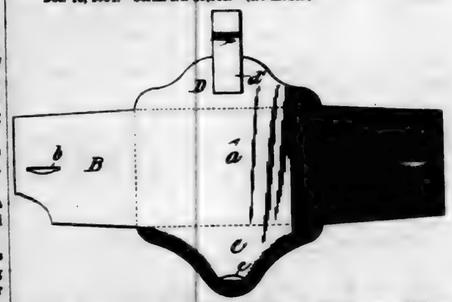

Claim.—An envelop consisting of a body portion, having side flaps and a bottom flap adapted to be folded over and secured together, each of said flaps having a slit, all of the slits registering when the flaps are folded, said body portion having a top flap provided with a tongue, said tongue adapted to carry adhesive substance, said slits being of similar shape and having straight upper edges and their lower edges at an intermediate point being recessed whereby the tongue may be passed through the registering slits, the clean side of the tongue passing along the straight upper edges of the slits, the parallel ends of the slits holding the tongue in position and the recessed lower edges of the slits permitting the adhesive substance to pass within the envelop without being scraped off.

707,964. CAR-HEATING SYSTEM. ERNEST H. GOLD, Chicago, Ill. Filed Sept. 17, 1900. Serial No. 30,267. (No model.)

Claim.—1. In a car-heating system, the combination with two independent heaters and a circulating system in operative contact with both of said heaters and adapted to be separately or simultaneously heated thereby, of a current-controlling valve interposed at a common junction between said heaters and said circulating system adapted to be closed against the inlet from either of said heaters to said junction whenever the other heater is in operation, and to be moved to a mid-position between

the inlets to said junction from each of said heaters when both of said heaters are in operation and to be supported when in said closed positions and when in said mid-position by a part of the structure, substantially as described.

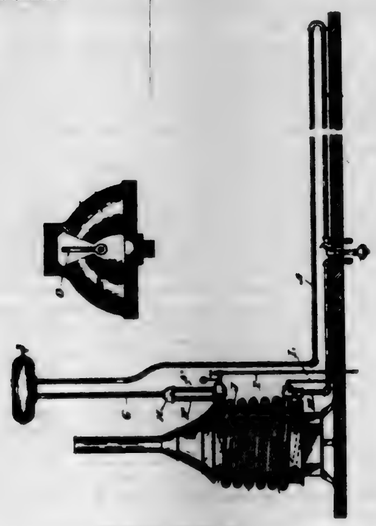

2. In a car-heating system, the combination with a circulating system, of two independent heaters each of which forms a part of the circulating system, a current-controlling valve located at the common point of junction between said heaters and the circulating system, and adapted to be automatically operated by the current moving from either or both of said heaters into the circulating system, to prevent short-circuiting, said valve when at rest being wholly supported by a portion of the structure, substantially as described.

3. In a car-heating system, the combination with two independent heaters, of a pipe connected to each of said heaters and to a casing, valve-seats formed on the upper end of each pipe, a single pipe connected to said casing communicating with said heater-pipes through the casing, and a flipper-valve pivoted in the casing below said valve-seats and adapted to be seated on one of said seats on one pipe when the current in the other pipe is rising, and adapted to engage the other seat on the other pipe when the current is rising in the first-named pipe, and adapted to assume a vertical position when the current is rising in both pipes simultaneously, substantially as described.

4. In a car-heating system, the combination with two independent heaters, of a pipe connected to each of said heaters, a casing connected to the upper ends of each of said pipes and communicating therewith, a single pipe connected to said casing at an intermediate point above said heater-pipes and communicating therewith through the casing, valve-seats formed on the upper ends of said heater-pipes, a flipper-valve pivotally mounted in said casing below the valve-seats, adapted to be seated on one of said seats when the current in the other pipe is rising, and adapted to engage the other seat when the current is rising in the first-named pipe, and adapted to assume a vertical position when the current is rising in both pipes simultaneously, whereby its weight is borne by the pivotal connection and its vertical position maintained by the equalization of the current-pressure in each side thereof, substantially as described.

707,965. COMBINED ROAD-CART AND INSECT-CATCHER. MARTIN B. GOODE, Vicksburg, Miss. Filed Mar. 3, 1902. Serial No. 96,432. (No model.)

Claim.—1. The combination with a one-wheeled vehicle, of a net coated with adhesive substance and mounted centrally over the thills of the vehicle and a series of lights arranged around said netting.

2. The combination with a one-wheeled vehicle, of arched bars secured to and extending upwardly from the thills of the vehicle, a net covered with adhesive substance mounted upon said arched bars and a series of lights surrounding said net.

3. The combination with a one-wheeled vehicle, of arched bars secured to and extending above the thills of said vehicle, standards mounted upon and extending upward from the center of the arched bars, a brace connecting the upper ends of said standards, a net coated with adhesive substance and secured to said standards and to said brace.

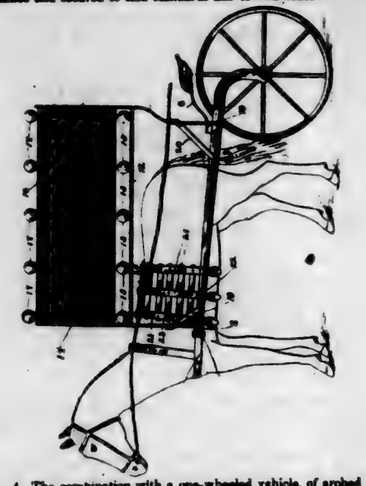

4. The combination with a one-wheeled vehicle, of arched bars extending upwardly from and secured to the thills of the vehicle, braces secured to said bars and to said thills, a brace connecting the arched bars at the top, standards projecting upwardly from the center of the arched bars, a brace connecting the upper ends of the standards, a net coated with adhesive substance secured to the said standards, and to the brace connecting the upper ends of the standards and a series of lights secured upon the last two named braces.

707,966. RAIL-JOINT. GEORGE GORDON, Luther, Mich., assignor of one-fourth to Thomas P. Magrane, Chicago, Ill. Filed Apr. 30, 1902. Serial No. 105,353. (No model.)

Claim.—1. In a rail-joint, the combination with a pair of cross-ties, of side plates secured to said ties, a bed-plate intermediate the ties, seats formed on the bed-plate to rest on the ties, adjoining rails resting on the ties and the bed-plate, and bolts securing the rails and the side plates together, substantially as described.

2. In a rail-joint, the combination with a pair of side plates, each plate having a depression, ways and a spring-seat, a bed-plate, bolts securing the side plates and the bed-plate together, a device for locking the nuts of the bolts against rotation, said device comprising a slide seated in the depression, guided therein by ways and held by the spring-seat, substantially as described.

3. In a rail-joint, the combination with a pair of side plates, each plate having ways and a spring-seat, a bed-plate, bolts securing the side plates and the bed-plate together, a device for locking the nuts of the bolt against rotation, said device comprising a slide guided by the ways and held by the spring-seat, substantially as described.

707,967. AUTOMATIC SWITCH FOR ELECTRIC PUMPS. ALFRED C. GRISCOM, New York, N. Y., assignor of one-half to Richard Collings, New York, N. Y. Filed Nov. 12, 1901. Serial No. 81,962. (No model.)

Claim.—In combination, a main-line circuit, a pump-circuit, a pressure-gage, a solenoid and contact-pieces at the opposite ends of the solenoid, the core of the solenoid being so located with respect to the said contact-pieces that it will make circuit through one set and break circuit through another set at each movement of the core, thereby simultaneously making or breaking circuit through the pump and breaking circuit through the solenoid, substantially as set forth.

2. In combination, a mean-line circuit, a pump-circuit, a pressure-gage, a solenoid and means under the control of the gage for energizing the solenoid and thereby making and breaking the pump-circuit, the said means comprising a vibrating tongue fixed to move with the gage-arbor, an arm for swinging the gage-arbor together with the vibrating tongue into any position within the limits of the gage and contact-pieces carried by the said arm for limiting the vibratory movement of the tongue in any position in which it may be set, substantially as set forth.

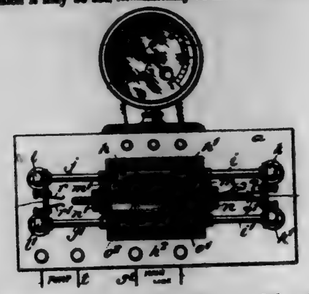

3. The combination with the reciprocating core of the solenoid, of an auxiliary core having a limited movement on the main core, substantially as set forth.

4. The combination with the solenoid, its core and yielding jaws for receiving the opposite ends of the core, of an auxiliary core having a limited initial movement along the main core for imparting a driving movement to the main core to release it from the contact-jaws, substantially as set forth.

707,968. IRONING-MACHINE. Isaiah Harer, Van Wert, Ohio. Filed Mar. 18, 1901. Serial No. 51,941. (No model.)

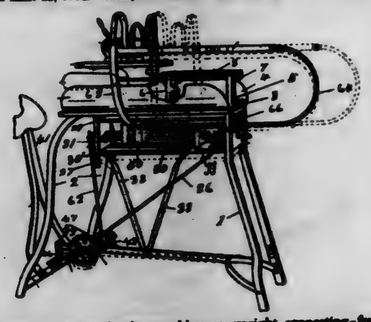

Claim.—1. In an ironing-machine, an upright supporting-frame surmounted by a fixed table; a vertically-movable frame arranged within said upright frame beneath said table; a right and left screw-threaded shaft revolubly mounted in said movable frame; means for actuating said shaft; a carriage loosely mounted on said shaft and provided with a split nut suspended therein and adapted for a meshing engagement with but one side of said shaft at a time, whereby the said carriage is effected a longitudinal movement thereon; means for automatically reversing the movement of said carriage at predetermined limits of its travel; means for normally holding said nut to its actuating engagement; a sectional ironing-board revolubly mounted on said table as described; lateral shields fixed on said table as shown; an iron supported by said carriage normally suspended above and in cooperative relation with the said board; and means for actuating the said vertically-movable frame to bring the said iron into operative relation with the said ironing-board.

2. An ironing-machine consisting of an upright supporting-frame; a horizontal screw-shaft having right and left screw-threads revolubly and yieldingly mounted in said frame; means for rotating said shaft and for imparting thereto a limited vertical movement; a carriage mounted on said shaft and adapted to be actuated thereby in opposite directions; means for automatically reversing said carriage at each limit of its travel; a sectional ironing-board rotatably mounted on said frame as described; and an iron supported from said carriage and normally suspended above said board and in cooperation therewith.

3. The combination of an upright frame; a right and left handed screw-shaft rotatably mounted and yieldingly supported in said frame; means for rotating said shaft, and means for imparting thereto a limited vertical movement; a carriage movably mounted on said shaft and adapted to be actuated thereby in opposite directions; means for automatically reversing said carriage at each limit of its travel; an ironing-board mounted on said frame; an iron yieldingly supported above and in cooperative relation with said board; and means for rigidly connecting the said iron with the said carriage.

4. In an ironing-machine of the class specified, mechanism for imparting to the iron a reciprocating motion in a horizontal plane consisting of a horizontal shaft having right and left handed screw-threads; a carriage movably mounted on said shaft, and provided with a split nut adapted to alternately engage the said shaft upon opposite sides for the purpose of actuating the said carriage in opposite directions; means for automatically reversing the said carriage at each limit of its travel; and means for rigidly supporting the said iron upon the said movable carriage.

5. In an ironing-machine means for actuating the iron to and fro in a horizontal plane, consisting of a horizontal screw-shaft having right and left handed threads; a carriage movably mounted thereon and provided with a pivoted split nut whose threaded jaws are adapted for an alternate actuating engagement with the said shaft whereby the said carriage is alternately actuated in opposite directions; means for rotating the said shaft; means for automatically reversing the movement of said carriage at each limit of its travel; means for reversing the movement of said carriage at any desired point in its travel; and means for firmly supporting the said iron upon the said carriage.

6. In an ironing-machine, an ironing-board consisting of radial sections pivotally mounted upon a revolvable shaft as described, and means for locking the said board in any desired position.

7. In an ironing-machine means for supporting a movable iron consisting of a rotatable screw-shaft having right and left hand threads; a carriage movably mounted on said shaft and provided with a pivoted nut having oppositely-arranged threaded jaws adapted for a meshing engagement with the said shaft alternately as described; means for normally holding said nut in its engagement; and means for supporting said iron upon said carriage.

707,969. CAN-DIPPING MACHINE. Louder Harbinson, Chester, Pa., assignor to John F. Wells and Ernest W. Bennett, Aberdeen, Md. Filed Jan. 10, 1902. Serial No. 89,191. (No model.)

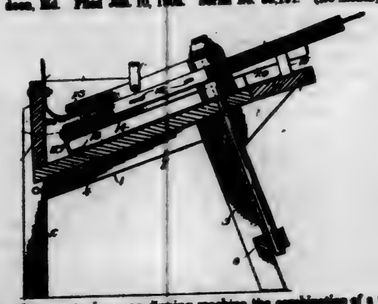

Claim.—1. In a can-dipping machine, the combination of a trough, designed to contain a liquid, a can-engaging wheel set at an inclination and extending into the trough, and a curved guide or way also set at an inclination and arranged concentric with the wheel and extending into the liquid to submerge the cans, substantially as described.

2. In a can-dipping machine, the combination of a trough, designed to contain a liquid, a can-engaging wheel set at an inclination and extending into the trough and provided with means for engaging cans, and an inclined way or guide extending into the trough below the surface of the liquid to submerge the cans and arranged adjacent to the wheel, substantially as described.

3. In a can-dipping machine, the combination of a liquid-receiving trough, an inclined can-engaging wheel, a guide or way arranged at an inclination and located adjacent to the wheel and extending beneath the surface of the liquid and adapted to receive, support and submerge the cans, and an adjustable guard arranged at the top of the guide or way and adapted to hold the cans in position, substantially as described.

4. In a can-dipping machine, the combination of a liquid-receiving trough, an inclined can-engaging wheel provided at intervals with fingers, an inclined guide or way extending into the trough below the surface of the liquid and adapted to receive and submerge the cans and located beneath the fingers, and a guard located above the fingers, substantially as described.

5. In a can-dipping machine, the combination of a trough having an inclined bottom, a can-engaging wheel arranged at an inclination and extending into the trough, and a curved guide or way arranged concentric with the lower portion of the wheel and extending into the trough, substantially as described.

6. In a can-dipping machine, the combination of a trough, a can-engaging wheel, a guide or way arranged adjacent to the wheel, and an adjustable guard arranged at the top of the guide or way and provided with a strainer for covering the top of the cans to retain the solid contents in the latter, substantially as described.

7. In a can-dipping machine, the combination of a trough, a can-engaging wheel, a guide or way arranged adjacent to the wheel, and a guard arranged at the top of the guide or way and provided with a strainer-strip having openings and forming a top wall for covering the cans to prevent the solid contents of the latter from escaping, substantially as described.

8. In a can-dipping machine, the combination of a frame having a trough provided with an inclined bottom, a can-engaging wheel arranged at an inclination and extending into the trough, the curved guide or way mounted upon the inclined bottom of the trough and having end extensions and composed of a bottom rail, a rear side or wall, and the short front walls arranged at the extensions of the guide or way and located at opposite sides of the wheel, substantially as described.

707,970. HEATER, RADIATOR, OR STOVE. Thomas P. Kinman, Brooklyn, N. Y., assignor of one-half to Frederick W. Sparks, Brooklyn, N. Y. Filed Feb. 28, 1902. Serial No. 96,726. (No model.)

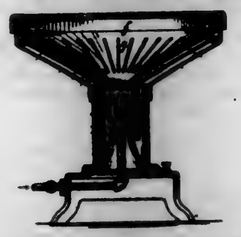

Claim.—1. As a new article of manufacture, a gas heating device comprising a chamber having a plurality of conical walls and exit-openings for the gas, a mixer having a deflector extending downwardly within the same from the central chamber, and a gas and air supply for the mixer.

2. A gas heating device comprising a central chamber with a plurality of walls, said chamber provided with exit-openings, and a mixing-chamber located outside the central chamber and having a deflector leading the mixture away from the central chamber, so that the mixing is complete before the combustible enters the said central chamber.

3. A gas heating device having a chamber with burner-openings and a mixer comprising an outer wall open at the bottom, an inner frusto-conical or tapering tube secured at its lower edge to the lower edge or bottom of the outer wall, and a deflector closed at top and open at bottom and made to extend part way down between the outer wall and the taper tube, so as to compel air and gas rising or entering by way of the taper tube to descend before entering and rising in the outer wall.

4. A gas heating device having a chamber with burner-openings and a mixer comprising an outer wall with open top, a tapered tube open at top and bottom and made to fit the bottom of the outer wall, and a deflector made to dip down between the tube and outer wall and separate from said tube.

5. A conical chamber having oppositely-located combustion-openings, and means forming a mixing-chamber for supplying combustible to and for supporting the central chamber.

6. A conical or upwardly-expanding chamber having oppositely-located combustion-openings for throwing heat outwardly and downwardly and also inwardly and upwardly, combined with a mixing-chamber.

7. A heating device comprising outer and inner conical chambers provided with oppositely-located burner-openings, a mixer outside of and made to communicate with the chambers, a deflector, and gas and air supplies for the mixer.

8. A gas heating device, consisting of a chamber formed of a plurality of walls and provided with gas-exit openings, a mixing-tube for supporting said chamber a deflector connected to said walls and depending downwardly within and separated from said mixing-tube and a suitable gas and air supply therefor.

707,971. METHOD OF AMALGAMATING METALS. Paul A. Krapff, Greenville, Ga., assignor, by mesne assignments, to American Amalgamating Company, a Corporation of Georgia. Filed Mar. 3, 1902. Serial No. 97,231. (No specimens.)

Claim.—1. The method of amalgamating metals which consists in causing pulp to traverse an amalgamating-space containing mercury, forcibly intermingling the mercury and the pulp during its passage therethrough, removing the gangue from said space, separating the heavier particles from said gangue, and causing them to retraverse the amalgamating-space.

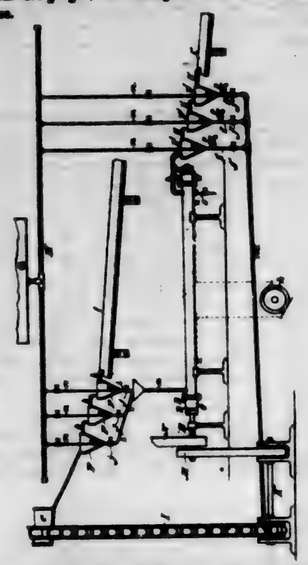

2. The method of amalgamating metals which consists in forming a pulp, forcibly intermingling the same with mercury, removing the gangue therefrom, separating the heavier particles from said gangue, and conducting the heavier particles thus separated to the lagging pulp.

3. The method of amalgamating metals which consists in forming a pulp, forcibly intermingling the same with mercury, removing the gangue therefrom, separating the heavier particles from said gangue, condensing the particles thus separated to the lagging pulp and concentrating the pulp and heavier particles before entrance into the amalgamator.

4. The method of amalgamating metals which consists in causing a pulp to traverse a restricted amalgamating-space containing mercury, forcibly intermingling the mercury and the pulp during its passage therethrough, removing the gangue from said space, separating the heavier particles from said gangue and causing them to retraverse the amalgamating-space.

5. The method of amalgamating metals which consists in separating the heavier metallic particles from the gangue and causing their repeated passage again through the amalgamating-space and their repeated intermingling with the mercury therein until amalgamation is effected.

6. The method of conducting the amalgamation of metals which consists in separating the heavier particles from the gangue, causing a repeated circulation of the same through the amalgamating-space and an enforced intermingling with the mercury until amalgamation is effected, and withdrawing from such circulation those particles unsusceptible to amalgamation.

7. The method of conducting a continuous amalgamation of metals which consists in causing the passage of pulp through a confined mercury-containing space, forcibly intermingling the mercury and pulp by agitation of the same, removing the gangue from said space, extracting the heavier particles from said gangue, causing said heavier particles to be returned again into the mercury-containing space, and subjecting them to intermingling with the mercury therein.

8. The method of amalgamating metals which consists in causing a pulp to traverse under pressure an amalgamating-space containing mercury, forcibly intermingling the mercury and the pulp during its passage therethrough, removing the gangue from said space, separating the heavier particles from said gangue and causing them to retraverse the amalgamating-space.

9. The method of amalgamating metals which consists in forming a pulp, causing a passage of said pulp under pressure through a mercury-receptacle, forcibly intermingling the mercury and pulp during such passage, removing the gangue from said receptacle, separating the heavier

particles from said gangue, and conducting the heavier particles then separated to the ingoing pulp.

10. The method of amalgamating metals which consists in forming a pulp, causing the passage of said pulp through a mercury-receptacle, forcibly intermingling the mercury and pulp during such passage, removing the gangue from said receptacle, separating the heavier particles from said gangue, conducting the particles thus separated to the ingoing pulp, and concentrating the pulp and heavier particles before entrance into the amalgamator.

11. The method of amalgamating metals which consists in causing a pulp to traverse an amalgamating-space containing mercury, forcibly intermingling the mercury and pulp during its passage therethrough, removing the gangue from said space, separating the heavier particles from said gangue, causing them to retraverse the amalgamating-space and maintaining the activity of the mercury by an alternating current.

12. The method of amalgamating metals which consists in forming a pulp, causing the passage of the same through a mercury-receptacle, forcibly intermingling the mercury and the pulp, removing the gangue therefrom, extracting the heavier particles from said gangue, returning said heavier particles to the mercury-receptacle, and maintaining the activity of the mercury by an electric current.

13. The method of amalgamating metals which consists in forming a pulp, conducting the same into a mercury-receptacle from a position elevated therebove, causing the circulation of said pulp through said receptacle by the pressure of the superimposed pulp, intermingling the mercury and pulp, removing the gangue from said receptacle, extracting the heavier particles from said gangue, conveying said heavier particles to the ingoing pulp.

707,972. AMALGAMATOR. PARK A. KNAPP, Granville, Ga., assignor, by mesne assignments, to American Amalgamating Company, a Corporation of Georgia. Filed Mar. 8, 1902. Serial No. 97,232. (No model.)

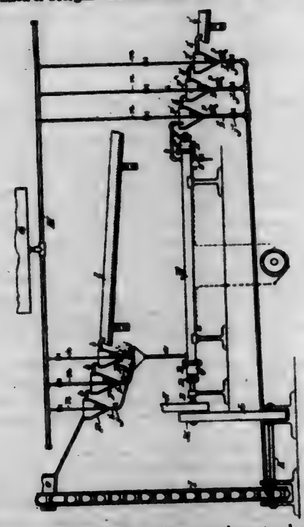

Claim.—1. The combination with an amalgamator, having means therein for forcibly intermingling the pulp and mercury, a pulp-inlet and an outlet for the gangue, of a concentrator for extracting the heavier particles from the gangue, and conveying means to conduct said heavier particles again into the amalgamator near the inlet end thereof.

2. The combination with an amalgamator having means therein for forcibly intermingling the pulp and mercury, a pulp-inlet and an outlet for the gangue, of a concentrator for extracting the heavier particles from the gangue and conveying means to conduct said heavier particles again into the amalgamator through said pulp-inlet.

3. The combination with an amalgamator having means therein for forcibly intermingling the pulp and mercury, a pulp-inlet and an outlet for the gangue, of a concentrator for extracting the heavier particles from the gangue, conveying means to conduct said heavier particles to the ingoing pulp, and a concentrator to concentrate the ingoing pulp and heavier particles.

4. The combination of an amalgamator, a concentrator interposed between the pulp-feeder and said amalgamator, and a second concentrator to receive the gangue therefrom, and having a concentrate-discharge to said first concentrator.

5. The combination of an amalgamator having means therein for forcibly intermingling the pulp and mercury, a pulp-inlet and an outlet for the gangue, means to cause the passage of the pulp therethrough under pressure, a concentrator for extracting the heavier particles from the gangue and conveying means to conduct said heavier particles again into the amalgamator near the initial end thereof.

6. The combination of an amalgamator, having means therein for forcibly intermingling the pulp and mercury, a pulp-inlet and an outlet for the gangue, means to cause the passage of the pulp through the mercury under pressure, a concentrator for extracting the heavier particles from the gangue, and conveying means to conduct said heavier particles again into the amalgamator through said pulp-inlet.

7. The combination of an amalgamator having means therein for forcibly intermingling the pulp and mercury, a pulp-inlet and an outlet for the gangue, means to cause the passage of the pulp through the mercury under pressure, a concentrator, for extracting the heavier particles from the gangue, conveying means to conduct said heavier particles to the ingoing pulp, and a concentrator to concentrate the ingoing pulp and heavier particles.

8. The combination of an amalgamator having means therein for forcibly intermingling the pulp and mercury, a concentrator to extract the heavier particles from the gangue, conveying means to return the heavier particles again to said amalgamator near the initial end thereof and means to cause the passage of an electric current through the contents of said amalgamator.

9. The combination of an amalgamator having means therein for forcibly intermingling the pulp and mercury, a pulp-inlet elevated thereabove and in free communication therewith, a concentrator for the gangue from said amalgamator and conveying means to conduct the heavier particles from said concentrator to the pulp-inlet.

10. The combination of an amalgamator having means therein for forcibly intermingling the pulp and mercury, a concentrator for extracting the heavier particles from the gangue, means for returning said heavier particles to the amalgamator to maintain a repeated circulation of the amalgamated metal therethrough, and means for withdrawing from such circulation those particles which are unsusceptible to amalgamation.

11. The combination of an amalgamator having means therein for forcibly intermingling the pulp and mercury, a concentrator to receive the gangue therefrom, and communication between said concentrator and an inlet to said amalgamator to permit the passage of the heavier particles from said concentrator again into said amalgamator.

707,973. CARBURETER. THOMAS H. J. LEONARD, Admr. Iowa, assignor of one-half to Mason City Gas and Fuel Company, Mason City, Iowa. Filed May 29, 1902. Serial No. 109,481. (No model.)

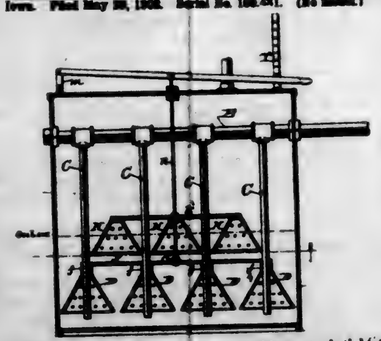

Claim.—1. In a carburetor for gas-machines, an air-tight tank, a fixed tube extending horizontally in the top portion of the tank, a plurality of tubes fixed to the horizontal tube to extend into the lower portion of the tank, elongated air-distributers fixed together and slidingly connected with the lower ends of the fixed tubes, means for raising and lowering the air-distributers and means for retaining them stationary at different points of elevation, arranged and combined to operate in the manner set forth for the purposes stated.

2. In a carburetor for gas-machines, an air-tight tank, a tube fixed in the top portion of the tank to extend horizontally, a plurality of tubes extending vertically and fixed to the horizontal tube, an air-distributer slidably connected with each fixed upright tube, means for jointly raising and lowering the distributers relative to the bottom of the tank and a plurality of air-distributers fixed on top of the distributers slidably connected with the upright tubes, to operate in the manner set forth for the purpose stated.

3. A carburetor for gas-machines, an air-tight tank, an air-tube fixed in its top portion to extend horizontally, a plurality of tubes fixed to the horizontal tube to extend downward, an air-distributer slidably connected with the lower end portion of each upright tube, a second series of air-distributers fixed on top of the lower distributers, a rod connected with the plurality of distributers and extended up through the top of the tank and the rod pivotally connected with the lever and a rack for retaining the lever in a fixed position, arranged and combined to operate in the manner set forth for the purposes stated.

707,974. CLOTHES-WRINGER. FRED H. PERKINS, Bridgewater, Mass., assignor of one-third to Harry E. Perkins, Bridgewater, Mass. Filed July 17, 1899. Serial No. 724,055. (No model.)

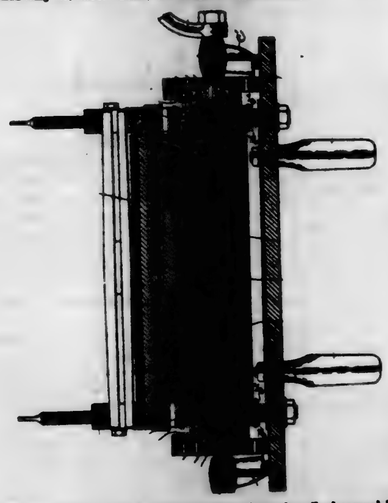

Claim.—The improved clothes-wringer above described comprising wringer-rolls, one of which has a tubular shaft; a power-driven shaft inside the tubular shaft; and pinions on the power-shaft meshing with internal gears on the tubular shaft whereby the clothes passing between the wringer-rolls are not exposed to the teeth of the gearing.

707,975. MERCURY-VAPOR LAMP. HENRY M. PORTER, Pittsburg, Pa., assignor to George Westinghouse, Pittsburg, Pa. Filed July 24, 1900. Serial No. 24,551. (No model.)

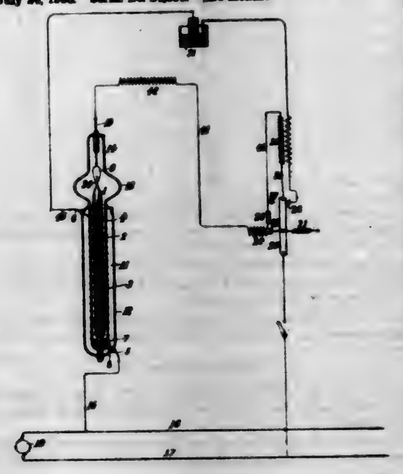

Claim.—1. The method of utilizing substantially all the luminous effect of a gas or vapor rendered and maintained incandescent by the electric current, which consists in shutting off the current from the central portion of the gas or vapor and confining its action to a path outside such central portion.

2. The method of utilizing substantially all the luminous effects of a gas or vapor rendered and maintained incandescent by the electric current, which consists in arranging the gas or vapor path in the form of an annulus and causing the current to traverse this path.

707,976. MERCURY-VAPOR LAMP. HENRY M. PORTER, Pittsburg, Pa., assignor to George Westinghouse, Pittsburg, Pa. Original application filed July 24, 1900, Serial No. 24,551. Divided and this application filed Dec. 31, 1900. Serial No. 41,606. (No model.)

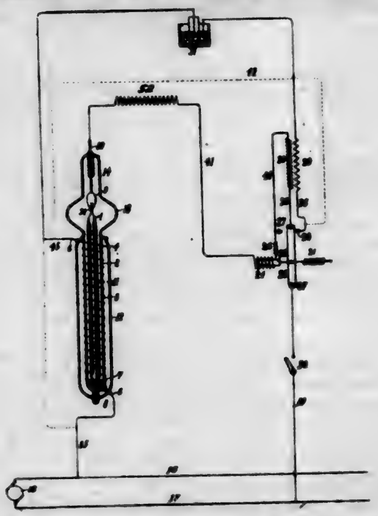

Claim.—1. A gas or vapor electric lamp, having a tube containing a material or materials intended to be made incandescent by the electric current, in combination with a non-conducting material occupying the central portion of the said tube.

2. A gas or vapor electric lamp, consisting of a tube containing a material or materials intended to be made incandescent by the electric current, a cooling-chamber at one end of the said tube, and a narrowed extension of the said chamber.

3. A gas or vapor electric lamp, consisting of a tube containing a material or materials intended to be made incandescent by the electric current, a cooling-chamber at one end of the said tube, and a narrowed extension of the said chamber, one of the electrodes being located at the mouth of the narrowed extension.

4. A gas or vapor electric lamp, having a tube containing a material or materials intended to be made incandescent by the electric current, the said tube being surrounded by a vacuum-chamber in which is located a heater.

5. A gas or vapor electric lamp, having a tube containing a material or materials intended to be made incandescent by the electric current, the said tube being surrounded by a vacuum-chamber in which is located an electrical starting-heater.

6. A gas or vapor electric lamp, having a tube containing a material or materials intended to be made incandescent by the electric current, the said tube being surrounded by a vacuum-chamber in which is located a heater, the operation of which is automatically interrupted by the lighting-current.

7. A gas or vapor electric lamp, having a tube containing a material or materials intended to be made incandescent by the electric current, the said tube being surrounded by a vacuum-chamber for a portion of its length and containing an enlargement in its remaining portion.

707,977. WHEELED SCRAPER OR SCOOP. THOMAS B. RADCLIFFE, Lawrence, Kans., assignor of one-third to Charles Rich Metcalf, Lawrence, Kans. Filed Dec. 7, 1901. Serial No. 84,591. (No model.)

Claim.—1. A wheeled scraper, comprising in combination, a pan, an end-gate closable over the front of the pan, a draft-frame upon which the pan is pivotally suspended, a pan-shifting and wheel-supporting frame, having stub-axles, and pivotally connected with the pan at a point in advance of its axles, and having a member for engaging the pan to lift it and move it forward, and interlocking devices controlled by the forward lift movement of the pan for effecting a closure of the end-gate, as the pan is lifted and moved forward, as set forth.

2. A wheeled scraper, comprising in combination with a lift-frame the supporting-wheels, the vertically and forwardly movable pan, pivotally suspended from said frame, and the draft-frame pivotally hung on the axles; of the independently-movable end-gate pivotally suspended from the draft-frame, and mechanism cooperatively connected with the pan and draft-frame controlled by the upward and forward swing of the pan for shifting said end-gate to its closure position, when the pan is elevated for transportation, as set forth.

3. The combination with the pan, a lift-frame having side arms pivotally connected with the pan at a point in advance of the axles, said arms having the wheel-carrying axles projected therebeyond, a draft-frame pivotally joined with the axles, an independently-movable end-gate pivotally suspended from the said draft-frame, latch-hooks on the pan, latches on the draft-frame, and means for moving the said hooks and pan to an interlocking position, substantially as shown and for the purposes described.

4. The combination with the frame B, including the side members *b*, and the stub-axles projected from said members; of the pan pivotally suspended from the members *b* at a point in advance of the axles, latch-engaging hooks projected forwardly from the pan and secured thereto, and heel-bosses on the pan in the path of the swing movement of the members *b*; of the draft-frame C pivotally secured to the axles, the end-gate D, pivotally suspended from the frame B, latches on the frame C for engaging the pan-hooks, and means for swinging the end-gate to its closed position as the pan is lifted and swung forward by the action of the frame B, substantially as shown and for the purposes described.

707,978. GAP FOR BOTTLES. Frederick Esser, Brooklyn, N. Y., assignor to Rex Cap and Cork Company, New York, N. Y., a Corporation of New York. Filed Dec. 13, 1900. Renewed Feb. 21, 1902. Serial No. 93,693. (No model.)

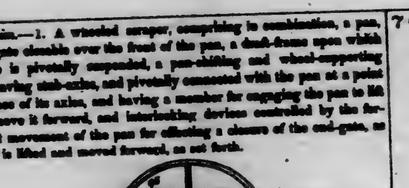

Claim.—1. The combination with a bottle, of a flanged cap for the mouth thereof, the neck of the bottle and the flange of the cap being provided with matching grooves, a wire intermediate between the neck and cap and locking the cap to the bottle by lying partly in each groove, and an opening through the flange of the cap into its groove through which the wire can be withdrawn from its locking position with both grooves, substantially as described.

2. The combination with a bottle, of a flanged cap for the mouth thereof, the neck of the bottle and the flange of the cap being provided on one side with engaging lips and on the opposite side with matching grooves, and a wire intermediate between the neck and the cap and locking the cap to the bottle by engaging the grooves in both, substantially as described.

3. The combination with a bottle of a flanged cap for the mouth thereof, the neck of the bottle and the flange of the cap being provided on one side with engaging lips and on the opposite side with matching grooves, an opening through the flange of the cap into the groove, and a wire passing through the opening and lying intermediate between the neck and the cap and locking the cap to the bottle by engaging the groove in both, substantially as described.

707,979. BOOK-SUPPORT OR COPY-HOLDER. Sherard W. Sawyer, St Rena, Ohio. Filed Oct. 11, 1901. Serial No. 78,370. (No model.)

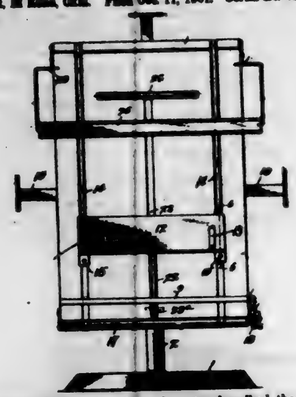

Claim.—1. In a device of the character described, the combination of a book adjustably mounted upon a suitable support and having its front and rear surfaces provided with siloed longitudinal grooves, rollers mounted at the ends of the book and extending across the terminals of the grooves, a carriage disposed transversely of the front of the book, straps traveling in the grooves and secured at one end to the carriage and at the other end to one of the rollers, a ratchet device for the latter roller, operating means for the roller, and antifriction-rollers carried by the carriage and traveling in the respective grooves in the front of the book and behind the straps.

2. A device of the class described, comprising a book adjustably mounted upon a suitable support, a top and opposite side extensible arms mounted in grooves in the rear side of the book, a carriage slidable upon the front side of the book, means for adjustably moving the carriage, a ratchet device therefor, a spring constructed to return the carriage to its normal position when the ratchet is released, a marker extending transversely across the front side of the book, and provided with opposite terminal arms which are pivoted to the respective edges of the book, the marker being capable of being swung over upon the rear side of the book upon the pivotal connections of the arms as centers, and an antifriction-roller let into the front side of the book.

707,980. KNITTING-MACHINE NEEDLE. Robert W. Scott, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed Oct. 15, 1901. Serial No. 78,116. (No model.)

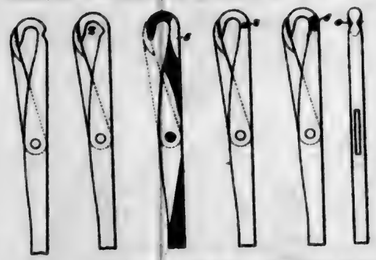

Claim.—1. A knitting-machine latch-needle having its upper portion locally weakened so as to cause breakage at a predetermined point when the hook is subjected to undue strain.

2. A knitting-machine latch-needle having its hook locally weakened whereby, when said hook is subjected to undue strain, the hook portion of the same will be broken off.

3. A knitting-machine latch-needle having the upper portion of the same recessed at a point below the head of the hook so as to locally weaken the same.

707,981. MOWING-MACHINE. Fred L. Semple, Toledo, Ohio. Filed June 10, 1899. Renewed Feb. 3, 1902. Serial No. 92,546. (No model.)

Claim.—In a mowing-machine, the combination with the supporting-frame, two wheeled axles thereon, one below and in advance of the

other, rollers at the forward end of the supporting-frame, a draft-bar having its inner end pivotally connected to the lower wheeled axle, and a brace for the draft-bar extending from the latter to and having a pivotal connection with the lower axle, substantially as and for the purpose described.

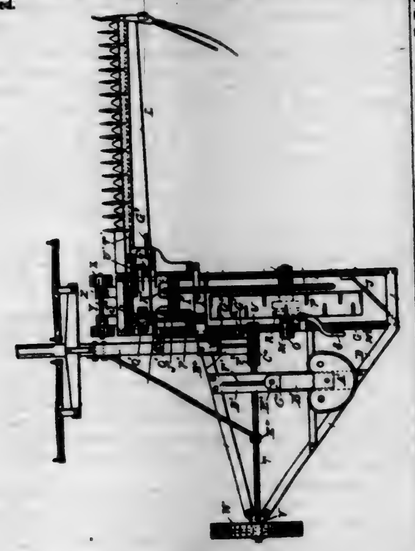

707,982. HEAD OR SEARCH LIGHT. Horace H. Taylor, San Jose, Cal., assignor of one-half to Frank J. Hayhow, San Francisco, Cal. Filed June 2, 1902. Serial No. 109,594. (No model.)

Claim.—1. A head or search light comprising a central stationary mirror or reflector and a plurality of adjustable mirrors extending around said stationary mirror or reflector, substantially as and for the purpose specified.

2. A head or search light comprising a central mirror or reflector and a plurality of supplemental mirrors or reflectors forming an extension to the central mirror or reflector, and means for adjusting the supplemental mirrors or reflectors, substantially as and for the purpose described.

3. A head or search light comprising a plurality of pivoted mirrors or reflectors, a movable ring, and suitable means connecting the mirrors or reflectors with the ring, whereby the movement thereof will change the position and angle of the mirrors or reflectors, substantially as and for the purpose set forth.

4. A head or search light comprising a stationary ring, a plurality of mirrors or reflectors pivotally connecting with the ring, a movable ring connecting with the mirrors or reflectors whereby the same may be adjusted to change their angle by the movement of the ring, substantially as and for the purpose specified.

5. A head or search light comprising a plurality of pivoted mirrors or reflectors, arms connecting with the mirrors or reflectors, a movable ring and suitable cam devices thereon to operate in connection with the arms to tilt the mirrors or reflectors on their pivotal connection to change their angle to control the direction of the rays or beams of light therefrom, substantially as and for the purpose described.

6. A head or search light comprising a central stationary mirror or reflector and a plurality of pivoted supplemental mirrors or reflectors, a movable ring and suitable cam devices thereon for changing the position of the supplemental mirrors or reflectors with relation to their angle whereby the direction of the rays or beams of light reflected thereby are controlled, substantially as and for the purpose set forth.

7. A head or search light comprising a central stationary mirror or reflector and a plurality of pivoted supplemental mirrors or reflectors forming an extension thereto, suitable arms extending from the rear sides of the supplemental mirrors, a suitable movable ring and cam devices thereon to operate in connection with the arms to change the angle and position of the supplemental pivoted mirrors and reflectors, substantially as and for the purpose described.

8. A head or search light comprising a stationary ring, a central mirror or reflector connecting therewith, a movable ring and suitable cam devices thereon, and pivoted supplemental mirrors or reflectors connecting with the ring, and arms upon the supplemental mirrors or reflectors against which the cam devices come in contact to adjust the position of the supplemental mirrors or reflectors, substantially as and for the purpose specified.

9. A head or search light comprising a stationary ring, a suitable mirror or reflector and brackets connecting the same with the ring, suitable arms on the ring, supplemental mirrors or reflectors pivotally connected thereto and forming an extension to the stationary mirror or reflector, suitable arms upon the rear sides of the supplemental mirrors or reflectors, a movable ring suitably connecting with the stationary ring, and cam devices thereon to operate in connection with the arms, substantially as and for the purpose set forth.

707,983. METALLIC SHELVING. Warren H. Taylor, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Filed Feb. 3, 1894. Serial No. 499,088. (No model.)

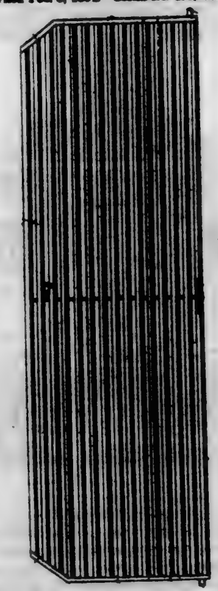

Claim.—1. As a new article of manufacture, an open trussed fireproof shelf comprising transverse end pieces, hollow bars fixed at their ends against transverse displacement upon said end pieces, trussed tie-rods having their ends fixed in the end pieces, tying said end pieces together and holding them against the hollow bars, and a transverse supporting-rod passing through all of the hollow bars, fixed with relation thereto and resting upon the trussed tie-rods; substantially in the manner and for the purposes set forth.

2. As a new article of manufacture, an open fireproof shelf comprising end pieces formed with seats, longitudinal hollow bars fitted to the seats on said end pieces in a manner to prevent transverse movement of the hollow bars on the end pieces, and a rod passing transversely through all of the hollow bars and resting upon the tie-rods and thereby affording vertical support to the hollow bars; substantially as herein set forth.

3. As a new article of manufacture, an open fireproof shelf comprising transverse end pieces having beams formed thereon providing seats, longitudinal hollow bars fitted over said bars and thereby prevented from transverse movement upon the end pieces, trussed tie-rods extending through the hollow bars, having their ends fixed in the end pieces and tying the latter rigidly against the longitudinal hollow bars, and a trans-

verse rod passing through all of the hollow bars above and resting upon the tie-rods; substantially as set forth.

4. A metallic shelf comprising a series of longitudinal hollow bars, the transverse pieces or headers in which the ends of the hollow bars are fitted and by means of which the hollow bars are supported, and the brace or tie rods, located at variable heights between the top and bottom of the pieces or headers and by which the pieces or headers are connected and adapted to impart additional support and stiffness to the hollow bars; substantially as described.

5. In a metallic shelf, the combination of the pieces or headers, the bars extending between the headers, one or more brace or tie rods also extending between and attached to the headers, and a screw-threaded stay-rod passing through the bars and engaging the brace or tie rods, at or near the center, substantially as and for the purpose set forth.

707,984. DRIVING MECHANISM FOR ROAD-VEHICLES. WILLIAM S. TAYLOR, Jr., Lima, Ohio, assignor of two-thirds to Charles Zimmerman and Lee Zimmerman, Ostwein, Iowa. Filed Nov. 20, 1901. Serial No. 83,055. (No model.)

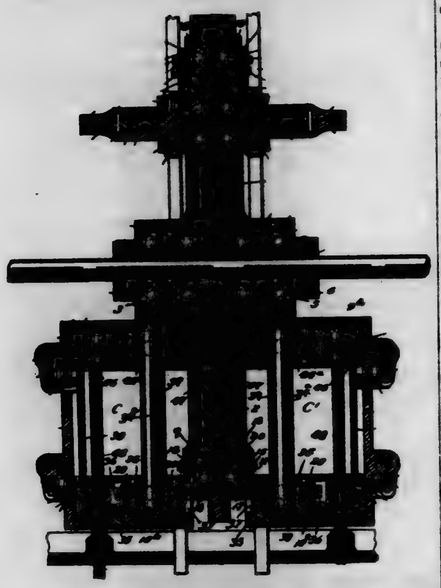

Claim.—1. In a changeable speed-gear, a driven member, a casing surrounding the driven member, a rotary driving member mounted revolubly on the casing and concentric to the driven member, parallel shafts, fixed and movable gears on said shafts, said fixed gears connecting with the driving member and the movable gears with the driven member.

2. In a changeable speed-gear, a casing having a circular perimeter, a driven rotary member, a revolubly driving member, mounted on the perimeter of the casing, shafts, fixed and movable gears on the shafts, connecting with the driving and driven members on opposite sides thereof respectively, and means to throw the gears out of operative connection with said members.

3. In a changeable speed-gear, a casing having a circular perimeter, a driving member revolubly mounted on the perimeter of the casing, a driven member within the casing, shafts on opposite sides of and parallel with the driven member, fixed and movable gears on each shaft connecting with the driving and driven members respectively, means to throw the gears out of operative connection with said member, and means to adjust the movable gears on the shafts.

4. In a changeable speed-gear, a casing, a rotary driven member therein, a rotary driving member mounted on the perimeter of the casing, shafts on opposite sides of the driven member, fixed and movable gears, arranged to connect with the opposite side faces of the said driving and driven members respectively, and means substantially as described for adjusting the movable gears on the shafts.

5. In a changeable speed-gear, a rotary driven member, a rotary driving member arranged concentric to and in the same plane as the driven member, gear-carrying means parallel to the plane of the said members, fixed and movable gears mounted thereon and operatively engaging the driving and driven members respectively, and means substantially as described for adjusting the movable gears on the shafts.

6. In a changeable speed-gear, a rotary driven member, a rotary driving member arranged concentric to and in the same plane as the driven member, gear-carrying means parallel to the plane of the said members, fixed and movable gears mounted thereon and operatively engage the driving and driven gears respectively, and means to adjust the movable gears with relation to the driven member.

7. In a changeable speed-gear, a rotary driven member, a rotary driving member arranged concentric to and in the same plane as the driven member, gear-carrying means parallel to the plane of the said members, fixed and movable gears mounted thereon, arranged to operatively engage the driving and driven gears respectively, means to adjust the movable gears with relation to the driven member and means to throw the gears out of operative engagement.

8. In a mechanism of the character described, the combination of a casing, a rotary disk-wheel within the casing, means to rotate the disk-wheel, and brakes in the casing arranged to bear on opposite sides thereof mounted on eccentric bearings.

9. The combination of a circular casing, a revolubly sprocket-rim on the casing, a rotary disk-wheel within the casing, oppositely-disposed shafts, friction-pulleys on the shafts to engage with the sprocket-rim, and friction-pulleys on said shafts to engage with the disk-wheel.

10. The combination of a circular casing, a revolubly sprocket-rim on the casing, a rotary disk-wheel within the casing, oppositely-disposed shafts, friction-pulleys on the shafts to engage with the sprocket-rim, friction-pulleys on said shafts to engage the disk-wheel and movable lengthwise on the shafts, and means to move and hold said pulley at points to which moved.

11. The combination of a circular casing, a revolubly sprocket-rim on the casing, a rotary disk-wheel within the casing, oppositely-disposed shafts, friction-pulleys fixed on one end of the shafts to engage with the sides of the sprocket-rim, friction-pulleys slidably mounted on the other ends of the shafts to engage with the sides of the disk-wheel, means to move the pulleys laterally out of engagement and means to move and hold the slidable pulleys on the shafts.

12. The combination of a circular casing, a revolubly sprocket-rim on the casing, a rotary disk-wheel within the casing, oppositely-disposed boxes secured to the casing, laterally-movable bearings located in one end of the boxes, laterally and vertically movable bearings in the other end of the boxes, friction-pulleys in the first-named bearings, to bear on the face edges of the sprocket-rim, friction-pulleys in the second-named bearings, to bear on the faces of the disk-wheel, means to move the laterally and vertically movable bearings with the pulleys vertically, and means to move the bearings laterally.

13. In combination with the revolubly sprocket-rim, the casing, and the disk-wheel, of a reversing-gear therefor, comprising parallel shafts, pulleys on the ends of the shafts, to engage the sprocket-rim, pulleys on the opposite ends of the shafts, pulleys interposed between the last-named pulleys and the side faces of the disk-wheel, and means to move the pulleys into and out of engagement with the disk-wheel.

14. In a machine of the character described, the combination with the casing, the revolubly sprocket-rim carried by the casing, and the disk-wheel, of a reversing mechanism therefor, comprising shafts mounted parallel with the casing and disk-wheel and laterally movable in relation thereto, pulleys on the shafts to engage the sprocket-rim, pulleys on the other ends of the shaft, and pulleys between these and the disk-wheel, means to adjust the pulleys radially in relation to the disk-wheel, and means to move all the pulleys into and out of engagement with said rim and disk-wheel.

707,985. PROCESS OF MAKING LAUNDRY STARCH. CHARLES H. TILLOTSON and ABEL G. GOLDSWAIT, Troy, N. Y., assignors to William H. Tillotson & Son, Troy, N. Y., a Firm. Filed Feb. 3, 1898. Renewed July 14, 1902. Serial No. 115,963. (No specimens.)

Claim.—1. That improvement in the art of making laundry starch which consists in heating starch with water until it becomes hydrated, and then cutting and finely subdividing the mass until all structure is destroyed.

2. That improvement in the art of making laundry starch which consists in heating starch with water until it becomes hydrated, and then simultaneously cutting, finely subdividing and cooling the mass until all structure is destroyed.

3. That improvement in the art of making laundry starch which consists in simultaneously isolating from external contamination, agitating and superheating a mixture of ignitable starch and water until the starch becomes soluble and is partially dissolved, and then while so isolated simultaneously cutting, finely subdividing and cooling the isolated mass.

707,985.

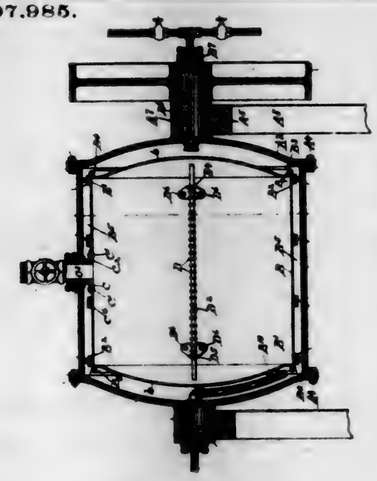

707,986. APPARATUS FOR TREATING STARCH. CHARLES H. TILLOTSON and ABEL G. GOLDSWAIT, Troy, N. Y., assignors to William H. Tillotson & Son, Troy, N. Y., a Firm. Original application filed Feb. 3, 1898, Serial No. 668,686. Divided and this application filed Aug. 30, 1901. Serial No. 73,366. (No model.)

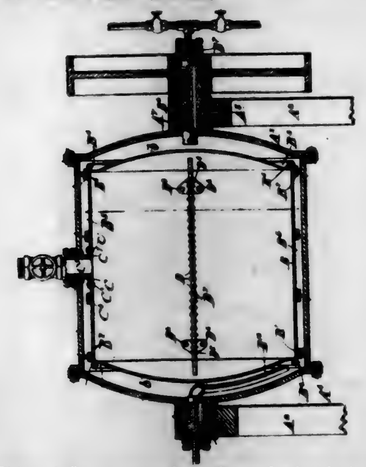

Claim.—1. In an apparatus for treating starch a drum having a series of screen-partitions extending from its inner periphery to near its center, leaving said center open for the passage of starch from one partition to the other entirely around the cylinder, and an opening leading to the space between two of the partitions, said opening being provided with means for closing the same, substantially as described.

2. In a starch-treating apparatus a starch-receiving drum rotary upon a horizontal axis and containing a screen-partition fixed in the drum and partially dividing the starch-inclosure, and means for rotating the drum.

3. An apparatus for treating starch consisting of a drum having a series of screen-partitions extending from its inner periphery to near its center, leaving said center open for the passage of starch from one partition to the other entirely around the cylinder, substantially as described.

4. An apparatus for treating starch consisting of a drum having a series of screen-partitions extending from its inner periphery to near its center, leaving said center open for the passage of starch from one partition to the other entirely around the cylinder, and an opening leading to the space between two of the partitions, said opening being closed by a valve, substantially as described.

5. The combination with an outer drum having end trunnions journaled in suitable bearings; of an inner drum; adjustable supporting connections between the cylindrical walls of the two drums for centering the inner drum; inlet and outlet pipes for permitting a heating agent to flow through the space between the drums and means for rotating the drums, substantially as described.

6. In a starch-treating apparatus, and in combination; a rotary drum with supporting-trunnions; bearings for the trunnions; means for rotating the drum; a closed starch-receiver; means for supporting the receiver within the drum with a steam-chamber between the drum and receiver; a steam-supply pipe leading through one of the trunnions to the steam-chamber; a stationary exhaust-pipe leading from the lower side of such steam-chamber out through the other trunnion, substantially as described.

707,987. LOCK-UP FOR PRINTERS' FORMS. SAML. G. TORREY, Washington, D. C., assignor of one-half to William C. Boddew, Washington, D. C. Filed July 20, 1901. Serial No. 68,810. (No model.)

Claim.—1. In a lock-up for printers' forms, the combination with two parallel movable quoin-members disposed at right angles to each other and each comprising two sections one of which is movable longitudinally and the other of which is movable laterally, said sections of each member having coacting cam-faces, of a pressure-adjusting device including a block interposed between the mutually-adjacent ends of the members and pivotally connected to the adjacent ends of the longitudinally-movable sections of the members, and means operating through said block for actuating the members substantially as described.

2. In a lock-up for printers' forms, the combination with the quoin members each comprising two sections, the one section of each member being movable longitudinally and the other section of each member movable laterally, of a pressure-adjusting device including a block pivotally connected to adjacent ends of the members, and a screw operating through said block, substantially as described.

3. In a lock-up for printers' forms, the combination with the quoin members adapted to be placed within the chase substantially at right angles to one another, of a pressure-adjusting device including a block and screw, the block pivotally connected to the adjacent end of the quoin members, substantially as described.

4. In a lock-up for printers' forms, the combination with the quoin members disposed at right angles to each other and each comprising two sections having coacting cam-faces, one section of each member movable longitudinally and the other movable laterally, of a pivotal connection between the adjacent ends of the longitudinally-movable members and means connected to the said pivotal connections for adjusting the pressure of the members on the type-form, substantially as described.

5. The combination with the quoin members each comprising two sections one section movable longitudinally and the other laterally, with means carried by the longitudinally-movable section to limit the movement of the laterally-moving section, and a pressure-adjusting device including a block, and a screw operating therethrough, the block being pivoted to the adjacent ends of the longitudinally-movable sections, substantially as described.

6. In a printer's lock-up, two quoin members adapted to be placed within a chase substantially at right angles to each other, a block placed between the adjacent ends of said members, a screw operating through said block for engagement in the corner of the chase, and links pivoted at their ends to the block and quoin members, substantially as described.

7. A lock-up for printers' forms, comprising in connection with a type-chase, quoin members which are adapted to be placed in the chase substantially at right angles, a block located between the adjacent ends of the quoin members, a screw operating through the block and engaging the type-chase, and links pivoted to the block and to the adjacent ends of the quoin members, as and for the purpose described.

8. In a printer's lock-up two quoin members adapted to be placed within a chase at substantially right angles to each other, each member comprising two sections, one section movable longitudinally and the other section of each member movable laterally, a pivotal connection between the adjacent edges of the said longitudinally-movable members, and a pressure-adjusting device pivotally secured to the said pivotal connection, substantially as and for the purpose described.

707,988. AUTOMATIC TRAIN-PIPE COUPLING. WILLIAM G THISTLEWAY, Vancouver, Canada, assignor of one-half to THOMAS A. TREMBLAY, Montreal, Canada. Filed Jan. 8, 1902. Serial No. 88,915. (No model.)

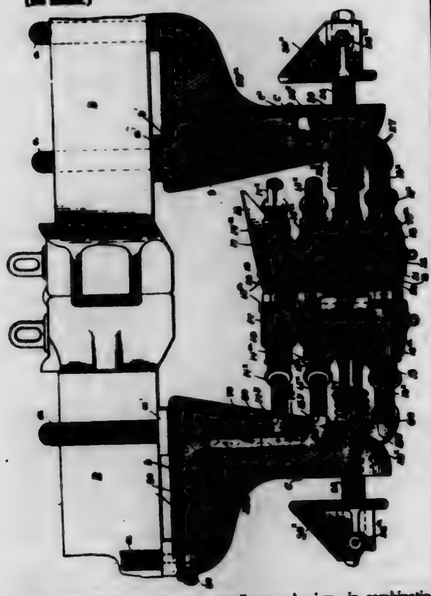

Claim.—1. In a train-pipe coupling mechanism: in combination with a suitable hanger, a coupling means supported in said hanger, comprising a solid shank fulcrumed in the hanger for vertical and lateral motion, a coupling-head attached to and supported upon the outer end of the shank to move freely in a lateral and vertical plane, said shank having means adapted to coöperate with the hanger for sustaining the shank and the head in a horizontal position, said coupling-head including flexibly-held pipe-sections, and flexible connections for joining said sections with the ordinary train-pipe, all being arranged substantially as shown and described.

2. The combination with train-pipes, the hanger 20, the coupling-head, said head having ducts for coöperating with the train-pipes, and a solid stem slidable in the hanger, means for sustaining the stem and head in a predetermined horizontal plane, and the spring for normally forcing the head and its stem forward; of the rigid pipe-sections, joined with the coupling-head ducts, with their free ends extended in a transverse plane with the hanger 20, and a flexible pipe-connection for joining the rigid pipes with the train-pipes, all being arranged substantially as shown and for the purpose described.

3. In a train-pipe coupling mechanism as described, a longitudinally-slidable coupling-head, and means for normally pressing it to its forward position; of mechanism for tilting the said head vertically, when said head is forced the limit of its outward thrust, for the purposes set forth.

4. The combination with the hanger 20, the coupling-head longitudinally slidable in said hanger, and supported therein to swing in a vertical plane; of a stop-piece on the rear end of said coupling-head, adapted to engage the hanger, and a stop adjustably held on the hanger for engaging with the upper end of the stop, for the purposes specified.

5. The combination with the vertically-slotted hanger, the coupling-head, including the stem 26 slidably mounted in the slot of the hanger and fulcrumed therein for vertical and lateral movement, the bracket or stop member fixedly secured on the rear end of the stem, the spring 27, and the stop-stud C, adjustably mounted on the hanger to engage with the stop member when the stem and head move forward, for the purposes described.

6. In a train-pipe coupling mechanism of the character described the combination with the hanger 20 for supporting the pipe coupling mechanism, said hanger including diverging side members, and a cross-head, and the draw-bar; of clip members adapted to straddle the bar, said members including distance-pieces or clip-bars, for coöperating with the threaded ends of the clips, and notched cylebolts for engaging the clip ends, and made fast to the side members of the hanger-frame, all being arranged substantially as shown and described.

7. In combination with a coupler-head, having a rectangular face with guide-horns placed on a diagonal plane at opposite flat sides of head, and bearing-points arranged on its opposite corners, and apertured nuts having gudgeons arranged in ducts on a perpendicular line across the face of said head, a detachable plate, having ducts therethrough designed to register with the ducts in said head, said plate being of the same contour as face of said head, a catch on one side of said plate designed to overlap and grip the retentive side of the head, and a slidable bolt, having a beveled inner side arranged on the opposite side of said plate in such a manner as to grip the opposite side of the head, whereby the forcing inward of said bolt, the plate and head will be clamped together.

8. In combination with a coupling-head, having its guide-horns on a diagonal plane from a vertical line and flattened edges at right angles thereto, an attaching-plate of the same form as the face of said head, having a lugged projection on one side, and a lug with a slidable locking-bolt on the other to engage the opposite flattened edges of face of said head.

707,989. STOVE OR RANGE. GEORGE A. TOURTELLOT, Salt Lake City, Utah. Filed Jan. 13, 1902. Serial No. 89,457. (No model.)

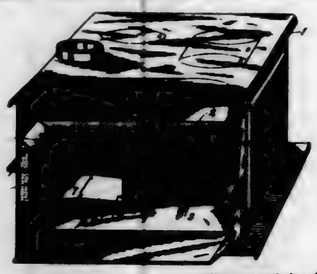

Claim.—1. In a stove or range, a partition extended vertically from the grate and movable thereon, a plate extending across the grate and having hinge connection with the partition, another plate having hinge connection with the first-named plate and hinge connection with the stove or range, and a rod for operating the partition, substantially as specified.

2. In a stove or range, a partition extended upward from the grate and movable along the same, a plate extended across the grate and having hinge connection with the lower end of the partition, another plate having hinge connection with the first-named plate and also having hinge connection with the stove or range, a rod having a portion extended from the partition through an opening in the stove, and a portion extended along the outer side of the stove, substantially as specified.

707,990. HEATING-DRUM. WILLIAM VOGEL, Hartley, Iowa. Filed Nov. 12, 1901. Serial No. 82,905. (No model.)

Claim.—1. In a heating-drum, the combination with the casing connected at its ends to the stove and smoke-pipe, horizontal plates slidably mounted therein, rods connected to said plates, and a wall at one end of the plates, substantially as shown and described.

2. In a heating-drum, the combination, of the casing connected at its ends to a stove and smoke-pipe, horizontal plates swiveled in the drum or casing, rods connected to said plates, a wall at the outer end of the plates at one side of the drum, and supports for said plates, one edge of each plate being heavier than the other, substantially as shown and described.

3. In a heating-drum, the combination, of the casing connected at its end to a stove and smoke-pipe, horizontal plates swiveled in the drum or casing and located at one end thereof, beams in the other end of the casing, scrapers mounted in the casing upon the beams, and handles connected to said scrapers, the bottom of the drum having an opening through which the soot is deposited, substantially as shown and described.

707,991. COUPLING. FRED A. WARREN, East Providence, R. I. Filed Apr. 16, 1901. Serial No. 56,491. (No model.)

Claim.—1. In a coupling, the combination with a male member having a tapering end and an inclined contracted portion forming a vertical shoulder, of a female member having an annular chamber therein engaging said end of the male member, the rear wall of said chamber having an annular groove therein, an annular washer carrying a flange, the flange being seated in said groove in said chamber and being engaged by said tapering end of the male member, the washer engaging the inner circumference of the male and female members, enlarged portions on opposite sides of said female member having vertical openings therein, posts having lower inclined faces for engagement with said tapering portion and said shoulder of the male member, the upper ends of said posts having horizontal openings therein, a latch secured to each of said enlarged portions in an opening provided therefor on the upper face of the enlarged portion, a pin passing through said latch and secured in said enlarged portions, a rounded lug formed integral with one end of the latch and normally mounted in said horizontal openings in the posts, the other end of said latch being convex in cross-section forming a seat on its under face and a thumb-operating member on its upper face, and a spring engaging said seat and in an opening provided therefor on the upper face of said enlarged portion, an annular flange formed integral with each end of the female member, and an annular flange formed integral with the rear end of the male member for engagement with the front flange of the female member when the members are locked, substantially as described.

2. In a coupling, the combination of a male member having a tapering end and an annular flange carried in proximity to the end, of a female member having a chamber formed therein and carrying a flange at its end for engagement with said flange carried by the male member, the end portion of the male member engaging the inner circumference of said chamber in the female member, the rear wall of said chamber having an annular groove formed therein, a projection formed at the lower end of said groove, a washer having an elongated portion for engaging with the inner circumference of said male and female members, said washer carrying a flange for engagement in said groove in said chamber and said projection, the other face of said flange being engaged by said tapering end of the male member, substantially as described.

707,992. APPARATUS FOR SUPPLYING FUEL TO FURNACES. GEORGE H. WARNER, Brooklyn, N. Y., assignor, by mesne assignments to the Central Cyclone Company, Ltd., London, England, a Corporation. Filed May 20, 1901. Serial No. 62,410. (No model.)

Claim.—1. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan for supplying the air, of a hopper, of a feeding device located between the hopper and the said fan and normally supporting the body of fuel, of a device for agitating the fuel in said hopper and in contact with and operated directly by said feeding device and of means whereby the quantity of fuel supplied from the hopper to the furnace is determined by the speed of the fan, for the purpose specified.

2. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan for supplying the air, of a hopper, of a feeding device located in said hopper, of an agitating device between the hopper and the said fan and normally supporting the body of fuel in contact with and operated directly by said feeding device and of means whereby the quantity of fuel supplied to the furnace from the hopper is determined by the speed of the motor-fan for the purpose specified.

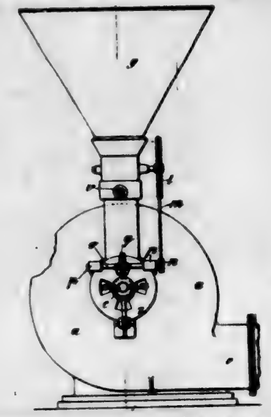

3. In apparatus for supplying pulverized fuel and air to furnaces the combination of a motor-fan for supplying the air, of a hopper, of a feeding device located between the hopper and the said fan and normally supporting the body of fuel, of an agitating device in said hopper in contact with and operated directly by said feeding device, of adjustable means for regulating the outlet of said hopper and of means whereby the quantity of fuel supplied to the furnace from the hopper is determined by the speed of the motor-fan.

4. In an apparatus for supplying pulverized fuel and air to furnaces the combination of a motor-fan, a hopper, a feeding device between the hopper and the said fan and normally supporting the body of fuel, an agitating device situated in said hopper and in contact with and operated directly by said feeding device and of gearing coupling the motor-fan with the feeding device for the purpose specified.

5. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan, of a hopper, of a feeding device between the hopper and the said fan and normally supporting the body of fuel, of an agitating device situated in said hopper and in contact with and operated directly by said feeding device, of adjustable means for controlling the quantity of fuel delivered from said hopper, and of gearing coupling the motor-fan with the feeding device for the purpose specified.

6. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan, of a hopper, of a feeding device located between the hopper and the said fan and normally supporting the body of fuel, of a conduit situated between said hopper and said fan, of an agitating-plate situated in said hopper and in contact with and operated directly by said feeding device, of an adjustable plate for controlling the outlet of said hopper and of means working in conjunction with the said fan and the said feeding device for the purpose specified.

7. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan, of a hopper, of a fluted roller located in said hopper, of a conduit situated between said hopper and the fan, of a flexible plate situated in said hopper and having its lower edge engaging with said roller, of an adjustable flexible plate situated in said hopper for regulating the outlet of said hopper and of gearing connecting the axis of said roller and the driving-shaft of said fan for the purpose specified.

8. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan, of a hopper, of a fluted roller located in said hopper, of a conduit situated between the said outlet and the fan and having air-inlet openings in its walls, of a flexible plate situated in said hopper and having its lower edge engaging with said fluted roller, of an adjustable flexible plate situated contiguous to the outlet of said hopper and said roller, of gearing connecting the said roller to the driving-shaft of the fan for the purpose specified.

9. In apparatus for supplying pulverized fuel and air to furnaces the combination of a motor-fan, of a surrounding casing for said fan having suitable air-inlet openings in its walls, of means for adjusting said inlets, of a hopper, of a fluted roller located in said hopper, of a conduit situated under the outlet of said hopper and communicating with the fan-inlet of said fan, of a flexible plate situated in said hopper and having its lower end in engagement with said fluted roller, of an adjustable flexible plate for regulating the outlet of said hopper and of gearing connecting

the axle of said roller with the driving-shaft of said fan for the purpose specified.

10. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan, of a surrounding casing for said fan having suitable air-inlet openings in its walls, of a movable perforated plate for adjusting said openings, of a hopper, of a fluted roller located in said hopper of a conduit communicating with the outlet of said hopper and with the fuel-inlet of said fan, of a flexible plate situated in said hopper and having its lower edge in engagement with said fluted roller, of an adjustable flexible plate for regulating the outlet of said hopper and of gearing connecting the axle of said roller with the driving-shaft of said fan, for the purpose specified.

11. In apparatus for supplying pulverized fuel and air to furnaces, the combination of a motor-fan for supplying the air, of a casing surrounding said fan having air-inlet openings in its walls, of a movable perforated plate for adjusting said openings, of a hopper, of a fluted roller located in said hopper, of a conduit communicating with the outlet from the hopper and with the fuel-inlet in said fan-casing, of a flexible plate situated in said hopper and having its lower edge in engagement with said roller, of an adjustable flexible plate in said hopper for regulating the said outlet, of a screw for adjusting the position of said plate relatively to said roller and of gearing connecting the axle of said roller with the shaft of said fan for the purpose specified.

12. In a machine for feeding pulverized fuel, the combination with a fan-casing and a spout communicating therewith, of a grooved feed-roller mounted in the spout, and a spring-bar having one end secured above the roller and its lower end located within the spout and extending into one or the other of the grooves of said roller, substantially as described.

13. In a machine for feeding pulverized fuel, the combination with a fan-casing and a spout communicating therewith having a hopper, of a grooved feed-roller mounted in the spout and a spring-bar mounted in the hopper and adapted to be continuously vibrated by the feed-roller, substantially as described.

14. In a machine for feeding pulverized fuel, the combination with a fan-casing and a spout communicating therewith, of a grooved feed-roller mounted in the spout and an adjustable spring-arm having a free, depending straight portion bearing with a yielding pressure against the surface of said roller, substantially as described.

15. In a machine for feeding pulverized fuel, the combination with a fan-casing and a spout communicating therewith, of a grooved feed-roller mounted in the spout, a spring-arm normally bearing against the surface of said roller and having a free depending portion extending below the same and a set-screw adapted to engage said depending portion for adjusting the position of said arm relative to the roller, substantially as described.

16. In a machine for feeding pulverized fuel, the combination with a fan-casing and a spout communicating therewith, of a horizontally-disposed grooved feed-roller mounted in the spout, a spring-arm having a depending, vertical portion normally bearing intermediate its end against the side of said roller, and a set-screw having its end engaging the free end of said spring-arm for adjusting the position of the spring-arm relative to the roller, substantially as described.

17. In a machine for feeding pulverized fuel, the combination with a fan-casing and a spout communicating therewith, of a grooved feed-roller mounted in the spout, a spring-bar having a free end extending into one of the other of the grooves of the roller, a spring-arm normally bearing with a yielding pressure against the surface of said roller, and means for adjusting the position of said arm relative to said roller, substantially as described.

18. In a machine for feeding pulverized fuel, a fan-casing, a housing surrounding the suction-opening of said fan-casing, and having an air-inlet, a chute communicating with the interior of said housing at one end, and having a feed-hopper at its opposite end, a feed-roller mounted in said chute, a rotary fan in said casing, and a driving connection between said fan and said roller, substantially as described.

19. In a machine for feeding pulverized fuel, a fan-casing, a housing surrounding the suction-opening of said fan-casing and having an air-inlet, a chute mounted upon said casing, and having above the casing an air-opening and communicating at its lower end with the interior of said housing and having a feed-hopper at its upper end, a feed-roller mounted in said chute, a rotary fan in said casing and a driving connection between said fan and said roller, substantially as described.

20. In a machine for feeding pulverized fuel, a fan-casing, a housing surrounding the suction-opening of said fan-casing and having a damper-controlled air-inlet, a chute mounted upon said casing and having above the casing an air-opening and communicating at its lower end with the interior of said housing and having a feed-hopper at its upper end, a feed-roller mounted in said chute, a rotary fan mounted in said casing, and a driving connection between said fan and said roller, substantially as described.

707,993. MACHINE FOR CORKING BOTTLES. CLINTON J. WARREN, Chicago, Ill. Original application filed May 16, 1901, Serial No. 60,594. Divided and this application filed Dec. 7, 1901. Serial No. 85,093. (No model.)

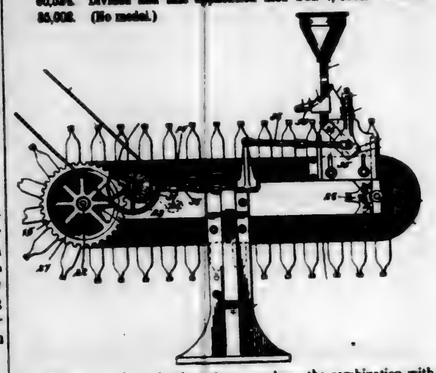

Claim.—1. In a bottle-corking machine, the combination with a movable carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, cork-inserting devices adapted to insert corks in successive bottles of said moving series, means for causing said inserting devices to move for a limited distance alongside of the moving series of bottles, and means for retracting said inserting devices in an opposite direction from that of the movement of the carrier, substantially as specified.

2. In a bottle-corking machine, the combination with a movable carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, cork-inserting devices adapted to insert corks in successive bottles of said moving series, means for causing said inserting devices to move for a limited distance alongside of the moving series of bottles, means for retracting said inserting devices in an opposite direction to that of the movement of the carrier, and means for advancing the cork in position to be acted upon by said inserting devices after each retracting movement, substantially as specified.

3. The combination with a carrier adapted to receive and hold a bottle thereon with the neck end projected, of means for continuously moving the carrier, a cork-carrying device, means for moving said cork-carrying device a limited distance alongside of the bottle and returning it to its normal position, and means for forcing a cork from said cork-carrying device into the neck of the moving bottle.

4. The combination with a carrier adapted to receive and hold a bottle thereon with its neck end projected, of means for moving the carrier, a cork-carrying device, means for giving said cork-carrying device a reciprocating motion over and in the line of travel of the bottle and to retract it therefrom, and means for forcing a cork from said cork-carrying device into contact with the top of the bottle and to retract it therefrom, and means for forcing a cork from said cork-carrying device into the neck of the bottle while in contact therewith and while said bottle is being moved with its carrier, substantially as described.

5. The combination with a frame, a carrier supported thereby and adapted to receive and hold a bottle with its neck end projected, means for moving the carrier, a cross-head suitably supported above said frame, a plunger carried thereby, and a second cross-head movable vertically in the supports of the first-named cross-head and provided with means for holding a cork, of means for forcing the cross-head carrying the cork down upon the top of the moving bottle, means for forcing down the other cross-head to bring the plunger carried thereby into contact with the cork in the cork-carrying cross-head and thereby force such cork into the neck of the moving bottle, and means for withdrawing said devices after the cork has been forced into the bottle, substantially as specified.

6. The combination with a frame, a carrier supported thereby and adapted to receive and hold a bottle with its neck end projected, means for moving the carrier, a cross-head suitably supported above said frame, a plunger carried thereby, and a second cross-head movable vertically in the supports of the first-named cross-head and provided with means for holding a cork, of means for forcing the cross-head carrying the cork down upon the top of the moving bottle, means for forcing down the other cross-head to bring the plunger carried thereby into contact with the cork in the cork-carrying cross-head and thereby force such cork into the neck of the moving bottle, means for withdrawing said devices after the cork has been forced into the bottle, and means for automatically supplying said cork-carrying cross-head with another cork after such withdrawal, substantially as specified.

7. The combination with a carrier adapted to receive and hold a bottle thereon with its neck end projected, of means for moving the carrier, a cork-carrying device, means for giving said cork-carrying device a reciprocating motion over and in the line of travel of the bottle and a descending and ascending movement to bring said cork-carrying device into contact with the top of the bottle and to retract it therefrom, means for forcing a cork from said cork-carrying device into the bottle while in contact therewith and while said bottle is being moved with its carrier, a receptacle for containing a quantity of corks, and means for feeding from said receptacle a single cork to the cork-carrying device each time that said cork-carrying device is drawn to the limit of its backward and upward motion, substantially as specified.

8. The combination with a carrier adapted to receive and hold a bottle thereon with its neck end projected, of means for moving the carrier, a cork-carrying device, means for giving said cork-carrying device a reciprocating motion over and in the line of travel of the bottle and a descending and ascending movement to bring said cork-carrying device into contact with the top of the bottle and to retract it therefrom, means for forcing a cork from said cork-carrying device into the bottle while in contact therewith and while said bottle is being moved with its carrier, a receptacle for containing a quantity of corks, means for feeding from said receptacle a single cork to the movable cork-carrying device each time that said cork-carrying device is brought to the limit of its upward and rearward movement, and means carried by said movable cork-carrying device for setting in operation the means for forcing a cork from the receptacle containing a supply of corks into the movable cork-carrier, substantially as specified.

9. The combination with a carrier adapted to receive and hold a bottle thereon with its neck end projected, of means for moving the carrier, a cork-carrying device, means for giving said cork-carrying device a reciprocating motion over and in the line of travel of the bottle and a descending and ascending movement to bring said cork-carrying device into contact with the top of the bottle and to retract it therefrom, means for forcing a cork from said cork-carrying device into the bottle while in contact therewith and while said bottle is being moved with its carrier, a receptacle for containing a quantity of corks, means for feeding from said receptacle a single cork to the movable cork-carrying device each time that said cork-carrying device is brought to the limit of its backward and rearward movement, means connected with said movable cork-carrying device for setting in operation the means for forcing a cork from the said receptacle into the movable cork-carrier, and a connection between said movable cork-carrier and the means for supplying corks from the receptacle whereby upon the downward and forward movement of the cork-carrier a single cork will be dropped into position and the parts for ejecting corks locked until the next upward and rearward movement of the cork-carrier has been effected, substantially as specified.

10. The combination with a carrier adapted to receive and hold a bottle thereon with its neck end projected, of means for moving the carrier, a cork-carrying device, means for giving said cork-carrying device a reciprocating motion over and in the line of travel of the bottle, and at the same time a descending and ascending movement to bring said cork-carrying device over and in line with the top of the bottle and to retract it therefrom, a stationary receptacle for containing a supply of corks, a tube connected with said receptacle at its upper end and at its lower end with a chamber, a plunger within said chamber adapted to be drawn back to permit a cork from said tube to be draped in front of said plunger, a connection between said cork-carrier and said plunger whereby said plunger is retracted as the cork-carrier moves away from it means connected with said cork-carrier for releasing said plunger from its retracted position when said cork-carrier is at its upper and rearward position, and means for forcing said plunger forward to move the cork in front of it into said cork-carrier, substantially as specified.

707,994. BOTTLE-FILLING MACHINE. CLINTON J. WARREN, Chicago, Ill. Original application filed May 16, 1901, Serial No. 60,594. Divided and this application filed Dec. 7, 1901. Serial No. 85,093. (No model.)

Claim.—1. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a liquid-reservoir, a movable filling device adapted to fill said bottle while said bottle is moving, and means for passing said filling device into and through said reservoir during the operation of filling the bottle, substantially as specified.

2. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a liquid-reservoir, a movable filling device adapted to fill said bottle while said bottle is moving, means for passing said filling device into and through said reservoir during the operation of filling the bottle, and means for withdrawing said filling device from the reservoir and shutting off the flow of liquid, substantially as specified.

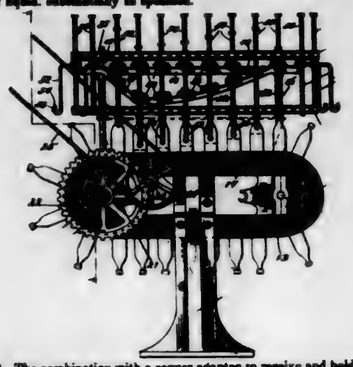

4. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a liquid-containing reservoir, a device for filling said bottle while it is moving, means for forcing said device into said bottle and also into said reservoir, means for moving said filling device through said reservoir while engaged with said bottle, and means for causing a flow of liquid through the filling device into the bottle while said carrier is being moved, substantially as specified.

5. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a liquid-containing reservoir, a device for filling said bottle while it is moving, means for forcing said device into said bottle and also into said reservoir, means for moving said filling device through said reservoir while engaged with said bottle, means for gradually varying the position of the filling device in the bottle and at the same time maintaining its connection with the reservoir, and means for causing a flow of liquid through the filling device from the reservoir into the bottle, substantially as specified.

6. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a liquid-containing reservoir, a device for filling said bottle while it is moving, means for forcing the filling device into said moving bottle and into the reservoir, means for moving said filling device through the reservoir parallel with the moving carrier and in engagement with the bottle, means for causing a flow of liquid through the filling device while said carrier and the bottle thereon are moving, and means for withdrawing said filling device from the moving bottle and reservoir and shutting off the flow of liquid through the filling device, substantially as specified.

7. The combination with a carrier mounted on a horizontal axis adapted to receive and hold a series of bottles with their neck ends projected, of means for moving said carrier, a second carrier mounted on a vertical axis and consisting of an endless chain, means for moving the said chain, a series of filling devices carried by said second carrier, means for causing said filling devices to successively engage successive bottles on said first-named carrier, means for causing a flow of liquid through said filling devices to fill said bottles while the same are being moved, and means for disengaging the filling devices from the bottles and shutting off the flow of liquid without stopping the movement of the bottle-carrier, substantially as described.

8. The combination with a bottle-carrier, and means for moving said carrier, of an endless chain located above said bottle-carrier, means for moving said chain, a series of filling devices carried by said chain and adapted to be successively brought over bottles carried by said bottle-carrier, means for causing said devices to engage such bottles, means for causing a flow of liquid through said filling devices to fill said bottles while the same are being moved, and means for disengaging the filling devices from the bottles and shutting off the flow of liquid without stopping the movement of the bottle-carrier, substantially as specified.

9. The combination with a bottle-carrier adapted to receive and hold a series of bottles, and means for moving said carrier, of a chain located above said bottle-carrier, means for moving said chain, a series of filling devices carried by said chain and adapted to be successively brought over bottles carried by said bottle-carrier, said filling devices having a vertical movement, means for causing said filling devices to successively enter suc-

cessive bottles on said bottle-carrier, means for causing a flow of liquid through said devices when such devices are within the bottles, and means for withdrawing said devices from the bottles and shutting off the flow of liquid without stopping the movement of said bottle-carrier, substantially as specified.

10. The combination with a bottle-carrier adapted to receive and hold a series of bottles, and means for moving said carrier, of a chain located above said bottle-carrier, means for moving said chain, a series of filling devices carried by said chain and adapted to be successively brought over bottles carried by said bottle-carrier, said filling devices having a separate vertical movement, trolleys attached to said filling devices, a track for said trolleys to run upon, said track being inclined at one portion to cause the filling devices to descend and enter the bottles on the moving carrier, means for causing a flow of liquid through said devices when such devices are within the bottles, and means for withdrawing said devices from the bottles and shutting off the flow of liquid without stopping the movement of said bottle-carrier, substantially as specified.

11. The combination with a bottle-carrier adapted to receive and hold a series of bottles, and means for moving said carrier, of a chain located above said bottle-carrier, means for moving said chain, a series of filling devices carried by said chain and adapted to be successively brought over bottles carried by said bottle-carrier, said filling devices having a separate vertical movement, trolleys attached to said filling devices, a track for said trolleys to run upon, said track being inclined at one portion to cause the filling devices to descend and enter the bottles on the moving carrier and also inclined to cause a withdrawal of the said devices from such moving bottles, means for causing a flow of liquid through such filling devices when said devices are within the bottles, and means for shutting off the flow of liquid as they are being withdrawn from the moving bottles, substantially as specified.

12. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a siphon-tube having its discharge end located above the line of travel of the moving bottle, means for moving said tube parallel and at equal speed with the bottle, means for forcing the said discharge end of the siphon-tube into the bottle, a valve carried by the other or receiving end of the siphon-tube and adapted to open said end when submerged in a body of liquid, a liquid-containing tank into which said receiving end of the siphon-tube is adapted to enter, and means for withdrawing the said ends from the bottle and tank respectively, substantially as described.

13. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a siphon-tube having its discharge end above the line of travel of the moving bottle, a track or guide having a double inclined portion parallel with the line of travel of the moving bottle, means for supporting said siphon-tube on said track, means for moving said siphon-tube down and up said inclined track, whereby the said discharge end of the siphon-tube will be caused to gradually enter and be withdrawn from the moving bottle, a valve carried by the other or receiving end of the siphon-tube and adapted to open said end when submerged in a body of liquid, and a liquid-containing tank into which said receiving end of the siphon-tube is adapted to enter when moving on the inclined portion of the track, substantially as specified.

14. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a siphon-tube, a track having a double inclined portion, a trolley adapted to run on said track and connected at one side to each siphon-tube, means for forcing said trolley along said track, whereby when it passes along the double inclined portion the discharge end of said siphon-tube will gradually enter and be withdrawn from the bottle, a liquid-containing tank adapted to receive the other end of the siphon-tube while said trolley is on the inclined portion of the track, means for admitting liquid to the siphon-tube when said last-named end is in the tank, and means for closing said tube when withdrawn from the tank, substantially as described.

15. The combination with an endless carrier adapted to receive and hold a series of bottles with their neck ends projected, of means for continuously moving said carrier, an endless track located above said continuously-moving endless carrier and having at the side nearest the endless carrier a double inclined portion parallel with the line of travel of said endless carrier, a series of siphon-tubes movably mounted on said track, means for continuously moving said series of siphon-tubes so that as they pass down and up the double inclined portion of the track one end of each will successively enter and be withdrawn from one of the series of continuously-moving bottles, a liquid-containing tank into which the opposite end of each of said siphon-tubes is adapted to enter at the time said tubes travel on the double inclined portion of the track, means for admitting liquid to the bottles from said siphon-tubes while said tubes are in said bottles and in said tank, and means for stopping the flow of liquid through the siphon-tubes as said tubes are withdrawn from the bottles and the tank, substantially as specified.

16. The combination with a bottle-carrier and means for moving said carrier, of an endless chain located above said bottle-carrier, means for moving said chain, a series of siphon filling-tubes carried by said chain and adapted to be brought over bottles carried by said bottle-carrier, means for causing said tubes to engage such bottles, a liquid-containing means into which one end of the siphons is forced and moved therethrough to cause the filling of the bottles while the same are being moved, and means for disengaging the filling-tubes from the bottle and shutting off the flow of liquid without stopping the movement of the bottle carrier.

17. The combination with a bottle-carrier adapted to receive and hold a series of bottles and means for moving said carrier, of a chain located above the bottle-carrier, means for moving said chain, a series of siphon filling-tubes carried by said chain and adapted to be successively brought over bottles carried by said bottle-carrier, said siphon filling-tubes having a vertical movement, means for causing said filling-tubes to successively enter successive bottles on said bottle-carrier, a liquid-containing means into which one end of the siphons is forced and moved therethrough to cause the filling of the bottles while the same are being moved, and means for disengaging the filling-tubes from the bottle and shutting off the flow of liquid without stopping the movement of the bottle-carrier.

18. The combination with a bottle-carrier adapted to receive and hold a series of bottles, and means for moving said carrier, of a chain located above said bottle-carrier, means for moving said chain, a series of siphon filling-tubes carried by said chain and adapted to be successively brought over bottles carried by said bottle-carrier, said filling-tubes having a vertical movement, trolleys attached to said filling-tubes, a track for said trolleys to run upon, said trunk being inclined at one portion to cause the filling-tubes to descend and enter the bottles on the moving carrier a liquid-containing means into which one end of the siphons is forced and moved therethrough to cause the filling of the bottles while the same are being moved, and means for disengaging the filling-tubes from the bottle and shutting off the flow of liquid without stopping the movement of the bottle-carrier.

19. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a stationary liquid-reservoir, a movable filling device independent of said reservoir and adapted to fill said bottle while said bottle is moving, and means for forcing said filling device simultaneously into said bottle and into said liquid-reservoir and for withdrawing said filling devices simultaneously from said bottle and liquid-reservoir, substantially as specified.

20. The combination with a carrier adapted to receive and hold a bottle with its neck end projected, of means for moving said carrier, a stationary liquid-reservoir, a movable filling device adapted to fill said bottle while said bottle is moving, means for forcing said filling device simultaneously into said bottle and into said liquid-reservoir and for withdrawing said filling device simultaneously from said bottle and liquid-reservoir, and means for gradually varying the position of the filling device in the bottle during the travel of the latter and at the same time maintaining its connection with the reservoir.

707,995. VALVE-GEAR. HENRY WHITE and WILLIAM G. TAYLOR, Marion, Ohio, assignors of one-third to Zachariah Taylor Silvis, Greensburg, Pa., and Harry J. Silvis, Mansfield, Ohio. Filed Sept. 23, 1901. Serial No. 76,262. (No model.)

Claim.—1. A valve reversing and stopping gear comprising an eccentric, an eccentric-strap surrounding the eccentric, the eccentric-strap adapted to reciprocate with relation to the guides, tracks formed on two opposite sides of the strap, guides located on two opposite sides of the eccentric-strap, the tracks adapted to be received in the guides, whereby the strap reciprocates between the guides.

2. A valve-reversing gear comprising a shaft, an eccentric on the shaft, a strap surrounding the eccentric, guides located on opposite sides of the eccentric-strap between which guides the strap is adapted to reciprocate, bars connecting the guides, the bars located outside the plane of travel of the straps, reversing-guides pivoted on the shaft outside the plane of travel of the eccentric-strap, the reversing-guides received between the bars which constitute guides therefor, and means for swinging the reversing-guides upon the shaft as a center whereby to vary the direction of reciprocation of the eccentric-strap.

3. A valve-reversing gear comprising a shaft, an eccentric rigidly secured thereon, an eccentric-strap surrounding the eccentric, eccentric-guides located on opposite sides of the strap, tracks formed upon the contiguous edges of the strap and guides, the tracks adapted to register with one another whereby the strap is permitted a reciprocatory movement between the guides and a yoke surrounding the guides and eccentric-strap, the yoke adapted to retain the members in position with relation to each other.

4. A valve-reversing gear comprising a shaft, an eccentric mounted thereon, an eccentric-strap surrounding the eccentric, guides between which the strap is received and reciprocates, a yoke surrounding the eccentric, eccentric strap and guides, a connecting-rod to which the yoke is attached, reversing-guides pivoted on the shaft, means connecting the eccentric-guides, between which the reversing-guides are received whereby the reversing-guides are enabled to change the direction of reciprocation of the eccentric-strap and means for swinging the reversing-guides.

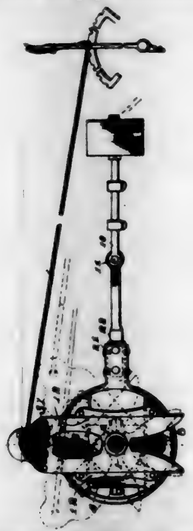

5. A valve-reversing gear comprising a shaft, an eccentric mounted thereon, a strap surrounding the eccentric, ribs formed on opposite sides of the straps, grooved eccentric-guides between which the strap is received and is adapted to reciprocate, the ribs received in the grooves, a yoke surrounding and retaining the eccentric-guides in place, the yoke received in grooves in the guides, reversing-guides pivotally mounted on the shaft, means on the eccentric-guides between which the reversing-guides are received means for rocking the reversing-guides on the shaft whereby a partial revolution is given the eccentric-guides in the yoke, the reversing-guides adapted to regulate the direction of motion of the eccentric-strap in this manner.

6. The combination with a valve-reversing gear, of an annular yoke, a pair of oppositely-disposed segmental eccentric-guides located within the circle embraced by the yoke, a rectangular eccentric-strap located in the space between the two guides, the strap adapted to reciprocate therebetween, an eccentric, a shaft to which the eccentric is keyed, the eccentric inclosed by the eccentric-strap, a pair of reversing-guides journaled on the shaft on either side of the eccentric, means for retaining the reversing-guides in fixed relation to the eccentric-guides, a connecting-rod removably secured to the yoke, a valve, a valve-stem, the outer end of which is pivotally secured to the free end of the connecting-rod and means for rocking the reversing-guides on the shaft to reverse the admission-point of the steam and to stop the engine.

7. A valve-reversing gear comprising a shaft, an eccentric secured on the shaft, an eccentric-strap surrounding the eccentric, guides between which the strap is received and reciprocates, a yoke surrounding the guides to retain the parts in position, reversing-guides pivotally mounted on the shaft, the reversing-guides adapted to vary the direction of travel of the eccentric-strap, a connecting-rod secured to the yoke, a valve-stem pivotally secured to the rod, the movement of the valve-stem regulated by the direction of movement of the eccentric-strap whereby a greater or lesser amount of steam is admitted to the cylinder of the engine.

8. A valve-reversing gear comprising a reciprocating member, oscillating means between which the reciprocating member moves, means for varying the direction of movement of the reciprocating member, a yoke surrounding the reciprocating member and the oscillating means between which it moves, a rod secured at one end to the yoke, a valve-stem pivotally secured to the opposite end of the rod, the movement of the valve-stem regulated by the direction of movement of the reciprocating member whereby to govern the amount of power admitted by the valve on the valve-stem to the engine-cylinder.

9. A valve-reversing gear comprising a shaft, an eccentric secured thereon, an eccentric-strap received upon and surrounding the eccentric, ways formed in opposite sides of the strap, segmental guides between which the strap is received and reciprocates, the segmental guides provided with grooves on their straight edges in which are received the ways on the strap, a yoke in which the segmental guides are received and inclosed, the yoke received in grooves on the arc-shaped edges of the segmental guides, reversing-guides pivotally mounted on the shaft on either side of the eccentric, bars secured to and connecting the segmental guides, the reversing-guides received between and contacting with the bars, and means whereby the reversing-guides, and segmental guides are swung in the arc of a circle to vary the direction of reciprocation of the eccentric-strap.

10. A valve-reversing gear comprising a shaft, an eccentric secured thereon, an eccentric-strap received upon and surrounding the eccentric, ways formed in opposite sides of the strap, segmental guides between which the strap is received and reciprocates, the segmental guides provided with grooves on their straight edges in which are received the ways on the strap, a yoke in which the segmental guides are received and inclosed, the yoke received in grooves on the arc-shaped edges of the segmental guides, reversing-guides pivotally mounted on the shaft on either side of the eccentric, a plurality of bars secured to each side of and connecting the segmental guides, the reversing-guides fitted between the bars, levers, rods connecting the reversing-guides and the levers whereby the reversing-guides may be moved to any angular position to swing the segmental guides in the yoke whereby to give a direct angular direction of reciprocation to the segmental guides and eccentric-strap.

11. A valve-reversing gear comprising a shaft, an eccentric secured thereon, an eccentric-strap received upon and surrounding the eccentric, eccentric segmental guides between which is received and reciprocates the eccentric-strap, the guides provided with grooves on their peripheries, a yoke seated in the grooves and inclosing the guides, bars secured to and connecting the guides, the bars located on either side of the guides, reversing-guides pivoted on the shaft and received between the bars and means for rocking the reversing-guides in the arc of a circle.

12. A valve-reversing gear comprising a shaft, an eccentric secured thereon, an eccentric-strap on the eccentric, tracks on the strap, guides with a groove formed in the periphery thereof, the strap received and reciprocating between the guides, a yoke surrounding the guides and received in the groove, and movable reversing-guides adapted to guide the travel of the eccentric-strap to maintain a direct angular travel, whereby the relative travel of the valve is the same on the direct or reverse motion.

707,996. STEAM-GENERATOR. PAUL H. WHITE, Indianapolis, Ind., assignor to White Steam Wagon Company, Indianapolis, Ind., a Corporation of Indiana. Original application filed May 27, 1901, Serial No. 62,693. Divided and this application filed Sept. 7, 1901. Serial No. 74,662. (No model.)

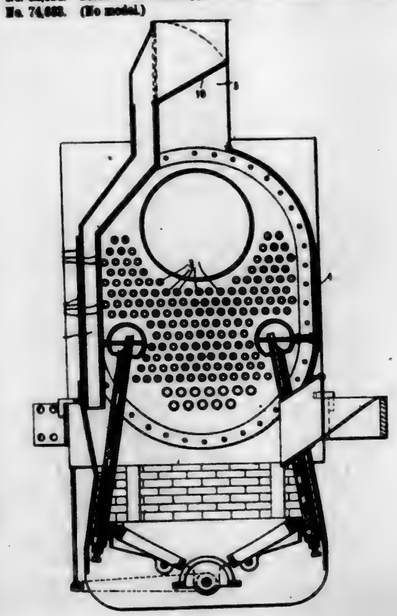

Claim.—1. In a steam-generator, the combination with a furnace, of a main outlet leading therefrom above the body of the generator, a supplemental outlet leading from the furnace below the body of the generator, and means for controlling the passage of heat through the outlets so that when the main outlet is closed a non-circulating heat will be maintained in the body of the generator.

2. In a steam-generator, the combination with the main body of the generator, of a furnace, an outlet leading through the main body of the generator, a supplemental outlet passing around the main body of the generator, and means arranged above the main body of the generator for controlling the passage of heat through said outlets.

3. In a steam-generator, the combination with the water-tubes thereof, of an inclosing casing, a furnace mounted beneath said tubes, a main outlet leading from said casing, a supplemental outlet passing around the water-tubes and communicating with the furnace below the water-tubes and with the main outlet above the water-tubes, and a damper arranged above the water-tubes so as to close either the supplemental outlet or the main outlet.

707,997. **NUT-CRACKER.** AUGUST WESTRUM, Denver, Colo. Filed Dec. 17, 1901. Serial No. 86,262. (No model.)

Claim.—1. In a nut-cracker, the combination with a suitable casing, of a stationary jaw, a movable jaw having a projection protruding through the casing to permit the opening of the jaw by pressure thereon, an eccentric pivoted in the casing, a lever-arm connected with the eccentric, and a rod connecting the movable jaw with the eccentric.

2. The combination with a casing, of a stationary jaw, a coöperating movable jaw, a spring normally holding the movable jaw in the closed position, the movable jaw being provided with an elongated opening, a connecting-rod having one extremity located in said opening, an eccentric to which the opposite extremity of the rod is connected, and a lever-arm for actuating the eccentric.

3. In a nut-cracker, the combination with a casing, of a stationary jaw, a movable jaw coöperating with the stationary jaw, a spring for holding the movable jaw in the closed position, the movable jaw having a projection protruding through the casing to permit the opening of the jaw by pressure thereon, the jaw being provided with an elongated opening, a rod having one extremity engaging said opening, and suitable means connected with the opposite extremity of the rod for actuating the movable jaw for the purpose set forth.

4. In a nut-cracker, the combination with a suitable casing, of a stationary jaw, a movable jaw coöperating with the stationary jaw, the movable jaw having a projection protruding through the casing to permit the opening of the jaw by pressure thereon, a weak spring normally holding the movable jaw in the closed position, an eccentric mounted in the casing, a rod connecting the eccentric with the movable jaw, and a lever-arm for actuating the eccentric.

707,998. **LAST.** JAMES D. WINCHESTER, Beverly, Mass. Filed Sept. 13, 1901. Serial No. 75,268. (No model.)

Claim.—A last, having two sections with diagonal surfaces slidably engaged together, for the purpose specified, one section being grooved at its inclined surface, a slotted plate arranged over the groove, the upper end of the plate being projected into a notch in said section, a fastening device extending through the lower end of the plate and into said section, and screws fastened to the other section of the last and slidably fitting in the slot of the plate, the heads of the screws being located in the groove of the first-named last-section.

707,999. **MINE-CAR RAIL.** JOSEPH A. CRAIG, Roscoe, Pa. Filed Oct. 16, 1901. Serial No. 78,779. (No model.)

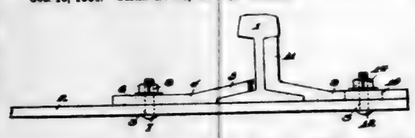

Claim.—A rail-joint comprising in combination with a chair 9 having a transverse slot 10 and an upwardly-projecting portion adapted to be held against the under face of the tread of the rail, a swinging plate 4 and retaining pivotal bolt, the free end of said plate 4 being rounded and adapted to wedge against the web of a rail as set forth.

REISSUES.

12,024. **GAS AND STEAM CONVERTIBLE ENGINE.** GUSTAVE DAHLBERG, McDonald, JACOB CROQUENOUR, Taylorstown, and ERNEST UHLER, McDonald, Pa., assignors, by direct and mesne assignments, to D. C. & U. Gas Engine Company, Washington county, Pa. Filed Aug. 7, 1901. Serial No. 71,578. Original No. 683,339, dated Sept. 19, 1899.

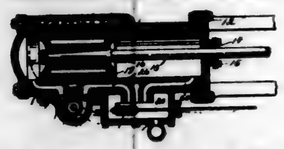

Claim.—1. In a convertible engine, the combination, with a cylinder, of a piston therein, a chest in communication with the cylinder, passages for steam and for an explosive mixture leading into the chest, fluid-passages from the chest to the cylinder in communication with opposite ends of the cylinder, a valve-casing provided with a valve for controlling the admission of an explosive charge to the combustion end of the cylinder said valve adapted to be opened by the pressure of the compressed explosive charge within the chest, substantially as set forth.

2. In a convertible engine, the combination, with a cylinder having a piston therein, of a chest in communication with the cylinder and with a steam-supply passage and an explosive-mixture passage whereby both steam and an explosive mixture are admitted to the chest at will, a mixer connected with the chest provided with means for controlling the admission of the explosive mixture to the chest, fluid-passages from the chest to opposite ends of the cylinder, a valve arranged in the passage leading to the combustion end of the cylinder for controlling the admission of a compressed explosive charge from the chest to the cylinder and adapted to be opened by the pressure of the compressed explosive charge, substantially as set forth.

12,025. **RAILROAD-TIE.** WILLIAM C. GREGG, Minneapolis, Minn., assignor to Wm. C. Gregg & Co., a Corporation of Minnesota. Filed Sept. 23, 1901. Serial No. 76,319. Original No. 684,982, dated Dec. 12, 1899.

Claim.—1. In a railroad-tie, the combination of a laterally-pierced, longitudinally grooved and flanged strip of sheet metal, upon which the rails rest and to which they are secured; a pair of jaws, one of which enters the said lateral openings, and one of which overlaps the end of the said tie, and a clamp-bolt underlying the said rail and uniting the said jaws, substantially as shown and described.

2. In a railroad-tie, the combination of the laterally-pierced and longitudinally grooved strip of sheet metal having vertically-depending flanges adapted to enter the ground, jaws adapted to enter the said laterally-pierced tie and to engage the base of the said rail, similar jaws adapted to overlap the ends of the said tie, exteriorly-threaded bolts adapted to underlie the said rails and to unite the said jaws, and interiorly-threaded nuts adapted to tighten the said jaws and to clamp the said rails, substantially as shown and described.

3. The combination with a metallic railroad-tie, longitudinally grooved and laterally pierced, and upon which the rails rest and to which they are secured, of a pair of jaws, one of which enters the lateral openings and overlaps the foot or base upon the inner side of the rail, and one of which overlaps the end of the tie and the foot or base upon the outer side of the rail, and a clamp-bolt underlying said rail and uniting said jaws, substantially as described.

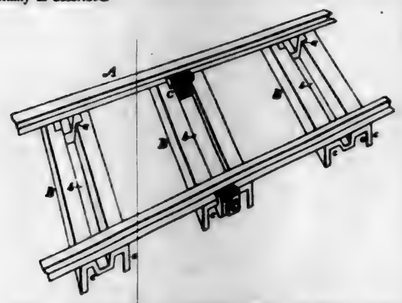

4. The combination with a metallic railroad-tie, longitudinally grooved and laterally pierced, and upon which the rails rest and to which they are secured, of a pair of jaws, one of which enters the lateral openings and overlaps the foot or base upon the inner side of the rail, and one of which engages the tie and overlaps the foot or base of the rail upon its outer side, and a clamp-bolt underlying said rail and uniting said jaws, substantially as described.

12,026. **EGG-BEATER.** WILLIAM G. BROWNE, Kingston, N. Y., assignor to the W. G. Browne Manufacturing Company, a Corporation of New York. Filed Nov. 1, 1901. Serial No. 80,826. Original No. 673,456, dated July 16, 1901.

Claim.—1. In an egg-beater, a rotary beater-blade comprising a flat bowed portion and a flange projected therefrom at an angle and in a relation to the forward edge thereof whereby said forward edge constitutes a cutter-blade and an open gathering and retarding pocket is formed by the angle between the flat surface of said bowed portion and said flange, in combination with means whereby said blade is rotated.

2. In an egg-beater, a rotary beater-blade comprising a flat bowed portion and a flange projected therefrom at an angle and in a relation to the forward edge thereof whereby said forward edge constitutes a cutter-blade and an open gathering and retarding pocket is formed by the angle between said flat surface of said bowed portion and said flange, said flange being provided with a plurality of openings to permit the escape of matter gathered in said pocket in minute streams, in combination with means whereby said beater-blade is rotated.

3. In an egg-beater, the combination with a plurality of rotary beater-blades each comprising a bowed portion, and a flange projected therefrom at an angle and in a relation to the forward edge thereof, whereby said forward edge constitutes a cutter-blade and an open gathering and retarding pocket is formed by the angle between said bowed portion and said flange, said flange being provided with a plurality of openings to permit the escape of matter gathered in said pocket in minute streams, of means whereby said blades may be simultaneously and reversely rotated.

4. In an egg-beater, the combination with a plurality of eccentrically-mounted rotary beater-blades each comprised of diametrically opposite flat and parallel bowed portions and a crescent-shaped or segmental flange projected inwardly at an angle therefrom and in a relation to the forward edge thereof whereby said forward edge constitutes a cutter-blade and an open gathering and retarding pocket is formed by the angle between the flat surface of said bowed portion and said flange, said flange being provided with a plurality of openings to permit the escape of matter gathered in said pocket of means whereby said beater-blades may be simultaneously and reversely rotated.

DESIGNS.

86,022. **HANDLE FOR TOILET ARTICLES.** ROBERT B. DEMAREST, New York, N. Y. Filed May 8, 1902. Serial No. 106,690. Term of patent 14 years.

Claim.—The ornamental design for a handle for toilet articles, substantially as herein shown and described.

86,028. **BACK FOR BRUSHES OR SIMILAR ARTICLES.** SIDNEY A. KELLER, New York, N. Y. Filed July 28, 1902. Serial No. 116,744. Term of patent 3½ years.

Claim.—The ornamental design for a back for brushes, mirrors, or similar articles, substantially as herein shown and described.

36,024. HANDLE FOR BUTTON-HOOKS OR SIMILAR ARTICLES. Ernest A. Kilian, New York, N. Y. Filed July 23, 1902. Serial No. 116,763. Term of patent 3½ years.

Claim.—The ornamental design for a handle for button-hooks or similar articles, substantially as herein shown and described.

36,025. LID FOR POST-CHECKED SIMILAR ARTICLES. Ernest A. Kilian, New York, N. Y. Filed July 23, 1902. Serial No. 116,765. Term of patent 3½ years.

Claim.—The ornamental design for a lid for post-boxes or similar articles, substantially as herein shown and described.

36,026. BASE FOR CHECKED OR SIMILAR ARTICLES. Ernest A. Kilian, New York, N. Y. Filed July 23, 1902. Serial No. 116,766. Term of patent 3½ years.

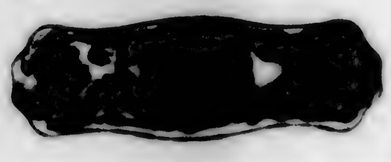

Claim.—The ornamental design for a base for brushes, mirrors, or similar articles, substantially as herein shown and described.

36,027. CHECK FOR CHECKED OR SIMILAR ARTICLES. Ernest A. Kilian, New York, N. Y. Filed July 23, 1902. Serial No. 116,767. Term of patent 3½ years.

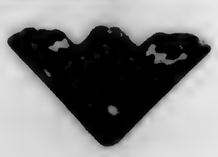

Claim.—The ornamental design for a check for checked or similar articles, substantially as herein shown and described.

36,028. STAND FOR PHOTOGRAPH-ALBUMS. Rafael Abeshaus, New York, N. Y., assignor to Isaac Abeshaus, New York, N. Y. Filed July 19, 1902. Serial No. 116,504. Term of patent 7 years.

Claim.—The ornamental design for a stand for a photograph-album as herein shown and described.

36,029. LAMP-BODY. Bruno A. Kunz, St. Louis, Mo. Filed July 1, 1902. Serial No. 114,324. Term of patent 14 years.

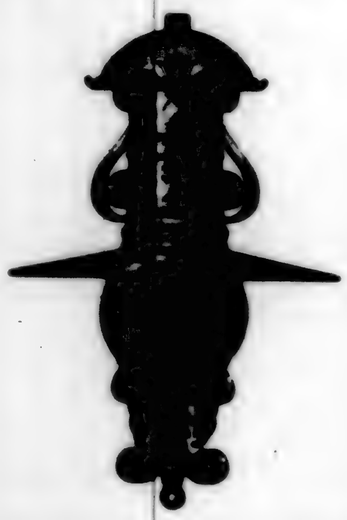

Claim.—The ornamental design for a lamp-body, as herein shown and described.

36,030. PLATE. Gustave R. Wirz, Wilkinsburg, Pa. Filed Feb 18, 1902. Serial No. 94,700. Term of patent 3½ years.

Claim.—The ornamental design for a plate, as herein shown and described.

36,031. VENDING-MACHINE CASING. Gustave W. Galvin, Rockville City, Conn. Filed May 16, 1902. Serial No. 107,031. Term of patent 7 years.

Claim.—The ornamental design for a vending-machine casing as herein shown and described.

36,032. SEWING-MACHINE TABLE. Frank G. Hoglund, Chicago, Ill., assignor to Illinois Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed July 1, 1902. Serial No. 114,023. Term of patent 7 years.

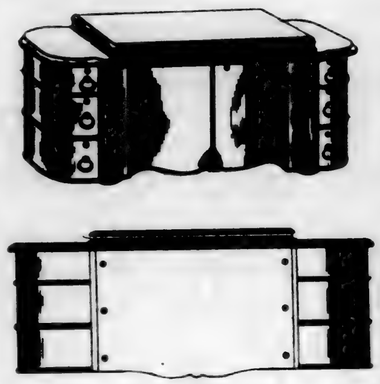

Claim.—The ornamental design for a sewing-machine table herein shown and described.

36,033. RUG. Adolph Pressla, Philadelphia, Pa., assignor to John R. Bromley and Edward Bromley, Philadelphia, Pa., copartners trading as John Bromley & Sons. Filed July 31, 1902. Serial No. 117,901. Term of patent 3½ years.

Claim.—The ornamental design for a rug, substantially as shown and described.

36,024. HANDLE FOR BUTTON-HOOKS OR SIMILAR ARTICLES. Sidney A. Keller, New York, N. Y. Filed July 22, 1902. Serial No. 116,765. Term of patent 3½ years.

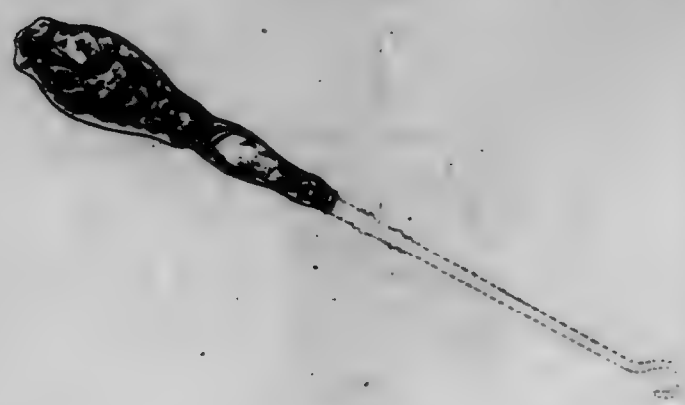

Claim.—The ornamental design for a handle for button-hooks or similar articles, substantially as herein shown and described.

36,025. LID FOR PUFF-BOXES OR SIMILAR ARTICLES. Sidney A. Keller, New York, N. Y. Filed July 22, 1902. Serial No. 116,766. Term of patent 3½ years.

Claim.—The ornamental design for a lid for puff-boxes or similar articles, substantially as herein shown and described.

36,026. BACK FOR BRUSHES OR SIMILAR ARTICLES. Sidney A. Keller, New York, N. Y. Filed July 22, 1902. Serial No. 116,768. Term of patent 3½ years.

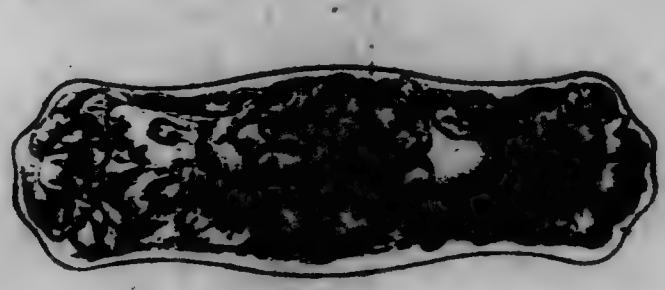

Claim.—The ornamental design for a back for brushes, mirrors, or similar articles, substantially as herein shown and described.

36,027. CORNER FOR BLOTTING-PADS OR SIMILAR ARTICLES. Sidney A. Keller, New York, N. Y. Filed July 22, 1902. Serial No. 116,767. Term of patent 3½ years.

Claim.—The ornamental design for a corner for blotting-pads, or similar articles, substantially as herein shown and described.

36,028. STAND FOR PHOTOGRAPH-ALBUMS. Raphael Abrahams, New York, N. Y., assignor to Rosa Abramson, New York, N. Y. Filed July 19, 1902. Serial No. 115,904. Term of patent 7 years.

Claim.—The ornamental design for a stand for a photograph-album as herein shown and described.

36,029. LAMP-BODY. Cyrus A. Kaal, St. Louis, Mo. Filed July 3, 1902. Serial No. 114,326. Term of patent 14 years.

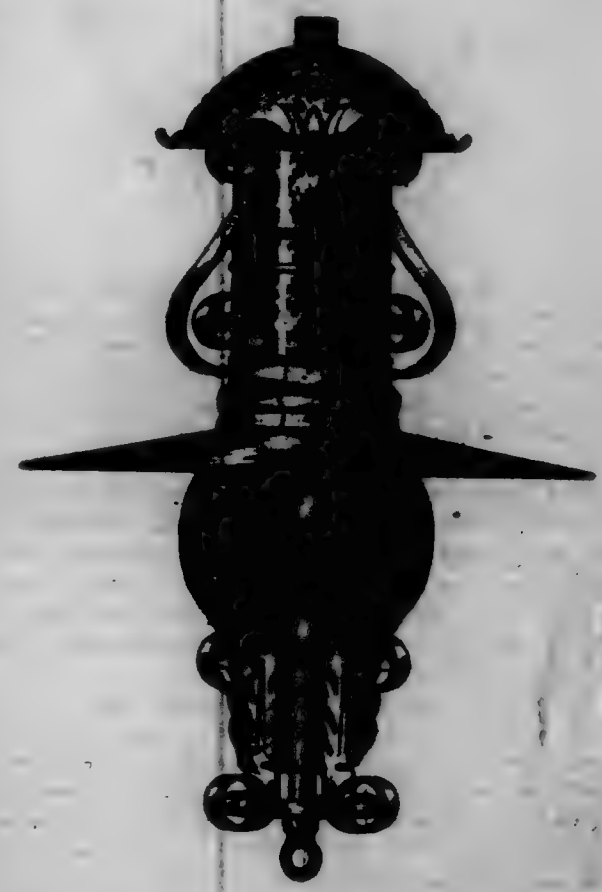

Claim.—The ornamental design for a lamp-body, as herein shown and described.

36,080. PLATE. Clement B. Wise, Williamsburg, Pa. Filed Feb. 18, 1902. Serial No. 94,702. Term of patent 3½ years.

Claim.—The ornamental design for a plate, as herein shown and described.

36,081. VENDING-MACHINE CASING. Clement W. Gerrie, David City, Nebr. Filed May 16, 1902. Serial No. 107,601. Term of patent 7 years.

Claim.—The ornamental design for a vending-machine casing as herein shown and described.

36,083. SEWING-MACHINE TABLE. Frank S. Boland, Chicago, Ill., assignor to Illinois Sewing Machine Company, Chicago, Ill., a Corporation of Illinois. Filed July 1, 1902. Serial No. 114,088. Term of patent 7 years.

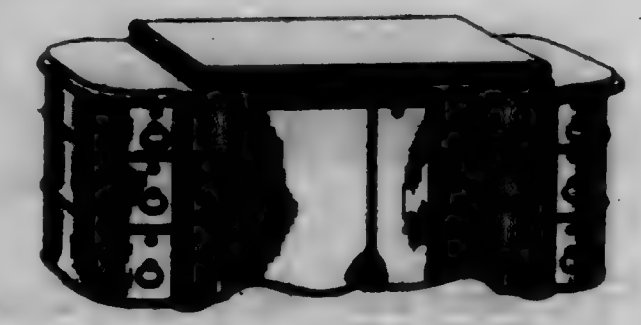

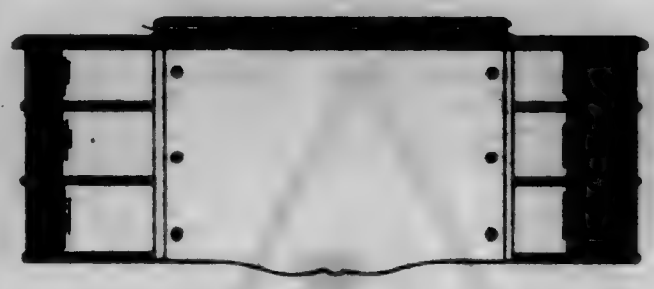

Claim.—The ornamental design for a sewing-machine table herein shown and described.

36,088. RUG. Adolph Pfeiffer, Philadelphia, Pa., assignor to John H. Bromley and Edward Bromley, Philadelphia, Pa., copartners trading as John Bromley & Sons. Filed July 31, 1902. Serial No. 117,261. Term of patent 3½ years.

Claim.—The ornamental design for a rug, substantially as shown and described.

TRADE-MARKS.

REGISTERED AUGUST 26, 1902.

38,881. CERTAIN NAMED PAPER. Sarason A. Jarman, New York, N. Y. Filed May 13, 1902.

The letter "J" within a diamond border. Used since April 1, 1896.

38,882. CERTAIN NAMED CLOTHING. Ezra Brevoort, St. Paul, Minn. Filed Mar. 17, 1902.

The representation of a tailor's goose or smoothing-iron, printed in red within a black border, with the words "AT THE SIGN OF THE RED GOOSE" printed in connection therewith. Used since July 1, 1900.

38,883. SYRUPS, COATS AND PANTS. John H. Woodruff, St. Louis, Mo. Filed July 8, 1902.

The word "DIAMOND" inclosed in a diamond-shaped figure. Used since January 1, 1900.

38,884. LINENS. Brown Bros. & Co., New York, N. Y. Filed May 14, 1902.

SAXON

The word "SAXON." Used since January 20, 1902.

38,885. LINENS. Brown Bros. & Co., New York, N. Y. Filed May 14, 1902.

SUNSHINE

The word "SUNSHINE." Used since May 14, 1901.

38,886. COTTON YARNS. New England Cotton Yarn Company, Jersey City, N. J., and New Bedford, Mass. Filed July 22, 1902.

The word "OVERLAND" and a circle inclosing the same. Used since July 10, 1902.

88,837. MEN'S BOOTS AND SHOES. LAMKIN & POMEROY, Boston, Mass. Filed July 5, 1902.

The word "PEDREX" and the representation of a shoe surmounted by a crown. Used since May 1, 1902.

88,888. CERTAIN NAMED BOOTS AND SHOES. DOROTHY DODD SHOE CO., Manchester, N. J., and Boston, Mass. Filed July 21, 1902.

A device comprising a shield bearing upon it two capital letters "G D" arranged facing each other, one of the letters being reversed, the shield being surmounted by a crown and deer's head. Used since May 1, 1902.

88,889. INSOLES. JOHN ARNSWALD, Sleepy Hollow, N. Y. Filed July 2, 1902.

A. H. B.

The letters "A. H. B." Used since December, 1900.

88,840. LEATHER FOR MAKING BOOTS AND SHOES. WILSON & COMPANY, Chicago, Ill. Filed July 14, 1902.

GOLDEN OAK

The words "GOLDEN OAK." Used since June, 1902.

88,841. CERTAIN NAMED PAINTS AND PAINTERS' SUPPLIES. COLONIAL WORKS, Boonton, N. J. Filed July 7, 1902.

COLONIAL

The word "COLONIAL." Used since September 1, 1897.

88,842. CERTAIN NAMED CLEANING COMPOUNDS, WOOD-STAIN, SHIP-CEMENT, AND ANTI-FOULING-BOTTOM COMPOUND. NATIONAL ARCHITECTURAL IMPROVEMENT AND SUPPLY COMPANY, Wilmington, Del., and Baltimore, Md. Filed July 19, 1902.

The representation of an ornamental base supporting two pillars, with a yoke inclosed by two concentric circles arranged behind the pillars, an eagle carrying a scroll in its beak being perched upon the outer circle, above the eagle being a star, and a transverse rectangular bar being arranged across the lower portions of the two pillars. Used since June 1, 1902.

88,848. CERTAIN NAMED CLEANING AND POLISHING PREPARATIONS. EDWARD T. EATON, Ridgewood, N. J. Filed May 31, 1902.

SILVER-ON

The hyphenated word "SILVER-ON." Used since 1894.

88,844. WHISKY AND WHISKY PREPARATIONS. The Bourmonte Co., San Francisco, Cal. Filed Nov. 25, 1901.

OLD JUDGE

The words or name "OLD JUDGE." Used since 1900.

88,845. PEPTONIZED EXTRACT OF MALT. Siegel-Cooper Co., New York, N. Y. Filed June 26, 1902.

MALT

VIGOR

The words "MALT" and "VIGOR," the latter being displayed in the form of a cross. Used since May 27, 1902.

88,846. LAGER-BEER. Duke and Brothers Canney Brewery Co., Quincy, Ill. Filed Feb. 24, 1902.

A scroll continued at its center upper and lower edges into projections in the form of a cross or fleur-de-lis, upon the scroll being the capital letter "D," and in the center of said letter "D" and on the face of the scroll being a smaller capital letter "B," the whole surrounded by heads of barley, the stems of which are crossed below the scroll. Used since June 1, 1897.

88,847. FLOUR. Geo. J. Evans, Indianapolis, Ind. Filed May 17, 1902.

E-Z-BAKE

The letters and characters "E-Z-BAKE." Used since March 5, 1902.

88,848. ARTIFICIAL FOOD DERIVED FROM ALBUMINOIDS. Aktien-Gesellschaft für Anilin-Fabrikation, Berlin, Germany. Filed Apr. 5, 1902.

Glectone.

The word "GLECTONE." Used since September 30, 1901.

88,849. ALMONDS. Bryan & Co., Malaga, Spain. Filed Dec. 3, 1901.

The representation of a saddled and bridled horse. Used since August 24, 1892.

88,850. [illegible] June 24, 1902.

88,851. [illegible] Filed [illegible]

88,852. [illegible] Warner, [illegible]

88,853. [illegible]

88,850. TABLE-SAUCE. Sconce & Walker, Toledo, Ohio. Filed June 26, 1902.

The representation of a lily and leaves and a monogram "F & Co" upon the same. Used since May 1, 1902.

88,851. LAUNDRY SOAP. The B. K. Fairbank Company, Chicago, Ill. Filed May 22, 1902.

LONE STAR

The words "LONE STAR." Used since October, 1898.

88,852. CERTAIN NAMED TOILET ARTICLES. Bella Perry Watson, London, England. Filed June 26, 1902.

SLENDERINE

The word "SLENDERINE." Used since June, 1899.

88,853. DEVICES FOR APPLYING EMBELLISHMENTS TO WOMEN'S OR CHILDREN'S. Emily Sommers, Chicago, Ill. Filed July 3, 1902.

ANTIGON

The word "ANTIGON." Used since December, 1901.

88,854. POISON FOR THE EXTERMINATION OF INSECTS AND ANIMALS. Rodney Charles Tabb, Providence, R. I. Filed June 26, 1902.

PEACHENE.

The word "PEACHENE." Used since June 18, 1902.

88,855. REMEDY FOR CERTAIN NAMED DISEASES OF CATTLE. Thomas D. Young, Media, Pa. Filed Mar. 26, 1902.

The representation of a cow on rampant hold in leash by a female attendant grasping a tether. Used since February, 1902.

88,856. CLINICAL THERMOMETERS. E. Kimmerer Optical Company, St. Louis, Mo. Filed June 26, 1902.

Household

The word "HOUSEHOLD" in script letter. Used since January 1, 1898.

88,857. HYDROCARBON-VAPOR LAMPS. The Sun Vapor Burner Lamp Co., Canton, Ohio. Filed July 3, 1902.

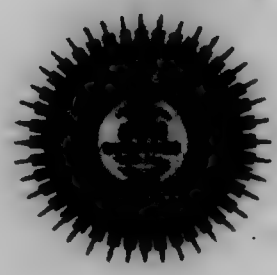

The words "THE SUN OUTSHINES THEM ALL," arranged within a circle formed by the conventional representation of the sun's rays. Used since 1877.

38,858. OFFBOARD LIBRARY FURNITURE. The File Maker Co., Lim., Grand Rapids, Mich. Filed Jan. 30, 1902.

A broad and curved dash, the same being oppositely curved at its respective ends or having an "ogee" curvature. Used August 1, 1895.

38,859. PNEUMATIC TOOLS. James E. Hayes, Chicago, Ill. Filed Apr. 30, 1902.

A monogram of the letters "E E H." Used since January 1, 1902.

THE SOBER-SETTERS CO.

LABELS

REGISTERED AUGUST 26, 1902.

9,396.—*Title:* "NICHOL'S HAT CO. HAT MAKERS." (For Hats.) CHARLES E. SACKETT, Danbury, Conn. Filed July 18, 1902.

9,397.—*Title:* "BROOKS CO. MAKERS." (For Hats.) CHARLES E. SACKETT, Danbury, Conn. Filed August 1, 1902.

9,398.—*Title:* "WORLD'S HAIR RESTORER." (For Hair-Restorer.) MRS. S. F. LAGH, Los Angeles, Cal. Filed July 15, 1902.

9,399.—*Title:* "JOE TURNER." (For Cigars.) A. C. HERSCHEL & Co., Chicago, Ill. Filed July 17, 1902.

9,400.—*Title:* "GOOD FELLOW CIGARS." (For Cigars.) ARNOLD JACOBSEN, New York, N. Y. Filed August 2, 1902.

9,401.—*Title:* "FRANKLIN UNION NUMBER FOUR CIGARS." (For Cigars.) MICHAEL A. PACELLA, Chicago, Ill. Filed August 4, 1902.

9,402.—*Title:* "BASS BROOK." (For Whisky.) SAMUEL BASS, Baltimore, Md. Filed July 17, 1902.

9,403.—*Title:* "STATIC." (For Packages Containing Carbonated Beverages.) STATIC CARBONATING COMPANY, Boston, Mass. Filed July 30, 1902.

9,404.—*Title:* "PINE TREE STATE TAFFY." (For Taffy.) GEORGE E. LUFKIN, Bangor, Me. Filed July 10, 1902.

9,405.—*Title:* "BANNER BRAND." (For Condensed Milk.) NORTHERN CONDENSED MILK CO., Philadelphia, Pa. Filed August 2, 1902.

9,406.—*Title:* "SURE-POP BAKING POWDER." (For Baking-Powder.) E. C. NEWMAN, Chicago, Ill. Filed August 4, 1902.

9,407.—*Title:* "GRAIN-FRUIT. THE HYGIENIC BREAKFAST CEREAL." (For Breakfast-Food.) THE GRAIN-FRUIT CEREAL CO., Chicago, Ill. Filed July 28, 1902.

9,408—*Title:* "'NOUVEAU' FURNITURE POLISH." (For Furniture-Polish.) THE NOUVEAU MANUFACTURING COMPANY, Newark, N. J. Filed August 4, 1902.

9,409.—*Title:* "UNITED POWDER AND HIGH EXPLOSIVE WORKERS OF AMERICA." (For Explosives.) WILLIAM FERRIS, Gracedale, Pa. Filed July 21, 1902.

PRINTS

REGISTERED AUGUST 26, 1902.

(None.)

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

FELBEL v. OLIVER.

Decided April 22, 1901.

1. INTERFERENCE—SUPPRESSION OF TESTIMONY—PRINTED RECORD.
Where certain testimony taken is ordered suppressed, *Held* that it should not be embodied in the printed record, since that record should contain only matter properly in the case.

2. SAME—SAME—REMOVING SUPPRESSED DEPOSITION FROM PRINTED RECORD.
Where a party prints in his record depositions which have been suppressed, *Held* that a motion to expunge, cancel, and remove it entirely from the printed record will be granted.

APPEAL on motion.

TYPE-WRITING MACHINE.

Application of Jacob Felbel filed December 18, 1899, No. 740,708. Application of Thomas Oliver filed July 17, 1899, No. 724,049.

Mr. William W. Dodge for Felbel.
Messrs. Poole & Brown for Oliver.

ALLEN, *Commissioner:*

This case is before me on an appeal by Oliver from the decision of the Examiner of Interferences granting a motion by Felbel for an order requiring Oliver to expunge, cancel, and remove entirely from Oliver's printed record the deposition of Robert H. Wiles and also to remove from the index all reference to the deposition of Wiles, together with his name appearing in the notary's certificate.

It appears from the record that on December 8, 1900, the Examiner of Interferences granted a motion by Felbel to strike out the deposition of the witness Wiles, and on January 18, 1901, his decision was affirmed by the Assistant Commissioner. Thereafter and on March 19 Oliver filed his printed record containing the deposition of Wiles in the same manner as if it had not been ordered stricken out. This was clearly contrary to the intent and purpose of the Assistant Commissioner's decision suppressing the deposition. It should not have been printed at all in the record, and Oliver himself practically admits that it should not have been printed in the same manner as the other depositions, for he says in his appeal—

> * * * in order to fully carry out the spirit and intent of the decision of the Assistant Commissioner dated Jan. 18th, 1901, the utmost that Oliver can properly be called upon to do is to plainly designate or mark in each filed copy of such printed record, the parts held proper to be stricken out under said decision of the Hon. Assistant Commissioner.

The decision of the Assistant Commissioner made the deposition of Wiles no part of the record to be considered in the further proceedings, and since the printed record should contain only matter properly forming a part of the case there was no error by the Examiner of Interferences in granting Felbel's motion. (*Dashiell* v. *Tasker*, 68 MS. Dec., 285.)

The decision of the Examiner of Interferences is affirmed.

EX PARTE THE MIAMI CLOTHING MANUFACTURING COMPANY.

Decided December 28, 1901.

1. TRADE-MARKS—DESCRIPTIVE—"FULLOUT."
"Fullout" as a trade-mark for clothing refused registration on the ground that it is descriptive, since it would convey to the purchasing public a definite idea of the style of the clothing.

2. SAME—SAME—PRINTING IN SCRIPT.
Merely printing a mark otherwise not registrable in script with a flourish beneath it does not render it registrable.

ON appeal.

TRADE-MARK FOR CLOTHING.

Application filed July 31, 1901, No. 68,890.

Mr. R. J. McCarty and *Mr. D. P. Wolhaupter* for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner of Trade-Marks refusing to register for overalls and shirts a mark the essential feature of which is said to be—

> the word "Fullcut" printed in facsimile of handwriting with the heavily-shaded flourish continued from the last letter beneath the word, and the word "Brand" printed on the tail of the flourish.

The ground of refusal is that the mark is descriptive of the merchandise upon which it is used and that the style in which it is printed does not render it so arbitrary and distinctive as to entitle the applicant to its exclusive use.

There is no doubt in my mind that the word "Fullcut" would convey to the purchasing public a definite idea of the style of the clothing upon which it is used. The term "full cut" is an expression well known as applied to clothing to distinguish it from that which is close-fitting and is descriptive of this quality. No one can be adjudged to have the exclusive right to such terms of description.

Merely printing a mark otherwise not registrable in script with a flourish beneath it does not render it registrable. This is a common way of printing words and marks and is not sufficient to lend distinctiveness to a particular mark. The ex-

sential feature which is impressed upon the purchaser and upon which the mark must stand or fall is the word which is printed and not the style of the printing.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE WOOLWORTH.

Decided December 31, 1901.

TRADE-MARKS—DESCRIPTIVE—"NEVERS-TICK."

"Nevers-Tick" as a trade-mark for lubricants refused registration upon the ground that it is descriptive.

ON appeal.

TRADE-MARK FOR LUBRICANT.

Application of Leland G. Woolworth for registration filed March 15, 1900, No. 60,767.

Mr. James J. Sheehy for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner of Trade-Marks refusing to register the word "Nevers-Tick" as a trade-mark for lubricants for machinery, drawer-slides, and the like.

Sticky is the antithesis of slippery, and to say that a lubricant does not stick is to describe in an ordinary way a quality or characteristic of it. Being a lubricant, it is of course intended to be slippery and not sticky, and no one is entitled to the exclusive right to say that a lubricant sold by him does not stick or never sticks. Such descriptive words cannot be taken to indicate to the purchaser origin or ownership of the goods.

This appellant has adopted a form for writing the descriptive words which differs in some respects from the ordinary; but the differences are not sufficient to destroy the identity of the words. They would be understood when read or pronounced in the same way as if written in the ordinary manner.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE BARRETT & BARRETT.

Decided February 5, 1902.

TRADE-MARK—"MALT MYRRH" FOR MALT LIQUORS—DESCRIPTIVE.

Held that "Malt Myrrh" as a trade-mark for malt liquors is not registrable, since the word "Malt" is clearly descriptive and "Myrrh" is either descriptive or deceptive.

ON appeal.

TRADE-MARK FOR LIQUORS, ETC.

Application for registration filed August 22, 1901, No. 64,020.

Mr. John R. Philp for the applicants.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the words "Malt Myrrh" as a trade-mark for malt liquors or beverages.

The word "Malt" is undoubtedly descriptive of the goods upon which it is used, and "Myrrh" is a descriptive word which would convey the impression that the beverage contained myrrh. Since the applicant states that the beverage does not in fact contain myrrh, this word applied to it is deceptive.

Registration was properly refused for the reason that the mark is partly descriptive and partly deceptive.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE MCNEIL.

Decided July 16, 1901.

1. PATENTABILITY—INVENTION—NEW ELEMENT OF OLD COMBINATION.

The combination of a trimmer with one type of stitch-forming mechanism being old, *Held* that it is not invention to combine that trimmer with another stitch-forming mechanism, whether the second stitch-forming mechanism be new or old, when no new result is accomplished which differs in kind from the result accomplished by the first combination and when each element acts in its own way and is not affected by the other and performs its function in the combination irrespective of the other.

2. SAME—SAME—SAME.

Held, further, that the invention, if any, is in the stitch-forming mechanism and that the applicant should claim it separately if he regards himself as the inventor of it.

APPEAL from Examiners-in-Chief.

SEWING-MACHINES.

Application of Chester McNeil filed December 31, 1897, No. 665,193.

Mr. C. L. Sturtevant for the appellant.

MOORE, *Acting Commissioner:*

This is an appeal from the decision of the Examiners-in-Chief affirming the rejection by the Primary Examiner of seventeen claims. As stated by the Examiners-in-Chief, it is only necessary to refer to one as an example.

1. In a sewing-machine, in combination with stitch-forming mechanism, including devices for forming two rows of irregular stitches, the adjacent loops of which are interlocked, of a trimmer arranged in advance of the stitch-forming mechanism and in the line of the seam, substantially as described.

Claim 5 is rejected on the ground that it covers a construction not shown and described. This claim is as follows:

5. The combination, in a sewing-machine, of a suitable trimmer, stitch-forming mechanism in rear of said trimmer including a plurality of eye-pointed thread-carrying devices forming parallel rows of stitches upon opposite sides of the line of feed and eye-pointed thread-carrying devices reciprocating back and forth between said opposite rows of stitches and forming intermediate interlocking rows of stitches, substantially as described.

The references are patents to Nichols, October 5, 1875, No. 168,521; Woodward, December 29, 1891, No. 466,264; Woodward and Timm, August 9, 1892, No. 480,377; Borton and Willcox, May 30, 1893, No. 496,616.

It is old in a sewing-machine to combine a trimmer with a stitch-forming mechanism. This combination is shown in the patent to Borton and Willcox. In this patent the trimmer is arranged in advance of the stitch-forming mechanism in the line of the seam, and said stitch-forming mechanism includes devices for forming two rows of stitches.

The particular stitch-forming mechanism shown by appellant and which constitutes an element in the combinations of his claims is not separately claimed by the appellant. Such a stitch-forming mechanism is shown, described, and claimed in the patent to Woodward.

The appellant has filed affidavits under the provisions of Rule 75 to establish a date of invention of the matter claimed prior to the date of filing of Woodward's application which resulted in the grant of his patent, No. 466,264, on December 29, 1891. The Examiner has held that these affidavits are not sufficient for the purpose. Whether they are sufficient or not is immaterial from the view I take of this case.

Borton and Willcox having invented the combination of a trimmer with a stitch-forming mechanism, it is not invention to combine a trimmer with another stitch-forming mechanism whether the stitch-forming mechanism be new or old. No new result is accomplished by appellant which differs in kind from the result accomplished by Borton and Willcox. There is no special coaction between the particular stitch-forming mechanism and the trimmer. Each acts in its own way and is not affected by the other and performs its function in the combination irrespective of the other. I think that what the appellant has done is within the province of the mechanic and does not amount to invention.

As stated by the Supreme Court of the United States in *Hill* v. *Wooster*, (50 O. G., 560)—

* * * it is not enough that a thing shall be new, in the sense that in the shape or form in which it is produced it shall not have been before known, and that it shall be useful, but it must, under the Constitution and the statute, amount to an invention or discovery.

If appellant regards himself to be the original inventor of the particular stitch-forming mechanism shown and described, he should claim it. The showing and description do not warrant the allowance of claim 5. I can find no description of "eye-pointed thread-carrying devices reciprocating back and forth" between the opposite rows of stitches, which mechanism is specified in said claim.

The decision of the Examiners-in-Chief is affirmed.

DECISIONS OF THE U. S. COURTS.

Court of Appeals of the District of Columbia.

IN RE FRASCH.

Decided June 23, 1902.

1. APPEAL—JURISDICTION—DIVISION OF APPLICATION.

An appeal from the decision of the Commissioner of Patents requiring division between process and apparatus dismissed for want of jurisdiction.

2. SAME—DIVISION—INTERLOCUTORY ORDER.

The requirement for division is not a refusal of a patent, but is a mere interlocutory order from which there can be no appeal.

3. SAME—REFUSAL OF PATENT—FINAL ORDER NECESSARY.

The right to appeal to the Court of Appeals of the District of Columbia from a decision of the Commissioner of Patents is limited to two classes of cases: first, where an application for patent has been finally denied, and, second, where in an interference proceeding there has been a final determination of the question of priority of invention between adverse claimants.

Mr. Charles J. Hedrick for the appellant.

Mr. John M. Coit for the Commissioner of Patents.

SHEPARD, *J.:*

The proceeding in this case began with an application by Herman Frasch, filed November 18, 1899, for a patent for a process and apparatus for removing incrustation of calcium sulfate from brine-heating surfaces.

The application concludes with six claims, the first three of which are for the process, and the last three for a particular apparatus to be used in the application of the process.

The Primary Examiner, on December 16, 1899, notified the applicant that his specifications and claims presented two different subjects of invention, namely, process and apparatus, and, calling his attention to Rule 41 requiring division in such cases, stated that—

division on this line must be made before action upon the merits can be given.

Rule 41 reads as follows:

41. Two or more independent inventions cannot be claimed in one application; but where several distinct inventions are dependent upon each other and mutually contribute to produce a single result they may be claimed in one application.

Claims for a machine and its product must be presented in separate applications.

Claims for a machine and the process in the performance of which the machine is used must be presented in separate applications.

Claims for a process and its product may be presented in the same application.

After hearing argument on behalf of the appellant, the Examiner repeated the order for division, and notified the applicant that there was no appeal because there had been no rejection of his application. He therefore declined to transmit the case to the Examiners-in-Chief as appealed from his decision, and called applicant's attention to his right of petition to the Commissioner of Patents under Rule 145, which authorizes the review by the Commissioner of any repeated ruling of an Examiner—

which does not involve the merits of the invention claimed, or the rejection of a claim.

On December 19, 1901, applicant presented a petition to the Commissioner in which he recited the proceedings in the Office and the rulings of the Examiner and prayed relief.

On January 23, 1902, the Commissioner rendered the following decision upon this petition:

This is a petition from the action of the Primary Examiner requiring division in the above-entitled case and refusing to forward to the Examiners-in-Chief an appeal which has been filed.

The application includes claims to a process and claims to an apparatus, and therefore the Examiner properly required division and refused to act upon the merits of the claims until that requirement was complied with. The petitioner regarded this as a refusal of a patent to him and filed a request for reconsideration, which he calls a persistence in his claim, under section 4909 of the Revised Statutes, and upon a repetition of the requirement for division filed an appeal to the Examiners-in-Chief.

A requirement for division is not an action upon the merits of the application, but is a mere matter of form, and therefore a party has no right to appeal to the Examiners-in-Chief from such a requirement. It is not a refusal of a patent or patents upon the alleged invention or inventions, but is a ruling that the application therefor has not been made in proper form. The requirement of division may be and often is made where all of the claims are admitted to be patentable. The objection is to the way in which the matter is presented and not to the matter itself. The Examiner was right in refusing to forward the appeal. The petition is denied.

From that decision the appeal has been prosecuted. On behalf of the Commissioner, a motion has been entered to dismiss for want of jurisdiction in this court to entertain the appeal.

The motion to dismiss the appeal must be granted. The right to appeal to this court from a de-

essential feature which is impressed upon the purchaser and upon which the mark must stand or fall is the word which is printed and not the style of the printing.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE WOOLWORTH.

Decided December 31, 1901.

TRADE-NAME—REGISTRATION—"NEVER-TICK."

"Never-Tick" as a trade-mark for lubricants refused registration upon the ground that it is descriptive.

ON appeal.

TRADE-NAME FOR LUBRICANTS.

Application of Leland G. Woolworth for registration filed March 14, 1901, No. 69,767.

Mr. James J. Hinchey for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner of Trade-Marks refusing to register the word "Never-Tick" as a trade-mark for lubricants for machinery, drawer-slides, and the like.

Sticky is the antithesis of slippery, and to say that a lubricant does not stick is to describe in an ordinary way a quality or characteristic of it. Being a lubricant, it is of course intended to be slippery and not sticky, and no one is entitled to the exclusive right to say that a lubricant sold by him does not stick or never sticks. Such descriptive words cannot be taken to indicate to the purchaser origin or ownership of the goods.

This appellant has adopted a form for writing the descriptive words which differs in some respects from the ordinary; but the differences are not sufficient to destroy the identity of the words. They would be understood when read or pronounced in the same way as if written in the ordinary manner.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE BARRETT & BARRETT.

Decided February 5, 1902.

TRADE-MARK—"MALT MYRRH" FOR MALT LIQUORS—DESCRIPTIVE.

Held that "Malt Myrrh" as a trade-mark for malt liquors is not registrable, since the word "Malt" is clearly descriptive and "Myrrh" is either descriptive or deceptive.

ON appeal.

TRADE-MARK FOR LIQUORS, ETC.

Application for registration filed August 22, 1901, No. 64,030.

Mr. John R. Philp for the applicants.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the words "Malt Myrrh" as a trade-mark for malt liquors or beverages.

The word "Malt" is undoubtedly descriptive of the goods upon which it is used, and "Myrrh" is a descriptive word which would convey the impression that the beverage contained myrrh. Since the applicant states that the beverage does not in fact contain myrrh, this word applied to it is deceptive.

Registration was properly refused for the reason that the mark is partly descriptive and partly deceptive.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE MCNEIL.

Decided July 16, 1901.

1. PATENTABILITY—INVENTION—NEW ELEMENT OF OLD COMBINATION.

The combination of a trimmer with one type of stitch-forming mechanism being old, *Held* that it is not invention to combine that trimmer with another stitch-forming mechanism, whether the second stitch-forming mechanism be new or old, when no new result is accomplished which differs in kind from the result accomplished by the first combination and when each element acts in its own way and is not affected by the other and performs its function in the combination irrespective of the other.

2. SAME—SAME—SAME.

Held, further, that the invention, if any, is in the stitch-forming mechanism and that the applicant should claim it separately if he regards himself as the inventor of it.

APPEAL from Examiners-in-Chief.

SEWING-MACHINES.

Application of Chester McNeil filed December 21, 1897, No. 663,198.

Mr. C. L. Shurtcomb for the appellant.

MOORE, *Acting Commissioner:*

This is an appeal from the decision of the Examiners-in-Chief affirming the rejection by the Primary Examiner of seventeen claims. As stated by the Examiners-in-Chief, it is only necessary to refer to one as an example.

1. In a sewing-machine, in combination with stitch-forming mechanism, including devices for forming two rows of irregular stitches, the adjacent loops of which are interlocked, of a trimmer arranged in advance of the stitch-forming mechanism and in the line of the seam, substantially as described.

Claim 5 is rejected on the ground that it covers a construction not shown and described. This claim is as follows:

5. The combination, in a sewing-machine, of a suitable trimmer, stitch-forming mechanism in rear of said trimmer including a plurality of eye-pointed thread-carrying devices forming parallel rows of stitches upon opposite sides of the line of feed and eye-pointed thread-carrying devices reciprocating back and forth between said opposite rows of stitches and forming intermediate interlocking rows of stitches, substantially as described.

The references are patents to Nichols, October 5, 1875, No. 168,821; Woodward, December 28, 1891, No. 464,264; Woodward and Timm, August 9, 1892, No. 480,377; Borton and Willcox, May 30, 1893, No. 498,616.

It is old in a sewing-machine to combine a trimmer with a stitch-forming mechanism. This combination is shown in the patent to Borton and Willcox. In this patent the trimmer is arranged in advance of the stitch-forming mechanism in the line of the seam, and said stitch-forming mechanism includes devices for forming two rows of stitches.

The particular stitch-forming mechanism shown by appellant and which constitutes an element in the combinations of his claims is not separately claimed by the appellant. Such a stitch-forming mechanism is shown, described, and claimed in the patent to Woodward.

The appellant has filed affidavits under the provisions of Rule 75 to establish a date of invention of the matter claimed prior to the date of filing of Woodward's application which resulted in the grant of his patent, No. 464,264, on December 29, 1891. The Examiner has held that these affidavits are not sufficient for the purpose. Whether they are sufficient or not is immaterial from the view I take of this case.

Borton and Willcox having invented the combination of a trimmer with a stitch-forming mechanism, it is not invention to combine a trimmer with another stitch-forming mechanism whether the stitch-forming mechanism be new or old. No new result is accomplished by appellant which differs in kind from the result accomplished by Borton and Willcox. There is no special coaction between the particular stitch-forming mechanism and the trimmer. Each acts in its own way and is not affected by the other and performs its function in the combination irrespective of the other. I think that what the appellant has done is within the province of the mechanic and does not amount to invention.

As stated by the Supreme Court of the United States in *Hill* v. *Wooster*, (30 O. G., 880)—

• • • it is not enough that a thing shall be new, in the sense that in the shape or form in which it is produced it shall not have been before known, and that it shall be useful, but it must, under the Constitution and the statute, amount to an invention or discovery.

If appellant regards himself to be the original inventor of the particular stitch-forming mechanism shown and described, he should claim it. The showing and description do not warrant the allowance of claim 5. I can find no description of "eye-pointed thread-carrying devices reciprocating back and forth" between the opposite rows of stitches, which mechanism is specified in said claim.

The decision of the Examiners-in-Chief is affirmed.

DECISIONS OF THE U. S. COURTS.

Court of Appeals of the District of Columbia.

IN RE FRASCH.

Decided June 26, 1902.

1. APPEAL—JURISDICTION—DIVISION OF APPLICATION.

An appeal from the decision of the Commissioner of Patents requiring division between process and apparatus dismissed for want of jurisdiction.

2. SAME—DIVISION—INTERLOCUTORY ORDER.

The requirement for division is not a refusal of a patent, but is a mere interlocutory order from which there can be no appeal.

3. SAME—REFUSAL OF PATENT—FINAL ORDER NECESSARY.

The right to appeal to the Court of Appeals of the District of Columbia from a decision of the Commissioner of Patents is limited to two classes of cases: first, where an application for patent has been finally denied, and, second, where in an interference proceeding there has been a final determination of the question of priority of invention between adverse claimants.

Mr. Charles J. Hedrick for the appellant.

Mr. John M. Coit for the Commissioner of Patents.

SHEPARD, *J.:*

The proceeding in this case began with an application by Herman Frasch, filed November 13, 1899, for a patent for a process and apparatus for removing incrustation of calcium sulfate from brine-heating surfaces.

The application concludes with six claims, the first three of which are for the process, and the last three for a particular apparatus to be used in the application of the process.

The Primary Examiner, on December 16, 1899, notified the applicant that his specifications and claims presented two different subjects of invention, namely, process and apparatus, and, calling his attention to Rule 41 requiring division in such cases, stated that—

division on this line must be made before action upon the merits can be given.

Rule 41 reads as follows:

41. Two or more independent inventions cannot be claimed in one application; but where several distinct inventions are dependent upon each other and mutually contribute to produce a single result they may be claimed in one application.

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Claims for a machine and the process in the performance of which the machine is used must be presented in separate applications.

Claims for a process and its product may be presented in the same application.

After hearing argument on behalf of the appellant, the Examiner repeated the order for division, and notified the applicant that there was no appeal because there had been no rejection of his application. He therefore declined to transmit the case to the Examiners-in-Chief as appealed from his decision, and called applicant's attention to his right of petition to the Commissioner of Patents under Rule 145, which authorizes the review by the Commissioner of any repeated ruling of an Examiner—

which does not involve the merits of the invention claimed, or the rejection of a claim.

On December 19, 1901, applicant presented a petition to the Commissioner in which he recited the proceedings in the Office and the rulings of the Examiner and prayed relief.

On January 23, 1902, the Commissioner rendered the following decision upon this petition:

This is a petition from the action of the Primary Examiner requiring division in the above-entitled case and refusing to forward to the Examiners-in-Chief an appeal which has been filed.

The application includes claims to a process and claims to an apparatus, and therefore the Examiner properly required division and refused to act upon the merits of the claims until that requirement was complied with. The petitioner regarded this as a refusal of a patent to him and filed a request for reconsideration, which he calls a persistence in his claim, under section 4908 of the Revised Statutes, and upon a repetition of the requirement for division filed an appeal to the Examiners-in-Chief.

A requirement for division is not an action upon the merits of the application, but is a mere matter of form, and therefore a party has no right to appeal to the Examiners-in-Chief from such a requirement. It is not a refusal of a patent or patents upon the alleged invention or inventions, but is a ruling that the application therefor has not been made in proper form. The requirement of division may be and often is made where all of the claims are admitted to be patentable. The objection is to the way in which the matter is presented and not to the matter itself. The Examiner was right in refusing to forward the appeal. The petition is denied.

From that decision the appeal has been prosecuted. On behalf of the Commissioner, a motion has been entered to dismiss for want of jurisdiction in this court to entertain the appeal.

The motion to dismiss the appeal must be granted. The right to appeal to this court from a de-

cision of the Commissioner of Patents is limited to two classes of cases: first, where an application for patent has been finally denied; and, second, where, in an interference proceeding, there has been a final determination of the question of priority of invention between adverse claimants. (R. S., secs. 4911, 4912, 4918, 4914; R. S. D. C., sec. 780; act creating Court of Appeals, D. C.: approved February 9, 1893, sec. 9.)

There has been no denial of the application in this case. Its merits have not been considered. The Examiner has declined to pass upon the application or to consider the allowance of the claims, because, in his opinion, he is bound by the terms of Rule 41 to demand a division of the application; that is to say, a separate application each for the process and for the apparatus embraced in the claims of the pending application. On petition against this ruling, the Examiner has been sustained by the Commissioner. It is a mere interlocutory order from which, in either class of cases, there can be no appeal, for reasons which have been heretofore stated, and need not be repeated. (*Westinghouse* v. *Duncan*, 2 App. D. C., 131, 134.) Moreover, upon appeal from a final decision on the merits, it has been held that—

the rulings on questions of mere practice in the Patent Office will not be reviewed in this court, unless it appear that there has been an abuse in the exercise of discretion, and that substantial rights have been thereby affected or denied. (*In re Marschutz*, 18 App. D. C., 288, 286; *in re Neill*, 11 App. D. C., 564, 588.)

The contention of the appellant is, that Rule 41 is inconsistent with the statutes providing for the grant of Letters Patent, and, therefore, beyond the power of the Commissioner of Patents to enact; wherefore its enforcement in this case has worked a practical denial of the application. That such is the substantial or necessary result of the ruling we cannot agree. We do not mean to say that there may not be a way in which the power to enact Rule 41 might be brought in question as necessarily involving the denial of a substantial right under the law.

If there be such a way, however, it has not been pursued in this proceeding. Whether the power exists presents a question of great importance, both to applicants for patents and to the Government, if for no other reason than the doubling of fees which must necessarily result from its strict enforcement. Nevertheless, the question is one of practice, and to be determined by this court must come up, not on appeal from an interlocutory order for the enforcement of the rule, but as necessarily involved in a final decision of the Commissioner rejecting an application for a patent, as intimated in the cases last-above cited.

Without intending to intimate any view in respect of the authority for, or the expediency of the purpose of, the enactment of Rule 41 by the Commissioner, it may be of some interest to briefly state its history.

The rule, as it now reads, was adopted by Mr. Commissioner Duell July 18, 1899. The change consisted in adding to the rule as it then read, the three last paragraphs which require separate applications for claims for a machine and its product, for a machine and the process in the performance of which it is used, and a single application for a process and its product.

Under the general terms of the old Rule 41, the practice of the Patent Office had varied from time to time under different administrations, and fallen into some confusion as claimed by Mr. Commissioner Duell in a decision wherein he set forth the reasons inducing him to amend the rule in the particulars noted. (*Ex parte Boucher*, 88 O. G., 545; C. D., 1899, p. 133, decided July 11, 1899.)

In that opinion he referred to the decision of the Supreme Court of the United States which recognized the general discretion committed to the head of the Patent Office in the matter of the division of applications (*Bennett* v. *Fowler*, 8 Wall., 445), as well as to the manner in which that discretion had been exercised by many preceding Commissioners.

In a later case he considered the subject again, at length, in justifying the amendment that had been made. (*Ex parte Frasch*, 91 O. G., 459; C. D., 1900, p. 50.)

In that opinion he cited several decisions of the Supreme Court of the United States, as sustaining his view that a process and an apparatus to be used in its application, are separate and distinct inventions.

Without pursuing the subject further, the appeal will be dismissed without prejudice, for the reasons given; and this decision and the proceedings herein will be certified to the Commissioner of Patents as required by law. It is so ordered.

Patents Nos. 708,000 to 708,510.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 10. TUESDAY, SEPTEMBER 2, 1902. PRICE—$5 per year.

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Total issue	550	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	2		Nebraska	6	
Alaska Territory	1		Nevada		
Arizona Territory			New Hampshire	1	
Arkansas	1		New Jersey	17	1
California	20	1	New Mexico Territ'y		
Colorado	1		New York	70	11
Connecticut	17	2	North Carolina	3	
Delaware	1		North Dakota	1	
District of Columbia	3	2	Ohio	44	2
Florida	1		Oklahoma Territ'y	2	
Georgia	1		Oregon		
Hawaii Territory	1		Pennsylvania	48	
Idaho			Philippine Islands		
Illinois	44	4	Rhode Island	5	
Indian Territory	1		South Carolina		
Indiana	11	3	South Dakota	1	
Iowa	11		Tennessee	3	
Kansas	6		Texas	4	
Kentucky	4		Utah		
Louisiana	1		Vermont	1	1
Maine	2		Virginia	3	1
Maryland	6		Washington	3	
Massachusetts	50	2	West Virginia	6	
Michigan	13		Wisconsin	13	
Minnesota	9		Wyoming		
Mississippi	1				
Missouri	24		Total to citizens of the United States	402	30
Montana	2				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina			Netherlands		
Austria-Hungary	1		Newfoundland		
Belgium			New South Wales	1	
Bermuda			New Zealand	1	
Brazil			Norway		
Canada	11		Peru		
Cape Colony	1		Portugal		
Chile			Russia		
China			Santo Domingo		
Colombia			Scotland	1	
Cuba			South African Republic		
Denmark	1		South Australia		
Egypt			Spain		
England	15		Sweden	1	
France	4		Switzerland	1	
Germany	17		Uruguay		
Guatemala			Victoria	1	
India			Western Australia		
Ireland					
Italy			Total to citizens of foreign countries	57	
Japan					
Mexico	1				

Indexes to Patents on Electricity.

Indexes to patents relating to electricity, covering the period of time from July 1, 1882, to June 30, 1896, have been issued, and are for sale. These indexes, arranged alphabetically, numerically, and by classes, comprise the following volumes, the prices of which are given below:

Vol. 1. Index to patents relating to electricity granted by the United States prior to June 30, 1881, with an appendix, July 1, 1881, to June 30, 1882. One volume, 350 pages. In paper covers, $3; bound, $5.

Vol. 2. Appendix No. 2, July 1, 1882, to June 30, 1883. One volume, 50 pages. In paper covers, $1.50.

Vol. 3. Appendix No. 3, July 1, 1883, to June 30, 1884. One volume, 60 pages. In paper covers, $1.50.

Vol. 4. Appendix No. 4, July 1, 1884, to June 30, 1885. One volume, 60 pages. In paper covers, $1.50.

Vol. 5. Appendix No. 5, July 1, 1885, to June 30, 1886. One volume, 54 pages. In paper covers, $1.50.

Vol. 6. Appendix No. 6, July 1, 1886, to June 30, 1887. One volume, 58 pages. In paper covers, $1.50.

Vol. 7. Appendix No. 7, July 1, 1887, to June 30, 1888. One volume, 66 pages. In paper covers, $1.50.

Vol. 8. Appendix No. 8, July 1, 1888, to June 30, 1889. One volume, 72 pages. In paper covers, $1.50.

Vol. 9. Appendix No. 9, July 1, 1889, to June 30, 1890. One volume, 84 pages. In paper covers, $1.50.

Vol. 10. Appendix No. 10, July 1, 1890, to June 30, 1891. One volume, 98 pages. In paper covers, $1.50.

Vol. 11. Appendix No. 11, July 1, 1891, to June 30, 1892. One volume, 86 pages. In paper covers, $1.50.

Vol. 12. Appendix No. 12, July 1, 1892, to June 30, 1893. One volume, 80 pages. In paper covers, $1.50.

Vol. 13. Appendix No. 13, July 1, 1893, to June 30, 1894. One volume, 70pages. In paper covers, $1.50.

Vol. 14. Appendix No. 14, July 1, 1894, to June 30, 1895. One volume, 68 pages. In paper covers, $1.50.

Vol. 15. Appendix No. 15, July 1, 1895, to June 30, 1896. One volume, 68 pages. In paper covers, $1.50.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business August 26, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	In arrears—Under one month.			
253	X. Carriages and Wagons	Aug. 18	Aug. 18	24
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	Aug. 4	Aug. 14	57
80	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	July 28	July 19	350
246	I. Tillage, etc., and Fences	July 28	July 19	235
	Between one and two months.			
106	II. Farm Products, etc., Lubricators, Presses, etc.	July 24	July 19	171
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	July 23	Aug. 2	167
228	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	July 21	July 31	157
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	July 16	July 25	190
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	July 15	July 30	255
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	July 12	July 28	191
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	July 12	July 25	263
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	July 11	July 28	227
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	July 7	Aug. 2	211
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	July 5	July 26	335
213	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	July 5	July 24	182
196	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	July 2	July 28	319
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	July 1	July 1	556
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	June 30	July 25	307
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	June 30	July 2	277
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	June 28	July 17	396
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	June 26	July 9	438
	Between two and three months.			
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 25	July 15	307
138	XXIX. Wood-Working Machines, Coopering and Roofing.	June 21	June 30	241
109	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 16	July 14	381
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	June 14	July 9	255
122	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 13	July 8	266

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	June 6	June 9	418
248	XVIII. Steam-Engineering, etc.	June 5	June 27	489
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	June 5	May 24	401
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	June 2	July 12	456
91	XVI. Telegraphy and Telephony	June 2	June 5	305
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	May 29	May 29	503
	Between three and four months.			
109	XXII. Fire-Arms, Ordnance, Navigation.	May 23	July 19	188
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 20	June 20	728
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 19	May 24	455
148	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	May 17	June 12	518
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 1	June 12	602
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	Apr. 26	June 16	586

Total number of applications awaiting action 12,601

In arrears—Under one month.			
*Designs	Aug. 15	Aug. 13	70
Between one and two months.			
†Trade-Marks	July 15	Aug. 7	225
Under one month.			
‡Labels and Prints	Aug. 19	Aug. 18	19

Amendments to Allowed Applications.

Hereafter all amendments proposed to allowed applications and all petitions and requests relating thereto shall be filed with the docket clerk, Mr. J. M. Fowler, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action. (Order 629 amended October 15, 1896.)

Renewal of Forfeited Applications.

Attention is called to section 4,897, Revised Statutes, relating to the renewal of allowed applications forfeited through failure to pay the final fee within six months from the date of allowance. The law requires the petition for renewal to be signed by the *inventor, discoverer*, or *assignee* and that the same be filed in this Office within two years after the allowance of the original application. If the inventor be dead, the petition must be signed by the administrator or executor; if insane, by the guardian, conservator, or legal representative. *It will not be accepted if signed by the attorney.* (Form 12, page 64, Rules of Practice, should be used.)

PATENTS

GRANTED SEPTEMBER 2, 1902.

708,000. POLISHING-STRIP. CHARLES C. ALLEN, Kansas City, Mo. Filed Dec. 11, 1901. Serial No. 85,497. (No model.)

Claim.—A long and narrow flexible polishing-strip, having its side edges substantially parallel and having one of its sides partially abrasive and partially smooth; the smooth portion occurring at opposite ends of the abrasive portion.

708,001. ART OF MAKING PAPER BAGS. DANIEL APPEL, Cleveland, Ohio, assignor to the Union Paper Bag Machine Company, Philadelphia, Pa. Filed Dec. 26, 1901. Serial No. 87,173. (No model.)

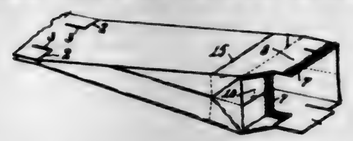

Claim.—That improvement in the art of producing paper bags from a flattened pleated paper tube which consists in cross-cutting through all of the plies of the flattened pleated tube upon the opposite edges of the tube and inward to a distance less than the inward projection of the side folds of the tube, longitudinally cutting the face-plies only of the tube at right angles rearwardly from the extremities of the cross-cuts in these plies, expanding the tube to rectangular form, completing the severance at the sides of the tube, applying paste where adhesion of folds is to occur, turning the advancing portion of the side plies inwardly and rearwardly while the unsevered portions of the tube are under tension, collapsing the tube end and folded parts while under tension, relieving the tension on the folded parts and completing the severance so as to leave the tails of the face-plies free, folding one of the tails of the face-plies against the previously-inturned side plies, folding the second face-ply against the first one to complete the forming and sealing of the bag-bottom, and folding and pressing the completed bottom against the collapsed body part of the bag.

708,002. AUTOMATIC GRAIN-BINDER. JOHN F. APPLEBY, Chicago, Ill. Filed Sept. 11, 1901. Serial No. 74,807. (No model.)

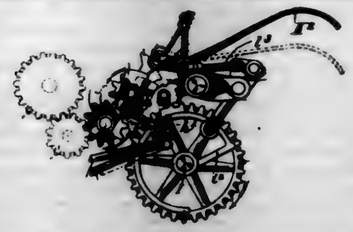

Claim.—1. In an automatic grain-binder, the combination with a binding mechanism and a packing mechanism, of a continuously-rotating driving-shaft, intermittently-rotating binder-shaft and packer-shaft, gears mounted upon said driving-shaft, binder-shaft and packer-shaft, intermediate gears movably mounted, means, actuated by the packing mechanism, for moving one of said intermediate gears into position to transmit rotary motion from said driving-shaft to said binder-shaft, and also means, controlled by the binding mechanism, for moving another of said intermediate gears into position to transmit rotary motion from said driving-shaft to said packer-shaft, whereby the binding mechanism and packing mechanism are caused to intermit alternately in their operation, substantially as described.

2. In an automatic grain-binder, the combination with a binding mechanism and a packing mechanism, of a continuously-rotating driving-shaft having a gear thereon, an intermittently-rotating binder-shaft having also a gear thereon, an intermediate gear in constant mesh with the gear on said driving-shaft, means, actuated by the packing mechanism, for moving said intermediate gear into mesh and means for moving it out of mesh with the gear on said binder-shaft, an intermittently-rotating packer-shaft having a gear thereon, a second intermediate gear in constant mesh with the gear on said driving-shaft, and also means, controlled by the binding mechanism, for moving said second intermediate gear into and out of mesh with the gear on said packer-shaft, whereby the binding mechanism and the packing mechanism are caused to intermit alternately in their operation, substantially as described.

3. In an automatic grain-binder, the combination with a binding mechanism and a packing mechanism of a continuously-rotating driving-shaft having a spur-gear secured thereto, an intermittently-rotating binder-shaft having also a spur-gear secured thereto, an intermediate spur-gear in constant mesh with the gear secured to said driving-shaft, a vibrating trip-arm on which the said intermediate gear is mounted, the axis of which is concentric with said driving-shaft, packer, means, actuated by said packers, for moving said trip-arm on its axis and thereby carrying said intermediate gear mounted thereon into mesh and means, actuated by the binding mechanism, for carrying it out of mesh with the gear on said binder-shaft, an intermittently-rotating packer-shaft having a spur-gear secured thereto, a second intermediate spur-gear in constant mesh with the gear on said driving-shaft, a vibrating hanger in which the said second intermediate gear is mounted, the axis of which is concentric with said driving-shaft, an oscillating needle, and means, controlled thereby, for moving said vibrating hanger on its axis and thereby carrying the intermediate gear mounted therein into and out of mesh with the gear on said binder-shaft, whereby the binding mechanism and the packing mechanism are caused to intermit alternately in their operations, substantially as described.

4. In an automatic grain-binder, the combination with a binding mechanism and a packing mechanism, of a continuously-rotating driving-shaft, an intermittently-rotating binder-shaft, gears mounted upon said driving-shaft and binder-shaft, an intermediate gear movably mounted, means, actuated by the packing mechanism, for moving said intermediate gear into position to transmit rotary motion from said driving-shaft to said binder-shaft, whereby intermittent rotation is imparted to the binding mechanism, substantially as described.

5. In an automatic grain-binder, the combination with a binding mechanism and a packing mechanism, of a continuously-rotating driving-shaft having a gear thereon, an intermittently-rotating binder-shaft having also a gear thereon, an intermediate gear in constant mesh with the gear on said driving-shaft, means, actuated by the packing mechanism, for moving said intermediate gear into mesh and means for moving it out of mesh with the gear on said binder-shaft, whereby intermittent rotation is imparted to the binding mechanism, substantially as described.

6. In an automatic grain-binder, the combination with a binding mechanism and a packing mechanism, of a continuously-rotating driving-shaft having a spur-gear secured thereto, an intermittently-rotating binder-shaft having also a spur-gear secured thereto, an intermediate spur-gear in constant mesh with the gear secured to said driving-shaft, a vibrating trip-arm on which the said intermediate gear is mounted, the axis of

which is concentric with said driving-shaft, pawlcrum, means, actuated by said pawlcrum, for moving said trip-arm on its axis and thereby carrying said intermediate gear mounted thereon into mesh and means, actuated by the binding mechanism, for carrying it out of mesh with said gear on said binder-shaft, substantially as described.

7. In an automatic grain-binder, the combination with the binding mechanism of a constantly-rotating driving-shaft having a gear thereon, an intermittently-rotating binder-shaft having also a gear thereon, an intermediate gear in constant mesh with the gear on said driving-shaft, a vibrating trip-arm on which said intermediate gear is mounted, the axis of which is concentric with said driving-shaft, a trip-step adapted normally to engage said trip-arm, means for holding it in engagement therewith, pawlcrum, means actuated by said pawlcrum, through the instrumentality of the accumulating intervening bundle, for disengaging said trip-step from said trip-arm, links connecting said pawlcrum with said trip-arm adapted, through the action of said pawlcrum upon the accumulated grain, to move said trip-arm upon its axis and thereby carry said intermediate gear mounted thereon into mesh with the gear on said binder-shaft, and a mutilation on the gear on said binder-shaft adapted to engage said intermediate gear and move it out of mesh therewith, whereby intermittent rotation is imparted to the binding mechanism, substantially as described.

8. In an automatic grain-binder, the combination with the binding mechanism of a constantly-rotating driving-shaft having a spur-gear secured thereto, an intermittently-rotating binder-shaft having also a spur-gear secured thereto, an intermediate spur-gear in constant mesh with the gear secured to said driving-shaft, a vibrating trip-arm on which said intermediate gear is mounted, the axis of which is concentric with said driving-shaft, a trip-step adapted normally to engage said trip-arm, pawlcrum, means, actuated by said pawlcrum, through the instrumentality of the accumulating intervening bundle, for disengaging said trip-step from said trip-arm, a pivoted pawlcrum-link support, links connecting said pawlcrum with said pivoted support, a link connecting said pivoted support with said trip-arm adapted, through the action of said pawlcrum upon the accumulated grain, to move said trip-arm upon its axis and thereby carry said intermediate gear mounted thereon into mesh with the gear on said binder-shaft, and a mutilation on the gear on said binder-shaft adapted to engage said intermediate gear and move it out of mesh therewith, whereby intermittent rotation is imparted to the binding mechanism, substantially as described.

9. In an automatic grain-binder, in combination with an intermittently-rotating binder-shaft and an oscillating needle actuated thereby, means connecting said binder-shaft and needle, whereby the oscillation of said needle may be adjusted at one extremity only thereof, substantially as described.

10. In an automatic grain-binder, in combination with an intermittently-rotating binder-shaft having a crank secured thereto and an oscillating needle, a bell-crank pivoted to the needle-arm, adjustable means for holding it normally rigid therewith, and a pitman connecting the crank on said binder-shaft with said bell-crank on the needle-arm, whereby the oscillation of said needle may be adjusted at one extremity thereof, substantially as described.

11. In an automatic grain-binder, in combination with an intermittently-rotating binder-shaft having a crank secured thereto and an oscillating needle, a bell-crank pivoted to the needle-arm, a bolt pivoted in said bell-crank provided with look-nuts adapted to engage a lug on said needle, and a pitman connecting the crank on said binder-shaft with said bell-crank on the needle-arm, whereby said needle may be adjusted relative to the knotter without changing its relation to the deck, substantially as described.

708,003. PROCESS OF PRODUCING A COMPOSITION OF MATTER TO BE USED AS A SUBSTITUTE FOR RUBBER. OTTO A. BAILER, Philadelphia, Pa. Filed Dec. 27, 1901. Serial No. 87,473. (No specimens.)

Claim.—The above-described process of producing a rubber substitute by forming a solution by mixing gum-arabic, rubber dissolved in benzin, whiting and sulfur, in the proportions substantially of ten per cent. of gum-arabic, twenty per cent. of rubber, twenty-five per cent. of whiting and forty-five per cent. of sulfur, adding feathers to the above solution in the proportion of three parts by weight of feathers to one part of the solution, cooldrying the whole, pressing into the desired form and vulcanizing, substantially as and in the manner described.

708,004. MOUNTING FOR WHIFFLETREES. EDWIN W. H. BAILEY, Amesbury, Mass. Filed Oct. 10, 1901. Serial No. 78,516. (No model.)

Claim.—1. The combination with a pair of members comprising a whiffletree and its support, of an interposed plate secured to each, and a bolt serving to prevent the separation of the members passing through the plates and support and provided with means for preventing its rotation engaging said support, which means is free from such engagement with the plates and whiffletree.

2. The combination with a whiffletree and its support, of an interposed plate secured to each and having a circular opening, and a bolt passing through the openings in the plates and being provided with a squared portion of less transverse dimension than the circular openings for engaging the support.

3. The combination with a pair of members comprising a whiffletree and its support, of an interposed plate provided with a recess and having its opposite outer faces each in close proximity to one of the members and being secured to one of them, a second plate secured to the other member and located within the recess in the first plate, and a bolt passing through the plates and the support and having means for preventing its rotation engaging said support, which means is free from such engagement with the plates and whiffletree.

4. The combination with a pair of members comprising a whiffletree and its support, of an interposed plate provided with a sharpened projection adapted to be forced into engagement with one of the members, means for securing the plate to said member, and a bolt passing through the plate and at least one of the members.

5. The combination with a pair of members comprising a whiffletree and its support, of an interposed plate provided with a central opening and a reduced or sharpened projection surrounding said opening adapted to engage one of the members, means for securing the plate to said member, and a bolt passing through the opening in the plate and at least one of the members.

6. The combination with a pair of members comprising a whiffletree and its support, of a plate secured to one of the members provided with a recess on the side toward said member and a recess on the side toward the companion member, a plate secured to the companion member and situated within the last-named recess, and a bolt extending through the plates having its head located entirely within the first-named recess and being provided with means for preventing its rotation engaging the support.

7. The combination with a pair of members comprising a whiffletree and its support, of a circular plate secured to one of the members provided with a recess on the side toward said member and an annular recess on the side toward the companion member, an annular plate secured to the companion member and situated within the last-named recess, and a bolt extending through the plates having its head located entirely within the plate-recess and being provided with means for preventing its rotation engaging the support.

8. The combination with a whiffletree and its support, of a plate secured to said support, a coacting plate secured to the whiffletree provided with a skirt or flange extending downward about the first-named plate and contacting at all times with the support, and a bolt passing through the plates and support.

9. The combination with a whiffletree and its support, of a plate secured to said support, a coacting plate secured to the whiffletree provided with a skirt or flange extending downward about the first-named plate and contacting with the support, and a bolt provided with a squared portion passing through the plates and engaging the support whereby the rotation of said bolt is prevented.

10. A mounting for whiffletrees comprising a pair of coacting plates, and a bolt carrying a nut passing through the plates and adapted to turn freely therein and provided with lateral projections extending outside the plates on the side toward the nut.

11. A mounting for whiffletrees comprising a pair of coacting plates, and a bolt carrying a nut passing through the plates and adapted to turn freely therein and provided with a squared portion extending outside the plates on the side toward the nut.

12. A mounting for whiffletrees comprising a plate provided with a countersunk recess and an oppositely-placed annular recess and being substantially equal in thickness to the desired distance between the whiffletree and its support, an annular plate adapted to occupy the recess in the first plate, and a bolt provided with a squared portion passing through the plates and having its head situated in the countersunk recess.

13. A mounting for whiffletrees comprising a pair of coacting plates one of which is provided with a projection at its outer side adapted to be forced into the member to which it may be secured, and a bolt passing through the plates and carrying a nut on the side at which the projection is situated.

14. A mounting for whiffletrees comprising a pair of coacting plates one of which is provided with an annular reduced or sharpened projection at its outer side adapted to be forced into the member to which it may be secured, and a bolt passing through the plates and carrying a nut on the side at which the projection is situated.

708,005. ARTIFICIAL LEG. HILBE C. BALDWIN, Elmira, N. Y., assignor of one-half to Thomas R. Stevenson, Elmira, N. Y. Filed Apr. 4, 1902. Serial No. 101,230. (No model.)

Claim.—1. A joint for artificial legs comprising a tenon on one member integral therewith pivoted in a mortise in a second member, said second member having cheeks at each side of the mortise cut on a circle with the pivot as a center, the first member being recessed at each side of the tenon to fit said cheeks, and spring or cushion blocks set in sockets at the front and rear of the joint.

2. A joint for artificial legs comprising a tenon on one member integral therewith pivoted in a mortise in a second member, with side straps passing from the pivot-pin to fastening-points on the first member, and spring-blocks to hold the members in normal relation and allow for their required relative movements in walking.

708,006. ELECTRIC SWITCH. HENRY P. BALL, New York, N. Y., assignor to General Incandescent Arc Light Company, a Corporation of New York. Filed Mar. 21, 1901. Serial No. 52,157. (No model.)

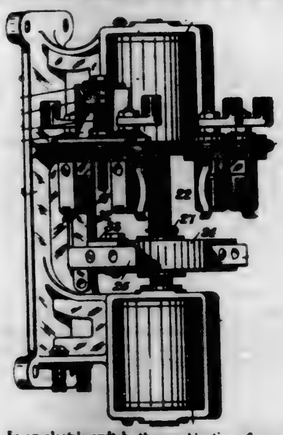

Claim.—1. In an electric switch, the combination of a pair of solenoids in line, a series of spring-terminal contacts, a reciprocating bridge device, an armature actuated by one of said solenoids and fixed to said bridge device, and an armature actuated by the other of said solenoids and elastically connected to said bridge device.

2. In an electric switch, the combination of a pair of solenoids in line, a series of spring-terminal contacts, a reciprocating bridge device, an armature actuated by one of said solenoids and fixed to said bridge device, and means actuated by the other of said solenoids for imparting a hammer-blow to said bridge device.

3. In an electric switch, the combination of a pair of solenoids arranged in line, a series of spring-terminal contacts, a reciprocating bridge device, an armature actuated by one of said solenoids and fixed to said bridge device, an armature actuated by the other of said solenoids, and a spring between said armature and said bridge device.

708,007. TIME-LIMIT DEVICE FOR CIRCUIT-BREAKERS. HENRY P. BALL, New York, N. Y., assignor to General Incandescent Arc Light Company, a Corporation of New York. Filed Jan. 30, 1902. Serial No. 91,742. (No model.)

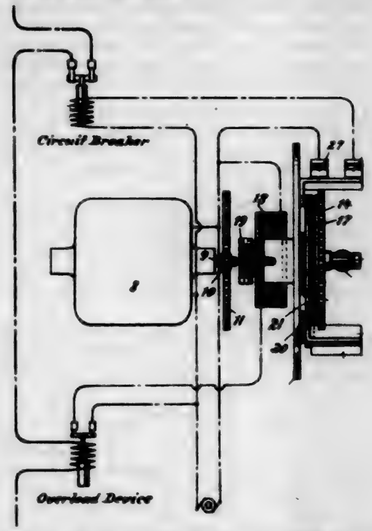

Claim.—1. In a device such as described, the combination of a rotating member, a circuit-closing member, electromagnetic means for engaging said members, and means for returning the circuit-closing member to its original position upon the cessation of an overload.

2. In a device such as described, the combination of a rotating member, a circuit-closing member, electromagnetic means for engaging said members upon the existence of an overload, means for returning the circuit-closing member to its original position upon the cessation of an overload, and means for limiting the degree of movement of the circuit-closing member.

3. In a device such as described, the combination of a rotating member, a rotatable member, electromagnetic means for engaging the rotating member and the rotatable member, and means for restoring the rotatable member to its original position when the electric energy which energizes the electromagnetic means falls below a predetermined point.

4. In a device such as described, a rotating member, a rotatable member, electromagnetic means for engaging the rotating and rotatable members, means for limiting the degree of rotation of the rotatable member, means for restoring the rotatable member to its original position, and a circuit-closing device carried by the rotatable member.

5. In a device such as described, the combination of a circuit-closing member, means for imparting a definite speed of movement forward to the circuit-closing member upon the creation of an overload, means for limiting the degree of movement of the circuit-closing member, and means for imparting a definite speed of movement backward to the circuit-closing member upon the cessation of an overload.

6. In a device such as described, the combination of a rotating member, a circuit-closing member, electromagnetic means for engaging said members upon the existence of an overload, means for returning the circuit-closing member to its original position upon the cessation of an overload, and means for adjusting the range of movement of the circuit-closing member.

7. In a device such as described, the combination of a circuit-closing device cut in relation by the creation of an overload on the circuit in which it is connected, means for limiting the motion of said circuit-closing device, and means for imparting a reverse motion to the circuit-closing device immediately upon the cessation of an overload.

8. A device such as described, comprising a motor, a disk driven by said motor, a second disk, means for moving said second-named disk into frictional relation with said first-named disk upon an overload, a bridge device carried with said second-named disk, a pair of contacts with which said bridge device coacts, means for separating the disks when the over-

head ceases, and means for determining the time limit within which the device will act.

9. A device such as described, comprising a motor, a disk driven by said motor, a second disk, means for moving said second disk into frictional relation with said first-named disk upon an overload, a bridge device carried with said second-named disk, a pair of contacts with which said bridge device coacts, means for separating the disks and restoring the second-named disk and bridge device to their original position, and means for determining the time limit within which the device will act.

10. In a device such as described, the combination of a driven disk, a second disk, means for moving said second disk into frictional relation with said first-named disk upon an overload, means for determining the period of rotation of the second-named disk, and a circuit-making device actuated by said second-named disk.

11. In a device such as described, the combination of a driven disk, a second disk, means for moving said disk into frictional relation with said first-named disk upon an overload, means for determining the degree of rotation of the second-named disk, and a circuit-making device actuated by the second-named disk.

12. In a device such as described, the combination of a driven disk, a second disk, means for moving said second disk into frictional relation with said first-named disk, means for restoring said second-named disk to its original position after the frictional relation with the first-named disk has ceased, means for limiting the degree of movement of the second-named disk, and a circuit-making device actuated by the second-named disk.

13. In a device such as described, the combination of a driven disk, a second disk, means for moving said second-named disk into frictional relation with said first-named disk, a contact-making device actuated by said second-named disk, and a disk provided with means for limiting the range of movement of the second-named disk.

14. In a device such as described, the combination of a driven disk, a second disk, means for moving said second disk into frictional relation with said first-named disk, a bridge device carried by said second-named disk, a pair of contacts with which said bridge device coacts, a disk having spaced openings, and a pin adapted to be placed in said openings which will coact with the bridge device and limit the movement of said device.

15. In a device such as described, the combination of a driven disk a second reciprocating disk, means for reciprocating said second disk toward and from the first-named disk, a bridge device carried by said second-named disk, a pair of contacts with which said bridge device coacts, and means for adjusting the range of movement of the bridge device.

16. In a device such as described, the combination of a driven disk, a second disk carrying a bridge device, an electromagnet, an armature for said magnet, a pin between said armature and said second-named disk, means for separating the first and second named disks, and means for rotating the second-named disk to its original position.

17. In a device such as described, the combination of a driven disk, a disk to be driven, a bridge device carried by said second-named disk, a disk over the periphery of which said bridge device travels, and means carried by said third disk for limiting the movement of the bridge device over its periphery.

18. A device such as described, comprising a driven disk, a second disk, electrically-actuated means for moving said second disk into operative relation with said first-named disk, a bridge device carried by said second-named disk, a pair of contacts, with which said bridge device coacts, means for determining the range of movement of the bridge device, and means for restoring the bridge device to its original position when the electrically-actuated means for throwing the disks into contact is not active.

708,008. REVERSE-CURRENT DEVICE FOR CIRCUIT-BREAKERS. HENRY P. BALL, New York, N. Y., assignor to General Incandescent Arc Light Company, a Corporation of New York. Filed Jan. 28, 1902. Serial No. 91,744. (No model.)

Claim.—1. In a device such as described, a magnet, an armature comprising a fixed core and a pivoted oscillating coil, an auxiliary magnet, and means carried by the coil for closing a circuit through the auxiliary magnet when the direction of current through the first-named magnet is reversed.

2. In a device such as described, a magnet, an armature comprising a fixed core and an oscillating coil pivoted at its center, an auxiliary magnet, and means carried by the coil for closing an electric circuit through the auxiliary magnet.

3. In a device such as described, a magnet, an armature comprising a fixed core and a pivoted oscillating coil, an auxiliary magnet, means carried by the coil for connecting said coil in circuit with a source of energy, and means carried by the coil for establishing an electric circuit through the auxiliary magnet.

4. In a device such as described, a magnet, provided with a coil, an armature having a fixed core and oscillating coil, the coil of the magnet and armature adapted to be connected in parallel to the source of energy, an electroresponsive device, and means carried by the coil of the armature for energizing the electroresponsive device.

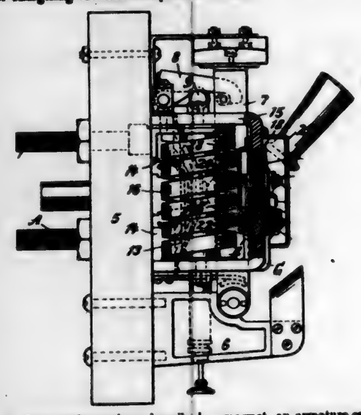

5. In a device such as described, a magnet, an armature carrying a coil in circuit with a source of energy, an electroresponsive device, and means carried by the armature for closing the current through the electroresponsive device.

6. In a device such as described, the combination of a magnet, a pivoted armature carrying a coil, depending fingers from the terminals of said coil, mercury-cups attached to the terminals of the source of energy, an electroresponsive device connected through one terminal to the source of energy and through the other terminal to a mercury-cup under the armature, and a depending finger carried by said armature which when immersed in the last-mentioned mercury-cup will close a circuit through said electroresponsive device.

7. In combination with a circuit-breaker, a device adapted to trip the circuit-breaker, said device consisting of a fixed member and an oscillating member, both members permanently in circuit with a source of energy, an auxiliary magnet, and a device carried by the oscillating member for closing a circuit through the auxiliary magnet upon a reversal of current from the source of energy.

8. In combination with a circuit-breaker, a reverse-current device comprising a magnet having a coil, an armature having a fixed core and a movable coil, said coils connected in parallel with each other and in series with the magnet of the circuit-breaker, and means energized by the movement of the armature-coil to open said circuit-breaker when the normal angular inclination of the armature is altered.

9. In a device such as described, the combination of a supporting-base, a frame projecting therefrom, a magnet, pivotal bearings on said frame, an armature-coil adapted to oscillate in said bearings, a fixed core for the armature, a series of troughs supported by said frame and carrying a conducting liquid, and fingers carried by said coil adapted to coact with the liquid in said troughs.

708,009. RAIL-JOINT. MAX BARSCHALL, New York, N. Y., assignor to The FIRM Ausbeserungen fuer Eisenbahn Oberbau, Abth. Stossfangschiene, Stegm. Eppenstein, Berlin, Germany. Filed Jan. 6, 1902. Serial No. 88,513. (No model.)

Claim.—1. A rail-joint comprising in combination a main rail, an auxiliary rail, the head of which abuts against the main rail, a double-headed filling-piece arranged between the webs of the said rails, the web of the auxiliary rail being of relatively small thickness at the points where it is engaged by the said filling-piece, and of increased thickness between said points, and means for connecting the auxiliary rail with the main rail.

2. A rail-joint comprising in combination a main rail, an auxiliary rail, the head of which abuts against that of the main rail, said auxiliary rail having a web with relatively thin portions adjacent to its head and base and with a central portion of greater thickness, a filling-piece located between the webs of the main rail and the auxiliary rail and provided with heads which engage the web of the auxiliary rail at the thin portions thereof, and bolts passing through the webs of the rails and loosely through the web of the filling-piece.

3. A rail-joint comprising a main rail, an auxiliary rail abutting against it and provided with an outwardly-thickened web portion provided with a longitudinal groove, a filling-piece located between the webs of the main rail and the auxiliary rail, and bolts connecting the said rails and having angular heads seated in the groove of the auxiliary rail.

4. A rail-joint comprising a symmetrical main rail, an auxiliary rail having a head of the same width as that of the main rail, and also having a web located symmetrically to the head adjacent to the said head and to the base, and of relatively small thickness at these points, the intermediate or central portion of the web being of increased thickness, a double-headed filling-piece, the heads of which engage the web of the main rail and also engage the web of the auxiliary rail at the thin portions thereof, and connecting-bolts extending through the webs of the rails and loosely through the web of the filling-piece.

708,010. TYPE-CASTING. HENRY BARTH, Cincinnati, Ohio. Filed Nov. 8, 1900. Serial No. 36,022. (No model.)

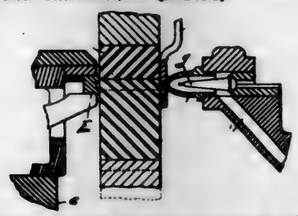

Claim.—In a type-casting machine a mold consisting of side members, a sliding cover on the side members, a matrix, a carriage to advance it to cover one end of the mold, a nipple covering the other end of the mold for the admission of molten metal, a plunger between the side members, the matrix and the nipple, means for actuating the sliding cover, and the matrix and means for keeping the body-piece or plunger against the cover until all the parts of the mold are closed and for then drawing it away from said cover to form a vacuum-chamber, substantially as shown and described.

708,011. EGG-CASE. JOHN A. BASTLE and HENRY H. WEBER, Chicago, Ill. Filed Mar. 13, 1902. Serial No. 98,130. (No model.)

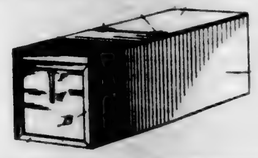

Claim.—An egg-case consisting of two sides, two ends, reinforced by means of four cleats each, the top one having a groove on inner side to permit a steel-wire eye to pass through, a bottom, a partition and a movable cover, the cover being divided in the center and permanently attached together at such division and to the partition by means of a double strap-hinge, the cover having on each end an eye of steel wire, and the case having on each end a steel spring-catch just beneath the cleat to meet and catch the steel-wire eye.

708,012. MULTICOLOR-PRINTING. HENRY F. BECHHAM, Battle creek, Mich., assignor to the Duplex Printing Press Company, Battle creek, Mich. Filed July 15, 1901. Serial No. 68,376. (No model.)

Claim.—1. The herein-described method of printing and perfecting a multicolor-sheet on an ordinary press, consisting in arranging page-forms for multicolored pages side by side transversely of the press in each printing mechanism, of a press having a plurality of printing mechanisms, providing the proper color ink-supply for each form on each printing mechanism, and leading the web successively through both printing mechanisms over one set of page-forms therein to perfect the web and immediately returning the web through both sets of printing mechanisms over the other set of page-forms therein, the impressions taken from the different forms in each printing mechanism being superimposed, all substantially as and for the purpose described.

2. The herein-described manner of printing a multicolored perfected sheet in a traveling-cylinder perfecting-press, consisting in arranging the different-color page-forms for the same page or pages on the same bed side by side and transversely of the press, providing suitable colored ink-supplies for the respective color-forms, leading the web through the press successively over one set of page-forms on each bed to perfect the web, and immediately returning the web through the feeding and printing mechanisms of the press parallel with its first lead and over the other set of page-forms on each bed, the second series of impressions taken from the second forms on the beds being superimposed on the first series of impressions taken from the first forms thereon, for the purpose and substantially as described.

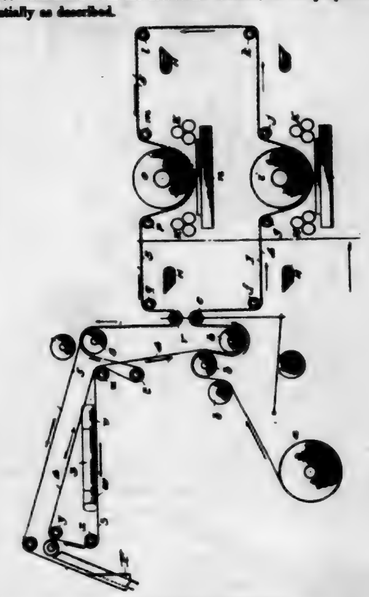

708,018. MACHINE FOR MULTICOLOR-PRINTING. HENRY F. BECHHAM, Battlecreek, Mich., assignor to the Duplex Printing Press Company, Battlecreek, Mich. Filed Jan. 15, 1902. Serial No. 89,893. (No model.)

Claim.—1. In a multicolor web-perfecting printing-press, the combination of two printing-couples, a plurality of multicolor page-forms arranged in each couple side by side and transversely of the press, a suitable color ink-supply for each form in each printing-couple, means for leading a web successively through both printing-couples over one set of forms therein and taking perfected impressions therefrom; and means for again passing the web successively through both printing-couples over the other set of forms therein and taking perfected impressions therefrom, the impressions from the different page-forms in each printing-couple being superimposed, substantially as described.

2. In a multicolor web-perfecting printing-press, the combination of two printing-couples, a single feed mechanism, and a single delivery mechanism, a plurality of multicolor page-forms arranged in each printing-couple side by side and transversely of the press, a suitable color ink-supply for each form in each printing-couple; means for leading a web from the feed to the delivery successively through both printing-couples over one set of forms therein and taking perfected impressions therefrom; means for diverting the web to one side, and means for again passing the web from the feed to the delivery through both printing-couples over the other set of forms therein and taking perfected impressions therefrom, and means for diverting the web out of the press after it passes the delivery-rolls the second time, substantially as described.

3. In a multicolor perfecting-press, the combination of a pair of printing-couples, a single set of feed-rolls, a single set of delivery-rolls, and guides for directing the web from the feed-rolls through the printing-couples to the delivery-rolls; with means for diverting the web as it first issues from the delivery-rolls to one side, means for directing the deflected portion of the web around the feed-rolls, back into the press, and leading it again between the printing-couples parallel with its first lead therethrough back to the delivery-rolls, and means for directing the web into

ing the second time from the delivery-rolls out of the machine, all substantially as and for the purpose set forth.

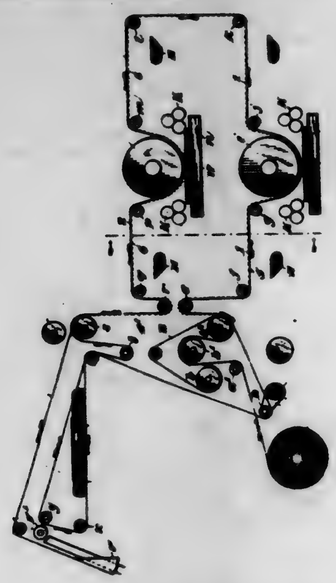

708,014. OYSTER-OPENING TOOL. SILLIMAN BLAGDEN, Boston, Mass. Filed Apr. 29, 1902. Serial No. 105,153. (No model.)

Claim.—An oyster-opening tool consisting of a pair of hinged lever-arms, each having a short and long leg, an anvil on one of said short legs, and a knife-blade on the other short leg, said blade being mounted thereon at an angle inclined thereto and depending inwardly toward the hinge of the tool as and for the purpose herein set forth.

708,015. SHELF-BENDING MACHINE. GEORGE G. BLAKEY and ROBERT O. BLAKEY, Pittsburg, Pa. Filed Nov. 1, 1901. Serial No. 80,745. (No model.)

Claim.—In a strip or strap bending machine, a die, a ram to push the end of a strip against and around the face of said die to form an eyelet and a lever actuated by the ram on its return movement, whereby the eyelet is discharged from said die.

708,016. REGULATING-SOCKET. LOUIS F. ROSSA, Jr., Philadelphia, Pa. Filed Sept. 20, 1901. Serial No. 75,726. (No model.)

Claim.—1. In a regulating-socket, the combination with a frame of resistance material, comprising annular flanges connected by a hub of reduced diameter and forming an annular space; of line-terminals and local terminals connected to said frame; a resistance medium secured to the inner face of one of said flanges at one side of said annular space; and a movable contact member, mounted on said hub and arranged to contact with said resistance medium to vary the extent of said resistance medium interposed between said line and local terminals, substantially as set forth.

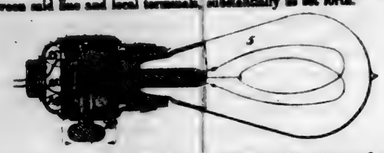

2. In a regulating-socket, the combination with a frame of resistance material comprising annular flanges connected by a hub of reduced diameter and forming an annular space; of line-terminals and local terminals connected to said frame; a resistance medium secured to the inner face of one of said flanges; and a movable contact member, mounted between said flanges and arranged to contact with said resistance medium to vary the extent of said resistance medium interposed between said line and local terminals, substantially as set forth.

3. In a regulating-socket, the combination with a frame of resistance material comprising two members, having an annular space between them; the first of said members being provided with a reduced portion and the second member with a socket to receive the reduced portion of the first member; of a resistance medium secured to the inner face of one of said members; and a movable contact member mounted on said reduced portion arranged to contact with said resistance medium to vary the extent of said resistance interposed between said line and local terminals, substantially as set forth.

4. In a regulating-socket, the combination with an outer shell comprising two parts; of a ceramic frame comprising two parts fixed to the respective parts of the shell so as to maintain an annular space between them; line-terminals fixed to one member of said frame; local terminals fixed to the other member of said frame; a conductor connecting one of said line-terminals with one of said local terminals, and arranged to hold the two members of the frame together; a resistance medium fixed to one member of said frame and permanently connected at one extremity to the other of said local terminals; a rotary contact device arranged to connect said resistance medium and the other of said line-terminals; and means to shift said contact device to vary the resistance interposed between said line and local terminals, substantially as set forth.

5. In a regulating-socket, the combination with an outer shell; of line-terminals and local terminals stationary in said shell; an annular body of resistance medium within said shell; a contact-roller mounted within said shell to traverse said resistance medium; and means to shift said roller and thereby vary the resistance interposed in the circuit between said line and local terminals, substantially as set forth.

6. In a regulating-socket, the combination with an outer shell; of line-terminals and local terminals stationary in said shell; an annular body of resistance medium within said shell; a contact-lever mounted to rotate within said shell; a yoke pivoted to said contact-lever; a contact-roller mounted for rotation in said yoke; and a spring arranged to press said roller in contact with said resistance medium, substantially as set forth.

7. In a regulating-socket, the combination with an outer shell; of line-terminals and local terminals stationary in said shell; an annular body of resistance medium within said shell; a contact-lever mounted within said shell to traverse said resistance medium; an operating-lever coupled to said contact-lever and arranged for definitely-limited motion with respect thereto; and a spring connecting said contact-lever with said operating-lever, substantially as set forth.

708,017. GRAIN-DOOR FOR CARS. THOMAS H. DOS DURANT, Moundridge, Kans. Filed Apr. 26, 1902. Serial No. 104,668. (No model.)

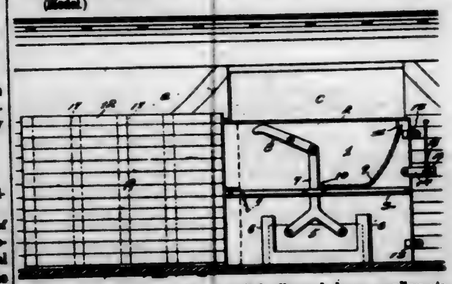

Claim.—1. A car having oppositely-disposed doors, coupling elements connected thereto and adapted to be disposed across the car and to be connected together, for the purpose set forth, said doors having supports on their inner sides for said coupling elements, when the latter are disconnected from each other, substantially as described.

2. A car having oppositely-disposed sliding doors, casings to receive the doors when the same are opened, flexible coupling elements connected to the doors and adapted to be connected together when the doors are closed, for the purpose set forth, said doors being provided on their inner sides with longitudinally-disposed bars forming supports for said coupling elements when the latter are disconnected from each other and the doors are opened, substantially as described.

3. A grain-door for cars, made of sheet or plate metal having its upper side bent laterally to strengthen the same, having a longitudinally-disposed bar on its inner side at a point intermediate the upper and lower sides of the door, a coupling-chain secured at one end to the door above the bar, and a support carried by the door, to detachably engage the free end of the coupling-chain, substantially as described.

4. A car having oppositely-disposed doors, flexible elements connected thereto and means to secure said flexible elements together when the doors are closed to brace the doors against the outward pressure of the grain, substantially as described.

5. A car having oppositely-disposed doors, and coupling elements connected thereto and adapted to be disposed across the car and to be connected together, to brace the doors against the outward pressure of the material with which the car is loaded, substantially as described.

708,018. UTILIZING WASTE HEAT IN CONNECTION WITH SMELTING-FURNACES. RICHARD BROWN, Southampton, England. Filed Apr. 12, 1902. Serial No. 102,503. (No model.)

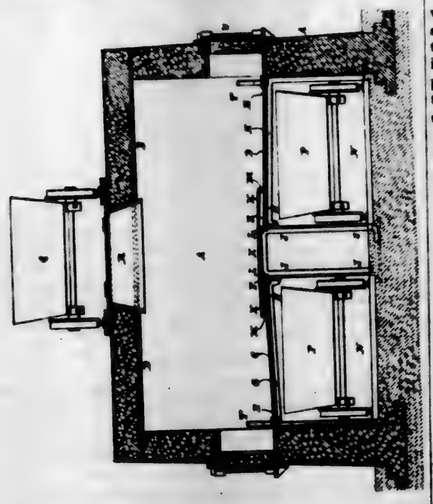

Claim.—Apparatus for utilizing waste heat in connection with smelting-furnaces, comprising a covered chamber to receive the materials in the furnace, having a floor and supported so as to form flues to receive bogies containing hot products from the furnace, the floor having openings adapted to allow air heated by contact with the hot products to ascend through the materials thereon, substantially as described.

708,019. NECK-YOKE. ANDREW BURR, Columbia City, Ind. Filed Nov. 2, 1901. Serial No. 80,982. (No model.)

Claim.—The combination with a pole having a ring rigidly secured to the front end thereof, of brackets attached to diametrically opposite portions of the pole in rear of the front extremity and provided with central perforations, rods 6 having their inner ends loosely connected to the perforations of the brackets and their outer ends screw-threaded, U-shaped links 10 each having the terminals formed into eyes, one of which is screw-threaded and the other large enough to slip over the threads on the outer end of the rod whereby the said links may be positively applied to the rods, and chains 3 connected to the ring at the front end of the pole and the links 10, the latter being slipped through the rear links of the said chains.

708,019.

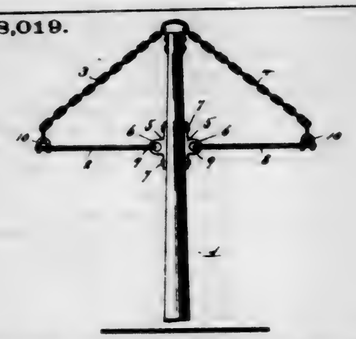

708,020. VEHICLE-SHAFT SUPPORT. IRA D. CADY, Minneapolis, Minn. Filed Dec. 16, 1901. Serial No. 86,012. (No model.)

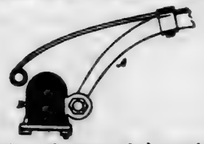

Claim.—A device of the type set forth comprising in combination with the axle and the shafts, a clamp adjustably mounted upon the shafts, and a supporter formed of an integral piece of wire bent into a U shape, the free ends of the wire being bent upwardly and immovably secured in the clamp, and a single coil formed on the looped portion of the supporter, the rear portion of the supporter being bowed and the coil frictionally engaging the under side of the axle for securing the shaft, substantially as described.

708,021. ACETYLENE-GAS GENERATOR. CHARLES W. CALDWELL, Waterloo, Iowa, assignor to the Railroad Gas Lighting Company, Chicago, Ill., a Corporation of Illinois. Filed Oct. 24, 1901. Serial No. 79,510. (No model.)

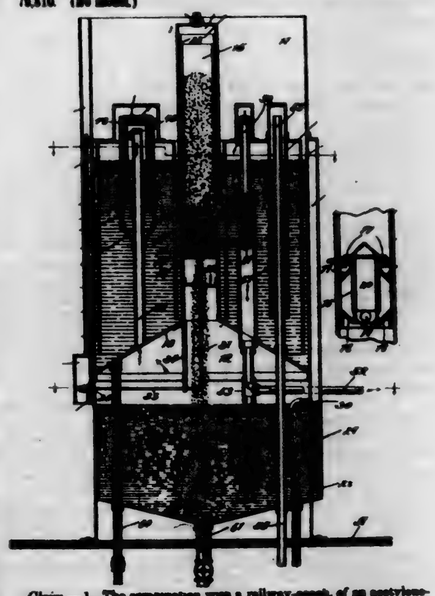

Claim.—1. The combination with a railway-coach, of an acetylene-gas-generating apparatus secured within the same and projecting through the roof of the coach, substantially as specified.

2. The combination with a railway-coach, of an acetylene-gas-generating apparatus secured within the same and projecting through the roof

of the coach, said apparatus comprising a fixed portion open at its upper end, and a movable bell within said fixed portion, whereby upon the overturning of the coach said bell will be displaced and release the gas confined thereby, substantially as specified.

3. The combination with a railway-coach, of an acetylene-gas-generating apparatus secured within the same and projecting through the roof of the coach, and pipes leading from the interior of the said apparatus through the floor of the coach, to permit the liquid and solid contents of the apparatus to be drawn off and discharged beneath the coach, substantially as specified.

4. In an acetylene-gas-generating apparatus, the combination with a gas-generating chamber, and a gas-holding bell adapted to receive gas from said chamber and hold it, of a carbid-holder arranged concentrically with said gas-holding bell, a vertical valve-casing, open at its lower end, carried by that portion of the holder within the gas-holding bell and provided with an opening in the side wall thereof through which carbid is adapted to pass, a vertically-movable hollow valve located in said casing, and adapted to normally close the said opening in the wall of the casing, a rod adapted to enter said hollow valve and abut against the end wall thereof, and means for forcing said rod upward to raise said valve, said means being actuated through the downward movement of said bell, substantially as specified.

5. In an acetylene-gas-generating apparatus, the combination with a gas-generating chamber, and a gas-holding bell adapted to receive gas from said chamber and hold it, of a carbid-holder arranged concentrically with said gas-holding bell, a vertical valve-casing, open at its lower end, carried by said holder and provided with an opening in the side wall thereof through which carbid is adapted to pass, an inclined plate adapted to direct carbid toward said side-wall opening, a vertically-moving valve located in said valve-casing and adapted to normally close said side-wall opening in the casing, and means for actuating said valve through the movement of the bell, substantially as specified.

6. In an acetylene-gas-generating apparatus, the combination of a gas-generating chamber, and a gas-holding bell adapted to receive gas from said chamber and hold it, of a carbid-holder communicating with said gas-generating chamber and provided with a valve for controlling the discharge of carbid, a movable valve-rod, a second rod provided with a crank at each end and connected with said valve-rod through one of said cranks, a lever pivoted to the other of said cranks, means for preventing said lever from turning in one direction on its pivot, and another rod adapted to be actuated by the bell and provided with means for engaging said pivoted lever, whereby through the first two mentioned rods the valve will be opened to permit the discharge of carbid, substantially as specified.

7. In an acetylene-gas-generating apparatus, the combination with a gas-generating chamber, and a gas-holding bell adapted to receive gas from said chamber and hold it, of a carbid-holder communicating with said gas-generating chamber and provided with a valve for controlling the discharge of carbid, a movable valve-rod, a second rod provided with a crank at each end and connected with said valve-rod by means of one of said cranks, a lever pivoted to the other of said cranks, means for preventing said lever from turning in one direction on its pivot, and another rod adapted to be actuated by the bell and provided on its lower end with a fork adapted to contact the said pivoted lever, substantially as specified.

8. In an acetylene-gas-generating apparatus, the combination with a gas-generating chamber, and a gas-holding bell adapted to receive gas from said chamber and hold it, of a carbid-holder communicating with said gas-generating chamber and provided with a valve for controlling the discharge of carbid, a movable valve-rod, a second rod provided with a crank at each end and connected with said valve-rod by means of one of said cranks, a lever pivoted to the other of said cranks, means for preventing said lever from turning in one direction on its pivot, and another rod adapted to be actuated by the bell and provided at its lower end with means for loosely connecting it to said pivoted lever, substantially as specified.

9. In an acetylene-gas-generating apparatus, the combination with a gas-generating chamber, and a gas-holding bell adapted to receive gas from said chamber and hold it, of a carbid-holder communicating with said gas-generating chamber and provided with a valve for controlling the discharge of carbid, a movable valve-rod, a second rod connected at one end with said valve-rod, a lever pivoted to the other end of said second rod, means for preventing said lever from turning in one direction on its pivot, and another rod adapted to be actuated by the bell and provided with means for engaging said pivoted lever, whereby, through the first two mentioned rods, the valve in the carbid-holder can be opened to permit the discharge of carbid, substantially as specified.

708,022. LUBRICATOR. FRANK GARKLOSS, Chicago, Ill., assignor to Morgan-Gardner Electric Company, Chicago, Ill., a Corporation. Filed Aug. 2, 1901. Serial No. 70,710. (No model.)

Claim.—1. In a lubricating device, the combination of a receptacle, a casing at the bottom of said receptacle, inlet and outlet ports in said casing, a valve in said casing with chambers communicating alternately with said inlet and outlet ports, a tubular extension on said valve, a by-pass leading from the receptacle to said extension, a lateral orifice in said extension adapted to register with said by-pass, a stem for said valve, an armature on said stem, a spring holding said valve in a normal position, an electromagnet for turning said stem, and a set-screw in said armature for limiting the amount of revolution, substantially as described.

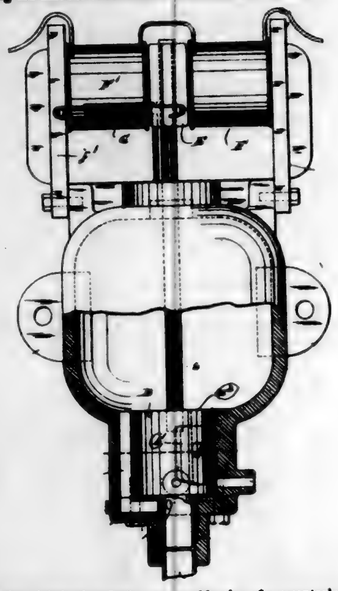

2. In a lubricating device, the combination of a receptacle, a casing at the bottom of said receptacle, inlet and outlet ports in said casing, a valve in said casing with chambers communicating alternately with said inlet and outlet ports, a tubular extension on said valve, a by-pass leading from the receptacle to said extension, a lateral orifice in said extension adapted to register with said by-pass, a stem for said piston and means for turning said stem.

708,028. ENGINE ATTACHMENT. VIRGINIUS X. CARACHEO, Granite, Va. Filed June 19, 1901. Serial No. 65,168. (No model.)

Claim.—1. The combination with a locomotive or engine cylinder having a piston-rod, of an extension-bearing of approximate wedge shape arranged in advance of said cylinder, and means for adjusting said bearing.

2. The combination with a locomotive or engine cylinder having a piston-rod, of an extension-bearing secured to the front end of said cylinder, said bearing being of wedge shape, and means for adjusting said bearing.

3. The combination with a locomotive or engine cylinder having a piston-rod, of an extension-bearing secured to the front end of said cylinder and provided with upper and lower bearing-blocks, and means for adjusting one of said blocks.

4. The combination with a locomotive or engine cylinder having a piston-rod, of an extension-bearing secured to the front end of said cylinder and provided with upper and lower bearing-blocks, said lower block being of wedge shape, and means for adjusting said wedge-shape block.

5. The combination with a locomotive or engine cylinder having a piston-rod, of an extension-bearing secured to the front end of said cylinder, a coupling extending from said extension-bearing, and a protecting-sleeve carried by said coupling.

6. The combination with a locomotive or engine cylinder having a piston-rod, of an extension-bearing having flanges, one of which is secured to the front end of said cylinder, a coupling extending from the other flange of said bearing, a protecting-sleeve carried by said coupling, and a screw secured to the free end of said sleeve.

7. The combination with a locomotive or engine cylinder having a piston-rod, of an extension-bearing having flanges, one of which is secured to the front end of said cylinder, bearing-blocks carried by said bearing and a protecting-hood surrounding the peripheries of said flanges.

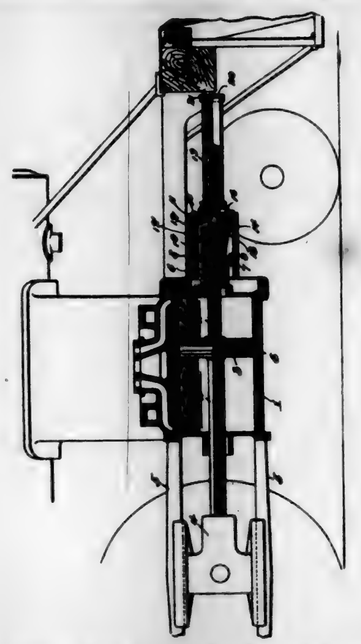

8. The combination with a locomotive or engine cylinder, of an extension-bearing secured to the front end thereof and provided with upper and lower bearing-blocks, means for adjusting the bearing, a coupling covering such means, and a protecting-sleeve connected to and extending from such coupling.

9. The combination with a locomotive or engine cylinder, of an extension-bearing secured to the front end thereof and provided with upper and lower bearing-blocks, the latter being wedge-shaped, means for adjusting the lower block and a securing-bolt tapped into the lower side thereof and mounted in a slot in the extension-bearing.

10. The combination with a locomotive or engine cylinder, and its described piston, of an extension-bearing of tubular shape the bottom of which is inclined or flared toward the outer end thereof, upper and lower bearing-blocks located in the extension and fitting the same, an adjusting means for the lower bearing, and a binding-bolt for securing the same after such adjustment.

11. The combination with a locomotive or engine cylinder, and its piston-rod, as described, of a tubular extension-bearing, the bottom of which is inclined, upper and lower bearing-blocks located in the extension, the lower block being wedge-shaped to accord with the extension, a follower-plate located beyond the lower block, bolts extending through the plate and swiveled in the extension, and a covering for the outer ends of the bolts.

12. The combination with a locomotive or engine cylinder, and its piston-rod as described, of a tubular bearing extension, the bottom of which is inclined, upper and lower bearing-blocks located in the extension, the latter block being wedge-shaped to accord with the bottom of the extension, a follower-plate located beyond the lower block, bolts extending through the plate and through the extension a coupling bolted to the extension and covering the outer ends of the bolts, a protecting-sleeve connected to the coupling, and a screw at the outer end of said sleeve.

13. The combination with a locomotive or engine cylinder, and its described piston-rod, of a tubular bearing extension, the bottom of which is inclined, upper and lower bearing-blocks located in the extension, the lower block being wedge-shaped to accord with the bottom of said bearing extension, a follower-plate located beyond the lower block, bolts extending through the plate and extension and provided with nuts at their rear ends, a swab-cap, and a coupling inclosing the same and covering the outer ends of the bolts.

14. The combination with a locomotive or engine cylinder, and its described piston, of a tubular oppositely-flanged bearing extension bolted to the cylinder and having its bottom inclined and provided with a slot, upper and lower bearing-blocks mounted in the extension, the lower block being wedge-shaped to accord with the bottom of the extension, a protecting-casing fitting over the flanges of the extension a binding-bolt passed through the slot in the bearing extension and entering the bottom bearing-block, a swab-cap covering the end of the extension, and a cover for the swab-cap.

15. The combination with a locomotive or engine cylinder, and its piston-rod, of a tubular extension-bearing located at the front end of the cylinder and provided with laterally-disposed counterweak ears having holes, upper and lower bearing-blocks located in the bearing, the latter block being wedge-shaped to accord with the inclined bottom of the bearing, a follower-plate located against the front end of the latter block, and bolts passed through the follower-plate and through the holes in the counterweak ears and in rear of the latter provided with nuts.

708,024. COUPLING FOR ELECTRIC MOTORS. FRANK H. CLARK, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Feb. 15, 1901. Serial No. 47,414. (No model.)

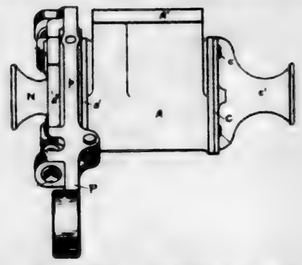

Claim.—1. In a coupler for electric conductors, the combination with a casing, of a block of insulation, a metallic socket-piece mounted therein, and contact-brushes secured to said socket-piece.

2. In a coupler for electric conductors, the combination with a casing, of a block of insulation, a metallic socket-piece mounted therein, and contact-brushes secured to said socket-piece, having their ends terminating in a plane transverse to the axis of the casing.

3. The combination with a receptacle provided with a cylindrical surface, of a plug fitting into the receptacle, a collar rotatable on the cylindrical surface, and spring-actuated hooks on the collar to engage with the plug.

4. The combination with a receptacle provided with a cylindrical surface, of a plug fitting into the receptacle, and provided with chamfered flanges, and a collar rotatable on the cylindrical surface and carrying yielding hooks having chamfered ends to engage with said flanges.

5. In a coupler for electric conductors, the combination with a casing, of a block of insulation, and a metallic socket-piece mounted therein, and having arms to carry contact-brushes.

6. In a coupler for electric conductors, the combination with a casing, of a block of insulation removably secured therein, a socket-piece mounted in said block and having arms, and a brush secured to each arm.

7. In a coupler for electric conductors, the combination with a casing, of a block of insulation removably secured therein, a socket-piece mounted in said block, arms projecting from said socket-piece, and a brush on each arm, said brushes being inclined toward each other and having their ends cut off on a plane transverse to the axis of the casing.

708,025. ROTARY TRANSFORMER. ALEXANDER GRAMME, Chicago, Ill. Filed June 13, 1898. Serial No. 790,186. (No model.)

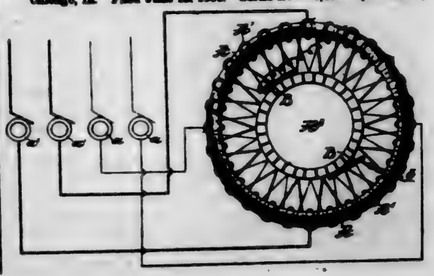

Claim.—1. A rotary transformer for multiphase systems provided with a plurality of armature-windings corresponding in number to the number of phases in the system, a separate pair of collector-rings connected with each winding, and a separate set of commutator-bars connected with each winding, whereby the phases are maintained independent of each other.

2. A rotary transformer for multiphase systems provided with a plurality of armature-windings corresponding in number to the number of phases of the system, a separate pair of collector-rings connected with each winding, and a separate commutator for each winding.

708,026. ELECTRIC CONTROLLER. WILLIAM H. CLARKE, New York, N. Y. Filed Oct. 11, 1901. Serial No. 78,217. (No model.)

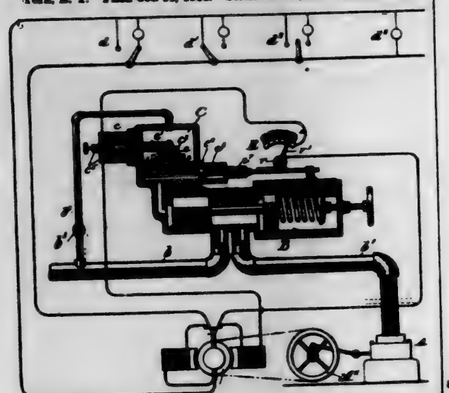

Claim.—1. In an electric regulator, the combination of a motor, a differential piston controlling the motor, a generator operated by said motor, an electric circuit connected therewith, a rheostat in said circuit, and means governed by the differential piston and rheostat for maintaining a constant speed of the motor, substantially as described.

2. In an electric regulator, the combination of a generator, a rheostat and a solenoid included in the field-circuit of said generator, a piston connected with the rheostat, and a valve operated by the solenoid and controlling the admission of fluid-pressure to said piston, substantially as described.

3. In an electric regulator, the combination of a fluid-pressure motor, an electric generator operated by said motor, a reducing-valve governing the admission of fluid-pressure to said motor, an electromagnetic valve connected with the generator, a rheostat in the field-circuit of the generator, a fluid-pressure motor for the rheostat, and a part or passage governed by said electromagnetic valve for admitting pressure to the rheostat-motor and the reducing-valve, substantially as described.

4. In an electric regulator, the combination of a fluid-pressure motor, a generator operated by said motor, a circuit connecting the armature-terminals of said generator, a shunt-shunting switch for said circuit, and means governed by said switch for cutting off the supply of fluid-pressure to the motor, substantially as described.

708,027. AIR-SUPPLY DEVICE. EDWARD J. CHESHAM, St. Paul, Minn. Filed Sept. 3, 1901. Serial No. 74,031. (No model.)

Claim.—1. The combination in an engine in which four strokes of the piston and two revolutions of the crank-shaft are comprised in a working cycle, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber, heating means therefor, and valves interposed between said air-chamber and piston-cylinder said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into said air-chamber and the clearance-space of the cylinder, during the latter half of the second stroke of the cycle, retained in said chamber and heated therein during the third and fourth strokes of the cycle, and expanded from said chamber into the cylinder during the first stroke of the following cycle.

2. The combination in an engine in which four strokes of the piston and two revolutions of the crank-shaft are comprised in a working cycle, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber, heating means therefor, and valves interposed between said air-chamber and piston-cylinder said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into said air-chamber and the clearance-space of the cylinder during the latter half of the second stroke of the cycle, retained in said chamber and heated therein during the third and fourth strokes of the cycle, and expanded from said chamber into the cylinder during the first stroke of the following cycle, and means for giving initial movement to the piston.

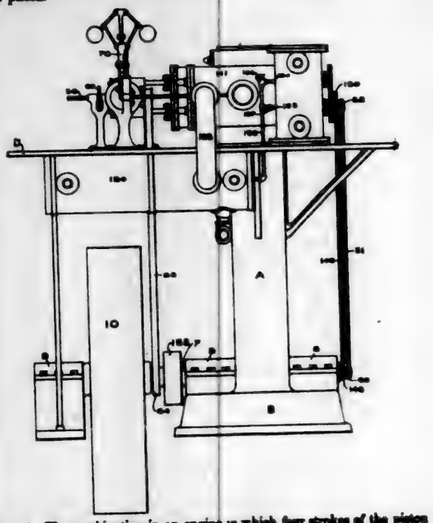

3. The combination in an engine in which four strokes of the piston and two revolutions of the crank-shaft are comprised in a working cycle, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber, heating means therefor, and valves interposed between said air-chamber and piston-cylinder, said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature, into said chamber and the clearance-space of the cylinder, during the latter half of the second stroke of the cycle, retained in said chamber and heated therein during the third and fourth strokes of the cycle, and expanded from said chamber into the cylinder during the first stroke of the following cycle, and means for giving initial movement to the piston.

4. The combination in an engine in which four strokes of the piston and two revolutions of the crank-shaft are comprised in a working cycle, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber divided into two compartments, heating means therefor, and valves interposed between said air-chamber compartments and piston-cylinder said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into said chamber and the clearance-space of the cylinder, during the latter half of the second stroke of the cycle, retained in said chamber and heated therein during the third and fourth strokes of the cycle, and expanded from said chamber into the cylinder during the first stroke of the following cycle, and means for causing initial compression of air in the air-chamber and clearance, substantially as set forth and described.

5. The combination in an engine in which four strokes of the piston and two revolutions of the crank-shaft are comprised in a working cycle, of a cylinder and piston contained therein, a connected crank-shaft, an air-chamber divided into two compartments, heating means therefor, and valves interposed between said compartments and piston-cylinder, said parts being so constructed and arranged that air is substantially compressed by the piston into the clearance-space of the cylinder during the second stroke of the cycle, and expanded into the cylinder during the third stroke of the cycle, thereby doing positive work against the piston during the said stroke, the ratio of expansion during said stroke of the cycle being greater than the ratio of compression of the air in the second stroke thereof, whereby the positive energy of the air expanding in the third stroke is greater than the energy consumed in compressing said air in the second stroke, and means for imparting an initial movement to said piston, thereby compressing air into said clearance during the second stroke of the initial cycle, substantially as set forth and described.

6. The combination in an engine in which four strokes of the piston and two revolutions of the crank-shaft are comprised in a working cycle, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber divided into two compartments, means for heating the contents thereof, of said chamber, an air-reservoir, means for heating the contents thereof, means for compressing air in said reservoir, valves arranged between said

air-chamber compartments and reservoir and said cylinder, whereby the air is admitted from said reservoir to the cylinder during a short part of the beginning of the third stroke and expanded therein against the piston doing positive work during said stroke, the ratio of compression of said air into the reservoir being less than the ratio of expansion of said air in the cylinder during the third stroke of the cycle, whereby the energy derived from the expansion of said air during the said stroke of the cycle is greater than the energy consumed in compressing said air into said reservoir, means for initially compressing the air in said reservoir, and means for imparting initial movement to the operating parts of the engine.

7. The combination in an engine in which four strokes of the piston and two revolutions of the crank-shaft are comprised in a working cycle, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber comprising two independent compartments, one connected with one end of said cylinder, and the other with the other end, means for heating the air in said compartments, valves interposed between each compartment of said air-chamber and said cylinder, an air-reservoir, a compressor arranged in connection therewith, valves interposed between said reservoir and cylinder, the parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into each compartment of said air-chamber and the clearance-space of said cylinder during the latter part of each alternate return stroke of said cycle and heated therein during the second forward stroke and second return stroke of said cycle and expanded from each of said compartments alternately into the cylinder down to or below atmospheric pressure and temperature, the ratio of expansion in the first forward stroke being greater than the ratio of compression in the first return stroke, whereby the energy derived from the expansion of the air in said first forward stroke is greater than the energy consumed in compressing said air during the latter part of the first return stroke, and the ratio of expansion of the air from the reservoir into the cylinder during the second forward stroke being greater than the ratio of compression of said air into said reservoir by the compressor, whereby the energy developed by said expansion is greater than the energy consumed in said compression, means for regulating the flow of air between said cylinder and air-chamber and external atmosphere, and between the compressor and the reservoir, and a governor for operating said regulating means, substantially as and for the purpose described.

8. The combination in an engine, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber, means for heating the contents of said chamber, an air-reservoir, means for compressing air therein, means for heating the contents thereof, valves arranged between said chamber and reservoir and cylinder, said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into said air-chamber and the clearance-space of the cylinder, retained and heated in said chamber, and expanded from said chamber into said cylinder, and is admitted from said reservoir to said cylinder during the stroke of the cycle.

9. The combination in an engine, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber, means for heating the contents of said chamber, an air-reservoir, means for compressing air in said reservoir, means for heating said air, and rotary valves for establishing communication between said air-chamber, said reservoir and said piston-chamber, said parts being so arranged and connected that air is compressed by the piston into said air-chamber, retained and heated in said chamber, expanded from said chamber into said cylinder, and is admitted from said reservoir into said cylinder during the stroke of the cycle

10. The combination in an engine, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber consisting of two compartments, means for heating the contents of said compartments, an air-reservoir, means for compressing air in said reservoir, means for heating said air, a rotary valve for establishing communication between said air-chamber compartments and cylinder, said valve being provided with parts for establishing communication between said cylinder and the outer air, a rotary valve for establishing communication between said reservoir and cylinder, said parts being so arranged and connected that air is compressed by the piston into said chamber, retained and heated therein, and expanded from said chamber into said cylinder, and is admitted from said reservoir into said cylinder during the stroke of the cycle.

11. The combination in an engine, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber consisting of two compartments, means for heating the contents thereof, rotary valves for establishing communication between said compartments and the opposite ends of said cylinder, said valves being provided with parts for establishing communication between said cylinder and the outside air, an air-reservoir, means for compressing air therein, means for heating the same, and rotary valves for establishing communication between said reservoir and cylinder, said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into said air-chamber, retained and heated in said chamber, and expanded from said chamber into said cylinder, and is admitted from said reservoir into said cylinder during the stroke of the cycle.

12. The combination in an engine, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber consisting of two compartments, means for heating the contents of said chamber, an air-reservoir, means for compressing air in said reservoir, means for heating said air, rotary valves for establishing communication between the compartments of said air-chamber and said cylinder, and between said reservoir and cylinder, a source of steam-supply, and rotary valves for establishing communication between said steam-supply and cylinder, said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into said air-chamber compartments, retained and heated in said compartments, and expanded therefrom into said cylinder, and is admitted from said reservoir to said cylinder during the stroke of the cycle, steam being admitted to said cylinder to impart initial movement to said piston.

13. The combination in a double-acting engine, in which four strokes of the piston, i. e. a first forward stroke, a first return stroke, a second forward stroke, a second return stroke, and two revolutions of the crank-shaft constitute a cycle of operations, of a cylinder, a piston contained therein, a connected crank-shaft, two independent air-chamber compartments connected with opposite ends of the cylinder, means for heating the contents of said compartments, an air-reservoir, means for heating the contents thereof, a compressor actuated by the engine for forcing air into said reservoir, two sets of coöperating air-valves actuated by the engine interposed between the air-chamber compartments, air-reservoir and the cylinder, one set for each end of the cylinder, each of said air-valves being in three divisions, one valve in the first division of each set having a port to open communication between each air-chamber compartment and the corresponding end of the cylinder, during the two first strokes of each cycle, viz. the first forward and the first return, one valve in the second division of each set having two ports one of which opens communication between the cylinder and the external atmosphere, in each last stroke of each cycle, viz. the second return stroke, and the other of which opens communication between the cylinder and the external atmosphere during the first part of each first return stroke, a valve in the third division of each set having a port which opens communication between the air-reservoir, and each end of the cylinder, during the first part of each third stroke of each cycle, viz. the second forward, the parts being so arranged and connected that air is compressed by the piston in the engine-cylinder into each air-chamber compartment during the latter half of each first return stroke, retained in each compartment and heated therein during the second forward and second return strokes, and admitted into the cylinder in each first forward stroke, and expanded into said cylinder during the said stroke down below atmospheric pressure and temperature, the parts being also arranged and connected so that air is compressed by the compressor during the working of the engine into the reservoir, from which it is admitted into each end of the cylinder during the first part of each second forward stroke, and then expanded into said cylinder down below atmospheric pressure and temperature during the remainder of said stroke, a valve controlling communication between the cylinder and the external atmosphere, a valve controlling communication between the compressor and air-reservoir, a governor for said valves actuated by the engine, a steam-boiler, auxiliary valves actuated by the engine for controlling communication between said boiler and the cylinder to regulate the inflow of steam into the cylinder and the effect therefrom for the purpose of starting the engine, a system of four coöperating step-valves, two of which are interposed between the cylinder and the air-valve chest, the other two being interposed between each end of the cylinder and steam-valve chests, and means for actuating said valves simultaneously to throw the steam-valves into communication with the cylinder and out the air-valves out of communication, or to throw the air-valves into communication and out the steam-valves out.

14. The combination in a double-acting engine, in which four strokes of the piston, viz. a first forward stroke, a first return stroke, a second forward stroke, and a second return stroke, and two revolutions of the crank-shaft constitute a cycle of operations, of a cylinder, a piston contained therein, a connected crank-shaft, two air-chamber compartments, means for heating the contents of said compartments, an air-reservoir, means for heating the contents of said reservoir, a compressor actuated by the engine to force air into said reservoir, air-valve chests interposed between each end of the cylinder and the air-chamber compartment and reservoir, hollow cylindrical rotary valves arranged in each of said chests, said valves being fixed upon and rotatable by a shaft, gear connection between said valve-shafts and the crank-shaft, said gearing being so arranged and proportioned that said air-valves will make one revolution while the crank-shaft makes two, and the air-valves in each of said chests being in three divisions, a valve in the first of each division in each chest having a port for establishing communication between the air-chamber compartments and the end of the cylinder connected therewith, during the first forward and first return

strokes of each cycle, a valve in the second division in each chest having two ports through one of which communication is established between the cylinder and the external atmosphere during each second return stroke of each cycle, and through the other of which valves communication is established between said cylinder and the atmosphere during the first part of each first return stroke of each cycle, a valve in the third division of said chest having a port through which communication is established between the air-reservoir and the cylinder during the first part of each second forward stroke of each cycle, a valve controlling communication between the cylinder and the external atmosphere, a valve controlling communication between the air reservoir and cylinder, a governor for said valves actuated by the engine, whereby the flow of air between the cylinder and the external atmosphere, and between the reservoir and the cylinder may be regulated and the speed of the piston, while the latter is actuated upon by air-governed, pipe connections between the reservoir and each chamber-compartment, stop-valves for said connections, and means for initially compressing air in said reservoir and air-chamber compartments.

15. The combination in an engine, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber, means for heating the contents of said chamber, valves for establishing communication between said chamber and the cylinder, an air-reservoir, means for compressing air therein and valves for establishing communication between said reservoir and cylinder, said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and a temperature into said air-chamber, retained and heated in said chamber, and expanded therefrom into said cylinder, and is admitted from said reservoir to said cylinder during the strokes of the cycle, and means for imparting initial movement to said piston.

16. The combination in an engine, of a cylinder, a piston contained therein, a connected crank-shaft, an air-chamber consisting of two compartments, means for heating the contents of said compartments, an air-reservoir, means for compressing air in said reservoir, means for heating the air, valves for establishing communication between said air-chamber compartments and cylinder, and for establishing communication between said reservoir and cylinder, said parts being so arranged and connected that air is compressed by the piston from atmospheric pressure and temperature into said air-chamber compartments, retained and heated in said compartments, and expanded therefrom into said cylinder, and is admitted from said reservoir to said cylinder during the strokes of the cycle, a source of steam-supply, and means for admitting steam to said cylinder to impart initial movement to said piston.

708,028. FEED-WATER HEATER AND PURIFIER. JAMES B. CRAWLEY, Milwaukee, Wis. Filed May 13, 1902. Serial No. 106,827. (No model.)

Claim.—1. A feed-water heater and purifier having an inner filter comprising a skeleton frame consisting of a pair of opposite vertical end-capped channel-plates, horizontal bars connected at their ends to edges of the channel-plates, vertical rods in connection with each series of bars at intervals lengthwise of same; pliable strainer material wrapped on the frame from end to end thereof, and means for clamping the strainer material against said channel-plates of said frame.

2. A feed-water heater and purifier having an inner filter comprising a skeleton frame consisting of a pair of vertical end-capped channel-plates, horizontal bars connected at their ends to edges of the channel-plates, vertical rods in connection with each series of bars at intervals lengthwise of same; pliable strainer material wrapped on the frame from end to end thereof, straps in pairs facing the strainer material parallel to said channel-plates of said frame, bolts extending through each pair of straps above and below the strainer material, and clamp-nuts run on the bolts.

3. A feed-water heater and purifier comprising an outer vertical cylinder having a lower steam-inlet and upper steam-outlet, a shell in connection with the cylinder inside the same forming therewith a steam-space open at the upper end, deflectors fast to said cylinder and shell at intervals within the adjacent steam-space, a drain-pipe for said steam-space, a baffle-plate depending from the upper cylinder-head parallel to the shell within the confines of same, means for collecting and temporarily holding water in suspension within the confines of the baffle-plate, a filter below said baffle-plate, and a feed-pump pipe in connection with the filter.

4. A feed-water heater and purifier comprising an outer vertical cylinder having a lower steam-inlet and upper steam-outlet, a shell in connection with the cylinder inside the same forming therewith a steam-space having deflectors arranged at intervals therein, a drain-pipe for said steam-space, a baffle-plate depending from the upper cylinder-head parallel to the shell within the confines of same, means for collecting and temporarily holding water in suspension within the confines of the baffle-plate, a filter below said baffle-plate, a feed-pump pipe in connection with the filter, and an equalizing-pipe connecting the feed-pump pipe with the cylinder above the lower end of said baffle-plate.

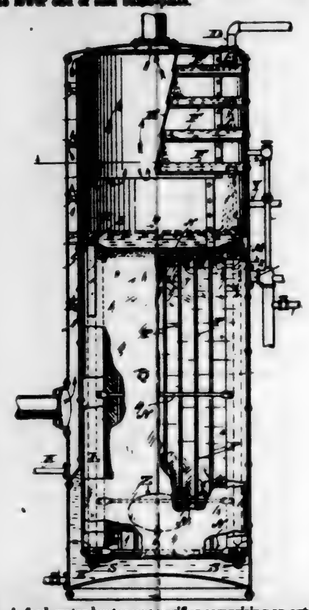

5. A feed-water heater and purifier comprising an outer vertical cylinder having a lower steam-inlet and upper steam-outlet, a shell in connection with the cylinder inside the same forming therewith a steam-space having deflectors arranged at intervals therein, a drain-pipe for said steam-space, a baffle-plate depending from the upper cylinder-head parallel to the shell within the confines of same, pans of gradually-increasing width in descending order supported within the confines of the baffle-plate under a water-inlet, these pans being alternately provided with bottom outlets having upwardly-extending flanges, a filter below said baffle-plate, and a feed-pump pipe in connection with the filter.

708,029. INTERNAL-COMBUSTION ENGINE. RUDOLF DIESEL, Munich, Germany, assignor to Diesel Motor Company of America, New York, N. Y., a Corporation of New York. Filed Jan. 18, 1901. Serial No. 43,602. (No model.)

Claim.—1. In an internal-combustion engine, the combination of a working cylinder, having a valved inlet and a mechanically-controlled

outlet for air or combustible mixture, and means for withdrawing, cooling, and compressing to a high tension a portion of the air or mixture from the working cylinder, substantially as described.

2. In an internal-combustion engine, the combination of a working cylinder having a valved inlet and a mechanically-controlled outlet, for air or combustible mixture, and a fuel-feed valve, and means for withdrawing a portion of the air or combustible mixture from the working cylinder, compressing it to a tension higher than the ultimate tension due to compression in the working cylinder, and delivering the highly-compressed mixture to the fuel-feed valve, substantially as described.

3. In an internal-combustion engine, the combination of a working cylinder having a valved inlet, and a mechanically-controlled outlet, for air or combustible mixture, and a fuel-feed valve; a compressing-pump having an inlet connected to the outlet of the working cylinder and an outlet connected to the fuel-feed valve; and means for operating the compressing-pump, substantially as described.

4. In an internal-combustion engine, the combination of a working cylinder and piston, the working cylinder having a valved inlet, and a mechanically-controlled outlet for air or combustible mixture, a fuel-feed valve, and an exhaust; a source of supply connected to the inlet for air or combustible mixture; a compressing-pump, having an inlet connected to the outlet for air or combustible mixture of the working cylinder, and an outlet connected to the fuel-feed valve; and means for operating the compressing-pump, substantially as described.

5. In an internal-combustion engine, the combination of a working cylinder and piston, the working cylinder having a valved inlet and a mechanically-controlled outlet for air or combustible mixture, a fuel-feed valve, and an exhaust; a source of supply connected to the inlet for air or combustible mixture; a receiver connected with the fuel-feed valve; a compressing-pump, having an inlet connected to the outlet for air or combustible mixture of the working cylinder, and an outlet connected to the receiver; and means for operating the compressing-pump: substantially as described.

6. In an internal-combustion engine, the combination of a working cylinder and piston, the working cylinder having a mechanically-controlled inlet and a valved outlet for air or combustible mixture, a fuel-feed valve, and an exhaust; a source of supply connected to the inlet for air or combustible mixture; a compressing-pump, having an inlet and an outlet; a connection between the inlet of the compressing-pump and the mechanically-controlled outlet of the working cylinder, and a receiver interposed in said connection; a connection between the outlet of the compressing-pump and the fuel-feed valve of the working cylinder, and a receiver interposed in the connection; and means for operating the compressing-pump; substantially as described.

708,080. MACHINE FOR FOLDING COLLAR-BLANKS &c. GARET J. DORNAKDY, Lansingburg, N. Y., assignor to the United Shirt and Collar Company, Troy, N.Y. Filed July 10, 1896. Serial No. 598,471. (No model.)

Claim.—1. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, a templet having edge portions adapted to bear directly upon the blanks upon said support and within edge portions of the blanks, infolders constructed and fitted to move inwardly and outwardly whereby edge portions of the blanks may be folded over edge portions of the templet, a slide constructed and fitted to move to and fro, and a plurality of devices, as cams, actuated by the said slide, each device for effecting the inward and outward movements of one or more infolders.

2. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, a templet having edge portions adapted to bear directly upon the blanks upon said support, and within edge portions of the blanks, infolders constructed to move inwardly and outwardly whereby the edge portions of the blanks may be folded over the edge portions of the templet, a ring constructed and fitted to slide in bearings located outward of the blanks upon said support, and means intermediate of said ring and of infolders, whereby the said ring may effect the inward and outward movement of infolders.

3. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, a templet having edge portions adapted to bear directly upon the blanks upon said support and within edge portions of the blanks, infolders constructed to move inwardly and outwardly whereby the edge portions of the blanks may be folded over the edge portions of the templet, a ring, and a plurality of cams provided in said ring, each for effecting the inward and outward movements of one or more infolders.

4. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, a templet having edge portions adapted to bear directly upon the blanks upon said support and within edge portions of the blanks, infolders constructed to move inwardly and outwardly whereby edge portions of the blanks may be folded over edge portions of the templet, a ring constructed and fitted to move to and fro, the said ring located outward of the blanks upon said support, and means actuated by said ring for effecting the inward and outward movements of infolders.

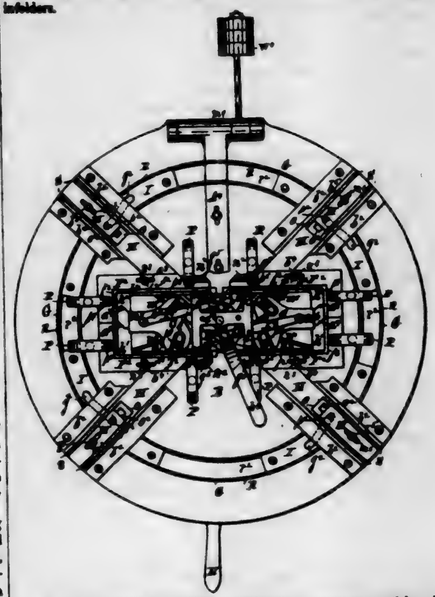

5. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, a templet having edge portions adapted to bear directly upon the blanks upon said support, and within edge portions of the blanks, a ring constructed and fitted to slide in suitable bearings provided in said support, infolder-bars constructed and fitted to move inwardly and outwardly, the said bars located above the said sliding ring, cams actuated by said ring for effecting the inward and outward movements of infolder-bars and infolders connected to the infolder-bars.

6. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, a templet having expanding and contracting plates, edge portions of which are adapted to bear directly upon the blanks upon said support and within edge portions of the blanks, a ring constructed and fitted to slide in suitable bearings in said support, slide-bars constructed to move inwardly and outwardly, slideways for said slide-bars, the said slideways being connected to the said support above the said sliding ring, cam-surfaces provided upon the said ring, cam-pins downwardly projecting from said slide-bars for engaging with said cam-surfaces, whereby the said ring may effect the inward and outward movements of slide-bars, infolders connected to slide-bars, means for sliding said ring to and fro whereby infolders may be moved inwardly and outwardly to fold edge portions of the blanks over edge portions of said templet, and means whereby the folds of the blanks may be pressed between the support and infolders after withdrawal of the plates of the templet from the folds, and thereby fixed with a sharp fold.

7. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, the support provided with an annular bearing, infolders constructed to move inwardly and outwardly whereby edge portions of the blanks may be infolded, a ring constructed and fitted to slide in the bearing in said support, means for oscillating said ring, means intermediate of said ring and of infolders whereby the oscillation of said ring may effect the inward and outward movements of infolders, and means whereby the folds of the blank may be pressed between the support and infolders and before the blanks are taken from the said support, and thereby fixed with a sharp fold.

8. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks to be infolded, a templet for defining the blanks upon said support, infolders for infolding edge portions of the blanks over edge portions of the templet, bars connected to said infolders constructed and fitted to move inwardly and outwardly, guides for said bars, the said guides being separate from said support and detachable to and detachable from the support, a ring fitted to move to and fro and cams actuated by the ring for effecting the inward and outward movements of the said bars and the infolders connected thereto, the said cams

being separate from the ring and attachable to and detachable from the ring.

9. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks to be infolded, a templet for defining the blanks upon said support, infolders for infolding edge portions of the blanks over edge portions of the templet, bars connected to said infolders constructed and fitted to move inwardly and outwardly, a part fitted to move to and fro, cams actuated by said part for effecting the inward and outward movements of the bars, and means adjustably connecting the cams and bars, whereby the cams may be longitudinally adjustable upon the bars, so that the infolders may be adapted to the infolding of blanks of varying dimensions.

10. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks to be infolded, a templet for defining the blanks upon said support, infolders for infolding edge portions of the blanks over edge portions of the templet, bars constructed and fitted to move inwardly and outwardly, means connecting infolders and bars whereby the infolders may be laterally adjustable at the inner ends of the bars, a part fitted to move to and fro, cams actuated by said part for effecting the inward and outward movements of the bars, and means adjustably connecting the cams and bars, whereby the cams may be longitudinally adjustable upon the bars, so that the infolders may be adapted to the infolding of blanks of varying lengths and widths.

11. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks, a templet having edge portions adapted to bear directly upon the blanks upon said support and within edge portions of the blanks, infolders constructed to move inwardly and outwardly, whereby edge portions of the blanks may be folded over edge portions of the templet, means for effecting the inward and outward movements of said infolders, a part fitted to said machine having upwardly-projecting members, with heads adapted to extend over said infolders when the latter are moved inwardly, and means for depressing said part whereby it may cause the infolders which are moved inwardly to descend toward said support to press and thereby to fix with a sharp fold the infolds of the blanks beneath said infolders.

12. In a machine for infolding cuff-blanks or analogous articles, the combination of a support for the blanks to be infolded, infolders fitted to said support to move inwardly and outwardly whereby the blanks upon said support may be infolded, said infolders being adapted to receive a slight vertical movement sufficient to press with a sharp fold the infolds of the blanks between the said infolders and said support, a treadle, and means intermediate of said treadle and said infolders, whereby the said treadle may effect the vertical movements of the said infolders to press the blanks.

13. In a machine for infolding cuff-blanks or analogous articles, the combination of a bed for supporting the blanks, a ring fitted to the bed to oscillate, means for oscillating said ring, slides fitted to move inwardly and outwardly on said bed, infolders connected to slides, and cams intermediate of said slides and said ring, whereby when the ring is oscillated infolders may be moved inwardly and outwardly.

14. In a machine for infolding cuff-blanks or analogous articles, the combination of a bed, a ring fitted to the bed to oscillate, segments detachably connected to said ring to oscillate therewith and provided with cam-surfaces, inwardly and outwardly moving slides provided with cam-parts for coacting with the cam-surfaces of said segments, infolders connected to said slides and means for oscillating said ring to effect inward and outward movements of infolders.

15. In a machine for infolding cuff-blanks or analogous articles, the combination of a bed, infolders, the bed provided with a circular slideway, a ring capable of sliding in said slideway, the ring provided with a concentric groove, a cam for operating an infolder connected to said ring through the groove therein, and means for moving said ring whereby the infolder may be operated to infold an edge portion of a blank upon said bed.

16. In a machine for loosening the edges of blanks for cuffs or like articles, the combination with a bed having a circular slideway, and also radially-arranged slideways of infolders each provided with a slide-bar arranged in one of said radial slideways, a ring arranged in said circular slideway and provided with a handle by which to be reciprocatingly rotated therein; segments each having a cam-slot and connected to said ring; a slide-pin arranged to make a sliding engagement with the sides of each of the segment-slots, and mounted upon a plate adjustably connected to one of said slide-bars, whereby as said ring is reciprocated in said circular slideway the infolders will be moved inwardly and outwardly substantially as and for the purposes set forth.

17. In a machine for infolding the edges of blanks for cuffs or like articles, the combination with a bed provided with an annular slideway; of a ring having an annular groove, and arranged in said slideway and provided with an operating-handle; radially-arranged slideways formed in said bed; segments each provided with a cam-slot and interchangeably connected to said ring within said annular groove; infolders each having a slide-bar arranged in one of said radial slideways; a slide-pin mounted upon a plate adjustably connected to the outer end of each of said slide-bars, and arranged to make a sliding engagement with the cam-slot of one of the segments whereby as said ring is reciprocatingly rotated the infolders will be moved inwardly and outwardly over the bed, substantially as and for the purposes set forth.

18. The combination with the bed B, having the annular stideway G, and radially-arranged slideways f; of the ring R, having the annular recess r^2, in its upper surface, and provided with an operating-handle H; the segments I, detachably connected to, and arranged within said annular slideway, and each provided with the cam-slot g^2; the slide-bars N, each arranged in one of said radially-arranged slideways, and each provided with a slide-pin p^2, with each of the latter arranged to engage with the slot g^2, of one of the segments; and an infolder F^2, connected to the inner end of each of said slide-bars, constructed and arranged to operate substantially as and for the purposes set forth.

19. In a mechanism for infolding the edges of blanks for cuffs or like articles, the combination with a bed provided with an annular slideway; of a ring constructed with an annular recess and provided with an operating-handle by which to be reciprocatingly rotated in said annular slideway; segments each provided with a cam-slot, and each detachably connected to said ring; slideways radially arranged on said bed; a slide-bar arranged in each of said radial slideways; and each provided with a slide-pin, making a cam or sliding engagement with the cam-slot of one of the segments; an infolder for each of said slide-bars; and means substantially as described for adjustably connecting each of said infolders to one of said slide-bars, constructed and arranged to be operated substantially in the manner as and for the purposes set forth.

20. The combination with the folders F^2, each provided with the slot o^2, and ribbed overhanging side o^3, of the slide-bars N, each provided with a slide-pin p^2, and having a grooved bulge g^3 and each attached to one of said folders by means of the slot o^2, and bolt b^2, and segments each provided with a curved slot adapted to receive the slide-pin of each of said slide-bars, with said segments operated to be reciprocatingly rotated on the machine-bed, substantially as and for the purposes set forth.

21. The combination with the folders F^2, the slide-bars N, each having the recess O, provided with the bottom opening O^2, of the cam-pin plates M, each made with the slot o^3, and having the downwardly-projected cam-pin p^3, the ring R, arranged in the annular recess G, the segmental plates I, each having a cam-pin slot g^3, constructed to connect and be operated substantially in the manner as and for the purposes set forth.

22. The combination with a series of folders arranged upon a bed, each provided with a slide-bar whereby they may be moved inwardly toward or outwardly from each other substantially as described; of presser-arms each having a vertical shank passing down through the bed, and each having a laterally-extended head that will overhang the folders when the latter are moved inwardly; a frame to which the shanks of the presser-arms attach, and a lever operated by a treadle whereby said frame may be drawn downwardly and cause the presser-heads to bear on the folders against the force of a spring, substantially in the manner as and for the purposes set forth.

23. The combination with the bed B, of the frame T^2, the presser-arms P, attached to the latter and upwardly projected therefrom and each provided with an overhanging head p^2, the lever L, provided with a foot-treadle, and connecting-rod; and the folders F^2, arranged on said bed beneath the overhanging heads of the pressers, constructed and arranged to be operated substantially in the manner as and for the purposes set forth.

24. The combination with the frame T^2, of the pressers P, each made with a laterally-extended head p^2, and having a downwardly-projected shank connected to said frame; the folders F^2; the spring S^2, arranged between said frame and the machine-table, and the lever L, provided with a foot-treadle, and connecting-rod constructed and arranged to operate substantially as and for the purposes set forth.

25. The combination with the bed B, provided with slideways S, of the slide-bars N, each connected to a bar n^2, and arranged in one of the slideways; the folders T^2, each connected to one of said bars n^2; the frame T^2; the pressers P, each having the laterally-extended head p^2, and provided with a cheek projected downwardly to connect with a frame beneath the bed, and the lever L, constructed and arranged to be operated substantially in the manner as and for the purposes set forth.

26. The combination with a bed having an annular slideway formed therein; of a ring constructed to be reciprocatingly rotated in said annular slideway; segments each provided with a cam-slot, and attached to said ring; slide-bars each provided with slideways and having a cam-pin plate provided with a cam-pin pintered in one of the segment-slots; a folder attached to each of slide-bars; a blank-holder having a hinged connection with the bed, at one side thereof; pressers each provided with an overhanging head, and connected to a frame beneath the bed; and a lever having a treadle whereby said frame may be moved downwardly with the heads of the pressers bearing upon said folders, substantially in the manner as and for the purposes set forth.

27. In a machine for loosening the edges of blanks for cuffs or like articles, the combination with a bed of a ring provided with a circular slideway formed in said bed, and provided with means to be reciprocatingly rotated therein substantially as described; segments each provided with a cam-slot and constructed to be detachably connected to said ring; infolders each provided with a slide-bar, and a slideway on the bed; a slide-pin mounted on a plate adjustably connected to each of said slide-bars at its outer end and thereat arranged to engage with the sides of one of said cam-slots; and a templet having expanding and indrawing plates upon its under surface, and provided with means whereby it may be operated to descend onto and rise from off said bed, substantially as and for the purposes set forth.

28. In an infolding-machine, the combination with a bed having an annular slideway and radially-arranged slideways; of a ring provided with an annular recess, and a handle by which to be reciprocatingly rotated in said annular slideway; infolders each having a slide-bar arranged in one of said radial slideways, each of said slide-bars having mounted thereon adjustably a plate having at its outer end a slide-pin; segments each provided with a cam-slot adapted to receive one of said slide-pins, said segments being connected in a detachable manner to said ring substantially as and for the purposes set forth.

29. In an infolding-machine, the combination with a bed provided with a circular slideway, and radially-arranged slideways, of a ring provided with a handle by which to be reciprocatingly rotated in said circular slideway; segments each provided with a cam-slot; means substantially as described whereby said segments are detachably connected to said ring; a slide-bar in each of said radial slideways provided with a cam-pin plate having on its outer end a cam-pin arranged to run in one of the said cam-slots; and an infolder mounted on the inner end of each of said slide-bars constructed and arranged to be operated substantially in the manner as and for the purposes set forth.

30. In a machine for infolding blanks for cuffs or like articles, the combination with a bed having an annular slideway and radially-arranged slideways; of a ring provided with a handle by which to be reciprocated in said annular slideway; segments each provided with a cam-slot and connected to said ring; infolders each provided with a slide-bar arranged in one of said radial slideways; a slide-pin mounted upon the outer end of a plate connected to each of said slide-bars, said slide-pins each making a sliding engagement with the slot of one of the segments; and a blank-holder having expanding and indrawing plates on its under surface, and means substantially as described whereby said blank-holder may be operated to descend onto and rise from off said bed, substantially in the manner as, and for the purposes set forth.

708,081. TORPEDO-LAUNCHING APPARATUS. STEPHAN J. J. DZIEWIECKI, Paris, France. Filed Jan. 2, 1902. Serial No. 88,147. (No model.)

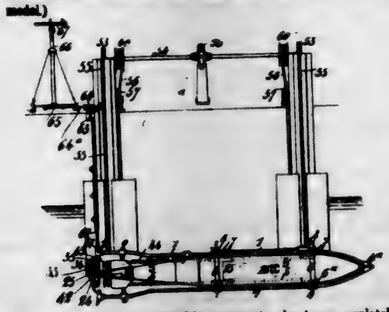

Claim.—1. A torpedo-launching apparatus having an unlatching mechanism consisting of a pivoted frame, pivoted claw-arms to engage the torpedo on the outside, a threaded tubular sleeve to engage the central tube of the torpedo and mechanism for releasing said claw-arms, substantially as described.

2. A torpedo-launching apparatus having an unlatching mechanism, comprising pivoted claw-arms having extensions 41, a spring, levers controlled by the spring and connected with the extensions, a lever 24 to hold the claws in latched position and means for latching and unlatching said lever 24, substantially as described.

3. In a torpedo-launching apparatus, an unlatching mechanism consisting of spring-controlled mechanism to normally hold the torpedo and a lever 24 to hold such mechanism latched, in combination with a pointer-bolt, adapted to secure the lever 24, spring mechanism adapted to withdraw the pointer-bolt and means to hold said spring mechanism in check until the torpedo has reached a certain determined position and then release the spring mechanism, substantially as described.

4. An unlatching means for torpedo-launching apparatus, comprising a pivotally-mounted frame, shaped like a figure 3, and a horizontally-pivoted part therein, carrying claw-arms adapted to engage the stern of the torpedo, substantially as described.

5. An unlatching means for torpedo-launching apparatus, comprising a pivotally-mounted frame, a pivoted part in the frame, claw-arms, a cross-head, links connecting the arms and cross-head, a spring to operate the cross-head, a lever pivoted to the lower part of the pivoted part at one end, and passing across and holding down the cross-head, and a pointer-bolt to latch the upper part of the lever in position, as and for the purpose described.

6. An unlatching means for torpedo-launching apparatus, comprising a pivotally-mounted frame, a pivoted part in the frame, claw-arms, a cross-head, links connecting the arms and cross-head, a spring to operate the cross-head, a lever pivoted to the lower part of the pivoted part at one end and passing across and holding down the cross-head, and a pointer-bolt to latch the upper part of the lever in position, a lever secured to the pointer-bolt, fulcrumed to the pivoted part and secured at its other end to a spring-pressed collar, and means for normally holding said spring-pressed collar with its spring compressed and a releasing means, substantially as described.

7. An unlatching means for torpedo-launching apparatus, comprising a pivotally-mounted frame, a pivoted part in the frame, claw-arms, a cross-head, links connecting the arms and cross-head, a spring to operate the cross-head, a lever pivoted to the lower part of the pivoted part at one end and passing across and holding down the cross-head, a pointer-bolt to latch the upper part of the lever in position, a lever secured to the pointer-bolt and to a spring-pressed collar, a lever secured to the collar adapted to control its position and a delivery-lever to operate the collar-operating lever, a sector adjustable in position, normally holding said delivery-lever in check but adapted upon a sufficient movement of the pivoted frame to release said lever, as and for the purpose set forth.

8. A torpedo-unlatching apparatus, comprising a pivotally-mounted frame, a spring-controlled lever for unlatching the torpedo from the frame, said lever having a wire connected with the torpedo-starting mechanism of such strength that upon the release of the latching-lever the wire will be tensioned to throw the torpedo-lever but upon the further movement of the lever the wire will be broken, substantially as described.

9. A torpedo-launching apparatus, comprising a cradle, a pivotally-mounted frame at one end thereof, a sleeve carrying a sector at the upper part of said frame, a pivoted part transversely pivoted in the frame and having upwardly and downwardly depending arms, a spring-controlled cross-head mounted in the pivoted part, claw-arms and links between them and the cross-head, a slot in the cross-head, a lever passing through the slot and pivoted at its lower end to the downwardly-depending arm of the pivoted part, its upper end being latched to the upwardly-extending arm of the pivoted part, a pointer-arm to latch them, a lever for the pointer-arm, spring means to withdraw the pointer-arm, and a delivery-lever to control the said spring means itself controlled by the aforesaid sector, substantially as described.

11. Apparatus for sighting torpedoes, comprising a sector, a shaft to rotate it, a cross-piece 64 to the shaft, a second cross-piece, rods connecting both cross-pieces and a shaft 66 carrying an index and graduated raglet, said shaft being fast to the second cross-head, substantially as described.

12. Apparatus for launching torpedoes, comprising rails secured to the ship's sides, trolleys mounted on said rails, a cradle mounted on the trolleys, chains secured to the trolleys and mechanism for winding or unwinding said chains, as and for the purposes set forth.

13. Apparatus for launching torpedoes, comprising a cradle, trolleys on which it is mounted, guideways for the trolleys, projections 53 on certain determined points of the guideway and corresponding projections 51 on the trolley, as and for the purpose described.

708,082. ELECTRIC-ARC LAMP. EDGAR A. EDWARDS, Cincinnati, Ohio. Filed Nov. 26, 1900. Serial No. 37,351. (No model.)

Claim.—1. In an electric-arc lamp, the combination with the movable electrode, of a movable support therefor, means for feeding the electrode downward independently of the support, a counterweight balancing the weight of the support and electrode, and means for releasing the connection between the electrode and support at the instant of feeding to

bring the counterweight into active operation to move the support to its higher position independently of the electrode, substantially as set forth.

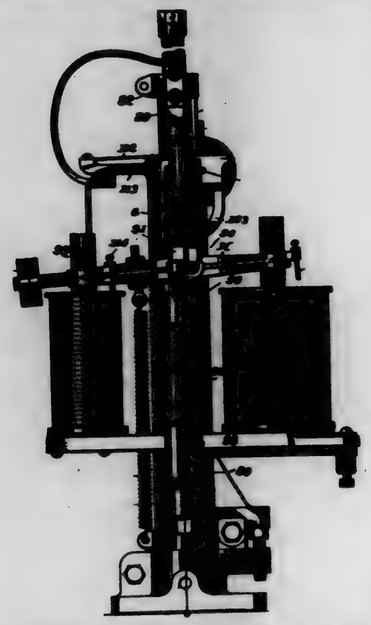

2. In an electric-arc lamp, the combination with a movable electrode, of a beam, supports for the said electrode connected with the beam at one side of its fulcrum, means for counterbalancing the weight of the parts at the opposite side of the fulcrum, and a rack, pinion, ratchet-wheel and pawl for momentarily releasing the connection between the beam and electrode-support when the electrode has been carried downward to a predetermined extent, substantially as set forth.

3. The combination in an electric lamp, of a beam, a movable electrode, means for supporting the electrode at one side of the fulcrum of the beam, means for momentarily disconnecting the beam and electrode when the latter has been carried downward to a predetermined distance and for thereafter engaging the two when the beam rises, and means for mechanically counterbalancing the weight of the electrode as long as the beam and electrode are in connection, substantially as set forth.

4. The combination in an electric-arc lamp, of a beam, a movable electrode supported by the beam at one side of the fulcrum thereof, a counterweight at the opposite side of the beam maintaining the latter mechanically in equilibrium, solenoids with cores supported by the beam at opposite sides of the fulcrum, and means whereby the connection between the beam and the movable electrode is momentarily released to permit the lifting of the beam and thereafter resumed to maintain the equilibrium of the beam, substantially as set forth.

5. In an electric-arc lamp, the combination with a movable electrode, of a beam supporting the electrode at one side of its fulcrum, a weight counterbalancing the weight of the electrode and means for momentarily releasing the connection between the electrode and beam at the instant of feeding, with the effect of then vibrating the beam by the sole action of the weight, substantially as set forth.

6. In an electric-arc lamp, the combination with a movable electrode, of a support therefor, a beam connected with the support, means for equalizing the weight on opposite sides of the fulcrum of the beam to prevent the vibration of the beam on its fulcrum from the movements of the parts connected with the fulcrum, and means for momentarily releasing the connection between the support and electrode to alter the equilibrium of the beam and bring the weight into action to lift the end of the beam connected with the said support when the electrode has been fed downward to a predetermined extent, substantially as set forth.

7. The combination with the base, operating-solenoids, and movable electrode of an arc-lamp, of connections between the movable electrode and the beam at one side of the fulcrum of the latter, a counterbalance at the opposite side arranged to mechanically counterbalance the beam so long as the beam and electrode are connected, and means for releasing momentarily the said connections when the movable electrode has been carried downward to a predetermined extent, substantially as set forth.

8. The combination with the beam, operating-solenoids, and movable electrode of an arc-lamp, of connections between the movable electrode and the beam at one side of the fulcrum of the latter, a counterbalance at the opposite side, a rack and pinion carried by independent parts of said connections, a ratchet-wheel connected with the pinion, and a pawl connected with a stationary part of the apparatus and to and from which the ratchet-wheel is carried by the vibrations of the beam, substantially as set forth.

9. The combination with the electrodes and operating-solenoids of an arc-lamp, of a beam connected with the movable electrode at one side of its fulcrum, and a weight at the opposite side of the fulcrum arranged to mechanically maintain the beam and parts connected therewith in equilibrium as long as the beam and electrode are in connection, substantially as set forth.

10. The combination with the carbon-feeding mechanism of an electric-arc lamp, of a guide supported on fixed bearings having converging faces constituting a side bearing for the carbon, and a pressure device for maintaining the carbon against said faces, substantially as set forth.

11. The combination with the carbon-feeding mechanism of an electric-arc lamp, of a guide having converging faces constituting a side bearing for the carbon, and a weighted lever for maintaining the carbon against said guide, substantially as set forth.

12. The combination with one electrode of an arc-lamp, of a second electrode consisting of a disk having pointed teeth at the periphery, substantially as set forth.

13. The combination with one electrode of an arc-lamp, of a second electrode consisting of a disk having pointed teeth at the periphery, and means for locking the disk with its active teeth in line with the axis of the opposite electrode, substantially as set forth.

14. The combination with one electrode of an arc-lamp, of a second electrode consisting of a removable disk having pointed teeth at the periphery, substantially as set forth.

15. In an electric-arc lamp, an electrode consisting of a metallic disk adapted to be turned to different positions around its center, and with a series of pointed peripheral projections, substantially as set forth.

16. The combination with the carbon electrode of an arc-lamp, and with its support, of a connection between the support and the electrode constructed to permit the latter to swing laterally in directions at right angles to each other, substantially as set forth.

17. The combination with the carbon electrode of an arc-lamp, and with its support, of a connection, consisting of a flexible blade twisted to present the upper portion at right angles to the lower portion, between the support and the electrode constructed to permit the latter to swing laterally in opposite directions, substantially as set forth.

18. The combination with the carbon electrode of an arc-lamp, and with its support, of a connection, consisting of a blade twisted to present the upper portion at right angles to the lower portion, between the support and the electrode constructed to permit the latter to swing laterally in opposite directions, substantially as set forth.

19. The combination with the carbon electrode of an arc-lamp, and with its support, of a connection, consisting of a blade twisted to present the upper portion at right angles to the lower portion, between the support and the electrode constructed to permit the latter to swing laterally in opposite directions, the connections with the support all being upon a plane running through the fulcrum thereof, substantially as set forth.

20. The combination with the electromagnetic controlling devices of an arc-lamp, of a beam mounted on a fixed support, a pinion connected at one side of the fulcrum of the beam, a rack supported by the said pinion and connected to support the movable electrode, a ratchet-wheel connected with the pinion-shaft, and a pawl engaging the ratchet-wheel and supported by a fixed part of the apparatus, substantially as set forth.

21. The combination with a beam fulcrumed on a fixed support, a movable electrode connected with the beam, feeding mechanism actuated thereby, and a weight to counterbalance the weight of the electrode so long as the electrode is connected therewith, of a balance-spring arranged to move the beam in one direction, and electromagnetic devices arranged to overcome the tension of the spring and move the beam in the other direction, whereby said feeding mechanism is actuated to control the vertical position of the point of the carbon and maintain a substantially constant arc resistance, substantially as set forth.

22. The combination with a beam fulcrumed on a fixed support, a movable electrode connected with the beam, feeding mechanism actuated thereby, and a weight counterbalancing the weight of the electrode when connected with the beam, of electromagnetic devices arranged to control the movements of the beam in opposite directions respectively according to an increase or decrease in the arc resistance from the normal, and an adjustable balance-spring arranged to resist the action of one of said devices and to maintain the beam in a position with the poles of the

arc separated during the discontinuance of the electrical current, substantially as set forth.

23. In an electric-arc lamp, the combination with a movable electrode, of a beam supporting the electrode at one side of its fulcrum, a weight counterbalancing the weight of the electrode, means for momentarily releasing the connection between the electrode and beam at the instant of feeding, with the effect of then vibrating the beam by the sole action of the weight, and means for remaking the connection at a different point as the weighted end of the beam drops, substantially as set forth.

24. The combination in an electric-arc lamp, of a beam, a movable electrode supported thereby on one side of the fulcrum, feed devices, electromagnets connected to vibrate the beam in different directions, to raise and lower the electrode, and a spring arranged to coöperate with the magnet which elevates the electrode, substantially as set forth.

708,033. **DETACHABLE CUSHION-HEEL.** WALTER S. BATES, Webster, Mass., assignor of one-half to A. J. Bates, Webster, Mass. Filed Mar. 11, 1902. Serial No. 97,777. (No model.)

Claim.—1. In a cushion-heel-attaching device, a base-plate having an angular aperture with the edge of the plate at the front and rear end of the aperture turned down to form seats, a plate vulcanized in the heel and having tongues projecting from the inner surface, said plates being adapted to be sprung to cause engagement of the tongues with the base.

2. In a cushion-heel-attaching device, a base-plate secured to the sole of a shoe and having an aperture with the front and rear edge of the aperture turned down to form seats, a plate embedded in the heel and having a front and rear tongue projecting therefrom, the rear tongue being narrower than the front tongue whereby the front tongue will bend slightly to allow rear tongue to seat with the base.

708,084. **HOOK AND EYE.** WILLIAM FLEISCHER, New York, N. Y. Filed Jan. 9, 1902. Serial No. 88,068. (No model.)

Claim.—1. A hook for a hook and eye comprising usual eyelets *a*, *a*, and hook *b*, an arch or projection extending from the back portion of the hook and a looped spring-tongue extending from the eyelets under the extreme end of the hook *b* and into the loop of which the arch or projection normally extends.

2. A hook for a hook and eye formed from a single piece of wire and comprising usual eyelets *a*, *a*, and hook *b*, an arch or projection extending from the back portion of the hook and a looped spring-tongue extending from the eyelets under the extreme end of the hook *b* and into the loop of which the arch or projection normally extends.

3. A hook for a hook and eye comprising usual eyelets *a*, *a*, and hook *b*, an arch or projection extending from the back portion of the hook and a looped spring-tongue extending to a point suitably adjacent the end of the hook *b* and into the loop of which the arch or projection normally extends.

708,035. **SMOKE-CONVEYER.** WILLIAM L. GALE, Louisville, Ky., assignor of one-fourth to Isaac F. Whiteside, Louisville, Ky. Filed Apr. 7, 1902. Serial No. 101,760. (No model.)

Claim.—1. A smoke-conveying tube for railway-trains, comprising a series of adjustable sections each comprising a plurality of telescopic members, springs tending to separate said members, and means for drawing the members together to contract the tube.

2. A smoke-conductor for railway-trains, comprising a plurality of sections independently pivoted on the roof of each car, each of said sections comprising a plurality of yieldably-connected telescopic tubular members.

3. A smoke-conductor for railway-trains, comprising a reversible pivotally-mounted section mounted centrally on each car, independent sections pivotally mounted near the ends of each car, all of said sections being reversible and each comprising a plurality of tubular members having yielding connections.

4. A smoke-conducting tube having telescopic members, springs tending to separate said members, pins carried by the adjacent ends of said members, and adjusting-levers having links embracing said pins.

5. In a device of the class specified, a tube-section rigidly supported on the engine and in communication with the smoke-stack, said section having a top opening, a movable cover for said opening, a telescopic stack member carried by the smoke-stack and adjustable through the opening, and means for adjusting said telescopic member.

6. In a device of the class specified, a tube carried by the engine and having an open front end, there being an opening in the top of the tube at a point over the top of the smoke-stack, and an adjustable smoke-stack connecting with the tube and movable through said opening.

7. In a device of the class specified, a tube carried by the engine and having an opening above the smoke-stack, a movable cover for said opening, a stack having a section adjustable through said opening, and a cover-holding catch having a portion arranged in the path of movement of the stack.

8. In a device of the class specified, a tube carried by the engine and having a flared front end open for the admission of air and provided with a top opening above the smoke-stack, a hinged cover for said opening, a telescopic smoke-stack adjustable through the opening, a gravity locking-catch arranged in the path of movement of the smoke-stack and serving to keep the cover normally in closed position, and means for raising and lowering the movable portion of the smoke-stack.

9. In a device of the class specified, a smoke-conducting tube pivotally mounted on top of a car, an end rail arranged on a curved line concentric with the pivotal axis of the tube, and a vertically-adjustable supporting-lever carried by and movable on said end rail, substantially as specified.

708,086. **MOUNTING FOR ELECTRIC HEATERS.** EDWARD H. GOLD, New York, N. Y. Filed Oct. 16, 1901. Serial No. 78,287. (No model.)

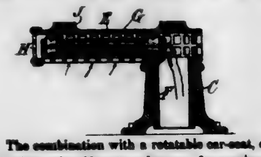

Claim.—1. The combination with a rotatable car-seat, of means for supporting a heater beneath said seat, and means for moving said heater to maintain it beneath said seat when the latter is moved.

2. The combination with a movable car-seat of means for supporting a heater beneath said seat, and means for moving said heater simultaneously with said seat when the latter is moved.

3. The combination with a movable car-seat of means for supporting a heater beneath said seat, and means for connecting said seat and heater to maintain the latter beneath the seat when the seat is moved.

4. The combination with a movable car-seat of means for supporting a heater beneath said seat, said seat and supporting means being connected to move together.

5. The combination with a seat, of a movable support on which said seat is mounted, and means for carrying a heater on said support.

6. The combination with a plurality of seats, of a single movable support on which said seats are mounted, and means for carrying a heater on said support and in position to extend under each of said seats.

7. The combination with a car-seat, of an oscillating support on which said seat is mounted, and means for carrying a heater on said support.

8. The combination with a seat of a movable support therefor having a tubular body adapted to carry a heater.

9. The combination with a seat of a movable support therefor having a tubular body adapted to carry a heater, and having apertures in the bottom and sides of said body for air circulation.

10. The combination with a seat of a pivoted support therefor comprising a tubular body E provided with a removable plate H and a pivotal extension F, and a fixed support carrying said pivoted support.

708,087. HOSE-SUPPORTER. MYRON B. HARRIGAN, Bridgeport, Conn. Filed June 16, 1902. Serial No. 111,982. (No model.)

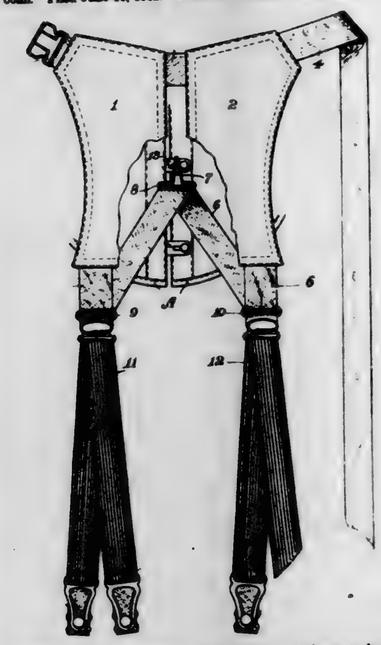

Claim.—1. A hose-supporter comprising a pad element adapted to be secured at its upper corners to the person of the wearer by means of a suitable belt, a webbing having its ends secured to the bottom edge of said pad, a hook device provided at its base with an opening through which the bight of said webbing extends, and stocking-engaging members suspended from said webbing near the points where the latter is secured to the pad element, said hook device being adapted to engage with the corset-clasp, substantially as set forth.

2. A hose-supporter comprising a pad element, means at the upper end of said element for securing the same to the person of the wearer, the webbing having its free ends secured to the bottom edge of the pad element whereby a loop is formed which latter passes loosely through an opening in a hook device adapted to be engaged with the corset-clasp, and stocking-engaging members having links at their upper extremities through which links said webbing is passed loosely immediately below the bottom edge of the pad, substantially as set forth.

708,088. VISE AND BRACKET. CHARLES B. HARPER, Marshalltown, Iowa. Filed Jan. 13, 1902. Serial No. 89,626. (No model.)

Claim.—1. An elbow-shaped bracket provided with an angular aperture in its upright portion and the vertical edges of the aperture beveled and the upper ends of the flanges adapted to aid in supporting a vise and the lower end portion provided with bolt-holes and the horizontal portion of the bracket adapted to overlie the top of a work-bench, in the manner set forth for the purposes stated.

2. An elbow-shaped bracket provided with an angular aperture in its upright portion and the vertical edges of the aperture beveled and the upper ends of the flanges adapted to aid in supporting a vise and the lower end portion provided with bolt-holes and the horizontal portion of the bracket adapted to overlie the top of a work-bench, a vise having an aperture in its rear jaw and a recess for a nut around said aperture and dovetail tenons on the face of the jaw to engage the beveled edges at the sides of the aperture in the bracket, in the manner set forth for the purposes stated.

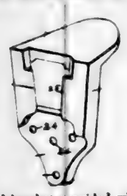

3. An elbow-shaped bracket provided with an angular aperture in its upright portion and the vertical edges of the aperture beveled and the upper ends of the flanges adapted to aid in supporting a vise and the lower end portion provided with bolt-holes and the horizontal portion of the bracket adapted to overlie the top of a work-bench, a vise having an aperture in its rear jaw for the passage of the screw for operating the hinged jaw and a recess for a nut around said aperture and dovetail tenons on the face of the jaw to engage the beveled edges at the sides of the aperture in the bracket, arranged and combined with a work-bench in the manner set forth for the purposes stated.

708,089. POP SAFETY-VALVE. BERNHARD HELLWIG, Cincinnati, Ohio. Filed Apr. 21, 1902. Serial No. 103,972. (No model.)

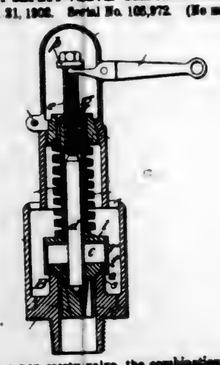

Claim.—1. In a pop safety-valve, the combination, with the valve and its seat, a spring for holding the valve closed and a spindle-socket surrounding the valve-spindle against which said spring acts, of a cylindrical pop-lift secured to the spindle-socket and embracing the upper edge of the valve-seat base, to form an annular chamber of a greater area than the valve to insure a pop action therefor, substantially as shown and described.

2. In a pop safety-valve, the combination, with the valve and its seat, of a casing for same, a regulator-ring screwed into the upper portion of said casing, a valve-spindle and regulating-screw therefor, and a spindle-socket with coiled spring bearing between the spindle-socket and the regulator-ring, substantially as shown and described.

3. In a pop safety-valve, the combination with the valve and its seat, of a casing for same, a regulator-ring screwed into the upper portion of said casing, a valve-spindle and regulating-screw therefor, a spindle-socket carrying a cylindrical pop-lift at its lower end to embrace the upper edge of the valve-seat base, with a coiled spring bearing between the spindle-socket and regulator-ring, substantially as shown and described.

708,040. FIRE-LADDER. SAMUEL B. HEMÉY, Washington, D. C. Filed Oct. 25, 1901. Serial No. 79,976. (No model.)

Claim.—1. The combination of a ladder having a sill, a nut carried by the sill and located between the side bars of said ladder, and a screw passing through the nut and the nut being fixed relatively to the screw against movement in the direction of the length of said screw.

2. The combination of a ladder having a sill, a nut carried by the sill substantially centrally thereof, a screw passing through said nut and said nut being held against movement relatively to the screw in the direction of the length of said screw, and a base-piece adapted to rest upon the ground, and connected to said screw.

3. The combination of a ladder having a sill, a nut carried by the sill substantially centrally thereof, a screw passing through the nut and the latter being held against movement relatively to the screw, in the direction of the length of said screw, and a base-piece swiveled to the screw.

4. The combination of a ladder having a sill provided with a seat on its under side and having a fixed nut, a screw passing through said nut, a base-piece swiveled to the lower end of the screw and arranged to fit in said seat, and means carried by the screw for rotating the same.

5. The combination of a ladder having a sill provided with a seat on its under side and having a fixed nut, a screw passing through said nut, and a base-piece connected to the screw and arranged to fit completely in said seat.

708,041. SAFE OR VAULT DOOR. HENRY D. HIBBARD, Plainfield, N. J., assignor to Hibbard-Rodman-Ely Safe Company, borough of Manhattan, New York, N. Y., a Corporation of New Jersey. Filed Mar. 11, 1902. Serial No. 97,883. (No model.)

Claim.—1. A safe or vault door comprising a body having a rearwardly-extending flange integral therewith provided with bolt-openings for the passage of bolts; bolt mechanism carried by such door; and a filling-plate located between the bolt mechanism and said body and receiving the strain of said bolts when in their protracted positions, whereby such bolts assist in maintaining said plate in position.

2. A safe or vault door comprising a body having a rearwardly-extending integral flange provided with bolt-openings; bolts working in such openings; a filling-plate located between such bolts and said body and having bearing-surfaces for the bolts and receiving the strain of such bolts when in their protracted positions whereby such bolts assist in maintaining it in position, said plate also having a centrally-located boss for the engagement of the inner ends of the bolts therewith.

3. A safe or vault door comprising a body having a rearwardly-extending integral flange provided with bolt-openings; bolts working in such openings; a filling-plate located between such bolts and said body and having bearing-surfaces for the bolts and receiving the strain of such bolts when in their protracted positions whereby such bolts assist in maintaining it in position, said plate also having a centrally-located boss for the engagement of the inner ends of the bolts therewith, said filling-plate and body constructed to form with the door-body a chamber for the reception of non-conducting material.

4. A safe or vault door comprising a body having a rearwardly-extending flange provided with bolt-openings; bolts working therein; and a filling-plate located between said bolts and said body and having a centrally-located boss coöperating with the inner ends of the bolts when in their protracted positions to prevent the withdrawal thereof except in the proper manner.

5. A safe or vault door comprising a body having a rearwardly-extending flange formed of unmachinable metal and a filling-plate wedged in position in the rear of said body.

6. A safe or vault door comprising a body having a rearwardly-extending flange formed of unmachinable metal and a filling-plate wedged in position in the rear of said body and constructed to form a chamber for the reception of non-conducting material.

7. A safe or vault door comprising a body having a rearwardly-extending flange; a filling member located in the rear of said body and interiorly of said flange; and a sectional wedge securing said member in position.

8. A safe or vault door comprising a body having a rearwardly-extending flange; a filling-plate bolted centrally thereof to said door-body and wedged at its periphery interiorly of said flange.

9. A safe or vault door comprising a body having a rearwardly-extending flange; a filling-plate connected centrally thereof to said door-body and wedged at its periphery interiorly of said flange, and constructed to form with the door-body a chamber for the reception of non-conducting material.

10. A safe or vault door comprising a body having an integral flange; a filling-plate located in the rear of said body and interiorly of said flange and connected centrally thereof to the door-body; and a sectional wedge located at the periphery of said plate to assist in securing it in position.

11. A safe or vault door comprising a body having an integral flange; a filling-plate located in the rear of said body and interiorly of said flange and connected centrally thereof to the door-body; a sectional wedge located at the periphery of said plate to assist in securing it in position relatively to the door, and bolts located in position to also assist in maintaining the plate in position when such bolts are protracted.

12. A safe or vault door comprising a body having an integral flange; a filling-plate located in the rear of said body and interiorly of said flange and connected centrally thereof to the door; a sectional wedge located at the periphery of said plate to assist in securing it in position relatively to the door; and bolts located in position to assist in maintaining said plate in position when such bolts are protracted, said plate having a centrally-located boss for the engagement of the inner ends of the bolts therewith to prevent the withdrawal thereof except in the proper manner.

13. A safe or vault door comprising a body having a rearwardly-extending integral flange provided with bolt-openings; a filling-plate located in the rear of said body and interiorly of said flange and secured to said door centrally thereof; sectional wedges located at the periphery of said plate to assist in maintaining it in position, the strain of the bolts when in their protracted position being received by said plate, thereby to assist in maintaining the same in position, said plate having a centrally-located boss coöperating with the inner ends of the bolts and constructed to form with the door-body a chamber for the reception of non-conducting material, and means for swinging said bolts during their longitudinal movement.

14. A safe or vault door comprising a body having a rearwardly-extending tapered flange, provided with bolt-openings; bolts working in said openings; and a plate located interiorly of said flange and between the bolts and the door-body; the organization being such that as the door is forced into the door-opening of the safe or vault body by the bolts, the strain of such bolts is received by the plate, whereby the same is forced into more intimate engagement with the door-body.

15. A safe or vault door comprising a body having a rearwardly-extending tapered flange provided with bolt-openings, bolts working in said openings, and means free of integral connection with the door and located interiorly of said flange and between the bolts and the door-body to receive the strain of the bolts as they force the door into the door-opening of the safe or vault body, whereby such strain-receiving means is forced toward the body of the door, the bolts thus being more firmly wedged in their bolting position.

16. A safe or vault member comprising an outer member and an inner member secured to each other centrally thereof and constructed one with a flange to form an intermediate chamber.

17. A safe or vault member comprising an outer member and an inner member in engagement with each other centrally thereof and constructed one with a flange to form an intermediate chamber.

18. A safe or vault door comprising a body having a rearwardly-extending flange, and a filling-plate in engagement with said body centrally thereof and wedged at its periphery interiorly of said flange.

708,042. SPARKING IGNITER FOR EXPLOSIVE-ENGINES. JOHN B. HINES, Detroit, Mich. Filed Nov. 9, 1901. Serial No. 81,699. (No model.)

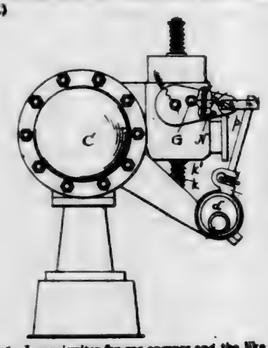

Claim.—1. In an igniter for gas-engines and the like, the combination of a fixed and a movable electrode, a rock-shaft, and an arm secured thereto carrying the movable electrode in a position adapting it to be moved into contact with the fixed electrode, with an operating-arm se-

secured to said rock-shaft, and two independently-pivoted arms engaging with opposite sides of said operating-arm, a spring connected with the two outer arms and acting to draw them toward each other, and a movable tripping device engaging with one of said outer arms and adapted to move it upward and then release it to the action of said spring, substantially as and for the purpose specified.

2. In an igniter for gas-engines and the like, the combination of a fixed and a movable electrode, a rock-shaft, and an arm secured thereto carrying the movable electrode in a position adapting it to be moved into contact with the fixed electrode, with an operating-arm secured to said rock-shaft, two independently-pivoted arms engaging with opposite sides of said operating-arm, said three arms having flat contacting surfaces, a spring connected with the two outer arms and acting to draw them toward each other, and a movable tripping device engaging with one of said outer arms and adapted to move it upward and then release it to the action of said spring, substantially as and for the purpose specified.

3. In an igniter for gas-engines and the like, the combination of a fixed and a movable electrode, a rock-shaft, and an arm secured thereto carrying the movable electrode in a position adapting it to be moved into contact with the fixed electrode, with an operating-arm secured to said rock-shaft, two independently-pivoted arms engaging with opposite sides of said operating-arm, a spring connected with the two outer arms and acting to draw them toward each other, a rocking lever pivoted to a fixed support, a tripping-finger pivoted to said lever and engaging with one of said spring-connected arms, a constantly-driven shaft, an eccentric connected thereto, a connecting-rod transmitting motion from said eccentric to said rocking lever, and means for lengthening and shortening said connecting-rod, substantially as and for the purpose specified.

4. In an igniter for gas-engines and the like, the combination of a fixed and a movable electrode, a rock-shaft, and an arm secured thereto carrying the movable electrode in a position adapting it to be moved into contact with the fixed electrode, with an operating-arm, an arm loosely pivoted on the same rock-shaft and lying above and in contact with said operating-arm, an arm pivoted on a different axis and lying below and in contact with said operating-arm, a contractile coil-spring connected with the two outer arms and acting to draw them toward each other and into contact with the intermediate operating-arm, and a tripping device for actuating the upper one of said arms, substantially as and for the purpose specified.

708,048. COMBINATION-SIDEBOARD. JOHN T. HICKS, Boston, Mass., assignor to Hotel Security Checking Company, Portland, Me.; Boston, Mass., and New York, N. Y., a Corporation of Maine. Filed Jan. 30, 1901. Renewed Oct. 26, 1901. Serial No. 80,119. (No model.)

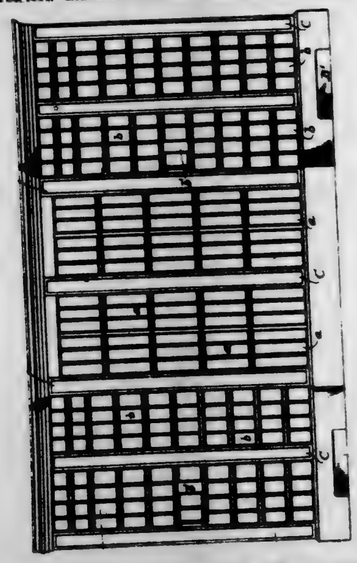

Claim.—1. In a sideboard, the combination with a main central section, having spaces for the reception of bottles from which liquors are being dispensed, and a refrigerating-space for the reception of bottled goods, of wings or side sections for holding clean glassware and the like, said main and side sections being furnished with front and rear slides, whereby the contents of the several spaces or chambers can be readily approached, substantially as described.

2. In a sideboard, the combination of the central section and the side or wing sections, all of which are provided at front and rear with series of slides, a series of mirrors on the front of the sideboard behind which mirrors the said slides may be pushed individually, as described, a series of open-work shelves in the wing-sections, a series of open-work shelves in the main section, provided with partial partitions, means in the front portions of the main section for closing temporarily the mouths of the bottles therein from which drinks are being dispensed by the bartender, an ice-chest for keeping cool the contents of the main section, and a locking device for the slides, substantially as described.

3. In a sideboard, the combination with a main section having spaces for the reception of bottles from which liquors are being dispensed and a refrigerating-space for the reception of bottled goods, means for closing temporarily the mouths of the bottles from which drinks are being dispensed, a guide for keeping said bottles in position, front and rear slides for enabling the contents of the spaces or chambers to be readily approached at any desired point.

708,044. PROCESS OF OBTAINING ZINC. EVAN H. HOPKINS, South Kensington, England. Filed July 1, 1901. Serial No. 66,721. (No specimens.)

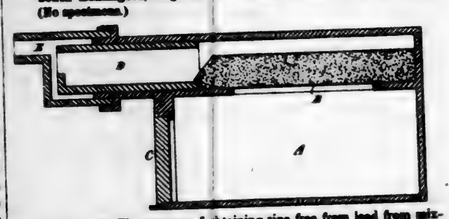

Claim.—1. The process of obtaining zinc free from lead from mixtures of the oxids of zinc and lead which consists in heating carbon to incandescence, heating the oxids mixed with carbonaceous materials in a closed retort and passing the products of distillation upward through the incandescent carbon.

2. The process of obtaining zinc free from lead from ores containing lead and zinc consisting in heating carbon to incandescence, roasting lead-zinc sulfid ores, mixing the metallic oxids thus obtained with carbonaceous material, heating the same in a closed retort and passing the products of distillation upward through carbon heated to incandescence.

708,045. SHOCK-LOADER. AARON C. HOOTSMILL, Tama Township, Iowa. Filed Mar. 3, 1902. Serial No. 96,849. (No model.)

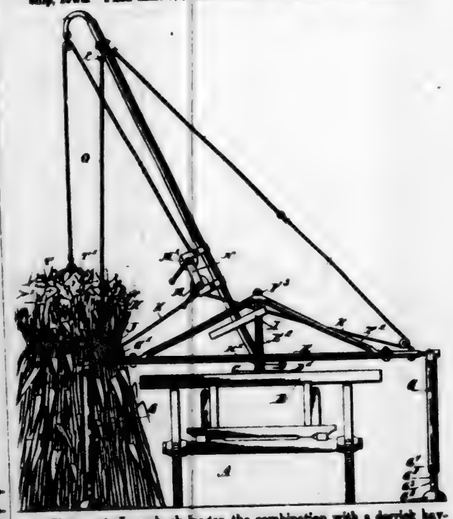

Claim.—1. In a shock-loader, the combination with a derrick having a mast-tilting truss mounted transverse to the loading-rack, and a rock to support the same, of end supports for said truss adapted to rest on the ground, substantially as described.

2. In a shock-loader, the combination with a derrick-truss and a central support therefor, substantially as described, of adjustable end supports for the truss, with bread feet or bases to rest on the ground, substantially as set forth.

3. In a shock-loader, the combination of a tilting mast, a truss adjacent to the foot thereof, sheaves near the ends of the truss, a windlass mounted on the mast, and a guy-rope passing around the windlass and sheaves and connecting with the mast near its upper end.

4. In a shock-loader, the combination of a tilting mast, a truss adjacent to the foot thereof, means substantially as described for tilting the mast, a gooseneck mounted to turn in the top of the mast, a sheave depending therefrom, a lifting-windlass secured to the mast, a grab for holding the shock and a rope running over said sheave and attached at one end to the grab and at the other end to the windlass, substantially as described.

5. In a shock-loader, the combination of a rail adapted to rest on a wagon-rack, a derrick mounted to slide endwise thereon, said derrick comprising a rail mounted above and parallel with the longer rail, with suitable bearings to connect them slidably, a mast and brace therefor mounted pivotally on the upper rail, a truss attached to said upper rail and transverse thereto, a stirrup embracing the mast and center post of the truss, and means substantially as described for tilting the mast.

708,046. CARDING-MACHINE. WILLIAM H. HOYLE and THOMAS BARKER, Bolton, England. Filed Mar. 26, 1902. Serial No. 100,434. (No model.)

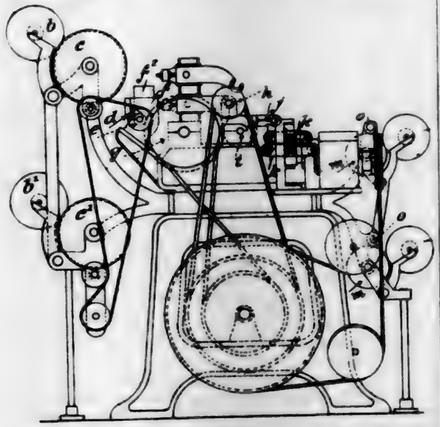

Claim.—1. In an apparatus for the purpose described, the combination with the carding-cylinder, of an elongated feed-roller in proximity thereto, and a plurality of independently-movable section-feed devices arranged in juxtaposition to said feed-roller, substantially as described.

2. In combination, in an apparatus for recondensing condenser-yarn or the like, the combination with the plurality of bobbins, of a feed-roller, a plurality of section-feed devices in juxtaposition to said roller, a main cylinder *g*, a doffer *i*, and doffing-comb *j*, and a "fancy-roller" *h* and rubbers *k*, *k*, for rubbing the sections of yarn, substantially as described.

3. In combination in an apparatus such as is herein described a plurality of bobbins for holding condenser-yarn, means for withdrawing said yarn, a sectional feed, comprising an elongated roller, a plurality of independently-movable presser devices cooperating therewith, a main carding-cylinder a doffer and doffing-comb, rubbers for rubbing the yarn and means for batching the recondensed yarn substantially as described.

4. In a machine of the class described, the combination with the carding-cylinder *g*, of a single elongated feed-roller *c* in proximity thereto, a feed-plate above the feed-roller having a plurality of compartments, and a plurality of blocks seated in said compartments and having guiding-grooves in their lower portions, substantially as described.

708,047. CAR-WHEEL. BENJAMIN S. JEFFERSON, Athens, Ohio, assignor to Athens Foundry & Machine Co., Athens, Ohio. Filed May 5, 1902. Serial No. 106,051. (No model.)

Claim.—In a car-wheel, a rim, a hub, tangentially disposed and curved spokes between the hub and rim, the hub comprising inner and outer shells joined at their inner end portions, said shells forming an oil-chamber, braces of approximately T form interposed between the inner and outer shells and having their head portions disposed at the outer end portion of the inner shell and their cheek portions extending horizontally and longitudinally bracing the shells, a wall closing the outer and open end of the oil-chamber, said wall being integral with the outer shell and having a tapering oil-hole centrally therethrough, an opening in the outer shell for insertion and extraction of the cutter-pin, said opening being normally closed, there being spirally-formed grooves or channels provided upon the wear-surface of the inner shell for the purpose set forth, the whole structure being of integral formation, substantially as set forth.

708,048. TROLLEY HARP OR FORK. OTTO P. JOHNSON and FRED P. CROCKETT, Kalamazoo, Mich., assignors to the Star Brass Works, Kalamazoo, Mich. Filed Apr. 28, 1900. Serial No. 14,771. (No model.)

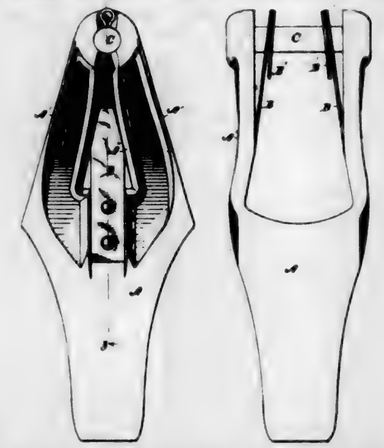

Claim.—1. The combination of the harp A divided into forks above, being suitably ribbed at A', A' to protect the parts; a journal-pin C retained within the harp by suitable means; a spring B secured to the outside of said harp and extending upwardly through suitable apertures in the same within the forks above and being formed forked at its upper end to embrace the pin C; and a contact-washer B' with a projecting portion *c'* to engage within the forks of the spring, all constructed substantially as described for the purpose specified.

2. The combination of the harp A divided into forks above; a journal-pin extending through said forks to carry the trolley-wheel; a spring secured to said harp and extending upwardly inside of the fork, being forked at its upper end to embrace the said pin; and a washer with a suitable projection to engage between the forks of the spring and to contact with the side of the trolley-wheel, counting for the purpose specified.

3. In a contact device for trolley-harps, a spring forked at its upper end, and a washer having suitable projections to engage between the forks of said spring to contact with a trolley-wheel, for the purpose specified.

4. A trolley-harp divided into forks above; a spring-brush forked at its upper end; and a washer, having a suitable projection to engage between the forks of the said spring-brush to contact with a trolley-wheel, counting for the purpose specified.

5. The combination of a harp divided into forks above; a spring secured to the outside of said harp and extending upwardly through suitable apertures, and fulcrumed on the inner side of the same, for the purpose specified.

708,049. TABLE-SPREAD SUPPORT. DAVID C. JORDAN, David City, Nebr. Filed June 6, 1901. Serial No. 63,431. (No model.)

Claim.—The arched cover-supporting frame designed to be arranged over a dish or dishes and comprising a series of laterally-adjustable foldable arms curved longitudinally and provided at their upper ends with vertical pivots, the upper and lower clamping-plates arranged above and below the upper ends of the arms and provided with perforations, the perforation of the lower plate being threaded and one of said plates being provided with openings to receive the said pivots, a screw extending through the perforations of the plates and engaging the screw-threads of the lower plate, and a coiled spring arranged on the upper portion of the screw and forming a grip or handle and engaging the screw and the upper plate, whereby the latter is yieldingly held in engagement with the arms to permit the same to be adjusted laterally and to be folded together, substantially as described.

708,050. MILK-DIPPER. FRANCIS J. KEE, Watervliet, N. Y. Filed Oct. 26, 1901. Serial No. 80,123. (No model.)

Claim.—1. A device of the kind described comprising a dipper or cup and a handle having an opening near its lower end, a cover having a projection extending through said opening and pivoted therein, and a spring-actuated rod connected to the projection and carried by the handle, and means for operating the spring-actuated rod, substantially as described.

2. A device of the kind described comprising a dipper and handle, said handle having an opening near the bottom, the cover having a rear projection extending through the opening and pivoted therein, the rod connected thereto, the spring-actuated lever pivoted upon the handle and pivotally connected to the said rod, substantially as described.

3. A device of the kind described, comprising a cup or dipper, a handle attached thereto, the pivoted cover having a groove provided with a packing-ring, said cover having a rearwardly-projecting extension, a rod attached to said extension, the event-lever pivoted to the handle, the links for connecting the levers and rod, a spring attached to the said rod at its upper end, the opposite end of said spring being connected to the handle and the supplemental springs attached at one end to the handle and at the other end to the rear extension adjacent to the lower end of the handle, substantially as described.

4. The combination with a cup or dipper, having a curved plate arranged upon the inside thereof, of a pivoted cover, having a groove, provided with a packing-ring adapted to fit upon the rim of the cup, said cover also having a restraint-groove provided with a packing and adapted to fit the top of the curved plate.

708,051. STEP FOR STREET-CARS OR OTHER VEHICLES. CHARLES W. KEYLER and ADAM MATZ, Cincinnati, Ohio; said Keyler assignor to said Matz. Filed Apr. 1, 1901. Serial No. 53,967. (No model.)

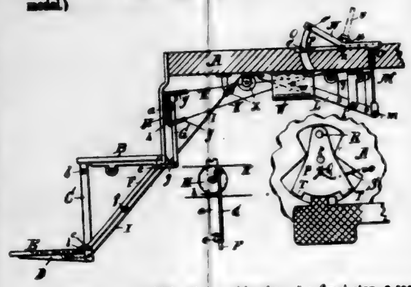

Claim.—1. In a vehicle, the combination of a fixed step, a second step movably hung thereto, and projecting below and horizontally outward therefrom; means for rigidly holding and locking said lower suspended step in said horizontal position; means for unlocking the same; means for pulling it back and folding it up horizontally under the fixed step; means for holding said movable step locked in said last-named position; means for unlocking the same therefrom, and means for lowering said adjustable step into its former lower horizontally-extended position, substantially as shown and described.

2. In a vehicle, the combination of a fixed step, a second step movably hung thereto, and projecting below and horizontally outward therefrom, knuckle-jointed braces for rigidly holding and locking the said lower suspended step in said horizontal position; means for making and breaking said braces at their knuckle-joints; means for pulling said movable step back and folding it up horizontally under said fixed step; means for holding said movable step locked in said last-named position; means for unlocking the same therefrom, and means for lowering said adjustable step into its former lower horizontally-extended position, substantially as shown and described.

3. In a vehicle, the combination of the fixed step B, a second step E, movably hung thereto and projecting below and horizontally outward therefrom, knuckle-jointed braces F, (for rigidly holding and locking said lower suspended step in said horizontal position) provided with arms *g*, means for raising or lowering said arms *g* as desired, thereby making or breaking said braces at their knuckle-joints; means for pulling said movable step back into a vertical position under said fixed step; means for holding the same locked in said vertical position; means for unlocking the same therefrom, and means for lowering said adjustable step into its former lower horizontally-extended position, substantially as shown and described.

4. In a vehicle, the combination of the fixed step B, a second step E, movably hung thereto and projecting below and horizontally outward therefrom, knuckle-jointed braces F, (for rigidly holding and locking said lower suspended step in said horizontal position) provided with arms *g*; means for raising or lowering said arms *g*, as desired, thereby breaking said braces at their knuckle-joints; means for pulling said movable step back and folding it up horizontally under said fixed step; means for holding the same locked in said vertical position; means for unlocking the same therefrom, and means for lowering said adjustable step into its former lower horizontally-extended position, substantially as shown and described.

5. In a vehicle, the combination of the fixed step B, a second step E, movably hung thereto, and projecting below and horizontally outward therefrom, knuckle-jointed braces F, (for rigidly holding and locking said lower suspended step in said horizontal position) provided with arms *g*, pulleys H, suitably journaled to the brackets *a*, to which pulleys are eccentrically journaled the ends of pitman-rods G, the other ends of which are pivoted to the ends of the arms *g*, means for rotating said pulleys H, means for pulling said movable step back into a vertical position under said fixed step; means for holding the same locked in said vertical position; means for unlocking the same therefrom, and means for lowering said adjustable step into its former lower horizontally-extended position, substantially as shown and described.

6. In a vehicle, the combination of the fixed step B, a second step E, movably hung thereto and projecting below and horizontally outward therefrom, knuckle-jointed braces F, (for rigidly holding and locking said lower suspended step in said horizontal position) provided with arms *g*, pulleys H, suitably journaled to the brackets *a*, to which pulleys are eccentrically journaled the ends of pitman-rods G, the other ends of which are pivoted to the ends of the arms *g*, means for rotating said pulleys H, means for pulling said movable step back and folding it up horizontally under said fixed step; means for holding the same locked in said vertical position; means for unlocking the same therefrom, and means for lowering said adjustable step into its former lower horizontally-extended position, substantially as shown and described.

7. In a vehicle, the combination of the fixed step B, a second step E, movably hung thereto, and projecting below and horizontally outward therefrom, knuckle-jointed braces F, (for rigidly holding and locking said lower suspended step in said horizontal position) provided with arms *g*, pulleys H, pitman-rods G, cables I, cables K, hangers C, brackets D, pulleys *x*, pulleys *y*, lever L, pitman-rod M, treadle N, segment O, latch P, spring S, and adjustable weight W, substantially as shown and described.

708,052. STCHING DEVICE. ISIDOR KITSEE, Philadelphia, Pa. Filed Sept. 16, 1899. Renewed Feb. 3, 1902. Serial No. 93,262. (No specimens.)

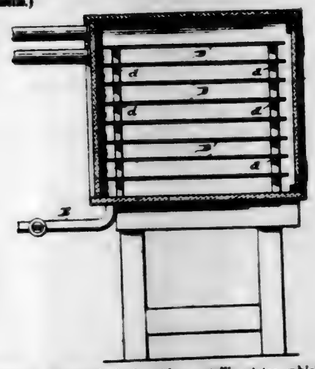

Claim.—1. The method of etching metallic plates, which consists in subjecting said plates simultaneously to the action of an active gas or vapor and to the action of steam.

2. The method of etching, which consists in bringing in contact the parts of the plates to be etched, simultaneously with two agents each from a separate source, one agent in a gaseous form, capable of combining with the metal in the presence of moisture, the second a passive agent, capable of imparting to the first agent the moisture required.

708,053. APPARATUS FOR DISTRIBUTING THE PRIMARY CURRENT FOR ELECTRIC IGNITION BY COILS AND IGNITERS IN EXPLOSIVE-ENGINES. ARTHUR C. KRAKE, Paris, France, assignor to Société Anonyme des Anciens Etablissements Panhard et Levassor, Paris, France. Filed Jan. 31, 1902. Serial No. 91,969. (No model.)

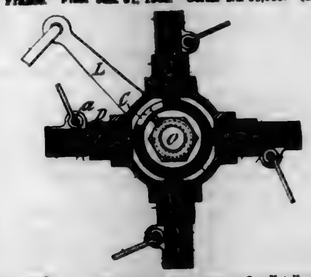

Claim.—In a gas-engine or the like, means for distributing a current to a plurality of igniters comprising brushes connected separately to said igniters, a terminal, means for revolving said terminal to contact with said brushes in succession, tubes carrying said brushes, springs in the outer ends of said tubes, pressing said brushes inward, clamp-caps closing the outer ends of said tubes, and conducting-wires attached to said clamp-caps.

708,054. HAT-STIFFENING MACHINE. NATHANIEL LEVESQUE, Fall River, Mass., assignor of one-half to James Marshall and Brothers, Fall River, Mass. Filed Apr. 26, 1902. Serial No. 104,879. (No model.)

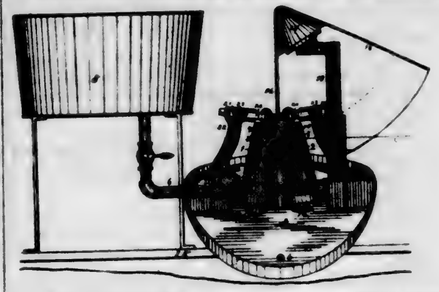

Claim.—1. The combination in a hat-stiffening machine, of a pair of vertically-mounted rolls, means for applying stiffening material to a hat-body, of an adjustable scraper-bar supported from a fixed part of the machine adjacent to the top of one of the rolls, said scraper-bar contacting with the hat-body to remove the surplus stiffening deposited upon the hat-body from the top downwardly, substantially as described and shown.

2. The combination in a hat-stiffening machine, of a pair of vertically-mounted rolls, means for applying stiffening material to a hat-body, of a pair of adjustable scraper-bars supported from fixed parts of the machine, the one bar within and the other without the hat-body, said scraper-bars contacting with the hat-body upon each side of it simultaneously to remove the surplus stiffening deposited upon the hat-body, substantially as described and shown.

708,055. ELECTRIC CONTROLLER. JOHN B. LIEB, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Feb. 15, 1901. Serial No. 47,398. (No model.)

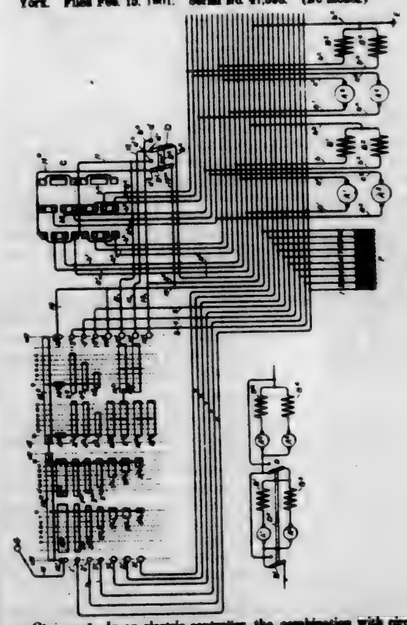

Claim.—1. In an electric controller, the combination with circuit-controlling devices for two pairs of parallel-connected motors, of a switch

comprising two blades, and connections whereby one pair of motors will be cut out when one blade is thrown and the other pair when both blades are thrown.

2. In an electric controller, the combination with circuit-controlling devices for a plurality of motors, of a cut-out switch for said motors comprising two blades, and means for permitting an independent movement of each blade in one direction only.

3. In an electric controller, the combination with circuit-controlling devices for a plurality of motors, of a cut-out switch for said motors comprising two blades, and connections permitting each blade to move independently in one direction, but compelling one to actuate the other when moved in the other direction.

4. In an electric controller, the combination with circuit-controlling devices for a plurality of motors, of a cut-out switch for said motors comprising two blades, one capable of independent movement in one direction and the other in the opposite direction, and means for compelling each to actuate the other when moved in the reverse direction.

5. In an electric controller, the combination with circuit-controlling devices for a plurality of motors, of a cut-out switch comprising two blades pivoted to move in parallel planes, and a handle on each blade projecting into the path of movement of the other handle.

6. In an electric controller, the combination of a circuit-controlling device for a plurality of motors, of a cut-out switch comprising two blades pivoted to move in parallel planes and overlapping handles carried by said blades.

7. In an electric controller, the combination with a series-parallel contact-cylinder having a lug on its shaft, of a hooked lever adjacent to the shaft, a cut-out switch having two parallel blades independently movable, a link connecting one of said blades with the lever, and overlapping handles on the blades.

8. In an electric controller, means for electrically connecting two contact-cylinders, comprising electrically-connected collars having a sliding fit on said cylinders.

9. In an electric controller, means for electrically connecting two parallel contact-cylinders, comprising a divided collar on each cylinder, spring-fastenings for said collars, and conductors connecting said collars.

10. In an electric controller, means for electrically connecting two parallel contact-cylinders, comprising a divided collar on each cylinder, spring-fastenings for said collars, and one or more flexible conductors connecting said collars.

708,056. **VEHICLE.** NICHOLAS P. HANSEN, Sun Prairie, Wis. Filed Feb. 20, 1902. Serial No. 94,916. (No model.)

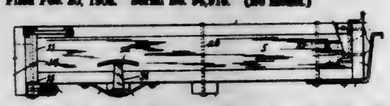

Claim.—1. In a vehicle-body, the combination with a side-board, a bottom, and a cross-brace under the bottom at the end of the body and projecting laterally beyond the side-board, of a corner angle-iron binder secured to said side-board and brace, one flange of which binder fits against the outer side of and is secured to the side-board and the other flange of which fits against the end of the body, the side flange being at its lower end turned outwardly transversely and fitted and secured to the top surface of the cross-brace, and the end flange being at its lower end at a distance below the end of the side flange turned inwardly transversely and fitted and secured to the lower surface of the cross-brace.

2. A binder for a vehicle-body, consisting of a section of angle-iron or similar material, the flanges of which are of unequal length the shorter flange at its lower end being turned transversely outwardly and the longer flange being turned transversely inwardly at a distance below the termination and transverse portion of the shorter flange, the binder having provision for securing it to the corner of a vehicle-body.

708,057. **DISPLAY-CABINET FOR PACKETS.** ALEXANDER W. M. MARSH, St. Paul, Minn., assignor to Lewis L. May, St. Paul, Minn. Filed Aug. 13, 1901. Serial No. 71,726. (No model.)

Claim.—1. In a display-case of the class described, the combination with an outer frame, of a frame rotatably supported therein, a series of horizontal receptacles pivotally supported in said inner frame, vertical strips arranged at the forward sides of said receptacles constituting intermediate openings, a strip secured to the upper ends of said vertical strips and formed with an inwardly and downwardly projecting lip, and partition-walls arranged transversely of said receptacles adjacent to said vertical strips.

2. In a case or use cases described, the combination of a frame, a series of receptacles arranged transversely thereof, inwardly-projecting flanges carried by the side walls of said frame, outwardly-projecting pivots carried by the ends of said receptacles and projecting through said flanges, and means carried by said receptacles for abutting against said flanges to limit the movement of said receptacles.

3. In a display-case of the class described, the combination with a frame, of a series of receptacles transversely arranged therein, inwardly-projecting flanges carried by the side walls of said frame, a pivotal connection between the lower ends of said receptacles and said flanges, and means carried by said receptacles for abutting against the flanges to limit the movement of said receptacles.

4. In a display-case of the class described, the combination with a frame, of a series of receptacles transversely arranged therein, inwardly-projecting flanges carried by the side walls of said frame, wires diagonally secured to the ends of said receptacles, the lower ends of said wires being bent outwardly and projecting through the adjacent flanges upon the side walls of the frame, and the upper ends of said wires being outwardly bent to abut against said flanges and limit the movement of said receptacles.

708,058. **AGITATOR.** HERMAN M. MARTINSEN, Rumford Falls, Me. Filed Nov. 22, 1901. Serial No. 83,239. (No model.)

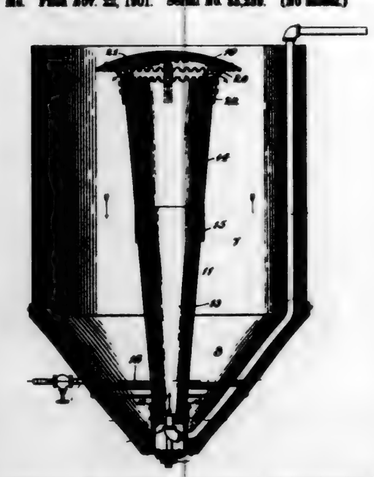

Claim.—1. In an agitator, a reservoir, a mixing-chamber in said reservoir, provided with an inlet and an outlet opening, said chamber made in parts, and means to adjust said parts longitudinally with relation to each other to vary the distance between the inlet and outlet openings in said mixing-chamber.

2. In an agitator, a reservoir, a mixing-chamber in said reservoir, provided with an inlet and an outlet opening, said chamber made in parts, means to adjust said parts longitudinally with relation to each other and vary the distance between the inlet and outlet openings in said mixing-chamber, and an agitator-pipe leading from the interior of said mixing-chamber to a source of power.

3. In an agitator, a reservoir, a mixing-chamber in said reservoir, provided with an inlet and an outlet opening, and an agitator-pipe leading from the interior of said mixing-chamber to a source of power, the outlet end of said mixing-chamber being notched for the purpose set forth.

4. In an agitator, a reservoir, a mixing-chamber in said reservoir, provided with an inlet and an outlet opening, an agitator-pipe leading from the interior and lower end of said mixing-chamber to a source of power, and a cap fast to said mixing-chamber and extending across said outlet-opening at a distance therefrom, whereby an annular space is provided between said cap and the outlet end of said mixing-chamber.

5. In an agitator, a reservoir, a mixing-chamber in said reservoir, provided with an inlet and an outlet opening, an agitator-pipe leading from said inlet-opening to a source of power, and a cap fast to said mixing-chamber and extending across said outlet-opening, the edge of said cap being notched for the purpose set forth.

6. In an agitator, a reservoir, a mixing-chamber in said reservoir, provided with an inlet and an outlet opening, said chamber being conical in shape, the large end of said mixing-chamber constituting the outlet-opening thereof and the small end of said mixing-chamber constituting the inlet-opening thereof, and an agitator-pipe leading from said inlet-opening to a source of power.

708,059. **FEEDING MECHANISM FOR PRESSES FOR PLASTIC MATERIAL.** JOHN R. MASSEAR and THOMAS BEVINGTON, Toronto Junction, Canada, assignors of one-half to David Brown, Donaghmore, Ireland. Filed Dec. 11, 1901. Serial No. 86,472. (No model.)

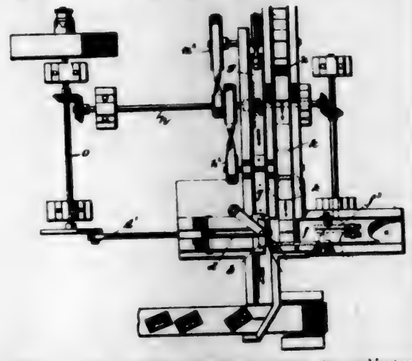

Claim.—1. In a pressing or stamping machine, the combination with the dies and means for operating them, of a charging-table and a charger for pushing the bars to be pressed from said table between the dies, a main conveyer for receiving the bars in a row, standing upright, side by side, an intermediate feeding device adapted to receive said bars from the main conveyer and to transfer them to the charging-table, means for moving the conveyer and means for turning each bar upon its side in the course of its travel, whereby each bar is delivered flat upon the charging-table, substantially as described.

2. In a machine of the character described, the combination with the vertically-reciprocating dies, of a charging-table or guideway leading to the dies, a charger and means for moving the same across said charging-table toward the dies, an inclined feeding-chute communicating at the bottom with the side of the charging-table and adapted to introduce bars placed in said chute laterally onto the charging-table into the path of the charger, and conveying mechanism adapted to receive unpressed bars in a row standing side by side, and arranged to deliver the bars one by one edge to edge into the upper portion of said feeding-chute.

3. In a machine of the character described, the combination with the vertically-reciprocating dies, of a charging-table or guideway leading to the dies, a reciprocating charging-plunger arranged to slide in said guideway, and means for operating said plunger, an inclined feeding-chute communicating at the bottom with the charging-table or guideway, a main conveyer adapted to receive a row of soap bars standing on edge side by side, a supplementary conveyer in alinement with the main conveyer and adapted to receive bars from the end of said main conveyer and to transfer said bars to the upper end of the feeding-chute, the two conveyers being arranged relatively to one another so that the soap bars will fall on their sides in passing from one to the other, and means for driving said conveyers, the supplementary conveyer being driven faster than the receiving-conveyer.

708,060. **DOOR-HANGER.** GUSTAV O. MEYER, Milwaukee, Wis. Filed Apr. 9, 1902. Serial No. 102,046. (No model.)

Claim.—1. The combination of a stationary suspension-bar, an adjusting-bar held in connection with the suspension-bar by screw bolts and nuts, a spring under tension between said bars adjacent to ends of same, angle-irons in connection with adjusting-bar having depending lower portions constituting parallel tracks, brackets attachable to a door, spindles carried by the brackets, and rollers on the spindles adapted to bear on the tracks.

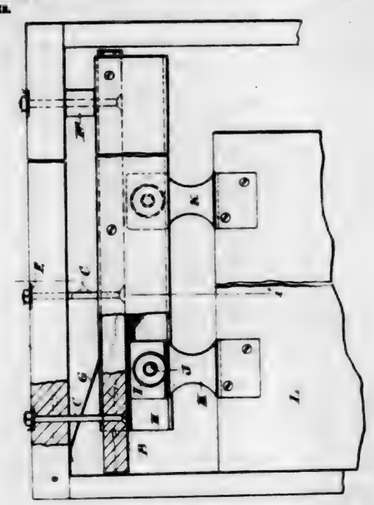

2. The combination of a stationary suspension-bar, an adjusting-bar held in connection with the suspension-bar by screw bolts and nuts, a fulcrum-block intermediate of said bars adjacent to ends of same, angle-irons in connection with the adjusting-bar having depending horizontal portions constituting parallel tracks, brackets attachable to a door, spindles carried by the brackets, and rollers on the spindles adapted to bear on the tracks.

3. The combination of a stationary suspension-bar, an adjusting-bar held in connection with the suspension-bar by screw bolts and nuts, a fulcrum-block intermediate of the bars adjacent to ends of same, a spring under tension between said bars adjacent to the ends of same farthest from the fulcrum-block, angle-irons in connection with adjusting-bar having depending lower portions constituting parallel tracks, brackets attachable to a door, spindles carried by the brackets, and rollers on the spindles adapted to bear on the tracks.

708,061. **CLEANER FOR SPINNING-MACHINES.** SEVERUS MOOK, Pawtucket, and CHARLES D. ROBINSON, Crompton, R. I.; said Robinson assignor to said Mook. Filed Nov. 16, 1901. Serial No. 82,569. (No model.)

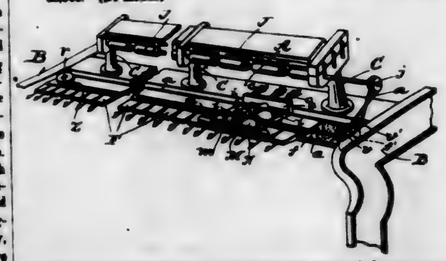

Claim.—1. In a cleaner for ring-spinning frames of the type mentioned the traveler N having upon its under surface a recess W, and the openings *c' c'* connecting therewith, substantially as described.

2. In a cleaner for ring-spinning frames, the traveler N; a guard fixed thereto and projecting downwardly and outwardly therefrom so that the lower front edge of the guard rests upon the guide-wires while the interior surface of said lower edge is in contact with or in close proximity to the front edge of the filler-blocks, in combination with said filler-blocks and guide-wires, substantially as described.

3. In a cleaner for ring-spinning frames of the type mentioned, a traveler N having a recessed under surface and at each end of said traveler an opening connecting with said recess; a fibrous material lining said recess; a guard fixed upon said traveler and carving downwardly and outwardly therefrom so that its lower edge rests upon the guide-wires while the inner surface of said lower edge is in contact with or in close prox-

imity to the lifter-blocks; the whole in combination with said lifter-blocks and guide-wires, substantially as set forth.

708,062. COOKING-STOVE. WILLIAM H. MOORE, Joliet, Ill. Filed Apr. 21, 1902. Serial No. 103,840. (No model.)

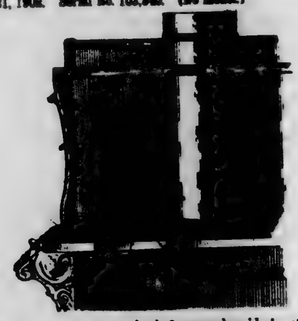

Claim.—A stove having a back frame and a side bracket at its rear and also a key-plate in its top, adjacent to said bracket, said key-plate being pivotally connected at its inner edge to the stove-top, so that it will swing upwardly and inwardly, a lifting and suspending device connected to the rear outer corner of the key-plate, adjacent to said side bracket, and extending upward and connected to said side bracket, and means for locking said suspending device when the key-plate is lifted.

708,063. HORSE-HOPPLE. WILLIAM L. MORRISSEY, Summit, N. J. Filed June 1, 1901. Serial No. 62,751. (No model.)

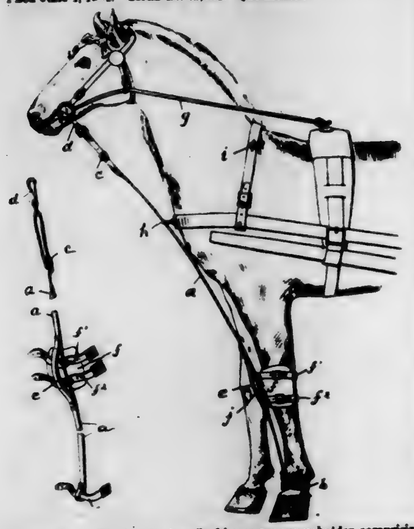

Claim.—1. The herein-described horse hopple or holder, comprising a strap adjustable in length and adapted at one end to be fastened to the horse's bit, means at the other end of said strap for fastening it to the ankle, between the fetlock and hoof, of one of the horse's fore feet, and a knee cap or cushion slidably secured to the strap intermediate of its ends and adapted to buckle firmly to the knee of the same leg to which the strap is fastened.

2. In a horse hopple or holder, a strap *a*, adapted at one end to be attached to the bit and at the other end to be buckled around the ankle, between the fetlock and hoof, of one of the horse's fore feet, and a knee cap or cushion adapted to be strapped firmly to the knee of the same leg to which the strap is buckled and having loops through which said strap passes.

3. The combination of the strap *a*, a band *b*, for the ankle of a horse's fore leg at one end of said strap, a snap-hook *d*, for the bit adjustably secured to the other end, a strip *e*, secured at its ends to said strap intermediate of said band and snap-hook and forming a loop *j*, a cap or cushion *f*, for the knee of the said fore leg, and fastening-bands *f'*, *f''*, for said cap or cushion passing loosely through the loop *j*, whereby the strap may slide with respect to said cap or cushion when the latter is fixed by its bands.

708,064. CULTIVATOR. JOHN A. MCKINNON, Hiuajos, Cal. Filed Nov. 29, 1901. Serial No. 84,102. (No model.)

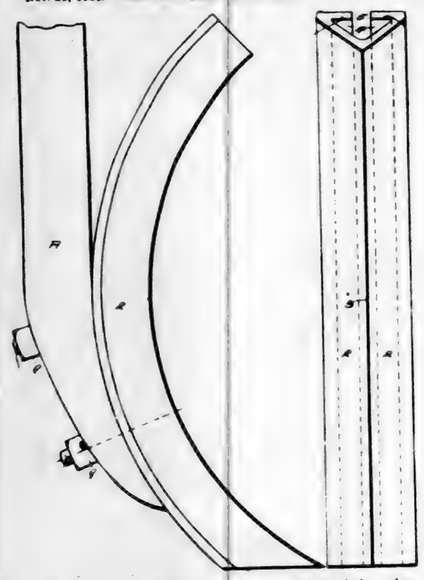

Claim.—1. A cultivator-tooth having a longitudinal channel to receive the head of a bolt and a slot in the rear side of the tooth intermediate the sides of the channel and communicating therewith, substantially as described.

2. In combination with a cultivator-tooth having a longitudinal channel, a longitudinal slot in its rear side communicating with said channel and flanges forming the sides of said slot and the rear side of said channel, a cultivator-standard and a bolt connecting said tooth to said standard, the head of said bolt being disposed in said channel and the shank thereof disposed in said slot, whereby the said cultivator-tooth is adjustably secured to said standard, substantially as described.

708,065. BOOKBINDING. JOHN L. MCMILLAN, Ilion, N. Y. Filed July 9, 1900. Serial No. 695,518. (No model.)

Claim.—1. The herein-described binding for loose sheets, comprising a back 3; boards 1 and 2 hinged to said back; binding-strips 7, attached at one end to the cover and having open barrels or hooks at the other end; a notched barrel or tube 5 made fast to the cover; a rod adapted to pass through the barrel 5 and the open barrels or hooks of the binding-strips; a series of attaching-strips 14 provided with perforate ears to receive the binding-strips; and sheets slitted to receive the ears and applied thereto, substantially as described.

2. In combination with a cover provided with plates 4, having barrels 5 provided with openings 6, binding-strips 7 provided with barrels 8 and hooks or open barrels 11; and rods 9 and 18 for securing the binding-strips to the plates 4.

3. In combination with a cover provided with barrels 5 having openings or notches 6; binding-strips 7 provided with barrels 8 and hooks or open barrels 11; attaching-strips 14 provided with ears having perforations 17; and rods 9 and 18 for attaching the binding-strips to the barrels 5.

4. In combination with a cover or binder; a hinged binding-strip to carry or sustain the sheets; a barrel secured to the cover and having an opening to receive the free end of the binding-strip; a rod passing through the barrel and serving to attach the binding-strip thereto; and rigid spurs permanently projecting into the barrel and serving to prevent withdrawal of the rod.

5. In combination with a book-cover, a plate secured thereto and provided with a barrel 5 having an opening 6; a binding-strip 7 provided with a barrel 8 seated in the opening 6; a rod passing through the barrels 5 and 8; and rigid spurs 10 cast from the metal of barrel 5, projecting into the same, and serving to prevent withdrawal of the rod, substantially as and for the purpose set forth.

6. In combination with a cover; binding-strips attached thereto; attaching-strips having perforated ears some of which are strung upon the binding-strips; and elastic bands attached to the cover and having one end free to be passed through ears of the attaching-strips, substantially as and for the purpose explained.

7. In combination with a suitable cover, a series of perforated attaching-strips adapted to carry leaves or sheets to be bound; and an elastic band attached to the cover, larger in cross-section than the perforations, whereby it is adapted to be drawn through the perforations of the attaching-strips when elongated and to expand laterally when released; causing it to bind in the perforations and by contracting longitudinally, draw the attaching-strips firmly together.

8. In a binder, the combination of a suitable cover; binding-strips within said cover; single or unfolded sheets or leaves having perforations through them from face to face near the binding edge; and attaching-strips having perforate ears passing through the sheets or leaves and strung upon the binding-strips, substantially as described.

9. In a binder, the combination of a series of single or unfolded sheets or leaves, and a series of attaching-strips, one for each sheet or leaf, each strip having a tongue passing through one leaf from face to face at a point a short distance inward from the binding edge.

10. In combination with a suitable cover provided with a notched barrel; a binding-strip having a barrel to enter the notch of the main barrel; and a hinge-rod for connecting the two barrels provided with a head or projecting portion to reach outside the barrel, and with a notch below said head to facilitate the removal thereof.

11. In combination with a suitable cover, a series of attaching-strips 14 provided with perforate ears; and an elastic band arranged to pass through the perforate ears, said band being normally of larger measurement in cross-section, in a given direction, than the perforation through which it passes.

12. In combination with a suitable cover, a series of attaching-strips provided with perforate ears; and an elastic band of larger cross-section than the perforations of the ears, but provided with a tab of smaller section.

13. A book, a series of cross-pieces therein having open hook ends, means within the book located to be engaged by the hooks, and means for detachably securing pages to said cross-pieces.

14. A book, comprising a cover having a hinge member, a series of cross-pieces having hinge members at their ends, a rod adapted to pass through the hinge members and having a weakened place, and means for detachably securing a series of pages to the cross-pieces.

15. In combination with a cover provided with barrels having openings, binding-strips provided with hooks or open barrels, and rods for securing the binding-strips to the covers.

708,066. STEAM-GENERATOR. WILLIAM HORRIE, Blackpool, and HENRY SPURRIER, St. Annes-on-the-Sea, England. Filed Feb. 26, 1902. Serial No. 96,562. (No model.)

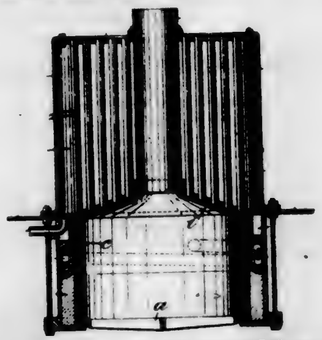

Claim.—1. In steam-generators of the class described, a crown-plate having parts extending beyond the extreme diameter of the fire-box and forming a means of support for the boiler, in combination with means for suspending the fire-box therefrom, substantially as set forth.

2. In steam-generators of the class described, a cast-iron ring surrounding the upper part of the fire-space and having recesses formed in the outer part of its upper edge for the reception of mud-cock elbows, substantially as set forth.

3. In steam-generators of the class described, the combination with a fire-box crown-plate, of angular extensions integral with the plate, a cast-iron ring suspended from the crown-plate, recesses cast in the upper outer part of the ring, and mud-cock elbows contained within the said recesses, substantially as set forth.

708,067. WINDOW-FASTENER. LEONARD D. PARIS, Gatesville, Tex., assignor of one-half to John T. Post, Gatesville, Tex. Filed May 15, 1902. Serial No. 107,488. (No model.)

Claim.—1. A combined window fastener and lock, comprising a casing, a pair of cams pivotally mounted therein and provided with eccentric and coöperating meeting surfaces, an operating-handle, and a pin or stud on one cam, and a spring having its free end bearing against said pin or stud and adapted thereby to hold the cams either in their operative or inoperative positions, substantially as described.

2. A combined window-sash fastener and lock, comprising a casing, a pair of cams fulcrumed therein and provided with eccentric and coöperating meeting surfaces, and operating-handle, and a pin or stud on one cam, a spring bearing against said pin or stud and adapted to hold the cam either in its operative or inoperative position, and a stop-shoulder on the casing, one of the cams being cut away to form a coöperating stop-shoulder and to give the cam a preponderance of weight upon one side of its fulcrum.

708,068. SURGICAL APPLIANCE. PHILIP H. T. PARLIERTI, Philadelphia, Pa. Filed May 6, 1902. Serial No. 106,313. (No model.)

Claim.—1. A surgical appliance for fractured patellæ consisting of a splint adapted to keep the knee-joint rigid, two saddle-pieces arranged to

fit above and below the knee, adjustable means for connecting the said saddle-pieces together, blocks slidingly engaged in said saddle-pieces and means provided on each saddle-piece for forcing the blocks toward each other, substantially as described.

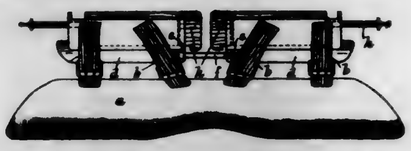

2. In a surgical appliance for fractured patellæ a device for putting pressure upon the patella above and below the knee in combination with an attachment having adjustable sliding blocks adapted to put lateral pressure upon the patella, substantially as described.

708,069. PROCESS OF STAINING WOODS. JOSEF PFEIFER, Vienna, Austria-Hungary, assignor to Joachim von Brunner, Schloss Goldford, Austria-Hungary. Filed Feb. 12, 1902. Serial No. 93,905. (No specimens.)

Claim.—1. The process of staining woods under liquid-pressure, which consists in applying successively to one face of the article or wood to be treated the desired patterns and then forcing in succession the dyeing liquid within a closed receptacle under pressure through each pattern to show the decided colored patterns therethrough, when finished, substantially as set forth.

2. The process of staining woods under liquid-pressure, which consists in applying to one face of the wood to be treated a pattern, forcing the dyeing liquor under pressure through the wood to penetrate the texture of the wood in axial direction and continuing the pressure of the forcing liquid through the wood to cause its penetration through the pores of the wood in a lateral direction, substantially as and for the purposes set forth.

708,070. COHERER. GREENLEAF W. PICKARD, Boston, Mass., assignor, by mesne assignments, to Consolidated Wireless Telegraph and Telephone Company, a Corporation of Arizona Territory. Filed Oct. 18, 1901. Serial No. 79,107. (No model.)

Claim.—1. A coherer, comprising a non-conducting tube, conducting-wires entering said tube from opposite ends, metallic plugs surrounded by said tube and connected to the wires, said plugs having their adjacent ends provided with a concavity so as to form a pocket whose greatest width is between the center of the adjacent ends of the plugs and whose narrowest width is between the extreme edges of the adjacent faces of the plugs and metallic filings or particles located in said pocket below the axial line of said plugs.

2. A coherer, comprising a non-conducting tube, conducting-wires entering said tube from opposite ends, metallic plugs surrounded by said tube and connected to the wires, the inner faces of said plugs being concaved so as to form a substantially elliptical or circular pocket in cross section, and metallic particles located in the pocket so formed.

3. A coherer, comprising a non-conducting tube, metallic plugs in said tube and providing a pocket between their adjacent faces, said pocket having its greatest breadth between the axial line of the plugs, and its narrowest breadth between the extreme edges of the adjacent faces of the plugs, metallic filings or particles between said plugs below the axial line thereof, and conductor-wires connected to the outer faces of said plugs.

4. A metallic plug for a coherer, comprising a substantially cylindrical body having a concaved surface upon one end and a surface upon the other end to engage a wire, said concaved surface having its deepest concavity in its axial line and radiating in all directions to form an overhanging periphery.

708,071. WIRELESS-TELEGRAPH SYSTEM. GREENLEAF W. PICKARD, Boston, Mass., assignor, by mesne assignments, to Consolidated Wireless Telegraph and Telephone Company, a Corporation of Arizona Territory. Filed Oct. 29, 1901. Serial No. 80,382. (No model.)

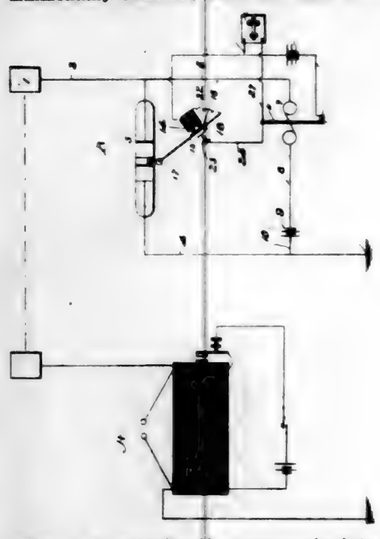

Claim.—1. In combination with a wave-responsive device, a decohering means therefor, said decohering means having automatic means for regulating the operation thereof according to the resistance of the said wave-responsive device.

2. In combination with a wave-responsive device, a decohering means therefor, comprising an electromagnetically-operated means, and a circuit to regulate the operation of said electromagnetically-operated means according to the resistance of the wave-responsive device.

3. In a receiver for electrical oscillations, the combination of a receiving means, a circuit therethrough, a relay in said circuit, a decohering-circuit operated by said relay, a recorder-circuit in shunt to said decohering-circuit, and an imperfect electrical contact regulated by the relay according to the resistance of the receiving means to energize the decohering-circuit accordingly.

4. In a receiver for electrical oscillations, the combination of a receiving means, a circuit therefor, a relay in said circuit, a decohering-circuit operated by said relay, a recorder-circuit in shunt to said decohering-circuit, a lever or armature operated by the relay to energize the recorder and decohering-circuit, an imperfect electrical contact made by said armature regulated by the resistance of the receiving means, and a decohering means in said decohering-circuit.

5. In a receiver, the combination of receiving means, a circuit therefor, a relay in said circuit, a decohering-circuit operated by said relay, a recorder-circuit in shunt to said decohering-circuit, an imperfect electrical contact regulated by the relay according to the resistance of the receiving means to energize the decohering-circuit, and a decohering means in said decohering-circuit.

6. In a receiver, the combination of receiving means, a circuit therefor, a relay in said circuit, a decohering-circuit controlled by said relay, a decohering means in said decohering-circuit, and means operated by the relay to regulate the decohering means according to the resistance of the receiving means.

708,072. WIRELESS TELEGRAPHY. GREENLEAF W. PICKARD, Boston, Mass., assignor, by mesne assignments, to Consolidated Wireless Telegraph and Telephone Company, a Corporation of Arizona Territory. Filed Nov. 4, 1901. Serial No. 81,079. (No model.)

Claim.—1. In a wireless-telegraph system, the combination of a single aerial and ground connection, a transmitter and receiver, manually-operated means for connecting the transmitter or receiver with the connections, and means operated by said first-mentioned means for disconnecting the coherer from the receiver.

2. In a wireless-telegraph system, the combination of aerial and ground connections, a transmitter and a receiver, manually-operated means for connecting the aerial connection with the transmitter or receiver, and means operated by said above-mentioned means for cutting the coherer from the receiver when the transmitter is connected with the aerial and ground connections.

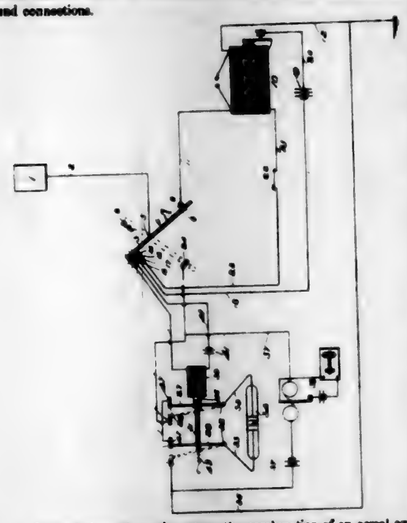

3. In a wireless-telegraph system, the combination of an aerial and ground connection, a transmitter, a receiver, an imperfect electrical contact in the receiver, manually-operated means for connecting the transmitter or receiver with the aerial and ground connections and means operated by said last-mentioned means for cutting the imperfect electrical contact from the receiver when the transmitter is connected with the aerial and ground connections.

4. In a wireless-telegraph system, the combination of an aerial and ground connection, a transmitter and a receiver, an imperfect electrical contact in said receiver, manually-operated means for connecting the transmitter or receiver with the aerial and ground connections, and means operated by said means for cutting the imperfect electrical contact from the receiver when the transmitter is connected with the aerial and ground connections.

5. In a wireless-telegraph system, the combination of an aerial and a ground connection, a transmitter, a receiver, a wave-responsive device in said receiver, means for disconnecting said wave-responsive device from the receiver, a switch for connecting the transmitter or receiver to the aerial and ground connections and means operated by said wave-responsive-device-disconnecting means when said switch connects the transmitter with the aerial and ground connections.

6. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver having a wave-responsive device therein, a switch for connecting the transmitter or receiver with the aerial and ground connection, and means operated by said switch to prevent the wave-responsive device from being damaged by radiations from the transmitter when the transmitter is connected with the aerial and ground connections.

7. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver consisting of an imperfect electrical contact, a pair of arms connected in circuit with said contact, a circuit through said arms and contact, an electromagnet, means for operating the arms to cut the contact from its circuit, means for returning the arms, and a switch for connecting the transmitter or receiver with the aerial and ground connections, said electromagnetically-operated means being operated when the transmitter is connected with the aerial and ground connections.

8. In a wireless-telegraph system, the combination of a single aerial and ground connection, a transmitter and receiver, means for connecting the transmitter or receiver with the connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said first-mentioned means for disconnecting the coherer from the receiver.

9. In a wireless-telegraph system, the combination of aerial and ground connections, a transmitter and a receiver, manually-operated means for connecting the aerial connection with the transmitter or receiver, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said above-mentioned means for cutting the coherer from the receiver when the transmitter is connected with the aerial and ground connections.

10. In a wireless-telegraph system, the combination of an aerial and ground connection, a transmitter, a receiver, an imperfect electrical contact in the receiver, means for connecting the transmitter or receiver with the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said last-mentioned means for cutting the imperfect electrical contact from the receiver when the transmitter is connected with the aerial and ground connections.

11. In a wireless-telegraph system, the combination of an aerial and a ground connection, a transmitter, a receiver, a wave-responsive device in said receiver, means for disconnecting said wave-responsive device from the receiver, a switch for connecting the transmitter or receiver to the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said wave-responsive-device-disconnecting means when said switch connects the transmitter with the aerial and ground connections.

12. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver, a switch for connecting the transmitter or receiver with the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, and means operated by said switch to prevent the receiver from being damaged, when the transmitter is connected with aerial and ground connections.

13. In a terminal station, the combination of an aerial and ground connection, a transmitter, a receiver, consisting of an imperfect electrical contact, a pair of arms connected in circuit with said contact, a circuit through said arms and contact, an electromagnet, means for operating the arms to cut the contact from its circuit, means for returning the arms, and a switch for connecting the transmitter or receiver with the aerial and ground connections, comprising a pivoted lever of insulation material having contacts on each end for making the connections, said electromagnetically-operated means being operated when the transmitter is connected with the aerial and ground connections.

708,073. FIRE-LIGHTER MACHINE. EDWIN POLLARD, Bilston, England, and JOHN B. THOMAS, Cincinnati, Ohio, assignors to Pollard & Metcalfe, Limited, Bilston, England. Filed July 27, 1901. Serial No. 69,925. (No model.)

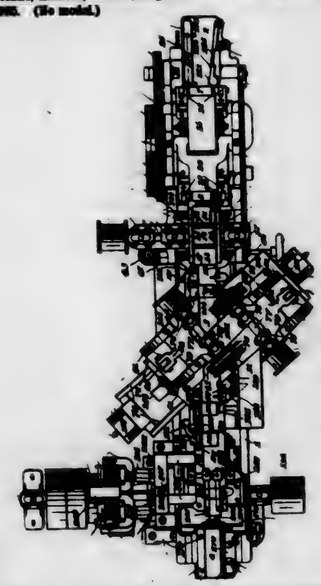

Claim.—1. In combination, cutters for making longitudinal grooves on one side of the material, cutters for making grooves transversely on the other side of the material, said cutters being arranged to cut into the same intermediate plane and through the material at the intersection of the grooves and intermittent feeding mechanism, substantially as described.

2. In combination, cutters for making longitudinal grooves on one side of the material, cutters for making grooves transversely on the other side of the material, means for moving said transverse grooving-cutters

to and from the path of the material so that said lengthwise and transverse cutters cut into the same intermediate plane and through the material at the intersection of the grooves and intermittent feeding means, substantially as described.

3. In a fire-lighter machine, the combination of a transversely-reciprocating carriage, a grooving device mounted thereon and reciprocating therewith, a table for the stock between the grooving device and the carriage, and a holddown-plate taking above the stock secured to and reciprocating with the carriage, substantially as described.

4. In a fire-lighter machine, the combination of a transversely-reciprocating carriage, a grooving device mounted thereon and reciprocating therewith, a table for the stock between the grooving device and the carriage, and a holddown-plate taking above the stock secured to and reciprocating with the carriage, with springs for yieldingly holding the plate against the stock, substantially as described.

5. In a fire-lighter machine, the combination of a frame, a carriage reciprocating diagonally with relation thereto, grooving-cutters mounted thereon and moving diagonally therewith, a table stationarily positioned between the cutters and the carriage, and a diagonally-reciprocating pressure-plate for the stock reciprocating with the carriage.

6. In a fire-lighter machine, the combination of a frame, a carriage reciprocating transversely thereof, a pair of grooving devices mounted thereon, a holddown-plate between the grooving devices, with an intermittent feed, constructed and arranged for having the pressure-plate take over a cut end an uncut portion of a strip of stock at each forward movement of the feed.

7. In a fire-lighter machine, the combination of a frame, a transversely-reciprocating carriage, a pair of grooving devices mounted thereon and reciprocating therewith, a stationary table for the stock between the grooving devices and the carriage, with a holddown-plate for the stock above the table and between the pair of transversely-reciprocating grooving devices.

8. In a fire-lighter machine, the combination of a frame, a transversely-reciprocating carriage, grooving-cutters mounted thereon, a feeding device, a cutting-off saw, an arbor therefor, a reciprocating frame in which the arbor is mounted, a reciprocating feeding-out table, a rock-shaft, with connections for the saw-arbor and the feeding-out table to the reciprocating frame of the saw-arbor through the rock-shaft for longitudinally reciprocating the saw-arbor and feeding-out table.

9. In a fire-lighter machine the combination of a frame, a transversely-reciprocating carriage, grooving-cutters mounted thereon, a feeding device, a cutting-off saw, an arbor therefor, a reciprocating frame in which the arbor is longitudinally slidable, a feeding-out table, a rock-shaft, rocking arms and links connecting the saw-arbor and feeding-out table with the rock-shaft, and a connection between the reciprocating frame of the saw-arbor and the rock-shaft for rocking the latter.

10. In a fire-lighter machine, the combination of a frame, a transversely-reciprocating carriage, grooving-cutters mounted thereon, a feeding device, a cutting-off saw, an arbor therefor, a reciprocating frame in which the arbor is longitudinally slidable, a feeding-out table, a rock-shaft, rocking arms and links connecting with the saw-arbor and feeding-out table, a plurality of connections between the rocking arms and links for varying the longitudinal movement of the saw-arbor and feeding-out table, and a connection between the reciprocating frame of the saw-arbor and the rock-shaft for rocking the latter.

11. In a fire-lighter machine, the combination of a frame, a transversely-reciprocating carriage mounted thereon, with grooving means for the carriage, feeding mechanism, an intermittently-operating shaft for the feeding mechanism, a cutting-off saw, a shaft extending longitudinally of the machine, with gearing between the latter shaft and the intermittently-operating shaft of the feeding mechanism, a reciprocating frame for the cutting-off saw, with a crank and pitman between the latter and the longitudinal shaft for reciprocating the cutting-off saw.

12. In a fire-lighter machine, the combination of a feeding-out table, a saw-arbor, a reciprocating frame therefor, a crank for moving the frame, a rock-shaft, and connections between the saw-arbor and feeding-out table and the rock-shaft for longitudinally reciprocating the saw-arbor and feeding-out table simultaneously with the reciprocating movement of the saw-arbor frame imparted by the crank.

13. In a fire-lighter machine, the combination of a frame, a carriage reciprocating transversely thereof, grooving-cutters mounted thereon and moving therewith, a cutting-off saw, a reciprocating slidable arbor for the same, a frame for the latter, a slidable feeding-out table, a rock-shaft, with a plurality of connections respectively between the arbor and feeding-out table and the rock-shaft, with a reciprocating connection from the saw-arbor frame to the latter for simultaneously longitudinally sliding the saw-arbor and feeding-out table with the reciprocating movement of the arbor

14. In a fire-lighter machine, the combination of a frame, a transversely-reciprocating carriage, a grooving device mounted thereon and moving therewith, a cutting-off saw, a reciprocating frame for the same, an arbor for the saw slidable longitudinally in the frame, a feeding-out table, a rock-shaft, arms and links connecting the saw-arbor and feeding-out table with the rock-shaft, a plurality of connections between the arms and the links, a connection between the reciprocating frame of the saw-arbor and the rock-shaft for rocking the latter, with a crank for reciprocating the arbor-frame, a driving-shaft for the crank, with change-gears between the driving-shaft and crank-shaft, constructed and arranged for regulating the speed of reciprocations of the saw-arbor frame and longitudinal movement of the saw-arbor and feeding-out table.

708,074. MACHINE FOR GROOVING LUMBER. EDWIN POLLARD, Hinton, England. Filed Feb. 25, 1902. Serial No. 96,577. (No model.)

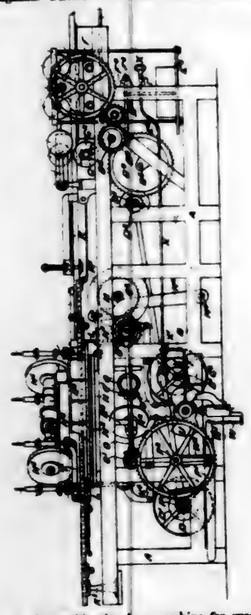

Claim.—1. In combination in a machine for grooving lumber, cutters for making longitudinal grooves on one side of the material, cutters for making grooves transversely on the other side of the material, said cutters being arranged to cut into the same intermediate plane and through the material at the intersection of the grooves, and feeding means substantially as described.

2. In a machine for grooving lumber, cutters for making longitudinal grooves on one side of the material, cutters for making grooves transversely on the other side of the material, said cutters being arranged to cut into the same intermediate plane and through the material at the intersection of the grooves, means for feeding and continuously propelling the lumber, and means for firmly holding or securing the traveling lumber during the longitudinal and transverse cuttings.

708,075. MOLD FOR MAKING PAPER-BOARD BURIAL CASKETS. ELMER A. POST, Allegan, Mich. Filed Oct. 24, 1900. Serial No. 34,177. (No model.)

Claim.—1. A mold for making paper-board burial-caskets and the like, consisting of a base-board, sides hinged thereto and adapted to be connected together at their ends, the posts rising from the base within the mold and threaded at their upper ends, a core or plunger fitting down over said posts and within the mold, and clamp-nuts on the upper ends of the posts, substantially as set forth.

2. A mold for forming laminated paper-board vessels, such as burial-caskets, a base provided with a pair of vertical posts, one rising from either end, a plunger or core fitting down over these posts and having its exterior shaped to conform to the interior of the casket, means for clamping the core or plunger down upon the base, hinged sides connected to the base and conforming to the exterior of the casket.

3. A mold for forming paper-board vessels, such as burial-caskets, comprised of a base, a pair of hinged sides, each of which is provided with a hinged section at each end, means for clamping the end sections together, and a removable core.

708,076. DEVICE FOR STOPPING OR CLOSING GAS-MAINS. ARTHUR POSTLEY, New York, N. Y. Filed Apr. 2, 1902. Serial No. 101,044. (No model.)

Claim.—1. A stopper or closure device for gas-mains comprising a contractible and expansible frame composed of main bars or links pivotally connected centrally thereof, supplemental bars or links pivotally connected with the ends of the main bars or links, and with each other, an elastic tube passing around and connected with the frame thus formed, a flexible covering secured to said frame, and handle-levers pivotally connected with the main bars or links of said frame and with each other, substantially as shown and described.

2. A stopper or closure device for gas-mains comprising a contractible and expansible frame composed of main bars or links pivotally connected centrally thereof, supplemental bars or links pivotally connected with the ends of the main bars or links and with each other, an elastic tube passing around and connected with the frame thus formed, a flexible covering secured to said frame, and hand-levers pivotally connected with the main bars or links of said frame and with each other, one of said handle-levers being provided with a pivoted pawl and the other with ratchet-teeth, substantially as shown and described.

3. In a device of the class described an expansible and contractible frame composed of pivotally-connected main bars or links, supplemental bars or links pivotally connected with the ends of the main bars or links and with each other, an elastic tube inclosing said frame and secured thereto, a flexible covering inclosing one side of said frame and handle-levers connected with each other and with the main bars or links, substantially as shown and described.

708,077. LAST. DAVID L. PURINTON, Boston, Mass. Filed June 28, 1901. Serial No. 66,343. (No model.)

Claim.—The combination with the hinged last sections, of the bar, and the pivotal member for said bar comprising the U-shaped spring-strip one end of which is formed with the split eye pivotally holding an end of said bar, and the other end constructed to be fastened to the toe-section, substantially as described.

708,078. REVOLVER. JAMES D. ROSENBERG, Norwich, Conn., assignor, by mesne assignments, to The Thames Arms Company, Norwich, Conn., a Corporation. Filed Nov. 4, 1901. Serial No. 80,974. (No model.)

Claim.—1. In combination, a cylinder having a central axial opening with annular enlargement, as set forth, a barrel, and an axial stem fixed in said barrel; the free end portion of said stem being slotted and provided with an annulus adapted to engage the said annular enlargement in the cylinder.

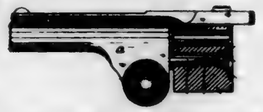

2. The combination with a cylinder having an axial opening with annular enlargement between its ends, of a barrel having a fixed axial stem of less length than said opening and provided with slotted outer end with an annulus at the end of the slots to spring into said enlargement of the bore of the cylinder to prevent displacement of the latter without retarding its rotation, substantially as described.

708,079. PROCESS OF MAKING SODIUM CYANID. FRITZ ROESSLER, Frankfort-on-the-Main, Germany, assignor to the Roessler & Hasslacher Chemical Company, New York, N. Y., a Firm. Filed Feb. 4, 1899. Serial No. 704,584. (No specimens.)

Claim.—1. The method substantially as hereinbefore described of obtaining sodium cyanid, which consists in treating a mixture of sodium cyanid and sodium carbonate with insufficient water to dissolve the cyanid completely, forming a lye, separating the lye from the mixture, again treating the remaining mixture with such a quantity of water as is necessary to dissolve all the cyanid left in the mass after the first treatment forming a second lye, and lixiviating a fresh quantity of the mixture of sodium cyanid and sodium carbonate with the second lye, whereby the sodium carbonate in the solution is displaced by sodium cyanid, as and for the purposes set forth.

2. The method substantially as hereinbefore described of obtaining sodium cyanid, which consists in treating a mixture of sodium cyanid and sodium carbonate with insufficient water to dissolve the cyanid completely, forming a lye, separating the lye from the mixture, again treating the remaining mixture with such a quantity of water as is necessary to dissolve all the cyanid left in the mass after the first treatment, forming a second lye, lixiviating a fresh quantity of the mixture of sodium cyanid and sodium carbonate with the second lye, whereby the sodium carbonate in the solution is displaced by sodium cyanid, and depositing crystals of sodium cyanid by cooling, as and for the purposes set forth.

3. The method substantially as hereinbefore described of obtaining sodium cyanid, which consists in treating a mixture of sodium cyanid and sodium carbonate with insufficient water to dissolve the cyanid completely, forming a lye, separating the lye from the mixture, again treating the remaining mixture with such a quantity of water as is necessary to dissolve all the cyanid left in the mass after the first treatment, forming a second lye, lixiviating a fresh quantity of the mixture of sodium cyanid and sodium carbonate with the second lye, whereby the sodium carbonate in the solution is displaced by sodium cyanid, depositing crystals of sodium cyanid by cooling, and freeing the crystals from their water of crystallization, as and for the purpose set forth.

4. The method substantially as hereinbefore described of obtaining sodium cyanid, which consists in treating a mixture of sodium cyanid and sodium carbonate with insufficient water to dissolve the cyanid completely, forming a lye, separating the lye from the mixture, again treating the remaining mixture with such a quantity of water as is necessary to dissolve all the cyanid left in the mass after the first treatment, forming a second lye, lixiviating a fresh quantity of the mixture of sodium cyanid and sodium carbonate with the second lye, whereby the sodium carbonate in the solution is displaced by sodium cyanid, depositing crystals of sodium cyanid by cooling, and freeing the crystals of sodium cyanid in their water of crystallization at about 33° centigrade, whereby the cyanid is separated in a state free from water, as and for the purpose set forth.

708,080. REVOLVING ELECTRIC IGNITER. ARSON G. ROSAN, Toronto, Canada. Filed June 5, 1901. Serial No. 63,302. (No model.)

Claim.—1. In a revolving electric igniter, the combination with an electrode centrally mounted within an adjustable electrode from which it is insulated, and designed to turn therein, of said adjustable electrode, the same adjustable about its axis with reference to the other electrode.

2. In a revolving electric igniter, the combination with an electrode mounted centrally within an adjustable electrode from which it is insulated, and designed to turn therein, the said revolving electrode having a limited longitudinal movement, and means for limiting longitudinal movement of same, of said adjustable electrode, the same adjustable about its axis with reference to the other electrode, and means for adjusting said

adjustable electrode, the first-mentioned electrode being revolved and making a wipe contact with said adjustable electrode.

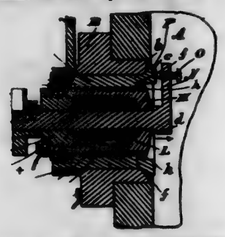

3. In a revolving electric igniter, the combination with an electrode centrally mounted within an adjustable electrode from which it is insulated, and designed to turn therein, the said revolving electrode having a limited longitudinal movement, an adjustable contact-point carried by the inner end of said revolving electrode, and stops on said revolving electrode for limiting longitudinal movement of same, of said adjustable electrode, the same adjustable about its axis with reference to the other electrode, and means for adjusting said adjustable electrode, the first-mentioned electrode being revolved and making a wipe contact with said adjustable electrode.

4. In a revolving electric igniter, the combination with an electrode centrally mounted within an adjustable electrode from which it is insulated, and designed to turn therein, the said revolving electrode having a limited longitudinal movement, an adjustable contact-point carried by the inner end of said revolving electrode, and stops on said revolving electrode for limiting longitudinal movement of same, of said adjustable electrode, a contact-point on the inner end of same and projecting outwardly from same, the said adjustable electrode adjustable about its axis with reference to the other electrode, and means for adjusting said adjustable electrode, the first-mentioned electrode being revolved so that its contact-point will make a wipe contact with said contact-point of said adjustable electrode.

5. In a revolving electric igniter, the combination with an electrode centrally mounted within an adjustable electrode from which it is insulated, and designed to turn therein, the said revolving electrode having a limited longitudinal movement, an adjustable contact-point carried by the inner end of said revolving electrode, and stops on said revolving electrode for limiting longitudinal movement of same, of said adjustable electrode, a contact-point on the inner end of same and projecting outwardly from same, the said adjustable electrode adjustable about its axis with reference to the other electrode, and a lever on the outer end of said adjustable electrode for adjusting same, the first-mentioned electrode being revolved so that its contact-point will make a wipe contact with said contact-point of said adjustable electrode.

6. In a revolving electric igniter, the combination with an electrode mounted centrally to revolve within an adjustable electrode from which it is insulated, and a contact-point carried by the inner end of said revolving electrode, of said adjustable electrode, the same essentially quickly adjustable with reference to the revolving electrode, and means for adjusting said adjustable electrode.

7. In a revolving electric igniter, the combination with an electrode mounted centrally to revolve within an adjustable electrode from which it is insulated, and an adjustable contact-point carried by the inner end of said revolving electrode, of said adjustable electrode, and a contact-point on the inner end of same and projecting outwardly therefrom, the said adjustable electrode essentially quickly adjustable with reference to the revolving electrode, and means for adjusting said adjustable electrode.

8. In a revolving electric igniter, the combination with an electrode mounted centrally to revolve within an adjustable electrode from which it is insulated, and an adjustable contact-point carried by the inner end of said revolving electrode, of said adjustable electrode, and a contact-point on the inner end of same and projecting outwardly therefrom, the said adjustable electrode essentially quickly adjustable with reference to the revolving electrode, and an arm on the outer end of said adjustable electrode for adjusting same.

708,081. CHUTE. FRANK L. SACKETT, Fredonia, N. Y. Filed Mar. 17, 1902. Serial No. 98,477. (No model.)

Claim.—1. A flexible chute comprising a main body portion and a series of adjustable portions, and means for connecting said portions comprising spaced pivots arranged substantially one above the other in a vertical plane whereby said chute is vertically rigid and laterally flexible, and means for positively locking said sections in various laterally-adjusted positions for the purpose described.

2. A flexible chute comprising, rigid open-top end portions, a series of intermediate portions connected to each other and to said end portions, and means for connecting said portions comprising spaced pivots arranged substantially one above the other in a vertical plane whereby said chute is vertically rigid and laterally flexible, for the purpose described.

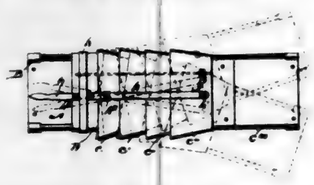

3. A flexible chute comprising open-top end portions and an intermediate cover portion flexibly connected to said end portions, for the purpose described.

4. A flexible chute comprising open-top end portions, and intermediate tubular tapered portions pivotally connected to each other and secured to said end portions, for the purpose described.

5. A flexible chute comprising an open-top portion A, a support D extending laterally of said portion A and secured thereto, a tubular portion pivotally secured to said portion A by pivots *d d*, the longitudinal axis of said pivots lying in substantially a vertical plane whereby said chute is vertically rigid and laterally flexible, for the purpose described.

6. A flexible chute comprising, a main portion A, and a series of tubular sections pivotally secured to each other and to said portion A by pairs of pivots, the longitudinal axes of each pair of pivots lying in a vertical plane whereby said chute is vertically rigid and laterally flexible, and means for positively locking said sections in various laterally-adjusted positions for the purpose described.

7. A flexible chute comprising a main portion A having a flat bottom A′ and side portion A^2, a bar or support D rigidly secured to said portion A, a taper tubular portion pivotally secured to said portion A by rivets or bolts *d, d*, the longitudinal axes of said rivets or bolts lying in a line perpendicular to the plane of the bottom portion A′ for the purpose described.

8. A flexible chute comprising sections angularly adjustable relative to each other and resilient means normally maintaining the longitudinal axes of said sections in alinement.

9. A flexible chute comprising a series of sections pivotally secured to each other and resilient means normally maintaining the longitudinal axes of said sections in alinement.

10. A flexible chute comprising a series of sections pivotally secured to each other, a perforated bag carried by each section, and a resilient rod extending through said perforated bags, substantially as described.

11. A flexible chute comprising a main body portion, a series of sections pivotally secured to each other and to said body portion, a perforated bag carried by each section at a distance from said pivot, and a resilient rod extending through said perforated bags, and secured at its end to said body portion substantially as described.

12. A flexible chute comprising sections angularly adjustable relative to each other and means for locking said chutes in various adjusted positions including a device secured to one end section and a retaining means for adjustably securing said device to the other end section substantially as described.

13. A flexible chute comprising sections pivotally secured to each other whereby said sections may be angularly adjusted, means for maintaining said sections in alinement and means for locking said sections in various adjusted positions substantially as described.

14. A flexible chute comprising end sections and intermediate sections pivotally secured to each other and means for locking said chute in various adjusted positions including a rod pivotally secured to one of said end sections, a swiveled fulcrum-block secured to the other end section and loosely receiving said rod and means carried by said latter end section for locking said rod against lateral movement, substantially as described.

708,082. CHUTE. FRANK L. SACKETT, Fredonia, N. Y. Filed Mar. 17, 1902. Serial No. 98,478. (No model.)

Claim.—1. A chute comprising an open-top body portion and a supporting-bail pivotally attached adjacent to one end of said body portion, said pivots being so disposed relatively to the body portion and the bail that said bail may be turned above the chute-body or below the same substantially as described.

2. A chute comprising a body portion having a flat bottom portion and sides substantially at right angles thereto, a bail having a portion parallel to said bottom portion and end portions, and pivots for securing said end portions of the bail to said sides of the body portion for the purpose described.

3. A chute comprising a body portion having a flat bottom portion and sides substantially at right angles thereto, a strengthening-band at one end thereof, and a bail having a portion parallel to said bottom portion and end portions, pivots for securing the end portions to said sides, said pivots being so disposed that said bail may be turned above the chute-body or below the same, substantially as described.

4. A chute comprising a body portion, a strengthening-band around the end thereof, a hook having a portion thereof secured between said band and body portion, and a portion at right angles to the body portion, and a bail pivotally secured to the strengthening-band and chute-body, substantially as set forth.

5. A chute comprising a body portion, a strengthening-band around the end thereof, a hook having a portion thereof secured between said band and body portion and a portion at right angles thereto, a bail having a portion substantially parallel to the bottom of the chute and bent at its end and pivotally secured to said strengthening-band, substantially as set forth.

6. A chute comprising a body portion, a strengthening-band around the end thereof, a series of strips extending longitudinally of the body portion of the chute and secured beneath said band, a supplemental band extending transversely of said chute and securing the other end of said strips, substantially as set forth.

7. A chute comprising a body portion, a strengthening-band around the end thereof, a series of strips extending longitudinally of the body portion of the chute and secured beneath said band, a supplemental band extending transversely of said chute and securing the other end of said strips, a bail having a portion substantially parallel to the bottom of the chute and pivotally secured at its ends to the sides of said chute, substantially as set forth.

708,083. BOTTLE-CAPPING MACHINE. JAMES D. SCHELL, Evanston, Ill. Filed Dec. 23, 1901. Serial No. 86,851. (No model.)

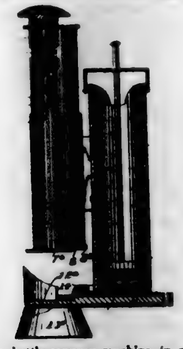

Claim.—1. In a bottle-capping machine, in combination, a vertically-reciprocating spring-supported plunger, a magazine-tube adjacent thereto, a reciprocating plunger-actuated disk-carrier under the mouth of the tube, adapted to carry a disk to a position beneath the plunger, and a detent to prevent backward movement of the disk when the carrier recedes.

2. In a bottle-capping machine, the combination with disk-feeding means, of a support, a reciprocating spring-supported plunger therein comprising telescoping tubes combined relative to each other, one of said tubes having a plunger-head and the other a handle, and connections between the plunger and the feeding means to cause cooperative action.

708,084. TOY-CARTRIDGE EXPLODER. ROBERT I. SHOUP, Cleveland, Ohio, assignor to the Cleveland Toy and Manufacturing Company, Cleveland, Ohio, a Corporation of Ohio. Filed Oct. 1, 1901. Serial No. 77,220. (No model.)

Claim.—1. In a cartridge-exploder, in combination, an upper member having on diametrically opposite sides horizontal walls, a lower member having in its outer face a downwardly-opening diametric groove extending across the bottom and up the sides of said member, a U-shaped bail occupying said grooves and having its ends extending through openings in said walls in the upper member and having upset heads, and a spring tending to bring said members together, substantially as described.

2. In a cartridge-exploder, in combination, an upper member having in its upper end a recess for the reception of a stick and in its lower end a recess opening downward and opening sidewise, a lower member having a projection adapted to enter the bottom recess of the upper member, and having in its outer face a downwardly-opening diametric groove extending across the bottom and up the sides of said member, a U-shaped bail riveted at its ends to said upper member and occupying said grooves in the bottom and sides of said lower member, and a spring tending to bring said members together, substantially as described.

3. In a cartridge-exploder, an upper member A formed in conical shape and having a recess in its upper end for the reception of a stick and a flaring recess a' in its lower end, which latter recess also has a lateral opening a^2, there being a pair of recesses a^1 a^2 on opposite sides of the member, combined with a cooperating member B having on its upper surface a conical projection adapted to enter the recess a', said member B having a diametrical groove *b*, a bail D depending from the member A by having its ends projecting through the member into the recesses a^2 and there riveted, said bail occupying the groove *b*, and a spring occupying a central downwardly-opening recess in the member B and bearing against the inner surface of the bail, substantially as described.

708,085. CIGAR-SHAPER. CHRISTIAN G. SINGLEY, Manheim, Pa. Filed July 16, 1902. Serial No. 115,751. (No model.)

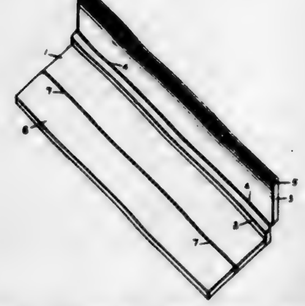

Claim.—1. The combination, in a cigar-shaper, of a bottom plate, a back on the bottom plate, a lid hinged to the back, and a shaping-plate hinged to the front of the bottom plate, for the purpose specified.

2. The combination, in a cigar-shaper, of a bottom plate, a back on the bottom plate, a lid hinged to the back, means for securing the lid in a closed position, and a shaping-plate hinged to the front of the bottom plate, for the purpose specified.

3. The combination, in a cigar-shaper, of a bottom plate, a back on the bottom plate, a lid hinged to the back and having the swinging edge thereof beveled, and a shaping-plate hinged to the front of the bottom plate, for the purpose specified.

4. The combination, in a cigar-shaper, of a bottom plate, a back on the bottom plate, a lid hinged to the back, means for securing the lid in a closed position, a shaping-plate hinged to the front of the bottom plate, and means for securing the shaping-plate in a raised position, for the purpose specified.

5. The combination, in a cigar-shaper, of a bottom plate, a back on the bottom plate, a lid hinged to the back and having the swinging edge thereof beveled, the hook 10 and the staple 11, a shaping-plate hinged to the front of the bottom plate, and the hooks 12 and the staples 13, for the purpose specified.

708,086. PRINTER'S FURNITURE. WILLIAM G. HANSEN, Ossa, N. Y. Filed Nov. 1, 1902. Serial No. 726,908. (No model.)

Claim.—1. A hollow rectangular metallic bar of printers furniture, having a side opening, and an inclosed quoin, and means for projecting said quoin from the opening, or for retiring the quoin entirely within the opening.

2. A hollow rectangular metallic bar of printers' furniture, having a side mortise, a quoin in said mortise which may be retired entirely within the bar, a wedge within the bar engaging the quoin, and means for moving the wedge.

3. A hollow rectangular metallic bar of printers' furniture having a mortise in one side, a quoin in said mortise in position to be withdrawn wholly within the bar, and a wedge within the bar having interlocking engagement with the quoin, so that longitudinal movement of the wedge advances or retracts the quoin.

4. A rectangular metallic bar of printers' furniture having a side mortise and a face opening in one face only, a quoin in the mortise which may be retired entirely within the bar, means within the bar for projecting the quoin, and a wrench which may enter the face-opening to engage the quoin-projecting means, but may not reach through the body of the bar, all combined.

5. A hollow rectangular bar of printers' furniture having a plurality of side mortises, quoins in said mortises, and independent means for retiring said quoins within the bar, or for projecting them, all combined.

708,087. BRACED FENCE-POST. WILLIAM H. SMITH, New Cumberland, W. Va., assignor of one-half to George A. McCandless, Oakdale, Pa. Filed Dec. 23, 1901. Serial No. 86,966. (No model.)

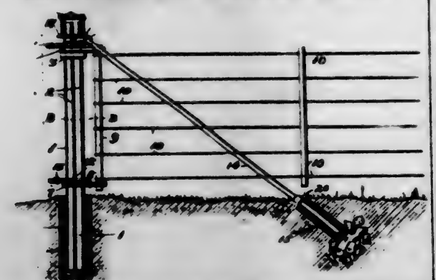

Claim.—1. In combination with a wire fence, a braced post comprising a tubular metal post-body having an adjustable cap fitted to its upper end and a tubular non-rotting or non-rusting base secured to the buried end, a two-legged V-shaped brace circumferentially engaging said post beneath the cap and extending therefrom at an inclination in the direction of and to straddle the fence with tubular non-rotting or non-rusting base-pieces secured to the buried ends thereof, links carried by said post extending laterally therefrom in a line with the fence, and a rod loosely fitted into said links to engage the fence-wires, as shown and set forth.

2. In combination with a wire fence, a braced fence-post comprising a tubular metal post having an adjustable cap fitted to its upper end and a tubular non-rotting or non-rusting base-piece secured to the buried end, a two-legged V-shaped brace circumferentially engaging said post beneath the cap and extending therefrom at an inclination in the direction of and to straddle the fence with tubular non-rotting or non-rusting base-pieces secured to the buried ends thereof, links carried by said post extending laterally therefrom in a line with the fence, a rod loosely fitted into said links to engage the fence-wires, and laterally-extended gate-suspending members carried by said post, as shown and set forth.

3. In combination with a wire fence, a braced post comprising a tubular metal post-body having an adjustable cap fitted to its upper end and a tubular non-rotting or non-rusting base-piece secured to the buried end, a plurality of two-legged V-shaped braces circumferentially engaging said post beneath the cap and extending therefrom at an inclination in the direction of and to straddle the fence leading thereto and having non-rotting or non-rusting base-pieces secured upon their buried ends, links carried by said post extending laterally therefrom in line with the fence, and rods loosely fitted into said links to engage the fence-wires, as shown and set forth.

708,088. SYSTEM OF FEED-WATER PURIFICATION. ADOLPH SUTRO, Jr., Chicago, Ill. Filed Mar. 2, 1896. Renewed Mar. 12, 1902. Serial No. 97,811. (No model.)

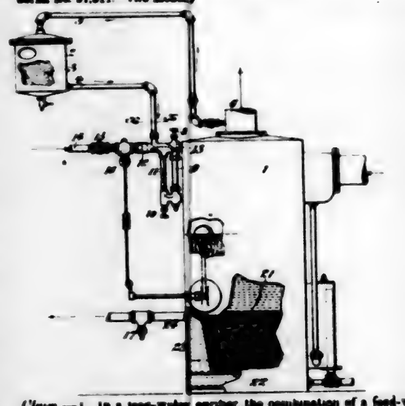

Claim.—1. In a feed-water purifier, the combination of a feed-water heater, a closed tank containing a purifying ingredient, a pipe leading from the steam-space of said heater into the upper portion of said tank whereby the water of condensation passes through said tank and purifying ingredient in its path to said heater, a feeding device, a pipe leading from said tank to said feeding device and a feed-water inlet-pipe communicating with said feeding device, the latter being connected with said heater.

2. In a feed-water purifier, the combination of a feed-water heater, a tank containing a purifying ingredient, a pipe leading from the steam-space of said heater into the upper portion of said tank, a feeding device, a pipe leading from said tank to said feeding device, a feed-water inlet-pipe communicating with said feeding device, a connection from the latter to said heater, a filtering device for the water in said heater and a pipe for conducting the filtered and purified water from said heater, said last-mentioned pipe having therein means for drawing off and testing the water prior to its entrance into the boiler.

3. In a feed-water purifier, a feed-water heater having an outlet leading to a boiler, a tank containing a purifying ingredient, said tank communicating with the heater by a plurality of pipes, one of said pipes communicating with the steam-space of said heater, whereby steam passes therefrom into said tank to be condensed therein, said parts being so constructed that the water of condensation passes through the tank and purifying ingredient therein and returns to said heater, and a filter through which the water passes between said heater and said boiler.

4. In a feed-water purifier, a feed-water heater, a tank containing a purifying ingredient, a pipe communicating with the upper portion of said tank and with the steam-space of said heater, another pipe communicating with said tank and with said heater, a filtering device within said heater, consisting of a plurality of filtering-beds, a passage or chamber in which the filtered water is received, and an outlet-pipe leading therefrom.

5. The combination of a feed-water heater, a closed tank containing a purifying ingredient, a pipe leading from the steam-space of said heater into the upper portion of said tank, whereby the water of condensation passes through said tank and purifying ingredient in its path to said heater, a feeding device, a pipe leading from said tank to said feeding device, a feed-water inlet-pipe communicating with said feeding device, the latter being connected with said heater, a filtering device in the lower portion of said heater, and an outlet-pipe for the filtered water.

6. The combination of a feed-water heater, a closed tank containing a purifying ingredient, a pipe leading from the steam-space of said heater into the upper portion of said tank, whereby the water of condensation passes through said tank and purifying ingredient in its path to said heater, a feeding device, a pipe leading from said tank to said feeding device, a feed-water inlet-pipe communicating with said feeding device, the latter being connected with said heater, a filtering device in the lower portion of said heater, and an outlet-pipe for the filtered water, in combination with means for testing the purified and filtered water prior to its entrance to the boiler.

708,089. BICYCLE-BRAKE. GIOACCHINO STABILE, San Francisco, Cal., assignor of two-thirds to Joseph C. Sala and Armand Maurice Vivier, San Francisco, Cal. Filed Apr. 14, 1902. Serial No. 102,779. (No model.)

Claim.—1. A steering-head for a bicycle comprising a middle section constituting a rigid member of the steering-post, outer sections connected to the middle section at opposite ends by hinge-joints, said outer sections having limited angular movement of their hinge-joints toward each other in one direction under an inward pressure, but to be rigid and in line with the middle section under pressure applied in the opposite direction, and means connected with said hinged sections operating under the angular movement thereof in one direction to grip the rim of the wheel from opposite sides, and to release the wheel by their movement in the contrary direction.

2. In a bicycle-brake, a steering-head comprising a rotatable post having a cross-head fixed on the upper end, handle-bearing outer members attached to the outer ends of the cross-head by hinge-joints, said handle-bearing members having limited angular movement only in one direction and rigid under pressure applied to the handles in all other directions; in combination with brake-arms having angular movements with respect to the rim of the steering-wheel and adapted to grip the wheel from opposite sides of the rim, and means rigidly connecting said brake-arms with the handle-bearing members, whereby the angular movements of the handle-bars produce corresponding angular movements of the brake-arms to close the latter upon the wheel, and a spring at the joint of each handle-bearing member adapted to bring said member to position when pressure is removed therefrom and throw off the brake-arms.

708,090. SHADE-ROLLER-HANGING APPARATUS. JEREMIAH STOUFFBAKER, Barnesville, Ohio. Filed Mar. 3, 1900. Serial No. 7,071. (No model.)

Claim.—The combination with a window, of pulleys mounted on the window-frame at opposite sides of the top thereof, the cord 5 doubled between its ends to form a depending loop and arranged on and extending downward from each of the said pulleys, a shade-roller, and the shade-roller brackets each constructed of a single piece of wire coiled at its upper end and at its center to provide upper and lower eyes for the reception of the ends of the cord, said bracket being provided at its lower portion with a U-shaped bend or loop for the reception of the journal of the shade and the lower terminal of the wire being arranged directly beneath the lower eye, whereby the loop is closed to confine the journal therein, substantially as described.

708,090.

708,091. ROTARY HAND-FAN. BENNETT D. STRAIGHT, Chicago, Ill. Filed Oct. 7, 1901. Serial No. 77,801. (No model.)

Claim.—1. A rotary hand-fan comprising a handle, a fan supported on a shaft mounted to rotate in the handle, a cord wrapped around the shaft and secured at one end to the handle through an elastic connection, a lever pivoted to the handle and having its free end secured to the other end of the cord, and elastic means applied to normally hold the lever against the handle, substantially as described.

2. A rotary hand-fan comprising a handle, a fan supported on a shaft mounted to rotate in the handle, a cord wrapped about the shaft and secured at one end to the handle through an elastic connection, and a lever pivoted to the handle and secured at its free end to the other end of the cord, said lever being provided with a bow-shaped bend near its pivoted end, substantially as described.

3. A rotary hand-fan comprising a handle, a fan supported on a shaft mounted to rotate in the handle, a cord wrapped about the shaft and secured at one end to the handle through an elastic connection, and a lever pivoted to the handle and secured at its free end to the other end of the cord, said lever being provided with a bow-shaped bend near its pivoted end, and elastic means applied between the handle and lever to normally force the bow portion of the lever away from the handle, substantially as described.

708,092. AIR-BRAKE VALVE. FREDERICK STRATTNER, Salisbury, Md. Filed Oct. 15, 1901. Serial No. 78,742. (No model.)

Claim.—1. In air-brake apparatus, an air-cylinder and its piston for applying the brake, an air-storage cylinder and its piston arranged for simultaneous coaction with the first-referred-to piston, for releasing the brake, and air-pressure valve mechanism operatively connected to the train-pipe and to said cylinders, comprising a primary valve and an automatic supplemental valve carried by, and independently operative of, said primary valve, substantially as set forth.

2. In air-brake apparatus, an air-cylinder and its piston for applying the brake, an air-storage cylinder and its piston having a relatively reduced area or diameter and arranged for simultaneous coaction with the aforesaid piston, for releasing the brake, and air-pressure valve mechanism operatively connected to the train-pipe and to said cylinders, comprising a primary valve and an automatic supplemental valve carried by, and independently operative of, said primary valve, substantially as set forth.

3. In air-brake apparatus, an air-cylinder and its piston for apply-

ing the brake, an air-storage cylinder and its piston arranged for simultaneous operation with the aforesaid piston for releasing the brake, and an air-pressure valve mechanism operatively connected with said cylinders comprising a primary valve and an automatic supplemental valve carried by, and independently operative of, said primary valve, said primary valve having a port or passage therethrough intersected by said supplemental valve, substantially as set forth.

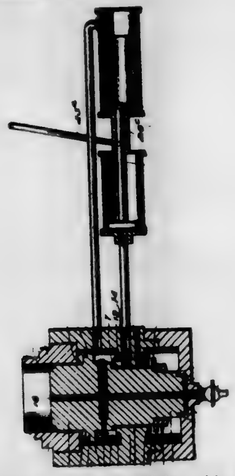

4. In air-brake apparatus, an air-cylinder and its piston for applying the brake, an air-storage cylinder and its piston arranged for simultaneous operation with the first-named piston, for releasing the brake, air-pressure valve mechanism, comprising a primary valve and an automatic supplemental valve carried by, and independently operative of, said primary valve, and adapted to be seated at each end, said primary valve having a port or passage therethrough intersected by said supplemental valve, pipe connection with said cylinders, and means establishing communication between said pipe connection and the ports of said primary and supplemental valves, substantially as set forth.

5. In air-brake apparatus, an air-cylinder and its piston, for applying the brake, an air-storage cylinder and its piston for releasing the brake, an air-pressure valve mechanism, means for effecting operative connection between said cylinders and valve mechanism, comprising a primary valve and an automatic supplemental valve carried by, and independently operative of, said primary valve, said piston having a common rod connection, substantially as set forth.

6. In air-brake apparatus, an air-cylinder and its piston, for applying the brake, an air-storage cylinder and its piston for releasing the brake, an air-pressure valve mechanism means for effecting operative connection between said cylinder and valve mechanism, comprising a primary valve and an automatic supplemental valve carried by, and independently operative of, said primary valve, said pistons being of different diameters and having a common rod connection, substantially as set forth.

7. In air-brake apparatus, an air-cylinder and its piston, for applying the brake, an air-storage cylinder and its piston, an air-pressure valve mechanism, means for effecting operative connection between said cylinders and valve mechanism, said valve mechanism having its valve proper supplied with supplemental or compensating valve acting in conjunction with a central port or passage of said valve proper and a second compensating valve also cooperating with said valve proper, said compensating valve effecting the direct supply of air-pressure to said brake-cylinder, and one effecting a passage between the bottom outlet of said central valve-port and said storage-cylinder, substantially as set forth.

8. In apparatus of the character described, a brake-applying cylinder and its piston, a brake-releasing cylinder and its piston, air-pressure valve mechanism, means effecting operative connection between said cylinders and valve mechanism, said valve mechanism comprising a centrally-ported valve, having a plurality of lateral contacting surfaces within its casing and two supplemental or compensating valves arranged for conjoint operation and in communication with ports in said casing and with said cylinders, substantially as set forth.

9. In air-brake apparatus, a brake-applying cylinder and its piston, an air-pressure-storage cylinder and its piston, a valve mechanism, and means for effecting operative connection between said cylinders and said valve mechanism, said mechanism comprising a casing having an inward circular extension, a collar provided with a circular pendent projection, and a bottom portion having, around a depression or recess therein, a shoulder, said inward extension having projections upon its upper and lower surfaces, a centrally-ported valve, having lateral vertical ports and corresponding salient portions with those of said casing, above noted, adapted to contact with, or engage the same, two supplemental or compensating valves, one adapted to be seated in the first-named valve and the other in said casing, said casing also having ports connecting with said cylinders and lateral ports of the first-referred-to valve, and an air-exhausting port, substantially as set forth.

708,093. ELECTRICALLY-PROTECTED STRUCTURE. HENRY M. SUTTON, WALTER L. STEELE, and MICHAEL CORRYER, Dallas, Tex. Original application filed May 20, 1901, Serial No. 61,923. Divided and this application filed Aug. 19, 1901. Serial No. 72,573. (No model.)

Claim.—1. In an electrical alarm system, a wiring for a protected structure comprising a series of wires each composing an independent circuit, one of said series extending at a right angle to the other and the third series intersecting diagonally the spaces between the first two series of wires; substantially as specified.

2. A wiring for a protected structure comprising a block or body having on one face intersecting kerfs or grooves therein extending at a right angle to each other and of different depths, and an electrical conductor in each of said kerfs or grooves; substantially as specified.

3. A wiring for a protected structure comprising a block or body having intersecting kerfs or grooves therein of different depths, and an electrical conductor in each of said kerfs or grooves; substantially as specified.

4. In an electrical alarm system, a casenet or apartment having the several walls or surfaces thereof provided with intersecting grooves of different depths lined by superposed insulated electrical conductors in continuous circuit; substantially as specified.

5. In an electrical alarm system, a cabinet or apartment having the several walls or surfaces thereof provided with intersecting grooves of different depths lined by superposed electrical conductors in continuous circuits, and insulated material for embedding each layer of said conductors; substantially as specified.

6. An electrical alarm system, a block or body having a series of grooves therein of different depths extending at right angles to each other and diagonally across the spaces between the right-angle grooves, circuit-wires located in said grooves and insulated from each other, and means for establishing circuits through said wires; substantially as specified.

708,094. MACHINE FOR MAKING FIRE-LIGHTER BLOCKS. JOHN B. THOMAS, Cincinnati, Ohio, assignor to Pollard & Metcalfe, Limited, Bledon, England. Filed Jan. 9, 1902. Serial No. 88,062. (No model.)

Claim.—1. In combination, a saw or gang of saws for grooving the stock longitudinally, a second saw or gang of saws for grooving the stock transversely, a cut-off saw for severing the grooved stock into blocks, feeding means for the stock, a mutilated gear, means for driving the same and a pair of gears driven alternately by the mutilated gear, connections from one of said gears to the feeding mechanism and connections from the other of said gears to the cut-off saws, substantially as described.

2. In combination, a saw or gang of saws for grooving the stock longitudinally, a second saw or gang of saws for grooving the stock transversely, a cut-off saw for severing the grooved stock into blocks, feeding means for the stock, a mutilated gear, means for driving the same and a pair of gears driven alternately by the mutilated gear, connections from one of said gears to the feeding mechanism, connections from the other of said gears to the cut-off saws, and means for driving the transverse saws from the connections leading to the cut-off saws, substantially as described.

3. In combination, a saw or saws for grooving the stock longitudinally, a saw or saws for grooving it transversely, a cut-off saw for severing the grooved stock into blocks, feeding mechanism for the stock, a mutilated gear, means for driving the same, a pair of gears, connections therefrom for driving respectively the feeding means and the cut-off saws alternately and means whereby the shafts of said gears may be adjusted to provide change-gearing, substantially as described.

4. In combination with intermittent feeding means, longitudinal saws with means for driving the same, transverse and cutting-off saws, a mutilated gear, a connection therefrom to the intermittent feeding means to operate the same, connections between the mutilated gear and the transverse and cutting-off saws whereby the same are operated against the stock intermittingly, said means including a gear meshing with the mutilated gear, beveled gearing, a shaft to which one member of the beveled gearing is splined and an adjustable bracket for adjusting the splined gear together with its shaft toward and from the mutilated gear, substantially as described.

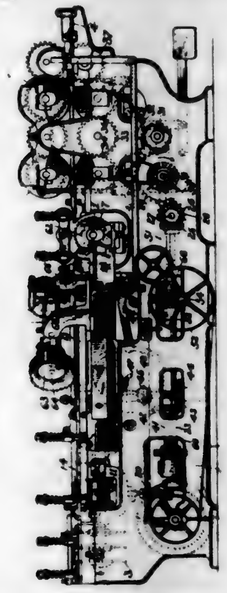

708,095. SAFETY DEVICE FOR STAMPS, DROP-HAMMERS, OR THE LIKE. CHARLES A. THORNTON and CHARLES W. WHITTEMORE, North Attleboro, Mass. Filed Apr. 26, 1902. Serial No. 104,736. (No model.)

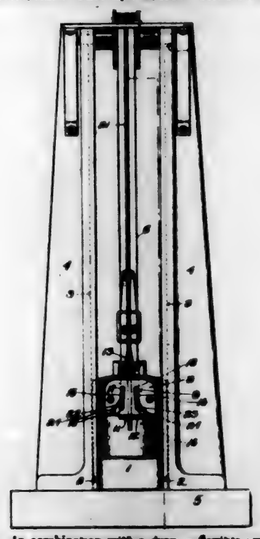

Claim.—1. In combination with a drop, a flexible strap by which said drop is raised, and a safety device to check accidental descent of said drop, said safety device comprising movable jaws attached to the drop, a fixed rod, a safety-line which connects said jaws with the operating end of the lifting-strap and which temporarily receives the strain of the drop when the main strap is broken or otherwise disconnected at a point intermediate of its operating end and its connection with the drop, the strain upon the safety-line actuating the jaws to grip the said fixed rod, substantially as described.

2. In combination with a drop, a flexible line by which said drop is raised, and a safety device comprising a wedge-shaped way on said drop, slidable jaws mounted to move in said way, a fixed rod which passes between said jaws, and a flexible connection between said jaws and the operating end of said lifting-line, which if said lifting-line breaks or is otherwise disconnected at an intermediate point will receive the strain from the drop and move the said jaws to grip the said rod and stop the descent of the drop, substantially as described.

3. In combination with a drop, a lifting-strap one end of which is secured to said drop, and a safety device comprising slidable jaws attached to said drop, a fixed rod which passes between said jaws, springs which normally prevent the jaws from gripping said rod, and a connection between said jaws and said lifting-strap which will receive the strain of the weight of the drop if the said strap is broken or otherwise disconnected at an intermediate point between its operating end and connection with the drop, and thereby set the jaws into engagement with the said fixed rod, substantially as described.

4. In combination with a drop-hammer, a strap attached thereto and a support over which said strap passes whereby said hammers may be raised by the strap, and a safety device comprising a way of inverted-wedge shape on the hammer, movable jaws in said way, a plate covering said jaws, guide-slots in said plate inclined toward each other upwardly, guide-pins which project from said jaws through said guide-slots, a fixed rod passing between said jaws, and a flexible safety-line which connects said jaws with said lifting-strap at the operating end thereof and receives the strain of the hammer if the lifting-strap is broken or otherwise disconnected at any point between the hammer and the point where the safety-line is connected with the said strap and will cause the jaws to grip the said fixed rod and stop the descent of the hammer, substantially as described.

5. In combination with a drop, a flexible strap or line one end of which is secured to said drop, and a pulley mounted above the said drop over which said strap runs whereby said drop may be raised and dropped, and a safety device to stop the descent of said drop if said strap or line breaks, said safety device comprising a slotted way of inverted-wedge shape on said drop, movable wedge-shaped jaws in said slot, a fixed rod which passes down between said jaws, a face-plate covering said jaws and slotted ways having guide-slots inclining upwardly toward each other, guide-pins on said jaws which extend into said guide-slots whereby movement of said jaws upwardly relative to the slots will cause the jaws to grip said rod, and a connection between said jaws and said strap or line, whereby if said strap or line breaks at an intermediate point between the drop and the point where said connection is attached to said strap the jaws will be caused to grip said rod and stop the descent of the drop, substantially as described.

6. In combination with a drop-hammer, a strap by which said hammer is raised and lowered, and a safety device to prevent accidental falling of the hammer, said safety device comprising a pair of gripping-jaws carried by the hammer, a fixed rod adapted to be engaged by said jaws, a flexible connection between said jaws and said strap whereby if the said strap is broken or otherwise disconnected at a point between the connection with the hammer and its operating end the hammer will then pull upon said flexible connection with the jaws and cause them to grip said rod and check the descent of the hammer, substantially as described.

708,096. CONTROLLER FOR ELECTRIC MOTORS. LEONARD A. TERRILL, Lynn, Mass., assignor to General Electric Company, a Corporation of New York. Filed Feb. 14, 1901. Serial No. 47,198. (No model.)

Claim.—1. In a controller, a rotatable contact-carrying member, a handle for operating said member, an electromagnet concentric with the shaft on which said handle is mounted, an armature for said electromagnet operatively connected to the controller-handle so as to be rotated therewith in a path concentric with the periphery of the electromagnet, and means controlled by said armature for locking the handle to the contact-carrying member.

2. In a controller, a rotatable contact-carrying member, a handle for operating said member, an electromagnet concentric with the shaft on which said handle is mounted, an armature for said electromagnet operatively connected to the controller-handle so as to be rotated therewith in a path concentric with the periphery of the electromagnet, means controlled by said armature for locking the handle to the contact-carrying member, and means for returning the said member to its initial position whenever it is unlocked from the handle.

3. In a controller, a rotatable contact-carrying member, a handle for operating said member, an electromagnet concentric with the shaft on

which said handle is mounted, and an armature for said magnet operatively connected with the controller-handle so as to be rotated therewith in a path concentric with the periphery of the electromagnet, the said armature operating in one position to lock the rotatable member to the controller-handle and in another position to unlock the said member from the handle.

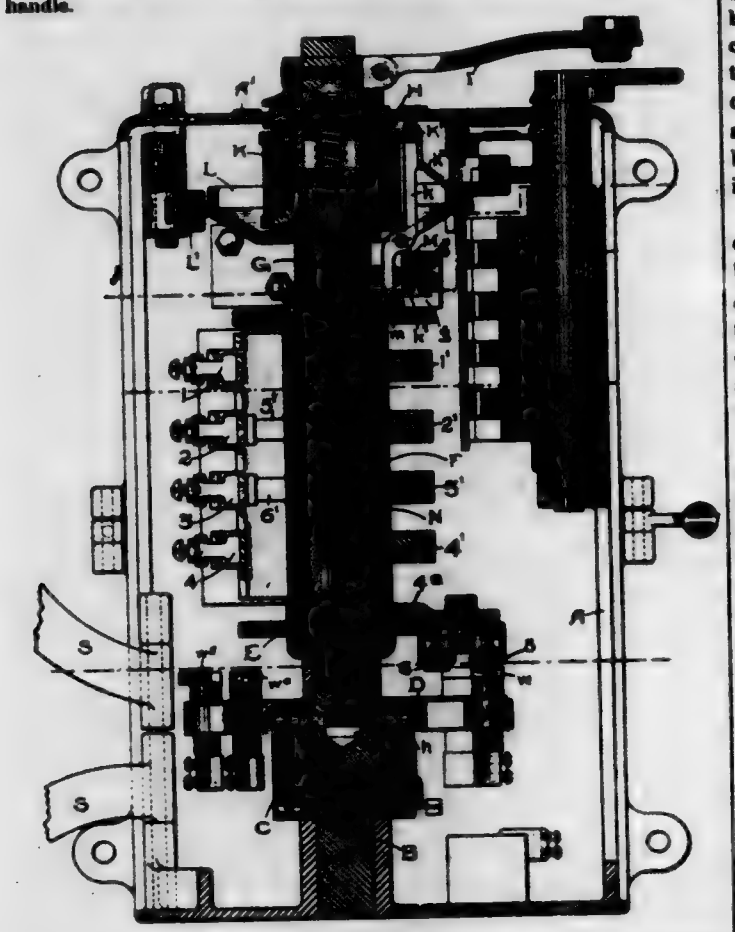

4. In a controller, a rotatable contact-carrying member, a handle for operating said member, an electromagnet concentric with the shaft on which said handle is mounted, an armature for said magnet operatively connected with the controller-handle so as to be rotated therewith in a path concentric with the periphery of the electromagnet, the said armature operating when the magnet is energized to lock the rotatable member to the controller-handle, and a spring for moving the armature to unlock the member from the handle when the magnet is deënergized.

5. A controller for an electric motor, comprising a rotary tubular shaft, a contact-cylinder secured thereto, a handle sleeved on the shaft, means for locking the handle to the shaft, an electromagnetic device for unlocking them, and a coiled spring in said tubular shaft attached to the shaft and the handle.

6. A controller for an electric motor, comprising a rotary shaft, a contact-cylinder secured thereto, an arm moving with said cylinder, a catch-plate on the arm, a handle sleeved on the shaft and carrying a pawl adapted to engage with the catch-plate, and an electromagnetic device for actuating the pawl.

7. A controller for an electric motor, comprising a contact-cylinder and shaft, an arm moving with the cylinder and carrying a catch-plate, a handle sleeved on the shaft and carrying a star-wheel and an electromagnet, a pawl pivoted on the star-wheel and adapted to engage with the catch-plate, and an armature for the electromagnet arranged to disengage said pawl.

8. In a controller, the combination with a rotatable member, of a plurality of circuit-controlling contacts arranged alongside of said member, a plurality of resistance-controlling contacts arranged concentric with said member, cylindrical contacts carried by said rotatable member and adapted to remain in engagement with the circuit-controlling contacts in all the power positions of the controller, and a brush contact or contacts electrically connected to one of the contacts on said rotatable member and adapted to successively engage the concentrically-arranged contacts.

9. In a controller, a rotatable member provided with cylindrical contacts, fixed contacts arranged to be engaged thereby, a supporting-frame located beneath the said rotatable member, a series of contacts mounted thereon in a circle concentric with the axis of rotation of said rotatable member, and a contact on the rotatable member arranged to successively engage the contacts of the said series as the said member is rotated.

10. In a controller, a set of fixed contacts arranged one above another, a rotatable member provided with cylindrical circuit making and breaking contacts adapted to engage said fixed contacts, one or more series of circuit-controlling contacts mounted in a circle concentric with the axis of rotation of said rotatable member, and one or more contact-fingers mounted on said rotatable member and arranged to successively engage the contacts of the said series, as the said member is rotated, without opening the circuit at said contacts.

11. In a controller, a set of fixed contacts arranged one above another, a rotatable member provided with cylindrical circuit making and breaking contacts adapted to engage said fixed contacts, a series of circuit-controlling contacts mounted in a circle concentric with the axis of rotation of the said rotatable member, a coöperating contact-finger mounted on said rotatable member and electrically connected to the circuit making and breaking contacts, and means for extinguishing any arc which may be formed on the opening of the circuit at the circuit making and breaking contacts.

12. In a controller, a set of fixed contacts arranged one above another, a rotatable member provided with cylindrical circuit making and breaking contacts adapted to engage said fixed contacts, a series of circuit-controlling contacts mounted in a circle concentric with the axis of rotation of the said rotatable member, a coöperating contact-finger mounted on said rotatable member and electrically connected to the circuit making and breaking contacts, and a blow-out magnet for the circuit making and breaking contacts.

13. In a controller, a set of fixed contacts arranged one above another, a rotatable member provided with cylindrical circuit making and breaking contacts adapted to engage said fixed contacts, a second set of fixed contacts rigidly mounted in a circle concentric with the axis of rotation of the said rotatable member, and a yieldably-supported brush or contact-finger adapted to successively engage the contacts of the said second set, the said brush or contact being mounted on said rotatable member and electrically connected to the circuit making and breaking contacts thereon.

14. In a controller for an electric motor, the combination with a stationary post, of a frame supported thereon carrying one or more series of contact-plates concentric with said post, a contact-cylinder having its shaft journaled on the upper end of said post, and an arm on said cylinder carrying one or more contact-fingers to engage with said plates.

15. In a controller for an electric motor, the combination with a stationary post, of a blow-out coil concentric therewith, and a contact-cylinder having its shaft stepped in the upper end of said post.

16. The combination with a compound-wound electric motor, of a resistance in series with the series field-coil, a second resistance, and a single switch mechanism for successively cutting out the series resistance and throwing the second resistance in shunt around the series field-coil.

17. The combination with a compound-wound electric motor, of two resistances, and a single switch mechanism for successively connecting one of said resistances in series with the series field-coil, gradually cutting out said resistance, throwing the second resistance in shunt around said series field-coil, and finally gradually cutting out said second resistance.

708,097. LATCH. DANIEL W. TOWER, Grand Rapids, Mich.
Filed Oct. 11, 1901. Serial No. 78,209. (No model.)

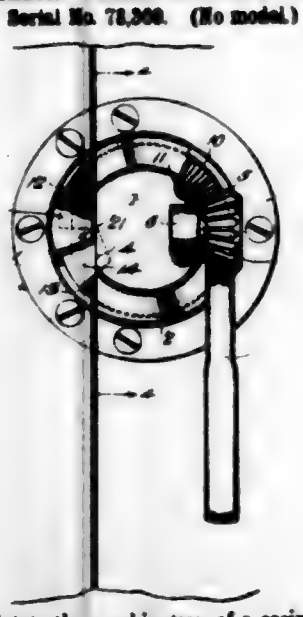

Claim.—1. In a latch, the combination of a casing, a rotatable bolt mounted therein having a locking-head and a toothed segment, an operating-handle with a toothed head engaging the said segment, the toothed head of the handle being at an angle to the bolt, and a striker having a keeper for engagement by the bolt-head.

2. In a latch, the combination of a casing, a rotatable bolt having a locking-head and a toothed segment, an operating device disposed at an angle to the bolt and having a toothed head to engage said segment, and a striker having a keeper for engagement by said bolt-head.

3. In a latch, the combination of supporting means, a rotatable bolt having a locking-head and toothed segment, an operating device for the bolt movable in a plane at right angles to the latter and having a toothed head to engage said segment, and a striker for engagement by said bolt-head.

4. In a latch, a rotatable bolt, a striker to engage a portion of the bolt, and means movable in planes at right angles to the movement of the bolt for operating the latter.

5. In a latch, the combination with a keeper, of a rotatable bolt having a portion to engage said keeper and provided with a toothed segment, and a vertically-movable operating means having a toothed head to engage said segment, the bolt being movable in a plane at an angle to that of said operating means.

6. In a latch, the combination with a striker, of a rotatable bolt having means to engage said striker movable concentrically therewith, and an operating device for the said bolt movable in a plane at an angle to the latter.

7. In a latch, the combination of a striker having a reversible keeper, a rotatable bolt having two heads spaced apart and arranged to engage opposite portions of the keeper, and reversible means movable in planes at right angles to the movement of the bolt for operating the latter, substantially as described.

8. In a latch, the combination of a striker having a diagonally-arranged keeper and adapted to be reversed, a rotatable bolt provided with a pair of heads spaced apart to engage opposite portions of the keeper, and reversible means movable in planes at right angles to the movement of the bolt for operating the latter, substantially as described.

9. In a latch, the combination of a striker having a diagonally-disposed keeper, a rotatable bolt provided with reversely-tapered heads spaced apart and arranged to engage the opposite faces of the diagonally-disposed keeper, the latter being adapted to be reversed to enable either of the said heads to extend behind it, and reversible means for operating the bolt, substantially as described.

10. In a latch, the combination of a striker having opposite engaging faces, a rotatable bolt with a pair of contiguous heads to individually engage the faces of the said keeper and also having a toothed segment, and an operating-handle revolubly and reversibly mounted in relation to the bolt and having a head in the form of a bevel-pinion to engage the said segment.

708,098. ENVELOP. GEORGE D. VAN ARSDALE, Newark, N. J. Filed Dec. 12, 1901. Serial No. 85,504. (No model.)

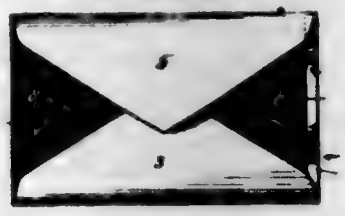

Claim.—1. An envelop having a front face and a flap, and a portion between and integral with said face and flap and doubled to form a strip running along one edge and outside of said envelop, said strip having a backwardly-bent projection free from the body of said envelop by which said strip may be torn off to open said envelop, one of the flaps thereof overlapping and holding said projection.

2. An envelop having a front face and a flap, and a portion between and integral with said face and flap and doubled twice over to form a strip running along one edge and outside of said envelop at one end thereof, said strip having a backwardly-bent projection free from the body of said envelop by which said strip may be torn off to open said envelop, said envelop also having a second flap extending over part of said backwardly-bent projection to hold the same in place.

708,099. MEANS FOR DECORATING FABRICS. ANTOINE VESICH, New York, N. Y. Filed Apr. 6, 1902. Serial No. 101,518. (No model.)

Claim.—1. A means for applying colors to materials comprising a stencil made of a pattern layer having suitable openings or perforations; an open-mesh fabric extending across the pattern layer and the openings therein; and an interposed rubber sheet or layer having certain parts cut out to conform to the pattern openings or perforations of the first-named layer and dissolved by the application of heat and pressure into intimate union with the pattern layer and said fabric layer.

2. A stencil comprising a perforated or cut-out pattern layer, an open-mesh-fabric layer, and an interposed rubber sheet or layer dissolved by the application of heat and pressure and partially filling the pores of the pattern and fabric layers and intimately uniting them throughout their engaging faces, said interposed layer having certain portions thereof cut out or removed and conforming to openings or perforations of the pattern layer.

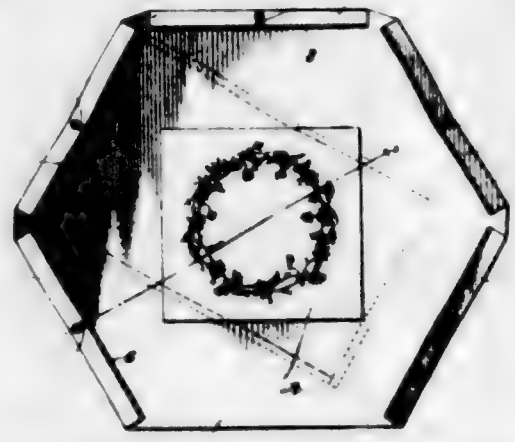

3. A stencil substantially such as described, comprising layers of paper, fabric and an interposed adhesive layer; said paper and adhesive layers being perforated and removed according to the configuration of the pattern and said adhesive layer being dissolved by the application of heat and pressure to the layers, whereby the adhesive layer intimately unites the fabric and paper layers.

4. An apparatus for applying different colors to materials comprising a suitable table having a work-receiving space, a series of different-color stencils arranged to be successively fitted to said space, and a scraper operatively related to the stencils and adapted to be moved across the same, said scraper being effective at a single stroke in applying any one color to the decorative material through one of the stencils.

5. An apparatus for applying colored patterns to materials consisting of a table having a work-receiving space, a group of cut-out different-color stencils arranged to be fitted successively to said space for the pattern-openings to match with one another in applying different colors to the work, another stencil having its pattern or design formed by minute perforations and also arranged to be fitted to the space in matching relation to the patterns applied previously by the cut-out stencils, and a scraper adapted to be drawn across the stencils and effective at a single stroke in applying color therethrough to the work in said space.

6. The combination with a table having a work-receiving space, of a group of stencils attached to said table around said space, and counter-weighted cords attached to the stencils and adapted to maintain them in raised positions with relation to the table.

708,100. SAW-SET. HOLLAND R. VICK, Alliance, Ohio. Filed May 15, 1902. Serial No. 107,429. (No model.)

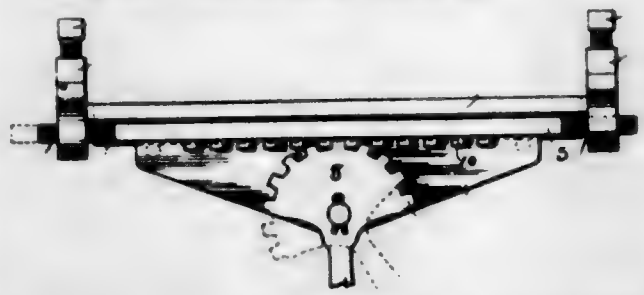

Claim.—1. In a saw-set, the combination of a fixed and movable jaw, said jaws provided with pins or stops and one of the jaws provided with hooked arms, a clamping-bar provided with wedge-shaped ends located opposite the hooked arms, means for imparting longitudinal movement to the clamping-bar, and dies provided with beveled upper edges, said dies located between the jaws, substantially as and for the purpose specified.

2. The combination of jaws one movable and the other fixed, hooked arms extended laterally from the fixed jaw and at the ends of said jaw, said hooked arms provided with set-screws, a clamping-bar carried by the hooked arms and located adjacent to the movable jaw, dies located between the jaws, and means for imparting a reciprocating movement to the clamping-bar, substantially as and for the purpose specified.

3. The combination of jaws provided with downward-extending flanges, one of the jaws movable and the other fixed, a toothed segmental head provided with an operating-handle pivotally attached to the flange of the movable jaw, a clamping-bar provided with teeth adapted to mesh with the teeth of the segmental head, and the clamping-bar provided with wedge-shaped ends, hooked arms carrying the movable jaw and the clamping-bar and dies located between the jaws, substantially as and for the purpose specified.

708,101. VACUUM STEAM-HEATING SYSTEM. JAMES R. WADE, St. Louis, Mo. Filed Jan. 13, 1902. Serial No. 89,483. (No model.)

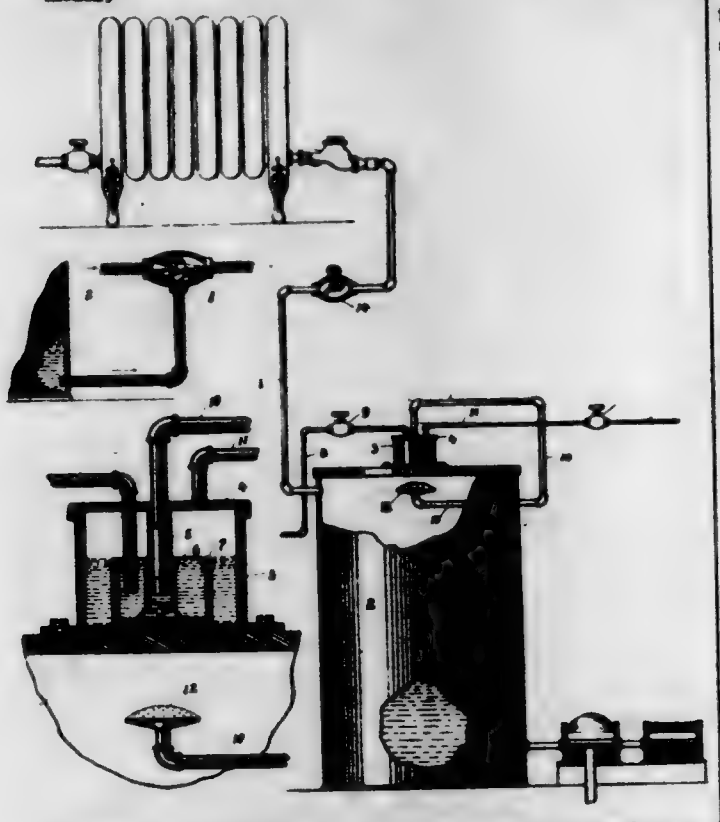

Claim.—1. In a heating system, a tank or condenser having connection with a steam-circulating system, a trap disconnected from the system having a water-discharge tube leading into said condenser, a pipe for conducting cold water into said trap, a pipe for conveying fluid under pressure thereinto for effecting a subsequent discharge of the water therefrom into the condenser through the water-discharge tube, and means for withdrawing the water, vapor and gases accumulated in said condenser substantially as set forth

2. In a heating system, a tank or condenser having connection with a steam-circulating system, a trap disconnected from the system having a water-discharge tube leading into the condenser, a float or pot normally closing the inner end of said discharge-tube, a water-feed pipe delivering into the pot, a steam-pipe leading to the trap at a point above the surface of the water contained therein, suitable controlling-valves in said pipes, and mechanism for pumping out the contents of the condenser, the parts operating substantially as, and for the purpose set forth.

3. In a heating system, a tank or condenser having connection with a steam-circulating system, a trap disconnected from and independent of said circulating system, having a water-discharge tube leading into said condenser, a pipe for conducting cold water into said trap, a pipe for conveying fluid under pressure thereinto for effecting a subsequent discharge of the water therefrom into the condenser through said water-discharge tube, and means for positively withdrawing the contents of the condenser, substantially as set forth.

4. A heating system comprising a tank or condenser having connection with a low-pressure steam-circulating system, a trap mounted on top of the tank, a float in said trap, a water-feed pipe leading into the trap and discharging into said float, a guide-tube depending from the top of the trap, a hollow open stem carried by the float and loosely embracing the guide-tube, a water-discharge tube having one end inserted through the guide-tube and normally closed by the float, the said discharge-tube penetrating the walls of the condenser and discharging thereinto, a steam-pipe communicating with the interior of the trap above the level of the water therein, suitable valves in the pipes, and mechanism adapted to remove the waters, air and gases accumulating in the condenser, the parts operating substantially as, and for the purposes set forth.

5. In a heating system, a tank or condenser having connection with a steam-circulating system, a trap disconnected from the system having a water-discharge tube leading into said condenser, a pipe for conducting cold water into said trap, a pipe for conveying fluid under pressure thereinto for effecting a subsequent discharge of the water therefrom into the condenser through the water-discharge tube, and means for withdrawing the water, accumulated in said condenser and returning the same to the boiler, substantially as set forth.

708,102. DEVICE FOR FASTENING LOOSE-LEAF BOOKS. JOHN A. WALDO, Jr., Reading, Mass. Filed June 16, 1902. Serial No. 111,847. (No model.)

Claim.—1. The herein-described device, or fastening for loose-leaf books, consisting of a pair of telescopic tubes, one longitudinally adjustable within the other, each tube having a flange at the outer end, and a fastening-string passing through the tubes and securing them together, substantially as and for the purpose set forth.

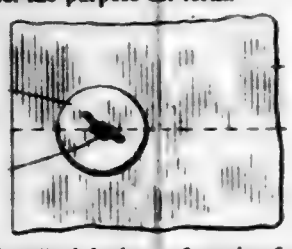

2. The herein-described device, or fastening for loose-leaf books, consisting of a pair of telescopic tubes, one longitudinally adjustable within the other, each tube having a flange at the outer end combined with perforated caps or washers, and a tying-string for securing the parts of the fastening device to the loose-leaf book, &c., substantially as and for the purpose set forth.

708,108. COUPLING MECHANISM FOR RAILWAY STEAM OR AIR PIPES. HENRY H. WARNER, Tacoma, Wash. Filed Nov. 7, 1901. Serial No. 81,626. (No model.)

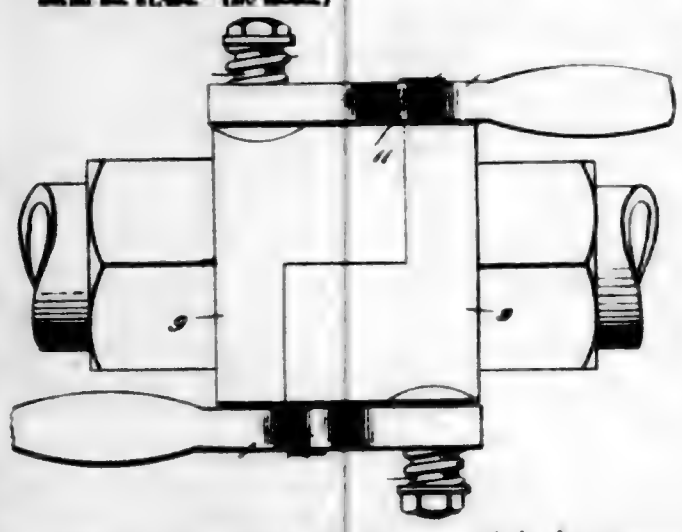

Claim.—1. A coupling device for steam and air pipe connections for railway-cars, comprising two members, each of said members having two oppositely-arranged lugs projecting beyond the inner ends of the members and adapted to interlock when the two members have their outer edges together, a cylindrical pin mounted upon one side of the exterior of the members, a pivoted lever mounted upon said pin, a coil-spring surrounding the pin outside the lever, means to hold the spring in place, and an oppositely-arranged pin carried by each member having a flat and a curved side.

2. A coupling device for steam and air pipe connections for railway cars, comprising two members, each of said members having two oppositely-arranged lugs projecting beyond the inner ends of the members, a cylindrical pin mounted upon one side of the interior of the members, a pivoted lever mounted upon said pin, means to yieldingly hold the lever upon the pin, and an oppositely-arranged pin carried by each member to be engaged by the lever of the other member; in combination with pipe connections and means for operating the levers when the cars are a certain distance apart to uncouple the members.

708,104. FLEXIBLE PIPE-JOINT. HENRY H. WARNER, Tacoma, Wash. Filed Nov. 7, 1901. Serial No. 81,627. (No model.)

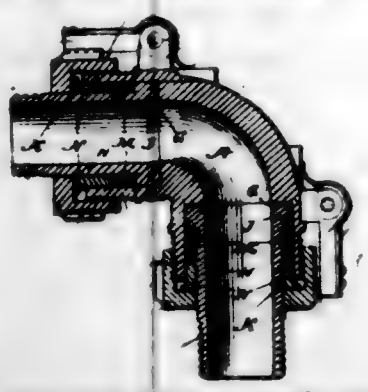

Claim.—A swivel flexible joint connection for pipes, comprising a pipe provided with a threaded end, a short coupling rotatably mounted in the end of said pipe and having a shouldered inner end, a smooth in-

termediate surface and a threaded outer end, a heat-non-conducting gasket surrounding the smooth surface next to the shouldered end, a hard-rubber gasket having an annular rim surrounding the smooth surface of the coupling and having the rim beyond the threaded end of the pipe, a flanged disk mounted upon the smooth portion and adapted to engage the threaded end of the pipe and compress the gaskets, a series of lugs formed on the extension of the disk, a yoke surrounding the pipes, a pair of lugs carried by the yoke, a detent pivotally mounted between the lugs, and a flat spring connected to the detent and having its free end abutting against the exterior of the pipe to normally hold the detent in engagement with one leg of the flanged disk.

708,105. CASE FOR FAN-MOTORS. HAROLD R. WELLMAN, New York, N. Y., assignor to General Incandescent Arc Light Company of New York, a Corporation. Filed Nov. 16, 1901. Serial No. 82,528. (No model.)

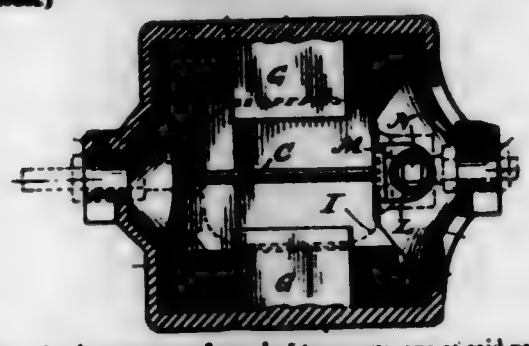

Claim.—1. A motor-case formed of two parts, one of said parts substantially cylindrical in its vertical axis with a horizontal top and bottom and having on one cylindrical surface a circular opening, and the other part formed as a convex disk adapted to be inserted in the circular opening of the other part, and means for securing said parts together.

2. A motor-case formed of two parts, one of said parts substantially cylindrical in outline, with flattened top and bottom, and the other part formed as a convex disk.

3. A motor-case formed of two parts, one of said parts substantially cylindrical in outline, with flattened top and bottom, and the other part formed as a convex disk carrying tubes for the commutator-brushes.

4. A motor-case formed of two parts, one of said parts substantially cylindrical in outline in its vertical axis, with flattened top and bottom, pole-pieces projecting inward from said top and bottom and said part having a circular opening in its cylindrical surface, and the other part formed as a convex disk adapted to be inserted in and secured to said first-named part.

708,106. WATER-CLOSET. FRANK A. WELLS, New York, N. Y. Filed Jan. 13, 1902. Serial No. 89,417. (No model.)

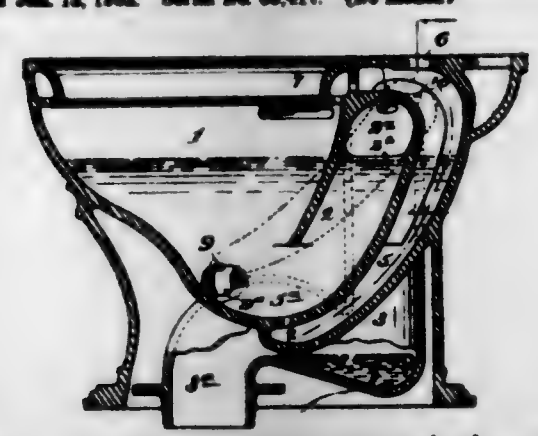

Claim.—1. A water-closet provided with a bowl and up and down communicating passages or legs, a soil-leg communicating with the down-leg, a duct communicating with a jet-opening leading to the bowl, and a duct communicating with the soil-leg below the level of the water in the bowl and with the first-mentioned duct, and also with said passages or legs above the normal level of the water in the bowl, substantially as described.

2. A water-closet provided with a bowl and up and down communicating passages or legs, a soil-leg communicating with the down-leg, a duct communicating with a jet-opening leading to the bowl, the down-leg having an upper jet-opening communicating by a duct with the first-mentioned duct, and a duct communicating above the level of the water in the bowl with the second-mentioned duct and said passages and also with the soil-leg, substantially as described.

3. A water-closet provided with a bowl and up and down communicating passages or legs, the down-leg having a water-pocket and communicating with a soil-leg, a duct communicating with a jet-opening leading to the bowl, a duct communicating with said duct below the normal water-level in the bowl and also communicating with the down-leg above said water-level, and a duct communicating with the soil-leg above said pocket and also communicating with the second-mentioned duct and with said passages above the normal level of the water in the bowl, substantially as described.

708,107. FURNACE. GEORGE WESTINGHOUSE, Pittsburg, Pa. Filed Mar. 25, 1901. Serial No. 52,694. (No model.)

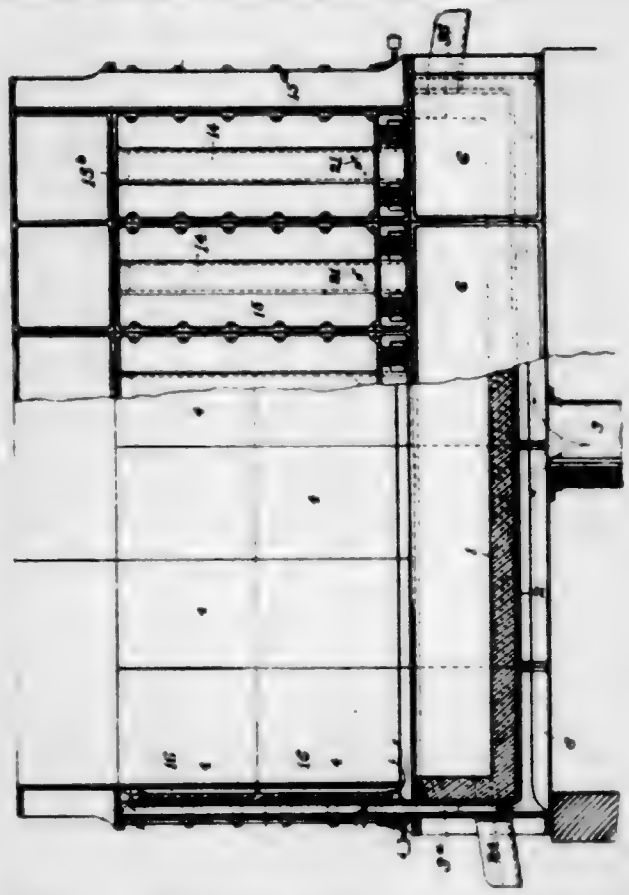

Claim.—1. In a smelting-furnace, an air-jacket consisting of wall-plates having vertical ribs and transverse baffle-plates integral with the inner surface of the plates, the baffle-plates extending across the spaces between adjacent ribs, substantially as described.

2. A smelting-furnace having its outer walls composed of vertical plates having air-passages, an air-inlet and an air-outlet leading to and from said passages, and its inner wall composed of plates having integral heat-radiating ribs, and means for securing the same to the outer wall.

3. A smelting-furnace consisting of a crucible and vertical air-jacketed walls and air inlets and outlets leading to and from the air-jacket, said walls consisting of hollow independently-removable compartments, and heat-radiating ribs integral with the inner walls thereof.

4. In a smelting-furnace, an inclosing wall consisting of wall-plates of iron having heat-radiating ribs integral with one side thereof, and an outer wall to which the wall-plates are independently removably attached.

5. In a smelting-furnace, an air-jacketed wall and air inlets and outlets leading to and from the air-jacket, said wall consisting of an outer supporting structure, and independently-removable sectional wall-plates having heat-radiating ribs integral therewith, substantially as described.

6. A removable section of wall for a furnace, consisting of a wall-plate having vertical and transverse heat-radiating ribs, the transverse ribs being inclined with reference to the wall.

7. A furnace-wall consisting of a series of independently-removable heat-radiating sections, each section comprising a wall-plate having one surface presented to the reduction-chamber of the furnace and having its opposite surface constructed with heat-radiating ribs, and means for detachably securing the wall-plates in the furnace.

8. The combination with the wall-plate 4, of the vertical ribs 16 and 18 projecting from one surface of the wall-plate, and the interposed baffle-plates inclined with reference to the surface of the wall-plate.

9. In a smelting-furnace, the combination of the outer walls, the vertical flues therein, the inner vertical heat-radiating compartment with which said flues communicate at their upper ends, and the tuyeres with which said compartment communicates.

10. In a smelting-furnace, the combination of the outer walls, the vertical flues therein, the inner vertical heat-radiating compartment with which said flues communicate at their upper ends, the tuyeres with which said compartment communicates, and the regulating-dampers in said flues.

11. The combination of the outer walls, constituting the shell of a

furnace, the vertical flues therein, the openings at their lower ends, the air-heating chamber beneath the crucible, the twyers, connections between the heating-chamber and the twyers and connections from the flues to the twyers.

12. The combination with the crucible of a furnace, of the inclosing wall, the vertical flues carried thereby, an air-jacket beneath the crucible communicating with the vertical flues, an air-jacket within the wall of the furnace, connections from the upper ends of the flues with said air-jacket, and openings from the lower end of the jacket into the furnace.

708,108. **VERTICAL-LIFT LUBRICATING-VALVE FOR STEAM-CHESTS.** George Wiesecke, Allegheny, Pa. Filed Apr. 5, 1901. Serial No. 54,507. (No model.)

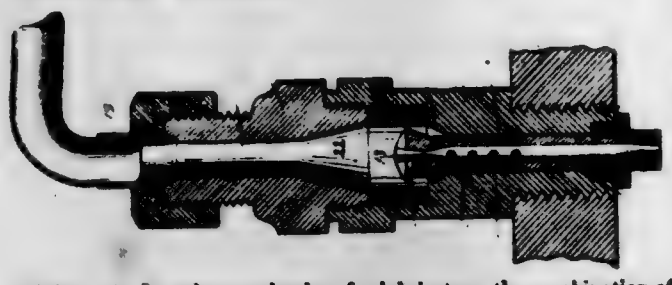

Claim.—1. In valve mechanism for lubricators, the combination of a casing adapted at opposite ends to connect with a steam-chest and a lubricator, a hollow piston-valve movable longitudinally in the casing and provided with permanently-open contracted inlet and outlet orifices and with additional inlet-orifices, separate and distinct from the permanently-open inlet-orifice, said additional orifices being open only when the valve is operated by steam-chest pressure.

2. In valve mechanism for lubricators, the combination of a casing adapted at opposite ends to connect with a steam-chest and a lubricator, a hollow piston-valve movable longitudinally in the casing and provided with permanently-open contracted inlet and outlet orifices, the inlet-orifice being of smaller area than the outlet-orifice, the valve having additional inlet-orifices, separate from the permanently-open contracted inlet-orifice, opened only when the valve is operated by steam-chest pressure.

3. In valve mechanism for lubricators, the combination of a casing adapted at opposite ends to connect with a steam-chest and a lubricator, a hollow piston-valve movable longitudinally in the casing and provided at opposite ends with permanently-open contracted inlet and outlet orifices and with side inlet-orifices separate and distinct from the permanently-open contracted inlet-orifice, the valve-casing being formed with a seat and the lubricator end of the valve with a head complementary with the seat, whereby when the valve is seated the said side inlet-orifices are closed to the ingress of steam and oil.

4. In valve mechanism for lubricators, the combination of a casing adapted at opposite ends to connect with a steam-chest and with a lubricator, a piston-valve operative therein formed with a longitudinal passage-way having its outlet or steam-chest end and its inlet or lubricator end contracted, the intermediate portion of the passage-way being relatively large and provided with lateral inlet-orifices which are open only when the valve is operated by steam-chest pressure.

708,109. **BLANKET-GUARD.** Henry H. Williams, Fort Wayne, Ind., assignor of one-fourth to Frank Berger, Fort Wayne, Ind. Filed Jan. 27, 1900. Renewed Jan. 31, 1902. Serial No. 92,072. (No model.)

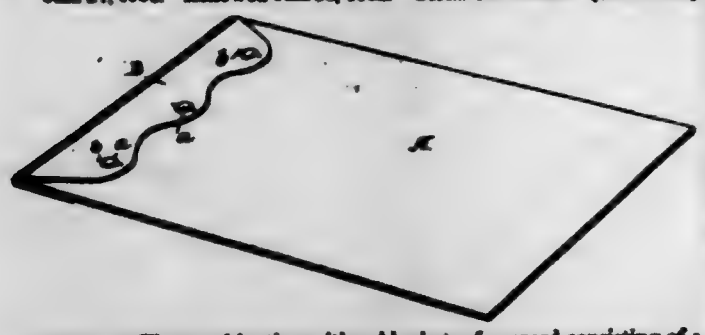

Claim.—The combination with a blanket, of a guard consisting of a sheet of linen or analogous material folded over one edge of the blanket to prevent contact of the latter with the face of the seer, and means for detachably connecting both folding portions of the guard to the blanket, substantially as set forth.

708,110. **COUPLING FOR RAILWAY-CARRIAGES, &c.** John Williams, Cleveland, Ohio, assignor to the National Malleable Castings Company, Cleveland, Ohio, a Corporation of Ohio. Filed Sept. 26, 1899. Renewed Jan. 28, 1902. Serial No. 92,516. (No model.)

Claim.—1. In a draft-rigging the combination with the draw-head adapted to receive buffing and draft, and a draft-spring, of a lever interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring; substantially as described.

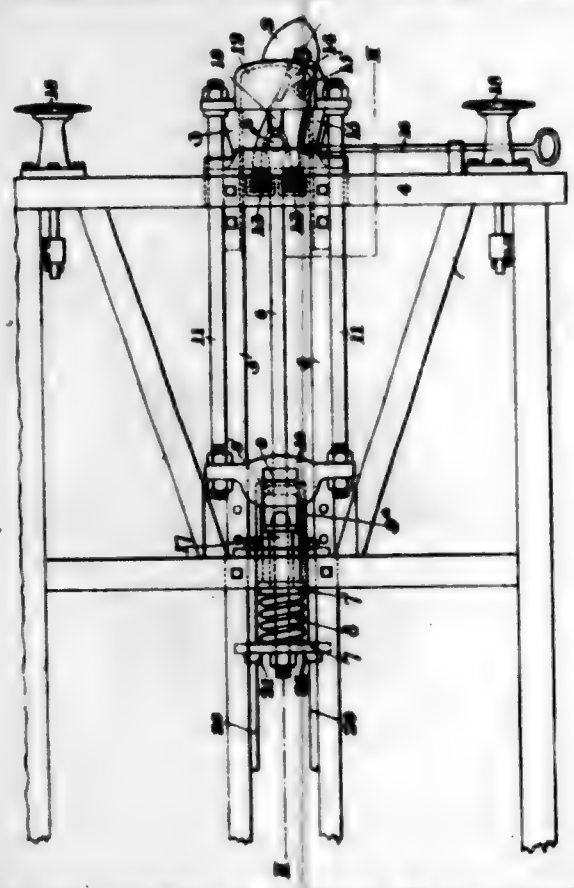

2. In a draft-rigging, the combination with the draw-head adapted to receive buffing and draft, and a draft-spring, of a lever interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring, and a rod interposed between the lever and the buffer parts; substantially as described.

3. In a draft-rigging, the combination with the central buffer or draw-head, and a longitudinally-extending draft-spring, of a lever interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring; substantially as described.

4. The combination of a laterally-swinging draw-head, a movable push-bar against which it has a bearing on both sides of its axial line, a spring, and a lever between the push-bar and the spring; substantially as described.

5. The combination of a laterally-swinging draw-head, having lateral lugs mounted in guide-walls, and a longitudinally-movable spring-backed part against which the lugs bear, and which is adapted to be actuated by lateral swinging of the draw-head; substantially as described.

6. The combination of a draft-spring, a draw-bolt, a lever and a push-bar, and a sleeve 17 on the draw-bolt interposed between the lever and the spring and adapted to be moved by the lever; substantially as described.

7. The combination with a draw-head hook, of an uncoupling-set arm pivoted to the hook, a lever 15 also pivoted to the hook and adapted to engage the side of the set-arm and to hold the same in open position, and an operating-rod; substantially as described.

8. The combination with a central buffer or draw-head, and draft-spring, a bracket at such spring, a lever set in a vertical plane and having its end fitting in a fulcrum-socket in the bracket and bearing against the spring, and means for connecting the spring to the buffer or draw-head; substantially as described.

9. In a draft-rigging, the combination of the draft-spring and buffing device, of a lever interposed between the buffing device and the spring, a sleeve between the spring and the lever, follower-plates for the spring, guide-rods on which the plates are movable, and stops on the guide-rods; substantially as described.

10. The combination of a draft-spring, a draw-head having a direct connection therewith, a buffer, and a lever interposed between the buffer and the draft-spring and adapted to transmit compression of the buffer to compress the spring; substantially as described.

11. The combination of a laterally-swinging draw-head, having lateral lugs mounted in guide-walls, and a longitudinally-movable push-bar against which the lugs have a bearing on both sides of the axial line of the draw-head, a spring, and a lever interposed between the push-bar and the spring; substantially as described.

12. A draw-head and a draft-spring, said draw-head being connected

with the draft-spring directly and by an interposed lever and adapted to transmit pulling and buffing force thereto, and also connected therewith in such manner as to transmit to the spring force produced by lateral deflection of the draw-head, whereby the draft-spring is made to perform a triple function of yieldingly resisting the pressure of draft and buffing and lateral deflection; substantially as described.

13. In a draft-rigging, the combination with the central buffer or draw-head, and a spring, of a lever set in a vertical plane and interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring; substantially as described.

14. The combination in a draft-rigging, of a draw-head, a spring, a lever, a push-rod adapted to transmit buffing force to the lever and thence to the spring, and a draw-bolt extending from the draw-head through the lever, said lever being upheld by the draw-bolt; substantially as described.

15. In a draft-rigging the combination with the draw-head adapted to receive buffing and draft, and a draft-spring, of a lever interposed between these parts and arranged to convert a long buffing motion into a short compression of the spring, and a draw-bolt arranged to transmit the force of draft from the draw-head to the spring; substantially as described.

708,111. MACHINE FOR WIRING WOOD SLATS. CHARLES M. ALGER, Hannibal, Mo. Filed Nov. 30, 1901. Serial No. 84,241. (No model.)

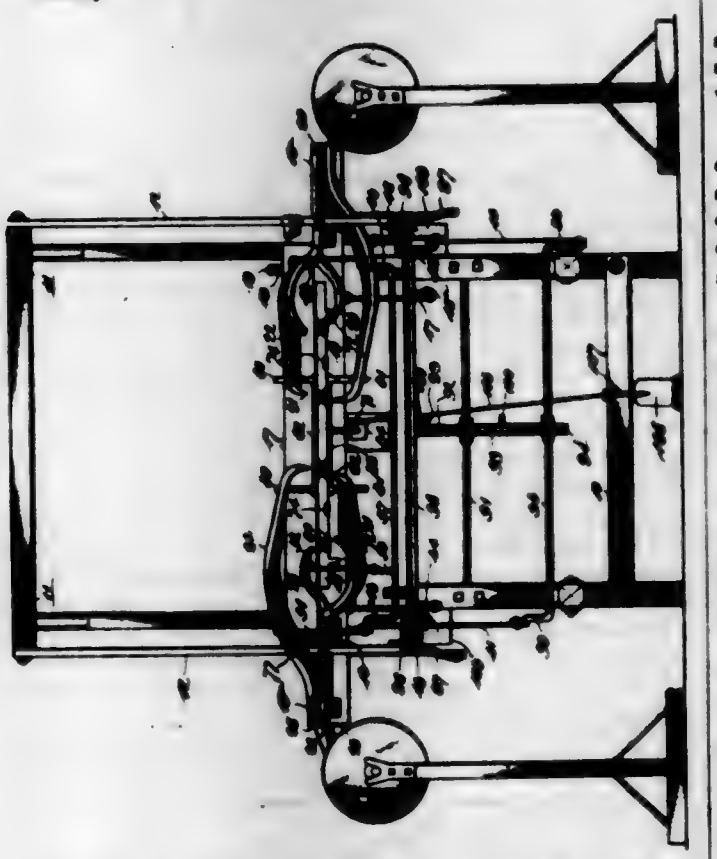

Claim.—1. In a machine for wiring wood slats, the combination with wire-carriers, of devices for operating the same to form a shed having a wholly-unobstructed front opening, thereby to permit of the direct edgewise feeding of successive slats.

2. In a machine for wiring wood slats, a slat-hopper located directly in front of the shed and in line with the woven material, and means for feeding slats directly from the hopper to wiring position.

3. In a machine for wiring wood slats, the combination of wire-carriers, devices operating the same to form a shed having an unobstructed front opening, a batten, and slat-feeding devices carried by said batten.

4. In a machine for wiring wood slats, the combination with wire-carriers, of means for moving said carriers above and below the plane of the material being woven, thereby to form a shed having a wholly-unobstructed front opening.

5. In a machine for wiring wood slats, the combination with devices for forming an open-front shed, of a batten, a slat-hopper, and mechanism carried by the batten for removing the slats from the hopper and feeding the same successively to the shed.

6. In a machine for wiring wood slats, the combination with devices for forming an open-front shed, of a slat-hopper, a batten, a slat-support carried thereby, and a slat-engaging hook carried by the batten and adapted to engage with and remove the lowermost slat of the hopper.

7. In a machine for wiring wood slats, the combination with devices for forming an open-front shed, of a slat-hopper, a batten, a slat-support carried thereby, a slat-engaging hook, and a pivoted dog adapted to be operated by the movement of the hook and to elevate said hook into position for engagement with the lowermost slat of the hopper, substantially as specified.

8. In a machine for wiring wood slats, the combination with devices for forming an open-front shed, of a batten, a slat-hopper, a hook carried by the batten and adapted for engagement with the lowermost slat of the hopper, an operating-lever pivoted to the batten and connected to said hook, and a link connecting said lever to the fixed frame of the machine.

9. The combination with devices for forming an open-front shed, of a hopper, a batten, a slat-support carried thereby, a slat-engaging hook, an operating-dog therefor, a slat-engaging finger carried by the batten, and a locking-lever for moving the slat-engaging hook into inoperative position, substantially as specified.

10. In a machine for wiring wood slats, the combination of the wire-carrying fingers arranged in sets and having a pivotal movement in a plane substantially at right angles to the length of the fabric being woven thereby to form a shed having an unobstructed front opening.

11. In a machine for wiring wood slats, the combination of a series of mating sets of wire-carrying fingers having supporting-pivots arranged in a plane substantially at right angles to the length of the fabric being woven and forming after each operation of the fingers an open shed to permit of the edgewise feeding of successive slats.

12. In a machine for wiring wood slats, a batten having a knife-edge adapted for contact with the slats in advance of the change of the shed to produce a seating groove or recess for the wires.

13. In a machine for wiring wood slats, wire-carrying fingers, mechanism for operating the same to change the shed, and pressure-rollers adapted to act on the upper and lower sides of the slat and to force the wires thereinto.

14. In a machine for wiring wood slats, the combination of a series of sets of wire-carrying fingers having an oscillating movement in a plane substantially at right angles to the length of the fabric and adapted to change the shed, a batten-bar, a series of blocks carried by said bar, knives carried by said blocks in alinement with the several sets of fingers and adapted for contact with the slats in advance of the changing of the shed.

15. In a machine for wiring wood slats, the combination with a series of wire-carrying fingers having a pivotal axis in a plane at right angles to the length of the fabric, a series of spring-plates arranged in alinement with the series of sets of fingers, and a batten-bar having a series of batten-blocks also arranged in alinement with the sets of fingers, substantially as specified.

16. In a machine for wiring wood slats, the combination of a pair of wire-carrying fingers having independent pivotal axes, means for simultaneously moving said fingers, and a pair of connected wire-carrying fingers having a pivotal center coincident with one of the first-named fingers and adapted to pass between the fingers of the first pair, substantially as specified.

17. In a machine for wiring wood slats, the combination of the wire-carrying fingers, means for operating the same, and independently-pivoted arms or levers adapted to be engaged by said fingers during the movement of the same in changing the shed, substantially as specified.

18. In a machine for wiring wood slats, the combination of the wire-carrying fingers, means for operating the same, arms or levers pivoted eccentric to the pivotal axes of the fingers and adapted to engage with said fingers during the changing of the shed to prevent vibration of the same, substantially as specified.

19. In a machine for wiring wood slats, the combination of the wire-carrying fingers, means for operating the same, a pair of independently-pivoted arms or levers movable one with each set of fingers toward a central position, said arms or levers acting to resist the movements of the fingers past the central or crossing point, substantially as specified.

20. In a machine for wiring wood slats, the combination with the wire-carrying fingers, of a pair of independently-pivoted levers having notches or seats for the reception of said fingers and adapted to resist the movement of the fingers in changing the shed and to steady and support said fingers during the changing movement, substantially as specified.

21. In a machine for wiring wood slats, the combination with the wire-carrying fingers, of a pair of independently-pivoted levers having notches or seats for the reception of said fingers, and counterbalancing weights or springs operatively connected to said levers, substantially as specified.

22. The combination of the head-block, a bar mounted above the same, springs normally tending to move the bar and block into contact, spring-pressed pressure-rollers arranged in pairs on the block and bar and adapted to receive the successive slats, wire-carrying fingers, means for operating the same, and a movable batten for contact with said slats, substantially as specified.

23. The combination of the head-block, a spring-pressed bar mounted above the same, spring-plates arranged in pairs on the block and bar antifriction-rollers arranged at the outer ends of said plates, supporting-plates carried by the head-block for the reception of the slats, wire-car-

rying fingers, means for operating the same, and a movable batten for forcing said slats, between the constriction-rollers, substantially as specified.

24. In a machine for wiring wood slats, a batten-block having in its forward edge a vertical and a horizontally-disposed groove, and a knife arranged in alinement with said vertical groove.

25. In a machine for wiring wood slats, a batten-block having horizontally-disposed groove and provided upon its upper and lower faces with curved wire-guiding plates, there being at the juncture of said plates an inclined groove for receiving the wire, and a knife carried by the batten-block in alinement with said inclined groove, substantially as specified.

26. The combination of the wire-carrying fingers having pivotal axes in a plane substantially at a right angle to the length of the fabric being woven, a revolvable crank-shaft, means for operating the same, a pair of auxiliary shafts having cranked connections with said crank-shaft, and mechanism operatively connecting the auxiliary shafts to the fingers.

27. The combination of the wire-carrying fingers having pivotal axes in a plane substantially at a right angle to the length of the fabric being woven, a batten, a revolvable crank-shaft operatively connected to the batten, and mechanism for operatively connecting said crank-shaft to the fingers, substantially as specified.

28. The combination of the wire-carrying fingers having pivotal axes in a plane substantially at a right angle to the length of the fabric being woven, a batten, an operating-pawl connected thereto, a sprocket-wheel having pins or teppets adapted for successive engagement by the pawl-bar, a revolvable crank-shaft operatively connected to the sprocket-wheel, and means for connecting said crank-shaft to the wire-carrying fingers, substantially as specified.

29. The combination of the wire-carrying fingers, a batten, pivoted links carried by the frame and connected to the batten, a pawl-bar pivotally connected between the links, a pedal operatively connected to the pawl-bar, a sprocket-wheel having pins or teppets adapted to be engaged by said pawl-bar, a revolvable crank-shaft, a sprocket-wheel thereon, a link belt connecting the two sprocket-wheels, auxiliary shafts having cranked connections with the crank-shaft and rods and cranks for operatively connecting said auxiliary shafts to the wire-carrying fingers, substantially as specified.

30. The combination of the wire-carrying fingers, a batten, mechanism operatively connecting the batten to the wire-carrying fingers, said mechanism including as one of its elements a pair of connecting-bars inclined at an angle to the length of the frame and adapted for engagement with guides on the side of said frame to assist in centering the batten substantially as specified.

31. In a machine for wiring wood slats, the combination with the wire-carrying fingers and devices for operating the same, of a batten adapted to operate directly upon the crossed wires after each change of the shed.

32. In a machine for wiring wood slats, the combination of the wire-carrying fingers arranged in sets, mechanism for operating said fingers to cross the shed, a batten adapted for contact with the slats before the crossing of the shed and for direct contact with the crossed wires after each change of the shed.

33. In a machine for wiring wood slats, a batten having a knife-edge for contact with the slats in advance of the change of the shed to produce or form in said slats a seating groove or recess for the wires, the knife-edge being adapted for contact with the cross-wires after the change of the shed to force wires into the groove or recess.

34. In a machine for wiring wood slats, the combination of a series of sets of wire-carrying fingers having an oscillating movement in a plane substantially at right angles to the length of the fabric and adapted to change the shed, a batten-bar, a series of blocks carried by said bar, knives carried by said blocks in alinement with the several sets of fingers and adapted for contact with the slats in advance of the changing of the shed and for contact with the crossed wires after the changing of the shed.

708,112. **ELECTRIC CLOCK.** EJALMAR E. ANDERSSON, Stockholm, Sweden. Filed Dec. 1, 1900. Serial No. 38,344. (No model.)

Claim.—1. In a clock, the combination with the arbor carrying the transmitting-gears of the clock-train, a ratchet-wheel and an armature-lever revolvable on said arbor, said lever having one of its arms weighted, a pawl on the other arm thereof in engagement with the aforesaid ratchet-wheel, an electromagnet influencing the lever, and a suitable electric circuit; of a circuit-closer in said circuit operated by the armature-lever to close the electric circuit and rotate the ratchet-wheel during the gravitating movement of the lever, and to again open said circuit when said lever is moved in an opposite direction by the closure of the electric circuit, and means disengaging the pawl from its ratchet-wheel before the armature-lever completes its motion under the action of the weighted arm, for the purpose set forth.

2. In a clock, the combination with the transmitting-gears of the clock-train, a ratchet-wheel, a motor-spring connecting said gears and ratchet-wheel, an armature-lever, an arbor on which said parts are loosely mounted, an electromagnet influencing said lever and a suitable electric circuit one arm of said armature-lever weighted and a pawl on the other arm of said lever engaging the aforesaid ratchet-wheel; of a circuit-closer in said electric circuit operated by the gravitating movement of the armature to close said circuit and rotate the ratchet-wheel and to again open the circuit when said lever is moved in an opposite direction by the previous closure of said circuit and the energizing of the electromagnet, for the purpose set forth.

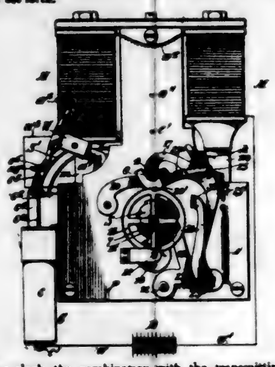

3. In a clock, the combination with the transmitting-gears of the clock-train, a ratchet-wheel, a motor-spring connecting said gears and ratchet-wheel, an armature-lever, an arbor on which said parts are loosely mounted, an electromagnet influencing said lever and a suitable electric circuit, one arm of said armature-lever weighted and a pawl on the other arm of said lever engaging the aforesaid ratchet-wheel; of a circuit-closer in said electric circuit operated by the gravitating movement of the armature to close said circuit and rotate the ratchet-wheel and to again open the circuit when said lever is moved in an opposite direction by the previous closure of said circuit and the energizing of the electromagnet, and means disengaging the lever-pawl from its ratchet-wheel before said lever completes its gravitating motion, for the purpose set forth.

4. In a clock, the combination with the arbor carrying the hammer-actuating device, a ratchet-wheel secured thereto, an armature-lever loose thereon and having one of its arms weighted, a pawl on its other arm actuating the ratchet-wheel, an electric circuit including an electromagnet influencing the armature-lever, and a circuit-closer acted upon by said lever during its gravitating motion to close the circuit and to open the same again and rotate the ratchet-wheel during its movement in an opposite direction under the influence of the electromagnet energized by the previous closure of said circuit; of a timing mechanism timing the operation of the pawl and operating to disengage the same from its ratchet-wheel in accordance with the number of blows to be struck by the hammer, for the purpose set forth.

5. In a clock, the combination with the arbor carrying the hammer-actuating device, a ratchet-wheel secured thereto, an armature-lever loose thereon and having one of its arms weighted, a pawl on its other arm actuating the ratchet-wheel, an electric circuit including an electromagnet influencing the armature-lever, and a circuit-closer acted upon by said lever during its gravitating motion to close the circuit and to open the same again and rotate the ratchet-wheel during its movement in an opposite direction under the influence of the electromagnet energized by the previous closure of said circuit; of a let-off cam, a snail, and mechanism controlled thereby and operating to disengage the aforesaid pawl from its ratchet-wheel in accordance with the number of blows to be struck by the hammer, for the purpose set forth.

6. In a clock, the combination with the arbor carrying the hammer-actuating device, transmitting-gearing, a ratchet-wheel 10 and an armature-lever loose on said arbor, a ratchet-wheel 16 fast thereon, a motor-spring connecting ratchet-wheel 10 with the transmitting-gearing, two pawls carried by one arm of the armature-lever whose other arm is weighted, one of said pawls normally engaging ratchet-wheel 10 and the other held normally out of engagement with ratchet-wheel 16, an electric circuit including an electromagnet for aforesaid armature-lever, and a circuit-closer operated by the lever during its gravitating motion to close the electric circuit and to again open the same during its motion in a reverse direction under magnetic influence; of a timing mechanism, means controlled thereby to throw the pawl of ratchet-wheel 10 out of, and the pawl of ratchet-wheel 16 into engagement, and to time the operation of the latter in accordance with the number of blows to be struck by the hammer, for the purpose set forth.

7. The combination with the arbor 4 carrying the pinion 8, hammer-actuating wheel 9 and the ratchet-wheel 10, an electric circuit including an electromagnet and a circuit-closer, an armature-lever loose on said arbor 4 and carrying on one of its arms a pawl in engagement with said ratchet-wheel 10, the other arm of said lever weighted and operating the circuit-closer during its gravitating movement to close the electric circuit and to open the same during its reverse movement under magnetic influence; of a let-off device, a snail, the lever 26 in the path of the let-off device, the arms 24 and 25′ the latter carrying the toothed and flanged segments 25, said arms 24 and 25′ loosely pivoted to an arm 23″ of lever 23, the free end of arm 24 in the path of pinion 8 on aforesaid arbor 4, the arm 20 having its outer end bifurcated and extending under said pinion 8 and forming an abutment for segment 25, and means controlled by arm 20 to move the pawl of ratchet-wheel 16 out of engagement therewith whenever segment 25 is moved out of gear with and by pinion 8, for the purpose set forth.

8. The combination with the oscillating armature-lever, a rock-lever mounted on one of its arms, a pawl rocked by said lever, the arbor 4, the ratchet-wheel 16, the pinion 8 and the hammer-actuating wheel fast on said arbor; of the arm 20 and mechanism substantially such as described controlling the movements of said arm to periodically lift and lower the same, and a connection between said arm and the aforesaid rock-lever, whereby the pawl is moved periodically into and out of engagement with its ratchet to revolve arbor 4, for the purpose set forth.

708,113. **GLASS-LADLE.** BOOTHE H. BALDWIN and ISAAC H. SCHELLINGER, Royersford, Pa. Filed Feb. 11, 1902. Serial No. 93,680. (No model.)

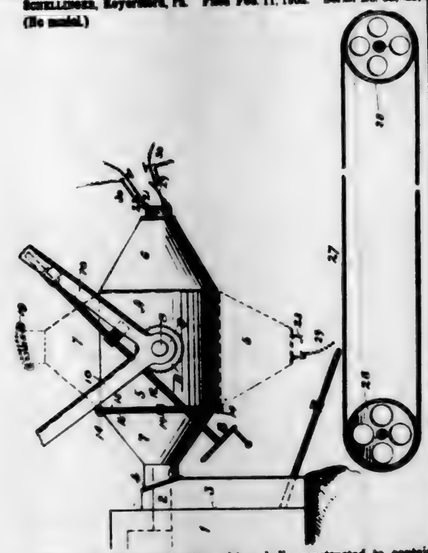

Claim.—1. The combination with a ladle constructed to contain molten glass and having an aperture in the bottom thereof, guides mounted adjacent to said aperture, and a block of refractory material mounted in said guides and having a slot therein to permit the outflow of glass, substantially as described.

2. The combination with a ladle constructed to hold molten glass and having a narrow slot thereon for the outflow of glass, contact-pieces mounted on said ladle and located to be operated by the issuing glass to close a circuit, substantially as described.

3. The combination with a furnace having an inclined plane face thereon with an aperture therein for the outflow of glass, a ladle mounted to turn about a horizontal axis and provided with an elongated reduced neck having an inclined plane face, said face being located to come in contact with the said inclined face on said furnace when the bore of said neck is in alinement with the said aperture in said furnace, to prevent the entrance of air and limit the movement of the ladle, substantially as described.

708,114. **ROLLER-BRAKE.** LOUIS H. BELL, San Francisco, Cal., assignor to Dusk Brake Company of New York, New York, N. Y. Filed Aug. 13, 1901. Serial No. 72,511. (No model.)

Claim.—1. In a brake for elastic wheel-tires, the combination of a movable supporting member, a plurality of roller-carrying pieces pivotally connected thereto and adapted to swing forward and back of the plane of said member, shafts extending from said pieces and inclining downwardly and outwardly therefrom, rollers loosely mounted on said shafts and friction-blocks secured to the shafts at the backs of said rollers, with means for actuating the supporting member whereby the rollers may be brought into contact with a tire and swung into operative position by the movement of the tire, substantially as set forth.

2. In a brake for elastic wheel-tires, the combination of a movable supporting member, a plurality of roller-carrying pieces pivotally connected thereto and adapted to swing forward and back of the plane of their pivots, rigid shafts inclining downwardly and outwardly from said pieces and having loose rollers and fixed friction-blocks thereon, means to limit the swinging movement of the carrying-pieces and means for actuating the movable supporting member whereby the rollers may be brought into contact with a tire, substantially as and for the purpose set forth.

708,115. **SEAT-SPRING FOR VEHICLES.** GEORGE E. BLAIER, Coshocton, Ohio. Filed Jan. 20, 1902. Serial No. 91,574. (No model.)

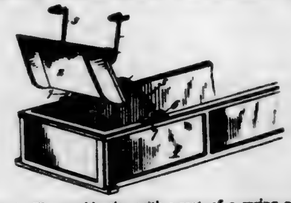

Claim.—1. The combination with a seat, of a spring consisting of two coils terminating in arms adapted to engage the upper edge of the wagon-box, and a second set of arms leading from said coils and lying in the same horizontal plane as the upper portions of the coils and formed with a loop, the upper surface of said coils, the last-named arms and the loop contacting with and supporting said seat, and means for adjustably connecting said loop to said seat, said means comprising a clasp surrounding the sides of the loop and having its ends embedded in the lower side of the seat, and a screw passed through said clasp between the sides of the loop and into said seat, substantially as set forth.

2. The combination with a wagon-box and a seat, of a spring consisting of two coils terminating in arms, one of which is pivotally connected to the upper edge of the side of the wagon-box, and the other of which has a loose hook engagement therewith, said springs being provided with a second set of arms lying in a horizontal plane and parallel with the upper portions of the coils and terminating in a loop, and means for adjustably connecting said loop to said seat, said means comprising a clasp surrounding the sides of the loop and having its ends embedded in the lower side of the seat, and a screw passed through said clasp between the sides of the loop and into the seat, substantially as set forth.

708,116. **IRON BLAST-FURNACE.** MARTIN P. ROSS, San Francisco, Cal., assignor to Hydro-Carbon Smelting Co., New York, N. Y., a Corporation of West Virginia. Filed July 13, 1901. Serial No. 66,733. (No model.)

Claim.—1. In a blast-furnace, a water-jacketed fire-chamber, a tuyer extending therethrough, an oil-feeder inserted through the water-jacket of said chamber and communicating with the interior of the tuyer at a point intermediate of its ends, and an air-feeder projecting into the tuyer, and adapted to discharge at a point adjacent to the point of discharge from the oil-feeder.

2. In a blast-furnace, a water-jacketed fire-chamber, a tuyer extending therethrough, an inclined oil-feeder projecting through the outer wall of said chamber and into the upper portion of the tuyer at a point intermediate of its ends, and an air-feeder projecting into the said tuyer and arranged to discharge at a point adjacent to the point of discharge from the oil-feeder.

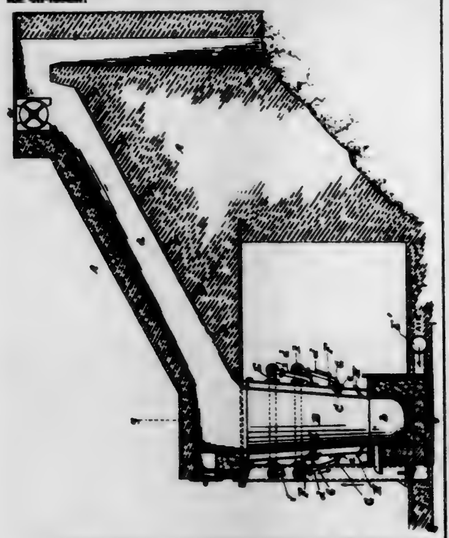

3. In a blast-furnace, a fire-chamber, a tuyer extending through the wall thereof, an oil-feeder projecting through said wall at a point above the tuyer and arranged to discharge therein, and an air-feeder arranged longitudinally of the tuyer and projecting therein from the outer end thereof, said feeder being arranged to discharge at a point adjacent to and below the point of discharge from the oil-feeder.

4. In a blast-furnace having an air-blast tuyer extending through the wall thereof, an oil-feeder inserted through the wall of said tuyer, a cap-plate *c* fitting over the outer end of the tuyer and an air-feeder projecting into the tuyer through said cap-plate and adapted to discharge at a point adjacent the discharge from the feeder at an angle thereto, substantially as described.

5. In a blast-furnace having an air-blast tuyer extending through the wall thereof, an oil-feeder inserted through the wall of said tuyer, a relatively flat cap-plate fitting over the outer end of the tuyer and an air-feeder projecting into the tuyer through said cap-plate and adapted to discharge at a point adjacent the discharge from the feeder at an angle thereto, and a removable auxiliary cap covering an opening in the cap-plate in alinement with the tuyer, substantially as described.

6. In a blast-furnace, a water-jacketed fire-chamber, air-blast tuyers C extending through and supported at opposite alined points in the opposite walls of said chamber, oil-feeders passing through the water-jacket of said chamber and leading into said tuyers and valved feeder-pipes H below said tuyers C also extending through and supported at alined points in the opposite walls of the water-jacket, substantially as described.

7. In a blast-furnace, a water-jacketed fire-chamber, a tuyer extending therethrough, and oil and air feeders associated with said tuyer and projecting therein and arranged to discharge into the fire-chamber, said oil-feeder passing through the water-jacket of said chamber, substantially as described.

8. In a blast-furnace, a water-jacketed fire-chamber, an air-blast tuyer C extending through and supported in the opposite walls of said chamber, an oil-feeder passing through the water-jacket of said chamber and leading into said tuyer, and a second feeder-pipe H below said tuyer and also extending through the water-jacket of the fire-chamber and arranged to discharge into said fire-chamber, substantially as described.

708,117. RETAINER FOR HOSE-COUPLINGS. WILLIAM F. BOWERS, San Francisco, Cal. Filed Apr. 3, 1902. Serial No. 101,520. (No model.)

Claim.—In a device of the character described, the combination with a coupling provided with a peripherally-grooved collar and a tubular extension adapted to fit into the end of a hose, of a tapering externally-screw-threaded sectional thimble which surrounds the end of the hose fitted over the tubular extension of the coupling, the outer end of the thimble-sections being inwardly flanged to engage with the peripheral groove of the coupling-collar, and a tightening-nut which screws onto the tapering screw-threaded thimble.

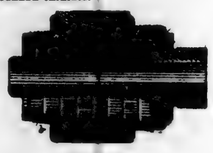

708,118. FERTILIZER-DISTRIBUTER. ELIAS L. BRAXTON, Pactolus, N. C. Filed Nov. 20, 1901. Serial No. 83,758. (No model.)

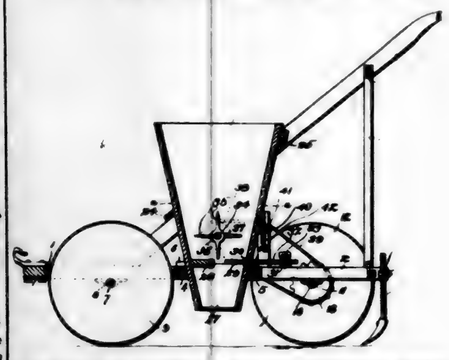

Claim.—1. In a fertilizer-distributer, the combination of a wheeled frame having cross-bars forming an opening therein, a downwardly-tapered hopper having its lower portion inserted between said cross-bars and bearing against the same, handles attached to the frame and disposed on opposite sides of the hopper, cross-bars connecting said handles and disposed on and bearing against the front and rear sides of the upper portion of the hopper, a cut-off slide-plate operating in an opening in one side of the hopper, extending outwardly therefrom and having a longitudinal slot, a support fixed on the frame for the outer end of said slide, and a clamping-screw in said support and operating in said slot, substantially as described.

2. In a fertilizer-distributer, the combination of a frame, a centrally-disposed supporting-wheel at the front end thereof, a shaft journaled in bearings near the rear end of the frame, supporting-wheels on said shaft on opposite sides of the frame, a sprocket-wheel on said shaft, at one side of the frame, a hopper supported on the frame, a stirring-shaft journaled in the hopper, a sprocket-wheel on the stirring-shaft at one side of the hopper, a sprocket-chain connecting said sprocket-wheels, and a feeder on one side of the frame, in advance of one of the side wheels and extending in advance of and laterally beyond the sprocket-wheel on the stirring-shaft, substantially as described.

708,119. SIGHT FOR FIREARMS. JAMES T. BRAYTON, Chicago Ill. Filed May 13, 1901. Serial No. 60,796. (No model.)

Claim.—1. The combination with the front sight and a double-concave-lens sight at the breech, of a plate mounted on the barrel, a bridge adjustably connected to the said plate, a frame hinged to said bridge and a double-convex lens held in said frame, substantially as described.

2. A plate mounted upon the barrel, a bridge mounted to slide along said plate, detents for locking the said bridge to said plate and a double-convex lens mounted on said bridge, substantially as described.

3. The combination with the front sight and a double-convex-lens sight at the breech, of a bridge adjustably mounted on the barrel, a frame hinged to said bridge and a double-convex lens held in said frame.

4. The combination with the front sight and a double-convex-lens sight at the breech, of a bridge adjustably mounted on the barrel, a frame hinged to said bridge, said frame being provided with spring-clamps for holding a double-convex lens, substantially as described.

5. In a sight for firearms a bridge adjustably mounted on the barrel, a tilting frame hinged to said bridge, a double-convex lens held by said tilting frame and an open sight adjacent to said tilting frame, substantially as described.

708,120. FIRE-ESCAPE. JAMES H. BRASELL, Rochester, N. Y. Filed Dec. 2, 1901. Serial No. 84,372. (No model.)

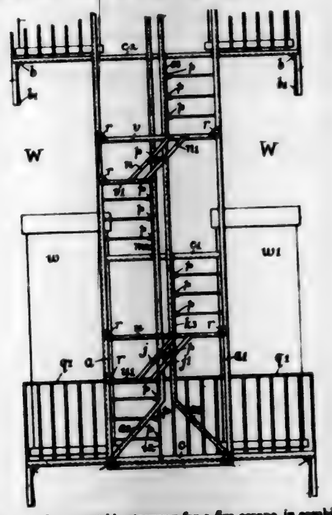

Claim.—1. In an outside stairway for a fire-escape, in combination with the four vertical members constituting the outer and inner corners around which the stairway is built, horizontal pieces connecting the outside vertical members together and horizontal members also connecting such outside vertical members with the building, such last-named horizontal members constituting supports for the several platforms or balconies next to the building, flights of steps leading from the platforms next to the building to the platforms or landings supported by such vertical members and carried around such inner vertical members and within such outer vertical members, tie-rods extending obliquely from the inner ends of one pair to the outer ends of a lower pair of such horizontal members connected with the outside vertical members, all of such vertical members supported from and connected with such horizontal members.

2. In an outside stairway for a fire-escape, in combination with the four vertical members constituting the outer and inner corners around which the stairway is built, horizontal pieces connecting the outside vertical members together and horizontal members also connecting such outside vertical members with the building, such last-named horizontal members constituting supports for the several platforms or balconies next to the building, flights of steps leading from the platforms next to the building to the platforms or landings supported by such vertical members and carried around such inner vertical members and within such outer vertical members, and tie-rods extending obliquely downward and outward from the building and supporting the outer vertical members and the horizontal members by connections therewith at or near their junction, all of such vertical members supported from and connected with such horizontal members.

708,121. DEVICE FOR OVERCOMING ALTERNATING CURRENTS IN DIRECT-CURRENT CIRCUITS. REINHARD BRODHUN, Berlin, Germany. Filed Mar. 20, 1902. Serial No. 100,342. (No model.)

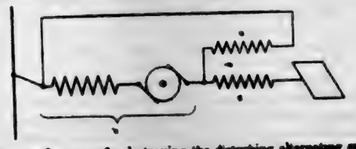

Claim.—In means for destroying the disturbing alternating current in the conductors of electric railroads worked with direct current, a transformer the primary winding of which is connected in the series circuit, and the secondary in a short-circuit to the motor, in such manner that on the common path through the motor, the alternating current generated by the latter flows in opposite direction to the current produced in the secondary winding, for the purpose of removing the former, substantially as described.

708,122. PLOW. JUDSON BUCHANAN, Chattanooga, Tenn., assignor to Chattanooga Plow Co., a Corporation of Tennessee. Filed Jan. 13, 1902. Serial No. 89,433. (No model.)

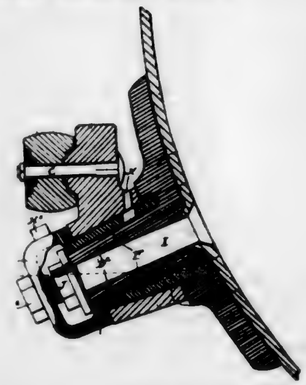

Claim.—1. In a rotary moldboard-plow, the combination with a plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, means for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and secured to said bushing by a dust and oil tight joint, substantially as described.

2. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, means for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded to said bushing, substantially as described.

3. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, means for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing and abutting against said hanger, substantially as described.

4. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, and a nut for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing, substantially as described.

5. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, a nut for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing and abutting against said hanger, substantially as described

6. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard a journal rigid upon and extending from the moldboard through said bushing, a bolt extending through said moldboard and said journal, a nut applied to said bolt, and a cup-shaped cap extending over the lower end of said journal and secured to said bushing by a dust and oil tight joint, substantially as described.

7. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bush-

ing, a bolt extending through said moldboard and journal, a nut applied to said bolt, and a cup-shaped cap extending over the lower end of said journal and threaded to said bushing, substantially as described.

9. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular bushing located within said hanger and inclined downward from said moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, a bolt extending through said moldboard and journal, a nut applied to said bolt, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing and abutting against said hanger, substantially as described.

9. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular, tapering bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, means for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded to said bushing, substantially as described.

10. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular, tapering bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, means for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing and abutting against said hanger, substantially as described.

11. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular, flanged bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, means for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and secured to said bushing by a dust and oil tight joint, substantially as described.

12. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular, flanged bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, means for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing and abutting against said hanger, substantially as described.

13. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular, flanged bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, a nut for securing said journal in said bushing, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing, substantially as described.

14. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular, flanged bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal rigid upon and extending from the moldboard through said bushing, a bolt extending through said moldboard and said journal, and a cup-shaped cap extending over the lower end of said journal and secured to said bushing by a dust and oil tight joint, substantially as described.

15. In a rotary moldboard-plow, the combination with the plow-beam, of a hanger, a bearing comprising a tubular, flanged bushing located within said hanger and inclined downward from the moldboard, a rotary moldboard, a journal extending from the moldboard through said bushing, a bolt extending through the moldboard and journal, a nut applied to said bolt, and a cup-shaped cap extending over the lower end of said journal and threaded around said bushing and abutting against said hanger, substantially as described.

16. In a rotary moldboard-plow, the combination with a beam and a hanger formed integral with said beam, of a bearing comprising a tubular bushing located within said hanger and inclined downward, and a cup-shaped cap secured over the lower end of said bushing by a dust and oil tight joint, substantially as described.

17. In a rotary moldboard-plow, the combination with a beam and a hanger formed integral with said beam, of a bearing comprising a tubular bushing located within said hanger and inclined downward, and a cup-shaped cap threaded to the lower end of said bushing, substantially as described.

18. In a rotary moldboard-plow, the combination with a beam and a hanger formed integral with said beam, of a bearing comprising a tubular bushing located within said hanger and inclined downward, and a cup-shaped cap threaded around the lower end of said bushing and abutting against said hanger, substantially as described.

19. In a rotary moldboard-plow, the combination with a beam and a hanger formed integral with said beam, of a bearing comprising a tapering, tubular bushing located within said hanger and inclined downward, and a cup-shaped cap secured over the lower end of said bushing by a dust and oil tight joint, substantially as described.

20. In a rotary moldboard-plow, the combination with a beam and a hanger formed integral with said beam, of a bearing comprising a flanged, tubular bushing located within said hanger and inclined downward, and a cup-shaped cap secured over the lower end of said bushing by a dust and oil tight joint, substantially as described.

21. In a rotary moldboard-plow, the combination with a beam and a hanger formed integral with said beam, of a bearing comprising a flanged, tubular bushing located within said hanger and inclined downward, and a cup-shaped cap threaded around the lower end of said bushing and abutting against said hanger, substantially as described.

708,128. CARTRIDGE-SHELL-GAGING MACHINE. PAUL BUTLER, Lowell, Mass. Filed Apr. 28, 1897. Serial No. 633,902. (No model.)

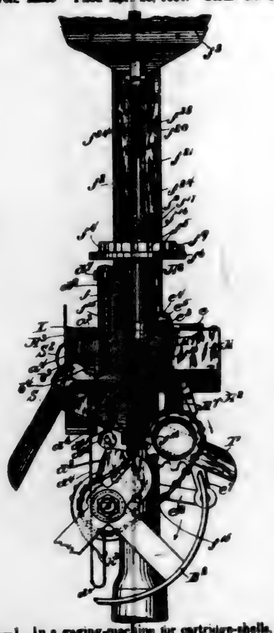

Claim.—1. In a gaging-machine for cartridge-shells, the combination with a gage-passage adapted to admit articles of a predetermined size or smaller but to exclude articles of a larger size, of a succeeding passage or passages in alinement with said gage-passage each smaller than and independent of the one preceding it, means for positively moving an article toward said series of passages until stopped by one of them, and ejecting devices for ejecting an article standing in any of the positions determined by the gage-passages, substantially as described.

2. The combination with a pair of gage-passages, of a support longitudinally movable therein, a feeler adapted to engage a shell stopped at the mouth of either passage, ejecting devices adapted to operate on said shell when released by said feeler, and connecting mechanism whereby said parts are caused to coöperate, substantially as described.

3. In a gaging-machine for cartridge-shells, the combination with a gage-passage, of a support longitudinally movable through said passage a feeler movable with said support and adapted to engage a shell which will not pass through said passage, an ejecting device for said shell adapted to operate when the shell is disengaged by the said feeler, and connecting mechanism whereby said parts are caused to coöperate, substantially as described.

4. The combination with the gage-passages and means for presenting a shell thereto, of the means for controlling the movement of the shell with relation to said passages consisting of a supporting-pedestal for the shell movable through said passages, and a feeler movable with said pedestal to engage a shell which will not pass through said passages or either of them, substantially as described.

5. The combination with a gage-passage, of a reciprocating carriage adapted to present a shell thereto, a pedestal to receive and support a shell thus presented, means for moving said pedestal to permit the shell supported thereon to enter said passage, a feeler movable with said pedestal to engage a shell which is too large to enter said passage, and a portion of the carriage adapted to yieldingly engage a shell during the movement of said carriage in the opposite direction, substantially as described.

6. The reciprocating carriage *c* provided with the jaws c^2 and the ejector-spring c^{10}, combined with the gage-passage *a* and the feeler d^3, as and for the purpose described.

7. The combination with the different-sized gage-passages in alinement with each other, of the reciprocating support adapted, when free, to move through said passages away from the openings thereof to which a shell is presented, the feeler movable with said support, and means for positively actuating said support toward said openings, substantially as described.

8. The combination with a gage-passage and means for presenting a shell thereto, of a second gage-passage in line therewith, a support or pedestal movable through said passages, a feeler adapted to engage a shell stopped by either passage, a spring-operated ejecting device for shells stopped by the second passage adapted to be set by said pedestal in its movement in one direction, and means for maintaining it set during the movement thereof in the opposite direction, substantially as described.

9. The combination with a gage-passage and means for presenting a shell thereto, of a second gage-passage in line therewith, a support or pedestal movable through said passages, a feeler adapted to engage a shell stopped by either passage, a spring-operated ejecting device for shells stopped by the second passage adapted to be set by said pedestal in its movement in one direction, an engaging member adapted to maintain said ejector set until engaged by a shell stopped by the passage and held by the feeler, and means for disengaging said member after the shell is so held, substantially as described.

10. The combination with the gage-passage and the reciprocating carriage for the shells, of the movable support and feeler, an ejecting device comprising a spring-actuated plunger adapted to be set by said movable support, a retaining device for maintaining said plunger set, and an operating-cam for said retaining device coöperating with the reciprocating carriage, substantially as and for the purpose described.

11. The combination of the spring-actuated plunger *g* having the inclined surface g^2; with the pedestal *d*; the retaining device g^3 and means for operating the same; and the feeler d^3, substantially as and for the purpose described.

12. The combination with a reciprocating carriage adapted to receive a shell and present it to a suitable gage-passage, of a movable support for the shell, a cam for positively moving said support to a position to receive a shell presented by the carriage, means for yieldingly producing the return movement of said support, a feeler movable with said support, and actuating mechanism for said carriage and cam whereby the downward movement of the support and feeler takes place substantially when the carriage is in position to present the shell to the gage-passage, substantially as described.

13. In a machine for operating on cartridge-shells, the combination with a feed-chute adapted to receive said articles from a suitable hopper, of a traveling receiver for said articles; cams in the path of a shell carried by said receiver for overturning and righting said shell if presented to said receiver wrong end up while said shell is still in the receiver, and an opening in the path of the shells carried by the said receiver, through which opening said shells are fed to the machine, substantially as described.

14. In a machine for operating on cartridge-shells, the combination with a feed-chute adapted to receive said articles from a suitable hopper, of a traveling receiver for said articles, a cam adapted to engage the mouth of a shell traveling in said receiver and draw it aside until the shell falls on its side without leaving the receiver; and means for righting said fallen shell in the receiver, substantially as described.

15. In a machine for operating on cartridge-shells, the combination with a feed-chute adapted to receive said articles from a suitable hopper, of a traveling receiver for said articles, a cam adapted to engage the mouth of a shell traveling in said receiver and draw it aside until the shell falls on its side in the receiver; an inclined surface beyond said cam adapted to engage the mouth end of a shell during the onward movement of the traveling receiver and lift said end until the shell stands on its flanged end in the receiver, and an opening in the path of shells carried by the traveling receiver through which all of the shells in the receiver are fed to the machine, substantially as described.

16. The combination with the chute f^3, of the support f^6 provided with an opening f^7, the traveling receiver f^5 having recesses f^8, the cam f^9, and the inclined surface f^{10} adjacent to the said receiver and in the path of an article carried thereby, substantially as herein shown and for the purpose described.

17. The combination with a feed-chute adapted to contain a column of shells endwise, with a support for the shells below said chute, means for moving said shells along the surface of said support, a cam in the path of shells thus moved, arranged to engage the mouth of a shell but not the flanged end thereof and inclined to the direction of travel of the shell, whereby the mouth of the shell is drawn from under the center of gravity to tip the shell upon its side, an inclined righting-surface so positioned with relation to the receiver as to be in the path of the shell thus tipped; and an opening in the said support to which the shells are finally carried, substantially as described.

18. The combination with a feed-chute adapted to contain a column of shells endwise, of a traveling shell-receiver below said chute having recesses each adapted to receive and carry along a shell dropped therefrom, a lateral opening in said chute of sufficient size to permit a shell to pass out laterally in the direction of movement of the traveling receiver, and a normally closed gate for said opening arranged to open in response to pressure, whereby a shell caught by the receiver before it has fully emerged from the chute is permitted to escape therefrom without detriment, substantially as described.

19. In a machine for operating on cartridge-shells, the combination with the feed-chute adapted to receive said articles from a suitable hopper, of a traveling receiver for said articles adapted to receive the articles endwise from the feed-chute, a support for the articles along which they are propelled by the receiver, and a cam adapted to engage the end of an article as it is propelled by said receiver and deflect the same until the said article falls from its end upon its side, substantially as described.

20. In a machine for operating on cartridge-shells, a rotating feed-disk having radial recesses, means for presenting articles to said recesses either end uppermost, a support for the articles along which they are carried by said disk, and a cam stationary with relation to said disk and adapted to engage and deflect one end of an article traveling along the support but not the other whereby the articles will remain on end upon the support or be tipped over sidewise upon the support according to the position in which they were originally presented, substantially as described.

21. In a machine for operating on cartridge-shells or other articles the opposite ends of which differ in shape, the combination with a traveling carrier adapted to receive one of such articles in a substantially vertical position, of a support for said article below said carrier, and a cam formed on said support and so shaped and arranged as to engage and deflect an article traveling along the support on one end but not an article traveling along the support on the other end.

22. The combination with a disk having radially-arranged shell-receiving recesses; of means for feeding shells thereto either end up; and cams so arranged with relation to said disk as to coöperate therewith in rearranging the shells after they have been fed thereto to secure a uniform end arrangement thereof in said disk.

23. In a machine for operating on articles the longitudinal dimension of which is greater than the lateral dimension, the combination with a traveling receiver adapted to receive one or more of such articles vertically positioned, of a support below the said receiver for said article, a cam or deflecting surface so arranged with relation to said receiver as to engage an article propelled thereby at a point near one end thereof, and means for substantially preventing a lateral movement of the other end of the article in the same direction while it is engaged by the cam, whereby said article is tipped from a vertical to a horizontal position upon said support, substantially as described.

24. In a machine for operating on articles the longitudinal dimension of which is greater than the lateral dimension, the combination with a traveling receiver having laterally-open recesses along its periphery each adapted to contain and forward one of such articles, of means for tipping said articles from a vertical to a horizontal position in the travel of the receiver, and means for preventing the articles thus tipped from escaping endwise from the recesses, substantially as described.

708,124. WALL-PAPER HANGER. JOSEPH P. CAMPON, Elma, Iowa. Filed Jan. 7, 1902. Serial No. 88,744. (No model.)

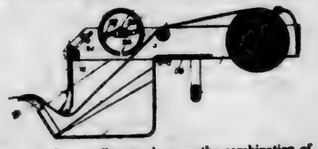

Claim.—1. In a wall-paper hanger, the combination of a frame, a paper-bearing roller mounted in said frame near the front end thereof, means for controlling the paper on said roller, a paste-spreading brush pivotally mounted in the rear end of said frame, shoulders on the inside

of the sides of the frame in front of said paste-spreading brush, a brush-bearing shaft mounted in the said shoulders, a hollow-cylinder paste-tank having a longitudinal slot therein mounted on said shaft and outside of the brush portions thereof, a roller mounted on the sides of the frame between the paper-bearing roller and the cylindrical paste-tank, connecting-pieces between the sides of the frame, a handle attached to the under surface of the said connecting-piece, a drip-cup detachably connected with said connecting-piece and extended under the roller paste-tank, a brush-bearing frame pivotally and adjustably attached to the rear end of said frame, for the purposes stated.

2. In a wall-paper hanger, the combination of a frame, a paper-bearing roller mounted in said frame, means for controlling the paper on said roller parallel to the front end thereof, a paste-spreading brush pivotally mounted in the rear ends of said frame, means for limiting the pivotal movement of said paste-spreading brush, shoulders on the inside of the sides of the frame in front of said paste-spreading brush, a hinged top portion to said shoulders, means for holding said hinged portion firmly to the shaft, a brush-bearing shaft mounted in said shoulders, a cylinder paste-tank having a longitudinal slot therein mounted on said shaft and outside of the brush portion thereof, a roller mounted in the side of said frame between the paper-bearing roller and the cylinder paste-tank, a connecting-piece between the sides and attached to them at its end portion, a handle firmly attached to the under surface of the said connecting-piece a drip-cup detachably connected with said connecting-piece to hang near the cylinder paste-tank, a brush-bearing frame pivotally and adjustably attached to the rear end of said frame comprising two side pieces, and a brush portion between said side pieces, for the purposes stated.

3. In a wall-paper hanger, the combination of a frame, a paper-bearing roller detachably mounted in said frame near the front end thereof, a leaf-spring attached at one end to the front end piece of said frame and extended inwardly, a paste-spreading brush pivotally mounted in the rear ends of said frame, means for limiting the movement of said paste-spreading brush, shoulders on the inside of the sides of the frame in front of said paste-spreading brush, a brush-bearing shaft detachably mounted in said shoulders, means for holding said shaft in said shoulders, a cylinder paste-tank having a longitudinal slot therein and having covers on each end thereof, shoulders on the inner surface of the cylinder portion of said covers, an end portion in said cover deflected inwardly, said paste-tank being mounted on said shaft and outside of the brush portion thereof, a roller rotatably mounted in the sides of the frame near the paper-bearing roller and the cylinder paste-tank, a connecting-piece between the sides and firmly attached to them at its end portions, a handle attached to the under surface of said connecting-piece, means for holding said drip-cup firmly in place beneath the cylinder paste-tank, a brush-bearing frame pivotally attached to the rear ends and on the opposite sides of the said frame, means for limiting the pivotal movement of said brush-bearing frame for the purposes stated.

708,125. COATING-MACHINE. GABRIEL CARLSON, Springfield, Mass., assignor to Confectioners' Machinery and Manufacturing Company, Springfield, Mass. Filed May 9, 1901. Serial No. 59,632. (No model.)

Claim.—1. In a coating-machine, an endless series of center carriers or baskets; means for moving the carriers over a coating-material tank; means for applying coating material to the contents of the carriers, a series of plucks and means for automatically removing the coated goods from the carriers and depositing the same upon the plucks.

2. In a coating-machine, the combination with the coating-material tank, of a vertical reciprocatable pan adapted and arranged to periodically raise coating material from the tank, and means for reciprocating the same.

3. In a coating-machine, an endless series of center carriers or baskets; means for moving the carriers over a coating-material tank; a vertically-reciprocatable pan for applying coating material to the contents of the carrier, and means for jarring or shaking the carriers at intervals.

4. In a coating-machine, an endless series of center carriers or baskets; a coating-material tank; means for passing the center carriers over the coating-tank and applying a coating to the contents of the carriers by means of a vertically-reciprocatable pan, and means for automatically removing excess of coating material from the contents of the carriers, substantially as shown and described.

5. In a coating-machine, an endless series of center carriers or baskets; means for moving the carriers over a coating-material tank; means for applying a coating to the contents of the carriers; means for jarring the carriers and their contents, and means for removing the coated goods, substantially as shown and described.

6. The combination with a series of center carriers or baskets and means for moving the same, of the horizontal, vertically-adjustable, reciprocatable rack-bars, and means for reciprocating said bars.

708,125.

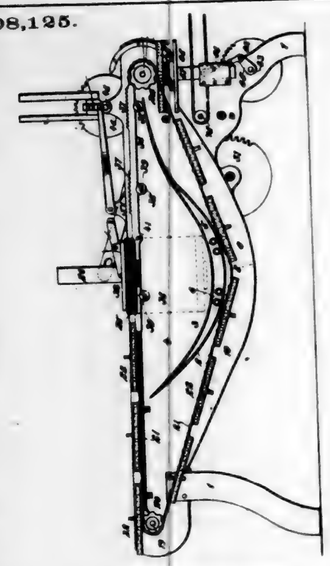

708,126. PORTABLE IRRIGATOR. JOHN F. CHASE, St. Petersburg, Fla. Filed June 11, 1901. Renewed July 19, 1902. Serial No. 116,344. (No model.)

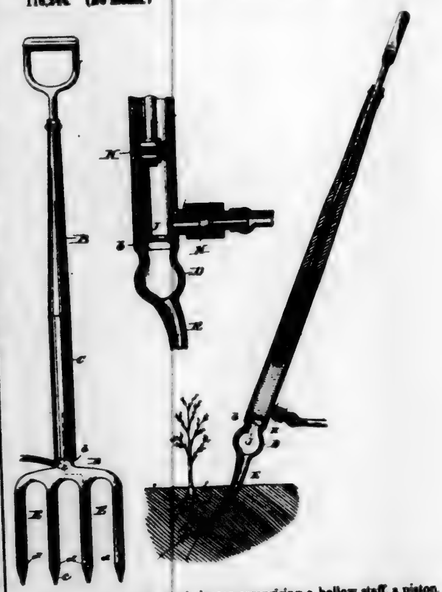

Claim.—1. A portable irrigator comprising a hollow staff, a piston, a rod for operating the piston, means for connecting the staff with a liquid-supply, a valve for cutting off the supply, hollow tines having latera openings connected to said hollow staff, and a valve for closing communication between said tines and staff.

2. A portable irrigator, comprising a hollow staff suitably connected with a liquid-supply, valves for controlling the admission to and emission from the staff of the liquid, a hollow fork-head having hollow tines formed with openings connect to said staff, and a piston for drawing the liquid into and discharging the same from the staff through tines.

3. A portable irrigator, comprising a hollow staff, a hollow fork-head having hollow tines formed with perforations and having thickened pointed ends, means for connecting said staff with a liquid-supply, and a piston for drawing the liquid into and discharging the same from said hollow staff.

708,127. GRINDING, POLISHING, OR BUFFING MACHINE. CHARLES F. CHURCH, Holyoke, Mass. Filed Jan. 24, 1900. Serial No. 2,567. (No model.)

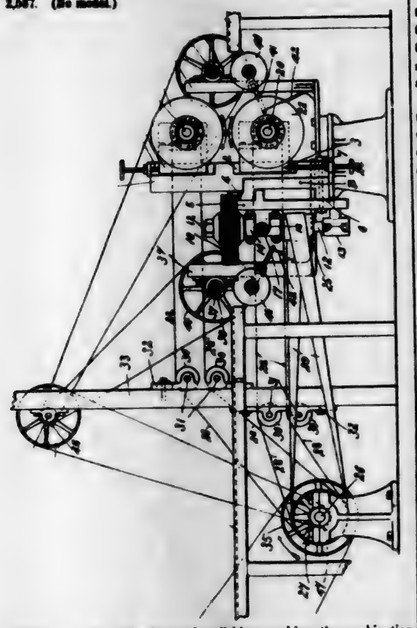

Claim.—1. In a grinding and polishing machine, the combination with a vertical supporting-frame formed with upper and lower vertical slideways at its front, plates having flanges to engage the slideways and formed with upper and lower horizontally-projecting arms provided with bearing-apertures, bearing-boxes formed with trunnions mounted in said bearing-apertures, shafts in the bearing-boxes, upper and lower polishing-wheels on the shafts, and screws engaging said plates from above and below whereby the same may be adjusted to and from each other, substantially as shown and described.

2. In a grinding and polishing machine, the combination with the polishing-wheels, the feed-wheels, and the shaft thereof, of a polish-applying device comprising a lever formed to carry a polishing material in its free end, a roller on its other end, a spring to hold the polishing material in contact with the polishing-wheel, and a cam on the feed-wheel shaft to carry the lever with the polishing material free from the polishing-wheel, substantially as specified.

3. In a grinding and polishing machine, the combination with the polishing-wheels, of an automatically-operated device for applying polishing material to the wheels, comprising a suitably-mounted lever extended in both directions beyond its fulcrum or pivotal support, and formed to carry a polishing material in the end of the arm adjacent to the said wheels, a roller on the other arm of the lever, a cam to actuate the lever, and a spring to hold the roller in engagement with the cam.

4. In a grinding and polishing machine, a vertical supporting-frame formed with laterally-extended guideways at its base, laterally-adjustable plates formed with coincident grooves mounted on the guideways, and having rearwardly-projecting arms provided with bearings, vertically-disposed bearing-boxes formed with trunnions to rest within the bearings of said arms, lower vertical bearings carried by the plates, vertical shafts in the bearings, and polishing-wheels operatively mounted on the shafts.

5. In a grinding and polishing machine, a vertical supporting-frame formed with laterally-extended frames having guideways on their upper edges and provided with horizontally-elongated slots in the lower portion, laterally-adjustable plates formed with coincident grooves mounted on the guideways and having rearwardly-projecting arms provided with bearings, a fastening-bolt projected through the said slots, vertical bearing-boxes having trunnions to engage in the bearings of said arms, lower vertical bearings formed with an arm to engage in the said plates, vertical shafts in the bearings, and polishing-wheels operatively mounted on the shafts.

6. In a grinding and polishing machine, the combination of a relatively stationary feed-wheel, a lever suitably fulcrumed, a feed-roller journaled in one end of the lever and arranged adjacent to its companion roller, and a retractile spring secured to the other end of the lever.

7. In a grinding and polishing machine, the combination with a vertically-disposed supporting-frame, and adjustable bearings supported by the frame, of upper and lower horizontally-arranged shafts mounted in the bearings at the front of the frame, vertical polishing-wheels on the shafts, vertical shafts mounted in the bearings at the rear of the frame, and horizontally-disposed polishing-wheels mounted on the vertical shafts.

8. In a grinding and polishing machine, the combination of a vertically-disposed supporting-frame, horizontal shafts mounted at the front of the frame, alining polishing-wheels on the shafts, vertical shafts mounted at the rear of the frame, alining polishing-wheels on the upper ends of the vertical shafts, feed-rollers at the front of the frame and polishing-wheels, and feed-rollers at the rear of the frame and rear polishing-wheels.

9. In a grinding and polishing machine, the combination with the shaft of the polishing-wheels, of bearing-boxes formed with trunnions, bearings to take the trunnions, a screw-threaded chamber in one of the bearings, a socket-plug having exterior screw-threads to engage those of the said chamber, and an expanding spring in the socket arranged to bear with one end on the end of the trunnion.

10. The combination in a polishing-machine, of a suitable frame, suitable polishing-wheels mounted thereon, and means for automatically and intermittently feeding one or more of the polishing-wheels with a polishing material, said means comprising a holder for the polishing material mounted upon a lever, a shaft having a cam as 54 mounted thereon revolving in engagement with one arm of the lever, and a spring arranged to maintain the engaging arm of the lever in contact with said cam, the cam being shaped to allow the holder of the polishing material to be carried toward the polishing-wheels as said cam revolves, and means to revolve the shaft upon which the cam is mounted, substantially as shown.

708,128. APPARATUS FOR THE CONTINUOUS MANUFACTURE OF SPIRAL SPRINGS OR COILS. ALFRED E. COLE and PATRICK J. DONNELLY, Spencer, Mass. Filed Oct. 16, 1901. Serial No. 78,802. (No model.)

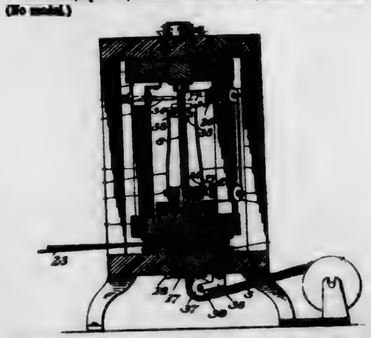

Claim.—1. In an apparatus for coiling wire, the combination of a stationary non-rotating mandrel, means for leading the wire thereto, and mechanism for rotating the means around said mandrel, whereby the wire will be laid thereon, and formed into a spiral of indefinite length, which will slide off the end of said mandrel without rotation.

2. In an apparatus for coiling wire, the combination of a stationary non-rotating mandrel, a support for carrying a bundle of wire, means for leading the wire from said bundle to said mandrel, and means for rotating said support and said means, whereby the wire will be laid on said mandrel and formed into a spiral of indefinite length which will slide off the end of the mandrel without rotation.

3. In an apparatus for coiling wire, a stationary non-rotating mandrel, means for leading the wire thereto, a separator or spacer carried by said means, and mechanism for rotating this means around the mandrel.

4. In an apparatus for coiling wire, a hollow stationary non-rotating mandrel, means for leading the wire thereto, and mechanism for rotating this means around the mandrel to lay the wire thereon and form the coil.

5. In an apparatus for coiling wire, a stationary non-rotating mandrel having a shoulder, means for leading the wire to said mandrel to

wind on the same under said shoulder, and mechanism for rotating this means around the mandrel.

6. In an apparatus for coiling wire, a stationary non-rotating mandrel arranged to have its axis vertical, a support for a bundle or reel of wire arranged in line with the axis of said mandrel, and mechanism for rotating said means and support around said axis.

7. In an apparatus for coiling wire, the combination of a mandrel an escape-pipe arranged in line with said mandrel, a frame journaled on said mandrel and escape-pipe, means carried by said frame for leading the wire to the mandrel, and mechanism for rotating said frame.

8. In an apparatus for coiling wire, the combination of a mandrel, an escape-pipe arranged in line with said mandrel, disks journaled on said mandrel and escape-pipe, spider-arms connecting said disks, means carried by one of said spider-arms for leading the wire to the mandrel, and mechanism for rotating the frame formed by said disks and said arms.

9. In an apparatus for coiling wire, a stationary non-rotating mandrel, a shoulder formed on said mandrel, means for leading the wire thereto mechanism for rotating the means around said mandrel, and a spacer carried by said means, arranged to fit in between the coils of the spiral to force the same off of the end of the mandrel as fast as it is laid under said shoulder, and to determine the pitch or spacing of the spring or coil.

10. In an apparatus for coiling wire, the combination of a stationary non-rotating mandrel having a working shoulder, said mandrel being slightly tapered from said shoulder, means for leading the wire thereto, and mechanism for rotating this means around the mandrel.

11. In an apparatus for coiling wire, a stationary non-rotating hollow mandrel having a working shoulder, means for leading the wire to said mandrel to lay the same under the shoulder, and mechanism for rotating this means around the mandrel.

12. In an apparatus for coiling wire, a mandrel, an escape-pipe, a frame journaled thereon, means for rotating the frame, and one or more pressers or formers carried by the end of the escape-pipe and pivoted thereon, so that they can be swung out, and the bundle or reel of wire placed on the end of the escape-pipe.

708,129. ROTARY ENGINE. ANDREW DAHLÉN, Vasa, Minn., assignor of one-half to H. L. Bryntilson and O. E. Anderson, Vasa, Minn. Filed Aug. 2, 1901. Serial No. 70,681. (No model.)

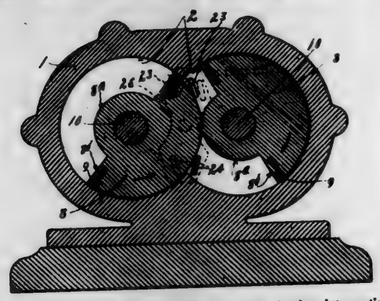

Claim.—1. The combination with a cylinder having intersecting piston-seats, of coöperating rotary pistons in said seats having reduced segmental sections intermeshing with the segmental body of the coöperating pistons, and admission and exhaust ports opening into and from the said cylinder and arranged to be opened and closed by said pistons, substantially as described.

2. The combination with a cylinder having intersecting piston-seats, and a pair of admission and a pair of exhaust ports one admission-port and one exhaust-port opening into each piston-seat through a cylinder-head, of coöperating segmental rotary pistons working in said piston-seats and serving as valves to open and close said ports in the proper order, substantially as described.

3. The combination with a cylinder having intersecting piston-seats and two pairs of admission and two pairs of exhaust ports opening into said cylinder, two admission-ports and two exhaust-ports opening to each piston-seat, of coöperating intermeshing rotary pistons working in said seats and serving as valves to open and close said ports in the proper order, and a pair of reversing-valves coöperating with said ports, substantially as described.

4. The combination with a cylinder having intersecting piston-seats and the pairs of admission and exhaust ports 21 22 and 23 24, respectively, of the reversing-valves 25 and 26 having respectively, the ports 21^a 22^a and 23^a 24^a, connections for moving said valves simultaneously, and the intermeshing segmental rotary pistons working in said seats and serving as valves to open and close said admission and exhaust ports in the proper order, substantially as described.

5. The combination with a cylinder having intersecting piston-seats and pairs of admission and exhaust ports opening into said piston-seats, of the reversing-valves coöperating with said admission and exhaust ports, the cut-off valve coöperating with said admission-ports, and the rotary segmental intermeshing pistons working in said seats and serving as valves to open and close said ports in the proper order, substantially as described.

6. The combination with a cylinder having intersecting piston-seats and suitable admission and exhaust ports, of rotary segmental intermeshing pistons working in said seats, and means for adjusting one of said pistons with respect to the other comprising the sliding bearing 14, the yoke 16 and the nutted bolt 17 18, substantially as described.

708,180. MACHINE FOR THREADING TAPE INTO EDGINGS. JONATHAN DAVIS, Phœnixville, Pa. Filed Apr. 24, 1902. Serial No. 104,494. (No model.)

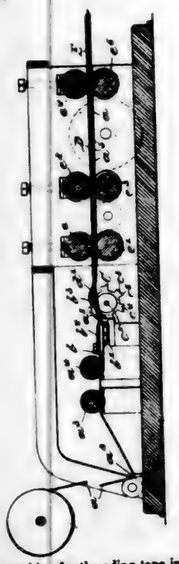

Claim.—1. In a machine for threading tape into lace or edging, a wheel having radial projections, the peripheral face of said projections having a straight portion terminating in a finger, all arranged so that the distance between successive bars of the lace or edging to be fed is less than the distance between successive projections on said wheel.

2. In a machine of the character described, in combination with means for feeding the edging, a star-wheel, the projections of which having a straight face terminating in a finger, said straight face adapted to engage and to permit a movement of alternate bars of said lace or edging and to be rotated by said bars by abutting against said fingers.

3. In a machine of the character described, in combination with means for feeding the edging, a star-wheel having projections and straight faces terminating in a finger, the straight faces of said projections and the intervening spaces between the same adapted to receive and to permit a certain forward movement of the bars of said lace or edging.

4. In a machine of the character described, in combination with means for feeding the lace or edging, a star-wheel, the projections of which have straight faces and a finger, said faces adapted to engage alternate bars of said edging and to be rotated by said bars by abutting against said fingers with a step-like movement and to permit the entrance of the bars intermediate of said alternate bars in the intervening spaces of said projections, said spaces being of greater width than the width of a projection so as to afford a free movement of said intermediate bars independently and during and after the step-by-step movement of said star-wheel, and a needle located between said projections adapted to receive the alternate bars above and the intermediate bars below the point thereof.

5. In a machine of the character described, in combination with means for feeding the lace or edging, a star-wheel, the projections of which have straight faces and a finger arranged at one end of said straight face the faces being adapted to receive alternate bars of said lace or edging, and

to be rotated by said bars by abutting against each finger successively by a step-like movement, and the intervening spaces of said projection being of greater width than the width of each projection and adapted to receive intermediate bars of the alternate bars to permit an independent forward movement of said intermediate bars in said intervening spaces of said projections, a needle arranged between said projections, curved guides adapted to present the alternate bars of said lace or edging to one pair of the projections of said star-wheel to feed the alternate bars of said lace or edging upon the needle, and a tension-arm adapted to feed the intermediate bars of said lace or edging passing over said curved guides below said needle so as to interlace said bars with said needles.

6. In a machine of the character described, in combination with a needle adapted to receive the lace or edging and mechanism for feeding the lace or edging toward the needle, a star-wheel having projections and straight peripheral faces terminating in successive fingers integral with said projections, and intervening spaces between said projections of a width greater than the width of each projection, the flat faces of said projections and intervening spaces between the same adapted to receive and to present bars of the lace or edging alternately above and below the point of the needle, and said star-wheel so arranged as to be driven by alternate bars of said lace or edging by abutting against the fingers of said projections.

7. In a machine of the character described, in combination with a needle adapted to receive the lace or edging and mechanism for feeding the lace or edging over the needle and to maintain the same in a flat condition and taut position during said feeding, a star-wheel adapted to present the lace or edging to the needle so that the bars of the lace or edging are alternately above and below the point of the needle, said star-wheel arranged to be driven by the feeding of the lace or edging with a step-like movement, and means adapted to depress the bars of the lace or edging before and during presentation of the lace or edging to said star-wheel.

8. The combination, in a machine for inserting tape into lace or edging, of a flat grooved bar adapted to receive the tape, a needle and a star-wheel for feeding the lace or edging over the needle and the grooved bar and tape, said needle having a contracted and flat end for the reception of the grooved bar, and a spring adapted to clamp said bar to the contracted and flat end of said needle.

9. In a machine for threading tape into lace or edging, a star-wheel having a series of projections, each projection having a flat face terminating at one end in a finger, curved guides arranged adjacent to said star-wheel, said star-wheel and guides arranged in the path of the lace or edging in its passage through the machine, and means arranged between said guides and the projections of said star-wheel to depress the bars of said lace or edging as the same passes through the machine.

10. In a machine of the character described, a star-wheel having a series of radial projections separated from each other by a series of spaces wider than said projections, each projection having a flat face terminating at one end in a radial projecting finger, said spaces, flat faces and fingers mutually coöperating in the feeding of the lace or edging of the machine.

708,181. ATTACHMENT FOR CAR-STEPS. JAMES H. FARRELL, Nashua, and JOHN R. WARREN, Greenfield, N. H., assignors of one-half to William H. Chesver, Nashua, N. H. Filed Jan. 28, 1902. Serial No. 91,172. (No model.)

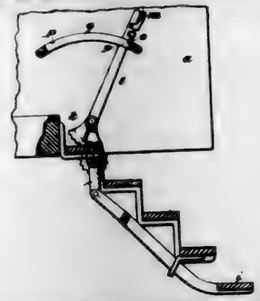

Claim.—The combination of a car-body; a flight of fixed steps secured thereto; a shaft journaled on said flight of steps; a crank-arm fast on the inner end of said shaft; a yoke pivotally secured to said crank-arm; guide-supports for said yoke; a step secured to said yoke; a pinion fast on the outer end of said shaft; a lever pivotally secured to said car-body and formed on its lower end with a segmental rack in mesh with said pinion, whereby motion is communicated to said shaft to raise and lower said yoke with its attached step; a strap secured to said car-body and formed with notches; a spring-controlled latch device mounted on the upper end of said lever for engaging in the notches in said strap, whereby said yoke is held in the desired position.

708,182. ELECTRIC-ARC LAMP. RICHARD FLEMING, Swampscott, Mass., assignor to General Electric Company, a Corporation of New York. Filed Dec. 6, 1900. Renewed Jan. 2, 1902. Serial No. 88,058. (No model.)

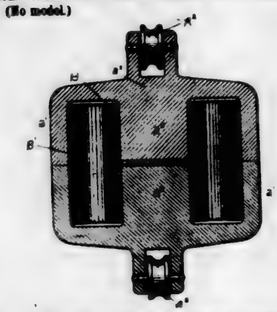

Claim.—1. A reactance-coil composed of an open-work cage of magnetic material having central cores separated by an air-gap, and a coil concentric with the cores and inside the cage.

2. A reactance-coil composed of a cage of magnetic material made in two similar parts united at the middle, and each carrying a central core, the ends of the cores being separated by an air-gap, and a coil concentric with the cores and inside the cage.

3. A reactance-coil composed of an open-work cage of magnetic material, having central cores separated by an air-gap, and a coil made in two sections concentric with the cores and having an annular space between them.

4. A frame for a reactance-coil for an arc-lamp, composed of the two similar parts A, A', each having a ring a, arms a' uniting in a hub a^3, and a core a^2 concentric with the ring a, the opposing ends of the cores having an air-gap between them.

5. The combination with a frame of magnetic material composed of the two parts A, A', having rings a, arms a' hubs a^3, cores a^2 having an air-gap between them, screws A^3, and insulating suspension-rings A^2, of the coil made in two sections B, B', one fitting the core and the other inside the arms, with a space between the coils.

6. In an electric-arc lamp, the combination of a cage or frame of magnetic material having central cores separated by an air-gap, a coil concentric with the cores mounted inside the cage or frame, and a tubular backbone depending from said cage or frame.

7. In an electric-arc lamp, the combination of a cage of magnetic material, a coil within the cage, and a tubular backbone secured to and depending from said cage.

708,188. MACHINE FOR CRUSHING FEATHERS AND PULVERIZING. FREDERICK FRANKE, Louisville, Ky., assignor to S. D. Crume, Louisville, Ky. Filed Nov. 26, 1901. Serial No. 83,587. (No model.)

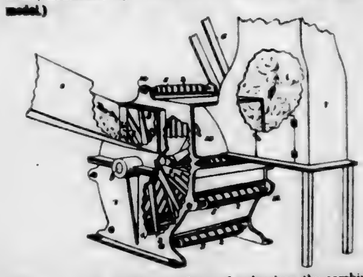

Claim.—1. In a feather crusher and pulverizer, the combination of a separable cylindrical casing, transverse rows of rectangular perforations through the periphery of said casing, bars of rectangular cross-section, having one end pivoted, passing through the said rectangular perforations in the casing, blocks of yielding material perforated and placed between the perforated outer ends of aforesaid bars, a bolt passing through the per-

forations of each row of blocks and bars, a sectional lining on the periphery of the casing consisting of blunt teeth cast integral with curved plates, a shaft passing axially through the casing and revolubly in boxes on the sides of the casing, a row of diametral bars keyed on said shaft and so spaced as to pass between the stationary bars and so disposed as to form a spiral, substantially as and for the purposes specified.

2. In a feather crusher and pulverizer, the combination of a cylindrical casing 1, transverse rows of arms 2 of rectangular cross-section, rigidly fastened in the periphery of said casing, a revolvable shaft 9 passing axially through said casing, a spiral row of tapered diametral arms 3 rigidly fastened to said revolvable shaft, a toothed peripheral lining 4 with teeth slanting opposite to the direction of motion of the revolving arms 3, an inlet-opening 8 in one side of the casing 1, and an outlet-opening in the periphery of the casing 1 on the side of said casing opposite to that having the inlet-opening, and a sliding shutter 10 to control the outlet-opening, substantially as and for the purpose specified.

708,134. DUMPING-WAGON. ROBERT J. GLEES, Verona, Ill. Filed May 28, 1902. Serial No. 109,376. (No model.)

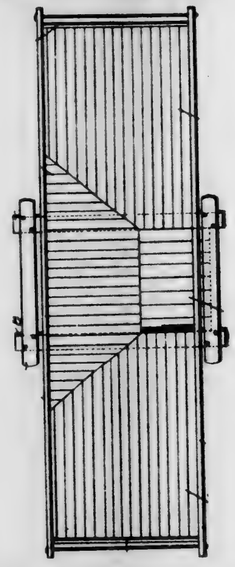

Claim.—1. A dumping-wagon comprising a body having a bottom composed of oppositely-inclined tapering end sections terminating short of the center and spaced apart thereat, and an oppositely-tapered transversely-inclined side section extending through the space between the inner ends of the end sections and forming a continuous incline from one side of the body to the other, sides depending from the body and forming with the extension of the side section, a discharge spout or chute, and a cut-off, substantially as described.

2. A dumping-wagon comprising a body having a bottom composed of inclined end sections terminating short of the center of the body, and an inclined side section having a central transverse extension extending downward between the ends of the end sections, cleats extending transversely of the body and supporting the lower ends of the end sections, side pieces arranged at the side edges of the central transverse extension of the inclined side section and projecting inward beyond the cleats to form supporting-shoulders, and a horizontal slide arranged on the supporting-shoulders, substantially as described.

3. A dumping-wagon comprising a body having a bottom composed of inclined end sections, and an inclined side section having a transverse extension extending downward at an inclination, transverse cleats secured to the wagon-body and extending beyond the same, side pieces arranged at the side edges of the extension and projecting inward beyond the cleats to form supporting-shoulders, a horizontal slide or cut-off arranged on the shoulders, and a horizontal bar arranged beneath the lower end of the extension and secured to the side pieces, substantially as described.

708,135. PORTABLE WATER-TOWER. HENRY H. GORTER, San Francisco, Cal., assignor to Mary E. Gorter, San Francisco, Cal. File Sept. 9, 1901. Serial No. 74,758. (No model.)

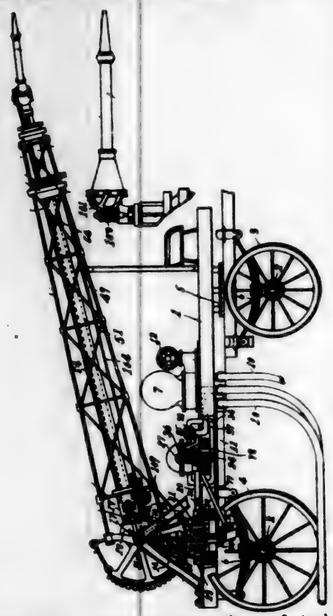

Claim.—1. In a water-tower, the combination of a truck, a swinging tower thereon, an extensible mast carried thereby, a motor on the truck and an operative connection between said motor and extensible mast to extend the same, said connection being flexibly jointed on an axis in line with the pivotal axis of the tower, substantially as described.

2. In a water-tower, the combination of a motor-shaft, a worm driven thereby, a shaft having a worm-wheel operated by said worm, a vertical shaft, said shafts having cooagaging bevaled gears, a swinging tower, a shaft swinging with said tower and connected with the vertical shaft by a knuckle-joint in line with the pivotal axis of the tower, an extensible portion for said tower and means operated by the swinging shaft for rotating said extensible portion, substantially as described.

3. In a water-tower, the combination of a motor, a worm driven thereby, an oblique shaft having a worm-wheel operated by said worm, a vertical shaft, said oblique and vertical shafts having cooagaging bevel-gears, a swinging tower, a shaft swinging with said tower and connected to the vertical shift by a knuckle-joint in line with the pivotal axis of the tower, an extensible portion for said tower, and means operated by the swinging shaft for actuating said extensible portion, substantially as described.

4. In a water-tower, the combination of a truck, a pivoted frame, a main tube carried thereon, a motor on the truck, a shaft driven thereby, a vertical shaft operatively connected with said motor-shaft to be driven thereby, said vertical shaft having a flexible connection substantially in line with the pivotal axis of the frame, a mast extensible from the main tube, and means for extending said mast operated by said vertical shaft, substantially as described.

5. In a water-tower, the combination of a truck, a pivoted frame, a main tube carried thereon, a water-wheel, means for supplying pressure-water to said water-wheel, a vertical shaft operatively connected with said water-wheel shaft to be driven thereby, said vertical shaft having a flexible joint substantially in line with the pivotal axis of the frame, a mast extensible from the main tube, and means for extending said mast, operated by said vertical shaft, substantially as described.

6. In a water-tower, the combination of a truck, a pivoted frame, a main tube carried thereon, a receiver, a conduit and flexible coupling for connecting the receiver with the main tube, means for supplying pressure-water to the receiver from the fire-hose, a water-wheel, a fluid or brush pipe from the receiver to the water-wheel to supply pressure-water thereto to operate the same, a vertical shaft operatively connected with said water-wheel shaft to be driven thereby, said vertical shaft having a flexible joint substantially in line with the pivotal axis of the frame, a mast

extensible from the main tube, and means for extending said mast operated by said vertical shaft, substantially as described.

7. In a water-tower, the combination of standards, a tower swinging thereon, a transverse shaft, an operative connection from the transverse shaft to the tower to swing the same, an extensible mast carried by said tower, means mounted loosely on the transverse shaft connected operatively to the extensible mast to extend the same, a motor-shaft, and means for connecting said motor-shaft with the transverse shaft and with the means mounted loosely thereon, substantially as described.

8. In a water-tower, the combination of standards, a tower swinging thereon, a transverse shaft, an operative connection from the transverse shaft to the tower to swing the same, a hollow motor-shaft loosely mounted on said transverse shaft, an extensible mast carried by said tower, means mounted loosely on the transverse shaft connected operatively to the extensible mast to extend the same, and clutches on said transverse shaft, arranged to be thrown into engagement with the hollow motor-shaft, one of said clutches connecting said motor-shaft with the transverse shaft to swing the tower, and the other being arranged to engage the means for extending the mast, substantially as described.

9. In a water-tower, the combination of standards, a tower swinging thereon, segmental gears carried by said tower, worms engaging said gears, longitudinal shafts carrying said worms, worm-wheels on said shafts, a transverse shaft having worms engaging said worm-wheels, a motor-shaft mounted loosely on said transverse shaft, an extensible mast carried by said tower, a worm mounted loosely on the transverse shaft, an operative connection from said worm to said extensible mast to extend the same, and clutches on said transverse shaft arranged to be thrown into engagement with the motor-shaft, one of said clutches connecting said motor-shaft with the transverse shaft to swing the tower by means of said segmental gears and the other being arranged to engage the worm to extend the mast, substantially as described.

10. In a water-tower, the combination of a tube, a mast extensible thereon, a casing at the lower end of the tube, a ring at the upper end of the tube rigidly connected with said casing, an internal gear-wheel revolvable about the lower end of said tube, gear-wheels engaged by said internal gear, worms on the gear-wheel shafts, vertical worm-wheels operated by said worms, pulleys attached to said worm-wheels, a ring revolvable in the upper ring, pulleys carried by said revolvable ring, and chains passed around said pulleys and attached to said mast to extend the same, substantially as described.

11. In a water-tower, the combination of a tube, a mast extensible thereon, a casing at the lower end of the tube, a ring at the upper end of the tube rigidly connected with said casing, a ring revolvable in the upper ring, a wheel revolvable about the lower end of the tube, pulleys carried by the ring and chain-pulleys carried by the wheel, chains passed around said pulleys and attached to the mast to extend the same, and means for revolving the chain-pulleys, substantially as described.

12. In a water-tower, the combination of the tower proper, a pivoted support thereon, a vertical shaft swinging with said tower, means for rotating said shaft, a main tube carried by said tower, a mast extensible thereon, means for extending said mast operatively connected with said swinging shaft, a gear-wheel mounted loosely on said swinging shaft, means for operating said gear-wheel, a nozzle upon the end of said mast, an extensible shaft, and means for supporting the same parallel with said tube and mast, an operative connection between the upper end of said extensible shaft and the nozzle to swing the same, and an operative connection between said gear-wheel and the lower end of said extensible shaft to rotate the same to swing the nozzle, substantially as described.

708,186. STOP-MOTION FOR CUTLERY-GRINDING MACHINES. ADDISON GOULD, Norwich, Conn., assignor to William A. Breed, Norwich, Conn. Filed Jan 10, 1902. Serial No. 89,171. (No model.)

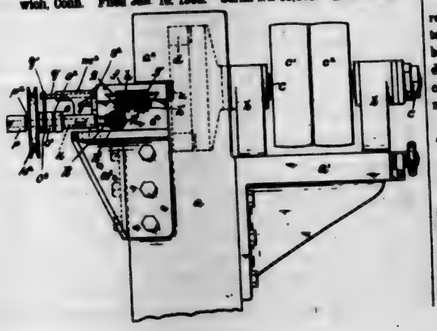

Claim.—In combination with a shaft *k*, a constantly-rotating pulley loosely mounted on said shaft, clutch mechanism connecting the said shaft and pulley, a reciprocating table, and means for disconnecting the said clutch consisting of a rod *q*, fork *q'*, and a hinged latch carried by the said reciprocating table, substantially as herein specified.

708,187. CORN-PLANTER. LEVI P. GRAHAM, Decatur, Ill. Filed June 5, 1902. Serial No. 110,334. (No model.)

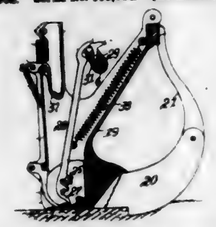

Claim.—1. In a planter, the combination of a seed-conveying shank adapted to travel along the surface of the soil, a seed-retaining bucket hinged in the lower end of the shank with its bottom extended horizontally rearward from the hinge, and means for forcing the rearward extension of the bucket into the soil below the shank and discharging the seed into the depression made by the bucket.

2. In a planter, the combination of a seed-conveying shank adapted to travel along the surface of the soil, a seed-retaining bucket composed of sides and a bottom, such bucket being hinged in the lower end of the shank with its bottom extended rearward from the hinge, and a push-bar to force the rearward extension of the bucket into the soil below the shank and discharge the seed into the depression formed by the bucket.

3. In a planter, the combination of a seed-conveying shank adapted to travel along the surface of the soil, a seed-retaining bucket composed of sides and a bottom, such bucket being hinged in the lower part of the shank with its bottom extending rearward from the hinge, a push-bar pivotally connected with the bucket at a point above and to the rear of the hinge, and an extension of the push-bar approximately reaching the bottom of the bucket and acting as a seed-discharger therefor.

4. In a planter, the combination of a seed-conveying shank adapted to travel along the surface of the soil, a seed-retaining bucket composed of sides and a bottom, such bucket being hinged in the lower part of the shank with its bottom extending rearward from the hinge, a push-bar pivotally connected with the bucket at a point above and to the rear of the hinge, an extension of the push-bar approximately reaching the bottom of the bucket and forming a seed-discharger therefor and a valve pivoted in the shank in the rear of the push-bar with its lower end in position to close the rear end of the bucket, when the bucket is raised.

5. In a planter, the combination of a seed-conveying shank adapted to travel along the surface of the soil, a seed-retaining bucket hinged in the lower end of the shank with its bottom extended rearward from the hinge and its rear lower part projecting beyond the walls of the shank, and means for forcing the rearward extension of the bucket into the soil below the shank.

6. In a planter, the combination of a seed-conveying shank, a seed-retaining bucket hinged in the lower end of the shank with its bottom extending rearward from the hinge, means for forcing the rearward extension of the bucket into the soil below the shank and a furrow-forming runner attached to the lower end of the shank with its lower edges above the soil-penetrating position of the rearward extension of the bucket.

7. In a planter, the combination of a seed-conveying shank, a seed-retaining bucket hinged in the lower end of the shank with its bottom extended rearward from the hinge, a push-bar connecting pivotally with the bucket and extending upward therefrom, and a rock-arm adapted to press downward on the push-bar to force the bucket into the soil and swing closer of the push-bar when the bucket is at the end of its downward movement.

708,138. COIN-CONTROLLED TELEPHONE. SYLVESTER P. GREY, Fort Wayne, Ind., assignor of one-half to Franklin Howenstein, Fort Wayne, Ind. Filed Oct. 14, 1901. Serial No. 78,530. (No model.)

Claim.—1. In a coin-controlled telephone a coin-chute having a longitudinal coin-channel provided at its lower end with two discharge-openings one of which is controlled by an adjustable slide; a coin-arresting disk rotatably mounted in the said chute in cooperative relation with an actuating receiver-hook; a receiver-hook engaging said disk and adapted to automatically actuate the same when the receiver is removed therefrom; means for limiting the forward movement of the said disk against

the stress of the said hook; an adjustable slide closing one of the discharge-openings of said chute; means for arresting the coin upon the said slide; and means for withdrawing said slide from the path of the descending coin.

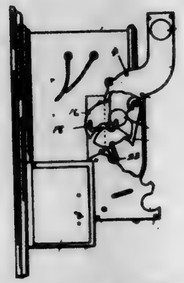

2. A coin-chute having two discharge-openings one of which is normally closed; a coin-arresting disk revolubly mounted in said chute in co-operative relation with an actuating receiver-hook; a receiver-hook engaging said disk and adapted to automatically actuate the same when the receiver is removed therefrom; means for limiting the forward movement of the said disk against the stress of the said hook; means for again arresting the said coin at or near its point of discharge; means for normally closing one of said discharge-openings; and means for enabling the telephone operator to open said closed opening for the purpose described.

3. In a coin-chute having a vertically-disposed coin-channel provided with two independent outlet-ports, a laterally-adjustable slide arranged in said chute to normally close one of said ports, and having a vertical slot adapted to register with the coin-channel; movable means independent of said slide for normally arresting the coin upon the said slide; and means for actuating the said slide under the control of the central operator for the purpose described.

4. In a device of the class specified a coin-arresting disk revolubly mounted in a coin-chute having a peripheral coin-arresting recess and a pair of peripheral lugs as described; a receiver-hook arranged in an actuating engagement with the said disk; a spring-pressed pawl mounted in said chute in a co-operative relation with the said disk as described; and means for withdrawing the said pawl from its holding engagement with the said disk consisting of a screw-threaded lug on the rear face of said pawl and a key adapted to fit the same.

708,139. MECHANICAL MUSIC-CHART. CHRISTINE M. HALVORSEN, Los Angeles, Cal. Filed May 3, 1900. Serial No. 15,864. (No model.)
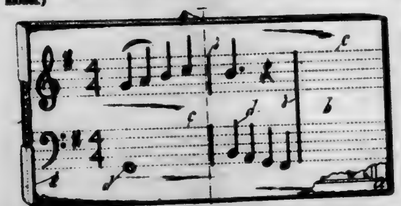
Claim.—1. A mechanical music-chart comprising a sheath of woven fabric tapering slightly from one end toward the other and furnished with stitching for the lines of a music-staff and which can be readily detached if desired from the frame; and independent tone-indicating music characters respectively provided with a pointed pin to insert into said fabric.

2. A mechanical music-chart comprising an open frame with four limbs or members united at the corners of the frame; a sheath of woven fabric stretched over the frame; said furnished with the lines of a music-staff and music characters respectively furnished with pointed pins which are inserted into the fabric to hold the characters in place.

3. A mechanical music-chart, comprising a sheath of woven fabric tapering slightly from one end toward the other and furnished with the lines of the music-staff; and a tapering frame to fit the sheath tightly.

4. A mechanical music-chart, comprising a sheath of woven fabric tapering slightly from one end toward the other, and furnished on its opposite side with the lines of the music-staff; a frame composed of four limbs joined at the corners and tapering to fit the sheath tightly; means for closing the mouth of the sheath; and a detachable band around the sheath outside the frame, substantially as set forth.

708,140. FEED MECHANISM FOR BLANK-THREADING MACHINES. JAMES H. HASKINS, Chicago, Ill., assignor of one-half to McCormick Harvesting Machine Company, Chicago, Ill. Filed Feb. 19, 1902. Serial No. 94,813. (No model.)

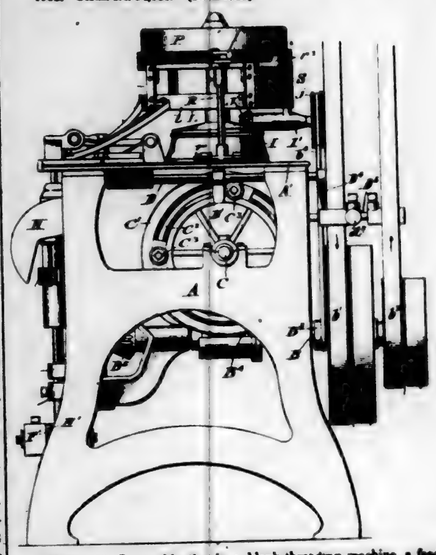

Claim.—1. In combination in a blank-threading machine, a feed-chute for the blanks, a feed-bar moving across said chute, a finger on said bar adapted to simultaneously engage and deflect the foremost blank in the chute and arrest the movement of the blanks in the chute, a plunger for forcing the deflected blank to the top and operating at right angles to the feed-bar, and means to successively advance the feed-bar and the plunger.

2. In combination in a blank-threading machine, a feed-chute for the blanks, which chute is formed with a deflected section, a feed-bar reciprocating across said chute, a finger on said bar adapted to simultaneously advance a blank along said deflected chute-section and arrest the movement of the blanks in the main chute, a plunger operating across the deflected section to force the blank from the deflected section and over the top, and means to successively advance the feed-bar and the plunger.

3. In combination in a blank-threading machine, a feed-chute for the blanks, which chute is provided with a deflected section at its lower end, a feed-bar having a finger reciprocating across said chute adapted to simultaneously advance a blank along the deflected section of said chute and arrest the movement of the blanks in the main chute, a plunger operating across said chute-section to force the blank from the deflected section and over the top, an actuator-bar connected to said plunger and said feed-bar, whereby the feed-bar and the plunger are alternately operated to advance the blank.

4. In combination in a blank-threading machine, a feed-chute for the blanks, which chute is provided with a deflected section at its lower end, a feed-bar having a finger reciprocating across the chute and adapted to simultaneously advance a blank along the deflected section of said chute and arrest the movement of the blanks in the main chute, a plunger operating across said chute-section to force the blank from the deflected section and over the top, an actuator-bar operatively connected to said plunger, and a rock-lever pivoted between said actuator-bar and said feed-bar, whereby the latter is operated by said actuator-bar, all so arranged that when the plunger is advanced to force a blank over the top, the feed-bar is retracted to uncover the chute and upon the reverse movement of the plunger the feed-bar is advanced to close the chute and advance the next blank.

5. In combination in a blank-threading machine, a hopper containing the blanks, a series of feed-chutes delivering the blanks from the hopper to the tops, each chute having a deflected section at its lower end, a feed-bar reciprocating across said chutes, a series of spring-pressed fingers mounted upon said feed-bar and normally closing the respective chutes, reciprocating plungers for the respective chute-sections, and an actuator-bar connected with the several plungers and with the feed-bar, whereby the blanks are advanced along the deflected sections of the chute by the feed-bar fingers and subsequently forced over the tops by the plungers.

6. In combination in a blank-threading machine, a hopper containing the blanks, a series of chutes delivering the blanks from the hopper to the tops, each chute having a deflected section at its lower end, a plunger reciprocating across each of said deflected chute-sections to force the blank therefrom and over the corresponding top, an actuator-bar, yielding safety connections between the actuator-bar and the respective plungers, whereby the latter are reciprocated, a feed-bar having a series of fingers reciprocating along said deflected chute-sections to advance the foremost blank in each chute and arrest the movement of the blanks in the main chutes, and means connected with said actuator-bar to retract the feed-bar and cause the fingers thereon to uncover the respective chutes for the delivery of another blank into each of the deflected chute-sections.

7. A blank-feeding mechanism comprising a chute having a deflected section, a plunger reciprocating across said deflected section, a feed-bar mounted above and transversely of said chute, said bar comprising a stationary sleeve, a reciprocating rod mounted in said sleeve, a collar on said sleeve and connected with said rod, a finger on said collar operating in said deflected chute-section and normally closing the main chute, and means for advancing and retracting said plunger and said feed-bar alternately, whereby a single blank is fed from the chute, advanced by the finger along said deflected chute-section, and forced over the top by the plunger.

8. A blank-feeding mechanism comprising a series of chutes, each having a deflected section at its end, a plunger reciprocating across each of said deflected sections, a feed-bar mounted above and transversely of said chutes, said feed-bar comprising a stationary sleeve, a reciprocating rod mounted in said sleeve, a series of collars loosely mounted on said sleeve and detachably connected to said rod, springs surrounding said sleeves and operating to hold said collars and said rod in engagement, and fingers on the collars operating in the deflected sections of the chutes, and means for advancing and retracting said plungers and said feed-bar alternately, whereby a single blank is fed from each chute, advanced by the co-operating finger-bar along the deflected chute-sections and forced over the top by the corresponding plunger.

708,141. EYEGLASSES. ALBERT E. HAWKES, Atlanta, Ga. Filed Jan. 16, 1902. Serial No. 90,028. (No model.)

Claim.—1. A spring-bow for eyeglasses, comprising two separate spring members, a series of detents formed in said members, and a horn depending from the end of each member adapted to engage the detents in the other member and lock the members against movement.

2. In combination with the bows of eyeglasses, the connecting-spring made in two separate parts, bands carried by the upper end of each spring, the bands of one spring adapted to encircle the other spring, and means mounted upon each of said bands adapted to clasp the spring passing under it.

3. In combination with the bows of eyeglasses, the connecting-spring made in two separate parts, bands carried by the ends of each spring, the band of one spring adapted to encircle the other spring, of a ratchet connection between said bands and said springs.

4. In combination with the bows of eyeglasses, the connecting-spring made in two separate parts, a series of detents or seats formed in said spring and a band carried by the end of each spring; a horn depending from each of said bands and a ball secured upon the lower end of each horn adapted to engage the said series of detents or seats.

708,142. TOBACCO-PIPE. MARSHALL B. HEES, Birmingham, England, assignor to John Horn and Marie Horn, Manchester, England. Filed Mar. 22, 1902. Serial No. 100,622. (No model.)

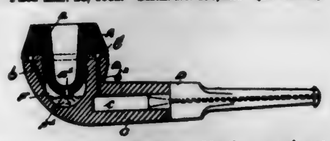

Claim.—1. In a tobacco-pipe, the combination consisting of an outer bowl part B having an annular groove b' on its upper end and diametrically-opposed passages $b\,b^2$ through its body respectively putting the said annular groove into communication with a sump F at the bottom of B and with the aperture c in the pipe-stem C, and an inner bowl part A detachably connected with B and communicating with the said sump F in the same but preventing the smoke from flowing up around its exterior and thence directly to the said passage b^2, substantially as described.

2. In a tobacco-pipe, the combination consisting of an outer bowl part B having an annular groove b' in its upper end and diametrically-opposed passages $b\,b^2$ through its body respectively putting the said annular groove into communication with a sump F at the bottom of B with the aperture c in the pipe-stem C, an inner bowl part A detachably connected with B and communicating with the sump F in the same but preventing the smoke from flowing up around its exterior and thence directly to the said passage b^2, and a metal washer A′ disposed between the said parts A and B to prevent their adhesion, substantially as described.

708,143. ROLLING-HOOP. EDWARD P. KINSMAN, North Andover, Mass. Filed Nov. 20, 1901. Serial No. 83,013. (No model.)

Claim.—The combination with a hoop, of inclosed pockets constituting chords of an arc of the hoop, and balls or similar free objects in the pockets.

708,144. ELEVATING AND DUMPING APPARATUS. RUSSELL HOLLOPETER, Fostoria, Ohio. Filed Nov. 30, 1901. Serial No. 84,288. (No model.)

Claim.—1. The combination with the derrick or frame and the bucket and its elevating devices, of a counterbalance-weight for the bucket, an inclined plane for throwing out the lower end of the bucket, and means for automatically dumping the same when it reaches the limit of its upward movement, as set forth.

2. The combination with the frame or derrick and the bucket and its elevating devices, of an inclined plane for throwing out the lower end of the bucket, means for turning the bucket from its elevating position to one at substantially a right angle thereto, and means for returning the bucket to a position to descend, as set forth.

3. The combination with the frame or derrick, the bucket and its elevating devices, of means for stopping the upward movement of the bucket and means including an inclined plane for automatically dumping the same.

4. The combination with the frame or derrick and the bucket and its elevating devices, of means for automatically stopping the upward movement of the bucket, a pivoted frame, and a weight guided in an inclosure in said frame for returning the bucket to its position to descend.

708,145. VALVE. BARRY IVES and JAMES S. WARD, Chicago, Ill. Filed Nov. 21, 1901. Serial No. 83,117. (No model.)

Claim.—1. A combined check and relief valve comprising a valve-casing, a check-valve chamber in said casing, a check-valve in said chamber, a relief-valve chamber in said casing communicating with said check-valve chamber, and a relief-valve in said relief-valve chamber, said valve-chambers communicating with an opening in the valve-casing for admitting steam to close said check and relief valves.

2. The combination of a check-valve, a vacuum-relief valve, a valve-

casing, a check-valve chamber in said casing, a relief-valve chamber in said casing, an opening in said casing communicating with said valve-chambers, a spring for closing said check-valve and a sleeve inclosing said spring for protecting the same.

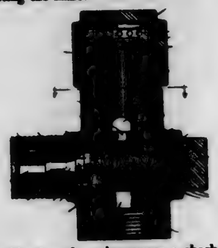

3. The combination of a valve-casing, a check-valve, a vacuum-relief valve, a check-valve chamber in said casing, a relief-valve chamber in said casing, said chambers communicating one with another, an opening in said casing for admitting steam into said check-valve chamber, a spring for closing said check-valve, and a perforated cap for admitting air into said relief-valve chamber.

4. The combination of a valve-casing, a check-valve, a check-valve chamber, a relief-valve chamber, a wall in said casing for supporting said relief-valve when open, an opening in said casing for admitting steam therefrom, connections between said steam-opening and said check-valve chamber, an aperture in said wall for admitting steam into said relief-valve chamber and a recess in one extremity of said relief-valve registering with said aperture in said wall.

708,146. CUTTING APPARATUS FOR MOWERS, REAPERS, OR THE LIKE. EDWARD A. JOHNSTON, Chicago, Ill., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Filed July 10, 1902. Serial No. 115,621. (No model.)

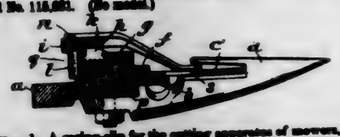

Claim.—1. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a rigid finger extending forward over the cutter and free to oscillate therewith, and a spring holding said finger down with an elastic pressure on the cutter.

2. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a rigid spring-pressed finger that is free to oscillate on a vertical pivot, combined with a spring which causes the finger to tilt on a horizontal fulcrum and presses its front end elastically down on the cutter.

3. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a rigid bell-crank-shaped finger that is pivoted horizontally and vertically by one of its arms and has its other arm extending forward over the cutter, combined with a spring which acts on the first-mentioned arm to hold the forwardly-extending arm elastically down on the cutter.

4. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a rigid, pivoted, spring-pressed finger overhanging the cutter and having a lug on the under side of its front end, combined with a cutter having a fore-and-aft slot into which the lug extends and in which it plays as the cutter and finger reciprocate.

5. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a rigid finger *h* having a pivot *l* with a V-shaped recess in the rear side at the upper end, a socket *g* having a knife-edged projection *n* at its upper rear side, and a spring *p* inclosed in the socket and resting against the lower end of the pivot *l*.

6. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a rigid finger *h*, having a pivot *l* with a V-shaped recess *m* in the rear side at the upper end, a socket *g* having a rear wall *i* with a knife-edged vertical projection *n*, and a spring *p* inclosed in the socket and resting against the lower end of the pivot *l*, the forward end of the finger having a projection on its under side to engage a slot in the cutter.

708,147. CUTTING APPARATUS FOR MOWERS, REAPERS, OR THE LIKE. EDWARD A. JOHNSTON, Chicago, Ill., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Filed July 10, 1902. Serial No. 115,622. (No model.)

Claim.—1. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a base-plate having a vertical pivot-post, a rigid finger pivoted upon said post and extending forward over the cutter and free to oscillate therewith, and a spring reacting between the post and the finger to hold the latter down elastically on the cutter.

2. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a base-plate having a vertical pivot-post, a rigid finger having a pair of perforated ears at its rear end by means of which it is pivoted on the post so as to oscillate freely, and a spring coiled around the post between the ears and reacting between the post and the lower ear to hold the finger down so that its forward end which projects over the cutter is held elastically down thereon.

3. A spring-clip for the cutting apparatus of mowers, reapers, and the like, comprising a base-plate having a vertical pivot-post, a rigid finger pivoted upon said post and extending forward over the cutter and free to oscillate therewith, a washer on the pivot-pin, and a coiled spring reacting between the washer and the finger to hold the front end of the latter down elastically on the cutter.

4. A spring-clip for the cutting apparatus of mowers, reapers and the like, comprising a base-plate *d*, having a vertical post *f*, a rigid finger *g* pivoted on said post to oscillate freely and having its front end extending forward and bearing down on the cutter, and a spring *w* coiled around the post, the finger having a pair of perforated ears *h*, *h'*, by means of which it is pivoted to the post, and a washer *s* or other projection on the post under the upper ear and between which and the lower ear the spring reacts.

5. The combination with one of the cutters of a mower, reaper, or the like, of a clip comprising a spring-depressed finger having a nib or projection on its forward end, and a groove or depression formed in the cutter into which the nib engages so that the finger is oscillated by the reciprocations of the cutter.

708,148. APPARATUS FOR PHOTOGRAPHING AND EXHIBITING KINEMATOGRAPHIC PICTURES. LEONARD U. KARR, London, England. Filed July 22, 1902. Serial No. 116,032. (No model.)

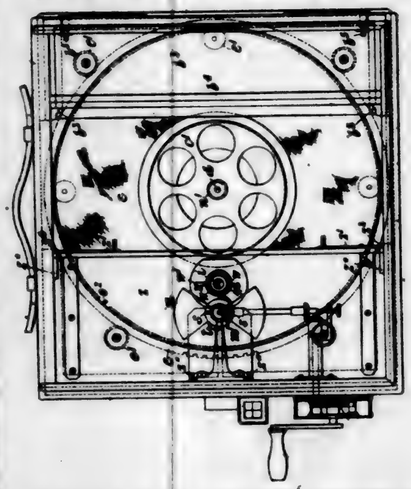

Claim.—1. In apparatus for photographing and exhibiting kinematographic pictures the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated picture-plate, a toothed ring and spiral cam for effecting the intermittent rotation of the picture-plate, a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing and a rack-bar and pinion for effecting the rectilinear movement of the sliding plate substantially as described.

2. In apparatus for photographing and exhibiting kinematographic pictures the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated picture-plate, a toothed ring and spiral cam for effecting the intermittent rotation of the picture-plate, a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing, a rack-bar and pinion for effecting the rectilinear movement of the sliding plate and wall upon the sliding plate where it telescopes through the outer casing to prevent the disclosure of the picture-plate substantially as described.

3. In apparatus for photographing and exhibiting kinematographic pictures, the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated ring-shaped picture-plate, a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing, a toothed ring supporting the picture-plate upon the rectilinearly-sliding plate, a clamping-disk, a shaft for operating mechanism for moving the sliding plate rectilinearly, a rack and pinion comprising such mechanism, a disk connected to the said shaft on the side of the picture-plate opposite to that of the clamping-disk and against which the picture-plate is designed to be clamped and means carried by the said shaft for securing the clamping-disk against the picture-plate substantially as described.

4. In apparatus for photographing and exhibiting kinematographic pictures, the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated ring-shaped picture-plate, a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing, a toothed ring supporting the picture-plate upon the rectilinearly-sliding plate, a clamping-disk, a shaft for operating mechanism for moving the sliding plate rectilinearly, a rack and pinion comprising such mechanism, a disk connected to the said shaft on the side of the picture-plate opposite to that of the clamping-disk and against which the picture-plate is designed to be clamped, a nut loosely connected with the clamping-disk and a screw-thread on the said shaft for the engagement of the nut, substantially as described.

5. In apparatus for photographing and exhibiting kinematographic pictures, the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated picture-plate, a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing a toothed ring supporting the picture-plate, means for moving the picture-plate rectilinearly, an operating-handle, gear-wheels and spiral cam for intermittently rotating the picture-plate and a telescopic driving device for the spiral cam, one portion of which device is carried by the case of the apparatus and the other part by the rectilinearly-sliding plate carrying the picture-plate substantially as described.

6. In apparatus for photographing and exhibiting kinematographic pictures, the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated picture-plate, a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing a toothed ring supporting the picture-plate, means for moving the picture-plate rectilinearly, an operating-handle, gear-wheels and spiral cam for intermittently rotating the picture-plate and a telescopic driving device for the spiral cam comprising a shaft carried by the case of the apparatus, a fork on the said shaft, a disk engaging the said fork and a shaft carrying the disk and supported on the rectilinearly-sliding plate carrying the picture-plate substantially as described.

7. In apparatus for photographing and exhibiting kinematographic pictures, the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated picture-plate, a toothed ring and spiral cam for effecting the intermittent rotation of the picture-plate a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing, a rack-bar and pinion for effecting the rectilinear movement of the picture-plate, a lever pivoted to the case of the apparatus and jointed to the rack-bar and means whereby it can be clamped upon its fulcrum, substantially as and for the purpose set forth.

8. In apparatus for photographing and exhibiting kinematographic pictures, the combination of an outer casing, a lens connected to the said casing, an intermittently-rotated picture-plate, a toothed ring and spiral cam for effecting the intermittent rotation of the picture-plate a rectilinearly-sliding plate carrying the said picture-plate and moving it relatively with the lens and telescoping through one end of the outer casing a rack-bar and pinion for effecting the rectilinear movement of the picture-plate, a lever pivoted to the case of the apparatus and jointed to the rack-bar, a bolt, a nut engaging therewith and a slotted plate fixed to the case of the apparatus and through which the bolt passes substantially as and for the purpose set forth.

708,149. FRUIT-CAN WRENCH. WILLIAM F. KERR, Cleveland, Ohio. Filed Feb. 20, 1902. Serial No. 95,497. (No model.)

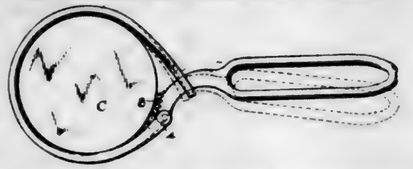

Claim.—1. A fruit-jar wrench consisting of a spring-metal loop having an elongated slot at one end and a handle having a curved shank loosely projected through said slot and slidable thereon and pivotally engaged at its extremity with the opposite end of said loop, the said shank having its convex portion on the inside in respect to the loop and provided with serrations at its base inside to bear against the article to be gripped, substantially as described.

2. The wrench described consisting of a malleable metallic loop having a slot lengthwise at one end and ears at the other end with opposite lugs on their inside, in combination with the handle having a segmentally-curved shank extending through said slot and engaged between said ears, the concave edge of said shank being on the outside, substantially as described.

708,150. CULTIVATOR. ANDERS H. KOPPERUD, Byron, Cal. Filed Feb. 20, 1902. Serial No. 94,677. (No model.)

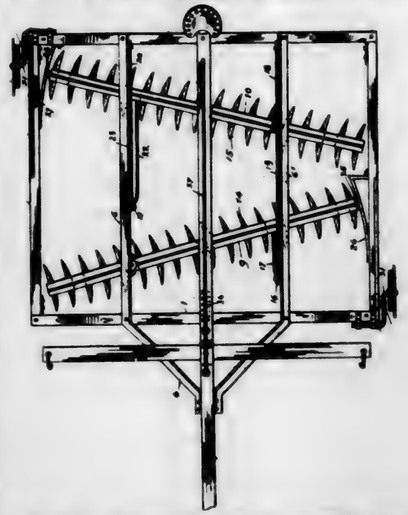

Claim.—1. A disk harrow comprising a frame, a pair of axles suspended therefrom, said axles being arranged one in advance of the other, the axles being pivotally connected at opposite ends to the frame, means connected to the free end of the axles for changing the position thereof, a series of colter-disks secured to each axle, and colter-wheels connected to the frame at diagonally opposite corners.

2. The combination with the frame, of a pair of axles suspended therefrom one in advance of the other, said axles being pivotally connected at opposite ends to the frame, means connected with the free end of each axle whereby the same may be swung into different positions, a series of colter-disks secured to each axle, and segment-plates attached to the frame and against which the free ends of the axles bear.

708,151. ORDNANCE. JOSEF KUBS, Essen, Germany, assignor to Fried. Krupp, Essen, Germany. Filed Jan. 9, 1902. Serial No. 88,905. (No model.)

Claim.—1. The combination of an elevating device for guns locking the gun in an adjusted firing position, and mechanism disengaging the gun from the elevating device and moving the gun independently of the elevating device from an adjusted firing position to loading position and thence to the same firing position.

2. The combination of an elevating device for guns, a clutch in con-

section with said elevating device, and means operating the clutch and moving the gun independently of the elevating device, from an adjusted firing position to loading position and thence to the same firing position.

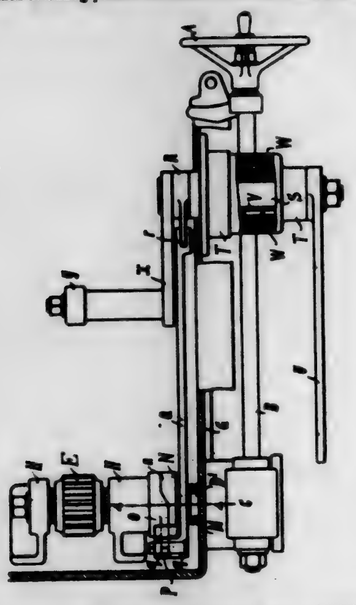

3. The combination of an elevating device for guns, a clutch interposed between the driving and driven parts of said elevating device, mechanism through which the breech of the gun is manipulated up and down independently of the elevating mechanism, and a connection between the breech-shifting means and the clutch, throwing the clutch out as the breech is shifted to loading position, and in when the gun reaches its original firing position.

4. In combination with a gun, an elevating mechanism, a clutch interposed between the driving and driven parts of the elevating mechanism and means for throwing the clutch in and out, consisting of the ring N, and the sleeve O having engaging faces formed at an inclination, one of said parts being connected with the movable member of the clutch and the other having a fixed abutment, and means for imparting relative rotation between said parts.

5. In a gun-mount, elevating mechanism embodying in its structure a two-part shaft, with a clutch interposed between and having its members respectively fixed and sliding on the parts of said shaft, a worm-gear rotating said shaft, a spring on said shaft bearing against the sliding clutch member, and the ring and sleeve having angularly-disposed engaging faces, and arranged the one in connection with the movable clutch member, and the other in abutment with a fixed part, and means for rotating said sleeve.

6. In a gun-mount, an elevating mechanism holding the gun in adjusted firing position and embodying a clutch between its driving and driven parts; a shaft having a crank-arm providing a movable support for the breech of the gun, independent of the elevating mechanism, and connections between the shaft and the clutch.

7. In a gun-mount, an elevating mechanism holding the gun in adjusted firing position embodying a clutch between its driving and driven parts; and a shaft having a crank-arm providing a movable support for the breech of the gun, independent of the elevating mechanism, and a counterbalance-spring on said shaft tending to rotate the crank in a direction to raise the gun-breech.

8. In a gun-mount, an elevating mechanism embodying a clutch between its driving and driven parts, and a shaft having a crank-arm providing a movable support for the breech of the gun, and a crank-and-rod connection between the shaft and clutch moving the latter into and out of engagement as the supporting-crank moves.

9. In a gun-mount, the combination of the toothed arc, connected with the gun, the toothed gear engaging said arc, the two-part shaft, one part of which carries said toothed gear, the clutch interposed between the two parts of said shaft, the ring and sleeve having inclined engaging faces, and connected the one to the movable member of the clutch and the other to a fixed part, and disengaging the clutch when they are relatively rotated, the shaft near the breech of the gun carrying a lever which raises and lowers said breech and with a hand-lever for manipulating it, and the lever-and-rod connection between the last-named shaft and the clutch-operating sleeve; a lost motion being provided between the manipulating hand-lever and the breech-supporting crank, whereby upon movement of the hand-lever in one direction the clutch is first disengaged and the gun-breech moved, and upon movement of the hand-lever in the opposite direction the gun-breech is moved and the hand-lever is reengaged.

708,152. DIFFERENTIAL-GEAR PULLEY-BLOCK. RENARD LAVERY, Boston, Mass. Filed Mar. 20, 1901. Serial No. 52,442. (No model.)

Claim.—1. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, and means adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, substantially as specified.

2. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, means adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, and means whereby the load may be held suspended at any point when the differential power is so thrown off, substantially as specified.

3. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, means adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, and means for braking the said lifting sheave or sheaves, substantially as specified.

4. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, means adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, means whereby the load may be held suspended at any point when the differential power is so thrown off, and means for braking the said lifting sheave or sheaves, substantially as specified.

5. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, a ratchet and pawl adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, substantially as specified.

6. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, a ratchet and pawl adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, and means for braking said lifting sheave or sheaves, substantially as specified.

7. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, a ratchet and pawl adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, and means adapted to lock said pawl in said ratchet until said ratchet is given a slight reverse impulse, substantially as specified.

8. In a pulley-block, in combination, a differential-gear operating-wheel, a lifting sheave or set of sheaves, a ratchet and pawl adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley, means adapted to lock said pawl in said ratchet until said ratchet is given a slight reverse impulse, and means for braking said lifting sheave or sheaves, substantially as specified.

9. In a pulley-block, in combination, a differential-gear operating-wheel, a chain-pocketed lifting-sheave, accessory unpocketed lifting-sheaves, and a ratchet and pawl, the said ratchet being secured to a gear meshing with one side of the aforesaid differential gearing, substantially as specified.

10. In a pulley-block, in combination, a differential-gear operating-wheel, a chain-pocketed lifting-sheave, accessory unpocketed lifting-sheaves, a ratchet and pawl, the said ratchet being secured to a gear meshing with one side of the aforesaid differential gearing, a friction-wheel secured to one of the lifting-sheaves, and a hand-brake bearing upon said friction-wheel, substantially as specified.

11. In a pulley-block, in combination, a differential-gear operating-wheel, a chain-pocketed lifting-sheave, accessory unpocketed lifting-sheaves, a ratchet and pawl, the said ratchet being secured to a gear meshing with one side of the aforesaid differential gearing, the ratchet-notches adapted to lock said pawl in said ratchet until said ratchet is given a slight reverse impulse, substantially as specified.

12. In a pulley-block, in combination, a differential-gear operating-wheel, a chain-pocketed lifting-sheave, accessory unpocketed lifting-sheaves, a ratchet and pawl, the said ratchet being secured to a gear meshing with one side of the aforesaid differential gearing, ratchet-notches adapted to lock said pawl in said ratchet until said ratchet is given a slight reverse impulse, a friction-wheel secured to one of the lifting-sheaves, and a hand-brake bearing upon said friction-wheel, substantially as specified.

13. In a differential-power pulley-block, means adapted to automatically throw off the differential power and allow the use of the lifting sheave or sheaves as a direct simple pulley.

708,153. OAR ATTACHMENT. MOSES A. LESSER, Pullman, Ill. Filed Dec. 11, 1901. Serial No. 85,515. (No model.)

Claim.—1. The combination with an oar, of an auxiliary flexible power-transmitting device connected at one end to the oar at a point outboard from the loom, and an engaging loop disposed at the opposite end of said device.

2. The combination of an oar, flexible means attached to said oar at a point outboard from the loom for directly transmitting auxiliary force thereto, said means being provided with a loop for engagement by an assistant.

3. The combination of an oar, an adjustable strap for directly transmitting auxiliary force to said oar, said strap being attached at one end to said oar at a point outboard from the loom and having a loop at its other end provided with a stirrup.

4. An oar attachment comprising a strap provided with means at one end for removably engaging an eye on an oar at a point outboard from the loom, and at the other end with an adjustable loop having a stirrup.

5. The combination of an oar, a plate attached to said oar outboard from the loom and having a series of eyes disposed thereon, and a strap provided with means for removably engaging said eyes.

6. The combination of an oar, a plate attached to said oar outboard from the loom and having a series of eyes disposed thereon, and a strap provided with means for removably engaging said eyes, said strap also having a stirrup attached thereto.

708,154. SUSPENDERS. CHARLES O. LEAH, Brandon, Vt. Filed Jan. 2, 1902. Serial No. 88,602. (No model.)

Claim.—1. In a pair of suspenders, a draft-evener for connecting the shoulder and button straps, comprising two separate coiled springs, having their terminals projected beyond their coils and the ends of the terminals interlinked.

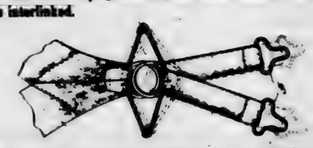

2. In a pair of suspenders, a draft-evener for connecting the shoulder and button straps, comprising two separate coiled springs, the terminals of which are oppositely disposed and projected beyond the coils, and interlinked at their extremities.

3. In a pair of suspenders, a draft-evener for connecting the shoulder and button straps, comprising two separate springs having the extremities of their terminals connected and their intermediate portions provided with whirls disposed intercurrent.

4. In a pair of suspenders, a draft-evener comprising two separate coiled springs having their terminals projected beyond the coils and the ends of the terminals interlinked, button-straps secured to the coils of the lower member, and a flexible band secured to the coils of the upper member and to the shoulder-strap buckle.

5. In a pair of suspenders, a draft-evener for connecting the shoulder and button straps comprising two oppositely-operable coiled springs having their terminals projecting beyond their coils and connected at their extremities.

708,155. ELECTRIC ATTACHMENT. JONATHAN C. HILOSE, Providence, R. I., assignor to the General Fire Extinguisher Company, New York, N. Y., a Corporation of New York. Filed Mar. 1, 1898. Serial No. 672,102. (No model.)

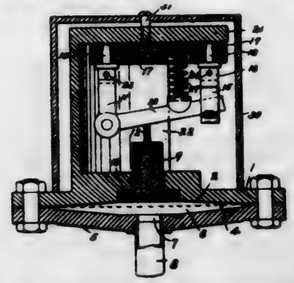

Claim.—1. The combination with a pressure-chamber, of a diaphragm therein, a plunger operated thereby, a block of insulating material, binding-posts depending therefrom and supported thereby, an overhanging arm to which said block is secured, a contact-blade pivoted to one of said posts and engaged by said plunger, and plates secured to the other post between which said blade passes.

2. The combination with two dished plates, a diaphragm clamped between said plates, an inlet through one plate, a plunger extending through the second plate and engaging the diaphragm, a standard projecting from the second plate, an arm extending laterally from said standard, a block of insulating material secured to the under face of said arm, binding-posts depending from said block, and a contact-blade engaged by said plunger for connecting said posts.

3. The combination with dished plates 1 and 5, of a diaphragm 3 clamped between said plates, an inlet 7 to the chamber 6 below the diaphragm, a standard 22 rising from plate 1, an arm 21 extending laterally from said standard, a block 17 of insulating material secured to the under side of said arm, binding-posts 11 and 16 supported by said block, a contact-blade 12 pivoted to post 11, plates 15 carried by post 16, and a plunger 9 engaging diaphragm 3 and contact-blade 12.

708,156. WINDOW-SHADE HANGER. JAMES B. HEREN, Hattenburg, Miss. Filed Nov. 22, 1901. Serial No. 83,310. (No model.)

Claim.—1. A device of the class described comprising a supporting-frame designed to be hinged to a window-frame and adapted to swing upward and downward, brackets carried by the frame and adapted to support a curtain-shade, and rods forming handles and provided with eyes receiving the frame, said rods being also provided with arms arranged to support a curtain-pole, substantially as described.

2. A device of the class described comprising a supporting-frame provided with arms designed to be hinged to a window-frame at opposite sides thereof and capable of swinging upward and downward, brackets carried by the frame and adapted to support a curtain-shade, rods hinged to the frame and forming handles for operating the same and provided with arms arranged to support a curtain-pole, a catch arranged at one side of the frame in position for engaging the same and adapted to hold the said frame in an elevated position, and a support located below the catch and arranged to receive the frame when the latter is swung downward, substantially as described.

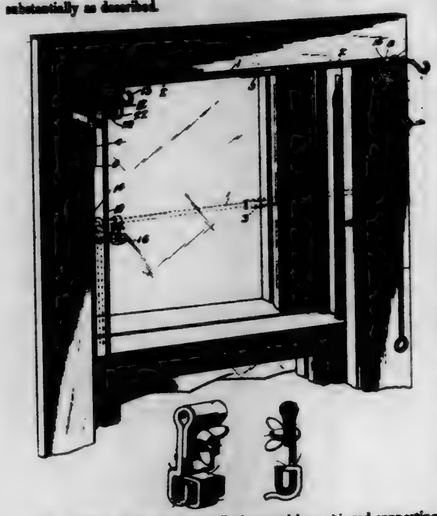

3. A device of the class described comprising a hinged supporting-frame arranged to swing upward and downward, means for holding the frame in an elevated position, brackets carried by the frame, one of the brackets being provided with an eye and the other bracket having a substantially U-shaped bearing portion, and a resilient clamp detachably mounted on the bearing portion of the bracket and extending across the said bearing portion from the exterior of one side and terminating at the inner face of the opposite side, substantially as described.

4. A device of the class described comprising a frame, a bracket carried by the frame and provided with an approximately U-shaped bearing portion, and a resilient clamp extending across the top of the bearing portion of the bracket and having a hook-shaped lower portion engaging the bottom of the bracket, substantially as described.

5. A device of the class described comprising a frame, a bracket carried by the frame and provided with an approximately U-shaped bearing portion and having a shoulder at the top thereof, and a resilient clamp interlocked with the bracket at the bottom thereof and having an upper portion extending across the bearing portion of the bracket from the exterior of one side and terminating at the inner face of the opposite side and engaging the shoulder, substantially as described.

708,157. CONTROLLER FOR ELECTRIC MOTORS. FRANK A. MERRICK and HERBERT W. STULL, Johnstown, Pa., assignors to the Lorain Steel Company, a Corporation of Pennsylvania. Filed Jan. 2, 1902. Serial No. 88,691. (No model.)

Claim.—1. In a controller for electric motors, the combination of a rheostatic switch, a series-parallel switch, a lock for the series-parallel switch temporarily released by the movement of the rheostatic switch to a predetermined running position, and a second lock for the series-parallel switch released by the return of the rheostatic switch to its open-circuit position.

2. In a controller for electric motors, the combination with separately-operable rheostatic and series-parallel switches, of a lock for the series-parallel switch controlled by the rheostatic switch and released by the movement of the latter through its operative position and back to its open-circuit position.

3. In a controller for electric motors, the combination with a rheostatic switch, and a separately-operable series-parallel switch, of a lock for the series-parallel switch controlled by the operation of the rheostatic switch and released by a movement of the latter through its operative positions and back to its open-circuit position, and means connected with said lock and operating automatically to render it again effective after a short interval.

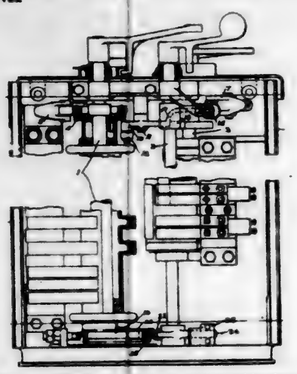

4. In a controller for electric motors, the combination of a rheostatic switch, a series-parallel switch, separate means for operating the two switches, and a spring tending to hold the series-parallel switch at its series position, of a locking-pawl engaging the said series-parallel switch, means on the rheostatic switch for disengaging said pawl when the rheostatic switch is moved to its off position, a spring for returning said pawl to locking position after such disengagement, and a retarding device opposing the action of said spring.

5. In a controller for electric motors, the combination with a rheostatic switch, a separate series-parallel switch, means for normally holding the series-parallel switch at its series position, of a locking device for locking said switch in that position, and means operated by the rheostatic switch for disengaging said locking device, a spring tending to reengage said locking device, and a retarding device opposing the action of said spring.

6. In a controller for electric motors, the combination with a rheostatic switch, a separate series-parallel switch, means for normally holding the series-parallel switch at its series position, of a locking device for locking said switch in that position, and means operated by the rheostatic switch for disengaging said locking device, a spring tending to reengage said locking device, and a retarding device opposing the action of said spring, together with a second locking device also engaging the series-parallel switch, and released only when the rheostatic switch is at its open-circuit position.

7. In a controller for electric motors, the combination of a rheostatic switch, a separately-operative series-parallel switch, a spring normally holding said series-parallel switch at its series position, a locking-pawl for locking said series-parallel switch in both series and parallel positions, means on the rheostatic switch whereby at its open-circuit position said lock is released, a second locking-pawl engaging the series-parallel switch and locking it in series position, means on the rheostatic switch for releasing said pawl when the rheostatic switch is at its last running position, a spring tending to reengage the last-named pawl, and a retarding device acting in opposition to the said spring.

8. In a controller for electric motors, the combination with separate rheostatic and series-parallel switches, and locking devices for the series-parallel switch controlled by the rheostatic switch, of an electromagnetic device operated by current generated by one or more of the motors for modifying the action of said lock under certain conditions.

9. In a controller for electric motors, the combination with separate rheostatic and series-parallel switches, and locking devices for the series-parallel switch controlled by the rheostatic switch and normally requiring a full operation of the rheostatic switch for their release, of a magnet-coil, means whereby the movement of the rheostatic switch to its off position places said coil in circuit with the armature of one of the motors, and an armature for said magnet arranged, when the magnet is energized, to restrain the normal action of the locking devices.

10. In a controller for electric motors, the construction of separate rheostatic and series-parallel switches, a spring tending to hold the series-parallel switch at its series position, a lock for holding the series-parallel switch at multiple position, means whereby said lock is normally released when the rheostatic switch is at open-circuit position, a magnet, a circuit for the coil of said magnet including one of the motor-armatures, and closed by the rheostatic switch at its off position, and an armature for said magnet arranged to engage the series-parallel switch when the latter is at its multiple position and prevent its return to series position so long as the magnet remains sufficiently energized.

708,158. CONTROLLER FOR ELECTRIC MOTORS. FRANK A. MERRICK and HERBERT W. STULL, Johnstown, Pa., assignors, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Jan. 2, 1902. Serial No. 88,692. (No model.)

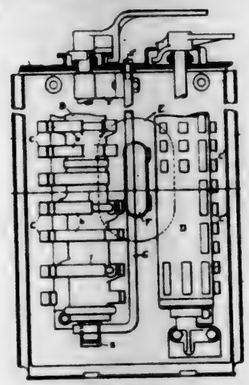

Claim.—1. In a controller for electric motors, the combination with a casing formed in part of magnetic material, and a controller-drum whose body and shaft are also of magnetic material, of a blow-out coil, a core supporting said coil, and a pole-piece carried by said core and carrying the bearings for the said shaft.

2. In a controller for electric motors, the combination with a contact-carrying drum having a body of magnetic material, of a blow-out coil adjacent to the central portion of said drum, a pole-piece carried by the said core, and carrying the bearings for the shaft of said drum, and a casing arranged to complete the magnetic circuit through the said drum.

3. In a controller for electric motors, a blow-out coil adjacent to a contact-carrying drum of the controller, a pole-piece carried by the core of said coil, and bearings for the shaft of said drum carried by the said pole-piece.

4. In a controller for electric motors, the combination of a casing having its body portion formed of magnetic material, a contact-carrying drum having its body and shaft of magnetic material, a blow-out coil adjacent to the central portion of said drum, a core for said coil carried by the said casing, a pole-piece for said coil carried by the casing and itself carrying the bearings for the said shaft.

5. In a controller for electric motors, the combination with a contact-carrying drum having its shaft and body portion composed of magnetic material, a blow-out coil, and a pole-piece secured to the core of said coil and extending in opposite directions therefrom parallel with and adjacent to the said drum, and bearings for the drum-shaft carried by the said pole-piece.

708,159. INCANDESCENT LAMP. HENRY E. REYNER, Butte, Mont. Filed Aug. 19, 1901. Serial No. 73,603. (No model.)

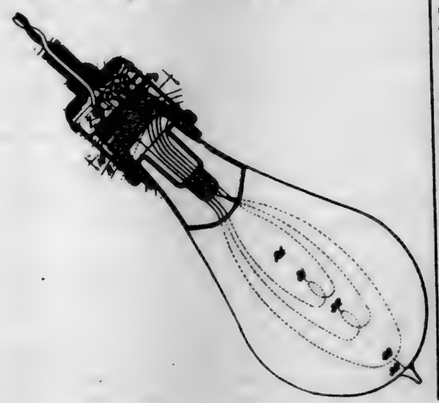

Claim.—An incandescent lamp, comprising a casing, a cap therefor, a sleeve in the cap, a screw-plug in the sleeve, an insulating-collar at the lower end of the casing, a threaded metallic socket in the collar, an insulating-plate secured to said socket, a conductor extending through the plug and electrically connected through said plate to said metallic socket, a series of spring-contacts, below said plate, electrical conductors connected thereto, a globe, a threaded plug, an insulating-lining for the plug and securing the globe in position, filaments in the globe electrically connected at one end to said plug, and segmental contact-strips embedded in and projecting upward from said lining, and connected to the opposite ends of said filaments, each of which is adapted to engage, once in each revolution, one of said spring-contacts, substantially as described.

708,160. GLOVE. DANIEL F. MORGAN, Toledo, Ohio. Filed Mar. 17, 1902. Serial No. 98,587. (No model.)

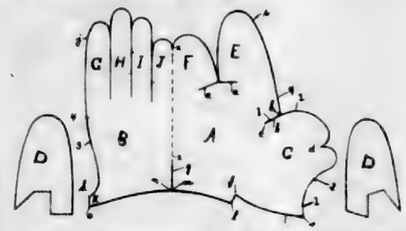

Claim.—1. A hand-covering comprising front and back portions and a thumb portion formed from a single blank said thumb portion consisting of a convex portion and an ogee-curved portion, said convex portion being adapted to be fastened to said ogee-curved portion in such a manner as to form a perfect-fitting thumb.

2. A hand-covering comprising front, back and thumb portions in one piece, said thumb portion commencing at a point near the apex of the angle formed by the thumb and index-finger and consisting of an outwardly, downwardly and inwardly extending convex portion; a second outwardly, downwardly and inwardly extending convex portion, which gradually changes to a prolonged inwardly, downwardly and outwardly extending concave portion, said convex portions meeting at a curvilinear angle; and a third inwardly and slightly upwardly extending portion which joins the lower point of said second portion at an angle, the outlines of said first and second portions being such as to form a perfect-fitting thumb when properly joined together.

3. In a hand-covering comprising front and back portions, a thumb portion integral with said front portion and consisting of an outwardly, downwardly and inwardly extending convex portion, a second outwardly, downwardly and inwardly extending convex portion which gradually changes to a prolonged inwardly, downwardly, and outwardly extending concave portion, said convex portions meeting at an angle, and a third inwardly and slightly upwardly extending convex portion, which joins the lower point of said second portion at an angle; said back portion having its outer edge concave near its lower extremity and adapted to join with said inwardly and slightly upwardly extending convex portion to provide a perfect fit around the wrist and heel of the thumb.

4. A hand-covering comprising front, back and thumb portions, the said back portion having the edge *j k* which tapers gradually inwardly and downwardly and suddenly outwardly near its lower portion, thereby forming the tongue K, the said edge *j k* being adapted to join with the edges *f e* and *h i* and the edge *k o* with the edge *l f*.

5. In a hand-covering comprising front, back and thumb portions formed from a single blank, and a wrist portion, said front and back portions being hollowed out adjacent to said wrist portion in such manner that when said front and back portions are folded upon each other said wrist portion joins said front and back portions at a slight angle, substantially as described.

708,161. TOOL FOR BANDING BOXES. PATRICK W. MULLANY, Amberg, Wis. Filed Nov. 15, 1901. Serial No. 82,629. (No model.)

Claim.—A tool for banding boxes comprising a bar or member 1 provided at one end with a recess, a steel plate detachably secured to the bar or member 1 adjacent to the said recess and provided with a cutting edge at one side and having a cam edge at its outer end, said bar or member 1 being also provided with a terminal cam edge located opposite the cam edge of the detachable plate, and the bar or member 2 pivoted between the plate and the bar or member 1 and provided at the inner side of the pivotal point with a cutting edge to cooperate with that of the plate, said bar or member 2 being enlarged beyond the cam edges to form

supporting side shoulders and having diverging arms arranged in the same longitudinal planes as the said shoulders and adapted to straddle a strap or band, substantially as described.

708,162. SAFETY ASH-PAN. TIMOTHY F. O'CONNOR, Sauk Center, Minn. Filed Jan. 6, 1902. Serial No. 88,647. (No model.)

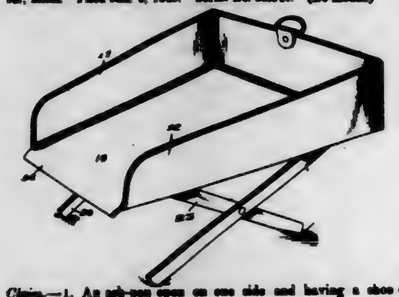

Claim.—1. An ash-pan open on one side and having a shoe or guideway 50 on the under side of its bottom, two pairs of supporting-legs, crossed and pivotally connected together, fixed bearings pivotally connecting one pair of said legs to the bottom of the pan, a cross-bar having downwardly-extending bearings for the other pair of legs, and a bar 42, extending inwardly from the cross-bar, operating in the shoe or guideway and having means to adjustably secure it therein, substantially as described.

2. An ash-pan having two pairs of supporting-legs crossed and pivotally connected together, fixed bearings pivotally connecting one pair of said legs to the bottom of said pan, slidable bearings pivotally connecting the other pair of said legs to said pan, a guide for said slidable bearings, means to secure the latter when adjusted, and laterally-extending ears 24 at the outer ends of one pair of said legs, at the under sides thereof, substantially as described.

708,163. SEAT-HINGE. LEWIS D. PEYER, Chicago, Ill. Filed May 22, 1901. Serial No. 61,449. (No model.)

Claim.—1. In a seat-hinge, an immovable part A having a central opening B and provided with a stud *a*; a seat-arm provided with a projection *d* having groove E and track F in its circumferential face, said projection of seat-arm resting upon stud *a* of immovable part A within groove E; movable abutment C having a track H therein; a spring K interposed between movable abutment C and side *a'* of immovable part A; a ball I interposed between the movable abutment C and projection *d* within tracks H and F in each respectively, substantially as specified.

2. The combination of a seat-arm provided with a projection having track and groove therein, an immovable part having a central opening and a recess therein and also provided with a stud extending into said central opening and upon which stud the projection of seat-arm rests and turns within said groove in the circumferential face of the projection of seat-arm, a movable abutment having a V-shaped track therein for a ball placed in said recess in immovable part, a ball interposed between the circumferential face of projection of seat-arm and movable abutment in tracks in each respectively, a spring yieldingly holding movable abutment in working position, substantially as specified.

3. The combination of a seat-arm having a projection with a groove and track in the circumferential face of such projection, an immovable part provided with a central opening and a recess and a stud having a concave top surface upon which the projection of seat-arm rests and turns, a movable abutment set in said recesses in the opening of said immovable part and provided with a track therein for a ball, a ball interposed between the projection of seat-arm and the movable abutment in said tracks in each respectively, and a spring yieldingly holding movable abutment in a working position and confined in its limit of operation by immovable part, substantially as specified.

4. An immovable part having a central opening and a recess and provided with a stud having a concave top surface; a seat-arm provided with a projection having a groove in its circumferential face and also having a V-shaped track, each track being lenticular in form, the sides thereof converging at either end at an acute angle, and placed on the opposite circumferential face of such projection to said groove; a movable abutment placed in said recess in immovable part and provided with a lenticular V-shaped track the sides of which track converge at either end at an acute angle; a ball interposed between the projection of seat-arm and the movable abutment within said tracks in the circumferential face of such projection and movable abutment respectively, and a spring yieldingly holding the movable abutment in a working position, substantially as specified.

5. An immovable part molded as part of a seat-standard, having a central opening and a recess, also a stud having a concave top; a seat-arm provided with a projection, such projection having a groove within which the stud of the immovable part is placed, and upon which stud the projection turns, such groove being concentric throughout its greater part to the concave top of such stud, said projection also provided with a V-shaped track placed in the circumferential edge of said projection opposite to such groove, said track being lenticular in shape the sides thereof converging at either end at an acute angle; a movable abutment placed in said recess in immovable part of hinge, said abutment having a track therein which track is lenticular in form, the sides thereof converging at either end at an acute angle, said abutment being so placed in immovable part that the track therein shall be opposite to and facing the track in the projection of seat-arm; a spring yieldingly holding abutment in working position, and a ball interposed between movable abutment and the circumferential face of projection of seat-arm, substantially as specified.

708,164. MEANS FOR LOADING AUTOMATIC PHOTOGRAPHIC APPARATUS. GEORGE H. PEYER, Cleveland, Ohio, assignor to the American Automatic Photograph Company, Cleveland, Ohio, a Corporation of Ohio. Filed Oct. 25, 1901. Serial No. 79,994. (No model.)

Claim.—1. Means for loading photographic apparatus, comprising the combination of a receptacle adapted to carry a column of photographic plates, a removable closure at one end of said receptacle, and means embodied in said receptacle for removing such closure.

2. Means for loading photographic apparatus comprising the combination of a receptacle, adapted to carry a column of photographic plates, a removable closure at one end of said receptacle, and means embodied in said receptacle for moving said column of plates in said receptacle, whereby said closure may be removed.

3. Means for loading photographic apparatus comprising the combination of a receptacle, adapted to carry a column of photographic plates, a removable closure at one end of said receptacle, and a movable cap at its opposite end whereby said closure may be removed by the movement of said cap when a column of plates is in said receptacle.

4. Means for loading photographic apparatus, comprising the combination of a receptacle adapted to carry a column of photographic plates, a removable closure at one end of said receptacle having a flexible peripheral portion, and means embodied in said receptacle for removing said closure.

5. Means for loading photographic apparatus, comprising the combination of a receptacle adapted to carry a column of photographic plates, a removable closure at one end of said receptacle, and a movable cap at its other end whereby said column may be removed by the movement of said cap when a column of plates is in said receptacle.

6. Means for loading photographic apparatus, comprising the combination of a receptacle, adapted to carry a column of photographic plates, a removable closure at one end of said receptacle, a movable cap at its other end, and a separator adapted to rest intermediately of said cap and said column of plates, whereby said closure may be removed by the movement of said cap when a column of plates is in said receptacle.

7. In means for loading photographic apparatus, the combination of a receptacle adapted to carry a column of photographic plates, a movable cap at one end of said receptacle and a detached member adapted to rest intermediately of said cap and a column of plates, and adapted to pass through said receptacle.

8. In means for loading photographic apparatus, a receptacle adapted to carry a column of photographic plates, a removable light-tight closure adapted to fit within the interior of one end of said receptacle, a movable cap at the other end of said receptacle and means embodied in said receptacle for removing said closure.

708,165. PHOTOGRAPHIC PLATE. GEORGE H. PEYER, Cleveland, Ohio, assignor to the American Automatic Photograph Company, Cleveland, Ohio, a Corporation of Ohio. Filed Oct. 26, 1901. Serial No. 79,993. (No model.)

Claim.—1. A photographic sensitive plate having a mount permanently confined thereto and flanged so as to overlap the edge of the plate both in front and rear, substantially as specified.

2. A photographic sensitive plate having a mount consisting of a backing-plate with edge flange lapped around the edge of the sensitive plate and permanently confined thereto, substantially as specified.

3. A photographic sensitive plate having a mount permanently secured thereto and forming at the edge of the plate flanges projecting both forwardly and rearwardly therefrom, substantially as specified.

4. A photographic sensitive plate having a mount permanently secured thereto and forming flanges projecting beyond the plate both in front and rear and an attaching device secured to said mount and projecting therefrom to a less extent than the rear flange, substantially as specified.

5. A photographic sensitive plate having a mount permanently secured thereto and consisting of a sunken back plate with edge flange overlapping the edge of the sensitive plate, and an attaching device secured to said back plate and contained within the sunken portion of the same, substantially as specified.

708,166. AUTOMATIC PHOTOGRAPHIC APPARATUS. GEORGE H. PEYER, Cleveland, Ohio, assignor to the American Automatic Photographic Company, Cleveland, Ohio, a Corporation of Ohio. Filed Dec 13, 1901. Serial No. 86,736. (No model.)

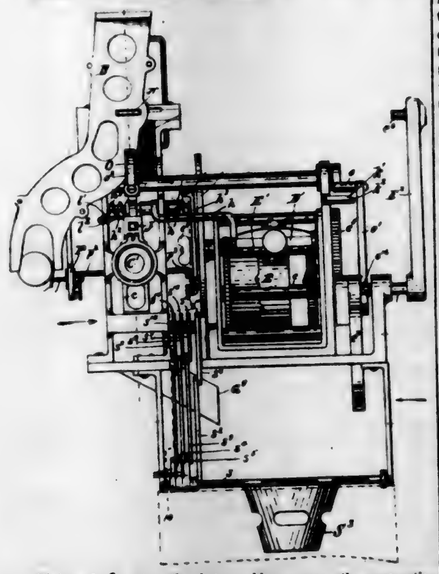

Claim.—1. In automatic photographic apparatus, the combination of a photographic magazine, a motor, means for energizing said motor, means for feeding a plate from said magazine, such energizing and plate-feeding means being operatively connected whereby a plate may be fed simultaneously with the energizing of the motor.

2. In automatic photographic apparatus, the combination of a plate-magazine, a motor, an operating-lever for energizing said motor, and a reciprocatory slide positively connected with said lever for feeding a plate from said magazine.

3. In automatic photographic apparatus, the combination of a plate-magazine, a motor, an operating-lever for energizing said motor, and means for feeding a plate from said magazine and positively connected with said lever.

4. In automatic photographic apparatus, the combination of a motor, a plate-magazine, an operating-lever for energizing said motor, means for feeding a plate from such magazine and controlled by the operation of said lever, and plate exposing and finishing means controlled by such lever.

5. In automatic photographic apparatus, the combination of a motor, a plate-magazine, an operating-lever for energizing said motor, means for feeding a plate from said magazine and controlled by the operation of said lever, and plate exposing and finishing means controlled by said lever and operated by said motor.

6. In automatic photographic apparatus, the combination of a motor, a plate-magazine, an operating-lever for energizing said motor, means for feeding a plate from said magazine and controlled by the operation of said lever, plate exposing and finishing means operated by said motor, and an electric circuit containing means for controlling the action of the motor, such circuit being controlled by said operating-lever.

7. In automatic photographic apparatus, the combination of a motor, a plate-magazine, an operating-lever for energizing said motor, means for feeding a plate from said magazine, plate exposing and finishing means operated by said motor an electric circuit containing a magnet, means for interrupting the action of such motor controlled by said magnet, and circuit-closing means operated by said operating-lever.

8. In automatic photographic apparatus, the combination of a motor, a plate-magazine, an operating-lever for energizing said motor, means for feeding a plate from said magazine, a shutter for exposing a plate and means for operating same, plate-finishing means operated by said motor, an electric circuit containing means for controlling the opening of said shutter, means for closing the latter, means for interrupting the action of the motor, means in said circuit for controlling such interrupting means, such circuit being controlled by said operating-lever, and means operated by the motor for actuating the finishing means subsequently to the opening and closing of the shutter.

9. In automatic photographic apparatus, the combination of a motor, a plate-magazine, an operating-lever for energizing said motor, means for feeding a plate from said magazine and operated by said lever, a shutter for exposing a plate and means for opening same, an operating-wheel connected with said motor, plate-finishing means, an electric circuit containing a magnet, an armature controlled by said magnet, means for interrupting said motor's action controlled by said armature, said operating-wheel adapted to actuate the finishing means and close the shutter, and said lever adapted to control said circuit.

10. In automatic photographic apparatus, the combination of a series of receptacles for holding material for finishing a photographic plate, an operating-wheel, and means for transferring a plate from one receptacle to another, said wheel provided with means for successively operating such transferring means.

11. In automatic photographic apparatus, the combination with a series of receptacles for holding materials for finishing a photographic plate, each said receptacle provided with a movable carrier for receiving a plate, such carrier adapted to transfer such plate from its respective receptacle to the next carrier, of means for successively actuating such carriers.

12. In automatic photographic apparatus, the combination with a series of receptacles for holding material for finishing a photographic plate, each such receptacle provided with a tilting carrier adapted to transfer a plate from its respective receptacle to the next, of means for successively tilting said carriers.

13. In automatic photographic apparatus, the combination of a series of receptacles for holding material for finishing a photographic plate, each such receptacle provided with a carrier for receiving and holding such plate, such carrier being movable and adapted to transfer such plate from its respective receptacle to another carrier.

14. In automatic photographic apparatus, the combination of a series of receptacles for holding material for finishing a photographic plate, each such receptacle provided with a carrier depending therein for receiving and holding such plate, such carrier adapted to transfer a plate from its respective receptacle to another carrier.

15. In automatic photographic apparatus, the combination of a series of tanks, a series of movable carriers, a carrier being located in each tank, and an operating wheel and motor therefor, said wheel provided with means for actuating said carriers successively.

16. In automatic photographic apparatus, the combination of a se-

ries of tanks, a series of movable carriers, a carrier being located in each tank, a series of lever systems connected with said carriers and adapted to actuate same, and an operating wheel and motor therefor, said wheel provided with means for actuating said lever systems successively.

17. In automatic photographic apparatus, the combination of a series of tanks, a series of movable carriers, a carrier being located in each tank, a series of lever systems connected with said carriers and adapted to actuate same, and an operating wheel and motor therefor, said wheel provided with a series of projecting studs, each stud adapted to engage and actuate one of said lever systems.

18. In automatic photographic apparatus, the combination of a series of juxtaposed tanks, a series of tiltable carriers, a carrier being located in each tank, a series of lever systems connected with said carriers and adapted to tilt same, said systems including a row of alined trip members; an operating wheel and motor therefor, said wheel being provided with a series of projecting studs having a path of movement intersecting said trip members, whereby the latter may be engaged and said carriers tilted successively.

19. In automatic photographic apparatus, the combination of a tank, a plate-carrier mounted upon a support permanently located relatively to said tank so as to be movable into and out of the latter, and means for automatically actuating such carrier.

20. In automatic photographic apparatus, a discharging-duct of tubular form having its receiving-end opening located in the lateral wall of the upper portion thereof.

21. In automatic photographic apparatus, a discharging-duct consisting of a tube having a receiving-opening in the lateral wall of the upper tube portion and a lower portion removed from and projecting transversely of the tube-bore.

22. In automatic photographic apparatus, a discharging-duct consisting of a tube having a receiving-opening at its upper end, a discharge-opening at its lower end, and a lower portion removed from said opening and projecting transversely of the tube-bore.

23. In automatic photographic apparatus, the combination of a bath for developing a photographic plate, means for removing said plate from said bath, and an operating-wheel provided with an angularly-adjustable arm for actuating said removing means, said wheel being provided with marks indicating angular intervals of wheel travel, said arm provided with an indicating-pointer located in the vicinity of the marked portion of said wheel.

24. In automatic photographic apparatus, the combination of a camera, a shutter therefor, and means for operating same, plate-feeding means and means for operating same, plate finishing means, a motor, and means actuated by the shutter-operating means for controlling the operation thereof, said finishing means operated by said motor.

25. In automatic photographic apparatus, the combination of a camera, a shutter therefor and means for operating same, plate feeding and finishing means, a motor, means actuated by the shutter-operating means for controlling the operation of the motor, said finishing means operated by said motor, said shutter-operating means controlled by the energizing means.

708,187. COIN-CONTROLLED PHOTOGRAPHIC APPARATUS.

GEORGE H. PIPER, Cleveland, Ohio, assignor to the American Automatic Photographic Company, Cleveland, Ohio, a Corporation of Ohio. Filed Mar. 3, 1902. Serial No. 97,206. (No model.)

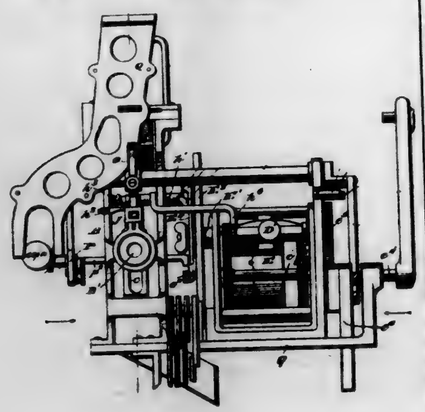

Claim.—1. In coin-controlled, automatic photographic apparatus, the combination of a motor, a coin-duct, an operating-lever connected with said motor, and an electrical-circuit-containing means for controlling the operation of said motor, and two pairs of electrical contacts for opening and closing such circuit, a member of one pair being located in the coin-path of said duct and a member of the other being located in the lever-path.

2. In coin-controlled, automatic photographic apparatus, the combination of a motor, a coin-duct, an operating-lever for energizing such motor, and an electrical-circuit-containing means for controlling the operation of said motor, and two pairs of contacts for opening and closing said circuit, a member of one pair being located in the coin-path of said duct, and a member of the other being located in the lever-path at the end of its energizing stroke.

3. In a coin-controlled automatic photographic apparatus, the combination of a motor, a coin-duct, means for controlling the operation of said motor, including a pair of electrical contacts one of which is movable and adapted while in contact with the other to hold same in the coin-path of said duct, and means for actuating said movable contact to disengage the other contact, whereby the latter may be removed from the coin-path.

4. In coin-controlled automatic photographic apparatus, the combination of a motor, a coin-duct, an operating-lever connected with said motor; and an electrical circuit including means for controlling the operation of said motor, three pairs of electrical contacts for opening and closing such circuit, a member of one pair being located in the coin-path of said duct, a member of a second pair being located in the lever-path, and a member of the third pair being capable of being manually operated.

708,168. SHUTTER FOR AUTOMATIC PHOTOGRAPHIC APPARATUS.

GEORGE H. PIPER, Cleveland, Ohio, assignor to American Automatic Photographic Company, Cleveland, Ohio, a Corporation of Ohio. Filed Mar. 11, 1902. Serial No. 97,735. (No model.)

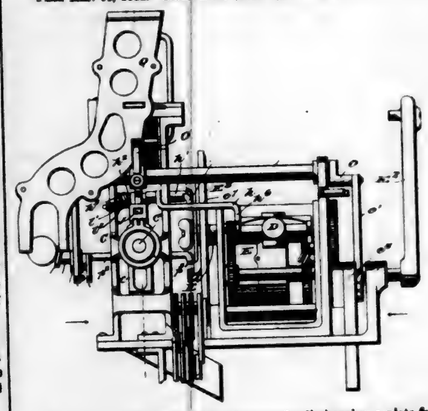

Claim.—1. The combination of means for discharging a plate from a focal plane, a lens-controlling shutter, and an operating-wheel embodying means for operating said discharging means and for closing said shutter, said operating means and closing means being relatively fixed.

2. The combination of means for discharging a plate from a focal plane, a lens-controlling shutter, and an operating-wheel provided with relatively fixed lips respectively adapted to operate said discharging means and to close said shutter.

3. The combination of a shutter, a motor-operated wheel, and an angularly-adjustable arm on said wheel for closing said shutter.

4. The combination of a shutter, a motor-operated wheel, and an angularly-adjustable arm on said wheel for closing said shutter, said wheel being provided with a series of indicating-marks, whereby the angularity of said arms and hence the time of exposure may be indicated.

5. The combination of means for discharging a plate from a focal plane, a lens-controlling shutter, and a motor-operated angularly-adjustable arm, one end of said arm being adapted to close said shutter and the other to engage and operate said discharging means.

6. The combination of an operating-wheel and motor therefor, a shutter, a spring-actuated shaft connected with and adapted to open said shutter, a sleeve, a step-arm for controlling the operation of said wheel mounted upon said sleeve, the latter forming a bearing for said shaft, said sleeve provided with means for engaging said shaft when moved in one direction and for disengaging same when moved in the opposite direction, said wheel provided with means for engaging said shaft whereby said shutter may be closed independently of said stop-arm.

7. The combination of an electrical circuit containing a magnet, armature and means for opening and closing the circuit, a spring-actuated arm, a shutter connected with such arm, said armature adapted to hold such shutter in a closed position against the action of the spring, whereby upon the movement of the armature said spring may be caused to actuate the shutter to open.

8. The combination of an electrical circuit containing a magnet, armature and means for opening and closing the circuit, a motor, a spring-actuated arm, a shutter and motor-controlling means connected with such arm, said armature adapted to hold such shutter in a closed position against the action of the spring, and means connected with the motor for closing such shutter.

9. In automatic photographic apparatus including a motor, the combination with means for controlling the operation of the motor and embodying an exterior movable element, of a light-circuit, said movable element adapted to control said light-circuit.

10. In automatic photograph apparatus including a motor, the combination with an electric-light circuit, of electrical means for controlling the operation of said motor, and embodying an exterior movable element which is provided with means for controlling the electrical circuit in said motor-controlling means, said movable element being adapted to control said light-circuit.

708,169. PERIODICAL-FILE.

CORYDON L. PRIBBLE, Evanston Ill. Filed July 5, 1901. Serial No. 67,147. (No model.)

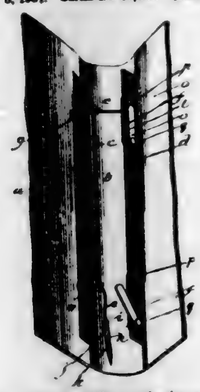

Claim.—1. In a binding or filing mechanism a needle with the eye extending longitudinally from the head to a notched opening in the side, said opening forming a recessed shoulder to retain the knotted end of the binding-cord, in combination with the cord *c*, stays *c* and *d* and locking device *f*, substantially as described.

2. In a binding or filing mechanism a needle having adjacent to the eye an inwardly-diminishing slot in the side, said slot being adapted to have the binding-cord drawn securely therein, in combination with the locking device *f*, cord *c* and stays *c* and *d*, substantially as described.

3. In a binding or filing mechanism the locking device *f*, consisting of a fixed inner plate *l* having an aperture *m* for the insertion of the needle, a pocket *n* to inclose the needle, and a movable cap *o* to confine and conceal the needle, in combination with the stays *c* and *d*, and the needle *h* and cord *c*, said needle being adapted to the adjustment of the cord immovably thereon, substantially as described.

4. In a binding or filing mechanism the combination of the eyelets *r s*, adapted to be inserted through the folds of a signature and engage the binding-cord, the cord *c* and stays *c* and *d*, with the needle *h* and lock *f*, said needle and lock cooperating to secure to the stay *d* the free end of the binding-cord, substantially as described.

708,170. LUBRICATING DEVICE.

HENRY G. REISS, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 23, 1901. Serial No. 44,398. (No model.)

Claim.—In a dynamo-electric machine, the combination, with the rotatable member thereof mounted on an upright shaft, of upper and lower bearings for said shaft, there being a passage or duct in said member joining said bearings, an oil-cup for the upper bearing, a centrifugally-operated oiling device secured to the rotating member beneath the lower bearing and arranged to receive the oil flowing therefrom, and a trans-

for-pipe leading from said device out around the rotating member to the upper bearing.

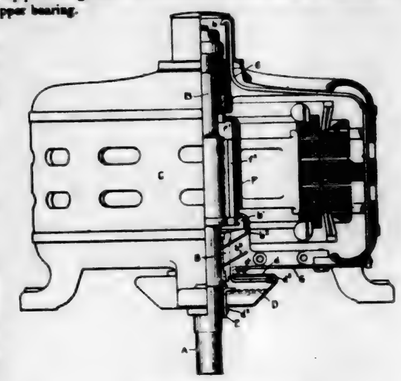

708,171. NON-REFILLABLE BOTTLE.

HORACE B. REUBELT Franklin, Tenn. Filed Jan. 3, 1902. Serial No. 88,265. (No model.)

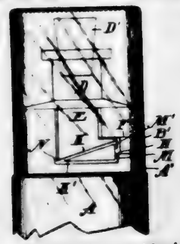

Claim.—1. A non-refillable bottle, comprising in combination with the body portion of the bottle, having an annular shoulder on its outer wall, a recess in the outer wall, said recess having a laterally-projecting portion, a spring having its ends bent at right angles and seated within said recess, a cap having a flange upon its inner wall, said flange adapted to enter the recess in the outer wall of the bottle, and to be turned with the cap so as to enter said laterally-projecting portion of the recess, and to be held therein, by the end of said spring, the cap adapted to rest upon said annular shoulder, as set forth.

2. A non-refillable bottle, comprising in combination with the bottle, having an annular flange in its outer wall, below the neck portion of the bottle, a recess E and a V-shaped recess N at the bottom of the latter, a laterally-projecting recessed portion F extending horizontally at a location near the bottom of the recess E, a shoulder H intermediate said recessed portion F and recess E, a spring bent upon itself and fastened in said V-shaped recess, the ends of said spring being bent at right angles, a frangible cap, a segment-flange on the inner wall of said cap, adapted to be pushed down through the recess E, against the arm of the spring, and to be turned into said recessed portion F, and held therein by an arm of said spring, as set forth.

708,172. SPINNING-MACHINE FOR CHEWING-TOBACCO.

WILLIAM SCHERTIGER, Aalborg, Denmark. Filed Apr. 21, 1902. Serial No. 104,088. (No model.)

Claim.—1. In a machine for spinning chewing-tobacco, a twisting-needle with means for continuously rotating the same, a pair of superposed endless bands in proximity to the point of said needle with means for operating them, and a winding-drum in rear of said belts, substantially as described.

2. In combination, an initial twisting-needle, a pair of endless bands arranged at an angle to each other, the said needle projecting into proximity to the crossing-point of said bands, means for driving said bands, and a winding-drum in rear of said bands, substantially as described.

3. In combination, an initial twisting-needle, a pair of endless bands arranged at an inclination to each other and in proximity to the point of said needle, means for varying the inclination of said bands with relation to each other, and a winding-drum in rear of said bands, substantially as described.

4. In combination, an initial twisting-needle, upper and lower bear-

ing-plates, means for adjusting said plates in a circular manner, a pair of rollers carried by each plate, an endless band carried by each pair of rollers, means for driving one of the rollers of each pair, and winding means in rear of said bands, substantially as described.

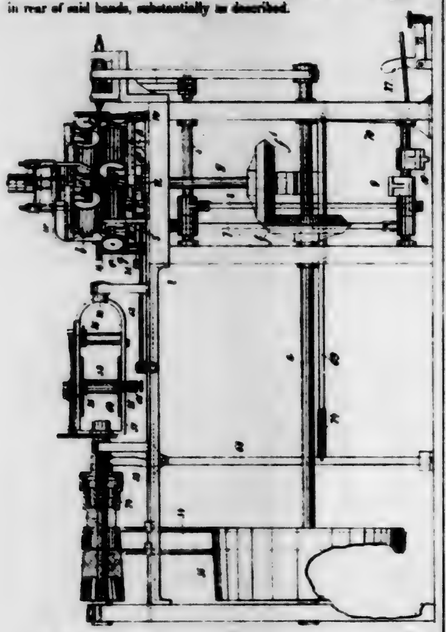

3. In combination, a vertical shaft, with means for operating it, upper and lower plates capable of oscillating on an axis coincident with said shaft, a pair of rollers journaled in each plate, endless bands carried by said rollers, a gear-wheel carried by the vertical shaft, small gears meshing therewith, vertical shafts extending upward from said small gears into proximity to the rollers, worms on said shafts, worm-wheels connected with the rollers engaging said worms, means for oscillating said plates to vary the inclination of the bands, means for feeding tobacco between the bands on one side and coiling or winding means on the other, substantially as described.

4. In combination, an initial twisting-needle, a pair of endless bands arranged at an inclination to each other with means for operating them, a winding-drum in rear of said bands and friction means for driving said winding means, substantially as described.

708,173. ADJUSTABLE BOTTLE-REST. RUDOLPH SCHMIDT, Kansas City, Mo. Filed Mar. 20, 1902. Serial No. 99,154. (No model.)

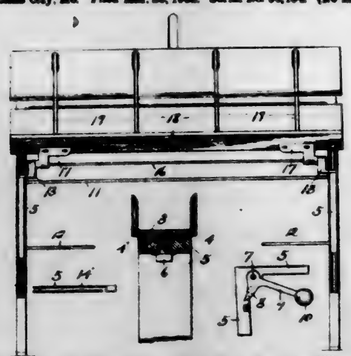

Claim.—1. The combination with the front legs of a filling-tank, of a pair of ratchets secured to said legs respectively, a bracket mounted slidably on each of said ratchets, a pawl secured to each bracket in position to engage the adjacent ratch, means for holding the pawls yieldingly against the ratchets, a bearing mounted slidably on the top of each bracket, a rod connecting said bearings, and an angular bottle-rest supported indirectly by said rod; substantially as described.

2. The combination, with the front legs of a filling-tank, of a pair of ratchets secured to said legs respectively, a bracket mounted slidably on each of said ratchets, the base of each bracket having a vertical slot therein, a cap-screw passing through each of said slots and entering one of said ratchets, a pawl secured to each bracket in position to engage the adjacent ratch, means for holding said pawls yieldingly against the ratchets, a bearing mounted slidably on the top of each bracket, a rod connecting said bearings, and an angular bottle-rest supported indirectly by said rod; substantially as described.

708,174. POSTAL CAR AND STATION APPLIANCE. LOUIS SCHLENDER, Theresa, Wis., assignor of one-half to John Gerlach, Theresa, Wis. Filed June 9, 1902. Serial No. 110,723. (No model.)

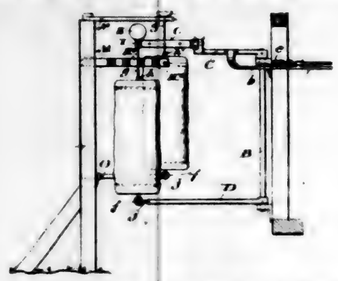

Claim.—1. A postal-car appliance comprising a lever-controlled swing-frame adjacent to a side doorway of the car, a latch on the lever, keepers for the latch arranged with respect to holding the swing-frame in different positions of adjustment, means in connection with said swing-frame for releasable suspension of a mail-bag, as well as for catching and detaching such a bag from suspending devices at a station, and other means at the station for catching and holding the former bag.

2. A postal-car appliance comprising a swing-frame adjacent to a side doorway of the car, a pivotally-adjustable upper outer bar in connection with the swing-frame, a yielding catch extending in one direction from the outer end of the bar for the engagement of a flexible device connecting one end of a mail-bag with a step designed to overlie the catch, a swivel-hook in connection with the outer end of a lower swing-frame arm in alinement to said catch to engage with a ring in connection with the other end of the mail-bag and other yielding catches alined on said bar to extend therefrom in the direction opposite the former catch to be one or the other thereof engaged by a stop-attached flexible device in connection with a mail-bag suspended from a station-frame passed by said car.

3. A railway-postal-station frame having an upper horizontal beam thereof provided with a pair of bars each adjustable on vertical pivots to stand at a right angle to the frame, yielding catches alined on sides of the bars, those of one bar being extended in an opposite direction to those of the other bar, a forked-end arm in connection with a vertical pivot on an upper frame-timber the plane of this pivot being intermediate of those aforesaid, another arm adjustable on a horizontal pivot in connection with a lower frame-timber to stand with the other arm at a right angle to said frame, and a swivel-hook in connection with the free end of the lower arm; the catches aforesaid being singly for automatic engagement of a flexible device connecting one end of a mail-bag with a catch-overlying stop, the bag being normally suspended from a swung-out postal-car appliance provided with other yielding catches for engagement of a similar flexible device engageable with the forked-end frame-arm and connecting an overlying stop with a mail-bag having a lower ring engaged by the swivel-hook of the other frame-arm.

708,175. SUSPENDED RAILWAY-VEHICLE. WILHELM SCHMITZ, Elberfeld, Germany, assignor to the Continentale Gesellschaft für Elektrische Unternehmungen, Nuremberg, Germany. Filed Nov. 5, 1901. Serial No. 81,228. (No model.)

Claim.—1. In monorail elevated railways with suspended vehicles a connection between the wheel-trucks and the vehicle-box consisting of a universal joint above the rails composed of a vertical axis and a horizontal axis parallel to the truck-wheel axles in combination with an arrangement of the masses and the area exposed to air resistance, of the trucks and the vehicle-box so as to have their lines of gravity passing through the center of the rail-head, as and for the purpose set forth.

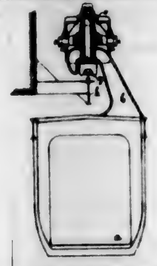

2. In monorail elevated railways with suspended vehicles a connection between the wheel-trucks and the vehicle-box consisting of a universal joint above the rails composed of a vertical axis and a horizontal axis parallel to the truck-wheel axles in combination with an arrangement of the masses and the area exposed to air resistance, of the trucks and the vehicle-box so as to have their lines of gravity passing through the center of the rail-head, and a safety-catch connected to the truck-frame, embracing the rail-carrier, as and for the purpose set forth.

3. In monorail elevated railways a vehicle provided with universal-joint connections for supporting said vehicle at two or more points above the rail, the arrangement being such that the vehicle will adapt itself for variable curves and gradients, substantially as described.

4. In monorail elevated railways a vehicle provided with universal-joint connections for supporting said vehicle at two or more points above the rail; in combination with one or more safety-catches located below the rail-support, substantially as described.

708,176. TOOL-HOLDER. CHARLES T. SHAFER, Springfield, Ohio, assignor to the Western Manufacturing Company, Springfield, Ohio, a Corporation of Ohio. Filed Apr. 11, 1901. Serial No. 55,289. (No model.)

Claim.—1. A tool-holder having a lateral recess or seat in its head, terminating at the bottom in a shoulder or flange, undercut to receive and prevent lateral movement of the lower edge of the tool, in combination with a cap supported on said head, extending over the top of said recess or seat, and provided with a depending flange to engage the outer face of the tool at its upper edge, and means for adjustably securing said cap on said head, said means comprising engaging surfaces on the head and cap, one of which is inclined to the face of the seat or recess, whereby, when the cap is moved longitudinally on the head, its depending flange will be pressed against the upper edge of the tool, substantially as described.

2. A tool-holder having in one side of its head a lateral recess or seat, terminating at the bottom in a shoulder or flange, undercut to receive and prevent lateral movement of the lower edge of the tool, the opposite side of the head being provided with a bearing-surface inclined to the plane of the recess or seat in the first-mentioned side, a cap adjustably supported on said head and extending beyond both sides thereof, being provided on the recessed side with a depending flange to engage the outer face of the tool at its upper edge, and having on the opposite side of the head a depending flange to engage the inclined bearing-surface of said side, and means for securing said cap in position on the head after adjustment, substantially as described.

3. A tool-holder having in one side of its head a lateral recess or seat, terminating at the bottom in a shoulder or flange, undercut to receive and prevent lateral movement of the lower edge of the tool, the opposite side of the head being provided with a bearing-surface inclined to the plane of the recess or seat in the first-mentioned side, a cap adjustably supported on said head and extending beyond both sides thereof, being provided on the recessed side with a depending flange to engage the outer face of the tool at its upper edge, and having on the opposite side of the head a depending flange to engage the inclined bearing-surface of said side, and means for securing said cap in position on the head after adjustment, said means comprising a slot in the cap parallel with the inclined bearing-surface, and a stamping-screw passing through said slot into the head, substantially as described.

4. A tool-holder comprising a head and shank, both having formed in them a continuous lateral recess or seat, terminating at the bottom in an undercut shoulder or flange to receive and prevent lateral movement of the lower edge of the tool, in combination with a clamping-cap mounted on the head and adapted to grip the upper edge of the tool, and a flat wearing-plate, of harder material than the shank, permanently secured on the top of the shank and extending laterally beyond the same over the top of the recess or seat therein immediately above the tool, substantially as described.

708,177. BORING-MACHINE. WILLIS S. SHERMAN, Milwaukee, Wis. Filed Jan. 6, 1902. Serial No. 88,563. (No model.)

Claim.—1. In a boring-machine, rotatably-mounted drill-heads disposed opposite to each other and arranged to be rotated together, each head carrying a drilling-tool extending beyond the outer rim thereof.

2. In a boring-machine, rotatably-mounted drill-heads disposed opposite to each other and arranged to be rotated together, and each head carrying a plurality of drilling-tools extending beyond the outer rim thereof.

3. In a boring-machine the combination with rotatably-mounted drill-heads disposed opposite to each other and arranged to rotate together, and each head carrying a drilling-tool, extending beyond the outer rim thereof, of means for adjusting one of the heads so as to bring its tool out of transverse line with the tool of the other head.

4. In a boring-machine, the combination with rotatably-mounted drill-heads disposed opposite to each other, and arranged to rotate together, and each head carrying a plurality of drilling-tools extending beyond the outer rim thereof, of means for adjusting one of the heads so as to bring its tools out of transverse line with the tools of the other head.

5. In a boring-machine, the combination with rotatably-mounted drill-heads disposed opposite to each other, and arranged to rotate together, each head carrying a drilling-tool extending beyond the outer rim thereof, of means for adjusting one of the heads closer to or farther away from the other head.

6. In a boring-machine, pivotally and rotatably mounted drill-heads disposed opposite to each other, and arranged to be rotated together, each head carrying a drilling-tool extending beyond the outer rim thereof.

7. In a boring-machine, the combination of pivotally and rotatably mounted drill-heads disposed opposite to each other, and arranged to rotate together, each head carrying a drilling-tool extending beyond the outer rim thereof, of means for adjusting one of said heads closer to or farther away from the other head.

8. In a boring-machine, the combination of rotatably-mounted drill-heads disposed opposite to each other, and one of said heads provided with a plurality of openings, a pin secured to one of the heads and adapted to extend into one of the openings of the other head, in accordance with the extent to which said head is rotatably adjusted, and a drilling-tool carried by each head and extending beyond the outer rim thereof.

9. In a boring-machine, the combination of rotatably-mounted drill-heads disposed opposite to each other, and one of said heads provided with a plurality of openings, pins secured to one of the heads and adapted to extend into any of the openings of the other head, in accordance with the rotatable adjustment of said head, and a drilling-tool carried by each head and extending beyond the outer rim thereof.

10. In a boring-machine, the combination of rotatably-mounted drill-heads disposed opposite to each other and one of said heads provided with a plurality of openings, a pin secured to one of the heads and adapted to extend freely into one of the openings of the other head, in accordance with the extent to which said head is rotatably adjusted, means for adjusting the latter head closer to or farther away from the other head, and

a drilling-tool carried by each head and extending beyond the outer rim thereof.

11. In a boring-machine, the combination of rotatably-mounted drill-heads disposed opposite to each other, said one of said heads provided with a plurality of openings, a pin adjustably secured to one of the heads and adapted to extend into one of the openings of the other head, in accordance with the extent to which said head is rotatably adjusted, and a drilling-tool carried by each head and extending beyond the outer rim thereof.

12. In a boring-machine, the combination of standards or bearings, a shaft supported therein, arms pivotally mounted on said shaft, drill-heads rotatably carried at the forward ends of the arms, means for causing said heads to rotate together, and a drilling-tool carried by each head and extending beyond the outer rim thereof.

13. In a boring-machine, the combination of standards or bearings, one of said standards or bearings being adjustably secured so as to be brought closer to or farther away from the other standard or bearing, a shaft supported in the standards or bearings, arms extending from the shaft, drill-heads rotatably carried at the opposite ends of said arms, means for causing the heads to rotate together, and a drilling-tool carried by each head and extending beyond the outer rim thereof.

14. In a boring-machine, the combination of standards or bearings, the upper ends thereof being bifurcated, and the furcate arms provided at their extremities with boxes, sleeves arranged within said boxes, a shaft supported in the sleeves, arms provided at their ends with eyes surrounding the sleeves between the boxes of the furcate arms of the standards, drill-heads rotatably carried at the opposite ends of the arms, means for causing said heads to rotate together, and a drilling-tool carried by each head and extending beyond the outer rim thereof.

15. In a boring-machine, the combination of a bed-piece or support, standards or bearings extending therefrom, the upper ends of said standards being bifurcated, and the furcate arms provided at their extremities with boxes, and one of said standards being adjustably secured to the bed-piece or support so as to be brought closer to or farther away from the other standard or bearing, sleeves arranged within the boxes, a shaft supported in the sleeves, means for securing the sleeves and boxes together, arms provided at their ends with eyes surrounding the sleeves between the boxes of the furcate arms of the standards, drill-heads carried at the opposite ends of the arms, means for causing said heads to rotate together, and a drilling-tool carried by each head and extending beyond the outer rim thereof.

16. In a boring-machine, the combination of standards or bearings, a drive-shaft mounted in the upper ends thereof, means for rotating the shaft, arms pivotally mounted on said shaft, the opposite ends of the arms provided with boxes, driven shafts mounted in said boxes, drill-heads disposed opposite to each other and arranged to rotate together, a drilling-tool carried by each head and extending beyond the outer rim thereof, a gearing between said drilling-tool and each driven shaft, and connections between the driven shafts and the drive shaft, whereby the rotation of the latter is imparted to the former.

17. In a boring-machine, the combination of standards or bearings, a drive-shaft mounted in the upper ends thereof, means for rotating the shaft, pulleys mounted on the shaft, one of said pulleys being adjustable thereon, arms pivotally mounted on the shaft, the opposite ends of said arms provided with boxes, drill-heads provided with outwardly-extending journals which pass through said boxes of the arms, one of said drill-heads being adjustable toward and from the other, driven shafts mounted in said journals, a drilling-tool carried by each drill-head and extending beyond the outer rim thereof, a gearing between each drilling-tool and each driven shaft, pulleys mounted on the driven shafts, and endless belts connecting said pulleys with the pulleys of the drive-shaft.

18. In a boring-machine, the combination of a bed-piece or support, standards or bearings extending therefrom, the upper ends of said standards being bifurcated, and the furcate arms provided at their extremities with boxes, and one of said standards being adjustably secured to the bed-piece or support so as to be brought closer to or farther away from the other standard, sleeves arranged within the boxes, means for securing the boxes to the sleeves, a drive-shaft supported in the sleeves, means for rotating said shaft, pulleys mounted on the drive shaft, one of said pulleys being adjustable thereon, arms provided at their ends with eyes surrounding the sleeves between the boxes of the furcate arms, drill-heads disposed opposite to each other and provided with outwardly-extending tubular journals, a drilling-tool carried by each head and extending beyond the outer rim thereof, driven shafts mounted in the said journals, a gearing between each of said shafts and the drilling-tool of the head rotating thereto, a pulley mounted on each of said shafts, endless belts connecting said pulleys with the pulleys of the drive-shaft, and means for adjusting one of the drill-heads toward or from the other.

19. In a boring-machine, the combination of rotatably-mounted drill-heads disposed opposite to each other and arranged to be rotated together, rotatable shafts each carrying at its inner end a beveled gear, and a drilling-tool carried by each drill-head and provided with a beveled pinion meshing with the beveled gear of each shaft the outer end of said tool projecting beyond the outer rim of the head.

20. In a boring-machine, the combination of rotatably-mounted drill-heads disposed opposite to each other and arranged to be rotated together, each head provided with an outwardly-extending journal, a rotatable shaft in each journal, each shaft carrying at its inner end a beveled gear, and a drilling-tool carried by each drill-head and provided with a beveled pinion meshing with the beveled gear of each shaft the outer end of said tool projecting beyond the outer rim of the head.

21. In a boring-machine, the combination of rotatable carriers, a drilling-tool carried by each carrier, the axes of the tools lying in the plane of rotation of the carriers, and means for adjusting the distance apart laterally of said carriers.

22. In a boring-machine, the combination of rotatable carriers, a drilling-tool carried by each carrier, the axes of the tools lying in the plane of rotation of the carriers, means for adjusting the distance apart laterally of said carriers, and means for adjusting one of the carriers so as to advance its tool with relation to the tool of the other carrier.

708,178. METHOD OF PRODUCING VARNISH-OILS. WILLIAM A. SMITH, Cleveland, Ohio. Filed Oct. 23, 1901. Serial No. 79,632. (No specimens.)

Claim.—1. A method of producing a substitute for linseed-oil, consisting of: first, boiling resin in concentrated sulfuric acid until the mixture ceases to foam, by which sulfonic acids of the constituents of resin are formed, whose lead salts are not of a curdy nature, and secondly, thinning down with a refined illuminating-oil.

2. A method of producing a substitute for linseed-oil, consisting of: first, boiling resin in sulfuric acid until the mixture ceases to foam, by which sulfonic acids of the constituents of resin are formed, whose lead salts are not of a curdy nature, and secondly, thinning down with refined second-grade illuminating-oil.

3. A composition of matter, consisting of substantially one-half refined petroleum-oil, and one-half abietic sulfonic acid and the sulfonic acids of other constituents of resin.

4. A substitute for linseed-oil, consisting of a mixture of substantially equal parts of refined petroleum oil and the sulfonic derivatives of the constituents of resin.

5. A substitute for linseed-oil, consisting of a mixture of substantially one-half abietic sulfonic acid and other chemical products formed when resin is boiled in sulfuric acid, and one-half some lighter oil.

6. A substitute for linseed-oil, consisting of a mixture of substantially equal parts of refined second-grade illuminating-oil, and the chemical products formed when resin is boiled in sulfuric acid.

7. A substitute for linseed-oil, which has the same gravity as linseed-oil, consisting of a mixture of substantially equal parts of refined second-grade illuminating-oil, and the chemical products formed when resin is boiled in concentrated sulfuric acid.

708,179. AUTOMATIC VALVE. HENRY R. STAGER, Chicago, Ill. Filed Aug. 23, 1901. Serial No. 73,073. (No model.)

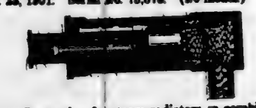

Claim.—1. In a valve for steam-radiators, in combination, an outer shell or casing having an inlet-opening and an air-escape opening; a tubular body portion formed integral with one of the ends of said shell or casing, projecting into the interior thereof and being provided at its inner end with an opening; an air-bell within said outer casing, having a projection adapted to close the opening in said body portion; and a pencil expansible by heat, mounted in said body portion and adapted to close the opening therein.

2. In a valve for steam-radiators, in combination, a bottom cap provided with a screw-threaded plug for connecting said valve with a radiator, said plug having an opening extending therethrough and communicating with the interior of the bottom cap; a casing-shell secured to said bottom cap; an air-bell in said bottom cap and said casing-shell, the bottom of said air-bell being normally below the mouth of the opening through said plug; a projection on said air-bell; a cap secured to the upper end of said casing-shell; a tubular body portion supported within said casing-shell by said cap, said body portion having an opening in its lower end adapted to be closed by the projection on said air-bell; a pencil expansible by heat, also adapted to close said opening; a plug in said tubular body portion, for supporting said pencil, said plug having a screw-thread engagement with the body portion; and a closure for the upper end of said tubular body portion.

3. In a valve for steam-radiators, in combination, a bottom cap provided with a screw-threaded plug for connecting said valve with a radiator, said plug having an opening extending therethrough and communicating with the interior of the bottom cap; a casing-shell secured to said bottom cap; an air-bell in said bottom cap and said casing-shell, the bottom of said air-bell being normally below the mouth of the opening through said plug; a projection on said air-bell; a cap having a screw-thread engagement with the upper end of said casing-shell; a tubular body portion formed integral with said cap and extending into said casing-shell, said body portion having an opening in its lower end adapted to be closed by the projection on said air-bell; a raised rim around the opening in said body portion; a pencil expansible by heat, adapted when expanded to contact said raised rim to close said opening; a plug in said tubular body portion, for supporting said pencil, said plug having a screw-thread engagement with the body portion; and a closure for the upper end of said tubular body portion.

708,180. HYDRAULIC PRESS FOR THICK FLUID SUBSTANCES. GOTTFRIED VON SÜSKIND, St. Georgen, Switzerland. Filed Feb. 24, 1902. Serial No. 96,467. (No model.)

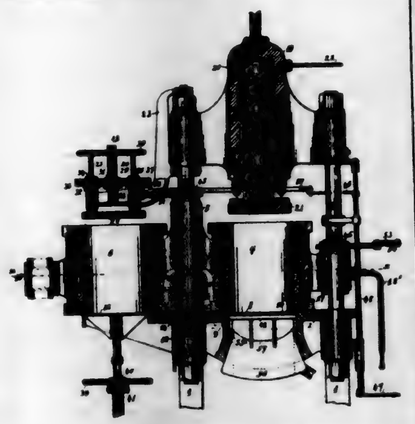

Claim.—1. In a hydraulic press for thick fluid masses, rotatable receptacles, a divided mold in communication with said receptacles, means for lifting the said rotatable receptacles out of a recess in the table, mechanism for adjustably securing the receptacles to their support, and means for heating the mold and the substances under pressure.

2. In a hydraulic press for thick fluid masses, rotatable receptacles, a plurally-divided mold placed in the table and secured in position by the receptacles and screws, a hydraulic pressure device concentric to the axis of rotation of the receptacles and adapted to lift the rotatable receptacles out of the recess in the table, means for adjustably securing the receptacles to their support, a perforated heating-body having a system of passages and placed beneath the mold for heating the same and the substances under pressure.

3. In a hydraulic press for thick fluid masses, in combination the posts 3 and 4, the center piece 5 the receptacles 6 and 7, the mold 8, the funnel 56, the plate 42, the grating 57, the steam-passages 59 and 60, the inlet-pipes 63 and 64 the outlets 65 and 66, mechanism for raising said receptacles 8 and mechanism for adjustably securing the receptacles to their support.

708,181. SEPARABLE BUTTON OR STUD. JOHN L. VREDENBURGH, Austin, Tex. Filed June 11, 1902. Serial No. 111,177. (No model.)

Claim.—1. In combination in a separable button, a base provided with a stem, a locking projection thereon and a head provided with a plate having an opening therein to permit of the passage of the stem and projection, said parts being adapted to be turned to couple the head and stem, and oppositely-disposed lugs struck up from the plate designed to coact with said projection to prevent the relative rotation of the parts when in coupled position.

2. In a separable button or stud of the type described, a back or base member, a stem extending therefrom, a locking member projecting laterally from the stem having two radial locking edges, a head, a plate carried thereby designed to interlock with said projection, and two interlocking lugs on said plate adapted to provide a bearing for the projection on the stem in the relative turning movement of the parts, and to confine said projection between the same when in locked position with the radial edges of said projection abutting said lugs, and a tension-spring interposed between said head and said base member, substantially as described.

3. In a separable button, a base having a stem, an arc-shaped lateral projection carried by the stem of slightly less area than a half-circle, a head, a base-plate secured thereto having an opening therethrough of the contour of the end of said stem and projection, to permit of the passage of the same when in register, and lugs arranged on the plate on diametrically opposite sides of the opening for the stem, said lugs being adapted to coact with the radial edges of the lateral projection to lock the head and stem against relative turning movement, substantially as described.

4. In a separable button, a back or base member having a stem, a flat arc-shaped projection extending laterally therefrom having radial locking edges, a head, a plate secured thereto having an opening therein conforming in contour to the end of the stem and said projection, and oppositely-arranged vertical lugs struck up from said plate on the inner face thereof, said projection being adapted to ride upon the upper edges of the lugs in the relative turning movement of the parts and to drop behind the lugs and abut thereagainst to prevent said relative turning movement, substantially as described.

5. In a separable button or the like, a head, a stud projecting axially therefrom, a base-plate for the head secured thereto and having an axial opening therein, and an arc-shaped concentric extension thereof, lugs projecting from the inner face of the plate at the juncture of the main opening and the extension of the same and extending from the wall of one to the wall of the other, a back or base member having an axial stem secured thereto provided with a central bore, a spring housed therein adapted to be compressed by said stud, and a laterally-projecting arc-shaped projection on said stem forming a locking member, substantially as described.

6. In a separable stud or the like, the combination with a back or base member having an axial stem and a projection thereon, of a head including a plate having an opening therethrough conforming in contour to the end of the stem and the projection carried thereby, and lugs struck up from the metal displaced from said opening and extended at right angles to the plate on the inner face thereof, said lugs coacting with said projection to provide a lock, and a spring for seating the projection behind said lugs, substantially as described.

708,182. CIRCUIT-INTERRUPTER. MILO S. WALKER, Chicago, Ill., assignor to the General Electric Company, a Corporation of New York. Filed Nov. 6, 1899. Serial No. 736,804. (No model.)

Claim.—1. The herein-described mode of maintaining electric vibration in a circuit, consisting of causing the current to traverse a narrow thread or film of conducting liquid, and maintaining at the sides of said film or thread a larger body of conducting liquid whereby the vibration is maintained by the sole action of the current.

2. An electric interrupter comprising two terminals, an electric conducting liquid between the same and in continuous open relation to the electrodes, a spot of reduced current-carrying capacity in the electric path between the electrodes, and an adjusting device for varying its carrying capacity.

3. An electric interrupter, comprising two circuit-terminals, a liquid-conductor between them and in continuous open relation to them, a perforated wall of insulating material between them, and an adjusting device for varying the size of the opening in the wall.

4. An electric interrupter comprising two circuit-terminals, one in-

closed in an insulating-tube, an opening of small cross-section establishing communication between the electrodes by a conducting liquid, means for permitting the escape of gases or vapors, and means for subjecting the liquid-conductor in the tube to pressure.

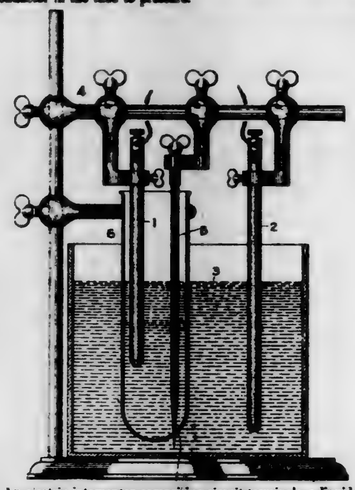

5. An electric interrupter comprising circuit-terminals, a liquid-conductor between the same, and a vertically-adjustable separating-wall of insulating material provided with a plurality of vertically-disposed openings of small cross-section.

6. An electric interrupter comprising circuit-terminals, a liquid-conductor between the same, a vertically-adjustable separating-wall of insulating material provided with a plurality of vertically-disposed openings of small cross-section, and a bed of oil above the liquid-conductor.

7. An electric interrupter comprising circuit-terminals, a liquid-conductor between the same, a separating-wall of insulating material provided with a plurality of vertically-disposed openings of small cross-section and means for including or excluding the openings from the circuit.

708,183. WRENCH. MICHAEL WALSH and JOSEPH H. ADGERS, Bay City, Mich. Filed Jan. 24, 1902. Serial No. 91,055. (No model.)

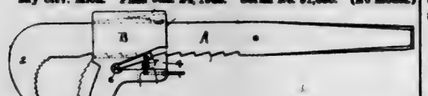

Claim.—1. In combination with the movable jaw, the wedge-shaped opening in one side thereof, said opening having a contracted lower end; the transverse part-cylindrical recess; the central vertical slot; the pivoted lever mounted therein; the upwardly-extending link; the spring on said link; the pawl having a cylindrical lower end and pivotally connected near its upper end with the upper end of the link, all arranged substantially as described and for the purposes set forth.

2. In a wrench of the class described, the combination of the shank having shallow depressions in its face, with the sliding jaw; and a spring mounted within said jaw and having its end adapted to slightly engage said depressions when the jaw is slid along the shank, for the purpose set forth.

3. In a wrench of the class described, the combination of a sliding jaw having a part-cylindrical transverse recess; a pawl; a link and lever for depressing said pawl; a wrench-shank having shallow depressions in its face; and a spring carried by the sliding jaw, the end of said spring being arranged to engage said depressions, all arranged for the purposes set forth.

708,184. DRYING-REEL. CHARLES D. WEAVER, McPherson, Kans., assignor to the Clark-Weaver Manufacturing Company, Greeley, Colo. Filed Apr. 1, 1902. Serial No. 100,974. (No model.)

Claim.—1. In a machine of the class described, the combination of a drying-reel, brackets adjustably mounted on the reel-arms, sprocket-wheels mounted on the brackets, and means mounted on the sprocket-wheels for automatically shifting the convolutions wound on the reel.

2. The combination with the reel, of brackets mounted on the reel-arms, sprocket-wheels mounted on the brackets, chains carried by the sprockets, worm-wheels fast on the sprocket-spindles, a worm engaging each worm-wheel, a star-wheel mounted on the worm-spindle, and means for automatically actuating each star-wheel as the reel is rotated, whereby the chains are actuated for the purpose set forth.

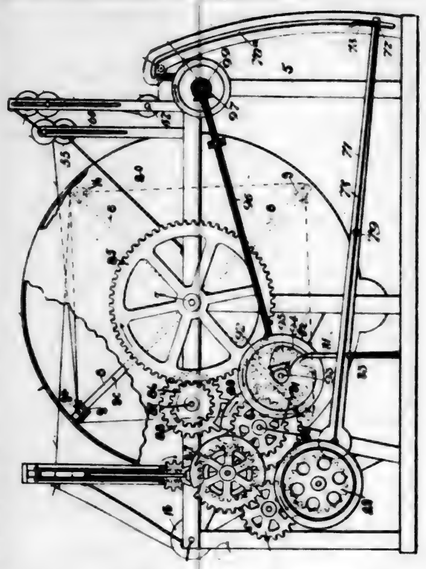

3. The combination with the reel, of sprocket-wheels mounted on the reel-arms, endless chains mounted on the sprocket-wheels and extending substantially parallel to the axis of the reel, said chains being provided with notches for the convolutions wound on the reel, and means for actuating the chains as the reel is rotated.

4. In a machine of the class described, the combination with the reel, of sprocket-wheels mounted on the reel-arms, endless chains carried by the sprocket-wheels, and provided with notches, pins also mounted on the chains in line with the notches, and means for automatically actuating the chains as the reel is rotated.

708,185. MAGNETIC SEPARATOR. JOHN P. WETHERILL, South Bethlehem, Pa. Filed Aug. 20, 1901. Serial No. 73,297. (No model.)

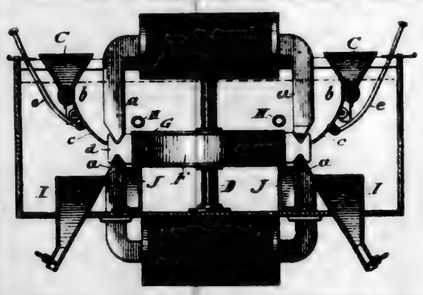

Claim.—1. A magnetic separator comprising magnet-poles spaced apart to form an intervening gap traversed by the magnetic lines of force, means for feeding into said gap the material to be separated, means for washing out the non-attracted particles from the particles detained by magnetic attraction in said gap, and a scraper for removing the attracted particles, said scraper having projections which scrape both pole-pieces; substantially as described.

2. A magnetic separator comprising an upper magnet-pole and a lower magnet-pole spaced apart to form an intervening gap traversed by the magnet lines of force, means for feeding into said gap the material to be separated, means for washing out the non-attracted particles from the particles detained by magnetic attraction in said gap, and a scraper having its path of movement through the gap, and provided with a series of scraper-blades extending transversely of the gap in such manner as to scrape both pole-pieces; substantially as described.

3. A magnetic separator, comprising an upper magnet-pole and a lower magnet-pole spaced apart to form an intervening gap, said magnet-poles being pointed or wedge-shaped at their ends to concentrate the lines of force across the gap, means for feeding into said gap the material to be separated, means for washing out the non attracted particles from the particles detained by magnetic attraction in the gap, and a scraper having its path of movement through the gap and provided with scraper-blades of a configuration conforming to the outline of the pole ends, substantially as described.

4. A magnetic separator, comprising magnet-poles separated by an intervening gap traversed by the magnetic lines of force, means for feeding into said gap the material to be separated, a jet-pipe for expelling the non-attracted particles from the particles detained by magnetic attraction in said gap, and a scraper for removing the attracted particles, said scraper having projections which scrape both pole-pieces; substantially as described.

5. A magnetic separator, comprising magnet-poles separated by an intervening gap traversed by the magnetic lines of force, means for feeding into said gap the material to be separated, a jet-pipe for expelling the non-attracted particles from the particles detained by magnetic attraction in said gap, a scraper for removing the attracted particles, and a water vat or tank in which the magnet-poles and jet-pipe are immersed; substantially as described.

6. A magnetic separator, comprising an upper magnet and a lower magnet, of substantially U shape in cross-section and having their opposing poles so related as to form with the core a magnetic circuit with two gaps, means for feeding into said gaps the material to be separated, jet-pipes for expelling the non-attracted particles from the particles detained by magnetic attraction in the gaps, and a scraper consisting of an endless belt provided with a series of scraper-blades having a path of movement successively through the gaps and extending transversely of the gap in such manner as to scrape both pole-pieces; substantially as described.

7. A magnetic separator, comprising an upper magnet-pole and a lower magnet-pole spaced apart to form an intervening gap, means for feeding into said gap the material to be separated, a vat or tank containing water in which the magnet-poles are submerged, a scraper operating within the gap, a jet-pipe having its jet-openings directed through the gap, laterally-disposed hoppers to receive the non-attracted particles, and an end hopper to receive the attracted particles as they are conveyed to it by the scraper; substantially as described.

8. A magnetic separator, consisting of upper and lower U-shaped magnets whose poles are so arranged as to form a magnetic circuit with two gaps, outlying hoppers for supplying to said gaps the material to be separated, jet-pipes whose jets are directed through the gaps on the opposite side to the feed, an endless belt carrying scraper-blades having a path of movement successively through the gaps, laterally-disposed hoppers to receive the non-attracted particles, and an end hopper to receive the attracted particles as they are conveyed to it by the scraper; substantially as described.

9. A magnetic separator, provided with an interpolar gap, means for feeding into said gap the material to be separated, a water-containing tank within which the separator-poles are submerged, a jet-pipe whose jets are directed through the gap, and means for removing the particles detained in the gap by magnetic attraction; substantially as described.

10. A magnetic separator, provided with an interpolar gap, means for feeding laterally into said gap the material to be separated, a water-containing tank within which the separator-poles are submerged, a jet-pipe whose jets are directed laterally through the gap, and a longitudinally-moving scraper; substantially as described.

708,186. MAGNETIC SEPARATOR. JOHN P. WETHERILL, South Bethlehem, Pa. Filed Aug. 20, 1901. Serial No. 73,298. (No model.)

Claim.—1. A magnetic separator, comprising oppositely-disposed hollow magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, means for feeding into said gap the material to be separated, means for washing out the non-attracted particles from the particles detained by magnetic attraction in said gap, and a scraper for removing the attracted particles beyond the detaining influence of the magnetic field; substantially as described.

2. A magnetic separator, comprising oppositely-disposed hollow magnet-poles, separated from each other by an interpolar space or gap traversed by the magnetic lines of force said poles having alternate magnetic and non-magnetic zones or sections along their peripheries, means for feeding into the interpolar space or gap the material to be separated, means for washing out the non-attracted particles from the particles detained by magnetic attraction in said gap, and a scraper having its path of movement successively through the gaps, laterally-disposed hoppers to receive the non-attracted particles, and an end hopper to receive the attracted particles as they are conveyed to it by the scraper; substantially as described.

3. A magnetic separator, comprising oppositely-disposed hollow magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, said poles having alternate magnetic and non-magnetic zones or sections along their peripheries, feeding-hoppers for supplying the material to be separated to the magnetic portions of the gap between the magnetic zones or sections, a water-jet pipe having its jet-apertures directed through the gap, and a series of scraper-blades operating within the gap; substantially as described.

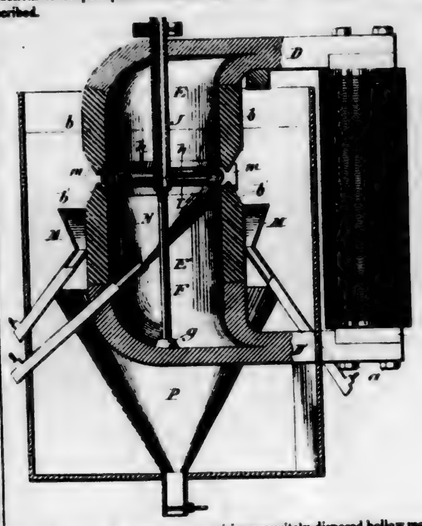

4. A magnetic separator, comprising oppositely-disposed hollow magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, said poles having alternate magnetic and non-magnetic zones or sections along their peripheries, the non-magnetic zones or sections being of approximately the form of triangular prisms so as to concentrate the lines of force through the magnetic zones or sections, means for feeding the material to be separated to the magnetic portions of the gap, means for washing out the non-attracted particles from the particles detained by magnetic attraction in the gap, and a scraper operating in the gap for removing the attracted particles from the magnetic to the non-magnetic sections of the pole-pieces and releasing them thereat; substantially as described.

5. A magnetic separator, comprising oppositely-disposed hollow magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, said poles having alternate magnetic and non-magnetic zones or sections, hoppers for feeding the material to be separated into the magnetic portions of the gap, a rotatory hollow shaft within the magnet-poles, an annular jet-pipe carried by said shaft and in communication with its hollow interior, and scraper-blades operating in the interpolar gap and mounted upon said annular pipe; substantially as described.

6. A magnetic separator, comprising oppositely-disposed hollow magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, said poles having alternate magnetic and non-magnetic zones or sections, hoppers for feeding the material to be separated into the magnetic portions of the gap, a rotatory hollow shaft within the magnet-poles, an annular jet-pipe, carried by said shaft and in communication with its hollow interior, scraper-blades operating in the interpolar gap and mounted upon said annular pipe, receiving-hoppers for heads arranged opposite the non-magnetic sections of the pole-pieces, and a separate receiving-hopper for tailings; substantially as described.

7. A magnetic separator, comprising oppositely-disposed hollow magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, said poles having alternate magnetic and non-magnetic zones or sections, hoppers for feeding the material to be separated into the magnetic portions of the gap, a rotatory hollow shaft within the magnet-poles an annular jet-pipe carried by said shaft and in communication with its hollow interior, scraper-blades operating in the interpolar gap and mounted upon said annular pipe, receiving-hoppers for heads arranged opposite and outside of the non-magnetic sections, an additional receiv-

ing-hopper for heads arranged within the lower magnet-pole, and a separate receiving-hopper for tailings; substantially as described.

8. A magnetic separator, provided with an electromagnet having a flattened core and flattened lateral projections from said core, said flattened projections terminating in hollow tubular pole-pieces, separated from each other by an interpolar space or gap traversed by the magnetic lines of force; substantially as described.

708,187. MAGNETIC SEPARATOR. JOHN P. WETHERILL, South Bethlehem, Pa. Filed Aug. 26, 1901. Serial No. 73,290. (No model.)

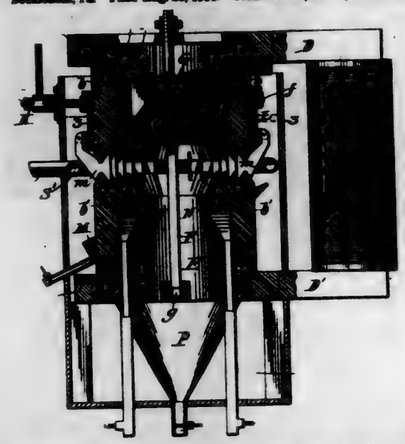

Claim.—1. A magnetic separator, comprising hollow tubular magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, a distributing-cone within the upper pole for directing the material to be separated into said gap, a water-jet pipe whose jet-orifices are directed into the gap, and a scraper operating in the gap; substantially as described.

2. A magnetic separator, comprising hollow tubular magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, a distributing-cone within the upper pole for directing the material to be separated into said gap, a water-jet pipe whose jet-orifices are directed into the gap, and a scraper operating in the gap, said scraper consisting of a series of scraper-blades mounted upon a rotatable carrier-ring; substantially as described.

3. A magnetic separator, comprising hollow tubular magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, a distributing-cone within the upper pole for directing the material to be separated into said gap, a water-jet pipe whose jet-orifices are directed into the gap, and a scraper operating in the gap, said scraper consisting of a series of scraper-blades mounted upon a rotatable carrier-ring, said ring being carried by the upper tubular magnet and the scraper-blades being hinged thereto; substantially as described.

4. A magnetic separator, comprising hollow tubular magnets, separated by an interpolar space or gap traversed by the magnetic lines of force, said poles being provided with alternate magnetic and non-magnetic zones or sections along their peripheries, a distributing-cone within the upper pole for directing the material to be separated into the magnetic portions of the gap, a water-jet pipe exterior to the gap and whose jet-orifices are directed inwardly into the gap, and scraper-blades operating within the gap; substantially as described.

5. A magnetic separator, comprising hollow tubular magnets, separated by an interpolar space or gap traversed by the magnetic lines of force, said poles being provided with alternate magnetic and non-magnetic zones or sections along their peripheries, a distributing-cone within the upper pole for directing the material to be separated into the magnetic portions of the gap, a water-jet pipe exterior to the gap and whose jet-orifices are directed inwardly into the gap, scraper-blades operating within the gap, a receiving-hopper for tailings arranged below the hollow interior of the magnet, and receiving-hoppers for heads arranged opposite the non-magnetic sections of the poles; substantially as described.

6. A magnetic separator, comprising two hollow tubular magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, means for feeding the material to be separated to said gap from within the magnet, an outlying annular water-jet pipe having its jet-orifices directed inwardly into the gap, a scraper operating within the gap, and suitable receiving-hoppers for the heads and tailings; substantially as described.

7. A magnetic separator, provided with hollow tubular magnet-poles, separated by an interpolar space or gap traversed by the magnetic lines of force, the upper of said poles serving as a feed-hopper to the gap, said poles being clamped within laterally-projecting extensions of the magnet-core; substantially as described.

708,188. LIGHTNING-ROD. JAMES O. WILSON, Canton, Mo. Filed Jan. 6, 1902. Serial No. 88,864. (No model.)

Claim.—1. A lightning-rod comprising a continuous conductor extending from an elevated point to a plurality of ground connections, and composed ground-plates to which the terminals of the conductor are electrically connected.

2. A lightning-rod comprising a continuous conductor having a plurality of ground connections, loops connected continuously to the conductor and extending therabove to form attractive points, and composed ground-plates to which the terminals of said conductor are electrically connected.

3. A lightning-rod comprising a continuous conductor extending from an elevated point to a ground-plate, said conductor being branched or divided, and a ground-plate to which the branched or divided portions of the conductor are connected.

4. A grounding connection for a lightning-rod comprising a bed of charcoal arranged below the surface of the ground, and a composite plate embedded in the charcoal and electrically connected to the conductor.

5. A grounding-plate for a lightning-rod, comprising superposed sheets of galvanized iron, zinc, lead and copper, arranged in the order named.

6. A grounding-plate for lightning-rods, comprising a series of superposed plates of different electrical properties, the outer of said plates having its edge portions folded over the edges of the remaining plates and binding the same together.

7. The combination with a lightning-rod, of a ground-plate to which said rod is connected, the terminals of said rod extending through and below said plate, substantially as specified.

708,189. SIGNALING-TARGET. GEORGE A. WIRT, Pugit township, Ind. Filed May 29, 1901. Serial No. 61,560. (No model.)

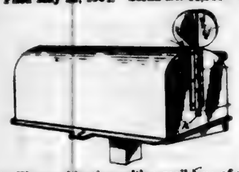

Claim.—1. The combination, with a mail-box, of a signaling-target therefor comprising a socket or bearing, a stem bearing the signaling-target on its upper end mounted to extend through and slide and turn in said bearing, being provided with a head below said bearing for limiting the movement of said stem, and a detent with which said target is adapted to engage and be thereby held in adjusted position, substantially as set forth.

2. The combination, in a target, of a suitable vertically-arranged bearing, a stem adapted to be inserted and revolve in said bearing and provided with a head on the lower end thereof, wings secured to the upper end of said stem, and a keeper having a notch therein into which an edge of one of the wings may enter, said stem being of sufficient length to permit a longitudinal movement in the bearing, substantially as set forth.

3. The combination, in a target, of a bearing, a stem mounted therein, wings secured on said stem, and a V-shaped keeper secured alongside of said stem and adapted to receive an edge of one of the wings, substantially as and for the purposes set forth.

708,190. CASH-REGISTER. AUGUSTUS L. WOOD, Cincinnati, Ohio, assignor of one-half to Edward C. Bidmann, Cincinnati, Ohio. Filed June 18, 1898. Serial No. 683,825. (No model.)

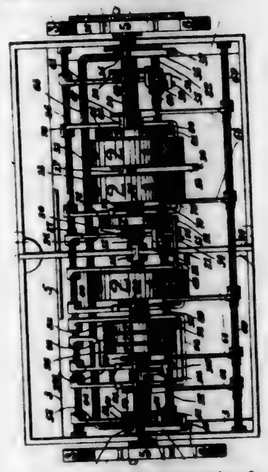

Claim.—1. In a cash-register, the combination of a shaft, sales indicating and registering mechanisms mounted thereon, a cash-drawer, operating-wheels arranged in position at one end of the shaft to be engaged and moved by the hand of the operator in actuating said mechanism, a latch for holding the cash-drawer in closed position, a movable part arranged adjacent the wheels to be struck by the hand, and a link connection between said latch and said movable part, substantially as set forth.

2. In a cash-register, the combination of a series of indicating-disks, shafts whereon said disks are mounted, operating-wheels for said shafts, a cash-drawer, a latch arranged to hold said drawer closed and mechanism for releasing the cash-drawer and limiting the movement of said shafts, said mechanism comprising a cranked shaft connected to the latch and having its end in the path of the hand of the operator in turning said operating-wheels, substantially as set forth.

3. In a cash-register, the combination of indicating mechanisms comprising indicating-disks having shafts and provided with means for turning them to indicate sales, dog-and-ratchet devices for holding the disks, when turned, against back rotation, arms adapted, when the dogs are disengaged from their ratchets, to engage and hold said dogs out of operation, fingers on the shaft to move said arms out of engagement with the dogs when the shaft is turned, a cash-drawer, and mechanism, actuated from the movement of the cash-drawer, for moving the dogs to disengage them from their ratchets, substantially as set forth.

4. In a cash-register, the combination of indicating mechanism comprising indicating-disks and means for turning same to indicate sales, dog-and-ratchet devices for holding the disks, when turned, against back rotation, a cash-drawer, mechanism, actuated from the movement of the cash-drawer, for throwing said dog-and-ratchet devices out of operation to permit the indicating-disks to be returned to their normal positions, and means actuated from the movement of the indicating-disks, when turned to indicate a sale, for placing said dog-and-ratchet devices in operation, substantially as set forth.

5. A cash-register comprising a shaft, indicating and registering disks arranged thereon, a series of pivoted yokes embracing the indicating-disks, and each provided with arms pivoted at opposite sides of the respective indicating-disk, means for actuating each registering-disk from a corresponding indicating-disk, means for actuating the yokes from the registering-disks, and mechanism for actuating registering-disks from the movement of the yokes, substantially as set forth.

6. A cash-register comprising a sales-indicating device, a dog and ratchet-wheel to hold said device, when actuated to indicate a sale, a cash-drawer, mechanism actuated by the movement of the cash-drawer for disengaging said holding means to permit the sales-indicating device to be retracted, and mechanism to retain said holding means out of operative position when disengaged from the sales-indicating device, substantially as set forth.

7. A cash-register comprising a sales-indicating device, means to hold said device, when actuated to indicate a sale, a cash-drawer, mechanism to disengage the holding means of the sales-indicating device when the cash-drawer is moved and mechanism controlled by the sales-indicating device for retaining said holding means out of operation when disengaged from the sales-indicating device, substantially as set forth.

8. A cash-register comprising a sales-indicating device, means to hold said device, when actuated to indicate a sale, a cash-drawer, mechanism to disengage the holding means of the sales-indicating device when the cash-drawer is moved, a part arranged to engage the holding means and retain the same out of operation when disengaged from the sales-indicating device, and mechanism for releasing said part from engagement with the holding means of the sales-indicating device, substantially as set forth.

9. In a cash-register, the combination of a shaft, two indicating-disks arranged side by side thereon, and provided with actuating devices, a registering-disk on said shaft at each side of said indicating-disks, means to actuate each registering-disk from a corresponding indicating-disk, a movable yoke having arms embracing the two indicating-disks, said yoke being pivoted at the ends of its arms, means for moving the yoke through one of its arms from one of the registering-disks and means for actuating the other registering-disk from the other arm of the yoke, substantially as set forth.

708,191. VACUUM FRUIT-JAR-SEALING DEVICE. SAMUEL ADLAM, New York, N. Y. Filed Nov. 22, 1901. Serial No. 83,313. (No model.)

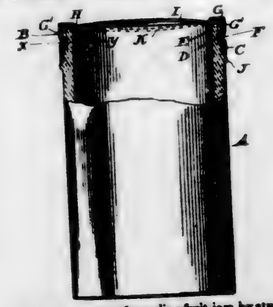

Claim.—1. In an apparatus for sealing fruit-jars by atmospheric pressure, the combination consisting of neck of the jar, provided with the recess as D; the compressible ring as C, located in recess D; the barrel of the sealing-cap as B, provided with an inwardly-formed depression as *V*, constructed to engage with ring C; a top surface turned inwardly from barrel B and provided with a recess G; a packing G', located therein; the top surface of the cap being formed with a spring stamped in the metal, all constructed, arranged and combined to operate substantially as hereinbefore specified.

2. As an article of manufacture, a vacuum fruit-jar cover, constructed with a vertical rim provided with a depression in it, the top surface of said cover being formed with a convex central portion, struck up in the metal and forming a spring, substantially as and for the purposes specified.

708,192. NECKTIE. FREDERICK A. ARENDS, Hoboken, N. J. Filed Mar. 15, 1901. Serial No. 51,236. (No model.)

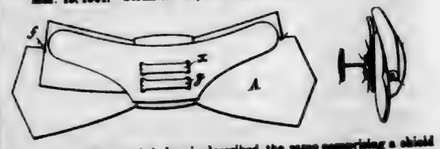

Claim.—The necktie herein described, the same comprising a shield having centrally disposed upon its rear surface, a series of strips parallel with each other, attached at each of their extremities to the shield, but

free between said extremities, whereby a collar hook-button may be inserted, as herein shown and described, between the strips and the shield.

708,198. COIN-CONTROLLED VENDING APPARATUS. GEORGE ARTHUR, Lawrence, Mass. Filed June 26, 1901. Serial No. 67 121. (No model.)

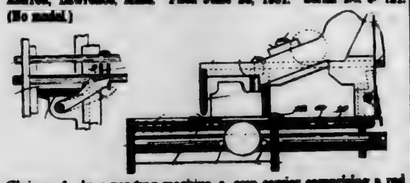

Claim.—1. In a vending-machine, a coin-carrier comprising a rod having projections extended therefrom substantially at right angles to the longitudinal axis of said rod to sustain the edge of a coin at two points, a plate having a slot and provided with a depending guide independent of said coin-carrier to act on one side of a coin as it passes through said throat to enter the space between and to be sustained by said projections.

2. In a vending-machine, a coin-carrier comprising a rod having projections extended therefrom substantially at right angles to the longitudinal axis of said rod to sustain the edge of a coin at two points, a plate having a slot and provided with a depending stationary guide to act on one side of a coin as it passes through said throat to enter the space between and to be sustained by said projections, a package-holder containing packages to be delivered, a package-delivering device having a projection located above the projections of the coin-carrier whereby as the coin-carrier is moved toward the package-holder the coin sustained by the projections of said carrier will move the package-delivering device in unison with it to meet and deliver a package.

3. In a vending-machine, a coin-receiving throat, a coin-carrier composed of a sliding rod having lateral coin-supporting projections extended from one side thereof substantially at right angles to the longitudinal axis of the coin-carrier and being separated for a distance less than the diameter of the coin which must be used to effect the delivery of a package, combined with a stationary guide located at one side said coin-carrier and acting upon one side of the coin entering the space between said projections, and means to actuate said coin-carrier to slide one face of the coin along the face of the guide.

4. In a vending-machine, a coin-receiving throat, a coin-carrier composed of a sliding rod having lateral coin-supporting projections extended from one side thereof substantially at right angles to the longitudinal axis of the coin-carrier and being separated for a distance less than the diameter of the coin which must be used to effect the delivery of a package, combined with a stationary guide located at one side said coin-carrier and acting upon one side of the coin entering the space between said projections, means to actuate said coin-carrier to slide one face of the coin along the face of the guide, a package-delivering device having a projection to be engaged by the coin sustained by the coin-carrier, and a spring-controlled pick-off acting upon the face of the coin which was in contact with the guide to thereby aid in maintaining the coin in operative position in the coin-carrier.

5. In a vending-machine, a coin-receptacle, a coin-throat, a stop set counting therewith to engage and arrest a false coin of magnetic material, a coin-carrier provided with projections extended therefrom substantially at right angles to the longitudinal axis of said carrier to sustain a good coin, and a clearer, said clearer being located sufficiently behind the projection of said carrier to have a space between said projections and carrier through which the false coin detached by said clearer may drop into the coin-receptacle.

6. In a vending-machine, a coin-carrier having lateral projections to sustain the edges of a coin at two points, a coin-throat to receive a coin and guide the same into position between said projections, a magnet located in the direction of travel of the coin to engage and arrest a false coin of magnetic material, a clearer operatively connected with said coin-carrier, and means to actuate the coin-carrier and the clearer, the clearer acting upon the edge of a false coin held by the magnet and detaching it from the magnet that it may continue its movement through the throat, the projections of the coin-carrier having been moved out of the range of the descent of the false coin so that the coin is not arrested by the coin-carrier.

7. In a vending-machine, a coin-carrier having extended from it lateral projections separated for a distance less than the diameter of the coin required to enable a package to be delivered, a spring-controlled coin pick-off located at one side of the coin-carrier and kept pressed normally against one face of the moving coin as the carrier is moved to carry the coin past the position of the pick-off and to effect the discharge of a package.

8. In a vending-machine, a coin-carrier having lateral projections to sustain a coin by its edge, a package-delivering device located above said coin-carrier and having a projection to be acted upon by the edge of said coin, a presser to act upon the upper edge of said coin and keep the same seated on said projections, a spring-controlled pick-off located at one side of said coin-carrier and having a heel to prevent the coin-carrier from returning to its normal position until said carrier has been moved sufficiently far to cause the delivery of a package.

9. In a vending-machine, a coin-carrier having lateral projections between its ends extended therefrom at substantially right angles to the longitudinal axis of said carrier to sustain a coin of the proper diameter, combined with a coin-throat having a guide coöperating therewith to guide the coin as it is being seated on the projections of the coin-carrier.

10. In a vending-machine, a coin-carrier having projections to sustain the edge of a coin of proper diameter, a spring-controlled coin pick-off acting in a yielding manner upon the exposed side of the coin being moved by the coin-carrier, the spring moving the free end of the coin pick-off into a position across the path of movement of the coin as the coin passes the free end of the pick-off whereby as the coin-carrier is retracted the coin pick-off meets the edge of the coin and discharges it from said projections.

11. In a vending-machine, a coin-carrier having projections to sustain a coin of the proper diameter, an inclined throat to receive a coin and lead it into position between said projections, a yielding spring-sustained clearer located in said throat and having an inclined acting edge whereby said edge meeting an obstruction stuffed into the slot may remove the same.

12. In a vending-machine, a coin-carrier having projections to sustain a coin, a throat having an inclined guideway to receive a coin and conduct it between the projections of the coin-carrier, a yielding clearer carried by said coin-carrier and movable in said throat as the coin-carrier is moved, whereby the breaking of the clearer may be obviated in case of a fixed obstruction placed in said throat.

13. In a vending-machine, a coin-carrier having lateral projections between its ends to sustain and carry a coin, a separate slotted throat to receive and direct coin in position between the projections of the coin-carrier, a package-delivering device sustained independently of said carrier and located between said coin-carrier and said throat and adapted to be moved by a coin sustained by the coin-carrier, combined with a guard-plate interposed between said throat and said package-delivering device to prevent the movement of the package-delivering device by an instrument inserted through the slot in said throat.

14. In a vending-machine, a sliding coin-carrier having extended from its side between its ends projections separated for a distance less than the diameter of the coin required, to enable a package to be delivered, an independently-sustained package-delivering device surrounded by a spring and having a projection adapted to be acted upon by the coin sustained by the coin-carrier, said coin causing the package-delivering device to be moved in unison with the coin-carrier.

15. In a vending-machine, a frame, a series of connected coin-carriers, and an actuating device to slide the series of coin-carriers in said frame, combined with a series of package-delivering devices sustained in said frame above the coin-carrier, a spring for each of said devices to normally retract it from its operative position, each delivering device being adapted to be moved independently of the other by a coin in the coin-carrier below it.

708,194. TILING. GEORGE H. BENNETT, New York, N. Y. Filed Jan. 13, 1902. Serial No. 90,228. (No model.)

Claim.—1. A floor-covering, comprising the combination of tiles having arms, formed with corrugated or serrated edges, said arms arranged in juxtaposition to form spaces between them, and block-tiles the edges of which are correspondingly corrugated or serrated fitting within and filling the spaces between the arms.

2. A floor-covering, comprising the combination of a plurality of removable cross and block tiles, the cross-tiles having arms, the extremities of which are arranged in juxtaposition to form spaces between them, and the block-tiles fitting within and filling the spaces between the arms, the edges of all of the tiles being formed with corresponding corrugations or serrations adapted to engage and intermesh.

3. A tile floor covering, consisting of a plurality of removable tiles, all of the tiles being formed with corrugated or serrated edges, the corrugations or serrations being symmetrical in form, their central axes extending at right angles from the edges of the tiles, and being at right angles to their surfaces, the formation of the edges in all the tiles corresponding and being adapted to engage and intermesh throughout.

4. The combination with a block-tile of two tiles, each in the form of a double heraldic cross, the adjoining arms of the crosses forming spaces adapted to receive and contain various-formed block-tiles, and all being removable.

5. The combination with block-tiles of tiles, each in the form of a double heraldic cross, the adjoining arms of the crosses forming spaces adapted to receive and contain the block-tiles, the edges or margins of all of the tiles being formed with corrugations or serrations of equal dimensions, and adapted to intermesh, engage and be removable.

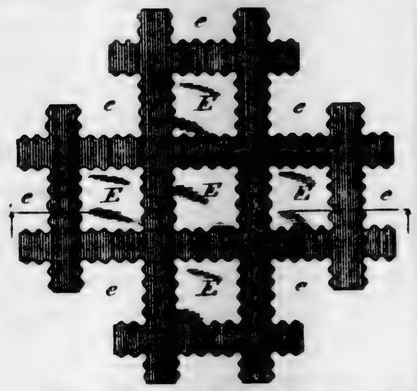

6. A floor-tile comprising cross-tiles, the arms of which are arranged in juxtaposition to each other forming inclosed spaces, and block-tiles adapted to fit into and fill said spaces, the edges of all of the tiles being formed with corresponding and engaging corrugations or serrations arranged at right angles to the surfaces of the tiles.

7. A floor-covering, comprising the combination of tiles having arms, the extremities of which are arranged in juxtaposition to one another to form spaces between them and a plurality of subdivided block-tiles fitting within and filling the spaces between the arms, and all being removable.

8. A floor-covering, comprising the combination of cross-tiles having arms the extremities of which are arranged in juxtaposition to form spaces between them, and a plurality of block-tiles fitting within and filling the spaces between the arms, said block-tiles uniting to fill the space between the said arms and formed with corrugated or serrated outer edges, the serrations in the block-tiles corresponding and adapted to intermesh with the serrations in the arms.

708,195. CONTROLLING DEVICE FOR ELECTRIC GENERATING SYSTEMS. JOHN H. RICKFORD, Salem, Mass. Filed Dec. 18, 1900. Serial No. 40,251. (No model.)

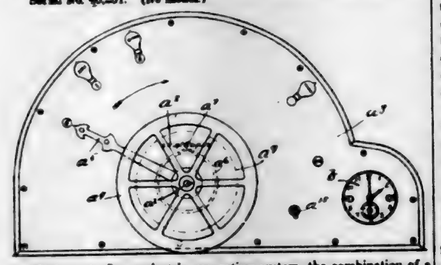

Claim.—1. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it a starting device for starting said power generating and converting apparatus and a device for closing the dynamo-circuit containing the translating devices having an operating device by which it is operated, substantially as described.

2. In an electric generating system, the combination of a dynamo a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus, a device for closing the dynamo-circuit containing the translating devices and an operating device for operating said starting device and also said circuit-closing device, substantially as described.

3. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus and a device for cutting out the resistances of the shunt field-circuit of the dynamo and for closing the dynamo-circuit containing the translating devices, having an operating device by which it is operated, substantially as described.

4. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus and a device for closing the dynamo-circuit, having an operating device by which it is operated, and an automatic locking device for holding said starting device while the power generating and converting apparatus starts, substantially as described.

5. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus and a device for closing the dynamo-circuit containing the translating devices, having an operating device by which it is operated, and automatic means for preventing the starting device from closing the dynamo-circuit until after the power generating and converting apparatus starts, substantially as described.

6. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus and a device for cutting out the resistances of the shunt field-circuit of the dynamo and for also closing the dynamo-circuit containing the translating devices having an operating device by which it is operated, and an automatic locking device for preventing said device from cutting out the resistances of the shunt field-circuit of the dynamo and for closing the dynamo-circuit until after said power generating and converting apparatus has started, substantially as described.

7. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for also starting said power generating and converting apparatus, having an operating device by which it is operated, substantially as described.

8. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus and a device for closing the dynamo-circuit containing the translating devices, having an operating device by which it is operated, substantially as described.

9. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus and a device for closing the dynamo-circuit containing the translating devices, and an operating device for operating said starting device and also said circuit-closing device, substantially as described.

10. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus and a device for cutting out the resistances in the shunt field-circuit of the dynamo and for closing the dynamo-circuit containing the translating devices, having an operating device by which it is operated, substantially as described.

11. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power and converting apparatus and for starting said power generating and converting apparatus, means for cutting out the resistances in the shunt field-circuit of the dynamo and for closing the dynamo-circuit containing the translating devices, and an operating device for operating said starting device and also said means for cutting in the dynamo and for closing the dynamo-circuit, substantially as described.

12. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the

admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for also starting said power generating and converting apparatus, having an operating device by which it is operated and an automatic locking device for holding said starting device while the power generating and converting apparatus starts, substantially as described.

13. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus and a device for closing the dynamo-circuit containing the translating devices, having an operating device by which it is operated, and automatic means for preventing it circuit-closing device from closing the dynamo-circuit until after the power generating and converting apparatus has started, substantially as described.

14. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus, and a device for cutting out the resistances in the shunt field-circuit of the dynamo and for closing the dynamo-circuit containing the translating devices, having an operating device by which it is operated, and an automatic locking device for preventing the device from cutting out the resistances of the shunt field-circuit of the dynamo and for closing the dynamo-circuit until after said power generating and converting apparatus has started, substantially as described.

15. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for also starting said power generating and converting apparatus, having an operating device by which it is operated, and an automatic locking device for holding said starting device while the vaporizer acts to vaporize the liquid hydrocarbon, substantially as described.

16. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for also starting said power generating and converting apparatus, having an operating device by which it is operated, an automatic locking device for holding said starting device while the vaporizer acts to vaporize the liquid hydrocarbon, and another automatic locking device for holding said starting device while the power generating and converting apparatus starts, substantially as described.

17. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus comprising a battery, circuits leading therefrom including the operating devices for starting said power generating and converting apparatus, and means for operating said circuits, and a switch for closing the dynamo-circuit containing the translating devices and means for operating it, substantially as described.

18. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus comprising a battery, circuits leading therefrom including the operating devices for starting said power generating and converting apparatus, means for operating said circuits, and a switch for closing the dynamo-circuit containing the translating devices, and an operating device for operating said starting device and also said switch, substantially as described.

19. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus, comprising a battery, circuits leading therefrom including the operating devices for starting said power generating and converting apparatus, means for operating said circuits, and means for cutting out the resistances of the shunt field-circuit of the dynamo, a switch for closing the dynamo-circuit including the translating devices and means for operating it, substantially as described.

20. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a starting device for starting said power generating and converting apparatus comprising a battery, circuits leading therefrom including the operating devices for starting said power generating and converting apparatus, and means for operating said circuits, combined with an automatic locking device for holding the starting device while the power generating and converting apparatus starts, substantially as described.

21. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus comprising a battery, circuits leading therefrom including the operating devices for starting said power generating and converting apparatus, and means for operating said circuits, and a switch for closing the dynamo-circuit containing the translating devices, means for operating it, and means for preventing the operation of said switch until after the power generating and converting apparatus starts, substantially as described.

22. In an electric generating system, the combination of a dynamo a power generating and converting apparatus for operating it, a starting device for starting said power generating and converting apparatus comprising a battery, circuits leading therefrom including the operating devices for starting said power generating and converting apparatus, and means for operating said circuits, a device for cutting out the resistances of the shunt field-circuit of the dynamo, a switch for closing the dynamo-circuit containing the translating devices, means for operating it, and an automatic locking device for holding said device to prevent cutting out the resistances of the shunt field-circuit of the dynamo, and for holding the switch to prevent closing the dynamo-circuit until after the power generating and converting apparatus starts, substantially as described.

23. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, and a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for also starting said power generating and converting apparatus, comprising a battery, circuits leading therefrom including the operating devices which control said vaporizer and start said power generating and converting apparatus, switches for said circuits, and means for operating said switches successively, substantially as described.

24. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus and a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus, comprising a battery, circuits leading therefrom including the operating devices which control said vaporizer and start said power generating and converting apparatus, and switches for said circuits, and a switch for closing the dynamo-circuit, and means for operating said switches successively, substantially as described.

25. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus and a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus comprising a battery, circuits leading therefrom including the operating devices which control said vaporizer and start said power generating and converting apparatus, and switches for said circuits, and means for cutting out the resistances of the shunt field-circuit of the dynamo, a switch for closing the dynamo-circuit, and means for successively operating said battery-circuit switches, resistances and dynamo-circuit switch, substantially as described.

26. In an electric generating system, the combination of a dynamo a power generating and converting apparatus for operating it, a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus and a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for also starting said power generating and converting apparatus, comprising a battery, circuits leading therefrom including the operating devices which control said vaporizer and start said power generating and converting apparatus, switches for said circuits, and means for operating said switches successively, and an automatic locking device for holding said starting device while the vaporizer acts to vaporize the liquid hydrocarbon, substantially as described.

27. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus and a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus, comprising a battery, circuits leading therefrom including the operating devices which control said vaporizer and start said power generating and converting apparatus, and switches for said circuits, and a switch for closing the dynamo-circuit, means for operating said switches successively, and automatic means for preventing the switch from closing the dynamo-circuit until after the power generating and converting apparatus has started, substantially as described.

28. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus and a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus and for starting said power generating and converting apparatus, comprising a battery, circuits leading therefrom including the operating devices which control said vaporizer and start said power generating and converting apparatus, and switches for said circuits, and a switch for closing the dynamo-circuit, means for operating said switches successively, an automatic locking device for holding said starting device while the vaporizer acts to vaporize the liquid hydrocarbon, and another automatic locking device for holding said starting device until the power generating and converting apparatus starts, substantially as described.

29. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus, having an operating device by which it is operated, and an automatic locking device for holding the starting device while the vaporizer acts to vaporize the liquid hydrocarbon, substantially as described.

30. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus, having an operating device by which it is operated, and a locking device for holding the starting device while the vaporizer acts to vaporize the liquid hydrocarbon, and a thermal device operated by the vaporizer for operating said locking device to release the starting device, substantially as described.

31. In an electric generating system, a dynamo, a power generating and converting apparatus for operating it, and a vaporizer for vaporizing liquid hydrocarbon which is delivered to said power generating and converting apparatus, combined with a starting device for controlling the admission of liquid hydrocarbon to the vaporizer and for controlling the delivery therefrom to the power generating and converting apparatus, comprising a battery, circuits leading therefrom, including the operating devices which control said vaporizer, switches for said circuits, means for operating them, and a locking device for holding the starting device while the vaporizer acts to vaporize the liquid hydrocarbon, and a thermal device operated by said vaporizer for operating said locking device to release the starting device, substantially as described.

32. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, and a starting device for starting said power generating and converting apparatus comprising an electromagnetically-operated device for controlling the admission of hydrocarbon to the burner of said power generating and converting apparatus, and an automatic igniting device for said burner, a battery, circuits leading therefrom including said electromagnetically-operated controlling device and said igniting device, and means for operating said circuits, substantially as described.

33. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, and a starting device for starting said power generating and converting apparatus comprising a vaporizer, a heating-coil therefor, an electromagnetically-operated device for controlling the admission of hydrocarbon to the burner of said power generating and converting apparatus, and an automatic igniting device for said burner, a battery, circuits leading therefrom including the heating-coil of the vaporizer, the electromagnetically-operated controlling device and said igniting device, and means for operating said circuits, substantially as described.

34. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, and a starting device for starting said power generating and converting apparatus comprising a vaporizer, a heating-coil therefor, an electromagnetically-operated device for controlling the admission of hydrocarbon to the burner of said power generating and converting apparatus, and an automatic igniting device for said burner, a battery, circuits leading therefrom including the heating-coil of the vaporizer, the electromagnetically-operated controlling device and said igniting device, means for operating said circuits, and means for disconnecting said heating-coil from the battery, and for connecting it with the dynamo-circuit, substantially as described.

35. In an electric generating system, the combination of a dynamo, a power generating and converting apparatus for operating it, and a starting device for starting said power generating and converting apparatus comprising a battery, circuits leading therefrom including the operating devices for starting said power generating and converting apparatus, means for operating said circuits, a circuit containing the translating devices, a switch for connecting said battery with said circuit, and means for opening said switch and for connecting said circuit with the dynamo-circuit, substantially as described.

36. The combination with a movable contact-pen, of two separated contact-strips insulated from each other adapted to be successively engaged by said contact-pen, a switch for closing an electrical connection between said contact-strips, and means for closing said switch while the contact-pen traverses the gap between said contact-strips, which thereafter opens and breaks the connection, substantially as described.

37. In an electric generating system, a dynamo, a power generating and converting apparatus, a starting device for starting said power generating and converting apparatus, having an operating device by which it is operated, a detent for engaging said starting device and for holding it in its abnormal position, means for operating said detent to release the starting device and means for returning said starting device to its normal position, substantially as described.

38. In an electric generating system, a dynamo, a power generating and converting apparatus, a starting device for starting said power generating and converting apparatus, having an operating device by which it is operated, a detent for engaging said starting device and for holding it in its abnormal position, means for automatically operating said detent to release the starting device, and means for returning said starting device to its normal position, substantially as described.

708,196. WIRE-TIGHTENER. SAMUEL W. BRADBURY, Cape Town, Cape Colony. Filed Feb. 19, 1902. Serial No. 94,733. (No model.)

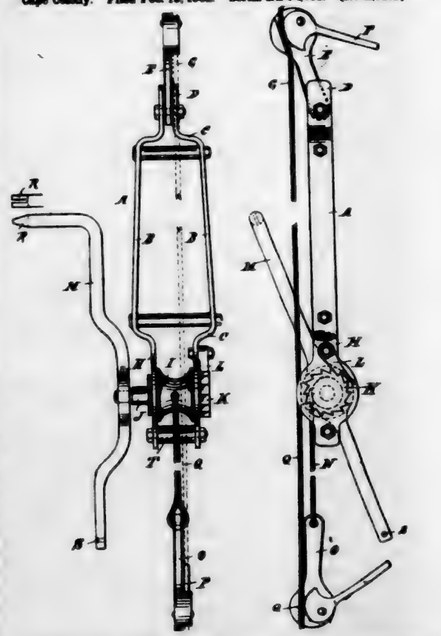

Claim.—In an apparatus of the character described, the combination of two sides similar in configuration spaced apart to form an elon-

gated central space and terminating in a double eye and a secondary frame, a clamp P, pivoted in said double eye, a winch-and-ratchet mechanism mounted in said secondary frame, a clamp O, a flexible connection between said clamp O and said winch, an antifriction-roller carried by said secondary frame between said winch and said clamp and a detachable double lever-handle M whereby said winch may be actuated, substantially as described.

708,197. BRAKE FOR CYCLES. WLADIMIR BRANKOWITSCH, Paris, France, assignor to Compagnie Albert Menthé and Co., Paris, France. Filed Nov. 15, 1901. Serial No. 82,432. (No model.)

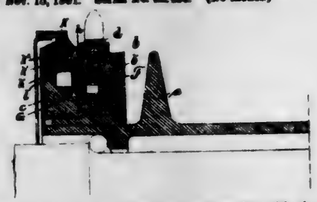

Claim.—In brakes for cycles, the combination with the driving-wheel hub and two rings, as *b* and *c*, threaded thereon, of the sprocket-wheel having diametrically opposite cam-surfaces, and a loose ring provided with correspondingly-located inclines adapted to engage said cam-surfaces when the sprocket-wheel is rotated forward, and a second loose ring having inclined surfaces located relatively to those of the first ring in such position as to engage, when the sprocket is rotated backward, cam-surfaces of the sprocket-wheel alternating with those engaged by the inclines of the first-mentioned wheel, substantially as described.

708,198. TROLLEY. JAMES W. BROOKS, Indianapolis, Ind. Filed Jan. 16, 1901. Serial No. 43,437. (No model.)

Claim.—1. In a trolley, the combination of the pivoted head part having the blades provided with the openings therein, the springs having the slots at the free ends thereof and extending through the openings in the blades, the axle extending through said slots and secured to said blades, and the trolley-wheel mounted on said axle between the ends of said springs that have the slots therein, said springs being secured at their opposite ends, substantially as set forth.

2. In a trolley, the combination of the pivoted head part having the blades provided with the openings therein, the springs having the slots at the free ends thereof and extending through the openings in said blades, the axle extending through said slots and secured to said blades near said openings, the trolley-wheel mounted between the ends of said springs that have the slots therein, and the linings between the hub of said wheel and said spring ends, the opposite ends of said springs being secured to the lower part of the head, substantially as set forth.

3. In a trolley, the combination with the two-part pivoted head having the trolley-wheel mounted in the pivoted upper part thereof, of the combined guide-springs and electric conductors having bearing connections with the wheel-hub and extending through the sides of the pivoted part to the other part of said head, substantially as set forth.

708,199. PORTABLE HAY-LOADING DERRICK. EDWARD BIXBY, Davisville, Cal. Filed Mar. 27, 1902. Serial No. 100,156. (No model.)

Claim.—1. The combination in a portable derrick of a horizontal A-frame, trapezoidal frames disposed transversely of said frame, divided blocks upon the upper ends of said last-named frames, a journaled mast embraced by said blocks, and having an arm rigid with it, a truss-rod extending through said blocks, and a lower fixed support for said rod.

2. The combination in a portable hay-derrick of a horizontal A-frame, a pillar or mast pivotally supported in relation thereto, trapezoidal frames extending transversely of said A-frame, oppositely-disposed journal-blocks in which the mast is turnable carried on the upper convergent ends of said trapezoidal frames, a vertical truss-rod connecting said blocks and the base of the apparatus whereby the structure is rigidly united, and a jib or arm secured to and turnable with said mast.

3. The combination in a portable hay-derrick, of a base-frame mounted on wheels, said frame having the rear axle rigid therewith and its forward end adapted to be attached to the front axle of an ordinary wagon a mast, trapezoidal frames carried upon the base-frame and supporting said mast, a truss-rod passing vertically between the latter frames, having one end connected therewith and the other end fixed to the base, means for tightening said rod, and an arm secured intermediate of its ends to and turnable with the mast.

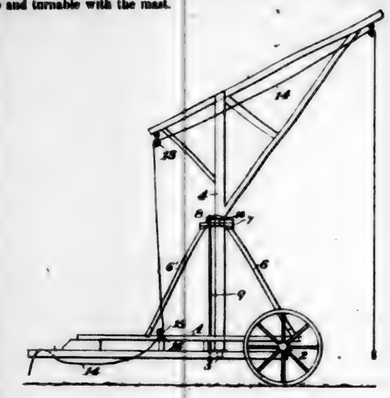

708,200. TUBE-CLEANING DEVICE. JOHN S BRENNELL, Brooklyn, N. Y. Filed Dec. 20, 1901. Serial No. 86,635. (No model.)

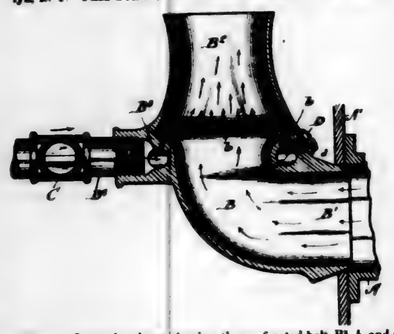

Claim.—In a tube-cleaner having the perforated belt B^3, *b*, and provisions B^4 for supplying steam under pressure thereto, a liberal orifice *d* in such belt and means for controlling it adapted to allow the blowing of steam forcibly through such belt past the smaller orifices *b* at intervals to clean the belt, all substantially as herein specified.

708,201. DRIVING, BRAKING, AND COASTING MECHANISM. FRANK B. CASE, Rochester, N. Y., assignor to Riggs-Spencer Company, Rochester, N. Y., a Corporation. Filed June 28, 1901. Serial No. 66,406. (No model.)

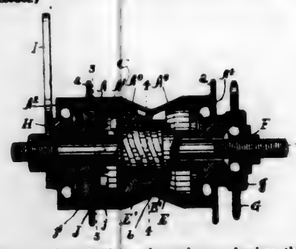

Claim.—1. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; surfaces upon the hub adapted to be engaged by an expansible clutch-ring; a self-centering expansible clutch-ring adapted to engage such surfaces; and a clutch-nut upon the threaded portion of the driving mechanism whereby the clutch-ring is expanded into engagement with the hub, substantially as described.

2. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; a part of the hub adapted to be engaged by a clutch-ring; an expansible clutch-ring; and a clutch-nut upon the threaded portion of the driving mechanism whereby the clutch-ring is expanded so as to engage the hub, said nut having a shoulder adapted to support the clutch-ring when said ring is out of engagement, substantially as described.

3. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; conical surfaces A^4 within the hub adapted to be engaged by a clutch-ring; the expansible clutch-ring B^7; and the clutch-nut C upon the threaded portion of the driving mechanism, having conical and cylindrical surfaces c^3, c^4, whereby the clutch-ring is expanded so as to engage the hub, and is supported when out of engagement therewith, substantially as described.

5. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; a part of the hub adapted to be engaged by a clutch-ring; an expansible clutch-ring comprising shoes; a clutch-nut upon the threaded portion of the driving mechanism, whereby the clutch-ring is expanded so as to engage the hub, substantially as described.

6. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; surfaces upon the hub adapted to be engaged by an expansible clutch-ring; an expansible clutch-ring; a clutch-nut upon the threaded portion of the driving mechanism, whereby the clutch-ring is expanded to engage the hub on forward driving; and projections from the nut whereby the clutch-ring is prevented from rotating with reference to the nut, substantially as described.

7. In a coaster and brake mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism having a part extending within the hub and having threads thereon; a part of the hub adapted to be engaged by a clutch-ring; an expansible clutch-ring; a clutch-nut upon the threaded portion of the driving mechanism, whereby the clutch-ring is expanded so as to engage the hub in forward driving, and a brake mechanism adapted to engage the hub on back pedaling, substantially as described.

8. In a coaster and brake mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism having a part extending within the hub; and having threads thereon; a part of the hub adapted to be engaged by a clutch-ring, and also a part adapted to be engaged by a brake-clutch; a block H within the hub secured against turning; projections h' upon the surfaces of the block H; brake-shoes J notched to receive the projections h', upon the block H; teeth h upon the block H; the spring j; and a clutch-nut upon the threaded portion of the driving mechanism, having the tooth c' on its side, and adapted in forward pedaling to expand the clutch-ring so as to engage the hub, and on back pedaling both to expand the clutch-shoes, and to turn them upon the projections h' so as to brake the hub, substantially as described.

708,202. CUSHION-FRAME FOR BICYCLES. FRANK B. CASE, Rochester, N. Y., assignor to Riggs-Spencer Company, Rochester, N. Y., a Corporation of New York. Filed Aug. 6, 1901. Serial No. 71,088. (No model.)

Claim.—1. In a bicycle, the combination of a rigid front frame, a rear-wheel fork flexibly connected thereto at or near the crank-hanger, a brace flexibly connected to the rear portion of the front frame and comprising as one section concentric tubes, a tube fitting air-tight the space between said concentric tubes whereby the two sections may telescope one into the other, a spring within said tubes for extending said sections

whereby the clutch-ring is expanded so as to engage the hub, substantially as described.

2. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; surfaces upon the hub adapted to be engaged by an expansible clutch-ring; a self-centering expansible clutch-ring adapted to engage such surfaces; and a clutch-nut upon the threaded portion of the driving mechanism whereby the clutch-ring is expanded into engagement with the hub, substantially as described.

3. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; a part of the hub adapted to be engaged by a clutch-ring; an expansible clutch-ring; and a clutch-nut upon the threaded portion of the driving mechanism whereby the clutch-ring is expanded into engagement with the hub, substantially as described.

4. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; conical surfaces A^4 within the hub adapted to be engaged by a clutch-ring; the expansible clutch-ring B^7; and the clutch-nut C upon the threaded portion of the driving mechanism, having conical and cylindrical surfaces c^3, c^4, whereby the clutch-ring is expanded so as to engage the hub, and is supported when out of engagement therewith, substantially as described.

5. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; external threads upon the part extending within the hub; a part of the hub adapted to be engaged by a clutch-ring; an expansible clutch-ring comprising shoes; a clutch-nut upon the threaded portion of the driving mechanism, whereby the clutch-ring is expanded so as to engage the hub, substantially as described.

6. In a driving and coasting mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism extending within the hub; surfaces upon the hub adapted to be engaged by an expansible clutch-ring; an expansible clutch-ring; a clutch-nut upon the threaded portion of the driving mechanism, whereby the clutch-ring is expanded to engage the hub on forward driving; and projections from the nut whereby the clutch-ring is prevented from rotating with reference to the nut, substantially as described.

7. In a coaster and brake mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism having a part extending within the hub and having threads thereon; a part of the hub adapted to be engaged by a clutch-ring; an expansible clutch-ring; a clutch-nut upon the threaded portion of the driving mechanism, whereby the clutch-ring is expanded so as to engage the hub in forward driving, and a brake mechanism adapted to engage the hub on back pedaling, substantially as described.

8. In a coaster and brake mechanism, the combination of a hollow hub having bearings at its ends; a driving mechanism having a part extending within the hub; and having threads thereon; a part of the hub adapted to be engaged by a clutch-ring, and also a part adapted to be engaged by a brake-clutch; a block H within the hub secured against turning; projections h' upon the surfaces of the block H; brake-shoes J notched to receive the projections h', upon the block H; teeth h upon the block H; the spring j; and a clutch-nut upon the threaded portion of the driving mechanism, having the tooth c' on its side, and adapted in forward pedaling to expand the clutch-ring so as to engage the hub, and on back pedaling both to expand the clutch-shoes, and to turn them upon the projections h' so as to brake the hub, substantially as described.

708,202. CUSHION-FRAME FOR BICYCLES. FRANK B. CASE, Rochester, N. Y., assignor to Riggs-Spencer Company, Rochester, N. Y., a Corporation of New York. Filed Aug. 6, 1901. Serial No. 71,088. (No model.)

Claim.—1. In a bicycle, the combination of a rigid front frame, a rear-wheel fork flexibly connected thereto at or near the crank-hanger, a brace flexibly connected to the rear portion of the front frame and comprising as one section concentric tubes, a tube fitting air-tight the space between said concentric tubes whereby the two sections may telescope one into the other, a spring within said tubes for extending said sections with reference to each other, a collar upon one tube of each section, and a spring between said collars tending to cause said sections to telescope one into the other when they are extended beyond the normal limit, substantially as described.

2. In a bicycle, the combination of a rigid front frame, a rear-wheel fork flexibly connected to said front frame at or near the crank-hanger, a brace flexibly connected with the rear portion of the rear-wheel fork and having a section flexibly connected to the upper rear portion of the front frame, said brace comprising a cap having two concentric tubes, the inside one being longer than the other, and having an outside collar, and another section having a tube provided with an internal collar and fitting air-tight the space between the said concentric tubes, a coiled spring within the second section and extending within the inner tube of the first section for extending the two sections, and a second coiled spring between said collars for contracting the sections when they are extended beyond the normal limit, substantially as described.

3. In a bicycle, the combination of a rigid front frame, a crank-hanger hinged thereto, a rear-wheel fork rigidly connected to the crank-hanger, a brace flexibly connected to the rear portion of the front frame and to the rear-wheel fork and comprising as one section concentric tubes, and as the other section a tube fitting air-tight the space between the said concentric tubes, said sections containing a spring adapted to extend said sections and a spring for contracting said sections when they are extended beyond the normal limit, substantially as described.

4. In a bicycle, the combination of a rigid front frame, a crank-hanger hinged thereto, a rear-wheel fork rigidly connected to the crank-hanger, a brace flexibly connected to the rear portion of the front frame and to the rear-wheel fork and comprising as one section concentric tubes, a tube fitting air-tight the space between said concentric tubes whereby the two sections may telescope one into the other, a coiled spring within said tubes for extending said sections with reference to each other, a collar upon one tube of each section, and a spring between said collars tending to cause said sections to telescope one into the other when they are extended beyond the normal limit, substantially as described.

5. In a bicycle, the combination of a rigid front frame, a crank-hanger hinged thereto, a rear-wheel fork rigidly connected to the crank-hanger, a brace flexibly connected with the rear portion of the rear-wheel fork and having a section flexibly connected to the upper rear portion of the front frame, said brace comprising as one section a cap having two concentric tubes, the inside one being longer than the other and having an outside collar, and another section having a tube provided with an internal collar and fitting air-tight the space between the said concentric tubes, a coiled spring within the second section and extending within the inner tube of the first section for extending the two sections, and a second coiled spring between said collars for contracting the sections when they are extended beyond the normal limit, substantially as described.

708,203. COPY-HOLDER. THOMAS P. CHANDLER, Rochester, Pa. Filed Mar. 17, 1902. Serial No. 98,627. (No model.)

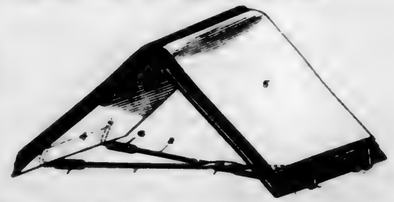

Claim.—1. As an article of manufacture, a copy-holder, comprising two arms crossing each other and pivotally joined, and turned-up end portions on each arm, substantially as set forth.

2. As an article of manufacture, a copy-holder, comprising two arms crossing each other and each having turned-up end portions, and rests or supports on each arm, substantially as set forth.

3. As an article of manufacture, a copy-holder, comprising two arms crossing each other and pivotally joined, each provided with turned-up end portions, and rests or supports on each arm, substantially as set forth.

708,204. CASTER. GEORGE D. CLARK, Plainville, Conn. Filed Dec. 24, 1901. Serial No. 87,063. (No model.)

Claim.—1. In a caster, a sheet-metal frame comprising a solid top, a perforation therein to form an upper bearing for a pintle the sides and back of said top being bent down and contracted to form a lower bearing for the pintle, wheel-supporting horns extending downwardly from the solid top and forwardly from the depressed sides thereof.

2. In a caster, a sheet-metal frame comprising a solid top, a perforation therein to form an upper bearing for a pintle the sides and back of said top being bent to form a lower bearing for the pintle, wheel-supporting horns extending downwardly from the solid top and forwardly from the depressed sides thereof, and corrugations between the depressed sides and said horns, said corrugations being deeper at the bottom than at the top.

3. In a caster, a sheet-metal frame comprising a solid top, a perforation therein to form an upper bearing for a pintle, the sides and back of said top being bent to form a lower bearing for the pintle, wheel-supporting horns extending downwardly from the solid top and forwardly from the depressed sides thereof, and a bushing secured in place by the back and sides of said top portion.

708,205. DOOR-HANGER. JOSEPH F. CLIFT, Syracuse, N. Y. Filed May 10, 1902. Serial No. 106,808. (No model.)

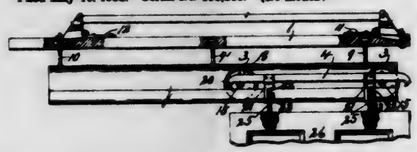

Claim.—1. In a door-hanger, the combination with a track, rocking members located at the ends of the track, a link connecting the members, one of said members being connected to one end of the track, means for rocking the other member, separate means for raising and lowering the other end of the track, and a carriage for the door mounted on the track.

2. In a door-hanger, a bell-crank, a track having one end connected to one arm of the bell-crank, means at the other end of the track connected to the other arm of the bell-crank for rocking the bell-crank, and a carriage for the door mounted on the track and separate means for adjusting said other end of the track.

3. In a door-hanger, two bell-cranks and supports therefor, a link connecting corresponding arms of the bell-cranks, a track having one end connected to the adjacent bell-crank and raised and lowered thereby, adjusting means connected to rock the other bell-crank, separate adjusting means for the other end of the track, and a carriage for the door mounted on the track.

4. In a door-hanger, a fixed support and a track beneath the support, in combination with a bell-crank hinged to the support at one end of the track and having one arm adjustably connected to the opposite end of the track for raising and lowering the same, adjusting means connected to the other arm of the bell-crank for rocking the same, separate means for adjusting said one end of the track vertically, and a carriage for the door mounted on the track.

5. In a door-hanger, the combination of a support, a track, bell-cranks pivotally mounted on the support, at opposite ends of the track, a link connecting corresponding arms to the bell-cranks, adjusting-screws connected to the other arms and engaged respectively with the support and track, separate means engaged with the support and track for adjusting the same vertically, and a carriage for the door mounted on the track.

6. A door-hanger, the combination of a support, levers mounted on the support, an adjusting-screw connecting one of the levers to the support for rocking the lever, a link connecting the levers to transmit rocking motion from one to the other, a track having one end adjustably connected to the other lever and its other end adjustably connected to the support in proximity to the former adjusting-screw, and a carriage for the door mounted on the track.

708,206. AUTOMATIC CAR-COUPLING. SOLOMON GEE and GEO. W. WARNER, Granger, Iowa. Filed Nov. 20, 1901. Serial No. 83,262. (No model.)

Claim.—1. In a car-coupling, two crank-shafts in bearings fixed to the side portions of a car-platform, a pin, two bars pivotally connected with the top of the pin and means for jointly actuating the crank-shafts for lifting the pin, arranged and combined to operate in the manner set forth for the purposes stated.

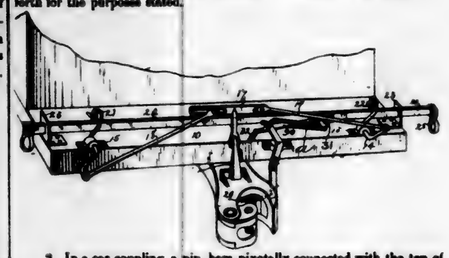

2. In a car-coupling, a pin, bars pivotally connected with the top of the pin, crank-shafts mounted on the platform and connected with the ends of said bars, a straight bar slidably mounted on the platform, bridles projecting vertically from the sliding bar to admit the inner ends of the crank-shafts and means for moving the slidable bar, arranged and combined to operate in the manner set forth, for the purposes stated.

3. In a car-coupling, a draw-head connected with the platform at the end of a car, a spring-actuated elbow-shaped lever pivoted to the platform and one end of the lever extended through a slot in the draw-head, a bar slidably mounted on the platform to extend from one side to the other, bridles projecting upward from the slidable bar, crank-shafts mounted on the platform and their inner arms extended through said bridles, a bar pivotally connected with each outer arm of the crank-shafts and a pin pivotally connected with the ends of said bars, arranged and combined to operate in the manner set forth for the purposes stated.

4. In a car-coupling, a pin-operating mechanism comprising a pin, two bars pivotally connected with the top of the pin to extend laterally in reverse ways, crank-shafts mounted on the car-platform and their outer ends pivotally connected with the ends of said bars, a bar mounted on the platform to slide in reverse ways and provided with bridles projecting upward therefrom to be traversed by the inner ends of the crank-shafts, a shoulder on the slidable bar, a spring-actuated elbow-shaped lever fulcrumed to the platform and one end extended through a slot in the draw-head and a pawl pivoted to its other end to engage the shoulder on the slidable bar, all arranged and combined to operate in the manner set forth for the purposes stated.

708,207. VEHICLE-BODY RAISER. JAMES E. CRYDERMAN, Edmonton, Canada. Filed Mar. 15, 1902. Serial No. 98,413. (No model.)

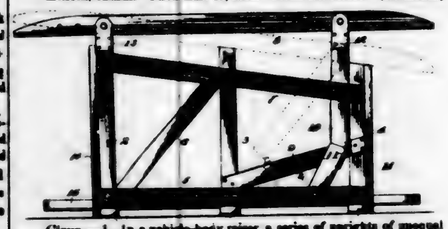

Claim.—1. In a vehicle-body raiser, a series of uprights of unequal length on each side forming a driveway, a lever adjustably pivoted to each of the highest uprights and supporting-standards comprising two sections hinged together, the meeting ends of said sections being oppositely beveled to swing past a line drawn through the pivots of the opposite ends of said sections.

2. In a vehicle-body raiser, a frame suitably supported, said frame being portable, a series of uprights of unequal length, a lever pivoted to the highest upright of each series, supporting-standards pivoted to each lever, the said standards swinging into engagement with the short uprights on each side whereby the weight is supported, as and for the purpose described.

3. In a vehicle-body raiser, a portable structure, levers pivoted thereto, said levers being adjustable to project a greater or less degree beyond the lower end of the structure, standards pivoted to the levers; said standards being in two sections having oppositely-beveled meeting ends, hinges connecting the sections, the said standards being so positioned as to contact with the end upright of the structure, as and for the purpose described.

708,208. GRAIN-SPOUT. WILLIAM D. DOZIER, Peoria, Ill. Filed Nov. 18, 1899. Renewed July 26, 1902. Serial No. 117,203. (No model.)

Claim.—1. A device of the character described comprising the telescopic sections A, A', hood B, rotatably mounted on the section A', sections C, C', the bifurcated sections D, D, an equaliser E, pivotally mounted in the section C, means for adjusting the equaliser, and means for elevating the structure, substantially as described.

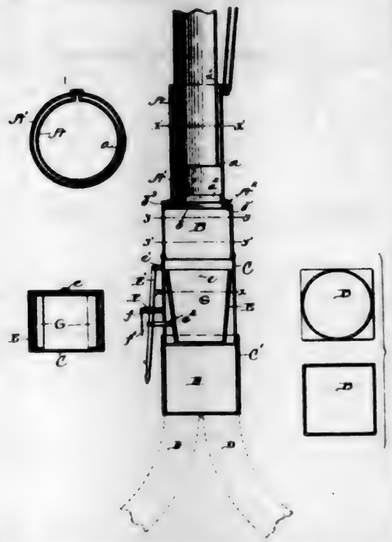

2. A device of the character described, comprising the telescopic sections A, A', splined together, hood B, rotatably mounted on the section A', bifurcated sections D, D, a section intermediate the hood and bifurcated sections, an equaliser adjustably mounted in said intermediate section, and means for securing the equaliser in its adjusted positions, substantially as described.

708,209. SIDE GUARD FOR CARS. JAMES H. DONNELLY, Philadelphia, Pa., assignor of one-half to William W. Ruley, Philadelphia, Pa. Filed May 15, 1902. Serial No. 107,672. (No model.)

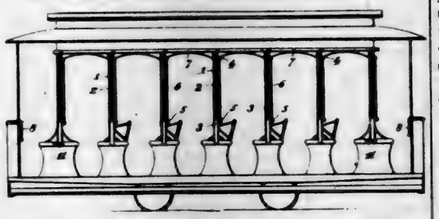

Claim.—1. A side guard for cars, comprising a series of guard-arms, a series of independent bell-cranks, connections between said guard-arms and bell-cranks, and a reciprocating connecting-rod for said bell-cranks, substantially as described.

2. A side guard for cars, comprising a series of guard-arms pivoted to the uprights of the car, a series of bell-cranks also pivoted to said uprights, connecting rods or links for said guard-arms and bell-cranks, and a reciprocating connecting-bar for said bell-cranks, whereby said guard-arms and bell-cranks are movable simultaneously to open and close the entrances to the car, substantially as described.

3. A side guard for cars, comprising a series of guard-arms pivoted to the uprights of the car, a series of bell-cranks also pivoted to said uprights, connecting rods or links for said guard-arms and bell-cranks, a reciprocating connecting-bar for said bell-cranks, whereby said guard-arms and bell-cranks are movable simultaneously to open and close the entrances to the car, and catches for holding said parts in open position, substantially as described.

4. A side guard for cars, comprising a series of guard-arms pivotally secured to the car by the handle-bar fastenings, a series of bell-cranks also pivotally secured to the car by the said fastenings, connecting rods or links for said guard-arms and bell-cranks, and a reciprocating connecting-bar for said bell-cranks, whereby all of said bell-cranks and guard-arms are movable simultaneously to open and close the entrances to the car, substantially as described.

5. A side guard for cars, comprising a series of guard-arms pivotally secured to the car by the handle-bar fastenings, a series of bell-cranks also pivotally secured to the car by said fastenings, connecting rods or links for said guard-arms and bell-cranks, and a reciprocating connecting-bar for said bell-cranks, whereby all of said bell-cranks and guard-arms are movable simultaneously to open and close the entrances to the car, the free ends of said guard-arms when in the closed position adapted to engage the adjacent handle-bars, substantially as described.

708,210. WRENCH. AXEL DAHL, North Tarrytown, N. Y. Filed Apr. 30, 1902. Serial No. 105,264. (No model.)

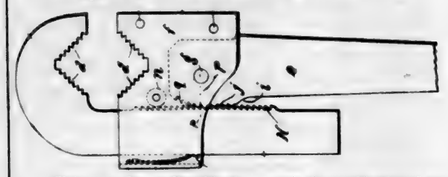

Claim.—1. In an adjustable pipe-wrench, the combination of two jaws each having a notched and serrated face formed in two parts having angular relation to each other adapting the two jaws to have biting effect at four points in the circumference of the pipe, the lever pivoted at one end in the space between the cheeks of one of said jaws, a shank of the other jaw sliding in the said space, clutching-teeth on said shank and lever respectively adapted to be unclutched for adjusting the jaws and a spring for normally maintaining the clutched condition of the shank and lever.

2. In an adjustable pipe-wrench, the combination of two jaws each having a serrated face adapted to have biting effect on the pipe, the lever pivoted at one end in the space between the cheeks of one of the jaws, a shank of the other jaw sliding in the said space, clutching-teeth on said shank and lever respectively adapted to be unclutched for adjusting the jaws, a spring for normally maintaining the clutched condition of the shank and lever and a fulcrum for the jaw-shank located in the space between the cheeks of the jaw wherein the lever is pivoted and in advance of the pivot to facilitate unclutching said jaws.

3. In an adjustable pipe-wrench, the combination of two jaws each having a serrated face adapted to have biting effect on the pipe, the lever pivoted at one end in the space between the cheeks of one of the jaws, a shank of the other jaw sliding in said space, clutching-teeth on said shank and lever respectively adapted to be unclutched for adjusting the jaws, a spring for normally maintaining the clutched condition of the shank and lever and a fulcrum for the said shank located in the space between the cheeks of the jaw wherein the lever is pivoted and in advance of the pivot, the toothed face of the lever being reduced radially to the pivot between the transverse axial line of the lever and the fulcrum to favor unclutching the teeth.

708,211. ELECTRIC SNAP-SWITCH. LOUIS W. DOWNES, Providence, R. I. Filed May 3, 1902. Serial No. 105,613. (No model.)

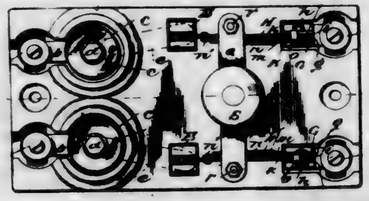

Claim.—1. In an electric snap-switch, two circuit-terminals, a switch-blade pivoted to one of the terminals and adapted to be moved on its pivot into and out of engagement with the other terminal, an actuating-lever normally extending along one side of the switch-blade and fulcrumed at one end on the pivot of said blade, a spring connected at one end to the lever and at the other end to the switch-blade, a lug on the pivoted end of the lever, and a tooth or projection on the pivoted end of the blade which the lug is adapted to engage after the actuating-lever has been moved a predetermined distance and the spring thereby put under tension.

2. In an electric snap-switch, two circuit-terminals, a switch-blade pivoted to one of the terminals and adapted to be moved on its pivot into and out of engagement with the other terminal, an actuating-lever normally extending along one side of the switch-blade and fulcrumed at one end on the pivot of said blade, a spiral spring connected at one end to the blade at a point remote from its pivot, a finger on the actuating-lever adjacent to its fulcrum said finger projecting into the other end of the spiral spring, a lug on the pivoted end of the lever projecting over the edge of the switch-blade, and a tooth or projection on the pivoted end of the blade which the lug is adapted to engage after the actuating-lever has been moved a predetermined distance and the spring thereby put under tension.

3. In a double electric snap-switch, two single switches each comprising two circuit-terminals, a switch-blade pivoted to one of the terminals and adapted to be moved on its pivot into and out of engagement with the other terminal, an actuating-lever normally extending along one side of the switch-blade and fulcrumed at one end on the pivot of said blade, a spring connected at one end to the lever and at its other end to the switch-blade, a lug on the pivoted end of the lever, and a tooth or projection on the pivoted end of the blade which the lug is adapted to engage after the actuating-lever has been moved a predetermined distance and the spring thereby put under tension; angular extensions at the free end of the actuating-levers of the several switches, and a bar of non-conducting material connecting and secured to said angular extensions so that the actuating-levers move together.

708,212. LEATHER BELT. JAMES I. FABEY, Boston, Mass. Filed Jan. 4, 1901. Serial No. 42,169. (No model.)

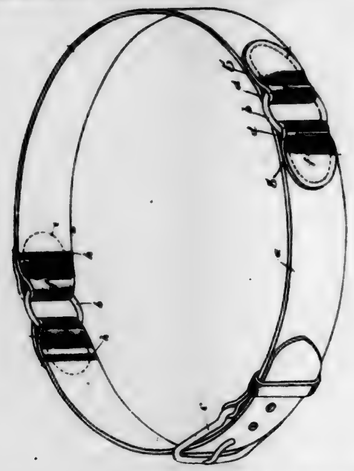

Claim.—1. A belt consisting of a plurality of main straps of uniform thickness throughout their entire length and forming the body portion, combined with a plurality of connecting-rings, and straps forming loops embracing said rings for connecting the main straps together, said loops having ends of unequal length, the shorter ends abutting against the ends of the main straps and the longer ends overlapping the outer face of the main straps, said loops suitably attached to the main straps and of substantially the same thickness.

2. A belt consisting of a plurality of main straps forming the body portion, combined with a plurality of connecting-rings, and straps forming loops embracing said rings for connecting the main straps together, said loops having ends of unequal length, the shorter ends abutting against the ends of the main straps and the longer ends overlapping the outer face of the main straps, said loops suitably attached to the main straps, substantially as herein shown and described.

708,213. TYPE-WRITING MACHINE. ROBERT J. FISHER, Athens, Tenn., assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed Aug. 29, 1900. Serial No. 28,419. (No model.)

Claim.—1. In a type-writing machine, the combination with the type-bar, of a pivotal type-head carried by the type-bar and having a cam-ear formed with an arcuate bearing-face, a trigger carried by the type-bar and having a shifter element cooperating with said bearing-face, and means for actuating said trigger.

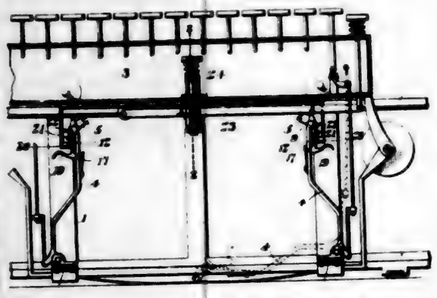

2. In a type-writing machine, the combination with the type-bar, and the type-head pivoted thereto, of a device carried by the type-bar for shifting the type-head to either of two positions by engaging with said head at opposite sides of its pivotal point.

3. In a type-writing machine, the combination with the type-bar, and the type-head pivoted thereto, of a device carried by the type-bar for shifting the type-head to either of two positions and locking the same in each position, said operations being effected by direct engagement with the head at opposite sides of its pivotal point.

4. In a type-writing machine, the combination with the type-bar, the type-head pivoted thereto, and means for limiting the swinging movement of the type-head beyond either of two positions, of a device carried by the type-bar for positively shifting the head to and locking the same in either position.

5. In a type-writing machine, the combination with the type-bar, and the type-head pivoted thereto, of a device carried by the type-bar directly engaging with the type-head for shifting the same to and locking said type-head in either of two positions, and means for limiting the movement of said device so as to hold it in engagement.

6. In a type-writing machine, the combination with the type-bar, and the shiftable type-head, of a device carried by the type-bar to shift the type-head to either of two positions and to lock the same, and separate trips arranged at all times outside of the path of the type-head and adapted to be brought alternately in contact with the device to cause the shifting of the type-head to one position and to restore said head to its normal position.

7. In a type-writing machine, the combination with the type-bar, and the pivoted type-head carried thereby and provided with a portion projecting beyond the pivotal point, of a device carried by the type-bar and having a shifting finger engaging with the type-head and adapted to be transferred to opposite sides of the pivot of the head to shift the same into either of two positions.

8. In a type-writing machine, the combination with the type-bar, and the pivoted type-head carried thereby and provided with a portion projecting beyond the pivotal point, of a device carried by the type-bar and having a shifting-finger engaging with the type-head and adapted to be transferred to opposite sides of the pivot of the head to shift the same into either of two positions, a resetting-arm and a tripping-tail carried by the device, and a double trip engaging with the tripping-tail and the resetting-arm.

9. In a type-writing machine, the combination with the type-bar, and a movable type-head mounted thereon and adapted to be shifted to either of two positions, of a single device carried by the type-bar and engaging with the type-head for positively shifting the head to and locking the same in each position.

10. In a type-writing machine, the combination with the type-bar, and a movable type-head mounted thereon and adapted to be shifted to either of two positions, of a single spring-actuated device carried by the type-bar and engaging with the type-head for positively shifting the head to and locking the same in each position.

11. In a type-writing machine, the combination with the type-bar and a type-head pivoted thereto, of a device mounted on the type-bar independent of the type-head, but adapted to engage the same to shift it to either of two operative positions and also lock the same in each position.

12. In a type-writing machine, the combination with the type-bar, and a type-head pivoted thereto, of a device pivoted on the type-bar, independent of the type-head, but adapted to engage the same to shift it to either of two operative positions and also lock the same in each position.

13. The combination with the type-bar, and the type-head pivoted thereto, of a single device pivoted on the type-bar, independent of the type-head, but adapted to engage the same to shift the type-head to either of two positions and serve as a lock for the said head in each position, and a spring acting against the said device for the purposes described.

14. The combination with the type-bar, and the shiftable type-head pivoted thereto, of a single device carried by the type-bar, independent of the type-head, and constituting a combined shifting and locking means for the type-head, to shift the latter to either of two positions and lock the same in each position, and a spring for the said device.

08,214. HINGE. CHARLES H. FOSTER, Omaha, Nebr. Filed Mar. 8, 1902. Serial No. 97,212. (No model.)

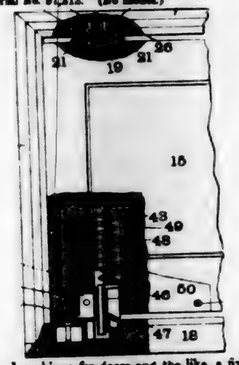

Claim.—1. In a hinge for doors and the like, a fixed part, a movable part, a beveled track carried by one of said parts, and a member carried by the other of said parts and traveling on said track, said track and member being arranged to force the said movable part toward the rear.

2. In a hinge for doors and the like, a fixed part, a movable part, a beveled track carried by one of said parts, and a conical wheel carried by the other of said parts and traveling on said track, said track and conical wheel being arranged to force the said movable part toward the rear.

3. In a hinge for doors and the like, a fixed part, a movable part, one of said parts being provided with a pair of bearings and the other with a pair of bearing-pins, a beveled track carried by one of said parts, and a conical wheel carried by the other of said parts and traveling on said track, said track and wheel being arranged to force the said movable part toward the rear.

4. In a hinge for doors and the like, a fixed part, a pair of bearings carried by said fixed part, a movable part, a pair of bearing-pins carried by said movable part, a beveled track carried by said fixed part, and a conical wheel carried by said movable part and traveling on said track, said track and wheel being arranged to force the said movable part toward the rear.

5. In a hinge for doors and the like, a fixed part, a movable part, a beveled track carried by one of said parts, a member slidingly mounted on the other of said parts, a conical roller carried by said member and traveling on said track, said track and roller being arranged to force the said movable part toward the rear and a spring for forcing said roller against said track.

6. In a hinge for doors and the like, a fixed part, a movable part, a track carried by one of said parts, a yieldingly-mounted member carried by the other of said parts and traveling on said track, and a pair of inclines at the ends of said track for contacting with the part carrying said yieldingly-mounted member.

7. In a hinge for doors and the like, a fixed part, a movable part, a track carried by one of said parts, a yieldingly-mounted member carried by the other of said parts and traveling on said track, a pair of inclines at the ends of said track for contacting with the part carrying said yieldingly-mounted member, and a pair of stops at the ends of said inclines for limiting the movement of said movable part.

8. In a hinge for doors and the like, a fixed part, and a movable part, one of said parts being provided with a pair of bearings, a pair of intersecting curved guideways extending therefrom, and a pair of auxiliary guideways adjacent thereto, and the other of said parts being provided with a pair of bearing-posts cooperating with said bearings and traveling in said intersecting guideways, and a pair of legs adjacent to said posts and traveling in said auxiliary guideways.

9. The combination with a door, of an upper hinge consisting of a fixed part and a movable part, one of said parts being provided with a pair of projections and the other of said parts being provided with a pair of inclined rub-strips for contacting with said projections, and means for raising said door when it is opened.

708,215. HOT-AIR FURNACE. CHARLES H. FOSTER, Omaha, Nebr. Filed Mar. 13, 1902. Serial No. 98,070. (No model.)

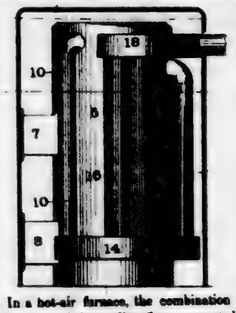

Claim.—1. In a hot-air furnace, the combination with a combustion-chamber, of two sets of descending flues connected with said combustion-chamber, a base-flue connecting the pipes of one of said sets, a second base-flue connecting the pipes of the other of said sets, ascending flues connected with said base-flues, a conduit connecting said ascending flues, and an outlet leading from said conduit.

2. In a hot-air furnace, the combination with a combustion-chamber, of a pair of long descending flues connected therewith, a pair of short descending flues also connected with said combustion-chamber, a pair of base-flues each connecting a long and a short descending flue, a pair of ascending flues each connected with one of said base-flues at a point nearer to the long than to the short descending flue, a conduit connecting said ascending flues and passing above said short descending flues, and an outlet leading from said conduit.

708,216. ELECTROMEDICAL APPLIANCE. JONATHAN O. POWLER, Jr., New York, N. Y., assignor to John W. Gibbs, New York, N. Y. Filed Mar. 30, 1901. Serial No. 53,644. (No model.)

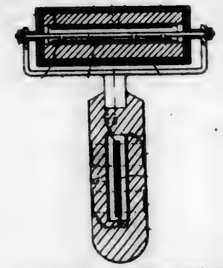

Claim.—1. In a device for applying electricity, the combination of a hollow roller-shell, a handle therefor, and means for generating a current of electricity within said roller-shell, and also means for connecting the said electricity-generator with the shell, and an induction-coil located in said handle.

2. In a device for applying electricity, the combination of a roller, a handle therefor, and means for generating electricity mechanically, said electricity-generating means being constructed and arranged to be operated by the motion of the roller, and an induction-coil located in said handle.

3. In a device for applying electricity, the combination of a hollow roller-shell, a handle therefor, and means for generating a current of electricity within said roller-shell, and also means for connecting said electricity-generator with the shell, and an induction-coil located in said handle.

4. In a device for applying electricity, the combination of a roller, a handle therefor, and means for generating a series of induced currents of electricity mechanically, contained within said shell, said electricity-generating means being constructed and arranged to be operated by the motion of the roller, and an induction-coil located in said handle.

5. In a device for applying electricity, the combination with a movable roller-shell, and a handle therefor, of a relatively stationary part forming one member of the electricity-generating system, and of another mem

ber of the generator of electricity secured to said shell, to cause the operation of the generator of electricity by the motion of the roller, and an induction-coil located in said handle.

6. In a device for applying electricity, a roller, a handle therefor, a coil of wire contained within the roller, and means to set up in said coil an induced current of electricity by the motion of the roller, and an induction-coil located in said handle.

7. In a device for applying electricity, the combination of a roller, and a handle therefor, and a coil of wire located adjacent to the roller, and means to set up a series of induced currents of electricity in said coil by the motion of the roller, and an induction-coil located in said handle.

8. In a device for applying electricity, a roller, a handle therefor, a coil of wire, and means to set up in said coil an induced current of electricity by the motion of the roller, and an induction-coil located in said handle.

708,217. **WATER-HEATING FURNACE.** HUGH A. FRASER, Sarnia, Canada. Filed Apr. 14, 1902. Serial No. 102,797. (No model.)

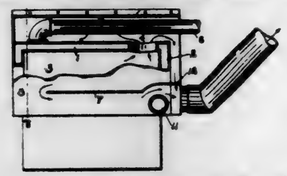

Claim.—1. A water-heating furnace comprising in combination an inner water-containing shell of inverted-U section; an outer casing inclosing said shell; an opening through the top of the water-containing shell near its rear end, connecting the combustion-chamber with the space between the shell and the casing; a horizontal deflecting-plate extending around the lower part of the shell and connecting the shell and casing; openings near the front ends of said deflecting-plate; a smoke-pipe communicating with the interior of the casing below said deflecting-plate; and openings in the deflecting-plate in proximity to the smoke-pipe, for the purposes set forth.

2. In a furnace the combination of a combustion-chamber inclosed by an inverted water-containing shell of substantially U-shaped section having a water-containing end, said shell and end being formed in one piece; an opening for the passage of hot gases from the combustion-chamber through the upper part of said shell near its rear end; a distributing-pipe extending above said opening; an outer casing inclosing the distributing-pipe and shell; a horizontal deflecting-partition near the lower part of said shell, connecting the shell and casing and extending along the sides and back of the shell; and openings for the passage of hot gases near the front ends of said partition; all arranged and operating for the purposes set forth.

708,218. **APPARATUS FOR PACKING OIL-CAKES.** ALFRED W FRENCH, Piqua, Ohio. Filed Nov. 30, 1900. Serial No. 38,127. (No model.)

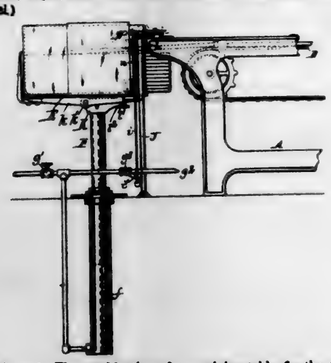

Claim.—1. The combination of a receiving-table for the trimmed cakes, means for holding a bag distended on said table, a support for said table, and a horizontal pivotal joint connecting said table with said support, whereby the table can be swung from its horizontal receiving position to its upright discharging position, substantially as set forth.

2. The combination of a receiving-table having an abutment, means for holding a bag distended on said table, a head on which said table is supported, a horizontal pivotal joint connecting said table with said head, and a stop provided on said head and supporting the table in its horizontal position, substantially as set forth.

3. The combination with a cake-trimming machine, of a receiving-table for the trimmed cakes, means for holding a bag distended on said table, and a support to which said table is attached by a pivotal connection which allows the table to be tilted for removing the pile of cakes and bag, substantially as set forth.

4. The combination with a cake-trimming machine, of a receiving-table for the trimmed cakes provided with an abutment at one end, means for holding a bag distended on said table, a support to which said table is attached by a transverse pivotal connection which allows the table to be tilted, and means for lowering said table-support automatically, substantially as set forth.

5. The combination of a receiving-table, a support on which the same is pivoted, and two separate bag-holding devices arranged lengthwise upon the table on opposite sides thereof, substantially as set forth.

6. The combination of a pivoted receiving-table, and two holding devices arranged lengthwise upon the table on opposite sides thereof and pivoted at their front ends to the table, substantially as set forth.

7. The combination with the receiving-table, of two bag-holders arranged lengthwise upon the table on opposite sides thereof and provided at their front ends with vertical pivotal devices by which the holders are detachably connected to the table, substantially as set forth.

8. The combination with the receiving-table provided at its rear end with an abutment, of two bag-holders arranged lengthwise upon the table on opposite sides thereof and connected with the table at their front ends by vertical pivotal devices, substantially as set forth.

9. The combination of means for holding a bag distended, a receiving-table which supports said bag-holding means, means for feeding the cakes successively into the bag, and means for intermittently moving said table in a direction transversely of the direction of movement of the cakes by the feeding means, said receiving-table extending beneath the bag on said holder and supporting the cakes and the bag, substantially as set forth.

10. The combination of a receiving-table, and means for holding a bag thereon, said means being movable with said bag away from said table, substantially as set forth.

11. The combination of a tilting receiving-table, and a bag-holding means detachably connected with said table whereby the filled bag can be removed from the table, substantially as set forth.

708,219. **SUCTION-BOX COVER FOR PAPER-MAKING MACHINES.** WILLIAM M. GILBERT, THEODORE M. GILBERT, and WILLIAM C. HAHN, Neenah, Wis. Filed July 2, 1902. Serial No. 114,160. (No model.)

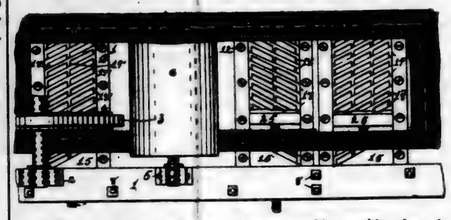

Claim.—1. A suction box cover for paper-making machines formed of a series of blocks having grooves therein of such form that when said blocks are assembled together side by side with their ends upon opposite sides of the suction-box, said grooves form a series of apertures through said cover having parallel sides and ends which are of greater length than width, suitably-shaped end pieces for each end of said cover, and means for holding said blocks and end pieces in position over the suction-box, substantially as described.

2. A suction-box cover for paper-making machines formed of a series of blocks having grooves therein of such form that when said blocks are assembled together side by side diagonally across said box with their ends upon opposite sides thereof, said grooves form a series of apertures through said cover of a rhomboidal form, suitably-shaped end pieces for each end of the cover, and means for holding said blocks and end pieces in position over said suction-box, substantially as set forth.

3. A suction-box cover for paper-making machines formed of a series of blocks having grooves therein of such form that when said blocks are assembled together side by side with their ends upon opposite sides of the suction-box, said grooves form a series of apertures through said cover having parallel sides and ends which are of greater length than width, suitably-shaped end pieces for each end of said cover, a tenon upon opposite ends of each block and end piece, and a groove upon opposite sides of the suction-box above the ends thereof for receiving said tenons and holding said blocks and end pieces in position therein, substantially as described.

4. A suction-box cover for paper-making machines formed of a series of blocks having grooves therein of such form that when said blocks are assembled together side by side with their ends upon opposite sides of the suction-box, said grooves form a series of apertures through said cover having parallel sides and ends which are of greater length than width, suitably-shaped end pieces for each end of the cover, a tenon upon the opposite ends of each block and end piece, a rail secured upon the top of the opposite longitudinal side walls of the suction-box, and a groove at the meeting edges of said rails and side walls for receiving said tenons and holding said blocks and end pieces in position over the suction-box, substantially as set forth.

708,220. **MEANS FOR WINDING CONVERTERS OR LIKE ARTICLES.** EDWIN R. GILL, New York, N. Y., assignor to Invention Developing Company, a Corporation of New Jersey. Filed Mar. 30, 1899. Serial No. 711,060. (No model.)

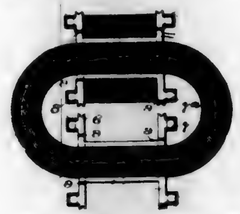

Claim.—1. As an article of manufacture, an electrical apparatus with a virtually-closed magnetic circuit having a practically straight portion, a divisible spool on said straight portion, and terminals for the conductors on said spool, said terminals serving also to fasten the parts of said spool together.

2. As an article of manufacture for use with electrical apparatus, a divisible insulating-spool having means for fastening the end of a conductor thereto.

3. As an article of manufacture for use with electrical apparatus, a divisible insulating-spool having terminal conducting-knobs on the outside of the flanges thereof for fastening the ends of the wires to be wound thereon.

4. As an article of manufacture for use with electric apparatus, a divisible insulating-spool having half-knobs on its half-flanges adapted to come together as described, and metallic caps fitting over said half-knobs in pairs when juxtaposed.

5. As an article of manufacture for use with electric apparatus, a divisible insulating-spool having half-knobs on its half-flanges, threaded and adapted to come together as described, and metallic caps adapted to screw onto said half-knobs in pairs when juxtaposed.

6. As an article of manufacture for use with electric apparatus, a divisible insulating-spool having half-knobs on its half-flanges, threaded and adapted to come together as described, metallic caps adapted to screw onto said half-knobs in pairs when juxtaposed, and a circumferential groove on one of said flanges.

7. In a converter, a closed-circuit subdivided core and two half-shells of iron applied to the two sides of said core for confining said laminations.

8. In a converter, a core composed of iron wire wound into shape, and two half-shells of iron applied to the two sides of said core to confine said wire.

9. In a converter, a closed magnetic circuit having a straight portion, a divisible spool revolubly mounted on said straight portion, metallic terminals on the flanges of said spool for holding said spool portions together, and primary and secondary windings on said spool terminating in said metallic terminals.

708,221. **FOUNTAIN-PEN.** ROBERT T. GILLESPIE, Rochester, Pa. Filed June 26, 1901. Serial No. 66,080. (No model.)

Claim.—1. A penholder provided with means for holding the pen, a pivoted lid provided with bearing-shoulders adapted to be raised from and to be closed upon and to form with the pen an ink-holding cavity, and a spring-controlled dog adapted to bear against the shoulders and to hold the lid in a lowered or raised position.

2. A penholder provided with an inner ferrule and adapted to form with the ferrule of the penholder a pen-retaining socket, a lid pivotally mounted in the inner ferrule provided with shoulders, and a spring-controlled dog adapted to bear against shoulders upon the lid angularly arranged with relation to each other, and to hold it in a lowered or raised position respectively.

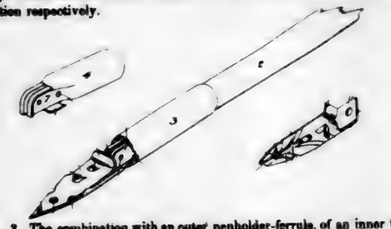

3. The combination with an outer penholder-ferrule, of an inner ferrule, a lid pivotally mounted in the inner ferrule provided with a shoulder, a spring-controlled dog adapted to bear against the shoulder of the lid, and means for connecting the outer and inner ferrules.

4. The combination of an outer penholder-ferrule and an inner ferrule provided with forwardly-extending cheeks, an ink-retaining lid pivotally mounted between the cheeks and provided with shoulders, a spring-controlled dog adapted to bear against the shoulder, and means for securing the outer and inner ferrules together.

5. A cylindrical ferrule adapted to be inserted in the ferrule of the penholder, having forwardly-extending cheeks, a lid pivotally mounted between the cheeks provided with shoulders, and a spring-controlled dog mounted within the ferrule and adapted to bear against the shoulders and to hold the lid in a lowered or raised position respectively with relation to the pen-point.

6. A cylindrical ferrule adapted to be inserted within the ferrule of a penholder having outwardly-extending cheeks, a lid pivotally mounted between the cheeks provided with shoulders, perforations, corrugations and raised portions for the purpose described, and a spring-controlled dog adapted to bear against the shoulders and to hold the lid in a lowered or raised position respectively with relation to the pen-point.

7. A cylindrical ferrule provided with forwardly-extending cheeks, rounded and reinforced substantially as shown and described, an ink-retaining lid pivotally mounted between the cheeks, and a spring-controlled dog adapted to bear against the lid and to hold it in a lowered or raised position, respectively with relation to the pen-point.

8. A cylindrical ferrule provided with forwardly-extending cheeks rounded and reinforced substantially as described, an ink-retaining lid pivotally mounted between the cheeks, provided with bearing-shoulders, a dog adapted to bear against the shoulders, said dog having a stem and a coiled spring surrounding the stem on the dog and inclosed within the cylindrical ferrule.

9. The combination of an outer penholder-ferrule and an inner cylindrical ferrule provided with forwardly-extending reinforced cheeks, an ink-retaining lid pivotally mounted between the cheeks provided with bearing-shoulders at its inner end, a spring-controlled dog located within the inner ferrule and adapted to exert holding pressure upon the shoulders of the lid and means for connecting the parts together, substantially as set forth.

10. A penholder provided with means for holding the pen, a pivoted lid provided with bearing-shoulders adapted to be raised from and to be closed upon and to form with the pen an ink-holding cavity, provided with grooves on its under surface leading to its tip, and a spring-controlled dog adapted to bear against the shoulders and to hold the lid in a lowered or raised position.

708,222. **INCANDESCENT GAS-BURNER.** THOMAS GORDON, Philadelphia, Pa. Filed July 26, 1901. Serial No. 69,758. (No model.)

Claim.—1. In a gas-burner, the combination with an induction and mixing chamber, and a gas-supply pipe having communication therewith, of an air-supply pipe, and means at the bottom of said chamber providing an elongated annular duct connecting the chamber with said air-supply pipe, the outlet or discharge portion of said duct being open and unobstructed.

2. In a gas-burner, the combination with the induction and mixing chamber and the gas-supply pipe having communication therewith, of the air-supply pipe, a tube leading therefrom to the said chamber, and a core in said tube, affording in the latter an annular duct having an open unobstructed outlet.

3. In a gas-burner, the combination with the induction and mixing chamber and the gas-supply pipe having communication therewith, of the air-supply pipe, a tube leading therefrom to the said chamber, and a loosely-mounted stem or pin in said tube.

4. In a gas-burner, the combination with the induction and mixing chamber, and the air-supply pipe having central communication with said chamber adjacent the bottom of the latter, of the gas-supply pipe, and

the elongated gas-ingress tubes disposed in the bottom of the said chamber independently and laterally of the point of communication between the air-supply pipe and said chamber.

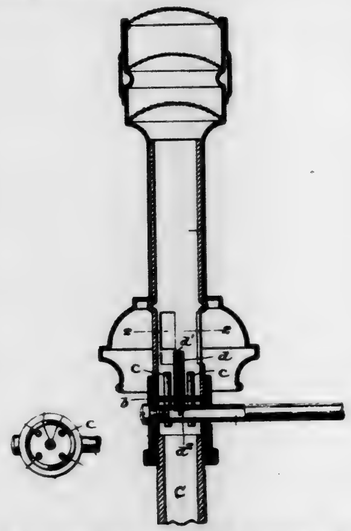

5. In a gas-burner, the combination with the induction and mixing chamber, of the gas-supply pipe, the elongated gas-ingress ducts in the bottom of said chamber, the air-supply pipe, and a centrally-disposed annular duct leading therefrom to the said chamber, said duct having an open unobstructed outlet.

6. In a gas-burner, the combination with an induction and mixing chamber, a gas-supply pipe, and an air-supply pipe, of elongated gas-ingress ducts in the bottom of said chamber, an elongated air-duct leading from the air-supply pipe to said chamber, and an axially-disposed stem or pin in said air-duct.

708,223. ADJUSTABLE ECCENTRIC. HENRY GRAFF, Philadelphia, Pa. Filed Oct. 3, 1901. Serial No. 77,401. (No model.)

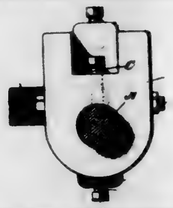

Claim.—In an apparatus of the character described, two guide-blocks secured upon the end of a power-shaft, guideways formed in said guide-blocks, slides adapted to slide within said guideways, a wrist-pin connected to each of said slides and extending between the same, slots formed through the slides, bolts secured in the guide-blocks upon each side of the slides and extending through the slot within said slide, and screws threaded through each end of the slides and adapted to bear against the bolts upon opposite sides, substantially as described and for the purpose specified.

708,224. SYRINGE. FRANK C. COUDLAGH and WILLIAM R. LUDEWIG, Pittsburg, Pa. Filed Oct. 14, 1901. Serial No. 79,134. (No model.)

Claim.—1. In a device of the character herein described, the combination of a syringe and a reservoir, one end of the syringe terminating in a socket having a centrally-disposed channel communicating with the interior of the syringe, and a channel near the edge thereof communicating with the reservoir, and a nozzle having an orifice in alinement with the central channel in the bottom of the socket and adapted when tightly seated in the socket, to close the channel between the socket and the reservoir.

2. In a device of the character herein described, the combination of a syringe, a reservoir and tablet-receptacle, one end of the syringe terminating in a socket adapted to communicate with the reservoir and the liquid-chamber of the syringe, in combination with a plug seated in said socket and adapted to control the means of communication between the socket and reservoir.

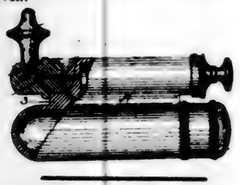

708,225. ELASTIC TIRE AND PROCESS OF MANUFACTURING SAME. FRANK E. HALL, Quincy, Mass. Filed Feb. 23, 1900. Serial No. 6,137. (No model.)

Claim.—1. The herein-described process which consists, first, in semivulcanizing the tire in a mold to give it its cross-section shape, second, in coiling said tire with a circumference less than its circumference when applied to the wheel to expand the outer periphery, and third, in fully vulcanizing said tire in its coiled position so that when applied to the wheel the outer periphery will compress.

2. The herein-described process, which consists, first, in semivulcanizing the tire in a straight mold to give it its cross-section shape, second, in coiling said tire with a circumference less than its circumference when applied to the wheel to expand the outer periphery, and third, in fully vulcanizing said tire in its coiled position so that when applied to the wheel the outer periphery will compress.

3. The herein-described process which consists, first, in semivulcanizing the tire in a mold to give it its cross-section shape with one or more continuous passages, second, in coiling said tire with a circumference less than its circumference when applied to the wheel to expand the outer periphery, and third, in fully vulcanizing said tire in its coiled position so that when applied to the wheel the outer periphery will compress.

4. The herein-described process which consists, first, in semivulcanizing the tire in a mold to give it its cross-section shape with one or more continuous passages and with a reinforced base, second, in coiling said tire with a circumference less than its circumference when applied to the wheel to expand the outer periphery, and third, in fully vulcanizing said tire in its coiled position so that when applied to the wheel the outer periphery will compress.

5. As an article of manufacture, an elastic tire provided with one or more continuous longitudinal passages and having a normal circumference less than its circumference when applied to the wheel and having an outer periphery longer than its inner periphery and provided with reinforcing material vulcanized in said passages and with yielding reinforcing material vulcanized to its base.

708,226. ADJUSTABLE SHADE-BRACKET. AUGUST HANSON, New Haven, Conn. Filed Jan. 20, 1902. Serial No. 90,500. (No model.)

Claim.—1. The combination with the recessed and slotted face-plate, of the shade-bracket having an apertured reduced end, a block arranged in the recess of the face-plate and having an extension fitting into the aperture of the reduced end of the shade-bracket, and means for connecting the bracket-plate and block as set forth.

2. The combination with the recessed and slotted face-plate of the shade-bracket having an apertured reduced end and a perforated angular flange and block arranged in the recess of the face-plate, and having an extension fitting into the apertured end of the shade-bracket, and a bolt passing through the perforated flange and entering the said block as and for the purpose described.

708,227. STEAM-TURBINE. ROBERT B. HEWSON, San Francisco, Cal. Filed Mar. 7, 1902. Serial No. 97,038. (No model.)

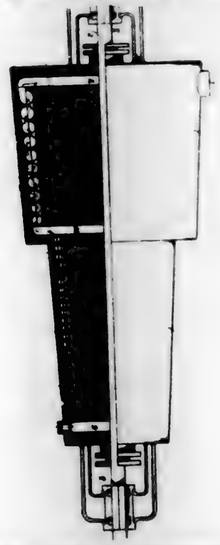

Claim.—1. The combination in a steam-turbine of a revoluble conical part having open buckets in annular successive series around its periphery, an inclosing casing within which the movable part fits and is revoluble, corresponding open buckets formed in said casing and in planes intermediate to the planes of the buckets of the cone, means for admitting an elastic medium under pressure to the smaller end of the cone, and transmitting it alternately through the buckets of the cone and those of the casing to the larger end and exhaust.

2. The combination in a steam-turbine of an approximately cylindrical or conical part, a casing within which it is journaled and revoluble, said revoluble part having open buckets arranged in annular series around its periphery and from end to end with intermediate ring or barrier surfaces, correspondingly-shaped open buckets reversed in position within the interior of the casing, intermediate between the buckets of the movable part, and also having ring or barrier stops interposed between each series of buckets.

3. The combination in a steam-turbine of a plurality of approximately cylindrical or conical parts, with offsets at the junction of each smaller and larger section, a correspondingly-shaped casing within which the first portion is turnable, open buckets formed in series around the sections and of gradually-increasing size, each series being separated from the adjacent series by rings or barriers, corresponding open buckets formed in the interior of the casing and having a reversed position from those of the revoluble part, and lying intermediate between each series of said part whereby the medium under pressure is caused to pass from end to end of the apparatus in alternate reverse curves through the stationary and movable buckets and is expanded at each successive passage.

4. The combination in a steam-turbine of a part consisting of a series of frustums of cones, each larger in diameter than the preceding ones, a casing having the same shape within which said cones are journaled and revoluble, concave-convex buckets formed in series around the cones, and of successively-increasing size from the smaller to the larger end, correspondingly-shaped buckets reversed in position within the interior of the casing, each series forming a connection between the two adjacent series of the cone, and intermediate annular separating-surfaces between each series of buckets of the cone and of the casing.

5. The combination in a steam-turbine of a series of cones, each of larger diameter than the preceding and having a common axis, a casing of same shape within which the cones are journaled and turnable, buckets formed in successive series around the cone with intermediate separating barrier-surfaces, corresponding buckets reversely formed within the casing and connecting with each adjacent series of buckets of the cone, an annular chamber with which the smaller end of the first cone connects into which the medium under pressure is admitted, a second annular chamber intermediate between the first and second cone into which the medium from the first cone is exhausted and from which it is delivered to the buckets of the second cone and an exhaust-chamber into which the medium is delivered from the second cone.

6. A steam-turbine comprising a plurality of approximately cylindrical or conical parts and correspondingly-shaped casings within which they are revoluble, buckets formed in series around the revoluble part from one end to the other, said buckets being made semicircular at the deepest end and having curved diminishing lobes forming the rear ends, said lobes having a curvature corresponding with the semicircular end of the next succeeding bucket, annular barrier-surfaces interposed between each adjacent series of buckets, correspondingly-shaped buckets formed in the interior of the casing, and in reverse position to those of the revoluble part, said buckets alternating with those of the revoluble part and forming a connection between each two adjacent series thereof, the casing-buckets having corresponding barrier-surfaces between them whereby the medium under pressure is caused to act directly and with impulsive and reactionary effect as it passes through the buckets from one end to the other.

7. A steam-turbine consisting of an approximately cylindrical or conical part and a correspondingly-shaped casing within which the first portion is journaled to fit and revolve, both of said parts having reversely-disposed open buckets (interior to) the fitted contiguous surfaces with intermediate barriers, and means admitting an elastic medium under pressure to pass alternately through said buckets.

708,228. BACK-PEDALING BRAKE. ERNST G. HOFFMANN, Chelmsford, England. Filed May 10, 1900. Serial No. 16,147. (No model.)

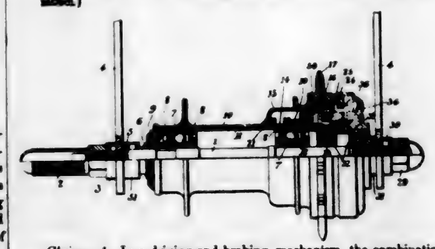

Claim.—1. In a driving and braking mechanism, the combination with a hub having a flange on same, and a spindle on which the hub can rotate, of a free driving member, means carried by the hub for obtaining a lateral motion of such member to bring it into contact with the flange on the hub for driving purposes and means carried by the spindle for obtaining a similar lateral motion of such member to bring it also into contact with the flange on the hub for braking purposes.

2. In a driving and braking mechanism, a hub, a spindle on which same can rotate, a free driving member at the extremity of said hub having interior cam-surfaces, a projection carried by the hub having a conical face, a cage inside such free driving member and movable over such conical face, a flange on the hub coöperating with the free driving member and movable parts in such cage coöperating with the conical face and the cam-surfaces of the free driving member whereby a forward movement imparted to the free driving member will produce a movement of the cage and impart a lateral movement to said free driving member to bring it into frictional contact with the flange on the hub.

3. In a driving and braking mechanism, a hub, a spindle on which same can rotate, an abutment carried by the spindle having cam-surfaces movable parts on such cam-surfaces, a free driving member between the hub and the abutment having interior cam-surfaces, a flange on the hub coöperating with the free driving member, a projection carried by the hub having a conical face, a cage inside such free driving member and movable over such conical face, movable parts in such cage, coöperating with the conical face and the cam-surfaces of the free driving member whereby a forward movement imparted to the free driving member will produce a spiral movement of the cage and impart a lateral movement to said free driving member to bring it into frictional contact with the flange on the hub for driving while a backward movement of the free driving member causes the movable parts on the abutment to rise up the cam-

surfaces and also force the free driving member frictionally against the flange on the hub for braking.

4. In a driving and braking mechanism, the combination with the hub of a free driving member, a series of cam-surfaces on the interior of same, a conical face carried by the hub, and rolling parts between the conical face and the cam-surfaces whereby a forward movement given to the free driving member will give the rolling parts a tendency to travel up the conical face the movement of the free driving member also causing them to roll on the cam-surfaces of such member the combined movement producing a spiral movement of the free driving member in the direction of the hub with which it then engages.

5. In a driving and braking mechanism, a hub, a flange on same, a spindle on which same can rotate, a disk-shaped abutment on the spindle having cam-surfaces and rolling parts thereon, a free driving member between the hub and the abutment having a series of cam-surfaces in the interior of same, a projection carried by the hub having a conical face, and rolling parts between such conical face and the cam-surfaces of the free driving member whereby a forward movement imparted to the free driving member will also act to produce in it a spiral movement to bring it into frictional contact with the flange on the hub for driving, a backward movement of the free driving member causing the rolling parts on the abutment to rise up the cam-surfaces thereof and also force the free driving member frictionally against the flange on the hub for braking.

6. In a driving and braking mechanism, and in combination, a hub having an expanded extension 15, a projection 14, a conical ring carried thereby, a spindle on which such hub can rotate, a disk-shaped abutment on the spindle having a series of cam-surfaces thereon, a rolling part for each cam-surface, a free driving member between the abutment and the hub having a series of cam-surfaces in the interior of same, balls between the cam-surfaces of such free member and the conical ring, a ball-bearing for such free member, a conical sleeve 19 adapted to slide on the projection 14 and forming part of such bearing, and a spring for pressing such sleeve 19 forwardly so that adjustment of the bearings is constantly maintained.

7. In a driving and braking mechanism, the combination with a hub, a flange on same, a spindle on which said hub can rotate, an abutment on the spindle having cam-surfaces and rolling parts thereon and a free driving member between the hub and its abutment having cam-surfaces inside same, of a projection 14 on said hub, having a conical surface 13, a loose cage between such surface and the free driving member, balls carried by such cage adapted to contact with the conical surface 13 and the cam-surfaces of the free driving member and a coil-spring engaging with the free member and with the cage whereby the latter will be kept in a position so that the balls will be forced into the narrowest point between the cams on the free driving member and the conical surface so that the free driving member is always ready for forward driving.

708,229. AERATING-AGITATOR. BENJAMIN D. HOOPER, Jamaica, N. Y. Filed Oct. 8, 1901. Serial No. 78,018. (No model.)

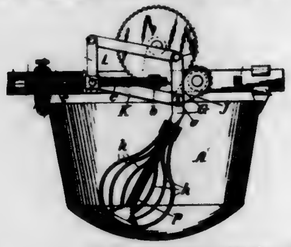

Claim.—1. In an aerating-agitator, the combination with the agitating member thereof, and means for bodily gyrating the same in a vertical, or nearly so, plane, of means for forcing air, or any other gas, into the mass to be agitated, during the motion of the agitated member, substantially as, and for the purposes, described.

2. In an aerating-agitator, the combination with a supporting-frame, of a wheel mounted thereon, a framework of arms pivoted together and forming a parallelogram, means for imparting motion from said wheel to the parallelogram, whereby the angles of said arms with respect to each other are altered, a pump, means for imparting motion from said framework to the pump, an agitating member carried by said framework, and means for supplying pressure from said pump to said agitating member substantially as described.

3. In an aerating-agitator the combination with the air-pump cylinder of a hollow piston and piston-rod, a hollow connecting-rod, a pin pivotally connecting the said rods provided with two annular grooves and a connecting-groove, a crank, a crank-pin provided with two annular grooves and a connecting-groove, a hollow agitator-arm, a hollow air-nozzle, and means for imparting motion to the said crank, substantially as described.

4. In an aerating-agitator, the combination with any suitable support, of a framework forming a parallelogram and having the contacting ends of all its arms pivoted together, said framework being mounted upon said support, a pump connected with said framework, means for imparting motion to said framework, whereby the angles of said arms are altered with respect to each other for operating said pump, an agitator member carried by one of the arms of said framework, and means for communicating pressure from said pump to said agitator member, substantially as described.

5. In a mechanism of the class described, the combination with a suitable support, of a crank pivotally mounted thereon, means for rotating said crank, an agitating member pivoted to said crank, means for guiding said member in its movement while following the crank, whereby said agitating member will be directed in a bodily, vertically rotatory or gyrating movement, and means for supplying atmosphere to the lower end of said member during operation thereof, substantially as described.

6. An aerating-agitator, comprising a suitable supporting-frame, a pump mounted thereon, a pinion carried by said frame, a crank operated thereby, an agitator member pivotally secured to said crank, means connecting said pump with said crank, means for rotating said pinion, and means of communication from said pump with said agitator member, whereby rotation of said pinion will gyrate said agitator member and supply gas under pressure thereto, substantially as described

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708,230. BOOK FOR HOLDING AND FILING SALES-SLIPS, &c. JOHN F. HUBER, Rochester, N. Y., assignor to Lewis T. Huber, Lockport, N. Y. Filed June 24, 1901. Serial No. 65,765. (No model.)

Claim.—1. The combination with a plurality of leaves hinged together at one edge to form a book, of a plurality of flat spring-clips secured on each leaf inside of the free edges thereof and each adapted to hold bills, slips or cards in contact with the latter.

2. The combination of a plurality of leaves, hinged together at one edge to form a book, each leaf having a plurality of holding-clips on each side thereof, the clips on opposite sides of the same leaf being composed of a single piece of spring material extending through the leaf and having portions pressing toward the sides of the leaf.

3. The combination with the apertured leaf or support of sheet material, of a duplex clip for holding slips on both sides of the sheet embodying a piece of spring material passing through the aperture in the sheet and having its free end portions on opposite sides thereof and movable toward and from the sheet.

4. The combination with the leaf or support of sheet material, of the clips thereon composed of the single piece of spring material extending through the support and having the annular spring-arms on opposite sides thereof.

5. An article of manufacture consisting of a book for holding sales-slips, &c., embodying the covers, the rods pivotally connecting the inner edges of the covers, the leaves arranged between the covers having flexible hinge members thereon engaging the rods, and holding-clips on the leaves consisting of the spring-wire extending through the leaves and having a coil on each side thereof.

6. In a book for holding sales-slips, &c., the combination with the covers having the binding-strips at the edges, and the continuous rod extending longitudinally in the strips and between the ends of the covers, of the rods having the eyes arranged intermediate said ends and engaging the binding-strip, and the leaves having the flexible ears thereon engaging the rods and arranged between the covers.

708,231. VEHICLE. CHARLES W. HUFF, West New Brighton, N. Y. Filed June 14, 1902. Serial No. 111,627. (No model.)

Claim.—1. A vehicle comprising a middle and a rear truck, cross connections between said trucks, a forward steering-truck, and a rigid frame or reach connecting said steering-truck with the middle truck, substantially as described.

2. A vehicle comprising a middle and a rear truck, cross connections between said trucks, a forward steering truck, a rigid frame or reach connecting said steering-truck with the middle truck, and a motor applied to the wheels of one of said trucks, substantially as described.

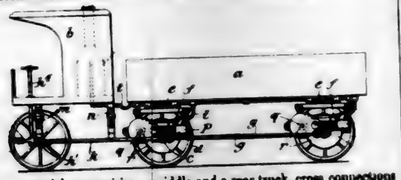

3. A vehicle comprising a middle and a rear truck, cross connections between said trucks, a forward steering-truck, a rigid frame or reach connecting said steering-truck with the middle truck, and a motor mounted on the axle of one of said trucks and applied to the wheels of said truck, substantially as described.

4. A vehicle comprising a middle and a rear truck, cross connections between said trucks, a body mounted on said trucks, a forward steering-truck, a rigid frame or reach connecting said steering-truck with the middle truck, and an independent body mounted on the steering-truck and reach, substantially as described.

5. A vehicle comprising a middle and a rear truck, cross connections between said trucks, a body mounted on said trucks, a forward steering-truck, a rigid frame or reach connecting said steering-truck with the middle truck, an independent body mounted on the steering-truck and reach, a motor applied to the wheels of the middle or rear truck, and a source of power mounted on said independent body, substantially as described.

708,232. SPROCKET-WHEEL. DANIEL C. JACKLING, Republic, Wash. Filed Aug. 3, 1901. Serial No. 70,642. (No model.)

Claim.—In a sprocket-wheel of the class described, the combination of a main disk having a plurality of radial grooves in its inner side and a projecting hub, a second disk rotatably mounted upon such hub adjacent to the main disk and provided with a plurality of tangential cam-grooves upon its inner side extending to the periphery of such disk, a sprocket-tooth slidably mounted in each of the radial grooves of the main disk and having a projecting shoulder on the inner end thereof extending into a tangential groove of the second disk, each of such teeth being provided with projecting shoulders near its outer end for forming a chain-supporting base, and bolt-and-nut mechanism for holding the disks and thereby the sprocket-teeth in position, substantially as described

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708,233. HOOP-LUG. PETER C. JUBA, Jr., San Francisco, Cal. Filed Mar. 24, 1902. Serial No. 99,834. (No model.)

Claim.—In a hoop-lug, a block having a longitudinal slot for the reception of the hoop-band, said slot having its upper wall concaved and approaching the lower wall abruptly at either end of the block, a longitudinal central opening for the bolt, partitions 11 on either side of the bolt, said partitions dependent from the upper wall of the band-slot and balls having a limited reciprocal movement in the space formed between said partitions and the side walls of the slot, said ball-spaces extending substantially the entire length of the block.

708,234. PAPER BAG. HUGH LAIRD, Turriston, Scotland. Filed Dec. 18, 1901. Serial No. 86,371. (No model.)

Claim.—1. A paper bag made with bellows-like sides and folded bottom, said bag being provided with two series of holes near the top, the holes, four in each series, passing through the front and back of the bag and through the folded side portions thereof, the exterior holes being protected by applied washers as explained, and a draw-string serving to close the bag when lifted and to operate as a handle, the parts being arranged and combined substantially as shown and described.

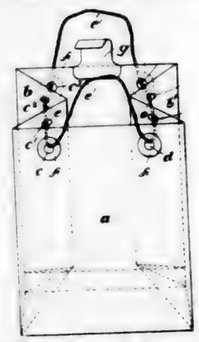

2. The herein-described paper bag, the same being made with bellows-like sides and folded bottom, provided with two series of holes near the top, the holes, four in each series, passing through the front and back of the bag and through the folded side portions thereof, the exterior holes being protected by applied washers as explained, a draw-string serving to close the bag when lifted and to operate as a handle, and a gummed tongue on the top of one side, substantially as herein set forth.

708,235. GUN-CARRIAGE. OTTO LAUBER, Essen-Altendorf, Germany, assignor to Fried. Krupp, Essen, Germany. Filed Sept. 21, 1901. Serial No. 76,013. (No model.)

Claim.—In a recoil apparatus for field-gun carriages, the combination with a brake-spur, a thrust-bolt engaging at one end with said spur and having a solid angular shank and a compression-box comprising two bearings or brasses provided with angular grooves, one of said brasses being movable, said grooves embracing the angular faces of the thrust-bolt, whereby, without intervention of other mediums, pressure on one of said brasses produces friction between said grooves and the angular faces of said shank.

708,236. GAS-ENGINE. WILLIAM A. LEONARD, Wareham, Mass. Filed July 19, 1901. Serial No. 68,870. (No model.)

Claim.—1. In a gas-engine, a power cylinder, a pump-cylinder, a single cylinder-head for both said cylinders, an inlet-port leading through the cylinder-head and opening into the end of the pump-cylinder, an exhaust-port for the power-cylinder also extending through the cylinder-

head, an ignition-chamber in said cylinder-head and having communication with each cylinder, a puppet-valve controlling the inlet-port to the pump-cylinder, a second puppet-valve controlling the exhaust from the power-cylinder, a third puppet-valve controlling the communication between the pump-cylinder and the ignition-chamber, and a fourth puppet-valve controlling the inlet between the ignition-chamber and power-cylinder, all of said valves being carried by and operating in the cylinder-head and each of said valves being independent from the others and when closed having its face flush with and constituting part of the end of the cylinder, positive valve-actuating mechanism for the valve controlling the inlet to the power-cylinder and that controlling the exhaust therefrom, said mechanism operating to close the inlet-valve at the finish of the outward stroke of the power-piston, and also operating to close the valve in the exhaust-port before the power-piston reaches the end of its inward stroke, whereby the gases remaining in the power-cylinder are compressed to substantially the same pressure as the charge of air and gas in the ignition-chamber.

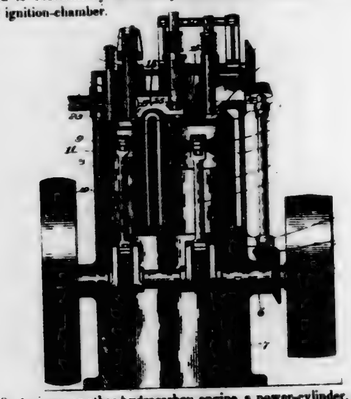

2. In a gas or other hydrocarbon engine, a power-cylinder, a piston therein, an ignition-chamber separate from, but having a valved connection with the cylinder, means to admit a charge of gas to said ignition-chamber and means to explode the same at each outward stroke of the piston, and means to admit a scavenging charge of fresh air directly to said ignition-chamber during the latter part of each outward stroke.

3. In a gas or other hydrocarbon engine, a power-cylinder, a piston therein, an ignition-chamber connected to said cylinder but separate therefrom, a valve controlling the communication between the ignition-chamber and cylinder, means to admit a charge of gas to said chamber at each inward stroke of the engine, igniting devices, and means to admit a scavenging charge of fresh air directly to said ignition-chamber during the latter part of each outward stroke.

4. In a gas-engine, a power-cylinder, an ignition-chamber separate from said cylinder and connected thereto, an inlet-valve between said cylinder and chamber, an automatic scavenging-valve to admit fresh air directly to said chamber, the relation between the parts being such that during the latter part of each outward stroke a partial vacuum is created in the power-cylinder and fresh air is drawn directly into the ignition-chamber through the scavenging-valve.

5. In a two-cycle gas-engine, a power-cylinder, a piston therein, an ignition-chamber connected to the cylinder, means to admit a charge of gas to said chamber, means to ignite the same slightly before, or during, the early part of each outward stroke of the piston, combined with a spring-controlled scavenging-valve leading to said chamber and adapted to admit fresh air directly into the latter, the piston operating at the end of each outward stroke to create a partial vacuum in the cylinder and draw fresh air directly into the ignition-chamber through the scavenging-valve.

6. In a two-cycle gas-engine, a power-cylinder, a piston therein, a pump-cylinder and its coöperating piston, a chamber between said cylinders, a valve between each cylinder and the chamber, and a scavenging-valve to admit fresh air to said chamber, the parts being so disposed that the pump-piston operates to force a charge of compressed gas into the chamber where it is ignited, the ignited gas operating on the power-piston to give an impulse to the same, and the said piston operating to create a partial vacuum in the cylinder and draw a scavenging charge of fresh air into the chamber through the scavenging-valve.

7. In a gas or other engine, a power-cylinder, a piston therein, a pump-cylinder and piston, a chamber between said cylinders, an automatic valve between the chamber and pump-cylinder, a positively-operated inlet-valve between the chamber and the power-cylinder, and an automatic scavenging-valve to admit fresh air directly to said chamber, the parts being so disposed that on each inward stroke of the pump-piston a charge of gas is compressed in the chamber, and as the power-piston reaches the end of its inward stroke the inlet-valve is opened and the charge ignited, the power-piston during the latter part of its stroke operating to create a partial vacuum in the power-cylinder, and draw a scavenging charge of fresh air directly into the chamber.

8. In a gas-engine, a power-cylinder, a piston therein, a pump-cylinder and its piston, a chamber between said cylinders, an automatic valve between the chamber and the pump cylinder, an inlet-valve between the chamber and the power-cylinder, and an exhaust-valve, said valves being independent from each other, valve-actuating mechanism operating to close the exhaust-valve before the power piston reaches the end of its inward stroke, whereby the said piston is cushioned, and to open the inlet-valve and admit the compressed gases in the chamber into the power-cylinder, said inlet-valve remaining open until the piston reaches the end of its outward stroke, an automatic valve to admit fresh air directly to the chamber, the piston during the latter part of its stroke creating a partial vacuum in the power-cylinder and drawing a scavenging charge of air into the chamber, said scavenging charge remaining in the chamber during the exhaust.

9. In a gas-engine, a power-cylinder, a piston therein, an ignition-chamber separate from said cylinder but connected thereto, an inlet-valve between the chamber and said cylinder, valve-operating mechanism, said cylinder having an exhaust-valve, means to compress a charge of explosive gas in said chamber and ignite the same, said explosive gas impelling the piston forward, and means whereby the piston during the latter part of its outward stroke draws a scavenging charge of fresh air into said chamber, said inlet-valve being closed as the piston begins its inward or return stroke, whereby the burned gases are expelled through the exhaust-valve and the scavenging charge of fresh air remains in the cylinder.

10. In a two-cycle gas-engine, a power-cylinder, a piston therein, an ignition-chamber connected to the cylinder, an inlet-valve between the chamber and cylinder, valve-operating mechanism, an exhaust-valve leading from the said cylinder, means to admit a charge of gas to said chamber, means to ignite the same slightly before or during the early part of each outward stroke of the piston, combined with a spring-controlled scavenging-valve leading to said chamber and operating to admit fresh air directly into the latter, the piston operating at the latter part of its outward stroke to create a partial vacuum in the cylinder and draw fresh air directly into the ignition-chamber through the scavenging-valve, and said inlet-valve closing as the piston begins its return stroke, whereby the burned gases are expelled through the exhaust-valve while a scavenging charge of air remains in the said chamber.

11. In a two-cycle gas-engine, a power-cylinder, a piston therein, a pump-cylinder and its coöperating piston, a chamber between said cylinders, a valve between the pump-cylinder and the chamber, and an inlet-valve between the power-cylinder and the chamber, an exhaust-valve leading from the said power-cylinder, a scavenging-valve to admit fresh air directly to said chamber, and valve-operating mechanism, the parts being so disposed that the pump-piston operates to force a charge of compressed gas into the chamber where it is ignited, the ignited gas operating on the power-piston to give an impulse to the same, the said power-piston operating during the latter portion of its outward stroke to create a partial vacuum in the said cylinder and draw a scavenging charge of fresh air into the chamber through the scavenging-valve, and the inlet-valve closes when the power-piston has reached the limit of its outward stroke, whereby the burned gases are expelled through the exhaust-valve, while the scavenging charge of fresh air remains in the said chamber.

12. In a gas or other engine, a power-cylinder, a piston therein, a pump-cylinder and piston, a chamber between said cylinders, an automatic valve between the chamber and pump-cylinder, a positively-operated inlet-valve between the chamber and the power-cylinder, an exhaust-valve for the power-cylinder, valve-operating mechanism for the inlet and exhaust valves, and an automatic scavenging-valve to admit fresh air directly to said chamber, the parts being so disposed that as the power-piston reaches the end of its inward stroke the inlet-valve is opened and the charge ignited, and as the power-piston reaches the end of its outward stroke the said inlet-valve is closed, the power-piston during the latter part of its outward stroke operating to create a partial vacuum in the power-cylinder and draw a scavenging charge of fresh air directly into the chamber, and during its return stroke operating to expel the burned gases from the cylinder, the scavenging charge of air remaining in the chamber.

708,237. PYROTECHNIC DEVICE. THOMAS LLOYD, New York, N. Y. Filed May 31, 1902. Serial No. 109,714. (No model.)

Claim.—1. A pyrotechnic device comprising a body having a base and an upright portion; said upright portion being made to resemble a volcano, and being provided with a receptacle containing a suitable pyrotechnic compound, and one or more strips of combustible material made to resemble a building or buildings, arranged on and rising from the base of the body.

2. A pyrotechnic device comprising a body having a base, and an upright portion flexibly joined to and adapted to fold upon the base; said upright portion being made to resemble a volcano, and being provided with a receptacle containing a suitable pyrotechnic compound, and one or more strips of combustible material made to resemble a building or buildings; said strip or strips being flexibly joined to and rising from the base of the body, and being adapted, when the upright portion of the body is folded upon the base, to fold between said upright portion and base.

3. The herein-described pyrotechnic device comprising the body formed of a single piece of pasteboard, creased longitudinally at *c*, and having a base and an upright portion separated by said crease; the said upright portion being made to resemble a volcano, a receptacle arranged on the rear side of the upright portion of the body and containing a suitable pyrotechnic compound, and strips flexibly joined to and rising from the base of the body; the said strips being a paper chemically treated to render them highly combustible, and being made to resemble the buildings of a city or village.

4. The herein-described pyrotechnic device comprising the body formed of a single piece of pasteboard, creased longitudinally at *c*, and having a base and an upright portion separated by said crease; the said upright portion being made to resemble a volcano, a receptacle arranged in the rear side of the upright portion of the body and containing a suitable pyrotechnic compound, a stay of pasteboard attached to the back of the upright portion of the body and having the extended end *e*, and strips flexibly joined to and rising from the base of the body; the said strips being of paper chemically treated to render them highly combustible and being made to resemble the buildings of a city or village.

708,238. DEVICE FOR HOLDING DOORS. LEVI H. LUCABAUGH, Barbers Mill, Ind. Filed June 10, 1902. Serial No. 111,021. (No model.)

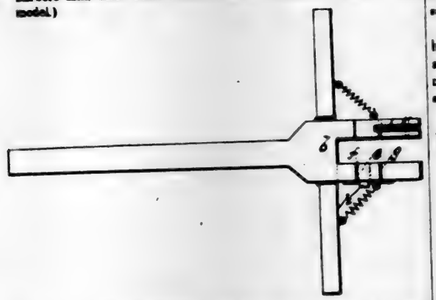

Claim.—1. The combination with the forked base-bar and grooved standard of the pressure-bar having the guide-pins, the inclined slots to receive said pins and the handle for operating said bar, substantially as described.

2. In combination with the grooved and slotted standard, of the pressure-bar and handle therefor, the slotted floor-hook pivoted in the kerf in the forked end of the base, the hinged angular side wings or braces and hooks for holding said wings in position while the device is in operation, all substantially as described.

708,239. FOLDING MIRROR-SUPPORT. BERNARD C. LYON, New London, Conn. Filed May 4, 1901. Serial No. 58,702. (No model.)

Claim.—1. A mirror-holder comprising a main arm, a link attached to one end of said arm, a tubular member attached to said link, said tubular member being adapted to slip on over the tip of a gas-burner, a blade projecting from said tubular member downward at an angle thereto, and means attached to the other end of said main arm for holding a mirror at various angles.

2. A mirror-holder comprising a series of hinged arms vertically adjustable, means consisting of hooks for holding said hinged arms at operative positions, a tubular device attached at one end of one of said arms adapted to be removably secured to a tubular support, and a frame attached to one of said arms for holding a mirror, said frame being composed of extensible loops with means for adjusting the same.

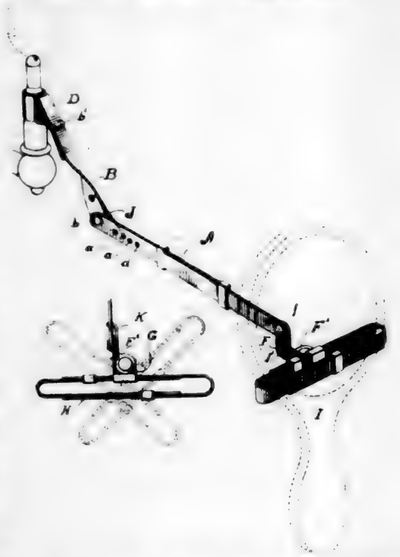

3. A mirror-holder comprising a main arm A, a link B hinged to said arm, a clip D hinged to said link, a tubular support E adapted to be secured to said clip, said clip and tubular support being adapted to be attached to a window and to a gas-burner, respectively, and means attached to said arm A for holding a mirror at various angles, said means comprising an extensible frame hinged to said main arm and adjustable with respect thereto.

4. A mirror-holder comprising arm A, link B hinged thereto, clip D hinged to said link B, a blade D' secured to said clip D and projecting at an angle therefrom, and means for attaching said clip to a supporting member, and means for holding a mirror, said means being hinged to said arm A.

708,240. APPARATUS FOR BURNING LIME. GARWIN A. MACK, Menominee Falls, Wis. Filed Feb. 28, 1902. Serial No. 96,074. (No model.)

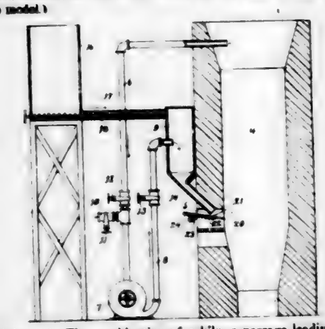

Claim.—1. The combination of a kiln, a passage leading from the kiln back to the fire, means within the passage for drawing the hot air and gases from the kiln into said passage and back to the fire, a mixing-chamber to which the passage leads, said mixing-chamber being in communication with the fire-chamber of the kiln, a valve in the passage between the mixing-chamber and the drawing or suction means, a valve in said passage in advance of said drawing or suction means and communicating with the in advance of the drawing or suction means and communicating with the

passage, and means for feeding a fuel to the mixing-chamber, said fuel and the hot air and gases being thereby mixed and commingled in the mixing-chamber, before being finally conducted into the fire.

2. The combination of a kiln, a plate in the fire-chamber thereof, means for adjusting said plate inwardly and outwardly, and means for discharging a fuel onto the plate to thereby give said fuel an initial heating.

3. The combination of a kiln, a plate in the fire-chamber thereof, a passage leading from the kiln at a point above the fire-chamber and extending back to said fire-chamber, means for drawing hot air and gases through said passage and back to the fire-chamber, and means for feeding fuel into said passage, and for discharging said fuel, and the hot air and gases mixed therewith onto the plate.

4. The combination of a kiln, a passage leading from the kiln back to the fire, means for drawing the hot air and gases from the kiln through said passage and back to the fire, a receptacle, a bin provided with an opening leading to the receptacle, a gate for said opening, means for agitating said gate, a conveyer adapted to convey the fuel discharged into the receptacle, and a conduit leading from the receptacle to the passage, the said conveyer adapted to conduct the fuel to the conduit, and the conduit to discharge said fuel into the passage, whereby the fuel is mixed with the hot air and gases prior to being discharged into the fire.

708,241. TILE-PRESS. WILLIAM P. MESSER, Newark, N. J. Filed Aug. 3, 1901. Serial No. 70,747. (No model.)

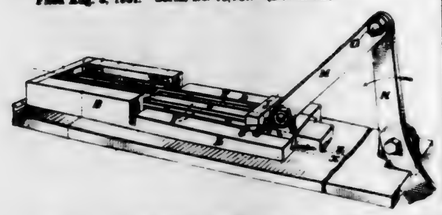

Claim.—1. In a tile-press, the combination, with a matrix provided with a removable side, of an inclined or beveled offset on the inner side of said matrix, and entirely surrounding the same in the angle between the base and sides of the matrix, substantially as described.

2. In a tile-press, the combination, with a stationary bed-plate and fixed matrix sides, provided interiorly with downwardly-beveled offsets, in the angle between the sides and bed-plate, of a laterally-removable matrix side, also provided with a downwardly-beveled offset on its inner face, adjacent to the bed-plate, substantially as described.

3. In a tile-press, the combination, with a stationary matrix-bed, of tapered and undercut flanges upon said bed, fixed matrix sides provided interiorly with downwardly-beveled offsets, and a laterally-removable matrix side, also provided with a downwardly-beveled offset on its inner face, substantially as described.

4. In a tile-press, the combination, with a stationary matrix-bed, of tapered and undercut flanges upon said bed, fixed matrix sides, provided interiorly with downwardly-beveled offsets, a laterally-removable matrix side, also provided with a downwardly-beveled offset on its inner face, and carrying fingers attached to said removable side and sliding between said undercut flanges upon said matrix-bed, substantially as described.

5. In a tile-press, the combination, with a stationary matrix-bed, of tapered and undercut flanges upon said bed, fixed matrix sides, provided interiorly with downwardly-beveled offsets, a laterally-removable matrix side, also provided with a downwardly-beveled offset on its inner face, and carrying fingers attached to said removable side and sliding between said undercut flanges upon said matrix-bed, and passing out through exteriorly-flaring holes in the rear side of said matrix, substantially as described.

6. In a tile-press, the combination, with a stationary matrix-bed, of tapered and undercut flanges upon said bed, fixed matrix sides, provided interiorly with downwardly-beveled offsets, a laterally-removable matrix side also provided with a downwardly-beveled offset on its inner face, and with outwardly-flaring holes to receive the ends of said undercut flanges, and carrying fingers attached to said removable side and sliding between said undercut flanges upon said matrix-bed, substantially as described.

7. In a tile-press, the combination, with a stationary matrix-bed, of tapered and undercut flanges upon said bed, fixed matrix sides provided interiorly with downwardly-beveled offsets, and a laterally-removable matrix side, also provided with a downwardly-beveled offset on its inner face, and with ends beveled to correspond with the said beveled offsets on the fixed sides of the matrix, substantially as described.

8. In a tile-press, the combination, with a stationary matrix-bed, of tapered and undercut flanges upon said bed, fixed matrix sides, provided interiorly with downwardly-beveled offsets, a laterally-removable matrix side, also provided with a downwardly-beveled offset on its inner face, and with outwardly-flaring holes to receive the ends of said undercut flanges, and carrying fingers attached to said removable side and sliding between said undercut flanges upon said matrix-bed, and with ends beveled to correspond with the said beveled offsets on the fixed sides of the matrix, substantially as described.

9. In a tile-press, the combination, in a matrix, having laterally-removable side and bottom members, of outwardly-flaring openings in the matrix sides for the relatively moving portions to pass through, substantially as described.

10. In a tile-press, the combination, in a matrix having laterally-removable side and bottom members, of outwardly-flaring openings in the matrix sides provided with closely-fitting inner edges, for the relatively moving inner portions to pass through, substantially as described.

11. In a tile-press, the combination, in a matrix, having laterally-removable side and bottom members of cutting edges upon the meeting portions of the relatively moving parts, substantially as described.

12. In a tile-press, the combination, with a matrix having relatively movable portions, of an opening through the base of the matrix beneath the relatively movable portions, substantially as described.

13. In a tile-press, the combination, with a matrix, having relatively movable portions, with cutting edges thereupon, of an opening through the base of said matrix beneath the point at which the cutting edges meet, substantially as described.

708,242. EXERCISING DEVICE. WILLIAM M. MOSELEY, Elgin, Ill. Filed Apr. 16, 1902. Serial No. 103,079. (No model.)

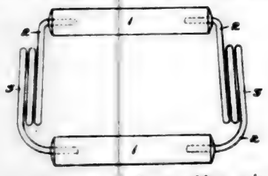

Claim.—1. An exercising device comprising a pair of handles and a pair of springs, each of which springs is coiled near its middle and fastened at its ends to the ends of the handles and with the coils of the springs each arranged at one side of the path of the handles.

2. The exercising device above described consisting of the handles 1, 1, the levers 2, 2, and the coil-spring 3 all organized as illustrated to cause movement of the handles 1, 1, toward each other so increase the effective length of the levers 2, 2, and to cause increasing resistance of coil-spring 3 to be balanced by the increasing leverage of levers 2, 2.

708,243. WINDING-KEY HEAD. THOMAS W. R. MCCABE, Winsted, Conn. Filed May 1, 1901. Serial No. 58,966. (No model.)

Claim.—The cylindrical ring-head reduced in diameter at one end one or more grooves extending the full length of the larger diameter, and mortises in said grooves, in combination with the loop having its ends entered in said mortises, all substantially as described.

708,244. FARM-GATE. LEWIS K. MCCLELLAN, Cedar Rapids, Nebr. Filed Dec. 12, 1901. Serial No. 85,567. (No model.)

Claim.—1. The combination with a supporting-post, of a tilting lever secured to said supporting-post, a weight secured to one end of said lever, a shifting hanger working upon said lever, a fence-gate supported by said hanger, a hollow post, a housing secured to said post provided with suitable openings, a lifting-bar extending through said hollow post through said housing-openings and pivotally secured to the weighted end of said lever, a lifting-link adapted to engage said lifting-bar, masts positioned upon opposite sides adjacent said hollow posts, a lever pivotally secured to each mast, a detent within said housing adapted to engage said lifting-bar and operating-strands secured to said levers and to said detent, and strands connecting said lifting-link to each of said levers and arranged substantially as and for the purpose set forth.

2. The combination with a supporting-post, of a tilting lever secured to said supporting-post, a shifting hanger working upon said lever, a fence-gate supported by said hanger, a housing provided with suitable openings, a lifting-bar extending through said housing-openings and pivotally secured to one end of aforesaid lever, a lifting-link adapted to engage aforesaid lifting-bar, masts positioned adjacent said housing, a lever pivotally secured to each mast, a detent within said housing adapted to engage said lifting-bar, operating-strands secured to said last-mentioned levers and to said detent, and strands connecting said lifting-link to each of said last-mentioned levers all arranged substantially as and for the purpose set forth.

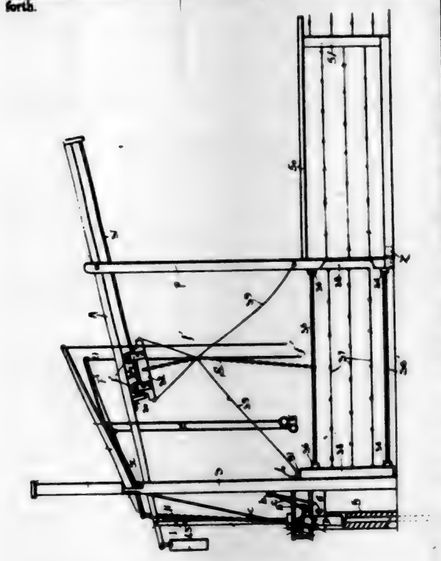

708,245. TARGET APPARATUS. JOHN L. MCCULLOUGH, Brooklyn, N. Y., assignor to Automatic Target Machine Company, a Corporation of New York. Filed Apr. 30, 1900. Renewed Dec. 31, 1901. Serial No. 87,978. (No model.)

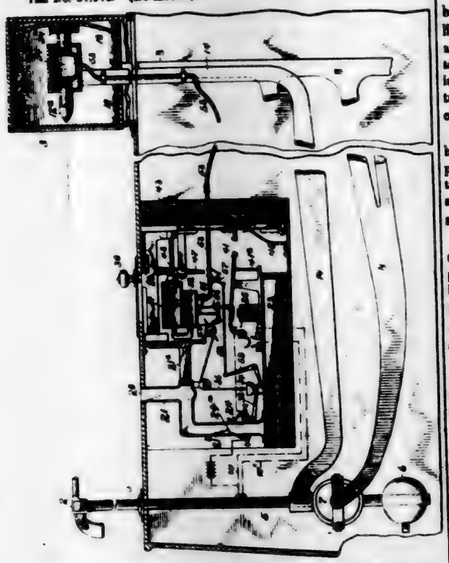

Claim.—1. In a target apparatus, the combination with a penetrable target, a pistol or the like, and a universally-mounted support for the pistol, of an indicator back of the target and connected with the pistol-support, means for operating said indicator to cause it to protrude through the target, and means, controlled by the trigger of the pistol, for setting in operation the said indicator.

2. In a target apparatus, the combination with a penetrable target, a pistol or the like, and a universally-mounted support for the pistol, of an indicator back of the target and connected with the pistol-support, means for operating said indicator to cause it to protrude through the target, an indicator-lock, means for operating said lock and means controlled by the trigger of the pistol for setting in operation the said indicator and lock.

3. In a target apparatus, the combination with a penetrable target, a pistol or the like, and a universally-mounted support for the pistol, of an indicator back of the target and connected with the pistol-support, means for operating said indicator to cause it to protrude through the target, and electrical means, controlled by the trigger of the pistol, for setting in operation the said indicator.

4. In a target apparatus, the combination with a penetrable target, a pistol or the like, and a universally-mounted support for the pistol, of an indicator back of the target and connected with the pistol-support, means for operating said indicator to cause it to protrude through the target, an indicator-lock, means for operating said lock, and electrical means, controlled by the trigger of the pistol, for setting in operation the said indicator and lock.

5. In a target apparatus, the combination with a target, a pistol or the like, and a universally-mounted support for the pistol, of an electrically-operable indicator back of the target and connected with the pistol-support, an indicator-lock, means for actuating said indicator and lock and electrical means, controlled by the trigger of the pistol, for setting in operation simultaneously the said indicator and lock operating mechanisms.

6. In a target apparatus, the combination with a casing supporting the mechanism, a target, a target-box, a pistol mounted on a support on the casing, the said support, universally mounted in the casing, an indicator behind the target and carried by the pistol-support, and means for driving the indicator through the target, of electrical means, controlled by the trigger of the pistol, for setting in operation said indicator-actuating means.

7. In a target apparatus, the combination with a casing supporting the mechanism, a target, a target-box, a pistol mounted on a support on the casing, the said support, universally mounted in the casing, an indicator behind the target and carried by the pistol-support, means for driving the indicator through the target, an indicator-lock, means for operating said lock, and electrical means controlled by the trigger of the pistol for setting in operation said indicator and lock actuating means.

8. In a target apparatus, the combination with a target, a counterbalanced main frame pivotally suspended at the target, a pistol or the like on a support counterbalanced and jointed universally in said frame, and the said support, of an indicator at the target connected with the pistol-support and adapted to move about the target as the pistol is moved in aiming, means for operating said indicator, and electrical means, controlled by the trigger of the pistol for setting in operation the said indicator-actuating mechanism.

9. In a target apparatus, the combination with the casing, a target-box mounted thereon, a target, and a counterbalanced main frame 8, suspended at the target, of a counterweighted support or stem 5, for the pistol, mounted universally in the frame 8, the arm 14 carried by the stem 5 and extending up into the target-box, an indicator carried by said arm, and a pistol carried by the said stem 5.

10. In a target apparatus, the combination with a target, a pistol, an electric circuit adapted to be completed by actuating the trigger of the pistol, and a magnet 25 in the said circuit, of the sounding device, comprising a box 43, a hinged flap 44, and its spring 46, the armature-lever of the magnet 25, provided with a hook 50, the hook 49 on the flap 44, adapted to engage the hook 50, and means for drawing back said flap, substantially as set forth.

11. In a target apparatus, the combination with a target adapted to be penetrated without rupture, of a pointed indicator adapted to be protruded through said target, a simulated firearm, and means, controlled by the firing of said firearm, for operating said indicator.

12. In a target apparatus, the combination with a penetrable target, and a universally-mounted pistol capable of being aimed at the target, of a carrier connected with the pistol-mounting and situated back of the target, a solenoid-coil mounted on said carrier, the pointed core 12 of said solenoid serving as an indicator for piercing the target, means for retracting said indicator, and an electric circuit including said solenoid-coil and a generator and adapted to be completed through pressure on the trigger of the pistol, substantially as set forth.

13. In a target apparatus, the combination with a penetrable target, and a universally-mounted pistol capable of being aimed at the target, of a carrier connected with the pistol-mounting and situated back of the target, the solenoid-coil fixed in said carrier, the pointed indicator, 12,

forming the movable core for the solenoid, means for retracting said core the locking-electromagnet, the plate 18, and an electric circuit including the coils of the solenoid and the locking-magnet and adapted to be completed through pressure on the trigger of the pistol, substantially as set forth.

14. In a target apparatus, the combination with a target, a universally-mounted pistol or arm capable of being aimed at any part of said target, a solenoid situated back of the target, means connecting said solenoid with the pistol whereby the solenoid is caused to move with the pistol when the latter is aimed, the core of said solenoid, adapted, when protruded to visually indicate its position on the target, and an electric circuit including said solenoid and a generator and adapted to be completed through pressure on the trigger of the pistol, substantially as set forth.

708,246. **BEAM-LOCK FOR LOOMS.** HENRY H. MCLEAN, Whitinsville, Mass., assignor to The Whitin Machine Works, Incorporated, Whitinsville, Mass. Filed Nov. 14, 1901. Serial No. 82,235. (No model.)

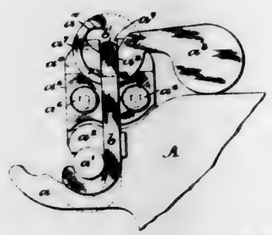

Claim.—1. The combination in a beam-lock with the end frame, the horn on the end frame forming the support for the beam-journal, the fixed journal-bearing, a slotted lug extending from the end frame, a bolster adjustably secured to the lug, of a lever, a cam on one end of the lever, concave seats within the cam, and two hooked arms connected by a bar, whereby the journal of the warp-beam may be supported and locked, as described.

2. In a beam-lock, the combination with the end frame A, the horn a, the fixed bearing a^3, and the lug a^2 on the end frame, of the bolster a^5, the lever a^6, the cam a^7 on the lever and supported on the bolster, the seats a^8 and a^{10} within the cam, the bar b', and the arms b b connected with the bar b' and having hooks at their ends, whereby the journal may be locked and held against vibration, as described.

708,247. **WELL-AUGER.** RALPH O. HEWELL, Venus, Nebr. Filed Dec. 1, 1899. Serial No. 738,939. (No model.)

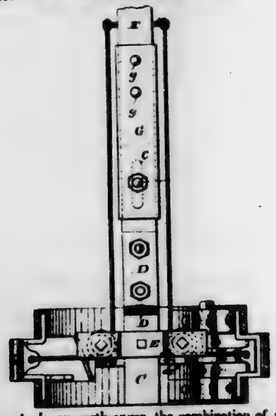

Claim.—1. In an earth-auger, the combination of an auger-drum, auger-blades supported upon and capable of radial movement relatively to said drum, springs connected with said blades and tending to give them outward radial movement, an auger-rod supporting said drum, the latter having a limited longitudinal movement upon said rod, and cords or chains connecting said rod and blades.

2. An earth-auger comprising the combination of a cylindrical drum having openings in its wall, auger-blades hinged in one end of said openings so as to swing outwardly, springs for effecting such outward movement, each blade provided with a stop adapted to limit such movement, an auger-rod attached to said drum and movable relatively thereto, and cords or chains connecting said rods and blades, whereby said rod may be caused to actuate said blades to withdraw from their outward positions.

708,248. **METHOD OF MOLDING ARTIFICIAL STONE.** FRANK OELIKOWSKI, Cleveland, Ohio. Filed May 14, 1902. Serial No. 107,264. (No specimens.)

Claim.—The method of making artificial stone consisting in placing within a suitable flask a compact layer of hard stone pieces; then covering said pieces at a suitable depth with a flowing cement, and then tamping the mass until solid; then spreading another close layer of hard stone pieces over said body to complete the stone and covering the same with cement to fill the interstices and overspread the same, and finally tamping the material thus added and leaving the stone with a flat finished top surface, substantially as described.

708,249. **SUBAQUEOUS-TUNNEL CONSTRUCTION.** JOHN F. O'ROURKE, New York, N. Y. Filed Apr. 23, 1902. Serial No. 104,284. (No model.)

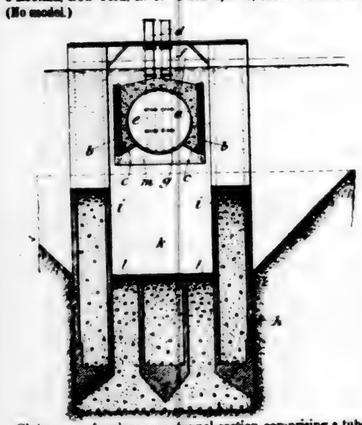

Claim.—1. A subaqueous-tunnel section comprising a tube-section, bulkheads in the ends thereof, a sustaining vessel and filling between the walls of the sustaining vessel and the tube-section, substantially as described.

2. A subaqueous-tunnel section, comprising a tube-section, bulkheads in the ends thereof, a sustaining vessel comprising side walls and plates uniting the tube-section to said walls, and filling supported upon said plates between the tube-section and the side walls, substantially as described.

3. A subaqueous-tunnel section, comprising a tube-section, bulkheads in the ends thereof, a sustaining vessel for said tube-section, and a shaft extended through said tube-section to the bottom thereof, substantially as described.

4. A subaqueous-tunnel section, comprising a tube-section, bulkheads in the ends thereof, a sustaining vessel for said tube-section forming an air-chamber below the tube-section and a shaft extended through said tube-section to said air-chamber, substantially as described.

5. In subaqueous-tunnel construction, the combination of a crib or caisson sunk to the required depth and two tunnel-sections each comprising a tube-section and a sustaining vessel, said tunnel-sections having their ends brought together and supported upon the crib or caisson, and means to unite the ends of the tube-sections, substantially as described.

6. In subaqueous-tunnel construction, the combination of a crib or caisson sunk to the required depth, two tunnel-sections each comprising a tube-section and a sustaining vessel, the ends of the tunnel-sections being brought together within the crib, means to unite the tube-sections within the crib and concrete filling the space around the tube-sections within the crib or caisson, substantially as described.

708,250. **CARDING-MACHINE.** HENRY A. OWEN, Whitinsville, Mass., assignor to The Whitin Machine Works, Incorporated, Whitinsville, Mass. Filed Oct. 5, 1900. Serial No. 32,070. (No model.)

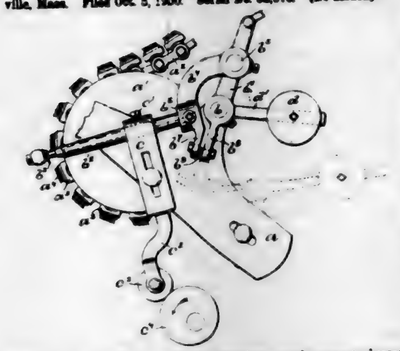

Claim.—1. A stripper mechanism having a comb-support pivotally connected with a rocking member, said member swinging on a point below the pivotal connection of the comb-support, and a link connection between the rocking member and the comb-support, whereby, for a limited part of the stroke of the comb, the comb-support may swing on its pivotal connection and then swing with the rocking member, as and for the purpose described.

2. In a stripper mechanism for carding-machines, in combination, a rocking member, a comb-support pivotally connected with the rocking member, and means for limiting the movement of the comb-support on the rocking member, whereby the comb-support may swing on the rocking member, as described.

3. In a stripper mechanism for carding-machines, a comb-support having two pivotal points of support, means for limiting the movement of the comb on one of the points of support, and means for operating the comb, whereby the comb is moved diagonally from the normal path at each stroke, as described.

4. In a stripper mechanism for carding-machines, the combination with the comb b^3, and the supporting-arms b^2, of the arm b' pivotally supported on a fixed part of the machine, the bracket b^4, the link b^5, the bracket b^7, the supports b^1 pivotally supported on the arm b' and connected with the arm b', whereby the supports b^1 may rock on the pivotal connection through part of each stroke, as described.

5. In a stripper mechanism for carding-machines, the combination with the arm b' pivotally supported on a fixed part of the machine, the pivotal center b^4 on the arm, and the supports b^1 pivoted on the center b^4 and connected with the arm b' by a link connection, of the comb b^3, the arms b^2 supporting the comb, and means for operating the comb; whereby the comb is moved diagonally toward and from the wires of the flats at the beginning of each stroke, as described.

708,251. **LOOM.** OSCAR L. OWEN, Whitinsville, Mass., assignor to The Whitin Machine Works, Incorporated, Whitinsville, Mass. Filed Nov. 14, 1901. Serial No. 82,234. (No model.)

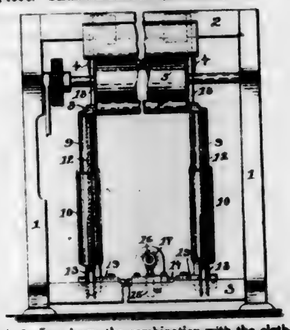

Claim.—1. In a loom, the combination with the cloth-roll, and the telescopic spring-actuated supports of the same, of a winding-shaft, sheaves on the same, cords connected with the cloth-roll supports and with the sheaves on the winding-shaft, and means, comprising a worm and worm-shaft, for operating the winding-shaft, as described.

2. A journal-support for the cloth-roll of a loom consisting of two tubular chambers, a tube sliding longitudinally in each tubular chamber, journal-supports on the free ends of the sliding tubes, coiled springs bearing on the bottom of the tubular chambers and the journal-supports on the sliding tubes, and cords connected with the sliding tubes and with a winding device, as described.

3. In a loom, the combination with the breast-beam, the front strut, the take-up roll, and the cloth-roll, of vertical struts secured to the breast-beam and the front strut, a tubular chamber forming part of each strut, tubes telescopically supported in the tubular chambers, journals bearing on the free ends of the tubes, a winding mechanism below the tubular chambers, and cords connected with the winding mechanism and the sliding tubes, as described.

4. In a loom, the combination with the breast-beam, the take-up roll, the friction-roll, and the cloth-roll, of the arm 18, the tube 10, and the base 19 formed integral and secured to the breast-beam and the front strut, the tube 9, the journal-bearing 8 on the same, the cord 12 connected with the journal-bearing and with the winding-sheave 13, and mechanism for operating the two winding-sheaves of two journal-bearings simultaneously and comprising a worm and worm-gear, as described.

708,252. **PIPE-WRENCH.** FRANK A. PALMER and FRED SHARPE, Erie, Pa. Filed Feb. 19, 1902. Serial No. 94,759. (No model.)

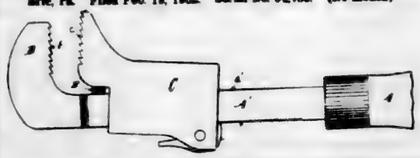

Claim.—The combination in a pipe-wrench, of a handle, a serrated jaw thereon, ratchet-teeth on the under side of the handle, a sliding jaw-frame on the handle, a serrated jaw on the front end of the jaw-frame, spring-actuated mechanism in the front end of the jaw-frame engaging the upper side of the handle, and a cam-shaped ratchet-dog in the under side of the rear of the frame adapted to engage the ratchet-teeth on the under surface of the handle, substantially as and for the purpose set forth.

708,253. **ELECTRIC CLOCK.** ARTHUR F. POOLE, Wheeling, W. Va. Filed Sept. 7, 1901. Serial No. 74,653. (No model.)

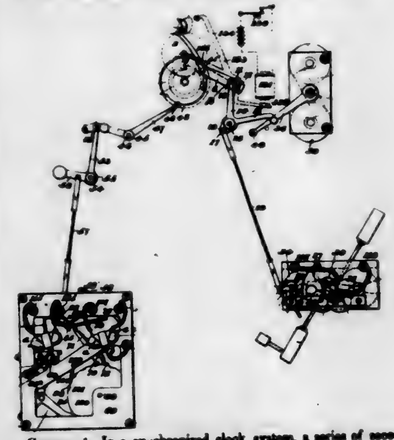

Claim.—1. In a synchronized clock system, a series of secondary clocks, a master-clock having connections arranged to give electric impulses to them at determined intervals and for a determined period in one direction, and mechanism for sending out impulses for another period at determined intervals in the opposite direction; substantially as described.

2. In a synchronized clock system, a series of secondary clocks, a master-clock having connections arranged to give electric impulses to them at determined intervals in one direction, and for a predetermined period, and in the opposite direction at determined intervals and for a predetermined period, followed by a series of impulses in quick succession and in the same direction as the last preceding period, whereby the secondary clocks are synchronized; substantially as described.

3. In a synchronized clock system, a master-clock having connection with a series of secondary clocks arranged to give electric impulses to them at determined intervals in one direction and for a predetermined period, and in the opposite direction at determined intervals and for a predetermined period, followed by a series of impulses of augmented intensity in quick successions and in the same direction as the last preceding period, whereby the secondary clocks are synchronized; substantially as described.

4. In an electric clock, a switch normally locked, releasing mechanism adapted to unlock said switch so as to make and break the circuit at predetermined intervals; mechanism adapted to restore the releasing mechanism to its normal position, in which said switch is locked, said restoring mechanism being in the same circuit with said switch; substantially as described.

5. In an electric clock, a switch adapted to send out impulses at predetermined periods, releasing mechanism operated by the clock-movement adapted to unlock said switch at said predetermined interval, secondary clocks adapted to receive impulses sent out by said switch, mechanism adapted to restore the releasing mechanism to its normal position, in which said switch is locked and the circuit is broken, said restoring mechanism being in the same circuit with said switch and secondary clocks; substantially as described.

6. In an electric clock having a switch adapted to send out impulses at predetermined intervals, a synchroniser having switches adapted to change the direction of the impulses sent out by said switch; substantially as described.

7. In an electric clock having a switch adapted to send out impulses at predetermined intervals, a synchroniser having switches adapted to change the direction and intensity of the impulses sent out by said switch; substantially as described.

8. An electric clock having a switch adapted to send out impulses at predetermined intervals, a synchroniser having switches adapted to change the direction of said impulses, a cam operated by the clock mechanism and arranged to control the switches of the synchroniser, thereby determining the period during which impulses are sent out in a given direction; substantially as described.

9. In an electric clock having a switch adapted to send out impulses at predetermined intervals for predetermined periods and in quick succession for another period relatively short, releasing mechanism controlling said switch, a restorer normally adapted to reset said releasing mechanism and lock said switch after each impulse during the longer periods, a synchroniser having switches adapted to change the direction of the current during the long periods, said restorer being normally in circuit with the switch which sends out impulses at predetermined intervals, but adapted to be cut out of said circuit by one of the switches of the synchroniser during the relatively short period during which said switch which sends out impulses, so that said switch is permitted to send out a series of impulses in quick succession; substantially as described.

10. In an electric clock having a switch adapted to send out impulses at predetermined intervals, a synchroniser having switches adapted to change the direction of the impulses sent out by said switch, releasing mechanism operated by the clock mechanism by which the interval at which said impulses are sent out is determined, a synchroniser having switches adapted to change the direction of said impulses, a cam operated by the clock mechanism arranged to control the switches of the synchroniser, thereby determining the period during which impulses are sent out in a given direction; substantially as described.

11. In an electric clock provided with a switch adapted to send out impulses, a synchroniser having switches arranged to form a portion of a path for said impulses, said synchronizing-switches being adapted to change the direction in which said impulses are sent out; electromagnets forming a part of the circuit and adapted to offset the restoration of said switches to their normal position on the back stroke of their armatures; substantially as described.

12. In an electric clock having a switch adapted to send out impulses at predetermined intervals, a synchroniser having switches released in succession, mechanism operated by the clock mechanism by which said release is effected, said switches when released altering the direction in which the impulses are sent out, electromagnets located in circuit with said switches adapted to restore them to their normal position in the reverse order to which they were released upon the back stroke of the armatures; substantially as described.

13. In an electric clock having a switch adapted to send out impulses at predetermined intervals, a synchroniser having switches released in succession, mechanism operated by the clock mechanism by which said release is effected, said switches when released altering the direction in which the impulses are sent out, electromagnets located in circuit with said switches adapted to restore them to their normal position upon the back stroke of the armatures; substantially as described.

14. In an electric clock having a switch adapted to send out impulses at predetermined intervals released by the clock mechanism, a synchroniser having a switch also released by said clock mechanism, said switch being adapted when released to change the direction without altering the interval at which said impulses are sent out; substantially as described.

15. In an electric clock having a switch adapted to send out impulses at predetermined intervals released by the clock mechanism, a synchroniser having a switch also released by said clock mechanism, said switch being adapted when released to change the direction without altering the interval at which said impulses are sent out, and a second switch adapted to be released by said clock mechanism after the first switch has been released, whereby the frequency of the impulses sent out is permitted until said switch is returned to its normal position; substantially as described.

16. In an electric clock having a switch adapted to send out impulses at predetermined intervals released by the clock mechanism, a synchroniser having a switch also released by said clock mechanism, said switch being adapted when released to change the direction without altering the interval at which said impulses are sent out, a second switch adapted to be released by said clock mechanism after the first switch has been released, whereby the frequency of the impulses sent out is permitted, and a locking-disk provided with a series of notches arranged at intervals, an electromagnet in circuit with the impulse-sending switch and said second switch of the synchroniser, feeding mechanism actuated by said electromagnets, whereby said locking-disk is fed step by step, resetting mechanism for said second switch which is held out of operative position during the interval between the notches in said locking-disk, said switch being returned to its normal position when the resetting mechanism again engages the next succeeding notch in the locking-disk; substantially as described.

17. In an electric master-clock having a switch adapted to send out impulses at predetermined intervals, a releasing mechanism therefor, a restorer for said switch in circuit therewith, a synchroniser having switches adapted to change the direction and intensity of said impulses, electromagnets having vibrating armatures adapted to restore said switch, resetting mechanism secured to said armatures, clock mechanism adapted to determine the time at which said change of direction and intensity takes place, releasing mechanism operated by said clock mechanism by which said synchroniser-switches are released in succession, one of said switches altering the direction of the impulses sent out without affecting the intensity of the current, the second switch of said synchroniser being adapted to increase the intensity of the current without changing its direction, said second switch permitting the repeating-switch to send out impulses of augmented intensity in rapid succession, feeding mechanism actuated by the vibrating armature of one of said electromagnets, releasing mechanism whereby said synchronizing-switches are operated, also actuated thereby, said armature resetting said releasing mechanism for both switches on its first feeding stroke, a locking-disk adapted to be actuated by said feeding mechanism, notches in the periphery of said locking-disk arranged at intervals, resetting mechanism for said second switch adapted to engage the notches and the periphery of said locking-disk, the space between said notches determining the number of impulses of augmented intensity sent out by the repeating-switch in quick succession, said second switch with the synchroniser being restored to its normal position on the first back stroke of the electromagnet which operates the locking-disk when the resetting mechanism is dropped into registry with the next succeeding notch, the resetting of said switch again completing the circuit through the restorer for the repeating-switch, and thereby establishing the circuit through the magnet of the synchroniser-switch first released, and thereby actuating its armature and the resetting mechanism secured thereto so that upon the back stroke of the armature, the first-released switch of the synchroniser is returned to its normal position; substantially as described.

18. A synchronized clock system comprising a primary clock having connection with a self-driven master-clock, mechanism by which said master-clock is synchronized therewith, said master-clock having connections with a series of secondary clocks arranged to give electric impulses to them at determined intervals and for determined periods in one direction, and mechanism for sending out impulses for another period and a determined interval in the opposite direction, whereby said secondary clocks are synchronized with said master and primary clock; substantially as described.

708,254. TURBINE FLUE-CLEANER. JOHN P. PRESTON and ROBERT G. GREGORY, Barberton, Ohio, assignors to the Stirling Company, Chicago, Ill., a Corporation of Illinois. Filed July 17, 1901. Serial No. 68,020. (No model.)

Claim.—1. In a boiler-tube cleaner, the combination with a casing having a tapered portion provided with a restricted opening, of a hose or tube projecting into said tapered portion, a bushing or thimble fitting within said tube or hose and clamping the same against the inner wall of the tapered portion, a perforated disk in said casing adjacent to the forward end of the bushing or thimble and provided with a rearward-tapered portion projecting into said bushing, a motor-wheel mounted on said disk, and a tube-cleaning tool connected to said wheel.

2. In a boiler-tube cleaner, the combination with a casing having a tapered portion provided with spiral grooves or recesses on its inner face, of a hose or tube projecting into said tapered portion, a bushing or thimble fitting within said tube or hose and provided with spiral ribs which press the tube out into the holes or depressions in the casing, a perforated disk in said casing adjacent to the forward end of said bushing or thimble and provided with a rearward-tapered portion projecting into said bushing, a motor-wheel mounted on said disk, and a tube-cleaning tool connected to said wheel.

3. In a boiler-tube cleaner, the combination with a casing having a tapered portion at one end, of a hose or tube projecting into said tapered portion, an internal flange on the casing against which the end of the tube projects, a tapered thimble or bushing fitting within the tube and serving to clamp the same against the inner wall of the tapered portion, a perforated stationary disk adjacent to the end of the bushing and internal flange, a turbine wheel rotatably mounted in said casing, and a tube-cleaning tool connected to said wheel.

4. In a boiler-tube cleaner, the combination with a casing, a perforated disk fixedly mounted therein and provided with a rearwardly-tapered projection, a turbine wheel rotatably mounted on said disk, a tube-cleaning tool connected to said wheel, a tapered portion of said casing provided with an internal flange or shoulder so arranged as to leave a space between the same and the perforated disk, a hose or tube projecting into the casing against said flange or shoulder, and a tapered bushing fitting within said tube or hose and clamping the same against the inner wall of the casing.

5. In a boiler-tube cleaner, the combination with a casing provided with an internal shoulder and internal screw-threads, a perforated disk therein resting against said shoulder, a tapered extension having a threaded portion engaging the internal threads in the casing and bearing against the disk to clamp the same against the internal shoulder, a hose or tube projecting into said extension, a tapered bushing or thimble fitting within the hose, a turbine wheel rotatably mounted on said perforated disk, and a tube-cleaning tool connected to said wheel.

6. In a boiler-tube cleaner, the combination with a casing provided with an internal shoulder and internal screw-threads, a perforated disk in said casing resting against said shoulder, said disk being provided with a rearwardly-projecting conical portion, a tapered extension having a threaded portion engaging the internal threads in the casing and bearing against the perforated disk to clamp the same against the internal shoulder, said extension being provided with an internal flange or shoulder, a hose or tube projecting into the extension and against said flange or shoulder, a conical bushing or thimble fitting within the hose or tube and serving to clamp the same against the inner wall of said extension, a motor-wheel rotatably mounted on said perforated plate, and a tube-cleaning tool connected to said wheel.

7. In a boiler-tube cleaner, a fluid-motor comprising a stationary perforated disk having a central opening, a motor-wheel provided with a central opening and a screw-threaded socket in one face thereof, a journal-pin having a head located in said socket and secured in the opening in the stationary disk, a tool-carrying block provided with a threaded extension engaging the screw-threaded socket in the wheel, said extension being recessed to fit over the head of the screw, and a tube-cleaning tool attached to said block.

708,255. CRACKER-STACKING MACHINE. BURT PRESCOTT and WILLIAM H. BUDD, Jr., Columbus, Ohio. Filed Apr. 4, 1902. Serial No. 101,228. (No model.)

Claim.—1. In a cracker-stacking machine, the combination with a framework and a hopper pivotally mounted thereon, of cracker-conducting tubes movably connected with said framework and a cracker-carrying mechanism arranged between said hopper and the mouths of said tubes, substantially as specified.

2. In a cracker-stacking machine, the combination with a framework and a grooved table arranged adjacent thereto, of a plurality of tubes having their lower ends beveled or inclined and extending within said table-grooves and means for imparting a swinging motion to said tubes, substantially as specified.

3. In a cracker-stacking machine, the combination with a framework, and a grooved table arranged adjacent thereto, of a plurality of cracker-conducting tubes having their lower end portions extending within the grooves of said table and having said lower end portions beveled as described, a finger extending outwardly from each of said tubes and adapted when said tubes are in a vertical or substantially vertical position to engage the upper portion of a cracker arranged on edge within the groove of said table and means for imparting a swinging movement to the tubes, substantially as specified.

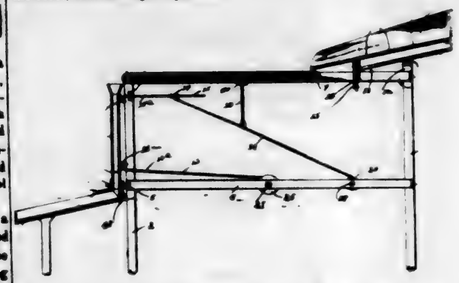

4. In a cracker-stacking machine, the combination with a framework and a grooved table arranged adjacent thereto, of a plurality of cracker-conducting tubes having their lower beveled ends discharging within the grooves of said table, means connected with the lower portions of said tubes for imparting a swinging motion thereto and means for imparting a vibratory motion to the tubes, substantially as specified.

708,256. BRICK-MOLD. OTTO M. REIF, Allegheny, Pa., assignor to Harbison & Walker Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Mar. 21, 1901. Serial No. 52,182. (No model.)

Claim.—1. A brick-mold comprising sides formed of angle-irons, the vertical flanges of which form the side walls of the mold and the other flanges of which lie in a horizontal plane, transverse end pieces separate from and riveted to said vertical flanges, and a bottom secured to said horizontal flanges.

2. A brick-mold comprising side pieces formed of angle-irons, the vertical flanges of which form the side walls of the mold, transverse end pieces and partitions separate from and permanently attached to said vertical flanges, the horizontal flanges of said angle-irons extending the full length of the mold, and a bottom secured to said horizontal flanges.

3. A brick-mold comprising side pieces formed of angle-irons, the vertical flanges of which form the side walls of the mold, and the other flanges of which lie in a horizontal plane, and a bottom having an inclined upper face and parallel side edges secured to said horizontal flanges.

4. A brick-mold comprising side pieces formed of angle-irons, the vertical flanges of which form the side walls of the mold, inclined transverse end pieces and partitions secured to said vertical flanges, the horizontal flanges of said angle-irons extending the full length of the mold, and a bottom having a series of inclined faces on its upper surface and parallel side edges secured to said horizontal flanges.

708,257. ASH-SIFTER. ALBERT L. RUSSELL, Providence, R. I., assignor of one-half to Earl G. Davis, Plainfield, Conn. Filed Oct. 23, 1901. Serial No. 80,334. (No model.)

Claim.—In an ash-sifter, the combination, with a casing the upper portion of which has inclined end walls, of a cuneiform screen the sides of which are parallel with but separate from the inclined walls of the casing, an ash-drawer beneath the screen, said drawer having a chute in its forward end and an ash-compartment in rear of said chute, and a cinder-drawer beneath the ash-drawer, said cinder-drawer being of such

length as to underlie the chute and extend beyond the ash-compartment substantially as described.

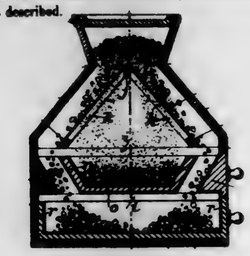

708,258. APPARATUS FOR BURNING LIQUID HYDROCARBONS. WILLIAM H. RUSSELL and GEORGE E. RUSSELL, Jersey City, N. J. Filed Oct. 11, 1900. Serial No. 33,703. (No model.)

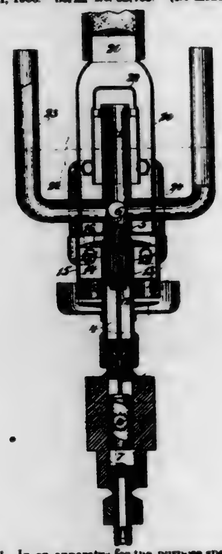

Claim.—1. In an apparatus for the purpose specified, the combination with a generator and means for admitting oil in regulated quantity thereto, of a mixing-tube above the outlet of the generator, an intermediate tube closed above and over the upper end of the mixing-tube, an air-induction pipe which admits air to said mixing-tube, an outer casing inclosing the mixing-tube and intermediate tube, a casing about the generator to form a heating-chamber, a tube connecting the chamber in the outer casing with the heating-chamber, the receiving end of said tube being situated above the lower, open end of the intermediate tube, and a receptacle below the heating-chamber to contain a combustible for igniting the gaseous mixture in the heating-chamber, substantially as set forth.

2. In an apparatus for the purpose specified, the combination with a generator and means for admitting oil thereto, of a casing about said generator and having apertures in its bottom, a baffle-plate below said casing, a cup for combustible liquid below said plate, gauze diaphragms within said casing, an outer casing, which carries the burner-tube and is mounted on the casing surrounding the generator, tubes connecting said casings, a mixing-tube within the outer casing, air-tubes connected with and supplying said mixing-tube, an intermediate tube within the outer casing and inclosing the mixing-tube, and means for regulating the outflow of gas from the generator, substantially as set forth.

708,259. BUNSEN BURNER. WILLIAM H. RUSSELL and GEORGE E. RUSSELL, Jersey City, N. J. Filed Dec. 2, 1901. Serial No. 84,350. (No model.)

Claim.—1. A Bunsen burner having an elongatable burner-tube, means for supplying gas thereto, a telescopic chimney, a bar carrying said chimney and upright parallel guides for said bar, substantially as set forth.

2. A Bunsen burner having a telescopic burner-tube and a telescopic chimney alined therewith.

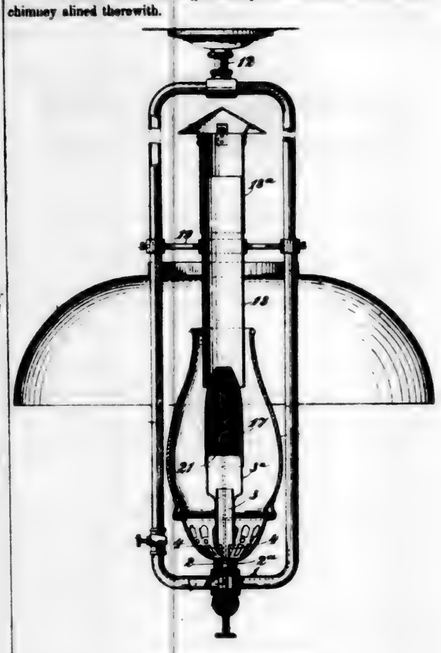

708,260. STAIR-PAD. HERBERT H. SANDERSON, Walpole, Mass. Filed June 24, 1901. Serial No. 65,751. (No model.)

Claim.—As an article of manufacture, a stair-pad, composed of a base, a fabric stitched along its edges to the base on the under side thereof, along a longitudinal line extending from one end of the base to the other, the fabric extending from said line of stitching over the front and rear edges of the base and over the upper surface of the base, whereby the meeting edges of the covering are secured to the under side of the base along said longitudinal row of stitching, a soft filling between the top of the base and the upper layer of covering fabric, and a transverse row of stitching through the upper and lower layers of covering fabric and through the base along each end edge of the base, substantially as set forth.

708,261. BALL-BAT AND EXPLOSIVE. JOHN C. SCHWABENGEL, Dayton, Ohio. Filed Mar. 24, 1902. Serial No. 99,051. (No model.)

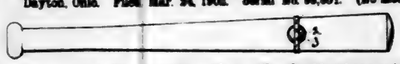

Claim.—A ball-bat provided with an orifice shouldered and reduced at its inner end and adapted to contain a cartridge, in combination with an exploding-hammer in the outer end of said orifice, and an elastic retaining means for said hammer, substantially as described.

708,262. RAZOR-CLEANER. HENRY SCHWEITZER, Altoona, Pa. Filed May 2, 1902. Serial No. 105,691. (No model.)

Claim.—1. A razor-cleaner comprising a cup-like body of which the vertical flange portion is formed of a yielding material, the upper edge of the flange being escalloped to form curved surfaces adapted to fit the concaved sides of a razor-blade.

2. A razor-cleaner comprising a cup-like body of which the vertical flange portion is formed of thick yielding material, said flange portion having an escalloped upper edge, the curved surfaces being each formed on arcuate lines of different radii and adapted to fit into the concave or semi-concave sides of razor-blades.

708,262.

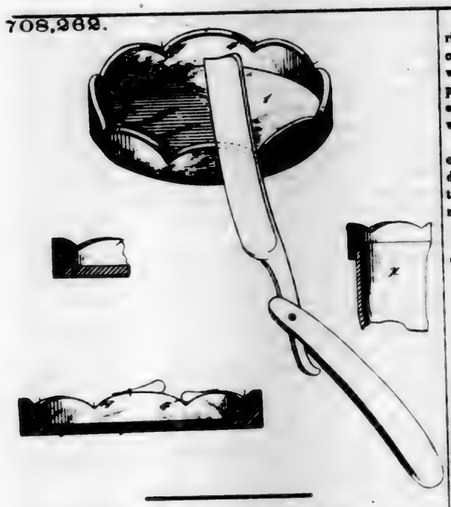

708,263. REEL. JAMES SHAW, Paterson, N. J., assignor to the Shaw & Cocker Machine Company, Paterson, N. J., a Corporation of New Jersey. Filed May 24, 1902. Serial No. 108,943. (No model.)

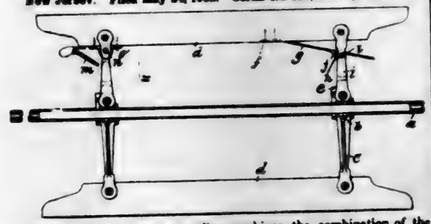

Claim.—1. In a reel for reeling-machines, the combination of the spiders, a blade, the spokes of said spiders which carry the blade serving as link-like connections between the spiders and the blade, and a spring-latch adapted to secure said blade and one of said spokes in their extended positions and carried by one and engageable with the other of them, substantially as described.

2. In a reel for reeling-machines, the combination of the spiders, a blade, the spokes of said spiders which carry the blade serving as link-like connections between the spiders and the blade, and a spring-latch carried by said blade and engageable with one of said spokes in the extended position of the blade, substantially as described.

708,264. BOTTLE-STOPPER. WILLIAM H. SHERMAN, New York, N. Y. Filed July 3, 1901. Serial No. 66,977. (No model.)

Claim.—1. A bottle-stopper comprising a soft-metal cup fitted to be locked in the neck of the bottle, a releasing-plug and means for drawing the cup into locking engagement with the plug as the plug is forced inwardly to release the cup from the bottle, substantially as set forth.

2. A bottle-stopper comprising a soft-metal cup having its walls struck outwardly to engage the neck of a bottle, a releasing-plug having a circumferential groove therein and means for drawing the cup into locking engagement with the plug as the plug is forced inwardly to release the cup from the bottle, substantially as set forth.

3. A bottle-stopper comprising a soft-metal cup having its walls struck outwardly to engage the neck of a bottle and having an outwardly-flaring rim and a releasing-plug having a circumferential groove, the said cup and releasing-plug being fitted to be locked together when the cup is released from the bottle by the said plug, substantially as set forth.

4. In combination, a bottle having an annular shoulder in the interior of its neck and a tapering seat in the mouth of the neck, a soft-metal cup having one or more projections engaging the said shoulder and an outwardly-flared rim and a releasing-plug arranged to draw the one or more projections out of engagement with the shoulder and the flaring rim into engagement with the plug when the plug is driven to the limit of its inward movement within the neck of the bottle, substantially as set forth.

5. A bottle-stopper comprising a soft-metal cup locked in the neck of the bottle and having a corrugated rim and releasing-plug arranged to draw the corrugated rim into locking engagement with the plug when the plug is inserted into the cup and driven to the limit of its inward movement within the neck of the bottle, substantially as set forth.

708,265. PLOW. JACOB A. SHUPING and CHARLES L. SHUPING, Morganton, N. C. Filed Aug. 28, 1901. Serial No. 73,621. (No model.)

Claim.—1. In a disk plow, the combination with a base, of means located upon one side of the base for securing the same to a beam or similar support, an adjustable disk-carrier movable in a vertical plane and journaled upon the opposite sides of the base, a disk mounted upon the carrier, and means connecting the base and disk-carrier to hold the latter against its vertical swinging movement.

2. In a disk plow, the combination with an upright base having a slot that passes horizontally through said base, of means for attaching the base to a beam or similar support, a disk-carrier movably mounted on the base, and a holding device for the disk-carrier, said device being mounted upon the disk-carrier and engaging in the slot of the base whereby said carrier may be adjusted in a vertical plane.

3. In a disk plow, the combination with an upright base-plate having a slot that passes horizontally through said base-plate, of a clamp for attaching the base-plate to a plow-beam or similar support, an eyebolt pivotally mounted upon the plate, an eyebolt movably mounted in the slot, and a disk-carrier passing through the eyebolts and being thereby adjustable in a vertical plane.

4. In a disk plow, the combination with a vertically-disposed base-plate having a horizontally-disposed slot in its lower portion and a pivot-opening in its upper portion, of a clamp located upon one face of the plate for attaching the same to a plow-beam or similar support, an eyebolt pivoted in the upper opening of the plate, an eyebolt movably mounted in the slot, and a disk-carrier passing through the eyebolts whereby said carrier may be adjusted in a vertical plane.

5. In a disk plow, the combination with a disk-carrier, of means for securing the carrier to a plow-beam or similar support, said carrier having a movable connection with the securing means, and an extensible holding device fastened to the carrier to hold the same against movement.

6. In a disk plow, the combination with a disk-carrier, of means for securing the same to a plow-beam or similar support, said carrier having a rotatable connection with the said means, and an extensible holding device fastened to the carrier for holding the same against movement.

7. In a disk plow, the combination with a base, of means for securing the same to a beam or similar support, a disk-carrier shaft rotatably mounted on the base, and an adjustable holding device secured to the shaft and arranged to be fastened to a portion of the plow to hold said shaft against movement.

8. In a disk plow, the combination with a base, of means for securing the same to a beam or similar support, a disk-carrier shaft rotatably mounted on the base and provided with a crank-arm, and an extensible holding device connected to the crank-arm for holding the shaft in different positions.

9. In a disk plow, the combination with a plow beam and handle, of a disk-carrier rotatably mounted on the beam, and an extensible connection between the carrier and handles to hold the former against movement.

10. In a disk plow, the combination with a plow beam and handles of a disk-carrier shaft rotatably mounted on the beam and having a crank-arm, a holding-rod connecting the crank-arm and the handles and comprising sections, and a turnbuckle adjustably connecting the adjacent ends of the sections.

11. In a disk plow, the combination with a base, of means for securing the base to a plow-beam or similar support, a disk-carrier having a pivotal and rotatable connection with the base, a holding device carried by the base for preventing the pivotal movement of the carrier, and means for holding said carrier against rotary movement.

12. In a disk plow, the combination with a base, of means for se-

curing the base to a plow-beam or similar support, a disk-carrier having a horizontal pivotal and a vertical rotatable connection with the base, a holding device carried by the base for preventing the pivotal movement of the carrier, and means for holding said carrier against rotary movement, said means being located adjacent to the pivotal connection between the carrier and the base.

13. In a disk plow, the combination with a vertically-disposed base-plate, of a clamp for attaching the plate to a beam or similar support, a pair of horizontally-projecting eyebolts secured to the plate, one of said bolts having a slidable connection therewith, a disk-carrier shaft journaled in the eyebolts and having a crank-arm and an extensible holding device secured to the crank-arm.

14. In a disk plow, the combination with a base, of alined bearings movably mounted upon the base, and a disk-carrier journaled in the bearings and longitudinally adjustable therein.

15. In a disk plow, the combination with a vertically-disposed base, of horizontally-projecting alined bearings movably mounted upon the base a disk-carrier journaled in the bearings and longitudinally adjustable therein, and devices engaging the outer sides of the journals to hold the carrier against its longitudinal movement.

16. In a disk plow, the combination with a vertically-disposed base, of horizontally-projecting alined bearings movably mounted upon the base, a disk-carrier journaled in the bearings and longitudinally adjustable therein, devices engaging the outer sides of the journals to hold the carrier against its longitudinal movement, one of said devices being in the form of a crank-arm, and means engaging said crank-arm to prevent the rotation of the carrier in the journal.

17. In a disk plow, the combination with a disk-carrier, of means for securing the same to a beam or similar support, said carrier having a vertical longitudinal adjustment upon the securing means, a head attached to the carrier, a disk rotatably mounted on the head, and a scraper also secured to the head.

18. In a disk plow, the combination with a disk-carrier, of a head located upon the carrier and having an annular bearing-flange, a disk-bearing carrying the disk and having spaced flanges that embrace the flange of the head, the inner flange being spaced from the adjacent face of the head, and a pivot fastener passing through the head and disk-bearing.

19. In a disk plow, the combination with a disk-carrier, of a head located upon the carrier and having an annular bearing-flange, said carrier being also provided with a scraper-support, a disk-bearing carrying the disk and having spaced flanges that embrace the flange of the head, a pivot fastener passing through the head and disk-bearing, and a scraper secured to the support of the carrier-head.

20. In a disk plow, the combination with a suitable frame, of a rotatable disk-carrier journaled upon the frame, extensible means secured at one end to a fixed portion of the frame, and at the other end to the carrier for holding said carrier against its rotary movement.

21. In a disk plow, the combination with a fixed support, of journal-bearings mounted upon the support and movable in a substantially vertical plane, and a disk-carrier journaled in the bearings and rotatable upon a substantially vertical pivot-axis.

22. In a disk plow, the combination with a beam having a channel, of a base-plate having a projection fitting in the channel, means for securing the base-plate upon the beam, and a disk-carrier rotatably mounted upon the base-plate.

708,266. DECORATION OF WOODWORK. HENRY SMITH, Kew, Victoria, Australia. Filed May 23, 1901. Serial No. 61,602. (No specimens.)

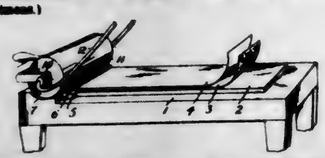

Claim.—1. The method or process of ornamenting wood, which consists in treating the smoothed surface of wood with kerosene and crystal paper-varnish, then applying wetted paper on which is a design made with oil or spirit colors with face of paper onto the wood, then applying pressure and heat to the paper whereby the design on the paper is caused to impregnate or be incorporated into the wood.

2. The method or process of ornamenting wood which consists in treating the smoothed surface of wood with kerosene and crystal paper-varnish, then applying wetted paper on which is a design made with oil or spirit colors with the face of paper on the wood, then applying a damp cloth to back of paper, then applying pressure to the damp cloth by means of a heated iron or roller substantially as described.

3. The method or process of ornamenting wood which consists in treating smoothed surface of wood with kerosene and crystal paper-varnish, then applying wetted paper on which is a design made with oil or spirit colors with the face of paper on the wood, then applying a damp cloth to back of paper, then applying pressure to the damp sheet by means of a heated iron or roller, then, after the design has dried on the wood, applying size and afterward varnish or polish substantially as described.

4. The method or process of ornamenting wood, which consists in treating smoothed surface of wood first with a coating of whiting and milk solution and afterward with a solution of kerosene and crystal paper-varnish, then applying wetted paper, on which is a design made with oil or spirit colors, to the surface of the wood, then applying at back of paper a damp cloth, preferably of cotton, then applying an even pressure over the cotton sheet by means of a heated household iron or a roller, then allowing the surface of the wood with the design to dry, then sizing and afterward varnishing or polishing the surface substantially as described.

5. The method or process of ornamenting wood which consists in treating smoothed surface of wood first with a coating of whiting and afterward treating the wood surface with a solution of kerosene and crystal paper-varnish, applying to the surface of the wood a wall-paper prepared with oil and spirit colors and coated with a solution of methylated spirits and water then applying to back of paper a damp cloth then applying an even pressure over the cloth by means of a heated iron substantially as and for the purpose set forth.

708,267. COATING-MACHINE. MYRON A. SMITH, New York, N. Y., assignor to International Machine Co., New York, N. Y. Filed Apr. 12, 1901. Serial No. 55,453. (No model.)

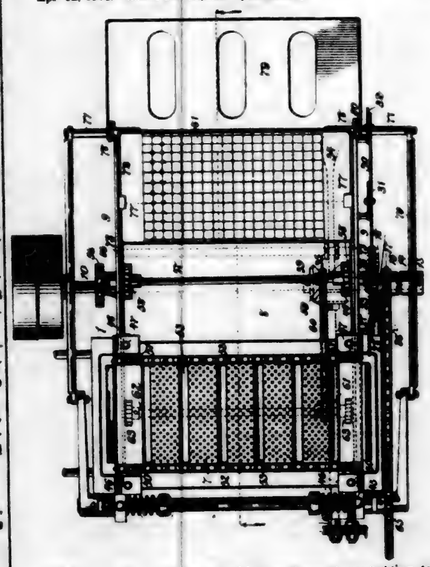

Claim.—1. The combination with a coating-material-holding tank and a perforated distributer mounted thereover, of elevator-buckets arranged to raise coating material from the tank, empty it upon one end of the distributer and spread it over the entire surface thereof, substantially as shown and described.

2. The combination with a coating-material-holding tank and a perforated distributer mounted thereover, of elevator-buckets arranged to raise the coating material from the tank, empty it upon one end of the distributer and spread it over the surface thereof, and a reciprocatable center-carrying device, substantially as shown and described.

3. The combination with a coating-material-holding tank and a perforated distributer mounted thereover, of elevator-buckets arranged to raise the coating material from the tank, empty it upon one end of the distributer and spread it over the surface thereof, a reciprocatable center-carrying device, and means for jarring or shaking the same when beneath the coating-material distributer, substantially as shown and described.

4. The combination with the material-holding tank, applying mechanism, and horizontally-reciprocatable center-carrying device, of a drip-pan at the front of the tank, means for automatically moving the center-carrier over the drip-pan, and means for automatically jarring or shaking the center-carrying device when over said pan, substantially as shown and described.

5. The combination with the main driving-shaft carrying a clutch, of driving mechanism connected with the free portion of the clutch and the mechanism for reciprocating the center-carrier, the center-carrier, and means for automatically stopping the center-carrier over the coating-tank, and over the drip-pan, substantially as shown and described.

6. The combination with the main driving-shaft carrying a clutch, of driving mechanism connected with the free portion of the clutch and the mechanism for reciprocating the center-carrier, the center-carrier, and means for automatically stopping the center-carrier over the coating-tank, over the drip-pan, and at the outer end of the stroke, substantially as shown and described.

7. The combination with the main driving-shaft carrying a clutch, of driving mechanism connected with the free portion of the clutch and the mechanism for reciprocating the center-carrier, the center-carrier, and means for automatically stopping the center-carrier over the coating-tank, over the drip-pan and at the outer end of the stroke, and for locking the same at the end of each stroke, substantially as shown and described.

8. The combination with the main driving-shaft provided with a clutch, and with the reciprocatable center-carrier, of a treadle for throwing the clutch into operation, and automatic means for throwing it out of operation at three points in the reciprocation of the center-carrier, substantially as shown and described.

9. The combination with a loose collar upon the driving-shaft, a clutch mechanism also on said shaft for controlling the same, of connections between the collar and a stop upon the main frame arranged to engage the driving-wheel of the center-carrying mechanism, substantially as shown and described.

10. The combination with the center-carrying frame provided with projections at each side, of the adjustable supporting-bars upon which said frame rests and moves, and ratchet-wheels arranged to come in contact with said projections, substantially as shown and described.

11. The combination with the reciprocatable center-carrying frame and means for reciprocating the same, of arms thereon, slotted plates at the end of the outward stroke adapted to receive said arms, substantially as and for the uses and purpose shown and described.

12. The combination with the reciprocatable center-carrying frame and means for reciprocating the same, of arms thereon, slotted plates fixed to the main frame at the end of the outward stroke adapted to receive said arms, and a fly hinged upon said slotted plates adapted and arranged to turn independently or in unison with the center-carrying frame, substantially as shown and described.

13. The combination with the center-carrying frame of a center-holder the receptacles wherein are provided with imprinting devices adapted and arranged to be held out of contact with the centers while they are being coated and brought in contact with the coated surfaces when the center-holder is reversed for depositing the coated goods, substantially as shown and described.

708,268. METALLIC PACKING. THOMAS SMITH, San Luis Potosi, Mexico, assignor of two-thirds to C. B. Haag and R. M. Thomas, San Luis Potosi, Mexico. Filed July 2, 1901. Serial No. 66,334. (No model.)

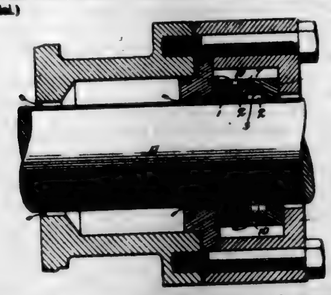

Claim.—1. The combination with a piston-rod, of a segmental packing normally loose thereon, means for holding the packing assembled and means whereby when fluid-pressure is on the cylinder the packing will be brought into positive engagement with the rod.

2. The combination with a piston-rod, of a plurality of sectional packing-rings normally loose thereon, means for holding the rings assembled and means whereby when fluid-pressure is on the cylinder the rings will be brought into positive engagement with the rod.

3. The combination with a piston-rod, of a metallic sectional packing comprising a plurality of packing-rings normally loose upon the piston-rod, and a casing for holding the rings assembled, the said casing having a fluid-space exterior of the packing-rings and communicating with the interior of the cylinder, whereby when the cylinder is under pressure, the rings will operatively engage the piston-rod, and when the cylinder is relieved from pressure, the rings will be loose thereon.

4. A packing of the class described, comprising a plurality of fluid-pressure-actuated radially-variable packing-rings encompassing the piston-rod and normally out of frictional engagement therewith, but adapted to bear frictionally on the piston-rod with a pressure varied by that of the internal fluid-pressure in the cylinder, and a casing in which said packing-rings are confined, said casing having a fluid-space exterior of the packing-rings and communicating with the interior of the cylinder, whereby when the latter is relieved of internal fluid-pressure the friction between the packing-rings and the piston-rod is relaxed, substantially as described.

5. A packing of the class described, comprising fluid-pressure-actuated radially-variable packing-rings encompassing the piston-rod and normally out of frictional engagement therewith, but adapted to bear frictionally on the same with a pressure varied by that of the internal fluid-pressure in the cylinder, and a casing in which said packing-rings are confined, said casing having a fluid-space, exterior of the packing-rings and communicating with the interior of the cylinder, whereby when the latter is relieved of internal fluid-pressure, the friction between the packing-rings and the piston-rod is relaxed, substantially as described.

708,269. BALING-PRESS. JULIUS A. STRECKER, Dwight, Ill. Filed Oct. 28, 1901. Serial No. 80,272. (No model.)

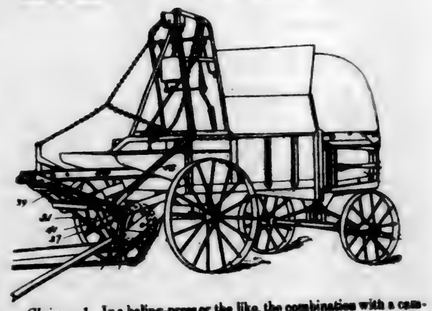

Claim.—1. In a baling-press or the like, the combination with a cam-block adapted to be continuously rotated and a traveler connected to the follower of the press and slidable on the periphery of the cam-block, of a longitudinally-movable locking-bolt for the traveler carried by the cam-block and provided with a lateral extension, a fixed cam adapted to engage the lateral extension of said bolt and actuate the latter through its unlocking movement, and an arm pivoted to said lateral extension and to the body of the cam-block and serving to counteract that component of the cam's action which is transverse to the bolt, substantially as described.

2. In a baling-press or the like, the combination with a rotatable cam-block and a traveler connected to the follower of the press and slidable on the periphery of the cam-block, of a longitudinally-movable locking-bolt for the traveler housed in the cam-block and provided with a vertical extension, a fixed cam having two cam-faces adapted to engage the vertical extension of said bolt on opposite rotative movements of the cam-block, respectively, and actuate said bolt through its unlocking movement, and an arm pivoted to said vertical extension and to the body of the cam-block and serving to counteract that component of the cam's action which is transverse to the bolt, substantially as described.

3. In a baling-press or the like, the combination with a cam-block adapted to be continuously rotated and a fixed track disposed adjacent said cam-block and on the arc of a circle whose center is coincident with the pivotal axis of the cam-block, said track having one end thereof abruptly curved outwardly, of a traveler connected to the follower of the press and slidingly engaging said track, and a fixed projection on the cam-block adapted to advance the traveler along the track, the latter, when it reaches the outwardly-curved end of the track passing out of contact with the projection, substantially as described.

4. In a baling-press or the like, the combination with a continuously-rotatable cam-block and a fixed track disposed above said cam-block and on the arc of a circle whose center is coincident with the pivotal axis of the cam-block, said track having one end thereof abruptly curved outwardly, of a depending traveler slidingly engaging said track, a power-transmitting connecting-rod swiveled to the under side of said traveler said rod having a depending leg, and a fixed arm projecting radially from

the periphery of the cam-block and adapted to contact said lug and thus advance the traveler along the track until the traveler enters upon the outwardly-curved end of the track, thus separating the actuating arm and lug, substantially as described.

5. In a baling-press or the like, the combination with a continuously-rotatable cam-block and a fixed curved track disposed above said cam-block, of a depending traveler slidingly engaging said track, a power-transmitting connecting-rod swiveled to the under side of said traveler, said rod having a depending lug, a fixed arm projecting radially from the periphery of the cam-block and adapted to contact said lug to advance the traveler along the track, and means slidingly engaged by said connecting-rod adjacent its connection to the traveler and serving to prevent lateral distortion of the latter relatively to its track, substantially as described.

6. In a baling-press or the like, the combination with a continuously-rotatable cam-block and a fixed curved track disposed above said cam-block, of a depending traveler slidingly engaging said track, a power-transmitting connecting-rod swiveled to the under side of said traveler, said rod having a depending lug and a lateral protuberance at its swiveled end, a fixed arm projecting radially from the periphery of the cam-block and adapted to contact said lug to advance the traveler along the track, and a fixed curved guide-rail disposed parallel with the outer side of said track and closely adjacent thereto, said guide-rail being slidingly engaged on its lower face by the lateral protuberance of the connecting-rod to prevent lateral distortion of the traveler relatively to its track, substantially as described.

7. In a baling-press or the like, an elongated framework or casing adapted to connect the power-receiving devices with the rear end of the press-body and to contain the power-transmitting connections to the follower, said casing being formed in two longitudinal sections the proximate ends of which abut each other in a knuckle-joint, as and for the purpose described.

8. In a baling-press or the like, an elongated framework or casing adapted to connect the power-receiving devices with the rear end of the press-body, said casing being made in two endwise-abutting sections having a knuckle-joint at their point of abutment, and a transverse rod disposed across said casing adjacent the knuckle-joint and serving to sustain the power-transmitting connections above the bottom of the casing at said joint, substantially as and for the purpose described.

9. In a baling-press or the like, an elongated casing for the power-transmitting connections, said casing being formed in two unconnected longitudinal sections which abut each other in a knuckle-joint, the rear section being adapted to contain at its rear end the power-receiving devices and having at its forward end a transverse support for the power-transmitting connections, and the forward section adapted to form a knuckle-joint with a fixed abutting member on the press-body in the line of draft of the power-transmitting connections, substantially as and for the purpose described.

10. In a baling-press or the like, an elongated casing formed in two unconnected endwise-abutting sections, power-receiving devices mounted in the rear end of the rear section, a press-body having a fixed rearwardly-extending bracket adapted to abut the forward end of the front section of the casing, a pair of guide-pulleys mounted in said bracket, and power-transmitting connections connected with the power-receiving devices and passing through said sectional casing and thence around said guide-pulleys, the abutting ends of the sections of the casing and the bracket being provided with knuckle-joints within which the line of draft falls, substantially as and for the purpose described.

11. In a baling-press or the like, an elongated casing formed in two unconnected endwise-abutting sections, power-receiving devices having curved paths of movement mounted in the rear end of the rear section, a press-body having a fixed rearwardly-extending bracket adapted to abut the forward end of the front section of the casing, a pair of guide-pulleys mounted in said bracket, and power-transmitting connections between the power-receiving devices and the pulleys, the same comprising a pair of rods longitudinally disposed within the casing and chains connected with the ends of said rods, and operating over the curved paths of said power-receiving devices and the peripheries of said pulleys, substantially as and for the purpose described.

12. A baling-press chamber having a vertically-extensible top wall and a door at one end thereof, combined with a locking device normally serving to lock the top of the chamber against extension, and connections therefrom to the door whereby, when the door is opened, the locking device is released and the top is free to rise under the expansion of the bale, substantially as described.

13. A baling-press chamber having a stationary bottom and front wall and a vertically-extensible top wall and a door covering one end of the chamber, in combination with a locking-arm for the top wall and connections therefrom to the hinge of the door, said arm engaging the top wall in a manner to prevent movement thereof when the door is closed and to permit the rise thereof when the door is opened, substantially as described.

14. In a baling-press, the combination with a bale-chamber and a fixed horizontal frame surrounding and surmounting the same, of a top or cover for the chamber, a series of obliquely-disposed links whereby said cover is suspended from said frame, a door closing one entire end of the chamber, a locking-arm pivoted to said frame and in its locking position abutting said cover, and a link connecting said locking-arm with the hinge of the door, whereby the opening of the door withdraws said locking-arm and permits the cover to swing rearwardly and upwardly on its supporting-links, all substantially as described.

15. In a baling-press, the combination with a bale-chamber having stationary front and bottom walls and a pair of doors constituting the end walls of the chamber, respectively, of a top or cover for the chamber mounted so as to be capable of a vertical extension, a locking device for said top or cover, and an interchangeable connection between said locking device and either of said doors adapted to maintain the cover in its lowermost position when the doors are closed and permitted to rise when the doors are opened, substantially as described.

16. In a baling-press chamber, the combination with a bale-chamber and a fixed horizontal frame surrounding and surmounting the same, of a top or cover for the chamber, a series of obliquely-disposed links whereby said cover is suspended at its ends from said frame, doors closing the entire ends of the chamber, respectively, a horizontal locking-arm pivoted to said frame and at its free end abutting the vertical rear wall of said cover, and an interchangeable link adapted to connect said locking-arm with the hinge of either of said doors, whereby when that door to which the arm is connected is opened, the locking-arm is withdrawn and the cover is free to swing rearwardly and upwardly, substantially as described.

17. In a baling-press, the combination with a bale-chamber and a door hinged and covering one end of the same, of a locking-hasp pivoted to said door near the outer or free edge thereof, a fixed staple adapted to receive the outer end of the hasp when the door is closed, and means for locking the inner end of the hasp against outward movement relatively to the door, substantially as described.

18. In a baling-press, the combination with a bale-chamber and a hinged door covering the entire end thereof, of a locking-hasp having an inwardly-bent outer end pivoted just back of such inwardly-bent end to said door near the outer or free edge thereof, a fixed staple adapted to receive the inwardly-bent end of the hasp when the door is closed, and means on the door adapted to engage the longer rearwardly-extending arm of the hasp and thereby lock the door in closed position, substantially as described.

19. In a baling-press, the combination with a bale-chamber and a hinged door covering the entire end thereof, of a locking-hasp having inwardly-bent outer and inner ends and pivoted just back of its outer end to the door near the free or outer edge thereof, a fixed staple adapted to receive the inwardly-bent outer end of the hasp when the door is closed, and a pivoted staple mounted in the outer face of the door and adapted to override the inwardly-bent inner end of the hasp and thereby lock the door in closed position, substantially as described.

20. In a baling-press, the combination with a bale-chamber provided with suitable transverse slots in the containing-walls thereof, of a wire-tucking device, the same comprising an arm pivoted above said chamber and means for actuating the same, and a wire-clamp mounted on the free end of said arm and adapted to clamp the wire and force the same through the slotted walls of the chamber upon the actuation of said arm, substantially as described.

21. In a baling-press, the combination with a bale-chamber provided with suitable transverse slots in the containing-walls thereof, of a wire-tucking device, the same comprising an arm pivoted above said chamber and means for actuating the same, a wire-clamp mounted on the free end of said arm and adapted to clamp the wire and force the same through the slotted walls of the chamber during its downward movement, and a clamp-releasing device adapted to receive the clamp and automatically release the wire therefrom when the arm reaches the limit of its operative movement, substantially as described.

22. In a baling-press, the combination with a bale-chamber having transverse slots formed through the walls thereof to permit the admission of the baling-wires, of means for tucking the wires therethrough, the same comprising a horizontal rock-shaft mounted above and along one side of the chamber, a pair of arms one fixedly and the other loosely mounted adjacent each other and at corresponding ends upon said rock-shaft, means limiting the angle of divergence of said arms, and clamps on the outer free ends of said arms adapted to grip the baling-wires and successively force the same through the slotted walls of the chamber upon the actuation of the rock-shaft, substantially as described.

23. In a baling-press, the combination with a bale-chamber having transverse slots formed through the walls thereof to permit the admission of the baling-wires, of means for tucking the wires therethrough, the same comprising a horizontal rock-shaft mounted above and along one side of the chamber, a pair of arms one fixedly and the other loosely mounted adjacent each other and at corresponding ends upon said rock-shaft, a link embracing said arms near their pivotal point and limiting their angle of divergence, clamps on the outer free ends of said arms adapted to clamp the baling-wires and successively force the same through the slotted walls of the chamber, and a stationary clamp-releasing device adapted to engage said clamps in the lowermost position of the arms, substantially as described.

24. In a baling-press, the combination with a bale-chamber having its top, bottom and front walls transversely slotted for the passage therethrough of the baling-wires, of a follower constituting the rear wall of the chamber, the face of the follower being provided with vertical grooves disposed in the same vertical planes as the slots of the chamber, and mechanism mounted above the chamber adapted to grip the baling-wires and tuck them through the slotted walls of the chamber and the grooves of the follower, substantially as described.

25. In a baling-press, the combination with a bale-chamber having its top, bottom and front walls transversely slotted for the passage therethrough of the baling-wires, of a follower constituting the rear wall of the chamber, the face of the follower being provided with vertical grooves disposed in the same vertical planes as the slots of the chamber, said grooves of the follower communicating with the interior space of the chamber through contracted longitudinal openings, and mechanism mounted above the chamber adapted to grip the baling-wires and tuck them through the slotted top and bottom walls of the chamber and the vertical grooves of the follower, substantially as described.

26. In a device of the character described, the combination with a power mechanism of means for transmitting a pull or stretch to a point remote from the power comprising a plurality of strut-like supports constituting compression members arranged to abut each other and flexibly united by means of hollow or divided joints and a traveler-cable extending from the power mechanism substantially through the centers of said joints to the points of power application, whereby any substantial flexing moment of the cable upon the compression members is avoided when said members are arranged out of direct alinement with each other, substantially as described.

27. In a mechanism of the character described, the combination with a cam-block adapted to be continuously rotated and a fixed track disposed adjacent said cam-block and on the arc of a circle whose center is coincident with the pivotal axis of the cam-block, said track having one side thereof abruptly turned out of the arc of curvature of the track, of a traveler slidingly engaging said track, and a fixed projection on the cam-block adapted to advance the traveler along the concentric portion of the track and to drop the traveler on the outwardly-turned end of the track, substantially as described.

28. A baling-press chamber having an outwardly-opening end door, and further having one of its sides formed by an outwardly-movable wall, in combination with obliquely-disposed links whereby said wall is hinged to a stationary external support, and locking means for said wall connected with the end door, said means locking the wall against outward movement when the door is closed, and releasing said wall when the door is opened, substantially as described.

29. In a baling-press, a baling-chamber one side of which is constituted by an upwardly-movable wall or cover, in combination with means connected to said wall and to a stationary part of the press-frame, said means serving to counteract the weight of the wall and tending to raise the same out of contact with the underlying bale to facilitate the withdrawal of the latter, substantially as described.

30. In a baling-press, a baling-chamber one side of which is constituted by an upwardly-movable wall or cover, in combination with a spring connected to said wall and to a stationary part of the press-frame, said spring serving to counteract the weight of the wall and tending to raise the same out of contact with the underlying bale to facilitate the withdrawal of the latter, substantially as described.

31. In a baling-press, a baling-chamber one side of which is constituted by an upwardly-movable wall or cover, in combination with obliquely-disposed links whereby said movable wall is hinged to an external stationary support, means for locking said wall against upward movement, and a spring connected to said wall and to a stationary member of the press-frame and serving to counteract the weight of the wall and to raise the latter out of contact with the underlying bale when the locking means are withdrawn, substantially as described.

708,270. TYPE-WRITER TYPE-BAR AND SUPPORT. CHARLES SEIBU, New York, N. Y. Original application filed July 30, 1901. Serial No. 69,112. Divided and this application filed Oct. 24, 1901. Serial No. 79,256. (No model.)

Claim.—1. In a type-writer, a paper-carriage and platen, an arc-plate disposed with its upright concave face oblique to the horizontal and opposite said platen, and type-bar hangers mounted upon the concave face of said plate; substantially as specified.

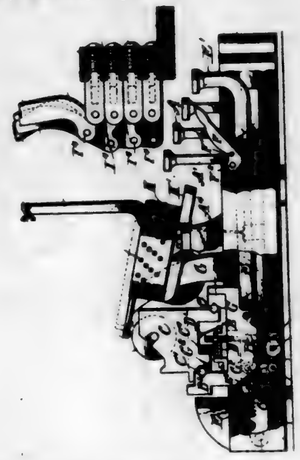

2. An arc-plate for supporting type-bar hangers comprising a flange having upon its concave face a groove and an aperture extending from the convex face of said plate and intersecting said groove; substantially as specified.

3. In a type-writer, an arc-plate provided with a longitudinal groove upon its concave face and a series of apertures extending from said groove to the opposite face, a hanger having a flange adapted to enter said groove, a securing device passing through the aperture in said plate and entering said hanger, and a type-bar mounted in said hanger; substantially as specified.

4. In a type-writer, an arc-plate having parallel longitudinal grooves upon one face, and a series of hangers mounted thereon in different horizontal planes and with their vertical centers in different vertical planes; substantially as specified.

5. In a type-writer, a carriage and platen, a segmental plate disposed with its upright concave face oblique to the horizontal and opposite said platen, and a series of type-bars and hangers staggered or stepped upon the concave surface of said plate next to said platen; substantially as specified.

6. A type-bar hanger comprising a block having a threaded transverse aperture therein, pivoting-ears at opposite ends, and a securing-flange extending longitudinally across the back of said hanger in alinement with said aperture; substantially as specified.

7. A type-bar comprising a plate having the body thereof at one end slitted and pressed in opposite directions to form an eye to receive a type-shank; substantially as specified.

8. A type-bar comprising a plate having the body thereof at one end slitted and pressed in opposite directions to form an eye to receive a type-shank and provided at its opposite end with an extended portion having a pivoting-aperture and connecting-eye for a ligament; substantially as specified.

9. A type-bar comprising a plate having the body thereof at one end slitted and pressed in opposite directions to form an eye to receive a type-shank and provided at its opposite end with an extension below the body of the plate and having a pivoting-eye beyond said extension and a ligament-eye below said pivoting-eye; substantially as specified.

10. A type-bar comprising a plate having the body thereof at one end slitted and pressed in opposite directions to form an eye adapted to receive a type-shank and at its opposite end provided with an extension in the plane of the bar extending at an angle thereto and provided with a ligament-eye, and a body portion having a pivoting-eye beyond said extension; substantially as specified.

708,271. VETERINARY APPLIANCE. NEIL STALKER, West Hartford, Conn. Filed Nov. 20, 1901. Serial No. 83,094. (No model.)

Claim.—A veterinary appliance consisting of a shield, straps for attaching the shield to a horse, a pocket hanging from the shield, an alarm-ball depending from the under side of the shield near the front of the pocket, and a disk located in the front of the pocket and connected with the ball, substantially as specified.

708,271.

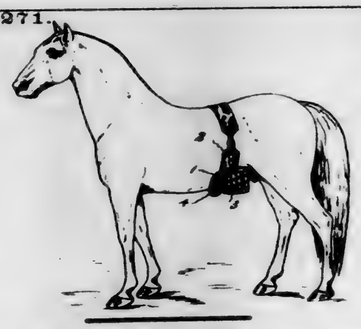

708,272. VEHICLE-BRAKE. JONAS A. TAUTPHAUS, Sappington, Mo. Filed Mar. 24, 1902. Serial No. 99,055. (No model.)

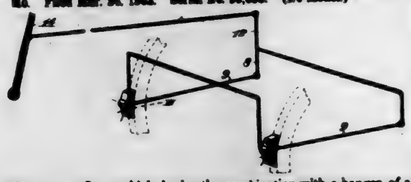

Claim.—1. In a vehicle-brake, the combination with a hanger, of a pull-rod loosely connected to the hanger, and a brake-head loosely pivoted to the hanger, of an eyebolt seated in the brake-head and in which the pull-rod is positioned to provide a connection between pull-rod and brake-head independently of the hanger.

2. In a vehicle-brake, the combination with a swinging hanger, suspended from the wagon-body, formed of a continuous piece of material, and comprising a horizontal portion, a depending portion at each end of the horizontal portion, and outturned ends; of brake-heads carried by the outturned ends of the hanger, a rock-shaft carried by the running-gear, pull-rods secured to the outturned ends of the hanger between the brake-heads and the depending portion, and connecting with the rock-shaft, eyebolts secured in the brake-heads and receiving the pull-rods, and means for operating the rock-shaft.

708,273. SAW. JOSEPH TUTTEROW, Morgantown, Ind. Filed Apr. 23, 1902. Serial No. 104,364. (No model.)

Claim.—1. A crescent-saw blade-smith thicker near the cutting edge than at the back, and having a central pair of planer-teeth with perpendicular faces set in opposite directions and a notch between said teeth, the edge curving from said central teeth toward each end of the blade, and having teeth arranged in groups of three with recesses between the groups, said recesses each approximating the width of a group of three teeth, and each group having two cutter-teeth and one clearer-teeth.

2. A crescent-saw blade with plane sides, the curved edge much thicker than the back, having a central pair of clearing-teeth with perpendicular faces in opposite directions, and teeth arranged in groups of three between said clearing-teeth and the ends of the saw, spaces between the groups of teeth, each space approximating the width of a group of three teeth, each group of three consisting of two cutters beveled on opposite sides and a planer-tooth at the side of the group toward the end of the saw, the planer-teeth having their planer-faces substantially perpendicular to the back of the saw.

708,274. CAR-COUPLING. JOHN R. WADE, Brooklyn, N. Y. Filed Jan. 10, 1900. Serial No. 971. (No model.)

Claim.—1. In a car-coupling, a draw-head, a knuckle pivoted therein and a movable locking-piece adapted to engage said knuckle and a transient member whereby said coupling is locked.

2. In a car-coupling, a draw-head, a knuckle pivoted therein, comprising an engaging jaw and a locking-arm at approximately right angles thereto and a vertically-movable locking-piece adapted to be raised by said arm and to engage said arm and a transient member whereby said coupling is locked.

3. In a car-coupling, a draw-head, a knuckle pivoted therein, comprising an engaging jaw and a locking-arm at approximately right angles thereto, and a vertically-movable swinging locking-piece adapted to be raised by said arm and to engage said arm and a transient member whereby the coupler is locked and also adapted upon withdrawal of said transient member to swing outwardly, whereby said knuckle is permitted to assume the open position.

4. In a car-coupler, a draw-head, a knuckle pivoted therein, comprising an engaging jaw and a locking-arm at approximately right angles thereto, a vertically-movable swinging locking-piece adapted to be raised by said arm and to engage said arm and a transient member whereby the coupler is locked and also adapted upon the withdrawal of said transient member to swing outwardly whereby said knuckle is permitted to assume the open position and respective means whereby the oscillation in each direction of said locking-piece is limited.

5. In a car-coupling, a draw-head, a knuckle pivoted therein comprising an engaging jaw and a locking-arm at approximately right angles thereto, an inclined bearing therefor whereby it normally assumes the open position, a vertically-movable swinging locking piece adapted to be raised by said arm and to engage said arm and a transient member whereby said coupler is locked and also adapted upon the withdrawal of said transient member to swing outwardly whereby said knuckle is permitted to assume the open position and respective means whereby the oscillation in each direction of said locking-piece is limited.

6. In a car-coupling, a draw-head, a knuckle pivoted therein comprising an engaging jaw and a locking-arm at approximately right angles thereto an inclined bearing therefor whereby it normally assumes the open position, a stop G and an incline H in said draw-head and a vertically-movable swinging locking-piece pivoted between said stop and said incline and adapted to be raised by said arm and to engage said arm and a transient member whereby said coupling is locked.

7. In a car-coupling, a draw-head, a knuckle pivoted therein comprising an engaging jaw and a wedge-like locking-arm at approximately right angles thereto, an inclined bearing therefor whereby it normally assumes the open position, a stop G and an incline H in said draw-head and a vertically-movable swinging locking-piece pivoted between said stop and said incline and adapted to be raised by said locking-arm and to engage said arm and a transient member whereby said coupling is locked.

708,275. CAR-COUPLING. JOHN R. WADE, Brooklyn, N. Y. Filed Feb. 3, 1900. Serial No. 3,910. (No model.)

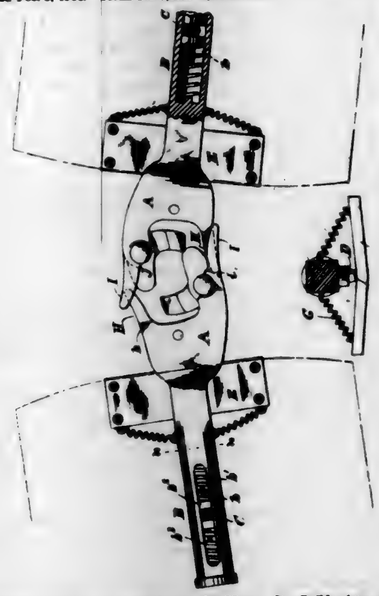

Claim.—1. In a car-coupler of the Master Car-Builders' type, a draw-head provided with diagonally opposite approximately vertical guide-surfaces A A and forwardly-extended laterally-flared horns above and below said surfaces respectively adapted to engage similar guide-surfaces on an opposing coupler-head whereby said coupler-heads are brought substantially into alinement, substantially as described.

2. The combination with a coupler pivoted at its shank, of a centrally-inclined supporting-slideway, a friction-ball between the coupler and slideway, and an auxiliary tensional centering-support.

708,276. PLUNGER-ADJUSTING MECHANISM FOR RE-PRESS BRICK MACHINES. JOSEPH WALKER, St. Elmo, Va., assignor of one-half to Henry P. West, Washington, D. C. Filed Mar. 24, 1902. Serial No. 99,697. (No model.)

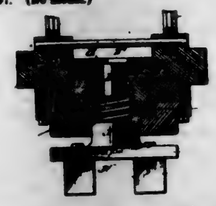

Claim.—The combination with a reciprocating cross-head having an upper bored casing, of a plunger, having a smooth upper portion fashioned into said bore and capable of vertical movement therein, said plunger having a screw-threaded middle body, an enlarged smooth lower body adapted to move freely in bore of the lower casing, secured by means of bolts to the cross-head, said lower casing having a slot in its front face allowing an adjusting-handle to work therethrough, said handle being secured in contact of a nut working upon threads of plunger, said nut being clamped between the upper and lower casings, substantially as shown and described.

708,277. TELEPHONE OR TELEGRAPH POLE. ISAAC M. WARNER, Union City, Mich., assignor to Frank C. Boise, Union City, Mich. Filed Oct. 18, 1901. Serial No. 78,730. (No model.)

Claim.—1. The combination of a tubular pole, a bolt projecting vertically from the upper end thereof and having its lower end secured therein, a cross-arm provided with a series of wire-supports on said bolt, bearing on the upper end of said pole and means, independent of said bolt to secure said cross-arm to said pole, substantially as described.

2. The combination of a tubular pole, a bolt projecting vertically from the upper end thereof and having its lower end secured therein, cross-arms on said bolt, a space-block on said bolt between said cross-arms, the lowermost cross-arm bearing on the upper end of the pole, and a clamping-nut on said bolt bearing on the upper cross-arm, substantially as described.

3. The combination of a tubular pole, a bolt 10 having its lower end inserted in the upper end of the tubular pole, a bolt passed transversely through the upper portion of the pole and the lower portion of said bolt 10 to secure the latter in the pole and a cross-arm secured on the projecting upper portion of said bolt 10 and bearing on the upper end of the pole, substantially as described.

708,278. CONVERTIBLE CHAIR. THEODORE W. WARNEKE, Baldwinsville, Mass., assignor to Gilman Waite, Baldwinsville, Mass., doing business as the Waite Chair Company. Filed Sept. 13, 1900. Serial No. 780,209. (No model.)

Claim.—1. In a convertible chair the combination of crossed legs pivoted together; a seat pivoted to the rear legs and connected by a link to the front legs; and a frame pivoted to the rear legs and connected by a link to the front legs.

2. In a convertible chair the combination of crossed legs pivoted together; a seat pivoted to the rear legs and connected by a link to the front legs; a frame pivoted to the rear legs and connected by a link to the front legs; and a spring-catch for holding the chair in its elevated

position, one member of the catch being on the frame and the other on the seat.

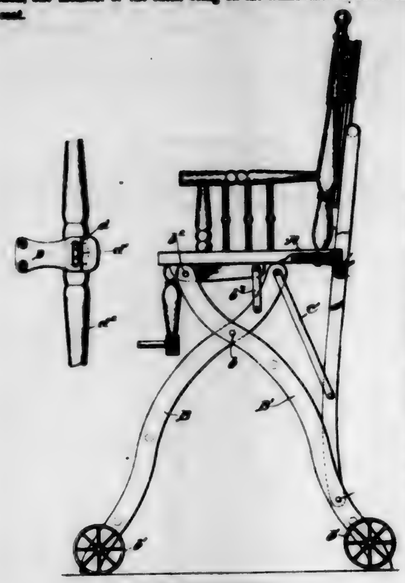

708,279. SELF-IGNITER. SARAH WATERMAN, New York, N. Y. Filed Feb. 6, 1902. Serial No. 92,775. (No model.)

Claim.—A self-igniter composed of a bail, platinum wires depending from the bail ends, a number of spaced igniting-pellets carried by the platinum wires, and platinum spirals that encircle the wires intermediate the pellets and extend from pellet to pellet, substantially as specified.

708,280. ADJUSTABLE CURTAIN-BRACKET. LOUIS A. WATTS, Cincinnati, Ohio, assignor of one-half to George Schott, Cincinnati, Ohio. Filed Sept. 30, 1901. Serial No. 76,707. (No model.)

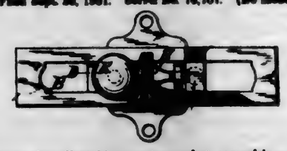

Claim.—1. An adjustable curtain-bracket comprising a base-plate adapted to be secured to a window-frame or support, said base-plate being longitudinally grooved at its under side and having its face longitudinally slotted, a slide fitted in said grooved base-plate having an integral sleeve projecting through said slotted face at right angles, a set-screw locking said sleeve in position, an arm slidably fitted in said sleeve having a head formed to support a roller-spindle, and a set-screw locking said arm in position; substantially as described.

2. An adjustable curtain-bracket comprising a base-plate adapted for attachment to a support, said plate being longitudinally grooved at its under side and having its face longitudinally slotted, an angle-shaped member having one arm slidably fitted in said grooved base-plate and its other arm extending through the slotted face thereof, said latter arm being in the form of a sleeve and of proper external size to permit insertion or detachment of the member from the under side of the base-plate, a set-screw screwed into the upper part of the slide-arm of said member having a flat base engaging the face of the base-plate, and a roller-supporting member adjustably secured in the sleeve-arm of said member, substantially as described.

708,281. ADJUSTABLE SHADE-BRACKET. LOUIS A. WATTS, Cincinnati, Ohio, assignor of one-half to George Schott, Cincinnati, Ohio. Filed Feb. 10, 1902. Serial No. 93,362. (No model.)

Claim.—1. An adjustable shade-bracket comprising an arm adapted for direct attachment to the inner side of a window-frame to project laterally, and a roller-supporting arm secured thereon, adjustable lengthwise thereof and extending substantially at right angles therefrom, substantially as described.

2. An adjustable shade-bracket comprising an arm adapted for attachment to the inner side of a window-frame to project laterally therefrom, and a roller-holding member supported thereby, one of said members having a sleeve fitting on the other in slidable relation, screw-holes in opposite sides of said sleeve, and a set-screw insertible in either of said screw-holes for locking the roller-holding member in position; substantially as described.

3. An adjustable shade-bracket comprising an arm adapted for attachment to the inner side of a window-frame to project laterally therefrom, a roller-holding member consisting of a sleeve having an arm extending at right angles therefrom and formed to receive a roller-spindle, the said sleeve being fitted on said first-mentioned arm, and a set-screw for locking the roller-holding member in position; substantially as described.

4. An adjustable shade-bracket comprising two right-angle members having corresponding arms parallel and adjustably secured together, the free arm of one member being formed to receive a roller-spindle, and the corresponding arm of the other member constituting a base-plate for attachment to the inner side of a window-frame, substantially as described.

5. An adjustable shade-bracket comprising two right-angle members having corresponding arms adjustably fitted lengthwise together and their free arms extending therefrom in the same direction, one of said free arms being formed to receive a roller-spindle and the other being adapted for attachment to a support; substantially as described.

6. An adjustable shade-bracket comprising an angle-shaped bracket member, one of the arms of which is adapted for attachment to a support, a similarly-shaped roller-holding member having its corresponding arm formed to receive a roller-spindle, the other arm of the latter member being in the form of a sleeve and slidably embracing the corresponding arm of the bracket member, and a set-screw for locking the roller-holding member in place; substantially as described.

7. An adjustable shade-bracket comprising an angle-shaped bracket member, one arm of which is adapted for attachment to a support, and a similarly-shaped roller-holding member arranged with its arms extending in the same directions and having its corresponding arm formed to receive a roller-spindle, the remaining arms of said members being secured together in adjustable relation, one being in the form of a sleeve and the other slidably fitted therein, and a set-screw for locking the roller-holding member in place; substantially as described.

708,282. SHOE-LACING-TIP MACHINE. CHARLES D. WEAVER, McPherson, Kans., assignor to the Clark-Weaver Manufacturing Company, Crosley, Colo. Filed Aug. 16, 1901. Serial No. 72,304. (No model.)

Claim.—1. In a machine for applying non-metallic tips to shoelaces, the combination with a framework, of a supply-spool, solution-applying mechanism, a reel for drawing the lacing-web from the supply-spool, means mounted on the reel for keeping the convolutions of the web separated and to prevent them from winding on top of one another, molding devices to which the web passes after leaving the reel, a cutting device for severing the lace from the web, and means for drawing the lacing-web from the reel to a position to be acted on by the cutting device.

2. In a machine of the class described, the combination with means for applying the solution to the lacing-web, of a drying-reel upon which the web is wound after the solution is applied, means, mounted on the reel for automatically shifting the convolutions, whereby a convolution wound in one plane is moved out of the way to allow the next convolution to wind in the same plane, and so on, the arrangement being such that any desired number of convolutions may be constantly maintained on the reel, between the plane where the web is received and the plane where it passes from the reel, whereby any convolution is held in the drum a sufficient length of time for partially drying the applied solution.

3. The combination with means for applying the solution to the lacing-web, of a stationary drum or casing, a drying-reel actuated by said casing, and means mounted on the reel for automatically shifting the convolutions of the web as they are wound on the reel, substantially as described.

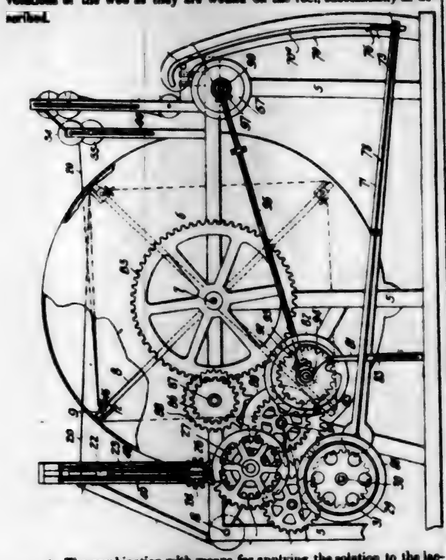

4. The combination with means for applying the solution to the lacing-web, of a drying-reel and chains mounted on the reel-arms for automatically shifting the convolutions of the web in a direction parallel with the axis of the reel, for the purpose set forth.

5. In a machine of the class described, the combination with a suitable supporting-frame, of a trough for holding the solution, said trough being mounted to move vertically on the frame, spring-supported gates normally closing openings in the sides of the trough, other gates in alinement with the trough-gates, and means for raising the trough to immerse the lacing-web in the solution therein, the arrangement being such that the upper gates displace the trough-gates and prevent the escape of the solution when the trough-gates are lowered for the purpose stated.

6. In a machine of the class described, the combination of a solution-containing trough, movable gates normally closing web-openings in the opposite sides of the trough, vertically-movable gates located above and in alinement with the trough-gates, and means for simultaneously raising the trough and lowering the upper gates to immerse the lacing-web in the solution, the arrangement being such that the two sets of gates meet on the web, the trough-gates being displaced by the other gates to allow the immersion of the web in the solution and prevent the escape of the solution from the trough, the meeting edges of the gates being provided with yielding material as rubber for the purpose set forth.

7. In a machine of the class described, the combination with a suitable framework, of a solution-containing trough mounted to move vertically in the framework, a cover for said trough, means for supporting the lacing-web out of the plane of the trough, and means for raising and lowering the trough to bring it in a position to immerse a portion of the web in the solution, and means for automatically actuating the cover during the trough's vertical movement, substantially as described.

8. In a machine of the class described, the combination with a suitable framework, of a solution-containing trough mounted to move vertically therein, means for supporting the lacing-web above the plane of the trough, a movable cover normally closing an opening in the top of the trough, and means for automatically actuating said cover to open the trough to allow the immersion of the lacing-web as the trough is raised for the purpose set forth.

9. In a machine of the class described, the combination with a suitable framework, of a solution-containing trough mounted to move vertically in the framework, spring-supported gates normally closing openings in the sides of the trough, and gates mounted above the trough-gates and arranged to meet and displace the latter to allow the immersion of the web in the solution, means for simultaneously raising the trough and lowering the upper gates for the purpose, a movable cover for the trough, and a slide located below the upper gates when the mechanism is at rest, and means for automatically actuating the cover and slide as the trough is raised for the purpose set forth.

10. In a machine of the class described, the combination with means for applying solution to the lacing-web, of a drying-reel upon which the web is wound after the solution is applied, molding devices to which the web is passed after leaving the reel, a stationary block, means for drawing the web from the reel, through the molding devices and across said block, and a reciprocating cutter device arranged to sever the web where it engages the block, so as to leave a portion of the web to which the solution is applied, on each side of the cutter.

11. In a machine of the class described, the combination with a series of web-supply spools, of a reel for drawing the web from the supply-spools, means intermediate the spools and the reel for simultaneously applying solution to all the webs, molding devices to which the series of webs pass after leaving the reel, stationary blocks, means for drawing the webs across said blocks in such a manner that the portion of each web to which the solution is applied, shall engage the blocks, and a reciprocating rod provided with cutters adapted to sever the webs where they engage the blocks, the arrangement being such that the solution-applying mechanism and the cutters act simultaneously while the reel is at rest, these devices in turn being at rest while the reel is in operation.

12. In a lacing-tip machine, the combination with spools adapted to hold a series of lacing-webs, of means for simultaneously applying solution to a portion of all the webs, an intermittently-operated reel for drawing the webs from the spools, molding devices through which the webs pass after leaving the reel, stationary blocks, means for drawing the webs across the stationary blocks, a reciprocating rod provided with projections adapted to engage the webs and to hold them in place on the blocks, and a reciprocating rod provided with cutters adapted to sever the webs at the blocks.

13. In a machine of the class described, the combination with supply-spools upon which the lacing-webs are wound, of solution-applying mechanism for all the webs, a reel upon which the webs are wound, molding devices through which the webs pass after leaving the reel, cutting devices acting on the webs after they leave the molding devices, and means for drawing the webs from the reel, through the molding devices, and into position to be acted on by the cutters, said means comprising oscillating arms and two rods connected with said arms and provided with codperating fingers, one of the said rods being movable endwise, levers mounted on the oscillating arms and connected with the movable finger-rod to operate the latter, the arrangement being such that the fingers of the rods are raised and grasp the lacing-webs in proximity to the cutters and then descend while holding the webs, whereby the aforesaid function is performed.

14. In a machine of the class described, the combination with supply-spools, means for applying solution to a portion of the webs, a reel for drawing the webs from the spools, molding devices, cutting devices, and means for drawing the webs after they leave the reel, through the molding devices and into position to be acted on by the cutting devices, said means comprising a pair of oscillating arms, a rod journaled in said arms, a second rod rigidly attached to the first-named rod, extending parallel therewith, and separated therefrom, upwardly-projecting stationary arms having slots in which the two rods move as the oscillating arms are raised, fingers fast on the two rods, the direction of the slots in the upper extremities of the stationary arms, being changed to cause the first-named rod to turn in the bearings of the oscillating arms, whereby the fingers of the rods are projected to one side of the stationary webs, a third rod mounted to have an endwise movement on the first-named rod, provided with fingers connected to slide on the second rod, and levers mounted on the oscillating arms and connected with the third rod for imparting the endwise movement thereto, whereby the webs are grasped between the two sets of fingers, and as the oscillating arms descend the webs are drawn downwardly for the purpose set forth.

15. The combination with means for applying the solution to the lacing-web, of a drying-reel and chains mounted on the reel-arms for automatically shifting the convolutions of the web in the direction parallel with the axis of the reel and a support between the reel-arms to prevent the chain from sagging.

708,288. POSTMAN'S RACK. CHARLES J. WEBER, Tarrytown, N. Y. Filed Mar. 20, 1902. Serial No. 99,205. (No model.)

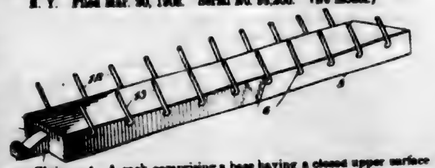

Claim.—1. A rack comprising a base having a closed upper surface to support letters of different lengths, said base having an opening in one

end, a plurality of U-shaped wires having their bight portions journaled in the sides of the base for movement of their end portions above and below the upper surface of the base said bight portions being centrally offset, a single shift-rod pivoted to the bight portions and projecting at one end through the opening in the end of the base, and a spring connected with the opposite end of the shift-rod and to the adjacent end of the base to hold the rod yieldably at one limit of its movement with the ends of the U-shaped wires in lowered positions, the projecting end of the shift-rod having a notch to receive the end of the base to hold the rod against the action of the spring.

2. A postman's rack comprising a base having a continuous upper surface, and having an opening at one end, arms pivotally mounted in the sides of the base for movement into position above and below the upper surface of the base, a shift-rod mounted in the base and operatively connected with the arms for shifting them and a spring connected to one end of the shift-rod and to the base for holding the rod with the arms lowered, the opposite end of the shift-rod projecting from the base and adapted for engagement with the base to hold the rod against the action of the spring.

3. A rack comprising a base, a plurality of U-shaped wires having their bight portions journaled in the base and having central offset supplemental bight portions, a shift-rod pivotally connected with the supplemental bight portions, a spring connected with the shift-rod for holding it yieldably at one limit of its motion, and a latch-tongue connected with the opposite end of the rod and adapted for engagement with the base to hold the rod against the tendency of the spring.

4. A rack comprising a hollow base having a continuous upper surface, a plurality of separating devices connected in pairs and journaled in the sides of the base for movement into erect and reclining positions above and below the upper surface of the base respectively, a shift-rod within the base connecting the separating devices for actuating them, and yieldable means within the base and connected with the rod for holding it yieldably with the separating devices in erect positions, said rod projecting at one end from the base and constructed to engage the base to hold the rod against the action of the yieldable holding means.

708,284. INCANDESCENT IGNITER FOR EXPLOSIVE-ENGINES. CARL W. WEISS, New York, N. Y., assignor of one-half to August Mietz, New York, N. Y. Filed Jan. 14, 1901. Serial No. 43,004. (No model.)

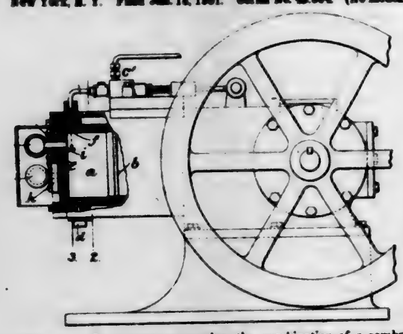

Claim.—1. In an explosive-engine, the combination of a combustion chamber or cylinder, a plurality of separate and independent igniters disposed on the cylinder-head at widely-separated points to ignite the charge at different places in the combustion-chamber simultaneously, one or more of said igniters having a projection within the cylinder, and means to inject the fuel against such projection, substantially as described.

2. In an explosive-engine, the combination of a single combustion-chamber, a fuel-supply pipe having a nozzle with a plurality of inlet-openings, a plurality of separate and independent igniters disposed on the cylinder-head at widely-separated points within said single chamber to ignite the charge at different places in said chamber simultaneously, the igniters in line with said inlet-openings being provided with lips to receive and vaporize the fuel, substantially as described.

708,285. COMBINED MILK STRAINER AND VENTILATOR. PAUL WEISS, Lester Prairie, Minn. Filed Sept. 26, 1901. Serial No. 76,608. (No model.)

Claim.—1. The combination with a milk-can having a flaring mouth, of a milk-can cover and strainer, consisting of a flaring ring, a cylindrical part supported from said flaring ring and provided with an imperforate bottom and having openings in its side walls above the imperforate bottom, and screen-coverings to the openings in the side walls, said screen-openings being arranged so that when the cover is in one position they will lie opposite to the walls of the neck of the can and when the cover is reversed they will be above the flaring mouth of the can and below the inverted imperforate bottom, and said flaring ring being so located that in one position it will rest on the flaring mouth portion of the can, substantially as described.

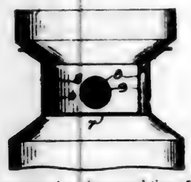

2. A milk-can cover and strainer, consisting of a ring with straight walls, a cylindrical part with an imperforate bottom and having openings in its side walls above the imperforate bottom, screen-coverings to said openings, and a flaring ring connecting said straight-walled ring and cylindrical part, said straight-walled ring projecting from the flaring ring so as to constitute an upright wall extending above the same when the device is serving as a strainer, and to constitute a depending outer wall overhanging the mouth of the can when the device is serving as a cover, and in connection with the flaring ring serving to shed rain from the cover and away from the mouth of the can, substantially as described.

708,286. POWER-TRANSMITTING DEVICE FOR HAND-DRIVEN MECHANISMS. FREDERICK W. WILD, Jr., Baltimore, Md. Filed May 6, 1902. Serial No. 106,115. (No model.)

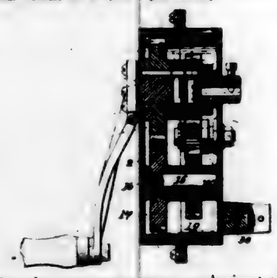

Claim.—In a power-transmitting mechanism for the purpose described, a spindle which has to be rotated in a certain direction, a gear-wheel loose on the said spindle and to which power is applied, a ratchet mechanism constructed to transmit rotary movement from the said gear-wheel to the spindle when the said gear-wheel is rotated in one direction only, or that to be taken by the spindle, a second gear-wheel loose on the said spindle with ratchet mechanism which in effect is the same as the first, combined with a train of gearing driven from the first gear-wheel, whereby in the reversal in direction of the first gear-wheel, the second gear-wheel is caused to rotate in an opposite direction to that of the first, thereby continuing the rotation of the spindle in the first-described and required direction, substantially as specified.

708,287. FLOATING LIGHTHOUSE. JOHN C. WILLIAMS, Kansas City, Mo. Filed Oct. 24, 1901. Serial No. 79,902. (No model.)

Claim.—1. The combination of a buoy or float supported lighthouse, embracing buoys or floats, intersecting arches connecting the same, suitable braces for the buoys or floats and arches, an upwardly-tapering tower centrally surmounting the arched frame, and braces connecting said arches near their ends with said tower, weights or anchors, cables extending up from the same to the lower ends of the arches, pulleys guiding said cables to the base of the tower, and means located therein for taking up or paying out said cables, substantially as described.

2. The combination of a plurality of buoys or floats provided with vertical passages or wells, braces connecting said buoys or floats, intersecting arches connecting said floats or buoys and the ends of said braces, said arches being of tubular construction, guide-pulleys arranged in said arches and at the lower ends of said wells or passages, a hollow tower centrally surmounting the arches, and suitably braced, a globe or lamp surmounting the tower, a house formed at the base of the tower and containing winding-drums, cables attached to said winding-drums and extending over said pulleys and down through said wells or passages, weights or anchors attached to the lower ends of said cables, means to turn said drums in one direction so as to wind up the cables, and means for preventing the accidental back rotation of the drums, substantially as described.

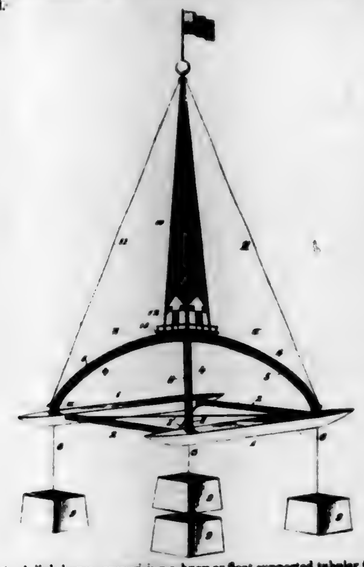

3. A lighthouse, comprising a buoy or float supported tubular frame, a tower mounted on said frame, and provided with a living-room, ladder suitably guided through said tubular frame, and into said room, weights resting on the bottom of the can, and attached to the lower ends of said cables, and means for winding up or paying out said cables in said room so as to accommodate the falling or rising of the water.

4. A lighthouse comprising a buoy or float supported structure provided with vertical passages or wells at suitable points, intersecting tubular arches registering at their lower ends with said wells or passages, and suitably braced, a skeleton tower surmounting the arches and provided with a living-room, cables connecting the upper part of the tower with the lower ends of the arches, cables suitably guided through said tubular arches and said wells or passages, weights attached to the lower ends of said cables, and means within said room for shortening or lengthening said cables, substantially as described.

708,288. FOLDING BLANK PAPER BOX. DIOR L. WIBLOW, Boston, Mass. Filed Dec. 26, 1901. Serial No. 87,051. (No model.)

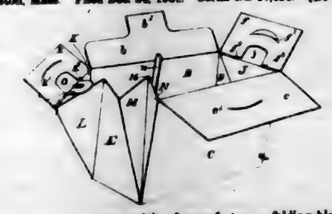

Claim.—1. As a new article of manufacture, a folding blank paper box consisting of a single sheet, comprising a bottom portion, front and rear side portions, and end portions, the said sides and ends being connected by folding portions, the two correspondingly-placed folding portions upon opposite sides of each of the said end portions and immediately next to the said side portions being provided one with a locking-tab and the other with a flap, the said flap of the folding portion having a plurality of slits, and the said locking-tab adapted to be passed through all the said slits during the folding operation thereby locking the folding portions together, substantially as described.

2. As a new article of manufacture, a folding blank paper box consisting of a single sheet, comprising a bottom portion, front and rear side portions, and end portions, the two correspondingly-placed folding portions upon opposite sides of each of the said end portions and immediately next to the said side portions being provided one with a locking-tab and the other with a flap, the said flap of the said folding portion having a plurality of slits and a tab formed by cutting through the said flap, the said tab formed in the flap being bent over an adjacent folding portion, and the said locking-tab adapted to be passed over the said bent flap-tab and through all the slits in the said flap during the folding operation thereby locking the folding portions together, substantially as described.

708,289. REGULATOR. HENRY R. P. WEBER, New York, N. Y. Filed Aug. 10, 1901. Serial No. 71,049. (No model.)

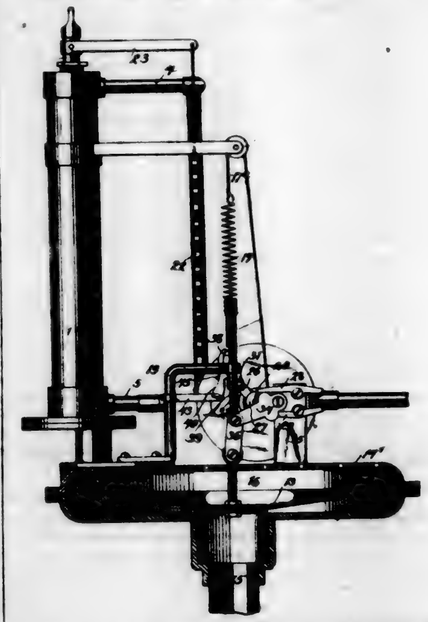

Claim.—1. In an apparatus for operating dampers in furnace-off takes, the combination, with a motor for moving such dampers and a motor controller, of an actuating device for operating said motor-controller, a primary controlling device operated by variations in pressure in the combustion-chamber, means operated by said primary controlling device controlling the operation of said actuating device, which actuating device derives its power from a source independent of the primary controlling device, and a compensating device for compensating for the difference in range between these variations in pressure which operate the apparatus to close the damper and these variations in pressure which operate to open the damper.

2. In an apparatus for operating dampers in furnace-offtakes, the combination, with a fluid-pressure motor for moving such dampers, and a controlling-valve for such motor, of an actuating device for operating said valve, a primary controlling device operated by variations in pressure in the combustion-chamber, means operated by said primary controlling device controlling the operation of said actuating device, which actuating device derives its power from a source independent of the primary controlling device, and a compensating device for compensating for the difference in range between these variations in pressure which operate the apparatus to close the damper and these variations which operate to open the damper.

3. In an apparatus for operating dampers in furnace-offtakes, the combination, with a motor for moving such dampers, and a motor-controller, of an energy-storing actuating device arranged to operate said motor-controller when released, means operated by the motor for storing up energy in said actuating device, a primary controlling device operated by variations in pressure in the combustion-chamber, means operated by the said primary controlling device, adapted to release the actuating device, and a compensating device, for compensating for the difference in range between the variations in pressure which operate the apparatus to close the damper and these variations which operate to open the damper.

4. In an apparatus for operating dampers in furnace-offtakes, the combination, with a motor for moving such dampers and a motor-controller, of a primary controlling device operated by variations in pressure in the combustion-chamber, an actuating device for operating the motor-controller, mechanically connected with and controlled by said primary controlling device, but deriving its power from an independent source, and a compensating device for compensating for the difference in range between the variations in pressure which operate the apparatus to close the damper and those variations which operate to open the damper.

5. In an apparatus for operating dampers in furnace-offtakes, the combination, with a motor for moving such dampers and a motor-controller, of a primary controlling device operated by variations in pressure in the combustion-chamber, an energy-storing actuating device for operating the motor-controller, mechanically connected with and controlled by said primary controlling device, but deriving its power from an independent source, and a compensating device for compensating for the difference in range between the variations in pressure which operate the apparatus to close the damper and those variations which operate to open the damper.

6. In an apparatus for operating dampers in furnace-offtakes, the combination, with a motor for moving such dampers and a motor-controller, of a primary controlling device operated by variations in pressure in the combustion-chamber, an energy-storing actuating device for operating the motor-controller, in which power is stored for such purpose by the motor in its operation, and which is mechanically connected with and controlled by said primary controlling device, and a compensating device for compensating for the difference in range between the variations in pressure which operate the apparatus to close the damper and those variations which operate to open the damper.

7. In an apparatus for operating dampers in furnace-offtakes, the combination, with a motor for moving such dampers and a motor-controller, of a primary controlling device operated by variations in pressure in the combustion-chamber, an energy-storing actuating device for operating the motor-controller, comprising a power-storing device, means operated by the motor in its operation for storing power therein, and a tripping mechanism for releasing said power-storing device, such tripping mechanism being arranged to be operated by the primary controlling device; and a compensating device for compensating for the difference in range between the variations in pressure which operate the apparatus to close the dampers and those variations which operate to open the dampers.

8. In an apparatus for operating dampers in furnace-offtakes, the combination, with a motor, a motor-controller, an energy-storing actuating device for operating the motor-controller, adapted to be released by a suitable tripping device, and means for storing up energy in said actuating device, of a primary controlling device adapted to be operated by change of conditions within the furnace and to release said actuating device, and provided with an automatically-operated locking device which prevents changes of conditions within the furnace from causing the operation of said controlling device, when once the actuating device has been released by said controlling device, until sufficient energy has been stored in said actuating device to again operate the motor-controller.

9. In an apparatus for operating dampers in furnace-offtakes, the combination, with a motor, a motor-controller, an energy-storing actuating device for operating the motor-controller, adapted to be released by a suitable tripping device, and means for storing up energy in said actuating device, of a primary controlling device adapted to be operated by change of conditions within the furnace and to release said actuating device, provided with an automatically-operated locking device which prevents changes of conditions within the furnace from causing the operation of said controlling device, when once the actuating device has been released by said controlling device, until sufficient energy has been stored in said actuating device to again operate the motor-controller, and a compensating device for compensating for the difference in range between the variations in pressure which operate the apparatus to close the damper and those variations which operate to open the damper.

10. The combination, with a motor, a motor-controller, an energy-storing actuating device for operating the motor-controller, adapted to be released by a suitable controlling device, and means for storing up energy in said actuating device, of a controlling device provided with a lock for preventing its operation at intervals, said controlling device being adapted to release said actuating device, and means for operating the lock so as to prevent the operation of said controlling device while energy is being stored in the actuating device.

11. The combination, with a reciprocating motor, a motor-controller, an energy-storing actuating device for operating the motor-controller, adapted to be released by a suitable controlling device, and means for storing up energy in said actuating device, of a controlling device provided with an automatically-operated lock for preventing its operation at intervals, said controlling device being adapted to release said actuating device, and means operated by the motor, for operating the lock so as to prevent the operation of said controlling device while the motor is operating.

12. In a damper-operating apparatus, the combination with a motor and a motor-controller, of a spring, an arm connected with the motor-controller and engaging one end or the other of said spring according to the direction in which the motor-controller is to be operated, tripping devices adapted to hold said arm stationary while the spring is being wound up, a spring-winding member mechanically connected with the motor and arranged to wind the spring in one direction or the other according to the direction in which the motor-controller is to be operated, and means for operating the said tripping devices to release said arm.

13. In a damper-operating apparatus, the combination, with a motor, a motor-controller, a spring, an arm connected with the motor-controller and revolubly mounted and arranged to engage one end of the spring or the other, according to the direction in which the spring is to be wound, and tripping-triggers, one adapted to hold said arm against motion in one direction and the other to hold it against motion in the opposite direction, of a spring-winding member mechanically connected with the motor and adapted to wind said spring in one direction or the other according to the direction in which the motor-controller is to be operated, and a cam for operating said triggers and releasing said arm.

14. In a damper-operating apparatus, the combination, with a motor, a motor-controller, an energy-storing controlling device for operating the motor-controller, tripping devices controlling the operation of said energy-storing device, and means operated by the motor for storing energy in such energy-storing device as the motor operates, of an actuating member for actuating said tripping devices, having notches, a locking-pawl adapted to engage said notches and hold said actuating member stationary while energy is being stored, and means for releasing said actuating member when full power has been stored.

708,290. COMBINATION STEP-LADDER AND BENCH. JOHN T. WEITZ, Pittsburg, Pa. Filed May 13, 1901. Serial No. 59,986. (No model.)

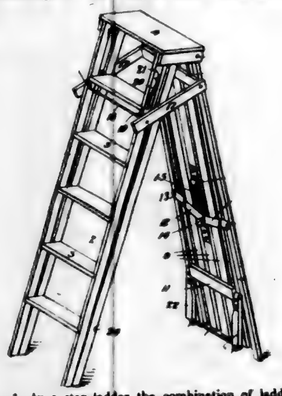

Claim.—1. In a step-ladder the combination of ladder members provided with steps and a top, back supporting-legs therefor pivotally connected to the framework of the ladder, closely-assembled slat members, a double-sided brace pivotally connected with the supporting-leg structure provided with a cross-bar and extended lips, adapted to engage retaining-recesses in the ladder members, and means for distending and adjusting the supporting-legs.

2. In a step-ladder the combination of ladder members provided with steps and a top, back supporting-legs therefor pivotally connected with the framework of the ladder, a double-sided brace pivotally connected with the supporting-leg structure provided with a cross-bar adapted to engage the retaining-recesses in the ladder members, a spring-retaining device adapted to hold such brace members in a raised position and means for distending and adjusting the supporting-legs.

3. In a step-ladder, the combination of ladder members provided with steps, a top, and brace-retaining notches and spring devices, back supporting-legs pivotally connected with the ladder-framework, brace members pivotally connected with the supporting-leg structure and adapted to engage said retaining-notches and spring devices, longitudinal slat members closely assembled with the supporting-legs so as to constitute a bench, and supporting-braces therefor adapted to rest upon the ladder members.

4. In a step-ladder the combination of ladder members provided with steps, a top, and brace-retaining notches and springs, back supporting-legs pivotally connected with the ladder-framework, brace members pivotally connected with the supporting-leg structure, and adapted to engage the retaining-notches and spring devices of the ladder structure, longitudinal slat members closely assembled with the supporting-legs, so as to constitute a bench, and supporting-braces therefor adapted to rest upon the ladder members, and means for distending and adjusting the supporting-legs with relation to the bench-slats.

708,291. INVOICE AND BALANCE SHEET. BENJAMIN A. ALLISON, McPherson, Kans. Filed July 30, 1901. Serial No. 70,107. (No model.)

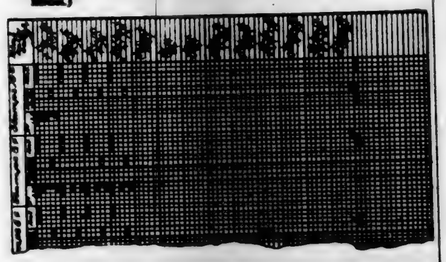

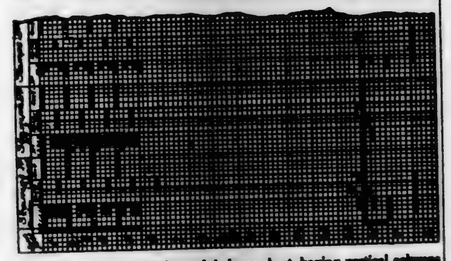

Claim.—1. An invoice and balance sheet having vertical columns provided with headings for designating kinds of goods or stock, and having the vertical columns subdivided into other vertical columns having headings to indicate quantity of goods on sale, the total value of goods disposed of daily and the total value of the goods on hand at the close of each day's business, and having the series of vertical columns intersected by horizontal lines corresponding to the days of the month and having classifying-spaces for the goods handled on each day of the month, substantially as specified.

2. An invoice and balance sheet having vertical columns provided with headings for designating kinds of goods or stock, and having the vertical columns subdivided into other vertical columns having headings to indicate quantity of goods on sale, the total value of goods disposed of daily and the total value of the goods on hand at the close of each day's business, and having the series of vertical columns intersected by horizontal lines corresponding to the days of the month and having classifying-spaces for the goods handled on each day of the month, and a vertical total daily-sales column intersecting the horizontal spaces corresponding to the days of the month for summarizing the daily sales of all kinds of goods, substantially as described.

708,292. LOCOMOTIVE. LEONARD ATWOOD, Philadelphia, Pa. Filed Aug. 3, 1901. Serial No. 70,882. (No model.)

Claim.—1. The combination in a boiler, of a fire-box, a tube-sheet and tubes, a pivoted bridge-wall within the fire-box some distance from the tube-sheet and forming a combustion-chamber, a grate with external means for adjusting the bridge-wall to increase or diminish the size of the combustion-chamber, substantially as described.

2. The combination in a boiler, of a fire-box, a tube-sheet, and tubes, a grate, a bridge-wall within the fire-box some distance from the tube-sheet and forming a combustion-chamber, a pivoted deflector above the bridge-wall, with external means for adjusting the deflector to increase or diminish the size of the combustion-chamber and the passage leading thereto from the fire-chamber, substantially as described.

3. The combination in a boiler, of a fire-box, a grate, a pivoted bridge-wall, a pivoted deflector above the bridge-wall, means exterior of the fire-box for adjusting both the bridge-wall and the deflector, substantially as described.

4. The combination in a locomotive, of a fire-box, tubes leading from the fire-box, a grate, a bridge-wall back of the grate, a deflector above the bridge-wall, both the grate and the deflector being pivoted, with means exterior of the fire-box for turning both the bridge-wall and the deflector on their pivots so as to increase or diminish the passage leading from the fire-box to the tubes or to adjust the parts that access may be had to the tubes, substantially as described.

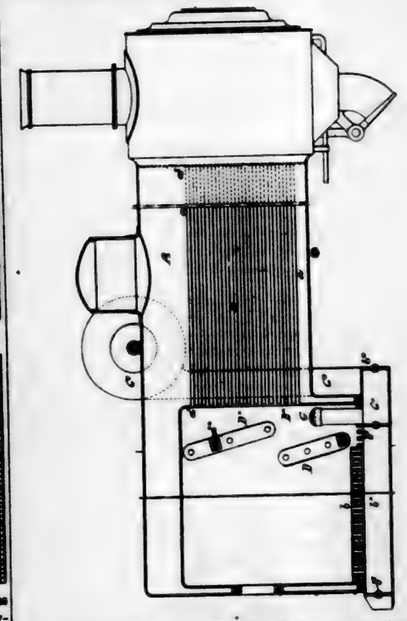

5. The combination in a boiler, of a fire-box, a grate, detachable bearings in the side walls of the fire-box, a pivot-shaft mounted in said bearings and extending through the fire-box, a deflector so mounted on the shaft that when one of the bearings is detached the shaft can be withdrawn to allow for the removal of the deflector, substantially as described.

6. The combination in a boiler, of a fire-box, a grate, a pivoted bridge-wall, a pivoted deflector above the bridge-wall, shafts on which the said bridge-wall and deflector are mounted, said shafts extending through the side wall of the fire-box and detachable from the said bridge-wall and deflector, substantially as and for the purpose specified.

7. The combination in a locomotive, of the fire-box, a grate, an ash-pit under the grate, tubes leading from the fire-box, a pivoted bridge-wall, a pivoted deflector mounted above the bridge-wall, an air-pipe communicating with the combustion-chamber between the bridge-wall and the tube-sheet, and an air-blast device for forcing air under pressure into the combustion-chamber and under the grate, substantially as described.

708,293. COVER-LIFTING DEVICE FOR PAILS, &c. ROBERT L. BAKER, Somerville, Mass. Filed July 30, 1901. Serial No. 69,095. (No model.)

Claim.—1. A covered pail having a pivoted bail offset above its pivoted portions to avoid contact with a cover-flange surrounding the pail and provided with cover-lifting fingers located outside the pail and at one side of the axis of the bail and arranged to be moved against the lower edge of the cover-flange in paths which are substantially parallel with the adjacent surfaces of the pail, by a swinging movement of the bail in one direction, and away from the said flange by a swinging movement of the bail in the opposite direction.

2. A covered pail having an outwardly-projecting lip on the flange of its cover, and a bail pivoted to the body of the pail and provided with cover-lifting fingers located outside the pail and at one side of the axis of the bail and arranged to move in paths which are substantially parallel with the adjacent surfaces of the pail and to strike said lip when the bail is moved in one direction from a vertical position.

3. A covered pail, a bail therefor having pivot-engaging eyes offset inwardly from the side portions of the bail, whereby said side portions

are caused to stand out from and clear a lip on the cover of the pail, the said eyes being extended to form lip-engaging fingers located outside the pail and within the said side portions, and arranged to lift the cover when the bail is swung in one direction from a vertical position, said fingers moving in paths that are substantially parallel with the adjacent surfaces of the pail.

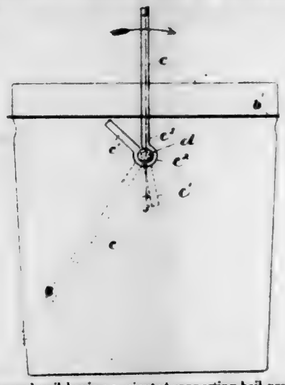

4. A covered pail having a pivoted supporting-bail provided with cover-lifting fingers located outside the pail and at one side of the axis of the bail and arranged to be moved toward the cover in paths which are substantially parallel with the adjacent surfaces of the pail by a swinging movement of the bail in one direction, and away from the cover by a swinging movement of the bail in the opposite direction, said fingers being bent inwardly at their upper ends toward the body of the pail and adapted to bear yieldingly thereon.

708,294. CUSPIDOR-RACK. FARLEY F. BALL, Socorro, Col. Filed Apr. 9, 1902. Serial No. 102,064. (No model.)

Claim.—1. The improved rack herein described comprising the base in the form of a ring open at its lower end and flared outwardly toward its upper end, the side frames secured at their lower ends to the base-ring and made in the form of bails having at their upper ends inwardly-projecting portions provided with cross-bars and one of said inwardly-projecting portions being widened adjacent to its cross-bar whereby to permit the adjustment of the other cross-bar within the said widened portion, and the handle having spaced-apart bearings for the said cross-bars and arranged when turned a half-revolution to draw the side frames toward each other or set them apart substantially as set forth.

2. The rack herein described comprising the base, the opposite side frames secured at their lower ends to the base and provided at their upper ends with inwardly-projecting portions and the handle to which the inwardly-projecting portions are jointed at their inner ends at points spaced apart whereby the handle may be turned a half-revolution to adjust the side frames toward or from each other at their upper ends, substantially as set forth.

3. The combination in a rack with the base, of side frames secured at their lower ends to the base, and a handle to which the upper ends of said frames are jointed at points spaced apart whereby a half-revolution of the handle may operate to adjust the side frames substantially as set forth.

4. The combination in a rack substantially as described with the handle having spaced-apart bearings of the opposite side frames provided at their ends with cross-bars journaled in said bearings and one of said frames being widened adjacent to its cross-bar, substantially as set forth.

5. A rack having the base composed of an integral or unbroken ring flared upwardly and open at its bottom, the side frames secured at their lower ends to the said base, and the handle connected with the upper ends of the side frames, substantially as set forth.

6. A cuspidor-rack comprising an annular unbroken base, the opposite side frames secured at their lower ends to and connected at such ends by the base, and the handle connecting the upper ends of the side frames, substantially as set forth.

708,295. CONSECUTIVE-NUMBERING APPARATUS. OSWALD G. BARTHEL, Brooklyn, N. Y., assignor to the New York Stencil Works, New York, N. Y., a Corporation of New York. Filed May 24, 1902. Serial No. 108,802. (No model.)

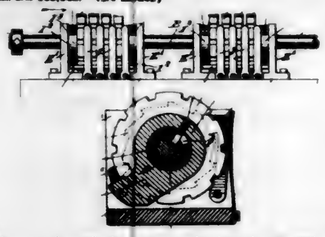

Claim.—1. A numbering apparatus having a longitudinally-grooved shaft, a casing, a sleeve fitted on the shaft and extending through and secured at both ends to the casing, numbering-wheels all mounted loosely on the sleeve, a pawl-frame hung on the sleeve and having an interlocking connection with the grooved shaft to be actuated thereby, and pawls carried by said pawl-frame.

2. A numbering apparatus having a grooved rock-shaft, a double-armed casing, a sleeve secured at its ends to the arms of the casing and fitted loosely on the shaft, a pawl-frame hung loosely on the sleeve and provided with projections which extend into the groove of the shaft, numbering-wheels all mounted loosely on the sleeve, and pawls carried by the pawl-frame; said sleeve and the casing with the connected parts being shiftable endwise on the shaft and the projections of the pawl-frame being slidable in the groove of said shaft.

3. A numbering apparatus, having a casing, a sleeve fixed therein and provided with a transverse slot, a numbering-wheel mounted to turn loosely on the said sleeve, a pawl for driving the numbering-wheel, mounted to rock on the sleeve, a pin extending from the pawl through the said slot, and a rock-shaft extending in the sleeve and engaged by the said pin, as set forth.

4. A numbering apparatus, having a casing, a sleeve fixed therein and having a transverse slot, a numbering-wheel mounted to turn loosely on the sleeve, a pawl for driving the numbering-wheel, mounted to rock on the said sleeve, a pin extending inwardly from the pawl through the said slot, and a rock-shaft extending in the sleeve and having a longitudinal keyway for engagement by the inner end of the said pin, as set forth.

5. A numbering apparatus having a longitudinally-grooved shaft, and a plurality of numbering devices each being shiftable lengthwise of the shaft and operable therefrom, each numbering device having a casing, a slotted sleeve secured at both ends to the casing and fitted loosely on the shaft, a pawl-frame hung on the sleeve and provided with projections which pass through the slots in the sleeve and enter the groove of the shaft, numbering-wheels on the sleeve, and pawls on the pawl-carrier.

6. A numbering apparatus, comprising a rock-shaft, a plurality of numbering devices held adjustably on the said rock-shaft and each comprising a casing, a fixed sleeve in the casing, through which extends the rock-shaft, a numbering-wheel mounted to turn loosely on the sleeve, a pawl fulcrumed on the sleeve, and a pin extending through a slot in the sleeve to engage a longitudinal keyway in the said shaft, as set forth.

708,296. WATER-METER. GEORGE B. BARRETT, Buffalo, N. Y. Filed Feb. 14, 1902. Serial No. 94,141. (No model.)

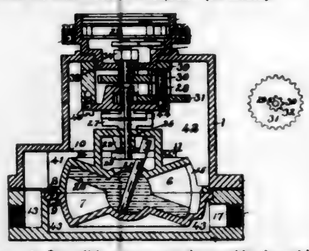

Claim.—1. In a disk water-meter the combination with an inner disk-chamber and an outer case, a gravel-chamber communicating with the inlet-opening of the outside case and a receiving-chamber communicating with the inlet-port of the disk-chamber, of a narrow slot extending along the top edge of the disk-chamber and connecting the gravel-chamber and receiving-chamber, substantially as and for the purpose described.

2. In a disk water-meter the combination with an inner disk-chamber and its projecting flanges of an outer surrounding case so formed as to divide the space above said flanges between the outer wall of the disk-chamber and the inner wall of the outside case into two communicating compartments both adjacent to the disk-chamber substantially as and for the purpose described.

3. In a disk water-meter the combination with an inner disk-chamber and its projecting flanges of an outer surrounding case so formed as to divide the space between the outer wall of the disk-chamber and the inner wall of the outer case into three compartments adjacent to the disk-chamber two compartments being above said flanges and one compartment below said flanges, substantially as and for the purpose described.

4. In a disk water-meter an inner removable disk-chamber composed of two equal sections with inlet and outlet ports having the opposite part of each port formed unequally in the spherical side walls of both sections substantially as and for the purpose described.

5. In a disk water-meter the combination with a disk and its disk-chamber of an inlet-port and an outlet-port formed in the spherical side wall of said disk-chamber with one edge each that does and one edge that does not alternately overlap the edge of said disk when the edge of said disk between said ports is at its points of greatest oscillation, substantially as and for the purpose described.

6. In a disk water-meter the combination with the disk-chamber of an inlet-port and an outlet-port formed in the spherical side wall of said disk-chamber each with one diagonally opposite edge cut away so as to afford the water easy access to and egress from said measuring-chamber.

7. In a disk water-meter the combination with the disk-chamber, the disk and its spindle, a recess formed by walls integral with the end walls of said disk-chambers and into which recess said disk-spindle projects, of an opening into said recess through the side of said integral walls for the purpose of observing said spindle.

8. In a water-meter, the combination with an intermediate toothed wheel and notches formed in the edge of a central hole in said wheel, a pinion with teeth adapted to fit said notches and prevent said pinion turning in said wheel when the two are permanently joined, of shoulders formed in said pinion-teeth, substantially as and for the purpose described.

9. In a water-meter, the combination with a hollow pinion and shouldered toothed projections formed on said pinion of a gear-wheel and notches formed in the edge of a central hole formed in said wheel adapted to fit said projections and prevent said pinion turning in said wheel when the two are permanently joined, substantially as and for the purpose described.

10. In a water-meter, the combination with a shaft, a hollow pinion turning loosely on said shaft and shouldered teeth formed on said pinion, of notches formed on the edge of the central hole of a gear-wheel mounted on said shouldered pinion-teeth, substantially as and for the purpose described.

11. In a water-meter, the combination with a supporting-piece for the indicator and stuffing-box and a threaded projection on the lower end of the supporting-piece extending through the outer wall of the meter-case of a clamping-nut located on the inside of the meter-case and mounted onto the projection of said supporting-piece, substantially as and for the purpose described.

12. In a water-meter, the combination with a supporting-piece for the indicator and stuffing-box and a clamping-nut therefor located in the interior of said meter, of an interior intermediate gear-frame mounted on said clamping-nut, substantially as and for the purpose described.

708,297. COMBINATION SHEEP FEEDING RACK AND SHEARING TABLE. VIC RADEBAUGH, Marysville, Ohio. Filed Mar. 20, 1899. Serial No. 711,085. (No model.)

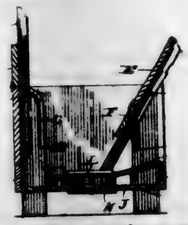

Claim.—In a sheep-feeding rack, a frame supporting a bed, a central longitudinal grain-receptacle mounted upon the said bed having oppositely-disposed longitudinal feeding-slots through the sides thereof, a trough upon each side of the grain-receptacle into which the feeding-slots open, leaves having series of bars arranged thereupon curved slots in each end of the frame, the bars upon the respective ends of the leaves being pivotally and adjustably secured in the said slots, dependent leaves hinged to the leaves supported by the bars, and adapted to be folded down upon the bars or back upon the leaves supported thereby, substantially as shown and for the purpose set forth.

708,298. KNIFE FOR MICROTOMES. EDWARD BAUSCH, Rochester, N. Y., assignor to Bausch & Lomb Optical Company, Rochester, N. Y., a Corporation of New York. Filed June 14, 1901. Serial No. 64,567. (No model.)

Claim.—1. The combination with a knife-blade, a holder therefor extending over one side of the blade and having the recesses open at their lower sides in which the ends of the blade rest, of the fastening devices extending through the holder and engaging the ends of the blade.

2. The combination with a knife-blade, a holder therefor extending over one side of the blade and having the recesses therein open at their lower sides adapted to receive the ends of the blade, of the bolts extending through the holder having the heads engaging the ends of the blade to prevent its removal.

3. The combination with a knife-blade, of a holder extending above one side of the latter, a portion of said holder being out of contact therewith and engaging the ends of the blade only, and adjustable fastening devices securing the blade at its ends and operable from the upper side of the holder.

4. The combination with a knife-blade, angular in cross-section, of a holder extending over one side of the blade having recesses provided with sloping faces against which the ends of the blade are secured, stops for limiting the rearward movement of the blade, and clamping devices engaging the blade and operative from the opposite side of the holder.

5. The combination with a knife-blade, angular in cross-section, of a holder extending above one side of the knife, a portion of said holder being out of contact therewith, and having the recesses adapted to receive the ends of the blade provided with the sloping sides against which the blade is secured, stops limiting the inward movement of the blade on said surfaces, and bolts adjustable in the support having the heads engaging the blade.

6. The combination with the arched knife-holder, of a cutting-blade extending beneath the arch and engaging the holder at its ends only, clamps engaging the ends of the blade and means for operating said clamps simultaneously.

7. The combination with the arched knife-holder, of a cutting-blade extending beneath the arch and engaging the holder at its ends only, the bolts having the heads engaging the knife ends, the lever-plate pivoted on the holder and engaging the upper ends of the bolts and means for operating said lever-plate.

708,299. WINDOW-CLEANER. HOYES B. BEELER, Chicago, Ill. Filed Feb. 15, 1902. Serial No. 94,158. (No model.)

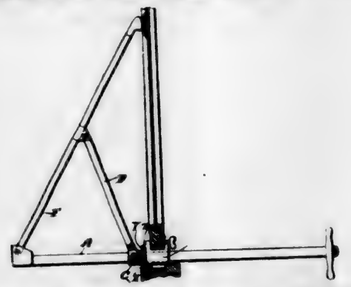

Claim.—1. A window-cleaner comprising a rotatable, longitudinally-movable shaft, means to hold the same to a window-frame, a lever having a cleaning device at one end and hinged at its other end to said shaft, and a fulcrum-arm supported upon the window-frame and pivoted to the lever.

2. In a window-cleaner, the combination of a block secured to a window-frame, a shaft carried thereby and capable of rotary and longitudinal movement, an arm pivotally connected to the block, and a lever attached to the outer end of the shaft and fulcrumed on the arm.

3. In a window-cleaner, in combination, a block secured to a win-

dow-frame, a collar rotatably attached thereto, a shaft extending through the block and collar and movable rotatively and longitudinally therein, a lever attached to the shaft carrying a cleaning device, and a fulcrum-arm for the lever pivoted to the collar.

708,800. COMBINED GRAIN-DOOR AND LOADING AND UNLOADING PLATFORM FOR BOX-CARS. JACOB S. BENDER, Kansas City, Mo. Filed Jan. 3, 1902. Serial No. 88,293. (No model.)

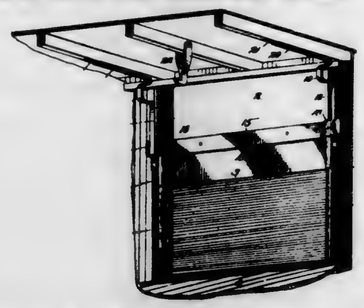

Claim.—1. In a device of the character described, a door-section hinged at the lower end of the car-door opening, so as to perform the function of a door and of a loading or unloading platform or shoveling-board, brackets secured to the car, and consisting of lower upright portions, and upper portions extending substantially parallel with the car-lines of the car, and an upper section provided with arms fitting and adapted to be adjusted between said brackets and the car-frame, substantially as described.

2. In a device of the character described, a door-section hinged at the lower end of the car-door opening, so as to perform the function of a door and of a loading or unloading platform or shoveling-board, brackets secured to the car, and consisting of lower upright portions, and upper portions extending substantially parallel with the car-lines of the car, an upper section provided with arms fitting and adapted to be adjusted between said brackets and the car-frame, and a gravity-dog to engage said section when the latter is supported by the upper portions of the brackets, substantially as described.

3. In a device of the character described, a door-section hinged to the lower end of the car-door opening, so as to perform the function of a door and of a loading or unloading platform or shoveling-board, brackets secured to the car, and consisting of lower upright portions and upper portions extending substantially parallel with the car-lines of the car, embodying inwardly-projecting loops at or near the junction-point of the upper and lower portions of the brackets, and an upper section, provided with angle-arms adapted to fit between the brackets and the car-frame, and adapted to be supported in said loops, substantially as described.

4. In a device of the character described, a door-section having its lower edge hinged at the bottom of the door-opening and adapted to swing outward, and provided with inwardly-projecting flanges at its sides, and angle-plates secured to the sides of the door-casing to provide space wherein said flanges fit when the door-section is closed, substantially as described.

5. In a device of the character described, a door-section having its lower edge hinged at the bottom of the door-opening and adapted to swing outward, and provided with inwardly-projecting flanges at its sides, angle-plates secured to the side of the door-casing to provide space wherein said flanges fit when the door-section is closed, and means for securing said section in its closed position, substantially as described.

6. In a device of the character described, a door-section having its lower edge hinged at the bottom of the door-opening and adapted to swing outward, and provided with inwardly-projecting flanges at its sides, angle-plates secured to the side of the door-casing to provide space wherein said flanges fit when the door-section is closed, a tubular rib secured to the outer side of the door and provided with an inverted-U-shaped slot, a bolt fitting in the tubular rib to engage a cavity in the door-casing, and provided with an arm adapted to depend through one arm of the other of said U-shaped slot, and thereby hold the bolt in its locked or unlocked position, substantially as described.

708,801. MACHINERY FOR BREAKING PIG-IRON. HARRY BENTLEY, Whitehaven, England. Filed May 1, 1902. Serial No. 105,457. (No model.)

Claim.—1. A machine for breaking pig-iron comprising in combination with the framing and driving-gear, a main or eccentric shaft, a movable table for supporting and feeding forward the bed of pigs, a crank, levers and rods for traversing the said table, eccentrics and sheaves for raising said table, mechanism for actuating these, a toothed wedge-block for clamping the pigs, an eccentric rod and lever for actuating said block, toothed pawls for locking the wedge-block, a lever and cam for releasing the pawls from the wedge-block, toggle-levers and an eccentric for actuating the pig-breaking ram, and an eccentric for actuating the sow-breaker, substantially as described.

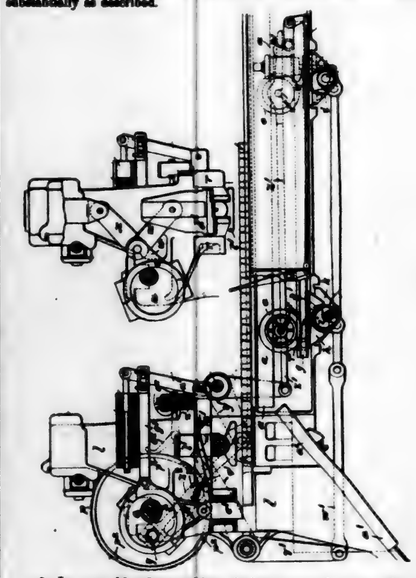

2. In a machine for breaking pig-iron, means for supporting and traversing the bed of pigs under the gripping and breaking devices, said means comprising a stationary framing for supporting the bed of pigs during the breaking operation, a table or trolley for raising and feeding forward the bed of pigs, connections from a crank on the main shaft of the machine to traverse the table, rails on which the table travels and eccentric-blocks connected to said rails and fitted with sheaves for raising and lowering the rails and table to permit of the bed of pigs being fed forward and of the table being returned under said bed, substantially as described.

3. In a machine for breaking pig-iron, means for locking the clamping-block during the breaking operation comprising a wedge-block, a lever operated from the main shaft and connected to said wedge-block, teeth upon said wedge-block, toothed pawls adapted to engage these teeth, and a lever connected to said pawls and actuated from the main shaft of the machine substantially as described.

4. In a machine for breaking pig-iron means for locking the clamping-block during the clamping operation said means comprising in conjunction with a toothed wedge-block, a series of spring-actuated pawls arranged side by side and each consisting of a plate having one of its edges formed with teeth of similar pitch to the teeth on the wedge-block, the teeth on each plate being so spaced from its forward side in relation to the adjacent plates that a pawl action is obtained equal to that obtainable by a tooth-pitch of a fraction of that of the wedge-block, said pawls being raised simultaneously from engagement with the wedge-block by levers actuated from the main shaft substantially as described.

708,802. NON-REFILLABLE BOTTLE. JOHN J. BENTZ, Brooklyn, N. Y. Filed Mar. 27, 1902. Serial No. 100,347. (No model.)

Claim.—1. A non-refillable bottle, comprising the combination with the bottle-neck, of a centrally-orificed plug secured in the lower portion thereof, a flexible tube held in the orifice of the plug, a plunger-valve working with the tube, an inverted cup inclosing the plunger-valve and perforated to permit the passage of the liquid therethrough, said plunger-valve having a longitudinal passage for the liquid, and an orificed end plug secured in the outer portion of the neck of the bottle.

2. A non-refillable bottle, comprising the combination with the bottle-neck, of a centrally-orificed plug secured in the lower portion thereof, a flexible tube held in the orifice of the plug, a plunger-valve working with the tube, an inverted cup inclosing the plunger-valve and perforated to permit the passage of the liquid therethrough, said plunger-valve having a longitudinal passage for the liquid, and an orificed end plug secured in the outer portion of the neck of the bottle, the neck of the bottle being tapered downward toward the body and the said inverted cup being correspondingly tapered.

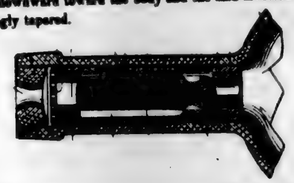

3. A non-refillable bottle, comprising the combination with the neck of a bottle, of a plug secured in the lower portion thereof and having a central orifice, a yielding tube fitted in said orifice and forming a valve-seat, an inverted cup having perforations in its upper portion, said cup being secured in the neck of the bottle above the said plug, a plunger-valve mounted in the cup and having a longitudinal passage for the liquid, and a glass or like plug secured permanently in the outer portion of the neck and having a central orifice for the passage of the liquid.

4. A non-refillable bottle, comprising the combination with the bottle-neck, of an orificed plug secured in the lower portion thereof, means held by the plug and constituting a valve-seat, a plunger-valve working with the said means constituting the valve-seat, and an inverted cup inclosing the plunger-valve and perforated to permit the passage of the liquid therethrough, said plunger-valve having a longitudinal passage for the liquid.

708,803. APPARATUS FOR ANIMATED PICTURES. JOSEPH RAINES, Philadelphia, Pa. Filed Oct. 24, 1900. Serial No. 34,169. (No model.)

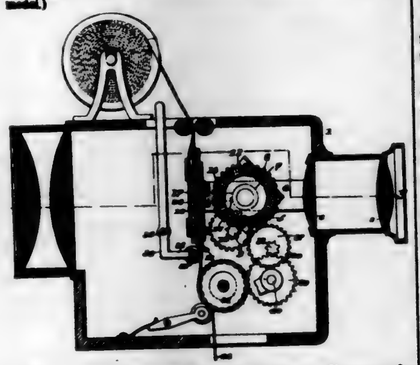

Claim.—1. In an apparatus for animated pictures, a film, means for moving the same, a revolvable solid body of transparent material, mounted to present flat and angular faces and disposed in the optical axis, and means for revolving said body at different speeds as the film is moved so that the pictures are properly presented.

2. In an apparatus for animated pictures, a film, means for moving the same, a solid body of transparent material, in the optical axis mounted to present flat and angular faces, and means for revolving said body as the film moves, so that a flat surface of said body is presented when a complete picture is in position in the optical axis and when a portion of one picture and the portion of another picture on the film is in the optical axis, the angle of said body is presented in order to project both portions of said pictures.

3. In an apparatus for animated pictures, means for moving the film, a revolvable transparent body constructed to present flat and angular faces, and an apertured slide and means operating synchronously with the film to slightly raise and lower the slide as the film moves so as to properly frame the pictures on the film.

4. In an apparatus for animated pictures, means for moving the film, a revolvable transparent body constructed to present flat and angular faces, an apertured slide, and means for moving said slide in conjunction with the movement of said film.

5. In an apparatus for animated pictures, the combination of a rotatable transparent body in the optical axis for properly projecting the pictures of an apertured slide, and connections whereby said body and slide can be simultaneously actuated.

6. In an apparatus for animated pictures, means for moving the film, a transparent body, means for turning the same, and means for retarding and accelerating its revolutions with respect to the moving film.

7. In an apparatus for animated pictures, means for moving the film, and a lever having one end located against said film and projecting in order to be operated by hand and so arranged that the same can be operated to press against the film and thus draw down the picture to the proper point, and operated in the other direction to remove the pressure from the film.

8. In an apparatus for animated pictures, means for moving the film, a body of transparent material having flat faces, eccentric gears for rotating said body to present a flat surface thereof when a complete picture is in position in the optical axis and to present an angle of said body when portions of two adjacent pictures on the film are in the optical axis.

9. In an apparatus for animated pictures, means for moving the film, a revolvable transparent body adapted to present alternate flat and angular faces in the optical center, and means adapted to move in conformity with the movement of said body and film in order to properly frame the picture at the optical axis.

10. In an apparatus for animated pictures, means for removing the film, a body of transparent material having flat faces mounted in the optical axis and means for imparting variable rotary motion to said body, whereby the pictures will be properly presented.

11. In an apparatus for animated pictures, in combination with means for moving the film, a body composed of transparent material having flat faces of equal length whereby proper portions of the adjacent picture will be reflected, and means for reflecting said body as the film moves so as to properly project the pictures.

12. In an apparatus for moving pictures, means for presenting the film in a curved contour in cross-section at the optical axis.

13. In an apparatus for animated pictures, means for moving the film, and means situated below the optical axis which is adapted to be operated to press against the film and thus draw down the pictures to the proper point in the optical axis and is adapted to be operated in the other direction to remove the pressure from the film, so that the slack of the film will be taken up before that portion of the film which is in the optical axis, is moved.

14. In a moving-picture apparatus, the combination with mechanism for continuously moving a picture film, or surface, and an optical system for compensating for such movement by projecting the images of the picture to the same point, of a device having one or more apertures of dimensions to expose a single picture and movable in unison with the film so as to expose the picture to the optical system singly and during a portion of its travel through the field.

15. In a moving-picture apparatus, the combination with mechanism for continuously moving a picture-film, and an optical system for deflecting the rays of light from successive pictures to a fixed point, of a device movable in unison with the film for exposing the picture to the optical system singly and during a portion of its travel through the field.

16. In a movable-picture apparatus, the combination with mechanism for continuously moving a picture-film, and an optical system for deflecting the rays of light from successive pictures to a fixed point, of a contact having one or more apertures which follow the movements of the pictures through a portion of their travel so as to expose the pictures to the optical system in succession.

17. In a moving-picture apparatus, the combination with mechanism for continuously moving a picture-film, and an optical system for deflecting the rays of light from successive pictures to a fixed point, means intermediate the picture-film and the optical system and having a slot which affords an aperture of sufficient width to expose a single picture and of such form as to follow the movements of the picture through a portion of its travel.

18. In an apparatus for moving pictures, means for presenting the film in curved contour at the optical axis, in a plane at a right angle to the line of movement of said film.

708,804. BREECH-LOADING FIREARM. JOSEPH BENOITE, St. Constant, Canada. Filed July 31, 1901. Serial No. 70,236. (No model.)

Claim.—1. A breech mechanism for firearms comprising a sliding breech-plate covering the upper side of the receiver-chamber, a breech-block depending from said plate, a firing-pin resiliently mounted in said breech-block and projected through the front end thereof, a firing-bolt slidable in a recess in the receiver and having a head to engage said firing-pin and to be engaged by said breech-block when the latter is retracted, a spur engaging said firing-bolt when retracted, a spring to project said firing-bolt forwardly when released, and a transverse latch-bolt 71 projected into a slot in the breech-plate to lock it in advanced position.

2. A breech mechanism for firearms comprising a breech-plate adapted to reciprocate on the upper side of the receiver and to cover the receiver-chamber, a breech-block depending from the lower side of said breech-plate and to close the end of the barrel, a firing-pin resiliently mounted in said breech-block, a firing-bolt having a tang 16 sliding in a longitudinal recess in the receiver-chamber, and a head to strike said firing-pin and to be engaged by the rear face of said breech-block to retract the bolt when the breech-plate is retracted, a transverse pin passing through a slot in said tang to limit the movement of said firing-bolt, a guide-stem 20 mounted on the head of said firing-bolt parallel with and above the tang thereof and guided in a longitudinal recess in the rear end of the receiver-chamber, a coiled spring mounted on said guide-stem, a vertically-reciprocating sear having a nose to engage over the front end of said firing-bolt when retracted, a trigger-lever having a finger-piece and an arm engaging said sear to move it vertically, and means for locking said breech-plate in forward position.

3. A breech mechanism for firearms comprising a breech-plate to reciprocate on the upper side of the receiver and to cover the receiver-chamber, a breech-block depending from the lower side of said breech-plate to close the end of the barrel, a firing-pin resiliently mounted in said breech-block, a firing-bolt having a tang 16 sliding in a longitudinal recess in the receiver-chamber and a head to strike said firing-pin and engaged by the rear face of said breech-block to retract the bolt when the breech-plate is retracted, a transverse pin passing through a slot in said tang to limit the movement of said firing-bolt, a guide-stem 20 mounted on the head of said firing-bolt parallel with and above the tang thereof and guided in a longitudinal recess in the rear end of the receiver-chamber, a coiled spring mounted on said guide-stem, a vertically-reciprocating sear having a nose to engage over the front end of said firing-bolt when retracted, a trigger-lever having a finger-piece and an arm engaging said sear to move it vertically, means for locking said breech-plate in forward position, an extractor-bolt reciprocably mounted below the barrel and in advance of the firing-bolt, a spring pressing against the forward end of said extractor to project the same rearwardly, and means for releasing said extractor-bolt when the breech-plate is withdrawn.

708,805. **BUNG.** HENRY C. BLANEY, Philadelphia, Pa. Filed Apr. 29, 1902. Serial No. 105,136. (No model.)

Claim.—1. In a bung, a body portion having a passage therethrough, a valve adapted to cover said passage and rotatably mounted to one side thereof, means upon the rotary shaft of said valve for operating the same, and a packing seated and held within a recess in said body portion and surrounding the said passage at its inner end.

2. In a bung, a body portion having a passage therethrough, a valve adapted to cover said passage and rotatably mounted to one side thereof, means upon the rotary shaft of said valve for operating the same, a packing seated and held within a recess in said body portion and surrounding the said passage at its inner end, and means for supporting and tightening said valve against the under side of said packing.

3. In a bung, a body portion having a passage therethrough, a valve adapted to cover said passage and rotatably mounted to one side thereof, means upon the rotary shaft of said valve for operating the same, a packing seated and held within a recess in said body portion and surrounding the said passage at its inner end, and means for supporting and tightening said valve against the under side of said packing and means for forming a tight joint about said shaft.

4. In a bung, a body portion having a passage therethrough, a valve adapted to cover said passage and rotatably mounted to one side thereof, means upon the rotary shaft of said valve for operating the same, and a packing seated and held within a recess in said body portion and surrounding the said passage at its inner end, the said body portion being formed with a cam-guide at its inner end to support the free edge of the valve and tighten said valve against the packing.

708,806. **LUBRICATOR FOR CAR-TRUCKS.** JOHN A. BRADFORD Victor, Colo. Filed Oct. 24, 1901. Serial No. 79,183. (No model.)

Claim.—1. A car-truck provided with wheels each of which is provided with an independent hollow axle, a receptacle connecting and furnishing communication between the inner ends of the axles, and a receptacle on the outer end of each axle, whereby lubricant supplied to any one of the receptacles will be distributed to all the others, substantially as described.

2. A car-truck provided with wheels each of which is provided with an independent hollow axle, lubricant-receptacles mounted on and surrounding the outer end of each axle, and an independent lubricant-receptacle between said wheels which furnishes communication between the inner ends of the axles, substantially as described.

3. A car-truck comprising wheels each having an independent hollow axle, side frames provided with lubricant-receptacles supported on the outer ends of said axles, means connecting said side frames, short frames secured to said means and carrying lubricant-receptacles which extend from the inner ends of the axles on one side of the frame to the inner ends of the axles on the opposite side, substantially as described.

708,807. **CEMENT ROOFING.** HOLDEN BROCK, St. Paul, Minn. Filed Mar. 15, 1902. Serial No. 98,711. (No model.)

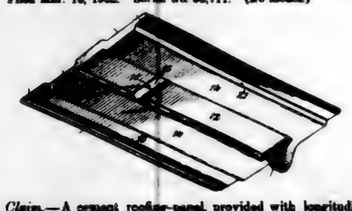

Claim.—A cement roofing-panel, provided with longitudinal gutters in its exposed surface, one at each side of the center and corresponding offsets in its back or under surface, together with a central longitudinal channel between the offsets, an apertured lug at one end of the channel, and an apertured rib crossing the channel at its opposite end, the said panel being also provided at its under or back surface with a longitudinal toothed recess at one side edge and a longitudinal plain recess at its opposite side edge, transversely inclined, the front exposed surface of the panel at one longitudinal edge being beyond the plane of the bottom of the gutters and the corresponding exposed surface of the opposite side edge of the panel being in the same plane with the bottom of the gutters and provided with longitudinal teeth, substantially as described.

708,808. **GAS AND AIR MIXER.** STEPHAN BROICHHAUS, Milwaukee, Wis., assignor to the Perfect Gas Machine Company, Milwaukee, Wis., a Corporation of Wisconsin. Filed Dec. 30, 1901. Serial No. 87,734. (No model.)

Claim.—1. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, means for suspending the float, a pivoted lever within the mixing-chamber, a connection between the float and the lever, whereby said lever is turned on its fulcrum when the float is moved, a valve for controlling the air-inlet port, and a connection between the valve and the lever, whereby the movement of the lever causes the valve to be moved away from or toward its seat.

2. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, elastic means for suspending the float, a pivoted lever within the chamber, a connection between the lever and the float, whereby said lever is turned on its fulcrum when the float is moved, a valve for controlling the air-inlet port, and a connection between the valve and the lever, whereby the movement of the lever causes the valve to be moved away from or toward its seat.

3. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, an adjustable means for suspending the float, a pivoted lever within the chamber, a connection between the lever and the float, whereby said lever is turned on its fulcrum when the float is moved, a valve for controlling the air-inlet port, and a connection between the valve and the lever, whereby the movement of the lever causes the valve to be moved away from or toward its seat.

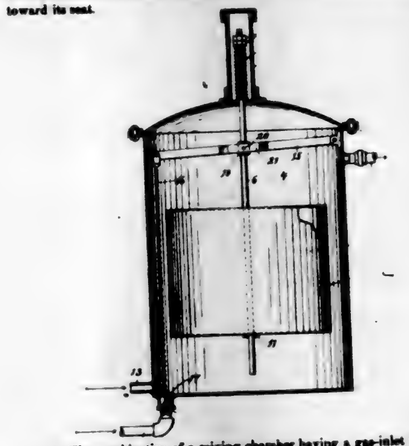

4. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, means for suspending the float, a rod extending from the float, a pivoted lever within the chamber and adapted to be actuated by the rod, when the float is moved, a valve for controlling the air-inlet port, and a connection between the valve and the lever whereby the movement of the lever causes the valve to be moved away from or toward its seat.

5. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, means for suspending said float, a rod extending from the float, a pivoted lever within the chamber and having a pivotal connection with the rod, whereby said lever is actuated when the float is moved, a valve for controlling the air-inlet port, and a connection between the valve and the lever, whereby the movement of the lever causes the valve to be moved away from or toward its seat.

6. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, a rod extending from the float, a pivoted lever within the chamber and adapted to be actuated by the rod when the float is moved, a valve for controlling the air-inlet port, a connection between the valve and the lever, whereby the movement of the lever causes the valve to be moved away from or toward its seat, and a coiled spring surrounding the rod and confined between a fixed part and an enlargement on the rod, said spring adapted to yieldingly suspend the float.

7. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, a rod extending from the float, a coiled spring surrounding the rod and confined between a fixed part and an enlargement on the rod, said spring adapted to suspend the float, a valve for controlling the air-inlet port, and means adapted as the float rises or falls for causing the valve to be moved away from or toward its seat.

8. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, a rod extending from the float, a coiled spring surrounding the rod and confined between a fixed part and an enlargement on the rod, said spring adapted to suspend the float, a valve for controlling the air-inlet port, means for regulating the tension of the spring, and means adapted as the float rises or falls for causing the valve to be moved away from or toward its seat.

9. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a tube extending from the end of the mixing-chamber, a float within the chamber, a rod extending from the float and through the end of the mixing-chamber and into the tube, a coiled spring within the tube and surrounding the rod and confined between a fixed part, and an enlargement on the rod, said spring adapted to suspend the float, a valve for controlling the air-inlet port, and means adapted as the float rises or falls for causing the valve to be moved away from or toward its seat.

10. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, means for suspending the float, a valve for controlling the air-inlet port, means adapted as the float rises or falls for causing the valve to be moved away from or toward its seat, and means for guiding the float in its movement.

11. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, means for suspending the float, a valve for controlling the air-inlet port, means adapted as the float rises or falls for causing the valve to be moved away from or toward its seat, a rod extending from the float, and a device which the rod engages, said device adapted for guiding the float in its movement.

12. The combination of a mixing-chamber having a gas-inlet port, a mixed air and gas eduction port, and an air-inlet port, the latter adapted to deliver air to said mixing-chamber, a float within the chamber, means for suspending the float, a valve for controlling the air-inlet port, means adapted as the float rises or falls for causing the valve to be moved away from or toward its seat, a rod extending from the float, and a guide-bar having an opening through which the rod passes, whereby the float is guided in its movement.

708,809. **MANUFACTURE OF GLASS BY MEANS OF ELECTRICITY.** JOSEF BRONN, Cologne, Germany, assignor to Gesellschaft zur Verwertung der Patente für Glasverfeugung auf Electrischem Wege Becker & Co., M. B. H., Cologne, Germany. Filed Sept. 21, 1901. Serial No. 76,087. (No specimens.)

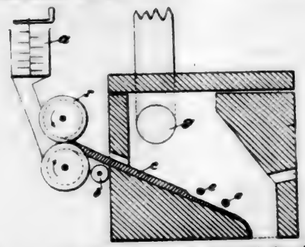

Claim.—1. The process herein described of producing glass by electricity, which consists in mixing the raw materials together with water and a suitable binding agent, conducting the mixture in plastic form between compressing-rolls and thence, in a continuous moving strip in close proximity to electrodes by which it is subjected to melting heat from an electric arc, as explained.

2. A process for producing glass by means of electricity consisting in compressing the raw material, to which a suitable binding agent such as water, water-glass, hydraulic plaster or lime is added, into solid pieces and in then subjecting these pieces to the action of the electric current and melting the same, substantially as and for the purpose set forth.

3. A process for producing glass by means of electricity consisting in compressing the raw material to which a suitable binding agent such as water, water-glass, hydraulic plaster or lime is added into a continuous rod and in then subjecting this rod to the action of the electric current, and melting the same, substantially as and for the purpose set forth.

4. A process for producing glass by means of electricity consisting in compressing the raw material, to which a suitable binding agent such as water water-glass, hydraulic plaster or lime is added into a solid form, then drying the same and finally melting it by means of the electric current, substantially as and for the purpose set forth.

5. A process for producing glass by means of electricity consisting in compressing the raw material, to which a suitable binding agent such as water, water-glass, hydraulic plaster or lime is added into a solid form, conducting said form over a heated surface, drying the same and in then melting said form by means of the electric current, substantially as and for the purpose set forth.

708,810. **MANIFOLD-COPY BOOK.** JAMES C. BROWNING, Saltpoint, N. Y. Filed Mar. 28, 1902. Serial No. 100,490. (No model.)

Claim.—1. A manifold-copying book provided with a pad one side of the book being provided transversely at the free ends of the leaves of

the pad with a plaited or folded carbon-holder provided at its free edge with a flange or strip and spring-connected hooks engaging the ends of said flange or strip and adapted to hold a carbon-sheet, substantially as shown and described.

2. A manifold-copying book comprising a pad and the usual back or cover, one side of the back or cover being provided at the end thereof adjacent to the free ends of the leaves of the pad with a transversely-plaited holder which is connected therewith at one edge, and the other or free edge of which is provided with a transverse member, and means for connecting a writing-sheet or plate and a carbon-sheet with said member, substantially as shown and described.

708,811. MAGAZINE FOR FIREARMS. LOUIS F. REED, Springfield, Mass. Filed Sept. 18, 1901. Serial No. 75,507. (No model.)

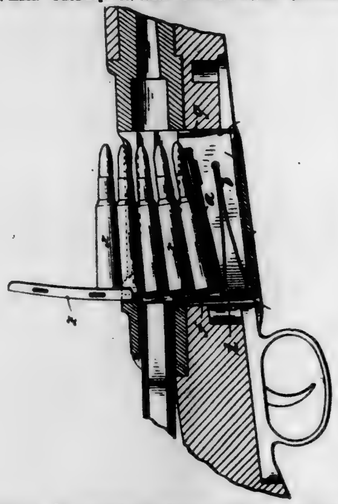

Claim.—1. In a magazine for firearms of the character described, the magazine-case having the loosely-mounted and spring-supported follower therein and having its rear end wall provided at a distance below its top, and somewhat above its bottom with a forwardly-protruding shoulder, against which the rear end portion of the follower in its descending movement may contact, for the purpose set forth.

2. In a magazine for firearms, of the character described, the magazine-case having the loosely-mounted and spring-supported follower therein, and having its rear end wall provided with a forwardly-protruding shoulder or ledge, at a distance above the bottom of the magazine-chamber, and said rear wall at all points below said ledge being as forwardly prominent as the ledge.

3. In a magazine of the character described, the magazine-case having the loosely-mounted and spring-supported follower therein, the rear end of which is adjacent the rear wall of the case, and said rear wall being provided, above its bottom, with a forwardly-protruding shoulder; said rear wall below said shoulder being as forwardly prominent as the shoulder, and the lower portion of the forward wall of the chamber being forwardly recessed for the purposes set forth.

708,812. PLOW. HENRY BRYAN, Modesto, Cal. Filed Jan. 28, 1902. Serial No. 91,504. (No model.)

Claim.—1. The combination, with a gang-plow frame having front transporting-wheel, of a rear transporting-wheel, a crank-arm carrying said wheel and journaled on the frame, whereby it is adapted to swing in a vertical plane, a hand-lever fulcrumed on a fixed support in front of the wheel, an adjusting-rod pivotally connected with said lever in rear of its fulcrum and also with the free end of the aforesaid crank-arm, a straight bar fixed in vertical position on the frame, in rear of the wheel, a sleeve adapted to slide on said bar and also on the said lever, and a spring-lock connected with the lever and sleeve, for securing the latter firmly in any adjustment, in the manner shown and described.

2. The combination, with a gang-plow frame, having front transporting-wheel and a rear extension formed as a handle, of the rear transporting-wheel, a crank-arm upon which the same is journaled, the said arm being journaled in slotted bearings on the under side of the frame extension, a clamp-collar and screw applied to the journal of the arm in the slot of said bearings, a hand-lever fulcrumed at a point in advance of the bearings and extending rearward over the handle of the frame, whereby both are adapted to be conveniently seized and manipulated, a rod connecting the wheel crank-arm with the lever at a point in rear of its fulcrum, a straight rod fixed vertically on the frame in rear of the wheel-bearings, and the sleeve adapted to slide on said bar and the lever, and means for locking them together at any point to which the lever may be adjusted, as shown and described.

708,813. COMBINED DUMB-BELL, INDIAN CLUB, AND PULLING OR SWINGING BAR. FRANK R. DOTY, San Francisco, Cal. Filed Dec. 10, 1901. Serial No. 85,575. (No model.)

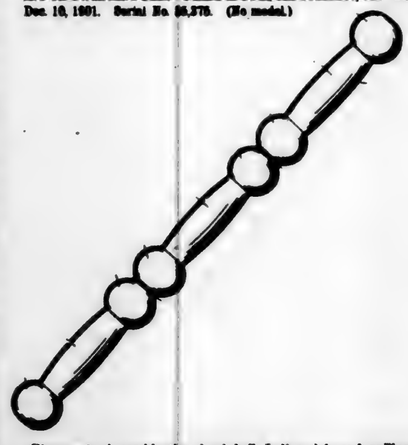

Claim.—1. A combination dumb-bell, Indian club, and pulling or swinging bar, comprising a bar having formed thereon a central hand-grip and two terminal hand-grips and having also formed thereon terminal knobs on the outside of the terminal hand-grips, and bands separating the terminal hand-grips from the central hand-grip, said knobs and bands being all immovably secured on the bar at equal intervals of substantially a hand's breadth and each such interval of the bar being free or unobstructed throughout its entire length, to afford a hand-grip over the whole of said interval, substantially as described.

2. A combination dumb-bell, Indian club, and pulling or swinging bar, comprising a bar having formed thereon a central hand-grip and two terminal hand-grips, said central hand-grip being separated from the terminal hand-grips by pairs of bands, the bands of each pair being rigidly secured to each other, but separated by a groove suitable for receiving a cord or small rope, substantially as described.

708,814. WIRE-GRIP. JOSEPH D. CAMPBELL, Delaware, and ROBERT C. KYLE, Columbus, Ohio. Filed Jan. 27, 1902. Serial No. 91,230. (No model.)

Claim.—1. In a wire-grip, the combination with the section 1 having its inner end portion bent outward at an angle therewith and having its forward end portion formed with an upper side notch or recess, of a separately-formed section 2 the body of which is adapted to pass loosely through an opening in said outwardly-bent portion of the section 1, said section 2 having an enlarged head portion 7 and an upper side notch or recess 8 adjacent thereto, substantially as specified.

2. In a wire-grip, the combination with the section 1 comprising a bar having an outwardly-inclined inner end portion 1ª and having an upper side flaring recess or notch 3 in its outer end portion and an opening in its outwardly-bent end portion, of a section 2 comprising a curved bar adapted to pass loosely through the opening at the inner end of the bar 1, said section 2 having an enlarged head portion 7 and upper side notch or recess 8, substantially as specified.

708,815. GEARING. JOHN R. CARTER, Augusta, Ky., and JOSEPH R. HAMFELD, Cincinnati, Ohio, assignors to Ernst H. Hunnefeld, Cincinnati, Ohio. Filed Oct. 31, 1901. Serial No. 80,690. (No model.)

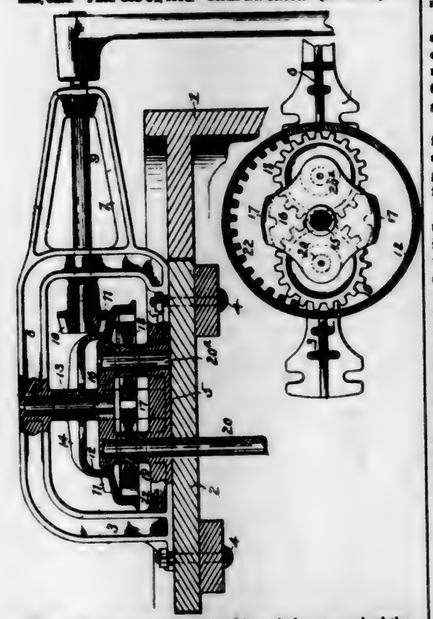

Claim.—1. The combination of a driven shaft, a gear-wheel thereon, another gear-wheel meshing with said first-mentioned gear-wheel, a hollow wheel or ring surrounding said gears and having an internal notched gear alternately engaging said first-mentioned gears, and a rack or series of gear-teeth around its outer face to which motion is transmitted.

2. The combination with a receptacle, a frame thereon, and a dasher-rod or shaft projecting up into said frame and entering said receptacle, of a gear-wheel secured on said dasher-rod, another gear-wheel meshing with said first-mentioned gear-wheel, a hollow wheel or ring supported on a bearing in said frame and inclosing said gear-wheels, an internal notched gear in said wheel or ring adapted to alternately engage said gear-wheels, an external rack or gear on said wheel or ring, a drive-shaft, and a gear thereon meshing with said rack or gear.

708,816. KNOTTING DEVICE FOR HARVESTING-MACHINES. ANDRÉ CASTELLIN, Paris, France, assignor to Société Anonyme d'Etudes et d'Exploitation des Brevets A. Castellin pour Machines Agricoles Automobiles, Paris, France. Filed June 24, 1901. Serial No. 65,866. (No model.)

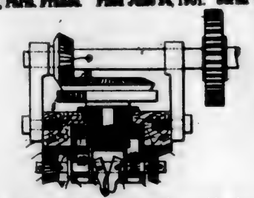

Claim.—1. In a binding apparatus, the combination of a rotary cup, a shaft supported by said cup, a plurality of fingers carried by said shaft for independent oscillation, means for rotating the cup and shaft respectively and means for effecting a movement of each of the fingers, independent of those applied to the cup and shaft.

2. In a binding apparatus, the combination of a cup, a shaft supported by said cup, means for rotating the cup, driven devices carried by said shaft, means for independently actuating said driven devices, a plurality of fingers shiftably carried by said shaft, and means for effecting motion of the fingers independent of those applied to the shaft and cup respectively:

3. In a binding apparatus, the combination of a cup, a shaft supported by said cup, means for rotating the cup, driven devices carried by said shaft, means for independently actuating said driven devices, a plurality of fingers shiftably carried by said shaft, and fixed projections arranged in the paths of said fingers and serving to shift the same.

4. In a binding apparatus, the combination of a rotary cup, a shaft supported by said cup, a plurality of fingers carried by said shaft for independent oscillation, means for rotating the cup and shaft respectively, means for effecting a movement of each of the fingers, independent of those applied to the cup and shaft, and means upon the cup for holding the cord for a predetermined period.

5. In a binding apparatus, a cup, a shaft carried by the cup, means for rotating said cup, gears carried by said shaft, fixed racks for engaging said gears as the cup is rotated, for rotating said shaft, a plurality of fingers shiftably carried by said shaft, and means for effecting motion of the fingers independent of those applied to the cup and shaft, respectively.

6. In a binding apparatus for harvesters, a cup, a knife mounted upon said cup, a toothed sector connected with the knife, teeth mounted independently of the sector for engaging the same to put the knife in its working position means normally acting upon the knife in opposition to said teeth, and means for rotating said cup.

7. In a binding apparatus for harvesters, a cup, means for rotating the same, a shaft carried by said cup, independent devices for effecting the rotation of said shaft during a certain period of the rotation of said cup, means for preventing rotation of said shaft during the remainder of the rotation of the cup, a plurality of fingers carried by said shaft, and means for effecting the motion of said fingers independent of those applied to the cup and shaft, respectively.

8. In a binding apparatus for harvesters, a shaft, a plurality of fingers having holes to receive said shaft, the walls of the holes being inwardly curved and said fingers having external incurved faces, pivots passing through the fingers and shafts respectively, and fixed projections for engaging said external incurved faces.

708,817. SHIELD FOR PERSONAL WEAR. LILLIE H. CATHER, Baltimore, Md. Filed Apr. 17, 1902. Serial No. 103,261. (No model.)

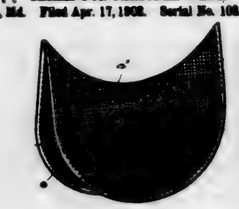

Claim.—As a new article of manufacture, a shield for personal wear, comprising three superposed plies, namely, a ply of waterproof material, a ply of open-mesh fabric, and an intermediate ply of coarse-mesh fabric of sufficiently cellular nature to hold in its interstices a quantity of toilet powder and all three plies bound around their marginal edges, as and for the purpose set forth.

708,818. **PLANE.** LUCAS C. CLARK, Southington, Conn. Filed July 11, 1901. Serial No. 67,267. (No model.)

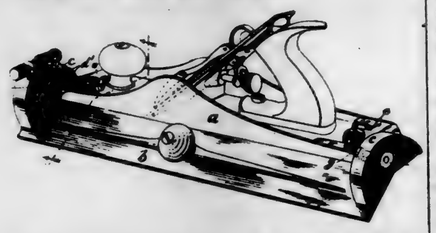

Claim.—1. In combination, the plane, the adjustable leaf, the rim-sectors attached to the leaf, and the disk-sections within the rims of the rim-sectors, and attached medinely to the plane, all substantially as described and for the purposes set forth.

2. In combination, the plane, the adjustable leaf, the rim-sectors attached to the leaf, the disk-sections within the rims of the rim-sectors, and the planes attached to the disk-sections and adapted for attachment to and detachment from the plane, all substantially as described and for the purposes set forth.

3. In combination, the plane, the adjustable leaf, a rim-sector attached to the leaf, the worm borne by the rim-sector and the disk-section attached to the plane and peripherally worm-toothed, all substantially as described and for the purposes set forth.

708,819. **DAMPER-REGULATOR.** SAMUEL COATS, Bridgeport Pa. Filed Nov. 9, 1901. Serial No. 81,718. (No model.)

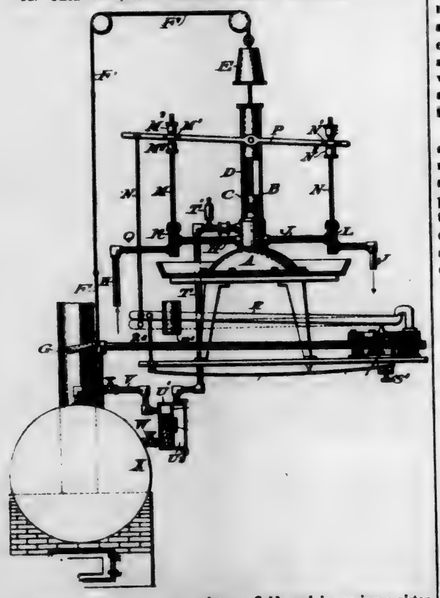

Claim.—1. In a damper-regulator, a fluid-receiving casing, a piston therein, a connection for said piston with a damper of a furnace or heating device, supply and discharge pipes connected to said casing, valves on said pipes, a pressure-motor, a horizontally-disposed swinging beam, connections for opposite portions of said beam directly, with the stems of said valves, and a connection for said motor with said beam.

2. A fluid-receiving casing, a piston therein, a connection for said piston with a damper of a furnace or heating device, fluid supply and discharge pipes connected with said casing, a valve on said pipes, and a pressure-motor in combination with a swinging beam, and a connection for said diaphragm with said beam, the stems of said valves passing loosely through and being attached to opposite portions of said beam.

3. In a damper-regulator, a fluid-receiving casing, a piston therein, supply and discharge pipes connected with said casing, and valves on said pipes in combination with a swinging beam through which loosely pass and to opposite portions of which the stems of said valves are attached, and means for operating said beam by the changes in the pressure of steam of a boiler whose furnace or heating device is provided with a damper, with which said piston is connected.

4. In a damper-regulator, a fluid-receiver, supply and discharge pipes connected with said receiver, valves in said pipes, a swinging beam for operating said valves, and means for clamping the stems of said valves upon opposite sides of said beam, the latter having elongated slots which the adjacent portions of said stems freely occupy.

5. In a damper-regulator, a fluid-receiving casing, a piston therein, supply and discharge pipes connected with said casing, and valves on said pipes and having stems in combination with a swinging beam to opposite portions of which the stems of said valves are attached and means for operating said beam by the changes in the pressure of steam of a boiler whose furnace or heating device is provided with a damper with which said piston is connected, in combination with a pipe connected with said casing, and a low-water-actuated device adapted to be connected with said boiler and with said pipe.

6. In a damper-regulator, a fluid-receiving casing, supply and discharge pipes connected with said casing, valves on said pipes and consisting of rods of substantially the same diameter throughout and having ends shaped to coact with valve-seats in valve-casings in said supply and discharge pipes, a pivoted swinging beam for reversely operating said valves and means for operating said beam by changes in the pressure of steam, in combination with means for connecting the stems of said valves with said beam consisting of elongated slots in the latter opposite sides of the pivot, jaws clamping said stems above and below said beam, and collars on said jaws for tightening the same, said stems passing freely through said jaws, collars and slots.

7. In a damper-regulator, a fluid-receiving casing, water supply and discharge pipes connected therewith, a piston in said casing having connection with a damper, a swinging beam mounted between its ends on said casing, a pressure-motor, valve-stems passed loosely through and connected with said beam upon opposite sides of its pivot with ends adapted to seats in the supply and discharge pipes, a lever connected with the motor and extending substantially parallel with the said beam, and a connection between one end of the lever and the adjacent end of the beam.

8. In a damper-regulator, a fluid-receiving casing, water supply and discharge pipes connected therewith, a piston in said casing having connection for a damper, a swinging beam pivoted between its ends, valve-stems passed loosely through and connected with said beam near its opposite ends, a pressure-motor, a lever connected with the motor and extending substantially parallel with the beam, a connection between one end of the said lever and the adjacent end of the beam, a spring secured at one end, a link connecting the other end to said lever and a weight on said lever.

708,820. **HARVESTER-BINDER.** JOHN A. COWAN, Calgary Canada. Filed Oct. 10, 1900. Renewed July 30, 1902. Serial No. 117,710. (No model.)

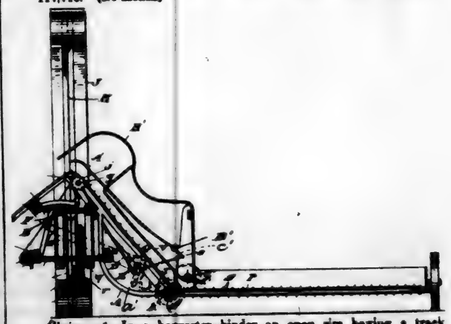

Claim.—1. In a harvester-binder an open rim having a track formed on its inner periphery in combination with a truck running on the said track; and a harvester-frame journaled at one end of the frame of the said truck and adjustably supported upon it at the other end, substantially as and for the purpose specified.

2. In a harvester-binder an open rim having a track formed on its periphery, in combination with a truck having three wheels running on the track; a sprocket-wheel connected with the main wheel of the truck; a harvester-frame journaled at one end of the frame of the said truck and adjustably supported upon it at the other end; a cross-shaft journaled on the said harvester-frame; a sprocket-wheel on the shaft connected by a sprocket-chain with the sprocket-wheel on the main wheel of the truck; a shaft longitudinally journaled on the harvester-frame and geared to the aforesaid shaft; and a crank-disk on the forward end of the longitudinal shaft, substantially as and for the purpose specified.

3. In a harvester-binder, an open rim having a track formed on its inner periphery, in combination with a truck having three wheels running on the track; a sprocket-wheel connected with the main wheel of the truck; a harvester-frame supported on the said truck being journaled at one end and adjustably supported at the other; a cross-shaft journaled on the said harvester-frame; a sprocket-wheel on the shaft connected by a sprocket-chain with the sprocket-wheel on the main wheel of the truck; a shaft longitudinally journaled on the harvester-frame and geared to the aforesaid shaft; a crank-disk on the forward end of the longitudinal shaft; conveying and elevating chains upon the harvester carried by sprocket-wheels upon suitable shafts; and a sprocket-wheel and chain connection between the aforesaid longitudinal shaft and one of the latter, substantially as and for the purpose specified.

4. In a harvester-binder, and in combination with the elevator and needle thereof, a series of rods passing through holes at or near the apex between the elevator and binder-deck and extending above said apex, and means for automatically extending the said rods simultaneously with the motion of the needle, substantially as and for the purpose specified.

5. In a harvester-binder, and in combination with the elevator and needle thereof, a series of rods passing through holes at or near the apex between the elevator and binder-deck, and means for automatically extending the said rods simultaneously with the motion of the needle; an apron supported above the elevator and having its upper end turned outwardly and slotted; fingers connected to a suitably-journaled shaft and extending through the said slots normally close to the elevator, and means for swinging the said fingers backward simultaneously with the movement of the aforesaid rods, substantially as and for the purpose specified.

6. In a harvester-binder, and in combination with the elevator and needle thereof, a series of rods movably mounted to engage through holes at or near the apex between the elevator and binder-deck, and means for automatically extending the said rods simultaneously with the motion of the needle; a vertically-divided apron supported above the elevator and having its upper end turned outwardly and slotted; fingers connected to a suitably-journaled shaft and extending through the said slots normally close to the elevator, and means for swinging the said fingers backward simultaneously with the movement of the aforesaid rods, substantially as and for the purpose specified.

7. In a harvester-binder, an elevator provided with elevating-chains running over sprocket-wheels upon suitably-journaled shafts; means for driving the said shafts; a vertically-divided slotted spring-apron supported close to the said elevator; a shaft journaled above the bottom of the apron; a series of disks connected to the said shaft and provided with fingers which fingers only are adapted to extend through slots in the apron; and a gear connection between the said shaft and an elevator-chain-driving shaft substantially as and for the purpose specified.

8. In a harvester-binder, a combined rim having a track formed on its inner periphery, combined with a truck running on said track, and a harvester-frame hinged at one end of the truck-frame and adjustably supported upon it at the other, and means for tilting the truck-frame, substantially as and for the purpose specified.

9. In a harvester-binder, the combination with the elevator and needle thereof, of a series of rods movable through holes at or near the apex between the elevator and binder-deck, means for automatically extending said rods simultaneously with the motion of the needle, a slotted apron, fingers extended through the slots of the apron and means for simultaneously actuating said fingers and rods, substantially as and for the purpose specified.

10. In a harvester-binder, the combination with the elevator and needle thereof, of a series of rods movable through holes at or near the apex between the elevator and binder-deck, means for automatically simultaneously actuating the needle and rods, and fingers extended above said apex, and means for moving said fingers simultaneously with the movement of said rods, substantially as and for the purpose specified.

708,821. **BOTTLE-WASHING MACHINE.** WILLIAM J. CUSHMAN, Philadelphia, Pa. Filed Mar. 1, 1902. Serial No. 96,945. (No model.)

Claim.—1. In a bottle-washing machine, brushes adapted to receive and hold the bottles, means for rotating said brushes and with them the bottles, and means for revolving said bottles with respect to said brushes.

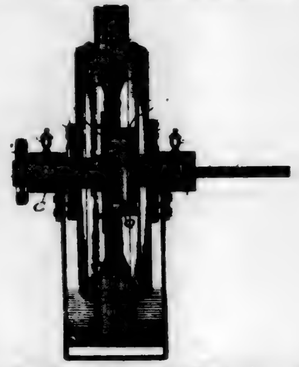

2. In a bottle-washing machine, bottle-holders, brushes on said holders adapted to contact with the interior and exterior of the bottles, means for revolving the same, means for rotating said bottles with respect to said bottle-holders and brushes, and means for imparting a reciprocating motion to said bottles with respect to said bottle-holders and brushes.

3. In a bottle-washing machine, bottle-holders, brushes on said holders adapted to contact with the interior and exterior of the bottles, means for revolving the same, means for rotating said bottles with respect to said bottle-holders and brushes, and means for conducting cleansing material to the interior of said bottle-holders and for automatically closing the supply thereof.

4. In a bottle-washing machine, bottle-holders, brushes on said holders adapted to contact with the interior and exterior of the bottles, means for revolving the bottles with respect to said bottle-holders and brushes, and a valve mechanism for automatically controlling the supply of cleansing material to said bottles and bottle-holders.

5. In a bottle-washing machine, bottle-holders, means for revolving the same, means for rotating said bottles with respect to said bottle-holders, means for imparting a reciprocating motion to said bottles with respect to said bottle-holders, and a valve mechanism for automatically supplying cleansing material to the interior of said bottles.

6. In a bottle-washing machine, a tank, brushes suitably supported therein and adapted to receive a bottle, means for revolving said brushes with respect to said tank, and disks suitably supported and adapted to contact with said bottle for rotating the same with respect to said brushes.

7. In a bottle-washing machine, a tank, brushes suitably supported therein and adapted to receive a bottle, means for revolving said brushes with respect to said tank, and a track provided with means for imparting a reciprocating motion to the bottle with respect to said brushes.

8. In a bottle-washing machine, a tank, brushes suitably supported therein, means for revolving the same with respect to said tank, bottles adapted to be held adjacent said brushes, and disks suitably supported and adapted to contact with the bottle and means for imparting motion to said disks whereby said bottles are rotated with respect to said brushes.

9. In a bottle-washing machine, a tank, brushes suitably supported therein and adapted to receive bottles, means for revolving said brushes with respect to said tank, and a block having suitable passages therein which are adapted to register with the communications to the interior of the bottles, whereby cleansing material is conducted thereinto.

10. In a bottle-washing machine, a tank, a plate suitably supported therein, means for revolving said plate, brushes connected with said plate, one of which is adapted to enter the bottle, ports in said plate communicating with the interior of said bottle and a block having a passage therein which is so situated as to register with said ports or passages in said plate, in order to conduct cleansing material to the interior of the bottle at a suitable time.

11. In a bottle-washing machine, a tank, a plate secured therein, means for revolving said plate, brushes connected with said plate, one of which is adapted to be inserted in a bottle, ports in said plate, disks suitably supported and adapted to contact with the sides of the bottle, means for rotating said disks independent of said plate, a block having a port therein adapted to register with the ports or passages in said plate and means for conducting cleansing material into said port, whereby cleansing material is supplied to the interior of the bottle at the proper time.

12. In a bottle-washing machine, bottle-holders adapted to receive the bottles, means for rotating the said holders and with them the bottles,

means for revolving said bottles with respect to said bottle-holders, and means for conducting cleansing material to the interior of the bottles when in position.

13. In a bottle-washing machine, brushes adapted to receive and to hold the bottle and adapted to contact with the interior and exterior of the bottles when in position, means for rotating said bottles with respect to said brushes, means for imparting a reciprocating motion to said bottles with respect to said brushes, and means for conducting cleansing material to the interior of said bottle.

14. In a bottle-washing machine, a tank adapted to receive cleansing material, brushes suitably supported and adapted to receive a bottle and to rotate in said tank, whereby the bottles are carried through the cleansing material, and means for revolving said bottles with respect to said brushes, whereby the bottles are thoroughly cleansed.

15. In a bottle-washing machine, a tank adapted to receive cleansing material, brushes suitably supported and adapted to contact with the interior and exterior of said bottles, means for rotating said brushes and bottles with respect to said tank, whereby the said bottles pass through the cleansing material, means for revolving said bottles with respect to said brushes, and means for introducing suitable cleansing material into said bottles whereby the exterior and interior of said bottles are thoroughly cleansed.

708,822. **INVALID-BED.** ELLA B. DOERR, Cincinnati, Ohio, assignor of one-half to Frank W. Handley, Cincinnati, Ohio. Filed Aug. 16, 1901. Serial No. 72,256. (No model.)

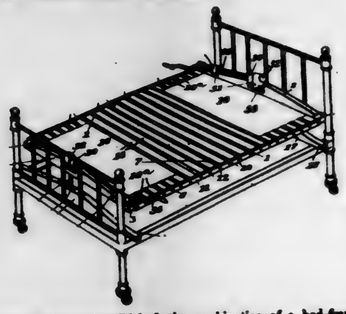

Claim.—1. In an invalid-bed, the combination of a bed-frame, a horizontally-extended cross-bar extended transversely beneath each end of said bed-frame and means interposed between the bed-frame and said cross-bars for raising and lowering the bed-frame relatively to said cross-bars, each cross-bar having at its central part pivotal connection with the raising and lowering means and being adapted for pivotal movement in a horizontal plane independently of the other cross-bar, substantially as set forth.

2. In an invalid-bed, the combination of a bed-frame, horizontally-extended supports, independent of each other and arranged beneath opposite ends of the bed-frame and raising and lowering means interposed between the ends of the bed-frame and said supports and comprising rotative parts extended between the bed-frame and said supports and upon which the said supports are centrally pivoted and are adapted for turning or pivotal movement in a horizontal plane, substantially as set forth.

3. In an invalid-bed, the combination of a bed-frame, independent horizontally-extended cross-bars arranged beneath opposite ends of the bed-frame and means for raising and lowering the bed-frame relatively to said cross-bars and comprising collared screws extended between the bed-frame and said cross-bars and upon which the cross-bars are centrally pivoted and are adapted for turning or pivotal movement independent of each other and devices for operating said screws, substantially as set forth.

4. In an invalid-bed, the combination of a bed-frame, horizontally-extended supports, independent of each other and arranged beneath opposite ends of the bed-frame and provided at their central portions with nuts, screws having their upper ends collared at the ends of the bed-frame and having their lower ends engaged with the nuts carried by the respective supports, the said supports being arranged for pivotal or turning movement in horizontal planes upon said screws and means carried by the bed-frame for rotating said screws to raise and lower the bed-frame upon said supports, substantially as set forth.

5. In an invalid-bed, the combination of a bed-frame formed of side rails and end pieces arranged for detachable connection with the side rails at the corners of the bed-frame, horizontally-extended supports independent of each other and extended beneath each end of said bed-frame and means interposed between the said supports and the end pieces of the bed-frame for raising and lowering the bed-frame upon said supports, each of said supports having at its central part pivotal connection with the raising and lowering means being adapted for pivotal or turning movement in a horizontal plane and independently of the other support, substantially as set forth.

708,823. **STEAM-INJECTOR.** JOHN DESMOND, Cincinnati, Ohio, assignor to the William Powell Company, Cincinnati, Ohio, a Corporation of Ohio. Filed Dec. 24, 1901. Serial No. 87,091. (Model.)

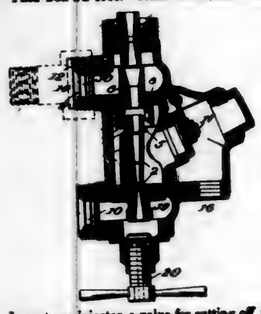

Claim.—1. In a steam-injector, a valve for cutting off the overflow at the mouth of the combining-tube, and the combining-tube having a spill-outlet set at such angle relatively to the valve that the latter will be seated by the force of the water discharged through such opening, as set forth.

2. In a steam-injector, a cup-shaped valve for cutting off the overflow at the mouth of the combining-tube, and the combining-tube having a spill-outlet so arranged that the discharge therethrough will be directed into the cupped side of the valve for effecting the seating thereof by the force of the water discharged through such opening, substantially as set forth.

3. In a steam-injector, a valve for cutting off the overflow at the mouth of the combining-tube formed with a face set at an angle, and the combining-tube having a spill-outlet opening for directing the overflow passing therethrough against such face of the valve, as and for the purpose stated.

4. In a steam-injector, a valve for cutting off the overflow at the mouth of the combining-tube formed with two faces set at an angle, the combining-tube having a spill-outlet opening for directing the overflow passing therethrough against one of said faces, and the water-lifting tube having a seat against which the other face of the valve is designed to be seated, as and for the purpose stated.

5. The combination with the combining-tube having a spill-opening set at an angle, of a valve for cutting off the overflow at the mouth of such combining-tube, said valve having a face set at an angle and against which the discharge through said spill-opening is designed to strike, as and for the purpose stated.

6. The combination with the combining-tube having a spill-opening set at an angle, of a valve having a central ring dilatable on the combining-tube, and a flange at an oblique angle to such ring against one side of which the discharge through said spill-opening is designed to strike, and the water-lifting tube having a seat for such valve, substantially as set forth.

7. The combination with the casing and the couplings, the former being composed of inferior material, and the latter having nipples or tailpieces, of the bushings forming seats for such nipples formed of yielding non-corrosive metal of a superior grade to that composing the casing, as set forth.

8. The combination with the casing having socketed openings, and the couplings designed to be secured thereto having nipples or tailpieces, such casing being composed of inferior material, such as cast-iron, of the bushings having annular portions fitted in the sockets of the several openings and having flared portions against which the nipples are designed to bear, such bushings being formed of yielding non-corrosive metal of a grade different from that composing the casing, as set forth.

708,824. **LUBRICATING DEVICE.** FREDERICK B. DUNBAR, Madison, Wis., assignor to Northern Electrical Manufacturing Company, Madison, Wis., a Corporation of Wisconsin. Filed Jan. 19, 1901. Serial No. 43,849. (No model.)

Claim.—1. The combination with suitable bearings of a rotating vertical shaft, having a passage-way extending part way therethrough, one or more lateral passage-ways extending from said passage-way to the upper bearing-face of the shaft, an escape at or near the bottom of said passage-way, by means of which the oil is conducted to the lower bearing-face of the shaft, the parts arranged so that the upper and lower bearings are both oiled from the same passage-way, the oil being supplied to the lower bearing without first making contact with the upper bearing, and means for inserting oil at the upper end of said passage-way.

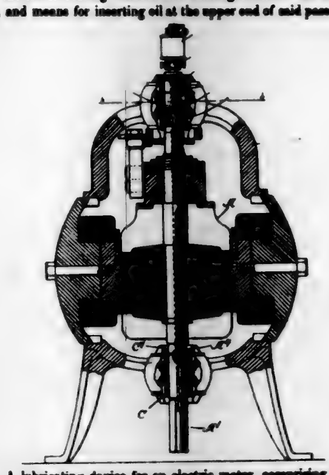

2. A lubricating device for an electric motor, comprising a vertical armature-shaft rotatably mounted in an upper and a lower bearing, a longitudinal passage-way extending through said shaft from its upper end to a point in proximity to the lower bearing, one or more lateral passage-ways at the upper end of the shaft connecting said longitudinal passage-way with the upper bearing-face of the shaft, an exit at the lower part of said passage-way by means of which the oil can pass to the lower bearing-face of the shaft, a stationary oil-cup mounted at the upper end of the shaft and in position to permit oil to pass into the longitudinal passage-way, whereby the amount of oil supplied to the upper bearing is automatically regulated and the oil for the lower bearing is supplied without making contact with the upper bearing.

708,825. **TOOL FOR OIL-WELLS, &c.** WILLIAM J. DEHLAP, Erie, Pa. Filed Apr. 11, 1902. Serial No. 102,494. (No model.)

Claim.—In a device of the type set forth, the combination of a casing having its upper and lower portions interiorly threaded, a sleeve threaded in the lower portion of said casing, an enlarged portion carried by the sleeve of the same diameter as the casing and having its upper side abutting against the lower edge of the casing, said sleeve and enlarged portion being apertured, a stem received within said aperture, a head on the lower end of the stem of the same diameter as said casing and adapted to have its vertical movement limited by engagement of its upper side with the under side of the enlarged portion of the sleeve, the lower end of said head being externally screw-threaded, the upper end of the stem being threaded, a nut in the upper end of the stem, a spiral spring encircling the stem and engaging the nut and the upper end of the sleeve, substantially as described.

708,826. **GLASS-PRESS.** PHILLIP REELING, Moundsville, W. Va., assignor of one-half to George Lafayette Caldwell, Wellsburg, W. Va. Filed Aug. 27, 1901. Serial No. 73,456. (No model.)

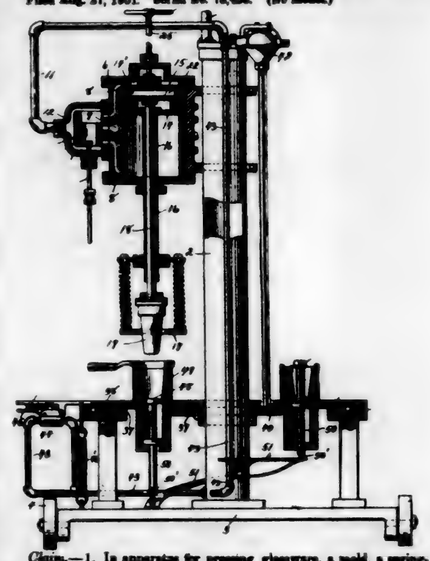

Claim.—1. In apparatus for pressing glassware, a mold, a spring-plate, a spring-plate carrier and a pressing-plunger capable of independent movement, plate-carrier-actuating means, and means for subjecting the plunger to force or pressure substantially uniform throughout the pressing stroke and of less degree than that applied to the spring-plate carrier.

2. In apparatus for pressing glassware, a cylinder, a hollow main piston, a spring-plate carried thereby, an auxiliary piston movable in the main piston, a pressing-plunger carried by the auxiliary piston, the main-piston chamber being provided with a fluid-inlet over the auxiliary piston, and a mold.

3. In apparatus for pressing glassware, a cylinder, a hollow main piston provided with a fluid-inlet, a tubular stem extending from said piston, a spring-plate carried by the stem, an auxiliary piston movable in the main piston, a stem extending from the auxiliary piston through the tubular stem of the main piston, a plunger on the auxiliary-piston stem, and a mold.

4. In apparatus for pressing glassware, a mold, a pressing-plunger, plunger actuating mechanism, means for regulating the force or pressure of the actuating mechanism on the plunger during the pressing stroke, and means for accelerating the movement of the plunger during the latter part of its pressing stroke.

5. In apparatus for pressing glassware, a mold-carrier, a motor therefor, a motor-controlling device, and carrier-securing mechanism adapted to actuate said device.

6. In apparatus for pressing glassware, a mold-carrier, a motor therefor, a motor-controlling valve, and carrier-securing means adapted when released from the carrier to hold the valve open.

7. In apparatus for pressing glassware, a mold-carrier, a motor therefor, a motor-controlling valve, a spring-actuated latch adapted normally to lock the carrier, and an operative connection between the latch and valve, whereby when the carrier is released the valve is opened.

8. In apparatus for pressing glassware, a hollow column forming an air-reservoir, pressing mechanism including a power cylinder communicating with the column, a mold-carrier, and a carrier actuating air-motor communicating with the column.

9. In apparatus for pressing glassware, a hollow column forming an air-reservoir, pressing mechanism, a mold-carrier, a latch normally engaging and securing the carrier, an air-motor for actuating the carrier, a pipe extending from the column to the motor, and a valve in the pipe adapted to be opened by the latch when the latter is released from the carrier.

708,827. **DOOR OR WINDOW ALARM.** JOHN G. EBERSFELD, Chicago, Ill., assignor, by direct and mesne assignments, to John J. Hovey, John F. Dean, and R. Adam Brechvogel, Chicago, Ill. Filed June 3, 1901. Serial No. 62,977. (No model.)

Claim.—1. In a burglar-alarm, a shell comprising two bowl-shaped parts having their connection adjacent and their peripheries approximately contiguous, the upper one of said parts constituting an alarm-bell; a central plate secured to the lower of said shell parts and extending across the device from the peripheries of said shell parts; an arm fixed to and extending in both directions from said lower shell part, one end of said arm having prongs for engaging an exterior object, and the other end of said arm having a turned-up portion perforated to form a guide; a main arbor mounted in and extending through said central plate, and secured at one end to said bell; a pulsative device inclosed between said central plate and said bell for sounding the latter; a spring-casing inclosed between said lower shell part and said central plate, said spring-casing being connected to said main arbor for driving said pulsative device; a spring connected at one end to said arbor and at the other end to said spring-casing; a plate slidingly mounted on said central plate and constituting a detent for controllably retaining said pulsative device; and a controlling-rod secured to said detent, said rod extending through the perforated turned-up guide portion of said fixed arm, and said controlling-rod having means for engaging an exterior object.

2. In a burglar-alarm, the combination of a main framework, a mainspring-casing, a main arbor, a mainspring secured at one end to said casing and at the other end to said arbor, an alarm-bell attached to said arbor for winding said spring, a ratchet-and-pawl device connecting said arbor and the main framework for preventing the accidental improper release of the mainspring, a pulsative escapement device geared to said mainspring-casing for sounding said bell; a detent operating upon said escapement, said detent having a slot for receiving a guide-pin and having a transverse arm passing through an aperture in the central plate of the main frame, and said detent being slidably mounted upon said central plate and making contact therewith for the greater portion of the length of said central plate thereby affording a firm bearing for said detent; a controlling-rod secured to the transverse arm of said detent upon the side of said central plate opposite to the major portion of said detent; said rod having means for engaging an exterior object and prongs upon said framework for engaging a second exterior object whereto the device is adjusted.

708,328. ROTARY ENGINE. ALBIN C. REX and ADOLF F. CEDERQUIST, St. Louis, Mo. Filed Feb. 18, 1902. Serial No. 94,648. (No model.)

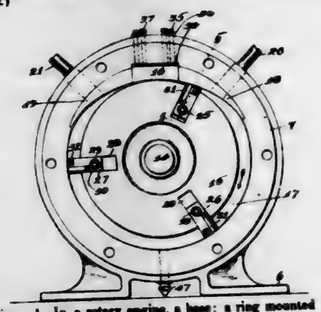

Claim.—1. In a rotary engine, a base; a ring mounted upon and formed integral with the base to form a cylinder; plates attached one to each side of said cylinder and forming the cylinder-heads, there being an eccentric cam-groove in the inner face of one of said cylinder-heads, and a concentric groove in the inner face of the other cylinder-head; a cam-plate adjustably mounted in said concentric groove and having an eccentric cam-groove matching the first cam-groove; a shaft mounted in bearings through the centers of said cylinder-heads; a rotary piston mounted upon the shaft in the cylinder and having a concentric periphery; an abutment recessed into said ring and adjustably bearing against the periphery of said piston; inclined approaches mounted in said ring one upon each side of said abutment; wing-valves mounted to reciprocate radially in slots in said piston; and trunnions extending from said wing-valves into said cam-grooves, substantially as specified.

2. In a rotary engine, a cylinder; a shaft mounted in the cylinder; a piston upon the shaft in the cylinder, said piston having a concentric periphery; wing-valves mounted to slide radially in the piston; an abutment 16 recessed into the cylinder to engage the periphery of the piston, said abutment being adjustably mounted by means of the studs 35 rigidly fixed in the abutment and projecting outwardly through the cylinder; the nuts 36 on the outer ends of said studs to draw the abutment outwardly; and the screws 37 screw-seated through the cylinder with their points in engagement with the abutment to press the abutment inwardly, substantially as specified.

3. In a rotary engine, a cylinder; a shaft mounted in the cylinder; a piston upon the shaft in the cylinder, said piston having a concentric periphery; wing-valves mounted to slide radially in the piston; an abutment 16 recessed into the cylinder to engage the periphery of the piston, said abutment being adjustably mounted by means of the studs 35 rigidly fixed in the abutment and projecting outwardly through the cylinder; the nuts 36 on the outer ends of said studs to draw the abutment outwardly; the screws 37 screw-seated through the cylinder with their points in engagement with the abutment to press the abutment inwardly; and the inclined approaches 18 and 19 mounted one on each side of the abutment, there being ports 22 and 23 leading through the cylinder and through the approaches to the steam-chamber, and there being ports 23' and 24 leading from said ports 22 and 23 to the abutment, substantially as specified.

4. A rotary engine comprising a base; a ring mounted upon and formed integral with the base and forming a cylinder; plates attached to said ring and forming cylinder-heads, there being an eccentric cam-groove in the inner face of one of the cylinder-heads; and a concentric cam-groove in the inner face of the other cylinder-head; a cam-plate adjustably mounted in said concentric groove and having an eccentric cam-groove matching the first cam-groove; a shaft mounted in bearings at the centers of the cylinder-heads; a rotary piston mounted upon the shaft in the cylinder, the periphery of the piston being concentric; an abutment recessed into said ring and adjustably bearing against the periphery of the piston; inclined approaches mounted in the ring one upon each side of said abutment; wing-valves mounted to reciprocate radially in slots in said piston and having trunnions extending into said eccentric cam-grooves; the studs 38 rigidly fixed in the cam-plate and extending outwardly through the head of the cylinder; the nuts 39 upon the outer ends of said studs to draw the cam-plate outwardly; and the set-screws 40 screw-seated through the end 9 with their points engaging the cam-plate, substantially as specified.

5. In a rotary engine, the cylinder-head 9 having a concentric groove in its inner face; the cam-plate 12 adjustably mounted in said groove, there being a recess 41 formed in the inner face of said cam-plate; a concentric piston mounted beside said cylinder-head and the cam-plate; an adjustable abutment mounted to engage the periphery of said piston and move downwardly into said recess 41; the packing-plate 42 mounted in said recess 41; the studs 43 fixed in the plate 42 and extending outwardly through the slots in the cylinder-head; and nuts upon the outer ends of said studs for adjusting said plate 42, substantially as specified.

6. In a rotary engine, a concentric piston; a wing-valve mounted to slide radially in recesses in the piston, there being grooves in the outer edge and each end of said valve; packing-strips mounted in said grooves, said packing-strips being right-angled bars mounted parallel in the outer edge of the valve, the end of one bar extending down on one end of the valve, and the end of the other bar extending down on the other end of the valve; and springs for pressing said packing-strips yieldingly outwardly, substantially as specified.

708,329. LIGHTNING-ARRESTER. CHARLES H. EGAN, Durham, N. C., assignor to Julian S. Carr, Durham, N. C. Filed Mar. 11, 1901. Renewed Apr. 22, 1902. Serial No. 104,222. (No model.)

Claim.—1. In a lightning-arrester, the combination of a base; main line-terminals carried thereby; a ground normally insulated from said terminals; a conductor connected with one of said terminals; a series of fuses connected to said conductor; a closed circuit intermediate one of said fuses and the other line-terminal; and means for cutting in each of the fuses in succession as the preceding fuse is blown.

2. In a lightning-arrester, the combination of a base; main line-terminals mounted thereon; a ground insulated from the terminals against the passage of normal current; a frame supported by the base and electrically connected to one of the main line-terminals; a series of fuses connected to the frame; a series of spring members connected to said fuses; a connection intermediate one of said members and the second of the main line-terminals; contacts arranged to act in conjunction with the members when released by the fusing of the links; and connections between said contacts and the fixed ends of the spring members.

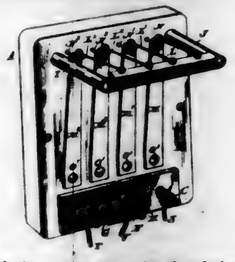

3. In a lightning-arrester, the combination of a base; main line-terminals carried thereby; a ground insulated from said terminals against the passage of current of normal strength; a conductor connected with one of said main line-terminals; a series of fuses connected to said conductor; a closed circuit intermediate one of said fuses and the other line-terminal, said circuit including a spring member held under stress by the fuse; and means for cutting in each of the fuses in succession as the preceding fuse is blown.

4. In a lightning-arrester, the combination of a base; main line-terminals carried thereby; a ground normally insulated from said terminals; a conductor connected with one of said terminals; a series of fuses connected to said conductor; a closed circuit intermediate one of said fuses and the other line-terminal; and a series of spring members connected to each of the succeeding fuses, adapted and arranged to close the circuit as its fuse is blown.

5. In a lightning-arrester, the combination of a base; main line-terminals carried thereby; a ground insulated from said terminals against the passage of normal current; a conductor connected with one of said terminals; a series of fuses connected to said conductor; a closed circuit intermediate the first of said fuses and the other line-terminal, said circuit including a spring member held under stress by the fuse; a series of spring members carried by the base and connected to the fuses; a series of contacts arranged in line with the ends of said spring members; cross connections between said contacts and the fixed ends of the adjacent spring members; and a connection between the other line-terminal and the first of said contacts.

6. In a lightning-arrester, the combination of a suitable base; conducting-plates D, E, mounted thereon; main line-terminals connected respectively to said plates; a ground connection carried by said base adjacent to the plates but normally insulated therefrom; a conducting-frame carried by the base; connections intermediate one of said terminals and said frame; a series of fuse-links connected to said frame; a series of spring-arms carried by the base and having their free ends attached to the links; a series of contacts mounted in the base beneath the free ends of said spring-arms; connections between said contacts and the fixed ends of the adjacent spring-arms; and a connection between the other line-terminal and the last of the series of spring-arms.

708,330. PROCESS OF OBTAINING FOOD EXTRACTS. OTTOKAR EICHELBAUM, Berlin, Germany. Filed Mar. 23, 1901. Serial No. 100,536. (No specimens.)

Claim.—A process for producing a food-stuff similar to meat extract, consisting in mixing milk with a peptonizing ferment and subjecting it to the operation of the said ferment; then mixing therewith diluted mineral acids and heating, and, after the lactose contained in the milk has been split into its glucoses by the action of the acids, neutralizing the acids; then mixing yeast with the liquid to ferment the glucoses obtained from the lactose, and after fermentation is complete, filtering and concentrating the liquid.

708,331. PROCESS OF TREATING FINE IRON ORES FOR BLAST-FURNACES. ALEXANDER D. ELBERS, Hoboken, N. J. Filed May 9, 1902. Serial No. 106,653. (No specimens.)

Claim.—1. The method of compacting fine iron ores, which consists in intimately mixing fine iron ores with moderate quantities of pulverized slag of suitable composition, and in burning such mixes to clinker under rotating action, substantially as described.

2. The method of compacting fine iron ores, which consists in mixing said fine ores with pulverized slag, burning such mixes to a clinker and maintaining the mass in constant agitation during the burning to effect the segregation of the plastic clinker into lumps, substantially as and for the purpose described.

3. The method of compacting fine iron ores, which consists in mixing said fine ores with pulverized slag of the singulo-silicate type or of an oxygen ratio of one to one, low in alumina, burning such mixes to a clinker, and maintaining the mass in constant agitation during the burning to effect the segregation of the plastic clinker into lumps substantially as and for the purpose described.

708,332. STEERING APPARATUS FOR VESSELS. PHILIP L. RISDON, San Francisco, Cal. Filed Aug. 28, 1901. Serial No. 73,580. (No model.)

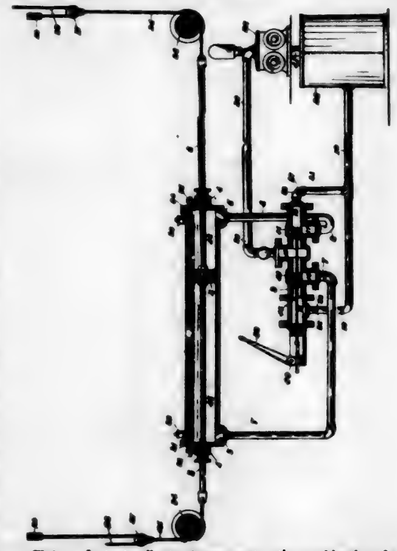

Claim.—In hydraulic steering apparatus, the combination of a main steering-cylinder provided with air-escape valves 30 and water-escape valves 35, a controlling-cylinder provided with air-inlet valves 38, a force-pump for maintaining pressure in the system, a tank for receiving the circulating liquid, a pipe from the pump to the controlling-cylinder, return-pipes from the controlling-cylinder to the tank, and pipes from the controlling-cylinder to the main steering-cylinder, substantially as specified.

708,333. CYANID COMPOUND AND PROCESS OF MAKING SAME. GEORG ERLWEIN and ALBERT FRANK, Berlin, Germany. Filed Feb. 27, 1902. Serial No. 96,936. (No specimens.)

Claim.—1. Composition containing cyanid of calcium destined to serve as a substitute for cyanids of the alkalies consisting in a molten mass of cyanid of calcium and a metallic chlorid.

2. Composition containing cyanid of calcium destined to serve as a substitute for cyanids of the alkalies consisting in a molten mass of cyanid of calcium and chlorid of sodium.

3. Process of manufacturing a composition containing cyanid of calcium consisting in heating a mixture of cyanamid of calcium, carbon and a metallic chlorid until the mass melts.

4. Process of manufacturing a composition containing cyanid of calcium consisting in heating a mixture of cyanamid of calcium, carbon and chlorid of sodium until the mass melts.

708,334. ELECTRIC ACCUMULATOR-PLATE. ALEXANDER FISCHER, Berlin, Germany. Filed June 21, 1902. Serial No. 112,634. (No model.)

Claim.—1. Accumulator-plate comprising in combination: a plate of lead folded into serpentine form; tongues cut out of said plate at the apex of each fold and bent outward; and active mass disposed between said folds; substantially as set forth.

2. The combination with a serpentine-folded accumulator-plate of tongues cut out of said plate at the apex of each fold and bent outward; substantially as set forth.

3. The combination with a serpentine-folded accumulator-plate of tongues cut out of said plate at the apex of each fold and bent outward.

and stiffening-pieces folded with said plate at intervals in the height thereof; substantially as set forth.

4. The method of producing accumulator-plates which consists in: (1) folding a sheet of lead into serpentine form; (2) cutting tongues out of said plates at the apex of said folds and bending said tongues outward; substantially as set forth.

5. The method of producing accumulator-plates which consists in: (1) folding a sheet of lead into serpentine form; (2) cutting tongues out of said plate at the apex of said folds and bending said tongues outward; filling the grooves of said plate with active mass; and giving the plate the desired shape; substantially as set forth.

708,335. **FLOW-ARRESTING DEVICE.** HENRY A. PERK, Newton, Mass., assignor, by mesne assignments, to Everett D. Chadwick, Brookline, Mass. Filed Sept. 21, 1900. Serial No. 30,678. (No model.)

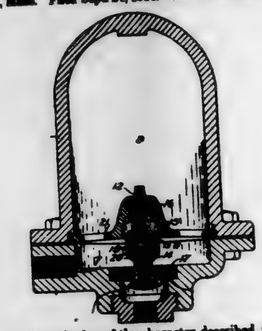

Claim.—1. In a device of the character described, the combination of a chamber having an inlet and an outlet, a valve controlling said outlet, means for opening said valve, means operated by the pressure of the fluid entering said chamber for exerting a closing force on the valve, and means whereby the effective force holding said valve closed is automatically neutralized after a predetermined interval.

2. In a device of the character described, the combination of a chamber provided with an inlet and an outlet, a valve arranged to control the flow of a fluid through said outlet, means for holding the valve normally open, means for closing the valve arranged to be operated by the pressure of said fluid, and means for rendering said pressure inoperative after a predetermined interval.

3. In a device of the character described, the combination of a chamber provided with an inlet and outlet, a movable member arranged to be operated by fluid-pressure exerted in said chamber, a flow-controlling device operative with said member and arranged to arrest the flow of the fluid through the outlet when said member is acted upon by the pressure thereof, and means for rendering the pressure on said member inoperative after a predetermined interval.

4. In a device of the character described, the combination of a movable member arranged to be operated by fluid-pressure, a valve controlled by said movable member and arranged to be held closed thereby when said member is acted upon by said pressure, means for automatically equalizing the pressures on both sides of said movable member after a predetermined interval, and means for opening said valve.

5. In a device of the character described, the combination of a chamber provided with an inlet and an outlet, a movable plate or diaphragm closing one side of said chamber, a valve connected with said diaphragm and arranged to close said outlet when the diaphragm is acted upon by the pressure of the fluid in said chamber, means for opening said valve, and means for equalizing the pressures on both sides of said diaphragm after a predetermined interval.

6. In a device of the character described, the combination of a chamber provided with an inlet and an outlet, a reservoir separated from said chamber by a movable partition, a valve carried by said partition and arranged to close said outlet, and means for opening said valve, said partition being provided with an open passage-way leading from said chamber to said reservoir.

7. In a device of the character described, the combination of a chamber provided with an inlet and an outlet, a reservoir adjacent to said chamber, a movable partition between said chamber and reservoir provided with an open passage adapted to permit a gradual flow of fluid between the chamber and reservoir, a valve connected with said partition and adapted to close the outlet from said chamber, and means for opening said valve.

8. In a device of the character described, the combination of a chamber and a reservoir separated by a flexible diaphragm, said chamber being provided with an inlet and an outlet, a valve attached to said diaphragm and arranged to close the outlet, said valve having the upper portion of its stem hollow and thereby providing a passage between said chamber and reservoir, a straining device surrounding the lower end of said hollow stem and communicating therewith, and means for opening said valve

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708,336. **DOOR-KNOB.** JAMES R. FLETCHER, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn. Filed June 10, 1902. Serial No. 111,042. (No model.)

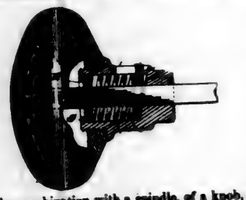

Claim.—1. The combination with a spindle, of a knob, a clamping-plate located within the shank of the knob and normally resting in an inclined or oblique position therein, the said plate having a peripheral lug projecting through a slot in the knob-shank and a spring for yieldingly holding the clamping-plate in position.

2. The combination with a spindle, of a knob, a spindle-clamping plate located within the shank of the knob and provided with a lug projecting through a slot in the knob-shank, and a spring for yieldingly holding said plate in a position to clamp the spindle.

3. The combination with a spindle, of a knob, a spindle-clamping plate located within the shank of the knob and provided with a lug projecting through a slot in said shank, a spring for yieldingly holding said plate in a position to clamp the spindle, and a disk secured within the inner end of the shank and locking the spring within the shank.

4. In combination with a knob-shank, a movable clamping-plate carried in the shank, a spring also carried in the shank which tends to throw the clamping-plate into the locked position, and means for compressing the spring and releasing the clamping-plate so that the spindle can be removed from the shank.

708,337. **MECHANICAL STRINGED MUSICAL INSTRUMENT.** RICHARD GABRIELSKY, Jersey City, N. J. Filed Sept. 4, 1901. Serial No. 74,332. (No model.)

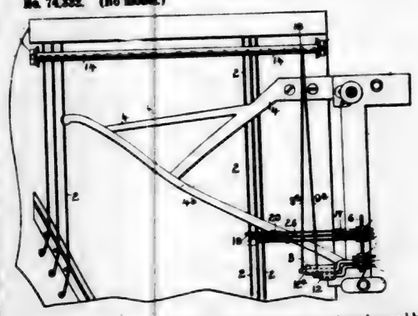

Claim.—1. In a mechanical musical instrument, a damping-rod having an eccentric adapted to be applied to the strings, in combination with star-wheels and intermediate actuating mechanism for turning the rod and automatically making the instrument play piano or forte, substantially as described.

2. In a mechanical musical instrument, the combination with the strings, of a damping-rod, supported adjacent thereto and having an eccentric, and mechanism for automatically turning the rod and thereby causing its eccentric to bear upon and to be removed from the strings, for producing a piano or forte effect, substantially as described.

3. In a mechanical musical instrument, the combination with the strings, of a damping-rod having an eccentric, and supported transversely adjacent to the strings, star-wheels and intermediate actuating mechanism for turning said rod to cause its eccentric to bear upon or be removed from the strings, for producing a piano or forte effect, substantially as described.

4. In a mechanical musical instrument, the combination with the strings, of a damping-rod having an eccentric supported transversely thereto, star-wheels, crank-levers adapted to be engaged by the star-wheels, and connections from said crank-levers to said damping-rod, for turning it, for automatically making the instrument play piano or forte, substantially as described.

5. In a mechanical musical instrument having strings, a rod having a damping cam or eccentric and mounted transversely adjacent to the strings, in suitable bearings, in combination with crank-levers, connections therefrom to said rod for turning its eccentric toward or from the strings and means for actuating said levers, for automatically making the instrument play piano or forte, substantially as described.

708,338. **WASHING-MACHINE.** PAUL H. GREDGE, Sherbrooke, Canada. Filed Sept. 26, 1901. Serial No. 76,584. (No model.)

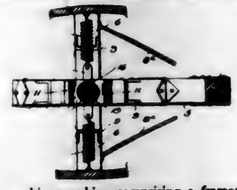

Claim.—A washing-machine comprising a framework, a vertical shaft, a slotted bearing, a movable stop-plate loosely mounted on said shaft, and movably disposed in the slot of said bearing, a vessel mounted on the bearing and the shaft for oscillatory movement and springs connecting the said vessel with the said stop-plate to move the latter diagonally across said bearing as the vessel is moved in one direction, substantially as and for the purpose specified.

708,339. **LOCK-BUCKLE.** CHARLES A. GOODEY, Woonsocket, R. I. Filed Feb. 14, 1902. Serial No. 94,081. (No model.)

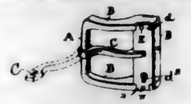

Claim.—1. In a lock-buckle, the combination with the movable tongue, having a hole in its end, of a lock-case lock mechanism comprising a spring-bolt, a spring-catch for engaging said bolt when it is withdrawn from the tongue in the act of unlocking and a thumb-piece on said catch projecting through the lock-case.

2. In a lock-buckle, the combination with the movable tongue, having a hole in its end, of a lock mechanism comprising a case, a stationary key-plate partially filling one end thereof and carrying a key-post, a sliding bolt-plate movable over the key-plate, and having a flange at one end, a spring confined between said flange and the end of the case, and an abutment on the other end of the bolt-plate adjacent to the key-post

3. In a lock-buckle, the combination with the movable tongue, having a hole in its end, of a lock-case having an opening for said tongue, a stationary key-plate in said case carrying a post, a bolt-plate movable over the key-plate and having a flange *f*, recess *f'*, beveled lug *f''* and abutment *f'''*, a helical spring between the flange and the end of the case.

4. In a lock-buckle, the combination with the movable tongue C, having a hole *c* in its end, of a lock-case D having an opening *d'*, a bolt-plate F having a flange *f*, recesses *f'*, *f''*, beveled lug *f'''* and abutment *f''''*, a stationary key-plate G behind the bolt-plate, having recesses *g*, *g''* and notch *g'*, a spring I, and a spring-catch L having a thumb-piece M projecting through the case.

708,340. **FRACTURE APPARATUS.** JOSEPH P. GORDON, Rockford, Ill. Filed Nov. 22, 1901. Serial No. 83,333. (No model.)

Claim.—1. In a fracture apparatus, the combination of a table proper, of adjustable hooked arm-supports and an adjustable foot-section.

2. In a fracture apparatus, the combination of a table proper, of arm-supports, a bar located at the foot of the table and provided with a toothed rack and a pinion meshing with the rack.

3. In a fracture apparatus, the combination of a table proper, a hinged head-section, arm-supports having a pivotal connection with the table proper and capable of folding within the head portion, and an extensible bar at the foot of the table.

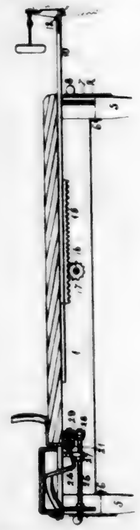

4. In a fracture apparatus, the combination of a table proper, a stationary shaft, two yokes movable on the shaft, a bracket moved by each yoke and means for moving the yokes.

708,341. **PORTABLE WARDROBE.** PETER D. GRAAFF, Fresno, Cal. Filed Apr. 27, 1901. Serial No. 57,749. (No model.)

Claim.—A portable wardrobe comprising a top, sides and back, brackets extending centrally downward from the under side of the top having a detachable rack suspended thereby, hooks secured to the lower front edge portion of the back, a rod extending longitudinally on the under front surface portion of the top having a support centrally arranged to hold and prevent sagging of the same, the opposite ends of the rod being curved and bent to form therewith transverse straight right-angular branch arms having their terminal ends secured to said back, rings slidably mounted on the rod and its arms, a sectional curtain connected to said rings of the rod and arms whereby said curtain is movable on the rod and also from the rod to the straight arms, or vice versa, by means of said curvature at the intersection of said rod and said arms, substantially as specified.

708,342. **APPARATUS FOR MOUNTING PHOTOGRAPHS.** ISAAC G. GRANT, Bozeman, Mont. Filed Oct. 23, 1901. Serial No. 79,694. (No model.)

Claim.—1. In a picture-applying apparatus the combination of a base, a carriage thereon, means on the carriage for applying the picture to the mount, and a frisket mounted on the base and movable to cover and uncover a mount placed on the base.

2. The combination of a base, a carriage thereon, means on the carriage for applying the picture to the mount, a frisket mounted on the base for the purpose specified, and devices actuated by the movement of the carriage, for actuating the frisket.

3. The combination of a base, a carriage thereon, picture-applying devices on the carriage, a frisket on the base for the purpose specified, a gear in connection with the frisket, and a rack on the carriage, the rack riding over the gear to actuate the frisket.

4. The combination of a base, a frisket mounted thereon for the pur-

pose specified, a rock-shaft whereon the frisket is mounted, a gear attached to the rock-shaft, a carriage on the base, a rack on the carriage, the rack riding over the gear, and picture-applying devices on the carriage.

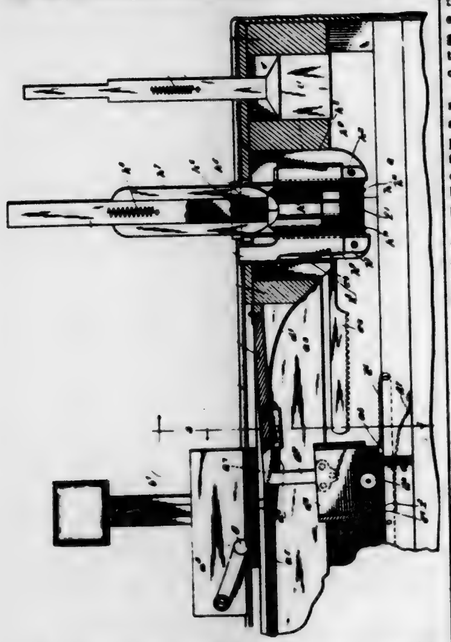

5. The combination of a base, a carriage thereon, a paste-applying device on the carriage, a picture-case on the carriage, means on the carriage for forcing the pictures successively from the case, and a stamp also on the carriage for finishing the operation of applying the picture.

6. In a picture-applying apparatus, the combination of a base, a frisket mounted thereon for the purpose specified, a rock-shaft whereon the frisket is mounted, a gear attached to the rock-shaft, a carriage on the base, a rack on the carriage, the rack riding over the gear to operate the frisket, a paste-applying device on the carriage, means on the carriage for carrying the pictures, and means also on the carriage for separately discharging the pictures from the carriage.

7. In a picture-mounting apparatus, the combination of a base, a carriage thereon, a paste-applying device mounted on the carriage and working over the base, means on the carriage for carrying the pictures and means also on the carriage for forcing the pictures from the carriage.

8. The combination of a base, a carriage thereon, a paste-applying device mounted on the carriage and working over the base, a case vertically movable on the carriage, a stamp within the case, a plunger within the case, a cross-head having limited movement on the plunger, a relatively strong spring connecting the cross-head and stamp, and a relatively weak spring sustaining the case.

9. The combination of a base, a carriage thereon, a case vertically movable on the carriage, a relatively weak spring sustaining the case in normal position, a stamp movable within the case, a plunger, a cross-head having limited movement on the plunger, and a relatively strong spring engaging the cross-head and stamp, said cross-head being capable of engaging the case, for the purpose specified.

10. The combination of a support, a case movable vertically on the same, a stamp movable within the case, means for yieldingly holding the case, a spring connected to the stamp, and a cross-head connected to the spring and adapted to engage the case for the purpose specified, said spring being stronger than the means for yieldingly holding the case.

11. The combination of a base, a carriage thereon, a picture-applying device mounted on the carriage, a dog sustained on the base, and a part connected to the picture-applying device, with which part the dog coacts for the purpose specified.

12. The combination of a base having a part with a guide-groove and an offset therein, a carriage on the base, and a paste-applying device on the carriage and movable relatively thereto, said paste-applying device comprising a part running in the guide-groove, whereby as the offset of the groove is reached, the paste-applying device is moved into operative position.

13. The combination of a frame having a part with a guide-groove therein, a carriage on the frame, a paste-applying device hingedly mounted on the carriage and having a lateral projection fitting in the said guide-groove, the guide-groove having an offset portion, and a spring lying in the groove at the offset portion to engage and deflect the said projection of the paste-applying device.

14. In a picture-applying device, the combination of a frame, a carriage thereon, a paste-applying device movably mounted on the carriage and engaging an irregular surface on the frame, whereby to throw the paste-applying device into and out of active position, means for applying the pictures, said means including a shouldered member, a dog supported on the frame and engageable with said shouldered member, and means being mounted on the carriage and tending to return the carriage to its position of rest.

15. In a picture-applying device, the combination of a frame, a carriage thereon, a paste-applying device, means for applying the pictures, said means being mounted on the carriage and including a shouldered member movable with the picture-applying means, a dog supported on the frame and engaging the shouldered member, and a spring tending to return it to its inactive position.

708,843. HYDROCARBON-BURNER FOR STOVES OR FURNACES. GEORGE A. GREEER, Rogers, Tex. Filed Dec. 27, 1901. Serial No. 87,437. (No model.)

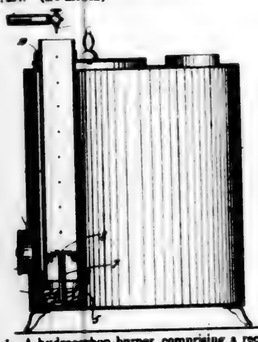

Claim.—1. A hydrocarbon-burner, comprising a receptacle, an air-inlet tube having its lower portion terminating within said receptacle and forming therewith an intermediate space or opening for the passage of a combustible fluid, and a splash device extending upwardly from the receptacle and terminating within the lower open portion of said air-tube.

2. A hydrocarbon-burner comprising a receptacle, an air-inlet tube having its lower open end terminating within said receptacle and forming therewith an intermediate space or opening for the free passage of a combustible fluid, a splash device within the lower end of the tube, an air-inlet independent of the air-tube and arranged to supply air to the receptacle around or outside of the tube, and means for feeding liquid fuel to the splash device.

3. The combination with a stove or furnace, of a burner-receptacle having communication therewith and adapted to be charged with a mass of absorbent material, an air-inlet tube extending into said receptacle to terminate above the level of the absorbent material therein and forming with said receptacle an intermediate space or opening for the free passage of a combustible mixture, a splash device within the lower open end of the air-tube and adapted to permit a liquid spray to impinge the tube, and means for feeding liquid fuel against the splash device.

4. A hydrocarbon-burner comprising a receptacle, an air-inlet tube extending into said receptacle and adjustable vertically with relation thereto, whereby the volume of air supplied by the tube to the receptacle may be varied, a splash device surrounded by said tube, and means for feeding hydrocarbon against the splash device.

5. A hydrocarbon-burner, comprising a receptacle, an air-tube extending into the same and having an open upper end, a splash device surrounded by said air-tube, and a sight-feed device having a drip-nozzle disposed to view above the air-tube and adapted to drop a liquid directly upon the splash device.

708,844. COMBINED DOOR-CHECK AND BURGLAR-ALARM. WILLIAM F. GEIER, Carnegie, Pa. Filed July 8, 1902. Serial No. 114,747. (No model.)

Claim.—1. A device of the type set forth, comprising a plate with guides thereon, a curved rod having its lower end removably secured in the floor, and carrying a T-head on its upper end operating in said guides, a gong, and means actuated by said T-head for tripping the gong.

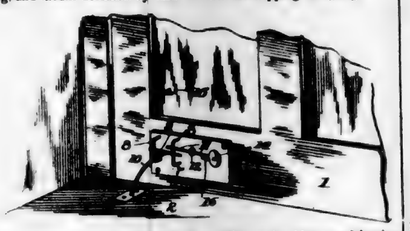

2. A device of the type set forth, consisting of guides, a rod having its lower end removably secured in the floor and carrying a head on its other end operating in said guides, a gong, and pivoted means adapted to be actuated by said head of the rod for tripping the gong.

708,845. WATERING TROUGH, BOWL, OR BASIN. NORMAN W. GREWOLD, Honolulu, Hawaii. Filed Nov. 11, 1901. Serial No. 81,929. (No model.)

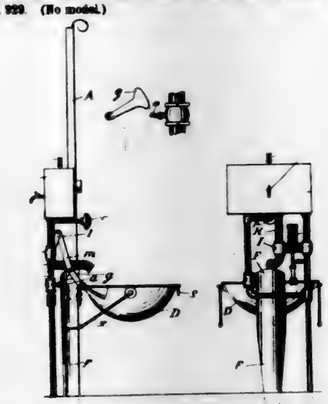

Claim.—1. In a watering-trough for animals a hinged bowl or basin adapted to be moved on its hinged bearings to a vertical position so as to empty its contents: a closed tank supported at an elevation higher than the bowl or basin and connected by a pipe with a source of water-supply, an air-valve in the top of the tank: a pipe leading downward from the bottom of the tank so as to discharge into the bowl or basin: a valve in the feed-pipe and a valve in the discharge-pipe and means operated by the raising and lowering of the bowl or basin whereby said valves are opened and closed alternately so as to successively admit water into the tank and then discharge it into the bowl substantially as described.

2. In a watering-trough for animals a bowl or basin provided with a discharge-spout on one side and supported on hinged bearings on each side of said spout, a latch adapted to engage with the opposite rim of said bowl or basin when it is elevated and closed: a waste-spout adapted to receive the contents of the bowl when it is tipped to a vertical position and a rigid arm attached to said bowl and adapted to operate a spray within the bowl or basin as it is opened and closed, substantially as described.

3. In a watering-trough for animals a bowl or basin supported on hinged bearings and adapted to be raised to a vertical position: means for alternately filling and emptying said bowl or basin: and a spray-pipe connected with the water-supply and operated by the movements of the bowl or basin in opening or closing whereby a spray of fresh water is ejected into and against the bottom of the bowl each time it is raised and lowered substantially as described.

4. In a watering-trough for animals, a bowl or basin adapted to be raised to a vertical position on hinged bearings: means for filling the bowl or basin when it is lowered to a horizontal position, and for emptying its contents when it is raised to a vertical position, and a thin wall or screen extending on each side and above the trough or basin, substantially as described.

708,846. TRUCK. GEORGE H. GROSVIR, SIMON BRILLARD, and JOSEPH L. LABRANCHE, Waterville, Me. Filed May 14, 1902. Serial No. 107,296. (No model.)

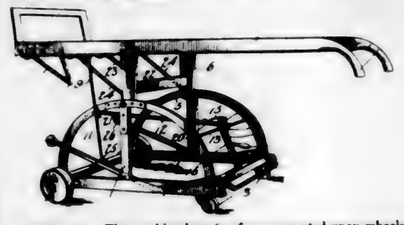

Claim.—1. The combination of a frame mounted upon wheels and having upright devices connected by a cross-rod, a truck-platform having a pair of oppositely-disposed hangers depending therefrom and movably engaging the said rod, a break-joint connection between one end of the platform and frame, a rod extending longitudinally from the said joint under the before-mentioned rod and having a depending toe at the rear terminal thereof, a slotted standard rising from the rear end of the frame and through which the rod with the toe movably extends, and a spring-catch device supported by the slotted standard to lock the rod with the toe.

2. The combination with a frame, of a truck-platform pivotally mounted at an elevation thereon, a break-joint connection between one end of the platform and frame, a rod extending longitudinally from the said connection to the rear of the frame, a lock device for holding the rod against movement, and levers pivoted to the opposite inner side portions of the frame and bent at an angle, the rear ends of the levers having rollers therein and the front ends or extremities connected by a transverse bar which serves as a treadle.

3. The combination with a frame, of a truck-platform mounted thereon and adapted to swing in a vertical plane, rods pivoted together and connecting one end of the platform with the adjacent end of the frame, an operating-rod extending from the connected ends of said rods, a trip for imparting longitudinal movement to the operating-rod, and a lock for said rod.

4. The combination with a frame, of a truck-platform mounted thereon and adapted to swing in a vertical plane, rods connected to the platform and plane and pivoted to each other, an operating-rod extending from the said rods, a guide therefor, a trip within the guide and engaging the rod and adapted to impart longitudinal movement thereto, and a spring-catch adapted to lock the operating-rod in position.

708,847. RAILROAD-BED. MARTIN HAAS, Kalamazoo, Mich. Filed June 30, 1902. Serial No. 113,730. (No model.)

Claim.—1. The combination in a cement railroad-bed, of an upper and lower embedded series of wires or strips and internally-screw-threaded sockets having rigid connection with said wires or strips, substantially as described.

2. The combination in a cement railroad-bed of embedded wires, embedded sockets each having means adapted for engagement with said embedded wires, and a screw-threaded perforation adapted to receive a headed and threaded bolt, the latter having suitable means for engaging and securing the rails, substantially as described.

3. The combination with a cement road-bed, of an upper and lower series of wires or strips, one series arranged transversely and the other series longitudinally within the said bed, substantially as described.

4. The combination with a cement railroad-bed of an upper and lower twisted or corrugated series of wires or strips, one series arranged transversely and the other longitudinally within the said bed, substantially as described.

5. The combination with a cement road-bed, of embedded transverse and longitudinal wires or strips as specified, internally-screw-threaded sockets having perforated side ribs with the perforations adapted to receive wires embedded in the bed and threaded bolts adapted to enter the said sockets and engage and secure the track-rails, substantially as described.

708,848. BASCULE-BRIDGE. CHARLES F. HALL, Chicago, Ill. Filed Dec. 7, 1901. Serial No. 85,018. (No model.)

Claim.—1. In a bascule-bridge, the combination with a vertically-

swinging span, of an abutment supporting the weight of the same, contacting supporting-surfaces on the abutment and span respectively, having a sliding movement relatively to each other, and a pivoted tension-link connecting the heel of the span with a fixed point on the abutment, substantially as described.

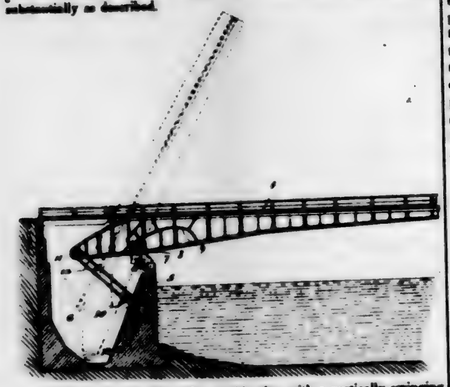

2. In a bascule-bridge, the combination with a vertically-swinging span, of an abutment supporting the weight of the same, a way or track on one of said elements, a fulcrum-roller journaled in or upon the other and contacting said way and having a relative traveling movement thereover, and a pivoted tension-link connecting the heel of the span with a fixed point on the abutment, substantially as described.

3. In a bascule-bridge, the combination with a vertically-swinging span, of an abutment supporting the weight of the same, a fulcrum-roller journaled in or upon the upper end of the abutment beneath the span, a way or track formed in or upon the span above and slidingly contacting said roller, and a tension-link pivoted at one end to the heel of the span and at its opposite end in the abutment, substantially as described.

4. In a bascule-bridge, the combination with a vertically-swinging span, of an abutment supporting the weight of the same, a fulcrum-roller journaled in or upon the upper end of the abutment beneath the span, a way or track formed in or upon the span and overlying said roller, said way and roller having contacting friction-surfaces, means for rotating said roller, and a controlling device for the heel of the span, substantially as described.

5. In a bascule-bridge, the combination with a vertically-swinging span, of an abutment supporting the weight of the same, a roller journaled in or upon the upper end of the abutment beneath the span, a tension-link pivotally connecting the heel of the span to the abutment, and a curved way or track on the span engaging the roller and so formed and located relatively to the center of gravity of the span and the arc of travel of its heel as that the span shall be in substantial equilibrium at all points of its movement, substantially as described.

708,849. **INSULATED-RAIL JOINT.** GEORGE L. HALL, Brooklyn, N. Y. Filed Mar. 6, 1902. Serial No. 96,894. (No model.)

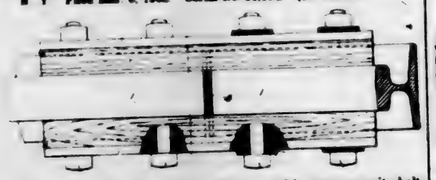

Claim.—1. An insulated-rail joint comprising two opposite bolt-plates extending across the joint, two insulating-blocks extending across the joint one on each side of the rail ends and between them and the corresponding bolt-plate, a plurality of bolts extending through the bolt-plates, insulating-blocks and rail ends, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from said bolt-plates and means of maintaining the rail ends from contact with each other.

2. An insulated-rail joint comprising two opposite bolt-plates extending across the joint, one or both provided with an integral spike-plate, two insulating-blocks extending across the joint one on each side of the rail ends and between them and the corresponding bolt-plate, a plurality of bolts extending through the bolt-plates, insulating-blocks and rail ends, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from said bolt-plates and means of maintaining the rail ends from contact with each other.

3. An insulated-rail joint comprising two opposite bolt-plates extending across the joint, one or both provided with an integral spike-plate having the part thereof opposite the part of the bolt-plate at which the rail ends are joined formed so as to be in substantially the same vertical plane with said bolt-plate, two insulating-blocks extending across the joint one on each side of the rail ends and between them and the corresponding bolt-plate, a plurality of bolts extending through the bolt-plates, insulating-blocks, and rail ends, insulating-bushings adapted to insulate every of said bolts passing through one of the rail ends from said bolt-plates, and means of maintaining the rail ends from contact with each other.

708,850. **INSULATED-RAIL JOINT.** GEORGE L. HALL, Brooklyn, N. Y. Filed Apr. 3, 1902. Serial No. 101,867. (No model.)

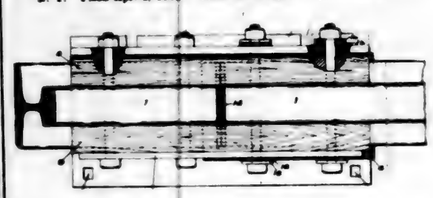

Claim.—1. An insulated-rail joint comprising a rail-chair having a bridge-plate and a bolt-plate, said bridge-plate being provided with additional metal at one end thereof, insulating material between one of the rail ends and said bridge-plate, a metal band separated from the chair and opposing said bolt-plate and extending across the joint, two insulating-blocks, one between said bolt-plate and the rail ends and the other between said band and the rail ends and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulating-bushings adapted to insulate every of said bolts passing through the rail end insulated from said bridge-plate from both said bolt-plate and said band, and means of maintaining the rail ends from contact with each other.

2. An insulated-rail joint comprising a rail-chair having a bridge-plate and a bolt-plate, said bridge-plate being provided with additional metal at one end thereof, insulating material between one of the rail ends and said bridge-plate, means of holding said insulating material in proper position on said bridge-plate, a metal band separated from the chair and opposing said bolt-plate and extending across the joint, two insulating-blocks, one between said bolt-plate and the rail ends and the other between said band and the rail ends and both extending across the joint, a plurality of bolts extending through the bolt-plate, insulating-blocks, rail ends, and band, insulating-bushings adapted to insulate every of said bolts passing through the rail end insulated from said bridge-plate from both said bolt-plate and said band, and means of maintaining the rail ends from contact with each other.

708,851. **RAIL-JOINT.** JOHN E. HAMMOND, Sullivan, Ind., assignor of one-half to Wm. E. Aydelotte, Sullivan, Ind. Filed Oct. 2, 1901. Serial No. 77,484. (No model.)

Claim.—In a rail-joint, the combination with the meeting ends of railroad rails; of the fish-plates having pairs of arms with extensions at right angles therewith slidably connected one within the other so that the bases of the meeting ends of the rails will rest centrally on the middle extensions of the plates, the sides of the plates being adapted to abut against the outer edges of the bases of the rails, said plates being also provided with inwardly-projecting portions which overlap and form flush joints with the opposite upper surfaces of the bases of the rails, and said inwardly-projecting portions extending vertically upward on opposite sides of the webs of the rails and secured flush therewith, whereby the bottoms, side edges and upper portions of the bases of the rails and the webs thereof are wholly inclosed by the construction of said fish-plates, thereby forming a rigid joint and preventing the fish-plates and rails from moving either longitudinally or laterally, substantially as specified.

708,852. **BRAKE-BEAM FULCRUM.** PHILIP T. HANDIGES, St. Louis, Mo., assignor of one-half to Damascus Brake Beam Company, St. Louis, Mo., a Corporation. Filed Jan. 11, 1902. Serial No. 89,236. (No model.)

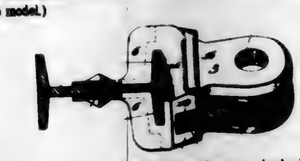

Claim.—1. As a new article of manufacture, a brake-beam fulcrum comprising a pair of socket clamp members, and a jaw seated and held within said members, substantially as described.

2. The combination with a brake-beam, of a jaw and a pair of socket clamp members interlockingly engaged and adapted to hold said jaw between them, substantially as described.

3. A brake-beam fulcrum comprising a pair of socket clamp members grooved to fit over the flanges of a brake-beam, and having forwardly-extending wings; and a jaw seated and held between said wings, substantially as described.

4. A brake-beam fulcrum comprising a pair of socket clamp members grooved to fit the flanges of a brake-beam, and having forwardly-projecting wings, mating flanges carried by said wings adapted to abut against each other, and a jaw seated and held between said wings, substantially as described.

5. A brake-beam fulcrum comprising a pair of socket clamp members having a body portion adapted to fit the brake-beam, wings projecting from said body, bosses carried by said wings, and a jaw positioned between said wings and having recesses adapted to receive said bosses, substantially as described.

6. A brake-beam fulcrum comprising a pair of socket clamp members having a grooved body portion adapted to fit the flanges of the brake beam, wings projecting obliquely from said body portion, flanges projecting from each of said wings having tongues adapted to abut against the tongues of the mating socket clamp members, bosses located on the inside faces of said wings, and a jaw seated between said wings having recesses adapted to receive said bosses, substantially as described.

708,853. **COMPOSITION OF FIREPROOF WALL-PLASTER.** CHARLES R. HARRIS and CHRISTOPHER C. BARRICK, Los Angeles, Cal. Filed Feb. 13, 1902. Serial No. 93,962. (No specimens.)

Claim.—1. The herein-described composition of matter, consisting of clay, calcined plaster, cement, asbestos fiber and glue, substantially as described and for the purpose specified.

2. A dry powder for plaster consisting of clay, calcined plaster, cement, asbestos fiber and glue, in substantially the proportions stated.

3. A dry powder for plaster consisting of clay, calcined plaster, cement, asbestos fiber and glue in substantially the proportions stated and coloring-matter.

708,854. **FIREPROOF WALL-PLASTER.** CHARLES R. HARRIS and CHRISTOPHER C. BARRICK, Los Angeles, Cal. Filed Feb. 27, 1902. Serial No. 96,941. (No specimens.)

Claim.—1. The herein-described composition of matter, consisting of clay, calcined plaster, sand, cement, asbestos and glue, substantially as and for the purpose specified.

2. A new article of manufacture consisting of a dry composition for plaster in powdered form and consisting of clay, calcined plaster, sand, cement, asbestos and glue in substantially the proportions stated.

708,855. **COMBINED POCKET RULE, SQUARE, COMPASSES, AND COMB.** CHARLES P. HARTLEY, Washington, D. C. Filed June 2, 1902. Serial No. 109,973. (No model.)

Claim.—1. A device of the class set forth, having teeth at one side, an opening in one extremity in alinement with the inner end walls of the spaces between the teeth, a straight edge at the side opposite that having the teeth, and scale-marks on opposite faces of the portion of the device from which the teeth extend, said scale-marks extending inwardly from the said straight edge.

2. A device of the class set forth having teeth at one side projecting from a back formed with a straight edge, the said back having scale-marks on opposite sides thereof and the teeth terminating at a distance from one end of the device to provide a square member which has an opening at the center thereof.

708,856. **COMBINED DRIVING-GEAR AND BRAKE FOR MOTOR-VEHICLES.** HERBERT H. HENSHEIM, St. Louis, Mo., assignor to International Motor Company, St. Louis, Mo., a Corporation of Missouri. Filed Apr. 8, 1901. Serial No. 54,964. (No model.)

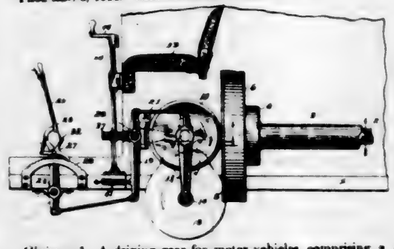

Claim.—1. A driving-gear for motor-vehicles comprising a main operating-shaft, a friction-wheel at one end thereof, a shaft 14, upwardly-extending arms pivoted to the shaft 14, a friction-disk supported between the arms and adapted to engage the friction-wheel, a shaft 20, rock-levers pivoted to the shaft 20 and connections 21 between the upper end of the pivoted arms and the upper ends of the rock-levers, and means for operating the rock-levers to throw the friction-disk into and out of engagement with the friction-wheel, substantially as described.

2. In combination with motor-driven instrumentalities, speed-changing devices in communication therewith comprising opposing friction-disks, means for shifting one of the disks across the face of the other, a brake carried by the disk-shifting means, and means for swinging the shiftable disk toward and from the other disk and into engagement with the brake; substantially as described.

3. In combination with motor-driven instrumentalities, speed-changing devices in communication therewith comprising opposing disks, means for shifting one of the disks across the face of the other, a brake movable with said shiftable disk, and means for causing a frictional engagement between said shiftable disk and the brake, substantially as described.

4. A combined driving-gear and brake for motor-vehicles, comprising a revolvable friction-plate, a friction-wheel mounted to engage said friction-plate and shiftable across the face thereof, a brake shiftable with the friction-wheel, and means for retracting said friction-wheel from engagement with said friction-plate and forcing the same into contact with said brake; substantially as described.

5. A combined driving-gear and brake for motor-vehicles, comprising a revolvable friction-plate, a friction-wheel mounted to engage said friction-plate and shiftable across the face thereof, a brake shiftable with the friction-wheel, and means operating by its initial movement to retract the friction-wheel from engagement with the friction-plate, and by further movement to force said friction-wheel into contact with the brake; substantially as described.

6. A combined driving-gear and brake for motor-vehicles, constructed with a friction-plate adapted to revolve continuously in a given direction, a friction-wheel mounted to engage said friction-plate on either side of the center of said plate, a brake for said friction-wheel and adapted to be shifted therewith, and a ball-bearing for receiving the thrust of said friction-plate, substantially as specified.

7. A combined driving-gear and brake for motor-vehicles, having a friction-wheel 10 provided with a peripheral friction-surface 35, a continuously-revolving friction-plate, means for urging said friction-wheel into contact with said friction-plate, a toothed rack for moving said friction-wheel nearer to or farther from the periphery of said friction-plate, and a brake carried by said toothed rack and adapted to engage said frictional surface of said friction-wheel, substantially as specified.

8. In a driving-gear for motor-vehicles, devices for changing the speed of the vehicle, a combined hand and foot lever for controlling said devices, a toothed sector, a pawl having an arm to be engaged by the operator's foot, an auxiliary handle on said lever, and a connection between said auxiliary handle and said pawl, substantially as specified.

708,857. **WINDOW-SCREEN.** ELDRIDGE G. HOLDEN, Philadelphia, Pa. Filed Nov. 21, 1901. Serial No. 83,113. (No model.)

Claim.—1. In a window-screen, a wire-cloth, a side frame comprising two strips between which the screen is clamped, one of said strips having two beveled edges, the other strip having a beveled edge opposite to that of the beveled outer edge of the other strip, pins extending transversely of the groove formed by the beveled edges of the strips, and hooks having recesses to receive the pins, as and for the purpose described.

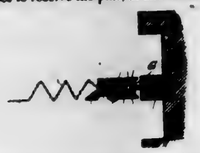

2. The combination in a window-screen, a wire-cloth, of side frames attached to each side edge of the wire-cloth, a vertical groove formed in the outer edge of each of said side frames, pins extending through the side frames and across the groove, right-angle screws secured in the window-casing, said screws having a portion extending upward parallel with the window-casing, behind which the pins are adapted to be held when the screen is in position, vertical folds or convolutions formed in the wire-cloth, and means for locking the screen in place whereby the spring of the vertical folds or convolutions will hold the screen locked in position, as and for the purpose specified.

3. In combination in a window-screen, a wire-cloth, of side frames attached to each side edge of the wire-cloth, a vertical groove formed in the outer edge of each of the side frames, pins extending through the side frames and across the groove, right-angle screws secured in the window-casing, said screws having a portion extending upward parallel with the window-casing behind which the pins are adapted to be held when the screen is in position, notches formed in this upward parallel portion of the right-angle screws, in which the pins are adapted to lie so as to lock the screen in position, and vertical folds or convolutions formed in the wire-cloth, said folds or convolutions adapted to exert a spring-pressure to hold the pins within the notches of the right-angle screws, as and for the purpose specified.

708,358. **MECHANICAL TOY.** ALEXANDER HOSRATH, Reynolds, Ind. Ter. Filed May 19, 1902. Serial No. 107,991. (No model.)

Claim.—1. A mechanical toy, comprising a suitable casing having a doorway, a revolvable carrier within said casing, a series of objects, and means for slidably mounting said objects on said carrier.

2. A mechanical toy comprising a suitable casing, a carrier revolubly mounted therein and having radial arms, a series of objects, and means carrying said objects and fitted to the carrier to rotate therewith within the casing and capable of slidable movement on the arms of said carrier.

3. A mechanical toy comprising a suitable casing, a revolubly carrier having radial guides, objects having supporting means slidably mounted on the guides of the carrier, and means for limiting the radial movements of the objects with respect to the carrier.

4. A mechanical toy, comprising a suitable casing having a doorway, a rotary carrier provided with two series of radial arms, stops on said arms at different distances from the axis of rotation of the carrier, and objects having supporting means slidably mounted on said arms and limited in their radial movements by the stops.

5. A mechanical toy, comprising a suitable casing having a doorway, a revolubly carrier within said casing and provided with arms, slotted sleeves slidably fitted to arms of the carrier, stops passing through said slots of the sleeve and restraining the sleeves from axial displacement on said carrier, and means for rotating said carrier.

708,359. **HARNESS-BUCKLE.** CARROLL H. JOHNSON and LUTHER H. CLEMENTS, Lake City, Mo. Filed Feb. 7, 1902. Serial No. 93,055. (No model.)

Claim.—1. In a buckle, an integral frame comprising side cheeks connected by four cross-pieces, and a hollow wedge-block adapted to lie within said frame, said wedge-block having two inclined outer faces, and a transverse rib between said faces, substantially as described.

2. In a buckle, an integral frame comprising side cheeks connected by four cross-pieces, and a hollow wedge-block adapted to lie within said frame, said wedge-block having two inclined outer faces, and a transverse rib between said faces, one of said faces having a recess and a shoulder 14 therein, substantially as described.

3. In a buckle, an integral frame comprising side cheeks connected by two outer cross-pieces and three inner cross-pieces the intermediate inner cross-piece having a projection on its inner face, and a hollow substantially triangular wedge-block adapted to lie within said frame, said wedge-block having two inclined outer faces and a transverse rib between said faces, one of said faces being recessed to form a shoulder, as 14, substantially as described.

708,860. **LOADING OR UNLOADING DEVICE.** MILLARD F. JOHNSON, Plum River, Ill. Filed June 27, 1902. Serial No. 113,526. (No model.)

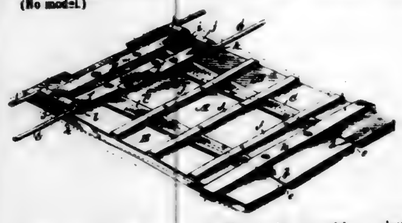

Claim.—1. A loading and unloading device comprising a platform consisting of a central stationary section and pivoted side sections adapted to be extended to increase the width of the platform, substantially as and for the purpose set forth.

2. A loading and unloading device comprising a platform consisting of a central stationary section and pivoted side sections, said sections being beveled upon their inner or adjoining edges, substantially as and for the purpose described.

3. A loading and unloading device comprising a platform consisting of a central stationary section and pivoted side sections, and guard-plates secured to the central stationary section and overlapping the pivoted side sections, substantially as and for the purpose specified.

4. A loading and unloading device comprising a platform consisting of a central stationary section and pivoted side sections, and pivoted or hinged keepers provided with suitable handles, substantially as and for the purpose set forth.

5. A loading and unloading device comprising a platform consisting of a central stationary section and pivoted side sections, and hinged or pivoted handles provided with bolts adapted to abut against the edges of the pivoted sections to hold them closed and to engage bolt-holes therein to hold them extended, substantially as and for the purpose specified.

708,861. **STOCK-WATERER.** JOHN W. KELLEY and CYRUS W. ADKINS, Hastings, Iowa. Filed Oct. 31, 1901. Serial No. 80,614. (No model.)

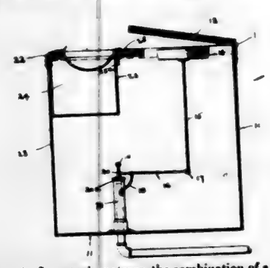

Claim.—1. In a stock-waterer, the combination of a water-tank, and open-topped trough hinged to the tank having one or more openings in its sides, and having a solid bottom mounted in the tank to project below the water-level thereof, and a grating hinged to the tank over the trough partially below the water-level thereof for the purposes stated.

2. In a stock-waterer, a combination of a water-tank provided with a supply-pipe, a stopper in said supply-pipe, means for automatically removing and inserting said stopper into the supply-pipe, a trough in the upper corner of the tank and hinged to it, one or more openings in its interior side, a grating protector for the trough partially below its water-level and hinged to the tank, and a cover for that portion of the tank not protected by the grating and trough for the purposes stated.

3. In a stock-waterer, a combination of a tank having a water-supply pipe, a float 14, a rod 15 connected therewith, a rod 16 pivotally connected with the rod 15, a rod 20 having a stopper on its lower end pivotally attached to the rod 16, a brace 18 attached to the pipe 21 and pivotally attached to the rod 16, which float, rods and stopper are to act in conjunction with each other in regulating the supply-water, a cover 12, attached to the tank and in the upper front portion of the tank, a trough, with one or more openings in the side thereof, to permit the flow of the water into it, hinged to the end of the tank 23, a handle on said trough, a grating hinged to the tank directly over the trough having the side pieces 28, the end pieces 29 and the metal cross-bars 30 partially extending into the trough and below the water-level in it for the purposes stated.

708,362. **SMOKE-CONSUMER.** JOSEPH P. KELLY, St. Louis, Mo., assignor of one-half to Ora E. Overpeck, St. Louis, Mo. Filed May 13, 1902. Serial No. 107,199. (No model.)

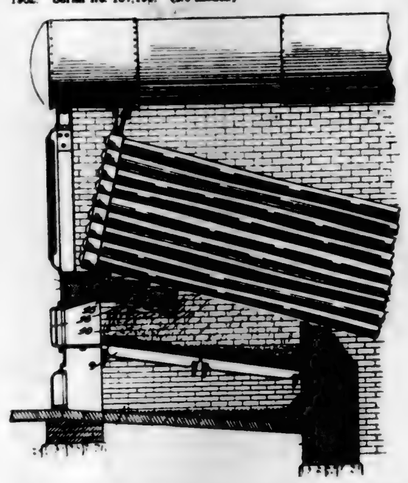

Claim.—1. The combination with a boiler-furnace, having a fire-box, side walls extending upwardly from the fire-box, and a front wall having a fuel-opening leading to the fire-box; of a baffle-plate extending backwardly from the front wall above the fuel-opening; said baffle-plate consisting of I-beams having their forward ends embedded into the front wall and extending backwardly, and tile interlocked with the I-beams so as to protect the I-beams from the heat, and so as to be supported by the I-beams; substantially as specified.

2. The combination with a boiler-furnace having a fire-box; of a baffle-plate extending backwardly from the front wall above the grate, said baffle-plate consisting of beams supported by the front wall and the side walls; and tile having grooves in their ends to receive said beams, thereby covering the beams with the tile and supporting the tile, the distance between the end faces of said grooves being greater than the vertical dimension of the tile, and greater than the horizontal dimension longitudinally of the beams, substantially as specified.

708,363. **ART OF ENAMELING METAL WARE.** GEORGE W. KITCHEN, Newark, N. J. Filed Dec. 5, 1901. Serial No. 84,773. (No specimens.)

Claim.—1. The herein-described process of enameling which consists first, in coating the cleaned article with a thin layer of cohesive and non-corrosive metal, then applying an enamel which upon heating will cooct with and only partially oxidize and permeate the coating metal.

2. The herein-described process of enameling which consists first, in coating the cleaned article with a thin layer of cohesive and non-corrosive metal, then applying an enamel composed of feldspar, borax, soda-ash, saltpeter, fluor-spar, cryolite and a coloring-matter in such proportions that such enamel will upon heating partially oxidize and permeate the metal layer, and finally heating to flux and set the enamel.

4. The herein-described process of enameling which consists in coating an iron or steel body with a thin layer of cohesive and non-corrosive metal, then applying an enamel which upon heating will cooct with only the outer surface of the coating metal.

5. The herein-described process of enameling which consists first, in coating the cleaned article with a thin layer of cohesive and non-corrosive metal, then applying an enamel composed of fusible materials and a coloring-matter, and which enamel upon heating will set free an acid which will cooct with and only partially oxidize and permeate the non-corrosive coating, and act upon the coloring-matter, to produce in the finished article a surface having a high gloss and a wavy or foliated appearance, and finally heating to flux and set the enamel.

6. The herein-described process of enameling which consists first, in coating the cleaned article with a thin layer of cohesive and non-corrosive metal, then applying an enamel which upon heating will develop boracic acid sufficient in quantity to only partially oxidize and permeate the applied metal coating, and finally heating to flux and set the enamel.

7. As a new article of manufacture, a metallic vessel or other article carrying a superposed film of another metal partially oxidized and permeated in spots, and upon said film an enamel or glaze.

8. As a new article of manufacture, a vessel or other article having a base of a corrosive metal, an enameled surface, and a layer of non-corrosive metal, partially oxidized and permeated in spots, interposed between the base and the enamel.

9. As a new article of manufacture, a metallic vessel or other article having its entire surface, pores, indentations and inequalities covered and filled with a thin cohesive layer of metal, said layer of metal partially oxidized and permeated in spots, and an enamel coating situated over said metal layer.

708,364. **REPEATING CLOCK.** JAKOB KIESELS, Schwenningen, Germany. Filed June 3, 1901. Serial No. 62,965. (No model.)

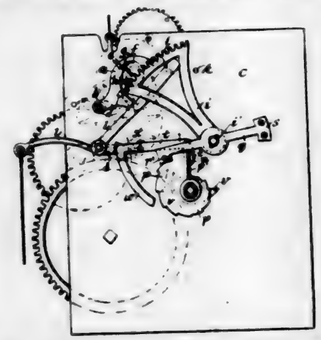

Claim.—1. In a repeating clock, the combination with the segment, of an arresting-lever, adapted to arrest the movement of the segment, and a cam controlling the striking mechanism and engaging said lever.

2. In a repeating clock, the combination with the segment, of a forked arresting-lever, and a cam forming a part of the striking mechanism and arranged within the fork of said lever provided on one side with a pin adapted to engage the lever and on the other side with a pin adapted to engage the segment, the said lever being provided with a pin adapted to engage the segment and with a second pin adapted to engage the shoulder of the said cam.

3. In a repeating clock, the combination of the segment, the repeating lever, an arresting-lever bearing on the repeating lever, and adapted to engage the segment, and a cam forming a part of the striking mechanism and adapted to engage both the segment and the arresting-lever.

708,365. **ELECTROMEDICAL APPLIANCE.** JOHN H. KLOBE and ARTHUR T. KLOBE, New York, N. Y. Filed Aug. 26, 1901. Serial No. 73,262. (No model.)

Claim.—1. In an electromedical apparatus, the combination with a source of light, of means for absorbing heat-rays from the light comprising a cell having transparent walls, ports in said cell, a receptacle for a heat-absorbing fluid, a flexible connection between such receptacle and one of said ports, a second receptacle, and a flexible connection between said second receptacle and another of said ports, said receptacles being adapted to be raised and lowered alternately above and below said cell, whereby a constant flow of the heat-absorbing fluid through the cell may be produced, as set forth.

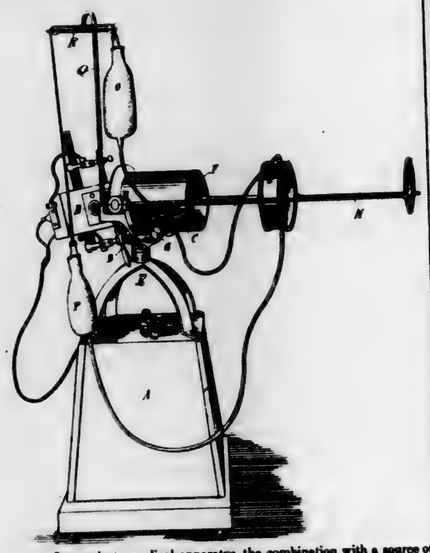

2. In an electromedical apparatus, the combination with a source of light, of condensing-lenses forming the sides of a cell, ports in said cell, a receptacle for a heat-absorbing fluid, a flexible connection between said receptacle and one of said ports, a second receptacle, and a flexible connection between said second receptacle and another of said ports, said receptacles being adapted to be raised and lowered alternately above and below the said cell, whereby a constant flow of the heat-absorbing fluid through the cell may be produced, as set forth.

3. In an electromedical apparatus the combination of a hood or casing capable of universal adjustment, an arc-lamp, a focusing-lens, and condensing-lenses forming the sides of a cell, ports in said cell, a receptacle for a heat-absorbing fluid, a flexible connection between said receptacle and one of said ports, a second receptacle, a flexible connection between said second receptacle and another of said ports, and means for raising and lowering said receptacles alternately above and below the said cell, whereby a constant flow of the heat-absorbing fluid through the cell may be produced, substantially as and for the purposes set forth.

708,366. CAR-DOOR FITTING. GREGORY KRYCOSKI and EDWARD A. LOWRIE, St. Louis, Mo., assignors of one-fourth to Stanislaw A. Czerniewski. Filed Apr. 17, 1902. Serial No. 103,304. (No model.)

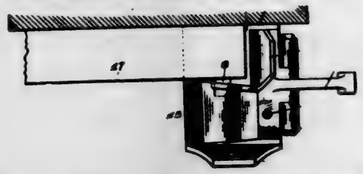

Claim.—1. An improved car-door fitting comprising a fastening-plate adapted to be secured to the side of the car; a base-plate extending horizontally outwardly from the upper end of said fastening-plate; a guide-plate extending upwardly from the outer end of said base-plate and adapted to limit the outward motion of the car-door when the door is open; a hinge member extending backwardly from the base-plate; a second hinge member connected to the first hinge member; a stop-plate extending upwardly from the second hinge member and adapted to engage the rear side of the door, when the door is closed, to prevent the door from sliding open; and a second stop-plate extending forwardly from said second hinge member beside the first stop-plate and adapted to engage the outer face of the door when the door is closed and hold the door against the side of the car, substantially as specified.

2. An improved car-door fitting comprising a fastening-plate adapted to be secured to the side of the car; a base-plate extending horizontally outwardly from the upper end of said fastening-plate, and having a central opening; a guide-plate extending upwardly from the outer end of said base-plate and adapted to limit the outward motion of the car-door when the door is open; a hinge member extending backwardly from the base-plate; a second hinge member connected to the first hinge member; a stop-plate extending upwardly from the second hinge member and adapted to engage the rear side of the door, when the door is closed, to prevent the door from sliding open; a second stop-plate extending forwardly from said second hinge member beside the first stop-plate and adapted to engage the outer face of the door when the door is closed and hold the door against the side of the car; and a third stop extending backwardly from said second hinge member and adapted to pass upwardly through said central opening when the door is open and engage the inner face of the door to hold the door outwardly against said guide-plate and prevent the door from swinging inwardly against the face of the car, substantially as specified.

3. An improved car-door fitting comprising a fastening-plate adapted to be secured to the side of the car; a base-plate extending horizontally outwardly from the upper end of said fastening-plate, and having a central opening; a guide-plate extending upwardly from the outer end of said base-plate and adapted to limit the outward motion of the car-door when the door is open; a hinge member extending backwardly from the base-plate; a second hinge member connected to the first hinge member; a stop-plate extending upwardly from the second hinge member and adapted to engage the rear side of the door, when the door is closed, to prevent the door from sliding open; a second stop-plate extending forwardly from said second hinge member beside the first stop-plate and adapted to engage the outer face of the door when the door is closed and hold the door against the side of the car; a third stop extending backwardly from said second hinge member and adapted to pass upwardly through said central opening when the door is open and engage the inner face of the door to hold the door outwardly against said guide-plate and prevent the door from swinging inwardly against the face of the car; and a removable pin to be inserted through said second hinge member and through said base-plate to hold the first and second stops in position, substantially as specified.

708,367. CAR-DOOR FITTING. GREGORY KRYCOSKI and EDWARD A. LOWRIE, St. Louis, Mo., assignors of one-fourth to Stanislaw A. Czerniewski. Filed Apr. 17, 1902. Serial No. 103,305. (No model.)

Claim.—1. A car-door fitting comprising a fastening-plate adapted to be secured to the side of the car; a base-plate extending horizontally outwardly from the upper end of said fastening-plate; an outer guide-plate extending upwardly from the base; an inner guide-plate extending upwardly from the base; a stop-plate extending upwardly from the base and connecting the rear ends of the guide-plates; a spring-snap attached to the stop-plate in position to engage the door; there being a recess in the door to receive the snap and hold the door open; said stop-plate serving to limit the backward motion of the door; and said guide-plates serving to hold the door from swinging inwardly against the side of the car, and to hold the door from swinging outwardly, substantially as specified.

2. A car-door fitting comprising a fastening-plate adapted to be secured to the side of the car; a base-plate extending horizontally outwardly from the upper end of said fastening-plate; an outer guide-plate extending upwardly from the base; an inner guide-plate extending upwardly from the base; a stop-plate extending upwardly from the base and connecting the rear ends of the guide-plates; a spring-snap attached to the stop-plate in position to engage the door; there being a recess in the door to receive the snap and hold the door open; said stop-plate serving to limit the backward motion of the door, and said guide-plates serving to hold the door from swinging inwardly against the side of the car, and to hold the door from swinging outwardly; a recess-plate embedded into the car-door to receive the snap; and a handle on the snap for manually releasing the snap from the recess, substantially as specified.

708,368. LAMP-BURNER. FREDERIC LEHMANN, Allegheny, Pa. Filed Aug. 26, 1901. Serial No. 73,538. (No model.)

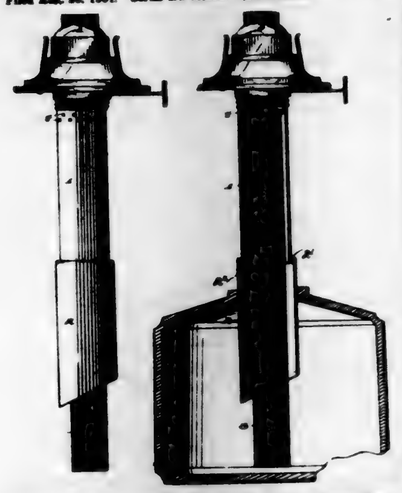

Claim.—In a lamp-burner, an integral sleeve of equal diameter throughout secured in the lamp, the edge of the upper extremity of said sleeve being bent inwardly to form an integral right-angular annular flange, an integral burner-tube of equal diameter throughout adapted for sliding movement in said sleeve, the edge of the lower extremity of said burner-tube being bent outwardly to form an integral right-angular flange for frictional engagement with the inner circumference of said sleeve, the periphery of the burner-tube being frictionally engaged by said flange of the sleeve, the burner-tube having a series of openings near the upper end thereof, and limited in its upward movement by engagement of its flange with the flange of the sleeve, the said burner-tube being exteriorly threaded at its upper end to receive the burner, the oil when the lamp is upset traveling through the interior of the sleeve and the burner and flowing through the said openings in the burner-tube, both of said flanges frictionally engaging and securing the inner circumference of the sleeve and the periphery of the burner-tube in any position the burner-tube assumes, substantially as described.

708,369. PHOTOGRAPHIC-PRINTING FRAME. WILLIAM H. LEWIS, Huntington, N. Y., assignor to James H. Smith, Chicago, Ill. Filed Dec. 15, 1900. Serial No. 39,968. (No model.)

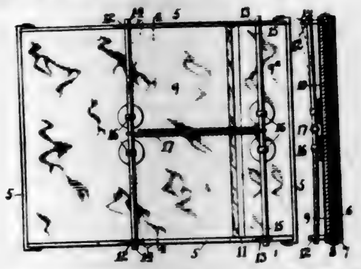

Claim.—1. The combination with a frame, of a removable back composed of two members having a padded facing on the under sides and hinged together on their upper sides by a web of flexible light-proof material, and means for removably securing said back in said frame.

2. The combination of the frame 5; hinged back 9, 9ª; suitable clamps 14, 15 for securing the back, and the spring 17 for supporting the upper member of the back in inclined position, as described.

3. The combination of the frame 5; hinged back 9, 9ª; clamp-rods 14, 15; lugs 12, 13, and supporting-spring 17, substantially as and for the purposes described.

4. The combination with a frame, of a removable back composed of two members, having padded facings on their under sides, and hinged together on their upper sides by a web of flexible light-proof material, clamps for removably securing said back to said frame, and a spring for supporting one of said members in inclined position.

5. In photographic-printing frames the combination with a frame of a hinged back, composed of two members, each of such members being provided with spring clamp-rods, rigidly secured to the back thereof, and adapted to secure the back in the frame by springing the clamp-rods under suitable stationary lugs on the frame.

708,370. PHOTOGRAPHIC-PLATE HOLDER. WILLIAM H. LEWIS, Huntington, N. Y., assignor to James H. Smith, Chicago, Ill. Filed Dec. 15, 1900. Serial No. 39,967. (No model.)

Claim.—1. The combination with a plate-holder having the usual double slides between which is formed a closed chamber, of a hermetically-sealed flexible air-tube secured in said chamber between and adapted to cushion said slides, and a suitable fabric covering secured over said tube against which the slides bear.

2. The combination with a plate-holder, having the usual slide, of a closed chamber in the head of said holder, of a tubular cushion positioned in said chamber, said cushion being closed at both ends by heads and a suitable fabric covering secured over said tube and adapted to be pressed by said tube against said slide.

3. In a plate-holder for photographic cameras, the combination of a suitable frame 4 a sliding shutter 7 and a packing device consisting of a tube 9 of elastic material, hermetically closed at its ends so as to confine an inclosed body of air and inserted in a recess in the frame in position to be compressed by contact with the sliding shutter and to form a tight joint with the inner surface thereof so as to exclude light, substantially as described.

4. The combination of the frame 4, sliding shutter 7, the packing device consisting of a hermetically-closed tube 9 of elastic material and a covering-strip 10 for said tube, substantially as, and for the purposes described.

5. The combination of the frame 4, partition 5, shutters 7, 7, and a hermetically-sealed elastic packing-tube 9 interposed between the opposed surfaces of the shutters 7, 7, substantially as and for the purposes set forth.

708,371. BED-PAN COVER. HELEN C. LIPPS, Boston, Mass. Filed June 12, 1902. Serial No. 111,257. (No model.)

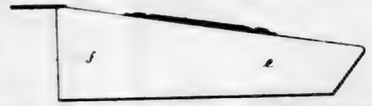

Claim.—1. As a new article of manufacture a bed-pan cover comprising a top and a skirt surrounding the top and joining the same at the edge thereof, the top being inclined to the free edge of the skirt and one end of the skirt being at an obtuse angle to the free edge of the skirt and the other end at a right angle thereto, substantially as set forth.

2. As a new article of manufacture, a bed-pan cover comprising a top and a skirt surrounding the top and joining the same at the edge thereof, the top being inclined to the free edge of the skirt and one end of the skirt being at an obtuse angle to the free edge of the skirt, and the other end at a right angle thereto, and the cover at one end being semi-elliptical and at the other end being tapering so as to provide for the change in shape of the skirt from the obtuse angle at one end to the right angle at the other end in causing the bed-pan cover to surround and conform to the outline of the bed-pan, substantially as set forth.

3. As a new article of manufacture, a bed-pan cover, comprising a top and a skirt surrounding the top and joining the same at the edge thereof, the top being inclined to the free edge of the skirt and one end of the skirt being at an obtuse angle to the free edge of the skirt and the other end at a right angle thereto, and a handle upon the cover for lifting and carrying the same, and a perforated flap h at one end of the cover for suspending the same from a fastening device, substantially as set forth.

4. As a new article of manufacture, a bed-pan cover of india-rubber or similar material, comprising a top and a skirt surrounding the top and joining the same at the edge thereof, the top being inclined to the free edge of the skirt and one end of the skirt being at an obtuse angle to the free edge of the skirt and the other end at a right angle thereto, substantially as set forth.

708,372. AUTOMATIC ENGINE-STOP. NATHANIEL C. LOCKE, Salem, Mass., assignor to Locke Regulator Company, Salem, Mass., a Corporation of Maine. Filed Jan. 2, 1902. Serial No. 88,166. (No model.)

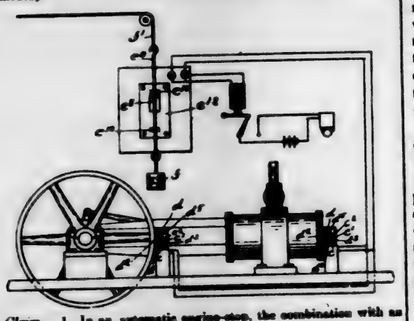

Claim.—1. In an automatic engine-stop, the combination with an engine, means for shutting off steam to the engine comprising an electromechanical actuating mechanism and a circuit therefor, of a circuit-operating device for said circuit located close to said engine and arranged to be operated by contact with a distorted part thereof, substantially as described.

2. In an automatic engine-stop, the combination with an engine, means for shutting off steam to the engine comprising electromechanical actuating mechanism and a circuit therefor, and an alarm also operated by said circuit, of a circuit-operating device for said circuit located close to said engine, and arranged to be operated by contact with a distorted part thereof, substantially as described.

708,378. COMBINED HOT-AIR AND WATER OR STEAM HEATER. ARBAN L. LOGAN, Montalare, Pa. Filed July 16, 1901. Serial No. 66,696. (No model.)

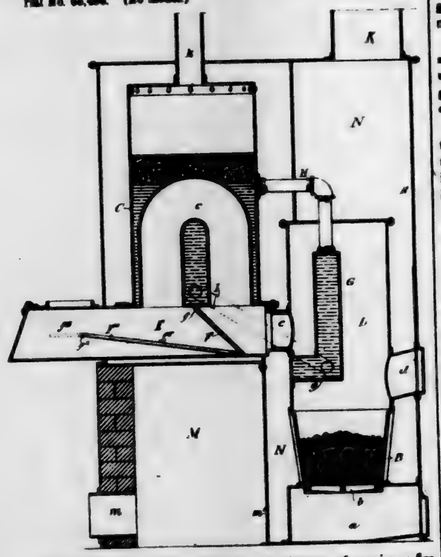

Claim.—1. The combination in a heating-furnace, of a casing, a fire-pot, a combustion-chamber mounted above the fire-pot, a water-receptacle within the combustion-chamber and forming a partition therefor, a horizontal flue communicating with the combustion-chamber, said partition being so formed that the products of combustion will have an indirect passage to the flue, a U-shaped flue communicating with the horizontal flue, a damper within the horizontal flue between the inlet and outlet of the U-shaped flue, and means for operating the damper from the outside of the furnace, substantially as described.

2. The combination in a combined heating-furnace, of a casing, a fire-pot, a combustion-chamber mounted on the fire-pot within the casing, a water-receptacle mounted within the combustion-chamber and forming a partition for the combustion-chamber, so that the products of combustion will have an indirect passage therethrough, a horizontal flue communicating with the combustion-chamber on one side of the partition, a water chamber or boiler mounted above the horizontal flue, a flue within the water-chamber and communicating with the horizontal flue, pipes forming communication between the upper portion of the water-receptacle and the water-chamber, and a pipe forming communication between the lower portion of the water-receptacle and the lower portion of the water-chamber, substantially as described.

3. The combination in a heating-furnace, of a casing, a fire-pot, a cylindrical combustion-chamber mounted above the fire-pot, a transverse water-receptacle mounted within the combustion-chamber and forming a partition, the space in front of the partition communicating with the fire-pot, a horizontal flue communicating with the space back of the partition so that the products of combustion will pass over the water-receptacle and down to the flue, a damper in said flue, means for operating said damper, a water receptacle or boiler mounted above the flue and having a passage therein for the products of combustion, the damper being arranged to close the said passage, substantially as described.

708,374. SPINNING-SPINDLE. CHARLES E. LOVEJOY, Lowell, Mass., assignor to Sawyer Spindle Company, of Maine. Filed Dec. 23, 1901. Serial No. 86,940. (No model.)

Claim.—1. In a spinning-spindle, a supporting-case, an oil-snout having an upright inlet portion, enlarged at its upper end to form a raised guard extended around the top of the inlet-opening, and a cover pivotally mounted on the guard having a body portion to enter the guard.

2. In a spinning-spindle, a supporting-case provided with an oil-snout, having an upright inlet portion, a flange on the top of the latter, upturned and extended around the top of said inlet portion, to form a guard-wall around the entrance of the inlet, and a cover for the inlet pivotally mounted on the inwardly-extended portions of said ribs.

3. In a spinning-spindle, a supporting-case provided with an upturned oil-snout having an enlarged top to form a cup-like guard around the entrance of the oil-inlet, a pivotally-mounted cover on the snout, having its body portion adapted to snugly enter said guard and close the inlet, and an overhanging finger-piece on the cover.

708,375. WINDMILL. THEODORE W. LOWE, Stockton, Cal. Filed Mar. 15, 1902. Serial No. 98,330. (No model.)

Claim.—1. A device of the class described, comprising a shaft, a rim having arms attached to the shaft, a series of elastic vanes clamped to the shaft and each having a side edge portion thereof attached to an arm of the rim, said vanes being normally held by the inherent elasticity thereof in the plane of the rim and the other side edges of the vanes being free or unconfined, and means connected with said free edges of the vanes to positively displace them and to vary the active area of the vanes by bending or deflecting the same with relation to the plane of the rim.

2. A device of the class described, comprising a shaft, a carrier-ring mounted fast on the shaft to rotate therewith, a series of pliable vanes clamped to the shaft and each having one edge confined on the carrier-ring, a semirotary element loosely sleeved on the shaft, and means for imparting a slidable and rotary movement to said element, and connections between the adjusting element, the carrier-ring and the free edges of the pliable vanes.

3. A device of the class described, comprising a shaft, a rim having arms attached to the shaft, a series of elastic vanes attached to the shaft and to arms of the rim along one side edge of each vane, said vanes being normally held by their inherent elasticity in the plane of the rim, and the other side edges of the vanes being unconfined, a slidable and semirotary element having connection with the free edges of said vanes, a retractor opposing the slidable movement of said element in one direction only, and means for imparting slidable movement to said element.

4. A device of the class described, comprising a shaft, a rim having arms attached to the shaft, a series of elastic vanes attached to said shaft and to arms of the rim along one side edge of each vane, said vanes being normally held by their inherent elasticity in the plane of the rim, and the other side edges of the vanes being unconfined, a slidable disk having operative connection with the shaft and adapted to turn thereon simultaneously with its slidable movement, and individual connections between said disk and the free or unconfined edges of said vanes, whereby the movement of the disk in one direction serves to positively displace the elastic vanes with relation to the plane of the rim.

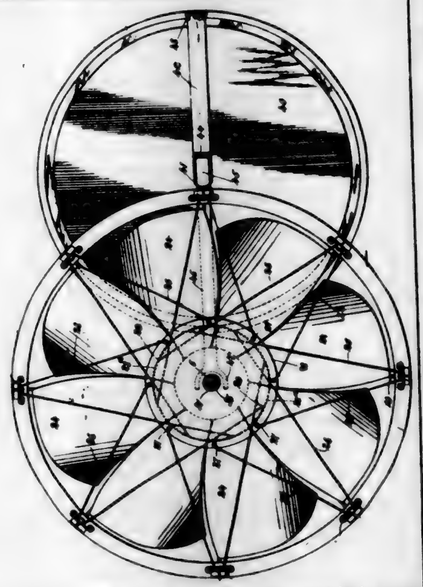

5. A device of the class described, comprising a shaft having a cam-slotted extremity, a rim having arms attached to the shaft, a series of elastic vanes attached to said shaft and to arms of the rim along one side edge of each vane, said vanes being normally held by their inherent elasticity in the plane of the rim, and the other side edges of said vanes being unconfined, a slidable and semirotary element loosely fitted on said shaft and having means arranged to travel in the cam-slotted portion thereof, a spring opposing the slidable movement of said element in one direction only, and individual connections between the slidable element and the free or unconfined edges of said vanes.

6. A device of the class described, comprising a shaft, a carrier-ring made fast with the shaft and having guide devices disposed in oblique positions, a series of vanes made fast with the shaft and connected with the carrier-ring, a semiturning element slidably mounted on the shaft, and cables attached to the vanes, reeved around the guide devices and fastened to the semiturning element.

7. A device of the class described, comprising a shaft having an intermediate threaded portion and a cam-slotted extremity, a hub secured to said shaft, a rim united by a series of rods to said hub, a nut screwed on said threaded portion of the shaft, a sleeve fitted loosely on the shaft and seated against said nut, a loose bearing-collar inclosing said sleeve and also seated against the nut, a disk provided with a sleeve which is loosely fitted on the shaft and is arranged to slide within the first-named sleeve, a spring surrounding the two sleeves and having one end seated against the bearing-collar and its other end seated against said disk, a pin attached to the sleeve of the disk and extending through the cam-slotted extremity of the shaft, a series of vanes attached to the hub and to the arms of the rim, and individual connections between the disk and the unconfined edges of said vanes.

708,376. SQUARE. AXEL L. LUNDGREN, Pullman, Ill. Filed Feb. 14, 1902. Serial No. 94,080. (No model.)

Claim.—1. A square, comprising two members pivoted together, one member being provided with an angular offset having a segmental and beveled end, and with a segmental undercut or bearing, and the other member having its pivoted end segmental and beveled and provided with a segmental undercut, as set forth.

2. A square, comprising two members pivoted together, the pivotal ends of the members being reduced at their inner contacting faces, one member being provided with a segmental and beveled end and with a segmental undercut, and the other member having its pivoted end segmental and beveled and provided with a segmental undercut, as set forth.

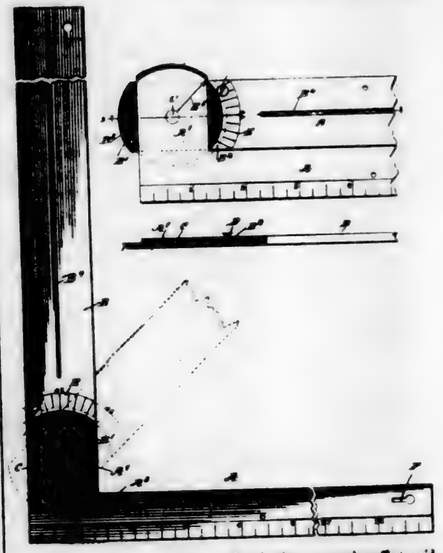

3. A square, comprising a member having an angular offset, said offset being reduced in thickness and having a segmental and beveled end, a segmental undercut and an index, and a longitudinally-slotted member having one end reduced in thickness and pivoted to the angular offset of the first member, the reduced portion having a segmental and beveled end and provided with a segmental undercut and with a graduation adjacent to said undercut, as set forth.

4. A square comprising a member provided at one end with an angular offset having a beveled end and an undercut at its opposite end, the said offset being provided with an index, and a longitudinally-slotted member longer than the first member and having one end pivoted thereto, said slotted member having its end beveled and provided with an undercut opposite the beveled end and a graduation at said undercut, the said members being provided with stops to limit the swinging movement thereof, as set forth.

5. A square, comprising two members of unequal length and pivoted together, each member being provided at its free end with a keyhole-slot, and points of unequal length and provided with headed pins for engaging the slots of the members, as set forth.

708,377. CORN-SHOCK CARRIER. NEWTON W. LYON, Brighton, Iowa. Filed May 28, 1902. Serial No. 109,310. (No model.)

Claim.—1. A shock-carrier, comprising a suitable platform, a winding-shaft mounted on said platform, impalement-stems projecting from the platform and disposed near said shaft, and a binding cable or chain adapted to be coiled on the shaft and to cooperate with the impalement-stems in holding a shock on the platform.

2. A shock-carrier, comprising a suitable platform, a winding-shaft mounted thereon, a series of impalement-stems projecting from the platform and disposed in a position parallel to the shaft, a binding cable or chain detachably connected to said shaft and arranged to be wound thereon, said cable and chain being disposed in cooperative relation to the im-

palement-stems, and means for rotating the shaft with a step-by-step movement.

3. A shock-carrier, comprising a suitable platform, a winding-shaft mounted thereon and provided with a feed-ratchet, a series of impalement-stems fixed to said platform, a binding cable or chain detachably connected with the shaft and adapted to be wound thereon, said cable or chain being disposed in cooperative relation to the impalement-stems, a lever having a feed-pawl adapted for engagement with the ratchet of said shaft, and a locking-pawl also arranged to engage with said ratchet.

4. A shock carrier or vehicle, comprising a suitable platform, a binding cable or chain, and impaling devices attached to the platform in cooperative relation to the binding devices.

5. A shock carrier or vehicle, comprising a platform having a front runner, rear runners located a short distance in advance of the rear end of the platform, a winding-shaft having a suitable binding cable or chain, and impaling devices attached to said platform in cooperative relation with the binding devices.

708,378. **BOX-STRAP HOLDER.** JAMES R. MACMURRAY, Chicago, Ill. Filed Apr. 24, 1902. Serial No. 104,566. (No model.)

Claim.—1. A holder for a coil of box-strap, comprising a frame composed of the two bars A and B hinged together at one end to extend parallel to each other when the frame is closed and form the coil-receiving space between them, a coil-journaling stud on the inner face of one of said bars, a lip *c* on the free end of one of said bars and a latch on the opposite bar to engage with said lip, substantially as described.

2. A holder for a coil of box-strap, comprising a frame composed of the bar A having a flange *b* at one end and the bar B hinged at one end to said flange to form the coil-receiving space between the bars, a coil-journaling stud on the inner face of one of said bars extending close to the face of the opposing bar when the frame is closed and forming the sole journaling-support for the coil, and a latch on the free end of one bar for engaging with the adjacent end of the opposite bar, substantially as described.

708,379. **ODDS-INDICATOR.** DAVID W. MARION, Baltimore, Md. Filed Jan. 30, 1902. Serial No. 91,927. (No model.)

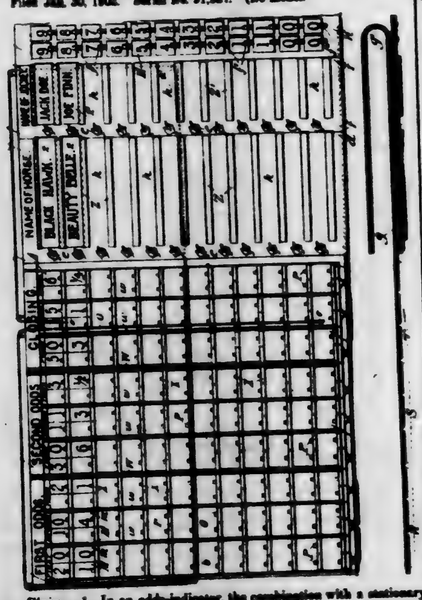

Claim.—1. In an odds-indicator, the combination with a stationary schedule-board provided with holding-compartments for a series of name-bearing cards, of a flexible rack movable horizontally behind the schedule-board and provided with means for holding numeral-bearing cards in rows and in alinement with the schedule-board compartments, so as to display in order the first, second and closing odds, as and for the purpose specified.

2. In an odds-indicator, the combination with a stationary schedule-board provided with name-receiving spaces or compartments, of a flexible rack movable horizontally behind the schedule-board and divided off into sections for respectively containing the first, second and closing odds, the flexible rack being further divided off horizontally and provided with means for holding numeral-bearing cards arranged in horizontal rows and alining with the spaces on the schedule-board to represent in figures the first, second and closing odds, substantially as described.

3. In an odds-indicator, the combination with a stationary schedule-board provided with name-receiving spaces or compartments, of a flexible rack movable horizontally behind the schedule-board and divided by heavy vertical lines into sections and each section subdivided by other vertical lines into column-spaces, the several columns of the sections having means for holding numeral-bearing cards in horizontal alinement with the spaces or compartments of the schedule-board, for displaying the first, second and closing odds, substantially as set forth.

4. In an odds-indicator, the combination with a stationary schedule-board provided with name-receiving spaces or compartments, and a track having one end extended laterally on one side of the schedule-board and its other end recurved behind the same, of a flexible rack mounted to travel on the track and movable behind the schedule-board, said rack being divided off to receive and having means for holding odds-indicating cards in alinement with the name spaces or compartments of the schedule-board, and means for shifting the flexible rack, substantially as described.

5. In an odds-indicator, a frame comprising a track at the base, a superimposed guide-rail, and a stationary schedule-board having name-receiving spaces, of a flexible rack having its lower portion mounted on the track and its upper portion in engagement with the guide-rail, and means for moving said rack behind the schedule-board, the rack being divided off into vertical columns and horizontal rows and provided with holders for engaging and displaying odds-indicating cards in alinement with the name-spaces of the schedule-board, substantially as described.

6. In an odds-indicator, a frame comprising a track at the bottom, a superimposed guide-rail, and a stationary schedule-board having name-receiving spaces, of a flexible rack mounted on the track and stayed by the guide-rail, said rack having means for holding and displaying odds-indicating cards in alinement with the name-spaces on the schedule-board, and an operating cord or cable fastened at an intermediate point to the flexible rack and running from thence in opposite directions around guide-pulleys on the frame, substantially as and for the purpose specified.

708,380. **FISH-TRAP.** GEORGE MERLE, Brooklyn, N. Y. Filed Nov. 20, 1901. Serial No. 83,066. (No model.)

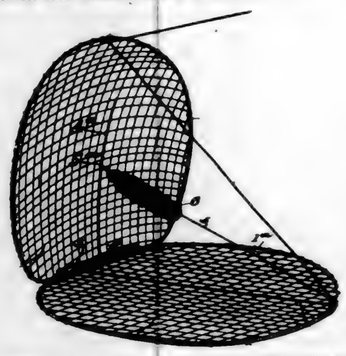

Claim.—A trap of the class described consisting of a top portion and a bottom portion hinged together at one side, the body portion of each of said parts being composed of open network, said trap being also provided with a spring at the hinge for holding the separate parts thereof open and a cord connected with the top portion centrally thereof and passed through a ring or eye at the free edge of the bottom portion and then through a ring or eye at the free edge of the top portion, substantially as shown and described.

708,381. **WINDOW-CURTAIN BRACKET.** ALMA C. MILLER, McKeesport, Pa. Filed June 5, 1902. Serial No. 110,309. (No model.)

Claim.—In a device of the type set forth, the combination with a window-frame, of a base-plate carrying an arm bifurcated at its outer end with a pulley mounted in the bifurcated portion, an eyelet carried by the base-plate, a curtain-pole having hooks on its lower side to receive the curtain, hooks on the upper side of the pole with cords engaging said hooks, passing over said pulley and through the eyelets carried by the base-plate, eyelets carried by the window-frame at the corners thereof, and an eyelet secured intermediate the width of said window-frame, said cord adapted to pass through said eyelets and have their free ends knotted and passed through said eyelet located intermediate of the window-frame, with the knotted portion on the under side of the eyelet, substantially as described.

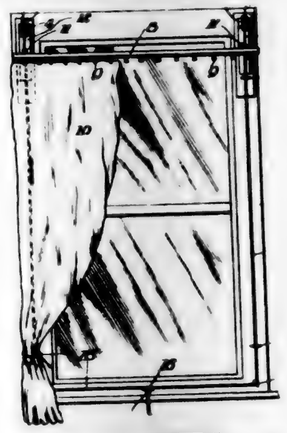

708,382. **METHOD OF SPLITTING SKINS.** FREDERICK W. MOORE, Lynn, Mass., assignor to Charles A. Moore, New York, N. Y. Filed Oct. 11, 1901. Serial No. 78,336. (No specimens.)

Claim.—1. The method of splitting skins consisting in applying to one or both surfaces of a skin a backing of cloth, or equivalent device, and then subjecting the backed skin to a splitting device, under compression, as set forth.

2. The method of treating skins consisting in preparing a tanned skin by trimming its irregular surface and edges, then applying to one or both of its surfaces a backing of cloth, or equivalent device, and then subjecting the reinforced skin to a splitting device, under compression, as set forth.

708,383. **MANTLE-SUPPORT.** JOHN E. MURRAY and JOSEPH J. HOOVER, Washington, Pa. Filed Mar. 10, 1902. Serial No. 97,456. (No model.)

Claim.—1. In a mantle-support, the combination of a mantle-holder, a sleeve frictionally engaging said mantle-holder, said sleeve having its upper end flared outwardly and terminating in a vertical flange, and an inner integral flange arranged in vertical alinement with the bore of the said sleeve the said flared portion forming a seat adapted to support the lower portion of a mantle between the said flanges.

2. In a mantle-support, the combination with a mantle-holder formed on its sides with integral stops, and a mantle-wire-receiving sleeve formed integral with the lower edge of the mantle holder, and having its upper end extending above the upper edge of the said holder, of a sleeve adapted to be slid onto the upper portion of the mantle-holder and engaging the stops thereof, said sleeve provided at its upper end with two integral flanges spaced apart and forming a seat therebetween, and a looped wire having its lower end secured in the said first-named sleeve and adapted to receive a mantle.

3. In a mantle-support, the combination of a mantle-holder, and a cylindrical sleeve engaging said mantle-holder and having its upper end flared outwardly and provided with a pair of vertically-arranged annular flanges arranged one within the other and formed integral with the said flared upper end of the said sleeve.

4. In a mantle-support, the combination of a mantle-holder, and a cylindrical sleeve engaging said mantle-holder, and having its upper end flared outwardly, said flared portion being provided with a pair of vertically-arranged parallel flanges arranged one within the other, and forming a seat therebetween for the lower end of a mantle, said outer flange extending above the inner flange, substantially as described.

708,384. **ANNEALING-RECEPTACLE FOR CASTINGS.** ALLAN W. MCCLARY, St. Paul, Minn. Filed Apr. 12, 1901. Serial No. 55,461. (No model.)

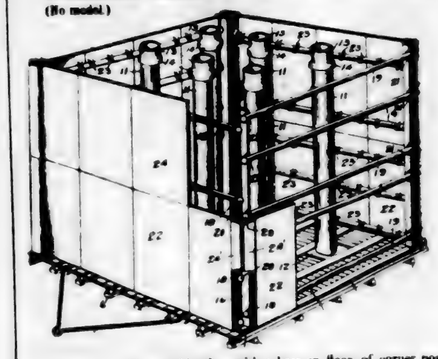

Claim.—1. The combination, with a base or floor, of corner posts or standards thereon, removable rods connecting said posts, a series of sections suspended on said rods, and removable flues provided on said base.

2. The combination, with a base or floor, of angle-bars having a series of notches provided at the corners thereof, a series of rods removably fitting said notches and tying said bars together, and a series of sections suspended on said rods.

3. An annealing-receptacle comprising a base or bottom having flue-holes, flues removably arranged over said holes, and walls removably arranged upon said base around said flues and divided horizontally into a series of independent sections, substantially as described.

4. An annealing-receptacle comprising a base or bottom made up of a series of blocks and parallel rails, alternately arranged, and provided with a series of flue-holes, a series of flues fitting over said holes, means for binding said blocks and rails together, and walls composed of separable sections resting upon said base and inclosing said flues, substantially as described.

5. An annealing-receptacle comprising a base composed of a series of parallel rails suitably spaced, a filling material provided with flue-holes for the space between said rails, means for binding said filling material and said rails together, flues fitting over said holes, and walls divided into separable sections removably supported upon said base and inclosing said flues, substantially as described.

6. An annealing-receptacle, comprising a base or bottom, flues removably arranged on said base, and walls removably arranged upon said base around said flues and divided horizontally into a series of independent bottomless sections.

708,385. **NUT-LOCK.** LESLIE MCCONNELL, Brewton, Ala. Filed May 10, 1902. Serial No. 106,780. (No model.)

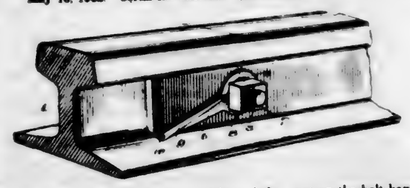

Claim.—1. A nut-lock comprising a bolt, a nut on the bolt having an annulus of ratchet-teeth, an arm having a washer encircling the bolt, said arm being held against backward movement, and a pawl pivoted to the arm and adapted to engage the annulus of ratchet-teeth.

2. A nut-lock comprising a bolt, a nut on the bolt having an annular hub on one side which is provided with ratchet-teeth, an arm having a washer encircling the bolt, said arm being held against backward movement, and a pawl pivoted to the arm and adapted to engage the ratchet-teeth aforesaid.

708,386. **AUTOMATIC CAR AND ELEVATING-TRACK.** WILSON L. MCLAUGHLIN, Clearlake, Iowa, and JAMES R. SWENSON, Lake Crystal, Minn. Filed Mar. 25, 1902. Serial No. 99,899. (No model.)

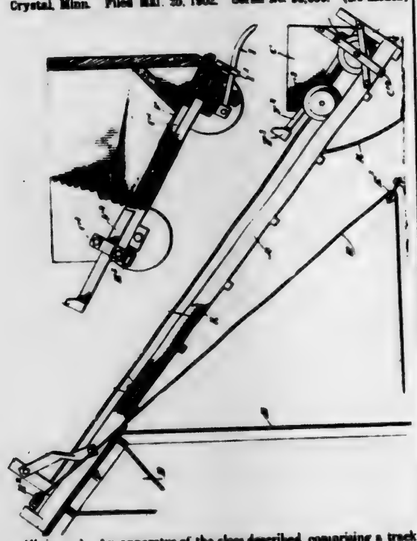

Claim.—1. An apparatus of the class described, comprising a track, a car mounted to travel thereon and having a sliding gate at its bottom, and abutments at the ends of the said track for alternately engaging the gate, to slide the same alternately into an open and closed position, as set forth.

2. An apparatus of the class described, comprising a track, a car mounted to travel thereon and having a sliding gate at its bottom, abutments at the ends of the said track for alternately engaging the gate, to slide the same alternately into an open and closed position, and a locking device for the said gate, to hold the same locked when the gate is in a closed position, the said locking device being controlled and unlocked by the abutment at the discharge end of the track, immediately previous to the abutment opening the gate for dumping the contents of the car, as set forth.

3. An apparatus of the class described, comprising an inclined track, a car mounted to travel thereon, a sliding gate at the bottom of the car, having a frame external of the car, and abutments at the end of the track, adapted to be engaged by the said frame, to open and close the gate, as set forth.

4. An apparatus of the class described, comprising an inclined track a car mounted to travel thereon, a sliding gate at the bottom of the car having a frame external of the car, and abutments at the ends of the track adapted to be engaged by the said frame, to open and close the gate, the side arms of the gate-frame having notches for engaging a fixed part on the car, to lock the gate in a closed position and one of the abutments having a cam device for moving the notched side arms out of engagement with the fixed part, to unlock the gate immediately previous to opening the same, as set forth.

5. An apparatus of the class described, having an inclined track provided with a toothed rack, a car mounted to travel on the said track, a safety-dog hung on the car and adapted to engage the said rack, and a crank-shaft on the track having its crank-arm adapted to engage the safety-dog, to swing the same out of engagement with the rack whenever it is desired to return the car, as set forth.

6. An apparatus of the class described, having an inclined track provided with a toothed rack, a car mounted to travel on the said track, a safety-dog hung on the car and adapted to engage the said rack, means on the track for engaging the safety-dog, to swing the same out of engagement with the rack whenever it is desired to return the car, and a retaining device on the car adapted to be engaged by the said dog when swung out of engagement with the rack, as set forth.

7. An apparatus of the class described, having a car, a safety-dog fulcrumed on the car, a spring-catch on the said car, and a manually-controlled device in the path of the dog to throw the latter into engagement with the spring-catch, as set forth.

8. An apparatus of the class described, having a track, a car traveling thereon, a safety-dog on the car, a spring-catch for holding the said safety-dog in an inactive position, and an abutment on the track for engaging the dog, to swing the latter out of engagement with the spring-catch, as set forth.

708,387. **BUCKLE.** DONALD M. MCLEAN, Boston, Mass. Filed Jan. 7, 1902. Serial No. 88,812. (No model.)

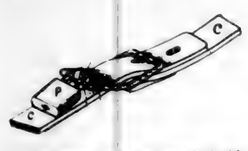

Claim.—A buckle having its tongue provided with a perforated enlargement at its end, said tongue, when the buckle is in use, resting on the cross-bar of the buckle with the said enlargement projecting upward, whereby a padlock having its hasp in the perforation of the enlargement may swing forward or back on the buckle.

708,388. **FILE.** LUTHER C. MCNEAL, Rochester, N. Y. Filed Sept. 3, 1901. Serial No. 74,153. (No model.)

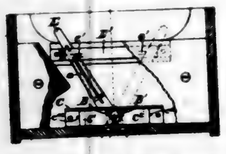

Claim.—1. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate attached transversely to each end of each bar, there being oppositely-arranged recesses in the operating-plates of each pair, an operating-bar provided with means engaging said oppositely-arranged recesses, and means for turning said operating-bar, whereby the locking-bars are separated and brought together, substantially as described.

2. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate attached transversely to each end of each bar, there being oppositely-arranged recesses in the operating-plates of each pair, stops for limiting the throw of said plates, an operating-bar provided with means engaging said oppositely-arranged recesses, and means for turning said operating-bar, whereby the locking-bars are separated and brought together, substantially as described.

3. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate on the end of each bar in which the end of the bar is inserted, there being oppositely-arranged recesses in the operating-plates of each pair, an operating-bar provided with means engaging said oppositely-arranged recesses, and means for turning said operating-bar, whereby the locking-bars are separated and brought together, substantially as described.

4. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate on each end of each bar in which the end of the bar is inserted, there being oppositely-arranged recesses in the operating-plates of each pair, stops for limiting the throw of said plates, an operating-bar provided with means engaging said oppositely-arranged recesses, and means for turning said operating-bar, whereby the locking-bars are separated and brought together, substantially as described.

5. In a file for cards and the like, a frame, a pair of locking-bars having reduced ends, an operating-plate having a perforation fitting upon each reduced end of said locking-bar, there being oppositely-arranged recesses in the operating-plates of each pair, an operating-bar provided with teeth simultaneously engaging said oppositely-arranged recesses, and means for turning said operating-bar, whereby the locking-bars are separated and brought together, substantially as described.

6. In a file for cards and the like, a frame, a pair of locking-bars having reduced ends, an operating-plate having a perforation fitting upon each reduced end of each locking-bar, there being oppositely-arranged recesses in the operating-plates of each pair, an operating-bar provided with teeth adapted to engage simultaneously said oppositely-arranged recesses, means for turning said operating-bar whereby the locking-bars are separated and brought together, and spring-catch devices for holding said locking-bars in their extreme positions of separation and proximity, substantially as described.

7. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate having a socket fitting upon each end of each bar, there being oppositely-arranged recesses in the operating-plates of each pair, an operating-bar provided with means engaging said oppositely-arranged recesses, a lever set on the end of said operating-bar for turning the same, whereby the locking-bars are separated and brought together, and spring-catch devices for retaining said lever in the positions corresponding to the extreme separation and proximity of the locking-bars, substantially as described.

8. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate having sockets fitting upon each end of each bar, there being oppositely-arranged recesses in the operating-plates of each pair, an operating-plate provided with teeth engaging said oppositely-arranged recesses, and a lever having a U-shaped end, one arm of which is perforated to set on the end of said locking-bar, whereby the locking-bars are separated and brought together, a plate on said frame having projections, and a spring for pressing said lever into engagement with said projections, whereby the locking-bars are held in their extreme positions of separation and proximity, substantially as described.

9. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate for each end of each locking-bar having a socket for the end of the locking-bar and a perforation for the passage therethrough of the other locking-bar, there being also perforations having oppositely-arranged recesses in the operating-plates of each pair, a guide-plate at each end of the frame having grooved ways for a pair of said operating-plates, an operating-bar having oppositely-arranged teeth engaging said oppositely-arranged recesses, and means for turning said operating-bar, whereby the locking-bars are separated and brought together, substantially as described.

10. In a file for cards and the like, a frame, a pair of locking-bars, an operating-plate for each end of each locking-bar having a socket for the end of the locking-bar, and a perforation for the passage therethrough of the other locking-bar, there being also perforations having oppositely-arranged recesses in the operating-plates of each pair, a guide-plate at each end of the frame having grooved ways for a pair of said operating-plates, stops for limiting the throw of the plates, an operating-bar having oppositely-arranged teeth engaging with the recesses in a pair of the operating-plates, and means for turning said operating-bar, whereby the locking-bars are separated and brought together, substantially as described.

11. In a file for cards and the like, a frame, a follower-block adapted to move along said frame, a plate in said frame having a downwardly-turned edge set underneath the follower-block and as long as the path of movement thereof, and a plate attached to said block engaging and fitting upwardly against said downwardly-turned edge, whereby the follower-block is held in the frame and its movements are guided therein, substantially as described.

12. In a file for cards and the like, a frame, a follower-block adapted to move along said frame, a plate in said frame having a downwardly-turned edge set underneath the follower-block, and a plate attached to said block and having a grooved portion engaging and fitting upwardly against said downwardly-turned edge, whereby the follower-block is held in the frame and its movements are guided therein, substantially as described.

13. In a file for cards and the like, a frame, a follower-block adapted to move along said frame, a plate in said frame having a downwardly-turned edge set underneath the follower-block and as long as the path of movement thereof, and a plate attached to said block engaging and fitting upwardly against said downwardly-turned edge, whereby the follower-block is held in the frame and its movements are guided therein, and a spring-operated lever attached to said follower-block and adapted to press downwardly on said plate, substantially as described.

14. In a file for cards and the like, a frame, a follower-block adapted to move along said frame, a plate in said frame having a downwardly-turned edge set underneath the follower-block, and a plate attached to said block and having a grooved portion engaging and fitting upwardly against said downwardly-turned edge, whereby the follower-block is held in the frame and its movements are guided therein, and a spring-operated lever attached to said follower-block and adapted to press downwardly on said plate, substantially as described.

708,389. **HYDROCARBON-BURNER.** JOHN W. NEUHAUS, Louisville, Ky. Filed May 13, 1902. Serial No. 107,135. (No model.)

Claim.—The combination of a tank for containing liquid fuel, a supply-pipe for conducting the fuel from said tank and having a valve, an air-blast pipe connected with the supply-pipe between said valve and tank, and having a mouthpiece, and a second valve for controlling the feed of fuel from the tank through said supply-pipe.

708,389.

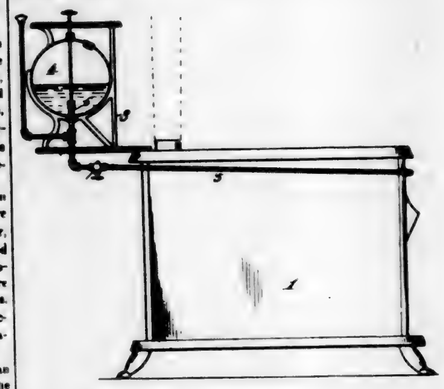

708,390. **MAIL DELIVERING AND CATCHING DEVICE.** WILLIAM J. NOBLE, Philadelphia, Pa., assignor of one-half to Ella McGinnis Princeton, N. J. Filed Apr. 10, 1902. Serial No. 102,244. (No model.)

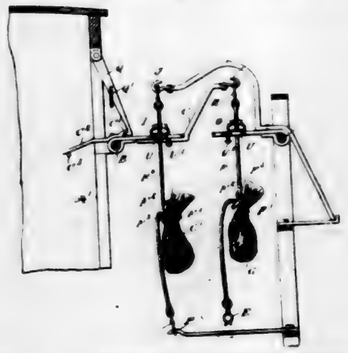

Claim.—1. A mail delivering and catching device, comprising arms mounted to swing and to slide lengthwise on their pivots, one of the arms being located on a car and the other on a track station, a hook on the free end of each arm, to suspend a pouch, and a receiving device on each arm, for receiving a pouch, the receiving device being arranged between the hook and the pivot of the arm, as set forth.

2. A mail delivering and catching device, comprising arms mounted to swing and to slide lengthwise on their pivots, one of the arms being located on a car and the other on a track-station, a hook on the free end of each arm, to suspend a pouch, a receiving device on each arm, for receiving a pouch, the receiving device being arranged between the hook and the pivot of the arm, and catches for engaging the arms, to hold the same set in pouch-exchange position, as set forth.

3. A mail delivering and catching device, comprising arms mounted to swing and to slide lengthwise on their pivots, one of the arms being located on a car and the other on a track-station, a hook on the free end of each arm, to suspend a pouch, a receiving device on each arm, for receiving a pouch, the receiving device being arranged between the hook and the pivot of the arm, and catches for engaging the arms, to hold the same set in pouch-exchange position, the catches being arranged to release the arms on the latter sliding longitudinally on their pivots, as set forth.

4. A mail delivering and catching device, comprising arms, of which one is mounted to swing and to slide longitudinally on a car and the other is similarly mounted on a track-station, a suspending device on each arm for supporting a pouch, a receiving device on each arm for receiving the pouch, the suspending device on one arm and the receiving device on the other arm lying in the same vertical plane, at the time the parts are set in pouch-exchanging position and the car passes the station, and a hook fixed at the track-station and adapted to be engaged by the lower end of the pouch-suspending device, as set forth.

5. A mail delivering and catching device, comprising arms mounted to swing and to slide lengthwise on their pivots, one of the arms being located on a car and the other on a track-station, a hook on the free end of each arm, to suspend a pouch, a receiving device on each arm, for receiving a pouch, the receiving device being arranged between the hook and the pivot of the arm, catches for engaging the arms, to hold the same set in pouch-exchange position, and springs pressing the arms at their fulcrums, to hold the arms yieldingly in position for the catches to engage the arms, as set forth.

6. A mail delivering and catching device, provided with a suspension device for a pouch, and comprising a flexible tie, and a tie-plate having spaced apertures for the passage of the tie to form a loop or noose in the tie at one side of the tie-plate, as set forth.

7. A mail delivering and catching device, provided with a suspension device for a pouch, and comprising a flexible tie, a tie-plate having spaced apertures for the passage of the tie to form a loop or noose in the tie at one side of the tie-plate, and a stop on the tie, to abut against the face of the tie-plate, as set forth.

8. A mail delivering and catching device, provided with a suspension device for a pouch, and comprising a flexible tie, a tie-plate having spaced apertures for the passage of the tie to form a loop or noose in the tie at one side of the tie-plate, and open spring-hooks on the ends of the tie, as set forth.

9. A mail delivering and catching device, comprising arms mounted to swing and to slide lengthwise on their pivots, one of the arms being located on a car and the other on a track-station, a hook on the free end of each arm, to suspend a pouch, a receiving device on each arm, for receiving the pouch, the receiving device being arranged between the hook and the pivot of the arm, and guideways leading to the entrance ends of the receiving devices, as set forth.

10. A mail delivering and catching device, comprising arms mounted to swing and to slide lengthwise on their pivots, one of the arms being located on a car and the other on a track-station, a hook on the free end of each arm, to suspend a pouch, and a receiving device on each arm, for receiving the pouch, the receiving device being arranged between the hook and the pivot of the arm, the said arms being arranged to clear each other on the car passing the station and the hook of one arm standing above the receiving device of the other arm, at the time the car passes the station, as set forth.

11. A mail-bag delivering and catching device, comprising two arms, one on a car, and the other on a track-station and each mounted to swing and to slide longitudinally, and provided with a hook at its free end and with a receiving device between the hook and pivot, springs on the pivots of the arms and pressing on opposite sides of the said arms, catches for holding the arms in operative positions and flexible pouch-ties provided with spring-hooks for engaging the hooks of the said arms, as set forth.

12. A mail-bag delivering and catching device, comprising two arms, one on a car and the other on a track-station and each mounted to swing and slide longitudinally, said arms being provided with a hook at its end, a receiving device between the hook and pivot, a guideway leading to the receiving device, and a pin on the under side of the guideway, springs for holding the arms normally from sliding, catches for holding the arms in operative positions, and flexible pouch-ties provided with spring-hooks at their ends, as set forth.

708,891. **WIRE FENCE.** ISAAC B. O'NEAL, Kokomo, Ind., assignor of one-half to H. H. Hartgrove, Kokomo, Ind. Filed Feb. 14, 1902. Serial No. 94,053. (No model.)

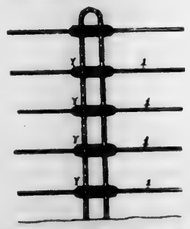

Claim.—1. In a wire fence, the combination with the horizontal line-wires, of a vertical stay embodying two parallel corrugated strands connected at their upper ends and straddling the line-wires, and a clamp having its ends bent in opposite directions and embracing the line-wire to bend the latter to the stay, substantially as described.

2. In a wire fence, the combination with the horizontal line-wires, and the corrugated vertical stay straddling the line-wires, of a substantially Z-shaped clamp for each line-wire, each clamp having its ends engaged with the line-wires at opposite sides of the stay, substantially as described.

708,892. **SPRING-BALANCE SCALE.** ORANGE O. OHIAS, Dayton, Ohio, assignor to the Computing Scale Company, Dayton, Ohio, a Corporation of Ohio. Filed July 26, 1897. Serial No. 646,004. (No model.)

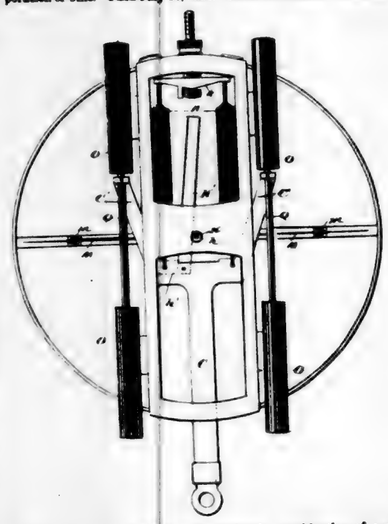

Claim.—1. In a spring-balance scale, the combination of a vertically-movable runner, a horizontal rotatable spindle, a pinion secured to said spindle, and a rack secured to the runner and engaging with said pinion, with two vertical pneumatic dash-pots, each having its upper end open, which dash-pots are fixed on opposite sides of the runner and below the scale-spindle, plungers in said dash-pots and connecting-rods which are connected at their lower ends to said plungers and at the upper ends with the runner; substantially as described.

2. In a spring-balance scale, the combination with the scale-frame and two vertical dash-pot cylinders which are open at the upper ends, said cylinders being placed on opposite sides of the scale center, with a vertically-movable spring-supported runner, having two arms which extend upward and laterally to points above the open ends of the dash-pots, plungers in the dash-pots and rods connecting said plungers and runner-arms; substantially as and for the purpose specified.

3. In a spring-balance scale, the combination of a spring-suspended draft-bar, having at its lower end means for suspending the load, with two oppositely-located fixed dash-pot cylinders, their pistons, piston-rods pivotally connected with the draft-bar and connected at the ends with the pistons, an indicating mechanism and a connection between the indicating mechanism and draft-bar located intermediate the dash-pot cylinders; substantially as described.

4. In a spring-balance scale, the combination with a spring-suspended draft-bar having at its lower end means for suspending the load, and an indicator operatively connected with and moved by the draft-bar, of a fixed dash-pot cylinder, a piston and a piston-rod connecting said piston and draft-bar, the connection between the piston and draft-bar being sufficiently loose in the direction of the length of the piston-rod to permit the indicator to reach a final state of rest when moved in either direction uninfluenced by the resistance of the piston; substantially as described.

5. In a spring-balance scale, the combination with a rotary indicator, a spring-suspended draft-bar centrally connected with the indicator for rotating the same and having on its lower end means for suspending the load, of fixed dash-pot cylinders located on opposite sides of the connection between the indicator and draft-bar, pistons in said cylinders and piston-rods pivotally and loosely connecting the pistons and draft-bar, the loose connection being in the direction of the length of the piston-rods and being sufficient to permit the indicator to come to a final state of rest when moved in either direction without being influenced by the pistons.

6. In a spring-balance scale, the combination of a draft-bar, a rotatable spindle mounted above the draft-bar, a driving connection between the draft-bar and spindle and an indicator moved by the spindle, of springs for supporting the draft-bar and counterbalancing the load connected with the draft-bar on opposite sides of the driving connection with the spindle, fixed dash-pot cylinders also located on opposite sides of said driving connection, pistons in said cylinders and piston-rods for said pistons pivotally connected with the draft-bar; substantially as described.

7. In a spring-balance scale, the combination of the scale-frame, and two vertical dash-pots supported by said frame on opposite sides of the scale center, plungers in said dash-pots, the vertically-movable runner having laterally-extended arms, and rods connecting said plungers and laterally-extended arms.

8. In a spring-balance scale, the combination of a draft-bar, a rotatable spindle mounted above the draft-bar, a driving connection between the draft-bar and spindle, of springs for supporting the draft-bar and counterbalancing the load connected with the draft-bar on opposite sides of the driving connection with the spindle, fixed dash-pot cylinders also located on opposite sides of said driving connection, pistons in said cylinders and piston-rods for said pistons pivotally connected with the draft bar.

9. In a spring-balance scale, the combination of a vertically-movable spring-supported runner, a horizontal rotatable spindle, a driving connection between the runner and spindle, two vertical dash-pots secured on opposite sides of the runner, pistons in said dash-pots, and pivotal connections between said pistons and the runner.

708,893. **WEIGHING AND PRICE SPRING-BALANCE SCALE.** ORANGE O. OHIAS, Dayton, Ohio, assignor to the Computing Scale Company, a Corporation of Ohio. Filed Dec. 27, 1897. Serial No. 663,733. (No model.)

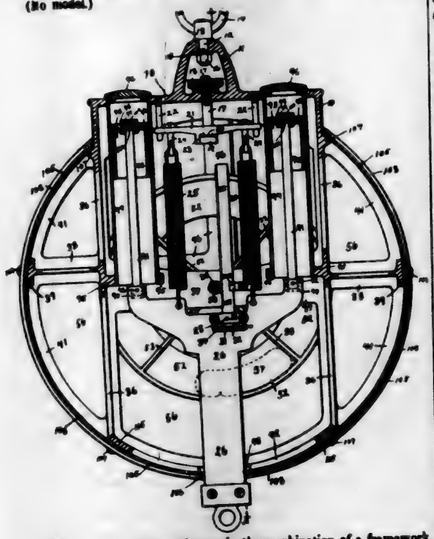

Claim.—1. In a computing-scale, the combination of a framework, a casing inclosing said framework, a shaft provided with end bearings in said framework, indicating-disks mounted on said shaft between the bearings, within the framework and adjacent to each side of said casing, the indicating-disk adjacent to one side of said casing being provided with weight-indicating characters and the indicating-disk adjacent the opposite casing being provided with a series of sets of values computed at different rates per unit, exposing-openings in opposite sides of the casing for said indicating-disks, the exposing-opening for the value-indicating disk being provided adjacent to its edge with a series of characters indicating the prices at which the different values on the value-indicating disk were computed, and means for imparting a revolvable movement to said shaft proportionate to the weight of merchandise placed upon said scale, substantially as specified.

2. In a computing-scale, the combination of a framework, a shaft provided on opposite ends with bearings in said framework, indicating-disks mounted adjacent to the opposite ends of said shaft between the bearings and within the framework, one of said disks being provided with weight-indicating characters and the other disk being provided with a series of sets of characters indicating values at different rates per unit, a casing inclosing said framework and disks and shaft, openings at top and bottom in said casing through which the supporting and draft mechanism extend, exposing-openings in opposite sides of said casing for said indicating-disks the exposing-opening for the value-indicating disk being provided adjacent its edge with a series of price-indicating characters corresponding to the prices at which the different values on the value-indicating disk were computed, and means for imparting a revolvable movement to said shaft proportionate to the weight of merchandise placed upon said scale, substantially as specified.

3. In a computing-scale, the combination of a shaft, a frame provided with bearings for said shaft, indicating-disks rigidly mounted upon opposite ends of said shaft, a pinion loosely mounted on said shaft, a rack meshing with said pinion, a collar rigid with said pinion, a series of spring-strips rigidly secured at one end to said collar, a corresponding series of scale rigidly carried by one of said disks and adapted to slidingly engage the free ends of said spring-strips, a casing inclosing said parts, openings at top and bottom in said casing through which the supporting and draft mechanisms extend, exposing openings in opposite sides of said casing for said indicating-disks, and means for imparting a vertical movement to said rack proportionate to the weight of merchandise placed upon said scale, substantially as specified.

4. In a computing-scale the combination of a revolvable indicating-disk, a series of concentric sets of graduated and numbered values on said disk computed at different rates per unit, a casing for said disk, an exposing-opening in said casing varying in width in accordance with the distance between adjacent numbered graduations on the disk and adapted to expose only the numbered graduation next below the graduation indicating the true value and those graduations intermediate, and a series of price-per-unit characters adjacent one edge of said exposing-opening and adapted to designate the values indicated by said disk, substantially as specified.

5. The combination of a framework, a casing for said framework, an indicator, a draft-bar adapted to move said indicator, connections 91 loosely pivoted to opposite sides of said draft-bar, pistons 93 loosely pivoted to said connections, cylinders 94 supported rigidly in said framework and of a larger diameter than said pistons 93, and a head 96 in one end of said cylinders, substantially as specified.

6. The combination of a framework, an indicator carried by said framework, a draft-bar adapted to move said indicator, connections loosely pivoted to opposite sides of said draft-bar and to thimbles 99, secured to pistons 93 by pins 100 passing through said thimbles and through projections 96 of said pistons, cylinders 94 rigid in said framework and of larger diameter than and receiving said pistons, and heads 96 for and closing one end of said cylinders, substantially as specified.

7. In a spring-balance, the combination of a spring-supported draft-bar, a revolvable shaft, an indicator driven by said shaft, a pinion on said shaft, a rack carried by said draft-bar and meshing with said pinion, a pivot 28 connecting said rack-bar to said draft-bar and a plate 29 rigid with said draft-bar, and a spring-strip 32 supported at each end by said draft-bar and engaging the lower edge of said rack to retain the same in mesh with said pinion, substantially as specified.

8. The combination of an indicating-ring 52 having indicating characters upon its face, a series of arms 53 substantially U shape in cross-section connecting said ring with projections 54 of collar 55, a revolvable shaft supporting and driving said collar, a casing for said ring, and an exposing-opening in said casing for said ring, substantially as specified.

9. The combination of a frame 10, a wall 105 about its periphery, end walls 56 and 62, rings 108 substantially J shape in cross-section upon each edge of said wall 105 and securing and concealing the edges of said walls 56 and 62, said rings 108 being secured to said walls 105 and to said frame 10 substantially as specified.

10. The combination of a frame, a threaded nut 18 exposed upon said frame and supporting bolt 17 having head 19 supporting bar 21, a projection 20 forming the bearing between said bar 21 and head 19, a projection 23 of bar 21, engaging head 19, guides 22 rigid with said frame and provided with bearings in said bar 21, springs 25 supported by said bar 21, a draft-bar supported by said springs, a revolvable shaft supported by said frame, an indicator driven by said shaft, and a rack-and-pinion connection between said shaft and draft-bar, substantially as specified.

11. The combination of a shaft mounted in suitable bearings, an indicating-disk rigidly secured to and near each end of said shaft, a pinion loosely mounted on said shaft, a series of radial spring-strips rigid with and radiating from said pinion, a corresponding series of loops rigid upon one of said indicators, V-shaped edges in said loops adapted to engage the ends of said spring-strips, indicating characters upon said indicating-disks, a casing inclosing said parts, exposing-openings in said casing for designating said characters, and means for imparting a revolvable movement to said pinion proportionate to the weight of merchandise, substantially as specified.

12. In a spring balance scale the combination with the frame or casing, the longitudinally-movable goods-support and the supporting-springs connecting said support and casing and arranged on diametrically oppo-

site sides of the center of the line of draft of the goods-support, of pneumatic cylinders having their lower ends open and arranged with the line of their longitudinal centers in the same plane as the longitudinal centers of the supporting-springs, pistons working in said cylinders and piston-rods directly connecting the pistons with the goods-support and having their lines of draft in the plane of the longitudinal centers of the springs and cylinders, whereby the action of the springs and cylinders and pistons does not deflect the goods-support from its line of draft when the goods are applied to or removed therefrom.

13. In a spring-balance scale, a casing and a rotary indicator combined with a freely-suspended goods-support, a rack-bar interposed between the goods-support and indicator, springs connecting the goods-support and casing and a pneumatic differential governor interposed between the goods-support and casing, said goods-support, rack-bar, springs and pneumatic differential governor, all having their longitudinal axes and lines of draft in a single coincident plane and so arranged that the resultant resistance of each is in a line coinciding with that of each of the others; substantially as described.

14. In a spring-balance scale, a casing having a single point of suspension at top and a rotary indicator journaled in the casing, combined with a freely-suspended goods-support, a rack-bar, interposed between the goods-support and indicator, springs connecting the goods-support and casing and a pneumatic differential governor interposed between the goods-support and casing, said casing-support, goods-support, rack-bar, springs and pneumatic differential governor all having their longitudinal axes and lines of draft in a single coincident plane and so arranged that the resultant resistance of each is in a line coinciding with that of each of the others, substantially as described.

15. In a spring-balance scale, the combination of the scale-frame, a vertically-movable spring-suspended runner having on its lower end means for attaching the load, a horizontal spindle mounted on the frame above the runner, a pinion on the spindle, and a rack connected with the runner and engaging with said pinion, with two vertical dash-pot cylinders supported by the frame and lying on opposite sides of the spindle with their axes in the same vertical plane (at right angles to the spindle) in which the runner lies and moves, plungers freely movable in said dash-pots, and rods which are connected with said plungers and parts of the runner which are in line with the axes of the dash-pot cylinders.

708,894. PROCESS OF BURNING BRICK. JOHN PECK, Haverstraw, N. Y. Filed May 23, 1902. Serial No. 108,679. (No specimens.)

Claim.—The herein-described process of burning brick in kilns, which consists first in subjecting the kiln to the action of a fire fed with atomized oil and maintaining this fire until the kiln has been heated, and second, in stopping said oil-fire and continuing the burning of the kiln by a fire fed with soft or bituminous coal or other similar fuel.

708,895. DEVICE FOR DIGGING DITCHES. OSCAR PETERSON and JOSEPH H. CLARK, Chicago, Ill. Filed Apr. 15, 1901. Serial No. 55,852. (No model.)

Claim.—1. A digging device comprising a movable frame, one or more digging-shafts connected therewith, said digging shaft or shafts each provided with a non-cutting screw for moving the material acted upon, and a series of cutting-blades connected to each of said screws.

2. A digging device comprising a movable frame, a motor mounted thereon, one or more digging-shafts adjustably connected with said frame and operatively connected with said motor, each shaft provided with a screw which acts to transport the material acted upon, said screw provided with a series of detachable cutting blades or knives which project beyond the edge of the screw.

3. A digging device comprising a movable frame, two digging-shafts adjustably suspended from said frame side by side, and means for adjusting said digging-shafts at their ends farthest from said frame so as to vary the angular relation between them.

4. A digging device comprising a movable frame, two digging-shafts adjustably connected therewith, means for rotating said shafts, a screw associated with each shaft, each screw provided with a series of detachable cutting-blades which project beyond the edge of the screw, and means for moving said screws so as to change their angular relation.

5. A digging device comprising a movable frame, two digging-shafts suspended therefrom, each provided with two screws of opposite pitch which engage the material to be acted upon so as to convey it toward a point between the ends of the shafts, said screws provided with detachable cutting-blades, an elevator associated with said digging-shafts and adapted to receive the material from the screws and convey it to a distant point.

6. A digging-shaft comprising a shaft proper, a screw-blade connected therewith, a series of knives detachably connected with said screw-blade and projecting beyond the edge thereof.

7. A ditch-digging device comprising a movable frame, a motor mounted thereon, two digging-shafts movably connected with said frame and adapted to be moved to and from each other so as to vary the angular relation between them, each shaft provided with a screw adapted to convey the loosened material to a given point, a series of detachable cutting-blades connected with said screw and projecting beyond the edge thereof, a conveyer adapted to receive the material from said screws and lift it to a given point, and a back-filling conveyer adapted to receive the material and deposit it in the ditch at a distance from the digging-shaft.

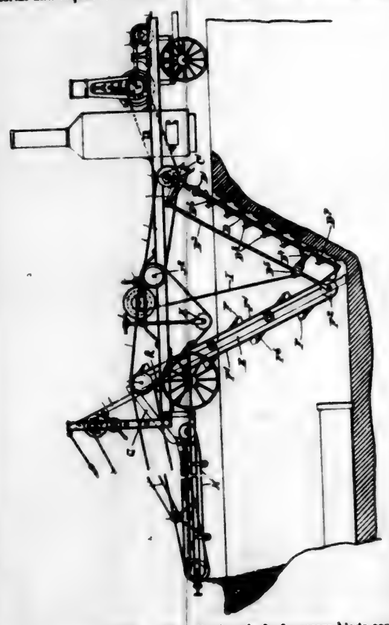

8. The combination with a digging-shaft of a screw-blade connected thereto, one or more knives consisting of two parts at an angle to each other, said knife or knives connected with the screw-blade so as to project beyond the edge thereof.

708,896. PROCESS OF TANNING. WILHELM H. PHILIPPI, Bürgel-Offenbach, Germany. Filed Nov. 4, 1901. Serial No. 81,113. (Specimens.)

Claim.—1. The process of tanning skins or hides, consisting in subjecting the skins or hides to the usual preparatory treatment before the tanning process, and then immersing them in a solution of tar in a suitable solvent until the tanning is accomplished, substantially as set forth.

2. The process of tanning skins or hides, consisting in subjecting the skins or hides to the usual preparatory treatment before the tanning process, and then immersing them in a solution of tar in turpentine-oil, substantially as set forth.

3. The process of tanning skins or hides, consisting in subjecting the skins or hides to the usual preparatory treatment before the tanning process, then immersing them in a solution of tar and turpentine and then treating them with carbolic acid, substantially as described.

4. The process of tanning skins or hides, consisting in subjecting the skins or hides to the usual preparatory treatment before the tanning process, then immersing them in a solution of tar in a solvent and then treating them with carbolic acid, substantially as described.

5. The process of tanning skins or hides, consisting in subjecting the skins or hides to the usual preparatory treatment before the tanning process and then immersing them in a solution of tar in turpentine and carbolic acid, substantially as set forth.

708,897. COMBINED SHIRT-FRONT AND BRACES. MARGARETTA R. POORE, London, England, assignor to Richard Poore, Herne Hill, London, England, and William Bradley, Wood Green, Middlesex, England. Filed May 22, 1902. Serial No. 108,575. (No model.)

Claim.—1. A shirt-front, flaps secured a portion of their length to the sides of said shirt-front and the remaining portion of their length free of the shirt-front and adapted to be passed down the back of the wearer and crossing each other at their ends, said flaps provided with buttonholes at each side of the shirt-front and buttonholes registering with each other in their free ends, in combination with suspender-straps adapted to engage in the buttonholes at the side of the shirt-front and in the registering buttonholes in the free end of the flaps.

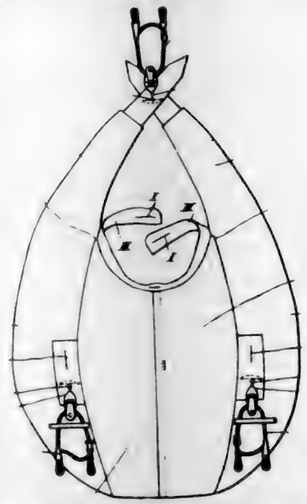

2. A shirt-front, flaps secured a portion of their length to the sides of said shirt-front and the remaining portion of their length free of the shirt-front and adapted to be passed down the back of the wearer and crossing each other at their ends, said flaps provided with buttonholes at each side of the shirt-front and buttonholes registering with each other in their free ends, in combination with suspender-straps adapted to engage in the buttonholes at the side of the shirt-front and in the registering buttonholes in the free end of the flaps, and loops secured to the outer face of said flaps at the sides of the shirt-front for retaining said suspender-straps in position.

3. A shirt-front, a flap at each side of said shirt-front, each of said flaps extending a portion of its length the entire length of the side edges of the shirt-front and suitably secured thereto and the remaining portion of the length of the said flaps being free of the shirt-front and adapted to be passed down the back of the wearer and crossing each other at their ends, each of said flaps provided with a plurality of buttonholes at each side of the shirt-front and further provided in their free ends with a buttonhole, the buttonholes in the ends of the flaps registering with each other, in combination with suspender-straps adapted to engage in the buttonholes at the sides of the shirt-front and in the registering buttonholes in the ends of the flaps, substantially as shown and described.

708,898. ELECTRICAL GAS-LIGHTER. JAMES G. POPPERT, Milwaukee, Wis. Filed Jan. 7, 1902. Serial No. 88,815. (No model.)

Claim.—1. An electrical igniter, comprising a handle; a laterally-extending push-button; a fixed electrode projecting from the handle; an axially-oscillating electrode, having a resilient arm adapted to engage the fixed electrode, and yieldingly pass the same; an arm projecting from the oscillating electrode into the path of the push-button; a coiled spring located on the oscillating electrode with one arm secured to the handle, and the other engaged under the push-button arm of said electrode; and electrical conductors leading from a suitable source of current-supply and electrically connected with said electrode; said handle being made in longitudinally-divided sections, adapted to inclose the inner ends of the electrodes and the actuating-spring of the oscillating electrodes.

2. An electrical igniter, comprising a handle; a fixed electrode having end-to-end connection therewith; an oscillatory electrode, arranged for positive make-and-break contact with the fixed electrode; a push-button extending laterally from the handle, and having operative connection with the oscillatory electrode; a spring for retracting said electrode; flexible conductors connecting the electrodes with a suitable source of current-supply; said oscillatory electrode being provided with suitable bearings in the interior of said handle; and a ferrule connected with the handle and projecting therefrom to support said electrode exteriorly, and hold the same in position in the handle.

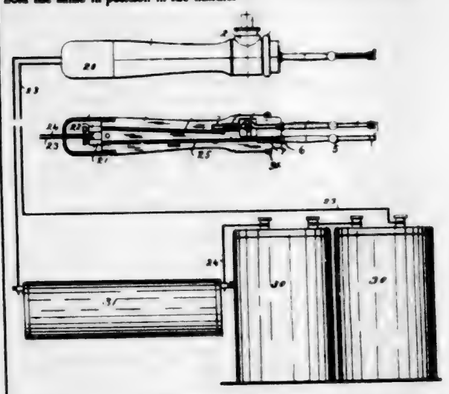

708,899. RAILWAY SIGNALING DEVICE. HARRY PRATT, Kenilworth, Ill. Filed Feb. 12, 1902. Serial No. 93,663. (No model.)

Claim.—1. A railway signaling device comprising an operating-lever which is adapted for actuation by a part depending from the locomotive, a transmitting device located at a distance from the operating-lever comprising a part which is adapted to be thrown upwardly into the path of the actuating part of a signaling device carried by a locomotive, operative connections between said transmitting device and the lever, and means for locking said projecting part of the transmitting device in its uppermost position embracing a lever which is thrown toward the track-rail when the transmitting device is locked, said lever being adapted for engagement by the locomotive-wheel to swing the same therefrom and to release the locking means of the transmitting device to permit the parts to be restored to their inoperative positions.

2. A railway signaling device comprising an operating-lever which is adapted to be actuated by a part projecting from a locomotive, a transmitting device located at a point distant from the operating-lever, said transmitting device embracing an endwise-movable bar, a finger pivoted on a plate which is supported on the railway-track, and is loosely connected with the bar, whereby, upon endwise movement of the bar, the finger is thrown into an upright position, operative connections between said bar and said operating-lever, means for locking said bar to hold the finger in an upright position, and means for releasing said bar to permit the finger to be restored to its inoperative position.

3. A railway signaling device comprising an operative lever which is adapted to be actuated by a part projecting from the locomotive, a transmitting device comprising an endwise-movable bar, operative connections between said bar and the operating-lever, a finger pivoted to a plate supported on the bracket and loosely connected with the bar, whereby, when said bar is moved endwise, the finger is thrown upwardly into the path of the projecting part of a signaling device carried by a locomotive, a locking-lever engaging said bar for holding said finger in its upright position, said lever being adapted for contact with the wheel of the locomotive for releasing said bar and permitting the finger to return to its inoperative position.

4. A railway signaling device comprising an operating-lever which is adapted to be actuated by parts depending from the locomotive, a transmitting device comprising an endwise-movable bar, operative connections between said bar and lever, a finger pivoted to a plate supported on the track and having loose pivotal connection with the bar, whereby, when said bar is moved endwise, the finger is swung upwardly into the path of an actuating part of a signaling device carried by a locomotive, a bell-crank lever pivoted to said plate, one arm of which is adapted to engage a downwardly-opening notch in said bar to lock the finger in its operative position, and a cam-surface on the other arm of the lever adapted to be engaged by the wheel of the locomotive for releasing said lever from the bar.

5. A railway signaling device comprising a horizontally-swinging operating-lever, which is located between and normally inclined to the

track-rails, rigid arms on said operating-lever, two transmitting devices, one located in front and the other in rear of the operating-lever and at a distance therefrom, each comprising a part which is adapted to be thrown upwardly into the path of the actuating member of a signaling device carried by a locomotive, rigid rods connecting said arms of the lever with the movable parts of the transmitting devices, means for locking the projecting members of the transmitting devices in their uppermost positions, and means operated by a part on the locomotive for releasing said members to permit the same to be restored to their inoperative positions.

708,400. HOLLOW GRATE-BAR. THEODORE J. PRITCHARD, Sunshine, La. Filed Apr. 14, 1902. Serial No. 102,747. (No model.)

Claim.—A hollow grate-bar, comprising a longitudinal tubular member of substantially J shape closed at one of its ends and provided upon each of its sides with a series of separate vent-holes, each hole being provided with an eyelid integral with said tubular member and forming an arch over said hole, said member being further provided with a plurality of substantially funnel-shaped ash-pockets integral therewith, each of said ash-pockets being provided with a removable cap, substantially as described.

708,401. DOOR CATCH AND BUFFER. FRENCH E. RAMSDELL and HENRY C. MUDDIMAN, Manassas, Va. Filed Apr. 3, 1902. Serial No. 101,182. (No model.)

Claim.—1. A door catch and buffer comprising an outer frame having a back and two sides, an inner frame having an angular front and two sides, and pivoted in said outer frame, a contact-face on said inner frame to yieldingly receive the impact of the closing door, another face to engage the edge of the door when closed, and means to restore the inner frame to its normal position when released from the door-pressure.

2. A door catch and buffer having an outer frame provided with attaching-wings and screw-holes therein, and having a back and two sides, an inner frame having two sides and pivotal connection with said outer frame, and contact-faces disposed at an angle to each other, a spring to hold the inner frame in normal position and a cushion interposed between the door and said faces substantially as herein specified.

708,402. ABDOMINAL AND BACK SUPPORTER. HOWARD C. RASH and LEON C. RASH, Salina, Kans., assignors to the Natural Body Brace Company, Salina, Kans., a Corporation of Kansas. Filed Apr. 1, 1902. Serial No. 100,956. (No model.)

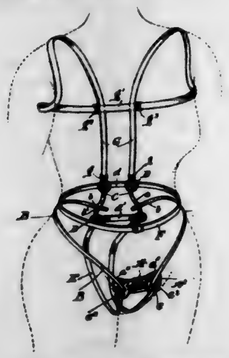

Claim.—1. The front plate formed in two separable sections overlapped at their adjacent ends to form a rigid sliding connection, and means for securing the two sections separably together in their adjusted positions: substantially as set forth.

2. The front or abdominal plate or pad formed in two separable sections, one section having guides, and the other section having an open slot, and in sliding connection with said guides, and a set-screw extending through one section and through the said open slot in the other section; substantially as described.

3. The combination with the front plate provided with a marginal flange cut away at its upper corners, of the hip-straps pivoted at their forward ends to the said front plate and extending through the said cut-away portions, and headed studs projecting from the front plate in the path of the lower edges of the hip-straps to prevent them from dropping down too low.

4. A combined abdominal and back supporter, comprising curved spring hip-straps, an abdominal plate secured to the front ends of said hip-straps and formed in two separable rigidly-connected sections, and a back-supporting device connecting the rear ends of said hip-straps; substantially as described.

5. A combined abdominal and back support, comprising curved spring hip-straps, an abdominal plate secured to the front ends of said hip-straps and formed in two separable sections, back-springs secured between their ends to the rear ends of said hip-straps, back-pads secured to the upper and lower ends of the back-springs, a belt connecting the two upper back-pads, and adapted to pass around the waist to be connected at its ends above and independent of the abdominal plate, and a connection between the lower back-pads; substantially as described.

6. A combined abdominal and back supporter, comprising curved spring hip-straps, an abdominal plate secured to the front ends of said hip-straps and formed in two separable and adjustably-connected sections sliding one upon the other, back-springs adjustable laterally and vertically between their ends on the rear ends of the hip-straps, connected back-pads on the lower ends of the back-springs, back-pads on the upper ends of the back-springs, and a waistband or belt secured at its middle to said upper back-pads, and adapted to be fastened together at its ends above and independent of the abdominal pad; substantially as described.

7. A combined abdominal and back supporter, comprising the curved spring hip-straps, having a series of round holes in their rear ends, a sectional separable abdominal plate connecting the front ends of the hip-straps, back-springs at the rear ends of the hip-straps, provided with a series of square apertures, screws passed through said holes and apertures, and having squared portions for the said square apertures, and smooth round portions for the said round holes, nuts on the outer ends of the screws, connected pads on the lower ends of the back-springs, upper pads on the upper ends of the back-springs, and a waistband or belt connecting the upper back-pads, and adapted to be fastened at its ends above and independent of the abdominal plate; substantially as described.

8. A combined abdominal and back supporter, comprising the flanged front plate formed in two separable sections with its flange cut away at its upper corners, a headed stud on each section, curved spring hip-straps pivoted at their front ends to said sections and extending through said cut-away portions, back-springs adjustably connected to the rear ends of the hip-straps, connected pads on the lower ends of the back-springs, pads on the upper ends of the back-springs, a waistband or belt connecting said upper plates or pads at its middle, and adapted to encircle the waist above the abdominal plate or pad, and perineal straps connected to the lower back-pads and provided at their ends with slides having key-hole-slots to engage the headed studs on the abdominal plate; substantially as described.

9. A combined abdominal, back and shoulder supporter or brace, comprising the curved spring hip-straps, the separable abdominal plate at the front ends of the hip-straps, the back-springs connected to the rear ends of the hip-straps, the lower connected back-pads on the lower ends of the back-springs, the perineal bands connecting the lower back-pads with the abdominal plate, the waistband connecting the upper back pads or plates, and adapted to pass around the waist above and independent of the abdominal plate and the shoulder-straps connected at their lower ends to the upper back-pads; substantially as described.

10. A combined abdominal and back supporter, comprising the curved spring hip-straps having a series of round holes in their rear ends, a sectional separable abdominal plate connecting the front ends of the hip-straps, back-springs at the rear ends of the hip-straps provided with a series of square apertures, screws passed through said holes and apertures and having squared portions for the said square aperture and smooth round portions for the said round holes, nuts on the outer ends of the screws, pads on the lower ends of the back-springs and pads on the upper ends of the back-springs.

11. A combined abdominal and back supporter, comprising curved spring hip-straps, an abdominal plate secured to the front ends of the hip-straps and formed in two separable rigidly-connected sections, back-supporting springs at the rear ends of the hip-straps, means whereby the back-springs may be adjusted along the rear ends of the hip-straps and also vertically on the hip-straps, and pads carried by the ends of the said back-springs.

708,403. BICYCLE SADDLE-POST. OSCAR F. REEVE, Saginaw, Mich. Filed Mar. 12, 1901. Serial No. 50,842. (No model.)

Claim.—1. A seat-post adapted to be secured in a seat-post socket, and comprising a tubular stem, a sleeve having telescopic connection therewith, a spring within the tubular stem, a spring-support connected to the sleeve, and exposed means for adjusting the tension of the spring, substantially as described.

2. A seat-post comprising a tubular stem, a sleeve having telescopic connection therewith and secured against other than slidable longitudinal movement with relation thereto, a spring within the tubular stem, a spring-support, and exposed means for adjusting the tension of the spring, substantially as described.

3. A seat-post comprising a tubular stem, a sleeve having telescopic connection therewith and secured against other than slidable longitudinal movement with relation thereto, a spring within the tubular stem, within the lower end of the stem a spring-support movable with relation to the stem and fixed with relation to the sleeve, and means at the upper end of the stem for adjusting the tension of the spring without removing the stem from the sleeve, substantially as described.

4. A seat-post comprising a tubular stem and a sleeve having telescopic connection and secured against other than slidable longitudinal movement with relation to each other, a spring within the tubular stem, within the lower end of the stem a spring-support movable with relation to the stem and fixed with relation to the sleeve, a plug in the lower end of the stem, a recoil-cushion within the stem below the spring-support and above the plug, and exteriorly-disposed means at the upper end of the stem for adjusting the tension of the spring, substantially as described.

708,404. SMOKING-PIPE. CHARLES P. REMORZ, Tully, New York. Filed May 12, 1902. Serial No. 106,933. (No model.)

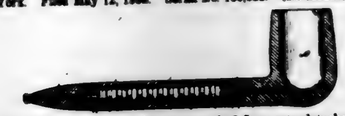

Claim.—1. A tobacco-pipe composed of five parts, detachably connected to each other, viz., a bowl, a mouthpiece, a screw-plug, a stem connected to the mouthpiece and the screw-plug, and a core filling the bore of the stem and having on its exterior surface a parallel series of grooves extending around the axis of the core in a direction at right angles to the axis, and connected with each other by two sets of shorter longitudinal grooves.

2. A tobacco-pipe, the stem of which contains a removable core formed on its exterior surface with a single longitudinal rib, a series of parallel transverse grooves extending around the axis of the core and terminating on opposite sides of the rib, and longitudinal grooves arranged alternately on opposite sides of the rib and connecting the transverse grooves.

3. A tobacco-pipe the stem of which contains a solid removable core formed on its exterior surface with a series of transverse grooves extending around the axis of the core, a longitudinal rib, interrupting the continuity of each annular groove, longitudinal grooves arranged alternately on opposite sides of the rib and connecting the transverse grooves, and end grooves transversely arranged at the opposite ends of the core connected with the longitudinal grooves.

708,405. SULKY PLOW. WILLIAM W. ROBINSON, Des Moines, Iowa. Filed Sept. 13, 1901. Serial No. 75,267. (No model.)

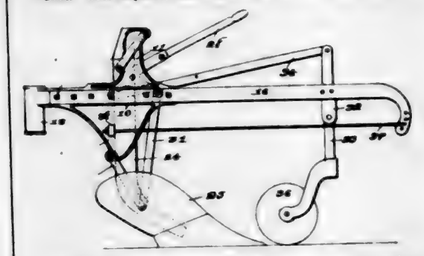

Claim.—1. The combination with the frame of a riding-plow of a standard-supporting frame connected with the plow-frame and vertically slotted to receive a plow-standard, the front edge of the slot being vertical at its upper end and inclining downwardly and forwardly at its lower end, the rear edge of the slot being inclined downwardly and forwardly at its upper end and vertical at its lower end and the sides of the slot being straight and parallel, a plow-standard mounted in the slot and in an engagement, in its lowered position with the vertical portions at the back and front of the slot, and in engagement with the sides of the slot, when in any position levers pivoted to the top portion of the standard-supporting frame in front of the slot and projected rearwardly and downwardly and pivoted to the top portion of the standard, and levers pivoted to the lower portion of the standard-frame and extended in the rear of the slot downwardly and forwardly and pivoted to the lower portion of the standard and means for elevating and lowering the standard.

2. The combination with the frame of a riding-plow of a standard-supporting frame connected with the plow-frame, and vertically slotted, the forward edge of the slot being vertical at its upper end and inclined downwardly and forwardly at its lower end, the rear portion of the slot being inclined downwardly and forwardly at its upper end and vertically at its lower end and the sides of the slot being parallel a standard mounted in said slot and when in its lowered position, engaging both the front and back edges of the slot, means for elevating and lowering the plow-standard and means for tilting the lower end of the standard forwardly and upwardly when elevated, a colter pivoted to the plow-frame to be capable of moving from a substantially vertical position rearwardly and upwardly and means for moving the said colter simultaneously with the movement of the plow-standard.

3. The combination with the frame of a riding-plow of a standard-supporting frame fixed to the plow-frame and vertically slotted, the forward edge of the slot being vertical at its upper end portion and inclined downwardly and forwardly at its lower end portion, the rear edge of the slot being inclined downwardly and forwardly at its upper end portion and vertically at its lower end portion, the sides of the slot being parallel, a plow-standard passed through said slot and when in its lowered position engaging the vertical portions at the front and back of the slot, and when in its elevated position engaging only the sides of the slot, and means for elevating and lowering the plow-standard.

4. The combination with the frame of a riding-plow of a standard-supporting frame, having a vertical slot therein, the sides of the slot being parallel, the front edge of the slot being vertical at its upper end and inclined downwardly and forwardly at its lower end, the rear edge of the slot being inclined downwardly and forwardly at its upper end and vertically at its lower end, the said inclined portions being separated from each other a materially greater distance than the vertical portions are separated, a plow-standard mounted in said slot and when in its lowered position engaging the sides of the slot and the vertical portions of the front and rear edges of the slot and when in its elevated position engaging the sides of the slot only, and means for moving the plow-standard from a position, where its front and rear edges engage the vertical portions of the slot to a position tilted forwardly and upwardly at its lower end where it engages only the sides of the slot, for the purposes stated.

5. The combination with the frame of a riding-plow of a standard-supporting frame connected with the plow-frame and vertically slotted to receive a plow-standard, the front edge of the slot being vertical at its upper end and inclining downwardly and forwardly at its lower end, the rear edge of the slot being inclined downwardly and forwardly at its upper end and vertically at its lower end, and the sides of the slot being straight and parallel, a plow-standard mounted in the slot and in an engagement in its lowered position with the vertical portions of the back and the front of the slot, and in engagement with the sides of the slot, when in any position levers pivoted to the top portions of the standard-frame in front of the slot and projecting rearwardly and downwardly and piv-

end to the top portion of the standard and levers pivoted to the lower portion of the standard-frame in the rear of the slot and extending downwardly and forwardly and pivoted to the lower portion of the standard and means for elevating and lowering the standard, and means for locking the plow-standard in its elevated position.

6. The combination with the frame of a riding-plow of a standard-supporting frame connected with the plow-frame and vertically supported to receive a plow-standard, the front edge of the slot being vertical at its upper end and inclining downwardly and forwardly at its lower end, the rear edge of the slot being inclined downwardly and forwardly at its upper end and vertically at its lower end and the sides of the slot being straight and parallel, a plow-standard mounted in the slot and in an engagement in its lowered position with the vertical portions of the back and front of the slot and in engagement with the sides of the slot, when in any position, levers pivoted to the top portions of the standard and projecting rearwardly and downwardly and pivoted to the top portion of the standard, and levers pivoted to the lower portion of the standard-frame and extending downwardly and forwardly and pivoted to the lower portion of the standard and means for elevating and lowering the standard, a lever fulcrumed to the slotted frame, a link pivoted to said lever and to the plow-standard, said link passing the fulcrum of said lever when the plow-standard moves from its lowered to its elevated position.

708,406. SASH LOCK AND LIFT. CHARLES W. ROBISON, McKees Rocks, Pa. Filed May 10, 1902. Serial No. 106,745. (No model.)

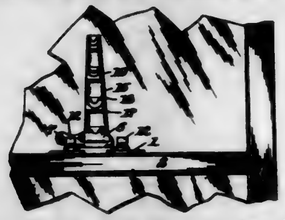

Claim.—1. In a device of the type set forth, the combination of a standard secured to the mid-rail of the upper sash, with shelves arranged in pairs on the standard, each alternate shelf having a downwardly-projecting flange, a frame carried by the mid-rail of the lower sash with a cam-lever pivotally mounted on the frame, and a flange carried by the cam-lever, the under face of the cam-lever engaging and guided by one of said shelves, the flange of the succeeding shelf engaging the flange of the cam-lever, when the latter is in its locked position, and means for automatically locking the handle of the cam-lever, when the latter is locked to the standard.

2. In a device of the type set forth, the combination of a standard secured to the mid-rail of the upper shelf and carrying engaging means, a frame mounted on the mid-rail of the lower sash, with a cam-lever, pivoted to the frame, depressible means secured to the frame and adapted to engage the cam-lever and means on the casing to limit the movement of the cam-lever, whereby the latter may be locked between the last-named and the depressible means.

3. A device of the type set forth, comprising a standard secured to the mid-rail of the upper sash and carrying engaging means, with a frame secured to the mid-rail of the lower sash and having a cam-lever pivoted thereto, said frame having openings formed therein, with springs secured to the frame and inclining upwardly and having their ends bent downwardly and outwardly, with the outwardly-bent portion engaging the under side of the frame adjacent said openings thereby limiting the upward movement of the spring, and stops carried by the casing, with the handle of the cam-lever adapted to be received between said stops and downwardly-bent portions of the springs.

4. A device of the type set forth, consisting of a standard secured to the mid-rail of the upper sash, with engaging means thereon, a frame having openings therein and carrying a pivoted cam-lever with a handle thereon secured to the mid-rail of the lower sash, depressible means carrying shoulders secured to the frame and operating in the said openings with steps carried by the frame, the handle of the cam-lever when actuated depressing said depressible means and being locked between said steps and the shoulder of the depressible means.

708,407. STEAM-BOILER. JOSEPH A. SCHLEIER, Pelham, Minn. Filed Nov. 21, 1901. Serial No. 83,116. (No model.)

Claim.—1. The combination with a boiler-shell formed in its front end with a longitudinal recess or opening, of a flue located within the boiler-shell and formed with a registering recess or opening, a spiral re-tarder located within said flue, and a yoke-frame comprising a vertically-disposed yoke to which the front ends of the shell and flue are secured and by which they are spaced apart, and provided with a longitudinally-disposed yoke to which the walls of the said recesses or openings are secured, substantially as set forth.

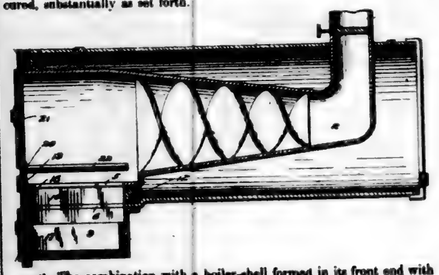

2. The combination with a boiler-shell formed in its front end with a longitudinally-disposed recess or opening; of a flue located within the boiler-shell and formed with a registering recess or opening, and a yoke-frame comprising a vertically-disposed yoke to which the front ends of the shell and flue are secured and by which they are spaced apart and provided with a laterally-disposed yoke to which the walls of said recesses or openings are secured, substantially as and for the purpose specified.

3. The combination with a boiler-shell formed in its front end with a longitudinally-disposed recess or opening; of a flue located within the boiler-shell and formed with a registering recess or opening, and a yoke-frame comprising a vertically-disposed yoke to which the front ends of the shell and flue are secured and by which they are spaced apart and provided with a laterally-disposed yoke to which the walls of said recesses or openings are secured, and an ash-box arranged below said openings, substantially in the manner set forth.

708,408. COMBINED LIFTING-JACK AND AIR-PUMP. JOSEPH G. SCHMIDT and WILLIAM P. MUELLER, Milwaukee, Wis., assignors of one-third to Charles P. Herrmann, Milwaukee, Wis. Filed Oct. 25, 1901. Serial No. 79,927. (No model.)

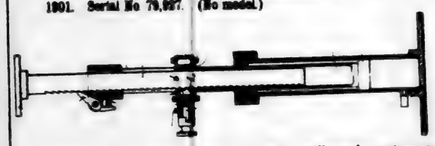

Claim.—1. An upright air-pump having a hollow piston stem and an attachment in the form of a shank vertically adjustable in said stem.

2. An upright air-pump having a head-bracket, a hollow lever-controlled piston-stem, a retractive spring-controlled pawl carried with said piston-stem for the engagement of a rack-toothed shank engageable with said bracket and stem to be vertically adjustable therein, a shank-detent in connection with the aforesaid bracket, and means for holding the pawl in retracted position.

3. An upright air-pump having a hollow piston-stem provided with an upper collar, lever-trunnions extending from the collar, a pawl in one of the trunnions for engagement with a rack-toothed shank guided in the piston-stem, a trunnion-plug having an outer clutch-face and constituting a guide for a stem of the pawl, a spiral spring intermediate of the pawl and trunnion-plug, a clutch-faced knob on the pawl-stem for match-fit engagement with said plug, a shank-guide head-bracket in connection with the pump-cylinder, and a spring-controlled shank-detent in connection with said bracket.

4. An upright air-pump having its piston-stem made hollow for the engagement of a shank vertically adjustable therein, a lever in connection with the piston-stem, and means for regulating throw of the lever.

5. An upright air-pump having its piston-stem made hollow for the engagement of a shank vertically adjustable therein, a head-bracket on the pump-cylinder, a lever in connection with said stem, and an adjustable fulcrum-link connecting the lever and bracket.

6. An upright air-pump having a lever-controlled hollow piston-stem and a head-bracket, a rack-toothed headed shank guided in the bracket and piston-stem, a spring-controlled detent in connection with said bracket, a retractive spring-controlled pawl carried with said piston-stem to engage said shank, a spring-controlled shank-detent in connection with the aforesaid bracket, means for holding the pawl in retracted position, and a fulcrum-link connecting the piston-stem lever with said bracket.

7. An air-pump having an attachment in the form of a vertically-adjustable lifting-jack.

8. An air-pump, a rack-toothed lifting-jack engageable with the piston-stem of the pump, an actuating-lever for the piston-stem, a pawl carried with the lever to be engageable with the lifting-jack shank, and a detent for holding said shank in vertically-adjusted position.

708,409. GRIPPING MECHANISM FOR PRINTING-PRESSES. MAX SCHMIDT and EUGEN J. GEISLER, Dresden, Germany. Filed May 21, 1901. Serial No. 61,281. (No model.)

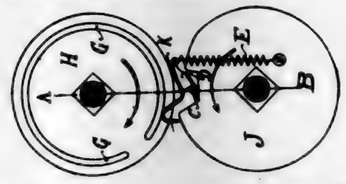

Claim.—1. A gripping mechanism for printing-presses consisting in combination with a printing-cylinder and an impression-cylinder, of a gripping-bar hinged within the impression-cylinder, means connected with the bar and with the impression-cylinder for normally retaining the said bar in a lowered position, releasing-arms carried by the bar, and means carried by the printing-cylinder and engaging the arms for elevating the bar.

2. In a gripping mechanism for printing-presses consisting in combination with an impression and a printing cylinder, of a gripping-bar mounted in a slot formed in the impression-cylinder, means arranged in the said slot for hinging the bar to the impression-cylinder, springs connected to the impression-cylinder and with the bar for retaining the latter normally in a lowered position, releasing-arms connected with the bar, and an offset carried by the printing-cylinder and engaging with the arms for elevating the same.

3. In a gripping mechanism for printing-presses consisting in combination with a printing-cylinder and an impression-cylinder, the latter provided with a suitable slot and a flattened portion, of a clamping-bar suitably connected to the impression-cylinder within the slot thereof, means carried by the impression-cylinder and connected with the bar for normally retaining the same in engagement with the said flattened portion thereof, means for elevating the said bar from its engagement with the flattened portion of the impression-cylinder, and means carried by the printing-cylinder and adapted to engage with the elevating means for operating the same.

4. In a gripping mechanism for printing-presses, the combination with a printing and an impression-cylinder, of a gripping-bar extending transversely of the impression-cylinder and suitably mounted therein, means for hinging the said bar within the impression-cylinder, means connected to the ends of the impression-cylinder and engaging with the bar for normally retaining the same in a lowered position, bow-shaped releasing-arms carried by said bar, and means carried by the end of the printing-cylinder and during the travel of the latter engaging with the said arms to elevate the said bar, the latter adapted to resume its normal position through the action of the said retaining means when the means carried by the printing-cylinder is out of engagement with the arms.

5. In combination, an impression-cylinder and a printing-cylinder provided with a spring-controlled gripping mechanism and an offset, respectively, said offset adapted to engage said gripping mechanism for releasing it.

708,410. OVERDRAW-CHECK FOR BRIDLES. JOHN B. SCHOTT, Quincy, Ill. Filed Jan. 8, 1902. Serial No. 88,846. (No model.)

Claim.—A bridle, comprising a crown-piece, a single section of spring-wire bent six times at right angles and in the same plane so as to present a central raised loop and a pair of upturned ends in alinement therewith, a flexible plate secured upon said crown-piece and provided centrally with a longitudinal slot for engaging said loop and also provided with holes for engaging said upturned ends, said slot and said holes being in alinement with each other, a buckle secured upon said flexible plate, and a flexible strap engaged by said buckle and disposed within said central raised loop.

708,411. PROJECTILE. JOHN B. SEMPLE, Sewickley, Pa. Filed May 9, 1902. Serial No. 106,800. (No model.)

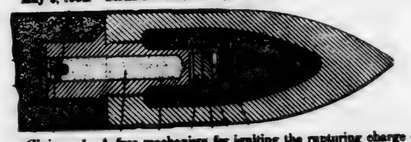

Claim.—1. A fuse mechanism for igniting the rupturing charge of a projectile in combination with a pyrotechnic compound, means for igniting said compound, and common means for connecting said parts to a projectile, substantially as set forth.

2. A mechanism for igniting the rupturing charge of a projectile in combination with a pyrotechnic compound, means for igniting said compound, said parts being united in a common structure and means for attaching such structure to a projectile, substantially as set forth.

3. The combination of a plug or block, mechanism for igniting the rupturing charge of a projectile arranged at one end of said block, a chamber for a pyrotechnic compound formed within the block, means for igniting the said compound arranged at the opposite end of the block or plug, and means for connecting the plug or block to a projectile, substantially as set forth.

4. The combination of a plug or block having a socket or recess at one end and provided with a chamber extending from the opposite end, mechanism for igniting the rupturing charge of a projectile arranged in the socket or recess, and a pyrotechnic compound and its igniting mechanism arranged within the chamber, and means for connecting the plug or block to a projectile, substantially as set forth.

708,412. BARREL-HEAD FASTENING. EDWARD C. SHEARS, La Porte, N. D. Filed Jan. 9, 1902. Serial No. 89,011. (No model.)

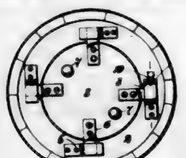

Claim.—In a barrel-head fastening a ring-like member secured to a barrel, and a member removably engaging with the ring-like member, locking-plates attached to the ring-like member, and plates attached to the removable member and adapted to engage the outer sides of the first-named plates, the said plates secured to the removable member having inclined upper surfaces, one interlocking pair of plates having their ends turned upward and perforated to receive a sealing-wire, substantially as specified.

708,418. EXTENSION-LADDER. WILLIAM H. SIBLEY, Wittenberg, Canada, assignor to himself, Harry Judson Crowe, Bridgetown, Nova Scotia, Canada, and Edgar Prior Crowe, Lower Stewiacke, Nova Scotia, Canada. Filed Nov. 26, 1901. Serial No. 83,551. (No model.)

Claim.—1. In an extension-ladder, a plurality of ladder-sections detachably connectible in sequence, a plurality of clip-bands on the side bars of each ladder-section near the upper end, two derrick-arms removably connectible with the clip-bands on the ladder-sections, and a windlass device on the lower ladder-section, and flexible connections between said windlass device and the other ladder-sections, for raising or lowering said ladder-sections.

2. In an extension-ladder, a plurality of ladder-sections connectible in sequence, two derrick-arms removably securable on the upper portion of each ladder-section, a pulley held to rotate on the upper end of each derrick-arm, a windlass device on the lower part of the lower ladder-section, and flexible connections wrapped at one end on the windlass device and extended upward to engage with the pulleys.

3. An extension-ladder, comprising a plurality of ladder-sections, connectible in sequence, a windlass on the lower section, two flexible connections extended upward from the windlass, two derrick-arms removably held on side bars of a ladder-section near its upper end, a pulley on the

upper end of each derrick-arm engaged by a respective flexible connection, and a hook on the upper end of each flexible connection, adapted to engage a lower rung of a ladder-section for its elevation when the windlass is rotated.

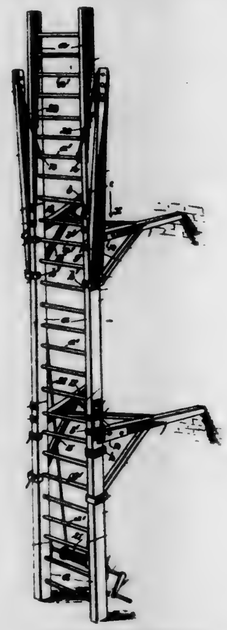

708,414. ROTARY ENGINE. EDWARD L. SELL, Woodward, Okla. Filed Jan. 15, 1900. Renewed July 15, 1902. Serial No. 115,741. (No model.)

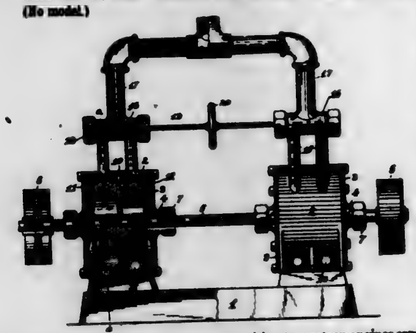

Claim.—The improved engine, comprising two rotary engines separated a distance, a main shaft 5 which is common to both engines, two separate valve-casings, one for each of said engines, a rotary valve in each casing, a rotary shaft 19 extending between said valve-casings and being connected to both valves, and a single handhold located on said rotary shaft and adapted to move the latter and thereby simultaneously rotate the valves to admit an equal amount of steam into both engines and to start them at the same time.

708,415. ROTARY ENGINE. EDWARD L. SELL, Gage, Okla. Filed Dec. 4, 1901. Serial No. 84,693. (No model.)

Claim.—1. In a rotary engine, a piston-cylinder, a shaft mounted through the center of the cylinder, a cylindrical drum mounted upon the shaft in the cylinder, an abutment slidingly mounted in position to extend into the cylinder and engage the periphery of the drum, an abutment-rod attached to the abutment and slidingly mounted and having a vertical slot at its center, an antifriction-roller mounted in said slot, a rocker-arm supporting said roller, a rock-shaft supporting said rocker-arm, a second rocker-arm attached to the opposite end of the rocker-shaft, an eccentric-rod attached to the second rocker-arm, an eccentric for operating the eccentric-rod, a spur-pinion attached to the eccentric, and a segmental gear attached to the piston-shaft in position to engage the spur-pinion as required to move the abutment out of the way of the piston at each revolution, substantially as specified.

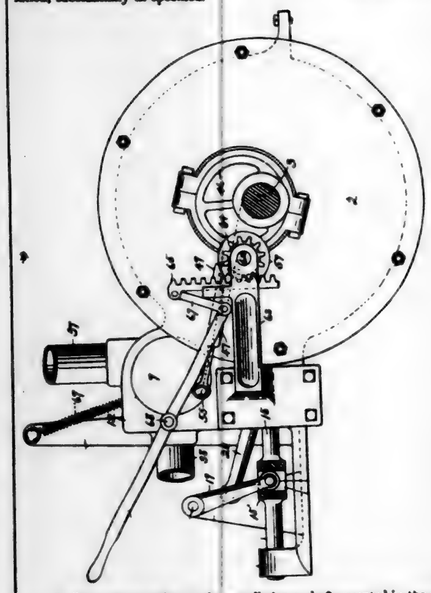

2. In a rotary engine, a piston-cylinder, a shaft mounted in the center of the cylinder, a piston mounted on the shaft in the cylinder, a sliding abutment mounted in position to extend into the cylinder and engage the piston, a port for admitting steam to one side of the sliding abutment, a rocking valve in position to control the passage through said port, a spring in position to hold the rocking valve in position to control the passage through said port, a spring in position to hold the rocking valve normally closed, an eccentric mounted on piston-shaft, a sleeve extending from the eccentric, an eccentric-rod slidingly mounted in the sleeve, a crank attached to the valve and to said eccentric-rod, a collar mounted on said sleeve, a pawl carried by said collar and in position to removably engage a notch in said sleeve, a tension-spring connecting the sleeve to the eccentric-rod, and an adjustable projection mounted in position to be struck to operate the pawl and release the sleeve as required to release the valve and allow said tension-spring to return it to its normal cut-off position, substantially as specified.

3. In a rotary engine, a piston-cylinder, a shaft mounted in the center of the cylinder, a drum mounted on the shaft in the cylinder, a piston extending from the drum and engaging the inner surface of the cylinder, an abutment slidingly mounted in position to extend into the cylinder and engage the periphery of the drum, locking means for holding the abutment in its normal position against the drum, a tension-spring attached in position to exert its influence toward removing the abutment from its contact with the drum, trip mechanism for unlocking the abutment and the geared connection between the piston-shaft and the abutment whereby the abutment is withdrawn out of the way of the piston at each revolution, the tension of said spring serving to assist in starting the abutment, thereby relieving the shock on the other parts, substantially as specified.

4. In a rotary engine, a sliding abutment mounted in position to cooperate with the piston, lock mechanism for holding the sliding abutment in its normal position, trip mechanism for unlocking the abutment, and geared mechanism for sliding the abutment out of the way of the piston, substantially as specified.

5. In a rotary engine, a piston-cylinder; a shaft mounted in the center of the cylinder; a piston mounted on the shaft and engaging the inner face of the cylinder; a sliding abutment mounted in position to cooperate with the piston; means whereby the abutment is locked in its normal position; trip mechanism for unlocking the abutment; and geared mechanism for sliding the abutment out of the way of the piston, substantially as specified.

6. In a rotary engine, a piston-cylinder; a shaft mounted through the center of the cylinder; a cylindrical drum mounted upon the shaft in the cylinder; a piston extending from the drum to the inner face of the cylinder; a sliding abutment mounted in position to extend into the cylinder and engage the periphery of the drum; means whereby the abutment is locked in its normal position; trip mechanism for unlocking the abutment; and geared mechanism for sliding the abutment out of the way of the piston, substantially as specified.

7. In a rotary engine, a piston-cylinder; a shaft mounted through the center of the cylinder; a cylindrical drum mounted upon the shaft in the cylinder; a piston extending from the drum to the inner face of the cylinder; a sliding abutment mounted in position to extend into the cylinder and engage the periphery of the drum; means whereby the abutment is locked in its normal position; trip mechanism for unlocking the abutment; geared mechanism for sliding the abutment out of the way of the piston; a port leading into the cylinder to one side of the sliding abutment; a valve controlling the passage through said port; and an adjustable means of regulating the valve so as to cut off the steam at any desired point of the piston in the revolution, substantially as specified.

708,416. ATTACHMENT FOR LINOTYPE-MACHINES. ASA D. SMITH, Worcester, Mass. Filed Jan. 21, 1902. Serial No. 90,670. (No model.)

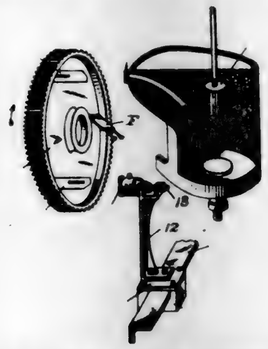

Claim.—1. In a linotype-machine, the combination of the rotatable mold-carrier, the trimming-knife, and an attachment adapted to be secured in position to clean and oil the rear face of a mold after the same has passed the trimming-knife.

2. As an article of manufacture, an attachment for linotype-machines, comprising a spring press-plunger carrying an oil-reservoir having projecting wicking or other fibrous material, and means for securing the plunger in place to clean and oil the rear faces of the mold.

3. In an attachment of the class described, the combination of a bracket or support, means for clamping said bracket or support upon the cross-bar or frame of a linotype-machine, a spring press-plunger mounted in said bracket, an oil-reservoir carried by the plunger, said oil-reservoir having projecting wicking or fibrous material, and a stop-collar for limiting the motion of the spring press-plunger, the said attachment being adapted to clean and oil the rear faces of the molds.

708,417. MAGAZINE TOY GUN. IRVING T. SMITH, Brooklyn, N. Y. Filed Jan. 15, 1902. Serial No. 89,808. (No model.)

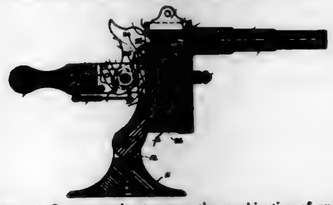

Claim.—1. In a magazine toy gun, the combination of an operating-lever firmly secured on one end of the lock-mechanism center-pin, a spring-actuated hammer revolubly mounted on said pin and provided on its rear lower portion with a rounded shoulder, and arms projecting from said pin in opposite directions and carrying one a cylinder-revolving pawl and the other a dog adapted to engage said shoulder.

2. In a magazine toy gun, the combination of operating means firmly secured on one end of the lock-mechanism center-pin, a hammer revolubly mounted on said pin, and means carried by said pin for retracting and releasing said hammer to fire the gun.

3. In a magazine toy gun, the combination of operating means firmly secured on one end of the lock-mechanism center-pin, a hammer revolubly mounted on said pin, means carried by said pin for retracting and releasing said hammer to fire the gun, and means carried by said pin to successively present the cartridges to said hammer.

4. An improved magazine toy gun, comprising the barrel, a cylindrical shell arranged at the inner end of the barrel and embodying a fixed portion and a hinged portion, a cylinder revolubly mounted in said shell and provided on its rear face with rearwardly-projecting teeth, operating means firmly secured on one end of the lock-mechanism center-pin, a hammer revolubly mounted in said pin, and means carried by said pin for retracting and releasing said hammer to fire the gun.

5. An improved magazine toy gun, comprising the carriage, a barrel, a cylindrical shell embodying a fixed portion mounted on said carriage and connected with the inner end of said barrel and a hinged portion, a cylinder revolubly mounted in said shell and provided on its rear face with rearwardly-projecting teeth, operating means firmly secured on one end of the lock-mechanism center-pin, a hammer revolubly mounted on said pin, means carried by said pin for retracting and releasing said hammer to fire the gun, and means carried by said pin to successively present the cartridges to said hammer.

708,418. BRAIDING ATTACHMENT FOR SEWING-MACHINES. LUELLA SMITH, Alliance, Nebr., assignor of one-half to James M. Dickey, Monon, Ind. Filed May 10, 1901. Serial No. 59,676. (No model.)

Claim.—A sewing-machine attachment comprising a frame having end posts, guides between which trimming is held, screws connecting the guides to the posts, whereby the guides are horizontally adjustable with relation to each other and to the posts without moving the frame, said frame having a plurality of bars, one of which is adapted to rest on the trimming in operation, whereby proper tension of the trimming is maintained.

708,419. WALL-PAPER TRIMMING AND PASTING MACHINE. JACOB P. SPROOT, St. Louis, Mo., assignor to Avery Wall Paper Machine Company, St. Louis, Mo., a Corporation. Filed Apr. 19, 1902. Serial No. 103,575. (No model.)

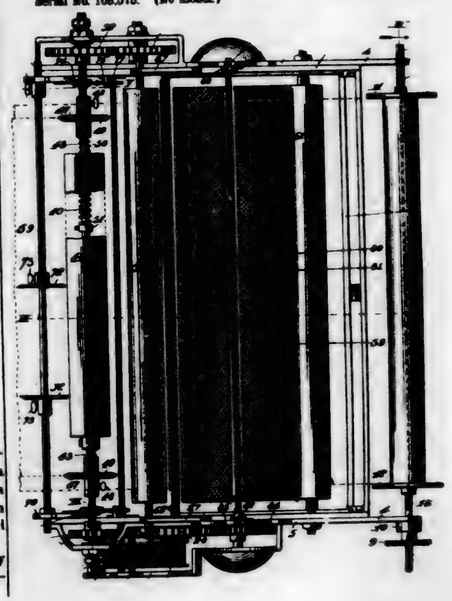

Claim.—1. In a wall-paper-pasting machine, the combination of means for applying paste to the paper; and a support for the roll of paper, comprising a pair of uprights, one of which is spring-held to the other, substantially as described.

2. In a wall-paper-pasting machine, the combination of means for applying paste to the paper; and means for holding the roll of paper, comprising a fixed upright, a loosely-supported upright and a spring by which said loosely-supported upright is yieldingly held with relation to said fixed upright, substantially as set forth.

3. In a wall-paper-pasting machine, the combination of means for applying paste to the paper; and means for supporting the roll of paper, said roll-supporting means comprising a rod, an upright fixed to said rod, a second upright loosely mounted on said rod, and a spring providing a connection between said uprights and adapted to hold said loosely-mounted upright toward said fixed upright, substantially as described.

4. In a wall-paper-pasting machine, the combination of means for applying paste to the paper; and means for supporting the roll of paper; said roll-supporting means comprising a longitudinally-movable rod, means for adjusting said rod longitudinally, and a pair of paper-roll-receiving uprights mounted on said rod and one of which is spring-held toward the other, substantially as described.

5. In a wall-paper-pasting machine, the combination of means for applying paste to the paper; and means for supporting the roll of paper; said roll-supporting means comprising a longitudinally-movable rod, means for supporting said rod, an adjustment-nut mounted on said rod, an upright fixed to said rod, a second upright loosely mounted on said rod, and a spring providing connection between said uprights for the purpose of holding said loosely-mounted upright toward said fixed upright, substantially as described.

6. In a wall-paper pasting and trimming machine, the combination with a frame, of a pasting-roller, a feed-roller, a pressure-roller mounted above said feed-roller, trimming-cutters between which said paper is adapted to be passed, a roller carried by the shaft of one of said trimming-cutters, and slitting-cutters arranged in proximity to said last-named rollers, substantially as described.

7. In a wall-paper pasting and trimming machine, the combination with a frame, of a pasting-roller, trimming-cutters between which said paper is adapted to be passed, a roller carried by the shaft of one of said trimming-cutters, and slitting-cutters yieldingly held in proximity to said last-named roller, substantially as described.

8. In a wall-paper pasting and trimming machine, the combination with a frame, of a pasting-roller, trimming-cutters between which said paper is adapted to be passed, a roller carried by the shaft of one of said trimming-cutters, swinging bearing-bars, a shaft mounted in said bearing-bars, slitting-cutters carried by said shaft and arranged in proximity to said last-named roller, and springs connected to said bearing-bars and adjustably connected to the frame of the machine, substantially as described.

9. In a wall-paper pasting and trimming machine, the combination with a frame, of a pasting-roller, trimming-cutters between which said paper is adapted to be passed, a roller carried by the shaft of one of said trimming-cutters, swinging bearing-bars, a shaft mounted in said bearing-bars, slitting-cutters carried by said shaft and arranged in proximity to said last-named roller, springs connected to said bearing-bars and adjustably connected to the frame of the machine, and a stop-screw arranged to limit the movement of said bearing-bars, substantially as described.

10. In a wall-paper-pasting machine, the combination of a pasting-roller, a paste-pan mounted beneath said pasting-roller, and a spring-controlled catch adapted to engage and support said paste-pan, substantially as described.

11. In a wall-paper-pasting machine, the combination of means for supporting a roll of paper, and means for rewinding said paper; said rewinding means comprising a spool consisting of a rod and a V-shaped strip applied to said rod, and means for operating said spool to wind the paper thereonto, substantially as described.

12. In a wall-paper-pasting machine, the combination of means for supporting a roll of paper, and means for rewinding said paper, said rewinding means comprising a spool consisting of a rod and a V-shaped strip applied to said rod, bearing-supports for said spool, means for operating said spool to wind the paper thereonto, and spring-held catches adapted to engage said spool to hold it in its bearings, substantially as described.

708,420. RELIEF-COLOR-STAMPING PRESS. ROBERT F. SPROULS, London, England, assignor to Photoxylo Die Press, Limited, London, England. Filed Mar. 31, 1902. Serial No. 100,864. (No model.)

Claim.—In a relief-color-stamping press, a cam for working the color-brush, consisting of a disk provided with an offset having in its face a groove in the form of a circular arc in which is engaged a roller mounted on the reciprocating rod which works the brush-gear, substantially as described.

708,420

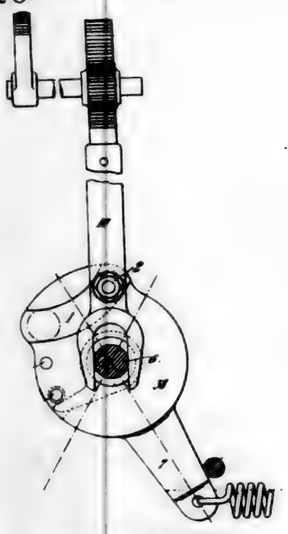

708,421. VEHICLE-HUB. EDMOND B. STEARNS, Eldorado, Kans., assignor of three-fourths to Wesley R. Songer, George H. Wise, and Waltman Joseph, Potwin, Kans. Filed Jan. 22, 1902. Serial No. 90,516. (No model.)

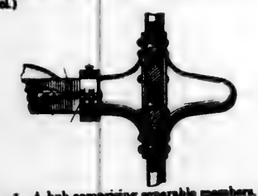

Claim.—1. A hub comprising separable members, one of which has an outwardly-projecting sleeve with a smooth outer surface and the other an outwardly-projecting tube with a smooth bore to frictionally fit over said sleeve, the tube having an outer integral closed extremity which is normally located in advance of the outer end of the sleeve to form an oil-receptacle, the two members also having opposing radially-projecting flanges which are spaced apart to receive wheel-spokes, and means for securing said flanges.

2. A hub comprising separable members, one of which has an outwardly-projecting sleeve with a smooth outer surface and the other an outwardly-projecting tube with a smooth bore to frictionally fit over said sleeve, the tube having an outer integral closed extremity which is normally located in advance of the outer end of the sleeve to form an oil-receptacle, the two members also having opposing radially-projecting flanges which are spaced apart to receive wheel-spokes, means for securing said flanges combined with an axle-spindle to fit in the sleeve, said spindle having a spiral groove thereabout which extends full length of the spindle and communicates with said outer receptacle.

3. A hub having an outer closed portion combined with an axle having a spindle on which said hub is removably fitted, and an annular clamp comprising hinged sections, one of the sections carrying a pivoted locking-stirrup with a set-screw therein, and the other a lug for engagement by said stirrup and screw.

708,422. COMPOSITION SUITABLE FOR USE IN MAKING TOY BUILDING-BLOCKS OR THE LIKE. JACOB STEPHAN, Cleveland, Ohio, assignor of one-half to Godfrey Fugman, Cleveland, Ohio. Filed Jan. 30, 1902. Serial No. 92,560. (No specimens.)

Claim.—1. A composition consisting of a dry mixture comprising, as ingredients, whiting and a whitish or light-colored or bright sand or pulverized rock material, approximately in the proportions specified, and a small quantity of dark sand or pulverized rock material, and a binding liquid mixed with the dry mixture in the proportions required to render the resulting mass plastic and bind and hold the ingredients of the dry mixture together.

2. A composition comprising a dry mixture composed of a whitish or light-colored or bright sand or pulverized rock material, plaster-of-paris, whiting and dark sand or pulverized rock material in about the proportions, by measure, of one part of whiting, one part of plaster-of-paris, and three parts of the whitish or bright sand, with the dark sand equal in quantity to about one per cent. of the dry mixture, and a binding liquid mixed with the dry mixture approximately in the proportions specified.

3. A composition consisting of a dry mixture composed of whiting and sand or pulverized rock material, approximately in the proportions specified, and a binding liquid mixed with the dry mixture and comprising, as ingredients, white lead, zinc-white, vegetable oil, and paint-drier.

4. A composition consisting of a dry mixture comprising whiting and sand or pulverized rock material, approximately in the proportions specified, and a binding liquid mixed with the dry mixture and comprising, as ingredients, white lead, zinc-white, linseed-oil, and paint-drier, approximately in the proportions specified.

5. A composition consisting of a dry mixture comprising sand or pulverized rock material and whiting, approximately in the proportions specified, and a binding liquid mixed with the dry mixture in the proportions of about ten per cent. of the liquid and ninety per cent. of the dry mixture, with the liquid comprising, as ingredients, white lead, zinc-white, vegetable oil, and paint-drier.

6. A composition composed of a dry mixture and a binding liquid mixed with the mixture and binding or holding the ingredients of the dry mixture together, with the dry mixture comprising, as ingredients, sand or pulverized rock material, plaster-of-paris and whiting approximately in the proportions specified, and with the binding liquid comprising, as ingredients, white lead, zinc-white, vegetable oil and paint-drier approximately in the proportions specified.

7. A composition comprising a dry mixture and a binding liquid mixed with the dry mixture approximately in the proportions specified, with the dry mixture comprising, as ingredients a whitish or light-colored or bright sand or pulverized rock material, plaster-of-paris, whiting, and dark sand or pulverized rock material approximately in the proportions specified, and with a binding liquid comprising, as ingredients, white lead, zinc-white, vegetable oil, and paint-drier in approximately the proportions specified.

708,423. MACHINE FOR AFFIXING POSTAGE-STAMPS OR LABELS UPON ENVELOPS, CARDS, &c. ROBERT H. STROUD, Galesburg, Ill., assignor of two-thirds to William O. B. Bradley and John P. McCaffery, Galesburg, Ill. Filed Apr. 1, 1902. Serial No. 100,894. (No model.)

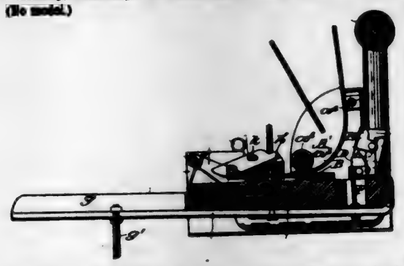

Claim.—1. In a machine for the purpose set forth, a base having thereon a water-supply tank, a moistener below the end of a pipe connected with the water-tank, a reciprocating carriage which travels in the rear of the moistener, two cutters each pivotally mounted at right angles to the other, and a plate which provides a space open on two sides, substantially as shown.

2. In a machine for the purpose set forth, the combination with a plate having an opening to receive an envelop, a moistening device constructed to contact with a part of the envelop in its passage beneath the plate to moisten each part of the envelop, a blade coacting with one edge of the plate and a blade coacting with the other edge and with the first-mentioned blade, the blades being relatively movable with respect to each other to sever a piece from a sheet, one of the blades having a flat portion of sufficient width to cover the severed portion of the sheet, for the purpose set forth.

3. In a machine for clipping and affixing rectangular pieces from a gummed sheet, the combination with a pivoted and upwardly-movable moistening-pad, fixed lower cutters and movable upper cutters arranged in line therewith and at right angles to each other, a carriage carrying a gummed sheet, means for moving the carriage step by step and means for depressing the upper cutters, substantially as shown.

4. In a machine for the purpose set forth, a carriage having a rack-bar rigidly attached thereto, a rod for supporting the carriage said carriage being in swinging and in sliding engagement therewith, a stop and clutch mechanism for engagement with the rack-bar, comprising a pivotally-supported dog, a pawl which overlies one side of the dog and the end thereof, the overlying side of the pawl arranged to engage the teeth of the ratchet-plate, substantially as set forth.

5. In a machine for the purpose set forth, the combination of a reciprocating carriage, a supporting-rod therefor, a stop and release mechanism comprising a fixed ratchet-plate which moves in unison with the carriage, a pawl with which the vertical members of the teeth of the ratchet-plate engage, a dog also engaged by the same portion of the ratchet-teeth, means for swinging the dog and the pawl when the latter is engaged by the ratchet-plate to provide a space between the dog and pawl for the passage of one teeth of the ratchet-plate, a spring-drum, a flexible connection between the drum and the carriage, a lever with which the stop and release mechanism is connected, a pivoted bar connected to the dog, fixed lower cutter and movable upper cutters carried by the base, the upper cutters being in movable engagement one with the other, and a rod connecting one of the upper cutters with the pivoted bar to operate the upper cutters when the bar is depressed, substantially as shown.

6. In a device for the purpose set forth, the combination of a base a carriage supporting frame attached to the base, a carriage movable on the frame, a ratchet-plate attached to the carriage, a spring-actuated drum mounted on the base, a flexible connection attached to the drum and to the carriage, a lever pivoted to the under side of the base, a stop and release mechanism actuated by the lever for engagement with the ratchet-plate, a pair of pivoted cutters arranged at right angles to each other, a spring for lifting one of the cutters, fixed lower cutters which coöperate with the pivoted cutters, means for connecting one of the blades to the lever, means carried by said blade for engagement with the pivoted blade at right angles thereto, and a moistener in proximity to the cutting-blades, substantially as shown.

708,424. STAMP-AFFIXING MACHINE. ROBERT H. STROUD, Galesburg, Ill., assignor of two-thirds to William O. B. Bradley and John P. McCaffery, Galesburg, Ill. Filed Apr. 16, 1902. Serial No. 103,142. (No model.)

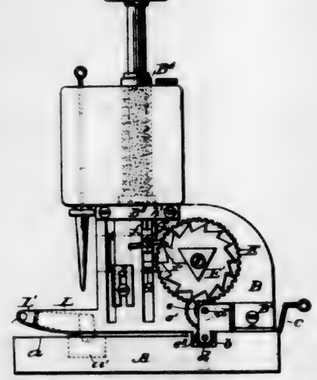

Claim.—1. In a stamp or label affixing machine, the combination with a base provided at one end with a spring-depressed moistening-pad, a water-supply tank above the pad, and a water-receptacle below the pad, of a frame provided with feed-rolls and actuating mechanism therefor, such mechanism including a ratchet-wheel, trips carried by the frame, a plunger having a flat plate at its lower end, an oscillating pawl carried by the plunger to engage one of the trips on its upward movement and the ratchet-wheel on its downward movement, a pivoted dog carried by the plunger to engage the other trip and release the pawl, and a blade which is raised by a spring and depressed by engagement with a stud on the plunger as the plunger is moved downward, substantially as shown and for the purpose set forth.

2. In a stamp or label affixing machine, the combination with a reciprocating plunger, a frame having an overhanging portion one end of which carries a spring-depressed moistening device, feed-rollers on the opposite side of the overhanging frame from the moistening device, a flat portion between the feed-rolls and the moistening device, of a train of gears for actuating the feed-rolls, a ratchet-wheel included in the train,

3. In a stamp-affixing device, means for feeding and pressing a stamp upon a moistened surface, a moistening device comprising a pivotally-supported and spring-depressed frame, a pad-carrying frame pivoted to the spring-depressed frame to be susceptible of an oscillating movement thereon, and means for applying water to the moistening-pad, substantially as shown.

4. In a stamp-affixing-machine, the combination with a base, of a frame attached to the base to overhang the major portion of the ear a, a moistening device pivotally attached to one end of the overhanging frame, and a plunger carried by an intermediate part of the overhanging part of the frame, feed mechanism to one side of the overhanging portion of the frame, the feed mechanism having feed-rollers above and below the base, a fixed cutter adjacent to the feed-rolls, and a pivoted cutter-spring actuated in one direction and depressed by the plunger when the same is lowered, substantially as shown and for the purpose set forth.

5. In a stamp-affixing machine, the combination of a plunger which is spring-actuated in one direction, an oscillating pawl attached to a rock-shaft which is carried by the plunger, a dog pivoted to the plunger, a tumbler on the rock-shaft with which the dog engages, stops carried by the frame with which the dog and pawl engage, and a ratchet-wheel for operating the feed mechanism said ratchet-wheel being turned by the pawl on its downward stroke, for the purpose set forth.

6. In combination with a plunger having on one side a projecting stud, of a blade-spring actuated in one direction, an open-ended slot through the blade into which the stud passes to depress the blade on the downward movement of the plunger and raise the same on the upward stroke thereof, and a spring which engages the slot in the blade and the base to hold the blade normally raised, substantially as shown.

7. In a stamp-affixing machine, the combination of a frame having a vertical slot, a reciprocating plunger attached to the frame, a rock-shaft carried by the plunger, a tumbler on one end of the rock-shaft, a pawl attached to the other end, a dog pivoted to the plunger to engage the tumbler, a stop with which the pawl engages to set the same and limit the upward movement of the plunger, a trip in line with the dog, feed-rollers actuated by the pawl, and a cutter which is depressed by the plunger, the parts being organized substantially as shown and for the purpose set forth.

8. In a stamp-affixing machine, the combination of a frame having a vertical slot therethrough, a stop-plate adjacent to the upper end of the slot, an adjustable trip-plate carried by the frame, a rock-shaft having on one end an adjustable pawl and on the other end a tumbler which is engaged by a dog, one end of the dog being in line with the adjustable trip-plate, and a feed mechanism operated by a ratchet-wheel which is engaged by the pawl during a part of the downstroke of the plunger, substantially as shown.

708,426. APPARATUS FOR OPERATING VENETIAN BLINDS. Thomas Shennerton, Christchurch, New Zealand. Filed Apr. 3, 1902. Serial No. 101,598. (No model.)

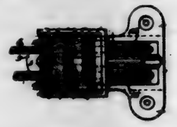

Claim.—1. The combination in apparatus for the purpose indicated of a drum having recesses upon its circumferential periphery and revolving with the cord-pulleys of a Venetian blind, operating-cords passing over said cord-pulleys, a pivoted trip-lever the rear end of which has a projection adapted to engage in any one of said recesses, a cross-bar at the forward end of said trip-lever, and pivoted grip-levers serrated at their lower ends and having projections from their upper ends adapted to be engaged by said cross-bar when the rear end of the trip-lever is raised as specified.

2. The combination in apparatus for the purpose indicated of grip-levers having serrations at their lower ends said levers being pivoted above the operating-cords of a Venetian blind and normally tending to grip same by the weight of the blind upon the cords projections from the grip-levers, a pivoted trip-lever having a bar adapted to engage such projections a projection from the rear end of the trip-lever adapted to engage in any

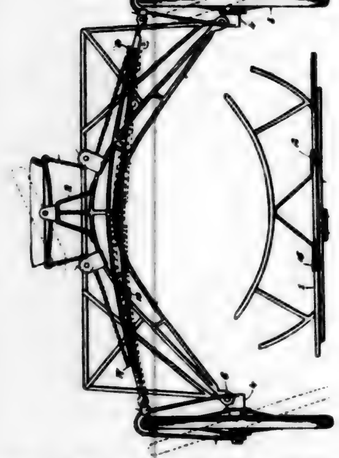

Claim.—1. In a sulky, an axle, wheel-spindles having swinging connection with the axle, yokes extended upward from the spindles, a shifting bar connecting with said yokes, a rocking seat on the axle, connections between said seat and said bar, a post carried by the bar, and a loop on the axle through which said post passes, substantially as specified.

2. In a sulky, an axle, wheel-spindles pivoted to the axle, yokes extended upward from the spindles, a shifting bar having pivotal connection with said yokes, a seat mounted to rock on the axle, pulleys supported on the axle, and chains extended from the opposite sides of the seat around said pulleys and connected with opposite ends of the shifting bar, substantially as specified.

708,427. DEHLDOME-COVERING. Franklin S. Thomas and Leopold Thomas, East Stroudsburg, Pa. Filed Sept. 24, 1901. Serial No. 76,431. (No model.)

Claim.—1. The combination, in a demijohn-covering, of a wooden disk or bottom having sockets, *b*, in its outer edge, and an annular bevel, *d*, on its under side, with the cushion-base D, composed of reed strips *g*, *h*, *i*, which bear upon the outer edge and annular bevel of the disk, engage and bind the ribs C in place and project beneath the lower surface of the said disk or bottom, all substantially as herein shown and described.

2. In a demijohn-covering, the disk or bottom B, consisting of veneer layers *a*, *b*, *c*, the middle layer, *b*, having radial slots *f*, and the bottom one, *c*, an annular bevel *d*, which said layers, *a*, *b*, *c*, are rigidly joined by glue or other suitable means in such manner that those in contact will be crossed in relation to each other with respect to their grains, all substantially as herein set forth.

708,428. GREENHOUSE CONSTRUCTION. Frank Van Arsdel, Jersey City, N. J. Filed Apr. 16, 1902. Serial No. 103,324. (No model.)

Claim.—1. In greenhouse construction, the combination of the metallic frame part, the glass plate, and a yielding or spring-like fastening extending between the metallic frame-bar and the glass plate, for the purpose specified, said fastening being formed of spring-wire bent to produce an intermediate coil for engagement with the said frame part and end portions separated from each other to engage the glass at different points thereon.

3. In greenhouse construction, the combination of the metallic frame-bar having the longitudinally-disposed web, the glass plates lying on the frame-bar at opposite sides of the web, a transverse pin carried in the web, and yielding or spring-like fastenings at the ends of the pin and bearing on the glass plates, for the purpose specified, said fastenings being formed of spring-wire bent to produce an intermediate coil encircling the pin and end portions separated from each other to engage the glass plates at different points.

4. The combination of the metallic frame part, a pin carried thereby, overlapping glass plates resting on the frame part, and a spring-fastening comprising a length of spring-wire bent to produce an intermediate coil encircling the pin and end portions separated from each other, one end portion lying on top of the top plate and the other end portion lying on top of the other plate and against the adjacent edge of the top plate.

5. The combination of the metallic frame part, a pin carried thereby, overlapping glass plates resting on the frame part, and a spring-fastening comprising a length of spring-wire bent to produce an intermediate coil encircling the pin and end portions separated from each other, one end portion lying on top of the top plate and the other end portion lying on top of the other plate and against the adjacent edge of the top plate, the last-named end of the spring-fastening being turned laterally with respect to the frame part, so as to engage its side with said edge of the top glass plate.

6. A spring-fastening for greenhouse construction, said fastening being formed of a length of spring-wire bent to produce an intermediate coil and having its end portions projected oppositely from each other to bear on the glass plates at different points, one of said end portions being turned laterally to present its side to the end edge of one adjacent glass plate.

708,429. PROCESS OF PRINTING WITH SULFUR DYES. Ernst Vortmann, Oerdingen, Germany. Filed June 13, 1902. Serial No. 111,884. (No specimens.)

Claim.—1. The process for printing with sulfur dyes upon textile fabrics which consists in mixing dyestuff, free from sulfuret of alkali with sulfur and alkalies, printing the mixture upon a textile fabric and steaming and developing the dye upon the fabric.

2. The process for printing with sulfur dyes upon textile fabrics which consists in purifying the dyestuff, mixing the same with sulfur and carbonate of alkali, printing the mixture upon a fabric and steaming and developing the dye stuff upon the said fabric.

708,430. WINDOW FRAME AND SASH. Charles L. Wall, Philadelphia, Pa. Filed May 13, 1902. Serial No. 107,076. (No model.)

Claim.—1. The combination of a window-frame having weight-boxes, guideways for the lower sash, a removable piece secured to the frame so that access may be had to said boxes, a sash having strips at each side, pins on the strips arranged to enter openings in the sash, one of said strips being of flexible material so that it can be bent to allow its pin to clear the opening in the sash and thereby permit the removal of said strip, substantially as described.

2. The combination of a window-frame having ways formed by permanent beading, upper and lower sashes arranged to travel in said ways, the beading between the sashes extending part way down the frame, the lower sash having strips detachably secured to each side so that when one of the strips is removed the sash can be pushed to one side to allow the other strip to be removed, with an upper sash also less than the width of the frame, with counterbalancing devices for the two sashes, substantially as described.

3. The combination in a frame having ways, a beading between the upper and lower sashes, a rabbet on the lower sash extending over the

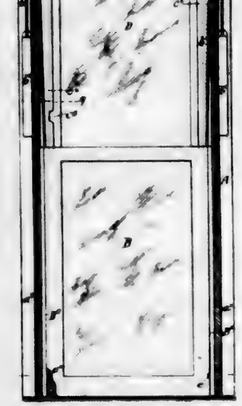

708,431. BED-FRAME. Frederick W. Walker, Utica, N. Y. Filed Oct. 5, 1900. Serial No. 32,131. (No model.)

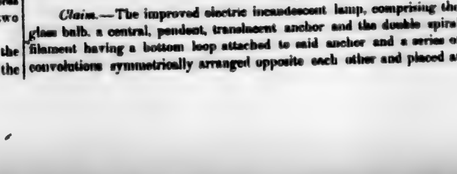

Claim.—In a bed-frame, the combination of angle-bar side rails provided with end coupling-hangers, each hanger having a flange secured to the vertical flange of a rail, the hangers extending vertically above the horizontal planes of said rails, the hangers at one end of the frame provided with elevated abutments 21, above said rails, angle cross-bars between the ends of said rails and resting directly on the top flanges of the rails, means for adjusting one of said cross-bars longitudinally of said rails, the other cross-bar having its vertical flange held against said abutments of said hangers, and the shouldered clips 17, secured at 18, on the horizontal flanges of said rails inwardly of said bar and projecting under the top flanges of the rails and lapping outwardly over the horizontal flange of the cross-bar, substantially as described.

708,432. INCANDESCENT ELECTRIC LAMP. Glenn C. Webster, Warren, Ohio, assignor to the Sterling Electrical Manufacturing Company, Warren, Ohio, a Corporation of Ohio. Filed Dec. 30, 1901. Serial No. 87,794. (No model.)

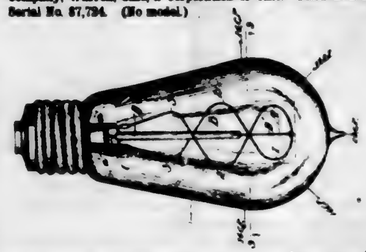

Claim.—The improved electric incandescent lamp, comprising the glass bulb, a central, pendent, translucent anchor and the double spiral filament having a bottom loop attached to said anchor and a series of convolutions symmetrically arranged opposite each other and placed at

different distances from the anchor, as shown and described for the purpose specified.

708,433. SUPERHEATER FOR STEAM-GENERATORS. HENRY WEBBER, Montclair, N. J. Filed Apr. 27, 1901. Serial No. 57,949. (No model.)

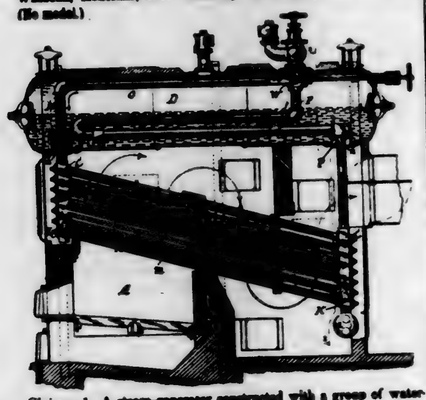

Claim.—1. A steam-generator constructed with a group of water-tube sections, and having one of said sections forming said group, partitioned therefrom and connected to communicate with the steam-space and steam-outlet, to form a steam-superheating section, as set forth.

2. A steam-generator having a steam-superheating space partitioned therefrom, as described, provided with an auxiliary safety-valve adjusted to open in advance of the main safety-valve of the generator, as set forth.

708,434. MACHINE FOR STRINGING TOBACCO. CHARLES G. WELLS, Hartford, Conn., assignor to The Firm of Pealsee and Wells, a copartnership composed of Charles G. Wells and Augusta Pealsee, Windsor, Conn. Filed June 28, 1898. Serial No. 113,124. (No model.)

Claim.—1. The combination, with a bed having devices for hanging leaves by their stems, of a movable punch or needle constructed to retain a cord and to insert such cord in the stems.

2. The combination, with a bed having a series of kerfs, of a stem-retaining device in each of said kerfs, a perforating instrument adapted to receive and carry a cord; and means for actuating said perforating instrument.

3. The combination, with a grooved block having transverse recesses, of points projecting into said recesses, and upon which the stems of the leaves are impaled; and a tool working in the groove of the block and constructed to carry a cord through the stems.

4. The combination, with a bed having a series of recesses and a groove intersecting each of said recesses, of stem-retaining devices in said recesses; and a punch or needle adapted to receive and carry a cord through the stems.

5. The combination, with a bed having a series of recesses, of stem-retaining devices in said recesses; a series of ejectors; a movable punch or needle adapted to carry a cord through the stems; means for actuating said punch; and means for actuating the ejectors.

6. The combination, with a bed-plate having a series of projections, slotted on their ends, of stem-retaining devices between said projections; ejectors; a movable punch or needle adapted to receive and carry a cord; means for actuating said punch; and means for actuating said ejectors.

7. The combination, with a bed-plate, of a block having a series of transverse passages; an impaling-point in each of said transverse passages; a series of ejectors, one in each of the passages; a movable punch or needle adapted to carry a cord; means for actuating the punch; and means for actuating said ejectors.

8. The combination, with a bed, of a block having a series of transverse kerfs and a longitudinal bore intersecting said kerfs; a belt carrying a punch or needle movable in said bore; and means for actuating said belt.

9. The combination, with a bed having transverse passages, of a block having a longitudinal guideway; a punch or needle movable in said guideway; a belt to which said punch is secured; and a movable cover for said block inclosing the belt and punch.

10. In a tobacco-stringing machine, the combination, with a movable cord-carrying tool, of means for hanging tobacco-leaves by their stems in the path of said tool.

11. The combination, with a bed having retaining devices for tobacco-leaves, of a movable perforating and cord-carrying tool; a belt to which said tool is secured; and means for actuating the belt.

12. In a tobacco-stringing machine, the combination, with a plate having transverse passages separated by slotted projections, and also having a guideway, of means upon which the stems of tobacco-leaves may be impaled; a punch or needle constructed to carry a cord; means for actuating said punch or needle; and devices for ejecting the strung leaves.

13. The combination, with a plate having transverse passages and slotted projections between said passages, of impaling-points, one located in each passage, upon which tobacco-leaves may be hung by their stems; a series of ejectors; and an eccentrically-pivoted block for actuating said ejectors.

14. In a tobacco-stringing machine, the combination, with a guide-block, of a punch or needle reciprocative in said guide-block; a belt to which said punch or needle is secured, said belt being movable in a groove of the guide-block; and pulleys having a sprocket connection with said belt.

15. In a tobacco-stringing machine, the combination, with a guide-block having a longitudinal groove, of a belt movable on said block; pulleys over which the belt passes; means for actuating one of said pulleys; a cover-plate upon the block; a punch or needle, the shank of which is secured to the run of the belt passing over the block, said punch or needle being adapted to carry a cord; and means for retaining tobacco-leaves in position to have their stems perforated by said punch and strung upon the cord.

708,435. MACHINE FOR SHAVING ELECTROTYPES. FERDINAND WEBER, Brooklyn, N. Y. Filed July 27, 1901. Serial No. 69,997. (No model.)

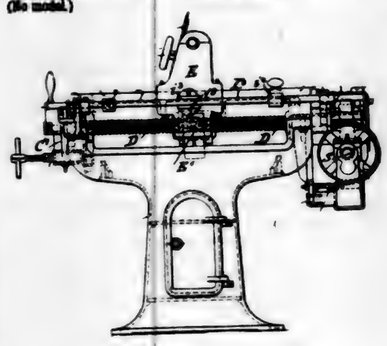

Claim.—1. In a stereotype-shaving machine, the combination with the bed-plate, of a knife-head guided on the same, a shaving-knife supported by said knife-head, means for reciprocating the knife-head, a stop-gage guided in a recess of the bed-plate, a lower yoke-shaped piece secured to said stop-gage, and means, in said yoke-shaped piece, for raising or lowering said stop-gage, substantially as set forth.

2. In a stereotype-shaving machine, the combination, with the bed-plate, of a stop-gage guided in a recess of the bed-plate, an eccentric engaging the lower portion of said stop-gage, and means for turning said eccentric for raising or lowering the stop-gage, substantially as set forth.

3. In a stereotype-shaving machine, the combination, with the knife-head, of a transverse knife-bar in said head, inclined ways on which said bar is adjusted, a shaving-knife attached to said bar, a transverse shaft provided with eccentric rings, a worm-gear for turning said shaft, and means by which said rings engage the knife-bar for adjusting the same, substantially as set forth.

4. In a stereotype-shaving machine, the combination, with the knife-head, of a transverse knife-bar guided in said head, a shaving-knife attached to said knife-bar, means for adjusting the knife-bar in the knife-head, and an indicating device actuated by the knife-bar for indicating the adjustment of the shaving-knife, substantially as set forth.

5. In a stereotype-shaving machine, the combination with the knife-head, of a transverse knife-bar guided on said head, a shaving-knife attached to said knife-bar, means for adjusting said knife-bar in the knife-head, and an indicating device actuated by the knife-bar and consisting of a graduated dial-plate, a pointer and motion-transmitting gearing between the knife-bar and the pointer for moving the latter over the dial and indicating the required adjustment of the knife-bar, substantially as set forth.

708,436. MACHINE FOR BEVELING PHOTO-ENGRAVERS' PLATES. FERDINAND WEBER, Brooklyn, N. Y. Filed July 27, 1901. Serial No. 69,998. (No model.)

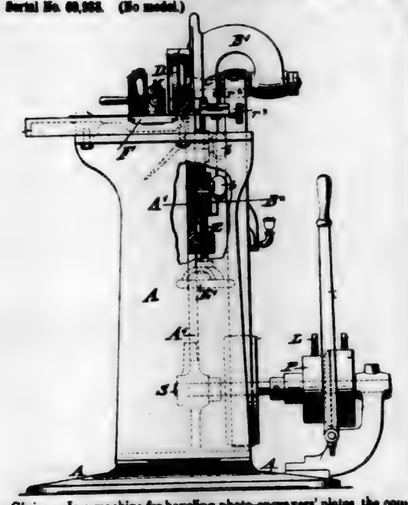

Claim.—In a machine for beveling photo-engravers' plates, the combination, of a supporting-frame, a table on the same provided with longitudinal ways, a reciprocating slide-plate guided in said ways, a vertically-adjustable yoke-shaped support, a vertical web depending from said table, ways provided in said web, the inner arm of said support being guided in the ways of said web, a screw and hand-wheel on said web for adjusting said support, a clamping-screw for securing said support in adjusted position, and a rotatable beveling-disk mounted on said support, substantially as set forth.

708,437. REVOLVER-LOCK. JOSEPH H. WEBSTER, Springfield, Mass. Filed Mar. 15, 1901. Serial No. 51,872. (No model.)

Claim.—1. In a firearm, a pivoted hammer, a mainspring connected to said hammer and tending to throw it forward, a safety-catch pivoted to the hammer, an incline on the frame against which said safety-catch bears with cam action to rebound the hammer, and a spring acting on said catch to force it along the incline, all combined.

2. In a firearm the combination of a pivoted hammer, a mainspring connected to the hammer to throw it forward, a safety-catch pivoted to the hammer, and an incline on the frame with which said safety-catch engages in certain positions as described, said incline acting as a cam to force back the hammer against the pressure of the mainspring.

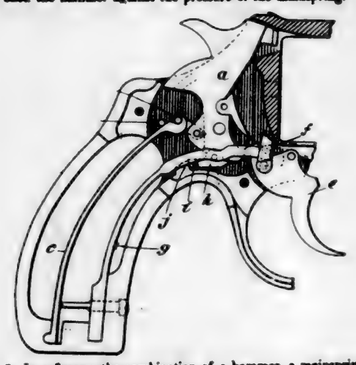

3. In a firearm the combination of a hammer, a mainspring acting on the same to force it to striking position, a safety-catch pivoted to the hammer, a cam or incline in the frame with which said safety-catch makes contact in certain positions, and the trigger-spring engaging said catch to force it along the incline, thereby rebounding the hammer.

4. In a firearm, the combination of a hammer and mainspring a safety-catch pivoted to the hammer, an incline in the frame against which the free end of the catch bears in certain relations, and automatic means operating to force said catch along the incline, thereby rebounding the hammer.

708,438. ZINC-FURNACE. WILLIAM C. WETHERILL, Joplin, Mo. Filed Oct. 12, 1900. Serial No. 32,655. (No model.)

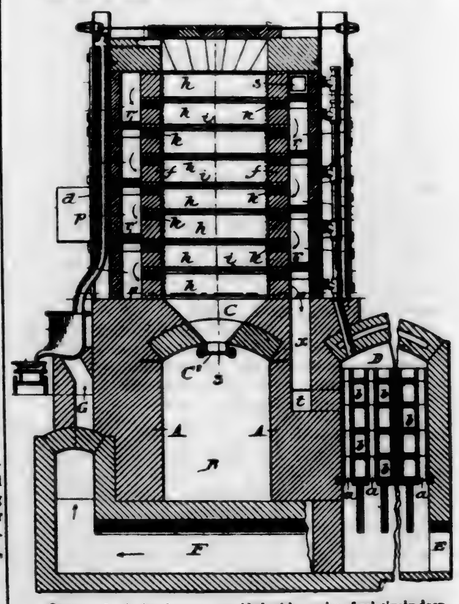

Claim.—1. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, and removable tile combustion-flues separating said chambers from each other and forming the walls thereof, whereby the furnace may be charged and discharged without dismantling it, the destructive effects of the slags are largely obviated and the loss of zinc by absorption is materially reduced; substantially as described.

2. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, and removable tile combustion-

flues forming a zigzag passage and constituting the division-walls of said chambers, whereby the furnace may be charged and discharged without dismantling it, the destructive effects of the slags are largely obviated and the loss of zinc by absorption is materially reduced; substantially as described.

3. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, removable tile combustion-flues separating said chambers from each other, said chambers being provided with top feed-openings and bottom discharge-openings, and exit-pipes for connecting the chambers with a condenser, whereby the furnace may be charged and discharged without dismantling it, the destructive effects of the slags are largely obviated and the loss of zinc by absorption is materially reduced; substantially as described.

4. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, separated from each other by removable combustion-flues, said combustion-flues consisting of hollow tiles extending entirely across the said chambers and supported at their ends upon partition-walls, the ends of the tiles being joined by connecting-passages beyond said partition-walls, whereby the furnace may be charged and discharged without dismantling it, the destructive effects of the slags are largely obviated and the loss of zinc by absorption is materially reduced; substantially as described.

5. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, separated by removable combustion-flues, said combustion-flues consisting of hollow tiles located one above the other and extending entirely across the said chambers and supported at their ends upon partition-walls, the ends of the tiles being joined by connecting-passages beyond said partition-walls, and luting material located in recesses between the top of one tile and the base of another throughout the series, whereby the furnace may be charged and discharged without dismantling it, the destructive effects of the slags are largely obviated and the loss of zinc by absorption is materially reduced; substantially as described.

6. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, separated from each other by removable combustion-flues, said combustion-flues consisting of hollow tiles extending entirely across the said chambers and supported at their ends upon partition-walls, the ends of the tiles being joined by connecting-passages beyond said partition-walls, and flat arches above the several series of combustion-flues whereby the furnace may be charged and discharged without dismantling it, the destructive effects of the slags are largely obviated and the loss of zinc by absorption is materially reduced; substantially as described.

7. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, separated from each other by removable combustion-flues, said combustion-flues consisting of hollow tiles extending entirely across the said chambers and supported at their ends upon partition-walls, the ends of the tiles being joined by connecting-passages beyond said partition-walls, and flat arches above the several series of combustion-flues, and luting material located in recesses between the top of one tile and the base of another throughout the series, and between the uppermost tiles and the bases of the arches whereby the furnace may be charged and discharged without dismantling it, the destructive effects of the slags are largely obviated and the loss of zinc by absorption is materially reduced; substantially as described.

8. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, separated from each other by removable combustion-flues, said combustion-flues consisting of hollow tiles extending transversely of the chambers, and provided at their lower edges with overhung recesses; substantially as described.

9. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, separated from each other by removable combustion-flues, said combustion-flues consisting of hollow tiles having projections extending along their bases and within their lower edges, thereby forming luting-recesses and outlying overhung vapor-conveying recesses; substantially as described.

10. A zinc-furnace, provided with a series of relatively deep, long and narrow charge-containing chambers, separated from each other by removable combustion-flues, said combustion-flues consisting of tiles of the general configuration of truncated prisms, provided along their bases with lugs or shoulders extending longitudinally thereof; substantially as described.

11. A zinc-furnace, provided with charge-containing chambers and means for externally heating the same, condenser-pipes leading from said chambers and passing through a temperature-regulating compartment within the furnace-walls, and doors for said compartment adapted to be open or closed as desired whereby the temperature of said compartment is regulated; substantially as described.

12. A zinc-furnace, provided with charge-containing chambers and means for heating the same externally, condenser-pipes leading from the chambers, and metal-pots into which said condenser-pipes discharge, said metal-pots being located in the path of the waste products of combustion on their passage to the chimney-stack; substantially as described.

708,439. SPEED-REGULATOR. HENRY P. WHITE, Kalamazoo, Mich. Filed June 9, 1902. Serial No. 110,949. (No model.)

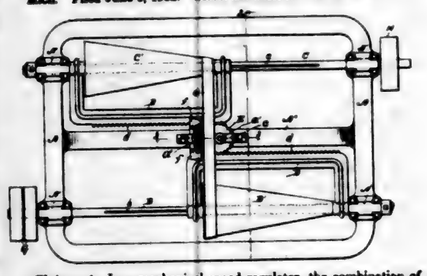

Claim.—1. In a mechanical speed-regulator, the combination of a frame A; shafts B and C supported in suitable bearings in said frame; a driven tapered cone; a driving tapered cone, the like ends of which point in the same direction, slidably mounted upon said shafts; yokes D, D, having racks *d* thereon engaging said cones; a gear F adapted to engage said racks; a belt *a* connecting said cones; guides *a'*, *a'*, to retain said belt in position; and means for controlling said gear, whereby the relative positions of said cones may be shifted to vary the relations of their speed, as specified.

2. In a mechanical speed-regulator, the combination of a supporting-frame; a driven tapered cone adapted to be connected to a source of power; a driving tapered cone adapted to be connected to the machine it is designed to operate, said cones being arranged parallel and with their like ends pointing in the same direction; a belt connecting said cones; connecting means for said cones whereby they may be adjusted an equal distance in opposite directions to vary the relation of their speed, as specified.

3. In a mechanical speed-regulator, the combination of cones adapted to revolve upon their axes, arranged parallel so that their like ends point in the same direction; a belt connecting said cones; means for retaining said belt in proper position; and means for changing the relative lateral position of said cones to vary the relation of their speeds.

4. In a mechanical speed-regulator, the combination of cones adapted to revolve upon their axes, arranged parallel so that their like ends point in the same direction; a belt connecting said cones; and means for changing the relative lateral position of said cones to vary the relation of their speeds.

708,440. DISTANCE-RECORDING APPARATUS FOR RECIPROCATING BODIES. EDWIN A. WHITEHEAD, Broken Hill, New South Wales, Australia. Filed Nov. 11, 1901. Serial No. 81,800. (No model.)

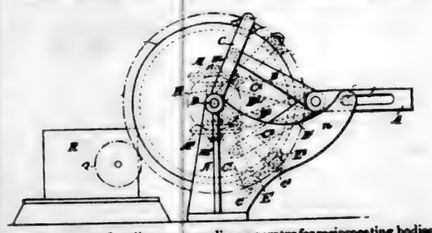

Claim.—1. In a distance-recording apparatus for reciprocating bodies the combination with a frame, a shaft and bearings therefor in said frame, of wheels on said shaft, means in connection with the reciprocating bodies whereby said wheels are rotated, a gear-wheel free on said shaft, and an epicyclic train of gears whereby motion is transmitted from the said wheels to the said gear-wheel, substantially as and for the purposes set forth.

2. In a distance-recording apparatus for reciprocating bodies, the combination with a frame, a shaft and bearings therefor in said frame, of wheels on said shaft, means in connection with the reciprocating bodies whereby said wheels are rotated, a gear-wheel free on said shaft and means for transmitting motion from the said wheels to the said gear-wheel so that the revolutions imparted to the said gear-wheel in a given time are proportional to the sum of the revolutions of the said wheels in the same time, substantially as set forth.

3. In a distance-recording apparatus for reciprocating bodies, the combination with a frame, a shaft and bearings therefor in the said frame, of grooved wheels on said shaft, means in connection with the reciprocating bodies for actuating said grooved wheels in opposite directions, a gear-wheel free on said shaft, and an epicyclic train of gears between one of said grooved wheels and said gear-wheel the parts being so connected together and to the said shaft that the said gear-wheel in a given time is caused to revolve proportionally to the sum of the revolutions of the said grooved wheels in the same time, substantially as specified.

4. In a distance-recording apparatus for reciprocating bodies, the combination with a frame, a shaft and bearings therefor in said frame, of two grooved wheels on said shaft one free thereon and the other keyed thereto, a bevel-gear integral with the free grooved wheel, means in connection with the reciprocating bodies for revolving said grooved wheels, a gear-wheel free on said shaft, a bevel-gear integral therewith, a hub connected to said shaft, and bevel-gears carried by said hub and meshing with the said gears integral respectively with the said gear-wheel and the grooved wheel free on the shaft, whereby motion may be transmitted from the said grooved wheels to the said gear-wheel, substantially as specified.

5. In a distance-recording apparatus for reciprocating bodies, the combination with a frame, shaft and bearings therefor, of a grooved wheel free on said shaft, a grooved wheel fixed on said shaft, a gear-wheel free on said shaft, an epicyclic train of gears between said gear-wheel and the free grooved wheel, rods connected to the reciprocating bodies, rocker-arms on said shaft having longitudinal slots therein, links connecting said rods and said rocker-arms, means for varying the movement of the rocker-arms for a given stroke, and means carried by the said rocker-arms for imparting motion to the said grooved wheels and thence through the epicyclic train to the gear-wheel, substantially as specified.

6. In a distance-recording apparatus for reciprocating bodies, the combination with a frame, shaft and bearings therefor, of a grooved wheel free on said shaft, a grooved wheel fixed on said shaft, a gear-wheel free on said shaft, an epicyclic train of gears between said gear-wheel and the free grooved wheel, rods connected to the reciprocating bodies, rocker-arms on said shaft having longitudinal slots therein, links connecting said rods and said rocker-arms, bolts passing through the slots in the said rocker-arms, collars on said bolts over which the ends of the said links fit, and means carried by said rocker-arms for imparting motion to the said grooved wheels in opposite directions to operate the gear-wheel, substantially as specified.

7. In a distance-recording apparatus for reciprocating bodies, the combination with a frame, shaft and bearings therefor, of a grooved wheel free on said shaft, a grooved wheel fixed on said shaft, a gear-wheel free on said shaft, an epicyclic train of gears between said gear-wheel and the free grooved wheel, rods connected to the reciprocating bodies, rocker-arms on said shaft having longitudinal slots therein, links connecting said rods and said rocker-arms, bolts passing through the slots in the said rocker-arms, collars on said bolts over which the ends of the said links fit, and eccentric wedges carried by said rocker-arms and bearing in the grooves of said grooved wheels for imparting motion to the same to turn said gear-wheel, substantially as specified.

708,441. NURSERY WINDOW-GUARD. GEORGE C. WILLIAMS and EDWARD A. WILLIAMS, Brooklyn, N. Y. Filed Apr. 16, 1902. Serial No. 103,237. (No model.)

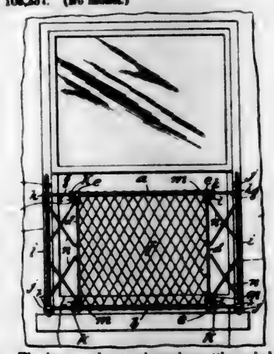

Claim.—The improved extension wire-netting window-guard comprising, in combination, the main-wire-web-carrying frame consisting of the vertical end rods, and upper and lower tubular members fixedly connected at the angles, a supporting-rod carried in the outer extremities of telescopic rods carried in said tubular members, yoke-clamps coupling the telescoping rods and an end rod of the wire-netting frame, extension-wires intermediate of the said end rods of the wire-netting frame, and the supporting-rod carried by the telescopic rods, said main wire web and intermediate extension-wires both being in one piece.

708,442. BOWED NURSERY WINDOW-GUARD. GEORGE C. WILLIAMS and EDWARD A. WILLIAMS, Brooklyn, N. Y. Filed Apr. 16, 1902. Serial No. 103,236. (No model.)

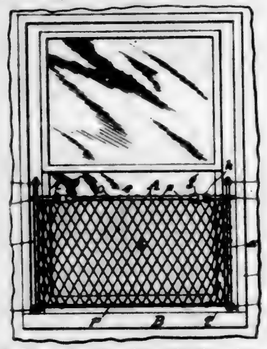

Claim.—1. In an adjustable wire-netting bowed nursery window-guard, the combination with the upper bow-frame comprising the middle inverted channel-bar, inverted elbow channel parts lapped and riveted at one end to the ends of the middle bar respectively, and inverted channel end bars pivoted in the other ends of the elbow parts; of the supporting-rods adapted to be attached to the window-frame, said end bars and supporting-rods connected by said rods being inserted in eyes of the end bars.

2. In an adjustable wire-netting bowed nursery window-guard, the combination with the upper bow frame-bar comprising the middle inverted channel-bar, inverted elbow channel parts lapped and rivited at one end to the ends of the middle bar respectively, and inverted channel end bars pivoted in the other ends of the elbow parts; of the supporting-rods adapted to be attached to the window-frame and connected to the ends of said channel end bars, the continuous wire placed in the channels of the several parts of the frame-bar, and secured to the respective parts at intervals along the middle of the channels, and the wire-netting interwoven along the upper edge with said wire.

3. In an adjustable wire-netting bowed nursery window-guard, the combination with the upper bow frame-bar comprising the middle inverted channel-bar, inverted elbow channel parts lapped and riveted at one end to the ends of the middle bar respectively, and inverted channel end bars pivoted in the other ends of the elbow parts, of the supporting-rods adapted to be attached to the window-frame, and connected to the ends of said channel end bars, the continuous wire placed in the channels of the several parts of the frame-bar and secured to the respective parts, at intervals along the middle of the channels, the wire-netting interwoven along the upper edge with said wire, and the lower frame-bar jointed at the angles of the guard and secured to the supporting-rods and having the lower edge of the wire-netting interwoven with it.

708,443. AUTOMATIC FAN. JEFF D. WILLIAMS, Dunning, Ark. Filed Oct. 29, 1901. Serial No. 80,466. (No model.)

Claim.—1. In an automatic fan of the class described, comprising spring driving-gear, a rigid frame in which the same is mounted, a fan-carrying shaft having a collar fixed thereon, and a detachable bearing for said shaft, composed of two bars arranged horizontally on the upper portion of the frame, one of them being pivoted and the other fixed, and their meeting ends being curved as described, and the slidable keeper, for locking the bars together, as shown and described.

2. In an improved automatic fan of the class described, the combination, with the fan-shaft having links and arms fixed thereon at different points, fan-blades adapted for attachment to said links, and adjustable devices connecting the blades with the arms and serving to support them in the manner shown and described.

3. In an automatic fan of the class described, the combination, with the fan-shaft, having links and arms fixed thereon at different elevations, of fan-blades which are detachably engaged with the links, cords or their equivalent connecting the fan-blades with the outer ends of the said arms, and adapted to be shortened or extended for the purpose of adjusting the angle of the blades, substantially as shown and described.

4. In an improved automatic fan of the class described, the combination with the fan-shaft and links secured thereto, of arms also attached to the shaft but at a higher point, and arranged in a different vertical plane, and fan-blades adapted for attachment to the said links, and means for connecting the blades with the free ends of the arms, substantially as shown and described, to operate as specified

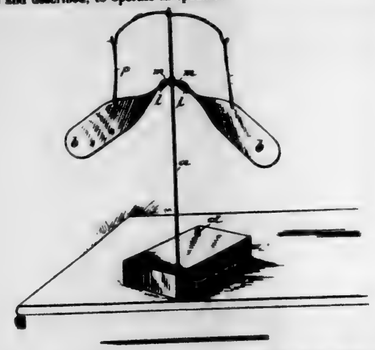

708,444. REVERSING MECHANISM FOR WASHING-MACHINES. DAVID R. WILLOCK, Kansas City, Mo. Filed Oct. 26, 1901. Serial No. 80,103. (No model.)

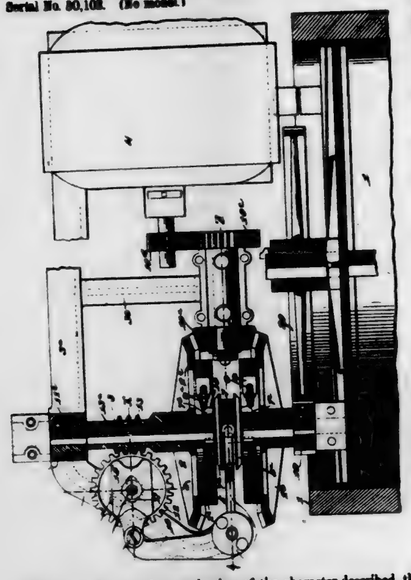

Claim.—1. In reversing mechanism of the character described, the combination of a driven shaft, gearing loosely arranged thereon, a shiftable coupling arranged to slide upon said shaft and yet turn therewith, a driving-shaft geared to the said driven shaft, means for shifting said coupling, means for oppositely actuating said shifting means from said driven shaft, and spring-pressed means for engaging said coupling with either of the gears of said driven shaft, substantially as set forth.

2. In reversing mechanism of the character described, the combination of a driven shaft, gearing loosely arranged on said shaft, a shiftable coupling arranged to slide on said shaft and yet turn therewith, a driving-shaft geared to said driven shaft, means for shifting said coupling, means for oppositely actuating said shifting means from said driven shaft, a bevel-ended notched bar carried by said coupling and spring-pressed studs carried by said gearing and adapted to engage said notched bar, substantially as set forth.

3. In apparatus of the character described, automatically-reversing mechanism comprising a common shaft, gearing loosely mounted upon said shaft, spring-equipped rings concentric with said gearing, a laterally-movable shipping collar arranged on said shaft, intermediately of said gears, a cam carried by said collar, means applied to the springs of said rings for engaging said cam, means for automatically actuating from said shaft said collar, and means for actuating said shaft, substantially as set forth.

4. In apparatus of the character described, automatically-reversing mechanism comprising a common shaft, duplicate gears loosely arranged upon said shaft, an intergeared worm gearing and wheel arranged in connection with said shaft, means to couple up said shaft and said duplicate gearing, means to effect connection between said worm-gearing, and said means of coupling and means for actuating said shaft, substantially as set forth.

5. In apparatus of the character described, automatically-reversing mechanism comprising a common shaft, duplicate gears loosely arranged thereon, a gear common to the first-named gearing, a worm-and-wheel gearing arranged in connection with said shaft, a cam suitably arranged in position, and a lever carried by said cam, said cam being engaged by a projection on said wheel, and means actuated by said lever and adapted to effect the coupling of said shaft and said duplicate gearing, substantially as set forth.

6. In apparatus of the character described, automatically-reversing mechanism comprising a common shaft, duplicate gears arranged loosely thereon, a worm and friction-coupling arranged in connection with said shaft, spring-equipped rings carried by said duplicate gearing, screw-bolts carried by said springs of said rings, a hub interposed between said duplicate gearing and rings, a collar applied to said hub and equipped with a bevel-ended cam adapted to engage said screw-bolts, means for effecting connection between said worm-and-wheel gearing and collar to move the last-named with its cam endwise, and means for actuating said shaft, substantially as set forth.

7. In apparatus of the character described, automatically-reversing mechanism comprising a shaft, duplicate gears adapted to be driven simultaneously in opposite directions, means for clutching or coupling said duplicate gearing and shaft together, a worm-and-wheel gearing actuated from said shaft, a cam suitably arranged in position, and actuated from said worm-and-wheel gearing, and a lever carried by said cam and having prongs or a shipper engaging said coupling, and means for transmitting motion from said shaft, substantially as set forth.

8. In apparatus of the character described, automatically-reversing mechanism comprising a shaft, duplicate gears loosely mounted thereon, means for simultaneously driving the wheels of said gearing in opposite directions, means for coupling said gearing and said shaft together, worm-and-wheel gearing arranged upon said shaft, a cam having lateral opposite convexed surfaces or faces and a slot therethrough a fixed pivot pin or stud passing through said slot, a lever carried by said cam and a shipper carried by said cam and connected up with said coupling, means for actuating said lever from said cam, and means for transmitting motion from said shaft, substantially as set forth.

708,445. AUTOMATIC GATE. JAMES H. WILSON, Mount Ayr, Iowa. Filed May 8, 1902. Serial No. 106,426. (No model.)

Claim.—1. In an automatic gate, the combination with a hinged and horizontally-swinging gate, of latch mechanism comprising a latch-lever, latch-bars operatively connected therewith and adapted to be moved thereby simultaneously in opposite directions, and a double keeper on the latch-post consisting of portions adapted to be individually engaged by the respective latch-bars.

2. In an automatic gate, the combination with a hinged and horizontally-swinging gate, of a latch-lever fulcrumed thereon, latch-bars operatively connected with said lever and simultaneously movable in opposite directions, a single keeper-strip with which one of said latch-bars is adapted to engage, and parallel keeper-strips between which the other latch-bar is adapted to engage, the several keeper-strips being mounted upon the latch-post.

3. In an automatic gate, the combination with a hinged and horizontally-swinging gate, of a latch-lever fulcrumed intermediate its ends on the gate, latch-bars operatively connected with said latch-lever at opposite sides of its fulcrum, a spring for vibrating the latch-lever in one direction, an operating-rope for drawing the lever in an opposite direction, a latch-post, and a double keeper on the latch-post comprising a single keeper-strip with which one of the latch-bars is adapted to engage, and parallel keeper-strips with which the other latch-bar is adapted to engage.

4. In an automatic gate, the combination with a hinged and horizontally-swinging gate, of a lever extension on the gate projecting in rear of the hinged post, a spider pivotally mounted on the lever extension comprising radiating-arms, operating-ropes connected with one arm of the spider, a gate-latch, a latch-rope extending from the latch and bifurcated to form branches which connect with lateral arms of the spider, and a pin extending through the inwardly-projecting arm of the spider and adapted to engage the branches of the latch-rope, substantially as and for the purpose specified.

708,446. EAR-MUFF. LOUIS WILS. Morris, Ill., assignor of one-half to Lars Hansen, Morris, Ill. Filed Feb. 14, 1902. Serial No. 94,063. (No model.)

Claim.—1. An ear-muff, comprising a suitable covering for the ear, a clamping device associated with said covering and adapted to clamp it to the ear, so that it will be held in proper position, said clamping device adapted to be moved out of the plane of the covering to release the ear.

2. An ear-muff, comprising a suitable frame, a covering therefor, a clamping device movably connected with said frame and adapted to clamp the ear, so as to hold the muff in position, said clamping device comprising a part or loop through which the ear passes and a second part cooperating therewith.

3. An ear-muff, comprising a frame, a suitable covering therefor, a clamping device attached to the frame and comprising two parts between which the ear is clamped, one part engaging the back of the ear and the other the outer face thereof.

4. An ear-muff, comprising a frame, a suitable covering therefor, a clamping device attached to the frame and comprising two parts between which the ear is clamped, said clamping parts movably connected to the frame, one of said parts engaging the frame when in its clamping or holding position so as to hold or lock the parts in said position.

5. An ear-muff, comprising a suitable frame, a covering therefor, and an adjusting device for adjusting the size of the ear-receiving opening of the muff, so as to fit different ears, said adjusting device normally fixed during the use of the muff, the ear-receiving opening remaining unchanged when the proper adjustment is secured.

6. An ear-muff, comprising a frame, a covering therefor, a clamping device comprising two parts movably connected with said covering and between which the ear is clamped, and an adjustable part connected with one of said parts so as to adjust the ear-receiving opening of the muff to fit different-sized ears.

7. An ear-muff, comprising a suitable frame, a covering therefor, a two-part clamping device associated therewith and adapted to clamp the muff to the ear, both parts of said clamping device movable in a plane at an angle to the frame of the muff.

8. An ear-muff, comprising a frame, a covering therefor, a two-part clamping device pivotally connected to said frame, one within the other, one adapted to receive the ear and engage the back thereof and the other adapted to be moved to engage the outer face of the ear, so as to hold the parts in position.

708,447. COMBINATION-TOOL. JESSE L. WOOD, Fulton, and WALLACE G. LAWRENCE, Cordova, Ill. Filed Dec. 10, 1901. Serial No. 85,333. (No model.)

Claim.—1. The combination of a stationary jaw, a shank fastened thereto and having a longitudinal slot and also a rack, a slide mounted on the shank and comprising a movable jaw, a worm mounted in the slide and working with the rack of the shank, and a screw-driver attached to the slide and lying movably in the slot of the shank.

2. The combination of a stationary jaw, a shank fastened thereto and having a longitudinal slot and also a rack, a slide mounted on the shank and comprising a movable jaw, a worm mounted in the slide and working with the rack of the shank, a screw-driver attached to the slide and lying movably in the slot of the shank, and a handle carried by the end of the shank opposite the stationary jaw, said handle having a longitudinal passage therein forming a continuation of the slot in the shank and through which passage the screw-driver may be projected.

3. The combination of a stationary jaw, a shank fastened thereto and having a longitudinal slot and also a rack, a slide mounted on the shank and comprising a movable jaw, a worm mounted in the slide and working with the rack of the shank, a screw-driver attached to the slide and lying movably in the slot of the shank, and a handle carried by the end of the shank opposite the stationary jaw, said handle having a longitudinal passage therein forming a continuation of the slot in the shank and through which passage the screw-driver may be projected, the outer end of said passage in the handle being angular in cross-sectional form to permit its use as a wrench.

4. The combination of a stationary jaw, a shank fastened thereto and having a longitudinal slot, a slide mounted on the shank and comprising a movable jaw, and a screw-driver attached to the slide and lying movably in the slot of the shank.

5. The combination of a stationary jaw, a shank fastened thereto and having a longitudinal slot, a slide mounted on the shank and comprising a movable jaw, a screw-driver attached to the slide and lying movably in the slot of the shank, and a handle carried by the shank opposite the stationary jaw, the handle having a passage therein forming a continuation of the slot in the shank and through which passage the screw-driver may be projected.

6. A tool, comprising a stand having a rack thereon, a stationary jaw, a movable jaw sliding on the stand, a worm mounted on the movable jaw and meshed with the rack for the purpose specified, and a screw-driver attached to the movable jaw and moving therewith, the tool having a passage therein in which the screw-driver is movable, substantially as described.

708,448. OILING DEVICE. ALBERT O. WYMAN, Putnam Falls, Mass., assignor of one-half to Cyrus L. Glynn, Boston, Mass. Filed Nov. 23, 1901. Serial No. 83,283. (No model.)

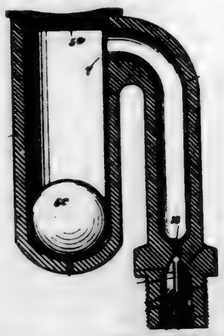

Claim.—An oiling device comprising a cylindrical cup or receptacle open at one end and provided with a removable cap, a spherical ball or body placed in said cup or receptacle a tubular member connected with one side of said cup or receptacle, near the cup end thereof and ranging parallel with and slightly longer than said cup or receptacle, the free end of said tubular member being provided with a valve-seat and a port or passage formed therein, and means for regulating the flow of oil through said port or passage, consisting of a split screw-threaded plug having a conical end and a port or passage, substantially as shown and described.

708,449. CASH-REGISTER. PHILIP YOS, Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J., a Corporation of New Jersey. Filed Sept. 19, 1898. Serial No. 691,230. (No model.)

Claim.—1. In a cash-register, the combination with graduated indicating-tablets arranged in banks, registering-wheels, one for each bank, operating devices coöperating with said indicators, and independent means for each wheel for throwing it into connection with its respective operating device when one of the tablets of its bank is operated.

2. In a cash-register, the combination with a printing-segment having a rack formed thereon, means for moving said segment, an alining device arranged to engage said rack, and a platen carrying a spring-arm which is arranged to operate the alining device before the platen reaches printing position.

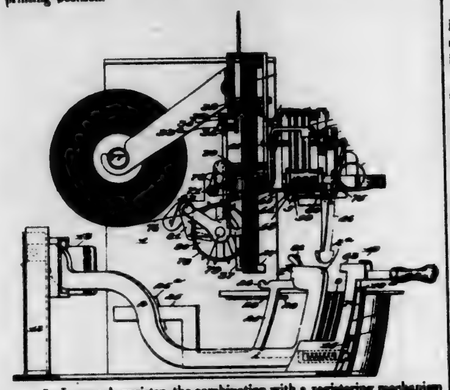

3. In a cash-register, the combination with a registering mechanism arranged in banks, of operating devices for the same, an operating-lever and independent means for each bank arranged to be moved by the operating-lever to throw the operating devices of that particular bank into operative position.

4. In a cash-register, the combination with a series of independent indicating-tablets, of a lever arranged to actuate said tablets, and means controlled by the lever for positively locking all the remaining tablets in normal position when one is operated.

5. In a cash-register, the combination with a series of indicator-plates arranged one in front of the other and having apertures of graduated lengths, of a movable registering-frame extending through all of said apertures and arranged to be engaged and raised by the lower walls of the same.

6. In a cash-register, the combination with a plurality of indicating-tablets having coinciding graduated apertures, of a movable frame extending through all of said apertures, a registering mechanism connected to said frame, and devices for operating the tablets.

7. In a cash-register, the combination with a series of indicating-tablets, of a swinging lever for raising any one of said tablets, a movable operating device mounted on said lever and means for alining said device with any of the several tablets when the lever is swung laterally.

8. In a cash-register, the combination with a series of independent indicating-tablets, arranged in banks, pivoted yokes coöperating with the respective banks of indicators, registering-wheels one for each yoke, independent devices for throwing said wheels into connection with their respective yokes and a lever for operating the tablets and said throwing devices.

9. In a cash-register, the combination with a plurality of indicating-tablets arranged in series, of means for raising the tablets of the different series successively to indicating position, registering-wheels, devices for moving said wheels into operating position, means actuated by said indicators to turn the registering-wheels, and means for retracting the registering-wheels to normal position

10. In a cash-register, the combination with a registering mechanism, of a series of devices for operating the same arranged substantially in a line, an operating-lever and movable alining means mounted on said lever and arranged to move in alinement with the operating devices.

11. In a cash-register, the combination with a series of indicating-tablets, of a pivoted operating-lever, an operating device movably mounted on said lever, and spaced stationary strips arranged to receive and guide said device to cause it to properly operate the desired tablet.

12. In a cash-register, the combination with a plurality of indicating-tablets, each comprising a plate provided with a lifting-arm at its lower end and formed with an aperture having a projection on one of its walls, of wings projecting through said apertures and arranged to engage said projections to hold the tablets elevated, operating-yokes also extending through said apertures, means for releasing said wings, operating devices arranged to engage the lifting-arms, and a registering mechanism connecting to said operating-yokes.

13. In a cash-register the combination with operating devices, of a counter comprising a series of counter-wheels, and a single operating-lever arranged to throw any desired one of the counter-wheels into connection with the operating devices and operate it to the desired extent.

14. In a cash-register the combination with a register-operating mechanism, arranged in banks, of a counter comprising a series of wheels each of which is operated by its respective bank, an operating-lever and independent means for each bank arranged to be operated by said lever to throw its respective counter alone into operative position.

15. In a cash-register, the combination with a registering mechanism, of a bank of indicating-tabbts, a lever adapted to move any one of said tablets to indicating position, and means for locking all the remaining tablets when one is moved from normal position.

16. In a cash register the combination with printing devices arranged side by side and having alining teeth formed thereon, of means for moving said devices, a pivoted alining device arranged to simultaneously engage the teeth of all of said printing devices, and a platen mounted independently of the alining device and provided with a flexible arm arranged to operate said alining device before the platen raises to printing position.

17. In a cash-register the combination with a frame having grooves formed therein, of a registering mechanism, a pivoted operating-lever having a lug which extends under a portion of the frame and normally holds the lever down but which may be brought into alinement with the grooves to allow the lever to be raised at certain points and a spring-actuated member mounted on the lever and arranged to coöperate with said frame to prevent backward movement of the lever.

18. In a cash-register the combination with an operating mechanism, of an operating-lever capable of both lateral and vertical movements and a movable latch on said lever for compelling a lateral movement of the lever at a period between the upward and downward strokes of said lever.

19. In a cash-register the combination with an operating mechanism, of an operating-lever capable of both lateral and vertical movements, means for guiding said lever vertically after its initial movement, and devices for preventing a return movement of the lever in the same vertical plane.

20. In a cash-register the combination with an operating mechanism, of an operating-lever capable of both lateral and vertical movements, and devices for compelling a lateral movement of said lever between its first and final vertical movements.

21. In a cash-register the combination with a registering mechanism, of indicating-tablets, a lever arranged for operating any one of said tablets and a shiftable device movably mounted upon said lever and arranged to be shifted by its movements and also be elevated thereby so as to engage and actuate the desired indicator.

22. In a cash-register the combination with a plurality of indicating-tablets having graduated apertures of a movable frame extending through said apertures, a pivoted printing-segment, means connecting said segment and frame and devices for operating the indicators.

23. In a cash-register, the combination with the registering-wheels and a registering mechanism, of indicating-tablets arranged to actuate the same to register amounts equal to the numerical designation of the operated tablets, a swinging lever for raising any one of said tablets and means for alining a movable part of said lever with the desired tablet.

24. In a cash-register the combination with a plurality of indicating-tablets having graduated apertures, of a pivoted frame extending through said apertures, a registering mechanism, means connecting said frame and mechanism and devices for operating the tablets.

25. In a cash-register, the combination with registering mechanism comprising independently-actuated registering-wheels, devices for turning said register-wheels, an operating-lever and independent means for each bank arranged to be moved by the operating-lever to throw one of the register-wheels into mesh with the operating devices.

26. In a cash-register the combination with a plurality of indicating-tablets having graduated apertures, of a pivoted frame extending through said apertures, a pivoted printing-segment, a link connecting said frame and segment, and means for operating said tablets.

27. In a cash-register the combination with a registering mechanism, of an operating-lever capable of both lateral and vertical movements, means connecting said lever to said mechanism, a frame having grooves each with a flange at its lower end, and a plunger carried by the lever and coöperating with said flanges.

28. In a cash-register, the combination with a registering mechanism, of an operating-lever having a lug which normally prevents it from rising, means connecting said lever to said mechanism, a wall having vertical grooves formed therein to receive said lug, a flange partly closing the lower end of each groove, and a plunger on said lever adapted to move through said grooves.

29. In a cash-register, the combination with a plurality of indicating-tablets formed with apertures of different depths, and having locking-shoulders, of a frame extending through said apertures and arranged to be moved by the walls of the same, registering mechanism connected to said frame and means for raising said tablets whereby the registering mechanism is actuated and the frame moved over the shoulders to lock the remaining tablets.

30. In a cash-register, the combination with a plurality of indicating-tablets having graduated apertures, of a movable frame extending through said apertures, a printing device connected to said frame and means for raising the tablets.

31. In a cash-register, the combination with a plurality of indicating-tablets having graduated apertures, of a movable frame extending through said apertures, a rack carried by said frame, a registering mechanism operated by said rack, and means for raising the tablets.

32. In a cash-register, the combination with a series of indicating-tablets having graduated apertures, of a movable frame extending through said apertures, a rack on said frame, a registering-wheel having a pinion arranged to mesh with said rack, and operating means for raising said tablets and moving said pinion into mesh with the rack.

33. In a cash-register, the combination with the register-wheels, the printing-segments and a platen, of an operating-lever movable in one direction to adjust the printing-segments and in another direction to actuate the platen.

34. In a cash-register, the combination with a series of plates having coinciding graduated apertures and arranged one in front of the other, of a movable frame extending through all of said openings, a registering-wheel normally disengaged from said frame, actuating devices for said plates and means for bringing the registering-wheel into engagement with the movable frame during one movement of the latter.

35. In a cash register, the combination with a plurality of plates formed with coinciding graduated apertures, of a movable frame extending through all of said openings so as to be moved to a greater or less extent according to the plate operated, a register-wheel arranged to be operated by the movable frame, and a single lever for actuating said plates.

36. In a cash-register, the combination with register-wheels, of operating-plates arranged in banks and adapted to be independently actuated, a lever arranged to actuate said plates, shifting means, one for each register-wheel and arranged to be actuated by said lever to shift the registering mechanism into connection with the operating-plates.

37. In a cash-register, the combination with a registering mechanism, of indicating-tablets of different numerical designations arranged to operate the registering mechanism to record the amount of the numerical designation of the operated tablet, a lever arranged to actuate any one of said tablets, and means for locking all the remaining tablets in position when one is operated.

38. In a cash-register, the combination with a series of indicating-tablets arranged approximately in a straight line, of a pivoted operating-lever, and a movable alining means mounted on said lever and arranged to move in alinement with said tablets so as to be capable of lifting the same regardless of the position of the lever carrying said alining means.

39. In a cash-register, the combination with operating devices, of a counter comprising a series of counter-wheels and an operating-lever for the operating device arranged to be adjusted to throw any desired one of the counter-wheels into connection with the operating devices and move the same by a single operation.

40. In a cash-register, the combination with operating devices, of a counter comprising a series of wheels normally out of connection with the operating devices and transfer means between said wheels and an operating-lever arranged to be adjusted to throw any desired one of the counter-wheels into connection with the operating devices.

41. In a cash-register, the combination with operating devices, of a counter comprising a series of counter-wheels, and an operating-lever arranged to be moved in one direction to select the desired counter-wheel and in another direction to bring said wheel into connection with the operating devices.

42. In a cash-register, the combination with operating devices, of a counter comprising a series of counter-wheels and an operating-lever arranged to be moved horizontally to select the desired counter-wheel and vertically to throw the same into connection with the operating devices.

43. In a cash-register, the combination with operating devices, of a counter comprising a series of counter-wheels mounted on longitudinally-movable shafts, and a lever arranged to operate any one of said shafts to bring its counter-wheel into connection with the operating devices.

44. In a cash-register, the combination with graduated indicating-tablets arranged in banks, registering-wheels, one for each bank, operating devices coöperating with said indicators, independent means for each wheel for throwing it into connection with its respective operating device, and a lever arranged to operate any one of said tablets and simultaneously actuate the respective throwing means.

45. In a cash-register, the combination with graduated indicating-tablets arranged in banks, registering-wheels one for each bank, operating devices coöperating with said indicators, levers for the respective wheels for throwing them into connection with the operating devices, and a hand-lever arranged to operate any one of said tablets and the respective throwing-lever.

46. In a cash-register, the combination with graduated indicating-tablets arranged in banks, registering-wheels one for each bank, operating devices carrying racks and coöperating with said indicators, independent means for the respective wheels for throwing them into connection with the racks, and a lever arranged to operate any one of said tablets and the respective throwing means.

47. In a cash-register, the combination with a plurality of indicating-tablets formed with apertures having locking-shoulders, of a frame extending through said apertures and arranged to be moved by the walls of the same whereby when one tablet is raised the frame is moved over the locking-shoulders of the remaining tablets.

48. In a cash-register, the combination with a plurality of indicating-tablets having graduated apertures, of a movable frame extending through said apertures, a movable printing device connected to the frame, and means for operating the tablets.

49. In a cash-register, the combination with a registering mechanism, of a series of devices for operating the same arranged in a straight line, a pivoted lever, an operating device movably mounted on said lever, and means for alining said movable device with the operating devices as the lever is moved about its fulcrum.

50. A cash-register comprising a series of indicators, a support a member pivotally secured to the latter, an operating-lever hinged to said member and coöperating with said indicators when operated for elevating any one of said indicators, a suitable printing device and suitable mechanism coöperating with the lever and said printing device.

51. A cash-register comprising a series of indicators, a support, a member pivotally secured to the latter, an operating-lever hinged to said member and adapted to coöperate with the indicators for raising any one of the same, a rocking frame actuated by said lever, a printing device operated by said lever, and suitable gearing interposed between said rocking frame and printing device.

52. A cash-register comprising a suitable casing, a series of indicators located within the same, a support, a member pivotally secured to the latter, an operating-lever hinged to said member and adapted to coöperate with the ends of the indicators to raise the latter, a rock-frame actuated by said lever, a printing device operated by said lever, and inking means operated by said frame.

53. In a cash-register the combination with a series of indicators, a support, a member pivotally mounted on said support, a lever hinged to said member and coöperating with the indicators to elevate the same, printing-types controlled by said lever and printing mechanism also controlled by said lever.

54. In a cash-register the combination with a series of indicators, a support, a member pivotally secured to the latter, an operating-lever hinged to said member, and adapted to coöperate with the free ends of said indicators for elevating any one of the same, a rocking frame actuated by said lever, said casing having a slot formed therein for the lateral movements of said lever and vertical passages for permitting vertical movements of said lever, a printing device and mechanism coöperating with the lever and printing device.

55. In a cash-register the combination with a lever having both lateral and vertical movements of a series of indicators arranged to be elevated by said lever, a rocking frame actuated by said lever, an ink-ribbon, strip-feeding devices and means connecting both the ink-ribbon and strip-feeding devices to the rocking frame.

56. In a cash-register a printing device consisting of supporting-rollers, a ribbon connecting the same and arranged to be fed thereby, rollers for supporting and feeding a paper strip in proximity to the ink-ribbon, but at an angle thereto, a rocking frame and means connecting said frame and the respective feed-rollers whereby the ribbon and paper strip are simultaneously fed.

57. In a cash-register the combination with a series of indicators, of a register, register-actuating means controlled by the indicators, and a lever arranged when moved laterally to select a desired indicator and when moved vertically to bring the register and register-operating mechanism into connection and operate the selected indicator.

708,450. SAW-SPACING DEVICE. FRANK YOST, Lorain, Ohio. Filed Feb. 10, 1902. Serial No. 93,414. (No model.)

Claim.—1. A new and improved device of the character set forth comprising two plates, blocks secured between said plates and arranged to slide in and out between said plates and means for securing said plates together, substantially as described and for the purpose set forth.

2. A new and improved spacing device for saws, comprising two plates, blocks secured between said plates and arranged to slide in and out between said plates, means for forcing said blocks outward between said plates and means for limiting the outward movement of said blocks, substantially as described and for the purpose set forth.

3. A new and improved device for spacing saws in a gang-frame, comprising two plates, blocks arranged between said plates and adapted

to slide in and out between said plates, means for forcing said blocks outward between said plates and means for supporting the device between the saws composing the gang, substantially as described and for the purpose set forth.

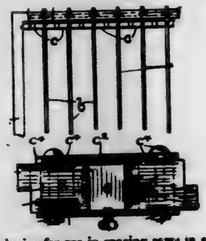

4. A spacing device for use in spacing saws in a gang-frame, comprising two plates, blocks secured between said plates and arranged to slide in and out between said plates, said blocks having their adjacent faces inclined and capable of touching only at their lower ends, a wedge arranged between the said blocks and means for locking the said wedge between the said plates, substantially as described and for the purpose set forth.

5. A spacing device for use in spacing saws in a gang-frame, comprising two plates, blocks arranged between said plates, said blocks having their adjacent faces inclined and capable of touching only at their lower ends, slots formed in said blocks, bolts passing through said slots and securing said plates together, a wedge arranged between the said blocks and a set-screw mounted in one of the said plates and adapted to engage the said wedge, substantially as described and for the purpose set forth.

708,451. TROLLEY-WHEEL. WARREN W. ASHALE, Grand Rapids, Mich., assignor to Appliance Company, Limited, Grand Rapids, Mich., a Corporation of Michigan. Filed Jan. 7, 1902. Serial No. 88,807. (No model.)

Claim.—1. The combination of a trolley-wheel, a tubular axle fixed in the wheel and projecting therefrom, and bearings engaging both the interior and exterior surfaces of the tubular axle, substantially as described.

2. The combination of a trolley-wheel, a tubular axle fixed in the wheel and projecting laterally therefrom, a harp having bearings engaging the outer surfaces of the ends of the tubular axle, and a bearing extending through the axle and attached to the respective sides of the harp and rigidly connecting the same, substantially as described.

3. The combination of a trolley-wheel, a tubular axle in the wheel and projecting laterally therefrom, a harp made in two parts and connected at one end by a bolt, and at the other end by a bearing engaging the interior of the tubular axle, and bosses on the harp having bearings engaging the outer surfaces of the tubular axle, substantially as described.

4. The combination of a trolley-wheel, a tubular axle in the wheel and projecting laterally therefrom, a harp having tubular bosses forming external bearings for the axle, screw-threaded openings in the bosses, a screw-threaded tube engaging the threads in the bosses and having lateral openings and also forming an internal bearing for the axle, and a removable plug in said tube, substantially as described.

5. The combination of a trolley-pole, a harp having two parts attached to the pole at one end and having tubular bosses at the other end having bearing-surfaces at their adjacent ends, and reduced and screw-threaded openings at their outer ends, a screw-threaded tube rigidly connecting the bosses and having lateral openings, removable plugs in said tube, a rotative tubular axle internally engaging the tube and externally engaging the bearings in the bosses, and a trolley-wheel mounted on the axle, substantially as described.

708,452. DILATOR. ERNST DEMP, Magdeburg, Germany. Filed July 1, 1902. Serial No. 113,921. (No model.)

Claim.—1. A dilator comprising a tubular casing having exterior grooves providing longitudinal recesses on its outer side, the arms pivoted to the casing so as to seat in the recess within the circumference of the casing and provide a relatively smooth surface, and means for opening and closing the arms.

2. A dilator comprising a corrugated tubular casing having interior and exterior grooves providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, the arms pivoted to the casing so as to seat in the recesses within the circumference of the casing and provide a relatively smooth surface, and means for opening and closing the arms.

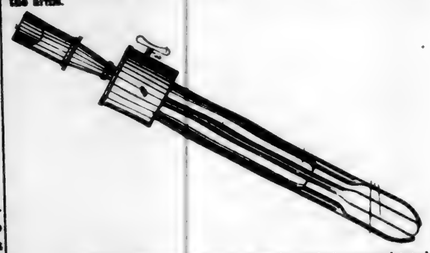

3. A dilator comprising an interiorly and exteriorly grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, the arms pivoted to the casing so as to seat within the recesses and extending beyond the casing and means for opening and closing the arms.

4. A dilator comprising an interiorly and exteriorly grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, the arms pivoted to the casing so as to seat within the recesses, the intermediate sleeve fitted within the casing, the injecting-tube fitted within the intermediate sleeve, and means for opening and closing the arms.

5. A dilator comprising an interiorly and exteriorly grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, the arms, the disk located within the casing having headed pins extending through the casing whereby the arms are pivoted to the casing at their inner ends so as to seat within the recesses, and means for opening and closing the arms.

6. A dilator comprising an interiorly and exteriorly grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, having longitudinal slots at their inner ends, the arms pivoted to the casing so as to seat within the recesses and adapted to enter the longitudinal slots at their inner ends, and means for opening and closing the arms.

7. A dilator comprising a grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, the arms pivoted to the casing within the recesses, having guide-pins at their inner ends, the head to which the casing is secured, the drum located within the head, having a worm-wheel, and an inner plate formed with curved slots which receive the guide-pins, and a shaft mounted in the head having a worm-gear whereby the worm-wheel is oscillated to operate the drum which in turn rotates the inner plate thereof for opening and closing the arms.

8. A dilator comprising a grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, the arms pivoted to the casing within the recesses, and having guide-pins at their inner ends, the head to which the casing is secured, having an inner plate formed with radial guide-slots through which the guide-pins project, the drum, located within the head, having a worm-wheel, and an inner plate formed with curved slots which receive the guide-pins, and a shaft mounted in the head having a worm-gear whereby the worm-wheel is oscillated to operate the drum which in turn rotates the inner plate thereof for opening and closing the arms.

9. A dilator comprising a grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, having longitudinal slots at their inner ends, the arms having guide-pins at their inner ends and seating in the recesses and adapted to enter the longitudinal slots at their inner ends, the disk having headed pins whereby the arms are pivoted to the casing within the recesses at their inner ends, the head to which the casing is secured, having an inner plate formed with radial guide-slots through which the guide-pins project, the drum, located within the head, having a worm-wheel, and an inner plate formed with curved slots which receive the guide-pins, and a shaft mounted in the head having a worm-gear whereby the worm-wheel is oscillated to operate the drum which in turn rotates the inner plate thereof for opening and closing the arms.

10. A dilator comprising a grooved tubular casing providing longitudinal air-passages on its inner side and longitudinal recesses on its outer side, the arms having guide-pins at their inner ends, and seating in the recesses, the disk having headed pins whereby the arms are pivoted to the casing within the recesses, at their inner ends, the head to which the casing is secured, having an outer plate formed with air-openings and an inner plate formed with air-openings and radial guide-slots through which the guide-pins project, the drum having an outer plate formed with air-openings and a worm-wheel, and an inner plate formed with curved slots which receive the guide-pins, and shaft mounted in the head having a worm whereby the worm-wheel is oscillated to operate the drum which in turn rotates the inner plate thereof for opening and closing the arms.

708,453. HYDROCARBON-BURNER. WILLIAM H. BEST, Los Angeles, Cal., assignor of one-half to William Adelbert Cooper, Los Angeles, Cal. Filed Apr. 17, 1901. Serial No. 56,312. (No model.)

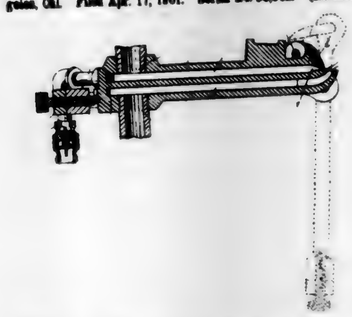

Claim.—1. A hydrocarbon-burner furnished with an oil-outlet with an orifice to discharge an expansive fluid across said outlet approximately in the plane thereof to induce a vacuum therein to draw the oil therethrough and to strike said oil and thoroughly atomize the same; a movable nozzle-piece independent of the oil-outlet to partially close said orifice for effective operation of the burner; and means extending rearwardly from the nozzle for operating said nozzle-piece from the rear.

2. In a hydrocarbon-burner, the combination of a body furnished with two chambers for oil and an expansive fluid, respectively, one of the chambers being furnished with an inlet and with a nozzle for oil and the other chamber being furnished with an inlet and open rearwardly of the oil-outlet; a nozzle-piece to form a closure for the end of said chamber and to leave an opening for the escape of expansive fluid from said chamber; and means extending rearwardly from the nozzle for operating said nozzle-piece.

3. In a hydrocarbon-burner, the combination of a body furnished with two superposed chambers for oil and an expansive fluid respectively, one of the chambers being furnished with an inlet and with a nozzle for oil, and the other chamber being furnished with an inlet and being open rearwardly of the oil-outlet; a nozzle-piece hinged to the body of the burner to form a closure for the end of said chamber and to leave an opening for the escape of expansive fluid from said chamber; and means for holding the nozzle-piece in its closed position.

4. In a hydrocarbon-burner, the combination of a body furnished with two superposed chambers for oil and an expansive fluid respectively, one of the chambers being furnished with an inlet and with a nozzle for oil, and the other chamber being furnished with an inlet and being open rearwardly of the oil-outlet; a nozzle-piece hinged to the body of the burner to form a closure for the end of said chamber and to leave an opening for the escape of expansive fluid from said chamber; and a latch for latching the nozzle-piece in its closed position.

5. In a hydrocarbon-burner, the combination of a body furnished with two superposed chambers for oil and an expansive fluid respectively, one of the chambers being furnished with an inlet and with a nozzle for oil, and the other chamber being furnished with an inlet and being open rearwardly of the oil-outlet; a nozzle-piece hinged to the body of the burner to form a closure for the end of said chamber and to leave an opening for the escape of expansive fluid from said chamber; a latch-piece hinged to the nozzle-piece and extending rearwardly to the rear end of the body; and a set-screw screwed through said latch-piece and engaging the body to draw the nozzle-piece firmly into position.

6. A hydrocarbon-burner comprising a body furnished with superposed chambers for oil and an expansive fluid, respectively, one of the chambers being furnished with an inlet and with a nozzle for oil, and the other chamber being furnished with an inlet and with a nozzle for an expansive fluid, and a burner-body support, integral with the burner-body, the upper face of which lies at an angle converging forwardly toward the floor of the expansive-fluid chamber, substantially as set forth.

7. In a hydrocarbon-burner, the combination of a body furnished with two chambers for oil and an expansive fluid, respectively, one of the chambers being furnished with an inlet and with a nozzle for oil, and the other chamber being furnished with an inlet and open rearwardly of the oil-outlet; a nozzle-piece hinged to the body of the burner to form a closure for the end of said chamber and to leave an opening for the escape of expansive fluid from said chamber; and means for operating the nozzle-piece to open and close the same.

708,454. METHOD OF WATERPROOFING PAPER. CHARLES S. BIRD and JOHN B. HAMCOCK, East Walpole, Mass., assignors to F. W. Bird and Son, a firm composed of Charles S. Bird, East Walpole, Mass. Filed Oct. 22, 1901. Serial No. 79,531. (No specimens.)

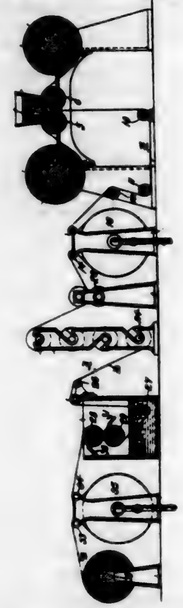

Claim.—The process in the art of manufacturing waterproof paper fabric which consists in feeding two sheets, or webs, of paper between compressing means, simultaneously feeding waterproofing material therebetween, cooling and compressing the compound fabric, subjecting the surfaces of the compound fabric to fluid waterproofing material, and cooling the fabric.

708,455. SHIP'S WINDLASS. CHARLES W. BLAKE, Port Republic, N. J. Filed May 11, 1901. Serial No. 59,782. (No model.)

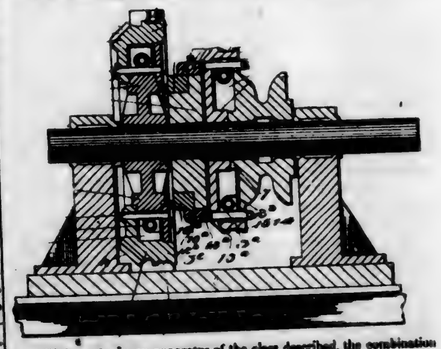

Claim.—1. In an apparatus of the class described, the combination with a shaft, of a compensating load-take up member thereon, and a subsequently-effective member controlled by the shaft and brought into service thereby under excessive strain on the first-named member.

3. In an apparatus of the character described, the combination of a shaft, a compensating load-take-up member, and a driving compensating member operatively connected through the shaft with the first member to drive the latter in one direction and subsequently brought into service by the take-up member under excessive strain, thereon.

3. In an apparatus of the character described, the combination of a shaft, a compensating load-take-up member thereon, and a driving compensating member connected to the shaft for propelling the latter and the load member and adapted to be brought into service through reverse motion of the shaft under strain which exhausts the compensating capacity of the load member.

4. In an apparatus of the character described, the combination of a shaft, a load-take-up member thereon, a compensating driving member on the shaft, and means for limiting the driving member to rotation in one direction.

5. In an apparatus of the character described, the combination of a shaft, a load-take-up member idly mounted thereon, a clutch arranged to make one section of said load member fast with the shaft, and a compensating driving member on the shaft arranged to be brought into service through backward motion of the shaft.

6. In an apparatus of the character described, the combination of a shaft, a two-part load-take-up member having one section made fast to the shaft and said parts adapted to have a limited turning movement relative to one another, and a two-part cushioned driving member, one part of which is fast with the shaft and adapted, on backward movement of the shaft, to automatically bring the cushions into service.

7. In an apparatus of the character described, the combination of a shaft, a two-part cushioned load member thereon, and a two-part power-gear having cushion devices arranged to be brought into service by the backward motion of the shaft.

8. In an apparatus of the character described, the combination of a shaft, a two-part cushioned load member thereon, a two-part power-gear having cushion devices and fitted to said shaft, and means to restrain the power-gear from turning in a backward direction.

9. In an apparatus of the character described, the combination with a shaft, of a compensating member having two sections, one of which is revolubly with the shaft and the other is provided with a ratchet, a pawl engaging said ratchet, and cushion devices between the sections of said member.

10. In an apparatus of the character described, the combination with a shaft, of a compensating member having two sections and intermediate cushion devices between said sections, a clutch for making one section fast with the shaft, a brake-surface on one section of the member, and a movable brake element in cooperative relation to the brake-surface and adapted to control the rotation of the member when unattached from the shaft.

11. The combination with a shaft, of a wildcat or chain-wheel comprising a member loose on the shaft and provided on one side with a series of lugs or abutments and on its other side with a laterally-extending coupling-section, and a companion member also idly fitted to the shaft and provided with lugs or abutments disposed in opposing relation to the corresponding lugs on the first-named member, cushion devices between the opposing lugs of the two members, a clutch-head fast with the shaft, a series of locking-dogs slidably mounted in the clutch-head and arranged for engagement with the coupling-section of one shaft member, and a cam-ring carried by the clutch-head and engaging with said locking-dogs.

12. The combination with a shaft, of a wildcat or chain-wheel having companion members both fitted loosely on said shaft, said members being provided on their opposing sides or faces with lugs or abutments which are projected laterally into opposing relation, a series of cushion-springs each fitted between two of the faces of a pair of lugs in the respective members to cushion the relative movement thereof when the wildcat turns in one direction, a series of other cushion devices each fitted between other opposing faces of the pair of abutments of the respective members to cushion the relative movement thereof when the wildcat turns in the opposite direction, and means for making one member of the wildcat fast with the shaft.

13. In apparatus of the character described, the combination of a driven shaft, a wildcat or wheel adapted to receive the strain or strain of a chain or hawser and comprising sections movable one within the plane of the other and springs arranged between said sections, and a clutch or coupling comprising a disk fixed or keyed to said shaft, a cam-ring carried by said disk, and lugs or dogs actuated by said cam-ring and carried by said disk and engaging said wildcat or wheel, substantially as set forth.

14. A wildcat loosely supported upon a driven shaft, and having a lateral coupling-section provided with internal abutments and an independent, movable coupling-section connected to said shaft fit against rotation and having counterpart abutments yieldingly connected to the aforesaid abutments, and a movable ring mounted upon one of said sections and having a spiral peripheral rib and a dog engaging said rib and the other one of said sections, substantially as set forth.

15. In apparatus of the character described, the combination of a driven shaft and a wildcat or wheel adapted to receive thereon the strain or strain of a chain or hawser, and comprising sections or parts movable one with the other and springs arranged between said sections, and a locking pin or key engaging sockets or openings in the sections of said wildcat to couple or connect up said sections, substantially as set forth.

16. A wildcat loosely supported upon a driven shaft, and comprising yieldingly-connected-together sections, a power-gear fixed upon said shaft and comprising yieldingly-connected-together sections, and a coupling device for effecting connection between said wildcat-sections and said shaft, substantially as set forth.

708,456. PROCESS OF MAKING CELLULOSE ACETATE. RAHU W. BOSSEN, Boston, Mass. Filed June 25, 1901. Serial No. 65,987. (No specimens.)

Claim.—1. The process of preparing cellulose esters, which consists in removing the alkali metal of the viscose with formation of a haloid salt in presence of an organic acid radical.

2. The process of preparing cellulose acetate, which consists in removing the alkali metal of the viscose with formation of a haloid salt in presence of the radical of a fatty acid.

3. The process of preparing cellulose acetate which consists in removing the alkali metal from viscose with formation of a haloid salt in presence of acetyl.

708,457. PROCESS OF PURIFYING CELLULOSE ESTERS. RAHU W. BOSSEN, Boston, Mass. Filed June 28, 1901. Serial No. 66,605. (No specimens.)

Claim.—1. The method of purifying cellulose acetate, which consists in removing the excess of reagents by treatment with naphtha, substantially as described.

2. The method of purifying cellulose acetate, which consists in dissolving out any excess of acetic anhydride in naphtha, substantially as described.

3. The method of purifying cellulose acetate with recovery of excess of reagents, which consists in washing out the excess of reagents by treatment with naphtha, and recovery of the reagents from the naphtha by fractional distillation, substantially as described.

708,458. SPINNING-HEAD. FRANK A. BREEZE, Forest Mills, Ontario, assignor of one-half to James Wilson, Richmond township, Ontario, Canada. Original application filed Nov. 7, 1900, Serial No. 35,777. Divided and this application filed Jan. 6, 1902. Serial No. 88,679. (No model.)

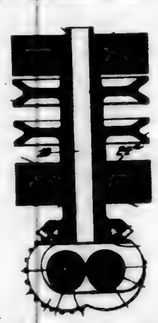

Claim.—1. In a spinning-frame, a spinning-head comprising revoluble members driven in the same direction at different speeds, a gear carried by one of said members, a pair of drawing-rolls mounted in the other member and said rolls provided at their opposite ends respectively with gears which counterpoise the weight of the rolls and both of said gears having intermeshing engagement with the gear on said other member to be driven positively thereby, and tension devices in cooperative relation to the otherwise free ends of said rolls and adapted to normally force the same toward each other; the arrangement of the rolls and the gears mounted thereon being such that centrifugal energy developed by high speed of the spinning-head tends to normally force the rolls together and to exert proper drawing and twisting action on the sliver or roving, as set forth.

2. In a spinning-frame, a twisting and drawing head comprising concentric members revolubly in the same direction and at different speeds, a pair of counting rolls mounted in one member to rotate therewith and each roll provided at one end with a yieldable bearing, said bearings being located at opposite ends of the respective rolls, and gearing connecting both of said rolls operatively with the other member and adapted to positively rotate both rolls on their axes at equal angular velocity, whereby centrifugal force of the rolls developed by high speed of the spinning-head tends to normally force the rolls into cooperative relation, substantially as described.

3. In a spinning-head, a twisting and drawing head comprising concentric members revolubly in the same direction and at different speeds, a slotted foot-block fast with one of said members, a pair of rolls each having one end journaled in a stationary bearing in the foot-block and its other end loosely fitted in a slot of the foot-block, the loosely-mounted portions of said rolls lying at opposite ends of the rolls respectively, springs in cooperative relation to the loosely-mounted ends of said rolls and tending to normally force them together, and gears between the rolls and the other head member for positively rotating both rolls on their axes, as and for the purposes described.

4. In a spinning-frame, a twisting and drawing head comprising concentric members revolubly in the same direction and at different speeds, a foot-block fast with one of said members and provided with plates having slots at their opposite ends, spring-actuated bearings in said slots of the plates, a pair of counting rolls each having one end engaged by said bearings and its other end mounted in an opening of one plate, said spring-actuated bearings tending to move the rolls normally toward each other, a bevel-gear secured to the stationary supported end of each roll, and a driving-gear fast with one head member and engaging with the gears of both rolls to positively drive the latter, substantially as described.

5. In a spinning-frame, a twisting and drawing head comprising a tubular spindle, a sleeve concentric with the spindle and provided with a driving bevel-gear, a foot-block secured fast to the spindle, spring-actuated bearings supported by the foot-block, a pair of counting rolls carried by the foot-block and each roll having one end engaged by one of said bearings and its other end mounted in a stationary bearing, said bearings engaging with opposite ends of the respective rolls and tending to normally hold the latter in cooperative relation, and bevel-gears made fast with the rolls at the ends thereof which are in stationary bearings and said gears intermeshing with the driving-gear to positively propel both of the rolls, substantially as described.

708,459. BOX-WRAPPING MACHINE. EDWARD W. BRYANT, New York, N. Y., assignor of one-half to John J. Carroll, New York, N. Y. Filed Apr. 19, 1900. Serial No. 13,421. (No model.)

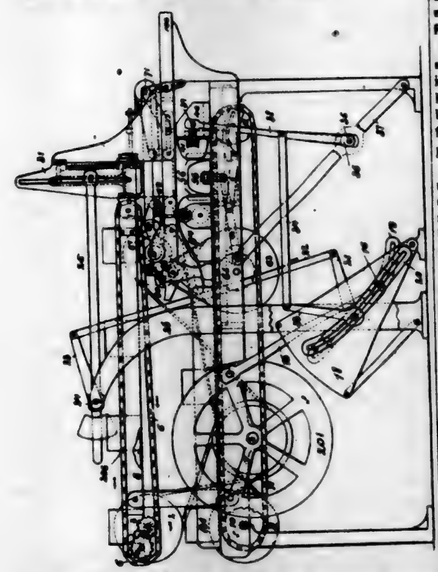

Claim.—1. In a box-wrapping machine the combination of a paper-feed plane having an opening therein, a vertically-moving plunger working through said opening and means for bridging said opening consisting of shears arranged to be opened by the upward movement of said plunger and a bridging device carried on said shears and arranged to be carried across the opening in the paper-feed plane by the opening movement of the shears, substantially as and for the purposes set forth.

2. In a box-wrapping machine the combination of a paper-feed plane having an opening therein and means for bridging such opening to permit the passage of the wrappers thereacross, such means consisting of shears, a sliding device carried by said shears, bridging fingers carried by said device and means for opening and closing said shears, substantially as and for the purposes set forth.

3. In a box-wrapping machine having a paper-feed plane with an opening therein, the combination of shears, 103, pivotally attached to a fixed support, means for opening and closing said shears and a device carried by said shears and arranged to be carried forward by the closing movement thereof and operating in its forward movement to turn down a fold of the box-wrapper and bridge the opening in the paper-feed plane, substantially as and for the purposes set forth.

4. In a box-wrapping machine the combination of a paper-feed plane having an opening therein, means for intermittently bridging said opening, upper and lower paper-feed rollers and bands, and means for raising and lowering said upper rollers, substantially as and for the purposes set forth.

5. In a box-wrapping machine the combination with a paper-feed plane of a set of paper-feed rollers and bands fixed in position in relation thereto and a set of upper feed rollers and bands superimposed thereon and set in a vertically-movable cradle and means for raising and lowering said cradle, substantially as and for the purposes set forth.

6. In a box-wrapping machine the combination of a vertically-movable cradle carrying a set of feed-rollers, means for raising and lowering the same, a paper-feed table and detents arranged to be moved vertically by the movements of said cradle and, when lifted, to project above said table, substantially as and for the purposes set forth.

7. The combination of the rock-bars, 19, 20, having the oppositely-arranged curved slots therein, the fixed plates, 18, 18, having straight slots therein and the pin, 16, carried by the arm, 15, and engaging the said several slots, and feeding and folding mechanism adapted to be operated by the movement of the said rock-bars, substantially as and for the purposes set forth.

8. In a box-wrapping machine the combination of the rock-bars, 19, 20, means for alternately moving said rock-bars, a vertically-moving plunger adapted to be operated by the movement of one of said rock-bars and a horizontally-moving plunger or push-block arranged to be operated by the movement of the other of said rock-bars, and delivery-chains into engagement with which the box is brought by the forward movement of said push-block, substantially as and for the purposes set forth.

9. In a box-wrapping machine the combination of a horizontally-moving plunger or push-block, means for imparting motion thereto, folding-shares carried thereby, vertically-movable folding-shares and box-holding uprights and means, arranged to be operated by the forward-and-back movement of the push-block, for moving said vertically-movable folding-shares, and box-holding uprights, substantially as and for the purposes set forth.

10. In a box-wrapping machine the combination of a horizontally-moving plunger or push-block, means for imparting motion thereto, vertically-movable folding-shares and box-holding uprights and means, arranged to be operated by the forward-and-back movement of the push-block for moving said folding-shares and uprights, substantially as and for the purposes set forth.

11. In a box-wrapping machine the combination of a horizontally-moving plunger or push-block, means for imparting motion thereto, vertically-movable folding-shares and means, arranged to be actuated by the movements of the push-block, for raising and lowering said folding-shares, substantially as and for the purposes set forth.

12. In a box-wrapping machine the combination of a horizontally-moving plunger or push-block, means for imparting motion thereto, vertically-movable uprights arranged when in their elevated position to receive and hold a box in position on a delivery-plane and means actuated by the movements of said push-block for raising and lowering said uprights.

13. In a box-wrapping machine the combination of a paste-tank, a paste-feed roller dipping therein, a paste-distributing roller, in contact with said paste-feed roller, and an eccentrically-mounted paste-applying roller arranged to rotate freely upon its support and to make intermittent contact with said paste-distributing roller, substantially as and for the purposes set forth.

14. In a box-wrapping machine the combination of a paste-distributing roller mounted in pivoted supports, means for limiting the range of movement of said supports and an eccentrically-mounted paste-applying roller arranged to rotate freely upon its support and to make intermittent contact with said paste-distributing roller, substantially as and for the purposes set forth.

15. In a box-wrapping machine a paste-applying roller, consisting of a cylindrical, eccentrically-mounted core and a sleeve surrounding said core and free to rotate thereon, substantially as and for the purposes set forth.

16. In box-wrapping machine the combination of a paste-applying roller comprising an eccentrically-mounted core and a sleeve free to rotate thereon and means for positively rotating said core substantially as and for the purposes set forth.

17. In a box-wrapping machine the combination of a vertically-moving plunger, a paper-feed plane having an opening therein, a discharge-table located below the paper-feed plane and constituting a box-support and means, arranged to be operated by the movements of said plunger for intermittently bridging said opening and at the same time turning down a fold of the box-wrapper substantially as and for the purposes set forth.

18. In a box-wrapping machine the combination of a paper-feed plane having an opening therein, a discharge-table located below the paper-feed plane and constituting a box-support and means arranged to intermittently bridge said opening and at the same time turn down a fold of the box-wrapper, substantially as and for the purposes set forth.

708,430. FLUE CONSTRUCTION FOR STEAM-CARRIAGES.

JAMES H. BULLARD, Springfield, Mass., assignor to Overman Automobile Company, Chicopee, Mass., a Corporation. Filed Nov. 2, 1900. Serial No. 35,250. (No model.)

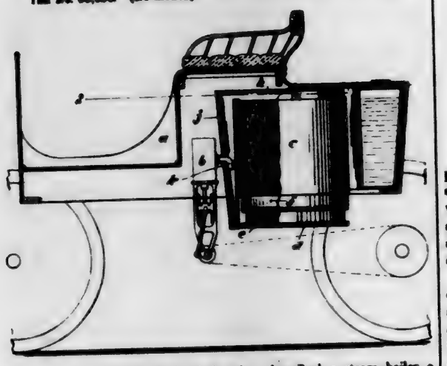

Claim.—1. In a vehicle of the class described, a steam-boiler, a burner for heating it, a hood inclosing the upper end of the boiler for receiving the products of combustion from the burner, said flue having substantially horizontal divergent branches, which are provided with outlets to the atmosphere and are arranged on either side of said hood to the rear of the center of the boiler, said branches together forming a through-passage for disposing of atmospheric currents which might otherwise reverse or check the normal draft of the burner, in combination with a flue downwardly extending from that part of the hood lying at the front of the boiler; and an exhaust-pipe from the engine entering said flue and downwardly turned therein, substantially as described.

2. In a vehicle of the class described, a steam-boiler, a burner for heating it, a hood inclosing the upper end of the boiler for receiving the products of combustion from the burner, a flue for disposing of the products of combustion connected with that portion of the hood at the front end of the boiler, and extending downward to a point beneath the body of the vehicle, and an exhaust-pipe from the engine entering said flue and downwardly turned therein, substantially as described.

708,461. TIDAL MOTOR.

ELMER E. CADE, Skagway, Alaska. Filed Sept. 3, 1901. Serial No. 74,235. (No model.)

Claim.—1. A motor of the nature indicated, comprising a buoyant weight, a casing for guiding said buoyant weight, a pair of drive-weights, a shaft, a pair of reciprocal wheels intermittently operably related to said shaft, belts on said wheels arranged to lift said drive-weights alternately by rise and fall of the buoyant weight, and means for guiding one of the belts carried by the lower end of the guiding means for the buoyant weight.

2. A motor of the nature indicated, comprising a buoyant weight, a casing for guiding said buoyant weight, a pair of drive-weights, a shaft, a pair of wheels loosely mounted on said shaft, ratchet mechanism connecting the wheels and shaft, belts on said wheels arranged to lift said drive-weights alternately by rise and fall of said buoyant weight, a speed-regulating device coöperatively connected with said shaft, and means for guiding one of the belts carried by the lower end of said casing.

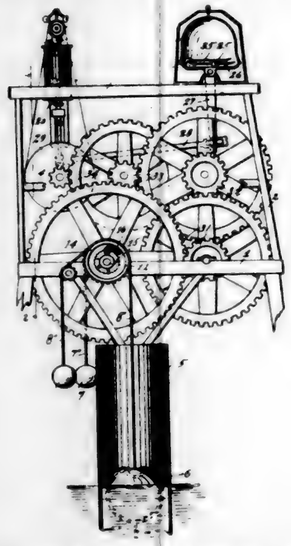

3. A motor of the nature indicated, comprising a buoyant weight, a pair of drive-weights, a shaft, a pair of wheels loosely mounted on said shaft, ratchet mechanism connecting the wheels and shaft, belts on said wheels arranged to lift said drive-weights alternately by rise and fall of said buoyant weight and an escapement coöperatively connected to said shaft comprising an air-cylinder and a governor adapted to regulate the egress of air from the cylinder.

4. A motor of the nature indicated, comprising a buoyant weight, a casing for guiding said buoyant weight, a pair of drive-weights, a shaft, a pair of reciprocally-rotative chain-wheels mounted loosely on said shaft each having a pawl pivotally mounted thereon, ratchets fixed on the shaft in coöperative relations with respective pawls, link belts on said wheels arranged to lift said drive-weights alternately by rise and fall of the buoyant weight and means for guiding one of the link-belts carried by the lower edge of said casing.

5. A motor of the nature indicated, comprising a vertically-reciprocal buoyant weight, a guide-casing therefor, a pair of drive-weights, a shaft journaled above said casing, a pair of reciprocally-rotative chain-wheels mounted loosely on said shaft, a pawl pivotally mounted on each wheel, ratchets fixed on the shaft in coöperative relations with respective pawls, link belts on said wheels each fixed by one end to a respective drive-weight and by the opposite end to the buoyant weight and adapted to raise the drive-weight alternately by rise and fall of the buoyant weight, means connected to the lower edge of the guide-casing for guiding the belt connected to the lower portion of the buoyant weight, and means to regulate the falling speed of the drive-weights.

6. A device of the nature indicated, comprising, a buoyant weight, a vertically-disposed guide-casing therefor, a pair of drive-weights, a drive-shaft journaled above the casing, a pair of reciprocally-rotative chain-wheels mounted loosely on said shaft each having a pawl pivotally mounted thereon, ratchets fixed on said shaft in coöperative relations with respective pawls, link belts on said wheels arranged to lift said drive-weight alternately by rise and fall of its buoyant weight, a pair of guide-wheels carried by the lower end of the guide-casing for guiding one of the link belts, an air-cylinder carrying a piston, a governor related to the ports of egress of said cylinder, and speed-multiplying gearing operably connected to said drive-shaft and piston.

708,462. VEHICLE TO BE USED IN ELECTRIC TRACTION ON RAILWAYS.

GEORGE CAWLEY, Westminster, England. Filed June 3, 1902. Serial No. 110,120. (No model.)

Claim.—1. An electric vehicle, having a supporting-bogie at each end thereof and carrying a boiler, water-tanks above and below the boiler, and fuel-bunkers at one end of the boiler with engines and dynamos on the other side of the fuel-bunkers, substantially as described.

2. An electric vehicle, having a supporting-bogie at each end thereof and carrying a boiler, water-tanks above and below the boiler, and fuel-bunkers at one end of the boiler with engines and dynamos on the other side of the fuel-bunkers, in combination with a cab at each end of the vehicle and passages within the vehicle-body communicating from one part to the next throughout the vehicle, whereby access can be had from one cab, past the boiler and fuel-bunkers, to the engine-room and then to the other cab, substantially as described.

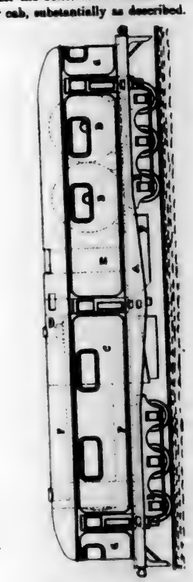

708,468. BRIDGE CONSTRUCTION.

GEORGE M. CHENEY, Indianapolis, Ind. Filed Feb. 24, 1902. Serial No. 96,252. (No model.)

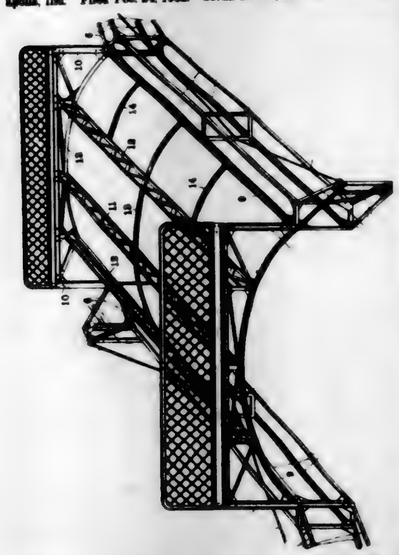

Claim.—1. A combined abutment and wing-walls consisting of a metallic framework approximating the desired form of abutment and attached wing-walls and adapted to contain and be embedded in cement.

2. A combined abutment and wing-walls consisting of a metallic framework approximating the marginal lines thereof, an intermediate bracing-frame forming part of the abutment-frame, and tie-rods extending from said bracing-frame to the ends of said wing-wall frames, the whole adapted to receive and be embedded in cement.

3. In a bridge structure, the combination with the end trusses, of a plurality of beams extending between and connected to the same, and a plurality of struts extending between the several beams parallel with the end trusses and increasing in number from the center of the arch toward each end.

708,464. HAIR-CLIPPER.

GEORGE H. COATES, Worcester, Mass. Filed Jan. 11, 1901. Serial No. 42,935. (No model.)

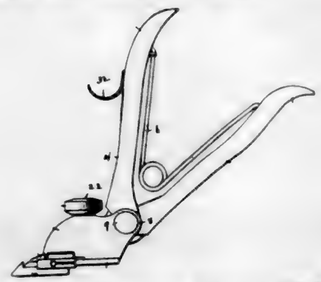

Claim.—1. The combination with the head of a hair-clipper of a pair of lugs to receive the handles, a bolt held by said lugs, a stationary handle removably attached to said head by said bolt and having a projecting prong engaging the head, whereby said handle is held from turning on said bolt, substantially as described.

2. The combination with a pivoted handle and a reciprocating cutting-plate, of a lever intermediate between said plate and said handle, said handle and said lever having coacting surfaces placed obliquely to the axis of said plate and said handle, whereby the rocking motion of said handle is communicated to said lever, substantially as described.

3. The combination with the movable plate of a hair-clipper of a lever provided with spiral teeth, a pivoted handle having spiral teeth engaging the teeth on said lever, substantially as described.

4. The combination with the stationary cutting-plate of a hair-clipper, of a comb-plate provided at its ends with upturned clasps adapted to embrace the ends of the stationary cutting-plate, said clasps having flanges 25 overlapping the cutting-plate and having slits 26 and openings 27 forming elastic jaws, substantially as described.

708,465. TICKET-PUNCH.

HERBERT COTTRELL, Newark, N. J., assignor to L. A. Sayre & Co., Newark, N. J., a Firm. Filed Jan. 2, 1902. Serial No. 88,110. (No model.)

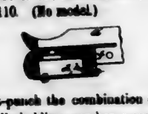

Claim.—In a ticket-punch the combination of a receptacle for the clippings recessed in the die-holding member, a cover upon the lower side thereof adapted to slide longitudinally in guides; a stop-screw inserted in the said cover to serve as a push-knob to open and close the same; and a latch to fasten the said cover in a closed position, substantially as described.

708,466. AXLE.

WILLIAM H. DAVIS, Beaver Meadow, Ala. Filed Nov. 20, 1901. Serial No. 83,004. (No model.)

Claim.—1. An axle comprising a central pipe, internally-threaded collars engaged with the ends of the pipe and having flat bearing-faces at their outer ends, and spindles having their inner ends threaded and adjustably engaged with the threads of the collars for projection therefrom to different extents, said spindles being without surface projections, to permit of direct contact of the hub-boxes with the end faces of the collars, and means for holding the spindles at different points of their adjustments.

2. An axle comprising a central member having terminal, internally-threaded collars having flat bearing end faces, and spindles having their inner ends threaded and adjustably engaged with the threads of the collars to project to different extents from the collars, said spindles being without surface projections, to permit direct contact of the hub-boxes with the end faces of the collars, and means for holding the spindles at different points of their adjustments.

708,466.

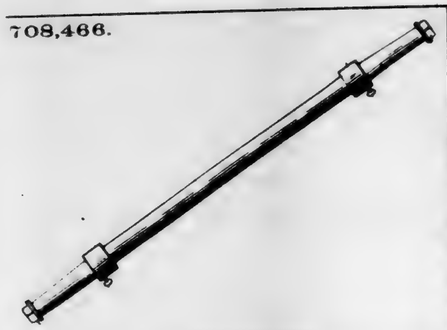

708,467. STITCHED SEAM. GEORGE H. DUROUD, Bridgeport, Conn., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed July 13, 1901. Serial No. 68,173. (No model.)

Claim.—A stitched seam, comprising a series of stitches and a fabric, such as a glove, in which said stitches are made, said seam consisting of superposed interlocked triplets of thread of equal length.

708,468. WINDOW-SHADE HOLDER. JAMES H. DONALDSON, Chicago, Ill. Filed Aug. 5, 1901. Serial No. 70,891. (No model.)

Claim.—1. In a curtain-holder, the combination with a tubular stick of a non-rotative extension-rod therein, means for holding the extension-rod yieldingly in an adjusted position, a shoe, an adjustable adjusting-bar forming the connection between the shoe and the extension-rod and adapted normally to be engaged in the end of the stick, but withdrawable therefrom for purposes of adjustment.

2. In a curtain-holder, the combination with a stick having a tubular end, of a non-rotative longitudinally-movable extension-rod therein, positive bearings within the end of the stick adjacent to the ends of the extension-rod, a spring engaging the extension-rod between said bearings and adapted to return the rod to its adjusted position when moved outwardly or inwardly of the stick, a shoe, an adjusting-bar rotatively engaged on the shoe and having screw-threaded engagement with the extension-rod, and held from rotation by the end of the stick but withdrawable therefrom for purposes of adjustment.

3. In combination, a curtain-stick having a tubular end, of an extension-rod movable longitudinally in said stick and provided at its inner end with a shoulder and at its outer end with a nut and adapted to slide through fixed bearings within the stick, a spring secured on the extension-rod between said bearings and acting to return the extension-rod to its adjusted position when moved outwardly or inwardly therefrom, a shoe, an angular adjusting-bar rotatively engaged thereon and engaging in a complemental aperture at the end of the stick and having screw-threaded engagement with the extension-rod, said adjusting-bar when withdrawn from the end of the stick being adjustable longitudinally of the rod.

4. In a curtain-holder the combination with a tubular stick of a casing therein, a non-rotative extension-rod therein, a spring on said extension-rod, a shoe, an adjustable adjusting-bar forming the connection between the shoe and the extension-rod and adapted to be engaged in and withdrawable from the outer end of the casing.

5. In a curtain-holder the combination with a tubular stick of a casing secured in the end thereof, a non-rotative extension-rod adapted for longitudinal movement within the casing, a friction-shoe adjustably connected therewith and movable longitudinally of the stick, stops adapted to limit the movement of the extension-rod and a spring engaged on the extension-rod and adapted to force the said rod outwardly as a brake.

6. In a curtain-holder the combination with a tubular stick adapted for attachment to a curtain of a casing, an extension-rod longitudinally movable therein, a spring within the casing controlling the movements of the extension-rod and acting to force the same outwardly therefrom, a shoe, a bar forming an adjustable connection between the shoe and extension-rod and a shank on said bar adapted to engage in or be drawn from a complemental aperture in the end of the casing.

7. In a curtain-holder the combination with a tubular stick of a casing, an end-threaded non-rotative extension-rod longitudinally movable within the casing, a spiral spring adapted to the rod, a nut and washer adjustable upon the rod and adapted to receive the pressure of the outer end of the spring and to permit adjustment of the tension of the same, a shoe, an adjusting-bar rotatively attached thereto and provided with a threaded aperture to receive the end of the extension-rod and a milled disk on said adjusting-bar.

8. In a curtain-holder the combination with a tubular stick of a tubular casing therein, an end-threaded non-rotative extension-rod longitudinally movable in the stick, a slotted cap engaged on the inner end of the casing through which the inner flattened end of the extension-rod passes, a washer upon the rod adapted to bear against the cap, a nut and washer adjustable upon rod, a spring upon the rod acting to press against the washer, an adjusting-bar adjustably secured upon the outer end of the extension-rod and a shoe carried upon the outer end of the adjusting-bar, substantially as described.

9. In a curtain-holder the combination with a tubular stick of a casing therein, an extension-rod, and a spring secured in said casing, an adjusting-bar adjustably secured upon the outer end of the extension-rod and having a journal at the outer end thereof provided with an annular groove therein, a shoe having a hub to fit the journal and a tangential pin passing through the hub into and across the groove in the journal of the extension-bar, substantially as described.

10. The combination with a tubular stick of a spring-controlled, non-rotative extension-rod therein, bearings in the stick acting to limit the movements of said rod, a shoe, and an adjusting-bar engaged thereon and having screw-threaded engagement with the extension-rod and normally engaged in and held from rotation by the stick and adapted to be withdrawn from the stick against the tension of the spring for purposes of adjustment.

708,469. STROKE-REGULATING MECHANISM FOR GLASS-PRESSERS, &c. PHILLIP REBLIN, Moundsville, W. Va., assignor of one-half to George Lafayette Caldwell, Wellsburg, W. Va. Original application filed Aug. 27, 1901, Serial No. 73,456. Divided and this application filed Dec. 30, 1901. Serial No. 87,060. (No model.)

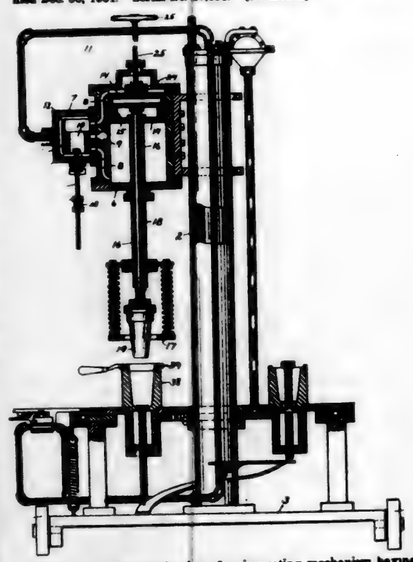

Claim.—1. The combination of reciprocating mechanism having a piston-chamber and means for actuating said mechanism, a piston carried by the reciprocating mechanism and movable in the chamber thereof, means for supplying fluid under pressure to the piston-chamber for actuating said piston, and a plunger connected to the piston.

2. The combination of a cylinder, a recessed piston therein and open thereto, an auxiliary piston having limited movement in the recessed piston, and a plunger connected to the auxiliary piston.

3. The combination of a cylinder, a hollow main piston therein having valved communication therewith, an auxiliary piston having limited movement in the main piston, and a plunger connected to the auxiliary piston.

4. The combination of a cylinder, a hollow main piston having a port communicating with the cylinder, a valve for said port, valve-actuating means movable with the piston and projecting from the cylinder, an auxiliary piston movable in and with the main piston, and a plunger connected to the auxiliary piston.

5. The combination of a cylinder, a hollow main piston therein having a valve-seat in its exterior communicating with the piston-cavity, a valve adjustable toward and from the seat, a stem projecting from the valve through the cylinder, an auxiliary piston movable in and with the main piston, and a plunger connected with the auxiliary piston.

6. The combination of a plunger, power-cylinder, a piston operating therein to reciprocate the plunger, and means for checking the exhaust from the inactive side of the piston during the first portion of the pressing stroke and accelerating the same during the latter portion of the stroke.

7. The combination of a plunger, a power-cylinder, a piston operating therein to reciprocate the plunger, a valved main exhaust for the cylinder and a contracted permanently open exhaust therefor, and means operating before the completion of the stroke to open the main exhaust.

8. The combination of a plunger, a power-cylinder, a piston operating therein to reciprocate the plunger, a pipe extending from the cylinder-exhaust formed with a port, a spring-closed valve slidable on the pipe, and an operative connection between the piston and said valve.

9. The combination of exhaust-pipe 30 having a valve-controlled main exhaust 31 and auxiliary contracted openings 35, and rotatable ring 36 covering openings 35 and formed with openings 36 adapted to register therewith.

708,470. TILE. ALFRED L. FLOOD, Chicago, Ill., assignor of one-half to William L. Weber, Chicago, Ill. Filed Feb. 28, 1902. Serial No. 95,647. (No model.)

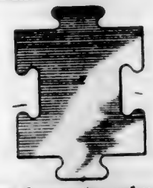

Claim.—1. A wall, floor or other surface, made up of a series of separate, uniform and interchangeable tiles, having marginal dovetailed recesses and corresponding interlocking projections, one in the middle of each side and alternating around the margin, and both extending through the entire tile thickness, so that they can be locked together to form a substantially continuous surface of pieces held together against lateral strain by such interlocking marginal parts.

2. A wall, floor or other surface, made up of a series of separate, uniform and interchangeable tiles, having marginal dovetailed recesses and corresponding interlocking projections, one in the middle of each side and alternating around the margin, and both extending through the entire tile thickness, so that they can be locked together to form a substantially continuous surface of pieces held together against lateral strain by such interlocking marginal parts, the tiles being four-sided, with two recesses on opposite margins and two projections on opposite margins.

708,471. TILE. ALFRED L. FLOOD, Chicago, Ill., assignor of one-half to William L. Weber, Chicago, Ill. Filed Feb. 28, 1902. Serial No. 95,648. (No model.)

Claim.—1. A floor-covering consisting of a series of flat tiles with edges at right angles with the floor-surface and provided with interlocking marginal projections and recesses to prevent them from separating one from another in response to lateral strain and supplementary projections from the under side of some of said tiles and a floor to receive the extended lower surfaces of such tiles said floor provided with recesses to receive such supplementary projections, the parts related so that the pressure exerted by the expansion of the tiles which are not provided with the supplementary projections is exerted in a plane parallel with the surface of the floor-covering.

2. The combination of a floor having a series of recesses therein with a series of flat tiles which rest upon such floor some of them having projections to be received into such recesses, said flat tiles provided with edge faces at right angles to the floor-surface and provided with interlocking marginal projections and recesses to prevent them from separating one from another in response to lateral strain, the parts arranged so that the lateral strain due to the expansion of the tiles which have no supplementary projections is exerted in a line parallel with the surface of the floor-covering and the under surface of the tiles about their edges resting firmly upon the floor-body, the supplementary projections being dovetailed and filling material in the space within the recesses about the dovetailed projections.

708,472. TILE. ALFRED L. FLOOD, Chicago, Ill., assignor of one-half to William L. Weber, Chicago, Ill. Filed Mar. 3, 1902. Serial No. 96,200. (No model.)

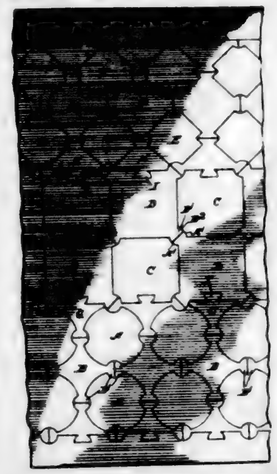

Claim.—1. A floor, wall or other surface composed of a series of tiles of different shapes or forms, one form consisting of a circular tile cut away at various points to provide circular recesses, the other having circular engaging faces provided with interlocking projections adapted to fit such circular recesses.

2. The combination with a series of circular tiles of a binding or interlocking tile adapted to be interposed between the circular tiles and provided with interlocking projections which engage such circular tiles.

3. The combination of a series of surface-forming flat tiles with interlocking edges to form when thus interlocked an extended flat surface, such interlock consisting of a curved recess in the edge of one of such tiles and curved projections on adjacent tiles, two of such projections lying in engagement with each of said recesses.

4. A floor, wall or other surface made up of a series of dissimilar tiles, provided with curved recesses of greater width at the mouth and curved interlocking projections, the curved projections adapted to fit into the curved recesses, substantially as described.

5. A floor, wall or other surface made up of a series of tiles of various shapes, said tiles having their outer boundary interrupted by projections and recesses, the faces of the projections adapted to engage the faces of the recesses, such engaging faces being arcs of circles and such recesses of greatest width at their mouths.

708,478. TRACK-SANDER. WILLIAM C. GARDNER, Altoona, Pa. Filed Apr. 22, 1902. Serial No. 104,301. (No model.)

Claim.—1. A track-sander, comprising a sand-receiving chamber surrounded by a steam-pocket, and a sand-discharging device arranged within the chamber.

2. A track-sander, comprising a sand-receiving chamber surrounded by a steam-pocket, a sand-discharging device arranged within the chamber, and jet-nozzles carried by the discharge device.

3. A track-sander, comprising a sand-receiving chamber surrounded by a steam-pocket, said chamber being provided with outlets, a sand-discharging device arranged within the chamber, and provided with discharge-openings alined with the outlets, and jet-nozzles carried by the discharge-openings.

4. A track-sander, comprising a chamber surrounded by a steam-pocket, means for feeding sand thereto, a partition arranged within the chamber and provided with passages having opposite discharge-openings, jet-nozzles arranged in the discharge-openings, means for feeding steam to the passages to discharge the sand, means for supplying steam to the pockets, and an exhaust adapted to control the supply of steam in the pockets.

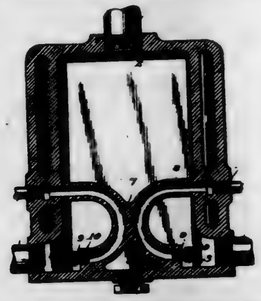

5. A track-sander, comprising a sand-receiving chamber surrounded by a steam-pocket, and a sand-discharging device arranged within the chamber, and formed integral therewith.

6. A track-sander, comprising a sand-receiving chamber surrounded by a steam-pocket, and provided with outlets, a partition within the chamber and formed integral therewith, said partition being provided with passages having oppositely-located inlet and discharge openings.

708,474. WIRE-STRETCHER. FREDERIC C. GARTON, Schoolhouse, W. Va. Filed Nov. 2, 1901. Serial No. 80,981. (No model.)

Claim.—As a new article of manufacture, a combined wire stretcher and holder comprising a bar having a curved split claw at its forward end, said bar being curved or bowed substantially in the form of a semi-circle adjacent to the forward end, a hook arranged upon the bar between the claw and curved portion, and a shank carrying a plurality of hooks arranged upon opposite sides of the curved portion and also upon the opposite side of the bar, substantially as described.

708,475. ROLLER-BEARING. ALBERT E. HENDERSON, Toronto, Canada. Filed Apr. 10, 1902. Serial No. 102,236. (No model.)

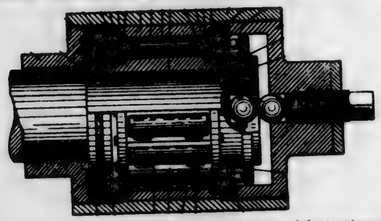

Claim.—1. In a roller-bearing the combination of the bearing-rollers, retaining-rings for the bearing-rollers, tie-rods having apertures therein provided with median end grooves, and spacers contained in the apertured tie-rods held from contact therewith by the median end grooves, substantially as specified.

2. In a roller-bearing the combination of the bearing-rollers, retaining-rings for the bearing-rollers, tie-rods having apertures therein provided with median end grooves, and spacing-rollers contained in the apertured tie-rods having tapering pins journaled in the median end grooves, substantially as specified.

3. In a roller-bearing the combination of the bearing-rollers having centrally-located conical recesses in the ends thereof terminating in horizontally-disposed bores, retaining-rings fitted with tapering pins having conical points journaled in the conical recesses of the bearing-rollers, apertured tie-rods for holding the retaining-rings relatively to the bearing-rollers and spacing-rollers contained in the apertured tie-rods, substantially as specified.

4. In a roller-bearing the combination of the bearing-rollers, retaining-rings for the bearing-rollers, tie-rods for holding the retaining-rings together and independently-rotatable abutting rings to contact the ends of the bearing-rollers, substantially as specified.

5. In a roller-bearing the combination of the journal a sleeve therefor, bearing-rollers encircling the sleeve, retaining-rings for the bearing-rollers, tie-rods for holding the retaining-rings together, a sleeve inclosing the retaining-rings, independently-rotatable abutting rings fitted to the sleeves engaging the ends of the bearing-rollers, and adjusting-nuts fitted on the sleeve to prevent the longitudinal displacement of the rotatable abutting rings, substantially as specified.

6. In a roller-bearing the combination of the bearing-rollers, sectional retaining-rings for the bearing-rollers, the separable parts of which have overlapping joints, and a series of tie-rods interposed between the bearing-rollers and passing through the overlapping joints of the retaining-rings to hold the sections of the retaining-rings relatively to each other, and to the bearing-rollers, said tie-rods being provided with apertures therethrough, and antifriction devices mounted in said apertures and adapted to contact the bearing-rollers.

708,476. FENDER FOR BOATS. WILLIAM H. HIGGINS, Boston, Mass. Filed Jan. 27, 1900. Serial No. 2,972. (No model.)

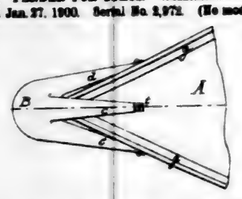

Claim.—1. A fender for boats consisting of two flexible triangular members sewed together around their edges, stuffing between them, means for securing the prongs to the boat, and a web for attaching the center of the device to the boat, as and for the purpose set forth.

2. A fender for boats consisting of a flexible body portion, three arms or prongs of equal length, means for securing the ends of said prongs to the sides and top of the boat respectively, a lug or tongue attached to the center of the body portion and connected with the nose of the boat, and a yielding stuffing material thicker in the body of said covering than in said prongs, as and for the purpose set forth.

3. A fender for boats, consisting of a flexible body portion, a plurality of prongs of equal length, a web for securing the body portion to the boat, means for securing the ends of said prongs to the sides and top of the boat respectively, and a yielding stuffing material thicker in the body of said covering than in said prongs, as and for the purpose set forth.

4. As a new article of manufacture, the head or fender in tripod form composed of curled hair and rawhide and provided with the lug or tongue to be attached to the stem of boat, substantially as described.

708,477. EMERGENCY-BRAKE. WILLIAM W. HOPKINS, St. Louis, Mo., assignor of one-half to Wilson P. H. Turner, Normandy, Mo. Filed July 18, 1901. Serial No. 68,793. (No model.)

Claim.—1. In a car-brake mechanism, suitable plates supported adjacent to the rails, and means for moving said plates onto the rails to form treads for the flanges of the car-wheels where the rails are provided with flanges, and for the tread-surfaces where there are no flanges on the rails, substantially as specified.

2. The improved car-brake, consisting of the usual brake mechanism, means for lowering a portion of the same out of its normal position, and curved plates carried by the brake mechanism and adapted to rest upon the rails when the brake mechanism is lowered to pass entirely under and thereby form treads for the car-wheels, substantially as specified.

3. The improved car-brake mechanism, consisting of suitable brake-shoes, means for upholding them in normal position, means whereby the brake-shoes may be lowered, and tread-plates carried by said brake-shoes and adapted to rest upon the flanges of the rails to form treads for the flanges of the wheels and thereby entirely support the wheels above the rails, substantially as specified.

4. The improved car-brake mechanism, consisting of suitable brake-shoes, means for supporting the brake-shoes in normal position, curved tread-plates carried by said brake-shoes, means for lowering the brake-shoes so that the said plates will rest upon the rails and form treads or runners for the wheels, and suitable connections between the brake-shoes and the car-body so that the weight of the brake-shoes and the resistance

of the plates under the wheels will be supported by the car-body, substantially as specified.

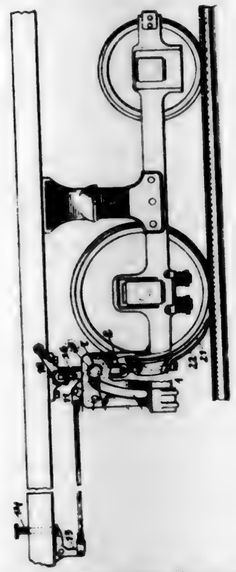

5. In a car-brake mechanism, suitable plates supported near the flanges of the rails, and means for moving said plates in position to form treads for the flanges of the wheels, so that the entire weight of the car will be upon the flanges of the wheels, as and for the purpose set forth.

6. In a car-brake mechanism suitable plates supported above the flanges and heads of the rails, and means for lowering said plates into position upon the said flanges and heads to form treads for the flanges of the wheels where the rails are provided with flanges and for the tread-surfaces where there are no flanges on the rails.

708,478. ELECTRICAL POSITION-INDICATOR. ALBERT S. HUBBARD, Greenwich, Conn. Filed Feb. 20, 1902. Serial No. 94,913. (No model.)

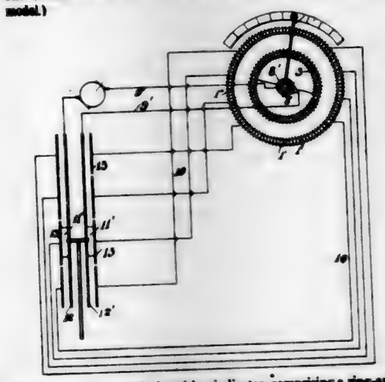

Claim.—1. An electrical position-indicator, comprising a ring-armature provided with a winding and with energizing-circuit connections, an index device connected to said armature, an annular field-magnet with a ring-winding, and a switch device connected to the object whose position is to be indicated and having a plurality of contacts electrically connected to different parts of the said winding and to an energizing-circuit.

2. An electrical position-indicator, comprising a ring-armature provided with a winding and with energizing-circuit connections, an index device connected to said armature, an annular field-magnet with a ring-winding, and a switch device connected to the object whose position is to be indicated and having a plurality of contacts electrically connected to different parts of the said winding and to an energizing-circuit.

3. An electrical position-indicator comprising an annular field-magnet provided with a series of coil-sections, a ring-armature having energizing-circuit connections, windings on said armature to divide the current around and polarize the same, said armature mounted to move in response to polarization of the field-magnet, an index controlled by the movements of said armature, a switch device having contact-pieces connected to the object whose position is to be indicated, and said contact-pieces connected with the corresponding coil-sections of the field-magnet.

4. An electrical position-indicator comprising an annular field-magnet provided with a series of coil-sections, a ring-armature having energizing-circuit connections, windings on said armature to divide the current around and polarize the same, said armature mounted to move in response to polarization of the field-magnet, an index controlled by the movements of said armature, a switch device having contact-pieces connected to the object whose position is to be indicated, said contact-pieces connected with the corresponding coil-sections of the field-magnet, said switch device being of such construction as to pass from one contact-piece to the adjacent contact-piece without breaking circuit.

5. An electrical position-indicator comprising an annular field-magnet provided with a series of coil-sections, a ring-armature having energizing-circuit connections, windings on said armature to divide the current around and polarize the same, said armature mounted to move in response to polarization of the field-magnet, an index controlled by the movements of said armature, a switch device having contact-pieces connected to the object whose position is to be indicated, said contact-pieces connected with the corresponding coil-sections of the field-magnet, the interval between adjacent contact-pieces being so small with relation to the switch device that said switch device will maintain contact with adjacent contact devices in passing from one to the other and bring in circuit corresponding adjacent coil-sections on the field-magnet whereby an intermediate position of the object whose position is to be indicated will be shown.

708,479. CROSS-INDEX. ROBERT L. HUNTER, Cleveland, Ohio. Filed Jan. 10, 1901. Serial No. 42,749. (No model.)

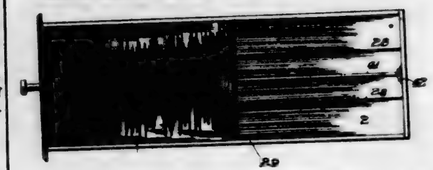

Claim.—1. In a device of the class described, the combination of a plurality of index-cards and means for holding or retaining said cards in various transverse positions relatively to each other, substantially as described.

2. In a device of the class described, the combination of a guide or guides and a plurality of index-cards, each of said cards being provided with a plurality of means for engaging said guide or guides whereby said cards may be held in various transverse positions, substantially as described.

3. In a device of the class described, the combination of a guide or guides and a plurality of index-cards each card being provided with a plurality of means for loosely engaging said guide or guides whereby said cards may be held in various transverse positions, while free to move in a longitudinal direction, substantially as described.

4. In a device of the class described, the combination of a plurality of index-cards provided with slots upon their edges, means for holding or retaining said cards in various transverse positions relatively to each other, comprising a guide or guides for engaging the slots of said cards, substantially as described.

5. In a device of the class described, the combination of a plurality of index-cards provided with slots, means for engaging said slots and holding or retaining said cards from transverse movement relatively to each other while permitting the free longitudinal movement of the same, substantially as described.

6. In a device of the class described, the combination with the box or tray of a runner 28 provided in the bottom thereof and cards provided with a plurality of slots 40 and held in desired transverse relations by said runner, substantially as described.

7. In a device of the class described, the combination with the box or tray of the parallel runners 28 provided in the bottom thereof and a plurality of cards each having two sets of vertical slots 40 to fit said runners, substantially as described.

8. In a device of the class described, the combination with the box

or tray of the parallel runners 28 provided in the bottom thereof and a plurality of cards each having two sets of vertical slots 40 to fit said runners, said cards also having slots 43 and a locking-rod extending through said slots, substantially as described.

9. In a device of the class described, the combination with the box or tray of the runners 28 in the bottom thereof, cards adapted to be held in various transverse positions by said runners and locking means common to said cards, substantially as described.

10. A cross-index card provided with a plurality of vertical slots 40, with substantially parallel sides, as and for the purpose specified.

11. A cross-index card provided with a plurality of slots 40 with substantially parallel sides and having a middle locking-bar aperture, as and for the purpose specified.

708,480. **FABRIC-SEWING MACHINE.** JOHN W. HYATT, Newark, N. J. Filed Jan. 23, 1901. Renewed Jan. 11, 1902. Serial No. 89,340. (No model.)

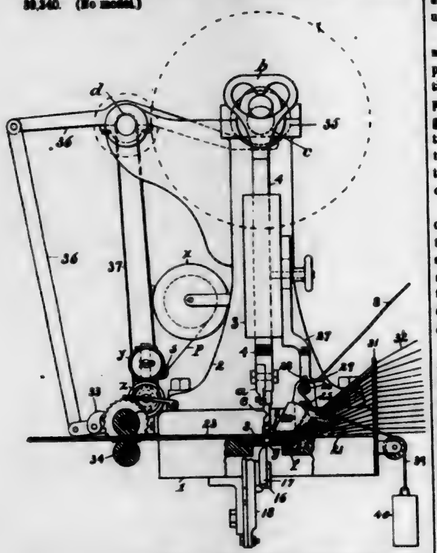

Claim.—1. In a multiplex sewing-machine having a reciprocating needle-bar, a row of eye-pointed needles carried thereby, and a needle-bed having an open slot for the passage of the needles, the combination, with such bed and needles, of a thread-carrying looper movable longitudinally next the needles and having an eye in the point and a longitudinal notch at the side in the rear of the eye, a guide A at the base of the looper with a guide *v* and means for supplying a lock-thread to the guide *v* and the eye of the looper, means for reciprocating the looper and carrying the eye and the notch beyond the end of the row of needles, a shuttle-guide mounted vertically at the end of the row of needles, and a shuttle with means for reciprocating it vertically through the notch of the looper to engage the loop of the lock-thread, substantially as herein set forth.

2. A multiplex sewing-machine having a needle-bar with means for reciprocating it vertically, a needle-holder with means for reciprocating it horizontally upon the needle-bar, and a row of eye-pointed needles carried by such holder, a needle-bed with longitudinal slot and a thread-carrying looper with means for reciprocating it next the needles, the looper having an eye in the point with a lock-thread carried thereby, and a shuttle with means for reciprocating it through the loop of such lock-thread.

3. In a multiplex sewing-machine, the combination, with the needle-bar and a row of flat eye-pointed needles of much greater breadth than thickness transversely to the row, and having each an eye extended transversely to the row and an open notch open its front side above the eye, of a needle-bed having an open slot for the passage of the needles, means for reciprocating the needle-bar to carry the notches beneath the fabric and maintain the tension upon the needle-threads before the said notches, and a looper supplied with an independent lock-thread reciprocated in the series of notches between the needles and the needle-threads under tension, to engage the loops formed by the said needles, substantially as herein set forth.

4. In a multiplex sewing-machine, the combination, with the needle-bar, and the row of flat eye-pointed needles of much greater breadth than thickness and having each an eye extended transversely to the row, and an open notch open its front side above the eye, of a needle-bed having an open slot for the passage of the needles, means for reciprocating the needle-bar to carry the notches beneath the fabric and maintain the tension of the needle-threads, and a looper having an eye in the point and a lock-thread carried thereby, with means for reciprocating such looper in the series of notches, between the needles and the needle-threads under tension and carrying the loop of the lock-thread beyond the end of the row, and means for securing the successive loops of the lock-threads together.

5. In a multiplex sewing-machine having a reciprocating needle-bar, a row of eye-pointed needles, and a needle-bed beneath the needle-bar, the combination, with such bed and needles, of a thread-carrying looper having an eye in the point, means for reciprocating the same next the needles, means for engaging the loop formed by such looper, means for continuously feeding the lock-thread to such looper, and a spring take-up between the feeding device and the looper for maintaining the tension upon the lock-thread.

6. In a multiplex sewing-machine having a rotary driving-shaft, a needle-bar reciprocated by the same, a needle-carrier with row of eye-pointed needles, and a needle-bed beneath the needle-bar, the combination, with such parts, of a thread-carrying looper having an eye in the point, means for reciprocating the same next the needles, means for engaging the loop formed by such looper, lock-thread rolls rotated continuously by the driving-shaft, a guide for directing the lock-thread through the same, and a spring having eye applied to the lock-thread between the feed-rolls and the looper, for maintaining the tension upon such thread during the reciprocation of the looper.

7. In a multiplex sewing-machine, the combination, with means for operating a row of eye-pointed needles and locking the loops of the threads carried thereby, of a needle-bed having an open slot for the passage of the row of needles, the perforated guide 31 at one side of the needle-bed, and the feed-rolls 34 at the opposite side, and a presser-foot for pressing the warp-threads into a layer adjacent to the slot in the needle-bed, whereby a series of warp-threads may be drawn across the needle-bed under tension transversely to the row of eye-pointed needles.

8. In a multiplex sewing-machine, the combination, with means for operating a row of eye-pointed needles and locking the loops of the threads carried thereby, of a needle-bed, means for guiding a series of warp-threads in a flat layer across the surface of the needle-bed and means for vibrating the needle-carrier, to form zigzag stitches and connect such warp-threads together laterally.

9. In a multiplex sewing-machine, the combination, with a reciprocating needle-bar and a row of eye-pointed needles carried thereby, and a needle-bed and means for locking the loops formed by the needles, of means for guiding a series of warp-threads in a flat layer across the surface of the needle-bed, and means for vibrating the needle-carrier to form zigzag stitches to lock such warp-threads together laterally.

10. In a multiplex sewing-machine, the combination, with a needle-bed and a transverse slot across the same, and means for locking the loops formed by the needles, of means for guiding a series of warp-threads in a flat layer across such slot, and a needle-bar with carrier having a series of broad flat needles adapted to pass between the warp-threads and having eyes extended fore and aft through the same, and means for vibrating the carrier to form zigzag stitches and connect the warp-threads together laterally.

11. In a multiplex sewing-machine, the combination, with a reciprocating needle-bar and a row of eye-pointed needles carried thereby, of a needle-bed with means for guiding a series of warp-threads in a flat layer along the needle-bed across the path of the needles, means for vibrating the needle-carrier to form zigzag stitches to connect the warp-threads into a fabric, a lock-thread-carrying looper having an eye in the point, means for reciprocating the looper and carrying the loop of the lock-thread beyond the edge of the fabric, and means for securing the loops of the lock-threads together upon the edge of the fabric to form a selvage thereon.

12. In a multiplex sewing-machine, the combination, with means for operating a row of eye-pointed needles and locking the loops of the threads carried thereby, of a needle-bed, a guide and a presser-foot at one side of the needle-bed for guiding a series of warp-threads in a flat layer across the surface of the needle-bed, means for vibrating the needle-carrier to form zigzag stitches and connect such warp-threads laterally, feed-rolls at the opposite side of the needle-bed adapted to draw the sewed fabric from the needles, a ratchet-wheel upon the feed-rolls, and a pawl reciprocated a fraction more than the space of an integral number of teeth upon the ratchet-wheel, whereby the elasticity of the fabric operates to reverse the movement of the feed-rolls while the needles are in the fabric, and the last row of stitches is pressed against the forward side of the needles to beat the rows of stitches together.

13. In a multiplex sewing-machine having a reciprocating needle-bar, a row of eye-pointed needles and a needle-bed beneath the needle-bar, the combination, with such bed and needles, of a thread-carrying looper having an eye in the point, means for reciprocating the same next the needles, means for engaging the loop formed by such looper, rolls for continuously but insufficiently feeding the thread to such looper, a spring take-up between the feeding-rolls and the looper, and means for pressing the feeding-rolls together adapted to yield under the tension of the take-up to permit the slipping of the thread in the rolls to supply the deficiency.

14. In a multiplex sewing-machine having a reciprocating needle-bar, a row of eye-pointed needles and a needle-bed beneath the needle-bar, the combination, with such bed and needles, of a thread-carrying looper movable longitudinally next the needles with an eye extended horizontally through the point, a vertical notch at the side of the rear of the eye, and a groove in the side of the looper extended backwardly from such notch, means for reciprocating the looper and carrying the eye and the notch beyond the end of the row of needles, and a shuttle with means for reciprocating it vertically through the notch of the looper to engage the loop of the lock-thread.

15. In a multiplex sewing-machine, the combination, with the needle-bed and means for guiding a series of warp-threads in a flat layer across the surface of the same, of a needle-carrier having a row of eye-pointed needles flattened in the direction of the warp-threads, and having each an eye extended through the breadth of the same, and a looper, with means for operating the same, for locking the loops of the needle-threads, substantially as herein set forth.

16. In a multiplex sewing-machine having a reciprocating needle-bar, a needle-bed and means for locking the loops of the needle-threads underneath such bed, of a series of needles flattened transversely to the length of the needle-carrier and having each an eye extended through the breadth of the same, and the body of each needle formed in longitudinal sections one at each side of the eye, and one each above and below the eye, as and for the purpose set forth.

708,481. **CAR-RIGGING OR DRAFT APPLIANCE FOR RAILWAY-CARS.** SYLVESTER H. JANSEN, Buffalo, N. Y.; Emily J. Jansen executrix of said Sylvester H. Jansen, deceased. Filed Nov. 10, 1899. Serial No. 736,556. (No model.)

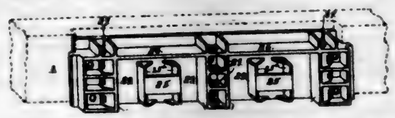

Claim.—1. In combination with the draft-timbers of a car, draft-plates secured to the inner sides of the draft-timbers, vertically-disposed abutments formed on the inner faces of the draft-plates, bosses formed with the inner faces of the draft-plates intermediately the central and end abutments, said bosses comprising end plates connected by face-plates, follower-plates adapted to travel between the abutments and the ends of the bosses, springs between the follower-plates, bearing against the faces of the bosses whereby said springs are guided, a yoke slidable between the draft-plates and having an intermediate cross-piece for confining the springs and followers and a draw-bar to which the yoke is attached as and for the purpose described.

2. In combination with the draft-timbers of a car, draft plates secured to the inner sides of the draft-timbers, vertically-disposed abutments formed on the inner faces of the draft-plates intermediately the central and end abutments, said bosses comprising end plates connected by face-plates, follower-plates adapted to travel between the abutments and the ends of the bosses, springs between the follower-plates, bearing against the faces of the bosses whereby said springs are guided, a yoke slidable between the draft-plates and having an intermediate cross-piece for confining the springs and followers, a draw-bar to which the yoke is attached, bars bolted to the under edge of the draw-plates, cross-bars connecting the longitudinal bars whereby the draft-timbers are connected, as and for the purpose described.

708,482. **PNEUMATIC TIRE.** THOMAS B. JEFFERY, Kenosha, Wis. Filed July 24, 1901. Serial No. 69,471. (No model.)

Claim.—1. A pneumatic tire comprising concentric flexible bands adapted when secured together at their lateral edges to constitute an inclosure, in combination with rigid annular elements which lap and unite such flexible bands at their corresponding lateral edges, such rigid annular elements being exterior to the edges which they unite, and forming rigid lateral armor for the tire.

2. A pneumatic tire comprising a casing consisting of two flexible elements each annular and adapted to be joined at their corresponding lateral edges to inclose the tire-chamber; two rigid annular elements lapping the adjacent edges of the flexible elements at the opposite sides respectively of the tire and connected thereto and constituting the means of uniting said two flexible elements.

3. A pneumatic tire consisting of two concentric flexible bands having their corresponding lateral edges in the same planes respectively transverse to the axis, in combination with two rigid annular elements which lap and engage the corresponding edges of the flexible bands at opposite sides respectively.

4. A pneumatic tire consisting of two concentric flexible bands which are normally approximately semicylindrical in form in transverse section, in combination with two rigid annular elements which lap and engage the corresponding edges of the flexible bands at opposite sides respectively.

5. A pneumatic tire, consisting of two concentric flexible bands, of which the inner is adapted to be seated at the middle part of its width on the rim, and means securing it thereto; said bands being united throughout their circumference at their corresponding lateral edges; interior annular elements lapping the two bands across their said lateral junctions, and engaged with the bands at opposite sides of the junctions respectively.

6. A pneumatic tire, consisting of two concentric bands; rigid annular elements which exteriorly clasp their corresponding lateral edges, and rigid annular elements which interiorly lap the edges of said bands at each of said lateral junctions, and engage the bands at opposite sides of said junctions respectively.

7. A pneumatic tire, consisting of two concentric annular bands, each provided with exterior and interior beads, B^2, B^3, parallel with their lateral edges respectively, the interior beads being nearer the edge than the exterior; in combination with the rigid annular elements adapted to clasp the corresponding edges of said bands and engage the exterior beads thereof; and interior rigid annular elements lapping the junctions of said bands at the opposite sides, and engaging their interior beads.

708,483. **PLAYING-BALL.** ELEAZER KENDRALL, Boston, Mass. Filed Dec. 18, 1901. Serial No. 86,347. (No model.)

Claim.—1. A playing-ball comprising a highly-compacted substantial gutta-percha shell and a soft-rubber sphere or ball powerfully gripped by said shell, so that the shell constantly tends to compress the core and the latter to expand the shell.

2. A playing-ball comprising a highly-compacted substantial gutta-percha shell and a sphere of solid soft rubber held under permanent compression by said shell.

3. A playing-ball comprising a gutta-percha shell consisting of welded segments, and a solid sphere consisting entirely of well-vulcanized soft rubber filling said shell and held under compression thereby.

4. A playing-ball consisting of a highly-compacted shell built up from gutta-percha segments, said segments being welded edge to edge, and a filling consisting largely or wholly of soft rubber powerfully gripped by said shell.

5. A playing-ball comprising a shell built up of highly solidified or compacted hemispherical sections of well-cemented gutta-percha, and a sphere of highly-vulcanized, solid soft rubber held under compression by said shell.

6. A playing-ball comprising a highly-compacted substantial gutta-percha shell and a sphere of solid soft rubber cemented to and powerfully gripped by said shell.

7. A playing-ball comprising a gutta-percha shell consisting of welded segments, and a sphere of well-vulcanized soft rubber filling said shell and cemented thereto and held under compression thereby.

8. In a playing-ball, the combination with a soft filling of a shell of plastic material cemented and powerfully compressed thereon, and holding said filling under permanent compression.

9. In a playing-ball, the combination with a soft springy filling, of a shell consisting of segments of plastic material welded together and both cemented to and compressed upon said core, and holding said core under permanent compression.

10. A golf-ball having a core of molded elastic material compressed within a hard or rigid but elastic outer covering, substantially as set forth.

11. A golf-ball having a core of homogeneous rubber under pressure and an outer covering of gutta-percha, substantially as set forth.

708,484. PLAYING-BALL. ELEAZER KEMPSHALL, Boston, Mass. Filed June 16, 1902. Serial No. 111,839. (No model.)

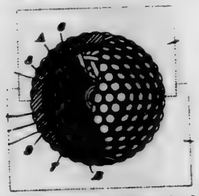

Claim.—1. A playing-ball comprising a hard core, a layer of soft rubber thereon, twine wound tightly upon said soft rubber, a layer of rubber upon said twine, windings of twine upon the last-mentioned layer of rubber, and a shell of plastic material.

2. A playing-ball comprising a hard-rubber shell, a layer of soft rubber thereon, tense windings of twine upon said soft rubber, tense windings of rubber upon said twine, tense windings of twine upon said rubber windings, and a gutta-percha shell.

3. A playing-ball comprising a perforated hard-rubber shell, a layer of soft rubber thereon, tense windings of twine upon said soft rubber, tense windings of rubber upon said twine, tense windings of twine upon said rubber windings and a gutta-percha shell, said windings of twine being impregnated with celluloid.

4. A playing-ball comprising a hard shell, a plurality of rubber layers thereon, each layer being wound with twine, and a shell of gutta-percha.

5. A playing-ball comprising a perforated hard-rubber shell, a plurality of rubber layers thereon, each layer being wound with twine; and a shell of gutta-percha.

6. A playing-ball comprising a perforated center piece of hard material, a plurality of rubber layers thereon, each layer being wound with twine; and a shell of gutta-percha.

708,485. GOVERNING AND VALVE-OPERATING MECHANISM FOR GAS OR VAPOR ENGINES. ERNST H. KOSMINTER, Kansas City, Mo., assignor to the Kansas City Hay Press Company, a Corporation of Missouri. Filed Apr. 29, 1901. Serial No. 57,971. (No model.)

Claim.—1. In valve-operating mechanism, the combination with the exhaust-valve, of a spring-retracted, slidable bar, a valve-actuating reciprocating plate, a plunger pivotally connected with said plate and coacting with and actuating intermittently the slidable bar, a rotatable cam supporting the outer end of said plunger and adapted to remove said plunger from contact with said slidable bar, and coacting devices upon said reciprocating plate and said slidable bar imparting motion alternately to said cam, in the reciprocal movements of the said plate and sliding bar.

2. In valve-operating mechanism, the combination with the exhaust-valve, of a spring-retracted, slidable bar, a valve-actuating reciprocating plate a plunger pivotally connected with said plate, coacting with and actuating intermittently the slidable bar, a rotatable cam supporting the outer end of said plunger, and adapted to move the outer end of said plunger from contact with the slidable bar, a self-engaging barbed stem pivotally connected with the said reciprocating plate, and a pawl upon the slidable bar, and devices upon each side of said cam actuated alternately by said barbed stem and said pawl.

3. In valve-operating mechanism, the combination with the exhaust-valve, of a spring-retracted, slidable bar actuating said valve, a reciprocating plate, a plunger pivotally connected with said plate and actuating the slidable bar, a rotatable cam supporting the outer end of said plunger pins upon one side of said cam, and teeth upon the other side in alternate, transverse positions to said pins, a stem pivotally connected with said reciprocating plate and a barb at the outer end engaging automatically with said pins, and a pawl upon the slidable bar engaging with said teeth in the reciprocal movements of said plate and sliding bar.

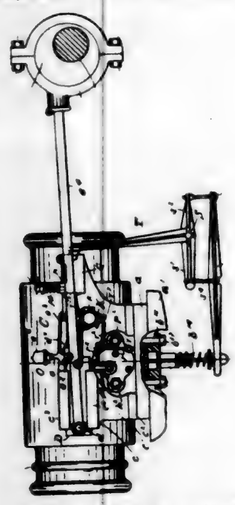

4. In valve-operating mechanism, the combination with a suitable supporting bracket or stand and with the exhaust-valve, of a spring-retracted, slidable bar actuating said valve, suitable guides upon said stand therefor, a reciprocating plate, and guides upon said bracket therefor, a spring-actuated plunger coacting with and actuating the slidable bar, and pivotally connected with said plate, a stud-shaft upon said bracket, and a rotatable cam upon said stud-shaft supporting the outer end of said plunger, and adapted to move said plunger from contact with the slidable bar, pins extending from one side of said cam, and teeth upon the other side in alternate, transverse position to the pins, a spring-actuated stem pivotally connected with the reciprocating plate, and self-engaging devices upon said stem adapted to engage with the pins on said cam, and a spring-actuated pawl pivotally connected with the slidable valve-operating bar and arranged to engage with the teeth on said cam, and a spring on the stud-shaft bearing against said cam.

5. In valve-operating mechanism, the combination with the exhaust-valve and with a suitable supporting bracket or stand of a guide-box at one end thereof, a spring-retracted slidable bar in said box, guide-bearings at the other end of said bracket, and a reciprocating plate on said bearings and a plunger pivotally connected with said plate and coacting to actuate said slidable bar, a spring-actuated pawl pivotally connected with said sliding bar, a stud-shaft upon said bracket, and a rotatable cam upon the stud-shaft supporting the outer end of said plunger and adapted to move the outer end of said plunger in and out of contact with the slidable bar, pins extending outwardly from one side of said cam, and a ring upon the other side, and teeth upon said ring in alternate, transverse positions to the said pins, adapted to be engaged by the pawl on the sliding bar, and a stem pivotally connected with the reciprocating plate, and a hook upon said stem having a rearwardly-inclined forward end.

6. In a vapor-engine, the combination with the main power-shaft and the exhaust-valve, of a valve governing and operating mechanism comprising a reciprocating plate, and a supporting-bracket therefor, and guide-bearings upon said bracket, a vibrating governor, upon said reciprocating plate, and vibrating arms upon said governor, an eccentric upon the power-shaft and an eccentric-rod connected with the eccentric and also connected with the reciprocating plate, a spring-retracted, slidable bar operating the exhaust-valve and a spring-actuated locking-plate arranged above said slidable bar and engaging intermittently therewith, and also actuated intermittently by one of the arms of the governor, a spring-actuated plunger-bar pivotally connected with said reciprocating plate and coacting intermittently with the slidable bar, a cam supporting the outer end of said plunger and pins upon and extending outwardly from one side of said cam and teeth upon the other side in alternate, transverse position to said pins, and adapted to be engaged alternately by said pawl, and a spring-actuated stem pivotally connected with said reciprocating plate, and a barb upon said stem engaging alternately with said pins.

7. In a valve operating and governing mechanism for vapor-engines, the combination with the exhaust-valve and a spring-retracted valve-operating slidable bar, and with a guide-box therefor of a reciprocating plate, a spring-actuated plunger-bar pivotally connected with said plate and coacting intermittently with said slidable bar, a vibrating plate pivotally connected at its forward end with the forward end of said box, and a hook thereon, and a lip upon said hook, said slidable bar having a transverse groove adapted to receive said lip, lugs upon the rear end of said guide-box for said sliding bar, and a transverse plate upon said lugs, a rod connected with the rear end of the vibrating plate having its upper end screw-threaded and extending through the said transverse plate on said lugs, an adjusting-nut upon said rod, a spiral spring upon said rod between said nut and said transverse plate, and means for moving said hooked end of said vibrating plate into engagement with said slidable bar

8. In vapor-engines, the combination with the cylinder of the engine, having an air and gas mixing chamber, of an exhaust-valve, a cylinder for the gas-igniting devices connected with the cylinders of the engine, and a cylinder-plate, a crank-shaft and an insulated pin within said igniter-cylinder, and contacts on the inner ends of said shaft and pin, a spring holding said contacts normally apart, a plate pivotally connected at one end with the cylinder-plate for the gas-igniting devices, a spring retracting said pivoted plate, a rod extending through said plate and the crank in the crank-shaft of the igniting devices, nuts upon the ends of said rod, a reciprocating plate, a plunger pivotally connected with said plate, devices actuated by said plunger and opening said exhaust-valve intermittently, and a tripper upon the said plunger actuating said pivoted plate on the cylinder-plate intermittently.

9. In vapor-engines, the combination with the cylinder of the engine having an air and gas mixing chamber, of an exhaust-valve, a cylinder for the gas-igniting devices connected with the cylinder of the engine and a cylinder-plate, a crank-shaft and a stationary, insulated pin extending through said igniter-cylinder, contacts upon the inner ends of said shaft and pin and a spring holding said contacts normally apart, a spring-retracted plate pivotally connected with the cylinder-plate, a rod extending through said plate and the crank-arm on the crank-shaft, adjusting-nuts on the ends of said rod, a bracket upon the engine and suitable guides at one end of said bracket, a plate in said guides, a plunger pivotally connected with said plate, means for reciprocating said plate, a box at the other end of said bracket, a slidable valve-actuating bar in said box actuated intermittently by said plunger, a rotatable cam upon said bracket supporting the outer end of said plunger, devices upon said reciprocating plate and said slidable bar actuating said cam alternately, and a tripping-plate on said plunger actuating said pivoted plate on the cylinder-plate for the igniting devices intermittently.

10. In valve-operating devices for gas-engines the combination with a spring-actuated exhaust-valve, of a rock-shaft, arms upon said shaft, an adjustable balanced beam upon said arms actuating said valve and means for operating said rock-shaft.

11. The combination with a spring-actuated exhaust-valve, of a rock-shaft, arms upon said shaft, a beam having its rear end extending to and actuating said valve, a link connecting said beam intermediate its ends with one of said arms on the rock-shaft, a rod connected adjustably with the other arm and bearing upon the outer end of said beam, a lever on the rock-shaft and means for actuating said lever, substantially as described.

12. The combination in a vapor-engine with the cylinder and its base and with the side supports for said base of a rock-shaft, a spring-actuated exhaust-valve, slidable valve-operating mechanism upon said base of the engine-cylinder, and a lever on the rock-shaft connecting therewith, arms upon said rock-shaft, a beam having one end extending to and operating the exhaust-valve, a link connected with one arm of the lever and with the said beam intermediate its ends and a screw-threaded adjusting-rod connected with the other arm having one end of said rod bearing upon the outer end of said beam, and an adjusting-nut on said rod beneath said arm.

13. In vapor-engines, the combination with the cylinder of the engine and its main driving-shaft, of an eccentric upon said shaft, and an eccentric-rod, a spring actuated exhaust-valve on said cylinder, a bracket upon said engine, a reciprocating plate upon said bracket, and suitable guides upon said bracket therefor, a stud shaft upon said plate with which said eccentric-rod is connected, a plunger pivotally connected with said plate, a triangular-faced cam on said bracket supporting the outer end of said plunger, pins upon the outer side and near the angles of said cam, and teeth upon the other side of said cam in alternate, transverse position to the said pins, a stem pivotally connected with said reciprocating plate, and a hook on said stem having a rearwardly-inclined forward end, a slidable bar in said bracket, actuated intermittently by said plunger, a box on said bracket therefor and a spring-actuated pawl pivotally connected with the inner side of said slidable bar, engaging with the teeth on the inner side of said cam, and gas-igniting devices upon the said engine actuated intermittently by said plunger.

14. In vapor-engines, the combination with the cylinder of the engine and its main driving-shaft, of an eccentric upon said shaft and an eccentric-rod, a spring-actuated exhaust-valve in said cylinder, a bracket upon said engine, a reciprocating plate upon said bracket, and suitable guides therefor, and a stud-shaft on said plate, with which said eccentric-rod is connected, a spring-actuated plunger pivotally connected with said plate, a stud-shaft on said bracket, and a rotatable, triangular-faced cam on said stud-shaft supporting the outer end of said plunger, a spring bearing on said cam, pins upon the outer side of and near the angles of said cam, teeth upon the other side of said cam in alternate, transverse position to said pins, a stem pivotally connected with said reciprocating plate, and a hook having a rearwardly-inclined, forward end engaging alternately with said pins, a guide-box upon the other end of said bracket, a slidable valve-actuating bar in said box, intermittently acted upon by said plunger, a spring-actuated pawl engaging alternately with the teeth on said cam, a rock-shaft upon said engine, and arms upon said shaft, a beam having its inner end engaging with the exhaust-valve, a link connecting one of said arms on the rock-shaft with said beam, intermediate the ends thereof, a rod adjustably connected with the other arm and bearing on the forward end of said beam, and a lever on the rock-shaft, having its free end contacting with the forward end of the sliding bar, substantially as described.

708,486. BOLT AND FASTENER THEREFOR. ALBERT H. LEWIS, Uhrichsville, Ohio, assignor of three-fourths to Albert G. Quimby, James C. Shields, and Peter C. Stevenson, Uhrichsville, Ohio. Filed May 20, 1902. Serial No. 106,227. (No model.)

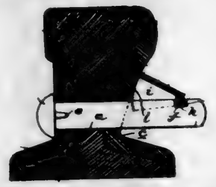

Claim.—1. A bolt having a crosswise abutment thereon adjacent to one end, in combination with a fastener adapted to bear at one end against the crosswise abutment of the bolt, and having an opposite convex and serrated or roughened end to engage a device through which the bolt is passed.

2. A bolt having a crosswise groove adjacent to one end, the outer wall of which is undercut and constitutes an abutment, in combination with a fastener having a toe at its outer end and adapted to bear in the groove, and also having a convex and serrated or roughened inner end adapted to be pressed into engagement with a device through which the bolt is passed.

3. A bolt having a crosswise abutment thereon, undercut at its inner side, in combination with a separate fastener having a pointed toe at its outer end adapted to bear in the undercut of the abutment, and an inner end adapted to engage a device through which the bolt is passed.

4. The combination of a bolt having a crosswise groove, the outer wall of which is undercut, and a fastener having the side and top walls, and also having the toe at its outer end disposed in the crosswise groove of the bolt, and its inner end rounded and roughened or serrated.

708,487. SIGNALING APPARATUS. JAMES R. MEAD, Lewes, Del., assignor of one-half to William R. Veasey, Lewes, Del. Filed Nov. 5, 1901. Serial No. 81,242. (No model.)

Claim.—1. In a signaling apparatus, the combination with a support which is rotatable upon its vertical axis, of vertically-movable signal-holders carried by opposite sides of the support, a plurality of signals for interchangeable engagement with the holders, and means for elevating and maintaining the signal-holder at one side of the support in an elevated and displayed position while the signal-holder at the opposite side of the support is held in a depressed position for receiving a signal.

2. In a signaling apparatus, the combination with a support which is rotatable upon its vertical axis, of vertically-slidable signal-holders carried by opposite sides of the support and movable from the bottom to the top thereof and vice versa, a plurality of signals for interchangeable engagement with the holders, and means for raising and lowering the signal-holders and to maintain the holder at one side of the support in an elevated and displayed position while the signal-holder at the opposite side of the support is in a depressed position for receiving a signal preparatory to being elevated.

3. In a signaling apparatus, the combination with a support which is rotatable upon its vertical axis, of vertically-movable signal-holders carried by opposite sides of the support and provided with guideways, a plurality of signal-slides for interchangeable engagement with the hold-

ers, and means for maintaining the signal-holder at one side of the support in an elevated and displayed position, while the signal-holder at the opposite side of the support is in a depressed position for receiving a signal-slide.

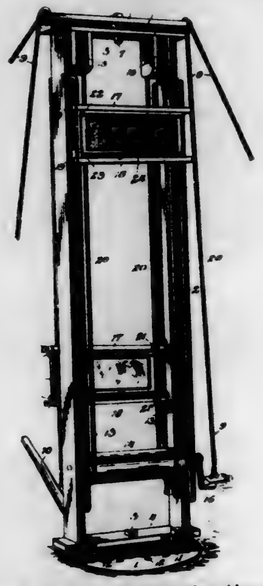

4. In a signaling apparatus, the combination with an upright rotatable support, of signal-holding means at opposite sides of the support, and means for simultaneously raising the signal-holding means at one side of the support and lowering the same upon the opposite side thereof, whereby signals may be displayed in an elevated position at one side of the support while other signals are being set at the lower portion of the opposite side of the support, the support being rotatable to display the latter set of signals when elevated.

5. In a signaling apparatus, the combination with an upright support which is rotatably adjustable upon a vertical axis, of an upstanding endless halyard carried by the support and working in opposite directions on opposite sides thereof, and signal-holders carried by the halyard and located at opposite sides of the support, whereby signals may be simultaneously elevated at one side of the support and hauled down at the opposite side thereof, and signals may be set at one side while other signals may be displayed at the opposite side of the support.

6. In a signaling apparatus, the combination of an upstanding rotatable support, means for adjustably rotating the same, a pair of upstanding endless halyards having corresponding portions at opposite sides of the support, and signals having their opposite ends connected to corresponding portions of the respective halyards, whereby signals may be set upon one side of the support while other signals are being displayed at the opposite side thereof.

7. In a signaling apparatus, the combination with an upstanding support, of a pair of upright rigid guides carried by the support, opposite upstanding halyards carried by the support, a signal-holder having substantially horizontal top and bottom cross-bars connected respectively to the opposite halyards with their opposite ends slidably mounted upon the respective guides and provided in their inner faces with corresponding open-ended grooves, and a signal-slide removably fitted in the grooves.

8. A signaling apparatus, comprising a mast or tower, a rigid vertical guide carried by the tower, a vertically-adjustable signal-holder slidably mounted upon the guide and provided with a substantially horizontal open-ended guideway, and a removable signal-slide carried by the guideway and removable horizontally outward through the open end thereof.

9. A signaling apparatus comprising a mast or tower, a vertical rigid guide carried thereby, a vertically-adjustable signal-holder having corresponding substantially horizontal open-ended grooves, and a signal-slide removably fitted in the grooves.

10. A signaling apparatus, comprising a mast or tower, a pair of vertical rigid guides carried thereby, a signal-holder having top and bottom cross-bars having their opposite ends slidably mounted upon the guides, and also provided with substantially horizontal corresponding open-ended grooves, a signal-slide removably fitted in the grooves, and means for raising and lowering the holder.

11. A signaling apparatus, comprising a mast or tower, opposite upstanding guide-rods carried thereby, a signal-holder slidably mounted upon the guide-rods and provided with a guideway, a signal-slide removably carried by the guideway, and means for raising and lowering the holder.

12. A signaling apparatus, comprising a mast or tower, opposite upright guide-rods carried thereby, a signal-holder having substantially horizontal top and bottom cross-bars, which are provided with terminal openings receiving the guide-rods, and also having corresponding open-ended grooves in their inner faces, a signal-slide removably fitted in the grooves, and means for raising and lowering the holder.

13. A signaling apparatus, comprising a mast or tower, opposite upright guide-rods carried by the tower, a drum carried by the tower, guides mounted near the opposite end of the tower, endless halyards running over the guides and the drum, means for rotating the drum, signal-holders carried by the halyards, and slidably mounted upon the guide-rods and removable signal-slides for the holder.

14. A signaling apparatus, comprising a mast or tower which is adjustably rotatable upon a vertical axis, a pair of halyards carried by and movable with the tower, and a signal connected at opposite ends to the halyards to prevent flattering of the signal.

15. In a signaling apparatus, a tower comprising a substantially rectangular frame which is adjustably rotatable upon a vertical axis, opposite upright guides carried by the frame, a signal-holder having its opposite ends slidably mounted upon the guides, and a pair of halyards for raising and lowering the signal-holder, said halyards being connected to opposite ends of the signal.

16. In a signaling apparatus, a tower comprising a substantially rectangular frame which is rotatably adjustable upon a vertical axis, upright guide-rods carried by the opposite sides of the frame, a signal-holder slidably mounted at opposite ends upon the guides, a drum mounted within the lower part of the frame, means for rotating the drum, a pair of pulley-blocks mounted upon the upper portion of the frame, and endless halyards reeved through the pulley-blocks and around the drum, the signal-holder being connected to the halyards.

17. In a signaling apparatus, a tower comprising a substantially rectangular frame which is adjustably rotatable upon a vertical axis, upright guide-rods carried by and offset from the opposite sides of the upright side members of the frame, signal-holders located at opposite sides of the frame and slidably connected to the respective guide-rods, and means for raising and lowering the signal-holders.

18. In a signaling apparatus, a tower comprising a substantially rectangular frame which is adjustably rotatable on a vertical axis, a drum mounted within one end portion of the frame, means for operating the drum, guide-pulleys at the opposite end of the frame, halyards reeved through the guide-pulleys and around the drum, and signal-holders carried by the halyards and located at opposite sides of the frame.

19. A signaling apparatus, comprising a base, a rotatable mast or tower mounted thereon, means carried by and adjustable upon the tower into and out of engagement with the base to form an adjustable interlocking engagement between the mast or tower and the base, and a signal-holder carried by the mast or tower.

20. A signaling apparatus, comprising a base having a circular series of sockets in its upper face, a rotatable mast or tower mounted upon the base and concentrically with respect to the circular series of sockets, a locking-bolt carried by the mast or tower and in operative relation to the series of sockets, and a signal-holder carried by the mast or tower.

21. In a signaling apparatus, the combination with a base, of an upright substantially rectangular frame mounted to rotate upon the base on a central vertical axis, an adjustable interlocking connection between the frame and the base, a drum mounted within the lower end of the frame, means for operating the drum, guide-pulleys mounted within the upper end of the frame, halyards reeved through the guide-pulleys and over the drum, guide-rods carried by the opposite edges of both side pieces of the frame, pairs of signal-holding cross-bars having terminal perforations receiving the respective guide-rods, and also provided in their inner faces with corresponding open-ended grooves, signal-slides removably fitted in the grooves of the cross-bars, each cross-bar being connected to the halyards, a cross-head swiveled to the upper end of the frame, and guys connected to the opposite ends of the cross-head.

708,488. RUNNING-GEAR FOR VEHICLES. WALTER H. MARKLAM, Olean, N. Y., assignor to the Meeklan Wagon Company, New York, N. Y. Filed Nov. 7, 1901. Serial No. 81,456. (No model.)

Claim.—1. The combination of an axle, a bolster, front bounds, a tongue pivoted between the front bounds, metal straps or bars secured to the front bounds and to the tongue and detachably interlocked and permitting the tongue to swing upward and downward on its pivot, the curved braces supported by the bolster and extending in advance and in rear of the same and secured at their front ends to the bounds, adjacent to the pivot of the tongue, the rear ends of the braces terminating in vertical bolts extending through the bounds, the transverse connecting-bars secured to the bounds by the bolts of the curved braces, the bottom braces also secured to the bounds by the said bolts, and the side braces extending from the axle to the front ends of the bounds and secured to the latter a considerable distance in advance of the pivot of the tongue, whereby the latter is supported and held against lateral movement, substantially as described.

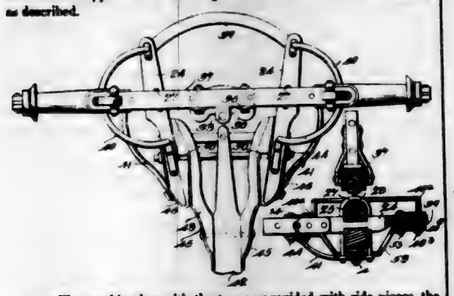

2. The combination with the tongue provided with side pieces, the front bounds and the transverse pivot-rod, of the straps or bars secured to the side pieces of the tongue and to the bounds, and having perforations to receive the rod and provided with enlargements, one of the enlargements at each side of the tongue being recessed to receive the other enlargement and the latter being rounded, substantially as and for the purpose described.

3. The combination with a tongue having side pieces, bounds, and a transverse pivot-rod, of the straps or bars secured to the side pieces and provided at their rear portions with enlargements having rounded front ends, and the straps or bars secured to the bounds and provided in advance of the pivot-rods with enlargements having rounded bearing-recesses receiving the adjacent ends of the said enlargements, substantially as described.

4. The combination with a tongue having side pieces, bounds, and a transverse pivot-rod, of the straps or bars 45, secured to and conforming to the configuration of the side pieces of the tongues and provided at their rear portions with enlargements having rounded front ends and straps or bars 46 arranged on the inner and outer edges of the bounds and provided in advance of the pivot-rods with enlargements having bearing-recesses receiving the rounded ends of the enlargements of the straps or bars 45, substantially as described.

708,489. FOLDING SAMPLE-CASE. CALVIN S. MORRIS, St. Louis, Mo. Filed Apr. 21, 1902. Serial No. 104,089. (No model.)

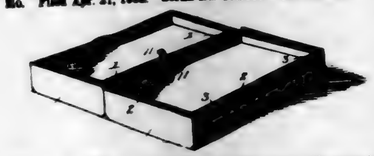

Claim.—A folding sample-case, comprising two main trays hinged together and adapted to close together on their free edges, and two additional trays hinged respectively to the outer sides of the main trays to stand in horizontal position when turned outward, and bottoms in the additional trays fixed intermediate of the heights of their side and end walls, whereby when the additional trays are brought together they constitute covers for the main trays and form a central compartment between the folded main trays

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708,490. FOLDING DISPLAY BOX OR TRAY. CALVIN S. MORRIS, St. Louis, Mo. Filed Apr. 21, 1902. Serial No. 104,090. (No model.)

Claim.—1. A shipping and display device comprising a plurality of trays hinged together to fold one upon the other in vertical succession and whereby they can be extended and stand on parallel planes of decreasing heights, plates hinged to the sides and ends of the bottom tray adapted to turn into vertical position against the trays, and fastening means to hold the plates against the trays.

2. A shipping and display device, comprising a tray A, plates hinged to the sides and ends thereof, a tray B secured to the inner face of one of the side plates to turn outward with said plate, a plate C secured to the outer side piece of tray B and extending below the bottom thereof, a tray C hinged to the plate C, and a tray D formed with a vertical side extension hinged to the tray C, said trays being adapted to fold one upon the other with the hinged plates of tray A turned against their sides and ends, and fastenings to bind the plates and trays together.

708,491. DUST-GUARD. JAMES S. PATTEN, Baltimore, Md., assignor to Metal Dust Guard Company of Baltimore City, a Corporation. Filed June 3, 1901. Serial No. 62,967. (No model.)

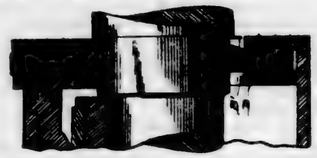

Claim.—1. The improved dust-guard herein described comprising the annular packing-section, and the frame-section secured to the packing-section between the inner and outer edges thereof whereby the portion of the packing-section within the frame-section may operate as a packing and the portion of the packing-section outside the frame section may operate to hold the guard from turning in the car-axle box, and the said frame-section being composed of the face-plate, the inwardly projecting flanges at the outer edge of the face-plate and the spurs projecting from the edge of said flanges and penetrating through the packing-section and clinched on the side thereof opposite the face-plate substantially as set forth.

2. A dust-guard composed of a ring-like packing-section, and a ring-like frame-section secured to one face of the packing-section between the inner and outer edges thereof and lying wholly between said inner and outer edges.

3. A dust-guard comprising the annular packing-section, and an annular brace or frame section secured to the packing-section between the inner and outer edges thereof, the inner edge of the packing-section being arranged to operate as a packing and its outer edge being formed to hold the guard from turning in the car-axle box substantially as set forth.

4. A dust-guard composed of a continuous unbroken ring-like packing-section, and a continuous ring-like frame-section secured to the side face of said packing-section and lying between the inner and outer edges thereof.

5. A dust-guard comprising an annular yielding packing-section, a frame to brace said section and fastening means for said frame which fastening means project through the packing-section and operate to brace the same on the opposite side thereof from the frame substantially as set forth.

6. A dust-guard composed of a ring-like packing-section, a ring-like frame-section fitted against one face of the packing-section between the inner and outer edges thereof, and securing devices extending from the frame-section through the packing-section.

7. A dust-guard comprising an annular packing-section and an annular brace secured positively in connection with the packing-section, said brace occupying, throughout its full length, a position between the inner and outer edges of the packing-section whereby portions of the packing-section within and without the brace will be unobstructed by the latter substantially as set forth.

8. A dust-guard composed of a continuous unbroken ring-like packing-section, and a continuous unbroken ring-like brace secured to and against one face of the packing-section between the inner and outer edges of said packing.

9. A dust-guard composed of a ring-like packing-section having its outer edge entirely exposed and unobstructed and a frame or brace secured to one face of said packing-section and occupying a position entirely within the outer edge of the packing-section, substantially as set forth.

10. A dust-guard composed of a ring-like packing-section and a ring-like brass-frame secured to and against one face of the packing-section and lying wholly between the inner and outer edges thereof, substantially as set forth.

708,492. DUST-GUARD. JAMES S. PAYNE, Baltimore, Md., assignor to Metal Dust Guard Company of Baltimore City, a Corporation. Filed June 3, 1901. Serial No. 62,926. (No model.)

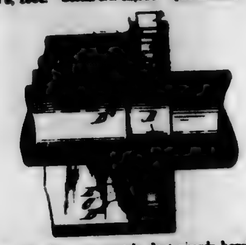

Claim.—1. The improvement in dust-guards herein described consisting of the annular packing-section, the carrier therefor formed with a face-plate, a pocket having a peripheral wall or outer plate, and a side plate, and the cover-sheet fitted over the face-plate and having a portion fitting within the pocket, the rim-flange extending from the outer edge of the face-plate in the same direction as the pocket, and means for securing the annular packing-section within the pocket of the carrier substantially as set forth.

2. A dust-guard comprising a carrier having a face-plate and a pocket for holding the packing-section, the packing-section, and the cover-sheet extending within the pocket and thence over the face-plate outside the packing-section substantially as set forth.

3. A dust-guard comprising the carrier having a face-plate and a pocket and provided with a side plate, the cover-sheet extending over the face-plate and fitting within the pocket and having a slitted portion lying against the side plate of the pocket, the packing-ring fitting in said pocket, and the rivets securing the packing-ring and the slitted portions of the cover-sheet to the side plate of the pocket substantially as set forth.

4. A dust-guard comprising an annular packing-ring, and a carrier therefor composed of a sheet-metal plate having a pocket for the packing-ring, and a bracing-flange at its outer edge, and fastening means for securing the packing to the side plate of said pocket substantially as set forth.

5. In a dust-guard a carrier for a packing-ring composed of a sheet-metal plate provided with a pocket having a side plate P' for the packing-ring and having at its outer edge a bracing-flange projecting in the same direction as the said pocket substantially as set forth.

6. In a dust-guard a packing-ring carrier comprising a plate having a laterally-projecting pocket provided with a side plate P' to receive a packing-ring and provided at its outer edge with a lateral flange projecting in the same direction as the pocket and the springs secured to the plate and housed within the space between the pocket and the outer flange substantially as set forth.

708,493. MAGAZINE PLATE-FEEDING APPARATUS. GEORGE H. PUTER, Cleveland, Ohio, assignor to American Automatic Photographic Company, Cleveland, Ohio, a Corporation of Ohio. Original application filed Dec. 13, 1901, Serial No. 86,720. Divided and this application filed Mar. 11, 1902. Serial No. 97,726. (No model.)

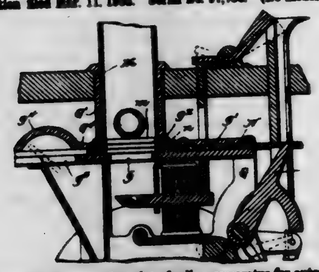

Claim.—1. In magazine plate-feeding apparatus for automatic photographic apparatus, the combination with a plate-slideway, of a slide operating in said way, the latter being provided with a semicircular opening through which a plate may be caused to drop.

2. In magazine plate-feeding apparatus for automatic photographic apparatus, the combination of a plate-magazine, a plate-slideway provided with a semicircular opening, a slide operating in said way intermediately of said magazine and semicircular opening, the curved side of said opening being on the side farthest toward and the straight side being on the side farthest away from said magazine.

3. In magazine plate-feeding apparatus for automatic photographic apparatus, the combination of a plate-magazine, a plate-feeding slide having a plate-receiving aperture formed therein, and a support for such slide, such support provided with an aperture below such magazine, such plate-feeding opening located intermediately of such magazine and aperture in such support, the latter being of such a form as to prevent the passage of a plate therethrough.

4. In magazine plate-feeding apparatus for automatic photographic apparatus, the combination of a magazine-seat, a tubular plate-magazine secured in said seat, a slideway located beneath and transversely of said magazine and provided with an aperture beneath the magazine of dimensions such as to prevent plates from the latter from passing therethrough, and a slide operating in such way and provided with an opening for receiving a plate from the magazine, such opening being located so as to permit it to establish communication between said magazine and said slideway-opening.

5. In a magazine plate-feeding apparatus for automatic photographic apparatus, the combination with a plate-magazine provided with a movable closure at its bottom, of a support provided with a seat for such magazine, such support formed with an aperture below said seat, whereby said closure may be removed from the magazine through such aperture.

708,494. APPARATUS FOR EXTRACTING METALS FROM ORES. JOHN RANDALL, Deadwood, S. D. Filed May 23, 1902. Serial No. 108,722. (No model.)

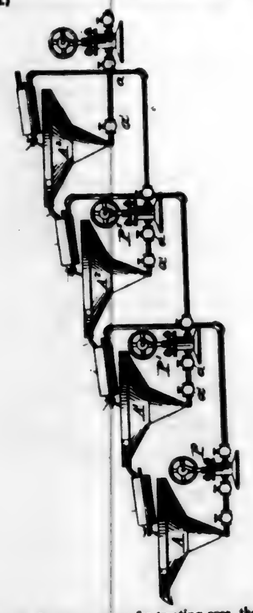

Claim.—1. In an apparatus for treating ores, the combination of a series of tanks with a series of agitators above said tanks and discharging into the same, so arranged that the overflow of the solvent fluid from each tank discharges into the agitator over the next adjacent tank and from thence into the latter, and means for conveying the ore from the bottom of each of said tanks into the agitator directly above the adjacent tank for discharge into the latter, substantially as described.

2. In an apparatus for treating ores, a series of tanks with outlets at the bottoms thereof and provided with lips at the upper edges having discharge-outlets, a series of agitators above said tanks adapted to discharge their contents into the tops thereof, and means for conveying the ore from each said tanks into the agitator directly above the adjacent tank for discharge into the latter, said parts being combined substantially as described.

3. In an apparatus for treating ores, a series of tanks with outlets at the bottom thereof, a series of agitators adapted to discharge their contents into the tops of said tanks and means for conveying the contents of each of said tanks into the agitator directly above the adjacent tank for discharge into the latter, each of said tanks having a lip with discharge leading into the ore-receiving end of the agitator whereby the ore and fluid pass through the agitator in the same direction, said parts being combined substantially as described.

4. In an apparatus for treating ores, a series of tanks, each having an outlet in its bottom, a series of agitators adapted to discharge into said tanks and pipes with pumps for conveying ore from the outlets in the bottoms of each of said tanks to the agitators discharging into the adjacent tank, each of said tanks having solvent-liquid-overflow outlets discharging into the ore-receiving ends of said agitators, said parts being combined substantially as described.

5. In an apparatus for treating ores, a series of tanks, a series of agitators above said tanks, and means for forcing ore from the bottom of each of said tanks except the last one thereof to the agitator discharging into the adjacent tank, each of said tanks having a solvent-outlet discharging into an agitator at the ore-receiving end thereof, said parts being combined substantially as described.

708,495. STONE OR ORE CRUSHER. DANIEL C. ROBINSON, McKeesport, Pa. Filed Sept. 27, 1901. Serial No. 76,772. (No model.)

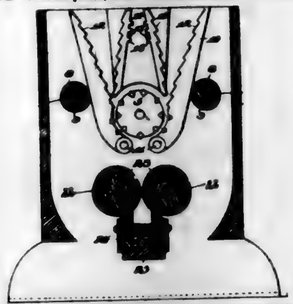

Claim.—1. In a crusher, a casing, a pair of suitably-pivoted sides forming a hopper in said casing, shafts mounted in said casing carrying eccentrics for engagement with said sides, means for operating said shafts in unison, a breaking-down roll secured between said sides of the hopper, and a pair of inclined stationary jaws above said breaking-down roll, said jaws carrying projections on their rear faces, and pins carried by the casing whereby said jaws may be adjusted, substantially as described.

2. In a crusher, the combination of a casing, a hopper secured in said casing, movable sides forming jaws of said hopper, means to operate said jaws inwardly and outwardly, a breaking-down roll between the lower part of said jaws, crusher-rolls secured under said breaking-down roll, and means whereby said jaws and rolls are driven in unison, substantially as described.

708,496. BURGLAR-ALARM. FREEMAN C. ROBINSON and JAMES B. GREEN, Council Bluffs, Iowa. Filed Nov. 26, 1901. Serial No. 83,711. (No model.)

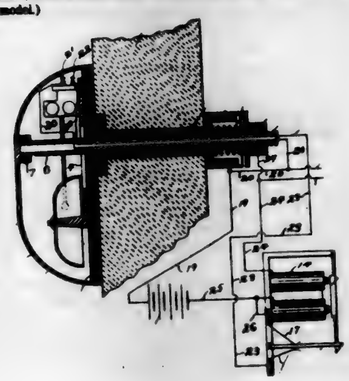

Claim.—1. The combination, in a burglar-alarm, with a suitable gong located outside of the vault, safe or other receptacle or apartment to be protected, of a shield inclosing said gong and means for closing an electric circuit that causes said gong to be sounded upon the moving of said shield, substantially as described.

2. The combination, in a burglar-alarm, with a suitable gong, of a shield inclosing said gong, a tube supporting said shield and means connected with said tube for closing an electric circuit upon the moving of said shield, substantially as described.

3. The combination, with the wall of the vault, safe or other receptacle, of an alarm-gong located on the outside thereof, a shield inclosing said gong, a tube supporting said shield and extending through said wall and means connected with said tube for closing an electric circuit upon the movement of said shield and tube, substantially as described.

4. The combination, with the wall of a vault, safe or other receptacle, of a gong located on the outside thereof, a shield inclosing said gong, a tube extending through said wall and supporting said shield and means arranged upon the outside of the wall and in connection with said tube for closing an electric circuit upon the movement of said gong and tube, substantially as described.

5. The combination, with the wall of a vault, safe or other receptacle, of a suitable gong located on the outside of said wall, a shield inclosing said gong, a support for said shield extending through said wall, and means connected with said support inside of said wall for closing an electric circuit upon the movement of said shield, substantially as described.

6. The combination, with the wall of a vault, safe or other receptacle, of a gong located upon the outside thereof, a shield inclosing said gong, a tube supporting said shield and extending through said wall and forming a conduit for the conductors by which said gong is operated, a spring engaging said tube and tending to draw said shield against said wall, a washer arranged upon said tube and engaged by said spring and a collar surrounding said tube and insulated therefrom, a suitable battery and electrical connections to said collar and said sleeve, substantially as described.

7. The combination, in a burglar-alarm, with a suitable gong located outside of the vault, safe or other receptacle or apartment to be protected, of a shield inclosing said gong, an electric circuit in which said gong is located and means for causing said gong to be operated through said circuit upon the moving of said shield, substantially as described.

8. The combination, with the wall of a vault, safe or other receptacle, of a suitable gong or alarm located on the outside of said wall, an electric circuit in which said gong is located, a shield inclosing said gong and means for closing said electric circuit, and thereby operating the said gong or alarm, upon the moving of said shield, substantially as described.

9. The combination, with the wall of a vault, safe or other receptacle, of a suitable gong or alarm located on the outside of said wall, a perforated metallic shield inclosing said gong or alarm, the base of said alarm or gong and said shield being arranged in an electric circuit adapted to be closed when an electrical connection is made between said shield and the base or frame of said alarm.

10. The combination, with a vault, safe or other receptacle of a suitable gong or alarm located outside of said receptacle, a shield inclosing said gong and means located within said vault, safe or receptacle for operating said gong upon the moving of said shield.

11. The combination, with a vault, safe or other receptacle, of a suitable gong or alarm located on the outside of said wall, with the base or frame of said gong or alarm arranged in an electric circuit, a perforated metallic shield inclosing said gong or alarm, said shield being arranged in the same circuit with the base or frame of said alarm or gong, and said shield and said base being insulated from each other, whereby upon the insertion of a metallic instrument through one of the perforations of said shield into contact with said base or frame, the alarm or gong will be sounded, substantially as described.

12. The combination, with the wall of a vault, safe or other receptacle of an alarm located on the outside thereof and electrically connected through said wall with a circuit-closer arranged within said vault, safe or receptacle, a shield arranged on the outside of said wall and inclosing said gong or alarm and electrical connections between said shield and said circuit-closer for the purpose set forth.

13. The combination, with the wall of a vault, safe or other receptacle, of a gong located on the outside thereof, an automatic circuit-closer arranged within said wall and adapted to close the circuit operating said gong, a shield arranged on the outside of said wall and inclosing said gong, and an electric circuit connected with said shield and also connected with and adapted to operate said automatic circuit-closer, substantially as described.

708,497. GARMENT-SUPPORTING DEVICE. LOUIS ROSER, Jr., Chicago, Ill. Filed Apr. 23, 1902. Serial No. 104,362. (No model.)

Claim.—A hose-supporter comprising a shield or pad with a body-strap secured thereto, straps D and D' secured to said shield, loops E, E

attached to said straps D and D', straps F, F, secured to the shield intermediate straps D and D', and passing through said loops, elastic straps fastened to the ends of straps F, loops K hung on straps F, and elastic straps G[x], fastened to the loops K, as set forth.

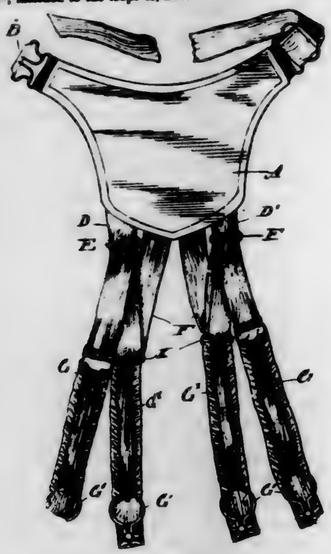

708,498. METHOD OF ORNAMENTING SURFACES. JOHANNES P. RUDOLPH, Görlitz, Germany. Filed Feb. 14, 1901. Serial No. 47,091. (No specimens.)

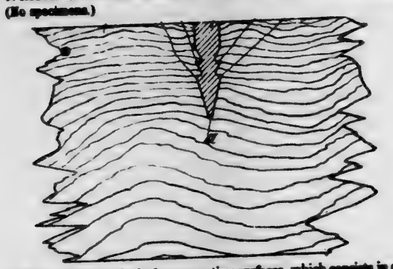

Claim.—The method of ornamenting surfaces, which consists in subdividing the surface into separate areas by inlaid metal strips, and then applying liquid colors to the separated areas, substantially as specified.

708,499. BUILDING-BLOCK. FRANK A. SEARSHIT and GEORGE J. STEVENS, Union City, Mich. Filed Feb. 27, 1902. Serial No. 95,905. (No model.)

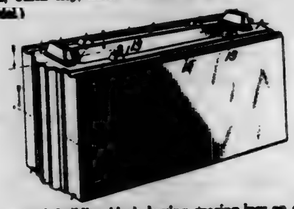

Claim.—1. A building-block having spacing-lugs on one face and grooves on the same face exterior to the lugs, the opposite face of the block having also grooves corresponding in position to the first-named grooves to register with the first-named grooves of an adjacent block.

2. A building-block having ribs on opposite faces provided with mutually-converse corrugations the bottoms of which terminate in planes spaced from the said faces of the block and said walls having fingers for engagement within an adjacent block, the remaining walls of the block having spacing-lugs adjacent to the inner faces thereof and having grooves spaced outwardly from the lugs, the opposite face of the block having also grooves corresponding in location to the first-named grooves.

708,500. CORN-HUSKING MACHINE. JOHN K. SMITH, Hartford City, Ind. Filed June 18, 1900. Serial No. 20,671. (No model.)

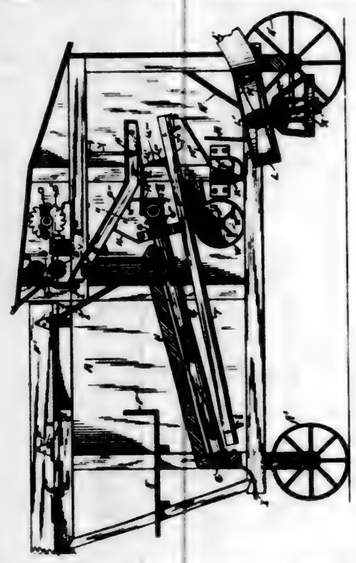

Claim.—1. In combination substantially as described, a pair of snapping-rolls bearing a fixed relation relative to each other, means for operating said rolls, and correspondingly-located ribs and grooves on the rollers each comprising longitudinally-disposed portions arranged out of alinement and inclined intermediate portions connecting said longitudinal portions.

2. In combination substantially as described, a series of husking-rolls located side by side, means for operating said rolls, and each alternate roll being provided with a series of separated grooves of a length substantially that of an ear of corn all grooves of the series being arranged in alinement longitudinally of the roll, and each intermediate roll being provided with a plurality of separated series of projecting pins also arranged in alinement longitudinally of the roll and adapted as the roll revolves to engage the corn seated in the grooves of the adjacent roll, and guides H arranged to feed the corn to a point between each pair of rolls.

708,501. METHOD OF FILLING METAL TUBES WITH WOODEN CORES. OTTOMAR STRESER, Frankenberg, Germany. Filed Aug. 3, 1900. Serial No. 25,796. (No specimens.)

Claim.—1. A process for constructing metal tubes for use in the manufacture of furniture, consisting of inserting into a seamless tube one or more sheet-metal blanks with overlapping edges, expanding the blanks to permit the overlapping edges to be withdrawn so that the entire outer surface of the blanks contact with the inner periphery of the seamless tube.

2. A process for constructing metal tubes for use in the manufacture of furniture, consisting of inserting into a seamless tube one or more cylindrically-bent sheet-metal blanks with their edges overlapping, and inserting wedges within the blanks to spread them apart, to permit the overlapping edges to be withdrawn until the entire outer periphery of the blank contacts with the inner periphery of the seamless tube.

708,502. HYDROCARBON-MOTOR. WILLIAM J. STILL, Wimbledon, England. Filed Aug. 31, 1901. Serial No. 73,823. (No model.)

Claim.—1. A hydrocarbon-motor comprising a rotary carrier, a support therefor, motor-cylinders fixed tangentially to the axis of said carrier and each provided with a piston, a normally stationary crank shaft or body provided with a crank-pin and around which said carrier and cylinders are mounted to rotate, a rock-shaft mounted at the outer end of each cylinder and provided with an inner crank-arm connected to the piston of the corresponding cylinder and with an outer crank-arm, and link mechanism connecting the outer crank-arms to said crank-pin, substantially as described for the purposes set forth.

2. A hydrocarbon-motor comprising a rotary carrier, a support therefor, motor-cylinders fixed tangentially to the axis of said carrier and each provided with a piston, a crank shaft or body provided with a crank-pin and around which said carrier and cylinders are mounted to rotate, means whereby said crank shaft or body can be held stationary and released, a rock-shaft mounted at the outer end of each cylinder and provided with an inner crank-arm connected to the piston of the corresponding cylinder and with an outer crank-arm, and link mechanism connecting the outer crank-arms to said crank-pin and to a rotary part of said motor, substantially as described for the purposes set forth.

3. A hydrocarbon-motor comprising a rotary carrier, a support therefor, motor-cylinders fixed tangentially to the axis of said carrier and each provided with a piston, a normally stationary crank shaft or body provided with a crank-pin and around which said carrier and cylinders are mounted to rotate, a rock-shaft mounted at the outer end of each cylinder and provided with an inner crank-arm connected to the piston of the corresponding cylinder, and with an outer crank-arm, a link connecting the outer crank-arms together, a second link jointed at one end to one of said outer crank-arms, a pair of additional links jointed to the other end of said second link and one of which is jointed to said crank-pin and the other to a rotary part of the motor, means for admitting explosive charges to said cylinders alternately, means for firing said charges, and means for causing the exhaust of the spent gases.

4. A hydrocarbon-motor comprising a rotary carrier, a support therefor, motor-cylinders fixed tangentially to the axis of said carrier and each provided with a piston, a normally stationary crank shaft or body provided with a crank-pin and around which said carrier and cylinders are mounted to rotate, a rock-shaft mounted at the outer end of each cylinder and provided with an inner crank-arm connected to the piston of the corresponding cylinder and with an outer crank-arm, one of said outer crank-arms having its outer end bent at an angle to the remaining portion, a link connecting the bent end of said crank-arm to the other outer crank-arm, a second link jointed at one end to the said bent end of one of the outer links, a pair of shorter links jointed to the other end of said second link at opposite sides thereof, one of said links being also jointed to said crank-pin and the other to a rotary part of said motor, means for admitting explosive charges to said cylinders alternately, means for firing said charges, and means for causing the exhaust of the spent gases.

5. A hydrocarbon-motor comprising two cylinders arranged with their axes parallel to one another and a central tubular extension projecting laterally from one side thereof, a crank-shaft extending through said tubular extension and provided at one end with a crank and crank-pin and at the other end with a clutch device whereby it can be held stationary or released, a support for said tubular extension and crank-shaft, two rock-shafts carried by said casting near the outer open ends of said cylinders and each provided with two crank-arms one of which is arranged to enter the open end of the corresponding cylinder and is connected by a link to the piston therein, and the other is located outside said cylinder, and link mechanism substantially as described connecting the outer crank-arms of the rock-shafts to the crank-pin and to the combined cylinder and carrier, substantially as described.

6. In a hydrocarbon-motor, the combination with a rotary carrier and two parallel motor-cylinders fixed thereto and each fitted with a piston, of a central crank-shaft about which the carrier and cylinders are mounted to turn, a crank arm and pin fixed to one end of said shaft, a clutch device at the other end of said shaft whereby the same can be held stationary or released, two rock-shafts *x* each mounted in a bearing near the outer end of one of said cylinders and provided with inner and outer crank-arms *u* and *l* respectively, one of the outer crank-arms having a bent end 2, a link connecting the inner arm of each rock-shaft to the piston of the corresponding cylinder, a link 3 connecting the bent end 2 of one of the outer crank-arms to the other outer crank-arm, a link 4 jointed at one end to the said bent ends 2 of one of the outer crank-arms, and a pair of short links 6 and 7 jointed by a common pin 5 to the other end of said link 4, said link 6 being jointed by a pin to the cylinders, and said link 7 being jointed to said crank-pin 9, substantially as described for the purposes specified.

7. In a hydrocarbon-motor, motor-cylinders mounted to rotate and each having a normally closed combustion-chamber with separate inlet and exhaust valves and valve-chambers at one end, a tubular extension connected to said cylinders and formed with a gas-passage leading to the inlet-valve chamber of each cylinder, and a stationary body surrounding said tubular extension and formed with a gas passage and port in communication with the gas-passage in said tubular extension.

8. In a hydrocarbon-motor, the combination of a rotary casting comprising motor-cylinders each provided at one end with a normally closed combustion-chamber and a gas-inlet valve and valve-chamber, and a tubular extension formed with gas-passages communicating at one end with the inlet-valve chambers of the respective cylinders and at the other end with ports in the periphery of said extension, and a stationary body surrounding said tubular extension and formed with a gas-passage therethrough terminating in a port in communication with the gas-passages in said tubular extension.

9. In a hydrocarbon-motor, a casting comprising a pair of cylinders *a* and a tubular extension *b* extending from one side thereof and formed with gas-passages *e* leading to the inlet-valve chamber at the closed end of each cylinder and terminating in ports *f* in the periphery of said extension, and a stationary gas-supply chamber *g* surrounding said tubular extension and in communication with the ports *f* therein, substantially as described.

10. In a hydrocarbon-motor, the combination of a pair of motor-cylinders, a tubular extension integral with said cylinders and formed with gas-passages communicating at one end with the gas-inlet valve-chambers of the cylinders and at the other ends with ports in the periphery of said extension, and a stationary support provided with bearing wherein said tubular extension is mounted to rotate, the ports in said tubular extension being between said bearings, and said support being made hollow to serve as a gas-supply device and provided with a port also located between said bearings, substantially as described.

11. In a hydrocarbon-motor, the combination of the two rotary cylinders *a* and lateral extension *b* made integral with one another and formed with the gas-supply passages *e e* and ports *f*, the normally stationary shaft 11 extending through said tubular extension, and the hollow support *g* formed with the gas-outlet port *f* and provided with bearings *c c* for said extension, substantially as described.

12. In a hydrocarbon-motor, the combination of motor-cylinders each provided at one end with a combustion-chamber and separate inlet and exhaust valves and valve-chambers, a rotary tubular carrier connected to said cylinders and formed with gas-supply passages leading to the respective inlet-valve chambers, a support for said carrier, an annular silencing-chamber connected to said cylinders, and surrounding said tubular carrier, and exhaust-passages connecting the exhaust-valve chambers to said silencing-chamber, substantially as described.

13. In a hydrocarbon-motor of the kind herein referred to, the combination with a rotary carrier, motor-cylinders connected thereto, and inlet and exhaust valves for controlling the supply of explosive charges to and the exhaust of spent gases from the motor-cylinders, of valve-operating mechanism for each cylinder, a cam for actuating each set of said valve-operating mechanism, and epicyclic gearing for actuating the cams, said gearing comprising a normally stationary centrally-arranged toothed wheel, and other toothed wheels journaled to the rotary part of the motor, gearing with said central toothed wheel and connected to said cams.

14. In a hydrocarbon-motor of the kind herein referred to, the combination with a rotary carrier, motor-cylinders connected thereto, and inlet and exhaust valves for controlling the supply of explosive charges to

and the exhaust of spent gases from the motor-cylinders, of valve-operating mechanism for each cylinder, a cam for actuating each set of said valve-operating mechanism, and epicyclic gearing for actuating the cams, said gearing comprising a centrally-arranged toothed wheel, means whereby the same can be held stationary or allowed to rotate with said motor, and other toothed wheels journaled to the rotary part of the motor, gearing with said central toothed wheel and connected to said cams.

15. In a hydrocarbon-motor, the combination with a rotary carrier, motor-cylinders fixed thereto and each provided at one end with separate gas inlet and exhaust valves provided with springs that tend to close them, of two-armed levers each adapted to control a pair of inlet and exhaust valves, a second lever adapted to operate and control the position of each of the first-mentioned levers, a cam for operating each of said second levers, and epicyclic gearing carried by said motor and worked by the rotation thereof for rotating said cams.

16. In a hydrocarbon-motor, the combination with a rotary carrier, motor-cylinders connected thereto and each provided at one end with a closed combustion-chamber having a pair of inlet and exhaust valves provided with springs that tend to close them, of valve-operating mechanism for each pair of valves, said mechanism comprising a two-arm lever mounted in a bearing at the outer side of the valve-chambers and provided with a lever-arm, a spring tending to cause said lever to open the inlet-valve and allow the exhaust-valve to close, a second lever pivoted to the rotary motor and adapted to act upon and move said lever-arm in a direction to cause said two-arm lever to open the exhaust-valve and allow the inlet-valve to close, a cam for operating said second lever, a toothed wheel journaled to said motor and connected to said cam, and a centrally-arranged normally stationary toothed wheel gearing with the first-mentioned toothed wheel and around which the latter wheel normally travels, substantially as described.

17. In a hydrocarbon-motor, the combination with a rotary carrier, motor-cylinders connected thereto and each provided with separate inlet and exhaust valves provided with springs tending to close them, a two-armed lever pivoted to the outer side of the valve-chambers of each cylinder, a lever-arm connected to each of said two-arm levers, and a spring tending to move said lever in a direction to open the corresponding inlet-valve and allow the exhaust-valve to close, of a centrally-arranged shaft or body, a toothed wheel fixed thereon, means for holding and releasing said shaft or body, and sets of valve-controlling mechanism for each pair of inlet and outlet valves, each set of valve mechanism comprising a two-armed lever pivoted to a rotary part of the motor and having one arm adapted to move the first-mentioned lever and lever-arm in opposition to their spring, a rotary cam having three cam-paths of different radii arranged to act successively upon the other arm of the second two-arm lever, and a toothed wheel carrying said cam, journaled to a rotary part of said motor, and gearing with the centrally-arranged toothed wheel, substantially as described.

18. A hydrocarbon-motor comprising a rotary carrier, two cylinders fixed thereto and each provided at one end with separate inlet and exhaust valves, a crank-shaft extending through said carrier and provided at one end with a crank-pin and at the other end with a clutch device whereby it can be held stationary or released, mechanism substantially as described connecting the pistons of each cylinder to said crank-pin and to a rotary part of the motor, a central toothed wheel fixed to and concentric with said shaft, two outer toothed wheels journaled to a rotary part of said motor, gearing with said central toothed wheel and of half the diameter thereof, a cam fixed to each of said outer toothed wheels and formed with three cam-surfaces of different radii, and spring-actuated lever mechanism substantially as described for controlling each pair of valves, said lever mechanism being pivoted to a rotary part of said motor and arranged to be operated in one direction by one of said cams and in the opposite direction by its spring, as set forth.

19. In a hydrocarbon-motor, the combination with a crank-shaft and crank, and the piston of said motor, of two links that are jointed together at one end and one of which is jointed at its other end to the crank-pin and the other is jointed to a relatively fixed part of the motor at a point outside the circular path of the crank-pin, and means connecting the jointed ends of said links to said piston.

708,503. COOKING OR HEATING OIL-STOVE. MARIE I. STONE, Toronto, Canada. Filed Apr. 28, 1902. Serial No. 104,360. (No model.)

Claim.—1. In a cooking and heating oil-stove, the combination with the oil-bowl and the burners extending upwardly from the same, of the disk provided with double truncated-cone-shape flues, the lower one being reversely set to the upper one and at the bottom fitting the burner as and for the purpose specified.

2. In a cooking or heating oil-stove, the combination with the oil-bowl and the burners extending upwardly from the same, of the disk provided with double truncated-cone-shape flues, the lower one being reversely set to the upper one and at the bottom fitting the burner, a central opening in the disk and a central guide affixed to the center of the top of the bowl and designed to extend up through the central opening or hole in the disk as and for the purpose specified.

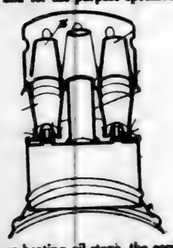

3. In a cooking or heating oil-stove, the combination with the oil-bowl and the burners extending upwardly from the same, of the disk provided with double truncated-cone-shape flues, the lower one being reversely set to the upper one and at the bottom fitting the burner, and a radiator-wall suitably secured at the lower edge to and above the edge of the disk as and for the purpose specified.

4. In a cooking and heating oil-stove, the combination with the bowl, the burners located in the top of the same, the disk provided with upwardly-extending rim, and the radiator fitting each rim, of the thimbles suitably secured and extending through the disk and the reversely-set truncated cone fitting at the bottom on the burner and at the top around the lower half of the thimble, so as to support the same and the truncated cone fitting the upper half of the thimbles above the disk and forming with the lower truncated cone a plurality of flues as and for the purpose specified.

5. In a cooking and heating oil-stove, the combination with the bowl, the burners located in the top of the same, the disk provided with an upwardly-extending rim and perforated as shown, and the radiator-wall fitting each rim, of the thimbles suitably secured and extending through the disk and the reversely-set truncated cones fitting at the bottom on the burners and at the top around the lower half of the thimbles, so as to support the same and the truncated cones fitting the upper half of the thimbles above the disk and forming with the lower truncated cones a plurality of flues as and for the purpose specified.

708,504. TREATMENT OF ORE-SLIMES. HENRY I. SOLMAS and HUGH F. KIRKPATRICK-PIGARD, London, England. Filed Mar. 11, 1902. Serial No. 97,761. (No specimens.)

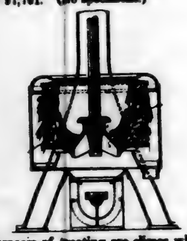

Claim.—The process of treating ore-slimes which consists in separating by means of a centrifugal machine the ore-slimes from the residual water with which they are mixed by adding a little lime to the charge, removing the bulk of the water, thereafter introducing into the machine an amount of leaching solution of a volume equal to that of the remaining quantity of adhering moisture and introduced into the slimes by centrifugal action, and replacing the moisture by the added leaching solution.

708,505. WINDOW-SHADE AND CURTAIN-POLE BRACKET. JAMES P. SWEENEY and THOMAS W. SWEENEY, Tarentum, Pa., assignors of one-third to William H. Wylie, Tarentum, Pa. Filed Apr. 26, 1902. Serial No. 104,682. (No model.)

Claim.—In a fixture of the character described, the combination with the supports provided with pins spaced apart on their inner faces, of horizontal guide-plates secured to the front side of each support, said guide-plates having their inner ends apertured, shade-brackets slidably mounted in said guide-plates, springs disposed between the adjacent ends of the said guide-plates and having their ends secured in the apertured ends thereof, vertically-arranged guides detachably secured to the sides of the said supports, and curtain-brackets removably secured in said guides, substantially as described.

708,505.

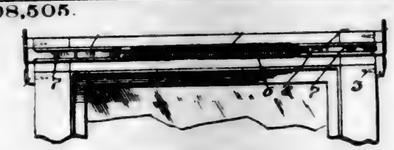

708,506. DRESS-CUTTING INSTRUMENT FOR DRAFTING GARMENTS. GUSTAF V. VALENTIER, Chicago, Ill. Filed July 5, 1901. Renewed Aug. 11, 1902. Serial No. 119,322. (No model.)

Claim.—1. A chart or instrument for drafting garments, cut out of thin material, having one long straight edge one end of which is tangential to a large convex curved end which is practically semicircular and which merges into a convex curve of larger radius, said convex curve approaching said straight edge and extending about one-half its length and terminating in a tangential straight line which continues to approach said first-mentioned edge, so that the instrument practically ends in a point, together with the scales on opposite sides of the chart arranged in respect to the edges of the chart in the manner shown and described.

2. A chart or instrument for drafting garments, of a somewhat fish-shaped outline as described, provided with a large curved end, practically semicircular, which merges into a convex curve of larger radius on one edge and into a straight line on the opposite edge, said convex curve of larger radius ending in a tangential straight line which approaches the opposite edge of the instrument, said curved edge and end being adapted, when the instrument is placed in predetermined positions to indicate the curves of the various patterns comprising a lady's dress, together with the scales on opposite sides of the instrument, arranged on said instrument in the manner and for the purposes set forth.

3. A chart or instrument for drafting patterns for ladies' garments comprising a thin flat instrument of a somewhat fish-shaped outline, having one long straight edge terminating tangentially to a large convex curved end, which is practically semicircular and which merges into a convex curve of larger radius terminating in a tangential straight line which approaches said first-mentioned line, and provided with certain scales on its edges representing certain measurements and also with other scales on the body of the instrument removed from the edges, representing various other measurements ordinarily taken, said scales varying between the usual limits of the corresponding measurements and being placed on the instrument in such relation to the outlines of same that when said instrument is placed in certain predetermined positions the various points in the scales will indicate various points on the diagram agreeing with the corresponding measures.

4. In a chart or instrument for drafting patterns for ladies' garments, comprising a thin flat fish-shaped instrument having one long straight edge terminating tangential to a large convex curved end practically semicircular, which merges into a convex curve of larger radius, which approaches said straight edge extending about half the length of same and which ends in a tangential straight line which continues to approach said straight edge, the end of the instrument opposite to said large curved end being quite narrow, scales on said instrument corresponding with the usual measurements, said scales being graduated between the ordinary limits of the corresponding measurements and provided with perforations at the principal points in same adapted to admit the point of a pencil for the purpose of marking on the pattern.

5. A chart or instrument for drafting patterns for ladies' garments, of a somewhat fish-shaped outline as described, provided with one long straight edge ending in a large curved end of constantly-increasing radius though nearly semicircular, said large curved end merging into a convex curve of large radius which extends nearly parallel with said long straight edge and about one-half its length, said large curve ending in a tangential straight line which approaches said long straight edge, said instrument being provided with a number of diagonal lines which are so placed on the instrument that when the long straight edge of said instrument is placed on one vertical edge of a skirt-gore pattern one of said diagonal lines will determine the direction of the other vertical edge of said gore, substantially as described.

6. A chart or instrument for drafting patterns for ladies' garments, of a somewhat fish-shaped outline as described, provided with one long straight edge ending in a large curved end of constantly-increasing radius though nearly semicircular, said large curved end merging into a convex curve of large radius which extends nearly parallel with said long straight edge and about one-half its length, said large curve ending in a tangential straight line which approaches said long straight edge, said instrument being provided with a scale divided into inches and quarters extending at a right angle to said long straight edge, and beginning at the junction of said long straight edge with said large curved end, the second inch division from the starting-point of said scale being marked "0" and numbers running right and left from said "0" point, forming what might be called a right-and-left scale, substantially as described.

708,507. ADJUSTABLE CURTAIN-BRACKET. LOUIS A. WATTS, Cincinnati, Ohio, assignor of one-half to George Schott, Cincinnati, Ohio. Filed Sept. 26, 1901. Serial No. 76,706. (No model.)

Claim.—1. An adjustable curtain-bracket comprising a rigid arm adapted to be secured to a window frame or support, a slide adjustable thereon having an arm extending at right angles to the former, and a roller-supporting member adjustable lengthwise on said latter arm and having slidable connection with the first-mentioned arm; substantially as described.

2. An adjustable curtain-bracket comprising a rigid arm adapted to be secured to a window frame or support, a slide adjustable thereon having an arm extending at right angles to the former, and a roller-supporting member longitudinally slotted and embracing the first-mentioned arm and adjustable lengthwise on the arm carried by the slide; substantially as described.

3. An adjustable curtain-bracket comprising a rigid arm adapted to be secured to a window frame or support, a slide adapted to be adjustably secured on said arm in either of two positions which are at right angles to each other, said slide having an arm extending therefrom at right angles to the first-mentioned arm, and a roller-supporting member adjustable lengthwise on said latter arm; substantially as described.

4. An adjustable curtain-bracket comprising a rigid arm adapted for attachment to a support, a sleeve member having transverse ways therethrough whereby said member may be slidably secured on said arm in either of two positions which are at right angles to each other, means for locking said sleeve in place thereon, an arm extending from said sleeve at right angles to the former arm, a curtain-roller-supporting member slidable lengthwise on said latter arm, and means for locking said member in position; substantially as described.

5. An adjustable curtain-bracket comprising a rigid arm adapted for attachment to a support, a sleeve member having transverse ways therethrough whereby said member may be slidably secured on said arm in either of two positions which are at right angles to each other, a set-

screw located at the intersection of said ways for locking said sleeve on the arm, an arm extending from said sleeve at right angles to the former, a curtain-roller-supporting member slidably secured on said second arm, and a set-screw for locking the same in position; substantially as described.

6. An adjustable curtain-bracket comprising a base-plate adapted for attachment to a support, an arm extending therefrom, a sleeve on said arm having an extension at right angles to the former, means for locking said sleeve in place, a curtain-roller-supporting plate slidable lengthwise on said extension, and a set-screw locking said plate in position, said set-screw being insertible at either side of the device to adapt the same for use at either end of the curtain-roller; substantially as described.

708,508. PUMP-VALVE. DAVID C. WOOD, St. Louis, Mo., assignor of one-fourth to E. Huff, St. Louis, Mo. Filed May 6, 1902. Serial No. 106,230. (No model.)

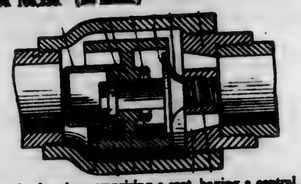

Claim.—1. A valve comprising a seat having a central upwardly-directed spindle, and a movable cylindrical member having flat ends, and having a central hub and a continuous web connecting the body and the hub, said hub being slidably and removably mounted upon the spindle to permit of reversal of the body to bring its ends alternately into coöperative relation with the seat.

2. A valve comprising a seat having a central stem and openings surrounding the stem, a hollow cylindrical body mounted slidably upon the stem for movement with its end into and out of contact with the seat, and a deflecting-plate at the base of the stem, said plate extending upwardly and outwardly over the openings in the seat.

3. A valve comprising a seat having a central stem, a body having a central hub slidably mounted upon the stem and adapted for engagement with the seat, and a cap removably engaged with the hub and inclosing the upper end of the stem.

708,509. LISTER-CULTIVATOR. WILLIAM S. GRAHAM, Canton, Ill., assignor to Parlin & Orendorff Company, Canton, Ill., a Corporation of Illinois. Filed May 3, 1902. Serial No. 105,462. (No model.)

Claim.—1. In a lister-cultivator, the combination of a pair of cultivators adapted to follow furrows, horizontal frames carried by the cultivators, a spreader-board laid across the horizontal frames and link-bars pivoted at their front ends to the frames, connected pivotally between their ends to the spreader-board and having their rear ends extended below cross-bars of the frames.

2. In a lister-cultivator, the combination of a pair of cultivators adapted to follow furrows, horizontal frames on the cultivators having each an arc-formed rear cross-bar and a pair of side bars, a spreader-board laid on the side bars of the cultivator-frames and link-bars beneath the frames pivoted at their front ends to the frames, connected pivotally with the spreader-board and having their rear ends extended beneath the arc-formed cross-bars of the frames.

3. In a lister-cultivator, the combination of a cultivator-frame adapted to run in a furrow, a lever, a rock-shaft, cultivating appliances attached to the rock-shaft and extended rearward therefrom, arms extending upward from the rock-shaft, and a seat-supporting frame sustained by the arms and by the lever, whereby the seat-supporting frame is rocked forward and back as the cultivating appliances are raised and lowered.

4. In a lister-cultivator, the combination of a cultivator-frame adapted to run in a furrow, a lever fulcrumed in the front of the cultivator-frame, an upward-extended arm on the lever, a rock-shaft journaled crosswise of the rear part of the cultivator-frame, cultivating appliances attached to the rock-shaft and extended rearward therefrom, arms extending upward from the rock-shaft, and a seat-supporting frame sustained at its rear end by the rock-arms and at its front end by the extension of the lever.

5. In a lister-cultivator, the combination of a cultivator-frame adapted to run in a furrow, a lever fulcrumed in the front of the cultivator-frame, a rock-shaft journaled in the rear part of the cultivator-frame crosswise thereof, cultivating appliances attached to the rock-shaft and extended rearward therefrom, arms extending upward from the rock-shaft, other arms pivoted on the arms of the rock-shaft, means for adjusting the pivoted arms on the arms of the rock-shaft, and a seat-supporting frame sustained at its rear end on the two-part arms and at its front end on the lever.

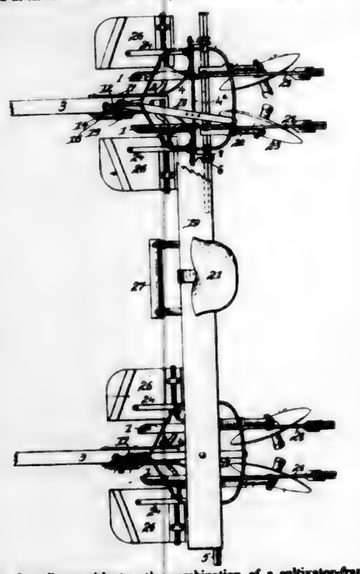

6. In a lister-cultivator, the combination of a cultivator-frame, an arched axle, supporting-wheels on the axle, crusher-boards carried by extensions of the axle and braced from the frame, and cultivating appliances in the rear of the spreader-boards.

708,510. PROCESS OF TREATING GAS-TAR RESIDUUM. JOHN T. LOVEJ, Boston, Mass., assignor of two-thirds to Milton P. McLaughlin, Somerville, and Joseph H. Smith, Wollaston, Mass. Filed Jan. 21, 1901. Serial No. 44,103. (No specimens.)

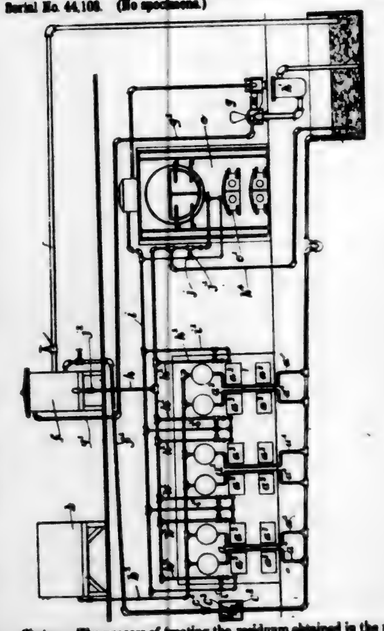

Claim.—The process of treating the residuum obtained in the manufacture of gas, which consists in agitating said residuum together with water to reduce it to a liquid mass of uniform consistency, and then separating from said mass the free water to produce a liquid product having a uniform and predetermined consistency.

REISSUES.

12,027. CASTING APPARATUS. DAVID T. CROXTON, Canal Dover, Ohio. Filed May 5, 1902. Serial No. 106,097. Original No. 660,373, dated May 29, 1900.

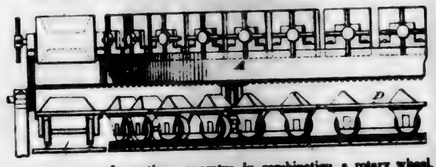

Claim.—1. In casting apparatus, in combination, a rotary wheel, molds rotatably mounted thereon, a track located beneath the casting-molds, cars or trucks coupled in a continuous endless chain, and connected to the rim of the mold-supporting wheel, a water-tank located in the car-track, and having the car-track depressed and attached to the bottom of said tank, whereby the cars will be drawn through the water for cooling the pigs, substantially as described.

2. In casting apparatus, in combination, a rotary wheel, molds rotatably mounted thereon, a track located beneath the casting-molds, cars or trucks coupled in a continuous endless chain, and connected to the rim of the mold-supporting wheel, a water-tank located in the car-track, and having the car-track depressed and attached to the bottom of said tank, and a portion of the rail on inside of the track elevated in a curved line, the arrangement being such that as the cars are drawn to travel on said track, they will pass through the tank for cooling the iron and also be tilted in passing over the elevated rail for unloading the cars, substantially as described.

3. In casting apparatus, in combination, a horizontally-arranged rotary carrier, molds mounted thereon and traveling in a circular path around the axis of the carrier, a cooling-chamber below the carrier for the pigs, and means supplemental to the mold-carrier traveling through the cooling-chamber in paths parallel to the path of the molds for advancing the pigs, substantially as set forth.

4. In casting apparatus, in combination, a horizontally-arranged rotary carrier, molds mounted thereon and traveling in a horizontal circular path around the axis of the carrier, a cooling-chamber formed on a curve around the axis of the carrier and adapted to hold a body of water and to receive the pigs from the mold, a conveyer moving through the water in said cooling-chamber in paths parallel to the path of the molds, means for imparting motion to the carrier and means for imparting motion to the conveyer in the cooling-chamber, substantially as set forth.

5. In casting apparatus, in combination, a horizontally-arranged rotary carrier, molds mounted thereon and traveling in a circular path around the axis of the carrier, a water-chamber below the carrier and means for moving the pigs through the water-chamber in paths curved around the axis of the carrier, substantially as described.

6. In casting apparatus, in combination a horizontally-arranged rotary carrier, molds mounted thereon and moving around the axis of the carrier; a cooling-chamber below the carrier, means for moving the pigs through the cooling-chamber in a path curved around the axis of the carrier, and means for causing the pigs to move away from the cooling-chamber on lines radial of the carrier, substantially as set forth.

7. In casting apparatus, in combination, a horizontally-arranged rotary carrier moving around a vertical axis, molds mounted thereon traveling around the axis of the carrier, a tank constituting more or less of an annular chamber arranged beneath the carrier substantially parallel to and directly under the path of the molds, a pig-receiving conveyer in the said tank and adapted to carry the pigs through the water in the said tank in a path around the axis of the carrier and means for causing the pigs to move from said carrier on lines radial of the said carrier, substantially as set forth.

8. In casting apparatus, in combination a horizontally-arranged rotary carrier moving around a vertical axis, molds mounted thereon traveling around said axis, a cooling-chamber beneath the carrier and arranged inside of the vertical lines of the carrier, and means for advancing the pigs through the cooling-chamber rotating around the axis of the carrier and means for causing the pigs to move in directions radial to the carrier substantially as set forth.

9. In casting apparatus, in combination a horizontally-arranged rotary mold-carrier, molds mounted thereon, a carrier for the castings below the molds supported independently of the mold-carrier and arranged to move around the vertical axis of the mold-carrier, substantially as set forth.

10. In casting apparatus, in combination, a horizontally-arranged rotary mold-carrier, molds mounted thereon, a horizontally-moving carrier for the castings below the mold-carrier consisting of a series of sections arranged in a circular series and arranged to travel around the vertical axis of the mold-carrier, and said sections being capable of movement relatively to the mold-carrier, substantially as set forth.

11. In casting apparatus, in combination a horizontally-arranged rotary mold-carrier, molds mounted thereon, a horizontally-moving carrier for the castings below the mold-carrier consisting of a series of sections arranged in a circular series and arranged to travel around the vertical axis of the mold-carrier and a support for the castings-carrier having a section in a relatively lower horizontal plane, a section in a relatively higher horizontal plane, and sections connecting the higher to the lower sections, whereby the castings-carrier when moving around the said axis is caused to travel in different horizontal planes, substantially as set forth.

12. In casting apparatus, in combination, a horizontally-arranged rotary mold-carrier, molds mounted thereon, a horizontally-moving carrier for the castings below the molds and arranged to move around the vertical axis of the mold-carrier and a support for the castings-carrier having a lower section, a higher section, and intermediate connecting-sections, and means for causing the castings-carrier to move around the vertical axis of the mold-carrier, substantially as set forth.

DESIGNS.

36,034. HANDLE FOR SPOONS, FORKS, OR SIMILAR ARTICLES. JOHN CUBLEE, Wallingford, Conn., assignor to International Silver Co., Meriden, Conn., a Corporation of New Jersey. Filed July 25, 1902. Serial No. 117,060. Term of patent 7 years.

Claim.—The ornamental design for a handle for a spoon, fork or similar article as herein shown and described.

36,035. CANDLESTICK. LOUIS C. HILLER, Wallingford, Conn., assignor to International Silver Co., Meriden, Conn., a Corporation of New Jersey. Filed July 25, 1902. Serial No. 117,047. Term of patent 7 years.

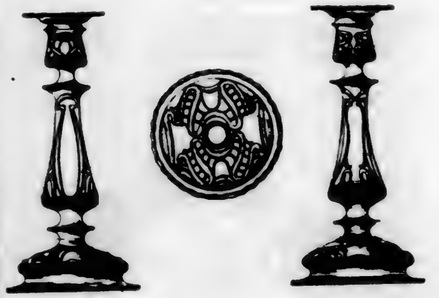

Claim.—The ornamental design for a candlestick as herein shown and described.

36,086. CANDLESTICK. LOUIS C. HELLER, Wallingford, Conn., assignor to International Silver Co., Meriden, Conn., a Corporation of New Jersey. Filed July 26, 1902. Serial No. 117,043. Term of patent 7 years.

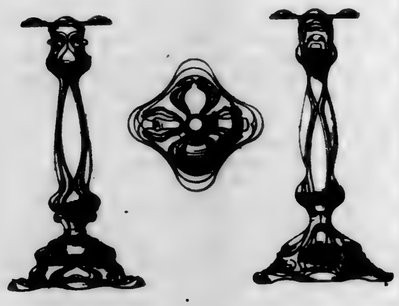

Claim.—The ornamental design for a candlestick as herein shown and described.

36,087. CANDLESTICK. LOUIS C. HELLER, Wallingford, Conn., assignor to International Silver Co., Meriden, Conn., a Corporation of New Jersey. Filed July 26, 1902. Serial No. 117,049. Term of patent 7 years.

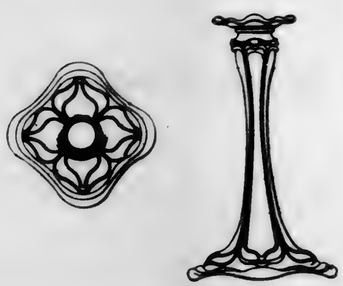

Claim.—The ornamental design for a candlestick as herein shown and described.

36,088. BAG-FRAME. SIDNEY A. KELLER, New York, N. Y., assignor to Marcus T. Goldsmith, New York, N. Y. Filed Sept. 21, 1901. Serial No. 76,078. Term of patent 3½ years.

Claim.—The ornamental design for a bag or purse frame, or similar article, as shown and described.

36,089. PAPER OR DRAPING WEIGHT. AARON LEVANS, Philadelphia, Pa. Filed July 11, 1902. Serial No. 115,947. Term of patent 14 years.

Claim.—The ornamental design for a paper or draping weight, as herein shown and described.

36,040. AUTOMOBILE-BODY. JOHN C. REUTER, St. Louis, Mo. Filed July 3, 1902. Serial No. 114,322. Term of patent 3½ years.

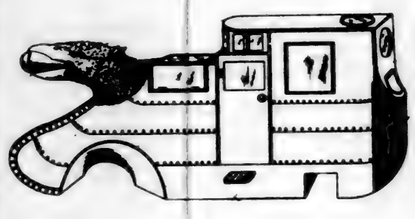

Claim.—The ornamental design for an automobile-body, as herein shown and described.

36,041. FABRIC. WILLIAM FREDERIC STIFEL, Wheeling, W. Va. Filed Aug. 6, 1902. Serial No. 118,634. Term of patent 7 years.

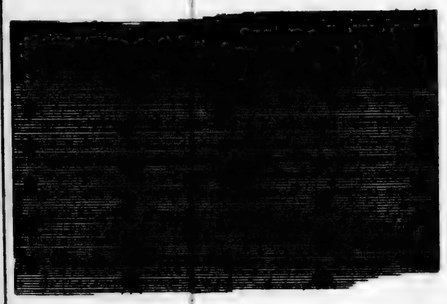

Claim.—The ornamental design for a fabric as herein shown and described.

TRADE-MARKS

REGISTERED SEPTEMBER 2, 1902.

38,860. MEN'S GLOVES. SHWARTZ, SCHLOSS & COMPANY, New York, N. Y. Filed July 11, 1902.

HERCULES

The word "HERCULES." Used since July 1, 1902.

38,861. SHIRT-WAISTS. UNITED SHIRT WAIST Co., Chicago, Ill. Filed July 7, 1902.

KEEP-KOOL

The hyphenated word "KEEP-KOOL." Used since May 1, 1902.

38,862. SILKS. CONSUMERS SILK MILLS AND COUPON EXCHANGE Co., Newark, N. J. Filed July 14, 1902.

Relda

The word "RELDA." Used since June, 1902.

38,863. REMEDY FOR RHEUMATISM. ADOLF H. WISSOWATY, Chicago, Ill. Filed Aug. 12, 1902.

A portrait of the registrant. Used since June 1, 1902.

38,864. SWEETENED AND UNSWEETENED COCOA AND CHOCOLATE. JOSEPH J. O'DONOGHUE'S Sons, New York, N. Y. Filed May 8, 1902.

Gold Seal

The representation of a seal having thereon a monogram comprising the letters and abbreviation "G S C Co" and the words "GOLD SEAL." Used since March 22, 1897.

38,865. BUTTER. R. O. WHITFORD & Co., Washington, D. C. Filed Apr. 15, 1902.

The words "RED CLOVER" and the representation of leaves and a bloom of red clover and a circular cable-like border. Used since March 15, 1902.

38,866. CLEANSING PREPARATIONS IN TABLET FORM. Geo. W. KIRK, Swansboro, Va. Filed July 22, 1902.

KI-SOP

The hyphenated word "KI-SOP." Used since July, 1900.

88,867. COMPOSITIONS FOR COATING WOOD AND METAL. AMERICAN STANDARD COMPOSITION CO., Washington, D. C. Filed Apr. 17, 1902.

A symbol consisting of the representation of an anchor in an inclined position resting at one end of the stock on a rock and having a chain attached to the eye, an eagle having upraised and partially-spread wings and grasping in its talons the shank of the anchor, and a marine or water view partially around the rock. Used since April 1, 1902.

88,868. BLACKBOARD-CRAYONS. AMERICAN SCHOOL FURNITURE COMPANY, New York, N. Y. Filed May 24, 1902.

The representation of a five-pointed star having the word "STAR" in plain block letters across the face and the representation of a bar immediately below the word "Star." Used since September 27, 1901.

88,869. ICE-CREAM FREEZERS. DASH & CO., Cincinnati, Ohio. Filed June 2, 1902.

PEARL

The word "PEARL." Used since 1899.

88,870. CROSSCUT-SAWS. E. C. ATKINS & COMPANY, Indianapolis, Ind., New York, N. Y., Memphis, Tenn., Minneapolis, Minn., Atlanta, Ga., and Portland, Oreg. Filed Nov. 5, 1901.

The word "POINTER" and the representation of a dog of the pointer type. Used since April 29, 1901.

88,871. CROSSCUT-SAWS AND HANDSAWS. E. C. ATKINS & COMPANY, Indianapolis, Ind., New York, N. Y., Memphis, Tenn., Minneapolis, Minn., Atlanta, Ga., and Portland, Oreg. Filed Nov. 5, 1901.

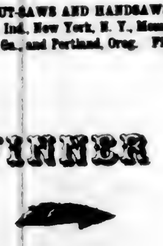

The word "WINNER" and the representation of the heads and necks of two racing-horses, one slightly in advance of the other. Used since March 22, 1901.

THE NORRIS PETERS CO.

LABELS

REGISTERED SEPTEMBER 2, 1902.

9,410.—*Title:* "A POCKET HAT LUER." (For Hat-Luers.) CHARLES E. SACKETT, Danbury, Conn. Filed July 31, 1902.

9,411.—*Title:* "BOSTON LIGHT GELATINE." (For Gelatin.) A. L. STARK, Boston, Mass. Filed July 28, 1902.

9,412.—*Title:* "KNICKERBOCKER CHOP." (For Tea.) FIRM OF W. J. BUTTFIELD, New York, N. Y. Filed August 11, 1902.

9,413.—*Title:* "HOP TEA." (For a Non-Intoxicating Beverage.) N. THOMAS BREWING CO., Dayton, Ohio. Filed August 11, 1902.

9,414.—*Title:* "LA ROSENCIA." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed August 13, 1902.

9,415.—*Title:* "LA GRADOSA." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed August 7, 1902.

9,416.—*Title:* "LA ROSA PUERTA." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed August 7, 1902.

9,417.—*Title:* "LA ROSA PUERTA." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed August 7, 1902.

9,418.—*Title:* "GOLDEN LEAF." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed August 7, 1902.

9,419.—*Title:* "STANDARD." (For Cigars.) EDWARD K. BLEWETT, Galena, Ill. Filed August 11, 1902.

9,420.—*Title:* "FLOR DE UTUADO." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed August 8, 1902.

9,421.—*Title:* "SUNCHITA." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed August 8, 1902.

9,422.—*Title:* "N. K. BROWN'S DYSPEPSIA AND INDIGESTION TABLETS." (For Tablets.) N. K. BROWN, Burlington, Vt. Filed August 9, 1902.

9,423.—*Title:* "THE NEW 20TH CENTURY REMEDY, THY MOIL." (For a Medicine.) WILLIAM R. COLLINS, Marion, Ind. Filed August 7, 1902.

9,424.—*Title:* "CHAMPAGNE-TABLETS." (For a Medicine.) FREDERICK J. RIEP, Boston, Mass. Filed July 31, 1902.

9,425.—*Title:* "ENGEL'S SILVER DUST." (For a Cleaning-Powder.) ALBERT W. ENGEL, Chicago, Ill. Filed August 8, 1902.

PRINTS

REGISTERED SEPTEMBER 2, 1902.

553.—*Title:* "AT THE TOP—MATHUSHEK PIANOS." (For Pianos.) MATHUSHEK PIANO MFG. CO., Orange, Conn. Filed August 12, 1902.

554.—*Title:* "PRIEST'S NAPA SODA." (For Soda-Water.) WILLIAM P. COURTNEY, Oakland, Cal. Filed July 29, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE GROSSMITH.

Decided December 9, 1901.

TRADE-MARKS—ANTICIPATION—"FLORODORA" AND "FLORIDENA."

The word "Florodora" refused registration in view of the prior registered mark "Floridena."

ON appeal.

TRADE-MARK FOR PERFUMES, PERFUMED SOAP, TOILET ARTICLES, ETC.

Application of John L. Grossmith for registration filed July 20, 1901, No. 63,814.

Messrs. J. E. Evans-Jackson & Co. and *Messrs. Richards & Co.* for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner of Trade-Marks refusing to register the word "Florodora" as a trade-mark for perfumes.

Registration was refused on reference to the prior registered mark "Floridena" for the same class of goods. The similarity between the words is so close that it is believed that the ordinary purchaser would be deceived and induced to purchase the goods of one party supposing them to be the goods of the other. There is certainly a likelihood of confusion in the minds of the purchasing public between the marks.

The decision of the Examiner of Trade-Marks is affirmed.

FELBEL v. OLIVER.

Decided January 6, 1902.

1. INTERFERENCE—PRIORITY OF INVENTION—CONCEALMENT OF INVENTION.

Where F. reduced the invention to practice and for one year and five months thereafter made no other machines and made no substantial advance toward placing the invention on the market, during which time O. made the invention and put it into use, *Held* that F. is the first inventor in the absence of a showing that he intentionally concealed the invention from the public or abandoned the idea of obtaining a patent and using the invention.

2. SAME—REDUCTION TO PRACTICE—DILIGENCE IN USING INVENTION.

By a reduction to practice a party's rights are protected, and it is not necessary thereafter to use the same amount of diligence in putting the invention upon the market as is necessary in a reduction to practice by one first to conceive but the last to reduce to practice.

APPEAL from Examiners-in-Chief.

TYPE-WRITING MACHINE.

Application of Jacob Felbel filed December 18, 1899, No. 740,703. Application of Thomas Oliver filed July 17, 1899, No. 724,049.

Mr. William W. Dodge for Felbel.

Messrs. Poole & Brown for Oliver.

ALLEN, *Commissioner:*

This is an appeal by Oliver from the decision of the Examiners-in-Chief affirming the decision of the Examiner of Interferences awarding priority of invention to Felbel upon the following issue:

In a type-writing machine, the combination with type-operating mechanism and a power-driven carriage, of a tabulating mechanism including a series of denomination-keys and a series of independently-movable stops connected thereto and also including an independent release-key for the carriage, the construction and arrangement being such that any key may be operated to set its corresponding stop, and such that said release-key may then be operated to enable the carriage to move rapidly to the point determined by the setting of said stop.

The testimony establishes and Oliver admits that the device in evidence as Felbel exhibit machine was made by Felbel in July, 1898. It is a full-sized operative machine and was successfully used at that time. This was prior to any date of invention proved by Oliver, and his claim to priority rests upon the contention that Felbel lost his rights after making the machine by a course of conduct similar to that of Mason in the case of *Mason* v. *Hepburn*, (84 O. G., 147.) This is stated in the reason of appeal as follows:

That the Examiners-in-Chief were in error in failing to hold that the contestant Felbel has lost all rights as against Oliver by putting aside the model made in July, 1898, and in failing to introduce into public use the improvements embodied in said model or to apply for a patent thereon, until after Oliver had invented, reduced to practice, filed his application for, and put into general public use the improvements set forth in his application.

Felbel's application was filed on December 18, 1899, and therefore there was a delay of one year and five months on his part after his machine was made. It does not appear that during this time Felbel made any other machines of the same character or made any substantial advance toward placing the machine upon the market. It is this failure to manufacture the machine during the time when Oliver made his invention and placed it upon the market which is alleged as a forfeiture of his rights.

The conduct of Felbel, as shown by the testimony, is not analogous to that of the parties who were adjudged to have lost their rights by intentional delay and concealment in the cases cited by the appellant. When his machine was made, Felbel took it to Seamans, an officer of a large manufacturing concern engaged in the manufacture of type-writers, with the expectation that the com-

pany would manufacture it. After waiting some time to see if this would be done he states that he took possession of the machine and had drawings for an application for a patent prepared in January, 1899. It is said that the draftsman was working on these drawings one hundred and four hours. Felbel states that he then intended to prepare the specification and claims himself, but was busy on other matters, and in the fall of that year turned the preparation of the case over to one Barkley. There is nothing in the admissions of Felbel or the testimony of the witnesses to show that he intentionally concealed the invention from the public or abandoned the idea of obtaining a patent and making use of the invention.

After the completion of an invention it is not necessary that the inventor use the same amount of diligence in putting it upon the market as is necessary in a reduction to practice by one first to conceive but the last to reduce to practice. By a reduction to practice a party's rights are protected and are not lost by what might be considered a lack of diligence if it had reference to a completion of the invention, but only by some such course of conduct as indicated in *Mason* v. *Hepburn*, cited above. (*Estey* v. *Newton*, 86 O. G., 799.)

Oliver argues that there is no interference in fact and that if the issue is construed as broad enough to apply to both parties' devices it is not patentable in view of the prior art. For the purposes of this case the issue must be construed as broad enough to apply to both devices. It is not limited beyond that in terms and was apparently intended to have that scope when the claims were drawn. The question whether a claim of that breadth is patentable is a matter to be considered by the Examiner when the cases come before him for *ex parte* consideration. The Examiners-in-Chief have called attention to this matter under Rule 126 and stated that in their opinion the issue is not patentable. The Examiner will consider this question when the applications come before him.

The decision of the Examiners-in-Chief is affirmed.

EX PARTE DOWNING.

Decided March 10, 1902.

1. FINAL REJECTION—FORMAL AMENDMENTS.

Where an applicant makes merely formal amendments to the claims and requests reconsideration, *Held* that a final rejection is in order.

2. AMENDMENT AFTER FINAL REJECTION—ADDITIONAL CLAIM—FORMAL AMENDMENT.

A party cannot demand the admission of an additional claim after final rejection as placing the case in better form for appeal, since if it differs from other claims it affects the merits.

3. SAME—DUPLICATION OF CLAIMS.

Where after final rejection the applicant presents by amendment an additional claim which is substantially the same as one of those rejected, *Held* that the amendment should not be entered, either with or without the showing referred to in Rule 68, since duplicate claims are not permissible.

ON petition.

CLOTHES-RACK.

Application of James M. Downing filed April 3, 1900, No. 11,826.

Mr. R. G. Dyrenforth for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner finally rejecting the claims in the above-entitled application and refusing the admission of a new claim filed after said final rejection.

The records show that after four actions by the Office an amendment was filed canceling all the claims and inserting in lieu thereof two new claims.

The Examiner suggested that certain formal amendments be made to these claims in order to correct their phraseology. The claims were also rejected on references.

The petitioner filed an amendment adopting the suggestions of the Examiner as to the formal matters and requested a reconsideration of the previous action on the merits, giving reasons for this request.

On reconsideration the Examiner finally rejected the claims. The applicant thereupon filed a new claim in addition to those already in the case and asked that it be entered and considered on its merits. The Examiner refused to enter and consider this claim on the ground that the claims were under final rejection, and the application was therefore in condition for appeal, citing Rule 68. The petitioner argued that the amendment was in order, as the final rejection was premature.

The amendments made to the claims after the first rejection thereof are clearly mere formal amendments. They were suggested by the Examiner in order to place the claims in better form. They did not in any way change or affect the merits of the claims.

The mere fact that an applicant amends rejected claims does not prevent the claims from being finally rejected upon a reconsideration thereof. The claims must be amended in matters of substance to avoid a final rejection. When the amendments are mere formal changes in the claims, a final rejection is proper. It follows, therefore, that the Examiner was not premature in his final rejection of the claims. (*Ex parte Rider*, 85 O. G., 1078.)

Upon the refusal of the Examiner to enter and consider the new claim on its merits the petitioner requested that the same be entered for the purpose of appeal under Rule 68. The Examiner properly refused to enter the new claim on the ground that Rule 68 does not provide for the entry of a new claim in addition to those under final rejection for the purpose of appeal. Rule 68 provides that—

> * * * amendments canceling claims or presenting those rejected in better form for consideration on appeal may be admitted.

The phrase "presenting those rejected in better form" is clear in its meaning. The intent of this provision of Rule 68 is to permit an applicant to change the form of the rejected claims for consideration on appeal. This change in form of the rejected claims can only take place by amendment. If a new claim is submitted which is merely one of the rejected claims in better form, the rejected claim should be canceled and the new claim substituted in lieu thereof; otherwise two claims which are the same in substance will be presented in the same application, which is not permissible.

If the new claim differs from the rejected claim in substance, it clearly cannot be entered in an application which is in condition for appeal under the first provision of the second paragraph of Rule 68, which provides only for the entry of amendments *not* affecting the merits. (*Ex parte White*, 98 O. G., 1969.)

The petitionor then filed a verified statement setting forth reasons why the new claim was not earlier presented and requested that in view of this statement the said claim be entered and considered.

The Examiner held that the new claim did not affect the merits, that it was the same claim in substance as those in the case under final rejection, and refused to enter the claim for that reason, as to do so would only present for consideration the same question already passed upon.

If the new claim did not affect the merits of the case, the Examiner's action was correct. In order to warrant the entry of an amendment after final rejection upon a verified showing of good and sufficient reasons why it was not earlier presented, the amendment must affect the merits. (*Ex parte White*, *supra*.)

A comparison of the new claim with the claims under final rejection makes it clear that the new claim does not affect the merits of the application. It is the same in substance as the claims under final rejection. The entry of the claim would only present for consideration the matter already passed upon.

The Examiner's action is correct, and the petition is denied.

EX PARTE HOYT.

Decided March 27, 1902.

DIVISION—SPRING-MOTOR AND COMBINATION OF MOTOR WITH A FAN.

Held that division was properly required between claims to a spring-motor and claims to that motor in combination with a fan.

ON petition.

SPRING-MOTOR.

Application of Charles H. Hoyt filed June 29, 1901, No. 66,504.

Mr. Thomas D. Stetson for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner requiring division between the claims of the above-entitled application.

Claims 1, 2, and 3 cover a spring-motor which is obviously of general application. Claim 4 covers this motor in combination with a fan.

Spring-motors and automatic fans, comprising a fan and its motor, are recognized in the art and manufacture as separate subjects of invention. They are separately classified in this Office.

Under these circumstances division was properly required, following the well-settled practice of the Office. (See *ex parte Johnston*, 92 O. G., 1235; *ex parte Smith*, 98 O. G., 1971.)

The petition is denied.

EX PARTE TYLER.

Decided July 8, 1902.

1. DIVISION—GAS-ENGINE—SPECIFIC DEVICE—CAPABLE OF GENERAL USE.

Held that division should be required between claims to the general gas-engine structure and specific claims covering, respectively, a self-lubricating journal-box, a lubricator for a crank-pin, a crank-pin, a speed-regulating device, a valve capable of use in any engine structure.

2. SAME—SAME.

Held that claims for a valve mechanism which covers a structure which is peculiarly adapted for use in the general gas-engine structure disclosed and claimed should not be divided from the claims covering the general gas-engine structure.

ON petition.

GAS-ENGINE.

Application of Aaron J. Tyler filed May 2, 1900, No. 15,261.

Messrs. Davis & Davis for the applicant.

ALLEN, *Commissioner:*

This is a petition from an action of the Examiner requiring division between certain groups of claims in the above-entitled application on the ground that the several groups of claims cover, respectively, independent inventions capable of separate use.

The invention relates to a gas-engine of special type. A majority of the claims are drawn to cover, in general, a gas-engine structure. Some of the claims, however, cover specific devices which are used in a gas-engine construction; but these devices are recognized by inventors and manufacturers as separate and independent inventions from each other and from the general engine structure in which they are used.

Claims 1 and 2 cover a specific form of self-lubricating journal-box. Such a structure is capable of general use and is not confined to use in the special engine construction described and claimed by the petitioner. Not only is such a device recognized by inventors and manufacturers as a separate and independent invention from the general engine structure in which it is used, but it is so recognized by this Office in its scheme of classification. The Examiner is right in his opinion that these two claims should be presented in a separate application from that containing the claims drawn upon the general engine structure.

Claims 3 and 4 should also be divided from the remaining claims in this application for the same reasons, in that they cover a specific form of lubricator for a crank-pin which is capable of separate use from the other inventions claimed in this application. Claim 5 covers a crank-pin of specific form which is capable of use in any engine. It is an independent subject-matter of invention from the general engine structure in which it is used.

The same is to be said of claims 13 and 14, for the reason that these claims cover a specific form of speed-regulating device, which is an independent subject-matter of invention from the inventions covered in the remaining claims and is capable of separate use.

The Examiner has required that the group comprising claims numbered 11, 12, 33, 34, 35, 36, and 37 be divided from the other claims on the ground

that they are drawn to cover a specific form of valve-operating device. An examination of these claims shows that claims 11 and 12 cover a specific valve capable of use in any engine structure, and the requirement of division by the Examiner as to these claims is right. Claims 33 to 37, inclusive, however, are drawn to cover the general engine structure specifically disclosed in this application, and division of these claims from the other claims covering the engine structure should not be insisted upon.

Claims 15 and 16, which were required by the Examiner to be divided from the remaining claims, also cover the general engine structure, and the requirement of division as to these two claims should not be insisted upon.

The petition is granted to the extent indicated.

DECISIONS OF THE U. S. COURTS.

Court of Appeals of the District of Columbia.

IN RE MCNEIL.

Decided June 23, 1902.

1. PATENTABILITY—MCNEIL—SEWING-MACHINE—CLAIMS NOT PATENTABLE.

The claims in the application of Chester McNeil for a sewing-machine, Serial No. 665,193, filed December 31, 1897, examined and *Held* to be not patentable in view of the prior art. (Decision of Assistant Commissioner, 100 O. G., 1976, affirmed.)

2. COMBINATION UNPATENTABLE—ELEMENT NEW—DOUBLE USE.

Where the combination in a sewing-machine of a trimmer in advance of one form of stitch-forming mechanism is old, *Held* that the combination of that trimmer with another stitch-forming mechanism is not patentable, whether that stitch-forming mechanism is new or old.

Mr. Charles L. Sturtevant for the appellant.

Mr. John M. Coit for the Commissioner of Patents.

SHEPARD, *J.*:

This is an appeal from the decision of the Commissioner of Patents denying an application for a patent for an improved combination in sewing-machines.

The application contains seventeen claims, sixteen of which are substantially represented by claim 1, as follows:

1. In a sewing-machine, in combination with stitch-forming mechanism, including devices for forming two rows of irregular stitches, the adjacent loops of which are interlocked, of a trimmer arranged in advance in the stitch-forming mechanism and in the line of the same, substantially as described.

Claim 5 was separately considered and reads as follows:

5. The combination, in a sewing-machine, of a suitable trimmer stitch-forming mechanism in rear of said trimmer including a plurality of eye-pointed thread-carrying devices forming parallel rows of stitches upon opposite sides of the line of feed and eye-pointed thread-carrying devices reciprocating back and forth between said opposite rows of stitches and forming intermediate interlocking rows of stitches, substantially as described.

The Primary Examiner, in his decision denying patentability, quotes the appellant's statement of his improvement as follows:

The invention therefore consists primarily of a sewing-machine including stitch-forming devices for making two rows of irregular stitches, the adjacent loops of which are interlocked, and a trimmer arranged in advance of the stitch-forming mechanism and in the line of the same. Secondly, the invention consists of a trimmer for severing the edges of overlapped pieces of fabric, stitch-forming mechanism in rear of said trimmer including devices for depositing along the edge of each of the abutting pieces of fabric a row of binding-stitches, and means for interlocking the adjacent loops of said binding-stitches, whereby, in one operation, an artificial selvage is formed on the edges of the fabric, and the same are united. Thirdly, the invention consists of a plurality of obliquely-set vertically-reciprocating and laterally-vibrating needles, and means for imparting an amount of lateral movement to said needles sufficient to carry each past the working position of another in every vibration, and a trimmer located in advance of said needles and between the extremities of throw thereof.

He then adds:

Inspection of the Woodward machine shows that every feature of each of the claims, save claim 5, in so far as the same call for stitch-forming mechanism, is found therein. The applicant has added to the said Woodward machine the ordinary trimmer in common use upon sewing-machines does not involve invention, the combination of stitch-forming mechanism and a trimmer, coöperating therewith to trim the edges of the material being stitched, being admittedly at least thirty years old.

From another point of view, the claims call for the bare substitution in the Borton and Willcox machine for the stitch-forming mechanism shown therein of the stitch-forming mechanism shown in the Woodward machine.

The decision of the Primary Examiner was affirmed successively on appeal to the Examiners-in-Chief and the Commissioner.

Agreeing with the conclusions of the Assistant Commissioner, we shall content ourselves with quoting from his opinion, to which nothing need be added beyond the citation of some additional authorities. He said, after reciting the patents of Nicholas (No. 168,521), Woodward (No. 466,264), Woodward & Timm (No. 480,377), and Borton & Willcox (No. 498,616):

It is old in a sewing-machine to combine a trimmer with a stitch-forming mechanism. This combination is shown in the patent to Borton and Willcox. In this patent the trimmer is arranged in advance of the stitch-forming mechanism in the line of the seam, and said stitch-forming mechanism includes devices for forming two rows of stitches.

The particular stitch-forming mechanism shown by appellant, and which constitutes an element in the combination of his claims, is not separately claimed by the appellant. Such a stitch-forming mechanism is shown, described, and claimed in the patent to Woodward.

The appellant has filed affidavits, under the provisions of Rule 75, to establish a date of invention of the matter claimed prior to the date of filing of Woodward's application, which resulted in the grant of his patent, No. 466,264, on December 29, 1891. The Examiner has held that these affidavits are not sufficient for the purpose. Whether they are sufficient or not is immaterial, from the view I take of this case.

Borton and Willcox having invented the combination of a trimmer with a stitch-forming mechanism, it is not invention to combine a trimmer with another stitch-forming mechanism, whether the stitch-forming mechanism be new or old. No new result is accomplished by appellant which differs in kind from the result accomplished by Borton and Willcox. There is no special coaction between the particular stitch-forming mechanism and the trimmer. Each sets in its own way and is not affected by the other, and performs its function in the combination irrespective of the other. I think that what the appellant has done is within the province of the mechanic and does not amount to invention.

As stated by the Supreme Court of the United States in *Hill* v. *Wooster*, (50 O. G., 560; 132 U. S., 695, 701,) * * * it is not enough that a thing shall be new, in the sense that in the shape or form in which it is produced it shall not have been before known, and that it shall be useful, but it must, under the Constitution and the statute, amount to an invention or discovery.

See also, *Durham* v. *Seymour* (71 O. G., 601; 6 App. D. C., 78, 103), and cases cited and reviewed therein.

There being no error in the decision of the Commissioner of Patents, it will be affirmed; and this decision will be certified to the Commissioner as required by law.

Patents Nos. 708,511 to 708,979.

THE OFFICIAL GAZETTE

OF THE

United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 11. TUESDAY, SEPTEMBER 9, 1902. PRICE—$5 per year.

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Designs	32—No.	36,042 to No.	36,073, inclusive.
Trade-Marks	24—No.	38,873 to No.	38,896, inclusive.
Labels	15—No.	9,426 to No.	9,440, inclusive.
Prints	1—No.	555.	
Reissues	3—No.	12,088 to No.	12,090, inclusive.
Total issue	544		

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	1	.....	Nebraska	4	1
Alaska Territory	.....	.....	Nevada	.....	.....
Arizona Territory	.....	.....	New Hampshire	1	.....
Arkansas	2	.....	New Jersey	19	.....
California	22	2	New Mexico Territ'y	.....	.....
Colorado	7	.....	New York	66	13
Connecticut	10	1	North Carolina	2	.....
Delaware	.....	.....	North Dakota	2	.....
District of Columbia	1	.....	Ohio	27	2
Florida	.....	.....	Oklahoma Territ'y	1	.....
Georgia	1	1	Oregon	2	.....
Hawaii Territory	.....	.....	Pennsylvania	75	3
Idaho	1	.....	Philippine Islands	.....	.....
Illinois	34	4	Rhode Island	6	.....
Indian Territory	.....	.....	South Carolina	1	.....
Indiana	7	.....	South Dakota	1	.....
Iowa	6	.....	Tennessee	3	.....
Kansas	3	.....	Texas	2	.....
Kentucky	3	.....	Utah	5	.....
Louisiana	1	.....	Vermont	.....	.....
Maine	.....	.....	Virginia	6	.....
Maryland	8	.....	Washington	4	.....
Massachusetts	17	1	West Virginia	1	.....
Michigan	13	5	Wisconsin	17	.....
Minnesota	18	.....	U. S. Navy	1	.....
Mississippi	.....	.....			
Missouri	13	4	Total to citizens of the United States	415	87
Montana	1	.....			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina	1	.....	Netherlands	.....	.....
Austria-Hungary	1	.....	Newfoundland	.....	.....
Belgium	2	.....	New South Wales	2	.....
Bermuda	.....	.....	New Zealand	.....	.....
Brazil	.....	.....	Norway	.....	.....
Canada	12	.....	Peru	.....	.....
Cape Colony	.....	.....	Portugal	.....	.....
Chile	.....	.....	Russia	1	.....
China	.....	.....	Santo Domingo	.....	.....
Colombia	.....	.....	Scotland	6	.....
Cuba	.....	1	South African Republic	.....	.....
Denmark	1	.....	South Australia	.....	.....
Egypt	.....	.....	Spain	.....	.....
England	27	1	Sweden	1	.....
France	8	.....	Switzerland	3	.....
Germany	18	1	Uruguay	.....	.....
Guatemala	.....	.....	Victoria	.....	.....
India	1	.....	Western Australia	.....	.....
Ireland	1	.....			
Italy	1	.....	Total to citizens of foreign countries	86	3
Japan	.....	.....			
Mexico	.....	.....			

Attorneys.

(ORDER No. 1,497.)

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., August 30, 1902.

Pursuant to the provisions of section 487 of the Revised Statutes, and with the approval of the Secretary of the Interior, Charles O. Erbaugh, of Denver, Colo., registry number 2305, is hereby disbarred from practice before the United States Patent Office for gross misconduct.

E. B. MOORE,
Acting Commissioner.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., September 2, 1902.

This Office has been advised by the Secretary of the Interior of the disbarment of the following attorneys from practice before the Department or any Bureau thereof:

Edward O. Jones, Booneville, Ind., August 8, 1902; William Jones, Booneville, Ind., August 8, 1902; Clayban M. Perkins, Elkton, Ky., August 22, 1902; Turner Bartley, Tompkinsville, Ky., August 27, 1902; Benjamin F. Morse, East Elmore, Vt., August 28, 1902; William A. Emery, formerly of Norway, now of East Waterford, Me., August 29, 1902.

C. M. IRELAN,
Chief Clerk.

Money by Mail.

Money sent by mail to the Patent Office will be at the risk of the sender. Letters containing money should be registered.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business September 2, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	In arrears—Under one month.			
252	X. Carriages and Wagons	Aug. 22	Aug. 25	54
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	Aug. 4	Aug. 14	84
246	I. Tillage, etc., and Fences	Aug. 4	Aug. 3	218
	Between one and two months.			
223	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	July 28	Aug. 4	165
30	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	July 28	July 24	326
155	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	July 25	Aug. 5	170
106	II. Farm Products, etc., Lubricators, Presses, etc.	July 24	July 19	175
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	July 19	July 25	270
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	July 18	July 30	253
258	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	July 18	July 29	199
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	July 17	Aug. 4	222
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	July 12	Aug. 11	213
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	July 12	Aug. 4	187
281	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	July 12	July 26	360
196	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	July 9	July 30	377
213	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	July 5	July 24	200
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	July 5	July 9	557
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	July 2	July 29	394
	Between two and three months.			
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	July 1	July 21	264
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	June 28	July 17	378
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	June 28	July 15	158
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 25	July 15	347
128	XXIX. Wood-Working Machines, Coopering and Roofing.	June 21	June 30	254
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	June 19	July 9	274
109	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 16	July 14	407
122	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 13	July 8	264

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
248	XVIII. Steam-Engineering, etc.	June 9	July 2	459
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	June 6	June 10	410
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	June 5	June 5	567
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	June 5	May 24	401
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	June 2	July 19	474
91	XVI. Telegraphy and Telephony	June 2	June 7	288
	Between three and four months.			
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	May 28	June 7	488
109	XXII. Fire-Arms, Ordnance, Navigation.	May 24	July 19	199
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 20	June 21	721
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	May 17	June 12	519
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	May 3	June 23	556
	Between four and five months.			
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 1	June 24	715

Total number of applications awaiting action 12,807

In arrears—Under one month.			
*Designs	Aug. 18	Aug. 13	65
Between one and two months.			
†Trade-Marks	July 15	July 7	217
Under one month.			
‡Labels and Prints	Aug. 19	Aug. 18	45

Punctuation and Amendments.

Attention is called to Order 789, dated November 26, 1892, which is as follows:

It is hereby directed that in the printing of claims of applications for patents the punctuation of the claims as made by applicants be strictly followed, and that the punctuation of the specification made by applicants be not departed from except to cure a manifest absurdity.

This order is still in force.

Examiners are prohibited from making any change in the claims or specification of an application without the consent of applicants or their attorneys; but when amendment becomes necessary the Office will duly advise, by letter, the applicant or his representative before passing a case to issue.

Women Inventors.

The Patent Office has published and has for sale a volume containing a list of women inventors to whom patents have been granted by the United States from 1790 to July 1, 1888. 44 pages. Paper covers, 50 cents.

An Appendix to the above, covering the period from July 1, 1888, to October 1, 1892. One volume, 18 pages. Paper covers, 25 cents.

Appendix No. 2, October 1, 1892, to March 1, 1895. One volume, 28 pages. Paper covers, 25 cents.

PATENTS

GRANTED SEPTEMBER 9, 1902.

708,511. PARAMETHYL-AMIDOPHENYL-GLYOXYLIC ACID AND PROCESS OF MAKING SAME. Fritz Ach, Mannheim, Germany, assignor to The Firm of C. F. Boehringer & Soehne, Mannheim-Waldhof, Baden, Germany. Filed May 20, 1900. Serial No. 16,635. (No specimens.)

Claim.—1. The process of preparing para-amidophenyl-glyoxylic acid which consists in treating amidophenyltartronyl-ureids with an oxidizing agent in the presence of alkali.

2. The process of preparing para-amidophenyl-glyoxylic acid which consists in dissolving an amidophenyltartronyl-ureid in an alkali and acting on the solution with an oxidizing agent.

3. The process which consists in dissolving an amidophenyltartronyl-ureid in an alkali solution, adding an oxidizing reagent thereto and boiling until the generated ammonia is driven off.

4. The process which consists in dissolving an amidophenyltartronyl-ureid in an alkali solution, adding an oxidizing reagent thereto and boiling in a reflux apparatus until the generated ammonia is driven off.

5. The process which consists in dissolving an amidophenyltartronyl-ureid in an alkali solution, adding an oxidizing reagent thereto and boiling in a reflux apparatus until the generated ammonia is driven off, then filtering and evaporating the filtrate, whereby the alkali salt of the new acid is obtained.

6. The process which consists in dissolving an amidophenyltartronyl-ureid in an alkali solution, adding an oxidizing reagent thereto, and boiling until the generated ammonia is driven off, then filtering and evaporating the filtrate, whereby the alkali salt of the new acid is obtained, then dissolving in water and acidulating the filtrate.

7. The process which consists in dissolving methyl-anil-alloxan in potash lye and adding mercuric oxid all in the proportions specified, and boiling in a reflux apparatus until all the ammonia has been liberated until generated ammonia has disappeared.

8. The process which consists in dissolving methyl-anil-alloxan in potash lye and adding mercuric oxid, all in the proportions specified, and boiling in a reflux apparatus until generated ammonia has disappeared, then filtering and evaporating the filtrate to dryness, digesting with alcohol and again evaporating.

9. The process which consists in dissolving methyl-anil-alloxan in potash lye and adding mercuric oxid all in the proportions specified, and boiling in a reflux apparatus until generated ammonia has disappeared, then filtering and evaporating the filtrate to dryness, digesting with alcohol and again evaporating, then dissolving the residue in water and acidulating with a mineral acid, whereby the new amido-phenylglyoxylic acid is precipitated.

10. As a new chemical compound, para-methyl-amido-phenylglyoxylic acid having the formula $CH_3.NH.C_6H_4.CO.COOH$ which is readily soluble in boiling water, cold alcohol, acetone, acetic ether, but soluble with difficulty in cold chloroform, ether and benzene, which softens on heating to 140°, centigrade, and is decomposed with frothing at 155°, to 157°, centigrade, and which forms short well-developed prisms of an orange color.

708,512. DIACETYL-DIAMIN AND PROCESS OF MAKING SAME. Fritz Ach, Mannheim, Germany, assignor to The Firm of C. F. Boehringer & Soehne, Mannheim-Waldhof, Baden, Germany. Filed May 1, 1901. Serial No. 58,256. (Specimens.)

Claim.—1. The process of preparing the herein-described uracyl derivatives which consists in heating a uric acid together with an organic acid anhydrid until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

2. The process of preparing the herein-described uracyl derivatives which consists in heating a uric acid together with an organic acid anhydrid under pressure until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

3. The process of preparing the herein-described uracyl derivatives which consists in heating a uric acid together with an organic acid anhydrid and a condensing agent until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

4. The process of preparing the herein-described uracyl derivatives which consists in heating a uric acid together with an organic acid anhydrid and a condensing agent under pressure until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

5. The process of preparing diacyl-diamins which consists in heating uric acid proper together with an organic acid anhydrid until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

6. The process of preparing diacyl-diamins which consists in heating under pressure uric acid proper together with an organic acid anhydrid until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

7. The process of preparing diacyl-diamins which consists in heating uric acid proper together with an organic acid anhydrid and a condensing agent until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

8. The process of preparing diacyl-diamins which consists in heating under pressure uric acid proper together with an organic acid anhydrid and a condensing agent until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

9. The process of preparing 4-5-diacetyl-diamido-uracyl which consists in heating uric acid proper together with acetic anhydrid until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

10. The process of preparing 4-5-diacetyl-diamido-uracyl which consists in heating uric acid proper together with acetic anhydrid and a condensing agent until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

11. The process of producing 4-5-diacetyl-diamido-uracyl which consists in heating uric acid proper together with acetic anhydrid and pyridin, until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

12. The process of producing 4-5-diacetyl-diamido-uracyl which consists in heating uric acid proper together with acetic anhydrid and pyridin under pressure until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling.

13. The process of producing 4-5-diacetyl-diamido-uracyl which consists in heating uric acid proper together with acetic anhydrid and pyridin under pressure until the product of the reaction will not reduce an ammoniacal silver solution except by prolonged boiling and then separating the diacetyl compound by boiling with water.

14. As a new chemical compound, a uric-acid derivative in which an acid radical and hydrogen are separately bound to the nitrogen atoms in the positions 7 and 9 of a uric acid, the CO group of the position 8 having been removed, the said compound being a diacetyl-diamin of a uric acid, giving a strong murexid reaction when evaporating with hydrochloric acid and reducing an ammoniacal silver solution only after prolonged boiling.

15. As a new chemical compound, 4-5-diacetyl-diamido-uracyl having the formula hereinabove given, which is readily soluble in alkalies including ammonia, which gives a strong murexid reaction on boiling with concentrated hydrochloric acid, without adding an oxidizing agent, which reduces ammoniacal silver solution only after boiling for a long time, which has no melting-point but sinters and turns brown at about 300°, centigrade, gradually decomposing on still further raising the temperature, and which may be crystallized in fine felted needles.

708,518. THIOXANTHIN AND PROCESS OF MAKING SAME. Fritz Ach, Mannheim, Germany, assignor to The Firm of C. F. Boehringer & Soehne, Mannheim-Waldhof, Baden, Germany. Filed July 27, 1901. Serial No. 69,267. (No specimens.)

Claim.—1. In the art of preparing thioxanthins, the process which consists in reacting upon an uric acid with carbon bisulfid.

2. The process which consists in reacting upon an alkali salt of an uric acid with carbon bisulfid.

3. The process which consists in reacting upon an acid alkali salt of an uric acid with carbon bisulfid.

4. The process which consists in heating an acid alkali salt of an uric acid with carbon bisulfid.

5. The process which consists in heating an acid alkali salt of an uric acid with carbon bisulfid in the presence of water.

6. The process which consists in heating an acid alkali salt of an uric acid with carbon bisulfid and water under pressure in a closed vessel.

7. The process which consists in heating the mono-potassium salt of an uric acid with carbon bisulfid and water under pressure in a closed vessel.

8. The process which consists in heating the mono-potassium salt of 3-methyl-uric acid with carbon bisulfid and water in a closed vessel to a temperature of about 150° centigrade.

9. As a new chemical compound, 3-methyl-6-thiouranthin whose formula is $C_6H_6N_4SO_2$, which decomposes on heating at about 340° centigrade, dissolves in about four hundred parts of boiling water, crystallizes from the same in the form of bright-yellow lustres and has all the properties characteristic to the thiouranthins.

708,514. HARNESS TRACK-SADDLE. LE ROY R. ALLEN, Berwick, Ohio. Filed July 30, 1901. Serial No. 70,054. (No model.)

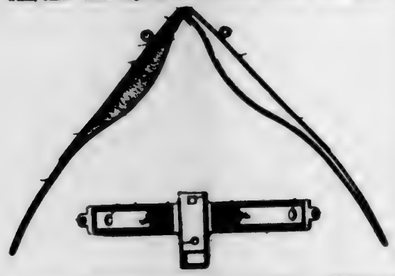

Claim.—1. In a harness-saddle, in combination, a saddletree, pad-plates secured thereto, and two disconnected pads attached to the pad-plates, the ends of the pad-coverings abutting together at the top, the tree and plates being contained within the pads and removable through the abutting ends.

2. In a harness-saddle, in combination, a saddletree, flanges thereon, a terret-bar between the flanges, a pad-plate resting upon the flanges and secured to the tree, a pad the skirting of which is without and upon the pad-plate, screws securing the skirting to the plate, a tug-hanger upon the skirting, a perforation through the tug-hanger, the housing and the plate, and a terret extending through the perforation and engaging the bar.

3. In a harness-saddle, in combination, two disconnected pads the coverings of which abut together at the top, a saddletree extending within the pads and removable through the abutting ends of the coverings, and means to secure the pads to the tree.

4. In a harness-saddle, the combination with a saddletree and pad-plates, of disconnected pad-coverings inclosing the tree and plates, said coverings having open upper ends abutting at the head of the saddle, and screws which pass through the coverings and attach the plates to the tree, whereby the tree may be detached from the plates and removed in the manner specified.

708,515. BOX-COVERING MACHINE. CHARLES R. RALPHYE, Brooklyn, N. Y. Filed June 27, 1898. Serial No. 684,541. (No model.)

Claim.—1. In a box-covering machine, the combination, with a box-holder, of a reciprocating carriage operating in a path parallel with one side of a box and having means carried thereby for engaging with and applying a covering-strip to a box on said holder, and means for operating the carriage.

2. In a box-covering machine, the combination, with a box-holder, of a reciprocating carriage operating in a path parallel with one side of a box and having a brush supported thereby for applying a covering-strip to the box, means for operating said carriage, and means for communicating a rotary movement to the brush.

3. In a box-covering machine, the combination, with a box-holder, of means reciprocating in a given path for engaging with a covering-strip and applying the same to a box, and means for engaging with the covering-strip in advance of said applying means and supporting its edges, for the purpose set forth.

4. In a box-covering machine, the combination, with a box-holder, of a reciprocating carriage provided with a brush or device supported thereby for applying a covering-strip to a box, and having means supported in advance of said brush for engaging with the strip to support its edges, and means for operating said carriage.

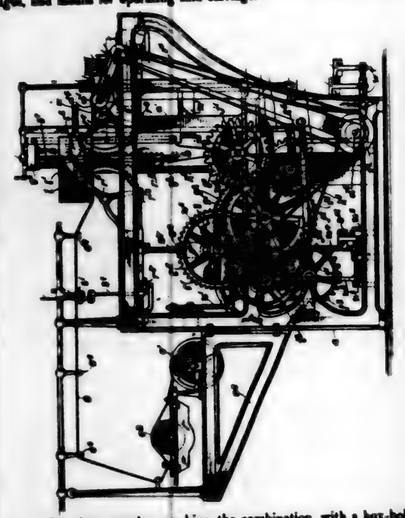

5. In a box-covering machine, the combination, with a box-holder, of means reciprocating in a given path for engaging with a covering-strip and applying the same to a box, and devices for engaging with the covering-strip in advance of said applying means and supporting its edges, one of said devices being laterally adjustable relative to the other.

6. In a box-covering machine, the combination, with a box-holder, of means reciprocating in a given path for engaging with the projecting edge of a covering-strip and acting upon the same in a longitudinal direction to bend and press the same against the bottom or adjacent side of a box carried by said holder.

7. In a box-covering machine, the combination, with an intermittently-rotating box-holder, of means for applying a covering-strip to the outer wall of a box, and means operating in a fixed path parallel with one side of a supported box for engaging with the loose edge of the covering-strip and bending and pressing the same against the inner wall of the box.

8. In a box-covering machine, the combination, with an intermittently-rotating box-holder, of a reciprocating carriage operating in a path parallel with one side of a supported box, provided with a series of arms arranged at varying angles relative to each other for successively engaging with the projecting edge of a covering-strip and operating to gradually bend and press the same against the bottom or adjacent side of the box.

9. In a box-covering machine, the combination with an intermittently-rotating box-holder, of a reciprocating carriage operating in a path parallel with one side of a supported box, provided with a series of spring-arms arranged at varying angles relative to each other for successively engaging with the projecting edge of a covering-strip and operating to gradually bend and press the same against the bottom or adjacent side of the box.

10. In a box-covering machine, the combination, with an intermittently-rotating box-holder, of a reciprocating carriage, operating in a path parallel with one side of a supported box, and provided with means carried thereby for engaging with the projecting edge of a covering-strip and acting upon the same to bend and press it against the bottom or adjacent side of the box.

11. In a box-covering machine, the combination, with an intermittently-rotating box-holder, of a reciprocating carriage operating in a path parallel with one side of a supported box, provided with means for engaging with the projecting edge of a covering-strip to bend and press the same against the bottom or adjacent side of the box, and with means in advance of said strip bending and pressing means for engaging with and supporting the projecting edge of the strip.

12. In a box-covering machine, the combination, with a box-holder, of a reciprocating carriage operating in a path parallel with one side of a box, a series of levers supported by said carriage, means for operating said levers to move the same into engagement with the covering-strip when opposite the box, and away from engagement therewith when in a position at the end of the box.

13. In a box-covering machine, the combination, with a box-holder, of a movable carriage, a lever supported by said carriage, and means operating said lever to move the same forward into engagement with the covering-strip when opposite the box, and backward from engagement therewith when in a position at the end of the box.

14. In a box-covering machine, the combination, with a box-holder, of a movable carriage, a strip-engaging device supported upon said carriage, and means for automatically moving said device forward into engagement with the covering-strip when opposite the box, and backward from engagement therewith when in a position at the end of the box, each automatic movement of the strip-engaging device being substantially at right angles to the movement of its carriage.

15. In a box-covering machine, the combination, with a box-holder, of a movable carriage operating in a path parallel with the edge of a supported box, a device carried by said carriage for engaging with a covering-strip upon the box, and means acting upon said device during the movement of the carriage to successively hold the same back from the edge of the box to permit it to pass one end of the latter, then enter it into the box to act upon the covering-strip, and then withdraw the same from within the box prior to reaching the opposite end of the latter, for the purpose set forth.

16. In a box-covering machine, the combination, with a box-holder, of a movable carriage operating in a path parallel with the edge of a box on said holder and provided with a roller thereon for passing beneath the box and supporting the same, and a device supported upon said carriage for engaging with a covering-strip and pressing the same upon the box.

17. In a box-covering machine, the combination, with a box-holder, of a movable carriage operating in a path parallel with the side of a box on said holder, a lever pivotally supported by said carriage to be moved therewith, and cam-plates located at opposite ends of the box to engage with said lever and control its movement in a direction toward and away from the box for the purpose set forth.

18. In a box-covering machine, the combination, with a box-holder, of a movable carriage operating in a path adjacent to one side of a box in said holder, a lever pivotally supported by said carriage to be movable therewith, and adjustable cam-plates located at opposite ends of the box to engage with said lever and control its movement in a direction toward and away from the box for the purpose set forth.

19. In a box-covering machine, a box-holder, a reciprocating carriage having means for applying a covering-strip to a box on said holder, means for operating said holder to successively present the several sides of a box thereon in the path of said strip-applying means, and means for automatically adjusting the position of the box-holder according to the form of the supported box whereby the several sides of the latter will be presented to the strip-applying means in the same plane.

20. In a box-covering machine, a box-holder, means for giving said holder a partial revolution at certain predetermined times and adjusting the vertical position of the same whereby the several sides of a box on said holder will be successively presented in the same predetermined plane, and means for applying a covering-strip upon the box on said holder.

21. In a box-covering machine, a box-holder, means for operating said holder to simultaneously give the same a partial turn and adjust its vertical position whereby the several sides of a box on said holder will be successively presented in the same plane, and means for applying a covering-strip upon the box on said holder.

22. In a box-covering machine, a box-holder, means for giving said holder a partial turn at certain predetermined times, means, embodying a cam, for automatically adjusting the vertical position of said holder whereby the several sides of a box thereon will be presented in the same predetermined plane, and means for applying a covering-strip upon the box on said holder.

23. In a box-covering machine, a box-holder, a shaft carrying said holder, a vertically-adjustable block in which said shaft is journaled and carried, means for operating said shaft to give the holder a partial turn at certain predetermined times, means for automatically moving said block to regulate the position of the holder, and means for applying a covering-strip upon the box in said holder.

24. In a box-covering machine, a box-holder, means for giving said holder a partial revolution at certain predetermined times and adjusting the vertical position of the same whereby the several sides of a box on said holder will be successively presented in the same predetermined plane, and means for automatically locking said holder in certain predetermined positions.

25. In a box-covering machine, a box-holder, means for revolving said holder, means for automatically locking said holder in certain predetermined positions, and means for automatically releasing said holder at certain predetermined times.

26. In a box-covering machine, a box-holder, a shaft carrying said holder and having a notched disk thereon, a spring-pressed pin normally engaging said disk to enter the notches therein and hold the box-holder from rotary movement, and means for automatically withdrawing said pin from engagement with the notched disk.

27. In a box-covering machine, a box-holder, a reciprocating carriage having means for applying a covering-strip to a box on said holder, a device carried by said carriage for acting upon the edge of said covering-strip, adjustable cam-plates located at opposite ends of the box for engaging with said device and controlling its movement in lateral direction toward and away from the box, and means for adjusting the box-holder and the said cam-plates relative to each other whereby the position of the cam-plates will correspond to the length of the box side presented for the application of the covering-strip.

28. In a box-covering machine, a box-holder, a reciprocating carriage having means for applying a covering-strip to a box on said holder, a device carried by said carriage for acting upon the edge of said covering-strip, adjustable cam-plates for engaging with said device to control its movement in a direction toward and away from the box, means for turning said box-holder at certain predetermined times to present its several sides to the strip-applying means, means for automatically adjusting the position of the box-holder whereby the several sides of an oblong or other irregular-shaped box may be presented in a certain predetermined plane, and means automatically adjusting the position of said cam-plates according to the length of the box side presented for the application of the covering-strip.

29. In a box-covering machine, a box-holder, a movable carriage having means for applying a covering-strip to a box on said holder, a device carried by said carriage for acting upon the edge of said covering-strip, adjustable cam-plates for engaging with said device to control its movement in a direction toward and away from the box, means for turning said box-holder at certain predetermined times to present its several sides to the strip-applying means, means for adjusting the position of the box-holder whereby the several sides of an oblong or other irregular-shaped box may be presented in a certain predetermined plane, and means operatively connecting said cam-plates with the box-holder whereby their position will be regulated by the movement of the latter.

30. In a box-covering machine, a box-holder, a movable carriage having means for applying a covering-strip to a box on said holder, a device carried by said carriage for acting upon the edge of said covering-strip, an adjustable cam or cam-plate for engaging with said device to control its movement in a lateral direction toward and away from the box, means for turning said box-holder whereby the several sides of an oblong or other irregular-shaped box may be presented in a certain predetermined plane, and means operatively connecting said cam-plate with the box-holder whereby its position will be regulated by the movement of the latter.

31. In a box-covering machine, a box-holder, means for engaging with the loose edge of a covering-strip to bend and press the same against the inner wall of a box, and means for entering the box and pressing the edge of the covering-strip against the inner corner of the same.

32. In a box-covering machine, a box-holder, means for applying a covering-strip to the outer wall of a box, means moving in a direction substantially parallel with the box and engaging with the loose edge of the covering-strip to bend and press the same against the inner wall of the box, and means having a movement to and from a position within the latter for pressing the edge of the covering-strip against the inner corner of the same.

33. In a box-covering machine, a box-holder, means for applying a covering-strip to the outer wall of the box, means engaging with the loose edge of the covering-strip and bending and pressing the same against the inner wall of the box, and a block supported to be movable to and from a position within the box, having a portion of its surface conforming to the inner corner of the latter for pressing the edge of the covering-strip therein.

34. In a box-covering machine, a box-holder, consisting of a rotatable head having box-supporting arms, means for applying a covering-strip to the outer wall of the box, means engaging with the loose edge of the covering-strip and bending and pressing the same against the inner wall of the box, blocks supported to slide upon said arms of the box-holder, and means connecting said blocks whereby the same may be moved to and from a position within the box to press the edge of the covering-strip against the corner of the same.

35. In a box-covering machine, a box-holder, a reciprocating carriage having means for applying a covering-strip to the outer wall of a box, and means automatically moving the said box-holder from its normal position during the return movement of the carriage, and returning the same to its proper position preparatory to the forward movement of the carriage.

36. In a box-covering machine, a box-holder, a vertically-adjustable block carrying said holder, a reciprocating carriage having means for applying a covering-strip to a box on said holder, and a rotating cam engaging said adjustable block and operating the same to raise the box-

holder from its normal position relative to the path of the carriage during the return movement of the latter.

27. A box-holder consisting of a cross-head, two pistons supported to slide on said head, blocks having box-supporting arms, supported to slide on said pistons in a direction at right angles to the movement of the latter on the cross-head, and means holding the parts in an adjusted position.

28. In a box-covering machine, the combination, with a box-holder, of means operating in a given path for engaging with a covering-strip and applying the same to a box on said holder, and means for rotating the box-holder with an intermittent movement to successively present the several sides of a supported box in the path of the strip-applying means and holding the same stationary while being acted upon by the latter, for the purpose set forth.

708,516. DRYING APPARATUS. HENRY C. BAUSEMAN, Baltimore, Md., assignor to Ella H. Baughman, Baltimore, Md. Filed Jan. 9, 1902. Serial No. 88,624. (No model.)

Claim.—1. In a drying apparatus, the combination with a rotary drum comprising a series of alternating drying-pockets and hot-air spaces, said pockets opening to the outside air and said hot-air spaces communicating with the interior of the drum, of means arranged for supplying said pockets with material to be dried, substantially as set forth.

2. A drying apparatus comprising a drum formed on its outer side with pockets and on its inner side with hot-air spaces communicating with the interior of the drum and arranged alternately with the pockets in combination with means arranged for supplying said pockets with material to be dried, substantially as set forth.

3. A drying apparatus comprising a corrugated drum formed with alternating drying-pockets and hot-air spaces, the pockets being accessible from without and the hot-air spaces communicating with the interior of the drum, of means arranged for supplying said pockets with material to be dried substantially as set forth.

4. A drum consisting of a cylindrical corrugated body to form alternating drying-pockets and hot-air spaces, the said pockets being accessible from without and the hot-air spaces communicating with the interior of the drum, heads secured to the ends of the drum and of greater diameter than the drum, roller-bearings upon which said heads are supported and means arranged for supplying said pockets with material to be dried, and means for rotating the drum, substantially as set forth.

5. A drier comprising a cylindrical drum formed with alternating drying-pockets and hot-air spaces and provided at its ends with heads, said hot-air spaces communicating with the interior of the drum and said pockets being accessible from without, substantially as set forth.

6. In a drying apparatus, a hollow rotary drum having a corrugated peripheral wall forming a series of alternating drying-pockets and hot-air spaces, said pockets opening to the atmosphere and said hot-air spaces communicating with the interior of the drum, substantially as set forth.

708,517. SASH ADJUSTER AND LOCK. FREDERICK W. & REMINGTON, Detroit, Mich. Filed May 24, 1901. Serial No. 61,757. (No model.)

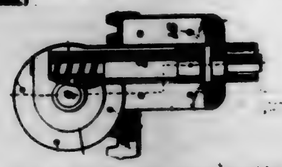

Claim.—A window-sash adjuster and lock, comprising a casing adapted to be countersunk in the frame of a window so as to lie flush therewith, a gear-wheel of comparatively large diameter projecting outside the casing and adapted to engage a rack either to the rear or the front thereof upon the upper or lower sash of a window, a comparatively small pinion or worm-wheel extending inwardly from the said gear-wheel into the casing, a worm engaging said pinion or worm-wheel, a shaft carrying the said worm and finding bearings in the casing, the upper end of said shaft being reached through the opening in the front of a window-casing and formed with a squared end by which it may be turned, substantially as described.

708,518. EXPLOSIVE-ENGINE. ALBERT T. BURNETT, Kansas City, Mo. Filed Aug. 20, 1901. Serial No. 73,402. (No model.)

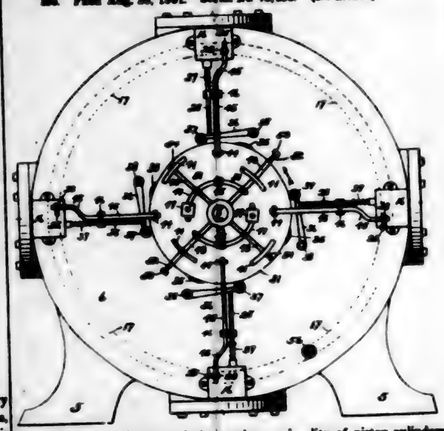

Claim.—1. In an explosive-engine, a plurality of piston-cylinders, a crank-shaft, a gear-wheel secured on said shaft, a stationary pinion driven by said gear-wheel, a cam-wheel mounted rotatably on said shaft, an internal gear in said cam-wheel, driven by said pinion, a plurality of cams, corresponding in number to the number of cylinders, mounted on the face of said cam-wheel so as to be movable radially, governor-levers pivotally secured to said cam-wheel and connected to said cams in such a manner that oscillation of said governor-levers will shift said cams radially, weights on said governor-levers, springs opposing the centrifugal pull of said weights, and admission-valves operated by the revolution of said cams, substantially as described.

2. In an explosive-engine, four piston-cylinders arranged ninety degrees apart, a crank-shaft, a gear-wheel secured on said shaft, a stationary pinion driven by said gear-wheel, a cam-wheel mounted rotatably on said shaft, an internal gear in said cam-wheel, driven by said pinion, the pitch diameter of said internal gear being double that of said gear-wheel, four cams on the periphery of said cam-wheel, set ninety degrees apart, and four exhaust-valves operated respectively by said cams, substantially as described.

3. In an explosive-engine, four piston-cylinders arranged ninety degrees apart, a crank-shaft, a gear-wheel secured on said crank-shaft, a stationary pinion driven by said gear-wheel, a cam-wheel mounted rotatably on said shaft, an internal gear in said cam-wheel, driven by said pinion, the pitch diameter of said internal gear being double that of said gear-wheel, four cams mounted on the face of said cam-wheel so as to be movable radially, said cams being ninety degrees apart, two governor-levers pivotally secured to said cam-wheel and connected to said cams in such manner that oscillation of said governor-arms will move said cams radially, weights on said governor-levers, springs opposing the centrifugal pull of said weights, and four admission-valves operated by the revolution of said cams, substantially as described.

708,519. QUOIT. CHARLES T. BRADSHAW, Philadelphia, Pa. Filed Oct. 17, 1898. Serial No. 693,827. (No model.)

Claim.—1. A quoit consisting of a dished shell having a central opening in its top and having a deflecting-flange at the edge of the opening and projecting downwardly into the inclosure of the shell beyond the edge of the opening, said flange lying in the path of air-currents passing upwardly against the inner face of the shell, to deflect said currents against air-currents passing upwardly through the opening of the quoit, to steady the quoit in its flight.

2. A quoit consisting of a shell having a central opening, a flange

surrounding the opening, within the shell and extending parallel with the axis of the opening, and additional openings having rods adapted to be vibrated by air passing through their respective openings.

708,520. MEASURING INSTRUMENT. CHARLES A. BROWN and ROBERT C. KIMM, Reading, Mich. Filed Jan. 20, 1902. Serial No. 91,259. (No model.)

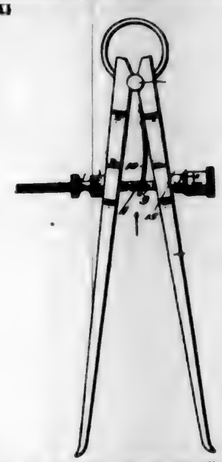

Claim.—1. In adjusting mechanism for calipers and like measuring instruments, the combination with the legs of the instrument provided with openings; of a draw-rod passing therethrough and provided with opposite threaded portions, an adjusting-nut working on one of said threaded portions for setting the calipers to the approximate adjustment, and a differential micrometer-nut upon the other threaded portion of the rod for setting the calipers to exact adjustment, the said differential nut comprising an outer nut, an inner nut having an exteriorly-threaded portion to engage said outer nut, and an interiorly-threaded portion to engage the threads on the draw-rod, and means for holding the outer nut against rotation, substantially as described.

2. In adjusting means for calipers and like measuring instruments, the combination with the legs of the instrument provided with openings; of a draw-rod extending through said openings and provided with opposite threaded portions, a nut engaging one of the threaded portions for setting the calipers to approximate adjustment, and a differential micrometer-nut engaging the other threaded portion of the rod for setting the instrument to the exact adjustment, the said micrometer-nut comprising an outer nut provided with legs to engage seats in the adjacent leg of the instrument and formed with interior screw-threads, and an inner nut having a stem formed with interior screw-threads to engage the rod and with exterior finer threads to engage the threaded surface of the outer nut and having a sleeve inclosing said stem and outer nut, substantially as described.

3. In adjusting means for calipers and other like measuring instruments, the combination with the legs of the instrument; of a draw-rod passing therethrough, said rod being provided with opposite threaded portions, a nut working upon one of the threaded portions of the rod for setting the instrument to the approximate adjustment, a differential micrometer-nut working upon the other threaded portion of the rod for setting the instrument to the exact adjustment, one of the members of said micrometer-nut being provided with legs for engaging the adjacent leg of the instrument for holding it against rotation, and means engaging the rod for normally drawing the same in one direction for maintaining said legs in engagement, substantially as and for the purposes set forth.

4. In adjusting means for calipers and other like measuring instruments, the combination with the legs of the instrument; of a draw-rod extending therethrough, said rod being provided with opposite threaded portions and an intermediate shoulder, a nut working upon one of the threaded portions of the rod for setting the instrument to the approximate adjustment, a differential micrometer-nut working upon the other threaded portion of the rod for setting the instrument to exact adjustment, one of the members of said micrometer-nut being provided with legs to engage notches in the adjacent leg of the instrument to look it against rotation, and a plate-spring secured to said leg and bearing against said shoulder to draw the rod in one direction to hold said legs in locking engagement, substantially as described.

708,521. RAILROAD-TIE. EARL M. BUNCH, Collinwood, Ohio. Filed Dec. 2, 1901. Serial No. 84,261. (No model.)

Claim.—1. In combination, a railroad-tie comprising a metal beam embedded in a body of molded material, said beam having lateral flanges forming seats for the rail, and rail-retaining bolts engaging said flanges.

2. A railroad-tie comprising a metal beam embedded in a solid block of molded material, said beam having lateral flanges forming seats for the rail.

3. In combination, a railroad-tie comprising a flanged metallic beam embedded in a solid block of molded material, and rail-retaining bolts engaging the flanges.

4. In combination, a railroad-tie comprising a flanged metallic beam embedded in a block of molded material, the clips G, and the bolts D engaging the clips and the flanges.

5. In combination, a railroad-tie comprising a trough-shaped metallic beam embedded in a block of molded material, and rail-retaining means engaging the beam.

6. In combination, a railroad-tie comprising a trough-shaped metallic beam embedded in a block of molded material, and rail-retaining bolts engaging the beam.

708,522. RAILROAD-TIE. EARL M. BUNCH, Collinwood, Ohio. Filed Dec. 12, 1901. Serial No. 86,567. (No model.)

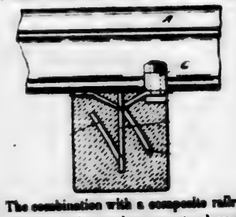

Claim.—1. The combination with a composite railroad-tie comprising a flanged metal beam having anchor-arms struck up therefrom, forming openings therethrough, and an inclosing body of molded material extending through said openings, of rail-retaining bolts engaging the flanges.

2. A railroad-tie comprising a metallic beam embedded in a block of molded material, said beam having flanges forming seats for the rails and arms projecting from the frame into the molded material, said arms presenting their broader sides in a horizontal plane.

3. A railroad-tie comprising a metallic beam embedded in a block of molded material and having integral flanges forming seats for the rails and anchor-arms projecting laterally into the molded material, said flanges and arms being struck up from the body of the beam producing openings therein through which the molded material extends.

4. A composite railroad-tie comprising a single metal plate having rail-supporting flanges and anchor-arms struck up therefrom, the wider sides of which are faced upwardly, forming openings therethrough, and a body of molded material inclosing said plate and arms and extending through the openings.

708,528. SWIVEL-TRUCK FOR VEHICLES. FRANK BURGER, Fort Wayne, Ind., assignor of three-fourths to Henry H. Williams, Fort Wayne, Ind. Filed Feb. 20, 1901. Serial No. 48,168. (No model.)

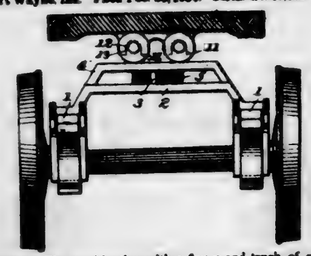

Claim.—The combination with a frame and truck, of a bolster supported on the truck, a bolt on the bolster, a girder supported above the

bolt, a connecting-bar between the bolt and frame, a cross-bar connected to the frame, and friction-rollers between the cross-bar and girder, substantially as described.

708,524. FILLING-CARRIER RECEPTACLE FOR WEFT-REPLENISHING LOOMS. JOHN I. DUNCAN, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed May 1, 1902. Serial No. 105,468. (No model.)

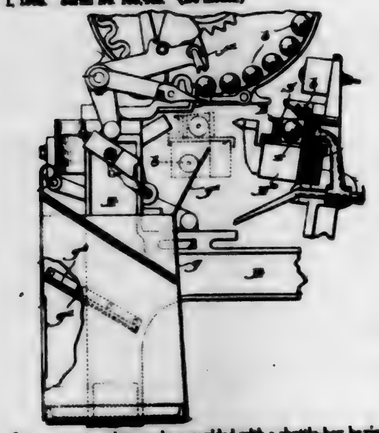

Claim.—1. In a loom, a lay provided with a shuttle-box having an opening in its bottom for the discharge of a filling-carrier, a stationary receptacle having an upturned and rearwardly-inclined guide-lip to extend beneath said opening when the lay beats up, and an oppositely-inclined deflector below the lip within the receptacle, the latter having an opening in its wall below the deflector to permit withdrawal of filling-carriers directed from the deflector to the bottom of the receptacle.

2. In a loom, a lay provided with a shuttle-box having an opening in its bottom for the discharge of a filling-carrier, a stationary receptacle having an upturned and rearwardly-inclined guide-lip to extend beneath said opening when the lay beats up, and an oppositely-inclined guard or deflector below the guide-lip and within the receptacle and cushioned on its upper face, a filling-carrier passing from the guide-lip onto the deflector and being conducted thence to the bottom of the receptacle, the latter having an opening in its front wall below the deflector, for withdrawal of filling-carriers.

3. In a loom, a lay provided with a shuttle-box having an opening in its bottom for the discharge of a filling-carrier, the lay being cut away in front beneath the opening, a stationary receptacle having an upturned and rearwardly-inclined guide-lip to enter the cut-away portion of the lay and extend beneath the opening in the shuttle-box when the lay beats up, and an oppositely-inclined deflector extended across the receptacle below the lip, with a clearance between the lower edge of the deflector and the back of receptacle, the latter having an opening in its front wall below the deflector, through which may be removed filling-carriers directed from the lip to the deflector and thence to the bottom of the receptacle.

4. In a loom, a lay provided with a shuttle-box having an opening in its bottom for the discharge of a filling-carrier, a stationary receptacle having an open top and positioned to receive a discharged filling-carrier when the lay beats up, said receptacle having an opening in one of its walls, and an inclined deflector within the receptacle above the said opening to guard or shield from an incoming filling-carrier the hand of the attendant when inserted in the wall-opening.

5. In a loom, a lay provided with a shuttle-box having an opening in its bottom for the discharge of a filling-carrier, a stationary receptacle having an open top and positioned to receive a discharged filling-carrier when the lay beats up, and an inclined deflector within the receptacle below its top, said deflector being cushioned on its upper face, a discharged filling-carrier falling onto the deflector and being conducted thence to the bottom of the receptacle, the latter having an opening in one of its walls below and guarded or shielded by the deflector, to permit withdrawal of filling-carriers.

6. A receptacle for discharged filling-carriers, consisting of a box having an open top, and an inclined guard or deflector within the box below its top and extended from one wall part way toward the opposite wall, the box having an opening in the wall of the box below and shielded by the guard or deflector.

7. A receptacle for discharged filling-carriers, consisting of a box having an open top, and an inclined guard or deflector fixedly mounted within the box below its top and extended from the front wall thereof part way toward its back wall, and a cushion on the upper face of the deflector, the box having an opening in its front wall below the guard or deflector.

8. A receptacle for discharged filling-carriers, consisting of a box having an open top and an upturned, rearwardly-inclined guide-lip at its back, an oppositely-inclined guard or deflector within the box below the guard-lip, extended from the front wall of the box part way toward its back wall, and a cushion on the upper face of the guard or deflector, the box having an opening in its front wall below the said guard or deflector.

708,525. BLOTTER OR DESK-PAD. GEORGE W. BURKIRK, New York, N. Y. Filed Apr. 24, 1901. Serial No. 57,294. (No model.)

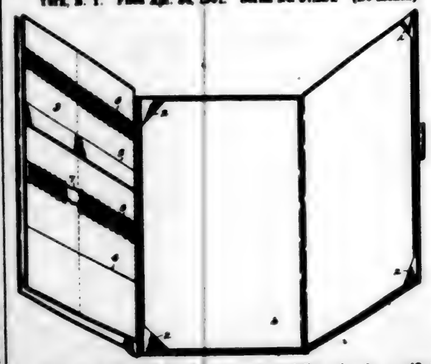

Claim.—A pad of the character substantially as herein specified; comprising a body-section and two flexibly-attached foldable sections, said body-section and one of said foldable sections being provided at the corners thereof most remote from each other with triangular pockets adapted to receive the corners of blotters and similar sheets, a pocket attached at one of its longer edges to the inner edge of the other foldable section, said pocket being practically of equal dimensions with said section, and the two being united at the shorter edges thereof by an extensible connection, the pocket being also provided with transverse bands or strips attached thereto at widely-separated points, and with suitably-attached transverse corrugated bands or strips.

708,526. LOAD-RETAINING APPARATUS FOR VEHICLES. WILLIAM H. CASE, Carlton, Minn. Filed Dec. 3, 1901. Serial No. 84,607. (No model.)

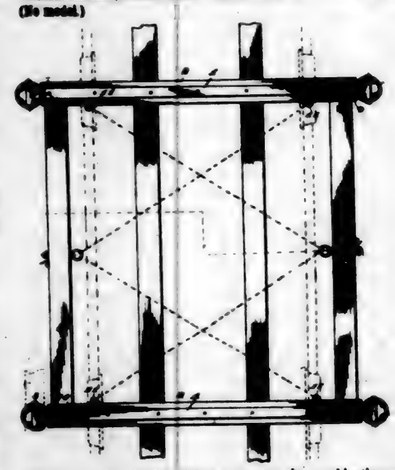

Claim.—1. In a load-retaining apparatus, the combination with a suitable car, of sockets pivotally supported thereon, flexible means secured to said sockets and passed transversely of the car to the opposite side thereof to that of the respective socket, and flexible means at each side of said car for simultaneously controlling the socket-operating means for affecting all of the sockets of the opposite side of the car, substantially as described.

2. In a load-retaining apparatus, the combination with a suitable car, of stake-carrying sockets pivoted at either side thereof, cables secured to each of said sockets and passed to the side of the car opposite that of the respective socket, and flexible means carrying the free ends of said cables, whereby operation of said flexible means is designed to simultaneously affect all of the sockets of one side of the car, substantially as described.

3. In a load-retaining apparatus, the combination with a suitable car, of stake-carrying sockets pivotally supported near either side thereof, flexible means engaging each of said sockets and designed to control the pivotal position of the same, the said means being passed to the opposite side of the car to that of the sockets, and means for controlling the movement of said flexible means of all of the sockets on one side of the car simultaneously, from the opposite side thereof, substantially as described.

4. In a load-retaining apparatus, the combination with a suitable car, of straps passed transversely thereof, sockets pivoted to the ends of said straps, means carried by said sockets and passed transversely across the car to the opposite side thereof to that of the respective sockets for controlling the pivotal movement thereof, flexible means upon said opposite side connecting the controlling means of one set of sockets whereby the same may be operated simultaneously, means for locking said connecting means against movement, substantially as described.

5. In a load-retaining apparatus, the combination with a suitable car, of straps arranged transversely thereof and secured on top of the same, stake-carrying sockets pivoted to said straps to swing laterally outward and downward, a cable secured to each of said sockets and passed to the opposite side of said car to that of its respective socket, a chain carrying the free ends of all the cables of one side of the car, and means for locking said chain against movement, substantially as described.

6. In a load-retaining apparatus, the combination with a suitable car, of stake-carrying sockets pivoted upon the same, each of said sockets being provided with an annular groove, a ring fitting within said groove and surrounding said socket, an eye formed on said ring, a cable secured to said eye and passed to the opposite side of said car, and means for locking the free end of said cable in a given position, substantially as described.

7. In a load-retaining apparatus, the combination with a suitable car, of stake-supporting sockets pivotally mounted thereon near each side thereof, a cable secured to each of said sockets, a ring carried by the framework of said car near each of said sockets, the cable of each of the respective sockets being passed through its contiguous ring, and thence to the opposite side of the car to that of its socket, and a chain at each side of the said car engaging the free ends of all of the cables of its respective side of the car, and designed to be operated for simultaneously affecting all of said cables, substantially as described.

708,527. COMBINED GAGE-COCK AND SAFETY-VALVE. ALEXANDER C. GALGER, Richmond, Va. Filed Mar. 20, 1902. Serial No. 99,068. (No model.)

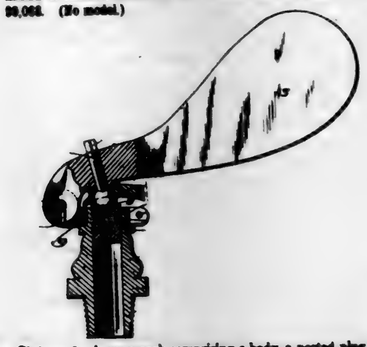

Claim.—1. A gage-cock comprising a body, a ported plug inserted therein and having a concaved seat, a convex valve, and a gravity-lever for closing the valve against its seat, substantially as set forth.

2. A gage-cock comprising a body, a ported plug inserted therein and having a concaved seat, a gravity-lever, a convex valve carried by the lever, and a shield about the valve-stem and guarding the valve, substantially as set forth.

3. A gage-cock comprising a body, a ported plug inserted therein and having a concaved seat, a gravity-lever, and a convex valve having a stem journaled in the lever and having a projecting end by which it may be turned, substantially as set forth.

708,528. METAL CAP FOR BOTTLES OR JARS. CHRISTIAN A. CALLESEN, New York, N. Y., assignor to ANNA Callesen, Brooklyn, N. Y. Filed Nov. 13, 1901. Serial No. 82,093. (No model.)

Claim.—1. A metal cap for bottles or jars having a tongue, the base of the tongue being formed by slits terminating in the side wall or flange of the cap, and an additional slit in the side wall or flange of the cap extended to a point intermediate the slits which form the base of the tongue whereby the body of metal at the base of the tongue may be broken as the tongue is bent away from the cap, for releasing the side wall or flange from its engagement with the neck of the bottle or jar, substantially as set forth.

2. A metal cap for bottles or jars having a tongue projecting from its side wall or flange, with its base located within the said side wall or flange, and a slit in the side wall or flange leading to a point at the base of the tongue whereby the body of metal at the base of the tongue may be broken as the tongue is bent away from the cap for completely severing the side wall or flange for releasing it from the neck of the bottle or jar, substantially as set forth.

3. A metal cap having a side wall or flange fitted to be clamped to the neck of a bottle or jar and a tongue projecting from the side wall or flange, and a slit through the side wall or flange leading to a point within the base of the tongue whereby the body of metal at the base of the tongue may be broken as the tongue is bent away from the cap for releasing the side wall or flange from its looking engagement with the neck of the bottle or jar, substantially as set forth.

4. A metal cap for bottles or jars having a tongue, the base of the tongue being formed by slits terminating in the side wall or flange of the cap, and a plurality of additional slits in the side wall or flange of the cap extended to points intermediate the slits which form the base of the tongue whereby the body of metal at the base of the tongue may be broken as the tongue is bent away from the cap for releasing the side wall or flange from its engagement with the neck of the bottle or jar, substantially as set forth.

5. A metal cap for bottles or jars having a tongue projecting from its side wall or flange, with its base located within the said side wall or flange, and a plurality of slits in the side wall or flange leading to points within the base of the tongue whereby the body of metal at the base of the tongue may be broken as the tongue is bent away from the cap for completely severing the side wall or flange for releasing it from the neck of the bottle or jar, substantially as set forth.

708,529. WATER-TRAP. FRITZ GARBUTT, Jr., Chicago, Ill. Filed Feb. 3, 1902. Serial No. 92,317. (No model.)

Claim.—1. A device of the type set forth, comprising two horizontal sections of pipe having their ends flared and in abutting engagement forming an interior globular pocket, the lower portion of the pocket adapted to receive a liquid extending in alinement with the lower portions of the pipe-sections, a float adapted to be supported by the liquid, with a means extending through one of said pipe-sections and into said globular pocket for engagement with the float, said means being adjustable from the exterior of the pipe.

2. A device of the type set forth, comprising horizontal sections of pipe having their ends flared and bolted together, forming an interior globular pocket between the openings of the pipes, said pocket adapted to receive a liquid extending in alinement with the lower portions of the pipe-sections, a float supported by the liquid, and a wire screwed into one of the pipe-sections and extending within said globular pocket.

3. A device of the type set forth, comprising horizontal sections of pipe having their ends flared and secured together forming an interior globular pocket, the lower portion of which is adapted to receive a liquid extending flush with the lower portions of the pipe, a float supported by the liquid, and a means extending within the globular pocket and to the front of the opening of one of the pipe-sections for engagement with said float.

708,529.

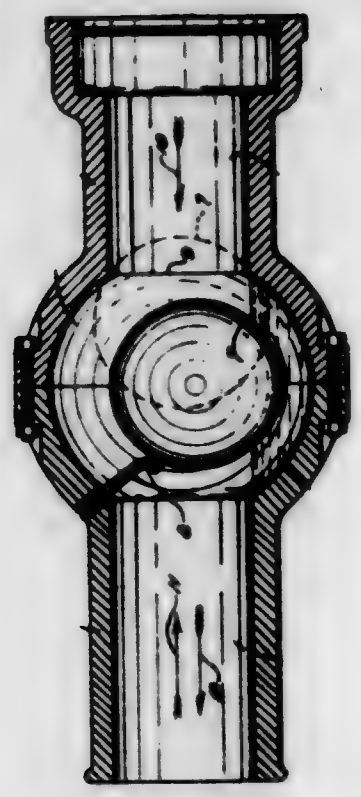

708,530. DOOR HOLDER OR BOLT. WILLIAM J. CRAFFEE, Manharper, Indiana. Filed May 13, 1902. Serial No. 106,942. (No model.)

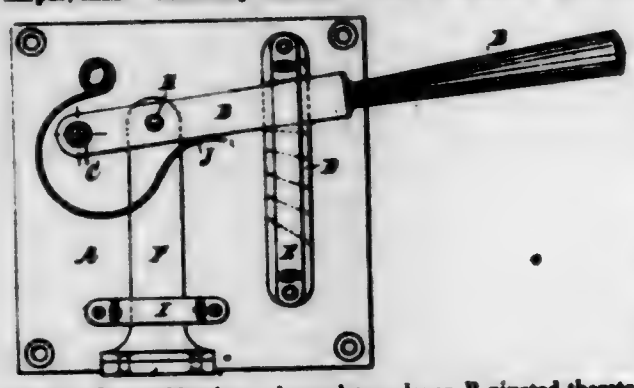

Claim.—In combination, a base-plate, a lever B pivoted thereto, a holder pivotally connected to the lever at a point between the pivot of the lever and its free end, a rack located upon the base-plate for engaging and holding the lever and a spring for pressing the lever against the rack-teeth, substantially as described.

708,531. RAIL-JOINT. WILLIAM COLLETON, Mukwonago township, Wis. Filed Mar. 26, 1902. Serial No. 100,010. (No model.)

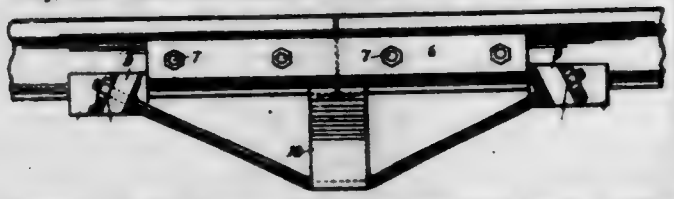

Claim.—1. In combination, the abutting ends of two rails, joint-plates on and secured to the rails, straining-blocks loose and slidable on the flanges of the rails bearing against the joint-plates, a strut between the straining-blocks under the ends of the rails, and tension-rods bearing medially on the strut and anchored by tension-nuts to the straining-blocks.

2. Supporting means for a rail-joint, comprising joint-plates secured to the webs of the rails, straining-blocks slidable on the base of the rails and bearing against the ends of the joint-plates, a strut between the straining-blocks under the ends of the rails, and tension-rods bearing medially on the strut and secured adjustably to the straining-blocks.

3. Supporting means for a rail-joint, comprising straining-blocks adapted to fit on the base of the rails and against joint-plates thereon, and provided with laterally-projecting wings, a strut between the straining-blocks under the ends of the rails, tension-rods bearing medially on the outer end of the strut and extending to and passing through the wings on the straining-blocks, and nuts turning by a screw-thread on the ends of the tension-rods and against the wings on the blocks.

708,532. MOLD FOR MAKING CEMENT STONE. ROBERT R. COLPITTS, Jacksonville, Mich. Filed Apr. 12, 1902. Serial No. 102,582. (No model.)

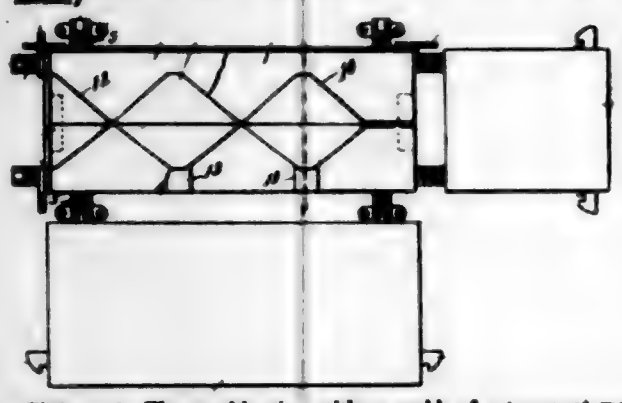

Claim.—1. The combination with a mold, of a two-part member forming a series of cores, the core at one end of the series being closed and the core at the opposite end thereof being open.

2. A series of cores for molding-machines constructed and arranged in sections and adapted when placed together to form the series of cores, the core at one end of the series having a closed end and the core at the opposite end of the series having an open end.

3. A series of cores for molding-machines constructed and arranged in sections and adapted when placed together to form the series of cores, the core at one end of the series being open.

4. In a mold, a base having sides and ends hinged thereto, said sides and ends being locked together, an auxiliary sectional bottom arranged above said base, sectional cores arranged upon said bottom, a top plate, and means for pressing said top plate downward with relation to said sides and ends.

5. In a mold, a base having sides and ends detachably secured thereto, means connected with the sides and the ends for fastening them in a vertical position, an auxiliary bottom, said bottom being split throughout its entire length, sectional cores disposed upon said bottom, a top plate, and means for pressing the top plate downward with relation to said sides and ends.

6. In a cement-mold, a base having ears thereon; detachable sides and ends having tongues for engagement with said ears; a sectional auxiliary bottom, and sectional cores mounted thereon.

7. A series of cores for molding-machines constructed and arranged in sections and adapted when placed together to form the series of cores one core of the series having an open portion.

8. In a cement-mold, a base; detachably-hinged sides and ends; a top plate; a roller having ears at either end eccentric to said roller; a chain about said mold and its ends in engagement with said ears; and an arm for turning said roller to tighten said chain and compress said mold.

9. In a cement-mold for plastic material, a base; a removable auxiliary bottom superimposed thereupon consisting of two or more sections; sectional cores mounted upon the auxiliary bottom and removable therewith and detachably-hinged sides and ends.

10. In a mold, a base, sides and ends detachably secured to said base, a top plate, a lever having a roller provided with ears at its ends, and a chain having connection with the ears of said roller whereby the top plate may be pressed downward with relation to the sides and ends when the lever is raised.

11. A mold for plastic material, consisting of a base having ears thereon; each of said ears having a rectangularly-shaped opening therein; curved portions upon said ears adjacent to said openings; sides and ends having downwardly-directed projections conforming in cross-section to said rectangularly-shaped openings in said ears, with curved surfaces upon said projections adjacent to said rectangular-shaped portion, and straight portions to roll upon the curved portions of the ears in raising and lowering the said sides and ends in their operation.

12. The combination with a mold having detachably-hinged sides and ends, of an auxiliary bottom consisting of two sections, and sectional cores mounted thereon dividing the mold into two separate and distinct molds.

13. The combination with a mold, of a two-part member forming a series of cores.

14. In a mold, a base, sides and ends detachably secured to said base, an auxiliary bottom having raised portions, cores arranged upon said bottom, a top plate, and means for pressing the top plate downward with relation to the sides and ends.

15. In a mold, a base, sides and ends detachably secured to the base, an auxiliary sectional bottom having raised portions in its upper surface, sectional cores arranged upon said bottom, a top plate, and means for pressing the top plate downward with relation to the said sides and ends.

16. In a mold, a base, sides and ends detachably secured to the base, an auxiliary bottom split throughout its entire length, the split members

of said bottom having raised portions in their upper faces, sectional cores arranged upon the said bottom, a top plate, and means for pressing the top plate downward with relation to the said sides and ends.

17. In a mold, a base, sides and ends detachably secured to the base, an auxiliary bottom split throughout its entire length, and a core formed of two parts whereby part of the core may be removed from the mold simultaneously with one split portion of the auxiliary bottom.

18. In a mold, a base, sides and ends detachably secured to the base, an auxiliary bottom split throughout its entire length, a core formed of two parts whereby one part of the core may be removed independently of its companion part, and a top plate adapted to be pressed downward upon the said sides and ends.

19. In a mold, the combination with a sectional auxiliary bottom of a sectional core, the said bottom and the core being constructed and arranged whereby a section of the bottom may be removed with a section of the core independently of the other sections of the bottom and the core.

20. A series of cores for molding-machines constructed and arranged in sections and adapted when placed together to form the series of cores.

21. A series of cores for molding-machines constructed and arranged in sections and adapted when placed together to form a series of compartments independent one of the other.

708,533. BEVEL AND SQUARE. ALBERT C. CHILMARK, La Crosse, Wis. Filed Mar. 3, 1902. Serial No. 96,495. (No model.)

Claim.—The combination with a handle having a longitudinal slot; of a blade pivoted in said slot and having a central segmental extension projecting from one edge, said extension being provided on one side with lines forming a polygon-miter scale *a* and designating angle-indices, and on its opposite side with the companion bevel and plumb cut scales *c*, *c'* and *d*, *d'*, formed by angle-lines and corresponding indices, said scales *c* and *d* being disposed at the ends of the segmental portion at their intersection with the inner edge of the blade, and the scales *c' d'* between the same and the center of the segmental portion, the blade also having a table *b* explanatory of the index-angles of scales *a*, and a table *e* explanatory of the indices and pitch-measures of the scales *c c'* and *d d'*, together with means for securing the blade in adjusted position, substantially as and for the purpose specified.

708,534. GARMENT-FASTENING. CHARLES R. DE LANCEY, Newport, Pa. Filed Aug. 8, 1901. Serial No. 71,280. (No model.)

Claim.—A socket fastening member comprising a head or flange, a socket upon one side thereof, said socket having a top opening and a side passage, and a rim formed integral with and guarding the top opening of the socket, said rim having its ends converging to form a contracted throat to said opening and thence continued or extended laterally beyond the socket to form diverging spring guard-fingers, said fingers adapted to open and close under pressure to admit of the passage of the shank of a stud into the socket and top opening, the head of which stud passes into and out of the socket through the passage in the side of said socket, substantially as set forth.

708,585. TIRE-TIGHTENER. HOWELL P. DICKINSON, Hurtsboro, Ala. Filed Mar. 18, 1902. Serial No. 98,702. (No model.)

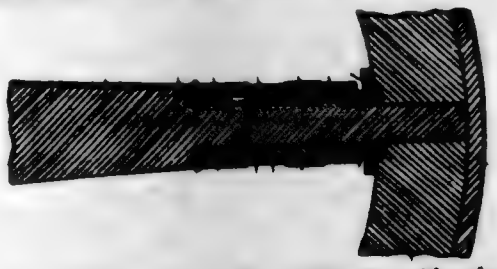

Claim.—1. In a tire-tightener, the combination with a tire, felly and spoke, the latter being provided with a tenon entering the felly; of a thimble slidable on said tenon, and engaging the felly and provided with right and left threaded portions of different diameters, an adjusting-nut engaging one of said threaded portions, and a lock-nut engaging the other threaded portion and adapted to hold the adjusting-nut against rotation, said nuts being provided with sleeves for covering the threads of said surfaces exposed by the adjustment of the nuts, substantially as specified.

2. In a tire-tightener, the combination with a tire, felly and spoke, the latter being provided with a tenon entering the felly; of a thimble slidable on said tenon and provided with right and left threaded surfaces, a clip carried by the thimble and embracing the felly, an adjusting-nut engaging one of said threaded portions, and a lock-nut engaging the other threaded portion and adapted to hold the adjusting-nut against rotation, substantially as set forth.

3. In a tire-tightener, the combination with a tire, felly and spoke, the latter being provided with a tenon entering the felly; of a thimble slidable on said tenon and provided with right and left threaded surfaces, a clip carried by the thimble and embracing the felly, an adjusting-nut engaging one of said threaded portions, and a lock-nut engaging the other threaded portion and adapted to hold the adjusting-nut against rotation, said nuts being provided with sleeves for covering the threads of said surfaces exposed by the adjustment of the nuts, substantially as specified.

708,586. WARP STOP-MOTION FOR LOOMS. CLARE H. DRAPER, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Jan. 6, 1902. Serial No. 88,822. (No model.)

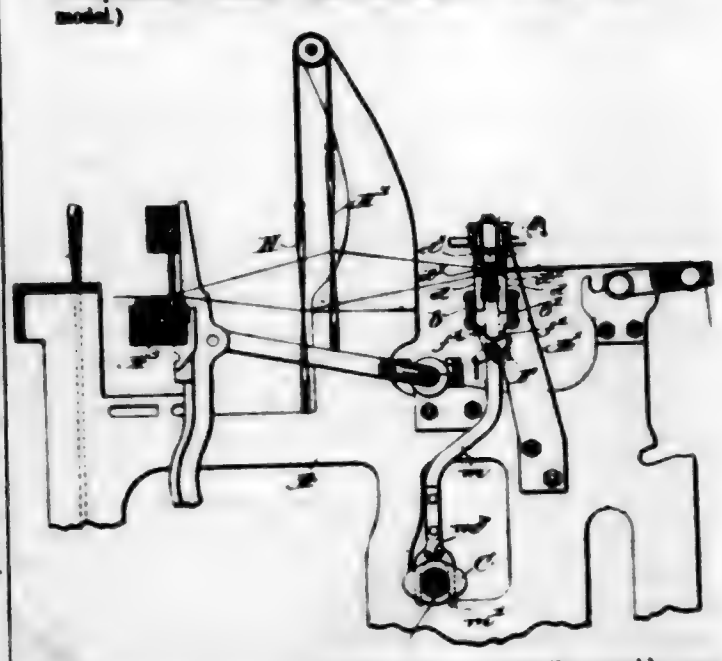

Claim.—In a loom, two parallel series of vertically-movable warp-stop-motion controlling-detectors maintained inoperative by intact warp-threads, a normally vibrating feeler for each series, stopping means for the loom actuated by or through the arrest of a feeler by a released detector of the series with which it coöperates, a single vertically-movable warp-support between the two series of detectors to lift the warp-threads simultaneously with the detecting movement of each feeler, to take up warp slack and thereby prevent improper action of a detector, and means to positively lift the warp-support.

708,587. HOSE-COUPLING. WILLIAM G. HEIM, Manitowoc, Wis. Filed Apr. 17, 1902. Serial No. 103,427. (No model.)

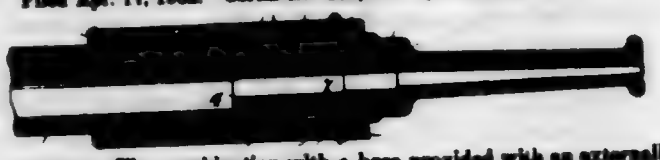

Claim.—The combination with a hose provided with an externally-screw-threaded nipple, of an internally-screw-threaded nozzle, a coupling provided at each end with exterior screw-threads, one of which affords connection to the nozzle, and provided at its inner end with screw-threads which engage the threads of the nipple, and a handle or grip placed around the end of the hose and having internal screw-threads to engage the external screw-threads at the inner end of the coupling, substantially as set forth.

708,588. HOSE-COUPLING. WILLIAM G. HEIM, Manitowoc, Wis. Filed Apr. 17, 1902. Serial No. 103,428. (No model.)

Claim.—1. The combination with a hose, its nipple provided with an annular shoulder, and a hose-nozzle, of a grip or handle located upon

the end of the hose and having a portion clamped between the shoulder of the nipple and the inner end of the nozzle, substantially as set forth.

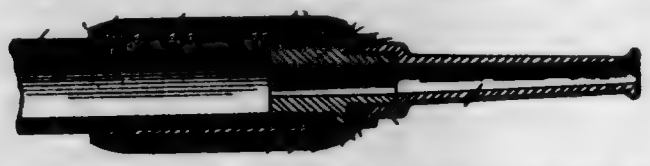

2. The combination with a hose, its nipple having an annular shoulder, and its nozzle having an annular shoulder, of a grip or handle located upon the outer end of said hose and provided at each end with stop-shoulders, and a non-conducting covering which is confined between said shoulders, the outermost stop-shoulder being formed with an annular inwardly-projecting flange which is clamped between the annular collar of the nipple and the annular collar of the nozzle, substantially as set forth.

708,589. VIBRATORY-CURRENT RELAY. JOHN M. PELL, Arlington, N. J., assignor to American Telephone and Telegraph Company, a Corporation of New York. Filed Sept. 16, 1901. Serial No. 75,491 (No model.)
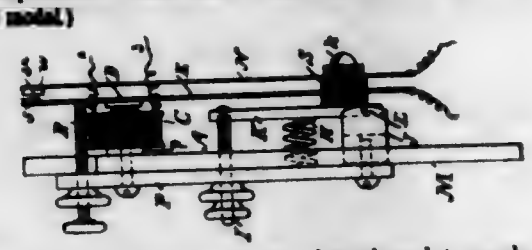
Claim.—1. A vibratory-current relay adapted to produce steady makes and breaks in a local circuit, consisting of a permanent magnet with coil-surrounded poles; two insulated spring-bars of diverse weight and rate of vibration mounted by one end in a common support, and together extending over the poles of said magnet to a point beyond them, the lighter of said springs being outermost and weighted at its free end; an armature attached to the heavier spring-bar and supported thereby in front of said magnet-poles; a stop for said heavier bar; and coöperating local-circuit relay-points carried at the free ends of the said spring-bars respectively; the said stop being adapted to maintain the said armature out of contact with said magnet-poles and to establish a nodal point in the said heavier spring-bar, and the said local-circuit points being normally in contact but adapted to separate when the said springs are vibrated by said magnet, substantially as described.

2. In a vibratory-current relay, the combination of a permanent magnet M having electromagnetic coils C surrounding its poles; the vibratory armature-spring E secured at one end to the supporting-block S; the armature D carried thereby; and the node-establishing and armature-regulating front stop R for said armature-spring; with the lighter associate spring N also secured at one end in said supporting-block and weighted at the other; relay-points s s' carried by the springs E and N respectively and held normally in contact with each other by the pressure of said lighter spring; and an adjustable mounting for the common fixed support of said springs E and N; the said two springs being constructed and adjusted to have different rates of vibration, whereby the said normally united points are enabled to separate, or increase their contact resistance during the passage of appropriate alternating currents through the said electromagnetic coils, substantially as specified.

3. In a vibratory-current relay, the combination of the permanent U-magnet having pole-pieces surrounded by electromagnetic main-circuit helices; an armature therefor; a contact-spring carrying said armature supported at one end in an insulating-block adjustably mounted on said magnet near the heel thereof, and extending beyond the point of armature attachment; a stop adjustably secured to said magnet and impinging upon the face of said spring at a point substantially midway between the armature and the end thereof; a lighter contact-spring also supported at one end in said insulating-block and extending parallel with the armature-carrying spring; the said two springs having different rates of vibration, and carrying the separable relay-points of a local circuit, and the said lighter spring being weighted at its free end, and adjusted to exercise a normal pressure upon the armature-carrying spring at the free ends of both, thereby holding the said relay-points normally in contact, substantially as described.

708,540. ROUNDABOUT. HORRORS F. FELTON, Grand Forks, N. D. Filed Jan. 18, 1902. Serial No. 90,281. (No model.)

Claim.—1. The combination of a revolvable standard, a radial arm carried thereby, a wheeled forward figure portion rigidly secured to the radial arm, a wheeled rear figure portion hinged to the forward figure portion and trailing circumferentially around the standard.

2. In a roundabout, the combination of a revolvable standard, a radial arm, a hinged two-part figure carried by the arm one section of which is rigidly connected with the radial arm and eccentric wheels mounted upon both parts of the figure.

3. In a roundabout, the combination of a revolvable standard, a radial arm carried thereby, a two-part hinged figure mounted thereon, one section of which is rigidly connected with the radial arm, and eccentrically-mounted wheels upon the figure, the wheel upon one part being of a different diameter from that of the other figure.

4. In a roundabout, the combination of a revolvable standard, a radial arm carried thereby, a two-part hinged wheeled figure mounted thereon one section of which is rigidly connected with the radial arm and a head hinged to the fore part of the figure.

5. The combination of a revolvable standard, a radial arm carried thereby, a two-part figure, a supporting-wheel carried by each part, a hinge between said parts, and a rigid connection between the forward section and the radial arm, whereby the forward section traverses and constitutes a guide for the after-trailing section.

708,541. HYDRAULIC DEVICE FOR EMPTYING DREDGING-SCOWS. OTTO PREHLING, Brunswick, Germany. Filed Nov. 5, 1900. Serial No. 35,475. (No model.)

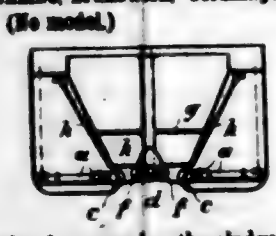

Claim.—1. A device for removing the sludge by suction from the sludge-rooms of ships and dredge-boats, comprising the combination of two systems of pipe-conduits a, d, parallel to each other and longitudinally arranged within the ship, one of the said pipe-conduits having connection with the dredge-pump, while the other pipe-conduit is open to the outside, both pipe-conduits being provided at the bottom of the storage-rooms with a great number of short pipes c, f, which are so arranged that two of them are situated in the same axis and which open out opposite to each other and which may be opened or closed separately, in order to be able to take up the sludge from all points of the boat, substantially as specified.

2. A device for emptying and dumping sludge from dredge-boats, comprising the combination with the dredge-pump, of two systems of piping in communication with the sea-water and with the dredge-pump respectively, side outlets in the said pipes, opening into the hold of the ship or vessel, and webs and high-pressure conduits arranged between said outlets to prevent the stopping up of said outlets and to keep the sludge in a loose condition and open the way for the currents of water sucked through the said sludge, substantially as described.

3. In a device for emptying dredge-boats, the combination of a pipe that communicates with the water and has lateral outlet-openings, with a second pipe that is adapted to be connected to a dredge-pump and has lateral inlet-openings, arranged opposite the lateral outlet-openings, substantially as specified.

4. In a device for emptying dredge-boats, the combination of a pipe that communicates with the water and has lateral outlet-openings, with a second pipe that is adapted to be connected to a dredge-pump and has lateral inlet-openings, and with webs arranged between the openings, substantially as specified.

708,542. HOOK AND EYE. NOAH D. GARIS, Garisville, Pa. Filed Sept. 24, 1901. Serial No. 76,367. (No model.)

Claim.—1. In a hook and eye, a hook consisting of a single piece of wire bent so as to form an eyelet A at one end and the eyelets E at the other end, an elongated opening formed by intermediate wires between eyelet A and eyelets E, the outer wires passing underneath the interme-

diate wires and upward through the elongated opening and bent forward so as to form a hook, a raised portion or hump formed in the intermediate wires underneath the hook and coming within a slight distance of the hook, substantially as and for the purpose specified.

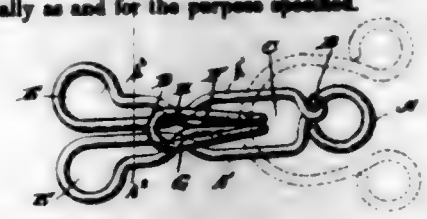

2. In a hook and eye, a hook consisting of a single piece of wire bent so as to form the eyelet A at one end and the eyelets E at the other end, an elongated opening formed by intermediate wires between eyelet A and eyelets E, said intermediate wires bent so as to approach one another and running parallel with one another at D, then bent outward at the eyelets E, these outer wires then passing underneath the intermediate wires and upward through the elongated opening and bent forward so as to form a hook, a raised portion or hump formed in the intermediate wires underneath the hook, substantially as and for the purpose specified.

708,543. ADJUSTABLE SHEAVE-ARM FOR LEERS. JOSEPH GOODMAN, Pittsburg, Pa. Filed July 5, 1901. Serial No. 67,067. (No model.)

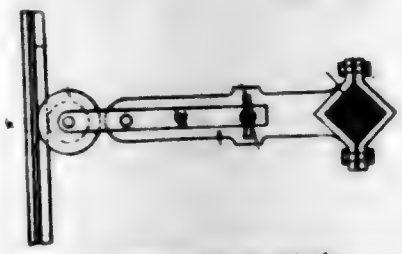

Claim.—1. In an operating mechanism for leers, a rockably-mounted arm and a member pivoted to the arm and adapted to swing in the arc of a circle, and means for securing the pivoted member at different points in relation to the arm, after adjustment of the member.

2. In an operating mechanism for leers, a rockably-mounted arm having an arc-shaped slot, a member pivotally connected to the arm, and a bolt passing through the member and through the slot, whereby the member can be adjusted in the arc of a circle and secured where positioned.

3. In an operating mechanism for leers, the combination with a plurality of bed-bars, and a plurality of pulling-out bars, of a plurality of rockably-mounted arms adapted for supporting the bed-bars and for raising them up and down in relation to the pulling-out bars, and means for rocking the said arms.

4. In an operating mechanism for leers, the combination with a plurality of bed-bars and a plurality of pulling-out bars, of a plurality of rockably-mounted arms, means for rocking said arms, and members carrying sheaves which support the bed-bars, said members being adjustably mounted on the arms so that the relative elevation of the bed-bars to the arms may be varied.

5. In an operating mechanism for leers, the combination with a plurality of bed-bars and a plurality of pulling-out bars, of a plurality of rockably-mounted arms having arc-shaped slots, members pivoted to the arms, sheaves on the members which support the bed-bars, and bolts passing through the members and through the slots, whereby the members and sheaves can be swung in the arc of a circle and the bed-bars raised or lowered relative to the arms and means for rocking the arms.

708,544. STRAINER FOR COFFEE-POTS. ERNST J. GUERTEL, Milwaukee, Wis., assignor of one-half to Frank P. Dittmar, Milwaukee, Wis. Filed Aug. 26, 1901. Serial No. 73,256. (No model.)

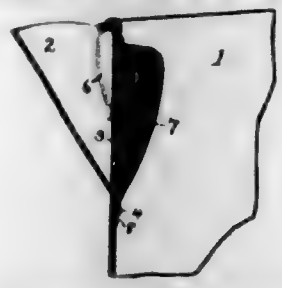

Claim.—1. In a coffee-pot or similar receptacle, a suitable frame adapted to fit the interior surface of the receptacle around the pouring-spout; a screen secured to the frame in a position to cover the inlet of the spout; one or more suspensory spring-hooks secured to the frame and extending over the rim of the receptacle and downwardly to engage its exterior surface, said frame and hooks serving as a clamp to bind the screen firmly in position against the interior surface of the receptacle.

2. In a coffee-pot, or similar receptacle, a suitable frame, adapted to fit the interior surface of the receptacle around the pouring-spout; a screen secured to said frame in a position to cover the inlet of the spout; and one or more suspensory spring-hooks secured to the frame and extending over the rim of the receptacle and downwardly to a point opposite the central portion of the screen; said hooks and screen-frame being arranged to serve as a clamp to bind the screen in position.

708,545. NON-REFILLABLE BOTTLE. CHARLES C. GUERRIST, Nashville, Tenn., assignor of one-half to H. B. Shyer, Nashville, Tenn. Filed Jan. 22, 1902. Serial No. 90,831. (No model.)

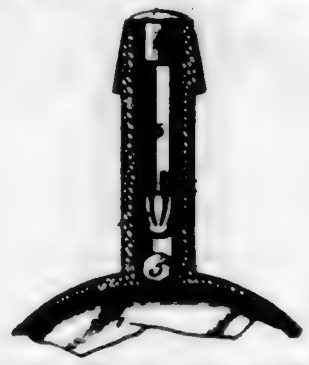

Claim.—1. In combination with a bottle or receptacle having a neck provided with a valve-seat and an inner shoulder a short distance from said valve-seat, a valve coöperating with the valve-seat to close the passage through the said neck, and a guard for preventing displacement of the valve, the same consisting of a tubular body fitted within the neck of the bottle and having an enlargement at its inner end provided at its base with an outer shoulder to snap under the inner shoulder of the neck, said enlargement comprising spring elements, substantially as set forth.

2. In combination with a bottle or receptacle having a neck provided with a valve-seat and an inner shoulder a short distance from the said seat, a valve coöperating with the valve-seat for closing the passage through the neck of the bottle, and a guard of tubular form having an enlargement at its inner end of approximately conoidal form and having an outer shoulder at the base of the said enlargement to snap under the inner shoulder of the neck of the bottle, said enlargement and the adjacent portion of the tubular body being slotted to admit of compression of the said enlargement when passing by the inner shoulder of the bottle-neck when pressing the guard therein, substantially as set forth.

3. In combination, a bottle or receptacle having a valve-seat, and an inner shoulder spaced therefrom, a valve coöperating with the valve-seat, and a guard having an enlargement at its inner end to snap under the inner shoulder of the neck, said enlargement being closed at its lower end to prevent interference with the valve by means of a wire or instrument inserted into the neck of the bottle, substantially as set forth.

4. In combination, a bottle or receptacle having a valve-seat and an inner shoulder within its neck, a valve coöperating with the valve-seat, and a guard consisting of a tubular body having a conoidal-shaped enlargement at its lower end and having an outer shoulder at the base of the enlargement to snap under the inner shoulder of the bottle-neck, the sides of the enlargement being slotted and the lower end of the enlargement being closed, the upper portion of the guard having a packing-sleeve fitted thereto, substantially as set forth.

708,546. FIRE-ESCAPE. CHARLES J. HAGENBUCH, Warren, Pa. Filed Feb. 3, 1902. Serial No. 92,263. (No model.)

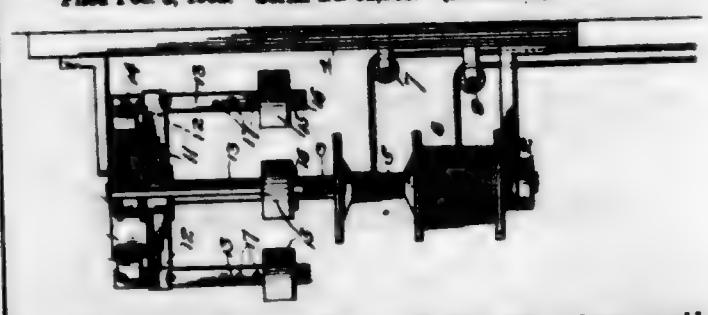

Claim.—In a fire-escape, the combination with a frame provided with bearings; of a shaft journaled in said bearings and carrying at its lower end two drums, guide-pulleys secured to said frame, ropes reversely wound around said drums and having their ends pendent from said pulleys, a spider fixed to the upper end of said shaft to turn therewith, a relatively stationary friction-disk, levers pivoted intermediate their ends to

said spider, brake-shoes carried at the upper ends of said levers for frictional contact with said disk, and weights vertically adjustably connected to the lower ends of said levers, substantially as and for the purpose described.

708,547. OVERSHOE. HENRY A. HAMILTON and FRANK H. CRAWFORD, Emleuton, Pa. Filed June 20, 1901. Serial No. 65,370. (No model.)

Claim.—An overshoe having a reversible upper with a slit extending the entire length of the central portion of the front of the upper and approximating to the sole of the shoe, a folded vamp or gusset of rubber formed integral with the under meeting edges of the slit whereby the upper is adapted to be wholly turned inside out and over the sole of the shoe and then re-turned to its normal position by means of the expansible and contractible action of said vamp or gusset, substantially as specified.

708,548. CONSTRUCTION OF METALLIC-FRAME BUILDINGS. CHARLES R. HENDERD, Brooklyn, N. Y. Filed Apr. 11, 1902. Serial No. 102,337. (No model.)

Claim.—1. A building, the frame of which is composed of metallic pipe the ends of which are united by cross-bolts and suitable turnbuckles to apply the requisite strain.

2. A building, the frame of which is composed of metallic pipe, the ends of which are united by cross-bolts and suitable turnbuckles to apply the requisite strain, the walls and partitions being made of metallic rods or wires embedded in cement.

3. A building, the frame of which is composed of metallic pipe with suitable connections, the window and door openings being made of sections of pipe coupled together, the door and window casings being attached to the metallic framing with threaded bolts which engage with the tubing adjacent to the door and window openings.

4. A building the frame of which is composed of metallic pipe, the ends of which are united by cross-bolts and certain turnbuckles, and a sleeve adapted to inclose the turnbuckles and lap on the ends of the adjacent sections of pipe, for the purpose set forth.

5. In a metallic-frame building a turnbuckle interposed between the adjacent ends of the metal elements composing the frame whereby the requisite strain may be applied to draw the parts to position and a sleeve adapted to inclose the turnbuckle and to lap onto the metal elements at each side of the turnbuckle, for the purpose set forth.

708,549. THERMOPHORE. FRITZ HELLIESEN, Andernach, Germany. Filed July 2, 1902. Serial No. 114,532. (No model.)

Claim.—1. A holder adapted to contain a crystallizable substance, and opposed contact-surfaces arranged within the holder and movable toward and away from each other, whereby crystallization of the substance contained within the holder may be started by the friction obtained by the rubbing of the frictional surfaces together, substantially as described.

2. A flexible holder adapted to contain a crystallizable substance, and opposed contact-bodies arranged within the holder and movable toward and away from each other, whereby crystallization of the substance contained within the holder may be started by the friction obtained by the rubbing of the frictional bodies together, substantially as and for the purpose set forth.

708,550. FRICTION DRAFT-RIGGING FOR RAILWAY-CARS. JOHN J. HENNESSY, Milwaukee, Wis. Filed June 16, 1902. Serial No. 111,874. (No model.)

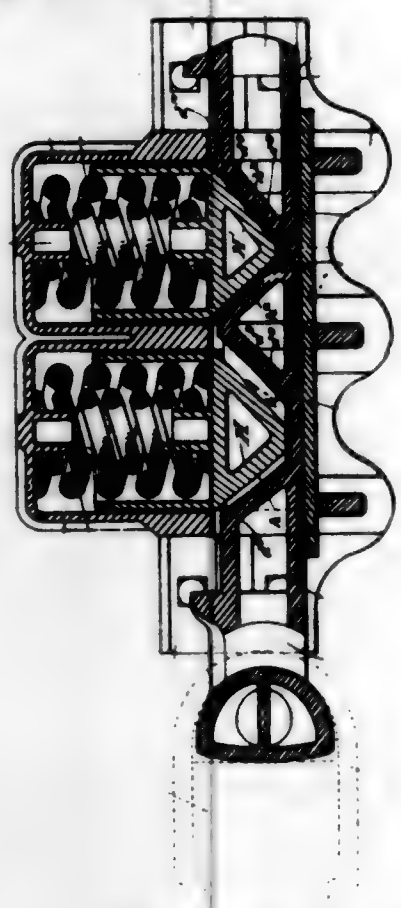

Claim.—1. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction-plate in line with the draw-bar and in sliding frictional engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, the incline friction-faces on the draft-iron and friction-block for resisting buffing strains being at a greater angle than those for resisting pulling strains, to cause the draft-rigging to exert a greater resistance in buffing than in pulling, substantially as specified.

2. In a railway draft-rigging, the combination with a draw-bar of a draft-iron in line therewith, a stationary friction-plate in line with the draw-bar and in sliding frictional engagement with one of the sides of the draft-iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction-plate, the incline friction-faces for buffing on the draft-iron and friction-blocks being at a greater angle than those for pulling, substantially as specified.

3. In a railway draft-rigging, the combination with a draw-bar of a draft-iron in line therewith, a stationary friction-plate in line with the draw-bar and in sliding frictional engagement with one of the sides of the draft-iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction-plate, the incline friction-faces for buffing on the draft-iron and friction-blocks being at a greater angle than those for pulling, the double inclines on one of said friction-blocks having a snug fit and on the other a loose fit with the corresponding double inclines on the draft-iron so that one of the springs may be partially compressed before the other comes into action, substantially as specified.

4. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in frictional sliding engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side

of the draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction surface or plate, said draft-iron and friction-block being of malleable iron, steel or other suitable metal and having an interposed supplemental wearing-plate of different metal, substantially as specified.

5. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in frictional sliding engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing it against said stationary friction surface or plate, said draft-iron being of malleable iron and the stationary friction-plate, of wrought-iron and having an interposed supplemental cast-iron wearing-plate, substantially as specified.

6. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in frictional sliding engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side of the draft iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing it against said stationary friction surface or plate, said draft-iron and stationary friction-plate having interengaging friction wearing-faces of different metals, substantially as specified.

7. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction-plate in line with the draw-bar and in sliding frictional engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, said draft-iron having a pair of side webs d' bridging said double-incline friction-faces thereon, substantially as specified.

8. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction-plate in line with the draw-bar and in sliding frictional engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, said draft-iron having a pair of side webs d' bridging said double-incline friction-faces thereon, said draft-iron being of malleable iron and having supplemental wearing-plates on its incline faces between said webs, substantially as specified.

708,551. **FENCE-BUILDER AND HAY-DERRICK.** WESLEY W. G. HILL, Martinsville, Ill. Filed June 5, 1901. Serial No. 63,264. (No model.)

Claim.—1. In a machine of the class described the combination with the sills of a mast hinged thereto and comprising spaced uprights having a pulley at their upper ends, a beam pivoted between the upper ends of the uprights, a pulley upon the beam, a lifting-line passed over the pulley on the mast and beam, a line attached to one end of the beam for moving the latter pivotally and a winding-drum mounted upon the sills and adapted for attachment of the lines thereto interchangeably.

2. In a machine of the class described the combination with the sills of a mast hinged thereto and comprising spaced uprights having a pulley at their upper ends, a beam pivoted between the upper ends of the uprights, a pulley upon the beam, a lifting-line passed over the pulley on the mast and beam, a line attached to one end of the beam for moving the latter pivotally, a winding-drum mounted upon the sills and adapted for attachment of the lines thereto interchangeably, the uprights of the mast being adapted to receive a driving-block therebetween below the pulley.

3. A machine of the class described comprising a body portion having a mast at one end thereof, a beam provided with a track, said mast being adapted for pivotal connection of the beam therewith at different elevations, supporting-legs adapted for interchangeable connection with the outer end of the beam to support it at different elevations, a carriage slidably engaged with the track and having a pulley, hooks slidably connected with the track, and a winding-drum on the body to receive a line engaged with the pulley.

4. In a machine of the class described, the combination with the body portion, of a mast hinged thereto for movement to recline thereon or stand erect, a beam pivoted to the mast to fold thereagainst and lifting mechanism connected with the beam.

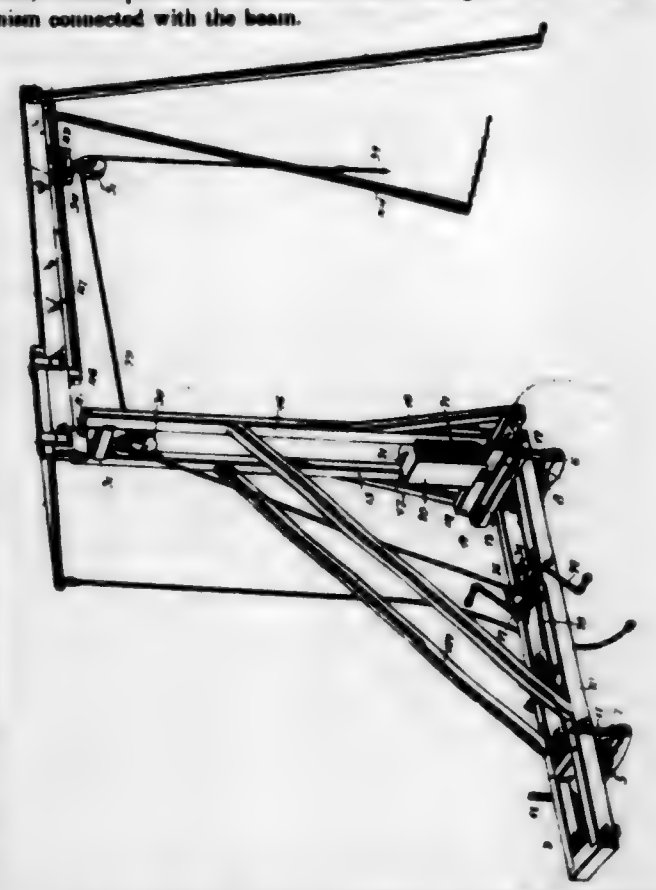

5. In a machine of the class described the combination with the body portion, of a mast hinged thereto for movement to recline thereon or stand erect, a beam pivoted to the mast to fold thereagainst, lifting mechanism connected with the beam and braces removably connected with the mast and with the body.

708,552. **SUBMARINE OR OTHER GUN.** JOHN P. HOLLAND, Newark, N. J., assignor to Electric Boat Company, a Corporation of New Jersey. Filed Sept. 13, 1898. Renewed Feb. 10, 1902. Serial No. 93,451. (No model.)

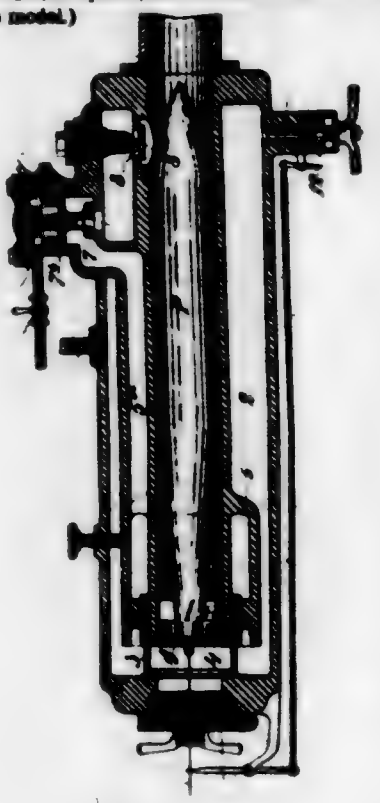

Claim.—1. A gun for discharging a torpedo or other projectile, having means for first setting the projectile in motion with compressed air, having regulable, mechanical connecting means between the projectile and an igniter for afterward igniting an explosive charge when the projectile shall have traveled far enough to act forcibly on the igniter through said connecting means, and having a special, stationary chamber for the explosive charge independent of the projectile, substantially as set forth.

2. A gun for discharging a torpedo or other projectile, having a bar-

rel to guide the projectile, a breech-chamber behind the projectile-chamber, means for admitting a charge of compressed air to said breech-chamber for setting the projectile in motion, a cartridge-chamber independent of the projectile and open to said breech-chamber and adapted to receive a cartridge containing an explosive charge, an igniting device for said cartridge, and regulable connecting means between said igniting device and the projectile whereby the latter, when it shall have moved a predetermined distance, will effect the ignition of the cartridge, substantially as set forth.

3. A gun having an air-reservoir about its barrel in the form of a jacket, a breech-chamber behind the projectile-chamber, a valve controlling communication between said reservoir and breech-chamber, a cartridge-chamber communicating with the breech-chamber and adapted to receive a cartridge containing an explosive, said cartridge-chamber being independent of the projectile and forming a part of the gun, and means for igniting said explosive when the projectile shall have moved a predetermined distance, substantially as set forth.

4. A gun having an air-reservoir about its barrel in the form of a jacket, a breech-chamber behind the projectile-chamber, a valve controlling communication between said reservoir and breech-chamber, a cartridge-chamber communicating with the breech-chamber and adapted to receive a cartridge containing an explosive, said cartridge-chamber forming a part of the gun, and means for igniting the said explosive while the charge of compressed air is between the said cartridge-chamber and the projectile, whereby the force of the explosive acts on the projectile through the intermediate cushion of air, substantially as set forth.

5. A gun for submarine use, having a valve-controlled inlet for admitting gas under tension to the bore of the gun in front of the projectile, whereby the water may be forced out of the said bore in advance of the projectile, substantially as set forth.

6. A gun for submarine use, having a valve to admit compressed air behind the projectile, a chamber to contain compressed air behind the said valve to hold said valve down to its seat, a port opening into the bore of the gun in front of the projectile, a passage connecting said port with the chamber behind said valve, and a firing-valve, controlling said passage whereby when said firing-valve is opened the air from said chamber expels the water from the bore of the gun, substantially as set forth.

7. A gun for submarine use having a firing-valve for admitting a gas under tension behind the projectile, and a valve, automatically controlled by said firing-valve, which admits a gas under tension in front of the projectile substantially at the same time as the firing, whereby the water is expelled from the bore ahead of the advancing projectile.

708,553. SUBMARINE BOAT. JOHN P. HOLLAND, Newark, N. J. Filed Aug. 7, 1901. Serial No. 71,120. (No model.)

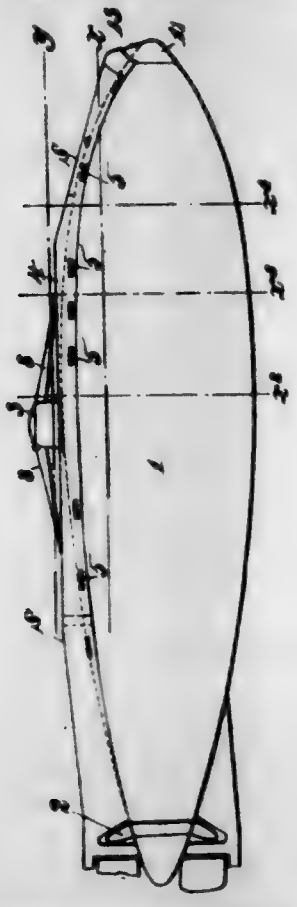

Claim.—1. A submarine boat provided on its top or rounded back with a hollow superstructure having a flat, level promenade both forward and aft of the conning-tower, and having sloping portions extending from said level promenade down to the stem and stern of the boat, said hollow superstructure having at its sides always-open scuppers for the flow of water in and out, and having in its top always-open gratings for the flow of air in and out, substantially as set forth.

2. A submarine boat having on its top or rounded back a hollow superstructure with apertures for the free flow of water into and out of same, a conning-tower which extends up through said superstructure, the inclined structures, and the sloping fins 8 on the superstructure and abutting against the said tower to prevent the fouling of lines, substantially as set forth.

3. The combination with a submarine boat of spindle form and having an expulsion-tube, a muzzle-casting, and a cap 11 hinged to said casting and provided with a shield-plate 11', of the hollow superstructure on the boat, provided with a hood 13 which houses the operative mechanism of the cap and the shield thereof, substantially as set forth.

4. A submarine boat having on its rounded top or back a hollow superstructure extending the entire length of the boat and open at all times for the outflow and inflow of air or water, said superstructure having at its middle part a flat, level, promenade-deck, and at its forward end an inverted-V form so as to reduce resistance in moving through the water, as set forth.

708,554. COPY-HOLDER FOR TYPE-WRITERS. EDWARD A. HOLBITE, St. Paul, Minn., assignor of one-half to James C. Bramwell, St. Paul, Minn. Filed Feb. 24, 1902. Serial No. 96,181. (No model.)

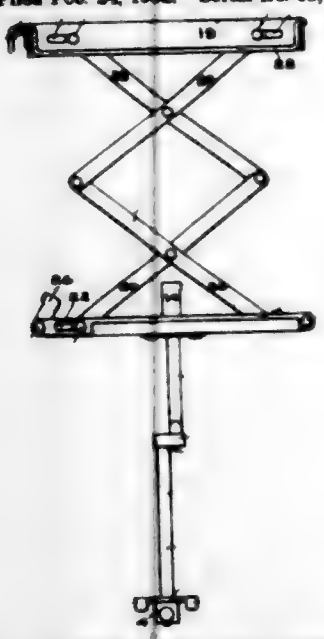

Claim.—1. In a copy-holder of the class described, the combination of a vertical standard, a collar slidable upon said standard, an interlocking connection between said collar and the upper end of said standard, an upwardly-projecting arm carried by said collar said arm being bent to bring its upper end toward said standard, a copy-holding frame having rotatable support upon the upper end of said bent arm, means for holding said copy-holding frame and said bent arm in parallel planes, and means for holding said frame at an angle with said arm.

2. In a copy-holder of the class described, the combination of a vertical standard provided with means for attachment to a support, a collar slidable upon said standard, an upwardly-projecting arm carried by said collar, said arm being bent to bring its upper end toward the standard, means for supporting said collar at the upper end of said standard, a collapsible copy-holding frame rotatably supported upon the upper end of said arm, means for securing said frame in a plane at right angles with the plane of said bent arm, and means for securing said frame parallel to said bent arm.

3. In a copy-holder of the class described, the combination of a vertical standard and a supporting-clamp therefor, a collar slidable upon said standard, an arm carried by said collar, means for holding said collar supported at the upper end of said standard, a post carried by the upper end of said arm, a sleeve inclosing said post, and a collapsible copy-holding frame carried by said sleeve.

4. In a copy-holder of the class described, the combination of a standard, a supporting-clamp therefor, a collar slidable upon said standard and provided with a downwardly and horizontally disposed slot in its side, an outwardly-projecting pin carried by the upper end of said standard and adapted to fit into said slot to support said collar, an arm carried by said collar, and a collapsible copy-holding frame rotatably mounted upon the upper end of said arm.

5. In a copy-holder of the class described, the combination of a standard and supporting-base therefor, a collar slidable upon said standard, an

interlocking connection between said collar and base, an interlocking connection between said collar and the upper end of said standard, a bent arm supported by said collar, and a collapsible copy-holding frame carried by the upper end of said arm.

6. In a holder of the class described, the combination of a standard, a supporting-base therefor, a collar slidable upon said standard, an interlocking connection between said collar and the upper end of said standard, a bent arm supported by said collar, a post carried by the upper end of said arm, a sleeve inclosing said post and provided with a slot to receive said arm and to hold said sleeve in adjusted positions upon said post, and a collapsible copy-holding frame carried by said sleeve.

708,555. **SAFETY ENVELOP-FILLER.** GEORGE E. HUNDT, Omaha, Nebr. Filed Feb. 12, 1902. Serial No. 93,736. (No model.)

Claim.—1. The combination with an envelop of a filler held therein, said filler comprising a frame provided with V-shaped terminations held apart under spring tension.

2. As a new article of manufacture, a safety-filler for envelops, comprising a spring-wire frame in combination with two V-shaped end portions secured thereto, said end portions being held apart under spring tension all arranged substantially as and for the purpose set forth.

708,556. **GRASS OR GRAIN CUTTING MACHINE.** RAY W. HUSSEY, Pendleton, Ind. Filed Jan. 6, 1902. Serial No. 88,948. (No model.)

Claim.—1. In a machine of the class described, a crank-wheel with a pin for driving the knife, a knife-head with a vertical slot, and a bearing-block vertically slidable in said slot to receive the crank-pin, said block having an oil-chamber in its upper side with outlet-orifices therefrom to each side of the bearing-block and to the pin, substantially as and for the purpose shown and described.

2. In a machine of the class described, a crank-wheel with a pin for driving the knife, a knife-head with a pair of oppositely-placed rigid vertical arms, a bar adjustably mounted in one arm and opposite the other to form a vertical slot, and a bearing-block slidable in said slot to receive said crank-pin.

3. In a machine of the class described, a crank-wheel with a pin to drive the knife, a bearing-block in which said pin fits and a knife-head having a vertical slot for the bearing-block which is formed by a rigid vertical arm turned at its upper end, a rigid oppositely-placed shorter arm, a supplementary plate connected at one end to the short arm and at the other end with the turned upper end of the long arm, and a bar held in a vertical position opposite said long arm by a lag-screw near one end extending through said short arm and by a lag-screw at the other end extending through the supplementary plate.

4. In a machine of the class described, an axle, a frame pivotally mounted thereon, means for supporting the knife and finger-bar at the forward end of said frame, a tongue, a lever mechanism fulcrumed above its lower end beside the tongue with an arm extending therefrom, a link connecting said arm and the frame to be elevated, a spring adjustably connected with the tongue and the lower end of the lever, a block slidably mounted on the tongue, doubletrees mounted in said block, and a spring connected to said sliding block and the forward end of said frame.

5. In a machine of the class described, an axle, a frame pivotally mounted thereon, means for supporting the knife and finger-bar at the forward end of the frame, a tongue, a guide-bar on the tongue, a block slidably mounted on said guide-bar, doubletrees mounted in said block, a spring connecting the sliding block to the forward end of said frame, and a spring-stop secured to the guide-bar that permits the insertion of the sliding block thereon and limits its rearward movement.

708,557. **HARVESTER.** RAY W. HUSSEY, Dublin, Ind., assignor to the Hussey Mower and Implement Company, Dublin, Ind., a Corporation of Indiana. Original application filed Jan. 6, 1902, Serial No. 88,948. Divided and this application filed Apr. 3, 1902. Serial No. 101,993. (No model.)

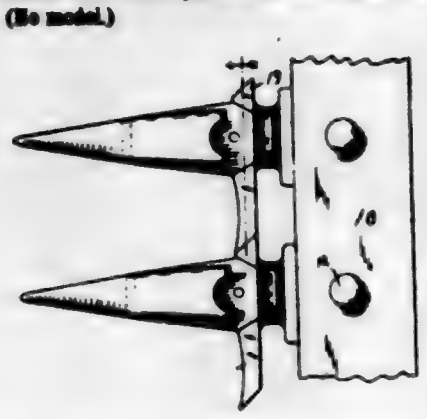

Claim.—1. In a machine of the class described, a guard-finger with a guard-bar extending from only one side of the finger and beveled at its outer end forwardly and away from the finger, and a reversely-beveled surface on the opposite side of the finger against which the guard-bar of the adjacent finger will abut.

2. In a machine of the class described, a series of guard-fingers secured thereto, each finger being provided with a guard-bar that extends laterally to the adjacent finger and at its outer end is beveled forwardly and away from the finger to which the guard-bar is attached, and a reversely-beveled shoulder on the opposite finger against which the guard-bar of the adjacent finger abuts.

708,558. **WASHING-MACHINE.** FREDERICK G. HYATT, St. James, Minn. Filed Mar. 7, 1902. Serial No. 97,169. (No model.)

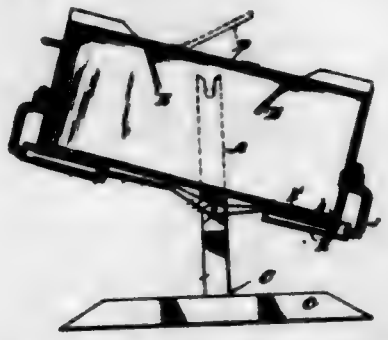

Claim.—1. In a washing-machine, the combination of a supporting-frame, a receptacle mounted to rock therein, air-pump, a pipe connecting the pump with the lower portion of one end of the receptacle through a restricted opening, and connections between the rocking receptacle, the pump and the supporting-frame whereby the pump is operated as the receptacle is rocked.

2. In a washing-machine, the combination of a supporting-frame, a receptacle mounted to rock therein, an air-pump, the cylinder of which is attached to the rocking receptacle and which communicates with the lower portion of one end of the receptacle, and connections between the piston of the pump and the supporting-frame whereby the pump is operated as the receptacle is rocked.

3. A washing-machine comprising a supporting-frame, a receptacle mounted to rock therein, an air-pump, the cylinder of which is secured to the receptacle, a pipe connecting the cylinder of the pump with the receptacle, a check-valve in said pipe, a valve in the piston of the pump and connections between the piston and the supporting-frame whereby the pump is operated as the receptacle is rocked.

4. A washing-machine comprising a supporting-frame, a receptacle mounted to rock therein, air-pumps carried by and rocking with the receptacle and communicating with opposite ends thereof, and connections between the piston of the pumps and the supporting-frame whereby the pumps are operated as the receptacle is rocked.

5. A washing-machine, comprising a supporting-frame, a receptacle mounted to rock therein, air-pumps, the cylinders of which are secured to the opposite ends of the receptacle, communications between the interior of the receptacle and the cylinders of the air-pumps, and connections between the piston-rods of the air-pumps and the supporting-frame, the organization being such that the air-pumps are alternately operated to inject air into the receptacle, as the latter is rocked.

708,559. TROLLEY-POLE. CHARLES D. JENNEY, Indianapolis, Ind. Filed Dec. 5, 1900. Serial No. 39,215. (No model.)

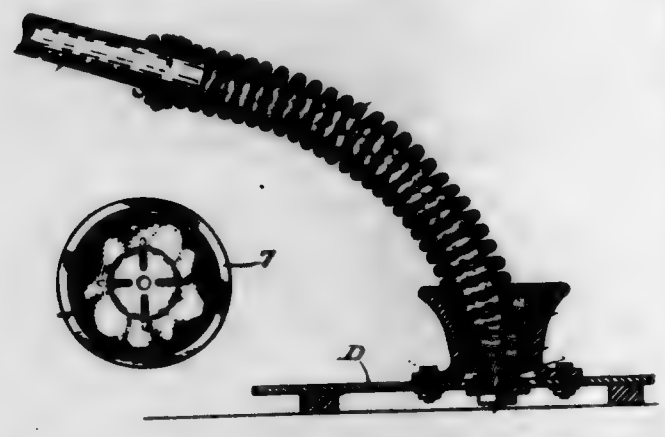

Claim.—1. The combination of an electric car, an overhead conductor, a pole extending from said car to said conductor and embodying in its structure a spring whereby it may yield in any direction, and a bowl-like socket formed with outwardly-curved sides within which the spring-like lower end of said pole may be secured.

2. The combination of an electric car, an overhead conductor, a pole carried by said car and extending to said conductor, the lower end whereof is in itself a spring, a bowl-like socket having outwardly-curved sides secured to the car into which said spring-like lower end of the pole enters, and a clamp washer and bolt whereby said spring-like lower end of the pole is secured within said socket.

708,560. DEVICE FOR HITCHING HORSES TO SHAFTS. CHAS. B. JOHNSON, Columbus, Ohio. Filed Jan. 10, 1902. Serial No. 89,215. (No model.)

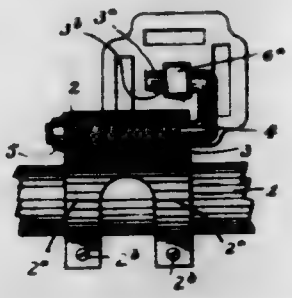

Claim.—1. In a shaft-hitching device, a tube fixed to the shaft, a hook having two parallelly-extending legs one leg rockably secured in said tube, a spring on said leg, a projection on the other of said legs, a plate on the harness having an eye into which the latter leg can be inserted to be secured thereto only when the hook is turned out of normal position relatively to said plate, substantially as described.

2. In a shaft-hitching device, a tube 2 having securing skirts or clips 2^a for embracing the shaft formed integrally therewith, a hook having two parallelly and rearwardly extending legs, one leg extending into said tube and rockable therein, a spring on said leg, and means on the harness with which the other leg can be connected only when the legs are turned out of normal position, substantially as described.

708,561. PROCESS OF SEPARATING ALUMINA FROM SILICA. ADOLF KAYSER, Buffalo, N. Y. Filed Sept. 5, 1901. Serial No. 74,450. (No specimens.)

Claim.—1. The process of separating alumina from silica, which consists in heating a mixture, containing alumina, silica, lime and soda in the proportion of two molecules of soda to one molecule of alumina and two molecules of lime to one molecule of silica, to a cindering temperature and leaching out the aluminate of soda thus formed; substantially as described.

2. The process of separating alumina from silica, which consists in heating a mixture, containing alumina, silica, lime and soda in the proportion of two molecules of soda to one molecule of alumina and two molecules of lime to one molecule of silica, to a cindering temperature, leaching out the aluminate of soda thus formed and recovering the alumina from the solution; substantially as described.

3. The process of recovering alumina from marl containing approximately, alumina eighteen per cent., silica twenty-eight per cent., calcium oxid fifty-four per cent., which consists in mixing it with carbonate of soda in the proportion of about one hundred pounds of marl to thirty-four pounds of carbonate of soda, heating to the cindering temperature, leaching and recovering the alumina from the resulting solution; substantially as described.

708,562. EMERGENCY SAFETY-PLUG. FRANK KOSTLAN, Traer, Iowa. Filed May 16, 1902. Serial No. 107,582. (No model.)

Claim.—The combination with a steam-boiler provided with a safety-plug, substantially as described, of an emergency safety-plug, comprising a gland adapted to be screwed into the boiler-shell, a tubular stem screwing into said gland, and provided with a suitable hand-wheel, and auxiliary stem screwing into said tubular stem, and provided with a suitable set-nut, and a terminal, conical tip of soft metal secured in the end of said auxiliary stem.

708,568. HOT-AIR FURNACE. JOHN F. KRAUTER, Toledo, Ohio. Filed Feb. 14, 1901. Serial No. 47,205. (No model.)

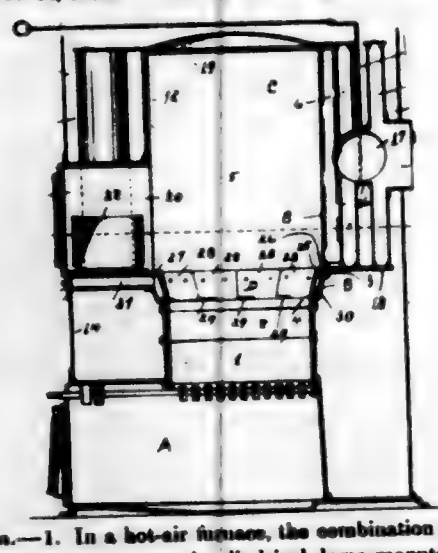

Claim.—1. In a hot-air furnace, the combination with a fire-pot, of a radiator comprising a central cylindrical dome mounted on the fire-pot and having a fuel-duct for the fire-pot extending from one side and a flue opening opposite therefrom into an inner drum extending concentrically around the dome to opposite sides of the fuel-duct; an outer drum concentrically disposed around the inner drum and connected at opposite sides of the fuel-duct by elbows with the inner drum; narrow vertical air-passages between the outer and inner drums and between the inner drum and the dome; an exit-flue for the outer drum set horizontally opposite the flue of the dome, and an intermediate flue connecting the outer and inner drums in alinement with the exit-flue and having a damper adapted, when open, to admit direct draft from the flue of the dome through the intermediate flue to the exit-flue, and, when closed, to force the draft circuitously through the drums.

2. In a hot-air furnace, the combination with a fire-pot having an outwardly-flared detachable top section provided with an inner shoulder around the base of the section, and with an incut at one side in its rim, of an annular base-plate for the dome mounted horizontally on the fire-pot, with its inner rim on the rim of the top section, a dome for the fire-pot, provided with a side opening and mounted on the base-plate concentric with its inner rim, a perforated lining for the top section of the fire-pot, formed of detachable sections, having the lower ends of the sections supported on the inner shoulder of the top section, and the upper ends curved outward and supported by the inner rim of the horizontal plate, forming, with the top section of the fire-pot and the rim of the plate, an annular air-space around and within the top of the fire-pot, plates secured to the annular horizontal plate, and to the dome around its side opening, forming a fuel-duct for the fire-pot, a plate angled at the sides and secured to the base-plate beneath the fuel-duct, and to the top

section of the fire-pot around the opening formed by the side incut in its rim, forming an air-duct for the annular air-space and a frame including the outer ends of both ducts, provided with independent closures for the ducts.

708,564. WAGON-BRAKE. PHELPS LEWIS, Yocum, Ky. Filed Apr. 26, 1902. Serial No. 104,848. (No model.)

Claim.—In a wagon-brake, the combination with a wheeled truck, of a brake-beam provided with brake-shoes, a brake-lever connected with said beam, a second brake-lever mounted on the truck and provided with a curved and slotted arm, a slidable tongue having a downwardly-deflected and slotted rear end portion carrying a pin which works in the curved and slotted arm of the second brake-lever, a brake-rod extending between the two brake-levers and pivotally connected therewith, and a universal coupling associated with the brake-rod between its points of connection with the brake-levers, substantially as and for the purpose described.

708,565. BELT STUD OR FASTENER. FRANK M. LINDERMAN and CHARLES A. BIRD, Chicago, Ill. Filed Jan. 6, 1902. Serial No. 88,667. (Model.)

Claim.—A belt-stud comprising a curved bar 1 provided at its end with T-heads 2 whose lower bearing-surfaces lie substantially in line with the top of the bar, said heads being formed with the rounded under edges 3 and intermediate strengthening-ribs 4 and having their upper surfaces convexly curved between their upper and lower edges 5 and 6 and from their central portions 7 to their end edges 8, substantially as and for the purpose specified.

708,566. ROTARY ENGINE. MITCHELL M. LOCKERBY, Grand Forks, N. D. Filed Apr. 28, 1902. Serial No. 104,999. (No model.)

Claim.—1. The combination of a rotary wheel, a casing, swinging pistons secured to the wheel, eccentric-blocks secured to the casing having steam-chambers formed therein, live-steam pipes entering the eccentric-blocks, steam-ports in the eccentric-blocks, an oscillating valve, eccentric-rod connections between the wheel and the valve, and exhaust-ports in the casing, substantially as set forth.

2. The combination of a rotary wheel, a casing, swinging pistons secured to the wheel, eccentric-blocks secured to the casing having steam-chambers formed therein, live-steam pipes entering the eccentric-blocks, steam-ports in the eccentric-blocks, an oscillating valve, eccentric-rod connections between the wheel and the valve, exhaust-ports in the casing, and packing for the eccentric blocks, pistons and casing, substantially as set forth.

708,566.

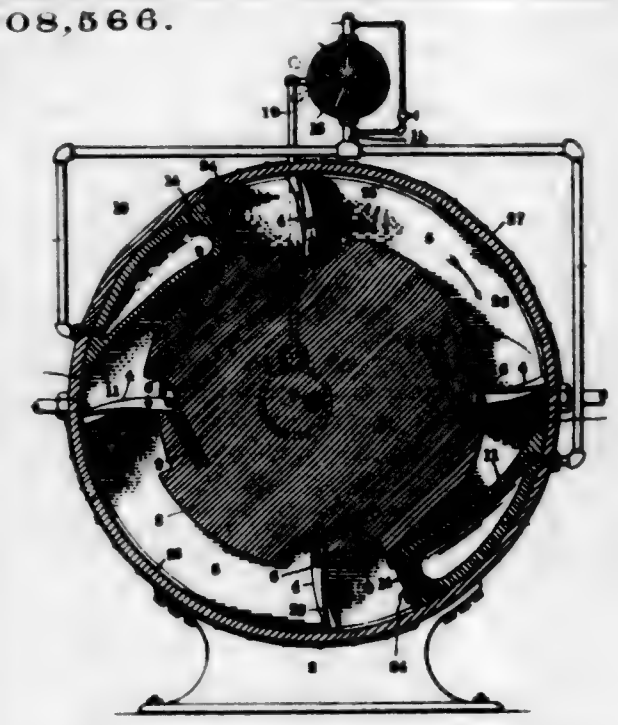

708,567. APPARATUS FOR SEPARATING METALS FROM THEIR ORES. WARREN A. R. LOOSE, Provo, Utah. Filed Sept. 9, 1901. Serial No. 74,826. (No model.)

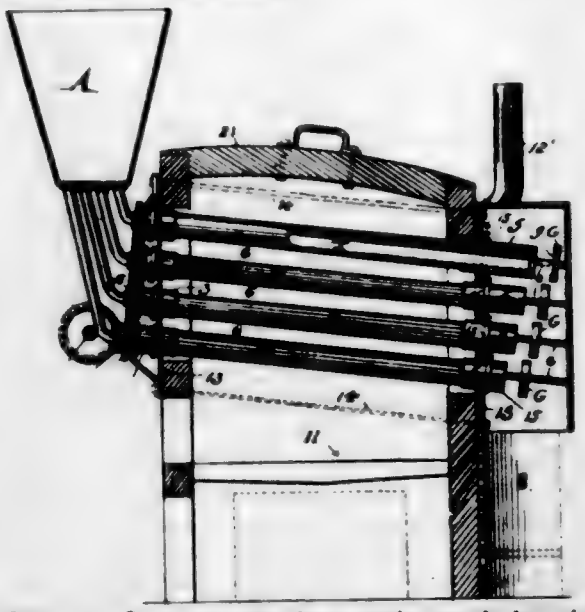

Claim.—1. In an apparatus for separating metals from their ores, the combination with a muffle, of a shield adjustable toward and from the discharge end of the muffle and having a sight-opening to afford inspection of the interior of the muffle while the ore is being reduced, and means inclosing the end of the muffle and the shield.

2. In an apparatus for separating metals from their ores, the combination with a revoluble muffle, of a shield separated from the end of, and movable in line with, the discharge end of the muffle and having a transparent portion to permit inspection of the interior of the muffle during the reducing operation, and an inclosure for the end of the muffle and the shield.

3. In an apparatus for separating metals from their ores, the combination with an inclined muffle through which the ore passes, of a shield separated from the end of, and movable in line with, the discharge end of the muffle, and having a transparent portion, means whereby the shield may be adjusted toward and from the end of the muffle, and a housing inclosing the discharge end of the muffle and the shield.

4. In an apparatus for separating metals from their ores, the combination with a muffle, of a shield in line with, and separated from, the end of the muffle and including a ring or band and a transparent sheet held thereto, and means whereby the shield may be adjusted to and from the discharge end of the muffle.

5. In an apparatus for separating metals from their ores, the combination with the muffles, of an inclosure or housing for the discharge ends of said muffles, said housing or inclosure being closed on all sides, except the bottom, and having openings containing transparent material, and a shield interposed between the housing and the discharge end of the muffle, and having a transparent portion in line with the openings in said housing.

6. In an apparatus for separating metals from their ores, the combination with a vertical row of muffles, of an inclosure or housing covering the discharge ends of all of the muffles said inclosure having closed sides and top, an open bottom and a hinged door, said door having glazed sight-openings, one in line with each of the muffles.

7. In an apparatus for separating metals from their ores, the combination with a vertical row of muffles, of an inclosure or housing for the discharge ends thereof and having internal guides, and a shield fitting said guides in line with the muffles and adjustable with relation to the discharge ends of the muffles.

8. In an apparatus for separating metals from their ores the combination with a muffle, of a burner-tube entering directly therein and composed of graphite said tube having inclined sides converging upwardly.

9. In an apparatus for separating metals from their ores the combination with the muffle, of a burner-tube entering the muffle and having substantially a triangular form in cross-section.

708,568. APPARATUS FOR TEACHING PRIMARY ARITHMETIC. ARTHUR F. LOEHNERT, Detroit, Mich. Filed Apr. 12, 1901. Serial No. 55,532. (No model.)

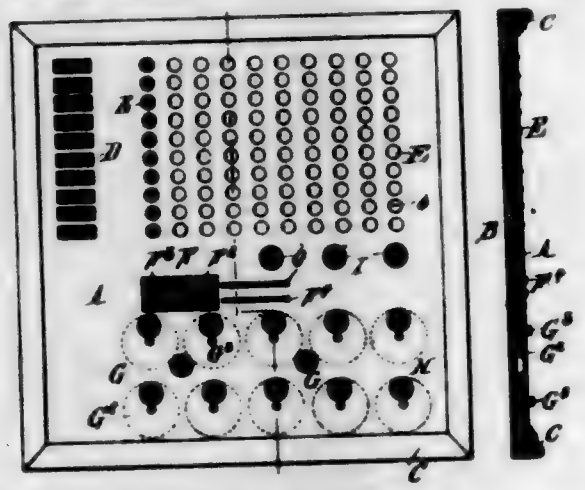

Claim.—1. In an arithmetical apparatus in which numbers are represented by color-dots formed by means of colored apertures in a face-plate, of apertures provided with disks rotatively secured behind the face-plate and provided with means for turning each disk upon its center, each disk carrying upon its face different colors and arranged in such relation to one of the apertures that by turning the disk the color of the aperture may be changed.

2. In an arithmetical apparatus in which numbers are represented by color-dots formed by means of colored apertures in a face-plate, of color-dots arranged in groups to form number-pictures composed of ten or any lesser number of color-dots each color-dot being provided with a slide whereby any color-dot may be covered over independently of any other one, and color-disks affixed behind the apertures forming some of the color-dots and adapted to vary the colors of said dots by turning the disk, those not provided with the disks having a fixed and uniform color, whereby in forming a number-picture by suitably opening or closing certain slides, the colors of some of the color-dots composing said number-picture may be varied for the synthetic or analytic consideration of the number represented by the number-picture.

3. In an arithmetical apparatus composed of a face-plate provided with apertures having slides and arranged to form color-dots upon the face-plate adapted to represent numbers by opening the slides, of one or more groups of color-dots as G, each composed of five, grouped to form the number-picture five, four of each group provided with means for changing the color of the dot whereby each dot of the group may be made to appear of a different color from the others.

4. In an arithmetical apparatus, the combination with the face-plate A, and its group or groups of colored apertures G arranged to represent the number-picture "five," each aperture provided with a slide, of color-disks rotatably secured upon the back of the face-plate behind four of the apertures, each color-disk bearing five different colors each adapted to appear in the aperture by rotating the disk.

5. In an arithmetical apparatus, composed of a face-plate provided with apertures having slides and arranged to form color-dots, the combination of the group E of circular color-dots arranged in ten rows of ten each, each row having a different color from the adjacent row, a group D of ten rectangular color-dots, a rectangular color-dot F having ten circular color-dots of a different color placed within its color-field and provided with separate slides, and groups of circular color-dots G, G, H, I, adapted to collectively form number-pictures of ten or less color-dots and having means to vary the color of some of the color-dots.

6. In an arithmetical apparatus, in which numbers are represented by color-dots formed by means of colored apertures in the face-plate having slides for opening and closing the apertures, the combination of one or more groups of circular color-dots for representing numbers numerically, one group as D of rectangular color-dots, and the rectangular color-dot F having in its color-field ten circular color-dots of a different color and controlled by separate slides.

708,569. INDICATOR FOR BALL GAMES. EDWARD MANLEY, Chicago, Ill. Filed Oct. 9, 1901. Serial No. 78,143. (No model.)

Claim.—1. A device for use in ball games, comprising an indicator interposed between the pitcher's and catcher's positions and defining or bounding the usual or determined trajectory of the ball, substantially as described.

2. An indicator for ball games, comprising a light non-resisting vertical device interposed between the pitcher's and catcher's positions to determine the correct trajectory of a pitched ball, substantially as described.

3. An indicator for ball games, comprising a slight frame interposed between the pitcher's and catcher's positions, by which the ball is to be pitched, for the purpose and substantially as described.

4. In an indicator for ball games, the combination of two vertical members anchored between the pitcher's and catcher's positions, said members being of slight proportions and arranged to determine the correct trajectory of the pitched ball, substantially as described.

5. In an indicator for ball games, the combination of an overhead support, a pair of vertically-arranged members suspended therefrom at a point between the pitcher's and catcher's positions, and transverse members attached to the vertical members to form therewith a frame through which the ball must be pitched, substantially as and for the purpose set forth.

708,570. PRINTING-MACHINE. FLORIAN J. MARTIN, Milwaukee, Wis. Filed Apr. 18, 1901. Serial No. 56,450. (No model.)

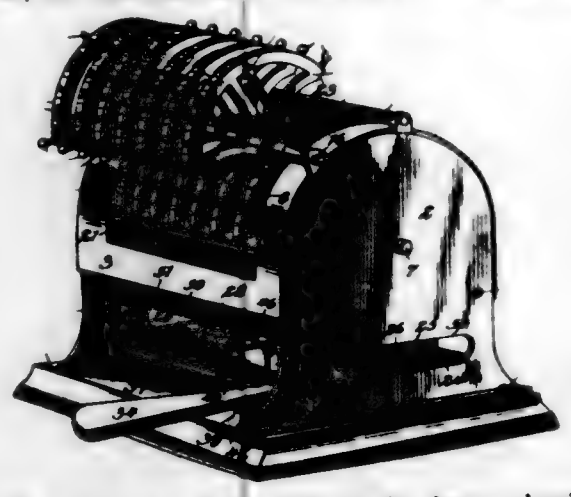

Claim.—1. In a printing-machine of the character described, the combination of shiftable printing mechanism, which is normally fixed in printing position, a shiftable inking device normally out of engagement therewith, a shiftable platen, and common manually-operated means for inserting and withdrawing the platen from between the inking device and the printing mechanism and into operative relation with respect to said printing mechanism, and also for moving the inking device into and out of engagement with the printing mechanism.

2. In a printing-machine, the combination with relatively fixed oscillatory shiftable printing mechanism, of a vertically-movable inking de-

vice normally out of engagement therewith, a shiftable platen, and common hand-operated means for raising the inking device into engagement with the printing mechanism, and also for moving the platen over and away from the inking device and for raising the same into operative relation with respect to the printing mechanism.

3. In a printing-machine of the character described, the combination with shiftable but normally fixed printing mechanism, of a vertically-movable inking device therefor, a platen movable substantially horizontal in a plane lying between the inking device and the printing mechanism to cover and uncover the inking device, and also movable vertically into operative relation with respect to the printing mechanism, and a vertically and horizontally swinging lever having operative connections with the inking device and the platen.

4. In a printing-machine of the character specified, a casing-housing printing mechanism, substantially as described, the ends of the casing being provided with slots through which the material to be printed upon may be inserted, in combination with an inking means for the printing mechanism, a platen, and means operating to remove the platen from over the inking means to permit inking of the printing characters and to project the platen over the inking means when printing is to be effected.

5. In a printing-machine of the character specified, the combination with printing mechanism, of a bed-block arranged below the printing mechanism, an inking-pad mounted on the bed-block, a platen, and a lever adapted when shifted, in one direction in a horizontal plane, to move the platen from over the inking-pad, and when depressed to bring the inking-pad into contact with the characters of the printing mechanism, and when shifted in the opposite direction in a horizontal plane, to bring the platen over the inking-pad and when depressed to lift the bed-block and with it the platen toward the characters of the printing mechanism.

6. In a printing-machine of the character specified, a plurality of printing-wheels each bearing a gear-wheel and a ratchet-wheel, and type-wheel actuators and indicators each comprising two oppositely-disposed sectors having their arcs of rotation concentric, one of the sectors being provided with teeth to mesh with the said gear-wheel and the other bearing characters corresponding to those on the type-wheel, locking means for engaging the ratchet-wheel, pointers coacting with the character-bearing sector, and stops also coacting with the extremities of the character-bearing sector to limit its arc of rotation.

7. In a printing-machine of the character specified, a plurality of printing-wheels each bearing a gear-wheel and a ratchet-wheel, type-wheel actuators each comprising two oppositely-disposed sectors having their arcs of rotation concentric, one of the sectors being provided with teeth to mesh with the said gear-wheel, and the other bearing characters corresponding to those on the type-wheel, a bed-block arranged below the type-wheels, an inking-pad mounted on the bed-block, a platen, and a lever adapted when shifted in one direction in a horizontal plane to move the platen from over the inking-pad, and when depressed to bring the inking-pad into contact with the characters of the type, and when shifted in the opposite direction in a horizontal plane to bring the platen over the inking-pad and when depressed to lift the bed-block and with it the platen toward the characters on the type-wheel.

8. In a printing-machine having printing-wheels, and actuating mechanism therefor, a movable bed-block normally held out of engagement with the printing mechanism, an inking-pad carried by the bed-block, a platen, and a lever to perform the triple functions of moving the platen over and away from the inking-pad and of raising the bed-block.

9. In a printing-machine having printing-wheels and actuating mechanism therefor, substantially as described, of a movable bed-block normally held out of engagement with the printing mechanism, an inking-pad carried by the bed-block, a platen, and a lever for moving the platen over and away from the inking-pad and for raising the bed-block.

10. In a printing-machine having printing-wheels, and actuating mechanism therefor, substantially as described, a movable bed-block normally held out of engagement with the printing mechanism, an inking-pad carried by the bed-block, a platen, means for moving the platen over and away from the inking-pad and for raising the bed-block, and means for automatically returning the bed-block to its normal position upon the release of its actuating means.

11. In a printing-machine of the character specified, the combination with a plurality of printing-wheels, and actuating and indicating mechanism therefor, substantially as described, of a bed-block carrying an inking-pad and a platen, means operating automatically to hold the bed-block normally depressed, a rock-shaft bearing two arms extending beneath the bed-block, one of the arms being provided with a flattened head and with an overhanging lug, a lever pivotally connected with the latter arm and having a flattened head engaging the said lug, and an arm carried by the lever and having a pivotal connection with the platen.

12. In a printing-machine of the character specified, the combination with a plurality of printing-wheels, and actuating and indicating mechanism therefor, of a bed-block bearing an inking-pad and a platen, and a lever adapted, when moved in a horizontal plane, to move the platen either to expose or cover the inking-pad and when depressed through interposed mechanism, to raise the bed-plate either to cause inking of the character of the type-wheel or to effect printing.

13. In a printing-machine of the character specified, a plurality of printing-wheels and actuating and inking mechanism therefor, a bed-block having spring means operating normally to cause the bed to be depressed and thus out of the path of movement of the type-wheels, a rock-shaft carrying two arms extending beneath the ends of the bed-block, one of the arms being provided at its outer extremity with an enlarged flattened head carrying a depending pin working in an orifice in the base-plate of the machine, the pin carrying a spring operating normally to hold the arm raised, and the inner portion of the arm being provided with an overhanging lug, a lever pivoted upon the latter arm and having an enlarged flattened head to engage with the lug, an arm carrying a pin engaging a slot formed in a projection on the platen, and guide-pins carried by the rock-shaft and coacting with the tongue.

14. In a printing-machine of the character specified, the combination with a plurality of printing-wheels and actuating and inking mechanism therefor, of a bed-block provided with two sets of guideways, the lower set of guideways being engaged by an inking-pad carrier, and the upper guideways by a platen, and means for moving the platen to cause it to cover or expose the inking-pad and to raise the bed-block.

15. In a printing-machine of the character specified, a casing comprising a base-plate, end plates secured thereto and a shell or cover secured to the end plates, a shaft journaled in suitable bearings in the end plates and supporting a plurality of type-wheels each bearing a ratchet-wheel and a gear-wheel, a shaft supported in bearings near the front of the machine and carrying a plurality of type-wheel actuators and indicators, corresponding in number to the type-wheels, each comprising two oppositely-disposed sectors having their arcs of rotation concentric, one of the sectors having teeth engaging the said gear-wheels and the other sector bearing characters corresponding with those on the type-wheels, locking means engaging the ratchet-wheels, a bed-block arranged below the type-wheels, an inking-pad and a platen supported by the bed-block, a rock-shaft journaled in the end plates and carrying two arms projecting under the bed-block, one of the arms being provided on its outer extremity with an enlarged flattened head and near its inner extremity with an overhanging lug, a lever pivoted on its latter arm and having an enlarged flattened head engaging the said lug, the lever carrying an arm provided with a pin engaging a slot formed in a tongue projecting from the platen, guide-pins carried by the rock-shaft and coacting with the tongue to cause the platen to move in a right line, guides arranged in the casing and operating to direct insertion to the slip of paper under the type-wheels, the end plates of the casing being provided with openings to permit insertion of a strip of paper therethrough and under the type-wheels.

16. In a printing-machine of the character specified, the combination with a plurality of type-wheels and actuating mechanism therefor, of a vertically-movable bed-block, carrying an inking-pad and a platen, a lever adapted for horizontal movement and rocking movement in the two extremities of the arc of a circle, horizontal movement in one direction with rocking movement effecting projection of the platen over the inking-pad and then lifting of the bed-block to effect printing, and horizontal movment in the other direction and depression effecting uncovering of the inking-pad and lifting of the bed-block to effect inking of the pad.

17. In a printing-machine of the character specified, a plurality of printing-wheels each having its periphery provided with printing characters of any suitable material, each type-wheel carrying a gear-wheel and a ratchet-wheel, locking means engaging the gear-wheels, type-wheel actuators and indicators corresponding in number to the type-wheels, and comprising each two oppositely-disposed sectors having their arcs of rotation concentric, one of the sectors being provided with teeth engaging the gear-wheels, and the other bearing characters corresponding to those on the type-wheels, pointers coacting with the character-bearing sectors, knobs carried by latter sectors by which they may be moved, stops for limiting the arc of rotation of the sectors, a movable bed-block carrying an inking-pad and a platen, and a lever adapted through interposed mechanism to move the platen over or away from the inking-pad and to lift the bed-block.

18. In a printing-machine of the character described, the combination with a base, of a casing comprising opposite ends rising from the base, a top shell extending between and supported by the end pieces and having a longitudinal opening extending through the front and top thereof, the lower front and rear edges of the casing being terminated short of the base and provided with inwardly and downwardly inclined guide-plates, the lower ends of which terminate above the base, the opposite end pieces having corresponding transverse openings lying at the lower ends of the guide-plates, printing mechanism mounted between the end pieces and having adjusting means projected through the opening in the shell or casing, a vertically-movable inking device carried by the base

and below the printing mechanism, a platen located between the base and the printing mechanism, and means for moving the inking device to ink the printing mechanism and also to move the platen into operative relation with respect to said printing mechanism, the end openings forming an entrance and an exit for the element to be printed upon, and the spaces formed between the base and the opposite inclined guide-plates forming similar openings disposed in alinement transversely to the first-mentioned openings.

19. In a printing-machine of the character described, a rotatable printing-wheel having type characters, and carrying a gear-wheel, a type-wheel actuator and indicator pivoted at one side of the printing-wheel and embodying two oppositely-disposed sectors having their arcs of rotation concentric, one of the sectors being provided with teeth to mesh with the gear-wheel, and the other sector having characters corresponding to those on the type-wheel, a relatively fixed pointer coöperating with the characters on the indicating-sector, and means for locking the type-wheel against accidental movement.

20. In a printing-machine of the character described, the combination of a plurality of independently-rotatable printing-wheels mounted upon a common axis and having type characters upon their peripheries, gears carried by the type-wheels, type-wheel actuators and indicators each of which embodies oppositely-disposed sectors having their arcs of rotation concentric and pivoted at one side of the printing-wheels, one of the sectors being provided with teeth in mesh with the adjacent gear and the other sector having its periphery provided with characters corresponding to the type characters of the adjacent type-wheel, and a fixed pointer coöperating with the characters on all of the indicating-sectors, whereby, when a plurality of sectors are set at a predetermined relation, the disposition of the type characters which are in printing position is clearly indicated by the indicator characters alined with the pointer.

708,571. CAR-COUPLING. THOMAS F. MELARSON, Upper Charlo, Canada. Filed June 2, 1902. Serial No. 109,883. (No model.)

Claim.—1. A car-coupler comprising a draw-head having a recess in its forward end adapted to receive a link, a pin slidable in a transverse aperture across said recess to engage the link, and link-supporting means comprising a normally projecting bolt longitudinally slidable in said draw-head beneath said recess, said bolt being adapted to directly sustain the link and to be pushed back flush with the end of said draw-head, and a spring adapted to hold said link-supporting bolt resiliently pressed into its projecting position.

2. A car-coupler comprising a draw-head having a recess in its forward end adapted to receive a link, a pin mounted in a transverse aperture in said draw-head and adapted to be shot across the said recess to engage the link, a bolt slidable in a longitudinal passage-way in said draw-head coaxial with said recess, a spring mounted at the rear end of said bolt and adapted to hold the same pressed into its forward position with its front end across said aperture for the pin, a link-supporting bolt mounted to reciprocate in a longitudinal passage-way in said draw-head beneath said recess, a second spring mounted on the rear end of said link-supporting bolt to retain the same in forward or projecting position, and a latch-bolt adapted to be projected across the path of said link-supporting bolt to engage the same when retracted and hold it in retracted position.

3. A car-coupler comprising a draw-head having a recess in its forward end adapted to receive a link, a pin mounted in a transverse aperture in said draw-head and adapted to be shot across the said recess to engage the link, a bolt slidable in a longitudinal passage-way in said draw-head coaxial with said recess, a spring mounted at the rear end of said bolt and adapted to hold the same pressed into its forward position with its front end across said aperture for the pin, a link-supporting bolt mounted to reciprocate in a longitudinal passage-way in said draw-head beneath said recess, a second spring mounted on the rear end of said link-supporting bolt to retain the same in forward or projecting position, a latch-bolt adapted to be projected across the path of said link-supporting bolt to engage the same when retracted and hold it in retracted position, a rock-shaft mounted transversely of the car at the end thereof, a rock-arm keyed centrally to said rock-shaft, a bolt connecting the end of said rock-arm with the link-pin, and lever-handles formed on the extremities of said rock-shaft, whereby said pin may be raised from the side of the car, substantially as described.

4. In a car-coupler, a supporting means for the free end of a link held in the same draw-head comprising a bolt adapted to reciprocate in a longitudinal passage-way formed in the draw-head, a bracket-lug formed on the forward end of said bolt and rising to a level with the under side of the link when in horizontal position, and vertically-upstanding side lugs formed on said bracket-lug to confine said link against horizontal movement.

5. In a car-coupler, a supporting means for the free end of a draw-link adapted to hold the same in horizontal position comprising a longitudinal bolt adapted to reciprocate in a passage-way formed in the draw-head beneath said link, a bracket-lug formed on the front end of said bolt and adapted to support the pin, and a spring mounted on the rear end of said bolt and adapted to keep the same resiliently pressed into projecting position.

6. In a car-coupler, a supporting means for the free end of a draw-link adapted to hold the same in horizontal position comprising a longitudinal bolt adapted to reciprocate in a passage-way formed in the draw-head beneath said link, a bracket-lug formed on the front end of said bolt and adapted to support the pin, a spring mounted on the rear end of said bolt and adapted to keep the same resiliently pressed into projecting position, a latch-bolt adapted to be projected across the path of said supporting-bolt to engage and hold the same when retracted, a spring acting on said latch-bolt to project it into engagement with said supporting-bolt, and a pair of handle-bars projecting to opposite sides of the car and connected with said latch-bolt, whereby to enable the same to be released and projected forward by said first-named spring.

7. A car-coupler comprising a draw-head having a recess in its forward end adapted to receive a link, a pin adapted to slide in a transverse aperture in said draw-head and to be projected across said recess to engage the link, a rock-shaft mounted transversely of the car above said draw-head, a rock-arm centrally keyed on said rock-shaft and connected with said pin, cranked handles formed on the extremities of said rock-shaft to enable said pin to be raised from the side of the car, a bolt slidable in a longitudinal passage-way formed in said draw-head in line with the link, a spring connected with the rear end of said bolt and adapted to hold the same pressed resiliently forward across the path of said pin to hold the same in raised position, a link-supporting bolt slidable in a longitudinal passage-way parallel with said first-named bolt and directly beneath the same, a supporting-lug formed on the front end of said link-supporting bolt adapted to receive and hold said link, and a spring connected with the rear end of said link-supporting bolt to hold the same resiliently pressed into forward position.

8. A car-coupler comprising a draw-head having a recess in its forward end adapted to receive a link, a pin adapted to slide in a transverse aperture in said draw-head and to be projected across said recess to engage the link, a rock-shaft mounted transversely of the car above said draw-head, a rock-arm centrally keyed on said rock-shaft and connected with said pin, cranked handles formed on the extremities of said rock-shaft to enable said pin to be raised from the side of the car, a bolt slidable in a longitudinal passage-way formed in said draw-head in line with the link, a spring connected with the rear end of said bolt and adapted to hold the same pressed resiliently forward across the path of said pin to hold the same in raised position, a link-supporting bolt slidable in a longitudinal passage-way parallel with said first-named bolt and directly beneath the same, a supporting-lug formed on the front end of said link-supporting bolt adapted to receive and hold said link, a spring connected with the rear end of said link-supporting bolt to hold the same resiliently pressed into forward position, a latch-bolt adapted to project across the path of said link-supporting bolt and to retain the same in retracted position, a spring acting on said latch-bolt to project it into engagement with said link-supporting bolt, and a bar sliding transversely of the car

and connected with said latch-bolt, whereby to enable the latter to be operated to release said link-supporting bolt from either side of the car, substantially as described.

9. In a car-coupler, the combination of a link-and-pin connection, a rock-shaft mounted transversely of the car and connected with said pin to raise the same, a pair of crank-handles formed on the respective ends of said rock-shaft, and means arranged to be inserted under said handles when the pin is raised to hold it in raised position.

10. In a car-coupler, the combination of a link-and-pin connection, a rock-shaft mounted transversely of the car and connected with said pin to raise the same, a pair of crank-handles formed on the respective ends of said rock-shaft, and an oblique swinging bar pivoted on a vertical axis to the car-body and having a socket formed in its upper end adapted to receive and support said crank-handle to hold the pin in raised position, substantially as described.

708,572. FOUNTAIN-PEN. CARL F. MILLER, Janesville, Wis. Filed May 13, 1901. Serial No. 59,956. (No model.)

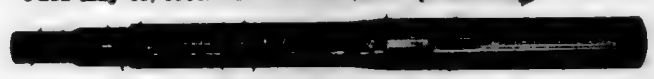

Claim.—In a fountain-pen, a reservoir having a nipple, a cap threaded on the nipple, a pen and feeder in the opposite end of the reservoir and a stem connected to the feeder in combination with a valve-casing on the opposite end of the stem, a piston having a hole in its end formed with the valve-casing, ports through the wall of the valve-casing leading into the reservoir, a valve for controlling the hole in the piston and the ports, a spring in the valve-casing for retaining the valve normally seated and a buffer-screw depending into the reservoir for regulating the draw of the piston, as and for the purpose described.

708,573. CAPTIVE-BALL APPARATUS. EUSTACE H. MILES, Cambridge, England. Filed Mar. 26, 1900. Serial No. 10,260. (No model.)

Claim.—A combination consisting of an open-work net bag adapted to hold an ordinary playing-ball movable therein, two elastic suspension-cords secured to opposite ends of the network bag and rows of hooks adapted to secure the outward ends of the suspension-cords in such a way that the ball may be placed at any desired height from the ground and the suspension-cords inclined at any desired angle.

708,574. PEAT-PRESS. WILLIAM A. MILNE, Brown's Corners, Canada. Filed Sept. 30, 1901. Serial No. 77,099. (No model.)

Claim.—1. In a peat-press two forming-wheels both having their peripheries divided into arc-shaped and angular recesses, the arc-shaped recess of one wheel being designed to come substantially opposite the angular recess of the opposite wheel when they are on a level with the shafts as they rotate as and for the purpose specified.

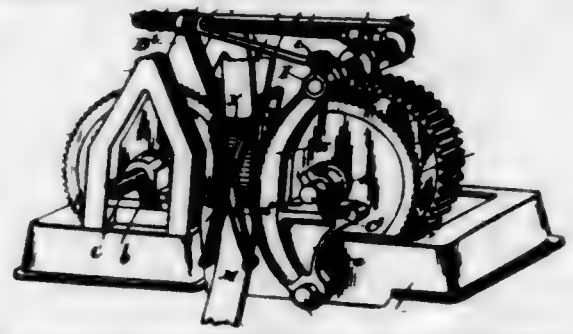

2. The combination with the wheels supported and driven and approaching each other opposite their centers, of the endless bands suitably driven and having plain surfaces substantially abutting the faces of the wheels whereby the hopper thus formed is of the same width throughout and thereby form ends for the cavities or recesses, and backing-supports for the bands as specified.

3. The combination with the forming-wheels supported and driven and approaching each other opposite their centers, of the endless bands suitably driven and substantially abutting the faces of the wheels, so as to form ends for the cavities or recesses and roller-chains forming a bearing to the outside of the bands and suitable supports for such roller-chains as and for the purpose specified.

708,575. GOLF-CLUB. WILLIAM MILNE, Penarth, England. Filed Jan. 21, 1901. Serial No. 44,183. (No model.)

Claim.—1. In the heads of clubs for playing the game of golf, the combination of a hard and rigid face-plate and a pad of resilient material at the back of the same, the pad being thicker at one edge than at the other.

2. In the heads of clubs for playing the game of golf, the combination of a hard and rigid face-plate and a pad of resilient material at the back of same, the pad being thicker at the upper edge than at the lower.

708,576. GRAIN-ELEVATOR. WILLIAM H. MCCANNON and CHARLES A. LEE, Formoso, Kans. Filed Apr. 15, 1902. Serial No. 103,089. (No model.)

Claim.—1. In a grain-elevator, the combination with the elevator proper, and a raised platform to which the elevator is connected, of a bin-holding chamber arranged beneath the top of the platform, a hinged cover for the bin, a tilting bin located within said chamber and means for elevating one end of the bin through the top of the bin-chamber so as to discharge into the elevator, substantially as described.

2. In a grain-elevator, the combination with the elevator proper, and a raised platform to which the elevator is connected, of a tilting bin arranged beneath the top of the platform, means for raising and lowering one end of the bin, and a cut-off at the discharge end of the bin for regulating the flow of grain from the bin to the elevator, substantially as described.

3. In a grain-elevator, the combination with a raised platform and the elevator proper connected therewith, of a tilting bin located below the top of the platform and in line with the elevator, a cut-off at the dis-

charge end of the bin, and a windlass and connection for raising and lowering one end of the tilting bin, substantially as described.

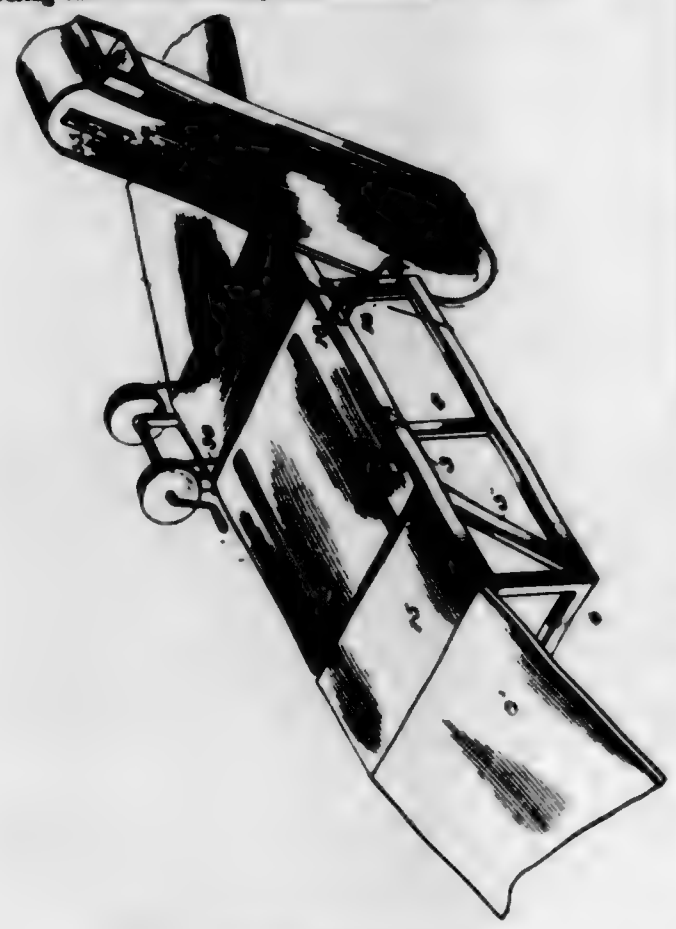

708,577. EYELET. GEORGE R. MCCORMACK, East Bridgewater, Mass., assignor to Precision Eyelet Company, East Bridgewater, Mass., a Copartnership. Filed Feb. 8, 1902. Serial No. 93,185. (No model.)

Claim.—The herein-described improved sheet-metal eyelet, comprising the barrel A, and the circular flange consisting of two thicknesses or layers of metal B, B', concentric in cross-section and in physical contact with each other throughout their entire width and circumference or length, the peripheral portion B' of the metal constituting the flange being folded under the portion B, and corresponding in shape thereto, and the flange being formed to produce an annular groove on its under surface, substantially as set forth.

708,578. BOX. EDWARD T. HOSAK, Chicago, Ill. Filed Mar. 8, 1901. Serial No. 50,404. (No model.)

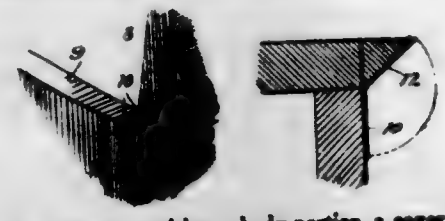

Claim.—1. A box comprising a body portion, a cover, a hinge, and a stop-strip attached in position to hold said cover in inclined open position, said stop-strip affording a plane against which the edge of the cover abuts when in such inclined open position, substantially as described.

2. A box comprising a body portion, a cover, a cloth hinge, attached to said box and cover, a stop-strip attached outside said hinge, in position to hold said cover in inclined open position, said stop-strip affording a plane against which the edge of said cover abuts when it is in inclined open position, substantially as described.

3. A box comprising a body portion, a cover, a flexible hinge, and a stop-strip attached by cementation outside said hinge in position to hold said cover in inclined open position, substantially as described.

4. A box comprising a body portion, a cover, a cloth hinge, secured to said body portion and said cover by cementation, and a stop-strip cemented to said hinge upon the outside of the box, in position to hold said cover in partly open position, substantially as described.

708,579. DRIVING-GEAR. JOHN HUTEY, Midlandpark, N. J., assignor of two-thirds to Carl P. Lenk and Rudolph Lenk New York, N. Y. Filed Oct. 1, 1901. Serial No. 77,197. (No model.)

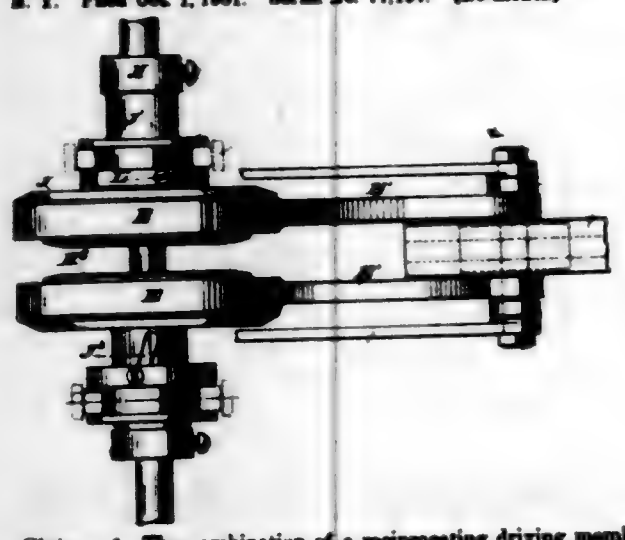

Claim.—1. The combination of a reciprocating driving member, a driven part mounted to turn, a driving part mounted to oscillate about the axis of the driven part and provided with an outwardly-extending guideway, an intermittent grip device forming a driving connection between said oscillating driving part and the driven part, connecting mechanism from the driving member to the driving part, said connecting mechanism comprising an adjustable member arranged to slide along the guideway of the driving part, a link pivotally connected with said connecting mechanism at the adjustable member thereof, and an adjustable carrier on which said link is fulcrumed.

2. The combination of a reciprocating driving member, a driven part mounted to turn, a driving part mounted to oscillate about the axis of the driven part, and provided with an outwardly-extending guideway, an intermittent grip device forming a driving connection between said oscillating driving part and the driven part, connecting mechanism comprising an adjustable member arranged to slide along the guideway of the driving part, a link pivotally connected with said connecting mechanism at the adjustable member thereof, a normally stationary carrier on which said link is fulcrumed, said carrier being pivoted to a stationary part, and a speed-controlling lever for adjusting the carrier on the pivot.

3. The combination of a reciprocating driving member, a driven part mounted to turn, a connecting mechanism from the driving member to the said part, the latter being provided with a guideway on which said connecting mechanism is adjustable, the said guideway being arranged substantially radially with respect to the axis of the driven part, and having at its outer portion a lateral extension on which said connecting mechanism may move when in its outer position, said mechanism being adjustable on the driven part from its outer position at which the driving member moves without affecting the driven part, to a maximum of rotary speed of the driven part, and means for adjusting said connecting mechanism.

4. The combination of a reciprocating driving member, a driven part mounted to turn, a driving part mounted to oscillate about the axis of the driven part and provided with an outwardly-extending guideway terminating in a lateral extension, an intermittent grip device forming a driving connection between said oscillating driving part and the driven part, connecting mechanism from the reciprocating driving member to the oscillating driving part, said connecting mechanism comprising an adjustable member arranged to slide along the guideway of the oscillating driving part and the lateral extension thereof and to reciprocate longitudinally along said lateral extension, a link pivotally connected with said connecting mechanism at the adjustable member thereof, a normally stationary carrier on which said link is fulcrumed, said carrier being pivoted to a stationary part, and a speed-controlling lever for adjusting the carrier on the pivot, and adapted to move the adjustable member of the connecting mechanism along the guideway of the driving part and into engagement with the lateral extension of said guideway.

5. The combination of a reciprocating driving member, a driven part mounted to turn, a driving part mounted to oscillate about the axis of the driven part and provided with an outwardly-extending guideway terminating in a lateral extension, extending at an angle to the main portion of said guideway an intermittent grip device forming a driving connection between said oscillating part and the driven part, connecting mechanism from the reciprocating driving member to the oscillating driving part, said connecting mechanism comprising an adjustable member arranged to slide along the guideway of the oscillating driving part and the lateral extension thereof and to reciprocate longitudinally along said lateral extension, and an adjustable support for said adjustable member.

6. An intermittent grip device comprising a driving-ring, a clutch member, having a hub projected therefrom, a plurality of rollers between

the driving-ring and the clutch member, pins projecting on each side of said rollers so as to limit the motion of said rollers, a plate-disk from which said pins project, a sleeve upon which said disk is mounted and capable of a partial movement of rotation about the axis of said grip device, but incapable of longitudinal movement along the same, said sleeve being provided with an oblique slot, a pin adapted to move longitudinally in a groove in the hub of said clutch member and to engage the walls of said oblique slot in said sleeve, and means to move said pin longitudinally along said hub and thereby to rotate said sleeve and the disk thereon and to vary the position of the pins within said recesses and the movement of the said rollers.

7. An intermittent grip device comprising a driving-ring, a clutch member provided with a plurality of arms which contact with the driving-ring and between which are recesses, the inner walls of which consist of inclined planes, a plurality of rollers within said recesses and adapted to engage the inner surface of the driving-ring, and means for preventing the engagement of the rollers with the driving-ring during movement of the latter in one direction.

708,580. ANTIFRICTION METAL ALLOY. HARRY PEARSE and BYRE F. IEVERS, Buenos Ayres, Argentina. Filed July 18, 1902. Serial No. 116,018. (No specimens.)

Claim.—An antifriction metallic alloy composed of lead, antimony, tin, copper, wrought-iron, and cast-iron, substantially as set forth.

708,581. PHONOGRAPH. WILHELM PETSCHE, Berlin, Germany. Filed Jan. 9, 1901. Serial No. 42,699. (No model.)

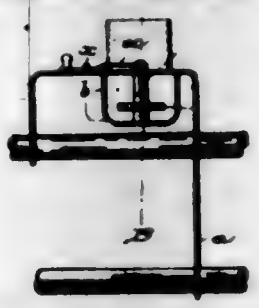

Claim.—1. In combination, a pivoted arm for supporting the diaphragm, having a slot, and a revolvable locking-rod passing through said slot and flattened on its side, said rod being arranged to limit the lateral movement of the pivoted arm, substantially as described.

2. A holding device for recording and speaking apparatus in phonographs comprising an arm *g*, and a locking-rod *m* on which the arm is guided, said rod being flattened laterally, substantially as described.

708,582. MILK-PAIL ATTACHMENT. MILLARD F. POTTER, St. Paul, Minn. Filed Apr. 28, 1902. Serial No. 104,793. (No model.)

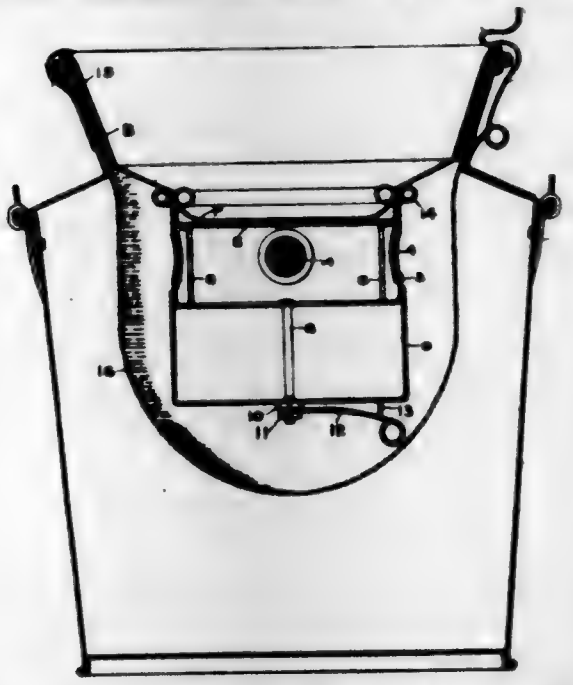

Claim.—1. The combination with a milk-pail, of a funnel, means for securing said funnel in the mouth of said pail, a closed bottom for said funnel, a horizontal strainer arranged in said funnel, the bottom of said funnel being formed with screened openings in its side wall below said horizontal strainer, and a slidable cap fitted over the bottom of said funnel.

2. The combination with a milk-pail, of a funnel, means for holding said funnel in the mouth of said pail, a downwardly-projecting closed bottom carried by said funnel, a horizontal strainer detachably supported in said funnel, the bottom of said funnel being formed with screened openings below said strainer, and a slidable cap arranged in connection with the bottom of said funnel.

3. The combination with a milk-pail, of a funnel, means for detachably supporting said funnel in the mouth of said pail, a downwardly-projecting closed bottom for said funnel, a horizontal strainer detachably supported therein, the bottom of said funnel being provided with screened openings in its side wall below said strainer, a slidable cap fitted over the bottom of said funnel, and means for securing said cap in open position.

4. The combination with a milk-pail, of a funnel, means for supporting said funnel in the mouth of said pail, a downwardly-projecting closed bottom for said funnel, a horizontal strainer detachably supported therein, said funnel being formed with screened openings in its side wall below said strainer, a rubber ring surrounding said funnel, a rod projecting downwardly from the bottom of said funnel, a cap slidably supported on said rod and fitting over the bottom of the funnel, a catch secured to the bottom of said cap, a spring carried by said rod and projecting outward adjacent to said catch, and a fabric bag surrounding said funnel and connected parts.

5. An attachment of the class described, consisting of a funnel provided with a closed end, said funnel being formed with screened openings in its side wall, a cap slidably supported upon the end of said funnel, and means for holding said cap in open position.

6. An attachment of the class described, consisting of a funnel provided with a closed end formed with screened openings in its side wall, a rubber ring surrounding said funnel above said openings, and a cap slidably supported upon the closed end of said funnel.

708,588. DREDGING APPARATUS. GEORGE G. POWELL, New York, N. Y. Filed Dec. 11, 1901. Serial No. 85,445. (No model.)

Claim.—1. In a dredge, the combination of a buoyant body or float and a series of buckets mounted to travel around said float in a common path.

2. In a dredge, the combination of a buoyant body or float, a circular chain of buckets mounted to travel vertically around the float, an adjacent boat, driving mechanism thereon, and driving connections from said mechanism to the buckets.

3. A buoyant cylindrical body, a boat to which it is adjustably connected, a circular chain of buckets arranged to travel vertically around the cylinder, mechanism for imparting motion to the buckets, and a conveyer moving transversely to the travel of the buckets to carry away the spoil.

4. In a dredge a buoyant cylindrical drum, a circular series of buckets sustained by and traveling vertically around the drum, and each having a hinged side to discharge the contents, and means for automatically opening and closing the same.

5. In a dredge, a boat, an adjacent float, and vertically-adjustable connections between them, in combination with a circular series of dredging-buckets mounted to revolve around the float, mechanism for driving the buckets, and means for flooding and draining the float.

6. In a dredge, in combination with the boat adjustably connected thereto, the cylindrical drum, tracks encircling the same, an endless chain of buckets traveling on the tracks, driving mechanism mounted in the boat and connected with the buckets, and means for conveying away the spoil discharged from the buckets.

7. The float, the chain of buckets provided with opening sides and arranged to travel around the float, in combination with means for automatically opening and closing the buckets.

8. In a dredge, the combination of a buoyant body, parallel endless series of buckets revolving around the same, and means for driving the different series independently, whereby they may be actuated at different speeds for one series while another is at rest, as the character of the soil or other conditions may demand.

9. In a dredge, the combination of a scow and a connected buoyant body, an endless series of buckets arranged to travel vertically around the buoyant body, said buckets extending laterally beyond the sides of the scow, whereby they are adapted to open a channel wider than the scow, substantially as described and shown.

10. In a dredge, the combination of a hull or scow with driving mechanism thereon, a drum or float located in advance of the hull and connected thereto by means for vertical adjustment, parallel series or chains of buckets arranged to travel vertically around the float, driving-cables extended from the respective series of buckets to the independent driving mechanism on the scow, and means for controlling the tension of the respective cables independently.

11. In a dredge, a hull or scow and bucket-driving mechanism mounted thereon, in combination with parallel chains of buckets, located directly in front of the scow and extending beyond the sides of the latter, the arrangement being substantially such as described and shown, to open in advance of the scow a channel for its passage.

708,584. PIGMENT. ALEXANDER S. RAMAGE, Cleveland, Ohio. Filed Feb. 17, 1902. Serial No. 94,471. (No specimens.)

Claim.—A pigment consisting of the light, yellow, hydrated basic, ferric oxid, having the formula $Fe_2O_3Fe_2(OH)_6$, impregnated with an independent coloring agent, as set forth.

708,585. PROCESS OF TREATING FERROUS LIQUORS. ALEXANDER S. RAMAGE, Cleveland, Ohio. Filed Feb. 17, 1902. Serial No. 94,472. (No specimens.)

Claim.—1. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, containing occluded oxygen, and calcining said oxid by heating it to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, as set forth.

2. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, containing occluded oxygen, and calcining said oxid by heating it, with exclusion of air, to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, as set forth.

3. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, containing occluded oxygen, calcining said oxid by heating it to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, and stirring the oxid during calcination, as set forth.

4. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, containing occluded oxygen, calcining said oxid by heating it, with exclusion of air, to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, and stirring the oxid during calcination, as set forth.

5. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, recovering the acid radical as a solution of a salt of an alkali or alkaline-earth metal, placing said oxid and solution in proximity, and heating said oxid to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, thereby simultaneously calcining the oxid and supplying heat to evaporate the solution, as set forth.

6. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, recovering the acid radical as a solution of a salt of an alkali or alkaline-earth metal, placing said oxid and solution in proximity, and heating said oxid, with exclusion of air, to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, thereby simultaneously calcining the acid and supplying heat to evaporate the solution, as set forth.

7. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, recovering the acid radical as a solution of a salt of an alkali or alkaline-earth metal, placing said oxid and solution in proximity, heating said oxid to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, thereby simultaneously calcining the oxid and supplying heat to evaporate the solution, and stirring the oxid during calcination, as set forth.

8. The process of treating ferrous liquors, which consists in precipitating therefrom a yellow, hydrated, basic, ferric oxid, recovering the acid radical as a solution of a salt of an alkali or alkaline-earth metal, placing said oxid and solution in proximity, heating said oxid, with exclusion of air, to a temperature sufficient to cause the occluded oxygen to react on the oxid with evolution of heat, thereby simultaneously calcining the acid and supplying heat to evaporate the solution, and stirring the oxid during calcination, as set forth.

708,586. DOOR CHECK AND CLOSER. XAVER REICHLIN, Horgen, Switzerland, assignor to Antony Schorno, Irvington, N. J. Filed May 6, 1902. Serial No. 106,143. (No model.)

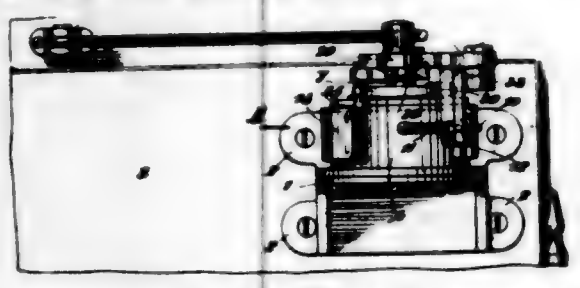

Claim.—1. In door checks and springs, the combination of the main spiral spring mechanism, a brake-band surrounding the drum of the said mainspring mechanism, a brake-lever connected to one end of the said brake-band, and a wedge-piece to actuate the said brake-lever, for the purpose of at first braking the closing door and then releasing it again, substantially as described.

2. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever connected to one end of the said brake-band, a wedge-piece coöperating with the said brake-lever, a screw-bolt connecting the said brake-band with the said brake-lever, and an interposed spring, for the purpose of altering the tension of the said brake-band, substantially as set forth.

3. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever connected to one end of the said brake-band, a wedge-piece coöperating with the said brake-lever, a plate carrying the said wedge-piece and turning about the mainspring-pin, and means for adjustably securing the said plate, for the purpose of varying the relative position of the said wedge-piece to the said brake-lever, substantially as and for the purpose set forth.

4. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever connected to one end of the said brake-band, a wedge-piece coöperating with the said brake-lever, and an arm pivotally secured upon the mainspring-drum and carrying the said wedge-piece, and means for adjusting the said wedge-piece upon the said pivoted arm, substantially as and for the purpose specified.

5. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever connected to one end of the said brake-band, a wedge-piece coöperating with the said brake-lever, an arm pivotally secured upon the mainspring-drum and carrying the said wedge-piece, means for adjusting the said wedge-piece upon the said pivoted arm, and means for altering the starting po-

sition of the said pivoted arm, for the purpose of reducing or enhancing the braking action, substantially as set forth.

6. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever adjustably connected to one end of the said brake-band, an adjustable wedge-piece codperating with the said brake-lever, and a tension-lever, adapted to actuate the said brake-band upon the door being violently slammed, substantially as described.

7. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a cam-surface on which said roller acts to check the closing of the door, substantially as set forth.

8. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a pivoted cam-surface on which the roller acts to check the closing of the door, substantially as set forth.

9. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a pivoted adjustable cam-surface on which the roller acts to check the closing of the door, substantially as set forth.

10. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a pivoted adjustable cam-surface on which the roller acts to check the closing of the door, and means to alter the point at which the door is checked, substantially as set forth.

11. In a door-check, the combination with a drum, a lever, a roller on the lever, and a cam pivoted on the drum and having a long and a short arm, said roller adapted to engage the long arm to check the closing of the door, and a spring to hold the cam in operative position and allow it to move out of the path of the roller when the door is opened, substantially as set forth.

708,587. **DREDGE-BUCKET.** ARTHUR W. ROBINSON, Montreal, Canada. Filed May 20, 1902. Serial No. 108,269. (No model.)

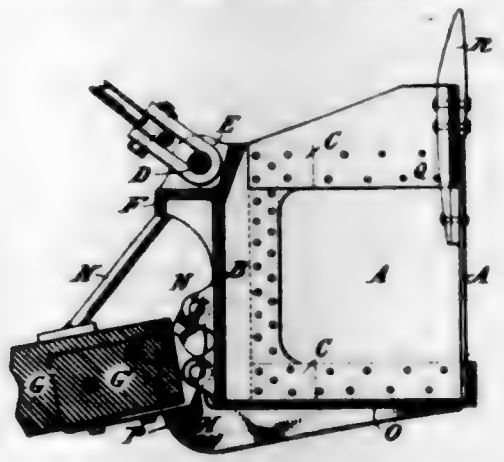

Claim.—1. A bucket the back of which is composed of a single continuous casting having a horizontal stiffening-flange near its upper edge and means for the direct attachment of the hoisting-tackle to said casting.

2. A bucket the back of which is composed of a single continuous casting having a horizontal stiffening-flange near its upper edge, lugs for the attachment of the hoisting-tackle and for engagement with the arm and back braces cast integral with said casting.

3. A bucket the back of which is composed of a single continuous casting having lugs for the attachment of the hoisting-tackle and for engagement with the arm and the braces thereof and for hinging the bottom, all cast integral therewith.

4. A bucket the back of which is composed of a single continuous casting having lugs cast integral therewith for the direct attachment of the hoisting-tackle to said casting.

5. A bucket the back of which is composed of a single continuous casting and having a horizontal stiffening-flange and projecting parts C, C, to which the shell-plate of the bucket may be bolted, means whereby the hoisting-tackle may make direct attachment with said casting and a reinforcing band or plate at the upper edge of the mouth of the bucket shell-plate upon which the teeth are supported.

708,588. **BOOM FOR DREDGES, EXCAVATORS, &c.** ARTHUR W. ROBINSON, Montreal, Canada. Filed May 20, 1902. Serial No. 108,270. (No model.)

Claim.—1. The combination in a dredge or like machine of a boom having a tapering form and rigidly attached at its larger end to a turn-table, the turn-table itself, feet on the under side of the turn-table and a rotatable collar supported about a fixed center and provided with sockets adapted to receive said feet, for the purpose set forth.

2. The combination in a dredge or like machine of a boom having lateral flanges thereon whereby it is stiffened against lateral strains, said flanges tapering from the base of the boom toward its free end, and a turn-table to which the larger end of the boom is rigidly attached and an axis about which the turn-table may turn, for the purpose set forth.

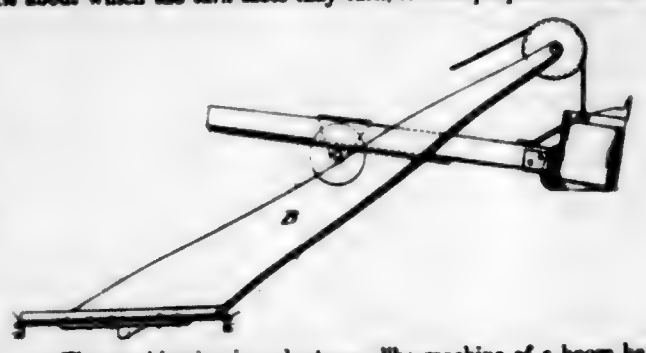

3. The combination in a dredge or like machine of a boom having a tapering form from a turn-table toward its free end and provided with lateral flanges likewise tapering in form from the turn-table toward the free end of the boom, for the purpose set forth.

4. The combination in a dredge or like machine of a boom composed of two similar parts, each having an outwardly-extending horizontal flange, the boom as a whole being rigidly attached at its larger end to a turn-table, the turn-table itself and means whereby the boom and turn-table may be rotated as a unit, for the purpose set forth.

5. The combination in a dredge or like machine of a boom having a tapering form and provided with lateral flanges, the larger end of the boom being rigidly attached to a turn-table, the turn-table itself, feet beneath the turn-table integral with or rigidly attached to the base of the boom, a rotatable collar provided with a suitable fixed center and sockets located upon the collar adapted to receive said feet, for the purpose set forth.

708,589. **HOISTING-GEAR FOR DIPPER-BUCKETS FOR USE UPON DREDGES, STEAM-SHOVELS, &c.** ARTHUR W. ROBINSON, Montreal, Canada. Filed May 20, 1902. Serial No. 108,272. (No model.)

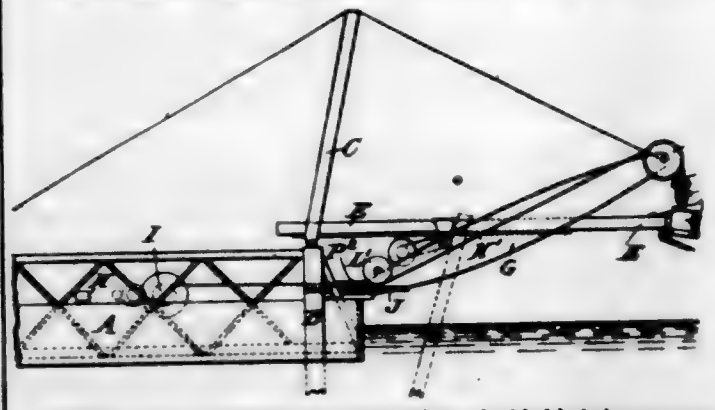

Claim.—1. A hoisting-gear embodying a doubled hoisting-rope and five guiding-sheaves over the turn-table, three of them equally spaced and horizontally arranged, the central one lying between the hoisting-ropes, and two vertically arranged, and a turn-table which directly or indirectly supports all of said sheaves, for the purpose set forth.

2. A hoisting-gear embodying a doubled hoisting-rope, a turn-table, three horizontally-disposed and equally-spaced sheaves carried by the turn-table, the central one lying between the hoisting-ropes, two vertically-disposed guiding and supporting sheaves so arranged relative to the first-named sheaves as to guide the ropes to and from them and means for winding up and unwinding said ropes, for the purpose set forth.

3. A hoisting-gear embodying a doubled hoisting-rope and vertically-arranged and horizontally-arranged sheaves for guiding and controlling the direction of the hoisting-ropes, said sheaves being all of them directly or indirectly supported by a turn-table and moving with it, and the horizontal sheaves being equally spaced relative to each other, the central one lying between the hoisting-ropes, a turn-table itself and a sheave at the bucket around which the doubled hoisting-rope passes, for the purpose set forth.

708,590. **STEAM-SHOVEL, &c.** ARTHUR W. ROBINSON, Montreal, Canada. Filed May 20, 1902. Serial No. 108,273. (No model.)

Claim.—1. In a dredge or like machine the combination of a boom rigidly attached to a turn-table the turn-table itself and a hoisting-engine and drum located upon the boom and centered about the axis of revolution thereof, for the purpose set forth.

2. In a dredge or like machine the combination of a boom rigidly attached to a turn-table, the turn-table itself feet rigidly connected to the boom beneath the turn-table which enters steps therefor in a rotatable collar supported upon the axis of revolution, said collar itself, and a hoisting-engine and drum located upon the boom and centered about the axis of revolution thereof, for the purpose set forth.

3. In a dredge or like machine the combination of a boom rigidly attached to a turn-table, the turn-table itself fast rigidly connected to the boom beneath the turn-table which enters steps therefor in a rotatable collar supported upon the axis of revolution, said collar itself, and a hoisting-engine and drum located upon the boom and centered about the axis of revolution thereof, and steam supply and exhaust pipes leading to and from the cylinders of the engine and provided with swivels located on the axis of revolution, for the purpose set forth.

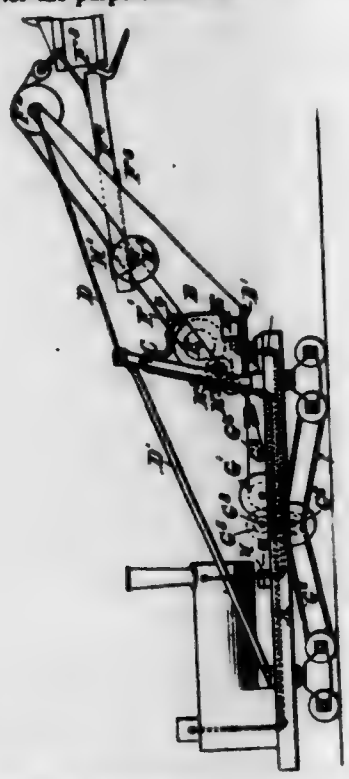

4. In a dredge or like machine the combination of a boom mounted upon and turning with a turn-table the turn-table itself and a hoisting-engine and drum located upon the boom and turning therewith, for the purpose set forth.

5. In a dredge or like machine the combination of a boom provided with feet at its lower ends which enter steps therefor in a rotatable collar and said collar itself supported upon the axis of revolution of the boom, for the purpose set forth.

6. In a dredge or like machine the combination of a boom provided with feet at its lower ends which enter steps therefor in a rotatable collar and said collar itself supported upon the axis of revolution of the boom, and a hoisting-engine and drum located upon the boom and turning with it, for the purpose set forth.

7. In a dredge or like machine the combination of a boom supported upon and turning with a turn-table, the turn-table itself a hoisting-engine and drum located upon the boom, feet at the lower end of the boom which enter steps therefor in a rotatable collar said collar itself supported upon the axis of revolution and steam supply and exhaust pipes leading to and from the hoisting-engine each comprising stationary and movable sections suitably connected together, for the purpose set forth.

8. In a dredge or steam-shovel or like machine the combination of a two-part dipper-arm, a saddle-block adapted to engage with the arm, a hoisting-rope which passes between the two parts of the dipper-arm and means for controlling the thrust of the dipper-arm, for the purpose set forth.

9. In a dredge or like machine the combination of a drum, spur-gears for actuating the drum, pinions loosely mounted on a shaft which engage with the spur-gears and a friction-clutch located between said spur-gears and which engages with suitable surfaces on said pinions, for the purpose set forth.

10. In a dredge or like machine the combination of a drum, spur-gears for actuating the drum, pinions loosely mounted on a shaft which engage with the spur-gears and a friction-clutch located between said spur-gears and which engages with suitable surfaces on said pinions, and a brake adapted to engage with said spur-gears and control the running of the drum, for the purpose set forth.

11. In a dredge or like machine the combination of a boom, hoisting-engines and a drum located upon the boom surrounding the axis of rotation thereof and duplex gearing connecting the hoisting engine or engines with the boom, for the purpose set forth.

12. In a dredge or like machine the combination of a boom, hoisting-engines and a drum located upon the boom surrounding the axis of rotation thereof, gearing connecting the hoisting engine or engines with the boom, and steam supply and exhaust pipes having a swivel connection located in the axis of rotation of the boom, for the purpose set forth.

13. In a dredge, steam-shovel, or like machine the combination of a two-part dipper-arm and a centrally-recessed saddle-block adapted to engage with the arm and a hoisting rope or ropes adapted to pass through said recessed saddle-block, for the purpose set forth.

14. In a dredge or like machine the combination of a drum having holes in its sides through which the draft-ropes may pass and a clamp adapted to engage with the two ends of the hoisting-ropes and confine the same, for the purpose set forth.

708,591. WALL-PLASTER. NELSON J. RUGGLES, Columbus, Ohio. Filed Feb. 26, 1902. Serial No. 96,715. (No specimens.)

Claim.—As an article of manufacture, prepared plaster consisting essentially of pulverized partially-slaked, dried and bolted lime, fire-clay and sand all mixed in substantially the proportions stated.

708,592. LOOM-SHUTTLE. ADOLF SCHAUB, Paterson, N. J., assignor to George A. Fletcher, Otto W. Schaum, and W. H. Rometsch, copartners trading as Schaum and Uhlinger. Filed Dec. 19, 1901. Serial No. 86,472. (No model.)

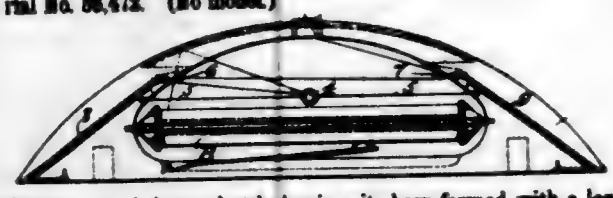

Claim.—1. A loom-shuttle having its bow formed with a longitudinal slot directly therein and provided with a central drawing-off eye, and an intermediate guiding means for the thread on its passage from said slot to said eye.

2. A loom-shuttle having a single bobbin-chamber, a bow formed with a continuous longitudinal slot directly therein and provided with a central drawing-off eye, and an intermediate guide-eye located approximately midway the length of the bobbin and between the latter and the drawing-off eye.

3. A loom-shuttle having its bow formed with a longitudinal slot constituting a guideway for the thread directly in said bow and said bow provided with a central drawing-off eye, a guide-eye located approximately midway the length of the bobbin and between the latter and the drawing-off eye, and intermediate right and left tension-eyes.

4. A loom-shuttle having a central eye in the bow, a longitudinal guideway to receive the thread on its passage from the bobbin to said bow-eye, and a guide-eye yieldingly supported midway of the length of the bobbin and below the bow-eye.

708,593. LIGHTING AND HEATING DEVICE FOR VEHICLES. PHILIPP F. SCHWENKE and JOHN W. CASE, Jackson, Mich. Filed Feb 15, 1902. Serial No. 94,245. (No model.)

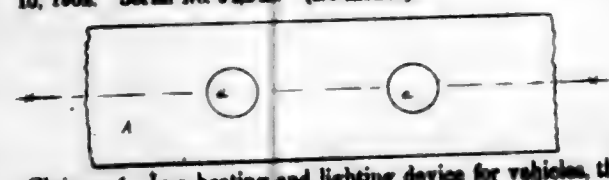

Claim.—1. In a heating and lighting device for vehicles, the combination with a heater, adapted to be placed over an opening in the floor of a vehicle, of a lamp-chimney provided with a loose revoluble joint, the upper end of said chimney communicating with said opening, so that the heat derived from a lamp communicating with the lower end of said chimney shall pass through the said opening and into said heater, substantially as described.

2. In a lighting and heating device for vehicles, the combination with a heater provided with a radiator, and adapted to be placed over an opening in the floor of a vehicle, of a lamp-chimney provided with a loose revoluble joint, the upper end of said chimney adapted to be placed contiguous to said radiator while the lower end of said chimney is adapted to support a lamp, substantially as described.

3. In a lighting and heating device for vehicles, the combination with a heater provided with a radiator and adapted to be placed over an opening in the floor of a vehicle, a lamp-chimney provided with a loose revoluble joint, the upper end of said chimney adapted to be placed contiguous to said opening so that the heat derived from a lamp attached to the lower end of said chimney shall pass through said opening and into said heater, of a bull's-eye arranged in the lower half of said chimney and an adjustable slide, B, arranged in the interior of the chimney and adapted to shut off the light from the bull's-eye, substantially as described

4. In a lighting and heating device for vehicles, the combination with the floor of a vehicle provided with an opening through said floor, a heater provided with a radiator placed over said opening, a lamp-chim-

ney provided with a loose revoluble joint, the upper end of said chimney placed contiguous to said opening so that the heat from a lamp attached to the lower end of said chimney shall pass through said opening and into said heater, the lower part of said chimney provided with a bull's-eye, a slide arranged in the chimney to shut off the bull's-eye, and a reflector arranged in the chimney opposite the bull's-eye, substantially as described.

708,594. MESSAGE-BOX. HENRIETTA SHRIVER, Arbuckle, Cal., administratrix of Augustus F. Shriver, deceased, assignor to Morris Zobertier and Samuel R. Caldwell, San Francisco, Cal. Filed Jan. 23, 1902. Serial No. 91,647. (No model.)

Claim.—1. A message-box, comprising a casing having a receptacle for a paper roll and a receptacle for receiving the paper, feed-rollers arranged between said receptacles, the roll-holding receptacle being provided with an opening in one of its walls, a plate arranged below said opening and swinging arms on which the casing is mounted, substantially as specified.

2. A message-box, comprising a casing, arms mounted to swing on a support and having pivotal connection with the casing, the said casing having a roll-holding receptacle and a roll-receiving receptacle, feed-rollers arranged between said receptacles, one wall of the roll-holding receptacle being provided with an opening, and a plate arranged below said opening forming a bed over which the paper passes, substantially as specified.

3. A message-box, comprising a casing having a receptacle for a paper roll and a receptacle for receiving the paper, feed-rolls arranged between the receptacles, a stop device for one of the rollers, a supporting-plate, a shaft at the lower portion of the plate, a spring connection between the shaft and plate, and arms extended from the shaft to the box, substantially as specified.

708,595. CARRYING AND TRANSFERRING DEVICE. JOHN H. SIBBOTT, Brooklyn, N. Y. Filed Oct. 10, 1901. Serial No. 78,217. (No model.)

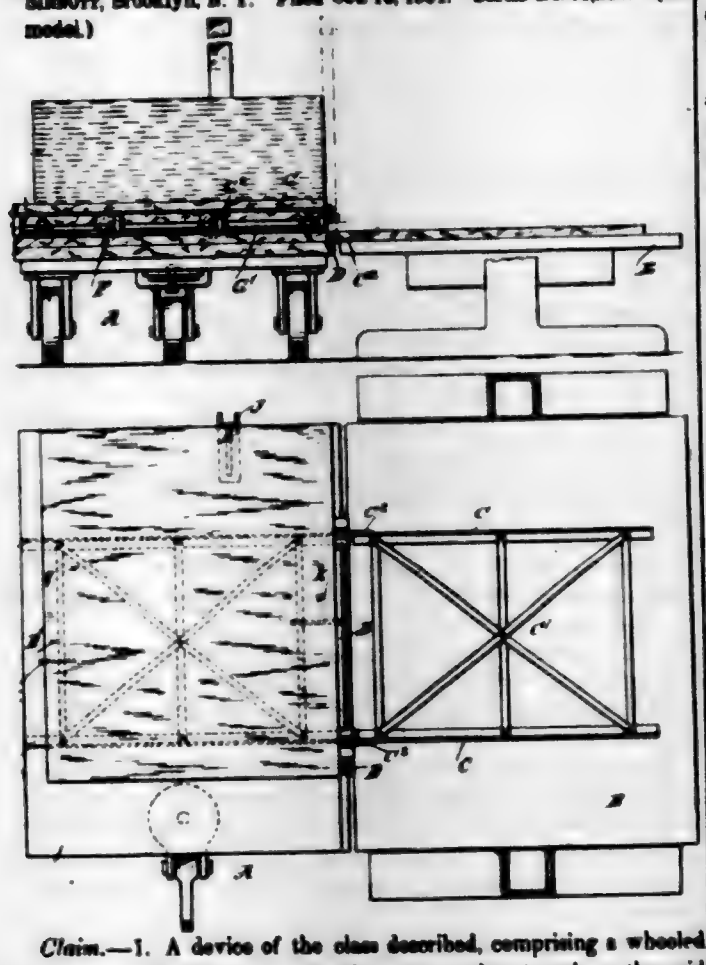

Claim.—1. A device of the class described, comprising a wheeled vehicle, a track fixed thereon, a carriage mounted to travel on the said track, and a track-section adapted to be supported on a receiving-table of a printing-press and forming an extension for the said fixed track, for wheeling the carriage from the wheeled vehicle onto the receiving-table, as set forth.

2. A device of the class described, comprising a wheeled vehicle, a track fixed thereon, a carriage mounted to travel on the said track, and a track-section adapted to form an extension for the said fixed track, for wheeling the carriage from the fixed track onto the track-section, the said track-section being also adapted to form a guide for piling the sheets of paper on the said carriage, as set forth.

3. A device of the class described, comprising a wheeled vehicle, a fixed track thereon, a carriage mounted to travel thereon, and a track-section removably connected with the said fixed track and adapted to be supported on a receiving-table of a printing-press and forming an extension therefor, to permit of wheeling the said carriage from the wheeled vehicle onto the receiving-table and leaving it thereon, as set forth.

4. A device of the class described, comprising a fixed track, a carriage mounted to travel thereon and adapted to receive a load, and a track-section pivoted on the said fixed track and adapted to form a guide for the sheets piled on the said carriage, as set forth.

5. A device of the class described, comprising a fixed track, a carriage mounted to travel thereon and adapted to receive a load, a track-section pivoted on the said fixed track and adapted to form a guide for the sheets piled on the said carriage, and means for locking the said track-section to the said carriage, as set forth.

6. In a device of the class described, a table or platform having longitudinally-extending guideways, wheels having one end of their axles working in said guideways, and guard-rails carried by the table or platform and engaging the other ends of the axles of the wheels, as set forth.

7. In a device of the class described, a table or platform having longitudinally-extending guideways, wheels having one end of their axles journaled in a support independent of the table or platform and their other ends working in the said guideways, and guard-rails carried by the table or platform and engaging the ends of the axles mounted in the said support, as set forth.

8. A device of the class described, comprising a track, a frame having wheels mounted to travel on the said track, a table, and guideways carried on the table and in which the axles of the said wheels work, as set forth.

9. A device of the class described, comprising a track, a frame having wheels mounted to travel on the said track, a table, guideways carried on the table and in which the axles of the said wheels work, and a locking device for locking the said table to the said frame, as set forth.

10. A device of the class described, comprising a track, a frame having wheels mounted to travel on the said track, a table, guideways carried on the table and in which the axles of the said wheels work, and means substantially as described, for limiting the ordinary motion of the guideways on the said axles, as set forth.

11. In a device of the class described, the combination with a frame, and wheels having one end of their axles mounted in said frame, of a platform having longitudinal guideways in which are mounted the other ends of the axles of the wheels and provided with guard-rails engaging axles adjacent to the frame, as set forth.

12. In a device of the class described, the combination with a frame, and wheels having one end of their axles mounted in said frame, of a platform having longitudinal guideways in which are mounted the other ends of the axles of the wheels and provided with guard-rails engaging axles adjacent to the frame, and means for locking the platform to the frame, as set forth.

13. A device of the class described, comprising a wheeled vehicle, a fixed track on said vehicle, a track-section pivoted to the fixed track, means for locking the track-section in a vertical position, and a carriage comprising a frame having wheels mounted to travel on the fixed track and track-section, and a platform mounted to travel on the frame at a greater rate of speed than that of the frame on the track, as set forth.

14. A device of the class described, comprising a wheeled vehicle, a fixed track thereon, a track-section pivoted to the fixed track, means for locking the track-section in a vertical position, and a carriage comprising a frame, wheels having one end of their axles mounted in said frame, and a platform having longitudinal guideways in which are mounted the other ends of the axles and provided with guard rails engaging the axles of the wheels adjacent to the frame, as set forth.

708,596. REEL FOR BARBED WIRE. ZACHARY D. SMITH, Springfield, Ill. Filed Mar. 14, 1902. Serial No. 98,314. (No model.)

Claim.—In an apparatus of the class described, a bracket having a slotted horizontal member provided with a projecting pin, and a vertical member provided with a transverse bearing, in combination with a main frame a plate on said frame adapted to receive said pin, a bolt passing

through said frame and through the slot in a horizontal member of said bracket, and a spool-shaft turnable in the bearing on the vertical member of said bracket, as set forth.

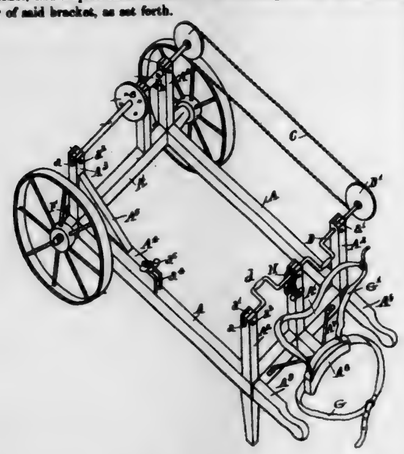

708,597. CURRYCOMB. ANDREW TEPPER and OLE M. HELTNER, Rariville, Ill.; said Heltner assignor to said Tepfer. Filed Apr. 28, 1902. Serial No. 105,063. (No model.)

Claim.—The combination with a currycomb having spring-sockets at its corners; of a cleaner consisting of a top plate and cleaner-bars depending therefrom and adapted to engage the opposite sides of the comb-bars, braces located between said cleaner-bars and holding the same in contact with the comb-bars, springs arranged in the spring-sockets and confined between the bottoms of said sockets and the top plate of the cleaner, posts projecting from the currycomb, and a bail journaled in said posts to swing in either direction and provided with cranks to bear upon the cleaner, whereby the latter may be depressed against the tension of said springs, substantially as and for the purpose described.

708,598. STEAM-FEED FOR SAWMILL-CARRIAGES. EDWIN B. THOMAS, St. Paul, Minn., assignor of one-half to Union Iron Works, Minneapolis, Minn., a Corporation of Minnesota. Filed Aug. 31, 1901. Serial No. 73,914. (No model.)

Claim.—1. The combination, with a log-carriage steam-cylinder and piston having its rod connected with the carriage, of valve-casings having suitable pipe connections with the ends of the cylinder and with the steam-supply and normally admitting steam to both sides of the piston simultaneously, and suitable slide-valves provided in said casings and within control of the sawyer and when stationary allowing steam to enter both ends of the cylinder simultaneously and when operated alternately closing the steam-inlet passages and opening the cylinder to the exhausts, substantially as described.

2. The combination, with a log-carriage steam-cylinder and piston having its rod connected with the carriage, of valve-casings having suitable pipe connections with the cylinder on both sides of the piston and provided with steam inlet and exhaust ports and with annular grooves between said inlet and exhaust ports communicating with the cylinder, and slide-valves provided in said casings and within control of the sawyer for normally allowing the steam to flow into both ends of the cylinder simultaneously when the carriage is stationary and alternately exhausting the steam from each side of the piston when the carriage is in motion.

3. The combination, with a log-carriage steam-cylinder and its piston connected with the log-carriage, of valve-casings connected respectively with the cylinder on both sides of the piston, said casings being provided with steam inlet and exhaust ports and having annular grooves located between said ports and forming passages communicating with the cylinder, piston-valves provided in said casings and within the control of the sawyer, and bridges provided on said valves intermediate to their ends for closing the exhausts when the valves are stationary and opening the steam-inlet passages to the cylinder, and alternately opening and closing said exhausts and said inlet-ports when the valves are in motion.

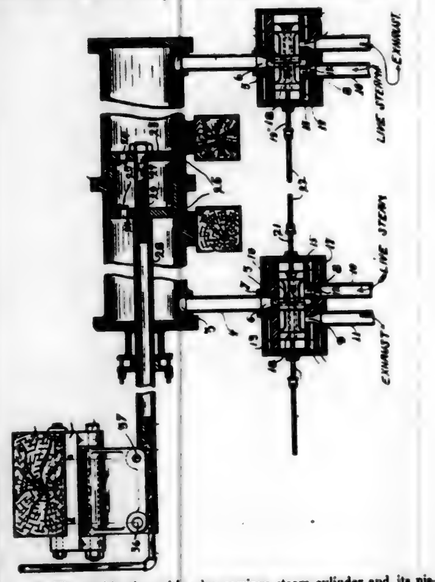

4. The combination, with a log-carriage steam-cylinder and its piston connected with the log-carriage, of valve-casings having pipe connections with the cylinder on each side of the piston respectively, said casings having steam inlet and exhaust ports, annular grooves provided in the walls of said casings between said ports and communicating with the cylinder, piston-valves provided in said casings and within control of the sawyer, bridges provided on said valves intermediate to their ends and permitting steam to flow into the cylinder upon both sides of the piston when the valves are stationary and alternately exhausting the steam from the ends of the cylinder when the valves are in motion, the sides of the bridges being substantially flat, for the purpose specified.

5. The combination, with a valve-casing having inlet and exhaust ports and a suitable connection with a cylinder, of a piston-valve provided within said casing, ducts for the water of condensation provided in the wall of said casing near its ends, and passages connecting said ducts with the exhaust-port.

6. The combination, with a cylinder, of a valve-casing connected therewith and provided with inlet and exhaust ports and an annular duct between said ports, of a double-ended slide-valve provided within said casing and having a bridge intermediate to its ends for closing the passages from said ports to said duct and the cylinder, and ducts for the water of condensation provided near the ends of said casing and communicating with passages that lead to the exhaust, substantially as described and for the purpose specified.

7. The combination, with a log-carriage steam-cylinder and its piston connected with the carriage, of suitable means through which live steam is conducted from the cylinder to the carriage, and means for delivering steam simultaneously to both ends of the cylinder when the carriage is at rest, whereby the pressure on the carriage is always constant, and means within control of the sawyer for alternately closing the live-steam inlets and opening said cylinder ends to the exhausts, substantially as described.

8. The combination, with a log-carriage steam-cylinder, of a hollow piston therein provided with check-valves, a hollow piston-rod provided with suitable ducts through which steam is conveyed to the log-carriage, suitable operative connections provided between said piston-rod and carriage, means through which steam is normally admitted to both sides of the piston simultaneously, whereby the pressure on the carriage is constant even when the carriage is stationary, and means within control of the sawyer for alternately shutting off the admission of steam to the ends of the cylinder and opening the same to the exhausts, substantially as described.

9. The combination, with a log-carriage steam-cylinder having a hollow piston provided with check-valves and a piston-rod connected with a log-carriage and provided with ducts through which steam is conveyed to the carriage, of valve-casings having pipe connections with the cylinder on both sides of the piston and provided with steam inlet and exhaust ports, and slide-valves provided within said casings and within control of the sawyer, and provided with means for normally allowing the steam to enter on both sides of the piston simultaneously when the valves are stationary and for alternately exhausting the steam from said sides when the valves are in motion, substantially as described.

10. The combination, with a log-carriage steam-cylinder, of a hollow piston therein provided with check-valves and ducts for the water of condensation, a plug provided in said piston, a second plug having suitable connections with the log-carriage, a hollow piston-rod connecting said plugs, suitable ducts provided in said plugs connecting said rod with the hollow piston and with pipe connections to the carriage, means through which steam is delivered simultaneously to both sides of the piston when the carriage is stationary, whereby pressure on the log-carriage will be constant, and means within control of the sawyer for alternately shutting off the passage of steam to each side of the piston and opening the same to the exhaust, substantially as described.

11. The combination, with a log-carriage steam-cylinder, of a piston having a hollow rod connected with the carriage and through which rod steam is conducted from both ends of the cylinder to the steam-operated mechanism on the carriage, means for delivering steam simultaneously to both ends of the cylinder when the carriage is at rest, whereby pressure on the carriage mechanism is always constant, and means within control of the sawyer for alternately shutting off the steam from the ends of the cylinder and opening them to the exhausts.

708,599. TRAP FOR AMALGAM. GEORGE R. TUTTLE, Grass Valley, Cal. Filed Aug. 7, 1901. Serial No. 71,157. (No model.)

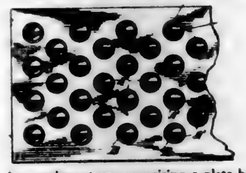

Claim.—1. An amalgam-trap comprising a plate having a recess therein, and a cell in said recess comprising a tubular body portion and a partition therein, said body portion and partition being composed of dissimilar metals, substantially as described.

2. An amalgam-trap comprising a plate having a recess therein, and a cell in said recess comprising a tubular body portion and a partition therein adapted to be inserted into or withdrawn from either end of the body portion, said body portion and the partition being composed of dissimilar metals, substantially as described.

3. An amalgam-trap comprising a plate having a recess therein, and a cell in said recess comprising a tubular body portion and a removable partition therein, said body portion and partition being composed of dissimilar metals, substantially as described.

708,600. LINE-SPACING MECHANISM FOR TYPE-WRITERS. FRANZ X. WAGNER, New York, N. Y., assignor to Wagner Typewriter Company, New York, N. Y., a Corporation of New York. Filed Dec. 27, 1901. Serial No. 87,473. (No model.)

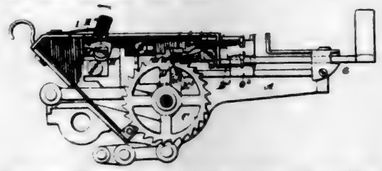

Claim.—1. The combination in a type-writer or like machine of a rotary paper-roller having a ratchet-wheel, a driving-pawl for turning said ratchet-wheel and permanently in engagement therewith but normally free to slip over the ratchet-wheel teeth, a locking device for preventing an outward movement of the driving-pawl during its entire driving movement, and single means for operating the driving-pawl and for bringing the locking device into action at the beginning of the operative movement of the driving-pawl.

2. In a type-writer or like machine, the combination of a paper-roller having a ratchet-wheel, a main slide, a driving-pawl carried by said main slide and in permanent engagement with the ratchet-wheel, said driving-pawl being normally free to slip over the ratchet-wheel teeth, a locking-slide with a limited movement relatively to the main slide, and means for operating the locking-slide and the main slide successively.

3. The combination of the paper-roller having a ratchet-wheel, the main slide, the pivoted driving-pawl engaging the ratchet-wheel permanently and carried by the main slide, the auxiliary slide projecting beyond the main slide and having a spring connection therewith, said auxiliary slide being provided with a projection adapted in one of its positions to lock the driving-pawl against outward movement, and an operating device for engaging the projecting portion of the auxiliary slide and moving the said slide and the main slide successively.

4. The combination of a main slide carrying a driving-pawl, a paper-roller having a ratchet-wheel engaged by said pawl, a locking device movable on the main slide and adapted to prevent outward movement of the driving-pawl, an operating means adapted to engage said locking device and to move the same preparatory to moving the main slide and the driving-pawl.

5. The combination of a paper-roller having a ratchet-wheel, with a spring-pressed slide, a driving-pawl secured thereto, an adjustable stop for varying the initial position of said slide, a locking-slide movable relatively to the main slide and carried thereby, said locking-slide being adapted to prevent outward movement of the driving-pawl, and operating means for first moving the locking-slide alone and then both slides together.

708,601. ROLLER SIDE BEARING. JOHN C. WANDS, St. Louis, Mo. Filed Nov. 8, 1901. Serial No. 81,585. (No model.)

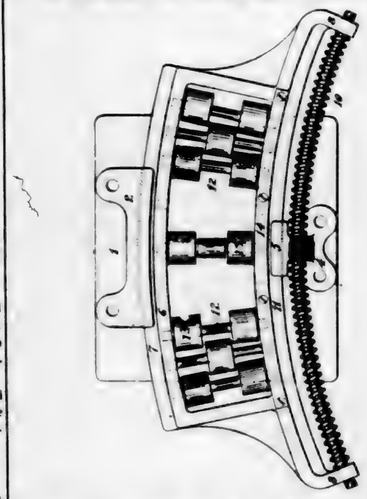

Claim.—1. In a side bearing for cars, the combination with an antifriction device, of a rod carried thereby, and a restoring-spring arranged on said rod; substantially as described.

2. In a side bearing for cars, the combination with an antifriction device, of a rod carried thereby, a fixed guide for said rod, and a restoring-spring arranged on said rod between said fixed guide and the antifriction device; substantially as described.

3. In a side bearing for cars, the combination with an antifriction device, of a rod carried thereby, a fixed guide for said rod, and springs arranged on said rod at each side of the fixed guide; substantially as described.

4. In a side bearing for cars, the combination of an antifriction device, a frame in which the same is mounted, and opposing springs arranged at the side, and in the horizontal plane of said frame for centering the same and its carried antifriction device; substantially as described.

5. In a side bearing for cars, the combination with an antifriction device, of a guide therefor, and opposing springs arranged at the side, and in the horizontal plane of said antifriction device, for coöperating with said guide at their outer ends and with the antifriction device at their inner ends; substantially as described.

6. In a side bearing for cars, the combination with an antifriction device provided with lateral guiding-fins, of guide-brackets coöperating with said fins, and restoring-springs arranged at one side of said antifriction device; substantially as described.

7. In a side bearing for cars, the combination with an antifriction device, of laterally-extending guiding-fins, guide-brackets coöperating with said fins, and opposing springs for restoring said antifriction device, said springs being seated against one of said guiding-brackets; substantially as described.

8. In a side bearing for cars, the combination with an antifriction device, of laterally-extending guiding-fins, guide-brackets coöperating with said fins, a rod carried by said antifriction device and passing through one of said guide-brackets, and springs arranged on each end of said rod and seated against said guide-bracket; substantially as described.

9. In a side bearing for cars, the combination with a track-plate, of an antifriction device and separable guide-brackets therefor, said guide-brackets having integral overhangs; substantially as described.

10. In a side bearing for cars, the combination with a shiftable frame, and separated groups of antifriction devices carried by said frame; substantially as described.

11. In a side bearing for cars, the combination with a shiftable frame, of separated groups of antifriction devices carried at the ends of said frame, whereby when one of said groups is in service the other is partially or entirely out of service, and resilient means for restoring said shiftable frame and its antifriction devices to a central position after operation; substantially as described.

12. In a side bearing for cars, the combination with a shiftable frame, of a track-plate, and separated groups of rollers in the end of the frame; substantially as described.

13. In a side bearing for cars, the combination with a track-plate, of a shiftable frame carrying separated groups of rollers at its ends, one of which groups is designed to be in service while the other is wholly or partially out of service, and a centering device for said frame; substantially as described.

14. In a side bearing for cars, the combination with a track-plate, of a shiftable frame, spindles arranged in separated groups at the ends of said frame, and rollers loosely mounted on said spindles; substantially as described.

15. In a side bearing for cars, the combination with a track-plate, of a shiftable frame, separated groups of rollers mounted in the ends of said frame, and sectional rollers overlapping each other and loosely arranged on said spindles; substantially as described.

16. In a side bearing for cars, the combination with a track-plate, of a shiftable frame, a plurality of spindles forming separated groups at each end of said frame, nested or grouped rollers mounted upon said spindles, said rollers overlapping each other, and a medial spindle provided with rollers; substantially as described.

17. In a side bearing for cars, the combination with an antifriction device, of springs exerting their energies in opposite directions for returning the antifriction device to a central position after operation; substantially as described.

18. In a side bearing for cars, the combination with a frame containing antifriction devices, of opposing springs for centering the same; substantially as described.

19. In a side bearing for cars, the combination with a reciprocatory antifriction device, and opposing springs acting to center said antifriction device; substantially as described.

20. In a side bearing for cars, the combination with a reciprocatory antifriction device, and opposing springs arranged to extend parallel with the direction of movement of said antifriction devices and acting to center the same; substantially as described.

21. In a side bearing for cars, the combination with a reciprocatory antifriction device comprising a roller-carriage and a plurality of antifriction-rollers caged therein, and opposing springs arranged to center said carriage; substantially as described.

22. In a side bearing for cars, the combination with a reciprocatory antifriction device comprising a carriage and a plurality of roller elements caged therein to maintain definite relation to the carriage, a base upon which said carriage travels, and opposing springs acting to center said carriage relatively to its length of travel across the base; substantially as described.

23. In a side bearing for cars, the combination with a frame containing antifriction devices, and opposing springs which bear at one of their ends against said frame and at their other ends against fixed abutments, whereby, the normal position of said frame is determined by the establishment of equilibrium between said springs; substantially as described.

24. In a side bearing for cars, the combination with a track-plate, of a frame containing antifriction devices, which frame is designed to traverse said track-plate, opposing springs, the ends of which are seated against said frame, and abutments against which the opposite ends of said springs are seated, whereby the frame is returned to a normal or central position by the establishment of equilibrium between said springs; substantially as described.

25. In a side bearing for cars, the combination with a frame containing antifriction devices, and coiled expansion-springs jointly engaging said frame in all of its positions and acting to restore said frame to a central position; substantially as described.

26. In a side bearing for cars, the combination with a frame containing antifriction devices in the form of rollers, and coiled expansion-springs under compression at all times and in all positions of said frame, said springs separately acting to restore the frame to a central position, or a position of equilibrium by the preponderating pressure of one spring over the other; substantially as described.

708,602. **DRIER.** ABRAHAM T. WELCH, Baltimore, Md. Filed May 28, 1897. Serial No. 638,659. (No model.)

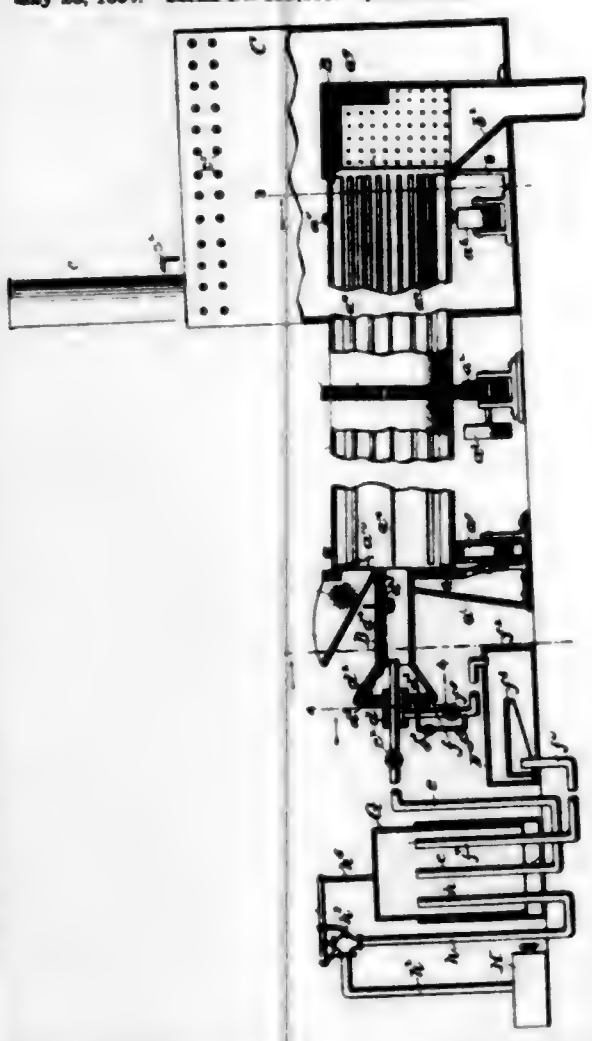

Claim.—1. The combination in a drier of a chamber, means for blowing or injecting flame thereinto at one end through an opening of smaller diameter than that of the end of the chamber and located some distance above its base, means for supplying to said end of the chamber material to be treated and means operating to advance the material progressively toward the other end of the chamber, substantially as described.

2. The combination in a drier of a chamber, means for blowing or injecting flame thereinto at one end through an opening of smaller diameter than that of the end of the chamber, and located at substantially the center of said end, means for supplying to said end of the chamber material to be treated, and means operating to advance the material progressively toward the other end of the chamber, substantially as described.

3. The combination in a drier of a chamber, means for blowing or injecting flame thereinto at one end through an opening of smaller diameter than that of the end of the chamber and located above the material to be treated, means for supplying to said end of the chamber material to be treated, and means operating to advance the material progressively toward the other end of the chamber, substantially as described.

4. A drier comprising a shell or drum, having its interior provided with a series of shelves, the same increasing in number from the inlet to the exit end of the drum, in combination with means for supplying heat to the drum, substantially as described.

5. A drier comprising a shell or drum, having its interior provided with a series of shelves, the same increasing in number from the inlet to the exit end of the drum, substantially as described.

6. A drier comprising a shell or drum having its interior provided with a series of shelves, a dust-arrester arranged at the discharge end of the drum, comprising an open-work structure, and a brush carried by the drum for removing accumulations from the interior walls of the said arrester, substantially as described.

7. The combination with a chamber of a burner in communication with the inlet end thereof, an air-supply pipe in connection with the burner and projecting beyond the same, substantially as described.

8. The combination with a revoluble drum, of a burner in communication with the inlet end thereof, an air-supply pipe in connection with the burner, and projecting beyond the same, substantially as described.

9. A drier comprising a shell or drum having its interior provided with a series of shelves, a dust-arrester arranged at the discharge end of the drum, comprising an open-work structure, and a dust-room inclosing the dust-arrester, and provided with means for introducing cooler air whereby to chill fine particles of material escaping thereto, substantially as described.

10. The combination with a revoluble drum of a stationary head-plate carrying a combustion-chamber, means for supplying a blast to the said chamber, a burner arranged at the outer end of the said chamber, a fuel-supply pipe entering the combustion-chamber, and means for regulating the supply of fuel to the burner, substantially as described.

11. The combination in a drier of a chamber open at one end and closed at the other, means for blowing flame into the closed end under pressure, and means for supplying to the chamber at the closed end material to be dried.

12. The combination in a drier of a chamber open at one end and closed at the other, means for blowing flame into the closed end under pressure in a direction substantially parallel to the line of discharge, and means of supplying to the chamber at the closed end material to be dried.

13. The combination in a drier of a chamber having a discharge-outlet, means for blowing flame partially therethrough from a passage-way alined with the line of discharge, means for supplying to the said chamber material to be treated, and means operating to advance the material through the chamber without burning, at a varied speed dependent upon the weight of the pieces.

14. The combination in a drier of a chamber having a discharge-outlet, means for forcing flame partially therethrough, in a line substantially parallel to the line of discharge, means for supplying such chamber with material to be treated, and means operating to advance the material through the chamber without burning, toward the outlet, at a speed dependent upon the heat-absorbing capacity of the material.

15. The combination in a drier, of a chamber closed at one end and having a discharge-outlet at the other, an inlet through said closed end having substantially parallel walls, and an area in cross-section less than that of the chamber, means for blowing flame into said chamber through said inlet, means for relieving the pressure of the discharge-outlet and means for supplying to the chamber material to be dried.

16. The combination in a drier, of a chamber provided with a discharge-outlet, a contracted inlet, of an area in cross-section less than that of the chamber, means for blowing the flame through said inlet in a direction substantially parallel to the line of discharge, means for relieving the pressure at the discharge-outlet and means for supplying to the chamber at or near the flame-inlet material to be dried.

17. The combination in a drier of a chamber having a discharge-outlet, means for blowing flame thereinto, in a direction substantially parallel to the line of discharge, means for relieving the pressure at the discharge-outlet, and means for supplying to the chamber at, or near the fire-inlet, material to be dried, and means for agitating the material so as to bring it into the line of the blast.

18. The combination in a drier of a chamber having a discharge-outlet, means for blowing flame thereinto under pressure in a direction substantially parallel to the line of discharge, means for relieving the pressure at the discharge-outlet, and means for supplying to the chamber at, or near the fire-inlet, material to be dried, and means for subjecting the material intermittently to the action of the blast, first to the highest temperature, and subsequently to the constantly-declining temperature.

19. The combination in a drier of a chamber having a discharge-outlet means for forcing flame partially therethrough in a line substantially parallel to the line of discharge, means for regulating and controlling the temperature of the flame and force of the blast, means for supplying to the said chamber material to be treated, and means operating to advance the material through the chamber without burning.

20. In a drier the combination of a cylinder, means for revolving the cylinder, means for projecting a flame under pressure into one end at or about its center, and means for feeding to the cylinder material to be dried, at the same end as the blast.

21. In a drier the combination of a receiver and agitator for the goods, said receiver being provided with a discharge-outlet, of means for feeding material to be dried to the receiver always at substantially the same point, and means for projecting a flame under pressure directly over the goods in the direction of discharge, the point of maximum temperature in the receiver being substantially opposite the point of maximum bulk of the goods.

22. In a drier the combination of a receiver having a discharge-outlet, means for agitating the goods in the receiver, means for feeding material to be dried to the receiver, always at substantially the same point, and means for projecting a flame directly over the goods in the direction of discharge, the point of maximum temperature in the receiver being opposite the point of maximum bulk of the goods.

23. In a drier the combination of a receiver having a discharge-outlet, means for agitating the goods, means for feeding material to be dried to the receiver always at substantially the same point and means for projecting a flame directly over the goods in the direction of discharge, so located that the point of maximum temperature in the receiver will be opposite the maximum bulk of goods.

24. In a drier the combination of a receiver having a discharge-outlet, the means for feeding the material to be dried to the receiver at one end, always at substantially the same point, whereby a maximum bulk of goods is maintained at the feed end, which gradually declines to the discharge end, means for agitating all the goods to prevent burning, and means for projecting a blast over the goods, the point of inlet of blast being over and opposite the maximum bulk of goods, and above the level of the discharging goods at the discharge end.

25. In a drier the combination of a receiver having a discharge-outlet, embodying a receiving-bed, having a rear wall forming an abrupt angle with the bed, with means for feeding material to be dried to the bed, immediately in front of the abrupt wall, means for agitating all the goods on the receiving-bed, and means for blowing a blast over the goods, the point of inlet of blast being opposite to the point of maximum bulk of goods, and above the level of the discharging goods at the discharge end.

26. In a drier the combination of a receiver, means for projecting a blast thereinto, means for regulating and controlling the force, volume and temperature of the blast to produce a desired power, means for advancing the material to be dried through the chamber, and means for supplying to the receiver material to be dried, and acted upon by the blast so as substantially to balance the power and work at all points in the receiver.

27. In a drier the combination of a receiver, means for projecting a flame thereinto under pressure, means for regulating and controlling the force, volume and temperature of the blast, to produce the desired power, means for advancing the material to be dried through the chamber, and means for supplying to the receiver material to be dried, and regulating the volume of material fed to the receiver, and acted upon by the blast so as substantially to balance the power and work at all points in the receiver, substantially as described.

28. In a drier the combination of a receiver, means for projecting a blast thereinto, means for regulating and controlling the pressure, volume and temperature of the blast to produce a desired power, and means for supplying to the receiver material to be dried in regulated quantity, so as to present to the power at all points in the receiver an amount of work proportional thereto.

29. In a drier the combination of an inclined rotating drum, open at one end and closed at the other by a stationary wall, means for projecting a flame through said wall into said drum at a substantial distance above the base of said drum, means for feeding material to be dried into said drum through said wall, and means for rotating said drum.

708,603. DRIER. ABRAHAM T. WELCH, Baltimore, Md. Filed Feb. 16, 1899. Renewed July 31, 1902. Serial No. 117,230. (No model.)

Claim.—1. In a drier the combination of a level-drum closed by a vertical wall at one end and open at the other with means for supplying material to be dried to the drum at the closed end, and delivering the same against the vertical wall, so that the material lies in a pile the depth of which decreases from the vertical wall toward the open end of the drum, means for projecting a flame into the drum from its closed end such a distance from the bottom of said drum that the flame upon entering will not impinge upon the goods piled on the bottom, means for rotating the drum and means whereby by the rotation of the drum the material is dropped through the flame and fed through the drum toward the open end thereof.

2. In a drier the combination of a level-drum closed by a vertical wall at one end and open at the other, of means for supplying material to be dried to the drum at the closed end and delivering the same against the vertical wall so that the material lies in a pile the depth of which decreases from the vertical wall toward the open end of the drum, means for projecting a flame through the vertical wall into the drum such a distance from the bottom of said drum that the flame upon entering will not impinge upon the goods piled on the bottom, and means for rotating the drum whereby by the rotation of the drum the material is dropped through the flame and progressed through the drum toward the open end thereof.

3. In a drier the combination of a drum closed at one end by a head substantially at right angles to the axis of the drum, and open at the other, the level of the discharge being the same as that of the base at feed end,

means for supplying to the drum at the closed end material to be dried, means for revolving the drum, and means for projecting into the drum at its closed end a flame at or about the center of the head substantially as described.

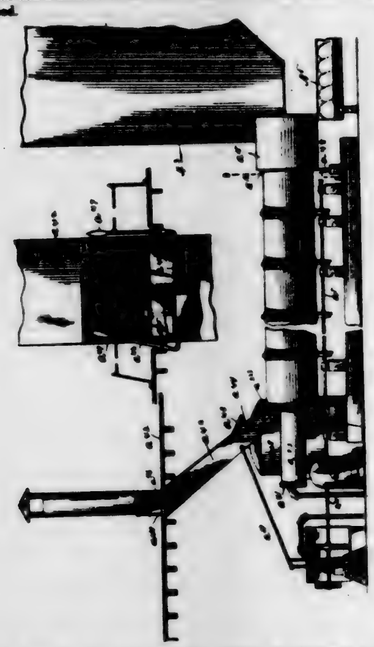

4. In a drier the combination of a receiver, the discharge end of which is at substantially the same level as the goods-receiving surface at the feed end, and having at its rear end an abrupt wall high enough to retain in the receiver an incline of goods of such an inclination that goods of any given moisture, while traveling down the incline from the feed to the discharge end of the receiver, will lose the desired quantity of moisture, means for agitating the material to be dried, means for feeding to the receiver measured quantities of material to be dried, means for projecting a flame through said wall such a distance from the bottom of said drum that the flame upon entering will not impinge upon the goods piled on the bottom.

5. In a drier the combination of a rotating drum open at one end, and closed at the other by a stationary vertical wall, means for projecting a flame through said wall into said drum at a substantial distance above the base of said drum, means for feeding material to be dried into said drum through said wall and means for rotating said drum.

6. In a drier the combination of a rotating drum open at one end and closed at the other by a stationary vertical wall, means for projecting a flame through said wall into said drum, means for feeding material to be dried into said drum through said wall, means for rotating said drum, and means whereby by the rotation of the drum the material is fed through the same and dropped through successive parts of the blast.

7. In a drier the combination of a rotating drum closed at one end by a stationary vertical plate, means for rotating said drum and means for adjusting said drum longitudinally, so that it will always bear tightly against said plate.

8. In a drier the combination of a drum composed of sections suitably secured together, flanges on the drum, of flanged friction-rollers for rotating the drum, a combined head-plate, feed-chute and combustion-chamber closing the feed end of the drum and means for shifting the shafts carrying the friction-rollers whereby to cause the drum to bear tightly against the head-plate.

9. The combination with the drying-receptacle provided with means for supplying heat at the feed end and having a cooler arranged at the discharge end, and a dust-collector inclosing the cooler.

10. The combination with the drying-cylinder provided with means for supplying heated products of combustion at the feed end and having a cooler arranged at the discharge end, of a dust-collector inclosing the cooler, substantially as described.

11. The combination with the drying-cylinder provided with means for supplying heated products of combustion at the feed end and having a cooler arranged at the discharge end, a dust-collector inclosing the cooler, said collector being provided with a spray to carry down the dust, substantially as described.

12. The combination with a drying-chamber, of a dust-collector located at the discharge end thereof in position to receive gases and floating particles therefrom but not the bulk of the dry material, consisting of a chamber open at the bottom and nearly closed at the top, the cubical contents of which progressively increases from the bottom toward the top, whereby the dust and floating particles are precipitated, the bulk of material being discharged without passing into the dust-collector.

13. The combination with a drying-chamber, of a dust-collector located at the discharge end thereof in position to receive gases and floating particles therefrom but not the bulk of the dry material, consisting of a chamber open at the bottom for the admission of cool air, the cubical contents of which progressively increase from the bottom to the top whereby the dust and floating particles are precipitated, the bulk of material being discharged without passing into the dust-collector.

14. The combination with a drying-chamber, of a dust-collector located at the discharge end thereof in position to receive gases and floating particles therefrom but not the bulk of the dry material, consisting of a chamber open at the bottom for the admission of cool air and nearly closed at the top, the cubical contents of which progressively increase from the bottom to the top, whereby the dust and floating particles are precipitated, the bulk of material being discharged without passing into the dust-collector.

708,604. DRIER. ABRAHAM T. WELCH, Baltimore, Md. Original application filed Oct. 22, 1897, Serial No. 656,062. Divided and this application filed June 7, 1901. Serial No. 63,859. (No model.)

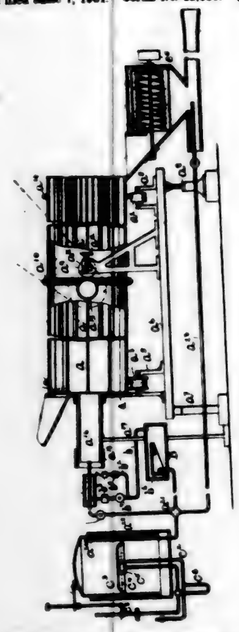

Claim.—1. In a drier the combination with an inclined rotating drum, open at one end and closed at the other by a stationary wall, means for projecting a flame through said wall into said drum at a substantial distance above the base of said drum, means for feeding material to be dried into said drum through said wall, means for rotating said drum, and means for varying the inclination of said drum.

2. In a drier the combination with an inclined rotating drum, open at one end and closed at the other by a stationary wall, means for projecting a flame through said wall into said drum, means for feeding material to be dried into said drum through said wall, means for rotating said drum, means whereby by the rotation of said drum material is fed through the same and dropped through successive parts of the flame, and means for varying the rate of feed through said drum.

3. In a drier the combination with a drum of means for projecting a flame into said drum at a substantial distance above the base of said drum, means for feeding material to be dried into and through said drum, means for delivering the material from the drum, and means for agitating the material to be dried in cooler air after it has been discharged from the drum.

4. In a drier the combination with a drum of means for projecting a flame into the drum at a substantial distance above the base of said drum, means for feeding the material to be dried into and through said drum, means for agitating the material to be dried in cooler air after it has been discharged from the drum, and means for discharging the material from said agitating means.

5. In a drier the combination with a drum of means for projecting a flame into said drum at a substantial distance above the base of said drum, means for feeding material into and through said drum, means for agitating the material after it is discharged from the drum in cooler air, said agitating means consisting of a screen and a rotating brush.

6. In a drier the combination with a drum of means for projecting a flame into said drum at a substantial distance above the base of said drum, means for feeding material into and through said drum, means for agitating the material after it is discharged from the drum in cooler air, said agitating means consisting of a screen and a rotating brush, and means for discharging material from said agitating means.

708,605. RAILROAD-RAIL JOINT. WILLIAM C. WESSEL and HENRY W. JACOB, Pittsburg, Pa. Filed Jan. 20, 1902. Serial No. 90,517. (No model.)

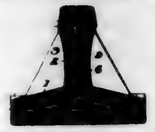

Claim.—In a rail-joint, the combination with the rails having the under faces of their treads grooved, of a chair carrying integral fish-plates, flanges and a base, and flanges on the upper ends of the fish-plates engaging in said grooved treads, vertical enlargements formed on the base of the chair and being apertured to receive the spikes, the said flanges of the base being recessed at their ends on the under side, and wedges adapted to be received within said recessed flanges and engage the upper face of the base, the wedges being located on each side of the rail-web and being engaged from the exterior of the ends of the chair-flanges, substantially as described.

708,606. VENTILATING-T. EDWARD F. WIETER, Chicago, Ill., assignor of one-half to Frederick H. Letourneau, Chicago, Ill. Filed Apr. 18, 1902. Serial No. 103,573. (No model.)

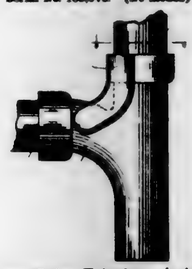

Claim.—1. A ventilating-T having a horizontal and a vertical branch, and a vent open at the top and joining with the said horizontal branch out of line with said vertical branch.

2. In a ventilating-T, the combination of a vertical branch, a horizontal branch, and a vent open at the top, said vent joining said horizontal branch out of line with said vertical branch and the mouth of said vent lying substantially adjacent to the said vertical branch.

3. In a ventilating-T, the combination of a vertical branch, a horizontal branch, and a vent open at the top, the juncture of said vent lying wholly on said horizontal branch and the mouth of said vent being laterally offset so as not to lie directly above said horizontal branch.

4. A ventilating-T having a horizontal branch, a vertical branch, and a vent, the juncture of the vent with said horizontal branch lying wholly on said horizontal branch and the mouth of said vent lying substantially adjacent to said vertical branch; and the mouth of said vent lying between reference-planes extending transversely to said horizontal branch and tangent to said vertical branch.

708,607. HORSESHOE-PAD. FRANK W. WOOD and MERCER B. MACPHERSON, Chelsea, Mass. Filed Jan. 31, 1902. Serial No. 91,986. (No model.)

Claim.—In a horseshoe-pad, in combination, the rubber cushion comprising the main portion A, the heel portion B, and the substantially elliptical tread portion C, said cushion being formed on its upper surface at the point where the frog is liable to press, with the recess E connecting with the groove F but having no connection with or passage leading to the edge of the cushion; and the leather layer H provided with the hole H' located at the heel but having no connection with or passage to the edge of the layer, and being coincident or registering with said recess, for the purpose of preventing frog-pressure, substantially as set forth.

708,608. GAMBREL. WILLIAM A. H. SANDER, Hopkins, Minn., assignor of one-half to John A. Ehrhardt and Morris B. Myers, Stanton, Nebr. Filed Feb. 18, 1902. Serial No. 94,601. (No model.)

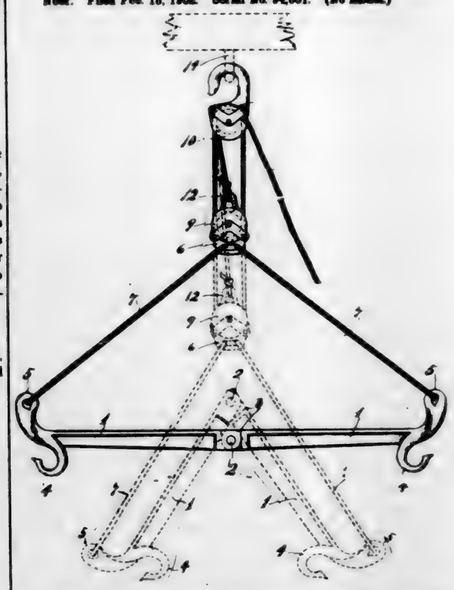

Claim.—The combination with a block and tackle, of a gambrel comprising the compression-toggle 1, the members of which are pivotally connected and are provided with the coöperating stops 3, depending hooks 4 and upwardly-extending lugs 5, and the toggle-links 7 pivotally connected to said lugs 5 and to one of the tackle-blocks, which toggles 1 and 7 are adapted to be buckled or folded into approximately parallel positions, substantially as described.

708,609. COMBINED GRAB AND SCRAPER. WILLIAM A. H. SANDER, Hopkins, Minn., assignor of one-half to John A. Ehrhardt and Morris B. Myers, Stanton, Nebr. Filed Feb. 28, 1902. Serial No. 96,116. (No model.)

Claim.—1. A grab, for use in scalding hogs or for other purposes, comprising a handle provided at one end with a yoke and a brad set at an acute angle to each other, substantially as and for the purposes set forth.

2. A combined grab and scraper, comprising a handle having at one end a yoke and a brad, set at an acute angle to each other, for adapting the device to be used as a grab, and provided at its opposite ends with a scraper, substantially as and for the purposes set forth.

708,609.

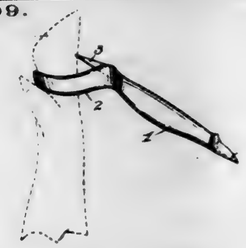

708,610. FASTENING DEVICE FOR PINS. JOHN KELLY, Eaton, Ohio. Filed Oct. 5, 1901. Serial No. 77,732. (No model.)

Claim.—1. In a breastpin or the like, the combination with a base-plate, of opposite slotted posts having their slots in mutual alinement, the back of one of the posts having a socket formed therein and communicating with the adjacent edge of the slot thereof, a headed pin thrust through the socket into the slot and having its head loosely received within the socket, the opposite free end of the pin being adapted to be seated in the slot of the other post, and pivotal keepers embracing the respective posts and constructed to prevent accidental displacement of the adjacent ends of the pin.

2. In a breastpin and the like, the combination of a hinge-post having a longitudinal slot formed in one side, and an opening formed in the opposite side and communicating with the slot, a headed pin thrust through the opening in the post with its head received loosely therein and its shank portion working in the slot thereof, and means permanently carried by the post for covering and uncovering the opening therein and to permit insertion and removal of the pin.

3. In a breastpin and the like, the combination of a hinge-post having a longitudinal slot formed in one side, and an opening formed in the opposite side, and communicating with the slot, a headed pin thrust through the opening with its head received loosely therein and its shank working in the slot, and a sleeve permanently swiveled upon the post and having an opening capable of being alined with the opening in the post to uncover the head of the pin.

4. In a breastpin and the like, the combination with a base-plate, of a slotted post projected therefrom and having a socket formed in one side thereof and in communication with the slot, a headed pin-tongue inserted through the socket and the slot with its head loosely received within the socket, and a pivotal keeper embracing the post and constructed to normally lie across the socket to prevent outward displacement of the pin-tongue.

5. A hinge-joint for breastpins and the like, comprising a slotted post having a socket formed in the outer side and communicating with the slot, a headed pin thrust through the socket and the slot and having its head loosely received within the socket, and a pivotal keeper embracing the post and constructed to cover and uncover the socket therein.

6. A hinge-joint for breastpins and the like, comprising a slotted post having a socket formed in its outer side and communicating with the slot, a headed pin thrust through the socket and the slot and having its head loosely received within the socket, a locking-sleeve swiveled upon the post and having an opening to uncover the socket, and also provided in its outer edge with a notch or slot to receive the projected portion of the pin.

7. A hinge-joint for breastpins and the like, comprising a slotted post having a socket formed in its outer side and in communication with one edge of the slot, the outer end of the post having an outwardly-directed marginal flange, a headed pin thrust through the socket and the slot and having its head loosely received within the socket, and a locking-sleeve swiveled upon the post at the inner side of the flange and having an opening to be registered with the socket and also provided with a notch or slot in its outer edge to be normally registered with the opposite edge of the slot.

8. In a breastpin or the like, the combination with a base-plate, of opposite slotted posts projected therefrom and having their slots mutually alined, one of the posts having a socket provided in its outer side and in communication with the slot, a headed pin thrust through the socket and the slot with its head loosely seated in the socket, and keeper-sleeves swiveled upon the respective posts and constructed to lock the adjacent ends of the pin against accidental displacement from the respective posts.

9. In a breastpin or the like, the combination with a base-plate, of opposite slotted posts projected therefrom and having their slots mutually alined, one of the posts having a socket formed in its outer side and in communication with the adjacent slot, a headed pin thrust through the socket and the slot with its head loosely received within the socket and its opposite free end adapted to enter the slot of the other post, a locking-sleeve swiveled upon the socketed post and provided with an opening to register with the socket and also having a notch or slot formed in its outer edge for normal alinement with the inner edge of the slot, and another locking-sleeve swiveled upon the other post and provided with a bayonet-slot to receive and lock the adjacent free end of the pin.

10. A pin-tongue fastener, comprising a stationary post having a longitudinal slot opening outwardly through its outer end, and a keeper comprising a sleeve embracing the slotted portion of the post and permanently swiveled thereon, the sleeve being provided with a substantially L-shaped slot, one member of which is disposed transversely with respect to the slot in the post and located intermediate of the opposite ends thereof, and the other member of the slot opening outwardly through the outer end of the sleeve and adapted to be alined with the slot in the post.

11. The combination with the base-plate of a breastpin and the like, of a pin-tongue fastener comprising a cylindrical post carried by and projected at substantially right angles to the plate and provided with a longitudinal slot opening outwardly through the outer end of the post, and a tubular keeper embracing and permanently swiveled upon the cylindrical slotted portion of the post to cover and uncover the slot.

708,611. SASH-LOCK. ERNEST P. ARMSTRONG, Colorado Springs, Colo. Filed May 7, 1902. Serial No. 106,347. (No model.)

Claim.—1. In a sash lock and holder, the combination of an eccentric cam pivotally mounted on the sash-rail, an adjusting part pivotally connected with the cam and having a limited movement independently thereof, the cam being provided with a projection adapted to be engaged by the adjusting part, for the purpose of regulating the position of the cam, substantially as described.

2. In a sash lock and holder, the combination of an eccentric disk, an adjusting device, a bearing-sleeve connecting the two parts, the extremities of the sleeve projecting beyond the connected parts and being turned over thereon, and a fastening device passed through the bearing-sleeve for securing the lock to the sash-rail, the disk being provided with a stop arranged to be engaged by the adjusting device, substantially as described.

708,612. WIRE-TIE. DANIEL W. AYLWORTH, South Haven, Mich. Filed May 21, 1902. Serial No. 108,223. (No model.)

Claim.—1. In a fence-joint the combination with a wire-stay, of lateral loops integral therewith, a series of line-wires crossing the said loops and crimped within the loop-circle, and means for binding said line-wires to said loops, consisting of individual wire-fasteners one for each loop, each fastener passing through the crimp in the line-wire and having its extremities wrapped about the sides of the loop, substantially as described.

2. The combination with a looped stay, of a line-wire provided with a crimp situated within said loop, and a fastener therefor, consisting of a wire passing through the crimp in the line-wire, and closely wrapped about the sides of the loop.

3. The combination with a looped stay, the said loops extending laterally therefrom and flattened on the sides, of line-wires passing across said loops, the said line-wires being provided with crimps lying within each loop and wire-fasteners wound about the flattened sides of the loops and passing within the crimps in the line-wires, substantially as described.

4. In combination with a stay and line-wire, a loop laterally extending on the stay, a crimp in the line-wire located within the loop, and an individual wire-tie inserted through said crimp and engaging the edges of the loop sides adjacent to the crimps in the line-wire, free extremities of the wire-tie closely wrapped about the sides of the loop and means for preventing the wrapped extremities from slipping longitudinally on the loop, substantially as described.

708,618. WIREWORKING-TOOL. DAVID M. BAILEY, Caldwell, Kans. Filed Sept. 16, 1901. Serial No. 75,528. (No model.)

Claim.—1. A wireworking-tool comprising a handle having a toothed arch, a fixed claw carried by the handle and a movable claw carried by the arch and adapted to be engaged by the teeth thereon and held opposite the fixed claw in position to permit of the twisting of the ends of the wire.

2. A wireworking-tool comprising a handle having an arch, a fixed claw arranged at one end of the handle and situated to one side thereof, a traveling claw mounted on the arch and adapted to be moved to a point opposite the fixed claw.

3. A wireworking-tool comprising a handle 5 having a toothed arch 6, a fixed claw 7, a sliding claw 9 adapted to engage said toothed arch, the fixed claw being provided with a hammer-head.

4. A wireworking-tool comprising a handle having an arched portion and having at one end a curved face, arcuate flanges arranged on said curved face and having oppositely-disposed wire-engaging shoulders.

5. A wireworking-tool comprising a handle having an arched portion and provided at one end with a pair of separated arcuate flanges terminating in recessed shoulders, the ends of said shoulders extending respectively in opposite directions beyond a common medial line in which the wire is situated after the formation of a loop.

6. A wireworking-tool comprising a handle having an arched portion and at one end arcuate flanges 12 provided with oppositely-facing shoulders 13, the opposite ends of said curved portion terminating in claws 20, substantially as specified.

708,614. CARPET-SWEEPER. JONATHAN BARNES, RICHARD W. KENYON, and WILLIAM H. KENYON, Accrington, England. Filed May 2, 1902. Serial No. 105,677. (No model.)

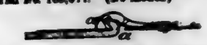

Claim.—1. In a carpet-sweeper the combination with the sweeper-case and the rubber buffer formed in two disconnected lengths, of the corner-bracket provided with slots to receive the ends of the buffer and spring-pieces behind the slots to engage the inner ends of the buffer, substantially as described.

2. In a carpet-sweeper the combination with the sweeper-case and the rubber buffer formed in two disconnected lengths, of the corner-bracket provided with slots to receive the ends of the buffer, spring-pieces behind the slots to engage the inner ends of the buffer, and a guard-piece covering the slot to prevent the end being projected through to too great an extent, substantially as described.

708,615. ORE-ROASTING APPARATUS. ADOLPH M. BEAR, Denver, Colo. Filed Apr. 1, 1901. Serial No. 53,980. (No model.)

Claim.—1. In an ore-roasting apparatus the combination with the source of heat, and a stack, of a shell mounted to rotate, a conveyer located therein and connected to rotate therewith, the relative size of the shell and conveyer being such that a chamber surrounding the conveyer is formed, said chamber being in communication with the source of heat at one extremity and with the stack at the other extremity, but having no communication with the interior of the conveyer, a spiral partition located between the shell and conveyer to cause the heat to travel in a spiral path through the intervening chamber, means for feeding the ore to the conveyer at one extremity, and means for discharging the ore therefrom at the opposite extremity.

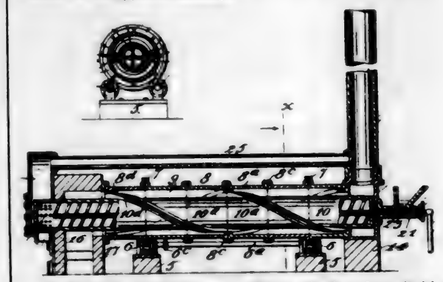

2. In an ore-roasting apparatus, the combination of a cylindrical shell mounted to rotate, a conveyer passing through the shell, a space surrounding the conveyer being left within the shell, the shell and the conveyer being respectively provided with interior and exterior spirally-arranged ribs connected to form spiral partitions within the intervening chamber, the said chamber communicating with a source of heat at one extremity and with a stack at the opposite extremity, suitable means for rotating the shell and conveyer which are connected to revolve in unison, means for feeding the ore at one extremity of the conveyer, and means for discharging the roasted ore at the opposite extremity.

3. In an ore-roasting apparatus, the combination with a furnace and stack, of a rotary shell, a cylindrical conveyer passing through the shell and of such size as to leave a concentric chamber between the shell and conveyer, said chamber being in communication with the fire-box of the furnace at one extremity, and with the stack at the opposite extremity, the parts being so arranged that the interior of the conveyer has no communication with the said chamber, the shell and conveyer being respectively provided with interior and exterior spirally-arranged, longitudinally-grooved ribs, and a tongue connecting said ribs whereby the shell and conveyer are made to rotate together.

4. In an ore-roasting apparatus the combination with a furnace and stack, of a chamber communicating with the fire-box of the furnace at one extremity, and with the stack at the opposite extremity, a conveyer passing through said chamber and provided with interior, spirally-arranged ribs or threads arranged to cause the ore to travel therethrough, and a longitudinally-disposed perforated partition located within the conveyer and through which the ore must pass as it travels therethrough, means for rotating the conveyer, means for feeding the ore to one extremity of the conveyer, and means for discharging it at the opposite extremity.

5. In an ore-roasting apparatus, the combination with a furnace and stack, of a combustion-chamber communicating at one extremity with the furnace and at the other extremity with the stack, a revolvable conveyer located in said chamber and provided with spiral threads or ribs formed on its interior, longitudinally-disposed perforated partitions located in the interior of the conveyer, and a feed-screw for feeding the ore to the conveyer, the opposite extremity of the conveyer being perforated to allow the ore to escape.

6. The combination with a furnace and stack, of a shell composed of sections suitably connected, a conveyer located within the shell and also composed of sections, the shell and the conveyer being connected by spiral partitions to rotate together, an annular chamber being formed between the shell and conveyer, said chamber communicating at one extremity with the furnace and at the other extremity with the stack, but having no communication with the interior of the conveyer, means for feeding the ore to the conveyer at one extremity, and means for discharging it at the opposite extremity.

7. In an ore-roasting apparatus the combination with a furnace and stack, of a rotary shell, a conveyer located within the shell and connected to rotate therewith, a chamber formed between the shell and conveyer, and communicating with the furnace at one extremity and with the stack at the opposite extremity, but having no communication with the interior of the conveyer, means for feeding the ore to the front end of the conveyer, the opposite extremity of the conveyer being constructed to dis-

charge the ore, and a chamber into which the discharge extremity of the conveyer protrudes, for receiving the gases resulting from the roasting operation, said chamber having a discharge-opening at the bottom for the ore, and an escape-opening communicating with its upper portion through which the gases may be carried to any desired location.

8. In an ore-roasting apparatus, the combination with a furnace and stack, of a shell mounted to rotate, a conveyer passing through the shell, an annular chamber located between the shell and conveyer, the conveyer and shell being connected to rotate together, the chamber between them being in communication at one extremity with the fire-box and at the other extremity with the stack, but having no communication with the interior of the conveyer, a hollow head into which the front extremity of the conveyer protrudes, a screw feed-conveyer connected with the said head for feeding the ore to the rotary conveyer, the rear extremity of the rotary conveyer being perforated, and a chamber surrounding said rear extremity, and having a discharge-opening below, and an escape for the gases above.

708,616. DITCHING-MACHINE. THOMAS BEARMAN, Windsor Canada. Filed Aug. 24, 1901. Serial No. 73,204. (No model.)

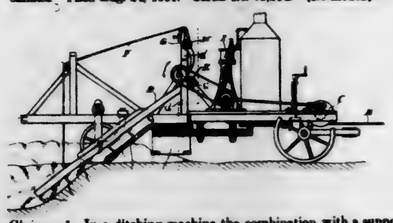

Claim.—1. In a ditching-machine the combination with a supporting-frame mounted upon wheels of a ditching-boom provided with a plurality of hoe or scraper blades fixedly secured thereto at intervals along the under side thereof and extending transversely thereof and carrying means freely supporting said boom in an opening of the frame longitudinally thereof and inclined at an angle to the ground, said carrying means comprising a revolving crank-shaft journaled transversely of the frame and upon which the forward end of the boom is supported above ground free to follow the motion of said crank and a chain or rope supporting the rear end of said boom below the surface of the ground free to rise and fall and having a conjointed movement with the crank to impart to said boom a continuous operative four-motion movement.

2. In a ditching-machine, the combination with a supporting-frame mounted upon wheels of a ditching-boom provided with a plurality of hoe or scraper blades secured thereto at intervals along its under side and extending transversely thereof, and carrying devices movably supporting said boom in an opening of the frame in a longitudinal vertical plane inclined at an angle to the ground said carrying devices comprising a revolving crank-shaft journaled upon the forward part of the frame and supporting the forward end of the frame free to revolve with said crank-shaft at some distance above the ground and a chain or rope supporting the rear end of said boom at a distance below the ground free to rise or fall with the movement of said chain or rope, said rope or chain having a concerted movement with the crank-shaft to impart to the boom a continuous four-motion movement and provided with means for lengthening and shortening it.

3. In a ditching-machine, the combination of the supporting-frame having a central longitudinal opening and supported upon wheels, the ditching-boom movably supported in said opening at an angle with the ground and provided with a series of scraper-blades along its under side, the revolving crank-shaft journaled transversely above the frame and supporting the front end of the boom above the ground, the chain or rope from which the rear end of said boom is supported from the frame below the surface of the ground, the oscillating lever mounted upon the crank-shaft in the path thereof and to which the chain or rope is connected for imparting movement to said rope, the conveyer-trough independently adjustably supported on the frame below the ditching-boom and means for adjusting said ditching-boom and conveyer-trough upon different inclines with the ground.

4. In a ditching-machine, the combination with a supporting-frame mounted upon wheels of a four-motion ditching-boom centrally supported in a longitudinal vertical plane in the opening of the frame at an incline to the ground and provided upon its under side with a series of scraper blades for cutting the ditch by the motion of the boom, and two lateral booms supported from the frame at right angles thereto at opposite sides and in the path of the dirt thrown out by the ditching-boom, said lateral booms provided with scraper-blades upon their under side and having a concerted four-motion movement with the ditching-boom.

708,617. RECEPTACLE FOR PAPERS AND LETTERS. DELBERT F. BENNETT, Redding, Cal. Filed May 1, 1902. Serial No. 105,537. (No model.)

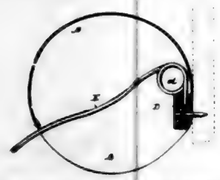

Claim.—In a device for receiving and holding papers and letters a cylindrical casing having two circular heads secured to the main portion of the casing and a longitudinal downward opening extending from end to end, the upper part of the device being closed, a cleat fastened to the rear part and inside of said casing, and a spring of wire, the ends of which are secured to said cleat, said wire being provided with coils *d* and extended forward in the form of a loop and bent to form a finger-piece *e*, substantially as and for the purposes described.

708,618. WINDOW-BLIND. WARREN R. BRIGGS, Stratford, Conn. Filed Feb. 5, 1902. Serial No. 92,684. (No model.)

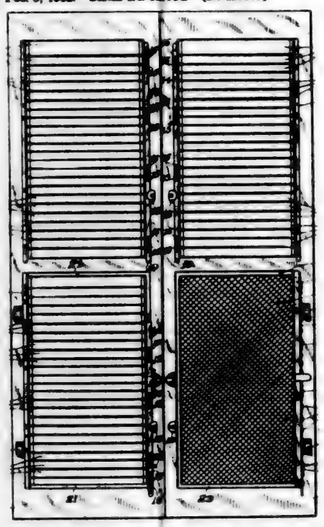

Claim.—1. In a window-blind, the combination of the shutter-frame, having at opposite sides of its opening sockets and inclined open recesses which constitute bearings, the blind-slats having trunnions at both ends adapted to fit within said bearings and provided with elongated recesses in one end of each slat, the locking-strip secured to the shutter-frame in close proximity to the trunnions in said recess-bearings, and the operating-bar adjustably secured to the shutter-frame and having lugs which project within said recesses, substantially as set forth.

2. In a window-blind, the combination of the shutter-frame having the sides of its opening provided with inclined open recesses and sockets, the blind-slats having at their ends metal ferrules and trunnions which latter are adapted to fit within said sockets and recesses, while one end of each slat is provided with an elongated recess, means for locking the trunnions as against displacement in said recesses, and a vertically-adjustable bar carried by the shutter and having lugs which engage with said recesses whereby the blind-slats may be operated in harmony, substantially as set forth.

3. In a window-blind, the combination of the sockets and inclined open recesses which form bearings at opposite sides of a suitable frame, the independent blind-slats provided with trunnions which rest within said bearings, one end of each slat having an elongated recess, the locking-strip secured to said frame and extending in close proximity to the trunnions in said recesses, and the operating-bar adjustably secured to said frame and provided with lugs which project within said recess, substantially as set forth.

4. In a window-blind, the sockets and inclined open recess-bearings arranged at the opposite sides of a suitable frame, the independent slats provided with trunnions which rest within said bearings, and means operatively connected with the slats at one side for turning said slats in unison, substantially as set forth.

5. In a window-blind, the combination of the shutter-frame supporting at opposite sides of its opening sockets and open recess-bearings, the blind-slats having metal ferrules on their ends and provided with trunnions which rest within said bearings, and an operating-bar suitably guided and capable of vertical movements and loosely connected with said slats at one side, substantially as set forth.

6. In a window-blind, the combination of the shutter-frame having on opposite sides of its opening sockets and open recesses, the blind-slats provided at each end with metal ferrules and trunnions which latter extend within said sockets and recesses, the elongated recesses in one end of each slat, the locking-strip secured to the shutter and adapted to confine the trunnions at one side of the slats within said open recesses, the operating-bar having lugs which engage said recesses and provided with elongated slots, and screws extending through said slots into the shutter whereby said bar is guided and is capable of a free vertical play, substantially as set forth.

7. In a window-blind, the combination of the sockets and inclined open recess-bearings arranged at opposite sides of a suitable frame, the independent blind-slats provided with trunnions which rest within said bearings, means for confining said trunnions within the recess-bearings, and an operating-bar adjustably secured at one side of the frame and loosely connected with the ends of the slats, substantially as set forth.

708,619. SHUTTER-FASTENER. WARREN R. BRIGGS, Stratford, Conn. Filed Feb. 5, 1902. Serial No. 92,685. (No model.)

Claim.—1. The herein-described improvement in latches for swinging blinds or shutters, comprising two independent levers pivoted to the inside of the shutter in the plane of the sash, said levers provided at their free extremities with right-angled beveled catches, substantially as set forth.

2. The herein-described improvement in catch-holders for swinging shutters and blinds, the same comprising a base-plate having screw-holes at the top and bottom which are separated vertically by a distance slightly greater than the width of a brick, and provided with flanges at the sides, and a plate inserted between said flanges and held in any suitable adjustment by the clamping of said flanges and provided with a suitable catch-holder, substantially as set forth.

708,620. AUTOMATIC REGULATOR FOR WINDMILLS. ERNEST A. BRADLEY, Brighton, Colo. Filed Feb. 6, 1902. Serial No. 92,842. (No model.)

Claim.—1. In a regulator for windmills, the combination with a water-tank and pumping mechanism therefor, of a sheave supported above the said tank; cables passing around the said sheave, one of which carries a weight, while the other carries a float; a cable which passes around the said sheave in an opposite direction to the before-mentioned cable, and over a similar sheave, supported by the windmill-tower; a weight depending from the said cable; a cable connecting the said weight with the pump-operating mechanism; the said weight being designed to drop by gravity and stop the mill, when the tank is full, and to be counterbalanced by the combined weights of the aforesaid float and weight, when the water in the said tank falls, so as to allow the mill to start, substantially as shown.

2. In a regulator for windmills, the combination with a water-tank and pumping mechanism therefor, of a differential sheave, and means, such as standards, for supporting the same, above the tank; a cable, one end of which passes around the said sheave, and is secured thereto, while the other end passes over a suitably-supported sheave within the windmill-tower, and is provided with a weight at its free end; a cable connecting the said weight with the pump-operating mechanism; a pair of cables secured to and passing around the said differential sheave in an opposite direction to the before-mentioned cable, one of said cables being provided with a weight, while the other is provided with a float, the combined weights of said float and weight being greater than that of the before-mentioned weight, so as to counterbalance the same, when the water falls in the tanks, and thus permit the pumping mechanism to operate, substantially as shown.

3. In a regulator for windmills, the combination with a water-tank and pumping mechanism, of a cable one end of which connects with the said pumping mechanism, while the other end carries a weight, which normally prevents the operation of said mechanism, a cable, one end of which is secured to the said weight, the said cable passing over a sheave in proximity thereto, and over a differential sheave secured above the water-tank, its free end being secured thereto; cables secured to the said sheave, and passing around the same in an opposite direction to the before-mentioned cable, one of said cables carrying a weight at its free end, while the other of said cables connects with one arm of a crank-lever, to the other arm of which is secured a cable, the lower end of which carries a float, the said float and weight acting in concert to overbalance the before-mentioned weight, when the water falls in the tank, so as to start the pump, while the before-mentioned weight drops when the tank is full, owing to the reduction in the pull exerted against it, as the float is borne up by the water, so as to stop the pump; and platforms upon which the weights rest, at the limit of their downward movement, substantially as shown.

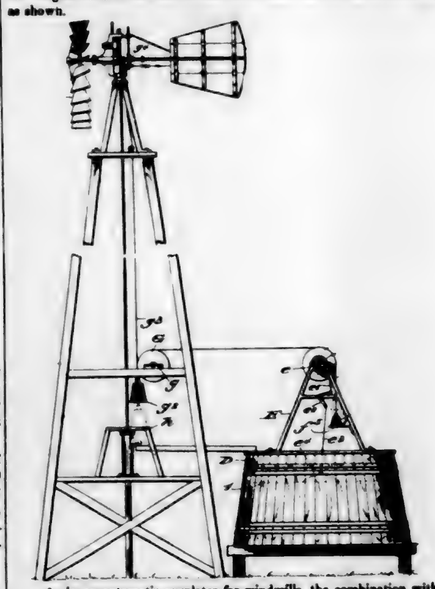

4. In an automatic regulator for windmills, the combination with a water-tank and pumping mechanism therefor of a differential sheave secured above the tank, the said sheave comprising a plurality of small sheaves of varying diameters, and twin sheaves of larger diameter; a cable which passes around one of the twin sheaves one end of which is secured to the same, while the other end depends therefrom, and carries a weight; a cable which is secured to one of the smaller sheaves, and passes around the same; a bell-crank lever, one arm of which connects with the said cable, while to the other arm is secured a cable, the lower end of which carries a float, which is operated by the rise and fall of the water, in the said tank; a cable secured to the remaining twin sheave and passing around the same in an opposite direction to the before-mentioned cable, the said cable extending to and over a sheave supported within the windmill-tower, and carrying a weight at its free end; a second cable secured to the said weight and connecting the same with the pumping mechanism; the said weight operating when lowered to stop the pump and when lifted by the combined weights of the before-mentioned weight and float, as the water falls in the tank, to start the said pump; and platforms upon which the said weights rest when in their lowered position, substantially as shown.

5. In an automatic regulator for windmills, the combination with a water-tank and pumping mechanism therefor of a differential sheave supported above the tank; a second sheave in line with the first-mentioned sheave, supported within the windmill-tower; a cable secured to the differential sheave which passes around the same and over the second sheave, and carries a weight at its free end; means for connecting the said weight with the pumping mechanism; cables secured to and passing around the differential sheave in opposite direction to the before-mentioned cable, one of which carries a weight, while the other carries a float; the combined weights of said weight and float being greater than the before-mentioned weight, so that, as the water in the tank falls, their combined weights will

tarn the differential sheave, wind the cable connected with the before-mentioned weight, and lift the same, causing the pump to start, substantially as shown.

708,621. BABY-BUGGY. RALPH R. CHITMAN, Chattanooga, Tenn.
Filed May 17, 1902. Serial No. 107,795. (No model.)

Claim.—1. A baby-buggy having two beds, the lower being stationary and the other being pivotally supported intermediate of its center and front end and connected at its front end with the lower part of the vehicle by spring-ties, and standards to support the upper bed, said standards having a plurality of notches arranged in step-like series, substantially as described and shown.

2. A baby-buggy having a stationary bed, a pair of standards one on either side of said bed, having a plurality of notches in steps increasing in altitude toward the front of the vehicle, a second body having lateral pins which are supported by the notched standard, said pins being between the center of the second body and the front end and an elastic tie or ties connecting the front end of the second or upper body with the lower vehicle portion, substantially as described and shown.

3. A body mounted on wheels and having a push-bar attachment, standards on either side of said body, a second body pivotally supported above the first on said standards said standards having a plurality of notches of varying altitude and distance from the front end of the body and between that end and the middle of said body, and straps to prevent accidental displacement of said pivots, and elastic and removably-secured ties connecting the two bodies at their front ends, all substantially as described and shown.

708,622. AUTOMATIC FAN. WALTER R. COLEMAN, Newdorp, N. Y., assignor to the Coleman Manufacturing Company, a Corporation of New York.
Filed Dec. 10, 1901. Serial No. 85,374. (No model.)

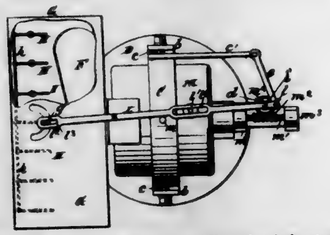

Claim.—1. The combination of a fan F, an electrical motor M, pivotally supported in the ring C, said ring C, pivotally supported between the arms *b*, *b*, upon the base B, and formed with the rigid arm *c'*, the lever-arm *c*, pivotally connected to said rigid arm *c'*, and to the crank *d'*, said crank *d'*, shaft D, and pinion *d*, and the motor-shaft *m'*, formed with the worm-screw m^2, engaging with said pinion *d*, for the purpose and substantially in the manner set forth.

2. The combination of a fan F, an electrical motor M, pivotally supported in the ring C, said ring C, pivotally supported between the arms *b*, *b*, upon the base B, and formed with the rigid arm *c'*, the lever-arm *c*, pivotally connected to said rigid arm *c'*, and to the crank *d'*, said crank *d'*, shaft D, and pinion *d*, and the motor-shaft *m'*, formed with the worm-screw m^2 engaging with said pinion *d*, the rock-lever L, connected with the crank *d'*, and the deflectors H, together with said deflectors, arranged and operated substantially in the manner set forth.

708,623. FAN. WALTER R. COLEMAN, Newdorp, N. Y., assignor to the Coleman Manufacturing Company, a Corporation of New York.
Filed Jan. 17, 1902. Serial No. 90,144. (No model.)

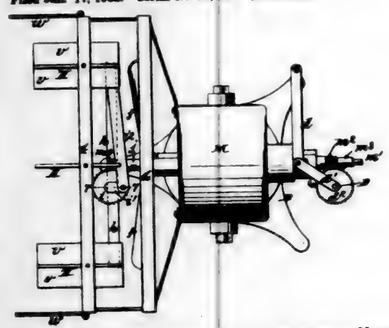

Claim.—1. The combination of the fan *f*, electric motor M mounted upon the vertical spindle S, said spindle S, supported in the base B, by means which admit it to turn axially, said base B, the standard *c'*, rigidly secured to said base, the lever-arm *d*, pivotally connected to said standard *c'*, and to the crank *d'*, the crank *d'*, shaft D, and wheel d^2, and the motor-shaft formed with the screw-worm m^2, engaging with the wheel d^2, for the purpose and substantially in the manner described.

2. The combination of the fan *f*, electric motor M mounted upon the vertical spindle S, said spindle S, supported in the base by means which admit it to turn axially, said base B, means for turning the motor horizontally on said base the guard-frame G, supported upon the motor-casing, the deflectors H pivotally supported in the frame G, the links A, coupling the deflectors H together, the connecting-rod i^2, pivotally connecting the deflectors with the crank i', said crank i', the gear *i*, and the screw-worm m^4, upon the motor-shaft, arranged and operating substantially in the manner and for the purpose set forth

3. The combination of an electric motor and fan, a guard-frame G, supported upon the frame of the motor, deflectors H, mounted pivotally in said guard-frame and formed with cross-vanes *v*, together with means for vibrating said deflectors H on their axes, substantially in the manner and for the purpose set forth.

4. The combination of an electric fan and motor, a guard-frame, deflectors mounted pivotally in said guard-frame, pivotally-connected links coupling said deflectors together, a worm-gear on the motor-shaft in front of the fan, a gear-wheel engaging said worm, a crank attached to and actuating said gear-wheel, and a connection-rod pivotally connecting said crank with the deflectors for the purpose of imparting a vibratory motion to the same, substantially as set forth.

708,624. FAN. WALTER R. COLEMAN, Newdorp, N. Y., assignor to the Coleman Manufacturing Company, a Corporation of New York
Filed Mar. 31, 1902. Serial No. 100,665. (No model.)

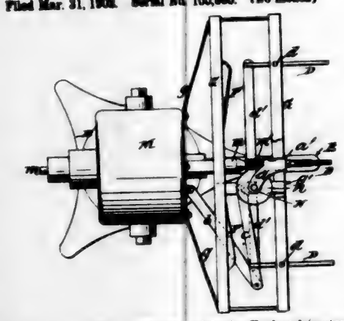

Claim.—1. The combination of the fan F, electric motor M, mounted upon the vertical spindle S, said spindle S, supported in the base B, by means which admit of its turning axially, said base B, the fulcrum-arm *b*, rigidly secured to said base, the lever-arm *c*, pivotally connected to said rigid arm *b*, and to the crank n^3, said crank n^3, the vertical shaft N, the worm-wheel *n*, the motor-shaft *m*, formed with the screw-worm *m'*, engaging with said worm-gear *n*, for the purpose and substantially in the manner set forth.

2. The combination of the fan F, electric motor M, mounted on the vertical spindle S, said spindle S, supported in the base B, by means which admit of its turning axially said base B, the arm E, rigidly secured to the base B, and formed with the longitudinal slot *e*, the stud d^3, attached to a deflector D, and resting in said slot *e*, the deflectors D, pivotally mounted in the guard-frame G, said guard-frame G, rigidly secured to the motor, and means for vibrating the motor for the purpose and substantially in the manner described.

3. The combination of the fan F, electric motor M, mounted upon the vertical spindle S, said spindle S, supported in the base B, by means which admit of its turning axially, said base B, the arm E rigidly secured to the base B, and formed with the longitudinal slot *e*, the stud d^3, attached to a deflector D, and resting in said slot *e*, means for adjusting said stud d^3, horizontally upon said deflector, the deflectors D, pivotally mounted in the guard-frame G, said guard-frame G, rigidly secured to the motor, and means for vibrating the motor for the purpose and substantially in the manner described.

4. The combination of the fan F, the electric motor M, mounted upon the spindle S, said spindle S, supported in the base B, by means which admit of it to turn axially, said base B, the fulcrum-arm *b*, rigidly secured to said base the lever-arm *c*, pivotally connected to said rigid arm *b*, and to the crank n^3, said crank n^3, the vertical shaft N, the worm-gear *n*, the motor-shaft *m*, formed with the screw-worm *m'* engaging said worm-gear *n*, the arm E, rigidly secured to the case B, and formed with the longitudinal slot *e*, the stud d^3 attached to a deflector D, and resting in said slot *e*, the deflectors D, pivotally mounted in the guard-frame G, and said guard-frame G, rigidly secured to the motor, the whole arranged and operating substantially in the manner and for the purpose described.

708,625. HAY DERRICK OR STACKER. WILHELM G. DANIELSEN, Logan, Utah. Filed Mar. 5, 1902. Serial No. 96,806. (No model.)

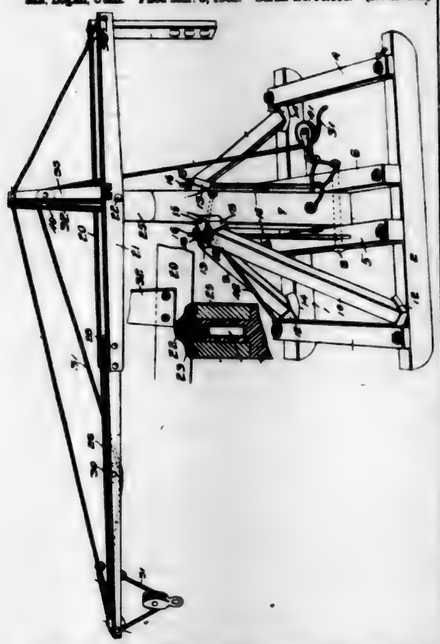

Claim.—1. The combination with a support and a mast, the one movable angularly with reference to the other, braces disposed radially with reference to the mast, having their lower ends secured on the support against radial movement and their upper ends slidably connected to the mast, and flexible adjustable ties, connecting the support and the upper portions of said braces, whereby the latter may be adjusted on the mast to move the latter angularly, substantially as described.

2. In an apparatus of the character described, a base-platform, a mast supported movably in said platform, braces engaging diametrically opposite points of said platform by their lower ends and loosely engaging diametrically opposite parts of said mast by their upper ends, and adjustable tie-rods connecting the said upper ends of said braces with said platform, whereby the upper ends of said braces may be forcefully adjusted vertically upon said mast, substantially as described.

3. In an apparatus of the character described, a base-platform, a mast supported movably in said platform, braces engaging diametrically opposite points of said platform by their lower ends, cap-blocks upon the upper ends of said braces and adapted to loosely engage diametrically opposite parts of said mast, and means whereby said cap-blocks may be forcefully adjusted vertically upon said mast, substantially as described.

4. In an apparatus of the character described, a base-platform having transverse timbers centrally disposed and spaced apart, a mast pivotally supported by its lower end between said timbers, braces engaging diametrically opposite points of said platform by their lower ends and loosely engaging diametrically opposite parts of said mast by their upper ends, and means whereby the said upper ends of said braces may be forcefully adjusted vertically upon said mast, substantially as described.

5. In an apparatus of the character described, a base-platform having transverse centrally-disposed timbers spaced apart, a mast pivotally connected by its lower end between said timbers, braces engaging diametrically opposite points of said platform by their lower ends and loosely engaging diametrically opposite parts of said mast by their upper ends, adjustable tie-rods connecting said upper ends of said braces and said transverse timbers, whereby the upper ends of said braces may be forcefully adjusted vertically upon said mast, substantially as described.

6. In an apparatus of the character described, the combination of a base-platform having transverse timbers spaced apart and centrally disposed, a mast pivotally supported between said transverse timbers, braces engaging diametrically opposite points of said platform by their lower ends, cap-blocks upon the upper ends of said braces and engaging diametrically opposite parts of said mast loosely, and tie-rods engaging said cap-blocks at one end and said transverse timbers at their other ends, and means for adjusting said tie-rods, whereby said cap-blocks and the braces engaged by them may be adjusted vertically upon said mast, substantially as described.

7. In a device of the character described, a base-platform, a mast supported movably in said platform, braces engaging diametrically opposite points of said platform by their lower ends and engaging diametrically opposite parts of said mast loosely by their upper ends, means for forcefully adjusting the upper ends of said braces vertically upon said mast, a derrick supported upon said mast, a draft-line leading from said derrick to a guide-pulley near the lower end of said mast, and an adjustable stay-rod connecting said mast to said platform in a direction diametrically opposite to the point of attachment of said guide-pulley, substantially as described.

8. In an apparatus of the character described, a base-platform, a mast supported upon said platform, a socket upon the upper end of said mast, a swivel-block revolubly engaged by said socket, a boom formed of spaced side members and pivotally engaging said swivel-block, a hoisting means supported by the forward end of said boom, a strut supported upon said boom at a point in the rear of said swivel means and of said mast, a brace-rod connected to the ends of said boom and supported by said strut, and a draft-cable sheave carried by said strut, and adapted to guide said draft-cable clear of said mast and swivel means, substantially as described.

9. In an apparatus of the character described, a mast vertically supported, a socket upon the upper end of said mast, a swivel-block revolubly engaged by said socket, a boom formed of spaced side members and pivotally engaging said swivel-block, a hoisting means supported from the forward end of said boom, a bar pivotally secured by its upper end between the rear ends of said boom members, and depending therefrom and forming a support for a counterweight, substantially as described.

10. In an apparatus of the character described, a mast vertically supported, a socket upon the upper end of said mast, a swivel-block revolubly engaged by said socket, a main boom formed of spaced side members and pivotally engaging said swivel-block, an extension-boom formed of spaced side members and connected removably to the forward end of said main boom, a strut connected to said main boom and rising therefrom, a brace-rod connected by its ends to the rear end of said main boom and the forward or free end of said extension-boom, and supported by said strut, substantially as described.

708,626. ELEVATOR. LEONARD W. DEITZ, San Jose, Cal.
Filed Dec. 23, 1901. Serial No. 86,919. (No model.)

Claim.—1. In an elevator, the combination with a polygonal skeleton shaft made up of upstanding angle-shaped guideways at the corners thereof, of a polygonal open top box or car mounted in the shaft with its upright edges working in the corresponding guideways, guide-pulleys upon the bottom of the car and located between corresponding upright corners thereof, a hoisting-cable having one end fixed at a point between a pair of guideways and its intermediate portion engaging the guide-pul-

lays on the box, a fixed guide-pulley located opposite the fixed end of the cable, the free portion of the cable passing over the fixed guide-pulley, means for operating the cable to raise and lower the box or car, and a counterbalance connected to the operating means and independent of the box or car.

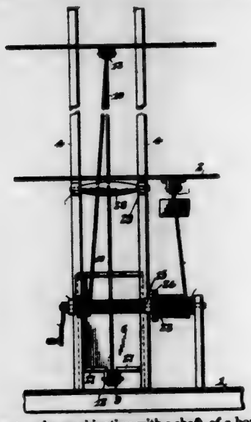

2. In an elevator, the combination with a shaft, of a box or car working therein, a hoisting-cable connected to the box or car, a winding-drum having a cable connected thereto, a weight-drum mounted independently of the hoisting-drum, a pinion upon the hoisting-drum, a gear carried by the weight-drum in mesh with the pinion and of greater diameter than said pinion, and a counterbalance-weight having a cable connected to the weight-drum.

3. In an elevator, the combination with the floor having a shaft-opening therein, of upstanding rigid guideways forming the shaft and projected above the floor, an open-top box or car working in the guideways and provided upon its bottom with a cable-guide, a fixed cable-guide located below the floor at one side of the shaft-opening, a hoisting-cable having one end fixed at a point opposite the fixed cable-guide and passing around the guide on the box or car and around the fixed cable-guide, means for manipulating the cable to raise and lower the box or car, the space across the top of the shaft formed by the guideways being open to permit the box or car to project above the floor into the room when elevated to its upper limit by the hoisting-cable, means carried by the car for engagement with the floor to stop the car, and a counterbalance connected to the manipulating means and independent of the box or car.

4. In an elevator, the combination with a shaft, a cage or car working therein, a winding-drum, a hoisting-cable connected to the cage or car and the drum, and a supporting-guide for the intermediate portion of the cable, of a tapered antifriction guide-roller located in the path of the cable adjacent to the drum and fixed against endwise movement.

5. In an elevator, the combination with a shaft, a cage or car working therein, a winding-drum, a hoisting-cable connected to the cage or car and the drum, and a supporting-guide for the intermediate portion of the cable, of an antifriction guide-roller which is fixed against endwise movement tapered in opposite directions from the middle thereof and located in the path of the cable adjacent to the drum.

6. In an elevator, the combination of a shaft, a cage or car working therein, a winding-drum mounted externally upon the shaft, a hoisting-cable connected to the cage or car and the winding-drum, a supporting-guide for the intermediate portion of the cable, and an antifriction guide-roller which is fixed against endwise movement tapered in opposite directions from its center and mounted externally upon the shaft above the winding-drum and in the path of that portion of the hoisting-cable which extends to the drum.

7. In an elevator, the combination with the floor having a substantially rectangular shaft-opening formed therein, four angle-guideways rising from below the floor and projected upwardly through the corners of the opening in said floor, a box having its upright corners working in the guideways, guide-pulleys mounted externally upon the bottom of the box, a hoisting-drum, a fixed guide-pulley located above the drum, a hoisting-cable having one end fixed and its opposite end connected to the hoisting-drum, the intermediate portion of the cable being passed across the pulleys of the box and over the fixed guide-pulley, a weight-drum in operative relation to the hoisting-drum, a guide-pulley located above the weight-drum, a weight-cable reeved through the pulley and having one end connected to the weight-drum, and a counterbalancing-weight connected to the opposite free end of the weight-cable.

708,627. **PACKAGING-MACHINE.** WILLIAM H. DOBLE, Quincy, Mass., assignor to Pneumatic Scale Corporation, Portland, Me., a Corporation of Maine. Filed Apr. 3, 1902. Serial No. 101,253. (No model.)

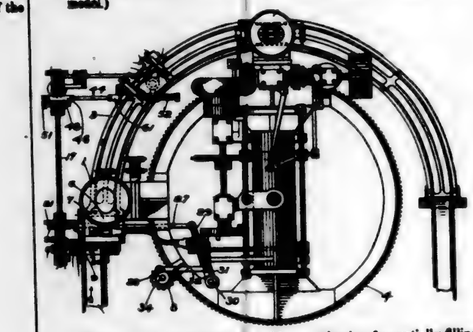

Claim.—1. In a packaging-machine, mechanism for partially filling the package, a support for the package which holds the package stationary and free from agitation during the process of filling, mechanism for suspending the supply after the package is partially filled, mechanism for settling the material in the partially-filled package after the supply is suspended, and mechanism which gives an additional supply of material to the package after the settling, substantially as described.

2. In a packaging-machine, mechanism for partially filling the package, mechanism for suspending the supply after the package is partially filled, mechanism for squeezing the sides of the partially-filled package and mechanism for lifting and dropping the package alternately with the squeezing, and mechanism which after the squeezing and shaking supplies additional material to the package, substantially as described.

3. In a packaging-machine, mechanism for partially filling the package, a support for the package which holds the package stationary and free from agitation during the process of filling, mechanism for removing the partially-filled package and placing another package in position to be partially filled, mechanism for settling the material in the partially-filled package while the succeeding one is receiving its partial load, and mechanism which removes the settled package to another feed and mechanism which furnishes to the settled package an additional supply while one following it is being settled and still another is receiving a partial load, substantially as described.

4. In a packaging-machine, mechanism for partially filling the package, mechanism for suspending the supply after the package is partially filled, mechanism for squeezing the sides of the partially-filled package, and mechanism for supplying additional material to the package after the squeezing, substantially as described.

5. In a packaging-machine, a plurality of feeds, a support for the package which holds it stationary and without agitation during the feeding operation, mechanism for carrying each package to positions to successively receive goods from each feed, and mechanism for settling the goods in the package after the package receives its supply from the first feed and before it receives its supply from the last feed, substantially as described.

6. In a packaging-machine, a plurality of feeding mechanisms, mechanism which places each package in position for each feed in succession, a support for the package which holds it stationary and without agitation during the feeding operation, a vertically-reciprocating member on which the package is deposited after being partially filled before it receives the completion of its supply, and mechanism for vertically reciprocating said member and giving a vertical vibratory movement to the package, substantially as described.

7. In a packaging-machine, two feed mechanisms, intermittent package-moving mechanism which deposits each package under each feed in succession with a rest in its passage from the first feed position to the second feed position, a vertically-reciprocable member upon which the package is deposited by said intermediate movement, mechanism which raises the reciprocable member and package and abruptly drops them onto a seat, and mechanism which squeezes the package alternately with the vertical movement.

8. In a packaging-machine, two feed mechanisms, a package-carrier, mechanism which actuates the carrier to place a package in position to receive material from the first feed, a support for the package which holds the package stationary and free from agitation during the feeding operation, mechanism which actuates the carrier to move the package away from the feed position and brings another package into feed position, mechanism which stops the carrier, mechanism which settles the material in the removed package while the carrier is at rest and while the following package is receiving material, and mechanism which actuates the carrier to transfer the package from the position where it is settled to the second feed mechanism, and mechanism which causes the package to receive an additional supply from the second feed, substantially as described.

9. In a packaging-machine, mechanism for supplying material to a package, mechanism for cutting off the feed, mechanism for shaking the package and mechanism for squeezing it alternately with the shaking a plurality of times, and mechanism for supplying an additional amount of material to the package after the shaking and squeezing, substantially as described.

10. In a packaging-machine, mechanism for squeezing a partially-filled package comprising a pair of pivoted gripping-arms, mechanism which rocks said arms so as to bring them on opposite sides of the package, mechanism which then rocks said arms toward each other to squeeze the package, and mechanism which releases the gripping-arms from the package, substantially as described.

11. In a packaging-machine, mechanism for squeezing a partially-filled package comprising gripping-arms pivoted so as to be capable of turning on two axes at right angles to each other, hinged ears on the inner faces of said arms, mechanism which rocks the arms on their pivots so as to squeeze the package, and mechanism which releases the gripper from the package, substantially as described.

12. In a packaging-machine, mechanism for partially filling the package, while at rest, a support which holds the package stationary and free from agitation during the feeding operation, mechanism for settling the material in the package when partially filled, mechanism for completing the supply to the package and means which cause said filling and settling mechanisms to perform their operations synchronously on different packages and successively on the same package in the order specified, substantially as described.

13. In a packaging-machine, mechanism for partially filling a package, a support which holds the package stationary and free from agitation during the process of filling, mechanism for completing the supply to said package, mechanism for transferring the partially-filled package from the partial supply mechanism to the final supply mechanism, mechanism for stopping the package at a point between the two supply mechanisms, mechanism for agitating said package at said stopping-point, and means which cause the filling and settling mechanisms to operate on different packages while the transferring mechanism is at rest, substantially as described.

14. In a packaging-machine, mechanism for partially filling a package, mechanism for transferring the package to a point where it receives a further supply, mechanism for giving to the package said further supply, mechanism which grasps and agitates said package at a point between said supply mechanisms, and means for moving said package-grasping mechanism into and out of the path of movement of said package, substantially as described.

708,628. **STENCIL-FRAME.** STERLING ELLIOTT, Boston, Mass., assignor to the Elliott Company, Boston, Mass., a Corporation of Maine. Filed May 12, 1900. Renewed Feb. 13, 1902. Serial No. 93,960. (No model.)

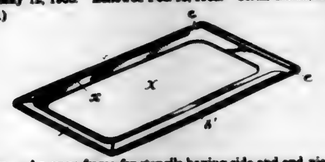

Claim.—An open frame for stencils having side and end pieces with overhanging flanges forming channels in each thereof, the flange of one of the end pieces of a different width from the cross-piece below, and with notches *e s* in the side pieces adjacent to the end piece, substantially as set forth.

708,629. **ADJUSTABLE WINDOW-SHADE CARRIER.** ARTHUR W. ELLIS, Sumpter, Oreg. Filed Feb. 13, 1901. Serial No. 47,177. (No model.)

Claim.—1. In a shade-holder, the combination of a frame comprising vertical extensible members, a lower horizontal extensible member and an upper horizontal extensible member, corner-brackets at the junctures of the vertical and upper horizontal member, and bearing-brackets for a shade-roller on said corner-brackets.

2. In a shade-holder, the combination of vertical extensible members, and upper horizontal extensible member, corner-brackets at the juncture of said members, bearing-brackets on the corner-brackets, a lower extensible member between the vertical members, and a spring carried by the lower extensible member for pressing the vertical members outwardly.

3. In a shade-holder, the combination of a frame comprising vertical and horizontal extensible members, a spring for pressing the vertical members laterally, shade-brackets carried by the frame, and devices to be secured to a window-frame to receive and guide said laterally-pressed vertical members.

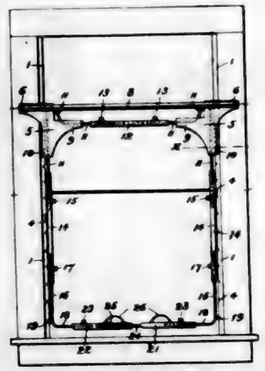

4. In a shade-holder, the combination of a frame having vertical and upper and lower horizontal portions, guiding devices to be secured to a window-casing, lugs on the vertical portions to engage the guiding devices on the window-casing and sustain the frame, the lower portion of the frame comprising two sections, a spring between said sections to retain the lugs in engagement with the window-casing, and means on the frame for supporting a roller.

5. In a shade-holder, the combination with upper corner-brackets, a horizontal bar, vertical bars, means for adjustably connecting said bars to the corner-brackets, means for connecting the lower ends of the vertical bars, means for supporting a roller on the frame thus formed and means for adjustably attaching the frame to a window-casing.

708,630. **WOVEN FABRIC.** THEODORE PAPTA, Chicago, Ill. Filed Oct. 3, 1901. Serial No. 77,679. (No specimens.)

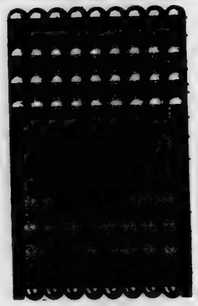

Claim.—1. A woven fabric consisting of several weft-planes located one on top of the other and warp-threads separately securing each of said weft-planes to the plane or planes below the same.

2. A woven fabric consisting of several weft-planes, warp-threads separately securing each of said weft-planes to the plane or planes below the same, and the side edges of the several weft-planes projecting beyond the one next above.

708,631. **FEEDER FOR SEWING-MACHINES.** CARL FÖRSTER, Gablonz, Austria-Hungary. Filed Dec. 9, 1901. Serial No. 85,236. (No model.)

Claim.—1. A sewing-machine feed comprising, the feed-dog provided with an opening, of a horizontally-reciprocating feed-bar projecting at its free end through said opening, provided at opposite sides with oppositely-inclined faces to impart longitudinal reciprocation to the feed-dog and also provided on its upper side with a third inclined face to raise the feed-dog against the goods, and means for effecting the lowering of the feed-dog; substantially as described.

2. The combination with the feed-dog having a depending shank loosely pivoted at its lower end and provided thereabove with an opening.

of a horizontally-operating feed-bar, projecting at its free end through said feed-dog opening, provided at opposite sides with oppositely-inclined faces to oscillate the dog back and forth and also provided on its upper side with a third inclined face to raise the feed-dog to the work: substantially as described.

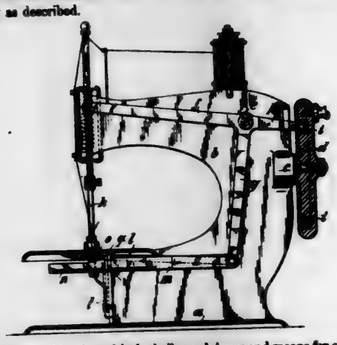

3. The combination with the bell-crank lever and means for operating it, of a needle-bar connected to the horizontal arm of said lever, an oscillating feed-dog having an opening through its shank, a horizontal feed-bar pivoted at one end to the depending arm of the bell-crank lever and at its opposite end passed through the feed-dog opening and there provided on its opposite side with two oppositely-inclined faces to oscillate the feed-dog back and forth, and also provided on its upper side with a third incline to raise the feed-dog to the goods; substantially as described.

4. A sewing-machine comprising the bell-crank lever, means for operating the lever, the needle-bar pivoted to the horizontal arm of the lever, a horizontal pointed looper-bar pivoted to the depending arm of said lever for reciprocation thereby, a loosely-pivoted oscillating feed-dog, having an opening therethrough, and a horizontal feed-bar also pivoted to the depending arm of the said lever, with its free end passed through the feed-dog opening and there provided with three inclined faces to impart positive movement in three directions to the feed-dog; substantially as described.

708,682. REGISTER AND ALARM. LAKE E. FORATS, Seattle, Wash. Filed Jan. 23, 1902. Serial No. 91,560. (No model.)

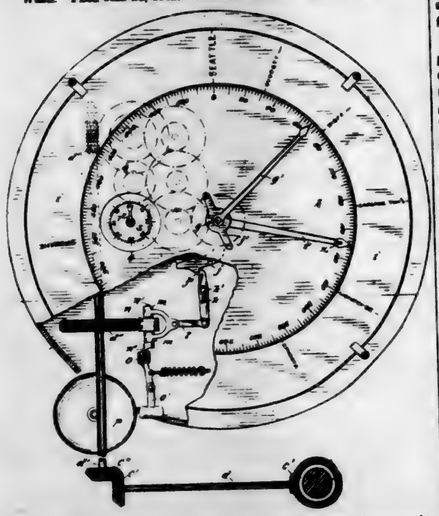

Claim.—1. A combined speed counter, register, and alarm, consisting respectively of a stationary graduated dial, an index-finger, means to revolve said finger from the rotating of one of the wheels of the car; another dial having graduate-marks thereon, an index-finger, means to engage or disengage said finger from its connecting mechanism; and an alarm-bell and means to ring the same from a pointer set at any desired location upon the first-mentioned dial, and adapted to being engaged by the first-named index-finger, and operative connection between the said bell and the said pointer, substantially as and for the purposes set forth.

2. The combination with a car-wheel axle, of a stationary dial having graduate-marks thereon, a train of gears, connection between the said axle and the train of wheels for operating the latter, an index-finger actuated by said train of wheels, a set hand or pointer loosely mounted on a sleeve upon the arbor of the aforesaid index-finger, a bell-crank provided with a stop hung upon said sleeve, means to clamp the said pointer and bell-crank to said sleeve, an alarm-bell, a friction-pulley mounted upon an arbor journaled in swinging boxes, connection between said swinging boxes and the said bell-crank lever such connection being a lever and a reach-rod, a bell-hammer, a crank upon said friction-wheel arbor for vibrating said hammer, a friction-wheel mounted upon the connection between said axle and the said train, a movable annular card having the railway-stations marked thereon; and a speed-meter comprising a graduated dial, an index-finger, geared connection between one of the arbors of the aforementioned train and the last-named index-finger, and means to engage or disconnect said finger from its gear-train, substantially as herein set forth.

708,688. MACHINE FOR MAKING VENEER BARRELS. WILLIS C. CRAFT, Ashtabula, Ohio. Filed June 21, 1901. Serial No. 65,582. (No model.)

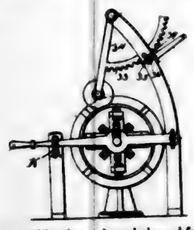

Claim.—1. In combination, a barrel-shaped former divided into segmental sections, a main central sleeve passing longitudinally through said former, spiders provided with spider-arms and secured to said sleeve, pins passing radially through said spider-arms and secured individually to said sections, one at either end thereof, short movable sleeves on the main sleeve, bell-cranks pivoted upon the spider-arms, and with their arms severally pivoted to said short sleeves and to the before-mentioned pins, connecting-rods between the short sleeves, a clutch engaging one of the short sleeves, and a main supporting-shaft within said main sleeve, and means for rotating the sleeve, as described.

2. In a machine for the purpose described, comprising a former longitudinally divided into sections, a central supporting-shaft therefor, mounted upon bearings at one end of the former, a main sleeve loosely mounted thereon and secured from longitudinal movement, means for extending and supporting said sections consisting of spiders secured to said main sleeve, bell-cranks pivotally secured to said spiders, short sleeves upon the main sleeve, to which the lower arms of the bell-cranks are secured, and pins mounted radially in said spiders and secured to said sections at their upper extremities and pivoted to the bell-cranks at their lower extremities, connecting-rods between the short sleeves and a clutch upon one of the short sleeves, means for rotating the main sleeve, means for retaining the outer and inner hoops upon the former while the barrel is being constructed, and a temporary support for the face extremity of the shaft, substantially as described.

708,684. CANE-UNLOADING MACHINE. WILLIAM C. GIBSON, Minneapolis, Minn. Filed Jan. 14, 1902. Serial No. 89,731. (No model.)

Claim.—1. In a cane-unloading machine, the combination, with a suitable overhead driving-shaft, of bars pivotally supported upon said shaft, an angular frame supported upon said bars, suitable endless rakes supported by said frame and means for operating said rakes, for the purpose specified.

2. In a cane-unloading machine, the combination, with a suitable overhead driving-shaft, of bars pivotally supported upon said shaft a series of angular frames connected together and supported upon said bars, a series of endless rakes mounted upon said frames, and means for simultaneously operating all of said rakes, substantially as described.

3. In a cane-unloading machine, the combination, with a suitable driving-shaft, of bars pivotally supported upon said shaft, a shaft 6 mounted in said bars, means for driving said shaft 6 from said driving-shaft, a series of angular frames mounted upon said shaft 6, means connecting said frames, and a series of endless rakes mounted upon said frames and driven from said shaft 6, substantially as described.

4. In a cane-unloading machine, the combination, of a suitable shaft, means supporting said shaft capable of being raised and lowered, an angular frame mounted upon said shaft, sprocket-wheels upon said shaft, other sprocket-wheels mounted upon said angular frame and endless rakes supported upon said sprocket-wheels, substantially as described.

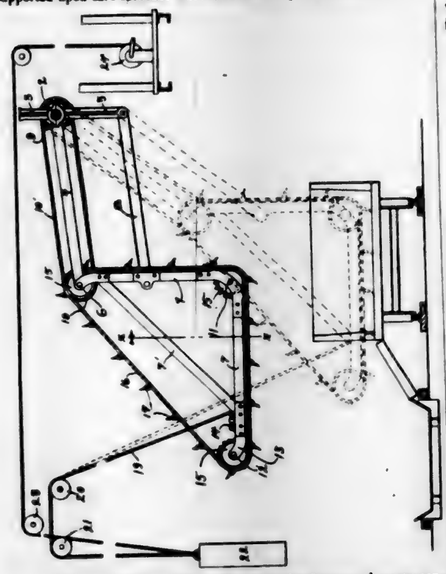

5. The combination, with a series of angular frames and means connecting said frames, of a shaft upon which said frames are pivoted, supports for said shaft and by means of which said shaft is capable of being raised or lowered, endless rakes supported upon said frames and means for simultaneously operating all of said rakes, substantially as described.

6. The combination, with the angular frame 7, the shaft 6 upon which said frames are mounted, means supporting said shaft and permitting the same to be raised or lowered with said frames, sprocket-wheels upon said shaft 6, other sprocket-wheels upon said frames and endless rakes passing around the sprocket-wheels upon said shaft and also around the sprocket-wheels upon said frames, with means for operating said rakes.

7. The combination, with the driving-shaft 2, of the angular frames, bars 4 pivotally supported upon said driving-shaft and forming pivotal support for said angular frames, bars 8 arranged parallel with said bars 4, endless rakes arranged upon said angular frames, and means for operating said rakes.

708,686. NUT-LOCK. EDWARD S. GEISE, Ottawa, Ohio. Filed June 14, 1901. Serial No. 64,554. (No model.)

Claim.—A nut-lock comprising a piece of tempered sheet metal having a single central bend to form leaves, and curved outward at the bend in opposite directions beyond the planes of the leaves, each of said leaves having an opening one of which is enlarged, and a malleable holding-tongue projecting from one of the leaves, the edges of said leaves being flattened, for the purpose described.

708,686. COMBINED PERFORATING, RING FORMING, AND INSERTING MACHINE. THOMAS HAWTHORNE, London, Canada. Filed Nov. 25, 1898. Serial No. 697,473. (No model.)

Claim.—1. In a machine of the class described, a wiper, D, and means for supporting and operating the same, in combination with a sliding bar, D^2, a toe, D', pivotally supported on said sliding bar, a stop, D^3, rigidly secured to said sliding bar to hold said toe from moving away from said wiper when the latter is moving said sliding bar downward, a head, D^4, secured to the upper end of said sliding bar, and a perforating device, D^5, carried by said head, substantially as and for the purpose set forth.

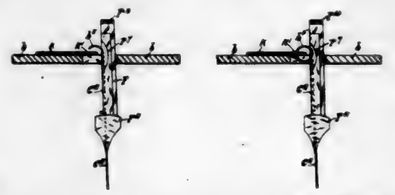

2. In a machine of the class described, an oscillating disk, B^3, means for supporting and operating the same, and a wiper, D, secured to said disk, in combination with a sliding bar, D^2, a toe, D', pivotally supported on said sliding bar, a stop, D^3, rigidly secured to said sliding bar to hold said toe from moving away from said wiper when the latter is moving said sliding bar downward, a spring, D^4, for returning said sliding bar to its normal position, a head, D^4, secured to the upper end of said sliding bar, and a perforating device, D^5, carried by said head, substantially as and for the purpose set forth.

3. In a machine of the class described, an oscillating disk, B^3, means for supporting and operating the same, and a wiper, D, secured to said disk, in combination with a sliding bar, D^2, a toe, D', pivotally supported on said sliding bar, a stop, D^3, rigidly secured to said sliding bar to hold said toe from moving away from said wiper when the latter is moving said sliding bar downward, a spring, D^4, for returning said sliding bar to its normal position, a head, D^4, secured to the upper end of said sliding bar, a rotating spindle, D^6, supported in said head, a drill, D^7, and pulley-wheel, D^{11}, secured to said spindle, and means for operating said pulley-wheel, substantially as and for the purpose set forth.

4. In a machine of the class described, an oscillating disk, B^3, means for supporting and operating the same, a wiper, D, secured to said disk, a sliding bar, D^2, a toe, D', pivotally supported on said sliding bar, a stop, D^3, rigidly secured to said sliding bar to hold said toe from moving away from said wiper when the latter is moving said sliding bar downward, a head, D^4, secured to the upper end of said sliding bar, a socket, D^{10}, formed in and a perforating device, D^5, secured to said head, in combination with an independently-moving standard, D^{12}, a foot, D^{11}, formed on said standard, a circular aperture, D^{13}, formed in said foot, a guide, D^{14}, secured to said standard, and fitted to and inserted in said socket in said head, and a compression-spring, D^{15}, secured at one end to said standard and at the other end to said head, substantially as and for the purpose set forth.

5. In a machine of the class described, a movable work-support, E^2, in which an opening or recess, E', is formed and means for supporting said movable work-support, in combination with and pivotally secured to a lever, E_2, a notch, E^3, formed in said lever, a wiper, E^4, formed with an angular end, E^5, and means for operating said wiper, substantially as and for the purpose set forth.

6. In a machine of the class described, a movable work-support, E^2, in which an opening or recess, E', is formed and means for supporting said movable work-support, in combination with and pivotally secured to a lever, E, a notch, E^3, formed in said lever, a wiper, E^4, formed with an angular end, E^5, a sliding bar, D^2, to which said wiper is secured, and means for operating said sliding bar, substantially as and for the purpose set forth.

7. In a machine of the class described, a head, D^4, means for supporting the same, a perforating device, D^5, secured to said head, an independently-moving standard, D^{12}, supported in said head, a foot, D^{11}, formed on said standard, a circular aperture, D^{13}, formed in said foot, and a compression-spring, D^{15}, secured at one end to said standard and at the other end to said head, in combination with a movable work-support, E^2, and means for supporting and operating the same, substantially as and for the purpose set forth.

8. In a machine of the class described, a head, D^4, a rotating spindle, D^6, supported in said head, a perforating device, D^5, and a pulley-wheel, D^{11}, secured to said spindle, and means for operating said pulley-wheel, an independently-moving standard, D^{12}, supported in said head, a foot, D^{11}, formed on said standard, a circular aperture, D^{13}, formed in said foot and a compression-spring, D^{15} secured at one end to said standard and at the other end to said head, in combination with a movable work-support, E^2, substantially as and for the purpose set forth.

9. In a machine of the class described, an oscillating disk, B^3, means for supporting and operating the same, a wiper, D, secured to said disk, a

sliding bar, D^3, a toe, D', pivotally supported on said sliding bar, a stop, D^5, rigidly secured to said sliding bar to hold said toe from moving away from said wiper when the latter is moving said sliding bar downward, a spring, D^4, for returning said sliding bar to its normal position, a bracket, d', through which said sliding bar, D^3, extends, a washer, d^2, secured to said sliding bar to prevent the latter from being withdrawn from said bracket by said spring, a head, D^6, secured to the upper end of the sliding bar, D^3, a socket, D^{20}, formed in said head, a perforating device, D^9, secured to said head, and an independently-moving standard, D^{16}, supported in said head, a foot, D^{17}, formed on said standard, a circular aperture, D^{18}, formed in said foot, a compression-spring, D^{21}, secured at one end to said standard, and at the other end to said head, and a guide, D^{19}, secured to said standard and fitted to and inserted in said socket in said head, in combination with a movable work-support, E^3, moving diagonally to and from said perforating device, substantially as and for the purpose set forth.

10. In a machine of the class described, an oscillating disk, B^3, a wiper, D, secured to said disk, a sliding bar, D^3, a toe, D', pivotally supported on said sliding bar, a stop, D^5, rigidly secured to said sliding bar to hold said toe from moving away from said wiper when the latter is moving said sliding bar downward, a wiper, E^4, and a head, D^6, secured to said sliding bar, a perforating device, D^9, secured to said head, an independently-moving standard, D^{16}, supported in said head, a foot, D^{17}, formed on said standard, a circular aperture, D^{18}, formed in said foot, a compression-spring, D^{21}, secured at one end to said standard and at the other end to said head, in combination with a movable work-support, E^3, and a lever, E, pivotally secured to said movable work-support, substantially as and for the purpose set forth.

11. In a machine of the class described, an oscillating disk, B^3, a wiper, D, secured to said disk, a sliding bar, D^3, a toe, D', pivotally supported on said sliding bar, a stop, D^5, rigidly secured to said sliding bar to hold said toe from moving away from said wiper when the latter is moving said sliding bar downward, a wiper, E^4, secured to said sliding bar and formed with an angular end, E^5, a head, D^6, secured to the upper end of said sliding bar, a socket, D^{20}, formed in and a perforating device, D^9, secured to said head, an independently-moving standard, D^{16}, supported in said head, a foot, D^{17}, formed on said standard, a circular aperture, D^{18}, formed in said foot, a compression-spring, D^{21}, secured at one end to said standard, and at the other end to said head, and a guide, D^{19}, secured to said standard and fitted to and inserted in said socket in said head, in combination with movable work-support, E^3, a lever, E, in which a notch, E^6, is formed, and pivotally secured near one end of said movable work-support, substantially as and for the purpose set forth.

12. A ring-former consisting of an inner section, F', in which a groove, F^6, curved outward at the upper end is formed, in combination with an outer section, F^2, provided with longitudinal flanges, F^3, and means for supporting said sections and holding them together, substantially as and for the purpose set forth.

13. A ring-former consisting of an inner section, F', in which a groove, F^6, curved outward at the upper end is formed, in combination with an outer section, F^2, formed with longitudinal flanges, F^3, and means for supporting said sections, holding them together, and for adjusting one section longitudinally on the other, substantially as and for the purpose set forth.

14. A ring-former consisting of an inner section, F', in which a groove, F^6, curved outward at the upper end is formed and an overhanging forked end, F^8, formed on said section, in combination with an outer section, F^2, formed with longitudinal flanges, F^3, and with a cross-flange, F^4, a screw-threaded socket formed in said cross-flange, and a double-headed screw, F^{10}, secured in said screw-threaded socket, and engaging with the overhanging forked end of the inner section, substantially as and for the purpose set forth.

15. A ring-former consisting of an inner section, F', in which a groove, F^6, curved outward at the upper end is formed, in combination with an outer section, F^2, provided with the flanges, F^3, a recess, F^7, formed in said sections, and means for supporting said sections and holding them together, substantially as and for the purpose set forth.

16. A ring-former consisting of an inner section, F', in which a groove, F^6, curved outward at the upper end is formed, in combination with an outer section, F^2, formed with longitudinal flanges, F^3, a recess, F^7, formed in said sections, and means for supporting said sections, holding them together and for adjusting one section longitudinally on the other, substantially as and for the purpose set forth.

17. A ring-former consisting of an inner section, F', in which a groove, F^6, curved outward at the upper end is formed, and an overhanging forked end, F^8, formed on said section, in combination with an outer section F^2, formed with longitudinal flanges, F^3, and with a cross-flange, F^4, a screw-threaded socket formed in said cross-flange, a double-headed screw, F^{10}, secured in said screw-threaded socket, and engaging with the overhanging forked end of the inner section, and a recess, F^7, formed in said sections, substantially as and for the purpose set forth.

18. A ring-former consisting of an inner section, F', and an outer section, F^2, in combination with a socketed support, F^{11}, in the socket in which the lower ends of said sections are inserted and held together, and a bracket, F^{12}, to which said support is pivotally secured, substantially as and for the purpose set forth.

19. The horizontally-adjustable slide, F^{13}, the slide, F^{14}, vertically adjustable on said horizontal slide, and an arm, F^{15}, secured to said vertically-adjustable slide, in combination with a ring-former, F, pivotally secured to the arm, F^{15}, substantially as and for the purpose set forth.

20. The horizontally-adjustable slide, F^{13}, the slide, F^{14}, vertically adjustable on said horizontal slide and an arm, F^{15}, secured to said vertically-adjustable slide, in combination with a ring-former, F, provided with a stud, F^{16}, a socketed support, F^{11}, in the socket in which the lower end of said ring-former is inserted and held together, and a bracket, F^{12}, to which said support is pivotally secured, substantially as and for the purpose set forth.

21. The horizontally-adjustable slide, F^{13}, the slide, F^{14}, vertically adjustable on said horizontal slide, and an arm, F^{15}, secured to said vertically-adjustable slide, in combination with a ring-former, formed in two sections, F', and F^2, means for holding said sections together and for adjusting one longitudinally on or within the other, a stud, F^{16}, on said ring-former with which the arm, F^{15}, engages, a socketed support, F^{11}, in which the lower end of said sections, F', and F^2, are inserted and held together, and a bracket, F^{12}, to which said support is pivotally secured, substantially as and for the purpose set forth.

22. In a machine of the class described, a shaft, B^3, a ratchet-wheel, B^{14}, fixed on said shaft, a cam, B^{26}, mounted loosely on said shaft, and provided with an arm, B^{28}, and a stationary bar, B^{29}, to which said arm is adjustably secured, in combination with a dog, B^{16}, in which an elongated opening, B^9, and socket, B^{18}, is formed and which is provided with an arm, B^{12}, an oscillating disk, B^3, in which an elongated slot, B^{13}, is formed to receive the arm, B^{12}, and a stud or pin, B^{11}, for holding said dog against the face of said disk, and a spring B^{17}, inserted in the socket, B^{18}, and means for operating said disk, substantially as and for the purpose set forth.

23. In a machine of the class described, the grooved feed-wheels, C, and, C^3, and means for supporting and operating said wheels, a shaft, B^3, a ratchet-wheel, B^{14}, fixed on said shaft, a cam, B^{26}, mounted loosely on said shaft, and provided with an arm, B^{28}, and a stationary bar, B^{29}, to which said arm is adjustably secured, in combination with a dog, B^{16}, in which an elongated opening, B^9, and socket, B^{18}, is formed, and which is provided with an arm, B^{12}, an oscillating disk, B^3, in which an elongated slot, B^{13}, is formed to receive the arm B^{12}, and a stud or pin, B^{11}, for holding said dog against the face of said disk and a spring, B^{17}, inserted in the socket, B^{18}, and means for operating said disk, substantially as and for the purpose set forth.

24. In a machine of the class described, the shaft, B^3, the ratchet-wheel, B^{14}, fixed on said shaft, a cam, B^{26}, mounted loosely on said shaft and provided with an arm, B^{28}, and means for holding the latter at the position to which it may be adjusted in combination with a plate, B^{30}, mounted loosely on said shaft and means for operating and limiting the movement of said plate, substantially as and for the purpose set forth.

25. In a machine of the class described, the shaft B^3, a ratchet-wheel, B^{14}, fixed on said shaft, a cam, B^{26}, mounted loosely on said shaft, and provided with an arm, B^{28}, a bar B^{29}, to which said arm is adjustably secured, a dog, B^{16}, and means for supporting and operating the latter, in combination with a slotted plate, B^{30}, provided with a shoulder, b^3, and an arm, B^{32}, an elongated slot, B^{31}, formed in said plate, a pin, B^{33}, secured to a rigid support and resting in said slot in said plate and a spring, B^{34}, connected at one end to said arm, and at the other end to a stationary support, substantially as and for the purpose set forth.

26. In a machine of the class described, the shaft, B^3, ratchet-wheel, B^{14}, fixed on said shaft, a cam, B^{26}, mounted loosely on said shaft and provided with an arm, B^{28}, and means for holding said arm at the position to which it may be adjusted, a slotted plate, B^{30}, provided with a shoulder, B^3, and an arm, B^{32}, an elongated slot, B^{31}, formed in said slotted plate, a spring, B^{34}, connected at one end to said arm and at the other end to a stationary support, a stationary sleeve, B^7, a flanged sleeve, B^{17}, and a pin, B^{35}, for securing said flanged sleeve to said stationary sleeve, in combination with a dog, B^{16}, in which an opening, B^9, and socket, B^{18}, are formed, an arm, B^{12}, formed on said dog, a stud or pin, B^{11}, a spring, B^{17}, located in said socket, B^{18}, an oscillating disk, B^3, in which an elongated slot, B^{13}, is formed, and a sleeve, B^7, on said disk, substantially as and for the purpose set forth.

27. In a machine of the class described, the slide-box, H, secured to a fixed support, cutter-carrying slides, H', and, H^2, supported in said box, a cutter, H^3, and a stud, H^4, secured to each of said cutter-carrying slides, and an antifriction-sleeve, H^5, supported on each of said studs in combination with the rock-shaft, H^{12}, and the right and left worms, H^{13}, and, H^{14}, formed on said shaft, substantially as and for the purpose set forth.

28. In a machine of the class described, the slide-box, H, secured to a fixed support, cutter-carrying slides, H', and, H^2, supported in said box, a cutter, H^3, and a stud, H^4, secured to each of said cutter-carrying slides and an antifriction-sleeve supported on each of said studs, in combination with a rock-shaft, H^{12}, worms, H^{13}, and, H^{14}, formed on said shaft, a toe, H^{15}, secured to said shaft, a wiper, H^{16}, for operating said toe, an oscillating disk, B^3, for supporting and operating said wiper, and means for operating said disk, substantially as and for the purpose set forth.

29. The combination of a former in which a groove F^6, curved outward at the upper end is formed for forming rings and simultaneously with their formation, inserting them in perforations in articles for the purpose of suspension, means for feeding wire to the ring-forming mechanism, a dog, a ratchet, and means for operating them to intermittently feed the wire to the ring-forming mechanism, substantially as described.

30. The combination of a former constructed in two sections in one of which sections a groove, F^6, curved outward at the upper end is formed for forming rings and said sections adjustable on one another to form rings of different diameter, and simultaneously with their formation, inserting them in perforations in articles, for the purpose of suspension, means for feeding wire to the ring-forming mechanism, a dog, a ratchet, and means for operating them to intermittently feed the wire to the ring-forming mechanism, and for causing the amount of wire presented to the wire-feeding mechanism to vary to accord with the diameter of the ring, substantially as described.

31. The combination of means for forming perforations in articles, means for operating and alternately throwing the perforating mechanism in and out of operation, means for forming rings and simultaneously with their formation inserting them in perforations in said articles for the purpose of suspension, a dog, a ratchet, and means for operating them to intermittently feed the wire to the ring-forming mechanism, substantially as described.

32. The combination of means for forming perforations in articles, means for operating and alternately throwing the perforating mechanism in and out of operation, adjustable means for forming rings, of different diameter and simultaneously with their formation inserting them in the perforations in said articles for the purpose of suspension, means for feeding the wire to the ring-forming mechanism, a cam, a ratchet-wheel and dog and means for operating them to cause the amount of wire presented to the wire-feeding mechanism to vary to accord with the diameter of the ring required, substantially as described.

33. The combination of means for forming perforations in articles consisting of a vertically-adjustable sliding bar carrying rotating perforating mechanism, means for operating and alternately throwing the perforating mechanism in and out of operation, a former in which a groove, F^6, curved outward at the upper end is formed for forming rings, and simultaneously with their formation inserting them in the perforations in said articles for the purpose of suspension, a dog, a ratchet, and means for operating them to intermittently feed the wire to the ring-forming mechanism, substantially as described.

34. The combination of means for forming perforations in articles, consisting of an adjustable sliding bar and an adjustable standard provided with a foot, and a compression-spring by which said standard is automatically adjusted to the thickness of the article, and to firmly hold the article while the perforation is being formed therein, and while withdrawing the perforating device therefrom, means for operating and alternately throwing the perforating mechanism in and out of operation, a former in which a groove, F^6, curved outward at the upper end is formed for forming rings and simultaneously with their formation inserting them in the perforations in said articles for the purpose of suspension, a dog, a ratchet and means for operating them to intermittently feed the wire to the ring-forming mechanism, substantially as described.

35. The combination of means for forming perforations in articles, consisting in part of a work-support moving diagonally to and from the perforating mechanism, means for operating and alternately throwing the perforating mechanism in and out of operation, means for alternately positioning the work-support toward the perforating mechanism, for holding it under the perforating mechanism while the perforation is being formed, and for positioning it from the perforating mechanism, a former in which a groove, F^6, curved outward at the upper end is formed, for forming rings and simultaneously with their formation inserting them in the perforations in said articles for the purpose of suspension, a dog, a ratchet and means for operating them to intermittently feed the wire to the ring-forming mechanism, substantially as described.

36. The combination of means for forming perforations in articles, consisting in part of a movable work-support, a lever formed with a notch, and a wiper formed with an angular end for the purpose of operating said lever and positioning the movable work-support under the perforating device, means for operating and alternately throwing the perforating mechanism in and out of operation, a former in which a groove, F^6, curved outward at the upper end is formed, for forming rings, and simultaneously with their formation inserting them in the perforations in said articles, for the purpose of suspension, a dog, a ratchet and means for operating them to intermittently feed the wire to the ring-forming mechanism, substantially as described.

37. The combination of a former in which a groove, F^6, curved outward at the upper end is formed, for forming rings, and simultaneously with their formation inserting them in perforations in articles, for the purpose of suspension, means for feeding wire to the ring-forming mechanism, a dog, a ratchet and means for operating them to intermittently feed the wire to the ring-forming mechanism, means for severing the ring from the wire and means for operating the severing mechanism when required, substantially as described.

38. The combination of a former constructed in two sections in one of which sections a groove, F^6, curved outward at the upper end is formed for forming rings, and said sections adjustable on one another to form rings of different diameter, and simultaneously with their formation inserting them in articles, for the purpose of suspension, means for feeding the wire to the ring-forming mechanism, a cam, B^{26}, a ratchet-wheel, B^{14}, and a longitudinally-adjustable dog, B^{16}, and means for operating them to cause the amount of wire presented to the wire-feeding mechanism to vary to accord with the diameter of the ring required, substantially as described.

39. The combination of means for forming rings and simultaneously with their formation, inserting them in perforations in articles for the purpose of suspension, a dog, a ratchet and means for operating them to intermittently feed the wire to the ring-forming mechanism, and means for preventing the dog from engaging with the ratchet when said dog is returning to its normal position, substantially as described.

40. The combination of means for forming perforations in articles, a former in which a groove, F^6, curved outward at the upper end is formed, for forming rings and simultaneously with their formation inserting them in perforations in said articles for the purpose of suspension, a dog, a ratchet and means for operating them to intermittently feed the wire to the ring-forming mechanism, means for severing the ring from the wire, and means for stopping the machine at a given point, or just after the operation of perforating, forming, inserting and cutting off the ring is completed, substantially as described.

708,687. COMBINED GAS AND STEAM ENGINE. William Hickert, Findlay Ohio, assignor of one-half to Henry W. Busey, Toledo, Ohio. Filed Oct. 29, 1901. Serial No. 80,433. (No model.)

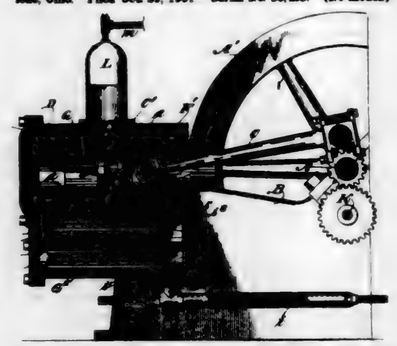

Claim.—1. A self-contained motor or engine comprising in a unitary structure a cylinder having a water-space around the same, a subjacent water way or passage extending upwardly in a serpentine or zigzag course from a source of supply to said water-space, heat-flues extending downwardly from said cylinder to the exhaust through said serpentine or zigzag waterway, and a piston working in said cylinder having a suitable connection with the driving-shaft, together with mechanism for automatically controlling the admission and exhaust of steam at one side and of explosive gases at the other side of the piston to actuate the latter by the expansive force of said gases and steam operating alternately to drive the piston in opposite directions; substantially as described.

2. A self-contained motor or engine comprising in a unitary structure a cylinder having a water-space around the same opening into a steam-dome at the top, a subjacent water way or passage extending upwards in a serpentine or zigzag course from a source of supply to said water-space, heat-flues forming a descending passage for the residue of heat and products of combustion from said cylinder through said water-space and subjacent water-passage, and a reciprocating piston working in said cylinder having a suitable connection with the driving-shaft, together with

mechanism for automatically controlling the admission and exhaust of steam at one side and of explosive gases at the other side of the piston to actuate the latter by the expansive force of said gases and steam operating alternately to drive the piston in opposite directions; substantially as described.

3. A self-contained motor or engine comprising in a unitary structure a cylinder, a subjacent waterway ascending step by step in reverse directions from a source of supply to a water-space at the boiler, a passage for the residue of heat and products of combustion descending step by step through said ascending waterway, and a piston working in said cylinder having a suitable connection with the driving-shaft, together with means for automatically admitting explosive gases and exploding the same at every second reverse stroke of the piston, for effecting such reverse stroke, and means for automatically admitting steam at the other side of the piston for impelling it at each forward stroke, substantially as described.

4. A self-contained motor or engine comprising in a unitary structure, a cylinder having a water-space around the same opening into a steam-dome at the top, a subjacent waterway gradually ascending from a source of supply to said water-space, a heat-passage gradually descending through said waterway to the exhaust, and a reciprocating piston working in said cylinder having a suitable connection with the driving-shaft, together with means for automatically admitting explosive gases and exploding the same at every second reverse stroke of the piston, for effecting such reverse stroke, and means for automatically admitting steam at the other side of the piston for impelling it at each forward stroke, substantially as described.

5. A motor or engine comprising in a unitary structure a cylinder having a surrounding water-space and air spaces or flues at its ends, tubes connecting said air-spaces through said water-space, a subjacent ascending waterway connecting said water-space with a feed-pipe, and other tubes passing through said subjacent waterway and connecting the air-spaces with the exhaust; a piston working in said cylinder, means for automatically admitting explosive gases at one end of said cylinder and for exhausting the residues of combustion into and out through said air-flues and tubes, and means for automatically controlling the admission and exhaust of steam at the other side of the piston for impelling the latter in a direction opposite to the action of the expansive gases, substantially as described.

6. A motor or engine consisting of a cylinder having a surrounding water-space and fire-flues separated therefrom, one at each end, a subjacent waterway ascending from a feed-pipe to said water-space, fire-flue tubes connecting said flues through said water-space, other tubes connecting similar flues at opposite ends of the cylinder with an exhaust-pipe and passing downwardly through said subjacent waterway, means for automatically admitting explosive gases at one end of said cylinder and igniting the same, and mechanism for automatically controlling the admission and exhaust of steam at the other end of said cylinder to effect the movements of the piston in one direction only, together with means for exhausting the residues of combustion through said fire-flues and fire-flue tubes, substantially as described.

7. In a combined gas and steam engine, a cylinder having a piston-chamber, and an explosion-chamber at one end, together with a water-space around the cylinder and flues at each end separated from said water-spaces by suitable partitions or webs between the inner and outer walls of the cylinder, a series of fire-flue tubes connecting said flues through said water-space, and a subjacent water-chamber with fire-flue tubes therein connecting a flue at the outlet from said first-mentioned flues, with a similar flue at the other end of said water-chamber; the latter flue communicating with the exhaust, so as to provide a zigzag course for the escape of the residues of combustion, together with a feed-pipe for supplying said water-space through said fire-flue-tube-containing water-chamber, substantially as described.

8. In a combined gas and steam engine, a cylinder having a piston-chamber, and an explosion-chamber at one end, together with a water-space around the cylinder and flues at each end separated from said water-space by suitable partitions or webs between the inner and outer walls of the cylinder, a series of fire-flue tubes connecting said flues through said water-space, and a subjacent water-chamber with fire-flue tubes therein connecting a flue at the outlet from said first-mentioned flues with a similar flue at the other end of said water-chamber; the latter flue communicating with the exhaust, so as to provide a zigzag course for the escape of the residues of combustion, together with a feed-pipe for supplying said water-space through said fire-flue-tube-containing water-chamber, and a steam-dome mounted on said cylinder in communication with the water-space around the same, substantially as described.

9. In combination with the piston-cylinder and piston working therein and a steam-dome at the top, a water-space around said cylinder, flues through said water-space, a subjacent ascending water-passage connecting said water-space with a feed-pipe at the bottom or lowest point in the circuit, and heat-flues extending downwardly through said subjacent water-chamber at the ends thereof, tubes connecting said flues, an inlet-valve for the admission of explosive gases at one side of the piston, a valve at the same side for exhausting the residues of combustion through said flues and tubes, and a valve at the other end of the cylinder for admitting steam to impel the piston in a direction opposite to the direction given by the expansive gases, whereby the heat and residues of combustion resulting from the explosion of the gases is utilized in heating the feed-water and reheating or superheating the steam, substantially as described.

10. In combination with the cylinder having a water-space around the same, a steam-dome mounted thereon, flues at the ends thereof, and tubes connecting said flues through said water-space, a subjacent water-chamber having a series of tubes therein which communicate with the outlet from said flues at one end and with a similar flue at the other end, other tubes connecting the latter flue through said subjacent chamber with the exhaust, and means for feeding the water in a zigzag course through said subjacent chamber in contact with said tubes and the walls of said flues, substantially as described.

11. In a combined gas and steam engine a piston having a reduced area working in the steam end of cylinder and an enlarged portion or area in end forming a gas-explosion chamber, said piston having a hollow extension or trunk extending through stuffing-box in one head of cylinder to receive the connecting-rod of engine and provide reduced steam-piston area around said extension in cylinder, as and for the purpose described.

12. In combination with the cylinder and its surrounding water-space and subjacent water-chamber, flues at the ends of the cylinder and subjacent chamber communicating at opposite ends, and a series of pipes forming a zigzag course for the escape of the residues of combustion through said water-space and subjacent chamber, together with a boiler feed-pipe and means for supplying water in a zigzag course through said subjacent water-chamber and water-space in contact with the fire-flues, whereby the feed-water is gradually heated as it ascends to the water-space at the top of the boiler, substantially as described.

708,638. ANIMAL-TRAP. SAM HUTCHERSON, Rongan, Tex. Filed Mar. 25, 1902. Serial No. 99,907. (No model.)

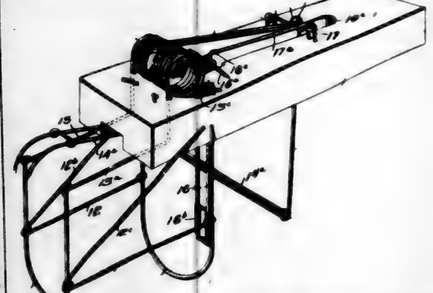

Claim.—1. In an animal-trap, a base-plate, a runway connected with said base-plate and formed by the wire cage open at the ends and wires forming the top member of said cage, said wires being extended through the base, turned into spring-coils and having connected ends forming an arm whereby the impaling device is actuated, substantially as set forth.

2. In an animal-trap, a pair of spring-coils having their inner connected ends extended to form an arm and having their outer ends extended vertically through a base supporting said coils and thence forwardly to form the upper members of a cage or runway, combined with a vibrating impaling device mounted pivotally between the top members of the runway, a rod connecting the rear end of said impaling device with the arm formed by the connected ends of the coiled springs, and suitable trigger mechanism, substantially as set forth.

3. In an animal-trap, a base-plate, a runway formed of a wire cage open at the ends and with the upper members extended through said base and turned into spring-coils and with spring-arms extending from said spring-coils, an impaling-bar movably connected to said base and operating in said runway, a rod connecting the inner end of said impaling-bar to said spring-arms, and a yieldable trigger mechanism operating from within said runway and adapted to actuate said releasing means, substantially as described.

708,639. TOOL FOR ELECTRICIANS. ISAAC W. HETHERER, Philadelphia, Pa. Filed Oct. 26, 1901. Serial No. 80,087. (No model.)

Claim.—1. The electrician's tool consisting of a blade provided with a double-beveled screw-driver point, a knife-edge along one margin thereof, and a saw-file on the opposite side, and a supporting-shank forming the rear end thereof provided with a cross-groove, in combination with a hollow handle, in which said blade and its shank are adapted to be longitudinally reciprocated, and a spring-latch to close said hollow handle when said blade is within the same, and close upon said blade when the same has been projected therefrom, and by engagement in said cross-groove prevent the withdrawal of said blade into said handle when said latch is held down thereupon, said reciprocation being produced by gravity when said handle is held upward to withdraw, or downward to project said blade therefrom, substantially as described.

2. A combined knife and screw-driver blade having a supporting and guiding shank and a cross-groove in the same, a double-beveled screw-driver point and a double-beveled knife-blade edge along one margin of said blade, the beveled sides of said knife-blade continued along the sides of said screw-driver without obstruction against sharpening said knife-edge on a sharpener of any size, substantially as described.

3. A hollow tool-handle having an opening at one end, and closed at the opposite end and at sides thereof, a spring thumb-latch guarding said opening, a passage within said handle for the longitudinal travel of a flat blade and shank, and a detachable blade-cover on one side of said flat blade, together with a screw at the rear end adapted to freely pass through said detachable blade-cover, and, be seated in the opposite blade-cover, so as to detachably secure the same together as a single construction, substantially as described.

4. In combination with a tool-blade, substantially as shown, and having a projecting stop-pin at the rear end of the shank thereof and a cross-groove in said shank, a hollow handle open at one end and closed at the other, said open end adjustably closed by a spring thumb-latch, an abutment in the fixed frame of said handle in rear of said latch adapted to engage with the stop-pin on said blade, and limit its projection from said handle when reciprocated therein, substantially as described.

5. In combination with a hollow tool-handle having a longitudinal passage open at one end through the same for the reciprocation of a tool-blade therein, and its projection therefrom, a spring thumb-latch operated at one end of said passage to close the same when said blade is withdrawn into said handle, and its edge adapted to enter a cross-groove in the shank of said blade when the same is projected, and lock the same in position vertical ears between which said thumb-latch is supported and operated, a passage-way for said blade beneath said latch, and fixed lugs, D^2 D^2, within said ears and above said blade-passage, to prevent said blade from being lifted from its place when projected, substantially as described.

6. In combination with a tool-blade substantially as described and provided with a cross-groove thereupon, the hollow handle having longitudinal passage-way for the reciprocation of said blade therein, and a thumb-latch provided with a lip and adapted to close the open end of said passage when said blade is retracted, and close upon said blade and engage with said cross-groove when the same is projected, and guards to limit the projection of said blade, the thumb-latch pivot G, and the coiled spring F F' around the same, one leg thereof adapted to engage with and be supported by the raised cross-rib, E^2, on the under and concave side of said latch, and between the front and rear margins thereof, and the opposite leg, F, adapted to engage with a support on the handle of said tool in rear of said latch, said spring adapted to close the open end of said hollow handle under spring tension, substantially as described.

7. In combination with a tool-blade adapted to be reciprocated in a hollow handle, and withdrawn within or partially projected from one end of the same, and having a rear supporting-shank and a cross-groove, the rear portion of said shank longitudinally bifurcated, a hollow handle adapted for the reciprocation of said blade, the flat side or sides thereof closed by blade-slot cover or covers, the projection, D^2, at the rear end of said blade-slot adapted to enter said bifurcation, B^2, and the screw hole or opening C' extended transversely through said projection, substantially as and for the purposes set forth.

8. In combination with the hollow tool-handle substantially as described, having blade-slot for the reciprocation of a flat blade adapted to be retracted within the same, or partially projected longitudinally therefrom, and blade-stops and locking-latch therefor and a blade provided with a cross-groove adapted to said latch, the blade-slot covers adapted to the flat sides of said handle, one of which is fixed and the opposite one detachably secured thereto, substantially as and for the purposes described.

9. In combination with a sectionally-flat, hollow tool-handle, substantially as described, and a tool-blade substantially as described and provided with a cross-groove and shank, a knife, saw-file and screw-driver, integral therewith in a single construction, and adapted to be reciprocated by gravity within the same, and partially projected longitudinally therefrom, and means to adjust and control said projection and reciprocation, one or more detachable blade-slot covers provided with recessed end or ends adapted to engage upon the opposite flat sides of said blade-slot, and contiguous to said blade, substantially as described.

708,640. PULVERIZER. ALBERTH C. HILSENBEK, New York, N. Y., and ABEL W. HILSENBEK, Orange, N. J., assignor to Calvin Amory Stevens, New York, N. Y. Filed Nov. 24, 1899. Renewed Apr. 10, 1902. Serial No. 102,263. (No model.)

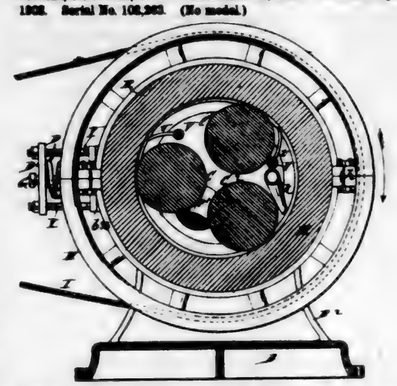

Claim.—In pulverizing apparatus the combination of a rotatable crushing-ring to the periphery of which the power is applied directly, two internal crushing-rolls with fixed bearings arranged to oppose the power applied to the ring, and a crushing-roll having two movable bearings connected with springs which allow the said roller to yield to the material under treatment and to distribute and equalize the strain, substantially in the manner and for the purpose described.

708,641. BABY-JUMPER. GEORGE J. HOLTON, Ponca, Okla., assignor of one-half to George W. Diehl, Ponca, Okla. Filed Feb. 23, 1902. Serial No. 96,049. (No model.)

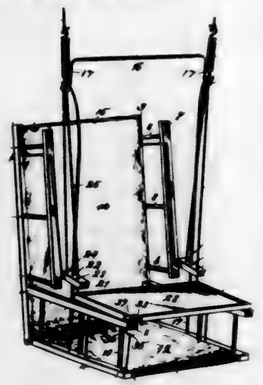

Claim.—1. A baby-jumper, comprising a seat portion having at its front end an adjustable board to be used as a foot-rest or a tray, a back hinged to the seat portion, an arch secured to the seat portion, clamping-blocks slidingly mounted on the arch, and flexible connections slidingly connected to the arch and extending down through the clamping-blocks and connected to the seat portion at one end and extending down through the clamping-blocks and connected at their opposite ends to the upper part of the back portion.

2. A baby-jumper, comprising a seat portion having at its front end an adjustable board to be used as a foot-rest or a tray, a back hinged to the seat portion, an arch secured to the seat portion, clamping-blocks slidingly mounted on the arch, flexible connections slidingly connected to the arch and extending down through the clamping-blocks and connected to

the seat portion at one end and extending down through the clamping-blocks and connected at their opposite ends to the upper part of the back portion, and springs suitably suspended and attached at their lower ends to the arch.

5. A baby-jumper, comprising a seat portion, side rails or arms therefor, a rod connecting the front ends of one set of the side rails with the seat portion proper below, and having its upper end formed with a shoulder 35, and a loop above said shoulder, a board having an eye engaging said rod and adapted to rest as a tray upon the side rails, means for additionally securing the tray in such position.

4. A baby-jumper, comprising a seat portion, side rails or arms therefor, a rod connecting the front ends of one set of the side rails with the seat portion proper, below, and having its upper end formed with a shoulder 35, and a loop above said shoulder, a board having a sliding connection with said rod and adapted to rest upon the seat portion proper, and a brace for detachably hooking said board to the side rails and thus supporting it as a foot-rest.

708,642. APPARATUS FOR MANUFACTURING CLOSED VESSELS OF PULP. FRANK B. HOWARD, New York, N. Y., assignor to Laflin & Rand Powder Company, New York, N. Y., a Corporation of New York. Filed Jan. 16, 1902. Serial No. 90,085. (No model.)

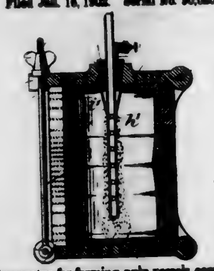

Claim.—Apparatus for forming pulp vessels comprising a perforated mold and an expansible former within the mold, the perforations in the mold being arranged at more frequent intervals throughout a portion of the mold than throughout another portion of the mold for the purpose of varying the thickness of the pulp wall of the vessel to be formed, substantially as set forth.

708,643. CENTRIFUGAL SEPARATOR. JONAS P. HULTGREN, Stockholm, Sweden, assignor of one-half to Filip Henrik Getzmann, Stockholm, Sweden. Filed Mar. 7, 1901. Serial No. 50,219. (No model.)

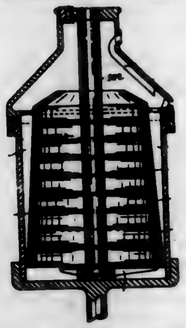

Claim.—The combination with a centrifugal separator-drum, of a liner consisting of a vertical series of rings, each elliptical in cross-section, substantially as and for the purpose set forth.

708,644. SMOKE-CONSUMER. JOHN W. JOHNSON, Trenton, Mo. Filed Apr. 15, 1902. Serial No. 102,910. (No model.)

Claim.—1. A smoke-consumer for steam-boiler furnaces, comprising a funnel in the smoke-box in advance of the smoke-stack and forming a partition in the upper portion of the smoke-box, a downwardly-directed baffle in the smoke-box in rear of the smoke-stack, an intake-pipe leading from the funnel, a return-pipe into which the intake-pipe discharges, said return-pipe discharging into the furnace, under the fire-box, and means to discharge a jet of live steam rearwardly in the return-pipe and thereby maintain an exhaust-current of air through the intake-pipe, substantially as described.

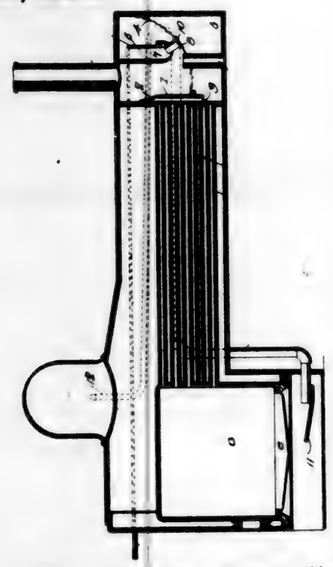

2. A smoke-consumer for steam-boiler furnaces, comprising a downwardly-directed baffle in the smoke-box in rear of the smoke-stack, a funnel forming a transverse partition in the upper portion of the smoke-box in advance of the smoke-stack and having a trough on its front side, an air-exhaust pipe leading from the said trough, to the furnace, under the fire-box, and having its intake end extended through the bottom of the trough and projecting upwardly therein, means to maintain an exhaust current of air through the said pipe, and a blower, discharging into the trough and on the intake end of the air-exhaust pipe to keep the latter clear, substantially as described.

3. A smoke-consumer for steam-boiler furnaces comprising a downwardly-directed baffle in the smoke-box, in rear of the smoke-stack, a transversely-disposed partition across the upper portion of the smoke-box, in advance of the smoke-stack, a funnel in front of said partition, a pipe leading from said funnel to the furnace, and means to maintain an exhaust current of air through said pipe, substantially as described.

4. In combination with a boiler having draft-tubes, a smoke-box into which they discharge, a smoke-stack leading from the smoke-box and an exhaust-steam pipe discharging into the smoke-box, a downwardly-directed baffle on the boiler-head, opposite the discharge ends of the draft-tubes, a transversely-disposed funnel in the upper portion of the smoke-box, forming a partition therein in advance of the smoke-stack and having a trough on its front side, an intake-pipe leading from said trough, a return-pipe communicating with the intake-pipe and discharging into the furnace under the fire-box, and a steam-pipe having a rearwardly-directed nozzle in the return-pipe to discharge a jet of steam under pressure therein and thereby maintain an exhaust current of air through the intake-pipe, substantially as described.

5. A boiler having a smoke-box into which the smoke-flues discharge, a smoke-stack leading from the smoke-box, a downwardly-directed baffle in the smoke-box in rear of the smoke-stack, a transversely-disposed partition across the upper portion of the smoke-box in advance of the smoke-stack, and having a funnel on its front side, a steam-exhaust pipe discharging upwardly in the smoke-box, between the baffle and the partition, a pipe leading from the funnel to the furnace, and means to maintain an exhaust current of air through said pipe, substantially as described.

708,645. TYPE-CONTAINING CHANNEL. LOUIS K. JOHNSON and ABBOT A. LOW, Brooklyn, N. Y., assignor to Alden Type Machine Company, New York, N. Y. Filed Jan. 18, 1899. Serial No. 702,518. (No model.)

Claim.—1. The combination of a type-containing channel, a fillet fitting therein and adapted to compensate for variations in the width of the fonts of types to be used, substantially in the manner and for the purpose described.

2. The combination with a type-containing channel formed on one side with the opposed return-flanges for retaining the types but otherwise open upon that side of a fillet fitting therein and adapted to compensate for variations in the width of the fonts of types, to be used, substantially as set forth.

3. The combination with a type-containing channel formed on one side with opposed return-flanges for retaining the types, but otherwise open upon that side, of a fillet fitting therein, said fillet being made of two thicknesses for the purpose and substantially in the manner set forth.

4. The combination with a type-containing channel formed upon one side with return-flanges having grooves in their opposed edges, of a fillet fitting in said grooves, said fillet being made of two thicknesses, substantially in the manner and for the purpose set forth.

708,646. COMPOSITOR'S TYPE-STICK. LOUIS K. JOHNSON, Brooklyn, N. Y., assignor to Alden Type Machine Company, New York, N. Y. Filed Mar. 18, 1901. Serial No. 51,586. (No model.)

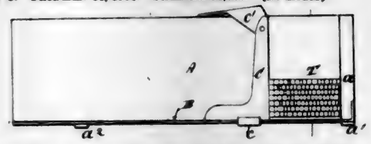

Claim.—1. In a compositor's type-stick, the combination of the type-plate A, and abutment a, the adjustable abutment C, formed with means for holding it in position upon the plate A, and the movable front flange B, supported adjustably upon said plate, for the purpose set forth.

2. A compositor's type-stick formed with a movable front flange substantially in the manner and for the purpose set forth.

3. In a compositor's type-stick the combination with the plate A, and abutment a, and with the movable front flange B, of the adjustable abutment C, formed with the clasp c, to straddle the upper edge of the front flange B, said abutment C, being also formed with means by which it may be held stationary upon the plate A, substantially in the manner and for the purpose set forth.

708,647. VAPORIZER FOR COLD VAPORS OR THE LIKE. EMIL JONAS, Wilmersdorf, Germany. Filed May 17, 1901. Serial No. 60,645. (No model.)

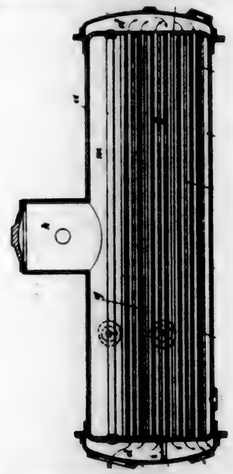

Claim.—1. A vaporizer, comprising a chamber or casing provided with an inlet and an outlet, heating-tubes extending through said chamber, and a partition located in the chamber between the inlet and the outlet, to retard the flow of the fluid through the chamber.

2. A vaporizer, comprising a chamber or casing provided with an inlet and an outlet, heating-tubes extending through said chamber, and a partition located in the chamber between the inlet and the outlet and extending lengthwise of said tubes, to divide the said chamber into a preheating-compartment and a vaporizing-compartment.

3. A vaporizer, comprising a chamber or casing provided with an inlet and an outlet, heating-tubes extending through said chamber, a partition located in the chamber between the inlet and the outlet, to divide said chamber into a preheating-compartment and a vaporizing-compartment, and a perforated partition located between the first-named partition and the outlet, whereby a superheating-compartment will be formed adjacent to the outlet.

708,648. JAR-COVER AND FASTENING THEREFOR. JULIUS KARRMANN, Indianapolis, Ind., assignor of one-half to Charles C. Caldwell, Indianapolis, Ind. Filed Feb. 24, 1902. Serial No. 95,457. (No model.)

Claim.—1. In a jar-cover and fastening for the same, the combination with the body of the jar, and a cover provided with a gradually-ascending surface having at its apex a depression or recess, said cover being also provided at a point intermediate its lower edge and said depression or recess with an annular bead or shoulder, of a bail pivotally connected to the body of the jar and provided with an enlarged portion adapted to be seated upon said annular shoulder or be received by said recess or depression at the apex of the cover, according to the degree of pressure which it is desired to impart to the cover.

2. In a jar-cover and fastening for the same, the combination with the body of the jar, and a cover provided with a gradually-ascending surface having at its apex a depression or recess, said cover being also provided at a point intermediate its lower edge and said depression or recess with an annular bead or shoulder, of a bail pivotally connected to the body of the jar and provided with a ball adapted to be seated upon said annular shoulder or be received by said recess or depression at the apex of the cover, according to the degree of pressure which it is desired to impart to the cover.

708,649. INSECT-REPELLENT. JOHN C. KNEELER, Milwaukee, Wis. Filed Sept. 8, 1899. Serial No. 729,803. (No specimens.)

Claim.—1. A composition of matter, consisting of fat acids of cocoanut-oil, combined with a suitable solvent, and sassafras-oil.

2. A composition of matter consisting of a solution of fat acids of cocoanut-oil, in amyl acetate, and alcohol.

3. A composition of matter consisting of a solution of fat acids of cocoanut-oil, in amyl acetate, and alcohol, and sassafras-oil.

4. A composition of matter, consisting in the combined fat acids of cocoanut-oil, in combination with a suitable solvent and sufficiently liquefied thereby to be readily distributed upon the hair or skin of an animal, substantially for the purpose set forth.

708,650. ASH-TRAY. PAUL KULICKE, Buckow, Germany. Filed Apr. 17, 1902. Serial No. 103,463. (No model.)

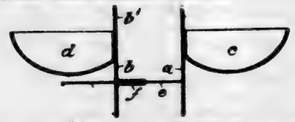

Claim.—1. An ash-tray having an adjustable cigar-support and consisting of two vertical plates forming stands and supports an adjustable connection between said plates and trays secured thereto so as to extend at opposite sides therefrom, substantially as described.

2. In an ash-tray the combination of two vertical plates cut out so as to form stands and cigar-supporting recesses, a sliding bar secured to the one plate and guided in a horizontal sleeve extending from the other

plate, means for limiting the sliding motion of said guide-bar and two trays secured to said plates, substantially as described.

708,651. KNOCKDOWN SHIPPING-CRATE. JOHN F. LAY, Louisville, Ky. Filed Nov. 26, 1901. Serial No. 83,602. (No model.)

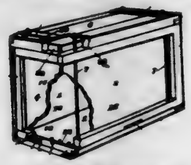

Claim.—In a knockdown crate or other box, the combination of a rabbeted bottom, rabbeted sides, a framed recessed cover, rods or bolts passing vertically through the bottom frame, side frames and cover-frame, and dowel-pins between the bottom frame and the bottom edges of the side and end frames, all substantially as and for the purposes specified.

708,652. RESERVOIR FOR DISPENSING LIQUID SOAP. ELMER LEE, New York, N. Y. Filed May 17, 1901. Serial No. 60,735. (No model.)

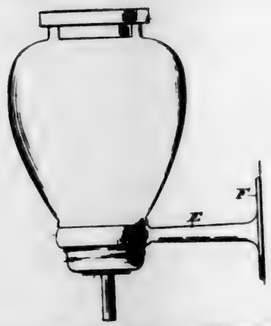

Claim.—1. A reservoir for liquid soap—said reservoir being provided with a constricted base and constructed substantially as hereinbefore described, in combination with a divided valve-casing adapted to engage the inner and outer surface of said constricted base, means for making a tight joint between the said valve-casing and the said base, and a valve operatively mounted within the divided valve-casing, all constructed and arranged substantially as shown and described.

2. A reservoir for liquid soap provided with an annular neck for filling, a constricted base adapted to be detachably secured in the ring of a supporting-bracket, in combination with a divided valve-casing adapted to engage the inner and outer surface of said constricted base, means for making a tight joint between the said valve-casing and the said base, and a valve operatively mounted within the divided valve-casing, all constructed and arranged substantially as shown and described.

3. A reservoir for liquid soap provided with an annular neck for filling, a constricted base provided with external screw-threads, in combination with a divided valve-casing adapted to engage the inner and outer surface of said constricted base, means for making a tight joint between the said valve-casing and said base, and a valve operatively mounted within the divided valve-casing, all constructed and arranged substantially as shown and described.

4. As an article of manufacture, a reservoir for liquid soap comprising a glass body constricted at its upper end to provide an annular plain neck and constricted at its lower end to provide an open base having external threads thereon, in combination with a divided valve-casing adapted to engage the inner and outer surface of said constricted base, means for making a tight joint between the said valve-casing and the said base, and a valve operatively mounted within the divided valve-casing, all constructed and arranged substantially as shown and described.

5. A reservoir for liquid soap provided with an annular neck for filling, a cover, a constricted base adapted for detachably securing in the ring of a supporting-bracket, in combination with a divided valve-casing adapted to engage the inner and outer surface of said constricted base, means for making a tight joint between the said valve-casing and the said base, and a valve operatively mounted within the divided valve-casing, all constructed and arranged substantially as shown and described.

708,653. INCANDESCENT ELECTRIC LAMP. ALBERT W. W. MILLER, South Orange, N. J., assignor to American Electric Company, a Corporation of New Jersey. Filed Oct. 17, 1901. Serial No. 79,000. (No model.)

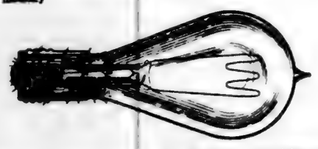

Claim.—1. An incandescent electric lamp comprising a bulb having a neck, a removable sleeve enveloping the neck, means for clamping the sleeve against endwise withdrawal from the neck, the base-terminal of the lamp and its insulating medium, the opening in the base end of the sleeve being other than circular and loosely embracing a correspondingly-shaped insulating medium to lock the sleeve against rotation.

2. An incandescent electric lamp having a neck, insulation applied at the end thereof, the base-terminal seated in or upon such insulation, a sleeve adapted to be passed endwise over the neck and means for clamping it thereupon, the base end of the sleeve being loosely interlocked with said insulation to prevent rotation of the sleeve and at the same time permit of its ready removal.

3. An incandescent electric lamp comprising a bulb having a neck, the base-terminal of the lamp, insulation in which it is seated having a raised portion of other than circular cross-section, a removable sleeve adapted to pass endwise over the neck and having an opening conforming to and embracing the raised part of said insulation and means for clamping the sleeve against endwise withdrawal from the neck.

4. An incandescent electric lamp comprising a bulb having a neck, the base-terminal of the lamp, its insulation, a removable sleeve adapted to be passed endwise over the neck and means for detachably securing it in position, said insulation and the base end of the sleeve being so formed as to loosely interlock and prevent rotation of the sleeve.

5. An incandescent electric lamp comprising a bulb having a neck, the base-terminal of the lamp, its insulation, a removable sleeve formed at its base end to interlock the said insulation to prevent rotation of the sleeve and slotted at its other end to form a number of tongues or projections and a binding-wire applied around said tongues to clamp them to the lamp.

6. An incandescent electric lamp comprising a bulb having a neck, a removable sleeve enveloping the neck, a packing interposed between the neck and sleeve, means for clamping the sleeve against endwise withdrawal from the neck, the base-terminal of the lamp and its insulating medium, the opening in the base end of the sleeve being other than circular and embracing the correspondingly-shaped insulating medium of the base-terminal to lock the sleeve against rotation.

7. An incandescent electric lamp having a neck, insulation applied at the end thereof, the base-terminal seated in or upon such insulation, a sleeve adapted to be passed endwise over the neck, means for clamping it thereupon, the base end of the sleeve being loosely interlocked with said insulation to prevent rotation of the sleeve and at the same time permit of its ready removal, and a packing interposed between the neck and sleeve.

8. An incandescent electric lamp comprising a bulb having a neck, the base-terminal of the lamp, insulation in which it is seated having a raised portion of other than circular cross-section, a removable sleeve adapted to pass endwise over the neck and having an opening conforming to and embracing the raised part of said insulation, a packing interposed between the neck and sleeve and means for clamping the sleeve against endwise withdrawal from the neck.

9. An incandescent electric lamp comprising a bulb having a neck, the base-terminal of the lamp, its insulation, a removable sleeve adapted to be passed endwise over the neck and means for clamping it in position, said insulation and the base end of the sleeve being so formed as to interlock and prevent rotation of the sleeve, and a packing interposed between the neck and sleeve.

10. An incandescent electric lamp comprising a bulb having a neck, the base-terminal of the lamp, its insulation, a removable sleeve formed at its base end to interlock with the said insulation to prevent rotation of the sleeve and slotted at its other end to form a number of tongues or projections, a binding-wire applied around said tongues to clamp them to the lamp and a packing interposed between the neck and sleeve.

11. An incandescent electric lamp comprising a bulb having a neck, an insulating-filling of cement or plaster applied at the base end of the lamp, an insulating-button seated upon said filling and having a raised boss of irregular contour in cross-section, the base-terminal of the lamp seated in said button, a sleeve adapted to be slipped over the neck and having an opening at its base end conforming to and embracing the raised boss of the button and means for clamping the sleeve upon the neck to prevent its endwise withdrawal therefrom.

12. An incandescent electric lamp comprising a bulb having a neck, an insulating-filling of cement or plaster applied at the base end of the lamp, an insulating-button seated upon said filling and having a raised boss of irregular contour in cross-section, the base-terminal of the lamp seated in said button, a sleeve adapted to be slipped over the neck and having an opening at its base end conforming to and embracing the raised boss of the button, a packing interposed between the neck and sleeve and means for clamping the sleeve upon the neck to prevent its endwise withdrawal therefrom.

708,654. BANANA-CRATE. WALTER B. MONTGOMERY, Shreveport, La., assignor of one-half to John H. Shepherd, Shreveport, La. Filed Jan. 24, 1902. Serial No. 91,107. (No model.)

Claim.—1. A banana-crate comprising a plurality of staves, hoops secured to the terminals of the staves, a sack having its ends turned over the hoops, and means for detachably clamping the sack ends against the hoops.

2. A banana-crate comprising a plurality of staves, hoops secured to the terminals of the staves, a sack having its ends turned over the hoops, clamping-bands disposed against the overturned ends of the sack, and bolts passing through the bands, sack ends and hoops and detachably secured in the staves.

3. A banana-crate comprising a plurality of staves, each provided near its terminals with an orifice, hoops secured to the terminals of the staves, a sack having its ends turned over the hoops, clamping-bands disposed against the overturned ends of the sack, bolts passing through the bands, sack ends, and hoops and having their ends projected into the said orifices, and nuts arranged in the orifices to engage the ends of the bolts.

4. A banana-crate comprising a plurality of staves provided near their terminals with orifices and transverse depressions, hoops secured to the ends of the staves, a sack having its ends clamped against the hoops, and holding-cords to engage either the orifices or depressions for securing the mouths of the sack.

5. A banana-crate comprising a plurality of staves, hoops secured to the terminals of the staves, a sack having its ends turned over the hoops and corded, clamping-bands having flanges to inclose the periphery of the hoops and engage the corded edges of the sack, and means for securing the clamping-bands to the staves.

708,655. FRICTION POWER. ANDREW R. MOORE, Charlotte, Mich., assignor of one-half to Lyman H. McCall, Charlotte, Mich. Filed May 6, 1902. Serial No. 106,206. (No model.)

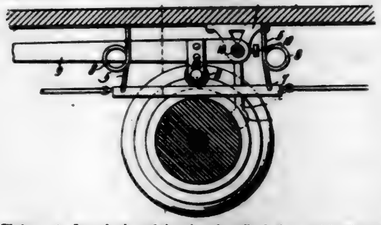

Claim.—1. In a device of the class described, the combination with a friction-wheel designed to be mounted on a car-axle, of a reciprocating block or bar arranged adjacent to the friction-wheel, springs supporting the block or bar and permitting the same to move upward and downward and backward and forward, and means for forcing the block or bar into contact with the friction-wheel, substantially as described.

2. In a device of the class described, the combination with a friction-wheel designed to be mounted on a car-axle, of a reciprocating bar located above the friction-wheel and designed to be connected with a brake, and springs suspending the block or bar normally out of contact with the friction-wheel and provided with intermediate coils, and means for forcing the block or bar into contact with the friction-wheel, substantially as described.

3. In a device of the class described, the combination with a friction-wheel, of a reciprocating brake-actuating block or bar designed to be connected with a brake and located above the friction-wheel, springs normally supporting the block or bar out of contact with the friction-wheel, and a lever located above the block or bar and provided with a roller arranged to engage the said block or bar to carry the same into engagement with the friction-wheel, substantially as described.

4. In a device of the class described, the combination with a friction-wheel, of a reciprocating brake-actuating block or bar designed to be connected with a brake and located adjacent to the friction-wheel, springs supporting the block or bar normally out of contact with the friction-wheel, a lever located adjacent to the block or bar and provided with means for engaging the same to force the block or bar against the friction-wheel, and a weighted arm connected with the lever and normally located in a vertical position and adapted to be shifted from such position when the brake is applied, substantially as described.

5. In a device of the class described, the combination with a friction-wheel, of a brake-actuating block or bar located above the friction-wheel, means for supporting the block or bar normally out of engagement with the wheel and for permitting the bar or block to move upward and downward and backward and forward, a shaft mounted above the block or bar, weighted arms depending from the shaft and normally arranged in a vertical position, an operating-bar fixed to the shaft, arms 12 arranged at opposite sides of the operating-bar and disposed at an inclination, and a roller carried by the arms 12, substantially as described.

708,656. ELECTRIC RAILWAY. THOMAS E. MURRAY and JOHN VAN VLECK, New York, N. Y. Original application filed Nov. 22, 1901, Serial No. 83,318. Divided and this application filed Feb. 26, 1902. Serial No. 95,677. (No model.)

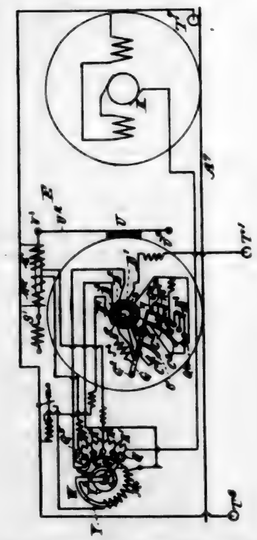

Claim.—1. In an electric railway, the combination of a track, a car, a main feeder-line, a main conductor-line divided into block-sections, and a breaker-line parallel to said conductor-line and divided into similar block-sections, a circuit-breaker interposed between one end of each main conductor-line block-section and said main feeder, and means for electrically opening said circuit-breaker interposed between the opposite end of each breaker-line block section and said main feeder, substantially as described.

2. In an electric railway, the combination of a track, a car, a main feeder-line D, a main conductor-line L′ divided into block-sections *a*, *b*, a breaker-line L^2 divided into similar block-sections *a′*, *b′*, a circuit-breaker O interposed between block-section *a* and main feeder-line D, a solenoid M^{13} interposed between block-section *b′* and said main feeder-line and operating to control said circuit-breaker, and circuit connections on said car for closing circuit between lines L′, L^2 and return, substantially as described.

3. In combination with an electric-railway car, a motor, means for varying the strength of current actuating said motor, a centrifugal governor controlling said means and having an arm eccentrically pivoted upon one of the car-wheels, substantially as described.

4. In combination with an electric-railway car, a motor, a centrifugal governor having an arm pivoted eccentrically upon one of the car-wheels and a variable resistance on said wheel in circuit with said motor, said resistance being controlled by said arm, substantially as described.

5. In combination with an electric-railway car, the governor-arm G, eccentrically pivoted on one car-wheel, a variable resistance controlled by said arm, pivoted finger F, and means for electrically vibrating the same, variable resistance controlled by said finger, and motor K and circuit connections, substantially as described.

6. In combination with a main-line conductor, a car provided with means for taking current from said conductor, an arm pivoted eccentrically on one of said car-wheels, a variable resistance controlled by said arm, and a driving-motor for said car in circuit with said resistance; whereby changes of position of said arm due to changes in centrifugal force dependent on speed of rotation of said car-wheel shall cause a variation in strength of current actuating said motor, substantially as described.

7. In an electric railway, a main-line conductor, a car provided with means for taking current from said conductor, and on said car, a driving motor, a controlling device constructed to control the current passing to said motor, means for electrically actuating said controlling device, and a centrifugal governor actuated by said car-wheel and controlling said actuating means, substantially as described.

8. In an electric railway, a main-line conductor, a car provided with means for taking current from said conductor, means on said car for varying the strength of said current, a solenoid operated by said variable current and a driving-motor on said car; the said controlling-solenoid being constructed and arranged to control the current passing to said motor, substantially as described.

9. In combination with an electric-railway car, a motor, a variable resistance in the circuit thereof, electrically-actuated means for varying said resistance, a variable resistance in the circuit of said means, and a centrifugal governor controlling said last-named resistance.

10. In combination with an electric-railway car, a motor, an electrically-actuated speed-regulator therefor, and means for cutting resistances into the circuit of said speed-regulator controlled by the speed of travel of said car.

11. In combination with an electric-railway car, a motor, an electrically-actuated speed-regulator therefor, a centrifugal governor, and a variable resistance governed and controlled by said governor and interposed in the circuit of said speed-regulator.

708,657. DREDGE. RALPH R. OSGOOD, Upper Troy, N. Y. Filed Feb. 6, 1902. Serial No. 92,982. (No model.)

Claim.—1. A dredge-boat having a turn-table foundation built integral therewith and projecting therefrom, said foundation having a well or passage within it for the hauling chain or cable, substantially as described.

2. A dredge-boat having a massive or substantial integral or built-in overhanging turn-table support, substantially as described.

3. A dredge-boat having at one end a hawser-hole below its platform or deck line, and a turn-table foundation overhanging said end and having a well extending vertically from the deck-line to a point below the hawser-hole, substantially as set forth.

4. A dredge-boat having a hawser-hole and a turn-table foundation forming a well extending some distance below the hawser-hole for the lead of a cable, substantially as and for the purpose set forth.

5. A dredge-boat having a hawser-hole located below its platform or deck line, and a well communicating at its upper end with the hawser-hole and extending continuously from a point above to a point below the hawser-hole, substantially as and for the purpose set forth.

6. A dredge-boat having a turn-table, a guide-sheave below the turn-table and directly connected thereto to turn therewith, and a hauling chain or cable guided by said sheave, substantially as set forth.

7. A dredge-boat having a hawser-hole, a turn-table foundation having a well in communication with its upper end with the hawser-hole and extending some distance below the same, a turn-table resting on said foundation, guide-sheaves located adjacent to the hawser-hole and at the lower end of the well for maintaining a cable-lead in line with the center of the table, and a hanger extending vertically through the well and carrying the lower sheave and connected at its upper end to the movable part of the turn-table.

8. A dredge-boat having a hawser-hole, a turn-table, guide-sheaves for guiding the lead of the cable to and from the hawser-hole in the central line of the turn-table, one of said sheaves being located adjacent to and the other below the hawser-hole, and means directly connecting the latter-named sheave with the turn-table to move with said turn-table, substantially as specified.

9. A dredge-boat having a hawser-hole, a turn-table foundation forming a well in communication at its upper end with the hawser-hole and extending some distance below the same, a turn-table resting on said foundation, guide-sheaves located adjacent to the hawser-hole and at the lower end for maintaining a cable-lead in line with the center of the table, means independent of the table for connecting the lower sheave to turn with the table, substantially as and for the purpose described.

10. A dredge-boat having a hawser-hole, a turn-table, a well beneath the turn-table and extending below the hawser-hole, a backing-cable extending vertically in the well and passing through the hawser-hole, a guide-sheave for the cable at the lower end of the well, and a connection through the well between the turn-table and sheave, whereby the latter is directly connected to swing with the said turn-table, substantially as described.

708,658. DREDGE. RALPH R. OSGOOD, Upper Troy, N. Y. Filed Mar. 18, 1902. Serial No. 98,303. (No model.)

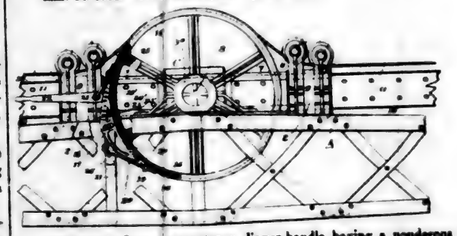

Claim.—1. In an excavator, a dipper-handle having a ponderous flaring outer end, reinforcing-plates applied to said outer end, and a dipper directly abutting said plates and detachably connected to the handle, substantially as described.

2. In an excavator, the combination with a trunnion-supported sleeve; of extensions from said sleeve comprising embracing members at the front and rear of the trunnion-sleeve and arms connecting the extensions and sleeve, the extensions thus being open between the embracing members and trunnion-sleeve, and a dipper-handle reciprocatory in said sleeve and reinforced by bolted or riveted plates, the ends of the bolts or rivets projecting and being exposed through the open portions of the extensions of the sleeve, substantially as specified.

3. In an excavator, the combination with a rectangular trunnion-supported sleeve; of rectangular extensions from said sleeve comprising boxes and angle-arms connecting said boxes with the trunnion-sleeve, a rectangular dipper-handle reciprocatory in said sleeve, plates upon the handle, and bolts or rivets connecting said plates to the handle and having projecting ends, the angle-arms serving as guides to prevent interference between the bolt or rivet ends and sleeve and boxes as the dipper-handle reciprocates, substantially as specified.

4. In an excavator, the combination with a trunnion-supported reinforcing-sleeve; of a dipper-handle reciprocatory in said sleeve, plates reinforcing the dipper-handle and secured thereto by bolts or rivets having projecting ends, and spacing means for guiding the handle through the sleeve and preventing interference between said sleeve and the projecting ends of said bolts or rivets, substantially as described.

5. In an excavator, the combination of a rectangular trunnion-supported sleeve, a rectangular dipper-handle reciprocatory in said sleeve, boxes embracing the handle on opposite sides of the sleeve, and angle-iron arms connecting the corners of the boxes with the corners of the sleeve, substantially as specified.

6. In an excavator, the combination with a dipper-handle, a dipper carried thereby, and controlling means for regulating the action of the handle and dipper; of chains or cables attached to opposite sides of the dipper, a spreader-bar spacing the outer ends of the chains and pivotally connected thereto to allow said chains to yield independently, guide-frames connected to the outer ends of the chains, followers movable in said frames, springs acting on said followers, and an attaching device connected to both followers for connecting the same with the controlling-cable, substantially as specified.

7. In an excavator, a dipper-handle having a tapered or outwardly-flaring outer end, plates reinforcing the handle, a dipper the walls of which

aline with said plates, and metallic straps or plates detachably connecting the dipper with the said tapered end of the handle, substantially as specified.

8. In an excavator, a dipper-handle, tapered pieces giving a flaring formation to the outer end of the dipper-handle, plates reinforcing the handle, a dipper the wall of the shell of which alines with said plates, bridge-plates overlapping the dipper and reinforcing-plates, and bolts or rivets securing said bridge-plates to the dipper, handle and reinforcing-plates, substantially as described.

9. In an excavator, the combination with a dipper-handle, a dipper carried thereby, and a hoisting-chain; of yielding connections between the sides of the dipper and said hoisting-chain, substantially as specified.

10. In an excavator, the combination with a dipper-handle, a dipper carried thereby, and a hoisting-chain; of yielding connections between the sides of the dipper and said hoisting-chain, and a spreader spacing said connections, substantially as set forth.

11. In an excavator, the combination with a dipper-handle, a dipper carried thereby, and a hoisting-chain; of suspending chains or cables attached to opposite sides of the dipper, a spreader spacing the suspending-chains, and means for connecting the suspending-chains to the hoisting-chain, substantially as and for the purpose described.

12. In an excavator, the combination with a dipper-handle, a dipper carried thereby, and a hoisting-cable; of suspending chains or cables attached to opposite sides of the dipper, a spreader spacing the suspending-chains, means for connecting the suspending-chains to the hoisting-chain, guide-frames connected to the suspending-chains, followers attached to said connecting means, and springs in said frames acting on the followers and adapted to allow either side of the dipper to yield without throwing undue strain on the handle, substantially as described.

13. In an excavator, the combination with a trunnion-supported sleeve, a dipper-handle reciprocatory therein, and means for oscillating said handle; of a winding-drum, cables operatively connecting the drum with the dipper-handle near its opposite ends, a band-wheel fixed to the drum and having a friction-surface, a friction-band adapted to engage said surface but held from rotating with the wheel, and a lever operatively connected with the ends of the band for moving the same into and out of engagement with said friction-surface, substantially as set forth.

14. In an excavator, the combination with a trunnion-supported sleeve, a dipper-handle reciprocatory therein, and means for oscillating said handle; of a winding-drum, cables operatively connecting the drum with the dipper-handle near its opposite ends, a band-wheel fixed to the drum and having a friction-surface, a friction-band adapted to engage said surface but held from rotating with the wheel, an operating-lever connected with one end of the band, and means for adjustably connecting the lever with the opposite end of the band, substantially as and for the purpose set forth.

15. In an excavator, the combination with a boom, a trunnion-supported sleeve thereon, a dipper-handle reciprocatory in said sleeve, and means for oscillating said handle; of a drum having connected thereto cables operatively connected to the dipper-handle near its opposite ends, a band-wheel fixed to the drum and provided with a friction-surface, a friction-band adapted to engage said surface, a block having a slot-and-pin connection with the boom and connected to the band, and a lever operatively connected to the ends of the band for moving the same into and out of engagement with said friction-surface, substantially as set forth.

16. In an excavator, the combination with a boom, a trunnion-supported sleeve thereon, a dipper-handle reciprocatory in said sleeve, and means for oscillating said handle; of a drum having connected thereto cables operatively connected to the dipper-handle near its opposite ends, a band-wheel fixed to the drum and provided with a friction-surface, a friction-band adapted to engage said surface, a block having a slot-and-pin connection with the boom and connected to one end of the band, said block forming a brake-shoe, and an operating-lever connected to the opposite ends of the block and band, substantially as and for the purpose specified.

708,659. SODA-WATER-DISPENSING FOUNTAIN. MORRIS H. PERSON, New York, N. Y. Filed Sept. 16, 1901. Serial No. 75,454. (No model.)

Claim.—1. The combination of a drawer; a vessel located therein having an orifice; a valve effective to close said orifice; a lever pivoted to the front of the drawer and effective to raise the valve; and means comprising a crank and pitman operable from the outside of the drawer to actuate said lever.

2. The combination of a drawer; a vessel located therein having an orifice; a valve effective to close said orifice; a lever pivoted to the front of the drawer and effective to raise the valve; means comprising a crank and pitman operable from the outside of the drawer to actuate said lever; and means for automatically seating said valve.

3. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted at one end to a relatively fixed support and carrying at the other end a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; and means connecting the pitman to said lever.

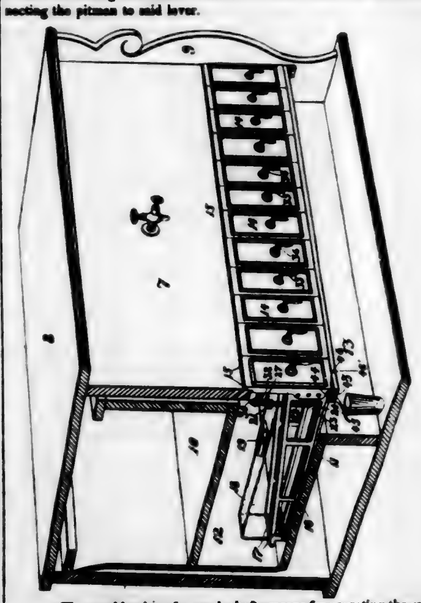

4. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted at one end to a relatively fixed support and carrying at the other end a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; and means comprising a link connecting the pitman to said lever.

5. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted at one end to a relatively fixed support and carrying at the other end a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; means connecting the pitman to said lever; and means for seating the valve.

6. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted at one end to a relatively fixed support and carrying at the other end a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; means comprising a link connecting the pitman to said lever; and means for seating the valve.

7. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted at one end to a relatively fixed support and carrying at the other end a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; means connecting the pitman to said lever; and a spring secured at one end to a fixed part and at the other end to the pivot connecting the crank and pitman and effective to return the same to normal position.

8. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted to a relatively fixed support and carrying a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; means comprising a link connecting the pitman to said lever; and a spring secured to a fixed part and to the pivot connecting the crank and pitman and effective to return the same to its normal position.

9. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted to a relatively fixed support and carrying a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; means connecting the pitman to said lever; and detents controlling the extent of oscillation of the crank-shaft.

10. The combination of a crank-shaft; means for operating the same;

a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted to a relatively fixed support and carrying a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; means comprising a link connecting the pitman to said lever; a spring secured to a fixed part and to the pivot connecting the crank and pitman and effective to return the same to its normal position; and detents carried by the crank and effective to engage the pitman to limit the oscillation of the crank-shaft.

11. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted to a relatively fixed support; means connecting the pitman to said lever; a valve-stem carried by said lever; means for locking the valve-stem to the lever; a jar having an orifice; and a valve connected to said stem for closing said orifice.

12. The combination of a crank-shaft; means for operating the same; a crank mounted thereon; a pitman pivoted thereto; a lever mounted above said crank-shaft and pivoted to a relatively fixed support and carrying a valve-stem; a jar having an orifice; a valve for closing said orifice connected to said stem; means connecting the pitman to said lever; and means embodying a hook for locking the valve-stem to a pin on the lever.

13. The combination of a jar having an orifice; a valve therefor; a valve-stem connected to the valve at one end and having its other end slotted; a pin crossing said slot; means including a lever for actuating said valve-stem and adapted to be embraced by said slot and pin; a lug on the lever; a hook carried by the stem and adapted to secure the lever and stem; and a handle for actuating the hook and organized in such relation to the valve-stem that on the hook engaging the lug the handle will spring past the side of the stem and thereby maintain the hook in position.

14. In a soda-water fountain, a valve effective to control the emission of syrup, &c.; a two-part valve-stem one part of which is secured to the valve, the other part of which has a screw-threaded connection therewith and provided with a bifurcated end; means comprising a lever received in such bifurcated end for actuating the valve; and means comprising a hook for locking the valve-stem to the actuating-lever.

708,660. PICKLING AND SWILLING APPARATUS. JAMES R. PHILLIPS, Pittsburg, Pa., assignor to the American Tin Plate Company, Pittsburg, Pa., a Corporation of New Jersey. Filed July 10, 1901. Serial No. 67,779. (No model.)

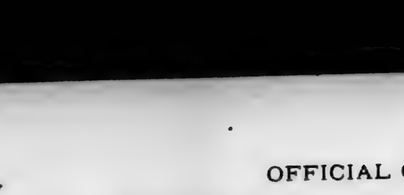

Claim.—1. A pickling-trough having a series of feed-rolls of acid-proof material located therein, and mechanism for brushing the plates as they pass through said rolls; substantially as described.

2. A pickling-trough having feed-rolls of acid-proof material therein, and brushing-rollers located between the feed-rollers and arranged to brush the faces of the sheets while fed along by the feed-rollers; substantially as described.

3. A pickling-tank having feed-rollers arranged in pairs therein to feed the sheets successively through the vat, brushing-rollers arranged to act upon the sheets during the pickling operation, and mechanism for driving the brush-rollers at a higher rate of speed than the feed-rollers; substantially as described.

4. A pickling-trough having a swilling-trough arranged in tandem therewith, rollers arranged to feed the sheets successively through both troughs, and brushing-rollers in both troughs having driving mechanism arranged to rotate them at a higher rate of speed than the feed-rollers; substantially as described.

5. A pickling-trough having brush-rollers arranged to act simultaneously upon the upper and lower faces of the sheet, said rollers having projecting plugs of a yielding material substantially as described.

708,661. DEVICE FOR FORMING ACCENTS ON LINOTYPES. JOSEPH PEIRS, Altrincham, England, assignor to the Linotype Company, Limited, London, England. Filed June 14, 1902. Serial No. 111,966. (No model.)

Claim.—1. In a device for forming accents on linotypes the combination of a base-plate, a gripper-jaw fast to the base-plate on one side of the site for the linotype, a movable gripper-jaw adjustable on the base-plate, on the other side of the said site, a lever pivoted to the base and movable jaw for adjusting the latter, a matrix on the movable gripper-jaw overhanging the site of the printing edge of the linotype, a lever pivoted to the movable gripper-jaw with its operative end movable adjacent to the site of the linotype, and a tool on the operative end of the said lever substantially as set forth.

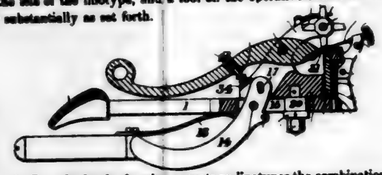

2. In a device for forming accents on linotypes the combination with relatively movable jaws of a linotype-gripper, of a matrix on one jaw overhanging the site for the linotype, a lever pivoted to the said jaw with its operative end movable adjacent to the said site, and a tool on the operative end of the lever, substantially as set forth.

3. In a device for forming accents on linotypes, the combination with a base-plate and a gripper-jaw fast to the base-plate, of a second gripper-jaw adjustable on the base-plate toward and away from the fixed jaw, a lever operatively connected to both the base-plate and movable gripper-jaw, a retracting-spring for the movable jaw, a lever in pivotal connection with the movable jaw, with its operative end movable adjacent to the site of the linotype, a tool on the said operative end, a retracting-spring for the last-named lever, and a matrix overhanging the site of the printing edge of the linotype substantially as set forth.

4. In a device for forming accents on linotypes, the combination with relatively movable jaws of a linotype-gripper of a matrix overhanging the site for the printing edge of the linotype, a lever pivoted to one of the gripper-jaws, with its operative end movable adjacent to the site of the linotype, a tool on said operative end and an indicator for the linotype adjustable on the gripper-jaw substantially as set forth.

5. In a device for forming accents on linotypes, the combination with a gripper for the linotype, of a boss pivoted to the gripper over the site of the linotype, a plurality of matrices on the boss, a lever pivoted to the gripper with its operative end movable adjacent to the above-named site, and a tool on the operative end of the lever substantially as set forth.

6. In a device for forming accents on linotypes, the combination with a gripper for the linotype, of a boss pivoted to the gripper over the site of the linotype, a plurality of matrices on the boss, a detent for the matrices adjustable on the gripper, a lever pivoted to the gripper with its operative end movable adjacent to the above-named site, a tool on the said operative end, and an indicator for the linotype adjustable on the gripper, substantially as set forth.

7. In a device for forming accents on linotypes, the combination with a base-plate, a gripper-jaw fast to the base-plate, and a second gripper-jaw movable on the base-plate, of a matrix mounted on the movable jaw and overhanging the site of the linotype, a lever in pivotal connection with the movable jaw, with its operative end movable adjacent to the said site, a tool on this operative end, a groove in the base-plate adjacent to the fixed jaw, a shelf on the base-plate between the groove and the fixed jaw and a spring on the fixed jaw to push the linotypes off the shelf substantially as set forth.

8. In a device for forming accents on linotypes, the combination with a gripper for the linotype, of a matrix on the gripper over the site for the linotype, a pivot in the gripper, a block on the pivot, a lever rocking on the pivot and adjustable on the said block with its operative end movable adjacent to the said site and a tool on the operative end of the lever substantially as set forth.

9. In a device for forming accents on linotypes, the combination with a gripper for the linotype, of a matrix on the gripper, over the site for the linotype, a lever pivoted to the gripper with its operative end movable adjacent to the said site, a tool on the operative end of the lever, a stop adjustable on the lever with its effective end adjacent to the tool, and adjusting devices for the stop substantially as set forth.

10. In a device for forming accents on linotypes, the combination with a gripper for the linotype, of a matrix on the gripper over the site for the linotype, a pivot in the gripper, a block on the pivot, a lever rocking on the pivot and adjustable on the said block with its operative end movable adjacent to the said site, a tool on the operative end of the lever, a stop adjustable on the lever with its effective end adjacent to the tool, and adjusting devices for the stop substantially as set forth.

708,662. BLUE SULFUR DYE AND PROCESS OF MAKING SAME. ALBERT F. FOERSTER, Paris, France, assignor to Ste. Anon des Matières Colorantes et Produits Chimiques de St. Denis, Paris, France. Filed Mar. 28, 1901. Serial No. 53,519. (No specimens.)

Claim.—1. The herein-described process of producing coloring-matter consisting in treating a solution of an indophenol and sodium sulfid, with the product resulting from the action of chlorid of sulfur on phenols.

2. The herein-described process of producing coloring-matter consisting in oxidizing a mixture of paraphenylenediamin and a phenol, forming a solution of the indophenol thus obtained with sodium sulfid, and then treating said solution with the product resulting from the action of chlorid of sulfur on phenols.

3. The described coloring-matter obtained by oxidizing a mixture of paraphenylenediamin and a phenol, forming a solution of the indophenol thus obtained with sodium sulfid, and then treating said solution with the product resulting from the action of chlorid of sulfur on phenols, the said coloring-matter being black in appearance, very soluble in water giving a blue solution from which it is completely precipitated by acids, the precipitate being soluble in soda and especially in alkali sulfids, and solutions thereof in alkali sulfids or water dyeing unmordanted cotton in blue tints of high resistance.

708,663. INCLINED ELEVATOR. JAMES W. RENO, New York, N. Y. Filed Feb. 20, 1902. Serial No. 95,004. (No model.)

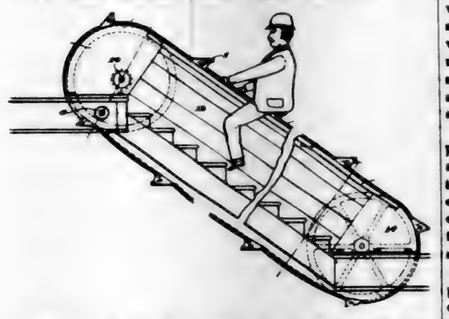

Claim.—1. In an inclined elevator, the combination with an inclined support, of an endless chain adapted to travel on said support, and seats secured to said chain.

2. In an inclined elevator, the combination with an inclined support, guide-sheaves located at the upper and lower ends of said support, an endless chain adapted to travel upon said support and around said guide-sheaves, and seats secured at intervals to said chain.

3. In an inclined elevator, the combination with an inclined support, guide-sheaves located at the upper and lower ends of said support, an endless chain adapted to travel upon said support and around said guide-sheaves, seats secured at intervals to said chain and a loose flexible connection between said seats independent of said chain.

4. In an inclined elevator, the combination with an inclined support and guide-sheaves located at either end of said support, of an endless chain adapted to travel upon said support and around said guide-sheaves, seats provided with hinged connections to said chain at their front ends and a roller-support to the rear of said hinged connections.

5. In an inclined elevator, the combination with an inclined support and guide-sheaves located at either end of said support, of an endless chain, a track for said chain, seats having hinged connections to said chain at their forward ends, a roller-support to the rear of said hinged connections, an independent track for said roller-support, whereby said seats may be maintained in a horizontal position.

6. In an inclined elevator, the combination with a stairway and its banister of a track upon said banister, an endless chain adapted to operate upon said track and seats secured to said endless chain.

7. In an inclined elevator, the combination with a stairway and banister of a track upon said banister centrally located, an endless chain adapted to travel upon said track, seats having hinged connections to said chain, bearing-rollers mounted under said seats, and independent tracks upon said banister for said bearing-rollers.

708,664. COMMUTATOR-BRUSH HOLDER. WALTER J. RICHARDS, Milwaukee, Wis. Filed Jan. 20, 1902. Serial No. 90,473. (No model.)

Claim.—1. In a commutator-brush holder the combination of a bearing-plate, means for pressing the brush endwise against the commutator, an arm extending over the outer end of said plate and adapted to bear at its free end against the face of the brush opposite said plate and to hold the same against said plate, substantially as described.

2. In a commutator-brush holder the combination of a bearing-plate, a pivoted arm adapted to bear against the outer end of the brush, a spring tending to press said arm against the end of the brush, a spring tending to press the brush endwise against the commutator, and another arm extending over the outer end of said plate and provided with a spring adapted to press and hold said brush against said plate, substantially as described.

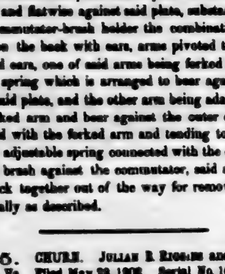

3. In a commutator-brush holder the combination of a plate against which one side of a brush is adapted to bear and slide, a pivoted arm adapted to bear against the outer end of the brush, a spring connected with said arm and adapted to press the brush endwise against the commutator, another movable arm extending normally over the outer end of said plate and bearing against the face of the brush opposite said plate, and a spring arranged to act on the latter arm and to hold the brush against said plate, substantially as described.

4. In a commutator-brush holder the combination with a bearing-plate, of a pivoted arm adapted to bear against the outer end of the brush, a spring acting on said arm and tending to press the brush endwise against the commutator, another pivoted arm extending normally over the outer end of said plate and provided at its free end with a spring which is adapted to bear against the face of the brush opposite said plate, and a spring tending to hold the latter arm in working position, substantially as described.

5. In a commutator-brush holder the combination of a bearing-plate provided on the back with ears, an arm pivoted on a pin between said ears and adapted to bear against the outer end of the brush, a spring adapted to act upon said arm and press the brush against the commutator, another arm pivoted on the same pin and provided with a spring which is adapted to hold the brush flatwise with yielding pressure against said plate, and means for holding said arm in working position, substantially as described.

6. In a commutator-brush holder the combination with a bearing-plate, a pivoted arm adapted to bear against the outer end of the brush, a spring connected with said arm and adapted to press the brush against the commutator, another pivoted arm adapted to bear against the face of the brush opposite said plate, and a spring connected with the last-mentioned arm and adapted to hold the brush with yielding pressure against said plate and to permit said arm to be turned back out of the way for removing or replacing a brush in the holder, substantially as described.

7. In a commutator-brush holder the combination with a bearing-plate, of two arms pivoted concentrically with each other to said plate, one of said arms being adapted to bear against the outer end of the brush and the other arm being provided with a spring which is adapted to bear against the side of the brush opposite said plate, and springs tending to swing said arms toward said plate and to press the brush endwise against the commutator and flatwise against said plate, substantially as described.

8. In a commutator-brush holder the combination with a bearing-plate provided on the back with ears, arms pivoted together on a cross-pin between said ears, one of said arms being forked and provided at its free end with a spring which is arranged to bear against the face of the brush opposite said plate, and the other arm being adapted to pass loosely through the forked arm and bear against the outer end of the brush, a spring connected with the forked arm and tending to hold it in working position, and an adjustable spring connected with the other arm and tending to press the brush against the commutator, said arms being adapted to be turned back together out of the way for removing or replacing a brush, substantially as described.

708,665. CHURN. JULIAN B. RIGGINS and HERBERT GORDAN, Clarksville, Va. Filed May 28, 1902. Serial No. 109,593. (No model.)

Claim.—In a churn, a supporting-frame, a churn-body carried thereby and having a reciprocating dasher, rearwardly-projecting bearing-brackets fixed to said supporting-frame, a transversely-disposed horizontal shaft journaled in bearings adjustably mounted in said bearing-brackets, a fan fixed to said shaft, a shelf or bracket carried by the supporting-frame, a casing slidably mounted upon said shelf and inclosing said fan, and having discharge-openings arranged to direct a blast of air upon the top of

the sleeve, and gearing for reciprocating the dasher-shaft and driving the fan-shaft, substantially as described.

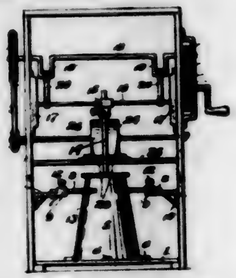

708,666. HAT-HOOK. JOSEPH ROSENBERG, New York, N. Y. Filed Apr. 9, 1902. Serial No. 101,999. (No model.)

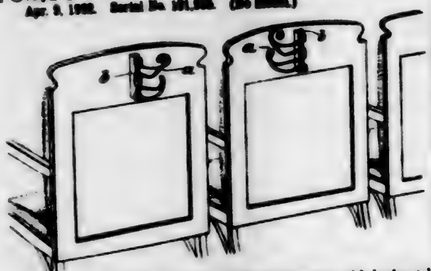

Claim.—1. A folding hat-hook, having elastic arms with horizontal portions and vertical pintles at their ends, and a securing-bracket provided with upper and lower vertical bearings to receive the pintles, said bearings being notched on their opposite ends to receive the horizontal portions of the elastic arms and hold the hook either in its folded or extended position.

2. A folding hat-hook, consisting of a hook having elastic arms with horizontal portions and vertical pintles at their ends, and an intermediate pivotal portion between the arms and in line with the pintles, and a securing-bracket having upper and lower vertical bearings to receive the pintles, and a central bearing for the intermediate pivotal portion of the hook.

3. A folding hat-hook, consisting of a single piece of wire bent into the form of a duplex hook, having elastic arms with horizontal portions and vertical pintles at their ends, the pintles of the upper and lower hooks extending in opposite directions, and a securing-bracket having upper and lower vertical bearings to receive the pintles, and a central bearing through which the intermediate pivotal portion of the hook between its arms passes.

708,667. CORKSCREW. RICHARD ZIEBELLS, Westerly, R. I. Filed Sept. 20, 1901. Serial No. 75,603. (No model.)

Claim.—1. A corkscrew, having a shank portion, a sleeve surrounding the corkscrew and designed to engage with a cork, a spring surrounding the sleeve, said spring being secured at its lower end to the sleeve, a connection between the upper end of the spring and the corkscrew, and a bar arranged transversely in the sleeve for engaging the screw, substantially as specified.

2. A corkscrew, a sleeve surrounding the corkscrew and having points or pins at its lower end, a rod extended transversely in said sleeve and at one side of its axial center for engaging with the screw, a ring through which the sleeve is movable, a spring surrounding the sleeve and connected thereto at its lower end, the upper portion of the spring being connected to the ring, an eye portion on the upper end of the spring, and a rod carried on the shank of the corkscrew and engaging in said eye, substantially as specified.

3. A corkscrew, a sleeve surrounding the corkscrew and having a flange at its lower end, pin-points on said flange, a cross-rod in the sleeve for engaging with the screw, a ring through which the sleeve is movable, a spring surrounding the sleeve and connected at its lower end to said flange and at its upper portion to the ring, the upper coil of said spring being turned outward to form an eye, a cross-head on the shank of the corkscrew, and a rod depending from said cross-head and engaging in said eye, substantially as specified.

708,668. OVERSHOE FOR HORSES. FREDERICK SMEDBERG, New York, N. Y. Filed Jan. 16, 1902. Serial No. 90,018. (No model.)

Claim.—1. An overshoe for horses consisting of an upper of leather shaped to fit the hoof and provided with fastening means, a sole of thick felt flexible material secured to said upper, and a metallic shield and stiffener comprising a sole-plate and an upper-plate having a lateral flange interposed between the said upper and sole and means passed through said flange and sole for securing the parts together, as set forth.

2. An overshoe for horses consisting of a thick sole of felt adapted for direct contact with the ground, an upper of leather to which said sole is secured, and an interposed reinforcing-stiffener resting upon said sole and against the front portion of the upper and having a lateral flange with means securing said upper and sole to the flange, said stiffener serving the double function of reinforcing the upper and sustaining the same and preventing penetration of and injury to the felt sole by the metallic shoe of the animal, as set forth.

708,669. APPARATUS FOR RAISING LIQUIDS BY MEANS OF STEAM OR COMPRESSED AIR. ALBERT SCHOLL, Mannheim, Germany. Filed Jan. 27, 1902. Serial No. 91,457. (No model.)

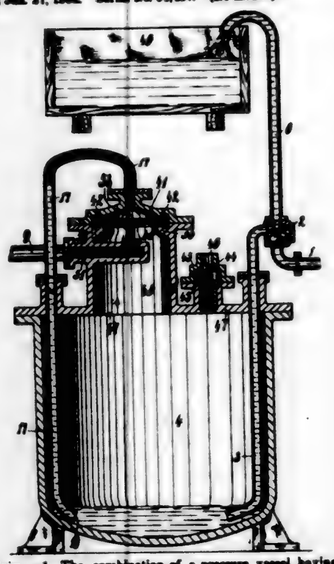

Claim.—1. The combination of a pressure vessel having a compressed-air space at its upper part and inlets for liquid and compressed fluid and an outlet for the liquid to be raised, a stand-pipe extending into said vessel and in communication with said air-space, a valve in said compressed-fluid inlet a valve-plate rigidly connected with said valve and adapted to close communication between said stand-pipe and air-space and opening the compressed-fluid valve on overpressure existing in the vessel, and means for putting the pressure vessel into communication with the atmosphere on cessation of overpressure therein, substantially as described for the purpose set forth.

2. The combination of a pressure vessel having a compressed-air space at its upper part, a stand-pipe extending at one end into said vessel and in communication at the other end with said air-space, an inlet-pipe for liquid, an inlet-nozzle for compressed fluid, a valve in said nozzle, a valve-plate rigidly connected with said valve and adapted to close communication between the stand-pipe and air-space and open the compressed-fluid valve on overpressure existing in the vessel, an outlet-pipe for the liquid to be raised, and means for putting said vessel into communication with the atmosphere on cessation of overpressure therein, substantially as described for the purpose set forth.

3. The combination of a pressure vessel having a flat cover and a compressed-air space at its upper part, a stand-pipe extending into said vessel and in communication with said air-space, an inlet-pipe for liquid, an inlet-nozzle for compressed fluid, a valve in said nozzle, a valve-plate rigidly connected with said valve and adapted to close communication between said stand-pipe and air-space, and open the compressed-fluid valve on overpressure existing in the vessel, an outlet-pipe for the liquid to be raised and an exhaust-valve in said cover adapted to put the pressure vessel into communication with the atmosphere on cessation of overpressure in said vessel, substantially as described for the purpose set forth.

4. The combination of a pressure vessel having a flat cover and a compressed-air space at its upper part, a stand-pipe extending below to near the bottom of said vessel and in communication above with said air-space, an inlet-pipe for liquid, an antireturn-valve in said pipe, an inlet-nozzle for compressed fluid, a valve in said nozzle, a valve-plate rigidly connected with said valve and adapted to close communication between said stand-pipe and air-space and open the compressed-fluid valve on overpressure existing in the vessel, an outlet-pipe for the liquid to be raised and an exhaust-valve adapted to be closed by the liquid and to put the pressure vessel into communication with the atmosphere on cessation of overpressure in said vessel substantially as described, for the purpose set forth.

708,670. LADDER. CHARLES R. SEE, Charlevoix, Mich. Filed Jan. 18, 1902. Serial No. 90,344. (No model.)

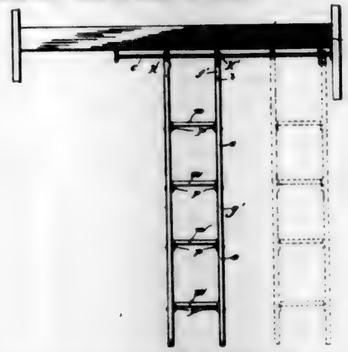

Claim.—1. The combination with the foldable stringers, and the broad steps pivoted thereto, of the berth track-bar, the runner connections of the inner stringers, and means for holding the outer stringers in folded position and in fixed relation to the end of the berth, substantially as specified.

2. The combination with a berth track-bar, and adjustable collapsing stairs having runner connections with said track-bar, of means for holding the stairs in collapsed or folded position and in fixed relation to the track-bar, substantially as specified.

3. A collapsible step-ladder consisting of the outer and inner pairs of stringers or side bars having the steps pivotally connected thereto, said outer pair of stringers being arranged to rest upon the floor of the room, when lowered, and a catch device for holding said outer pair of stringers in raised position, substantially as specified.

708,671. ANTISEPTIC ATTACHMENT FOR TELEPHONE-MOUTHPIECES. HENRY C. SMITH and MARK H. WOOLSEY, San Francisco, Cal. Filed Feb. 24, 1902. Serial No. 95,448. (No model.)

Claim.—1. The combination with a telephone-mouthpiece of a cap containing an interior filling of porous or absorbent material saturated with a sterilizing substance, and divergent spring-arms embracing the mouthpiece one of said arms forming a hinge member for one edge of the cap and the other member having a latch to engage the opposite edge of said cap.

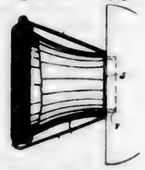

2. The combination with a telephone-mouthpiece of a cap fitting over the outer end of the mouthpiece having the interior lined with an absorbent saturated material, a plate having a central hole through which the screw-threaded end of the mouthpiece passes so that the shoulder of the mouthpiece will lock the plate in position, divergent arms extending outwardly upon each side of the mouthpiece, one of said arms carrying a hinged member to which the cap is connected, and the other being elastic and provided at its free end with a latching device whereby the cap is retained in position between the free ends of the arms in closed position upon the mouthpiece.

3. The combination with a telephone-mouthpiece of a perforated plate through which the screw-threaded end of the mouthpiece passes and by which it is secured to the case, divergent arms extending outwardly upon each side of the mouthpiece, one of said arms carrying a hinged member and the other being elastic and having, at its free end, a latching device, a cap confined between the free ends of the arms and having the other hinged member upon one edge and a catch upon the opposite side to engage with the latch, said cap having an interior cavity hooking over the mouthpiece when closed, and an absorbent material fitted therein adapted to close against the periphery of the mouthpiece.

708,672. SHUTTLE-GUIDE FOR WEFT-REPLENISHING LOOMS. ALFRED R. STAFFORD, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed May 10, 1902. Serial No. 106,735. (No model.)

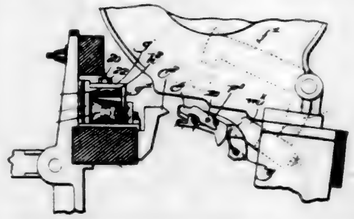

Claim.—1. In a loom, the lay, a shuttle-box thereon, and a depending shuttle-guide beyond and near the mouth of the box, leaving a clearance between the race of the lay and the lower edge of the guide, the inner face of the latter being located in the plane of the inner face of the front wall of the box.

2. In a loom, the lay, a shuttle-box thereon, comprising front and back walls and a top plate, and a depending shuttle-guide mounted on the latter near and beyond the mouth of the shuttle-box, the inner face of said guide being in the plane of the inner face of the front wall of the box, a clearance being left between the front wall and the guide, and between the lower edge of the latter and the race of the lay.

3. In a loom, the lay, a shuttle-box thereon having the inner end of its top plate extended beyond the mouth of the box and above the shuttle-path, and a shuttle-guide rigidly mounted on such extension, and depending therefrom beyond the mouth of the box, to direct the shuttle as it leaves the box.

4. In a loom, the lay, a shuttle-box thereon, a top plate therefor extended beyond the mouth of the box and provided at the top of the extension with a seat, and a shuttle-guide secured to the seat and depending therefrom in alinement with the front wall of the box beyond the latter, an unobstructed thread-passage being left between the lower edge of the guide and the race of the lay.

5. In a loom provided with automatic filling-replenishing mechanism, the lay, a shuttle-box thereon, a shuttle-feeler movable into operative position across the mouth of the replenishing-box when a change of filling is to be effected, and a depending shuttle-guide fixedly mounted near the mouth of such box beyond the feeler-path, to direct the shuttle as it leaves the box, an open thread-passage being left between the lower edge of the said guide and the race of the lay.

6. In a loom provided with automatic filling-replenishing mechanism, the lay, a shuttle-box thereon, the beat wall and top plate whereof are extended beyond the mouth of the box, to direct the shuttle at its back and top as it leaves the box; a shuttle-fender movable across the mouth of the shuttle-box when a change of filling is to be effected, and a shuttle-guide mounted on the extension of the top plate and depending toward, but not to, the race of the lay, said guide being in alinement with the front box-wall and beyond the path of the fender, to direct the shuttle at its front side when leaving the box.

708,673. BUTTON. FREDERICK R. STANLEY, Waterbury, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn., a Corporation of Connecticut. Filed Aug. 15, 1901. Serial No. 72,183. (No model.)

Claim.—1. A bar-button, having a hub, and a bar of less length than the internal diameter of the hub arranged in the bottom of said hub, and lateral indentations in the hub overlying and embracing the ends of the bar and restraining it against vertical and lateral displacement.

2. A bar-button, having a bar of less length than the internal diameter of the hub, and lateral indentations in the hub overlying and embracing the ends of the bar, the said indentations being substantially concentric with the circumference of the bar.

708,674. CORN-PLANTER AND FERTILIZER-DISTRIBUTER. JOHN W. STEVENS, Lonaconing, Va. Filed Dec. 12, 1901. Serial No. 85,681. (No model.)

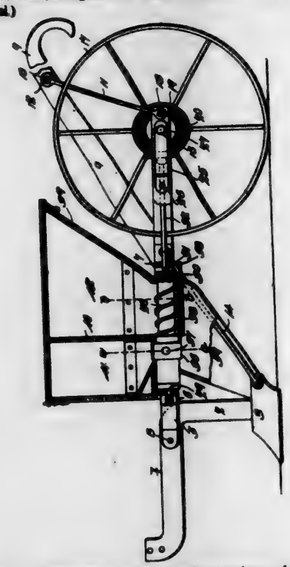

Claim.—1. In a planter, a frame having bearings, a hopper on said frame, a roller coacting with the hopper to discharge material therefrom, said roller having a trunnion at one end journaled in one of said bearings and having a socket in its opposite end, a longitudinally-movable shaft 32, journaled in the other bearings and having one end detachably connected to said socket, a traction-wheel, a gear revolved thereby and a gear on said shaft 32 and engaging said first-mentioned gear, substantially as described.

2. In a planter, the combination of a frame, a hopper, a removable element, coacting therewith to discharge material therefrom, said element having a projecting shaft, a shiftable pinion on said shaft, a longitudinally-shiftable shaft 16, disposed transversely with reference to and journaled in bearings in the frame, a traction-wheel and a gear, rotated thereby and adapted to be moved into and out of engagement with the pinion by shifting said shaft 16, said gear having concentric series of gear elements to respectively engage said pinion and thereby vary the speed of said revolvable element and means to lock said shaft 16 when shifted, substantially as described.

3. In a planter, the combination of a frame, a hopper detachably secured thereto, a revolvable roller having one end journaled in a bearing in the frame, a shaft, detachably connected to the opposite end of said roller, bearings for said shaft, a traction-wheel, and means to convey power therefrom to said shaft, substantially as described.

708,675. DEVICE FOR THE MANUFACTURE OF PHOTOGRAPHIC CARD-MOUNTS. PAUL J. STUPARICH, San Francisco, Cal. Filed Jan. 20, 1902. Serial No. 90,477. (No model.)

Claim.—A device for simultaneously punching and embossing photographic mounts, consisting of a stationary die having a plain surface, and a central opening, a reciprocating block having its lower end turned down to form a punch which fits said opening, and a removable embossing-ring embracing the punch and resting against the shoulder of said turned-down portion of the block.

708,676. HARNESS ATTACHMENT. JOSEPH T. SUEDADOR, Arbuckle, Cal. Filed Feb. 6, 1902. Serial No. 92,881. (No model.)

Claim.—In a harness attachment and in combination with a strap and a fastening device carried thereby, a retainer for said device consisting of a metal plate between the layers of the strap said plate of less width than the strap and bent at its center and the members brought together to lie one on the other in direct contact, and concealed from view by stitching the edges of the layers together, and a rivet passing through the ends of the plate and the strap and securing the parts substantially as herein described.

708,677. WITHDRAWN.

708,678. WITHDRAWN.

708,679. WIRE-FABRIC MACHINE. THOMAS SUTHERLAND, Hutchinson, Minn. Filed Mar. 22, 1902. Serial No. 99,409. (No model.)

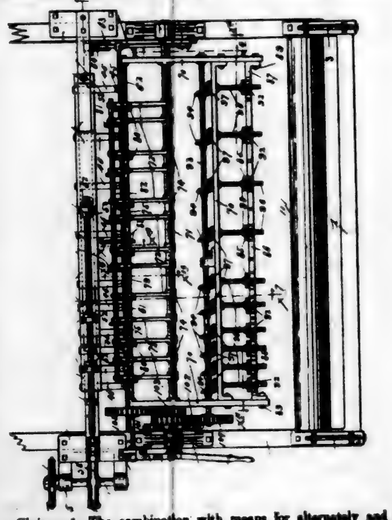

Claim.—1. The combination with means for alternately and reversely lapping the line-wires and twisting the same together to form stays, of means for moving the fabric to draw out the line-wires, and means for twisting together the adjacent line-wires of the several sections of the fabric, to form cables thereof and connect the said fabric-sections.

2. The combination with a plurality of wire-delivery shuttles or guides working in reversely-movable pairs to lap the line-wires, of stay-twisters operating to twist together the lapped section, to form stays thereof, means for intermittently moving the fabric to draw out the line-wires, and line-twisters arranged to twist together the line-wires between the stays, to form a cable thereof and bind together the sections of the fabric.

3. The combination with wire-delivery shuttles or guides, of a plurality of stay-twisters operative on the transverse sections of the incomplete fabric, to form the stays thereof, and a plurality of line-twisters operating to twist together adjacent line-wires between the stays, to form cables thereof and bind together the sections of the fabric.

4. The combination with wire-delivery shuttles or guides, of an oscillating frame, a series of stay-twisters and a series of line-twisters mounted on said frame and carried in reverse directions, to and from operative positions, under the movements of said frame, and means for driving the said twisters, to twist the stay and line sections of the fabric, substantially as described.

5. The combination with reciprocating wire-delivery shuttles or guides working in reversely-movable pairs to lap the line-wires, of corner-pins over which the wires are bent, stay-twisters operating to twist together the lapped sections of the wires, to form stays thereof, means for intermittently moving the fabric to draw out the line-wires, and line-twisters arranged to twist together the adjacent line-wires between the stays, to bind together the sections of the fabric, substantially as described.

6. The combination with a pair of reversely-reciprocating wire-delivery shuttles or guides, of a pair of coöperating corner-pins over which the wires are bent, under the movements of said shuttles, to overlap the line-wires, stay-twisters for twisting together the overlapped sections of the wires, means for moving the fabric to draw out the line-wires, and means for causing said stays and corner-pins to clear each other, under the movement of the fabric.

7. The combination with a pair of reversely-reciprocating wire-delivery shuttles or guides, of a pair of corner-pins over which the line-wires are bent, under the movements of said shuttles, to overlap the line-wires, and twisters operating to twist together the overlapped sections of the wires while the same are held stretched by the said corner-pins.

8. The combination with a pair of reversely-reciprocating wire-delivery shuttles or guides, of a pair of corner-pins over which the line-wires are bent, under movements of said shuttles to overlap said wires, twisters for twisting together the overlapped sections of the wires to form stays thereof, means for throwing said corner-pins into inoperative positions, to permit the twisted stays to pass over the same, and means for intermittently moving the fabric to draw out the line-wires, substantially as described.

9. The combination with a plurality of reversely-reciprocating wire-delivery shuttles or guides, coöperating corner-pins over which the line-wires are bent to overlap the same, a latch normally holding said corner-pins in operative positions, an oscillating frame or support, stay-twisters and line-twisters carried by said support and movable thereby into and out of operative positions, and a trip for said latch arranged to be thrown into action under that movement of said frame which carries the said twisters from their operative into their inoperative positions.

10. The combination with a plurality of wire-delivery shuttles or guides working in reversely-reciprocating pairs, of a rock-shaft provided with a plurality of corner-pins, a latch normally holding said corner-pins in operative positions, an oscillating frame, stay-twisters and line-twisters mounted on said frame and receiving reverse movements thereby, to and from operative positions, means for drawing the fabric forward to draw out the line-wires, and a trip for the said latch arranged to be thrown into action and then to be again released or rendered inoperative by that movement of said frame which carries the said twisters from their operative into their inoperative positions.

11. The combination with a reciprocating driver, of a plurality of slides receiving different movements therefrom, wire-delivery shuttles or guides carried by said slides, means for moving the fabric to draw out the line-wires, and means for twisting together the stay and line forming sections of the wires, substantially as described.

12. The combination with a pair of reversely-movable drivers, of slides driven by said drivers, wire-delivery shuttles or guides carried by said slides and operating in reversely-movable pairs, means for feeding the fabric to draw out the line-wires, and stay-twisters for twisting together the overlapped sections of the wires, to form stays thereof, substantially as described.

13. The combination with reversely-reciprocating drivers, of slides receiving different movements from each driver, wire-delivery shuttles or guides carried by said slides, the upper and lower members thereof coöperating in reversely-movable pairs, means for moving the fabric to draw out the line-wires, and means for twisting together the overlapped stay-forming sections and the parallel line-sections of the wires, substantially as described.

14. The combination with parallel upper and lower guides of a plurality of slides on each guide, wire-delivery shuttles or guides carried by said slides, reversely-reciprocating driving-plungers operating one on the upper and one on the lower series of slides, and adjustable driving collars or elements on said plungers for varying the driving actions thereof, on the respective slides, substantially as described.

15. The combination with a pair of parallel guides, of slides movable thereon, wire-delivery shuttles or guides carried by said slides and operating in reversely-movable pairs, and means for reversely reciprocating the upper and the lower members of said slides, and an oscillating lever with connections extending thereto, substantially as described.

16. The combination with a pair of parallel guides, of slides movable thereon, wire-delivery shuttles or guides carried by said slides and operating in reversely-movable pairs, and means for reversely reciprocating the upper and lower members of said slides, involving a reversible frictional clutch, an oscillating lever driven from said clutch and connections from said lever to said slides, substantially as described.

17. The combination with means for disposing the wires to form stay and line sections, of stay-twisters for twisting together the stay-forming sections of the wires, line-twisters spaced transversely of the fabric with their axes at right angles to the common axes of the stay-twisters, and means for adjusting the said line-twisters toward and from the stay-twisters, substantially as described.

18. The combination with a wire-twister and a stop for limiting to normal the return or unwinding movement thereof, of a drive for imparting twisting movements to said twister, and a reverse drive normally tending to impart return or untwisting movement to the said twister, but adapted to be overcome by the said former drive, substantially as described.

19. The combination with a wire-twister and a stop for limiting the return or unwinding movement thereof, of a frictional return drive tending to impart return or unwinding movements to said twister, and a primary drive for imparting twisting movements to said twister, against the action of said frictional return drive, substantially as described.

20. The combination with a plurality of twisters and a stop for limiting to normal positions the return movements thereof, of a primary drive for imparting twisting movements to said twisters and a secondary or return drive for said twisters adapted to be overcome by said primary drive and involving in itself a pair of coöperating pulleys and a belt running loosely thereover, substantially as described.

21. The combination with corner-pins over which the wires are adapted to be bent, of means for bending the wires and overlapping the same from one corner-pin to the other, and a pair of reversely-rotatable twisters for twisting together the overlapped wire-sections between said corner-pins, substantially as described.

22. The combination with corner-pins over which the wires are adapted to be bent, of reversely-movable wire-delivery shuttles or guides operating in pairs to cause the wires to overlap from one pin to the other, and a pair of reversely-rotatable twisters, for twisting together the overlapped wire-sections, between said corner-pins, substantially as described.

23. The combination with corner-pins arranged in pairs, of reversely-movable upper and lower wire-delivery shuttles or guides for lapping the wires over said corner-pins, means for twisting together the lapped wire-sections to form stays thereof, means for releasing said corner-pins after the stays have been twisted, means for moving the fabric to draw out the line-wires, and means for restoring the said corner-pins to their normal positions and there locking the same, substantially as described.

24. The combination with means for disposing the wires to form line and stay sections, of an oscillating frame pivoted at its intermediate portion and provided with a handpiece by means of which it will be moved at will, a plurality of stay-twisters mounted at one end of said frame and provided with normally downturned wire-receiving slits, another series of line-twisters mounted at the other end of said frame and provided with normally upturned wire-receiving slits, corner-pins over which the line-wires may be bent to form the stays, an automatic lock for holding said corner-pins in operative positions, a trip for said lock operated by said oscillating frame, and means for automatically restoring said corner-pins to normal positions and rendering the same again subject to said lock, substantially as described.

25. The combination with means for delivering the wires and twisting the same together to form a fabric, of a drum for receiving the finished fabric and drawing the same forward, and a tension-equalizing drum provided with a facing of soft rubber over which the fabric is adapted to be rolled, but by which it is held against slipping, substantially as described.

26. The combination with an oscillating frame provided with a plurality of twisters and with a handpiece for moving the same to carry the

twisters to and from operative positions, of reversely-reciprocating wire-delivery shuttles or guides, and means for moving said guides involving a foot-operated lever adapted to be engaged by the foot and operated, substantially as described.

27. The combination with means for disposing the wires to form the line and stay sections, of an oscillating frame, a plurality of twisters for twisting together the line and stay sections of the fabric, a drum onto which the finished fabric is wound, and means for intermittently driving said drum and said twisters in alternate order involving a pair of driven friction-wheels, and a shiftable frictional driving-wheel movable alternately into engagement with said friction-wheels, substantially as described.

708,680. **PROCESS OF MAKING DECORATIVE TILES.** EMILE R. TABOUREY, Brussels, Belgium. Filed July 19, 1901. Serial No. 68,551. (No specimens.)

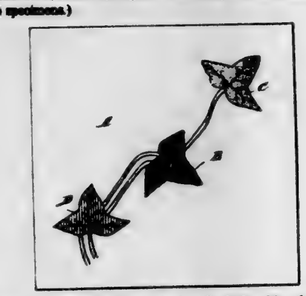

Claim.—1. The process herein described of making decorative tiles, which consists in sifting powdered materials of different colors one upon the other in layers, then uniting the layers by pressure, and finally removing parts of outermost layers to varying depths at different places in reproduction of different portions of any suitable design in any of the colors of the different layers of which the tile may be constituted.

2. The process herein described of making decorative tiles, which consists in sifting powdered materials of different colors one upon the other in layers, then uniting the layers and hardening the materials, and finally removing parts of outermost layers to varying depths at different places in reproduction of different portions of any suitable design in any of the colors of the different layers of which the design may be constituted.

3. The process herein described of making decorative tiles, which consists in sifting powdered materials of different colors one upon the other in layers, then uniting the layers and firing the mass to harden the same, and finally removing parts of outermost layers to varying depths at different places in reproduction of different portions of any suitable design in any of the colors of the different layers of which the tile may be constituted.

4. The process herein described of making decorative tiles, which consists in sifting powdered materials of different colors one upon the other in layers, then uniting the mass by pressure and hardening the same, and finally removing parts of outermost layers to varying depths at different places in reproduction of different portions of any suitable design in any of the colors of the different layers of which the tile may be constituted.

5. The process herein described of making decorative tiles, which consists in sifting powdered materials of different colors one upon the other in layers, then uniting the mass by pressure and hardening the same by firing, and finally removing parts of outermost layers to varying depths at different places in reproduction of different portions of any suitable design in any of the colors of the different layers of which the tile may be constituted.

6. The process herein described of making decorative tiles, which consists in sifting powdered materials of different colors one upon the other in layers, then uniting and hardening the mass, and finally removing parts of outermost layers to varying depths at different places in reproduction of different portions of any suitable design in any of the colors of the different layers of which the tile may be constituted.

708,681. **CAR-COUPLING.** CLINTON A. TOWER, Cleveland, Ohio, assignor to the National Malleable Castings Company, Cleveland, Ohio, a Corporation of Ohio. Filed Nov. 15, 1901. Serial No. 82,201. (No model.)

Claim.—1. A coupler having a swinging knuckle, and a tipping locking and opening piece, said piece being bodily movable upwardly and comprising a locking member, an opening-arm, and a connecting member which extends under the knuckle and connects the opening-arm with the locking member; substantially as described.

2. A coupler having a swinging knuckle, and an upwardly-movable and tipping knuckle locking and opening piece comprising a locking member, an opening-arm, and a connecting member which extends under the knuckle and connects the opening-arm with the locking member; said piece having a tipping-bearing above the knuckle and above the position of the said piece when locked; substantially as described.

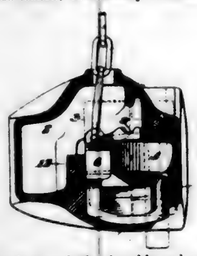

3. A coupler having a swinging knuckle, and a tipping locking and opening piece, said piece being bodily movable upwardly and comprising a locking member, an opening-arm and a connecting member between the locking member and opening-arm, said connecting member being shaped to permit the passage of the knuckle when the said piece has been raised; substantially as described.

4. A coupler having a swinging knuckle, and a tipping locking and opening piece, said piece being bodily movable upwardly and comprising a locking member, an opening-arm, and a connecting member which extends under the knuckle and connects the opening-arm with the locking member, the rear end of the knuckle being shaped to prevent the back movement of the opening-arm when the knuckle is open; substantially as described.

5. A knuckle locking and opening piece having in a single piece a locking member, a top bearing or fulcrum, a rear vertical opening-arm and a connecting member extending from the lower portion of the opening-arm horizontally and upwardly to the locking member; substantially as described.

708,682. **PACKING MECHANISM.** OLOF TYBERG, New York, N. Y., assignor to the American Tobacco Company, New York, N. Y., a Corporation of New Jersey. Filed Nov. 22, 1898. Serial No. 697,124. (No model.)

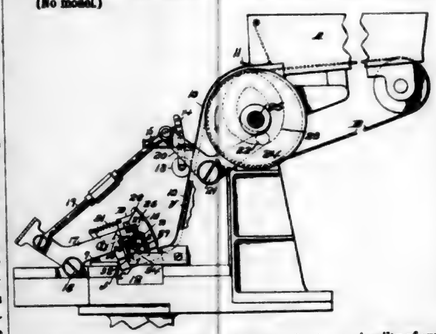

Claim.—1. The combination of a carrier having a plurality of supports arranged in the line of delivery of the articles from the carrier and adapted for holding articles in a plurality of separate layers, and means for withdrawing said supports for the delivery and packing together of the separate articles, substantially as described.

2. The combination of a carrier having a plurality of supports arranged in the line of delivery of the articles from the carrier and adapted for holding articles in a plurality of separate layers, means for withdrawing said supports for the delivery and packing together of the separate articles, and a pressure-plate acting upon the delivered articles after the supports are withdrawn, substantially as described.

3. The combination of a carrier having a plurality of supports arranged in the line of delivery of the articles from the carrier and adapted for holding articles in a plurality of separate layers, and means for simultaneously withdrawing said supports for the simultaneous delivery of the articles, substantially as described.

4. The combination of a carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for withdrawing said supports for the delivery of the articles superposed, substantially as described.

5. The combination of a vertically-moving carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, substantially as described.

6. The combination of a vertically-moving carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, and a presser-plate acting upon the delivered articles after the supports are withdrawn, substantially as described.

7. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, substantially as described.

8. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, and means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, said carrier having a further movement toward the articles independently of the supports after the latter are withdrawn, substantially as described.

9. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, and a presser-plate in the carrier moving toward the articles after the supports are withdrawn, substantially as described.

10. The combination of a carrier having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously and having a withdrawal movement substantially parallel to the surface on which the articles are delivered, and means for withdrawing said supports for the delivery and packing of the articles together, substantially as described.

11. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other adapted to hold separate articles simultaneously, said supports being pivoted on a horizontal axis to swing during withdrawal in a plane substantially parallel to the surface on which the articles are delivered, and means for withdrawing said supports for the delivery of the articles, substantially as described.

12. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other for holding separate articles, said supports being pivoted on a horizontal axis to swing during withdrawal in a plane substantially parallel to the surface on which the articles are delivered, means for withdrawing said supports for the delivery of the articles, and a presser-plate in the carrier having a movement toward the articles after the supports are withdrawn, substantially as described.

13. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and provided with a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, and means for actuating said carrier and withdrawing said supports for the delivery of the rows of cigarettes superposed, substantially as described.

14. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and provided with a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, means for actuating said carrier and withdrawing said supports for the delivery of the rows of cigarettes superposed, and a presser-plate in the carrier having a further movement toward the cigarettes after the supports are withdrawn, substantially as described.

15. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and provided with a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles, and means for moving said carrier intermittently to bring the successive supports into position to receive the cigarettes and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes superposed, substantially as described.

16. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles, of a single way through which the cigarettes are fed into the carrier, and means for moving said carrier intermittently to bring the successive supports into position to receive the cigarettes and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes superposed, substantially as described.

17. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other and each adapted to receive a row of cigarettes or similar articles, of a single way through which the cigarettes are fed into the carrier, means for moving said carrier intermittently to bring the successive supports into position to receive the cigarettes and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes superposed, and a presser-plate having a further movement toward the cigarettes after the supports are withdrawn, substantially as described.

18. The combination of a carrier pivoted to swing vertically and having a plurality of supports arranged one above the other and arranged with the supports inclined when in receiving position, a single raceway down which the cigarettes or similar articles are fed to the carrier by gravity, and means for moving said carrier intermittently to bring the supports successively into position to receive the cigarettes from the raceway and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes, said way having the bottom surface of its lower end curved to a substantially horizontal plane from which the cigarettes pass to the inclined supports, substantially as described.

19. The combination of a carrier pivoted to swing vertically and having a plurality of supports arranged one above the other and arranged with the supports inclined when in receiving position, a single raceway down which the cigarettes or similar articles are fed to the carrier by gravity, means for moving said carrier intermittently to bring the supports successively into position to receive the cigarettes from the raceway and to carry the superposed rows of cigarettes to delivering position and withdraw the supports for the delivery of the cigarettes, said way having the bottom surface of its lower end curved to a substantially horizontal plane from which the cigarettes pass to the inclined supports, and a roller pressing against and supporting the cigarettes in the upper part of the raceway, substantially as described.

20. The combination of a carrier having a plurality of receiving-chambers, a single way delivering to said chambers, and means for moving said carrier intermittently to bring successive receiving-chambers into position for delivery from the way to said chambers and for moving the carrier from receiving to delivering position, substantially as described.

21. The combination of a carrier having a plurality of supports arranged in the line of delivery for holding articles in separate layers, means for withdrawing said supports for the delivery and packing together of the separate articles, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

22. The combination of a carrier having a plurality of supports arranged in the line of delivery for holding articles in separate layers, means for withdrawing said supports for the delivery and packing together of the separate articles, and means for holding said supports withdrawn during the return movement of the carrier until the supports are moved beyond the delivered articles, substantially as described.

23. The combination of a vertically-moving carrier having a plurality of supports arranged one above the other for holding separate articles, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

24. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and having a plurality of supports arranged one above the other for holding separate articles, means for actuating said carrier and withdrawing said supports for the delivery of the articles superposed, said carrier having a further movement toward the articles independently of the supports after the latter are withdrawn, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

25. The combination of a carrier having a plurality of supports arranged one above the other for holding separate articles and having a withdrawal movement substantially parallel to the surface on which the articles are delivered, means for withdrawing said supports for the delivery and packing of the articles together, catches for holding the supports withdrawn and means for tripping the catches for the return of the supports, substantially as described.

26. A carrier having the supports *b*, *b'* arranged one above the other and carried by arms pivoted to swing on a horizontal axis, and means for actuating said carrier and swinging said arms to withdraw the supports, substantially as described.

27. The combination with a vertically-moving carrier having the supports *b*, *b'* arranged one above the other and carried by arms pivoted to swing on a horizontal axis, of slides having a vertical movement in the carrier and in which said arms are mounted, and means for actuating said carrier and swinging said arms to withdraw the supports with the carrier moving independently of the slides after the supports are withdrawn, substantially as described.

28. The combination of a carrier pivoted to swing vertically and having supports *b*, *b'* arranged one above the other, of means for actuating said carrier and withdrawing said supports, and a presser-plate in the carrier acting upon the delivered articles, substantially as described.

29. In a packing-carrier, pivoted arms 32 carrying side plates *c* and supports *b b'* arranged in the line of delivery of the articles from the carrier and adapted for holding articles in separate layers, substantially as described.

30. In a packing-carrier, pivoted arms 32 carrying supports *b b'* arranged in the line of delivery of the articles from the carrier and adapted for holding articles in separate layers, substantially as described.

708,683. SHEARS. ANNA E. WALSH, Minneapolis, Minn. Filed July 16, 1902. Serial No. 115,799. (No model.)

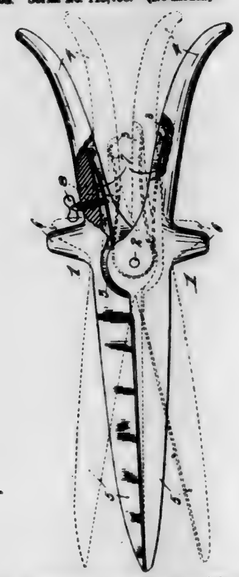

Claim.—1. A pair or scissors or shears, involving pivotally-connected members, a spring applied to said members for automatically closing the blade portions thereof, and means for varying the tension of said spring, substantially as described.

2. The combination with the members 1 pivoted at 2 and recessed at 3, of the springs 7 applied to the said members 1, for automatically closing the blade portions 5 thereof, and the adjusting-screw 8 for varying the tension of said spring, substantially as described.

708,684. ROTARY STEAM-ENGINE. ISAAC W. WEPPLO, Bandon, Minn. Filed Aug. 20, 1900. Serial No. 27,382. (No model.)

Claim.—1. In a rotary engine of the class described, the combination with the piston-chamber, of a piston-cylinder eccentrically supported in said chamber, and wings slidable in pockets in said cylinder, said wings being loosely fitted in said pockets and each provided with a space at its rear end.

2. In a rotary engine of the class described, the combination with a piston-chamber, and a piston-cylinder eccentrically mounted therein, of piston-wings slidable in pockets in said cylinder, said wings being loosely fitted in said pockets and formed with ports connecting the space upon opposite sides of said wings, and springs normally holding said wings outward.

3. In a rotary engine of the class described, the combination with a piston-chamber and a piston-cylinder eccentrically supported therein, of piston-wings slidable in pockets in said cylinder, said wings being each formed upon its opposite sides with channels connected by ports in the manner and for the purpose specified.

708,685. ARTIFICIAL LIMB. CHARLES P. WHITE, Spencer, N. C. Filed Jan. 23, 1902. Serial No. 91,631. (No model.)

Claim.—1. In an artificial limb, the combination of the outer casing, with a stump-receiving pocket formed of a loosely-supported pneumatic cushion having a closed bottom and open top and located between the stump and casing, said cushion serving as the sole means of connection between the stump and casing.

2. In an artificial limb, the combination with a stump-receiving pocket, of a mechanically-operated pump operatively connected to a movable member of the limb and serving to artificially ventilate said pocket.

3. In an artificial limb, the combination with a stump-receiving pocket, of an air-pump having an outlet in said pocket and adapted to discharge a current of air therein to ventilate the pocket, and means for operating said pump.

4. The combination in an artificial limb, of the casing, a stump-receiving pocket arranged therein, an air-pump comprising a bellows located in the lower portion of said casing, a plate hinged to the casing and connected to a movable part of the bellows, a foot member, and a flexible connecting means between said foot member and said plate.

5. The combination in an artificial foot, of the pivotally-connected body and toe members, and a pneumatic sole having a connected portion forming an air-chamber between the two members.

6. The combination in an artificial foot, of the body member, a pivotally-connected toe member, a channeled plate carried by said members, and a pneumatic sole having an outer portion shaped to engage said plate.

7. The combination in an artificial limb, of two pivotally-connected members, a pneumatic cushion carried by one of such members, and a pair of disks adapted for contact with said pneumatic cushion and having guided shanks in operative contact with the second member, substantially as specified.

8. The combination in an artificial limb, of the foot and leg members having a pivotal connection to form an ankle-joint, a pneumatic sole on the foot member, a pair of compression-disks carried by the foot member and adapted for contact with the pneumatic sole at the front and rear of the joint, said disks having shank members in operative contact with the leg member.

9. The combination in an artificial limb, of a pair of movable members, a ball, a rectangular shank secured to or formed with the ball and connected to one of the members, a pair of semispherical plates carried by the opposite member and adapted to embrace the ball, said plates being spaced to permit of the movement between them of the rectangular shank of the ball member, and a screw independent of the plate-securing devices for adjusting said plates.

10. In an artificial limb having two pivotally-connected members, a pair of connected fluid-containing chambers situated one on each side of the pivotal connection between the members.

11. In an artificial limb having two pivotally-connected members, a pair of connected fluid-containing chambers situated one on each side of the pivotal connection between the members, and means for regulating the flow of fluid between said chambers.

12. The combination in an artificial limb, of a pair of leg members having inclined faces to form approximately V-shaped recesses between them, a pivot connecting said members, a pair of triangular fluid-containing chambers situated within said recesses, a tube carried by one of the leg members and connecting said chambers, and means for regulating the flow of fluid through said tube.

13. In an artificial limb, a pair of leg members having a pivotal connection, compressible chambers situated between said members and an auxiliary tension-spring connecting said members, substantially as specified.

708,686. ATTACHMENT FOR BUGGY-BOOTS. ARTHUR W. WILSON, Moline, Ill. Filed May 27, 1902. Serial No. 109,167. (No model.)

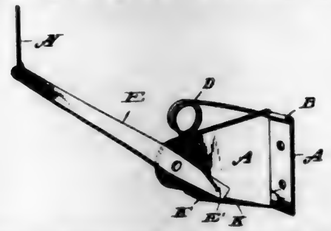

Claim.—A carriage-boot attachment comprising a plate A having two right-angled portions A' and K at angles to each other, the upper end of said flange A' being rolled to form a bearing B, a bar E pivotally connected to said plate A, a carriage-boot and rod connecting the same with said bar, a coil-spring D having a bearing at one end in said roll B and its other end fastened to the pivoted end of said bar and adapted to hold the under edge of the bar against the end K' of said flange K or the inner end of the bar against the upper surface of the flange K accordingly as the boot is closed or raised to its highest limit, as set forth.

708,687. EXHIBITING AND VENDING MACHINE. DANIEL M. WHAM, Binghamton, N. Y., assignor to Albert L. Weaver, New York, N. Y. Original application filed Sept. 14, 1899, Serial No. 730,454. Divided and this application filed Nov. 27, 1899. Renewed May 26, 1902. Serial No. 108,970. (No model.)

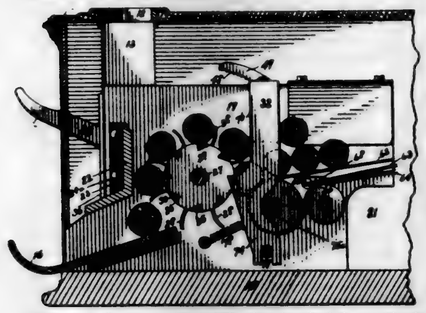

Claim.—1. In an apparatus of the class described the combination of a conveyor adapted to be inserted in a box packed with merchandise articles and below the articles contained therein, with mechanism for operating said conveyor whereby the underlying articles are successively withdrawn from said box, substantially as described.

2. In an apparatus of the class described, the combination of a conveyor adapted to be inserted in a box packed with merchandise articles and below the articles contained therein, with mechanism for operating said conveyor, and a discharge-drum arranged adjacent to the forwardly-projecting end of said conveyor, substantially as described.

3. In an apparatus of the class described the combination of a conveyor adapted to be inserted in a box packed with merchandise articles and below the articles contained therein, with mechanism for operating said conveyor, a discharge-drum arranged adjacent to the forwardly-projecting end of said conveyor, and a rocking gate arranged in the pathway of said conveyor, substantially as and for the purpose set forth.

708,688. MUSIC-TEACHING APPARATUS. HENRY WOODSIDE, Winlock, Wash. Filed Nov. 26, 1901. Serial No. 83,787. (No model.)

Claim.—1. In a music-teaching apparatus, a staff, and a single musical character coöperating with said staff, in combination with a keyboard having a number of keys operatively connected with said single character, whereby the movement of any of the keys connected with said character moves the latter with reference to said staff, substantially as described.

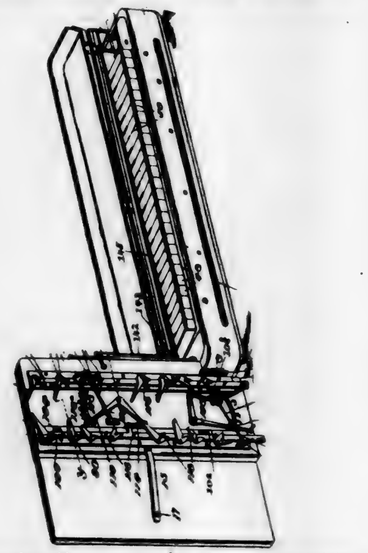

2. In music-teaching apparatus, treble and bass staffs, musical characters, one of said characters coöperating with each of said staffs, in combination with a keyboard having certain keys operatively connected with one of said characters, and other keys operatively connected with the other character, whereby the movement of certain of said keys moves one of said characters, and the movement of other keys operates the other character, substantially as described.

3. In music-teaching apparatus, a staff, and a single musical character coöperating with said staff, in combination with a keyboard, and operative connections between the keys of said keyboard and said single character, said connections being such that the movement of the keys imparts varying movement to said character, substantially as described.

4. In music-teaching apparatus, treble and bass staffs, musical characters, there being one character for each staff, in combination with a keyboard having part of its keys operatively connected with one character, and other keys connected with the other character, the connections between said keyboard and characters being such that the movements of certain keys cause varying action of one character and the movements of other keys cause varying movements of the other character, substantially as described.

5. In music-teaching apparatus, the combination of a keyboard, a staff-board detachably connected with said keyboard, and a single musical character coöperating with said staff-board, the said keyboard having a number of keys operatively connected with said single character, whereby the movement of any of the keys connected with said character moves the latter with reference to said staff-board, substantially as described.

6. In music-teaching apparatus, a staff-board, said staff-board folding upon itself, and a single musical character coöperating with said staff-board, in combination with a keyboard having a number of keys operatively connected with said single character, whereby the movement of any of the keys connected with said character moves the latter with reference to said staff-board, substantially as described.

7. In music-teaching apparatus, the combination of a staff, and a single musical character coöperating with said staff, a keyboard having a number of keys operatively connected with said single character, whereby the movement of any of the keys connected with said character moves the latter with reference to said staff, sharps and flats, and mechanism for controlling the same, substantially as described.

8. In music-teaching apparatus, the combination of a staff, and a single musical character coöperating with said staff, a keyboard, operative connections between the keys of said keyboard and said single character, said connections being such that the movements of the keys impart

varying movements to said character, sharps and flats, and mechanism for controlling the same, substantially as described.

9. In music-teaching apparatus, the combination of a staff, and a single musical character coöperating with said staff, a keyboard, operative connections between the keys of said keyboard and said single character, said connections being such that the movements of the keys impart varying movements to said character, sharps and flats, and mechanism for controlling the same comprising a lever and intermediate connections, substantially as described.

10. In a music-teaching apparatus, a staff-board having a recess or opening therein, sharps and flats normally hidden behind the board, the sharps being hidden on one side of the recess and the flats on the other, and mechanism for moving said sharps or flats to exhibit them through said opening from opposite sides thereof, substantially as described.

11. In music-teaching apparatus, a staff-board having a series of sharps and a series of flats on one side thereof, hand-levers on the opposite side of said staff-board controlling the movements of said sharps and flats, and intermediate connections between said levers and said sharps and flats, substantially as described.

12. In music-teaching apparatus, a staff-board having an opening or recess therein, series of sharps and flats normally located behind the walls of said recess and on opposite sides thereof, a hand-lever for the sharps and a hand-lever for the flats, both on the rear side of the staff-board, and intermediate connections between the levers and said sharps and flats, substantially as described.

13. In music-teaching apparatus, a staff having a series of characters thereon and means for controlling the positions of said characters comprising a cam-lever and reciprocating stud or pin for each character, substantially as described.

14. In music-teaching apparatus, a staff having a series of characters thereon and means for controlling the positions of said characters comprising a cam-lever and reciprocating stud or pin for each character, said levers combined with mechanism to progressively display said characters on said staff, substantially as described.

15. In music-teaching apparatus, a staff, a series of sharps and flats pivotally mounted with relation to said staff, mechanism for moving the sharps on their pivots, mechanism for moving said flats on their pivots, each of said mechanisms comprising cam-levers and reciprocating studs or pins and a lock arranged to lock one of said mechanisms when the other mechanism is being moved, substantially as described.

16. In music-teaching apparatus, a staff, a series of musical characters, a lever connected with each of said characters, a slide having means coöperating with all of said levers for controlling the position of said characters, and a hand-lever for operating said slide, substantially as described.

17. In music-teaching apparatus, a staff, a series of musical characters, a series of levers connected with said characters, a slide having studs coöperating with said levers, and a lever for operating said slide and said first-mentioned levers and a quadrant for holding said lever, substantially as described.

18. In a music-teaching apparatus, a staff, a series of musical characters arranged to be displayed thereon, a cam-lever and reciprocating studs or pins for each character, and means for operating said cam-levers; the said cam-levers being arranged to progressively display the said musical characters, substantially as described.

19. In music-teaching apparatus, a staff having an opening therein, a series of sharps and flats concealed by said staff, and mechanism for displaying said characters through said openings, comprising a lever and a reciprocating stud or pin for each sharp and flat, substantially as described.

20. In music-teaching apparatus, a staff having a character-rod pivoted thereon, a character supported by said rod, and a keyboard having its keys connected with said character-rod and imparting varying movements thereto, substantially as described.

21. In music-teaching apparatus, a staff, a musical character supported thereon, a keyboard having its keys arranged to move said character varying distances, an accidental concealed behind said character, and means for displaying said accidental, substantially as described.

22. In music-teaching apparatus, a staff having a musical character thereon, in combination with a keyboard having a series of keys, a lever under said keys arranged to be depressed thereby and having connections with the character on said staff, and means whereby the different keys impart varying movements to said character, substantially as described.

23. In music-teaching apparatus, a staff having two cleffs thereon, a musical character for each cleff, in combination with a keyboard, levers under said keyboard arranged to be operated by said keys, connections between one of said levers and one of said musical characters and connections between the other lever and the other musical character, means whereby the different keys impart varying movements to said character, substantially as described.

24. In music-teaching apparatus, a staff having treble and bass characters arranged to be displayed thereon, in combination with a keyboard, bass and treble levers under said keys, the treble lever being connected with the treble character and the bass lever with the bass character, and means for causing the keys of said keyboard to operate said characters varying distances, substantially as described.

25. In music-teaching apparatus, a staff having a musical character arranged to be displayed thereon, in combination with a keyboard having its keys arranged to move said character, and adjustable stops under said keys, whereby the movements of said keys may be graduated, substantially as described.

708,689. THILL-COUPLING. ALFRED H. WORREST, Lancaster, Pa., assignor to the Metal Stamping Company, New York, N. Y., a Corporation of New York. Filed Mar. 13, 1900. Serial No. 8,438. (No model.)

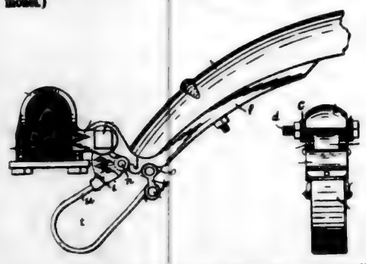

Claim.—1. The combination, in a thill-coupling, of a coupling-bolt, a hook-eye connected with a thill and having a slot in the lower side thereof, a pivoted lever, a dog on the lever and adapted to enter said slot and bear against the bolt, a link so located that its upper end is pivoted below the lever-pivot when the thills are in their normal position, and a spring having one end connected with the lower end of the link and the other end secured to the swinging end of the lever, the spring forming a loop between its ends, for the purpose specified.

2. The combination, in a thill-coupling, of a coupling-bolt, a hook-eye connected with a thill and having the slot in the lower side thereof, a pivoted lever, a dog on the lever and adapted to enter said slot and bear against the bolt, a link so located that its upper end is pivoted below and in front of the lever-pivot when the thills are in their normal position, and a spring having one end connected with the lower end of the link and the other end secured to the swinging end of the lever, the spring forming a loop between its ends, for the purpose specified.

708,690. CAR-COUPLING. BIRD O. YEARWOOD, Toccoa, Ga., assignor of one-half to Edward Schaefer, Toccoa, Ga. Filed Sept. 16, 1901. Serial No. 75,576. (No model.)

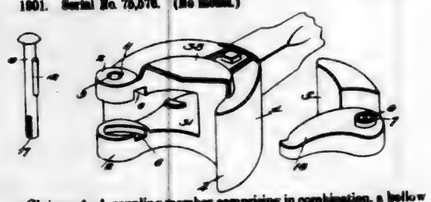

Claim.—1. A coupling member comprising in combination, a hollow draw-head having upper and lower knuckle pivoting-ears 2 provided with pivot-recesses 6, said recesses being extended to the inner edges of the ears, a knuckle having an enlarged head and a reduced tailpiece 18 thereon, upper and lower pivot-bosses 7 formed integral with the tailpiece and adapted to be entered in the recesses 6 from the inner edges of the ears, there being alining pivot-openings in the tailpiece, the bosses and ears, and the walls of the opening of the upper ear and of the tailpiece and bosses being slotted, a pivot-pin 10 having an integral or fixed key 12 intermediate of its length adapted to pass through said opening and to interlock with the slotted portion of the tailpiece and bosses, a torsion-spring 15 disposed on the lower end of said pin and having one end secured thereto and its opposite end secured to a fixed point, a fixed stop 30 in the form of a curved wall having an opening 31 and serving to limit the outward swinging movement of the tailpiece, the wall 30 presenting a solid unbroken surface to receive the initial impact of a mating coupling member, a locking-latch 19 pivoted within the draw-head and having its outer end extending through a slotted opening 26 in said draw-head, a pin 22 carried by the draw-head, a compression-spring 21 surrounding said pin, and a lug 34 disposed on the latch for engagement with the outer end of said spring, said lug being provided with an opening for the reception of said pin, substantially as specified.

2. In a car-coupling, a draw-head having knuckle pivot-ears arranged at one side and a guard arranged at the opposite side thereof, there being a curved recess between the two and an upper guard 33 forming an integral part of the draw-head and bridging said curved recess between the upper knuckle pivot-ear and the guard, said upper guard having its front edge inclined to permit of greater extension of the same over the mating coupling without allowing the upper guards of mating coupling members to come into contact.

708,691. OIL-BURNER. GEORGE W. ARPER, Oakland, Cal. Filed May 1, 1901. Serial No. 58,322. (No model.)

Claim.—1. A burner comprising a casing having alined openings through the wall thereof, a removable cover for said casing, an oil-supply at the lower portion of the casing, and a nozzle supported at a point adjacent to one of the openings in the casing and adapted to discharge a jet of steam through said opening into the flame of burning oil and out of the opposite opening to induce the discharge of the burning fuel in the direction of said last-mentioned opening; substantially as described.

2. A burner comprising a casing having an opening through the wall thereof, a pipe having a plurality of coils wound around the interior surface of the wall of the casing, the adjacent coils of said pipe being superposed the one upon the other and the whole constituting a water-back for the fire-chamber, an inlet to said pipe, an outlet therefrom, and a nozzle in communication with said outlet and arranged to discharge a jet of steam through the opening in the casing into the flame of burning oil; substantially as described.

708,692. JUNCTION-BOX. WILLIAM F. BONNET, Utica, N. Y., assignor to the Bonnet Electric Construction Company, Utica, N. Y. Filed June 4, 1902. Serial No. 110,171. (No model.)

Claim.—1. A junction-box for electric conductors, having double sides and ends, the walls of the outer casing dovetailed at their corners and provided with a bottom of insulating material fitting closely therein, the walls of the inner casing resting upon the bottom piece and breaking joints with the ends and sides of said piece, and also breaking joints with the corners of the outer casing; a cover secured to the outer casing; corner-pieces having right-angled parts embracing the corners of the outer casing and secured thereto by screw-bolts, a seat extending inwardly from the said parts under the corner of the said bottom piece and secured thereto by a screw-bolt, and an outwardly-projecting foot below the said seat; with two or more interiorly-threaded bushings screwed into holes in the sides or ends of the outer casing provided with an abutment-ring and a squared end; orifices in the inner casing concentric with the said holes and larger in diameter, having chamfered or rounded edges, as set forth.

2. A junction-box for electric conductors, having double sides and ends, the walls of the outer casing dovetailed at their corners and provided with a bottom of insulating material fitting closely therein, the walls of the inner casing resting upon the bottom piece and breaking joints with the ends and sides of said piece, and also breaking joints with the corners of the outer casing; a cover secured to the outer casing; corner-pieces having right-angled parts embracing the corners of the outer casing and secured thereto by screw-bolts, a seat extending inwardly from the said parts under the corner of the said bottom piece and secured thereto by a screw-bolt, and an outwardly-projecting foot below the said seat; with two or more interiorly-threaded bushings screwed into holes in the sides or ends of the outer casing, provided with an abutment-ring and a squared end; orifices in the inner casing concentric with the said holes and larger in diameter, having chamfered or rounded edges; and means secured to the bottom piece for the transposition of conductors from one bushing to another, as set forth.

3. A junction-box for electric conductors, having double sides and ends, the walls of the outer casing dovetailed at their corners and provided with a bottom of insulating material fitting closely therein, the walls of the inner casing resting upon the bottom piece and breaking joints with the ends and sides of said piece, and also breaking joints with the corners of the outer casing; a cover secured to the outer casing; corner-pieces having right-angled parts embracing the corners of the outer casing and secured thereto by screw-bolts, a seat extending inwardly from the said parts under the corner of the said bottom piece and secured thereto by a screw-bolt, and an outwardly-projecting foot below the said seat; with two or more interiorly-threaded bushings screwed into holes in the sides or ends of the outer casing, provided with an abutment-ring and a squared end; orifices in the inner casing concentric with the said holes and larger in diameter, having chamfered or rounded edges; metal bars secured to said bottom piece, with conduits entering said internally-threaded bushings carrying conductors whose ends are led into the box to the metal bars, the said bars provided with means for transposing the conductors to similar bars and to other conductors, as set forth.

708,698. SAFETY ATTACHMENT FOR HYDRAULIC NOZZLES. PIERRE BOUDET, Weaverville, Cal. Filed May 1, 1902. Serial No. 105,532. (No model.)

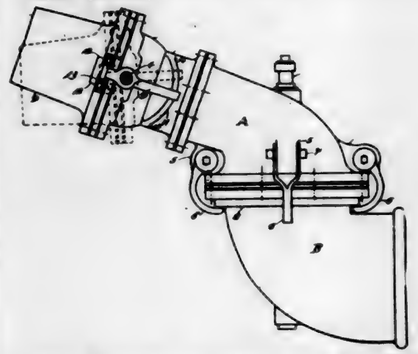

Claim.—1. In a device of the character described, the combination of a nozzle turnable on trunnions on a pipe-section, arms secured to the nozzle and turnable therewith, and segmental flanges on the pipe-section with which said arms are adapted to engage.

2. In a device of the character described, the combination of a section having a spherical segment at one end, a nozzle having a corresponding socket adapted to receive said segment, trunnions or pivot-bolts about which the nozzle is turnable, arms secured at one end to the nozzle and embracing and turnable about said pivots, claws or projections on the free end of said arms, and segmental flanges concentric with said pivots with which said claws are adapted to engage.

3. The combination of two pipe-sections, one of which is turnable in relation to the other, flanges on the adjacent edges of said sections, curved fingers detachably secured to one of said sections and adapted to engage the flange on the opposite section, a nozzle and a pivot connection by which it is secured to the movable section, arms embracing and turnable about said pivot connection and having one end fixed to one of said pivoted parts and the other end engaging segmental flanges on the other.

708,694. METHOD OF MANUFACTURING SECONDARY-BATTERY PLATES. GEORGE H. CHESTNAM, Cleveland, Ohio, assignor of one-half to Charles Herbert Taylor, East Cleveland, Ohio. Filed Dec. 7, 1901. Serial No. 85,073. (No specimens.)

Claim.—1. In the process of manufacturing plates for secondary batteries, the step which consists in electrolytically reducing an oxid of lead in an electrolytic cell having an electrolyte containing a compound of an organic reducing agent.

2. In the process of manufacturing plates for secondary batteries, the step which consists in electrolytically reducing an oxid of lead in an electrolytic cell having an electrolyte containing an organic-acid compound.

3. In the process of manufacturing plates for secondary batteries, the step which consists in electrolytically reducing an oxid of lead at the

cathode of an electrolytic cell having an electrolyte containing an organic-acid compound.

4. The process of converting an oxid of lead into spongy lead, which consists in electrolytically reducing such oxid in an electrolytic cell having an electrolyte containing a compound of an organic reducing agent.

5. The process of converting an oxid of lead into spongy lead, which consists in electrolytically reducing such oxid in an electrolytic cell having an electrolyte containing an organic-acid compound.

6. The process of converting an oxid of lead into spongy lead, which consists in electrolytically reducing such oxid in an electrolytic cell having an electrolyte containing an oxalic-acid compound.

7. The process of manufacturing spongy-lead plates for secondary batteries, which consists in electrolytically reducing an oxid of lead in an electrolytic bath having an electrolyte containing a compound of an organic reducing agent and strengthening such electrolyte periodically by addition of such compound as reduction progresses.

8. The process of manufacturing spongy-lead plates for secondary batteries which consists in electrolytically reducing an oxid of lead in an electrolytic bath having an electrolyte containing an organic-acid compound and strengthening such electrolyte periodically by addition of such compound as reduction progresses.

9. The process of manufacturing spongy-lead plates for secondary batteries which consists in electrolytically reducing oxid of lead in an electrolytic bath having an electrolyte containing oxalic-acid compound and strengthening such electrolyte periodically by addition of such compound as reduction progresses.

10. The process of manufacturing spongy lead, which consists in electrolytically reducing lead peroxid in an electrolytic cell having an electrolyte containing a compound of an organic reducing agent.

11. The process of manufacturing spongy lead, which consists in electrolytically reducing lead peroxid in an electrolytic cell having an electrolyte containing an organic-acid compound.

12. The process of manufacturing spongy lead, which consists in electrolytically reducing lead peroxid in an electrolytic cell having an electrolyte containing an oxalic-acid compound.

13. The step in the process of manufacturing secondary batteries, which consists in the deoxidation of an oxid of lead by means of electrolysis in a bath containing a compound of an organic reducing agent.

14. The step in the process of manufacturing secondary batteries, which consists in the deoxidation of an oxid of lead by means of electrolysis in a bath containing an organic-acid compound.

15. The step in the process of manufacturing secondary batteries, which consists in the deoxidation of an oxid of lead by means of electrolysis in a bath containing an oxalic-acid compound.

16. The process of converting an oxid of lead into spongy lead which consists in electrolytically reducing said oxid in an electrolytic cell having an electrolyte containing compound of an organic acid and an alkaline earth.

17. The process of converting an oxid of lead into spongy lead, which consists in electrolytically reducing such oxid in an electrolytic cell having an electrolyte containing a compound of an organic reducing agent and an alkaline earth.

18. The process of converting an oxid of lead into spongy lead, which consists in electrolytically reducing such oxid in an electrolytic cell having an electrolyte containing a solution of a compound of an organic reducing agent and an alkaline earth.

19. The process of converting an oxid of lead into spongy lead, which consists in electrolytically reducing such oxid in an electrolytic cell having an electrolyte containing a solution of a compound of an organic acid and an alkaline earth.

20. The process of converting an oxid of lead into spongy lead, which consists in electrolytically reducing such oxid in an electrolytic cell having an electrolyte containing a solution of a compound of oxalic acid and an alkaline earth.

708,695. METHOD OF MANUFACTURING PLATES FOR SECONDARY BATTERIES. GEORGE H. CRESSLER, Cleveland, Ohio, assignor of one-half to Charles Herbert Taylor, East Cleveland, Ohio. Filed Dec. 7, 1901. Serial No. 85,574. (No specimens.)

Claim.—1. In the process of manufacturing plates for secondary batteries, the step which consists in electrolytically deoxidizing an oxid of lead in an electrolytic cell having an electrolyte containing an organic reducing agent.

2. In the process of manufacturing plates for secondary batteries, the step which consists in electrolytically deoxidizing an oxid of lead in an electrolytic cell having an electrolyte containing an organic acid.

3. In the process of manufacturing plates for secondary batteries, the step which consists in electrolytically deoxidizing an oxid of lead at the cathode of an electrolytic cell having an electrolyte containing an organic acid.

4. The process of converting an oxid of lead into spongy lead, which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte containing an organic reducing agent.

5. The process of converting an oxid of lead into spongy lead, which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte containing an organic acid.

6. The process of converting an oxid of lead into spongy lead, which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte containing oxalic acid.

7. The process of manufacturing spongy-lead plates for secondary batteries, which consists in electrolytically deoxidizing an oxid of lead in an electrolytic bath having an electrolyte containing an organic reducing agent, and strengthening such electrolyte periodically by addition of such agent as electrolysis progresses.

8. The process of manufacturing spongy-lead plates for secondary batteries which consists in electrolytically deoxidizing an oxid of lead in an electrolytic bath having an electrolyte containing an organic acid, and strengthening such electrolyte periodically by addition of such acid as deoxidation progresses.

9. The process of manufacturing spongy-lead plates for secondary batteries which consists in electrolytically deoxidizing an oxid of lead in an electrolytic bath having an electrolyte containing oxalic acid, and strengthening such electrolyte periodically by addition of such acid, as deoxidation progresses.

10. The process of manufacturing spongy lead, which consists in electrolytically deoxidizing lead peroxid in an electrolytic cell having an electrolyte containing an organic reducing agent.

11. The process of manufacturing spongy lead, which consists in electrolytically deoxidizing lead peroxid in an electrolytic cell having an electrolyte containing an organic acid.

12. The process of manufacturing spongy lead, which consists in electrolytically deoxidizing lead peroxid in an electrolytic cell having an electrolyte containing oxalic abid.

13. The step in the process of manufacturing secondary batteries, which consists in the deoxidation of an oxid of lead by means of electrolysis in a bath containing an organic acid.

14. The step in the process of manufacturing secondary batteries, which consists in the deoxidation of an oxid of lead by means of electrolysis in a bath containing oxalic acid.

15. The process of converting an oxid of lead into spongy lead, which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte composed of a solution of water and an organic reducing agent.

16. The process of converting an oxid of lead into spongy lead, which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte composed of a solution of water and an organic acid.

17. The process of converting an oxid of lead into spongy lead which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte composed of a solution of an organic reducing agent.

18. The process of converting an oxid of lead into spongy lead which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte composed of a solution of an organic acid.

19. The process of converting an oxid of lead into spongy lead which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte composed of a solution of oxalic acid.

20. The process of converting an oxid of lead into spongy lead, which consists in electrolytically deoxidizing such oxid in an electrolytic cell having an electrolyte composed of a solution of water and oxalic acid.

708,696. PACKAGE. EDWARD H. DAVIS, Mesa Grande, Cal., assignor to Hallless Lid Box Company, San Francisco, Cal., a Corporation of California. Filed Sept. 20, 1901. Serial No. 75,970. (No model.)

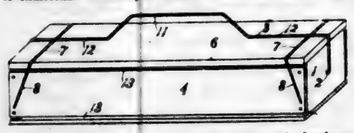

Claim.—1. A package comprising a receptacle having a loose lid provided with transverse grooves which extend continuously across the same; bails of a length sufficient to extend continuously across the top said bails adapted to be seated in said grooves and to embrace the sides of the receptacle, said bails arranged astant and having sperred terminals adapted for driving into the sides of the body of the receptacle, to retain the lid in place.

2. A package comprising a receptacle, a loose lid having transverse grooves extending continuously across it near the ends; and bails seated on the lid near the ends and having bent portions to extend over the edge of the lid and down along the body of the receptacle, and provided with inturned prongs to be forced into said receptacle to retain the lid in place independent of other fastening devices.

3. A package comprising a receptacle having a bottom, sides and ends, and a removable top, said ends having holes near the center; bails seated on the top near the ends and having bent portions embracing the sides of the receptacle and having spurs to be forced directly into said sides, and a spring-bail arranged at right angles to and above the bails and having the ends to pass over the ends of the package and seat in said holes.

4. A package comprising a receptacle; a lid therefor, and a bail said bail having its ends fitted to the receptacle and having portions extending parallel and in contact with the lid and having said portions connected by an intermediate loop whereby an inward pressure upon the loop causes the angles at the junction of the loop with the said parallel portions to fulcrum against said lid and detach the ends of the bails from the receptacle.

5. A package comprising a receptacle; a lid fastened on said receptacle; and a bail having inbent ends inserted in the receptacle, the central portion of the bail being bent to form a loop, each end of which loop is bent at an angle to the central portion and to the portions of the bail beyond, whereby each end will act as a fulcrum to swing the ends of the bail outward when the central portion is pressed downward.

708,697. ENGINE. THOMAS DRAKE, Eccles, England, assignor to himself and Charles Herbert Dunkin, Monton, Eccles, England. Filed Dec. 5, 1901. Serial No. 84,771. (No model.)

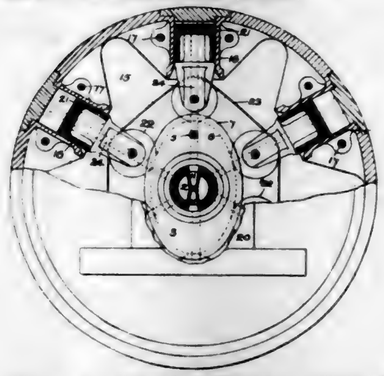

Claim.—1. In an engine, the combination of a stationary hollow shaft, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft and having steam-passages in its walls, a number of inwardly-directed cylinders carried by the said wheel and having admission-ports and exhaust-ports in communication with the said steam-passages, pistons adapted to reciprocate in the said cylinders, and rollers carried by the said pistons and adapted to make contact with the said track, substantially as and for the purpose set forth.

2. In an engine, the combination of a hollow shaft having non-circular ends, standards adapted to hold the said shaft by its non-circular ends, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft, and having radial steam-passages in its walls, trunnions on the said wheel, pedestals, bearings mounted in the said pedestals and adapted to carry the said trunnions, a number of inwardly-directed cylinders carried by the said wheel and having admission-ports and exhaust-ports in communication with the said steam-passages, pistons adapted to reciprocate in the said cylinders, and rollers carried by the said pistons and adapted to make contact with the said track, substantially as and for the purpose set forth.

3. In an engine, the combination of a stationary hollow shaft, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft, and having steam-passages in its walls, a number of inwardly-directed cylinders carried by the said wheel and having admission-ports and exhaust-ports in communication with the said steam-passages, pistons adapted to reciprocate in the said cylinders, and a rotatable sleeve introduced between the said shaft and the said wheel and having apertures therein, substantially as and for the purpose set forth.

4. In an engine, the combination of a stationary hollow shaft, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft, and having steam-passages in its walls, a number of inwardly-directed cylinders carried by the said wheel and having admission-ports and exhaust-ports in communication with the said steam-passages, pistons adapted to reciprocate in the said cylinders, and two concentric rotatable sleeves introduced between the said shaft and the said wheel and having apertures therein, substantially as and for the purpose set forth.

5. In an engine, the combination of a stationary hollow shaft, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft, and having radial steam-passages in its walls or otherwise, compounding, inwardly-directed cylinders carried by the said wheel, circumferential steam-passages communicating between the said cylinders, admission-ports and exhaust-ports communicating with between said cylinders and the said radial passages, and pistons adapted to reciprocate in the said cylinders around the said track or tracks, substantially as and for the purpose set forth.

6. In an engine, the combination of a stationary hollow shaft, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft, and having steam-passages in its walls or otherwise, a number of inwardly-directed cylinders carried by the said wheel and having admission-ports and exhaust-ports in communication with the said steam-passages, pistons adapted to reciprocate in the said cylinders, a rim, and spokes connecting the said rim with the said wheel, substantially as set forth.

7. In an engine, the combination of a stationary hollow shaft, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft and having steam-passages in its walls or otherwise, a number of inwardly-directed cylinders carried by the said wheel and having admission-ports and exhaust-ports in communication with the said steam passages, pistons adapted to reciprocate in the said cylinders, a rim, spokes connecting the said rim with the said wheel, and a tire carried by the said rim, substantially as and for the purpose set forth.

8. In an engine, the combination of a stationary hollow shaft, a plurality of non-circular tracks arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft, a number of inwardly-directed cylinders carried by the said wheel, and pistons adapted to reciprocate in the said cylinders some around each track, substantially as and for the purpose set forth.

9. In an engine, the combination of a hollow shaft having non-circular ends, standards adapted to hold the said shaft by its non-circular ends, a non-circular track arranged around the said shaft, admission-ports and exhaust-ports in the said shaft, a wheel rotatable around the said shaft and having radial steam-passages in its walls or otherwise, trunnions on the said wheel, pedestals, bearings mounted in the said pedestals and adapted to carry the said trunnions, compounding inwardly-directed cylinders carried by the said wheel, circumferential steam-passages communicating between the said cylinders, admission-ports and exhaust-ports communicating between the said cylinders and the said radial passages, pistons adapted to reciprocate in the said cylinders, rollers carried by the said pistons and adapted to make contact with the said track, means for retaining the said rollers in contact with the said track, two concentric rotatable sleeves introduced between the said shaft and the said wheel and having apertures therein, and means for transmitting motion from the said wheel, substantially as and for the purpose set forth.

708,698. HORIZONTAL CONVEYER. JAMES M. DODGE, Philadelphia, Pa., assignor to the Link Belt Engineering Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Jan. 8, 1901. Serial No. 42,583. (No model.)

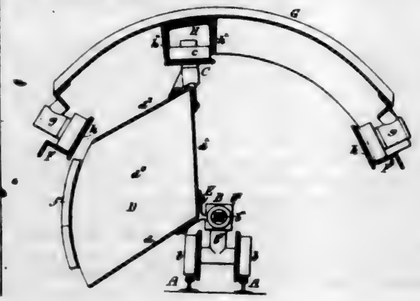

Claim.—1. The combination of a chain, a carrier therefor, buckets having one or more brackets pivoted to the chain, each bucket having a bottom extending from a point above the chain to one side thereof, a bracket secured to the inner end of the bucket, a wheel carried by the bracket, and a rail upon which the wheel travels, the outer end of the bucket being inclined and the inner end of the bucket being on the same incline as the outer end of the bucket, substantially as described.

2. The combination in an endless chain made up of a series of links, means for supporting the said chain, a series of buckets pivoted to the chain, a rail for supporting the bucket on one side of the chain, a second rail mounted above the first rail, a switch for transferring the bucket from the lower to the upper rail, and a discharge device for tipping the bucket, substantially as described.

3. The combination of an endless chain, supports therefor, buckets pivoted to the chain, a wheel on the inner end of each bucket, a rail on which the wheel travels so as to support the bucket on one side of the chain, a movable discharge device consisting of a frame mounted on longitudinal rails, and a curved channel-rail, with means for transferring the wheel of each bucket from the supporting-rail to the curved channel-rail, substantially as described.

4. The combination of two rails arranged side by side, an endless chain B, brackets depending from the chain, wheels having their axles mounted in the brackets, said wheels arranged to travel on the rails, a series of buckets pivoted to the chain so as to swing laterally on the chain, brackets on the inner end of each bucket, a wheel carried by each bracket, a rail A' upon which the wheels travel so that the load is carried by the rails A and A', rails F and F', a frame mounted on the said rails F, F', a curved rail mounted on the frame, switch-rails for transferring the wheels from the rail A' to the rail F', so that the wheels of the buckets will travel on the rails F', and on the curved rail to turn the buckets on their pivots and discharge the same, substantially as described.

5. The combination of an endless chain, a support therefor, buckets longitudinally pivoted on the chain, a rail supporting the inner end of each bucket, a rail mounted above the said supporting-rail, switch-rails for transferring the buckets from the supporting-rail to the upper rail, a frame longitudinally movable, and a channeled tipping-rail carried by the said frame and arranged to turn each bucket on the chain to the discharge position, substantially as described.

6. The combination of an endless chain made up of a series of links, wheels mounted on each link of the chain, two rails upon which the wheels travel, a bucket pivoted to each link of the chain, a wheel mounted on the inner end of each bucket, a rail upon which the wheel travels so that the load is supported by the three rails, rails parallel with the supporting-rails, a frame having wheels arranged to travel on the said rails, a curved tipping-rail carried by the frame, switch-rails at each end of the rail directly above the single supporting-rail so that the wheels at the rear end of the buckets will travel first on the supporting-rail, then upon the rail directly above the supporting-rail, and then upon the tipping-rail to the discharge-point, causing the contents of the buckets to be discharged, and back again to the supporting-rails, substantially as described.

7. The combination of an endless chain made up of a series of links, a bucket pivoted to each link, each bucket having one or more brackets, bushings on the links upon which the brackets are mounted, said bushings made in two parts coupled together, substantially as described.

8. The combination in an endless-chain conveyer, of a chain made up of a series of links pivoted together, the links being quadrangular in cross-section, a two-part bushing on each link, each part having a flange and a square opening adapted to the square link and means for coupling the parts together, a bracket, and a bracket on the bucket mounted on the bushing, substantially as described.

708,699. FUEL-ECONOMIZER FEED-WATER HEATER. WILLIAM DOWNS, Orange, N. J. Filed May 7, 1902. Serial No. 106,272. (No model.)

Claim.—1. In a fuel-economizer of the character specified, the combination of a series of tap boxes, outlet and supply pipe, and vertical circulating-tubes, with a series of lower headers arranged parallel, said lower headers having boxes to receive the vertical tubes, and also having internally-contracted portions between the boxes, substantially as and for the purpose as shown and described.

2. In a fuel-economizer of the character specified, a series of headers with boxes to receive vertical tubes, said headers being contracted internally and extended vertically in the portion between the boxes, in combination with a supply-pipe, vertical circulating-tubes, tap boxes; and outlet-pipe substantially as and for the purposes shown and described.

3. In a fuel-economizer of the character specified, a series of headers with boxes to receive vertical tubes, said headers being contracted internally and provided with ribs and extended vertically in the portion between the boxes, in combination with a supply-pipe, vertical circulating-tubes, top boxes, and outlet-pipe, substantially as and for the purposes shown and described.

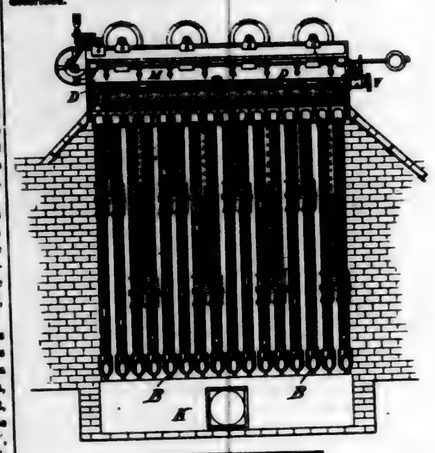

708,700. INSECT-DESTROYING MACHINE. CHARLES V. DYER and WILL S. WILLETT, Cuero, Tex. Filed Jan. 24, 1902. Serial No. 91,056. (No model.)

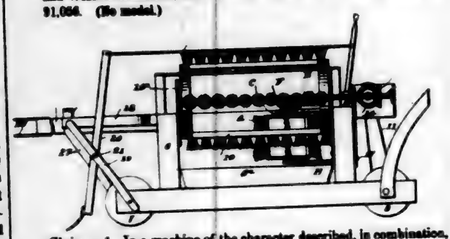

Claim.—1. In a machine of the character described, in combination, a casing, a rotatable brush adjustably supported adjacent thereto, means to drive the brush, normal draft appliances, and a supplementary detachable draft-beam connected to the casing.

2. In a combined insect-destroyer and cultivator, a plow-supporting frame, in combination with an insect-receiving casing and coöperating horizontal and vertical rotatable brushes adjacent to the casing.

3. In a machine of the character described, in combination, a wheeled casing, rotatable coöperative brushes secured adjacent thereto, the axes of the brushes being at an angle to each other, and means to drive the brushes.

4. In a machine of the character described, in combination, a movable casing open at one side, horizontal and vertical rotatable brushes at the open side of the casing, coöperating to sweep the same plant, and means to drive the brushes.

5. In a combined insect-destroyer and cultivator, the combination with a plow-supporting frame, of an insect-receptacle carried thereby, and coöperating horizontal and vertical rotatable brushes beside the receptacle, the horizontal brush being vertically adjustable.

708,701. SHADE-ROLLER. OLIVER M. EDWARDS, Syracuse, N. Y. Filed Aug. 27, 1900. Serial No. 28,126. (No model.)

Claim.—1. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface arranged substantially radial to the axis and open or accessible from the end of the roller, and a spindle provided with an abutting surface, which is arranged relatively to the surface on the barrel-head to abut against a device manually inserted between the two from the end of the roller.

2. In a shade-roller the combination, substantially as set forth, of a barrel-head and a spindle one of which is provided with an abutting surface and the other is provided with a plurality of abutting surfaces, whichever is on the barrel-head being arranged substantially radial to the axis and open or accessible from the end of the roller, with the surfaces on the head and spindle arranged relatively to each other to abut against a device manually inserted between a surface on the spindle and a surface on the head from the end of the roller.

3. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface open or accessible from both the side and the end of the roller, and a spindle also provided with an abutting surface, the surface on the head being arranged relatively to the surface on the spindle to abut against a device manually inserted between the surface on the head and the surface on the spindle.

4. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface open or accessible from the end of the roller, and a spindle also provided with an abutting surface, the surface on the head being arranged to pass near to the surface of the spindle, such surfaces being so constructed and arranged as to adapt them to abut against a device manually inserted between them from the end of the roller.

5. In a shade-roller the combination, substantially as set forth, of a barrel-head and a spindle each of which is provided with an abutting surface, one of which surfaces is arranged substantially parallel with the axial line of rotation of the head and spindle and is open or accessible from the end of the roller, the two surfaces being arranged to abut against a device manually inserted between them, from the end of the roller.

6. In a shade-roller the combination, substantially as set forth, of a barrel-head and a spindle each of which is provided with a plurality of abutting surfaces arranged substantially parallel with the axial line of rotation of the head and spindle and open or accessible from the end of the roller, the surfaces on one being arranged relatively to the surfaces on the other to abut against a device manually inserted between them from the end of the roller.

7. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with a recess having one open end and one open side, and a spindle provided with a recess having one open end, the open end of the recess in the head being arranged to pass near to the open end of the recess in the spindle, the side-wall surface of the recess in the head being arranged substantially parallel with the axial line of rotation of the head, portions of such surface and of the recess in the spindle being adapted to abut against a device manually inserted between them from the open side of the recess in the head.

8. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with a recess having open ends and one open side and a spindle provided with a recess having one open end and one open side, the open end of the recess in the spindle being arranged to pass near one of the open ends of the recess in the barrel-head, the side-wall surfaces of both of the recesses being arranged substantially parallel with the axial line of rotation of the head and spindle and portions of such surfaces being adapted to abut against a device manually inserted between them.

9. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface and a spindle provided with a plurality of abutting surfaces, the surface on the head or the surfaces on the spindle being open or accessible from the end of the roller and arranged relatively to the other surface or surfaces to abut against a device manually inserted from the end of the roller between any abutting surface on the spindle and the abutting surface of the head.

10. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with a plurality of abutting surfaces each of which is open or accessible from both the side and the end of the roller, and a spindle provided with a plurality of abutting surfaces which are arranged relatively to the surfaces on the barrel-head to abut against a device manually inserted between any abutting surface on the barrel-head and any abutting surface on the spindle.

11. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface and a spindle provided with a plurality of recesses having one open end and one open side, the side-wall surfaces of the recesses being arranged substantially parallel with the axial line of rotation of the spindle and are adapted to abut against a device manually inserted between the side wall of any recess in the spindle and the abutting surface on the barrel-head.

12. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface, a spindle adapted to be received by the barrel-head and to receive a disk, and a disk made separable from the spindle and provided with oppositely-arranged abutting surfaces and an opening through the disk of suitable shape to receive the spindle and be locked thereto in opposite directions, one of the oppositely-arranged abutting surfaces on the disk forming the operative abutting surface when the disk is placed on the spindle in one direction and the opposite surface thus forming it when the disk is placed on the spindle in the other direction, the abutting surfaces on the disk and barrel-head being arranged to pass near to each other and adapted to abut against a device manually inserted between them.

13. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface, a spindle adapted to be received by the head and to receive a disk, and a disk made separable from the spindle and provided with an opening through it of suitable shape to receive the spindle and be locked thereto in opposite directions and also provided with a recess having one open end and one open side, the side-wall surfaces of the recess being arranged substantially parallel with the axial line of rotation of the spindle, one side-wall surface forming the abutting surface when the disk is placed on the spindle in one direction and the opposite surface thus forming it, when the disk is placed on the spindle in the other direction, the abutting surfaces of the recess in the spindle and the abutting surface on the head being adapted to abut against a device manually inserted between them.

14. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface, a spindle adapted to be received by the barrel-head and to receive a disk, and a disk made separable from the spindle and provided with a recess having one open and one closed side and an open end and also provided with an opening through it of suitable shape to receive the spindle and be locked thereto, the open end of the recess in the disk being arranged to pass near the abutting surface on the barrel-head and the two adapted to abut against a device manually inserted between them.

15. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface, a spindle adapted to be received by the barrel-head and to receive a disk, and a disk made separable from the spindle and provided with a plurality of recesses having one open and one closed side and an open end and also provided with an opening through it to receive the spindle and be locked thereto, the open end of the recess in the disk being arranged to pass near to the abutting surface on the barrel-head, and the two adapted to abut against a device manually inserted between them.

16. In a shade-roller the combination, substantially as set forth, of a barrel-head provided with an abutting surface, a spindle adapted to be received by the barrel-head and to receive a disk, and a disk made separable from the spindle and provided with a plurality of recesses having one open and one closed side and an open end and also provided with an opening through it to receive the spindle and be locked thereto, the open ends of the recesses in the disk being arranged to pass near to the abutting surface on the barrel-head and the side-wall surfaces of the recesses arranged substantially parallel with the axial line of rotation of the spindle, the abutting surface on the head and the side-wall surface of any recess in the disk being adapted to abut against a device manually inserted between them.

17. In a shade-roller, the combination, substantially as set forth, of a barrel-head provided with a plurality of recesses having two open ends and one open side, a spindle adapted to be received by the barrel-head and to receive a disk, and a disk made separable from the spindle and provided with a plurality of recesses having one open and one closed side and an open end, the disk being provided with an opening through it of suitable shape to receive the spindle from opposite directions and be locked thereto, the open ends of the recesses in the disk being arranged to pass near the recesses in the barrel-head and the side-wall surface of one recess in the disk and the side-wall surface of any recess in the head are adapted to abut against a device manually inserted between them.

708,702. BOX-FASTENING. EDWARD FLETCHER, San Francisco, Cal., assignor to Mailless Lid Box Company, San Francisco, Cal., a Corporation of California. Filed Mar. 20, 1902. Serial No. 98,143. (No model.)

Claim.—1. The combination with boxes and the like, of covers having grooves or channels in their outer surfaces a short distance from the ends, and wires fitting said channels and having their ends extending divergently along the sides of the box and interned and driven through the sides to look the latter and the covers in place.

2. A box or similar receptacle including mailless sides, ends and tops said tops having grooves or channels across their upper surfaces, in combination with wire bails fitting said grooves or channels and having their opposite ends bent and extending divergently over the sides, and with the extremities of said bent portions turned inward and driven through the sides into the end portions of the box thereby securing the parts of the box independent of nails or other fastening means.

3. A box or receptacle and a cover therefor, said cover having parallel transverse grooves or channels near its ends, strips fitting said channels having grooves made longitudinally in their surfaces, wires seated in

said grooves extending thence divergently along the sides having interned ends driven into the sides whereby the parts are locked together.

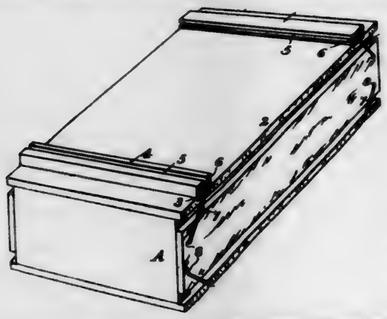

4. A box having unconnected sides, ends and tops said tops having channels across their upper surfaces, and bails fitted in said grooves and having their opposite portions embracing the sides and edges of the tops and with the extremities of said portions driven through said sides and into said ends to secure the unconnected portions without the use of nails and other independent fastenings.

5. A box or receptacle having opposite lids provided in their outer surface with transverse grooves or channels, and wire bails fitting said grooves or channels and having their end portions extending diagonally and driven directly into the sides of the box.

6. A box or like receptacle including a top having a groove near each end; a cleat engaging said groove and having its upper surface channeled; and a wire bail seated in said channeled surface and having its opposite portions embracing the sides of the box and edges of the top and driven into said sides.

708,703. MACHINE OR APPARATUS FOR RAISING OR LOWERING THE TEMPERATURE OF LIQUIDS. FRANK H. FLOYD, Quincy, Mass. Filed Apr. 23, 1902. Serial No. 104,323. (No model.)

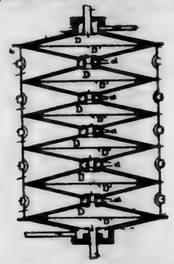

Claim.—1. In a machine for the purpose described, the combination of a series of hollow outer sections, a series of hollow inner sections arranged within the spaces between the outer sections and separated therefrom by narrow surrounding spaces, circulating connections between the inner sections and also with the end sections thereof, and means for effecting a circulation through the outer sections and also through the spaces between the inner and outer sections.

2. In a machine for the purpose described, the combination of a series of separably-superimposed hollow outer sections, a series of separably-superimposed inner hollow sections arranged between opposing surfaces of the outer sections and separated therefrom by narrow surrounding spaces, circulating connections between the individual inner sections extending through the outer sections, and means for effecting a circulation through both the inner and the outer sections and also through the spaces between said sections.

3. In means for the purpose described, a series of double-concave hollow annular outer sections superimposed one upon another, a series of double-convex hollow inner sections inclosed between the concave faces of the outer sections and separated therefrom by narrow spaces, and means whereby a circulation may be effected through each of said inner and outer sections and also through the said spaces.

4. In means for the purpose described, a series of double-concave, hollow, annular outer sections separably superimposed one upon another, a series of double-convex hollow inner sections inclosed in the spaces formed between the concave faces of the outer sections, hollow separable connections joining said sections through the central openings of the outer sections, and circulating-pipes connected to the said sections and with the spaces between the same.

5. In means for the purpose described, an inner series of hollow sections, superimposed one upon another and means for effecting a circulation therethrough, an outer series of sections entirely inclosing the sections of the inner series and separated from the surfaces thereof by narrow spaces, means for effecting a circulation through said outer sections, and circulating-pipes connecting with the said spaces.

6. In apparatus for changing the temperature of milk and other liquids, a plurality of hollow sections arranged in an inner and an outer series, the opposing surfaces of the sections of the two series forming between them a connected series of narrow spaces of double conical form adapted for the passage therethrough of the milk or other liquid to be treated.

7. In apparatus for the purpose described, the combination of the outer concave hollow, annular sections superimposed one upon another, and gaskets between said sections, of the inner convex hollow sections inclosed by the concave faces of the outer sections, and separable hollow stems connecting said inner sections through the central openings of the outer sections.

8. In apparatus for the purpose described, the combination of the top and bottom plates having the concave, inner surfaces, the series of separable, double-concave, hollow, annular outer sections, having detachable circulating connections, the inner hollow, double-convex sections having detachable, interfitting hollow stems, circulating connections for the upper and lower inner sections, and circulating connections communicating with the inclosed connected spaces between the inner and outer sections.

9. In apparatus for the purpose described, the combination with the series of separable superimposed hollow, double-concave, annular outer sections, of the series of hollow inner sections inclosed between the concave faces of the outer sections and separated therefrom by narrow spaces, separable hollow clutch connections, and means for rotating the series of inner sections.

10. In apparatus for the purpose described, the combination of the outer series of fixed separable sections, the inner sections inclosed by the outer sections and separably connected with each other, said inner and outer sections having parallel surfaces separated from each other at all points by narrow spaces, a circulating system connected with both inner and outer sections and also with the said spaces, bearings upon which the said inner sections may rotate, and joints in the circulating-pipes leading to said inner sections for permitting rotation thereof.

11. In apparatus for the purpose described, the series of superimposed hollow annular double-concave sections, and gaskets seated between the said sections near their peripheries, in combination with hollow inner sections seated between the concave faces of the outer sections and separated therefrom.

12. In a machine for the purpose described, the combination with a series of hollow outer sections superimposed upon each other at their peripheral portions, but having their adjacent surfaces separated by spaces, hollow inner sections arranged in said spaces with their surfaces separated from the surfaces of the outer sections, and central connections between said inner sections.

13. In a machine for the purpose described, the combination with a series of hollow outer sections, a series of hollow inner sections entirely inclosed by the outer sections and separated therefrom by spaces, means for effecting a circulation through each of said sections and also through the said spaces, and means for rotating the inner sections.

14. The herein-described machine for attemperating liquids, consisting of a plurality of hollow sections for the attemperating medium, separably superimposed upon each other in an inner and outer series and inclosing between their opposing surfaces a narrow passage of large superficial area for the liquid to be attemperated, together with means for effecting a circulation through said sections and passage.

708,704. BRAKE-SHOE. JOSEPH D. GALLAGHER, Glenridge, N. J. Filed June 13, 1901. Serial No. 64,422. (No model.)

Claim.—1. As a new article of manufacture, a brake-shoe formed of annealing-iron, having an outer shell of soft metal and an inner core of hard metal, substantially as described.

2. As a new article of manufacture, a brake-shoe formed of cast-iron, the back and lugs of which are annealed and the core of which is formed of hard iron so as to present during its use a compound wearing-surface, substantially as described.

3. As a new article of manufacture, a brake-shoe comprising malleable-iron and relatively hard cast-iron portions formed integral with each other, the malleable-iron portion comprising a layer disposed at the back of the shoe, substantially as described.

4. As a new article of manufacture, a brake-shoe comprising malleable-iron and relatively hard cast-iron portions formed integral with each other, the malleable-iron portion thereof comprising a layer disposed at the back of the shoe and the attaching-lug, substantially as described.

5. As a new article of manufacture, a brake-shoe comprising layers of malleable iron extending from the face or friction-surface thereof toward the back of the shoe and relatively hard cast-iron portions, the malleable and hard portions being integral with and merging gradually into each other, substantially as described.

6. As a new article of manufacture, a brake-shoe comprising a layer of malleable iron disposed at the back of the shoe, layers of malleable iron extending from the face or friction-surface thereof toward the back of the shoe, and relatively hard cast-iron portions, substantially as described.

7. As a new article of manufacture, a brake-shoe comprising outer layers of malleable iron on all exposed surfaces, and an inner portion of relatively hard cast-iron, substantially as described.

8. As a new article of manufacture, a brake-shoe consisting of an integral piece of metal and comprising outer layers of malleable iron and inner portions of relatively hard cast-iron, substantially as described.

708,705. FURNACE FOR HEATING AND MELTING IRON, &c. HENRY L. GANTT, Fountain Hill, Pa. Filed Mar. 22, 1901. Serial No. 52,336. (No model.)

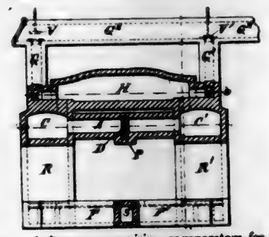

Claim.—1. A furnace comprising regenerators for air, a heating-chamber, waste-gas-burning chambers respectively connecting on one side with the space at the end of the regenerator checker-work, and on the other side with the heating-chamber, and that act as dust-collectors to protect the regenerators, means for introducing into the heating-chamber a finely-divided or attenuated fuel that is burned in suspension in said chamber, and a passage, connecting the waste-gas-burning chambers, through which part of the incoming heated air passes, and which is of such cross-sectional area as compared with the passages between the combustion-chambers and the heating-chamber that the incoming heated air passing to the heating-chamber is of such volume as to produce therein a partial combustion only of the fuel the unconsumed parts of the fuel leaving the heating-chamber being completely burned in the waste-gas-burning chambers.

2. A furnace comprising regenerators for air, a heating-chamber, waste-gas-burning chambers, one for each regenerator, respectively interposed between the regenerators and the heating-chamber, means for introducing into the heating-chamber a finely-divided or attenuated fuel that is burned in suspension in said chamber, a passage connecting the waste-gas-burning chambers, and means for varying at will the cross-sectional area of said passage to so control the quantity of air passing to the heating-chamber as to produce therein the desired character of flame or atmosphere.

3. A furnace comprising two regenerators, a heating-chamber interposed between their inner ends with a space of material dimensions between the checker-work of each regenerator and the heating-chamber, means for introducing into the heating-chamber a finely-divided or attenuated fuel that is burned in suspension in said chamber, an air-passage connecting said spaces at the inner ends of the regenerators, and means for varying at will the cross-sectional area of said passage to so control the quantity of air passing to the heating-chamber as to produce therein the desired character of flame or atmosphere.

4. A furnace comprising regenerators for air, a heating-chamber interposed between the inner ends of the regenerators with a space of material dimensions between the checker-work of each regenerator and the heating-chamber, a passage connecting said spaces, means for introducing into the heating-chamber a finely-divided or attenuated fuel that is burned in suspension, and means for regulating the relative quantities of incoming heated air passing through the passage connecting the regenerators, and into the heating-chamber, respectively.

5. A furnace comprising regenerators for air, a heating-chamber, waste-gas-burning chambers, one for each regenerator, respectively interposed between the regenerators and the heating-chamber, means for introducing into the heating-chamber a finely-divided or attenuated fuel that is burned in suspension, a passage connecting the waste-gas-burning chambers, and means for varying at will the quantity of incoming heated air passing to the respective combustion-chambers and to the heating-chamber to produce in the latter the desired character of atmosphere.

708,706. WIRE-STRETCHER. ANDREW J. GOLDSBY, Proctor, Mo. Filed July 16, 1901. Serial No. 68,514. (No model.)

Claim.—1. A wire-stretcher, embodying a pair of lever members terminating at corresponding ends in handles, and having a mutual fulcrum connection at their corresponding opposite terminals, and wire-clamps carried intermediately by the members and at corresponding distances from the fulcrum connection thereof, the clamp of each lever member being active when inward strain is placed upon said lever.

2. A wire-stretcher, embodying a pair of lever members terminating at corresponding ends in handles, and having a mutual fulcrum connection at their corresponding opposite terminals, each member being formed of pivotally-connected sections having mutually-coöperating clamp members, the clamp members of each lever being active when inward strain is placed upon said lever.

3. A wire-stretcher comprising opposite members, each of which is formed by a bowed section and a handle-section, which are pivotally connected and are constructed to mutually coöperate and form a wire-clamp, the outer corresponding ends of the opposite bowed sections having a pivotal connection.

4. A wire-stretcher comprising opposite duplicate members, each of which is formed by a bowed section and a handle-section which have their inner ends overlapped and pivotally connected, the bowed member having a shoulder extended transversely across and in coöperative relation with the inner end of the handle-section to form therewith a wire-clamp, the outer ends of the opposite bowed sections having a common pivotal connection.

5. A wire-stretcher, comprising a pair of members pivotally connected at their terminals, corresponding wire-clamps provided at an intermediate point of the members, and a wire guide or holder disposed between the clamps.

6. A wire-stretcher, comprising a pair of lever members having a mutual pivotal connection at their terminals, corresponding wire-clamps carried at an intermediate point by the members, and a wire guide or holder carried by the pivotal connection of the members at one side of the plane of said members, and adjustable across the members into positions between the wire-clamps when in use and outside of the lever members when not in use.

7. A wire-stretcher, comprising a pair of lever members having a mutual pivotal connection, corresponding wire-clamps carried at an intermediate point by the members, and a wire guide or holder pivotally carried at the pivotal connection of the members at one side of the plane of the members and movable across the same into positions between the clamp members when in use and outside of the lever members when not in use.

8. A wire-stretcher, comprising a pair of lever members having a mutual terminal pivotal connection, corresponding wire-clamps carried at an intermediate point by the members, and a wire guide or holder pivotally carried by the pivotal connection of the members and having a forked free end, the guide or holder being movable in an arcuate path upon its pivotal support in a plane at one side of the plane of the lever members to positions between the clamp members when in use and outside of the lever members when not in use.

9. In a wire-stretcher, the combination of opposite duplicate members, each of which comprises a bowed member and a lever member which have their inner ends overlapped and pivotally connected, the bowed member having a transverse shoulder located adjacent to and extended transversely across the inner end of the lever-section, the outer ends of the opposite bowed sections having a common pivotal connection, a wire guide or holder having one end loosely mounted upon the said common pivotal connection and normally lying between the opposite members, the free

end of the guide being provided with an inwardly-tapered, longitudinal bifurcation which is normally aligned with the inner ends of the opposite lever-sections, and a plurality of laterally-projected post-engaging hooks of different sizes, said hooks having common pivotal connection which is interchangeable from one bowed section to the other and located intermediate of the ends of said sections.

708,707. **KILN-BURNING APPARATUS.** GEORGE F. GRAY, HARRY H. GRAY, and RICHARD SOUTH, San Francisco, Cal. Filed Dec. 30, 1901. Serial No. 87,756. (No model.)

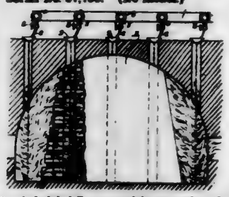

Claim.—1. A brick-kiln comprising a series of chambers containing the bricks; open combustion-chambers between the bricks and interior walls of the chamber; and oil-drip tubes and nozzles located above the roof of the kiln said roof having openings through it in line with the drip-tubes and leading the oil into the upper limits of the combustion-chambers whereby the oil is successively burned while dropping through the vertical height of said chambers.

2. A brick-kiln comprising a series of chambers containing the bricks; open combustion-chambers between the bricks and interior walls of the chamber; oil-drip tubes and curved nozzles located above the roof of the kiln said roof having vertical openings through it and leading the oil into the upper limits of the combustion-chambers whereby the oil is successively vaporized and burned while dropping from roof to floor of the chambers; seats fitting the upper ends of the vertical openings and funnels fitting said seats and receiving the drip from the nozzles.

708,708. **ELECTRODE-SEPARATOR FOR BATTERIES.** ARTHUR W. HARRISON, Los Angeles, Cal., assignor of two-thirds to F. A. Marcher, Los Angeles, Cal. Filed May 7, 1902. Serial No. 106,260. (No model.)

Claim.—1. In a battery an electrode-separator composed of yucca having the non-fibrous portion thereof removed.

2. In a battery an electrode-separator therefor composed of the fibrous portion of yucca.

3. As a new article of manufacture a battery electrode-separator of yucca deprived of the non-fibrous portions thereof.

708,709. **PUTTYING-TOOL.** ELLA T. HENNESSEY and MARGARET M. GLENNON, Deerlodge, Mont. Filed June 11, 1902. Serial No. 111,142. (No model.)

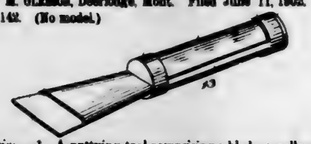

Claim.—1. A puttying-tool comprising a blade, a collapsible handle connected to the blade and adapted to deliver its contents to the blade and a rigid connection between the ends of the handle.

2. A puttying-tool comprising a blade and a collapsible handle connected thereto, said handle having metallic terminals to one of which the blade is directly connected and the other of which is open, a rigid connection between the metallic terminals and a closure for the open metallic terminal, the blade having an opening therethrough leading from the handle and arranged to deliver putty to the blade.

708,710. **CIRCUIT-BREAKER.** EDWARD M. HEWLETT, Schenectady, N. Y., assignor, by mesne assignments, to H. Ward Leonard, Bronxville, N. Y. Filed Sept. 26, 1896. Serial No. 606,160. (No model.)

Claim.—1. In an electric switch, the combination of a pair of fixed contacts, a bridging-contact and a barrier of insulating material between the fixed contacts and spanned by the bridge; the barrier consisting of fixed and movable portions, and means for causing the movable part to follow the bridge as the switch is opened.

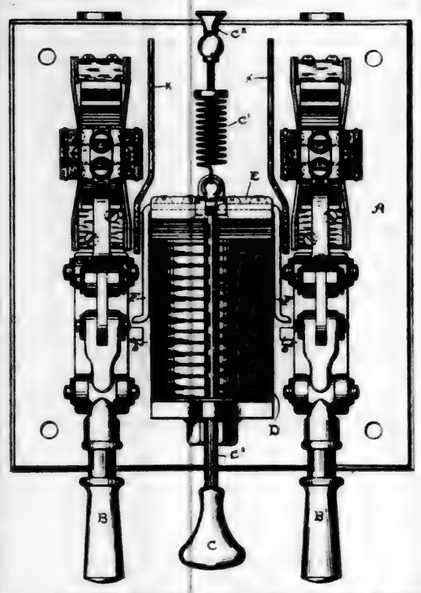

2. In a switch, the combination of a spring for opening the switch, a toggle for closing it, and a second toggle holding the first one extended.

3. In a switch, the combination of fixed and movable contacts, a toggle connected to the movable contacts, and a second toggle for holding the first in its extended position.

4. In a switch, the combination of fixed and movable contacts, a toggle connected to the movable contacts, a second toggle for holding the first in its extended position, and a spring for cramping the second toggle positively out of line.

5. An automatic circuit-breaker provided with a switch, a toggle for closing the switch, a second toggle for holding the first one extended, and an armature and series coil for causing the second toggle to release the switch.

6. The combination of a plurality of electric switches each comprising terminal blocks, a laminated member for bridging said blocks, independent means for bringing the laminated member into engagement with the terminal blocks, and a single controlling device for automatically controlling the movement of said switches.

7. The combination of a plurality of electric switches each comprising separated terminal blocks, a laminated bridging member for engaging said blocks, a toggle for operating each laminated bridging member, independent means in each switch for operating said toggle, and a single controlling device for automatically controlling the movement of said switches.

8. The combination of a plurality of electric switches, each comprising separated terminal blocks, a laminated bridging member for engaging said terminal blocks, a pivoted arm supporting said laminated bridging member at approximately its middle, independent means in each switch for operating said pivoted arms, and a single controlling device for automatically controlling the movement of said switches.

9. The combination of a plurality of electric switches, each comprising separated terminal blocks, a pivoted laminated bridging member for engaging said terminal blocks, independent means in each switch for operating the pivoted laminated bridging member, and a single controlling device for automatically controlling the movement of said switches.

10. The combination of a plurality of electric switches, each comprising separated terminal blocks, a pivoted laminated bridging member for engaging said blocks, a toggle for operating said pivoted laminated member, and independent means in each switch for operating the toggle, and a single controlling device for automatically controlling the movement of said switches.

11. The combination of a plurality of electric switches juxtaposed, and in series in the same electric circuit, each switch comprising separated terminal blocks, a laminated bridging member for engaging said terminal blocks to close the circuit, independent means in each switch for operating said bridging member, and a single electric responsive device for automatically controlling the movement of said switches.

12. The combination of a plurality of electric switches capable of independent manual movement into normal position, each switch comprising separated terminal blocks, a laminated bridging member for engaging said blocks, means for locking said bridging member in engagement with said terminal blocks, and a single electroresponsive device for automatically unlocking all the switches.

13. The combination of a plurality of electric switches designed to be moved independently into normal position, each switch comprising separated terminal blocks, a pivoted laminated bridging member for engaging said terminal blocks, independent locking devices for holding said switches in their normal position, and a single electroresponsive device for automatically releasing said switches.

14. The combination of a plurality of electric switches capable of independent movement into normal position, each switch comprising separated terminal blocks, one vertically above the other, a laminated bridging member for engaging said blocks, independent means in each switch for operating said bridging member, and a single controlling device for automatically controlling the movement of said switches.

15. The combination of a plurality of electric switches capable of independent movement into normal position, each switch comprising separated terminal blocks whose contact-faces are in approximately the same plane, a laminated bridging member for engaging said terminal blocks, independent means in each switch for operating said bridging member, and a single controlling device for automatically controlling the movement of said switches.

16. The combination of a plurality of electric switches, capable of independent movement into normal position, each switch comprising separated terminal blocks, one vertically above the other, and whose contact-surfaces are in approximately the same vertical plane a laminated bridging member for engaging said terminals, independent means in each switch for operating the laminated member, and a single electroresponsive device for automatically controlling or effecting the simultaneous movement of said switches.

17. The combination of a plurality of switches, independently movable into normal position, each switch comprising separated terminal blocks, a laminated bridging member for engaging said terminal blocks, a stationary shunt-contact located upon and above the upper terminal block, a movable shunt-contact cooperating with said fixed shunt-contact, locking devices for holding said switches in their normal positions and a single electroresponsive device for automatically and simultaneously releasing said switches.

18. The combination of a plurality of electric switches independently movable into normal position, each switch comprising separated terminal blocks, a laminated bridging member normally engaging with said terminal blocks, locking means for holding said bridge in engagement with said terminal blocks and a single electroresponsive device for automatically and simultaneously releasing the bridging devices of the switches from the control of their locking devices.

19. The combination of a plurality of electric switches independently movable into normal position and juxtaposed upon a common base, each switch comprising separated terminal blocks, one vertically above the other, a laminated bridging member cooperating with said terminal blocks, independent means in each switch for operating the laminated member, and a single electroresponsive device located between a pair of said switches for automatically and simultaneously releasing all the switches.

20. The combination of a plurality of electric switches independently movable into normal position, each switch comprising separated contact terminals, a laminated bridging member for engaging said contact terminals, independent means in each switch for operating the laminated member, a single electroresponsive device for automatically and simultaneously releasing said switches, and barriers of insulating material located between the independent switches.

21. An electric switch comprising separated contact-blocks one vertically above the other, and whose engaging faces are in approximately the same vertical plane, a laminated bridging member engaging with the ends of the laminæ upon said contact-blocks, means for bringing said bridging member into engagement with said blocks, means for locking said bridging member in engagement with said blocks and electroresponsive means for controlling the switch.

22. In an electric switch the combination of separated contact-blocks one vertically above the other and whose contact-surfaces are in approximately the same vertical plane, a stationary shunt-contact, a movable laminated bridging member for engagement with said contact-blocks, a vertically-extending member, a movable shunt-contact carried thereby, means for maintaining said bridging member in engagement with said contact-blocks, and electroresponsive means for controlling the switch.

23. In an electric switch the combination of separated contact-blocks one vertically above the other, and whose engaging faces are in approximately the same vertical plane, a shunt-contact in electrical communication with the upper contact-block and located above the engaging surface thereof, a laminated bridging member, for engaging with the ends of its laminæ with the engaging surfaces of said contact-blocks, a vertically-extending pivoted member, a movable shunt-contact carried at the upper end thereof, means for restraining the laminated bridging member in normal position, and electroresponsive means for controlling the switch.

24. In an electric switch the combination of separated contact-blocks one vertically above the other, and whose engaging faces are in approximately the same vertical plane, a shunt-contact in electrical communication with the upper contact-block and located above the engaging surface thereof, a laminated bridging member, for engaging at the ends of its laminæ with the engaging surfaces of said contact-blocks, a vertically-extending pivoted member, a movable shunt-contact carried at the upper end thereof, and means for restraining the laminated bridging member in normal position.

25. In an electric switch, the combination of separated contact-blocks one vertically above the other, and whose engaging faces are in approximately the same vertical plane, a shunt-contact in electrical communication with the upper contact-block and located above the engaging surface thereof, a pivoted laminated bridging member for engaging at the ends of its laminæ with the engaging surfaces of said contact-blocks, a vertically-extending pivoted member a movable shunt-contact carried at the upper end thereof, and means for restraining the laminated bridging member in normal position.

26. In an electric switch the combination of separated terminal blocks, one vertically above the other and having their engaging faces in approximately the same vertical plane, a horizontally spring-pressed member located between such terminal blocks, a laminated bridging member for engaging with said terminal blocks and in its normal position compressing said spring-pressed member, means for restraining said laminated member in its normal position, and means for releasing the switch.

27. In an electric switch the combination of separated contact-blocks one vertically above the other, and having their engaging faces in approximately the same vertical plane, a stationary shunt-contact in electrical communication with the upper contact-block and located above the engaging face thereof, a laminated bridging member for engaging said terminal blocks, a spring-pressed member located between said terminal blocks and exerting pressure against said laminated member in its normal position, a vertically-extending pivoted member, a movable shunt-contact carried at the upper end thereof, and means for restraining the laminated bridging member in normal position.

28. In an electric switch the combination of separated contact-blocks one vertically above the other, and having their engaging faces in approximately the same vertical plane, a stationary shunt-contact in electrical communication with the upper contact-block and located above the engaging face thereof, a laminated bridging member for engaging said terminal blocks pivoted on an axis parallel with the base, a spring-pressed member located between said terminal blocks, and exerting pressure against said laminated member in its normal position, a vertically-extending pivoted member, a movable shunt-contact carried at the upper end thereof, and means for restraining the laminated bridging member in normal position.

29. In an electric switch the combination of separated contact-blocks one vertically above the other, and having their engaging faces in approximately the same vertical plane, a stationary shunt-contact in electrical communication with the upper contact-block and located above the engaging face thereof, a laminated bridging member for engaging said terminal block, spring means located between said terminal blocks and exerting pressure against said laminated member in its normal position, a vertically-extending pivoted member, a movable shunt-contact carried at the upper end thereof, and means for restraining the laminated bridging member in normal position.

30. In an electric switch the combination of separated contact-blocks one vertically above the other, and having their engaging faces in approximately the same vertical plane, a stationary shunt-contact in electrical communication with the upper contact-block and located above the engaging face thereof, a laminated bridging member for engaging said terminal blocks pivoted on an axis parallel with the base, and spring means located between said terminal blocks and exerting pressure against said laminated member in its normal position, a vertically-extending pivoted member, a movable shunt-contact carried at the upper end thereof, and means for restraining the laminated bridging member in normal position.

31. In an electric switch the combination of a base of insulating material, separated contact-blocks secured thereto by means of bolts extending through said base and serving also as an electrical connection to

said blocks, one of said blocks located vertically above the other, said blocks having their engaging surfaces in approximately the same vertical plane, a laminated bridging member for engaging with said contact-blocks, resilient means located between said blocks and exerting pressure against said bridging member in its normal position, means for forcing said bridging member into engagement with the contact-blocks and means for restraining said bridging member in its normal position.

32. In an electric switch the combination of separated contact-blocks, one vertically above the other and having their contact-faces approximately in the same vertical plane, a laminated bridging member for engaging said contact-blocks, a lever pivoted on an axis parallel with the base and carrying at its upper end said laminated contact member, a toggle controlling said pivoted lever, and means for locking the toggle in its extended position.

33. In an electric switch the combination of separated contact-blocks, one vertically above the other, a laminated bridging member for engaging said contact-blocks, a lever pivoted on an axis parallel with the base and carrying at its upper end said laminated contact member, a toggle controlling said pivoted lever, and a second toggle for locking said toggle in its extended position.

708,711. BUTTON. JACOB HILDER, New York, N. Y. Filed May 16, 1902. Serial No. 107,641. (No model.)

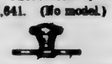

Claim.—1. The combination of a base-plate, a shank or stem projecting therefrom, an apertured cap attached to said shank or stem and a piece of yielding material seated beneath said cap and projecting through said aperture.

2. The combination of a base-plate, a shank or stem projecting therefrom and having a seat or shoulder on its upper end, an apertured cap attached to said shank or stem and a piece of yielding material seated beneath said cap and projecting through said aperture.

3. A button comprising an apertured cap or top and a piece of yielding material projecting through said aperture beyond the plane of said cap or top.

4. A button comprising a stem and a head, the latter being of greater diameter than the former and having a metal periphery or rim and a central fabric-engaging piece of yielding material.

5. A button having a shank and a head the latter being apertured and a piece of yielding material clamped between said head and shank so as to project through the aperture of said head.

6. A button having a shank and a head the latter being apertured and a piece of yielding material interposed between said shank and cap and compressed so as to project through the aperture of said head.

7. The combination of a base-plate, a shank or stem projecting therefrom, a plate or disk seated on the top of said shank or stem, a piece of yielding material seated upon said plate or disk and an apertured cap, the said yielding material projecting through the aperture of said cap.

708,712. CONDENSING OR COOLING APPARATUS. CHRISTIAN C. HILL, Chicago, Ill. Filed Oct. 23, 1901. Serial No. 79,683. (No model.)

Claim.—1. A condensing or cooling apparatus, comprising in combination, inlet and outlet heads, and a condensing or cooling chamber yieldingly connected to said heads by flexible connections which are adapted to permit of a ready detachment of said chamber from said head, substantially as set forth.

2. A condensing or cooling apparatus comprising in combination, inlet and outlet heads, and a series of condenser-sections yieldingly connected to said heads by flexible connections which are adapted to permit of a ready detachment of said chamber from said head, substantially as set forth.

3. A condensing or cooling apparatus, comprising in combination, inlet and outlet heads, and a condensing or cooling chamber yieldingly connected to said heads by flexible connections which are adapted to permit of a ready detachment of said chamber from said head, the same comprising flexible nipples and tubular necks on the respective parts, substantially as set forth.

4. A condensing or cooling apparatus, comprising in combination, inlet and outlet heads, and a series of condenser-sections yieldingly connected to said heads by flexible connections which are adapted to permit of a ready detachment of said chamber from said head, the same comprising flexible nipples and tubular necks on the respective parts, substantially as set forth.

5. A condensing or cooling apparatus, comprising in combination, inlet and outlet heads, a series of condenser-sections, a series of flexible nipples secured to the inlet and outlet heads, and a series of tubular necks attached to the condenser-sections and adapted for engagement with the flexible nipples which are adapted to afford individual yielding connections between said chambers and heads, and permit of a ready and individual detachment of the parts, substantially as set forth.

6. A condensing or cooling apparatus, comprising in combination, inlet and outlet heads, a series of condenser-sections, a series of flexible nipples having enlarged and integrally-formed bases common to a series of such nipples and secured to the inlet and outlet heads, and a series of tubular necks attached to the condenser-sections and adapted for engagement with the flexible nipples which are adapted to afford individual yielding connections between said chambers and heads, and permit of a ready and individual detachment of the parts, substantially as set forth.

7. A condensing or cooling apparatus comprising in combination, inlet and outlet heads formed with longitudinal depressions in their sides and with orifices in the sunken walls of such depressions, a series of condenser-sections, a series of flexible nipples secured to the inlet and outlet heads, and a series of tubular necks attached to the condenser-sections and adapted for engagement with the flexible nipples, which are adapted to afford individual yielding connections between said chambers and heads, and permit of a ready and individual detachment of the parts, substantially as set forth.

8. A condensing or cooling apparatus comprising in combination, inlet and outlet heads formed with longitudinal depressions in their sides and with orifices in the sunken walls of such depressions, a series of condenser-sections, a series of flexible nipples having enlarged and integrally-formed bases common to a series of such nipples and secured to the respective inlet and outlet heads outside the longitudinal depressions aforesaid, and a series of tubular necks attached to the condenser-sections and adapted for engagement with the flexible nipples, substantially as set forth.

9. A condensing or cooling apparatus, comprising in combination, upper and lower inlet-heads, an outlet-head arranged to the rear of the lower inlet-head, and a series of condenser-sections arranged between the upper and lower inlet-heads and forward of the outlet-head and connected to said heads by flexible connections, substantially as set forth.

10. A condensing or cooling apparatus, comprising in combination, upper and lower inlet-heads, an outlet-head arranged to the rear of the lower inlet-head, and a series of condenser-sections arranged between the upper and lower inlet-heads and forward of the outlet-head, and connected to said heads by flexible connections, the same comprising flexible nipples and tubular necks on the respective parts, substantially as set forth.

11. A condensing or cooling apparatus, comprising in combination, upper and lower inlet-heads, an outlet-head arranged to the rear of the lower inlet-head, a series of condenser-sections arranged between the upper and lower inlet-heads and forward of the outlet-head, a series of flexible nipples secured to the inlet and outlet heads, and a series of tubular necks attached to the condenser-sections and adapted for engagement with the flexible nipples, substantially as set forth.

12. A condensing or cooling apparatus, comprising in combination, upper and lower inlet-heads, an outlet-head arranged to the rear of the lower inlet-head, a series of condenser-sections arranged between the upper and lower inlet-heads and forward of the outlet-head, a series of flexible nipples having enlarged and integrally-formed bases common to a series of such nipples and secured to the inlet and outlet heads, and a series of tubular necks attached to the condenser-sections and adapted for engagement with the flexible nipples which are adapted to afford individual yielding connections between said chambers and heads, and permit of a ready and individual detachment of the parts, substantially as set forth.

13. A condensing or cooling apparatus, comprising in combination, upper and lower inlet-heads, an outlet-head arranged to the rear of the lower inlet-head, a series of condenser-sections arranged between the upper and lower inlet-heads and forward of the outlet-head, a series of flexible nipples secured to the inlet and outlet heads, and a series of tubular necks attached to the condenser-sections and having horizontal extensions adapted for engagement with the flexible nipples, substantially as set forth.

14. In a cooling or condensing apparatus of the character herein described, a condenser-section comprising two parallel plates, marginal folds on the opposing faces of such plates adapted to maintain the plates in separated relation, and means for securing the margins of the plates together, substantially as set forth.

15. In a cooling or condensing apparatus of the character herein described, a condenser-section comprising two parallel plates, marginal folds on the opposing faces of such plates adapted to maintain the plates in separated relation, and a binding cap-piece embracing the margins of the plates and securing the same together, substantially as set forth.

16. In a cooling or condensing apparatus of the character herein described, a condenser-section comprising two parallel plates, marginal folds on the opposing faces of such plates adapted to maintain the plates in separated relation, said plates having a depression adjacent to said folds, and a binding cap-piece embracing the margins of the plates and provided with inturned lips engaging the depressions aforesaid, substantially as set forth.

17. In a cooling or condensing apparatus of the character herein described, a condenser-section comprising two parallel plates, marginal folds on the opposing faces of such plates adapted to maintain the plates in separated relation, means for securing the margins of the plates together, and a series of stay-rivets arranged between the plates and provided with an enlarged central body portion and reduced rivet extensions at opposite ends, substantially as set forth.

18. In a cooling or condensing apparatus of the character herein described, a condenser-section comprising two parallel plates, marginal folds on the opposing faces of such plates adapted to maintain the plates in separated relation, a binding cap-piece embracing the margins of the plates and securing the same together, and a series of stay-rivets arranged between the plates and provided with an enlarged central body portion and reduced rivet extensions at opposite ends, substantially as set forth.

19. In a cooling or condensing apparatus of the character herein described, a condenser-section comprising two parallel plates, marginal folds on the opposing faces of such plates adapted to maintain the plates in separated relation, said plates having a depression adjacent to said folds, a binding cap-piece embracing the margins of the plates and provided with inturned lips engaging the depressions aforesaid, and a series of stay-rivets arranged between the plates and provided with an enlarged central body portion and reduced rivet extensions at opposite ends, substantially as set forth.

708,718. HOISTING APPARATUS. CHARLES W. HUNT, West New Brighton, N. Y. Filed Feb. 20, 1902. Serial No. 94,574. (No model.)

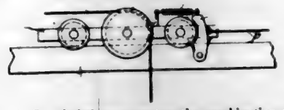

Claim.—1. In a hoisting apparatus, the combination of a trolley, a support therefor, a hoisting-rope, a rope for effecting movement of the trolley on its support, operating means for said ropes, and a trolley-brake or holding device in operative relation with one of said ropes, substantially as described.

2. In a hoisting apparatus, the combination of a trolley, a support therefor, a hoisting-rope, a rope for effecting movement of the trolley on its support, operating means for said ropes, a trolley-brake or holding-arm in operative relation with one of said ropes, and a spring coöperating with said arm, substantially as described.

3. In a hoisting apparatus, the combination of a trolley, a support therefor, a hoisting-rope, a rope for effecting movement of the trolley on its support, operating means for said ropes, a trolley-brake or holding device having the second-named rope connected thereto, and a spring coöperating with said brake or holding device against the tension of the rope, substantially as described.

4. In a hoisting apparatus, the combination of a trolley, a support therefor, a hoisting-rope, a rope for effecting movement of the trolley on its support, operating means for said ropes, a trolley-brake or holding-arm having the second-named rope connected thereto, and a spring coöperating with said arm against the tension of the rope, substantially as described.

708,714. APPARATUS FOR SERVING AERATED WATERS ON DRAFT. JOHN P. JACKSON, Liverpool, England. Filed Feb. 25, 1902. Serial No. 96,327. (No model.)

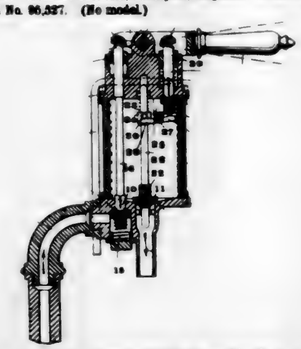

Claim.—1. In a counter-fountain, in combination, a receiver connected to a supply of aerated water, inlet, outlet, and snifting valves therefor, a syrup-measuring chamber communicating with the outlet from said receiver, a syrup-reservoir connected with said chamber, valves controlling the inlet of syrup to and its exit from said chamber, and a single operating-handle having connections for controlling all of said valves, substantially as described.

2. In a counter-fountain in combination with a receiver in communication with a supply of aerated water and having inlet, outlet and snifting valves, a handle operating said valves; two syrup-chambers in communication with syrup-reservoirs and having inlet and outlet valves and means capable of being adjusted whereby the movement of the handle may be made to operate the valve of either syrup-chamber at will; substantially as described.

3. In a counter-fountain, in combination with a receiver in communication with a supply of aerated water and having inlet, outlet and snifting valves, a handle for operating said valves; two syrup-chambers whose outlets communicate with the outlet of the receiver, a syrup-reservoir connected with each chamber each of said chambers being provided with a double valve which normally closes the outlet and a vent-pipe which allows the said chambers to fill from the reservoir, and adjustable means interposed between the handle and double valves whereby the movement of the handle when discharging the receiver moves the double valve of either chamber as may be desired so as to close the inlet and open the outlet; substantially as described.

4. In a counter-fountain in combination with the receiver, and its valves, the two syrup-chambers and their valves; the handle adapted to operate the valves of the receiver and having a movable catch 52 adapted to operate the valve of either syrup-chamber at will; substantially as described.

5. In a counter-fountain and in combination with the receiver, a syrup-chamber communicating with a syrup-reservoir and provided with a vent-pipe, a double valve which normally opens the inlet and closes the outlet; and means consisting of an operating-handle and adapted, when the latter is operated to discharge the receiver, to move the said double valve so that it closes the inlet and opens the outlet; substantially as described.

708,715. WATER-WHEEL. GEORGE W. JOHNSTON, St. Joseph, Mo., assignor of twenty-seven one-hundred-and-fortieths to Horace F. Whiteford, St. Joseph, Mo., and Charles J. Hunt, Beloit, Iowa. Filed Dec. 12, 1901. Serial No. 85,638. (No model.)

Claim.—1. In a wheel for utilizing the current of a stream, its supporting pile and sockets, the shaft and its bearings, the hub and its radially-projecting sets of sockets, the arms carried by said hub-sockets, the duplicate leaves hinged to each arm and the clamps and lugs to support said leaves when spread out against the current of the stream, substantially as described and for the purposes set forth.

2. In a water-wheel a shaft set vertically, a hub adapted to revolve on said shaft and provided with arms and leaves, the adjustable lower part of said hub having clutch connection therewith, and adapted to be

rigidly fastened to said shaft and to support the upper part of the hub, the collar on the hub and the cables forming connection between said collar and the gear and adapted to raise the hub out of clutch connection thereby stopping the revolutions of the shaft, or to lower the hub into clutch connection thereby setting the mechanism in motion, substantially as described.

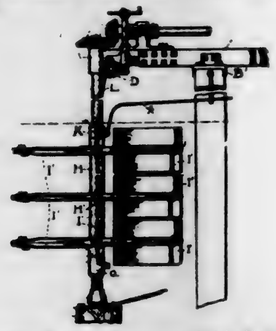

3. The combination with a water-wheel of the hinges upon an arm each having its strap rigidly attached to the back of the leaf, the depressions in the arm, the clamps the two parts of each of which fit into said depressions, the lugs on said clamps extending horizontally in opposite directions across the backs of the hinge-straps and leaves preventing the leaves being crowded back of their respective centers by the pressure of the current of the stream, substantially as described and for the purpose specified.

4. In a wheel for utilizing the power in the current of a stream, the vertically-set shaft adapted to revolve in the piling or support thereunder, the hub carried on said shaft, the flange at the top of said hub and the loosely-fitted collar thereunder adapted to serve in lowering and hoisting the hub, the rod attached to said collar and adapted to form connection with the shore-piling, together with the cable connection between the collar and the gearing, substantially as described and for the purpose specified.

5. The combination with the shaft and hub and lower member of said hub of a water-wheel, of triple sets of arms and leaves the sets being arranged vertically one above another with leaves of heaviest weight in the bottom set and lightest weight in the top set, substantially as described.

6. In a wheel for utilizing the power of the current of a stream the combination with the shaft and its hub, of the lower member of said hub, of the clutch connection between said hub and its lower member, of the keyways and keys below such clutch connection for attaching said lower part of the hub immovably to the shaft at the depth of water desired, of the set-screws to said therein, substantially as described and for the purpose specified.

7. In a water-wheel the combination with the arms provided with depressions and the leaves and the hinges attached thereto, of the clamps adapted to fit into said depressions in the arms, the lugs on said clamps to prevent the leaves passing back of their respective centers and the projections on said clamps to prevent said leaves passing forward of their centers or coming into actual contact, substantially as described.

8. The combination in a water-wheel of the upper bearing, cables and gearing for the purpose set forth, and pile E, with the vertical shaft, the hub thereon and its horizontally-projecting arms and sets of leaves of differing weights set vertically above each other, the lower member of the hub adapted to form clutch connection with said hub, the socket in said piling and the cap at the bottom of the shaft to prevent the filling of the socket set with sand, substantially as described.

708,716. BLOWING-ENGINE. WALTER KENNEDY, Pittsburg, Pa. Filed July 2, 1900. Serial No. 22,268. (No model.)

Claim.—1. A blowing-engine having a piston represented by external power connections, the head of the cylinder having inlet and outlet puppet-valves, motive cylinders having their pistons connected with said puppet-valves, and a source of fluid-pressure connected to the valve-cylinders and arranged to actuate the pistons in both directions, said source of pressure being separate from the engine-cylinder; substantially as described.

2. A blowing-engine having its piston connected to an external source of power, the engine-cylinder having a puppet-valve, a double-acting motive cylinder having its piston connected to said valve, a source of fluid-pressure separate from the cylinder of the engine connected to the motive cylinder, and arranged to actuate the piston in both directions, and means for automatically applying the fluid to and exhausting it from the motive cylinder; substantially as described.

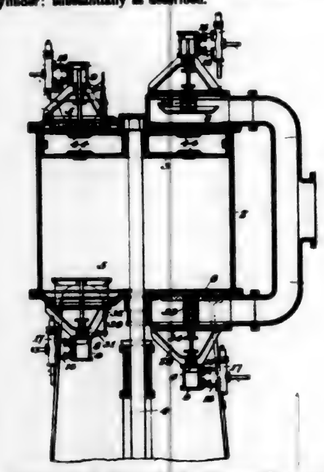

3. A blowing-engine having its piston connected to an external source of power, the engine-cylinder having a puppet-valve, a double-acting motive cylinder connected thereto, a source of fluid-pressure separate from the engine-cylinder connected to said motive cylinder and arranged to actuate its piston in both directions, and a valve controlling the supply of fluid to the motive cylinder and connected to a moving part of the engine; substantially as described.

4. A blowing-engine having its piston connected to an external source of power, the engine-cylinder having a puppet-valve in its head, a motive cylinder, a piston therein connected to the said valve and arranged to move the same positively in both directions, a source of fluid-supply separate from the engine cylinder and connected to the motive cylinder, a valve controlling said supply to and its exhaust from both ends of the cylinder, and a connection between said valve and a moving part of the engine; substantially as described.

5. A blowing-engine having its piston connected to an external source of power, the engine-cylinder having inlet and outlet puppet-valves in its head, double-acting motive cylinders connected to the said valves, a source of pressure separate from the engine-cylinder connected to the motive cylinders, and valves controlling the fluid-supply to said motive cylinders and connected to a moving part of the engine; substantially as described.

6. A blowing-engine having its piston connected to an external source of power, the engine-cylinder having a puppet-valve connected to a cylinder having a piston therein, said valve-cylinder having valve-controlled ports at each end whereby the seating of the puppet-valve is cushioned, and a source of fluid-pressure separate from the engine connected to the valve-operating cylinder; substantially as described.

7. An air-compressor having its piston connected to an external source of power, the engine-cylinder having a puppet-valve in its head, a motive cylinder connected to said valve and arranged to move it in one direction, and power mechanism for moving it in the opposite direction, both the motive cylinder and the power mechanism being independent of the pressure in the compressor-cylinder; substantially as described.

8. A blowing-engine comprising an engine-cylinder, wind-box, piston, piston-driving means, an outwardly-opening puppet-valve controlling the passage from the cylinder to the wind-box, a motor connected to said valve and a source of power for said motor distinct from the air-pressure in said cylinder or wind-box but controlled by the movement of said piston; substantially as described.

9. A blowing-engine comprising an engine-cylinder, wind-box, piston, piston-driving means, a poppet-valve in the cylinder-head, a motor connected to the valve and arranged to move it in both directions, and a source of power distinct from the air-pressure in the cylinder or wind-box but controlled by the movement of said piston; substantially as described.

10. A blowing-engine comprising an engine-cylinder, wind-box, piston, piston-driving means, an outwardly-opening puppet-valve controlling the passage from the cylinder to the wind-box, a motor connected to said valve, a source of power for said motor distinct from the air-pressure in said cylinder or wind-box but controlled by the movement of said piston and a regulator capable of adjustment during the operation of the engine, for maintaining the power applied to the motor substantially uniform; substantially as described.

11. A blowing-engine comprising an engine-cylinder, wind-box, piston, piston-driving means, a puppet-valve in the cylinder-head, a motor connected to the valve and arranged to move it in both directions, a source of power for said motor distinct from the air-pressure in said cylinder or wind-box but controlled by the movement of said piston and a regulator capable of adjustment during the operation of the engine, for maintaining the power applied to said motor substantially uniform; substantially as described.

12. A blowing-engine comprising an engine-cylinder, wind-box, piston, piston-driving means, an outwardly-opening puppet-valve controlling the passage from the cylinder to the wind-box, a motor connected to the valve, a source of power distinct from the air-pressure in said cylinder or wind-box but controlled by the movement of said piston, and a device arranged to maintain the power supplied to said motor at a point insufficient to open the valve against the back pressure of the air in the wind-box; substantially as described.

13. A blowing-engine comprising an engine-cylinder, wind-box, piston, piston-driving means, a puppet-valve in the cylinder-head, a motor connected to the valve and arranged to move it in both directions, a source of power distinct from the air-pressure in said cylinder or wind-box but controlled by the movement of said piston, and a device arranged to maintain the power supplied to said motor at a point insufficient to open the valve against the back pressure of the air in the wind-box; substantially as described.

708,717. WATER-PURIFYING APPARATUS. CARL L. KENNICOTT, Chicago, Ill., assignor to Kennicott Water Softener Company, Chicago, Ill., a Corporation of Illinois. Filed May 9, 1902. Serial No. 106,661. (No model.)

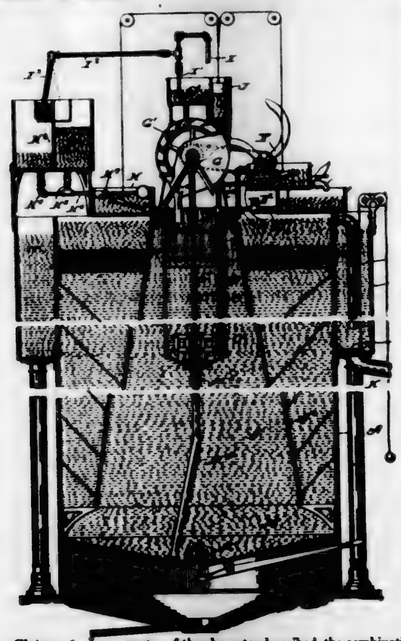

Claim.—1. In apparatus of the character described, the combination of a precipitating-tank, a chemical-solution tank therein having its upper portion serving as a mixing-chamber and provided with an overflow into said precipitating-tank, and a water-supply source with a discharge opening into said mixing-chamber.

2. In apparatus of the character described, the combination of a precipitating-tank, a chemical-solution tank therein having its upper portion serving as a mixing-chamber and provided with an overflow into said precipitating-tank, a water-supply source with a discharge opening into said mixing-chamber, and a second chemical-solution tank with a discharge opening into said mixing-chamber.

3. In apparatus of the character described, the combination of a precipitating-tank, a chemical-solution tank therein having its upper portion serving as a mixing-chamber and provided with an overflow into said precipitating-tank, a water-supply source with a discharge opening into said mixing-chamber, a second chemical-solution tank with a discharge opening into said mixing chamber, and stirrers for the lower portion of said first-named chemical-solution tank and said mixing-chamber.

4. In apparatus of the character described, the combination of a precipitating-tank, a chemical-solution tank equipped with a horizontal screen near its upper end and divided thereby to afford a mixing-chamber above said screen, means of admitting liquid to said chemical-solution tank beneath said screen, and a water-supply source discharging into said mixing-chamber.

5. In apparatus of the character described, the combination of a precipitating-tank, a chemical-solution tank having its upper portion serving as a mixing-chamber and provided with an overflow into said precipitating-tank, an elevated source of supply connected with the lower portion of said second-named tank, a hard-water-supply source discharging into said mixing-chamber, and a second chemical-solution tank discharging into said mixing-chamber, for the purpose set forth.

6. In apparatus of the character described, the combination of a precipitating-tank, a chemical-solution tank, a charge-preparing tank communicating through a valved pipe with the lower portion of said chemical-solution tank, a soft-water tank communicating with the lower portion of said chemical-solution tank, and a source of hard-water supply, for the purpose set forth.

7. In apparatus of the character described, the combination of a precipitating-tank, a chemical-solution tank, a charge-preparing tank communicating through a valved pipe with the lower portion of said chemical-solution tank, a soft-water tank communicating with said valved pipe, a source of hard-water supply discharging into the upper portion of said chemical solution tank, and a second chemical-solution tank discharging into the upper portion of said first-named chemical-solution tank, the overflow passing into said precipitating-tank, for the purpose set forth.

8. The combination of a precipitating-tank, a hard-water source, a chemical source, a soft-water-storage tank having a closed discharge-valve, and means for directing the water from the precipitating-tank upon said valve, for the purpose set forth.

9. The combination of a precipitating-tank, a hard-water source, a chemical source, an annular soft-water-storage tank encircling the precipitating-tank and having a closed discharge-valve, and an overflow-pipe leading from the upper portion of said precipitating-tank to a point adjacent to said valve, for the purpose set forth.

708,718. WATER-COOLED REVERSING-VALVE. LUTHER L. KNOX, Pittsburg, Pa. Filed Apr. 2, 1902. Serial No. 101,135. (No model.)

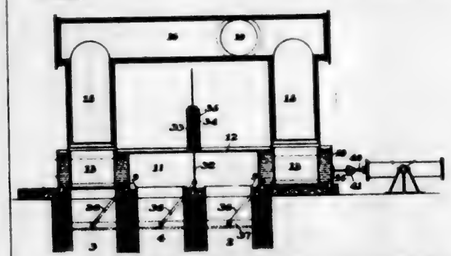

Claim.—1. A water-cooled reversing-valve comprising a stationary tank, ports extending up through the tank, a second tank resting within the stationary tank and containing ports extending up through it, and mechanism for shifting the second tank; substantially as described.

2. A water-cooled reversing-valve, comprising a tank, three ports extending up through the tank, a movable tank resting within the stationary tank, and containing a passage arranged to connect two of the ports, said movable tank having a third port leading up through it and arranged to connect with the third port, and mechanism for shifting the movable tank; substantially as described.

3. A water-cooled reversing-valve, comprising a tank, a series of at least three flanged ports extending upwardly through the tank, a movable tank resting within the stationary tank and having its bottom provided with an inverted box or channel arranged to connect two of the ports, a shell extending up through the movable tank and arranged to connect with another port, and mechanism for lifting the movable tank and shifting it longitudinally; substantially as described.

4. A water-cooled reversing-valve comprising a stationary tank having three flues extending upwardly through it, a movable tank supported in the stationary tank and containing a channel arranged to connect two

of the parts, vertical flue connections extending through the end portions of the movable tank, a gaseous supply-flue connecting to the end flue portions of the tank, and mechanism for shifting the movable tank longitudinally; substantially as described.

5. A water-cooled reversing-valve comprising a stationary water-tank having flues extending upwardly through it, a movable water-containing tank resting within the stationary tank and containing a connecting-flue, and an end flue, pivotal links connected to the movable tank and mechanism for shifting said movable tank longitudinally; substantially as described.

6. A water-cooled reversing-valve comprising a stationary tank with ports opening through it, a movable tank resting therein with a connecting-flue, a water-cooled damper within said flue, and mechanism for shifting the movable tank; substantially as described.

7. A water-cooled reversing gas-valve, consisting of vertically-extending gas-flues, a tank surrounding their upper ends, a movable tank within the stationary tank and having a port leading upwardly through it, said movable tank having a horizontal connecting-passage, and mechanism for shifting the movable tank horizontally in a vertical plane; substantially as described.

8. A vertical cylindrical supply-flue having an internal annular water seal, a vertically-movable tank within the flue having a depending flange within the water seal, an upper depending shell extending downwardly within the tank, and connections for moving the tank vertically, substantially as described.

9. A water-cooled reversing-valve comprising a tank, three ports extending up through the tank, a movable tank within the stationary tank and containing a passage arranged to connect two of the ports, said movable tank having end ports leading upwardly through it, mechanism for shifting the movable tank longitudinally in a vertical plane, and a gas-supply flue in constant connection with the end ports of said movable tank; substantially as described.

10. A water-cooled reversing-valve comprising a stationary tank with ports extending through it, a movable tank resting within the stationary tank and containing a connecting-flue, said movable tank having a third port extending upwardly through it, and mechanism for shifting the movable tank longitudinally in a vertical plane; substantially as described.

708,719. **FURNACE-DOOR.** LUTHER L. KNOX, Pittsburg, Pa. Filed May 5, 1902. Serial No. 105,907. (No model.)

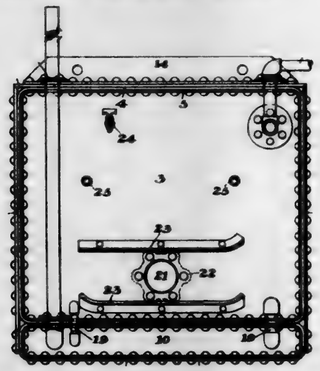

Claim.—1. A furnace-door formed at least in part of spaced-apart sheets with pressed-up flanges extending at an angle to the plane of the door, and secured together, and a water inlet and outlet leading to the space between the sheets; substantially as described.

2. A furnace-door having an inner and outer shell with pressed flanges secured together, and a water inlet and outlet leading to the space between the shells; substantially as described.

3. A furnace-door having a lower sill formed of pressed-up steel sheets secured together with a space between them and a water inlet and outlet leading to said space; substantially as described.

4. A furnace-door having its body formed of pressed-up plates with the flanges secured together, a lower sill also formed of pressed plates with flanges secured together, and water inlets and outlets for the door and sill; substantially as described.

5. A furnace-door having converging sides and pressed-up shells forming a body with a space between them; substantially as described.

6. A furnace-door having a rim portion arranged to receive refractory material, and a pair of shells outside the refractory material formed of pressed plates to form a water-space between them; substantially as described.

7. A furnace-door having a body formed of pressed plates with a space between them, a lower sill extending inwardly beyond the pressed body, and means for feeding water to one of said parts and from said part to the other; substantially as described.

708,720. **PRISMATIC SIGHTING-TELESCOPE.** ALBERT KÖNIG, Jena, Germany, assignor to Firm Carl Zeiss, Jena, Germany. Filed Nov. 14, 1901. Serial No. 82,328. (No model.)
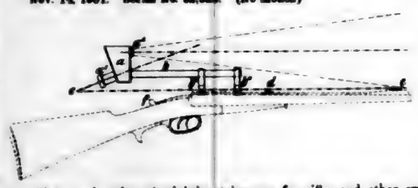
Claim.—A prismatic sighting-telescope for rifles and other small arms having the eyepiece-axis and the object-glass axis in such a way inclined to each other, that they are more distant from each other behind the eyepiece than before the object-glass, essentially as described.

708,721. **CAMERA.** HARVEY W. LOCKE, Rochester, N. Y. Filed Apr. 23, 1902. Serial No. 104,269. (No model.)

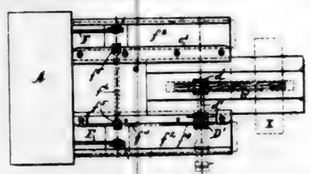

Claim.—1. In a camera, a camera-box, a support for the lens-frame hinged thereto, link mechanism hinged to the box and to a movable part on the support, and means for moving said movable part relatively to said support for tilting the latter, substantially as described.

2. In a camera, a camera-box, a support for the lens-frame hinged thereto, link mechanism hinged to the box and to a movable part on the support, means for moving said movable part relatively to said support for tilting the latter, and means for fastening said movable part in the various positions relatively to said support to which it may be moved, substantially as described.

3. In a camera, a camera-box, a support for the lens-frame hinged thereto, an extensible section on said support to which the lens-frame is adapted to be attached, link mechanism pivoted to the camera-box and to a movable part on said support, and means for moving said link mechanism and extensible section simultaneously, substantially as described.

4. In a camera, a camera-box, a support for the lens-frame hinged thereto comprising a slide on said support, a link pivoted at one end to the camera-box and at the other end to the slide, and rack-and-pinion devices for shifting said slide for tilting said support, substantially as described.

5. In a camera, a camera-box, a support for the lens-frame hinged thereto comprising a slide on said support, a link pivoted at one end to the camera-box and at the other end to the slide, rack-and-pinion devices for shifting said slide for tilting said support, and a rack on said support adapted to engage said pinion for locking the same in any position to which said parts may be moved, substantially as described.

6. In a camera, a camera-box, a support for the lens-frame hinged thereto, a pair of links each hinged to one side of the box and to a movable part on said support, and means for moving said movable part with reference to said support for tilting the latter, substantially as described.

7. In a camera, a camera-box, a support for the lens-frame hinged thereto, a pair of links each hinged to one side of the box and to a movable part on said support, means for moving said movable part with reference to said support for tilting the latter, and means for fastening said movable parts in the various positions to which they may be moved, substantially as described.

8. In a camera, a camera-box, a support for the lens-frame hinged thereto, comprising an extensible section on said support to which the lens-frame is adapted to be attached, a pair of links each pivoted to one side of the camera-box and to a movable part on said support, and means

for moving the ends of said links and said extensible section simultaneously, substantially as described.

9. In a camera, a camera-box, a support for the lens-frame hinged thereto comprising an extensible section on said support to which the lens-frame is adapted to be attached, a pair of links each pivoted to one side of the camera-box and to a movable part on said support, means for moving the ends of said links and said extensible section simultaneously and means for fastening said movable parts in any position to which they may be moved, substantially as described.

10. In a camera, a camera-box, a support for the lens-frame hinged thereto comprising a pair of slides on said support, a pair of links each pivoted at one end to the camera-box and at the other end to one of the slides, and rack-and-pinion devices for shifting said slides simultaneously for tilting said support, substantially as described.

11. In a camera, a camera-box, a support for the lens-frame hinged thereto comprising a pair of slides on said support, a pair of links each pivoted at one end to the side of the camera-box and at the other end to one of the slides, and rack-and-pinion devices for shifting said slides simultaneously for tilting said support comprising means for fastening said slides in the different positions to which they may be moved, substantially as described.

12. In a camera, a camera-box, a support for the lens-frame hinged thereto, a pair of links each pivoted at one end to one side of the camera-box and at the other end to a movable part on said support, rack-and-pinion devices for operating said movable parts simultaneously for tilting said support, and a stationary rack upon said support adapted to engage said pinion for locking the same in any position to which the parts may be moved, substantially as described.

13. In a camera, a rack-and-pinion device, a relatively movable part carrying one element of said rack-and-pinion device, a relatively stationary support carrying said movable part and bearing the other element of said rack-and-pinion device, in combination with locking mechanism consisting of said pinion as one component and a second rack immovable by rotation of the pinion as the other component, one of said components being movable into and out of mesh with the other for locking said first-mentioned rack-and-pinion device, substantially as described.

14. In a camera, a rack-and-pinion device always in mesh, a relatively movable part carrying one element of said rack-and-pinion device, a relatively stationary support carrying said movable part and bearing the other element of said rack-and-pinion device, in combination with locking mechanism consisting of said pinion as one component and a second rack immovable by rotation of the pinion as the other component, one of said components being movable into and out of mesh with the other for locking said first-mentioned rack-and-pinion device, substantially as described.

15. In a camera, a rack-and-pinion device having an axially-movable pinion, a relatively movable part carrying one element of said rack-and-pinion device, a relatively stationary support carrying said movable part and bearing the other element of said rack-and-pinion device, in combination with locking mechanism consisting of said pinion as one component and a second rack immovable by rotation of the pinion as the other component, the pinion component being movable axially into mesh with the rack component for locking said first-mentioned rack-and-pinion device, substantially as described.

16. In a camera, a rack-and-pinion device having an axially-movable pinion which is always in mesh with said rack, a relatively movable part carrying one element of said rack-and-pinion device, a relatively stationary support carrying said movable part and bearing the other element of said rack-and-pinion device, in combination with locking mechanism consisting of said pinion as one component and a second rack immovable by rotation of the pinion as the other component, the pinion component being movable into mesh with the rack component for locking said first-mentioned rack-and-pinion device, substantially as described.

17. In a camera, a camera-box, a support for the lens-frame hinged thereto, a rack thereon, a part movable on said support, a rack thereon, and an axially-movable pinion device meshing with the rack on said movable part and adapted to be moved into mesh also with said rack on said support for locking said movable part with reference to the support, in any position to which it may be moved, substantially as described.

18. In a camera, a camera-box, a support for the lens-frame hinged thereto comprising a main section and an extensible section to which said lens-frame is attached, a pair of slides on said main section, a pair of links each hinged at one end to the side of the camera-box and to one of the slides, a rack on each slide, a stationary rack on said main section, a rack on said extensible section, a pinion mechanism connecting the racks on the slides, and an axially-movable pinion mechanism on said main section meshing with the rack on the extensible section and adapted to be moved into and out of mesh with the stationary rack and with the rack on one of the slides, whereby on operating said pinion mechanism the extensible section may be extended or retracted and simultaneously said support may be raised or lowered, and the parts may be locked in any position to which they may be moved, substantially as described.

19. In a camera, a camera-box, a folding front consisting of a main section hinged to said camera-box, and an extensible section sliding on the main section and to which the lens-frame is attached, a pair of slides on said main section, a pair of links each hinged at its ends to a side of the camera-box and to one of said slides, a rack on each slide, a stationary rack on said main section, a rack on said extensible section, a pinion mechanism connecting the racks on the slides, a pinion carried on the main section in mesh with the rack on the extensible section, and an axially-movable sleeve for operating said pinion and having a pinion thereon adapted to be moved into and out of mesh with the rack on one of said slides and with said stationary rack, substantially as described.

20. In a camera, a folding front having an angular lower edge, a camera-box hinged to said front above the lower edge of the latter and having a recess in the lower rail of the camera-box cut out on the curve of movement of said angular lower edge, substantially as described.

21. In a camera, a rack-and-pinion device, a relatively movable part carrying one element of said rack-and-pinion device, a relatively stationary support carrying said movable part and bearing the other element of said rack-and-pinion device, in combination with locking mechanism consisting of said pinion as one component and a second component immovable by rotation of the pinion, one of said components being movable into and out of engagement with the other for locking said first-mentioned rack-and-pinion device, substantially as described.

708,722. **PAPER-CUTTING MACHINE.** HENRY W. MATHER, Roseville, N. J. Filed Nov. 22, 1900. Serial No. 37,351. (No model.)

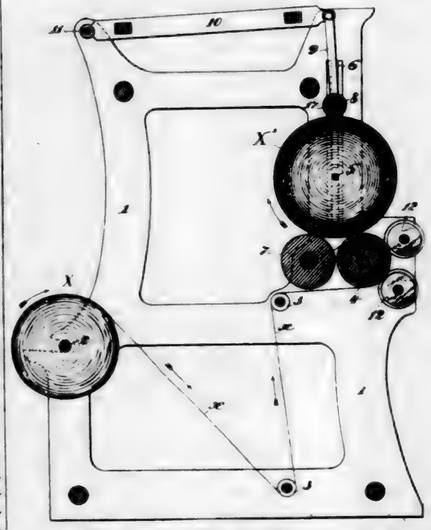

Claim.—1. In a machine for slitting paper into strips, the combination with the slitting mechanism, and means for rolling up the slitted paper, of means for separating the rolls of strips, said means comprising a pressure-roller 8, on the top of the roll of slitted paper, said roller having a projecting V-shaped edge which enters the slit between the strips and wedges them apart, substantially as set forth.

2. In a machine for slitting paper into strips, the combination with the circumferentially-grooved roller 4, the slitting-roller 12, having its cutters set to register with the grooves in the roller 4, and the said cutters, of the roughened bearing and driving roller 7, and upright guides, for the shaft 5, said shaft being so situated above the roller 7 that the roll of slitted paper bears peripherally on the latter, substantially as set forth.

3. In a machine for slitting paper into strips, the combination with the circumferentially-grooved roller 4, the slitting-roller 12, provided with cutters which register with the respective grooves in the roller 4, the bearing and driving roller 7, and the shaft 5 for the slitted paper, of means for separating the rolls of strips, said means comprising a pressure-roller on the top of the roll of slitted paper, said roller having projecting V-shaped edges which enter the slits between the strips and wedge them apart, substantially as set forth.

708,728. SHEET-METAL SEAM OR JOINT. JULIUS W. MATHIS, Chicago, Ill., assignor of one-half to August Mathis, Chicago, Ill. Filed Apr. 28, 1902. Serial No. 104,958. (No model.)

Claim.—1. A sheet-metal seam or joint comprising in combination, a sheet end formed with a flange folded upon itself to form an open loop and provided with an orifice or oblong orifices through the metal of such loop, and a companion sheet end formed with a flange having an extension or extensions which are adapted to pass through the aforesaid orifices and be bent upon themselves to constitute a locking means for the seam or joint, the flanges aforesaid having an arrangement at right angles to the surface of the sheets to constitute a standing seam and afford longitudinal stiffness to the article, substantially as set forth.

2. A sheet-metal seam or joint comprising in combination, a sheet end formed with a flange folded upon itself to form an open loop and provided with an orifice or oblong orifices extending through the crown portion of such loop, and a companion sheet end formed with a flange having an extension or extensions at its free end which are adapted to pass through the aforesaid orifices and be bent upon themselves to constitute a locking means for the seam or joint, the flanges aforesaid having an arrangement at right angles to the surface of the sheets to constitute a standing seam and afford longitudinal stiffness to the article, substantially as set forth.

708,724. OPERATING MECHANISM FOR MOTOR-CONTROLLERS. FRANK A. MERRICK and JOSEPH D. FOUSER, Johnstown, Pa., assignors, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Feb. 12, 1901. Serial No. 47,088. (No model.)

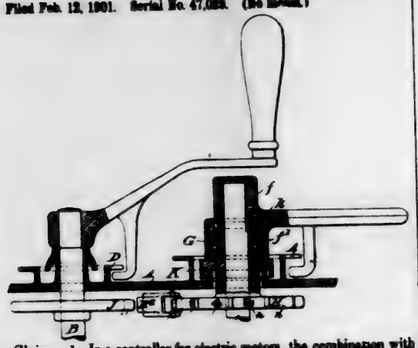

Claim.—1. In a controller for electric motors, the combination with a regulating-switch and a reversing-switch, of a handle for the reverse-switch composed of two complementary members, one of which has an operative engagement with the reverse-switch shaft, and the other of which is loose with respect to said shaft, and means controlled by the regulating-switch for preventing movement of the loose member in certain positions of the regulating-switch.

2. In a controller for electric motors, the combination with a regulating-switch and a reversing-switch, of a two-part handle for the reversing-switch, one part of which is operatively engaged with the switch-shaft, and the other of which is loose with respect to said shaft, and means for locking the loose part except when the motor-circuit is opened at the regulating-switch.

3. In a controller for electric motors, a reverse-switch handle composed of two members, one of which is operatively engaged with the reverse-switch shaft, and the other of which is loose with respect to said shaft, and means for locking the loose member under certain circuit conditions.

4. In a controller for electric motors, the combination with a regulating-switch and a reversing-switch, of a handle composed of two complementary members, one of which has a rotative engagement with the shaft of said reversing-switch, a sleeve loosely mounted on said shaft, and with which the other member of said handle has a rotative engagement, and means controlled by the regulating-switch for locking the said sleeve against movement on said shaft unless the regulating-switch is at its open-circuit position.

5. In a controller for electric motors, the combination with a regulating-switch and a reversing-switch, of a handle for the reversing-switch composed of two members, only one of which has an operative engagement with the switch-shaft, and means for locking the other of said members against movement except when the regulating-switch is at its off position.

6. In a controller for electric motors, the combination with a regulating-switch and a reversing-switch, of a handle for the reversing-switch composed of two complementary members, one of which is rotatively engaged with the switch-shaft, a sleeve loosely mounted on said shaft and to which the other handle is rotatably connected, a notched plate or disk carried by said sleeve, a pawl device engaging said plate or disk, and means carried by the regulating-switch for preventing the disengagement of the said pawl device except when the regulating-switch is at its off position.

7. In a controller for electric motors, the combination with a reverse-switch, of a handle therefor composed of two complementary members, one of which is rotatively engaged with the shaft of said switch, a sleeve loosely mounted on said shaft and carrying the other member of said handle, means for locking the said sleeve unless the motor-circuit has first been opened at the regulating-switch of the controller, and means for preventing removal of the said handle except when the reverse-switch is at its off position.

8. The combination with two related electric switches, of a handle for one of said switches composed of two complementary members, one of which is rotatively engaged with the shaft of that switch, and the other of which is locked to the other switch except when the latter is at its open-circuit position.

708,725. BUILDING-BLOCK DIE. NICHOLAS MERLEY, Canton, Ohio. Filed Apr. 17, 1902. Serial No. 103,308. (No model.)

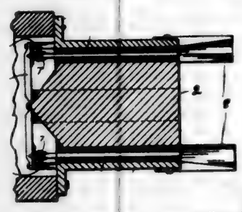

Claim.—1. The combination of an outer shell or die provided with a flange, a core located within the shell and spaced from the inner sides thereof, posts or arms connected to the flange of the shell, cross-bars secured to the posts, bars or cores located in the space between the outer shell and the inner core and extended parallel with the inner and outer faces of said parts, and the cross-bars and the inner core beveled upon their rear edges or ends, substantially as and for the purpose specified.

2. A die of the class described, an outer shell, a core located therein, and angled extensions secured to the shell of the die and provided with inner beveled faces, substantially as and for the purpose specified.

708,726. DROP. GEORGE MILES, Boston, Mass. Filed Aug. 17, 1900. Serial No. 27,188. (No model.)

Claim.—1. In a drop, a car guided by cables having tension-adjustments, and a piston with connections to normally overbalance the car, combined with means to form air-cushions to control the travel of the piston toward each limit of its stroke, and adjustable devices to admit air-pressure behind the piston at the beginning of its stroke, substantially as described.

2. In a drop, the combination with a car, a piston, a fluid-cylinder, and a fitting having chambers connected with opposite portions of and near the extremities of the said cylinder, of a valve controlling each chamber of the fitting so that if the pressure increases in either chamber its valve will allow escape of fluid from the said chamber, to permit motion of the piston, substantially as described.

3. In a drop, the combination with a car, a piston, a fluid-cylinder, and a fitting having inlet-chambers both of which are in connection with a relief-passage of the fitting and each of which chambers is in connection with an opposite portion of the fluid-cylinder, of valves controlling ports in each chamber of the fitting so that if the pressure in either chamber falls below the pressure in the relief-passage, the valve of that chamber will permit some fluid to pass from the relief-passage to its end of the cylinder to relieve the drag on the piston, substantially as described.

4. In a regulating device for drops, chambers having inlets, a relief-passage having an outlet, and connections from each chamber to the relief-passage, combined with valves arranged to normally close the connections from the chambers to the relief-passage, but having devices adapted to automatically allow motion of the valves so either or both of the chambers may connect with the relief-passage, substantially as described.

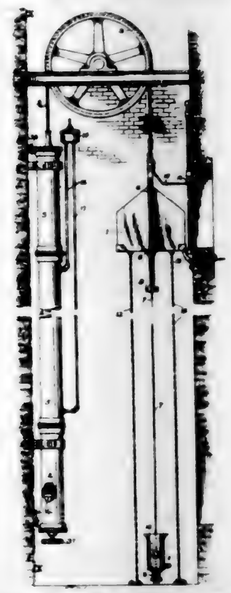

5. In a regulating fitting for drops, means forming inlets to, devices forming an outlet from, and ports between the inlets and outlet of the fitting, combined with valves and yielding supports for the valves arranged to close the ports normally, but when the pressure in an inlet increases its valve may open to discharge fluid to the outlet, and upon excessive increase of pressure in the outlet the valve of the other inlet may open so that inlet may receive fluid from the outlet, substantially as described.

6. In a drop, a car, a chain, a cylinder, a tight piston moving in the cylinder adapted to lift the car and chain, and connections for the moving parts, combined with automatically-acting valves and connections with opposite ends of the cylinder so air may be passed from one to the other side of the piston to increase its speed, substantially as described.

7. In a drop, a car, a chain, a cylinder and a tight piston moving in the cylinder to lift the car and chain through suitable connections, combined with means acting automatically for normally forming air-cushions at each end of the cylinder to retard the piston when approaching the said ends, and also acting to relieve a reduction of air-pressure at the ends of the cylinder as the piston leaves the said ends, substantially as described.

8. In a drop, a car, a chain, a cylinder, a tight piston and connections between the car and piston, combined with means to form air-cushions at each end of the cylinder, to freely pass air to or from the middle of the cylinder and devices for forming an adjustable air-cushion beneath the car as the car nears the limit of its downward travel, substantially as described.

9. In a drop, a car, a cylinder and a piston suitably connected with the car actuated by gravity to lift the empty car from its lower positions, combined with a chain hanging from the car when in position to receive a load to cause the car to fall by gravity, automatic devices to apply air-pressure behind the piston at the start and means for forming air-cushions in front of the piston near its limit of travel, substantially as described.

10. In a drop, a cylinder, a car, and a piston connected to the car, combined with an adjustable stop at one end of the cylinder to position the piston and car at a point of their travel, substantially as described.

11. In a drop, a cylinder, piston, and a car connected with the piston, combined with a plunger attached to the car, a stop for the plunger, and adjustments to determine the final position of the car, substantially as described.

708,727. CURTAIN-SHUTTER. OSWALD SATHER, Jena, Germany, assignor, by mesne assignments, to Firm Carl Zeiss, Jena, Germany. Filed Dec. 13, 1901. Serial No. 85,760. (No model.)

Claim.—1. In a curtain-shutter having an adjustable aperture and a triplex setting-spool the combination, with two side spools controlling one half of the curtain and a middle spool controlling the other half of the curtain, of a hollow axle on which both side spools are secured and the middle spool is rotatably mounted, a central axle, a tappet non-rotatably mounted on the central axle, penetrating a helical slot in the hollow axle and projecting into a longitudinal slot in the middle spool, means for non-rotatably connecting the central axle and the hollow axle at different angular positions relatively to each other, and a setting device connected with one of the axles, essentially as described.

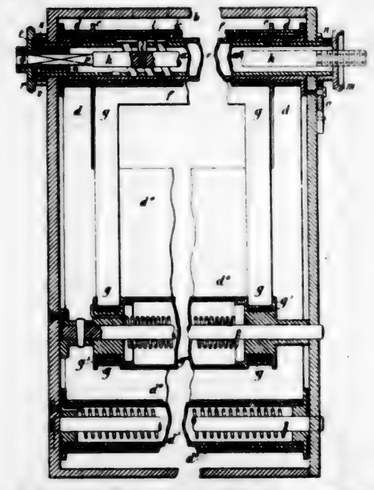

2. In a curtain-shutter having an adjustable aperture and a triplex setting-spool the combination, with two side spools controlling the opposite half of the curtain and a middle spool controlling the adjacent half of the curtain, of a hollow axle carrying the side spools fixed and the middle spool rotatable thereon, a central axle, a tappet guided in a longitudinal slot of the central axle, in a helical slot of the hollow axle and in a longitudinal slot of the middle spool, a bush in which the central axle is longitudinally guided, means for non-rotatably connecting the bush and the hollow axle at different angular positions relatively to each other, and a setting device connected with the hollow axle, essentially as described.

3. In a curtain-shutter having two curtain-webs the combination with two side spools controlling one curtain-web and a middle spool controlling the other curtain-web, of a hollow axle on which both side spools are secured and the middle spool is rotatably mounted, a central axle, a tappet non-rotatably mounted on the central axle, penetrating a helical slot in the hollow axle and projecting into a longitudinal slot in the middle spool, and means for rotating both the central axle and the hollow axle independently of each other.

708,728. ROASTER. JAMES A. OGDEN, Philadelphia, Pa., assignor of one-third to Charles H. Cornell, Valentine, Nebr. Filed Apr. 5, 1900. Serial No. 11,631. (No model.)

Claim.—1. The combination, in a roaster, of a furnace having a flue, an inclined plate situated in said flue, supports for said plate, swinging links connecting said plate with said supports, and mechanism for positively moving said plate in one direction, and means for suddenly checking its motion in the other; substantially as described.

2. The combination in a roaster, of a furnace having an inclined flue, a fire-box situate at one end of the flue, a plate for containing the ore to be roasted situated in said flue, said plate projecting completely through said fire-box, and means for suspending said plate, and giving it a freely-swinging motion, substantially as described.

3. In a roaster the combination of a furnace having an inclined flue, an inclined plate passing through the said flue, and projecting at either end, supports for the plate exterior to the furnace, and swinging links provided with turnbuckles, connecting the said plate with the said supports; substantially as described.

4. In a roaster, the combination with a furnace having an inclined flue, of an inclined plate passing through the said flue, supports above the plate, swinging links connecting said plate to said supports, and mechanism for bumping said plate; substantially as described.

5. The combination in a roaster, of a furnace having an inclined flue, a fire-box situate in said flue, a plate for containing the ore to be roasted, situated in said flue, a portion of said plate being situated over the said fire-box, means for suspending said plate and giving it a freely-swinging motion and mechanism for bumping said plate substantially as described.

708,729. VERTICAL STEAM-BOILER. WILLIAM PENMAN, Glasgow, Scotland. Filed Aug. 19, 1901. Serial No. 72,544. (No model.)

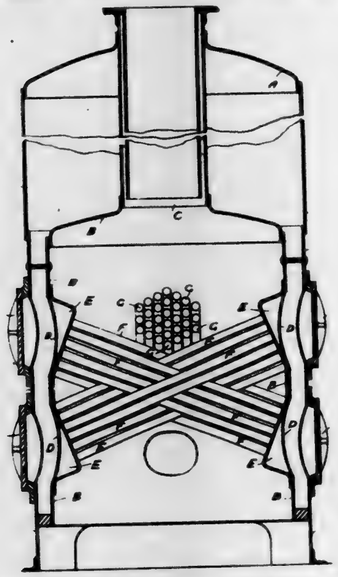

Claim.—1. A vertical steam-boiler comprising the usual outer shell, in combination with an inner shell formed with dished portions arranged in pairs opposite each other, one of each pair being in proximity to the fire-grate and the other to the furnace-crown, cross-rows of inclined tubes expanded into these dished portions approximately at right angles to the dished surfaces, and additional rows of tubes extending horizontally across the boiler above said inclined rows of tubes and orifices in the outer shell covered by doors substantially as described.

2. The herein-described vertical steam-boiler comprising in combination with an outer shell an inner cylindrical shell formed with dished portions diametrically opposite each other, cross-clusters of inclined tubes expanded into said dished portions, the outer shell having orifices opposite said dished portions closed by doors, substantially as and for the purpose set forth.

3. The herein-described vertical steam-boiler comprising in combination with an outer shell an inner cylindrical shell formed with orifices diametrically opposite each other, dished plates riveted to the inner shell covering said orifices, cross-clusters of inclined tubes expanded into said dished plates, the outer shell having orifices opposite those on the inner shell and closed by doors, substantially as and for the purpose set forth.

708,730. CREAM-SEPARATOR. CHARLES B. PHILLIPS, Bloomfield, Mich. Filed Aug. 13, 1901. Serial No. 71,730. (No model.)

Claim.—1. In a cream-separator, the combination with a bowl, of a vertical series of cones, a plurality of which extend to the wall of said bowl, and of a cone stopping short of said wall to form a passage-way between the edge of said cone and the wall of the bowl.

2. In a cream-separator, the combination with a bowl of a vertical series of cones, the upper and intermediate cones of which extend to the interior wall of the bowl, and of a bottom cone which stops short of the wall of said bowl whereby there is formed an annular passage-way.

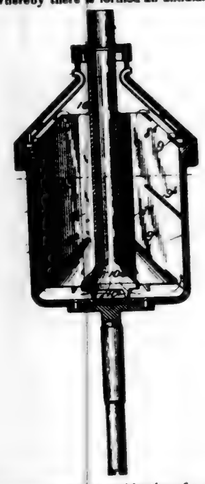

3. In a cream-separator, the combination of a series of hollow truncated cones arranged one above the other, a series of vertical radial wings rigidly connected with and supporting said cones, a separator-bowl, means for normally securing said series of cones and radial wings in operative relation within said bowl, the outer and larger edge of the upper and the intermediate truncated cones being in direct contact with the inner wall of the separator-bowl to force the material to travel inward as it rises past each of said cones, the lowermost cone of the series having a passage-way between its outer edge or margin and the interior wall of the separator-bowl.

4. In a cream-separator, the combination of a bowl, a series of hollow truncated cones arranged one above the other, a series of vertical radial wings rigidly connected with and supporting said truncated cones, said radial wings and upper and intermediate cones being in contact with the inner wall of the separator-bowl, the lowermost truncated cone having a space between its edge and the wall of said bowl, and having its inner edge extended toward the center of the bowl beyond the inner edges of the upper and intermediate cones.

5. In a cream-separator, the combination of a series of deflecting hollow truncated cones arranged one above the other, a series of vertical radial wings rigidly connected with and supporting said cones, a separator-bowl, means for normally securing said series of cones and radial wings in operative relation within said bowl, the outer and larger edge of the upper and the intermediate truncated cones being in contact with the inner wall of the separator bowl, the lowermost cone of the series having a passage-way between its outer edge or margin and the interior wall of the separator-bowl, and a down-feed tube disposed axially of said bowl.

6. In a cream-separator, a separator-bowl, a series of inclined cones arranged one above the other within said bowl, each of said cones above the lowermost deflector having its outer margin or edge in removable contact with the inner wall of the separator-bowl, and the lowermost cone having its outer edge or margin out of contact with the inner surface of the bowl to provide a space between the bowl and said outer edge for the passage of milk.

708,731. RECEPTACLE FOR COINS OR SMALL ARTICLES OF MERCHANDISE. CHARLES B. PIKE, Whitehall, N. Y. Filed Mar. 25, 1902. Serial No. 99,901. (No model.)

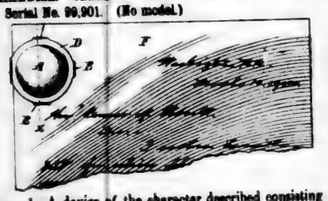

Claim.—1. A device of the character described consisting of a receptacle designed to receive coins or small articles of merchandise, a cover therefor, and a prong or prongs designed to penetrate a sheet of paper or other material inserted between said receptacle and cover and be thereafter bent for securing the cover to the receptacle and the device as a whole to the sheet of paper, substantially as described.

2. A device of the character described consisting of a receptacle designed to receive coins or small articles of merchandise, a flat cover therefor, and a prong or prongs designed to penetrate a sheet of paper or other material inserted between said receptacle and cover and be thereafter bent for securing the cover to the receptacle and the device as a whole to the sheet of paper, substantially as described.

3. A device of the character described consisting of a receptacle designed to receive coins or small articles of merchandise, a cover therefor, and a prong or prongs projecting from said receptacle designed to penetrate a sheet of paper or other material inserted between said receptacle and cover and be thereafter bent for securing the cover to the receptacle and the device as a whole to the sheet of paper, substantially as described.

4. A device of the character described made from a single piece of sheet metal consisting of a receptacle designed to receive coins or small articles of merchandise, a cover therefor connected to the marginal edge of said receptacle by a narrow neck of metal which is bent to bring said cover and receptacle into proper relations, and a prong or prongs designed to penetrate a sheet of paper or other material inserted between said receptacle and cover and be thereafter bent for securing the parts together, substantially as described.

5. A device of the character described made from a single piece of sheet metal and consisting of a receptacle designed to receive coins or small articles of merchandise, a flat cover therefor connected to the marginal edge of said receptacle, and a prong or prongs designed to penetrate a sheet of paper or other material inserted between said receptacle and cover and be thereafter bent for securing the parts together, substantially as described.

6. A device of the character described made from a single piece of sheet metal and consisting of a receptacle designed to receive coins or small articles of merchandise, a flat cover therefor, a prong or prongs projecting from said receptacle designed to penetrate a sheet of paper or other material inserted between said receptacle and cover and be thereafter bent for securing the cover to the receptacle and the device as a whole to the sheet of paper, substantially as described.

7. A device of the character described consisting of a receptacle designed to receive coins or small articles of merchandise, a substantially flat flange around the marginal edge of said receptacle, a cover, and a prong or prongs designed to penetrate a sheet of paper or other material inserted between said receptacle and cover and be thereafter bent for securing the cover to the receptacle and the device as a whole to the sheet of paper, substantially as described.

8. In combination with a sheet of paper or other material, of a receptacle designed to receive coins or small articles of merchandise for mailing or advertising purposes, said receptacle having its marginal edge in contact with said paper or other material, a cover for said receptacle on the opposite side of said paper, and a prong or prongs passing through said paper and binding said receptacle and cover together, substantially as described.

9. In combination with a sheet of paper or other material, of a receptacle designed to receive coins or small articles of merchandise for mailing or advertising purposes, said receptacle having its marginal edge in contact with said paper or other material, a flat cover for said receptacle on the opposite side of said sheet, a prong or prongs passing through said sheet and binding said receptacle and cover together, substantially as described.

10. In combination with a sheet of paper or other material, of a receptacle designed to receive coins or small articles of merchandise for mailing or advertising purposes, a cover on the opposite side of said sheet connected to said receptacle at its marginal edge, and a prong or prongs passing through said sheet and binding said receptacle and cover together, substantially as described.

11. In combination with a sheet of paper or other material, of a receptacle designed to receive coins or small articles of merchandise for mailing or advertising purposes, said receptacle having a substantially flat marginal flange in contact with said sheet, a cover on the opposite side of said sheet, and a prong or prongs passing through said sheet and binding said receptacle and cover together, substantially as described.

12. In combination with a sheet of paper or other material, of a receptacle designed to receive coins or small articles of merchandise for mailing or advertising purposes, said receptacle having a substantially flat marginal flange in contact with said sheet, a cover for said receptacle on the opposite side of said sheet connected to said receptacle at its marginal edge, and a prong or prongs at the marginal edge of said receptacle passing through said sheet and bent over said cover for securing the parts together, substantially as described.

708,732. STOPPER FOR BOTTLES. MARY PITTS, Chicago, Ill. Filed Feb. 14, 1901. Serial No. 47,210. (No model.)

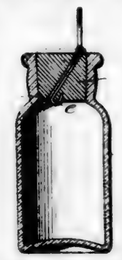

Claim.—1. A closure for vessels, comprising a stopper *b* a finger-piece *c*, and a retaining device secured in said stopper and extending diagonally therethrough, and binding said finger-piece pivotally upon the upper surface of the stopper and near one edge thereof, whereby the finger-piece may be folded down upon the upper surface of the stopper, said retaining device operating to bind the parts of the stopper together and to prevent disintegration, substantially as described.

2. A closure for vessels comprising a stopper, a finger-piece, and a retaining device secured in said stopper at a point between the center and the edge thereof, extending diagonally therethrough and securing said finger-piece to the upper surface of the stopper, said retaining device adapted to bind the parts of the stopper together and to prevent disintegration, substantially as described.

708,733. COIN-HOLDER. STANLEY RAY, Cambridge, Mass. Filed Feb. 17, 1902. Serial No. 94,357. (No model.)

Claim.—1. A coin-holder comprising an inclosing case having a movable cover, and a raceway within the case, to receive a series of coins superposed one upon the other and inclined relatively to the length of the raceway, said raceway being substantially elliptical in cross-section and provided at its lower end with an upturned stop, and having on its top a detent to engage and hold the rim of the next to the endmost coin of a series, the endmost coin being free to move against the stop into position to be withdrawn when the case is opened.

2. A coin-holder comprising an inclosing case having a movable cover, and a trough-like raceway within the case provided at its lower delivery end with an upturned stop for the endmost coin, and means on the raceway to engage the rim of and retain in place the next to the endmost coin when the case is opened, removal of the endmost coin effecting the release of the next coin and permitting it to move forward against the stop.

3. A coin-holder comprising a flattened, substantially oval case having a cover hinged thereto at its side, and an elongated, trough-like raceway secured within the case and extending in the direction of its length, said raceway having an upturned stop at its lower end and an adjacent delivery-opening, and means on the raceway at the upper end of the delivery-opening to engage the rim of and retain in place the next to the endmost coin, the endmost coin moving into position against the stop when the cover of the case is opened.

4. A coin-holder comprising a flattened case having a cover hinged thereto at its side, an elongated trough-like raceway in the case and adapted to receive a series of coins superposed one upon the other in an inclined position, said raceway having an upturned stop at its lower end and a detent to engage the rim of the next to the endmost coin, opening of the cover permitting the endmost coin to swing on its edge into upright position against the stop, withdrawal of such coin releasing the next coin from the detent and permitting it to slide down the raceway against the stop.

708,734. EMERGENCY-BRAKE FOR TRAMWAY-CARS. CARL REAL, Schwyz, Switzerland. Filed May 29, 1902. Serial No. 109,449. (No model.)

Claim.—1. An emergency-brake for tramway-cars comprising a

brake-beam, provided with means for gripping the roadway, and capable of being lowered from the driver's platform, said brake being fitted between two or more bolts secured to the under frame of the car in such a manner that the brake-beam, when released, is capable of fastening itself into the roadway so that as the vehicle tends to ride up the inclined part of the brake-beam, thereby causing the weight of the car to assist the braking action.

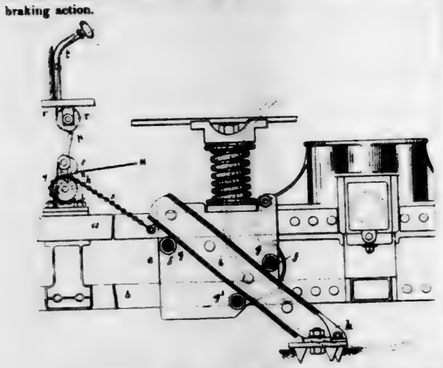

2. In combination with a car or like vehicle, a roadway-engaging brake device carried thereby, and means whereby said brake device may be inclined in the direction the car is going and caused to engage the roadway whereby the momentum of the car causes said car to be raised by said inclined brake device, substantially as described.

708,735. CHUCK. CHARLES H. REID, Danbury, Conn. Filed Dec. 7, 1901. Serial No. 85,036. (No model.)

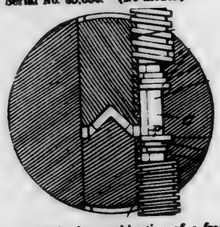

Claim.—1. In a chuck, the combination of a frame, threaded jaws therein, and a screw arranged in the frame and having right and left handed threaded portions engaging the threads of the jaws, and shoulders *c* at the inner ends of said threaded portions arranged to abut against the frame, and also having collars disposed between the shoulders *c;* the said collars being reduced in diameter outwardly, and arranged in correspondingly-shaped recesses of and bearing against the frame.

2. In a chuck, the combination of a frame, threaded jaws therein, and a screw arranged in the frame and having right and left handed threaded portions engaging the threads of the jaws, and shoulders *c* at the inner ends of said threaded portions arranged to abut against the frame, and also having cone-shaped collars provided with steps, at points between the shoulders *c;* the said collars being arranged with their reduced ends outwardly, and in correspondingly shaped and stepped recesses of the frame.

3. In a chuck, the combination of a frame, threaded jaws therein and a screw arranged in the frame and having right and left handed threaded portions engaging the threads of the jaws, and shoulders *c* at the inner ends of said threaded portions arranged to abut against the frame, and also having, at points between the shoulders *c*, cone-shaped collars provided with steps, the perimeters of which are beveled or tapered toward the reduced ends of the collars; the said collars being arranged with their reduced ends outwardly and in correspondingly shaped and stepped recesses of the frame.

708,736. ROLLER-BEARING SUPPORT FOR SHADE-ROLLERS. JOHN RESNER, Burlington, Iowa. Filed May 17, 1901. Serial No. 60,746. (No model.)

Claim.—As a new article of manufacture, a support for shade-rollers comprising a depending bracket having an opening therein, an internally-screw-threaded sleeve passing through said opening and secured therein, two rings screwed into said sleeve, each ring having a concave groove adapted to register with the groove in the other ring, the two grooves forming a runway, and balls located within said runway and projecting therefrom to form a bearing for the journal for a shade-roller.

708,737. SHEARS FOR CUTTING GRASS. JAMES R. RHODES, Grand Rapids, Mich., assignor to the Cronk and Carrier Manufacturing Company, Elmira, N. Y., a Corporation of New York. Filed Apr. 26, 1902. Serial No. 104,788. (No model.)

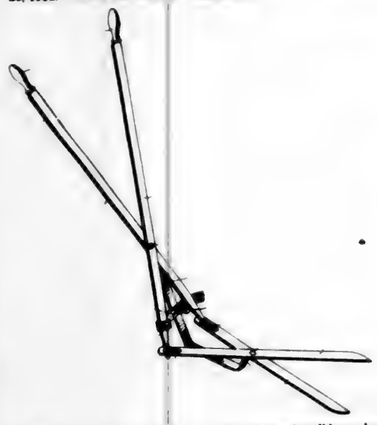

Claim.—1. The combination of a shoe adapted to slide on the ground, a pair of shear-blades pivotally attached to the forward end of the shoe, and a pair of operating-levers pivotally attached to the rear of the shoe and extending upward therefrom, and also connected to the rear of the shear blades to operate the same, substantially as described.

2. The combination of a shoe having a middle portion adapted to slide on the ground, an upright forwardly-extended forward end, and an upwardly and rearwardly extended rear end, a pair of horizontal shear-blades pivoted upon the forward end of the shoe, a pair of crossed and inclined levers pivoted upon the rear end of the shoe and slidably connected to the shear-blades at their lower ends, substantially as described.

3. The combination of a shoe having a middle portion adapted to slide on the ground and upwardly and oppositely inclined ends, a pair of shear-blades arranged horizontally and pivotally attached to the end of the shoe and having slots in their rear ends, and a pair of inclined levers pivotally attached to the other end of the shoe, and provided with handles at their upper ends, and also slidably engaging the slots in the extensions of the blades at their lower ends, substantially as described.

4. The combination of a shoe having an upwardly-extended rear portion, horizontal shear-blades pivoted to the shoe, inclined levers pivoted to the rear portion of the shoe and a transverse bar attached to the shoe and having stops at its ends to engage the levers, substantially as described.

5. The combination of a shoe having an upwardly-extended rear portion, horizontal shear-blades pivoted to the shoe, crossed levers pivoted to the rear portion and connected to the shear-blades, a transverse bar attached to the shoe and having forwardly-bent ends to engage the levers, and a middle stud to engage the levers, substantially as described.

6. The combination of a shoe having a middle portion adapted to slide on the ground, an upwardly and forwardly extended front portion, and an upwardly and rearwardly extended rear portion; horizontal shear-blades pivoted on the front portion of the shoe, and having slotted rear extensions, inclined and crossed levers pivoted to the rear portion of the shoe, and having handles at their upper ends and slidably engaging the slots at their lower ends, a transverse bar on the shoe having forwardly-extended ends to engage the levers, and a central stud to engage the levers, and to secure the bar in place, substantially as described.

708,738. PASTEURIZING APPARATUS. BALDWIN F. SCHIRMER, Indianapolis, Ind. Filed Mar. 4, 1902. Serial No. 96,598. (No model.)

Claim.—1. In a pasteurizing apparatus, the combination with a fluid-tank having inlet and outlet openings at opposite ends, of means for heating the tank, a normally closed door at each opening, an endless carrier in the tank, a supplementary carrier connected therewith, means for propelling the supplementary carrier through the inlet-opening, bottle-holders on the supplementary carrier for opening the inlet-door, and means for receiving the bottle from the main carrier at the outlet-door

2. In a pasteurizing apparatus the combination with a fluid-tank having inlet and outlet openings at opposite ends, normally closed doors at said openings, an endless carrier in the tank, a shaft and sprocket-wheels at the inlet end for supporting and driving said carrier, a supplementary carrier mounted at its inner end on said shaft and extending through the inlet-opening, means for adjusting the shaft to take up slack, and bottle-holding receptacles carried by the supplementary carrier and serving to open the normally closed inlet-door.

3. In a pasteurizing apparatus, the combination with a normally closed fluid-tank, a main endless carrier, means for propelling it through the tank, inwardly-projecting side flanges on the side of the tank engaging the carrier and deflecting it downward from the inlet end to the center of the tank and upward from the center to the outlet end, a supplementary carrier mounted upon and driven by the shaft at the inlet end of the main carrier, bottle holders on the supplementary carrier serving to open the inlet of the tank, a receiving roller-carrier outside the outlet of the tank, and means for projecting the bottle-holders on the main carrier through the outlet and upon the receiving roller-carrier.

4. In a pasteurizing apparatus, the combination with a fluid-tank, of a transverse shaft at each end near the outlet and inlet respectively and near the top of the tank, sprocket-wheels on said shafts, an endless carrier engaging said sprocket-wheels, horizontal flanges projecting inwardly from the sides of the tank at its mid-length and near the bottom, said flanges being parallel with the bottom of the tank for some distance and provided with upwardly-inclined ends, and rollers at the sides of the carrier engaging between and guided by said flanges.

708,739. SHADE-HOLDER FOR INCANDESCENT ELECTRIC LAMPS. RICHARD W. SCHNELL, Brooklyn, N. Y., assignor of one-half to William V. Gein, New York, N. Y. Filed Oct. 7, 1901. Renewed July 17, 1902. Serial No. 115,894. (No model.)

Claim.—1. A shade-holder composed of a spring-wire bent centrally to form a spring-ring b^3 and open at one side and provided at the open side with a laterally-directed loop or shank b^4 composed of two parts, the bottom portion of said loop or shank being shorter than the other and the separate parts thereof being bent to form a spring-ring b^4 open at one side, substantially as shown and described.

2. A shade-holder composed of a spring-wire bent centrally to form a spring-ring open at one side and provided at the open side with a laterally-directed loop or shank which is U-shaped in form and one side of which is shorter than the other, said shorter side of said loop or shank being also provided with a spring-ring open at one side and held in a concentric position with reference to the first-named spring-ring, substantially as shown and described.

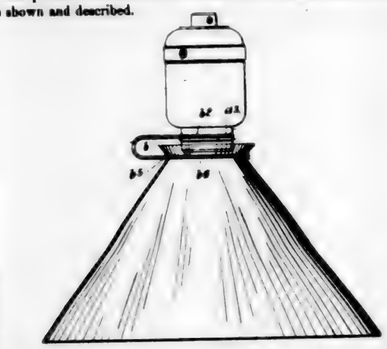

708,740. MANDREL FOR PAPER-ROLLS. FRANK SCHÖN, New York, N. Y. Filed Oct. 1, 1901. Serial No. 77,178. (No model.)

Claim.—1. The herein-described thimbles or socket-sleeves for use in connecting a roll of paper with a shaft or mandrel which is passed therethrough, said thimbles or socket-sleeves comprising a body portion composed of two parts, the adjacent side edges of which are inclined or wedge-shaped in form, one of said parts being also provided with an annular head, and means for preventing the roll of paper from turning on said thimbles or socket-sleeves, substantially as shown and described.

2. The herein-described thimbles or socket-sleeves for use in connection with a roll of paper and through which a shaft or mandrel is passed, said thimbles or socket-sleeves comprising a body portion composed of two parts, the adjacent side edges of which are inclined or wedge-shaped in form, one of said parts being provided with an annular head, and that part which has no head being provided with projections or teeth on its outer surface, substantially as shown and described.

708,741. SHEET-DELIVERY MECHANISM. WALTER SCOTT, Plainfield, N. J. Filed Aug. 18, 1898. Serial No. 688,854. (No model.)

Claim.—1. In a sheet-delivery having a to-and-fro-moving sheet support or carrier, a combined sheet stop and gripper comprising a relatively fixed sheet-stop against which the sheet is fed, and two independently-movable gripper members, coacting to grip the sheets between them, substantially as described.

2. In a sheet-delivery having a to-and-fro-moving sheet support or carrier, a relatively fixed sheet-stop moving with said carrier or support and against which the sheet is fed, a gripper above said stop and adapted to move up and down, and a gripper in front of said stop adapted to be depressed below the said stop, substantially as described.

3. In a sheet-delivery having a to-and-fro-moving sheet support or carrier, a relatively fixed sheet-stop moving with said carrier or support, a gripper above said stop adapted to move up and down, a spring for pressing the gripper downwardly, a second gripper in front of and adapted to be depressed below said sheet-stop, and a spring for pressing said second gripper upward, all in combination, substantially as described.

4. In a sheet-delivery having a to-and-fro-moving sheet carrier or support, a relatively fixed sheet-stop moving with said carrier or support, a gripper above said sheet-stop, means for moving and holding said gripper in each of two positions, a second gripper in front of and adapted to be depressed below said sheet-stop, and mechanism for moving said second gripper toward and from the first-named gripper, substantially as described.

5. In a to-and-fro-moving sheet-delivery, the combination of a to-and-fro-moving sheet support or carrier, a sheet-stop fixed thereto and moving therewith, a gripper above said stop, mechanism for operating said gripper to open and close the same, a second gripper in front of and adapted to be depressed below the said sheet-stop, and mechanism for

depressing said second gripper while sheets are being run in over it and against said stop and for closing said gripper, substantially as described.

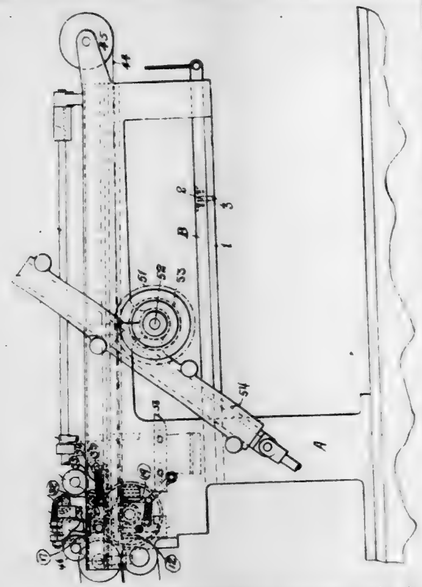

6. In a sheet-delivery, the combination of a to-and-fro-moving sheet carrier or support, a combined sheet and gripper stop moving with said support or carrier, a gripper above said stop and arrested in its downward movement thereby, a second gripper below the first-named gripper and in front of the sheet-stop, mechanism for moving said grippers downwardly and holding them apart while the sheets are fed in between them and against said stop and for releasing or closing said second gripper, and mechanism for opening said first-named gripper to release the sheets for delivery, substantially as described.

7. In a sheet-delivery, a to-and-fro-moving sheet carrier or support, a combined sheet and gripper stop moving with said carrier or support, a gripper above said stop adapted to be arrested in its downward movement thereby, mechanism for moving and holding said gripper against and away from said stop, a second gripper below and in front of said stop, a spring for pressing said gripper upward against the first-named gripper, and a cam on the framework for depressing said second gripper to provide a space between it and the first gripper into which the sheets are fed against said stop said second gripper raising said sheets up against said first-named gripper in position to be delivered over said stop, substantially as described.

8. In a sheet-delivery, the combination of a to-and-fro-moving carriage, a sheet-stop fixed thereto, a sheet support or carrier connected with said carriage, a gripper intermediate the stop and the support or carrier adapted to lie in or slightly above the horizontal plane including the top of the stop and to be depressed below said top, a gripper above said stop adapted to be stopped in its downward movements by said stop and to coact with the lower gripper to grip sheets, springs pressing said grippers toward each other, and mechanism for separating said grippers to allow the sheets to be fed in between them and to allow the sheets to be dropped or moved from said support or carrier, substantially as described.

9. In a sheet-delivery, the combination of a to-and-fro-moving carriage, a sheet and gripper stop fixed thereto, a sheet support or carrier connected with said carriage, a gripper between said stop and said support or carrier adapted to lie in or slightly above the top of said stop, a spring pressing said gripper upwardly, an adjustable stop for limiting the upward motion of said gripper, a cam for moving said gripper against the force of said spring to move the gripper below said stop-top, a gripper above the stop adapted to be stopped in its down movement by said top and to coact with the lower gripper to grip sheets, and mechanism for moving and holding said upper gripper toward and away from said stop-top and lower gripper, substantially as described

10. In a sheet-delivery having a to-and-fro-moving sheet support or carrier, a combined sheet stop and gripper comprising a relatively fixed sheet-stop against which the sheet is fed, and two independently-movable gripper members, one of which is stopped by said sheet-stop and the other of which is stopped by the first-named gripper, substantially as described.

11. In a sheet-delivery having a to-and-fro-moving sheet support or carrier, a relatively fixed sheet-stop moving with said carrier or support and against which the sheet is fed, a gripper above said stop and adapted to be stopped thereby in its downward movement, a gripper in front of said stop adapted to be depressed below the said stop and to be stopped in its upward movements by the first-named gripper, substantially as described.

12. In a sheet-delivery having a to-and-fro-moving sheet support or carrier, a relatively fixed sheet-stop moving with said carrier or support, a gripper above said stop adapted to move up and down, and to be arrested thereby in its downward movement, a spring for pressing the gripper downwardly, a second gripper in front of and adapted to be depressed below said sheet-stop and to coact with said first-named gripper to grip sheets, and a spring for pressing said second gripper upward, all in combination, substantially as described.

13. In a sheet-delivery having a to-and-fro-moving sheet carrier or support, a relatively fixed sheet-stop moving with said carrier or support, a gripper above said sheet-stop adapted to be arrested thereby in its downward movement, means for moving and holding said gripper in each of two positions against and away from said sheet-stop, a second gripper in front of and adapted to be depressed below said sheet-stop and coacting with said first-named gripper to grip sheets, and mechanism for moving said second gripper toward and from the first-named gripper, substantially as described.

14. In a to-and-fro-moving sheet-delivery, the combination of a to-and-fro support or carrier, a sheet-stop fixed thereto and moving therewith, a gripper above said stop and arrested by the top thereof as it moves downwardly, mechanism for operating said gripper to open and close the same, a second gripper below the first gripper and coacting therewith to grip sheets said second gripper being in front of and adapted to be depressed below the said sheet-stop, and mechanism for depressing said second gripper while sheets are being run in over and against said stop and for closing said gripper against the first-named gripper, substantially as described.

15. The combination of a delivery-board, a to-and-fro-moving sheet-delivering mechanism receiving printed sheets at one end of its path of motion and delivering them as it returns toward that end of its path on said board, and a second sheet-delivering mechanism adjustably connected with said first-named sheet-delivering mechanism, whereby the first-named mechanism begins its delivery at one point and the point of beginning of the delivery by the second mechanism may be varied, substantially as described.

16. The combination of a delivery-board, a to and-fro-moving carriage, a set of grippers carried thereby, a sheet support or carrier connected with said carriage, means for delivering printed sheets to said grippers and support or carrier, a second set of grippers and a sheet support or carrier adjustable along said carriage toward and from said first set and carrier or support, and an adjustable feed-board from which sheets are supplied to said second set of grippers and carrier or support, substantially as described.

17. The combination of a delivery-board, a sheet-delivering mechanism movable to and fro over said board and provided with a set of movable grippers and delivering printed sheets on said board, a second sheet-delivering mechanism also movable to and fro over said board in the same direction as the first mechanism and also provided with a set of movable grippers, and a connection between said sets of grippers for moving them simultaneously, substantially as described.

18. The combination of a delivery-board placed over the inking apparatus of a printing-press, a pair of side supports for said board, and a pin-and-hole connection between said board and said supports, whereby the board may be disconnected from said supports and slid along the same, substantially as described.

19. The combination of a delivery-board, horizontal bars for supporting the same at opposite edges thereof, and connections for holding said board in place on said bars and disconnectible by lifting or tilting said board, whereby the board may be disconnected from and be slid along said bars, substantially as described.

20. In a sheet-delivery having a to-and-fro-moving sheet supporter or carrier, a relatively fixed sheet-stop moving with said carrier or support and against which the sheet is fed, a movable gripper above said stop, and a movable gripper in front of said stop adapted to be depressed below the same while the sheet is being fed between the grippers, substantially as described.

21. In a sheet-delivery having a to-and-fro-moving sheet supporter or carrier, a relatively fixed sheet-stop moving with said carrier or support and against which the sheet is fed, a movable gripper above said stop, and a movable gripper in front of said stop adapted to be depressed below the same while the sheet is being fed between the grippers and raised to grip the sheet after the delivery has commenced its outward stroke, substantially as described.

22. In a sheet-delivery having a to-and-fro-moving sheet support or carrier, a relatively fixed stop against which the sheet is fed, combined with a depressible gripper member in front of said stop and adapted to lie flush with or slightly above the top of said stop, whereby the sheet is first arrested by the stop and is afterward lifted into position to be run out over said stop.

23. In a printing-press, the combination of two rotatable shafts each provided with a plurality of flaring notches along the same, a pulley for and mounted on each of said shafts to slide along the same, a spring-pressed pin for each slidable pulley adapted to engage with the notches of the corresponding shaft, whereby the slidable pulleys may be moved along their shafts by pressure applied to their sides, and a tape on and moved in two directions by said pulleys, substantially as described.

24. In a printing-press, the combination of two rotatable shafts each provided with a plurality of notches theresalong, a pulley for and mounted on each of said shafts to slide theresalong, a spring pin for each of said pulleys adapted to engage with the notches of the corresponding shaft, the coacting parts of the pins and notches being oblique to the axes of said shafts and a tape on and moved in two directions by said pulleys, substantially as described.

25. In a printing-press, the combination of a rotatable shaft having a plurality of flaring notches theresalong, a pulley slidable along said shaft, a spring-pressed pin on said pulley engaging with said notches, whereby the pulley may be slid along the shaft by pressure thereon and the pin snap from one to another of said notches, and a sheet-moving tape on and moved in two directions by said pulley, substantially as described.

708,742. ROTARY ENGINE. GEORGE SPRICH, Paragould, Ark., assignor of one-half to Charles Loesche and Hermann B. Steinheimer, Paragould, Ark. Filed Mar. 20, 1901. Serial No. 52,064. (No model.)

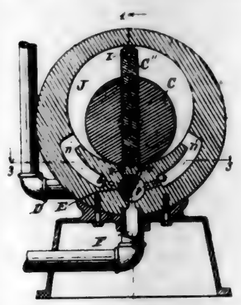

Claim.—1. In a rotary steam-engine, the combination of a cylinder; a rotary piston within the same; ports leading to each side of said cylinder to serve alternately as inlets or exhausts, said ports being divided into two separate passages at their outer ends; a valve having two passages, one of which connects one of said ports to the supply-pipe while the other connects the opposite port to the exhaust, alternately as the valve is shifted, coacting for the purpose specified.

2. In a rotary steam-engine, the combination of a cylinder, a cross-section of which is half-circular and half in the form of an ellipse, merging into each other; a rotary head eccentric thereto; a piston adapted to slide radially through the rotary head with suitable packings between it and the cylinder; ports leading to each side to serve alternately as inlets or exhausts, said ports being divided into two passages at their outer ends; a valve having two passages one of which connects one of said ports to the supply-pipe while the other connects the opposite port to the exhaust alternately as the valve is shifted, coacting for the purpose specified.

3. In a rotary steam-engine, the combination of a cylinder, a cross-section of which is half-circular and half in the form of an ellipse, merging into each other; a rotary head eccentric thereto; a piston adapted to slide radially through the rotary head with suitable packings between it and the cylinder; ports leading to each side to serve alternately as inlets or exhausts, said ports being divided into two passages at their outer ends; a valve having two passages one of which connects one of said ports to the supply-pipe while the other connects the opposite port to the exhaust, alternately as the valve is shifted; and an auxiliary exhaust leading into the main exhaust from the exhaust side of the cylinder-chamber, coacting for the purpose specified.

708,743. CLEANING AND POLISHING COMPOSITION. IDA STERN, Chicago, Ill. Filed Feb. 28, 1902. Serial No. 96,160. (No specimens.)

Claim.—The herein-described composition of matter for cleaning and polishing consisting of ammonia, varnish composed of turpentine and resin, and kerosene in substantially the proportions specified to wit: one (1) teaspoonful of varnish composed of turpentine and resin; thirty-eight (38) teaspoonfuls of ammonia of ten-per-cent. strength; and two (2) teaspoonfuls of kerosene.

708,744. BILLIARD-CUSHION. BENJAMIN A. STEVENS, Toledo, Ohio. Filed Nov. 21, 1901. Serial No. 83,071. (No model.)

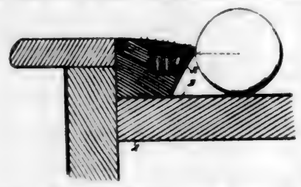

Claim.—1. The combination of a billiard-table rail and a resilient cushion, the cushion being secured to the rail, two series of grooves crossing each other being provided between adjacent surfaces of the cushion and rail.

2. A billiard-cushion provided with a longitudinal aperture therein, and a strip of softer rubber than that of which the body of the cushion is composed inserted in said aperture, the strip of softer rubber having a less area of cross-section than that of said aperture, said strip being of a uniform cross-section of such a form that it shall contact the walls of said aperture in two or more points.

3. A billiard-cushion provided with a longitudinal aperture therein, a strip of softer rubber than that of the body of the cushion of less area of cross-section than said aperture, lying therein and being in contact with the front and rear walls of said aperture, and a flexible inextensible strip embedded in the material of the cushion adjacent to the front wall of said aperture.

4. A rubber billiard-cushion provided with a longitudinal aperture, a strip of resilient material of a different degree of hardness from that of the cushion inserted in said aperture, said strip having a shape of cross-section such that it shall contact the wall of said aperture at two or more points and shall leave an opening between its periphery and the wall of said aperture between said contacting points, said opening being so located that the rubber displaced by the contact of the ball shall pass into it.

708,745. CONNECTOR FOR SWEEP-STICKS AND PICKER-STICKS OF LOOMS. HOMER R. TAPLIN, Lawrence, Mass. Filed Aug. 26, 1901. Serial No. 73,216. (No model.)

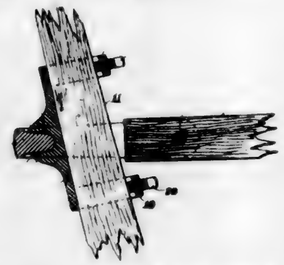

Claim.—1. A connector for the sweep-sticks and picker-sticks of looms comprising a block secured to the picker-stick, and a rigid loop secured to the sweep-stick and encircling the picker-stick and block, one of these members being provided with a projection and the other with a recess adapted to receive the projection and to permit its outward movement, and means for finally arresting said outward movement before the projection is withdrawn from the recess whereby the separation of the elements of the connector is prevented.

2. A connector for the sweep-sticks and picker-sticks of looms comprising a block secured to the picker-stick, and a rigid loop secured to the sweep-stick and encircling the picker-stick and block, one of these members being provided with a projection and the other with a recess adapted to receive the projection and to permit its outward movement until ar-

rested by a contact-face carried by the companion member before the projection is withdrawn from the recess.

3. A connector for the sweep-sticks and picker-sticks of looms comprising a block secured to the picker-stick, and a rigid loop secured to the sweep-stick and encircling the picker-stick and block, one of these members being provided with a projection and the other with a recess adapted to receive the projection, the depth of engagement between the members being greater than the distance between the end of the sweep-stick and the adjacent side of the picker-stick.

4. A connector for the sweep-sticks and picker-sticks of looms comprising a member formed with side bars secured at each side of the sweep-stick and a cross-bar connecting said side bars and provided with a projection having a curved end, and a block carried by the picker-stick within the sweep-stick member and provided with a recess adapted to receive the projection, the depth of engagement between the members being greater than the distance between the end of the sweep-stick and the adjacent side of the picker-stick.

708,746. BARREL-MAKING MACHINERY. JOHN VAN DEVELDE, Cleveland, Ohio. Filed Jan. 3, 1902. Serial No. 88,273. (No model.)

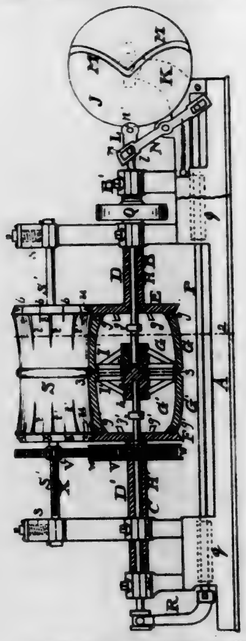

Claim.—1. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections hinged to said disks, central shafts supported in said tubular shafts, hubs on said central shafts, links connecting the hubs with the sections, adapted to collapse and withdraw substantially as described.

2. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections hinged to said disks, central shafts supported in said tubular shafts, holes or cavities in said sections, leaves hinged in said cavities, cross-grooves in the peripheries of the disks, hubs on the inner ends of the central shafts, links connecting the hubs with the sections, adapted to operate substantially as described.

3. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections, hinged to said disks, holes or cavities in said sections, leaves hinged in said cavities, cross-grooves in the peripheries of the disks, central shafts supported in said tubular shafts, hubs on the inner ends of said central shafts, links connecting the hubs with the sections, in combination with a pressure-roller mounted on a shaft over said mandrel, blades on the roller adapted to mesh with the cavities in the mandrel, and cutting-blades on said roller, adapted to crimp and cut the paper on the mandrel, substantially as described.

4. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections, hinged to said disks, holes or cavities in said sections, leaves hinged in said cavities, cross-grooves in the peripheries of the disks, central shafts supported in the tubular shafts, hubs on the inner ends of said central shafts, links connecting the hubs with the sections, in combination with a pressure-roller mounted on a shaft over said mandrel, blades on the roller adapted to mesh with the cavities in the mandrel, and cutting-blades on said roller, gears on the mandrel and pressure-roller meshing together, and means substantially as described for operating the mandrel and roller, as and for the purpose specified.

5. A collapsible mandrel consisting of disks, tubular shafts attached to said disks, curved and tapered body-sections hinged to said disks, holes or cavities in said sections, leaves hinged in said cavities, cross-grooves in the peripheries of the disks, central shafts supported in the tubular shafts, hubs on the inner ends of said central shafts, links connecting the hubs with the sections, in combination with a pressure-roller mounted on a shaft over said mandrel, blades on the roller adapted to mesh with the cavities in the mandrel, and cutting-blades on said roller, gears on the mandrel and pressure-roller, a cam-wheel mounted on the frame A, a swiveled head on end of central shaft, a pin on said head, a lever fulcrumed on the frame A, a sliding rod supported in bearings in the base A connected with said lever, an arm on opposite end of said rod connected with the opposite central shaft, all constructed and adapted to operate substantially as described.

708,747. CAR-COUPLING. GEORGE WESTINGHOUSE, Pittsburg, Pa. Filed Mar. 25, 1901. Serial No. 52,669. (No model.)

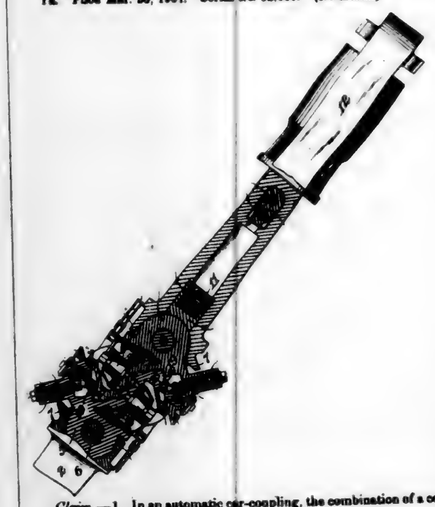

Claim.—1. In an automatic car-coupling, the combination of a coupler-head, flexibly connected with a car-frame, and adapted, by movement about a pivot, to be automatically engaged with a counterpart on another vehicle, and means for permitting a vertical movement of the coupler-head, a lock, automatically operable in and by the engagement of the coupler-head with a counterpart, for retaining said coupler-head in substantially rigid engagement with its counterpart.

2. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and having a fixed vertical coupling member adapted to be engaged with and disengaged from a corresponding member on a counterpart head, by lateral movement, means for permitting vertical movement of the coupler-head, and a lock, automatically operable in and by the engagement of the coupler-head with a counterpart, for retaining said coupling member in engagement with that of a counterpart coupler-head.

3. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, a vertical coupling member fixed thereon, and having an engaging face inclined to the line of draft and adapted to be brought into contact with the corresponding engaging face of a vertical coupling member fixed on a counterpart head, by lateral movement, means for permitting vertical movement of the coupler-head, and a lock for retaining said coupling member in engagement with that of the counterpart head.

4. In an automatic car-coupler, the combination of a coupler-head flexibly connected with a car-frame, a vertical coupling member fixed thereon, and having faces which are oppositely inclined to the line of draft and adapted to be brought into contact with corresponding oppositely-inclined faces of a vertical coupling member fixed on a counterpart head, by lateral movement, means for permitting vertical movement of the coupler-head, and a lock for retaining said coupling member in engagement with that of the counterpart head.

5. In an automatic car-coupler, the combination of a coupler-head flexibly connected with a car-frame, a vertical coupling member fixed thereon and adapted to be engaged with and disengaged from a corresponding member on a counterpart head, means for permitting both vertical and lateral movement of the coupler-head, a guide opposite said coupling member, for moving a counterpart head into engagement, and a lock, automatically operable in and by the engagement of the coupling member with that of a counterpart head, for retaining said coupling member in engagement with that of said counterpart coupler-head.

6. In an automatic car-coupling, the combination of a coupler-head having a fixed vertical coupling member adapted to be engaged with and disengaged from a corresponding member on a counterpart head, by lateral movement, means for permitting vertical movement of the coupler-head, and a lock fitted on the coupler-head in position to abut against a bearing-surface on a counterpart head and automatically operable in and by the engagement of the coupling member with that of a counterpart head, to hold the coupling members in close contact when the two heads are coupled.

7. In an automatic car-coupling, the combination of a coupler-head having a fixed vertical coupling member adapted to be engaged with and disengaged from a corresponding member on a counterpart head, by lateral movement, and a lock pivoted on the coupler-head and having a face, eccentric to its pivot, which is adapted to abut against a bearing-surface on a counterpart head when the two heads are coupled.

8. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, means for permitting vertical movement of the coupler-head, a lock for retaining said coupler-head in engagement with its counterpart, and a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled.

9. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, means for permitting vertical movement of the coupler-head, a lock for retaining said coupler-head in engagement with its counterpart, and an electric conductor in the head, having a terminal adapted to make contact with the terminal of an electric conductor in a counterpart head when the two heads are coupled.

10. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, means for permitting vertical movement of the coupler-head, a lock for retaining said coupler-head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled, and a cock fitted in the coupler-head and controlling the fluid-conduit.

11. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, a lock for retaining said coupler-head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled, a cock fitted in the coupler-head and controlling the fluid-conduit, and means for releasing the lock and operating the cock which are operable at a distance from the coupler-head sufficient to obviate necessity of going between and below cars.

12. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, a lock for retaining said coupler-head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled, a cock fitted in the coupler-head and controlling the fluid-conduit, and means, operable from the side of a car, for releasing the lock and operating the cock.

13. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, means for permitting vertical movement of the coupler-head, a lock for retaining said coupler-head in engagement with its counterpart, a plurality of fluid-conduits in the head, each having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled, and a cock fitted in the coupler-head and controlling the several fluid-conduits.

14. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, a lock for retaining said coupler-head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled, a cock fitted in the coupler-head and controlling the fluid-conduit, an unlocking-shaft journaled transversely on a car-frame and operable from the side of the car, and intermediate connections for releasing the lock and operating the cock by movement of the unlocking-shaft.

15. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, a lock for retaining said coupler-head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled, a cock fitted in the coupler-head and controlling the fluid-conduit, an electric conductor in the head, having a terminal adapted to make contact with the terminal of an electric conductor in a counterpart head when the two heads are coupled, and means for releasing the lock and operating the cock which are operable at a distance from the coupler-head sufficient to obviate necessity of going between and below cars.

16. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and having a vertical coupling member, adapted to be engaged with and disengaged from a corresponding member on a counterpart head, by lateral movement, a lock fitted in the coupler-head and adapted to maintain its coupling member in engagement with that of a counterpart head, a fluid-conduit section having a packed end on a face of the head which is adapted to abut against, and make a fluid-tight joint with, the end of a fluid-conduit on a counterpart head, a shell or casing fixed to the coupler-head, within a recess by the walls of which it is protected, a second fluid-conduit section, opening into said casing and flexibly connected to a pipe-line on the car, a cock fitting in the casing and controlling communication between the fluid-conduit sections, and means for releasing the lock and operating the cock.

17. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and having a fixed vertical coupling member, adapted to be engaged with and disengaged from a corresponding member on a counterpart head, by lateral movement, means for permitting vertical movement of the coupler-head, a lock fitted in the coupler-head and adapted to maintain its coupling member in engagement with that of a counterpart head, an electric conductor in the head, having a terminal adapted to make contact with the terminal of an electric conductor in a counterpart head when the two heads are coupled, and flexibly connected to an electric conductor on the car, and means for releasing the lock for uncoupling the heads and electric conductors.

18. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, a lock for retaining said coupler-head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the two heads are coupled, a cock fitted in the coupler-head and controlling the fluid-conduit, an operating-shaft journaled in the head, connections through which movement is imparted from said shaft to the lock, and vice versa, and connections from the operating-shaft to the cock, provided with means for permitting a determined degree of traverse of the operating-shaft and lock without imparting movement to the cock.

19. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, a locking-arm, fitted with the capacity of a limited degree of independent movement on a shaft journaled in the coupler-head, and adapted to retain said head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head, a cock fitted in the coupler-head and controlling the fluid-conduit, an operating-shaft journaled in the head, connections through which movement is imparted from said shaft to the locking-arm, and vice versa, and connections from the operating-shaft to the cock, provided with means for permitting a determined degree of traverse of the operating-shaft and locking-arm without imparting movement to the cock.

20. In an automatic car-coupling, the combination of a coupler-head flexibly connected with a car-frame, and adapted, by lateral movement, to be automatically engaged with a counterpart on another vehicle, a lock for retaining said coupler-head in engagement with its counterpart, a fluid-conduit in the head having a properly-packed end adapted to make a fluid-tight joint with that of a fluid-conduit on a counterpart head when the

two heads are coupled, a cock fitted in the coupler-head and controlling the fluid-conduit, an operating-shaft journaled in the head, connections through which movement is imparted from said shaft to the lock and vice versa, a connecting-arm fitting freely on said shaft and having a segmental recess adjoining its hub, an arm fixed to said shaft and adapted to abut against the ends of said recess, an arm fixed to the cock, a link coupled to said arm and having a longitudinal slot adjoining its opposite end, and a pin fixed to the connecting-arm and traversing in the slot of the link.

21. In an automatic car-coupling, the combination of a coupler-head having a fixed vertical coupling member adapted to be engaged with and disengaged from a corresponding member on a counterpart head, by lateral movement, a ball or spherical projection on the inner end of the coupler-head, having a vertical central passage, a draw-bar or coupler-shank having a recess in its outer end which receives the ball of the coupler-head, and a connecting-pin extending through the walls of the socket and the passage of the ball and being reduced in diameter from its middle portion, which substantially fits said passage, to each of its ends.

708,748. **REVERSING TAP-HOLDER.** HARRY WHARTON, Loughborough, England. Filed May 19, 1902. Serial No. 107,927. (No model.)

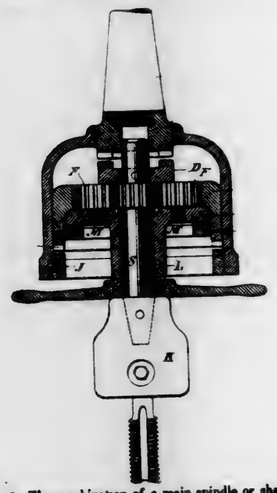

Claim.—1. The combination of a main spindle or shank, a bell or casing attached thereto, a clutch member within said casing or bell, a second spindle or shank in line with the first and movable independently thereof, a clutch member on the second shank adapted to coact with the first-named clutch member to connect the spindles or shanks directly, an independently-movable annulus within said casing or bell, a clutch for connecting casing and annulus, gears interposed between and connecting said annulus and the second-named shank or spindle, and means whereby certain of said interposed gears may be held against motion of translation.

2. The combination of a rotary main spindle or shank, a bell or casing fast thereto, a second spindle in line with the first-named spindle and movable independently thereof, a clutch within said casing or bell for connecting said spindles to drive the second directly from the first, a reverse-motion gearing independent of said casing or bell, a clutch for connecting said gearing and said casing to drive one member of said gearing from said casing, and means whereby part of said gearing may be held against motion of translation, substantially as described.

3. The combination of alined independently-revolable spindles or shanks, two clutch members rigidly connected with the driver shank or spindle, a clutch member and a gear attached to the second shank or spindle, a rotatory internal gear having a clutch member, gears interposed between and meshing with said spindle-gear and said internal gear, and a rotatory carrier for the interposed gears, said carrier being capable of being stopped at any time.

4. The combination of a main spindle, a casing or shell attached thereto, a clutch member within said casing, a tap-spindle axially in line with the main spindle and movable independently thereof, a clutch member on said tap-spindle adapted to engage with the first-named clutch member to connect said spindles directly, an independently-movable toothed annulus within the casing or shell, an independent clutch for connecting said casing and said annulus, a sleeve surrounding the tap-spindle, a pinion on the tap-spindle, and pinions carried by said sleeve and meshing with the tap-pinion and the toothed annulus, substantially as described.

5. The combination of a main spindle, a casing or shell attached thereto, a tap-spindle axially in line with the main spindle and movable independently thereof, a pinion fast on the tap-spindle, a clutch within the casing for connecting said spindles directly, a sleeve on the tap-spindle, a flange on said sleeve underneath the pinion on the tap-spindle, an annulus within the casing and movable independently thereof, an internally-toothed ring on said annulus, pinions meshing with said toothed ring and the tap-spindle pinion, and a clutch at the mouth of the casing or shell for connecting the annulus and casing when the first-mentioned clutch is disengaged, substantially as described.

708,749. **BOTTLE-STOPPER.** MARGARET C. WILSON, Chicago, Ill. Filed Jan. 20, 1902. Serial No. 90,518. (No model.)

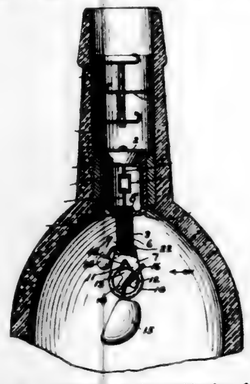

Claim.—1. In a bottle-stopper, the combination of a center casing secured to the neck of the bottle, a valve seating on said casing, a slotted loop connected to said casing, a rotatable key mounted in said loop and having a tongue for entering the slot in said loop, a valve-rod consisting of two parts, whereof one is connected to said key and the other is connected to said valve; and a telescoping swivel connecting the parts of said rod.

2. In a bottle-stopper, the combination of a center casing secured to the neck of the bottle, a valve seating in said casing, a loop connected to said casing, said loop being circular except at one side thereof where there is formed a slot extending outward from the center of said loop; a rotatable key having a cylindrical portion fitting the circular portion of said loop, and said key having a tongue adapted to enter the slot in said loop to thereby permit a movement in a radial direction of said key in said loop, a weight attached to said key whereby gravity may operate said key, and connections between said key and said valve for controlling the latter.

3. In a bottle-stopper, the combination of a hollow center casing secured in the neck of the bottle; a valve-seat at the upper extremity of said casing; passages for liquid at the lower extremity of said casing; a sleeve formed at the lower extremity of said casing; a slotted loop; a stem formed on said loop and revolubly mounted within said sleeve; a rotatable key mounted in said loop and having a tongue for entering the slot in said loop; a valve seating upon said center casing, and connections between said key and said valve whereby said key controls said valve.

4. In a bottle-stopper, the combination of a center casing secured in the neck of the bottle; a valve for closing the said casing; a sleeve formed at the lower extremity of said casing, a slotted loop, a stem formed on said loop and revolubly mounted within said sleeve; a gravity-operated rotatable key mounted in said loop and having a tongue for entering the slot in said loop; keepers for retaining said key within said loop; and connections between said key and said valves for operating the latter.

5. In a bottle-stopper, the combination of a center casing secured within the neck of the bottle a valve for closing the passage through said casing, a sleeve formed at the lower extremity of said casing; a slotted loop, a stem formed on said loop and revolubly mounted in said sleeve, a rotatable key having a slot for entering said loop, connections between said key and the valve for operating the latter; a weight for operating said key, and a guard slidingly mounted on said sleeve for limiting the motion of said weight in operating said key.

6. In a bottle-stopper, the combination of a center casing secured to the neck of the bottle, a valve seating in said casing; a loop connected to said casing, said loop being circular except at the side thereof where there is formed a slot extending outward from the center of said loop; a rotatable key having a cylindrical portion fitting the circular portion of said loop, and said key having a tongue adapted to enter the slot in said loop to thereby permit a movement in a radial direction of said key in said loop; connections between said key and said valve for operating the latter, and a series of shelves or diaphragms extending partially across the neck of the bottle above said valve for preventing the access of appliances for disturbing the same.

7. In a bottle-stopper, the combination of a valve seating within the neck of the bottle, a slotted loop mounted within said bottle, a rotatable key in said loop having a tongue for entering the slot in said loop, and a valve-rod connected to said key and to said valve, whereby said valve is controlled by said key.

8. In a bottle-stopper, the combination of a valve seating within the neck of the bottle, a slotted loop fixed within said bottle, a rotatable key in said loop, said key having a tongue for entering the slot in said loop, and connections between said key and said valve for controlling said valve.

9. In a bottle-stopper, the combination of a center casing secured to the neck of the bottle, a valve seating on said casing, a slotted loop connected to said casing, a rotatable key mounted in said loop and having a tongue for entering the slot in said loop, and a valve-rod connected to said key and to said valve for operating the latter.

708,750. **VALVE FOR STEAM-ENGINES.** WILLIAM WRIGHT, Brooklyn, N. Y., assignor, by mesne assignments, to Mary E. Wright, Brooklyn, N. Y. Filed Jan. 4, 1899. Renewed May 17, 1902. Serial No. 107,844. (No model.)

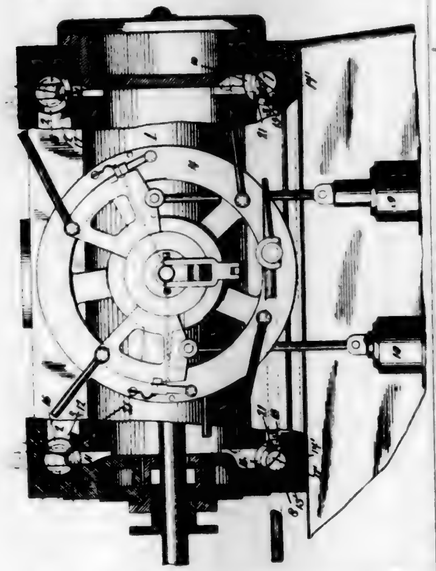

Claim.—1. The combination of a valve-seat, valve, and stationary port-closer, the valve and valve-seat having coacting ports adapted to permit the passage of fluid past the port-closer in one position of the valve, and the port-closer adapted to close a valve-port in one position of the valve, and having a port communicating with said valve-port and arranged to be opened by the valve when the latter moves to its open position, whereby the port in the port-closer forms an additional channel for the passage of fluid.

2. The combination of a cylindrical valve-chamber, a hollow cylindrical valve within the same, and a stationary port-closer within the valve, said valve and valve-chamber having coacting ports adapted to permit the passage of fluid past the port-closer in one position of the valve, and the port closer adapted to close a valve-port in one position of the valve, and having a port communicating with said valve-port and arranged to be opened by the valve when the latter moves to its open position, whereby the port in the port-closer forms an additional channel for the passage of fluid.

3. The combination of a valve-seat, valve, and stationary port-closer, the valve and valve-seat having coacting ports adapted to permit the passage of fluid past the port-closer in one position of the valve, and the port-closer adapted to close a valve-port in one position of the valve, and having a recess which communicates with said port and spans a portion of the valve on one side of said port when the valve moves to its open position, thereby affording an additional channel for the passage of fluid.

4. The combination of a cylindrical valve-chamber having admission and exit ports, a hollow cylindrical valve within said chamber likewise having admission and exit ports, and a stationary port-closer within said valve adapted to close one of the ports thereof in one position of the valve, and having a recess which communicates with said port so closed and spans the space between the ports of the valve when said valve moves to its open position, thereby affording an additional channel for the passage of fluid.

708,751. **DADO-CUTTER.** CAPELLE H. ARCHER, Richmond, Va., assignor of one-half to H. S. Winston, Richmond, Va. Filed Apr. 21, 1902. Serial No. 104,009. (No model.)

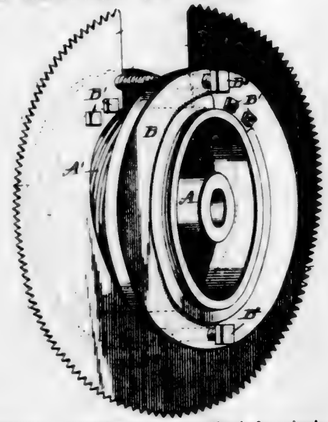

Claim.—1. In a dado-cutter, a supporting-body, a circular saw having separated end portions secured to said support on opposite sides of a diametrically opposite point of the saw, and means for adjusting said end portions toward and from each other; substantially as specified.

2. In a dado-cutter, a support provided with adjustable flanges thereon, a circular saw having its body centrally held by said flanges, and separated end portions secured to said flanges on opposite sides of the holding-point of said body; substantially as specified.

3. In a dado-cutter, a supporting-collar, a spirally-disposed saw carried on the periphery of said collar, and means engaging the free ends of the saw to adjust the same toward and from each other; substantially as specified.

4. In a dado-cutter, a supporting-collar, a spirally-disposed saw carried on the periphery of said collar, adjustable flanges secured to said collar, and means carried thereby for securing the saw between said flanges; substantially as specified.

5. In a dado-cutter, a supporting-collar having oppositely-extending threads upon its periphery, flanges oppositely threaded upon said periphery, and a circular saw disposed centrally between said flanges at one point, and having supporting ends secured to said flanges at an opposite point; substantially as specified.

6. In a dado-cutter, a supporting-collar having oppositely-extending threads upon its periphery, flanges oppositely threaded upon said periphery, a circular saw disposed centrally between said flanges at one point and having supporting ends secured to said flanges at an opposite point, opposite adjusting-screws carried by said flanges to engage the saw-body located centrally between the same, and securing means passing through said flanges to hold the free ends of the saw in contact therewith; substantially as specified.

7. A dado-cutter having a supporting-body, opposite adjustable flanges threaded upon said body, and a saw extending circumferentially thereof and having its free ends secured to said flanges in planes parallel to each other; substantially as specified.

8. A dado-cutter having a supporting-body, a saw extending circumferentially thereof having its free ends secured in planes parallel to each other, and holding means for the free ends of said saw adapted to adjust the same toward and from each other; substantially as specified.

708,752. APPARATUS FOR OPERATING GUIDED SHUTTLES IN LOOMS. ALEXANDRE BARNIER, Lyons, France. Filed Aug. 6, 1901. Serial No. 71,031. (No model.)

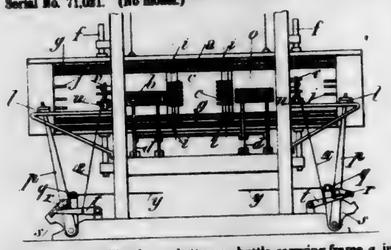

Claim.—In combination, a batten, a shuttle-carrying frame *a*, independent of the batten, means for giving said frame a rising-and-falling movement, rows of shuttles arranged to move on said frame, racks *g* carried by the frame, pinions *i* and *c* of differential diameter driven by said racks and in turn driving the shuttles, runners *j* moving on the frame and situated at the same height as the shuttles corresponding with them, means connecting the runners with the racks, pickers *l*, picker-sticks *p* for operating the pickers, said pickers being arranged to push the runners which are at their level and locking means for preventing the picker-sticks from operating, said locking means being controlled by the runner which has just been driven, substantially as described.

708,753. DREDGING-SCOOP. HENRY G. BUTLER, Danville, Ill. Filed Dec. 6, 1901. Serial No. 84,933. (No model.)

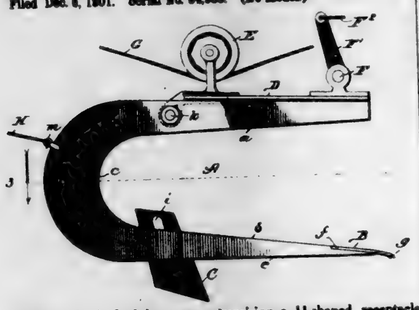

Claim.—1. A dredging-scoop comprising a U-shaped receptacle open at its opposite sides and having a base provided with a scraping edge, substantially as and for the purpose set forth.

2. A dredging-scoop comprising a U-shaped receptacle open at its opposite sides and formed with a series of reinforcing-ribs extending along its top and rear portion, and with a base having a forward scraping edge, substantially as and for the purpose set forth.

3. A dredging-scoop comprising a U-shaped receptacle open at its opposite sides and formed with a series of reinforcing-ribs extending along its top and rear portions, and with a hollow base having a forward scraping edge.

4. A dredging-scoop comprising a U-shaped receptacle, having a top wall *a* and rear wall *c* provided on the outer side with strengthening-ribs, an inclined inner bottom wall *b* and a base *e*, and a scraping-blade B secured thereto, substantially as described.

5. In a dredging-scoop, a U-shaped receptacle formed with a series of reinforcing-ribs extending along its top and rear portions and with a base having a forward scraping edge, a support to which the scoop is hinged at its upper rear portion, an engaging and releasing catch on the support for the forward end portion of the scoop, and a supporting-cable-engaging sheave on said support, substantially as and for the purpose set forth.

6. A dredging-scoop provided with a scraping edge and a rigid downward-projecting plow-point in rear of said edge in the plowing movement of the scoop, substantially as and for the purpose set forth.

7. A dredging-scoop provided with a scraping edge and a series of rigid downward-projecting plow-points in rear of said edge in the plowing movement of the scoop, substantially as and for the purpose set forth.

8. A dredging-scoop having a base formed with a plow-point-receiving socket, a scraping edge at the lower forward end of the scoop, and a downward-projecting plow-point in said socket, substantially as and for the purpose set forth.

9. A dredging-scoop comprising a U-shaped receptacle formed with a series of reinforcing-ribs extending along the top and rear portions, and with a hollow base provided with a plow-point-receiving socket and having a forward scraping edge, substantially as and for the purpose set forth.

10. In a dredging-scoop, the combination of a support, a sheave on said support, a U-shaped receptacle hinged at its rear upper portion to the said support, catch mechanism on the support for engaging and releasing the forward end of the receptacle, a scraping-blade on the lower forward edge of the receptacle, and a downward-flaring plow-point on the base of the receptacle in rear of said scraping-blade, substantially as and for the purpose set forth.

708,754. ADJUSTABLE CHART. HELEN S. CHANDLER, Dover N. H. Filed Mar. 3, 1896. Serial No. 672,344. (No model.)

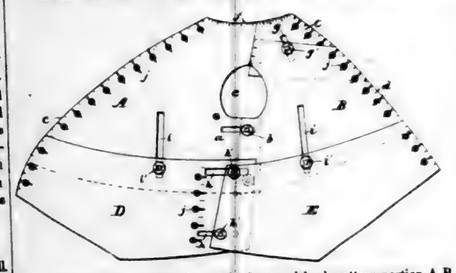

Claim.—The combination of the front and back pattern portion A B having the arm-eye partly formed in each and extensible on each other, with the shoulder pattern C independently adjustable on said back portion B, and the lower portions D E extensible on each other and on said portions A B, substantially as set forth.

708,755. ELEVATOR. MILTON A. CLEMAN, San Francisco, Cal., assignor to Cahill & Hall Elevator Company, San Francisco, Cal., a Corporation of California. Filed Jan. 28, 1901. Serial No. 44,773. (No model.)

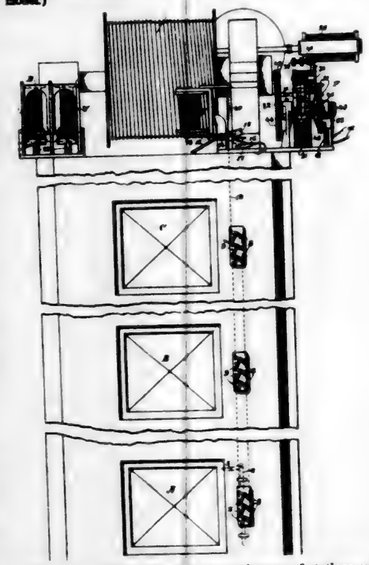

Claim.—1. The combination in an elevator of stations or floors; a cage suspended and movable between said floors; a motor and mechanism by which the cage is operated; independently-operated mechanism including controlling-switches, circuit-closing devices for each floor and connected together in sets and detents for the circuit-closing devices; and electric circuits and mechanism energized thereby to determine the direction and distance of movement of the cage.

2. The combination in an elevator of stations or floors, a cage suspended and movable between said floors, a motor and mechanism by which said cage is raised and lowered, and mechanisms comprising direction and floor switches, manually-operated circuit-closing devices and detents therefor, said circuit-closers for each floor being connected together in sets so that the mechanism for either floor may be operated from any of the floors, and electric circuits and mechanism energized thereby to determine the direction and distance of movement of the cage.

3. The combination in an elevator of stations or floors, a cage suspended and movable between said floors, a motor and mechanism by which said cage is raised and lowered, levers connected in sets to be operated in unison from either floor, independent electrical contacts each adapted to be closed or opened by the operation of one of said sets of levers, circuits controlled thereby and mechanism operated by the closing and opening of said circuits whereby the direction of movement of the cage is determined and effected.

4. The combination in an elevator of stations or floors, a cage suspended and movable between said floors, a motor and mechanism by which said cage is raised and lowered, levers connected in sets to be operated in unison from either floor, independent electrical contacts each adapted to be closed or opened by the operation of one of said series of levers, and an electromagnet energized by the closing of said circuit, an armature and lever actuated by said electromagnet whereby the first-named circuit remains closed until the electromagnet is deënergized.

5. An elevator-cage, a motor and mechanism by which said cage is raised or lowered, levers connected in sets, one of which is located at each floor or station and capable of being operated in unison from either floor, independent electrical circuits each adapted to be closed or opened by the operation of one of said series of levers, an electromagnet and movable armature controlling the circuit-closer, a locking device consisting of a movable slide having diagonal slots into which the armature is moved by the closing of the circuit which it controls, and the movement of any other armature and closing of its circuit are prevented.

6. An elevator-cage, a motor and mechanism by which said cage is raised or lowered, levers located at each floor and connected in sets of one for each floor, electrical circuit-closing devices operated in unison with the movement of either series of levers, and locking devices operated by the movement of either of the series of levers whereby the movement of one series of levers, prevents the operation of all the other series.

7. An elevator-cage, a motor and mechanism by which the cage is moved up or down, a series of slides corresponding with the number of floors and having segmental grooves in the edges, fulcrumed levers connecting with the slides and operated by the opening and closing of the doors, levers connected in sets for each floor and electrical circuits, each opened or closed by the operation of one of said series of levers, segments turnable in unison with the levers and adapted to engage the grooves and the slides whereby the movement of one lever locks and prevents movement of all the doors.

8. An elevator-cage, a motor and mechanism by which the cage is moved up or down, electrical circuits and mechanism including sets of levers located at each floor and connected together by which either circuit is closable from any of a number of floors or stations, a direction-switch actuated by the closing of such circuits whereby the movement of the cage up or down is determined.

9. An elevator-cage, a motor, a mechanism by which it is moved up or down, electrical circuits and mechanism including sets of levers located at each floor and connected together by which either circuit is closable from any of a number of floors or stations, a direction-switch actuated by the closing of such circuits whereby the movement of the cage up or down is determined, said switch consisting of insulated pins, and wires connecting said pins, so that electrical currents may be transmitted to the motor in reverse directions, contact-plates and a solenoid by which said plates are moved into contact with the pins when the solenoid is energized.

10. An elevator-cage, a motor, mechanism by which it is moved up or down, sets of levers at each floor connected together in sets so that either set can be operated from any floor, a direction-switch consisting of pins, connecting-wires therefor whereby currents in reverse directions may be transmitted to a motor, solenoids with movable cores, fulcrumed lever-arms connected with and movable by said cores when the solenoids are energized, and insulated contact-plates carried by the levers and capable of connecting either set of pins to give direction to the motor and the cage.

11. An elevator-cage, a motor, mechanism by which the cage is raised or lowered, levers connected in sets, either set of which may be operated from any floor, electrical circuits controlled by the movements of said levers, a direction-switch and an electrical circuit whereby the direction of motion of the cage is determined and a floor-switch and electrical controlling-circuit whereby the floor at which the cage should stop is determined.

12. An elevator-cage, a motor or mechanism by which it is raised or lowered, levers connected in sets, either set capable of being operated from either floor, independent electrical circuits, either of which is closed by the operation of one of the sets of levers, a floor-switch and electrical circuits controlled by the levers whereby the operation of any set of levers belonging to a floor sets the floor-switch to stop the cage at the desired floor or station.

13. The combination with a vertically-movable elevator of levers connected in sets and operated from either floor or station, independent electrical circuits closed by the operation of either set of levers, a motor and direction-switch actuated by the closing of said circuit to determine the direction of motion of the elevator, a floor-switch consisting of circular metallic insulated rings, fulcrumed levers carrying corresponding contacts, a disk revolvable in unison with the movements of the motor and elevator-cage, said disk having a notch in its periphery into which the contact-carrying lever drops, and breaks the electrical circuit when the cage has arrived at the desired floor.

14. A floor or station switch for vertically-movable elevator-cages consisting of stationary, insulated metallic rings, spring-pressed lever-arms fulcrumed at intervals and corresponding in number with the floors or stations, a disk mounted upon a shaft concentric with the rings, and intermediate mechanism whereby it is turnable in unison with the movements of the motor and cage and in either direction, said disk being mounted in line with the inner ends of the lever-arms which travel upon the periphery of the disk, contacts carried by the outer ends of said arms and caused to press upon the peripheries of the rings, conducting-wires connecting the said rings to which electrical circuits are completed by said contact, a notch formed in the periphery of the revolvable disk into which the inner end of either arm drops to break the contact between its outer end and the rings when the notch arrives in line with said arm and the cage at the corresponding floor or station.

15. A vertically-movable elevator-cage, a motor and mechanism by which said cage is moved in either direction, a switch by which the floor or station at which the cage is to stop is determined, said switch consisting of stationary insulated conducting-rings, each having one wire of an electrical circuit connected therewith, lever-arms corresponding with the number of stations fulcrumed with relation to said rings having contact-pieces upon the outer ends, a revolvable disk mounted upon the shaft concentric with the rings and turnable in unison with the movements of the motor and cage, rollers upon the inner ends of the lever-arms adapted to rest upon the periphery of the disk whereby the contacts at the outer ends are pressed against the rings to complete the circuits, controlling devices at each floor or station whereby an electrical circuit is completed through the arm corresponding with the station at which the cage is to stop, a notch formed in the periphery of the movable disk, a spring acting upon the lever whereby the inner end of the lever drops into the notch when the latter arrives in line with the lever whereby the contact between the outer end of the lever and the rings is broken and the cage-actuated mechanism is stopped.

16. The combination in a floor or station switch of an elevator-cage, of stationary insulated conducting-rings having the two wires of an electrical motor-actuating circuit connected therewith, lever-arms fulcrumed at intervals with relation to the rings corresponding with the stations, and carrying upon the outer ends contact-pieces, a disk, a shaft upon which it is mounted concentric with the rings and revolvable in unison with the movement of the motor and cage, rollers upon the inner ends of the lever-arms resting upon the periphery of said disk whereby the contacts of the outer ends are maintained, a notch in the periphery of said disk which passes beneath the inner ends of the arms, a supplemental disk contiguous to the movable one having a notch made in its periphery, and a lug entering the notch of the movable disk having a less diameter than that of the first notch whereby the inner ends of the arms drop into the notch of the loose disk, and an independent movement of the two disks is permitted whereby the cage is caused to stop at approximately the floor-level when moving in either direction.

17. An elevator-cage, a motor and mechanism by which the cage is movable, an electrically-actuated mechanism including controlling-switches and circuit-closing devices, said devices being arranged in sets at each floor by which the direction of movement of the cage is determined, and a detent by which said mechanism is maintained in operation until the cage has reached its destination.

18. An elevator-cage, a motor and mechanism by which the cage is movable, an electrically-actuated mechanism including controlling-switches and circuit-closing devices, said devices being arranged in sets at each floor by which the direction of movement of the cage is determined, an electrically-actuated detent by which said mechanism is maintained in operation, and a circuit closing and opening device actuated in unison with the movements of the cage.

19. An elevator-cage, a motor and mechanism by which the cage is movable, an electrically-actuated mechanism including controlling-switches

and circuit-closing devices, said devices being arranged in sets at each floor by which the direction of movement is determined, a second mechanism with connections by which it is driven in unison with the movements of the cage, and an electric-motor-actuating circuit controlled by said second mechanism to determine the distance to which the cage moves.

20. An elevator-cage, a motor and mechanism intermediate of the motor and the cage, a series of independent electrical circuits and connected mechanism including sets of levers located at each floor and connected together whereby the direction and destination of the cage are determined, an electrical motor-driving circuit, and means for closing said circuit to start the cage in its predetermined direction, in combination with a mechanism and connections by which it is driven in unison with the motor and cage, said mechanism acting to automatically open the motor-circuit when the cage has reached its destination.

21. The combination with an elevator-cage and an electrically driven motor therefor, of a rotary notched disk driven in unison with the motor and cage, lever-arms by which the electrical circuit of the motor is kept closed by the arms resting upon the rim of the disk, and springs by which any arm arriving at the notch in the disk is moved to break the contact controlled by it, and open the corresponding motor-circuit.

22. The combination with an electrically-driven elevator-motor of a disk turnable in unison with the motor, spring-pressed levers resting upon the periphery of the disk while closing the motor-circuit, a notch in the disk into which the levers fall when passing whereby the circuit is opened and the motor stopped.

23. The combination with an electrically-driven elevator-motor, of a disk turnable in unison with the motor, spring-pressed lever-arms, each controlling an electrical circuit through the motor, electrical contacts which are closed when the levers rest upon the periphery of the disk, a notch in said disk into which the levers drop upon reaching it, to open their electrical circuits, and a concentric loosely-turnable and correspondingly-notched disk of slightly smaller diameter, having a lug to engage the main disk, and limit the independent movement of the second disk.

24. The combination with an electrically-driven elevator-motor of two concentric disks, one turnable in unison with the motor and having a wide notch in its periphery, and the other turnable loosely and having a lug projecting to engage the first-named disk and permit a small independent movement, spring-pressed lever-arms fulcrumed with one end resting upon the first disk, and the other acting to close a motor-circuit, and a notch in the loose disk into which the lever-arms are forced by their springs to open their controlled circuits and by which a sudden independent movement of the second disk is effected.

25. The combination in an electric-motor circuit-breaking device, of a disk revoluble in unison with the motor and having a radial notch in its periphery, a second concentrically-mounted, loose disk of smaller diameter having a narrower notch in its periphery and a lug projecting into the notch of the first disk and allowing a small independent movement, contacts through which the motor-circuit passes, spring-pressed fulcrumed levers beneath one end of which the disks revolve, to cause the opposite ends to close the motor-circuits, each lever falling into the notches of the disks when they register and opening its circuit.

26. The combination in an electric-motor circuit-breaking device of concentrically-revolvable notched disks, and spring-pressed fulcrumed levers with one end resting upon the periphery of the disks so as to fall into the notches when they register, electrical motor-circuits and means carried by the outer ends of the levers to close said circuits while the levers rest upon the disks, and to open the circuits when the levers fall into the notches, and an independent circuit-closing plate, and pins carried by the disk and acting to move the plate and open the circuit if the levers fail to act.

27. The combination with an elevator and an electrically-driven motor therefor, of electrical circuits and mechanism including controlling-switches and circuit-closing devices, said devices being arranged in sets at each floor by which the direction of movement of the cage is controlled, a motor-circuit and means by which it is closed to energize the motor in unison with the directing device, and a mechanism driven in unison with the motor and acting to automatically open the motor-circuit and stop the elevator-cage at any station.

28. The combination with an elevator and an electrically-driven motor therefor, of electrical circuits and mechanism including controlling-switches and circuit-closing devices, said devices being arranged in sets at each floor by which the direction of movement of the cage is controlled, means including a disk and lever-arms contacting with the same by which the motor-circuit is closed, in unison with the direction device, a mechanism by which the motor-circuit is automatically opened when the cage reaches the desired station, electrical circuits by which the previously-described circuits are closed, and means connecting each floor or station with the last-named circuits whereby either one may be closed and the cage set in motion and its direction and its terminal station fixed.

29. The combination with an elevator-cage, an electric motor, an intermediate mechanism, and electrical circuits closable to energize the motor, of a direction-switch consisting of double set of contact-plates carried by a single arm, and pins so connected thereby as to produce a double break of field-circuit and quadruple breaks of the armature-circuit.

30. The combination with an elevator-cage and motor, and floors or stations between which the cage is movable, of mechanism by which the motor-circuit is energized and controlling devices at each floor, slides movable to lock or unlock said devices, levers having one end connected with a slide, and a notched plate fixed to and movable with the slidable door, and engaging the opposite end of a lever, whereby the slides are moved in unison with the movements of the doors.

31. The combination with an electrically-operated elevator, devices located at each floor whereby the controlling-circuits are energized, locking-slides and fulcrumed levers connected therewith, of slidable doors with notched plates fixed thereto and engaging the levers, said plates having the upper part projecting over the notches to insure the engagement of the levers during the closing movement of the doors.

708,756. STRING-TICKET FASTENER. SIMON DABCTGER, Dayton, Ohio. Filed Aug. 17, 1901. Serial No. 72,362. (No model.)

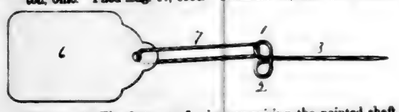

Claim.—1. The fastener of wire comprising the pointed shaft, the like loops 1 and 2 forming the head, the former loop crossing said shaft and the end of the latter terminating contiguously to the former, substantially as described.

2. The fastener of wire comprising the pointed shaft with point bent at a right angle, the loops 1 and 2 forming the head, the former loop crossing said shaft and the end of the latter terminating contiguously to the former, substantially as described.

708,757. EJECTOR APPARATUS. MARSHALL T. DAVIDSON and WILLIAM A. DREWETT, Brooklyn, N. Y. Filed Apr. 13, 1900. Serial No. 12,766. (No model.)

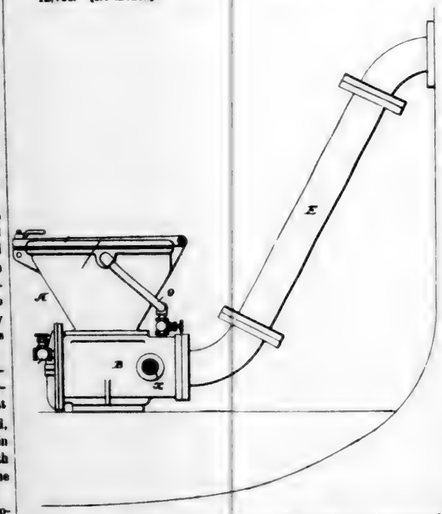

Claim.—1. An ejector apparatus provided with an ejector-nozzle and means for supplying fluid under pressure thereto, and a receptacle communicating with the nozzle and arranged to permit the contents to pass by gravity to the rear end of the nozzle and means for supplying fluid to mix with said contents, substantially as set forth.

2. An ejector apparatus including a receptacle having a hopper for the solid material to be ejected, and an ejector-nozzle having a central passage communicating at its rear end with the receptacle and with a surrounding annular passage to deliver an annular stream of fluid into the discharge-orifice thereof, substantially as set forth.

3. The combination in an ejector apparatus of a receptacle and means for supplying fluid thereto, an ejector having a central passage arranged to receive at the rear end the contents of the receptacle passing by gravity thereto, and a surrounding annular passage and means for supplying the latter with fluid under pressure, substantially as set forth.

4. An ejector apparatus including a receptacle for the material to be ejected, an ejector-nozzle located at the delivery end of the receptacle and below the top thereof to receive the material at the rear of the nozzle and constructed to deliver an annular stream of fluid into the discharge-orifice, and means for supplying fluid thereto under pressure, substantially as described.

5. In an ejector apparatus, the combination with a receptacle comprising a body portion and a hopper portion communicating therewith, of an ejector-nozzle located at the delivery end of the body portion of the receptacle, means for supplying fluid under pressure to the nozzle, and connections for supplying fluid to the body portion of the receptacle and to the hopper, substantially as described.

6. In an ejector apparatus, the combination with a receptacle comprising a body portion and a hopper portion communicating therewith, of an ejector-nozzle located at the delivery end of the receptacle and provided with an annular orifice, a chamber communicating with said orifice means for supplying said chamber with fluid under pressure, and connections from the chamber to the body portion and hopper portion of the receptacle for supplying a stream of fluid thereto, substantially as described.

7. In combination with a vessel and with an ash-ejector of the type wherein ashes are ejected overboard by means of a water-jet traversing a discharge-conduit, a separate branch conduit adapted to deliver bilge-water to the discharge-conduit and communicating directly with the bilge of said vessel and with said discharge-conduit to deliver bilge-water to the same between the points of inlet to said discharge-conduit of the ashes and the water-jet, substantially as described.

8. In combination with a vessel, a discharge-conduit leading overboard, means for producing a water-jet directed outwardly through said conduit, a supply-conduit connecting said discharge-conduit with a receptacle for ashes and a separate conduit adapted to conduct bilge-water to said discharge-conduit and connecting with the bilge of said vessel, substantially as described.

9. The combination with the hopper and discharge-pipe of an ash-ejector, of a source of fluid-supply to the ejector and means for connecting the hopper and discharge-pipe with the bilge independently of the said source of fluid-supply, substantially as set forth.

10. The combination with the hopper and discharge-pipe of an ash-ejector, of a pump adapted to pump water from the bilge and force it through the ejector and discharge-pipe, and an independent connection leading from the bilge to the hopper and discharge-pipe and through which water may be sucked by the action of the ejector and discharged through said discharge-pipe, substantially as set forth.

708,758. STEAM-MOTOR. IRVING S. DAVIS, Scranton, Pa. Filed Nov. 2, 1901. Serial No. 80,919. (No model.)

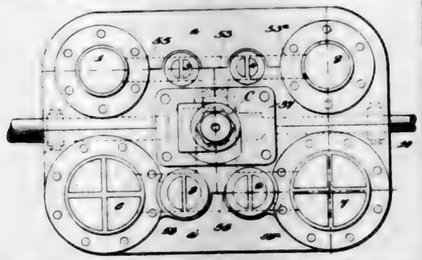

Claim.—1. A steam-motor comprising a pair of crank-shafts suitably geared to revolve in unison, a pair of steam-cylinders opposite each crank-shaft, pistons within said cylinders, connecting-rods connecting each crank-shaft with the pistons in the opposing pair of cylinders, a valve for each steam-cylinder adapted to control the inlet and outlet of steam thereto, and an adjustable controlling-valve and ports leading therefrom to the several cylinders, said controlling-valve and ports being arranged to cause the motor to operate either simple or compound according to the position of the controlling-valve.

2. A steam-motor comprising two pairs of cylinders, a crank-shaft opposite each pair of cylinders, said shafts being suitably geared to revolve in unison, pistons within the cylinders, connecting-rods connecting each crank-shaft with the pistons in the opposing cylinders, a valve for each cylinder adapted to control the inlet and outlet of steam thereto, a controlling-valve casing removably secured within the cylinder-frame, a controlling-valve adjustable within said casing and ports in the cylinder-frame leading from the several cylinders to ports in the controlling-valve casing, said valve and ports being arranged to cause the motor to move in either direction and to operate either simple or compound, according to the position of the controlling-valve.

3. A steam-motor comprising a cylinder-frame having two pairs of cylinders, a crank-shaft opposite each pair of cylinders, said shafts being suitably geared to revolve in unison, pistons within the cylinders, connecting-rods connecting each crank-shaft with the pistons in the opposing cylinders, a valve for each cylinder adapted to control the inlet and outlet of steam thereto, a controlling-valve casing removably secured within the cylinder-frame, a controlling-valve adjustable within said casing and ports in the cylinder-frame leading from the several cylinders to ports in the controlling-valve casing, said valve and ports being arranged to cause the motor to move in either direction and to operate either simple or compound, according to the position of the controlling-valve.

4. A steam-motor comprising high-pressure and low-pressure cylinders, a valve for each cylinder arranged to control the inlet and outlet of steam thereto, a controlling-valve and passage-ways leading therefrom to the cylinder-valves, said controlling-valve and passage-ways being so arranged as to cause the motor to operate simple or compound, according to the position of the controlling-valve.

5. A steam-motor comprising high-pressure and low-pressure cylinders, a valve for each cylinder arranged to control the inlet and outlet of steam thereto, a controlling-valve and passage-ways leading therefrom to the cylinder-valves, said controlling-valve and passage-ways being so arranged as to cause the motor to run in either direction and to operate simple or compound, according to the position of the controlling-valve.

6. In a steam-motor, the combination with two pairs of cylinders, pistons within the cylinders, a crank-shaft opposite each pair of cylinders and connecting-rods connecting each pair of pistons to the opposing crank-shaft, of a controlling-valve arranged between the two pairs of cylinders, ports leading from said valve to the several cylinders, said valve being arranged to control the direction of the steam through the cylinders whereby the motor may be operated either simple or compound and in either direction.

7. In a steam-motor, two high-pressure cylinders, two low-pressure cylinders, a separate valve-cylinder and a slide-valve therein for each steam-cylinder, a controlling-valve cylinder having a central steam-inlet and exhaust passage-ways leading from its opposite ends, two passage-ways leading from said controlling-valve cylinder to the slide-valves of the high-pressure cylinders, two passage-ways leading from said controlling-valve cylinder to the slide-valves of the low-pressure cylinders, and a controlling-valve within the controlling-valve cylinder arranged to direct the steam through said passage-ways to operate the engine simple or compound and in either direction.

8. In a steam-motor, the combination with a pair of high-pressure cylinders, a pair of low-pressure cylinders, and separate valves arranged to control the admission of steam to said cylinders, of a controlling-valve cylinder having exhaust-ports at either end, a central steam-inlet, two ports on either side of the steam-inlet leading to the high-pressure-cylinder valves and two ports leading to the low-pressure-cylinder valves and a hollow cylindrical controlling-valve within said controlling-valve cylinder, said controlling-valve having heads at either end, ports extending through its walls adjacent to the heads, and an intermediate portion opposite the steam-inlet of less diameter than the heads.

9. A steam-motor comprising two shafts geared to turn in unison, each shaft having two diametrically opposite cranks and the cranks of the two shafts being relatively ninety degrees apart, a pair of steam-cylinders opposite each crank-shaft, pistons within said cylinders, connecting-rods connecting said pistons with the cranks on the opposing shaft, a slide-valve for each cylinder and a pair of eccentrics on each shaft arranged to operate the valves of the opposing cylinders.

10. A steam-motor comprising two shafts geared to turn in unison, each shaft having two diametrically opposite cranks, a pair of steam-cylinders opposite each crank-shaft, pistons within said cylinders, connecting-rods connecting said pistons with the cranks on the opposing shaft, a slide-valve for each cylinder and a pair of eccentrics on each shaft arranged to operate the valves of the opposing cylinders.

708,759. ENDLESS CONVEYER. JAMES M. DODGE, Philadelphia, Pa., assignor to the Link Belt Engineering Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Dec. 17, 1900. Serial No. 40,207. (No model.)

Claim.—1. The combination in an endless-chain horizontal conveyer, of a chain, means for driving said chain, carriers pivoted thereto, the pivot of each carrier being longitudinal, and means for allowing the carriers to swing on their pivots below the carrying level to discharge their loads, substantially as described.

2. The combination of a chain, means for driving said chain, a se-

ries of carriers pivoted thereto, the pivot of each carrier being longitudinal, two rails, one rail supporting the inner side of the carrier and the other the outer side thereof, with means for depressing the outer supporting-rail to allow the carriers to turn on their pivots to discharge, substantially as described.

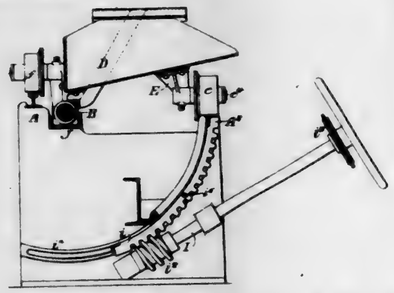

3. The combination of a chain, means for driving said chain, an inner and an outer rail, one on each side of the chain, a series of carriers pivoted to the chain, the pivot of each carrier being longitudinal, two wheels on each carrier arranged to travel on the two rails respectively, and means for deflecting the outer rail so as to cause the carrier to tilt, the chain acting as the pivot, substantially as described.

4. The combination in an endless-chain conveyer, of an endless chain, means for driving said chain, a series of carriers pivoted to the chain, the pivot of each carrier being longitudinal, a wheel mounted on each carrier, a rail for supporting said carrier in its normal position, said rail being interrupted at the discharge-point, and a movable rail forming a continuation of the carrying-rail so that when it is desired to discharge the carriers said movable rail is moved out of line to allow the carriers to tilt, substantially as described.

5. The combination in a conveyer, of an endless chain, carriers pivoted thereto, the pivot of each carrier being longitudinal so that the carriers can be tipped laterally to discharge, with hoods secured to the chain and overlapping the adjoining edges of the carriers, substantially as and for the purpose set forth.

6. The combination in a conveyer of an endless chain, means for driving said chain, carriers pivoted to the chain, a rail supporting the outer end of each carrier, means for lowering the support at the discharge-point, and a hood carried by the chain and overlapping the edges of the carrier, substantially as described.

7. The combination of an endless chain, a carrier having ends and an inner side, said carrier being pivoted to the chain at the inner side, the pivot being longitudinal, two wheels on each carrier, rails for supporting the wheels, one of said rails being interrupted, a movable rail inserted in the interrupted portion, and a curved rail at the interrupted portion over which the carriers travel when discharging, substantially as described.

8. The combination in a conveyer, of a series of carriers having inclined bottoms, a bracket secured to the inner side of each carrier, a drive-chain to which the bracket is pivoted, the pivot of each carrier being longitudinal, a bracket secured to the bottom of each carrier, a wheel on said bracket, and a rail supporting the wheel, substantially as described.

9. The combination of an endless chain, a series of carriers pivoted to the chain so as to be moved up or down, a rail supporting the outer ends of said carriers, a curved rail-section forming a continuation of the main rail-section and arranged to support the carriers when tilted to discharge the material, a movable rail-section, a segment on said rail-section, a shaft, and a worm on the shaft engaging the segment, so that when the worm-shaft is turned the movable rail will be raised or lowered, substantially as described.

708,760. MANUFACTURE OF VISCOSE. ARTHUR FIELDEN, Salford, England. Filed Nov. 5, 1901. Serial No. 81,250. (No specimens.)

Claim.—The herein-described process consisting of the admixture of a suitable bisulfite with viscose (cellulose sulfocarbonate) and the incorporation of the mixture with fibrous pulp in the manufacture of paper, and subsequent drying and steaming to complete the decolorization and fixation of the viscose.

708,761. PROCESS OF FIXING VISCOSE ON TEXTILES, &c. ARTHUR FIELDEN, Salford, England. Filed Feb. 18, 1902. Serial No. 94,687. (No specimens.)

Claim.—The herein-described process of fixing viscose on goods said process consisting of the impregnation of the goods with viscose, drying the goods, and fixing the viscose by means of steaming.

708,762. SAW-SET. AXEL M. GILBE, Dickinson Center, N. Y. Filed Feb. 24, 1902. Serial No. 95,416. (No model.)

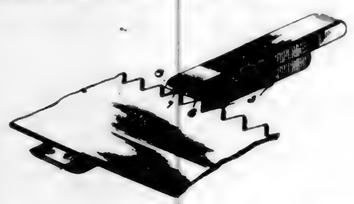

Claim.—1. A saw-set comprising a bed, a gage 4 adjustable with relation to the bed having its working face adapted to move a greater or less distance from the plane of the surface of the same, a die having an inclined end forming an acute angle with the bed, said inclined end being about on a line with the aforementioned inner end of the gage, the die being longitudinally adjustable in elongated openings in the bed and means for clamping the said die in an adjusted position, substantially as set forth.

2. A saw-set comprising a bed, a die longitudinally adjustable in elongated openings upon the bed and having an inclined end forming an acute angle with the bed, the inclined end being grooved, an adjustable gage 4 located in the angle aforementioned about in line with the inclined end of the die and having its working face adapted to move a greater or less distance from the plane of the surface of the bed to receive the impinge and thereby regulate the set of the saw-teeth, and corrugations upon the meeting sides of the die and bed to prevent slipping of the former upon the latter, substantially as and for the purpose set forth.

708,763. MACHINE FOR PERFORATING PIPES. EDWIN R. GRAHAM, Bakersfield, Cal. Filed Jan. 7, 1902. Serial No. 88,756. (No model.)

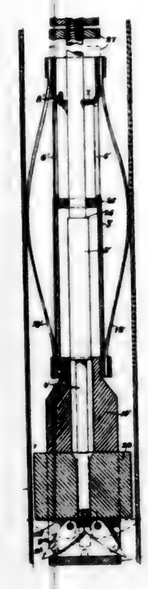

Claim.—1. The combination of a rod adapted to be reciprocated within the well-casing, a mandrel or spreader carried on said rod, a block having a series of radially-operating knives or punches disposed in relation to said mandrel, means by which said block may be supported at any desired point in the casing and means by which the mandrel may be supported out of contact with the knives.

2. The combination of a rod adapted to be reciprocated within the well-casing, a head or block in which are carried a series of punches or perforators, spring-guides by which said head is supported at any desired point in the well, a mandrel on said rod adapted to operate said perforators to drive them outwardly against the casing, and means by which the perforators are automatically retracted.

3. The combination of a head adapted to be moved in a well-casing, a series of radially-disposed knives or perforators on said head, a mandrel or spreader by which said knives or punches are operated to perforate the casing, a section or sleeve in which said mandrel is slidable, longitudinal slots in said sleeve, a radial projection on said mandrel slidable in said slots, and notches formed in the walls of said slots with which said projections may engage whereby the mandrel may be held out of contact with the perforators.

4. The combination of a rod adapted to be reciprocated in a well-casing, a sleeve slidable upon the lower end of said rod, means by which said sleeve is retained on the rod and means by which the slidable movement of the two members in relation to each other is limited, a head carried by said sleeve, knives pivoted in said head, means by which said head is held at any suitable point in the casing, and a prolongation of said rod adapted to engage said knives to drive them outwardly to perforate the casing.

5. The combination of a head adapted to be moved within a well-casing, radial slots in said head, knives movable in said slots, said knives having a pivoted socket portion and a removable knife-point portion removably fitting the sockets of said pivoted portions, means for supporting said head at any desired point in the well and means by which said knives are operated to perforate the casing.

6. The combination of perforating means, a radially-slotted head, knives pivoted in said slots, said head having an axial bore, a mandrel movable in said bore and adapted to operate said knives, and means adapted to suspend the head at any point in the well-casing.

7. The combination of perforating means, a radially-slotted head, knives pivoted in said slots, projections or shoulders upon the adjacent inner ends of said knives, a mandrel adapted to engage said shoulders to force the knives outward against the casing, means by which the movement of said knives in either direction is limited, and means capable of suspending the head at any point in the well-casing.

8. The combination, of a rod adapted to extend into the casing, a mandrel or spreader carried at the end of said rod, a sleeve in which said mandrel is slidable, longitudinal slots in said sleeve, projections on said mandrel extending into said slots, a head in connection with said sleeve, radially-operating knives carried by said head, said mandrel adapted to engage said knives to force the latter outwardly against the casing, means for holding the head at any desired point in the casing, and a collar carried by the mandrel and adapted to contact with the end of the sleeve when the mandrel engages the knives, whereby the movement of the mandrel through the head and sleeve may be limited.

9. The combination of a mandrel, a sleeve in which said mandrel has a limited reciprocating movement, means by which the withdrawal of the mandrel from the sleeve is prevented, a head carried on the lower end of said sleeve, said head having an axial bore in which the mandrel is movable, transverse slots in said head, knives pivoted in said slots, the inner adjacent ends of said knives projecting into the path of the mandrel and adapted to be engaged by the latter whereby the knives are operated, a plate by which the upward movement of the knives is limited, and spring members secured upon said sleeve whereby the device may be centered and held at any desired point in the casing.

708,764. FIREPROOF FLOORING. CHARLES F. HASLIN, Minneapolis, Minn. Filed May 23, 1901. Serial No. 61,457. (No model.)

Claim.—1. The combination with a wall and the concrete body of a floor, of parallel flanged beams on the opposite sides of said wall, bolts or rods passed through said wall and through the bodies of said floor-beams, which floor-beams have laterally-projecting flanges, and floor-wires anchored to said projecting flanges and embedded in the concrete floor-body, substantially as described.

2. The combination with a wall and the concrete body of a floor, of a flanged beam secured to said wall, and floor-wires bent upon themselves and threaded over and over through perforations in the flange of said beam, which wires are embeded in the concrete body of the floor, substantially as described.

3. The combination with laterally-spaced walls and the concrete body of a floor extending between said walls, of flanged beams secured to said walls and provided with laterally-projecting flanges, and floor-wires bent successively in one direction and then in the other and threaded over and over through perforations in the projecting flanges of said two beams, which wires are embedded in the said concrete floor-body, substantially as described.

708,764.

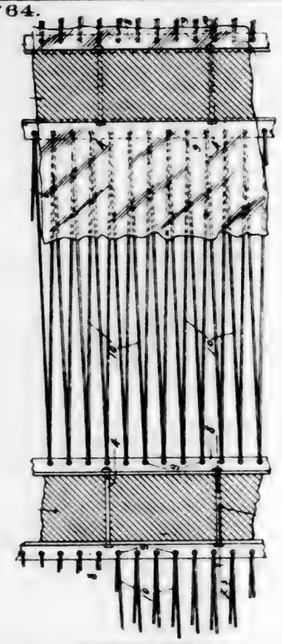

708,765. ORGAN. WILLIAM E. HASKELL and CHARLES S. HASKELL, Philadelphia, Pa. Filed Apr. 29, 1901. Serial No. 58,071. (No model.)

Claim.—1. In an organ, the combination with a register-stop: of an oscillatory stop-digital; means operatively connecting said stop-digital with said register-stop; an oscillatory detent arranged to engage the stop-digital in operative position; a lever-arm upon said detent; an auxiliary digital mounted independently of said stop-digital; and means operatively connecting said auxiliary digital with the arm of said detent, whereby the stop-digital may be released, substantially as set forth.

2. In an organ, the combination with a register-stop; of an oscillatory stop-digital; means operatively connecting the stop-digital with said register-stop; an auxiliary digital provided with a stud; an oscillatory detent arranged to engage said stop-digital in operative position; and an arm upon said detent operatively connected with the auxiliary digital, by said stud, whereby the stop-digital may be released, substantially as set forth.

3. In an organ, the combination with a register-stop; of an oscillatory stop-digital; means operatively connecting said stop-digital with said register-stop; an auxiliary digital mounted to oscillate at one side of said stop-digital and independently thereof; an oscillatory detent; and means operatively connecting said auxiliary digital with said detent; whereby said stop-digital may be engaged or released, substantially as set forth.

4. In an organ, the combination with a register-stop; of an oscillatory stop-digital; means operatively connecting said stop-digital with said register-stop; an auxiliary digital mounted to oscillate at one side of said stop-digital; an oscillatory detent; and an arm operatively connecting said auxiliary digital with said detent, whereby said stop-digital may be engaged or released, substantially as set forth.

5. In an organ, the combination with a series of register-stops; of a series of oscillatory stop-digitals; means operatively connecting the stop-digitals with the register-stops; a corresponding series of auxiliary digitals arranged in alternation, respectively at one side of the corresponding stop-digitals; a corresponding series of oscillatory detents; and arms op-

noting the auxiliary digitals with the detents, whereby the stop-digitals may be engaged or released, substantially as set forth.

708,766. SPINNING-TOP. Howard Harlehurst, Chicago, Ill. Filed Dec. 26, 1901. Serial No. 87,219. (No model.)

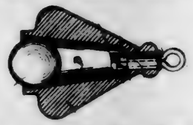

Claim.—1. In a spinning-top, the combination with a hollow top-body, of a closure for the upper end thereof constituting a projectile and means in the lower portion thereof for exploding a charge of fulminate by the impact of the top with the floor or ground in spinning, substantially as described.

2. In a spinning-top, the combination with a top-body having a chamber formed therein, of a closure for the upper end thereof constituting a projectile, a fixed seat or anvil in the lower end of said chamber, and a longitudinally-slidable spindle the upper end of which constitutes a hammer to explode a charge of fulminate against the anvil on the impact of the top with the floor or ground in spinning, substantially as described.

3. In a spinning-top, the combination with a top-body having a chamber formed therein and a closure therefor constituting a projectile, of a bushing fixed in the lower end of the top and entering the lower end of said chamber, said bushing being closed at its inner end to form an anvil and having a lateral aperture communicating with said chamber, and a removable spindle longitudinally slidable in said bushing, the upper end of which constitutes a hammer to explode a charge of fulminate against the anvil on the impact of the top with the floor or ground in spinning, substantially as described.

4. In a spinning-top, the combination with a top-body longitudinally chambered and apertured and a closure therefor constituting a projectile, of a fixed seat or anvil in the lower end of said chamber, and a spindle adapted to be inserted and withdrawn through the lower end of the top-body for the application of a charge of fulminate, the upper end of said spindle serving as a hammer to explode the charge against said anvil when the top is thrown to the floor or ground, substantially as described.

5. In a spinning-top, the combination with a top-body longitudinally chambered and apertured, of a fixed seat or anvil in the lower end of said chamber, and a longitudinally-split spindle the divided shank or stem of which is adapted to be inserted and withdrawn through the lower end of the top-body for the application of a charge of fulminate, the two sections of said shank at their upper ends constituting a hammer to explode a charge of fulminate against the anvil and at their lower ends being united by an elastic connection, substantially as described.

6. In a spinning-top, the combination with a top-body having a chamber formed therein, of a laterally-apertured bushing having a closed inner end constituting an anvil fixed in the lower end of the top and communicating with said chamber, and a longitudinally-split elastic spindle slidably and removably engaging said bushing for the application, retention and explosion of a charge of fulminate between the inner end of the spindle and the anvil of the bushing, substantially as described.

7. A detonating top adapted also as a receptacle for merchandise in small quantities, comprising in combination a top-body having a chamber formed therein, a laterally-apertured bushing having a closed inner end constituting an anvil passed through the lower end of the top-body and communicating with said chamber, a longitudinally-split elastic spindle slidably and removably engaging said bushing for the application, retention and explosion of a charge of fulminate between the inner end of the spindle and the anvil of the bushing, and a closure for the upper end of said chamber which also constitutes a projectile, substantially as described.

708,767. HINGE. Abbot H. Easterbrook, Jersey City, N. J. Filed Apr. 16, 1902. Serial No. 103,128. (No model.)

Claim.—A hinge, the wings or plates of which are provided with

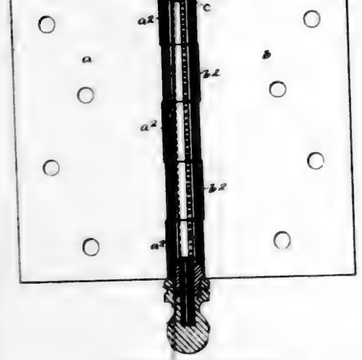

708,768. BUTTON-POLISHING MACHINE. John Hornby, Woonsocket, R. I. Filed Apr. 4, 1902. Serial No. 101,439. (No model.)

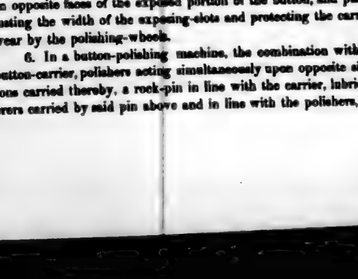

Claim.—1. In a button-polishing machine, the combination with a circular rotating button-carrier constructed to expose substantially half of a button beyond its periphery, of a wheel mounted on a shaft at a right angle to that of the carrier, provided with a peripheral polishing-surface and arranged to bear upon the exposed portion of a button in the carrier.

2. In a button-polishing machine, the combination with a rotating button-carrier, and guides on opposite sides thereof provided with exposing-slots, of polishing-wheels mounted on shafts at right angles to that of the carrier and arranged to meet in said exposing-slots.

3. In a button-polishing machine, the combination with a rotatable button-carrier provided in its periphery with substantially semicircular button-seats, of polishing-wheels rotating in planes at right angles to the plane of the carrier and bearing upon opposite sides of buttons on portions thereof which project beyond the seat in the carrier.

4. In a button-polishing machine, the combination with a button-carrier, provided with peripheral seats arranged to expose one-half of the buttons beyond its periphery, and polishing-wheels rotating in opposite directions and bearing simultaneously upon the opposite faces of the exposed portions of the buttons.

5. In a button-polishing machine, the combination with a button-carrier provided with peripheral seats arranged to project one-half of a button beyond its periphery, guides for the carrier slotted to expose the projected portion of a button, polishing-wheels acting through said slots on opposite faces of the exposed portion of the button, and plates for adjusting the width of the exposing-slots and protecting the carrier against wear by the polishing-wheels.

6. In a button-polishing machine, the combination with a rotating button-carrier, polishers acting simultaneously upon opposite sides of buttons carried thereby, a rock-pin in line with the carrier, lubricator-delivverers carried by said pin above and in line with the polishers, and means

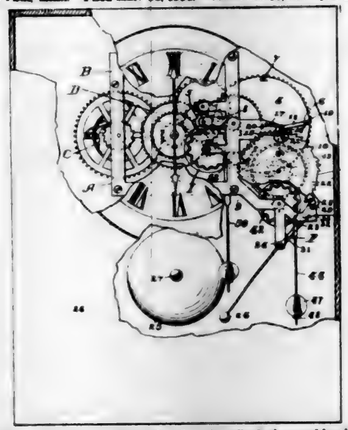

Claim.—1. In a device of the class described, the combination of a twenty-four-hour gear meshing with a time mechanism and carrying tapering trips, of a switch in the path of said trips having a stop-jaw, a stop adapted to impinge against said jaw, a toothed disk, a drive-spring; said stop, disk and spring connected to a shaft, a pivoted hammer having an arm impinging against said teeth, and a bell adjoining said hammer.

2. A clock, consisting in combination with its time-gearing and a supporting-frame of a twenty-four-hour gear, meshing with said time-gearing and having trips disposed upon its face; a spring-controlled toothed disk, journaled upon said frame and having a stop; a spring-controlled dog, in engagement with said stop and having a lever extending so as to release the stop from the dog as the trips revolve, said dog being adapted to check the disk at each revolution; a pivoted lever-hammer adjoining a sounder and having an operating-arm impinging against the teeth of the disk and adapted to communicate a racking motion to the hammer and strike the sounder as the disk revolves, and an escapement connected to said disk whereby the speed of the striking mechanism is governed.

3. In a device of the class described, the combination with the time mechanism, of tapering trips revolubly connected therewith, and striking mechanism, consisting of a spring, a toothed disk, a spring-controlled pivoted dog with a stop-jaw in the path of the trips, and a stop carried by the striking mechanism with which the dog connects; said dog being operated to engage the stop by the trips as they revolve.

4. In a device of the class described, the combination with the time mechanism, of the auxiliary striking mechanism, means for operating said auxiliary striking mechanism in conjunction with the time mechanism, and the escapement for the striking mechanism consisting of a journaled piece having a continuous groove in the form of a reverse curve around its center and a pivoted lever weighted on one end and carrying a pin near its opposite end, which pin projects into said groove.

708,770. PHOTOGRAPHIC-PRINTING FRAME. Stephen G. Johnson, South Orange, N. J. Filed June 25, 1902. Serial No. 113,171. (No model.)

Claim.—1. A photographic-printing frame provided with a series of laterally-adjustable matting-sheets overlapping each other within the frame and means for holding and guiding them in close contact with the negative, substantially as described.

2. A photographic-printing frame having slotted walls and laterally-adjustable matting-sheets passing through said slotted walls, substantially as described.

3. A photographic-printing frame provided with slotted walls, a clear-glass front, and a series of laterally-adjustable matting-sheets passing

4. A photographic-printing frame provided with a series of laterally-adjustable matting-sheets of flexible material, overlapping each other within the frame and rollers on which the portions of the sheets beyond the edges of the frame can be wound up.

5. A photographic-printing frame, provided with slotted walls, and adjacent rollers carrying flexible matting-sheets projecting into the frame through the slotted walls.

6. A photographic-printing frame, provided with slotted walls and adjacent rollers carrying flexible matting-sheets projecting into the frame through the slotted walls and bearings in which the rollers are frictionally mounted.

708,771. LOCK-STITCH SEWING-MACHINE. Karl S. Klogel, New York, N. Y. Filed Sept. 12, 1899. Serial No. 730,278. (No model.)

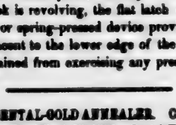

Claim.—1. In a sewing-machine a revolving hook having a loop-seizing beak provided with a laterally enlarged or broadened base and an outside guard or thread-guide connected to the base of the beak and extending toward its point, the said hook having also an axially-projecting rim forming a cavity and which rim is provided with a notch or recess in the rear of the loop-seizing beak.

2. In a sewing-machine a revolving hook having a loop-seizing beak provided with a laterally enlarged or broadened base and an outside guard or thread-guide connected to the base of the beak and extending toward its point, the said hook having also an axially-projecting rim forming a cavity and which rim is provided with a notch or recess in the rear of the beak, and with another notch or recess diametrically opposite the beak or nearly so, through which the loop of needle-thread is withdrawn.

3. In a sewing-machine, the combination with a revolving hook having a loop-seizing beak, and an axially-projecting rim forming a cavity, of a bobbin-case located in the cavity of the hook and having an open front face, a radially-projecting circumferential rim on the front face, a central post for the reception of a bobbin and a bobbin-retaining latch consisting of a cross-piece mounted upon a spring-pressed pin or pivot in the circumferential rim, the said cross-piece extending one end to the central post in the bobbin-case and provided with a stud or nipple fitting into a hole in the outer end of the central post and the other end toward the throat-plate of the machine and means, substantially as set forth, engaging the said bobbin-retaining latch or cross-piece, whereby the bobbin-case is held stationary.

4. In a sewing-machine, the combination of a revolving hook having a loop-seizing beak, an axially-projecting rim forming a cavity, a bobbin-case located in the cavity of the hook and having an open front face, a bobbin-retaining latch or cross-piece pivoted on its front face and extending one end upward or toward the throat-plate of the machine, with a bobbin-case holder or flat latch provided with a slot engaging the bobbin-retaining latch or cross-piece, whereby the bobbin-case is held stationary while the hook is revolving, the flat latch or bobbin-case holder having also a spring or spring-pressed device provided with a projecting curvature that is adjacent to the lower edge of the front opening in the bobbin-case but restrained from exercising any pressure thereon.

708,772. DENTAL-GOLD ANNEALER. Chapin F. Lauderdale, Milwaukee, Wis. Filed Sept. 23, 1901. Serial No. 76,167. (No model.)

Claim.—1. An annealing or heating attachment for dental lamps, comprising a bowl having an open-bottom portion and provided with an

annealing-plate, a flame-shield arranged below said annealing-plate, a burner socket or clip, and means for connecting the same to said bowl.

2. An annealing or heating attachment for dental lamps, comprising a bowl having an annealing-plate and terminating in a contracted neck, a flame-guard arranged below said bowl, a burner socket or clip, and means for connecting the socket or clip to the flame-guard and the bowl.

3. An annealing or heating attachment for dental lamps, comprising a bowl having a lower neck portion, an annealing-plate carried by said bowl, a shield or guard arranged within the bowl at a point below the annealing-plate, a cylindrical flame-guard disposed below said bowl, a burner socket or clip, and means for connecting the same to the cylindrical flame-guard and the bowl.

4. An annealing or heating attachment for dental lamps, comprising a bowl having a lower neck portion, an annealing-plate carried by the bowl, a guard or shield arranged within the bowl at a point below the annealing-plate, a carrying-clip for said shield, a cylindrical flame-guard arranged below and surrounding the neck portion of the bowl, and a spring ring or socket having integral arms bent outwardly and upwardly and secured to the cylindrical guard and to the neck portion of the bowl.

708,778. CORSET. JULIUS LEBDAUER, Paris, France. Filed Sept. 30, 1901. Serial No. 77,074. (No model.)

Claim.—A corset comprising a main part A of substantially the usual height adapted to pass around the body except in front, provided with whalebones for the whole of its height and formed of two sections connected by a lacing, in combination with a downwardly-widened part B of less height than the main part arranged at the front of the corset and covering only the abdomen to slightly above the waist, said part B being formed of two symmetrical sections provided only with busks at their free adjacent edges for securing the corset in place, and being seamed to the main part A, substantially as and for the purpose set forth.

708,774. COMPOSITION OF MATTER. EDWARD L. LIVINGSTON, New York, and WILBUR A. VANDERCOOK, Brooklyn, N. Y. Filed Jan. 15, 1902. Serial No. 89,877. (No specimens.)

Claim.—1. The herein-described composition of matter comprising a permanganate and chlorid of sodium, substantially as and for the purpose specified.

2. The herein-described composition of matter comprising a permanganate, chlorid of sodium, and dioxid of manganese, substantially as and for the purpose specified.

3. The herein-described composition of matter comprising a permanganate, chlorid of sodium, and peroxid of hydrogen, substantially as and for the purpose specified.

4. The herein-described composition of matter comprising a permanganate, chlorid of sodium, peroxid of hydrogen, and dioxid of manganese, substantially as and for the purpose herein specified.

5. The herein-described composition of matter comprising a permanganate, chlorid of sodium, peroxid of hydrogen, dioxid of manganese, and water, substantially as and for the purpose herein specified.

6. The herein-described composition of matter comprising a permanganate, chlorid of sodium, and water, substantially as and for the purpose herein specified.

7. The herein-described composition of matter comprising a permanganate, chlorid of sodium, dioxid of manganese, and water, substantially as and for the purpose herein specified.

8. The herein-described composition of matter comprising a permanganate, chlorid of sodium, peroxid of hydrogen, and water, substantially as and for the purpose herein specified.

708,775. PANORAMIC PHOTOGRAPHIC APPARATUS. AUGUSTE LUMIÈRE and LOUIS LUMIÈRE, Lyon-Monplaisir, France. Filed Mar. 20, 1901. Serial No. 52,077. (No model.)

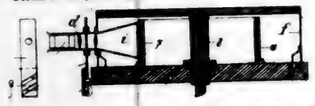

Claim.—1. In a panoramic camera, the combination with the rotating case, of means for supporting a sensitive surface therein in circular position, a lens and shutter carried by the outer periphery of said case, and means for deflecting the rays of light prior to their entering said lens, substantially as described.

2. In a panoramic camera, the combination with a circular rotating case, of means for supporting a film therein in a vertical position concentric with the case, an objective in the outer peripheral wall of said case having a suitable shutter, a screen within the case limiting the range of the light-rays, and deflecting means for deflecting the rays of light prior to their entering the objective, substantially as described.

3. In a panoramic camera, the combination with a rotating case having means for supporting a sensitive surface in circular position within the case, of a lens and shutter carried by said case and adapted to swing around said sensitive surface in a path concentric therewith, and means for deflecting the rays of light in a plane parallel with the line of movement of the lens, substantially as described.

4. In a panoramic camera, the combination with the case having means for supporting a sensitive surface therein in circular position, of a lens swinging concentric with said circular surface, a swinging light-confining screen extending from the lens toward the sensitive surface and terminating in a narrow slit in proximity to said surface, said slit being arranged at right angles to the line of movement of said screen, and light-deflecting means in proximity to said lens arranged to deflect the light which enters said lens in a plane at right angles to said narrow slit, substantially as described.

708,776. AUTOMATIC BUNDLE-CARRIER FOR HARVESTERS. WILLIAM MARTENS, Ackley, Iowa. Filed May 21, 1900. Serial No. 17,357. (No model.)

Claim.—1. In a bundle-carrier for harvesters, a frame adapted to be fixed to a harvester, a bundle-carrier pivotally connected to said frame, a lever extended stubbleward from the bundle-carrier having a traveler on its end adapted for running on the ground and trip mechanism for detachably connecting the lever with the pivoted bundle-carrier, arranged and combined to operate in the manner set forth.

2. A frame for supporting a bundle-carrier, a bundle-carrier pivoted to the frame, a rock-shaft mounted on the frame an arm extending from the rock-shaft for holding the bundle-carrier, a lever extended stubbleward from the bundle-carrier, an arm on the end of the rock-shaft connected with said lever, and a traveler adapted for running on the ground on the free end of the lever, arranged and combined to operate in the manner set forth for the purposes stated.

3. A frame for supporting a bundle-carrier, a bundle-carrier pivoted to the frame and provided with an arm, a rock-shaft mounted on the frame and provided with an arm for engaging the arm of the bundle-carrier, an arm on the end of the rock-shaft, a lever extending stubbleward from the bundle-carrier, pivoted to the frame and connected with the arm on the end of the rock-shaft and a traveler on the free end of the lever adapted for running on the ground, arranged and combined to operate in the manner set forth for the purposes stated.

4. A harvester-frame, the carrier hinged for rearward tilting, the rock-shaft, the arm on the rock-shaft engaging said carrier, a trigger pivoted to the frame and means for attaching the trigger to said rock-shaft, the crank-shaft formed with a crank arranged to engage said trigger, the lever connected with a crank on the end of the rock-shaft projecting stubbleward and provided with a traveler on its free end to run on the ground, the counter-shaft, the star-wheel thereon, the clearer-bar arranged for rotation, the arm on the clearer-bar arranged for engagement with successive teeth of the star-wheel and the sprocket-wheel and chain connection between the crank-shaft and counter-shaft, arranged and combined to operate in the manner set forth for the purposes stated.

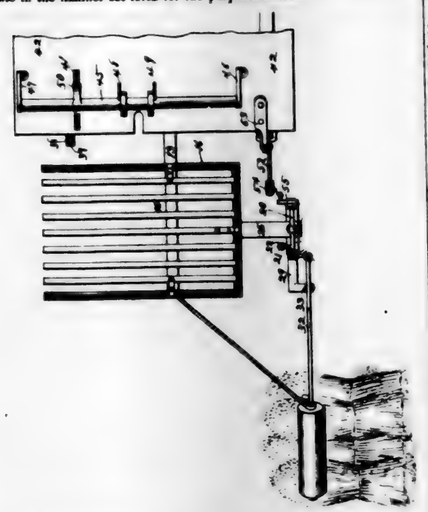

5. In a device of the class described the rock-shaft, means for oscillating said rock-shaft in one direction, the crank-arm on said rock-shaft, the bundle-carrier arranged for tilting, the arm on the bundle-carrier and arranged to be engaged by the crank-arm on the rock-shaft, the retractile coil-spring attached to the rock-shaft and means for securing said spring whereby the rock-shaft may be returned to a given position.

708,777. FIRE-ESCAPE. ALEXANDER MCCUTCHEON, Emporia, Kans. Filed Oct. 9, 1901. Serial No. 78,194. (No model.)

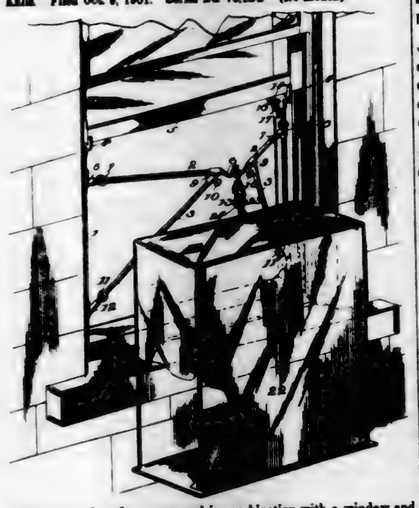

Claim.—1. In a fire-escape and in combination with a window and hoisting mechanism, a post stopped upon the window-sill and having a U-shaped head to receive the lower rail of a sash, and a jib and a brace connected to each other and to the post, substantially as described.

2. In a fire-escape and in combination with a window and hoisting mechanism, a post stopped upon the window-sill, a U-shaped head at the upper end of the post to embrace the sides of the lower rail of a sash, a T-fitting near the upper end and a Y-fitting near the lower end of the post, a jib pivoted to the T-fitting, a Y-fitting at the outer end of the jib, and a brace pivoted to the Y-fitting of the post and adapted to make detachable connection with the Y-fitting at the outer end of the jib, substantially as specified.

3. In a fire-escape, the combination with a window, a crane, an iron having a loop, a second iron having a hook at one end and having its opposite end bent to pass through the said loop, a screw coöperating with the loop and bent ends of the irons to clamp a portion of the window-casement, and a connection between the crane and the bent end of the iron, substantially as set forth.

708,778. BRICK-PRESS. JOSEPH J. HIETERS, St. Louis, Mo. Filed May 20, 1901. Serial No. 61,102. (No model.)

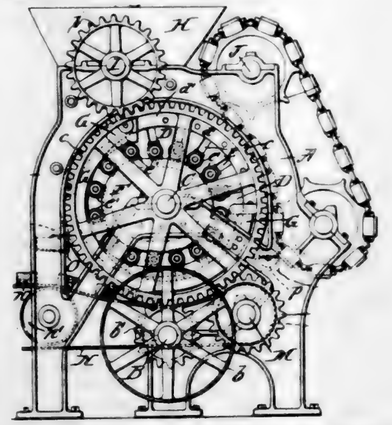

Claim.—1. In a brick-press, the combination with a hopper, of a mold-wheel provided with pockets in its periphery, plungers arranged in the bottoms of said pockets, and a cam for holding said plungers in their outermost position when they enter the hopper and for permitting said plungers to occupy their innermost position as they leave the hopper; substantially as described.

2. In a brick-press, the combination with a hopper, of a mold-wheel provided with pockets across its periphery, flange-rings forming the side walls of said pockets, plungers arranged in the bottoms of the pockets, said plungers having laterally-extending arms carrying rollers, and cams on each side of the mold-wheel for coöperating with said rollers; substantially as described.

3. In a brick-press, the combination with a mold-wheel formed with pockets in its periphery, of a traveling carrier provided with presser-shoes, at least two of which coöperate with the pockets of the mold-wheel at all times by being received therein; substantially as described.

4. In a brick-press, the combination with a mold-wheel formed with pockets in its periphery, of an endless chain carrying presser-shoes, and removable face-plates on said presser-shoes, at least two of which coöperate with the pockets of the mold-wheel at all times by being received therein; substantially as described.

5. In a brick-press, the combination with the mold-wheel formed with pockets in its periphery, of an endless chain, presser-shoes carried by said endless chain, face-plates on said presser-shoes for entering the pockets of the mold-wheel, and an eccentric line of antifriction-rollers coöperating with said presser-shoes; substantially as described.

6. In a brick-press, the combination with a mold-wheel formed with pockets in its periphery, of plungers arranged in the bottoms of said pockets, an endless chain carrying presser-shoes which coöperate with the outer portions of the pockets, devices for coöperating with said presser-shoes and moving the same inwardly when in engagement with the mold-wheel, and cams for forcing the plungers outwardly when opposite the presser-shoes; substantially as described.

7. In a brick-press, the combination with the hopper, of a mold-wheel formed with pockets in its periphery, plungers in the bottoms of said pockets, a scraping-blade arranged on the back wall of the hopper, an endless chain carrying presser-shoes, face-plates on said presser-shoes for entering the pockets, a series of eccentrically-arranged antifriction-rollers *l*, and cams F for forcing the plungers outwardly to compress the material therebetween and the face-plates; substantially as described.

8. In a brick-press, the combination with a mold-wheel formed with pockets in its periphery, of an endless chain carrying presser-shoes, face-plates on said presser-shoes which are designed to be received by the pockets in the mold-wheel, and a lubricating device for said face-plates; substantially as described.

708,779. BOWLING-ALLEY. CHARLES J. GLOSE, Chicago, Ill., assignor of one-half to Elvin Bush, Chicago, Ill. Filed Oct. 11, 1900. Serial No. 32,674. (No model.)

Claim.—1. In a bowling-alley, the pin-deck, having sockets for the pins, in combination with plungers in such sockets; means for guiding them at their lower part; shafts extending under the rows of sockets having projections which engage the downward extensions of the plungers respectively when the shafts are rocked or rotated in direction to carry said shaft projections upward.

2. In a bowling-alley, the pin-deck, having sockets for the pins, in combination with plungers in such sockets having downward extensions, and shafts extending under the rows of sockets and plungers, having eccentric abutments or crank-wrists which engage the downward extensions of the plungers respectively when the shafts are rocked or rotated in direction to carry said abutments upward.

3. In a bowling-alley, the pin-deck, having sockets for the pins, in combination with plungers in such sockets having downward extensions; shafts extending under the rows of sockets and plungers, having eccentric abutments or crank-wrists within the downward extensions of the plungers respectively abutting thereon both upwardly and downwardly, and thereby actuating them positively upward and downward as the shafts are rotated.

4. In a bowling-alley, the pin-deck, having devices for centering the pins on their respective spots; means for disengaging the pins from such centering devices at will; a fixed indicator denoting one of said positions of the disengaging means; and a movable indicator connected to the disengaging means and moved thereby into position obstructing the display of the fixed indicator.

5. In a bowling-alley, the pin-deck, having sockets for the pins, in combination with plungers in such sockets respectively, and means for raising and depressing the plungers at will; a fixed indicator, indicating one of the positions of the plungers, and a movable indicator connected to the plunger-operating mechanism and moved thereby into and out of display position, obstructing and disclosing the fixed indicator.

6. In a bowling-alley, the pin-deck, having sockets for the pins, in combination with plungers in such sockets; rock-shafts extended underneath the rows of sockets and plungers having eccentric abutments arranged to actuate the plungers as the shafts are rocked; lever-arms on the rock-shafts respectively; a bar connecting said lever-arms, whereby all the lever-arms may be actuated simultaneously by the same means; a cable connected to said bar; a guide-pulley for the same beyond said connection, said cable extending from its connection and from the guide-pulley in two plies to the entrance end of the alley; and suitable means at said entrance end connected to the two plies for actuating the bar in either direction at will.

7. In a bowling-alley, the pin-deck, having sockets for the pins, in combination with plungers in such sockets having downward extensions, shafts extending under the rows of sockets and plungers, comprising enlarged journals and wrists eccentric with respect to the journals and connecting the same, and fixed bearings for the journals, the plungers having horizontally-elongated wrist-bearings at which said eccentric wrists are engaged therewith.

708,780. STEAM-TURBINE. CHARLES A. PARSONS, Newcastle-upon-Tyne, England. Filed Feb. 13, 1900. Serial No. 5,060. (No model.)

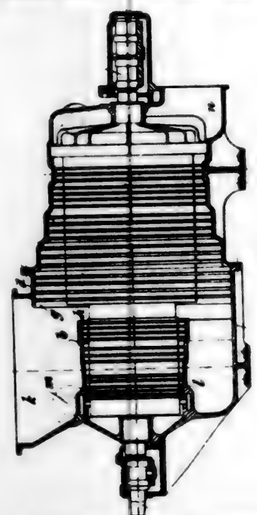

Claim.—1. In parallel-flow turbines, in combination, a complete main turbine having its own casing and its own drum and having a plurality of rings of blades supported from said casing and a plurality of interspaced rings of blades supported from said drum, an exhaust-passage leading from said main turbine, a complete reversing-turbine having its own casing and drum and having a plurality of rings of blades carried by the casing and a plurality of interspaced rings of blades supported from the drum, said turbines being mounted on the same shaft, and the exhaust end of the reversing-turbine being connected with the said exhaust-passage from the main turbine inside the main turbine-casing substantially as described.

2. In combination, a complete main turbine having a plurality of rings of blades supported from an outside casing interspaced between a plurality of rings of blades supported from an inside drum and a complete reversing-turbine having a plurality of rings of blades supported from an outside casing interspaced between a plurality of rings of blades supported from an inside drum, the said reversing-turbine being telescoped within the said main turbine to reduce longitudinal space occupied, substantially as described.

3. In combination, a main turbine having a plurality of rings of blades supported from an outside fixed casing interspaced between a plurality of rings of blades supported from an inside revolving drum and a reversing-turbine having a plurality of rings of blades supported from an outside revolving casing interspaced between a plurality of rings of blades supported from an inside fixed drum, the said reversing-turbine being telescoped within the said main turbine, substantially as described.

4. In combination, a main turbine having a plurality of rings of blades supported from an outside fixed casing interspaced between a plurality of rings of blades supported from an inside revolving drum and a reversing-turbine having a plurality of rings of blades supported from an outside revolving casing interspaced between a plurality of rings of blades supported from an inner fixed drum, the said reversing-turbine being telescoped within the said main turbine and the outer casing of the reversing-turbine being made in one part with the inner drum of the main turbine, substantially as described.

708,781. APPARATUS FOR DRYING VEGETABLES, FRUITS, &c. AUGUST PRAWATZ, Dresden, Germany. Filed Oct. 16, 1901. Serial No. 78,288. (No model.)

Claim.—1. In apparatus for drying vegetables, fruit, blood, and the like, the combination with a chamber having a bottom provided with an opening through which material may pass from the chamber and air may pass into the chamber, of a collecting-box supported below said opening to receive material passing therethrough, and means for moving said box to control the admission of air through said opening, substantially as set forth.

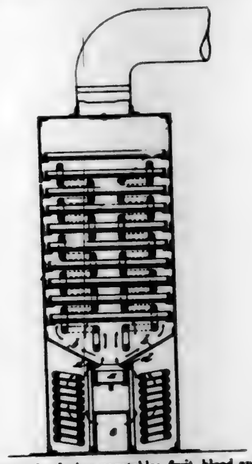

2. In apparatus for drying vegetables, fruit, blood and the like, the combination of a drying-chamber having a bottom formed of inclined plates and provided with an opening through which material may pass from the chamber, and air may pass into it, of a collecting-box hinged at one end and arranged below said opening to receive material passing therethrough, and means for moving the free end of said box to control the admission of air through said opening into the chamber, substantially as set forth.

708,782. MELTING-FURNACE. EDWARD H. SCHWARTZ, Chicago, Ill., assignor, by direct and mesne assignments, of two-thirds to the Hawley Down Draft Furnace Company, Chicago, Ill., a Corporation of Illinois. Filed July 14, 1900. Serial No. 23,770. (No model.)

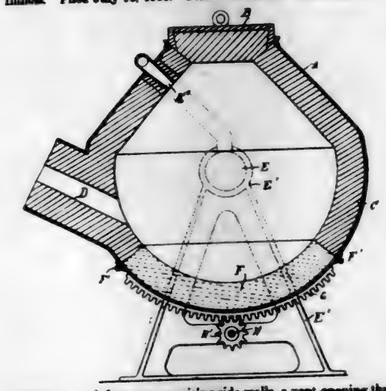

Claim.—1. A furnace comprising side walls, a vent-opening through one wall, and a burner discharging into the furnace through an opening distinct from the vent-opening, the side walls being arranged to cause the flame to sweep downwardly and thence across the hearth or bottom of the furnace and out through the vent-opening; substantially as described.

2. A furnace comprising side walls, one of which has a downwardly-curved inner surface, a vent-opening through the other side wall, and a separate burner also extending through the second side wall, above the vent-opening, and arranged to project flame across the furnace directly upon said curved wall; substantially as described.

3. A furnace comprising side walls, one of which has a downwardly-curved inner surface, a vent-opening through the other side wall, and a separate burner also extending through the second side wall, above the vent-opening, and arranged to project flame downwardly and across the furnace directly upon said curved wall; substantially as described.

4. A furnace comprising side walls, a vent-opening through one wall, and a plurality of burners, each discharging into the furnace through an opening distinct from the vent-opening and arranged to project converging flames across the furnace, the side walls being arranged to cause the flame to sweep downwardly and thence across the hearth or bottom of the furnace and out through the vent-opening; substantially as described.

5. A furnace comprising side walls, one of which has a curved inner surface, a vent-opening through the other side wall; and a plurality of burners extending through the second side wall, above the vent-opening, and arranged to project converging flames across the furnace directly upon said curved wall; substantially as described.

6. A furnace comprising a substantially spherical body, a vent-opening through one side, and a burner also extending through the side above the vent-opening and arranged to project flame directly across the furnace upon the curved wall opposite; substantially as described.

7. A furnace comprising a substantially spherical body, a vent-opening through one side, and a plurality of burners also extending through the side above the vent-opening and arranged to project converging flames directly across the furnace upon the curved wall opposite; substantially as described.

8. A furnace comprising walls of refractory material and a hearth for holding molten metal, means for throwing a flame across the furnace-chamber and directly upon a portion of the inner wall above the hearth, and means for shifting the furnace and thereby moving the heated portion of the wall beneath the molten metal lying on the hearth; substantially as described.

9. A furnace comprising walls of refractory material, a hearth for holding molten metal, a vent-opening through one side and above the hearth, a burner above the vent-opening, arranged to project flame across the furnace and directly upon a portion of the inner wall above the hearth, and means for shifting the furnace and thereby moving the heated portion of the wall beneath the molten metal lying on the hearth; substantially as described.

10. A furnace comprising walls of refractory material, a hearth for holding molten metal, a vent-opening through one side and above the hearth, a plurality of burners above the vent-opening, arranged to project converging flames across the furnace and directly upon a portion of the inner wall above the hearth, and means for shifting the furnace and thereby moving the heated portion of the wall beneath the molten metal lying on the hearth; substantially as described.

11. A furnace provided with a vent-opening and suitable burners at one side of the furnace, said burners being arranged to direct converging flames directly toward the opposite wall of the furnace; substantially as described.

12. A furnace provided with a vent-opening and suitable burners at one side of the furnace, said burners being arranged to direct converging flames downwardly and directly toward the opposite wall of the furnace; substantially as described.

13. A melting-furnace for the purpose described, consisting of a closed tiltable body having its inner walls curved in the horizontal plane, a burner entering said closed body and adapted to project a flame directly therein upon the curved inner walls and upon the exposed body of metal contained in the furnace, and means for rocking said body on its supports to expose different portions of the inner walls thereof to the direct heat of said flame, whereby the metal may be melted in said furnace in an open and exposed condition without the use of a crucible; substantially as described.

14. A melting-furnace for the purpose described, consisting of a closed tiltable body mounted on trunnions and having its inner walls curved in the horizontal plane, a burner entering said closed body through one of the trunnions and adapted to project a flame directly therein upon the curved walls, and upon the exposed body of metal contained in the furnace, and means for rocking said body on its trunnions to expose different portions of the inner walls thereof to the direct heat of said flame, whereby the metal may be melted in said furnace in an open and exposed condition without the use of a crucible; substantially as described.

15. A melting-furnace for the purpose described, consisting of a closed tiltable body provided with a discharge-outlet for molten metal near its base and with removable top or cover and having its inner walls curved in the horizontal plane, a burner entering said closed body and adapted to project a flame directly therein upon the curved inner walls and upon the exposed body of metal contained in the furnace, and means for rocking said body on its supports to expose different portions of the inner walls thereof to the direct heat of said flame, whereby the metal may be melted in said furnace in an open and exposed condition without the use of a crucible; substantially as described.

16. In a melting-furnace, the combination of a furnace-chamber proper, a plurality of burners arranged to discharge flame-jets and entering one side only of the furnace, and arranged to focus substantially at the central axis of the furnace and strike the opposite wall of the furnace.

17. In a melting-furnace, the combination of a furnace proper, having curved interior walls, and a plurality of burners arranged to discharge flame-jets and entering one wall only of the furnace and arranged to focus substantially centrally of the furnace, said flame-jets being deflected downward by the opposite wall of the furnace.

18. In a melting-furnace, the combination of a furnace proper having curved interior walls, and a plurality of burners arranged to discharge flame-jets and entering one wall only of the furnace and arranged to focus substantially centrally of the furnace, said burners being directed transversely and downwardly in the furnace.

19. A furnace provided with a lateral vent-opening and suitable burners in the upper portion of the furnace at one side only thereof, and above the vent-opening, said burners being directed convergingly toward the opposite side or wall of the furnace, the jets from said burners focusing before reaching said opposite wall.

20. A furnace, provided with a lateral vent-opening, and suitable burners in the upper portion, and on one side only of the furnace above the vent-opening directed convergingly toward the wall of the furnace opposite the vent-opening.

21. In a furnace, provided with an upwardly-inclined lateral vent-opening, a charging-door in the upper portion of the furnace, burners arranged at one side only of the furnace and located between the vent-opening and the charging-door, and directed toward the wall of the furnace opposite the vent-opening.

22. A furnace provided with an upwardly-inclined lateral vent-opening, and one or more burners arranged at one side only of the furnace and located at a higher level than the vent-opening, and directed downwardly toward the opposite interior wall of the furnace.

23. The combination of a furnace substantially spherical in form provided with a top charging-door B and a lateral vent D upwardly inclined from toward the bottom of the furnace and a plurality of burners located at one side of the furnace toward the top thereof, and directed downwardly and convergingly toward the opposite side or wall of the furnace and arranged to focus flame-jets near the central vertical axis of the furnace, which jets, by striking said opposite wall, obtain a rotary whirling motion.

24. A furnace formed with a charging-door at its upper end, a lateral vent-opening, burners located in the furnace between the vent-opening and the charging-door, and directed convergingly toward the interior wall opposite the burners, and a supporting-frame on which said furnace is pivotally mounted.

25. A furnace formed with a charging-door at its upper end, a lateral vent-opening, burners located in the furnace between the vent-opening and the charging-door, and directed toward the interior wall opposite the burners, a supporting-frame on which said furnace is pivotally mounted, and means for tilting the furnace to discharge the molten metal through the vent-opening.

26. A furnace formed with a charging-door at its upper end, a lateral vent-opening, burners located in the furnace between the vent-opening and the charging-door, and directed toward the interior wall opposite the burners, a supporting-frame on which said furnace is pivotally mounted, a sector-shaped rack-bar located on the lower portion of the furnace, and a pinion mounted in said frame upon a supporting-shaft, whereby the furnace may be tilted on its pivotal support.

27. A furnace pivotally mounted on supporting-trunnions, a recess in the outer ends of said trunnions, an air-blast pipe leading to said recess, a fuel-supply pipe communicating with the interior of said air-blast pipe, a valve located in said fuel-supply pipe, and gas-supply-pipe connections leading from the recessed trunnions to a point in the upper portion of said furnace.

28. A furnace provided with an upwardly-inclined lateral opening forming a combined vent and tap and burners arranged in one side only of the upper part of the furnace and arranged to discharge flame-jets into the furnace.

29. A furnace provided with an upwardly-inclined lateral opening forming a combined vent and tap and a plurality of burners passing through one side only of the furnace, being the side provided with said opening, and directly converging toward the opposite side or wall of the furnace.

30. A substantially spherical furnace having an upwardly-inclined opening D forming a combined vent and tap and a plurality of downwardly-directed and convergingly-pointed burners arranged to discharge flame-jets into the furnace, in combination with a supporting-frame on which the furnace is pivotally mounted.

31. A substantially spherical furnace having a charging-door B at the top and an upwardly-extending opening D forming a vent and tap, and also having trunnions, a frame receiving said trunnions whereby the furnace is pivotally supported, and burners K located above the said opening D and arranged to focus flame-jets substantially at the central vertical axis of the furnace, whereby the combined jets strike the wall of the furnace opposite the vent-opening.

32. A furnace comprising a tiltable body provided with a vent-opening, and a burner entering said furnace through an opening distinct from the vent-opening but in proximity thereto, substantially as described.

33. A melting-furnace comprising a tiltable body having an opening in position to act as a combined vent and tap, and a burner entering said furnace through an opening distinct from the vent and tap opening but in proximity thereto, substantially as described.

34. A furnace comprising a tiltable body having a vent-opening, and a burner entering said furnace through an opening distinct from the vent-opening but in proximity to and in substantially the same vertical plane as the said vent-opening, substantially as described.

35. A furnace comprising a tiltable body having in its side an outlet for products of combustion, and a burner entering said furnace through an opening distinct from but adjacent to said outlet, substantially as described.

36. A furnace comprising a tiltable body with a curved inner surface, an outlet for products of combustion, and a burner entering said furnace through an opening distinct from said outlet and arranged to discharge a flame upon said curved surface, substantially as described.

37. A furnace having a curved inner surface, an outlet for products of combustion, and a plurality of burners entering said furnace through an opening or openings distinct from said outlet, and arranged to discharge converging flames upon said furnace, substantially as described.

38. A furnace comprising a tiltable body having a curved inner surface, a vent-opening, and a plurality of burners entering said furnace through an opening or openings distinct from said vent-opening and arranged to discharge converging flames which impinge upon said curved surface, substantially as described.

39. A melting-furnace comprising a tiltable body mounted on trunnions and having in its side an opening for products of combustion, and a burner entering the body through one of the trunnions, substantially as described.

708,783. METHOD OF MELTING AND TREATING METALS. EDWARD H. SCHWARTZ, Chicago, Ill., assignor to The Hawley Down Draft Furnace Company, Chicago, Ill., a Corporation of Illinois. Filed June 13, 1901. Serial No. 64,370. (No specimens.)

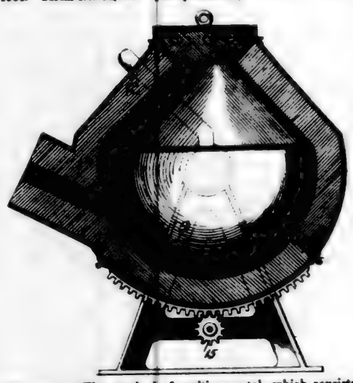

Claim.—1. The method of melting metals which consists in combining a plurality of flame-jets into a single flame, giving this flame a whirling movement and bringing it into contact with the metal to be melted; substantially as described.

2. The method of melting metals which consists in introducing into a melting-chamber from one side only thereof and at a point above the metal a plurality of downwardly-directed flame-jets which meet and combine into a single flame, and causing the flame to rotate in a vertical plane and in contact with the metal; substantially as described.

3. The method of melting metals which consists in combining a plurality of flames into a single flame and causing this flame to move downwardly and thence forwardly over and in contact with the metal; substantially as described.

4. The method of melting metals which consists in causing a flame to move rearwardly above the metal, thence downwardly and forwardly over and in contact with the metal and then to sweep a second time rearwardly, downwardly and forwardly over and in contact with the metal and thence out from the furnace; substantially as described.

5. The method of melting metals which consists in causing a flame to move laterally over and in contact with the surface of the metal, thereby melting it, and then changing the direction of movement of the flame relative to the metal and causing it to impinge directly upon and penetrate into the body of molten metal; substantially as described.

6. The method of melting metals which consists in causing a flame to move laterally over and in contact with the surface of the metal, thereby melting it, and then bringing the molten metal directly into the path of the flame and causing the flame to impinge directly upon and penetrate into the body of molten metal; substantially as described.

7. The method of melting metals which consists in causing a flame to rotate downwardly upon and thence forwardly over and in contact with the surface of the metal, thereby melting it, and then changing the direction of movement of the flame relative to the metal and causing it to impinge directly upon and penetrate into the body of molten metal; substantially as described.

8. The method of melting metals which consists in causing a hydrocarbon-flame to rotate downwardly upon and thence forwardly over and in contact with the surface of the metal, thereby melting it, and then changing the direction of movement of the flame relative to the metal and causing it to impinge directly upon and penetrate into the body of molten metal; substantially as described.

9. The method of melting metals which consists in combining a plurality of flames into a single flame, causing such flame to move laterally over and in contact with the surface of the metal, thereby melting it, and then causing such flame to impinge directly upon and penetrate into the body of molten metal; substantially as described.

10. The method of melting metals which consists in causing a flame to enter a furnace-chamber containing the metal and move rearwardly above the metal and thence downwardly and forwardly over and in contact with the metal, and removing the products of combustion from the furnace at such a point that they do not come in contact with the entering flame at a point below that of entrance of fuel into the furnace; substantially as described.

11. The method of melting metals which consists in combining a plurality of flames into a single flame and causing this flame to move downwardly and thence forwardly over and in contact with the metal, and removing the products of combustion from the furnace at a point below that of entrance of fuel into the furnace; substantially as described.

12. The method of melting brass which consists in applying to the brass to be melted a flame which at its first application contains a certain excess of carbon and subsequently an increased excess of carbon; substantially as described.

13. The method of melting brass which consists in applying to the brass to be melted a flame having a certain excess of carbon, then a flame having an increased excess and finally a flame similar to the one first applied; substantially as described.

708,784. CARRIAGE-POLE. JOSEPH SIMS, Allegheny, Pa. Filed July 7, 1902. Serial No. 114,863. (No model.)

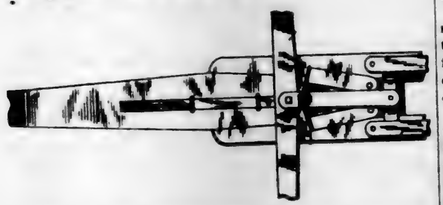

Claim.—A device of the type set forth, consisting of a wagon-tongue having spring-pressed pawls pivoted in proximity to its rear end, a tongue-support having a recess formed therein extending through the forward end thereof, the rear end of the recess on each side thereof being enlarged to form shoulders for engagement with the free ends of the pawls, said tongue having a longitudinal recess formed therein, with a bar slidably mounted in the last-named recess, and links pivoted to the rear end of the bar and to said pawls, whereby said pawls may be moved inwardly.

708,785. GAGE-COCK. WERNER I. STAAF, Pittsburg, Pa. Filed Nov. 19, 1901. Serial No. 83,288. (No model.)

Claim.—1. In a three-way gage-cock, a casing having ports for registration with a series of blow-off pipes, and a rotary valve-disk having a single discharge-port adapted on rotation to register with the respective blow-off pipes, substantially as described.

2. A gage-cock having a series of ports, and adapted for connection to a series of blow-off pipes, a disk valve having a single discharge-port, means connected to the stem of said valve for rotating the same, and means for adjusting the tension on said disk valve, substantially as described.

3. In a gage-cock, the combination of a casing having a series of ports and adapted for connection to a series of blow-off pipes, a rotatable valve disk mounted in the casing and having a single port through which all of the blow-off pipes discharge, and means for operating said valve, substantially as described.

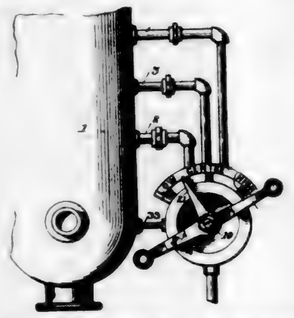

4. In a gage-cock, a casing having a series of ports and adapted for connection to a series of blow-off pipes, of means for controlling the ports in the casing whereby each of the blow-off pipes discharges through a common port.

5. A three-way gage-cock having three inlet-ports and one discharge-port and adapted for connection to three blow-off pipes, and means for controlling said ports whereby the discharge from the blow-off pipes is through a port common to all.

6. In a gage-cock, a casing having a chamber and a series of inlet-ports to said chamber, disk valve having a single orifice or port common to all of the inlet-ports in the casing, a lever connected to the stem of the casing and provided with a pointer, a single discharge-port in the casing, means in the chamber of the casing for holding the disk valve seated, and means for adjusting the tension on said disk valve, substantially as described.

7. In a gage-cock, a casing having a series of inlet-ports and a single discharge-port, and a valve mounted in the casing and controlling each of the inlet-ports, substantially as described.

8. In a gage-cock, a casing having a series of inlet-ports and a single discharge-port, and a valve operative to close all the ports and to open one port independently of the other ports, substantially as described.

9. In a gage-cock, a casing having two or more inlet-ports, and a single discharge-port, and a valve operative to close the ports and to open each port independently of the other ports, substantially as described.

10. In a gage-cock, a casing having inlet-ports registering with separate blow-off ports, and a single discharge-port, a disk valve mounted in the casing and provided with a single port, means connected to said valve for operating same to close the inlet-ports and to open the same independently to the discharge-port, and adjustable means for holding said valve on its seat, substantially as described.

11. In a gage-cock, a casing having an indicating-plate adapted to receive indicating-marks, said casing having a series of inlet-ports each in communication with a separate blow-off pipe, and a single discharge-port, a valve operative to close the inlet-ports and to open one port to the discharge independently of the others, a lever connected to the stem of said valve for operating the same, and a pointer carried by said lever to indicate by the inscriptions on said indicating-plate the position of said valve, substantially as described.

708,786. KNITTING-MACHINE. EMMANUEL STOLL, Routlingen, Germany, assignor to National Knitting Co., Milwaukee, Wis. Filed Nov. 4, 1901. Serial No. 81,143. (No model.)

Claim.—1. In a knitting-machine, the combination with a needle-bed having a needle-channel, of a double-end needle movable in said channel, a jack arranged to operate said needle, and means operated by the jack for limiting the movement of the needle.

2. In a knitting-machine, the combination with a needle-bed having a needle-channel, of a double-end needle movable in said channel, a jack arranged to operate said needle, and a lever arranged to be operated by the jack to limit the movement of the needle.

3. In a knitting-machine, the combination with a needle-bed having a needle-channel, of a needle movable in said channel, and a lever pivoted to the bed and having arms arranged to alternately project into the path of the needle and into the path of the jack respectively.

708,787. **PACKING MECHANISM.** OLIN TYBERG, New York, N. Y., assignor to the American Tobacco Company, New York, N. Y., a Corporation of New Jersey. Filed Nov. 23, 1898. Serial No. 697,123. (No model.)

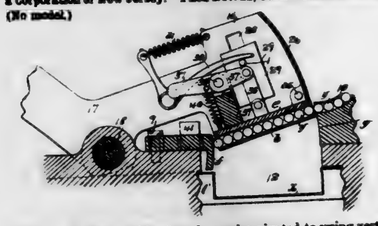

Claim.—1. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports for the cigarettes in the carrier, and means for withdrawing said supports to deliver the cigarettes, substantially as described.

2. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the delivering plane of the cigarettes, and means for actuating said supports, substantially as described.

3. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the surface on which the cigarettes are delivered, a presser-plate in the carrier, and means for actuating said supports and giving said carrier a further movement toward the cigarettes after the supports are withdrawn, substantially as described.

4. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the surface on which the cigarettes are delivered, means for actuating said supports and giving said carrier a further movement independently of the supports after the latter are withdrawn, and a presser-plate pivoted in said carrier and having a movement independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

5. The combination of a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, supports in the carrier having a withdrawal movement substantially parallel to the surface on which the cigarettes are delivered, a presser-plate pivoted in the carrier, and means for swinging the presser-plate independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

6. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, of means for actuating said carrier with long and short movements to deliver superposed rows of cigarettes, supports in the carrier for the cigarettes, means for withdrawing said supports to deliver the cigarettes, and a presser-plate having a movement independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

7. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, of means for actuating said carrier with long and short movements to deliver superposed rows of cigarettes, supports in the carrier for the cigarettes, means for withdrawing said supports to deliver the cigarettes, means for giving the carrier a further movement toward the cigarettes independently of the supports after the latter are withdrawn, and a presser-plate in the carrier having a movement independently of the carrier to bring the presser-plate into position parallel with the delivered cigarettes, substantially as described.

8. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles on a surface inclined in the direction of movement of the cigarettes into the carrier, of means for actuating said carrier with long and short movements to deliver superposed rows of cigarettes, supports in the carrier for the cigarettes, means for withdrawing said supports to deliver the cigarettes, a presser-plate pivoted in the carrier, and means for moving the carrier and presser-plate independently of the supports after the latter are withdrawn and rocking the presser-plate on its pivot in the carrier to bring the presser-plate into position parallel with and pressing upon the delivered cigarettes, substantially as described.

9. The combination with a carrier pivoted to swing vertically between its receiving and delivering positions and adapted to receive a row of cigarettes or similar articles, of means for actuating said carrier with long and short movements to superpose rows of cigarettes, supports for the cigarettes in the carrier, means for withdrawing said supports to deliver the cigarettes, a presser-plate pivotally mounted in the carrier, and means for moving said presser-plate independently of the supports after the latter are withdrawn to bring the presser-plate into a position parallel with and pressing upon the delivered cigarettes, substantially as described.

10. The combination with a carrier having an inclined receiving-surface for cigarettes or similar articles, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end curved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, substantially as described.

11. The combination with a carrier having an inclined receiving-surface for cigarettes or similar articles and pivoted to oscillate vertically, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end carved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, substantially as described.

12. The combination with a carrier having an inclined receiving-surface for cigarettes or similar articles, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end curved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, and a guard-plate on the carrier for closing the raceway during the movement of the carrier, substantially as described.

13. The combination with a carrier having an inclined receiving-surface for cigarettes or similar articles and pivoted to oscillate vertically, of a raceway adapted to secure the feed of the cigarettes to the carrier by gravity and having the bottom surface of its lower end curved to substantially a horizontal plane from which the cigarettes are delivered to the inclined receiving-surface, and a curved guard-plate on the carrier for closing the raceway during the movement of the carrier, substantially as described.

14. The combination with a carrier adapted to receive a row of cigarettes or similar articles on an inclined surface, and an inclined raceway for feeding cigarettes or similar articles to the carrier by gravity, of a roller pressing against the cigarettes in the raceway and acting to support the cigarettes in the upper part of the raceway, substantially as described.

15. The combination with an inclined way for feeding cigarettes or similar articles, of a roller pressing against the cigarettes as they pass down the way, substantially as described.

16. The combination with an inclined way for feeding cigarettes or similar articles, of a spring-pressed roller pressing against the cigarettes as they pass down the way, substantially as described.

17. The combination of a packing-carrier having supports carried thereby and moving therewith for the material or articles to be packed extending beneath the material or articles in the carrier when in supporting position and having a delivery movement substantially parallel with the surface on which the material or articles are delivered, and means for withdrawing said supports for delivery, substantially as described.

18. The combination of a packing-carrier having supports carried thereby and moving therewith for the material or articles to be packed extending beneath the material or articles in the carrier when in supporting position and pivoted to secure a delivery movement substantially parallel with the surface on which the material or articles are delivered, and means for withdrawing said supports for delivery, substantially as described.

19. The combination of a packing-carrier having pivoted supports carried thereby and moving therewith and extending beneath the material or articles in the carrier when in supporting position and having their axis transverse to the line of movement of the carrier and mounted to swing in an arc of such radius as to secure a delivery movement of the supports substantially parallel with the surface on which the material or articles are delivered, and means for withdrawing said supports for delivery, substantially as described.

20. The combination of a packing-carrier provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, and means for giving the carrier a further movement independently of the supports after the supports are withdrawn, substantially as described.

21. The combination of a packing-carrier provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, and a presser-plate for the material or articles having a further movement independently of the supports after the supports are withdrawn, substantially as described.

22. The combination of a packing-carrier provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, a presser-plate mounted in the carrier, and means for giving the carrier a further movement independently of the supports after the supports are withdrawn and moving said presser-plate independently of the carrier to position it relatively to the surface on which the material or articles are delivered, substantially as described.

23. The combination of a packing-carrier pivoted to swing vertically between its receiving and delivering positions and provided with supports for the material or articles to be packed, means for withdrawing said supports for delivery, a presser-plate pivoted in the carrier, and means for giving said presser-plate a further movement after the supports are withdrawn and swinging said presser-plate on its pivot in the carrier to bring the presser-plate into position parallel with and pressing upon the delivered material or articles, substantially as described.

24. The combination with a carrier, of slides mounted in the carrier, supports pivotally mounted on said slides to swing transversely to the direction of movement of the carrier and spring-pressed into supporting position, and fixed abutments for moving the supports against the spring-pressure for delivery and holding the slides stationary while the carrier completes its delivering movement, substantially as described.

25. The combination with a carrier, of slides mounted in the carrier, supports pivotally mounted on said slides to swing transversely to the direction of movement of the carrier and spring-pressed into supporting position, fixed abutments for moving the supports against the spring-pressure for delivery and holding the slides stationary while the carrier completes its delivering movement, catches carried by the slides for holding the supports withdrawn during the further movement of the carrier, and means for tripping said catches to release the supports, substantially as described.

26. The combination with a carrier, of slides mounted in the carrier, supports pivotally mounted on said slides to swing transversely to the direction of movement of the carrier and substantially parallel with the delivery-surface, and spring-pressed into supporting position, fixed abutments for moving the supports against the spring-pressure for delivery and holding the slides stationary while the carrier completes its delivering movement, catches carried by the slides and acting to hold the supports withdrawn, and means for tripping the catches for the return of the supports to supporting position after the return movement of the carrier has moved the supports out of position to engage the delivered material or articles, substantially as described.

27. The combination with the carrier D pivoted to swing vertically, and slides 29 mounted in the carrier and spring-pressed in the direction of the delivery movement of the carrier, of supports carried by said slides and pivoted to swing transversely to the line of movement of the carrier, and fixed abutments for withdrawing the supports and holding the supports and slides stationary during the latter part of the delivering movement of the carrier, substantially as described.

28. The combination with the carrier D pivoted to swing vertically, and slides 29 mounted in the carrier and spring-pressed in the direction of the delivery movement of the carrier, of supports carried by said slides and mounted to swing transversely to the line of movement of the carrier, fixed abutments for withdrawing the supports and holding the supports and slides stationary during the latter part of the delivering movement of the carrier, presser-plate *e* pivoted in the carrier, and means for swinging said presser-plate in the carrier, substantially as described.

29. The combination with the carrier D pivoted to swing vertically and slides 29 mounted in the carrier, of supports mounted in said slides to swing transversely to the line of movement of the carrier, fixed abutments for withdrawing the supports and holding the supports and slides stationary during the latter part of the delivering movement of the carrier, presser-plate *e* pivoted in the carrier, lever 37 mounted in the carrier and connected to the presser-plate, and a fixed abutment engaging said lever 37 during the latter part of the delivering movement of the carrier to swing the presser-plate in the carrier, substantially as described.

30. The combination of the carrier D pivoted to swing vertically, means for actuating said carrier with long and short strokes to superpose articles successively delivered by the carrier, supports in the carrier for the articles, means for withdrawing the same, a presser-plate pivoted in the carrier, and means for swinging the presser-plate in the carrier to bring the presser-plate into position parallel with the articles delivered at successive movements of the carrier, substantially as described.

31. The combination with a box-support, of a depositing-plunger, supporting devices upon which the articles rest carried by the plunger, means for moving the plunger toward the box, and means for moving the supporting devices to cause them to deliver the articles, substantially as described.

32. The combination with a box-support, of a depositing-plunger, supports upon which the articles rest carried thereby, means for delivering articles to the supports in the plunger, means for moving the plunger toward the box, and means for moving the supports to cause them to deliver the articles, substantially as described.

33. The combination with a box-support, of a plunger, movable supports carried by the plunger, means for giving the plunger different amounts of movement toward the box in order to enable it to deposit the articles in layers therein, and means for moving the supports out of the way for each movement of the plunger toward the box, substantially as described.

34. The combination of a packing-carrier having a support, as *b*, mounted on the carrier to swing on an axis transverse to the line of movement of the carrier, a receiving-surface onto which the material or articles to be packed is delivered by the carrier, means for moving the carrier toward the receiving-surface, and means for withdrawing the supports when the carrier has been moved to carry the material or articles to the delivery position, substantially as described.

35. In a packing-carrier for delivering the material or articles to be packed onto a suitable receiving-surface, a support, as *b*, carried by an arm or arms mounted to swing on an axis transversely to the line of movement of the carrier, the arm being of such length as to secure a delivery movement of the support substantially parallel with the delivery-surface, substantially as described.

36. The combination with a carrier for delivering the material or articles carried onto a suitable receiving-surface, which carrier is provided with supports for the material or articles carried extending beneath the material or articles in the carrier when in supporting position, and means for actuating the carrier and withdrawing the supports for delivery, of catches for holding the supports withdrawn and tripped for the return of the supports, substantially as described.

37. The combination with a carrier for delivering the material or articles carried onto a suitable receiving-surface, which carrier is provided with supports for the material or articles carried extending beneath the material or articles in the carrier when in supporting position, of means for actuating said carrier and withdrawing said supports, and means for holding said supports withdrawn during the return movement of the carrier until the supports are moved beyond the delivered material or articles, substantially as described.

38. The combination with a carrier for delivering the material or articles carried onto a suitable receiving-surface, which carrier is provided with supports for the material or articles carried extending beneath the material or articles in the carrier when in supporting position and mounted to move during withdrawal substantially parallel with the surface on which the material or articles are delivered, of means for actuating said carrier and withdrawing said supports, and means for holding said supports withdrawn during the return movement of the carrier until the supports are moved beyond the delivered material or articles, substantially as described.

39. The combination with a vertically-moving carrier for delivering the material or articles carried onto a suitable receiving-surface, which carrier is provided with supports for the material or articles to be carried extending beneath the material or articles in the carrier when in supporting position, of means for actuating said carrier and withdrawing said supports for delivery, substantially as described.

40. The combination with a vertically-moving carrier having a pressing-surface and provided with supports for the material or articles to be carried, of means for withdrawing said supports for delivery and giving said carrier a further movement independently of the supports after the latter are withdrawn to bring the pressing-surface into action, substantially as described.

41. Carrier D having the side plates 16 provided with slots 28, slides 29 mounted to move in said slots, spring-pressed arms 32 pivoted in said slides and carrying supports *b*, and abutments for withdrawing said supports, substantially as described.

42. Carrier D having the side plates 16 provided with slots 28, slides 29 mounted to move in said slots, spring-pressed arms 32 pivoted in said slides and carrying supports *b*, spring-pressed catches *d* for holding the supports when withdrawn, and abutments for withdrawing said supports and tripping said catches to permit the return of the supports, substantially as described.

43. A packing-carrier having pivoted arms 32 on opposite sides of the carrier, said arms carrying inwardly-extending supports *b* and side plates *c* extending upward from the supports, substantially as described.

44. A packing-carrier having plates *a* forming portions of opposite side walls of the receiving-chamber and pivoted arms 32 on the sides of the carrier having the plates *a*, said arms carrying inwardly-extending supports *b* and side plates *c* extending upward from the supports, substantially as described.

708,788. PROCESS OF COATING METALS PREPARATORY TO BEING HEATED. HEINRICH WACHWITZ, Hersbruck, Germany, assignor of one-half to MORITZ DÜNKELSBÜHLER, Nuremberg, Bavaria, Germany. Filed Oct. 28, 1901. Serial No. 80,236. (Specimens.)

Claim.—The process of welding metals, which consists in rubbing the surface of the metals with metallic aluminium, so as to cause a thin coating of the same to adhere to such metals and thereby prevent their oxidation, during the subsequent heating, and then suitably heating and welding together said metals, substantially as described.

708,789. MACHINE FOR BOXING LITTLE CIGARS. GEORGE M. WILLIAMS, Baltimore, Md., assignor to the American Tobacco Company, a Corporation of New Jersey. Filed June 21, 1900. Serial No. 21,063. (No model.)

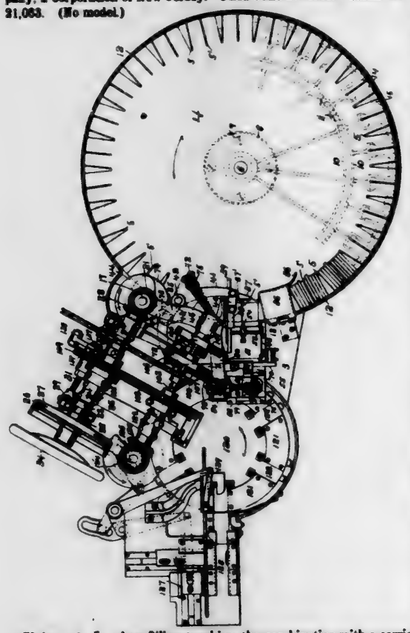

Claim.—1. In a box-filling machine, the combination with a carrier constructed to support on one of its surfaces and to successively forward predetermined quantities of the articles to be boxed, of a box-presenting mechanism operating to successively bring boxes into position to receive the articles from the carrier, and transferring means, said transferring means operating to cause the quantities of the article to move across the surface of the carrier and to the boxes as they are successively presented, substantially as described.

2. In a box-filling machine, the combination with a rotating carrier constructed to support on one of its surfaces and to successively forward predetermined quantities of the article to be boxed, of a box-presenting mechanism operating to successively bring boxes into position to receive the articles from the carrier, and transferring means, said transferring means operating to cause the quantities of the article to move across the surface of the carrier and to the boxes as they are successively presented, substantially as described.

3. In a box-filling machine, the combination with a rotating carrier constructed to support on one of its surfaces and to successively forward predetermined quantities of the article to be boxed, of a rotating box-presenting mechanism operating to successively bring boxes into position to receive the articles from the carrier, and transferring means, said transferring means operating to cause the quantities of the article to move across the surface of the carrier and to the boxes as they are successively presented, substantially as described.

4. In a box-filling machine, the combination with a carrier, one of the surfaces of which is provided at its edge with a series of pockets whereby it is adapted to successively forward predetermined quantities of the articles to be boxed, of an interior support capacitated to sustain a large number of the articles, a box-presenting mechanism operating to successively bring boxes into position to receive the articles from the carrier, and transferring means, said transferring means operating to cause the quantities of the article to move across the surface of the carrier and to the boxes as they are successively presented, substantially as described.

5. In a box-filling machine, the combination with a carrier consisting of a rotating table, one of the surfaces of which is provided at its edge with a series of pockets whereby it is adapted to successively forward predetermined quantities of the articles to be boxed, that part of the table inside the pockets being capacitated to support a large number of the articles, of a box-presenting mechanism operating to successively bring boxes into position to receive the articles from the carrier, and transferring means, said transferring means operating to cause the quantities of the article to move across the surface of the carrier and to the boxes as they are successively presented, substantially as described.

6. In a box-filling machine, the combination with a rotating carrier, one of the surfaces of which is provided at its edge with a series of pockets whereby it is adapted to successively forward predetermined quantities of the articles to be boxed, of an interior support capacitated to sustain a large number of the articles, a rotating box-presenting mechanism operating to successively bring boxes into position to receive the articles from the carrier, and transferring means, said transferring means operating to cause the quantities of the article to move across the surface of the carrier and to the boxes as they are successively presented, substantially as described.

7. In a box-filling machine, the combination with a carrier consisting of a rotating table, one of the surfaces of which is provided at its edge with a series of pockets whereby it is adapted to successively forward predetermined quantities of the articles to be boxed, that part of the table inside the pockets being capacitated to support a large number of the articles, of a rotating box-presenting mechanism operating to successively bring boxes into position to receive the articles from the carrier, and transferring means, said transferring means operating to cause the quantities of the article to move across the surface of the carrier and to the boxes as they are successively presented, substantially as described.

8. The combination with a carrier constructed to successively forward predetermined quantities of the article to be boxed, of means for separating the predetermined quantity so that it may be packed in the box in layers, box-presenting means, depositing mechanism, and transferring means operating between the carrier and the depositing mechanism, substantially as described.

9. The combination with a rotating carrier constructed to successively forward predetermined quantities of the article to be boxed, of means for separating the predetermined quantity so that it may be packed in the box in layers, box-presenting means, depositing mechanism, and transferring means operating between the carrier and the depositing mechanism, substantially as described.

10. The combination with a carrier constructed to successively forward predetermined quantities of the article to be boxed, of a box-presenting mechanism, depositing mechanism, transferring mechanism between the carrier and the depositing mechanism, separating means operating to divide the predetermined quantity into bunches, and spacing means for keeping said bunches separate as they are forwarded by the transferring mechanism, substantially as described.

11. The combination with a rotating carrier constructed to successively forward predetermined quantities of the article to be boxed, of a box-presenting mechanism, depositing mechanism, transferring mechanism between the carrier and the depositing mechanism, separating means operating to divide the predetermined quantity into bunches, and spacing means for keeping said bunches separate as they are forwarded by the transferring mechanism, substantially as described.

12. The combination with a rotating carrier constructed to successively forward predetermined quantities of the article to be boxed, of a rotating box-presenting mechanism, depositing mechanism, transferring mechanism between the carrier and the depositing mechanism, and separating means operating to divide the predetermined quantity into bunches, and spacing means for keeping said bunches separate as they are forwarded by the transferring mechanism, substantially as described.

13. The combination with a carrier constructed to successively forward predetermined quantities of the article to be boxed, of a box-presenting mechanism, depositing mechanism operating to deliver the articles to be boxed to the boxes in layers, a forwarding device, means for transferring the predetermined quantities to the forwarding device divided to form layers, and means for operating the forwarding device, substantially as described.

14. The combination with a rotating carrier constructed to successively forward predetermined quantities of the article to be boxed, of a box-presenting mechanism, depositing mechanism operating to deliver the articles to be boxed to the boxes in layers, a forwarding device, means for transferring the predetermined quantities to the forwarding device divided to form layers, and means for operating the forwarding device, substantially as described.

15. The combination with a rotating table having ribs which divide it into pockets, of spacing devices in the pockets, a stationary rim having a delivery-opening within which the table rotates, and means for delivering the articles from the pockets, substantially as described.

16. The combination with a rotating table having ribs which divide it into pockets, of a stationary rim having a delivery-opening within which the table rotates, an evening device, and means for delivering the articles from the pockets, substantially as described.

17. The combination with a rotating table having ribs which divide it into pockets, of spacing devices in the pockets, a stationary rim having a delivery-opening within which the table rotates, an evening device, and means for delivering the articles from the pockets, substantially as described.

18. The combination with a rotating table having ribs which divide it into pockets, of a stationary rim having a delivery-opening within which the table rotates, an evening-plate having a curved guide connected thereto, a delivery-slide, and means for operating the slide, substantially as described.

19. The combination with a rotating table having ribs which divide it into pockets, of spacing devices in the pockets, a stationary rim having a delivery-opening within which the table rotates, an evening-plate having a curved guide connected thereto, a delivery-slide, and means for operating the slide, substantially as described.

20. The combination with a carrier constructed to successively forward predetermined quantities of the articles to be boxed, a delivery-table provided with spacing means, and means for transferring the predetermined quantities from the carrier to the delivery-table, substantially as described.

21. The combination with a table having a spacing-rib, of means for delivering articles to the table in predetermined quantities and in the direction of the length of the rib whereby the rib subdivides the quantities, substantially as described.

22. The combination with a table, of a cover-plate therefor, a spacing-rib having its forward end beveled off, and means for delivering articles to the table in predetermined quantities, substantially as described.

23. The combination with a table, of a cover-plate therefor, a spacing-rib having its forward end beveled off and its sides inclined, and means for delivering articles to the table in predetermined quantities, substantially as described.

24. The combination with a delivery-table operating to support a plurality of cigars or similar articles, of a table to which said delivery-table delivers the article, and means for moving the delivery-table toward the other table as the delivery operation is effected and away from the other table after the delivery operation is completed so as to obtain clearance, substantially as described.

25. The combination with a delivery-table provided with a spacing-rib, of a slide for delivering articles thereto, a table to which said table delivers, and means whereby the slide moves the delivery-table toward the other table as the delivery operation is effected, substantially as described.

26. The combination with a delivery-table provided with a spacing-rib, of a slide for delivering articles thereto, a table to which said table delivers, means whereby the slide moves the delivery-table toward the other table as the delivery operation is effected, and a spring for returning the delivery-table, substantially as described.

27. The combination with a delivery-table having a spacing-rib, of a second table to which it delivers, a slide for delivering articles to the delivery-table, adjustable means between the delivery-table and the slide, whereby the slide moves the table, and means for returning the table, substantially as described.

28. The combination with a delivery-table having a spacing-rib, of a second table to which said table delivers, a cover-plate for said delivery-table, a bracket also carried by said table, a screw carried by the bracket, the end of which is adapted to be struck by the slide to move the delivery-table, and a spring for returning the table, substantially as described.

29. The combination with a carrier for forwarding articles such as cigars, of the receiving-table to which the cigars are to be delivered, an intermediate table operating to support a plurality of cigars, and means for giving the intermediate table a movement toward the receiving-table, as the delivery operation is effected and away from said table after the operation is completed, so as to obtain clearance, substantially as described.

30. The combination with a carrier for forwarding articles, of a receiving-table to which they are to be delivered, and an intermediate movable table between the carrier and the receiving-table, said table having a choked mouth, substantially as described.

31. The combination with a rotating carrier for forwarding articles, of a receiving-table to which they are to be delivered, an intermediate table between the carrier and the receiving-table and means for giving the intermediate table a bodily movement from the carrier to the receiving-table, substantially as described.

32. The combination with a rotating carrier for forwarding articles, of a receiving-table to which they are to be delivered, and an intermediate movable table between the carrier and the receiving-table, said table having a choked mouth, substantially as described.

33. The combination with a rotating carrier operating to forward articles in predetermined quantities, of means for delivering articles therefrom, a receiving-table to which the articles are to be delivered, and a movable table intermediate the carrier and the receiving-table, said table being operated by the delivering means, substantially as described.

34. The combination with a rotating carrier operating to forward articles in predetermined quantities, of means for delivering articles therefrom, a receiving-table to which the articles are to be delivered, and a movable table having a choked mouth intermediate the carrier and the receiving-table, said table being operated by the delivering means, substantially as described.

35. The combination with a rotating carrier operating to forward articles in predetermined quantities, of a slide for delivering articles therefrom, a receiving-table to which the articles are to be delivered, and a movable table intermediate the carrier and the receiving-table, said table being operated by the slide, substantially as described.

36. The combination with a rotating carrier operating to forward articles in predetermined quantities, of a slide for delivering articles therefrom, a receiving-table to which the articles are to be delivered, and a movable table having a choked mouth intermediate the carrier and the receiving-table, said table being operated by the slide, substantially as described.

37. The combination with a table, of a forwarding device having a plurality of operating-faces arranged tandem, and means operating to deliver articles to the table in position to be acted on by each of the operating-faces, substantially as described.

38. The combination with a table, of a forwarding-slide having a plurality of operating-faces arranged tandem, and means for delivering articles to the table in front of each of the faces, substantially as described.

39. The combination with a table, of a forwarding-slide having two operating-faces, one lying in front of the other, means for giving the slide two forward movements, means for moving the forward operating-face out of the path of the slide between the forward movements of the slide, and means for returning the slide, substantially as described.

40. The combination with a carrier constructed to forward articles in predetermined quantities, of a table, a slide having a plurality of operating-faces, and means for successively transferring the predetermined quantities of articles from the carrier to the table, a part of each predetermined quantity lying in front of each operating-face of the slide, and means for operating the slide, substantially as described.

41. The combination with a carrier constructed to successively forward articles in predetermined quantities, of a table having a spacing-rib, a second table, a forwarding device having a plurality of operating-faces coacting with said second table, and a delivery device operating to deliver the articles from the carrier to the first table, the tables being arranged sufficiently close to each other so that the articles forwarded by the delivery device to the first table operate to push the articles from the first table onto the second table, substantially as described.

42. The combination with a carrier constructed to successively forward articles in predetermined quantities, of a movable table having a choked mouth, a delivery-slide operating to transfer the articles from the carrier to the table, a second table to which the articles are delivered from the movable table, and a second slide having a plurality of operating-faces coacting with said second table, substantially as described.

43. The combination with a carrier constructed to successively forward articles in predetermined quantities, of a movable table having a choked mouth, a delivery-slide operating to transfer the articles from the carrier to the table, a second table to which the articles are delivered from the movable table, a second slide having two operating-faces, one lying in front of the other, means for giving this slide two forward movements, means for moving the forward operating-face out of the path of the slide, and means for returning the slide, substantially as described.

44. The combination with a receiving-table, of a slide having two operating-faces, a box-support, a depositing mechanism to which the slide delivers, means for giving the slide successive forward movements to enable each operating-face to deliver to the depositing mechanism, and means for moving the operating-face which is nearer the depositing mechanism out of the path of the slide after it has delivered to the depositing mechanism, substantially as described.

45. The combination with a box-support, of a depositing mechanism, a table, a slide having a plurality of operating-faces, means for moving the slide, and means for moving the operating-face which is nearest the depositing mechanism out of the path of the slide after it has delivered to the depositing mechanism, substantially as described.

46. The combination with a box-support, of a depositing mechanism, a table, a slide moving thereover, said slide having an operating-face, an arm pivoted to the slide and also having an operating-face which is in front of the operating-face on the slide, means for moving the slide toward the depositing mechanism, and means for moving the arm so as to move its face out of the path of the slide after said face has delivered to the depositing mechanism, substantially as described.

47. The combination with a box-support, of a depositing mechanism, a table, a slide having an operating-face, an arm pivoted to the slide and also having an operating-face which lies in front of the operating-face on the slide, means for giving the slide successive forward movements, and means for moving the arm to cause it to move its operating-face out of the path of the slide between successive forward movements of the slide, substantially as described.

48. The combination with a box-support, of a depositing mechanism, a table, a slide moving thereover and having an operating-face, an arm pivoted to the slide and also having an operating-face which lies in front of the operating-face on the slide, a rock-arm, connections between the two arms, and means for operating the rock-arm as the slide is moved forward, substantially as described.

49. The combination with a box-support, of a depositing-plunger carrying supporting devices, means for delivering articles, and positioning devices adapted to be moved out of the way by the articles as they are delivered to the supporting devices, substantially as described.

50. The combination with a depositing-plunger, of supporting devices carried thereby, a slide for delivering articles to the supporting devices, and positioning devices operating against the articles which are moved forward by the slide, substantially as described.

51. The combination with a depositing-plunger, of supporting-flanges carried by the plunger, pivoted positioning-arms normally lying in the space between the supporting-flanges, and means for delivering articles to the flanges, the articles as they are delivered to the flanges operating to move the positioning-arms out of the way, substantially as described.

52. The combination with a depositing-plunger, of supporting-flanges carried by the plunger, carved pivoted positioning-arms normally lying in the space between the supporting-flanges, and means for delivering the articles to the flanges, the articles as they are delivered to the flanges operating to move the positioning-arms out of the way, substantially as described.

53. The combination with a box-support, of a depositing-plunger, sliding members carried by the plunger, said sliding members having supports secured thereto, means for moving the plunger toward the box, and means for moving the sliding members to move the supports and cause them to deliver the articles, substantially as described.

54. The combination with a box-support, of a depositing-plunger, supports carried by the plunger, a second plunger, means for moving the two plungers toward the box, and means whereby the movement of the second plunger operates to move the supports carried by the first plunger so as to cause them to deliver the articles carried by them, substantially as described.

55. The combination with a box-support, of a plunger, supports carried by the plunger, a second plunger, a packing device, means for moving the two plungers toward the box, and means whereby the movement of the second plunger operates to move the supports and the packing device, substantially as described.

56. The combination with a box-support, of a plunger, sliding members carried thereby, supports mounted on the members, a second plunger having a cam-head for operating the sliding members, and means for moving the two plungers toward the box, substantially as described.

57. The combination with a box-support, of a plunger, sliding members carried thereby, supports secured to the members, a second plunger having a cam-head working through the first plunger, a spring-mounted packing device, and means for moving the two plungers toward the box, the movement of the second plunger operating the sliding members and the spring-mounted packing device, substantially as described.

58. The combination with a box-support, of a depositing-plunger sliding members carried thereby, supports secured to the members, a second plunger working through the first plunger and having a cam-head which operates the sliding members, a packing device carried by the first plunger, means for giving the two plungers different degrees of movement toward the box, the movement of the second plunger operating the sliding members and the packing device, substantially as described.

59. The combination with a box-support, of a depositing-plunger, supports carried by the plunger, a slide having a plurality of operating-faces, each face operating to insert a layer of articles in the plunger, means for giving the plunger different amounts of movement toward the box after each layer is inserted therein, and means for moving the supports to cause them to deliver the articles for each movement of the plunger toward the box, substantially as described.

60. In a machine for boxing articles, the combination with a rotating carrier having pockets thereon, of a receiving-table, means for transferring the articles from the carrier to the receiving-table, a forwarding-slide having two operating-faces working over the receiving-table, a box-support, a depositing-plunger having supporting means for the articles, means for giving the forwarding-slide successive forward movement, means for lifting one of the operating-faces out of the path of the slide between the movements, means for giving the depositing-plunger varying degrees of movement toward the box in order to enable it to insert the layers of articles in the box which are delivered to it by the successive movements of the slide, and means for moving the supporting means on the plunger to cause them to deliver the articles, substantially as described.

61. In a machine for boxing articles, the combination with a rotating carrier having pockets thereon, of a receiving-table, means for transferring the articles from the carrier to the receiving-table, a forwarding-slide having two operating-faces working over the receiving-table, a rotating box-support, a depositing-plunger having supporting means for the articles, means for giving the forwarding-slide successive forward movements, means for lifting one of the operating-faces out of the path of the slide between the movements, means for giving the depositing-plunger varying degrees of movement toward the box in order to enable it to insert the layers of articles in the box which are delivered to it by the successive movements of the slide, means for moving the supporting means on the plunger to cause them to deliver the articles, a raceway, means for delivering sheaths or covers to the raceway, and means for inserting the filled boxes in the sheaths, substantially as described.

62. In a mechanism for inserting boxes into sheaths, the combination with a raceway constructed to maintain the sides of the boxes in formed position, of means for forwarding boxes through the raceway, and a warped turner-guide on each side of the raceway positioned to act upon the side wings of the top flange of the box, substantially as described.

63. The combination with a carrier, of a shaft by which it is driven, a counter-shaft, clutch-controlled driving means between the two shafts, a box-support driven from the counter-shaft, and transferring devices between the carrier and the support, whereby both the carrier and the support may be caused to operate together or the carrier may be caused to operate without operating the support, substantially as described.

64. The combination with a rotating carrier, of a shaft from which it is driven, a power mechanism, a clutch between said shaft and the power mechanism, delivery devices driven from said shaft, a second shaft, clutch-controlled driving mechanism between the two shafts, a box-support, and a depositing mechanism driven from the second shaft, substantially as described.

708,790. APPARATUS FOR CUTTING PIPES, RODS, &c. PHILIP WIER, Birmingham, England. Filed Oct. 25, 1901. Serial No. 79,930. (No model.)

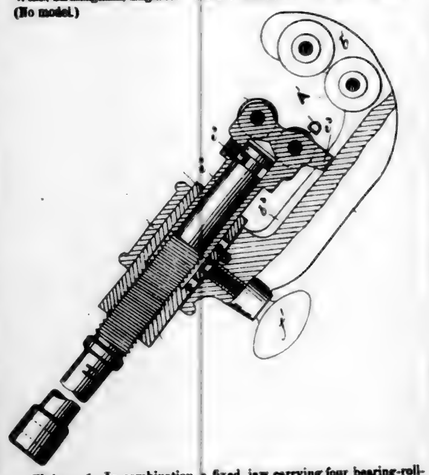

Claim.—1. In combination, a fixed jaw carrying four bearing-rollers, a sleeve movable toward and from the rollers with means for clamping it in any desired position, a movable jaw guided by said sleeve and means for operating the movable jaw, substantially as described.

2. In combination, the fixed jaw having bearing-rollers at one end and a tubular portion at the other, a sleeve slidably mounted in said tubular portion, means for clamping it adjustably in the tubular portion, a movable jaw having a tubular shank extending into the sleeve and a projection engaging a groove in the fixed jaw, a cutter carried by the movable jaw and a screw threaded through the sleeve and having its end rotatably secured within the tubular portion of the movable jaw, substantially as described.

708,791. EGG-SEPARATOR. MARY R. ABRAHAMS, St. Louis, Mo., assignor to Martha Bell, Portland, Oreg. Filed Feb. 21, 1902. Serial No. 95,123. (No model.)

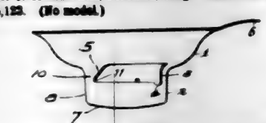

Claim.—As an article of manufacture, an egg-separator comprising a flaring upper portion 1; and the lower portion 2 having a substantially flat bottom and a substantially vertical wall connecting the bottom to the flaring portion 1, there being discharge-openings 3 formed through the upper part of the wall 8 and the lower part of the flaring portion 1, thus leaving the solid portions 9 and 10 connecting the wall 8 to the portion 1, and there being notches 4 at the ends of the openings 3 on each side of the solid portion 9 to serve as spouts, and said openings 3 being pointed at their lower forward ends; and the portion 10 being of sufficient width to conduct the yolk of an egg out of the portion 2; substantially as specified.

708,792. TYPE-WRITING MACHINE. WALTER J. BARRON, Brooklyn, N. Y., assignor to the Densmore Typewriter Company, Syracuse, N. Y., a Corporation of New York. Filed June 30, 1899. Serial No. 722,354. (No model.)

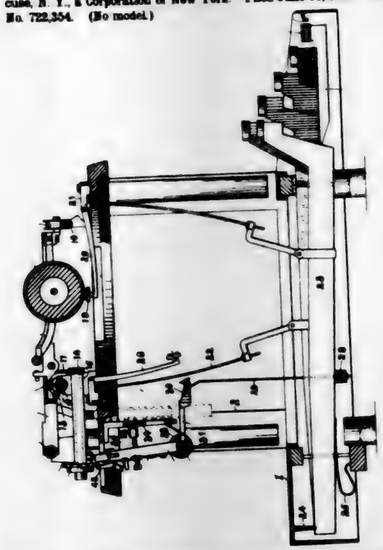

Claim.—1. In a type-writing machine, the combination of a power-driven carriage, a rack, a dog normally out of engagement with the rack and the rack and dog being arranged to provide a "drop" and one of said rack-and-dog elements being connected to and controlling a letter-space movement of the carriage, and means for preventing rebound of the carriage when engagement of the rack and dog occurs; substantially as set forth.

2. In a type-writing machine, the combination of a power-driven carriage, a rack, a dog normally out of engagement with the rack and the two being arranged to provide a "drop" and one of said rack-and-dog elements being connected to and controlling a letter-space movement of the carriage, and a notch adapted to coact with a rack-teeth; substantially as set forth.

3. In a type-writing machine, the combination of a power-driven carriage, a rack, a dog normally out of engagement with the rack and the two being arranged to provide a "drop" and one of said rack-and-dog elements being connected to and controlling a letter-space movement of the carriage, and a notch adjacent the dog and adapted to embrace a rack-tooth; substantially as set forth.

4. In a type-writing machine, the combination of a rack, a carrier, said rack and carrier having relative motion transversely of the rack, a bolding-dog moving relatively to said carrier transversely of the rack, a notched block carrying said dog and adapted to arrest and hold said dog in engagement with the rack while the rack and carrier have further relative motion, and a spring offering no resistance to the relative motion of the carrier and the rack until the dog is arrested by said block and thereafter opposing a gradually-increasing resistance to the said further relative motion; substantially as set forth.

5. In a type-writing machine and in an escapement mechanism, the combination of a power-driven carriage, a rack connected therewith, a dog-carrier movable at right angles to the plane of the rack, and a spring-pressed block provided with an adjacent notch and pivoted directly to said carrier on an axis parallel with the plane of said rack; substantially as set forth.

6. In a type-writing machine and in an escapement mechanism, the combination of a power-driven carriage, a rack, a vibratory dog-carrier, and a dog bolder or block pivoted on said carrier and spring-pressed toward the rack, and provided with a notch, one wall 57 of which is inclined to match the shape of the rack-teeth; substantially as set forth.

7. In a type-writing machine and in an escapement mechanism, the combination of a carriage, a rack, a vibratory dog-carrier, a dog block or bolder pivoted thereon and spring-pressed toward said rack, whereby the dog may be arrested while the rocker continues its forward movement, and means on said dog-bolder for positively grasping the rack-tooth and holding the rack stationary while the dog-carrier is moving forwardly as aforesaid, whereby the carriage is held firmly during the moment of impact of the types and at the same time the finger-key is cushioned; substantially as set forth.

708,798. MOTOR-VEHICLE. HENRY F. BORBEIN, St. Louis, Mo., assignor to Gus V. Brecht Butchers' Supply Company, St. Louis, Mo., a Corporation of Missouri. Filed July 24, 1902. Serial No. 116,802. (No model.)

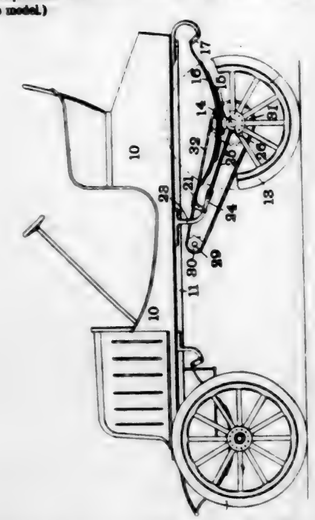

Claim.—1. In a motor-vehicle, the combination with a frame adapted to support the body, of a spring, a bearing for the driving-axle secured to said spring, a strut-rod secured to said bearing, a link pivoted at one end to said strut-rod and at the other to said spring, and means for supporting said strut-rod.

2. In a motor-vehicle, the combination with a frame for supporting the body, of a spring, a bearing carried by said spring, a strut-rod secured to said bearing, a link pivoted at one end to said strut-rod and at the other to said spring, and a hanger secured to said frame and supporting said strut-rod and link.

3. In a motor vehicle, the combination with a frame for supporting the body, of a bearing for the driving-axle, a strut-rod attached to said bearing, a bifurcated end piece adjustably secured to said rod, and a hanger secured to said frame and pivoted to said bifurcated end piece.

708,794. AUTOMATIC FIREARM. JOHN M. BROWNING, Ogden, Utah. Filed Nov. 7, 1901. Serial No. 81,361. (No model.)

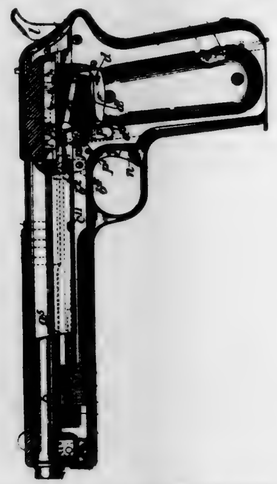

Claim.—1. In a firearm, the combination with a frame, a reaction-spring mounted in the frame, and a breech-slide formed to engage the frame and slide thereon, of an abutment for said spring carried by the breech-slide and a plug having a limited movement in the frame and adapted to coöperate with said spring to press the same back and release the abutment, substantially as shown and described.

2. In a firearm, the combination with a frame having a chamber, a reaction-spring mounted in said chamber, and a breech-slide formed to engage the frame and slide thereon, of a key carried by the breech-slide and traveling in a slot in the frame to couple said slide and frame and form an abutment for said spring, and a plug having a limited movement in the end of said chamber and adapted to coöperate with said spring to press the same back and release the key, substantially as shown and described.

3. In a firearm, the combination with a frame, a breech-slide formed to slide on the frame, and a magazine having a spring-actuated follower, of a latch mounted to slide in the frame, said latch having a locking-nose to engage the breech-slide and having a projection in the path of said follower whereby when the magazine is empty the latch is raised to engage the breech-slide and hold the same in its rearward position, substantially as shown and described.

4. In a firearm, the combination with a frame having a slot in its side, a breech-slide formed to slide on the frame and a magazine having a spring-actuated follower, of a latch mounted to slide in the slot in the frame, said latch having a locking-nose to engage the breech slide and having a projection in the path of said follower, whereby when the magazine is empty the latch is raised to engage the breech-slide and hold the same in its rearward position, substantially as shown and described.

708,795. PHOTOGRAPHIC CAMERA FOR PRODUCING AND VIEWING IMAGES IN NATURAL COLORS. EDWIN T. BUTLER, Cambuslang, near Glasgow, Scotland. Filed Dec. 7, 1900. Serial No. 39,022. (No model.)

Claim.—1. In a stereoscopic camera fitted with a slide in the usual orifice at the rear end of the camera-body and adapted to carry a sensitive sheet, the combination therewith of a slide placed in an orifice in the roof of the camera-body and carrying a sensitive sheet, colored screens combining all the colors of the spectrum in due proportion, interposed between the lenses and the sensitive sheets, and reflectors inclined at forty-five degrees to said screens an end for the purpose set forth.

2. In a stereoscopic camera fitted with a slide in the usual orifice at the rear end of the camera-body and adapted to carry a sensitive sheet, the combination therewith of a slide placed in an orifice in the roof of the camera-body and carrying a sensitive sheet, colored screens interposed between the lenses and the upper sensitive sheet, and inclined transparent colored plates interposed between the lenses and the rear sensitive sheet, said inclined plates serving as reflectors and screens as and for the purpose set forth.

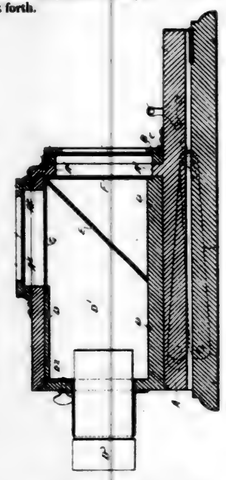

708,796. BLEACHING APPARATUS. CHAUNCEY C. CLARK, Philadelphia, Pa., assignor of one-half to James G. Carson, Philadelphia, Pa. Filed Jan. 22, 1901. Serial No. 44,273. (No model.)

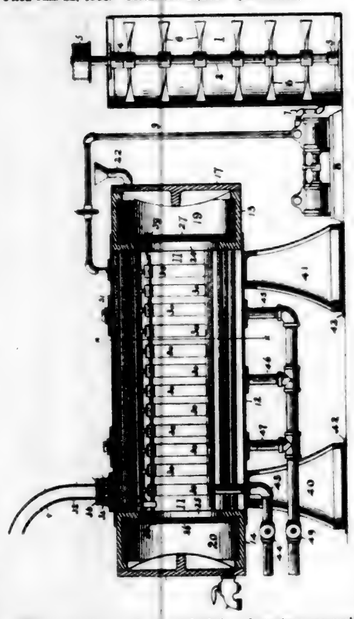

Claim.—1. In an apparatus for brine electrolysis, an inclosed cylindrical decomposing-receptacle, a series of electrodes in double rows therein, having electrical connections thereto, and within the receptacle means for the circulation of cooling material therethrough, from end to end of the cylinder.

2. In an electrolytic apparatus, a mixing-tank, an inclosed receptacle for the electrolyte, a series of electrodes in the receptacle and means for their electric energizing; chambers at the ends of the receptacle, a liquid-inlet to one of the chambers, a liquid-outlet for the other chamber, tubes connecting the chambers and passing through the receptacle, and means to withdraw the electrolyte after its electrolysis.

3. In a chlorin-manufacturing apparatus, an inclosed receptacle having chambers at the ends with inlet and outlet passages and tubes from chamber to chamber through the receptacle, tube-sheets in the chambers to which the tubes are expansively secured, openings in the tube-sheets, removable covers for the openings, and bus-bars secured to the tube-sheets for expansion and insulation and having anodes and cathodes secured thereto.

4. In an electrolytic apparatus, an inclosed cylindrical horizontal electrolyte-receptacle, electrodes removably suspended in the receptacle and having conductors therefor and electrical contact therewith, tube-sheets and chambers at the ends of the receptacle, means to cool the electrolyte by a series of independent tubes having expansion connections to the tube-sheets and adapted for the receipt and discharge of cooling liquid and its passing through the electrolyte and its receptacle, means for the discharge of the product of electrolysis, and its settled impurities and means to afford access to the receptacle for its cleansing.

5. In apparatus for the purpose described, a tightly-closed receptacle, heads forming the ends of the receptacle and removable covers thereon, tube-sheets formed on the heads, and chambers inclosed by the head formations, tubes secured to the tube-sheets, extending from sheet to sheet, connecting the chambers through the receptacle; openings in the tube-sheets, covers for the openings, bus-rods carried by the covers, a series of electrodes secured to and in contact with the bus-rods, and electrical conductors secured to the bus-rods, and passing outward from the receptacle through insulated and liquid-retaining stuffing-boxes to a source of electrical energy.

708,797. LANDING-NET. THADDEUS S. COFFIN, Revere, Mass. Filed Jan. 11, 1902. Serial No. 89,259. (No model.)

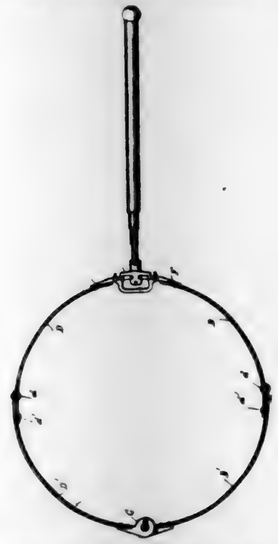

Claim.—1. In a landing-net, the combination, with a handle, and a forked bracket secured thereto and provided with guide-spaces and hooked catches; of a foldable frame formed of pivotally-connected spring-bars provided with arms which slide in the said forked bracket and have projections for engaging with the said guide-spaces and catches, substantially as set forth.

2. In a landing-net, the combination, with a handle, and a forked bracket secured thereto and provided with guide-spaces and hooked catches; of a support for the net provided with arms which slide in the fork of the said bracket and have projections for engaging with the said guide-spaces and catches, substantially as set forth.

3. In a landing-net, the combination, with a handle, and a forked bracket secured thereto and provided with a stop at its middle part, and having also guide-spaces arranged at each side of and above the stop, and catches at its ends; of a support for the net provided with arms which slide in the fork of the said bracket and have projections which engage with the said guide-spaces, stop and catches, substantially as set forth.

4. In a landing-net, the combination, with a handle, a forked bracket formed of two similar half-brackets, and means for securing the said half-brackets together and to the handle, said forked bracket being provided with guide-spaces and hooked catches; of a support for the net provided with arms which slide in the fork between the said half-brackets and have projections which engage with the said guide-spaces and catches, substantially as set forth.

708,798. CAN-SOLDERING MACHINE. BERNARD COLL, Baltimore, Md. Filed Nov. 22, 1901. Serial No. 83,254. (No model.)

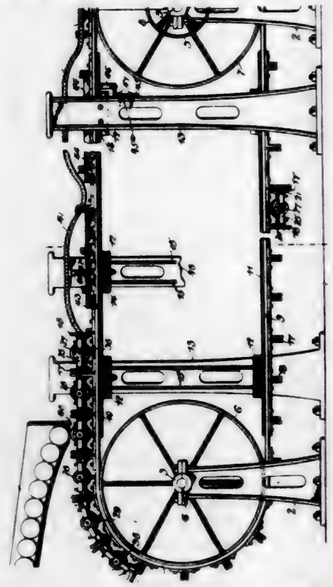

Claim.—1. In a can-soldering machine, the combination of a belt, belt-pulleys, a belt-guide, the said belt passing along the guide and around the pulleys, the said guide being arranged tangentially to the pulleys and constructed to maintain and guide the belt flatwise horizontally between the pulleys, can-carrier mechanism adapted to be rotated and tilted, and devices fashioned and disposed to rotate and tilt the said can-carrier mechanism, the said can-carrier mechanism being borne by the belt, the said guide being adjustable laterally whereby the said belt and can-carrier mechanism are correspondingly moved, and means for supporting the guide and for clamping it in position.

2. In a can-soldering machine, the combination of a belt, belt-pulleys, and can-carrier mechanism comprising twin posts secured to the belt, a carrier-frame having jointed ends, pivot-pins projecting from the posts, the said frame being pivotally supported and movable laterally on the said pins, a trough arranged to receive a can, the said trough being adjustably connected to the carrier-frame, spring-clamps adapted to hold a can within the said frame, revolubie and longitudinally-movable shafts attached to the said clamps, and means for rotating the shafts and tilting the can-carrier mechanism, substantially as described.

3. In a can-soldering machine, the combination of the belt, upper and lower belt-guides consisting of plates having their sides bent upwardly and inwardly to cover the edges of the belt leaving a space lengthwise in the middle of the belt uncovered, belt-pulleys, the said guides being arranged flatwise and tangentially between the tops and bottoms of the pulleys, devices adapted for adjusting the guides laterally, can-carrier mechanism secured to the middle of the belt, and means for rotating and tilting the can-carriers, substantially as described.

4. In a can-soldering machine, geared racks arranged at the sides of the machine, devices for supporting the said racks and constructed to effect the adjustment of the racks vertically and horizontally, and means carried by the vertical support whereby the said racks may be adjusted rotatively, substantially as described.

5. In a can-soldering machine, the combination of a belt, belt-pulleys, and can-carrier mechanism comprising twin posts secured to the belt, a carrier-frame, pivot-pins projecting from the posts, the said frame be-

ing pivotally supported and movable laterally on the said pins, a trough arranged to receive a can, the said trough being adjustably connected to the carrier-frame, vertically-adjustable devices secured to the belt beneath the said trough and attached pivotally to the trough, spring-operated clamping-plates, revoluble and longitudinally-movable shafts secured to the clamping-plates, and means for rotating the shafts and tilting the carrier mechanism, substantially as described.

6. In a can-soldering machine, the combination of a belt, belt-pulleys, and can-carrier mechanism comprising twin posts secured to the belt, a carrier-frame having jointed ends, pivot-pins projecting from the posts, the said frame being pivotally supported and movable laterally on the said pins, an adjustable trough arranged to receive a can, the said trough being adjustably connected to the carrier-frame, spring-operated clamping-plates, revoluble and longitudinally-movable shafts secured to the clamping-plates, pinions fixed upon the shafts, geared racks arranged at the sides of the machine, the racks being oppositely elevated and depressed whereby the engagement of the pinions rotates the clamping-plates and tilts the carriers, and spreaders adapted to separate the pinions for the purpose of receiving and discharging cans, substantially as described.

708,799. WEIGHING-MACHINE. EDGAR H. COOK, Brooklyn, N. Y. Filed June 6, 1901. Serial No. 63,367. (No model.)

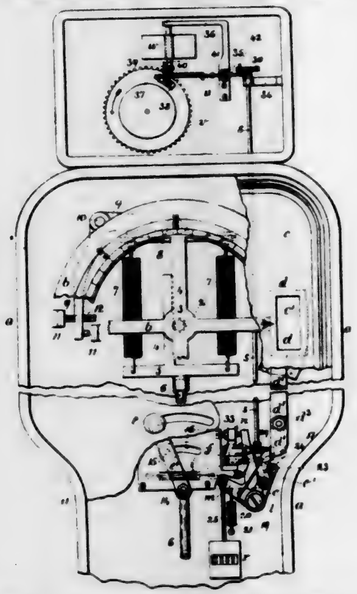

Claim.—1. In a weighing-machine, the combination with the weighing mechanism, a face covering the indicator-dial thereof and having an opening therein, and a shutter for normally covering the opening, and a hand-operated mechanism for effecting the movement of the shutter, of a rod extending from a registering mechanism, a lever device to which said rod is connected and which lever device is set in motion by the hand-operated mechanism simultaneously with the shutter mechanism for effecting the registration of the number of times the machine has been used, and a spring-actuated adjustable device connected with the lever mechanism and which may be set in proportion to the movement required of the rod extending to the registering mechanism, substantially as set forth.

2. In a weighing-machine, the combination with the weighing mechanism, a face covering the indicator-dial thereof and having an opening therein, and a shutter for normally covering the opening, and a hand-operated mechanism for effecting the movement of the shutter, of a lever mechanism comprising the arms *m n* and *o*, a hub upon which the same are mounted, a stop for limiting their movement, and a spring for holding the same in a normal position of rest, a spring-actuated adjustable device connected to said lever mechanism, a spring-actuated tooth connected to the arm *n*, and devices set in motion by the lever mechanism for effecting the release and permitting the movement of a music-box mechanism, substantially as set forth.

3. In a weighing-machine, the combination with the weighing mechanism, a face covering the indicator-dial thereof and having an opening therein, and a shutter for normally covering the opening, and a hand-operated mechanism for effecting the movement of the shutter, of a lever mechanism comprising the arms *m n* and *o*, a hub upon which the same are mounted, a stop for limiting their movement and a spring for holding the same in a normal position of rest, an auxiliary arm *o'* pivoted to the arm *o*, an eccentric device upon the free end of the arm *o*, a pin on the auxiliary arm and a spring for holding the said auxiliary arm against the eccentric device, a hollow hub on the arm *n*, and a spring-actuated non-rotatable tooth in said hub, and devices, substantially as set forth and adapted to be set in operation by the spring-actuated tooth of the arm *n* for releasing said mechanism and permitting the movement of a music-box mechanism, substantially as set forth.

4. In a weighing-machine, the combination with the weighing mechanism, a face covering the indicator-dial thereof and having an opening therein and a shutter for normally covering the opening, and a hand-operated mechanism for effecting the movement of the shutter, of a lever mechanism comprising the arms *m n* and *o*, a hub upon which the same are mounted, a stop for limiting their movement, and a spring for holding the same in a normal position of rest, an auxiliary arm *o'* pivoted to the arm *o*, an eccentric device upon the free end of the arm *o*, a pin on the auxiliary arm and a spring for holding the said auxiliary arm against the eccentric device, a hollow hub on the arm *n*, and a spring-actuated non-rotatable tooth in said hub, a rod *s* extending vertically from the case of a music-box mechanism through the case of the weighing-machine upon which the mechanism is superposed, supports therefor, a toothed wheel on the lower end of said rod adapted to be engaged by the tooth 27, a star-wheel on the upper end of said rod, a pivoted lever *u* having a pin engaged by the star-wheel, a finger 37 on the free end of the said lever and an arm 39 connected to said lever, means connected to the governor of the music-box mechanism and adapted to engage the said arm 39, a spring-actuated slide in the toothed wheel of the said music-box mechanism moving through a mortise in said wheel and which parts are engaged by the finger of said lever, substantially as set forth.

5. In a weighing-machine, the combination with the weighing mechanism, a face covering the indicator-dial thereof and having an opening therein and a shutter for normally covering the opening, and a hand-operated mechanism for effecting the movement of the shutter, of a case for a music-box mechanism superposed upon the case of the weighing-machine, an arm projecting from the shaft of the governor thereof, a spring-actuated slide movable in a mortise in the toothed wheel thereof, a pivoted lever *u* having a finger on one end adapted to engage said spring-actuated slide and enter the mortise in the toothed wheel, an arm 39 connected to said lever and adapted to engage the arm of the governor-shaft, a pin upon the other end of said lever *u*, a vertical shaft *s* extending through the case of the music-box mechanism into the case of the weighing-machine, a star-wheel 30 on its upper end engaging the pin of said lever, a toothed wheel 29 on its lower end, bearings for said vertical rod *s*, and devices, substantially as herein shown and described and operated by the hand-operated mechanism simultaneously with its operation of the shutter device for releasing and setting in motion the music-box mechanism, substantially as described.

6. In a weighing-machine, the combination with the weighing mechanism, a face covering the indicator-dial thereof and having an opening therein, and a shutter for normally covering the opening, and a hand-operated mechanism for effecting the movement of the shutter, of a case for a music-box mechanism superposed upon the case of the weighing-machine, an arm projecting from the shaft of the governor thereof, a spring-actuated slide movable in a mortise in the toothed wheel thereof, a pivoted lever *u* having a finger on one end adapted to engage said spring-actuated slide and enter the mortise in the toothed wheel, an arm 39 connected to said lever and adapted to engage the arm of the governor-shaft, a pin upon the other end of said lever *u*, a vertical shaft *s* extending through the case of the music-box mechanism into the case of the weighing-machine, a star-wheel 30 on its upper end engaging the pin of said lever, a toothed wheel 29 on its lower end, bearings for said vertical rod *s*, and a lever mechanism comprising the arms *m n* and *o*, the adjustable spring-actuated auxiliary arm *o'*, the spring 21, and a spring-actuated tooth 27, said lever mechanism being set in motion by the hand-operated mechanism simultaneously with its movement of the shutter mechanism and a tooth 27 upon the return movement engaging the toothed wheel 29 to release the devices actuated by the rod *s* to permit the operation of the music-box mechanism, substantially as set forth.

708,800. RAILWAY-SWITCH-OPERATING MECHANISM. REUBEN CRAPPER, Jr., Akron, Ohio, assignor of one-half to John A. Black, Akron, Ohio. Filed Oct. 22, 1901. Serial No. 79,540. (No model.)

Claim.—1. In a switch-operating mechanism, the combination of a pair of levers located along the track, a pair of bell-cranks connected with and operated by said levers, a three-arm lever located adjacent to the switch-point, a link connecting one arm of the same with the switch-point, and a pair of links connecting the other arms thereof with said bell-cranks, substantially as described.

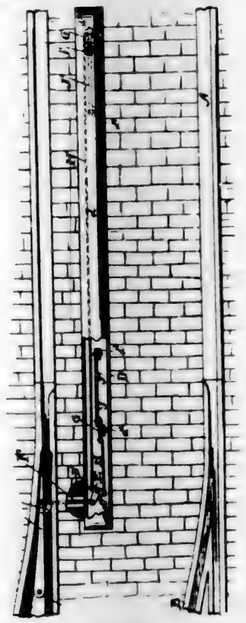

2. In a switch-operating mechanism, the combination of a switch-point, mechanism located along the track for throwing the same, a link connected with said mechanism and extending beneath the switch-point, said link being connected with the under side of the point, there being a slot through the rail-base within which such point moves, and a pivoted plate covering such slot and having a hole through which said pin projects, substantially as described.

3. In a switch-operating mechanism, the combination of a switch-point, a rail-base in which said point seats, said base having a slot through it, a plate covering said slot above the rail-base, and below the switch-point, said plate being pivoted to said rail-base adjacent to the slot therein, said plate having a slot through it adapted to overlap the slot in the rail-base, a rod shifting said switch-point beneath said rail-base said rod having a pin extending up through both said overlapping slots into the switch-point, substantially as described.

708,801. CAN-OPENER. CLERK T. COUTES, Great Cacapon, W. Va. Filed Jan. 23, 1902. Serial No. 90,782. (No model.)

Claim.—1. In combination with the shank of the can-opener having a bent point which serves as a fulcrum and pivot, a puncturing device and a cutting device independently movable longitudinally on said shank in order that the said puncturing device may be set at any desired distance from the said point and the said cutting device afterward moved into the hole or slot made by said puncturing device, for the purpose of continuing the said slot in a circular path substantially as set forth.

2. A can-opener shank B provided with a handle A, the bent point C and a forward shoulder or stock *b'* in combination with an arrow-head-form puncturing-blade D having a point *d'* and edges *d³ d³* and a cutting-disk E, both the said blade and the said disk being loosely sleeved on the said shank, permitting them to be independently adjusted longitudinally of the same or to turn around it substantially as and for the purpose described.

708,802. HARROW-DISK SHARPENER. AUGUSTUS R. DURBER, Evansville, Wis. Filed Feb. 10, 1902. Serial No. 93,307. (No model.)

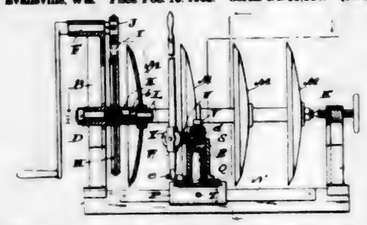

Claim.—1. A harrow-disk sharpener comprising a frame, means for chucking and rotating a shaft with a series of harrow-disks thereon between standards of the frame, a slide straddling a longitudinal frame-beam in hook connection therewith, a plate guided on the slide in a direction transversely of said frame, means for regulating adjustment of the plate, a post in swivel connection with said plate, a sleeve on the post, a cutting-tool having a shank engaging a vertical post-slot and sleeve-notches, a set-screw in the upper end of said post opposing the tool-shank, a hand-lever for which the aforesaid plate is provided with a step, and an anti-friction-roller carried by the lever opposite the cutting-tool.

2. A harrow-disk sharpener comprising a frame, means for chucking and rotating a shaft with a series of harrow-disks thereon between frame-standards, a slide straddling a longitudinal frame-beam in hook connection therewith, a plate guided on the slide in a direction transversely of said frame, an adjusting-screw having a journal end in said slide and its threaded portion engaging an ear of the plate, a post in swivel connection with the aforesaid plate, a sleeve on the post, a cutting-tool having a shank engaging a vertical post-slot and sleeve-notches, a set-screw in the upper end of said post opposing the tool-shank, a hand-lever for which the aforesaid plate is provided with a step, and an antifriction-roller carried by the lever opposite the cutting-tool.

708,803. DYNAMO AND MAGNETO-ELECTRIC MACHINE. NATHAN H. EDGERTON, Philadelphia, Pa. Filed Aug. 22, 1901. Serial No. 72,866. (No model.)

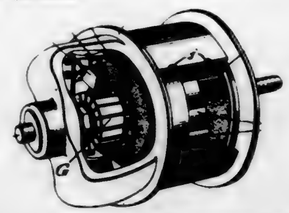

Claim.—1. In an electric machine, the combination of an armature, an annular frame, spacing devices secured to the inner periphery thereof at diametrically opposite points and having beveled edges which contact with the ends of the curved magnet-strips, the latter being retained in position by their contact with said spacing devices, said strips being concentric with and within the plane of rotation of the armature.

2. In an electric machine, the combination of an armature, an annular frame, spacing devices secured to the inner periphery of said frame at diametrically opposite points, and having beveled edges which contact with the ends of curved magnet-strips, the latter being retained in position by their frictional contact with said spacing devices, said strips being placed in sections concentric with and within the plane of rotation of the armature, so as to form an inductive field.

3. In an electric machine, the combination of an armature, having its windings parallel with its shaft, and an annular frame, of retaining-bars upon the inner faces of said frame upon diametrically opposite sides and having beveled edges, and curved laminated soft-iron magnets forming the field of the machine disposed within said frame with their ends abutting against the beveled edges of said retaining-bars.

4. In an electric machine, the combination of an armature, having its windings parallel with its shaft and an annular frame inclosing said armature, of retaining-bars upon the inner faces of said frame, and hav-

ing beveled edges, curved laminated soft-iron magnets forming the field of the machine with their ends abutting against the beveled edges of the said bars, and plates of diamagnetic material secured to the inner faces of said bars.

5. In an electric machine, the combination of an armature, having its windings parallel with its shaft, and an annular frame inclosing said armature, of retaining-bars on the inner face of said frame and having beveled edges, curved laminated soft-iron magnets forming the field of the machine disposed within said frame in a plane concentric with the armature and having their ends abutting against said bars, and plates of diamagnetic material secured to the inner face of said bars and overlapping the adjacent ends of said magnets.

708,804. **GRAIN OR HAY DELIVERER.** HENRY C. ESSE, Bowdle, S. D. Filed May 15, 1901. Serial No. 60,412. (No model.)

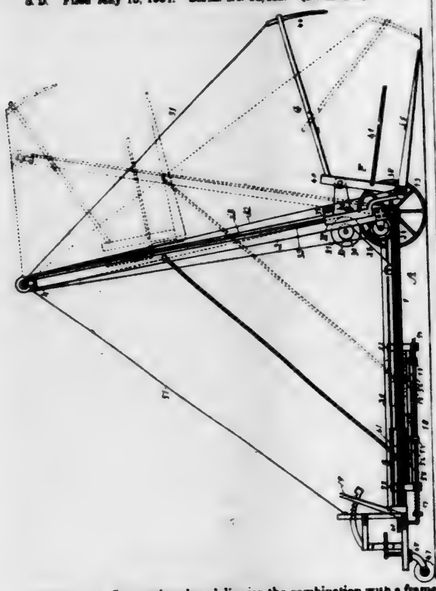

Claim.—1. In a grain or hay deliverer, the combination with a frame having a tubular longitudinal beam, a tubular transverse beam affixed thereto, uprights adjustably affixed to the said transverse beam, and a tie-beam connecting the said uprights; of an axle rotatable in boxes affixed in the said transverse beam; a toothed pinion rigidly affixed to the said axle; carriers affixed to, and longitudinally movable upon the said uprights; a fork hinged to, and movable with the said carriers; a grain or hay packer hinged to and movable with the said fork; a counter-shaft rotatable in boxes affixed to the said transverse beam; ropes or cables affixed to the said carriers, thence carried under and around sheave-wheels in the said fork, thence under and around other sheave-wheels affixed to the said carriers, thence over and around still other sheave-wheels supported by the said uprights, thence to and affixed in spools mounted upon the said counter-shaft; a toothed wheel loosely journaled upon the said counter-shaft, the teeth of which engage those of the toothed pinion affixed to the said axle; a clutch keyed upon, rotatable with and longitudinally movable upon the said counter-shaft; a spring operating to throw the said clutch into engagement with the said loosely-journaled toothed wheel, thereby locking it on the said counter-shaft; a lever operating to release, and to hold the said clutch out of engagement with the said loosely-journaled wheel; a ratchet-wheel and pawl, operating to lock the said counter-shaft to hold the said fork in its elevated position; a "wheel and axle" rotatable in boxes affixed to the said uprights; a spring affixed in and incased by the said longitudinal beam; a cable affixed in the periphery of the wheel of the said "wheel and axle" and extending to and over a sheave-wheel supported by the said tie-beam, thence to, and affixed in the said fork; and a similar cable affixed to the periphery of the axle of the said "wheel and axle" and connected with the said incased spring, all substantially as shown and for the purposes specified.

2. In a grain and hay deliverer, the combination with the frame, having a longitudinal beam and a transverse beam affixed thereto; of uprights pivotally affixed to the said transverse beam, a tie-beam connecting the said uprights; an axle rotatable in boxes affixed to the said transverse beam, carriers longitudinally movable upon the said uprights; a fork hinged to the said carriers; a packer affixed to the said fork; elevating-ropes affixed to the said carriers, connected with the said fork and wound upon spools rotated by the said axle; an operating-rope affixed to the said packer and extending to the driver's stand; a spring affixed to the said longitudinal beam; a "wheel and axle" mounted upon the said uprights; a cable extending from the said spring to the axle of the said "wheel and axle;" a similar cable extending from the wheel of the said "wheel and axle" to the said fork; and means for locking the said uprights in their forwardly-inclined position as when gathering, or in their rearwardly-inclined position as when conveying the grain or hay to the stacking-ground, substantially as shown and described.

3. In a grain and hay deliverer, the combination with the frame having a tubular longitudinal beam, a tubular transverse beam affixed thereto; an axle rotatable within the transverse beam; uprights adjustably affixed to the transverse beam; and a horizontal tie-beam affixed to said uprights; of carriers adjustably affixed to and longitudinally movable upon the said uprights; a fork having a horizontal beam to which are attached horizontal tines and guards, said fork being hinged to the said carriers and suspended in front of the said frame, said fork being carried by ropes or cables affixed to the said carriers, thence passing under and around sheave-wheels affixed in the said fork, thence extending under and around sheave-wheels affixed to the said carriers, thence over and around similar sheave-wheels supported by the said tie-beam or the said uprights, and thence to and around spools mounted upon a horizontal counter-shaft, said counter-shaft being revolved by the axle within the said tubular transverse beam, all substantially as shown and for the purposes specified.

4. In a grain and hay deliverer, the combination of the frame having a longitudinal beam, a transverse beam affixed thereto; inclinable uprights supported by the said transverse beam, a longitudinally-movable coupling mounted upon the said longitudinal beam; braces connecting the said uprights with the said coupling; a locking device for holding the said coupling, both in its forward and rearward positions; carriers mounted upon and longitudinally movable upon the said uprights; a fork hinged to the said carriers; an axle; carrying-wheels, both rotatable thereon and rotatable therewith; spools rotated by the said axle; and elevating-ropes affixed to the said carriers, connected with the said fork and wound upon the said spools, substantially as shown and for the purposes specified.

5. In a grain and hay deliverer, the combination with the frame having inclinable uprights, of an axle and carrying-wheels therefor; carriers mounted and longitudinally movable upon the said inclinable uprights; a spool rotated by the said axle; a fork hinged to the said carriers; ropes affixed to the said carriers, extending to and engaging with the said fork, thence to and wound upon the said spools, whereby when the said spools are rotated the fork will be elevated by the carriers, substantially as shown and for the purposes specified.

6. In a grain and hay deliverer, the combination with the frame mounted upon suitable wheels; of the adjustably-attached uprights, adapted to be inclined forward or rearward thereon; carriers sliding upward and downward upon the said uprights; a fork hinged to the lower end of the said carriers; a packer affixed to the said forks; cables for raising and lowering the said carriers and fork; a rope for operating the said packer, and means for winding the said cables to elevate the said fork, all substantially as shown and for the purposes specified.

7. In the frame of a grain and hay deliverer, the combination of the longitudinal beam to which the horses are attached; a transverse beam affixed thereto; inclinable uprights affixed to and supported by the said transverse beam; a tie-beam affixed to and connecting the said uprights; a longitudinally-movable coupling mounted upon the said longitudinal beam; braces connecting the said up-rights and the said movable coupling, and means for locking the said coupling and for supporting the said uprights in their inclined positions, substantially as shown and for the purposes specified.

708,805. **MOUTH-ORGAN.** ROBERT FIELD and ALBERT HARMON, Huddersfield, England. Filed Feb. 24, 1902. Serial No. 95,422. (No model.)

Claim.—1. The combination with a solo-harmonica, of an accompaniment-harmonica secured thereto, and a movable blow-tube connected to the accompaniment-harmonica and provided with a mouthpiece which slides opposite the blow-openings of the said solo-harmonica, so that both harmonicas are played simultaneously, substantially as set forth.

2. The combination, with a solo-harmonica, of two accompaniment-harmonicas secured at the rear of the solo-harmonica, and a movable blow-tube common to the two said accompaniment-harmonicas and provided with a mouthpiece which is normally arranged opposite the middle part of the said solo-harmonica and which slides opposite all its blow-openings, so that the three harmonicas are played simultaneously, substantially as set forth.

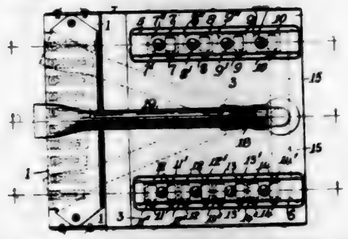

3. The combination, with a base-board provided with projecting arms, and a solo-harmonica detachably connected to the said arms; of an accompaniment-harmonica carried by the said base-board, and a movable blow-tube connected to the accompaniment-harmonica and provided with a mouthpiece which slides opposite the blow-openings of the said solo-harmonica, so that both harmonicas are played simultaneously, substantially as set forth.

4. The combination, with a solo-harmonica, of an accompaniment-harmonica secured thereto, a blow-tube provided with a mouthpiece which slides opposite the blow-openings of the said solo-harmonica so that both harmonicas are played simultaneously, and a pipe-joint of flexible material connecting the said blow-tube with the air-channel of the said accompaniment-harmonica, substantially as set forth.

5. The combination, with two harmonicas secured together, of a movable blow-tube connected to the main air-channel of one of the said harmonicas and provided with a mouthpiece which slides opposite the blow-openings of the other said harmonicas, so that both harmonicas are played simultaneously, substantially as set forth.

708,806. **KNIFE AND FORK.** GIOVANNI GARDA, Turin, Italy. Filed June 13, 1902. Serial No. 111,483. (No model.)

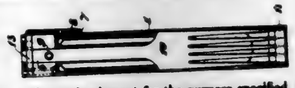

Claim.—1. In an implement for the purpose specified, the combination with the bellow handle, of a plurality of blades pivoted therein on a pivotal axis in common, the hinged locking-band adapted to fold transversely across the blades near their hinging-points, and means for securing said band in its locking position.

2. In an implement for the purpose specified, the combination with the knife, provided with a pocket 11 in its handle to receive the tines of the fork, a locking-band 13 to engage a tenon on the fork, and means for securing said band, of the folding fork, substantially as set forth.

3. The combination with the knife, having folding blades and means for locking them when closed, of the fork, comprising the bifurcated portion and the handle portion, hinged together for folding, and a locking-slide 15 on said fork for locking the hinge against flexure, substantially as set forth.

4. The combination with a knife having a plurality of blades spaced or distanced and arranged abreast, with a fork having tines spaced to enter between the said blades, whereby viands may be cut into bits at one stroke of the knife.

708,807. **DAMPER-OPERATING APPARATUS.** GEORGES GROBET and CHARLES BERNASCONI, Vallorbe, Switzerland. Filed Mar. 24, 1902. Serial No. 99,261. (No model.)

Claim.—1. In a damper-operating device for steam-boilers, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder for automatically closing the smoke-box door and arranged in tandem with the said steam-cylinder, a piston-rod common to both cylinders, means for connecting the said fire-box door to the said piston-rod and means connected to the spindle of the fire-box door and to the said steam-distributer, whereby the smoke-box door is opened every time the fire-box door is opened and closed, and means for regulating the time in which the smoke-box door is automatically closed.

2. In a damper-operating apparatus for steam-boilers, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder for automatically closing the smoke-box door and arranged in tandem with the said steam-cylinder, a piston-rod common to both cylinders, means for connecting the said fire-box door to the said piston-rod and means connected to the spindle of the fire-box door and to the said steam-distributer, whereby the smoke-box door is opened every time the fire-box door is opened and closed, and means for audibly indicating the time when the said smoke-box door is closed.

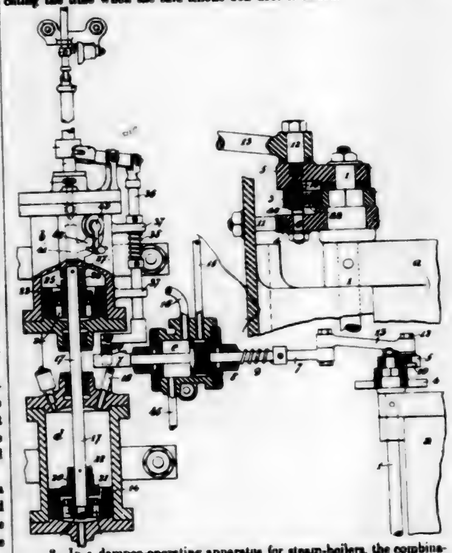

3. In a damper-operating apparatus for steam-boilers, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder for automatically closing the smoke-box door and arranged in tandem with the said steam-cylinder, a piston-rod common to both cylinders, means for connecting the said fire-box door to the said piston-rod, means connected to the spindle of the fire-box door and to the said steam-distributer, whereby the smoke-box door is opened every time the fire-box door is opened and closed, and means independent of the time consumed in closing the fire-box door, for supplying steam to the steam-cylinder by way of the distributer until the smoke-box door is fully opened.

4. In a damper-operating apparatus, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder, for automatically closing the smoke-box door and arranged in tandem with the said steam-cylinder, a piston-rod common to both cylinders, means for connecting the said fire-box door to the said piston-rod, means connected to the spindle of the fire-box door and to the said steam-distributer, whereby the smoke-box door is opened every time the fire-box door is opened and closed, means independent of the time consumed in closing the fire-box door for supplying steam to the steam-cylinder by way of the distributer until the smoke-box is fully opened, and means for automatically shutting off the steam-supply as soon as the fire-box door is fully open.

5. In a damper operating device, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder for automatically closing the smoke-box door and arranged in tandem with the said steam-cylinder, a piston-rod common to both cylinders, means for connecting the said fire-box door to the said piston-rod, means connected to the spindle of the fire-box door and to the said steam-distributer, whereby the smoke-box door is opened every time the fire-box door is opened and closed, and means for regulating the time in which the smoke-box door is automatically closed.

6. In a damper-operating device, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder arranged in tandem with said steam-cylinder, a piston-rod common to both of said cylinders, connections between said smoke-box door and said piston-rod, means controlled by the opening and closing of the fire-box door for actuating the said distributer to supply steam to the steam-cylinder to move the piston-rod to open the smoke-box door and means for regulating the time in which the smoke-box door is automatically closed by the brake-cylinder.

7. In a damper-operating device, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder arranged in tandem with said steam-cylinder, a piston-rod common to both of said cylinders, connections between said smoke-box door and said piston-rod, means controlled by the opening and closing of the fire-box door for actuating the said distributer to supply steam to the

steam-cylinder to move the rod to open the smoke-box door, means for shutting off the steam-supply when the smoke-box door is fully open, and means for regulating the time in which the smoke-box door is automatically closed by the brake-cylinder.

8. In a damper-operating device, the combination with a fire-box door and a smoke-box door, of a steam-distributer, a steam-cylinder, a brake-cylinder arranged in tandem with said steam-cylinder, a piston-rod common to both said cylinders, connections between said smoke-box door and said piston-rod, means controlled by the opening and closing of the fire-box door for actuating the said distributer to supply steam to the steam-cylinder to move the rod to open the smoke-box door, means for shutting off the steam-supply when the smoke-box door is fully open, means for audibly indicating that the smoke-box door is closed, and means for regulating the time in which the smoke-box door is automatically closed by the brake-cylinder

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708,808. APPARATUS FOR DYEING SLIVERS. CHARLES M. HARSON, Peacedale, R. I. Filed Dec. 14, 1901. Serial No. 85,917. (No model.)

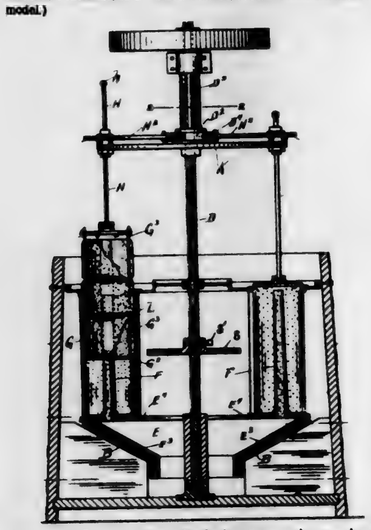

Claim.—1. In an apparatus for dyeing tops or cheeses, the combination of a tank, a shaft within the tank and means for rotating it, a series of perforated cans to contain the tops to be dyed mounted upon the shaft to substantially constitute the periphery of an extractor, and means within the tank to stop the rotation of the dye liquor after being thrown out through the perforated cans and return it to the center of the apparatus.

2. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within and near the bottom of the tank which has an open center and which does not extend to the walls of the tank, means for rotating the wheel, a series of perforated cans to contain the tops mounted upon the wheel, and rigid strips or wings under the wheel, the whole arranged so that the dye liquor will be thrown out through the perforated cans by the rotation of the wheel and return under the wheel to the center of the apparatus.

3. In an apparatus for dyeing tops or cheeses, the combination of a tank with a partial floor near its bottom having an opening in the center of the floor and between it and the walls of the tank, strips under the partial floor extending from the walls of the tank to the open center, a wheel with an open center to rotate above the partial floor, means for rotating the wheel, and a series of perforated cans to contain the tops mounted upon the wheel, the whole arranged so that the dye liquor will be thrown out through the perforated cans by the rotation of the wheel and return under the floor to the center of the apparatus.

4. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within and near the bottom of the tank and means for rotating it, a series of perforated cans to contain the tops to be dyed mounted upon the wheel and constituting substantially the periphery of an extractor, means for rotating the cans upon their centers, plates between the cans to prevent the dye liquor from passing out between them, and means for returning the dye liquor to the center of the apparatus after being thrown out through the perforated cans.

5. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within and near the bottom of the tank which has an open center and which does not extend to the walls of the tank, means for rotating the wheel, rigid strips or wings under the wheel, a series of perforated cans to contain the tops to be dyed mounted upon the wheel and constituting substantially the periphery of an extractor, means for rotating the cans about their axes, and plates between the cans to prevent the dye liquor from passing out between them.

6. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within and near the bottom of the tank with an opening in its center and between it and the walls of the tank, and constructed with a pocket or pockets extending outwardly from the open center, means for rotating the wheel, a series of perforated cans to contain the tops to be dyed mounted upon the wheel and constituting substantially the periphery of an extractor, means for rotating the cans about their axes, a hollow perforated tube in each can, with their interiors connected with the pockets of the wheel, plates between the cans to prevent the dye liquor from passing out between the cans; and means for returning the liquor to the center of the wheel.

7. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel in the tank near its bottom with an opening in its center and between it and the walls of the tank, and constructed with a pocket or pockets extending outwardly from the open center, rigid strips under the wheel to prevent any circular motion of the liquor at that point, a series of perforated cans to contain the tops to be dyed mounted upon the wheel and constituting substantially the periphery of an extractor, means for rotating the cans about their axes, a hollow perforated tube in each can with their interiors connected with the pockets of the wheel, and plates between the cans to prevent the dye liquor from passing out between them.

8. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel in the tank near its bottom with an opening in its center and between it and the walls of the tank and constructed with a pocket or pockets extending outwardly from the open center, rigid strips under the wheel to prevent any circular motion of the liquor at that point, means for rotating the wheel, a series of perforated cans to contain the tops to be dyed mounted upon the wheel and constituting substantially the periphery of an extractor, means for rotating the cans about their axes, a hollow perforated tube in each can with their interiors connected with the pockets of the wheel, and plates extending about half-way over the portion of the can next to the center of the apparatus and covering that portion of the can turning toward the center, and plates between the cans to prevent the dye liquor from passing out between them.

9. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within and near the bottom of the tank constructed with an opening in its center toward the bottom of the apparatus and with a pocket or pockets extending outwardly from its open center, means for rotating the wheel, a series of hollow perforated tubes mounted upon the wheel with their interiors connected with the pockets of the wheel, and means to return the liquor under and to the center of the wheel after being thrown out from the perforated tubes, substantially as described.

10. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within and near the bottom of the tank constructed with an opening in its center toward the bottom of the apparatus and with a pocket or pockets extending outwardly from the open center, means for rotating the wheel, a series of hollow perforated tubes mounted upon the wheel with their interiors connected with the pockets of the wheel, a series of perforated cans surrounding the tubes, means for rotating the cans and tubes upon their axes, and means for returning the liquor under and to the center of the wheel after being thrown from the perforated tubes, substantially as described.

11. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within and near the bottom of the tank constructed with an opening in its center on the side toward the bottom of the tank and with upper and lower coverings, the latter being inclined upward from the open center toward the outer circumference, means for rotating the wheel, and a series of hollow perforated tubes mounted upon the wheel with their interiors connected with the space or spaces between the coverings of the wheel, substantially as described.

12. In an apparatus for dyeing tops or cheeses, the combination of a tank, a wheel within the tank, a series of perforated cans to contain the tops mounted upon the wheel, a false bottom for the several cans, means for lifting the bottoms from the cans, means for rotating the wheel, and means within the tank to stop the rotation of the dye liquor after being thrown out through the perforated cans and return it to the center of the apparatus.

708,809. VELOCIPEDE OR THE LIKE. WALTER H. HAYES, London, England. Filed Feb. 18, 1902. Serial No. 94,584. (No model.)

Claim.—1. In a velocipede-support, the combination, with a guide-bar secured to the machine-frame, of a slidable piece mounted on the said guide-bar, two legs provided with rollers at their lower ends and having their upper ends pivoted to the said slidable piece, arms pivotally connecting the middle parts of the said legs with the lower part of the said bar, a spring for holding the said slidable piece in its raised position, and a spring which moves the said legs toward each other automatically when the said slidable piece is raised, substantially as set forth.

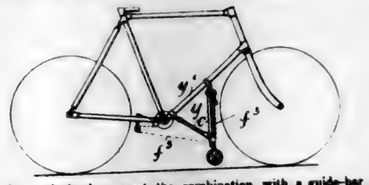

2. In a velocipede-support, the combination, with a guide-bar secured to the machine-frame and provided with a toothed rack, of a slidable piece mounted on the said guide-bar, a pawl pivoted to the said slidable piece, a laterally-movable spring carried by the said bar and holding the said pawl in or out of engagement with the said toothed rack as required, two legs provided with rollers at their lower ends and having their upper ends pivoted to the said slidable piece, arms pivotally connecting the middle parts of the said legs with the lower part of the said bar, a spring for holding the said slidable piece in its raised position, and a spring which moves the said legs toward each other automatically when the said slidable piece is raised, substantially as set forth.

3. In a velocipede-support, the combination, with a guide-bar secured to the machine-frame, a brake-ring which is moved in one direction when the crank-shaft is back-pedaled, and a roller carried by the said brake-ring; of a slidable piece mounted on the said guide-bar, two legs provided with rollers at their lower ends and having their upper ends pivoted to the said slidable piece, arms pivotally connecting the middle parts of the said legs with the lower part of the said bar, springs normally holding the said legs raised and near together, guide-rollers carried by the said bar and the machine-frame, and a flexible connection passing over all the said rollers and having its ends attached to the machine-frame and to the slidable piece respectively, whereby the said legs are moved downward and apart when the crank-shaft is back-pedaled, substantially as set forth.

708,810. HORN FOR TALKING-MACHINES. EDWIN A. HEYL, Philadelphia, Pa. Filed July 11, 1900. Renewed Aug. 4, 1902. Serial No. 118,333. (No model.)

Claim.—1. A horn of the character stated having a sound-non-producing palate of flexible material in the interior thereof.

2. A horn of the character stated having on the interior thereof a plate of reticulated material and a flexible palate of sound-non-producing material adjacent thereto.

3. A horn of the character stated having therein a plate of reticulated material, a sound-non-producing palate of flexible material, and separated wings, said palate being forward of said plate and said wings forward of said palate.

4. A horn of the character stated having therein separated blades which engage at their backs with the interior surface of the horn and extend in the longitudinal direction thereof.

5. In a horn of the character specified, a plurality of longitudinal blades, a support for one end of said blades, and a plurality of wings carried by said support.

6. A horn of the character stated having therein separated blades which engage at their backs with the interior surface of the horn in the longitudinal direction thereof, and an annulus connected with said blades and horn.

7. A horn of the character specified, provided with a reticulated plate at its small end, a flexible palate secured against said plate, wings secured within the small end portion of the horn, a cone in the rear of said wings, blades extending from said cone longitudinally along the interior face of the horn and provided with enlarged outer ends, and a sounding-plate secured within the large end of the horn and against the outer enlarged ends of said blades.

8. In a horn of the character specified, a plurality of longitudinal blades secured therein and provided with enlarged inwardly-extending ends.

9. In a horn of the character specified, a plurality of longitudinal blades, one of the ends of which is enlarged, and the other ends being deflected.

10. In a horn of the character specified, longitudinal blades extending along the inner face of the horn, one of the ends of which is enlarged, and the other ends being deflected inwardly and suitably supported.

708,811. MACHINE FOR FORCIBLY CASTING DENTAL BRIDGES. MERRILL W. HOLLINGSWORTH, Philadelphia, Pa. Filed May 19, 1902. Serial No. 107,901. (No model.)

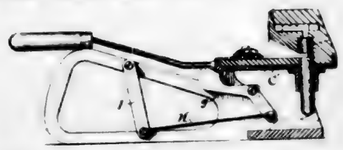

Claim.—1. In a machine for casting dental bridges, the combination, with a normally substantially horizontal melting-pan, of a mold having a casting-chamber and a normally upwardly extending passage beneath and communicating with said casting-chamber, a plunger beneath and adapted to said passage, there being an opening into said passage adjacent to said plunger and communicating with said melting-pan, whereby by the tilting of said pan the melted metal is passed into said passage, and means to force said plunger into said passage, thereby injecting the melted metal into the casting-chamber.

2. In a machine for casting dental bridges, the combination, with a normally horizontal melting-pan, of a mold having a casting-chamber and a passage communicating with said casting-chamber, a plunger adapted to said passage, there being an opening into said passage adjacent to and communicating with said melting-pan, whereby by the tilting of said pan the melted metal is passed into said opening, and means to force said plunger into said passage, thereby injecting the melted metal into the casting-chamber.

3. In a machine for casting dental bridges, the combination with the mold having a casting-chamber and a passage leading thereto, of a normally horizontal melting-pan, an opening into said passage adjacent to and communicating with said melting-pan, a plunger adapted to said passage, and means to successively tilt said pan toward said opening and force said plunger into said passage, thereby successively passing the melted metal into said passage and forcibly injecting it into the casting-chamber.

4. In a machine for casting dental bridges, the combination, with the mold having a casting-chamber and a passage leading thereto, of a normally horizontal melting-pan, an opening into said passage adjacent to said passage, and means for successively tilting said pan and then simultaneously further tilting said pan and forcing said plunger into said passage.

5. In a machine for casting dental bridges, the combination, with the mold having a casting-chamber and a passage leading thereto, of a table containing said mold and having an orifice therein coinciding with said passage, a plunger in said orifice adapted to said passage, means for simultaneously tilting said table and forcing said plunger into said passage.

6. In a machine for casting dental bridges, the combination, with the melting-table having an orifice, a plunger adapted to said orifice, a frame on which said table is pivoted, and means for tilting the table relatively to said frame, and simultaneously forcing said plunger upwardly.

7. In a machine for casting dental bridges, the combination, with the mold having a casting-chamber, a passage leading thereto and an opening into said passage, of a supporting-frame, a table having pivoted thereto a melting-pan on said table adjacent to said opening, said table having an orifice coinciding with said passage, a plunger in said orifice and extending beneath the same and adapted to said passage, a cam on said frame beneath said plunger and means for tilting said table relatively to said frame, thereby moving said plunger along said cam, whereby said cam forces said plunger into said passage.

8. In a machine for casting dental bridges, the combination, with the mold having a casting-chamber, a passage leading thereto and an opening into said passage, of a supporting-frame, a table pivoted thereto, a melting-pan on said table adjacent to said opening, said table having an orifice coinciding with said passage, a plunger in said orifice and extending beneath the same and adapted to said passage, a cam on said frame beneath said plunger, a lever pivoted to said frame and engaging said table, a second lever pivoted to said frame, and a link engaging said lever, whereby said table is tilted relatively to said frame, thereby moving said plunger along said cam and causing said plunger to be forced into said passage.

9. In a machine for casting dental bridges, the combination, with the casting-table having an orifice, a plunger adapted to project upwardly through and above said orifice and to sustain the pattern, and a separate rod adapted to engage the lower end of said plunger, whereby the plunger may be withdrawn after the formation of the mold.

708,812. MANTLE FOR INCANDESCENT GAS-LAMPS. OTTO KAUFMANN, Elmhurst, N. Y., assignor of one-half to David Ottenheimer, New York, N. Y. Filed Jan. 4, 1902. Serial No. 88,434. (No model.)

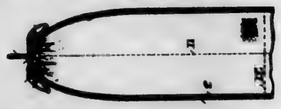

Claim.—1. A mantle for incandescent gas-lamps, comprising a plurality of hoods joined together and inserted one within the other, said hoods being composed one of finely-knitted fabric treated with a mineral and refractory substance, the other of more coarsely-knitted fabric likewise treated, as and for the purposes set forth.

2. An article of manufacture comprising a plurality of hoods joined together and inserted one within the other, the exterior hood comprising a relatively coarse and heavy knit fabric, and the interior hood a finely and loosely knit fabric, and a thread passing through folds formed in the upper ends of said hoods securing the same together.

3. An article of the class described, comprising a plurality of hoods inserted one within the other, the edge of the outer hood being overlapped upon the upper edge of the inner hood, and a thread passing through said overlapped portion and the upper edge of the inner hood, securing said hoods together.

4. An article of the class described, comprising a plurality of hoods one inserted within the other, one of said hoods comprising a knitted fabric having rows of thickened ribs and intervening rows of larger loops, the other hood being composed of a knitted fabric comprising smaller loops of thinner thread.

5. An article of the class described, comprising a plurality of hoods inserted one within the other, one of their upper edges overlapping the other, and both edges being drawn together by a securing-thread passing through both mantles.

6. An article of the class described, comprising a plurality of hoods inserted one within the other, the upper edge of the inner hood being lapped over the upper edge of the outer hood, both hoods being secured together by passing a thread through said overlap of the outer hood.

7. An article of the class described, comprising a plurality of hoods inserted one within the other, the upper edge of the interior hood overlapping the upper edge of the exterior hood, and securing-thread passed through folds or crimps in said upper edges by drawing said thread tightly.

8. An article of the class described, comprising a plurality of hoods inserted one within the other, and secured at their upper edges, and additional means for securing the hoods together in the direction of their length.

9. An article of the class described, comprising a plurality of hoods inserted one within the other and secured together at their upper edges, and a thread running longitudinally of the hood and securing them together.

10. An article of the class described, comprising a plurality of hoods inserted one within the other, and secured together at their upper edges, means for securing said hoods together in the direction of their length, and means for securing them together adjacent their lower edges.

11. An article of the class described, comprising a plurality of hoods inserted one within the other, and secured together at their upper edges, means for securing said hoods together in the direction of their length, and a thread disposed concentrically with the hoods adjacent their lower edges and securing the hoods together.

708,818. AUTOMATIC PHOTOGRAPHIC RECORDING APPARATUS. ACHILLES DE KHOTINSKY, Chicago, Ill., assignor to Thomas Jansen, Chicago, Ill. Filed Nov. 8, 1901. Serial No. 81,568. (No model.)

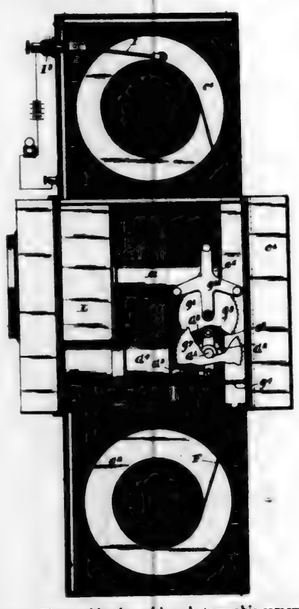

Claim.—1. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a power-driven part normally independent of the holder and means operated by said power-driven part for effecting the operations of said strip-feeding device, the shutter and the holder.

2. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, electrically-actuated devices for operating said strip-feeding and shutter mechanisms and the holder, and circuit-controlling means embracing a switch for starting one of said parts, the operation of the other parts being automatically accomplished in sequence.

3. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a power-driven part, electrically-operated actuating devices for operating said strip-feeding mechanism, the shutter mechanism and the holder, and circuit-controlling means actuated by said power-driven part for bringing into operation said actuating devices.

4. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a power-driven shaft, electrically-actuated operating devices for operating said strip-feeding mechanism, the shutter mechanism and holder, and circuit-controlling means, embracing cams on said shaft, for bringing into operation said actuating devices.

5. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a shaft with which said holder rotates, a power-driven shaft, an electromagnetic clutch for locking said power-driven shaft to the holder-shaft, electrically-operated actuating devices for said strip-feeding and clutch mechanisms and circuit-controlling means operated by said shafts for bringing into operation said clutch and said actuating devices.

6. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a shaft with which said holder rotates, a power-driven shaft, electrically-operated actuating devices for the strip-feeding and shutter mechanism, an electromagnetic clutch for locking said holder-shaft to the power-driven shaft, and circuit-controlling means, embracing cams on said shafts, for bringing into operation said clutch and actuating devices.

7. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a shaft with which said holder rotates, a power-driven shaft, electrically-operated actuating devices for the strip-feeding and shutter mechanisms, an electromagnetic clutch for locking said holder-shaft to the power-driven shaft, a group of cams which rotate with the holder-shaft, groups of cams loosely mounted on the power-driven shaft, an electromagnetic clutch for locking each of said last-mentioned groups of cams to said power-driven shaft, and circuit-controlling devices operated by said cams for bringing into operation said strip-feeding and shutter mechanisms and said clutches.

8. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a rotary holder for the papers to be recorded, a shaft with which said holder rotates, a power-driven shaft, an electromagnet-clutch for locking said power-driven shaft to the holder-shaft, electrically-actuated operating devices for said strip feeding and clutch mechanisms, circuit-controlling devices operated by said shafts for bringing into operation said actuating devices for the strip-feeding and shutter mechanisms, and means actuated by the strip-feeding mechanism for controlling the circuit through the holder-clutch.

9. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a power-driven shaft, electrically-actuated devices for operating said strip-feeding mechanism, the shutter mechanism, and holder, circuit-controlling means on said shaft for bringing into operation said actuating devices for effecting the operations to photograph one side of the paper, and circuit-controlling means actuated by the shutter mechanism for effecting a repetition of the operations of the several mechanisms to photograph the other side of the paper.

10. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, a power-driven shaft, electrically-actuated devices for operating said strip-feeding mechanism, the shutter mechanism and holder, circuit-controlling means on said shaft for bringing into operation the said actuating devices for effecting the operations to photograph one side of the paper, means actuated by the shutter mechanism for effecting a repetition of the operation of the several mechanisms to photograph the other side of the paper, and circuit-controlling means operated by said shaft for operating the holder-actuating devices to turn the holder from its second-exposure position to a horizontal position.

11. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism embracing a rotary disk provided with peripheral teeth or projections, an actuating-solenoid, a pawl-and-ratchet mechanism connected with the core of said solenoid for rotating said shutter-disk, and a stop-arm connected with said core and provided at its free end with a stop projection adapted, when the core is drawn inwardly, to rotate the cam and to be brought into the path of one of said teeth or projections.

12. The combination with a photographic camera, of means for feeding a sensitized strip step by step, and a rotative holder embracing two leaves hinged together at one margin thereof and provided with locking means at the other margin thereof, and means for automatically opening said holder at a point in its rotation.

13. The combination with a photographic camera, of a holder for the papers to be recorded comprising two leaves which rotate on a horizontal axis, a hinge joining said leaves at one side of the holder, means for detachably locking the leaves together, means for stopping said holder in two vertical positions, and in a horizontal position, and means for automatically opening said holder as it approaches its horizontal position or point of rest.

14. The combination with a photographic camera, of a holder for the papers to be recorded comprising two leaves which rotate on a horizontal axis, a hinge joining said leaves at one side of the holder, a spring applied to separate or open said leaves, means for detachably locking said leaves together, comprising a latch pivoted to one of said leaves, and a lug on the other leaf adapted for interlocking engagement with said latch, means for stopping said holder in two vertical positions and in a horizontal position, and a cam for releasing said latch when the holder reaches its horizontal position or point of rest.

15. The combination with a photographic camera, of a holder for the papers to be recorded comprising two leaves which rotate in a horizontal axis, a hinge joining said leaves at one side of the holder, a spring applied to separate or open said leaves, means for detachably locking the leaves together comprising a latch pivoted to one of said leaves, and a lug on the other leaf adapted for interlocking engagement with said latch, and a cam for releasing said latch when the holder completes its rotation to permit the holder to open under the influence of its opening-spring.

16. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a shutter mechanism, a movable holder for the papers to be recorded, electrically-actuated means for operating said strip-feeding and shutter mechanisms and the holder, circuit-controlling means embracing a switch for starting one of said parts, the operation of the other parts being automatically accomplished in sequence, and a friction-brake for arresting the movement of the holder.

17. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a movable paper-holder, shutter mechanism, electrically-operated actuating devices for operating said strip-feeding mechanism, the holder and the shutter mechanism, circuit-controlling means for bringing into operation the actuating devices for the strip-feeding, shutter and holder actuating mechanisms, and means controlling the movement of the holder, embracing a relay-magnet, and a switch in the relay-magnet circuit which is closed and opened by the movement of the strip-feeding mechanism.

18. The combination with a photographic camera, of means for feeding a sensitized strip step by step, a movable paper-holder, shutter mechanism embracing a rotative disk, electrically-operated actuating devices for operating said strip-feeding mechanism, the holder and the shutter-disk, circuit-controlling means for bringing into operation the actuating devices for effecting the apparatus to photograph one side of the paper, and means for effecting a repetition of the operation of said several mechanisms for photographing the other side of the paper comprising a relay-magnet, a switch in the relay-magnet circuit and pins carried by the disk and acting on said switch.

708,814. MOLD OPENING OR CLOSING DEVICE. WILLIAM F. KOEPPEL, Marion, Ind. Filed Dec. 2, 1901. Serial No. 84,433. (No model.)

Claim.—1. In a mold opening and closing device, a pair of mold-sections, a guide for the lateral movement thereof in opposite directions, pins extending from said molds, and an oscillatory plate with slots therein into which said pins loosely extend, said slots being so arranged that when the plate is oscillated it will cause one of said mold-sections to be moved in advance of the other.

2. In a mold opening and closing device, a pair of mold-sections, a stationary plate beneath the mold-sections with slots therein in line with each other and with the center of the mold, pins connected with the mold-sections and extending down through the slots in the stationary plate, and an oscillatory plate below the stationary plate with slots therein for receiving the lower ends of said pins, said slots being so arranged that when the plate is oscillated it will cause one of said mold-sections to be moved from the center in advance of the other.

3. In a mold opening and closing device, a pair of mold-sections, a guide for the movement thereof, a plate mounted concentric with the mold-sections when closed having a concentric slot on one side of its center and an eccentric slot opposite thereto, the inner end of the eccentric slot being diametrically opposite the inner end of the concentric slot and equidistant from the center of said plate, and means extending loosely through said slots and rigidly connected with said mold-section for moving the latter when said plate is moved.

4. In a mold opening and closing device, a pair of mold-sections, a guide for the mold-sections, a plate mounted concentric with the mold when closed having on one side of the center a slot that is concentric at its inner end and concentric at its outer end, and an eccentric slot on the other side of the center of said plate with its inner end diametrically opposite the inner end and at the same distance from the center of the plate as the concentric portion of the first-mentioned slot, means for giving said plate rotary movement, and means extending loosely through said slots and rigidly connected with said mold-sections.

5. In a mold opening and closing device, a stand having openings in it, a straight guideway, plates slidable on the stand and controlled by said guideway, mold-sections secured to said sliding plates, a plate rotatably mounted under the stand and concentric with the mold when closed, means for oscillating said plate, a pair of slots in said plate on opposite sides of the center, one slot having its inner portion concentric and its outer portion eccentric with the center of the disk, and the other slot having its inner portion correspondingly eccentric and at its outer portion

concentric with the center of said disk, and belts extending down from the sliding plate through the openings in the stand and through said slots.

708,815. STEAM-TURBINE. ALBERT KRAUS, Warkaus Jorois, Russia. Filed Nov. 19, 1901. Serial No. 83,837. (No model.)

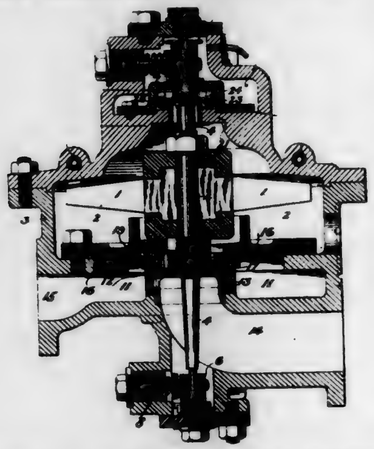

Claim.—1. In steam-jet turbines, the combination with an inclosing casing, a rotary shaft passing through the interior of the casing, bearing boxes located at each end of the casing to receive the ends of the shaft, means for supporting and permitting the bearing-boxes to have motions in directions parallel with the axis of the shaft, spring-actuated devices for normally maintaining the bearing-boxes coincident with the axis of the casing, a steam-jet turbine wheel fixed on the said shaft, a chamber in the casing within which chamber the wheel is located, jet-nozzles entering the turbine-wheel chamber to deliver the steam-jets to the vanes of the wheel, and a steam-exhaust aperture to the said wheel-chamber; of a second chamber within the casing through which also the turbine-shaft passes, a dividing-wall between the chambers, devices for preventing intercommunication of the contents of the chambers by leakage around the shaft and for permitting the elastically-held rigid shaft to have automatic lateral adjustment so that it may assume its natural axis of rotation, a centrifugal pump-disk fixed on the shaft within the second chamber, a fluid-supply passage to the centrifugal pump-disk by which fluid is pumped into the second chamber and maintained at pressure therein, and an exit-pipe from the second chamber by which the pressure fluid is conveyed for either direct utilization or for driving secondary machinery, substantially as set forth.

2. In steam-jet turbines, the combination with an inclosing casing, a rotary rigid shaft passing through the interior of the casing, bearing-boxes located at each end of the casing to receive the ends of the shaft, means for supporting the bearing-boxes and permitting them to have motions in directions parallel with the axis of the shaft, radially-arranged plungers to act laterally against the laterally-movable bearing-boxes, sleeve-ferrules in the casing to carry and guide the plungers, helical springs around the plungers to force the same against the bearing-boxes to normally maintain the latter in a resilient manner coincident with the axis of the casing, a steam-jet turbine wheel fixed on the shaft, a chamber in the casing within which chamber the wheel is located, jet-nozzles entering the turbine-wheel chamber to deliver the steam-jet to the vanes of the wheel and a steam-exhaust aperture to the said wheel-chamber; of a second chamber within the casing through which also the turbine-shaft passes, a dividing-wall between the chambers, devices for preventing intercommunication of the contents of the chambers by leakage around the shaft and for permitting the elastically-held rigid shaft to be capable of automatic lateral adjustment for assuming its natural axis of rotation, a centrifugal pump-disk fixed on the shaft within the second chamber, a fluid-supply passage to the centrifugal pump-disk by which fluid is pumped into the second chamber and maintained at pressure therein, and an exit-pipe from the second chamber by which the pressure fluid is conveyed for either direct utilization or for driving secondary machinery, substantially as set forth.

3. In steam-jet turbines, the combination with an inclosing casing, a rotary shaft passing through the interior of the casing, bearing-boxes located and supported within the casing to receive the ends of the shaft, fluid-supply passages to the portions of the casing carrying the bearing-boxes for effecting the liquid lubrication of the bearings, means for holding the bearing-boxes and permitting them to have motions in directions parallel with the axis of the shaft, spring-actuated devices for normally maintaining the bearing-boxes coincident with the axis of the casing, a steam-jet turbine wheel fixed on the said shaft, a chamber in the casing within which chamber the wheel is located, jet-nozzles entering the turbine-wheel chamber to deliver the steam-jet to the vanes of the wheel, and a steam-exhaust aperture to the said wheel-chamber; of a second chamber within the casing through which also the turbine-shaft passes, a dividing-wall between the chambers, devices for preventing intercommunication of the contents of the chambers by leakage around the shaft and for permitting the elastically-held rigid shaft being capable of automatic lateral adjustment for assuming its natural axis of rotation, a centrifugal pump-disk fixed on the shaft within the second chamber, a fluid-supply passage to the centrifugal pump-disk by which fluid is pumped into the second chamber and maintained at pressure therein, and an exit-pipe from the second chamber by which the pressure-fluid is conveyed for either direct utilization or for driving secondary machinery, substantially as set forth.

4. In steam-jet turbines, the combination with an inclosing casing, a rotary shaft in the interior of the casing, bearing-boxes located and supported within the casing to receive the ends of the shaft, means for holding the bearing-boxes and permitting them to have motions in directions parallel with the axis of the shaft, spring-actuated devices for normally maintaining the bearing-boxes coincident with the axis of the casing a steam-jet turbine wheel fixed on the rotary shaft, a chamber in the casing in which chamber the turbine wheel is located, steam-jet nozzles to deliver steam to the vanes of the turbine wheel, and a steam-exhaust aperture from the said chamber; of a second chamber within the casing through which also the turbine-shaft passes, a dividing-wall between the chambers, a disk fixed on the shaft adjacent to the dividing-wall, centrifugal pump-vanes formed on one side of the disk, and a fluid-supply pipe to the pump through which fluid is pumped into the second chamber and maintained at a pressure therein, and exit-pipe from the second chamber for the delivery of the pressure fluid for use, radial ribs formed on the side of the pump-disk which is in contact with the dividing-wall of the chambers, the ribs being calculated to act with greater force than the pump-vanes on the other side of the disk to produce an overbalance of pressure and prevent intercommunication of fluids between the first and second chambers, while the aperture in the dividing-partition through which the shaft passes is greater than the diameter of the shaft so as to permit the shaft to be self-centering, substantially as set forth

5. In steam-jet turbines, the combination with a rotary shaft, a steam-jet turbine wheel fixed on the said shaft, a chamber within which the wheel is located, jet-nozzles entering the chamber to deliver the steam-jet to the vanes of the wheel, a steam-exhaust aperture from the said chamber, a second chamber within the casing through which the turbine-shaft passes, a centrifugal pump-disk fixed on the shaft within the said second chamber, a fluid-supply passage to the centrifugal pump-disk, and an exit-pipe from the said chamber, centrifugally-acting vanes to prevent the fluid from the pressure-chamber entering the steam-chamber formed upon the upper side of the centrifugal pump-disk which is adjacent and in contact with the dividing-partition between the first and second chambers, the said upper surface of the pump-disk covering the aperture through which the turbine-shaft passes, which aperture is of larger diameter than the shaft to allow the freely-carried shaft to assume its natural axis of rotation, elastically-carried bearing-boxes in the casing to receive the ends of the shaft, supply-passages for liquid lubricant to chambers containing the bearing-boxes, a disk having radial vanes, mounted on the turbine-shaft adjacent to the partition of the compartment which contains that bearing-box upon the exterior side of a turbine-wheel compartment, and operating by centrifugal action to prevent entry of lubricating fluid from the bearing-box chamber to the turbine-wheel chamber, substantially as set forth.

708,816. AUTOMATIC ALARM. JOHN F. LAIRD, Fallriver, Wis. Filed Mar. 13, 1901. Serial No. 50,930. (No model.)

Claim.—1. In a device of the class described, the combination with a plate provided with arms adapted to engage a cord under tension, of a bell, a hammer pivoted on the plate, a weighted lever adapted to be supported normally at its outer end on the cord between said arms, and at its inner end to positively actuate the hammer when the tension of the cord is reduced thereby giving a signal on the bell.

2. In a device of the class described, the combination with a bell, of a hammer pivoted in operative relation thereto, arms over which a cord under tension engages, a lever pivoted adjacent to the bell and supported at its outer end on the cord, and normally sustained by the tension of the cord, said lever at its inner end extending in operative relation with the hammer and adapted to actuate the same when the tension of the cord is reduced, and a spring engaged on the hammer and acting to throw the same out of engagement with the bell after the signal is given.

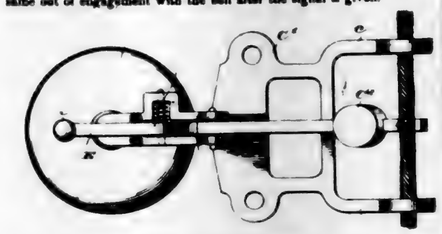

708,817. FLASK FOR TREATING WHEELS. JAMES P. S. LAWRENCE, U. S. Navy, assignor of one-half to Thomas Burd Zell, Reading Pa. Original application filed Apr. 10, 1901, Serial No. 55,123. Divided and this application filed June 5, 1901. Serial No. 63,279. (No model.)

Claim.—1. A device for case-hardening cast-steel wheels, consisting of a receptacle adapted to support the wheel, and having an open top and bottom.

2. A device for case-hardening cast-steel wheels, consisting of a receptacle adapted to support the wheel, and having an open bottom, and an annular cover for said receptacle.

3. A device for case-hardening cast-steel wheels, consisting of a receptacle adapted to support the wheel, and having an open bottom, and an annular cover for said receptacle having a depending peripheral flange surrounding the walls of the same.

4. A device for case-hardening cast-steel wheels, consisting of a casing having feet, and an interior annular flange extending inwardly from the side walls of the casing above said feet and adapted to support a wheel under treatment therein.

5. In combination with a device for case-hardening cast-steel wheels, having side walls, and an interior annular flange adapted to support a wheel under treatment therein, an annular cover therefor adapted to rest upon the upper end of said device.

6. A device for case-hardening cast-steel wheels after the same have been cast, consisting of a casing provided with an interior annular flange, adapted to support a wheel under treatment therein and a refractory lining upon the inner walls of said casing and upon the upper side of said flange.

7. A device for case-hardening cast-steel wheels having side walls, an interior annular flange adapted to support a wheel under treatment therein, and an annular cover adapted to rest upon the upper end of the flask, said interior annular flange extending inwardly to a greater extent than the annular cover.

8. A device for case-hardening cast-steel wheels after same have been cast, consisting of a casing provided with an interior annular flange adapted to support a wheel under treatment therein, a refractory lining upon the inner walls of said casing and upon the upper side of said flange, and an annular cover for said casing provided with a refractory lining on its lower face.

9. A device for case-hardening cast-steel wheels, consisting of a receptacle adapted to support the wheel having an open top and bottom, said receptacle having a refractory lining.

708,818. WINDLASS. FRANK S. MANTON, Providence, R. I. Filed Dec. 15, 1899. Serial No. 740,470. (No model.)

Claim.—1. An automatic riding or anchorage windlass equipped with surge-relieving mechanism and comprising a main shaft serving as a valve-actuating shaft, an engine, an engine-shaft geared to the main or valve-actuating shaft, a pressure-valve having means controllable by said valve-actuating shaft to vary the fluid-pressure in the engine, a wildcat or chain-wheel mounted directly and loosely on the valve-actuating shaft and capable of turning freely thereon in paying out the anchor-chain, and a clutch for making said wildcat fast directly to the valve-actuating shaft and causing the latter to directly transmit the strain to the engines and to actuate the pressure-valve.

2. An automatic riding or anchorage windlass equipped with surge-relieving mechanism and comprising a main or valve-actuating shaft, an engine, an engine-shaft geared to the first-named shaft, a pressure-valve controllable by said main or valve-actuating shaft, a wildcat or chain-wheel mounted loosely and directly on the main or valve-actuating shaft and free to rotate idly thereon in paying out the anchor-chain, a clutch for making the wildcat fast with said shaft, and a brake operatively related to the wildcat and adapted to control the latter when free from the valve-actuating shaft; said clutch and the brake being operable separately, and the clutch remaining in service with the wildcat when the latter turns the main shaft under the strain on the anchor-chain.

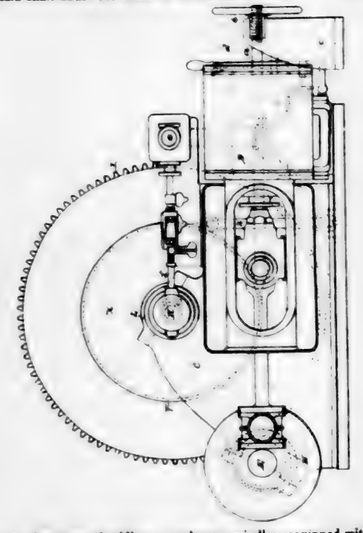

3. An automatic riding or anchorage windlass equipped with surge-relieving mechanism and comprising a main or valve-actuating shaft, an engine-shaft geared to said first-named shaft, the engines, a pressure-regulating valve controlled by said main shaft, the port and starboard wildcats mounted individually and loosely on the valve-actuating shaft and each adapted to turn idly thereon in paying out an anchor-chain, separate clutches operatively related to the main shaft and the wildcats and adapted to individually make the latter fast to said shaft, and separate brake devices in operative relation to the individual wildcats to control the latter when free from said valve-actuating shaft.

4. An automatic riding or anchoring windlass equipped with surge-relieving mechanism and comprising a main or valve-actuating shaft, the engines, an engine-shaft driven by said engines, the centrally-disposed gears on said shafts, a pressure-regulating valve controllable by said valve-actuating shaft, the port and starboard wildcats independently and loosely mounted on said valve-actuating shaft and disposed on opposite sides of the gearing, each wildcat adapted to turn freely on said shaft, clutches fast with said valve-actuated shaft and having operative relation to the individual wildcats for individually making the latter fast with said shaft, and separate brake devices operatively fitted to the separate wildcats and arranged to retard or arrest the latter when unclutched from said valve-actuating shaft.

5. An automatic riding or anchorage windlass equipped with surge-relieving mechanism and comprising a main or valve-actuating shaft, the engines, an engine-shaft having a central pinion meshing with a like gear on the main shaft, a pressure-regulating valve controllable by the valve-actuating shaft, the port and starboard anchor wildcats fitted loosely on the valve-actuating shaft on opposite sides of the gear thereon, each wildcat provided on one side with a brake-surface and on its opposite side with clutch-faces, movable brake elements operatively related to the brake-surfaces of the wildcats and arranged to separately control the same, and clutch devices mounted on the valve-actuating shaft between the gear thereon and the separate wildcats, each clutch device having movable dogs arranged to engage the clutch-faces of the wildcats and to individually make the latter fast with the valve-actuating shaft.

708,819. LIFTING DEVICE FOR COAL-WAGONS, &c. GEORGE B. MARX, New York, N. Y. Filed Feb. 6, 1902. Serial No. 92,761 (No model.)

Claim.—1. The combination with a coal-delivery or other wagon, of a lifter secured to said wagon and comprising a spring, a lever con

nected to the spring, and means on the lever to engage a load, substantially as described.

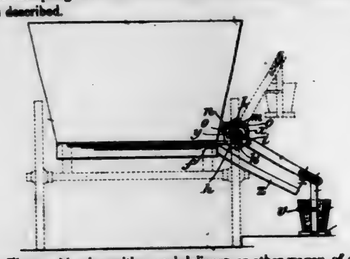

2. The combination with a coal-delivery or other wagon, of a lifter secured to said wagon and comprising a fixed bracket or support, a coiled spring one end of which is secured to said bracket, a lever to which the other end of the spring is secured, and means on the lever to engage a load, substantially as described.

3. In a lifter, the combination with a lever adapted to engage the load, and a spring in operative connection with said lever, of a ratchet-wheel secured to said lever at its fulcrum and a double-acting pawl in operative relation with said ratchet-wheel, substantially as described.

4. The combination with a coal-delivery or other wagon, of a lifter secured to said wagon and comprising a fixed bracket or support, a coiled spring one end of which is secured to said bracket, a lever to which the other end of the spring is secured, a ratchet-wheel secured to said lever at its fulcrum and a double-acting pawl in operative relation with said ratchet-wheel, substantially as described.

5. The combination with a coal-delivery or other wagon, of a lifter detachably secured to said wagon and consisting of a fixed bracket or support, a coiled spring at each end of said bracket the inner end of each of said springs being secured to the same, housings for said springs loosely mounted on said brackets and to which the outer ends of said springs are attached, levers rigidly secured to said housings, means on the levers to engage a load, a ratchet-wheel secured to each of said levers at the fulcrum thereof, and a double-acting pawl in operative relation with each of said ratchet-wheels.

708,820. **DRAWER FOR FURNITURE, &c.** CORNELIUS MAYER, Trenton, N. J. Filed Oct. 9, 1901. Serial No. 78,069. (No model.)

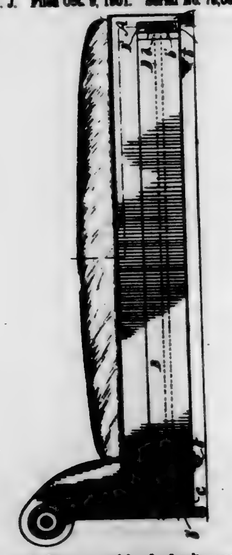

Claim.—1. In drawer provision for furniture and similar structures, the combination with a drawer and parts forming its recess, of rollers *b'*, located on said drawer contiguous to the front thereof; parallel side rails located in said drawer-recess, having end inclines over which said rollers ride for effecting the raising and lowering of the drawer during the movements; and an outer bottom-support connected with the drawer.

2. In drawer provision for furniture and similar structures, the combination with a drawer and parts forming its recess; of notched parallel side rails located on the parts forming the recess of said drawer; and sprocket-wheels located upon the drawer and provided with teeth correspondingly engaging the said rails, rollers *b'*, mounted on said drawer, contiguous to the front thereof; the parallel side rails having end inclines over which said rollers ride; and an outer bottom-support connected with said drawer.

3. In drawer provision for furniture and similar structures, the combination with a drawer and parts forming its recess; of notched parallel rails secured within the latter, at the sides thereof; a shaft revolubly extending through the drawer sides and having sprocket-wheels secured thereon; the teeth of which correspondingly engage the rail-notches; rollers *b'*, mounted on the drawer sides, contiguous to the front thereof; the rails having end inclines over which the rollers ride to effect the raising and lowering movements of the drawer with the shaft as a shifting fulcrum; and an outer bottom-support connected with said drawer.

4. In drawer provision for furniture and similar structures, the combination of a drawer, and parts forming its recess, with both front and rear drawer-openings, and an interchangeable section adapted to close either opening, and means for detachably securing said section in position.

5. In drawer provision for furniture and similar structures, the combination of a drawer, and parts forming its recess with both front and rear drawer-openings and including front and rear frame-ledges with dowel-recesses, and notched parts, and an interchangeable section A', having dowels located on the upper edge thereof, and pivoted dogs, mounted on the inner faces of said sections, the latter for engaging the notched parts.

708,821. **TYPE-WRITING MACHINE.** SIDNEY L. W. MERLIN, Paris, France. Filed July 26, 1900. Renewed Aug. 6, 1902. Serial No. 118,653. (No model.)

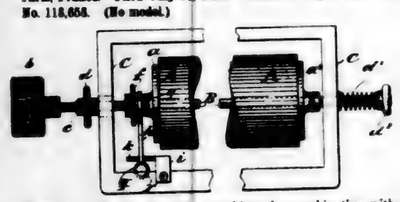

Claim.—1. In a type-writing machine, the combination with the frame, and the platen-roller, its boss, and its spindle mounted rotatively in said frame, of an arm mounted on and adapted to swing about said boss, stops to limit the swing of said arm, and means for clamping said arm to the platen-roller, substantially as set forth.

2. In a type-writing machine, the combination with the frame C, the spindle B mounted rotatably therein, the cylinder A, mounted on said spindle and provided with a screw *e*, and the boss of said cylinder, of the clamp-nut *f* on said screw, the arm *h*, hung on the boss of the cylinder and adapted to be clamped fast thereto by the nut *f*, the bracket *i k*, and the screw *q* in said arm *h*, substantially as and for the purpose set forth.

3. In a type-writing machine, the combination with the frame C, and the platen-roller A, mounted rotatively therein and slidable longitudinally, of means for moving the said roller endwise with precision, and means for limiting the extent of its rotation for spacing purposes, said means comprising an arm mounted to swing about the axis of the roller A, means for clamping it fast to the roller, and means for limiting the extent of its movement when so clamped fast, substantially as set forth.

4. In a type-writing machine, the combination with the frame C, the spindle B, mounted slidably and rotatively therein, the platen-roller A fixed on said spindle, and means for shifting said roller endwise in the frame, of the arm *h*, adapted to swing about the axis of the platen-roller, the nut for clamping said arm to the roller, the screw *q* in said arm, and stops for limiting the extent of swing of said arm when clamped to the roller, substantially as set forth.

708,822. **GROCER'S MIX.** ALEXANDER H. MILLER and FRANK A. ENGLAND, Philadelphia, Pa. Filed Jan. 6, 1902. Serial No. 88,543. (No model.)

Claim.—1. The combination of a bin having a counterbalanced front, with a bin-chamber and straps or links each pivoted at one end to the sides of the chamber and at the other end to the front of the base of the bin so that said links lie in a plane in front of the center of gravity of the bin, said straps or links constituting the sole means of support for the bin in said bin-chamber.

2. In combination, a bin having a counterbalanced front and flat base, a bin-chamber, the floor whereof is located parallel with but below the flat base of the bin, and two links or straps each pivoted at the upper end to a side of the bin-chamber and at the lower end to the base of the bin adjacent to the counterbalanced front, said straps or links constituting the sole means for supporting the bin within the bin-chamber and above the floor of said bin-chamber, and said straps or links arranged in a plane substantially through the center of gravity of the bin, when said bin is tilted in said chamber.

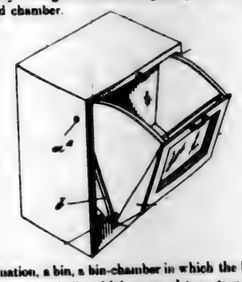

3. In combination, a bin, a bin-chamber in which the bin may swing or from which it may be wholly withdrawn and two straps or links constituting the sole means of support and connection between the bin and bin-chamber, said links swinging at their upper ends upon pivots projecting from the sides of the bin-chamber, and said bin swinging in pivots at the lower ends of said links, and both sets of pivots arranged normally in a plane in front of the center of gravity of the bin, when said bin is in its chamber.

708,823. **PROCESS OF PREPARING AND TREATING RUBBER-COATED MATERIALS.** JOHANN MIESER, Pinsterita, Germany, assignor to Oxylin-Werke Actien-Gesellschaft, Pinsterita, near Wittenberg, Germany. Filed Nov. 27, 1901. Serial No. 83,915. (No specimens.)

Claim.—1. The process herein described of preparing or treating rubber-coated materials in order to give the coating the properties described, which consists in passing the said material through a bath of heated heavy hydrocarbon and subsequently allowing the material to dry.

2. The process of preparing or treating rubber-coated materials, which consists in first coating a textile or other material with a mixture of india-rubber, loading and coloring substances and heavy hydrocarbon, subsequently drying and vulcanizing such coating on the said material, passing the latter through a bath of heated heavy hydrocarbon, and again allowing it to dry, substantially as and for the purposes described.

3. The rubber-coated material treated in a bath of heated heavy hydrocarbon and subsequently allowed to dry, substantially as and for the purpose described.

708,824. **OVERSEAMING ATTACHMENT FOR SEWING-MACHINES.** JESU C. MOORE, Brooklyn, N. Y. Filed Aug. 23, 1901. Serial No. 73,079. (No model.)

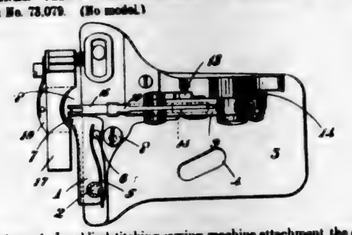

Claim.—1. In a blindstitching sewing-machine attachment, the combination of a base-plate adapted to be attached to a sewing-machine, a member movably mounted on the base-plate, means connected with said member and adapted to be operated by engagement with a reciprocating part of the sewing-machine to actuate said member to move the fabric being sewed out of the path of the needle for the formation of an overedge-stitch, and an adjustable spring-pressed guide mounted in proximity to the base-plate and forming a stop in proximity to the path of the needle, against which stop the outer surface of the folded edge of the fabric bears when the fabric has returned into the path of the needle for the formation of a blind stitch, and an adjustable stop against which the spring-pressed guide is adapted normally to bear and by which the normal position of said guide can be adjusted.

2. In a blindstitching sewing-machine attachment, the combination of a base-plate adapted to be attached to a sewing-machine, a member movably mounted on the base-plate, means connected with said member and adapted to be operated by engagement with a reciprocating part of the sewing-machine to actuate said member to move the fabric being sewed out of the path of the needle for the formation of an overedge-stitch, and a guide adjustably mounted in proximity to the base-plate, said guide being in the form of a bent metallic plate having the plane of the greater part of one portion parallel to and at a short distance from the plane of the front edge of the attachment along which the fabric is fed and the plane of the other portion parallel to the bed-plate of the sewing-machine, the former portion having a projection in close proximity to the path of the needle so as to form a stop, against which the outer surface of the folded edge of the fabric bears when the fabric has returned into the path of the needle for the formation of a blind stitch.

3. In a blindstitching sewing-machine attachment, the combination of a base-plate adapted to be attached to a sewing-machine, a member movably mounted on the base-plate, means connected with said member and adapted to be operated by engagement with a reciprocating part of the sewing-machine to actuate said member to move the fabric being sewed out of the path of the needle for the formation of an overedge-stitch, and a guide adjustably mounted in proximity to the base-plate, said guide being in the form of a bent spring-pressed pivoted metallic plate having the plane of the greater part of one portion parallel to and at a short distance from the plane of the front edge of the attachment along which the fabric is fed and the plane of the other portion parallel to the bed-plate of the sewing-machine, the former portion having a projection in close proximity to the path of the needle so as to form a stop, against which the outer surface of the folded edge of the fabric bears when the fabric has returned into the path of the needle for the formation of a blind stitch, and an adjustable stop against which the spring-pressed plate is adapted normally to bear and by which the normal position of the said plate can be adjusted.

4. In a blindstitching, sewing-machine attachment, the combination of a base-plate adapted to be attached to a sewing-machine, a member movably mounted on the base-plate, means connected with said member and adapted to be operated by engagement with a reciprocating part of the sewing-machine to actuate said member to move the fabric being sewed out of the path of the needle for the formation of an overedge-stitch, and a guide adjustably mounted in proximity to the base-plate, said guide being in the form of a bent metallic plate 1 having the plane of the greater part of one portion parallel to and at a short distance from the plane of the front edge of the attachment along which the fabric is fed and the plane of the other portion parallel to the bed-plate of the sewing-machine, the former portion having a projection 7 in close proximity to the path of the needle so as to form a stop, against which the outer surface of the folded edge of the fabric bears when the fabric has returned into the path of the needle for the formation of a blind stitch, and an adjustable eccentric stop 8 against which the spring-pressed plate 1 is adapted normally to bear and by which the normal position of said guide can be adjusted.

708,825. **FIRE-ESCAPE.** BENJAMIN V. MURRAY, Maud, Pa. Filed Oct. 3, 1901. Serial No. 77,395. (No model.)

Claim.—1. In a fire-escape apparatus, a board secured above the window upon the interior of the room, a rope or cable secured at one end to said board, the other end of said rope or cable adapted to be normally wound upon a spool, and said spool suspended from the board, a friction-sleeve through which the rope or cable passes longitudinally, an opening formed in one side of said friction-sleeve, a lever I pivoted at one end in said opening, a recess formed in the rear face of said lever, a series of friction-rollers journaled in said recess, a series of notches formed upon the outside of the lower end of the lever, eyes formed upon each side of the friction-sleeve, a seat, a rope, each end of which after passing through the eyes is secured to said seat, the loop of said rope passing around the lever and held in position by one of the notches an opening formed in the lower end of the sleeve, a lever O pivoted at its upper end in said opening, a frictional surface formed upon the inner face of said lever and adapted to be brought in contact with the rope or cable, an eye R formed upon the sleeve, a strap or belt S adapted to be passed through said eye, automatic means for returning the friction-sleeve to the window after the weight of the person descending has been removed from the same, substantially as and for the purpose specified.

2. In a fire-escape, a suspended rope or cable, a friction-sleeve through which the rope or cable passes, an opening formed in one side of said friction-sleeve, a lever I pivoted at one end in said opening, a recess formed in the rear face of said lever, a series of friction-rollers journaled in said

rocess and adapted to be brought in contact with the rope or cable, a series of notches formed upon the outside of the lower end of the lever, eyes formed upon each side of the friction-sleeve, a seat, a rope, each end of which, after passing through the eyes, is secured to said seat, the loop of said rope passing around the lever and held in position by one of the notches, an opening formed in the lower end of the sleeve, a lever O pivoted at its upper end in said opening, a frictional surface formed upon the inner face of said lever and adapted to be brought into contact with the rope or cable, an eye R formed with the sleeve, a strap or bolt S adapted to be passed through said eye and around the body of the person descending underneath the arms, substantially as and for the purpose set forth.

708,826. **CARBURETER.** FRASER PAUL, Jr., and ALBERT F. GUNDLACH, Sorel, Canada, assignors of one-half to Walter Tyler Ross, Montreal, Canada. Filed Oct. 28, 1901. Serial No. 80,309. (No model.)

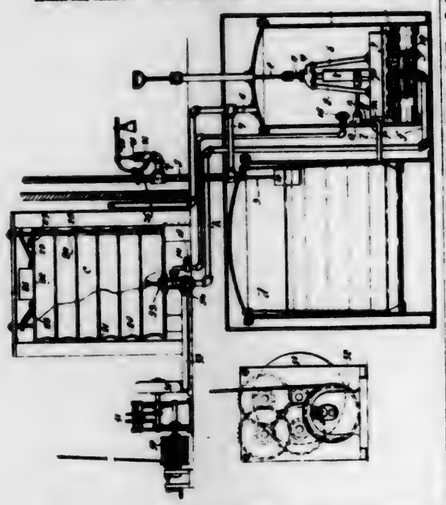

Claim.—1. A gas-generator comprising a carbureter containing a body of hydrocarbonaceous substance; a main air-supply and branch supplies leading therefrom, said branch supplies being immersed at different levels in said hydrocarbonaceous substance for supplying air thereto below the surface thereof; a float supporting said branches; and valvular means for varying said supply to flow through one or all of said branches; and means for collecting the carbonized air, for the purpose set forth.

2. A gas-generator comprising a carbureter containing a body of hydrocarbonaceous substance; a main air-supply and branch supplies leading therefrom said branch supplies being immersed at different levels in said hydrocarbonaceous substance for supplying air thereto below the surface thereof, a float supporting said branches; and valvular means for varying said supply to flow through one or all of said branches; means for collecting the carburized air, and means for varying the density of said carburized air, for the purpose set forth.

3. A carbureter comprising a tank containing a body of carburizing liquid; a pipe projecting upwardly through said carburizing liquid for conducting the fluid to be carburized; a tubular cap fitting loosely over said pipe; and a float supporting said cap with its lower end a short distance below the surface of said liquid; substantially as described and for the purpose set forth.

4. A carbureter comprising a tank containing a body of carburizing liquid; a pipe projecting upwardly through said carburizing liquid for conducting the fluid to be carburized; a tubular cap fitting loosely over said pipe; a float supporting said cap with its lower end a short distance below the surface of said liquid; and a perforated flared plate depending from and extending around the periphery of the under side of said float with its lower edge as low as the lower edge of said cap, substantially as described and for the purpose set forth.

5. A carbureter comprising a tank containing a body of carburizing liquid; a pipe projecting upwardly through said carburizing liquid for conducting the fluid to be carburized; a tubular cap fitting loosely over said pipe; a float supporting said cap with its lower end a short distance below the surface of said liquid; and a perforated flared plate depending from and extending around the periphery of the under side of said float with its lower edge as low as the lower edge of said cap; a fluid-distributer located below the level of the lower end of said cap; a fluid-conductor communicating at its upper end with the interior of said cap, and at its other end with said distributer; and a valve controlling the communication between the upper end of said conductor and the interior of said cap, substantially as described and for the purpose set forth.

6. A carbureter comprising a tank containing a body of carburizing liquid; a pipe projecting upwardly through said carburizing liquid for conducting the fluid to be carburized; a tubular cap fitting loosely over said pipe; a float supporting said cap with its lower end a short distance below the surface of said liquid; and a perforated flared plate depending from and extending around the periphery of the under side of said float with its lower edge as low as the lower edge of said cap; a branch pipe leading from first-mentioned pipe to a point within the carburetor above the level of said carburizing liquid; an atomizer upon the inner end of said branch pipe; and a valve for controlling said branch pipe, substantially as described, and for the purpose set forth.

7. A carbureter comprising a tank containing a body of carburizing liquid; a pipe projecting upwardly through said carburizing liquid for conducting the fluid to be carburized; a tubular cap fitting loosely over said pipe; a float supporting said cap with its lower end a short distance below the surface of said liquid; and a perforated flared plate depending from and extending around the periphery of the under side of said float with its lower edge as low as the lower edge of said cap; a fluid-distributer located below the level of the lower end of said cap; a fluid-conductor communicating at its upper end with the interior of said cap, and at its other end with said distributer; and a valve controlling the communication between the upper end of said conductor and the interior of said cap; and a valve-operating device extending from the outside of said carbureter to the inside thereof and adapted to be moved into engagement with said last-mentioned valves, substantially as described, and for the purpose set forth.

8. A gas-generating plant comprising a carbureter; a tank containing a hydrocarbonaceous fluid; a pipe leading from said tank to said carbureter; a valve controlling said pipe; a part moving with said fluid as the level thereof changes within said carbureter; means actuated by said movable part for opening and closing said valve; and a gas-exhaust from said carbureter, substantially as described and for the purpose set forth.

9. The combination with a carbureter containing a body of hydrocarbonaceous liquid means for supplying thereto the fluid to be carburized consisting of a tank having a rigid top and collapsible walls; a weight supported upon said top; a fluid-conductor leading from said tank to a point within said carbureter below the level of said hydrocarbonaceous liquid; and a gas-exhaust from said carbureter, substantially as described and for the purpose set forth.

10. The combination with a carbureter containing a body of hydrocarbonaceous liquid means for supplying thereto the fluid to be carburized consisting of a tank having a rigid top and collapsible walls; a weight supported upon said top; a fluid-conductor leading from said tank to a point within said carbureter below the level of said hydrocarbonaceous liquid; a gas-exhaust from said carbureter, a branch pipe leading from said conductor to a point within the carbureter above the level of the hydrocarbonaceous liquid therein, substantially as described and for the purpose set forth.

11. The combination with a carbureter of a tank containing a hydrocarbonaceous liquid; a pipe leading from said tank to said carbureter; a vertical pipe communicating at its lower end with said tank; a transparent elongated tubular cap upon the upper end of and communicating with said pipe; a branch pipe communicating at one end with said pipe; a blow-off valve upon the other end of said branch-pipe; a float within said tank; and an indicator-rod resting upon said float and projecting through said vertical pipe into said transparent elongated cap, substantially as described and for the purpose set forth.

12. The combination with a carbureter of a tank containing a hydrocarbonaceous liquid; a pipe leading from said tank to said carbureter; a vertical pipe communicating at its lower end with said tank; a transparent elongated tubular cap upon the upper end of and communicating with said pipe; a branch pipe communicating at one end with said pipe; a blow-off valve upon the other end of said branch pipe; a float within said tank; an indicator-rod resting upon said float and projecting through said vertical pipe into said transparent elongated cap, a residuum-pan upon the bottom of said tank, and means for removing said pan, substantially as described and for the purpose set forth.

13. The combination with a gas-generating plant of an automatic air-supplying device consisting of an air-blower, a collapsible tank, a pipe communicating at one end with the generator of said gas-generating plant, a branch pipe communicating at one end with said first-mentioned pipe and at its other end with said collapsible tank, a one-way valve controlling the communication between said branch pipe and collapsible tank, a pipe leading from said blower to said branch pipe, a one-way valve controlling said last-mentioned pipe, substantially as and for the purpose set forth.

708,827. **MOTOR MECHANISM FOR ROAD-VEHICLES.** EDWIN PERRY and FRANK BIRCH, Coventry, England. Filed June 4, 1902. Serial No. 110,158. (No model.)

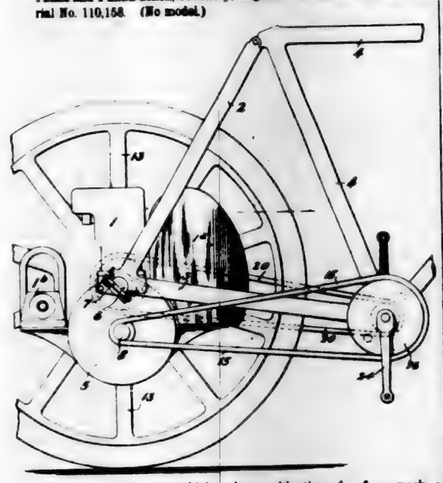

Claim.—1. In motor-vehicles, the combination of a framework, a motor-engine, trunnions projecting laterally from the casing of the engine eccentric to and parallel with the driving-shaft of same, means for rigidly fixing the trunnions to the framework of the vehicle to support the motor, a revoluble wheel-hub carried in bearings upon one of the motor-trunnions, a road-wheel felly surrounding and located in the vertical central plane of the motor-engine, concave spokes connecting the hub and the wheel-felly so that the motor-engine is partly contained within the dished wheel, and means for transmitting the motion of the engine crank-shaft to the road-wheel to rotate the latter, substantially as set forth.

2. In motor-vehicles, the combination with a framework, a motor-engine, trunnions laterally projecting from the engine-casing parallel with and eccentric to the motor-shaft, and means for rigidly fixing the first trunnion upon one side of the engine to the frame of the vehicle; of a revoluble wheel-hub mounted upon the second trunnion, a bearing-ring carried by the frame of the vehicle and encircling the wheel-hub to support the second trunnion, a wheel-felly surrounding and located in the central vertical plane of the motor-engine, concave spokes connecting the wheel-hub and felly so that the motor is partly contained within the dished wheel, and means for transferring the motion of the engine crank-shaft to the road-wheel to rotate the latter, substantially as set forth.

3. In motor-vehicles, the combination with a framework, an explosion-engine, trunnions laterally projecting from the engine-casing parallel with and eccentric to the driving-shaft of the engine, a supply-tank, a carbureter and electric ignition device carried by the motor-casing, and means for connecting the first trunnion upon one side of the motor to the frame of the vehicle; of a revoluble wheel-hub mounted upon the second trunnion, a bearing-ring carried by the frame of the vehicle and encircling the wheel-hub to support the second trunnion, a wheel-felly surrounding and located in the central vertical plane of the motor-engine concave spokes connecting the wheel-hub and felly so that the motor is partly contained within the dished wheel, and means for transferring the motion of the engine crank-shaft to the road-wheel to rotate the latter, substantially as set forth.

4. In motor-vehicles, the combination with a framework, a fork upon the framework, a motor-engine located between the fork members, a non-circular trunnion projecting laterally from the engine-casing upon one side parallel with and eccentric to the motor-shaft, and a socket in the adjacent member of the fork within which the non-circular trunnion can be rigidly fixed to support one side of the engine and hold it stationary relatively to the frame; of a trunnion projecting from the other side of the engine-casing coaxial with the first trunnion, ball-bearings upon the second trunnion, a wheel-hub mounted and revoluble upon the said ball-bearings a bearing-ring fixed to the second member of the fork-frame and surrounding the wheel-hub externally, and by which the second engine-trunnion is supported, and ball-bearings between the said ring and the wheel-hub, a flange upon the wheel-hub adjacent to the motor, concave spokes proceeding from the flange, and a wheel-felly connected to the spokes located centrally between the fork member of the frame and surrounding the motor, and means for transferring motion from the motor-shaft to the road-wheel to rotate the latter, substantially as set forth.

5. In motor-vehicles, the combination of a framework, a motor-engine, trunnions projecting laterally from the casing of the engine eccentric to and parallel with the driving-shaft of same, means for rigidly fixing the trunnions to the framework of the vehicle to support the motor, a revoluble wheel-hub carried in bearings upon one of the motor-trunnions, a road-wheel felly surrounding and located in the vertical central plane of the motor-engine, and concave spokes connecting the hub and the wheel-felly so that the motor-engine is partly contained within the dished wheel; of a counter-shaft carried in bearings upon the framework, means for transmitting the motion of the motor-shaft to the counter-shaft to drive the latter at a reduced speed and for driving the road-wheel from the counter-shaft at a still further reduced speed, a pedal-driven shaft to drive the counter-shaft and with it the road-wheel and the motor for starting the latter, and an overrunning clutch located between the pedal-shaft and the counter-shaft to permit of the latter overrunning the pedal-shaft when the motor is at work, substantially as set forth.

6. In motor-vehicles, the combination with a framework, a motor-engine having trunnions projecting laterally from its casing upon each side thereof parallel with and eccentric to the motor-shaft, means for rigidly connecting the trunnions upon one side of the engine to the frame of the vehicle to hold the engine stationary relatively to the said frame, a dished wheel revolubly mounted upon the second trunnion and partly containing the engine within its concavity, the felly of the wheel surrounding and being located in the central vertical plane of the engine, and a bearing carried by the framework and encircling the wheel-hub to support that side of the motor; of a counter-shaft carried in bearings upon the framework, sprocket-wheels on the motor-shaft and the counter-shaft, a driving-chain connecting the said sprocket-wheels to rotate the counter-shaft at a reduced speed, a second sprocket-wheel upon the counter-shaft and a sprocket-wheel upon the road-wheel hub, an overrunning clutch connecting the hub and its sprocket-wheel to allow the road-wheel hub to overrun its sprocket-wheel, and a driving-chain connecting the sprocket-wheels on the hub and counter-shaft for driving the road-wheels, substantially as set forth.

7. In motor-vehicles, the combination with a framework, a motor-engine having trunnions projecting laterally from its casing upon each side thereof parallel with and eccentric to the motor-shaft, means for rigidly connecting the trunnion upon one side of the engine to the frame of the vehicle to hold the engine stationary relatively to the said frame, a dished wheel revolubly mounted upon the second trunnion and partly containing the engine within its concavity, the felly of the wheel surrounding and being located in the central vertical plane of the engine, and a bearing carried by the framework and encircling the wheel-hub to support that side of the motor; of a counter-shaft carried in bearings upon the framework, sprocket-wheels on the motor-shaft and the counter-shaft, a driving-chain connecting the said sprocket-wheels to rotate the counter-shaft at a reduced speed, a second sprocket-wheel upon the counter-shaft and a sprocket-wheel upon the road-wheel hub, an overrunning clutch connecting the hub and its sprocket-wheel to allow the road-wheel hub to overrun its sprocket-wheel, and a driving-chain connecting the sprocket-wheels on the hub and counter-shaft for driving the road-wheel, a pedal-driven revoluble shaft for driving the counter-shaft to start the motor, and an overrunning clutch between the pedal-shaft and the counter-shaft to permit the latter overrunning the pedal-shaft when the motor is at work, substantially as set forth.

8. In motor-vehicles, the combination with a framework, a motor-engine having trunnions projecting laterally from its casing upon each side thereof parallel with and eccentric to the motor-shaft, means for rigidly connecting the trunnion upon one side of the engine to the frame of the vehicle to hold the engine stationary relatively to the said frame, a dished wheel revolubly mounted upon the second trunnion and partly containing the engine within its concavity, and a bearing carried by the framework and encircling the wheel-hub to support that side of the motor; of a tubular counter-shaft carried in bearings upon the framework, sprocket-wheels on the motor and counter shafts and a driving-chain connecting the said sprocket-wheels to rotate the counter-shaft at a reduced speed, a second sprocket-wheel upon the counter-shaft and a sprocket-wheel upon the road-wheel hub, an overrunning clutch connecting the hub and its sprocket-wheel to allow the road-wheel to overrun its sprocket, and a driving-chain connecting the hub sprocket-wheel with that of the counter-shaft to drive the road-wheel, a pedal-shaft passing through and carried in bearings within the tubular counter-shaft, and gearing connecting the pedal-shaft and the sleeve-shaft by which the latter may be driven by the pedals to start the motor, and an overrunning clutch in the gearing between the counter-shaft and the pedal-shaft to permit of the counter-shaft overrunning the pedal-shaft when the motor is at work, substantially as described.

708,828. SOUND-RECORD OF CELLULOID. ARTHUR H. PRITT, Newark, N. J., assignor to the International Phonograph and Indestructible Record Company, Limited, Liverpool, England. Filed July 30, 1900. Serial No. 25,203. (No model.)

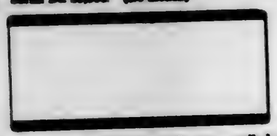

Claim.—1. As a new article of manufacture, a cylinder of celluloid having thereon an engraved sound-record.

2. As a new article of manufacture, a cylinder of celluloid having a prepared surface and a sound-record engraved thereon.

3. As a new article of manufacture, a celluloid tablet having engraved thereon a record of sound.

708,829. SWAGE SET-WORKS FOR SAWMILLS. DE WITT C. PRESCOTT, Chicago, Ill., assignor to Reuben P. Barker and Mitchell Garry, Harlowton, Wis. Filed July 2, 1901. Serial No. 66,069. (No model.)

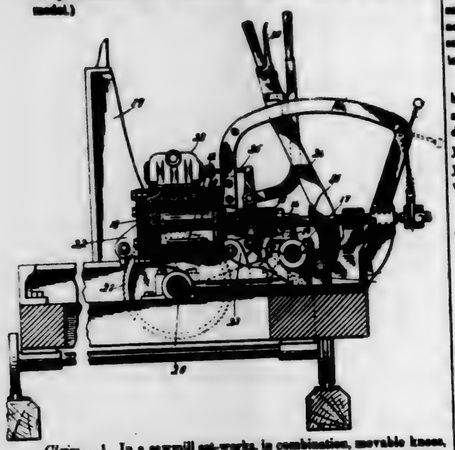

Claim.—1. In a sawmill set-works, in combination, movable knees, a motor operatively connected with the knees, a positive set-stop in the path of a movable part of such mechanism, and an adjusting-stop movable into and out of the path of a part of such mechanism within the range provided by the set-stop, for the purpose specified.

2. In a sawmill set-works, in combination, movable knees, a motor operatively connected with the knees, a positive set-stop in the path of a movable part of such mechanism, and an adjusting-stop normally out of but movable into the path of a part of such mechanism within the range provided by the set-stop, for the purpose specified.

3. In a sawmill set-works, in combination, a set-shaft, a reciprocating engine for driving the set-shaft, an adjustable stop for varying the movement of the engine, a block supported in the path of the piston of the engine and having an aperture through which the piston reciprocates, a movable plate, a slot in the block in which the plate moves and which crosses the piston-aperture, and means for moving the plate into the slot.

4. In a sawmill set-works, in combination, a set-shaft, power mechanism, pawl-and-ratchet mechanism driven by the power mechanism and driving the set-shaft, the feed throw of such power mechanism being sufficient to advance the set-shaft several teeth, an adjustable stop for varying the movement of the power mechanism through wide ranges, and an independent auxiliary stop movable into the path of an adjunct of the power mechanism and thereby limiting its movement to one tooth of the ratchet mechanism.

5. In a sawmill set-works, in combination, a set-shaft, a reciprocating engine, pawl-and-ratchet mechanism driven by the engine and driving the set-shaft, an adjustable stop for varying the setting movement of the set-shaft, an adjustable stop for varying the stroke of the engine, a movable stop, and means for moving the stop into the path of an adjunct of the engine for limiting its movement to one tooth of the ratchet mechanism.

6. In sawmill set-works, the combination with the set-shaft, of a cylinder, a piston fitted to work in said cylinder and having a pawl-and-ratchet-wheel connection with the set-shaft, an adjustable stop for limiting the movement of said piston in one direction at different points, and another movable stop adapted when in abnormal position, to so limit the movement of said piston that it will, for each single stroke, turn said ratchet-wheel an interval corresponding with one tooth, substantially as described.

708,880. ELEVATOR. FREDERICK PELWITT, Springfield, Ill. Filed Dec. 7, 1901. Serial No. 85,111. (No model.)

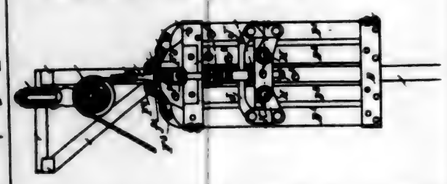

Claim.—1. In an elevator, the combination of a cage, guides on said cage, posts on which said guides travel, brackets secured in said cage, rods detachably connected with said brackets, a yoke mounted to slide on said rods, arms mounted on said rods, springs inclosing said rods and acting against said arms, levers mounted on said cage, links connecting said levers with said arms and jaws operative by said levers and adapted to engage said posts, as set forth.

2. In an elevator, the combination of a cage having vertical rails, bolts having square parts and mounted to turn in holes in said rails, levers and dogs fitting on the square parts of said bolts, washers separating said dogs from said rails, nuts retaining said levers and dogs on said bolts, a yoke in operative connection with said levers, a cable connected with said yoke, guides on said cage, and posts on which said guides travel, and with which said dogs engage, substantially as set forth.

708,881. GUARD FOR OPTICAL INSTRUMENTS. PHILIP S. REID, Lonsdale, R. I. Filed Mar. 16, 1901. Serial No. 51,498. (No model.)

Claim.—1. In an opthalmoscope, a frame having an operative portion, a guard of non-corrosive material lying against the outer face of said portion and having a portion embracing the edge of the upper part thereof, means for securing the guard to said portion and an arm secured on the rear face of the upper portion by the same means that retains the guard in position.

2. In an opthalmoscope, a frame having an operative portion, a flat thin guard of non-corrosive material lying against the outer face of said portion and having a right-angled flange embracing the edge of the upper portion of the operative part, an arm and a single means for securing both the guard and arm to said portion.

708,882. STREET-INDICATOR FOR STREET-CARS. JOHN F. RICHARDSON, Pittsburg, Pa. Filed Feb. 21, 1902. Serial No. 95,114. (No model.)

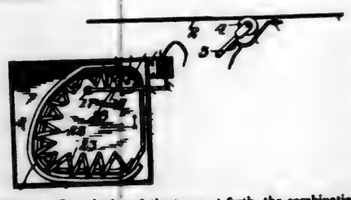

Claim.—1. In a device of the type set forth, the combination of a casing having guides arranged on its interior at the ends thereof, said guides being of an approximately U form with the lower end of the U curved upwardly, a shaft carrying sprocket-wheels mounted in the casing beneath the upper end of the U, a sprocket-chain carrying display-cards operating over said sprocket-wheels and received within said guides, said chain and cards after engaging said sprocket-wheels extending in a vertical plane between the ends of the U, said casing having an opening therein intermediate its top and bottom, and means for operating the shaft, substantially as described.

2. In a device of the type set forth, the combination of a casing having guides on its interior of an approximately U form, sprocket-wheels

mounted in the casing, with a chain engaging over the sprocket-wheels and carrying display-cards, said chain adapted to travel in a vertical plane between the ends of the U and supported in that position by said sprocket-wheels, means for operating the sprocket-wheels, the casing having an aperture therein, substantially as described.

708,883. SAFETY DEVICE FOR SHELL-FUSES. WILHELM RUDOLF, Düsseldorf, Germany. Filed Sept. 26, 1901. Serial No. 76,099. (No model.)

Claim.—1. In a safety device for fuses, the combination with a bolt-sleeve carrying a mass of combustible material and a percussion-bolt, said sleeve provided with a partition interposed between the said material and bolt, of a longitudinally-extending locking-pin mounted within said partition and adapted to engage said bolt and material to prevent the movement of said bolt until the said material is burned away.

2. In a safety device for fuses, the combination with a bolt sleeve having a mass of combustible material and a percussion-bolt mounted therein, and a partition interposed between the said combustible material and bolt and provided with a longitudinally-extending opening of two different diameters, of a locking-pin extending through the said opening, and a collar carried by the said pin and operating in that portion of the opening of larger diameter, said pin adapted to engage said bolt and material to prevent the movement of said bolt until the said material is burned away.

3. In a safety device for fuses, the combination with a bolt-sleeve carrying a mass of combustible material and a percussion-bolt, and a partition interposed between said material and bolt and provided with a longitudinally-extending opening of two different diameters, of a locking-pin extending through the said opening, a washer mounted in that portion of the opening of larger diameter, and a collar carried by said pin and adapted to engage the said washer, said pin adapted to engage said bolt and material to prevent the movement of said bolt until the said mass of combustible material is burned away.

4. In a safety device for fuses, the combination of a bolt-sleeve provided with a partition having a longitudinally-extending opening, a mass of combustible material carried by the sleeve above the said partition, a percussion-bolt carried by the sleeve below the said partition, and a locking-pin mounted in the said opening and engaging with said bolt and said material to prevent the longitudinal displacement of said bolt until the mass of combustible material is burned away.

5. In a safety device for fuses, the combination of a rotatable sleeve, a priming-bolt mounted therein, means for locking and releasing the bolt according to the adjustment of said rotatable sleeve, a percussion-bolt carried by the sleeve, a mass of combustible material carried by said sleeve, a locking-pin interposed between the said combustible material and said percussion-bolt, whereby the movement of the latter is prevented until the former is burned away, and means for igniting said mass.

6. A safety device for fuses, comprising in its construction a casing, a rotatable bolt-sleeve mounted therein, a priming-bolt carried by the sleeve, a percussion-bolt mounted in the sleeve, means for locking or releasing the priming-bolt according to the adjustment of said rotatable sleeve, and a means for locking said percussion-bolt for safety and release it for action.

7. A safety device for fuses, comprising in its construction a bolt-sleeve having a longitudinally-extending opening, a longitudinally-extending locking-pin operating through said opening, a percussion-bolt mounted in one end of said sleeve and arranged at the rear of and engaged by said pin for locking said bolt in safety position, and means carried by the other end of the bolt-sleeve and arranged at the front of the locking-pin for releasing said pin from engagement with said bolt to permit of the operation of the latter.

8. In a safety device for fuses, the combination with a percussion-bolt and a mass of combustible material, a longitudinally-extending locking-pin interposed between said material and bolt and adapted to lock the latter in a safety position until the material is burned away, and means arranged at the front of said material for igniting the same.

9. In a safety device for fuses, the combination of a percussion-bolt and a mass of combustible material at the front thereof, of a longitudinally-extending locking-pin interposed between said material and bolt and adapted to lock the latter in a safety position until the material is burned away, means arranged at the front of said material for igniting the same, a priming-bolt for igniting said means, and means for locking the said priming-bolt.

10. In a safety device for fuses, the combination with a rotatable bolt-sleeve, provided with a partition having a longitudinally-extending opening, of a percussion-bolt carried by the said sleeve below said partition, a spring carried by the sleeve and engaging the bolt, a ring of combustible material carried by the said sleeve above said partition, means for igniting said ring, and a locking device mounted in the opening of said partition and adapted to prevent the movement of said bolt until the said ring is burned away.

11. In a safety device for fuses, the combination with a sleeve provided with a partition having an opening extending therethrough and a percussion-bolt mounted in the said sleeve, of means arranged in the said opening and engaging the bolt for preventing longitudinal displacement thereof, a mass of combustible material carried by the sleeve and engaged by said means and adapted when burned away to permit of the longitudinal displacement of said means and bolt, and means carried by said sleeve for igniting the mass of combustible material.

12. In a safety device for fuses, a casing, a bolt-sleeve carried thereby and provided with a partition having an opening therethrough, a percussion-bolt mounted in the said sleeve at the rear of said partition, a combustible mass carried by the said sleeve at the front of the partition, means carried by the sleeve for igniting the said mass, a locking device mounted in the sleeve and adapted to engage said mass and bolt to prevent longitudinal displacement of said bolt until the said mass is burned away, a spring engaging the bolt, a bridge mounted in the casing and provided with a firing-pin, and an ignition-pellet carried by the percussion-bolt and adapted to be engaged by the firing-pin when said bolt is released by the burning away of the said mass.

13. In a safety device for fuses, the combination with a percussion-bolt and a ring of combustible material mounted at the front thereof, of a locking-pin interposed between said ring and bolt and adapted to lock the latter in safety position to prevent the longitudinal displacement thereof until said ring is burned away, and means at the front of the said ring of combustible material for igniting the same.

14. In a safety device for fuses, the combination with a bolt-sleeve provided with a partition forming a front and a rear chamber, said partition having an opening extending therethrough, of a socket-piece mounted in the front chamber, a mass of combustible material carried by the socket-piece, a priming-bolt extending in the socket-piece for igniting the mass of combustible material, a percussion-bolt mounted in the rear chamber of the said sleeve, a locking-pin arranged in the opening of the partition and interposed between the mass of combustible material and said bolt, said locking-pin adapted to engage the percussion-bolt to prevent the longitudinal displacement thereof until said mass is burned away, an ignition-pellet carried by the percussion-bolt, and means for igniting the said pellet.

15. In a safety device for fuses, the combination of a bolt-sleeve, a percussion-bolt carried thereby, a priming-bolt carried thereby, a mass of combustible material arranged within the said sleeve above the said percussion-bolt and adapted to be ignited by the said priming-bolt, means for locking said priming-bolt in a safety position, a locking-pin interposed between said percussion-bolt and said mass of combustible material, said locking-pin adapted to engage the said percussion-bolt to prevent longitudinal displacement thereof until said mass of combustible material is burned away, an ignition-pellet carried by the percussion-bolt, a firing-pin adapted to engage the pellet for igniting it, and a spring interposed between the said bolt and sleeve, said spring adapted to prevent the striking and ignition of the pellet by the firing-pin until the projectile on impact causes the percussion-bolt to overcome the spring and to drive the pellet upon the firing-pin.

16. In a safety device for fuses, the combination with a bolt-sleeve, a percussion-bolt carried thereby and a locking device for said bolt to prevent the longitudinal displacement thereof, of a mass of combustible material arranged within the said sleeve and at the front of the said locking device and adapted when burned away to release the locking-pin to permit of the movement of the bolt, and means at the front of said mass of combustible material for igniting it.

17. In a safety device for fuses, a casing, a spring-pressed percussion-bolt carried thereby, a mass of combustible material arranged within the casing at the front of the percussion-bolt, means carried by the casing for igniting said mass and communicating therewith by a fuse-channel, means interposed between the mass of combustible material and the said bolt and engaging the latter to prevent the longitudinal displacement thereof until the said mass is burned away, an ignition-pellet carried by the said bolt, and means carried by the casing for igniting said pellet.

18. In a safety device for fuses, a longitudinally-extending percussion-bolt, a longitudinally-extending locking-pin arranged at the front of said bolt and adapted to engage it and prevent the longitudinal displacement thereof, and a mass of combustible material arranged at the front of the head of said pin and adapted when burned away to release the pin to permit of the displacement of the said bolt.

19. In a safety device for fuses, a percussion-bolt, a locking-pin arranged at the front of said bolt and adapted to engage it to prevent the longitudinal displacement thereof, a mass of combustible material arranged at the front of said pin and adapted when burned away to permit of the longitudinal movement of said pin and allow of longitudinal displacement of said bolt, means at the front of said mass of combustible material for suitably igniting it, and means for locking the said igniting means to safety position.

20. In combination, a casing, a rotatable bolt-sleeve mounted therein and provided with a partition having a longitudinally-extending opening, said partition dividing said bolt-sleeve into a front and a rear chamber, a socket-piece mounted in the said front chamber, a mass of combustible material carried by the socket-piece and arranged above the opening in the partition of the said sleeve, a priming-bolt carried by the socket-piece and provided with an ignition-pellet for igniting the said mass of combustible material, means carried by the casing to lock said priming-bolt to safety position, a percussion-bolt mounted in the said rear chamber of the sleeve, a locking-pin arranged in the opening of the partition between the said mass of combustible material and said bolt and adapted to prevent the longitudinal displacement of the latter until the mass of combustible material is burned away, an ignition-pellet carried by said bolt, and means carried by the casing for igniting said pellet.

21. In a safety device for fuses, the combination with a longitudinally-extending percussion-bolt, a mass of combustible material and a longitudinally-extending means interposed between the said mass and bolt to prevent the displacement of the bolt until the mass of combustible material is burned away, of an ignition-pellet, means for igniting said pellet, and an adjustable means for locking said ignition means to safety position.

708,834. AMUSEMENT OR ROUNDABOUT APPARATUS.

GEORGE W. SCHOFIELD, Brooklyn, N. Y. Filed Jan. 27, 1902. Serial No. 91,493. (No model.)

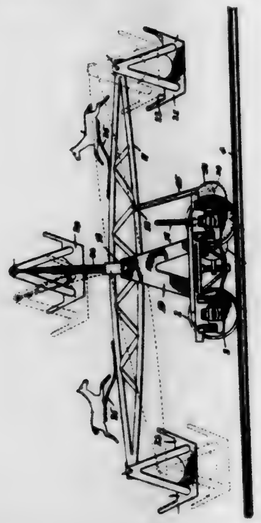

Claim.—1. An apparatus for recreation consisting in the combination of an oscillating member or beam, and one or more swings hung from said member or beam, a suitable carrier or car upon which said member or beam is mounted, and means for moving said carrier or car, substantially as and for the purpose set forth.

2. An apparatus for recreation consisting in the combination of an oscillating member or beam adapted to carry persons thereon, means for oscillating said member or beam, and a carrier or car having means for moving the same and upon which is mounted said oscillating member or beam, substantially as and for the purpose set forth.

3. An apparatus for recreation consisting in the combination of a suitable carrier or car provided with means for moving the same, an oscillating member or beam mounted upon said carrier or car and adapted to carry persons thereon, and mechanism mounted upon said carrier or car for oscillating said member or beam, substantially as and for the purpose set forth.

4. An apparatus for recreation consisting in the combination of a suitable carrier or car and means for moving the same, an oscillating member or beam mounted at about its center of length upon said carrier or car and adapted to oscillate thereon and means for oscillating it, and a swing suspended from each end of said member or beam, substantially as and for the purpose set forth.

5. An apparatus for recreation consisting in the combination of an oscillating member or beam, an upright support or frame oscillated by said member and adapted to yield in the plane of oscillation, and a swing hung upon said frame and the momentum of which causes said support or frame to move or yield in the plane of oscillation, a suitable carrier or car upon which said member or beam is mounted, and means for moving said carrier or car, substantially as and for the purpose set forth.

708,885. MERRY-GO-ROUND.

GEORGE W. SCHOFIELD, Brooklyn, N. Y. Filed Jan. 27, 1902. Serial No. 91,494. (No model.)

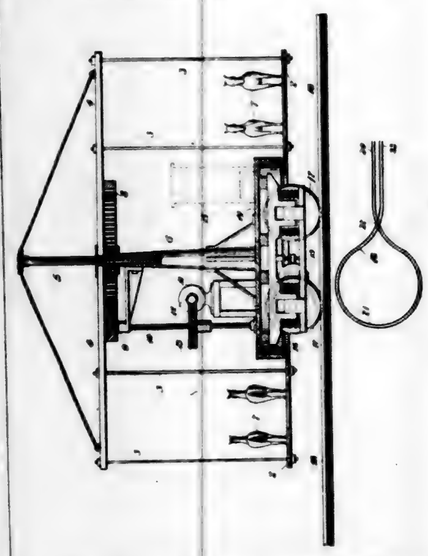

Claim.—1. The combination of a merry-go-round, rotating in a horizontal plane, a traveling carrier or vehicle upon which the merry-go-round is mounted and operated, and means for moving said carrier or vehicle while the merry-go-round is in operation, substantially as and for the purpose set forth.

2. The combination of a carrier or vehicle and means for moving the same, a merry-go-round mounted upon said carrier or vehicle and rotating thereon in a horizontal plane, and driving mechanism located upon said carrier or vehicle for actuating the merry-go-round, substantially as and for the purpose set forth.

3. The combination of a carrier or vehicle, a track or way along which said carrier or vehicle travels and means for moving the same along the track or way, a merry-go-round mounted upon said carrier or vehicle and rotating thereon in a horizontal plane, and driving mechanism located upon said carrier or vehicle for actuating the merry-go-round, substantially as and for the purpose set forth.

4. A self-propelled carrier or vehicle and a merry-go-round mounted upon the same and rotating thereon in a horizontal plane, and driving mechanism mounted upon said carrier or vehicle for actuating said merry-go-round, substantially as and for the purpose set forth.

5. A self-propelled vehicle or car and a track upon which the same runs, a merry-go-round mounted upon said vehicle or car and rotating thereon in a horizontal plane, and driving mechanism located upon the car for actuating said merry-go-round, substantially as and for the purpose set forth.

708,886. DELIVERY MECHANISM.

WALTER SCOTT, Plainfield, N. J. Filed Sept. 24, 1896. Serial No. 606,808. (No model.)

Claim.—1. The combination with a plurality of double-width presses arranged one above another, of four longitudinally-folding and transversely-cutting mechanisms arranged by pairs on different levels or planes and in the same vertical zone, a delivery for each of said mechanisms, and means whereby the cuts from the upper cutting mechanisms may be associated and delivered with the cuts from either or both of the lower folders, substantially as described.

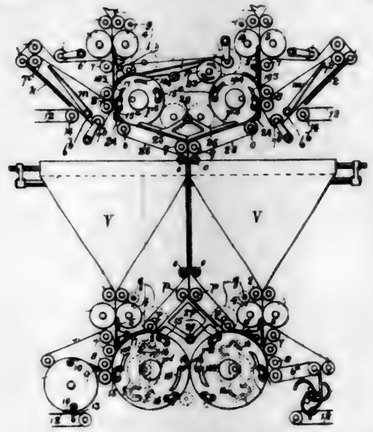

2. The combination with a plurality of double-width presses arranged one above another, of four longitudinally-folding and transversely cutting and folding mechanisms arranged by pairs on different levels and in the same vertical zone, a delivery for each of said mechanisms, and means whereby the cuts from the upper cutting mechanisms may be associated folded transversely and delivered with the cuts from either or both the lower folders, substantially as described.

708,887. BRAKE MECHANISM.

DANIEL S. SHEPHERD, Wallace, Idaho, assignor of one-half to Peter Bernier, Wallace, Idaho. Filed May 24, 1902. Serial No. 108,808. (No model.)

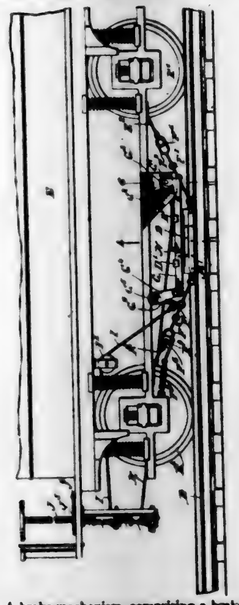

Claim.—1. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, and a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, as set forth.

2. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, and an operating mechanism connected with the said brake-beam and the said brake-shoes, to simultaneously lower the brake-beam and to move the shoes toward each other, to clamp the rail, as set forth.

3. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, and an operating mechanism connected with the said brake-beam and the said brake-shoes, to simultaneously lower the brake-beam, move the shoes toward each other, to clamp the rail, and to raise the brake-beam, to allow the shoes to open, as set forth.

4. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, a spring between the shoes to normally hold the same open, an operating device for moving the shoes toward each other, to clamp the rail, and a brake-beam-actuating device for moving the brake-beam down and up, as set forth.

5. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, a spring between the shoes to normally hold the same open, an operating device for moving the shoes toward each other, to clamp the rail, and a brake-beam-actuating device for moving the brake-beam down and up, the said devices being actuated simultaneously, as set forth.

6. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, a pair of brake-shoes on the said brake-beam, adapted to slide toward and from each other to engage a rail at opposite sides of its head, at the time the brake-beam is in a lowermost position, a spring between the shoes to normally hold the same open, an operating device for moving the shoes toward each other, to clamp the rail, a brake-beam-actuating device for moving the brake-beam down and up, and a brake-staff common to both devices, to actuate the latter simultaneously, as set forth.

7. A brake mechanism, comprising a brake-beam, means for lowering and raising the same, a pair of brake-shoes mounted to slide on the said brake-beam, toward and from each other, a cam mechanism mounted on the brake-beam and connected with the said shoes, to move the same toward and from each other, means under the control of the operator for operating the said cam device, and springs between the brake-shoes, to hold the same normally open, as set forth.

8. A brake mechanism, comprising a brake-beam adapted to be raised and lowered, pairs of brake-shoes mounted on the said brake-beam, springs for holding the brake-shoes of each pair normally apart, a cam-shaft having an operating-arm under the control of the operator, the said cam-shaft being mounted to turn in the said brake-beam, cams held on the said cam-shaft, and means actuated by the said cams and rigidly connected with the brake-shoes, so as to move the shoes of each pair toward each other on turning the cam-shaft in one direction, as set forth.

9. A brake mechanism, comprising a brake-beam carrying brake-shoes for engaging rails, guideways on the said brake-beam, bars engaging the said guideways, a shaft carrying crank-arms connected with the said bars at one end thereof, and fixed inclined guideways engaged by friction-rollers on the other ends of the said bars, as set forth.

10. A brake mechanism, comprising a brake-beam carrying brake-shoes for engaging rails, guideways on the said brake-beam, bars engaging the said guideways, a shaft carrying crank-arms connected with the said bars at one end thereof, and fixed inclined guideways engaged by friction-rollers on the other ends of the said bars, the said guideways having horizontal extensions at their lower ends, as set forth.

11. A brake mechanism, comprising a brake-beam, shoes mounted to slide thereon, a cam mechanism for operating the said shoes, mounted on the said brake-beam, a brake-staff, drums mounted on the said brake-staff, ropes engaging the said drums in such a manner that one rope winds up while the other unwinds on turning the brake-staff in one direction, and means connecting the said ropes with mechanism for raising and lowering the brake-beam and actuating the said cam device, as set forth.

708,888. FIRE-ESCAPE.

ALFONSO SPERLONGA, New York, N. Y. Filed May 20, 1902. Serial No. 108,186. (No model.)

Claim.—A fire-escape, comprising a track connected with a building, a scaffold slidably mounted upon said track, mechanism for raising and lowering said scaffold, shields mounted upon said scaffold for protect-

ing the occupants thereof from heat, and means for adjusting the positions of said shields relatively to said scaffold.

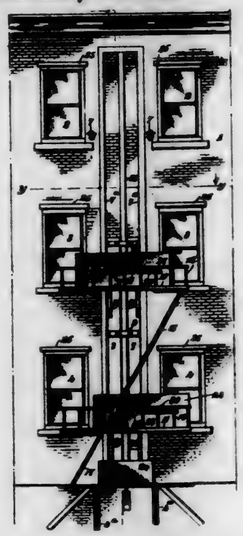

708,889. GAME APPARATUS. DANIEL SMITH, Griffin Corners, N. Y. Filed Jan. 3, 1902. Serial No. 88,263. (No model.)

Claim.—1. The combination of a gun, mounted to swing, a target-trap, and a connection between the two to operate the trap from the gun.

2. The combination of a gun, mounted to swing, a target-trap capable of throwing the target across the range of the gun, and a connection between the trap and the gun to operate the trap from the gun.

3. The combination of a target-trap, a turning gun-carriage, a gun thereon, and a connection between the trap and the gun-carriage to operate the trap upon the movement of the gun-carriage.

4. The combination of a gun, two oppositely-disposed target-traps capable of throwing a target from one to the other, and connections between the gun and the traps to operate the traps upon the movement of the gun.

5. The combination of two oppositely-disposed target-traps capable of throwing a target from one to the other, a gun mounted to swing, connections between the gun and the traps, said connections including rods with lateral projections, and parts connected with the gun alternately to engage the said projections as the gun swings.

6. The combination of a sector-like table having a target-path extending along its peripheral edge, a target-trap for projecting a target along said path, and a gun located at the center or axial portion of the table and mounted to swing so as to command the entire length of the said path on the peripheral edge of the table.

7. The combination of a sector-like table, a target-trap for projecting a target along the outer or peripheral edge thereof, a gun arranged at the outer or axial end of the table, and a connection between the gun and target to operate the target upon the movement of the gun.

8. The combination of a sector-like table, a target-trap for projecting a target along the outer or peripheral edge thereof, a gun arranged at the outer or axial end of the table, and means for returning the target and projectile from the outer or peripheral end of the table to the inner or axial end.

9. The combination of a sector-like table, an abutment arranged adjacent to but separated from the outer peripheral end thereof, a means forming a passage from the outer end of the table under the same to the inner or axial end, and devices for projecting objects over the table, said devices comprising a gun and a target-trap.

10. The combination of a sector-like table having a runway on its upper face adjacent to and following its outer or peripheral edge, means for projecting a target along said runway, and a gun arranged at the inner or axial end of the table and adapted to swing so as to throw a projectile toward any point on the peripheral or outer edge of the table.

11. The combination of a sector-like table having a runway on its upper face adjacent to and following its outer or peripheral edge, means for projecting a target along said runway, a gun arranged at the inner or axial end of the table and adapted to swing so as to throw a projectile toward any point on the peripheral or outer edge of the table, and a connection between the gun and the means for projecting the target.

708,840. PROCESS OF RENDERING ALUMINIUM CAPABLE OF BEING WELDED OR SOLDERED. CHRISTEN P. SØRENSEN, Copenhagen, Denmark. Filed Sept. 24, 1901. Serial No. 76,432. (No specimens.)

Claim.—A process for rendering aluminium capable of being soldered, which consists in first heating the metal to about 300° centigrade, then subjecting it to the action of concentrated soda-lye, and finally rinsing with cold water.

708,841. NAIL-EXTRACTOR. ELLIS H. SPERRY, Bridgeport, Conn., assignor, by mesne assignments, to the Bridgeport Hardware Manufacturing Company, Bridgeport, Conn., a Corporation of Connecticut. Filed June 3, 1902. Serial No. 110,073. (No model.)

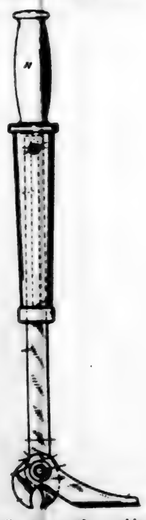

Claim.—1. In a nail-extractor the combination with a shank carrying a fixed jaw, of a movable jaw and jaw-lever formed integral from a blank of sheet metal having a central opening and folded longitudinally to place the sides parallel but separated, one end of the blank when folded forming a U-shaped jaw-lever and the plies of metal at the other end being closed together to form the movable jaw, the fixed jaw in assembling being passed through the opening.

2. In a nail-extractor the combination with a shank carrying a fixed jaw and having recesses on opposite sides terminating in arc-shaped shoulders, of a movable jaw and jaw-lever formed integral from a blank of sheet metal having a central opening and folded longitudinally to place the sides parallel but separated, one end of the blank when folded forming a U-shaped jaw-lever, the metal on opposite sides of the opening forming side pieces adapted to lie in the recesses and having curved edges corresponding with the arc-shaped shoulders and the plies of metal at the end opposite to the jaw-lever being closed together to form the movable jaw.

3. The integral jaw and jaw-lever formed from a blank of sheet metal having a central opening and folded longitudinally to place the sides parallel but separated, one end of said folded blank forming a U-shaped jaw-lever and the plies at the other end being closed together to form the jaw.

4. In a nail-extractor the combination with a shank carrying a fixed jaw, of a movable jaw and jaw-lever formed integral from a blank of sheet metal having a central opening and folded longitudinally to form a U-shaped jaw-lever, the movable jaw being formed by closing together the two plies of metal on opposite sides of the center of the blank at the end opposite to the jaw-lever, and the fixed jaw being passed through the opening.

708,842. WOOD CARPET. CARL A. STILLE and SWAN BILLINGS, Chicago, Ill. Filed Oct. 18, 1901. Serial No. 79,097. (No model.)

Claim.—1. A sectional carpet comprising a plurality of narrow strips laid edge to edge, in combination with a plurality of flexible non-elastic ties extending in a straight line extending transversely the strips and substantially centrally located between the top and bottom planes thereof, and means for permanently fixing the position of each strip relative to its ties.

2. In a sectional carpet, a plurality of sections arranged to contact at their edges and constructed with transverse channels or grooves formed in opposing pairs to inclose a part B', and with beveled lower edges as set forth, in combination with flexible non-elastic ties arranged in said channels and connected together between the contiguous sections, substantially as described.

708,848. CAR-DOOR. FRANCIS G. SUBERBIL, Detroit, Mich. Filed June 2, 1902. Serial No. 109,868. (No model.)

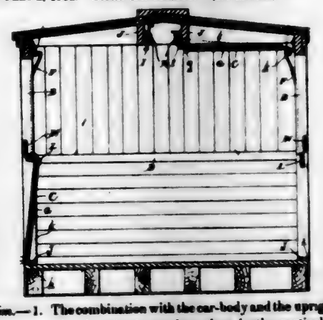

Claim.—1. The combination with the car-body and the uprights forming the doorway, of a door having end portions in the vertical plane of the uprights and forming bearings to support the door in position upon the inner faces of the uprights and a main body extending between said end portions in a plane inclined thereto and set out from the plane of said end portions (at least a material part thereof at the base) and triangular offsets continuously uniting the set-out portions of the main body with the end portions in planes substantially at right angles thereto, said offsets adapted to guide the door upon the uprights in raising it.

2. The combination with the car-body and the uprights forming the door-opening, of a vertically-raisable door having a main body the lower part of which at least is shorter than the width of the doorway and sets out into the doorway in a plane inclined thereto, vertical extensions at the ends of the main body forming bearings upon the inner faces of the uprights to support the door against outward movement, and triangular offset portions between the vertical extensions and the inclined portions of the main body forming a continuous connection between the ends of the main body and the extensions thereof.

3. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door having a main body, the lower part of which at least is shorter than the width of the doorway and sets out into the doorway at an incline to the uprights whereby the lower edge is substantially on a line with the outer faces thereof, extensions at the ends of the main body in the vertical plane of the uprights and forming bearings upon the inner faces thereof to close the door upon the inside, and triangular offsets continuously uniting the ends of the inclined part of the main body with the vertical bearings of the door in planes substantially at right angles thereto.

4. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door having a main body the lower part of which at least is shorter than the width of the doorway and sets out into the doorway at an angle to the uprights whereby the lower edge is substantially on a line with the outer faces thereof, lateral extensions at the ends of the main body in the vertical plane of the uprights and forming bearings upon the inner faces thereof which close the door grain-tight upon the inside of the doorway and triangularly-shaped offsets on the ends of the door-body at right angles thereto uniting the door-body with the lateral extensions, said offsets provided with flanges arranged to receive the ends of the door-body.

5. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door composed of a main body shorter than the width of the doorway and offset extensions secured to the ends of the main body forming bearings upon the inner faces of the uprights and maintaining the main body in an outwardly-sloping position in the doorway with its upper edge substantially in the plane of the bearings and its lower edge set out therefrom substantially the depth of the doorway between the uprights.

6. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door composed of a main body shorter than the width of the doorway and offset extensions secured to the ends of the main body and forming bearings for the door upon the inner faces of the upright at an angle to that of the main body, said main body projecting freely outwardly between said bearings into the doorway with its upper edge substantially in the plane of the bearings and its lower edge set out therefrom substantially the depth of the doorway, the offset portions of the extensions being substantially in a plane at right angles to the main body and provided with parallel flanges to receive the ends of the main body.

7. The combination with the car-body and the uprights forming the doorway of a vertically-raisable door composed of a main body of trapezoidal form the upper and lower edges being parallel to each other and shorter than the width of the doorway and the ends oppositely inclined toward each other, triangular offsets at the ends extending the body inwardly and offsets from the aforesaid offsets extending the body portion laterally and forming bearings continuous with the main body adapted to support the same in position upon the inner faces of the uprights against outward pressure and at an angle thereto whereby the main body is set out with its lower edge into the space between the uprights free to tilt in raising it.

8. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door composed of a wooden main body shorter than the width of the doorway and having oppositely-inclined ends whereby one edge is shorter than the other, and metallic extensions secured to the ends of said main body each forming two offsets one being of triangular shape and extending the main body inwardly and the other extending laterally from the aforesaid offset and forming bearings continuous with the main body and at an angle thereto adapted to support the main body upon the inner faces of the uprights in a plane inclined thereto and set out into the doorway free to be tilted in raising it.

9. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door composed of a main body shorter than the width of the doorway and with the ends oppositely inclined, (one edge being shorter than the other,) triangular offsets at the ends of the door-body and extending inwardly whereby the lower edge of the door-body is set out from the upper edge substantially to the depth of the doorway and offsets extending laterally from the aforenamed offsets and forming bearings continuous with the door-body to support the same in position grain-tight upon the inner faces of the uprights free to tilt in the doorway in raising it, the lower edge of the door-body provided with a depending flange along its rear upon which the door-body is adapted to rest and forming a continuous groove in front along the lower edge of the door-body.

10. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door composed of a main body shorter than the width of the doorway and with the ends oppositely inclined, the lower edge being shorter than the upper edge and metallic wings secured to the ends of the door-body and forming bearings upon the inner faces of the uprights, said wings formed with outset triangular offsets provided with flanges forming rabbets to receive the ends of the main body, whereby said main body is continuously united with the bearing portion of the wings in a plane outwardly inclined into the doorway free to be tilted therein in raising it.

11. The combination with the car-body and the uprights forming the doorway, of a vertically-raisable door having end portions for supporting the door upon the inner faces of the uprights, vertical slide-rods connect-

ed to the inner sides of the wall of the car adjacent to the uprights and wholly contained within the pockets formed between the frame-timbers of the wall, brackets secured at the upper corners of the door and projecting laterally into engagement with the slide-rods (the ends of said brackets provided with slots engaging with said slide-rods) and a main body to said door of trapezoidal form, shorter than the width of the doorway and outset into the doorway between the uprights upon a plane inclined thereto (at least the lower portion of said main body) and offsets connecting the outset portions of the main body with the end portions of the door at right angles thereto, said offsets adapted to guide the door laterally in raising it upon the uprights free to tilt the door to a limited degree.

12. The combination with the car-body and the uprights forming the opening, of a door in said opening adapted to slide upward upon the inner faces of the uprights and open from below, said door having an outwardly-sloping main portion extending in the doorway between the uprights and a metallic strip secured to the lower edge of the main body and having a depending flange extending along the lower edges of the main body upon the rear face thereof and upon which the door rests in its closed position.

708,844. GLASS-RINSING DEVICE. HENRY G. SWEENEY, Chicago, Ill., assignor to Frank G. Kammerer, Chicago, Ill. Filed July 13, 1901. Serial No. 68,158. (No model.)

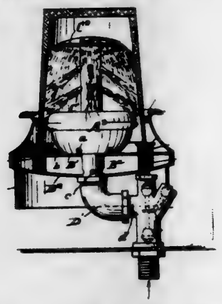

Claim.—1. A device for rinsing glasses comprising a receptacle having an upwardly-opening annular recess formed between two circular parts or walls for receiving the rim of a glass, a water-supply passage communicating with said recess, a valve for controlling the flow of water to said recess, and actuating means for said valve located in the recess in position to be engaged by the rim of the glass inserted in said recess.

2. A device for rinsing glasses comprising a receptacle having an upwardly-opening narrow annular recess formed between two circular parts or walls for receiving the rim of a glass, a water-supply pipe, a valve controlling said supply-pipe, and a yielding valve-actuating member located in said recess and adapted to be moved or actuated by the pressure thereon of the rim of a glass inserted in said recess.

3. A device for rinsing glasses comprising a receptacle provided with an annular upwardly-opening recess formed between two circular parts or walls, a water-supply passage, a discharge-passage, separate valves controlling said supply and discharge passages and a yielding valve-actuating member located in said recess adapted to be moved by contact of the edge of the glass therewith, said valve-actuating member being connected with and adapted to actuate both of said valves.

4. A device for rinsing glasses comprising a receptacle having an upwardly-opening annular recess for receiving the rim of a glass, a water-supply pipe, a valve in said supply-pipe, a spring-supported vertically-movable valve-actuating member located in said groove and one or more spring-supporting vertically-movable supports located in said recess in the same horizontal plane with said valve-actuating member.

5. A device for rinsing drinking-glasses comprising a receptacle provided with an annular, upwardly-opening recess for the edge of a glass, a water-supply passage, a valve controlling the supply of water from said supply-passage, a drain-passage communicating with said receptacle, a valve for closing said drain-passage and means operated by the pressure of the edge of the glass, when inserted within said recess, for operating both of said valves, the supply-passage valve and the drain-passage valve being connected in such manner that when one of the valves is opened the other is closed and vice versa.

6. A device for rinsing drinking-glasses comprising a receptacle having an annular upwardly-opening recess formed between two circular parts or walls to receive the edge of a glass, a stand-pipe rising centrally above said recess and provided with discharge-passages, a supply-pipe communicating with said recess and with said stand-pipe, a valve controlling the said supply-pipe and a yielding valve-actuating member located in said recess in position to be moved by the pressure of the edge of the glass thereon.

7. A device for rinsing drinking-glasses comprising a receptacle, a water-supply passage, a drainage-opening communicating with said passage, an inlet-valve for controlling said supply-passage, a valve for said drainage-opening connected with said inlet-valve, and a yielding actuating member for said valves located in the receptacle in position for engagement with the edge of a glass inserted therein.

8. A device for rinsing drinking-glasses comprising an upwardly-opening recess adapted to receive the edge of a glass, a supply-passage communicating with said recess, a downwardly-opening valve for controlling the flow of water through said supply-passage, a stem connected with said valve and provided at its upper end with a support for the glass located within said recess, and a spring applied to close said valve and hold said support in its elevated position.

9. A device for rinsing glasses comprising a receptacle provided with an upwardly-opening annular recess for receiving the rim of the glass and a central stand-pipe, a water-supply passage communicating with said recess and the stand-pipe, a valve controlling the flow of water to said recess and stand-pipe, a stem connected with said valve and extending upwardly into said recess, a support for the glass attached to said stem, and a spring applied to close said valve.

10. A device for rinsing glasses comprising a receptacle provided with an upwardly-opening annular recess for receiving the rim of a glass, a supply-passage communicating with said recess, a valve for controlling the flow of water to said recess, and a plurality of yielding supports located in position to be engaged by the rim of a glass, one of said supports being connected with and adapted to actuate said valve.

11. A device for rinsing glasses comprising a receptacle provided with an upwardly-opening annular recess for receiving the rim of a glass, a water-supply passage communicating with said annular recess, a valve for controlling the flow of water through said passage, a drainage-passage also communicating with the said recess, a valve for closing said drainage-passage, and a plurality of vertically-movable supports located in said recess in position for the engagement therewith of the rim of a glass, one of said supports being connected with and adapted to actuate both of said valves.

12. A device for rinsing glasses comprising a receptacle provided with an upwardly-opening annular groove for receiving the rim of a glass, a water-supply passage communicating with said annular groove, a downwardly-opening valve for controlling the flow of water through said passage, a vertical valve-stem which rises into said recess, a support for the glass connected with said valve-stem, a spring applied to hold the valve closed and the said support in its elevated position, a drainage-passage communicating with said receptacle and a valve for said drainage-passage which is connected with and operated by the said valve-stem.

13. A device for rinsing drinking-glasses comprising a receptacle, a water-supply passage communicating with a drainage-opening, a valve for controlling the water-supply passage, a movable valve-stem actuating said valve and rising into said groove, a spring acting on said valve-stem to hold the said valve closed, and a second valve movable with said valve-stem acting to close the drainage-opening.

14. A device for rinsing glasses comprising a receptacle having an annular recess adapted to receive the rim of a glass, a supply-passage through which water is conveyed to said annular recess, a valve controlling said supply-passage, a drainage-passage communicating with the said annular recess, valves controlling said water-supply and drainage passages, said valves being so connected that when one is opened the other is closed and vice versa, means for operating said valve embracing a movable part within the said annular recess adapted to be actuated by the pressure of the rim of the glass inserted within the said recess, and means for directing water both to the inner and outer sides of the rim of the glass when the valve of the water-supply passage is open.

15. A device for rinsing glasses comprising a receptacle, a central stand-pipe having exit-openings through which water is delivered for rinsing a glass, a water-supply passage, a valve for controlling said water-supply passage, and a downwardly-yielding support for the glass located in the receptacle in position to be engaged by the rim of a glass, said yielding support being connected with and actuating the said valve.

16. A device for rinsing glasses comprising a receptacle having a central stand-pipe provided with discharge-openings, a water-supply passage communicating with the said receptacle and with the stand-pipe, a valve in said supply-passage and a plurality of yielding supports located in the receptacle around the stand-pipe in position for contact of the rim of the glass therewith, one of said supports being connected with and adapted to actuate the valve.

17. A device for rinsing glasses comprising a water-receptacle, a stand-pipe thereon provided with discharge-openings, a water-supply pipe, a valve controlling said supply-pipe and a yielding valve-actuating member located in position for the action thereon of a glass placed over the stand-pipe.

18. A device for rinsing glasses comprising a water-receptacle, a stand-pipe, a water-supply passage delivering water to the stand-pipe, a drainage-opening communicating with the bottom of the receptacle, valves for controlling the water-supply passage and drainage-opening, and a yielding valve-actuating member located in position for contact of a glass therewith, and connected with and operating both of said valves.

19. A device for rinsing glasses comprising a water-receptacle, a stand-pipe, a water-supply passage supplying water to the stand-pipe, said water-supply passage having a drainage-inlet opening communicating with the bottom of the receptacle and a drainage-outlet opening, a valve in the inlet-passage for controlling the supply of water, a valve in the drainage-outlet opening, and a yielding valve-actuating member adapted for contact therewith of a glass, the said actuating member being connected with and adapted to actuate both of said valves.

708,845. RENDERING APPARATUS. CHARLES TURNER, Chicago Ill. Filed Apr. 7, 1902. Serial No. 101,708. (No model.)

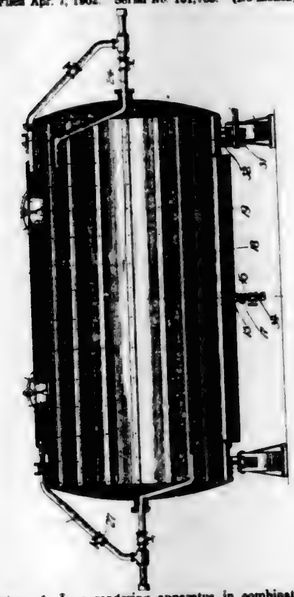

Claim.—1. In a rendering apparatus, in combination, a horizontally-disposed rotatable tank having a steam-jacket, a stationary steam-supply pipe entering the tank axially thereof through one end, an exhaust-pipe leading from the opposite end of the tank, a pipe entering the steam-jacket, a rotatable connection between the said pipe and the steam-supply pipe, means for exhausting from the steam-jacket, and a valve-closed outlet for the tank.

2. In a rendering apparatus, in combination, a horizontally-disposed rotatable tank having a steam-jacket, a stationary steam-supply pipe entering the tank axially thereof through one end and extending to near the bottom thereof, an exhaust-pipe leading axially from the opposite end of the tank and extending therein in the opposite direction from the first-mentioned pipe, valves for closing the said pipes, a valve-closed pipe leading from the side of the tank, a reticulated shield located in the tank and over the mouth of the said pipe, a rotatable sleeve on each of the steam supply and exhaust pipes, the portions of the said pipes inclosed by the said sleeves being reticulated, and a pipe leading from each sleeve to the steam-jacket.

3. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a steam-supply pipe, a pipe leading to the steam-jacket, a rotatable connection between the said pipes, and an exhaust for the jacket.

4. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a stationary pipe leading into the tank, a second stationary pipe leading therefrom, pipes entering the jacket, and a rotatable connection between each of the latter pipes and one of the stationary pipes.

5. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a stationary pipe leading into the tank, a second stationary pipe leading therefrom, valve-closed pipes entering the jacket, a rotatable connection between each of the latter pipes and one of the stationary pipes, and a valve in each of the stationary pipes between its rotatable connection and the tank.

6. In a rendering apparatus, in combination, a rotatable tank having a steam-jacket, a stationary steam-supply pipe entering the tank axially thereof through one end, a stationary exhaust-pipe leading axially from the opposite end of the tank, valves for closing the said pipes, a valve-closed outlet for the tank, a rotatable sleeve on each of the steam supply and exhaust pipes, the portions of the said pipes inclosed by the said sleeves being reticulated, and a valve-closed pipe leading from each sleeve to the steam-jacket.

708,846. FIRE-ESCAPE. HENRY VIERSEN, Grand Island, Nebr. Filed Oct. 4, 1901. Serial No. 77,573. (No model.)

Claim.—1. A fire-escape comprising a suitable pulley-block, annular brake members secured firmly to opposite sides of the block, a shaft concentric to said brake members and having a pulley disposed within the block and between said brake members, revolnble brake members fast with the opposite end portions of said shaft, centrifugal levers fulcrumed on the revolnble brake members to turn on axes that lie parallel to the planes of said brake members and adapted to be thrown outwardly to positions at right angles to said planes of said brake members, weights on said brake-levers, and shoes carried by said levers at points between the fulcra thereof and the weights thereon.

2. A fire-escape comprising a suitable pulley-block, annular brake members secured firmly to opposite sides of the pulley-block, a shaft extending through the block and said brake members and provided with a centrally-disposed pulley, revolnble brake members fast with the end portions of the shaft and each having a series of radial arms which terminate in suitable pivot-bearings, brake-levers connected to said bearings by pivots which lie parallel to the planes of the brake members and permitting said levers to extend outwardly to active positions at right angles to the revolnble members, weights on said levers, and brake-shoes actuated by the levers and adapted to engage the stationary brake members.

3. A fire-escape comprising a palley-block having a pulley and a brake mechanism to retard the pulley, a plate secured to the block below the pulley and provided with spaced eyes affording friction-surfaces, a flexible cable or member fitted around the pulley and passing through the eyes of said plate, and a pair of friction-rollers disposed between the plate and the pulley and having individual engagement with the strands of the cable or member, said rollers being grouped closer together than the space between the eyes of the plate and serving to draw the strands of the ca-

ble or member inwardly toward each other at a point between the pulley and the plate, whereby the cable is caused to hug the pulley and to have frictional engagement with the rollers and the friction-surfaces of the plate.

4. A fire-escape, comprising a block provided with a revolvable pulley and with a stationary guide-plate having friction-holes, relatively stationary brake members of annular form secured upon opposite portions of said block, revolvable members connected with said pulley and actuated thereby, longitudinal members connected with said revolvable members and free to swing when subjected to centrifugal force, weights and brake-shoes mounted upon said longitudinal members, so disposed that said weights are free to force said brake-shoes into contact with said stationary brake members and also to exert leverage upon said brake-shoes, a pair of rollers loosely mounted adjacent to said holes in said guide-plate, and a flexible cord engaging said holes, said rollers and said pulley, substantially as specified.

708,847. **AIR COOLING AND PURIFYING APPARATUS.** CARL W. VOLLMANN, Montreal, Canada. Filed Apr. 13, 1901. Serial No. 55,733. (No model.)

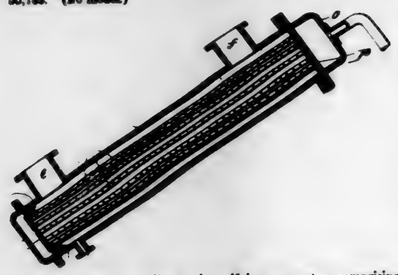

Claim.—1. An air cooling and purifying apparatus, comprising a closed chamber consisting of a cylinder having one end closed by a cap, and its other end closed by a hollow head; a series of perforated pipes within said cylinder and extending longitudinally thereof, and having one end of each closed and the other ends thereof rigidly secured to and communicating with the interior of said head, means for forcing brine into said hollow head; a brine-exhaust port in said closed cylinder, and an air supply to and exhaust from said cylinder, substantially as described and for the purpose set forth.

2. An air cooling and purifying apparatus consisting of a closed chamber consisting of an inclined cylinder having one end closed by a cap, and its other end closed by a hollow head; a series of perforated pipes within said cylinder and extending longitudinally thereof, and having one end of each closed and the other ends thereof rigidly secured to and communicating with the interior of said head, means for forcing brine into said hollow head; a brine-exhaust port in said closed cylinder, and an air supply to and exhaust from said cylinder, substantially as described and for the purpose set forth.

3. An air cooling and purifying apparatus comprising a closed chamber consisting of an inclined cylinder having one end closed by a cap, and its other end closed by a hollow head; a series of perforated pipes within said cylinder and extending longitudinally thereof, and having one end of each closed and the other ends thereof rigidly secured to and communicating with the interior of said head, the perforations in each of said pipes being in staggered relation to the perforations in the pipes adjacent thereto, means for forcing brine into said hollow head; a brine-exhaust port in said closed cylinder, and an air supply to and exhaust from said cylinder substantially as described and for the purpose set forth.

4. An air cooling and purifying apparatus consisting of a closed chamber consisting of an inclined cylinder having one end closed by a cap, and its other end closed by a hollow head; a series of perforated pipes within said cylinder and extending longitudinally thereof and having one end of each closed, and the other ends thereof rigidly secured to and communicating with the interior of said head, the perforations in each of said pipes being in staggered relation to the perforations in the pipes adjacent thereto, a spacing-plate supporting the closed ends of said pipes, a series of rollers mounted upon said plate and bearing upon the interior surface of said cylinder, means for forcing brine into said hollow head; a brine-exhaust port in said closed cylinder, and an air supply to and exhaust from said cylinder, substantially as described and for the purpose set forth.

5. An air cooling and purifying apparatus comprising a closed chamber consisting of an inclined cylinder having one end closed by a cap, and its other end closed by a hollow head; a series of perforated pipes within said cylinder and extending longitudinally thereof, and having one end of each closed and the other ends thereof rigidly secured to and communicating with the interior of said head, the perforations in each of said pipes being in staggered relation to the perforations in the pipes adjacent thereto, a spacing-plate supporting the closed ends of said pipes, a series of rollers mounted upon said plate and bearing upon the interior surface of said cylinder, a brine-refrigerator, a pump, a brine-pipe leading from said refrigerator to said pump, a brine-pipe leading from said pump to said hollow head, a brine-pipe leading from the lower end of said cylinder to said refrigerator, a fan, an air-pipe leading from the compartment to be cooled to said fan, an air-pipe leading from said fan to the lower end of said cylinder, and a return air-pipe leading from the upper end of said cylinder to said compartment, substantially as described and for the purpose set forth.

708,848. **FLAX-HARVESTER.** DAVID L. WELLMAN, Frazee, Minn. Filed Aug. 1, 1900. Serial No. 25,548. (No model.)

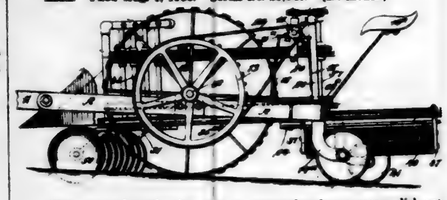

Claim.—1. In a flax-harvester, a supporting-frame, rotary disk cutters mounted on horizontal axles in arms projecting from the frame and adapted to enter the ground and loosen the roots of plants, which cutters have concaved and convexed sides, chain conveyers adapted to receive material from the said cutters, which chain conveyers are placed in close relation, and feeding devices adapted to conduct material from the disks to the spaces between adjacent members of the conveyers, as specified.

2. In a flax-harvester, a supporting-frame, a series of rotary disks, each disk being provided with a concaved outer and a convexed inner face, the disks being mounted on horizontal axles in arms projecting forwardly from the frame and adapted to enter the ground and loosen the roots of plants, pairs of conveyer-belts located adjacent to the disks, corresponding members of horizontally-opposing belts being near together, feed-wheels located at the forward end of each conveyer, and means for rotating the said wheels in direction of the space between corresponding members of horizontally-alining conveyer-belts.

3. In a flax-harvester, chain conveyers and feed-wheels at the forward portion of said conveyers, the feed-wheels serving to direct material to the spaces between the conveyers, said conveyers consisting of endless belts in horizontal pairs, one pair being placed above the other, the inner stretches of the belts of a pair being adapted to grip material closely between them, and rotary disk cutters mounted on horizontal axles and located adjacent to the forward lower portion of the lower conveyers, for the purpose described.

4. In a flax-harvester, chain conveyers, and feed-wheels at the forward portions of said conveyers, the feed-wheels serving to direct material to the spaces between the conveyers, the said conveyers consisting of sets of endless belts in horizontal pairs, one pair being above the other, the inner stretches of the belts of a pair being adapted to grip material between them, and means for moving the belts of one pair of belts at a lower speed than the belts of the other pair, as set forth.

5. In a flax-harvester, front and rear pairs of shafts, sprocket-wheels arranged in pairs on each shaft of the front pairs of shafts, a feed-wheel located between the wheels of each pair of sprocket-wheels of the said front shafts, sprocket-wheels of different sizes arranged in pairs on and mounted to turn with each shaft of the rear pairs of shafts, chain belts passed over corresponding sprocket-wheels on the front and rear shafts, the inner stretches of corresponding belts being sufficiently close to grip material between them, and means for revolving the shafts of the rear pairs of shafts in opposite directions, as set forth.

6. In a flax-harvester, a frame, forward and rear shafts mounted vertically on said frame, the forward shafts being in two series at angles to each other, each series having an inclination rearward to the center of the frame, sprocket-wheels of equal size mounted to turn on the forward shafts, a large and a small wheel mounted to turn on each of the rear shafts, feed-wheels located between the sprocket-wheels on the forward shaft, turning with said wheels, and conveyer-belts passed over corresponding sprocket-wheels on the forward and rear shafts, and means for driving the rear shafts, as and for the purpose specified.

7. In a flax-harvester, a frame, forward and rear shafts mounted vertically on the said frame, the forward shafts being in two series at angles to each other, each series having an inclination rearward to the center of the frame, sprocket-wheels of equal size mounted to turn on the forward shafts, a large and a small sprocket-wheel mounted to turn with each of the rear shafts, feed-wheels located between the sprocket-wheels on the forward shafts, turning with said wheels, conveyer-belts passed over corresponding sprocket-wheels on the forward and rear shafts, means for driving the rear shafts, forwardly-extending partitions dividing the series of forward shafts into pairs, and a series of disk cutters located below the said partitions and adapted to enter the ground and cut the roots of plants, which disks have concaved outer and convexed inner faces and are arranged in transverse alinement with the series of shafts at a point below and in advance of them, as described.

8. In a flax-harvester, the combination, with a main frame carrying a main driving and supporting wheel, a working frame having a rocking connection with the main frame, the forward portion of the working frame being inclined from its sides toward the center, and a series of disk cutters adapted to loosen the roots of plants, located in front of the working frame and connected with the forward portion thereof, of a series of shafts mounted at the forward portion of the working frame, following the inclination of the said part, sprocket-wheels of equal size loosely mounted on the said forward shafts, feed-wheels located between said sprocket-wheels and connected with one of them, a series of shafts corresponding to the forward shafts and mounted to turn at the rear of the working frame, a small and a large gear-wheel secured to each rear shaft and mounted to turn therewith, chain belts connecting corresponding sprocket-wheels with the forward and the rear shafts, the inner stretches of adjacent belts being sufficiently close together to grip material between them, driving-sprockets located at the upper portion of the rear shafts, a chain belt engaging alternately with the front and rear surfaces of the said driving-sprockets, and a driving connection between the belt engaging with the driving-sprockets and the main supporting-wheel in the main frame of the machine.

9. In a flax-harvester, the combination, with a main frame carrying a main driving and supporting wheel, a working frame having a rocking connection with the main frame, the forward portion of the working frame being inclined from its sides toward the center, and series of disk cutters adapted to loosen the roots of plants, located in front of the working frame and connected with the forward portion thereof, of a series of shafts mounted at the forward portion of the working frame, following the inclination of said part, sprocket-wheels of equal size loosely mounted on the said forward shafts, feed-wheels located between said sprocket-wheels and connected with one of them, a series of shafts corresponding to the forward shafts and mounted to turn at the rear of the working frame, a small and a large gear-wheel secured to each rear shaft and mounted to turn therewith, chain belts connecting corresponding sprocket-wheels with the forward and the rear shafts, the inner stretches of adjacent belts being sufficiently close together to grip material between them, driving-sprockets located at the upper portion of the rear shafts, a chain belt engaging alternately with the front and rear surfaces of the said driving sprocket-wheels, a driving connection between the belt engaging with the driving sprocket-wheels and the main supporting-wheel in the main frame of the machine, caster-wheels located at the rear of the main frame and rear outer portion of the working frame, and means, substantially as described, for adjusting the lower ends of the rear shafts.

10. In a flax-harvester, a wheel-supported frame, series of disks, said series being at angles to one another and extending from the center of the frame outward in opposite directions, each disk having a concaved outer and a convexed inner face, upper and lower belt conveyers arranged in pairs and extending from a point near the disks to the rear portion of the frame, the corresponding members of each pair of conveyer-belts being sufficiently close together to hold a plant, and feed-wheels mounted to revolve at the forward end of each belt conveyer, the feed-wheels of each pair of conveyers turning in direction of the space between corresponding members of the said belts, for the purpose set forth.

11. In a flax-harvester, the combination, with a frame, a series of shafts arranged on diagonal lines inclining outwardly and forwardly from the center of the said frame at the front, a second series of shafts located at the rear of the said frame, series of disks arranged correspondingly to the forward shafts in the said frame, the disks having concaved outer and convexed inner faces, and partitions separating the said forward shafts into pairs, which partitions extend over the said disks, of sprocket-wheels mounted on the forward and rear shafts, conveyer-belts carried by the said sprocket-wheels, feed-wheels attached to sundry of the said forward sprocket-wheels, and means for turning the feed-wheels of each pair of belts in direction of the space between corresponding members of said belts, for the purpose set forth.

12. In a flax-harvester, the combination with a main frame, a supporting-wheel mounted therein, and a working frame having a rocking connection with the main frame, of shafts arranged in pairs at the front and rear of the working frame, sprocket-wheels on the said shafts, chain belts passing around the sprocket-wheels, means for revolving the rear shafts of the several pairs of shafts in opposite directions from the supporting-wheel of the main frame, and rotary disk cutters mounted on horizontal axles at the forward part of the working frame and adapted to enter the ground and loosen the roots of the flax, substantially as described.

13. In a flax-harvester, the combination with a main frame, a supporting-wheel mounted therein, and a sprocket-wheel driven from the supporting-wheel, of a working frame having a rocking connection with the main frame, shafts arranged in pairs at the front and rear of the working frame, sprocket-wheels on the shafts, chain belts passing around the sprocket-wheels, a sprocket-wheel on the upper end of each rear shaft, and a sprocket-chain alternately engaging the front and rear surfaces of the sprocket-wheels of the rear shafts, said sprocket-chain passing around the sprocket-wheel of the main frame, substantially as described.

14. In a flax-harvester, a working frame having its front inclined rearwardly and inwardly from its sides toward the center, arms projecting forwardly from the frame, rotary disk cutters mounted on the arms, feed devices mounted on the frame in rear of the cutters, and endless conveyers mounted in the frame in rear of the feed devices, as set forth.

708,849. **SOUND-REPRODUCER.** HENRY G. A. I. WIEDER, London, England, assignor to Charles William Phillips, London, England. Filed Sept. 21, 1901. Serial No. 76,108. (No model.)

Claim.—1. In a device of the class described, the combination one with the other of three disks of different diameters concentrically interposed one upon the other and separated from each other by wires radiating from the common center thereof, substantially as shown and described and for the purpose set forth.

2. In a device of the class described, the combination one with the other of three disks of different diameters concentrically interposed one upon the other and separated from each other by wires radiating from the common center thereof and a recording or reproducing point secured to the outermost disk, substantially as shown and described.

3. In a device of the class described, the combination one with the other of three disks of resilient material of different diameters concentrically interposed upon each other, and separated from each other by wires radiating from the common center thereof, and a cone provided at the point with a recording or reproducing point, the base of which cone is secured to the outer disk, substantially as shown and described.

4. In a device of the class described, the combination with three disks of resilient material interposed concentrically upon each other so that their centers are coincident, of a recording or reproducing point carried by the outermost disk, wires radiating from the common center interposed between the disks, a casing supporting the periphery of the intermost disks, and a perforated back plate securing such disk therein, substantially as shown and described.

5. In a device of the class described, the combination one with the other of a cone *a*, the concentrically-arranged glass disk *b* separated by the wires *c* and cemented thereto, the perforated vulcanite disk *e*, and the metal back *f* connected by the inclosing rim *g*, substantially as shown and described.

6. In a device of the class described, the combination one with the other of a cone *a*, the concentrically-arranged glass disks *b* of different diameters separated by the wires *c* and cemented thereto, the perforated vulcanite disk *e*, and the metal back *f* connected by the inclosing rim *g*, substantially as shown and described.

708,850. **BAND-SAW WHEEL.** THEODORE S. WILKIN, Milwaukee, Wis. Filed Mar. 14, 1901. Serial No. 51,174. (No model.)

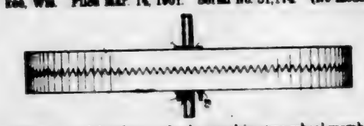

Claim.—1. A band-saw wheel, comprising two wheel members each being a complete wheel complementary to each other the members being connected to each other adjustably so as to be adapted to be moved away from or toward each other.

2. A band-saw wheel, comprising two wheel members each being a complete wheel and having rims provided with toothed edges complementary to each other and so disposed that the members can be separated somewhat and the teeth of the two members will still overlap or extend past each other, and means for adjusting the members from and toward each other.

3. In combination, a shaft, a band-saw wheel comprising two wheel members each being a complete wheel, one wheel member being fixed

on the shaft and the other wheel member being loose on the shaft, and means for adjusting the loose wheel member toward and from the fixed wheel member.

4. The combination, a band-saw wheel comprising two wheel members each member being a complete wheel and provided with a rim having a serrated edge the serrated edges being complementary to each other, and bolts revoluble in the hub of one member and held thereto against movement endwise and turning by screw-thread in the hub of the other wheel member.

5. A band-saw wheel in two parts of equal diameter, each part being in form a complete wheel, and means for holding the two parts near each other adjustably.

708,851. **AIR-FEEDING APPARATUS FOR FURNACES.** HERBERT ABBOTT, Balmain, near Sydney, New South Wales, Australia. Filed Nov. 6, 1901. Serial No. 81,357. (No model.)

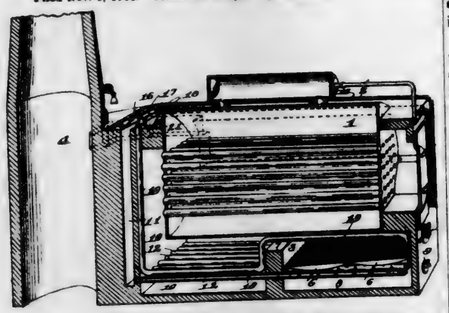

Claim.—1. The combination of a furnace having an upright passage opening at its upper end into the atmosphere, a pipe connected with the lower end of said passage and extending forwardly therefrom, its forward end being situated under the grate and having a series of openings, an upright pipe substantially coextensive with said passage, the lower end of the pipe being provided with a forwardly-extending portion substantially coextensive with said other pipe and its forward or delivery end being situated above the grate, and means for delivering steam into the upper ends of said upright passage and upright pipe, respectively.

2. The combination of a furnace having brickwork, said brickwork being provided with a downtake-passage opening into the atmosphere at its upper end, a plurality of pipes leading from the downtake-passage and extending forwardly therefrom, the forward ends of the pipes having openings for the discharge of air and steam at one side of the grate of said furnace, means for delivering steam into the upper open end of said downtake-passage, a pipe substantially coextensive with the downtake-passage and its upper end opening into the atmosphere, said pipe having a forwardly-extending portion, the end of which is arranged to discharge steam and air into the grate-chamber at the side of the grate opposite to that into which the air and steam from the first-mentioned pipes are delivered, and means for delivering steam into the upper open end of said pipe.

3. The combination of a furnace provided with a boiler and a steam-chamber, a vertical passage opening into the atmosphere, and having a conduit extending forwardly from the same, and arranged to deliver air and steam into the grate-chamber of said furnace, and a system of valved piping arranged to deliver steam into the upper open end of said passage, and connected with said steam-chamber.

708,852. **TOBACCO-PIPE.** NORRIS ALLISON, Hendersonville, N. C. Filed Apr. 17, 1902. Serial No. 103,318. (No model.)

Claim.—1. A tobacco-pipe comprising a bowl, a stem consisting of angled connecting branches having open ends, plugs inserted in said open ends, and valves secured to said plugs, and extending into said angled branches.

2. A tobacco-pipe comprising a bowl, a stem consisting of angled branches open at their ends and connected with said bowl and with each other and provided with valve-seats at their junction, plugs secured in the outer ends of the said branches, and pins having valves at their free ends adapted to be seated on the valve-seats in said branches.

3. A tobacco-pipe comprising a bowl, a stem consisting of vertical and horizontal branches meeting each other and provided with longitudinal passages connecting with each other, valve-seats at the junction of the several branches, plugs adjustably held in the outer end of the passages of the branches, needle-valves secured to the said plugs and projecting into the passages and adapted to engage the valve-seats within said passages.

4. In a tobacco-pipe, the combination with a bowl, of a tubular stem secured within the lower end of the bowl, said tubular stem being provided with a contracted opening at its upper end, a plug adjustably secured in the lower open end of the tubular stem, a circular pin projecting upwardly from said plug and flattened at its upper end on one or more sides, said flattened portion being adapted to enter the contracted opening in the upper part of the tubular stem.

5. A tobacco-pipe comprising a bowl, a stem consisting of tubular vertical and horizontal branches, valve-seats at the junction of the branches, and needle-valves adjustably secured in the branches and adapted to engage the said valve-seats, and a mouthpiece removably secured in the rear branch of the stem.

6. In a tobacco-pipe, the combination with a bowl, a stem consisting of tubular right-angled branches, cone-shaped valve-seats at the junction of the branches, plugs removably secured in the outer ends of the said branches, and carrying pins having conical ends adapted to engage the valve-seats in the branches, and a removable pin adapted to enter the lower end of the bowl.

7. A tobacco-pipe comprising a bowl provided with a transverse partition having a central aperture, a stem removably secured in the lower end of the bowl and abutting against the central partition, said stem being provided with a central passage in register with the central aperture of the partition and communicating at its lower end with a branch smoke-passage, and a pin provided with a reduced upper end movably held in the stem and adapted to project into and through the central passage of the stem and central aperture of the partition.

8. In a tobacco-pipe the combination with a bowl, a stem consisting of tubular right-angular branches, cone-shaped valve-seats at the juncture of the branches, valve rods or pins removably held in the outer ends of the branches and provided with conical inner ends adapted to engage the cone-shaped valve-seats in the branches of the stem.

708,853. **EXHIBITING DEVICE.** AUGUSTUS C. ARGLES, Wimbledon, England. Filed Mar. 7, 1902. Serial No. 97,157. (No model.)

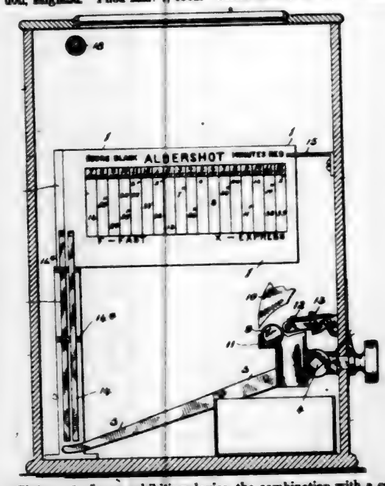

Claim.—1. In an exhibiting device, the combination with a casing provided with an exposure-opening, an elongated slot and a plurality of indicating-sheets arranged therein, of a rotatable rod mounted in said casing, a collar adjustable upon said rod, means operating in said slot for adjusting the said collar, an arm integral with said collar, and means engaged and operated by said arm when said rod is rotated for exposing the said sheets through the said opening.

2. In an exhibiting device, the combination with a casing provided with an exposure-opening, an elongated slot and a plurality of indicating-sheets arranged therein, of a rotatable rod mounted in said casing, a collar adjustable upon said rod, means operating in said slot for adjusting the said collar, an arm integral with said collar, means engaged and operated by said arm when said rod is rotated for exposing the said sheets through the said opening, and a handle connected to said rod.

3. In an exhibiting device, a casing provided with an exposure-opening, a series of indicating-sheets arranged therein, legs connected to each of said sheets, guides for the said sheets, a slidably-adjustable arm adapted to engage the respective leg of one of the sheets, said arm when operated adapted to move the said sheet for exposure through the said opening of the casing, and means for supporting and operating the said arm.

708,854. **APPARATUS FOR CLEANING WINDOWS.** HUGH BAIRD, Glasgow, Scotland. Filed Dec. 4, 1901. Serial No. 84,672. (No model.)

Claim.—1. In a cleaning device, the combination with a rod and a revoluble brush mounted thereon, of a slide operating on said rod, and flexible means connecting said slide and brush for revolving said brush upon operating the slide.

2. In a cleaning device, the combination with a rod and a revoluble brush thereon, of a perforated plate mounted behind said brush for cleaning the same, and a slide operating on said rod for revolving said brush.

3. In a cleaning device, the combination with the rod and brush thereon, of a slide operating on said rod, guides located adjacent said rod on opposite sides of said slide, and a flexible means engaging said brush, thence reeving through said guides and secured at its ends to said slide for operating the brush upon moving the slide.

4. In a window-cleaning device, the combination with a rod and a slide operating thereon, of a revoluble brush mounted on said slide, a perforated plate carried by said slide in engagement with said brush, means for operating said slide, and means operated by said slide for revolving said brush.

5. In a window-cleaning device, the combination with a rod and a slide operating thereon, of a revoluble brush mounted on said slide, means for operating said slide, guides located adjacent said rod, above and below said slide, a flexible cord or tape secured at one end to said slide thence reeving through one of said guides to and around the axis of said brush, thence through the other of said guides and secured again to the opposite side of said slide, for operating the brush upon the upward or downward movement of the slide.

708,855. **CAR-TRUCK.** JOHN C. BARBER, St. Paul, Minn., assignor to Standard Car Truck Company, Chicago, Ill., a Corporation of New Jersey. Filed Oct. 31, 1901. Serial No. 80,612. (No model.)

Claim.—1. In a car-truck, the combination with journal-boxes mounted in the truck-frame with freedom for both vertical and lateral movements with respect thereto, of springs interposed between said journal-boxes and the truck-frame, and coöperating lateral-motion devices afforded by rollers and coöperating concave roller-seats, applied between said journal-boxes and the truck-frame, whereby said journal-boxes are yieldingly held for independent vertical and lateral movements.

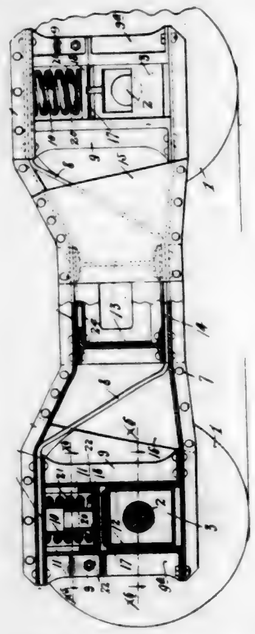

2. In a car-truck, the combination with the truck-wheels and their axles, of journal-boxes in which said axles are journaled, a truck-frame having pedestals between which said journal-boxes work with freedom for limited movements transversely of the truck, concave roller-seats carried on the tops of said journal-boxes, rollers on said concave seats and roller-caps held against lateral motion with respect to the said pedestals and having concave roller-seats engaging the tops of said rollers, substantially as described.

3. In a car-truck, the combination with the truck-wheels and their axles, of journal-boxes in which said axles are journaled, a truck-frame having pedestals between which said journal-boxes work with a limited movement transversely of the truck, concave roller-seats carried on the tops of said journal-boxes, rollers on said concave seats, roller-caps free for vertical but held against lateral movements with respect to said pedestals and having concave roller-seats engaging the tops of said rollers, and springs compressed between said roller-caps and superposed portions of the truck side frames, substantially as described.

4. In a car-truck the combination with the truck-wheels and their axles, of journal-boxes in which said axles are journaled, a truck having pedestals between which said journal-boxes work with a limited movement transversely of the truck, concave roller-seats carried on the tops of said journal-boxes, rollers on said concave seats, roller-caps connected to the truck side frames by vertically-disposed telescoping thimbles or guides and springs surrounding said thimbles and compressed between said roller-caps and superposed portions of the truck side frames, substantially as described.

5. The combination with a car-truck and axle-box, of an interposed supporting-spring, a bearing cup or head supporting the lower end of said spring, a truck member on the upper surface of the axle-box, and a set of rollers interposed between said bearing-cup and the truck member and adapted to afford independent lateral movement to the axle-box, substantially as described.

6. The combination with a car-truck and an axle-box, of an interposed supporting-spring, a bearing cup or head supporting the lower end of the spring, a truck member on the upper surface of the axle-box, and a set of rollers interposed between said bearing-cup and the truck member and adapted to afford independent lateral movements to the axle-box,

the opposed faces of the bearing-cup and the track member being formed with inclined recesses forming self-centering tracks for the rollers and individual to the same, substantially as described.

7. In a car-truck the combination with the pedestal or side frame, a supporting-spring, a support for the lower end of said spring, means for holding said support against lateral movement, an axle-box having independent lateral movement with relation to said spring-support, a track member on the upper surface of the axle-box, and a bearing roller or rollers interposed between the spring-support and said track member, substantially as set forth.

8. In a car-truck, the combination with pedestal or side frame, a supporting-spring, a support for the lower end of said spring, means for holding said support against lateral movement the same consisting of lugs or projections engaging vertical sides of the pedestal or frame, and an axle-box having independent lateral movement with relation to said spring-support, substantially as set forth.

9. In a car-truck, the combination of a pedestal or side frame, a supporting-spring, a support for the lower end of said spring, means for holding said support against lateral movement the same consisting of lugs or projections engaging the vertical sides of the pedestal-frame, and axle-box having independent lateral movement with relation to said spring-support, a track member on the upper surface of the axle-box and a bearing roller or rollers interposed between the spring-support and said track member, substantially as described.

708,856. **BELT-TIGHTENER.** WILLIAM R. BEE, Aurora, Ill., assignor to The Firm of Stephens, Adamson & Co., consisting of Wiley W Stephens, Frederick G. Adamson, and William R. Bee, Aurora, Ill. Filed Apr. 26, 1902. Serial No. 104,661. (No model.)

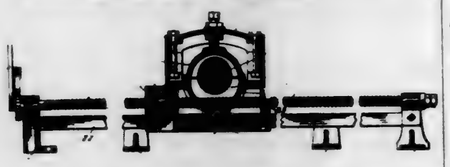

Claim.—1. In a belt-tightener, in combination, a guide-rail, a saddle in sliding engagement with the guide-rail and provided with apertures in the opposite sides thereof, a journal-box carried by the saddle and having an aperture alined with the apertures in the saddle, a belt-pulley shaft journaled in the box, and a screw-rod passing through the said apertures and engaging the saddle for sliding the saddle on the guide-rail.

2. In a belt-tightener, in combination, a pair of guide-rails, a saddle in sliding engagement with the guide-rails, a journal-box carried by the saddle, a bearing in each end of the journal-box, the said saddle and journal-box being provided with alined apertures between the bearings; a belt-pulley shaft journaled in the bearings, and a screw-rod passing through said apertures in close proximity to the shaft and engaging the saddle, for sliding the same on the guide-rails.

3. In a belt-tightener, in combination, a pair of guide-rails, a saddle in sliding engagement with the guide-rails, a journal-box carried by the saddle, a bearing in each end of the journal-box, a belt-pulley shaft journaled in the bearings, the said saddle and journal-box being provided with alined apertures between the bearings, a screw-rod passing through the said apertures, a block seated in a recess in the saddle and having a threaded aperture engaged by the screw-rod, a wall in the journal box at each side of the screw-rod to provide an oil-well under each bearing, and means for supplying a lubricant from the wells to the bearings.

4. In a belt tightener, in combination, a guide-rail, a saddle in sliding engagement with the guide-rail, a journal-box carried by the saddle, a belt-pulley shaft journaled in the box, and a screw-rod engaging the saddle and located parallel with the guide-rail between the latter and the shaft for sliding the saddle on the guide-rail.

5. In a belt-tightener, in combination, a guide-rail, a saddle in sliding engagement with the guide-rail, a journal-box carried by the saddle, a belt-pulley shaft journaled in the box, and a screw-rod engaging the saddle and passing through alined apertures in the saddle and the journal-box between the shaft and the guide-rail.

6. In a belt-tightener, in combination, a pair of guide-rails, a saddle having a cap and in sliding engagement with the guide-rails, a journal-box comprising an upper and a lower section carried by the saddle and adjustable thereto, a screw passing through the saddle-cap for clamping the sections together, a bearing in each end of the journal-box, a belt-pulley shaft journaled in the bearings, and a screw-rod engaging the saddle and passing through alined apertures in the saddle and the journal-box in close proximity to the belt-pulley shaft.

708,857. **COMBINED MOP AND WRINGER.** FRANK BRADEY, Jefferson City, Mo. Filed Apr. 26, 1902. Serial No. 104,727. (No model.)

Claim.—1. The combination with the rollers and the mop; of a retractile spring secured to the upper end of the mop.

2. The combination with the rollers and the mop, of a bail secured to the upper end of the mop, and a retractile spring secured to the bail.

3. A mop and wringer comprising a frame, having slotted side arms, a roller journaled in the ends of the arms, a wringing-roller journaled in the slots of the frame, a mop between the rollers, a contractile spring to keep the upper portion of the mop stretched, and means to press the wringing-roller down on the mop.

4. A mop and wringer comprising a frame having slotted side arms, a roller journaled in the ends of the arms, a roller journaled in said slots, a mop between the rollers, a bail secured to the upper end of the mop, a retractile spring secured to the bail, threaded sleeves on the side arms of the frame, and threaded rods, in the sleeves, having forked lower ends to engage over the ends of the journals of the roller, in the slotted bearings.

708,858. **POLISHING-MACHINE.** JOHN W BROWN, Jr., Philadelphia, Pa. Filed Mar. 10, 1902. Serial No. 97,489. (No model.)

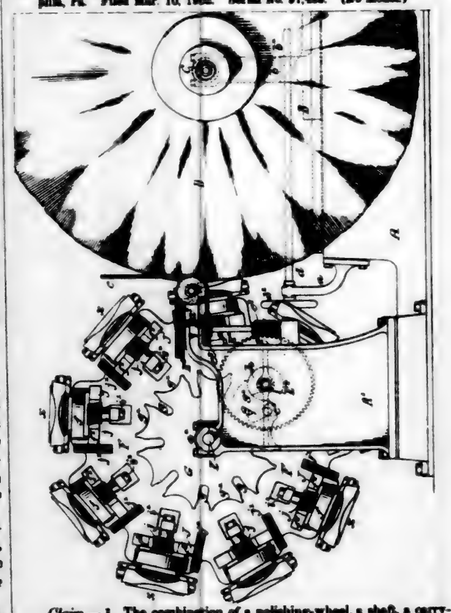

Claim.—1. The combination of a polishing-wheel, a shaft, a carrying-frame on said shaft, chucks on said carrying-frame for holding the irons or other articles to be polished, and means for intermittently rotating said frame, substantially as described.

2. The combination of a polishing-wheel, a shaft, a carrying-frame on said shaft, chucks mounted on said carrying-frame for holding irons or similar articles, a driven shaft mounted in fixed bearings, and means for connecting said driven shaft with a chuck when opposite the polishing-wheel, substantially as described.

3. The combination of a polishing-wheel, a shaft, a carrying-frame on said shaft, rotatable chucks mounted on the carrying-frame, said chucks arranged to hold an iron or similar article to be polished, a driven shaft, gearing between the driven shaft and the carrier-shaft for intermittently

turning the said carrier-frame, and a gear on the said driven shaft, a series of gears on the frame for turning the chucks, said gears being so arranged as to mesh with the gear on the driven shaft when opposite the polishing-wheel, substantially as described.

4. The combination of a polishing-wheel, a shaft, a carrying-frame on said shaft, rotatable chucks on the carrying-frame, a series of shafts mounted on the frame and each having a worm, a worm-wheel on each chuck meshing with the worm on one of the said worm-shafts, a gear on the said worm-shaft, a driven shaft mounted in fixed bearings and having a gear-wheel with which the gear-wheels on each of the worm-shafts of the carrying-frame engage when opposite the polishing-wheel, so as to rotate the chucks, and means for intermittently rotating the carrying-frame, substantially as described.

5. The combination of a polishing-wheel, a shaft, a carrying-frame mounted on said shaft, chucks on the carrying-frame for the irons or other articles to be polished, means for rotating the chucks when opposite the polishing-wheel, a star-wheel on the shaft of the carrying-frame, a stud, a wheel on said stud having a pin entering the slots of the star-wheel and having a disk for locking the star-wheel, with means for imparting motion to the said pin-wheel and disk, substantially as described.

6. The combination of a polishing-wheel, a standard, a shaft mounted thereon, a carrying-frame on said shaft, rotatable chucks mounted on said frame, a driven shaft, a worm thereon, a worm-wheel meshing with said worm, a star-wheel lock-gear through which the carrier-frame shaft is driven from the worm-wheel, and means for imparting rotary movement to each chuck from the said driving-shaft when the particular chuck is opposite the polishing-wheel, substantially as described.

7. The combination in a polishing-machine, of a carrying-frame, a socket and a bearing in said frame, a chuck mounted in the said socket and having a spindle extending through the bearing, a nut on the spindle for confining the chuck in position, a worm-wheel on the spindle, a worm-shaft, a worm on said shaft meshing with the worm-wheel, and means for turning said worm-shaft so as to rotate the chuck, substantially as described.

8. The combination of a polishing-wheel, a carrying-frame, a socket and a bearing, a chuck mounted in said socket and having a spindle mounted in the bearing, means for rotating said chuck, and a ring shaped to the article to be polished and secured to the chuck, substantially as described.

9. The combination of a polishing-wheel, a frame, a socket in the frame, a chuck mounted in the socket, means for rotating the chuck, a ring detachably secured to the chuck, a cross-bar, a grip on the cross-bar arranged to engage the cross-bar of the iron when placed in the socket so as to hold said iron in position, substantially as described.

10. The combination in a polishing-machine, of a fixed shaft, a gear-wheel thereon having teeth beveled at one end, a rotatable frame carrying chucks, means for revolving said chucks, a gear-wheel for driving said means, said gear-wheel having teeth beveled at one end and so arranged that when the frame F is rotated the gear-wheel on the movable frame will mesh with the gear-wheel on the fixed frame, substantially as described.

11. The combination in a polishing-machine, of the fixed frame, a vertical shaft thereon having at its upper end a gear-wheel, the teeth of which are beveled at one end, a polishing-wheel, a rotatable frame, a series of chucks carried by said frame, independent means for turning each chuck, a gear-wheel forming part of said means, the teeth of said gear-wheel being beveled at one end, with means for intermittently rotating the chuck-frame so that the wheels of the chuck mechanism will mesh with the gear-wheel mounted on the shaft having its bearings in the fixed frame, substantially as described.

708,859. **PARCEL RECEIVING AND DELIVERING DEVICE.** THEODORE L. BASSETT, Port Byron, N. Y., assignor to himself, L. H. King, F. S. Root, R. C. Smith, C. R. Westbay, J. G. Klatt, S. Peterson, Anson Tuller, and J. M. Ryan, Port Byron, N. Y. Filed May 17, 1902. Serial No. 107,808. (No model.)

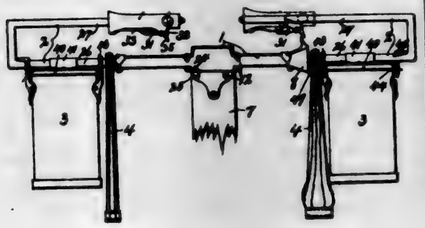

Claim.—1. In a parcel receiving and delivery system, a support having a receiving-guide, a pouch-carrier inserted in the guide, and means concealed within the guide and actuated by the carrier during its insertion for locking the carrier in the guide.

2. In a parcel receiving and delivery system, a support having a delivery-guide, a pouch-carrier removably inserted in the guide, movable means locking the carrier in the guide, and a moving body having means to move the former means to release the carrier.

3. In a parcel receiving and delivery system, a support having receiving and delivery guides, a pouch-carrier removably inserted in the delivery-guide, movable means locking the carrier in the guide, a second carrier inserted in the receiving-guide and actuating the former means to release the former carrier.

4. In a parcel receiving and delivery system, a support having receiving and delivery guides, a pouch-carrier removably inserted in the delivery-guide and additional means actuated by the second carrier for automatically locking the same during its insertion into the receiving-guide.

5. In a parcel receiving and delivery system, a support having receiving and delivery guides, a pouch-carrier removably inserted in the delivery-guide, a locking member holding the carrier in the delivery-guide, and a second carrier inserted in the receiving-guide and operating said member to release the former carrier and to lock the second carrier.

6. In a parcel receiving and delivery system, a pouch having an opening and a closure for the opening, locking members on the pouch and closure, and a carrier removably engaged with said members for locking the closure in its closed position.

7. In a parcel receiving and delivery system, a pouch having an opening and a closure for the opening, locking members on the pouch and closure, and a carrier removably engaged with said members for locking the closure in its closed position, a support to receive the carrier and means to lock the carrier to the support.

8. In a parcel receiving and delivery system, a support having a guide, a pouch having one or more locking members, a carrier-arm interlocked with said members and into the guide, and means actuated by the insertion of the carrier-arm for locking the arm to the support and preventing the removal of the pouch.

9. In a parcel receiving and delivery system, a support having receiving and delivery guides, a pouch-carrier removably inserted in the delivery-guide, movable means locking the carrier in the guide and preventing removal of the pouch from the carrier, and a second pouch-carrier inserted in the receiving-guide and operating said means to release the former carrier and to lock the second carrier to the support.

10. In a parcel receiving and delivery system, a support having a guide, a carrier removably inserted in the guide, a holder for the carrier, means for locking the holder to the carrier, and additional means for unlocking the former means to release the holder from the carrier as said carrier is inserted in the guide.

11. In a parcel receiving and delivery system, a moving holder, a pouch-carrier detachably mounted on the holder, a stationary support in the path of and receiving the carrier from the holder.

12. In a parcel receiving and delivery system, a moving holder, a pouch-carrier detachably mounted on the holder, a stationary support in the path of and receiving the carrier from the holder, and means locking the carrier to the support as the carrier is inserted into the support.

13. In a parcel receiving and delivery system, a moving holder, a pouch-carrier detachably mounted on the holder, a stationary support in the path of and receiving the carrier from the holder and a locking device actuated by the carrier for locking said carrier to the support.

14. In a parcel receiving and delivery system, a stationary support having receiving and delivery guides, a pouch-carrier inserted in the delivery-guide, a movable locking member holding said carrier in the guide, a moving holder carrying a second pouch-carrier into the receiving-guide, and means for releasing the holder from the second carrier as it is engaged with the support, said locking member being operated by the second carrier to release the former carrier, and the holder engaging and withdrawing the former carrier from the support.

15. In a parcel receiving and delivery system, a stationary support having receiving and delivery guides, a pouch-carrier inserted in the delivery-guide, a movable locking member holding said carrier in the guide, a moving holder carrying a second pouch-carrier into the receiving-guide, and means for releasing the holder from the second carrier being operated by the second carrier to release the former carrier and to lock the second carrier, and the holder engaging the former carrier and withdrawing the same from the support.

16. In a parcel receiving and delivery system, a stationary support having a guide, a rocking pawl on the support, and a pouch-carrier inserted in the guide and operating said pawl to engage and lock the carrier from withdrawal.

17. In a parcel receiving and delivery system, a stationary support,

a locking-pawl on the support, a pouch-carrier locked by said pawl, and a second pouch-carrier engaged by the support and engaging said pawl to trip the same from the former carrier and simultaneously lock the second carrier to the support.

18. In a parcel receiving and delivery system, a stationary support, a locking-pawl on the support, a pouch-carrier locked by said pawl, and a second pouch-carrier engaged by the support and engaging said pawl to trip the same from the former carrier and simultaneously lock the second carrier to the support and a moving holder depositing the second carrier on the support and picking up the released carrier.

19. In a parcel receiving and delivery system, a pouch having a movable closure, the body of the pouch and closure having locking members, a carrier interlocked with said members, said carrier being removable from one of the pouch members and tilting upon the other pouch member to open the closure.

20. In a parcel receiving and delivery system, a stationary support having receiving and delivery guides, a rocking pawl on the support, a movable closure normally concealing the pawl, a pouch-carrier inserted in the delivery end of the support and engaged by said pawl, a second pouch-carrier inserted in the receiving-guide and operating said pawl to release the former carrier and to simultaneously lock the second carrier in position, a moving holder for the carriers delivering one carrier in the receiving-guide and withdrawing the other carrier from the delivery-guide.

708,860. INCANDESCENT GAS-BURNER. JAMES BUCHANAN, New York, N. Y., assignor of one-half to John B. Conover, Freehold, N. J. Filed Jan. 9, 1902. Serial No. 88,901. (No model.)

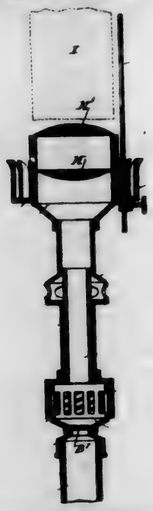

Claim.—1. An incandescent gas burner, having a preliminary mixing-chamber for the gas and air and provided in its sides with apertures, a gas-supply cap having a small aperture opening into the said mixing-chamber, a valve in the shape of a nut screwing on the outside of the chamber to close or open the apertures thereof, an outlet-pipe extending from the said mixing-chamber, an annular air-chamber around the upper end of the said outlet-pipe, to admit air to the mixture of air and gas passing up the pipe, the said air-chamber being vertically adjustable on the said pipe, and a conducting-pipe into which the outlet-pipe projects, as set forth.

2. An incandescent gas-burner, having a preliminary mixing-chamber for the gas and air and provided in its sides with apertures, a gas-supply cap having a small aperture opening into the said mixing-chamber, a valve in the shape of a nut screwing on the outside of the chamber to close or open the apertures of the said chamber, an outlet-pipe extending from the said mixing-chamber, a vertically-adjustable annular air-chamber around the upper end of the said outlet-pipe, to admit air to the mixture of air and gas passing up the pipe, a conducting-pipe leading from the said annular air-chamber concentric with the said outlet-pipe, and a main mixing-chamber on the end of the said conducting-pipe, as set forth.

3. An incandescent gas-burner, having a preliminary mixing-chamber for the gas and air and provided in its sides with apertures, a gas-supply cap having a small aperture opening into the said mixing-chamber, a valve in the shape of a nut screwing on the outside of the chamber to close or open the apertures of the said chamber, an outlet-pipe extending from the said mixing-chamber, a vertically-adjustable annular air-chamber around the upper end of the said outlet-pipe, to admit air to the mixture of air and gas passing up the pipe, a conducting-pipe leading from the said annular air-chamber concentric with the said outlet-pipe, a main mixing-chamber on the end of the said conducting-pipe, and spaced screens in the said main mixing-chamber, as set forth.

4. In an incandescent gas-burner, the combination with a preliminary mixing-chamber having an outlet-pipe extending from its top, of a vertically-adjustable annular air-chamber mounted on the outlet-pipe and provided with a conducting-pipe extending from its top and into which the outlet-pipe of the preliminary mixing-chamber projects, and a main mixing-chamber carried by the conducting-pipe, as set forth.

5. In an incandescent gas-burner, the combination with a preliminary mixing-chamber having an outlet-pipe extending from its top, of a vertically-adjustable annular air-chamber mounted on the outlet-pipe and provided with a conducting-pipe extending from its top and into which the outlet-pipe of the preliminary mixing-chamber projects, a main mixing-chamber carried by the conducting-pipe, and spaced screens in the said chamber, one screen being convex and the other concave, as set forth.

6. In an incandescent gas-burner, the combination with a preliminary mixing-chamber having an outlet-pipe extending from its top, said pipe being provided with an inclined surface, of an annular air-chamber having a sleeve fitting on the outlet-pipe and provided with an incline surface engaging the incline surface of the pipe, and with a conducting-pipe into which the outlet-pipe projects, and a main mixing-chamber carried by the conducting-pipe, as set forth.

708,861. INCANDESCENT GAS-BURNER. JAMES BUCHANAN, New York, N. Y., assignor of one-half to John B. Conover, Freehold, N. J. Filed Jan. 9, 1902. Serial No. 88,902. (No model.)

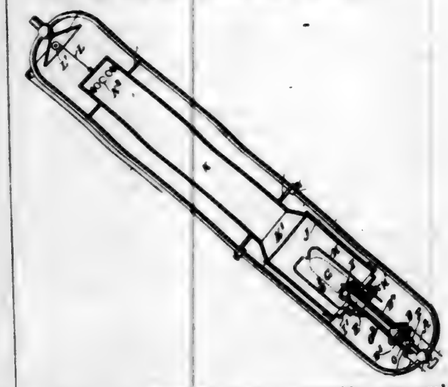

Claim.—1. An incandescent gas-burner, comprising a gas-supply pipe, a mixing-chamber having an air-inlet and into which said supply-pipe opens, a slide-valve on the supply-pipe to regulate the amount of gas passing from the supply-pipe into the mixing-chamber, said slide-valve being mounted to slide in a bearing on the supply-pipe and having an aperture adapted to register with the outlet-opening in the supply-pipe and a recess in its under side, and a screw-rod screwing into said supply-pipe and having a collar engaging the recess in said slide-valve, as set forth.

2. An incandescent gas-burner having a valved gas-supply pipe, a mixing-chamber into which projects said supply-pipe, said mixing-chamber comprising an upper and lower section, the lower section being provided with air-inlets and the upper section separable from the lower section and formed with a conducting-tube projecting from its top, an enlarged chamber at the upper end of the conducting-tube, a screen over the top of said enlarged chamber, and a pilot-pipe made in separable parts, the lower part being attached to the supply-pipe and extending into the mixing-chamber and the upper part carried by the conducting-tube with its lower end projecting into the mixing-chamber and coupled with the lower part, the upper end extending into the enlarged chamber, as set forth.

3. An incandescent gas-burner having a valved gas-supply pipe, a mixing-chamber formed of separable parts in the shape of frustums of a cone and into which projects said supply-pipe, said mixing-chamber having its lower portion provided with air-inlets and its upper portion formed with a conducting-tube projecting from its upper end, an enlarged chamber at the upper end of the conducting-tube, a screen over the top of said enlarged chamber, and a pilot-pipe made in separable parts, and extending from the supply-pipe through the mixing-chamber up into the enlarged chamber and through said screen, as set forth.

4. An incandescent gas-burner having a mixing-chamber formed of separable sections in the form of frustums of a cone, the lower section being perforated and the upper section having a conducting-tube projecting from its top, an enlarged chamber at the upper end of the conducting-tube and provided with a screen at its upper end, a supply-pipe projecting into the mixing-chamber, a valve in the supply-pipe within the mixing-chamber, a valve in the supply-pipe below the chamber, and a pilot-pipe leading from the supply-pipe below the valve outside of the mixing-chamber and extending up through the said chamber along the outside of the conducting-tube and into the enlarged chamber and through the screen thereof, said pilot-pipe being in sections coupled together in the mixing-chamber, as set forth.

5. An incandescent gas-burner, having a mixing-chamber formed of separable sections, the lower section being perforated and the upper one having a conducting-tube projecting from its top, an enlarged chamber at the upper end of the conducting-tube and provided with a screen at its upper end, a service-pipe provided with a valve, a supply-pipe leading from the service-pipe and extending into the mixing-chamber and provided with a regulating-valve at its end within the said chamber and with a valve below the chamber, and a pilot-pipe made in sections coupled together within the mixing-chamber, the lower section being connected with the supply-pipe below the valve therein that is outside of the mixing-chamber and the upper section extending out through the mixing-chamber, along the outside of the conducting-tube and into the enlarged chamber and through the screen thereof, as set forth.

6. An incandescent gas-burner having a valved gas-supply pipe, a mixing-chamber into which opens said supply-pipe, said mixing-chamber having its lower portion provided with air-inlets and its upper portion separable from the lower portion and formed with a conducting-tube, an enlarged chamber at the upper end of the conducting-tube, a screen over the top of said enlarged chamber, a pilot-pipe made in separable parts, of which the lower part is attached to the supply-pipe and the upper part to the conducting-tube and the enlarged chamber, said pilot-pipe extending to the top of the screen, and a branch pilot-pipe extending from said pilot-pipe to the top of the mantle located above the screen, as set forth.

7. In an incandescent gas-burner, the combination with a burner proper, and a chimney therefor, of a guideway extending up above the top of the chimney, a tube having a flaring lower end adapted to rest upon the upper end of the chimney, and with laterally-projecting lugs sliding on the guideway, and means connected with the upper end of the tube for raising the same, as set forth.

8. In an incandescent gas-burner, the combination with a burner proper, and a chimney therefor, of a loop-shaped service-pipe extending above the chimney, of a tube of less diameter than the chimney and having a flaring lower end adapted to rest upon the upper end of the chimney and provided with laterally-projecting lugs adapted to slide upon the looped service-pipe, and with outlet-openings in its upper end, and adjustable stops on the looped service-pipe with which a pair of the lugs of the tube engage, as set forth.

708,862. LATCH. OSCAR H. BURDEN, Kaslo, Canada, assignor of one-half to Theodore F. Adams, Kaslo, British Columbia, Canada. Filed Jan. 3, 1902. Serial No. 88,236. (No model.)

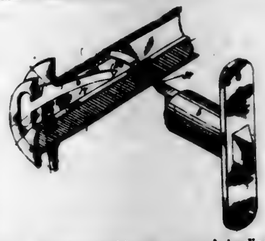

Claim.—1. A latch comprising an open-ended cylindrical casing provided near one end with a locking-aperture, an axially-adjustable cylinder fitted in the casing and provided with a longitudinal key-slot, a tumbler fitted in said slot at the rear part of the cylinder and pivoted to the latter, said tumbler extending beyond the rear end of the cylinder and the casing and provided with a locking projection arranged to enter the locking-aperture, and a spring acting against said tumbler.

2. A latch comprising a casing having locking-apertures, a slotted cylinder therein, a tumbler pivoted in the slotted part of the cylinder and having its rear portion provided with a thumb-piece which extends rearwardly beyond the casing and the cylinder, the front end of the tumbler having a key-engaging nose and said tumbler provided with a locking projection arranged to enter either aperture in the casing, means for limiting the turning movement of the cylinder within the casing, and a spring acting against the tumbler.

3. A latch comprising a slotted bolt-casing having a face-plate, a notched bolt slidable in the casing, a leaf-spring attached to the face-plate and passing through the slot in the bolt-casing and entering the notch of the bolt, a cylindrical casing having a slot 36, a cylinder in said cylindrical casing and provided with an arcuate groove 18 terminating in two shoulders, a finger attached to the slidable bolt and having a beak arranged to move in the casing-slot and to engage either shoulder of the cylinder, and a tumbler mounted in the cylinder.

708,863. QUICK RETURN FOR FEEDING DEVICES. WILLIAM J. BUSHNOER, Philadelphia, Pa., assignor to Thomas Devlin and Louis J. McGrath, copartners trading as Thomas Devlin & Company, Philadelphia, Pa. Filed Nov. 4, 1901. Serial No. 81,942. (No model.)

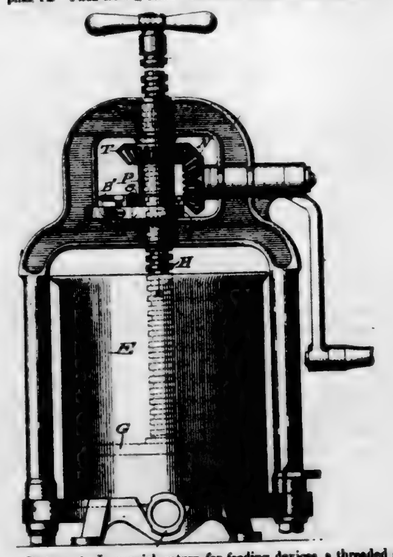

Claim.—1. In a quick return for feeding devices, a threaded stem, a sleeve surrounding the same, a plate having threads on its inner face adapted to engage with and be disengaged from the threads on said stem and a collar for holding said plate in position and which is operated when said plate is disengaged from the stem and means for revolving said sleeve and plate whereby the stem can be raised and lowered.

2. In a quick return for feeding devices, a stem, a sleeve surrounding the same, means for revolving said sleeve, a plate having threads on its inner face adapted to engage with the threads on said stem, a lug on said plate, and means engaging with said lug for moving said lug whereby said threads are engaged with or disengaged from said stem.

3. In a quick return for feeding devices, a threaded stem, a sleeve surrounding the same, a plate having threads on its inner face adapted to engage with said stem, means for raising and lowering said stem, means for operating said plate whereby the same engages with or is disengaged from said stem, and means on said plate which is normally disengaged from said operating means, and is engaged thereby to operate said plate.

4. In a quick return for feeding devices, a stem, a sleeve surrounding the same, means for revolving said sleeve and plate, a cut-away portion in said sleeve, a plate adapted to fit said cut-away portion and having threads on its inner face, a collar adapted to normally hold said plate in position, and means for operating said plate for moving said threads from the threads on said stem whereby the latter can be quickly raised or lowered.

5. In a quick return for feeding devices, a stem, a sleeve having a movable threaded portion, means for revolving said sleeve and threaded portion, pivoted jaws engaging said threaded portion whereby the same is moved from engagement with said stem.

6. In a quick return for feeding devices, a sleeve, an interiorly-threaded portion acting therewith, a gear on said sleeve, a lug on said threaded portion, spring-actuated jaws for holding said parts in normal position, a lever adapted to engage said threaded portion whereby the threads thereof are disengaged from the stem and the latter can be raised or lowered as desired.

7. In a quick return for feeding devices, a stem, a sleeve, a threaded portion movably connected therewith, jaws pivoted to each other and normally holding said sleeve and threaded portion together, a gear on said sleeve adapted to be operated to turn the latter whereby the same is raised and lowered, a lever adapted to engage with said threaded portion and cause the same to open said jaws whereby said threads on said portion are moved from engagement with the stem and the latter can be raised and lowered.

8. In a quick return for feeding devices, a stationary jaw, a spring-actuated jaw pivoted thereto, a lever pivoted to said stationary jaw, an arm having a slot therein connected with said lever, a lug on said movable jaw adapted to abut against said arm when the latter is in certain positions and adapted to pass through said slot at the proper time, a threaded stem, a sleeve surrounding said stem and having a gear thereon, and a plate having threads adapted to engage with the threads on said stem, said jaws holding said sleeve and plate and said lever being adapted to engage with said plate.

9. In a quick return for feeding devices, a stem, a sleeve surrounding the same, a plate having threads adapted to engage with the threads on said stem, means for revolving said sleeve and plate for raising and lowering said stem, a lug on said plate and means engaging with said lug for moving said plate, whereby said threads are engaged with or disengaged from said stem, and means for locking said plate in either position.

10. In a quick return for feeding devices, a sleeve, an interiorly-threaded portion acting therewith, a gear on said sleeve, a lug on said threaded portion, means for holding said parts in normal position, and a lever adapted to engage with said threaded portion, whereby the threads thereof are disengaged from the stem and the latter can be raised or lowered as desired.

11. In a quick return for feeding devices, a stem, a sleeve, an interiorly-threaded portion acting therewith, means for revolving said sleeve and threaded portion, and means normally out of the path of the movement of said threaded portion but which is adapted to be operated to engage therewith in order to remove the threads from the threads of the stem, whereby the latter can be raised or lowered.

708,864. **RESILIENT TIRE FOR VEHICLE-WHEELS.** WILLIAM E. CARMONT, Kingston-upon-Thames, England. Filed Mar. 10, 1902. Serial No. 97,548. (No model.)

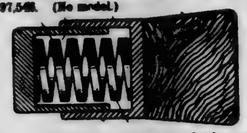

Claim.—1. In combination, a rim of a wheel provided with a peripheral channel, a plurality of segments mounted in said channel and each formed with a plurality of interiorly-arranged boxes, each of the segments further provided with openings, cushions arranged in each of the boxes of the segments, and means extending through the walls of the channel and through the openings of the segments for securing the latter to the rim.

2. The combination with the rim of a wheel provided with a peripheral channel, of a plurality of segments mounted in said channel and each formed with a plurality of interiorly-arranged boxes, each of the segments further provided with openings, rubber and spring cushions suitably mounted and arranged in the boxes of the segments, and means extending through the walls of the channel and through the openings of the segments for securing the latter to the rim.

708,865. **NUT-LOCK.** CHARLES H. CRITTON, Lexington, Va. Filed Feb. 26, 1902. Serial No. 96,774. (No model.)

Claim.—1. In a nut-lock, a plate adapted to be attached to a nut, a lever-bar pivotally supported upon said plate, a pin carried by said lever-bar and adapted to enter a cavity in the bolt engaged by said nut, and means for holding said lever-bar yieldably closed, and means for forcefully actuating said lever-bar, substantially as described.

2. In a nut-lock, the nut having a transverse aperture, a cavity in the bolt registering with said aperture, a plate disposed upon said nut, a lever-bar yieldably connected to said plate, a pin supported by said lever-bar and engaging said aperture and cavity, means for retaining said lever-bar yieldably in the closed position, and means for forcefully actuating said lever-bar to release said pin, substantially as described.

3. In a nut-lock, a plate adapted to be attached to the nut and having transverse sockets in its outer ends, a spring-tongue formed centrally of said plate between said sockets, a lever-bar having lateral journals engaging said sockets and disposed to be retained yieldably closed by said spring-tongue, and a pin supported by said lever-bar and engaging a cavity in the bolt engaged by said nut, and means for forcefully actuating said lever-bar to release said pin, substantially as described.

4. In a nut-lock, a plate adapted to be attached to the nut, a lever-bar yieldably connected to said plate, a pin supported by said lever-bar and engaging an aperture in the bolt engaged by said nut, means for retaining said lever-bar yieldably in its closed position, and an extension-lever movably attached to said lever-bar and adapted to be projected therefrom to afford means for forcefully actuating said lever-bar and its pin, substantially as described.

5. In a nut-lock, a plate adapted to be attached to the nut and having its outer end formed with side members turned backward to form lateral sockets and with a central spring-tongue, said side members and tongue being integral with said plate, a lever-bar having lateral journals integral therewith and engaging said sockets and disposed to be maintained yieldably by said spring-tongue, a pin supported by said lever-bar and engaging an aperture in the bolt engaged by said nut, and means for forcefully actuating said lever-bar to release said pin, substantially as described.

708,866. **CREAM-SEPARATOR.** MYRON A. COMSTOCK, Newark, N. Y. Filed May 23, 1902. Serial No. 108,649. (No model.)

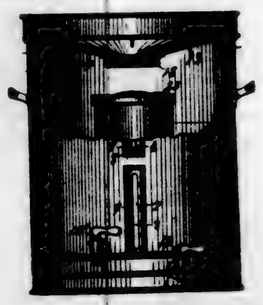

Claim.—1. A cream-separator having a subchamber and an inner upright chamber extending through the upper and lower walls of the subchamber and provided with lateral passages connecting said chambers.

2. A cream-separator comprising a receptacle having separate chambers one over the other, the upper chamber receiving the milk and the lower chamber receiving a cooling liquid, an upright tube extending centrally through the upper and lower walls of the lower chamber and separate devices for drawing off the milk and cooling liquid.

3. In a cream-separator, an outer shell having a milk-receiving chamber and a hollow bottom wall for receiving a cooling liquid, a hopper at the upper end of the receptacle provided with a screen and a central tube within the receptacle aligned with the hopper and having its lower end extended through the hollow bottom for the purpose set forth.

4. In a cream-separator, outer and inner upright receptacles, one for the milk and the other for a cooling liquid, the outer receptacle having a hollow bottom and the inner receptacle extending through and communicating with said hollow bottom.

5. A cream-separator comprising outer and inner upright receptacles, the outer receptacle having a subchamber surrounding and communicating with the base of the inner receptacle, an invertible hopper forming the top wall of the outer receptacle and disposed in a plane above the upper end of the inner receptacle, a screen in the apex of the hopper, and a deflector on the upper end of the inner receptacle beneath the screen when the hopper is in either position.

6. A cream-separator comprising outer and inner upright receptacles, the outer receptacle having a subchamber surrounding and communicating with the base of the inner receptacle, an invertible hopper forming the top wall of the outer receptacle and disposed in a plane above the upper end of the inner receptacle, the inner receptacle being open at both ends above and beneath the subchamber, and valved for the openings, the upper closure having a convex upper face beneath the screen when the hopper is inverted.

7. A cream-separator comprising outer and inner upright shells and a hollow bottom surrounding the base of the inner shell, the inner shell being open at both ends and having lateral openings in its base communicating with the hollow bottom, closures for said open ends, the upper closure having a convex face, a hopper in the upper end of the receptacle provided with a screened opening above the upper closure, and valved conduits leading from the interior of the hollow bottom and from a point above said hollow bottom for the purpose described.

708,867. **GUARD FOR PLATEN-PRESSES.** FREDERICK CROWE, Bristol, England, assignor to Marden, Son & Hall, Limited, Bristol, England. Filed Feb. 1, 1902. Serial No. 92,218. (No model.)

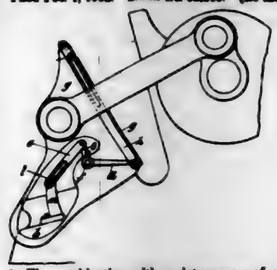

Claim.—1. The combination with a platen-press, of a guard slidably mounted on the platen member of said press, a rock-shaft carried by said member, a lever adjustably connected to said rock-shaft and pivoted at its other end to said guard, and means for operating said rock-shaft at a predetermined moment.

2. The combination with a platen-press, of a retentable member carried by the platen member of said press, lugs located adjacent the face of said platen member, a guard provided with slots engaging said lugs, a lever connected to said retentable member and pivoted at its other end to said guard, and means for operating said retentable member at a predetermined moment.

3. The combination with a platen-press, of a guard slidably mounted on the platen member of said press, a rock-shaft journaled in said member, a lever carried by said rock-shaft and pivotally secured to said guard, a yielding connection between the frame of the press and said rock-shaft, for operating said guard upwardly at a predetermined moment.

4. The combination with a platen-press, of a guard slidably mounted on the platen member of said press, a rock-shaft journaled in said member, a lever carried by said rock-shaft and pivotally secured to said guard, a drum carried by said rock-shaft, and a flexible tape secured to said drum and the frame of the press.

708,868. **HERMETIC SEALING OF TIES OR LIKE RECEPTACLES.** JOHN R. CROFT, London, England, assignor to Valves, Limited, London, England. Filed June 4, 1901. Serial No. 63,140. (No model.)

Claim.—1. A can-closing device consisting of a plurality of superposed parts having outlets, the outlets being out of line, an intermediate porous section, and a fusible seal for one of the outlets.

2. A can-closing device consisting of a plurality of superposed parts having outlets, the outlets being out of line, an intermediate porous section, and a seal of fusible metal solder for one of said outlets.

3. A can-closing device including a plurality of superposed metallic and substantially similarly concaved parts, the concavity of an upper part lying in the concavity of a lower part and the latter directly supporting the former, said parts having outlets and the outlets being out of line whereby fusible material applied to an outlet of said upper part will be arrested from downflow by said lower part.

4. A can-closing device including a plurality of superposed metallic and substantially similarly concaved parts, the concavity of an upper part lying in the concavity of a lower part and the latter directly supporting the former, said parts having outlets and the outlets being out of line whereby fusible material applied to an outlet of said upper part will be arrested from downflow by said lower part, and a piece of porous material held in place by and between said metallic parts.

5. A can-closing device including a part having a concaved portion a second part having an opening located over said concaved portion, a piece of porous material between said parts, and a fusible seal for said opening.

6. A can-closing device consisting of a plurality of superposed parts the lower one being concaved and the upper one having an opening over said concaved portion and a fusible seal for said opening.

7. A can-closing device including a part having inner and outer concaved portions and an intermediate raised portion said inner concaved portion having a hole provided with a fusible seal and a second part having a concaved portion located over the inner concaved portion and a beveled portion arranged to fit into the concaved portion of the first-mentioned part.

8. A can-closing device including a part having inner and outer concaved portions and an intermediate raised portion, a second part said parts being superposed and the upper one having a hole provided with a fusible seal having a concaved portion located over the inner concaved portion and a beveled portion arranged to fit into the concaved portion of the first-mentioned part, and a piece of porous material between said parts.

9. A can-closing device including a part having inner and outer concaved portions and an intermediate raised portion, a second part having a concaved portion located over the inner concaved portion and a beveled portion arranged to fit into the concaved portion of the first-mentioned part, a piece of porous material between the parts, the latter having non-registering openings, and a fusible seal for one of the openings.

708,869. **FOLDING COT.** JOSEPH DAVIDOFF, Brooklyn, N. Y. Filed Oct. 8, 1901. Serial No. 78,073. (No model.)

Claim.—1. A folding cot, comprising side rails for carrying a mattress, collars secured on the outer ends of the rails and having side flanges, supporting-arms for the side rails having forks at one end for engagement with the collars between the flanges, the forks having segmental flanges within which the flanges of the collars extend, as set forth.

2. A folding cot, comprising side rails each made in sections hinged together, collars secured on the sections of the side rail and having polygonal bodies and side flanges, and supporting-arms each having a fork at its outer end having its inner side walls shaped to correspond with the body of the collar, the forks being provided with segmental flanges, the flanges of the collars extending on opposite sides of the walls of the fork but within the segmental flanges on said forks, as set forth.

3. A folding cot having side rails, a mattress secured to the said side rails, collars secured on the side rails and having polygonal bodies and side flanges, and supporting-arms formed at their outer ends with forks having correspondingly-shaped side walls, walls into which fit the said collar-bodies, each fork being formed with a segmental flange the flanges of the collars extending on opposite sides of the polygonal-shaped walls of the forks but within the segmental flanges of said forks, as set forth.

4. A folding cot, comprising a reach, heads held on the ends of the reach, legs pivoted on the said heads, supporting-arms pivoted on the said heads supporting-arms pivoted on the said heads and having receiving-forks at their outer ends, side bars having collars for engaging the said forks, and a mattress carried by the said side bars, as set forth.

5. A folding cot comprising a sectional folding reach, heads secured on the ends of the reach, legs pivoted to the heads and extending radially outward and downward, supporting-arms pivoted on the heads and extending radially therefrom in an outward and upward direction, forks at the outer ends of the supporting-arms, side rails made in folding sections and having collars for engaging the said forks, and a mattress secured to the said side rails, as set forth.

6. A folding cot, comprising a reach, heads held on the ends of the reach, legs pivoted on the said heads, supporting-arms pivoted on the said heads, side bars, and a mattress carried by the side bars, the said supporting-arms and side bars being provided with engaging means, as set forth.

7. A folding cot, comprising a reach, heads screwing on the outer threaded end of the reach, flanges formed on the outer ends of the heads, washers mounted to turn on the reach and engaging the heads at the inner faces thereof, collars on the reach and engaging the washers, the said washers being provided with slots, legs pivoted on the heads between the flanges and the washers, supporting-arms pivoted on the heads, side bars adapted to be supported by said arms, and a mattress carried by the said side bars, the slots of the washers being adapted to register with the sup-

porting arms and legs to permit of folding the arms and legs on the reach, as set forth.

708,870. RAMMING APPARATUS FOR ORDNANCE. ARTHUR T. DAWSON, London, and JAMES HOGGE, Barrow-in-Furness, England, assignors to Vickers Sons & Maxim, Limited, Westminster, London, England. Filed Dec. 9, 1901. Serial No. 85,986. (No model.)

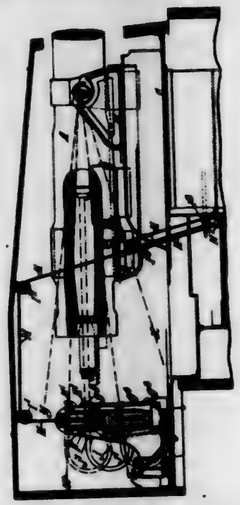

Claim.—1. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper mounted to slide in a support independent of the gun, of a pivotal guide on said slipper for the rammer-chain, of means for controlling the position of the guide relatively to its pivot during the sliding of said slipper, of gearing interposed between the gun and slipper for causing said slipper and guide to automatically follow the movements of the gun in its elevation or depression and of means for actuating the rammer for the purpose specified.

2. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper provided with a guide for the rammer and mounted to slide vertically in a support independent of the gun, of a guide for operating the rammer-guide, of a sprocket-wheel on said slipper engaging with the links of the rammer-chain, of means for imparting rotary motion to said sprocket-wheel, and of gearing connected with said slipper and actuated by the movement of the gun for causing said slipper to automatically follow the movements of the gun in its elevation or depression for the purpose specified.

3. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper provided with a guide for said rammer mounted to slide vertically in a support independent of the gun, of a sprocket-wheel mounted on a shaft carried by said slipper and engaging with the links of the rammer-chain, of means for actuating said sprocket-wheel, of means for causing said slipper to automatically follow the movements of the gun in its elevation or depression, and of means for keeping the said guide parallel with the axis of the gun as the slipper moves up or down in its support substantially as described.

4. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper provided with a guide for said rammer and mounted to slide vertically in a support independent of the gun, of a sprocket-wheel mounted on a shaft carried by said slipper and engaging with the links of the rammer-chain, of means for actuating said sprocket-wheel, of means for causing said slipper to automatically follow the movements of the gun in its elevation or depression and of a projection on the said guide engaging with an inclined groove in the said support substantially as and for the purpose specified.

5. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper provided with a guide for the rammer and mounted to slide vertically in a support independent of the gun, of a sprocket-wheel mounted on a shaft carried by said slipper and engaging with the links of the rammer-chain, of a gear-wheel on said sprocket-wheel shaft meshing with another gear-wheel adapted to revolve with and slide on a vertical shaft to which rotary motion is imparted from a suitable motor, of means for causing said slipper to automatically follow the movements of the gun in its elevation or depression, of means for keeping the said guide parallel with the axis of the gun as the slipper moves vertically up or down in its support, substantially as described.

6. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper provided with a guide for the rammer and mounted to slide vertically in a support independent of the gun, of a sprocket-wheel mounted on a shaft carried by said slipper and engaging with the links of the rammer-chain, of a gear-wheel on said sprocket-wheel shaft meshing with another gear-wheel adapted to revolve with and slide on a vertical shaft to which rotary motion is imparted from a suitable motor, of means for causing said slipper to automatically follow the movements of the gun in its elevation or depression, and of means for keeping the said guide parallel to the axis of the gun as the said slipper moves vertically up or down in its support, substantially as described.

7. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper provided with a guide for the rammer and mounted to slide vertically in a support independent of the gun, of a sprocket-wheel mounted on a shaft carried by said slipper and engaging with the links of the chain-rammer, of a gear-wheel on the said sprocket-wheel shaft meshing with another gear-wheel adapted to revolve with and slide on a vertical shaft to which rotary motion is imparted from a suitable motor, of means for causing said slipper to automatically follow the movements of the gun in its elevation or depression, of means for keeping the said guide parallel with the axis of the gun as the slipper moves vertically up or down in its support, of a spiral drum inclosed in a casing connected with said guide, of a shaft on and with which said drum can slide and revolve and of means for actuating said shaft from the sprocket-wheel shaft substantially as and for the purpose described.

8. In ramming apparatus for guns, the combination with a rammer mounted in a standard or support independent of the gun, of means for causing the said rammer to automatically follow the movements of the gun in its elevation or depression, of means for actuating the rammer, and of means for enabling said standard or support to be readily moved from its operative position for the purpose specified.

9. In ramming apparatus for guns, the combination with a rammer mounted on a standard or support independent of the gun, of means for causing the said rammer to automatically follow the movements of the gun in its elevation or depression, of means for actuating the rammer, and of a pivot about which said support can hinge substantially as and for the purpose specified.

10. In ramming apparatus for guns, the combination with a rammer mounted in a standard or support independent of the gun; of means for causing the said rammer to automatically follow the movements of the gun in its elevation or depression; of means for actuating the rammer, of a pivot about which said support can hinge, and of means for locking said support in its operative position substantially as and for the purpose specified.

11. In ramming apparatus for guns, the combination with a flexible rammer, of a slipper provided with a guide for the rammer and mounted to slide in a support independent of the gun, of a rope or chain having one end connected with the slipper and the other end with a part that does not participate in the movements of elevation or depression of the gun, of guide-pulleys for said rope or chain one of which is carried by a part that participates in the elevation or depression of the gun and around which a bight of the said rope or chain passes and of means for compensating for the slackness or the tightness in the said rope or chain for the purpose specified.

12. In ramming apparatus for guns, the combination with the flexible rammer, the rammer-guide, the support independent of the gun, the sliding slipper, the rope or chain and its guide-pulleys; of a pulley adapted to slide in a fixed guide, and of a weight tending to press said pulley against a portion of the aforesaid rope or chain substantially as and for the purpose specified.

13. In ramming apparatus for guns, the combination with the flexible rammer, the rammer-guide, the support independent of the gun, the sliding slipper, the rope or chain and its guide-pulleys; of a pulley adapted to slide in a fixed guide, of a weight tending to press said pulley against a portion of the aforesaid rope or chain and of a removable stop for limiting the extent of movement of said pulley in its guide substantially as described.

14. In ramming apparatus for guns, the combination with the flexible rammer, the rammer-guide, the support independent of the gun, the sliding slipper, the rope or chain and its guide-pulleys; of a vertical pivot for said support to swivel upon, and of a horizontal pulley working on an axle which is approximately coincident with the axis of the pivot of said support, so that the length of the rope or chain passing from said pulley to the slipper will not materially vary in length when said support is turned about its pivot substantially as described.

708,871. CARTRIDGE-EXTRACTOR FOR GUNS. ARTHUR T. DAWSON and GERARD T. BUCKNALL, Westminster, London, England, assignors to Vickers Sons & Maxim, Limited, Westminster, London, England. Filed Feb. 28, 1902. Serial No. 96,102. (No model.)

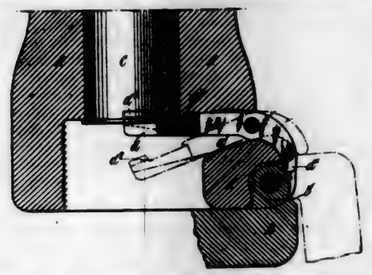

Claim.—1. The combination with the swinging carrier of a breech-loading gun, of an extractor consisting of a pivoted lever having lips adapted to engage with the flange of the cartridge-case, first at a point in proximity to the pivot of said lever and then at a point remote from said pivot, and of means for actuating said lever during the swinging of the carrier, substantially as described.

2. The combination with the swinging carrier of a breech-loading gun, of an extractor consisting of a U-shaped pivoted lever having ejecting-lips at its inner ends an extracting or prizing lip at the base of the U and also having a tail projecting through an opening in the breech-chamber and lying in the path of a cam-surface on the carrier-hinge substantially as and for the purpose described.

3. The combination with the swinging carrier of a breech-loading gun, of an extractor consisting of a U-shaped pivoted lever having at its inner ends ejecting-lips which lie a short distance in front of the cartridge-flange when the breech is closed, an extracting or prizing lip at the base of the U to lie in close contact with the front of the cartridge-flange at the side nearest to the pivot of the extractor, and a bent tail projecting through an opening in the breech-chamber and lying close to a cam-surface on the carrier-hinge, said cam-surface being formed with a shoulder for imparting to the extractor a sudden accelerated movement during the completion of the opening movement of the carrier substantially as and for the purpose specified.

708,872. HAT. ALBERT L. DELISE, Paris, France. Filed Mar. 19, 1902. Serial No. 98,997. (No model.)

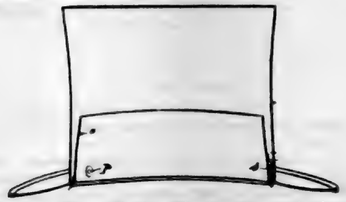

Claim.—1. The combination with a hat, of a sweat-band, means for resilvably connecting the band to the hat, and a spring yielding strip secured to the lower edge of the band and of larger diameter than the hat-opening.

2. In combination with a hat, a removable sweat-band, fastening-device members fixed to the hat and to the band, the openings of said members being upward, fastening devices fixed to the band and so arranged as to extend downward into the first-named devices, and a spring-wire fixed to the lower edge of the sweat-band and of larger circumference than the hat-opening, whereby the band will be held from moving upward in the hat.

708,873. ROUNDABOUT. MARTIN J. DOHER, St. Louis, Mo., assignor of one-half to John J. Desmarest, St. Louis, Mo. Filed Mar. 24, 1902. Serial No. 99,042. (No model.)

Claim.—1. In a roundabout, the combination of a revolvable frame, a serpentine track, rockers carried by said frame and having traveling engagement with said serpentine track, suspension-ropes connected in pairs to said rockers and extending downwardly from said frame, and carriages each adapted to receive the connection of two of said ropes attached to separate rockers, substantially as described.

2. In a roundabout, the combination of a revolvable frame, a serpentine track, rockers having pivotal connection to said frame, rollers carried by said rockers and adapted to travel against said serpentine track, suspension-ropes connected to said rockers and extending downwardly from said frame, and carriages each adapted to receive the connection of two of said ropes attached to separate rockers, substantially as described.

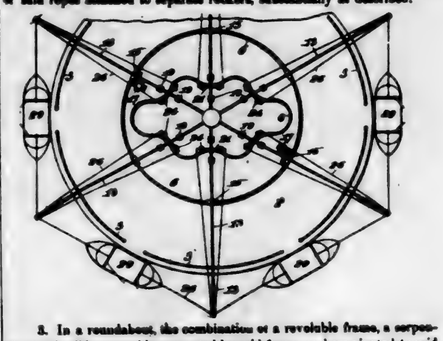

3. In a roundabout, the combination of a revolvable frame, a serpentine track, slides movably supported by said frame, rockers pivoted to said slides, suspension-ropes connected to said rockers and extending downwardly from said frame, and carriages each adapted to receive the connection of two of said ropes attached to separate rockers, substantially as described.

4. In a roundabout, the combination of a revolvable frame having radially-arranged beams, a serpentine track, slides movably fitted to said beams, rockers pivoted to said slides, rollers mounted in said rockers and adapted to travel against said serpentine track, suspension-ropes connected to said rockers and extending downwardly from said frame, and a series of carriages each adapted to receive the connection of two of said ropes attached to separate rockers, substantially as described.

708,874. OXIDIZING APPARATUS. ALEXANDER H. DUDDA, Philadelphia, Pa. Filed Aug. 14, 1901. Serial No. 72,057. (No model.)

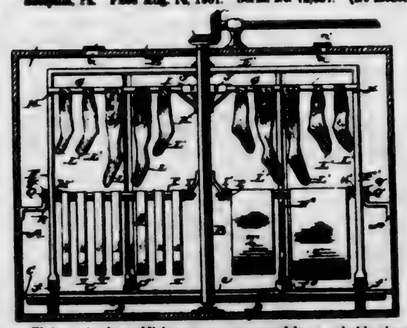

Claim.—1. An oxidizing apparatus comprising a suitable chamber provided with a ceiling, adjustable ventilating means in the ceiling, heating means located above the floor of the chamber, a rotatable rack contained within the chamber, a circular track on which the rack is supported and upon which it rotates and independently-removable poles carried by the rack, the poles having articles to be dried attached thereto.

2. An oxidizing apparatus comprising a suitable inclosed chamber, heating means stationarily located therein, horizontally-rotating means contained within the chamber, a plurality of series of supports carried by the rotary means one of the series of supports provided with means to intermittently actuate them in a direction at right angles to the plane of movement of the horizontally-rotating means.

3. A drying apparatus comprising a suitably-inclosed chamber, heating means in the chamber, a rotating rack contained within the chamber, the rack provided with a plurality of independently-rotatable radial arms journaled thereto, spurs secured to and rotating with the radial arms, stationary pins placed at intervals within the chamber, the spurs adapted to contact with the pins to intermittently rotate the radial arms.

4. A drying apparatus comprising an inclosed chamber, a rotary rack therein, a plurality of radial arms carried by the rack and rotating therewith, certain of the radial arms independently rotatable in a direc-

tion at right angles to the direction of rotation of the rack, the independently-rotatable arms being flat-sided in form, spurs carried by the last-mentioned arms and rotating therewith, studs mounted in the path of the spurs, the spurs adapted to intermittently contact with the studs to effect a partial rotation of the independently-rotatable arms during the rotation of the rack.

5. An oxidizing apparatus comprising an inclosed chamber, a rotatable rack therein, rotating means therefor, the rack provided with a series of vertical supports, rollers on the supports, a trunk upon which the rollers bear, annular notched bands connecting the vertical supports of the rack, annular notched braces surrounding and secured to the rotating means, independently-removable pans supported in the notches in the bands and braces and means for intermittently actuating certain of the pans in a rotatory direction at right angles to that in which the rack moves.

708,875. DYNAMO AND MAGNETO-ELECTRIC MACHINE. NATHAN H. EDGERTON, Philadelphia, Pa. Filed May 23, 1902. Serial No. 108,704. (No model.)

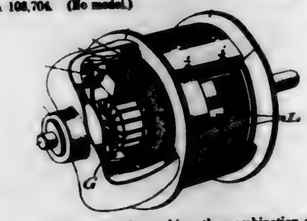

Claim.—1. In an electric machine, the combination of an isolated field magnet or magnets, composed of soft iron, energized or intensified from or by the current flowing through the armature-coils, with an armature embraced by said magnets and having its windings parallel with its shaft.

2. The combination with segregated fields of soft iron, energized by currents flowing through the armature-circuit only, of an annular inclosing frame of diamagnetic material, and an armature within said magnets having its windings parallel with its shaft, and at right angles to the laminated field.

3. In an electric machine, the combination of an isolated field magnet or magnets, composed of soft iron energized or intensified from or by the current flowing through the armature-coils, with an armature embraced by said magnets in a shell of diamagnetic material, and having its windings parallel with its shaft.

708,876. MECHANISM FOR RELEASING OR OPERATING PHOTOGRAPHIC SHUTTERS. ARTHUR H. EDWARDS, London, England. Filed Apr. 14, 1902. Serial No. 102,633. (No model.)

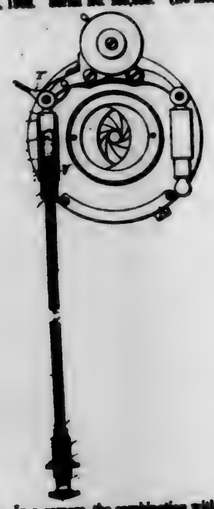

Claim.—1. In a camera, the combination with the shutter-releasing mechanism, of a flexible inner member secured to the camera; a flexible outer member, movable longitudinally of said inner member, engaging said shutter-releasing mechanism, and comprising a plurality of sections separable from and unconnected to each other; and means for operating said outer member.

2. In a camera, the combination with the shutter-releasing mechanism, of a flexible inner member; a flexible outer member provided with slots and rollers mounted therein, one of said members being movable longitudinally of the other and adapted to engage said shutter-releasing mechanism; and means for operating said movable member.

3. In a camera, the combination with the shutter-releasing mechanism, of a flexible inner member and a flexible outer member, one of said members being movable longitudinally of the other and adapted to engage said shutter-releasing mechanism, said outer member comprising a plurality of sections separable from and unconnected to each other, and each section provided with a roller mounted therein; and means for operating said movable member.

4. In a camera, the combination with the shutter-releasing mechanism, of a flexible inner member and a flexible outer member, one of said members being movable longitudinally of the other and adapted to engage said shutter-releasing mechanism, said outer member comprising a plurality of sections separable from and unconnected to each other, and each section provided with slots and rollers mounted therein; and means for operating said movable member.

5. In a camera, the combination with the shutter, of a flexible inner member; a flexible outer member, movable longitudinally of said inner member, and comprising a plurality of sections separable from and unconnected to each other, a shutter-releasing device connecting said shutter and outer movable member; and a handle composed of two members, one of said handle members connected to said inner flexible members, and the other said handle member being movable relatively to the first handle member and engaging said outer flexible member for operating the same.

708,877. SOAP-HOLDER. JOHN P. BOWEN, Newtonville, Mass. Filed Nov. 20, 1901. Serial No. 83,972. (No model.)

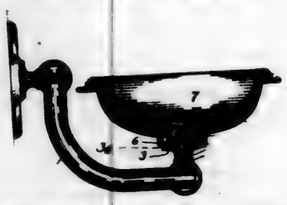

Claim.—The combination of a body-dish having an outwardly-projecting ledge; a drainer having an outwardly and downturned lip which rests on said ledge, the under side of the brim-forming portion of the drainer being removed from said ledge.

708,878. SHEET-DELIVERY FOR PRINTING-PRESSES. GEO. P. PERRIN, New London, Conn. Filed Apr. 12, 1902. Serial No. 102,614. (No model.)

Claim.—1. A delivery apparatus for printing-machines comprising a reciprocating tape-carriage provided at its front end with an intermittently-operating delivery-roll, and a roll-driving or friction-strap mounted independently of the carriage and made to be slackened at suitable intervals to permit the roll to remain stationary during the return of the carriage.

2. A tape-carriage having an intermittently-acting delivery-roll in advance of the tape, starting or drop wheels for the roll, a lifter or cam for moving the drop-wheels out of action, and a friction-strap for causing the operation of the roll, said strap being secured at its ends independently of the carriage and made to slacken at suitable intervals to leave the roll idle on the return of the carriage.

3. A tape-carriage having an intermittently-acting delivery-roll in advance of the tape, starting or drop wheels for the roll, a carrier having a roll held against the said roll, and a lifter or cam for moving the drop-wheels and carrier with its roller out of action.

4. A delivery apparatus for printing-machines comprising a reciprocating carriage provided with an intermittently-acting front or turning roll, and a curling-finger extended about the roll and having an extension provided with friction-rollers extended under the roll.

5. A delivery apparatus for printing-machines comprising a reciprocating carriage provided with an intermittently-acting front or turning roll, a curling-finger about the roll and having an extension, and a spring for holding the extension in action or to the roller.

6. A delivery apparatus for printing-machines comprising a front or turning roll and a belt or strap for alternately engaging and releasing the roll to cause the same to be intermittently driven or rotated.

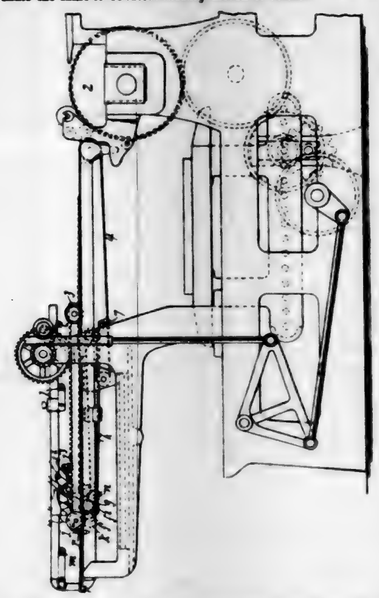

7. A delivery apparatus for printing-machines comprising a front or turning roll, an actuating strap or belt and mechanism for intermittently tightening the belt to drive the roller.

8. A delivery apparatus for printing-machines comprising a front or turning roll, an actuating belt or strap and a tumbler for intermittently causing the belt to tighten or engage the roller.

9. A delivery apparatus for printing-machines comprising a front or turning roll, an actuating belt or strap for the roll, a tightening-roller for the belt and a lever and tumbler for actuating the tightening-roller.

10. A delivery apparatus for printing-machines comprising a front or turning roll, an actuating belt or strap for the roll, a tumbler having a cam portion, and a lever and belt engaging or tightening roller actuated by the cam.

11. A delivery apparatus for printing-machines comprising a front or turning roll, an actuating belt or strap for the roll, a tumbler for causing the belt to engage or drive the roller, and an actuating-pin for the tumbler.

12. A delivery apparatus for printing-machines comprising a front or turning roll, an actuating belt or strap for the roll, a spring-engaged belt-tightening tumbler and pins for tripping the tumbler.

13. A delivery apparatus for printing-machines comprising a front or turning roll, a driving belt or strap and brake for the roll and a tumbler for tightening the belt and moving the brake.

14. A delivery apparatus for printing-machines comprising a front or turning roll, a driving belt or strap and a brake for the roll, and a tumbler for putting the strap in action while taking off the brake.

15. A delivery apparatus for printing-machines comprising a front or turning roll, a driving belt or strap and a brake for the roll and a tumbler for causing the belt and brake to alternate with one another.

16. A delivery apparatus for printing-machines comprising a front or turning roll, driving mechanism for the roll, a carrier for the roll, and a dog or holder for securing the carrier out of action.

17. A sheet-delivery apparatus for printing-machines comprising a reciprocating tape-carriage with tape-rollers and a front roller and an adjustable gear made to be set for connecting the front roller to the tape-roller.

18. A sheet-delivery apparatus for printing-machines comprising a reciprocating tape-carriage with tape-rollers and a front roller, a frame movable or adjustable about the center of the front roll and a gear carried by the frame for connecting the front roll to a tape-roller.

19. A sheet-delivery apparatus for printing-machines comprising a reciprocating tape-carriage with tape-rollers and a front roller, friction-wheels for the margin of the sheet, friction-wheels made to contact with the surface of the front roll, and a gear for connecting the front roll to a tape-roll.

708,879. ROTARY ENGINE OR MOTOR. NICOLAS J. POSTUMUS and ALFRED GRAMME, Liege, Belgium, assignors of one-third to Joseph Georges, Liege, Belgium. Filed Nov. 7, 1901. Serial No. 81,267. (No model.)

Claim.—In a rotary engine or motor, a cylinder having a concentric channel, an induction-port leading thereto, an opening leading from the channel to the interior of the cylinder, an eduction-port leading from the interior of the cylinder, circular grooves in the cylinder-heads concentric with the cylinder, a rotary piston-disk eccentric to the cylinder, pistons slidably mounted in the disk at an angle to the radius, rollers yieldingly carried by the pistons and traveling in the grooves, and yielding contact-bars carried by the pistons.

708,880. SAND-BLAST MACHINE. FRANK J. HEIDGER, West Bridgewater, Pa. Filed Oct. 5, 1901. Serial No. 77,995. (No model.)

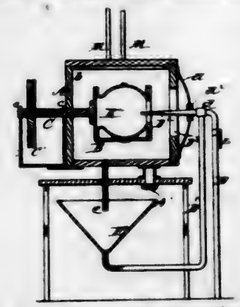

Claim.—1. In a sand-blast machine, the combination with a closed chest mounted on a vertical axis, a horizontal spindle journaled on said chest and having a work-holder and means for turning the chest on its axis and for revolving the spindle, of a sand-nozzle projecting into the chest, an air-pipe to which said nozzle is connected, an air-valve on said pipe, and means for closing said valve automatically when the chest has turned the requisite distance.

2. In a sand-blast machine, the combination with a closed chest mounted on a vertical axis, a horizontal spindle mounted on said chest and means for imparting a rotary motion to the spindle, of means for imparting a rotary movement to the chest independently of the movement of the spindle, whereby the rates of motion of the spindle and chest may be varied each independently of the other, substantially as described.

3. In a sand-blast machine, the combination of a closed chest mounted on a vertical axis, a revolving spindle mounted on said chest and carrying a work-holder and means for imparting rotary motion to the chest and the spindle, of a sand-nozzle extending into said chest and a flexible diaphragm attached to the chest and through which said nozzle projects, substantially as described.

4. In a sand-blast machine the combination with the air-pipe D, a valve on said pipe and a valve-handle L, and automatically-rotating box or chest A, of means for automatically closing the air-valve, when the work is finished.

708,881. BORING AND DRILLING MACHINE. BENJAMIN H. HERVEY, Ellensburg, Wash. Filed Mar. 20, 1902. Serial No. 98,057. (No model.)

Claim.—1. In a drilling and boring machine, the combination of

ure two alined shafts M and O having a swiveling coupling N and means for locking this coupling so that the two shafts turn together as one, an endwise screw-feed for the shafts, a counter-shaft G, gears for transmitting power from shaft M to shaft G, separable gears for transmitting power from shaft G to shaft O, one of said latter gears having a feather-and-groove connection with shaft O, substantially as described.

2. In a drilling and boring machine, the combination of the two alined shafts M and O having a swiveling coupling and means for locking the same, a parallel counter-shaft G, two pairs of separable gears for imparting motion from shaft M to shaft G, said pairs of gears being arranged for different speed and having shifting devices for coupling one pair and uncoupling the other pair, and a third set of separable gears for imparting motion from shaft G to O, one of said gears being connected to the shaft by a feather and groove, and a screw-feed for said latter shaft substantially as described.

3. In a boring and drilling machine, the combination with the boring-shaft; of a cup-shaped support for holding the article to be bored, said cup-shaped support having its open side next the drill and having a set-screw tapped through the sides of the cup to hold the article to be acted upon substantially as described.

708,882. SUSPENDERS OR OTHER GARMENT-SUPPORTER. HENRY C. HIER, New Britain, Conn. Filed June 20, 1902. Serial No. 112,404. (No model.)

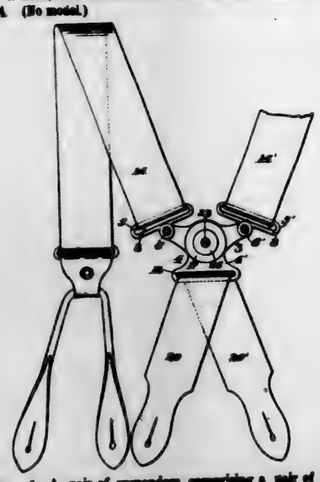

Claim.—1. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end, said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever being formed of thin sheet metal, and said hanger being also formed of thin sheet metal and being connected to said lever between the ends of the latter; a set of bearing-balls; said lever and hanger being so stamped or formed and assembled that they cooperate to form an annular race in which said balls are placed, said balls running in contact with each of said lever and hanger elements; and means for retaining said lever, hanger and balls in coöperative relation; whereby extensive bearing-surfaces of the thin sheet metal are brought into use, and the rapid cutting away of a bearing by the thin edge of either of said lever and hanger elements is avoided.

2. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; each of said lever and hanger elements being stamped up from thin sheet metal, and at least one thereof having stamped therein an annular channel forming a portion of a ball-race, and the other of said members having formed therein a coöperating ball-race portion; a set of balls working in said channel or said race; and means for retaining said lever, hanger and balls in coöperative relation.

3. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; each of said lever and hanger elements being stamped up from thin sheet metal, and each having struck up therein an annular channel, the channels together forming a ball-race; a set of balls working in said race; and means for retaining said lever, hanger and balls in coöperative relation.

4. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said straps being connected to said lever by means of chapes pivoted to the latter; each of said lever and hanger elements being reinforced by an annular channel struck up therein, said channels taken together forming a ball-race; a set of balls in said race; and a central device holding said lever, hanger and balls in coöperative relation.

5. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; each of said lever and hanger elements being stamped up from thin sheet metal, and each having struck up therein an annular channel, the channels together forming a ball-race; a set of balls working in said race; a second annular channel provided upon one of said lever and hanger elements; a second set of balls in said second channel; and means for retaining in coöperative relation said lever, said hanger and said sets of balls.

6. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; each of said lever and hanger elements being stamped up from thin sheet metal; one of said lever and hanger elements having upon its opposite faces struck-up annular channels, and the other thereof being provided with means on both sides of said first-mentioned member for coöperating with both of said channels to form ball-races; and sets of balls in said races: one of said races being of smaller diameter than the other.

7. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end, said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; each of said lever and hanger elements being stamped up from thin sheet metal; one of said lever and hanger elements having upon its opposite faces struck-up annular channels, and the other thereof having a struck-up annular channel for coöperating with one of said first-mentioned channels to form a ball-race, and a centrally-arranged transverse connector having a head which coöperates with the other of said first-mentioned channels to form another ball-race; and sets of balls in said races.

8. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end, said connecting device comprising a member to which said shoulder-straps are connected, and a second member to which said suspender-end is connected; said members being stamped up from thin sheet metal, and being connected together; a set of bearing-balls; said members being so stamped or formed and assembled that they coöperate to form an annular race in which said balls are placed; and means for retaining said members and said balls in coöperative relation; whereby extensive bearing-surfaces of the thin sheet metal are brought into use, and the rapid cutting away of a bearing by the thin edge of either of said members is avoided.

708,888. GAS-GOVERNOR. DAVID E. HODGMS, San Francisco, Cal. Filed Sept. 20, 1901. Serial No. 75,965. (No model.)

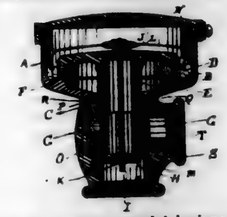

Claim.—In a gas-governor, a vessel A having an inwardly-extending lower portion and an open-ended laterally-apertured hollow stem C connecting with said inwardly-extending portion, said stem being interiorly screw-threaded, a separable bottom piece D having an annular flange resting on the interior surface of the inwardly-extending portion of the vessel and coöperating with the surrounding wall of the vessel to form a groove B for liquid, a depending screw-threaded stem on the bottom piece engaging the interior screw-thread of the hollow stem C of the vessel to secure said bottom piece firmly in place, a float adapted to be immersed in the liquid in the groove B, and a valve suspended from said float and arranged to regulate the opening at the lower end of the stem C, substantially as described.

708,884. BREECH MECHANISM FOR ORDNANCE. CARL HOLMSTRÖM, Glasgow, Scotland. Filed Jan. 8, 1902. Serial No. 88,939. (No model.)

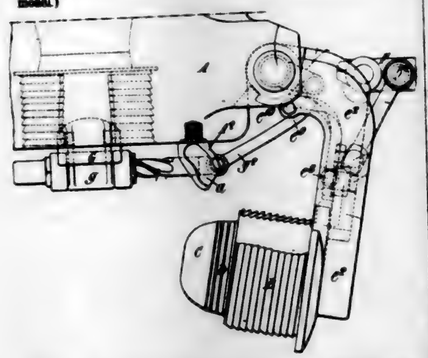

Claim.—1. In breech mechanism for guns, the combination with a swinging carrier formed of two members one of which is capable of independent movement relatively to the other, of a block rotatably mounted on the independently-movable member, of a projection on the independently-moving member adapted to travel along a cam-path on the gun and to impart to the block during the swinging of the carrier, a movement first in a curved path, then in an approximately straight path and then again in a curved path, and of a stationary cam-surface with which another projection on the independently-movable member engages during the swinging movement of the carrier substantially as and for the purpose specified.

2. In breech mechanism for guns, the combination with a swinging carrier, a block rotatably mounted thereon, and a hand-lever for actuating said carrier; of a bell-crank lever pivoted to the carrier and engaging with a slot in the block, and of a rod connecting the bell-crank lever to the said hand-lever at a point near to the fulcrum of the latter and in a manner to permit of said rod moving in both a vertical and a horizontal plane, substantially as and for the purpose specified.

3. In breech mechanism for guns, the combination with a swinging carrier, a block rotatably mounted thereon, and a hand-lever for actuating said carrier; of a bell-crank lever pivoted to the carrier so as to operate in a vertical plane and engaging with a slot in the block, of a short arm located near the fulcrum of the hand-lever, and of a rod connecting the bell-crank lever to said short arm through universal joints substantially as and for the purpose specified.

4. In breech mechanism for guns, the combination with a swinging carrier, a block rotatably mounted thereon, and means for actuating said block by a hand-lever; of a shot-guide hinged to the gun, of a sliding quick-threaded rod engaging with corresponding threads in the boss of the hinged shot-guide, and of means for imparting a rectilinear movement to said quick-threaded rod as the carrier is swung in opening and closing the breech, substantially as and for the purpose specified.

5. In breech mechanism for guns, the combination with a swinging carrier, a block rotatably mounted thereon, and means for actuating said block by a hand-lever; of a shot-guide hinged to the gun at a point below the breech and adapted to turn in a vertical plane, of a sliding quick-threaded rod engaging with corresponding threads on the boss of the shot-guide, and of means for imparting a rectilinear movement to said quick-threaded rod as the carrier is swung in opening and closing the breech, substantially as and for the purpose specified.

6. In breech mechanism for guns the combination with a swinging carrier, a block rotatably mounted thereon and means for actuating said block by a hand-lever; of a shot-guide hinged to the gun at a point below the breech and adapted to turn in a vertical plane, of a sliding quick-threaded rod engaging with corresponding threads on the boss of the hinged shot-guide of a crank on the carrier-pivot of a bar connecting said quick-threaded rod with said crank, substantially as and for the purpose specified.

708,885. EMERGENCY-BRAKE. WILLIAM W. HOPKINS, St. Louis, Mo., assignor of one-half to Wilson P. H. Turner, Normandy, Mo. Filed Nov. 27, 1901. Serial No. 83,843. (No model.)

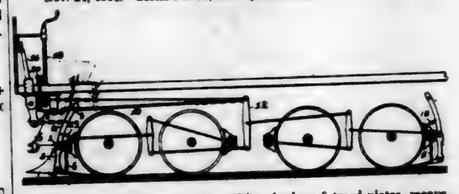

Claim.—1. The combination with a brake, of tread-plates, means for moving them into contact with the rails, so that the wheels will move upon them, and connections between the tread-plates and the brake mechanism; whereby all the brakes on the car will be applied when the wheels move onto any of said plates, substantially as specified.

2. The combination with a brake, of tread-plates in each truck, means for moving the plates in the front truck onto the rails so that the wheels will travel upon them, and lever connections between said plates and the brake mechanism so that all the brakes on the car will be applied whenever the wheels pass onto any of said plates, substantially as specified.

3. The combination with a brake, of tread-plates, means whereby said plates can be placed upon the rails to form treads for the wheels, means for applying the brakes when the wheels pass onto said plates; and means for releasing the brakes while the wheels are yet upon the plates, substantially as specified.

4. The combination with a brake, of tread-plates, means for placing certain of said plates upon the rails so that the wheels will pass upon them, connections between the tread-plates and the brake mechanism, and means for operating said connections to set all the brakes when the wheels pass onto any of the tread-plates, substantially as specified.

5. The combination with a brake, of tread-plates in front of the forward truck, a rock-shaft for supporting said tread-plates, means for operating the rock-shaft to move the tread-plates onto the rails to form treads for the wheels and connections between the rock-shaft, and the brake mechanism, whereby, all the brakes will be set whenever the wheels pass onto the said tread-plates, substantially as specified.

6. The combination with a brake, of thin metallic tread-plates, a rock-shaft supporting said tread-plates, means for operating the rock-shaft to move the tread-plates onto the rails to form treads for the wheels and connections leading from the rock-shaft to the brake mechanism, whereby, all the brakes will be set whenever the wheels pass onto the said tread-plates, substantially as specified.

7. The combination with a brake, of tread-plates means for holding them off of the rails and away from the wheels, means for placing certain of them upon the rails to form treads for the wheels, and means for setting all the brakes on the car when the wheels pass onto the tread-plates, substantially as specified.

8. In a car the combination with the usual brake, of a fender and tread-plates, means for placing the tread-plates upon the rails to form

treads or runners for the wheels, means for setting all the brakes on the car when the wheels pass onto said plates and means for lowering the fender to the track and holding it there when the wheels pass onto the tread-plates, substantially as specified.

708,886. **SELF-WINDING CLOCK.** CHARLES HOUR, Paris, France. Filed Dec. 17, 1901. Serial No. 86,230. (No model.)

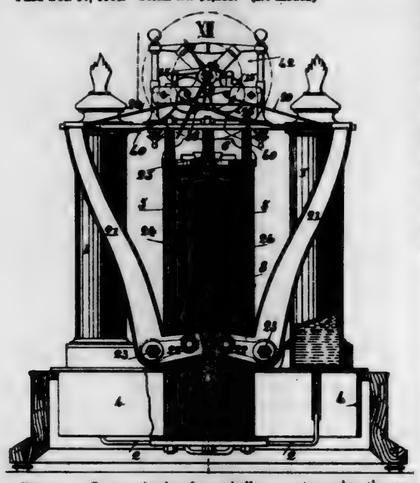

Claim.—1. In a mechanism for rewinding a motor-spring, the combination of reservoir-receptacles, extensible corrugated receptacles in communication with said reservoir-receptacles, a cross-head actuated by the extension movement of said extensible receptacles, levers connected to said cross-head, and spring arbors having flexible connections with said levers.

2. A mechanism for rewinding a motor-spring, comprising a reservoir-receptacle having an extensible tube, one end of which is fixed and in communication with said receptacle, bell-crank levers, rods or pitmen connecting the movable end of said extensible tube with the bell-crank levers, the spring-arbors each having a spiral spring, flexible ribbons connecting said levers with said arbors and adapted to actuate the arbors on the extension movement of said tubes, and means actuated by the arbors for winding a clock-barrel or spring-box on the recoil of said springs.

3. A mechanism for rewinding a motor-spring, comprising two springs, each having one of its ends fixed, arbors to which are secured the other ends of said springs, extensible tubes adapted to contain a liquid, levers connected with said tubes, ribbons connecting said levers with one of said arbors, other ribbons connecting the same levers with the other arbors, and means for separately actuating the motor-springs by the recoil of the springs on the arbors.

4. A mechanism for rewinding a motor-spring, comprising a frame, an extensible tube having one end fixed to said frame, levers pivoted to the frame and connected operatively with the tube, a barrel or spring-box pivoted to a plate on said frame, an arbor in said barrel, a spiral spring connecting said arbor and the barrel, flexible ribbons attached to the arbor and the levers, a removable plate attached to the first-named plate, a motor-spring supported by said removable plate, and ratchet-wheels and pawls on the first-named fixed plate and disposed to actuate the motor-spring by the shortening movement of the springs on said arbors.

5. An automatically-wound clock, comprising a receptacle, an extensible tube adapted to receive a liquid dilatable by heat and to lengthen and contract according to variations of the temperature, an arbor, an intermediate spring having one end attached to the arbor, and its other end fixed to a suitable device, a flexible ribbon, means for connecting said ribbon to said arbor and to the extensible tube, a clock barrel-spring, and means connecting the clock barrel-spring with said arbor and adapted to wind the barrel-spring by the rotation of the arbor, said rotation being produced by the unwinding of the intermediate spring; said flexible ribbon adapted to become slack on contraction of the extensible tube, and the intermediate spring adapted to remain tight after a previous winding, whereby the extensible tube can subsequently dilate without coiling the intermediate spring until the flexible ribbon shall have been again stretched.

6. An automatically-wound clock comprising a receptacle, an extensible tube in communication therewith, an intermediate spring, means for connecting said spring with said tube and consisting of a flexible ribbon, a clock barrel-spring, and ratchet-wheels connecting the said springs so as to wind the last spring by the shortening of the first spring.

7. An automatically-wound clock comprising a frame, a receptacle thereon, an extensible tube in communication with the receptacle, a transmission-shaft, a flexible connection between said tube and said shaft, a plate secured on the frame, an intermediate spring attached to the frame and said shaft, another plate removably secured to the first plate, a clock-movement supported on said removable plate, and ratchet-wheels mounted on the fixed plate and arranged to connect the transmission-shaft with the shaft of the spring-barrel of the clock-movement.

8. In a mechanism for rewinding a motor-spring or the like, the combination of a reservoir, an extensible tube in communication therewith, a cross-head controlled by said tube, a work-shaft, and a lever linked to the cross-head and having a flexible connection with the work-shaft.

9. In a mechanism for rewinding a motor-spring or the like, the combination of a cross-head, thermostatically-actuated mechanism for imparting slidable travel to said cross-head, separate work-shafts adapted to actuate suitable transmitting devices, and levers actuated by the cross-head and each having independent flexible connections with said separate work-shafts.

708,887. **CORSET ATTACHMENT AND STOCKING-SUPPORTER.** LUCY B. IRESAN, Wilkesbarre, Pa. Filed Feb. 12, 1902. Serial No. 93,675. (No model.)

Claim.—1. In a corset attachment, the two-part abdominal support, comprising duplicate plate-sections each of nearly quadrate form, securable at their upper edges upon the lower edge of a separable corset-front, so that their upright meeting edges will aline with like edges of the corset, loop-plates and studs at the upright edges on the plate-sections for their detachable connection, and links depending from lower edges of the plate-sections, having laterally-swinging connection with the lower portions of the plate-sections, and adapted to connect stocking-supports therewith.

2. The combination with the open front of a corset, of an abdominal support, comprising two similar nearly-square plate-sections having rounded outer corners, and fibrous coverings thereon, said plate-sections being secured upon the lower edge of the corset at the front, the upright edges of plate-sections alining with respective front edges of the corset, a pendent link held to rock laterally upon the lower edge portion of each plate-section, tubular formations on lower ends of the links, and two pliable stocking-supporters loosely connected with the tubular formations.

708,888. **JOINT FOR TOY RAILROAD-TRACKS.** HARRY C. IVES, Bridgeport, Conn., assignor to the Ives Manufacturing Corporation, Bridgeport, Conn., a Corporation of Connecticut. Filed July 23, 1902. Serial No. 116,611. (No model.)

Claim.—1. In a sheet-metal railway-track the combination with a bollow tread and two vertically-disposed web members, of a pin adapted to enter said hollow tread and provided with a projecting fin or wing to fit in between the web members to retain the pin in place.

2. A rail-section formed of sheet metal having a hollow tread and a substantially hollow web, a pin fitted into the hollow tread of the rail and provided with a depending fin extending into the opening of the web and indentations in the web fore and aft of the fin to prevent its withdrawal.

3. A railway connection comprising a rail having a hollow tread and web, a pin in said hollow tread having a projection to enter the opening of the web to prevent the turning of the pin, the stock of the web being swaged in around the projection to prevent the lateral movement of the pin.

4. In a connection for toy-track sections, the combination with a rail having a hollow tread and web, of a pin to enter said tread with recesses on the side and inward projections of the rail to enter said recesses of the pin, in a manner to prevent both the withdrawal and turning of the pin within the rail.

5. A railway-joint consisting of a pin having rounded ends and a fin struck up and projections from one side of the pin, one end of the pin and its fin being adapted to frictionally enter the hollow tread and rail-web.

6. A railway-joint consisting of a pin having rounded ends and a fin struck up and projecting from one side of the pin, one end of the pin being adapted to frictionally enter the hollow tread and rail-web, and means to engage the fin to prevent its withdrawal from said rail.

7. A railway-joint, comprising a rail having a hollow tread and web, of a pin to enter said tread bearing indentations on opposite sides and a fin to enter the web, projections in the sides of the rail to engage both the indentations and the fin in a manner to retain the pin against both rotary and lateral movement.

708,889. **TIME-STAMP.** CARL F. JOHNSON, Milwaukee, Wis. Filed Oct. 4, 1897. Serial No. 653,992. (No model.)

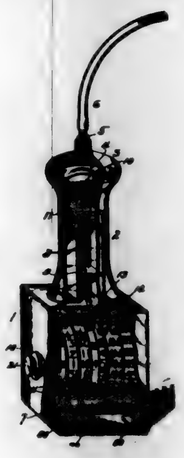

Claim.—1. In combination with a wheel having notches 31; dog 34 having tooth 35 of a width less than that of the notches and having also hook 36; means for moving said dog; and a locking-lever 27 provided with locking-ear 28 and with projection 29, the latter located in the path of hook 36.

2. In combination with a wheel and with means for imparting a step-by-step rotation thereto; a ring secured to said wheel and having a cam-shaped periphery with a step intermediate of its portions of least and greatest radius and an inwardly-projecting stud; a notched disk concentric with but independent of the wheel; a lever arranged to bear upon the peripheral cam-face of the ring and having a slotted end; a spring serving to hold said lever against the cam; a pin extending through the slotted lever to the space between the periphery of the notched disk and the interior of the cam-ring; and a spring for drawing said pin to one end of the slot in the lever; said parts being constructed and arranged substantially as described and shown, whereby the pin is caused to bridge the space between the stud of the cam-ring and the disk and thereby lock said parts together, then to descend beneath the periphery of the disk, allowing the lug to pass, and finally to move outward beyond the periphery of the disk.

3. In combination with a wheel having a lug or stud; a notched disk concentric with but independent of said wheel; a pin movable from the path of the stud into the notches of the wheel; and means substantially such as shown and described for moving said pin; whereby it is caused to lock together the wheel and the disk, then to pass wholly within the periphery of the disk and permit the passage of the lug, and finally to move out of the disk and back to its initial position.

4. In combination with wheel 25 provided with ring 42 having a cam-shaped periphery, an external shoulder or ledge 43, and an internal lug 52; a disk 40 concentric with said wheel and having peripheral notches 41; a lever 48 having an ear or projection to bear upon the periphery of the cam-ring and slotted at its free end; a yoke 45 capable of longitudinal and lateral motion; a pin 46 carried by said yoke, passing through slot 47 and extending into the path of lug 52, and a spring 49 for drawing said pin toward one end of the slot.

5. In combination with disk 40 provided with notches 41; locking-lever 54 provided with locking-tooth 56; spring 55 bearing against said lever; yoke 45, provided with extension 58 to engage lever 54; and means for moving said yoke laterally and longitudinally.

6. In combination with wheel 25 having cam-ring 42 provided with shoulder or ledge 43 and lug 52 or 53; notched disk 40; locking-lever 54 provided with tooth 56 and ear 57; slotted yoke 45 provided with pin 46 and extension 58; lever 48, provided with slot 47 and projection 50; spring 49 connected with said yoke; and means for advancing wheel 25 step by step.

7. In combination with a wheel or disk and means for rotating the same; a notched disk concentric with said wheel; a movable locking device for connecting the wheel and the disk to cause them to move in unison; and a cam carried by the wheel and serving to move said locking device to position wholly outside of the disk, wholly within its periphery, or to an intermediate locking position, substantially as set forth.

8. In combination with a wheel or disk and means for imparting rotation thereto; a notched disk independent of said wheel; a locking member adapted to bridge the space between the disk and a lug or abutment on the wheel; and a cam carried by the wheel and having three different elevations adapted respectively to cause the locking member to fall within the periphery of the notched disk, to rise to position partly within and partly without the disk, and to move wholly beyond the disk, as the cam rotates.

9. In combination with rotary cam 60 having shoulder or ledge 61 and tooth 62; notched disk 63 arranged concentrically within said cam; slotted yoke 66 provided with pin 65; and lever 73 provided with slot 72 to receive said pin, and with ear 76 arranged to bear upon the periphery of the cam 60, said parts being arranged to operate substantially as set forth.

10. In combination with tens-wheel 26 having sleeve 39; units-wheel 25 loosely encircling said sleeve and provided with cam-ring 42 having lug 52 or 53; notched disk 40 fast upon sleeve 39; slotted yoke 45 provided with pin 46; lever 48 provided with slot 47 and ear 50; spring 51 bearing upon said lever; and spring 49 connected with yoke 45 and serving to swing it laterally.

11. In combination with axle 15; wheel 26 provided with sleeve 39; notched disk 40 and cam 60 both rigidly attached to said sleeve, said cam 60 being provided with lug 62; wheel 25 loosely encircling said sleeve; cam-ring 42 carried by wheel 25 and having lug 52 or 53; yoke 42 free to move longitudinally and laterally upon said sleeve, and provided with pin 46; slotted lever 48 provided with ear 50; notched disk 63 secured upon axle 15; yoke 66 free to move lengthwise and to rock upon said axle, and provided with pin 65; slotted lever 73, and spring 75 bearing against yoke 66.

12. In a stamp, the combination of a primarily driven wheel provided with a lug or abutment; a part to be driven, provided with a notched disk; a stud or pin movable into the path of the lug, the notched disk, or partly into the path of each for locking the two together; and a cam carried by the first-mentioned wheel for determining the positions of said locking stud or pin.

13. In combination with a wheel having notches 31, lever 27 provided with locking-ear 28 and with nose 29; a spring for holding the lever in locking position; lever 32; dog 34 carried by said lever, and provided with tooth 35 and hook 36; and an actuating-stem connected with said lever.

708,890. **CLOSET-FLUSHING DEVICE.** JOSEPH M. JUSTIS, Toledo, Ohio, assignor of two-fifths to George W. Birchall and Charles E. Clapp, Toledo, Ohio. Filed Jan. 16, 1901. Serial No. 43,518. (No model.)

Claim.—The combination with a closed casing having an inlet and an exhaust in substantially vertical alinement, of a flat-winged wheel disposed in the path of the inlet, a train of gearing arranged externally of and parallel with the casing and actuated from the said wheel, a valve in the inlet-pipe, a lever connected with the valve and having at one end a weight to hold the valve normally closed and at the opposite end a nose, a pivoted spring-drawn latch having a toe arranged in the path of movement of the said nose and operating to hold the valve open, a striker on one of the train of gears and operating to trip the latch, and means for operating the lever to open the valve and bring the lever into engagement with the latch.

708,890.

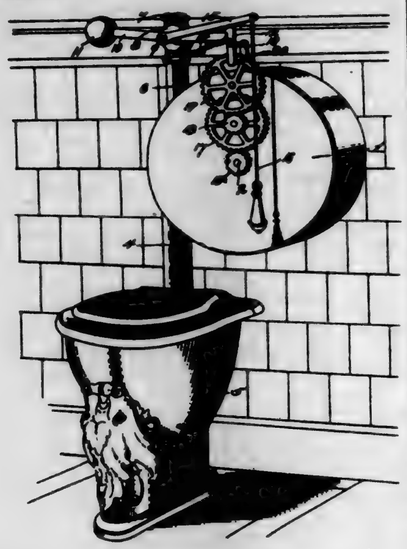

708,891. BOLT-MACHINE. CHARLES E. LASSITER, Richmond, Va. Filed Oct. 12, 1901. Serial No. 78,487. (No model.)

Claim.—1. In a device of the class set forth, a casing having oppositely-disposed inwardly-converging chambers communicating with each other at the center of the casing, inwardly-converging jaws located in and of materially less dimensions than the said chambers, oppositely-disposed cutters interposed between one side of each jaw and one wall of each chamber, the said jaws and cutters extending full length of the chambers and adapted to coöperate to form a tapered bolt, adjusting devices for the cutters, and independent adjusting devices for the jaws, one set of adjusting devices for the jaws engaging the sides of the latter opposite the sides against which the cutters have bearing for firmly clamping the jaws against the cutters.

2. In a device of the class set forth, a casing having oppositely-disposed chambers communicating with each other at the center of the casing, jaws mounted in said chambers and of materially less dimensions than the latter so as to have a normal loose movement, cutters interposed between the reverse sides of the jaws and the adjacent walls of the chambers, the cutters and jaws extending full length of the chambers, a series of alined adjusting devices engaging the cutters whereby the latter may have their cutting edges disposed at an angle to form a tapered bolt, and two separate sets of alined adjusting devices engaging the jaws to control the inward adjustment of said jaws and also to hold the latter in firm clamping position in relation to the cutters, one set of the adjusting devices engaging the sides of the jaws opposite those in contact with the cutters.

3. In a device of the class set forth, a casing having oppositely-disposed chambers communicating with each other at the center of the casing, jaws located in and coextensive with the chambers, oppositely-disposed cutters interposed between the reverse side edges of the opposite jaws and the adjacent walls of the chambers, and also coextensive with the latter, the said jaws and cutters being held mounted in the chambers and the jaws normally loose, means for controlling the inward adjustment of the jaws and cutters, and means at an angle to the means for controlling the inward adjustment of the jaws to force the latter in close clamping engagement with the cutters.

708,892. SLIDING BOLT. CHARLES E. LOSS, Branchestown, Ireland. Filed Jan. 6, 1902. Serial No. 88,884. (No model.)

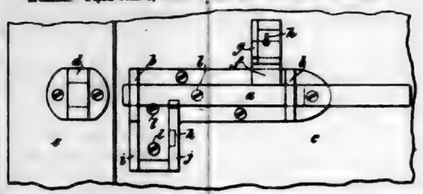

Claim.—1. The combination of a bolt-frame carrying guides, a bolt adapted to both slide and turn about its own axis in said guides, an arm fast with the bolt and projecting laterally therefrom, a key-operated lock carried by said arm, and a fixed lug with which the bolt of the key-operated lock engages.

2. The combination of a bolt-frame carrying guides, a bolt adapted to both slide and turn about its own axis in said guides, an arm fast with the bolt and projecting at right angles therefrom, a key-operated lock carried by said arm, and lugs or flanges on the bolt-frame between which the arm snugly fits and between which it is housed and shielded, one of said lugs being formed with a recess to receive the bolt of the lock carried by the arm.

3. The combination of a bolt-frame carrying guides, a bolt adapted to both slide and turn about its own axis in said guides, an arm fast with the bolt and projecting at right angles therefrom, a key-operated lock carried by said arm, lugs between which the arm snugly fits and between which it is housed and shielded, a keeper, and screws for securing the keeper and bolt-frame in place which are covered by the bolt and the arm when the bolt is shot and locked.

708,893. BURNER FOR LIQUID FUELS. CHARLES G. LUNDHOLM, San Bernardino, Cal. Filed Aug. 8, 1901. Serial No. 71,335. (No model.)

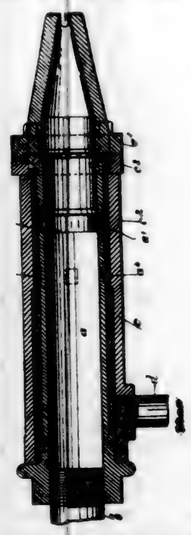

Claim.—1. A burner for liquid fuel, comprising a shell, a mouthpiece at its front end, and two nozzle-sections located in and separated from the shell in longitudinal line with each other, the nozzle-sections having a passage between them, and the front nozzle-section having a passage between its front end and the shell, and means for supplying the fuel and an atomizing fluid, the one to the interior of the nozzles and the other to the exterior of the nozzles within the shell.

2. A burner for liquid fuels, comprising a shell, a mouthpiece fastened to the front end thereof, a front nozzle-section situated in the shell and spaced therefrom, said front nozzle-section having a perforated flange secured between the front of the shell and the mouthpiece, a rear nozzle-section located in the shell in line with and back of the front nozzle-section, said nozzle-sections having a passage between them, and means for supplying the fuel and an atomizing fluid, the one to the interior of the nozzles and the other to the exterior of the nozzles within the shell.

3. A burner for liquid fuel, comprising a shell, two nozzle-sections located in and separated from the shell said nozzle-sections being in longitudinal line with each other, the nozzle-sections having a passage between them and the front nozzle-section having a passage between its front end and the shell, and means for supplying the fuel and an atomizing fluid, the one to the interior of the nozzles and the other to the exterior of the nozzles within the shell.

708,894. CASH-REGISTER AND TILL. ANDREW G. MACGILLOCH and HERBERT DOMINION, London, England. Filed Nov. 29, 1901. Serial No. 84,122. (No model.)

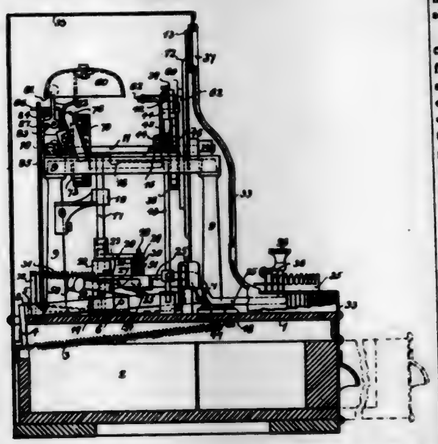

Claim.—1. In an automatic cash-register a dial provided with a circle of figures denoting sums of money, an inclosing case provided with an aperture adapted to display one of said figures or sums at a time, a segmental rack at the front of the machine divided and figured to correspond with the dial, a horizontal slot in the case adjacent to the rack, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movement and at its outer end extending through the slot in the case adjacent to the rack and adapted to traverse and engage the latter, means for conveying only the outward horizontal traversing movement of the key-lever to the dial and converting it into rotary movement, means for retaining the dial in the position to which it has been moved while the key-lever returns to its zero position, a counting apparatus, means for causing the forward movements of the dial to give motion to the counter in such manner that each complete revolution whether made up of part revolutions or not is registered, means for releasing and returning to zero the dial upon the return to zero and depression of the key-lever and means for locking the key-lever in its zero position until the dial has returned to its zero position substantially as herein shown and described and for the purpose stated.

2. In an automatic cash-register a revolvable dial provided with a circle of figures denoting sums of money, a segmental rack located at the front of the machine and divided and figured to correspond with the dial, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movement and at its outer end adapted to traverse the segmental rack, a beveled pinion fixed with the axis of the dial, a toothed segment engaging the pinion a spring for moving said toothed segment in one direction, a crank fixed with the axis of the toothed segment and adapted to loosely engage the key-lever in the outward horizontal traverse of the latter, means for retaining the dial and crank for the time being in the position to which they have been carried by the key-lever while the latter returns to its zero position, a counting apparatus, means for causing the forward movements of the dial to give motion to the counter in such manner that each complete revolution, whether made up of part revolutions or not, is registered, means for releasing and returning to zero the dial upon the return to zero and depression of the key-lever and means for locking the key-lever in its zero position until the dial has returned to its zero position substantially as herein shown and described and for the purpose stated.

3. In an automatic cash-register, a revolvable dial provided with a circle of figures denoting sums of money, a segmental rack located at the front of the machine and divided and figured to correspond with the dial, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movement and at its outer end adapted to traverse the segmental rack, means for conveying only the outward horizontal traversing movement of the key-lever to the dial and converting it into rotary movement, a ratchet-wheel fixed with the dial and a pawl engaging the same for retaining the dial in the position to which it has been moved while the key-lever returns to its zero position, means adapted to be acted upon by the key-lever in its zero position for raising the pawl and permitting the return to zero of the dial, means for causing the return to zero of the dial, means for locking the key-lever in its zero position until the dial has returned to zero, a disk fixed upon the dial-shaft and provided with a depression in its face a counting spring-pin carried by the pawl and adapted in the raised position of the latter to ride upon the edge of the disk and hold the pawl out of gear until the depression again comes opposite the pin thus permitting the pawl to fall into engagement with the ratchet-wheel, a counting apparatus, and means for causing the forward movements of the dial to give motion to the counter in such manner that each complete revolution whether made up of part revolutions or not is registered substantially as herein shown and described and for the purpose stated.

5. In an automatic cash-register, a revolvable dial provided with a circle of figures denoting sums of money, a segmental rack located at the front of the machine and divided and figured to correspond with the dial, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movement and at its outer end adapted to traverse the divided segmental rack, means for conveying only the outward horizontal traversing movement of the key-lever to the dial and converting it into rotary movement, means for retaining the dial in the position to which it has been moved while the key-lever returns to its zero position, a counting apparatus, means for causing the forward movements of the dial to give motion to the counter in such manner that each complete revolution whether made up of part revolutions or not is registered, means for releasing and returning to zero the dial upon the return to zero and depression of the key-lever means for locking the key-lever in its zero position until the dial has returned to zero means for returning the dial to zero a projection from the disk carrying the dial a notched or forked stop-plate having upper and lower jaws and pivotally mounted upon the frame of the machine and means for balancing the stop-plate in such manner that upon the return to zero of the dial the projection thereof will encounter the lower jaw of the stop-plate thereby arresting the dial at its zero position and the impact will momentarily throw the upper jaw forward to engage the projection and prevent the dial rebounding substantially as herein shown and described and for the purpose stated.

6. In an automatic cash-register a revolvable dial provided with a circle of figures denoting sums of money, a segmental rack located at the front of the machine and divided and figured to correspond with the dial, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movement and at its outer end adapted to traverse the segmental rack, a crank provided with a crank-pin for conveying through suitable connections only the outward horizontal traversing movement of the key-lever to the dial and converting it into rotary movement, means for retaining the dial in the position to which it has been moved while the key-lever returns to its zero position, a counting apparatus, means for causing the forward movements of the dial to give motion to the counter in such manner that each complete revolution whether made up of part revolutions or not is registered, means for releasing and returning to zero the dial upon the return to zero and depression of the key-lever, a weighted lever having an inclined nose and provided with a notch adapted to engage the key-lever in its zero position and thus lock it, an extension upon the crank-pin adapted in the return movement of the crank and dial to come against the inclined nose of the weighted le-

ver and depress the same thereby releasing the key-lever substantially as herein shown and described and for the purpose stated.

7. In an automatic cash-register a revolvable dial provided with a circle of figures denoting sums of money a segmental rack located at the front of the machine and divided and figured to correspond with the dial, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movement and at its outer end adapted to traverse the segmental rack, means for conveying only the outward horizontal traversing movement of the key-lever to the dial and converting it into rotary movement, means for retaining the dial in the position to which it has been moved while the key-lever returns to its zero position, an ordinary counting apparatus operated by a star-wheel a drum loosely mounted upon the shaft of the dial means for causing the drum to rotate with the dial in its forward movements and to remain stationary during its return movements, divisions and figures upon the periphery of the drum corresponding with those of the dial, a pointer opposite the drum, a projection upon the drum adapted to engage the star-wheel of the counting mechanism in the revolution of the drum, means for releasing and returning to zero the dial upon the return to zero and depression of the key-lever and means for locking the key-lever in its zero position until the dial has returned to its zero position substantially as herein shown and described and for the purpose stated.

8. In an automatic cash-register a revolvable dial provided with a circle of figures denoting sums of money a segmental rack located at the front of the machine and divided and figured to correspond with the dial, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movements and at its outer end adapted to traverse the segmental rack, means for conveying only the outward traversing movement of the key-lever to the dial and converting it into rotary movement, means for retaining the dial in the position to which it has been moved while the key-lever returns to its zero position, a rocking lever having at its front end a segmental bar coextensive with the arc traversed by the key-lever minus its zero position, a spring-actuated drawer, a detent carried by the rear end of the rocking lever and adapted to engage the drawer until the rocking lever is depressed by the key-lever, a counting apparatus means for causing the forward movements of the dial to give motion to the counter means for releasing and returning to zero the dial upon the return to zero and depression of the key-lever and means for locking the key-lever in its zero position until the dial has returned to its zero position substantially as herein shown and described and for the purpose stated.

9. In an automatic cash-register the combination of two mechanisms within one case the one to register purchases in cents and the other purchases in dollars each of such mechanisms consisting of a dial provided with a circle of figures denoting sums of money, a segmental rack at the front of the machine divided and figured to correspond with the dial, a key-lever at its inner end mounted upon axes of motion with capability of horizontal and vertical movement and at its outer end adapted to traverse and engage the rack, means for conveying only the outward traversing movement of the key-lever to the dial and converting it into rotary motion, means for retaining the dial in the position to which it has been moved while the key-lever returns to its zero position, a counting apparatus, means for causing the forward movements of the dial to give motion to the counter in such manner that each complete revolution whether made up of part revolutions or not is registered, means for releasing and returning to zero the dial upon the return to zero and depression of the key-lever and means for locking the key-lever in its zero position until the dial has returned to its zero position substantially as herein shown and described and for the purpose stated.

708,895. FURNITURE-CASTER. WILLIAM J. MARTIN, Catawissa, Pa. Filed Nov. 27, 1901. Serial No. 83,881. (No model.)

Claim.—1. In combination, a supporting plate and tube adapted to be attached to a furniture-leg, the tube rising from the plate and being adapted to extend up into the leg, a rotatable part carrying a floor-roller and consisting of a disk and a shank rising centrally from the disk and extending up into the supporting-tube, a main series of antifriction-balls adapted to receive the weight and confined between and bearing upon the lower surface of the supporting-plate and the upper surface of the rotatable disk, and a supplemental series of balls confined between the shank and the supporting-tube at the upper ends of the same and having a bearing on the inner wall of the tube and the adjacent side of the shank, the balls being thereby suspended between the shank and the tube and so situated as to receive the lateral thrusts of the shank, for the purpose set forth.

2. In combination, a supporting-tube and disk, adapted for connection to an article of furniture, a roller-carrying part consisting of a disk and a shank extending up through said tube, a main series of balls confined between the upper and lower faces of the disk parts, a supplemental series of balls in a ball-race formed between the upper end of the shank and the interior wall of the tube, and a removable disk carried by the shank and confining the supplemental balls in place.

708,896. SPRING-HINGE. ELBER MATHES, Miles, Oreg. Filed Jan. 30, 1902. Serial No. 91,065. (No model.)

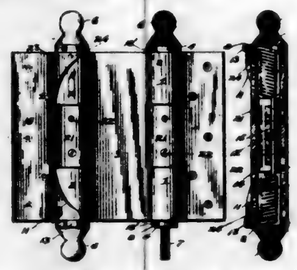

Claim.—1. A spring-hinge having a barrel formed of two portions divided by an intermediate space, a pintle, a spring coöperating with the pintle, and a leaf having a tongue occupying said space and detachably connected to the pintle, substantially as described.

2. A spring-hinge having a barrel formed of spaced sections, a pintle, a spring coacting with the pintle, a split sleeve surrounding the stem between the barrel-sections, and a leaf having a tongue inserted in said sleeve and pintle, and detachably connected to the pintle, substantially as described.

3. A spring-hinge having a bifurcated barrel, a pintle extending therethrough and having an enlarged intermediate portion, a spring in each section of the barrel and detachably connected to the barrel and spindle, a sleeve surrounding the enlarged portion of the pintle between the barrel-sections, cap-nuts on the spindle and closing the ends of the barrel-sections, a leaf having a tongue inserted into said sleeve and enlargement of the pintle, and fastening means detachably connecting the sleeve and tongue to the pintle, substantially as described.

4. A spring-hinge comprising a barrel, a spring-controlled spindle, a leaf detachably connected to the spindle, adjustable stops on the barrel, and cars on the leaf to engage said stops to hold the leaf from returning to its normal position, substantially as described.

5. A double-acting spring-hinge having a barrel formed of a double T-shaped blank of sheet metal, the wings of the blank forming bifurcated barrels and having flanges at their outer edges, and the cross-piece forming a web connecting said barrels, substantially as described.

6. A double-acting spring-hinge having bifurcated barrels and an interconnecting web formed of a single piece of sheet metal, pintles extending through the barrels and having central enlargements, a cap-nut threaded upon each end of the spindle and closing the ends of the barrel, springs in each section of the barrels and detachably connected thereto and to the pintles, sleeves surrounding the enlarged central portions of the pintles between the sections of the barrels, leaves having tongues inserted in said sleeves, fastenings detachably connecting the tongues and sleeves to the pintles, ears upon the leaves, lugs upon the cap-nuts coöperating with the ears to reinforce the leaves, and adjustable stops upon the barrels coöperating with the ears to hold the movable portion of the hinge in adjusted position against the tension of said spring, substantially as described.

708,897. OIL-WELL PUMP. SAMUEL W. HERAIS, Waynesburg, Pa. Filed Feb. 10, 1902. Serial No. 93,857. (No model.)

Claim.—1. An oil-well pump having a plunger, a spring device in the well, means carried by the plunger for engaging said spring device, and a disengaging device for said means, as set forth.

2. An oil-well pump having a plunger, a spring-pressed rod below the plunger, a device carried by the plunger for engaging said rod, and means for disengaging said device, as set forth.

3. An oil-well pump having a valved plunger carrying spring-hooks at its lower end, a wire line connected with the plunger, and a spring device located between the plunger and the standing valve for imparting a downstroke to the plunger, the said spring device being adapted to be engaged by the said spring-hooks, as set forth.

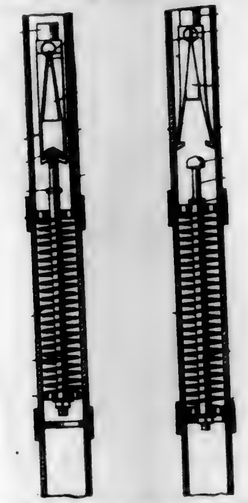

4. An oil-well pump having a plunger, a wire line connected with the plunger, a spring device for imparting a downstroke to the plunger, the said spring device being a permanent fixture of the lower portion of the well-casing and comprising a spring-pressed rod for detachable connection at its upper end with the said plunger, and a weight on the said line, as set forth.

5. An oil-well pump having a plunger, a spring device in the well-tubing below the plunger and comprising a washer held in the tubing, a rod extending loosely through said washer, a spring held on said rod and abutting at its upper end against said washer, and means carried by the plunger for engaging said rod, as set forth.

6. An oil-well having a plunger, a spring-pressed rod in the well, hooks carried by the plunger and engaging the said rod, and means adapted to engage the rod, to move the said hooks out of engagement with the rod, as set forth.

7. An oil-well pump provided with a plunger, spring-hooks carried by the plunger, and a wedge supported on the spring-hooks and having a slidable movement thereon, to open the spring-hooks on the wedge striking a fixed part, as set forth.

8. An oil-well pump provided with a plunger, spring-hooks carried by the plunger, a wedge supported on the spring-hooks and having a slidable movement thereon, to open the spring-hooks on the wedge striking a fixed part, and a spring-pressed rod in the oil-well, having a head adapted to be engaged by the said hooks and by the said wedge, as set forth.

9. An oil-well pump provided with a plunger, spring-hooks carried by the plunger, a wedge supported on the spring-hooks and having a slidable movement thereon, a guide held in the well-casing, a rod extending loosely through said guide and provided with a shoulder above the same, the said rod having a head at its upper end adapted to be engaged by the said hooks and by the said wedge, a spring coiled on the rod below the guide and exerting downward tension on the rod, and a weighted line connected with the plunger, as set forth.

708,898. BONE-BLACK KILN. WILLIAM T. HOBB, Glenolden, Pa. Filed May 9, 1902. Serial No. 106,888. (No model.)

Claim.—1. An apparatus of the class described, comprising a heating-chamber, an upright retort extending through the heating-chamber and through which gravitates the material to be treated, and a vertical flue extending through the retort and opening at its lower end into the heating-chamber, to form an escape for the heat from the heating-chamber, as set forth.

2. An apparatus of the class described, comprising a heating-chamber, an upright retort extending through the heating-chamber and through which gravitates the material to be treated, a flue extending vertically through the retort and opening at its lower end into the heating-chamber, to form an escape for the heat from the heating-chamber and for feeding the material into the upper end of the retort and through which the said flue also extends, the drier having means for the escape of gas and moisture from the material gravitating through the drier in its passage to the retort, as set forth.

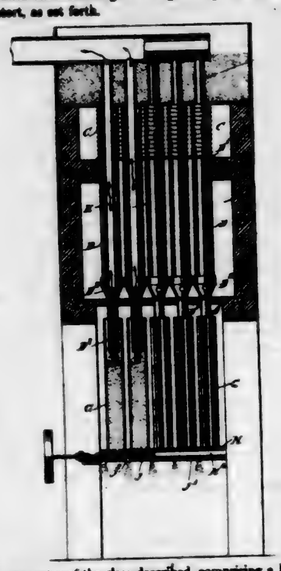

3. An apparatus of the class described, comprising a heating-chamber, an upright retort extending through the heating-chamber and through which gravitates the material to be treated, and a drier through which the material passes to the retort, the said drier being formed of superimposed spaced sections, each in the form of an inverted frustum of a cone, the apex end of one section opening into the base end of the section below to allow the material to gravitate through the drier in its passage to the retort, and allow the moisture to escape through the spaces between adjacent sections, as set forth.

4. An apparatus of the class described, comprising a heating-chamber, an upright retort extending through the heating-chamber and through which gravitates the material to be treated, a flue forming the escape for the heat from the heating-chamber and extending vertically through the retort, and a drier, through which gravitates the material in its passage to the retort, the said drier being formed of superimposed sections, spaced apart, to allow escape of moisture and gas from the material to the spaces between adjacent sections, the said flue also extending vertically through the said drier, as set forth.

5. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, disposed vertically and composed of superimposed spaced sections, to form escapes for the moisture and gas, a retort into which passes the lower end of the drier, a closed heating-chamber through which extends the said retort in a vertical direction, and a flue extending centrally through the said retort into the said hopper, to connect with a chimney-flue therein, the lower end of the flue opening into the heating-chamber, as set forth.

6. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, disposed vertically and composed of superimposed spaced sections, to form escapes for the moisture and gas, a retort into which passes the lower end of the drier, a closed heating-chamber through which extends the said retort in a vertical direction, and a flue extending centrally through the said retort into the said hopper, to connect with a chimney-flue therein, the lower end of the flue opening into the heating-chamber at or near the bottom thereof, as set forth.

7. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, disposed vertically and composed of superimposed spaced sections, to form escapes for the moisture and gas, a retort into which passes the lower end of the drier, a closed heating-chamber through which extends the said retort in a vertical direction, a flue extending centrally through the said retort into the said hopper, to connect with a chimney-flue therein, the lower end of the flue opening into the heating-chamber, and a tubular cooler below the heating-chamber, into which discharges the discharge-spout of the said retort, as set forth.

8. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, disposed vertically and composed of superimposed spaced sections, to form escapes for the moisture and gas a retort into which passes the lower end of the drier, a closed heating-chamber through which extends the said retort in a vertical direction, a flue extending centrally through the said retort into the said hopper, to connect with a chimney-flue therein, the lower end of the flue opening into the heating-chamber, a tubular cooler below the heating-chamber, into which discharges the discharge-spout of the said retort, and a conveyer into which discharges the lower end of the said cooler, as set forth.

9. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, disposed vertically and composed of superimposed spaced sections, to form escapes for the moisture and gas, a retort into which passes the lower end of the drier, a closed heating chamber through which extends the said retort in a vertical direction, a flue extending centrally through the said retort into the said hopper, to connect with a chimney-flue therein, the lower end of the flue opening into the heating-chamber, a tubular cooler below the heating-chamber, into which discharges the discharge-spout of the said retort, and a conveyer into which discharges the lower end of the said cooler, the conveyer having an apertured top and an apertured bottom, as set forth.

10. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, disposed vertically and composed of superimposed spaced sections, to form escapes for the moisture and gas, a retort into which passes the lower end of the drier, a closed heating-chamber through which extends the said retort in a vertical direction, a flue extending centrally through the said retort into the said hopper, to connect with a chimney-flue therein, the lower end of the flue opening into the heating-chamber, a tubular cooler below the heating-chamber, into which discharges the discharge-spout of the said retort, and an agitating device extending into the said spout and through the open end of the cooler to the outside thereof, as set forth.

11. An apparatus of the class described, provided with a drier formed of superimposed spaced ring-sections, each in the form of an inverted frustum of a cone, and vertically-arranged rods having branches inclined outwardly and upwardly and on which the said sections are secured, as set forth.

12. An apparatus of the class described, provided with a closed heating-chamber, a retort extending vertically through the same, and a vertical flue extending centrally through the said retort and having an inlet at its lower end opening through the wall of the retort into the heating-chamber, to form an escape for the heat from the heating-chamber, as set forth.

13. An apparatus of the class described provided with a tubular cooler into which passes the material, a supporting-plate on which the lower open end of said cooler rests, and having an opening for the passage of the material and a conveyer having a casing and into which leads the said opening, the bottom of the conveyer-casing being provided with a discharge-opening, the said supporting-plate having a transverse opening leading to the opening for the passage of the material, as set forth.

14. An apparatus of the class described, provided with a tubular cooler, polygonal in cross-section and into which passes the material, a supporting-plate for carrying the said cooler and having an opening for the passage of the material, and a conveyer below the said supporting-plate, into which leads the said opening, the conveyer having the bottom of its casing formed with a discharge-opening, as set forth.

15. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, a retort into which opens the lower end of the drier, the said retort having a head at its lower end provided with a discharge-spout, a closed heating-chamber through which extends the said retort, and a flue extending centrally through said retort into the hopper and connected with a chimney-flue therein, the lower end of the flue having inlets comprising branch pipes leading to openings in the side wall of the said head of the retort and communicating with the heating-chamber, as set forth.

16. An apparatus of the class described, comprising a hopper, a drier into which discharges the hopper, and arranged to permit of the escape of gas and moisture from the material, a retort with which the lower end of the drier communicates, the said retort being provided with a head at its lower end provided with a discharge-spout, a heating-chamber through which extends the said retort, a flue extending centrally through the retort and drier into the hopper and connected with an outlet-flue therein, the lower end of the flue having branch inlet-pipes leading to openings in the side walls of the head of the retort, and a cooler below the heating-chamber into which extends the discharge-spout of the head of the retort, as set forth.

17. An apparatus of the class described, comprising a heating-chamber, a retort extending vertically through the heating-chamber and provided with a head at its lower end having a discharge-spout, a flue extending centrally through the retort and opening at its lower end into the heating-chamber and an agitating device extending through the discharge-spout of the retort into the head, as set forth.

708,899. CAR-FENDER. EDWARD C. HOULTON, San Jose, Cal. Filed Mar. 4, 1902. Serial No. 96,672. (No model.)

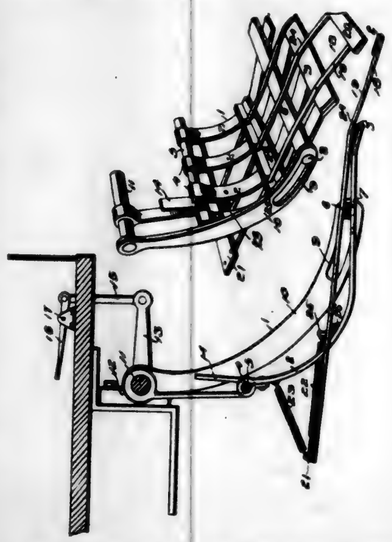

Claim.—1. The combination with a slidable fender, of guide-arms located at opposite sides of the fender and connected with the same at points between the ends thereof and adapted to form a fulcrum for the said fender, said guide-arms being arranged to permit the fender to have a limited inward or backward movement when it comes in contact with an object, and an upright guide receiving the rear portion of the fender and adapted to depress the front portion of the same when the said fender is moved inward or rearward, substantially as described.

2. The combination with a slidable fender, of guide-arms located at opposite sides of the fender and provided with slots receiving the same, and an upright loop arranged to receive the back of the fender and adapted to depress the front of the same when the said fender is moved rearward, substantially as described.

3. The combination with a slidable fender, of a rock-shaft provided with guide-arms receiving the fender at a point between the ends thereof, an upright guide also carried by the rock-shaft and receiving the rear portion of the fender, and means for operating the rock-shaft, substantially as described.

4. The combination of a rock-shaft provided with slotted guide-arms and having upright guides, a slidable fender having arms arranged in the slots of the guide-arms, said fender being also arranged in the upright guides, and means for operating the rock-shaft, substantially as described.

5. The combination of a fender, a supplemental slidable frame mounted on the fender and extending in advance of the same, and springs connecting the supplemental frame with the fender and located in rear of the latter, substantially as described.

6. The combination of a fender capable of a limited sliding movement, a supplemental frame arranged on the fender, guides carried by the fender and receiving the supplemental frame, and springs connecting the rear portion of the slidable frame with the fender, substantially as described.

7. The combination of a slidable fender capable of pivotal movement, means for supporting the fender and for holding the same normally in an extended position, and a slidable frame extending in advance of the fender and capable of movement longitudinally thereof, and carried by the said fender in its movements, substantially as described.

8. The combination of a fender provided with a guide-bar having guide-openings, a slidable frame arranged in the guide-openings and extending in advance and in rear of the fender, the approximately horizontal springs 22 connecting the rear portion of the frame with the fender, and the inclined springs 23 connecting the rear portion of the frame with the fender, substantially as described.

708,900. REVOLVING STEAM CONNECTION. FRANK HEDGAT-ROYD, Cleveland, Ohio. Filed Feb. 7, 1902. Serial No. 93,269. (No model.)

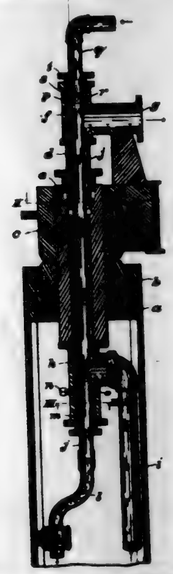

Claim.—1. In a fluid supplying and discharging device for revolvable machines, the combination with a hollow trunnion and a suitable bearing therefor, of a fixed discharge-pipe having a lateral outlet and inserted through a stuffing-box into the bore of said trunnion, a revolvable supply-tube passing axially through said discharge-pipe and trunnion and provided with a stuffing-box at the revolvable end of the discharge-passage, a stationary supply-tube communicating with the outer end of said revolvable tube, and a fluid-tight joint between said supply-tubes adapted to permit of both the revolution and a limited relative longitudinal movement of said revolvable tube, substantially as set forth.

2. In a fluid supplying and discharging device for revolvable machines, the combination with a hollow trunnion and a suitable bearing therefor, of a fixed discharge-pipe having a lateral outlet and inserted through a stuffing-box into the bore of said trunnion, a revolvable supply-tube passing axially through said discharge-pipe and trunnion provided with a stuffing-box at the revolvable end of the discharge-passage and having a socket formed upon its outer end, a stationary supply-tube having a cylindrical collar upon its inner end fitted to slide into said socket, and an open-ended stuffing-box fitted to receive said socket and adapted to prevent the escape of both the incoming and outgoing fluid, substantially as set forth.

3. In a fluid supplying and discharging device for revolvable machines, the combination with a hollow trunnion and a suitable bearing therefor, of a discharge-pipe inserted through a stuffing-box into the bore of said trunnion and having a fixed T upon its outer end, a lateral discharge-outlet and a stuffing-box for the supply-tube upon the inner end of said trunnion, a supply-tube carried by the revolvable portion of the machine passing axially through said inner stuffing-box, the bore of the trunnion and the discharge-pipe and terminating in a socket fitted to said fixed T beyond the lateral outlet thereof, a stationary supply-tube having a cylindrical collar upon its inner end fitted to slide into said socket, and a gland upon said stationary supply-tube adapted to hold suitable packing in the outer end of said fixed T against the joints formed by said collar and socket, substantially as set forth.

708,901. TRAMWAY RAIL. FRANK E. MUSGRAVE, Bolton, England. Filed July 16, 1902. Serial No. 115,854. (No model.)

Claim.—The combination of parts relating to tramway-rails consisting of the tramway-rail composed of the web A, bottom flange B and the flange C on one side of the web of angular form to receive the under side or other portion of the grooved upper face D of the tramway-rail on which the wheels of the tram or other cars or vehicles travel, the upper portion having the flange or web H by which it is secured to the web A by the bolts I and nuts J at each joint, and arranged so as to break joint with the web A, and flanges B and C, thus forming a "fish-plate" at each joint in the body or web A of the permanent carrying-rail; each tramway-rail being provided with the metallic boxes E and the covers F, the whole being constructed, connected, and applied substantially as described and as illustrated in the drawings.

708,902. PAD FOR TREATING SHOE-BOILS ON HORSES. ROBERT B. MUSGRAVE, New York, N. Y. Filed Feb. 11, 1902. Serial No. 93,609. (No model.)

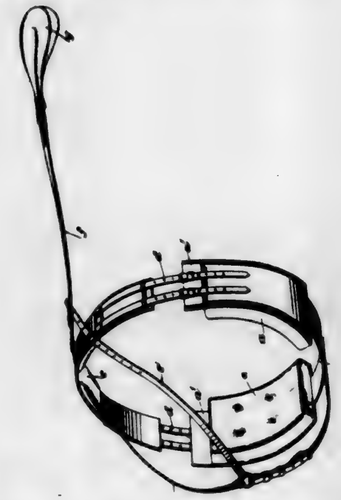

Claim.—1. A device for treating shoe-boils on horses, said device comprising two pads adapted to lie against the sides of the body of the horse immediately behind the fore legs, a connection between the pads, the connection passing under the body of the horse, a saddle adapted to lie on the back of the horse, connections between the sides of the saddle and the pads, a breast-strap attached to the connection between the pads under the horse and extending forward, said breast-strap having branches passed over the shoulders of the horse and connected to the saddle, and a device connected to the saddle and extending backward to the tail of the animal to prevent the saddle working forward.

2. A device for treating shoe-boils on horses, said device comprising two pads adapted to lie against the sides of the body of the horse immediately behind the fore legs, and means for holding said pads in position, said means comprising a connection between the pads, the connection passing under the horse, a saddle-like member lying on the back of the horse and connected with the pads, and fastenings extending forward and rearward from said parts to prevent forward and rearward displacement thereof.

3. A device for treating shoe-boils on horses, said device comprising two pads adapted to lie against the sides of the body of the horse immediately behind the fore legs, a connection between the pads, said connection passing under the body of the horse, a saddle-like member lying on the back of the horse and connected with the pads to support them, and means attached to said connection between the pads and extending forwardly over the shoulders of the horse, to prevent the rearward displacement of said parts.

4. A device for treating shoe-boils on horses, said device comprising two pads adapted respectively to lie at the sides of the body of the horse immediately rearward of the fore legs, and said pads having extended

coverings projected from the ends thereof, a middle-like member having connection with the covering extensions at the upper ends of the pads to sustain the pads, and a connection between the cover extensions at the lower ends of the pads, said connection passing under the body of the horse.

708,908. CATCH. DAVID W. MCCLAY, Newark, N. J., assignor to the Tea Tray Company of Newark, N. J. Filed Dec. 20, 1900. Serial No. 40,668. (No model.)

Claim.—1. In a catch, an arm adapted to be pivoted at one end and having at the other end a laterally-opening slot adapted to engage a coöperating catch member, and a tongue or extension projecting laterally from said arm at the side opposite that having the said slot and being bent out from the plane of the arm and doubled or returned to lie adjacent to the face of the slotted end of the arm, said returned portion being slotted in alinement with the slot in the arm.

2. In a catch, an arm hooked at one end to engage a coöperating catch member, and adapted at the other end to be pivoted, and having at said hooked end a lateral tongue or extension bent out from the plane of the arm and returned to lie adjacent to the face of the arm and being slotted.

3. In a catch, a sheet-metal arm adapted to engage a coöperating catch member and having at one end means for pivoting, and at the other end a laterally-facing hook at one edge and at the opposite edge an extension, the extension being bent out of the plane of the body portion of the arm and returned to lie adjacent to said body portion and having in itself a keyhole-slot.

708,904. SIGNALING-MACHINE. HENRY L. MCGOWAN, St. John, Canada. Filed Jan. 28, 1902. Serial No. 90,998. (No model.)

Claim.—1. In a signal-tower for a tidal water the combination of a reservoir, having a supply-pipe for admitting thereto a head of the tidal water, devices for shutting off such tidal water, an air-vent, a regulating-cock to secure an adjusted flow of the water from the reservoir into a tip-tank as described, devices for operating a signal-gong by the tipping of said tip-tank, a waste-tank for receiving the used water from the tip-tank, and devices for discharging such water from the tower and for preventing the tidal water from flowing back into the waste-tank substantially as and for the purposes described.

2. In a signal-tower the combination of a reservoir having devices for supplying the same with a constant head of water, as described, a regulating-cock to secure an adjusted flow of said water in the reservoir into a tip-tank as described, devices for operating by the tipping of said tip-tank a signal-gong, and devices for discharging from the tower the used water of the tip-tank, substantially as and for the purposes described.

708,905. FAN ATTACHMENT FOR ROCKING-CHAIRS. JACOB S. MCELWEE, Philadelphia, Pa. Filed Oct. 11, 1899. Serial No. 733,254. (No model.)

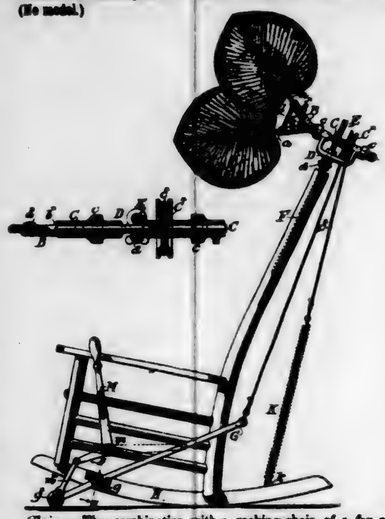

Claim.—The combination with a rocking-chair, of a fan-carrying spindle capable of being rotated, fans carried thereby, an adjustable bracket secured to one of the side posts of the chair and in which said spindle is mounted, ball-bearings for said spindle carried by the bracket, a pulley mounted on said spindle, a lever pivotally mounted on one of the rockers of the chair and having one end contacting with the floor, a spring having one end secured to one of the chair-rockers, a cord connected to the opposite end of the spring and to the high end of the lever, said cord passing over the pulley of the fan-carrying spindle, a hand-lever pivotally mounted on one of the rounds of the chair, and a slotted link connecting said levers whereby the lever in contact with the floor may be vibrated to operate the fans by the movement of the hand-lever, without the necessity of rocking the chair, substantially as described.

708,906. CHECKING DEVICE FOR HARNESS. HENRY D. MCKINNEY, Janesville, Wis. Filed Apr. 30, 1901. Serial No. 58,174. (No model.)

Claim.—In a checking device, a rounded hook having a shoulder near its base on the inner side thereof combined with a loop detachably engaging the hook and arranged to normally lie under said shoulder, and the loop having a slot and a spring-tongue inside said slot, the rear wall of the slot being rounded and the free end of the tongue being correspondingly rounded and such rounded portions being contiguous to and of a curvature corresponding with said hook below said shoulder, and the loop consisting of sheet metal in one piece and lying in a single plane.

708,907. STUFF-FINISHED WOVEN FABRIC. ANDREW MCLEAN, Passaic, N. J. Filed May 12, 1902. Serial No. 106,462. (No specimens.)

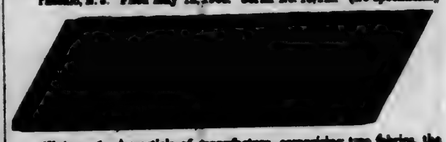

Claim.—1. An article of manufacture, comprising two fabrics, the edges of which are woven together into single-ply selvages, the threads in said selvages being woven back upon themselves so as to prevent unraveling, the two fabrics being secured together by sizing.

2. An article of manufacture, comprising two fabrics, the edges of which are woven together into single-ply selvages containing threads woven back upon themselves to prevent unraveling, said two fabrics being permanently secured together by sizing so as to form a two-ply cloth.

3. An article of manufacture, comprising a middle portion and edge portions of woven cloth, said edge portions terminating in threads woven back upon themselves to prevent unraveling, and said middle portion being composed of a plurality of fabrics secured together by sizing so as to form a compound cloth.

708,908. RAILWAY-TRACK JOINT. THOMAS C. MCLEE, Seattle, Wash. Filed Apr. 18, 1901. Serial No. 56,372. (No model.)

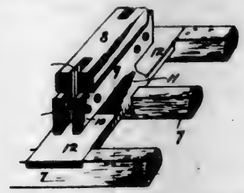

Claim.—In a rail-joint, a base-plate, a rail-section formed integral with said base-plate, fish-plates having upper and lower engaging faces extending on each side of said rail-section and having a space between said fish-plates and said base, substantially as specified.

708,909. FLASH-LIGHT APPARATUS. CHARLES H. HEINOLA, St. Louis, Mo. Filed Nov. 29, 1901. Serial No. 84,052. (No model.)

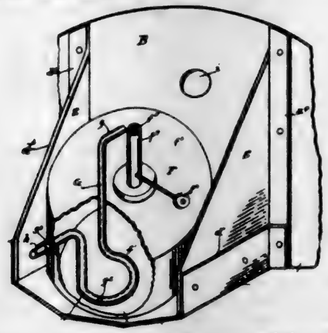

Claim.—1. A flash-lamp comprising a reservoir and a burner, a fluid-receiving and blast tube having air-inlet and fluid-discharging ends, and a portion of said tube intermediate said ends extending within the reservoir and provided with fluid-induction opening, and the discharging end of said tube extending upwardly and disposed transversely to the flame of the burner, and means for forcing air through said tube.

2. A flash-lamp comprising a reservoir and a burner, a fluid-receiving and a blast tube having an air-inlet and fluid-discharging end, and an intermediate portion of said tube extending within the reservoir and the fluid to be discharged and having a fluid-induction opening, said fluid-discharging end of said tube extending upwardly and being disposed transversely to the flame of the burner, a pneumatic blast device connected with the inlet-opening in said tube, and a check-valve between said device and the said induction-opening.

3. In a flash-light apparatus, a flash-pan, an upright shield having an opening therein, and a flame-guiding tube arranged above said pan opposite said opening, substantially as described.

4. In a flash-light apparatus, a flash-pan, an upright perforate shield, having an opening therein, a flame-guiding tube arranged above said pan opposite said opening, and a flame-deflector at the outer end of said tube, substantially as described.

5. In a flash-light apparatus, a flash-pan, an upright shield having an opening therein, a tube connected with said shield and said opening and arranged above said pan, and a flame-deflecting plate on the outer end of said tube, inclined outwardly and downwardly.

6. In flash-light apparatus, a flash-pan and a flame-spreading receiver for the fulminating material having an outwardly-flaring discharging end.

7. In flash-light apparatus, a flash-pan, and flame-spreading receivers for the fulminate upon said pan, having outwardly-flaring ends and inwardly-converging ends extending toward each other, provided with openings for the train of the fulminate.

8. In flash-light apparatus, a receiver for the fulminate, comprising a convex plate having outwardly-flaring outer ends, and an apex provided with an opening, and flanges upon said plate.

9. In flash-light apparatus, a flash-pan, and flame-spreading devices upon said pan for the fulminate, an upright shield having an opening, and a flame-guide upon said shield above said pan connected with said opening, and a flash-light lamp in rear of said shield having its flame opposite the opening in said shield.

708,910. SAFETY LOCKING-HOOK. ARTHUR H. NOYES, Boston, Mass. Filed May 15, 1902. Serial No. 107,513. (No model.)

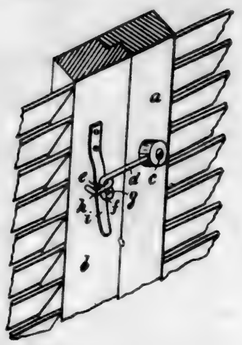

Claim.—1. A pivoted hook having a projection at its free end, combined with a staple, and a spring entering said staple to lock the hook to the staple.

2. A pivoted hook having a shank portion, a hook proper at the end of the shank portion, a projection at right angles to the hook proper and shank portion, and a portion parallel to the hook proper, combined with a staple, and a spring entering said staple to lock the hook to the staple.

708,911. CHAIR. JAMES O'CONNOR, East Cambridge, Mass. Filed Nov. 14, 1901. Serial No. 82,302. (No model.)

Claim.—1. In a reclining-chair, a frame, a back pivoted to said frame, a spring-controlled rod in each of the arms of said chair, arranged to slide lengthwise thereof, a slide-plate in each of said arms located and guided in a groove formed therein and pivotally connected to said rod, projections upon each of said slides, and a back-rod engaging said projections and supporting said back.

2. In a reclining-chair, a frame, a back pivoted to said frame, a spring-controlled rod in each of the arms of said chair arranged to slide lengthwise thereof, a slide-plate in each of said arms located and guided in a groove formed therein, a hook formed upon each of said slides and engaging an eye formed upon each of said rods, projections upon each of said slides, and a back-rod engaging said projections and supporting said back.

3. In a reclining-chair, a frame, a block pivoted to said frame, a rod arranged to slide lengthwise of each of the arms of said chair, a spring contained in a recess provided in each of said arms controlling said controlling said rods, a slide-plate in each of said arms located and guided in a groove formed therein, a hook formed upon each of said slides and engaging an eye formed upon each of said rods, projections upon each of said slides, and a back-rod engaging said projections and supporting said back.

708,912. EQUALIZING DEVICE FOR STEAM-PUMPS. PHILIP F. OEHEN, Cochemiahen, Germany. Filed Oct. 24, 1901. Serial No. 79,603. (No model.)

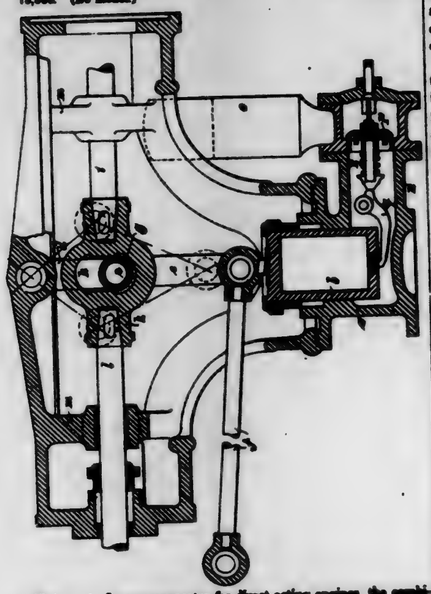

Claim.—1. In a compounder for direct-acting engines, the combination with the main piston-rod provided with a cross-head, links pivoted together in said cross-head, and one of said links being also pivoted to a guide-rod, of a piston working in a compounding cylinder for transmitting to the main piston-rod in the second half of the stroke, through the medium of said links, the power stored up in the first half of the stroke, and means for arresting the action of said compounding piston at predetermined points, substantially as described.

2. In a compounder for direct-acting engines, the combination with the main piston-rod provided with a cross-head, links pivoted together in said cross-head, and one of said links being also pivoted to a guide-rod, of a piston working in a compounding cylinder for transmitting to the main piston-rod in the second half of the stroke, through the medium of said links, the power stored up in the first half of the stroke, and means operated by said compounding piston for relieving the pressure thereon at predetermined times, substantially as described.

3. In a compounder for direct-acting engines, the combination with a main piston-rod, provided with a cross-head, links pivoted together in said cross-head, and one of said links being also pivoted to a guide-rod, of a piston working in the compounding cylinder for transmitting to the main piston-rod in the second half of the stroke, through the medium of said links, the power stored up in the first half of the stroke, a compressor-flask in communication with said compounder-cylinder, and a valve between said flask and cylinder, and means operated by said compounding piston for controlling the admission of pressure to said compounding cylinder, substantially as described.

4. In a compounder for direct-acting engines, the combination with the main piston-rod provided with a cross-head, links pivoted together in said cross-head, and one of said links being also pivoted to a guide-rod, of a piston working in the compounding cylinder for transmitting to the main piston-rod in the second half of the stroke, through the medium of said links, the power stored up in the first half of the stroke, a compressor-flask in communication with said compounder-cylinder, means for maintaining a constant pressure in said flask, a valve between said flask and cylinder, and means operated by said compounding piston for controlling the admission of pressure to said compounding cylinder, substantially as described.

5. In a compounder for direct-acting engines, the combination with the main piston-rod, a compounding cylinder, a piston in said cylinder, and means for transmitting motion from said second piston to the first, of a compressor-flask, a valve between said flask and cylinder, a lever having one arm engaging said valve and another arm operated by said second piston for controlling the admission of pressure to said cylinder, substantially as described.

6. In a compounder for direct-acting engines, the combination with the main piston-rod, a compounding cylinder, a piston in said cylinder, and means for transmitting motion from said second piston to the first, of a compressor-flask, a valve between said flask and cylinder, and an arm on said piston engaging a stop on the valve-stem for controlling the action of said valve, substantially as described.

7. In a compounder for direct-acting engines, the combination with the main piston-rod, a compounding cylinder, a hollow piston in said cylinder, and means for transmitting motion from said second piston to the first; of a compressor flask or reservoir, a pipe or conduit provided with apertures on the sides thereof, extending from said reservoir into said hollow piston, and a sleeve on said piston adapted to close said apertures, substantially as described.

8. In a compounder for direct-acting engines, the combination with the main piston-rod, a compounding cylinder, a hollow piston in said cylinder, and means for transmitting motion from said second piston to the first; of a compressor flask or reservoir, a pipe or conduit extending from said reservoir into said hollow piston, and a valve on the end of said pipe adapted to be operated by said piston, substantially as described.

9. In a compounder for direct-acting engines, the combination with the main piston-rod, a compounding cylinder, a hollow piston in said cylinder, and means for transmitting motion from said second piston to the first, of a compressor flask or reservoir, a pipe or conduit extending from said reservoir into said hollow piston, and a valve on said pipe operated when the pressure in said compounding cylinder falls below that in the reservoir, substantially as described.

708,918. HAT ATTACHMENT. ALFRED CLASS, San Diego, Cal. Filed Dec. 31, 1901. Serial No. 87,961. (No model.)

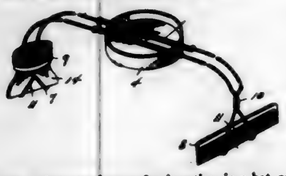

Claim.—1. A hat attachment for insertion in a hat comprising a mirror, and members adjustable in the mirror and provided with angular extremities having terminal means for holding a brush and comb.

2. An attachment for removable insertion in a hat comprising a mirror, and members telescopically adjustable in relation to each other and passing through a portion of the mirror and having depending terminals provided with means for holding a brush and a comb, the said terminals being insertible inside the sweat-band of a hat.

3. An attachment for removable insertion in a hat comprising a reflecting device, and adjustable members in relation to said reflecting device and provided with resilient terminal holders for removably retaining a brush and a comb.

708,914. FLUSH CAR-DOOR. KNUD OHR, St. Paul, Minn. Filed Sept. 20, 1901. Serial No. 75,898. (No model.)

Claim.—1. The combination with a car formed with a door-opening, and a door slidably supported in connection therewith, of a strip fixedly secured to the outside of the car along one side of said opening, said strip projecting inwardly over the door-opening, and a strip secured to the corresponding edge of the door, said strips overlapping when the door is closed, a strip secured to the outside of the car along the opposite edge of the door, a locking-strip movably secured to the adjacent edge of the door in position to be carried under said fixed strip, guides for said locking-strip, and a dog supported alongside said locking-strip, as and for the purpose set forth.

2. The combination with a car formed with a door-opening and a door slidably supported in connection therewith, of a strip fixedly secured to the car along one side of the door-opening, and a strip having pivotal support at the upper corner of the corresponding edge of the door in position to be carried beneath said fixed strip when the door is closed.

3. The combination with a car formed with a door-opening, and a door slidably supported in connection therewith, of a metal strip fixedly secured to the car along one side of the door-opening, a strip pivoted to the upper portion of the adjacent edge of the door in position to be carried under said fixed strip when the door is closed, and means for holding said pivoted strip under the edge of said fixed strip.

4. The combination with a car formed with a door-opening, and a door slidably supported in connection therewith, of a strip fixedly secured to the outer face of said car along one side of the door-opening, a strip having pivotal support at the upper portion of the corresponding edge of the door in position to be carried under said fixed strip, guides for said pivoted strip, and means for holding said pivoted strip underneath the edge of said fixed strip.

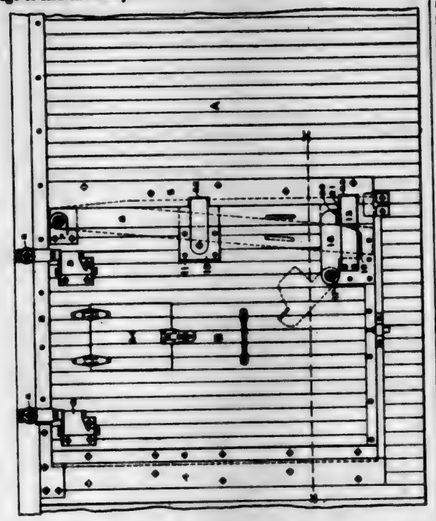

5. The combination with a car formed with a door-opening, and a door supported in connection therewith, of strips secured to the outside of the car along each side of said opening, a strip secured along one edge of the door, a locking-strip pivotally secured to the opposite upper corner of the door in position to be carried under the adjacent strip when the door is closed, a guide secured to the corresponding lower corner formed with an opening to receive the end of said locking-strip, and a dog for holding said locking-strip under the adjacent strip.

6. The combination with a car formed with a door-opening, and a slidable door arranged in connection therewith, of a metal strip secured to the car at one side of the door-opening and projecting inwardly beyond the edge of the same, a strip secured to the car along the opposite edge of the door-opening, a locking-strip having pivotal support at the upper corner of the corresponding edge of the door in position to be carried under the adjacent strip when the door is closed, a guide secured to the corresponding lower corner of the door, said guide being formed with an opening to receive the end of said locking-strip, and a dog having pivotal support upon said door and formed with a tongue projecting into the opening in said guide alongside said strip to hold said strip under the edge of the adjacent strip.

708,915. GATE. WILLIAM B. OTT and FRANK L. PERSYL, Riverside, Iowa. Filed Apr. 12, 1902. Serial No. 102,882. (No model.)

Claim.—1. The combination with a foldable slatted gate hold to rock on a post and counterbalanced thereon, of means for operating said gate, comprising a rockably-supported lever, a tilting bar jointed by one end on an end of the gate, a connecting-rod hinged on the upper portion of the gate between its ends, the tilting bar and connecting-rod crossing each other, and a projection on the lever adapted to loosely connect it with the bar and rod, so as to actuate them and rock the gate to open and close it when the lever is rocked.

2. The combination with a post, two parallel bars pivoted near the ends on the upper and lower portions of the post, the lower parallel bar having a transverse slot near one end which loosely receives the lower pivot-bolt, a series of spaced pailings pivoted on the gate-bars, and a counterbalance on a projecting end of the upper gate-bar, of a slotted tilting bar hinged by one end on the weighted end of the upper gate-bar, a slotted connecting-rod held to rock by one end on the upper gate-bar between its ends, a rockably-supported lever-bar having a projection thereon which loosely engages the slots in the connecting-rod and tilting bar, and means to rock the lever.

3. The combination with a post, and a gate comprising two parallel bars pivoted upon the post, the upper bar being extended to receive a counterbalance-weight, of a plurality of spaced pailings pivoted upon the gate-bars, and operating means for the gate, comprising two upright spaced stanchions, a lever-bar pivoted on one stanchion and held to rock at the side of the other stanchion, a rocking lever pivoted on the last-mentioned stanchion above the lever-bar, a link loosely connecting the rocking lever with the lever-bar between the stanchions, a slotted tilting bar hinged upon the weight-block or upper gate-bar extension, a slotted connecting-rod pivoted by one end on the upper bar of the gate, and loosely engaged in its slot by a bent arm mounted upon the lever-bar which arm also engages in the slot in the tilting bar, and means pendent from the outer ends of the lever-bar and the rocking lever, for manually operating the gate mechanism to open or close it.

4. In a device of the character described, the rockably-supported gate, a counterbalance therefor, a tilting bar held loosely by one end on the counterbalanced end of the gate, a connecting-rod hinged by one end on the gate and crossing the tilting bar, a rockable lever, and means to loosely connect the lever with the tilting bar and connecting-rod.

708,916. LABEL FOR BOTTLES, &c. ORRIN C PAINTER, Baltimore, Md., assignor of one-half to Lew S. Groomsbridge, Joseph S. Groomsbridge, and R. R. Friedenwald, Baltimore, Md. Filed Feb. 19, 1902. Serial No. 94,282. (No model.)

Claim.—1. A label for bottles or other receptacles comprising a folder having an inner and an outer leaf, a leaf or leaves inclosed between them and containing advertising or other printed matter, the said folder being adapted for attachment to the receptacle or bottle and the intermediate leaf or leaves being exposed by rupturing the outer leaf, substantially as described.

2. A label for bottles or other receptacles comprising a folder having an inner and an outer leaf, a leaf or leaves inclosed between them and containing advertising or other printed matter, the said folder being adapted for attachment to the bottle or receptacle, the said intermediate leaf or leaves being continuous with the inner leaf and being exposed by rupturing the outer leaf, substantially as described.

3. In combination with a bottle or other receptacle, a label consisting of a sheet of material folded to provide a leaf which is attached to the bottle and an outer leaf, said leaves or folds having between them a leaf containing advertising or other printed matter, the said outer leaf being attached at its free edge and having means whereby it may be ruptured along a certain line, substantially as described.

708,917. PLANT FOR THE MANUFACTURE OF GLASSWARE. RICHARD M. PAINTER, Washington, Pa. Filed May 24, 1901. Serial No. 61,776. (No model.)

Claim.—1. The combination with a loer, of a carrier located therein and traveling longitudinally of the loer, and a ware-carrier located outside of the loer and having a delivery portion traveling across the receiving-opening of the loer and across the receiving end of the loer-carrier, and transverse the direction of travel of the carrier located within the loer.

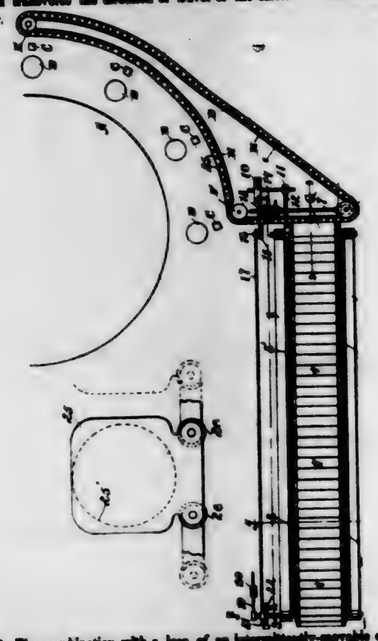

2. The combination with a loer, of an intermittently-movable carrier located within the loer, a continuously-movable carrier located outside of the loer and having a delivery portion extending transverse the loer-carrier, a motor operatively connected with said carriers, and means interposed between the motor and said intermittently-movable carrier for moving the latter intermittently.

3. The combination with a loer, of a carrier located therein, a ware-carrier located outside the loer and having a delivery portion extending transverse of the loer and a curved extended receiving portion.

4. The combination with a loer, of an intermittently-movable carrier therein, and a continuously-movable ware-carrier located outside the loer to receive the ware at the point of manufacture and deliver it to loer and operative connections between said carriers.

5. The combination with a loer, of a carrier therein traveling longitudinally of the loer and provided with transversely-arranged shelves to receive a plurality of articles in a row transverse the loer, and a ware-carrier located outside the loer and composed of small shelves to receive each a single article, said ware-carrier having a delivery portion extending transverse the loer to deliver the articles singly but in rows to said transverse shelf of the carrier in the loer.

6. The combination with a loer, of a carrier therein, carrier-wheels located outside and at opposite sides of the receiving end of the loer, a carrier-wheel located at a distance therefrom, and a carrier passing around said wheels, thus constituting a delivery portion transverse the loer, and an elongated extended receiving portion.

7. A plant of the nature described including a loer, and a ware-carrier having a curved receiving portion and a straight delivery portion extending transverse of and adjacent the receiving end of the loer.

8. A plant of the nature described including a loer, a carrier therein, a ware-carrier having its delivery end adjacent the receiving end of the loer-carrier, means for driving the ware-carrier, and a ratchet mechanism driven by the ware-carrier and propelling the loer-carrier.

9. A plant of the nature described comprising a loer, a carrier therein, a ware-carrier, said carriers operatively connected, and an interposed disconnecting device.

708,918. PROCESS OF PRODUCING ENAMELED POLYCHROME PHOTOGRAPHS, &c. EMILE PERROT, Châtelain de Ribbes, France. Filed Mar. 24, 1902. Serial No. 99,732. (No specimens.)

Claim.—1. The process of producing vitrified enameled polychrome articles, which consists in taking a suitable transparent or translucent base, applying to said base a layer of sensitized emulsion, impressing the outlines of a picture upon said layer, brushing the said sensitized surface with vitrifiable powder, successively superimposing on said powder vitrifiable colors, eliminating the undecomposed part of the emulsion and baking the article, substantially as described.

2. The process of producing vitrified enameled polychrome articles, which consists in taking a suitable transparent or translucent base, applying to said base a layer of sensitized emulsion, impressing the outlines of a picture upon said layer by the action of light, brushing said sensitized surface with vitrifiable powder having a neutral tint, successively applying vitrifiable powders of different colors, the darkest underneath, eliminating the undecomposed part of the sensitized emulsion and vitrifying the article, substantially as described.

708,919. SASH-LOCK. JOHN T. PETRICK, Carbondale, Pa. Filed Mar. 4, 1902. Serial No. 96,902. (No model.)

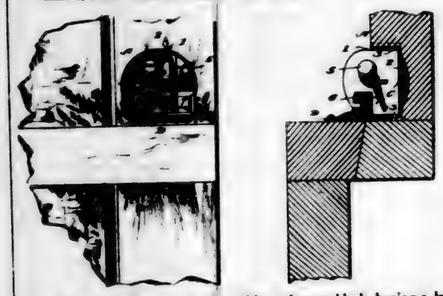

Claim.—1. The combination with a plate or block having a lug thereon, and adapted to be secured on the meeting-rail of the lower sash of a window, of a cup having a vertical slot in its bottom and extending into its sides, a catch having bearings which turn or rock in the ends of said slot, said catch having a notch to receive the lug on the plate or block on the other sash, and a spring for retaining the catch in one of two extreme positions.

2. The combination with a plate or block having a lug thereon, and adapted to be secured on the meeting-rail of the lower sash of a window, of a cup having a vertical slot in its bottom and extending into its sides, a catch having bearings which turn or rock in the ends of said slot, said catch having a notch to receive the lug on the plate or block on the other sash, a spring for retaining the catch in one of two extreme positions, the position of the catch in the slot being such that the walls of the side or flange of the cup form a stop in one direction for the catch.

3. The combination with a cup having a round flange or casing, of a catch pivoted therein and adapted to be housed in the cup when closed, said catch pivoted at one side of the cup-center and the flange or casing limiting its movement when swung open or outward.

708,920. DEVICE FOR WASHING DIAPERS. JOHN W. REED, Greensburg, Pa. Filed Feb. 11, 1902. Serial No. 93,589. (No model.)

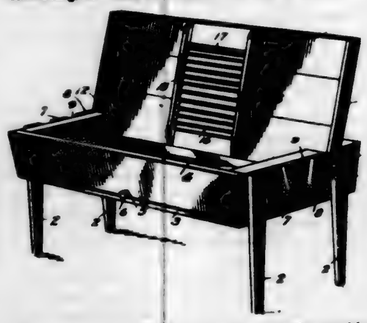

Claim.—A washing device of the class set forth comprising a tank having legs and exteriorly-located end blocks with spaces between them, and a board of such dimensions as to cover the tank and having a cleaning device extending transversely across the center of one side and also provided with corner-recesses at one side edge portion and strips with projecting ends adjacent to said recesses, the recesses permitting the board to embrace the ends of the tank and to partially extend downwardly into the latter, and the projecting ends of the strips being detachably insertible in the spaces between the end blocks, the spaces between the pairs of the latter and one of the same and one of the tank-legs being such as to have the board stand at different angles when the said ends are in engagement therewith.

708,921. PROCESS OF MANUFACTURING CALCIUM CARBID. ISAIAH L. ROGERS, New York, N. Y. Filed Mar. 18, 1897. Serial No. 628,197. (No specimens.)

Claim.—1. The process of manufacturing carbid of calcium which consists in the admixture of lime and anthracite coal.

2. The process of manufacturing carbid of calcium which consists in the admixture of lime and finely-granulated anthracite coal.

3. The process of manufacturing carbid of calcium which consists in the admixture of molten lime and anthracite coal.

708,922. BUILDING-RENOVATING APPARATUS. DAVID F. SAER, New York, N. Y., assignor to New York Stone, Brick & Terra-Cotta Renovating Company, of New York. Filed Apr. 17, 1901. Renewed Jan. 28, 1902. Serial No. 91,775. (No model.)

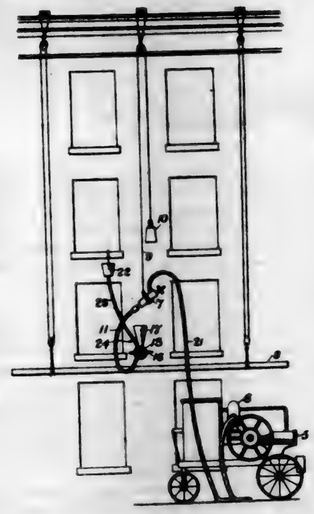

Claim.—1. In a building-renovating apparatus, the combination with a source of power of a motor; means to adjustably suspend the same adjacent to the workman's platform; a flexible shaft connected with said motor, and an abrading-tool operated by said shaft.

2. A building-renovating apparatus, comprising a portable air-compressor, a motor adjustably suspended adjacent to the workman's platform, a flexible shaft connected with said motor, a disk operated by said shaft, and means to feed abrading-powder to the face of said disk, as and for the purpose set forth.

3. A building-renovating apparatus, comprising a portable air-compressor, a motor adjustably suspended adjacent to the workman's platform, a flexible shaft connected with said motor, a disk operated by said shaft, a casing inclosing said disk, and means to feed abrading-powder through said casing to the face of said disk, as and for the purpose set forth.

4. A building-renovating apparatus, comprising a source of power, a motor mounted within reach of the workman operating the abrading-tool, an abrading-tool, flexible connections between the source of power and said motor, and flexible connections between the motor and said tool, as and for the purpose set forth.

5. A building-renovating apparatus comprising a portable air-compressor, a motor adjustably suspended adjacent to the workman's platform, a flexible tube connecting said compressor and said motor, a flexible shaft connected with said motor, a disk operated by said shaft, a casing inclosing said disk, a powder-receptacle connected with said casing, and in communication with the interior thereof adjacent to the face of said disk, and means to convey a liquid to the face of said disk, as and for the purpose set forth.

6. A building-renovating apparatus comprising a portable engine and air-compressor, a motor adjustably mounted adjacent to the workman's platform, flexible connections between the compressor and said motor, a flexible shaft connected with said motor, a disk composed of abrading material operated by said shaft, a casing inclosing said disk, a powder-receptacle in communication with the interior of said casing adjacent to the face of said disk, a water-receptacle, and a flexible tube connecting said water-receptacle with the interior of said casing, as and for the purpose set forth.

708,923. SHUTTLE-CHECK. THEODORE SCHELPENDAAM, Paterson, N. J., assignor of one-half to Samuel Sutter, Paterson, N. J. Filed Mar. 11, 1902. Serial No. 97,797. (No model.)

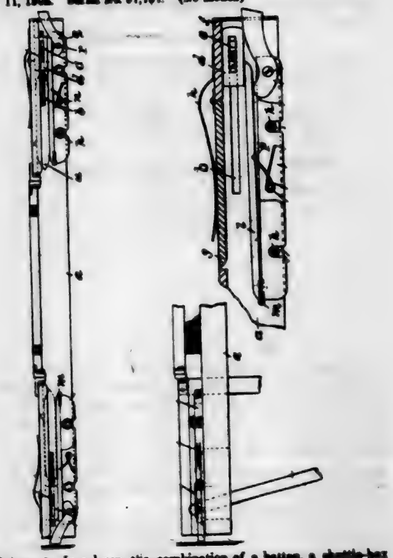

Claim.—1. In a loom, the combination of a batten, a shuttle-box arranged on said batten and having one of its longitudinal walls movable, a suitable support secured on said batten, said wall being pivoted to the support, and a lever pivoted on the support and engaging the outer face of said wall at one of its ends and adapted to project into alinement with the shuttle at its other end, substantially as described.

2. In a loom, the combination of a batten, a shuttle-box arranged on said batten and having one of its longitudinal walls movable, a suitable support adjustably secured on said batten, said wall being pivoted to the support, and a lever pivoted on the support and engaging the outer face of said wall at one of its ends and adapted to project into alinement with the shuttle at its other end, substantially as described.

3. In a loom, the combination of the batten, a picker arranged to reciprocate on the batten, a shuttle-box having one wall movable, a plate secured on the batten, said wall being pivoted to the plate at its inner end, and a lever pivoted on said plate and engaging said wall at one end and adapted to project across the path of movement of the picker at its other end, substantially as described.

708,924. CONVEYER-CHAIN. JOHN S. SCOTT and JOSEPH G. BERGER, Structville, Pa. Filed Apr. 18, 1902. Serial No. 103,512. (No model.)

Claim.—1. In a chain, a link formed in a single solid piece and having a depressed end, a flange partly inclosing said end, and an inclined wall to the flange forming a socket.

2. In a chain, a link having depressed ends, a semicircular flange partly inclosing one of said ends and forming a socket having its greatest diameter at the bottom, and a tapered circular stud extending laterally from the other end of the link, said stud having its greatest diameter at its outer end.

3. In a chain, a link having enlarged offset ends depressed on opposite sides respectively, a semicircular flange partly inclosing one of said ends and forming a socket having its greatest diameter at the bottom, and a tapered circular stud extending laterally from the other end of the link, said stud having its greatest diameter at its outer end.

4. The combination with a link having depressed ends provided with a socket and stud respectively, of a lug upon the link, an arm, a head thereto having a recess for the reception of the link and lug, means for securing the head to the link, and a flight secured to the arm.

5. A chain comprising a series of links each having enlarged offset ends depressed on opposite sides respectively, a semicircular flange upon one end forming a socket having its greatest diameter at the bottom, a circular tapered stud at the other end of the link having its greatest diameter at its outer end, said stud being adapted to engage a socket and interlock therewith, a lug upon each link, and a flight-arm engaging each lug and its link.

708,925. CALK-CUTTING MACHINE. FRED H. SEAGREN, Curlew, Iowa. Filed Apr. 30, 1902. Serial No. 104,347. (No model.)

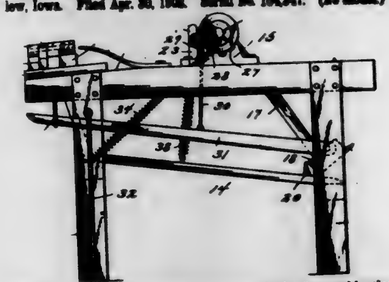

Claim.—1. In a machine of the class set forth, the combination of a bed having an anvil thereon adjacent to one end, a transversely-extensible shaft extending over the bed, an arm secured to the shaft and having a weighted head with a cutter, the said arm being movable through a part of the bed and adapted to be overthrown by the shaft, a drum loosely mounted on the shaft and having means in connection therewith for automatically causing the same to be rotated with the shaft and become released to move independently of the latter, and means for rotating the drum and shaft.

2. In a machine of the class set forth the combination of a bed having an anvil thereon adjacent to one end thereof, a swinging arm carrying a head with a cutter to coöperate with said anvil and movable through the bed, means for returning the arm to a normal position, the said arm being normally located beneath the bed, and a rebounding device adjacent to the anvil with which the said arm is adapted to contact.

3. In a machine of the class set forth, the combination of a work-supporting bed having an anvil arranged thereon near one end, a rotatable shaft held above the bed, an arm secured to said shaft and having a cutter at its free end, the said arm movable through the bed and having a cutter thereon normally disposed below the latter, and means for automatically returning the arm and the shaft to normal position.

4. In a machine of the class set forth, the combination of a work-support, a rotatable arm carrying a cutter to coöperate with said support and movable through the latter, the greater portion of the arm carrying the cutter being normally disposed below the bed, an inclined rest device below the bed against which the free end of the arm carrying the cutter normally rests, and means for throwing the arm over in engagement with the work-support, and means for automatically returning the arm to normal position.

5. In a machine of the class set forth, the combination of a work-support, a transversely-extending rotatable shaft, means for returning the shaft to normal position, a shouldered collar on the shaft, a drum loosely mounted on the shaft and having a clutch-slide movably mounted thereon an arm secured to the shaft and having a cutter to coöperate with the work-support, means for releasing the clutch-slide of the drum, means for operating the shaft to throw the arm and cutter over into engagement with the work-support, and means for returning the shaft and arm to normal position.

6. In a machine of the class set forth, the combination of a work-support and holding means, a shaft having means for returning it to normal position and provided with a shouldered collar, a drum loosely mounted on the said shaft and having a spring attached thereto and adapted to partially wind thereon, a clutch-slide carried by the drum and normally engaging the shoulder of the collar, means for releasing the said slide from the shoulder of the collar, an arm secured to the shaft and having a cutter thereon, and means for rotating the drum and shaft through the medium of the clutch-slide to throw the arm and its cutter over into engagement with the work-support and holding means.

7. In a machine of the class set forth, the combination of a work-support, a rotatable shaft having means to return it to normal position and also provided with a shouldered collar, an arm having a cutter secured to said shaft, a drum rotatably mounted on the shaft and provided with a clutch-slide to engage the shoulder of the collar, means for releasing the clutch-slide from the shoulder of the collar, a spring attached to the drum and adapted to partially wind thereon, a flexible pulling device also attached to the drum and partially surrounding the same, and an operating-lever connected to the pulling device.

8. In a machine of the class set forth, the combination of a work-support, a shaft having means for returning it to normal position and carrying a projecting device, a rotatable element loosely mounted on the shaft adjacent the projecting device and having means to interlock with the latter, a device for releasing the drum from the projecting device of the shaft, and means for operating the drum to actuate the shaft and the arm carrying the cutter.

708,926. VAPOR-BURNER. CHARLES S. SEATON and CLARK E. SEATON, Chicago, Ill. Filed Dec. 26, 1900. Serial No. 41,117. (No model.)

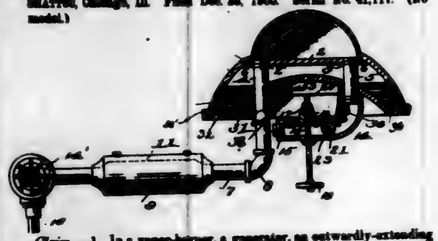

Claim.—1. In a vapor-burner, a generator, an outwardly-extending ridge formed integral with the bottom of said generator, a vapor-reservoir arranged below said generator and in communication therewith, a concaved spreader interposed between said generator and reservoir, said spreader having a centrally-arranged opening and further provided with a flange, and a burner mounted upon said flange, provided with a shoulder engaging said rib, and consisting of a conical ring provided with a circumferentially-extending series of rows of jet-passages.

2. In a vapor-burner, the combination with a generator and a vapor-reservoir in communication therewith, of a concave spreader having a centrally-arranged opening and terminating at its bottom with a horizontally-extending flange, and a substantially conical-shaped burner supported upon said flange and engaging at its top with said generator.

3. In a vapor-burner, a concave spreader provided with a flange and a centrally-arranged opening, and a burner supported by said flange and consisting of a substantially conical-shaped ring formed with a circumferentially-extending series of rows of jet-openings and having the concavity thereof receive the convexity of the spreader.

4. In a vapor-burner, the combination with a generator, a vapor-reservoir in communication therewith, and means for regulating the flow of vapor from said reservoir, of a concave spreader interposed between the generator and reservoir and having a centrally-arranged opening and terminating at its bottom in a horizontally-extending flange, and a burner supported at its bottom upon said flange and connected at its top to the bottom of said generator.

708,927. DEVICE FOR CONNECTING THE ELECTRICAL GEAR OF ELECTRIC CARS. ALEXANDER SIEMENS, Westover, Hilford-on-Sea, England, assignor to Siemens Brothers & Co., Limited, Westminster, London, England. Filed Mar. 24, 1902. Serial No. 99,749. (No model.)

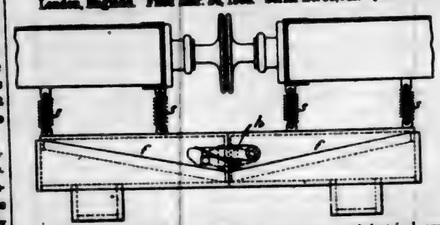

Claim.—A device for connecting the electrical gear of electrical cars, consisting of frames each carrying a controller and relay provided with flexible conductors, said frames suspended from the ends of each car, means for connecting the adjacent frames of two cars together, and means for suitably coupling the shafts of the controllers together, substantially as herein shown and described.

708,928. HAY-RACK. JOSEPH STEMEN, Valparaiso, Ind., assignor of one-half to Jacob Stemen, Valparaiso, Ind. Filed July 21, 1902. Serial No. 116,370. (No model.)

Claim.—A hay-rack comprising a base-frame, end frames mounted upon the base-frame and each comprising top and bottom and side pipes coupled together, the bottom pipes being detachably connected to the base-frame, brace-frames arranged adjacent to the end frames and each consisting of a cross-pipe detachably connected to the base-frame and inclined side pipes coupled at their lower ends to said cross-pipe and at their upper ends to the upper couplings of the adjacent end frame, so that the top pipe of the end frame is common to both frames, and side bars uniting the end and intermediate frames, substantially as and for the purpose set forth.

708,929. SANDER. SAMUEL T. STEPHENS and WALTER T. MOORE, Columbus, Ohio. Filed June 10, 1902. Serial No. 111,094. (No model.)

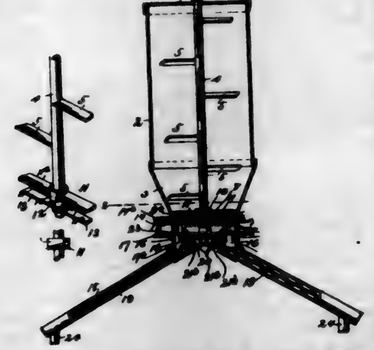

Claim.—1. In a sander, the combination of a sand-box, having outlet-apertures in the bottom, a vertical shaft bearing discharge-blades set at an angle to the bottom thereof with their forward edges in contact therewith to adapt them to scrape the sand off the bottom and raise it, and means for rotating said shaft, substantially as described.

2. In a sander, the combination of a sand-box, having discharge-apertures in the bottom thereof, chambers located below said apertures, rotatable feeders mounted in said chambers, tubes connected to said chambers, screws mounted in said tubes, and means for driving said feeders and said screws, substantially as described.

3. In a sander, the combination of a sand-box, having discharge-apertures in the bottom thereof, a shaft bearing discharge-blades located to scrape the bottom of said box, and cut-off arms carried by said shaft and located beneath said bottom parallel to said discharge-blades, substantially as described.

708,930. MAIL-BAG CATCHER. ROBERT L. SLADE, Washington, D. C., assignor to the Automatic Railway Mail Pouch Delivery Company, Washington, D. C., a Corporation of South Dakota. Filed Dec. 18, 1901. Serial No. 86,468. (No model.)

Claim.—1. The combination with a mail-bag catcher, of an auxiliary device for the purpose stated having a crotch, means holding such device to the catcher to allow of a limited independent movement thereof, said device having two divergent arms, and a spring between the catcher and the crotch of the auxiliary device, substantially as set forth.

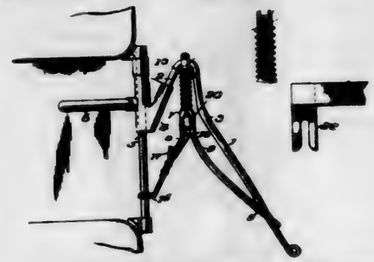

2. The combination with a mail-bag catcher having a divergent arm, of an auxiliary device for the purpose stated, means yieldingly holding such device to the catcher to allow of a limited movement thereof, said device having divergent arms one of which is loosely secured to the catcher-arm, substantially as set forth.

3. The combination with a mail-bag catcher having divergent arms and an intermediate crotch, of an auxiliary device arranged between the arms of the catcher and also having divergent arms and an intermediate crotch, and a sliding connection between said device and the crotch of the catcher, substantially as set forth.

4. The combination with a mail-bag catcher having divergent arms and an intermediate crotch, of an auxiliary device arranged between the arms of the catcher and also having divergent arms and an intermediate crotch, and a bifurcated extension projecting from said latter crotch to accommodate the crotch of the catcher, substantially as set forth.

5. The herein-described mail-bag-catching apparatus comprising, in combination, a bar mounted on a car, a forked catcher having divergent arms, an auxiliary device arranged within said catcher, and also having divergent arms, one of said latter arms having a ring on its end, and the other bifurcated at its outer end, designed, respectively, to slidingly engage the said bar, and the outer divergent arm of the catcher, substantially as set forth.

6. The herein-described mail-bag-catching apparatus comprising, in combination, a bar mounted on a car, a forked catcher having divergent arms, an auxiliary device arranged within said catcher, and also having divergent arms, one of said latter arms having a ring on its end, and the other bifurcated at its outer end, designed, respectively, to slidingly engage the said bar, and the outer divergent arm of the catcher, substantially as set forth.

7. The herein-described mail-bag-catching apparatus comprising, in combination, a bar mounted on a car, a forked catcher having divergent arms, an auxiliary device arranged within said catcher, and also having divergent arms, one of said latter arms having a ring on its end, and the other bifurcated at its outer end, designed, respectively, to slidingly engage the said bar, and the outer divergent arm of the catcher, a bifurcated extension projecting from the crotch of said device and designed to accommodate the crotch of said catcher, and a coil-spring encircling said extension, substantially as set forth.

8. The combination with a mail-bag having a rope or chain secured thereto, a ball on said rope or chain, of a catcher mounted on the car, an auxiliary device arranged within said catcher and slidingly connected thereto, said auxiliary device having jaws between which said rope or chain is designed to be caught and by which said ball is designed to be supported, substantially as set forth.

9. The herein-described attachment for mail-bag catchers comprising a V-shaped device designed to be removably positioned within such catcher and having sliding connections therewith, the arms of said device forming jaws, and a spring-catch for closing said jaws, substantially as set forth.

10. The herein-described attachment for mail-bag catchers comprising a V-shaped device designed to be removably positioned within such catcher and having sliding connections therewith, the arms of said device forming jaws, and a spring-catch for closing said jaws, said spring-catch having a cam portion and a plate-spring bearing thereon, substantially as set forth.

708,931. MICROMETER-CALIPERS. JOHN T. SLOCOMB, Providence, R. I., assignor to J. T. Slocomb Company, a Corporation of Rhode Island. Filed May 13, 1902. Serial No. 106,956. (No model.)

Claim.—1. In micrometer-calipers, the combination with a yoke of a barrel having an enlarged exteriorly-threaded upper portion, an annular shoulder thereon, a plunger within the barrel, means intermediate the

barrel and plunger for holding the latter from rotation, a threaded sleeve mounted upon the enlarged portion of the barrel, a scale-disk fixed to the sleeve, and a pointer fixed to the plunger.

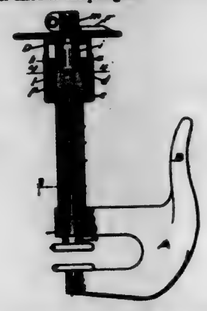

2. In micrometer-calipers, the combination with a yoke of a barrel having an enlarged exteriorly-threaded portion, an annular shoulder thereon, a plunger within the barrel, means intermediate the barrel and plunger for holding the latter from rotation, a sleeve mounted upon the enlarged portion of the barrel provided with a lesser number of threads than the barrel, a scale-disk fixed to the sleeve, and a pointer fixed to the plunger.

3. In micrometer-calipers, the combination with a yoke, of a barrel fixed to said yoke, a plunger traversing said barrel, a bearing-plate upon the lower extremity of the plunger, a head near the upper end of the plunger, a coiled spring surrounding the reduced portion of the plunger, and means upon the plunger-head and engaging the barrel to guide the plunger longitudinally.

708,932. PROCESS OF MANUFACTURING SHEET-METAL PIPE-ELBOWS. EDWARD H. SMITH, Mount Vernon, Ohio, assignor to Dinkelman-Bowers Manufacturing Company, Forest, Ohio, a Copartnership. Filed Nov. 28, 1901. Serial No. 83,782. (No specimens.)

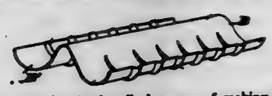

Claim.—1. The herein-described process of making pipe-elbows consisting in shaping up from a plain blank an intermediate blank having opposite longitudinally-extended and parallel semicylindrical portions provided with transverse crimps or corrugations extending to their edges and an intermediate elevated portion, bending such intermediate blank into approximately a cylindrical form, bending the cylinder so formed into elbow form whereby the preliminary crimps or corrugations are flattened radially and flattening said ribs or crimps upon the surface of the elbow, substantially as and for the purposes set forth.

2. The process of producing stovepipe-elbows which consists in forming a plate into a preliminary blank having opposite semicylindrical portions lying approximately in the same plane and separated by an intermediate projecting portion, and crimping or corrugating said semicylindrical portions transversely, bending the intermediate blank so formed into approximately a cylindrical form and bending said cylindrical form into elbow form, substantially as set forth.

3. The improvement in the art of making pipe-elbows with crimps extending partially around the circumference thereof, which consists in shaping up a plain blank into the intermediate blank with longitudinal parallel semicylindrical portions lying in the same direction and crimping them for a short distance from their outer edges to produce transverse crimps which disappear short of the inner sides of the said portions and subsequently transversely and longitudinally bending the intermediate blank into elbow form, substantially as set forth.

708,933. CATAMENIAL SACK. MARTIN H. SPARLDING, Chattanooga, Tenn. Filed Nov. 26, 1900. Serial No. 37,620. (No model.)

Claim.—1. A catamenial sack consisting of a section of fabric having a single eyelet at one end, and tapes secured to opposite corners at the opposite end of the fabric from the eyelet, said tapes being adapted for engagement with the eyelet and to be tied together to support all portions of the fabric, the base of the fabric being adapted to rest upon the hips of the wearer to support the sack.

2. A catamenial sack consisting of a triangular section of fabric, an eyelet formed at the apex of the fabric, and tapes secured to the ends of the base of the fabric and adapted for engagement with the eyelet to support the entire fabric, the ends of the base of the fabric being adapted to rest upon the hips of the wearer and the tapes being adapted to be tied together to hold the base and apex in position.

3. A catamenial sack consisting of a triangular section of fabric having its central portion reinforced and its edges hemmed, a reinforcing-piece secured at the apex of the fabric, said apex portion and reinforcement having an eyelet formed therethrough, and tapes attached to the ends of the base-hem, said tapes being adapted to pass through the eyelet and to be tied together to support the device upon the hips of the wearer, the base of the fabric being adapted to rest across the back and with its ends upon the hips of the wearer to support the sack.

708,934. DRAWING-DOWN DEVICE FOR BANJO-VELLUMS. WALTER J. SERET, Sydney, New South Wales, Australia. Filed Feb. 24, 1902. Serial No. 95,442. (No model.)

Claim.—1. In a drawing-down device for banjo-vellums, an anchor-piece consisting of a base provided with an opening and a hook depending from the side of said base, a puller-piece consisting of a fork having hooked ends and a base provided with an opening and integral with the lower end of the fork, a headed bolt extending through the said openings, the head of said bolt engaging the base of the fork, and a nut mounted on the bolt for securing said anchor and puller pieces in their adjusted position.

2. In a drawing-down device for banjo-vellums, an anchor-piece consisting of a base and a hook depending therefrom, a puller-piece consisting of a fork having hooked ends and a base integral therewith, a bolt extending through the base of said pieces, and a nut mounted on the bolt for securing said anchor and puller piece in their adjusted position.

708,935. MANUFACTURE OF VARNISHES. EDWARD H. STRAHAN, London, and EDWARD GRAHAM, Tilehurst, England, assignors of one-half to Edmund Ridsdale Burrell, Hilwall, London, England. Filed Apr. 21, 1902. Serial No. 104,048. (No specimens.)

Claim.—1. The manufacture of varnishes in which hard gum, or resin, a non-volatile drying-oil, and turpentine are employed, by first dissolving the gum, or resin, in an excess of turpentine in a closed vessel at a temperature sufficiently high to dissolve the hard gum, or resin, employed, then filtering, or settling, solid impurities from the solution, then distilling off the excess of turpentine and afterward mixing the non-volatile drying-oil with the solution at a temperature lower than that at which turpentine would be evaporated; substantially as hereinbefore described.

2. The manufacture of varnishes, in which hard gum, or resin, a non-volatile drying-oil and turpentine are employed by first dissolving the gum, or resin, in an excess of turpentine in a closed vessel at a temperature of or about 300° to 350° centigrade, then filtering, or settling, the solution to remove solid impurities, then distilling off excess of turpentine, and afterward mixing the non-volatile drying-oil with the solution at a temperature not exceeding 100° centigrade; substantially as hereinbefore described.

3. The manufacture of varnishes, in which hard gum, or resin, a non-volatile drying-oil and turpentine are employed, by first dissolving the gum, or resin, in an excess of turpentine in a closed vessel at a temperature sufficiently high to dissolve the hard gum, or resin, then distilling off a portion of the turpentine to carry off water, then filtering or settling out solid impurities then distilling off the excess of turpentine, and afterward mixing the non-volatile drying-oil with the solution at a temperature lower than would cause discoloration of the non-volatile drying-oil, or the evaporation of the turpentine; substantially as hereinbefore described.

708,935.

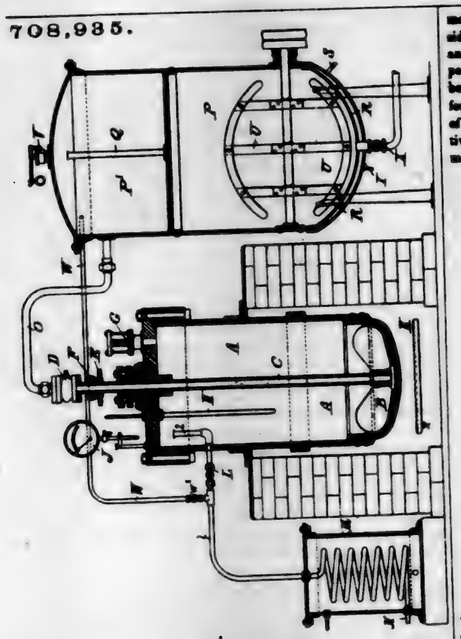

708,936. STRUCTURAL-METAL BEAM. AXEL A. STRESS, Chicago, Ill., assignor to Stress Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed July 15, 1902. Serial No. 115,717. (No model.)

Claim.—1. As a new article of manufacture, a wrought-metal webbed beam, having on one or on each end a forged head or base integral with, and composed wholly of sections of, all the webs of the beam upset into a solid body.

2. As a new article of manufacture, a wrought-metal webbed beam, having on one or on each end a forged head or base integral with, and composed wholly of sections of, all the webs of the beam upset into a solid body expanded beyond the depths of the webs of the article on two or more sides thereof.

708,937. ROTARY ENGINE. PETER STUDER and PETER RUFF, Whitehouse, Ohio. Filed May 31, 1902. Serial No. 109,736. (No model.)

Claim.—1. A rotary engine, comprising a casing having a plurality of annular steam-chambers, a single drive-shaft, said casing having a central bore, a disk rotatable within the bore, said disk having radial oppositely-disposed pistons, one for each annular chamber, cam devices on the shaft, a sliding abutment and cut-off valve for each annular steam-chamber, a separate means for automatically moving each abutment to its closure position, intermediate connections joining each abutment with one of the cam devices on the shaft, and connections joining the cut-off valve for each annular steam-space with its respective abutment, all being arranged substantially as shown and for the purpose described.

2. In a rotary engine, as described, the combination with the casing, having an annular steam-chamber, circular in cross-section: of a drive-shaft, a piston-carrying member mounted thereon, having a radial bracket, a piston-disk having a stub-axle, and a spring bearing on the bracket to receive the said disk, substantially as shown and for the purposes described.

3. In a rotary engine, as described, the combination with the annular steam-chamber, the steam-jackets surrounding the same, the automatically-operating abutment, said chamber having a steam-inlet at each side of the abutment, and a single exhaust; a piston operating with the annular chamber, a valve-chest communicating with the inlets, an independently-operating shifting valve for each inlet, a connection joining both valves, said connection including a rocking member, and a means for changing the fulcrum of said rocking member, whereby to throw one of the valves out of an operative condition, and the other into an operative condition, and a cam mechanism on the drive-shaft for imparting a motion to the rocking member, for the purposes described.

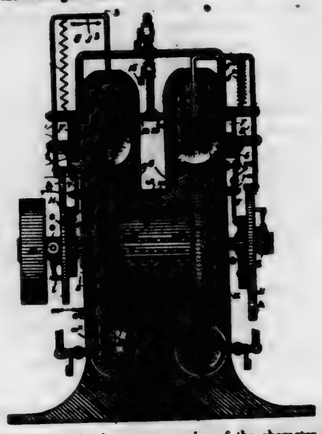

4. The combination in a rotary engine of the character described, with the annular steam-chamber, the sliding abutment, means for normally forcing the abutment to a closed position, the annular chamber having a steam-inlet at each side of the abutment, and a single exhaust; a piston operating in the said annular chamber, an independent valve for each inlet for controlling the steam-feed therethrough, a cam-disk mounted on the shaft, and connections between the disk and the sliding abutment cooperatively arranged for lifting the abutment, and a second cam-disk rotatable with the first cam-disk, and connections joining the second cam-disk with the rockable valve-operating member, for the purposes described.

5. In a rotary engine of the character described, the combination with the annular steam-chamber, the automatically-operating sliding abutment, said chamber having an inlet at each side of the abutment; the steam-chest common to both inlets, an independent valve for each inlet, mounted in the said chest, a changeable cam-disk connected with the inlet-controlling valves, and a governor mechanism for controlling the changes in the valve-operating cam-disk, for the purposes described.

6. The combination with the annular steam-chamber, the piston, the automatically-operating abutment, said piston having a pair of inlets, one at each side of the abutment, a valve-chest communicating therewith, a separate valve for each inlet, each valve including a crank-member, pivoted link connections joining both crank members, a rocker-arm including the said pivoted link connections, a shiftable fulcrum for the said rocker-arm, a cam disposed eccentrically of the drive-shaft and mounted to rotate with the said shaft, a link-arm joining the said eccentric with the valve-controlling mechanism, and a centrifugal governor for changing the position of the said eccentric, all being arranged substantially as shown and for the purposes described.

708,938. GRATE FOR KILNS OR FURNACES. JOHN W. TAYLOR, Summerville, S. C. Filed May 8, 1902. Serial No. 105,803. (No model.)

Claim.—1. In a grate, the combination with a series of grate-supporting bars each having portions of its length overthrown in cross-section and the remaining portions substantially T-shaped in cross-section and arranged horizontally and parallel with one another, of a plurality of bricks fitted between said bars and supported at their ends thereon, substantially as described.

2. In a grate, the combination with a series of grate-supporting bars

arranged horizontally and parallel with one another and each provided on its opposite vertical sides between its top and bottom with longitudinal laterally-projecting ribs or flanges, of a plurality of bricks disposed between the adjacent sides of said bars and resting at their opposite ends on said ribs or flanges, and means for preventing lateral movement of said bricks, substantially as described.

3. In a grate, the combination with a series of grate-supporting bars arranged horizontally and parallel with one another, each of said grate-bars being provided on its opposite vertical sides intermediate its top and bottom with longitudinal ribs or flanges and with lateral projections on the upper sides of said ribs or flanges, of a plurality of bricks arranged between the adjacent sides of said bars, each brick resting at its opposite ends on two of said ribs or flanges and between two of said lugs, substantially as described.

4. In a grate, the combination with a series of grate-supporting bars arranged horizontally and parallel with one another and each provided on its opposite vertical sides intermediate its top and bottom with longitudinal lateral-projecting ribs and with lugs formed on the upper sides of said ribs and the opposite sides of said bars, and a front and rear grate-supporting bar, each provided on its inner side only with a longitudinal laterally-projecting rib and laterally-projecting lugs formed on the upper side of said rib, and a plurality of bricks fitted between said grate-supporting bars and the said lugs, the upper edges of the front and rear grate-supporting bar lying flush with the upper surfaces of the bricks, substantially as described.

5. In a grate, the combination with a series of grate-supporting bars arranged horizontally and parallel with one another and provided with recesses for the reception of the ends of the bricks and provided on their under edges with depending tenons of hollow tubular standards, fitted at their upper ends over said tenons, substantially as described.

708,939. BAKE. LE GRAND TERRY, Waverly, N. Y. Filed Jan. 18, 1902. Serial No. 90,362. (No model.)

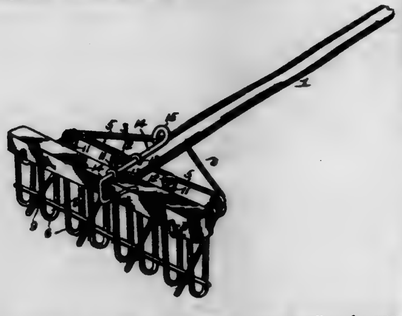

Claim.—1. In a rake, the combination with a handle and a cross-head secured thereto, of teeth secured to the cross-head and having front and rear members, a bar projecting through said teeth, and pivoted arms connected with the handle and projecting into eyes or loops in said bar.

2. In a rake, the combination with a handle and a cross-head secured thereto, of teeth secured to the cross-head and each comprising a wire bent between its ends, one end projecting into the bottom of the cross-head and the other into the side face thereof, a frame connected at its ends to the cross-head and between its ends to the handle, a rod carried by said frame disposed parallel with the cross-head, a bar projecting through the rake-teeth and having eyes at intervals throughout its length, and arms pivotally connected to said rod and projecting into the eyes in said bar.

3. In a rake, the combination with a handle and a cross-head secured thereto, of teeth secured to the cross-head, a bar projecting through said teeth, a frame carried by the rake, arms pivotally connected to the frame in front of the cross-head and having their free ends projecting through eyes on said bar, and a sliding catch on the rake adapted to support the bar and arms in an elevated position.

708,940. PRESSER-FOOT-LIFTING MECHANISM FOR SEWING-MACHINES. CONRAD TIEDEMANN, Bruning, Nebr. Filed Apr. 26, 1902. Serial No. 104,021. (No model.)

Claim.—1. A mechanism for lifting the presser-bar of a sewing-machine, comprising a presser-bar formed with rack-teeth, a bell-crank lever having teeth on the end of one arm to engage the said rack, a pivotally-supported lever to engage the other arm of the bell-crank lever, a reciprocable pitman to operate the lever, and means to reciprocate the pitman.

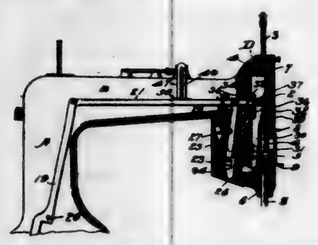

2. In a mechanism for lifting the presser-bar of a sewing-machine, the combination of a presser-bar formed with rack-teeth, a bell-crank lever having teeth on one arm to engage the said rack-teeth and provided with a pin in its upper end, a pivotally-supported lever 22 to engage the pin in the free arm of the bell-crank lever, a reciprocable pitman to which the upper end of the lever 22 is connected, a rocking lever to operate the pitman, and a lever under the table of the machine to rock the rocking lever.

3. In a mechanism for lifting the presser-bar of a sewing-machine, the combination with a reciprocable pitman having a pawl-catch on its inner end and means connected thereto for lifting the presser-bar, of a vertical shaft, a spider-wheel mounted on the shaft, a ratchet-pinion mounted on said shaft in the path of the pawl-catch, and means to actuate the pitman to engage the pawl-catch with the ratchet-pinion and turn the spider-wheel to engage and hold the presser-bar elevated.

4. In a mechanism for lifting the presser-bar of a sewing-machine, the combination of the lifting mechanism, the presser-bar formed with a recess, a ratchet-pinion, a spider-wheel turned thereby, and means to turn the ratchet-pinion with the spider-wheel whereby an arm of the spider is carried within the recess to support the presser-bar in raised position.

5. In a mechanism for raising and supporting the presser-bar of a sewing-machine, the combination of the presser-bar, a rotatable ratchet-pinion, a spider-wheel rotated thereby, means to lift the presser-bar, a pitman to actuate the lifting mechanism and to rotate the ratchet-pinion and bring the spider into engagement with the presser-bar, and a lever to operate the pitman.

708,941. MANUFACTURE OF IRON AND STEEL. FRANK J. TONE, Niagara Falls, N. Y., assignor to The Carborundum Company, Niagara Falls, N. Y., a Corporation of Pennsylvania. Filed Jan. 2, 1901. Serial No. 41,992. (No specimens.)

Claim.—As an improvement in the art of making iron and steel, the improvement which consists in adding to molten iron or steel silicon in its elemental form; substantially as described.

708,942. APPARATUS FOR RACKING OFF BEER. HARRY TOMESANI, Brooklyn, N. Y. Filed Nov. 9, 1901. Serial No. 81,892. (No model.)

Claim.—1. The combination of a racking-off faucet, a flanged tube connected therewith, a gasket or washer surrounding said tube, a sliding sleeve mounted on said tube and provided with a flange to engage a bushing and adapted to set on said gasket or washer, a ring connected with said tube, a guide interposed between said tube and sleeve, a handle or lever pivotally carried by said ring and having a cam-groove, a projection from said sleeve engaging said groove, and means for locking the handle or lever in the operative position, substantially as described.

2. An apparatus for the purpose specified comprising a tube adapted to be connected to a racking-off faucet provided at one end with a flange, a gasket disposed upon said tube adjacent to its flanged end, a sleeve slidably arranged upon said tube and provided with a stud and a flange adapted to engage a bushing, a ring fixed upon the upper end of said tube above said slidable sleeve, means carried by said ring and engaging said slidable sleeve whereby to hold the same against rotary movement, a lever pivotally mounted upon said ring, a cam-groove arranged in the pivoted end of said lever and engaging the stud on said slidable sleeve, a rack, and a pawl adapted to engage said rack whereby to lock said lever in its adjusted position and hold the gasket expanded within a bushing, substantially as specified.

3. An apparatus for the purpose specified comprising a tube adapted to be connected to a racking-off faucet provided at its lower end with a flange, a resilient gasket disposed upon said tube adjacent to its lower end, a slidable sleeve disposed upon said tube above said gasket and provided at its upper end with vertical apertures and an outwardly-projecting stud, and at its lower end with a flange adapted to engage a bushing, a ring fixed upon the upper end of said tube above said slidable sleeve, pins depending from said ring and extending into the vertical apertures in said slidable sleeve, a lever pivotally mounted upon said ring, a cam-groove arranged eccentrically in the pivoted end of said lever and engaging the outwardly-projecting stud on said slidable sleeve, a segmental rack arranged upon the periphery of the pivoted end of said lever, and a pawl pivoted on said slidable sleeve adapted to engage said segmental rack whereby to hold said lever to its adjusted position and the gasket expanded within a bushing, substantially as specified.

708,943. FOLDING BOX. ALEXANDER VAUSEY, Paraguald, Ark. Filed June 26, 1902. Serial No. 113,194. (No model.)

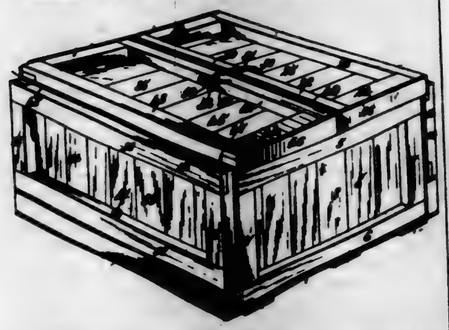

Claim.—A folding box consisting of a bottom, a plurality of supports secured to the lower face thereof, a front and rear wall, said walls each consisting of a rectangular frame having a plurality of vertically-extending abutting strips of suitable material secured to the inner face thereof, an edging-strip for the top of each of said walls, means secured to the upper face of the bottom and the inner face of each of said walls for hinging the walls to the bottom, a pair of supports secured to the upper face of said bottom, and side walls hinged to the said supports, each of the said walls comprising an upper and lower section hinged together, each of the said lower sections consisting of an oblong frame having a plurality of vertically-extending abutting strips of material secured to the inner face thereof, each of the upper sections consisting of a rectangular frame having a strip of material connected to the side edges thereof and projecting inwardly therefrom and a plurality of vertically-extending abutting strips of suitable material secured to the inner face of the frame and arranged to form a pair of grooves between the projecting strips, said grooves adapted to receive the top of the front and side walls when the box is set up, substantially as shown and described.

708,944. AIR-PUMP. EDWARD WALKER, Washington, Iowa. Filed Jan. 31, 1902. Serial No. 92,644. (No model.)

Claim.—1. The combination with the storage-ball and a pumping-ball connected by a pipe supplied with check-valves, of a meter-barrel having a piston therein connected to said pumping-ball, a valve constructed to regulate the flow of water into and out of said pumping-ball, a lever connected to operate said valve, a pair of cam-bearing levers, one located on each side of said levers in position to engage and operate said lever, and means connecting said ball and said cam-bearing levers to operate said levers, substantially as described.

2. In a device of the class described, the combination with a ball mounted in a tub, of a meter-barrel provided with a piston connected to said ball, a pipe connected to said barrel, a valve mounted in said pipe, a lever arranged to operate said valve to regulate the flow of water into and out of said barrel, a lever bearing a weight on one arm and a cam on the other, which cam is located to engage said lever, said weighted arm being connected to said ball by a flexible member, and a second lever bearing a weight on one arm and a cam on the other, said lever being located to operate said first-mentioned lever in the opposite direction from the first-mentioned cam-bearing lever, means for connecting said cam-bearing levers and said ball to operate them, substantially as described.

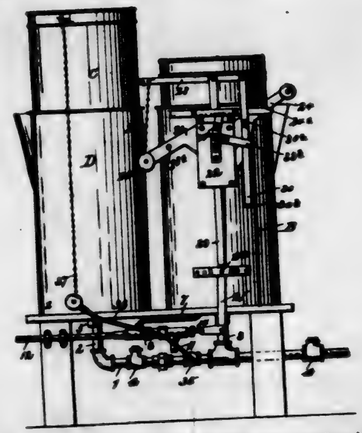

3. The combination with a pumping-ball, of a meter-barrel having a piston therein which is connected to said ball, a pipe connected to said meter-barrel and provided with a valve having a sliding stem, a lever connected to said stem, a first lever bearing a cam on one arm and a weight on the other, a chain connected to said ball and the weighted arm of said lever, a second lever bearing a cam on one arm and a weight on the other, a catch carried by said ball and located to engage the said second lever, said cam being located to operate said first-mentioned lever to operate said valve, substantially as described.

708,945. FLIER FOR SPINNING AND DOUBLING MACHINES. THOMAS WARDLE, Bridge of Weir, Scotland, assignor to Ernest Symington Coats, Paisley, Scotland. Original application filed Apr. 12, 1901. Serial No. 55,514. Divided and this application filed July 17, 1901. Serial No. 68,093. (No model.)

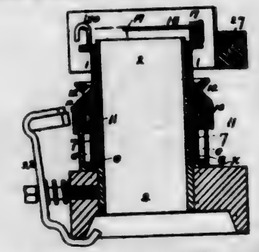

Claim.—1. In fliers for spinning and doubling machinery, a tubular bearing-piece to contain the spindle and having oil-grooves on its bearing-faces, and an oil-chamber for the bearing-piece having an annular piece fixed therein to divide the chamber into compartments, in combination with a flier-tube on the tubular bearing-piece, a head for the latter, a driving-pulley, a head-brake, a guide-eye, a two-armed lever, a stud for the latter and a stop, substantially as described.

2. An improved flier for spinning and doubling machinery, comprising a tubular bearing-piece, having oil-grooves and an outer annular wall in one with it, comprising an oil-chamber, a fixed annular piece in the latter, in combination with a flier-tube adapted to rest on its lower edge in said chamber, and having heads, one outside the oil-chamber and en-

tending down below the top of the oil-chamber and one outside the annular piece extending down between the annular piece and the oil-chamber wall, substantially as described.

3. An improved flier for spinning and doubling machinery, comprising a tubular bearing-piece, a flier-tube, a pulley for the latter, and a ring-piece frictionally held to the flier-tube carrying the guide-eye, said ring-piece normally revolving with the flier-tube, but adapted to be stopped independently without stopping the pulley, substantially as described.

4. A flier-tube, comprising a pulley and head and a ring thereon carrying the guide-eye, said ring having a flanged beveled lower end fitting into a corresponding groove in the flier-tube, substantially as described.

708,946. METHOD OF HEATING MATERIALS FOR THE PURPOSE OF DRYING OR TREATING. ABRAHAM T. WELSH, Baltimore, Md. Original application filed May 28, 1897, Serial No. 638,660. Divided and this application filed June 7, 1901. Serial No. 63,653. (No specimens.)

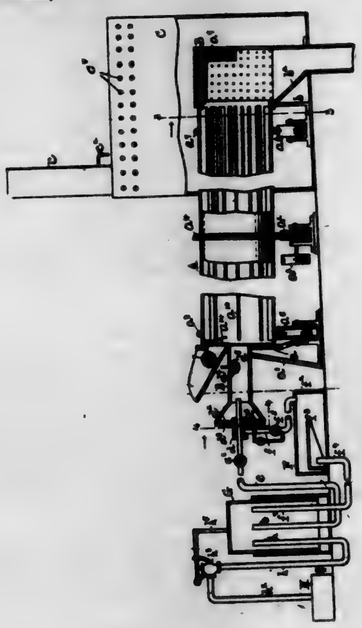

Claim.—1. The process of heating materials continuously without burning for the purpose of drying or treating, which consists of dropping the same through flame intermittently, and then subjecting the material to gradually-declining heat, substantially as described.

2. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the same initially in large bulks, with agitation, to the action of high heat, and then in gradually-diminishing bulks to progressively-decreasing heat, and increasing agitation whereby thoroughly to dry the substances, and at the same time, finely divide the same, substantially as described.

3. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the goods to successive portions of a flame of diminishing intensity.

4. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the goods to successive portions of a flame of diminishing intensity, and agitating the materials in the air.

5. The method of heating materials without burning for the purpose of drying or treating, which consists of dropping them through, or near, flame intermittently to heat them, and progressively decreasing the heat, substantially as described.

6. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the pieces to the direct or direct radiant action of a blast-flame for a period of time dependent upon and controlled by the moisture to be evaporated.

7. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the material intermittently to the direct or direct radiant action of flame, the period of subjection to the higher temperature, and the period of subjection to the lower temperature, being so proportioned that the temperature of the material will never rise to the ignition-point.

8. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the materials to the direct or direct radiant action of flame and a blast for a period of time dependent upon and controlled by its weight.

9. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the materials to the direct or direct radiant action of flame and a blast for a period of time dependent upon and controlled by its weight, and the amount of moisture to be evaporated.

10. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the material intermittently to the direct or direct radiant action of flame for a period of time dependent upon its weight, and the speed of feed.

11. The method of heating material without burning for the purpose of drying or treating, which consists of subjecting the material to the direct or radiant action of a flame, the work and the power being substantially balanced at all stages of the process, substantially as described.

12. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the materials to be heated to the direct or radiant action of a flame for a period of time, then withdrawing the material from the action of the flame at a speed directly proportional to the temperature of the flame.

13. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the materials to be heated to the direct or radiant action of a flame intermittently, and subjecting the material to the action of the flame in quantity substantially proportional to the temperature of the flame.

14. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the materials to be treated to the direct or radiant action of a flame, and then subjecting successive portions of said materials to constantly-declining temperatures, in quantities substantially proportional to the temperatures, and simultaneously feeding fresh material to the flame.

15. The method of heating mixed materials of varying size and weight, without burning, for the purpose of drying or treating, which consists of subjecting the material to be treated to the direct or radiant action of a flame and blast, intermittently passing the materials through the flame and blast, whereby the lighter and drier materials will be driven by the blast away from the flame toward its point of minimum temperature, while the heavier particles will be driven proportionally a less distance.

16. The method of heating material without burning for the purpose of drying or treating, which consists of subjecting the greatest quantity of material to be dried in its highest heat-absorbing condition, to the direct or radiant action of a flame at its point of maximum temperature, and gradually reducing the quantity as the temperature of the flame diminishes, substantially as described.

17. The method of heating materials without burning for the purpose of drying or treating, which consists of subjecting the greatest quantity of material to be treated, in its highest heat-absorbing condition, to the direct or radiant action of a flame, at its point of maximum temperature, intermittently subjecting the material to the direct action of the flame in constantly-declining quantity as the temperature decreases.

18. The method of heating materials continuously without burning, for the purpose of drying or treating, which consists of subjecting the maximum quantity of material to be heated, in its highest heat-absorbing condition, to the direct or radiant action of a flame, gradually withdrawing the material from the action of the hottest flame and subjecting it in constantly-reducing mass to a gradually-reducing temperature, and simultaneously supplying fresh material in its highest heat-absorbing condition.

19. The method of heating mixed materials of varying size and weight, without burning, for the purpose of drying or treating, which consists of subjecting the greatest quantity of material to be heated, in its highest heat-absorbing condition, to the direct or radiant action of a flame at its point of maximum temperature, intermittently passing the material through the flame, whereby the lighter and drier materials will be driven by the blast of the flame from the point of maximum temperature of the flame toward its point of minimum temperature, while the heavier particles will be driven a less distance from the point of maximum temperature of the flame.

20. The method of drying material which consists in subjecting the wettest goods to the direct action of flame for a period of time dependent upon and controlled by their contained moisture, and then withdrawing them from the action of the flame, and then subjecting them to a gradually-decreasing temperature.

21. The method of drying materials which consists of subjecting the wet goods to the direct action of flame for a period of time dependent upon and controlled by the contained moisture, and then automatically withdrawing them from the action of the flame.

22. The method of drying materials which consists of subjecting the wet goods to the direct action of a flame for a period of time dependent upon the contained moisture, and regulating the effective temperature of the flame upon the goods, by regulating the quantity of goods fed to the flame.

23. The method of drying materials which consists of subjecting the wet goods to the direct action of a flame for a period of time dependent upon and controlled by their contained moisture and then withdrawing them from the action of the flame automatically by agitation and blowing.

24. The method of drying materials which consists of subjecting the wet goods to the direct action of a flame for a period of time dependent upon and controlled by their contained moisture and then withdrawing them from the action of the flame by agitating an inclined mass and blowing.

25. The method of drying materials which consists of subjecting the wet goods to the direct action of a flame and regulating the effect of the flame upon the goods by regulating the quantity of goods fed to the flame.

26. The method of drying materials which consists of subjecting the wet goods to the direct action of a flame for a period of time dependent upon their contained moisture, and regulating the effects of the flame upon the goods by regulating the quantity of goods fed to the flame.

27. The method of drying which consists of subjecting the goods while passing through the drier to the direct action of a flame and hot air, while so maintaining the relative temperatures of the air and goods that the air will always continue to absorb moisture.

708,947. DUPLEX TOOL-HOLDER FOR PLANERS, &c. JOSEPH H. WICKSTEED, Leeds, England. Filed Mar. 3, 1902. Serial No. 96,532. (No model.)

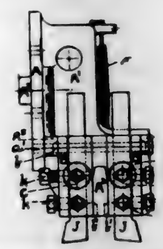

Claim.—1. In a tool-holder, a plate, a bracket integral therewith, a series of abutments integral with the bracket and provided with recesses, trunnions mounted in the said bracket, springs connecting the trunnions to the bracket, sleeves connected with the trunnions and provided with lugs adapted to engage in the said recesses, and tools suitably secured within the sleeves.

2. In a tool-holder, a pair of partially-rotatable trunnions, sleeves carried thereby and provided with lugs, tools suitably secured in the sleeves, a series of abutments provided with recesses and arranged at the sides of the sleeves, said recesses adapted to receive the said lugs during the operation of the tools, and means for supporting the trunnions and abutments.

3. In a tool-holder, a pair of partially-rotatable trunnions, sleeves suitably connected with the trunnions, tools suitably mounted in the sleeves, an abutment interposed between the sleeves, an abutment at each side of the sleeves, means integral with the sleeves and engaging in the abutments to prevent sidewise or upward movement during the cutting operation of the tools and means for supporting the trunnions and abutments.

4. In a tool-holder, a pair of partially-rotatable trunnions, sleeves carried thereby and provided with lugs, abutments suitably arranged in relation to the said sleeves and provided with recesses adapted to receive the lugs carried by the sleeves, means for suitably supporting the abutments and trunnions, and springs connected with said trunnions and with said supporting means.

5. In a tool-holder, a pair of trunnions, tool-carrying sleeves connected thereto, an abutment interposed between the sleeves, an abutment arranged at one side of each of the said sleeves, means carried by the sleeves and adapted to engage in the abutments to prevent movement of the sleeves during the operation of the tools and means for supporting said abutments and trunnions.

6. In a tool-holder, a plate, a bracket integral therewith, a pair of trunnions extending through the said bracket, a pair of springs connected at one end to the trunnions and at the other end to the said bracket, tool-receiving sleeves connected with the trunnions, an abutment integral with said bracket and interposed between said sleeves, and a pair of abutments integral with said bracket and one of which is adapted to be arranged at the outer side of each of the said sleeves.

708,948. JACK. BRAHUR WOODRUM, Oakmont, Pa. Filed Dec. 10, 1901. Serial No. 85,282. (No model.)

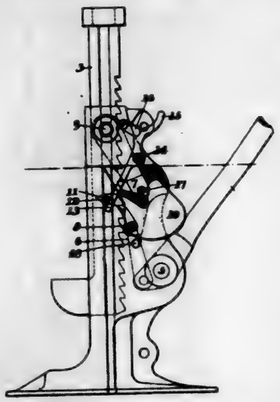

Claim.—1. A jack having two pawls engaging a toothed bar, and a single weight pivoted to the lower pawl and arranged to act upon the upper pawl to reverse the movement of the jack: substantially as described.

2. A jack having a toothed lifting-bar, two pawls arranged to engage the same, a weight pivoted to one pawl and arranged to act upon the other, a projection on the standard arranged to act upon the weight, and mechanism for holding the weight in inoperative position; substantially as described.

3. A jack having a toothed lifting-bar, a casing provided with a pawl engaging the teeth, an operating-lever also having a pawl engaging the teeth, a weight pivoted to the lever-pawl, and having one face arranged to act upon the upper pawl, and another face arranged to engage a projection on the casing, and a movable latch arranged to engage the weight: substantially as described.

708,949. MOTOR-VEHICLE. EDGAR A. WEBSTY, Canton, Ohio, assignor to the Aultman Company, Canton, Ohio, a Corporation of Ohio. Filed Dec. 13, 1900. Serial No. 39,772. (No model.)

Claim.—1. The combination of the truck-frame, the steering-wheels, the pivoting devices connecting the steering-wheels with the truck-frame, the power-transmitting devices at the axis of the said pivoting devices for actuating the steering-wheels, and a motor situated between the front and rear wheels operating in lines transverse to the vehicle and connected with said power-transmitting devices, substantially as set forth.

2. In a motor-vehicle, the combination of rear traction-wheels, front traction-wheels, a motor situated between said front and rear wheels and operating in planes transverse to the vehicle, power-transmitting devices extending longitudinally of the vehicle for transmitting power to said rear traction-wheels and to said front traction-wheels and power connections between the motor and said power-transmitting devices to actuate the same.

3. In a motor-vehicle the combination of rear traction-wheels, front traction-wheels, a differential or compounding power device rotating in planes transverse to the vehicle, a motor situated between the front and rear wheels, operating in planes transverse to the vehicle and connected with said differential power device, and power-transmitting devices extending longitudinally of the vehicle for transmitting power from said differential power device to said rear traction-wheels and to said front traction-wheels.

4. In a motor-vehicle, the combination of rear traction-wheels, front traction-wheels, two friction-wheels, capable of different rotation, situated below the main frame of the vehicle, a motor for actuating said wheels, supplemental friction-wheels adapted to engage the first friction-wheels, and power-transmitting devices extending longitudinally of the vehicle for transmitting power from one of said supplemental wheels to the rear

traction-wheels and from the other of said supplemental wheels to the front traction-wheels.

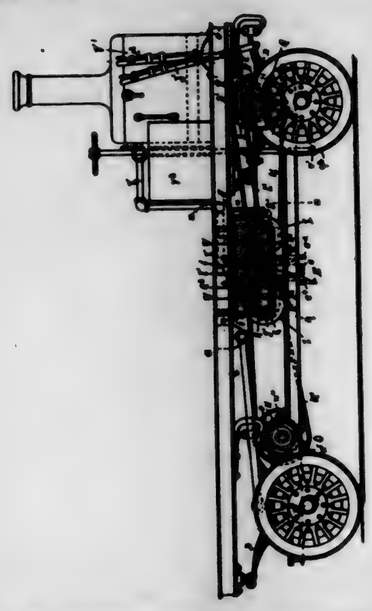

5. In a motor-vehicle, the combination of rear traction-wheels, front traction-wheels, two friction-wheels capable of different rotation and turning in planes transverse to the vehicle, a motor for actuating said wheels, supplemental friction-wheels engaging said first friction-wheels and turning in planes longitudinal of the vehicle, and power-transmitting devices extending longitudinally of the vehicle from said supplemental wheels to said front and rear traction-wheels respectively.

6. The combination of the vehicle-frame, the two steering-wheels adjustable relative to the frame, the two ground-wheels fixed in relation to the frame, the compensating gear having its two elements stationary relative to the vehicle-frame, and having its two elements respectively connected to the steering-wheels, the second compensating gearing having its two elements respectively connected to the fixed ground-wheels, and the intermediate compensating gearing turning in planes transverse to the vehicle and having its two elements respectively connected to the driving parts of the aforesaid compensating gearing, substantially as set forth.

7. The combination of the axles, the two wheels on each axle, the truck-frame, the body-frame, the engine on the body-frame operating in planes transverse to the vehicle, the engine-gearing comprising a compensating gear having two driven elements turning in planes transverse to the vehicle, the power-transmitting devices interposed between the engine-gearing and the two front driving-wheels, and comprising a supplemental compensating gearing and the driving devices for the two rear wheels comprising a compensating gearing, substantially as set forth.

8. The combination of the axles, the two wheels on each axle, the truck-frame, the body-frame, the engine connected to the body-frame and having its main driving-shaft longitudinal of the vehicle, the compensating gearing actuated by the engine turning in planes transverse to the vehicle and supported from the body-frame, the independent power devices for the front ground-wheels, the compensating gearing between said power devices, the two sets of driving devices for the rear ground-wheels, the compensating gearing between said devices, and two transmitting devices respectively connecting the first aforesaid compensating gear with the last two compensating gears, substantially as set forth.

9. The combination of the axles, the two driving-wheels on each axle, the truck-frame, the body-frame, the engine on the body-frame, the compensating gearing driven by the engine two friction-wheels driven by the compensating gearing, two sets of driving devices, one for each front wheel, the compensating gearing interposed between said driving devices, friction-driven power-transmitting devices connecting one of the aforesaid friction-wheels to the said compensating gearing two sets of driving devices for the rear ground-wheels, a compensating gear interposed between them, friction-driven power-transmitting devices connecting the last said gearing with the second aforesaid friction-wheel, substantially as set forth.

10. The combination of the truck-frame, the front pair of ground-wheels, the rear pair of ground-wheels, the engine or motor, the compensating gearing driven by the engine and mounted on a shaft longitudinal of the vehicle, the friction-wheels driven by the compensating gearing, the friction-pulleys on shafts transverse to the vehicles, and power-transmitting devices connecting one of the said transverse shafts with both of the front ground-wheels, and transmitting devices connecting the other transverse shaft with both of the rear ground-wheels, substantially as set forth.

11. The combination of the truck-frame, the two shafts mounted thereon, the pair of ground-wheels mounted in fixed positions relative to the truck-frame, a pair of ground-wheels adjustable on the truck-frame for steering, the two sets of compensating gears, one connected to the two fixed wheels and one connected to the two adjustable wheels, the intermediate compensating gearing, comprising transverse friction-wheels and longitudinally-turning friction-wheels, I, power devices for actuating the intermediate gearing, and two trains of power-transmitting devices, one connecting each of the aforesaid sets of compensating gears with the intermediate compensating gearing, substantially as set forth.

12. In a motor-vehicle, the combination of rear traction-wheels, front traction-wheels, a differential or compensating power device rotating in planes transverse to the vehicle and situated between said front and rear wheels, a motor for actuating said differential power device, longitudinally-turning chain-wheels, H, H', operated by the separate power elements of said differential power device respectively, and longitudinally-extending chains, M', M, for driving said rear and front traction-wheels.

13. In a motor-vehicle, the combination of rear traction-wheels, front traction-wheels, a differential or compensating power device rotating in planes transverse to the vehicle, situated between said front and rear wheels and having friction wheels or surfaces, c', c^2, friction-wheels, I, turning in longitudinal planes, chain-wheels, H, H', shafts, G, G', connecting the wheels, I, with the chain-wheels, and longitudinally-extending chains, M', M, for actuating the rear and front traction-wheels respectively.

14. In a motor-vehicle, the combination of the vehicle-frame, bearings g pivotally supported thereby, shafts supported in said bearings, movable bearings carrying the other ends of said shafts, means for moving the latter bearings, a compensating gearing between said shafts, having driving-wheels, driven wheels on said shafts, front and rear traction-wheels driven from said shafts, and means for actuating the compensating gearing.

15. In a motor-vehicle, the combination of the vehicle-frame, the traction-wheels, a compensating gearing comprising pinions and driving elements or wheels at the sides of said pinions, said pinions and wheels having intermeshing gear-teeth and also having curved surfaces engaging by a smooth rolling contact limiting the depth of engagement of said teeth, a motor for actuating said gearing, and means for driving the traction-wheels from said gearing.

16. In a motor-vehicle, the combination of the vehicle-frame, straps F', F', supported thereby, a compensating gearing, having a shaft supported in the inner parts of said straps, bearings supported in the outer parts of said straps, shafts at the sides of the compensating gearing driven thereby, and having journals in said bearings, traction-wheels driven from said shafts, and means for actuating the compensating gearing.

17. In a motor vehicle, the combination of front steering and traction wheels independently mounted by vertical pivots, gear-wheels on said traction-wheels, double-faced pinions, S', mounted in vertical line with said pivots, the lower face of said pinions engaging the gear-wheels of the traction-wheels, and means for engaging and driving said pinions on their upper faces, said pivots being extended and forming journals for said pinions.

18. In a motor-vehicle, the combination of a steering truck-frame, a transverse axle carrying the same, steering and traction wheels mounted on vertical pivots at the ends of said axle, transverse frame-bars forming a part of the truck-frame, an upwardly-extending frame carried by said axle, a transverse driving-shaft on said upwardly-extending frame, means whereby said traction-wheels are driven from said shaft, and braces extending from the upwardly-extending frame to said transverse frame-bars.

19. In a motor-vehicle, the combination of rear traction-wheels, front traction-wheels, a compensating gearing, E, a motor for driving the same, shafts, G, G', means by which said shafts are driven frictionally from said gearing, oscillatory bearn, g, forming bearings for said shafts, bearings, g', also supporting said shafts, a lever, L, means for operating the same, and connections between said lever and said bearings, g'.

20. In a motor-vehicle, the combination of rear traction-wheels, front traction-wheels, a compensating gearing operating in planes transverse to the vehicle and between said front and rear wheels, friction wheels or surfaces carried by the driving elements of said gearing, transverse shafts

movable toward and from said friction-surfaces, supplemental friction-wheels longitudinally movable on said shafts and turning in planes longitudinal of the vehicle, means for moving said shafts toward and from said gearing to engage and disengage the supplemental wheels, and means for moving the latter wheels longitudinally on their shafts, substantially as set forth.

708,950. MAIL-CHUTE. ARTHUR G. SARGENT, Boston, Mass. Filed July 2, 1902. Serial No. 114,071. (No model.)

Claim.—1. A mail-chute comprising a lower tubular section, and an upper tubular section having its lower end telescopically fitted within the upper end of the lower section and formed with an integral hook-shaped extension bent upwardly on the outer side of said upper section and taking over the edge of the lower section.

2. A mail-chute comprising a lower tubular section, and an upper tubular section having its lower end telescopically fitted within the upper end of the lower section, and formed with an integral hook-shaped extension bent upwardly on the outer side of said upper section and taking over the edge of the lower section, said upper section having its walls convergent from its upper toward its lower end.

708,951. LENO-LOOM. ROBERT H. RALLEY, Pawtucket, R. I. Filed May 27, 1901. Serial No. 62,162. (No model.)

Claim.—1. In a lease-loom, the combination of the lay, with a reed detachable from the lay, and deep and standard harnesses held for operative movement in front of the reed, and means for imparting such movement.

2. In a lease-loom, the combination of the lay, with a reed detachable from the lay, and deep and standard harnesses, arranged for operation in front of the reed, and means for locking the combined reed and deep and standard harnesses to the lay, and for disengaging the same.

3. In a lease-loom, the combination of the lay, with a reed detachable from the lay, and deep and standard harnesses arranged for operation in front of the reed, means for locking the combined reed and deep and standard harnesses to the lay, and for disengaging the same, and the metallic loops by means of which the deeps of the deep-harness are adapted to resist the wear caused by the forward and backward movement of the deep-harness with the lay.

4. In a lease-loom, the combination of the lay, with a reed detachable from the lay, and deep and standard harnesses, arranged for operation in front of the reed, and adapted to swing back and forth with the lay, means for locking the combined reed, and deep and standard harnesses to the lay, and for disengaging the same, and the soft lower portion of the standard-harness heddles, whereby the heddles are made adapted for heating up the weft in front of the reed.

5. In a lease-loom, the combination of the lay, with a reed detachable from the lay, and deep and standard harnesses arranged for operation in front of the reed, means for locking the combined reed, and deep and standard harnesses to the lay, and for disengaging the same, and the spring-buffers limiting the backward movement of the reed and the deep and standard harnesses.

6. In a lease-loom, the combination of the lay, with a reed detachable from the lay, and deep and standard harnesses arranged for operation in front of the reed, means for locking the combined reed, and deep and standard harnesses to the lay, and for disengaging the same, the shuttle guide-bar having guide-pins attached thereto, and means for raising the pins of the shuttle guide-bar into the shed.

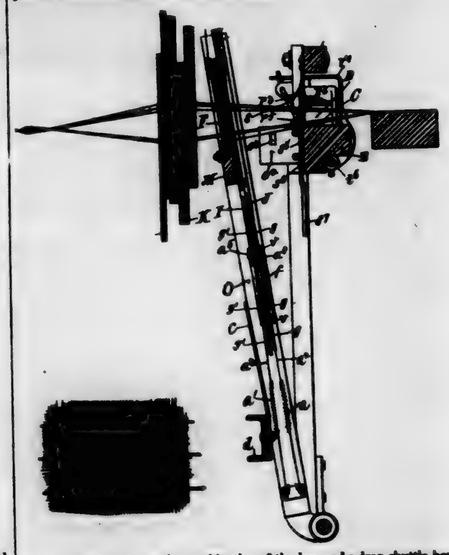

7. In a lease-loom, the combination of the lay, and a drop shuttle-box provided with a box for holding a ground-filling shuttle, and a box for holding a shuttle which carries the binding-thread for securing the crossed warp-threads, and means attached to the drop shuttle-box to provide for the normal retention of the lay upon the protector-rod, when the shuttle is not thrown through the shed at the crossing of the grouped warp-threads.

8. In a lease-loom, the combination of the lay, and a drop shuttle-box provided with a box for holding a ground-filling shuttle, a box for holding a shuttle carrying the binding-thread for the crossed warp-threads, and a blank shuttle-box member provided with a projection representing a deflected shuttle-binder.

9. In a lease-loom, the combination of a drop shuttle-box provided with a box for holding the ground-filling shuttle, a box for holding the shuttle carrying the binding-thread for the crossed warp-threads, a blank shuttle-box, and a projection which represents a deflected shuttle-binder, with the shuttle-binder of the shuttle-box at the opposite end of the lay, the weft-fork, the grid and the guard-arm, arranged back of the grid, and connected with the shuttle-binder.

10. In a lease-loom, the combination of the reed, and the standard and deep harnesses held for operation in front of the reed, with the lay, and the deep-protecting rod attached to the lay to prevent the engagement of the deeps with the flying shuttle.

11. In a lease-loom, the combination of the reed, and the standard and deep harnesses held for operation in front of the reed, with the lay, the shuttle guide-bar provided with the guide-pins, and means for raising the pins into the shed at each backward movement of the lay.

12. In a lease-loom, the combination of the reed, and the standard and deep harnesses held for operation in front of the reed, with the lay, the deep-protecting rod, attached to the lay to prevent the engagement of the deeps with the flying shuttle, the shuttle guide-bar provided with the guide-pins, and means for raising the pins into the shed at each backward movement of the lay.

13. In a lease-loom, the combination of the reed for beating up the weft, the deep and standard harnesses arranged in front of the reed for crossing action upon groups of threads in front of the reed, and means for imparting movement to the deep and standard harnesses to effect the required crossing of the groups of threads.

708,952. PNEUMATIC TIRE AND PROCESS OF MANUFACTURING SAME. JOHN W. ROBERTS, Chicago, Ill., assignor, by direct and mesne assignments, to H. Tire Company, Chicago, Ill., a Corporation of Illinois. Filed Mar. 13, 1901. Serial No. 51,570. (No model.)

Claim.—1. As a new article of manufacture, a pneumatic tire having the tube of knit fabric embedded therein and its ends brought together and secured without overlapping by uniting the loops forming the ends of the tube; substantially as described.

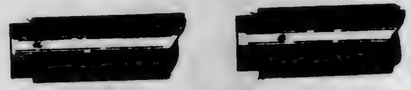

2. As a new article of manufacture, a pneumatic tire having the tube of knit fabric embedded therein and its ends brought together and secured without overlapping by uniting the loops forming the ends of the tube by knitting them together; substantially as described.

3. As a new article of manufacture, a pneumatic tire having a tube of knit fabric embedded therein and its ends brought together and secured without overlapping by a cord passed alternately through the loops in the two ends; substantially as described.

4. As a new article of manufacture, a pneumatic tire having the tube of knit fabric embedded therein and its ends brought together and secured without overlapping by uniting the loops forming the ends of the tube by cords stitched through the loops; substantially as described.

5. In the art of making pneumatic tires, the process which consists of placing the tube of knit fabric over a tube of raw rubber; in joining the ends of the rubber tube and the ends of the fabric tube; in saturating the fabric and outer surface of the rubber tube with naphtha or some equivalent substance; in inflating the tire while still saturated to force the rubber through the meshes of the fabric; and in subsequently vulcanizing the tire thus formed; substantially as described.

6. In the art of making pneumatic tires, the process which consists of placing the tube of knit fabric over a tube of raw rubber; in joining the ends of the rubber tube and fiberizing the ends of the fabric tube; in saturating the fabric and outer surface of the rubber tube with naphtha or some equivalent substance; in inflating the tire while still saturated to force the rubber through the meshes of the fabric; in then applying additional layers of raw rubber; and finally in vulcanizing the tube thus formed; substantially as described.

7. In the art of making pneumatic tires, the process which consists of placing a tube of knit fabric over a tube of raw rubber; in joining the ends of the rubber tube and fiberizing the ends of the fabric tube; in saturating the fabric and outer surface of the rubber tube with naphtha or some equivalent substance; in placing the tube in a tire-mold; in then inflating the tire very strongly while in the mold and while still saturated to force the rubber through the meshes of the fabric; and in subsequently vulcanizing the tire thus formed; substantially as described.

8. In the art of making pneumatic tires, the process which consists of placing a coating of raw rubber over a tube of vulcanized rubber; in then placing a tube of knit fabric over the raw rubber; in joining the ends of the rubber tube and the ends of the fabric tube; in saturating the fabric and the outer surface of the raw rubber with naphtha or some equivalent substance; in inflating the tire while still saturated to force the raw rubber through the meshes of the fabric; and in subsequently vulcanizing the tire thus formed.

9. In the art of making rubber tubes with fabric embedded therein, the process which consists of placing a tube of fabric over a tube of raw rubber; in closing the ends of the tube to make it air-tight; in softening the raw rubber by any suitable means; in inflating the tube while the rubber is still softened to force it through the meshes of the fabric; and in subsequently vulcanizing the tube thus formed.

708,953. PNEUMATIC TIRE AND PROCESS OF MANUFACTURING SAME.

JOHN W. BLOSSETT, Chicago, Ill., assignor, by direct and mesne assignments, to H. Tire Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 9, 1902. Serial No. 88,920. (No model.)

Claim.—1. As a new article of manufacture, a pneumatic tire having a tube of knit fabric embedded therein and its ends brought together and overlapped and secured by uniting the loops of the telescoped end with the adjacent loops of the inner portion; substantially as described.

2. As a new article of manufacture, a pneumatic tire composed of inner and outer vulcanized tubes connected by a thick layer of vulcanized cement in which is embedded a tube of knit fabric having its ends brought together and secured by the loops of the fabric; substantially as described.

3. As a new article of manufacture, a pneumatic tire composed of inner and outer vulcanized tubes connected by a thick layer of vulcanized cement in which is embedded a tube of knit fabric having its ends brought together and telescoped and secured by uniting the loops of the overlapping end with the adjacent loops of the inner portion; substantially as described.

4. In the art of making pneumatic tires, the process which consists of covering the inner vulcanized air-tube placed upon a mandrel with a coating of vulcanized cement; of knitting a tube of fabric upon said cement-coated air-tube; of placing an additional layer of vulcanized cement upon said tube of fabric; in placing the tube thus formed in a tire-mold and inflating it strongly; in coating it with cement again after it is removed; and in placing an outer tube of vulcanized rubber thereon to be secured to the inner tube by said cement; substantially as described.

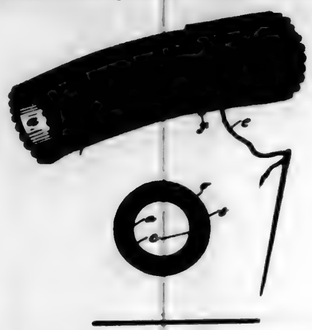

708,954. TIRE AND METHOD OF MANUFACTURING SAME.

JOHN W. BLOSSETT, Chicago, Ill., assignor, by direct and mesne assignments, to H. Tire Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 9, 1902. Serial No. 88,920. (No model.)

Claim.—1. As a new article of manufacture, a pneumatic tire having a tube of knit fabric embedded therein and its ends brought together and secured by uniting the loops of the ends and having the valve-stem passing through the fabric between the ends; substantially as described.

2. In the art of making pneumatic tires, the process which consists of placing the tube of fabric over a tube of raw rubber; in joining the ends of the rubber tube and the ends of the fabric tube; in inflating the tube in a tire-mold; in heating said mold sufficiently to soften the raw rubber so that the interior pressure will force it through the fabric thereby frictioning it; in placing a layer of raw rubber over the tube thus formed, and in subsequently vulcanizing the tire thus formed; substantially as described.

3. In the art of making pneumatic tires, the process which consists of placing a layer of raw rubber over an inner air-tube; in placing the tube of knit fabric over the raw rubber tube thus formed; in joining the ends of the rubber tube and the ends of the fabric tube; in inflating said tube in a tire-mold; in heating said mold sufficiently to soften the raw rubber so that the interior pressure will force it through the fabric thereby frictioning it; in placing a layer of raw rubber over the tube thus formed; and in subsequently vulcanizing the complete tire; substantially as described.

708,955. BASKET FORMING AND STAPLING MACHINE.

HOSMER B. BROWN, St. Joseph, Mich., assignor to St. Joseph Iron Works, St. Joseph, Mich., a Corporation of Michigan. Filed Mar. 4, 1902. Serial No. 96,661. (No model.)

Claim.—1. In a basket-making machine, the combination with a mold or form, of a pressure-plate, pressure-actuated devices tending to force the mold and plate toward each other, one of such devices exerting a force greater than that exerted by the other, and a stationary forming-ring through which the mold passes in the formation of a basket.

2. In a basket-making machine, the combination with a pair of cooperative basket-clamping devices one of which is shaped to form a mold for the basket, of fluid-pressure cylinders connected one to each of such devices, one of such cylinders being larger in area than the other, and a stationary forming-ring through which said devices are forced by the larger cylinder in the process of forming a basket.

3. In a basket-forming machine, the combination with a pair of basket-clamping means, one of which is shaped to form a mold for the basket, of a stationary forming-ring, and means for forcing the basket-clamps partially through said ring.

4. In a basket-forming machine, the combination with a basket-clamp and a mold for coöperation therewith, of a stationary forming-ring, through which the clamp and mold are forced, and means for actuating said clamp and mold.

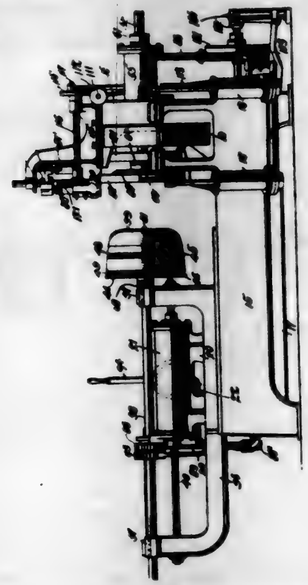

5. In a basket-forming machine, the combination with a basket-clamp and a mold, of means for actuating the same, a clamping-ring adapted to engage with that portion of the basket between the hoops, and means independent of both the clamp and mold for the support of said ring.

6. In a basket-forming machine, the combination with mechanism for driving a double row of hoop-securing staples, of a basket-clamp, a mold, means for actuating the same, a clamping-ring adapted to engage with and hold the staves to the mold at a point between the two lines of staples, and means independent of both the clamp and mold for supporting said ring.

7. In a basket-forming machine, the combination with mechanism for driving a double row of hoop-securing staples, of a basket-mold, a pressure-plate coöperating therewith, and a clamping-ring arranged in a vertical plane between the staple-drivers, and means for forcing the pressure-plate and mold through said ring.

8. A basket-forming machine, comprising a plurality of laterally-fixed rotatable forming-rings, a mold, a pressure-plate adapted to engage the bottom of the basket-blank, and means for forcing the mold and pressure-plate through said rings.

9. A basket-forming machine, comprising a plurality of laterally-fixed forming-rings, a mold, a pressure-plate adapted to clamp the blank against the bottom of the mold, and means for forcing the mold and the pressure-plate through said rings.

10. A basket-forming machine, comprising a pressure-plate, means for exerting a constant pressure thereon, a laterally-fixed basket-forming ring, a basket-mold adapted to pass through said ring, and pressure-actuated devices exerting a force superior to that acting on the pressure-plate and serving to force the basket-blank and the pressure-plate through said ring.

11. In a basket-forming machine, a pair of basket-engaging elements, a fixed basket-forming ring for coöperation therewith, a pressure-cylinder connected to each element and one of such cylinders having a greater area than the other, a pressure-supply with which the smaller cylinder is in constant communication, and a valve-controlled passage leading from said pressure-supply to the larger cylinder.

12. In a basket-forming machine, a pair of concentrically-disposed basket-engaging devices, concentrically-disposed pressure-cylinders, a pressure-supply with which both cylinders are in constant communication, a basket-mold adapted to coöperate successively with said basket-engaging devices, a pressure-cylinder for actuating said basket-mold, said pressure-cylinder being of an area greater than the combined area of the said two concentric cylinders, and a valve-controlled passage leading from said pressure-supply to the mold-actuating cylinder.

13. In a basket-forming machine, the combination with a basket-mold having a concaved bottom portion, of a yielding ejector-pin carried by said mold and normally projecting beyond the outer line of the mold, a crimp-forming plunger between which and the pin the basket-blank is primarily engaged, a yielding pressure-plate adapted to engage with the basket-blank after the formation of the crimp, and a stationary forming-ring through which both the pressure-plate and mold are forced.

14. In a basket-forming machine, the combination with a basket-mold having a concaved bottom portion, of a yielding ejector-pin carried by said mold and normally projecting beyond the outer line of the mold, a crimp-forming plunger between which and the pin the basket-blank is primarily engaged, means for exerting pressure on the plunger to offset the formation of a central crimp in the blank, a pressure-plate having its engaging surface normally disposed to the rear of the crimp-forming plunger, a laterally-fixed rotatable forming-ring, and means for forcing the mold successively into contact with the crimp-forming and pressure plate.

15. In a basket-forming machine, the combination with a basket-mold having a concaved bottom portion, of a yielding ejector-pin carried by said mold and normally projecting beyond the outer line of the mold, a crimp-forming plunger between which and the pin the basket-blank is primarily engaged, a yielding pressure-plate adapted to engage with the basket-blank after the formation of the crimp, a pair of spaced forming-rings through which the pressure-plate and mold are forced with the basket-blank.

16. In a basket-forming machine, the combination with a reciprocatory basket-mold having a concaved bottom portion, of a basket-forming ring, a pressure-plate, a cylinder, a pressure-supply with which said cylinder is in constant communication, a piston disposed in the cylinder, a hollow piston-rod secured to the piston and to the pressure-plate, said hollow piston-rod forming an auxiliary cylinder in communication with the main cylinder, a plunger disposed within the auxiliary cylinder, a crimp-former carried by said plunger at a point in advance of the pressure-plate, and means for reciprocating the basket-mold to effect the successive engagement of the blank with the crimp-former, the pressure-plate and the forming-ring.

17. In a device of the class specified, two concentrically-disposed cylinders, each having a piston and piston-rod, the piston-rod of the larger cylinder serving as the smaller cylinder, basket-engaging devices carried by both of the piston-rods, and an auxiliary mold or form adapted to coact with said devices.

18. In a basket-forming machine, a frame, a stationary cylinder carried thereby, a piston in said cylinder having a piston-rod connected to the piston and extending through the opposite cylinder-heads, a carriage guided on the frame and connected rigidly to the opposite ends of said piston-rod, a shaft mounted in bearings in said carriage, a basket-mold carried by the shaft, and means for coöperating with the mold to effect the formation of a basket.

708,956. APPARATUS FOR GENERATING ACETYLENE GAS.

EDMUND R. COOK, Sacramento, Cal., assignor of one-half to George F. Hemmer, Portland, Oreg. Filed Apr. 27, 1901. Renewed Aug. 16, 1902. Serial No. 119,963. (No model.)

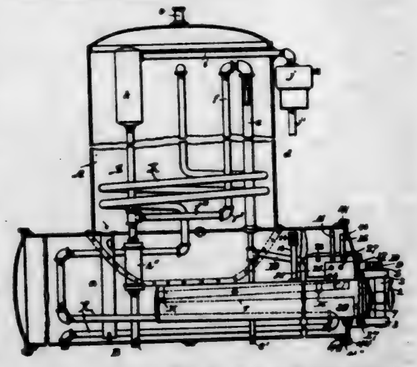

Claim.—1. In a gas-machine, the combination of a generator-chamber, a removable head for said chamber and a plurality of carbid-cylinders formed rigid with said head, a single valve interposed between the two cylinders, and provided with gas and water passages, gas and water

passages connecting the passages of the valve with said chambers, and means whereby the valve may be turned to open communication with one chamber and shut off communication with the other chamber.

2. In a gas-machine, the combination of a generator-chamber, a removable head therefor, a plurality of carbid-cylinders cast with said head, a turning plug axially mounted between said cylinders and provided with independent gas and water inlet and outlet ports or passages, gas and water inlet and water inlet and outlet passages leading from the plug to each cylinder, and means whereby the plug may be turned to open communication with one carbid-chamber and shut off communication with the other chamber.

3. In a gas-machine, the combination of a generator, a removable head therefor; a casting or lug rigid with said head and projecting into the generator-chamber; carbid-cylinders rigid with said head, one on each side of the vertical plane of said casting or lug; gas and water inlet and outlet passages formed in said lug and leading to each cylinder; a turning plug or valve mounted in said casting or lug, and circumferentially grooved to form passages or ports to connect with the said gas and water inlet and outlet passages in the lug or casting; and means whereby the plug may be turned to connect its passages with the corresponding passages leading to either cylinder, and simultaneously shut off the passages leading to the other cylinder.

4. In a gas-machine, the combination of a generator having a removable head, said head formed with a plurality of carbid-cylinders and an inwardly-projecting portion provided with oppositely-leading gas and water inlet and gas-outlet passages, one set of gas and water passages leading to each cylinder; and a single controlling-valve having gas and water ports or passages adapted to connect with the passages leading to one cylinder and simultaneously shut off communication with the passages leading to the other cylinder.

5. In a gas-machine, the combination of a generator; two carbid-cylinders contained in the same generator-chamber, and gas and water inlet and outlet passages formed in an inward extension of the head of the generator; and a longitudinally-extending turning plug or valve mounted in said extension and provided with ports or passages adapted to register with the inlet and outlet passages of each cylinder whereby a single valve controls the operation of each cylinder and one cylinder may be cut out without disturbing the operation of the other cylinder.

6. In a gas-machine, the combination of a generator; a plurality of carbid-cylinders contained in the same generating-chamber, the head of said chamber having an inward extension formed with gas and water inlet passages and gas-outlet passages, and one set of said passages communicating with each carbid-cylinder; and a longitudinally-extending turning plug or valve mounted in said extension between the cylinders and having peripheral ports or passages adapted to register with corresponding passages to and from each cylinder whereby the plug may admit water to, and exhaust gas from, one cylinder and then be turned to cut off this cylinder and establish communication with the other cylinder without interrupting the continuous operation of the machine.

7. In a gas-machine, the combination of a generator having a removable head said head provided with an inwardly-extending lug or casting with gas and water inlet and outlet passages formed therein; a plurality of carbid-cylinders in the single generator-chamber; a turning plug mounted in the lug or casting between two carbid-cylinders, and having peripheral ports or passages to connect with the water and gas passages to each cylinder; and a plurality of vertical tubes of unequal height whereby water may enter the shorter tube and be directed to one of said cylinders, and said plug may be turned into another position to establish connection with the longer tube and then admit water to the other cylinder, and cut out the first-named cylinder.

8. In a gas-machine, the combination of a generator and a plurality of carbid-cylinders therein; a removable head for the generator, said head having an integral inwardly-projecting portion formed with water and gas inlet and outlet passages; an inwardly-extending turning plug mounted in the head; and having gas and water ports: a longitudinal bolt having a countersunk head or passage and a gas-pipe connecting therewith: water-inlet pipes of unequal height; and means whereby the plug may be turned to establish communication with one carbid-cylinder and cut out another cylinder.

9. In a gas-machine, the combination of a generator and a removable head therefor; two carbid-cylinders within the same generator-chamber; a turning plug and water and gas passages therein and in the head and adapted to register to establish communication with one cylinder and cut out the other; a bracket secured on the outside of the head, and a screw mounted in said bracket and adapted to bear against the outer end of the plug substantially as and for the purposes described.

10. In a gas-machine, the combination of a generator; a removable head therefor, provided with a brace or bar: a carbid-cylinder; and a cover therefor having a projecting lug said brace-bar serving as a fulcrum for a tool adapted to engage said lug and loosen said cleaver.

11. In a gas-machine, the combination of a generator; a plurality of carbid-cylinders therein; a lug extending inwardly from the head of the generator and provided with water and gas passages for each cylinder; a seven-way valve in said passages between adjacent cylinders and controlling the passages to and from each, whereby the valve may be adjusted to establish communication with one cylinder and cut out the other cylinder, or cut out both cylinders; and a gas-pipe communicating with the gas-outlet passage of the valve.

708,957. LAMP. FRANK A. CURTIS, Hartford, Conn., assignor to Dwight T. Curtis, Boston, Mass. Filed Nov. 12, 1900. Serial No. 36,318. (No model.)

Claim.—1. In a lamp, in combination, an inclosing casing, an aperture through the bottom of the casing, a swinging trap located within the casing and adapted to close said aperture and having a flange adapted to support the trap in its opened position, and a pin projecting through the wall of the casing and adapted to strike the flange on the trap when the latter is raised.

2. In a lamp, in combination, an inclosing casing having an aperture through the bottom and means of access to a swinging trap, the swinging trap located within the casing and adapted to close said aperture and having a flange arranged to support the trap in its open position and overlie said means of access.

3. In a lamp, in combination, an inclosing casing, an aperture through the bottom of said casing, a trap pivoted in position to close said aperture and arranged to pass a vertical line in its opening movement, and having a flange arranged to provide a stop and to also serve as a means by which the trap may be closed.

4. In a lamp, in combination, an inclosing casing, an aperture through said casing, a trap arranged within the casing to close said aperture, and means normally disengaged from the trap and projecting from the inner to the outer side of the casing and adapted to engage the trap to cause its closing movement.

5. In a lamp, in combination, an inclosing casing, an aperture through the bottom of the casing, a trap arranged within the casing to close said aperture, and a pin normally disengaged from the trap and projecting through the wall of the casing and adapted to engage the trap to cause its closing movement.

6. In a lamp, in combination, an inclosing casing, an aperture through the bottom of the casing, a trap pivoted in position to close said aperture and having a flange and a movable pin projecting through the wall of the casing and adapted to strike said flange.

708,958. SHEET-DELIVERING APPARATUS. ALEXANDER COWAN, Penicuik, Scotland, assignor to Alex. Cowan & Sons, Limited, Penicuik, Mid-Lothian, Scotland. Filed Dec. 7, 1901. Serial No. 85,697. (No model.)

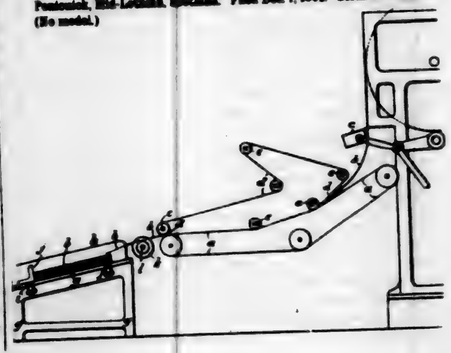

Claim.—A mechanism of the class described comprising an endless traveling apron adapted to receive the cut sheets, endless guide-tapes, a transverse rotatable shaft having a plurality of conical guide-rolls disposed to receive the sheets from the apron and a delivery-table having slots therein and upright partitions adjustably engaged in the slots and tapered at their ends to a thin wedge whereby compartments are formed, said compartments being arranged to receive said sheets.

708,959. HAIR-PIN. HENTON HARRISON, New York, N. Y., assignor of one-half to William Henry Laird, New York, N. Y. Filed July 11, 1901. Serial No. 67,288. (No model.)

Claim.—A hair-pin consisting of two arms tending to approach each other, said arms being in elongated contact throughout a portion of their length, whereby one or more hairs will always be clamped and the pin prevented from falling, substantially as described.

708,960. METHOD OF CONTROLLING ELECTRIC MOTORS. JOHN C. HENRY, Denver, Colo.; Susie A. Henry, executrix of said John C. Henry, deceased, assignor to Stanley Electric Manufacturing Company, a Corporation of New Jersey. Filed June 3, 1899. Serial No. 719,304. (No model.)

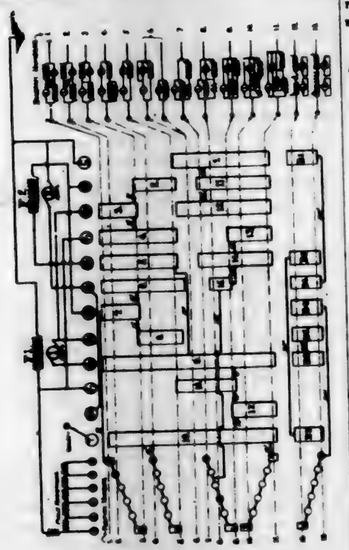

Claim.—1. A method of starting a pair of motors consisting of first placing them in parallel in opposite relation to each other, each armature being in series with the corresponding field and cross-connecting them so that each armature is in shunt with the field of the other motor.

2. A method of starting a pair of motors and increasing their speed which consists in placing them in parallel in juxtaposition with each armature in series with its own field, and establishing a cross connection of high resistance between the respective armatures and fields, and then decreasing the resistance of such cross connection so that each armature will be in shunt relation to the field of the other motor.

3. A method of protecting a pair of motors from the induced current ordinarily caused by breaking of circuit, which consists in maintaining in successive running positions a short circuit between the motors, whereby the said induced current will discharge through the low-resistance armature.

4. A method of controlling electric motors, which consists in placing each armature in series with the corresponding field-magnets in separate circuits, and cross-connecting from one of each circuits to the other at points between the armatures and fields, whereby the field of each of the separate machines is connected in shunt with the armature of the other machine, substantially as and for the purposes set forth.

5. A method of regulating a pair of motors, which consists in placing the armatures in series in one circuit, and the field-magnets in series in a separate circuit, gradually short-circuiting the field of one motor, short-circuiting and removing the corresponding armature, and then connecting it and its field in parallel with the armature of the other motor.

6. A method of regulating a pair of shunt-motors, which consists in connecting the armatures of said machines in series, and the fields of the machines in series, then dropping one of them from the circuit, and then connecting the armatures and fields of both motors in parallel.

7. A method of regulating a pair of motors to change the armatures from series to parallel, which consists in partially exciting the fields of a motor before placing the armature of the other motor in parallel therewith, so that the current generated by the second armature is neutralized by that from the line.

8. A method of regulating a pair of motors, which consists in first connecting them with their armatures in series and with their field-magnets in series, increasing the voltage of one of the motors by removing the other motor from the circuit, exciting the fields of the second motor by a connection independent of its armature and of the other first motor, and then connecting the armature of the second motor in parallel.

9. A method of regulating a pair of motors to change their armatures from series to parallel, consisting in disconnecting one of the motors from the circuit, and connecting its field and subsequently its armature in parallel with the other armature.

10. A method of varying a pair of electric motors, which consists in first connecting the motor-armatures in series, then increasing the voltage of one of the motors by decreasing the voltage of its mate, subsequently removing the latter motor, then connecting its field and afterward its armature in parallel with the field and armature of the other motor.

708,961. METHOD OF CONTROLLING ELECTRIC MOTORS. JOHN C. HENRY, Denver, Colo.; Susie A. Henry, executrix of said John C. Henry, deceased, assignor to Stanley Electric Manufacturing Company, a Corporation of New Jersey. Filed Apr. 1, 1901. Serial No. 54,091. (No model.)

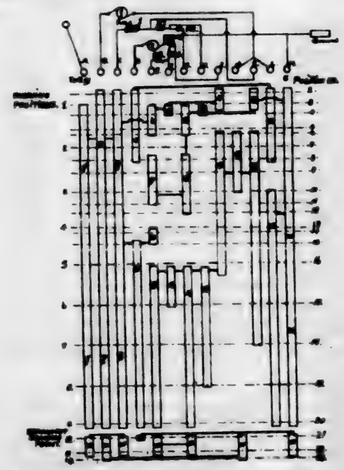

Claim.—1. The method of controlling a plurality of electric motors, whose fields are excited by a circuit independent of the armature, which consists in starting with the armatures in series and the fields in parallel and speeding up by changing the fields to series without breaking their circuit.

2. The method of changing the fields of a pair of motors from parallel to series, which consists in inserting resistances in the separate field-circuits to about equal that of the fields, establishing a cross connection so as to connect the fields and resistances together centrally, then withdrawing the resistance, leaving the fields in series.

3. The method of regulating a pair of motors, whose fields are excited by a circuit independent of the armature-circuit, which consists in weakening the field of one of the motors by shunting resistance around it to decrease the voltage of said motor, breaking the armature-circuit, allowing the current to pass through said field and resistance, in series with the other motor, and then short-circuiting said field and resistance.

4. The method of changing from series to parallel a pair of motors whose fields are excited by a circuit independent of the armature-circuit.

which consists in cutting out one of the armatures, increasing the current in the corresponding field, by establishing an additional path through resistance around the first field, and subsequently connecting the second armature to the circuit in parallel.

5. The method of connecting in parallel motors whose fields are excited by connections independent of their armatures, which consists in connecting the armature of one of the motors to the circuit, and strongly magnetizing the field of the other motor, subsequently connecting the armature of the second motor to the circuit and then weakening the fields of the second motor until its voltage corresponds with that of the first motor.

6. The method of retarding a motor whose field is excited by connection independent of its armature, which consists in first short-circuiting the armature, so that it may generate current under the residual magnetism of the field and subsequently increasing the magnetism of the field with current from the line.

7. The method of regulating a pair of motors which are connected in series, consisting in weakening the strength of the fields of one of the motors by establishing a shunt around it and then decreasing the resistance and increasing the current in the field of the other motor, and then open-circuiting the armature of the first-motor.

8. The method of changing the fields of a pair of motors from parallel to series, which consists in inserting resistance between one field and one side of the circuit and between the other field and the other side of the circuit, then cross-connecting them by a connection from the leaving-terminal of one field to the entering-terminal of the other field and then removing the resistance.

708,962. ELECTRIC VEHICLE. SUSIE A. HENRY, Denver, Colo., executrix of John C. Henry, deceased, assignor to Stanley Electric Manufacturing Company, a Corporation of New Jersey. Original application filed June 3, 1899, Serial No. 719,264. Divided and this application filed Dec. 27, 1901. Serial No. 87,620. (No model.)

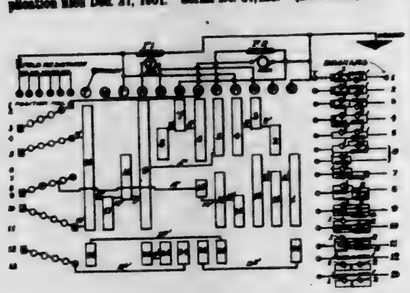

Claim.—1. A controller for a pair of motors comprising contacts and connections adapted and arranged, in one position of the controller, to connect the motors in parallel, in opposite relation to each other, each armature being in series with its field, and in a succeeding position cross-connecting them so that each armature is in shunt with the field of the other motor and in series with its own field.

2. A controller for a pair of motors comprising contacts and connections adapted and arranged, in one position of the controller, to connect the motors in parallel, in opposite relation to each other, each armature being in series with its field, and in a succeeding position cross-connecting them so that each armature is in shunt with the field of the other motor and in series with its own field, a variable resistance in said cross connection, and contacts in the controller for regulating such variable resistance.

3. The combination with the two oppositely-connected series motors connected in parallel to the circuit, of a cross-connection between the motors, whereby a low-resistance path through the armatures is provided for discharges from the fields and the motors are protected from the induced current ordinarily caused by breaking of circuit.

4. A controller for regulating a pair of electric motors comprising contacts and connections adapted and arranged, in one position, to connect the armatures in series in one circuit and the field-magnets in series in a separate circuit, and in succeeding positions to gradually short-circuit the field of one motor, short-circuit and remove the corresponding armature, and then connect it and its field in parallel with the armature of the other motor.

5. A controller for regulating a pair of electric motors comprising contacts and connections adapted and arranged, in one position, to connect the armatures of the motors in series and the fields in series in separate circuits, and in succeeding positions to drop one of the motors from the circuit and to thereafter connect the armatures and fields of both motors in parallel.

6. A controller for regulating a pair of motors to change their armatures from series to parallel, comprising contacts and connections adapted and arranged in one position to connect one motor to but disconnect the other motor from the circuit, and in succeeding positions to partially excite the field of the disconnected motor, and to thereafter connect the armature of said latter motor in circuit in parallel with the field thereof, so that the current generated by the second armature is neutralized by that from the line.

7. A controller for regulating a pair of motors, comprising contacts and connections adapted and arranged, in one position, to connect the armatures of said motors in series and their field-magnets in series, and in succeeding positions, to increase the voltage of one of the motors by removing the other motor from the circuit, and to excite the fields of the second motor by a connection independent of its armature and of the first motor, and to then connect the armature of the second motor in parallel with that of the first motor.

8. A controller for regulating a pair of motors to change their armatures from series to parallel, comprising contacts and connections adapted and arranged, in one position, to disconnect one of the motors from the circuit, and in succeeding positions to connect the field, and subsequently the armature of said motor, in parallel with the other armature.

9. A controller for regulating a pair of electric motors, comprising contacts and connections adapted and arranged to change the armatures from series to parallel relation and maintaining the field-magnets in parallel with the armatures when operating the armatures in series or in parallel.

10. In an electric vehicle, the combination with the motor, storage battery and controller, of an electric bell connected in circuit with the battery and motors, and responsive to overload on the battery.

11. In an electric vehicle, the combination with the motor and controller, of an electric bell arranged with a shunt in the circuit of the motor and responsive to overload thereon.

708,963. GARMENT-SUPPORTER. HENRY C. HIRE, New Britain, Conn. Filed July 16, 1902. Serial No. 115,801. (No model.)

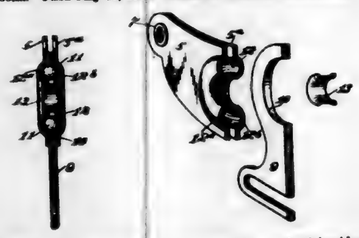

Claim.—1. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, and one of said elements consisting of a pair of plates and the other thereof being inserted between said plates and having an eye, means coöperating with said eye to form a ball-race; a set of balls in said race; and means for retaining said lever, hanger and balls in coöperative relation.

2. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, and one of said elements consisting of a pair of plates and the other thereof being inserted between said plates and having an eye; a transverse fastener extending through said eye and connecting said plates, and the elements which compose said connecting device being so formed or stamped up and arranged as to form a ball-race, a part whereof consists of said eye; and a set of balls in said race.

3. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end, said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, and one of said elements consisting of a pair of plates and the other thereof being inserted between said plates and having an eye, and at least one of said plates having a struck-up annular depression which coöperates with said eye to form a ball-race; a set of balls in said race, and means for retaining said lever, hanger and balls in coöperative relation.

4. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end, said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, and one of said elements consisting of a pair of plates and the other thereof being inserted between said plates and having an eye, and said plates having similar struck-up annular depressions, and said depressions coöperating with said eye to form a ball-race; and a set of balls in said race.

5. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end, said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, one of said elements consisting of a pair of plates and the other thereof being inserted between said plates and having an eye, said plates having similar struck-up annular depressions, and said depressions coöperating with said eye to form a ball-race; a set of balls in said race; and a rivet passing through said eye and connecting said plates.

6. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end, said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, one of said elements consisting of a pair of plates and the other thereof being inserted between said plates and having an eye, said plates having similar struck-up annular depressions, and said depressions coöperating with said eye to form a ball-race; a set of balls in said race; a rivet passing through said eye and connecting said plates; and rivets connecting said plates at their ends.

7. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, said lever consisting of a pair of plates, and said hanger being formed with an eye and being inserted between said plates; means coöperating with said eye to form a ball-race; a set of balls in said race; and means for retaining said lever, hanger and balls in coöperative relation.

8. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, said lever consisting of a pair of plates, said plates having similar opposite struck-up annular depressions, and said hanger being inserted between said plates and having an eye which coöperates with said depressions to form a ball-race; a set of balls in said race; and means for connecting said plates.

9. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, said lever consisting of a pair of plates, and said hanger being formed with an eye and being inserted between said plates; means coöperating with said eye to form a ball-race; a set of balls in said race; means for retaining said lever, hanger and balls in coöperative relation; and a pair of chapes inserted between said plates at the ends of said lever and attached thereto.

10. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever to whose opposite ends said shoulder-straps are connected, and a hanger to which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, and one of said elements consisting of a pair of plates and the other thereof being inserted between said plates and having an eye; means coöperating with said eye to form a ball-race; a set of balls in said race; means for retaining said lever, hanger and balls in coöperative relation; and a chape also inserted between said plates and pivoted thereto.

11. A pair of suspenders comprising a pair of shoulder-straps, a suspender-end, and a device connecting said straps to said suspender-end; said connecting device comprising a lever and a hanger, to the latter of which said suspender-end is connected; said lever and hanger elements being formed of thin sheet metal, said lever consisting of a pair of plates, and said hanger being formed with an eye and being inserted between said plates; means coöperating with said eye to form a ball-race; a set of balls in said race; a pair of devices connecting said plates at their ends; and a pair of chapes attached to said shoulder-straps and inserted between said plates and pivoted upon said connecting devices.

708,964. PENCIL AND THE ART OF MAKING SAME. LOUIS HOLLWORTH, Brooklyn, N. Y., assignor to Eagle Pencil Company, New York, N. Y. Filed June 19, 1902. Serial No. 112,314. (No model.)

Claim.—1. The improvement in the art of making pencils, consisting in applying to the same a plurality of thin superposed coats of varnish contrasting in color with one another, and then removing portions of the outer coat or coats to expose the coat of contrasting colored varnish immediately below, substantially as and for the purposes hereinbefore set forth.

2. As a new article of manufacture, a pencil having a plurality of thin superposed finishing varnish coats contrasting in color with one another, with portions of the outer coat or coats removed to expose the coat of contrasting color immediately below, as hereinbefore set forth.

708,965. DAMPER. CHARLES LOEFFLER, Salt Lake City, Utah. Filed May 28, 1902. Serial No. 109,479. (No model.)

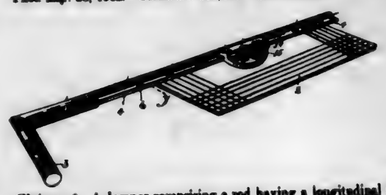

Claim.—1. A damper comprising a rod having a longitudinal rib, a reversible apertured damper-plate fitted to the rod, its lower end lying flush with the outer side of the rod, a clamping-plate engaging the other side of the rib and having lugs projecting through the apertures in the damper-plate, and means for clamping the parts together.

2. A damper comprising a rod having a longitudinal rib provided with recesses in each side thereof, a reversible apertured damper-plate having protuberances to engage said recess, a clamping-plate having protuberances to engage the recesses in the opposite side of the rib and having lugs projecting through the apertures in the damper-plate, and means to secure the parts together.

3. A damper comprising a rod having a longitudinal rib provided with recesses on each side thereof, a reversible apertured damper-plate having protuberances to engage said recesses, a clamping-plate having

protuberances to engage the recesses in the opposite side of the rib and lugs of greater length than the said protuberances, projecting through the apertures in the damper-plate and means to clamp the parts together.

4. In a damper, the combination of a rod having a rib and recesses formed in each side thereof, a reversible apertured damper-plate having protuberances to engage said recesses, a clamping-plate having lugs projecting through the apertures in the damper-plate and an offset edge provided with protuberances to engage the recesses in the opposite side of the rib, and means to hold the parts together.

708,966. SWINGING DOOR. HENRY MEYER, St. Louis, Mo. Filed Apr. 3, 1902. Serial No. 101,217. (No model.)

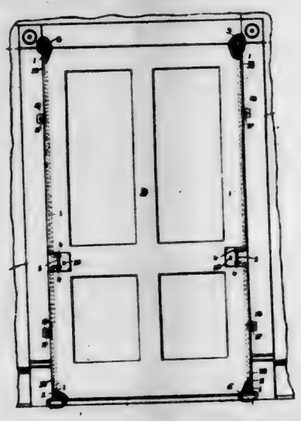

Claim.—1. In combination with a door, suitable hinge-bars carried in the line of the swinging axis of the door, and a door-closing device in coöperative connection with one of the bars, substantially as set forth.

2. In combination with a door, a pair of hinge-bars carried at either edge of the door, the outer ends of the bars being adapted to be received by sockets formed in the door-frame, a chamber located along the edge of the door, the adjacent or inner ends of the bars having inwardly-deflected portions confined within said chamber, transverse handle-bars at the ends of said deflected portions, suitable slots being formed in the opposite walls of the chamber for the free projection of said handle-bars, a spring coupled to the handle-bars for normally forcing them apart, a spring-actuated yoke for embracing the handle-bars when forced together, a latch projecting from the chamber and adapted to impinge against the jamb, and intermediate connections between the latch and yoke for disengaging the latter from the handle-bars upon the movement of the latch in the striking of the jamb, substantially as set forth.

3. In a swinging door having movable hinge-bars, a suitable casing, a stud forming part of the same, a rotatable disk mounted on the stud, means for effecting engagement between the disk and one of the hinge-bars, a spring having one end secured to the stud and the other to the disk, and means for tightening said spring, substantially as set forth.

4. In a swinging door, a hinge-bar, a casing, a stud located at the center thereof, a rotatable disk mounted on the stud, a series of notches being formed in the disk, a series of teeth carried by the hinge-bar for engaging said notches, and a spring confined within the casing and having one end secured to the stud and the other to the disk, substantially as set forth.

5. In a door having suitable reciprocating hinge-bars, suitable hinge-lugs located in the path of the bars, and bearings in the door-jamb for the reception of the lugs, substantially as set forth.

6. In a swinging door, suitable hinge-bars, sockets formed in the door-frame for the reception of the outer ends of the bars, means carried by the door for retarding said bars, devices for automatically retaining the bars in their retracted position, and a latch for disconnecting the device which automatically retains the hinge-bars in their retracted position, substantially as set forth.

708,967. MACHINE FOR SMOOTHING RUBBER VEHICLE TIRES. STEPHEN S. MILLER and LEE B. CLOSSER, Akron, Ohio. Filed May 14, 1902. Serial No. 107,374. (No model.)

Claim.—1. In a machine of the class designated the combination of a supporting-table, feeding guide-rolls mounted on said table to force said tire lengthwise along said table, cutting means mounted above and below said table placed to engage said passing tires, substantially as shown and described.

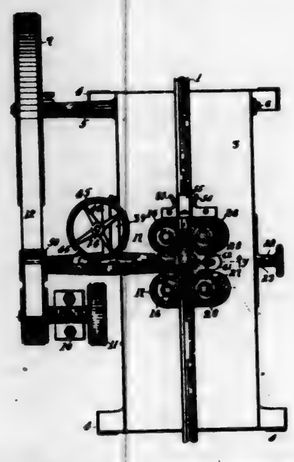

2. In a machine for removing projections from rubber tires, the combination with a supporting-table, of pairs of guide feeding-rolls mounted on said table, means to cause the tires to slide along said table, a portion of said guide feeding-rolls capable of transverse adjustment with relation to said tires and the other rolls and means for removing projections on said tires simultaneously on both sides.

3. The combination in a machine for removing projections from rubber tires, of means for feeding the tires across a table, means for removing projections from said tires simultaneously on both sides, and means for adjusting the relative position of said mentioned means with relation to each other, substantially as shown and described.

4. The combination in a machine for removing projections from tires, of a table to support said tires, a number of pairs of guide feeding-rolls situated in such position on the table as to cause the passage of the tires between the members of each pair, means for increasing or diminishing the space between the members of each pair of rolls, and means mounted on said table for removing the projections from said tires simultaneously on both sides.

5. The combination in a machine for removing the projections from tires, consisting of cutting means situated in such position with relation to each other as to bear on opposite sides of the tire simultaneously, feed guiding-rolls mounted in bearings in said table, sprocket-wheels connected with said guide feeding-rolls and a sprocket-chain to cause said guide feeding-rolls to simultaneously revolve.

6. The combination in a machine for removing projections from rubber tires consisting of a supporting-table, cutting mechanism mounted on said table in such relative position thereto as to engage the surfaces of tires passing over said table, guide feeding-rolls mounted in bearings on said table, a portion of said guide feeding-rolls capable of adjustment, means for revolving said guide feeding-rolls simultaneously, and means for retaining said last-named means at an even tension at any desired adjustment of said guide feeding-rolls, substantially as shown and described.

7. In a machine for removing projections from rubber tires the combination with a supporting-table, mechanism for removing projections from tires passing over said table, a number of guide feeding-rolls mounted in bearings in said table, sprocket-wheels connected with said guide feeding-rolls, a belt or chain for simultaneously revolving said guide feeding-rolls, a swinging arm, an idler sprocket-wheel mounted on said arm, and means to cause the rocking of said arm to vary the tension on said chain or belt when the position of said guide feeding-rods is varied with relation to each other, substantially as shown and described.

8. The combination in a machine for removing projections from rubber tires of a supporting-table, cutting mechanism situated with such relation to said table as to engage tires passing over said table, guide feeding-rolls mounted in bearings in said table, said guide feeding rolls adapted to press against one side of the passing tires, a sliding plate mounted in ways in said table, guide feeding-rolls mounted on said plate and capable of movement therewith, sprocket-wheels connected with said guide feeding-rolls, a sprocket chain or belt to cause a simultaneous revolution of said guide feeding-rolls, and means as a swinging arm, an idler sprocket-wheel to maintain the tension of said belt or chain during any adjustment of said sliding plate.

9. Movable guides to receive and permit the passage of tires of the class named having openings for the exposure of the portion of said tires containing "fins" in combination with revolvable grinding-wheels arranged to engage and remove said fins, substantially as shown and described.

10. In a machine for removing projections from rubber tires during their manufacture, the combination of means to support the tires simultaneously on both sides, means to feed said tire along said supporting means, cutting means to remove the projections from the tire, and supporting means to retain said tire in normal shape during such excision, substantially as shown and described.

11. In a machine for removing the projections from rubber tires during their manufacture, the combination of means to support the tire, means to feed said tires across said supporting means, means for cutting said projections, and supporting means to retain said tire during such excision, and means for forcing a current of air against said cutting means, at the point where such excision is taking place, substantially as shown and described.

708,968. WAGON-STANDARD. GEORGE HOOK, Bardstown, Ky., assignor of one-half to Charles T. Stewart, Bardstown, Ky. Filed Mar. 10, 1902. Serial No. 97,513. (No model.)

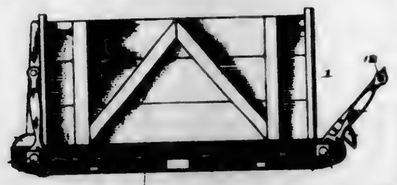

Claim.—1. A means for securing a wagon-bed removably to a bolster, including a wagon-standard having means by which it may be secured to said bolster, said parts being constructed and combined to permit the standard to be raised bodily and to move pivotally with relation to said bolster.

2. A wagon-standard having a footpiece to engage the wagon-bolster when the standard is in vertical position, and means for adjustably and pivotally securing said standard to said bolster, said means being such that the standard may be raised bodily to disengage the footpiece from the bolster and then turned pivotally.

3. A wagon-standard having a lengthened slot in its lower end and a footpiece above said slot, means extending through said slot for securing the standard to a wagon-bolster, said slot and securing means being such that the standard may be raised bodily and moved pivotally with relation to said securing means, and bracing means for said standard.

4. A wagon-standard having means by which it may be secured to a wagon-bolster, said parts being constructed and combined to permit the standard to be raised bodily and to move pivotally with relation to said bolster, and a footpiece which partakes of the movement of said standard and is constructed to bear upon said bolster.

5. A wagon-standard having a lengthened slot in its lower end and provided above said slot with a lateral projection, braces pivotally secured at their upper ends to said standard and having elongated slots in their lower ends and a fastening-bolt which extends through said slots in the standard and braces and is so related to said slots as to permit the standard and braces to be raised vertically and moved pivotally upon said bolt.

6. A wagon-standard having a vertically-elongated slot at its lower end and provided above said slot with a lateral projection, combined with braces pivotally secured at their upper ends to opposite sides of said standard and having their lower ends formed with approximately L-shaped slots, a bolt passing through the slots in said standard and braces, and a fastening-nut on said bolt.

7. A wagon-bolster having a vertical slot, combined with a standard having its lower end located in said slot and provided with a vertically-elongated slot, said standard having a lateral projection above said slot to bear upon said bolster, braces pivotally secured at their upper ends to said standard and having approximately L-shaped slots in their lower ends, a bolt passing through said slots, and a fastening-nut on said bolt.

708,969. ELECTRIC RAILWAY. THOMAS B. MURRAY and JOHN VAN VLECK, New York, N. Y. Original application filed Nov. 23, 1901, Serial No. 83,313. Divided and this application filed Mar. 14, 1902. Serial No. 98,326. (No model.)

Claim.—1. In an electric railway, a track, a car adapted to travel on said track, an electrically-controlled brake mechanism on said car, fixed circuit-terminals placed at intervals along said track and in proximity thereto, and a selective device carried by said car whereby circuit may be automatically closed from any predetermined fixed terminal to the electric mechanism of said brake, and said brake thereby actuated.

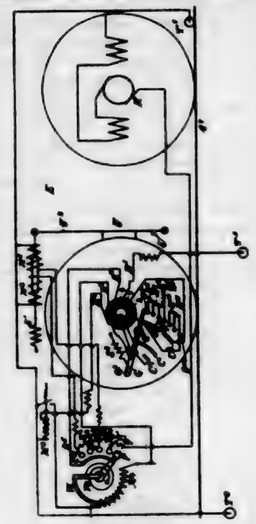

2. In an electric railway, a track, a car adapted to travel on said track, an electrically-controlled brake mechanism on said car, a plurality of line conductors each communicating with a source of current disposed at intervals along said track and a circuit-closing device carried by said car and adjustable thereon to make contact with any one of said line conductors and thereby to close circuit through the electric brake mechanism of said brake to actuate the same.

3. In an electric railway, a track, a series of fixed circuit-terminals disposed at intervals beside said track and connected to a source of current-supply, an electrically-controlled brake mechanism on said car and a pivoted circuit-closing arm carried by said car; the said circuit-terminals being placed in different positions on an arc struck from the pivot center of said arm and the said arm being adjustable to make contact with any one of said terminals and thereby to establish circuit from said terminal to said brake mechanism to operate said brake.

4. In an electric railway, a track, a plurality of fixed circuit-terminals in proximity thereto, a car, an electrically-controlled brake mechanism on said car, and a circuit-closer on said car adjustable to close circuit through any one of said terminals and said brake mechanism and thereby automatically to operate said brake.

5. In an electric railway, a track, a plurality of fixed circuit-terminals in proximity thereto, a car, an electrically-controlled speed-regulating mechanism on said car, and a circuit-closer on said car adjustable to close circuit through any one of said terminals and said regulating mechanism and thereby automatically to modify the speed of said car.

6. In combination with a main-line conductor and a car provided with means for taking current from said conductor, an arm pivoted eccentrically on one of said car-wheels, a variable resistance controlled by said arm, and an electrically-actuated brake mechanism on said car having said variable resistance in circuit; whereby changes in position of said arm due to changes in centrifugal force dependent on the speed of rotation of said car-wheel shall cause a variation in the strength of the current actuating said brake mechanism.

7. In combination with a track and line conductor L', a car E adapted to travel on said track, having trolley T' running on line L', governor-arm G pivoted on a wheel of said car, retracting-spring l^9 on said arm, variable resistance on said wheel traversed by said arm, pivoted brake-arm U^3 and brake-shoe carried thereby, solenoids M' M^2 controlling said brake-arm U^3, and circuit connections between said resistance and said solenoids.

8. In combination with a main-line conductor, a car provided with means for taking current from said conductor, an arm pivoted eccentrically to one of said car-wheels, a variable resistance controlled by said arm, a driving-motor for said car and an electrically-actuated brake mechanism on said car, said motor and brake mechanism being in circuit with said

resistance; whereby changes in position of said arm due to changes in centrifugal force dependent on speed of rotation of said car shall cause a variation in strength of current operating said brake mechanism and said motor.

9. In an electric railway, a main-line conductor, a car provided with means for taking current from said conductor, and, on said car, an electrically-actuated brake mechanism, a motor, a controlling device constructed to control the current passing to both brake mechanism and motor and a current-changing centrifugal governor actuated by said car-wheel and operating said controlling device.

10. In an electric railway, a main-line conductor, a car provided with means for taking current from said conductor, and, on said car, an electrically-actuated brake mechanism, a controlling device constructed to control the current passing to said brake mechanism, and a current-changing centrifugal governor actuated by said car-wheel and operating said controlling device.

11. In an electric railway, a main-line conductor, a car provided with means for taking current from said conductor, means on said car for varying the strength of said current, a solenoid operated by said variable current, an electric brake mechanism and means controlled by said solenoid for actuating said brake mechanism.

708,970. APPARATUS FOR TREATING AND TINNING PLATES. JAMES R. PHILLIPS, Pittsburg, Pa., assignor to the American Tin Plate Company, Pittsburg, Pa., a Corporation of New Jersey. Filed July 10, 1901. Serial No. 67,778. (No model.)

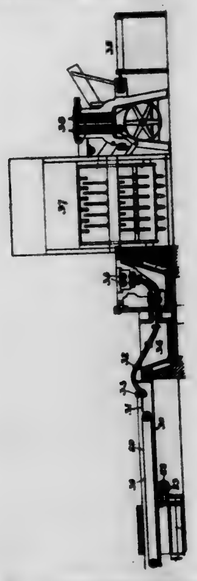

Claim.—1. The combination with a tank arranged to contain liquid for treating plates, of tinning-pots in proximity thereto, mechanism for feeding the sheets through the liquid, and a switch device arranged to transfer the sheets laterally from the liquid to the tinning-pots; substantially as described.

2. A tank arranged to contain liquid for treating plates, a series of tinning-pots adjacent thereto, mechanism for feeding a series of plates through the tank, and switch mechanism arranged to feed the sheets successively to the different tinning-pots; substantially as described.

3. A pickling-tank, a swilling-tank arranged in tandem therewith, mechanism for feeding sheets successively through the tanks, a tinning-pot at one side of the swilling-tank, and transfer mechanism arranged to feed the sheets from the swilling-tank to the tinning-pot; substantially as described.

4. A trough arranged to contain liquid, mechanism for feeding plates through said trough, a series of tinning-pots arranged along said trough, switches arranged to transfer the sheets from the tank into the tinning-pots, and mechanism for operating said switches successively one after the other, to feed the plates to the different pots; substantially as described.

5. A tank arranged to contain liquid, mechanism for feeding sheets into and through said tank, a series of tinning-pots arranged at different points along the length of the tank, brauning and dusting apparatus adjacent to the tinning-pots, and mechanism for transferring the successive sheets from the tank successively to different pots, and feeding them through the pots and the brauning and dusting devices; substantially as described.

6. A tank arranged to contain liquid, mechanism for feeding sheets through the tank, a set of switch devices, tinning, brauning and dusting devices to which the switches lead, and a common feed-table to which the sheets are fed from the dusting apparatus; substantially as described.

7. A tank arranged to contain liquid mechanism for feeding sheets therethrough, transfer devices located at different points in the length of the tank, mechanism for actuating the switch devices successively, and indicating mechanism arranged to show the transfer mechanism which will act upon any particular sheet; substantially as described.

8. A pickling-trough, a swilling-trough arranged in tandem therewith, rollers for feeding the sheets successively through both tanks, tinning-pots arranged at different points along the swilling-tank, and switch devices arranged to engage successive sheets in the swilling-tank and transfer them to the several tinning-pots; substantially as described.

708,971. SWITCH-OPERATING DEVICE. FRANCIS E. QUIST, Knoxville, Pa. Filed Jan. 25, 1902. Serial No. 91,212. (No model.)

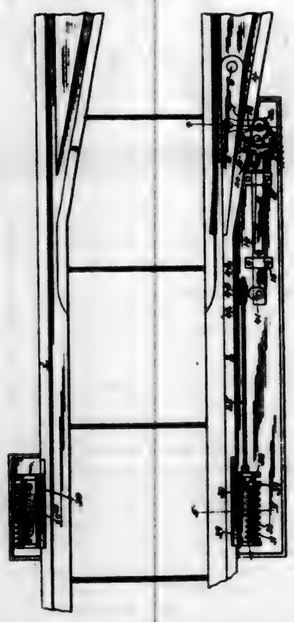

Claim.—1. In a railway-switch-operating device, the combination with a switch-point, of a horizontally-movable part lying in the path of a wheel or wheels of the car and adapted to be moved thereby when the rotation of the wheel is retarded, means for returning said movable part in its normal position after having been moved longitudinally by the car-wheel, and normally disconnected mechanism between the movable part and the switch-point, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said connecting mechanism being constructed and arranged to complete the throw of the switch-point on the backward stroke of the movable part.

2. In a railway-switch-operating device, the combination with a switch-point, of a horizontally-movable part adapted to be actuated from a car, means for returning said movable part to its normal position after having been moved longitudinally, and normally disconnected mechanism between said movable part and the switch-point, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said connecting mechanism being constructed and arranged so that when returned to its normal position it will hold the switch-point in the position to which it has been moved.

3. In a railway-switch-operating device, the combination with a switch-point, of a horizontally-movable part lying in the path of a wheel

or wheels of the car and adapted to be moved thereby when the rotation of the wheel is retarded, means for returning said movable part to its normal position after having been moved longitudinally by the car-wheel, a rocking lever connected to the switch-point, and means connected to the movable part and adapted to engage the rocking lever, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said means being constructed and arranged to engage the rocking lever and complete its throw on the backward movement of the movable part.

4. In a railway-switch-operating device, the combination with a switch-point, of a rocking lever connected thereto and provided with two pair of studs or shoulders, one of each pair being on opposite sides of the longitudinal axis of the lever, a horizontally-movable part adapted to be moved longitudinally from the car, means for returning it to its normal position after having been moved longitudinally, and an oscillating head connected to said movable part and arranged to swing beyond its center in both directions, said head being arranged to engage on its forward stroke alternately with the studs or shoulders of one pair, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said head having inclined or rounded faces on its rear side which on the back stroke engage alternately with the studs of the other pair to swing said head beyond its longitudinal center.

5. In a railway-switch-operating device, the combination with a switch-point, of a rocking lever connected thereto and provided with two pair of studs or shoulders, one of each pair being on opposite sides of the longitudinal axis of the lever, a horizontally-movable part adapted to be moved longitudinally from the car, means for returning it to its normal position after having been moved longitudinally, and an oscillating head connected to said movable part and arranged to engage on its forward stroke alternately with the studs or shoulders of one pair, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said head being provided on its rear side with inclined or concave faces which slope toward the center of said head and which on the back stroke engage alternately with the studs of the other pair on the lever and move said lever to the limit of its throw.

6. In a railway-switch-operating device, the combination with a switch-point, of a rocking lever connected thereto and provided with two pair of studs or shoulders, one of each pair being on opposite sides of the longitudinal axis of the lever, a horizontally-movable slide adapted to be moved longitudinally from the car, means for returning it to its normal position after having been moved longitudinally, and a comparatively long lever pivoted to said slide and carrying at its forward end a head, said head being arranged to engage on the forward stroke alternately with the studs or shoulders of one pair, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said head being provided on its rear side with inclined or rounded faces which on the back stroke engage alternately with the studs of the other pair, whereby said head is swung beyond its longitudinal center.

7. In a railway-switch-operating device, the combination with a switch-point, of a rocking lever connected thereto and provided with two pair of studs or shoulders, one of each pair being on opposite sides of the longitudinal axis of the lever, a horizontally-movable part adapted to be moved longitudinally from the car, means for returning it to its normal position after having been moved longitudinally, and an oscillating head connected to said movable part and arranged to swing beyond its center in both directions, said head being arranged to engage on its forward stroke alternately with the said studs or shoulders of one pair, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said head being provided on its rear side with inclined or rounded faces near its ends and inside the same with inclined or concave faces sloping toward the center of said head, which inclined or rounded faces on the back stroke are adapted to engage one of the other pair of studs or shoulders on the rocking lever, whereby said head is swung beyond its longitudinal axis and the inclined or concave face on its opposite side is brought into engagement with the other one of said pair of studs to move the oscillating lever to the limit of its stroke.

8. In a railway-switch-operating device, the combination with a switch-point, of a rocking lever, adjustable connections between said switch-point and lever, a horizontally-movable part lying in the path of a wheel or wheels of the car and adapted to be moved longitudinally thereby, when the rotation of the wheel is retarded, means for returning said movable part to its normal position, and means connected to the movable part and adapted to engage the rocking lever, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, said means being constructed and arranged to engage the rocking lever and complete its throw on the backward stroke of the movable part.

9. In a railway-switch-operating device, the combination with a switch-point, a rocking lever, an eccentric sleeve connected to said lever, a link pivoted on said eccentric sleeve and connected to the switch-point, said rocking lever being provided with a pair of shoulders or studs on opposite sides of its longitudinal axis, a horizontally-movable slide adapted to be actuated from the car, means for returning the same to its normal position after having been moved longitudinally, an oscillating head connected to said slide and having means on opposite sides of its longitudinal axis for engaging the shoulders or studs on the rocking lever both on its forward and backward strokes, whereby successive movements of the slide in the same direction will effect opposite movements in the switch-point.

10. In a railway-switch-operating device, the combination with a switch-point, of a rocking lever connected thereto and provided with shoulders or studs on opposite sides of its longitudinal axis, a horizontally-movable slide, an oscillating head connected to the same and having means on opposite sides of its longitudinal axis for engaging the shoulders or studs on the rocking lever, whereby successive movements of the slide in the same direction will effect opposite movements of the switch-point, a horizontally-movable part lying in the path of the wheel or wheels of the car and adapted to be moved longitudinally thereby, means for returning said movable part to its normal position after having been moved longitudinally, and adjustable connections between said movable part and the reciprocating slide.

11. In a railway-switch-operating device, the combination with a switch-point, of a horizontally-movable carriage, a projection on said carriage provided with an inclined upper surface lying in the path of a wheel or wheels of the car and adapted to be moved longitudinally thereby when the rotation of the wheel is retarded, means for returning said carriage to its normal position after having been moved longitudinally by the car-wheel, and normally disconnected means between the movable part and switch-point, whereby successive movements of the movable part in the same direction will effect opposite movements of the switch-point.

12. In a railway-switch-operating device, the combination with a switch-point, of a horizontally-movable part adjacent to one of the rails of the track and in the path of the wheel or wheels on that side of the car and adapted to be moved longitudinally thereby when the rotation of the wheel is retarded, connections between the said movable part and the switch-point for moving the latter, and an independent movable part located adjacent the opposite rail of the track and lying in the path of the wheel on that side of the car and adapted to support and carry forward the said wheel when the opposite wheel is on the first-named movable part.

13. In a railway-switch-operating device, the combination with a switch-point, of a horizontally-movable part lying adjacent to one of the rails of the track and in the path of a wheel on one side of the car and adapted to be moved longitudinally thereby when the rotation of the wheel is retarded, means for returning said movable part to its normal position after having been moved longitudinally by the car-wheel, normally disconnected means between the movable part and the switch-point, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, an independent longitudinally-movable part adjacent the opposite rail and lying in the path of the wheel on the opposite side of the car and adapted to move longitudinally with the said wheel when locked, and means for returning said second movable part to its normal position after having been moved longitudinally by the car-wheel.

14. In a railway-switch-operating device, the combination with a switch-point, of a horizontally-movable carriage adjacent to one of the rails of the track and provided with a projection having an inclined upper face lying in the path of a wheel or wheels of the car and adapted to be moved longitudinally thereby when the rotation of the wheel is retarded, means for returning said movable part to its normal position after having been moved longitudinally by the car-wheel, normally disconnected means between the movable part and the switch-point, whereby successive movements of the movable part in the same direction will effect opposite movements in the switch-point, a longitudinally-movable carriage adjacent the opposite rail of the track and provided with a projection having an inclined upper face lying in the path of the wheel on the opposite side of the car and adapted to be moved longitudinally thereby when the wheel is locked, and means for returning said second carriage to its normal position after having been moved longitudinally by the car-wheel.

708,972. ATTACHMENT FOR DISINTEGRATORS. CHARLES J. SAMUELSON and BORGE M. JOHNSON, Caldera Station, Utah. Filed Mar. 15, 1902. Serial No. 98,431. (No model.)

Claim.—1. A scraper of the class described consisting of two members one of which is secured to the periphery of the rotary cage, and the

other secured to said first-mentioned member, and scraper-teeth clamped between the members.

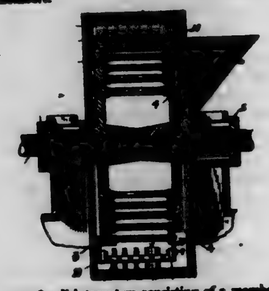

2. A scraper for disintegrators consisting of a member 6 secured to the periphery of the outer cage and having a recess, a clamping member fitted in said recess, and adjustable scraper-teeth carried by said members.

3. In a disintegrator, the combination with the cages and a casing inclosing the same, of a scraper projecting beyond the periphery of the outer cage, and composed of a member having a cross-bar provided with grooves, and a clamping member provided with grooves to alline with grooves in the cross-bar, and scraper-teeth adjustably mounted in said grooves.

4. In a disintegrator, the combination with the cages and a casing inclosing the same, of a scraper consisting of a member 6 having a cross-bar and projecting ears at the end of said bar to form a recess therebetween, a clamping member secured in said recess, and adjustable scraper-teeth clamped between the members.

5. In a disintegrator, the combination with the cages and the casing inclosing the same, of scrapers mounted on the periphery of the outer cage and each consisting of a fixed member and a removable clamping member, removable and adjustable scraper-teeth carried by the members and arranged in alternate relation to each other so that the teeth of each scraper will travel in a different path to scrape the entire inner surface of the casing.

708,973. PNEUMATICALLY-OPERATED LUBRICATOR. HERMANN SCHELDT, Hamburg, Germany. Filed Dec. 13, 1901. Serial No. 86,703. (No model.)

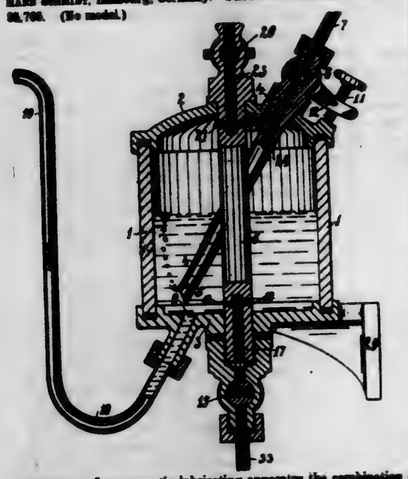

Claim.—1. In pneumatic lubricating apparatus the combination of a transparent oil-reservoir, a supply-pipe for compressed air leading to the lower part of the said reservoir, an oil-pipe leading from the lower part of said reservoir to the part to be lubricated, an oil-supply reservoir above the level of the part to be lubricated and a pipe leading from the said supply-reservoir to the transparent reservoir substantially as described.

2. In pneumatic lubricating apparatus the combination of a transparent oil-reservoir, a supply-pipe for compressed air leading to the lower part of the said reservoir, a cock for regulating said air-supply, an oil-pipe leading from the lower part of said reservoir to the part to be lubricated, an oil-supply reservoir above the level of the part to be lubricated and a pipe leading from the said supply-reservoir to the transparent reservoir, substantially as described.

3. In pneumatic lubricating apparatus the combination of a transparent oil-reservoir, a supply-pipe for compressed air leading to the lower part of the said reservoir, a cock for regulating said air-supply, and oil-pipe leading from the lower part of said reservoir to the part to be lubricated, an oil-supply reservoir above the level of the part to be lubricated, a pipe leading from the said supply-reservoir to the transparent reservoir and a cock adapted to control the communication of the upper part of the transparent reservoir with the exterior atmosphere, substantially as described.

708,974. CARPET-STRETCHER. MARTIN R. SHIRK, Chicago, Ill., assignor to Frederick J. Herbert, Chicago, Ill. Filed Apr. 15, 1901. Serial No. 55,942. (No model.)

Claim.—1. In a carpet-stretcher, the combination of a shank having on its upper face a series of rack-teeth and having at one end a downwardly-projecting claw, a sleeve having an opening extending entirely through the same to receive said shank and permit its projection through the sleeve at either end, and being longitudinally slidable along said shank, a plate pivoted on said sleeve at an angle to said shank and having thereon a spiral thread in mesh with the teeth on said shank, a handle for revolving said plate, and a bar pivoted to the under part of said sleeve below and near said plate and having thereon a number of downwardly-projecting claws coacting with the claw on said shank.

2. In a carpet-stretcher, the combination of a shank having on its upper face a series of rack-teeth and having at one end and integral therewith a downwardly-projecting claw, a sleeve having an opening extending entirely through the same to receive said shank and permit its projection through the sleeve at either end, and being longitudinally slidable along said shank, a plate pivoted on said sleeve at an angle to said shank and having thereon a spiral thread in mesh with the teeth on said shank, a handle for revolving said plate, and a bar secured to the under part of said sleeve below and near said plate and having thereon a number of downwardly-projecting claws coacting with the claw on said shank.

3. A carpet-stretcher comprising a flattened shank 1 having one end bent downwardly and sharpened to form the integral claw 3 and having a series of rack-teeth on the upper edge of said shank; the sleeve 2 through which said shank projects at both ends, having an opening through its upper part to expose the rack-teeth therein; the toothed bar 4 pivoted to the under side of the sleeve 2; and the plate 7 having a spiral thread on its under face, having a handle and being pivoted to said sleeve on an incline with part of said spiral thread in mesh with the teeth exposed through said opening.

4. In a carpet-stretcher, the combination of a shank having on its upper face a series of rack-teeth and having at one end a downwardly-projecting claw, a sleeve longitudinally slidable along said shank, a plate pivoted on said sleeve at an angle to said shank and having thereon a spiral thread in mesh with the teeth on said shank, a handle for revolving said plate, and a bar pivoted to the under part of said sleeve below and near said plate and having thereon a number of downwardly-projecting claws coacting with the claw on said shank, said bar being adapted to be turned at any angle to said shank or substantially parallel with same.

708,975. BAKER'S OVEN. CHARLES E. GLAPKE, Los Angeles, Cal. Filed Aug. 2, 1901. Serial No. 70,645. (No model.)

Claim.—1. In a reel-oven, a flue in the lower portion of the baking-chamber, extending therethrough to and communicating with the chimney; a damper in the opening between the flue and chimney; a branch flue in communication with the main flue near the chimney, and extending away from and terminating near the front wall of the oven, in an open end; a damper in the open end of the branch flue and a door in the front wall of the oven above the said flues, whereby the products of combustion pass through the main flue, then into the auxiliary flue and out thereof up through the oven and out of the door thereof.

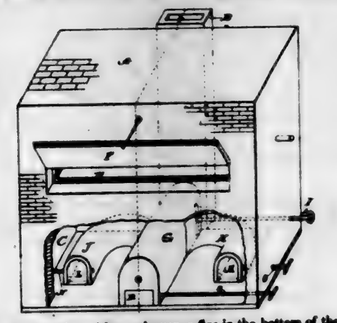

2. In combination with a reel-oven, a flue in the bottom of the oven extending therethrough transversely to the axis of the reel and communicating with the chimney; a damper in the opening between the flue and chimney; a branch flue communicating with the main flue near the chimney, on each side thereof, extending away therefrom, and toward, and terminating in an open end near the front wall of the oven; a damper in the open ends of the branch flues, and a hydrocarbon-burner in the front end of the main flue and a door in the front wall of the oven above the said flues, whereby the products of combustion pass through the main flue, then into the auxiliary flue and out thereof up through the oven and out of the door thereof.

3. In a reel-oven, a main flue in the bottom of the baking-chamber, extending therethrough, in communication with the chimney and having the front portion adapted for a combustion-chamber; a damper adapted to control the communication between the flue and chimney; branch flues in communication with the main flue, near the chimney and extending away from, and toward, and terminating in open ends near the front wall of the oven; dampers in, and adapted to control the open ends of the branch flues and a door in the front wall of the oven above the said flues, whereby the products of combustion pass through the main flue, then into the auxiliary flue and out thereof up through the oven and out of the door thereof.

4. In a reel-oven, a main flue in communication with the chimney, having its front end adapted for a combustion-chamber; a branch flue in communication with the main flue near the chimney, extending away from said flue, and terminating in an open end near the front of the oven; a damper in the main flue, controlling the opening therefrom into the chimney; a damper in the branch flue controlling its open end, and a door in the front wall of the oven above the said flues, whereby the products of combustion pass through the main flue, then into the auxiliary flue and out thereof up through the oven and out of the door thereof in combination with a hydrocarbon-burner in the combustion-chamber of the main flue.

708,976. FOLDING ROD. JEREMIAH P. JOHNSON, Detroit, Mich. Filed July 15, 1902. Serial No. 115,630. (No model.)

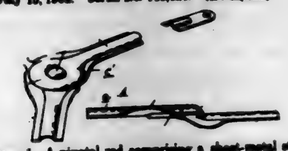

Claim.—1. A pivotal rod comprising a sheet-metal stamping fashioned to form at its end an annular rib surrounding a central pivot-aperture with an intermediate flange forming a seat for the head of the pivot, and a ribbed shank merging into said annular rib.

2. A pivotal rod comprising a sheet-metal stamping fashioned to form an annular rib of channeled cross-section having an inwardly-extending concentric annular flange surrounding a pivot-aperture and forming a seat for the head of the pivot, and a ribbed shank merging into said annular rib.

3. A pivotal rod comprising a sheet-metal stamping fashioned to form an annular rib surrounding a central aperture, a shank merging into said annular rib and a web or flange forming a strengthening-brace at the juncture of said shank and annular rib.

4. A pivotal rod comprising a sheet-metal stamping fashioned to form an annular rib surrounding a central aperture, a ribbed shank merged into said annular rib, and a turned web or flange forming a strengthening-brace at the juncture of said shank and annular rib.

5. A pivotal rod comprising a sheet-metal stamping fashioned to form an annular channeled rib surrounding a central aperture, a channeled shank merging into said annular rib, and a web or flange extending laterally from the base of said shank also merging into the base of said annular rib and having the portion at the angle between said shank and annular rib turned to form a strengthening-brace.

6. A folding rod comprising a pair of sheet-metal stampings fashioned to form complementary male and female annular ribbed bearings, a pivot arranged centrally of said annular bearings and securing the same together, and a ribbed shank formed integral with and merging into each of said annular bearings.

7. A folding rod comprising a pair of sheet-metal stampings fashioned to form complementary male and female annular channeled ribs each having an inwardly-extending annular flange surrounding a central aperture, a pivot passing through said aperture and headed to bear on opposite sides of said flanges to secure said stampings together, and ribbed shanks merging into each of said annular bearings and arranged on opposite sides of a central plane so as to permit of folding into parallelism.

8. A folding rod comprising a pair of sheet-metal stampings fashioned to form complementary male and female annular channeled ribs, a centrally-arranged headed pivot securing said stampings together, a ribbed shank formed integral with said flanges at the juncture of said shanks and annular bearings respectively turned in opposite directions in the two members to permit said shanks to be folded into parallelism.

9. A folding rod comprising a pair of stampings each fashioned to form complementary male and female pivotal bearings and outwardly-extending ribbed shanks and inclined oppositely-extending side flanges on each member forming engaging stops for arresting further movement when said members are turned into alinement.

10. A folding rod comprising a pair of stampings pivotally engaging each other, a pivotal bearing at one end of said rod formed by a struck-out annular flange and a washer shoved upon said flange.

708,977. COMBINED ORE-ROASTING AND FUME-SAVING APPARATUS. WILLIAM H. HOOVER, Denver, Colo. Filed Nov. 26, 1901. Serial No. 83,054. (No model.)

Claim.—1. In a roasting-furnace, the combination with a source of heat and a chamber in communication therewith, of a rotary conveyor located in the chamber, a hollow feed-screw connected with the conveyor at one extremity, a perforated pipe concentrically arranged in said conveyor and passing through the feed-screw, and means connected with said pipe outside of the furnace, for drawing off the fumes rising from the ore during the roasting operation, substantially as described.

2. The combination with a source of heat and a chamber in communication therewith, of a rotary conveyor located in the chamber and having closed walls to protect the ore from coming in direct contact with the products of combustion, a hollow feed-screw connected with the con-

veyer at one extremity, a perforated pipe concentrically arranged in said conveyer and passing through the feed-screw, and means connected with said pipe outside of the furnace for drawing off the fumes rising from the ore during the roasting operation.

2. In a roasting-furnace, the combination with a combustion-chamber, of a rotary conveyer extending longitudinally thereof and provided on its inner surface with a broken spiral or a screw-thread for agitating the ore and causing it to travel through the conveyer whose walls are closed to prevent the ore from coming in direct contact with the products of combustion, a hollow feed-screw connected with the conveyer at one extremity, a perforated pipe concentrically arranged in said conveyer and passing through the feed-screw, and means connected with said pipe outside of the furnace for drawing off the fumes rising from the ore during the roasting operation.

4. In a roasting-furnace, the combination with a combustion-chamber, of a rotary conveyer extending longitudinally therethrough, a hollow feed-screw connected with the conveyer at one extremity, and a perforated pipe concentrically arranged in the conveyer and passing through the feed-screw for discharging the fumes from the conveyer, substantially as described.

5. The combination with a combustion-chamber, of a rotary conveyer located therein, a hollow feed-screw connected with the conveyer at one extremity, a perforated pipe concentrically arranged in the conveyer and passing through the feed-screw, the said pipe being connected to rotate with the conveyer, a stationary conduit connected with the said pipe, suction means connected with the conduit for drawing off the fumes rising from the ore during the roasting operation, a liquid-containing tank, and a conduit connected with said suction means for forcing the fumes into the liquid of the tank, substantially as described and for the purpose set forth.

6. The combination with a combustion-chamber, of a rotary conveyer mounted in operative relation therein, and having its walls closed to protect the ore from direct contact with the products of combustion, a pipe concentrically arranged in said conveyer and having openings in its walls to allow the fumes rising from the ore to enter, means for connecting the pipe and the conveyer to cause them to rotate in unison, a hollow screw for feeding the ore to the conveyer, the perforated pipe passing through said screw, a stationary conduit connected with the perforated pipe outside of the conveyer, the connection being such as to allow one pipe to turn upon the other, a liquid-containing receptacle, and means connected with said conduit for drawing off the fumes rising from the ore during the roasting operation, and forcing them into the liquid of the receptacle for the purpose set forth.

708,978. BURNER FOR OIL. OLIVER TILLMAN, San Jose, Cal., assignor to Charles Eduard, San Jose, Cal. Filed Nov. 18, 1901. Serial No. 82,602. (No model.)

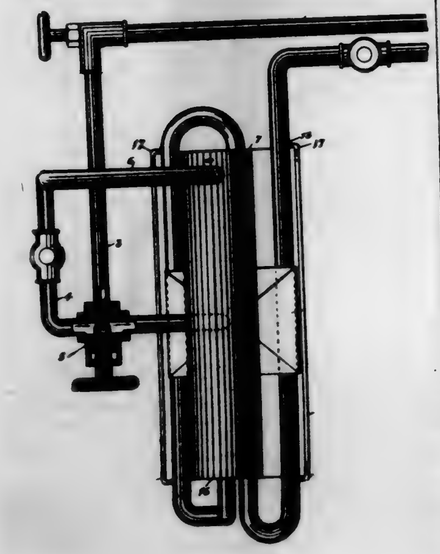

Claim.—1. The combination of the steam-drum, the water-pipe leading thereto, the pan in which said water-pipe is coiled, the spreader above said pan and below said drum, the steam-pipe issuing from said drum, the oil-supply pipe leading into said steam-pipe, the branch steam-pipes into which the oil and steam flow, and the nozzles terminating said branch pipes and discharging against said spreader, substantially as described.

2. The combination of the steam-drum, the water-pipe leading thereto, the pan in which said water-pipe is coiled, the spreader above said pan and below said drum, the steam-pipe issuing from said drum, the oil-supply pipe leading into said steam-pipe, the branch steam-pipes into which the oil and steam flow, the nozzles terminating said branch pipes and discharging against said spreader, and the wire-gauze in said nozzles, substantially as described.

708,979. CORN-PLANTER. EDWARD M. HEYLMAN, Janesville, Wis., assignor to Janesville Machine Company, Janesville, Wis., a Corporation of Wisconsin. Filed June 5, 1902. Serial No. 110,382. (No model.)

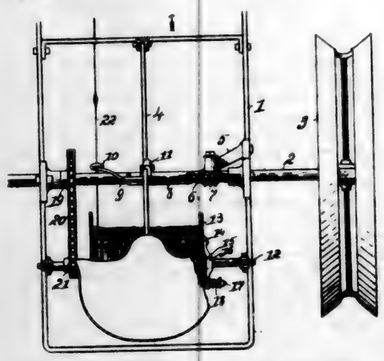

Claim.—1. The combination with the axle-shaft of a planter and a reel journaled crosswise of the planter-frame, of a worm on the axle-shaft, a worm-wheel in mesh with the worm, a wire-guide and a pitman connecting the wire-guide with the worm-wheel.

2. The combination with the axle-shaft of a planter and a reel journaled crosswise of the planter-frame, of a worm on the axle-shaft, a worm-wheel in mesh with the worm, an oscillating arm carrying a wire-guide in its swinging end and a pitman connecting the worm-wheel with the arm.

3. The combination with the axle-shaft of a planter and a reel journaled crosswise of the planter-frame, of a seat-bar above the axle-shaft, an arm pivotally connected with the seat-bar, a wire-guide in the swinging end of the arm, a worm on the axle-shaft, a worm-wheel in mesh with the worm-end a pitman connecting the worm-wheel with the arm.

4. In a reel for check-row wire, the combination of a reel-shaft, a reel journaled loosely on the shaft, a friction-bearing on the reel-shaft adjacent to an end of the reel, a hooked lug on the end of the reel in proximity to the friction-bearing on the shaft, a friction-arm having one end in pivotal engagement with the hooked lug and also having its intermediate part in contact with the friction-bearing of the shaft, and a spring forcing the opposite end of the arm toward the reel.

REISSUES.

12,028. CASTING APPARATUS. DAVID T. CROXTON, Canal Dover, and SAMUEL W. CROXTON, Cleveland, Ohio. Filed May 5, 1902. Serial No. 106,086. Original No. 656,372, dated May 29, 1900.

Claim.—1. The combination of the rotary wheel A, the molds M, M, rotatably mounted thereupon, the ingot receiving and conveying platform C suspended from said wheel A, and underneath the molds, and the post P having arm q projecting over the platform, and in the path of the ingots, substantially as described and for the purpose set forth.

2. In casting apparatus, in combination, a horizontally-arranged rotary mold-carrier, molds thereon for receiving the molten metal to form castings, and a castings-carrier below the mold-carrier arranged to rotate around the axis of the mold-carrier and to support the castings while they are stationary vertically after they have been removed from the molds and while they are rotating around said axis, substantially as set forth.

3. In casting apparatus, in combination, a rotary mold-carrier arranged to rotate on a horizontal axis, the molds mounted on axes on the said carrier and adapted to deliver the castings downward, and a rotary receiver and carrier for the castings below the molds and arranged to rotate around the axis of the mold-carrier, substantially as set forth.

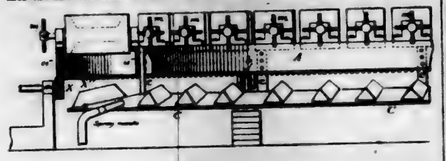

4. In casting apparatus, in combination, the horizontally-arranged rotary mold-carrier, the molds mounted on axes on the said carrier and arranged to deliver downward the castings, the receiver and carrier for the castings below the molds rotating around the axis of the mold-carrier, and means for causing the escape of the castings from the said castings-carrier, substantially as set forth.

5. In casting apparatus, in combination, a horizontally-arranged mold-carrier rotatable around a vertical axis, a series of molds mounted on axes thereon and arranged to deliver downward the castings, the receiver and carrier for the castings below the mold-carrier and adapted to rotate around the vertical axis of the mold-carrier, and power devices adapted to rotate simultaneously both the mold-carrier and the castings-carrier, substantially as set forth.

12,029. SCALE. ALLEN DE VILBISS, Jr., Toledo, Ohio, assignor, by mesne assignments, to Toledo Scale and Cash Register Company, Newark, N. J., a Corporation of New Jersey. Filed Dec. 19, 1901. Serial No. 86,607. Original No. 665,147, dated July 31, 1900.

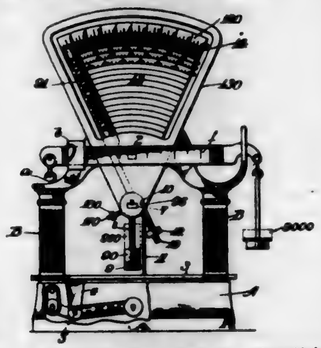

Claim.—1. In a computing-scale, a price-computing table having a plurality of rows of price-totals, in combination with an index having a plurality of rows of price units of which the corresponding-arranged numbers in the two rows coöperate with the same price-totals upon the computing-table and indicate values at different prices per pound; substantially as described.

2. In a computing-scale, a price-computing table having a plurality of rows of price-totals, in combination with an index having a plurality of rows of price units arranged side by side and coöperating with the same rows of price-totals upon the computing-table; substantially as and for the purpose described.

3. In a computing-scale, a weighing and price-computing table having a plurality of rows of weight units of which the numbers in one row are multiples of those in the other, and a plurality of rows of price-totals, in combination with an index having a plurality of rows of price units of which the numbers in one row are multiples of those in the other, said rows of price units coöperating with the rows of price-totals upon the computing-table in the manner and for the purpose described.

4. In a computing-scale, a weighing and price-computing table having a plurality of rows of weight units of contrasting colors and of which the numbers in one row are multiples of those in the other, and a plurality of rows of price totals, in combination with an index having a plurality of rows of price units of contrasting color and of which the numbers in one row are multiples of those in the other, said rows of price units cooperating with the rows of price-totals upon the computing-table in the manner and for the purpose described.

5. In a computing-scale, a weighing and price-computing table having a plurality of rows of weight units, and a plurality of rows of price-totals, in combination with an index having a plurality of rows of price units arranged side by side and of which the numbers in one row and the correspondingly-arranged numbers in the other row coöperate with the same rows of price-totals upon the computing-table in the manner and for the purpose described.

6. In a computing-scale, a weighing and price-computing table having a plurality of rows of weight units of contrasting colors, and a plurality of rows of price units, in combination with an index having a plurality of rows of price units of contrasting color and of which the numbers in one row and the correspondingly-arranged numbers in the other row cooperate with the same rows of price-totals upon the computing-table in the manner and for the purpose described.

7. In a computing-scale, a price-computing table having a plurality of rows of price-totals, in combination with an index having a plurality of rows of price units of which the numbers in one row are multiples of those in the other, said computing-table and index being movable relatively to each other under the influence of the load upon the scale-platform, means for counterbalancing the weight of the load upon the scale-platform and resisting said relative movement of the computing-table and index, and means for multiplying said resistance at will for the purpose described.

8. In a computing-scale, a weighing and price-computing table having a plurality of rows of weight units, and a plurality of rows of price-totals, in combination with an index having a plurality of rows of price units arranged side by side and having the correspondingly-arranged numbers in the several rows coöperating with the same rows of price-totals, said computing-table and index being movable relatively to each other under the influence of the load upon the scale-platform, means for counterbalancing the weight of the load upon the scale-platform and resisting said relative movement of the computing-table and index, and means for multiplying said resistance at will for the purpose described.

9. In a computing-scale, a weighing and price-computing table having a plurality of rows of weight units of contrasting color, and a plurality of rows of price-totals, in combination with an index having a plurality of rows of price units of contrasting color arranged side by side and having the correspondingly-arranged numbers in the several rows cooperating with the same rows of price-totals, said computing-table and index being movable relatively to each other under the influence of the load upon the scale-platform, means for counterbalancing the weight of the load upon the scale-platform and resisting said relative movement of the computing-table and index, and means for multiplying said resistance at will for the purpose described.

10. In a computing-scale, a price-computing table having a plurality of rows of price-totals, in combination with an index having two rows of price units of which the numbers in one row are double those in the other, a weighted pendulum coöperating with the index and computing-table and opposing movement of them relatively to each other, and a supplemental weight applicable to said pendulum to double the resistance offered by it to such relative movement of the index and computing-table; substantially as and for the purpose described.

11. In a price-computing scale, a weighing and price-computing table having two rows of weight units of which the numbers in one row are double those in the other, and a plurality of rows of price-totals, in combination with an index having two rows of price units corresponding to the respective rows of weight units, and of which the numbers in one row are double those in the other, a weighted pendulum coöperating with the index and computing-table and opposing movement of them relatively to each other, and a supplemental weight applicable to said pendulum to double the resistance offered by it to such relative movement of the index and computing-table; substantially as and for the purpose described.

12. In a computing-scale, a weighing and price-computing table having two rows of weight units of contrasting color and of which the numbers in one row are double those in the other, and a plurality of rows of price-totals, in combination with an index having two rows of price units of contrasting color corresponding to the respective rows of weight units and of which the numbers in one row are double those in the other, a weighted pendulum coöperating with the index and computing-table and opposing movement of them relatively to each other, and a supplemental weight applicable to said pendulum to double the resistance offered by it to such relative movement of said index and table; substantially as and for the purpose described.

13. In a computing-scale, a weighing and price-computing table provided with a plurality of concentrically-curved rows of weight units having their graduations and numbers in radial line with each other, and a plurality of curved rows of price-totals concentric to the rows of weight units, in combination with a radial index-hand movable over said table under the influence of the load upon the scale-platform and provided with

a plurality of rows of price units arranged side by side and having the correspondingly-arranged numbers in the several rows corresponding with the same rows of price-totals, means for counterbalancing the weight of the load upon the scale-platform and against the resistance of which the index-hand is moved over the computing-table by the weight of such load, and means for multiplying at will the resistance offered to such movement of the index-hand under the weight of said load; substantially as described.

14. In a computing-scale, the computing-table 13 having two rows of weight units 140 and 14, and the plurality of rows of price-totals, in combination with the index-hand 91 having the two rows of price units, the pendulum 8 connected at its upper end to the index-hand 91, the weight 9 normally carried by said pendulum, and the supplemental weight 90 applicable thereto; substantially as and for the purpose described.

15. A computing attachment for scales, comprising a price-computing table, an index movable relatively thereto and provided with a series of price units, in combination with a scale-platform, the usual lever mechanism within the scale-base supporting said platform, the main scale-beam connected with said lever mechanism and provided with a poise movable lengthwise thereof, and a supplemental lever and connections intermediate the lever mechanism within the scale-base and the price-computing attachment for causing the weight of the load placed upon the scale-platform to move the index relatively to the computing-table; substantially as described.

16. A computing attachment for scales, comprising a price-computing-table, an index-hand movable thereover and provided with a series of price units, and means for counterbalancing the weight of the load placed upon the scale-platform, against the resistance of which means the index-hand is moved over the computing-table by the weight of such load, in combination with the scale-platform, the usual lever mechanism within the scale-base supporting said platform, the main scale-beam connected with said mechanism and provided with a poise movable lengthwise of the beam, and a supplemental lever and connections intermediate said lever mechanism and the index-hand for causing the weight of the load placed upon the scale-platform to swing the index-hand over the computing-table; substantially as described.

17. In a computing attachment for scales, the housing 130, the computing-table 13, the disk 96 mounted in the lower end of said housing, the index-hand 91 projecting from said disk and cooperating with the table 13, and the weighted pendulum 8 depending from the disk 96, in combination with the scale-base A, the lever mechanism within said base supporting the weighing-platform 3 and comprising the main lever 165, the main scale-beam 1 fulcrumed on the housing 130 and connected at one end to the lever 165 by the link a, the supplemental lever 16 fulcrumed in the scale-base and connected to the lever 165, and the link 11 connecting the lever 16 with the disk 96; substantially as described.

18. A computing attachment for scales consisting of a table, a disk pivotally connected thereto and having a pendulum hanging normally vertical and a hand standing normally at zero on the table, both right with the disk, a screw projecting from the disk diametrically opposite the hand, and a counterpoise-nut thereon; combined with an arm pivoted within the base, a link connecting one end with a pivot on said disk, a connecting-link connecting said arm with the scale mechanism within the base, and means for counterbalancing the weight of the arm and link; substantially as described.

19. A computing attachment for scales consisting of a table, a pendulum and hand standing at angles to each other and pivotally connected to said table at their point of juncture, and means for counterbalancing the weight of the hand when the pendulum stands vertical; combined with an arm pivoted within the base and arched over and connected with the main lever of the mechanism therein, a link connecting the outer end of the arm with said pendulum at a point normally above the pivot of the latter, and means for counterbalancing the weight of the arm and link, substantially as described.

20. A computing attachment for scales consisting of a table, a pendulum and index at an angle to each other and pivotally connected to said table at their point of juncture; combined with an arm within the base connected respectively with the mechanism therein and with the pendulum, a frame at the inner end of the arm, slitted pivots projecting laterally therefrom, a yoke carried by the base and having bearings for said pivots, and an adjustable counterpoise for the arm located within the frame, as and for the purpose set forth.

21. A computing attachment for scales consisting of a table, and a pendulum and index standing at an angle to each other and pivotally connected to said table at their point of juncture; combined with an arm within the base connected respectively with the mechanism therein and with the pendulum, a frame at the inner end of the arm, pivots for supporting this frame, a screw projecting from its outer side toward and in alinement with the body of the arm, and a counterpoise threaded upon said screw, as and for the purpose set forth.

22. A computing attachment for scales consisting of a table, a pendulum, a hand moved by the pendulum over the table, and an arm within the base connected at its outer end with said pendulum; combined with a frame carried rigidly by the inner end of the arm, outwardly-projecting slitted knife-edge pivots on the frame, a yoke within the base having bearings for said pivots, a screw within the frame in alinement with the body of the arm, and a counterpoise-weight adjustable thereon, all as and for the purpose set forth.

12,080. CLUTCH. PAUL A. HOUSTALLEN, Riverton, N. J. Filed Feb. 28, 1902. Serial No. 96,191. Original No. 693,844, dated Dec. 10, 1901.

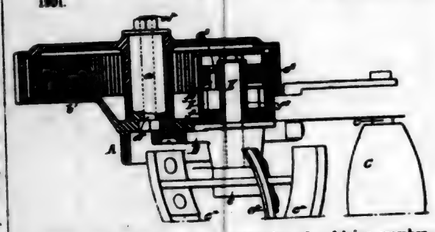

Claim.—1. In a clutch, the combination of a driving member, a driven shaft having a wheel fixed thereto, slots in the driving member eccentric to the axis of revolution thereof and arms having projections entering said slots and constructed to engage said wheel when the said projections are in the part of the slots farthest away from the axis of revolution of the driving-wheel, the projections serving to transmit power from the driving member to the wheel on the driven shaft, substantially as described.

2. In a clutch, the combination of a driving-wheel, a driven shaft having a ratchet-wheel fixed thereto, slots in the driving-wheel eccentric to the axis of revolution thereof and pawls having projections entering said slots and constructed to engage the teeth on said ratchet-wheel when the said projections are in the part of the slots farthest away from the axis of revolution of the driving-wheel, said projections performing the double function of operating the pawls and transmitting power from the driving-wheel to the ratchet-wheel through said pawls, substantially as described.

3. In a clutch, the combination of a driving-wheel, a driven shaft carrying a ratchet-wheel keyed to it, a carrier loosely mounted on the said shaft, pawls pivoted thereto with mechanism operated by the driving-wheel for throwing the pawls into engagement with the teeth of the ratchet-wheel when said driving-wheel turns at a higher rate of speed than the shaft, said mechanism performing the double function of operating the pawls and transmitting power from the driving-wheel to the ratchet-wheel through said pawls, substantially as described.

4. The combination of a driving-wheel, a driven shaft, an internally-toothed ratchet-wheel keyed thereto, a carrier loosely mounted on the shaft within the said ratchet-wheel, pawls pivoted thereto and constructed to be thrown into engagement with the teeth of said ratchet-wheel when they are turned on their pivots, with mechanism operated by the said driving-wheel serving the double purpose of throwing the said pawls into and out of engagement with the ratchet-wheel when the relative speed of the two wheels is varied, and transmitting power from the driving-wheel to the pawls and to the ratchet-wheel, substantially as described.

5. The combination in a clutch, of a driving-wheel having in its web slots eccentric to its axis of revolution, a driven shaft having a ratchet-wheel keyed thereto, a carrier on said shaft independent of the driving-wheel, pawls pivoted thereto, said pawls having projections entering the slots of the driving-wheel, through which power is transmitted from said driving-wheel, and being constructed to engage with the teeth on the said ratchet-wheel when they are swung on their pivots away from their axis of revolution, substantially as described.

6. The combination in a clutch, of a driving-wheel having slots in its web eccentric to its axis of revolution, a driven shaft having a carrier mounted upon it independently of the driving-wheel, pawls pivoted to the carrier, an internally-toothed ratchet-wheel in the same plane as the said carrier and studs projecting from the pawls and extending into the slots in the driving-wheel, said pawls being constructed to engage the teeth of the ratchet-wheel when the driving-wheel moves at a higher rate of speed than the said ratchet-wheel, substantially as described.

7. The combination in a clutch, of a driving-wheel having in its web slots eccentric to its axis of revolution, a driven shaft having keyed to it a ratchet-wheel, a carrier on the shaft having arms projecting from it, hooked pawls pivoted to the same, said hooked pawls carrying rollers which enter the slots in the driving-wheel, said pawls being constructed to be thrown into engagement with the teeth of the ratchet-wheel when the driving-wheel is moved at a higher rate of speed than the driven shaft, substantially as described.

8. In an operating mechanism for a lawn-mower, the combination of an internally-toothed traction-wheel, a pinion having eccentric slots in its web within the traction-wheel, a knife-shaft, a ratchet-wheel keyed on the same, a carrier loosely mounted on the shaft carrying pawls constructed to engage the teeth of the ratchet-wheel, studs on the pawls entering the slots in the said pinion, whereby the said pawls are thrown into engagement with the ratchet-wheel when the pinion is revolved at a higher rate of speed than said wheel, substantially as described.

9. In a clutch, the combination of two members, one member having a cam-surface, one or more arms constructed to engage one of said members, one or more pins operated by the cam-surface and serving the double function of directly operating the arms and directly transmitting power from one of said members through a comparatively short portion only of said arms to the other member, substantially as described.

10. In a clutch, the combination of two members, a ratchet-wheel connected to one of the same, a carrier, one or more pawls pivoted to the carrier each provided with a device operated by one of said members for throwing said pawls into engagement with the teeth of the ratchet-wheel when the relative speed of the members is varied, said device being arranged to directly operate its pawl and transmit power from one member to the other through a comparatively short portion only of the pawl, substantially as described.

11. In a clutch, the combination of a shaft, a ratchet-wheel, pawls, a pawl-carrier, pins to directly operate the one or more pawls and to directly transmit the motion to the part to be driven through a comparatively short portion only of the pawl, and means for causing the pins to cause the pawls to engage and disengage the ratchet-wheel, substantially as described.

12. In a clutch the combination of a shaft, a ratchet-wheel, one or more pawls, a pawl-carrier loose on the shaft, one or more pins to operate the pawls and arranged to directly transmit the motion to the part to be driven through a comparatively short portion only of the pawl, and means for causing the pins to cause the pawls to engage and disengage the ratchet-wheel, substantially as described.

13. In a clutch, the combination with a driving part and a part to be driven, of a ratchet-wheel, one or more pawls adapted to be engaged therewith and disengaged therefrom, one or more pins for directly operating said pawls and arranged to directly transmit the power from the driving to the driven part through a comparatively short portion only of the pawl, and cams for actuating said pins and effecting said engagement of the pawls with and their disengagement from the said ratchet-wheel, substantially as described.

DESIGNS.

36,042. BADGE. JOSEPH T. BAILEY, Philadelphia, Pa. Filed Aug. 16, 1902. Serial No. 119,971. Term of patent 14 years.

Claim.—The ornamental design for a badge substantially as shown and described.

36,043. HANDLE FOR BUTTON-HOOKS OR SIMILAR ARTICLES. HENRY A. KELLER, New York, N. Y. Filed Aug. 12, 1902. Serial No. 119,692. Term of patent 7 years.

Claim.—The ornamental design for a handle for button-hooks, or similar articles, substantially as shown and described.

36,044. SHIELD. HENRY A. KELLER, New York, N. Y. Filed Aug. 12, 1902. Serial No. 119,689. Term of patent 7 years.

Claim.—The ornamental design for a shield, substantially as herein shown and described.

36,045. SHIELD. HENRY A. KELLER, New York, N. Y. Filed Aug. 12, 1902. Serial No. 119,691. Term of patent 7 years.

Claim.—The ornamental design for a shield, substantially as herein shown and described.

36,046. ANDIRON. THOMAS H. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,567. Term of patent 7 years.

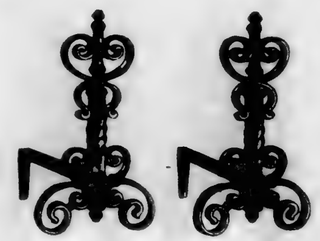

Claim.—The ornamental design for an andiron as herein shown and described.

36,047. ANDIRON. THOMAS H. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,567. Term of patent 7 years.

Claim.—The ornamental design for an andiron as herein shown and described.

36,048. ANDIRON. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,568. Term of patent 7 years.

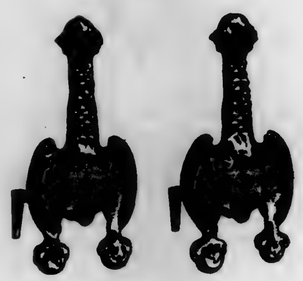

Claim.—The ornamental design for an andiron as herein shown and described.

36,049. ANDIRON. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,569. Term of patent 7 years.

Claim.—The ornamental design for an andiron as herein shown and described.

36,050. PORTABLE BASKET-GRATE. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,570. Term of patent 7 years.

Claim.—The ornamental design for a portable basket-grate as herein shown and described.

36,051. BASKET-GRATE. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,571. Term of patent 7 years.

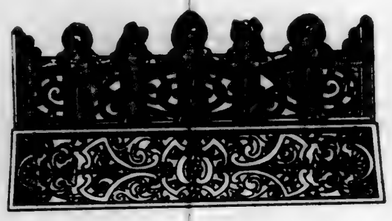

Claim.—The ornamental design for a basket-grate as herein shown and described

36,852. BASKET-GRATE. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,572. Term of patent 7 years.

Claim.—The ornamental design for a basket-grate as herein shown and described.

36,053. BASKET-GRATE. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,573. Term of patent 7 years.

Claim.—The ornamental design for a basket-grate as herein shown and described.

36,054. BASKET-GRATE. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,574. Term of patent 7 years.

Claim.—The ornamental design for a basket-grate as herein shown and described.

36,055. FIREPLACE-LINING. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,575. Term of patent 7 years.

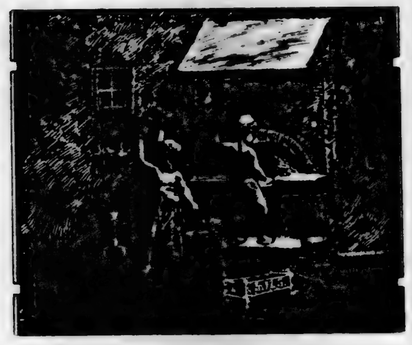

Claim.—The ornamental design for a fireplace-lining as herein shown and described.

36,056. FIREPLACE-LINING. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,576. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-lining as herein shown and described.

36,057. FIREPLACE-LINING. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Aug. 16, 1902. Serial No. 119,972. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-lining as herein shown and described.

36,058. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,577. Term of patent 7 years.

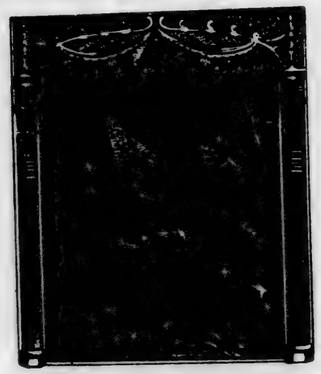

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,059. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,578. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,060. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,578. Term of patent 7 years.

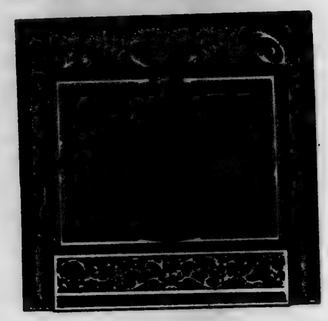

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,061. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,580. Term of patent 7 years.

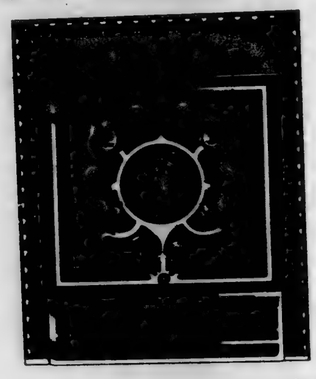

Claim.—The ornamental design for a fireplace-front as herein shown and described.

36,062. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,581. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,063. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,582. Term of patent 7 years.

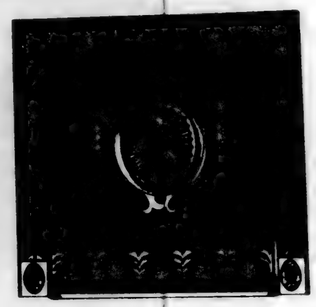

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,064. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,583. Term of patent 7 years.

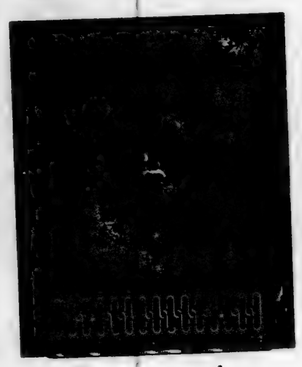

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,065. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,584. Term of patent 7 years.

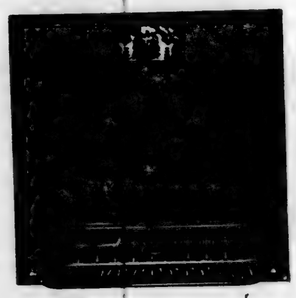

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,066. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,585. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,067. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,586. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-front as shown and described.

36,068. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,587. Term of patent 7 years.

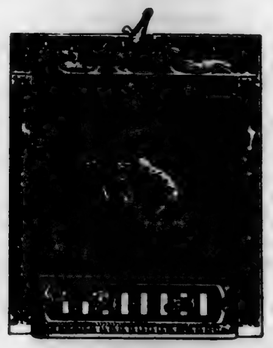

Claim.—The ornamental design for a fireplace-front as herein described and shown.

36,069. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,588. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-front as described and shown.

36,070. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,589. Term of patent 7 years.

Claim.—The ornamental design for a fireplace-front as shown and described.

36,071. FIREPLACE-FRONT. THOMAS M. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,590. Term of patent 7 years.

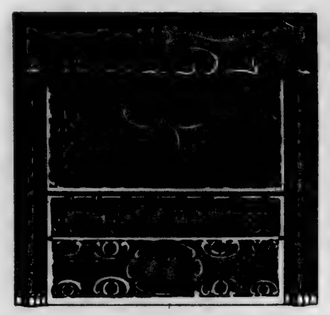

Claim.—The ornamental design for a fireplace-front as shown and described.

36,072. FIREPLACE-FRONT. THOMAS H. DUDGEON, Crafton, Pa., assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed July 29, 1902. Serial No. 117,501. Term of patent 7 years.

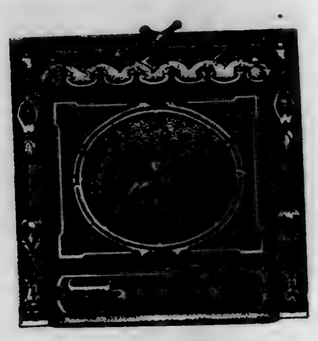

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Claim.—The ornamental design for a fireplace-front as herein described and shown.

TRADE-MARKS

REGISTERED SEPTEMBER 9, 1902.

38,872. STYLOGRAPHIC AND FOUNTAIN PENS. J. ULLMAN & Co., New York N. Y. Filed Aug. 7, 1902.

KOMPETEER.

The word "KOMPETEER." Used since July 31, 1902.

38,873. GAGE-GLASSES. JOHN H. LOUDENAN, Philadelphia, Pa. Filed July 17, 1902.

THISTLE

The word "THISTLE." Used since January, 1897.

38,874. OPTICAL LENSES. THEODORE ROOSEVELT, New York, N. Y. Filed July 30, 1902.

Neeranfar

The word "NEERANFAR." Used since April 1, 1902.

38,875. HATS. J. T. ADAMS & SONS, New York, N. Y. Filed Aug. 13, 1902.

RED ROVER

The words "RED ROVER." Used since January 1, 1902.

38,876. LEATHER BOOTS AND SHOES. SUTHERLAND CARPENTER & TELLING, Chicago, Ill. Filed June 13, 1902.

IROQUOIS

The word "IROQUOIS." Used since January 15, 1902.

38,877. CERTAIN NAMED LEATHER GOODS, TRIMMINGS, AND HARDWARE. GARCIA SUAREZ & Co., Manzanillo, Cuba. Filed July 30, 1902.

The phrase "LA PALMA," which appears upon a border surrounding a panel, on which panel the representation of a tropical scene is produced, a palm-tree occupying a prominent position in the foreground and a portion of a coast-line appearing in the background, a scroll being produced below the said panel, while a second scroll appears to cross the panel on which the tropical scene is produced. Used since 1892.

38,878. CERTAIN NAMED HOSPITAL AND SICK-ROOM APPLIANCES. MEDERER & Co., New York, N. Y. Filed June 3, 1902.

The word "PROGRESS," placed upon the horizontal bar of a Greek cross. Used since January 1, 1902.

88,879. ARSENIC COMPOUNDS. Vereinigte Chemische Werke Actiengesellschaft, Charlottenburg, Germany. Filed Apr. 28, 1902.

ATOXYL

The word "Atoxyl." Used since February 27, 1902.

88,880. REMEDY FOR CERTAIN NAMED DISEASES. Henry A. Sulzer, Pittsburg, Pa. Filed Jan. 4, 1902.

The words "Tossa Cura," together with the representation of the head and shoulders of a man, the face representing the man as suffering. Used since November 1, 1901.

88,881. REMEDIES IN CAPSULE, TABLET, OR SALVE FORM FOR THE CURE OF CERTAIN NAMED DISEASES. Benton H. Dunn, Buffalo, N. Y. Filed July 11, 1902.

The representation of a male figure standing on a portion of a globe and having a cloth around his waist, his left arm being extended and having a club held in the hand thereof, the whole being surrounded by concentric circles of contrasting colors. Used since June 19, 1902.

88,882. MEDICAL TONIC. Andrew J. Hill, Minerva, Ohio. Filed July 21, 1902.

PREPARIA.

The word "Preparia." Used since January 1, 1901.

88,883. PLAYER. Ammon Gast, Williamsport, Pa. Filed June 12, 1902.

88,888.

The words "The Specialist" and the medallion portrait of the registrant and the representation of peanuts below said picture, one of said peanuts having half of the shell removed. Used since May 20, 1900.

88,884. SALT. Diamond Crystal Salt Company, St. Clair, Mich. Filed May 17, 1902.

A diamond-shaped figure on which is shown a receptacle for salt. Used since September 1, 1901.

88,885. SHOE AND LEATHER DRESSING. The Ravis Glass Manufacturing Company, New York, N. Y. Filed July 19, 1902.

The representation of a person in military costume. Used since December 31, 1900.

88,886. LAUNDRY CREAM. Louis Loshbaugh, Jr., New York, N. Y. Filed July 9, 1902.

The word "Waxole," appearing on a rectangular background. Used since August 15, 1899.

88,887. CERTAIN NAMED CLEANING AND POLISHING COMPOUNDS. The Brunswig-Baled-Collender Company, Cincinnati, Ohio, and Chicago, Ill. Filed Apr. 17, 1902.

The word "Easybright," represented on a signboard held up by a lion rampant. Used since April 8, 1902.

88,888. DRY LAMPBLACK. The L. Martin Company, New York, N. Y. Filed July 3, 1902.

The representation of a plastic seal, upon which is displayed a conventionalized star with an open center, the letters "L. M. & Co." in plain type, appearing in the center of the seal, the "O" being inside the "C." Used since June 17, 1902.

88,889. CEMENT PAINT. S. & T. Hall, Limited, Hull, England. Filed July 3, 1902.

NONEX

The word "Nonex." Used since May 15, 1899.

88,890. MIXED PAINTS. Hollywood Paint Company, Buffalo, N. Y. Filed May 15, 1902.

The word "Hollywood" upon a seal and the representation of a sprig of holly. Used since May 1, 1901.

88,891. PAINT, PAINT-OIL, AND VARNISH. Charles P. Goodyear, Sr., Brunswick, Ga. Filed July 30, 1902.

TRIMAX

The word "Trimax." Used since May 1, 1902.

88,892. WOOD-FILLERS AND PRIMERS. The David B. Green Rubber Company, Bridgeport, Conn. Filed Aug. 6, 1902.

Primelac.

The word "Primelac." Used since July 1, 1902.

88,893. COMPOSITION FIRE-KINDLER. Henry G. Sachse, St. Louis, Mo. Filed Mar. 4, 1902.

K-K

The hyphenated letters "K-K." Used since February 1, 1902.

88,894. CERTAIN NAMED STEAM, WATER, AND GAS FITTINGS. WALWORTH MANUFACTURING COMPANY, Boston, Mass. Filed June 11, 1902.

WALMANCO

The word "WALMANCO." Used since March 1, 1902.

88,895. VENTILATING-DAMPERS, DRAFT-REGULATORS, AND SMOKE-PREVENTING APPARATUS. ADOLIPYLE COMPANY, New York, N. Y. Filed May 14, 1902.

Adolipyle

The word "ADOLIPYLE." Used since October 1, 1898.

THE NORRIS PETERS CO. PHOTO-LITH. WASH. D. C.

LABELS

REGISTERED SEPTEMBER 9, 1902.

9,426.—*Title:* "MISSION BRAND." (For Apricots.) THE SANTA PAULA COMMERCIAL CO., Santa Paula, Cal. Filed August 13, 1902.

9,427.—*Title:* "ORCHARD BRAND." (For Apricots.) THE SANTA PAULA COMMERCIAL CO., Santa Paula, Cal. Filed August 13, 1902.

9,428.—*Title:* "MAYFLOWER." (For Beer.) IMPERIAL BREWING CO., Kansas City, Mo. Filed August 18, 1902.

9,429.—*Title:* "MAYFLOWER." (For Beer.) IMPERIAL BREWING CO., Kansas City, Mo. Filed August 18, 1902.

9,430.—*Title:* "BEN KING." (For Cigars.) BEN KING CIGAR CO., St. Joseph, Mich. Filed July 19, 1902.

9,431.—*Title:* "NA-BOCKLISH." (For Cigars.) CENTRAL CIGAR MANUFACTURING CO., New York, N. Y. Filed August 16, 1902.

9,432.—*Title:* "GOLD BORE." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed August 15, 1902.

9,433.—*Title:* "THE WIN." (For Cigars.) JOHN WEISS, Jr., Saginaw, Mich. Filed August 18, 1902.

9,434.—*Title:* "MY BISCUIT." (For Biscuit.) THE SANITARY MY-FOOD CO., LIMITED, Battlecreek, Mich. Filed August 18, 1902.

9,435.—*Title:* "MANOR HOUSE." (For Coffee.) W. F. MCLAUGHLIN & CO., Chicago, Ill. Filed August 19, 1902.

9,436.—*Title:* "FILIPIN-O-KETCHUP." (For Catsup.) M. WOLFF & SONS, Chicago, Ill. Filed August 18, 1902.

9,437.—*Title:* "HY-STEP." (For Medicine.) JACOB FLOOK, Omaha, Nebr. Filed August 18, 1902.

9,438.—*Title:* "VAN WINKLE'S MEDICATED SOAP." (For Medicated Soap.) EDWARD VAN WINKLE & CO., Battlecreek, Mich. Filed August 14, 1902.

9,439.—*Title:* "EMPRESS IMPERIAL TOILET POWDER." (For Toilet Powder.) EUGENIA SHARP, Kansas City, Mo. Filed August 14, 1902.

9,440.—*Title:* "GOLDEN LUSTRE METAL POLISH." (For Metal-Polish.) CHARLES R. HULLEY & CO., Brooklyn, N. Y. Filed June 7, 1902.

PRINTS

REGISTERED SEPTEMBER 9, 1902.

555.—*Title:* "MEN'S AND BOYS' APPAREL." (For Men's and Boys' Apparel.) W. C. BOYS, Chicago, Ill. Filed August 16, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE TRAUDT.

Decided December 17, 1901.

TRADE-MARKS—DESCRIPTIVE—"DR. HOFFMANN'S DROPS."

"Dr. Hoffmann's Drops" refused registration as a trade-mark for medicine, since "Hoffmann" is an ordinary surname and "Drops" is descriptive.

ON appeal.

TRADE-MARK FOR CHOLERA, ETC., REMEDY.

Application of Frank Traudt filed March 14, 1899, No. 57,924.

Messrs. Higdon & Longan for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the words "Dr. Hoffmann's Drops" as a trade-mark for medicine.

The word "Drops" is a term ordinarily used to describe medicines of certain kinds, and therefore it is clearly descriptive. It cannot alone constitute a valid trade-mark and is not rendered registrable by being associated with words which are not themselves registrable. The word "Hoffmann" is a common surname and with the prefix "Dr." indicates that the medicine originated with some physician by the name of Hoffmann. There is nothing fanciful or arbitrary about the mark as a whole, and therefore it was properly refused registration.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE KENYON.

Decided February 24, 1902.

TRADE-MARK—"CATARRHAL JELLY"—NOT REGISTRABLE.

The words "Catarrhal Jelly" as a trade-mark for a jelly-like remedy for catarrh *Held* descriptive and not registrable.

ON appeal.

TRADE-MARK FOR MEDICAL REMEDIES.

Application of Thomas N. Kenyon filed November 21, 1901, No. 64,516.

Mr. Frederick S. Lyon for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner of Trade-Marks refusing to register the words "Catarrhal Jelly" as a trade-mark for remedies for catarrh and other diseases of the nose, throat, and lungs.

The words for which registration is sought are clearly descriptive of a remedy for catarrh, which remedy is of a jelly-like character. Any one purchasing this article to which these words are applied would expect to get a remedy of such character. These words are therefore descriptive and not fanciful or arbitrary. They do not serve to indicate the origin or ownership of the remedy, for any one would have the right to apply the same descriptive terms to a similar article.

It is well settled that words which are descriptive of the character, quality, or ingredients are not to be registered as technical trade-marks.

The decision of the Examiner of Trade-Marks is correct, and it is accordingly affirmed.

BLACKMAN *v.* ALEXANDER.

Decided April 9, 1902.

SUPPRESSION OF TESTIMONY—REOPENING INTERFERENCE.

Where testimony is suppressed because of irregularities in the taking thereof and it appears that the irregularities were due entirely to inadvertence and not to an intention to delay the proceedings, *Held* that the party should be given an opportunity to retake the testimony.

ON petition.

WOOD FLOORINGS.

Application of John J. Blackman filed January 14, 1901, No. 43,141. Application of Samuel Alexander filed October 25, 1900, No. 34,260.

Mr. Francis H. Richards for Blackman. (*Mr. C. A. Weed* of counsel.)

Messrs. Seymour & Earle for Alexander.

ALLEN, *Commissioner:*

This is a petition by Alexander asking—

First. For leave to file another petition for leave to file Alexander's proofs and exhibits upon the showing made by certain affidavits aforesaid and accompanying this petition.

Second. That in case this permission is refused, a stay of proceedings be granted and an opportunity be given for the notary before whom the testimony was taken to file the same after her return from abroad.

Third. That if both these requests be denied, the Examiner of Interferences be directed "to set times for the retaking of Alexander's proofs *de novo*."

Fourth. For a suspension of all proceedings pending the determination of the questions raised by the several prayers of this petition.

The testimony offered in behalf of Alexander has been suppressed because of certain irregularities in the taking thereof which have been heretofore fully considered. (See the decision in *Blackman v. Alexander*, 98 O. G., 1281, and *Blackman v. Alexander*, 73 MS. Dec., 274.) The reasons for the suppression of this testimony have been fully set forth in the decisions above noted and need not be

stated again. It is sufficient to say that the showing in the affidavits presented in support of the first prayer of the petition is insufficient to warrant the granting of permission to file the testimony now; nor can the defects in this testimony be overcome if the notary before whom it was taken should file the same. In so far, therefore, as the present petition seeks to have Alexander's suppressed testimony received and considered it is denied.

Although in compliance with the established rules of evidence it was necessary to suppress Alexander's testimony because of the irregularities in the taking thereof, the exceptions to which testimony have not been waived by the opposing party, yet in the present case justice requires that Alexander should not be compelled to go to trial without testimony in his behalf. It sufficiently appears that the irregularities arose through inadvertence and not through any desire to delay proceedings on Alexander's part. It is desirable that the Office have all the facts before it in the determination of the question of priority of invention, and the consideration of the facts should not be prevented through mere technicalities. In the absence of any waiver of objections to the testimony in behalf of Alexander by the opposing party it is considered to be best for all concerned that this testimony be retaken.

This case is therefore remanded to the Examiner of Interferences, who will set times for the retaking of Alexander's testimony *de novo*. To this extent the petition is granted.

DECISIONS OF THE U. S. COURTS.

Court of Appeals of the District of Columbia.

OLIVER *v.* FELBEL.

Decided June 6, 1902.

1. INTERFERENCE—APPEAL TO COURT—ISSUE UNPATENTABLE—MOOT QUESTION.

The court should not be called upon to decide priority between rival claimants to an invention where the Patent Office expressly reserves for future consideration the question of patentability of the invention. It is not the province of the court to decide moot causes.

2. SAME—PATENTABILITY A PREREQUISITE TO INTERFERENCE—JURISDICTION OF COURT.

Patentability of the invention is a necessary prerequisite to the declaration of an interference, and the court is without jurisdiction in a case where there is not a final favorable decision on that question by the Patent Office.

3. SAME—PATENTABILITY DOUBTFUL—PRACTICE.

Where a question as to the patentability of the invention is raised by some tribunal of the Patent Office after the declaration of an interference, *Held* that it should be finally settled before a decision on priority is rendered which entitles the defeated party to appeal to the court.

4. PATENTABILITY OF INVENTION—JURISDICTION TO VACATE FAVORABLE DECISION.

Until the patent is actually issued it is always competent for the Patent Office, with due regard to the rules of law, to vacate its favorable adjudication upon the question of patentability for good and sufficient cause.

5. INTERFERENCE—PRIORITY—DISCLAIMER OF INVENTION.

Where O. deliberately states in answer to a question propounded by his own counsel that he does not claim to be the inventor of the matter in controversy, *Held* that priority of invention cannot be awarded to him.

6. SAME—DELAY—PRESUMPTIVE EVIDENCE.

Long and unexplained delay yielding to activity only when the knowledge comes of the entrance of a rival on the field is always presumptive evidence that what is claimed to have been a reduction to practice was no more than an unsatisfactory or abandoned experiment.

7. SAME—DILIGENCE.

The diligence required of an inventor is diligence rather in the reduction of his invention to practice than in application to the Patent Office or in manufacturing his device for public use.

8. SAME—REDUCTION TO PRACTICE—CONCEALMENT OF INVENTION.

When reduction to practice by the first inventor is shown, his right to a patent is not barred by delay thereafter unless there be some circumstance of concealment, suppression, or abandonment of the invention.

Messrs. Poole & Brown for the appellant.

Mr. Wm. W. Dodge for the appellee.

MORRIS, *J.*:

This is an appeal from the decision of the Commissioner of Patents in an interference case, wherein the subject-matter of controversy is an alleged improvement in type-writing machines, described in the following one issue in the cause:

In a type-writing machine, the combination with type-operating mechanism and a power-driven carriage, of a tabulating mechanism including a series of denomination-keys and a series of independently-movable stops connected thereto, and also including an independent release-key for the carriage, the construction and arrangement being such that any key may be operated to set its corresponding stop, and such that said release-key may then be operated to enable the carriage to move rapidly to the point determined by the setting of said stop.

The alleged invention consists in the separation of the release-key from the denomination-keys of the tabulating mechanism, a separation which the appellant claims to be a step backward in the art, and which, notwithstanding that he accepted the issue as formulated in the Patent Office, he now seeks to have regarded as wanting in patentable novelty, but which the appellee claims to have the effect of removing certain tendencies in previously-existing mechanism to superinduce mistakes on the part of the operator.

The appellant Oliver filed his application for patent on July 17, 1899, and is the senior applicant. In his preliminary statement he alleged that he had conceived the invention, disclosed the same, and made drawings of it, during the period between April 7 and May 7, 1899; that he had constructed a full-sized operative machine embodying the invention between May 1 and June 1, 1899; and that since June 1, 1899, large numbers of such machines had been manufactured and sold.

The appellee Jacob Felbel filed his application for patent on December 18, 1899, which was five months later than the application of his opponent. In his preliminary statement he alleged that he had conceived the invention in issue, made sketches and drawings of it, and began the construction of full-sized working drawings, on or about May 20, 1898; that he showed these drawings, and explained the invention to others about May 25, 1898; that the construction of a full-sized machine, embodying the invention, was immediately commenced and was completed on or about July 20, 1898; and that this machine was immediately and repeatedly thereafter successfully operated.

Testimony was taken which showed that the allegations of the parties were substantially correct, and that Felbel had anticipated his rival. Whereupon all the tribunals of the Patent Office concurred in awarding judgment of priority of invention in favor of Felbel, and Oliver has appealed.

It appears from the record that the claim of the issue was the second of 73, afterward enlarged to 83 claims, contained in Felbel's application; that it was not originally claimed by Oliver; but that it was suggested to the latter by the Patent Office in accordance with its practice, in view of Felbel's application then pending. The suggestion was accepted by Oliver; and this claim was added by him as an amendment to his original specification, with the distinct understanding that thereby he would be placed in interference with a rival claimant. Notwithstanding this, after the interference had been declared, Oliver repeatedly moved for its dissolution, on the ground that there was no interference in fact between the devices of the two parties, and that the issue, when properly construed, according to his construction of it, applied specifically to Felbel's device, but did not cover his own. And when his motions for a dissolution of the interference had been overruled, he urged that the claim of the issue was old, and was therefore wanting in patentable novelty.

None of these contentions received any favor from the Examiner of Interferences. But the Board of Examiners-in-Chief, while affirming the decision of the Examiner of Interferences and awarding judgment of priority to Felbel, were of opinion that the claim was not patentable, and called the attention of the Commissioner to the fact. The Commissioner expressed no opinion as to the patentability of the claim, but stated that this could be considered by the Primary Examiner when the case should go back to him after the determination of the interference; and he affirmed the award of priority to Felbel.

In view of this condition of the record, we are not sure that we have jurisdiction to determine the issue in this case. The authority conferred on this court by the act creating it is, in reference to interference cases appealed to it from the decision of the Commissioner of Patents, to review the action of the Commissioner determining the right of priority of two or more persons claiming the same patentable invention. In the sense of the patent law there can be no interference unless there is patentable invention and there are rival claimants of it. Patentability of the invention or device is a necessary prerequisite to a declaration of interference; and the patentability of an invention, in controversy, except under some extraordinary circumstances, is not an open question before us. It is necessarily assumed in the declaration of interference, and the parties are estopped from denying it. It would be absurd and inconsistent to make application for a patent for an alleged invention, and immediately thereafter, when some one else claims the same invention, to argue against its patentability.

We understand the rules and the practice of the Patent Office to be in accordance with this requirement of law and right reason; and that no interference is ever declared between parties until there has been an adjudication of patentability. The absurdity of a declaration of interference, with a reservation at the same time of the question of patentability for future adjudication, would be, so far at least as this court is concerned, too glaring to be tolerated. Of course, it is always possible that, even after a *prima facie* adjudication of patentability, facts may be disclosed, in the course of interference proceedings or otherwise, which would make it the duty of the Patent Office to refuse a patent, notwithstanding the preliminary adjudication. And it may be admitted that, until the patent is actually issued, it is always competent for the Patent Office, with due regard to the rules of law, to vacate its adjudication for good and sufficient cause. But that there must be an adjudication of patentability, final to all ordinary intents and purposes, before this court can be called upon to determine the right of ownership as between rival claimants, we must regard as the demand of the statute. Otherwise, we would be trying moot causes, which it is not the province of any court of justice under our judicial system to try; or else we would be called upon to perform duties which are not judicial in their nature, and which, under our system of government, it is not competent for the Legislature to impose upon judicial tribunals.

In the case now before us there would seem to be no final and definite adjudication of patentability of the invention or device in controversy. It is true that the Primary Examiner has passed upon it, and has adjudged it to be patentable. But the Board of Examiners has expressed a different opinion; and while that opinion has not the effect, under the circumstances and the rules of the Patent Office, of overruling the Primary Examiner, and the Board can only call the attention of the Commissioner to the matter, which it has done, yet the Commissioner has virtually adopted the suggestion, and has held the question of patentability in abeyance to be reconsidered by the Primary Examiner when the matter goes back to him.

It is, of course, competent for the Patent Office to regulate its business in its own way, and to determine for itself by its own rules when and in what order it will take up the questions which arise in the performance of its functions. But, as we have said, this court cannot be called upon to determine moot causes; and the present is no more than a moot cause, since upon the face of the record itself the question of patentability has been expressly reserved for further and future consideration.

This question, however, has not been raised by either of the parties to the cause; but, as it very greatly affects our jurisdiction, we are compelled to raise it ourselves, and to suggest the grave doubt which exists in our minds whether we can assume jurisdiction in cases like the present.

But assuming that we have jurisdiction, we do not see what there is here for us to adjudicate.

invention cannot be awarded to him.

The appellant has distinctly and in the most positive manner, in the course of his testimony in the cause, disclaimed all interest in the subject-matter of controversy. Upon his examination as a witness on his own behalf, this question was deliberately propounded to him by his own counsel:

Do you claim to be the inventor of a device or mechanism embracing the particular combination of parts or elements specified in the issue of interference, as you understand them?

And his deliberate answer to the question was—

I do not.

Now we do not see the necessity or propriety of seeking to force upon a man the paternity of an invention which he so positively repudiates. In all probability this statement was made for the purpose of procuring a dissolution of the interference; but it matters not what the purpose of the appellant was in making it. It is a positive declaration under oath that he never was the inventor of the matter in issue. This we think should settle the controversy. Taken in connection with the appellant's contention before the Patent Office that the device of the claim was not patentable, it would show quite conclusively that the purpose of the appellant was rather to defeat his opponent than to procure a patent for himself.

Were we to go farther and to disregard this disclaimer of interest on the part of the appellant, we would still find that Felbel was the first and original inventor in this case, and not Oliver.

That Felbel's conception of the invention and all that he did in the way of reduction to practice antedated the conception of Oliver by several months, is abundantly proved, and we understand that it is not even contested by Oliver. But for the reason that Felbel was not diligent in coming to the Patent Office with an application, or in putting the invention on the market, and that in the meantime Oliver did put the invention on the market and promptly applied to the Patent Office for a patent, it is sought to bring this case within the ruling in *Mason* v. *Hepburn* (84 O. G., 147; 13 App. D. C., 86,) and *Warner* v. *Smith*, (84 O. G., 311; 13 App. D. C., 111.) We, however, concur with the Commissioner of Patents and the other tribunals of the Patent Office in holding that this case falls rather within the ruling in the cases of *Esty* v. *Newton*, (86 O. G., 799; 14 App. D. C., 50,) *McBerty* v. *Cook*, (90 O. G., 2295; 16 App. D. C., 133,) and the more recent case of *Roe* v. *Hanson* at the last term of this court. There was here no fraudulent concealment, no suppression of the invention to keep it from the public, no abandonment of it as of an unsuccessful experiment, no such unreasonable delay as to impose upon the claimant the burden of proof beyond a reasonable doubt. On the contrary, Felbel's delay in this instance does not seem to have been unreasonable under all the circumstances. He had placed his invention in the hands of the person to whom it was most natural for him to look to manufacture it for commercial use, which he was unable to do himself; and he withdrew it from him as soon as it became apparent to him that this person was not then disposed to take up the matter. He had constructed a practical operative machine; the reduction to practice had been complete: and all that remained to be done for the security of his right was to make his application for a patent. Undoubtedly it was possible for him to have done this more promptly than he did; but the delay was not unreasonable.

The diligence required of an inventor is diligence rather in the reduction of his invention to practice than in application to the Patent Office or in manufacturing his device for public use. It is very true, as we held in *Mason* v. *Hepburn*, *Warner* v. *Smith*, and other cases, that delay long and unexplained, and yielding to activity only when the knowledge comes of the entrance of a rival on the field, is always presumptive evidence that what is claimed to have been reduction to practice was no more in fact that an unsatisfactory or abandoned experiment. But when reduction to practice has been satisfactorily shown, and there is no unreasonable or unexplained delay, there is no law that would bar the first or original inventor of his right. In order to give to delay the effect of destroying such a right, there must be some circumstance of concealment, suppression or abandonment of the invention.

Notwithstanding our intimation that this cause, as now presented, is not ready for the appellate action of this court, we have deemed it proper to state our opinion upon the merits in view of the fact that neither party has raised the question of jurisdiction and we desire under the circumstances to save them the expense and delay of another appeal. Upon the merits, assuming the question of patentability of the alleged invention to have been definitely solved, we think that there was no error in the decision of the Commissioner of Patents.

In cases of this kind we think the proper practice to be, that the Commissioner, reserving, if he so desires, the determination of the question of interference, should hold the cause until he has referred the question of patentability back to the Examiner and there has been a definite adjudication of this latter question. Then, and not until then, his determination of the issue of interference would present a cause for our cognizance.

The clerk of the court will certify this opinion, and the proceedings in this court in the premises to the Commissioner of Patents, according to law.

Patents Nos. 708,980 to 709,455.

THE OFFICIAL GAZETTE OF THE United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

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TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	3		Nebraska	3	
Alaska Territory			Nevada	1	
Arizona Territory	2		New Hampshire		
Arkansas	5		New Jersey	26	
California	18		New Mexico Territ'y		
Colorado	4		New York	62	1
Connecticut	9		North Carolina		
Delaware			North Dakota	1	
District of Columbia	4	1	Ohio	35	
Florida			Oklahoma Territ'y		
Georgia	2		Oregon	3	
Hawaii Territory			Pennsylvania	56	2
Idaho	1		Philippine Islands		
Illinois	22	2	Rhode Island	5	
Indian Territory	2		South Carolina	1	
Indiana	7		South Dakota	1	
Iowa	8		Tennessee	4	
Kansas	7		Texas	6	
Kentucky	6		Utah		
Louisiana	1		Vermont	2	
Maine	6	1	Virginia	7	
Maryland	2		Washington	3	
Massachusetts	16		West Virginia	1	
Michigan	16		Wisconsin	8	
Minnesota	10		U. S. Navy		
Mississippi					
Missouri	17		Total to citizens of the United States	416	7
Montana	1				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina			Netherlands	2	
Austria-Hungary	2		Newfoundland		
Belgium			New South Wales		
Bermuda			New Zealand		
Brazil			Norway		
Canada	10		Portugal		
Cape Colony			Queensland		
Chile			Russia	1	
China	1		Santo Domingo		
Colombia			Scotland	2	
Cuba			South African Republic		
Denmark	1		South Australia		
Egypt			Spain		
England	17		Sweden	1	
France	6		Switzerland		
Germany	17		Uruguay		
Guatemala			Victoria	1	
India			Western Australia		
Ireland	2				
Italy	4		Total to citizens of foreign countries	67	
Japan					
Mexico					

Complete Applications.

It is hereby ordered that applications shall not be given serial numbers as complete applications and forwarded to the examining divisions for examination (1) when the petition has not been signed by the inventor; (2) when the specification and claims have not been signed by the inventor and the signature attested by two witnesses; (sec. 4888, Rev. Statu.;) (3) when the drawing has not been signed by the inventor or his attorney in fact and the signature attested by two witnesses; (sec. 4889, Rev. Statu.;) and (4) when the oath to the application does not fill the requirements of sections 4887 and 4888, Revised Statutes.

The requirements of section 4896, Revised Statutes, respecting the right of executor or administrator to make application for a patent for the invention of a deceased person must also be observed before the application will be considered as complete and forwarded for examination. The legal requirements in cases where the application is made by a foreign administrator are stated in *ex parte Ransome*, (C. D., 1870, 143.)

* * * * * * * * *

This order, so far as applicable, relates to applications for the registration of trade marks, labels, and prints, which must in all respects comply with the requirements of the statutes.

Inks.

(ORDER No. 37.)

All applications, communications, and other instruments in writing or print, which should properly constitute a permanent record in this Office, must be prepared with a substantially permanent ink. Aniline and other perishable inks will not be accepted.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business September 9, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended.	No. of applications awaiting action.
	In arrears—Under one month.			
253	X. Carriages and Wagons	Aug. 28	Aug. 28	99
117	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	Aug. 11	Aug. 14	98
246	I. Tillage, etc., and Fences	Aug. 11	Aug. 14	252
	Between one and two months.			
256	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	Aug. 7	Aug. 14	234
158	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	Aug. 4	Aug. 12	146
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	Aug. 4	Aug. 6	221
30	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	July 31	July 24	233
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Windwheels.	July 30	Aug. 8	256
228	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	July 28	Aug. 11	190
106	II. Farm Products, etc., Lubricators, Presses, etc.	July 26	July 29	152
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	July 23	Aug. 6	238
196	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	July 21	Aug. 9	210
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	July 18	Aug. 20	209
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	July 12	Aug. 9	249
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	July 12	Aug. 4	169
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	July 11	July 16	274
213	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	July 10	Aug. 8	220
	Between two and three months.			
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	July 5	Aug. 4	371
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	July 1	July 17	263
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	July 1	July 2	289
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	June 26	July 19	407
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	June 26	June 11	409
140	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 25	July 28	266
57	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	June 25	July 9	279
128	XXIX. Wood-Working Machines, Coopering and Roofing.	June 21	July 19	127
109	XXII. Fire-Arms, Ordnance, Navigation.	June 16	Aug. 8	199
109	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 16	July 17	408
128	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 13	July 8	264
948	XVIII. Steam-Engineering, etc.	June 12	July 10	489
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	June 10	June 7	458
	Between three and four months.			
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	June 6	June 7	503
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	June 5	May 24	415
91	XVI. Telegraphy and Telephony	June 2	June 9	297
223	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 26	June 26	672
190	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	May 23	July 19	490
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	May 17	June 19	521
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	May 12	June 30	571
	Between four and five months.			
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 1	July 8	741

Total number of applications awaiting action 12,802

In arrears—Under one month.			
*Designs	Aug. 18	Aug. 13	121
Between one and two months.			
†Trade-Marks	July 15	Aug. 7	280
Under one month.			
‡Labels and Prints	Aug. 19	Aug. 18	58

Preparation of Specifications, Entry of Amendments, Etc.

LEGIBLE WRITING REQUIRED.

The specification and claims must be plainly written or printed on but one side of the paper. All interlineations and erasures must be clearly referred to in marginal or foot notes on the same sheet of paper. Legal-cap paper with the lines numbered is deemed preferable, and a wide margin must always be reserved upon the left-hand side of the page.

AMENDMENTS MUST BE SPECIFIC—HOW WRITTEN.

In every amendment the exact word or words to be stricken out or inserted in the application must be specified, and the precise point indicated where the erasure or insertion is to be made. All such amendments must be on sheets of paper separate from the papers previously filed, and written on but one side of the paper. Erasures, additions, insertions, or mutilations of the papers and records must not be made by the applicant.

SPECIFICATIONS REWRITTEN.

When an amendatory clause is amended, it must be wholly rewritten, so that no interlineation or erasure shall appear in the clause, as finally amended, when the application is passed to issue. If the number or nature of the amendments shall render it otherwise difficult to consider the case, or to arrange the papers for printing or copying, the Examiner or Commissioner may require the entire specification to be rewritten.

PATENTS

GRANTED SEPTEMBER 16, 1902.

708,980. ADJUSTABLE TRUCK-BEARING. WALTER S. ADAMS, Philadelphia, Pa., assignor to John A. Brill, Philadelphia, Pa. Filed Mar. 7, 1902. Serial No. 97,022. (No model.)

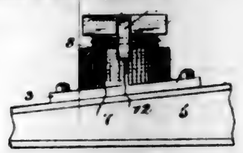

Claim.—1. The combination in an article of the class described, of the base having an annular and interiorly-threaded hub, a head comprising a wear-plate, and a threaded stem engaging the interior thread of the said hub, and a lock extending from said wear-plate to said hub.

2. The combination in an article of the class described, of the base having an annular and interiorly-threaded and upwardly-extending hub, a recess formed in the outer surface, the head comprising the flanged wear-plate and the exterior-threaded spindle engaging the interior thread of the rim, and the latch pivoted to the said wear-plate, its free end being adapted to engage the said hub-recess.

3. The combination in an article of the class described, of a base comprising the rim, a depression formed within the rim, flanges extending from said rim, a screw-thread formed interiorly of the rim, the head comprising the flanged wear-plate and an exteriorly-threaded spindle engaging the thread of the rim, the latch pivotally supported by said flange-plate, and a recess in the rim to receive the free end of the latch.

708,981. NON-REFILLABLE BOTTLE. HENRY F. BAILEY, Denver, Colo., assignor of one-half to Lonzo E. Steele and Harry E. Sims, Denver, Colo. Filed Jan. 6, 1902. Serial No. 88,608. (No model.)

Claim.—1. In a non-refillable bottle, the combination of a bottle having a neck and throat portion, a valve-seat in said throat, a spherical valve seated on said valve-seat, a plurality of lugs arranged concentric to said valve-seat, arranged to confine said spherical valve in operative relation to said valve-seat, suitable liquid-passages from said valve-seat between said lugs past said spherical valve, a key in the throat of the neck of said bottle, a plug in the throat of said bottle, arranged to define the operative movement of said valve, a keyway in said plug arranged to fit over said key when said plug is inserted in said throat, and adapted to define the position of said plug relative to said valve, and a zigzag liquid-passage through said plug having a substantially right-angled offset in its course through said plug, substantially as described.

2. In a non-refillable bottle, the combination with a bottle provided with a neck and mouth and throat portion of a suitable valve-seat and valve in said throat, a plug in said throat containing a keyway, a key projecting from said throat into said keyway and adapted to define the position of said plug relative to said valve, means including a suitable agent for non-removably securing said plug in the neck of said bottle, a liquid-passage through said plug having an offset in its length arranged and adapted to prevent access to said valve from the mouth of said neck, and a suitable cork or stopper in the mouth of said throat, substantially as described.

708,982. HORSESHOE. EDWIN D. RADER, Milwaukee, Wis., assignor of two-thirds to Archie L. Rodee and Edwin G. Bragg, Milwaukee, Wis. Filed Mar. 10, 1902. Serial No. 97,553. (No model.)

Claim.—1. A horseshoe having a screw-threaded nipple formed integrally therewith and projecting therefrom, in combination with a calk formed with a longitudinal screw-threaded bore removably secured to said nipple.

2. A horseshoe having a plane surface on its under side interrupted only by projecting screw-threaded nipples formed integrally therewith, and all of the same diameter and pitch of threads in combination with a series of calks, all provided with longitudinal screw-threaded bores of equal diameter and pitch, said calks being removably and interchangeably suited to said nipples.

3. A horseshoe-calk having a longitudinal-threaded bore and a squared exterior surface on the bored portion, one of the ends of the calk being flat, and the opposite end pointed, in combination with a horseshoe having an integral screw-threaded nipple projecting from its under surface.

708,983. OVERSHOE FOR HORSES. JOHN BARTLETT, Brooklyn, N. Y. Filed Apr. 17, 1902. Serial No. 103,249. (No model.)

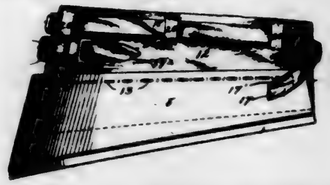

Claim.—1. An overshoe or boot for animals comprising a tread portion; an elastic hoof-covering projecting from said tread portion; a flexible apron secured to said hoof-covering and to the tread portion, said apron being slit at its front and rear ends; and means for securing the apron, and thereby the overshoe, in place.

2. An overshoe or boot for animals comprising a resilient base having an opening and upwardly-extending walls; an apron secured to the inner sides of said walls and to the base, said apron being slit to enable it readily to conform to the outline of the hoof; straps secured to the walls of the base and passing through loops of the apron; and buckles attached to the apron and serving to retain the straps.

3. In an overshoe or boot for animals, the combination, with an elastic base having upwardly-extending walls conforming to the outline of the hoof, of a flexible apron secured to said walls at its front and sides

and to the base at its rear portion, said apron being slitted at front and rear; straps secured to the rear sides of the flexible walls of the base; loops upon the flexible apron through which the straps pass; and buckles secured to the apron upon the reverse sides of the slit at the forward portions thereof.

4. An overshoe or boot for animals comprising a flexible base having a longitudinal opening in its tread portion, and also having upwardly-extending, elastic walls; a flexible apron secured to the inner side of said upwardly-extending walls and to the rear part of the tread portion; straps attached to the walls of the base at one end; loops carried by the flexible apron and through which said straps pass; and buckles for the reception of the front ends of said straps.

5. In an overshoe or boot for horses, the combination, with a resilient base, of an apron secured to said base, said apron being slitted as described; straps secured to said base, the straps being crossed at the rear of the shoe and carried around the side of the apron opposite the side upon which they are secured to the base and being brought around the front of the apron; and buckles carried by the apron and to which the free ends of the straps are attached.

708,984. METHOD OF TREATING AIR FOR FORCING MALT LIQUORS FROM KEGS. CHARLES A. BASTLEY, St. Louis, Mo. Filed Nov. 8, 1901. Serial No. 81,612. (No specimens.)

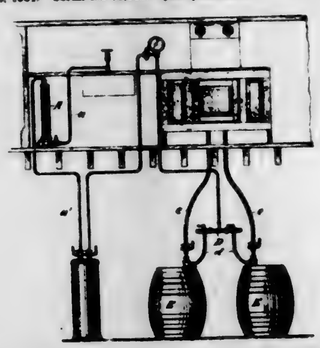

Claim.—1. The herein-described method of treating air for forcing malt liquors from kegs, the same consisting in removing foreign particles from the air, passing the cleansed air through a chamber containing hop-leaves, and delivering the cleansed and impregnated air, under pressure, to the surface of malt liquor in a keg; substantially as described.

2. The herein-described method of treating air for use in forcing malt liquors from kegs, the same consisting in first compressing the air, then passing the same through a chamber containing a cleansing ingredient, then passing the air through a chamber containing dried hop-leaves, and finally delivering the cleansed and impregnated air, under pressure, to the surface of liquor in a keg; substantially as described.

708,985. STEM-WINDING WATCH. MORRIS RABBOTT, Brooklyn, N. Y. Filed May 12, 1902. Serial No. 106,871. (No model.)

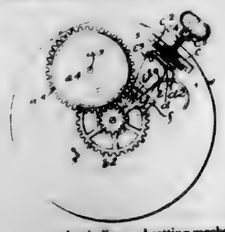

Claim.—1. In a watch winding and setting mechanism a barrel-shaft provided with a gear-wheel, a center arbor provided with a pinion, a gear-wheel operating in connection with said pinion, a yoke provided with a pinion normally in engagement with the gear-wheel on the barrel-shaft and adapted to be thrown into engagement with the gear-wheel which operates in connection with the pinion on the center arbor, a stationary plate, a wheel mounted on the inner side of said plate and provided with a hub which passes therethrough and is adapted to receive a pendant-stem longitudinally movable therein, and a plate pivoted between said wheel and said yoke and adapted to be operated by the pendant-stem, said last-named plate being adapted to operate said yoke, substantially as shown and described.

2. In a watch winding and setting mechanism a barrel-shaft provided with a gear-wheel, a center arbor provided with a pinion, a gear-wheel operating in connection with said pinion, a yoke provided with a pinion normally in engagement with the gear-wheel on the barrel-shaft and adapted to be thrown into engagement with the gear-wheel which operates in connection with the pinion on the center arbor, a stationary plate, a wheel mounted on the inner side of said plate and provided with a hub which passes therethrough and is adapted to receive a pendant-stem longitudinally movable therein and a plate pivoted between said wheel and said yoke and adapted to be operated by the pendant-stem, said last-named plate being adapted to operate said yoke, and a gear-wheel mounted between said last-named gear-wheel and the pinion carried by said yoke, substantially as shown and described.

3. In a watch winding and setting mechanism a barrel-shaft provided with a gear-wheel, a center arbor provided with a pinion, a gear-wheel operating in connection with said pinion, a yoke provided with a pinion, which normally engages the gear-wheel on the barrel-shaft, a plate secured transversely of the frame of the watch mechanism near one side thereof, a gear-wheel mounted at the inner side of said plate and provided with a hub which passes therethrough and is adapted to receive a pendant-stem, another gear-wheel mounted between said last-named gear-wheel and operating in connection therewith and in connection with the pinion carried by the yoke, and a plate pivoted at the inner side of the wheel through the hub of which the pendant-stem passes, said last-named plate being adapted to be operated by pendant-stem so as to operate said yoke, substantially as shown and described.

708,986. STOP-WATCH. MORRIS RABBOTT, Brooklyn, N. Y. Filed May 12, 1902. Serial No. 106,872. (No model.)

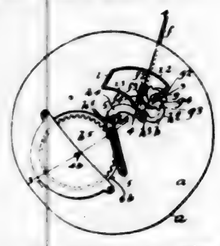

Claim.—1. In a fly-back attachment for watches, the combination with one of the plates of the frame of a watch mechanism, of a yoke-shaped spring secured to said plate at the middle thereof, a double cam-disk mounted on said plate, one member of which is in operative connection with one arm of said spring, and a lever adapted to engage with the other member of said cam-disk, said lever being in operative connection with the other arm of said spring, substantially as shown and described.

2. In a fly-back attachment for watches, the combination with one of the plates of the frame of the watch mechanism, of a yoke-shaped spring secured to said plate at the middle thereof, a double cam-disk mounted on said plate, one member of which is in operative connection with one arm of said spring, and a lever adapted to engage with the other member of said cam-disk, said lever being in operative connection with the other arm of said spring, and means for operating said double cam-disk, substantially as shown and described.

3. In a fly-back attachment for watches provided with a hollow main arbor, a center arbor longitudinally and rotatably movable therein and provided at one end with the usual sweep seconds-hand and at the other end with a heart-shaped cam and means for locking said center arbor to said main arbor as well as releasing the same; an operating-lever pivotally mounted at or near its center and adjacent to said center arbor, and provided with two curved projecting members which are wedge-shaped in longitudinal vertical section, and which are adapted to pass one on each side of said center arbor and engage, with their inclined surfaces, the under side of said heart-shaped cam, said operating-lever being also provided between the inner ends of said curved wedge-shaped members with a thickened projecting member which is wedge-shaped in transverse horizontal section, and adapted to engage the recess in the periphery of said heart-shaped cam, and means for operating said lever, substantially as shown and described.

4. In a fly back attachment for watches provided with a main arbor, a center arbor movable therein and provided at one end with a sweep

seconds-hand and at the other with a heart-shaped cam, and means for locking said center arbor to said main arbor and releasing it therefrom; a double cam-disk, an operating-lever one end of which is provided with wedge-shaped projecting members adapted to operate in connection with said heart-shaped cam and the other end of which is in operative connection with the outer member of said double cam-disk, a yoke-shaped spring one end of which operates on one end of said lever and the other end of which operates on the inner member of said double cam-disk, a spring-operated rod loosely mounted adjacent to said double cam-disk, and a pin secured at right angles thereto, and adapted to operate on the inner member of said double cam-disk, substantially as shown and described.

708,987. ICE-CREAM DIPPER. ERNST C. RAUSERMAN, Topeka, Kans. Filed Feb. 26, 1902. Serial No. 96,766. (No model.)

Claim.—An ice-cream dipper for forming Metropolitan ice-cream, consisting of the combination of a bowl having a perforated bottom, rib-like arms fitting against the bottom and sides thereof, an outside arm to which said rib-like arms are attached through said perforation, another arm projecting from said bowl, and a spring-handle connected to said arms respectively and adapted to rotate said bowl and said rib-like arms in opposite directions.

708,988. SPINNING-BAND. GEORGE M. BRADLE, Shickshinny, Pa. Filed Oct. 26, 1901. Serial No. 80,113. (No model.)

Claim.—A band having loops formed at the ends thereof, metallic eyes held in place by the loops, and a link engaging the eyes and provided intermediate of its length with a kink or bend disposed between the juncture of the loops and operating to hold it against turning in the eyes.

708,989. MACHINE FOR MAKING PRINTS. ROBERT A. BELL, Philadelphia, Pa., assignor to Charles A. Rutter, Philadelphia, Pa. Filed Feb. 13, 1902. Serial No. 93,818. (No model.)

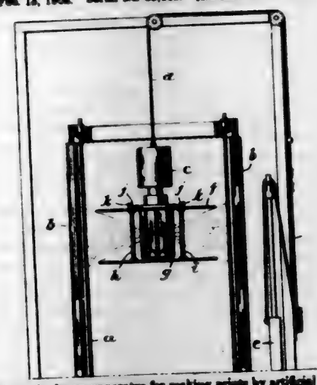

Claim.—1. In an apparatus for making prints by artificial light, the combination of a glass platen, means for holding a negative and a sensitized surface against the platen, an artificial light movable across the platen, and means for protecting all portions of the platen except those opposite the light at any point in its travel from the rays of said light.

2. In an apparatus for making prints by artificial light, the combination of a glass platen, means for holding a negative and a sensitized surface against the platen, an artificial light movable across the platen, and screens moving with said light and preventing the rays thereof from striking the platen except at points opposite the light.

3. In an apparatus for making prints by artificial light, the combination of a glass platen, means for holding a negative and a sensitized surface against the platen, an artificial light movable vertically of the platen, and two screens moving with and arranged, respectively, above and below said light, the screens being arranged to prevent the rays of said light from striking the platen except at points opposite the light.

4. In an apparatus for making prints by artificial light, the combination of a glass platen, means for holding a negative and a sensitized surface against the platen, an artificial light movable vertically of the platen, and screens detachably connected to and moving with said light to prevent the passage of rays therefrom above or below said light.

5. In an apparatus for making prints by artificial light, the combination of a glass platen, means for holding a negative and a sensitized surface against the platen, an artificial light movable vertically of the platen, a disk or screen arranged above and moving with said light and acting to prevent the rays of said light from striking the platen above said disk, and a second disk or screen, arranged below the light and detachably connected to the first said screen, and acting to prevent the rays of said light from striking the platen below said lower disk.

708,990. VALVE. JOHN H. BICKFORD, Salem, Mass. Filed June 17, 1901. Serial No. 64,831. (No model.)

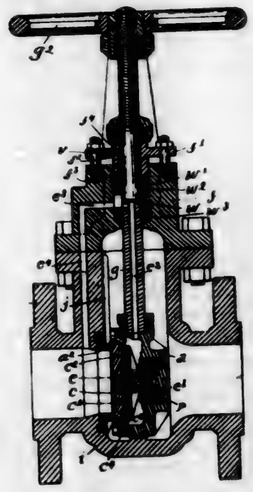

Claim.—1. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling the pressure in said chamber, substantially as described.

2. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling the pressure in said chamber operated by the means employed for moving the carrier, substantially as described.

3. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a manually-operated valve for controlling the pressure in said chamber, substantially as described.

4. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving

and carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a spring acting to assist in moving said valve-plate toward its seat, substantially as described.

5. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, a spring acting to assist in moving said valve-plate toward its seat and a valve for controlling the pressure in said pressure-chamber, substantially as described.

6. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage connecting said pressure-chamber with the pressure-supply including as a part of it a passage in the stem attached to said carrier, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling the pressure in said chamber, substantially as described.

7. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, an outlet-passage leading from said pressure-chamber through which the pressure is released, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling said outlet-passage, substantially as described.

8. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, an outlet-passage leading from said pressure-chamber through which the pressure is released, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling said outlet-passage operated by means employed for moving the carrier, substantially as described.

9. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, an outlet-passage leading from said pressure-chamber through which the pressure is released including as a part of it a passage in a stem attached to said carrier, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling said outlet-passage, substantially as described.

10. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, a reinforcing-plate for said flexible element, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling the pressure in said chamber, substantially as described.

11. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, an outlet-passage leading from said pressure-chamber through which the pressure is released, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve for controlling the pressure in said chamber constructed and arranged to close the passage leading from the pressure-supply to the pressure-chamber, and to open the outlet-passage leading from the pressure-chamber, substantially as described.

12 In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, an outlet-passage leading from said pressure-chamber through which the pressure is released, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a valve operated by the means employed for moving the carrier for controlling the pressure in said pressure-chamber constructed and arranged to close the passage leading from the pressure-supply to the pressure-chamber, and to open the outlet-passage leading from said pressure-chamber, substantially as described.

13. In a valve, a carrier bearing a valve-plate and also bearing a pressure-chamber having a flexible element as a part of it, means for moving said carrier, means, as a passage, connecting said pressure-chamber with the pressure-supply, an outlet-passage leading from said pressure-chamber through which the pressure is released, said pressure-chamber controlling the movements of said valve-plate laterally toward and from its seat as the pressure therein is controlled, and a manually-operated valve for controlling the pressure in said chamber constructed and arranged to close the passage leading from the pressure-chamber and to open the outlet-passage leading from said pressure-chamber, substantially as described.

708,991. SCREW-DOOR SAFE. JOSEPH B. BOOE, Muscatine, Iowa. Filed Jan. 31, 1902. Serial No. 92,019. (No model.)

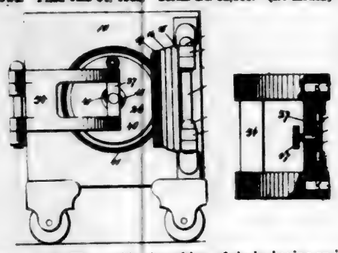

Claim.—1. The combination with a safe-body, having an inner and an outer door-opening, of a door for the outer door-opening, a door for the inner door-opening, supporting means for the inner door attached to the safe-body, and designed to project through the outer door-opening thereof, and means for automatically coupling the said supporting means to the inner door.

2. The combination with a safe-body, having an outer door-opening and also having an opening for an inner screw-door, of a screw-door for the outer door-opening, a screw-door for the inner opening, supporting means for the inner screw-door attached to the exterior of the safe-body, and designed to project through the outer door-opening thereof, and means for automatically coupling the said supporting means to the inner screw-door.

3. The combination with a safe-body, having an outer door-opening and also having an opening for an inner screw-door, of a screw-door for the inner opening, a door for the outer opening, a supporting-arm pivoted to the exterior of the safe and at one side of the outer opening, said arm being designed to swing in a horizontal plane and to be capable of projecting through the outer door-opening, and of engaging the front face of the inner door, and means for automatically coupling the said arm to the inner screw-door.

4. The combination with a safe-body, having an outer door-opening and also having an opening for the inner screw-door, of an outer door to fit in the outer door-opening, an inner screw-door comprising a body portion designed to enter the said opening for the inner door, a front plate for the inner door so arranged that the body portion of the door may rotate relative to the front plate thereof, a notched shank projecting forwardly from the front plate, an arm pivoted to the exterior of the safe capable of projecting through the opening for the outer door, an opening in its end to receive the said shank, and means for detaching the arm from the shank, for the purposes stated.

5. The combination with a safe-body, having an outer door-opening and also an opening for an inner screw-door, of an outer door, an inner screw-door comprising a body portion to enter the opening for the inner door, a front plate for the inner door attached to the body portion thereof in such manner as to permit the body portion to rotate relative to the front plate, a notched shank projecting forwardly from said plate, an arm pivoted to the body portion of the safe to swing in a horizontal plane, having its free end curved inwardly and designed to project through the outer opening, and having an opening in its end to receive the shank, spring-actuated bolts mounted in the arm to automatically enter the notch in the shank, a shaft mounted near the free end of the arm, having a knob at one end, a disk on the other end of the shaft having cam-grooves therein, and projections on the bolts admitted into said cam-grooves, whereby upon a manipulation of the knob, the bolts may be withdrawn from the notch in the shank, substantially as and for the purposes stated.

708,992. REFRIGERATOR. NICOLAS BESBARIS, Chicago, Ill., assignor of one-half to Edward S. Slocum, Chicago, Ill. Filed Nov. 23, 1901. Serial No. 83,977. (No model.)

Claim.—1. A refrigerator, comprising outer inclosing walls; an interior provision-chamber having its walls spaced from the outer inclosing walls; an ice-chamber within the inclosing walls above the provision-chamber, having its drainage into the interspace; a pipe leading from the bottom of the interspace opening therein to receive the filtered water, and extending upward in the lateral interspace; a water-chamber into which such pipe discharges; and a controlled discharge for such water-chamber.

2. A refrigerator comprising outer inclosing walls; an interior provision-chamber having its walls spaced from the outer inclosing walls; an ice-chamber within the inclosing walls above the provision-chamber, having its drainage into the interspace, said interspace being occupied with filtering material; a pipe leading from the bottom of the interspace embedded in said filtering material, and opening therein to receive the filtered water, and extending upward in the lateral interspace; a water-chamber into which such pipe discharges; and a controlled discharge for such water-chamber.

3. A refrigerator, comprising an outer inclosing wall; an interior provision-chamber having its walls spaced from the outer inclosing wall; filtering material occupying the interspace between the walls, and covering the interior chamber, said outer wall being extended upward above the provision-chamber to form a chamber for ice to be lodged upon the top of the filtering material, whereby the water of liquefaction from the ice filters downward about the provision-chamber; and a suitable discharge for the water of liquefaction at an elevated point; whereby the filtering material is saturated with the water.

4. A refrigerator comprising an outer inclosing wall; a metallic lining interior to such wall spaced therefrom; a plaster coating occupying the interspace between the outer wall and the metallic lining; an interior chamber having its walls spaced from the metallic lining; filtering material occupying the interspace, an ice-receptacle above the provision-chamber within the metallic lining, having its drainage into the interspace between the metallic lining and the provision-chamber; and means for permitting the discharge of the water of liquefaction from the upper part of the interspace, whereby the filtering material in such space may be kept saturated with the water of liquefaction.

5. A refrigerator, comprising outer inclosing walls, an interior provision-chamber having its walls spaced from the outer inclosing walls, an ice-chamber within the inclosing walls above the provision-chamber, means for forming air communication between the ice and provision chambers, the ice-chamber having its drainage into the interspace, a pipe leading from the bottom of the interspace opening therein to receive the filtered water, and extending upward in the lateral interspace, a water-chamber into which such pipe discharges, and a controlled discharge for said water-chamber.

6. A refrigerator, comprising outer inclosing walls, an interior plaster coating for said walls, and a metal casing or lining adjacent to the plaster coating, an interior provision-chamber having its walls spaced from the outer inclosing walls, an ice-chamber within the inclosing walls above the provision-chamber, the ice-chamber having its drainage into the interspace, a pipe leading from the bottom of the interspace opening therein to receive the filtered water, and extending upward in the lateral interspace, a water-chamber into which such pipe discharges, and a controlled discharge for said water-chamber.

7. A refrigerator, comprising outer inclosing walls having an interior plaster coating, a metal lining adjacent to said coating, an interior provision-chamber having its walls spaced from said outer walls, a filtering material arranged in said interspace, an ice-chamber within the inclosing walls above the provision-chamber, air-tight-fitting doors or covers for the ice and provision chambers, the said ice-chamber having its drainage into the interspace, a pipe leading from the bottom of the interspace opening therein to receive the filtered water, and extending upward in the lateral interspace, a water-chamber into which such pipe discharges, a controlled discharge for said water-chamber, and a flushing-pipe for cleaning the filtering material when desired.

708,993. RECORDER FOR SIGNALS AND ENGINE-DRIVERS. JACQUES P. DE BRAAL, Paris, France. Filed Apr. 21, 1902. Serial No. 103,966. (No model.)

extending upward in the lateral interspace, a water-chamber into which such pipe discharges; and a controlled discharge for such water-chamber.

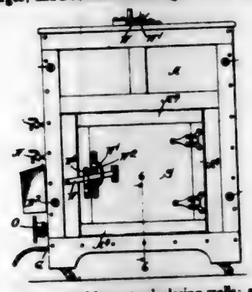

2. A refrigerator comprising outer inclosing walls; an interior provision-chamber having its walls spaced from the outer inclosing walls; an ice-chamber within the inclosing walls above the provision-chamber, having its drainage into the interspace, said interspace being occupied with filtering material; a pipe leading from the bottom of the interspace embedded in said filtering material, and opening therein to receive the filtered water, and extending upward in the lateral interspace; a water-chamber into which such pipe discharges; and a controlled discharge for such water-chamber.

3. A refrigerator, comprising an outer inclosing wall; an interior provision-chamber having its walls spaced from the outer inclosing wall; filtering material occupying the interspace between the walls, and covering the interior chamber, said outer wall being extended upward above the provision-chamber to form a chamber for ice to be lodged upon the top of the filtering material, whereby the water of liquefaction from the ice filters downward about the provision-chamber; and a suitable discharge for the water of liquefaction at an elevated point; whereby the filtering material is saturated with the water.

4. A refrigerator comprising an outer inclosing wall; a metallic lining interior to such wall spaced therefrom; a plaster coating occupying the interspace between the outer wall and the metallic lining; an interior chamber having its walls spaced from the metallic lining; filtering material occupying the interspace, an ice-receptacle above the provision-chamber within the metallic lining, having its drainage into the interspace between the metallic lining and the provision-chamber; and means for permitting the discharge of the water of liquefaction from the upper part of the interspace, whereby the filtering material in such space may be kept saturated with the water of liquefaction.

5. A refrigerator, comprising outer inclosing walls, an interior provision-chamber having its walls spaced from the outer inclosing walls, an ice-chamber within the inclosing walls above the provision-chamber, means for forming air communication between the ice and provision chambers, the ice-chamber having its drainage into the interspace, a pipe leading from the bottom of the interspace opening therein to receive the filtered water, and extending upward in the lateral interspace, a water-chamber into which such pipe discharges, and a controlled discharge for said water-chamber.

6. A refrigerator, comprising outer inclosing walls, an interior plaster coating for said walls, and a metal casing or lining adjacent to the plaster coating, an interior provision-chamber having its walls spaced from the outer inclosing walls, an ice-chamber within the inclosing walls above the provision-chamber, the ice-chamber having its drainage into the interspace, a pipe leading from the bottom of the interspace opening therein to receive the filtered water, and extending upward in the lateral interspace, a water-chamber into which such pipe discharges, and a controlled discharge for said water-chamber.

7. A refrigerator, comprising outer inclosing walls having an interior plaster coating, a metal lining adjacent to said coating, an interior provision-chamber having its walls spaced from said outer walls, a filtering material arranged in said interspace, an ice-chamber within the inclosing walls above the provision-chamber, air-tight-fitting doors or covers for the ice and provision chambers, the said ice-chamber having its drainage into the interspace, a pipe leading from the bottom of the interspace opening therein to receive the filtered water, and extending upward in the lateral interspace, a water-chamber into which such pipe discharges, a controlled discharge for said water-chamber, and a flushing-pipe for cleaning the filtering material when desired.

Claim.—1. In combination with a moving vehicle, a record-cylinder, a motor for rotating the same, means for holding the cylinder normally against rotation, a marker adapted to contact with said cylinder, means carried by the vehicle for simultaneously releasing said holding means and lowering the marker, and means for imparting an endwise movement to said cylinder while it is rotating, substantially as described.

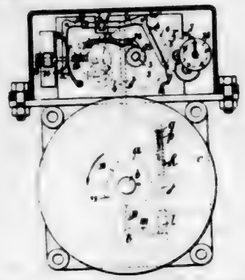

2. In combination with a moving vehicle, a record-cylinder, a motor for rotating the same, means for imparting to said cylinder an endwise movement when rotating, a pivoted spring-pressed plate carrying a marker adapted to make contact with said cylinder, a rod normally holding said plate out of contact with the cylinder, means for depressing said rod, and means controlling the movement of the motor, substantially as described.

3. In combination with a vehicle, a cylinder, a motor for rotating the same, a spring-pressed arm carrying a pointer adapted to contact with said cylinder, a rod having its upper end beneath said plate, a spring for forcing said rod upwardly, a bell-crank lever having one arm engaging said rod, and a rotatable cam adapted to operate against the other arm, substantially as described.

4. In combination with a moving vehicle, a record-cylinder, a shaft supporting the same, means for rotating said cylinder, a marker for said cylinder, a screw on one part of said cylinder, a stationary rack engaging said screw, and means for controlling both the operation of the marker and movement of the cylinder, substantially as described.

708,994. CAR-TRUCK. JOHN A. BRILL, Philadelphia, Pa. Filed Jan. 10, 1902. Serial No. 89,102. (No model.)

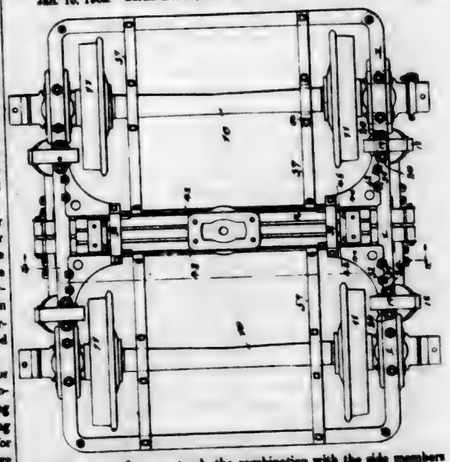

Claim.—1. In a car-truck, the combination with the side members of the truck-frame, and the axle-pedestals; of a top chord included by said side members, and a reinforcing-bar extending between said pedestals, upon which said chord rests.

2. In a car-truck, the combination with the top chord, and the pedestals, of a bar set on edge and extending between said pedestals parallel to said top chord, adapted to reinforce said top chord between the pedestals.

3. In a truck, the combination with the pedestals, a top chord having sections extending between the pedestals, separate bars supported

below and closely adjacent the said top-chord sections and secured at their ends to the pedestals, links suspended from the top chord in line with the said bars, and a bolster supported by said links, substantially as described.

4. In a car-truck, the combination with the flat side members of the top chord, the axle-box pedestals, and a bar set on edge secured to the pedestals, and abutting against the under side of the top-chord side members, substantially as described.

5. In a car-truck, the combination with the top chord and the pedestals, provided with recessed lugs projecting laterally therefrom; of a reinforcing-bar seated in said recesses and extending between said pedestals immediately beneath said top chord.

6. In a car-truck, the combination with the top chord, and the pedestals having laterally-projecting recessed lugs: of a reinforcing-bar set on edge and having its ends resting in said recesses in said pedestals, said bar abutting against and reinforcing said top chord between said pedestals.

7. The combination with the truck having a top chord and an underlying bar, brackets secured to the chord and bar, and transoms extending between the inner members of said brackets, substantially as described.

8. The combination in a car-truck, of the top chord 1, the pedestals having the top grooves 30 receiving the top chord, the lugs 32 on the pedestals extending inwardly and having the grooves 34 in line with the top chord, and the bar 29 with its ends inserted in the groove 34 and abutting against the top chord, substantially as described.

9. The combination in a car-truck, of the top chord, the recessed pedestals, a bar inserted in said recesses and extending below the top chord, brackets having longitudinal and transverse webs secured to the said bar and top chord intermediate of the pedestals, and transoms secured to and extending between the transverse webs, substantially as described.

10. In a car-truck, the combination with a top chord, the bar 29, of the brackets 37, having inwardly-stepped recesses 47, 48, receiving the top chord and bar, substantially as described.

11. The combination with the top chord, the bar 29 of less lateral dimension than the top chord, and the brackets 37 having stepped recesses 47, 48, and ledges 49, 50, and a vertical longitudinally-disposed web 39 in which said ledges and recesses are formed and which receives the edge of the top chord and face of the bar 29, and bolts passing through the bar and vertical web of the bracket, and the top chord, substantially as described.

12. As an article of manufacture, the axle-box pedestal having upright jaws, a top cross-bar having a longitudinal groove such as 30, a lug, and a recess formed in said lug in line with the said cross-bar groove, substantially as and for the purposes described.

13. As an article of manufacture, the axle-box pedestals comprising the upright jaws, the top crush-bar having ends extending beyond the jaws, lugs formed at the angle of the top cross-bar and jaws and extending outwardly from the jaws in the same plane as the top cross-bar, and recesses formed in said lugs opening outwardly at the ends thereof, as and for the purposes described.

14. As an article of manufacture, the transom brackets comprising the transverse and longitudinal vertical webs connected at their upper edges, and stepped recesses and ledges formed on the outer face of the longitudinal vertical web, as and for the purposes described.

15. In a car-truck, the combination with the side members of the truck-frame, the transom-bars, and brackets adapted to reinforce said side members and transoms, said brackets having flanged portions adapted to embrace the side members of said truck, and said transoms.

16. In a car-truck, the combination with the side members of the truck-frame, the transom-bars, and brackets having transverse and longitudinal vertical webs, the longitudinal web having stepped recesses receiving the said side members, the transverse web receiving the transoms.

17. In a car-truck, the combination with the side members of the truck-frame, of the transom bars, and brackets having transverse and longitudinal vertical webs, the longitudinal web having vertical recesses and receiving the said side members, bolts extending from the said side members through the vertical recesses of the bracket, the said transverse webs and transoms being connected.

18. In a car-truck, the combination with the side frame, and transom-bars comprising a flat bar with its narrower edge disposed vertically, the side bar being deepened to substantially correspond with the height of the transom-bar, and the bracket having a longitudinal and transverse vertically-disposed web secured to the transom-bar and to the deepened portion of the side frame.

19. In a car-truck having side bars, the combination with the transoms, the interposed angular brackets having transverse vertical webs to which the transoms are secured and a longitudinal vertical web having a recess in which the side bars are secured.

20. As an article of manufacture, the bracket having a pair of angularly-disposed webs, one of said webs having stepped recesses in its side, flanges extending laterally from said webs, and horizontally-disposed webs connecting said vertical webs.

21. As an article of manufacture, the bracket having angularly-disposed vertical webs, upper and lower laterally-disposed flanges carried by said vertical webs, forming longitudinally-disposed recesses upon the sides of the bracket, and vertically-disposed recesses formed in one side of the bracket, said recesses running through said vertical web and the upper and lower flanges thereof.

708,995. **DRILLING-MACHINE.** WILLIAM R. BUTLER, Bedford Ind. Filed July 29, 1901. Serial No. 69,415. (No model.)

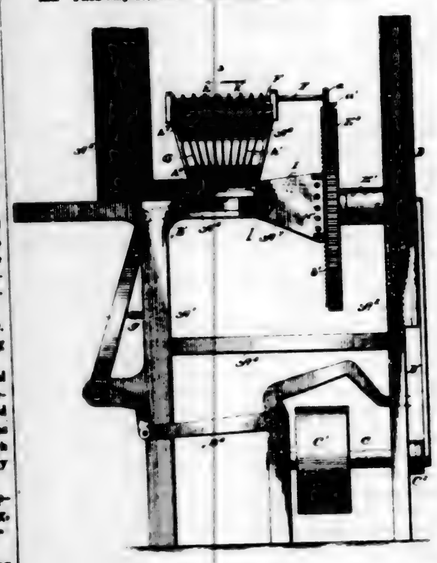

Claim.—1. In a drilling-machine, the combination of a suitable frame, and a rotatably (reversible) extensible two-part drill, comprising a spindle, through which power is applied, and a bit portion having threaded connection with the frame.

2. In a drilling-machine, the combination of a suitable frame, a series of parallel shafts, a series of rows of drills operated through said shafts, and means for imparting to the drill-bits reciprocating longitudinal movement.

3. In a drilling-machine, the combination of a suitable frame, a series of parallel shafts, means for imparting oscillating rotary movement to said shafts, and a series of rows of two-part drills operated through said shafts and comprising spindles geared to said shafts and bit portions operated by said spindles and having reciprocating longitudinal movement.

4. In a drilling-machine, the combination of a suitable frame, a series of parallel shafts, means for imparting oscillating rotary movement to said shafts, and a series of rows of two-part drills operated through said shafts and comprising spindles geared to said shafts and bit portions having sliding connection with said spindles and threaded connection with said frame.

5. In a drilling-machine, the combination of a suitable frame, a series of parallel shafts, a master-gear having gear connection with said shafts, a reciprocating rack serving to operate said master-gear, a series of rows of extensible drills operated through said parallel shafts, and means for feeding stock beneath said drills.

6. In a drilling-machine, the combination of a suitable frame, a reciprocating feed-slide, a driving-shaft, a reciprocating rack, said rack and feed-slide being operated through said shaft, a master-gear actuated by said rack, a series of shafts actuated from said master-gear, and extensible drills actuated from said last-named shafts.

7. In a drilling-machine, the combination of a suitable frame, a series of parallel shafts arranged on the surface of a portion of a cylinder, a master-gear, gear connections between said master-gear and said shafts, a series of rows of extensible drills operated from said shafts, a reciprocating feed-slide, a reciprocating rack, a lever connected with said feed-slide and having an end projecting into the path of said rack, and means for reciprocating said rack.

8. In a drilling-machine, the combination of a suitable frame, a series of parallel shafts, a series of rows of drills actuated from said shafts and lying in convergent planes, the individuals of each row being convergent, and means for operating said shafts.

9. In a drilling-machine, the combination of a suitable frame, a series of parallel shafts, extensible drills operated by said shafts, a master-gear operating said shafts, and a plurality of drills disposed substantially at right angles to said first-named group of drills and operated from said master-gear, said first-named group of drills operating to drill a side of a block and said second-named group of drills operating to drill an end of a block.

10. In a drilling-machine, the combination of a suitable frame, a guide, a reciprocating feed-slide connected with said guide, a plurality of drills arranged above said guide and operating to drill a side of a block, and a plurality of drills disposed substantially at right angles to said first-named group of drills and operating to drill an end of a block.

11. In a drilling-machine, the combination of a suitable frame, a reciprocating slide, a plurality of drills located above the path of said slide, a plurality of drills located at the rear end of the traverse of said slide, a master-gear, a plurality of shafts perpendicular to said master-gear and serving to operate said first-named drills, said shafts having gear connection to the periphery of said master-gear, and a shaft parallel to said master-gear and serving to operate said last-named group of drills, said last-named shaft having gear connection with a lateral peripheral margin of said master-gear

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708,996. **STEAM-TRAP.** JAMES CAMPBELL, Port Blakely, Wash. Filed Oct. 25, 1901. Serial No. 79,501. (No model.)

Claim.—1. In a steam-trap, the combination of a movable chamber, locking devices for holding the chamber in discharging position comprising two normally disengaged members which are brought into engagement by the movement of the chamber, one of which members moves with the chamber and the other of which is supported independently of the chamber, and a device actuated by the emptying of the chamber for releasing the locking devices.

2. In a steam-trap, the combination of a pivotally-mounted chamber, a discharge-valve actuated by the movement of the chamber, locking devices for holding the chamber in position when said valve is open, comprising two normally disengaged members which are brought into engagement by the movement of the chamber, one of which members is mounted upon and moves with the chamber and the other of which is supported independently of the chamber, and a device actuated by the emptying of the chamber for releasing the locking devices.

3. In a steam-trap the combination of a movable chamber and retaining device for holding it in discharging position, comprising a plunger, a cup to receive the same and a valve actuated by the plunger to admit air between the plunger and the cup, substantially as shown and described.

4. In a retaining device for steam-traps the combination of an adjustable plate, a cup secured thereto, a plunger movable by the operation of the trap relatively to the cup and a relief-valve actuated by such movement to admit air between the plunger and the cup, substantially as shown and described.

708,997. **TIRE FOR VEHICLE-WHEELS.** MADISON C. CARTER, Bourne, Tex. Filed May 12, 1902. Serial No. 106,991. (No model.)

Claim.—1. In a wheel, the combination with felly-sections, of tubular tire-sections receiving the felly-sections and detachably connected at their ends, substantially as and for the purpose described.

2. In a wheel, the combination with felly-sections, of the tubular tire-sections surrounding and reinforcing the felly-sections and provided with projecting overlapping tongues, and fastening devices passing through the tongues and through the adjacent sections, substantially as described.

3. In a wheel, the combination with felly-sections, of the tubular tire-sections surrounding the felly-sections and forming a continuous tread and provided at the inner faces of the felly-sections with openings, substantially as described.

4. In a wheel, the combination with round felly-sections, of the tubular tire-sections provided at their inner sides with longitudinal openings and having recesses at one end and provided with projecting tongues located at the other end and fitting in the said recesses, and fastening devices passing through the tongues and through the adjacent sections, substantially as described.

708,998. **CATTLE-GUARD FOR RAILWAY-TRACKS.** HIRAM L. CHURCH, Chicago, Ill. Filed Sept. 7, 1901. Serial No. 74,596. (No model.)

Claim.—1. A cattle-guard for railway-tracks, comprising tread-rails; suspended and oscillating transverse supports for such tread-rails; and means for retaining the said rails loosely on such supports.

2. A cattle-guard comprising tread-rails having their lower edges downwardly convex in cross-section; transverse supports for such rails, on which their convex edges rest and are adapted to rock laterally; and means for retaining the tread-rails loosely on said supports, with lateral freedom for their rocking movement.

3. A cattle-guard comprising tread-rails having their lower edges downwardly convex; suspended and transverse oscillating supports for such rails, and means for retaining said rails loosely on their oscillating supports, with freedom for oscillating movement of the supports and lateral rocking movement of said rails.

4. A cattle-guard comprising tread-rails having their lower edges downwardly convex, whereby they are adapted to rock laterally on their supports; supports extending transversely under the convex edges of such tread-rails; and counterpoises depending rigidly from the tread-rails respectively, below the surface of the supports on which the said rails rock.

5. A cattle-guard comprising, in combination with the track-rails, brackets rigid with the rails adjacent thereto; sway-bars suspended from the upper ends of said brackets, extending transversely of the track between the rails, and tread-rails extending parallel with the track-rails, lodged on the sway-bars and loosely connected thereto, to permit said bars to swing laterally, giving the tread-rails longitudinal movement.

6. A cattle-guard for railway-tracks, comprising brackets rigid with the track-rails; sway-bars pivoted on such brackets and extending transversely with respect to the track-rails; tread-rails lodged on the sway-bars, having their lower edges downwardly convex, whereby they are adapted to rock laterally on said bars; and means connecting them loosely to the bars to permit such rocking movement of the tread-rails and oscillating movement of the sway-bars.

7. A cattle-guard for a railway-track, comprising two sway-bars pivotally supported near the level of the tread of the track-rail, depending therefrom, and extending parallel with each other transversely of the track; tread-rails lodged upon said transversely-extending sway-bars, alternate tread-rails having loose connections with one of the sway-bars, and the remaining alternate rails having like loose connections with the other sway-bars; whereby alternate tread-rails are adapted to be moved longitudinally in opposite directions.

8. A cattle-guard for railway-track comprising parallel sway-bars suspended so as to extend transversely of the track and to oscillate longitudinally thereof; tread-rails lodged on said sway-bars, alternate groups of such tread-rails being loosely connected to one sway-bar and the remaining alternate groups being loosely connected to the other sway-bar.

9. A cattle-guard for a railway-track, comprising upstanding brackets inside the track-rails respectively; links suspended from the upper ends of the said brackets and depending between the brackets; bars pivotally connected to the lower ends of said links, and extending across the track from link to opposite link; said transverse bars being shorter than the distance between the pivotal supports of the upper ends of the links, whereby the links are caused to trend away from their supporting-brackets respectively, affording room for lateral oscillation of the links, and longitudinal reciprocation of the transverse bars supported thereby, in addition to the lateral swinging movement of said bars.

10. A cattle-guard for a railway-track, comprising tread-rails and suspended and oscillating transverse supporting-bars for such tread-rails; brackets having feet or bases adapted to be secured to consecutive ties, and a connecting-bar extending parallel with the track-rail from side to side; links suspended from such connecting-bars, and at their lower ends carrying the said tread-rail-supporting bars; the said tread-rails lodged upon such supporting-bars being adapted to roll thereon and provided with counterpoises which swing in the interval between the ties.

11. A cattle-guard for a railway-track, comprising tread-rails and suspended, oscillating transverse supporting-bars for said rails, and brackets from which such bars are suspended lodged on the base-flanges of the track-rails.

12. A cattle-guard for a railway-track, comprising tread-rails and suspended and oscillating transverse supporting-bars for said rails, and brackets from which such bars are suspended, having the point at which the suspension is made overhung by the cap or tread of the rail.

13. A cattle-guard for a railway-track, comprising tread-rails and suspended, oscillating transverse supporting-bars for said rails, brackets from which such bars are suspended mounted between the track-rails, and links by which the bars are suspended from the upper part of the brackets, the latter being cut away between their supports at the lower part under the point of suspension of the links, permitting the latter to swing in between the supports.

708,999. ROLL MECHANISM. CHARLES H. DAVIS, New York, N. Y. Filed Sept. 9, 1901. Serial No. 74,738. (No model.)

Claim.—1. In a music-roll mechanism, for pneumatically-actuated musical instruments, the combination with the music-roll of a brake-wheel driven by said music-roll, a brake-shoe, adapted to engage said brake-wheel and a pneumatic actuating said brake-shoe by the pneumatic pressure which actuates said instrument.

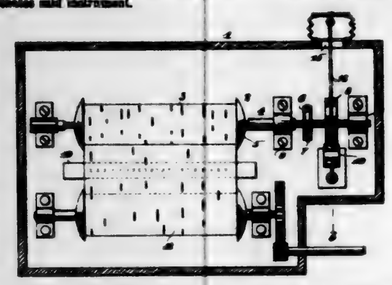

2. In a music-roll mechanism for pneumatically-actuated musical instruments, the combination with the music-roll, of a brake-wheel connected with said music-roll, and means for automatically applying frictional resistance to the revolution of said brake-wheel during the playing of the instrument.

3. In a music-roll mechanism for pneumatically-actuated musical instruments, the combination with the music-roll, of a brake-wheel connected with said music-roll, and means whereby frictional resistance is automatically applied to said brake-wheel during the playing of said instrument and automatically relieved therefrom during the rewinding of the music-roll.

709,000. SASH-CORD PULLEY. PETER DOSSE, Yonkers, N. Y. Filed May 14, 1902. Serial No. 107,242. (No model.)

Claim.—1. The combination in a sash-pulley of a face-plate having an upper and lower tongue cut from the face-plate itself, provided with means for supporting the wheel-frame and a hole made in one of the tongues for the insertion of a tool whereby a portion of the structure may be forced into the wood of the window-frame.

2. The combination in a sash-pulley of a face-plate having a tongue cut therefrom and arranged at substantially right angles thereto, a portion of the tongue being slit so as to afford a part adapted to be forced into the wood of the frame for the confinement of the pulley.

3. The combination in a sash-pulley of a face-plate having a tongue cut therefrom and arranged at substantially right angles thereto, an inclined recess at or near the junction between the tongue and the face-plate whereby the sides of the wheel-supporting frame will be thrown outwardly or bell-mouthed, for the purpose set forth.

4. The face-plate of a pulley having one end bent downwardly at an angle adapted to enter a similarly-shaped recess in the wood of the frame and a part of the metal constituting the face-place adapted to be forced into the wood of the frame after the pulley is set.

5. In a sash-pulley the combination of a wheel-supporting frame embodying side bars, each made of angular form, whereby their ends are adapted to engage with and be supported by devices attached to the face-plate and located adjacent to the face-plate, said side bars having a projecting central part adapted to properly support the pulley-wheel.

6. In a sash-pulley the combination of a wheel-supporting frame embodying two side bars, the edges whereof are reinforced by flanges or ribs and the ends whereof are adapted to engage with tongues cut from the face-plate and arranged at substantially right angles thereto and said tongues themselves.

7. In a sash-pulley the combination of a wheel-supporting frame embodying side bars having a hub-shaped recess formed at or near their central portion adapted to receive a similarly-shaped hub formed on the wheel, and flanges or ribs formed on the edges of the said side frames whereby they are stiffened.

8. In a sash-pulley the combination of a wheel made in two parts fastened together and having a hub at its central portion and a wheel-supporting frame embodying two lateral bars having a hub-shaped recess formed at or near their central part and integral therewith adapted to receive the hub of the wheel and a rivet connecting the two side bars together through an opening in the hub of the wheel.

709,001. PROCESS OF MANUFACTURING ELECTRICAL CONDUCTORS. LOUIS W. DOWNES, Providence, R. I. Filed Feb. 17, 1902. Serial No. 94,181. (No specimens.)

Claim.—1. The herein-described process of producing insulated electrical conductors consisting in covering the conductor with a suitable insulating material and subjecting the insulation to pressure alternately applied and released, thereby compacting the insulation on the conductor.

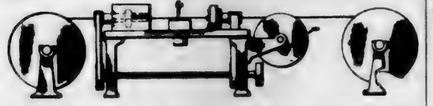

2. The herein-described process of producing insulated electrical conductors consisting in covering the conductor with a suitable insulating material and subjecting the insulation to pressure alternately applied and released in rapid succession, thereby compacting the insulation on the conductor.

3. The herein-described process of producing insulated electrical conductors consisting in covering the conductor with a suitable insulating material and subjecting the insulation to pressure alternately applied and released in rapid succession, the application of the pressure being equally distributed over the entire surface of the insulation, thereby uniformly compacting the insulation on the conductor.

4. The process of producing electrical conductors consisting in covering a conductor with a suitable insulating material, and subjecting the covered conductor to a rapid succession of blows uniformly distributed over its surface.

5. The process of producing electrical conductors consisting in covering a conductor with a suitable insulating material, and swaging the covered conductor thereby compacting the insulation.

6. The process of producing insulated electrical conductors consisting in applying an adhesive substance to a conductor, covering the conductor with a suitable insulating material, and subjecting the covered conductor to pressure alternately applied and released in rapid succession, thereby compacting the insulation on the conductor.

7. The process of producing insulated electrical conductors consisting in applying an adhesive substance to a conductor, covering the conductor with a suitable insulating material, heating the covered conductor to a temperature sufficient to melt the adhesive substance and subjecting the covered conductor to pressure alternately applied and released in rapid succession thereby compacting the insulation on the conductor.

8. The process of producing insulated electrical conductors consisting in applying an adhesive substance to a conductor, covering the conductor with a suitable insulating material, capping the insulating-covering to remove irregularities and lay the nap all in one direction and subjecting the covered conductor to pressure alternately applied and released in rapid succession thereby compacting the insulation on the conductor.

9. The process of producing insulated electrical conductors consisting in covering the conductor with a suitable insulating material, moistening the insulation and subjecting the covered conductor to pressure alternately applied and released in rapid succession, thereby compacting the insulation on the conductor.

10. The process of producing insulated electrical conductors consisting in applying an adhesive substance to a conductor, covering the conductor with a suitable insulating material, heating the covered conductor to a temperature sufficient to melt the adhesive substance, capping the insulating-covering to remove irregularities and lay the nap all in the same direction, moistening the insulating-covering and subjecting the covered conductor to pressure alternately applied and released in rapid succession thereby compacting the insulation on the conductor.

709,002. GUIDE-POCKET FOR RIVET SETTING MACHINES. ROBERT DRAPER, Waltham, Mass., assignor to Judson L. Thomson Manufacturing Company, Waltham, Mass., a Corporation of Maine. Filed Dec. 10, 1901. Serial No. 85,945. (No model.)

Claim.—1. A guide-pocket for rivet-setting machines comprising two rivet-guiding fingers, each of said fingers provided with a vertical rivet-guiding recess, one of said recesses being of larger area in cross-section than the other, and the two recesses forming together a cylindrical guide-passage.

2. A guide-pocket for rivet-setting machines comprising two rivet-guiding fingers, each of said fingers provided with a vertical rivet-guiding recess, the periphery of one of said recesses being greater than a semicircle and the periphery of the other recess being less than a semicircle, the two recesses forming together a cylindrical guide-passage.

3. A guide-pocket for rivet-setting machines comprising two rivet-guiding fingers, one of said fingers provided with a vertical rivet-guiding recess of sufficient area to receive more than one-half the head of one of said rivets, the other of said fingers provided with a vertical recess of an area in cross-section less than one-half the head of one of said rivets, the two recesses forming together a vertical cylindrical guide-passage.

4. A guide-pocket for rivet-setting machines comprising two rivet-guiding fingers, each of said fingers provided with a vertical rivet-guiding recess, one of said recesses being of larger area in cross-section than the other, the two recesses forming together a cylindrical guide-passage, one of said fingers rigidly supported upon said machine and the other finger spring-supported thereon.

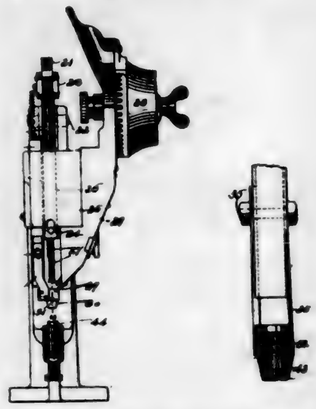

5. A guide-pocket for rivet-setting machines comprising two rivet-guiding fingers, each of said fingers provided with a vertical rivet-guiding recess, the two recesses forming together a cylindrical guide-passage, and a lateral entrance-passage leading into one of said recesses.

6. A guide-pocket for rivet-setting machines comprising two rivet-guiding fingers, each of said fingers provided with a vertical rivet-guiding recess, the two recesses forming together a cylindrical guide-passage, and a lateral entrance-passage leading into one of said recesses, the bottom wall of said entrance-passage being beveled downwardly into said recess for the purpose specified.

7. A guide-pocket for a machine for setting rivets comprising two rivet-guiding fingers, one of said fingers provided with a recess of sufficient area in cross-section to receive more than one-half the head of one of said rivets, the other of said fingers provided with a recess of an area in cross-section less than one-half the head of one of said rivets and having a rivet-supporting ledge at the upper end in said recess.

709,003. PROCESS OF PRODUCING SOLUBLE MILK-ALBUMEN. HENRY V. DUNHAM, New York, N. Y. Filed Oct. 23, 1901. Serial No. 80,247. (No specimens.)

Claim.—1. The herein-described process for producing soluble milk-albumen, consisting in reducing the whey containing the albumen and milk-sugar to the form of a heavy syrup, by evaporation at temperatures below the coagulating-point of the albumen, then separating the thickened or concentrated liquid from the crystallized milk-sugar therein, then precipitating the albumen from the concentrated liquid by the addition to such concentrated liquid of a small percentage of acid, and then removing the precipitated albumen from the concentrated liquid from which it has been precipitated.

2. The herein-described process for producing soluble milk-albumen from whey, said process consisting in neutralizing the acidity of the whey, then reducing the whey containing the albumen and milk-sugar to the form of a heavy syrup, by evaporation at temperatures below the coagulating-point of the albumen, then separating the thickened or concentrated liquid from the crystallized milk-sugar therein, then precipitating the albumen from the concentrated liquid by the addition to such concentrated liquid of a small percentage of hydrochloric acid, and then removing the precipitated albumen from the concentrated liquid from which it has been precipitated.

3. The herein-described process for producing soluble milk-albumen, consisting in reducing the whey containing the albumen and milk-sugar to the form of a heavy syrup by evaporation at temperatures below the coagulating-point of the albumen, then separating the thickened or concentrated liquid from the crystallized milk-sugar therein, then precipitating the albumen from the concentrated liquid by the addition to such concentrated liquid of a small percentage of acid, then removing the precipitated albumen from the concentrated liquid from which it has been precipitated, by straining, then removing the excess of acid from the albumen by washing the latter, and then finally drying the albumen to put it in its preferable commercial condition.

709,004. GENERATOR FOR CHLORIN GAS. THOMAS EDWARDS, Sebastopol, Ballarat, Victoria, Australia. Filed Sept. 28, 1901. Serial No. 76,867. (No model.)

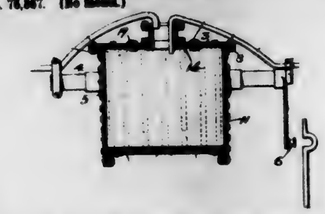

Claim.—1. In combination, the casing, the cover having openings, a lead lining having washers extending around the edges of the openings, a dome over one of the openings seated upon the lead washer, and a clamped cover on the washer of the other opening, substantially as described.

2. In combination, the casing having a cover with an opening, a lead lining having integral rivets headed on the outside of the cover, and washers extending around the edge of the opening, substantially as described.

3. A generator for chlorin gas and the like of semicylindrical form having a flat top, journals near said flat top projecting laterally and upon which the generator may rock, a dome surmounting the said flat top, a gas-pipe leading therefrom and a covered opening in the flat top to one side of the dome, substantially as described.

709,005. CARD OR SHEET PLATEN FOR TYPE-WRITING MACHINES. ROBERT J. FISHER, Athens, Tenn., assignor to the Fisher Book Typewriter Company, Cleveland, Ohio, a Corporation of Delaware. Filed Apr. 30, 1901. Serial No. 58,182. (No model.)

Claim.—1. The combination with a flat platen and the main tracks or guides, of a work-holder disposed between said tracks or guides and coöperating with the platen to clamp the work thereon, said work-holder having guiding means for a card or sheet.

2. The combination with a flat platen and the main tracks or guides, of a work-holder disposed between the tracks or guides and comprising members coöperating with the platen to clamp the work thereon, said members having holding-guides to guide and hold a card or sheet.

3. The combination with a flat platen, of a work-holder comprising members coöperating with the platen to clamp the work thereon, said members having adjustable work-holding guides to guide and hold cards or sheets of different thicknesses.

4. The combination with a flat platen, of a work-holder comprising members coöperating with the platen to clamp the work thereon, said members having opposed self-adjusting holding-guides for the reception of a card or sheet to guide the same to the printing position.

5. The combination with a platen, of a work-holder comprising members coöperating with the platen to clamp the work thereon, said members having guiding means disposed out of the plane of the bottom of the members to guide a card or sheet to the printing position.

6. The combination with a platen, of a work-holder comprising members coöperating with the platen to clamp the work thereon, said members having work-holding guides disposed in a plane above the bottom of the members and designed to guide a card or sheet to the printing position and to retain it in such position during the printing operation.

7. The combination with a platen, of a work-holder comprising members coöperating with the platen to clamp the work thereon, each of said members being provided in a plane above its bottom with an open-ended longitudinal guideway for the reception of the edge of a card or sheet.

8. The combination with a flat platen and the tracks or guides, of a bodily-movable work-clamp coöperating with the platen between the tracks or guides to clamp the work thereon and formed with a guide along which a work-sheet may be guided to the printing position.

9. The combination with a platen, of a work-holder comprising members movable toward and away from the platen to clamp the work between said members and the writing-surface of the platen, the members of the work-holder being formed with guiding means disposed in opposed relation and designed to guide a card or sheet to the printing position.

10. The combination with a platen, of a work-holder comprising members movable toward and away from the platen and designed to clamp the work against the writing-surface thereof, said members being provided with open-ended guideways for the reception of the edges of a card or sheet.

11. The combination with a flat platen and the tracks or guides, of a work-holder disposed between the tracks or guides and comprising members movable toward and away from the platen and designed to clamp the work-sheet against the writing-surface thereof, said clamping members being relatively adjustable to accommodate work of different sizes.

12. The combination with a flat platen and the tracks or guides, of a work-holder disposed between the tracks or guides and comprising members coöperating with the platen to clamp the work thereon, said members being adjustable relatively to accommodate work of different sizes and having guiding means for a card or sheet.

13. The combination with a flat platen and the tracks or guides, of a work-holder disposed between the tracks or guides and comprising members movable toward the platen to clamp the work against the printing-surface thereof, said members having opposed guideways for the edges of the card or sheet, and one of said members being adjustable over the platen to accommodate work of various sizes.

14. The combination with a platen, of a work-holder comprising members movable toward the platen to clamp the work against the writing-surface thereof and having opposed open-ended guideways located at their inner edges for the reception of the edges of a card or sheet, one of said members being movable over the face of the platen to accommodate work of various sizes.

15. The combination with a flat platen and the tracks or guides, of a hinged work-holder coöperating with the platen between the tracks or guides to clamp the work and having guiding means for a card or sheet.

16. The combination with a flat platen and the tracks or guides, of a work-holder coöperating with the platen between the tracks or guides to clamp the work, and bodily movable to different positions over the platen to accommodate work of various sizes, said holder having holding and guiding means for a card or sheet.

17. The combination with a flat platen and the tracks or guides, of a work-holder disposed longitudinally of the platen between the tracks or guides and independently movable upon a longitudinal axis, said work-holder having holding and guiding means for a card or sheet.

18. The combination with a flat platen and the tracks or guides, of a work-holder disposed between the tracks or guides and comprising opposed members movable upon longitudinal axes, and means for retaining said members against movement.

19. The combination with a flat platen and the tracks or guides, of a work-holder disposed between the tracks or guides and comprising members movable upon longitudinal axes to clamp the work against the writing-surface of the platen, and means for retaining said members in their elevated and depressed positions.

20. The combination with a flat platen and the tracks or guides, of a work-holder disposed between the tracks or guides and comprising members movable upon longitudinal axes located at the outer longitudinal edges of the members, said members being designed to coöperate with the platen to clamp the work thereon and arranged parallel with the tracks or guides.

21. The combination with a platen, of a work-holder having a longitudinally-disposed member movable upon a longitudinal axis and coöperating with the platen to clamp the work thereon, said member having a guide located along its free edge to guide a card or sheet in its movement to the printing position.

22. The combination with a flat platen and the tracks or guides, of a work-holder comprising opposed members disposed longitudinally of the platen between the tracks or guides and hinged at their outer longitudinal edges, and opposed longitudinal guides at the opposed inner edges of the members for the reception of the edges of the card or sheet to guide the latter to the printing position.

23. The combination with a flat platen and the tracks or guides, of a work-holder located between the tracks or guides and comprising members disposed longitudinally of the platen and hinged at their outer longitudinal edges, and opposed longitudinal guides at the inner edges of the members for the reception of the edges of a card or sheet, said members being relatively adjustable to accommodate work of different sizes.

24. The combination with a flat platen and the tracks or guides, of a work-holder located between the tracks or guides and comprising members coöperating with the platen to clamp the work thereon and having guiding means for a card or sheet, one of said members being hinged for movement on a longitudinal axis.

25. In a type-writing machine, the combination with the platen and the main tracks or guides for the traveling printing mechanism, of a longitudinally-hinged work-holder disposed between the tracks or guides and coöperating with the platen to clamp the work thereon.

26. In a type-writing machine, the combination with the platen and the main tracks or guides for the traveling printing mechanism, of a work-holder disposed between the tracks or guides and comprising members independently hinged for movement on longitudinal axes and coöperating with the platen to clamp the work thereon.

27. The combination with the platen and the tracks or guides, of a work-gage and a work-holder coöperating therewith, said work-holder comprising a combined sheet-clamp and card-guide, coöperating with the platen to clamp the sheet thereon.

28. The combination with a platen, and a gage device carried by the platen and disposed to aline the work thereon, of a work-holder comprising a longitudinally-hinged member coöperating with the gage and platen to clamp the work in the printing position.

29. The combination with a platen and the main tracks or guides for the traveling printing mechanism, of a gage device carried by the platen to aline the work, and a work-holder mounted on the platen between the tracks or guides and comprising a hinged member coöperating with the work-gage and with the platen to clamp the work upon the writing-surface of the latter.

30. The combination with a platen and the main tracks or guides for the traveling printing mechanism, of a gage device carried by the platen and disposed to aline the work, and a work-holder comprising a member hinged independently of the tracks or guides and coöperating with the work-gage.

31. The combination with the platen and the main tracks or guides for the traveling printing mechanism, of a work-gage comprising an alined series of gage projections, and a work-holder comprising a member hinged independently of the tracks or guides for movement toward and away from the platen, said member being disposed for coöperation with the gage-pins to clamp a work-sheet in its proper printing position against the platen.

32. The combination with a platen and the main tracks or guides for the traveling printing mechanism, of a gage device comprising an alined series of gage-pins projecting above the surface of the platen, and a work-holder disposed between the tracks or guides and independently hinged for movement on a longitudinal axis, said member being apertured for the reception of the gage-pins and coöperating with the platen to clamp the work thereon.

33. The combination with a platen, and a gage device disposed to aline the work, of a work-holder comprising a hinged member coöperating with the gage device and platen and disposed to clamp the work against the writing-surface of the latter, said member being provided with guiding means for a card or sheet.

34. The combination with a platen having gage-pins, of a work-holder comprising a hinged member coöperating with the platen to clamp the work thereon and also coöperating with the gage-pins, said member being provided with a guide defined between an apertured base, and a yielding upper section formed with openings, said gage-pins being disposed to pass through the apertures in the base and the openings in the yielding section of the guide.

35. The combination with a platen, of a work-holder comprising a member coöperating with the platen to clamp the work thereon, and an adjustable carriage for the member, said carriage comprising slides disposed at opposite ends of the member and said member being movable with respect to the carriage.

36. The combination with a platen, of a work-holder comprising a member coöperating with the platen to clamp the work thereon, and an adjustable carriage for said member, said carriage comprising a pair of connected slides each having interfitting engagement with the opposite edges of the platen.

37. In combination with the platen, and a gage device, the work-holder coöperating with the gage device to aline and clamp the work upon the platen, said work-holder being composed of members having opposed guides for the edges of a card or sheet.

38. In combination with the platen, the combined card-guide and sheet-clamp composed of two members, each bodily movable toward and away from the platen to clamp or release the work and having opposed guides disposed to engage the edges of the work-sheet to guide the same to the printing position.

39. In combination with the flat platen and the tracks or guides, of the swinging card-guide and sheet-clamp mounted on the platen and coöperating therewith to clamp or release the work and having a guide disposed to engage the edge of the work-sheet to guide the same to the printing position.

40. In combination with the flat platen and the tracks or guides, the work-holder arranged over the platen and provided with guiding and holding means for the opposite edges of a card or sheet and bodily movable toward and away from the platen to clamp a sheet between its under surface and the platen.

41. In combination with the flat platen, the tracks or guides, and a gage device, of the combined card-guide and sheet-clamp coöperating with the gage to aline and hold the work.

709,006. STEAM-GENERATOR OR WATER-HEATER. BERNARD A. OSBURN, Cleveland, Ohio. Filed Apr. 7, 1902. Serial No. 101,734. (No model.)

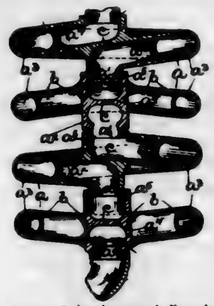

Claim.—1. A heater of the character indicated, comprising several sections arranged at different elevations respectively, and each section provided with an induction-port or fluid-inlet arranged at the bottom and centrally of the section and an upwardly-discharging eduction-port or fluid-outlet arranged at the top and centrally of the section, and each section, except the lowermost section, communicating, at its induction-port, with the eduction-port of the section next below, and each section also having the following: a lower sloping passage-way, an upper sloping passage-way and two intermediate sloping passage-ways, with the lower passage-way and the upper passage-way arranged at opposite sides, respectively of the ports of the said section, with the lower passage-way extending laterally outwardly and upwardly from the induction-port, with the upper passage-way arranged a suitable distance above the upper end of the lower passage-way and extending laterally outwardly and downwardly from the eduction-port, and with the two intermediate passage-ways arranged at opposite sides respectively of the lower and upper passage-ways and connecting the upper end of the lower passage-way with the lower end of the upper passage-way and gradually sloping upwardly from the lower passage-way.

2. A heater of the character indicated, comprising several sections arranged at different elevations respectively, and each section provided with an eduction-port and an induction-port arranged at the top and bottom respectively and centrally of the section, and each section, except the lowermost section, communicating, at its induction-port, with the eduction-port of the section next below, and adjacent sections having mutually-engaging threads at their communicating parts, and each section also having the following: a lower sloping passage-way, an upper sloping passage-way and two intermediate sloping passage-ways, with the lower passage-way and the upper passage-way arranged at opposite sides respectively of the ports of the said section, with the lower passage-way extending laterally outwardly and upwardly from the induction-port, with

the upper passage-way arranged a suitable distance above the upper end of the lower passage-way and extending laterally outwardly and downwardly from the ejection-port, and with the two intermediate passage-ways arranged at opposite sides respectively of the lower and upper passage-ways and connecting the upper end of the lower passage-way with the lower end of the upper passage-way and gradually sloping upwardly from the lower passage-way.

709,007. GAME APPARATUS. WILLIAM GIBB, Boston, Mass. Filed Dec. 21, 1901. Serial No. 86,730. (No model.)

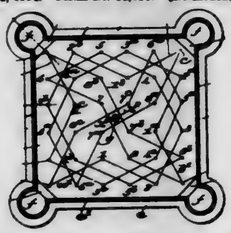

Claim.—1. A game apparatus comprising a field having thirty-six putting-holes distributed thereover in six rows, six holes in each row connected by an endless course suitably indicated thereon requiring the ball or movable device to pass diagonally from any one of said holes to the right or to the left to another hole in said course, passing between two holes in one of the rows of holes made across or lengthwise of the field.

2. A game apparatus comprising a playing-field having thirty-six putting-holes distributed thereover in six rows, six holes in each row, said holes being suitably indicated to designate four courses, all connected as an endless course, the successive holes in each course following diagonally to the right or left to a hole in another parallel row of putting-holes.

3. A game apparatus having a playing-field provided with thirty-six putting-holes and united to produce an endless course connecting all of said putting-holes in the manner set forth, said endless course consisting of four similar paths united substantially as indicated.

4. A game apparatus having a playing-field provided with putting-holes distributed thereon and composed of separate paths arranged in an endless course, the separate paths being designated in suitable manner that they may be distinguished from the remaining paths making up the endless course.

5. A game apparatus having a playing-field provided with putting-holes distributed thereon and composed of separate paths arranged in an endless course, the separate paths being designated in suitable manner that they may be distinguished from the remaining paths making up the endless course, and bankers communicating with the playing-field.

709,008. KNIFE, CUTTER, OR DIEING-OUT INSTRUMENT. JULIAN H. GIBSON, JOSIAH GIBSON, ARTHUR J. GIBSON, and SYDNEY A. GIBSON, Leicester, England. Filed Dec. 9, 1901. Serial No. 85,294. (No model.)

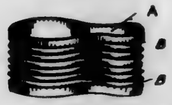

Claim.—A die, cutter, or dieing or cutting out instrument A having ribs, corrugations or indentations B on its outer walls, and its cutting edge in line with the interior walls thereof, substantially as described.

709,009. FREIGHT-CAR. HORACE S. GODFREY, Chicago, Ill. Filed Sept. 20, 1901. Serial No. 75,998. (No model.)

Claim.—1. In a car having a bottom formed in part of tilting sections, means for securing a tight joint between the outer edges of said sections and the sides of the car, said means consisting of yieldingly-supported plates secured along the said edges of said sections, substantially as set forth.

2. In a car having a bottom formed in part of tilting sections, means for securing a tight joint between the outer edges of said sections and the sides of the car, said means secured to the said sections and consisting of yieldingly-supported plates overlying the edges of said sections and abutting against the side walls of the car, substantially as set forth.

3. In a car having a bottom formed in part of tilting sections, means for securing a tight joint between the edges of the sections and the sides of the car, consisting of slidable plates spring-supported on the tilting sections and abutting against the inner walls of the car, as set forth.

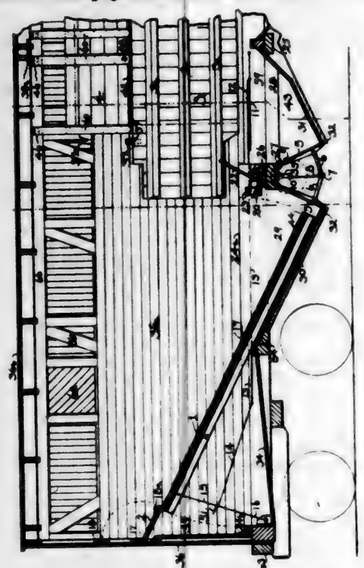

4. In a car having a bottom formed of movable sections, means for securing a tight joint between the edges of the sections and the walls of the car, consisting of angle-plates slidingly and yieldingly supported on the movable sections.

5. In a car having a fixed hopper, a bottom or floor formed of tilting sections adapted when moved to an inclined position to form hopper-bottoms extending from the hopper-doors to near the ends of the car, and of hinged sections adapted when in horizontal position to cover the fixed hopper, and when raised to form grain-doors, and means for effecting a tight joint between the edges of the tilting sections and the sides of the car, said means being secured to the edges of said tilting sections.

6. In a car, a floor composed of tilting sections and of hinged sections, means for effecting a grain-tight joint between the sides of the car and the edges of the tilting sections, and means for supporting the tilting sections in a horizontal position, said means being automatically operated by the lowering of the hinged sections, substantially as set forth.

709,010. LOCKING DEVICE. JOEL W. GOSER, Kinderhook, Ala. Filed July 3, 1901. Serial No. 66,994. (No model.)

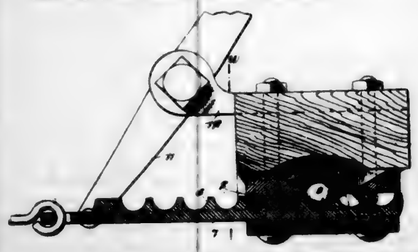

Claim.—1. In a locking device, a stationary member having an inclined runway, an abutment opposite the runway and having an inclined upper surface, the said stationary member also having an opening extending underneath said runway and abutment, there being a space between the runway and abutment, a locking-ball movable into the stationary member, and a rack member having concaved notches to receive the ball, substantially as specified.

2. In a locking device, a keeper having an inclined runway and an abutment spaced from and opposite the runway, a locking-ball movable into the keeper, and a rack member, the adjacent sides of teeth thereof being carved to engage closely against the ball, substantially as specified.

3. In a locking device, a fixed keeper having an inclined runway, a rack member movable in said keeper on a substantially horizontal plane, a ball in said fixed portion or member for engaging with the rack, and lifting device carried by the fixed portion for raising the ball onto the runway, substantially as specified.

709,011. MARKING-MACHINE. FERDINAND J. HAGEN, New York, N. Y. Filed Oct. 18, 1901. Serial No. 79,077. (No model.)

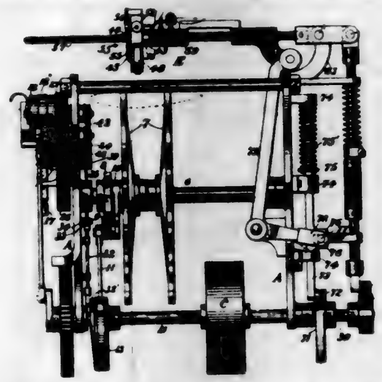

Claim.—1. In a marking-machine, a device for carrying or holding the objects to be marked, and means for imparting an intermittent progressive motion thereto, a marking-material-supply device, a slidable marking-head, and means for carrying the same to a position before first one of said devices and then the other, and means for moving said head toward and from each of said devices.

2. In a marking-machine, a device for carrying or holding the objects to be marked, and means for imparting an intermittent progressive motion thereto, a marking-material-supply device, a slidable marking-head, and means for moving the same horizontally to a position before first one of said devices and then the other, and means for oscillating said head transversely of its other movements to move the same toward and from each of said devices.

3. In a marking-machine, a device for carrying the objects to be marked, and means for imparting a rotary intermittent motion thereto, a marking-material-supply device, a slidable marking-head, and reciprocatory and oscillatory mechanisms whereby the said head is carried to a position before each of said devices and toward and from the same.

4. In a marking-machine, means for carrying the objects to be marked, means for supplying marking material, a marking-head, cam-actuated lever mechanism for reciprocating said head to a position before first one of said means and then the other, and similar mechanism for oscillating the head toward and away from each of said means.

5. In a marking-machine, the combination of a carrier for the objects to be marked, effective to be advanced step by step; means for so advancing the same; means for supplying marking material, located adjacent to the carrier; a marking-head; means for supporting the marking-head, traversing the supply means and carrier; means effective to move said supporting means toward and from said supply means and carrier; and means effective to reciprocate the head on such supporting means.

6. In a marking-machine, the combination of framework; a driving-shaft carried thereby; a carrier mounted on the framework and effective to be advanced step by step; means operated by the driving-shaft for so advancing the carrier; marking-material-supply means mounted adjacent thereto; a shaft pivoted above said supply device and said carrier; means operated by the driving-shaft for oscillating said shaft on its pivot; a printing-head mounted on said shaft; and means operated by the driving-shaft for reciprocating said head on said shaft.

7. In a marking-machine, the combination of a head comprising a marking-strip effective to wrap about an object to be marked; means to so wrap the same, operative partly by such strip; and means comprising a plunger, operative by the object and coöperative with said strip to operate the wrapping means; a shaft, and a hub thereon carrying the head and provided with a bore having flaring ends and effective to permit the same to rock upon said shaft.

8. In a marking-machine, the combination with a shaft; a head comprising a marking-strip effective to wrap about an object to be marked; means to so wrap the same, operative partly by such strip; means comprising a plunger, operative by the object and coöperative with said strip, to operate the wrapping means; and a hub carrying the head and provided with a bore having flaring ends effective to permit the same to rock upon said shaft.

9. In a marking-machine, the combination of a shaft; a head comprising a marking-strip effective to wrap about an object to be marked; means to so wrap the same, operative partly by such strip; means comprising a plunger operative by the object and coöperative with said strip to operate the wrapping means; a hub carrying said head upon said shaft, and effective to rock thereon; a sleeve mounted on said shaft; and adjustable means connecting said hub and sleeve.

10. In a marking-machine, the combination of a shaft, a head comprising a marking-strip effective to wrap about an object to be marked; means to so wrap the same, operative partly by such strip; means comprising a plunger, operative by the object and coöperative with said strip, to operate the wrapping means; a hub provided with a bore having flaring ends and effective to permit the same to rock upon said shaft; a carrier comprising circular members having object-receiving serrations; and means for advancing the carrier step by step.

11. In a marking-machine, the combination of a plurality of marking devices; a plurality of means for supplying marking material thereto; means for intermittently moving such supply means; means comprising a roller and a leaf for intermittently feeding marking material to such supply means; and means for intermittently operating such leaf.

12. In a marking-machine, the combination of a carrier for the objects to be marked, effective to be advanced step by step; means for so advancing the carrier; means for supplying marking material located adjacent to the carrier; a marking-head comprising a flexible marking-strip effective to wrap about an object to be marked, means to so wrap the same operative partly by said strip, and means operative by the object and coöperative with said strip to operate the wrapping means, and comprising a plunger and a shoe or platen carried thereby; means embodying a spring effective to apply tension to said strip, means for regulating the pressure of such spring; a hub or collar carrying the head and provided with a bore having flaring ends and effective to permit the same to rock upon a shaft; a shaft upon which said hub is mounted, traversing the supply means; a sleeve mounted on the shaft; adjustable means connecting said hub and sleeve; means connecting said shaft to the framework, embodying an arm and pivot; and means embodying an adjustable bar and roller and a cam for oscillating said shaft on its pivot; and means embodying a bar, roller and cam and a bell-crank lever for moving said head to and fro on said shaft.

13. The combination of a marking-strip effective to wrap about an object to be marked, means comprising side members effective to so wrap the same, and operative by said strip, and pinions secured to said side members and in mesh.

14. The combination of a marking-strip effective to wrap about an object to be marked, means comprising side members effective to so wrap the same and operative by said strip, and pinions secured to said side members and in mesh.

15. The combination of a marking-strip effective to wrap about an object to be marked; members effective to so wrap the same and operative by said strip; pinions in mesh secured to said members; and toggle-joints connecting said members.

16. The combination of a marking-strip effective to wrap about an object to be marked; means to so wrap the same, operative partly by such strip; and means comprising a plunger operative by the object and coöperative with said strip to operate the wrapping means.

17. The combination of a marking-strip effective to wrap about an object to be marked; means to so wrap the same, operative partly by said strip; and means operative by the object and coöperative with said strip to operate the wrapping means, and comprising a plunger, and a shoe or platen carried thereby.

18. In a marking device, the combination of yielding members; a marking-strip carried thereby; means for applying tension to such strip; and means for regulating such tension thereof.

19. In a marking device, the combination of a flexible marking-strip; means for yieldably supporting the ends of such strip; means embodying a spring effective to apply tension to said strip; and means for regulating the pressure of such spring.

20. In a marking-machine, the combination of supporting means; a marking-strip; side members pivoted to the supporting means and carrying said marking-strip below such pivotal point; a toggle-joint uniting said members thereabove; and means effective upon said member through said toggle-joint to bring the lower ends toward each other.

21. In a marking-machine, the combination of supporting means a marking-strip; members pivoted to said supporting means and carrying said marking-strip therebelow; and a toggle-joint uniting said members

thereabove, said strip and toggle effective to bring the lower ends of such strip toward each other and thereby flex such strip.

22. In a marking-machine, the combination of a frame; pinions pivoted to said frame and in mesh with each other; side members carried by the pinions; a flexible marking-strip carried by said side members; a toggle-joint connecting the side members; and a shoe or platen connected with said toggle and effective upon coming in contact with the object to be marked to operate the toggle and cause the side members to approach each other and to flex the strip, and, upon such members completely wrapping the strip about the object, to afford a platen for such strip.

23. In a marking device, the combination of a frame; pinions pivoted to said frame and in mesh with each other; side members carried by the pinions; a flexible marking-strip carried by said members below said pinions; a toggle-joint connecting the ends of said side members above said pinions; a plunger attached to the toggle-joint; a shoe or platen carried by the plunger above the marking-strip and effective upon the strip coming in contact with it and the object to be marked to operate the toggle-joint and cause the strip-bearing ends of said members to approach each other and to flex the strip, and, upon said member completely wrapping the strip about the object, to afford a platen for such strip.

24. In a marking device, the combination of a frame; pinions pivoted to said frame and in mesh with each other; side members carried by the pinions; a flexible marking-strip carried by said members below said pinions; a toggle-joint connecting the ends of said side members above said pinions; a plunger attached to the toggle-joint; a shoe or platen carried by the plunger above the marking-strip; and adjustable means for applying tension to the strip.

25. In a marking device, the combination of a frame; pinions pivoted to said frame and in mesh with each other; side members carried by the pinions; a flexible marking-strip carried by said members below said pinions; a toggle-joint connecting the ends of said side members above said pinions; a plunger attached to the toggle-joint; a shoe or platen carried by the plunger above the marking-strip and secured to one of the same; a screw-head on the pin; a pin passing through the arms; and a spring between the screw-head and one of the arms.

26. A marking-head comprising a yieldable marking-strip, a shaft, and a hub thereon carrying the head and provided with a bore having flaring ends whereby the same may be rocked lengthwise of said shaft.

27. A marking-head; a shaft; a hub carrying said head mounted upon said shaft and effective to rock thereon; a sleeve mounted on said shaft; and adjustable means connecting said hub and sleeve.

28. A marking-head; a shaft; a hub carrying said head and provided with a bore having flaring ends and effective to rock on said shaft; a sleeve mounted on said shaft; an adjustable means connecting said hub and sleeve comprising an arm provided with slots secured to one of such members; a pin on the other of said members entering one of said slots; and a set-screw effective to adjust and maintain in its adjusted position said arm.

29. In a marking-machine, a rotatable device having notches for receiving and holding the objects to be marked, and means for imparting a step-by-step movement to said device, a marking-material-supply device, a slidable marking-head, and means for carrying the same to a position before first one of said devices and then the other, and means for moving said head toward and from each of said devices.

709,012. GRAIN-ELEVATING MACHINE. MARTIN W HEYNEMA, near Rankin, Ill. Filed June 8, 1901. Serial No. 63,861. (No model.)

Claim.—1. In a machine of the class described, the combination of a frame provided at its bottom with wheels, a conveyer carried by the frame, said frame being adapted to be placed within a wagon-body, an operating-lever fulcrumed on the frame, and means carried by the operating-lever for engaging the wagon-body to advance the frame, substantially as described.

2. In a machine of the class described, the combination of a frame designed to be mounted within a wagon-body, and provided with means for engaging the same, whereby the frame is guided in its forward movement, a conveyer carried by the frame, and means for advancing the frame, substantially as described.

3. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a conveyer carried by the frame for removing the contents of the wagon-body, a ratchet-bar mounted on the wagon-body, a lever fulcrumed on the frame, a pawl depending from the lever and engaging the ratchet-bar, means for limiting the forward movement of the pawl, and a spring for actuating the pawl for returning the same to its initial position, substantially as described.

4. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a conveyer carried by the frame and adapted to remove the contents of the said body, a foot-lever fulcrumed on the frame and provided with a pawl for actuating the same, a gear-wheel located above the foot-lever and having a handle, and gearing connecting the gear-wheel with the conveyer, substantially as described.

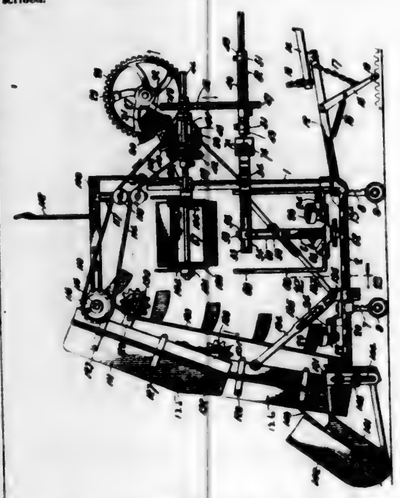

5. In a machine of the class described, the combination of a frame provided with wheels and designed to be mounted in a wagon-body, the spring-actuated antifriction-wheels located at opposite sides of the frame and arranged to engage the sides of the wagon-body, a conveyer carried by the frame, and means for advancing the frame in the wagon-body, substantially as described.

6. In a machine of the class described, the combination of a frame designed to be arranged on a wagon-body and provided with a conveyer, and a hoisting device connected with the frame and adapted to support the same in an elevated position to permit a wagon to be driven to and from the same, substantially as described.

7. In a machine of the class described, the combination of a frame designed to be arranged on a wagon-body and provided with a conveyer, and a hoisting device connected with the said frame and adapted to support the same in an elevated position and provided with a frame composed of uprights spaced apart to permit a wagon to be driven between them, and a connecting top portion, substantially as described.

8. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing the frame therein, a front conveyer mounted on the frame, an inner transverse conveyer carried by the frame and arranged to receive material from the front conveyer, and an outer conveyer extending from the inner conveyer and designed to be mounted on a bin or crib, substantially as described.

9. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing the frame on the same, a conveyer carried by the frame, an outer conveyer designed to be mounted on a crib or bin and adjustably supported, whereby it is adapted to accommodate itself to the movement of the frame, and means for connecting the said conveyers, substantially as described.

10. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing it thereon, a front conveyer carried by the frame, a scoop arranged at the lower end of the front conveyer, and a hinged apron or section arranged at the top of the scoop, substantially as described.

11. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing the frame on the same, a front conveyer carried by the frame and provided with upper and lower adjustable sections, and a scoop arranged at the bottom of the conveyer and adjustably mounted on the said frame, substantially as described.

12. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing the frame thereon, a conveyer carried by the frame, an inner pivoted fork or yoke connected with and carried by the frame, an outer fork or yoke designed to be pivotally mounted on a crib or bin, and an outer conveyer hinged to the inner fork or yoke and slidably and pivotally connected with the outer fork or yoke, substantially as described.

13. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing the frame thereon, a conveyer carried by the frame, an inner pivoted support carried by the frame, an outer pivoted support designed to be mounted on a crib or bin, and an outer conveyer connected with the said supports substantially as described.

14. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing the frame thereon, a conveyer carried by the frame, an inner pivoted support also carried by the frame, an outer pivoted support designed to be mounted on a crib or bin, and an outer conveyer mounted upon the said supports and slidably connected with the outer support, substantially as described.

15. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a conveyer carried by the frame, an outer pivoted support designed to be mounted on a crib or bin, an inner pivoted support carried by the frame, and an outer conveyer hinged to the inner support and slidably and pivotally connected with the outer support, substantially as described.

16. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a conveyer carried by the frame, an inner pivoted support also carried by the frame, an outer pivoted support designed to be mounted on a crib or bin, and an outer conveyer mounted on the inner support and having a slide arranged on the outer support and capable of longitudinal movement, substantially as described.

17. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a conveyer carried by the frame, an inner pivoted fork or yoke carried by the frame, an outer pivoted fork or yoke designed to be mounted on a crib or bin and provided at opposite sides with antifriction-wheels arranged in pairs, and an outer conveyer mounted on the inner fork or yoke and provided with slides arranged between the antifriction-wheels of the outer fork or yoke, substantially as described.

18. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a conveyer carried by the frame, an inner pivoted fork or yoke carried by the frame, an outer pivoted fork or yoke provided with means for securing it to a crib or bin and having slots or openings at its sides, brackets adjustably secured at the slots or openings by fastening devices arranged therein, said brackets being provided with wheels arranged in pairs, and an outer conveyer provided with slides arranged between the said wheels said outer conveyer being also provided with pivots arranged in bearings of the inner fork or yoke, substantially as described.

19. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, means for advancing it on the same, an inner upright front conveyer, a scoop arranged at the bottom thereof, an inner transverse conveyer carried by the frame and arranged to receive material from the front conveyer, an outer transverse conveyer pivotally connected with the frame, gearing connecting the conveyers, and a flexible connection constituting a portion of the gearing and adapted to accommodate itself to the movements of the frame and the outer conveyer, substantially as described.

20. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a front conveyer carried by the frame, an inner transverse conveyer, a bracket adjustably secured to the frame and extending laterally therefrom, an inner fork or yoke pivotally connected with the bracket, a bar provided with clamps, an outer fork or yoke pivotally mounted on the bar, and an outer conveyer supported by the inner and outer forks or yokes, substantially as described.

21. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body and adapted to be moved longitudinally thereof, a conveyer carried by the frame, an outer conveyer designed to be connected with a crib or bin and provided with a shaft having a head, a shaft carried by the frame and connected with the conveyer thereof and provided with a head, casings receiving the heads of the shafts, a coupling-rod slidably connected with the casings, and a coiled spring disposed on the coupling-rod and interposed between the casings, substantially as described.

22. The combination of a frame designed to be mounted on a wagon-body, means for advancing the frame thereon, a front conveyer mounted on the frame, an inner transverse conveyer arranged in rear of the front conveyer, an outer transverse conveyer, the shaft 39 journaled in suitable bearings of the frame and disposed transversely thereof, sprocket-gearing connecting the shaft 39 with the front conveyer, the shaft 44 forming a part of the inner transverse conveyer, gearing connecting the said shafts for operating the inner transverse conveyer, and sprocket-gearing connecting the shaft 44 with the outer transverse conveyer, substantially as described.

23. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a front conveyer mounted on a frame, an inner transverse conveyer carried by the frame and having a shaft 44 extending from one end of it, the shaft 39 disposed transversely of the frame, gear-wheels connecting the said shafts, the outer transverse conveyer having a shaft 71, the shaft 48 arranged in alinement with the shaft 71, a flexible coupling connecting the shafts 48 and 71, sprocket-gearing connecting the shaft 39 with the front conveyer, means for operating the shaft 39, and gearing connecting the shafts 44 and 48, substantially as described.

24. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body, a front conveyer carried by the frame, an inner transverse conveyer having an extended shaft 44, a bracket or bar extending rearward from the frame, rods adjustably mounted on the bracket or bar and provided with bearings, the shaft 48 journaled in the said bearings, gearing connecting the shafts 44 and 48, an outer conveyer having a shaft flexibly connected with the shaft 48, a transverse shaft 39 connected with the shaft 44 and provided with a gear-wheel 38, a gear-wheel 28 meshing with the gear-wheel 38 and provided with a handle, and gearing connecting the shaft 39 with the front conveyer, substantially as described.

25. In a machine of the class described, the combination of a frame designed to be mounted on a wagon-body and adapted to be moved longitudinally thereof, a front conveyer carried by the frame, an inner transverse conveyer mounted on the frame, an outer transverse conveyer pivotally connected with the frame and slidably connected with a suitable support, the shaft 48 carried by the frame and flexibly connected with the outer transverse conveyer, operating mechanism, and gearing for connecting the same with the shaft 48 and with the front and inner transverse conveyers, substantially as described.

709,013. SAW-SETTING MACHINE. JACOB E. HILLSTROM, Michigan City, Ind. Filed Oct. 2, 1901. Serial No. 77,287. (No model.)

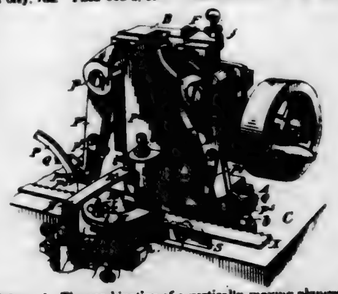

Claim.—1. The combination of a vertically-moving plunger, means for operating it, a support for the saw, a feed-dog, a lever to which it is pivoted, a spring for moving the lower end of the lever outwardly, and an inclined surface on the upper end of the plunger engaging the lever for moving its lower end inwardly.

2. A saw-setting machine comprising a vertically-moving plunger, an anvil coöperating therewith, a saw holder or clamp, a guide-plate for the front or toothed end of the saw, and means for adjusting the guide-plate toward and from the saw-holder in a direction at right angles to the direction in which the saw moves.

3. A saw-setting machine, comprising a vertically-moving plunger having a tapered upper end, a dog-carrying lever having at its upper end an inwardly-projecting portion engaging the inclined upper end of the plunger, and a spring for moving the lower end of the lever outwardly.

4. A saw-setting machine comprising a vertically-moving plunger, a feed-dog, means for operating it, a guide-plate in contact with which the end of the dog moves, and by which the dog is guided, and means for adjusting the guide-plate in a direction at right angles to the direction in which the saw moves.

5. A saw-setting machine, comprising a vertically-moving plunger, a feed-dog, a guide-plate for the dog, and means for adjusting the position of the plate in the line of movement of the dog, and also at right angles relatively thereto.

6. In a saw-setting machine the combination of a frame, a saw-holder arranged to hold the saw in a horizontal plane, a dog-carrying lever pivoted to the frame above the saw-holder and arranged to move in the same direction as the saw, a dog pivoted to the dog-carrying lever at is lower end and arranged to move relatively to the dog-carrying lever about an axis at right angles to the line of movement of the saw and also to move relatively to the dog-carrying lever about an axis perpendicular to the line of movement of the saw, and a spring for moving the dog horizontally toward the saw.

7. In a saw-setting machine, the combination of a dog-carrying lever adapted to move in a direction parallel with the line of movement of the saw, an anvil, a dog pivoted to the dog-carrying lever, and devices whereby the pivot of the dog may be adjusted on the lever toward and from the anvil.

8. The combination of the bed-plate, the lower member of the clamp, adjustably connected therewith, the upper member of the clamp pivoted to the lower member, and a pivoted spring-finger for pressing the upper member of the clamp toward the lower member.

9. The combination with the bed-plate of the machine, of the lower member of the clamp, pivotally connected with the bed-plate, devices for adjusting the position of the lower member vertically relatively to the bed-plate without changing its inclination, and for also adjusting its inclination thereon, the upper member of the clamp pivoted to the lower member, and the gage adjustable longitudinally on the clamp.

10. The combination with the bed-plate of the machine, of the lower member of the clamp pivoted thereto, and adjustable vertically thereon, the upper member of the clamp pivotally connected with the lower member, the gage adjustable longitudinally on the clamp, and the spring-finger pivoted to the lower member of the clamp, and adapted to engage the upper member.

11. In a saw-setting machine, the combination of the bed-plate, the fixed dogs, means for operating them, a holder for the saw, a plate formed with a tongue and moving in the grooves in the bed-plate toward and from the saw-holder, guides on the end of said plate next the saw-holder, and means for adjusting the guides toward and from each other in a direction parallel with the line of movement of the saw.

709,014. DRILL-CHUCK. ARTHUR I. JACOBS, Hartford, Conn. Filed May 10, 1902. Serial No. 106,722. (No model.)

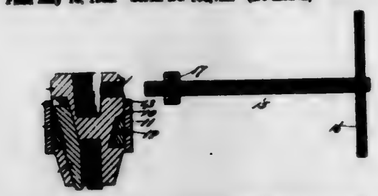

Claim.—1. A drill-chuck having a body with an annular outwardly-opening nut-recess and axially-inclined jaw-recesses, jaws movable in the jaw-recesses and having exterior threads, a nut movable in the nut-recess and having interior threads engaging the threads on the jaws, a sleeve encircling the body, attached to the nut and having on its edge teeth that are adapted to be engaged by a toothed key, substantially as specified.

2. A drill-chuck having a body with an annular outwardly-opening nut-recess and axially-inclined jaw-recesses, jaws movable in the jaw-recesses and having exterior threads, a nut formed in sections, movable in the nut-recess and having interior threads engaging the threads on the jaws, a sleeve encircling the body, attached to the nut-sections and having on its edge teeth that are adapted to be engaged by a toothed key, substantially as specified.

3. A drill-chuck having a body with an annular outwardly-opening nut-recess and axially-inclined jaw-recesses, jaws movable in the jaw-recesses and having exterior threads, a nut movable in the nut-recess, encircling the jaws and having interior threads engaging the threads on the jaws, a sleeve encircling the body outside of the nut-recess, attached to the nut and having teeth on its edge, and a key-recess in the body back of the sleeve adapted to receive a toothed key, substantially as specified.

709,015. AUTOMATIC RAILWAY-SWITCH. GEORGE B. JAMES, Cleveland, Ohio. Filed Dec. 30, 1901. Serial No. 88,702. (No model.)

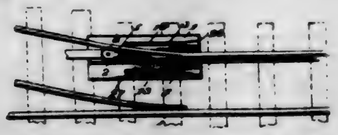

Claim.—In a railway-switch, and in combination with the switch-point, and a pivoted switch-bar connected with the switch-point for actuation thereof and having its opposite ends beveled, plates or bars pivotally connected with the beveled ends of the said switch-bar, substantially as set forth.

709,016. WASHING-MACHINE. MARY R. KELLY, Jackson, Ohio. Filed Dec. 7, 1901. Serial No. 85,041. (No model.)

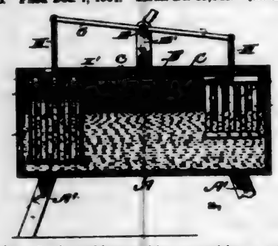

Claim.—1. A washing-machine comprising a tub or receptacle a shaft journaled therein and having arms projecting from either side thereof, buckets pivotally connected to the outer end of said arms, brackets arranged upon the tub and having a shaft journaled therein, arms projecting laterally from the shaft and having rods connected to their outer ends, the lower ends thereof being provided with plungers working in the buckets and means for rocking the last-named shaft, substantially as and for the purpose described.

2. In a washing-machine, the combination of a tub or receptacle, a shaft journaled therein, arms projecting from the said shaft, buckets carried by the arms, brackets secured to the tub, a shaft journaled in the brackets, arms projecting from the last-named shaft, plungers connected to the arms and working in said buckets and means connected to the said last-named shaft for operating it and the said plungers, substantially as shown and described.

709,017. CAN. JOHN H. KUECHENMEISTER, St. Louis, Mo., assignor of one-half to Henry Knochenmeister, St. Louis, Mo. Filed Nov. 19, 1901. Serial No. 83,211. (No model.)

Claim.—1. A can or the like comprising a body of yielding material, and a head having a flange adjacent the same, said flange having its material beat throughout its thickness to produce corrugations which are embedded in the surface of the material of which the can-body is composed and extend diagonally across the longitudinal axis of said can-body.

2. A can or the like comprising a body, a head, and corrugated plates upon said head and engaging opposite sides of said body, the corrugations of one of said plates extending at an angle different from that at which the corrugations of the other of said plates extend; substantially as described.

3. A can or the like comprising a body, a head, and corrugated plates upon said head and engaging opposite sides of said body, the corrugations of one of said plates extending at an angle opposite to the angle at which the corrugations of the other of said plates extend and the corrugations of one plate crossing the lines of the corrugations of the other plate; substantially as described.

4. A joint for cans and the like comprising overlapping sheet portions, one of said sheet portions being of yielding material, and the other of said sheet portions being beat throughout its thickness to produce corrugations which are embedded in the surface of said yielding material and extend at an angle to the transverse axis of the joint; substantially as described.

5. A joint for cans and the like comprising overlapping sheet portions, one of said sheet portions being of yielding material, and the other of said sheet portions being beat throughout its thickness to produce corrugations which are embedded in the surface of the said yielding material and extend diagonally across the longitudinal axis of said joint; substantially as described.

6. A joint for cans and the like comprising a sheet portion upon one of the joined parts, and corrugated sheet portions upon the other of said joined parts and engaging upon opposite sides of said first-mentioned sheet portion, the corrugations of one of said corrugated sheet portions extending at an angle different from that at which the corrugations of the other of said corrugated sheet portions extend; substantially as described.

7. A joint for cans and the like comprising a sheet portion upon one of the joined parts, corrugated sheet portions upon the other of said joined parts and engaging upon opposite sides of said first-mentioned sheet portion, the corrugations of one of said corrugated sheet portions extending at an angle opposite to the angle at which the corrugations of the other of said corrugated sheet portions extend, and the corrugations of one of said corrugated sheet portions crossing the lines of the corrugations of the other thereof; substantially as described.

709,018. LOCK. CARL KUHNELMANN, Sickingen, Germany. Filed Mar. 5, 1900. Serial No. 7,961. (No model.)

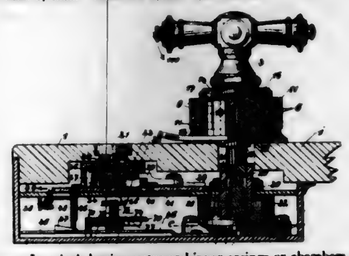

Claim.—In a lock having outer and inner casings or chambers, the combination of a main bolt adapted to be actuated by a key, an auxiliary bolt or bolts, a rotating handle for actuating said auxiliary bolts, means whereby said handle may be locked and unlocked against rotation, a plug for closing the keyhole or entrance to the outer casing of the lock, devices controlled by the rotation of said handle for releasing said plug, a movable barrier located behind said plug and adapted to oppose the entrance of a key to said inner chamber, means controlled by the key for removing said barrier, and means located behind said barrier and also controlled by the key whereby said main and said auxiliary bolts may be released.

709,019. MACHINE FOR GRINDING GLASS. WILLIAM LABODEY, Akron, Ohio. Filed Jan. 24, 1902. Serial No. 91,086. (No model.)

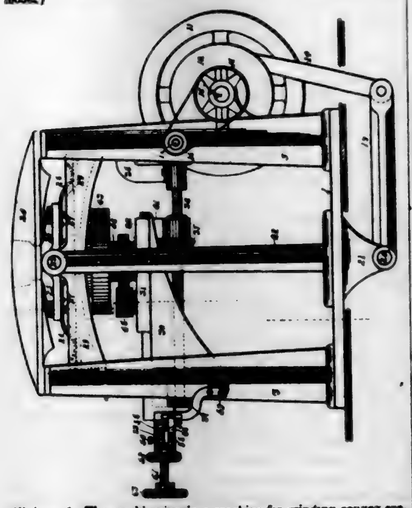

Claim.—1. The combination in a machine for grinding convex surfaces consisting of an oscillating grinding-head, springs to bear upon the upper surface of said grinding-head, means to adjust the inclination of said grinding-head, means to hold the article to be ground, and means to revolve said holder, means to oscillate said grinding-head, and means to convey said article to be ground against said grinding-head, substantially as shown and described.

2. The combination in a machine for grinding convex surfaces consisting of a grinding-head, means to vary the vertical inclination of either end of said grinding-head, a pair of arms to sustain said grinding-head, horizontal guides to guide said grinding-head, means to hold the article to be ground, a lever to oscillate the arms bearing said grinding-head, a second lever and a power-driven crank to operate the hereinbefore-described mechanism.

3. The combination in a machine for grinding convex surfaces consisting of an oscillating grinding-head capable of vertical inclination on either side, means to adjust this inclination, a grinding-head to hold the article to be ground, a pan surrounding said holder to receive particles ground from the surface of said article, a transversely-moving carriage to sustain said holder and pan, and means to move said carriage on its support transversely, substantially as shown and described.

4. The combination in a machine of the class designated of an oscillating grinding-head, means to vary the vertical inclination of said grinding-head, and means to retain said grinding-head in a desired position, a holder to sustain the article to be ground, a carriage to sustain said holder, transverse ways to sustain said carriage, means to slide said carriage on said ways, and means to raise said holder on said carriage, substantially as shown and described.

5. The combination in a machine for grinding convex surfaces of an oscillating grinding-head, means to vary the vertical inclination of said head, a holder to sustain the article to be ground, a carriage to sustain said holder, a threaded nut on said carriage to raise said holder, and means to rotate said nut and raise said holder vertically, substantially as shown and described.

6. The combination in a machine for grinding convex surfaces of an oscillating head, means to cause said head to oscillate, means to revolve said article, means capable of lateral adjustment to bring said article in alinement with said grinding-head, substantially as shown and described.

7. The combination in a machine for grinding convex surfaces of an adjustable oscillating head, means to cause such oscillation, means to revolve the article to be ground, means to automatically force said article against said grinding-head, and independent means for the lateral adjustment of said article, substantially as shown and described.

8. The combination in a machine for grinding convex surfaces consisting of a grinding-head, means to retain said head at a desired vertical inclination, a holder to sustain the article to be ground, a carriage to sustain said holder, means to revolve said holder, means to raise said holder vertically on said carriage, and independent means to adjust the lateral position of said carriage in said machine, substantially as shown and described.

709,020. GLASS GRINDING AND POLISHING MACHINE. WILLIAM LABODEY, Akron, Ohio. Filed Mar. 6, 1902. Serial No. 96,919. (No model.)

Claim.—1. In a machine of the class designated, the combination of an upright supporting-post, a swinging arm pivoted on the upper end of said post, a carriage adapted to travel along said swinging arm, means mounted on said carriage for supporting grinding and polishing mechanism, means to convey power from said post through said swinging arm to said grinding and polishing mechanism, and means to cause said grinding and polishing mechanism to rotate less than a revolution.

2. In a machine of the class designated, the combination with a supporting-post, mechanism mounted on said post to receive power from any desired source, a swinging arm pivoted on said post, means to convey power from said post to said swinging arm, a carriage mounted on said arm, means to cause said carriage to travel along said arm, mechanism depending from said carriage for grinding and polishing glass, and means mounted on said carriage to cause said grinding and polishing mechanism to alternately revolve vertically less than a complete revolution.

3. The combination of a supporting-post, an arm pivoted to said post, a traveling carriage on said arm, a depending portion on said carriage, a head mounted on said depending portion capable of revolution on said portion, grinding and polishing wheels mounted in said head, means to convey power from said post to said grinding and polishing mechanism, and means to cause a partial revolution of said head, substantially as shown and described.

4. In a machine of the class designated, the combination of a supporting-post, an arm pivoted on said post, a traveling carriage on said arm, a depending portion on the under face of said carriage, a revolvable head on said depending portion, grinding and polishing mechanism in said head, means to convey power from said post to said grinding and polishing mechanism, a rocking arm mounted in said carriage, a crank to operate said arm, and means to cause said arm to rotate said head a portion of a revolution.

5. The combination in a machine of the class designated, of a post, a swinging arm pivoted on said post, a carriage mounted on said arm, a head mounted on said carriage, a pair of grinding and polishing wheels mounted in said head, mechanism to cause said grinding and polishing wheels to revolve in opposite directions to one another, substantially as shown and described.

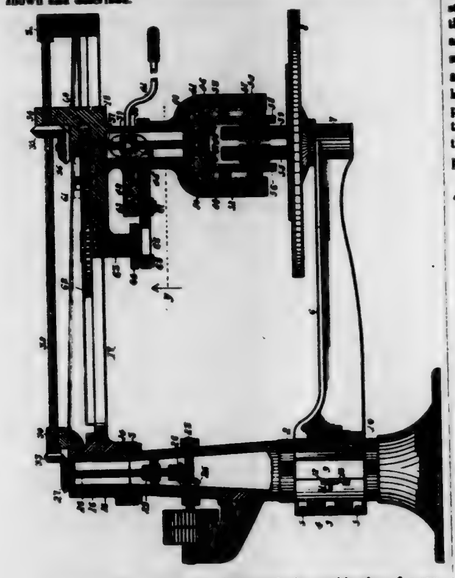

6. In a machine of the class designated, the combination of a supporting-post, of a swinging arm pivoted on said post, a carriage on said arm capable of longitudinal movement thereon, a head mounted on said carriage, a pair of grinding and polishing wheels mounted in said head, mechanism to cause said grinding and polishing wheels to revolve in opposite directions to one another, and means to cause said head to revolve on said carriage, substantially as shown and described.

7. The combination in a machine of the class designated, of a supporting-post, a swinging arm mounted thereon, a traveling carriage on said arm, a head mounted on said carriage, gear-teeth on the upper end of said head, two grinding and polishing wheels mounted in said head, mechanism to cause said wheels to rotate in opposite directions to one another, a rocking arm provided with teeth to mesh with the teeth on said head, and means to rock said arm, substantially as shown and described.

8. The combination in a machine of the class designated with a supporting-post of a swinging arm, a carriage slidable on said arm, a head mounted on said said carriage, two grinding-wheels mounted in said head, means to cause said grinding-wheels to revolve in opposite directions to one another, and means to vary the vertical position of said head on said carriage as desired, substantially as shown and described.

709,021. BICYCLE-TIRE. HERBERT DU BOIS LEFFERTS, New Brunswick, N. J. Filed Dec. 27, 1899. Serial No. 741,744. (No model.)

Claim.—The method of making a bicycle-tire, which consists in assembling (1) a strip of strengthening material treated with a solution of raw rubber and having its ends cut on the bias, (2) a second strip of rubber longer and narrower than the first strip and temporarily cemented thereto and having its ends cut straight, (3) a third rubber-saturated strip of strengthening material longer than the second strip and of substantially the same width, the second strip projecting slightly beyond one edge of the first strip and lying within the opposite edge thereof, and the third strip being extended beyond one edge of the second strip and lying within the opposite edge thereof, and, (4) a tread-strip fixed to the third strip and of less width than the other three strips, then lapping and rolling successively the ends of the strengthening-strip, second strip, third strip and tread-strip, the ends of the several strips breaking joints, then overlapping and cementing the edges of the strips, leaving the tread-strip disposed on the inside of the tire thus formed, then partially inflating the tire, then subjecting it to a bath of boiling water, and finally reversing the tire to bring the tread-strip on the outside, substantially as and for the purpose specified.

709,022. ROCK-DRILLING ENGINE. JOHN G. LEYNER, Denver, Colo. Filed July 13, 1901. Serial No. 68,308. (No model.)

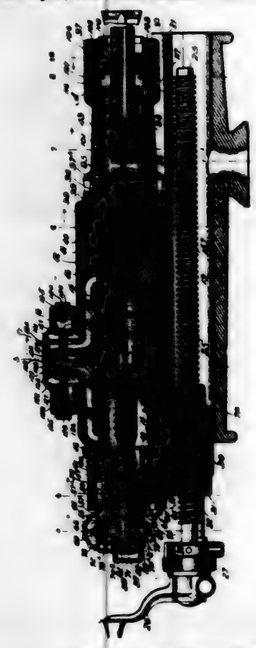

Claim.—1. In a rock-drilling engine, the combination with the cylinder having a piston-bore and a plurality of counterbores in its front end of different diameters, of a front cylinder-head comprising a tubular member threadedly secured to the largest counterbore of said cylinder, and a steel ring seated in a counterbore against the end of said cylinder-head, a buffer-ring seated in a counterbore against said steel ring, and a steel ring seated in a counterbore against said buffer-ring, substantially as described.

2. In a rock-drilling engine, the combination with the cylinder and the rock-cutting drill-bit of a piston reciprocally mounted therein, provided with a ram extension, having its periphery formed into straight flutes, a front cylinder-head secured to said cylinder, a chuck rotatably secured in said front cylinder, provided with an axial bore, a rifled nut surrounding said ram and secured in the bore of said chuck, and fitting slidably the flutes of the ram of said piston, substantially as described.

3. In a rock-drilling engine the combination with the cylinder, of a valve-chest cast integral with said cylinder, an axial bore in valve-chest, a valve reciprocally mounted in said valve-chest, suitable actuating-fluid inlet and exhaust ports from said valve-chest to said cylinder, coöperatively arranged in operation relative to said valve, a threaded plug secured in each end of said valve-chest, provided with a slight projection on its inner end of less diameter than the bore of said valve-chest, and a slot port diametrically across said slightly-projecting end of said plugs, substantially as described.

4. In a rock-drilling engine the combination of a cylinder having an operative valve mechanism and actuating-fluid inlet and exhaust ports, counterbores in the opposite ends of said cylinder, a front head secured to the front end of said cylinder, a back head secured to the rear end of said cylinder, a steel ring seated in a counterbore at each end of said cylinder's axial bore, a rubber buffer-ring operatively seated between said steel ring and the rear cylinder-head, a rubber buffer-ring seated against said steel ring at the front end of said cylinder, a steel ring seated in a counterbore between said rubber ring and the end of said front cylinder-head and a piston reciprocally mounted in said cylinder between said steel buffer-rings and provided with a ram extension projecting through said steel rings and rubber at the front end of said cylinder into the front cylinder-head, substantially as described.

5. In a rock-drilling engine the combination with the cylinder and the piston, of a tubular-shaped front cylinder-head, secured to one end of said cylinder and extending beyond it, a tubular drill-holding chuck rotatably mounted in said front cylinder-head, a reciprocating piston in said cylinder provided with a hammer extension, a straight fluted surface on the periphery of the end of said piston's hammer extension, a fluted nut secured in said chuck in which said piston's hammer extension fits slidably and a rock-cutting drill-bit having a shank adapted to fit loosely in said chuck and positioned in the reciprocal path of the hammer extension of said piston, and means, including a ring, for securing said drill-bit operatively in said tubular chuck, substantially as described.

6. In a rock-drilling engine, the combination with the cylinder, and the hammer-piston of a tubular-shaped front cylinder-head, secured to said cylinder-head, and extending beyond it, a cap threadedly secured to its outer end having an axial bore, a buffer bearing against the crown of said cap, a steel ring arranged adjacent to said buffer, a drill-bit-holding chuck revolubly mounted in said cylinder-head, and secured therein against longitudinal movement, a rock-cutting drill-bit having a shank provided with projecting lugs, adapted to fit loosely in said cap and in said drill-bit-holding chuck and positioned in the reciprocal path of said hammer-piston, and means including a ring arranged between said chuck and the buffer of said cap for releasably locking said drill-bit in operative striking relation to said hammer-piston in said chuck, substantially as described.

7. In a rock-drilling engine the combination with the cylinder, the hammer-piston and the front and rear cylinder-heads, provided with axial bores, a suitable buffer mechanism in the front and rear end of said cylinder at the ends of the reciprocal movement of said piston, an axial bore in said piston, a spirally-rifled nut in the axial bore of said piston, a chamber in the rear end of said rear cylinder-head, a rifled bar rotatably mounted in said rear cylinder-head having a disk portion extending into said chamber, ratchet-teeth on the periphery of said disk, spring-controlled pawls arranged in said chamber in operative relation to said ratchet-toothed disk, a spirally-rifled bar extending from said ratchet-disk slidably through the said spirally-fluted nut of said hammer-piston, a supplementary cylinder secured to said back cylinder-head, an axial bore in said cylinder-head coöperatingly arranged with said back cylinder-head to operatively support said spring-controlled pawls, substantially as described.

8. In a rock-drilling engine the combination with the cylinder, the front cylinder-head and the cap on the end of said front cylinder-head, of the piston in said reciprocating cylinder, the drill-chuck rotatably mounted in said front cylinder-head, the rifled nut in said chuck, the fluted hammer or ram of said piston, extending loosely through said fluted nut into said chuck, the bifurcation in the outer end of said chuck, the oppositely-arranged stops in the opposite ends of the bifurcation of said chuck, an axial bore in said chuck, a rock-cutting drill-bit having a shank adapted to fit loosely into said chuck and adapted to extend into the reciprocal path of said piston hammer or ram projecting lugs in said rock-cutting drill-bit's shank, adapted to fit the bifurcation in the end of said chuck and means, including a ring within said cap for operatively securing and interlocking said rock-cutting drill-bit to and from said chuck, means for rotating said drill-bit and means, including a valve-controlled water-conveying tube extending axially through said piston and an axial hole through said drill-bit for conveying a commingled supply of air and water to the cutting end of said drill-bit, substantially as described.

9. In a rock-drilling engine the combination of the cylinder, the hammer-piston, the front head threadedly secured to said cylinder, and the cap threaded to said front head with the chuck-key and the buffer in the cap, substantially as described.

10. In a rock-drilling engine the combination of the cylinder, the front cylinder-head and the cap, with the hammer-piston reciprocally mounted in said cylinder and the front head, of the drill-holding chuck arranged to be rotated step by step by said piston, the buffer in said cap, the chuck-key ring, and the drill-bit arranged to be releasably secured operatively in said chuck by said chuck-key in the reciprocal path of said hammer-piston, substantially as described.

11. In a rock-drilling engine the combination with the cylinder, the piston, the front cylinder-head, and the cap, of the chuck rotatably mounted in said front cylinder-head, and provided with a centrally-slotted end having its ends on the opposite sides of said slot provided with stepped shoulders, the buffer in said cap, the chuck in its outer end, the key-ring between said chuck and said buffer, having an axial bore provided with oppositely-disposed slots extending from said bore into said ring, and provided with oppositely-arranged projecting lugs in its side facing said chuck, adapted to engage said stepped shoulders when moved in one rotative direction, and to engage the sides of the ends of said slotted end, when moved in the opposite rotative direction, a drill-bit having a shank end provided with projecting lugs adapted to extend loosely through the axial bore and slots of said chuck and key-ring and into the slot in the end of said chuck and means for turning said chuck-key ring to lock said drill-bit in said chuck and to unlock it from said chuck, substantially as described.

12. In a rock-drilling engine, the combination with the cylinder and the rear and front cylinder-heads detachably secured to said cylinder, of a piston provided with a hammer or ram extension reciprocally mounted in said cylinder a drill-bit-holding chuck rotatably mounted in said front head suitable buffer devices operatively arranged between the said front head and chuck and the adjacent terminal stroke of said piston and between the rear cylinder-head and the adjacent terminal stroke of said piston for cushioning the spent strokes of said piston, means including a spirally-rifled bar for rotating said piston step by step in one direction of its reciprocal movement, and means connected with said piston for rotating step by step said drill-bit-holding chuck, substantially as described.

13. In a rock-drilling engine the combination with the cylinder and the piston, of the front head, an axially-perforated cap removably secured to the end of said front cylinder-head, a drill-bit-holding chuck rotatably mounted in said front head, a rock-cutting drill-bit arranged and adapted to be instantly pushed into said chuck, and positioned to be struck by the said piston at each forward stroke of its reciprocal movement, means connected with said chuck and said drill-bit, including a partially-rotating ring, for releasably locking said drill-bit operatively in said chuck, and means connected with said chuck and piston for rotating said drill-bit step by step at substantially each reciprocal stroke of said piston, substantially as described.

14. In a rock-drilling engine the combination with the cylinder and the piston, of the back and supplementing cylinder-heads, the front cylinder-head, the pawl-controlled ratchet-toothed rifle-bar, provided with spiral flutes the water-regulating valve and passages through said supplementing cylinder-head, the water-conveying tube extending from said supplementing cylinder-head axially through said rifle-bar and said piston loosely, a drill-bit-holding chuck rotatably arranged in said front cylinder-head, a rock-cutting drill-bit provided with an axial bore and arranged and adapted to fit slidably in said chuck in a position to be struck by said piston by the forward strokes of said piston's reciprocal movement means, including a ring adapted to be moved rotatably a predetermined distance, for releasably locking said drill-bit to said chuck, and means including said rifle-bar and a rifled nut for rotating said drill-bit step by step at substantially each reciprocal movement of said piston, substantially as described.

15. In a rock-drilling engine the combination with the piston and the cylinder, of the rear cylinder-head and the supplementary cylinder-head, provided with a shouldered bearing, a ring mounted in said bearing, a copper-covered washer on each side of said ring, a thread at the end of said supplementary cylinder-head, and a hood threadedly arranged to clamp said ring and washers against said shouldered bearing of said head, substantially as described.

16. In a rock-drilling engine the combination with the cylinder and the piston, the rear cylinder-head and a supplementary cylinder-head having a rearward hub projecting, of a ring portion clampably secured to the supplementary cylinder-head, a circumferential groove in the inner periphery of said ring, a water-inlet member, arranged on said ring to intersect said circumferential groove of said ring, and provided with a hose connection at one end, and a valve at the opposite end adapted to control said water-inlet and said circumferential groove of said ring, axial slots in the hub of said supplementary cylinder-head, intersecting the circumferential groove in said ring, and an axial bore in said supplementary cylinder-head provided with a tapering portion a tapering sleeve adapted to fit said taper portion of the axial bore of said head, and extending beyond said head's hub end, a nut threaded to the end of said sleeve, and adapted to bear against said hub's end, an axial bore in said sleeve, a plurality of radial slots in the said tapering sleeve extending through its shell into its axial bore, a water-conveying tube fitting loosely in the bore of said tapering sleeve, and adapted to be clamped to said sleeve by said threaded nut at its end, and a hood secured over the end of the hub of said supplementary cylinder-head, arranged and adapted to form a closed water-passage from said axial groove in said hub to the end of said water-conveying tube, substantially as described.

17. In a rock-drilling engine the combination with the cylinder and the piston, of the rear cylinder-head and the water-inlet ring and tube

clampably secured to said supplementary head and provided with a curved hose connection at one end and a water-controlling valve at its opposite end, substantially as described.

18. In a rock-drilling engine, the combination with the cylinder and the piston, the rear and supplementary cylinder-heads, the valve-controlled water-inlet ring the hollow head on the end of said supplementary cylinder-head and the valve-controlled water-passage through said ring and head to said head, substantially as described.

19. In a rock-drilling engine the combination with the cylinder and the rear cylinder-heads, of the valve-controlled water-inlet ring, the hollow head, the axial tapering bore in said supplementary cylinder-head, the tapering split sleeve, provided with an axial bore and the water-conveying tube arranged and adapted to be releasably secured to said sleeve and to said supplementary cylinder-head, substantially as described.

20. In a rock-drilling engine, the combination with the cylinder, the piston and the rear and supplementary cylinder-heads, the piston and the pawl and ratchet ribs-bar mechanism, with a valve-controlled inlet member, secured to said supplementary cylinder-head, a head at the outer side end of said supplementary cylinder-head, suitable water-passages through said valve-controlled water-inlet member, and supplementary cylinder-head to said head, a water-conveying pipe projecting loosely through said ribs-bar and piston, and means including a clamping device for releasably securing said tube in operative relation to said water-inlet passages in said supplementary cylinder-heads.

709,023. STREET-SIGN-ILLUMINATING DEVICE. JOHN W. LIEB, Jr., and JOSEPH H. TYLER, New York, N. Y. Filed Jan. 10, 1902. Serial No. 88,110. (No model.)

Claim.—1. The combination with an electric-arc lamp and a non-illuminating resistance therefor, of an illuminating steadying resistance, and means for throwing either resistance into the lamp-circuit.

2. The combination with an electric-arc lamp and a non-illuminating steadying resistance, of an illuminating steadying resistance, and a switching device constructed to establish circuit through said non-illuminating resistance, then cut out said resistance and then cut in said illuminating resistance.

3. The combination of the arc-lamp 2, resistance 13, glow-lamps 7 means for throwing said resistance or said glow-lamps into the lamp-circuit and circuit connections substantially as set forth.

709,024. SIGN. JOHN LORENZ, Jr., Buffalo, N. Y. Filed Apr. 17, 1902. Serial No. 103,369. (No model.)

Claim.—1. In a sign of the class described, the combination with a casing having an open side, of an opaque closure slidably mounted upon the casing and covering a portion of the open side thereof, a transparent sign removably mounted upon the casing and covering the remainder of the open side of the same, and a lamp arranged within the casing behind the opaque closure.

2. In a sign of the class described, the combination with an open-sided casing having guideways in its edges contiguous to its open side, of an opaque closure slidable in the guideways and inclosing a part of the open side of the casing, a transparent sign also slidable in the guideways and covering the remainder of the open side of the casing, and a lamp arranged within the casing behind the opaque closure.

2. In a sign of the class described, the combination with an open-sided casing having guideways in its edges contiguous to its open side and extending from end to end thereof, of an opaque closure slidable in the guideways and closing a part of the open side of the casing, a transparent sign also slidable in the guideways and covering the remainder of the open side of the casing, said sign abutting against the end of the opaque closure, and a lamp arranged within the casing behind the opaque closure.

4. In a sign of the class described, the combination with an open-sided casing having guideways in its edges contiguous to its open side and extending from end to end, of an opaque closure slidable in the guideways and closing a part of the open side of the casing, said closure having a groove in one edge, a transparent sign also slidable in the guideways and covering the remainder of the open side of the casing, said sign fitting in the groove of the closure, and a lamp arranged within the casing behind the opaque closure.

5. In a sign of the class described, the combination with an open-sided casing comprising a wooden frame, a metal sheathing covering the frame and having inturned flanges located over and spaced from the edges of the frame to form guideways in the edges of the casing contiguous to its open side, a reflector arranged within the casing, a lamp mounted in front of the reflector, and a transparent sign slidably mounted in the guideways.

6. In a sign of the class described, the combination with an open-sided casing having grooves in its opposite edges contiguous to its open side, of a lamp arranged within the casing, a transparent sign slidably mounted within the grooves, and an opaque shield also slidably mounted in the grooves and interposed between the sign and the lamp.

7. In a sign of the class described, the combination with an open-sided casing having grooves in its opposite edges contiguous to its open side, of a lamp arranged within the casing, an opaque closure slidably mounted in the grooves and having a seat in one edge that aligns with the same, said closure being disposed in front of the lamp, a transparent sign also slidably mounted in the grooves and having one edge fitted in the seat of an opaque closure, and an opaque shield slidably mounted in the grooves in rear of the sign, said shield also having one edge fitted in the seat of the closure.

8. In a sign of the class described, the combination with a casing, of a concave reflector arranged within the casing and extending completely across the same, said reflector having outturned flanges at its side edges that overlap the edges of the casing, inturned flanges secured to the casing and spaced from the flanges of the reflector forming grooves, a sign slidably mounted in the grooves, and a lamp located within the casing.

9. In a sign of the class described, the combination with a wooden casing having an open side, of a reflector arranged within the casing and having its edges overlapping the edges of the open side of said casing, a sheathing covering the exterior of the casing and having its edges inturned over but spaced from the edges of the reflector, thereby forming grooves, a sign slidably mounted in the grooves, and a lamp located within the casing.

709,025. MACHINE FOR CUTTING RECESSES IN CONDUIT-SECTIONS. ROBERT W LYLE, Perth Amboy, N. J. Filed May 15, 1902. Serial No. 107,460. (No model.)

Claim.—1. A device of the class described, comprising a frame adapted to fit over the end of a conduit-section and around the upper portion of the sides thereof, means movably mounted in said frame for cutting recesses in such section, and means for operating such cutting means.

2. A device of the class described, comprising a frame constructed to fit the end of a conduit-section and extending down along the upper portion of the sides of such section to support the material of the section, cutting means for cutting recesses in the section and removing the cores cut from such recess, and means for operating such cutting means.

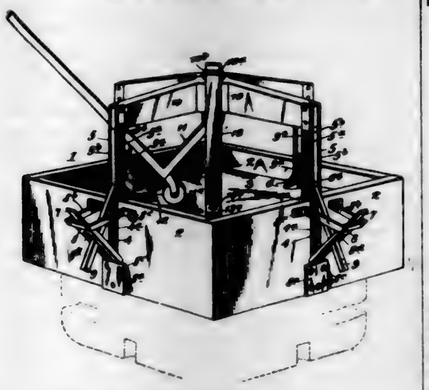

3. A device of the class described, comprising a frame for covering the end and upper portion of the sides of a conduit-section, a pair of knives movably mounted in said frame in timed relation to each other for simultaneously cutting a recess in such section longitudinally and transversely, and means for operating said knives.

4. A device of the class described, comprising a frame for covering the end and upper portion of the sides of a conduit-section, a pair of knives movably mounted in said frame in timed relation to each other for simultaneously cutting the sides and bottom of a recess in such section, and means for operating said knives.

5. A device of the class described, comprising a frame constructed to fit the end and upper portion of the sides of a conduit-section, a hollow knife movably mounted in said frame, and the interior of which is shaped like the cross-section of the desired recess, and the cutting edges of which are inclined at an angle desired for the bottom of such recess, and means for operating said knife.

6. A device of the class described, comprising a frame constructed to fit the end and overlap the upper portions of the sides of a conduit-section, a knife slidably mounted therein and inclined at the angle desired for the bottom of the recess in such section, and means for operating said knife.

7. A device of the class described, comprising a frame for covering the end and upper portion of the sides of a conduit-section, a hollow knife movably mounted in said frame and the interior of which is shaped like the cross-section of the desired recess and the cutting edges of which are inclined at the angle desired for the bottom of such recess, a knife slidably mounted in the frame and inclined at the angle desired for the bottom of the recess in such section, and means for operating said knives.

8. A device of the class described, comprising a frame provided with a top and sides depending therefrom, and adapted to overlap the sides of a conduit-section, and having recesses with grooved side walls extending from the top of such sides toward the bottom, carriers sliding in such recesses, cutting knives secured to said carriers for cutting recesses in such sections, and means for raising and lowering said carriers.

709,026. STORM-CURTAIN FOR BUGGIES. BERNARD S. D. S. MARTIN, McPherson, Kans. Filed Feb. 18, 1902. Serial No. 94,707. (No model.)

Claim.—1. The herein-described supports for a storm-curtain of a buggy comprising rotatable rods detachably connected with the front of the top of the hood of a buggy and provided with downwardly-directed end members, side rods provided at their upper ends with inwardly-directed members pivotally connected with the end members of the rotatable rod and means for pivotally connecting the side rods with side members of the buggy-hood, said side rods being also provided at their lower end with notches or recesses and hooks pivotally connected therewith, substantially as shown and described.

2. The herein-described supports for a storm-curtain of a buggy comprising rotatable rods detachably connected with the front of the top of the hood of a buggy and provided with downwardly-directed end members, side rods provided at their upper ends with inwardly-directed members pivotally connected with the end members of the rotatable rods, means for pivotally connecting the side rods with the side members of the buggy-hood, said side rods being also provided at their lower end with notches or recesses and hooks pivotally connected therewith, and spring-arms secured to the front of the body of the buggy and extending laterally in both directions, substantially as shown and described

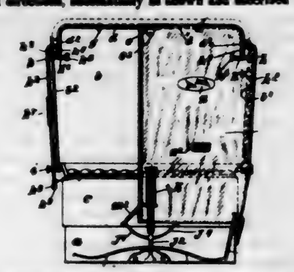

3. A storm-curtain for buggies consisting of two separate similar parts and means connecting the same with the hood of a buggy, comprising rotatable rods *d* detachably connected with the top of the hood of the buggy, and provided with downwardly-curved end members, side rods *h* provided at their upper ends with inwardly-directed members pivotally connected with the end members of the rods *d* and with means for connecting them with the side members at their buggy-hood, said side rods being also provided at their lower ends with notches or recesses and with pivoted hooks, substantially as shown and described.

4. A storm-curtain for buggies consisting of two separate similar parts and means for connecting the same with the hood of the buggy, comprising rotatable rods *d* detachably connected with the top of the hood of the buggy, and provided with downwardly-curved end members, side rods *h* pivotally connected with the end members of the rods *d* and with means for connecting them with the side members of the buggy-hood, said side rods being also provided at their lower end with notches or recesses and with pivoted hooks, and the front of the buggy being also provided with laterally-directed spring-arms and said separate parts of the storm-curtain being provided with attaching-springs which are adapted to be connected with said arms and with the side of the body of the buggy, substantially as shown and described.

709,027. ENGINEER'S BRAKE-VALVE. HARRY R. MASON, Chicago, Ill., assignor to the Westinghouse Air Brake Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Dec. 24, 1901. Serial No. 87,508. (No model.)

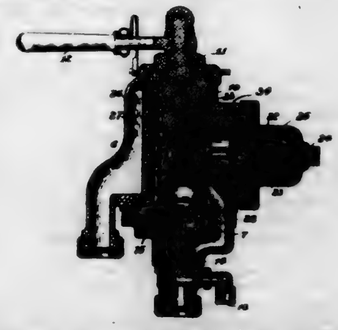

Claim.—1. An engineer's brake-valve having connection from a main reservoir and to a train-pipe, a main controlling-valve, a train-pipe-service discharge-port, a valve controlling said port, a piston arranged to produce gradual closure of said valve in service applications of the brakes, a passage for establishing communication between the fluid-pressures on opposite sides of said piston, a valvular device for controlling said passage, and power mechanism for actuating said valvular device, substantially as described.

2. An engineer's brake-valve having connection from a main reservoir and to a train-pipe, a main controlling-valve, a train-pipe-service discharge-port, a valve controlling said port, a piston arranged to produce gradual closure of said valve in service applications of the brakes, a passage for establishing communication between the fluid-pressures on oppo-

site sides of said piston, a valvular device for controlling said passage and a movable abutment for actuating said valvular device, substantially as described.

3. An engineer's brake-valve having connection from a main reservoir and to a train-pipe, a main controlling-valve, a train-pipe-service discharge-port, a valve controlling said port, a piston arranged to produce gradual closure of said valve in service applications of the brakes, a passage for establishing communication between the fluid-pressures on opposite sides of said piston, a valvular device for controlling said passage, and a piston for actuating said valvular device; substantially as described.

4. An engineer's brake-valve having connection from a main reservoir and to a train-pipe, a main controlling-valve, a train-pipe-service discharge-port, a valve controlling said port, a piston arranged to produce gradual closure of said valve in service applications of the brakes, a passage for establishing communication between the fluid-pressures on opposite sides of said piston, a valvular device for controlling said passage, a piston for actuating said valvular device, and means for establishing or destroying equilibrium of air-pressures on opposite sides of said piston, substantially as described.

5. An engineer's brake-valve having connection from a main reservoir and to a train-pipe, a main controlling-valve, a train-pipe-service discharge-port, a valve controlling said port, a piston arranged to produce gradual closure of said valve in service applications of the brakes, a passage for establishing communication between the fluid-pressures on opposite sides of said piston, a valvular device for controlling said passage, a piston for actuating said valvular device, means for establishing or destroying equilibrium of air-pressures on opposite sides of said piston, and a spring coöperating in the movement of said last-named piston, substantially as described.

709,028. PLOW. JOHN P. HELBERT, Pima, Wash. Filed Jan. 23, 1902. Serial No. 90,889. (No model.)

Claim.—1. In a plow, the combination with a plate-like standard and a beam thereon, of a cutter-disk held on the bottom of the standard and forming the share of the plow.

2. In a plow, the combination with a plate-metal standard and an adjustable beam thereon, of a cutter-disk held to rotate on the bottom of the standard and forming the share of the plow, and a cutter-disk on the beam, providing a colter for said plow.

3. In a plow, the combination with a plate-metal standard and an adjustable beam thereon, of a tapered point at the front of the standard, a base-plate held on and spaced from the lower edge of the standard, and a cutter-disk pivoted centrally between the standard and base-plate.

4. In a plow, the combination with a plate-metal standard having a lunate form, the straight edge being at the bottom, a tapered point T-shaped in cross-section, and an adjustable beam extended from the front of the standard, of a base-plate secured on the point and standard, extending rearward and spaced from the lower edge of the said standard, and a cutter-disk centrally pivoted between the base-plate and lower edge of the standard and forming the share of the plow.

5. In a plow, the combination with a standard having lunate form, a beam pivoted at one end at the front of the standard, an arm secured to project forwardly from the standard behind the beam, and an adjustable link-rod engaging the beam and arm, the adjustment of the said rod controlling the elevation or depression of the front end of the standard, of a point on the standard below the beam, and a horizontal cutter-disk held to rotate at the lower edge of the standard.

6. In a plow, the combination with a standard, and a beam extended forwardly therefrom, of a tapered point on the standard below the beam, a horizontal cutter in disk form pivoted at the lower edge of the standard, and means for supporting the moldboard inclined rearward and upward from the standard.

7. In a plow, the combination with a standard and a beam extended forwardly therefrom, of a tapered point on the standard below the beam, a base-plate held on the point and standard and spaced from the lower edge of said standard, a cutter in disk form pivoted between the base-plate and lower edge of the standard, a flat moldboard pivoted on the standard and inclined upwardly and rearwardly therefrom, and means for adjusting the inclination of the moldboard.

8. In a plow, the combination with a plate-metal standard having lunate form, a two-part beam pivoted thereon and extended forwardly, means for adjustably supporting the beam near its front end, and a disk cutter pivoted between members of the beam, of a tapered point on the standard, a base-plate secured on the point and standard, a disk cutter held to rotate between the base-plate and standard, a flat moldboard held to rock on and incline rearwardly and upwardly from the standard, a transverse shaft supported on the moldboard near its upper edge, and a plurality of disk cutters carried by the shaft.

9. In a plow, the combination with a plate-metal standard having lunate form, a beam extended forwardly from the standard, a point on said standard below the beam, and a disk cutter held to rotate in a horizontal plane at the lower edge of the standard, of a plate-metal moldboard having flat sides, means for holding the moldboard free to rock on the standard and inclined upwardly and rearwardly therefrom, a pawl on the moldboard engaging rack-teeth on the standard, a transverse shaft on the upper part of said moldboard, a plurality of disk cutters rotatable on the shaft in slots in the moldboard, and a plurality of pulverizing-arms held to rock on said shaft at the sides of the respective disk cutters.

10. In a plow of the character described, the combination with the plate-metal standard having lunate form, and having a series of teeth at its rear edge, of a moldboard rockably supported on the standard, and a pawl hung from the moldboard and adapted to mesh with the rack-teeth to change the inclination of the moldboard on the standard.

11. In a plow of the character described, the combination with a plate-metal standard, a beam thereon, a tapered point at the lower end of the beam, a horizontal disk cutter pivoted at the lower edge of the standard, and an inclinable flat moldboard projected upward and rearward from the standard, of a shaft carried by the moldboard near its upper edge, said moldboard having slots downwardly extended from the shaft, a series of disk cutters hung on the shaft and entering said slots, and a series of pulverizer-arms hung at one end on said shaft and thence extended rearward and downward, said arms having teeth on their upper edges and feet on their lower ends.

12. In a plow, the following coacting elements: a plate-metal standard, a tapering point thereon, a pivoted and vertically-adjustable beam, a disk cutter pivoted on the beam in a vertical plane, a horizontal disk cutter at the lower edge of the standard, a flat moldboard rockable transversely on the standard and extended rearwardly therefrom, a ratchet-and-pawl device for the inclined adjustment of the moldboard on the standard, a shaft carried at the upper edge of the moldboard, a series of cutter disks mounted on the shaft and working in slots in the moldboard, and a series of pulverizing-arms alternating with the disks on the shaft, said arms extending rearward and downward and each having a widened foot adapted to slide over the ground.

13. In a plow, the combination with a plate-metal standard and a two-part beam thereon, of a disk cutter pivoted between the members of the beam, serving as a colter for the plow.

14. In a plow, the combination with a plate-metal standard, of a two-part beam, a disk cutter pivoted between the members of the beam, a tapered point on the standard, and a horizontal disk cutter pivoted at the lower edge of the standard.

709,029. TRACK FOR DOOR-HANGERS. PHILIP A. MYERS, Ashland, Ohio, assignor to F. B. Myers and Bro., Ashland, Ohio, a Firm. Filed Nov. 9, 1901. Serial No. 81,774. (No model.)

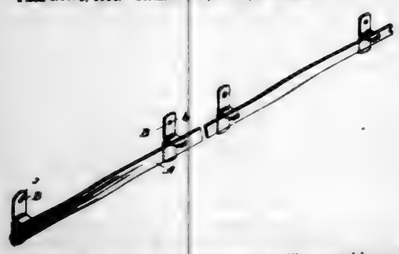

Claim.—1. A track for door-hangers and the like, comprising a plain metal bar and supporting-brackets, said brackets each comprising two members having adjoining ends passing through openings in the track and secured thereto, substantially as described.

2. A track for door-hangers and the like comprising a plain metal bar, supporting-brackets consisting of two angle-irons placed back to back with their ends passing through an opening centrally of the track and secured thereto, the brackets and track being symmetrically arranged so as to be reversible, substantially as described.

709,030. COMBINATION AIR AND VAPOR MOTOR. ALEXANDER MCGADDY, St. Joseph, Mo. Filed Aug. 27, 1900. Serial No. 28,158. (No model.)

Claim.—1. The combination in a motor of a vapor-chamber, and the plungers and plunger-guide therein, of a square vertical shaft, of the friction-wheel carried on the bottom thereof, of the main axle and the hub keyed thereto and adapted to contact with said friction-wheel, of a horizontal disk carried by said shaft through a square opening in the center of said disk enlarged at both top and bottom, of the disk-pockets, an aperture leading into the vapor-chamber and with which the disk-pockets are arranged to successively register during the motion of said disk, of the wires thereon, of the spring arranged to contact therewith, of the pipe connection between said pockets and the gasolene-tank which pipe is provided with any suitable means for heating and generating the gas therein, and the means through which to transmit the pressure caused by the explosions into the vapor-chamber from said disk-pockets as each pocket registers with the aperture provided, substantially as described and shown.

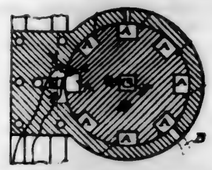

2. The combination with a gasolene-tank, a square shaft, of a disk, rotated thereby, of the pockets thereon and their copper wires, of a pipe attached to said tank and connecting with the passage into said pockets, of the hub and its axle and the vapor-chambers surrounding the same, of the plungers and their springs and the channels through which said plungers are let into said hub, of the plunger-guide, of the surrounding rim, of the opening through said rim to permit the pressure caused by the explosions in said pockets to enter said vapor-chamber, of the copper plates connected with said disk-pockets, of the spring, of the copper wire adapted to form connection between said spring and a storage battery and of the wire connecting with said plate and adapted to make complete circuit with the storage battery when the disk-pocket wire is brought into contact with said plate and secure explosion, substantially as described and for the purpose specified.

3. The combination with a gasolene-tank and its connecting-pipe of a disk rotated by a square vertical shaft, of the gas-pockets on said disk, of the disk-pocket wires, of the copper plate, of the spring and the connecting-wires to make complete circuit with a storage battery and cause explosions of gas as the pockets revolve, of an inclosed circular vapor-chamber, of the hub through the center thereof, of the plungers and the spring ends thereof let into said hub, of the elastic bumpers on said plungers, of the plunger-guide, of the means through which power is transmitted from the disk-pockets after explosions of the gas into said vapor-chamber, of a square vertical shaft, of a friction-wheel carried horizontally at the lower end thereof, of a lever connected at one end with the upper end of said shaft and of a safety-valve and its plunger having connection with the other end of said lever, and of the air-escapes, all substantially as described.

709,031. NON-REFILLABLE BOTTLE. RALPH MCCORD, St. Louis, Mo. Filed Jan. 2, 1902. Serial No. 88,162. (No model.)

Claim.—1. In a non-refillable bottle, the combination with the bottle-neck having an internal annular groove formed therein, of a stopper having longitudinal communicating chambers, transverse apertures leading from said chambers, a detachable valve-seat, a valve mounted in one of the chambers, and an expansible locking-band to hold the stopper in the bottle, substantially as specified.

2. In a non-refillable bottle, the combination with a bottle-neck having an annular groove, of a stopper carrying an expansible locking-band to engage the annular groove, said stopper having longitudinal communicating chambers and transverse discharge-apertures, a valve playing in one of the chambers, means to limit the movement of the valve, a detachable valve-seat, and means to permit a free circulation of air around and into the stopper when the contents are being poured from the bottle.

3. In a non-refillable bottle, the combination with the bottle-neck having an annular groove formed therein, of a stopper provided with a longitudinal eccentric, truncated, cylindrical chamber, and a ball-valve operating in the said chamber, a longitudinal segmental chamber communicating with the cylindrical chamber, and having an air-vent leading therein, transverse discharge-apertures leading from each of the chambers, a detachable valve-seat, and means to engage the annular groove to hold the stopper in a bottle-neck.

4. As an article of manufacture, the combination with the bottle-neck having an annular groove, of a stopper having an annular flange at its top provided with a flattened face, a recess beneath the annular flange, longitudinal chambers formed in the stopper and communicating with transverse discharge-apertures, a valve in one of the chambers, a valve-seat fitted on the lower end of the stopper, and a packing encircling the side of said valve-seat, means to prevent displacement of the valve-seat and the packing, and an expansible locking-band bent in semi-circular form having overlapping ends which fit within the recess beneath the annular flange, said locking-band adapted to expand and engage the annular groove in the bottle-neck, substantially as and for the purpose set forth.

709,032. STEAM-BOILER. CHARLES OLSON, Grand Rapids, Mich. Filed Mar. 28, 1902. Serial No. 100,061. (No model.)

Claim.—1. In a boiler, the combination of a tubular shell, an annular cap detachably secured thereto, removable heads and flues, a gasket, a ring engaging the gasket, and set-screws in the cap engaging the ring, substantially as described.

2. In a boiler, the combination of a plain tubular shell externally threaded at each end, annular internally-threaded caps having large central openings, set-screws at regular intervals in the caps, removable heads in the boiler, flues connecting the heads and attached thereto, a gasket covering the seam between the heads and shell, rings engaging the gasket and engaged by the set-screws, substantially as described.

3. The combination of a tubular shell, annular caps detachably secured thereto, set-screws at intervals in the caps, removable heads within the shell, flues connecting the heads and attached thereto, the outer flues being arranged in a circle and equidistant from the peripheries of the heads, gaskets covering the seam between the heads and shell, and rings engaging the gaskets and engaged by the set-screws, substantially as described.

4. In a boiler, the combination of a plain tubular shell externally threaded at the ends, internally-threaded caps having large central openings, set-screws at regular intervals in the caps, removable heads in the shell, flues connecting the heads, and arranged in a circle equidistant from the peripheries of the heads, gaskets covering the seams between the heads and shell, and yielding rings engaging the gaskets and engaged by the screws, substantially as described.

709,033. BOX-SANDING MACHINE. CHARLES H. PALMER and JOHN W. DUNBAR, Akron, Ohio, assignors to the Diamond Match Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 9, 1902. Serial No. 88,8. (No model.)

Claim.—1. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar by which box parts are conveyed to the latter, and means for feeding box parts in a path crosswise of said bar, in position for the end of the latter to enter therein, substantially as and for the purpose described.

2. In a sanding-machine, the combination of sanding mechanism, and a reciprocating bar adapted to enter and engage a box part and carry it to the sanding mechanism, substantially as and for the purpose described.

3. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar adapted to enter and engage a box part and carry it to

the sanding mechanism, and means for feeding box parts into the path of the bar, substantially as and for the purpose described.

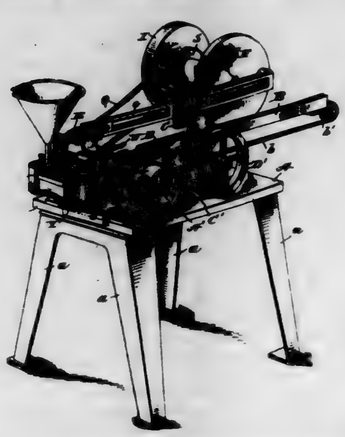

4. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar adapted to enter and engage a box part and carry it to the sanding mechanism, a source of supply of box parts, and means for feeding them from said source of supply into the path of the bar, substantially as and for the purpose described.

5. In a sanding-machine, the combination of sanding mechanism, a box-part carrier for conveying box parts to the latter, a box-part guide alongside the path of said carrier, and means for passing box parts from the guide to the carrier, substantially as and for the purpose described.

6. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar adapted to receive and convey box parts to said mechanism, a box-part guide alongside the path of the bar, and means for passing box parts from the guide into the path of the carrier, substantially as and for the purpose described.

7. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar adapted to receive and convey box parts to said mechanism, a trough-form, box-part guide alongside the path of said bar, and means for passing box parts from the guide into the path of the bar, substantially as and for the purpose described.

8. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar adapted to receive and convey box parts to said mechanism, a trough-form, box-part guide alongside the path of said bar, and a box-part carrier that is movable crosswise of said guide, substantially as and for the purpose described.

9. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar adapted to receive and convey box parts to said mechanism, a trough-form, box-part guide alongside the path of said bar, a conveyor at the bottom of the guide, and means for passing box parts from the guide into the path of the bar, substantially as and for the purpose described.

10. In a sanding-machine, the combination of sanding mechanism, a reciprocating bar adapted to receive and convey box parts to said mechanism, and a yielding device adjacent to the path of the bar and adapted to engage a box part carried thereby, substantially as and for the purpose described.

11. In a sanding-machine, the combination of sanding mechanism, a reciprocating box-part-carrier bar, a trough with an open bottom, in line with said bar, and a spring adjacent to the path of the bar in position to engage a box part thereon, substantially as and for the purpose described.

12. In a sanding-machine, the combination of sanding mechanism, a box-part carrier, a box-part guide, and a second box-part carrier movable between the guide and the first carrier, substantially as and for the purpose described.

13. In a sanding-machine, the combination of sanding mechanism, a box-part-carrying bar, means for reciprocating the same, a trough-form box-part guide parallel with the path of said bar, a box-part carrier movable in a path that is crosswise of that of the bar, a trough-form guide into which the bar moves the box part, a spring to press against the box part when on the bar, and a device to remove the box part from said bar, substantially as and for the purpose described.

709,084. PAPER-MAKING WIRE FOR PAPER-MAKING MACHINES. HOWARD PARKER, Bellows Falls, Vt. Filed Mar. 29, 1901. Serial No. 53,534. (No model.)

Claim.—1. A paper-making wire for paper-making machines comprising a perforated metallic plate with a surface having an affinity for rubber, and the coating of rubber united in and by vulcanization to said metallic plate.

2. A paper-making wire for paper-making machines comprising a metallic plate having a surface which has an affinity for rubber, and the coating of rubber united in and by vulcanization to said metallic plate and extending through the perforations therein, all substantially as described.

3. A paper-making wire for paper-making machines comprising the plate of perforated metal, the plating of lead on said plate, and the coating of rubber united in and by vulcanization to the coating of lead and extending through the perforations in said plate of perforated metal, all substantially as described.

709,085. CREAM-SEPARATOR. CLARENCE W. PARKS, Lowell, Mich. Filed Sept. 20, 1901. Serial No. 75,755. (No model.)

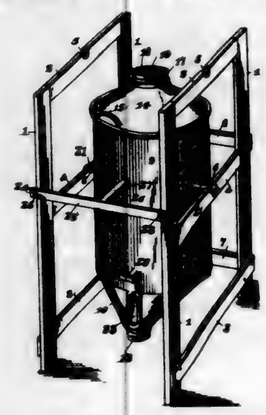

Claim.—1. In a device of the character described, the combination with a crate or stand having upper and lower seats, of a receptacle constructed to be interchangeably supported by the seats of the stand, and a single locking device engaging the receptacle while supported in either of the seats for holding the receptacle in an upright position.

2. In a device of the character described, the combination with a crate or stand having corresponding upper and intermediate cross-bars provided with corresponding seats, of a receptacle to fit within the stand and having opposite outwardly-directed projections to interchangeably fit the respective seats, and a locking device carried by the standard and engaging the receptacle in both of its positions for holding the same in an upright position.

3. In a device of the character described, the combination with a stand or support, of a creaming-can pivotally carried thereby and provided with a keeper, a locking device pivoted to one side of the frame and having its free end provided with a catch, a keeper upon the frame and located in the path of the catch to hold the locking device against accidental movement, and a laterally-projected catch carried by an intermediate portion of the locking device and disposed for engagement with the keeper of the can to prevent accidental swinging thereof.

4. In a device of the character described, the combination with a supporting stand or frame, of a creaming-can pivotally carried thereby and provided with a keeper, and a swinging cross-bar pivotally connected to one side of the frame and having a detachable connection with the opposite side thereof, the intermediate portion of the cross-bar being provided with a hook or catch for detachable engagement with the keeper of the can.

5. In a device of the character described, the combination with a stand or supporting-frame comprising corner-uprights and cross-bars, of a creaming-can pivotally supported within the frame, and a cross-bar pivotally connected to one of the uprights and having a detachable hooked connection with the opposite upright, the intermediate portion of the cross-bar being provided with a hook or catch to engage the can and hold it against accidental swinging movements.

6. The combination of a supporting-frame having an open front, an open top and an open upper back portion, pairs of upper and lower bearings, a vertically-disposed receptacle of less length than the frame and having normally closed top and bottom openings, and opposite outwardly-directed bearing projections normally seated in the lower pair of bearings of the frame and capable of being interchanged from one pair of bearings to the other, the receptacle also being capable of being inverted upon its pivots when seated in the upper pair of bearings to rest its lower end upon the back of the frame.

7. The combination of a supporting-frame having an open front, an open top and an open upper back portion, pairs of upper and lower bearings, a vertically-disposed receptacle of less length than the frame and having normally closed top and bottom openings, and opposite outwardly-directed bearing projections located above the middle of the receptacle, normally seated in the lower pair of bearings of the frame and capable of being interchanged from one pair of bearings to the other pair, the receptacle also being capable of being inverted upon its pivots when seated in the upper pair of bearings to rest its lower end upon the back of the frame, a keeper upon the lower front side of the receptacle, a cross-bar pivoted to one side of the upper front of the frame and having a detachable connection with the opposite side of the front, and a lateral inwardly-directed hook rigidly carried by the cross-bar and capable of engaging the keeper to hold the receptacle against accidental movement when supported in the upper pairs of bearings.

8. A combined shipping-crate and stand, comprising four corner-uprights, upper, lower and intermediate cross-bars connecting corresponding front and rear uprights, a bottom and an intermediate cross-bar connecting the rear uprights, the space between the rear uprights above the intermediate cross-bar being open, the opposite intermediate and top cross-bars being provided in their upper edges with corresponding notches, and a single cross-bar connecting the front uprights and having one end pivotally connected to one of said uprights, the opposite free end of the cross-bar having a hooked connection with the other upright, and the intermediate portion of the cross-bar having a laterally-projected hook.

709,086. SEED-GATHERER. JOSIAH PRICE, Nicholasville, Ky. Filed Oct. 30, 1901. Serial No. 80,594. (No model.)

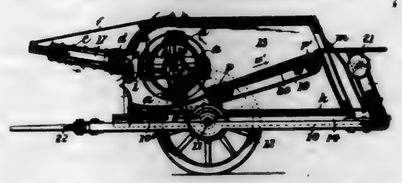

Claim.—1. A seed-gatherer, comprising a movable main frame, a spring-controlled rockable body thereon, a rotatable stripping-cylinder in the body, and a comb at the front of the stripping-cylinder.

2. A seed-gatherer, comprising a movable main frame, a body adapted to rock thereon, a rotatable stripping-cylinder having series of spaced teeth thereon, and a spring-controlled comb at the front of the stripping-cylinder.

3. A seed-gatherer, comprising a wheeled main frame, a body adapted to rock therein, a stripping-cylinder having series of teeth diagonally disposed on the periphery thereof, an upright comb mounted on a cross-bar, said bar being spring-cushioned and adapted to slide on the bottom frame of the body, and an apron adjustable above and forward of the comb.

4. A seed-gatherer, comprising a main frame, a transverse axle, wheels thereon, a body rockable on said axle, a rotatable stripping-cylinder in the body, a slidable spring-cushioned comb on a cross-bar at the front of the stripping-cylinder, an endless apron having spaced ribs thereon and adjustably supported on the body above the comb, an endless apron in the body behind the stripping-cylinder, and means to drive the cylinder and both aprons.

5. A seed-gatherer, comprising a wheeled main frame, a spring-controlled tilting body therein, a rotatable toothed cylinder in the body and a stripping-comb at the front of the body adjacent the cylinder.

6. A seed-gatherer, comprising a wheeled main frame, a spring-controlled tilting body therein, a rotatable toothed cylinder, a stripping-comb adjacent the cylinder, and adjustable means forward of the comb to cause engagement therewith of the grain or grain.

709,087. TREATMENT OF TELLURIDE GOLD ORES. WALTER PETTYBRIDGE, London, England. Filed Aug. 19, 1901. Serial No. 72,069. (No specimens.)

Claim.—1. A process for the decomposition of ores containing telluride of gold, consisting in reducing the ore to a finely-divided state, then exposing the ore to the action of a solution of ferric chlorid of a specific density of about 1.16, and continuing the treatment until the tellurium is in solution.

2. In the decomposition of ores containing telluride of gold, the process of reducing the ore to a finely-divided state and then exposing the ore to the action of a solution of ferric chlorid, alone, to attack the tellurium.

3. In the decomposition of ores containing telluride of gold, the process of reducing the ore to a finely-divided state and then exposing the ore to the action of a heated and agitated solution of ferric chlorid, alone, to attack the tellurium.

4. In the decomposition of ores containing telluride of gold together with iron, the process of reducing the ore to a finely-divided state, treating the ore with hydrochloric acid and water to form ferric chlorid in solution, and then decomposing the telluride of gold by means of such ferric chlorid.

709,088. PROCESS OF TREATING TELLURIDE GOLD ORES. WALTER PETTYBRIDGE, London, England. Filed Sept. 23, 1901. Serial No. 76,267. (No specimens.)

Claim.—1. A process for the decomposition of telluride of gold contained in ores, consisting in pulverizing the ore and treating the pulverized ore with a solution of ferric sulfate, used alone, resulting in the dissolving of the tellurium and the freeing of the gold in a solid form, substantially as described.

2. A process for the decomposition of telluride of gold contained in ores, consisting in pulverizing the ore and treating the pulverized ore with a solution of ferric sulfate, used alone, the separation of the filtrate, the precipitation of the tellurium by metallic iron and boiling, and the reconversion of the spent filtrate of ferrous sulfate into ferric sulfate by the action of potassium chlorate.

3. A process for the recovery of gold and tellurium from telluride of gold contained in ores, consisting in treating the pulverized ore with a solution of ferric sulfate, used alone; separating the filtrate from the solid residue; treating the residue for recovery of the free and solid gold therein, treating the filtrate for precipitation of the tellurium by metallic iron and boiling, separating the further filtrate of ferrous sulfate, and converting the ferrous sulfate into ferric sulfate by oxidation.

709,089. COMBINED ELECTRIC AND GAS LIGHTING SYSTEM. FRED G. PICKERT, Kansas City, Mo. Filed May 28, 1901. Serial No. 61,910. (No model.)

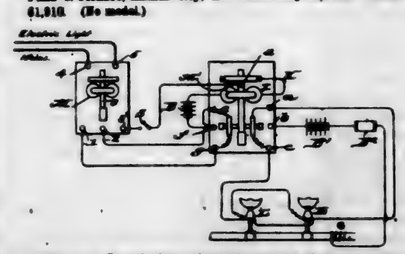

Claim.—1. In a device of the kind described, the combination with an initial circuit-closer, of a secondary circuit-closer, a battery arranged between the initial and the secondary circuit-closers, a commutator arranged adjacent to the secondary circuit-closer and operated by the vibration of the armature of the said secondary circuit-closer, a sparking coil connected with the automatic lighting and extinguishing device, said sparking coil being also connected with the commutator of the secondary circuit-closer, and a battery interposed between said commutator and sparking coil, substantially as shown and described.

2. In a device of the kind described, the combination with a primary circuit-closer, of a secondary circuit-closer having a vibrating armature, a double commutator arranged in connection with the secondary circuit-closer, a battery arranged between the primary and secondary circuit-closers, and a battery and sparking coil connected with the secondary closer, substantially as described.

3. In a device of the kind described, the combination with a secondary circuit-closer, having a vibrating armature, of the pawl attached thereto, the ratchet-wheel operated by the said pawl, the commutator-

disks arranged upon the ratchet-wheel shaft, and the brushes arranged in connection with the said commutator-disks and the battery and sparking coil arranged in connection with the said commutator-disks, substantially as and for the purpose described.

709,040. RAILWAY-SIGNAL. JONATHAN D. PEER, AURORA, Ill., assignor to Miller Signal Company, Chicago, Ill., a Corporation of Illinois. Filed Mar. 21, 1901. Serial No. 52,222. (No model.)

Claim.—1. The combination of a railroad-track electrically divided into blocks and having insulated track-rail sections, a signal-controlling electric generator connected with two sections located one in advance of the other to form therewith a local partial circuit, a pole-changer for said local partial circuit, said local partial circuit being normally closed so as to supply an impulse in one direction or the other to said rail-sections, depending upon the position of said pole-changer, means for operating said pole-changer, a train-carried electrically-controlled clear-signal, and track-engaging conductors for simultaneously engaging said last-named rail-sections to conduct the controlling-current to the train, substantially as and for the purpose set forth.

2. The combination of a railroad-track electrically divided into blocks and having relatively short insulated rail-sections at the block-junctions, the track being electrically continuous between said short sections, a signal-controlling electric generator connected with a relatively short section and an adjacent section, a pole-changer for the local partial circuit thus formed, the local partial circuit being normally closed to supply an impulse to the last-named rail-sections in one direction or the other, according to the position of the pole-changer, means for operating said pole-changer, a transient clear-signal, a transient electrically-controlled device controlling said signal, and conductors leading from said device and engaging the track one in advance of the other and serving normally to conduct current to said device when said last-named rail-sections are simultaneously engaged, substantially as and for the purpose set forth.

3. The combination of a railroad-track electrically divided into blocks and having insulated track-rail sections, a signal-controlling electric generator connected with two sections located one in advance of the other, a pole-changer for the local partial circuit thus formed, a controlling instrument for said pole-changer connected with both track-rails at the rear end of the block in advance of the block-junction with which said electric source is connected, a track-battery connected with the advance ends of both track-rails of said last-named block, a transient signal, an electrically-controlled transient device controlling said signal, and conductors leading from said device and located to simultaneously engage said last-named rail-sections, whereby a signal-controlling current is normally supplied to said device at the block-junction, substantially as and for the purpose set forth.

4. The combination of a railroad-track electrically divided into blocks and having insulated track-rail sections, a signal-controlling electric generator for each block-junction, and having connection with two rail-sections to form therewith a local partial circuit, a pole-changer for each local partial circuit, a controlling instrument for each pole-changer energized from the signal-controlling generator of the advance block-junction, and a transient signal mounted to traverse said track, and provided with conductors for simultaneously engaging said last-named two rail-sections, substantially as and for the purpose set forth.

5. The combination of a railroad-track electrically divided into blocks and having insulated track-rail sections, a signal-controlling electric generator for each block-junction, and having connection with two rail-sections to form therewith a local partial circuit, a pole-changer for each local partial circuit, a controlling instrument for each pole-changer having one conductor connected with the track at the rear end of the advance block and another conductor connected with the track at the advance block-junction, means for completing the circuit of said instrument through the signal-controlling generator of the advance block and through a section of the track, a switch in said last-named circuit, a switch-controlling instrument connected with both track-rails at the rear end of said last-named block, a track-battery connected with both track-rails at the advance end of said block, and a transient electrically-controlled signal mounted to traverse said track and provided with conductors for simultaneously engaging said last-named two rail-sections, substantially as described.

6. The combination of a track divided into blocks and having insulated rail-sections, a signal-controlling battery for each block connected with two rail-sections of one track-rail, a pole-changer for the local partial circuit thus formed at each block-junction, an instrument controlling each pole-changer and connected with the signal-controlling battery at the block-junction in advance thereof, a switch in the circuit of said last-named instrument, a switch-controlling instrument connected with both track-rails near the rear end of each block, a battery energizing each switch-controlling instrument and connected with both track-rails near the advance end of the block, and an electrically-controlled transient signal mounted to traverse said track and having track-engaging conductors located one in advance of the other, substantially as described.

7. The combination of a track divided into blocks and having insulated rail-sections, a signal-controlling battery for each block-junction having connections with rail-sections located one in advance of the other, a pole-changer for each local partial circuit thus formed, an instrument controlling each pole-changer and having a conductor connected with the track near the rear end of the block and a conductor leading to the signal-controlling battery of the block-junction in advance, switches interposed in the course of said last-named conductor near its rear and advance ends, switch-controlling instruments connected with both track-rails near the rear ends of the several blocks, switch-controlling batteries connected with both track-rails near the advance ends of the several blocks, and an electrically-controlled transient signal mounted to traverse said track and having track-engaging conductors located one in advance of the other, substantially as described.

8. The combination of a track electrically divided into blocks, and having at each block-junction a relatively short rail-section, the track-rail between said relatively short sections being electrically continuous, signal-controlling batteries for the several block-junctions, each having connection with a relatively short section and with the advance end of the adjacent section in the rear thereof, a pole-changer for each local partial circuit thus formed, a controlling instrument for each pole-changer having a conductor connected with the rear end of the rail-section in advance of the corresponding relatively short section and another conductor connected with the circuit of the signal-controlling battery at the advance block-junction, a switch in the circuit of each pole-changer-controlling instrument, a switch-controlling instrument connected with both track-rails at the rear end of each block, a track-battery connected with both track-rails at the advance end of each block, and a transient electrically-controlled signal mounted to traverse said track, and provided with conductors for simultaneously engaging the two rail-sections of the local partial circuit, substantially as described.

9. The combination of a track electrically divided into blocks, one of the track-rails having at each block-junction a relatively short insulated rail-section, a signal-controlling battery for each block-junction connected with the corresponding short rail-section and with the advance end of the rear adjacent rail-section, a pole-changer for each local partial circuit thus formed, an instrument for automatically maintaining each local partial circuit in a closed condition to deliver a signal, transient signal mechanism mounted to traverse said track and comprising clear and danger signals, an electrically-controlled device controlling said signals, and conductors leading from said device and simultaneously engaging a relatively short rail-section and an adjacent rail-section when a block-junction is encountered, substantially as and for the purpose set forth.

10. The combination of a track divided into block-junctions and having insulated rail-sections, train-carried signal mechanism comprising a signal, an electrically-controlled device controlling said signal, said device including a magnet equipped with opposite windings, a conductor connected with one end of each of said windings and leading from said device to the track, two additional conductors connected with said windings at their opposite ends and leading from said device to the track and engaging the track, one in advance of and the other in the rear of said first-named track-engaging conductor, whereby the same signal will be given whether the current be conducted through the two advance track-engaging conductors or the two rear track-engaging conductors, substantially as described.

11. The combination of a track divided into block-junctions and having insulated rail-sections, train-carried signal mechanism comprising a signal, an electrically-controlled device controlling said signal, and supplied with permanent magnets, said device being equipped with opposite windings, a conductor connected with one end of each of said windings and leading from said device to the track, two additional conductors connected with the opposite ends of said windings and leading from said device to the track and engaging the track, one in advance of and the other in the rear of said first-named track-engaging conductor, whereby the same signal will be given whether the current be conducted through the two advance track-engaging conductors or the two rear track-engaging conductors, substantially as described.

709,041. BOOT-STITCHING MACHINE. PERCY RANDALL and GEORGE DAVIS, Northampton, England. Filed Apr. 24, 1902. Serial No. 104,471. (No model.)

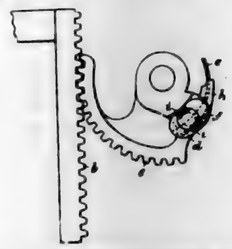

Claim.—1. In a rotary boot-stitching machine the combination of a curved awl, a segment to which it is attached, means for rotating the segment, an awl-cap attached to the segment for holding the awl in place and a pricker-blade fast with the cap.

2. In the rotary boot-stitching machine the combination of a curved awl, a segment to which it is attached, means for rotating the segment, an awl-cap for securing the awl to the segment and a curved pricker-blade formed with the cap and concentric with the awl.

709,042. STEAM-GENERATOR OR WATER-HEATER. CHARLES M. RAYMOND, Cleveland, Ohio, assignor of one-half to Louis R. Hoffman, Cleveland, Ohio. Filed Mar. 17, 1902. Serial No. 98,587. (No model.)

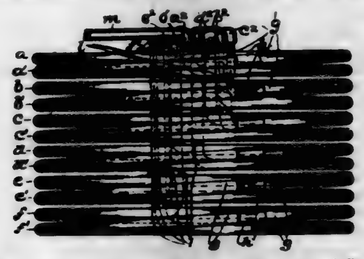

Claim.—1. A steam generator or heater of the character indicated, comprising pairs of helical pipe-sections arranged, respectively, in a horizontal or approximately horizontal plane and at short intervals vertically, which pipe system has the two sections of each pair of helical sections arranged one above the other and corresponding or approximately corresponding with each other in dimensions and number of coils and communicating with each other at their outermost coils and having their innermost coils provided, respectively, with an upward extension / projecting upwardly; a pipe arranged to conduct fluid from the pipe system and connected and communicating with the innermost coil of the upper section of the lowermost pair of helical pipe-sections, a fluid-supply pipe connected and communicating with the upward extension of the innermost coil of the lower section of the uppermost pair of helical pipe-sections, and a connection between the upward extension of the innermost coil of the lower section of each remaining pair of helical pipe-sections and the upward extension of the innermost coil of the upper section of the pair of helical pipe-sections next above, substantially as and for the purpose set forth.

2. A steam generator or heater of the character indicated, comprising pairs of helical pipe-sections arranged, respectively, in a horizontal or approximately horizontal plane and at short intervals vertically and constituting a partial inclosure for a space or opening *k* arranged centrally of and extending from top to bottom of the said pipe system, which pipe system has the two sections of each pair of helical sections arranged one above the other and communicating with each other at their outermost coils and having their innermost coils provided, respectively, with an upward extension / projecting upwardly through the aforesaid opening or space; a pipe arranged to conduct fluid from the pipe system and connected and communicating with the innermost coil of the upward extension of the upper section of the lowermost pair of helical pipe-sections; a fluid-supply pipe connected and communicating with the upward extension of the innermost coil of the lower section of the uppermost pair of helical pipe-sections, and a connection between the upward extension of the innermost coil of the lowermost section of each remaining pair of helical pipe-section and the upward extension of the innermost coil of the upper section of the pair of helical pipe-sections next above, substantially as and for the purpose set forth.

3. A steam generator or heater of the character indicated, comprising pairs of helical pipe-sections arranged, respectively, in a horizontal or approximately horizontal plane and at short intervals vertically, which pipe system has the two sections of each pair of helical sections arranged one above the other and communicating with each other at their outermost coils and having their innermost coils provided, respectively, with an upward extension / projecting upwardly to and above the uppermost helical section; a pipe arranged to conduct fluid from the pipe system at the top of the pipe system and connected and communicating with the upward extension of the innermost coil of the upper section of the lowermost pair of helical pipe-sections; a fluid-supply pipe arranged to supply fluid to the pipe system at the top of the pipe system and connected and communicating with the upward extension of the innermost coil of the lower section of the uppermost pair of helical pipe-sections; and a pipe connection, above the uppermost helical pipe-section, between the upward extension of the innermost coil of the lowermost section of each remaining pair of helical pipe-sections and the upward extension of the innermost coil of the upper section of the pair of helical pipe-sections next above.

4. A steam generator or heater of the character indicated, comprising pairs of helical pipe-sections arranged, respectively, in a horizontal or approximately horizontal plane and at short intervals vertically and constituting a partial inclosure for a space or opening *k* formed centrally of and extending from top to bottom of the said pipe system, which pipe system has the two sections of each pair of helical sections arranged one above the other and communicating with each other at their outermost coils and having their innermost coils provided, respectively, with an upward extension / projecting upwardly within the aforesaid space or opening; a pipe arranged to conduct fluid from the pipe system and connected and communicating with the innermost coil of the upper section of the lowermost pair of helical pipe-sections; a fluid-supply pipe connected and communicating with the upward extension of the innermost coil of the lower section of the uppermost pair of helical pipe-sections, and a connection between the upward extension of the innermost coil of the lowermost section of each pair of helical pipe-sections, except the lower section of the uppermost pair of helical sections, and the upward extension of the innermost coil of the upper section of the pair of helical pipe-sections next above.

5. A steam generator or heater of the character indicated, comprising pairs of helical pipe-sections arranged, respectively, in a horizontal or approximately horizontal plane and at short intervals vertically, which pipe system has the outermost coils of the two sections of each pair of helical sections joined together by a union; a pipe arranged to conduct fluid from the pipe system and connected and communicating with the innermost coil of the upper section of the lowermost pair of helical pipe-sections; a fluid-supply pipe connected and communicating with the innermost coil of the lower section of the uppermost pair of helical pipe-sections, and a connection between the innermost coil of the lowermost section of each pair of helical pipe-sections, except the lower section of the uppermost pair of sections, and the innermost coil of the upper section of the pair of helical pipe-sections next above.

709,048. NUT-LOCK. GEORGE H. ROSSER, Sr., New York, N. Y. Filed Sept. 14, 1901. Serial No. 75,266. (No model.)

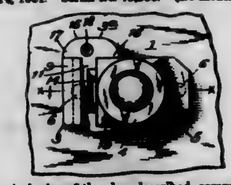

Claim.—1. A device of the class described, comprising a base-plate provided with means to prevent the rotation thereof and at one side of its upper surface with an upwardly-projecting rib having at the top thereof an inwardly-extending shoulder and a locking device fitting under said shoulder and against said rib and pressing against the nut and provided with a head bearing on one side against one face of the base-plate and on the other side against one face of the nut and with the end portion adapted to be bent into engagement with another face of the nut.

2. A device of the class described, comprising a base-plate provided with means to prevent the rotation thereof and at one side of its upper surface with an upwardly-projecting rib having at the top thereof an inwardly-projecting shoulder and a locking device fitting under said shoulder and against said rib and between the nut and base-plate and provided with a shoulder bearing against the nut and with a head projecting from opposite sides of said device and bearing against the base-plate and nut and with an end portion bent into engagement with another face of the nut.

709,044. MECHANISM FOR TRIMMING MANTLES. JAMES T. ROSIE, New York, N. Y. Filed Dec. 23, 1901. Serial No. 87,634. (No model.)

Claim.—1. In a mechanism for trimming mantles, the combination with a vertically-arranged mandrel over which the mantle fits, and the wall of which mandrel serves as a support for the lower portion of the wall of the mantle, a knife for trimming the mantle, and means for rotating one of said parts in contact with the other.

2. In a mechanism for trimming mantles, the combination with a mandrel over which the mantle fits, and the wall of which mandrel serves as a support for the lower portion of the wall of the mantle, an adjustable part carried by the mandrel, a knife for trimming the mantle, and means for rotating one of said parts in contact with the other.

3. The combination in a mechanism for trimming mantles, of a mandrel for supporting a mantle, means for causing a rotation of the mandrel in one direction, and other means for causing a rotation of the mandrel in a reverse direction, and a knife adapted to coact with the mandrel to trim the mantle supported thereby.

4. The combination in a mechanism for trimming mantles, of a mandrel for supporting a mantle, a cord coiled about the mandrel for causing a rotation of the mandrel in one direction, a weight connected to the cord and adapted when the cord is released for rotating the mandrel in a reverse direction, and a knife adapted to coact with said mandrel for trimming the mantle supported thereby

5. The combination in a mechanism for trimming mantles of a mandrel for supporting a mantle and adjustable extension on said mandrel, and a knife adapted to coact with said mandrel to trim the mantle supported thereby.

6. The combination in a mechanism for trimming mantles, of a rotatable mandrel for supporting a mantle, a knife adapted to coact with said mandrel for trimming the mantles, a lever on which said knife is mounted and means operating on said lever to move the knife into and out of operative position relatively to the mandrel, said means comprising a spring for moving the lever in one direction and a cam for moving the lever in a reverse direction.

7. The combination in a mechanism for trimming mantles, of a plurality of mandrels for supporting mantles, a plurality of knives for coacting with said mandrels for trimming the mantles, means for simultaneously moving the knives into and out of operative position relatively to said mandrels and means for causing a simultaneous rotation of said mandrels.

709,045. RAIL-JOINT. LUDWIG ROTH, St. Louis, Mo. Filed July 2, 1902. Serial No. 114,144. (No model.)

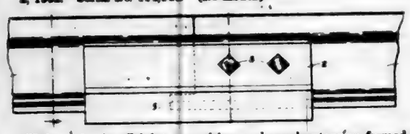

Claim.—1. A rail-joint comprising a channel extension formed integrally with one end of the rail, and adapted to receive the opposite end and support the flanges of the next adjacent rail, substantially as set forth.

2. A rail-joint comprising a channel extension formed integrally with one end of the rail and having its outer walls extending respectively beyond the web and below the lower flange thereof, a pocket formed in the chamber of the channel below the end of the rail proper, and adapted to receive the opposite end, and support the flanges of the next adjacent rail, a tongue forming a continuation of the lower flange of the end inserted into the channel, and adapted to be received by the said pocket, and securing-bolts passed through the side walls of the channel and the web of the rail end thus inserted, substantially as set forth.

709,046. POCKET-COMPASS. CHARLES C. RUDDER, Butte, Mont. Filed July 16, 1901. Serial No. 68,508. (No model.)

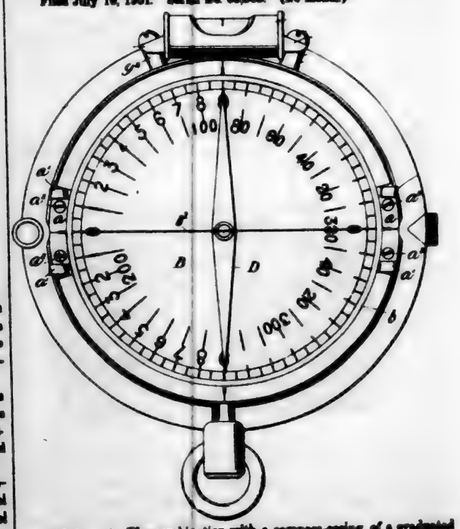

Claim.—1. The combination with a compass-casing, of a graduated disk revolubly mounted upon a central spindle within said casing, the casing inclosing said disk at the bottom and sides but being open at the top whereby the entire upper face of said disk is exposed to view, a magnetic needle revolubly mounted above and independently of said disk, and adapted to read over the entire upper face of the disk at all times, and arresting devices for said disk, substantially as described.

2. The combination with a compass-casing, of a graduated disk revolubly mounted upon a central spindle within said casing, the casing inclosing said disk at the bottom and sides but being open at the top, whereby the entire upper face of said disk is exposed to view, a magnetic needle revolubly mounted above and independently of said disk, and adapted to read over the entire upper face of the disk at all times, arresting devices for said disk and independent arresting devices for said needle substantially as described.

3. In a compass, the combination with the casing, of a pivotally-mounted disk within said casing, provided with portions adapted to engage the top of the casing to arrest said disk, an adjusting-screw for raising said disk to bring said portions into engagement with the top of the casing, a center pin having a threaded portion passing through said adjusting-screw, and a needle mounted on said center pin above said disk whereby said center pin may be adjusted to raise the needle into contact with the top of the casing, substantially as described.

4. In a compass, the combination with the casing, of a pivotally-mounted disk within the casing provided with a vertically-disposed flange terminating at its upper end in a horizontal flange, and provided with a scale of divisions on the disk proper, the inner face of said vertical flange and the upper face of said horizontal flange, a needle mounted in said casing and adapted to rotate independently of said disk and independent devices for arresting the disk and needle, substantially as described.

5. In a compass, the combination with the casing, of a pivotally-mounted disk within the casing provided with a vertically-disposed flange terminating at its upper end in a horizontal flange, and provided with a scale of divisions on the disk proper, the inner face of said vertical flange and the upper face of said horizontal flange, a needle mounted in said casing and adapted to rotate independently of said disk and independent devices for arresting the disk and needle, and a weight secured to said disk eccentrically thereof, the compass-casing being also provided with division-markings, substantially as described.

6. In a compass, the combination with the compass-casing, provided with sighting devices, of a revolubie disk pivoted centrally within said casing, a weight secured to said disk eccentrically thereof, and an adjustable securing device passing eccentrically through said weight, whereby said weight may be adjusted with respect to said disk, substantially as described.

7. In a pocket-compass, the combination with the compass-casing provided with sighting devices, of a revolubie disk mounted in said casing, a needle mounted in said casing and adapted to rotate independently of said disk, independent arresting devices for said disk and needle, and a weight secured to said disk adjacent to its periphery, constructed to cause that portion of said disk to swing beneath its center, when the casing is held in a vertical position, whereby the device may be used as a clinometer and the disk arrested for reading, substantially as described.

8. In a compass, the combination with the circular casing, of a needle mounted in said casing, a ring revolubly mounted on the exterior of said casing, and a level secured to said ring, substantially as described.

9. In a compass, the combination with the casing provided with sighting devices, of a ring revolubly mounted on said casing, a level secured to said ring, devices for adjusting said level in the plane of said ring and independent devices for adjusting said level perpendicularly to the plane of the ring, substantially as described

10. In a compass, the combination with the casing provided with sighting devices, of a ring revolubly mounted on the casing, a level provided with bifurcated portions at each end, sleeves engaging said bifurcated portions of the level and provided with eccentric apertures therethrough and adjusting-screws passing through said sleeves threaded into said ring and having portions engaging the bifurcated portions of said level, whereby said level can be adjusted in the plane of the ring and also perpendicularly to the plane of the ring, substantially as described.

11. In a compass, the combination with the casing provided with sighting means and with an annular scale of divisions and a needle mounted in said casing, of a ring mounted revolubly on said casing and provided with index-marks, adapted to register with the divisions of said scale on the casing, and a bubble-tube or level secured to said ring, substantially as described.

12. In a compass, the combination with the casing, of a ring revolubly mounted thereon, a level or bubble-tube secured to said ring and a torch pivotally secured to said casing and having a wick-tube extending to the top of the casing, whereby said bubble-tube may be rotated about the casing and said bubble-tube and the compass illuminated at any point, substantially as described.

ing inclosing said disk at the bottom and sides but being open at the top whereby the entire upper face of said disk is exposed to view, a magnetic needle revolubly mounted above and independently of said disk, and adapted to read over the entire upper face of the disk at all times, and arresting devices for said disk, substantially as described.

2. The combination with a compass-casing, of a graduated disk revolubly mounted upon a central spindle within said casing, the casing inclosing said disk at the bottom and sides but being open at the top, whereby the entire upper face of said disk is exposed to view, a magnetic needle revolubly mounted above and independently of said disk, and adapted to read over the entire upper face of the disk at all times, arresting devices for said disk and independent arresting devices for said needle substantially as described.

3. In a compass, the combination with the casing, of a pivotally-mounted disk within said casing, provided with portions adapted to engage the top of the casing to arrest said disk, an adjusting-screw for raising said disk to bring said portions into engagement with the top of the casing, a center pin having a threaded portion passing through said adjusting-screw, and a needle mounted on said center pin above said disk whereby said center pin may be adjusted to raise the needle into contact with the top of the casing, substantially as described.

4. In a compass, the combination with the casing, of a pivotally-mounted disk within the casing provided with a vertically-disposed flange terminating at its upper end in a horizontal flange, and provided with a scale of divisions on the disk proper, the inner face of said vertical flange and the upper face of said horizontal flange, a needle mounted in said casing and adapted to rotate independently of said disk and independent devices for arresting the disk and needle, substantially as described.

5. In a compass, the combination with the casing, of a pivotally-mounted disk within the casing provided with a vertically-disposed flange terminating at its upper end in a horizontal flange, and provided with a scale of divisions on the disk proper, the inner face of said vertical flange and the upper face of said horizontal flange, a needle mounted in said casing and adapted to rotate independently of said disk and independent devices for arresting the disk and needle, and a weight secured to said disk eccentrically thereof, the compass-casing being also provided with division-markings, substantially as described.

6. In a compass, the combination with the compass-casing, provided with sighting devices, of a revolubie disk pivoted centrally within said casing, a weight secured to said disk eccentrically thereof, and an adjustable securing device passing eccentrically through said weight, whereby said weight may be adjusted with respect to said disk, substantially as described.

7. In a pocket-compass, the combination with the compass-casing provided with sighting devices, of a revolubie disk mounted in said casing, a needle mounted in said casing and adapted to rotate independently of said disk, independent arresting devices for said disk and needle, and a weight secured to said disk adjacent to its periphery, constructed to cause that portion of said disk to swing beneath its center, when the casing is held in a vertical position, whereby the device may be used as a clinometer and the disk arrested for reading, substantially as described.

8. In a compass, the combination with the circular casing, of a needle mounted in said casing, a ring revolubly mounted on the exterior of said casing, and a level secured to said ring, substantially as described.

9. In a compass, the combination with the casing provided with sighting devices, of a ring revolubly mounted on said casing, a level secured to said ring, devices for adjusting said level in the plane of said ring and independent devices for adjusting said level perpendicularly to the plane of the ring, substantially as described

10. In a compass, the combination with the casing provided with sighting devices, of a ring revolubly mounted on the casing, a level provided with bifurcated portions at each end, sleeves engaging said bifurcated portions of the level and provided with eccentric apertures therethrough and adjusting-screws passing through said sleeves threaded into said ring and having portions engaging the bifurcated portions of said level, whereby said level can be adjusted in the plane of the ring and also perpendicularly to the plane of the ring, substantially as described.

11. In a compass, the combination with the casing provided with sighting means and with an annular scale of divisions and a needle mounted in said casing, of a ring mounted revolubly on said casing and provided with index-marks, adapted to register with the divisions of said scale on the casing, and a bubble-tube or level secured to said ring, substantially as described.

12. In a compass, the combination with the casing, of a ring revolubly mounted thereon, a level or bubble-tube secured to said ring and a torch pivotally secured to said casing and having a wick-tube extending to the top of the casing, whereby said bubble-tube may be rotated about the casing and said bubble-tube and the compass illuminated at any point, substantially as described.

13. In a compass, the combination with the casing, of a rotary disk mounted in said casing, a needle mounted in said casing and adapted to rotate independently of said disk, independent arresting devices for said disk and needle, folding diopters hinged to said casing and provided at their lower ends with bifurcated portions and at their upper ends with hook portions terminating in indicating-points, each of said diopters being provided with a sight-line, coinciding with its said indicating-point, substantially as described.

14. In a compass, the combination with the casing, of a rotary disk mounted in said casing, a needle mounted in said casing and adapted to rotate independently of said disk, independent arresting devices for said disk and needle, folding diopters, hinged to said casing and provided at their lower ends with bifurcated portions and at their upper ends with hook portions terminating in indicating-points, each of said diopters being provided with a sight-line, coinciding with its said indicating-point, one of said diopters being provided with a mirror above its bifurcated portion, substantially as described.

15. In a compass, the combination with the casing provided with a needle, of a support below said casing, pivotally connected with said casing, folding diopters pivoted to said casing, and adapted to be swung over and downwardly into the plane of the said support and provided with indicating-points, whereby the compass-casing may be revolved upon said support, the indicating-points of said diopters allowed to rest upon a paper and points taken directly therefrom in plotting, substantially as described.

16. In a compass, the combination with a casing, of a disk revolubly mounted therein, a weight secured eccentrically to said disk, a glass cover secured to said casing, flush with the upper surface thereof and a permanent sighting-line marked upon said glass cover, substantially as described.

17. In a compass, the combination with the casing, of a center pin threaded into the bottom thereof, a transparent cover for said casing, a needle revolubly mounted on said center pin beneath said cover, and having parts adapted to engage said cover to arrest the needle when the center pin is turned to raise the needle, said center pin having a part for engaging a part connected with the casing to prevent overwinding and thereby protect said center pin, substantially as described.

18. In a compass, the combination with the casing provided with a cover, of a vertically-adjustable center pin, and a needle having a bearing engaging said pin, said needle having lateral spring portions extending above the said bearing, and adapted to engage the said cover before the said bearing, whereby the needle can be arrested without injury to the center pin or pivot-cup, substantially as described.

19. In a compass, the combination with the casing, of a rotary disk mounted within the casing and provided with a central bearing, a support for said bearing threaded into said casing, a center pin threaded in said disk-support, and extending through said disk, and a needle mounted upon said center pin and adapted to revolve freely, independently of said disk, substantially as described.

20. In a compass, the combination with the casing provided with a transparent cover, of a rotary disk mounted within the casing below said cover and provided with a central bearing, an adjusting-screw threaded into the bottom of the casing adapted to support the central bearing of said disk, and to raise said disk into contact with said cover to arrest said disk, said screw having a shoulder for engaging the casing to prevent overwinding, a center pin threaded into said adjusting-screw and extending through said disk, a needle mounted on said center pin and adapted to revolve freely, said needle having parts adapted to engage the said cover when the needle is raised by said center pin, to arrest the needle, said center pin having a shoulder to engage said adjusting-screw to prevent overwinding, substantially as described.

21. In a compass, the combination with the casing provided with a transparent top or cover, of a center pin having a threaded portion, and a shoulder to prevent overwinding and a needle having a central bearing engaging the center pin, and lateral spring portions extending therefrom and curved upward above the plane of the top of said bearing, substantially as described.

22. In a compass, the combination with the casing, of an annular torch-body, pivotally secured to the casing and provided with an upwardly-extending wick-tube, substantially as described.

23. In a compass, the combination with the casing, of an annular torch-body detachably and pivotally secured to the bottom of said casing and provided with a vertically-extending wick-tube, substantially as described.

24. In a compass, the combination with the casing provided with a transparent top or cover, of a disk pivotally mounted at its center within said casing, a needle in said casing, a revolubie ring on said casing, a level secured to said ring, folding diopters secured to said casing, and an annular torch pivotally secured to the bottom of the casing, forming a support

thereto and provided with a vertically-extending wick-tube, substantially as described.

25. In a compass, the combination with the casing provided with a vertically-adjustable center pin, extending through the bottom of said casing, a needle on said center pin, an annular torch-body pivotally secured to the bottom of the casing provided with a wick-tube extending above the top of the casing, said torch being provided with depending feet forming a support for the wick-tube and casing and protecting the outer end of the center pin from injury, substantially as described.

709,047. **KNITTING-MACHINE.** MAX SALDEN, New York, N. Y., assignor, by direct and mesne assignments, to Otto L. Mayer, New York, N. Y. Filed Mar. 13, 1901. Renewed Dec. 26, 1901. Serial No. 87,234. (No model.)

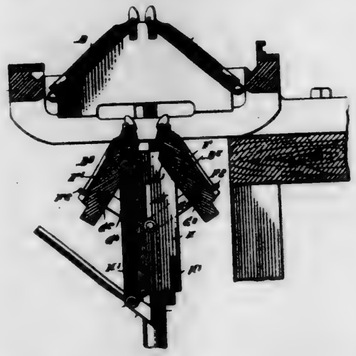

Claim.—1. A knitting-machine having groups of needles bodily movable with the fabric knitted, as set forth.

2. A knitting-machine having spaced groups of needles bodily movable with the fabric knitted, as set forth.

3. A knitting-machine, provided with needle-plates having movable sections, as set forth.

4. A knitting-machine, provided with needle-plates having movable sections arranged in pairs, as set forth.

5. A knitting-machine, provided with needle-plates having movable sections arranged in pairs, and means for moving said movable sections and their groups of needles bodily with the fabric knitted, as set forth.

6. A knitting-machine, provided with needle-plates having movable sections arranged in pairs, and means for moving said movable sections and their groups of needles bodily with the fabric knitted, said means operating in conjunction with the movement given to the carriage of the machine, as set forth.

7. A knitting-machine, provided with needle-plates having movable sections, needles contained in said plates and their sections, means for imparting a swinging motion to the said needle-plate sections and the groups of needles therein, and means for feeding said needle-plate sections in unison with the fabric as the latter is knitted, as set forth.

8. A knitting-machine, comprising a reciprocating carriage, a double yarn or thread carrier having releasing devices, means for operating the same, needle-plates having movable sections, needles contained in said needle-plates and their sections means for imparting a swinging motion to said needle-plates, and means for moving said sections and their groups of needles bodily downward with the fabric as the latter is knitted, as set forth.

9. A knitting-machine, comprising a reciprocating carriage, a double yarn or thread carrier having releasing devices, means for operating the same, needle-plates having movable sections, needles contained in said needle-plates and their sections, means for imparting a swinging motion to said needle-plates, and means for moving said sections and their groups of needles bodily downward with the fabric as the latter is knitted, said first-named means being under the control of the operator, and the second-named means operating in conjunction with the reciprocating carriage, as set forth

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709,048. **VICTUAL-PROTECTOR.** WILLIAM H. SAMMAN and JESSE H. SAMMAN, Schuylkill Haven, Pa. Filed Mar. 14, 1902. Serial No. 98,268. (No model.)

Claim.—1. A victual-protector for use in the bottom of cooking vessels, consisting of a sheet-metal plate, there being several rounded projections on the upper side of the protector-plate, and integral therewith, and perforations in the plate distributed among said projections.

2. A victual-protector, for use in the bottom of cooking vessels, consisting of a sheet-metal perforated plate, there being several rounded projections on the upper side of the protector-plate and integral therewith, and similar but reversed projections on the opposite side of the plate and serving as legs.

3. A victual-protector, for use in the bottom of cooking vessels, consisting of a sheet-metal perforated plate, there being several rounded projections on the upper side of the protector-plate and integral therewith, and an integral ribbed portion surrounding the part having said projections.

4. A victual-protector, for use in the bottom of cooking vessels, consisting of a sheet-metal perforated plate, said plate having integral projections, and a ribbed portion around its periphery.

5. A victual-protector, for use in the bottom of cooking vessels, consisting of a circular perforated plate having integral projections, a ribbed portion around the periphery of the plate, said ribs being at an angle to the radii of the plate.

6. A victual-protector for use in the bottom of cooking vessels, consisting of a sheet-metal plate, there being several integral projections extending from the plane of the plate upward, and separate projections extending from the plane of the plate downward, as and for the purpose set forth.

709,049. **MACHINE FOR FORMING AND DRYING TOOTHPICKS.** CHARLES F. SEAMMAN, Portland, Me.; Thalia L. Seamman administratrix of said Charles F. Seamman, deceased. Filed Oct. 19, 1901. Serial No. 79,223. (No model.)

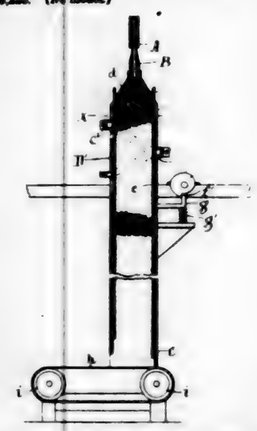

Claim.—1. In a machine for making and drying toothpicks, the combination of a toothpick-knife and a cutting-block, of a vertical spout for receiving the picks as formed, means for removing the picks from the lower end of the spout, a plate lining one of the sides of said spout and having a limited vertical motion therein, a lining for the inner surface of said plate having a pile-like inner surface and means for vertically reciprocating said plate.

2. In a machine for making and drying toothpicks, the combination of a toothpick-knife and a cutting-block, of a vertical spout for receiving the picks as formed, means for removing the picks from the lower end of the spout, two of the sides of said spout being formed of pervious material and each of the remaining sides having on its inner surface a plate adapted to have a limited vertical motion, a lining for the inner surface of said plate having a pile-like inner surface and means for vertically reciprocating said plate.

3. In a machine for making and drying toothpicks, the combination of a toothpick-knife and a cutting-block, of a vertical spout for receiving the picks as formed, means for removing the picks from the lower end of the spout, a plate forming the lining of one of the sides of said spout having a limited vertical motion therein, a lining for the inner surface of said plate having a pile-like inner surface and means for depressing said plate slowly and raising it quickly.

4. In a machine for making and drying toothpicks, the combination of a toothpick-knife and cutting-block, of a vertical spout for receiving the picks as formed, two opposite sides of said spout being formed of pervious material and each of the remaining sides of the spout having on its inner surface a plate lined with card-clothing and means for vertically reciprocating said plates.

5. In a machine for making and drying toothpicks, the combination of a toothpick-knife and a cutting-block, of a vertical spout for receiving the picks as formed, means for removing the picks at the lower end of the spout and a plate lining one of the sides of said spout and having a limited reciprocating vertical motion therein for passing the column of picks downward.

709,050. **MACHINE FOR DRYING TOOTHPICKS.** CHARLES F SEAMMAN, Portland, Me.; Thalia L. Seamman administratrix of said Charles F. Seamman, deceased. Filed Jan. 30, 1902. Serial No. 90,514. (No model.)

Claim.—1. In a machine for drying toothpicks the combination of a vertical spout for conveying the toothpicks in a solid column through the drier, said spout having one or more of its sides formed of wire-gauze or other like flexible material, a rigid support to which the lower end of said wire-gauze is secured and a flat spring resting against the outside of the gauze immediately above the rigid support.

2. In a machine for drying toothpicks the combination of a vertical spout for conveying the toothpicks in a solid column through the drier, said spout having one or more of its sides formed of wire-gauze or other like flexible material, a rigid support to which the lower end of said wire-gauze is secured and a flat spring-supported plate resting against the outside of the gauze immediately above the rigid support.

3. In a machine for drying toothpicks the combination of a vertical spout for conveying the toothpicks in a solid column through the drier, said spout having one or more of its sides formed of wire-gauze or other like flexible material, the lower end of the wire-gauze being provided with a slightly-yielding spring-support adapted to resist pressure from the inside of the spout.

709,051. **HEAT-RADIATOR FOR SMOKE-PIPES.** JOHN P. SCHEELER, Catasauqua, Pa. Filed Mar. 20, 1902. Serial No. 98,111. (No model.)

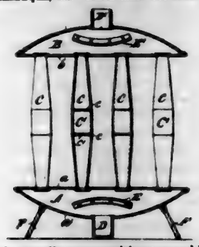

Claim.—1. A heat-radiator comprising top and bottom sections connected by one or more rows of vertical flues secured to the opposing flat wall thereof, the lower and upper walls of said sections being outwardly arched and having inlet and outlet connections respectively located midway of their length, and oppositely-arched deflector-plates in said sections covering said openings and forming reduced side passage-ways thereto, whereby the draft through the connecting-flues is equalized substantially as set forth.

2. The combination with the lower and upper radiator-sections of connecting double-conical flues having their reduced opposite ends connected to said lower and upper sections respectively and provided with partition-plates in the enlarged portions between the sections, said plates being formed with reduced passage-ways substantially as and for the purpose set forth.

3. A heat-radiator comprising similar reversely-arranged top and bottom horizontal sections having opposing flat walls and outwardly-arched outer walls with central openings, oppositely-arched deflector-plates in said sections covering said openings and forming reduced side passage-ways thereto, vertical double-conical flues having their reduced opposite ends connected to said opposing flat plates, and partition-plates in the enlarged portions of said flues having reduced openings therethrough substantially as and for the purpose set forth.

709,052. **ELECTRIC RAILWAY-SIGNAL.** CLAUDE D. SEAMAN, Topeka, Kans., assignor of one-half to C. C. Gardiner, Topeka, Kans. Filed Nov. 7, 1901. Serial No. 81,441. (No model.)

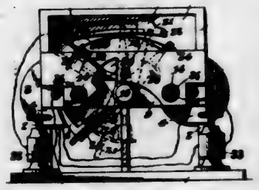

Claim.—1. In an electric railway-signal, the combination with a single two-battery track-circuit and a single relay included therein, of an alarm-circuit controlled by the armature of the relay.

2. In an electric railway-signal, the combination with a signal-block comprising track-sections, and a single normally closed two-battery track-circuit having its batteries connected with the tracks at the opposite ends of the block, of a single relay included in said track-circuit, and an alarm-circuit controlled by the armature of the relay.

3. In an electric railway-signal, the combination with a signal-block including tracks, one extending from end to end of the block and the other divided at the crossing by an insulating-joint, of a pair of batteries, one of which is connected with the tracks at each end of the block, a single relay having its terminals connected to the divided track at opposite sides of the crossing-joint, and an alarm-circuit controlled by the armature of the relay.

4. In an electric railway-signal, the combination with a single normally closed two-battery track-circuit, and a single relay included therein, of an alarm-circuit, and a contact device therefor, controlled by the armature of the relay and arranged to close the alarm-circuit when either of the batteries is short-circuited by a train approaching the crossing.

5. In an electric railway-signal, the combination with a two-battery track-circuit, and a single relay included therein, of an alarm-circuit, and a contact device for opening and closing the alarm-circuit, said contact device being controlled by the relay-armature and arranged to close the alarm-circuit when either battery is short-circuited by a train approaching the crossing, and when both batteries are short-circuited by a passing train.

6. In an electric railway-signal, the combination with a two-battery track-circuit, and a single relay included therein, of an alarm-circuit, and a contact device therefor arranged to close the alarm-circuit when a battery is short-circuited by a train approaching the crossing, and to open said circuit when a battery is short-circuited by a train receding from the crossing.

7. In an electric railway-signal, the combination with a two-battery track-circuit, and a single relay included therein, of an alarm-circuit, and a contact device therefor arranged to close the alarm-circuit when a battery is short-circuited by a train approaching the crossing, and when both batteries are short-circuited by a train located at the crossing, and to open said circuit when a battery is short-circuited by a train receding from the crossing.

8. In an electric railway-signal, the combination with a signal-block including tracks, one extending continuously from end to end of the block, and the other being divided by an insulating-joint located at the crossing, of a pair of batteries, one of which is connected with the tracks at each end of the block, a single relay having its terminals connected to the divided track at opposite sides of the crossing-joint, an alarm-circuit, and a contact device for opening and closing said circuit and controlled by the relay-armature, said contact device being arranged to close the alarm-circuit by the short-circuiting of a battery by a train approaching the crossing, and to close said circuit when a battery is short-circuited by a train receding from the crossing.

9. In an electric railway-signal, the combinatio. with a signal-block including tracks, one extending continuously from end to end of the block, and the other being divided by an insulating-joint located at the crossing, of a pair of batteries, one of which is connected with the tracks at each end of the block, a single relay having its terminals connected to the divided track at opposite sides of the crossing, an alarm-circuit, and a con-

that device for opening and closing said circuit and controlled by the armature of the relay, said contact device being arranged to close the alarm-circuit when one of the batteries is short-circuited by a train approaching the crossing, and when both batteries are short-circuited by a train located at the crossing, and to open the circuit when one of the batteries is short-circuited by a train receding from the crossing.

10. In an electric railway-signal, the combination with a two-battery track-circuit including a relay, a contact-arm operatively connected to the relay-armature, and an alarm-circuit, of an alarm-circuit terminal disposed for sliding contact with the arm when the latter is moved in one direction, and for electrical disconnection with the arm during the return movement of the latter.

11. In an electric railway-signal, the combination with a two-battery track-circuit including a relay, of an alarm-circuit, a contact-arm operated by the relay-armature and constituting one terminal of the alarm-circuit, a contact-plate constituting the other terminal of the alarm-circuit and disposed to compel the arm to traverse the opposite sides of the plate during its movement in opposite directions, and means for insulating the arm from one side of the plate, so that the alarm-circuit will be closed by the movement of the arm in one direction, and will be open during the movement of the arm in the opposite direction.

12. In an electric railway-signal, the combination with a two-battery track-circuit, and a relay included therein, of an alarm-circuit, a contact-arm constituting one terminal of the alarm-circuit and operatively related to the relay-armature, primary and secondary contact-plates constituting a divided terminal of the alarm-circuit, means for compelling the contact-arm to ride upon and electrically contact with the primary contact-plate prior to the contact of the arm with the secondary contact-plate, and means for preventing electrical contact of the arm with the primary plate as said arm is moved back toward its normal position after contact with the secondary contact-plate.

13. In an electric railway-signal, the combination with an alarm-circuit, of a swinging contact-arm constituting one terminal of the alarm-circuit, primary and secondary contact-plates constituting the other terminal of the alarm-circuit and disposed in overlapping relation, said contact-arm being related to the plates in a manner to cause it when moved in one direction to establish electrical contact with the primary contact-plates, to subsequently contact with the secondary contact-plate, and to move behind the primary contact-plate when returning to its normal position, and means for insulating the primary contact-plate from the arm when the latter is moved behind the same.

14. In a contact device for electric railway-signals and the like, the combination with an electric circuit, and a swinging contact-arm constituting one terminal thereof, of a second terminal comprising primary and secondary spring members, said primary member being extended beyond the end of the secondary member and having its extremity deflected, whereby the contact-arm is compelled to move in one direction in advance of the primary spring member, and is permitted to move in the opposite direction behind the latter, and an insulating material imposed upon one face of the contact-arm to prevent electrical contact thereof with the rear side of the primary contact member.

15. In an electric railway-signal, the combination with a track-circuit, and a relay, of an alarm-circuit, a contact device for said alarm-circuit including a weighted contact-arm operatively related to the relay-armature, and means for regulating the resistance opposed to the movement of said arm.

16. In an electric railway-signal, the combination with a track-circuit including a relay, of an alarm-circuit, a contact device for said circuit including a contact-arm operatively related to the relay-armature, and an adjustable weight connected to said arm to resist the movement thereof in one direction.

17. In an electric railway-signal, the combination with a track-circuit, a relay included therein, and an alarm-circuit, of a contact device for said alarm-circuit including a swinging contact-arm operatively related to the relay-armature, and adjustable primary and secondary weights connected to said contact-arm and arranged to resist the movement thereof in one direction.

18. In a circuit-closing device for electric railway-signals and the like, the combination with a contact-plate, of a swinging arm provided with a primary weight for retaining the arm in one position, a secondary weight movable independently of the arm, and means for connecting said arm through the movement thereof with the secondary weight, whereby initial movement of the arm in one direction will be opposed by the primary weight only, while continued movement thereof will be opposed by both the primary and secondary weights.

19. The combination with an electric circuit provided with a terminal, of a contact-arm arranged for sliding contact with said terminal when moved in one direction, and for electrical disconnection from the terminal during the return movement of the arm.

709,053. PHOTOGRAPHIC FILM. CHARLES H. SHAW, Brooklyn, N. Y. Filed Sept. 10, 1900. Serial No. 29,910. (No model.)

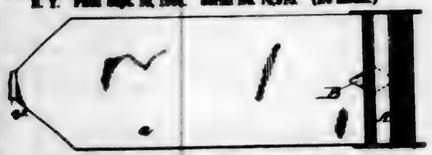

Claim.—1. In combination with a photographic film coiled upon a spool, of means located between the ends of the film for preventing the film unrolling or becoming loosened until such means are broken or otherwise destroyed, said means arranged intermediate of the side edges of the film and at such a distance from the outer end thereof as to permit of the film being threaded in a camera with the said means unbroken.

2. In combination with a photographic film consisting of a sensitized strip and an opaque strip, which strips are superimposed and wound upon a spool, a device for securing the end of the film to prevent it from unwinding, and a second device intermediate the ends of the film and arranged between, and overlaid by, adjacent coils of the film for preventing a portion of the film from becoming unwound or loosened after the breaking of the first device.

3. In combination with a photographic film, wound upon a spool, of a paper seal arranged between, and overlaid by, adjacent coils of the opaque strip of the film for preventing a portion of the film from unwinding or becoming loosened on the spool, until after the seal is destroyed, and a device for securing an end of the film beyond said paper seal.

4. In combination with a photographic film comprising a sensitized strip, and an opaque strip of greater length than said sensitized strip, said photographic film coiled upon a spool, fragile means located intermediate an end of the sensitized strip and an end of the opaque strip for preventing the film from becoming unwound or loosened on the spool until broken, and a device for securing an end of the paper beyond said means.

5. In combination with a photographic film coiled upon a spool, of means for securing the end of the opaque strip thereof to prevent the film from becoming unwound or loosened until it is broken, and a second means located intermediate of the said secured end of the opaque strip and the adjacent end of the sensitized strip for preventing that portion of the film comprising the sensitized strip from becoming unwound or loosened after the first means is destroyed, said means consisting of a paper piece rendered adhesive on both sides.

6. The combination with a spool and a photographic film wound thereon, of a seal, located between adjacent convolutions of the wound film, and secured thereto by adhesion on both sides, so that said adjacent convolutions will be secured to opposite sides of the said seal.

7. The combination with a spool and a photographic film wound thereon, of a seal composed of paper or similar material, and rendered adhesive on both sides, located between adjacent convolutions of the wound film, whereby adjacent convolutions will be secured to opposite sides of the said seal.

8. The combination with a spool and a photographic film wound thereon, of a seal, located between adjacent convolutions of the wound film, and secured thereto by adhesion on both sides, so that said adjacent convolutions will be secured to opposite sides of the said seal, and arranged at such a distance from the outer end of the film as to permit of the film being threaded in a camera with the said seal unbroken.

9. The combination with a spool and a photographic film wound thereon, of a seal composed of paper or similar material, and rendered adhesive on both sides, located between adjacent convolutions of the wound film, whereby adjacent convolutions will be secured to opposite sides of the said seal, and arranged at such a distance from the outer end of the film that at least one coil may be unwound before the said seal is broken.

709,054. PERFORATED MUSIC-SHEET FOR AUTOMATIC MUSICAL INSTRUMENTS. CHARLES H. SHAW, Brooklyn, N. Y., assignor to the Aeolian Company, New York, N. Y., a Corporation of Connecticut. Filed Mar. 20, 1902. Serial No. 99,049. (No model.)

Claim.—1. The combination with a music-roll and a music-sheet of a cord or similar material extending from the same and provided with an engaging device for attachment to the take-up roll of an automatic musical instrument.

2. The combination with a music-roll and a music-sheet of a cord or similar material extending from the same and provided with an engaging device consisting of a ring for attachment to the take-up roll of an automatic musical instrument.

3. The combination with a music-roll and a music-sheet of a cord or similar material extending from the same and a catch for the free end portion of the cord.

4. The combination with a music-roll and a music-sheet of a cord or similar material extending from the same, and a catch consisting of a hook for the free end portion of the cord.

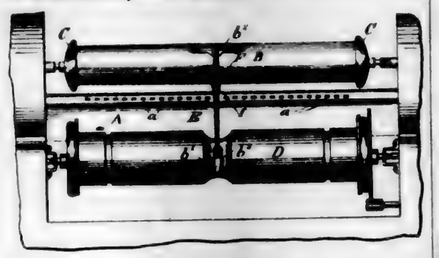

5. The combination with a music-roll and a music-sheet of a cord or similar material extending from the same and a catch consisting of a resilient hook for the free end portion of the cord.

6. The combination with a music-roll and a music-sheet of a cord or similar material extending from the same, and a catch consisting of a hook extending from a plate through which portions of the cord or similar material are threaded.

7. The combination with a music-roll and a music-sheet of a cord or similar material extending from the same and provided at its outer end with an engaging device for attachment to the take-up roll of a musical instrument, and provided intermediate of its ends with a catch for engaging the free end portion of the cord or similar material.

709,055. BODY-BRACE. PHILO B. SHELDON, Erie, Pa., assignor to the Philo Burt Manufacturing Company, Jamestown, N. Y. Filed Aug. 28, 1901. Serial No. 73,535. (No model.)

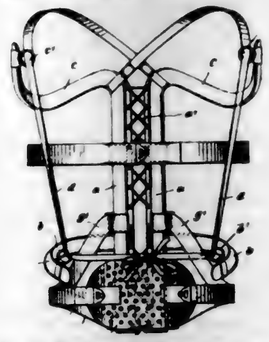

Claim.—1. A body-brace, comprising a main or body portion adapted to extend along the spine of the wearer, arms attached to the lower part of the said body portion in position to rest on the hips of the wearer, arms extending out from the upper part of the body portion and curved forward to bear under the armpits of the wearer, whereby to sustain the trunk on the hips, and straps attached to the upper part of the body and passed forwardly over the shoulders of the person, the straps having connection with the ends of the said arms and being joined together at the lower part of the appliance.

2. A body-brace having two rigid bars extending vertically in parallelism and adapted to be located at the back of the person, lacing extended between the bars to connect them together, rigid arms attached respectively to the upper ends of the bars and extending outward to lie under the armpits of the person, additional rigid arms attached respectively to the lower portions of the rigid bars and extending outward and forward to lie on the hips of the person and means for fastening the appliance in place.

709,056. LOCK. GEORGE G. SMITH, Florence, Italy. Filed Nov 28, 1901. Serial No. 83,704. (No model.)

Claim.—1. A lock comprising a base-plate; a pin embodying a pivot and a locking-seat carried thereby; a bolt capable of turning on the pivot and of locking on the seat; holes through the base-plate capable of receiving screws; a plate effective to overlie a portion of the holes and screws therein; a hole in the plate capable of receiving a screw; a bolt carried by the base-plate, and capable of overlying the screw traversing the plate; the organization being such that the plate locks the screws which it overlies, and the bolt locks the screw which holds the plate.

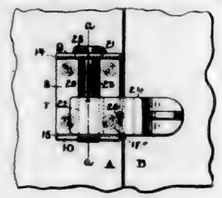

2. In a lock the combination with a base-plate, of a bolt pivoted thereon and capable of being locked in its closed position; means effective to hold the base-plate in position; an independent member for closing access to the holding means; and means covered by the bolt, in its closed position, for holding said access-closing member in place.

3. In a lock, the combination of a frame having a base-plate provided with countersunk screw-holes, one of which is countersunk to less depth than the others; and a plate effective to overlie the screw-holes, and having a countersink registering with the screw-hole of the least countersunk, and together capable of receiving the same-sized screw that the other holes are capable of receiving.

4. In a lock effective to be secured by screws, means for locking all the screws but one in place; a screw for securing the locking means in place; and a bolt effective to control the securing-screw.

5. The combination of a base-plate; end members thereon; undercut ways in the end members; squared holes in the end members; a pin, having a head, squared ends, and a pivot portion secured in the squared holes; a bolt, having a squared pivot-hole, on the pin; screw-holes in the base-plate; a plate capable of sliding in the ways; and a screw-hole in the plate capable of registering with a screw-hole in the base-plate and of receiving a screw.

6. The combination of a base-plate; end members thereon; undercut ways in the end members; squared holes in the end members; a pin, having a head, squared ends, and a pivot portion secured in the squared holes; a bolt, having a squared pivot-hole, on the pin; screw-holes in the base-plate; one of which screw-holes occupies a position under the bolt when closed; a plate capable of sliding in the ways; a screw-hole in the plate capable of registering with the bolt-covered screw-hole in the base-plate and of receiving a screw; and means for locking the bolt.

7. The combination of a bolt, means capable of supporting the bolt in two different planes, and to afford a pivot therefor when in one of the planes; and a spring-detent effective to hold the bolt away from the pivot portion.

8. The combination of a bolt; means capable of supporting the bolt in two different planes, and to afford a pivot therefor when in one of the planes; and a spring-detent effective to hold the bolt on either portion.

9. The combination of a bolt; means capable of supporting the bolt in two different planes, and to afford a pivot therefor when in one of the planes; and a spring-detent effective to hold the bolt when on the pivot portion in any position it may be placed.

10. The combination of a pin affording a pivot and pivotless seat for a bolt; a bolt thereon; a groove in the pin; a spring secured in the groove and capable of engaging the bolt.

11. The combination of a pin affording a pivot and a pivotless seat for a bolt; a bolt thereon; a depression in the bolt; a groove in the pin; a spring secured in the groove and having an upturned end and capable of engaging the depression in the bolt.

12. The combination of a base-plate; end members thereon; undercut ways in the end members; squared holes in the end members; a pin, having a head, squared ends, and a pivot portion, secured in the squared holes; a bolt, having a squared pivot-hole, on the pin; screw-holes in the base-plate; a plate capable of sliding in the ways; a screw-hole in the plate capable of registering with screw-holes in the base-plate and of receiving a screw; a groove in the pin; and a spring in the groove effective to hold the bolt off the pivot portion of the pin.

13. The combination of a base-plate; end members thereon; undercut ways in the end members; squared holes in the end members; a pin, having a head, squared ends, and a pivot portion, secured in the squared holes; a bolt, having a squared pivot-hole, on the pin; screw-holes in the base-plate; one of which screw-holes occupies a position under the bolt when closed; a plate capable of sliding in the ways; a screw-hole in the plate capable of registering with the bolt-covered screw-hole in the base-plate and of receiving a screw and means for locking the bolt, a groove in the pin, and a spring in the groove effective to hold the bolt off the pivot portion of the pin.

709,057. DOOR-CATCH. GIOSUE G. BETTI, Florence, Italy. Filed Dec. 4, 1901. Serial No. 84,615. (No model.)

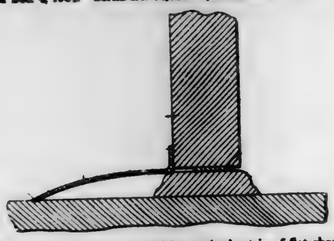

Claim.—A door-detent comprising a single strip of flat sheet metal and embodying a portion for interposition between a door and saddle; a struck-up lug adjacent to such portion for engagement with the side of the door; and a portion curving transversely from such former portion, and provided at its end with integral teeth for engagement with the floor.

709,058. DEVICE FOR THE CURE OF STRABISMUS. JOHN B. STEBBLE, Eau Claire, Wis. Filed Nov. 11, 1901. Serial No. 81,907. (No model.)

Claim.—1. A device for treating strabismus, consisting of one or more opaque plates having enlarged openings, slides covering said openings, and inwardly-projecting sight-tubes carried by the slides and adjustable therewith to accommodate the position of the pupils of the affected eyes.

2. A device for treating strabismus, comprising plates having central openings, and sight-tubes projecting inwardly from the plates and adjustable over the entire area of said openings.

3. A device for treating strabismus, comprising one or more plates having central openings, a slide covering each opening and adjustable longitudinally and rotatably with respect thereto, and a sight-tube carried by each slide.

709,059. ENGINE-GOVERNOR. HENRIK G. STRAND, Chicago, Ill. Filed Dec. 27, 1899. Renewed Feb 20, 1902. Serial No. 94,926. (No model.)

Claim.—1. In a device of the kind described, the combination of the governor-casing, the stationary valve-lining, inclosed thereby and provided with receiving and discharge ports, the governor-valve, loosely seated inside of said lining and having corresponding receiving and discharge ports, means for actuating the governor-valve in varying the area of the port-openings, the direct passage, between said valve and the engine-cylinder, and the check-valve located in and controlling said passage.

2. In a device of the kind described, the governor-casing, the lining inclosed by said casing and held in a rigid position and provided with receiving and discharge ports, the discharge-ports being located opposite each other and at right angles to the passage leading into the engine-cylinder, the spaces, between said casing and lining on the receiving and discharge sides respectively, the governor-valve, seated loosely inside of said lining and provided with receiving and discharge ports corresponding to the ports therein, the means substantially as described for actuating the governor-valve in regulating the admission of the motive agent, and the check-valve, located in and automatically controlling the passage between the governor-valve and engine-cylinder.

3. In a device of the kind described, the governor-casing, the stationary valve-lining, provided with receiving and discharge ports with corresponding spaces between said casing and lining, the double-walled governor-valve, having an annular chamber and loosely seated in place and the means described for actuating and controlling the movement of said valves in regulating the supply of gas or other motive fluid.

4. In a device of the kind described, the casing, the stationary lining, inclosed thereby, the governor-valve, loosely seated on the inside of said lining and both being provided with receiving and discharge ports so disposed that a solid wall is presented on the side adjacent to the passage leading into the engine-cylinder, and the check-valve, located in said passage and automatically controlling the flow of the motive agent therethrough.

5. In a device of the kind described, the combination of the casing, the valve-lining, provided with receiving and discharge ports, the cap, holding the lining in a stationary position, the governor-valve, seated loosely on the inside of its lining and provided with corresponding ports, means for preventing a rotary movement of said valve, and the annular space between said lining and casing on both the receiving and discharge sides.

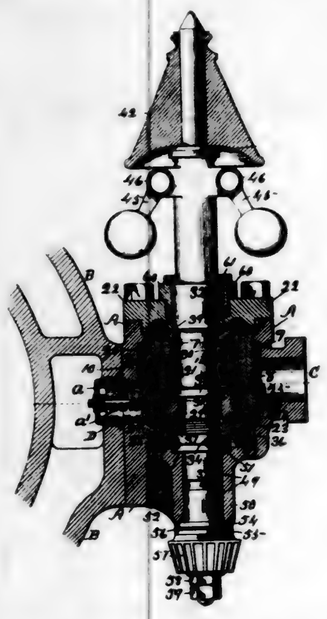

6. In a device of the kind described, the double-walled governor-valve, having the lower end of the inner wall stop short of the corresponding end of the outer wall and is thickened to form an annular shoulder, the vertically-reciprocating sleeve, provided with a flange engaging the shoulder on the valve, the governor-spindle, provided with a flange on which the sleeve loosely rests, the nut, having a screw-threaded engagement with the lower end of the sleeve, the ball-bearing between said valve and sleeve, and means for imparting a vertical movement to said sleeve in controlling the movement of the governor-valve.

7. In a device of the kind described, the combination with the governor-valve of its inclosing lining, provided on the lower end with an inturned flange on which the lowermost ends of said valve seats when in the lowest position and supports the same out of contact with its ball-bearing and providing space for the lubricant to reach said bearing.

8. In a device of the kind described, the combination of the casing, the stationary lining, having ports therethrough, the governor-valve having corresponding ports, the governor-spindle, the sleeve, inclosing said spindle and having both a rotary and endwise movement, and the weighted governor-arms, pivoted to said sleeve and engaging loosely with said spindle at a point above the governor-valve.

9. In a device of the kind described, the governor-valve, having double walls with an annular chamber therebetween and having receiving and discharge ports in the exterior wall only, the sleeve, inclosed by said valve and having an operative connection therewith, and the spindle, inclosed by said sleeve having both a rotary and an endwise movement thereon.

10. In a device of the kind described, the casing, having a contracted lower part, the bearing-bushing, provided with flanged ends, the governor-spindle, provided with a flange adjacent to the upper flanged end of the bushing, the bearing-collar, mounted on said spindle under the lower end of said bushing, the bearing-balls, inserted between said parts, and the adjusting screw-cone, threaded on the lower end of said spindle.

11. In a device of the kind described, the combination of the stuffing-box gland, having an oil-chamber with an oil-passage leading therefrom, the governor-spindle, provided with an annular and vertical oil-grooves, the sleeve, inclosing said spindle, and the series of ball-bearings, lubricated from said oil-passages.

709,060. FOUR-CYCLE EXPLOSIVE-ENGINE. HENRIK G. STRAND, Chicago, Ill. Filed Feb. 15, 1899. Renewed Feb. 20, 1902. Serial No. 94,927. (No model.)

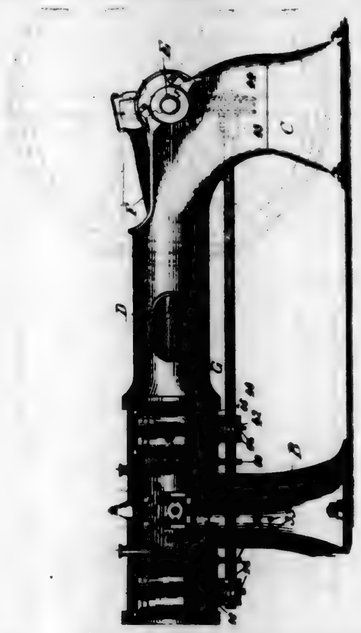

Claim.—1. In a gas-engine, the double-action cylinder, the double-valve chest at each end of said cylinder and the supply and separate exhaust valves in said cylinder with means for actuating said valves, a mixing-chamber and passages extending from it to the valve-chambers at the respective ends of the cylinder, substantially as described.

2. In a gas-engine, the horizontal cylinder, the double-acting piston therein, the valve-chest at each end of said cylinder, each valve-chest having an inlet and exhaust valve and means for operating the same, a mixing-chamber and passages extending from it to the valve-chambers at the respective ends of the cylinder, substantially as described.

3. In a gas-engine, the governor, the governor-valve, inserted loosely in its seat, the casing inclosing said valve, the lining interposed between said valve and its casing, said lining having ports as described, and a sleeve having a reciprocating and rotary motion and adapted to move the governor-valve either upwardly or downwardly, substantially as described.

709,061. DRILL-CHUCK. ALBERT J. STENSGAA, Minneapolis, Minn. Filed Mar. 20, 1902. Serial No. 98,089. (No model.)

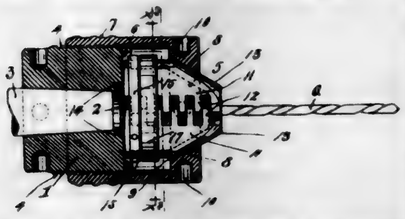

Claim.—1. In a drill-chuck, the combination with the head 1 screw-threaded at and provided with the integrally-formed cheek-pieces 5 and the abutting surface 6, which cheek-pieces 5 are spaced inward from said threads and are tapered at their outer ends, of the jaws 11 tapered at their outer ends and working between said cheek-pieces with their inner ends abutting against said abutting surface, the clamping-collar 7 engaging the screw-threads 4 of said head, spaced apart from said cheek-pieces to form an annular space and provided at its outer end with the conical seat 9 engaging the tapered ends of said jaws, and a spring extended circumferentially in said annular space and connected to both of said jaws and tending to separate the same, substantially as described.

2. In a drill-chuck, the combination with the head 1 having integrally-formed cheek-pieces 5 abutting the surface 6, of the jaws 11 tapered at their outer ends and working freely between said cheek-pieces with their inner ends abutting against said abutting surface, the pair of springs 17 embracing the opposite cheek-pieces 5 and attached at their ends to the said pair of jaws and tending to separate the same with a straight-line force, and a clamping-collar 7 screw-threaded onto said head 1 and provided at its outer end with the flange 8 having the conical seat 9 engaging the tapered ends of said jaws, substantially as described.

709,062. STEAM-ENGINE. NICHOLAS J. VERBIT and HENRY H. RAMSTAD, Little Rock, Ark. Filed Aug. 10, 1901. Serial No. 71,554. (No model.)

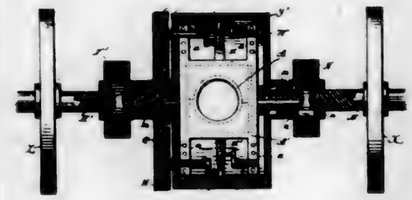

Claim.—1. In a steam-engine, the combination, of a cylinder, shafts connected to said cylinder, pistons working in the cylinder, pinions geared to said pistons, a gear-wheel over which the pinions travel, and means for regulating the turning of the gear-wheel and holding it stationary, substantially as shown and described.

2. In a steam-engine, the combination, of the cylinder, shafts connected to the sides of said cylinder, pinions geared to the pistons of the cylinder, a gear-wheel over which the pinions travel, and a friction-band engaging said gear-wheel; together with valve mechanism for the cylinder, substantially as shown and described.

3. In a steam-engine, the combination, of the cylinder, shafts connected to the sides of the cylinder, pistons working in the cylinder in opposite directions with their piston-rods projecting through the ends of the cylinder, cross-heads connected to the ends of the piston-rods, double-crank shafts connected to the cross-heads, pinions on the crank-shafts, a gear-wheel over which the pinions travel, and means for holding said gear-wheel stationary, substantially as shown and described.

4. In a steam-engine, the combination, of the cylinder, shafts connected to the sides of the cylinder, pistons working in the cylinder, cross-heads connected to the ends of the piston-rods, crank-shafts mounted on the cylinder and connected to the cross-heads, pinions on the crank-shafts, a gear-wheel over which the pinions travel and a brake for said gear-wheel, substantially as shown and described.

5. In a steam-engine, the combination, of the cylinder, shafts connected to the sides of the cylinder, pistons working in the cylinder, cross-heads connected to the ends of the piston-rods, double-crank shafts to which the cross-heads are connected, pinions on said shafts, a gear-wheel over which the pinions travel, and a friction-band engaging said gear-wheel, substantially as shown and described.

6. In a steam-engine, the combination, of the cylinder, shafts connected to the sides of the cylinder, pistons working in the cylinder, crank-shafts mounted on the cylinder and connected to the piston-rods, pinions on said crank-shafts, and a gear-wheel over which the pinions travel; together with means for holding the gear-wheel stationary, substantially as shown and described.

7. In a steam-engine, the combination, of the cylinder, shafts connected to the sides of said cylinder, pistons working in the cylinder, double crank-shafts mounted on the cylinder, cross-heads attached to the piston-rods and connected to the double-crank shafts, pinions on said crank-shafts, a gear-wheel over which the pinions travel, and a friction device engaging the gear-wheel, substantially as shown and described.

8. In a steam-engine, the combination, of the cylinder having steam and exhaust passages around the same, hollow shafts connected to the sides of the cylinder to conduct the steam to and from the same, and slide-valves through which the steam is admitted to and from the cylinder; together with the pistons, crank-shafts connected to the piston-rods, pinions on said crank-shafts, and a stationary gear-wheel over which the pinions travel, substantially as shown and described.

709,063. ELECTRIC-RAILWAY SYSTEM. LOUIS R. WALKER, Springfield, Mass., assignor, by direct and mesne assignments, to Ed. Wilson Farnham, Chicago, Ill. Filed Dec. 2, 1901. Serial No. 84,208. (No model.)

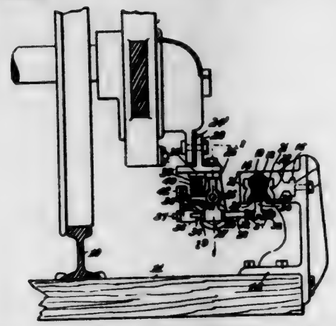

Claim.—1. In a third-rail system, the combination with a car, of a support rotatably mounted thereon, a lever pivoted upon the support, a member movably mounted upon the lever, and a contact-shoe carried by the member and longitudinally movable thereon.

2. In a third-rail system, the combination with a car, of a contact-shoe, a rotatable and revolvable carrying member for said shoe, and an actuating-lever connected to the carrying member and longitudinally movable thereon.

3. In a third-rail system, the combination with a car, of a contact-shoe, a rotatable and revolvable carrying member for said shoe provided with a projection, and an actuating-lever upon the carrying member provided with a slot into which the projection on the carrying member stands.

4. In a third-rail system, the combination with a car, of a support swiveled thereon, a lever pivoted upon the support, a rod extending through an opening in the lever, a contact-shoe carried by the rod, and an actuating-lever mounted upon the rod.

5. In a third-rail system, the combination with a car, of a support swiveled thereon, a lever pivoted upon the support, a rod extending through an opening in the lever, a contact-shoe carried by the rod, a lever mounted upon the rod, and a power-actuated piston connected with the lever.

709,064. PIPE-WRENCH. ERASTUS A. WARE, Hoosic, Conn., assignor of one-half to Michael B. McDonald, Hoosic, Conn. Filed June 12, 1901. Serial No. 64,326. (No model.)

Claim.—1. A device of the class described, comprising a body portion provided at one end with a handle and adjacent to the other end with a transverse curved recess the outer portion of which forms a hooked serrated jaw and intermediate such handle and jaw with a slot extending through said body portion in the plane of such recess, and a rotary jaw eccentrically mounted in such slot and provided with a serrated periphery which is so curved from a predetermined point that it constantly recedes from the bearing-pin until a point is reached approximately in line with the starting-point and the bearing-pin, the periphery between the initial and terminal points forming an inwardly-curved smooth shoulder.

2. A device of the class described, comprising a body portion embodying two parallel side pieces provided near one end with a transverse recess on one side the outer end portion of which forms a hooked serrated jaw and at the other end secured to a portion inserted between such side pieces to form a handle, and a rotary jaw eccentrically mounted between such side pieces intermediate the hooked jaw and the handle, and provided with a serrated periphery which is so curved from a predetermined point that it constantly recedes from the bearing-pin until a point is reached approximately in line with the starting-point and the bearing-pin, the periphery between the initial and terminal points forming an inwardly-curved smooth shoulder.

709,065. WOVEN-WIRE FENCE FABRIC. EUGENE I. WARNER, Waverly, Kans. Filed Feb. 3, 1902. Serial No. 92,455. (No model.)

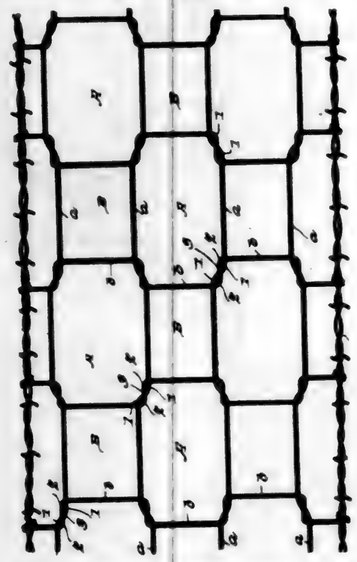

Claim.—1. A woven-wire fence fabric composed of continuous running-wires, and cross-wires, each offset alternately in opposite directions at the points of intersection, said running and cross wires having their respective offset portions twisted together to form rectangular meshes, substantially as described.

2. A woven-wire fence fabric composed of running-wires and cross-wires, each at suitable regular intervals being bent to form reversely-disposed lateral offsets, the distances between the respective horizontal and respective vertical reaches of the running and cross wires intermediate of the offset portions thereof being varied alternately and the said lateral offsets of said running and cross wires intersecting each other and being twisted together to prevent slipping and to form meshes of two sizes, the larger meshes alternating with the smaller, both longitudinally and transversely of the fabric, substantially as described.

709,066. STOCKING-SUPPORTER. ELIZABETH H. WATERMAN, Binghamton, N. Y. Filed Oct. 24, 1901. Serial No. 79,226. (No model.)

Claim.—1. In an improved stocking-supporter, clasps adapted to secure said stocking-supporter to the waist and to the stocking, said clasps each comprising a loop, jaws passed through the loop and having flat contact-surfaces, a pad of yielding material secured on the inner surface of one of said jaws, and spring-arms substantially parallel to each other, said arms passing through said jaws outside of the loop and riding over said jaws and adapted to press them together.

2. In an improved stocking-supporter, a clamping member embodying jaws having flat contact-surfaces and adapted to be passed through a loop on said supporter, a pad secured to the inside of one of said jaws, and a substantially U-shaped spring-arm passing through said jaws adjacent to said loop and adapted to ride over said jaws and press them together.

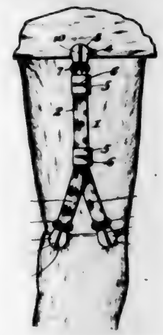

709,067. VALVELESS HAMMER. DANIEL S. WAGER, Chicago, Ill. Filed Nov. 30, 1900. Serial No. 38,902. (No model.)

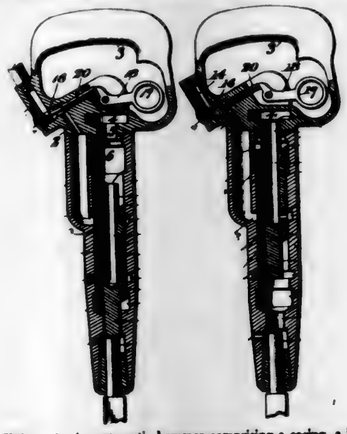

Claim.—1. An automatic hammer comprising a casing, a hammer movable therein, means for directing a fluid-pressure against a reduced area of the hammer during its initial movement and against the whole pressure area during the remainder of its movement in one direction, and means supplemental to the normal exhaust for relieving the compression opposed to the hammer during the final portion of its movement in the opposite direction.

2. In a fluid-operated hammer, the combination with a casing having means for admitting and exhausting motive fluid, of a plunger or hammer fitted within the casing for reciprocation by pressure of the motive fluid therein, means for reducing the pressure area of the hammer during the initial portion only of the movement of the hammer in one direction, and means for relieving the compression opposed to that portion of the pressure area defined by such reduction, said relief being effected during the final portion only of the return movement of the hammer.

3. In a fluid-operated hammer, the combination with a casing, a hammer movable therein and a primary compression-chamber defined in part by a reduced pressure area of the hammer, of an auxiliary compression-chamber defined in part by a separate pressure area of the hammer, means for exhausting the motive fluid from both compression-chambers, and means for subsequently relieving the compression within the auxiliary compression-chamber.

4. A fluid-operated hammer comprising a casing, a hammer movable therein, and means for admitting the motive fluid to the interior of the casing to operate the hammer, of means for exhausting the motive fluid opposed to the movement of the hammer in one direction, and a relief-port in the hammer for subsequently relieving the compression caused by such movement of the hammer.

5. A fluid-operated hammer comprising a casing, a hammer movable therein, and means for admitting the motive fluid to the interior of the casing to operate the hammer, of means for exhausting the motive fluid opposed to the movement of the hammer in one direction, and means for subsequently relieving the compression caused by such movement of the hammer, said relief being effective only during the final portion of the stroke and after the termination of the normal exhaust.

6. A fluid-operated hammer comprising a casing, a hammer movable therein and means for admitting the motive fluid to the interior of the casing to operate the hammer, of means for exhausting the motive fluid opposed to the movement of the hammer in one direction, and means controlled by the hammer for relieving the compression produced by such movement of the hammer.

7. A fluid-operated hammer comprising a casing, a hammer movable therein and means for admitting the motive fluid to the interior of the casing to operate the hammer, of means for exhausting the motive fluid opposed to the movement of the hammer in one direction, and a relief-port within the hammer arranged to be uncovered subsequent to the exhaust of the motive fluid, whereby the compression produced by the movement of the hammer subsequent to the exhaust of the motive fluid will be relieved through said port.

8. In a fluid-operated hammer, the combination with a casing provided at one end with a primary compression-chamber having a reduced extension and an auxiliary compression-chamber, of a hollow hammer movable within the casing and provided with a reduced hammer extension designed to fit within the chamber extension in one position of the hammer, and means for relieving the compression within the auxiliary chamber after the hammer extension has entered the extension of the primary compression-chamber.

9. In a fluid-operated hammer, the combination with a casing provided at one end with a primary compression-chamber having a reduced extension and an auxiliary compression-chamber, of a hollow hammer movable within the casing and provided with a reduced hammer extension designed to fit within the chamber extension in one position of the hammer, and a relief-port formed in the hammer and designed, after the hammer extension has entered the chamber extension, to relieve the compression within the auxiliary compression-chamber.

10. In a fluid-operated hammer, the combination with a casing and a hammer mounted for reciprocation therein, of means for subjecting the hammer to fluid-pressure during the initial portion only of its movement in one direction.

11. In a fluid-operated hammer, the combination with a casing and a hammer disposed for reciprocation therein, of means for subjecting the hammer to the action of the fluid motive agent during the entire effective stroke of the hammer, and means for effecting the return stroke of said hammer by subjecting it to fluid-pressure during the initial portion only of such return stroke.

12. In a fluid-operated hammer, the combination with a casing and a hammer mounted for reciprocation therein, of means for reducing the area of the surface of said hammer exposed to the pressure of a motive fluid during the initial portion of its effective stroke and for subsequently increasing such area during the effective stroke of the hammer, means for subjecting the hammer to fluid-pressure during the initial portion only of its return stroke, means for exhausting the motive fluid from behind the hammer to permit such return movement, and means operative subsequent to such exhaust for relieving the compression opposed to the return movement of the hammer.

13. In a fluid-operated hammer, the combination with a casing and a hammer mounted for reciprocation therein, of means for reducing the area of the surface of said hammer exposed to the pressure of a motive fluid during the initial portion of its effective stroke and for subsequently increasing such area during the effective stroke of the hammer, means for subjecting the hammer to fluid-pressure during the initial portion only of its return stroke, means for exhausting the motive fluid from behind the hammer to permit such return movement, and means effective only during the final portion of the return stroke of the hammer for relieving the compression produced by and opposed to such return movement.

14. In a fluid-operated hammer, the combination with a casing provided with supply and exhaust ports and having a primary compression-chamber and a return compression-chamber adjacent to its opposite ends, of a fluid-operated reciprocatory hammer within the casing, means for admitting the motive fluid to the primary and return chambers alternately through the hammer, means for exhausting said fluid from one of the chambers through the hammer, and means for effecting the direct exhaust of the other chamber by the initial movement of the hammer in one direction.

15. In a fluid-operated hammer, the combination with a casing provided with supply and exhaust ports, of a reciprocatory hammer within

the casing, said hammer being provided with an axial chamber, a port in communication with said chamber, and a comparatively small return-port, said port and return-port of the hammer being arranged for alternate presentation before the supply-port of the casing.

709,068. VEHICLE-GEAR. FRANK E. WILCOX, Mechanicsburg, Pa., assignor of one-half to L. E. Hickok, Mechanicsburg, Pa. Filed Mar. 15, 1902. Serial No. 98,269. (No model.)

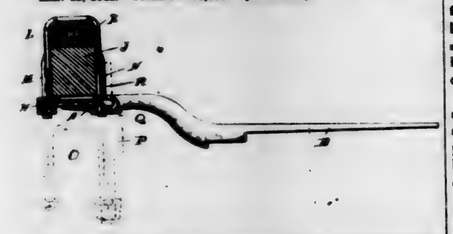

Claim.—1. The combination with the end of a reach-iron having holes E, E, a perforated lug F, and a hole for a king-bolt, of a head-block plate; a head-block; a spring; and a three-pronged clip, the prongs of which pass through holes E, E and the perforated lug F; said reach-iron having adjacent its end a recess C, and said head-block plate provided with a recess I which matches the recess C, whereby the reach-iron and head-block plate interlock and are held together by the clip.

2. The combination with the perforated reach-iron, of a head-block plate; a head-block; a spring; a three-pronged clip L; the said reach-iron having a hole D in the rear of the head-block and head-block plate; a king-bolt E and a king-bolt clip O having perforated lug P located below the reach-iron.

3. The combination in a vehicle-gear, of the reach-iron having the perforated lug F, holes E E, hole D and recess G; a head-block; spring; three pronged clip L; and king-bolt clip O having lug P, and cylindrical bearing Q which engages the recess G; a separate head-block plate being interposed between the head-block and recessed end of the reach-iron.

709,069. VEHICLE-GEAR. FRANK E. WILCOX, Mechanicsburg, Pa., assignor of one-half to L. E. Hickok, Mechanicsburg, Pa. Filed Oct. 12, 1901. Serial No. 78,668. (No model.)

Claim.—1. The combination in a vehicle-gear, of an axle having an integral perforated king-bolt lug in the rear thereof, and lower fifth-wheel end bearing portions separate from the lug and located at opposite sides thereof and formed integral with said axle; an upper fifth-wheel member; a head-block plate; reach-irons; a forked brace provided with a brace-head; and a king-bolt uniting the head-block plate, brace-head, and lug in the rear of the axle.

2. The combination in a vehicle-gear, of an axle having an integral perforated lug located in the rear thereof said lug being provided with a recess and a projection, lower fifth-wheel bearings separate from the lug; an upper fifth-wheel member; a head-block plate having a perforated lug; a brace having a perforated head; and a king-bolt; the lug of the head-block plate, axle-lug, and brace-head interlocking, whereby the king-bolt is relieved from severe strains.

3. The combination in a vehicle-gear, of a head-block plate provided with a king-bolt lug; a perforated brace; a king-bolt; an upper circular fifth-wheel member T; and a metallic axle having a perforated king-bolt lug C located in the rear thereof and lower fifth-wheel bearing portions separate from and located each side of and remote from the lug C; said king-bolt lug and bearing portions being formed integral with the body of the axle.

4. The combination in a vehicle-gear, of an axle having an integral and perforated lug C in the rear thereof, lower fifth-wheel bearings each side the lug; an upper fifth-wheel member; a head-block plate having a perforated lug G and a brace-head each interlocking with the king-bolt lug; and a king-bolt provided with means for anchoring the same so it cannot turn relative to the axle.

5. The combination in a vehicle-gear, of an axle; a perforated king-bolt lug integral with the axle; a lower fifth-wheel member of circular shape, the ends being integral with the axle and the remaining portion secured to the said ends; an upper circular fifth-wheel member; a head-block plate with a perforated king-bolt lug; reach-irons; a lower brace; a king-bolt; and means for securing the upper member of the fifth-wheel to the reach-irons; the said king-bolt being passed through the lower brace, axle-lug, and lug of the head-block plate.

709,070. VEHICLE-GEAR. FRANK E. WILCOX, Mechanicsburg, Pa., assignor of one-half to L. E. Hickok, Mechanicsburg, Pa. Filed Feb 17, 1902. Serial No. 94,470. (No model.)

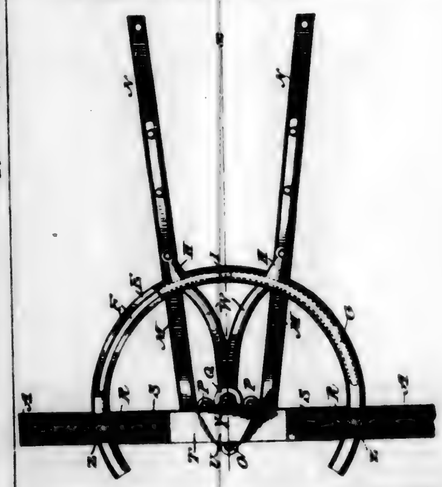

Claim.—1. The combination in a vehicle-gear, of a head-block plate having integral therewith the front perforated lug O and the two rear perforated lugs P, P; a head-block above the plate; a spring resting upon the head-block; a clip having three legs passed through the perforations in lugs O and P, P; and a plate T located between the spring and clip; said plate T having a recess within which is seated the enlarged, flat, top portion of the clip.

2. The combination in a vehicle-gear, of an axle having in the rear thereof and integral therewith a perforated king-bolt lug; a head-block plate having an integral perforated lug Q located above the axle-lug, a front perforated lug O, and two rear perforated lugs P, P; a head-block; a spring above the head-block; a three-legged clip surrounding the leaves of the spring and the head-block and having its legs passed through the perforations in lugs O and P, P; a brace with a perforated brace-head; and a king-bolt passed through the perforations in the lug Q, the axle-lug, and the brace-head.

3. The combination in a vehicle-gear, of an axle having a perforated king-bolt lug at the rear side thereof and integral therewith; a head-block plate having integral therewith the perforated front lug O, rear lugs P, P, and Q, and reach-irons M located outside the lugs P, P; a head-block; a spring; a three-legged clip having its legs passed through the perforations in the lugs O, P, P; a brace with a perforated brace-head; and a king-bolt; said king-bolt being passed through the perforations in lug Q, the axle king-bolt lug, and the brace-head, and the lug Q, king-bolt lug and the brace-head interlocking.

4. The combination in a vehicle-gear, of a metallic axle having at its rear a perforated king-bolt lug B, and a curved lower member of a fifth-wheel E provided with a curved slot F, said member being integral with the axle; an upper fifth-wheel member corresponding in shape with the lower member and provided with a bolt I; a recessed washer J; a spring in the recess of the washer; a nut on the end of the bolt I; a head-block plate having perforated lugs and a perforated lug Q at the rear edge thereof; a brace with a perforated head; a reach-iron; a head-block; a spring; a clip; and a king-bolt passed through lug Q, the king-bolt lug, and the brace-head.

709,071. CAR-TRUCK. WALTER S. ADAMS, Philadelphia, Pa., assignor to John A. Brill, Philadelphia, Pa. Filed Nov. 15, 1901. Serial No. 82,364. (No model.)

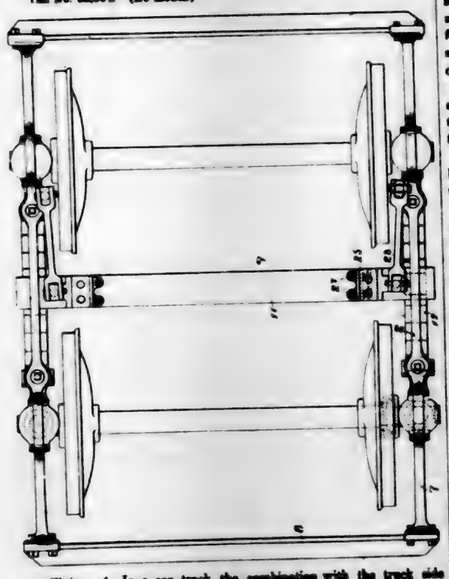

Claim.—1. In a car-truck, the combination with the truck side frames, of a bolster, means for supporting said bolster from the side frames, and inextensible means carried by said bolster and connected directly to the side frames for transmitting the draft tension.

2. In a car-truck, the combination with the truck side frames, of a bolster, means for supporting said bolster from said side frames, and an inextensible link carried by said bolster and connected directly to said side frames for transmitting the draft tension.

3. In a car-truck, the combination with the truck side frames, of a bolster resiliently supported from the side frames, and a pivoted inextensible link carried by said bolster and connected directly to the side frame at a point adjacent the pedestal thereof.

4. In a car-truck, the combination with the side frames, links supported thereby, and a semi-elliptic spring supported by said links; of a bolster supported by said spring, and a pivoted link interposed between said bolster and side frames for transmitting the draft tension.

5. In a car-truck, the combination with the side frames, links supported thereby, and a semi-elliptic spring supported by said links; of a bolster supported by said spring, and a universal connection interposed between said bolster and side frames for transmitting the draft tension.

6. In a car-truck, the combination with the truck side frames, links supported from said frames, a semi-elliptic spring having its ends supported by said links, a trussed bolster having extended ends centered upon said elliptic spring, and a pivoted link interposed between said bolster and said side frames.

7. In a truck, the combination with a frame, of a bolster capable of a vertical and horizontal movement, a rub plate or block carried thereby, said block and frame having apertures therein, eye pins or bolts in said apertures, and links forked at each end and connected with said eyepins, whereby a positive connection for the bolster having universal joints is provided.

8. In a car-truck, the combination with the truck side frames, extensible links supported thereby, and semi-elliptic springs supported by said links; of a bolster supported upon the said springs, and a link forming a rigid connection between said bolster and the side frames.

9. In a car-truck, the combination with the side frames, a bolster and means for resiliently supporting said bolster from the side frames; of a link, a pin pivotally connected to one end of said link, and pivotally secured to said bolster, and a pin carried by the other end of said link and secured to the side frame.

10. In a car-truck, the combination with the truck side frames, a bolster, and means for resiliently supporting the same from said side frames, of a forked link, pins pivotally mounted in the forked ends of said link, and means for rotatably securing said pins in said side frames, and to means connected to said bolster.

11. In a car-truck, the combination with the truck side frames, extensible links depending therefrom, a semi-elliptic spring having its ends supported in the ends of said links, a bolster having its ends supported upon said springs, and a wear plate or block carried by said bolster; of a forked link, carrying a pin at one end rotatably secured in an aperture in said block, the other end of said link also carrying a pin rotatably secured in an aperture in said side frames.

12. In a truck, a rub or side-bearing plate having standards, the said standards being split and roughened on their cooperating faces and bolts to secure said split portions together at any point to permit the height of the bearing-plate to be adjusted.

13. In a truck, a frame, a bolster supported thereon, rub plates or blocks secured to the bolster, and means connecting said rub-plates with the frame for draft purposes.

14. In a car-truck, a truck-frame, a bolster flexibly supported thereon, rub blocks or chairs mounted on said bolster one at either end, bars, rods, or links extending one from each block to a point on the frame toward one end thereof, and universal connections of said rods with the bolster and frame.

15. In a car-truck, a frame, a bolster flexibly supported thereon, bearing or rub blocks on each end of the bolster, each being provided with an enlarged base having an aperture therein, the side of the frame in advance of the bolster also having a similar aperture, pins rotatably secured in said apertures, and having eyes in their projecting ends, and rods extending between said pins and connected with said eyes whereby universal joints at the ends of the rods are obtained.

16. In a car-truck, a frame, a bolster comprising a lower plate, and an upper arch-plate, semi-elliptic springs to which the ends of said bolster are bolted, spring extension-links loosely suspended from the upper chord of the frame and supporting the ends of the elliptic spring, rub-plates mounted on said arch-bars and adjustable in height, and bars or rods extending from the said rub-plates to points in advance on the frame and having universal connections at their ends.

17. In a car-truck, the combination with the truck side frames, and means for connecting said side frames at their extremities; of a bolster supported at its ends from said side frames, and a pivoted inextensible link interposed directly between said bolster and side frames for limiting the lateral movement of said bolster.

18. In a car-truck, the combination with the truck side frames, of a bolster supported therefrom, side bearings or wear-blocks carried near the ends of said bolster, and means interposed between said side bearings and the side frames for transmitting the draft tension.

19. In a car-truck, the combination with the truck side frames, extensible links supported thereby, and semi-elliptic springs hung from said links; of a bolster supported upon said springs, side bearings or wear-blocks carried by said bolster, and a link interposed between said side bearings and said side frames.

20. In a car-truck, the combination with the truck side frames, extensible links supported thereby, and semi-elliptic springs hung from said links; of a bolster having its ends resting upon said springs, side bearings or wear-blocks carried by said bolster, and a universal connection interposed between said side bearings and side frames for transmitting the draft tension.

21. In a car-truck, the combination of the truck-frame including side frames, a bolster, semi-elliptic springs suspended from said side frames, supporting said bolster, and links interposed between said bolster and side frames, for transmitting the draft tension to the bolster.

22. In a car-truck, the combination of the truck-frame including the side frames, a bolster, semi-elliptic springs supporting said bolster from said side frames, and a universal connection interposed between said bolster and side frames, for transmitting the draft tension.

23. In a car-truck, the combination of the truck-frame, including side

frames, semi-elliptic springs hung from said side frames, a bolster, and means interposed between said bolster and side frames, for transmitting the draft tension.

24. In a car-truck, the combination of the truck-frame, including side frames, semi-elliptic springs hung from said side frames, a bolster supported by said springs, and a pivoted link interposed between said bolster and side frames.

709,072. **CAR-TRUCK CONSTRUCTION.** WALTER S. ADAMS, Philadelphia, Pa., assignor to John A. Brill, Philadelphia, Pa. Filed Feb. 25, 1902. Serial No. 96,560. (No model.)

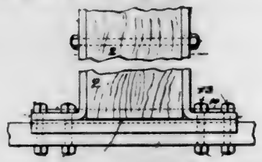

Claim.—1. The combination with the cross-bar having a bent end, another bar, and an interposed carrier having flanges extending from its upper and lower edge in opposite directions and vertically disalined, the bent end resting on the flange, the upper flange resting upon the latter bar, and means for detachably securing the bars together, substantially as described.

2. The combination with the spring-plank, cross-bars upon each side thereof having laterally-projecting ends substantially at right angles to said spring-plank, and a cross-bar supporter; of a cross-bar carrier interposed between said cross-bars and cross-bar supporter having a vertical web and longitudinally-disposed separated flanges extending therefrom in opposite directions, one of said flanges resting upon the upper side of said cross-bar supporter, and the lower flange resting beneath and supporting the end of said spring-plank and the outwardly-turned ends of said cross-bars upon each side of said spring-plank.

3. The combination with the spring-plank, and a cross-bar carried upon each side of said spring-plank having laterally-extending ends, and a cross-bar supporter carried by the truck-frame; of a cross-bar carrier interposed between the end of said plank and said support, oppositely-disposed flanges carried by said carrier, the flange upon the top of said carrier resting upon the upper side of said support, and the lower flange resting beneath and supporting the under side of said spring-plank and the laterally-extending ends of said cross-bars, and bolts passing through said cross-bar, cross-bar carrier and support for detachably securing said parts together.

4. The combination with the spring-plank, cross-bars having laterally-projecting ends bolted to each side of said spring-plank, and cross-bar supports carried by the truck-frame; of a flanged carrier interposed between the end of said spring-plank, and the laterally-projecting ends of said cross-bars and said support, and means for detachably securing said parts together.

5. The combination with the spring-plank, cross-bars secured to each side of said spring-plank having their ends projecting laterally from said plank in a plane substantially in line with the end of said spring-plank, and means carried by the track for supporting said cross-bars and spring-plank; of a cross-bar carrier having a vertical web interposed between the end of said spring-plank and cross-bars and said support, and oppositely-disposed flanges carried by said web, the upper flange resting upon the upper side of said support, and the lower flange resting beneath and supporting the end of said spring-plank and the laterally-projecting ends of said cross-bars, and bolts passing through said laterally-projecting portions of said cross-bars and through said cross-bar carrier and support for detachably securing said parts together.

709,073. **CONVERTIBLE RAILWAY-CAR.** JOHN A. BRILL and EDGAR S. BUCKMAN, Philadelphia, Pa.; said Buckman assignor to said Brill. Filed Feb. 1, 1901. Serial No. 46,546. (No model.)

Claim.—1. In a car having side openings, and posts to define said openings, the combination with a plurality of movable and separable panels, grooves in the posts to control the up-and-down movements of said panels, and means for automatically locking and unlocking the panels together as they are moved up and down in said grooves.

2. In a convertible car, the combination with grooves or guides in the space between the head-lining and roof, of the separable and inflexible panels each having means connecting its separate groove, the panels being adapted to be independently tilted in an inclined position in the said space and supported therein, and means for automatically locking and unlocking the panels as they are raised and lowered in said grooves.

3. In a car, the combination with posts having roof extensions and oppositely-disposed grooves therein, separate grooves in each of the posts merging into the extension-grooves, a turnout located at the junction of one of the post-grooves and the extension-grooves, separate panels movable in said grooves, and means carried by said panels alternately engaged and disengaged by said turnout.

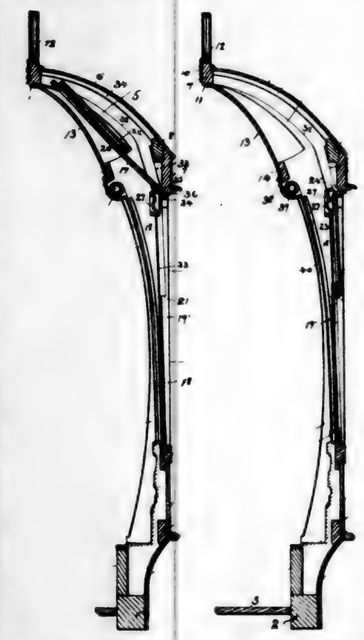

4. In a car, the combination with the posts having roof extensions, a groove in each of the extensions, openings in the car between the posts, a plurality of panels, stepped supports for the panels and grooves leading from said steps to the extension-groove, the lower panel having a flanged opening, and the upper panel a tongue adapted to engage the opening, and a turnout in the groove for the lower panel located adjacent the union of this latter groove and the extension-groove.

5. In a car having side openings, and posts to define said openings, the combination of a plurality of movable and separable panels, grooves in the posts to control the up-and-down movements of said panels together, and disengaging them from each other as they are moved up and down in said grooves.

6. In a car having side posts and an opening between said posts, of upper and lower panels for closing said openings, engaging members carried by each of said panels, and means for causing said engaging members to automatically lock and unlock during the raising and lowering of said panels.

7. In a car having side openings and roof-spaces, posts to define said openings, separate grooves in the posts, inflexible sectional panels to fill said openings and which are movable in the separate grooves, means to cause the lower section to engage and lock with the upper section when it is raised, whereby lifting the lower section also lifts the said upper section both together into the roof, and means for automatically disengaging them when lowered.

8. In a car having side openings, posts to define said openings, sectional sash-panels, means to cause a lower section to lock with and thereby raise said upper section, and means for automatically disengaging said panels when being lowered.

9. In a car having side openings, posts to define said openings, sectional sash-panels, means to cause the lower section to lock with the upper section when it is raised, and means for automatically disengaging said panels.

10. In a car having side openings, posts to define said openings, sectional sash-panels for said openings, means for freely raising the lower sash-panel for some distance, locking members carried by said upper and lower panels, and means for automatically locking said members, said lower panel thereby engaging and carrying the upper section along with it when pushed up a further distance.

11. A car having side openings, and a laterally-extending roof storage-space, posts defining said openings, separate grooves in the posts leading into said space, sectional panels movable in said grooves to close said openings, and means for automatically locking and unlocking said sections during raising and lowering.

12. In a car having side openings, a roof provided with storage-spaces, sectional sash-panels for said openings, means allowing the lower section to be freely raised for some distance, locking devices carried by said upper and lower panels, and means for locking said members, the lower panel thereby engaging and carrying with it the other section when raised a farther distance and to storage position within the roof-space.

13. In a car having side openings, a roof provided with storage-spaces, posts to define said openings and extending up into said spaces, sectional sash-panels adapted to be stored in said spaces, guiding and folding means for said panels in connection with the posts, and means for interlocking said panels at a predetermined point during the raising of said lower panel, both panels being thereby carried together into the storage-space.

14. In a car having openings, posts to define said openings, grooves or guides, sectional panels for said openings on the posts for said panels, and a turnout or switch in the guides to cause one section to interlock with another in being raised.

15. In a car having side openings, a sectional panel to close said opening, interlocking members carried by said panels adapted to automatically lock and unlock during the raising and lowering of said panels.

16. A car having side openings, posts to define said openings, sectional panels to fill said openings, grooves in the posts for said panels, a curve or turnout in one of said grooves to cause one section to engage with and lift another when it is raised.

17. A car having side openings, posts to define said openings, sectional panels to fill said openings and having trunnions thereon, and posts having grooves for said trunnions, and a curve or turnout in the grooves to cause one section to engage and lift another when the first is raised.

18. A car having side openings, posts to define said openings, a sash-panel consisting of upper and lower sections, said posts having grooves for said panels and turnouts in said grooves to enable the lower section to grasp and carry the upper section when the said lower section is raised.

19. A car having side openings, posts to define said openings, sectional panels to fill said openings and provided with trunnions, said posts having grooves or recessed portions in which said panels fit and slide, and other grooves made in the bottom of said first grooves for the trunnions on the panels, the latter being provided with a turnout to cause one section to engage and lift the other when the first is raised.

20. A car having side openings, posts having separate grooves to define said openings, sectional panels to fill said openings and which are movable in separate grooves, a fixed support in different planes on the posts for each of the sections, projections on one section, the other being provided with a socket, and means to cause said socket and projection to interlock when the lower section is raised whereby the other is lifted and carried along with it and to be disengaged by lowering the sections.

21. A car having side openings, grooved posts to define said openings, sectional panels movable in the grooves to fill said openings, one of said sections being provided with a slotted socket on its perpendicular face, said socket having lips projecting laterally thereof and over the slot, and another section having a projecting lug on its face opposing the slotted face of the other panel, and means for causing said lug and socket to interlock when one section is raised, whereby the other will be lifted and carried with it.

22. In a car having side openings, posts to define said openings, sectional panels to fill said openings, the lower section being provided with a key-slot and the upper with a corresponding projection, trunnions or lugs on the panels, the posts being provided with grooves for said trunnions and having turnouts or curves therein to cause said slot in the lower section to engage with the projection on the upper when said lower section is raised.

23. In a car having side openings, posts to define said openings having grooves therein, sectional panels guided by said grooves to close said openings, said panels being in different planes between the posts, means to cause said sections to automatically interlock, and rise together when the lower section is lifted.

24. In a car having side openings and roof storage-spaces, posts to define said openings having grooves in their opposing faces, sectional panels to fill said openings and guided by said grooves side by side, a turnout or switch in said grooves to cause said sections to interlock when the power is lifted into the roof storage-space.

25. In a car having side openings and roof storage-spaces, posts to define said openings having grooves in their opposing faces, sectional panels to fill said openings and guided by said grooves, means to cause one section to travel alongside the other when it is lifted, locking members carried by said panels, and means formed in said grooves for causing said lower and upper panels to engage to carry the latter into the roof storage-space and sustain it therein.

26. In a car having side openings and grooved posts, a roof providing storage-spaces above said openings and between the posts, upper and lower panels to move in the grooves to close said openings, means carried by said panels and combined with the said grooves to lock the panels together in said storage-spaces, and means for engaging one of the said panels to retain both of said panels in said storage-space.

27. In a car having side openings, and grooved posts, a storage-space formed above the said openings beneath the roof of the car and between said posts, combined with a pair of upper and lower panels adapted to close said openings, and means partly formed by said grooves and by devices carried by said panels for automatically locking the panels together while being raised into said storage-spaces, and means for retaining the panels in said storage-space.

28. In a car, having side openings and posts, and storage-spaces above said openings beneath the roof of the car and between the posts, the said posts defining said openings, grooves in the said side posts extending into the said storage-spaces, upper and lower panels guided by said grooved side posts, means carried by said panels and adapted to co-operate with said grooves for automatically locking said panels together while being raised into the storage-space, and unlocking them while being lowered from said storage-space, and further means for retaining said panels in said storage-space.

29. In a car having side openings, a roof providing storage-spaces above said openings, upper and lower panels adapted to close said openings, means carried by said panels adapted to automatically lock and unlock the panels to and from each other as they enter and leave said storage-spaces and to maintain them locked in said storage-spaces, and further means for engaging one of said panels to retain both of said panels in said storage-space.

30. In a car having side openings, and storage-spaces above said openings beneath the roof of the car, posts defining said openings, upper and lower panels adapted to close said openings, means for automatically locking said panels together while being raised into said storage-space, and a recess adapted to receive the lower end of said lower panel to support both panels in said storage-spaces.

31. In a car having side openings, a roof provided with storage-spaces, posts to define said openings, panels to close said openings, and means whereby the said panels can be lifted into the roof, and a recess formed in one wall of the said space, the lower end of the said panel being grooved to fit within the recess.

32. As a new article of manufacture, a post for cars having a groove therein, and being provided with a turnout or curve in said groove.

33. As a new article of manufacture, a post for cars provided with grooves side by side, one of said grooves being provided with a turnout, substantially as described.

34. As a new article of manufacture, a post for cars having a curved extension and provided with a groove or depression narrow at one end and wide in the curved portion, another groove in the bottom of said first groove and also running into the curved extension.

35. As a new article of manufacture, a post for cars having a curved extension and with superimposed grooves extending up into the curved portion, one being deeper than the other, the deeper groove having two substantially parallel portions, one being provided with a turnout or switch.

36. As a new article of manufacture, a post for cars having a curved extension and with superimposed grooves extending up, into the curved portion, one being deeper than the other, the deeper groove having two substantially parallel legs emerging from a wide portion thereof, said wide portion extending in the curved portion, and one of said legs having a turnout therein, and still another groove in the other edge of the same face of the post.

37. In a car having side openings, and storage-spaces above said openings below the roof of the car, of side posts defining said openings, upper and lower panels fitted between said posts, interlocking devices carried by said upper and lower panels, adapted to automatically lock and unlock during the raising and lowering of said panels, and a recess in said storage-space adapted to support the lower end of one of said panels.

38. In a car having side openings, and storage-spaces above said openings below the roof of the car, of grooved side posts defining said openings, upper and lower sashes fitted into the grooves of said side posts, locking members carried by said sashes, and means for automatically engaging and disengaging said locking members during the raising and lowering of said panels.

39. In a convertible car having side openings extending down to the belt-rail, sectional sash-panels to close said openings, stationary panels to close the sides of the car below the belt-rail, means to store said sectional panels in the roof, and a curtain-roller journaled between said posts.

40. The combination with the sash or panels, of a key-slot formed in the upper edge of one panel, and a projection from the other panel adapted to engage the slot in the other panel.

41. The combination with the sashes or panels, of a key-slot 28, having narrowing projections 31 formed on one of the panels, and a projection 29 having the overhanging portions 30 formed on the other panel for engagement with said slot.

42. In a convertible open and closed car, the combination of a sliding window-sash and panel, one of said parts being formed with an engaging device to hold the other part thereto when the parts are brought together with one part overlying the other.

709,074. COLLAR. EDWIN F. BROWN, Chicago, Ill. Filed June 5, 1902. Serial No. 110,319. (No model.)

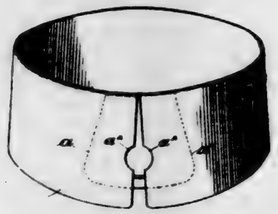

Claim.—1. In a turn-down collar the outer fold thereof provided in its end with a recess to receive the knot of the tie.

2. In a turn-down collar the outer fold thereof provided in each end with a recess to receive the knot of the tie.

709,075. CONVERTIBLE RAILWAY-CAR. EBEN S. BUCKHAM, Philadelphia, Pa., assignor to John A. Brill, Philadelphia, Pa. Filed Dec 16, 1901. Serial No. 86,019. (No model.)

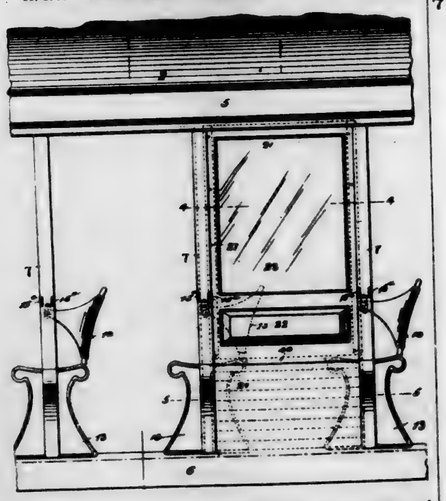

Claim.—1. In a car, the combination with the posts, grooves formed in the posts, of a window sash or frame, and means adapted to be detachably secured to the frame or sash and inserted into said grooves for detachably securing the sash or frame to the posts.

2. In a car, the combination with the side posts having grooves formed therein, of a sash adapted to fit between said posts, and strips carried by said sash fitting into said grooves to removably secure said sash between said posts.

3. In a car, the combination with the grooved side posts, of a sash fitting between said posts and detachably secured in position by extensions removably secured upon the vertical edges of said sash, adapted to fit into said grooved side posts.

4. In a car, the combination with the posts, grooves formed in said posts, of a window frame or sash, and separable strips adapted to be secured detachably to the sash or frame and inserted in the grooves, substantially as described.

5. In a car, the combination with the posts, grooves formed in said posts, of means for closing the openings between the posts comprising a window frame or sash; separable strips adapted to be detachably secured to the sash or frame and inserted in the grooves, and a panel adapted to be detachably secured in the car side below the said sash or frame.

6. The combination in a car having posts or stanchions provided with opposing grooves, of a sash or frame, separable strips adapted to be inserted in said grooves and secured to the sides of the sash, and a lower panel secured to the car side, substantially as described.

7. In a car, the combination with the lower panel, the upright posts having grooves above the panel, the window sash or frame, the strips inserted in the grooves and secured to the sash, said strips being adapted to rest upon the top of the lower panel, the lower edge of the sash overlapping the upper edge of the panel, the panel and sash being secured together at the overlapping point.

8. The combination with the grooved posts, the lower panel, the window-sash, the strips inserted in the grooves and resting on the lower panel, and means for detachably securing the strips to the sash.

9. The combination in a car having grooved posts, of the lower panel, the window-sash having a recess at its upper cross member, a letter-board extending along the post below the roof, its lower edge being adapted to enter into the said recess, and means for detachably securing the window-sash to the posts and the lower panel.

10. In a car, the combination of posts having grooves, of a lower panel comprising a plurality of longitudinally-disposed strips, an outer flexible covering supported in said grooves, and a window sash or frame detachably secured between the posts and to the upper strip of said lower panel.

11. In a car, the combination with the posts having grooves, the seat-panel having exterior grooved ribs, the grooves in the ribs alining with the grooves in the posts, a panel in said seat-panel grooves comprising a flexible sheet and a series of transverse strips supported in said grooves, and a window sash or frame detachably secured to the posts and to the seat-panel.

709,076. CONVERTIBLE RAILWAY-CAR. EBEN S. BUCKHAM, Philadelphia, Pa., assignor to John A. Brill, Philadelphia, Pa. Filed Jan. 21, 1902. Serial No. 90,585. (No model.)

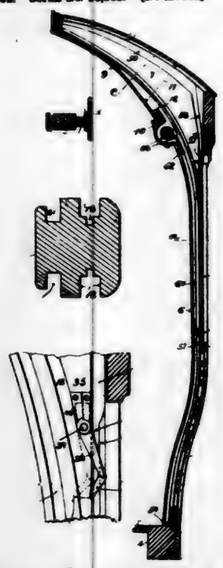

Claim.—1. In a car, the combination with the posts and the roof-pockets, of a groove formed in the sides of the posts and diverging into separate grooves at or adjacent to the entrance of the pockets, and which separate grooves extend within said pockets, a plurality of elements for closing the car side movable in said groove, and a switch for diverting the separate side-closing elements into the diverging branches of said groove, substantially as described

2. In a car, the combination with the posts having the groove 12 formed in their faces, the roof-pocket, the said groove entering said pocket, the groove 13 formed at the base of the groove 12 and diverging therefrom at and into the pockets, the flexible lower panel movable in the groove 12, the sash comprising two parts hinged together and having trunnions extending outwardly therefrom, the said trunnions moving in the groove 13, and a switch at the point of divergence of the groove 12 from the groove 13, for diverting the trunnions into the roof portion of said groove, and the flexible panel into the roof-section of the groove 13, substantially as described.

3. In a car, the combination with the roof-pockets having grooves converging to a single groove on the post, the separable sash and panel movable in the grooves, a switch comprising an arm provided with a divergent tongue located at the convergence of said grooves, and a spring for resisting the movement of said arm, substantially as described.

4. In a car, the combination with the posts, the roof-pockets, the grooves 12, 13 formed in the pockets, and a switch comprising an arm having a divergent tongue with a stepped face disposed in the path of the groove 12, and extending across the groove 13, and a spring operating against the other end of the arm to maintain it in the before-stated position, combined with a plurality of separable side-closing elements adapted to be diverted into the separate grooves by said switch.

5. The combination in a car-panel, of the upper and lower cross-bar, and a plurality of flexible sheets secured to said cross-bars, one of said sheets being loosely secured to one of said cross-bars.

6. A flexible car-panel comprising the upper and lower cross-bars, an exterior sheet of flexible self-supporting material extending between the cross-bars on one side, and a like sheet extending between the cross-bars on the other side, and secured to one cross-bar, and loosely attached to the other.

7. A flexible car-panel comprising the upper and lower cross-bars, the outer sheet secured to the top and bottom cross-bar, and a sheet secured to the upper cross-bar, and loosely receiving the lower edge of the latter sheet.

8. In a car-panel, the combination with the two sheets, the interposed top and bottom cross-bars, one of the sheets being loosely connected with one of the cross-bars at the lower edge of said sheet.

9. In a car-panel, the combination with the parallel sheets, the interposed top and bottom cross-bars, one of said sheets being loosely secured to one of said bars, and a series of slats secured to one of said sheets, and laterally disposed between them.

10. In a car-panel, the combination with the parallel sheets, the interposed top and bottom cross-bars, and lateral slats interposed between the sheets, some of said slats being secured to either of the said sheets, and disconnected from the other sheet.

11. In a car-panel, the combination with the parallel and juxtaposed sheets, of the interposed top and bottom cross-bars, and the interposed lateral slats secured to one of said sheets and free as to the opposing sheet.

12. In a car-panel, the combination with the parallel juxtaposed sheets, of the interposed top and bottom cross-bars, the slats arranged in pairs, each pair of slats being secured to one sheet and free as to the other, and another slat interposed between each pair and secured to the latter sheet and free as to the former sheet.

709,077. CLEANER FOR BURNER-TIPS. SVEN CARLSEN, Stockholm, Sweden. Filed Feb. 15, 1902. Serial No. 94,573. (No model.)

Claim.—An improved cleaning device comprising a needle-carrying arm, and a rocking arm to which the said needle-carrying arm is pivoted, said rocking arm having movement to carry the needle-carrying arm laterally to the burner and to move the needle-carrying arm longitudinally to thrust the needle into the burner-orifice, substantially as described.

709,078. COMBINATION-LOCK. WILLIS J. CARROLL, Cripple-creek, Colo. Filed Oct. 3, 1900. Serial No. 31,956. (No model.)

Claim.—1. In a permutation-lock of the single-spindle type, the combination with a single rotary and endwise-shiftable spindle extending entirely through the lock for actuation from either side thereof, a bolt, and tumbler mechanism in effective relation to the bolt, of means for effecting the operative connection of the spindle with the bolt or tumbler mechanism through the endwise movement of the spindle, and means for locking the spindle against such endwise movement to prevent the shifting of the spindle from one side of the lock.

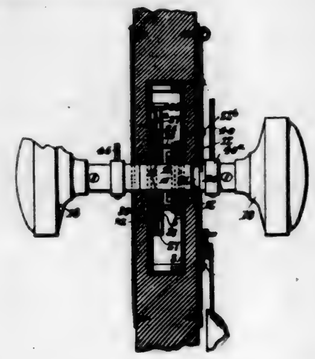

2. In a permutation-lock of the single-spindle type, the combination with a single rotary and endwise-shiftable spindle extending entirely through the lock for actuation from either side thereof, of a bolt and tumbler mechanism in operative proximity, means for effecting the operative connection of the spindle with the bolt or tumbler mechanism through the endwise movement of said spindle, and a sliding detent exterior to the lock and engaging the spindle to prevent the endwise movement thereof whereby the manipulation of the lock will be under the control of a person at one side of the door, but will be impossible by a person at the other side thereof.

3. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle, of a bolt and tumbler mechanism, a sounder, and a sounder-operating device mounted for movement into, or out of operative relation with, the sounder through the endwise movement of the spindle.

4. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle, a bolt, and a plurality of tumblers, of means for effecting an operative connection of the spindle with the bolt or tumblers when said spindle is shifted in opposite directions, a sounder designed to indicate the initial position of the tumbler preparatory to the working of the known combination, and operating means presented in operative relation with the sounder when the bolt is shifted into operative relation with the tumblers.

5. In a permutation-lock, the combination with a spindle and bolt, of a plurality of tumblers, means for audibly indicating the extent of movement of the tumblers, a shiftable element for effecting an operative connection between the several tumblers, a sounder, and a trip device mounted upon the spindle exterior to the lock and arranged to actuate the sounder for the purpose of indicating the initial position of the tumbler mechanism preparatory to the working of a known combination whereby the trip device carried by the spindle is exposed to the view of the operator and serves first to indicate the initial position of the tumbler by sounding the alarm, and then indicates the extent of movement of the spindle from its initial position.

6. In a permutation-lock, the combination with a spindle and bolt, of a plurality of peripherally-notched tumblers mounted upon the spindle and arranged to control the movement of the bolt, individual click-springs in operative relation to the periphery of each tumbler, a shiftable member carried by one tumbler and arranged for operative connection with the next adjacent tumbler in a predetermined relative position of the parts, a sounder, and a shiftable finger mounted upon the spindle exterior to the lock and arranged to operate the sounder when the tumblers have assumed predetermined relative positions, said finger being exposed to the view of the operator to indicate the progressive position of the spindle from the starting-point.

7. In a permutation-lock, the combination with a spindle and a bolt having a fixed tongue, of a plurality of tumblers provided with peripheral notches and bolt-slots, individual click-springs engaging the peripheries of the tumblers for the reception of said tongue, a shiftable member serving to operatively connect the tumblers, a shiftable finger movable with the spindle and mounted thereon exterior to the lock, and a sounder embodying a striker having a trip-arm located in the path of the finger when the spindle is shifted endwise to one position.

8. In a permutation-lock, the combination with the tumblers, of a spring secured to one tumbler and having a free end, and a pin or projection extending from another tumbler into the path of the free end of

said spring to effect the operative connection of the tumblers when rotated in one direction only.

9. In a permutation-lock, the combination with a spindle and bolt, of a bolt-operating disk carried by the spindle, said bolt-operating disk being provided with pins engaging the bolt and with a circular series of projections extending from its opposite face, tumbler mechanism loosely carried by the spindle and in effective relation with the bolt, and diametrically-opposed fingers carried by the spindle and arranged for engagement with the tumbler mechanism or with the teeth of the bolt-operated disk.

10. In a permutation-lock, the combination with a spindle capable of rotary and endwise-shiftable movement, of a bolt, a bolt-operating disk and tumbler mechanism mounted upon the spindle in spaced relation, and an engaging device carried by the spindle between the bolt-operating disk and tumbler mechanism to permit the independent rotation of the spindle or to be engaged with either the disk or tumbler mechanism by the endwise-shiftable movement of the spindle.

11. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle, a bolt, and a bolt-operating disk mounted upon the spindle to one side of the bolt, tumbler mechanism mounted upon the spindle, the elements of said tumbler mechanism being operatively connected by a shiftable element, and a finger upon the spindle, said finger being located between the disk and tumbler mechanism to permit the independent rotation of the spindle, and means for effecting the engagement of said finger with the disk and tumbler mechanism by endwise-shiftable movement in opposite directions of the spindle.

12. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle, of a bolt-operating disk carried by the spindle and having operative engagement with the bolt, and a plurality of rotary tumblers loosely mounted upon the spindle, a finger extending from the spindle at a point intermediate of the tumblers and bolt-operating disk, means for effecting the engagement of said finger with the disk and tumblers through the endwise movement of the spindle, and means for maintaining the spaced relation of the bolt-operating disk and the adjacent tumbler to permit the independent rotation of the spindle with the finger out of engaging relation with both the disk and tumblers.

13. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle, of a bolt, a bolt-operating disk and tumbler mechanism carried by the spindle, spacing-pins intermediate of the disk and tumbler mechanism, and fingers mounted upon the spindle for engagement with either the disk or tumbler mechanism through the endwise movement of the spindle, or with neither of said elements to permit the independent rotation of the spindle.

14. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle provided with an annular groove, of a bolt and tumbler mechanism, means for effecting an operative engagement between the spindle and the bolt or tumbler mechanism through the endwise movement of said spindle, a slotted detent arranged for engagement with the groove of the spindle, said slot being provided with lateral offsets, and detent-retaining devices located within the slot of the detent and designed to engage the offsets to retain the detent in one position.

15. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle, of a bolt and tumbler mechanism, means for effecting an operative engagement between the spindle and the bolt or tumbler mechanism through the endwise movement of said spindle, a sounder, and a finger movable with the spindle and designed by the endwise movement of the latter to be presented in operative relation to the sounder, whereby the rotation of said spindle, after each endwise movement, will cause the finger to operate the sounder.

16. In a permutation-lock, the combination with an endwise-shiftable spindle and bolt, of a plurality of tumblers, a shiftable element for effecting an operative connection between said tumblers, means for connecting the spindle with one of the tumblers, a dial, and an index-finger carried by the spindle and movable over the face of the dial to indicate the positions of the tumblers, said finger serving to indicate the endwise positions of the spindle, as well as the rotary positions thereof.

17. In a permutation-lock, the combination with a spindle and bolt, of a plurality of tumblers, a shiftable element for effecting an operative connection between said tumblers, a dial, an index-finger movable with the spindle and over the dial, means for adjusting the position of the finger with respect to the spindle, and a sounder operatively related to said finger.

18. In a permutation-lock, the combination with a casing and dials at opposite sides thereof, of a spindle and bolt, a plurality of tumblers, means for operatively connecting said tumblers with each other and with the spindle, index-fingers carried by the spindle and movable over the faces of the dials, a striker located exterior to the lock and provided with a trip-arm located in the path of one of the fingers, and a sounder in operative relation with the striker.

19. In a permutation-lock, the combination with a rotary and shiftable spindle, a bolt and tumbler mechanism, of a sounder, and a finger adjustable to various radial positions upon the spindle and movable therewith into or out of operative relation with the sounder.

20. In a permutation-lock, the combination with a rotary and endwise-shiftable spindle, a bolt and tumbler mechanism, of a sounder, and a finger adjustable to various radial positions upon the spindle and shiftable by the endwise movement thereof into or out of operative relation with the sounder.

21. In a permutation-lock, the combination with a casing, of a rotary and endwise-shiftable spindle extending entirely through the casing and projecting beyond opposite sides thereof, of tumbler mechanism and a rotary bolt-actuator both mounted directly upon the spindle within the casing, a bolt engaged by the actuator and having a fixed tongue directly obstructed by the tumbler mechanism when the latter is unset, and means for effecting the operative connection of the spindle with the tumbler mechanism or bolt-actuator through the endwise movement of said spindle, said means being normally free from the tumbler mechanism and bolt-actuator.

22. In a permutation-lock, the combination with tumbler mechanism and a bolt controlled thereby, of a spindle and means for operatively connecting the spindle with either the bolt or tumbler mechanism or with neither of said elements as desired.

23. In a permutation-lock, the combination with a casing, a rotary and endwise-shiftable spindle extending through the casing and provided with operating devices beyond each side thereof, a bolt, tumbler mechanism, and an actuator in operative aggroupment, means for effecting an operative connection between the spindle and either the tumbler mechanism or bolt-actuator through the endwise movement of said spindle, and means disposed beyond one side of the casing for locking the spindle against such endwise movement when desired, whereby the spindle when unlocked may be operated from either side of the casing and when locked will be under control from one side only of the casing.

24. In a permutation-lock, the combination with a spindle and bolt, of a bolt-operating disk carried by the spindle, tumbler mechanism likewise carried by the spindle, spacing means disposing the tumbler mechanism and bolt-operating disk in separated relations, a projection extending from the spindle intermediate of the disk and tumbler, and means for effecting the engagement of said projection with either the disk or tumbler mechanism as desired.

709,079. PHOTOGRAPHIC SHUTTER. EMIL DÖNITZ, Jena, Germany, assignor to Firm of Carl Zeiss, Jena, Germany. Filed Aug. 27, 1900. Serial No. 28,124. (No model.)

Claim.—1. A safety-shutter consisting of two roller-blinds each wound upon a setting-roller at one end and upon an exposure-roller at the other end and having a transverse edge for forming the exposure-aperture, winding-springs connected with the exposure-rollers, pinions on the setting-rollers, toothed members engaging the pinions, one of which members is connected with a setting device and the other with a catching and releasing device, and a set of coöperative stops on the toothed members controlling the relative positions of these members, one of the two stops in contact during exposure being adjustable for the purpose of regulating the exposure-aperture.

2. A safety-shutter consisting of two roller-blinds each wound upon a setting-roller at one end and upon an exposure-roller at the other end and having a transverse edge for forming the exposure-aperture, winding-springs connected with the exposure-rollers, pinions on the setting-rollers, coaxial spur-wheels engaging the pinions, one of which spur-wheels is connected with a setting device and the other with a catching and releasing device, and a set of coöperative stops on the spur-wheels controlling the relative positions of these wheels, one of the two stops in contact during exposure being adjustable for the purpose of regulating the exposure-aperture.

709,080. PROCESS OF SHAPING METAL I-BEAMS, CHANNEL-BEAMS, &c. WILLIAM A. DUNN, Smithville, Minn., assignor of one-half to Athol Morton Miller, Duluth, Minn. Filed Jan. 3, 1902. Serial No. 88,301. (No model.)

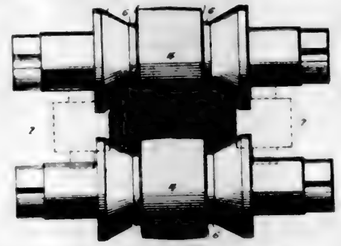

Claim.—The herein-described process of making flanged beams from metal ingots or slabs, which consists in subjecting the ingot or slab intermediate of its sides to roller-pressures exerted in a vertical direction, subjecting the sides of the ingot or slab to pressures exerted in a horizontal direction, and simultaneously with the vertical pressures applying roller-pressures to the side edges of the ingot or slab in an inward direction and at an abrupt angle to the horizontal.

709,081. MACHINE FOR SHAPING METAL I-BEAMS, CHANNEL-BEAMS, &c. WILLIAM A. DUNN, Smithville, Minn., assignor of one-half to Athol Morton Miller, Duluth, Minn. Filed Jan. 3, 1902. Serial No. 88,302. (No model.)

Claim.—1. In a mill of the class described, the combination of horizontal shaping-rolls mounted in a frame, vertical shaping-rolls mounted in a frame independent of the aforesaid frame, adjusting-screws for the horizontal rolls, a shaft having gear connection with said screws to rotate them, adjusting-screws for the vertical rolls, a shaft connected by multiplying-gearing with the screws of the vertical rolls for effecting the adjustment of the latter at a rate of speed in excess of that of the horizontal rolls, gearing between the said shafts, and a single hand-operated clutch in the vertical-rolls-adjusting shaft for checking the adjustment of the vertical rolls at any point during the operation of the mill for the purpose specified.

2. In a mill of the class described, the combination of vertical shaping-rolls, laterally-adjustable housings, frames movable in said housings and carrying said vertical rolls, screws for adjusting said frames, a shaft extending transversely of the frames, multiplying-gearing between the shaft and screws, a single hand-operated clutch in the shaft beyond the gearing for checking the adjustment of said vertical rolls at any point during the operation of the mill, horizontal shaping-rolls, a laterally-adjustable frame for the horizontal rolls arranged in longitudinal alinement with and independent of the vertical roll-frame, adjusting-screws for the horizontal rolls, and a shaft having gear connection with said screws and with the aforesaid shaft.

3. In a mill of the class described, horizontal rolls for shaping a flanged beam from a metal ingot or slab, one of said rolls having intermediate of its ends an approximately cylindrical roller-surface exerting pressure in a vertical direction against the ingot or slab to shape the web, grooves flanking the cylindrical surface the outer wall of each groove inclining from the groove-base at an abrupt angle to the horizontal and maintaining pressure against the side edges of the ingot or slab inwardly toward the center to force the metal into the groove to shape the flanges, and vertical rolls exerting pressures in a horizontal direction against the sides of the ingot or slab to reduce the height of the beam, said vertical rolls being arranged in advance of the horizontal rolls.

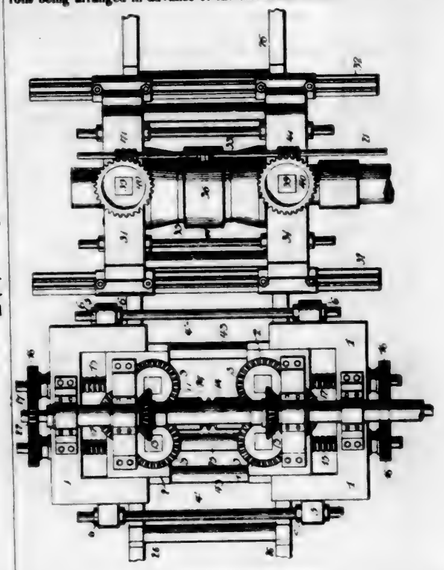

709,082. ROLLER-MILL. WILLIAM A. DUNN, Smithville, Minn., assignor of one-half to Athol Morton Miller, Duluth, Minn. Filed Jan. 3, 1902. Serial No. 88,303. (No model.)

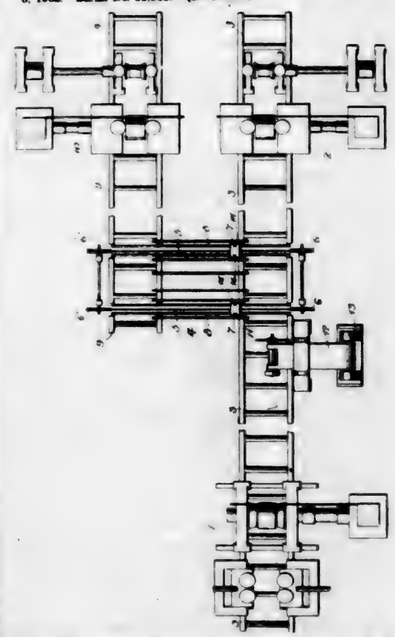

Claim.—The combination of a metal-carrying table leading from a shaping-mill to an intermediate mill and from thence to a finishing-mill,

a second metal-carrying table in parallel relation to the first table and leading to a second intermediate mill and from thence to a second finishing-mill, means for dividing the metal into lengths said means being located at the first-named table, and an endless conveyer between the tables adapted automatically to transfer a severed portion of the metal to the second table whereby both portions of the metal are conveyed to the intermediate and finishing mills for simultaneous treatment.

709,083. MACHINE FOR ROLLING METAL I-BEAMS, CHANNEL-BEAMS, &c. WILLIAM A. DUNN, Smithville, Minn., assignor of one-half to Athol Morton Miller, Duluth, Minn. Filed Jan. 3, 1902. Serial No. 88,304. (No model.)

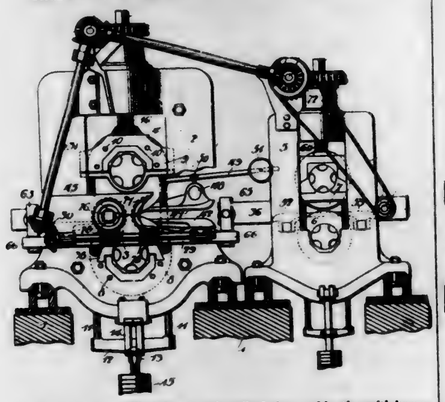

Claim.—In a mill of the class described, the combination with beam-web rolls and side rolls, of rolls located to the rear of the aforesaid rolls having projecting narrow roller rim portions flanking a reduced central portion said rims adapted to exert roller-pressure against the beam-web at the flanges, and outer cylindrical roller-surfaces and beveled roller portions extending from the cylindrical roller-surfaces to the rim portions for respectively working the edges and inner faces of the beam-flanges.

709,084. ROLLER-MILL AND CUTTER. WILLIAM A. DUNN, Smithville, Minn., assignor of one-half to Athol Morton Miller, Duluth, Minn. Filed Jan. 3, 1902. Serial No. 88,305. (No model.)

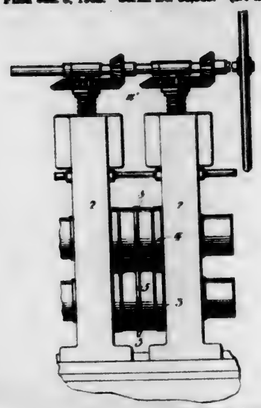

Claim.—1. The combination of a pair of rolls for finishing a shaped flanged beam having cylindrical web-rolling portions, cutter-blades on the rolls between the cylindrical web-rolling portions, each blade having two closely-adjacent cutting edges, the outer faces of which are at a right angle to said cylindrical web-rolling portions for producing finished edges on the finished severed portions of the beam.

2. The combination of a pair of rolls for finishing a shaped flanged beam having cylindrical web-rolling portions, cutter-blades on the rolls between the cylindrical web-rolling portions, each blade having two closely-adjacent cutting edges, the outer faces of which are at a right angle to said cylindrical web-rolling portions for producing finished edges on the finished severed portions of the beam, and the inner faces of which cutting edges are beveled and provide a concave rolling-surface for shaping the intermediate severed portion for further treatment.

709,085. MACHINE FOR ROLLING METAL I-BE...MS, CHANNEL-BEAMS, &c. WILLIAM A. DUNN, Smithville, Minn., assignor of one-half to Athol Morton Miller, Jr., Duluth, Minn. Original application filed Jan. 3, 1902, Serial No. 88,304. Divided and this application filed June 23, 1902. Serial No. 112,862. (No model.)

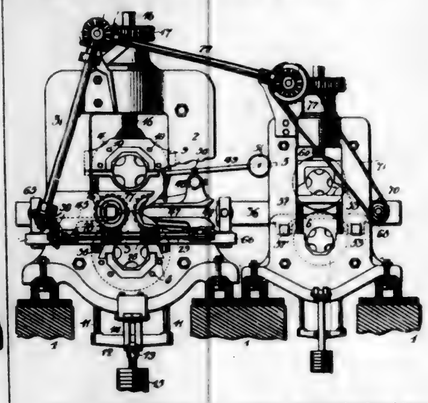

Claim.—1. In a mill of the class described, the combination of frames or housings supported to be adjusted laterally to accommodate different-size rolls, horizontal rolls mounted in said frames or housings, a shaft extending at the maximum adjustment of the frames or housings loosely through the latter, and a guide-plate mounted at its outer end on said shaft and contacting at its inner end with one of said rolls.

2. In a mill of the class described, the combination of frames or housings supported to be adjusted laterally to accommodate different-size rolls, horizontal rolls mounted in said frames or housings, a shaft loosely extending at the maximum adjustment of the frames or housings through the latter, a guide-plate mounted at its outer end on said shaft, and means for elevating the inner end of the guide-plate against the upper roll said means including a weight.

3. In a mill of the class described, the combination of frames or housings supported to be adjusted laterally to accommodate different-size rolls, horizontal rolls mounted in said frames or housings, side guides for the metal, a separate screw-rod for each guide permitting said adjustment of the frames or housings, and means for simultaneously rotating said screw-rods.

4. In a mill of the class described, a roll consisting of a shaft, outer cylindrical roller portions, adjacent roller-rims, and a two-part spacing-sleeve between the rims secured to the shaft, said roller portions, rims and sleeve being removably keyed to the shaft.

5. In a mill of the class described, the combination of a vertical roll, a spindle supporting said roll vertically, a saddle at the lower end of the spindle, a frame, a carriage guided by the frame and forming the lateral supports for the roll, means for moving the carriage, an adjustable connection between the carriage and saddle, a bracket-arm extending from the saddle and having a dovetailed groove, and a guide for the metal having a dovetailed end seated in the groove.

709,086. PROCESS OF MAKING PEROXID OF MAGNESIUM. FRIEDRICH ELIAS, Berlin, Germany. Filed Feb. 24, 1902. Serial No. 95,266. (No specimens.)

Claim.—1. The process for producing peroxid of magnesium by acting upon barium peroxid by a slightly-acidulated solution of a magnesium salt, then filtering, washing and drying.

2. The process of producing peroxid of magnesium, which consists in hydrating peroxid of barium and reacting upon an acidulated solution of a magnesium salt with the resulting product, substantially as described.

3. The process of producing peroxid of magnesium, which consists in reacting upon a cold acidulated solution of a magnesium salt with hydrated peroxid of barium, substantially as described.

4. The process of producing peroxid of magnesium, which consists in reacting upon an acidulated solution of magnesium chlorid with barium peroxid, substantially as described.

5. The process of producing peroxid of magnesium, which consists in reacting upon an acidulated solution of magnesium chlorid with hydrated barium peroxid, substantially as described.

709,087. STOVEPIPE HOLDER OR COLLAR. JAMES E. FAHLSER, Whatcom, Wash. Filed Feb. 24, 1902. Serial No. 95,267. (No model.)

Claim.—A device for holding a pipe in a chimney, comprising a bar bent at right angles at two locations, the ends of which are perforated, a cross-piece K, transverse slots near its ends through which the bar O passes, the ends of said cross-piece projecting beyond the parallel perforated portions of said bar, a collar having a central aperture to receive a pipe, slots in said thimble at locations diametrically opposite each other to receive the ends of said bar, pins passing through said perforations, as shown and described.

709,088. TYPE-WRITING MACHINE. JACOB FELSH, New York, N. Y. Filed Dec. 18, 1899. Serial No. 740,703. (No model.)

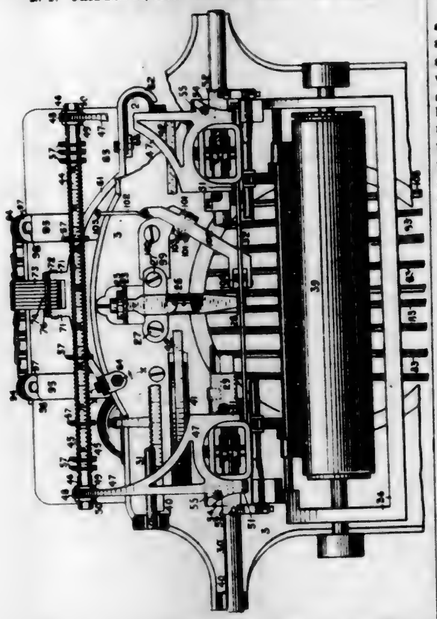

Claim.—1. In a type-writing machine, the combination with type-operating mechanism and a power-driven carriage, of a tabulating mechanism including a series of column-stops and a set of independent denomination-stops, and also including independently-operable means for releasing the carriage after the positioning of the stop members.

2. In a type-writing machine, the combination with type-operating mechanism and a power-driven carriage, of a tabulating mechanism including a series of denomination-keys and a series of independently-movable stops connected thereto, and also including an independent release-key for the carriage, the construction and arrangement being such that any key may be operated to set its corresponding stop, and such that said release-key may then be operated to enable the carriage to move rapidly to the point determined by the setting of said stop.

3. In a type-writing machine, the combination with type-operating mechanism and a power-driven carriage, of a tabulating mechanism including an adjustable column-stop arranged upon the carriage and a series of denomination-stops arranged upon the frame of the machine, and keys for controlling said denomination-stops, and said tabulating mechanism also including an independently-operable carriage-release key arranged upon the frame of the machine.

4. In a type-writing machine, the combination with a carriage and a type-operating mechanism, including a keyboard, of a tabulating mechanism for said carriage comprising a series of denomination-stops, a tappet, and means extending to said keyboard for effecting relative positioning between the tappet and the denomination-stops, said tabulating mechanism also comprising auxiliary means extending from the carriage to the keyboard and operable independently of said positioning means, for causing a movement of the carriage independent of the escapement mechanism and so that it may be arrested by the engagement of said tappet with the selected stop and hence positioned at the desired point.

5. In a type-writing machine, the combination with a carriage and a type-operating mechanism, including a keyboard, of a tabulating mechanism for said carriage comprising a series of stops, a tappet, and a series of denomination-keys arranged in line at the keyboard and provided with means for effecting different relative positioning between said stops and said tappet, said tabulating mechanism also comprising independently-operable means extending to the keyboard for releasing said carriage and hence that portion of the tabulating mechanism moving therewith from the control of the carriage-escapement mechanism, so that the carriage may be positioned at the desired point by the engagement of said tappet with the selected stop, the construction and arrangement being such that said release movement may be effected subsequently to and independently of the operation of the selected denomination-key.

6. In a type-writing machine, the combination with a carriage and a type-operating mechanism, including a keyboard, of a tabulating mechanism for said carriage comprising a series of stops, an adjustable tappet, and a series of denomination-keys arranged at the keyboard and provided with means for effecting different relative positioning between said stops and said tappet, said tabulating mechanism also comprising an auxiliary key arranged in proximity to said denomination-keys and connected to means for releasing the carriage and hence that portion of the tabulating mechanism moving therewith from the control of the carriage-escapement mechanism, so that one finger may be employed to operate any of said denomination-keys and so that another finger of the same hand may be employed to operate independently said auxiliary key so as to cause the carriage to be positioned at the desired point by the engagement of said tappet with the selected stop.

7. In a type-writing machine, the combination with a carriage and a type-operating mechanism including a keyboard, of a tabulating mechanism including an adjustable tappet, a series of independently-movable blades for arresting said tappet and carriage at variable distances from a point determined by the adjustment of said tappet, and a series of denomination-keys arranged in line at said keyboard and each connected to one of said blades but not adapted to release the carriage, said tabulating mechanism also including an auxiliary key extending parallel to said line of denomination-keys and connected to means for causing a release of said tappet together with said carriage from the control of the carriage-escapement mechanism.

8. In a type-writing machine, the combination with type-operating mechanism including a keyboard, of a carriage, a series of independently-movable stops, means for engaging the stops to arrest the carriage, a series of depressible finger-keys arranged at the keyboard and operatively connected to the said stops, and a key at the keyboard for releasing the carriage subsequent to the positioning of the selected stop.

9. In a type-writing machine, the combination of a carriage, a keyboard of the printing mechanism, a space-key arranged in front of the keyboard, and a tabulating mechanism, the latter including both a series of depressible denomination-keys arranged in line in front of said space-key, and an auxiliary carriage-release key arranged in front of said denomination-keys.

10. In a type-writing machine, the combination of a keyboard, a series of type-operating key-levers extending rearwardly therefrom, a carriage, a series of movable denomination-stops arranged upon the machine, means on the carriage for engaging the denomination-stops, and a series of horizontal rock-shafts arranged beneath said key-levers and extending rearwardly from the front of the machine and provided at their forward

ends with depressible finger-keys and at their rear ends with means for operating the denomination-stops.

11. In a type-writing machine, the combination of a carriage, a tappet thereon, a system of tabulator-blades, a series of longitudinally-extending rock-shafts arranged in the base of the machine, means for enabling the rock-shafts to move the tabulator-blades, a crank-arm arranged at the end of each rock-shaft, and an upright key-stem for and pivotally mounted upon each of said crank-arms.

12. In a type-writing machine, the combination of a system of tabulator-blades, a tappet, a series of horizontal rock-shafts arranged longitudinally in the base of the machine, each rock-shaft being provided with a crank-arm at its rear end, links connecting the crank-arms to the blades, crank-arms provided at the front ends of the rock-shafts, and upright key-stems pivotally secured thereon.

13. In a type-writing machine, the combination of a carriage, a tappet thereon, a series of tabulator-blades mounted on the frame of the machine, a series of links connected at their upper ends to said tabulator-blades and diverging at their lower ends, a series of longitudinally-arranged horizontal rock-shafts provided at their rear ends with crank-arms, each of said crank-arms being pivotally connected to the lower end of one of said links, and said horizontal rock-shafts diverging at their forward ends, and a key-operated crank-arm secured to the forward end of each shaft.

14. In a type-writing machine, the combination of a paper-carriage a bar thereon, a tappet adjustable along said bar, a series of vertical tabulator-blades pivoted on a fixed portion of the machine in proximity to said paper-carriage, each blade being provided with a crank-arm, a series of depressible keys arranged at the keyboard of the type-operating mechanism, and operative connections between said keys and said crank-arms, said connections including a series of horizontal longitudinally-extending rock-shafts arranged in the bottom of the machine.

15. In a type-writing machine, the combination of a paper-carriage, a bar thereon, a tappet adjustable along said bar, a series of tabulator-blades pivoted upon a fixed portion of the machine in proximity to said paper-carriage and each having a rearwardly-extending crank-arm, a series of links, the upper ends of which are connected to said crank-arms, and a series of key-operated horizontal rock-shafts extending longitudinally of the machine and connected at their rear ends to said links.

16. In a type-writing machine, the combination of a carriage, a bar thereon, a tappet adjustable along said bar, a series of vertical tabulator-blades pivoted on the frame of the machine and each provided with a horizontal crank-arm, a series of vertical links connected at their upper ends to the crank-arms, a series of rock-shafts extending longitudinally of the machine and provided at their rear ends with crank-arms which engage the lower ends of said links and also provided at their forward ends with crank-arms which are connected to vertical stem-keys, and a series of returning-springs.

17. In a type-writing machine, the combination with a carriage, of tabulating mechanism therefor, including a bar on said carriage, a tappet adjustable along said bar, a series of tabulator-blades pivoted upon a fixed portion of the machine, a series of depressible denomination-keys arranged at the keyboard of the type-operating mechanism, and operative connections extending from said keys to said tabulator-blades, and also including a carriage-release key arranged in proximity to said denomination-keys.

18. In a type-writing machine, the combination of a bracket comprising a horizontal plate, as 84, a vertical plate having a hook 90, catching over the top of the front bar of the type-writer base, a clamp 91 engaging the lower edge of said front bar, screw 92, means on said bracket for pivotally supporting a series of rock-shafts, a series of perforations in said horizontal plate, a series of key-bearing stems arranged in said perforations and operatively connected to said rock-shafts, and connections from said rock-shafts to a series of stops adapted to engage stops on the paper-carriage.

19. In a type-writing machine, the combination of vertical plate 85, upwardly-extending hook 93 thereon, oblique ear 94 at the upper end of said plate, horizontal plate or strap 95 having an ear parallel to said oblique ear, means for drawing the ears toward each other, hook 96 on said horizontal plate, the hook on said vertical plate being constructed to engage the lower edge of the vertical flange of the base of the machine and the hook on said horizontal plate being constructed to engage a horizontal plate on said base, a series of horizontal perforations in said vertical plate, a series of key-operated rock-shafts journaled in said perforations, a series of tabulator-blades operatively connected to said rock-shafts, a carriage, and a tappet thereon.

20. In a type-writing machine, the combination of a carriage, a tappet thereon, a bracket, a series of tabulator-blades mounted on said bracket, and means for securing said bracket to the frame of the machine so that the bracket may be adjusted to bring the working faces of the tabulator-blades to a vertical position.

21. In a type-writing machine, the combination of a carriage, a tappet thereon, a bracket, tabulating-blades mounted thereon, means for securing said bracket to the frame of the machine so as to prevent movement thereof in a horizontal direction, and a leveling-screw for swinging the bracket up or down so as to adjust the blades to a vertical plane.

22. In a type-writing machine having a base, vertical columns thereon, a top plate supported on the columns, and a carriage traveling over the top plate, the combination of a bracket provided with a hook for engaging one of said columns and with an arm extending over said top plate, means for adjustably clamping the bracket to the column and to the top plate, a series of key operated tabulator-blades supported on said bracket, and a tappet arranged upon the carriage for engaging the blades.

23. In a type-writing machine, the combination with a carriage, of opposite arms thereon each provided with a perforation and the perforations being in the same axial line, a bar extending through said perforations, the ends of the bar being threaded and provided with nuts to bear against each of said arms upon opposite sides thereof, whereby the bar may be adjusted longitudinally and locked in its adjusted position, a tappet adjustable along the bar, and key-operated means for engaging the tappet to arrest the carriage.

24. In a type-writing machine, a bar formed from a cylindrical rod and having two parallel opposite plane faces extending longitudinally thereof, said faces being produced by cutting away the cylindrical bar upon opposite sides thereof, a series of teeth cut at letter-space intervals on said bar, and a tappet constructed to slide along said bar without engaging the teeth thereof and also constructed to be turned into engagement with said teeth.

25. In a type-writing machine, a bar formed from a cylindrical rod and having two parallel opposite plane faces extending longitudinally thereof, said faces being produced by cutting away the cylindrical bar upon opposite sides thereof, a series of teeth cut at letter-space intervals on said bar, and a tappet constructed to slide along said bar without engaging the teeth thereof and also constructed to be turned into engagement with said teeth, said tappet having a weighted portion to maintain it in such engaged or working position.

26. In a type-writing machine, the combination with a carriage, of a bracket provided with a hook and a wedging surface, a screw as 55, and a washer as 54, on the screw for engaging said wedging surface to clamp the bracket to the carriage.

27. In a type-writing machine, the combination of two meeting levers, each pivoted between its ends, means for engaging the levers to each other at their meeting ends, a link pivoted to the outer arm of each lever, means for guiding the links, and a key-bar connecting said links.

28. In a type-writing machine, the combination of two levers connected together to move in unison, a key-bar connected with said levers to have substantial parallel motion, a carriage, and a carriage-release mechanism connected to and operated by said parts.

29. In a type-writing machine, the combination of a longitudinally-extending rock-shaft, a transverse substantially parallel-motion key-bar mounted upon pivots extending parallel with said rock-shaft, means for enabling said key-bar to rock said shaft, and means for enabling said rock-shaft to release the carriage from the control of its letter-spacing devices.

30. In a type-writing machine, the combination of a carriage, a rack thereon, a lever for moving said rack to release the carriage, a rod connected at one end to said lever, a rock-shaft, a crank-arm mounted on the rock-shaft and connected to the other end of said rod, and a key for actuating said rock-shaft.

31. In a type-writing machine, and in a tabulating mechanism, the combination of a carriage having tappets, a series of tabulating-blades on the frame, a bracket secured to the front of the machine, a series of depressible tabulating-keys guided in said bracket, and a carriage-release key arranged upon said bracket in front of said tabulating-keys.

32. In a type-writing and tabulating mechanism, the combination with a carriage having rollers 35 and open frames in which said rollers are journaled, of a pair of brackets 47, each provided with bifurcated hooks 51 which fit closely against said open frames, to prevent endwise movement of said brackets upon said carriage, said hooks being adapted to catch over a flange upon said carriage, means for drawing the hooks firmly against said flange, a transverse bar secured to the free ends of said brackets, and a series of tappets arranged upon the bar.

33. In a type-writing and tabulating mechanism, the combination with a carriage of a cylindrical bar flattened upon opposite sides and having teeth cut upon opposite round sides thereof, a tappet on said bar having a circular perforated portion 59, and slotted portions 58 on opposite sides thereof and communicating therewith, and stop mechanism engaging said tappet when in its normal position.

34. In a type-writing and tabulating mechanism, the combination with stop-projecting mechanism of independently-operable carriage-releasing mechanism and means for preventing the operation of the carriage-releasing mechanism until a stop has been projected

35. In a type-writing machine, the combination with a carriage of a tabulating mechanism therefor, including a key which normally is incapable of releasing said carriage from the control of its escapement mechanism, said tabulating mechanism also including a series of denomination-keys, each of which is capable of projecting a denomination-stop and also of enabling the first-mentioned key to be subsequently operated to effect the release of said carriage, so that the projected stop may cause the carriage to be arrested after its releasement.

36. In a type-writing machine and in a tabulating mechanism, the combination of a carriage, a series of key-actuated denomination-stops, a series of column-stops for coacting therewith and predetermining the arresting position of said carriage, an independently-operable release-key mechanism controlling said series of column-stops, and means whereby the column-stops can be released only after the selected key-operated denomination-stop has been set or moved to operative position.

37. In a type-writing machine and in a tabulating mechanism, the combination of a carriage, a series of key-actuated denomination-stops, a series of column-stops adapted to cooperate therewith, and a release mechanism having an actuating-key at the type-writer keyboard adapted to be effective only after one of said denomination-stop keys has been actuated, and which when pressed upon and held releases both the carriage and the column-stops for a rapid movement, to position the carriage at the point predetermined by the selected denomination-stop.

38. In a type-writing machine, the combination with a carriage of a tabulating mechanism therefor, including a key which normally is incapable of being independently operated for releasing said carriage from the control of its escapement mechanism, said tabulating mechanism also including a series of denomination-keys and a device for enabling the first-mentioned key to be operated to effect the release of said carriage, said enabling device being common to all of said denomination-keys, whereby the first-mentioned key may be operated in conjunction with any of the denomination-keys to release the carriage so that it may be arrested at a point determined by the selected denomination-key.

39. In a type-writing machine and in a tabulating mechanism, a series of keys for controlling a series of denomination-stops, a carriage-releasing mechanism, and means for preventing actuation thereof until after one of the denomination-keys has been actuated.

40. In a type-writing machine, the combination of a carriage, a tabulating mechanism therefor having two keys one of which operates to release the carriage, and the other of which operates to project or move a carriage-stopping device, and means controlled by the stop-actuating key for retaining said carriage-release key in normal position until after the stop-actuating key has been actuated.

41. In a type-writing machine, the combination of a carriage, a normally locked release-key therefor, a system of independently-movable tabulating-stops, a tappet and a set of keys connected both to release said release-key and also to operate said system of tabulating-stops.

42. In a type-writing machine, the combination of a carriage, and a tabulating mechanism therefor having two keys, one of which operates to release the carriage and the other of which operates to project or move the carriage-stopping device, and means for preventing simultaneous operation of said keys.

43. In a type-writing machine, the combination with a carriage, of a tabulating mechanism therefor having a plurality of movable stops, a key connected to each of said stops, and a universal locking mechanism for retaining any operated key of said series in abnormal or operated position while said carriage is moving rapidly to the predetermined point.

44. In a type-writing machine, the combination of a carriage, and a tabulating mechanism therefor having two keys, one of which operates to release the carriage and the second of which operates to project or move the carriage-stopping device, and means for retaining said second key in its operated position while the said carriage-release key is moving from and returning to normal position.

45. In a type-writing machine and in a tabulating mechanism, a series of keys for controlling a series of denomination-stops, a carriage-releasing mechanism, means for preventing actuation thereof until after one of the denomination-keys has been actuated, and means for preventing the return of the denomination-key until after the return of the operated release-key.

46. In a type-writing machine, the combination of a carriage, a tappet, a coacting stop, a key for causing the relative movement of the tappet and the stop, means for releasing the carriage, and a lock for automatically preventing the return of said key to normal position during the operation of the carriage-releasing mechanism.

47. In a type-writing machine, the combination of a carriage, a system of tabulating-blades, a tappet, a series of keys for causing relative adjustment or positioning of said blades and tappet, carriage-releasing mechanism, and means common to all of said keys for automatically locking any operated key in its depressed position during the operation of the carriage-releasing mechanism.

48. In a type-writing machine, the combination of a carriage, a system of tabulating-blades, a tappet, a series of denomination-keys for operating said system, and a carriage-release key connected to automatically lock any of said keys in its operated position.

49. In a type-writing machine, the combination of a carriage, a system of tabulating-blades, a tappet, a series of denomination-keys for operating said system, and a release-key connected to automatically lock each of said keys in its operated position and on its return to normal position to automatically release said lock and denomination-key.

50. In a type-writing machine, the combination of a carriage, a tappet, a stop, a denomination-key for effecting the relative positioning of the tappet and the stop, a carriage-releasing key, a lock for holding said carriage-release key in its normal position, means controlled by the denomination-key for releasing said lock, and means for enabling said release-key when in its operated position to hold the denomination-key in its operated position.

51. In a type-writing machine, the combination of a carriage, a tappet, a stop, a denomination-key for effecting relative positioning of the stop and the tappet, a carriage-release key, a lock for holding said carriage-release key in its normal position, means controlled by the denomination-key for releasing said lock, and means for enabling said release-key when in its operated position to hold the tabulating-key in its operated position, said release-key being constructed upon the return thereof to normal position to automatically release said depressed denomination-key.

52. In a type-writing machine, the combination of a carriage, a system of tabulator-blades, a tappet, a series of denomination-keys for operating said system, a carriage-release key, a lock for holding said release-key in normal position, means operated by each of said denomination-keys to release said lock, and means for enabling said carriage-release key to hold each of said denomination-keys in its operated position, said denomination-key being constructed upon the return thereof to normal position to automatically release the operated denomination-key.

53. In a type-writing and tabulating mechanism, the combination of a carriage, a carriage-release key, a pivotally-mounted lock constructed to normally prevent movement of the key, an arm secured upon said lock, and a key for operating said arm.

54. In a type-writing and tabulating mechanism, the combination of a carriage, a carriage-release key, an upright arm pivotally mounted below the release-key, and constructed for engaging said key to prevent the operation thereof, a horizontal arm connected to said upright arm, and a key for operating said horizontal arm.

55. In a type-writing and tabulating mechanism, the combination of a denomination-key, a carriage, a carriage-release key, and a bell-crank, one arm whereof is constructed to normally prevent the operation of the release-key, and the other arm whereof is constructed to be operated by the denomination-key for the purpose of releasing the said release-key.

56. In a type-writing and tabulating mechanism, the combination of a carriage, a carriage-release key, a bell-crank comprising an upright arm constructed to normally prevent the operation of the release-key and a horizontal operating-arm, and a series of denomination-keys each provided with means for actuating said horizontal arm so as to release said release-key.

57. In a type-writing machine, the combination of a carriage, a system of tabulator-stops, a tappet, a series of denomination-keys arranged in line and connected to means for effecting relative positioning of the tabulator-stops and tappet, a release-key, a lock therefor, a pivoted universal arm or plate for releasing said lock, said universal arm being extended in a direction parallel with said denomination-keys, and means upon each denomination-key for actuating said universal arm.

58. In a type-writing machine, the combination of a carriage, a system of tabulator-blades, a tappet, a series of denomination-keys arranged in line transversely of the machine and provided with means for effecting relative adjustments of the tabulator-blades and tappet, a release-key bar arranged in front of said series of keys and extending parallel therewith, a lock pivoted below the release-key for normally preventing the operation of the same, said lock being provided with a universal arm or plate in rear of said pivot, and said universal arm extending in a direction parallel with said denomination-keys, and means upon each denomination-key for actuating said universal arm and lock.

59. In a type-writing and tabulating mechanism, the combination of a carriage, a carriage-release key, a lock therefor, a series of denomination-keys, and a release-bar for said lock as 126, said release-bar being common to all of said denomination-keys.

60. In a type-writing machine, the combination of a carriage, a stop, a tappet, key-actuated means for effecting relative positioning of the stop and tappet, a catch, means for enabling the key to engage the catch, carriage-releasing mechanism, and means for enabling said release mechanism to control the catch and prevent the return of the key to normal position during the operation of said release mechanism.

61. In a type-writing machine, the combination of a carriage, a system of tabulator-blades, a tappet, a series of finger-keys arranged in line and provided with means for effecting different relative positioning of the tabulator-blades and tappet, a universal catch, means for enabling any of said keys to engage the catch, carriage-releasing mechanism, and means for enabling the said carriage-release mechanism to control the catch and prevent the return of any key to normal position in advance of the return of the carriage-release mechanism to normal position.

62. In a type-writing machine, the combination of a carriage, a system of tabulator-blades, a tappet, a series of denomination-keys arranged in line and provided with means for effecting different relative adjustments of the tabulator-blades and tappet, a pivoted universal catch constructed to be engaged by each of said denomination-keys, said catch being provided with a detent-arm, and a carriage-release key constructed to engage said detent-arm to enable the catch to prevent the return of the said denomination-key to normal position.

63. In a type-writing machine, the combination of a carriage, a system of tabulator-blades, a tappet, a series of finger-keys arranged in line and provided with means for effecting different relative positioning of the tabulator-blades and tappet, a horizontally-arranged pivoted universal catch for engaging each of said finger-keys, said catch being provided with an upright arm, and a carriage-release key constructed to coact with said upright arm to enable the catch to prevent the return of the said finger-key to normal position.

64. In a type-writing machine, the combination of a carriage, a system of tabulating-blades, a tappet, a series of rearwardly-extending horizontal rock-shafts provided with means for effecting different relative positioning of the blades and the tappet, a crank-arm secured to the forward end of each rock-shaft, a vertical key-bearing stem pivotally secured to each crank-arm, a carriage-release key arranged in proximity to said series of keys, a pivoted arm arranged beneath said release-key to prevent the downward movement thereof, said arm being provided with a horizontal plate, and means upon each key-stem for engaging the plate to rock the arm and release the release-key.

65. In a type-writing machine, the combination of a series of key-bearing stems arranged in line, a horizontal bar arranged parallel with said series, a pivoted vertical arm as 133 arranged beneath the horizontal bar, to prevent the depression thereof, a horizontal plate secured to said arm and folded so as to form a channel along the edge thereof parallel and in proximity to said series of key-bearing stems, and a lateral projection upon each of said stems for entering said channel and actuating the plate.

66. In a type-writing machine, the combination of a series of key-bearing stems arranged in line, a horizontal bar arranged parallel with said series, a pivoted vertical arm as 133 arranged beneath the horizontal bar, to prevent the depression thereof, a horizontal plate secured to said arm and folded so as to form a channel along the edge thereof parallel and in proximity to said series of key-bearing stems, and a lateral projection upon each of said stems for entering said channel and actuating the plate, said horizontal bar when depressed being constructed to act as a stop to prevent the return to initial position of said vertical arm, plate and key-bearing stem.

67. In a type-writing machine, the combination of a power-driven carriage, a tappet, a series of movable tabulator-blades for coaction with said tappet to arrest said carriage at different distances from a predetermined point, a series of denomination-keys operatively connected with said blades, but not releasing said carriage, carriage-release mechanism, and a lock for said carriage-releasing mechanism, said lock being operatively connected with the said denomination-keys.

68. In a type-writing machine, the combination of a power-driven carriage, a tappet, a series of movable tabulator-blades for coaction with said tappet to arrest said carriage at different distances from a predetermined point, a series of denomination-keys operatively connected with said blades, but not releasing said carriage, carriage-release mechanism, and a lock for preventing disengagement of said blade and said tappet before the return to normal position of the carriage-releasing mechanism.

69. In a type-writing machine, the combination of a power-driven carriage, a tappet, a series of independently-movable denomination-stops for coaction with said tappet to arrest said carriage at different distances from a predetermined point, a series of denomination-keys operatively connected with said stops, carriage-release mechanism independent of said stop-controlling devices, and a locking mechanism for preventing simultaneous motion of any of said denomination-keys and said carriage-release mechanism.

70. In a type-writing machine, the combination of a power-driven carriage, a tappet connected to and moving with said carriage, a series of independently-movable tabulator-blades mounted upon the machine-frame for coaction with said tappet to arrest said carriage at different distances from a predetermined point, a series of denomination-keys operatively connected with said blades, key-actuated carriage-release mechanism, and a lock for said carriage-release key, said lock being operatively connected with said denomination-keys.

71. In a type-writing machine, the combination of a power-driven carriage, a tappet connected to and moving with said carriage, a key-operated blade or stop normally out of and movable into the path of said tappet, key-actuated carriage-release mechanism, and a lock for preventing disengagement of said blade and said tappet until after the release of the carriage-releasing mechanism.

72. In a type-writing machine, the combination of a power-driven carriage, a tappet connected to and moving with said carriage, a series of movable tabulator-blades for coaction with said tappet to arrest said carriage at different distances from a predetermined point, a series of denomination-keys operatively connected with said blades, key-actuated carriage-release mechanism, and locking mechanism for preventing simultaneous motion of said releasing-key and said denomination-keys.

73. In a type-writing machine and in a tabulating mechanism, the combination of a carriage having a tappet, and a coacting stop on the framework, a key connected to said stop, and a carriage-releasing mechanism, including a key arranged in proximity to said controlling-key, whereby with one finger the stop may be set and with another the carriage may be released.

709,089. TROLLEY-GUARD. EDOUARD GAGNÉ, St. Charles, Canada, assignor of one-half to Pascal Bonneau, Willow Bunch, North-West Territories, Canada. Filed Apr. 16, 1902. Serial No. 103,943. (No model.)

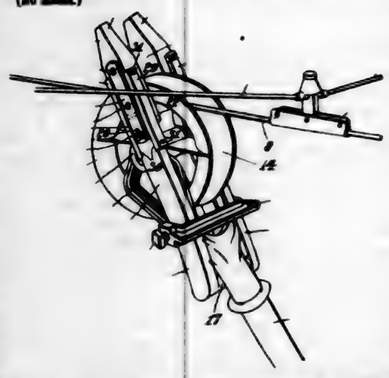

Claim.—1. In an electric railway, a trolley-guard comprising a pair of bars clamped to the opposite sides of the trolley-pole and adjacent to the wheel, a pair of extensions pivotally mounted to the ends of said bars on transverse axes, said extensions extending above the rim of the trolley-wheel and being adapted to be depressed below said rim, and a pair of extensible springs secured at the front and rear sides of each of said bars and extensions and joining them, said springs being adapted to maintain said extensions longitudinally in line with said bars to project above the rim of said trolley-wheel, and to permit said extensions to be longitudinally turned about their pivots in either direction by front or rear pressure and restore them to their normal position after said pressure is removed.

2. A trolley-guard comprising a U-shaped piece adapted to be removably clamped to the trolley-pole and having a pair of upstanding limbs adapted to embrace the opposite sides of the trolley-pole and and a transverse piece joining them and adapted to rest against the under side of the trolley-pole, a pair of hinged extensions mounted on transverse pivots at the upper ends of each of said limbs and extending normally above the trolley-wheel, and a pair of elastic extensible springs joined at their ends respectively to one of the extensions and the respective limbs at the front and rear sides thereof, whereby to resiliently maintain said extensions in axial line with said limbs and to permit them to be depressed by front or rear pressure below said trolley-wheel rim.

3. In an electric railway, the combination of a trolley-pole having a forked end, a trolley-wheel rotatably mounted in said end, a pair of bars adjustably clamped at opposite sides of said forked end, an extension pivotally mounted on the end of each bar, an extensible spring on the front side of said bar and extension and having its ends attached respectively to the bar and the extension, and a similar spring on the rear side attached in like manner whereby to retain said extension normally in axial line with said bar and to project above said trolley-wheel, substantially as described.

4. In an electric railway, the combination of a trolley-pole, a trolley-wheel rotatably carried at the end thereof, a U-shaped piece having upstanding limbs adapted to embrace the two sides of the trolley-pole end and a transverse member adapted to rest against the lower side of the pole at the base of said end, a screw-clamp overlying said pole end and U-shaped piece and radially clamping the latter in place upon the trolley-pole end, a pair of extension-pieces, a strap secured to each piece and extending beyond the lower end thereof, a transverse pivot-pin connecting each of said straps with the respective upstanding limb of said U-shaped piece, an overhanging tongue on the inner side of each of said extensions whereby to bring the inner face of said extensions into juxtaposition with the rim of the trolley-wheel, and means for resiliently retaining said extensions in upright position and permitting them to be depressed by pressure from the front or rear sides of the trolley-wheel, substantially as described.

5. In an electric railway, a trolley-guard comprising a U-shaped piece having a pair of upstanding limbs adapted to embrace the opposite sides of a trolley-pole end, a three-sided screw-clamp adapted to overlie said trolley-pole end and U-shaped piece and to securely clamp the latter to said trolley-pole end, a pair of extension pieces surmounting the ends of the limbs of said U-shaped piece, transverse pivot-pins connecting said extensions with the respective limbs of the U-shaped piece, said extensions having each an inwardly-extending face adapted to lie in juxtaposition with the edge of the trolley-wheel rim, and a spring arranged to resiliently maintain said extensions in upright positions and to permit the same to be depressed by pressure from front or rear and to restore them to their normal position, substantially as described.

709,090. CONDENSER FOR COTTON FIBERS. JEFFERSON M. GARDNER, New London, Conn. Filed Jan. 5, 1899. Serial No. 701,256. (No model.)

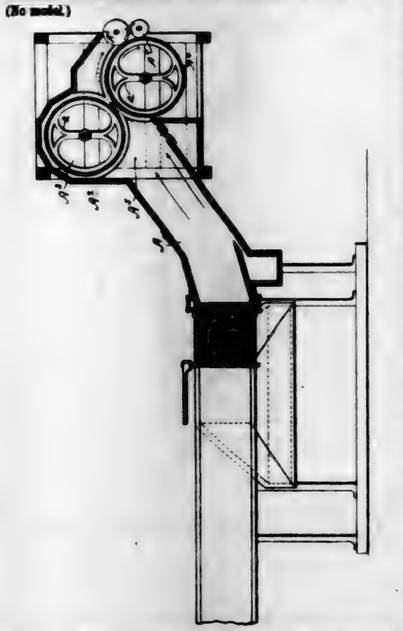

Claim.—1. In a condenser for cotton fiber, the combination with condensing-cylinders, of batting-rollers arranged adjacent thereto, adapted to receive and, by pressure, compact the cotton into a bat one of the batting-rollers being provided with means adapted to direct the cotton from the condensing-cylinders into engagement with the batting-rollers and the other having a surface pervious to air, substantially as described.

2. In a condenser for cotton fiber, the combination with condensing-cylinders, of batting-rollers arranged adjacent thereto adapted to receive and, by pressure, compact the cotton into a bat, one of the batting-rollers having a surface pervious to the passage of air, substantially as described.

3. In a condenser for cotton fiber, the combination with condensing-cylinders, of batting-rollers adapted to receive the cotton from the condensing-cylinders and, by pressure, compact the same into a bat, one of the batting-rollers being provided with flaps or projections and the other having a surface pervious to air, as and for the purpose specified.

4. In a batting-condenser, the combination of two wire-gauze-covered cylinders arranged approximately one above the other, means for driving one cylinder at a higher surface speed than the other, batting-rollers arranged adjacent thereto adapted to receive and, by pressure, compact the cotton into a bat and the surface of one of the batting-rollers being covered with wire-cloth, substantially as described.

5. In a condenser for cotton fiber, the combination of two condenser-cylinders, one of which is perforated to permit escape of air, the two cylinders revolving in opposite directions and having different surface speeds, batting-rollers adjacent to one of the condenser-cylinders and the upper roller being covered with wire-cloth, substantially as described.

6. In a condenser for cotton fiber, the combination of two condenser-cylinders, one of which is perforated to permit escape of air, the two cylinders revolving in opposite directions and having different surface speeds, means for feeding the cotton fiber, under pressure, to the condenser-cylinders, and two batting-rollers arranged adjacent to the condenser-cylinders in position to receive the condensed cotton from the condenser-cylinders, one of the rollers having a surface pervious to air, substantially as described.

7. In a batting-condenser, the combination of two gauze-covered condenser-cylinders arranged approximately one above the other, means for driving the upper cylinder at a higher surface speed than the lower cylinder, and two batting-rollers arranged adjacent to the lower condenser-cylinder, the lower batting-roller being rotated in the same direction to that of the said lower cylinder, and the upper roller having a surface pervious to air, substantially as described.

8. In a cotton-batting condenser, the combination of gauze-covered condenser-cylinders arranged approximately one above the other, means for driving the upper cylinder to impart thereto a higher rate of surface speed than that of the lower cylinder, batting-rollers arranged adjacent to the lower cylinder, the lower batting-roller being rotated in the same direction as the lower condenser-cylinder and provided with flaps or projections, and the upper roller being covered with wire-cloth, a housed discharge-flue arranged above the lower cylinder, and means for causing the proper separation and collection of the lint-cotton and condensation of the same into a smooth and even bat, substantially as described.

9. In a batting-condenser, the combination of two wire-gauze-covered cylinders arranged approximately one above the other, means for driving the upper cylinder at a higher rate of surface speed than the lower cylinder, batting-rollers arranged adjacent to the lower cylinder, the lower roller being rotated in the same direction as the lower cylinder, and the upper roller being covered with wire-cloth, a housed discharge-flue arranged above the lower cylinder, and means for causing a proper separation and collection of the lint-cotton and condensation of the same into a smooth and even bat, substantially as described.

709,091. WATER-HEATER. ROBERT J. GUNDRUM, Chicago, Ill. Filed May 11, 1901. Serial No. 59,830. (No model.)

Claim.—1. In a water-heater, the combination of a series of communicating lenticular water-chambers, water supply and discharge means communicating therewith, a series of graduated baffle-plates between said chambers, and means carried by said plates for supporting the chambers, substantially as described.

2. In a water-heater, the combination with a casing, inwardly-extending baffle-plates carried by said casing, annular sections carried by said plates, lenticular water-chambers between said annular sections, and means for clamping the said sections and chambers together, substantially as described.

3. In a water-heater, the combination with a casing, of inwardly-extending baffle-plates carried by said casing, annular sections supported by said plates, lenticular water-chambers supported by said annular sections, caps adjacent the outer ends of the upper and lower lenticular chamber, and a clamping-bolt passing through said chambers and sections and clamping the caps on said chambers, substantially as described.

4. In a water-heater, the combination with a casing, inwardly-extending baffle-plates carried by said casing, annular sections supported by said plates, lenticular chambers supported by said annular chambers, plates dividing said chambers horizontally and having communication with the upper and lower sections of said chambers formed by said plates, a water-supply, discharge means in communication with said chambers and means for securing said chambers to the annular sections, substantially as described.

5. In a water-heater, the combination with a casing, graduated baffle-plates, carried by said casing, inwardly-extending arms carried by said plates, annular sections supported by said arms, lenticular chambers supported by said sections and extending between the baffle-plates, plates dividing said chambers horizontally, and having openings near their outer

peripbery, thus communicating the two sections formed by said plate, a water supply and discharge pipe in communication with said chambers, caps adjacent the outer ends of the upper and lower lenticular chambers and a clamping-bolt passing centrally through said annular sections and chambers and clamping the caps on said chambers, whereby they are firmly secured together, substantially as described.

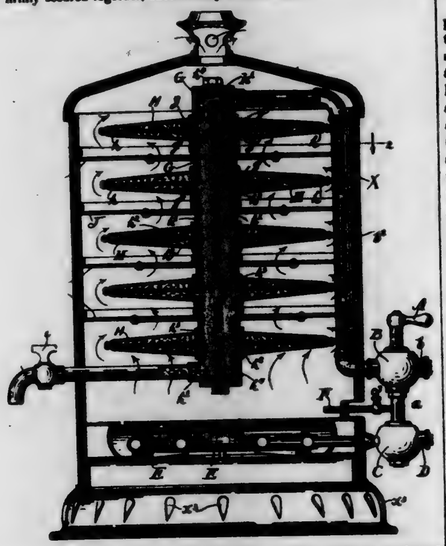

6. In a water-heater, the combination with a series of graduated plates, a series of lenticular chambers extending between said plates, and a water supply and discharge means communicating with said chambers, substantially as described.

709,092. DRAFT-EQUALIZER. JEFFERSON B. HAYDEN, Abilene, Tex. Filed Dec. 31, 1901. Serial No. 87,866. (No model.)

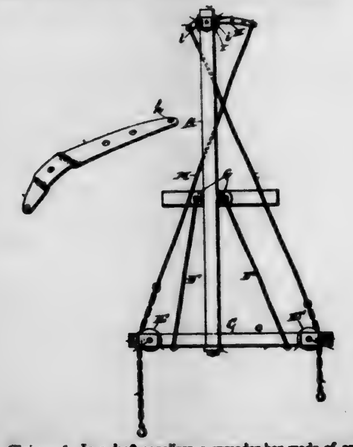

Claim.—1. In a draft-equalizer, a spreader-bar made of angle-iron having the upright side cut down near each end of the bar, and the end turned back on itself to form bearings for pulleys, substantially as shown and described.

2. In a draft-equalizer, a spreader-bar made of angle-iron and adjustably secured to the front of a plow-beam, the upright side of said angle-iron cut down near the ends thereof, the end turned back on itself, and a pulley journaled at each end in the loop formed by said turned-back portions, substantially as shown and described.

3. In a draft-equalizer, a slotted plate secured to the front of a plow-beam, a spreader-bar secured to said plate through the slot therein, a pulley journaled at each end of said spreader-bar, an equalizing-lever having its ends bent toward the draft, and rods attached to said lever having flexible ends passing over said pulleys, substantially as shown and described.

4. In a draft-equalizer, a slotted plate secured to the front of a plow-beam, a spreader-bar made of angle-iron adjustably secured through the slot in said plate, brace-rods connecting brackets on said beam and said spreader-bar, the front side of said angle-iron cut down near its ends and having its flat portion bent back on itself, a pulley journaled in the loop formed by said turned-back portion, an equalizing-lever pivoted to a U-shaped clamp, the ends of said clamp cut down and screw-threaded, a plate perforated to fit over said threaded portions and fastened by nuts, the ends of said equalizing-lever bent toward the draft and downward, a draft-rod attached to each end of said lever and having a flexible end to pass over a pulley at the end of the spreader-bar, and means attached to said flexible ends to attach thereto a whiffletree, substantially as shown and described.

709,098. MILK OR CREAM DEODORIZER. HENRY R. HOWE, Rockford, Ill., assignor of one-half to Henry W. Carmichael, Rockford, Ill. Filed Nov. 11, 1901. Serial No. 81,833. (No model.)

Claim.—1. In an apparatus for deodorizing milk or cream, in combination, a closed drum having an air-inlet opening, an air-outlet opening, and a liquid-inlet opening; means for producing a strong current of air through the air-inlet opening; and an imperforate impinging surface for said liquid and said air-current.

2. In an apparatus for deodorizing milk or cream, in combination, a closed drum having an air-inlet opening, an air-outlet opening, a liquid-inlet opening, and a liquid-outlet opening; means for producing a strong current of air through the air-inlet opening; and an imperforate impinging surface for said liquid and said air-current.

3. In an apparatus for deodorizing milk or cream, in combination, a closed drum having an air-inlet opening in one side thereof, an air-outlet opening in its opposite side, and a liquid-inlet opening near said air-inlet opening; an imperforate impinging surface within said drum opposite said air-inlet opening; and means for producing a strong current of air through the air-inlet opening.

4. In an apparatus for deodorizing milk or cream, in combination, a closed drum having an air-inlet opening near one side thereof, an air-outlet opening in its opposite side, and a liquid-inlet opening adjacent to said air-inlet opening, one wall of said drum being curved to form an impinging surface for the liquid; and means for producing a strong current of air through the air-inlet opening.

5. In an apparatus for deodorizing milk or cream, in combination, a closed drum having an air-inlet opening in one side thereof, an air-outlet opening near the opposite side of said drum, and a liquid-inlet opening adjacent to said air-inlet opening, said liquid-inlet opening comprising a number of fine perforations through the wall of said drum; a pipe for said outlet-opening; the upper wall of said drum being inclined upward at the forward side of the drum and curved downward near the rear side thereof, said curved portion of the upper wall constituting within the drum an impinging surface for the liquid; and means for producing a strong current of air through the air-inlet opening.

709,094. PROCESS OF DEODORIZING MILK OR CREAM. HENRY R. HOWE, Rockford, Ill., assignor of one-half to Henry W. Carmichael, Rockford, Ill. Filed Jan. 20, 1902. Serial No. 91,197. (No specimens.)

Claim.—1. The process of deodorizing milk or cream, consisting in heating said milk or cream to a temperature ranging from 100° to 155° Fahrenheit, and disintegrating said milk or cream by means of a blast of pure air.

2. The process of deodorizing milk or cream, consisting in heating said milk or cream to a temperature ranging from 135° to 140° Fahrenheit, and disintegrating said milk or cream by means of a blast of pure air.

709,095. CANE. JOHN S. JUDY, Middletown, Pa. Filed Nov. 20, 1901. Serial No. 83,015. (No model.)

Claim.—1. A cane having a ferrule including a socket portion in which the end of the body of the cane is held and a tubular lower portion spaced downwardly from the socket portion and connected thereto by means of a neck both ends of the tubular portion being open, said tubular portion being adapted to receive an upwardly-directed shell or cap in its lower end, and the lower end of the socket portion having an outwardly and downwardly directed flange projecting beyond the tubular portion, said flange being spaced from the upper end of the tubular portion and disposed in the path of discharge therefrom to receive the gases from the tubular portion and deflect them downwardly.

2. A cane comprising a body portion and a ferrule portion in which the body portion is engaged, the ferrule having a socket which receives the body portion and an open-ended tubular lower portion connected to the socket portion and spaced downwardly therefrom, and adapted to receive a shell to discharge its gases upwardly through the tubular portion, the socket portion having an outwardly and downwardly projecting reasoning-flange extending outwardly beyond the tubular portion, said flange being spaced from the upper end of the tubular portion and disposed in the path of discharge therefrom to receive the gases of explosion therefrom and deflect them downwardly.

709,096. VALVE MECHANISM FOR FLUID-SUPPLY PIPES. ADAM S. KEMPE, Cleveland, Ohio. Filed Jan. 31, 1902. Serial No. 91,661. (No model.)

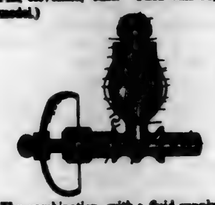

Claim.—1. The combination, with a fluid-supply pipe, of a tubular valve-casing extending through and transversely of the said pipe and provided, within the pipe, with an induction-port communicating with the interior of the pipe, which valve-casing is provided externally of the pipe with a discharge-orifice and has a passage-way connecting the said orifice with the aforesaid port; a valve in the said passage-way; another valve arranged to regulate the supply of fluid to the said passage-way from the aforesaid port; two clamping members arranged externally of the pipe and directly opposite each other and partially embracing the pipe, packing-forming washers surrounding the valve-casing and interposed between the clamping members and the pipe, and means for causing the said clamping members to bear against the pipe.

2. The combination, with a fluid-supply pipe, of a tubular valve-casing extending through and transversely of the said pipe and provided within the pipe, with an induction-port communicating with the interior of the pipe, which valve-casing is provided, externally of the pipe, with a discharge-orifice and has a passage-way connecting the said orifice with the aforesaid port; a valve in the said passage-way; another valve arranged to regulate the supply of fluid to the said passage-way from the aforesaid port; two clamping members arranged externally of the pipe and directly opposite each other, with one of the said clamping members in the form of an annular flange formed upon and partially embracing the pipe, and with the other clamping member in the form of a collar embracing the valve-casing and having lips or flanges partially embracing the pipe; packing-forming washers surrounding the valve-casing and interposed between the clamping members and the pipe; and a nut screwed onto the valve-casing at the outer end of the collar-forming clamping member, substantially as and for the purpose set forth.

3. The combination, with a fluid-supply pipe, of a tubular valve-casing extending through and transversely of the said pipe and provided, within the pipe, with an induction-port communicating with the interior of the pipe, which valve-casing is provided, externally of the pipe, with a discharge-orifice and has a passage-way connecting the said orifice with the aforesaid port; a valve in the said passage-way; two clamping members arranged to bear against and externally of the pipe and directly opposite each other, with one of the said clamping members rigid with the valve-casing and with the other clamping member in the form of a collar embracing the valve-casing; packing-forming washers surrounding the valve-casing and interposed between the clamping members and the pipe; means causing the said clamping members to bear against the pipe; a screw screwed into and extending longitudinally of the valve-casing and having its inner end forming a valve arranged to regulate the supply of fluid to the aforesaid passage-way from the aforesaid port, and means closing the end of the valve-casing at the outer end of the screw and forming a fluid-tight joint at the said end of the valve-casing.

709,097. LUBRICANT APPARATUS FOR THE DIES OF BRICK-MACHINES. HOWARD E. KIRK, Philadelphia, Pa., assignor to Chambers Brothers Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed Sept. 20, 1899. Serial No. 807,338. (No model.)

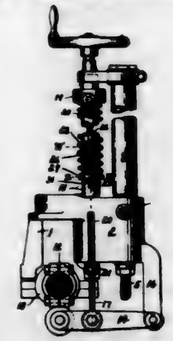

Claim.—1. In a machine or apparatus of the character and for the purpose recited, the combination of the piston adapted to work in a suitable chamber, the inlet and outlet openings in the latter, the respective check-valves therein, the air-chamber communicating with said outlet-opening, and adapted to communicate with the die of a brick-machine or the like, the pivoted arm connected to the piston, the post mounted above the latter, the screw-threaded rod therein, the nut on said rod provided with the projecting lugs, the sleeve on said post and connected with the piston, the tension-spring between said sleeve and lugs, together with the rotatable shaft and the eccentric thereon adapted to impinge against the said arm, during a part of each revolution of the shaft and thereby actuate the piston against the stress of said spring, substantially as and for the purpose set forth.

2. In an apparatus of the character described, the combination with a piston-chamber, of a piston arranged and adapted to reciprocate therein, a shaft, an operating device carried by said shaft, a pivoted arm connected

to said piston and adapted to be contacted by said operating device for actuating the piston in one direction, a post carried by the piston-chamber, a sleeve encircling said post and slidably mounted thereon, a spring also encircling said post and exerting its tension to force said sleeve away from the piston-chamber, and rods carried by said sleeve and connected to the piston, whereby said spring is adapted to operate said piston in opposition to the actuation of the operating device.

3. In an apparatus of the character described, the combination with a piston-chamber, of a piston arranged and adapted to reciprocate therein, a shaft, an operating device carried by said shaft, a pivoted arm connected to said piston and adapted to be contacted by said operating device for actuating the piston in one direction, a post carried by the piston-chamber, a sleeve encircling said post and slidably mounted thereon, a spring also encircling said post and exerting its tension to force said sleeve away from the piston-chamber, rods carried by said sleeve and connected to the piston, whereby said spring is adapted to operate said piston in opposition to the actuation of the operating device, and means for regulating the tension of said spring.

4. In an apparatus of the character described, the combination with a piston-chamber, of a piston arranged and adapted to reciprocate therein, a shaft, an operating device carried by said shaft, a pivoted arm connected to said piston and adapted to be contacted by said operating device for actuating the piston in one direction, a tubular post carried by the piston-chamber and provided at its sides with slots, a sleeve encircling said post and slidably mounted thereon, a threaded rod rotatably mounted in said post, a nut mounted upon said rod and provided with lugs projecting through the slots of said post, a spring encircling said post and interposed between said sleeve and the lugs of said nut, said spring exerting its tension to force said sleeve away from the piston-chamber, and connections between said sleeve and the piston, whereby said spring is adapted to operate said piston in opposition to the actuation of the operating device.

5. In an apparatus of the character described, the combination with a piston-chamber, of a piston arranged and adapted to reciprocate therein, a shaft, an operating device carried by said shaft, a pivoted arm connected to said piston and adapted to be contacted by said operating device for actuating the piston in one direction, a tubular post carried by the piston-chamber and provided in its sides with slots, a sleeve encircling said post and slidably mounted thereon, a threaded rod rotatably mounted in said post, a hand-wheel carried by said rod for rotating the same, a nut mounted upon said rod and provided with lugs projecting through the slots of said post, a spring encircling said post and interposed between said sleeve and the lugs of said nut, said spring exerting its tension to force said sleeve away from the piston-chamber, and connections between said sleeve and the piston, whereby said spring is adapted to operate said piston in opposition to the actuation of the operating device.

6. In an apparatus of the character described, the combination with a piston-chamber having inlet and outlet valves, and an air-chamber mounted on said piston-chamber, of a piston arranged and adapted to reciprocate in the piston-chamber, a shaft, an operating device carried by said shaft, a pivoted arm connected to said piston and adapted to be contacted by said operating device for actuating the piston in one direction, a tubular post carried by the piston-chamber and provided in its sides with slots, a sleeve encircling said post and slidably mounted thereon, a threaded rod rotatably mounted in said post, a threaded nut mounted upon said rod and provided with lugs projecting through the slots of said post, a spring encircling said post and interposed between said sleeve and the lugs of said nut, said spring exerting its tension to force said sleeve away from the piston-chamber, and connections between said sleeve and the piston, whereby said spring is adapted to operate said piston in opposition to the actuation of the operating device.

709,098. MACHINE-BEARING CABINET. THEODOR KNUDTS, Cleveland, Ohio. Filed Apr. 14, 1902. Serial No. 103,209. (No model.)

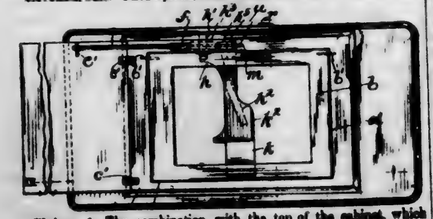

Claim.—1. The combination, with the top of the cabinet, which top has an opening extending vertically therethrough, a stationary back below the top rearward of the said opening; a tilting leaf supported from the top and arranged to tilt about a horizontal axis and to occupy the aforesaid opening in its upwardly-tilted position, and the tilting leaf hinged to the top horizontally and transversely of the cabinet at one side of the aforesaid opening, of a lever fulcrumed horizontally and transversely of the cabinet to the aforesaid back a suitable distance below the top and having an arm extending in under and transversely of and instrumental in supporting the first-mentioned leaf, which lever has a brace-forming arm arranged next to the inner side of the aforesaid back, and an operative connection between the said lever and the aforesaid lifting leaf.

2. The combination, with the top of the cabinet, which top has an opening extending vertically therethrough; a stationary back below the top rearward of the said opening; a leaf pivoted, near its rear edge, to the top horizontally and longitudinally of the cabinet; a bar arranged transversely of the under side of and secured to the said leaf, and a lifting leaf hinged to the top horizontally and transversely of the cabinet at the left-hand side of the aforesaid opening, of a lever fulcrumed horizontally and transversely of the cabinet to the aforesaid back a suitable distance below the top and having a forwardly-projecting arm extending in under and engaging the under side of the aforesaid bar, which lever has a brace-forming arm arranged diametrically opposite the first-mentioned arm next to the inner side of the aforesaid back, and is provided with a cable-guiding flange A^3 and a centrally-perforated lug A^4; an endwise-shiftable externally-screw-threaded pin extending through the perforation in the said lug; a cable operatively attached, at one end, to the lifting leaf a suitable distance from the axial line c' the leaf and operatively connected with the aforesaid pin at the adjacent end of the aforesaid lug; a nut upon the said pin at the opposite end of the said lug; a compressible and elastic sleeve upon the pin between the nut and the lug, and a guide-sheave engaging the aforesaid cable and arranged between the said pin and the aforesaid lifting leaf.

3. The combination, with the top of the cabinet, which top has an opening extending vertically therethrough, and a stationary back below the top rearward of the said opening; a tilting leaf supported from the top and arranged to tilt about a horizontal axis and to occupy the aforesaid opening in its upwardly-tilted position, and the tilting leaf hinged to the top horizontally and transversely of the cabinet at one side of the aforesaid opening, of a lever fulcrumed horizontally and transversely of the cabinet to the aforesaid back a suitable distance below the top and having an arm extending in under and transversely of and instrumental in supporting the first-mentioned leaf, a cable-guiding flange A^3 and a perforated lug A^4, formed upon the said lever, an endwise-shiftable externally-screw-threaded pin extending loosely through the perforation in the said lug; a cable operatively attached, at one end, to the lifting leaf, and operatively connected with the aforesaid pin at the adjacent end of the aforesaid lug; a nut upon the said pin at the opposite end of the said lug; a compressible and elastic sleeve upon the pin between the nut and the lug, and a guide-sheave engaging the aforesaid cable and arranged between the said pin and the aforesaid lifting leaf.

4. The combination, with the top of the cabinet, which top has an opening extending vertically therethrough, and a stationary back below the top rearward of the said opening; a leaf pivoted, near its rear edge, to the top horizontally and longitudinally of the cabinet; a bar arranged transversely of the under side of and secured to the said leaf, and a lifting leaf hinged to the top horizontally and transversely of the cabinet and the left-hand side of the aforesaid opening, of a lever fulcrumed horizontally and transversely of the cabinet to the aforesaid back a suitable distance below the top and having a forwardly-projecting arm extending in under and engaging the under side of the aforesaid bar, which lever has a brace-forming arm arranged diametrically opposite the first-mentioned arm next to the inner side of the aforesaid back, and is provided with a cable-guiding flange A^3 and a centrally-perforated lug A^4; an endwise-shiftable externally-screw-threaded pin extending through the perforation in the said lug; a cable operatively attached, at one end, to the lifting leaf a suitable distance from the axial line c' the leaf and operatively connected with the aforesaid pin at the adjacent end of the aforesaid lug; a nut upon the said pin at the opposite end of the said lug; a compressible and elastic sleeve upon the pin between the nut and the lug, and a guide-sheave engaging the aforesaid cable and arranged between the said pin and the aforesaid lifting leaf.

5. The combination, with the top of the cabinet, which top has an opening extending vertically therethrough; a stationary back below the rear portion of the top rearward of the said opening; a leaf pivoted, near its rear edge, to the top horizontally and longitudinally of the cabinet; a bar k arranged transversely of the under side of and secured to the said leaf centrally between the ends of the leaf, and a lifting leaf hinged to the top transversely of the cabinet, of a lever fulcrumed horizontally and transversely of the cabinet to the aforesaid back a suitable distance below the rear portion of the top and having an arm extending forwardly in under and engaging the under side of the aforesaid bar, which lever has a brace-forming arm arranged to engage the inner side of the aforesaid back, and an operative connection between the said lever and the aforesaid lifting leaf.

709,099. NON-REFILLABLE BOTTLE. WILLIAM G. LAWRENCE, Oakland, Cal. Filed Jan. 27, 1902. Serial No. 91,510. (No model.)

Claim.—1. In a non-refillable bottle the combination, with the body of the bottle, of a stopper having inner and outer tubular walls, the inner tube being apertured in its lower portion and having a valve-seat for a ball-valve, a ball on said seat, a float within the inner tube, and a spring between said float and ball, the inner tube being closed at its upper end, and the annulus between the upper ends of the tubes being open, substantially as described.

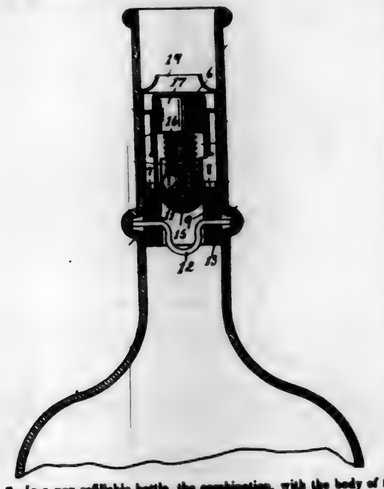

2. In a non-refillable bottle, the combination, with the body of the bottle, of a stopper having inner and outer tubular walls, the inner tube being apertured in its lower portion and having a valve-seat for a ball-valve, a ball on said seat, a float within the inner tube, a spring between said float and ball, the inner tube being closed at its upper end and the annulus between the upper ends of the tubes being open, and a series of broken annular fences extending transversely of the stopper between the inner and outer walls, the breaks or openings in successive fences being out of alinement, whereby a circuitous path is formed from an opening in the upper end of the stopper to one in the lower portion of the inner tube, substantially as described.

3. In a non-refillable bottle, the combination, with the body of the bottle, of a stopper having inner and outer tubular walls, the inner tube being apertured in its lower portion and having a valve-seat for a ball-valve, a ball on said seat, a float within the inner tube, a spring between said float and tube, the inner tube being closed at its upper end and the annulus between the upper ends of the tubes being open, a series of broken annular fences extending transversely of the stopper between the inner and outer walls, the breaks or openings in successive fences being out of alinement, whereby a circuitous path is formed from an opening in the upper end of the stopper to one in the lower portion of the inner tube, and means for automatically locking the stoppers to the bottle, substantially as described.

4. A non-refillable bottle, the combination, with the body of the bottle, of a stopper having inner and outer tubular walls, the outer wall having a rim fitting snugly within the neck and having a cork layer below said rim, the inner tube being apertured in its lower portion and having a valve-seat for a ball-valve, a ball in said seat, a float within the inner tube, a spring between said float and ball, the inner tube being closed at its upper end and the annulus between the upper ends of the tubes being open, and a series of broken annular fences extending transversely of the stopper between the inner and outer walls, the breaks or openings in successive fences being out of alinement, whereby a circuitous path is formed from an opening in the upper end of the stopper to one in the lower portion of the inner tube, substantially as described.

709,100. PROTECTION AGAINST SHOT FROM HAND FIRE-ARMS AND ARTILLERY. ADOLPH LEVER, Cologne, Germany. Filed Apr. 12, 1900. Serial No. 12,662. (No model.)

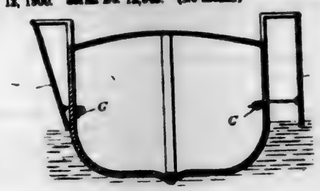

Claim.—1. A screen or barrier, for protection against projectiles constructed to present a surface of different degrees of resistance to the piercing force of the projectile, whereby the projectile will be given a rotation in the plane of its longitudinal axis; substantially as described.

2. A screen or barrier for protection against projectiles, consisting of a perforated metal plate.

709,101. DERAILER. GEORGE L. MANSFIELD, Chicago, Ill., assignor of one-half to Henry F. Baldwin, Chicago, Ill. Filed May 26, 1902. Serial No. 108,935. (No model.)

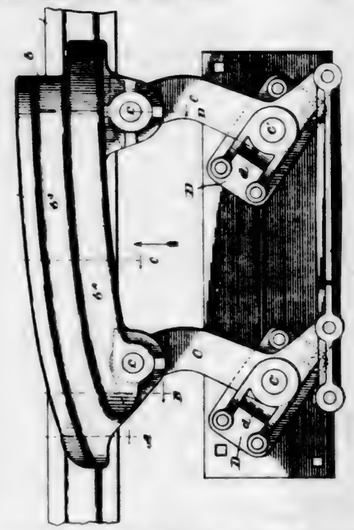

Claim.—1. The combination with the track-rail, of a derailing-rail adapted to rest thereon, the latter shaped to engage and guide the wheel, and mechanism engaged to the derailing-rail adapted to move the entire derailing-rail away from the track-rail in substantially a horizontal plane.

2. The combination with the track-rail, of a derailing-rail adapted to rest thereon, the latter shaped to engage and guide the wheel, and means engaged to each end of the derailing-rail adapted to move the same away from the track-rail in substantially a horizontal plane.

3. The combination with the track-rail, of a derailing-rail adapted to rest thereon, the latter shaped to engage and guide the wheel, and two pivoted levers adapted to swing in substantially a horizontal plane, pivoted to said derailing-rail and adapted to swing the latter away from the track-rail.

4. The combination with the track-rail, of a derailing-rail shaped on its upper side to engage and guide the wheel, and means for swinging the derailing-rail in substantially a horizontal plane away from the track-rail, said entire derailing-rail shaped so that a portion may rest on the track-rail while another portion bears against the side of the track-rail and forms a stop to limit the movement of the derailing-rail as the latter is swung to its operative position.

5. The combination with the track-rail of a derailing-rail, two pivoted levers pivoted to said derailing-rail for swinging it clear of the track-rail, and a connection between the levers.

6. A derailing-rail shaped to rest on the track-rail and provided on its upper side with a portion to receive the tread of the wheel and a groove to receive the flange of the wheel, said groove being more shallow at one end with respect to the portion that receives the tread, so that the flange of the wheel when it reaches the said end will ride on the bottom of the groove.

7. The combination with the track-rail, of a derailing-rail adapted to rest thereon, the latter shaped to engage and guide the wheel, and means engaged to each end of the derailing-rail adapted to move the same away from the track-rail.

709,102. WATER-GATE. JOSEPH H. MARTIN and DAVID ORMAND, Riverside, Cal. Filed Mar. 24, 1902. Serial No. 99,811. (No model.)

Claim.—1. A water-gate for use in an irrigating system, compris-

ing the gate-plate slidably mounted on the end of an irrigating pipe-line and movably connected with a sliding bracket, a sliding bracket having means to engage a vertical flanged guideway, a vertical flanged guideway secured to the end of the pipe-line and having an opening therein to register with the opening in the pipe-line, the portion of the flanged guide surrounding the opening forming the seat for the gate, a vertical stem journaled in the sliding bracket, a cam keyed to said stem and having flanges thereon adapted to engage flanges on the flanged guide; a flanged guide secured to the face-plate and means to rotate said stem to open and close the gate.

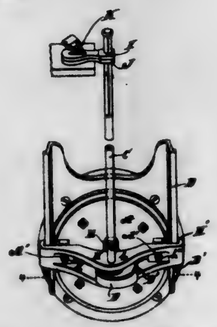

2. A water-gate of the character herein described comprising the cam D keyed to the stem C the said cam provided with guide-engaging flanges D', a sliding bracket H carrying said cam, the said stem being journaled in said bracket, the gate-plate A having secured thereto a flanged guide E adapted to engage the flanges on the cam, whereby the rotation of the operating-stem will cause the gate-plate to move to or from the stem substantially as shown and described.

3. In a vertically-sliding water-gate of the character herein described, means to limit the downward movement of the gate-plate, and hold the same in register with the seat in the gate, comprising a flanged guide-plate B having catches B' thereon a bracket H adapted to contact with said catch, the said bracket having perforations A'' therethrough, the gate-plate being provided with the projecting tests A' adapted to enter into the perforations A'' in the bracket, the face-plate being provided also with projecting tests *a*; recesses *b* in the flanged guide B to hold the tests when the gate-plate is seated substantially as shown and described.

709,108. MASSAGING DEVICE. CHARLES H. MAGEE, San Francisco, Cal. Filed Jan. 13, 1902. Serial No. 90,024. (No model.)

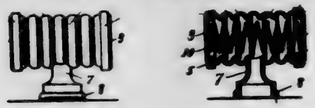

Claim.—1. A massage device comprising a vacuum-chamber having two end walls and a flexible cylindrical wall joining said end walls, a spring acting between said end walls to separate them, a non-collapsible suction-mouth, a flexible neck connecting said mouth directly with said flexible wall, substantially as described.

2. A massage device comprising a vacuum-chamber having two end walls and a flexible cylindrical wall corrugated longitudinally joining said end walls, a spring acting between said end walls to separate them, a non-collapsible suction-mouth, and a flexible neck connecting said mouth directly with said flexible wall, substantially as described.

3. A massage device comprising a vacuum-chamber having two end walls and a flexible cylindrical wall joining said end walls, a spring acting between said end walls to separate them, a non-collapsible suction-mouth, and a short flexible neck connecting said mouth directly with said flexible wall and made in one piece therewith, substantially as described.

709,104. STAMP-MILL MORTAR. WILLIAM A. MEREALLS, San Francisco, Cal. Filed Sept. 20, 1901. Serial No. 75,961. (No model.)

Claim.—1. A stamp-mill mortar provided with stationary means for feeding the ore onto the die from the outside inward simultaneously from two opposite directions, whereby the ore is fed evenly upon the die, substantially as described.

2. A stamp-mill mortar provided with stationary means for feeding the ore onto the die inward simultaneously from all sides of the mortar, whereby the ore is fed evenly upon the die, substantially as described.

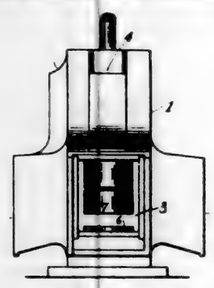

709,105. CATTLE-GUARD. MARTIN L. MILLER, Sealy, Tex., assignor of one-third to W. I. Hill, Sealy, Tex. Filed June 28, 1901. Serial No. 66,449. (No model.)

Claim.—1. In a cattle-guard, the combination with a pivoted upwardly-movable barrier member, of a pivoted downwardly-movable operating member, a depending arm carried by the operating member, a depending arm carried by the barrier member, and a single link pivotally connecting the arms of the members and movable therewith.

2. In a cattle-guard, the combination with a pivoted upwardly-movable barrier member, of a pivoted downwardly-movable operating member, a depending arm carried by the operating member, and a link having a pivotal connection with the arm, said link being pivotally connected to the barrier member.

3. In a cattle-guard, the combination with a pivoted upwardly-movable barrier member, of a pivoted downwardly-movable operating member, depending arms carried by the two members, the arm of the operating member being longer than that of the barrier member and a link secured directly to said arms to simultaneously move them upon the depression of the operating member.

4. In a cattle-guard, the combination with a pair of independent members movable in a downward and upward direction, of separate links pivotally connected with the members, each link having a slidable engagement with one member.

5. In a cattle-guard, the combination with a pair of independent members movable in a downward and upward direction, each of said members having a depending arm, of links each being connected with one of the members and having a pivotal connection with the arm of the other member.

6. In a cattle-guard, the combination with a pair of independent members movable in a downward and upward direction, each of said members having a depending arm, and links each being connected with one of the members, and having a pivotal and slidable connection with the arm of the other member.

7. In a cattle-guard, the combination with a pair of independent members movable in a downward and upward direction, each of said members having depending long and short arms and a link pivotally connected at one end with the short arm of one member, the other end having a pivotal and slidable connection with the long arm of the other member.

8. In a cattle-guard, a tilting platform having a plurality of fulcrums, and means arranged to engage the fulcrums to limit the tilting movement of the platform.

9. In a cattle-guard, a tilting platform having a plurality of fulcrum-shafts projecting beyond the side edges thereof, a plurality of bearings for the projecting ends of the fulcrum-shafts and stop-hooks located at the ends and above the bearings, said fulcrum-shafts engaging the hooks to limit the tilting movement of the platform.

709,106. ROTARY SHEARS. GEORGE W. MUDD, Moberly, Mo. Filed May 9, 1901. Serial No. 59,412. (No model.)

Claim.—1. In a device of the character described, a pair of rotary shears, a stationary bed I occupying a plane therebetween, a shoe K on the said bed adjacent to said rotary shears, a plurality of guide-rollers, and means for adjusting said rollers on the stationary bed transversely to the line of feed of the material to facilitate cutting material on a curved line, substantially as described.

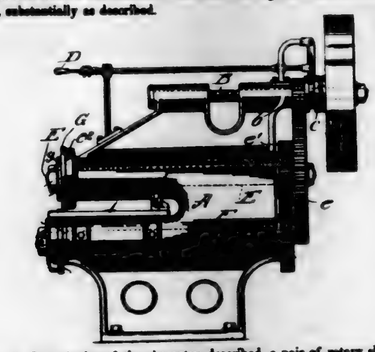

2. In a device of the character described, a pair of rotary shears, a stationary table-bed I occupying a plane therebetween, a series of guide-rollers arranged adjacent to said rotary shears, and means for adjusting said rollers on the stationary bed transversely to the line of feed of the material, to facilitate cutting material on a curved line, substantially as described.

3. In a machine of the character described, a pair of shears, a bed occupying a plane therebetween, a series of guide-rollers arranged adjacent to the line of feed from the machine, and means for adjusting said rollers on the bed transversely to said line of feed to facilitate the cutting of material on a curved line, substantially as described.

709,107. FURNACE. DONALD S. MCDONALD, Mabou, Canada. Filed Jan. 10, 1902. Serial No. 89,109. (No model.)

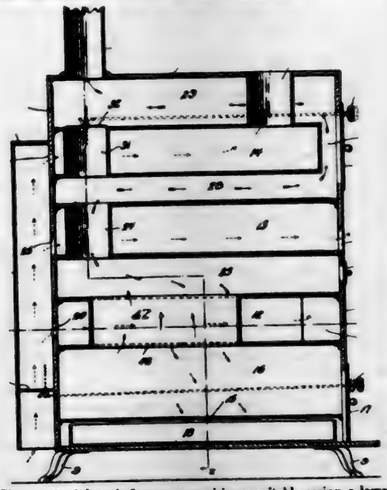

Claim.—1. A hot-air furnace comprising a suitable casing, a lower hot-air box having side and central smoke-flues traversing it and having a cold-air inlet and a hot-air outlet, an upper hot-air box having a smoke-tube and a hot-air outlet as well as a cold-air inlet, an intermediate hot-air box having a smoke-tube and air inlet and outlet, and a damper arranged in operative relation to the smoke-tube of the upper box, substantially as described.

2. A hot-air furnace comprising a rectangular casing, a series of hot-air boxes having horizontal flat top and bottom sides traversing the casing, each box having a cold-air inlet at one end and a hot-air outlet at the other, a fire-chamber located at the bottom of the casing, flue-chambers located between the boxes and above the uppermost one thereof, smoke-passages connecting the successive flue-chambers at opposite sides of the casing whereby to cause an alternating circulation of the flue-gases back and forth, a flue connection connecting the last one of said flue-chambers only with the chimney, and an alternative passage-way for the flue-gases having a damper therein and located immediately beneath said flue connection connecting the last two flue-chambers, whereby to regulate the circulation of the flue-gases.

3. A hot-air furnace comprising a rectangular casing, a series of hot-air boxes having horizontal top and bottom sides traversing the casing, each box having a cold-air inlet at one end and a hot-air outlet at the other, a fire-chamber located at the bottom of the casing, flue-chambers located between the boxes and above the uppermost one thereof, smoke-passages connecting the successive flue-chambers at opposite sides of the casing whereby to cause an alternating circulation of the flue-gases back and forth, a flue connection connecting the last one of said flue-chambers only with the chimney, an alternative passage-way for the flue-gases having a damper therein and located immediately beneath said flue connection connecting the last two flue-chambers, whereby to regulate the circulation of the flue-gases, and doors formed opposite each of said flue-chambers.

4. A hot-air furnace comprising a rectangular casing, a series of hot-air boxes having horizontal top and bottom sides traversing the casing, each box having a cold-air inlet at one end and a hot-air outlet at the other, a fire-chamber located at the bottom of the casing, flue-chambers located between the boxes and above the uppermost one thereof, smoke-passages connecting the successive flue-chambers at opposite sides of the casing whereby to cause an alternating circulation of the flue-gases back and forth, a flue connection connecting the last one of said flue-chambers only with the chimney, an alternative passage-way for the flue-gases having a damper therein and located immediately beneath said flue connection connecting the last two flue-chambers, whereby to regulate the circulation of the flue-gases, doors formed opposite each of said flue-chambers, and a cold-air-inlet box comprising a passage-way formed on the exterior rear wall of the casing and connecting the inlet-openings of said hot-air boxes, substantially as described.

709,108. FERRULE FOR FORK-HANDLES. GEORGE A. MCKEE, Jackson, Mich. Filed June 23, 1902. Serial No. 112,747. (No model.)

Claim.—1. In a device of the class described, the combination with a handle and a fork driven thereinto, of a strap-ferrule, composed of a tapered ferrule, a second tapered ferrule, having strap extensions thereon, the lower portion thereof being driven over the upper end of said first-named ferrule, and a third cup-shaped ferrule having a slot therein, driven over the lower end of said first-named ferrule, substantially as shown and described.

2. In a device of the class described, the combination with a fork-handle and a fork driven thereinto, of a strap-ferrule, composed of a tapered ferrule having an enlargement at its upper end, and driven into a second ferrule, correspondingly reduced at its lower end, and having strap extensions at its upper end, and a slotted cup-shaped ferrule driven over the lower end of said first-named ferrule, substantially as shown and described.

3. In a device of the class described, the combination with a fork-handle and a fork driven therein, of a strap-ferrule upon the end of said handle composed of a main ferrule, a second ferrule driven upon the upper end of said first-named ferrule, forming a double thickness at the upper end of said first-named ferrule, said second ferrule having strap extensions for attaching the ferrule to the handle, and a third ferrule formed in the shape of a cup, with a slot in the end thereof, as shown and driven upon the lower end of said first-named ferrule, forming a double thickness at the lower end of said first-named ferrule, substantially as shown, and for the purposes described.

4. In a device of the class described, the combination with a strap-ferrule, composed of a tapered ferrule, and a second tapered ferrule having strap extensions thereon, and adapted to be driven upon the upper end of said first-named ferrule forming a double thickness of ferrule at the upper end thereof, and also forming a shoulder against which the shoulder upon the handle will rest, of a handle having the end turned and tapered to fit the internal surface of said first-named ferrule, the portion adjacent thereto being turned to fit the second-named ferrule, with a shoulder between said two portions to coincide with the shoulder formed at the upper end of said first-named ferrule.

5. As a new article of manufacture, a strap ferrule, composed of a tapered ferrule, having an enlargement at the upper end, a second ferrule having strap extensions at its upper end, and its lower end tapered and

shaped to conform to the contour of the upper end of said first-named ferrule, and a cup-shaped slotted cap over the lower end of said first-named ferrule.

6. As a new article of manufacture, a long tapered strap-ferrule, for fork-handles, composed of a thick tapered ferrule having an enlargement at its upper end, and a long strap-ferrule tapered to conform to the contour of the upper end of said first-named ferrule, and adapted to be driven thereon forming an extra-long seamless tapered strap-ferrule, with a double thickness at the portion where the handle is to be driven therein, substantially as shown and described.

7. As a new article of manufacture, a double-strap ferrule for fork and other handles, composed of an inner tapered ferrule, of the desired length and thickness, and having an outwardly-extending projection at its upper end engaging with the inwardly-projecting extension on the outer ferrule, and an outer strap-ferrule having an inwardly-extending projection at its lower end engaging the extension on said inner ferrule, and preventing said inner ferrule from becoming disengaged from said outer ferrule, said outer ferrule being tapered to conform approximately to the taper of said inner ferrule, and said two ferrules forming a double thickness of ferrule at the portion requiring the greatest strength therein, substantially as shown and described.

8. In a device of the class described, the combination with a tool having a shank, of a cup-shaped member adapted to embrace the tool and its shank, a handle adapted to receive said shank, a ferrule mounted upon the lower end of the handle and adapted to rest within said cup-shaped member, and a second ferrule mounted upon the handle and adapted to embrace the upper end of the first-mentioned ferrule.

709,109. CLOTHES-POUNDER. KENNETH D. MCLAY, Dauphin, Canada. Filed June 13, 1901. Serial No. 64,962. (No model.)

Claim.—As an improved article of manufacture, the clothes-pounder herein described comprising an imperforate conical shell, a separate inner conical shell concentric therewith with the lower edge of its conical portion terminating in a horizontal plane with the lower edge of the first-mentioned shell, the said inner shell being provided near its upper end with openings and formed with a circumferential vertical walled foot-flange of less diameter than the bottom of the outer shell and extended beyond the lower edge of the latter and having its bottom edge rolled outward and upon itself, a socket-tube uniting the upper ends of the two shells, and an annular horizontal plate secured to the lower edge of the outer shell and to the inner shell at the point of junction of its conical portion and foot-flange and having perforations communicating with the space between the two shells, all substantially as shown and described and for the purpose specified.

709,110. LAWN OR HOUSE SWING. OLAF R. OLSON, Kansas City, Mo., assignor to Horizontal Swing Co., Kansas City, Mo., a Corporation of Missouri. Filed May 27, 1901. Serial No. 62,606. (No model.)

Claim.—1. A lawn or house swing, comprising standards pivoted to swing back and forth at their upper ends, links pivotally connecting the upper ends of the standards and provided with rigid depending stems, a platform pivotally carried by said stems, a chair rigidly mounted on said platform, and a foot-lever platform pivotally suspended from said stems, substantially as described.

2. A lawn or house swing, comprising standards pivoted to swing at their upper ends, links pivotally connecting their upper ends, a stem depending rigidly from each link, a frame pivotally attached to said stems, chairs rigidly mounted on said frame, a foot-lever platform, and brackets secured rigidly to and projecting from the same and pivoted at their upper ends to said stems, substantially as described.

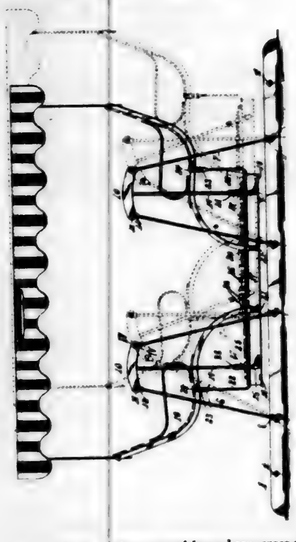

3. A lawn or house swing, comprising a base, cross-rods mounted therein, standards connected at their lower ends to said rods to swing back and forth at the upper ends, links pivotally connecting the upper ends of said standards, stems rigidly depending from the links, a chair-carrying frame pivotally connected to the lower ends of said stems, and a foot-lever platform pivotally suspended from said stems, substantially as described.

4. A lawn or house swing, comprising a base, two sets of standards pivotally mounted on said base, links connecting the upper ends of the standards of each set, and provided with rigid depending stems, a horizontal frame pivotally attached to the lower ends of said stems near its opposite ends, chairs rigidly mounted on the opposite ends of said frame, and a foot-lever platform pivotally suspended from said stems, substantially as described.

5. A lawn or house swing, comprising a base, two sets of standards pivotally mounted on said base, links connecting the upper ends of the standards of each set, and provided with rigid depending stems, a horizontal frame pivotally attached to the lower ends of said stems near its opposite ends, chairs rigidly mounted on the opposite ends of said frame, a foot-lever platform, and brackets secured to and projecting from the same, and pivoted to said stems above the chair-carrying frame, substantially as described.

6. In a swing, the side, the standards pivotally carried therein, the latter being widely separated at their pivotal ends and converging toward their upper ends, a link loosely connected at each end to one of the said standards, the arms rigidly secured in the links and depending therefrom, the platform suspended on the said arms, the seats carried on the platform and the foot-platform beneath the seats, and the hangers for carrying said foot-platform as set forth and all being arranged substantially in the manner and for the purpose herein described.

7. In a swing, a platform for carrying the seats, arms pivoted to said platform for carrying it, a supporting-frame for the swing, pivotal standards carried therein and converging toward their upper ends, a link to which said upper ends are pivoted, said standards pivoted at their lower ends and widely separated, the carrying-arms of said platform being rigidly secured to and hung from the links, the standards thus arranged adapted to limit the movement of the swing, as set forth.

8. In a swing, the combination of the standards supported pivotally at their lower ends and separated as shown and converging at their upper ends, a supporting-frame for carrying said standards at their lower ends, the links having one of the said standards pivoted at each end thereof, the depending arms secured to the links, the platform suspended on said arms, the seats on said platform and the foot-platform pivotally hung from the arms, all arranged substantially as and for the purposes set forth and described.

709,111. AUTOMATIC RAILWAY-SWITCH-OPERATING MECHANISM. LA FAYETTE PIERCE, Moundsville, Mo. Filed Jan. 3, 1902. Serial No. 88,264. (No model.)

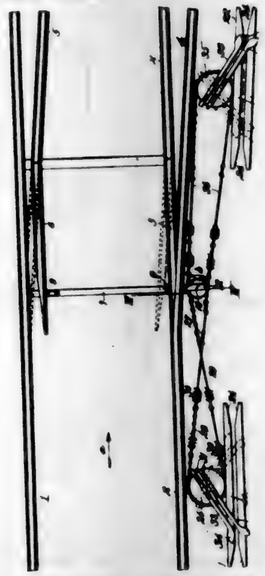

Claim.—1. In an automatic railway-switch-operating mechanism, the combination of main and side tracks, and a switch operating in conjunction therewith, of a wheel, a link pivotally connecting said wheel with said switch, train-operated means for rotating said wheel, a stop-plate having shoulders and a pin depending from said wheel and adapted to engage said shoulders alternately and when so engaged to occupy a position out of the vertical plane occupied by the axis of the wheel to the pivotal point of connection of the link with the switch.

2. In an automatic railway-switch-operating mechanism, the combination of main and side tracks, and a switch operating in conjunction therewith, of a wheel, a link pivotally connecting said wheel with said switch, wheels geared to the first-named wheel by flexible connections, one of said connections being a crossed connection, parallel levers secured to each wheel, ways parallel with the main and side tracks and each intersected by one of its levers or the other accordingly as the switch is opened or closed, an adjustable train-carried arm for passing successively through said ways, and operating said levers, causing the first one to open and the second one to close the switch, and means to limit the movement of the first-mentioned wheel to slightly more than a half-revolution, substantially as described.

3. In an automatic railway-switch-operating mechanism, the combination of main and side tracks, and a switch operating in conjunction therewith, of a sprocket-wheel, a link pivotally connecting said wheel with said switch, sprocket-wheels at opposite ends of the switch, a crossed and flexible connection connecting the first-named wheel and the sprocket-wheel at the main-track end of the switch, an endless connection between the first-named wheel and the other sprocket-wheel, said connections each consisting of chain-sections engaging the wheels, and wires or flexible rods connecting the chain-sections and provided with turnbuckles for tensioning the same, parallel levers secured to each wheel and having outwardly-curved and flaring ends, ways parallel with the main and side tracks and each intersected by one of its levers or the other accordingly as the switch is open or closed, an adjustable train-carried arm for passing successively through said ways, and operating said levers, causing the first one to open and the second one to close the switch, and means to limit the movement of the first-mentioned sprocket-wheel to slightly more than a half-revolution, substantially as described.

709,112. SLAG-HEATING APPARATUS. JOHN A. POTTER, Philadelphia, Pa. Filed July 5, 1901. Serial No. 67,267. (No model.)

Claim.—1. A slag-heater containing an inner vertically-extending slag-chamber, a shear-blade closing the lower end of said chamber, mechanism for reciprocating said shear-blade, and a stop or support below the blade and arranged to support the slag column with a portion thereof protruding below the slag-chamber; substantially as described.

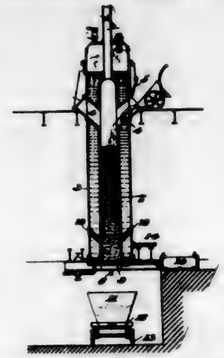

2. In a slag-heater, a hollow shell arranged to contain a fluid to be heated, and having an inner vertically-extending slag-chamber, feed-openings leading through the hollow shell to the slag-chamber, shearing mechanism arranged to cut off successive lower portions of the slag column and means for supporting the slag column with its lower portion protruding downwardly below the slag-chamber; substantially as described.

3. In a slag-heater, a hollow shell containing a vertically-extending slag-chamber, a shear-knife arranged to close the lower end of the chamber, mechanism for reciprocating the knife, a stop or support arranged to stop the column of slag with its lower portion projecting below the chamber, and a slag-receptacle below the said knife; substantially as described.

4. A slag-heater containing a slag-chamber, the cross-sectional area of which increases downwardly, means for supporting a slag column with its lower end portion projecting below the chamber, and a movable shear-blade arranged to close the lower end of the chamber; substantially as described.

5. In a steam-boiler, a hollow double shell containing an inner vertically-extending slag-chamber, slag-chutes leading through the outer shell to the upper part of the inner shell, a shear-blade arranged to close the lower end of the slag-chamber, a support arranged to hold a slag column with its lower portion below the lower end of the chamber, and mechanism for reciprocating the shear-blade, said boiler having steam and water connections; substantially as described.

709,113. TROLLEY-POLE. WILLIAM PULLMAN and CHARLES C. FIELD, Sodus, N. Y. Filed Dec. 16, 1901. Serial No. 86,173. (No model.)

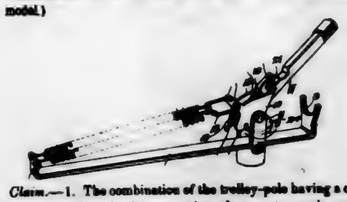

Claim.—1. The combination of the trolley-pole having a cam adapted for contact with a fixed base, a pivoted support carrying said pole, a locking-bolt for holding the trolley-pole in operative position, the lower portion of said bolt being adapted for contact with a fixed point to effect its movement to a releasing position.

2. The combination of the trolley-pole, a support to which said pole is pivotally connected, a cam carried by said pole and adapted for contact with a fixed plate or base, pivotal supports for said trolley-pole support, and means for locking the trolley-pole to said support.

3. The combination of the trolley-pole having a cam on its lower face adapted for contact with a fixed surface, a pivoted support to which said pole is fulcrumed, means for locking the pole and support, and means for disengaging the pole and support by any abnormal forward movement of the trolley-pole.

4. The combination of the carrier, a pivotal support for said carrier, a trolley-pole pivotally connected to said support at a point in advance of

the pivot-points of the carrier, means for locking the pole to its support, a spring normally tending to hold the support and pole in operative position, and a cam carried by the pole and adapted to move the support when released therefrom to such a position as to connect the springs to the pole and check the falling movement thereof, substantially as specified.

5. The combination of the trolley-pole, a carrier adapted to be locked thereto and to be automatically released therefrom on any abnormal forward movement of the pole, a spring connected to the carrier and adapted to hold the carrier and pole in operative position, and means for operably connecting the pole to the carrier to exert the retractile force of the springs on the pole and check the falling movement of the latter when released from its carrier, substantially as specified.

6. The combination of a trolley-pole having at its lower end a cam adapted for operative contact with a fixed plate, a pivoted carrier to which said pole is fulcrumed, means for locking the pole to the carrier, and a secondary fulcrum or socket with which the pole is adapted to engage after a partial movement by its cam toward the locking position, substantially as specified.

709,114. HANDWRITING-DEVELOPER. FREDERICK C. ROCKWELL, West Hartford, Conn. Filed Jan. 24, 1902. Serial No. 91,048. (No model.)

Claim.—1. A handwriting-developer which consists of a pad with a ball-bearing, and means for attaching the pad to the member of a person, substantially as specified.

2. A handwriting-developer consisting of a pad, recesses in the pad, freely-moving balls held in the recesses, and a flexible band for attaching the pad to a member, substantially as specified.

3. A handwriting-developer consisting of a pad, recesses in the pad, freely-moving balls held in the recesses, a flexible band for attaching the pad to a member, and means for adjusting the length of the band, substantially as specified.

709,115. GENERATION OF MOTIVE POWER. SIGMUND A. ROSENTHAL, London, England. Filed Dec. 21, 1901. Serial No. 86,844. (No model.)

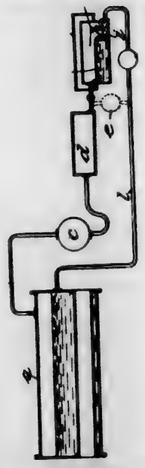

Claim.—1. A compound liquid for use in steam generation, consisting in combination, of water together with from .1 to .2 per cent. of a liquid of low boiling-point, high vapor tension, and low latent heat of vaporization, substantially as described.

2. A compound liquid for use in steam generation, consisting in combination, of water together with from .1 to .2 per cent. of acetone, substantially as described.

709,116. MACHINE FOR CUTTING PICTURE-MATS. CHARLES I. SHAWVER, Springfield, Ohio. Filed Jan. 16, 1902. Serial No. 89,964. (No model.)

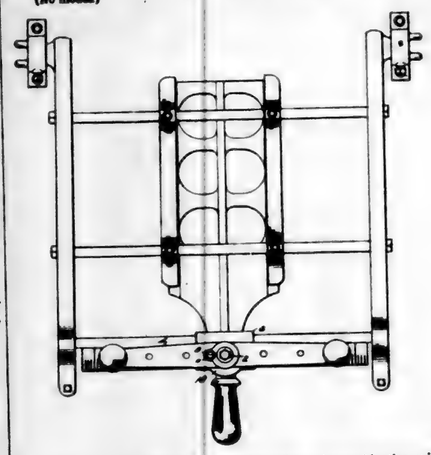

Claim.—1. In a picture-mat-cutting machine, the combination, with a tool-holder traveling in a curved path, of a trailing tool mounted to rotate around an axis at right angles with the plane of said path, said tool having its forward engaging or contact edge in the rear of its axis of rotation, and means for limiting the outward motion of said tool, substantially as described.

2. In a picture-mat-cutting machine, the combination, with a tool-holder traveling in a circular or elliptical path, of a trailing tool having a shank mounted to rotate around a vertical axis in said holder, said tool having its forward engaging or contact edge in the rear of its axis of rotation, and means for limiting the outward movement of said tool to prevent its passing beyond the normal path thereof, substantially as described.

3. In a picture-mat-cutting machine, the combination, with a trailing cutting-tool having a vertical shank, the cutting edge of said tool being in the rear of the axis of the shank, of a tool-holder traveling in a circular or elliptical path, said shank being rotatably mounted in said tool-holder, and means for limiting the rotation of said shank so as to prevent the tool from moving outward beyond its normal path, substantially as described.

4. In a picture-mat-cutting machine, the combination with a trailing tool having a vertical shank provided with a vertical stop-shoulder, the cutting edge of said tool being in the rear of the axis of the shank, of a tool-holder having a collar in which said shank is rotatably mounted, and a projection to engage said stop-shoulder and thereby limit the outward motion of the cutter to prevent its moving outward beyond its normal path, substantially as described.

5. In a picture-mat-cutting machine, the combination, with a trailing bevel-cutter provided with a vertical shank, the cutting edge of said tool being in the rear of the axis of the shank, said shank having a recess provided with a lateral stop-shoulder, of a tool-holder comprising a collar in which said shank is rotatably mounted, and a set-screw adapted to enter the recess and engage the stop-shoulder, substantially as described.

6. In a picture-mat-cutting machine, the combination, with a trailing bevel-cutter provided with a vertical shank, the cutting edge of said tool being in the rear of the axis of the shank, said shank having a longitudinally-curved recess of less width than the shank, whereby a lateral stop-shoulder is formed, of a tool-holder comprising a collar in which said shank is rotatably mounted, and a set-screw threaded through said collar and having its end extending into said recess and adapted to engage the stop-shoulder when the shank is rotated in one direction, and the bottom of the recess when the shank is rotated in the opposite direction, whereby the rotation of the shank is limited in both directions, substantially as described.

709,117. TOY. JOHN B. SLOANE, Detroit, Mich., assignor of one-half to Willard B. Partridge, Detroit, Mich. Filed Nov. 26, 1900. Serial No. 37,767. (No model.)

Claim.—In a toy, the combination of a supporting-block, a wire inserted in an opening therein and extending upward a distance, bent at right angles and extended laterally substantially parallel with the board, a figure having pivoted legs and arms, pivotally suspended from the outer end of said wire the pivot being in vertical line with the center of the said figure, and a flexible board secured at one end to said block and adapted to vibrate to engage said figure, at the opposite end.

709,118. LADDER. CLAYTON B. SMITH, Forestville, Conn. Filed Oct. 2, 1901. Serial No. 77,226. (No model.)

Claim.—1. A ladder having in combination, side rails composed of sheet metal the edges of which are bent inward to form tubular cylindrical ribs, rungs and means for securing the same to the side rails, substantially as described.

2. A ladder having in combination, side rails the edges of which are bent inward to form tubular ribs, rungs fitting snugly between the beads of the respective side rails and means for rigidly securing them to said rails, substantially as described.

3. A ladder having in combination, metal side rails the edges of which are bent inward to form tubular cylindrical ribs, rungs fitting snugly between said ribs, means for securing the rungs to the rails and coupling-sockets at one end of the rails, substantially as described.

709,119. BLANK FOR PIPE-ELBOWS. HOWARD H. SMITH, Mount Vernon, Ohio, assignor to Richardson-Bowers Manufacturing Company, Forest, Ohio, a Copartnership. Filed Nov. 28, 1901. Serial No. 83,754. (No model.)

Claim.—1. As a new article of manufacture an intermediate blank for a pipe-elbow composed of sheet metal and having the opposite semi-cylindrical portions and the intermediate elevated portion and provided in the semicylindrical portions with the transverse initial crimps, substantially as set forth.

2. An intermediate blank for use in making pipe-elbows composed of sheet metal and consisting of the opposite semicylindrical portions having the transverse parallel crimps extending to their outer edges and having an elevated portion uniting their inner edges and projecting above the plane of the outer edges of the blank, whereby to provide for the lapping of said outer edges in the production of the complete cylinder for use in forming the elbow, substantially as set forth.

3. A blank for a pipe-elbow provided in its opposite edges with inwardly-tapering crimps, the crimps in the opposite edges of the blank being in alinement, substantially as set forth.

4. A blank for a pipe-elbow having a central longitudinal upwardly-projecting portion, and provided on opposite sides of said projecting portion with the curved portions bent on equal arcs and opening in the direction in which the central projection extends, substantially as set forth.

5. A blank for a pipe-elbow provided at its opposite edges with the parallel curved portions and provided in said curved portions with inwardly-tapering crimps, the crimps in one edge of the blank being in an alinement with crimps in the opposite edge, substantially as set forth.

709,120. VISE. WILLIAM R. SHERRER, Camden, N. J. Filed Jan. 21, 1902. Serial No. 90,615. (No model.)

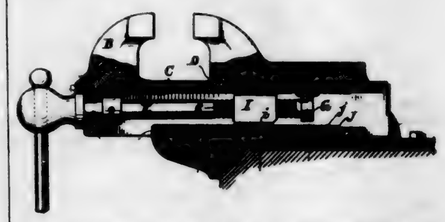

Claim.—1. The combination in a vise of the fixed jaw and casing, a fixed rack, a movable jaw, a sliding portion on the same, a threaded shaft, a screw-nut to engage said rack, cams on said shaft adapted to raise and lower the inner end of said shaft substantially as described.

2. The combination in a vise of the fixed jaw and rack, a movable jaw, a threaded shaft, a screw-nut adapted to engage said rack, a cam on said shaft acting against the movable jaw to raise the inner end of said shaft, and a cam on the inner end of said shaft adapted to depress the inner end of said shaft substantially as described.

3. The combination in a vise of the fixed jaw and rack, a movable jaw, a threaded shaft, a screw-nut, cams on said shaft to bring the screw-nut into or out of engagement with the fixed rack.

4. The combination in a vise of the fixed jaw and rack, a movable jaw, a threaded shaft, a screw-nut, cams on said shaft to bring the screw-nut into or out of engagement with said rack, a set-screw on said movable jaw acting against the cam on the inner end of said shaft substantially as described.

5. The combination in a vise of the fixed jaw and rack, a movable jaw, a threaded shaft, a screw-nut, cams on said shaft to bring the screw-nut into or out of engagement with said rack, a leg on the movable jaw acting against the cam on the outer end of said shaft, substantially as described.

6. The combination in a vise of the fixed jaw and rack, a movable jaw, a threaded shaft, a screw-nut, cams on said shaft to bring the screw-nut into or out of engagement with said rack, a projection on said shaft to prevent said shaft from turning, substantially as described.

709,121. WATCH-MOVEMENT FASTENER. LEVI G. SELLENBERGER, Chambersburg, Pa. Filed May 28, 1902. Serial No. 108,243. (No model.)

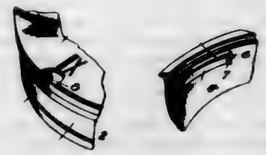

Claim.—In combination with a case, a movement removably fitted within the case and having a depression in its front plate in the rear of the dial, a cut upon the edge of the said plate in communication and disposed approximately at a right angle to the depression, a spring-catch secured to the case at one end and provided at its free end with a right-angularly-disposed extension adapted to enter the aforementioned cut in the edge of the movement-plate, a bent extension also right-angularly disposed with relation to the aforesaid extension, the latter entering the depression in the plate and concealed by the dial covering the said depression, substantially as set forth.

709,122. **DEVICE FOR CLEANING CARPETS.** EARL C. STENTZ, Cleveland, Ohio. Filed Nov. 27, 1901. Serial No. 83,622. (No model.)

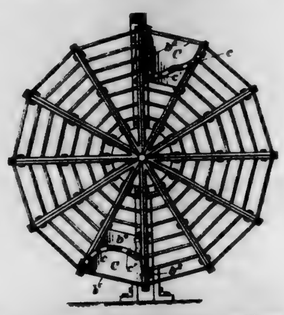

Claim.—1. A device for cleaning carpet, comprising a rotary drum having a transversely-located pocket upon its interior, such pocket consisting of a stationary and a suspended hinged diaphragm portion; and means for releasing such hinged portion at a predetermined point in the drum's rotation.

2. In a device for cleaning carpet, the combination with a rotary drum having a transversely-located pocket upon its interior, such pocket consisting of a stationary and a hinged portion, a latch secured to said drum engaging said hinged portion, and means secured to a stationary portion of the device for engaging said latch to disengage said hinged portion, whereby the latter is permitted to drop at a predetermined point in the drum's rotation.

3. In a device for cleaning carpet, the combination of a rotary drum having transversely-located pockets upon its interior, each such pocket consisting of a stationary and a hinged portion, each end of the latter provided with a pin projecting through the contiguous drum-wall, a latch hung upon the outside of each such wall and adapted to engage the contiguous pin and thereby hold such hinged portion suspended, and pins secured to a stationary part of the device adapted to engage each latch to release said hinged portion whereby the latter is permitted to drop at a predetermined point in the drum's rotation.

709,123. **SECURING ATTACHMENT FOR WAGON END-BOARDS.** WILLIAM L. STERLING, Brooklyn, Pa. Filed Apr. 16, 1902. Serial No. 103,063. (No model.)

Claim.—1. In a wagon-box, the combination with the side-boards and with the end-board of such box, of a clamping appliance which in its main portion consists of two arms which at the mid-length of the board are pivoted together, one directly upon the other, and which in its outer portions is pivoted upon such board; such outer portions being movable into or out of engagement with the side-boards, by the movement of the central or main portion of the appliance, directly across the face of the end-board; substantially as described.

2. In a wagon-box, the combination with the side-boards, and with the end-board of such wagon-box, of an adjustable securing appliance which is operatively mounted upon the end-board; and a means, applied upon the end-board, for preventing outward movement of such securing appliance, while permitting its free upward and downward movement directly across the face of such end-board; substantially as shown and set forth.

3. In a wagon-box, the combination with the side-boards, and with the integral end-board of such box, of a clamping appliance which embraces two operating-arms which, at the mid-length of the end-board, are pivoted one upon the other, and which are movable either to clamp or to release the side-boards, by power applied directly to such arms themselves.

709,124. **BRAKE MECHANISM FOR MOTOR-VEHICLES.** JOHN UNDEN, Carthage, N. Y., assignor of one-half to William W. Hawes, Clayton, N. Y. Filed Mar. 3, 1901. Serial No. 50,289. (No model.)

Claim.—1. In a brake mechanism for motor-vehicles provided with a steam-boiler, a condenser-coil communicating with the boiler, brakes and a brake-operating piston actuated by fluid from said condenser-coil.

2. In a brake mechanism for motor-vehicles, a steam-boiler, a condenser-coil communicating with the steam-space of said boiler, a brake arranged to engage the wheel of said vehicle and a brake-operating piston arranged to be actuated by fluid from said condenser-coil.

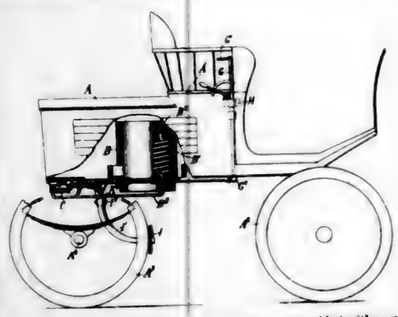

3. In a brake mechanism for motor-vehicles provided with a steam-boiler, a condenser communicating with the steam-space of said boiler, a fluid-brake and means to actuate it by the fluid from said condenser.

4. In a brake mechanism for motor-vehicles having a steam-boiler, means to condense steam from said boiler, and thereby furnish a supply of water under pressure and a fluid-brake arranged to be actuated thereby.

5. In a brake mechanism for motor-vehicles, a supply of water under pressure, a fluid-pressure-actuating mechanism, a brake and a valve and connections therefor between said supply of water and said actuating mechanism, whereby a supply of water actuates the brake and is then discharged from the brake mechanism.

6. In a brake mechanism for motor-vehicles, a supply of liquid under pressure, a liquid-actuated brake, a brake-cylinder, a valve and connections therefor between said brake-cylinder and said supply of liquid to admit any desired amount of liquid to actuate the brake to any desired extent to hold said brake in operative position and to discharge said liquid from said brake mechanism.

7. In a brake mechanism for motor-vehicles, a supply of liquid under pressure, a liquid-actuated brake, brake-actuating means, a valve and connections therefor to admit liquid to said means and thereafter to discharge said liquid from said brake mechanism.

8. In a brake mechanism for a motor-vehicle, a supply of water under pressure, a brake, a brake-cylinder, a piston to operate said brake within said cylinder, a valve arranged to control the admission of said water to said cylinder and to allow its discharge from said brake mechanism.

9. In a brake-mechanism for motor-vehicles, a brake-cylinder, a spring-pressed piston therein, brake-shoes operatively connected to said piston, a supply of liquid under pressure and a three-way valve between said supply of liquid and said cylinder, whereby said liquid may be admitted to said cylinder to apply the brakes or the liquid discharged from said brake mechanism under the action of said spring.

10. In a brake mechanism for motor-vehicles, a friction-brake to engage a moving part of said vehicle, brake-actuating means, a supply of liquid under pressure, a valve and connections therefor to admit such fluid to said actuating mechanism and to discharge said fluid from the vehicle.

11. In a brake mechanism for motor-vehicles, a source of fluid under pressure, a fluid-brake, a valve to admit such fluid to said brake and means to fasten said valve in this position to prevent the disengagement of said brake.

12. In a brake mechanism for motor-vehicles, a source of fluid under pressure, a fluid-brake, a valve to control the admission of said fluid to said brake and a lock arranged to maintain said valve in position to admit said fluid to said brake.

13. In a brake mechanism for motor-vehicles, a brake, a fluid-pressure mechanism adapted to operate said brake and means to lock said mechanism in such position as to secure the continuous operation of said brake.

14. In a brake mechanism for motor-vehicles, a supply of fluid under pressure, fluid-pressure brake mechanism operatively connected therewith, a brake-rod adapted to control the admission of such fluid to said brake, a slidable locking-piece on said brake-rod and means to hold said locking-piece against rotation.

15. In a brake mechanism for motor-vehicles, a brake, a brake-actuating mechanism therefor, a brake-rod to control said brake-actuating mechanism, a slidable locking-piece on said brake-rod, an abutment adjacent said locking-piece and adapted to coact therewith to hold said locking-piece against rotation, a spring-lock on said abutment and arranged to hold said locking-piece in engagement with said abutment and means to disengage said spring-lock.

16. In a brake mechanism for motor-vehicles, a brake, a brake-actuating mechanism, a brake-rod arranged to control said brake-actuating mechanism, a stationery abutment adjacent said brake-rod, a sliding locking-piece on said brake-rod arranged to engage said abutment when said brake-rod is in position to operate said brake, a spring-latch adapted to hold said locking-piece in engagement with said abutment and a key to disengage said spring-latch from said locking-piece.

17. In a brake mechanism for motor-vehicles, a brake, a brake-arm suitably mounted and supporting said brake, a pin in said brake-arm, a coöperating stationary abutment, a spring and connections adapted to disengage said brake and bring said pin against said abutment so as to hold said connections rigid and prevent shaking.

18. In a brake mechanism for motor-vehicles, a pair of brake-arms pivotally mounted and carrying brakes thereon, means coacting with said brake-arms to prevent shaking when the brakes are released, an equalizer-bar loosely connected with said brake-arms, a brake-cylinder, a spring-pressed brake-piston within said cylinder connected to said equalizer with a pivotal connection and means to operate said piston by liquid-pressure.

19. In a brake mechanism for motor-vehicles, a pair of pivotally-mounted brake-arms, brake-shoes rigidly fastened thereon, an equalizer-bar loosely connected to said arms, a brake-cylinder, a spring-pressed piston therein, a piston-rod pivotally attached to said equalizer-bar, abutments adjacent said brake-arms and pins on said brake-arms, a supply of liquid under pressure to actuate said brake, a three-way valve arranged between said source of liquid-supply and said brake-cylinder and a locking device adapted to lock said valve in such position as to actuate said brakes.

20. In a brake mechanism for motor-vehicles, a friction-brake to engage a moving part of said vehicle, a brake-cylinder to actuate said brake, a supply of fluid under pressure, a valve and connections therefor to admit said fluid to said cylinder to actuate the brake, to maintain the brake in operative position and to discharge said fluid in said cylinder from the vehicle to release the brake.

709,125. **BRAKE MECHANISM FOR MOTOR-VEHICLES.** JOHN UNDEN, Carthage, N. Y., assignor of one-half to William W. Hawes, Clayton, N. Y. Filed Oct. 31, 1901. Serial No. 80,622. (No model.)

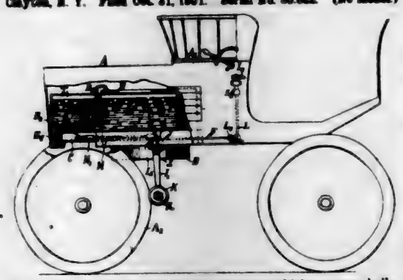

Claim.—1. In a brake mechanism for motor-vehicles, a steam-boiler, a water-tank, a condenser-worm in said water-tank connected with the steam-space of said boiler, a storage-chamber formed at the lower end of said worm, a brake-cylinder mounted on the frame of said vehicle, a valve-casing formed on said cylinder and communicating with the interior of the same, with said storage-chamber and with said water-tank, a spring-actuated piston in said cylinder, an equalizer loosely connected with said piston, brake-arms connected to said equalizer by brake-links, brake-shoes secured to the outer end of said brake-arms, brake-wheels mounted between said brake-shoes to engage the wheels of the vehicle, a spring-pressed three-way valve in said valve-casing, a brake-handle connected to said valve to admit condensed steam from said storage-chamber into said cylinder to actuate the brake and to discharge the water from said cylinder into said tank and a locking-piece secured to said brake-handle to maintain said brake in operative position.

2. In a brake mechanism for motor-vehicles, a brake-cylinder, a piston in said cylinder, brakes actuated from said piston, a valve-casing secured to said cylinder, a boiler, a water-tank adjacent said boiler, a condenser-worm in said water-tank communicating with the steam-space in said boiler and connected to said valve-casing, said valve-casing being connected to said water-tank and communicating with said cylinder, a valve in said casing to admit water from said worm into said cylinder and to discharge such water from said cylinder into said tank.

3. In a brake mechanism for motor-vehicles, a liquid-operated brake, a boiler, a water-tank, a condenser-worm communicating with the steam-space in said boiler, a valve and connections therefor to actuate said brake by water from said condenser-worm and to discharge such water into said water-tank.

4. In a brake mechanism for motor-vehicles, a fluid-actuated brake, a boiler, a water-tank, a condenser-worm located in said water-tank and communicating with the steam-space in said boiler, a storage-chamber at the lower end of said worm, a valve and connections therefor to admit water from said storage-chamber to said brake and to discharge such water into said water-tank.

5. In a brake mechanism for motor-vehicles, a brake-cylinder, a spring-pressed piston therein to actuate a brake, a valve-casing formed on said cylinder, a tapered three-way valve in said valve-casing, a spring to press said valve against its seat in said casing, a tap screwed upon said casing to hold said spring in position, said casing being formed with a cylinder-port communicating with said cylinder, an inlet-port communicating with a source of fluid under pressure and a discharge-pipe, a brake-handle and connections between said brake-handle and said valve to admit fluid to said cylinder to discharge such fluid through said discharge-pipe and to hold such fluid in said cylinder and a locking-piece connected to said handle to lock said valve in position to admit fluid to said cylinder.

709,126. **VAPORIZING DEVICE FOR EXPLOSIVE-ENGINES.** BENJAMIN C. VANDUSEN, Winton Place, Ohio. Filed July 12, 1898. Serial No. 686,858. (No model.)

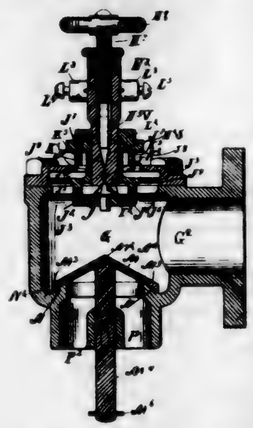

Claim.—1. The combination of the mixing-chamber G, piston in chamber or guideway J^1, stop below the piston, valve J, gasolene-inlet conduit H^2 constricted at I, and conical valve H^3 for regulating the passage of gasolene through the conduit H^2, and having a conical seat in the said conduit-pipe, springs L, having one branch connected to the piston and one branch to a fixed point as L^3, substantially as and for the purpose specified.

2. The combination of the mixing-chamber G, piston in chamber or guideway J^1, stop below the piston, valve J, gasolene-conduit H^2 constricted at I, and valve H^3 for regulating the passage of gasolene through the conduit H^2, and springs L, having one branch connected to and slidable through the extension L^2 of the piston, and the other branch connected to a stationary stud L^3, and having an opening through which the other branch L^4 of the spring is slidable, and set-screw for setting the adjustment of the spring, substantially as and for the purposes specified.

3. The combination of the mixing-chamber, gasolene-inlet conduit, dropable valve for controlling admission of gasolene therefrom to the mixing-chamber, sleeve connected to the piston and embracing the inlet-conduit, spring connected to the sleeve and to a fixed dotent, the dropable valve supported by the piston, substantially as and for the purpose specified.

4. The combination of the mixing-chamber, inlet gasolene-conduit, movable piston, carrying valve, controlling the admission of gasolene through the conduit, abutment, wedge resting thereon, and abutments or lugs connected to the piston for engagement with the wedge, and the governer, and means for enabling the governor to reciprocate the wedge and control the drop of the piston, and elastic means for holding up the piston and valve, except when the suction in the mixing-chamber opens it, substantially as and for the purpose specified.

5. The combination of the mixing-chamber and the air-inlet valve M, located directly below the gasolene-inlet valve, this air-valve M being conical above, the under side of its peripheral edge being inclined outward and downward and overlapping the edge of the air-inlet conduit, this latter edge being inclined outward and downward and terminating in the annular channel for the collection and aeration of gasolene, substantially as and for the purposes specified.

6. The combination of the mixing-chamber and the air-inlet valve conical above, and having its under outer edge inclined outward and downward, and the air-inlet conduit P having its upper end inclined outward and downward forming a tight seat for the valve M, when closed, and having an annular channel below and adjacent to the peripheral edge of the valve M, and an inlet gasolene conical valve, and a dropable valve supported by the piston, and in vertical line above the central portion of the air-inlet valve, substantially as and for the purposes specified.

709,127. FIRE-ESCAPE. MICHAEL WAGNER, Trenton, N. J. Filed Jan. 3, 1902. Serial No. 88,276. (No model.)

Claim.—1. In a fire-escape the combination of a loosely-mounted drum or pulley, a loosely-mounted member spaced from the drum, brake-shoes adapted to engage the opposing faces of the drum and member, a wedge working between the brake-shoes, and a governor connected with and operating said wedge, as set forth.

2. In a fire-escape, the combination of spaced gear-wheels, a drum or pulley carried by one gear-wheel, a pinion meshing with the gear-wheels, brake-shoes for engaging the opposing faces of the gear-wheels, a wedge working between the brake-shoes, and a governor having its stem connected with the wedge, as set forth.

3. In a fire-escape, the combination of spaced gear-wheels, a drum or pulley carried by one of the gear-wheels, a pinion having a hollow hub and meshing with the gear-wheels, brake-shoes having inclined inner faces and arranged between the gear-wheels, said brake-shoes being adapted to engage the inner faces of the gear-wheels, a wedge working between the brake-shoes, and a governor having its stem extending through the pinion and connected with the wedge, as set forth.

4. In a fire-escape, the combination with an endless rope or chain adapted to sustain persons while making a descent, and a carrying-pulley therefor, of a loosely-mounted gear facing the carrying-pulley, a pinion driven from the carrying-pulley and in driving connection with the gear, supports for the carrying-pulley, the pinion and the gear, a ball-governor in operative connection with the pinion, the shaft of the governor sliding loosely in said pinion, opposing brake-shoes adapted for sliding movement relative to each other and having straight outer faces arranged for contact with the inner faces of the carrying-pulley and gear, and inclined inner or opposing faces, and a wedge-block carried by the governor-shaft, operating when forced downward to carry the brake-shoes in frictional contact with the carrying-pulley and gear, as and for the purpose described.

5. In a fire-escape, the combination with an arched bracket, a shaft mounted in the bracket, a drum or pulley loosely mounted on the shaft, and provided with a gear-wheel on its inner face, a loosely-mounted gear-wheel on the shaft and spaced from the gear-wheel of the drum or pulley, brake-shoes mounted on the shaft between the gear-wheels and having inclined inner faces, the brake-shoes having overlapping upper ends, a wedge straddling the shaft, a pinion mounted in the bracket and meshing with the said gear-wheels, and a ball-governor having its stem extending through the pinion, the overlapping ends of the brake-shoes, and connected with the wedge, as set forth.

709,128. NUMBERING-MACHINE. ALBERT P. WATERMAN, Orange, and GEORGE H. B. BRENNOLD, Newark, N. J., assignors to the Edison Phonograph Works, Orange, N. J., a Corporation of New Jersey. Filed Aug. 2, 1900. Serial No. 25,603. (No model.)

Claim.—1. In a numbering-machine, the combination with a series of number-carrying disks or wheels, of a pawl-carrying plate arranged exteriorly of said disks or wheels, pawls on said plate engaging said disks or wheels for operating the latter, a finger or pawl carried by said plate arranged to prevent consecutive operation of the feed-pawls, an alternate deep-toothed disk arranged concentrically to the number-carrying wheels or disks and with which said finger coöperates, a lever pivoted to the pawl-carrying plate for engaging said finger with, and permitting disengagement of said finger from, the alternate deep-toothed disk, and a second finger pivoted to the pawl-carrying plate and with which said lever coöperates for throwing the feed-pawls continuously out of operation, substantially as set forth.

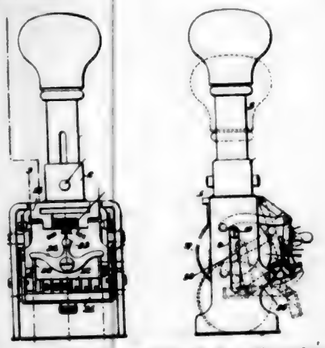

2. In a numbering-machine, the combination with a series of number-carrying disks or wheels, of a pawl-carrying plate arranged exteriorly of said disks or wheels, pawls on said plate engaging said disks or wheels for operating the latter, a finger or pawl carried by said plate arranged to prevent consecutive operation of the feed-pawls, an alternate deep-toothed disk arranged concentrically to the number-carrying wheels or disks and with which said finger coöperates, a lever pivoted to the pawl-carrying plate for engaging said finger with, and permitting disengagement of said finger from, the alternate deep-toothed disk, a second finger pivoted to the pawl-carrying plate and with which said lever coöperates for throwing the feed-pawls continuously out of operation, and a plain disk with which the second finger coöperates, substantially as set forth.

3. In a numbering-machine, the combination with a series of number-carrying disks or wheels, of a pawl-carrying plate arranged exteriorly of said disks or wheels, pawls on said plate engaging said disks or wheels for operating the latter, a finger or pawl carried by said plate arranged to prevent consecutive operation of the feed-pawls, an alternate deep-toothed disk arranged concentrically to the number-carrying wheels or disks and with which said finger coöperates, a lever pivoted to the pawl-carrying plate for engaging said finger with, and permitting disengagement of said finger from, the alternate deep-toothed disk, a second finger pivoted to the pawl-carrying plate and with which said lever coöperates for throwing the feed-pawls continuously out of operation, and a stationary plain disk with which the second finger coöperates, substantially as set forth.

709,129. PAPER-BAG MACHINE. HERBERT R. WHITEVELL, South Bend, Ind. Filed June 12, 1900. Serial No. 20,041. (No model.)

Claim.—1. The combination with a folding-bed; of a defining-plate consisting of two separated and relatively immovable portions; means for turning or folding back one of the plies of the blank; and a device for holding the other ply during the operation of said ply-folding means, the said holding device being located so that the opposite portions of the defining-plate will pass on its opposite sides.

2. The combination with the folding-bed; of a defining-plate combined with means for automatically advancing the same over the folding-bed; devices for entering the blank-tucks and folding back one of the plies thereof; a device for holding the other ply of the blank, the said defining-plate and holding device being constructed and arranged to permit the latter to pass the former without interfering therewith; and means for supporting said holding device so that the advance of the defining-plate causes a relative movement of the same toward and past the holding device, substantially as described.

3. The combination with the folding-bed; of a defining-plate consisting of two fixed portions, separated so as to form a space between their inner ends; a frame supporting the portions of the defining-plate and extended across the machine below the folding-bed; means for advancing the defining-plate along the folding-bed; means for folding back the upper ply of the bag-blank; and a device for holding the lower ply thereof, said device being located in line with the space between the inner ends of the defining-plate.

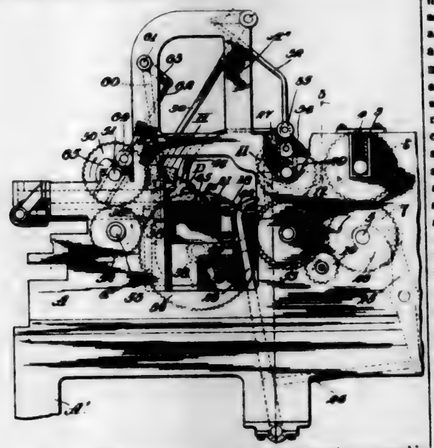

4. A defining-plate consisting of two separated portions, in combination with two uprights, to which said portions are secured at their outer ends; and a tie-rod connecting the other ends of said uprights.

5. The combination with the defining-plate consisting of two fixed portions separated at their inner ends; a frame carrying said defining-plate, and consisting of uprights secured to the outer ends of the portions of the plate; and a cross-rod extending between the lower ends of the uprights; swinging ways along which said uprights can travel; and means for advancing the same along said ways.

6. The combination with the folding-bed; of a defining-plate consisting of two fixed portions separated at their inner ends; means for advancing the defining-plate along the folding-bed; means for forming the bag-blank into a diamond fold during its advancement along the folding-bed; and holding devices acting upon the central portion of the blank during the formation of the diamond fold.

7. The combination with the folding-bed; of a defining-plate arranged to travel along the same, said plate consisting of two fixed portions separated at their inner ends; and one or more sets of rollers arranged in position to act upon the bag-blank, and in line with the space between the inner ends of the defining-plate.

8. The combination with the folding-bed and with tuck-entering and ply-folding devices combined with mechanism for advancing such devices along the folding-bed; of rollers for acting upon the bag-blanks; means for supporting said rollers above and below the path of travel of the blank over the folding-bed, between the paths of travel of the tuck-entering and ply-folding devices, substantially as described.

9. The combination with the folding-bed; of an arm secured to the forward portion of the machine, and extending rearwardly toward and over the folding-bed; a nose at the rear end of the said arm; and one or more sets of rolls, one in each set being arranged above and the other below the path of travel of the blank over the folding-bed, the upper rolls being journaled in said arm and the lower ones in a support below the folding-bed.

10. The combination with the folding-bed; of a defining-plate consisting of two fixed portions separated at their inner ends; means for advancing the defining-plate along the folding-bed; means for turning back the upper ply of the blank to form the diamond fold; one or more sets of rolls secured in position, the upper one above and the lower one below the path of travel of the blank, said rolls being arranged between the paths of travel of the two portions of the defining-plate; and means for driving said rolls.

11. The combination with a frame arranged for travel forward and backward in the machine; a cross-rod carried by said frame; and devices for entering the blank-tucks and folding the plies of the blank into the diamond fold, said devices being carried by an arrangement to travel upon the cross-rod of said frame.

12. The combination with the defining-plate; of a frame carrying the same, and embodying in its construction the cross-rod; standards mounted upon said cross-rod and arranged to slide along the same; and butterflys carried by said standards.

13. The combination with the folding-bed; of a movable frame carrying the presser-plate consisting of two fixed portions separated at their inner ends; the said frame being constructed with a cross-rod forming the lower transverse member of the frame; longitudinally-arranged ways for carrying said frame, said ways being pivoted at their forward ends so as to permit them to swing vertically; means for advancing the frame along the ways and retracting the same; means for holding the ways in an elevated position, and for lowering the same during the initial movement of the frame along the ways; standards carrying butterflys adapted to enter the blank-tucks and fold backward the upper ply of the blank; said standards being arranged for transverse movement relatively to the machine, upon the cross-rod forming a part of the said movable frame; same constructed with inwardly-inclined surfaces for moving the standards inwardly as the frame carrying them advances, and also with straight surfaces for maintaining them in their inward position; and abutments secured to the swinging ways and adapted to engage the butterflys and swing the same as they are advanced by the advancement of the frame along the ways.

14. The combination with the swinging ways; of the upright arms 27 secured to the rear ends thereof; means for coöperating the said arms to elevate the rear ends of the ways; and arms 44 secured to the upper ends of the arms 27, and provided with noses or abutments 45 adapted to engage the butterflys.

15. The combination with the folding-bed; of longitudinally-swinging ways arranged for vertical swinging movement; means for swinging said ways vertically up and down; a frame movable along said ways and carrying a presser-plate, said frame being constructed with a transverse cross-rod having its outer end portions inclined upwardly from its ends; standards arranged to move upon said cross-bar, and provided with tuck-entering and ply-folding devices; and means for actuating said standards so as to cause their inward and outward movement.

16. The combination with the folding-bed, and means for lifting the end of the upper ply of the blank and swinging the same upwardly and downwardly in a single continuous movement over the body portion of the blank so as to form the diamond fold; of wings or flaps adapted to strike against the sides of the blank and bend or press the same inwardly; and mechanism for swinging such wings or flaps so as to cause them to brush or strike against the sides of the blank.

17. The combination with the folding-bed, and means for forming the diamond fold thereupon; of leaves or flaps H having interned portions; swinging arms carrying said leaves or flaps; a rock-shaft carrying said arms; a link pivotally connected with a rocker-arm on said rock-shaft; and a cam for reciprocating said link.

18. The combination with the folding-bed and with means for forming the diamond fold thereupon, of a pair of wings or flaps adapted to strike against the sides of the blank and bend or press the same inwardly, and means for swinging such wings or flaps in a direction longitudinally of the folding-bed, substantially as set forth.

19. The combination with the folding-bed and with means for forming the diamond fold thereupon, of a pair of wings or flaps adapted to strike against the sides of the blank and bend or press the same inwardly, mechanism for swinging such wings or flaps in a direction longitudinally of the folding-bed so as to strike the sides of the blank and means for moving the bag-blank in a direction opposite the direction of movement of the swinging wings or flaps at a time when such wings or flaps strike against the sides of the bag-blank, substantially as described.

20. In a bag-machine, means for slightly turning in the sides of the bag-blank when such sides are in a standing position during the formation of the diamond fold, said means comprising a pair of longitudinally-extending and inwardly-inclined blades arranged on opposite sides of the bag-blank, and means for producing a relative longitudinal movement between the blades and the blank in such a direction that the ends of the blades separated most widely from one another meet the blank first, whereby the further longitudinal movement after such meeting causes the converging portions of the blades to rub against the blank sides throughout their length, and thereby turn or bevel the same in, substantially as described.

21. The combination with means for separating the plies of the bag-blank and swinging them continuously away from one another so as to form the diamond fold in a single operation, of means for turning the side edges of the blank slightly in when the same are in a standing position, and before the beginning of the folding operation, whereby the edges are directed inwardly and tearing of the same is prevented as the swinging movement of the plies is continued to form the diamond fold, substantially as described.

22. The combination with means for defining the primary creases of the bag-bottom, of means for engaging the lower ply of the bag-blank, means for engaging the upper ply and swinging it continuously upwardly, backwardly and downwardly so as to form the diamond fold in a single operation, edge-turners adapted to turn the side edges of the blank slightly in, and means for operating said edge-turners so as to cause them to act upon the side edges of the blank when the same are in a standing condi-

tion, and to separate from the same before the beginning of the folding operation, substantially as and for the purpose set forth.

23. The combination with the folding-bed, of a pusher-plate for holding the bag-blank upon the folding-bed and defining the primary crease, means for holding the lower ply of the blank to the folding-bed, a device for engaging the upper ply of the blank, means for actuating such device so as to cause the upper ply of the blank to be separated from the lower ply and swung upwardly and backwardly and then downwardly upon the body portion of the blank in a single continuous operation, edge-turners adapted to turn the side edges of the blank slightly in, and means for actuating said edge-turners so as to cause them to act upon the side edges when the same are in a standing condition, and to withdraw therefrom before the beginning of the folding operation, substantially as and for the purpose set forth.

24. The combination of devices for engaging the lower ply of the bag-blank, devices for engaging the upper ply of the blank and folding the same backwardly, and edge-turners adapted to act upon the edges of the bag-blank when the same are in a standing position.

25. The combination of grippers for engaging the lower ply of the bag-blank, devices for engaging the upper ply and folding the same backwardly, a creasing-blade adapted to form the transverse crease for the primary fold, and edge-turners adapted and arranged to act upon the edges of the bag-blank when the same are in a standing position.

26. The combination with side grippers adapted to clasp both plies of the bag-blank to the folding-bed, of edge-turning devices adapted and arranged to act upon the edges of the bag-blank when the same are in a standing position.

27. The combination of a front gripper, devices for gripping the lower ply of the bag-blank, devices for engaging the upper ply thereof and folding the same backwardly, a creasing-blade adapted to form the crease for the primary fold, side grippers adapted to engage both plies of the bag-blank and hold the same against the folding-bed, and edge-turning devices adapted and arranged to act upon the edges of the bag-blank when the upper ply is bent or folded backwardly by the ply-folding devices to an extent to place the edges of the blank in a standing condition.

709,180. PENHOLDER. KARL H. ZENK, Marion, Ind. Filed Jan. 29, 1902. Serial No. 91,798. (No model.)

Claim.—A penholder comprising a handle having one end hollow, the hollow end portion of the handle having a longitudinally-extending recess opening through the end of the holder, and having a slot formed through the bottom of the recess and having its rear end directed laterally, a sleeve slidably and rotatably mounted upon the hollow end portion of the handle and covering the recess, a pin engaged with the sleeve and passed through the slot and movable therethrough as the sleeve is moved longitudinally and rotated, said sleeve having also longitudinal cuts formed through the bottom of the recess in the planes of the side walls of the latter and entering the hollow of the handle.

709,181. APPARATUS FOR MOLDING THE EXTERIOR OF ARTICLES IN CLAY OR OTHER PLASTIC MATERIAL. MOSES J. ADAMS, Leeds, England. Filed Dec. 3, 1901. Serial No. 84,540. (No model.)

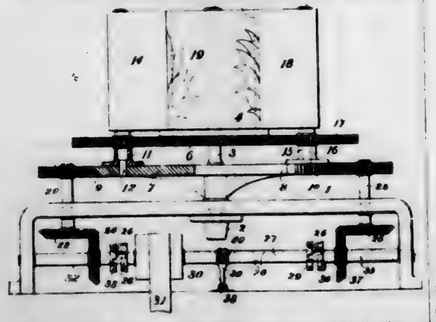

Claim.—1. In apparatus for molding decorated articles in clay or other plastic material, the combination of a core for carrying the clay to be molded with a molding-body adapted to travel around said core, and means independent of the engagement of the molding-body with the clay for causing the molding-body to rotate on its own axis, whereby clay laid on said core is molded with a design by the said molding-body without appreciable slip, substantially as set forth.

2. In apparatus for molding decorated articles in clay or other plastic material, the combination of a core for carrying the clay to be molded, a plurality of molding-bodies each adapted to travel around said core and each adapted to mold a portion of the external shape of the article to be molded, and means independent of the engagement of said molding-bodies with the clay for causing the molding-bodies to rotate on their own axes, whereby clay laid on said core is molded on its external surface with a design by the said molding-bodies without appreciable slip, substantially as set forth.

3. In apparatus for molding decorated articles in clay or other plastic material, the combination of a core to receive the clay to be molded, a molding-body adapted to act upon the clay on said core, means for causing said molding-body to travel around said core, and positive engaging means connecting said molding-body with said core for causing said molding-body to rotate on its own axis while traveling around said core, whereby the clay on said core is molded by the said molding-body and a design formed on said molding-body is formed in said clay without appreciable slip, substantially as set forth.

4. In apparatus for molding decorated articles in clay or other plastic material, the combination of a core to receive the clay to be molded, a plurality of molding-bodies each adapted to act upon the clay on said core, means for causing said molding-bodies to travel around said core, and positive engaging means connecting said molding-body with said core for causing said molding-bodies to rotate each on its own axis while traveling around said core, whereby the clay on said core is molded by the said molding-bodies and designs formed on said molding-bodies are formed in said clay without appreciable slip, substantially as set forth.

5. In apparatus for molding articles in clay or other plastic material, the combination of a core for carrying the clay to be molded, a support for said core, a toothed wheel carried by said support, a molding-body for acting on the clay on the said core, a second support mounted to rotate about said core-support and carrying said molding-body, and a pinion for said molding-body carried by said second support and engaging with said toothed wheel, and means for rotating said second support, whereby when the latter is rotated the said molding-body will rotate on its own axis while traveling around the said core, substantially as set forth.

6. In apparatus for molding articles in clay or other plastic material, the combination of a core for carrying the clay to be molded, a support for said core, a toothed wheel carried by said support, a plurality of molding-bodies for acting on the clay on the said core, a second support mounted to rotate about said core-support and carrying said molding-bodies, and a pinion for each molding-body carried by said second support and engaging with said toothed wheel, and means for rotating said second support, whereby when the latter is rotated the said molding-bodies will rotate each on its own axis while traveling around the said core, substantially as set forth.

709,182. PREPARED SEALING-WAX. THOMAS ARDIRON, Brooklyn, N. Y., assignor to John Murphy, Brooklyn, N. Y. Filed Jan. 8, 1902. Serial No. 88,873. (No model.)

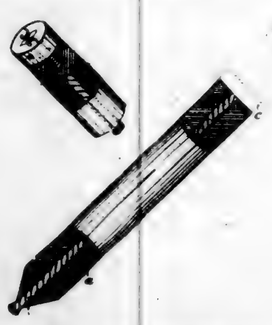

Claim.—1. As an article of manufacture, a stick of sealing-wax having a wick forming a longitudinal core therein, said wick being disposed eccentrically in the stick, substantially as described.

2. As an article of manufacture, in combination, a stick of sealing-wax having a wick forming a longitudinal core therein, and a handle secured to one end of said stick, the adjacent faces of the stick and handle having engaging projections and recesses, substantially as described.

709,183. INK-WELL. STEPHEN G. BALDWIN, Marion, Ind. Filed Sept. 16, 1901. Serial No. 75,561. (No model.)

Claim.—1. In an ink-well, the combination of a body portion, a large and a small compartment in the interior thereof, said small compartment extending from the wall of the interior of the well, to a point beyond the center of said well a top having a pen-opening considerably below the outer edges thereof, the edges of said pen-opening being below the top of the walls forming said smaller compartment, and means adapted to cover said pen-opening by the force of gravity, substantially as described.

2. In an ink-well, the combination of a body portion, a large and small compartment in the interior thereof, said small compartment extending from the wall of the interior of the well to a point beyond the center of said well, and a top having a pen-opening considerably below the outer edges thereof, the edges of said pen-opening being below the top of the walls forming said smaller compartment, substantially as described.

3. In an ink-well, the combination of a body portion, a small compartment formed therein and extending from the side thereof to a point beyond the center thereof, whereby said compartment may be filled by tilting the well, and a top having a pen-opening lower than the top of said compartment, thereby causing the interior of the well to be perfectly air-tight when said small compartment is filled, substantially as described.

4. In an ink-well, the combination of a body portion a large and a small compartment formed therein and integral therewith, a top having a pen-opening therein slightly lower than the top of said small compartment and integral therewith, and a cover for said opening, substantially as described.

5. In an ink-well, the combination of a body portion a small compartment formed therein and extending from the side thereof, to a point beyond the center thereof, whereby said compartment may be filled by tilting the well, a top having a pen-opening lower than the top of said compartment thereby causing the interior of the well to be perfectly air-tight when small compartment is filled and means adapted to cover said pen-opening by the force of gravity, substantially as described.

709,184. SWITCH-THROWING DEVICE. URIAH F. BENSELL, Dayton, Ohio. Filed Oct. 22, 1900. Renewed Feb. 13, 1902. Serial No. 93,946. (No model.)

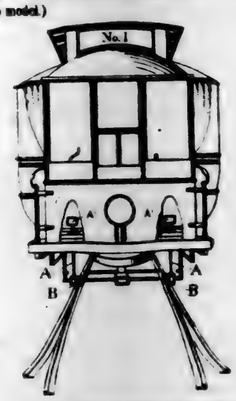

Claim.—1. A switch-throwing device, comprising a beveled wheel provided with conical bearings rotating upon an axle between two coiled springs suspended within the hanging frame which is attached to the rod extending upward through the platform or bottom of the car.

2. A switch-throwing device, comprising a beveled wheel provided with conical bearings adapted to rotate upon the axle or rod which passes through the bearings and through the beveled wheel, having provided on each side of the wheel a coiled spring, designed to keep the beveled wheel in the desired position yet permitting of slight side movement, and also having provided the guiding part which is secured into the upper part of the hanging frame, the hanging frame secured to some suitable adjustable contrivance by means of which it is operated and attached to the car.

3. In a switch-throwing device of the class described, consisting of a beveled wheel having a conical indentation on each side, the conical bearings designed to fit into the conical indentations, the axle or rod upon which they rotate passed through the conical bearings and through the beveled wheel, the coiled springs, one of which is placed on each side of the wheel, the hanging frame into the lower ends of which is secured the axle, the rod or support to which is secured the hanging frame, which extends up through a suitable supporting arm or device thence through the platform or bottom of the car through a plate which is secured to the platform of the car, the upper portion of the rod being square and provided with a loop, and the coiled spring which operates around the rod between the plate and the loop designed to hold the device up so as to pass obstructions, substantially as specified.

4. In a switch-throwing device of the class described, consisting of a beveled wheel, the beveled sides of which constitute oppositely-inclined surfaces: the wheel provided with conical indentations on the central sides, the conical bearings designed to fit into these conical indentations the axle or rod which is passed through the conical bearings and through the beveled wheel upon which they rotate, the coiled springs placed upon each side and operating against the conical bearings keeping them forced into the conical indentations provided in the beveled wheel, the hanging frame having provided and secured into the lower ends the axle, the hanging frame being secured to a bar or rod which extends upward through an aperture in a suitable support or stay, thence through the platform or bottom of the car, the plate which is provided with a square aperture through which the rod or bar is passed, the upper part of the rod being square and of larger diameter than the lower part, the loop provided at the upper end of the bar, and the coiled spring which is placed around the bar and designed to operate between the plate and the loop, substantially as specified.

5. In a switch-throwing device of the class described, consisting of a beveled wheel, the beveled sides of which constitute oppositely-inclined surfaces, the central sides of the wheel being conically indented, the conical bearings designed to fit into the said conical indentations, the axle or rod upon which the wheel and the conical bearings rotate, the said rod being passed through the said conical bearings and through the beveled wheel, the coiled springs which are designed to encircle the axle, one on each side of the wheel, and to operate against the conical bearings which keeps them forced into the conical indentations provided in the beveled wheel, the guiding arrangement which is secured into the upper part of the hanging frame, the lower part of the guiding arrangement being beveled, having oppositely-inclined walls designed to fit over the beveled edge of the wheel, the hanging frame, into the lower ends of which is secured the axle, the operating bar or rod which is secured into the hanging frame at a suitable distance from the center of said frame or line of the wheel designed to produce a different point of contact which the wheel will have upon the rail by swinging the device half-way around: the lower portion of the said rod or bar being round and of smaller diameter than the square aperture in the plate, designed to be secured to the bottom of the car, through which the bar or rod passes, thus permitting the turning of the device when raised so that the round portion of the rod or bar comes into the said aperture, the support or stay arm, secured to the bottom of the car-platform provided with an aperture through which the operating bar or rod passes, the plate, which is provided with a square aperture, secured to the platform of the car through which the rod or operating-bar passes, the upper portion of said bar being square, fitting into the square aperture in said plate designed to hold the device rigidly when not to be reversed, the upper end of the rod or operating-bar provided with a cross or loop and the coiled spring placed around the operating bar or rod and designed to operate between the plate and the loop, substantially as specified.

6. In a switch-throwing device of the class described, the combination of a beveled wheel, the beveled parts of which form oppositely-inclined surfaces, the central sides of the wheel provided with conical indentations, the conical bearings designed to fit into these conical indentations, the axle or rod passed through the conical bearings and through the beveled wheel upon which they rotate, the coiled springs designed to keep the conical bearings pressed rigidly into the conical indentations, with the supporting-frame designed to support the same to the car and by means of which it is operated from the car, substantially as specified.

7. In a switch-throwing device of the class described, the combination of the device consisting of a beveled wheel, the beveled parts of which form oppositely-inclined surfaces, the wheel provided with central conical indentations on the sides, the conical bearings designed to fit into these conical indentations, the axle or rod upon which the wheel and the conical bearings rotate, the coiled springs designed to be placed around the axle upon each side of the wheel and to operate against the conical

bearings thus keeping them pressed into the conical indentations, the hanging frame into which the beveled wheel is suspended provided with the guiding arrangement designed to keep the wheel in the middle and at equal distances from the sides of the hanger, the hanger attached to an operating bar or rod at one side of the hanging frame, designed to give a different point of contact by swinging the device half-way around provisions for which are made, the rod or operating-bar passed through a suitable supporting arm or contrivance, thence through a plate which is designed to be secured on the top of the platform of the car and provided with a coiled spring designed to operate between said plate and some suitable eye or loop provided at the upper end of the operating-rod, with the guiding-plate designed to be secured to the rail, substantially as specified.

8. In a switch-throwing device of the class described, consisting of the wheel B which is beveled to a slightly-rounded edge, the beveled sides constituting oppositely-inclined surfaces, the central sides of the wheel B being conically indented, the conical bearings B' and B^2 designed to fit into the said conical indentations, the axle or rod A^6 upon which the wheel and the conical bearings rotate, the said axle A^6 being passed through the said conical bearings B' and B^2 and through the beveled wheel B, the coiled springs A^7 and A^8 designed to encircle the axle A^6 and to operate against the conical bearings B' and B^2 one on each side which keeps the bearings forced into the conical indentations provided in the beveled wheel B, the guiding device B^3 secured in the upper part of the hanging frame A^4, the said guiding device being beveled at the lower end forming oppositely-inclined walls designed to fit over the beveled edge of the wheel, the hanging frame A^4 into the lower ends of which is secured the axle A^6, the operating rod or bar A to which is secured the hanging frame by means of the nut A^5, the hanging frame secured to the said operating device at a suitable distance from the middle of said frame designed to produce a different point of contact that the edge of the wheel B will have upon the switch by the operation of swinging the device half-way around; the lower portion of the said rod or bar being round, the supporting arm or device A^3 which is provided with a circular aperture through which the lower end of the operating rod or bar is passed, the plate A^2 designed to be attached to the upper side of the car-platform which is provided with a square aperture into which the upper end of the operating rod or bar A is inserted, the said rod or bar being square and of a size designed to fit loosely into said aperture in said plate, the loop A' provided at the upper end of the operating rod or bar, the coiled spring A^9 designed to encircle the rod or bar and to operate between the plate A^2 and the said loop A', substantially as specified.

9. In a switch-throwing device of the class described, the combination of the device consisting of the beveled wheel B provided with central conical indentations on the sides, the conical bearings B' and B^2 designed to fit into said conical indentations, the axle A^6 upon which the wheel and the conical bearings rotate, the coiled springs A^7 and A^8 encircling the said axle A^6 and operating against the conical bearings B' and B^2, the hanging frame A^4 into which the axle A^6 is secured, the guiding device B^3, the supporting-arm A^3, the operating rod or arm A to which the said hanging frame A^4 is secured by means of the nut A^5, the said operating rod or bar being passed through an aperture in the said supporting arm or stay A^3, the plate A^2 provided with an aperture through which the operating rod or bar A passes, the loop A' provided at the upper end of the operating rod or bar, the coiled spring A^9 encircling the rod A and operating between the plate A^2 and the loop A', with the guiding-plate C designed to be secured to the rails of the track near the point of the switch-tongue, all as and for the uses and purposes herein fully set forth and substantially specified.

709,135. **ORE-LEACHING APPARATUS.** JAMES BROWN, Tonopah, Nev. Filed Mar. 25, 1902. Serial No. 99,954. (No model.)

Claims.—1. An apparatus for leaching ores comprising a tank adapted to contain water or other liquid, a vertical conduit or hollow column connected to and extending upwardly from the tank, and adapted to contain a leaching solution, and one or more valves in the vertical conduit or hollow column for controlling the gravitation of pulp therethrough.

2. An apparatus for leaching ores comprising a tank adapted to contain water or other liquid, a conduit connected to and extending upwardly from the tank and adapted to contain a leaching solution, one or more valves in the conduit for controlling the passage of pulp through the same, and a hood or hoods disposed above the valve or valves and adapted to spread and deflect the pulp so as to enable the same to pass the valves.

3. An apparatus for leaching ores comprising a tank adapted to contain water or other liquid, a conduit connected to and extending upwardly from the tank and adapted to contain a leaching solution, valves arranged one above the other in the conduit for controlling the passage of pulp through the same, and valve-controlling mechanism arranged when operated to simultaneously effect the closure of one valve and the opening of the other and vice versa, alternately.

4. An apparatus for leaching ores comprising a tank adapted to contain water or other liquid, a conduit connected to and extending upwardly from the tank, valves arranged one above the other in the conduit for controlling the passage of pulp through the same, electromagnets for controlling the valves, an electrogenerator, a movable commutator, and circuit-wires connecting the electromagnets, the generator and the commutator; the said commutator being adapted to change the circuits and the condition of the magnets at intervals, so as to open one valve and close the other simultaneously.

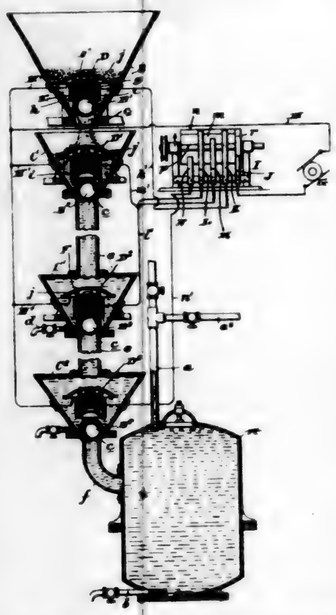

5. An apparatus for leaching ores comprising a tank adapted to contain water or other liquid, a conduit connected to and extending upwardly from the tank and having the plurality of chambers, a hopper disposed above the upper chamber, ball-valves for controlling the discharges of the chambers and hoppers, electromagnets disposed above the valves and adapted when energized to raise the same, the hoods and deflectors arranged in the chambers and hopper above the electromagnets, an electrogenerator, a movable commutator, and circuit-wires connecting the magnets, generator and commutator; the said commutator being adapted to change the circuits and the condition of the magnets, substantially as specified.

6. An apparatus for leaching ores comprising a tank adapted to contain water or other liquid, a vertical conduit or hollow column connected to and extending upwardly from the tank, and adapted to contain a leaching solution; said conduit or column being made up of chambers arranged one above the other in vertical series and tubes connecting said chambers together and to the tank, valves controlling the discharges of the chambers of the conduit, and valve-controlling mechanism arranged when operated to simultaneously effect the closure of one valve and the opening of the other and vice versa, alternately.

709,136. **ROLLER-BEARING.** CLARENCE A. CARMAN, Bayshore, N. Y., assignor of one-third to Benjamin P. Field, Babylon, N. Y. Filed Jan. 17, 1902. Serial No. 90,211. (No model.)

Claims.—1. The combination in a bearing, of the bearing-box, a removable lid thereon, an annular series of ball-races each comprising an annular flange, antifriction-balls adapted to said ball-races, holding-rings carried by the flanges for retaining said balls in position, disk rollers having curved peripheries and adapted to the bearings formed by said balls, substantially as specified.

2. The combination in a bearing, of the longitudinally-adjustable bearing-box having a series of inwardly-projecting lugs, a disk adapted to be seated on said lugs, means for securing the disk in position, an annular series of bearings arranged in longitudinally-alining pairs on the

box and disk, and reversible roller-disks having shafts or trunnions adapted to said bearings.

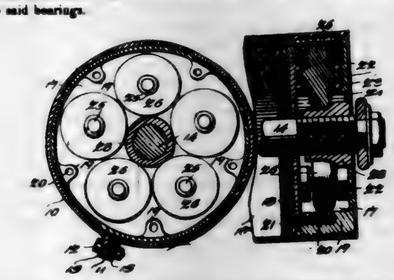

3. The combination in a bearing, of the support 10 having internal threads, a longitudinally-adjustable bearing-box 17 adapted to the threads at each end of the support, a series of inwardly-projecting lugs 19 carried by the bearing-box, a disk 18 adapted to be seated on and secured to said lugs, a series of annular flanges 22 carried by the box and disk and arranged in longitudinally alining pairs, antifriction-balls 23 adapted to ball-races formed by said flanges, rings 24 for holding said balls in position, disk rollers 26 having shafts or trunnions 25 adapted to be supported by the antifriction-balls, a shaft 14, and a sleeve 28 carried by said shaft and having bearing-surfaces 29 for contact with the disk rollers, substantially as specified.

4. The combination in a bearing, of a plurality of sets of disk rollers arranged side by side, the edges of one set overlapping the edges of the adjacent set, bearing-supports for said disk rollers, and a bearing-sleeve having separate inclined bearing-surfaces for each set of disk rollers.

709,137. **CENTRIFUGAL CHURN.** WALTER B. CHALFANT, Brasnell, Pa. Filed May 6, 1902. Serial No. 106,187. (No model.)

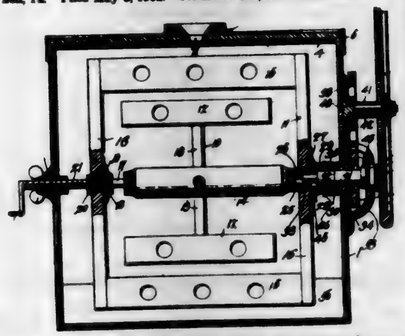

Claim.—1. A churn comprising inner and outer dashers, inner and outer shafts connected with the dashers, the inner shaft being slidable and provided with means for engaging the outer shaft, whereby it is interlocked with the latter when it is moved inward, and gearing connected with the shafts for reversely rotating the dashers, said gearing having a gear-wheel carried by the inner shaft, and adapted to be thrown out of mesh by the inward movement of the same to permit the dashers to be rotated in the same direction when the inner and outer shafts are interlocked, substantially as described.

2. A churn comprising a pair of dashers, shafts connected with the dashers, one of the shafts being slidable in the other and provided with means for interlocking it with the same, and gearing connected with the shafts for rotating the same in opposite directions, said gearing having an element carried by the slidable shaft and arranged to be thrown out of mesh by the same, whereby both dashers will be rotated in the same direction when the shafts are interlocked, substantially as described.

3. A churn comprising inner and outer dashers having sockets, the inner dasher being journaled on the outer dasher, an outer tubular shaft engaging the socket of the outer dasher, an inner shaft rotating within the outer shaft and provided at its inner end with means for engaging the socket of the inner dasher, said inner shaft being provided at its outer end with means for interlocking it with the outer shaft and being slidable to carry it into and out of such engagement, inner and outer pinions mounted on the said shafts, a gear-wheel meshing with the inner pinion, and an internal gear-wheel connected with the said gear-wheel and meshing with the outer pinion, the latter being movable with the inner shaft and adapted to be carried out of mesh by the inward movement of the same, substantially as described.

4. A churn comprising inner and outer dashers having sockets, an outer tubular shaft provided at its inner end with means for engaging the socket of the outer dasher, an inner pinion mounted on the outer shaft and having a recess or socket, an inner slidable shaft provided at its inner end with a reduced portion engaging the socket of the inner dasher, said inner shaft being also provided at its outer end with a portion for engaging the recess or socket of the inner pinion, an inner gear-wheel meshing with the inner pinion, an outer internal gear-wheel connected with the inner gear-wheel, and an outer pinion carried by the inner shaft and meshing with the internal gear-wheel and adapted to be carried out of engagement with the same by the inward movement of the said inner shaft, substantially as described.

5. A churn comprising inner and outer dashers, inner and outer shafts interlocked with the dashers, an inner pinion mounted on the outer shaft, means carried by the inner shaft for engaging the inner pinion to interlock the inner shaft with the outer shaft, an outer pinion carried by the inner shaft, an inner gear-wheel meshing with the inner pinion, an outer internal gear-wheel connected with the said gear-wheel and meshing with the outer pinion, a support receiving the outer portion of the inner shaft, and means carried by the support for engaging the inner shaft to secure the same in either of its positions, substantially as described.

6. A churn comprising inner and outer dashers, inner and outer shafts secured to the dashers, the inner shaft being extended beyond the outer shaft and provided with grooves, an inner pinion mounted on the outer shaft, means carried by the inner shaft for interlocking it with the outer shaft, gearing connecting the shafts and having an element carried by the inner shaft, and a fastening device mounted on a suitable support and arranged to engage the grooves to retain the inner shaft in either position, substantially as described.

7. A churn comprising an outer dasher provided at one side with a bearing-plate having inner and outer bearing-recesses, said outer dasher being also provided at its other side with a socket having a bearing, an inner dasher having a journal arranged in the inner recess of the bearing-plate, said inner dasher being also provided with a socket journaled in the bearing of the socket of the outer dasher, an adjusting-screw engaging the outer recess of the bearing-plate and supporting the dashers at one side of the churn, inner and outer shafts located at the outside of the churn and detachably interlocked with the sockets of the dashers, and gearing connected with the inner and outer shafts and adapted to rotate the dashers either in the same direction or in opposite directions, substantially as described.

709,138. **WATERPROOF SCARF.** WILLIAM O. CRIMMOLE, Glasgow, Scotland. Filed June 7, 1901. Serial No. 63,501. (No model.)

Claim.—1. In a waterproof scarf the combination of a shaped lower part having bent-in edges, a shaped upper part having turned-back sides, means for fastening these two parts together, a backing-piece secured to both parts, a hinged extension or flap on the upper part, a crescent-shaped piece secured to the flap and a piece of fabric for strengthening the joint of the flap, substantially as described.

2. In a waterproof scarf the combination of a shaped lower part, a shaped upper part, means for fastening these parts together, a backing-piece secured to both parts, a hinged flap on the upper part, a crescent-shaped piece secured to the flap, a hole in the backing-piece, a stud passed through the hole and a tab secured to the lower part around which an elastic loop secured to a front one be passed, substantially as described.

709,139. CANDY-COOLER. GEORGE S. COLLIS, Hartford, Conn. Filed May 19, 1902. Serial No. 107,802. (No model.)

Claim.—1. A candy-cooler having a bed with a water-receptacle and perforated abutments at intervals on the bed outside of the walls of the receptacle, a plate over the receptacle, and bolts extending through the abutments into threaded sockets in the plate, substantially as specified.

2. A candy-cooler having a bed with a water-receptacle, a plate over the receptacle, packing between the upper edge of the walls of the receptacle and the under face of the plate, and means for holding the bed and plate together, substantially as specified.

3. A candy-cooler having a bed with a water-receptacle and perforated abutments extending upwardly at intervals on the bed outside of the walls of the receptacle, a plate over the receptacle, packing between the upper edge of the walls of the receptacle and the under face of the plate, and bolts extending through the abutments into threaded sockets in the plate, substantially as specified.

4. A candy-cooler having a bed with a water-receptacle and transverse dams extending across the receptacle near each end, a plate over the receptacle, packing between the upper edge of the walls of the receptacle and the under face of the plate, and means for holding the bed and plate together, substantially as specified.

5. A candy-cooler having a bed with a water-receptacle, transverse dams extending across the water-receptacle near each end, perforated abutments extending upwardly at intervals on the bed outside of the walls of the receptacle, a groove in the upper edge of the walls of the receptacle, a packing located in said groove, a plate resting upon the packing, and bolts extending through the abutments from below the bed into threaded sockets in the under face of the plate, substantially as specified.

709,140. CALF-WEANER. DANIEL DASSETT, Lexington, Nebr. Filed June 6, 1902. Serial No. 110,491. (No model.)

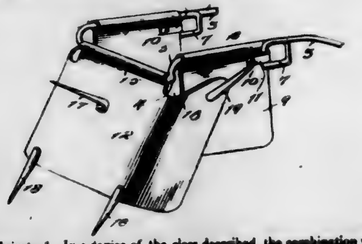

Claim.—1. In a device of the class described, the combination with the frame the sides whereof have downwardly-extending shoulders connected by a front cross-piece, of a shield hinged upon said cross-piece and side shields having rigid connection with the side pieces adjacent to the shoulders thereof, substantially as set forth.

2. In a device of the class described, the combination with the frame the sides whereof have downwardly-extending shoulders connected by a front cross-piece, and loops formed at a distance from said shoulders, of a shield hinged upon said cross-piece, and side shields mounted upon the sides of the frame adjacent to the shoulders thereof and connected rigidly with the loops, substantially as set forth.

3. In a device of the class described, the combination with the frame the sides whereof have downwardly-extending shoulders connected by a front cross-piece, and loops formed at a distance from said shoulders, of a shield hinged upon said cross-piece, and side shields mounted upon the sides of the frame between the shoulders and the loops thereof and having rigid connection with said loops by means of staples or keepers engaging the same, substantially as set forth.

4. In a device of the class described the combination with the frame the sides whereof have downwardly-extending shoulders connected by a front cross-piece, and loops formed at a distance from said shoulders, of a shield hinged upon said cross-piece and having rearwardly-bent sides formed with upwardly and rearwardly extended upper edges, and side shields mounted upon the side bars of the frame, between the shoulders and the loops thereof and having keepers or staples engaging the same to form a rigid connection therewith, the said parts being relatively so disposed that when the front shield swings forwardly the wings or extensions of the sides thereof shall partially extend over the said side shields, substantially as set forth.

5. The combination with the frame having downwardly-extending shoulders connected by a front cross-bar, and formed with approximately rectangular loops at a distance from said shoulders, of the depending shields mounted upon said frame between said shoulders and rectangular loops, and staples or keepers, inclosing the adjacent sides of said rectangular loops and shields and having rigid connection with the latter, substantially as set forth.

6. The combination with the frame having downwardly-extending shoulders connected by a front cross-bar and formed with loops at a distance from said shoulders, of the side shields mounted upon the said frame between said shoulders and loops and having rigid connection with the latter, and the front shield hinged upon the front cross-bar and having sides provided with rings or extensions overlapping said side pieces, and prongs or barbs attached to said front shield, substantially as set forth.

7. The combination with the frame having downwardly-extended shoulders connected by a front cross-bar, and side shields mounted upon said frame, adjacent to said shoulders and having rigid connection with said frame, of the front shield having an upwardly-extended central portion having hinge connection with the front cross-bar and rearwardly-extending side pieces the upper edges of which are extended upwardly and rearwardly to form wings, substantially as set forth.

709,141. AUTOMATIC CHECK-LOCK. HUGH W. DENISON, Glade, Pa., assignor of one-half to James S. Hershberger, Grantsville, Md. Filed Nov. 26, 1901. Serial No. 83,780. (No model.)

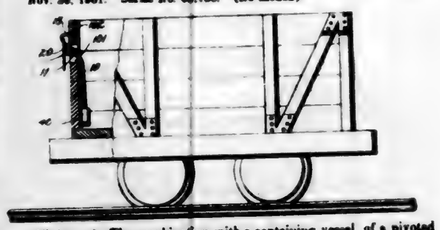

Claim.—1. The combination with a containing vessel, of a pivoted holder for supporting a check on the exterior of the vessel, said holder extending within the interior of said vessel and being held in check-locking position by engagement with the contents of the vessel.

2. The combination with a containing vessel, of a check-holder extending through a wall of the vessel, that portion of the check-holder on the exterior of the vessel forming a check-receiving hook, and that portion of the holder on the interior of the vessel being engaged by the contents of the vessel and maintained in check-locking position by the weight and pressure of such contents.

3. The combination with a containing vessel, of an automatic check-holder comprising a weighted hook pivotally connected to said vessel and adapted to be held in locking position by gravity when the vessel is level, and to move by gravity to unlocking position when the vessel is tilted.

4. A check-lock for a mine-car, comprising a pivoted check-holding device extending through the body of the car and having an exteriorly-disposed check-holding hook, the bill of which is adapted to partly enter a recess in the car-body, the inner portion of said check-lock being engaged and held in check-locking position by the contents of the car.

5. A check-lock for mine-cars, comprising a bar adapted to extend through an opening in the car-body, means disposed at the lower end of said bar adapted to be engaged by the material placed in the car, means for pivotally securing said bar to the car-body, and a check-holder attached to the outer end of said bar adapted to close when the car is in normal position, and to open when the car is tilted.

6. An automatic check-lock for mine-cars, comprising a bar having a secondary bar rigidly secured to the lower end thereof at right angles thereto, means connected with the upper end of said bar for pivotally attaching it to a car-body, and a check-holding hook arranged on the upper outer end of said bar and adapted to be forced against the side of the car by the weight and pressure of the contents of the car.

7. An automatic check-lock for mine-cars, comprising a bar bent at its upper end to form a lateral arm, a loop formed on said arm, a rod adapted to extend through said loop and pivotally secure it to the car-body, a check-holder connected with said loop and adapted to close tightly against the car-body, and means connected with said bar whereby the check-holder is normally held closed.

8. An automatic check-lock, comprising a bar bent at its upper end to form an arm, a loop on said arm, means adapted to extend through said loop and secure it to the car-body, and a transverse bar attached to the lower end of said bent bar adapted to be engaged by the material placed in the car and thereby lock the check-holder to prevent opening after loading of the car has begun.

9. An automatic check-lock for mine-cars, comprising a pivotally-mounted vertically-disposed bar bent at its upper end to form a loop, said bar being again bent outward to form a hook, and a transverse bar connected to the lower end of said vertical bar against which the material placed in the car abuts.

10. An automatic check-lock, comprising a bar adapted to be pivotally connected to a car-body, a check-holder on one end thereof, and means connected with the other end thereof for automatically closing said holder when the car is in normal position and for opening it when the car is tilted.

709,142. SPRING-WHEEL. JOSEPH DUCAIRE, Alpena, Mich. Filed May 20, 1902. Serial No. 108,566. (No model.)

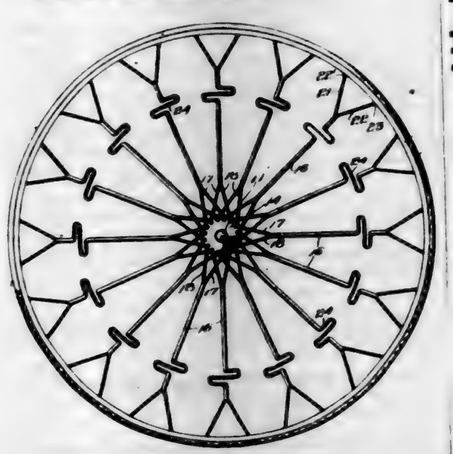

Claim.—1. In a wheel of the class described, a spoke having a bifurcated inner or hub end, each member of the fork thus formed being divided at an angle to the bifurcation.

2. In a wheel of the class described, a spoke having a bifurcated inner or hub end, each end of the fork thus formed being divided at an angle to the line of bifurcation and the outer end of said spoke being likewise forked for attachment to the rim.

3. A spoke having bifurcated outer and inner ends, the members of the fork at the inner end being subdivided at an angle to the line of bifurcation, said spoke having an intermediate spring.

4. A spoke having bifurcated outer and inner ends, the members of the fork at the inner end being subdivided at an angle to the line of bifurcation, said spoke having an intermediate S-shaped bent portion forming a spring.

5. A wheel comprising a rim, a centrally-disposed hub with flanges upon its ends having spaced perforations, spokes having forked inner ends engaging said perforations with one or more perforations between each adjacent pair of said forked ends, whereby the forks of each of the spokes engage the one or more perforations between the forks of the adjacent spokes, and with springs in said spokes between said forked ends and said rim, substantially as described.

6. A wheel comprising a rim, a centrally-disposed hub having spaced flanges on its ends, spokes having forked extremities engaging said hub and rim, and with springs in said spokes between said bracing ends, substantially as described.

7. A wheel comprising a rim, a centrally-disposed hub having spaced flanges on its ends, spokes having forked extremities engaging said hub and rim, and with the portion between the forked ends bent into S shape, whereby the spokes are bracingly connected to the hub and rim, and resilient portions provided in the spokes between said forked ends, substantially as described.

8. A wheel comprising a rim, a centrally-disposed hub formed with lateral flanges on its ends with spaced perforations therein, spokes having diverging braces engaging said flanges at opposite points and at separate points on the flanges with one or more of said perforations between each adjacent set of said braces, whereby each of said braces engages one or more of said perforations in said opposite flanges between the forked ends of the adjacent spokes, substantially as described.

9. A wheel comprising a rim having concaved outer surface, a yieldable tire supported in said concave, a hub having lateral flanges upon its ends with spaced perforations therein, spokes having forked inner ends engaging said perforations and with forked outer ends engaging said rim, and springs in said spokes between said forked ends, substantially as described.

10. In a wheel, a rim having concaved outer surface, a yieldable tire supported in said concave, a hub having lateral flanges upon its ends with spaced perforations therein, spokes having forked inner ends engaging said flanges, and with forked outer ends engaging said rim, substantially as described.

11. A wheel comprising a rim, a centrally-disposed hub having spaced lateral flanges at its ends, spokes having forked portions diverging therefrom and engaging said flanges at opposite points, and springs in said spokes between said hub-engaging forked portion and rim, substantially as described.

12. A wheel comprising a rim, a centrally-disposed hub, spaced spokes having forked inner ends engaging said hub at separated points, and springs in the spokes between said hub and said rim, substantially as described.

709,143. SOAP-HOLDER. ARTUS E. DUSEK, Crowlake, S. D., assignor of one-half to Joseph W. Dusek, Crowlake, S. D. Filed May 1, 1902. Serial No. 105,463. (No model.)

Claim.—1. A soap-holder consisting of two jaws connected together, one of said jaws being provided with a spring which exerts its energy to force its jaw toward its coacting jaw, and means for spreading said jaws apart and holding them in position to permit of the insertion of a cake of soap between said jaws, said means consisting of a lever pivoted at one end to one of the jaws and at its other end having a sliding connection with the other jaw, substantially as set forth.

2. A soap-holder consisting of two jaws the inner ends of which are parallel, arched and connected together, one of said jaws being formed with a spring-bow, clips connecting the parallel ends of the jaws and preventing spreading of the same, a fastening device adapted to be inserted between the parallel ends of the jaws, and a lever pivoted to one jaw and having an eye which embraces the other jaw and is designed to hold said jaw in spread position, substantially as set forth.

709,144. GAME APPARATUS. CLARENCE E. EGGERLY, Biddeford, Me. Filed Aug. 23, 1901. Serial No. 73,009. (No model.)
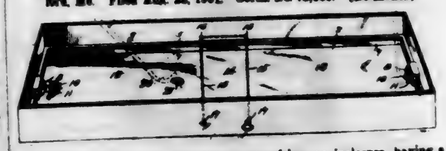
Claim.—1. A game apparatus comprising an inclosure having a pocket for the reception of a playing-piece, and a curved wire guard ar-

ranged in front of and at a distance from the mouth of the pocket and in a plane above that of the playing-piece.

2. A game apparatus comprising an inclosure having a bottom playing-field surrounded by a yielding cushion and provided with a goal or pocket at each end for the reception of a playing-piece, and a guard disposed in front of and at a distance from the mouth of each goal, said guards being arranged in a plane above that of the playing-piece.

3. A game apparatus comprising an inclosure having goals or pockets for the reception of a playing-piece, and inwardly-projecting curved guards, arranged at a distance from the mouth of each goal thereby to prevent the closing of the mouth of the goal by the impelling device.

4. A game apparatus comprising in combination, an inclosure having a goal or pocket for the reception of a playing-piece, a curved guard disposed in front of the mouth of the pocket in a plane above that of the playing-piece, and an impelling device adapted to engage in front of said guard, said impelling device being of a width less than that of the goal or pocket.

709,145. **GUARD DEVICE FOR COUPLED CARS.** JACOB REESHAFF, Frankfort-on-the-Main, Germany. Filed Jan. 14, 1902. Serial No. 89,763. (No model.)

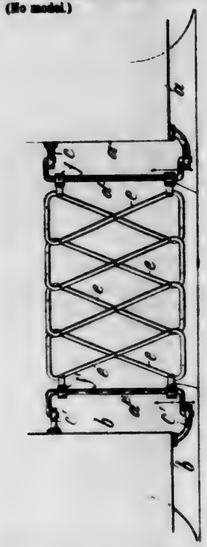

Claim.—1. A guard for the space between two adjoining cars, comprising a lazy-tongs, having its members bent into Z shape, and posts to which the opposite ends of the lazy-tongs are connected, and supporting devices on the ends of cars to which said posts are detachably secured, substantially as described.

2. The combination with eyes attached to ends of adjoining cars, the removable posts having their ends bent at right angles and then down to engage the eyes, and a lazy-tongs connected to and between said posts, for the purpose and substantially as described.

709,146. **STRAIGHTWAY VALVE.** EDWARD M. ERDMAN, Pottsville, Pa., assignor of one-half to William J. Matz, Pottsville, Pa. Filed Nov. 21, 1901. Serial No. 83,130. (No model.)

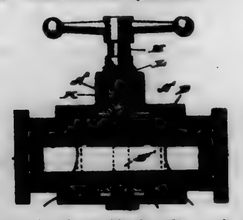

Claim.—In a valve, the combination with a casing having a cylindrical transverse chamber, of a valve comprising a cylindrical plug fitting said chamber and of appreciably less height than the chamber, said valve having a transverse passage and being cut away on two opposite sides, the cut-away portions having end shoulders parallel with the longitudinal axis of the valve and a central groove whose inner face tapers inwardly from top to bottom, a block fitting each cut-away portion of the plug and having parallel ends on which said shouldered ends of the valve slide, and a central rib fitting said groove and having a corresponding taper, a central stem integral with the valve and having a screw-thread mating with a similar thread in the casing, and a central stud on the lower end of the valve rotatably received in a recess in said casing to guide the valve, said blocks fitting the inside of the chamber and extending from top to bottom thereof and held against up and down movement, and said valve having a limited endwise play in said blocks and abutting against the top or bottom of the casing at each end of its rotary movement in opening and closing.

709,147. **COTTON-CHOPPER.** LOUIS P. FAY, Denison, Tex. Filed July 1, 1902. Serial No. 113,945. (No model.)

Claim.—1. In a cotton-chopper, a blade consisting of a central longitudinal and two outer diverging wings, said central wing being extended upwardly and forwardly and partially clamped around the curved rear portion of a draft-rod, substantially as set forth.

2. In a cotton-chopper, a blade consisting of a central longitudinal and two outer diverging wings, said blade being formed with a central longitudinal ridge and said central wing being extended upwardly and forwardly and partially clamped around the curved rear portion of a draft-rod, said curved portion being extended under the ridged central portion of the blade, substantially as set forth.

3. In a cotton-chopper, a blade having rearwardly-diverging wings provided with upturned rear ends forming brackets, and blades secured to said brackets and having cutting edges extending beyond the outer edges of the rearwardly-diverging wings, substantially as set forth.

4. In a cotton-chopper, a blade having rearwardly-diverging wings provided with upturned rear ends forming brackets, and blades secured to said brackets, converging rearwardly, and provided at their front ends with cutting edges extending beyond the outer edges of the rearwardly-diverging wings, substantially as set forth.

709,148. **SASH-FASTENER.** JAMES E GIBBS, Staunton, Va., assignor of one-half to Clarence Preston Herman, Staunton, Va. Filed May 31, 1902. Serial No. 108,681. (No model.)

Claim.—The sash-fastener herein shown and described, consisting of the casing adapted to be secured to the sash, the vertical guideway in said casing, the toothed wheel mounted in the casing under the said guideway, the rack-bar to be engaged by said toothed wheel, the bolt arranged in said guideway for engaging the toothed wheel, a finger-piece on the bolt a finger-piece on the casing, one of said finger-pieces being pivoted and serving as a latch to hold the bolt when in engagement with said toothed wheel

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709,149. **DRIVING-CHAIN.** ADOLPHE H. GRAFFIGNY and EMANUEL J. BOUVIER, Paris, France. Filed Dec. 16, 1901. Serial No. 86,100. (No model.)

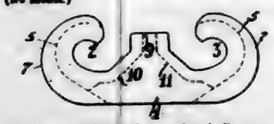

Claim.—1. In a detachable chain, a female link comprising a body portion 1, bifurcated hooked ends 4 and 5 forming transverse recesses 2 and 3, inclined walls 10 and 11 formed in the body portion 1, and guide-flanges 7 formed on the outer faces of the hooks, in combination with a male link comprising a body portion 12, reduced ends 12′ and 12″ adapted to operate between the bifurcated hooked ends 4 and 5 of the female link, pins 13 and 14 formed on said reduced ends and adapted to operate in the transverse recesses 2 and 3 of the female link, and curved shoulders 15 and 16 adapted to coact with the outer ends of the hooks 4 and 5 and to be guided by the flanges 7.

2. In a detachable chain, a female link comprising a body portion 1, bifurcated hooks 4 and 5 on each end thereof, forming between them slots, the inner ends of which are closed by the inclined walls 10 and 11 and said hooked ends forming recesses 2 and 3, in combination with a male link comprising a body portion 12, reduced ends 12′ and 12″ to operate between the hooks 4 and 5, pins 13 and 14 formed on the said reduced ends and adapted to operate in the recesses 2 and 3 of the female link, shoulders 15 and 16 to coact with the outer ends of the hooks 4 and 5, and the portions 17 and 18 of the said shoulders cut away to prevent contact of the said shoulders with the inclined walls 10 and 11 when the chain is used on wheels of relatively small diameter.

3. In a detachable chain, a female link comprising a body portion 1 provided with bifurcated hooked ends, said bifurcations forming slots, inclined walls 10 and 11 closing the inner ends of the said slots, and recesses 2 and 3 formed by the hooked ends, in combination with a male link comprising a body portion 12, reduced ends 12′ and 12″ adapted to operate between the bifurcated hooked ends of the female link, pins 13 and 14 formed on the said reduced ends and adapted to operate in the recesses 2 and 3, and shoulders 15 and 16 arranged at each side of the male link, the said shoulders having curvatures corresponding to those of the hooks of the female link for the purpose of preventing the insertion or removal of the pins 13 and 14 into and from the recesses 2 and 3 except at an angle abnormal to the working angle of the links.

709,150. **EXTENSIBLE PAN.** JESSE T. HALLS, Dumfries, Va. Filed Jan. 16, 1902. Serial No. 89,986. (No model.)

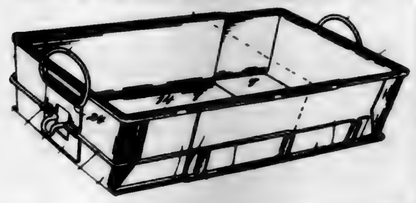

Claim.—1. An extensible pan comprising members telescopically connected, a latch carried by one of the members, and a plurality of sockets carried by the other member for engagement interchangeably by the latch to hold the members at different points of their telescopic adjustment.

2. An extension bread-pan comprising members telescopically connected, one of said members having sockets at its sides, and a U-shaped latch pivoted to the other member and having its ends bent downwardly to engage the sockets interchangeably.

3. An extensible pan comprising members telescopically connected, one of said members having sockets at its sides, and a U-shaped latch having its ends bent downwardly to engage the sockets interchangeably, said latch having its web portion pivotally connected to the second member and having the central portion of the web bent outwardly to form a handle for manipulating the latch.

4. An extensible pan comprising separate members each having base and upper edge flanges, the flanges of one member being slidably engaged with the flanges of the other member, a plurality of sockets at each side of one member, and a U-shaped latch having its web pivotally connected with the other member and having its ends bent to form hooks for engagement with the sockets of the other member, the web of the latch being bent outwardly to form a handle for manipulating the latch.

709,151. **BLUE SULFUR DYE AND PROCESS OF MAKING SAME.** RICHARD HERZ, Frankfort-on-the-Main, Germany, assignor to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed Feb. 3, 1902. Serial No. 92,430. (No specimens.)

Claim.—1. The process of producing blue cotton dyestuffs by heating para amidotolyl para oxyphenylamin with polysulfids substantially as described.

2. As a new article of manufacture the blue coloring-matter resulting from the reaction of polysulfids on para amidotolyl para oxyphenylamin which is a dark-blue powder hardly soluble in pure water but easily soluble in the presence of caustic alkalies or sulfids with a reddish-purple color, soluble in concentrated sulfuric acid with a dark-blue color and which dyes unmordanted cotton in a bath containing alkaline sulfids blue shades fast to acids, milling and light substantially as described.

709,152. **TYPE-WRITER.** WILFRED HEBY, Bothwell, Scotland. Filed June 10, 1901. Serial No. 63,929. (No model.)

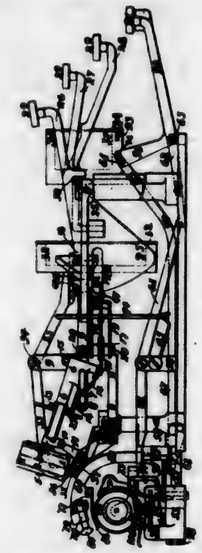

Claim.—1. A type-writer having a type-wheel, a shaft carrying it, and a bracket-piece carrying the shaft, guides at one end of the bracket in which each end of the bracket is adapted to slide, and a bell-crank connected to the other end of the bracket, adapted to move each end through the radius of movement of the bell-crank, whereby the type-wheel is caused to advance to print a character upon the partial revolution of the bell-crank, substantially as described.

2. A type-writer having a type-wheel, a rotatable shaft therefor, a bell-crank having a shaft at right angles to the type-wheel shaft and connected to and adapted to move said type-wheel and shaft at its outer end, in the radial path of movement of the bell-crank and guides adapted to guide the inner end of said shaft and so determine the printing position of the type-wheel, substantially as described.

3. In combination with the printing mechanism of a type-writer, a pair of stop-levers on a common center, means to move them in opposite directions, in combination with character-determining stops, said stop-levers adapted to bear on the opposite sides of the character-determining stops and connections between the levers whereby one lever prevents the rebound of the other, substantially as described.

4. In combination with the printing mechanism of a type-writer, a pair of stop-levers adapted to move in opposite directions, in combination with character-determining stops, said stop-levers adapted to bear on the opposite sides of the character-determining stops and connections between the levers whereby one lever prevents the rebound of the other, substantially as described.

5. A type-writer having a pair of stop-levers, adapted to move in opposite directions, and character-determining stops on the opposite sides of which the levers are adapted to bear, in combination with arms controlled by the stop-levers, a rotatable type-wheel and means between the arms and the type-wheel to rotate the wheel, substantially as described.

6. A type-writer having a pair of stop-levers, adapted to move in opposite directions and character-determining stops on the opposite sides of which the levers are adapted to bear, in combination with arms operated by the stop-levers, a bevel-sector on the arms, a rotatable type-wheel and shaft and a bevel-wheel on the shaft engaging the bevel-sector, as described.

7. A type-writer having a pair of stop-levers adapted to move in opposite directions, and character-determining stops, arms connected to the levers, in combination with a bevel-sector on the arms, a type-wheel and shaft, a bracket therefor, guides for the bracket at one end and a bell-crank at the other, and a bevel-wheel on the shaft engaging with the bevel-sector, all substantially as described.

8. A type-writer having a bracket-piece, a rotatable type-wheel and shaft, a bevel-wheel on the shaft, a bevel-sector, all carried by the bracket-piece, means to advance the bracket-piece, and stop-levers to control it, and character-determining stops whereby the type-wheel is rotated to the

predetermined character, upon the advance of the bracket-piece, in combination with other means for holding the rotated type-wheel from turning upon the further advance of the type-wheel to impress the predetermined character, substantially as described.

9. A type-writer having a type-wheel, a shaft and a bevel-wheel and a bracket in which they are mounted, said bracket having guides at one end in which it may be moved more or less horizontally and a bell-crank at the other end, in combination with character-determining stops, stop-levers and a bevel-sector controlled thereby and engaging the said bevel-wheel, substantially as described.

10. A type-writer having a type-wheel and a shaft, a bracket-piece, guides in which it may be moved at one end, and a bell-crank lever at the other end, a bevel-wheel on the shaft in combination with key-levers, stop-levers and stops, a bevel-sector connected with said levers and adapted to operate the bevel-wheel, said stop-levers being adapted to be arrested by the inner end of the key-levers upon the depression of the keys, substantially as described.

11. A type-writer having a type wheel and a shaft, a bracket-piece, guides in which it may be moved at one end, and a bell-crank at the other end, a bevel-wheel on the shaft, in combination with key-levers, stop-levers and stops, a bevel-sector connected with said levers and adapted to operate the bevel-wheel, said stop-levers being adapted to be arrested by the inner end of the key-levers upon the depression of the keys, said inner ends of the key-levers being of varying lengths, a driving-lever, a number of curved bars thereon and connected to said bell-crank, the varying inner ends of the key-levers engaging the different bars, substantially as described.

12. A type-writer having a type-wheel mechanism, a common driving-lever, key-levers, having a common fulcrum, said key-levers having different lengths of ends, and parts so placed on the common lever as to coöperate with such varying ends to accomplish the same angular movement of the common lever whether the key-levers struck have long or short ends, substantially as described.

13. A type-writer having type-wheel mechanism, a common driving-lever, key-levers having a common fulcrum, said key-levers having different lengths of ends, and parts on the common lever so displaced with reference to such varying ends as to accomplish the same angular movement of the common lever whether the key-levers struck have long ends or short ends, said parts on the common lever and said common fulcrum being arranged in curves of suitable radii, substantially as described.

14. A type-writer having a common driving-lever, a type-wheel and rotating mechanism therefor, in combination with a bell-crank to move the type-wheel, having jaws, a pin on the driving-lever engaging the jaws, and key-levers, each one of which is adapted to operate the common driving-lever, substantially as described.

15. A type-writer having stop-levers, a type-wheel and rotating mechanism, and means for forwardly moving the type-wheel, adjustable pins adapted to engage the ends of the stop-levers upon the return movement of the type-wheel to restore the type-wheel to its normal position, substantially as described.

16. A type-writer having stop-levers adapted to be arrested by key-controlled projections, said levers having wings adapted to prevent the raising of a second key-lever projection in the wake of the stop-levers, substantially as described.

17. A type-writer having a type-wheel, an inking-roller, a lever therefor having its axis inclined to the vertical and at one side of the type-wheel, whereby the roller is adapted to be pushed aside by the descending type-wheel, a spring to normally hold the lever in position for inking and a pointer-arm on the lever, substantially as described.

709,158. GATE. JESSE J. HUDDING, Ferndale, Cal. Filed May 26, 1902. Serial No. 109,070. (No model.)

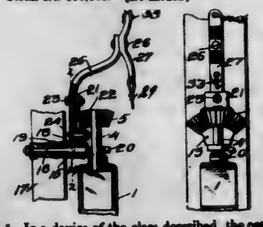

Claim.—1. In a device of the class described, the combination with a swinging gate, and a hinge-post, of a cap mounted on the gate and provided with a vertical shaft forming a pintle, a bolt secured to the hinge-post and provided adjacent to the same with a bearing portion and having an eye receiving the said shaft, a pinion mounted on the upper end of the shaft, a plate provided with an eye arranged on the bearing portion of the bolt, said plate being also provided with a curved series of teeth meshing with the said pinion, an arm extending from the plate, and a pivoted latch-operating lever mounted on the arm, substantially as described.

2. In a device of the class described, the combination with a swinging gate and a hinge-post, of a cap mounted on the gate and provided with a short vertical shaft, a bolt extending from the hinge-post and provided with a bearing portion and having an eye located beyond the bearing portion and receiving the vertical shaft, a bevel-pinion mounted on the shaft, a sector-plate provided at its lower end with an eye to receive the bearing portion of the bolt and having an extension at the top, said sector-plate being also provided with an inclined upper portion having a curved series of teeth meshing with the pinion and the lower portion of the sector-plate being provided with a rearwardly-extending lug, an arm secured to the lug and to the extension and extending forward and upward over the pinion, and a latch-lever fulcrumed on the upper end of the arm, substantially as described.

3. In a device of the class described, the combination with a hinge-post, and a gate, of a bearing-bracket supporting the bottom of the gate, a cap secured to the gate at the top thereof and having a vertical shaft, a bevel-pinion secured to the upper end of the vertical shaft, a horizontal bolt mounted on the post and having an eye receiving the shaft, said bolt being also provided between the eye and the post with a bearing portion, a sector-plate provided at its lower end with an eye to receive the bearing portion of the bolt and having an inclined portion provided with teeth meshing with the pinion, said plate being extended at the top and provided at the rear with vertical flanges and having a lug at the lower portions thereof, an arm secured to the plate and arranged between the flanges thereof, a latch mounted on the gate, a latch-lever fulcrumed on the arm and connected with the latch, and flexible connections extending from the latch-lever, substantially as described.

709,154. KNITTING-MACHINE. HENRY JARMEN, Reading, Pa., assignor to Textile Machine Works, Incorporated, Reading, Pa. Filed Feb. 20, 1902. Serial No. 94,578. (No model.)

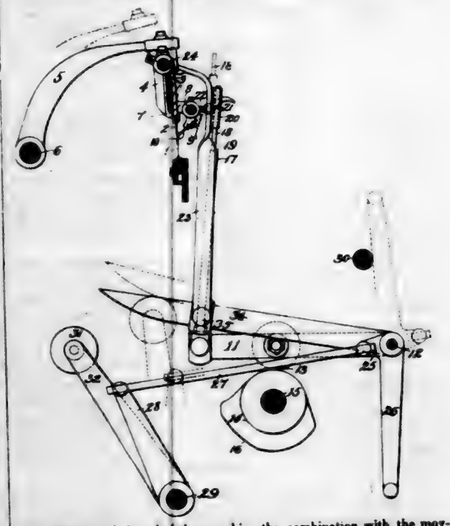

Claim.—1. In a knitting-machine the combination with the movable narrowing mechanism and the lever carried thereby, of the swinging arm arranged to engage and raise said lever and narrowing mechanism, and the hand-lever having an arm connected to said swinging arm and a limited movement arranged to carry the point of connection slightly over the dead-center to lock said swinging arm in its elevating position, substantially as set forth.

2. In a knitting-machine the combination with the movable narrowing mechanism comprising adjustable points and pivoted guards arranged to contact with said points, of an independent hand-lever mechanism for elevating said narrowing mechanism and an automatic operating mechanism for said guards comprising a device connected to said pivoted guards, an operating-rod therefor having a limited sliding movement in said device, and a lever-and-cam connection to said rod adapted to intermittently raise said device to withdraw the guards from the narrowing-points, substantially as set forth.

3. In a knitting-machine the combination with the movable narrowing mechanism comprising adjustable narrowing-points and pivoted guards arranged to contact with said points, of an automatic operating mechanism for said guards comprising a device pivotally connected to said pivoted guards, a rod having a limited sliding movement in said device, and a lever-and-cam connection to said rod adapted to intermittently raise said device and thereby withdraw the guards from the narrowing-points substantially as set forth.

709,155. GAME-BOARD. JOHN E. JOHNSTON, Trimble, Ohio. Filed Dec. 21, 1901. Serial No. 86,802. (No model.)

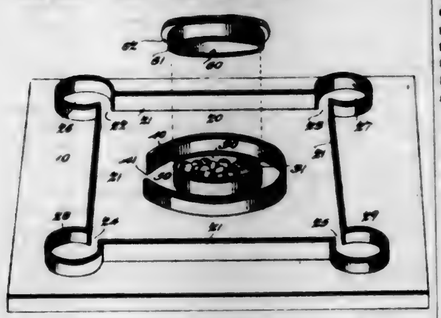

Claim.—A game-board comprising a horizontal base, side and end strips secured to the upper face of the base and forming an approximately rectangular inclosure or field and spaced from the edges of the base, said strips being also spaced apart at their ends to form corner-openings, the exterior curved strips mounted on the base beyond the said field or inclosure and connecting the ends of the side and end strips and forming circular corner-pens, and the concentric pens arranged at the center of the field and consisting of strips secured to the base and having their ends spaced apart to form openings, substantially as described.

709,156. ELECTRIC-RAILROAD SWITCH. JAMES A. JOYCE, Cleveland, Ohio. Filed Dec. 17, 1901. Serial No. 86,237. (No model.)

Claim.—1. In a switch with a movable shaft having a switch-point on the upper side, an armature fastened to the shaft having extended pole-pieces encircling the field-coil and acting in conjunction with the same to electromagnetically move the shaft and switch-point, a frame with grooves in the upper side, a drainage-hole under the shaft and switch-point, a water-tight compartment having a U-shaped support for field-coils and adapted to support the shaft and cover the electric mechanism, and an insulated section of trolley-wire from which the current passes to the armature and field-coils, when a car passes over the said insulated section of trolley-wire to open or close the switch, substantially as shown and described.

2. In a switch with a movable shaft having a switch-point on the upper side, an armature fastened to the said shaft, acting in conjunction with a field-coil to electromagnetically move the same and a frame adapted to support and to cover the shaft and the electrical mechanism, substantially as shown and described.

3. In a switch with a movable shaft having a switch-point on the upper side, an armature fastened to the shaft, having extended pole-pieces encircling the field-coil and acting in conjunction with the same to electromagnetically move the said shaft and switch-point, and a frame with grooves in the upper side, a longitudinal slot in which the switch-point works, a drainage-hole under said shaft, and a water tight compartment to support and cover the shaft and the electric mechanism, substantially as shown and described.

4. In a switch with a movable shaft having a switch-point on the upper side, an armature fastened to the shaft having extended pole-pieces encircling the field-coil and acting in conjunction with the same to electromagnetically move the shaft and switch-point, a frame with grooves in the upper side, a longitudinal slot in which the switch-point works, a drainage-hole under the said shaft and switch-point, a water-tight compartment to support the shaft and cover the electric mechanism and an insulated rail from which the current passes to the armature and field when a car passes over the said insulated rail which will cause the switch to open or close as desired, substantially as shown and described.

5. In a switch with a movable shaft having a switch-point on the upper side, an armature fastened to the shaft having extended pole-pieces encircling the field-coil and acting in conjunction with the same to electromagnetically move the shaft and switch-point, a frame with grooves in the upper side, a longitudinal slot in which the switch-point works, a drainage-hole under the said shaft and switch-point, a water-tight compartment having a U-shaped support for field-coils and adapted to support the shaft and cover the electric mechanism, and insulated rails from which the current passes to the armature and field-coil, when a car passes over the said insulated rails to open or close the switch, substantially as shown and described.

709,157. JAR FOR STORAGE BATTERIES. PATRICK KENNEDY, Brooklyn, N. Y. Filed Jan. 6, 1902. Serial No. 88,566. (No model.)

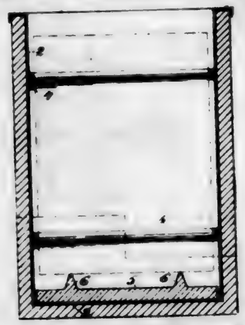

Claim.—1. A jar for a storage battery having side guards of soft cushion-like material to serve as buffers to keep the plates or elements out of contact with sides of the receptacle.

2. A jar for a storage battery having a soft-rubber lining and having side guards of soft cushion-like material to serve as buffers to keep the plates or elements out of contact with said lining.

3. A jar for a storage battery having an integral, soft-rubber lining provided with side guards of the same material projecting from its inner surface, substantially as and for the purpose set forth.

4. A jar for a storage battery comprising an outer wooden receptacle, and an integral lining therein of soft rubber, said rubber lining having a top flange which extends over the top of said receptacle and guards 4 formed on its inner face at the sides, substantially as and for the purpose set forth.

5. A jar for a storage battery having a rubber lining, side guards of yielding material, and a ribbed plate of acid-resisting material set loosely in the bottom of the jar and fitting into the latter, substantially as set forth.

709,158. FACSIMILE-TELEGRAPH. EDWARD R. KLEINSCHMIDT, New York, N. Y., assignor to Frederick Kleinschmidt, New York, N. Y. Filed Nov. 6, 1899. Serial No. 736,288. (No model.)

Claim.—1. In a facsimile-telegraph, a message-paper-feed mechanism embodying a flat table or platen over which the message-paper is adapted to pass in a continuous movement, said message-paper-feed mechanism being insulated from the remainder of the machine, a constantly-rotating stylus-carrier having styluses bearing with relation to said table or platen and maintained in continuous contact with the surface of the message-paper during its passage over the platen, and a contact device mounted in relation to the said platen and adapted to bear upon the surface of the message-paper.

2. In a facsimile-telegraph, a message-paper-feed mechanism, embodying a flat table or platen over which the message-paper is adapted to pass in a continuous movement, rollers mounted with relation to the said platen, means whereby the said rollers may govern the movement of the said paper, a constantly-rotating stylus-carrier provided with styluses bearing with relation to the said table or platen, means for main-

taining the styluses normally in contact with the message-paper during its passage over the platen, means for elevating the said styluses out of contact with the message-paper, a contact device mounted with relation to the table or platen normally connecting with the surface of the message-paper, and means for turning the rollers of the message-paper-feed mechanism independently of the operation of the telegraph-machine, whereby when the styluses are raised out of contact therewith the message-paper may be manually adjusted.

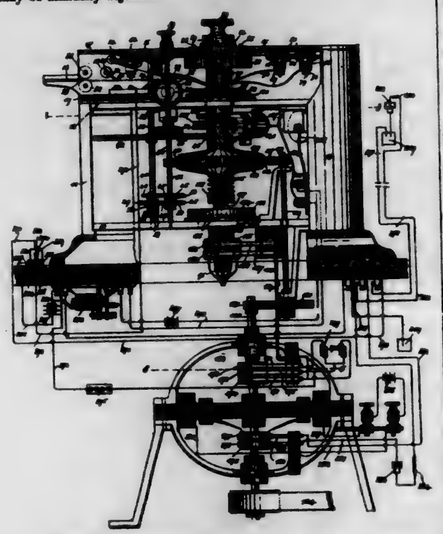

3. In a facsimile-telegraph, a message-paper-feed mechanism, transmitting devices comprised in an electric circuit and adapted to contact with the message-paper during the movement thereof through said feed mechanism, means for continuously operating said feed mechanism in unison with said transmitting devices, means for raising the transmitting devices out of contact with the message-paper, means for operating the feed-paper mechanism independently of movement of the transmitting devices and a contact device mounted in normal contact with the message-paper and having a vertically-movable relation thereto.

4. In a facsimile-telegraph, the combination, with a message-paper mechanism embodying a table or platen over which the message-paper sheet or blank is adapted to pass, of a plurality of continuously-rotating stylus devices comprised in an electric circuit and arranged in a set or series and adapted to have an arc or line of travel across said message-paper, the relative arrangement being such that a plurality of said stylus devices will simultaneously contact with said message-paper; and means for commutating the contacting stylus devices to the line separately and successively.

5. In a facsimile-telegraph, means for advancing the message-paper sheet or blank in a continuous movement and a rotary plate or frame carrying a plurality of constantly-rotating transmitting stylus devices comprised in an electric circuit and equidistantly arranged in a circular series, the relative arrangement being such that two or more of said stylus devices will simultaneously be in contact with the message-paper sheet or blank during the transmitting operation; and means for commutating the contacting stylus devices to the line separately and successively.

6. In a facsimile-telegraph, a series of styluses comprised in an electric circuit and divided into pairs or sets, the styluses of said respective pairs or sets being adapted to conjointly operate, means for conjointly operating the stylus devices of said respective pairs or sets, and means for commutating said stylus devices of the respective pairs or sets to the line-circuit during their conjoint operative movement.

7. In a facsimile-telegraph, a stylus-carrier, comprising a constantly-rotating plate, a plurality of stylus devices mounted thereon, each of which is comprised of a frame having an upper surface upon a plane substantially parallel to the plane of the carrier, and a stylus centrally mounted therein, a fastening device connecting the center of the frame to the stylus carrier or plate and capable of adjustment, whereby to govern the distance of the stylus device from the carrier, and a plurality of separate adjusting devices mounted in said carrier or plate and bearing upon the upper surface of the stylus device or frame at different points.

8. In a facsimile-telegraph, a stylus-carrier and one or more stylus devices mounted thereon, an insulating head or body upon the top of said stylus devices, an adjustable fastening device connecting the said insulating-head centrally to the stylus-carrier, and a plurality of separate adjusting devices mounted in the stylus-carrier and bearing upon the upper surface of said insulating-head at different points.

9. In a facsimile-telegraph, a stylus-carrier comprising a constantly-rotating plate, a plurality of stylus devices connected therewith, each of which is comprised of an upper body or head centrally apertured, means for adjustably connecting said head with the stylus-carrier to regulate both its distance from and its horizontal angle to said stylus-carrier, a cylinder adjustably mounted centrally in said head, means for retaining the same in its adjusted position, and a stylus yieldingly mounted in said cylinder.

10. In a facsimile-telegraph, the combination with a constantly-rotating stylus-carrier having a plurality of stylus devices connected therewith, and a message-paper-feed mechanism operatively connected with the said stylus-carrier, whereby they move in unison; of means for raising and lowering said stylus-carrier and means for adjusting the stylus devices both vertically and laterally with respect to said stylus-carrier and the message-paper.

11. In a facsimile-telegraph, a stylus device comprised in an electric circuit and embodying a cylinder or casing carrying a projecting stylus-rod and adjustably connected with said casing; and a circuit-wire-clamping device adjustably mounted relatively to the said cylinder or casing and adapted to conjointly hold the said cylinder or casing in its adjusted position and the said circuit-wire in connection therewith.

12. In a facsimile-telegraph, a stylus device comprised in an electric circuit and embodying a base or body by which it is mounted in position, a cylinder or tubular casing adjustably connected with said base and carrying a projecting stylus-rod, a set-out operating upon said casing and binding against said base, and an auxiliary set-out operating upon said casing and between which and the main set the circuit-wire is adapted to be bound.

13. In a facsimile-telegraph, a stylus-carrier adjustable in a longitudinal plane with relation to the plane of operative projection of the stylus device, and a stylus device comprised in an electric circuit and carried by said stylus-carrier and independently adjustable with relation thereto both in a longitudinal and lateral plane with relation to its plane of operative projection.

14. In a facsimile-telegraph, a stylus-carrier, a stylus device comprised in an electric circuit and embodying a disk or base, a device centrally connecting said base with the stylus-carrier, and set-screws operating between said carrier and base at points outside said central connection.

15. In a facsimile-telegraph, a constantly-rotating stylus-carrier carrying stylus devices, a plurality of which are constantly in contact with the message-paper, a rotary shaft connected centrally with said stylus-carrier, and exteriorly carrying an electric commutator divided into a plurality of segments arranged to severally connect with the styluses, whereby to commutate the contacting styluses to the circuit-line and circuit connections from the said commutator interiorly of the said shaft to the said stylus devices.

16. In a facsimile-telegraph, stylus-operating mechanism, and means actuated by the actual writing impulses over the transmitting or writing circuit for stopping and releasing said mechanism.

17. In a facsimile-telegraph, a stylus-operating mechanism, and means actuated by the actual writing impulses over the transmitting or writing circuit for starting said machine and for stopping said mechanism by the absence of such writing impulses.

18. In a facsimile-telegraph, the combination with the mechanism for operating the styluses, of a unison-magnet comprised in an electric circuit, and having its armature adapted to operatively connect with said mechanism to stop or release the same; and means, for actuating said unison-magnet, whereby the actual writing impulses sent over the line will start or release the mechanism and the absence of said impulses will operate to cause said magnet to stop the machine.

19. In a facsimile-telegraph, a plurality of styluses, mechanism for operating the styluses, an electromagnet, devices operated by the armature of the latter, guide devices comprised in said stylus-operating mechanism and adapted to guide said armature-operated devices in their operative contact and stop devices comprised in the stylus-operating mechanism and relatively arranged at the terminal of said guide devices and adapted to be engaged by said armature-operated devices.

20. In a facsimile-telegraph, a plurality of styluses, a rotary shaft for operating the styluses, an electromagnet mounted in adjacent relation to the said shaft, and an arm pivotally mounted upon the armature of said magnet and adapted to engage said shaft to stop the same.

21. In a facsimile-telegraph, a plurality of styluses, a rotary shaft for operating the styluses, spiral guide devices provided upon said shaft, an electromagnet mounted in adjacent relation to the said shaft, and an arm pivotally connected to the armature of said magnet in a plane at right angles to the vibratory plane of action thereof, said arm being adapted to engage the guide devices upon the shaft to stop the same.

22. In a facsimile-telegraph, a plurality of styluses, mechanism for operating the same, stop devices comprised in said mechanism, means for engaging said stop devices, means actuated by the actual writing impulses sent over the line, whereby to start or release the mechanism by said writing impulses and to stop the mechanism by the absence of said writing impulses, and means for prolonging the actual engagement of the operating means with the stop devices after the former is thrown into operative position, whereby the mechanism will not stop until after a continuous predetermined absence of writing impulses.

23. In a facsimile-telegraph, a plurality of styluses, mechanism for operating the styluses, stop devices comprised in said mechanism, vibratory operating devices adapted to engage said stop devices, and intermediate means arranged to be first engaged by said vibratory devices and adapted to guide the same to said stop devices in a prolonged period of movement.

24. In a facsimile-telegraph, a plurality of styluses, the combination of mechanism for operating the styluses, an electromagnet and its vibrating armature, means actuated by said armature for engaging and stopping the stylus-operating mechanism, and means for retarding the action of said mechanism in effecting said engagement.

25. In a facsimile-telegraph, a plurality of styluses, the combination of mechanism for operating the styluses, an electromagnet and its vibratory armature, mechanism operated by said armature and adapted to engage the stylus-operating mechanism to stop the same, and independent means for quickening or accelerating the disengaging movement of said stop mechanism.

26. In a facsimile-telegraph, a plurality of styluses, mechanism for operating the styluses, electrically-actuated mechanism comprised in an individual circuit and arranged in operative relation to said stylus-operating mechanism to stop the same, means for prolonging the action of said stop mechanism after it is thrown into operative position, and electrically-actuated mechanism comprised in the main transmitting or writing circuit and operating to open and close said individual circuit.

27. In a facsimile-telegraph, a plurality of styluses, mechanism for operating the styluses, an electromagnet comprised in an individual circuit and having its armature in connection with mechanism adapted to be brought into operative position to stop said stylus-operating mechanism, means for prolonging the action of said stop mechanism after it has been thrown into operative position by the vibratory movement of the armature, and a relay comprised in the main transmitting or writing circuit, and arranged in operative relation to said individual circuit to open and close the same.

28. In a facsimile-telegraph, a set of stylus devices arranged in a successive series, a commutator provided with two separate sets of individual segments, and circuit connections between said stylus devices and said segments, said connections extending alternately from the successive stylus devices to the different sets of segments and successively from the alternate stylus devices to the successive segments of the respective sets.

29. In a facsimile-telegraph, a set of stylus devices arranged in series, means whereby two different styluses will always be in operative contact with the message-paper, a commutator having separate sets of segments, said sets being made up of a series of separate segments and individual circuit connections extending from the respective stylus devices to such respective segments in such manner that each of the successively-contacting styluses will be connected to the same set of segments as the second stylus following it.

30. In a facsimile-telegraph, a set of constantly-rotating stylus devices, means for bringing a plurality of said stylus devices simultaneously in contact with the message-paper, and means for successively and individually circuiting said plurality of styluses.

31. In a facsimile-telegraph, a set of constantly-rotating electrically-actuated styluses, means for simultaneously bringing a plurality of said stylus devices into contact with the message-paper, and means for separately and individually actuating said plurality of stylus devices.

32. In a facsimile-telegraph, a plurality of stylus devices, the "selecting-commutator" device comprising separate sets of segments, the segments of each set being alternatively arranged and the segments of the different sets being in alternative relative position, and means for connecting said respective sets of segments with the individual stylus devices.

33. In a facsimile-telegraph, a plurality of stylus devices, the stylus-commutator divided into separate sets of individual segments which are individually connected to said stylus devices, in combination with the "selecting-commutator" divided into separate sets of alternatively-arranged segments with the segments of its different sets alternatively arranged in relative position, and the circuit connections between said commutators, for the purpose set forth.

34. In a facsimile-telegraph, a plurality of stylus devices, means for bringing a plurality of stylus devices simultaneously in contact with the message-paper, and means for alternating the action of said plurality of styluses while they are in said simultaneous contact.

35. In a facsimile-telegraph, a recording message-paper-feed mechanism, comprising a platen, a plurality of rollers mounted above said platen, a continuous carbon-ribbon mounted upon the said rollers and traversing the platen, a message-paper holder, guide devices for carrying the said paper over the platen in contact with the carbon-ribbon, means for adjusting the platen, means for regulating the tension of the carbon-ribbon, and means for tightening the guide devices upon the message-paper.

36. In a facsimile-telegraph, the combination, with the main frame of the machine having an opening, and stylus mechanism operating within said frame, of a carbon-ribbon-carrying frame mounted upon said main frame and embodying a table or platen arranged with relation to said stylus mechanism, said carbon ribbon-carrying frame being received within the opening of the main frame.

37. In a facsimile-telegraph, the combination of a recording paper-feed mechanism, a carbon-ribbon-feed mechanism, means for operating said ribbon and paper mechanisms in unison, and tension devices for tightening and adjusting the paper with relation to its unison movement with the ribbon.

38. In a facsimile-telegraph, a constantly-rotating stylus-carrier, carrying a series of transmitting stylus devices which successively pass over the message-blank, a corresponding series of recording stylus devices, circuit connection between said respective series of transmitting and recording stylus devices, means for maintaining a plurality of said transmitting stylus devices and recording stylus devices in operative correlative position at the same time; and means for commutating the said transmitting devices to the writing-circuit.

39. In a facsimile-telegraph, the combination with a pair of alternating generators, and a constantly-closed line-circuit connecting the same, of transmitting and recording facsimile-telegraph mechanisms respectively connected to the said generators to be thereby synchronously operated, the transmitting devices being comprised in an individual circuit which is alternately opened and closed during the transmission of the message; and means for causing the current of the said individual circuit to pass over the main line as message impulses.

40. In a facsimile-telegraph, the combination with a pair of alternating generators and a constantly-closed circuit connecting the same, of transmitting and recording facsimile-telegraph instruments connected respectively with the said generators to be synchronously operated thereby; the writing mechanism of the recording instrument being comprised in the line-circuit, and the transmitting devices being comprised in an individual short circuit which is connected with the line and normally separated therefrom; and means for opening the said individual short circuit when the transmitting writing devices transmit message impulses, whereby said impulses will be sent over the line.

41. In a facsimile-telegraph, the combination with a pair of alternating generators connected by a constantly-closed circuit, of transmitting and recording facsimile-telegraph instruments connected respectively with the said generators to be synchronously operated thereby, stylus devices comprised in the said instruments and thereby caused to travel over a message-paper; the recording-stylus devices being comprised in the main circuit; and the transmitting-stylus devices being comprised in an individual short circuit which is connected with the line, and which is completed when the stylus devices are in contact with the message-blank; and means for breaking the said individual short circuit when the stylus is in contact with the message matter to be transmitted, whereby such opening of the short circuit will send message impulses over the line.

42. In a facsimile-telegraph, the combination with a pair of alternating generators, and a constantly-closed line-circuit connecting the same, of transmitting and recording facsimile-telegraph mechanisms connected respectively with the said generators to be synchronously operated thereby, stylus devices comprised in the said instruments and thereby caused to travel over a message-paper; the recording-stylus devices being comprised in the main circuit and the transmitting-stylus devices being comprised in an individual circuit which is connected with the line but which contains an individual source of electrical energy, which source of energy is short-circuited from the line when the stylus devices are in contact with the message-blank, and the current of which is sent over the line when the stylus is in contact with the message matter to be transmitted.

43. In a facsimile-telegraph, a constantly-closed main circuit, including the operating mechanisms of the instruments, which circuit is operated by an alternating synchronizing-current; and an individual circuit comprising the transmitting devices and embodying a direct-current source of energy which is short-circuited from the main line when the instrument is not transmitting message matter, but which is sent over the line when the writing devices are transmitting message matter.

44. In a facsimile-telegraph means for synchronizing the instruments

with an alternating current over a constantly-closed main circuit and means for sending direct-current message impulses over the said circuit, at the same time with the synchronizing alternating current.

45. In a facsimile-telegraph means for synchronizing the instruments by a small or balanced alternating current over a constantly-closed main circuit, and sending heavier direct-current message impulses over the said closed circuit, at the same time with the synchronizing alternating current.

46. In a facsimile-telegraph means for synchronizing the instruments by an alternating current over a constantly-closed line-circuit in which the recording writing devices are included, an individual direct-current circuit, and means for sending the said direct current intermittently over the closed circuit including the transmitting devices as message impulses, at the same time with the synchronizing alternating current.

47. In a facsimile-telegraph means for maintaining a constantly-closed synchronizing-circuit in which the operating mechanisms of the instruments are included and in which the recording writing mechanism is also included, and an individual circuit including the transmitting devices the current of which is connected with and sent over the closed main circuit intermittently as message impulses.

48. In a facsimile-telegraph, the combination with a pair of alternating generators and a constantly-closed line-circuit connecting the same, of transmitting and recording facsimile-telegraph mechanisms respectively connected to the said generators to be thereby synchronously operated, the transmitting devices being comprised in an individual circuit which is intermittently opened and closed during the transmission of the message; means for causing the current of the said individual circuit to pass over the main line as message impulses when the transmitting writing devices are in contact with the message matter; means for stopping the transmitting devices when they are in contact with the message-blank; and means for suspending the action of the said stop means until the writing devices have traversed a predetermined amount of message-blank.

49. In a facsimile or other synchronous telegraph, a constantly-closed main circuit including the operating mechanism of the instruments and which circuit is operated by the alternately-synchronizing current; and an individual circuit comprising the actual transmitting devices and embodying a direct-current source of energy which is short-circuited from the main line when the instrument is not transmitting message matter, but which is sent over the line when message matter is being transmitted.

50. In a synchronous telegraph means for synchronizing the instruments with an alternating current over a constantly-closed main circuit, and means for sending direct-current impulses over the said circuit at the same time with the synchronizing alternating current.

51. In a facsimile-telegraph, the combination, with the line-circuit and the transmitting and recording machines, of mechanism for automatically stopping and starting said machines in unison, and means for operating said mechanism through the writing or message electrical impulses over the line-circuit.

52. In a facsimile-telegraph, the combination, with the line-circuit and the transmitting and recording machines, of electromagnet devices operating to automatically stop and start said machines in unison, and means for operating said electromagnets by the writing or message electrical impulses over the line-circuit.

53. In a facsimile-telegraph, transmitting-stylus mechanism, recording-stylus mechanism, a line-circuit connection between said mechanisms, synchronously-actuated motor mechanisms respectively operating the transmitting and recording stylus mechanisms and having a line-circuit connection, and electrically-actuated means controlling the starting and stopping of the transmitting and recording stylus mechanisms in unison and actuated by the message impulses over the line-circuit.

54. In a facsimile-telegraph, transmitting-stylus mechanism, recording-stylus mechanism, a line-circuit connection between said mechanisms, continuously-operating motor mechanisms for the respective transmitting and recording stylus mechanisms, said motor mechanisms having a line-circuit connection and being synchronously actuated, electrically-actuated means for stopping and releasing the respective transmitting and recording stylus mechanisms in unison independently of the continuously-operating motor mechanisms, and means for actuating said stop and releasing means by the message impulses.

55. In a facsimile-telegraph, the combination, with stylus-operating mechanism, of mechanism for stopping and releasing said stylus-operating mechanism, and means for operating said stop and release mechanisms automatically by the action of the writing or transmitting impulses of the line-writing circuit.

56. In a facsimile-telegraph, the combination with stylus mechanism, of an automatic electrically-actuated stop and release mechanism for the stylus mechanism, actuated only by the electrical writing or transmitting impulses of the line-writing circuit.

57. In a facsimile-telegraph, the combination of stylus mechanism, comprised in an electric circuit and adapted in its operation to send electrical impulses over the writing or transmitting line-circuit, and electrically-actuated mechanism automatically controlling the stopping of said stylus mechanism and in operative circuit connection with said writing or transmitting circuit, whereby said stop mechanism is operated by the writing or transmitting electrical impulses.

58. In a facsimile-telegraph, a unison synchronous stop mechanism for the transmitting and recording machines, comprised in an electric circuit and adapted to stop and release the stylus mechanism, said stop mechanisms being in circuit connection with the writing or transmitting line-circuit and operated by the writing or transmitting electrical impulses sent over said line-circuit, whereby message impulses will release the machine and the continuous absence of message impulses will stop the machine.

59. A facsimile-telegraph comprising a disk rotating on an axis carrying a series of transmitting-points, a platen mounted in a plane perpendicular to the axis, a transmitting paper-feed comprising a pair of rolls at the end of the platen and a roll above the platen geared therewith, substantially as described.

60. A facsimile-telegraph comprising a disk rotating on an axis, a set of recording-points on the disk, magnets for operating the recording-points, and a paper-feed in a plane perpendicular to the axis for cooperating with the points, substantially as described.

61. A facsimile-telegraph comprising a disk rotating on an axis, a set of recording-points on the disk, magnets for operating the recording-points, and a paper-feed in a plane perpendicular to the axis, having means for moving carbon-paper, and means for moving ordinary paper, each paper to coöperate with the points, substantially as described.

62. A facsimile-telegraph comprising a disk rotating on an axis, a set of recording-points on the disk, magnets for operating them, a feed for carbon-paper and a feed for ordinary paper for drawing the papers over a platen to coöperate with the points, substantially as described.

63. A facsimile-telegraph comprising a disk rotating on an axis, a set of recording-points on the disk, magnets having armatures for operating the recording-points, and a paper-feed in a plane perpendicular to the axis for coöperating with the points substantially as described.

64. A facsimile-telegraph comprising a disk rotating on an axis carrying a series of transmitting-points, a metallic platen in a plane perpendicular to the axis, a set of springs connected to a rod and means for turning the rod to press the springs against the platen for conveying current to the transmitting-paper, substantially as described.

65. A facsimile-telegraph comprising transmitting-points and receiving-points, each mounted to rotate about an axis, paper-feeds in planes perpendicular to these axes, a single main line connecting them, means for sending electrical currents of one kind for writing purposes and means for sending currents of another kind for synchronizing purposes.

66. A facsimile-telegraph comprising a disk mounted to rotate about an axis, a double series of transmitting-points thereon each controlling a single main line, a source of electrical energy and means for throwing this source to one or the other set of the points in rapid alternation, and thereby sending pulses corresponding to one or other series of transmitting-points onto the line.

67. A facsimile-telegraph comprising a rotating disk, a double series of transmitting-points thereon each controlling a single main line and a pair of brushes bearing on break-wheels having their insulations in a staggered relation for supplying current to one or other of the sets of points in rapid alternation.

68. A facsimile-telegraph comprising a rotating disk mounted to rotate about an axis, a double series of transmitting-points thereon, another disk mounted to rotate about an axis, a double series of recording-points thereon, a single main line, a source of energy at the transmitting-station, means for throwing the source respectively to one or other sets of transmitting-points in rapid alternation and means at the receiving-station for operating the sets of recording-points alternating in synchronism therewith.

69. A facsimile-telegraph comprising a disk mounted to rotate about an axis, a double series of transmitting-points thereon, two commutators having their plates connecting respectively to the two sets of points, brushes bearing on these commutators connecting to other brushes bearing on break-wheels having their insulations in a staggered relation, and an electrical connection from the break-wheels to the transmitting-points completing the circuit.

70. A facsimile-telegraph comprising transmitting-points and receiving-points each mounted to rotate about an axis, paper-feeds in planes perpendicular to these axes, a single main line connecting them, an electric motor for driving the respective points, means for sending electrical currents of one kind for writing purposes and means for sending electrical currents of another kind for synchronizing the motor.

71. A facsimile-telegraph comprising transmitting and receiving points, each mounted to rotate about an axis, paper-feeds in planes perpendicular to these axes, a single main line connecting them, a unison de-

vice controlled by an electromagnet, a local circuit, for this magnet, a high-resistance relay controlling the local circuit, and means for sending a prolonged high-tension current over the line to operate this relay to bring the transmitter and receiver into unison.

72. A facsimile-telegraph comprising a disk rotating on an axis, a double series of receiving-points mounted on said disk, operating means for said receiving-points, two commutators connected symmetrically to the said operating means, a double series of transmitting-points, two commutators connected symmetrically to said series of transmitting-points paper-feeds in planes perpendicular to the two series of points and coöperating respectively therewith, a single main line, and means for throwing either one or other series of points into coöperative relation with the line in rapid alternation.

73. A facsimile-telegraph comprising a disk rotating on an axis, a series of receiving-points mounted on said disk, operating means for said receiving-points, a commutator on the axis connected to the means for operating the receiving-points, a series of transmitting-points, a commutator connected to the transmitting-points and paper-feeds in planes perpendicular to the two series of points for coöperating respectively therewith.

709,159. ORTHO-SULFONATED TOLUYLIC ALDEHYDE AND PROCESS OF MAKING SAME. JOSEPH KOETSCHET, St. Fons, near Lyons, France, assignor to Société Chimique des Usines du Rhône, anciennement Gillard, P. Monnet et Cartier, Lyons, France, a Corporation of France. Filed June 14, 1901. Serial No. 65,042. (No specimens.)

Claims.—1. The manufacture of ortho-sulfonated meta-toluylic aldehyde by reacting upon meta-toluylic aldehyde with sulfonating agents.

2. The manufacture of ortho-sulfonated meta-toluylic aldehyde by reacting upon meta-toluylic aldehyde with sulfuric acid containing sixty per cent. anhydride at a relatively low temperature.

3. As a new article of manufacture, ortho-sulfonated toluylic aldehyde obtained by the sulfonation of meta-toluylic aldehyde and having the composition $C_8H_8SO_4$, being an acid crystalline substance very soluble in water and combining with alkalies or alkali earths to form neutral salts also soluble in water and which when the sodium salt is acted upon by phosphorous pentachlorid affords a chlorin derivative insoluble in water, which derivative can be recrystallized from alcohol and melts at about 109° centigrade.

709,160. GREEN DYE AND PROCESS OF MAKING SAME. JOSEPH KOETSCHET, St. Fons, near Lyons, France, assignor to Société Chimique des Usines du Rhône, anciennement Gillard, P. Monnet et Cartier, Lyons, France, a Corporation of France. Filed June 18, 1901. Serial No. 65,050. (No specimens.)

Claims.—1. The manufacture of a coloring-matter by condensing ortho-sulfo-meta-toluylic aldehyde with an aromatic amin and oxidizing the leuco product.

2. The manufacture of a coloring-matter by condensing ortho-sulfo-meta-toluylic aldehyde with a substituted aromatic amin and oxidizing the leuco product.

3. The manufacture of a coloring-matter by condensing ortho-sulfo-meta-toluylic aldehyde with an alkylated aromatic amin and oxidizing the leuco product.

4. The manufacture of a coloring-matter by condensing ortho-sulfo-meta-toluylic aldehyde with a dimethylated aromatic amin and oxidizing the leuco product.

5. The manufacture of a coloring-matter by condensing ortho-sulfo-meta-toluylic aldehyde with dimethyl anilin and oxidizing the leuco product.

6. As a new product, a coloring-matter being the oxidized leuco condensation product of one molecule of ortho-sulfo-meta-toluylic aldehyde and two molecules of aromatic amin, and having the composition $C_7H_6(SO_3H)COH(X)_2$, where X indicates an aromatic amin radical, and which coloring-matter is soluble in water and dyes wool and silk bright-green to greenish-blue shades fast to alkalies.

7. As a new product, a coloring-matter being the oxidized leuco condensation product of one molecule of ortho-sulfo-meta-toluylic aldehyde and two molecules of a substituted aromatic amin, and having the composition $C_7H_6(SO_3H)COH(X)_2$ where X indicates a substituted aromatic amin radical, and which coloring-matter is soluble in water and dyes wool and silk bright-green to greenish-blue shades fast to alkalies.

709,161. BOTTLE-STOPPER. ISAIAH KOSCHERAK, New York, N. Y. Filed Jan. 16, 1902. Serial No. 90,622. (No model.)

Claim.—1. The combination, with a bottle-neck provided with a wire neck-band, of a U-shaped lever, a bail or yoke, a stopper the head of which is provided with a recess and a transverse groove in the inner end of said recess, and a sheet-metal cap fitting over the head of the stopper and provided with recesses at diametrically opposite points for the bail or yoke, substantially as set forth.

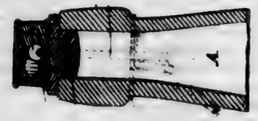

2. The combination, with a bottle-neck provided with a wire neck-band, of a U-shaped lever, a bail or yoke, a stopper having its head provided with a recess extending inwardly from one side and terminating in a diametrical groove, and a sheet-metal cap fitting over said head and provided with a fillet at its upper edge and upwardly-extending recesses at diametrically opposite points, substantially as set forth.

709,162. BOTTLE-STOPPER. ISAIAH KOSCHERAK, New York, N. Y. Filed Jan. 29, 1902. Serial No. 91,737. (No model.)

Claim.—1. In a bottle-stopper, a porcelain head or knob, the shank of which is provided with an elastic gasket, and a metallic covering-cap applied to the lower shouldered end of the head or knob, said cap having a rim tightly secured against the lower portion of the gasket, substantially as set forth.

2. In a bottle-stopper, a porcelain head or knob, provided with a rubber gasket, and a sheet-metal covering-cap at the shouldered lower end of the head, said covering-cap being provided with an outwardly-flaring rim fitting tightly around the gasket, so as to retain the same firmly in position on the head, substantially as set forth.

709,168. BOWLING-ALLEY. HENRY B. LAMB, New York, N. Y., assignor of one-half to Bowling Ball Company, New York, N. Y., a Corporation of New York. Filed Jan. 27, 1902. Serial No. 91,322. (No model.)

Claim.—1. In a bowling-alley, a runway extending lengthwise of the alley and having an inclined portion at its rear end and a separate transverse runway extending across the alley, arranged to permit the ball to drop therefrom onto the incline of the longitudinal runway, substantially as set forth.

2. In a bowling-alley, a runway extending lengthwise of the alley and having an inclined portion at its rear end and a substantially hori-

zontal portion leading therefrom to its front end and a separate transverse runway located across the rear end of the alley and arranged to permit the ball to drop therefrom onto the inclined portion of the longitudinal runway, substantially as set forth.

3. In a bowling-alley, a runway extending lengthwise of the alley and having an inclined portion at its rear end, a separate transverse runway located across the rear end of the alley and arranged to permit the ball to drop therefrom onto the inclined portion of the longitudinal runway and a stop arranged in position to cause the ball to drop onto the said longitudinal runway, substantially as set forth.

4. In a bowling-alley, a longitudinal runway, a branch runway leading laterally therefrom at the front end of the alley and a separate transverse runway located across the rear end of the alley and arranged to permit the ball to drop therefrom onto the longitudinal runway, substantially as set forth.

709,164. **ASEPTIC SPUTUM-RECEPTACLE AND HOLDER.** CATHERINE M. LAUGHLIN, Philadelphia, N. J. Filed June 27, 1901. Serial No. 66,215. (No model.)

Claim.—1. A sputum-holder composed of a bag formed from a sheet of flexible waterproof material and provided with means for securing it to a garment, the top of the bag being provided at the back with a closing-flap and at the front with a button-stud with which said flap may be connected, and an upper flap portion formed by an extension of the front top portion of the bag and adapted to be turned backwardly and downwardly into the bag, substantially as shown and described.

2. In a device of the class described, the combination with a bag formed of flexible waterproofed material provided with flaps 19 and 19' and with securing-tangs 16 and 17, of a securing button or stud carried by the same adapted to receive and secure in place the flap 19, an outer pocket or bag carried by the first-mentioned bag, and adapted to receive a plurality of sputum-receptacles, substantially as shown and described.

709,165. **CUSPIDOR.** ALEXANDER LINDSAY, Wellsville, Ohio. Filed Dec. 7, 1901. Serial No. 85,044. (No model.)

Claim.—1. A cuspidor comprising a bowl having a receiver arranged thereon, the upper end of which projects above the said bowl and having its lower end contracted and slotted, the said lower end terminating in a flaring portion arranged below the said slots, substantially as shown and described.

2. A cuspidor comprising a bowl having a funnel-shaped receiver fixed thereon, the lower edge of which is open and having slots radiating from the said open end, and an inverted-funnel-shaped section projecting from the lower end of the receiver and formed integral therewith, the said section being arranged within the bowl, substantially as shown and described.

709,166. **BANANA-SHIPPING CRATE.** NICHOLS LOMBARDO, Mason City, Iowa. Filed Mar. 17, 1902. Serial No. 98,579. (No model.)

Claim.—1. In a shipping-crate, a framework supported at one end, and consisting of two semicylindrical sections removably united longitudinally, a fabric envelop inclosed by said framework and having foldable ends and divided longitudinally, substantially as described.

2. In a shipping-crate, a framework formed of two semicylindrical sections removably united longitudinally, a fabric envelop inclosed by said sections and with foldable ends and divided longitudinally and with a longitudinal flap covering said division, substantially as described.

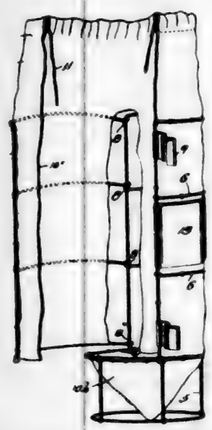

3. In a shipping-crate, a frame formed of a cylindrical end portion adapted to receive a portion of the contents and having a semicylindrical extension, and a semicylindrical portion removably engaging said cylindrical portion and semicylindrical extension, substantially as described.

4. In a shipping-crate, a framework formed of a cylindrical end portion adapted to receive a portion of the contents and having a semicylindrical extension, and a semicylindrical portion removably engaging said cylindrical portion and semicylindrical extension, and a fabric envelop inclosed by said framework, substantially as described.

5. In a shipping-crate, a frame formed of a cylindrical end portion having a semicylindrical extension, and a semicylindrical portion removably engaging said cylindrical portion and said semicylindrical extension, a fabric envelop inclosed by said framework with a conical extension at one end and foldable at the other end, substantially as described.

6. In a shipping-crate, a framework formed of a cylindrical end portion having a semicylindrical extension, and a semicylindrical portion engaging said cylindrical portion and semicylindrical extension, a fabric envelop inclosed by said framework having a longitudinal division on one side and provided with a flap adapted to form a closure to said division, substantially as described.

7. In a shipping-crate, a framework formed of a cylindrical end portion adapted to receive a portion of the contents and having a semicylindrical extension and a semicylindrical portion engaging said cylindrical portion and semicylindrical portion by a hinged joint on one side and yieldable catches on the other side, substantially as described.

8. In a shipping-crate, a framework formed of a cylindrical end portion having a semicylindrical extension and a semicylindrical portion removably engaging said cylindrical portion and semicylindrical extension, and a fabric envelop inclosed by said framework and having a conical extension at one end and foldable at the other end and with a longitudinal division between said ends, substantially as described.

9. In a shipping-crate a framework formed of two semicylindrical sections longitudinally united, a fabric envelop inclosed by said framework, and a name-plate upon said framework secured by bending the edges of said plate upon adjacent wires of the framework thereby bracing the latter, substantially as described.

709,167. **RIVETING-MACHINE.** GEORGE E. MARTIN, Philadelphia, Pa., assignor to the Pedrick and Ayer Company, Philadelphia, Pa. Filed Dec. 21, 1901. Serial No. 86,732. (No model.)

Claim.—1. In combination with the vibrating arms of a riveting-machine, a power cylinder and piston located upon one arm thereof and a bell-crank lever mounted upon the opposite arm, the long arm of the lever connecting with the power-piston rod and the short arm with a toggle-lever mechanism for vibrating the arms as set forth.

2. In combination with the vibrating arms of a riveting-machine, a power cylinder and piston located at an inclination to the axis of the movement of said arms, a bell-crank lever having its long arm connected to the power-piston rod, and its short arm with a toggle-lever device connected to the respective riveting-arms for vibrating the same, as set forth.

709,167.

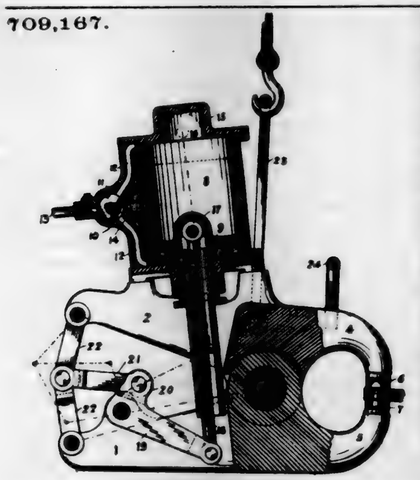

709,168. **TROLLEY.** FRANK A. MERRICK, Johnstown, Pa., assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Original application filed Sept. 14, 1899, Serial No. 730,437. Divided and this application filed Dec. 30, 1899. Serial No. 742,127. (No model.)

Claim.—The combination with a trolley harp and a wheel journaled therein, of an upwardly-pressing spring-arm secured to the harp within the fork thereof, and a contact-shoe at the upper end of said arm fitted to and contacting with the under side of the laterally-extending hub of said wheel, said shoe having an elongated longitudinal bearing on said hub, between the dished face of the wheel and the fork-arm, and guarded by its position from the action of stray arcs.

709,169. **RAILROAD-TIE PLATE.** THOMAS R. MOODIE and WILLIAM H. BUHL, Hartland, Me. Filed June 27, 1902. Serial No. 113,446. (No model.)

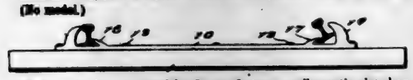

Claim.—1. As a new article of manufacture, a railway-tie plate having clips conforming to and adapted to engage the adjacent edges of the tie-flanges of the opposite rails, and with longer clips adapted to engage the outer edges of the heads of the opposite rails relatively near their upper surfaces, substantially as described.

2. As a new article of manufacture, a railway-tie plate having clips conforming to and adapted to engage the adjacent edges of the tie-flanges of the opposite rails, and with longer clips adapted to engage the outer sides of the heads of the opposite rails relatively near their upper surfaces, said longer clips curving outwardly between their extremities, whereby means are provided for the insertion and removal of the rails, substantially as described.

3. As a new article of manufacture, a railway-tie plate provided with clips conforming to and adapted to engage the adjacent edges of the tie-flanges and the vertical webs of the opposite rails, and with longer clips adapted to engage the outer sides of the heads of the opposite rails relatively near their upper surfaces, substantially as described.

4. As a new article of manufacture, a railway-tie plate having a clip conforming to and adapted to engage the inner edge of the tie-flange of the rail, and with a longer clip adapted to engage the outer side of the head of the rail relatively near its upper surface, substantially as described.

5. As a new article of manufacture, a railway-tie plate having a clip conforming to and adapted to engage the inner edge of the tie-flange and the vertical web of the rail, and with a longer clip adapted to engage the outer side of the head of the rail relatively near its upper surface, substantially as described.

6. As a new article of manufacture, a railway-tie plate having a clip conforming to and adapted to engage the inner edge of the tie-flange, and with a longer clip adapted to engage the outer side of the head of the rail relatively near its upper surface, said longer clip curving outwardly between its extremities, whereby means are provided for the insertion and removal of the rail, substantially as described.

7. As a new article of manufacture, a railway-tie plate having clips conforming to and adapted to engage the adjacent edges of the tie-flanges of the opposite rails, and with longer clips adapted to engage the outer edges of the heads of the opposite rails relatively near their upper surfaces, a supporting-tie beneath said plate, and means for securing said plate to said tie, substantially as described.

8. In railway construction, the rails spaced apart and connected at their adjacent ends by railway-rail joints, spaced ties transversely connecting said rails, tie-plates engaging the under sides of said rails transversely and adjacent to said joints, said tie-plates having clips conforming to and adapted to engage the adjacent edges of the tie-flanges of said rails, and with longer clips adapted to engage the outer sides of the heads of the opposite rails relatively near their upper surfaces, substantially as described.

9. As a new article of manufacture, a railway-tie plate having a clip integral therewith and conforming to and adapted to engage the inner edge of the tie-flange of the rail, and with a longer clip integral therewith and adapted to engage the outer side of the head of the rail relatively near its upper surface, substantially as described.

10. The combination of a railway-tie, spaced rails transversely engaging said tie, clips extending above said tie and conforming to and adapted to engage the inner edges of the tie-flanges of the rails, and clips extending above said ties and adapted to engage the outer surfaces of the heads of the rails, substantially as described.

709,170. **BASIN-CLAMP.** JOHN O. NOBLE, Trenton, N. J. Filed Mar. 3, 1902. Serial No. 96,451. (No model.)

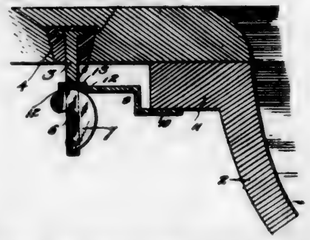

Claim.—A basin-clamp comprising a slotted post adapted to be secured to the slab or shelf of a basin, a cam-lever pivoted in the lower end of the post and adapted to swing into said slot, and a clamping-jaw having an aperture through which the post projects and a groove formed in its lower side contiguous to said aperture to receive the edge of the cam-lever and lock the clamping-jaw against rotation upon the post, substantially as set forth.

709,171. **FOLDING TABLE.** WILLIAM O. NUSBAUMER, Sheboygan, Wis. Filed Apr. 3, 1902. Serial No. 101,262. (No model.)

Claim.—A table of the kind described, comprising in combination a post or standard slotted at its upper and lower ends, the detachable legs adapted to fit into the slots at the lower end of the post or standard, the detachable supporting-arms adapted to fit into the slots at the upper end of the post or standard, the top or cover comprising the central piece, and the side pieces or leaves hinged thereto, said leaves or side pieces

having a depending valance or cornice, loops or bails carried by the said side pieces upon their under face, the angular locking-plates carried by the supporting-arms, and a spring-catch secured to the under side of the top piece and adjacent to one of the loops, said catch being adapted to permit one of the arms to pass beneath it in the direction of the loop, but resisting movement of the top piece or arm relative to each other in the opposite direction, substantially as described.

709,172. VACUUM EVAPORATING APPARATUS. CHARLES CONWAY, Brooklyn, N. Y. Filed Dec. 4, 1901. Serial No. 84,611. (No model.)

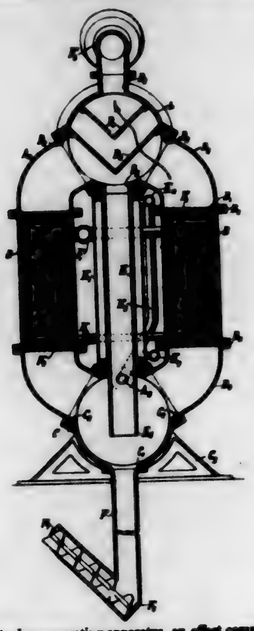

Claim.—1. In evaporating apparatus, an effect comprising a series of similar sections each of said sections being provided with flanges to readily assemble the same to form said effect, each of said sections comprising a vapor-chamber, a liquor-chamber, a vertical downtake connecting said vapor-chamber and said liquor-chamber and extending nearly to the bottom of said liquor-chamber, two batteries of vertical heating-tubes arranged adjacent said downtake on either side of the same, flanged connections connecting said heating-tubes with said vapor-chamber and said liquor-chamber to enable said heating-tubes to be readily removed from said chambers, a vacuum-leg connected with said liquor-chamber substantially in line with said downtake, a boot at the lower end of said vacuum-leg, a screw conveyer communicating with said boot, said liquor-chamber being formed adjacent said vacuum-leg with a flared hole to direct material into said vacuum-leg, a jacket surrounding said downtake and connections to feed the liquor into said jacket to cool said downtake and to feed said liquor from said jacket into said liquor-chamber.

2. In evaporating apparatus, a sectional effect comprising a series of similar sections bolted together by connecting-flanges formed on said sections, each one of said sections comprising a vapor-chamber, a liquor-chamber, a vertical downtake connecting said vapor chamber and said liquor-chamber and two batteries of heating-tubes arranged on either side of said downtake and connected to said liquor-chamber and said vapor-chamber to form a sectional effect which may be readily varied in capacity by varying the number of sections in said effect.

3. In evaporating apparatus, an effect comprising a series of similar sections provided with flanges to readily assemble said sections, each of said sections comprising a vapor-chamber having baffle-plates, a liquor-chamber and a vertical downtake connecting said vapor-chamber with said liquor-chamber and extending nearly to the bottom of said liquor-chamber, batteries of tubes mounted adjacent said downtake and connected to said liquor-chamber and said vapor-chamber, said sections when assembled having the liquor-chambers and vapor-chambers in communication to form common liquor and vaper chambers.

4. In evaporating apparatus, an effect comprising a series of similar sections, said sections being provided with opposing flanges on the vapor and liquor chambers of said sections to be bolted together to readily connect said sections together, each of said sections comprising a vapor-chamber, a liquor-chamber, a vertical downtake connecting said chambers and two batteries of heating-tubes arranged on either side of said downtake and connected to said liquor-chamber and said vaper-chamber.

5. In evaporating apparatus, an effect comprising a series of similar sections, said sections being provided with opposing flanges on the vaper and liquor chambers of said sections to be bolted together to readily connect said sections and form an effect having a common vaper and liquor chamber extending the whole length of the same, each of said sections comprising a vapor-chamber having baffle-plates arranged therein, a liquor-chamber, a vertical downtake connecting said chambers and two batteries of heating-tubes arranged on either side of said downtake and connected to said liquor-chamber and said vapor-chamber.

6. In evaporating apparatus, an effect comprising a vapor-chamber, a liquor-chamber provided with a vacuum-leg, a vertical downtake connecting said vapor-chamber and said liquor-chamber and extending nearly to the bottom of said liquor-chamber and substantially in line with said vacuum-leg, batteries of heating-tubes connected to said liquor-chamber and said vapor-chamber, a jacket surrounding said downtake and connections by which liquor fed to said effect enters said jacket to cool the liquor in said downtake and is fed from said jacket into said liquor-chamber.

7. In evaporating apparatus, an effect comprising a vapor-chamber, a liquor-chamber, a vertical downtake connecting said vapor-chamber and said liquor-chamber and extending nearly to the bottom of said liquor-chamber, batteries of vertical heating-tubes arranged adjacent said downtake and communicating with said vapor-chamber and said liquor-chamber, a vacuum-leg connected to said liquor-chamber and substantially in line with said downtake, means to remove material from said vacuum-leg, a jacket surrounding said downtake and means to secure a circulation of fluid in said jacket to cool said downtake.

8. In evaporating apparatus, an effect comprising a vapor-chamber, a liquor-chamber, batteries of heating-tubes communicating with said vapor-chamber and said liquor-chamber, a vertical downtake communicating with said vapor-chamber and said liquor-chamber, a jacket around said downtake, means to supply fluid to said jacket to cool the liquor in said downtake and means to remove precipitated material from said liquor-chamber.

9. In evaporating apparatus, an effect comprising a vapor-chamber, a liquor-chamber, heating-tubes connected to said vapor-chamber and said liquor-chamber, a downtake connected to said vapor-chamber and said liquor-chamber, a jacket surrounding said downtake and means to cause a circulation of fluid in said jacket to cool said downtake.

709,173. STEAM-BOILER FURNACE. ORIL D. ORVIS, New York, N. Y. Filed Mar. 11, 1901. Renewed July 29, 1902. Serial No. 117,532. (No model.)

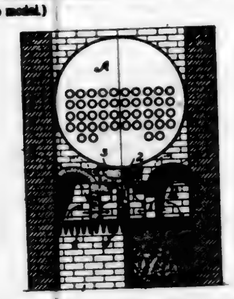

Claim.—1. In a furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, and a longitudinal wall intermediate of said retorts and having apertures corresponding with those of the retorts, substantially as described.

2. In a furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, and a longitudinal wall intermediate of said retorts and having apertures corresponding with those of the retorts but located at a higher level, substantially as described.

3. In a steam-boiler furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, a longitudinal wall intermediate of said retorts and having apertures corresponding with those of the retorts, and a rear wall located within the combustion-chamber and provided with a passage or passages arranged in proximity to the boiler, substantially as described.

4. In a steam-boiler furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, a longitudinal wall intermediate of said retorts and having apertures corresponding with those of the retorts, and a rear wall located within the combustion-chamber and provided with a passage or passages arranged concentric with the boiler in proximity to the same, substantially as described.

5. In a steam-boiler furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, a longitudinal wall intermediate of said retorts and having apertures corresponding with those of the retorts, a rear wall located within the combustion-chamber and provided with a passage or passages arranged in proximity to the boiler, and means extending through said wall for introducing air to the combustion-chamber, substantially as described.

6. In a steam-boiler furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, and a longitudinal wall intermediate of said retorts having apertures corresponding with those of the retorts and provided with a deflecting-head in proximity to the bottom of the boiler, substantially as described.

7. In a steam-boiler furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, and a longitudinal wall intermediate of said retorts having apertures corresponding with those of the retorts and provided with a deflecting-head or deflector in proximity to the bottom of the boiler; and said retorts being provided with inwardly-projecting deflectors above their lateral apertures, substantially as described.

8. In a steam-boiler furnace, the combination with the fire-chamber and the grate, of retorts located beyond the grate opening into the fire-chamber above the grate and provided with lateral apertures for the discharge of the products of combustion, a longitudinal wall intermediate of said retorts and having apertures corresponding with those of the retorts, a rear wall located within the combustion-chamber and provided with a passage or passages arranged in proximity to the boiler, and with a cleaning-opening, substantially as described.

709,174. COMBINATION DRAFT-FURNACE. ORIL D. ORVIS, New York, N. Y. Filed May 13, 1901. Renewed July 29, 1902. Serial No. 117,534. (No model.)

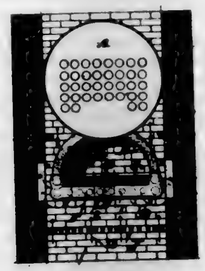

Claim.—1. In a combination draft-furnace, the combination with a water-grate, of a fire-chamber located above said grate and including part of the boiler-surface, and means for establishing a circulation of water through the grate; said grate having lateral exits for the products of combustion, downward exits for the products of combustion, and rear exits for the products of combustion; all said parts being arranged to cause a commingling of the gases, substantially as described.

2. In a combination draft-furnace, the combination with a water-grate, of a fire-chamber located above said grate and including part of the boiler-surface, and means for establishing a circulation of water through the grate; said grate having lateral exits for the products of combustion,

downward exits for the products of combustion, rear exits for the products of combustion, a lower grate adapted to receive the droppings from the first grate, and a rear and upward exit for the products of combustion from said grate; all said parts being arranged to cause a commingling of the gases from the water-grate and the lower grate, substantially as described.

3. In a combination draft-furnace, the combination with a water-grate, of a fire-chamber located above said grate, and means for establishing a circulation of water through the grate; said grate having lateral exits for the products of combustion, downward exits for the products of combustion, and rear exits for the products of combustion; all said parts being arranged to cause a commingling of the gases, substantially as described.

4. In a combination draft-furnace, the combination with a water-grate, of a fire-chamber located above said grate, and means for establishing a circulation of water through the grate; said grate having lateral exits for the products of combustion, downward exits for the products of combustion, rear exits for the products of combustion, a lower grate adapted to receive the droppings from the first grate, and a rear and upward exit for the products of combustion from said grate; all said parts being arranged to cause a commingling of the gases from the water-grate and the lower grate, substantially as described.

5. In a furnace, the combination with a fire-chamber having a water-grate, of converging arches extending from said grate and abutting against the boiler and exposing part of the boiler to radiant heat, combined with means for establishing a circulation of water through the grate, a lower grate adapted to receive the droppings from the first grate, a bridge-wall, and a wall closing the rear of the arches, all arranged to cause a commingling of the gases from the water-grate and the lower grate between the arches and the bridge-wall, substantially as described.

6. In a furnace, the combination with a fire-chamber having a water-grate opening laterally and furnace-walls having formed therein on each side of and adjacent to the grate a series of combustion-chambers into which the products of combustion from the grate pass in their rearward passage under the influence of the draft, substantially as described.

709,175. HAND-CAR. JOHN R. ROACH, Oaks, Ind. Filed June 14, 1902. Serial No. 111,740. (No model.)

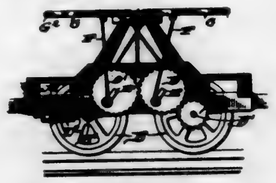

Claim.—1. In a hand-car the combination with the main frame, wheels and axles, said main frame having a central opening, of the crank-shafts arranged in said opening, the gears mounted upon said crank-shafts and meshing with each other, a gear mounted upon one of the axles and meshing with one of the gears mounted upon the crank-shaft, the supporting-frames arranged upon opposite sides of the central opening and main frame, and hand-levers pivotally mounted upon said supporting-frames, and the pitmen pivotally connecting the said levers with their respective crank-shafts, substantially as specified.

2. In a hand-car, the combination with a suitable platform cut away in the center, a frame above said central opening, levers bifurcated at both ends, cross-pieces terminating in trunnions secured in the bifurcated portions of the inner ends of the levers, said cross-pieces being journaled in the frame, hand-bars secured in the outer bifurcated ends of the levers, downwardly-projecting lugs secured to each lever adjacent the inner bifurcated portion, shafts mounted below said central opening having crooked portions, pitman-rods pivoted between the lugs and connected to the ends of the shafts respectively, and means for communicating the motion of said rods, and shafts to the car.

709,176. COMBINATION TABLE AND IRONING BOARD. PHILIPP ROTHENBERGER, New York, N. Y., assignor to Frederick Ruth, New York, N. Y. Filed Nov. 27, 1901. Serial No. 83,986. (No model.)

Claim.—The combination of a table having a portion of its top revolvable, a folding ironing-board attached by a sliding axis to the revolvable portion of the table-top, and a folding supporting-leg attached to the board, said folding portions being capable in their extended positions of horizontal motion about the sliding axis, substantially as described.

709,176.

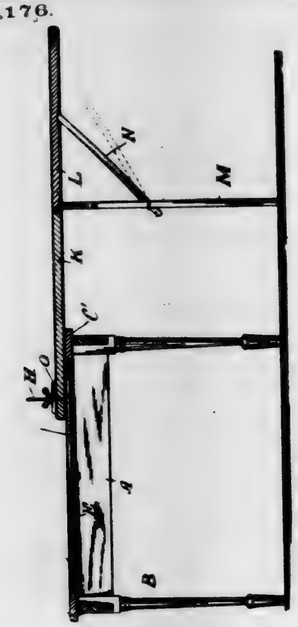

said notch and adapted to hold said guide in any desired position with reference to said arm; substantially as described.

4. In a device of the class described, the combination with a suitable supporting-arm, of a guide consisting of a flat plate, a notched rearwardly-extending lug and two forwardly-projecting lugs upon the edges of said flattened plate, said lugs also forming semicircular projections from one end of said flattened plate and suitable means for adjustably supporting said guide upon said supporting-arm; substantially as described.

5. In a device of the class described, the combination with a supporting-arm, of a guide consisting of a flat plate, two forwardly-projecting lugs upon the edges of said plate, said lugs also forming curved projections on one end of said plate, and means for adjusting the position of said guide, substantially as described.

6. In a device of the class described, the combination with a suitable supporting-arm, of a guide consisting of a flat plate, two forwardly-projecting lugs upon the edges of said plate, means for angularly adjusting said guide upon said arm, and means for permitting said guide to be moved in all directions, substantially as described.

709,178. TOOL HOLDER AND GUIDE FOR GRINDSTONES. SILAS C. SCHOFIELD, Freeport, Ill. Filed Jan. 30, 1902. Serial No. 91,534. (No model.)

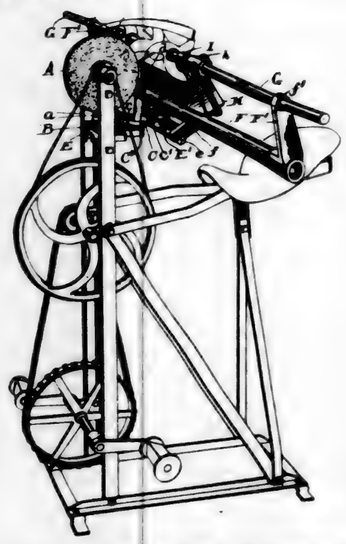

Claim.—1. The combination with a suitable grindstone and frame, of a frame pivotally connected to the supporting-frame of said grindstone, a suitable longitudinally-movable yoked shaft journaled in said frame, suitable means for supporting a lawn-mower cutter within said yoke in line with said shaft, and a suitable tool-guide adapted to fix the position of the blades of said cutter with reference to said grindstone; substantially as described.

2. In a device of the class described, the combination with a suitably-journaled, pivotally-swung frame, of two shafts, G, journaled in said frame, a yoke spanning the gap between the inner ends of said shafts, suitable means for adjusting space between the inner ends of said shafts and suitable means for holding an ordinary lawn-mower cutter in place between the inner ends of said shafts; substantially as described.

3. In a device of the class described, the combination with two shafts arranged in line and having a gap between them, of removable conically-socketed caps adapted to fit over the ends of said shafts and center a third shaft; substantially as described.

4. A tool guide and holder consisting of the plate, E, adapted to be clamped to the supporting-base of a grindstone, a tool-guide proper adapted to be adjustably clamped with reference to said grindstone, a frame pivotally connected to said plate, E, said frame consisting of a bar, F, upright journaled arms, F', thereon, two shafts, G, supported by said arms and having a gap between their inner ends, and a yoke, H, spanning said gap, and means for supporting a lawn-mower cutter between the inner ends of said shafts; substantially as described.

709,177. TOOL-GUIDE FOR GRINDSTONES. SILAS C. SCHOFIELD, Freeport, Ill. Filed Jan. 30, 1902. Serial No. 91,533. (No model.)

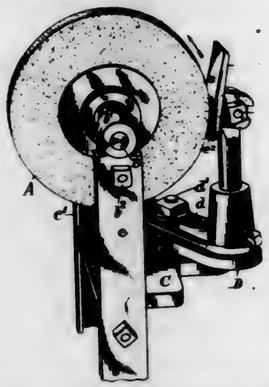

Claim.—1. In a device of the class described, the combination with a suitable supporting-arm, of a guide consisting of a flat plate supported by said arm, means for angularly adjusting said flat plate upon said arm, and means for altering the position of said guide in all directions, substantially as described.

2. In a device of the class described, the combination with a suitable supporting-arm, of a guide consisting of a flat plate, two forwardly-projecting lugs upon the edges of said plate and means for adjusting the position of said guide, substantially as described.

3. In a device of the class described, the combination with a slotted base and a grindstone rotatably journaled above the same, of a slotted plate upon said base, a bolt passing through the slots in said plate and said base, an arm extending upward from said plate, a flattened upper portion to said arm, a guide having a notched rearwardly-extending lug, and a suitable clamping-bolt passing through said flattened portion and

709,179. MACHINE FOR WINDING DRUM-ARMATURES. HENRY SCHULS, New York, N. Y. Filed Sept. 17, 1900. Renewed Feb. 20, 1902. Serial No. 94,924. (No model.)

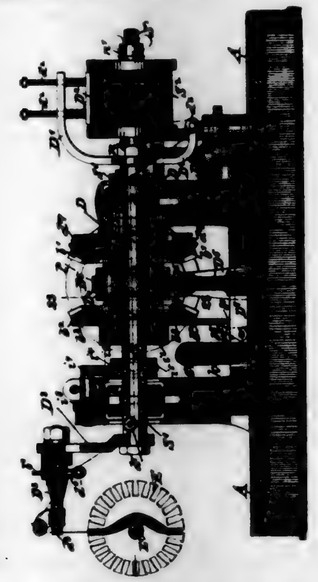

Claim.—1. The combination, with means for supporting an armature-core, of a winding-crank, means for feeding the coil-forming wire to said crank, and means for rotating said crank, substantially as set forth.

2. The combination, with means for supporting an armature-core, of a winding-crank supported at right angles to the shaft of an armature-core supported by said means, means for rotating said winding-crank so that its end moves in a vertical longitudinal plane around the armature-core, and means for feeding the coil-forming wire from the crank to the core, substantially as set forth.

3. The combination, with means for intermittently rotating an armature-core on its axis, of a rotary winding-crank, and means for feeding the coil-forming wire to said crank, substantially as set forth.

4. The combination, with means for intermittently rotating an armature-core on its axis, of a rotary winding-crank, means for feeding the coil-forming wire to said crank, and mechanism for reciprocating the winding-crank twice for each rotation of the crank for clearing the shaft of the armature-core, substantially as set forth.

5. The combination, with means for intermittently rotating an armature-core on its axis, of a rotary winding-crank, means for feeding the coil-forming wire to said crank, means for reversing the motion of the crank after a full coil is wound, and a loop-forming mechanism placed in the path of the wire on reversing the motion of the winding-crank, substantially as set forth.

6. The combination, with means for supporting an armature-core, of a coil-winding crank, a hollow shaft for the same, means for guiding the coil-forming wire through said shaft to the end of the crank, means for imparting rotary motion to the shaft of the winding-crank, means for reversing the motion of the winding-crank when a full coil is wound, and a loop-forming mechanism adapted to engage the wire when the motion of the crank is reversed so as to form a loop at the end of each coil, substantially as set forth.

7. In a machine for winding drum-armatures, the combination of a winding-crank, means for intermittently rotating an armature-core on its axis so as to present a new set of core-grooves to the winding-crank, means for feeding the wire to said winding-crank, means for rotating said crank, means for intermittently reversing the motion of the winding-crank, a loop-forming mechanism, and means for intermittently actuating the same so as to form a loop at the end of each coil, substantially as set forth.

8. In a machine for winding drum-armatures, the combination of stationary and adjustable centers for the shaft of an armature-core, a cylinder for supporting the adjustable center, means for connecting said cylinder with an armature-shaft supported in said centers, means for longitudinally adjusting the cylinder, a coil-winding mechanism, and a pawl-and-ratchet mechanism for intermittently actuating the cylinder so as to turn the armature-core on its axis for presenting a new set of grooves to the action of the winding mechanism, substantially as set forth.

9. In a machine for winding drum-armatures, the combination, with a driving-shaft, of a second shaft supported at right angles thereto, a bevel gear-wheel at the end of the main driving-shaft, intermeshing bevel gear-wheels mounted loosely on the second shaft, a clutch device for moving the bevel gear-wheel on the main driving-shaft into mesh with either one of the transmitting bevel gear-wheels, a worm-gear transmission operated by one of the bevel-gears, a fulcrumed lever actuated intermittently by said worm-gear transmission, a slide-bar connected with said fulcrumed lever and adapted for shifting the clutch so as to cause it to mesh with one or the other bevel gear-wheel for reversing the motion of the second shaft, and a coil-winding crank at the end of the second shaft, substantially as set forth.

10. In a machine for winding drum-armatures, the combination, with a coil-winding crank, of a longitudinally-guided and spring-actuated shaft for said crank, means for rotating said shaft, a stationary cam, and a collar on the shaft provided with antifriction-rollers that are placed twice in contact with the stationary cam for each rotation of said shaft so as to impart thereby twice longitudinally-reciprocating motion to the winding-crank during each rotation of the same, substantially as set forth.

11. In a machine for winding drum-armatures, the combination of a coil-winding crank, a rotary shaft to which said winding-crank is applied, a sleeve surrounding said tubular shaft, a helical spring interposed between said sleeve and shaft, a collar on said shaft provided with antifriction-rollers at diametrically opposite points, a stationary cam for engaging said rollers twice at each rotation of the shaft so as to produce the reciprocation of the shaft and winding-finger of the shaft twice during each rotation, substantially as set forth.

12. In a machine for winding drum-armatures, the combination of a coil-winding crank, a tubular shaft to one end of which said crank is applied, a wire-spool supported at the opposite end of said tubular shaft, guide-rollers for the wire located in the tubular shaft and on the winding-crank, a pair of guide-rollers at the end of the winding-crank, and means for imparting rotary motion to the shaft of the winding-crank, substantially as set forth.

13. In a machine for winding drum-armatures, the combination, with means for supporting the armature-core, of a rotary coil-winding crank, an intermittently-oscillating loop-forming finger, a guide-arm for said finger, and means for shifting said guide-arm and oscillating the finger after a full coil is wound on the armature-core, substantially as set forth.

14. In a machine for winding drum-armatures, the combination of means for supporting an armature-core, a coil-winding crank, a rotary shaft to which the winding-crank is applied, means for imparting rotary motion to said shaft in one direction, reversing mechanism for reversing the motion of the winding-crank after a coil is wound, a loop-forming finger located above the armature, a guide-arm for supporting the loop-forming finger, and means for actuating the arm and finger when the motion of the winding-crank is reversed so as to form a wire loop at the end of each coil, substantially as set forth.

15. In a machine for winding drum-armatures, the combination, with a rotary coil-winding crank provided with guide-rollers and a spring-actuated tension-roller for the wire to be wound, of a releasing-lever actuated by the shank of said tension-roller, and a stop-motion operated by said releasing-lever and connected by intermediate lever mechanism with a clutch on the main shaft, so as to arrest the motion of the machine on the breakage of the wire, substantially as set forth.

16. In a machine for winding drum-armatures, the combination of means for supporting an armature-core, a pawl-and-ratchet mechanism for intermittently turning an armature-core supported thereby, a winding mechanism for winding the coils on the armature-core, and a stop-motion for arresting the motion of the machine when all the coils are wound on the armature, substantially as set forth.

17. In a machine for winding drum-armatures, a loop-forming mechanism consisting of a curved guide-arm above the armature, an oscillating loop-forming finger supported on said guide-arm, and means for moving the finger into the path of the wire for forming the loop in connection with the end of the guide-arm, substantially as set forth.

18. In a machine for winding drum-armatures, a loop-forming mechanism actuated after each coil is wound and consisting of a curved guide-arm extending over the armature-core, and loop-forming finger pivoted to said guide-arm, means for oscillating the finger for shedding the loop of the coil last formed, and means for returning the finger into the path of the wire after the succeeding coil is formed for forming the new loop in connection with the end of the guide-arm, substantially as set forth.

19. In a machine for winding drum-armatures, a loop-forming mechanism actuated after each coil is wound and consisting of a curved guide-arm extending over the armature-core, a loop-forming finger pivoted to said guide arm, means for oscillating the finger for shedding the loop of

the preceding coil, means for returning the finger into the path of the wire after the succeeding coil is wound, for forming the loop over the finger and the end of the guide-arm, and means for shifting the guide-arm finger, and loop for clearing the next pair of armature-grooves for winding the next coil, substantially as set forth.

20. In a machine for winding drum-armatures, the combination, with means for intermittently rotating an armature-core, of a coil-winding mechanism, means for reversing said coil-winding mechanism after each coil is wound, a loop-forming mechanism actuated during the reversing of the coil-winding mechanism, and a stop device for the reversing mechanism for controlling the reverse motion of the winding mechanism until the loop is formed, substantially as set forth.

709,180. DELIVERY MECHANISM. WALTER SCOTT, Plainfield, N. J. Filed Apr. 27, 1901. Serial No. 57,738. (No model.)

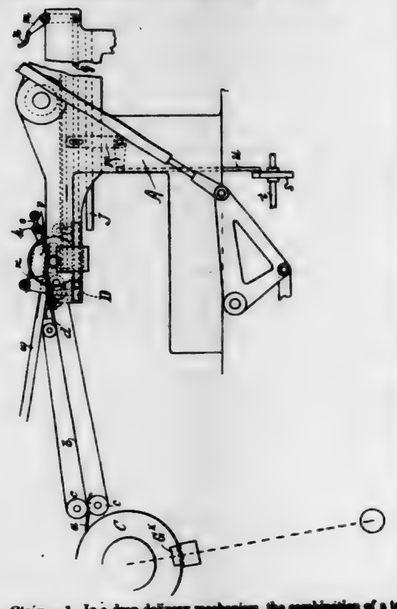

Claim.—1. In a drop-delivery mechanism, the combination of a to-and-fro-moving carriage, an extensible collapsible sheet-supporter operated thereby, a feed-board from which slip-sheets may be fed, and means underneath said board for feeding printed sheets onto said supporter underneath the slip-sheets, substantially as described.

2. In a drop-delivery mechanism, the combination of a to-and-fro-moving carriage, upper and lower gripper members thereon, a feed-board at the receiving end of said delivery mechanism from which slip-sheets may be fed to said grippers, and means underneath said board for feeding printed sheets to said grippers underneath the slip-sheets, whereby slip and printed sheets are gripped together at their heads and are associated as said grippers draw them out, substantially as described.

3. In a drop-delivery mechanism, the combination of a to-and-fro-moving carriage, fixed lower and movable upper gripper members thereon, a feed-board at the receiving end of said mechanism from which slip-sheets may be fed to said grippers, gages for said slip-sheets, and means underneath said board for feeding printed sheets to said grippers underneath said slip-sheets, substantially as described.

4. In a drop-delivery mechanism, the combination of a to-and-fro-moving carriage, upper and lower gripper members thereon, an extensible collapsible sheet-supporter operated by said carriage a feed-board from which slip-sheets may be fed, and means underneath said board for feeding sheets onto said supporter and to said grippers underneath the slip-sheets, substantially as described.

5. In a drop-delivery mechanism, the combination of a to-and-fro-moving carriage, fixed lower and movable upper grippers thereon, an extensible collapsible sheet supporter, a feed-board for slip-sheets, and means underneath said board for feeding printed sheets onto said supporter and to said grippers.

6. The combination with an impression-cylinder delivering sheets at its front, of a feed-board from which slip sheets are fed onto the printed sheets, the slip and the printed sheets moving in the same direction, and the slip-sheets subsiding upon the printed sheets as the latter are moved outward, and a delivery apparatus adapted to deliver associated sheets together on the receiving-board.

7. In a printing-press, the combination of an impression-cylinder delivering sheets at its front, a feed-board placed in front of said cylinder above the path of the printed sheets and from which slip-sheets may be fed to the sheet-path, both printed and slip sheets moving in the same direction, and the slip-sheets subsiding upon the printed sheets as the latter are moved outward, and a reciprocating delivery apparatus adapted to lay associated sheets on the receiving-board.

8. In a printing-press, the combination of an impression-cylinder delivering sheets at its upper front side, a feed-board placed above the path of the printed sheets, and sheet-supporting fingers at the lower end of said board for preventing the slip-sheets from resting on the printed sheets until the front ends of both meet at a common point.

9. In a printing-press, the combination of an impression-cylinder delivering sheets at its upper front side, a feed-board placed above the path of the printed sheets, sheet-supports at the lower end of said board for preventing the slip-sheet from resting on the printed sheet until both meet at a common point, and a reciprocating delivery mechanism adapted to deliver both sheets simultaneously.

10. In a printing-press, the combination of an impression-cylinder delivering sheets at its upper front side, a feed-board placed above the path of the printed sheets and from which slip-sheets may be fed, feed-gages to which the slip-sheets are fed so as to deliver them at the same point at which the printed sheets are delivered to the delivery mechanism, and said delivery mechanism for delivering said sheets flat on a receiving-board.

11. In a printing-press, the combination of an impression-cylinder receiving sheets at its upper side and delivering them at its front side into a sheet-path, a feed-board arranged above said path and from which slip-sheets may be fed in register with the front end of and associated with the printed sheets, and a reciprocating delivery mechanism adapted to deliver the associated sheets on a receiving-board.

12. In a stop-cylinder printing-press, the combination of an impression-cylinder delivering the printed sheets in front thereof, a feed-board from which slip-sheets may be fed to a point where the front edges of the printed sheets stop, said sheets being associated at such point, and a reciprocating delivery apparatus adapted to seize the associated sheets and draw them over the receiving-table.

13. In a stop-cylinder printing-press, the combination of an impression-cylinder delivering the printed sheets at its front side, a feed-board from which slip-sheets may be fed to a point where the front edges of the printed sheets stop, the slip and the printed sheets moving in the same direction, and the slip-sheets subsiding upon the printed sheets as the latter are moved outward, and a delivery mechanism provided with grippers for seizing the associated slip and printed sheets and drawing them out over a receiving-board.

14. In a stop-cylinder printing-press, the combination with an impression-cylinder delivering the printed sheets at its front, a feed-board from which slip-sheets may be fed to a point where the front edges of the printed sheets stop, said sheets being associated at such point, and a reciprocating delivery mechanism having a sheet-support, of a receiving table or board.

15. In a stop-cylinder printing-press, the combination of an impression-cylinder delivering the printed sheets at its front, a feed-board from which slip-sheets may be fed to a point where the front edges of the printed sheets stop, said sheets being associated at such point, a reciprocating delivery mechanism provided with grippers and with a sheet-support, said grippers seizing the heads of the associated sheets, and a receiving table or board.

16. In a stop-cylinder printing-press, the combination of an impression-cylinder delivering the printed sheets into a path in front thereof, the sheet stopping simultaneously with the cylinder, a feed-board from which slip-sheets may be fed to overlie the printed sheets from the front edges thereof, and a reciprocating delivery mechanism adapted to seize both sheets while in or near a state of rest and to deliver them onto a receiving board or table.

17. The combination of a reciprocating delivery having grippers which close to seize sheets and open to release them, a feed-board from which sheets may be fed to gages, the gages, and cam-operated means which simultaneously lower the gages and open said grippers.

709,181. SAND-BLAST APPARATUS. THEODORE A. RIPPEL, Newark, N. J. Filed Apr. 18, 1902. Serial No. 103,051. (No model.)

Claim.—1. In a sand-blast apparatus, comprising a casing, with the lower portion formed as a hopper for the abrasive material used; a valve to govern the flow of such abrasive material to an inner ejector-nozzle; and a pipe governed by a valve to convey an air-blast to such ejector; said pipe being attached at an angle downward so that the blast it carries may impinge upon and control the lower parts of such inner ejector-nozzle, and thus draw the abrasive material with it and force it through a fixed metallic tube connected thereto and adapted to carry it from the ejector at the bottom to a detachably-exchangeable blast-nozzle at the top of said casing, which nozzle extends downwardly therein; substantially as shown and described and for the purposes set forth.

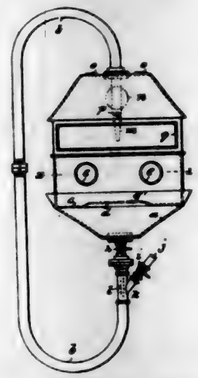

2. In a sand-blast apparatus, having its lower portion formed as a hopper for the abrasive material; the combination of an outlet-valve to govern the flow from such hopper, with an ejector, the inner tube of which extends to, and is beveled at right angles with an air-pressure inlet also governed by a valve; and a curved fixed metallic tube terminating in a detachable nozzle, connecting said ejector with the central top of such apparatus to convey the abrasive blast thereto; and a horizontal wire screen extending across the lower portion of the apparatus having a central sheet-metal shield which serves both as a rest for the articles to be operated upon and to protect the said hopper from the disturbing force of the said abrasive blast; substantially as shown and described, and as and for the purposes set forth.

709,182. CONTROLLER FOR ELECTRIC MOTORS. EMMETT W. SPELL, Johnstown, Pa., assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed June 10, 1901. Serial No. 63,940. (No model.)

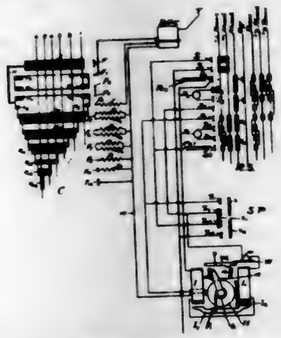

Claim.—1. In controlling mechanism for electric motors, the combination of a rheostatic switch, a mechanically-independent series-parallel switch, actuating means for the last-named switch operated by current derived from one of the motors temporarily acting as a generator for that purpose, and restraining means for said series-parallel switch controlled by the rheostatic switch.

2. In controlling mechanism for electric motors, the combination of a rheostatic switch having an open-circuit position, a separate series-parallel switch, a magnet or magnets for actuating said series-parallel switch connected in shunt with one of the motor-armatures, and means for preventing effective action of said magnet or magnets so long as the motor-circuit remains unbroken by the rheostatic switch, and means for utilizing such action to move the series-parallel switch from its series to its parallel position when the rheostatic switch is moved across its open-circuit position.

3. In controlling mechanism for electric motors, the combination of a rheostatic switch, having an open-circuit position, a separate series-parallel switch, a magnet or magnets for actuating said series-parallel switch connected in shunt with one of the motor-armatures, and means for preventing effective action of said magnet or magnets so long as the motor-circuit remains unbroken by the rheostatic switch, and means for utilizing such action to move the series-parallel switch from its series to its parallel position when the rheostatic switch is moved across its open-circuit position, together with suitable means, as a spring, for returning the series-parallel switch to series position when the rheostatic switch is brought to rest at its open-circuit position.

4. In controlling mechanism for electric motors, the combination of a manually-operated rheostatic switch having an open-circuit position, a separate series-parallel switch, means for automatically actuating said series-parallel switch in one direction by a movement of the rheostatic switch across its open-circuit position, and means for automatically actuating it in the opposite direction when the rheostatic switch is rested at its open-circuit position.

5. In controlling mechanism for electric motors, the combination of a rheostatic switch, a separate series-parallel switch, means for automatically actuating said series-parallel switch controlled by the movement of the rheostatic switch, and means for restraining such actuating means except under certain conditions, such restraining means being also controlled by the movement of the rheostatic switch.

6. In controlling mechanism for electric motors, the combination of a rheostatic switch having an open-circuit position, a separate series-parallel switch, means for automatically actuating said series-parallel switch controlled by the movement of the rheostatic switch, and electromagnetic restraining means for the series-parallel switch having its coil included in the main motor-circuit.

7. In controlling mechanism for electric motors, the combination of a rheostatic switch, having an open-circuit position, a separate series-parallel switch, an electromagnet having its coil or coils connected in shunt with an armature of one of the motors, an operative connection between the armature of said magnet and the series-parallel switch, and means for restraining the movement of the series-parallel switch except when the circuit is opened at the rheostatic switch.

8. In controlling mechanism for electric motors, the combination with a switch for connecting motors, or motor groups, in both series and parallel relation, of an electromagnet having one or more coils in shunt to one of the motor-armatures, a mechanical connection between the armature of said magnet and the movable member of said switch for moving the switch in one direction, a spring for actuating the switch in the opposite direction, and means whereby said magnet is effective only when the motor-circuit is opened and its coil or coils are energized by current generated by said armature turning in the residual field of the motor.

9. In controlling mechanism for electric motors, the combination with a series-parallel switch, and electromagnetic means for actuating the same, of a coil adjacent to said switch and included in the main circuit to the motors, pole-pieces exterior to said coil, and an arm of magnetic material attached to the movable member of said switch and extending between said pole-pieces, said arm forming a part of the magnetic circuit from the coil through said pole-pieces.

10. In controlling mechanism for electric motors, the combination with a series-parallel switch, and an electromagnet for actuating the said switch, having its coil or coils arranged to be connected in shunt with a motor-armature, of a coil connected in the main circuit to the motors, a pair of pole-pieces adjacent to the said coil, an arm connected to the movable member of said switch and extending between the said pole-pieces, said arm forming a part of the magnetic circuit from the coil to the pole-pieces, and an auxiliary switch arranged to close the shunt circuit of the magnet coil or coils at predetermined times.

11. In controlling mechanism for electric motors, the combination with a series-parallel switch, an electromagnet for actuating the same, having its coil or coils arranged to be connected in shunt with a motor-armature, and an auxiliary switch for effecting such connection, of a coil connected in the main circuit to the motors, a pair of pole-pieces adjacent to the said coil, and an arm connected to the movable member of the said switch and extending between the said pole-pieces, said arm forming a part of the magnetic circuit from the coil to the pole-pieces, and also arranged to operate the said auxiliary switch.

12. In controlling mechanism for electric motors, the combination of a rheostatic switch, having an open-circuit position, a separate series-

parallel switch, an electromagnet for actuating the said switch, said magnet having its coil or coils included in a shunt around one of the motor-armatures, and means whereby said magnet is effectually energized only when the motor-circuit is broken and the said armature is turning in a residual field of the motor, said rheostatic switch having an open-circuiting position which can be reached by movement of said switch in either direction, whereby the same set of movable switch-contacts are used for rheostatic control for both series and multiple relations of the motors.

13. In mechanism for the control of electric motors, a rheostatic switch having a compound blow-out coil, one part of which is always in series with the motors, and the other part of which is placed in series with the first part at the time the said switch is moved to its off position.

14. In mechanism for the control of electric motors, a rheostatic switch arranged to successively connect a number of resistance-coils in multiple in the motor-circuit, and to remove the same, of a blow-out coil therefor composed of two members, one of which is always in series with the motors, and the other of which is connected in series with a resistance-coil, and contacts in said switch for placing the last-named member of the blow-out coil and also the said resistance-coil in series with the motors as the switch is moved to its off position.

15. In mechanism for the control of electric motors, a rheostatic switch having a main group of contacts for controlling resistance in various ways to the motor-circuit, a secondary group of short contacts arranged to insert additional resistance in series in the motor-circuit just previous to breaking such circuit, and connections leading from the supply-conductor to each of said groups.

709,183. SWITCH-OPERATING DEVICE. JOSEPH STUPAR and FREDERICK STUPAR, Chicago, Ill. Filed Jan. 4, 1902. Serial No. 88,600. (No model.)

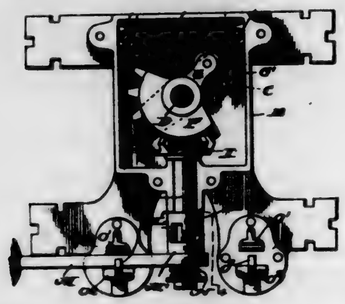

Claim.—1. In a switch-operating device, the combination with an operating-bar, a crank-arm to which said bar is connected, of the shaft carrying said crank-arm, an operating-lever, means for connecting the operating-lever with the shaft a shaft upon which the said operating-lever is loosely mounted, gearing connecting the said shaft carrying the lever, and the shaft carrying the crank-arm, all arranged and adapted to operate substantially as shown and described.

2. In a switch-operating device the combination with the operating-lever carrying a clutch-collar, of the horizontal shaft also provided with the clutch-collar and provided with a spring for throwing the said collars into engagement, a pinion carried by the horizontal shaft, a toothed segment adapted to engage the pinion, a vertical shaft carrying the said segment, said shaft carrying a signal at its upper end, and a crank-arm at its lower end, said crank-arm being adapted for engagement with the switch-bar, substantially as described.

3. In a switch-operating device, the combination with the switch-bar and crank-arm, of the vertical shaft to which the crank-arm is attached, the toothed segment mounted upon the vertical shaft and having the finger carrying a roller, a spring against which the rollers bears, a horizontal shaft carrying a pinion at one end, and a clutch-collar adjacent to the opposite ends an operating-lever loosely mounted upon the said horizontal shaft and provided with a clutch-collar adapted for engagement with the collar upon the shaft, and a spring for forcing the said collars into engagement, substantially as set forth.

4. In a switch-operating device, a lever-locking mechanism comprising a guide member, and the housing, a locking-catch pivoted in the said housing and provided with a shoulder at its lower end, a spring-actuated arm arranged within the housing and adapted to engage the said shoulder end of the catch, and a rotary hub adapted to engage the said spring-actuated arm for the purpose of disengaging the same and releasing the lever, substantially as set forth.

709,184. TIN-PLATE-CLEANING MACHINE. JOHN C. TALIAFERRO and CHARLES M. REYNARD, Baltimore, Md. Filed Nov. 29, 1901. Serial No. 83,986. (No model.)

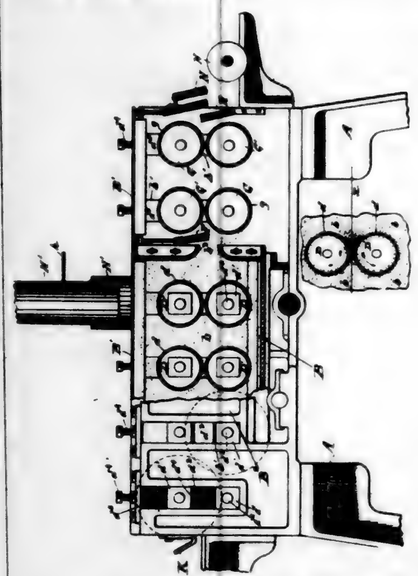

Claim.—1. In a tin-plate-cleaning machine, the combination with a box or receptacle containing a mass or body of bran or cleaning material, and having slots or openings at its ends for the sheets to pass through, of cleaning-rolls revolving together in pairs in the body of cleaning material, with a space between the rolls of each pair, and carrying on their surfaces layers of bran or cleaning material in contact with the sheets passing between them and operating to feed and force the sheets forward by the agency of the cleaning material itself, substantially as specified.

2. The combination with a box or receptacle containing a mass or body of cleaning material, of a pair of separated rolls revolving in said body or mass and operating to force the sheets through said body or mass by the agency of the cleaning material itself, substantially as specified.

3. The combination with a box or receptacle containing a mass or body of cleaning material, of a pair of separated rolls, said rolls having different surface speeds, revolving in said body or mass and operating to force the sheets through said body or mass by the agency of the cleaning material itself, substantially as specified.

4. The combination with a receptacle containing a mass or body of cleaning material, of a series of pairs of separated rolls having fibrous coverings revolving in said body or mass and feeding or forcing the sheets through said body or mass through the agency of the cleaning material itself between the rolls and the sheets passing between them, substantially as specified.

5. The combination with a receptacle containing a mass or body of cleaning material of a series of pairs of separated rolls having fibrous coverings revolving in said body or mass and feeding or forcing the sheets through said body or mass through the agency of the cleaning material itself between the rolls and the sheets passing between them, a feed or supply pipe for delivering the cleaning material to said box or receptacle, and a discharge pipe or hopper for the cleaning material, substantially as specified.

6. The combination with a receptacle containing a mass or body of cleaning material, of a series of pairs of separated rolls revolving in said body or mass and feeding or forcing the sheets through said body or mass through the agency of the cleaning material itself between the rolls and the sheets passing between them, and dusting or polishing rolls, substantially as specified.

7. The combination with a tinning mechanism feed or discharge chute down which hot, freshly-tinned sheets pass, of a receptacle containing a body of bran or cleaning material into which the hot sheets pass directly from said feed or discharge chute, rolls revolving in pairs in said cleaning material and operating to feed or force the sheets through the same, the hot sheets heating the cleaning material and the cleaning material covering the sheets and causing them to retain their heat during the cleaning operation, substantially as specified.

8. The combination with a tinning mechanism feed or discharge chute down which hot, freshly-tinned sheets pass, of a receptacle containing a body of bran or cleaning material into which the hot sheets pass directly from said feed or discharge chute, rolls revolving in pairs in said cleaning material and operating to feed or force the sheets through the same, the hot sheets heating the cleaning material and the cleaning material covering the sheets and causing them to retain their heat during the cleaning operation, the rolls of each pair being at a distance apart, and means for driving the rolls at different speeds, substantially as specified.

9. In a tin-plate-cleaning machine, the combination with a bran-holding box, of a series of pairs of rolls revolving and enveloped in the body of bran and between which the sheets pass, substantially as specified.

10. In a tin-plate-cleaning machine, the combination with a bran-holding box, of pairs of fast and slow cleaning-rolls revolving in the body of cleaning material, substantially as specified.

11. The combination with a bran-box having opposite sides furnished with vertical slots or ways to receive the boxes or journals of the roll-shafts, of cleaning-rolls revolving therein and having boxes or journals fitting in said slots or ways, substantially as specified.

12. The combination with a bran-box having opposite sides furnished with vertical slots or ways to receive the boxes or journals of the roll-shafts, of cleaning-rolls revolving therein and having boxes or journals fitting in said slots or ways and springs interposed between the boxes of the rolls, substantially as specified.

13. In a tin-plate-cleaning machine, the combination with a box or receptacle containing a mass or body of bran or cleaning material, having slots or openings at its ends for the sheets to pass through, of cleaning-rolls revolving together in pairs in the body of the cleaning material, with a space between the rolls of each pair, carrying on their surfaces layers of the bran or cleaning material in contact with the sheets passing between them, and a brush at the exit-slot in said box for the sheets to prevent the cleaning material issuing too rapidly at the exit-slot, substantially as specified.

709,185. PROCESS OF MAKING FERTILIZERS. BRUNO TERNE, Philadelphia, Pa. Filed May 7, 1902. Serial No. 106,355. (No specimens.)

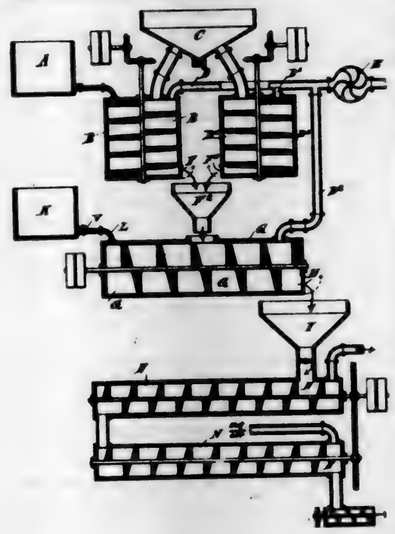

Claim.—The process herein described of making fertilizers, which consists in treating a phosphate-containing substance with sulfuric acid for rendering the same more fully soluble, simultaneously agitating the mass and adding slowly to the same a concentrated ammoniacal liquor and drawing off the resulting fumes, forcing a current of dry heated air through the mass and simultaneously agitating the same, and finally grinding and pulverizing the mass for use, substantially as set forth.

709,186. BLUE DYE AND PROCESS OF MAKING SAME. ARTHUR WEINBERG and FELIX KLIEGMANN, Frankfort-on-the-Main, Germany, assignors to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed Dec. 31, 1901. Serial No. 87,957. (Specimens.)

Claim.—1. The process of producing blue cotton dyestuffs of the herein-described constitution which consists in diazotizing one molecule of amido acetnaphtalid sulfo-acid, combining successively with two molecules of Cleve acid, diazotizing again and finally combining with one molecule of 2 amido 5 naphthol 7 sulfonic acid substantially as described.

2. The blue cotton dyestuff of the constitution mentioned above which is a dark-blue or bronzy powder easily soluble in water with a bright blue color, being precipitated by addition of hydrochloric acid, dissolving with a blackish-blue shade in concentrated sulfuric acid, separating from such solution by addition of water and dyeing unmordanted cotton indigo-blue shades fast to light substantially as described.

709,187. YELLOW ACRIDIN DYE AND PROCESS OF MAKING SAME. ARTHUR WEINBERG, Frankfort-on-the-Main, Germany, assignor to Leopold Cassella & Co., Frankfort-on-the-Main, Germany. Filed Jan. 14, 1902. Serial No. 89,793. (Specimens.)

Claim.—1. The process of producing new acridin dyestuffs by heating acridin compounds of the formula $C_{13}H_{11}N.(NX)_2$ where X means hydrogens or alcoyls, or the corresponding base derivatives, together with aromatic amins and formaldehyde substantially as described.

2. As a new article of manufacture the coloring-matter which can be obtained by the condensation of acridin yellow, formaldehyde and aromatic amins, and which dissolves in water with a yellow shade, in alcohol with a yellow shade showing a green fluorescence, in diluted mineral acids with an orange shade, and which dyes tanned cotton fast yellow shades substantially as described.

709,188. WALL-FINISH AND PROCESS OF MAKING SAME. GEORGE W. WOSSKA, St. Louis, Mo. Filed Apr. 28, 1902. Serial No. 105,006. (No specimens.)

Claim.—1. The process of manufacturing a lusterless non-peeling wall-finish which consists of the following steps: soaking four pounds of gum-tragacanth in water for twenty-four hours, then boiling the same for one hour, straining the resultant solution, mixing it with two thousand pounds of pure raw pulverized marble, drying and pulverizing the mixture thus formed, and adding alum and glue in the proportions specified, substantially as and for the purposes set forth.

2. A composition of matter constituting an improved wall-finish, consisting of the following materials in substantially the described proportions, by weight: pure raw pulverized marble, two thousand parts; gum-tragacanth, four parts; glue, eighty parts; and alum twenty parts.

709,189. FAUCET OR TAP. LEO WOLF, Kansas City, Mo. Filed Mar. 29, 1902. Serial No. 100,008. (No model.)

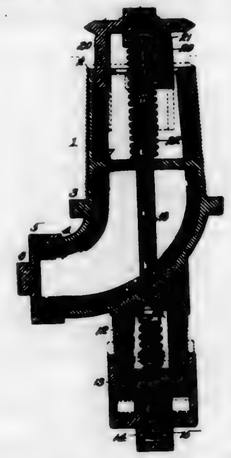

Claim.—1. A tap or faucet, comprising a tubular plug, having a valve-seat at one end and terminating in an offsetting arm or nozzle at

the other, and provided with a tubular threaded arm in axial alinement with the tubular plug valve-seat, a longitudinally-extending rod arranged centrally of the tubular threaded arm and provided with a valve at one end and a thread at the other, the thread running oppositely to that of the tubular arm, and a threaded cap engaging said threaded arm and provided also with a thread engaging that of the valve-rod, so that when turned longitudinal movement shall be imparted to the rod.

2. A tap or faucet, comprising a tubular plug having a valve-seat at one end and terminating in an offsetting arm or nozzle at the other, and provided internally with a centrally-apertured cross-bar, and externally at the opposite end from said valve-seat with a hole and a second valve-seat, a rod extending through said bar and said hole and provided at one end with a valve to engage the first-named seat, and with a second valve to engage the external valve-seat, and means, carried by the plug for imparting longitudinal movement to said rod so as to simultaneously move said valves toward and from their respective seats.

3. A tap or faucet, comprising a tubular plug having a valve-seat at one end and terminating in an offsetting arm or nozzle at the other, and provided internally with a centrally-apertured cross-bar, and externally at the opposite end from said valve-seat with a hole and a second valve-seat, a rod extending through said bar and said hole and provided at one end with a valve to engage the first-named seat, and with a second valve to engage the external valve-seat, and a spring to hold said rod with its last-named valve yieldingly against said external seat.

4. A tap or faucet, comprising a tubular plug having a valve-seat at one end and terminating in an offsetting arm or nozzle at the other, and provided internally with a centrally-apertured cross-bar, and externally at the opposite end from said valve-seat with a hole and a second valve-seat, a rod extending through said bar and said hole and provided at one end with a valve to engage the first-named seat, and with a second valve to engage the external valve-seat, a spring to hold said rod with its last-named valve yieldingly against said external seat, and means, carried by the plug for withdrawing said rod and reseating the first-named valve against the resistance of said spring.

709,190. DIPPING-ROLL FOR MATCH-MACHINES. JACOB P. WEIMER, Akron, Ohio, assignor to the Diamond Match Company, New York, N. Y., a Corporation of Illinois. Filed Jan. 17, 1902. Serial No. 90,173. (No model.)

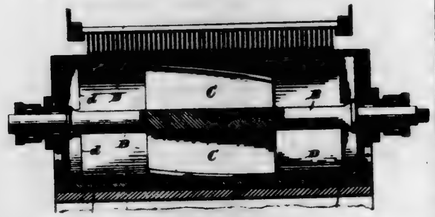

Claim.—1. The combination of a composition vat or receptacle, a hollow dipping-roll, and means within the roll for agitating the composition, substantially as and for the purpose described.

2. The combination of a composition vat or receptacle, a hollow dipping-roll, and means for causing movement of the composition through the roll, substantially as and for the purpose described.

3. The combination of a composition vat or receptacle, a hollow dipping-roll, having passages between its interior and exterior, and means for causing circulation of the composition into, through and out of the roll, substantially as and for the purpose described.

4. The combination of a composition vat or receptacle, a hollow dipping-roll, having passages between its interior and exterior, and means within the roll for causing circulation of the composition, substantially as and for the purpose described.

5. The combination of a composition vat or receptacle, a hollow roll, and spiral arms therein, substantially as and for the purpose described.

6. The combination of a composition vat or receptacle, a hollow roll, a shaft, and spiral arms between the shaft and roll, substantially as and for the purpose described.

7. The combination of a composition vat or receptacle, a hollow roll having passages at its ends, a shaft, and spiral arms between the shaft and roll, substantially as and for the purpose described.

8. The combination of a composition vat or receptacle, and a hollow roll whose ends have projecting lugs between which are spaces for the passage of composition, substantially as and for the purpose described.

9. The combination of a composition vat or receptacle, a hollow roll whose ends have projecting lugs between which are spaces for the passage of composition, and means for causing composition to pass through the roll, substantially as and for the purpose described.

709,191. ROCK-DRILL. RUSSELL AVERY, Sausalito, Cal., assignor to Avery Drill Company, San Francisco, Cal., a Corporation of California. Filed Dec. 21, 1901. Serial No. 86,850. (No model.)

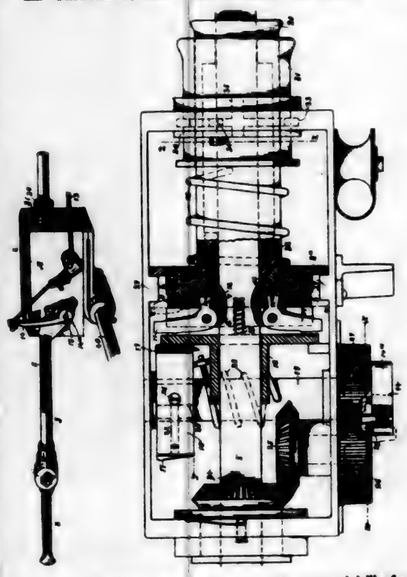

Claim.—1. The combination in a manually-operated drill, of a casing and a bevel-gear located within the casing through which the drill-bar is guided and slidable, a second bevel-gear mounted upon a transverse shaft engaging the first-named gear, a lever-arm exterior to the casing with connections whereby the gears and drill may be turned by the movement of the lever, a cord having one end connected with the outer end of the lever and the opposite end with the person of the hammer-wielder whereby the drill is turned at each backward swing of the body, and a spring by which the lever is returned to its normal position when released.

2. The combination in a drill of a casing and a bevel-gear through which the drill-bar is guided and slidable, a transverse shaft carrying a bevel-gear engaging the first-named and a spur-gear upon the outer end, a second transverse shaft having a spur-gear upon its outer end engaging the spur-gear of the first-named shaft, an exterior lever, a cord connecting its outer end with a means to reciprocate it, means connecting the inner end of the lever with the second shaft whereby said shaft is turned by a forward movement of the lever, and a spring by which the lever and shaft are returned to their normal position when released.

3. The combination in a drill of a casing, a drill-bar guided and movable therethrough, bevel-gears through which movement is transmitted to turn the drill, a transverse shaft in the casing, a lever-arm fixed to the outer end of the shaft through which movement is transmitted to turn the shaft, a clamping device adapted to grip the drill-bar, a cam carried by and turnable with the shaft by which said clamp grips and retracts the drill-bar at the first part of the turning of the shaft and gears and pawl-and-ratchet mechanism by which the movement of the shaft is subsequently transmitted to turn the drill.

4. The combination in a drill of a casing through which the drill-bar is guided and slidable, bevel-gears by which the drill is turnable, a clamping mechanism by which the drill-bar is engaged and retracted previous to turning, said mechanism consisting of a transverse shaft carrying the clamp-actuating cam, a lever fixed upon the outer end of the shaft through which movement is transmitted, a gear and internal ratchet loosely turnable upon the shaft, a spring-pressed pawl-pin carried by the lever and movable therewith so that the drill is retracted before the pawl engages the ratchet, and a second gear through which motion is transmitted from the first one to turn the drill.

5. The combination in a drill of a casing, a drill-bar guided and slidable therethrough, means for retracting the drill previous to turning, consisting of teeth or serrations upon the drill-bar, pawls adapted to engage said teeth, means by which said pawls are forced into engagement consisting of a revolvable cam and disk through which movement is transmitted, a shaft by which the cam is carried, a lever-arm fixed to the outer end of the shaft, connections between said lever-arm whereby it is moved, and the shaft and cam partially rotated, and the spring connected with the shaft by which the parts are returned to their normal position.

6. The combination in a drill of a casing, a drill the bar of which is guided and slidable therethrough, teeth or serrations formed upon the drill-bar, pawls and a carrier within which they are movable, levers engaging said pawls, a cam mounted upon a shaft and turnable therewith, a disk slidable upon the drill-bar against which disk the cam acts and through which the pawl-levers are actuated, and the pawl caused to grip the drill-bar and the latter is retracted.

7. The combination in a drill of a casing, a drill, the bar of which is guided and slidable within the casing, a gripping mechanism consisting of pawls and levers by which they are caused to grip the drill-bar, a cam mounted upon a revolvable shaft through which cam the movement is transmitted to actuate the pawl-levers, a shaft through which motion is transmitted to the cam, said shaft having ratchet-teeth and turnable loosely in one direction within the cam, a spring-pressed pawl carried by the cam and engaged by the teeth of the shaft when turned to advance the cam, and a spring by which the shaft is turned backwardly when impelling pressure is removed.

8. In a drill, a casing, a drill, the bar of which is guided and slidable therein, gripping pawls and levers by which they are forced into contact with the drill-bar, a cam mounted upon a transverse revolvable shaft, and by which the pawl-levers are actuated, pawl-and-ratchet connections between the cam and the shaft upon which it is mounted whereby the cam is advanced when the shaft is turned in one direction and a spring by which the shaft is returned within the cam when the turning pressure is relieved.

9. In a drill, a casing, a drill the bar of which is guided and slidable within the casing, mechanism by which the drill-bar is first retracted and subsequently turned, said mechanism consisting of pawls and a cam by which the pawls are caused to grip and retract the drill-bar, a shaft upon which the cam is carried, a spur-gear loosely mounted upon the shaft having a ratchet-wheel formable in unison with it, a lever-arm fixed upon the shaft through which power is transmitted to turn it, a spring-pressed pawl carried by the lever and normally out of operative contact with the ratchet-teeth whereby the shaft and cam are moved before the pawl engages the ratchet, a second spur-gear engaged by the first mounted upon a shaft within the casing, and bevel-gears through which motion is transmitted to turn the drill-bar when the pawl has engaged with the ratchet, and a spring surrounding the first-named shaft whereby the shaft and parts carried thereby are returned to their normal position after the pull upon the lever has been released.

10. In a drill, a casing, a drill the bar of which is guided and slidable therein, an oscillating lever and a transverse shaft to which it is fixed, a cam and gripping-pawls actuated thereby to first retract the drill, spur and bevel gears carried thereby through which motion is transmitted from the shaft to subsequently turn the drill and a spring acting against the pawl-carriers whereby the drill is forced against the surface to be operated on when released from its pawls.

11. In a drill, the casing, a drill, the bar of which is guided and slidable within the casing, gripping mechanism by which the drill-bar is retracted, and bevel-gears by which it is subsequently turned, a lever, a shaft to which it is connected, and a cam and pawl-and-ratchet mechanism actuated by said shaft to retract and turn the drill successively, a sleeve extending through the rear of the casing and connected with the pawl-carrier, a second sleeve surrounding the first one and itself movable through the end of the casing, a spiral spring surrounding the first sleeve, with one end pressing against the pawl-carrier and the other against the inner end of the outer sleeve, an annular groove in the casing, a lug carried by the outer sleeve, a channel by which it may be moved to engage the groove or the face of the sleeve in front thereof to regulate the tension of the spring.

12. The combination in a drill of a casing and a bevel-gear through which the drill-bar is guided and slidable, a transverse shaft carrying a bevel-gear engaging the first named, and a spur-gear upon the outer end, a second transverse shaft having a spur-gear upon its outer end engaging the spur-gear of the first-named shaft, an exterior lever, a cord, one end of which is connected to the outer end of the lever, and the other end with a means by which it may be periodically reciprocated between the drill-impelling blows, means connecting the inner end of the lever with the second shaft, whereby said shaft is turned by a forward movement of the lever, and a spring by which the lever and shaft are returned to their normal position when released.

709,192. SHOVEL-SUPPORT. JAMES BAKER, Carroll, Nebr. Filed Nov. 12, 1901. Serial No. 82,000. (No model.)

Claim.—1. The combination with a shovel, of a support therefor, and an elastic connection between the shovel and support, the said connection being rotatable and also longitudinally slidable on the said support.

2. The combination with a shovel, of a support therefor, and a spring interposed between the shovel and support and connected at opposite ends therewith.

3. The combination with a shovel, of an overhead supporting-rod, and a spring connected at one end to the shovel and having its opposite end connected with the supporting-rod so as to be capable of a sliding movement thereon.

4. The combination with a shovel, and a clevis applied thereto, of an overhead supporting-rod, and a spring connecting between the clevis and supporting-rod capable of a sliding movement on said rod.

5. The combination with a shovel, and a clevis applied thereto and provided with a series of openings, of an overhead supporting-rod, and a spring having a sliding connection with said rod, and an adjustable connection with the clevis.

6. The combination with a shovel, of a support therefor comprising a standard, a reversible crane-arm connected with said standard, a support carried by said crane arm and a yielding connection between the shovel and said support.

709,198. DOOR FOR RAILWAY-WAGONS OR THE LIKE. FRED BAINES, Sheffield, England. Filed Dec. 13, 1901. Serial No. 85,746. (No model.)

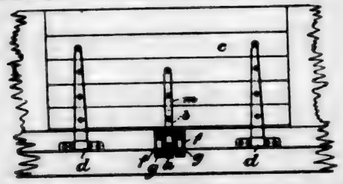

Claim.—1. The combination of a door for railway-wagons and the like, mounted vertically on a horizontal pivot and adapted to open downward to a horizontal position, with means for balancing the weight of the door when opened downward and limiting its downward motion.

2. The combination of a door for railway-wagons and the like, mounted vertically on a horizontal pivot and adapted to open downward into a horizontal position, with means capable of adjustment for balancing the weight of the door when opened downward and limiting its downward motion.

3. The combination of a door for railway-wagons and the like, mounted vertically on a horizontal pivot and adapted to open downward into a horizontal position, with a spring for balancing the weight of the door when opened downward and limiting its downward motion.

4. The combination of a door for railway-wagons and the like, mount-

ed vertically on a horizontal pivot and adapted to open downward into a horizontal position, with a spring for balancing the weight of the door when opened downward and limiting its downward motion, and means for adjusting the tension of the spring, substantially as described.

709,194. FRICTION-CLUTCH. GEORGE M. BENNETT, Kenosha, Wis., assignor of one-half to Thomas Forgham, Kenosha, Wis. Filed July 13, 1901. Serial No. 68,196. (No model.)

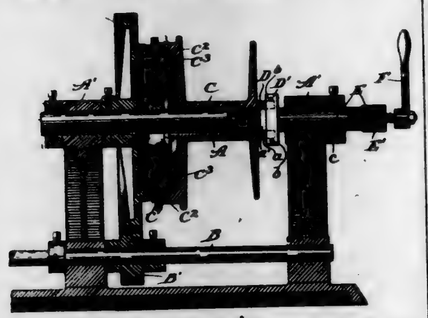

Claim.—1. The combination of a driving member and a driven member, one of said members being provided with a cone and the other with a bell for receiving said cone, a sectional collar loosely supported between said bell and cone and means for shifting one of said first-named members to press the sectional collar into engagement with the other member to produce frictional engagement between said collar and both said members, substantially as described.

2. In a friction-clutch, the combination of a driving member and a driven member, one of said members being provided with a cone and the other with a bell for receiving said cone, a peripheral channel being provided between said cone and bell, blocks of friction material loosely supported within said channel, and means for shifting one of said members to produce frictional engagement, substantially as described.

3. In a friction-clutch, the combination of a driving member and a driven member, one of said members being shiftable, a loose collar comprising blocks of friction material supported between said first-named members, and means for shifting said shiftable member, thereby to produce friction between both said first-named members and said sectional collar, for the purpose set forth.

709,195. BAND FOR BRACELETS, &c., AND METHOD OF MANUFACTURING SAME. THOMAS S. BENNETT, Providence, R. I. Filed Dec. 23, 1900. Serial No. 41,236. (No model.)

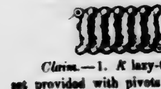

Claim.—1. *R* lazy-tongs band composed of two sets of arms, one set provided with pivots and the other with means for the reception of said pivots, the said pivot-bearing arms each comprising a plate having suitable pivots secured thereto, and a recessed body within which said pivot-bearing plate is secured, substantially as and for the purpose set forth.

2. A lazy-tongs band composed of two sets of arms, one set provided with pivots and the other with means for the reception of said pivots, the said pivot-bearing arms each comprising a plate having suitable pivots secured thereto, and a body-piece formed of stamped-up sheet metal, the said pivot-bearing plate being placed within the body-piece with the edges of the latter bent inwardly to secure said plate in place, substantially as and for the purpose set forth.

3. A lazy-tongs band composed of pairs of pivoted arms, the front one of each of which pairs comprises a recessed body and a plate provided with pivots and placed within the recess of said body with the pivots projecting from the rear face thereof, and the rear arm of said pair comprising a recessed body having the outer face thereof perforated to receive the pivots projecting from the said front arm and provided upon the interior with a suitable plate for receiving and holding the said pivots, substantially as and for the purpose set forth.

4. A lazy-tongs band composed of pairs of arms pivoted to each other at or near their centers and having the ends thereof pivoted to the corresponding ends of the adjacent pair of arms, each of the said pairs of arms comprising, first, a front arm comprising a recessed body and a plate provided with a central pivot and a second plate having a pivot at each end thereof, said plates being set within said body with the pivots thereof projecting from the rear face of said arm, and, second, a rear arm comprising a body recessed upon the rear face thereof and having its outer face provided with perforations for receiving the three pivots projecting from the said front arm, and a plate secured within the recess of said rear arm for receiving and holding each of said pivots, substantially as and for the purpose set forth.

5. A lazy-tongs band composed of pairs of arms pivoted to each other at or near their centers and having the ends thereof pivoted to the corresponding ends of the adjacent pair of arms, each of the said pairs of arms comprising, first, a front arm comprising a recessed body and a plate provided with a central pivot and a second plate having a pivot at each end thereof, said plates being set within said body with the pivots thereof projecting from the rear face of said arm, and, second, a rear arm comprising a body recessed upon the rear face thereof and having its outer face provided with perforations for receiving the three pivots projecting from the said front arm, and a plate secured within the recess of said rear arm for receiving and holding each of said pivots, and, third, a spring interposed between the two said arms and projecting into each of them and normally tending to close the arms on the central pivot on each other, substantially as and for the purpose set forth.

6. A lazy-tongs band composed of pairs of arms pivoted to each other at or near their centers and having the ends thereof pivoted to the corresponding ends of the adjacent pair of arms, each of the said pairs of arms comprising, first, a front arm comprising a recessed body and a plate provided with a central pivot and a second plate having a pivot at each end thereof, said plates being set within said body with the pivots thereof projecting from the rear face of said arm, and, second, a rear arm comprising a body recessed upon the rear face thereof and having its outer face provided with perforations for receiving the three pivots projecting from the said front arm, and a plate secured within the recess of said rear arm for receiving and holding each of said pivots, and, third, a coiled spring surrounding said central pivot and having one end thereof projecting into the interior of the front arm and the other end projecting into the interior of the rear arm and acting to normally close the arms on each other on the central pivot, substantially as and for the purpose set forth.

7. A lazy-tongs band composed of pairs of arms pivoted to each other at or near their centers and having the ends thereof pivoted to the corresponding ends of the adjacent pair of arms, each of the said pairs of arms comprising, first, a front arm comprising a body recessed upon its rear face, and a plate provided with a central pivot and placed within the recess of said body together with a second plate provided with a central perforation for the central pivot of the first plate to project through and having a pivot projecting from each end thereof and also placed within said recess and secured therein so that the three said pivots project rearwardly from the said front arm, and, second, a rear arm comprising a body recessed upon its rear side and formed upon its outer face with a central perforation for receiving the central pivot of its fellow-arm and end perforations for receiving the end pivots of the front arms of the next adjacent pair of arms, and a plate fixed within the recess of said rear arm for receiving and holding the said pivots, substantially as and for the purpose set forth.

8. A lazy-tongs band composed of pairs of arms pivoted to each other at or near their centers and having the ends thereof pivoted to the corresponding ends of the adjacent pair of arms, each of the said pairs of arms comprising, first, a front arm comprising a body recessed upon its rear face, and a plate provided with a central pivot and placed within the recess of said body together with a second plate provided with a central perforation for the central pivot of the first plate to project through and having a pivot projecting from each end thereof and also placed within said recess and secured therein so that the three said pivots project rearwardly from the said front arm, and, second, a rear arm comprising a body recessed upon its rear side and formed upon its outer face with a central perforation for receiving the central pivot of its fellow arm and end perforations for receiving the end pivots of the front arms of the next adjacent pairs of arms, and a plate fixed within the recess of said rear arm for receiving and holding the said pivots, and a backing-plate secured over the recess of said rear arm to close and conceal the same, substantially as and for the purpose set forth.

9. A lazy-tongs band composed of sets of pairs of pivoted arms, each of the said pairs of arms comprising, first, a front arm consisting in a recessed body *a*, and a plate *b* provided with a rearwardly-projecting central pivot *c* and set within said recess, another plate *d* provided with a central perforation *d'* through which the said central pivot *c* projects and each plate provided at its ends with rearwardly-projecting pivots *c'*, the said plate *d* being set within the recess of the body *a* and the edges of the latter bent over upon the same, and, second, a rear arm comprising a recessed body *f*, having the outer face thereof formed with a central opening *f'* for receiving the central pivot *c* of the front arm and also formed with end perforations for receiving the end pivots *c'* of the next adjacent pair of arms, and a plate *h*, secured within the recess of said rear arm for receiving and holding the said pivots *c* and *c'*, substantially as and for the purpose set forth.

10. A lazy-tongs band composed of sets of pairs of pivoted arms, each of the said pairs of arms comprising, first, a front arm comprising a recessed body *a*, and a plate *b*, provided with a rearwardly-projecting central pivot *c*, and set within said recess, another plate *d* provided with a central perforation *d'* through which the said central pivot *c* projects and each plate provided at its ends with rearwardly-projecting pivots *c'*, the said plate *d* being set within the recess of the body *a* and the edges of the latter bent over upon the same, and, second, a rear arm comprising a recessed body *f*, having the outer face thereof formed with a central opening *f'* for receiving the central pivot *c* of the front arm and also formed with end perforations for receiving the end pivots *c'* of the next adjacent pair of arms, and a plate *h*, secured within the recess of said rear arm for receiving and holding the said pivots *c* and *c'*, and a backing-plate *i*, placed over the recess of the body *f*, for closing the same, substantially as and for the purpose set forth.

11. A lazy-tongs band composed of sets of pairs of pivoted arms, each of the said pairs of arms comprising, first, a front arm consisting in a recessed body *a*, and a plate *b*, provided with a rearwardly-projecting central pivot *c* and set within said recess, another plate *d* provided with a central perforation *d'* through which the said central pivot *c* projects and each plate provided at its ends with rearwardly-projecting pivots *c'*, the said plate *d* being set within the recess of the body *a* and the edges of the latter bent over upon the same, and, second, a rear arm comprising a recessed body *f*, having the outer face thereof formed with a central opening *f'* for receiving the central pivot *c* of the front arm and also formed with end perforations for receiving the end pivots *c'* of the next adjacent pair of arms, and a plate *h*, secured within the recess of said rear arm for receiving and holding the said pivots *c* and *c'*, and, third, a coiled spring *e* surrounding the central pivot *c* and having one end *e'* thereof projecting into the said front arm and engaging a fixed point therein and the other end e^2 projecting into the rear arm and engaging a fixed point therein the said spring tending to normally close the pair of arms on each other on the central pivot, substantially as and for the purpose set forth.

709,196. TUBULAR-RIVET-SETTING MACHINE. THOMAS S. BENNETT, Attleboro, Mass., assignor to The D. F. Briggs Company, Attleboro, Mass. Filed Feb. 24, 1902. Serial No. 95,203. (No model.)

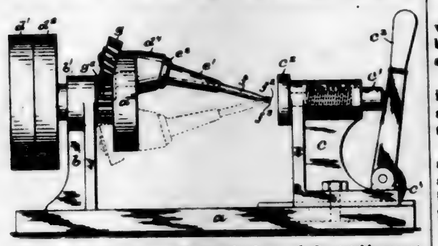

Claim.—1. In a rivet-setting mechanism, a shaft rotatably mounted in bearings, a head formed integral with or secured to the shaft, means for rotating the shaft, a bearing set at an angle and formed integral with the head, a tool-holder in the bearing, and means for rotating the bearing around the tool-holder and retarding or holding the tool-holder from rotating on its own axis.

2. In a rivet-setting mechanism, a shaft rotatably secured in bearings, a head secured to the shaft, means for rotating the shaft, a bearing set at an angle in the head and offset from the center of the shaft, a tool-holder shaft in the bearing, a tool-holder on the shaft, a riveting-tool secured in the tool-holder, and gearing connecting the tool-holder shaft with a fixed gear to retard or hold the tool-holder shaft from rotating.

3. In a rivet-setting mechanism, a head rotatably secured in bearings, a riveting-tool set at an angle in and offset from the center of the head, means for rotating the head, and gearing connecting the riveting-tool with a fixed gear to retard or hold the riveting-tool from rotating.

4. In a rivet-setting mechanism, a head formed integral with or secured to a shaft rotatably mounted in bearings, a riveting-tool set at an angle in the head and having a face set at right angle to the axis of the tool, and means for rotating the head to give to the face of the riveting tool a continuous rocking motion, as described.

5. In a rivet-setting mechanism, a shaft rotatably mounted in a bearing, a head secured to the shaft, a gear fixed to the bearing intermediate the head and the bearing and surrounding the shaft, a bearing in the head offset from the center of the shaft and set at an angle to the shaft, a tool-holder in the bearing, a riveting-tool secured in the holder having a face at right angle to its axis and a cone-shaped point projecting from its face, a skew-gear secured to the end of the tool-holder, an intermediate gear pivotally secured to the head connecting the skew-gear with the fixed gear for retarding or holding the riveting-tool from rotating, means for forcing the face of the riveting-tool against the tubular end of the rivet, and means for rotating the riveting mechanism to give to the face of the riveting-tool a continuous rocking motion to force or roll the tubular end of the rivet over and upon the article to be riveted, as described.

6. In a tubular or semitubular riveting machine, the base *a*, the head-stock *b* secured to the base, the tail-stock *b* adjustably secured to the base, the spring-pressed plunger *c* with the end c^3 in the tail-stock and on a line with the riveting-tool, the lever c^5 pivotally held in position to operate on the plunger *c'* by the stop c^4 to force the rivet against the face of the riveting-tool, the shaft *d* having its bearing *b'* in the head-stock *b* and carrying the fast pulley *d'* and the loose pulley d^2 on its outer end, and the head d^3 on its inner end, the bearing d^4 set at an angle in the head, the tool-holder shaft *e* in the bearing d^4, the tool-holder *e'* secured to the shaft *e* and having the shoulder e^3 shaped on its inner face to run on a circle of balls e^4, the cup-shaped depression or raceway e^5 in the end of the bearing d^4 forming a ball-bearing to take the thrust of the riveting-tool, the tapered hole e^6 for frictionally securing the tapered end *f'* of the riveting-tool *f* to the tool-holder, the cone-shaped point f^2 to slightly expand the tubular end of the rivet, and the flange or face f^3 to roll or force the end of the rivet over and upon the article to be riveted, the skew-gear *g* on the shaft *e*, the intermediate gear *g'* pivotally secured to the head d^3 by the stud g^2, and the fixed gear g^3 secured to the bearing *b'* and surrounding the shaft *d*, as and for the purpose described.

709,197. DETONATING DEVICE. JAMES H. BEVINGTON, Cleveland, Ohio. Filed Aug 29, 1901. Serial No. 73,673. (No model.)

Claim.—1. A detonating-head formed in two sections and provided with a series of radially-disposed barrels and discharge-openings in the bottom section into the inner portions of said barrels, the inner ends of said barrels being closed by a wall, substantially as described.

2. A sectional detonating-head comprising two equal sections having a plurality of radiating barrels between them, a head constructed to attach a handle and provided with a stem extending through said sections and constructed to hold them together, substantially as described.

3. As a new article of manufacture, a circular detonating-head with a flat bottom and a series of barrels therein open at its periphery and about its center and bottom, and a handle having a stem with a smooth base portion and a threaded outer portion on which said head is separably supported, substantially as described.

709,198. PETROLEUM INCANDESCENT-LIGHT BURNER. MAX BRAMSON, Warsaw, Russia, assignor to Henry F. Vogel, St. Louis, Mo. Filed June 24, 1901. Serial No. 65,310. (No model.)

Claim.—1. In a burner, the combination with a mantle and the wick-tube, of a detachable member supported upon the upper end of the

wick-tube and having an air-mixing chamber, inlets to said chamber for cold air and for hot air and an outlet for the mixed air communicating with the interior of the mantle.

2. In a burner of the class described, the combination with a chimney, a wick-tube, and a mantle, of a pair of apertured caps forming a detachable member, which is supported upon the upper end of the wick-tube, and has an air-mixing chamber receiving fresh and heated air, one of said caps being provided with apertures through which the air passes from said mixing-chamber to the interior of said mantle.

3. In a burner, the combination with a mantle and the wick-tube, of a detachable member supported upon the upper end of the wick-tube and having an air-mixing chamber, inlets to said chamber for cold air and for hot air and an outlet for the mixed air communicating with the interior of the mantle, and a copper ring supported above the wick-tube.

4. In a burner of the class described, the combination of an outer wick-tube, an inner wick-tube of less height than said outer tube, a cone fitting over said outer tube and having an annular flange arranged to project over a wick positioned between said tubes, and a mantle; said cone being provided with apertures for the admission of air therewith, substantially as described.

5. In a burner of the class described, the combination of an outer wick-tube, an inner wick-tube of less height than said outer tube, a cone fitted to said outer wick-tube, a flange on the interior of said cone arranged to project over the wick positioned between said wick-tubes, a cone-cap mounted on said cone, and a mantle; said cone and cone-cap being provided with apertures for the admission of air to the interior of the mantle, substantially as described.

6. In a burner of the class described, the combination of an outer wick-tube, an inner wick-tube of less height than said outer tube, an apertured cone fitting over said outer wick-tube, an annular flange on the interior of said cone arranged to project over the upper end of the wick positioned between said wick-tubes, a cone-cap provided with apertures in its wall and in its upper end, and a mantle, substantially as described.

7. In a burner of the class described, the combination of an outer wick-tube, an inner wick-tube of less height than said outer tube, an air-distributer positioned within said inner tube, an apertured cone fitting over said outer wick-tube, an annular flange on the interior of said cone arranged to project over the upper end of the wick positioned between said wick-tubes, an apertured cone-cap surmounting said cone, and a mantle, substantially as described.

8. In a burner of the class described, the combination of an outer wick-tube, an inner wick-tube of less height than said outer tube, an apertured cone fitting over said outer wick-tube, an annular flange within said cone and arranged to project over the end of the wick positioned between said wick-tubes, an apertured cone-cap mounted on said cone, and an air-distributer positioned within said wick-tubes, a ring of material of greater heat conductivity than the burner surmounting the upper end of the wick-tubes, and a mantle, substantially as described.

9. The combination with a mantle, of a burner having air-inlets leading to the interior of the mantle, and an air-heating device composed of copper and located adjacent to said inlets and heating the air as it passes into the mantle.

10. The combination of a mantle, and a burner having an air-mixing chamber, the side walls of which extend to the top of the burner, an inlet to said chamber for cold air, an inlet to said chamber for conducting the hot air around said mantle into the mixing-chamber, and an outlet for mixed air communicating with the interior of the mantle between the burner and the inner face of the mantle.

709,199. PORTABLE MECHANICAL LOADER AND DIGGER. GLENN C. BROWN, Birmingham, Ala. Filed Nov. 30, 1901. Serial No. 84,190. (No model.)

Claim.—1. In a portable mechanical loader and digger, the combination with the trucks of body portion, a sliding base secured on said body portion, a revolving plate secured on said sliding base, bucket-carrying apparatus supported on said revolving plate, belt-carrying apparatus supported on said sliding base, and a motor, substantially as described.

2. In a portable mechanical loader and digger, the combination with the trucks, of a body portion secured thereon, a sliding base carried on said body portion, racks formed on said sliding base, pinions carried in said body portion to mesh with said racks, a revolving plate carried on said sliding base, bucket-carrying apparatus supported on said revolving plate, belt-carrying apparatus and a motor carried on said sliding base substantially as described.

3. In a portable mechanical loader and digger, the combination with a body portion of track-clamps and jacks secured thereto, a sliding base carried thereon, a revolving plate secured on said sliding base, bucket-carrying apparatus supported on said revolving plate, belt-carrying apparatus and a motor supported on said sliding base, substantially as described.

4. In a portable mechanical loader the combination of I-beams forming the body portion, rail-clamps and jacks secured thereto, smaller I-beams, a sliding base carried thereon, rollers supporting said smaller I-beams and sliding base, racks formed on said smaller I-beams, pinions carried in said body portion to mesh with said racks, a hand-wheel adapted to turn said pinions, and move said sliding base, bucket-carrying apparatus supported on said sliding base, belt-carrying apparatus and a motor supported on said sliding base, substantially as described.

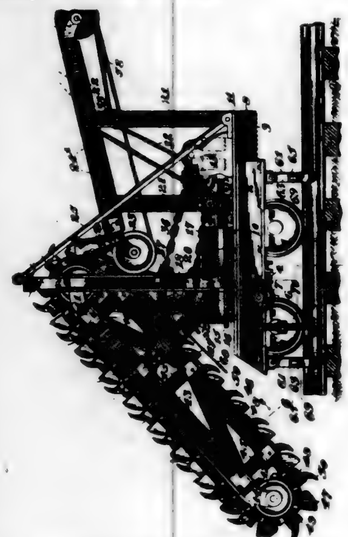

5. In a portable mechanical loader the combination of the body portion, a sliding base carried thereon, a foot-plate secured to said sliding base a revolving plate pivotally mounted on said foot-plate, bucket-carrying apparatus supported on said revolving plate, means for revolving said plate and bucket-carrying apparatus, belt-carrying apparatus and a motor supported on said sliding base, substantially as described.

6. In a portable mechanical loader and digger, the combination of a body portion, a sliding base carried thereon a foot-plate secured on said sliding base, a revolving plate pivotally mounted on said foot-plate, rollers adapted to support said revolving plate, a rearwardly-extending arm secured to said revolving plate, means for swinging said arm in either direction, bucket-carrying apparatus supported on said revolving base, belt-carrying apparatus and a motor supported on said sliding base, substantially as described.

7. In a portable mechanical loader and digger, the combination of a body portion, a sliding base carried thereon, a foot-plate secured on said sliding base, a revolving plate pivotally mounted on said foot-plate, rollers adapted to support said revolving base, a rearwardly-extending slotted arm secured to said revolving plate, a nut loosely carried in said slot, a threaded bolt passing through said nut, means for turning said bolt, bucket-carrying apparatus supported on said revolving plate, belt-carrying apparatus and a motor supported on said sliding base, substantially as described.

8. In a portable mechanical loader and digger, the combination of a base, a revolving plate supported thereon, uprights carried on said revolving plate, braces for said uprights, bucket-carrying apparatus supported by said uprights, belt-carrying apparatus and a motor supported on said base, substantially as described.

9. In a portable mechanical loader and digger, the combination of a base, a revolving plate supported thereon, uprights carried on said revolving plate, upwardly and forwardly inclined supports carried on said revolving plate, bucket-carrying apparatus pivoted to said uprights and adapted to be supported by said upwardly and forwardly inclined supports, belt-carrying apparatus and a motor supported on said base, substantially as described.

10. In a portable mechanical loader and digger, the combination of a base, a revolving plate mounted thereon, uprights supported on said revolving plate upwardly and forwardly inclined bucket-carrier supports carried on said revolving plate, bucket-carrying apparatus pivoted to said uprights, adjusting means carried on said upwardly and forwardly inclined

bucket-carrier supports, brace-rods extending from said base to the tops of said uprights, belt-carrying apparatus and a motor supported on said base, substantially as described.

11. In a portable mechanical loader and digger, the combination of a base, a revolving plate mounted thereon, uprights supported on said revolving plate, bucket-carrying apparatus pivoted to said uprights, chain sprocket-wheels and chain-guide sheaves carried on said uprights, belt-carrying apparatus and a motor supported on said base, substantially as described.

12. In a portable mechanical loader and digger, the combination of a base, a revolving plate mounted thereon, uprights carried on said revolving plate bucket-carrying apparatus pivoted to said uprights, a connecting-piece uniting said uprights at their tops, brace-rods extending from said base to a point above said connecting-piece, a connecting-rod uniting said brace-rods, a pin connecting said connecting-piece and connecting-rod directly over the pivotal point of said revolving plate, belt-carrying apparatus and a motor supported on said base, substantially as described.

13. In a portable mechanical loader and digger, the combination of a base, a revolving plate carried thereon, uprights secured to said revolving plate, upwardly and forwardly inclined supports secured to said revolving plate, a connecting-piece uniting said supports, means for raising and lowering said connecting-piece, bucket-carrying apparatus supported on said connecting-piece, belt-carrying apparatus and a motor supported on said base, substantially as described.

14. In a portable mechanical loader and digger, the combination of a base, a revolving plate carried thereon, uprights secured to said revolving plate, upwardly and forwardly inclined supports secured to said revolving plate, a connecting-piece uniting said supports at their tops means for raising said connecting-piece in position, a U-shaped piece secured to said connecting-piece, bucket-carrying apparatus adapted to be supported in said U-shaped piece belt-carrying apparatus and a motor supported on said base, substantially as described.

15. In a portable mechanical loader and digger, the combination of a base, belt-carrying apparatus and a motor supported thereon, a revolving plate mounted thereon, uprights and supports secured to said revolving plate, bucket-carrying apparatus carried by said uprights and supports, and comprising channels, sprocket-hangers secured to the ends thereof, chain-sprockets carried by said hangers, a bucket-chain carried on said sprockets, buckets carried on said chain, and means for raising or lowering said buckets and carrying apparatus, substantially as described.

16. In a portable mechanical loader and digger, the combination with a base and bucket-carrying apparatus of uprights secured to said base, chain-guide sheaves secured in the after uprights, a belt-carrier frame secured to said uprights, belt-drums carried at the ends of said frame, a belt carried on said drums, means for adjusting said belt, means for raising and lowering said frame, and means for driving said belt, substantially as described.

17. In a portable mechanical loader and digger, the combination with a base, and bucket-carrying apparatus of uprights carried on said base, a belt-carrier frame supported on said uprights, belt-drums carried at the ends of said frame, a belt-carrier on said drums, means for adjusting said belt, means for raising and lowering said frame, chain-guide sheaves journaled in the after uprights means for adjusting said chain-sheaves, and means for driving the belt, substantially as described.

709,200. COMBINATION NETHER GARMENT. MINNIE R. BUCKLEY, St. Louis, Mo. Filed Mar. 5, 1902. Serial No. 96,810. (No model.)

Claim.—1. In a garment of the character described, a main garment portion, a corset-cover permanently connected therewith, both of which terminate at their upper portion in a single set of shoulder-straps connected to said main garment and said corset-cover; substantially as described.

2. In a garment of the character described, a main garment portion, and a corset-cover secured thereto at the back and for a portion only of the front, said corset-cover terminating in integral flap portions separable from said main garment from the termination of the connection between said main garment and corset-cover to the free ends of said flaps; substantially as described.

3. In a garment of the character indicated, a main garment portion, shoulder-straps thereon, and a corset-cover permanently connected to said main garment portion and provided with integral flaps which, at the front of said main garment portion, detached and movable away from said main garment portion; substantially as described.

4. In a garment of the character indicated, a main garment portion, a corset-cover secured thereto along the upper rear edge and for a short distance in advance of the arm-holes along the upper front edge, flaps upon said corset-cover extending toward each other beyond the line at which said corset-cover and main garment portion are secured together at the front, and a single set of shoulder-straps; substantially as described.

709,201. BOTTLE-CLOSURE. WILLIAM J. BYCRAFT, Newton, Ind. Ter. Filed Dec. 11, 1901. Serial No. 85,467. (No model.)

Claim.—In combination with a bottle having an annular shoulder formed with and around the neck thereof, and also an annular groove formed in and around the neck between the mouth and the shoulder, said neck of the bottle also provided with a notch formed within the annular groove, a cap composed of brittle substance adapted to fit over the neck of the bottle, said cap provided with notches formed upon the interior thereof, said notches adapted to register with the annular groove in the neck of the bottle, said cap provided with a beveled surface formed upon the interior lower edge of the same, a ring adapted to lie within the annular groove of the neck, portions of said ring punched outward to form springs, said springs adapted to lie within the notches upon the interior of the cap, and the free ends of said springs adapted to prevent the cap from being rotated in either direction, a projection formed with said ring and extending into the notch within the annular groove upon the neck of the bottle, as and for the purpose specified.

709,202. SAFETY-STOP FOR CONVEYERS. PIERCE B. CLARKE, New York, N. Y. Filed Jan. 4, 1901. Serial No. 42,120. (No model.)

Claim.—1. In a device of the class described, the combination with an endless conveyer, of a stop arranged to lock the conveyer against backward movement, a support for holding the stop normally out of engagement with the conveyer, and a tripping device adapted to release the stop and arranged to be operated by the backward movement of the conveyer, substantially as described.

2. In a device of the class described, the combination with an endless conveyer, of a safety-stop arranged to engage the endless conveyer to lock the same against backward movement, said stop being located above the conveyer and normally held out of engagement with the same, and means operated by the backward movement of the conveyer for causing the safety-stop to engage the same, substantially as described.

3. In a device of the class described, the combination with an endless conveyer, of a movable frame arranged to engage the endless conveyer to lock the same against backward movement, a support for holding the frame normally out of engagement with the conveyer, and a tripping device for releasing the frame, substantially as described.

4. In a device of the class described, the combination with an end-

less conveyer, of a safety-stop located above and adapted to fall into engagement with the endless conveyer to lock the same against backward movement, means for supporting the safety-stop for holding the same normally out of engagement with the endless conveyer, and a tripping device arranged to release the safety-stop, substantially as described.

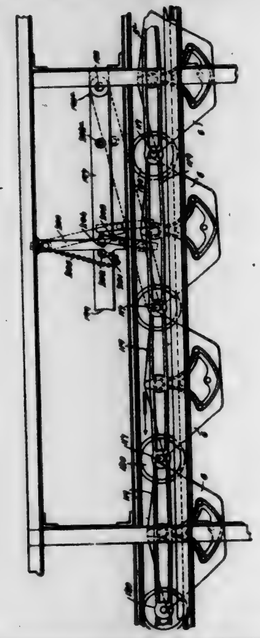

5. In a device of the class described, the combination with an endless conveyer, of a safety-stop located above and adapted to engage the endless conveyer to lock the same against backward movement, a support for holding the safety-stop normally elevated, and a tripping-lever mounted on the support and arranged in the path of the endless conveyer and adapted to be operated by the backward movement of the same, whereby the support is withdrawn from the safety-stop, substantially as described.

6. In a device of the class described, the combination with a conveyer, of a safety-stop located above and adapted to drop into engagement with the said conveyer, flexible connections for limiting the movement of the safety-stop to hold the same in proper position for engaging the conveyer, a support for holding the safety-stop normally in an elevated position, and a tripping-lever for releasing the safety-stop, substantially as described.

7. In a device of the class described, the combination with a conveyer, of a safety-stop located above and adapted to engage the conveyer, a support for holding the safety-stop normally out of engagement with the conveyer, said support being movable and provided with a projection, and a tripping-lever fulcrumed between its ends on the support and arranged to be carried into engagement with the said projection by the backward movement of the conveyer, whereby the support is withdrawn from the safety-stop, substantially as described.

8. In a device of the class described, the combination with a conveyer, of a safety-stop adapted to engage the conveyer, a support for holding the safety-stop normally out of engagement with the conveyer, and a tripping-lever fulcrumed between its ends and having one of its arms arranged within the path of the conveyer, its other arm being arranged to engage the support, whereby the safety-stop will be released when the conveyer moves backward, substantially as described.

9. In a device of the class described, the combination with a conveyer, of a safety-stop consisting of an approximately rectangular frame hinged at one end and adapted to engage the conveyer, a movable hanger or support having a cast and arranged to receive the safety-stop, and a lever fulcrumed between its ends on the hanger or support and having one end arranged in the path of the conveyer, the other end of the lever being adapted to engage the support, substantially as and for the purpose described.

10. In a device of the class described, the combination with a conveyer, of a safety-stop consisting of an approximately rectangular frame hinged at one end at a point above the conveyer and adapted to swing downward to engage the said conveyer to lock the same against backward movement, and means for supporting and tripping the safety-stop, substantially as described.

11. In a device of the class described, the combination with a conveyer, of a safety-stop hinged at one end above the conveyer and provided with side bars and having a connecting-rod, a movable support provided with a cast arranged to receive the said rod, whereby the safety-stop is normally held out of engagement with the conveyer, a flexible connection for limiting the downward movement of the safety-stop, and a tripping-lever pivoted between its ends on the support and having one end arranged in the path of the conveyer its other end being adapted to engage the support and being swung away from the same by the forward movement of the conveyer and toward the support by the backward movement of the conveyer, substantially as and for the purpose described.

709,208. BUCKET FOR ENDLESS CONVEYERS. PIERRE B. CLARKE, New York, N. Y. Filed Jan. 28, 1901. Serial No. 44,782. (No model.)

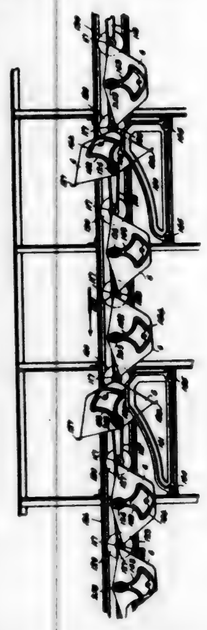

Claim.—1. A conveyer having pivoted buckets and provided at intervals with cams of different widths, projecting laterally from the buckets different distances, combined with dumping-blocks located different distances from the center of the conveyer and adapted to be engaged by the said cams, whereby the conveyer is adapted to discharge at several points, substantially as described.

2. In a conveyer, the combination with dumping-blocks, of pivoted buckets provided with cams projecting laterally from the buckets different distances and arranged to be engaged by the said dumping-blocks, whereby the conveyer will discharge at different points, substantially as described.

3. The combination with dumping-blocks, of pivoted buckets provided with cams 162 and 163 extending laterally from the buckets, the cams 162 being provided with lateral projections extending beyond the cams 163, substantially as and for the purpose described.

4. The combination of a conveyer having pivoted buckets provided at their sides with cams 162 and 163, the cam 162 being provided with lateral extensions or enlargements and the front and rear dumping-blocks located at different distances from the center of the conveyer, the front set of dumping-blocks being arranged in the paths of the extensions or enlargements and the other dumping-blocks being arranged to be engaged by the cams 163, substantially as described.

5. In a conveyer, the combination of the inner links provided with openings, the buckets provided at opposite sides with pivots or trunnions having reduced outer ends to fit the openings of the inner links and provided with longitudinal bores, a fastening device passing through the longitudinal bore, and a plate secured by the fastening device to the outer end of each of the pivots or trunnions and arranged to engage the inner links, substantially as described.

6. The combination of the inner and outer links, transverse shafts connecting the inner and outer links, pivoted buckets provided with hollow trunnions having reduced ends receiving the inner links, and fastening devices passing through the hollow trunnions and through the inner links and securing the buckets to the latter, substantially as described.

709,204. WOOD-BENDING. SPENCER CLARK, Northville, Mich., assignor to Archie Morris and Charles Walters, Northville, Mich. Filed Jan. 6, 1902. Serial No. 88,461. (No model.)

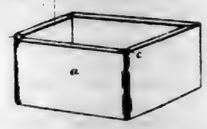

Claim.—A bent corner structure comprising a piece of wood formed with one or more recesses having a thin outer wall, and a corner-strip in said recess rounded on the side thereof adjacent to said wall, said piece bent about the curved side of the corner-piece, said wall thickened and reinforced adjacent to the corners of said recess, and said corner-strip correspondingly cut away adjacent to the reinforced portions of said wall.

709,205. ELECTRIC CONDENSER AND METHOD OF MAKING SAME. HENRY P. CLAUSEN, Chicago, Ill., assignor to American Electric Telephone Company, a Corporation of New Jersey. Filed Apr. 6, 1901. Serial No. 54,607. (No model.)

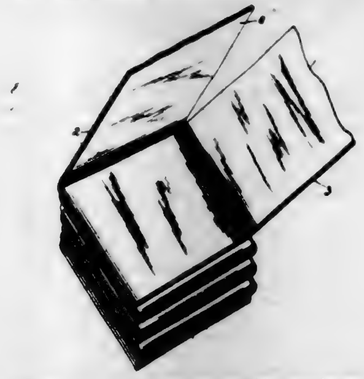

Claim.—1. An electric condenser comprising superimposed plates of suitable metal and dielectric arranged in two series, the said plates or sheets of each series being flexibly connected together, and the said sheets or strips when in place presenting flexible connections on all four sides of the condenser, whereby the superimposed plates or sheets of metal and dielectric of which the condenser is composed can be drawn apart without disconnecting the plates or sheets of one series from the plates or sheets of the other series, substantially as described.

2. An electric condenser composed of suitable sheets or plates of metal and dielectric, the said dielectric being in the form of two strips of suitable material arranged crosswise and folded back and forth alternately upon each other, the superimposed sheets or plates thus arranged presenting flexible connections on all four sides of the condenser, whereby the condenser plates or sheets may be drawn apart without disconnecting them from each other, substantially as described.

3. An electric condenser composed of superimposed sheets or plates of suitable metal and dielectric, the said metal sheets or plates being in the form of two strips arranged crosswise of each other and folded back and forth alternately in such manner as to present bends or flexible connections on all four sides of the condenser, substantially as and for the purpose set forth.

4. An electric condenser composed of superimposed sheets or plates of suitable metal and dielectric, the said sheets or plates being so folded and arranged as to present a plurality of bends or flexible connections on all four sides of the condenser, whereby the condenser can be extended for the purpose of exposing the surfaces of said sheets or plates, substantially as described.

5. The method of making electric condensers, which consists in combining suitable sheets or strips of metal and paper, arranging said sheets or strips crosswise and folding them back and forth alternately upon each other, so as to provide a condenser composed of superimposed plates or sheets of metal and dielectric so connected and arranged as to present a plurality of bends or flexible connections on all four sides of the condenser, suitably compressing this mass or bundle of sheet material, and then suitably treating the same with paraffin, substantially as described.

6. The method of making electric condensers, which consists in suitably preparing and combining sheets or strips of suitable metal and dielectric, arranging these said strips or sheets of metal and dielectric crosswise of each other, folding the said strips or sheets alternately back and forth upon each other, thereby causing the same to present a plurality of bends or flexible connections on all four sides of the condenser, and then suitably compressing or otherwise treating this mass or bundle of sheet material, substantially as described.

7. In an electric condenser, the combination with strips of metal at right angles and folded back and forth over each other alternately and forming the plates of the condenser, of a dielectric between the folds.

8. In an electric condenser, the combination with strips of metal at right angles to each other and folded back and forth alternately over each other to form superimposed layers, of a dielectric between the layers, and terminals for connecting with the plates.

9. A condenser, comprising continuous sheets or strips composed of tin-foil and paper, said sheets or strips being at right angles to each other and folded back and forth alternately over each other, the whole being compressed into a compact bundle.

10. A condenser composed of continuous strips of tin-foil and paper on both sides of the tin-foil, said strips being at right angles and folded back and forth alternately over each other, the whole being compressed into a compact mass, and boiled or soaked in paraffin or like substance.

11. In a condenser, two continuous strips composed of strips of paper with an interposed strip of tin-foil, said strips being at right angles to each other and folded back and forth alternately over each other, and terminals for the condenser comprising a metallic plate, as copper, placed next the tin-foil at one end of each strip.

709,206. BALL-BEARING. HARLEY CORNWELL, Lakeview, Mich. Filed Oct. 9, 1901. Serial No. 78,114. (No model.)

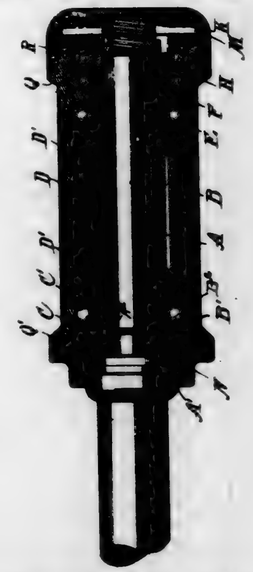

Claim.—A ball-bearing for vehicles, comprising an axle having a shoulder A′ and a convexed shoulder A² adjacent thereto, combined with a sleeve B having a flanged end and a concaved shoulder B² in the wall

of its bore adjacent to said flange, said flange and conserved shoulder designed to contact with the shoulders A' and B' respectively, a hub having annular flanges D' which are flat on their outer faces, bearing-rings C and C' about said sleeve and interposed between one of said flanges D' and flange B', the bearing-ring E in contact with the outer of said flanges D', a bearing-ring F having its bore threaded a portion of its length and engaging the threads about the outer portion of the axle, the inner face of said bearing-ring F having a conceved bearing-shoulder, balls interposed between said bearing-rings, a threaded ring H also fitted on the threaded circumference of the axle and abutting against the outer face of said ring F, the inner end of the hub extending over said rings C C' and flange B', and dust-caps N and M with interiorly-threaded flanges fitted over threaded portions of the circumference of the hub at the ends thereof and abutting against shoulders thereon, as set forth.

709,207. **ANIMAL-EXTERMINATOR.** LORENZ H. CORBETT, Ballvidad, Cal. Filed Jan. 13, 1902. Serial No. 89,441. (No model.)

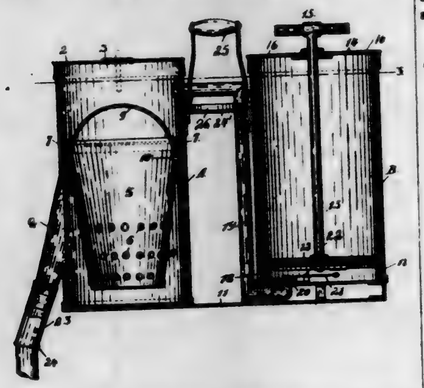

Claim.—1. The combination in an animal-exterminator of a generator-chamber having an internal ledge, a removable fire-pot having a bead to fit said ledge, and a handle by which the fire-pot may be removed from the chamber, an outlet from said generator and means for forcing a current of air through said generator.

2. The combination in an animal-exterminator of a generator-chamber, having a support on its inner wall, a removable perforated fire-pot suspended upon said support, and having a handle or bail by which it may be inserted into, and removed from, the chamber, a discharge-outlet from said generator, means by which air may be forced into the top of said generator and made to pass downwardly through said perforated pot.

3. The combination in an animal-exterminator of a generator having a ledge extending inward from its inner wall, a removable fire-pot fitting therein, and having a handle or bail by which it may be inserted into, and removed from, the chamber, said pot having a rim to engage said ledge and having tapered, perforated sides, said perforations forming the only channels of communication between the spaces in said chamber on either side of the bucket, means by which air is forced into the space above said bucket, and a discharge-outlet in the space below said bucket.

4. The combination in an animal-exterminator, of a generator, a perforated fire-pot fitting therein, an annular ledge on the interior of said generator engaging the said pot, and suspending the latter above the bottom of the generator, an air-pump and connections of said air-pump with the space in the generator above the bucket and a discharge-outlet intermediate of the sides of the pot and generator.

5. The combination in an animal-exterminator, of generator and pump cylinders arranged side by side, a single base to which they are both connected to form a rigid substantially unitary structure, a removable, perforated fire-pot fitting said generator-cylinder, and connections between said cylinders through which a current of air may be forced into the generator, and a discharge-outlet from the latter.

6. The combination in an animal-exterminator of generator and pump cylinders arranged side by side, means for rigidly connecting them to form substantially a unitary structure, said pump-cylinder having a plunger movable therein, valves in said plunger, a plunger-rod, a perforated cover through which said rod is slidable, air connections between the bottom of the pump-cylinder and the top of the generator-cylinder, a valve in said connections, a discharge-pipe entering said generator and movable jointed sections fitting the end of said pipe.

709,208. **CAR-WHEEL.** FREDERICK H. CRANDAL, Chicago, Ill., assignor of three-fifths to William B. Ewing and John A. Murphy, La Grange, Ill. Filed Feb. 6, 1902. Serial No. 92,890. (No model.)

Claim.—A wheel for railway-cars, the flange of which is provided with transverse ribs which extend inwardly from the periphery of the flange along the inner and outer faces of said flange, and which are made of greatest length at the periphery of the flange and of gradually lessening height or tapered at their end portions which so extend inwardly at the inner and outer faces of the flanges.

709,209. **CIGAR-CUTTER.** JOSEPH C. F. DICK, Belvidere, Ill. Filed Mar. 31, 1902. Serial No. 100,650. (No model.)

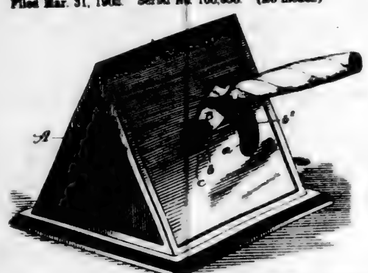

Claim.—1. A cigar-cutter comprising a vibratory part and a cutter arranged parallel to the plane of movement of the vibratory part, said vibratory part being provided with a cigar-receiving perforation the path of movement of which during the vibration of said part extends angularly across the cutting edge, and means for automatically bringing into use a new part of the cutting edge with each operation of the vibrating part, substantially as described.

2. A cigar-cutter comprising a slotted casing a swinging lever and a cutter arranged parallel to the plane of movement of said lever, the lever being provided at its free end with a cigar-receiving socket which extends through and works in the slot in the casing and the path of movement of which when the lever vibrates extends angularly across the cutting edge, substantially as described.

3. A cigar-cutter comprising a slotted casing a vibratory part and a cutting edge arranged parallel to the plane of movement of the vibratory part, said vibratory part being provided with a guard closing the slot in the casing and a cigar-receiving perforation the path of movement of which during the vibration of said part extends angularly across the cutting edge, substantially as described.

4. A cigar-cutter comprising an upright casing provided with a slot having closed ends, a pivoted lever normally held up, and a cutting-disk mounted upon an axis eccentric with respect to the axis of the lever, the lever being provided at its free end with a cigar-receiving socket working through said slot and located exterior to the cutting edge of the disk in the normal position of the lever but arranged to swing across said edge to sever the tip of an inserted cigar when the lever is oscillated, substantially as described.

5. A cigar-cutter comprising a vibratory part and a cutting-disk arranged parallel to the plane of movement of said vibratory part, the latter being provided with a cigar-receiving perforation the path of movement of which during the vibration of said part extends angularly past the cutting edge, and means operated by said vibratory part for giving intermittent rotary movement to the cutting-disk, substantially as described.

6. A cigar-cutter comprising a slotted casing, a vibratory part movable longitudinally of the slot in said casing, said vibratory part being provided with a cigar-receiving perforation, means for normally holding the vibrating part at one end of the slot, and a cutter within the casing with its cutting edge intersecting the path of movement of the cigar-receiving perforation, substantially as described.

7. A cigar-cutter comprising a slotted casing, a vibratory part movable longitudinally of the slot in said casing, said vibratory part being provided with a cigar-receiving perforation, a cutter within the casing with its cutting edge intersecting the path of movement of the cigar-receiving perforation, and means for moving the cutter to present new portions of its cutting edge to the cigar to be cut, substantially as described.

8. A cigar-cutter comprising a slotted casing, a vibratory part movable longitudinally of the slot in said casing, said vibratory part being provided with a cigar-receiving perforation, and a rotatable cutter within the casing with its cutting edge intersecting the path of movement of the cigar-receiving perforation, substantially as described.

9. A cigar-cutter comprising a slotted casing, a vibratory part movable longitudinally of the slot in said casing, said vibratory part being provided with a cigar-receiving perforation, a cutting-disk within the casing with its cutting edge intersecting the path of movement of the cigar-receiving perforation, and means for imparting rotary movement to said cutting-disk, substantially as described.

10. A cigar-cutter comprising a casing provided with a slot in one of its upright walls, a pivoted arm provided with a cigar-receiving socket swinging longitudinally of and working through the slot in said casing, and a cutter within the casing with its cutting edge intersecting the path of movement of the cigar-receiving socket, substantially as described.

11. A cigar-cutter comprising a slotted casing, a pivoted arm provided with a cigar-receiving perforation moving longitudinally of the slot in said casing as the pivot-arm is oscillated, and a cutting-disk within the casing arranged parallel to the pivoted arm and with its cutting edge intersecting the path of movement of the cigar-receiving perforation, substantially as described.

12. A cigar-cutter comprising a slotted casing, a pivoted arm provided with a cigar-receiving perforation moving longitudinally of the slot in said casing as the pivoted arm is oscillated, a cutting-disk within the casing arranged parallel to the pivoted arm and with its cutting edge intersecting the path of movement of the cigar-receiving perforation, and means for intermittingly rotating said cutting-disk, substantially as described.

13. A cigar-cutter comprising a slotted casing, a pivoted arm provided with a cigar-receiving perforation movable longitudinally of the slot in said casing as the pivoted arm is oscillated, a cutting-disk within the casing with its cutting edge intersecting the path of movement of the cigar-receiving perforation, a ratchet-wheel secured to said cutting-disk, and a ratchet-pawl connected to and movable with the pivoted arm for intermittingly rotating said cutting-disk, substantially as described.

14. A cigar-cutter comprising a slotted casing, a vibratory part movable up and down in the slot in said casing, said vibratory part being provided with a cigar-receiving perforation and a projecting finger-piece adjacent to said perforation by which the part may be vibrated, means for normally holding up said vibrating part, and a cutter within the casing with its cutting edge intersecting the path of movement of the cigar-receiving perforation, substantially as described.

15. A cigar-cutter comprising a slotted casing, a vibratory part movable up and down in the slot in said casing, said vibratory part being provided with a cigar-receiving perforation and a projecting finger adjacent to said perforation by which the part may be vibrated, means for normally holding up said vibrating part, a cutter within the casing with its cutting edge intersecting the path of movement of the cigar-receiving perforation, and means carried by the vibrating part for closing said slot while the vibratory part is at rest.

16. In a cigar-cutter, an upright casing provided with a slot in one of its walls, a cutter within the casing and in proximity to said slot, a part mounted on a wall of the casing adjacent to said slot and adapted to move up and down and carrying a cigar-receiving perforation coincident with said slot, this cigar-receiving perforation being adapted to cross the cutting edge when the movable part is depressed, and means for normally holding up the movable part.

17. In a cigar-cutter, an upright casing provided with a slot in one of its walls, a cutter within the casing and in proximity to said slot, a part mounted on a wall of the casing adjacent to said slot and adapted to move up and down and carrying a cigar-receiving perforation coincident with said slot, this cigar-receiving perforation being adapted to cross the cutting edge when the movable part is depressed, means for normally holding up the movable part, and a guard connected to the vibrating part and adapted to normally close said slot.

18. In a cigar-cutter, an upright stationary casing, a cutter carried thereby, a part mounted on a wall of the casing and adapted to move up and down and carrying a cigar-receiving perforation adapted on the downward movement of said part to cross said cutter edge and thereby sever the cigar-tip, and means for normally holding up said movable part.

709,210. **DUMPING-WAGON.** JOHN J. HAGEN, Oakland, Cal. Filed July 18, 1902. Serial No. 116,013. (No model.)

Claim.—1. The combination in a wagon, of a platform, a roller on the rear end thereof, a longitudinally-movable box resting on said roller and platform, forked bars carried on said box and engaging the stanchions of said wagon whereby the longitudinal movement of said box is limited, and connections of the inner ends of said forked bars with a lever whereby said bars may be operated in unison.

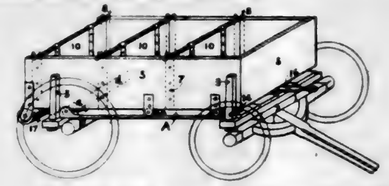

2. The combination in a wagon, of a platform, a fulcrum-roller, a box resting on said roller and platform, means including forked bars carried on the box and engaging the stanchions of the wagon, means for operating the forked bars, and a roller-bearing between the platform and box.

3. The combination in a dumping-wagon, of a platform, a box movable longitudinally on antifrictional bearings on said platform, slotted connections at the upper edge of the box and a door having a rod the ends of which are pivotally hung in said slotted connections, and locking means for said door including a vertically-reciprocable forked slide-bolt, and a lever pivoted on the door and engaging one end of said bolt.

4. In a wagon, a longitudinally-movable tilting box, transverse partitions and means whereby they are detachably hinged to the box, said partitions dividing the box into compartments, and independent locking means for each partition whereby any one or more of the partitions may be released without disturbing the others, substantially as described.

5. The combination in a wagon, of a box having double walls and bottom, U-shaped bands encircling the box between said wall and bottom sections, the ends of said bands slotted and projecting above the upper edge of the sides of the box, transverse rods supported at their ends in said slots, and doors hinged to said rods and movable in the space between the sides and bottom of the box and means for locking said doors.

709,211. **LIQUID-RECEPTACLE.** WALTER BLEAM, Chicago, Ill., assignor to Charles F. Cooke, Chicago, Ill. Filed Apr. 14, 1902. Serial No. 102,718. (No model.)

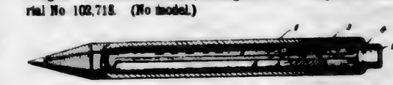

Claim.—1. In a device of the kind described, a case provided with a removable cap having an aperture formed therein, and a receptacle closely fitting within the case, in combination with a stopper for the receptacle adapted to be positioned within the case and cap, provided with an air-duct extending therethrough, a valve for the air-duct, a tube passing through the stopper, one end extending to a point near the bottom of the receptacle and the other to a point near the aperture in the cap, and a mouthpiece secured to the end of the tube and extending through the aperture.

2. In a device of the kind described, an inclosing case, provided with a cap adapted to be secured to the open end of the case and having an aperture 4, formed therein, in combination with a liquid-receptacle adapted to be positioned within the case and provided with a mouthpiece adapted to extend through the aperture 4 and a tube 8, extending from the mouthpiece to a point within the receptacle, substantially as described.

709,212. **PNEUMATIC PUMP.** RALPH W. ELLIOTT, Oakley, Cal. Filed Feb. 19, 1902. Serial No. 94,784. (No model.)

Claim.—1. The combination of vertical rigid air-inlet and water-outlet pipes, upper and lower horizontal guides extending between the said pipes and connected thereto at their ends, a tank, a rod extending vertically from said tank and slidably guided by said guides, a three-way valve in the air-inlet pipe communicating in one of its positions with the atmosphere, means actuated by said rod for operating the three-way valve, a rigid water-delivery pipe extending to the interior of the cylinder near the bottom thereof, a flexible pipe connection between said latter pipe and the vertical rigid water-outlet pipe, a flexible pipe connection between the air-inlet pipe and the upper end of the tank, and a check-valve in the water-delivery pipe, substantially as described.

2. In an apparatus of the character described, the combination of a tank having a valve-controlled opening in the bottom thereof to admit

water therein to, inflexible vertical compressed-air-inlet and water-outlet pipes, a rod attached to the tank, a guide for said rod flexibly carried upon said pipes, a pipe leading upward from the bottom of the cylinder for delivering the water to the water-outlet pipe, a flexible pipe connection between the two latter pipes, a flexible pipe connection between the top of the cylinder and the compressed-air-inlet pipe, and a three-way valve in said latter pipe opening in one position to the atmosphere and actuated by said rod in its vertical movement, substantially as described.

709,213. VEHICLE-AXLE. FRANCIS E. FISHER, Glen Arbor, Mich., assignor of one-half to Theodore C. H. Wegenarth, Chicago, Ill. Filed Dec. 5, 1901. Renewed Aug. 11, 1902. Serial No. 119,233. (No model.)

Claim.—1. A vehicle-axle comprising in combination, a fixed tubular housing having an enlarged circular outer end the periphery of which is offsetted to form a ball-race, a wheel-carrying arbor having a non-circular outer portion for engagement with a wheel-hub, a cylindrical body or bearing portion turning in the housing and an intermediate enlargement formed with an annular recess to constitute a companion ball-race, a series of interposed balls, and means for locking the parts against endwise disengagement, substantially as set forth.

2. A vehicle-axle comprising in combination, a fixed tubular housing having an enlarged circular outer end, a wheel-carrying arbor having a non-circular outer portion for engagement with a wheel-hub, a cylindrical body or bearing portion turning in the housing and an intermediate annular enlargement forming an end bearing, and means for locking the parts against endwise disengagement, the same comprising an annular groove in the bearing portion of the arbor, a semicircular block fitting said groove, and screw-bolt passing through the housing and engaging said block, substantially as set forth.

3. A vehicle-axle comprising in combination, a fixed tubular housing having an enlarged circular outer end, a wheel-carrying arbor having a non-circular outer portion for engagement with a wheel-hub, a cylindrical body or bearing portion turning in the housing and an intermediate annular enlargement forming an end bearing, and means for locking the parts against endwise disengagement, the same comprising an annular groove in the bearing portion of the arbor, a semicircular block fitting said groove and formed with a central tapering hole or cavity, and a screw-bolt passing through the housing and provided with a tapering point to engage the cavity of said block, substantially as set forth.

4. A vehicle-axle comprising in combination, a fixed tubular housing having an enlarged circular outer end, a filling-piece occupying the middle portion of the bore of such housing, a wheel-carrying arbor having a non-circular outer portion for engagement with a wheel-hub, a cylindrical body or bearing portion turning in the housing and an intermediate annular enlargement forming an end bearing, and means for locking the parts against endwise disengagement, substantially as set forth.

709,214. ROAD-GATE. ALEXANDER FRIESS, Elizabethtown, Ky., assignor of one-half to B. F. Collins, Elizabethtown, Ky. Filed Apr. 4, 1902. Serial No. 101,460. (No model.)

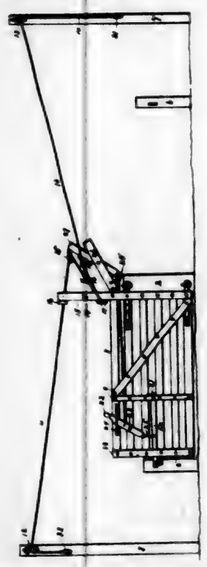

Claim.—1. In a road-gate, the combination of an upward extension of the hinge-stile and a rectangular, flat, line-deflecting frame the plane of which is vertical and at right angles to the plane of the gate secured on said upward extension, substantially as specified.

2. In a road-gate, the combination of an upright combined unlatching and gate-swinging lever, a rearwardly-extending bracket in which said combined unlatching and gate-swinging lever is housed and pivoted, and pulleys, adapted to receive operating-lines, secured to the upper end of said combined unlatching and gate-swinging lever, substantially as specified.

3. In a road-gate, the following combination: a line-deflecting frame on the upward extension of the hinge-stile, the two lines 10 and 11 attached one to each side of said line-deflecting frame, the upright unlatching and gate-swinging lever 27, the pulleys 14 and 15 secured near the upper end of said lever 27, the rearwardly-extending bracket 26, the wire 28 for transmitting motion from lever 27 to lever 22, the hasp latch lever 22 pivoted on bolt 23 on one of the upper rails of the gate, and the link 25 communicating between lever 22 and latch 20, all substantially as and for the purposes specified.

709,215. FENCE. GEORGE GOTTSLEBEN, Wapakoneta, Ohio. Filed May 4, 1901. Serial No. 58,702. (No model.)

Claim.—In a fence, the combination with a series of panels disposed at an angle to each other, each panel comprising uprights and horizontal rails connecting the uprights, of elongated links having parallel upper and lower members, one of said members being cut away at the center, each link having one member resting upon horizontal rails of adjacent panels and bearing against the uprights of said panels above the horizontal rails thereof, and the other member of the link disposed under said horizontal rails of adjacent panels and also bearing against the uprights of said panels below the point where the first-mentioned member of the link bears against the uprights.

709,216. ELECTRIC HOSE-COUPLING. MARION C. GOODWIN, Portland, Me. Filed Jan. 2, 1902. Serial No. 88,174. (No model.)

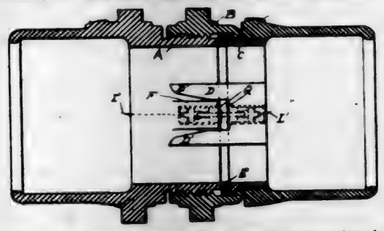

Claim.—1. An electric hose-coupling, in combination, male and female members, one provided with blocks, the other with posts, contact-points in said blocks and between said posts and means for surrounding said contact-points for preventing the grounding of an electric current.

2. In an electric hose-coupling, in combination, male and female members, the one provided with blocks, the other with tapering posts, the distance between said tapering posts at their bases being equal to the greatest width of the tapering block, contacts insulated from the couplings inserted in said blocks and between said posts and means for preventing moisture from reaching said contacts.

3. In an electric hose-coupling, in combination, male and female members, means for preventing said members from having any movement whatever one upon the other, contacts situated in each member and insulated therefrom and means for preventing moisture from reaching said contact-points.

4. In an electric hose-coupling, in combination, male and female members provided respectively with means for preventing the slipping of one part upon the other when being set up, contacts in each of said members, said contacts being inclosed in a non-conductive cylinder, the head of said cylinder being provided with a raised rim.

5. In an electric hose-coupling, a contact consisting of a casing of non-conductive material, a cap on the upper end of said cylinder, a contact-rod running through said cap, a spring-contact attached to a conductor, in the bottom of said cylinder and means for bringing a flexible conductor into said casing so that an uninterrupted current may be maintained through said cylinder, said cap being provided with a rim on its outer edges.

6. In an electric hose-coupling, in combination, male and female members, a plurality of blocks in the one and plurality of double posts in the other, electrical contacts insulated from said members situated in said blocks and between said double posts, said contact having on its head a raised insulated rim.

7. In an electric hose-coupling, in combination, a male member with a plurality of blocks attached to the inner periphery thereof, a female member, a flange therein, a plurality of double posts attached thereto, electrical contacts in the blocks and between the double posts, the contact-points being surrounded by an insulated cap provided with a raised rim which rim is adapted to sink into a gasket resting on the flange in the female member when the members of the coupling are set up.

709,217. POST FOR FENCING OR OTHER PURPOSES. ROBERT H. GUTHRIE, South Dumfries, Canada. Filed Jan. 8, 1902. Serial No. 88,885. (No model.)

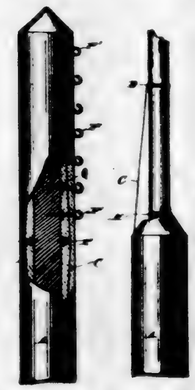

Claim.—1. In a fence-post, the combination of an outer casing of cement, a post embedded therein, truss-wires attached to said post and running lengthwise of the same from end to end thereof, a series of brackets secured to said post and extending out through said casing of cement, the outer ends of said brackets being provided with means whereby a fence may be attached thereto, substantially as described.

2. In a fence-post, the combination of an outer casing of cement, a post embedded therein, truss-wires attached to said post and running lengthwise of the same from end to end thereof, a series of brackets secured to said post and extending out through said casing of cement, the outer ends of said brackets being provided with hooks adapted to be closed when fencing-wires have been placed therein, substantially as described.

3. In a post for fencing or other purposes, the combination of an outer casing of cement, a post set therein, truss-wires attached to said post and running lengthwise of the same from the bottom upward, said casing of cement enveloping the lower portion of said post and the truss-wires attached, and extending upward to a point intermediate the ends of said post, all substantially as described.

4. In a post for fencing or other purposes, the combination of an outer casing of cement, a post set therein, truss-wires attached to said post and running lengthwise of the same from the bottom upward, said casing of cement enveloping the lower portion of said post and the truss-wires attached and extending upward to a point intermediate the ends of said post, said post having a groove about it circumferentially at the uppermost point reached by said casing of cement, said casing of cement covering said groove and entering into it for the purpose of producing a water-tight joint between said post and said casing of cement, substantially as described.

5. In a post for fencing or other purposes, the combination of an outer casing of cement, a post set therein, truss-wires attached to said post and running lengthwise of the same from the bottom upward, said casing of cement enveloping the lower portion of said post and the truss-wires attached, and extending upward to a point intermediate the ends of said post, the upper portion of said cement casing being protected by a covering of sheet metal, all substantially as described.

709,218. PROCESS OF MELTING NICKEL. HARRY L. HAAS, New York, N. Y., assignor to Baxter & Lovett & Loeb Company, New York, N. Y., a Corporation of New York. Filed Apr. 17, 1901. Serial No. 56,186. (No specimens.)

Claim.—1. The continuous process of melting and refining nickel containing carbon, consisting in subjecting a column of a mixture of nickel in granular form directly with fuel to heat generated from said fuel; passing large quantities of air under excessive pressure upwardly through the entire column of nickel and fuel, to assure a temperature above the melting-point of nickel, and to oxidize the carbon in the nickel; allowing the melting nickel to flow downwardly through the mass and in contact with the air, drawing off the melted nickel with more or less continuity below the column; and supplying fuel and granular nickel as necessary to the top of the column to maintain the temperature and to continue the process, substantially as described.

2. The continuous process of melting and refining nickel containing carbon, consisting in subjecting a column of a mixture of nickel in granular form directly with fuel to heat generated from said fuel; then passing large quantities of air under excessive pressure upwardly through the entire column of nickel and fuel, to assure a temperature above the melting-point of the nickel, and to oxidize the carbon in the nickel; allowing the melting nickel to flow downwardly through the mass and in contact with the air, and drawing off the melted nickel with more or less continuity below the column, substantially as described.

709,219. **DRAFTING DEVICE.** WILLIAM F. HOCHSTEIN, Jersey City, N. J., assignor of one-half to John H. Greif and Louis H. Greif, Jersey City, N. J. Filed Jan. 25, 1902. Serial No. 91,263. (No model.)

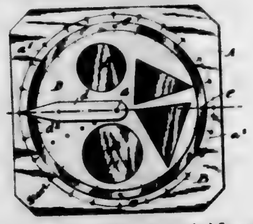

Claim.—1. A device for drafting geometrical figures, consisting of a base-plate provided with a center pin and pointed pins equidistant from said center pin, a rotary disk provided with a center opening and with openings of different sizes and shapes in the body of the disk, a pointer on said disk, and a graduated circle arranged on said base-plate beyond the edge of said disk, substantially as set forth.

2. A device for drafting geometrical figures, consisting of a base-plate provided with a center pin and a circle concentric with the axis of said pin, a rotary disk provided with a projecting index at one point of said disk and with openings of different sizes and shapes, and a plurality of pins projecting upwardly from said base-plate, substantially as set forth.

3. A device for drafting geometrical figures, consisting of a base-plate provided with a projecting center pin, a plurality of pins provided on the surface of said base-plate, a graduated circle concentric with the axis of the center pin, and a rotary disk provided with a pointer at one point of its circumference and with a number of openings of different sizes and shapes, substantially as set forth.

4. A device for drafting geometrical figures, consisting of a base-plate provided with a graduated circle, a centrally-guided disk provided with plotting-openings of different sizes and shapes, a pointer on said disk adapted to move with the disk along the graduated circle, and means for holding a sheet of paper stationary on the base-plate, substantially as set forth.

709,220. **METAL PLINTH-BLOCK.** JOHN J. HOULIHAN, Chicago, Ill. Filed Jan. 20, 1902. Serial No. 90,286. (No model.)

Claim.—The combination with a house-wall, a riser therein and a horizontal pipe which passes through an opening in the wall and is attached to the riser, of a hollow metal plinth-block which extends over the opening in the wall and is provided with a vertically-elongated slot through which the said horizontal pipe passes and with an inwardly-extending horizontal top flange and inwardly-extending vertical side flanges provided with marginal, laterally-extending attaching-flanges a movable plate mounted in the inner face of the plinth-block and provided with an aperture to receive said horizontal pipe said plate being adapted to slide freely in a vertical direction on the plinth-block so that it may rise and fall with the said pipe.

709,221. **FOLIO-HOLDER.** DAVID E. HUNTER, Cambridge, Mass., assignor to Library Bureau, Boston, Mass., a Corporation of Massachusetts. Filed Dec. 16, 1901. Serial No. 86,006. (No model.)

Claim.—1. The combination, in a drawer, of a hinged cover-board, and a securing device therefor consisting of a pawl, a rack therefor, a track, a pawl-shoe running in the track and adapted by contact therewith to hold the pawl away from the rack as the cover-board is closed, substantially as described.

2. The combination, in a drawer, of a hinged cover-board, and a securing device therefor consisting of a pawl, a rack therefor, a pawl-spring, normally urging the pawl toward the rack, a track, a pawl-shoe running in the track and adapted by contact therewith to hold the pawl away from the rack as the cover-board is closed, substantially as described.

3. The combination, in a drawer, of a hinged cover-board, and a securing device therefor consisting of a pawl loosely pivoted to the cover-board, a rack therefor, a track, a pawl-shoe running in the track, and adapted by contact therewith to hold the pawl away from the rack as the cover-board is closed, substantially as described.

4. The combination, in a drawer, of a hinged cover-board, and a securing device therefor consisting of a pawl loosely pivoted to the cover-board, a rack therefor, a pawl-spring, normally urging the pawl toward the rack, a track, a pawl-shoe running in the track and adapted by contact therewith to hold the pawl away from the rack as the cover-board is closed, substantially as described.

5. The combination, in a folio-holder, of a cover-board, a hinge-plate thereon, articulately joined to a sliding block, said block perforated to slide on a rod, the rod, a clutch-block pendent from the sliding block upon a binding-screw, and located between the slide-rod and an incline formed upon the sliding block, substantially as described.

709,222. **HOISTING DEVICE.** PAUL JABLOSOWSKY, Hamburg, Germany. Filed Feb. 15, 1902. Serial No. 94,292. (No model.)

Claim.—1. The combination in a hoisting-hook, of the yoke, the spring-seated hook having a stop on its shank, the pivoted retaining-catch, and the link connecting the yoke and the heel end of said retaining-catch, whereby said catch is opened and closed by the rising and falling of the hook.

2. The combination in a hoisting-hook, of the yoke, the spring-seated hook, having a stop on its shank, the locking-latch with which said stop engages, when the hook is depressed, the retaining-catch pivoted to the hook and playing in a slot therethrough, and the link connecting the heel of said catch to the yoke.

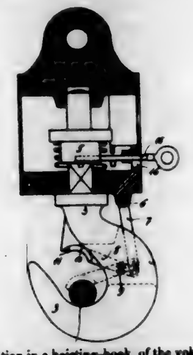

3. The combination in a hoisting-hook, of the yoke, the spring-seated hook, the stop upon its shank, the locking-latch urged against said stop by a spring and engaging over its upper end when the hook is depressed, the registering apparatus arranged in such relation to the latch and to a keyhole that the latch may be released and the register operated by a key acting concurrently upon both, the retaining-catch pivoted to the hook, and the link connecting the heel of said catch to the yoke.

709,223. **CATAMENIAL BANDAGE.** JOHN F. JAMES and ROBERT M. KIPPEN, Melbourne, Canada. Filed Nov. 4, 1901. Serial No. 81,041. (No model.)

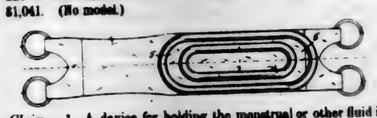

Claim.—1. A device for holding the menstrual or other fluid in the vagina, consisting of a base provided with two ribs consisting of pneumatic tubes, one rib shaped to press the external labia together and the other covering the remainder of the vulva and extending back on the perineum, substantially as and for the purpose set forth.

2. A device for holding the menstrual or other fluid in the vagina, consisting of a base provided with two concentric oval ribs forming an inner concavity and an annular surrounding concavity for the purposes described; in combination with means for securing the same in position on the body of the wearer, substantially as and for the purposes set forth.

709,224. **FENCE-POST.** WILLIAM B. JOHNSON, Van Wert, Ohio. Filed Apr. 19, 1902. Serial No. 103,782. (No model.)

Claim.—1. A post of plastic material provided with a support consisting of a continuous cable of twisted strands and composed of upright portions arranged at the sides and center of the post, the central upright portion being provided with horizontal arms formed by extending and twisting the strands of the cable and provided at their outer ends with eyes arranged on the exterior of the post, substantially as described.

2. A post of plastic material provided with a support consisting of a continuous cable and composed of upright center and corner portions and short connecting portions, substantially as described.

3. A post of plastic material provided with a support consisting of a continuous cable and composed of upright central and corner portions, a short diagonal connecting portion extending from the central upright portion to one of the corner portions, the approximately parallel top connecting portions arranged at the front and back of the post and connecting the upper ends of the upright corner portions, and the bottom connecting portion arranged at one side of the post and extending from the lower end of one of the front corner portions to the lower end of the adjacent rear corner portion, substantially as described.

4. A post of plastic material provided with a support consisting of a continuous cable of twisted strands of wire and composed of upright central and corner portions, the short diagonally-arranged connecting portion 6 extending from the central upright portion to one of the corner portions, the side connecting portion 10 arranged at one side of the post and extending from one corner portion to the adjacent corner portion, the parallel connecting portions 8 and 12, arranged at the front and back of the post and the arms extending from the central portion of the support and provided at their outer ends with eyes arranged on the exterior of the post, substantially as described.

709,225. **PAPER-RULING MACHINE.** WILLIAM H. JORDAN, Brooklyn, N. Y. Filed May 10, 1902. Serial No. 106,758. (No model.)

Claim.—1. In a ruling-machine, the combination with a horizontal feeding-belt, of a reciprocating pen-beam for producing wave-lines, a heater for drying the ink, a horizontal conveyer in alinement with the feeding-belt receiving the inked sheets from the feeding-belt and carrying same over the heater, a lay-boy, and a second conveyer for delivering the paper sheets to the lay-boy, substantially as set forth.

2. In a ruling-machine, the combination with a horizontal feeding-belt, of a reciprocating pen-beam for producing wave-lines, a heater for drying the ink, a horizontal string conveyer in alinement with the feed-

ing-belt receiving the inked sheets from the feeding-belt and carrying same over the heater, a lay-boy, and a second conveyer for delivering the paper sheets to the lay-boy, substantially as set forth.

3. In a ruling-machine, the combination with a feeding-belt, of a reciprocating pen-beam for producing wave-lines, a heater for drying the ink, a conveyer receiving the inked sheets from the feeding-belt and carrying same over the heater, a lay-boy, a second conveyer for delivering the paper sheets to the lay-boy, and a transferring-conveyer for dropping the paper sheets from the first conveyer to the second conveyer with the inked sides upward, substantially as set forth.

4. In a ruling-machine, the combination with a feeding-belt, of a reciprocating pen-beam for producing wave-lines, a heater for drying the ink, a string conveyer receiving the inked sheets from the feeding-belt and carrying same over the heater, a lay-boy, a second conveyer for delivering the paper sheets to the lay-boy, and a transferring-conveyer for dropping the paper sheets from the first conveyer to the second conveyer with the inked sides upward, substantially as set forth.

5. In a ruling-machine, the combination with a feeding-belt, of a reciprocating pen-beam for producing wave-lines, a lay-boy for receiving the inked sheets, a conveyer for delivering said sheets to the lay-boy, and a transferring device for dropping the sheets to said conveyer with the inked sides upward, substantially as set forth.

6. In a ruling-machine, the combination with a feeding-belt, of a reciprocating pen-beam for producing wave-lines, a lay-boy for receiving the inked sheets, a conveyer for delivering said sheets to the lay-boy, and a transferring device consisting of a divided conveyer which allows the sheets to sag and drop through to the first-named conveyer with the inked sides upward, substantially as set forth.

7. In a ruling-machine, the combination with a feeding-belt, of a reciprocating pen-beam for producing wave-lines, a lay-boy for receiving the inked sheets, a conveyer for delivering said sheets to the lay-boy, and a transferring device consisting of two string conveyers set at an angle to each other and presenting a wide opening through which the sheets sag and drop to the first-named conveyer with the inked sides upward, substantially as set forth.

8. In a ruling-machine, the combination with a feeding-belt, of a reciprocating pen-beam for producing wave-lines, a heater for drying the ink, a conveyer receiving the inked sheets from the feeding-belt and carrying same over the heater, a lay-boy, a second conveyer for delivering the paper sheets to the lay-boy, and a transferring device consisting of a divided conveyer which allows the sheets to sag and drop through to the second conveyer, with the inked sides upward, substantially as set forth.

9. In a ruling-machine, the combination with a feeding-belt, of a reciprocating pen-beam for producing wave-lines, a heater for drying the ink, a conveyer receiving the inked sheets from the feeding-belt and carrying same over the heater, a lay-boy, a second conveyer for delivering the paper sheets to the lay-boy, and a transferring device consisting of two string conveyers set at an angle to each other and presenting a wide opening through which the sheets sag and drop to the first-named conveyer with the inked sides upward, substantially as set forth.

10. In a paper-ruling machine, the combination with the paper feeding and ruling mechanism, the lay-boy, and the conveyer for delivering the ruled sheets to the lay-boy, of a transferring device consisting of a divided conveyer which allows the sheets to sag and drop through to said conveyer with the ruled sides upward, substantially as set forth.

11. In a paper-ruling machine, the combination with the paper feeding and ruling mechanism, the lay-boy, and the conveyer for delivering the ruled sheets to the lay-boy, of a transferring device consisting of two string conveyers set at an angle to each other and presenting a wide opening through which the sheets sag and drop to said conveyer with the ruled sides upward, substantially as set forth.

12. In a ruling-machine, the combination with several conveyers for the paper sheets, of a device for transferring the sheets from one conveyer to the other without turning the sheets over, consisting of two short conveyers separated so as to permit the sheets to sag in the middle and drop through, and an adjustable stop for checking the forward feed of the sheets on said conveyers, substantially as set forth.

13. In a ruling-machine, the combination with several conveyers for the paper sheets, of a device for transferring the sheets from one conveyer to the other without turning the sheets over, consisting of two short conveyers set at an angle to each other and presenting a wide opening so as to permit the sheets to sag in the middle and drop through, and an adjustable stop for checking the forward feed of the sheets on said conveyers, substantially as set forth.

14. In a ruling-machine, the combination with several conveyers for the paper sheets, of a device for transferring the sheets from one conveyer to the other without turning the sheets over, consisting of two short string conveyers traveling over two pairs of rollers set at an angle so as to present a V-shaped opening between them and permit the sheets to sag in the middle and to a greater extent at one end and drop through on a slant, and an adjustable stop for checking the forward feed of the sheets on said conveyer, substantially as set forth.

15. In a ruling-machine, the combination with the pen-beam, of a horizontally and vertically adjustable stationary bearing therefor at one end, a similarly-adjustable reciprocating bearing therefor at the other end, means for securing said pen-beam in its adjusted position both with respect to the paper to be ruled and to said reciprocating bearing, and means for imparting the reciprocating motion to said bearing, substantially as set forth.

16. In a ruling-machine, the combination with the pen-beam, of a horizontally and vertically adjustable stationary bearing therefor at one end, a similarly-adjustable reciprocating bearing therefor at the other end, means for securing said pen-beam in its adjusted position both with respect to the paper to be ruled and to said reciprocating bearing, an eccentric connected with said bearing, and a driving-gear for said eccentric whereby the reciprocating motion is imparted to said bearing, substantially as set forth.

17. In a ruling-machine, the combination with the paper-feeding mechanism and the conveyers, of two independently-reciprocating pen-beams for producing wave-lines, means for reciprocating said beams, and means for independently adjusting the movements of said beams, substantially as set forth.

18. In a ruling-machine, the combination with the paper-feeding mechanism and the conveyers, of two independently-reciprocating pen-beams for producing wave-lines, a stationary adjustable bearing for each of said beams, an adjustable reciprocating bearing for each beam, means for securing said beams in their adjusted positions both with respect to the paper and to said reciprocating bearings, and means for imparting the reciprocating motion to said bearings, substantially as set forth.

19. In a ruling-machine, the combination, with the paper-feeding mechanism and the conveyers, of two independently-reciprocating pen-beams for producing wave-lines, a horizontally and vertically adjustable stationary bearing for each of said beams, a similarly-adjustable reciprocating bearing for each beam, means for securing said beams in their adjusted positions both with respect to the paper and to said reciprocating bearings, and means for imparting the reciprocating motion to said bearings, substantially as set forth.

20. In a ruling-machine, the combination with the paper-feeding mechanism and the conveyers, of two reciprocating pen-beams for producing wave-lines, a stationary bearing for each of said beams, a reciprocating bearing for each beam, means for securing said beams in their adjusted positions and to said reciprocating bearings, an eccentric connected with each of said reciprocating bearings, and driving mechanism for said eccentrics, whereby the reciprocating motion is imparted to said bearings, substantially as set forth.

21. In a ruling-machine, the combination with the paper-feeding mechanism and the conveyers, of two reciprocating pen-beams for producing wave-lines, an adjustable stationary bearing for each of said beams, an adjustable reciprocating bearing for each beam, means for securing said beams in their adjusted positions and to said reciprocating bearings, an eccentric connected with each of said reciprocating bearings, and driving-mechanism for said eccentrics, whereby the reciprocating motion is imparted to said bearings, substantially as set forth.

22. In a ruling-machine, the combination with the paper-feeding mechanism and the conveyers, of two reciprocating pen-beams for producing wave-lines, a stationary bearing for each of said beams, a reciprocating bearing for each beam, means for securing said beams in their adjusted positions and to said reciprocating bearings, driving mechanism for said eccentrics, whereby the reciprocating motion is imparted to said bearings, and means for varying the reciprocations of said beams, substantially as set forth.

709,226. BLACKING-BOX HOLDER. GEORGE A. JOY, Bar Harbor, Me. Filed Sept. 23, 1901. Serial No. 76,254. (No model.)

Claim.—1. A box-holder comprising a slotted handle, a cover hinged thereto and adapted to serve as a guard when raised, and a spring supported by the handle and operatively connected with the cover to maintain the latter in its lowered or raised positions, the end wall of the handle-slot forming a stop for limiting the opening movement of the cover, substantially as described.

2. A box-holder comprising a handle, a cover-carrying arm attached at a point intermediate of its length to said handle by a hinged joint, a cover or lid carried by said arm, and a leaf-spring attached to the handle and acting against the short end of said cover-arm, for the purpose described, substantially as set forth.

3. A box-holder comprising a slotted handle, an extensible box-clamp carried thereby, a cover-carrying arm pivoted to said handle at a point intermediate of its length, a cover carried by said arm, and a spring carried by the handle and operatively connected with said arm to maintain the cover in its lowered or raised position, the end wall of the handle-slot forming a stop for limiting the opening movement of the cover, substantially as specified.

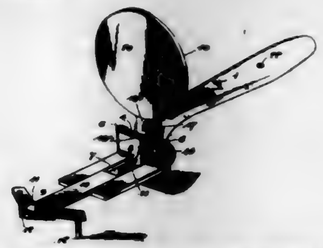

4. The combination with a handle and a cover supported thereby, of a box-clamp attached to the handle for adjustment thereon toward or from the cover, substantially as described.

5. In a box-holder, the combination with a handle and a cover, of an extensible box-clamp adjustably fitted to the handle to be moved thereon toward or from the cover whereby the clamp may be adjusted to accommodate boxes which may vary in diameter and depth, substantially as described.

6. In a box-holder, the combination with a handle and a cover, of a two-part box-clamp having its members extensibly fitted together and with one member fitted adjustably to the handle, and a single clamping device by which the box-clamp may be firmly held in its adjusted position on the handle and its members extended or contracted as desired, substantially as described.

7. In a box-holder, the combination with a handle and a cover, of a two-part box-clamp having one member adjustably fitted to the handle, and a clamp for holding the box-clamp in its adjusted position on the handle, substantially as described.

8. In a box-holder, a box-clamp consisting of a T-shaped carrier-plate provided with a guideway and a clamping-plate slidably fitted in the guideway and provided with a box-engaging face, in combination with a handle to which the T-shaped carrier-plate of the box-clamp is fitted, and a clamping-screw connected to the handle and having an adjustable connection with the clamping-plate, substantially as described.

9. In a box-holder, the combination with a handle, of a hinged cover, and a box-clamp fitted to the handle for adjustment thereon toward or from the hinge of said cover, and means for firmly holding the box-clamp in its adjusted position on the handle, substantially as described.

10. In a box-holder, the combination of a handle provided with a slotted end piece, a two-part box-clamp having its members extensibly fitted together, and with one member slidably fitted to said end piece, a single screw fitted to the handle and adjustably connected with the extensible member of the box-clamp, and a cover pivoted to the handle above the limit of adjustment of the box-clamp thereon, substantially as described.

709,227. WOOL-WASHING MACHINE. JOHN KEEFE, San Francisco, Cal. Filed May 20, 1902. Serial No. 108,204. (No model.)

Claim.—1. The combination in a wool-washing machine of water-containing tanks, endless traveling inclined belts moving parallel and contiguous to each other, extending from the bottom of the receiving to the top of the discharge end of the tank, the uppermost belt having teeth or bars to engage and carry the wool between the two belts and having its upper end extending beyond the corresponding end of the lower belt to allow its teeth to shed the wool by gravity.

2. The combination in a wool-washing machine of water-containing tanks, endless traveling belts having their contiguous surfaces traveling in the same direction from the bottom of the receiving to the upper and discharge end of the tank, the uppermost belt having teeth or bars to engage and carry the wool forward, the drums of said uppermost belt being set in advance of those of the lower belt, whereby space is provided to receive the wool at the bottom and to allow the teeth or bars to shed the wool by gravity at the discharge end.

3. The combination in a wool-washing machine of water-containing tanks, endless traveling belts having their contiguous surfaces movable in the same direction from the bottom and receiving to the upper and discharge end of the tank, carriers fixed upon the uppermost belt, means whereby the wool is caused to pass between the belts at the receiving end and is discharged and disengaged therefrom at the upper end, said upper carrier having its discharge end in advance of the corresponding end of the lower carrier whereby the teeth or bars of said upper carrier shed the wool by gravity at a point beyond the discharge end of the lower carrier, transmitting-rollers upon which the wool is delivered, squeezing-rollers between which it is passed and pickers over which it is subsequently passed and from which it is delivered into the succeeding tank.

709,228. WIRE-CLOTH FOR PAPER-MACHINES. RUDOLF KROH, Jr., Golsern, Germany. Filed June 13, 1902. Serial No. 111,456. (No model.)

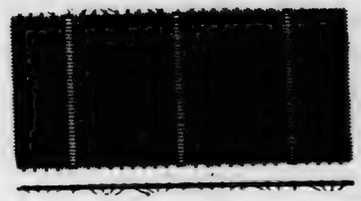

Claim.—A metallic wire or sieve for paper-making purposes into which wire or sieve metal strips are woven in longitudinal direction to form breadth of paper and between said strips metallic threads are woven in longitudinal direction to divide said breadth into small bands or ribbons.

709,229. DIAMOND-CUTTING TOOL. ROBERT MARY, Cincinnati, Ohio. Filed Apr. 26, 1902. Serial No. 104,767. (No model.)

Claim.—1. A diamond-cutter's dop having a circular recess or socket in the upper portion thereof, a rotatory disk within said socket carrying at a point other than its center the stem of said dop, substantially as set forth.

2. A diamond-cutter's dop having a circular recess or socket in the upper portion thereof, a rotatory disk within said socket carrying at a point other than its center the stem of said dop and means for securing said disk in place, substantially as set forth.

3. In a diamond-cutter's dop the combination of a socket in the upper portion thereof, a pivot fixed in the center of said socket parallel to the axis thereof, a disk or wheel revolving thereon carrying the stem of said dop, offsets diametrically opposite in the rim of said socket and a pin protruding from the circumference of said disk, substantially as set forth.

4. In a diamond-cutter's dop the combination of a socket in the upper portion thereof, a pivot fixed in the center of said socket parallel to the axis thereof, a disk or wheel revolving thereon carrying the stem of said dop, offsets diametricallly opposite in the rim of said socket and a pin protruding from the circumference of said disk, and a diamond-holder fixed to said dop by being screwed therein, substantially as set forth.

709,280. **VENTILATOR.** JAMES W. MAUS, Pacific Junction, Iowa. Filed June 14, 1900. Serial No. 20,311. (No model.)

Claim.—As a new article of manufacture, a window-sash ventilator comprising a box or casing 3 having open sides and inclined top and bottom walls adapted to extend entirely through an opening in a sash and rest flush with the inner and outer surfaces thereof, separable securing-flanges 4 adapted to engage with the edges of the top and bottom end end walls to hold the box from lateral movement, the edges of said flanges being level or flush with the inner surfaces of the box or casing to permit the free flow of water from the interior of the box, a foraminous shield 6 secured over the outer open side of the box by one of the flanges, a damper-plate 7 having longitudinally-alined pivot-pins or journals 8 arranged adjacent to the upper edge of the plate, there being perforations or recesses 9 formed in the end walls of the box for the reception of said pivot-pins, said damper being situated wholly within the box and when in closed position being inclined in the same direction but at a greater angle to the horizontal than the bottom wall of the casing and adapted to shed water, the lower edge of said damper when closed being in intimate contact with the lower wall of the casing to prevent the passage of water, an adjustable handle hinged to the damper and provided on its under side with a series of notches, and a keeper carried by the lower wall of the casing and adapted to engage in said notches, substantially as specified.

709,281. **MEASURING-MACHINE FOR ROLLED GOODS.** HENRY R. HEARN, Greeneville, Tenn., assignor of one-half to Jonathan Logan Wood, Greeneville, Tenn. Filed Oct. 29, 1901. Serial No. 80,389. (No model.)

Claim.—1. In a rolled-goods-measuring machine, the combination with a frame, of a winding device including a rotatable and endwise-adjustable operating-shaft having clamping-jaws to embrace one end of a bolt-board, and means for drawing the clamping-jaws together by an endwise adjustment of the shaft.

2. In a rolled-goods-measuring machine, the combination with a rotatable shaft mounted upon the frame and having a screw-threaded portion, and clamping-jaws, of an adjusting-nut fitted to the screw-threaded portion of the shaft and bearing against the frame, and means for drawing together the clamping-jaws by an endwise movement of the shaft under the action of the adjusting-nut.

3. In a rolled-goods-measuring machine, the combination with a frame, of a winding device embodying a rotatable endwise-shiftable shaft having diverged clamping-jaws at one end thereof, a head loosely fitted upon the shaft adjacent to the inner ends of the clamping-jaws, and means to adjust the shaft in an endwise direction to draw the jaws into frictional engagement with the opening in the head and thereby draw the jaws together.

4. In a rolled-goods-measuring machine, the combination with a frame, of a winding device embodying an endwise-adjustable and rotatable operating-shaft journaled in the frame, and provided at one end with divergent clamping-jaws, a head loosely mounted upon the jaw end of the shaft for frictional engagement with the jaws, and means for adjusting the shaft in an endwise direction to draw the head into engagement with the frame and to draw the jaws into frictional engagement with the opening in the head and thereby to draw the jaws together.

5. In a rolled-goods-measuring machine, the combination with a frame having an upright, of a winding device embodying a bearing carried by the upright and having an enlarged inner end, a rotatable and endwise-adjustable shaft mounted in the bearing and having a screw-threaded portion projected at the outer side of the upright, and divergent spring clamping-jaws at the inner end of the shaft and located at the inner side of the upright, means for rotating the shaft, a head loosely fitted to the inner end portion of the shaft, and an adjusting-nut fitted to the projected screw-threaded portion of the shaft and bearing against the outer side of the upright.

6. In a rolled-goods-measuring machine, the combination with a frame comprising a bottom and opposite uprights, one of which uprights is provided with a socket in its inner face, of a winding device comprising a rotatable and endwise-adjustable operating-shaft piercing the upright at the center of the socket therein and having its inner projected end provided with divergent clamping-jaws, a head slidably carried by the inner end of the shaft and adapted to be seated in the socket flush with the inner face of the upright, means for adjusting the shaft in an endwise direction to draw the clamping-jaws into frictional engagement with the head and thereby to draw the jaws together, an opposite rotatable head having clamping-jaws, and a bracket rotatably supporting the head and adjustable toward and away from the first-mentioned head.

7. In a rolled-goods-measuring machine, the combination with a frame embodying a base having a longitudinal groove formed in the upper face and at one side of the center thereof, and opposite end uprights, one of which uprights is provided with an opening registering with the adjacent end of the groove, of a receptacle to loosely contain a roll of goods located opposite the groove, a measuring-roll journaled in the upper portions of the uprights, an indicating device carried by one of the uprights and in operative relation to the measuring-roll, a feed-screw journaled in the groove of the base, a bracket inserted through the opening in one of the uprights and having a foot provided with a screw-threaded opening receiving the feed-screw, a rotatable head journaled upon the bracket, and provided with a pair of clamping-jaws, a rotatable endwise-adjustable winding-shaft piercing the other upright and having its outer projected end screw-threaded, divergent spring clamping jaws carried by the inner end of the shaft, a head slidably carried by the inner end of the shaft, an adjusting-nut fitted to the screw-threaded portion of the shaft and bearing against the outer side of the adjacent upright, the outer ends of the shaft and the feed-screw being made polygonal, and an operating-crank for detachable application to the polygonal ends of the winding-shaft and the feed-screw.

709,282. **CIRCUIT-BREAKER.** FRANK A. MERRICK, Johnstown, Pa., assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Mar. 21, 1900. Serial No. 9,537. (No model.)

Claim.—1. In a circuit-breaker, a chamber of insulating material, a fixed contact extending into said chamber through a wall thereof, a loosely-mounted shaft extending through said chamber and carrying a cooperating contact, a handle for manually actuating said shaft in one direction, a spring for actuating the shaft in an opposite direction, and an electromagnetically-controlled latch device for normally restraining the action of said spring, the magnet of said device having extended pole-pieces which embrace the said chamber to produce a magnetic field therein.

2. In a circuit-breaker, the combination of a fixed contact, a movable contact, a shaft to which the movable contact is fixedly secured, said shaft having two arms or projections thereon, a handle loosely sleeved on said shaft between the said arms or projections, and arranged upon movement to engage one or the other thereof, a spring interposed between the said handle and one of the arms or projections, a latch engaging the said handle, a spring for actuating said handle when the latch is released, and electromagnetic means for releasing said latch.

3. In a circuit-breaker, the combination of a pair of separable cooperative contacts, a shaft, a sleeve secured to said shaft and insulated therefrom, one of the contacts being fixedly secured to said sleeve, and a bearing in which said sleeve is journaled, said bearing forming a part of the circuit through the instrument.

4. In a circuit-breaker, the combination with a pair of separable cooperative contacts, of an inclosure therefor formed of insulating material, and having a separable portion closing its lower end, together with means for producing a magnetic field within said inclosure.

5. In a circuit-breaker, the combination with a pair of separable cooperative contacts, an inclosure of insulating material inclosing said contacts at the sides and underneath the same, and formed in separable upper and lower sections, and a shaft extending through the lower of said sections and carrying the same and also the movable contact.

709,283. **LIQUID DISTRIBUTING OR DOSING TANK AND MECHANISM.** SIDNEY W. MILLER, Chicago, Ill. Filed Jan. 6, 1902. Serial No. 88,514. (No model.)

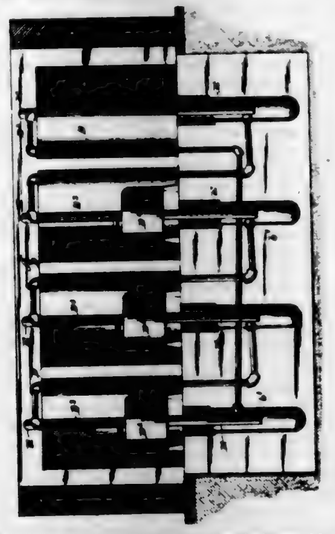

Claim.—1. An apparatus for the purpose set forth comprising a liquid tank or receptacle, means acting severally to empty said tank or receptacle comprising siphons located therein, chambers associated with the siphons, and means controlled by the presence of liquid in said chambers, prior to the passage of said liquid through the siphons, for bringing said siphons into operation in a predetermined rotative order.

2. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank, a series of chambers which are severally associated with said siphons and filled from the source supplying liquid to the tank, means operated by the filling of each chamber for transmitting pressure to the siphon associated with another chamber of the series to start the same into action, and means for emptying each chamber through the operation of its associated siphon.

3. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank, a series of chambers which are severally associated with said siphons and filled from the source supplying liquid to the tank, means operated by the filling of each chamber for transmitting pressure to the siphon associated with another chamber of the series to start the same into action, and means for emptying each chamber through the operation of its associated siphon, the last chamber of the series being connected with the first siphon of the series whereby said siphons may be operated in a predetermined rotative order.

4. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank, a series of chambers severally associated with said siphons and located in and filled from said tank, means operated by the filling of each chamber for transmitting pressure to the siphon associated with another chamber of the series and means for emptying each chamber through the operation of its associated siphon.

5. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons in said tank acting severally to empty said tank, a series of chambers also in said tank which are severally associated with said siphons, means operated by the filling of each chamber for transferring pressure to the siphon associated with another chamber of the series to start the same into operation and means for emptying each chamber through the operation of its associated siphon.

6. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank, and provided with trapped discharge ends, a series of chambers severally associated with said siphons, and filled from the source supplying liquid to the tank, a pipe communicating at one end with each siphon and sealed at its lowest part and having open communication at its other end with the chamber associated with one of the other siphons, and means for emptying each chamber through the operation of its associated siphon.

7. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank and provided with trapped discharge ends, a series of chambers severally associated with said siphons and filled from the source supplying liquid to said tank, a downwardly-opening bell in each chamber, a pipe connected with each siphon and dipping into its associated chamber, and a pipe communicating at one end with each bell and at its other end with a siphon associated with another chamber of the series, said parts being constructed to empty the chambers below the sealing-levels of the bells.

8. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank and provided with trapped discharge ends, a series of chambers severally associated with said siphons, and filled from the source supplying liquid to said tank, a downwardly-opening bell in each chamber, a pipe communicating at one end with each bell, and at its other end with a siphon associated with another chamber of the series, and means for emptying each chamber through the action of its associated siphon below the sealing-level of the bell therein.

9. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank and provided with trapped discharge ends, a series of chambers severally associated with said siphons and filled from the source supplying liquid to said tank, a downwardly-opening bell in each chamber, a pipe connected with each siphon and dipping into its associated chamber, a pipe communicating at one end with each bell and at its other end with a siphon associated with another chamber of the series, and a vent-pipe communicating with each of the last-mentioned pipes above the bell thereof and extending downwardly with its lower open end above the lower end of said bell.

10. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank and provided with trapped discharge ends, a series of chambers severally associated with said siphons and filled from the source supplying liquid to the tank, means operated by the filling of each chamber for transmitting pressure to the siphon associated with another chamber of the series, an emptying-pipe communicating at one end with each siphon and dipping into its associated chamber and means for maintaining said emptying-pipes constantly sealed.

11. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank and provided with sealed discharge ends, a series of chambers which are severally associated with said siphons and filled from the source supplying liquid to said tank, a pipe communicating at one end with each siphon

and sealed at its lower part and communicating at its other end with the chamber associated with another one of the siphons, whereby the rise of liquid in said chamber communicates pressure through said pipe to said siphon, an emptying-pipe communicating with each of the siphons and dipping into its associated chamber for emptying the latter through said pipe and associated siphon, and means for maintaining constantly sealed the lower ends of said emptying-pipes.

12. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank and provided with trapped discharge ends and also with blow-off traps communicating with said discharge ends, a series of chambers severally associated with said siphons and filled from the source supplying liquid to said tank, a downwardly-opening bell in each chamber, an emptying-pipe connected with each siphon and dipping into its associated chamber, and a pipe communicating at one end with each bell and at its other end with the blow-off pipe of a siphon associated with another chamber.

709,284. **ELECTRIC CLOCK.** CARL J. MOSSNER, Jersey City, N. J., assignor to Adam R. Schatz, Mount Vernon, N. Y. Filed May 26, 1897. Renewed Jan. 17, 1901. Serial No. 43,629. (No model.)

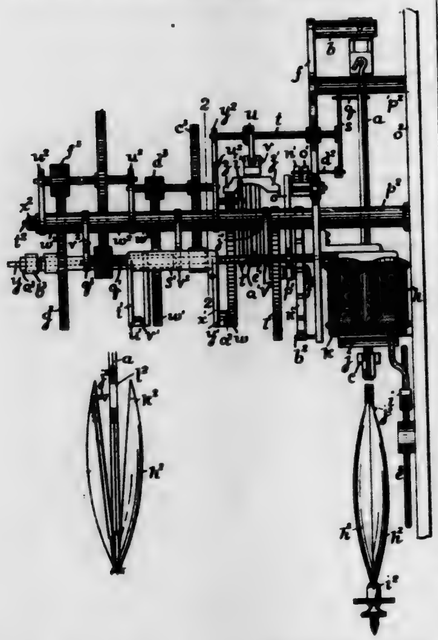

Claim.—1. The combination in a pendulum-actuating circuit of a circuit-closing lever, a pawl synchronously actuated by the pendulum for actuating said lever, and a pawl-carrying device whereon the pawl rests and reciprocates said device preventing engagement of said pawl with the lever while the impulses enable said pawl to reach said carrier, and permitting engagement when the pawl fails to reach thereto substantially as described.

2. The combination in a pendulum-actuating circuit, of a circuit-closing lever, a pawl synchronously actuated by the pendulum for actuating said lever, a pawl carrying device whereon the pawl rests and reciprocates said device preventing engagement of said pawl with said lever while the impulses enable said pawl to reach said carrier, and permitting engagement when the pawl fails to reach thereto, and a time-train-actuating pawl said pawl being an attachment of the pendulum-pawl carrier substantially as described.

3. The combination with the train-actuating mechanism, the pendulum and the pawl actuated by the pendulum, of a contact-lever adapted to be engaged by the pendulum-pawl when said pawl fails to catch the train-driving pawl, said contact-lever also adapted to actuate the train-pawl when not actuated by the pendulum-pawl substantially as described.

4. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, time-train-actuating pawl-lever and pawl, actuated by said hook-pawl, the pawl-carrying device for releasing the train-actuating pawl, and means for periodically closing the circuit substantially as described.

5. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, time-train-actuating pawl-lever and pawl actuated by said hook-pawl, pawl-carrying device for releasing the train-actuating pawl, the circuit-closing lever, and circuit-closing contact-springs substantially as described.

6. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, contact-springs, pawl-lever having the pawl-engaging hook, the train-actuating pawl and the pawl-detaching rocker, contact-lever adapted to be engaged by the pawl when failing to reach the hook, and the circuit-closing pin of the contact-lever, substantially as described.

7. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, contact-springs, pawl-lever having the engaging hook and the pawl-detaching rocker, contact-lever adapted to be engaged by the pawl when failing to reach the hook, circuit-closing pin of the contact-lever, said lever pivoted in the axis of the seconds-hand staff, and the pawl of the said pawl-lever engaging the seconds-hand wheel substantially as described.

8. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, pawl-lever and pawl actuated by said hook-pawl for actuating the time-train and means actuated by said pendulum-actuated pawl for periodically closing the circuit, and means also actuated by said pawl to periodically actuate the striking-train substantially as described.

9. In an electric clock, the combination of the time-train, striking-train pawl adapted to actuate both trains in their due order of operation, and the hook-pawl actuated by the pendulum and actuating said train-actuating pawl substantially as described.

10. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, means actuated by said pawl for periodically closing the circuit, and to actuate the time-train, and also to periodically actuate the striking-train said striking-train being periodically movable into and out of connection with the time-train-actuating device, and provided with means therefor substantially as described.

11. The combination in the hammer-actuating circuit, of the contact-springs, the lever actuated by the pendulum, circuit-closing piece in the extremity of said lever, the striking-wheel and its actuating-wheel on a movable support, means actuated by the seconds-hand wheel to close the circuit by movement of said striking-wheel support, and a pawl actuated by the pendulum adapted to actuate the striking-wheel periodically substantially as described.

12. The combination with the time-train in an electric clock, of the striking-train consisting of two wheels secured to the same axis and always moving together, and means to actuate said train periodically by the time-train-actuating pawl, said striking-train being periodically movable into and out of contact with the time-train actuating device substantially as described.

13. The combination with the time-train in an electric clock, of a striking-train that is movable out of its resting-place for striking, and means actuated by the time-train for so moving the striking-train, substantially as described.

14. In an electric clock the framework for supporting the trains consisting of two series of uniform arched pivot-supporting bridges placed in alternately upright and reversed relation and all mounted at their extremities on a supporting-pillar which serves alike for both series and is continuous through all the bridges with suitable spacing-collars, the time-indicating staffs being pivoted in one series of bridges, and back gear-pivots in the other series of bridges substantially as described.

15. The combination in the hammer-actuating circuit, of the contact-springs, stop-stud for the striking-wheel, said striking-wheel located on a movable support intermediately of the stud and contact-springs, means actuated by the seconds-hand wheel to close the circuit and release the striking-wheel from the stop-stud by movement of said striking-wheel support, and means actuated by the pendulum for periodically turning the striking-wheel substantially as described.

16. The combination in the hammer-actuating circuit, of the contact-springs, striking-wheel, and its actuating-wheel located on a movable support, and about in the axis of the seconds-hand staff, means actuated by the seconds-hand wheel to periodically close the circuit by movement of said striking-wheel support, and a pawl actuated by the pendulum, and adapted to operate the striking-wheel-actuating wheel when its support is moved for closing the circuit substantially as described.

17. The combination in the hammer-actuating circuit, of the contact-springs, striking-wheel and its actuating-wheel located on a movable support, and about in the axis of the seconds-hand staff, means actuated by the seconds-hand wheel to periodically close the circuit by movement of said striking-wheel support, and a pawl actuated by the pendulum and consisting of a branch of the seconds-hand-wheel-actuating pawl adapted to operate the striking-wheel-actuating wheel when its support is moved for closing the circuit substantially as described.

18. In an electric clock, the combination with independent electric actuating mechanisms for the time-train and the striking-train respectively, of independent impelling electric currents therefor, of equal electromotive force, and a resistance device in the circuit of the striking-train, whereby operation of the striking-train will cease through diminishing power of the battery prior to cessation of operation by the time-train substantially as described.

19. An electric clock-striking train provided with means adapted to terminate its action in advance of the termination of the action of the time-train said trains being actuated by independent circuits of equal tension, substantially as described.

20. In an electric clock having independent circuits and currents of equal tension for actuating the pendulum and striking mechanism respectively, the combination in the hammer-actuating circuit, of an electrical resistance adapted to terminate the action of the striking-train prior to the termination of the action of the time-train when the force of the currents diminishes substantially as described.

21. In a clock-pendulum the combination with the bar, and the bob-adjusting devices, of a bob that is detachable and attachable with the adjusting devices fixed to support the bob in its adjusted position, substantially as described.

22. In a clock-pendulum, the combination with the bar, and the bob-adjusting devices, of the bob constructed in two parts adapted to clamp on the bar attachably and detachably with the adjusting devices fixed to support the bob in its adjusted position and means to confine the clamped parts thereon substantially as described.

23. The combination in the striking apparatus, of the striking-wheel having the graduated notches in the periphery for controlling the number of strokes and being automatically movable periodically into and out of connection with its actuator, a support for maintaining it in connection with the actuating mechanism during the striking, contact devices of the hammer-actuating circuit, and means to close said contacts actuated by the means effecting connection of the striking-wheel with its actuating device substantially as described.

24. In a pendulum-actuating circuit, the combination with a going wheel; of a pendulum operatively connected with and normally imparting a step-by-step movement to said going wheel, the amplitude of range of movement of the pendulum gradually decreasing until the operative connection is broken; and means for automatically reviving the amplitude of range of movement of the pendulum, said means comprising an electric circuit; a circuit-closing mechanism normally inactive with the circuit broken and an actuating device for said mechanism normally forming a portion of the operative connection between the pendulum and going wheel, said device actuating said mechanism when the movement of the pendulum is insufficient to impart the step-by-step movement to the going wheel.

25. In a pendulum-actuating circuit, a pendulum; a going wheel operatively connected thereto; a circuit-closing mechanism; an actuating device for said mechanism forming a portion of the operative connection between the pendulum and going wheel; and a support for said device, said support forming a portion of said operative connection and normally preventing engagement between said device and mechanism while the amplitude of range of movement of the pendulum is sufficient to impart a step-by-step movement to the going wheel, and permitting such engagement when such range of movement is insufficient to actuate said going wheel, whereby the extreme amplitude of range of movement of the pendulum will be automatically revived.

709,285. **MACHINE FOR CUTTING HELICOIDAL GEAR-TEETH.** LÉON F. A. MOUSSETTE, Paris, France. Filed Dec. 14, 1896. Serial No. 740,266. (No model.)

Claim.—In a machine for generating gear-teeth, the combination of a pivotally-mounted guide, a tool-slide reciprocable thereon carrying a cutting-tool, and means to reciprocate said slide on said guide, of an angularly-adjustable work-table, carrying a rotatable work-support, means to rotate said support including a worm-wheel mounted thereon, a train of gearing connecting said worm-wheel with the means for reciprocating the tool-slide, said train of gearing passing through the pivot of the angularly-adjustable work-table, so that its operation is not affected by any adjustment of the work-table, means operated by the aforesaid worm-wheel once in each revolution thereof to turn the guide of the tool-slide about its axis and to give an additional rotation to the blank-support, so that the tool will be fed into the blank in such a way as to generate the proper tooth-curve.

709,285.

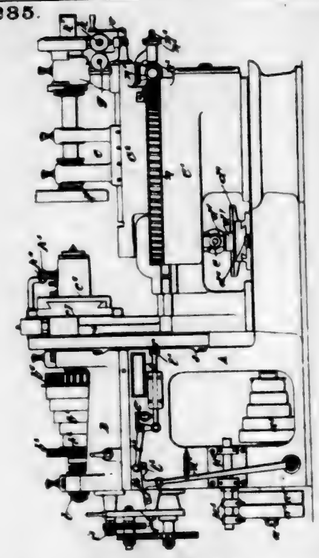

709,286. **STREET-INDICATOR FOR RAILWAY-CARS.** CHARLES R. MORGAN, Portland, Oreg., assignor, by direct and mesne assignments, to Automatic Street Indicator Company, a Corporation. Filed Jan. 14, 1902. Serial No. 89,654. (No model.)

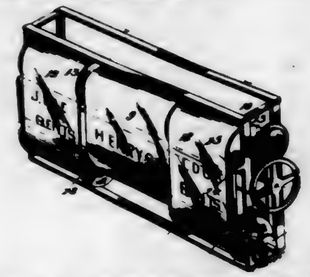

Claim.—1. In an indicator for street-cars and other public conveyances, a frame provided with the indicating mechanism and mounted to receive a limited sliding movement, actuating mechanism for imparting movement to the indicating mechanism, and means for sliding the said frame to disengage the actuating mechanism from the indicating mechanism for a proper setting or adjusting of the latter, substantially as set forth.

2. In an indicator for street-cars and other public conveyances, an indicating mechanism mounted to receive a limited sliding movement, means for exerting a spring-pressure upon the indicating mechanism to hold it in a predetermined position, actuating mechanism normally in mesh with the indicating mechanism, and a button or like contrivance to be operated by hand for sliding the indicating mechanism to throw it out of gear with the actuating mechanism and serving as a means for adjusting or setting the said indicating mechanism, substantially as set forth.

3. In an indicator for street-cars and other public conveyances, indicating mechanism, a rewinding-spring in coöperative relation therewith, a detent mechanism for preventing recoil of the said spring, a trip normally holding the detent mechanism out of action, an actuating mechanism, and means operated by hand for shifting the indicating mechanism and admitting of proper adjustment thereof, the shifting of the indicating mechanism throwing it out of meshing relation with the actuating mechanism without permitting disengagement of the aforementioned detent mechanism from the trip coöperating therewith, substantially as set forth.

4. In a street-indicator for the purposes specified, a case, a frame removably fitted within the case and provided with the indicating mech-

and sealed at its lower part and communicating at its other end with the chamber associated with another one of the siphons, whereby the rise of liquid in said chamber communicates pressure through said pipe to said siphon, an emptying-pipe communicating with each of the siphons and dipping into its associated chamber for emptying the latter through said pipe and associated siphon, and means for maintaining constantly sealed the lower ends of said emptying-pipes.

12. An apparatus for the purpose set forth comprising a tank or receptacle, a plurality of siphons acting severally to empty said tank and provided with trapped discharge ends and also with blow-off traps communicating with said discharge ends, a series of chambers severally associated with said siphons and filled from the source supplying liquid to said tank, a downwardly-opening bell in each chamber, an emptying-pipe connected with each siphon and dipping into its associated chamber, and a pipe communicating at one end with each bell and at its other end with the blow-off pipe of a siphon associated with another chamber.

709,284. **ELECTRIC CLOCK.** CARL J. MOSSNER, Jersey City, N. J., assignor to Adam E. Schatz, Mount Vernon, N. Y. Filed May 26, 1897. Renewed Jan. 17, 1901. Serial No. 43,689. (No model.)

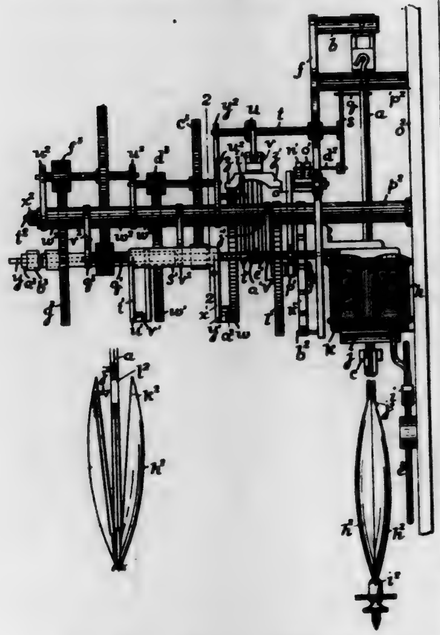

Claim.—1. The combination in a pendulum-actuating circuit of a circuit-closing lever, a pawl synchronously actuated by the pendulum for actuating said lever, and a pawl-carrying device whereon the pawl rests and reciprocates said device preventing engagement of said pawl with the lever while the impulses enable said pawl to reach said carrier, and permitting engagement when the pawl fails to reach thereto substantially as described.

2. The combination in a pendulum-actuating circuit, of a circuit-closing lever, a pawl synchronously actuated by the pendulum for actuating said lever, a pawl carrying device whereon the pawl rests and reciprocates said device preventing engagement of said pawl with said lever while the impulses enable said pawl to reach said carrier, and permitting engagement when the pawl fails to reach thereto, and a time-train-actuating pawl said pawl being an attachment of the pendulum-pawl carrier substantially as described.

3. The combination with the train-actuating mechanism, the pendulum and the pawl actuated by the pendulum, of a contact-lever adapted to be engaged by the pendulum-pawl when said pawl fails to catch the train-driving pawl, said contact-lever also adapted to actuate the train-pawl when not actuated by the pendulum-pawl substantially as described.

4. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, time-train-actuating pawl-lever and pawl, actuated by said hook-pawl, the pawl-carrying device for releasing the train-actuating pawl, and means for periodically closing the circuit substantially as described.

5. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, time-train-actuating pawl-lever and pawl actuated by said hook-pawl, pawl-carrying device for releasing the train-actuating pawl, the circuit-closing lever, and circuit-closing contact-springs substantially as described.

6. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, contact-springs, pawl-lever having the pawl-engaging hook, the train-actuating pawl and the pawl-detaching rocker, contact-lever adapted to be engaged by the pawl when failing to reach the hook, and the circuit-closing pin of the contact-lever, substantially as described.

7. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, contact-springs, pawl-lever having the engaging hook and the pawl-detaching rocker, contact-lever adapted to be engaged by the pawl when failing to reach the hook, circuit-closing pin of the contact-lever, said lever pivoted in the axis of the seconds-hand staff, and the pawl of the said pawl-lever engaging the seconds-hand wheel substantially as described.

8. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, pawl-lever and pawl actuated by said hook-pawl for actuating the time-train and means actuated by said pendulum-actuated pawl for periodically closing the circuit, and means also actuated by said pawl to periodically actuate the striking-train substantially as described.

9. In an electric clock, the combination of the time-train, striking-train pawl adapted to actuate both trains in their due order of operation, and the hook-pawl actuated by the pendulum and actuating said train-actuating pawl substantially as described.

10. The combination in the pendulum-actuating circuit, of the hook-pawl actuated by the pendulum, means actuated by said pawl for periodically closing the circuit, and to actuate the time-train, and also to periodically actuate the striking-train said striking-train being periodically movable into and out of connection with the time-train-actuating device, and provided with means therefor substantially as described.

11. The combination in the hammer-actuating circuit, of the contact-springs, the lever actuated by the pendulum, circuit-closing piece in the extremity of said lever, the striking-wheel and its actuating-wheel on a movable support, means actuated by the seconds-hand wheel to close the circuit by movement of said striking-wheel support, and a pawl actuated by the pendulum adapted to actuate the striking-wheel periodically substantially as described.

12. The combination with the time-train in an electric clock, of the striking-train consisting of two wheels secured to the same axis and always moving together, and means to actuate said train periodically by the time-train-actuating pawl, said striking-train being periodically movable into and out of contact with the time-train actuating device substantially as described.

13. The combination with the time-train in an electric clock, of a striking-train that is movable out of its resting-place for striking, and means actuated by the time-train for so moving the striking-train, substantially as described.

14. In an electric clock the framework for supporting the trains consisting of two series of uniform arched pivot-supporting bridges placed in alternately upright and reversed relation and all mounted at their extremities on a supporting-pillar which serves alike for both series and is continuous through all the bridges with suitable spacing-collars, the time-indicating staffs being pivoted in one series of bridges, and back gear-pivots in the other series of bridges substantially as described.

15. The combination in the hammer-actuating circuit, of the contact-springs, stop-stud for the striking-wheel, said striking-wheel located on a movable support intermediately of the stud and contact-springs, means actuated by the seconds-hand wheel to close the circuit and release the striking-wheel from the stop-stud by movement of said striking-wheel support, and means actuated by the pendulum for periodically turning the striking-wheel substantially as described.

16. The combination in the hammer-actuating circuit, of the contact-springs, striking-wheel, and its actuating-wheel located on a movable support, and about in the axis of the seconds-hand staff, means actuated by the seconds-hand wheel to periodically close the circuit by movement of said striking-wheel support, and a pawl actuated by the pendulum, and adapted to operate the striking-wheel-actuating wheel when its support is moved for closing the circuit substantially as described.

17. The combination in the hammer-actuating circuit, of the contact-springs, striking-wheel and its actuating-wheel located on a movable support, and about in the axis of the seconds-hand staff, means actuated by the seconds-hand wheel to periodically close the circuit by movement of said striking-wheel support, and a pawl actuated by the pendulum and consisting of a branch of the seconds-hand-wheel-actuating pawl adapted to operate the striking-wheel-actuating wheel when its support is moved for closing the circuit substantially as described.

18. In an electric clock, the combination with independent electric actuating mechanisms for the time-train and the striking-train respectively, of independent impelling electric currents therefor, of equal electromotive force, and a resistance device in the circuit of the striking-train, whereby operation of the striking-train will cease through diminishing power of the battery prior to cessation of operation by the time-train substantially as described.

19. An electric clock-striking train provided with means adapted to terminate its action in advance of the termination of the action of the time-train said trains being actuated by independent circuits of equal tension, substantially as described.

20. In an electric clock having independent circuits and currents of equal tension for actuating the pendulum and striking mechanism respectively, the combination in the hammer-actuating circuit, of an electrical resistance adapted to terminate the action of the striking-train prior to the termination of the action of the time-train when the force of the currents diminishes substantially as described.

21. In a clock-pendulum the combination with the bar, and the bob-adjusting devices, of a bob that is detachable and attachable with the adjusting devices fixed to support the bob in its adjusted position, substantially as described.

22. In a clock-pendulum, the combination with the bar, and the bob-adjusting devices, of the bob constructed in two parts adapted to clamp on the bar attachably and detachably with the adjusting devices fixed to support the bob in its adjusted position and means to confine the clamped parts thereon substantially as described.

23. The combination in the striking apparatus, of the striking-wheel having the graduated notches in the periphery for controlling the number of strokes and being automatically movable periodically into and out of connection with its actuator, a support for maintaining it in connection with the actuating mechanism during the striking, contact devices of the hammer-actuating circuit, and means to close said contacts actuated by the means effecting connection of the striking-wheel with its actuating device substantially as described.

24. In a pendulum-actuating circuit, the combination with a going wheel; of a pendulum operatively connected with and normally imparting a step-by-step movement to said going wheel, the amplitude of range of movement of the pendulum gradually decreasing until the operative connection is broken; and means for automatically reviving the amplitude of range of movement of the pendulum, said means comprising an electric circuit; a circuit-closing mechanism normally inactive with the circuit broken and an actuating device for said mechanism normally forming a portion of the operative connection between the pendulum and going wheel, said device actuating said mechanism when the movement of the pendulum is insufficient to impart the step-by-step movement to the going wheel.

25. In a pendulum-actuating circuit, a pendulum; a going wheel operatively connected thereto; a circuit-closing mechanism; an actuating device for said mechanism forming a portion of the operative connection between the pendulum and going wheel; and a support for said device, said support forming a portion of said operative connection and normally preventing engagement between said device and mechanism while the amplitude of range of movement of the pendulum is sufficient to impart a step-by-step movement to the going wheel, and permitting such engagement when such range of movement is insufficient to actuate said going wheel, whereby the extreme amplitude of range of movement of the pendulum will be automatically revived.

709,285. **MACHINE FOR CUTTING HELICOIDAL GEAR-TEETH.** LÉON F. A. MOSSERAY, Paris, France. Filed Dec. 14, 1899. Serial No. 740,256. (No model.)

Claim.—In a machine for generating gear-teeth, the combination of a pivotally-mounted guide, a tool-slide reciprocable thereon carrying a cutting-tool, and means to reciprocate said slide on said guide, of an angularly-adjustable work-table, carrying a rotatable work-support, means to rotate said support including a worm wheel mounted thereon, a train of gearing connecting said worm-wheel with the means for reciprocating the tool-slide, said train of gearing passing through the pivot of the angularly-adjustable work-table, so that its operation is not affected by any adjustment of the work-table, means operated by the aforesaid worm-wheel once in each revolution thereof to turn the guide of the tool-slide about its axis and to give an additional rotation to the blank-support, so that the tool will be fed into the blank in such a way as to generate the proper tooth-curve.

709,285.

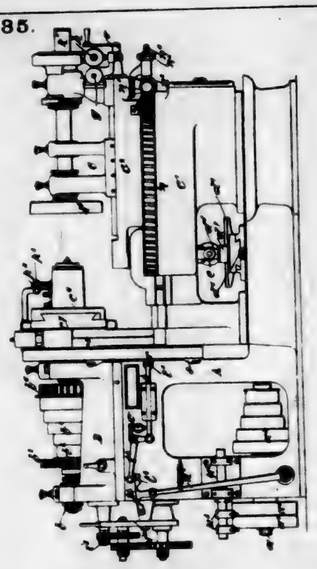

709,286. **STREET-INDICATOR FOR RAILWAY-CARS.** CHARLES E. MORGAN, Portland, Oreg., assignor, by direct and mesne assignments, to Automatic Street Indicator Company, a Corporation. Filed Jan. 14, 1902. Serial No. 89,694. (No model.)

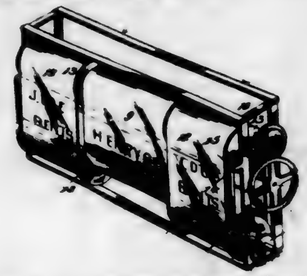

Claim.—1. In an indicator for street-cars and other public conveyances, a frame provided with the indicating mechanism and mounted to receive a limited sliding movement, actuating mechanism for imparting movement to the indicating mechanism, and means for sliding the said frame to disengage the actuating mechanism from the indicating mechanism for a proper setting or adjusting of the latter, substantially as set forth.

2. In an indicator for street-cars and other public conveyances, an indicating mechanism mounted to receive a limited sliding movement, means for exerting a spring-pressure upon the indicating mechanism to hold it in a predetermined position, actuating mechanism normally in mesh with the indicating mechanism, and a button or like contrivance to be operated by hand for sliding the indicating mechanism to throw it out of gear with the actuating mechanism and serving as a means for adjusting or setting the said indicating mechanism, substantially as set forth.

3. In an indicator for street-cars and other public conveyances, indicating mechanism, a rewinding-spring in coöperative relation therewith, a detent mechanism for preventing recoil of the said spring, a trip normally holding the detent mechanism out of action, an actuating mechanism, and means operated by hand for shifting the indicating mechanism and admitting of proper adjustment thereof, the shifting of the indicating mechanism throwing it out of meshing relation with the actuating mechanism without permitting disengagement of the aforementioned detent mechanism from the trip coöperating therewith, substantially as set forth.

4. In a street-indicator for the purposes specified, a case, a frame removably fitted within the case and provided with the indicating mech-

anism, a spring applied to said frame for actuating the indicating mechanism, a ratchet and pawl for preventing recoil of said spring when the frame is removed from the case, and a trip fixed within the case and adapted to disconnect the pawl from the ratchet and admit of free operation of the aforementioned spring when the frame is properly positioned within the case, substantially as set forth.

5. In an indicator for street-railway cars and public conveyances, the combination of indicating mechanism, a spring in coöperative relation thereto to be wound upon travel of the car in one direction, and actuating mechanism for effecting movement of the indicating mechanism and a winding up of the said spring and including a ratchet-and-pawl and trip devices, said pawl and trip embodying movable parts for alternate coöperation with the ratchet-wheel to admit of a backward movement of the ratchet-wheel when the car is making a return trip, substantially as set forth.

6. In an indicator of the character described, and in combination with the indicating mechanism, and a coil-spring in coöperative relation therewith for returning the parts to an initial position, actuating mechanism including a ratchet-wheel, pawl and trip, whereby the indicating mechanism is intermittently operated, the pawl and trip having yieldable parts for alternate coöperation with the teeth of the ratchet-wheel to permit of its backward movement one tooth at a time, substantially as and for the purpose set forth.

7. In an indicator for street-cars, public conveyances and in combination with the indicating mechanism, a spring in coöperative relation therewith to be wound when the car is traveling in one direction and adapted to unwind and to operate the indicating mechanism when the car is on the return trip, actuating mechanism for positively operating the indicating mechanism and adapted to control the unwinding of the aforementioned spring, said actuating mechanism including a ratchet-wheel, a pawl having a yieldable part, and a trip having a yieldable part for coöperation with the teeth of the ratchet-wheel and provided with an extension for engagement with the yieldable part of the pawl, substantially as set forth.

8. In combination with indicating mechanism and a spring in coöperative relation therewith, actuating mechanism comprising a ratchet-wheel, a pawl having a spring-actuated pivoted tailpiece, a trip having a spring-actuated pivoted end piece for coöperation with the teeth of the ratchet-wheel, and a projection extended from the said trip into the path of the pivoted tailpiece of the aforementioned pawl, the parts being combined to effect positive actuation of the indicating mechanism and a winding of the spring upon the out trip of the car and adapted to control the unwinding of the spring for intermittent operation of the indicating mechanism when the car is making a return trip, substantially as specified.

709,287. METAL WINDOW AND WINDOW-FRAME. William E. Muse, Cincinnati, Ohio. Filed Apr. 5, 1901. Serial No. 54,534. (No model.)

Claim.—1. A window made of hollow metal, having sashes provided with flanges, and a frame provided with grooves in which said flanges fit, the sashes having offsets adapted to engage each other when closed, said grooves, flanges and offsets being so arranged relatively to each other, that when closed the window is impervious to dust, rain or fire, said frame being provided with sections having flanges, said sections adapted to be removably fitted in the frame and hold or suspended therein by means of a hooked or turned-over portion engaging a flanged portion of the lintel, substantially as described.

2. A window made of hollow metal, having frame and sashes, the sashes having flanges and the frame having grooves in which said flanges fit, offsets on the sashes adapted to engage each other when the sashes are closed, a chain connecting the sashes and supported on a pulley mounted in the lintel, an overweight in the lower sash, a catch adapted to support the lower sash, said catch having flexible connection with the jamb, all substantially as and for the purpose described.

3. A window made of hollow metal, having a frame and sashes, the sashes having flanges and the frame having grooves in which said flanges fit, offsets on the sashes adapted to engage each other when the sashes are closed, chains mounted on pulleys on the lintel suitably arranged so as to support said sashes, catches adapted to support said sashes, the catches having flexible connection with the jamb and the sashes being suitably weighted, so that upon the fusion of the connections to the jamb, the sashes will close automatically, substantially as described.

709,288. CORSET. Sallie G. McClain, Philadelphia, Pa. Filed Aug. 17, 1901. Serial No. 73,456. (No model.)

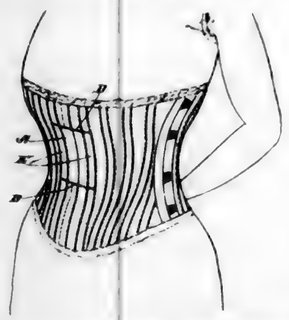

Claim.—In a corset a body having a double thickness of folded material at the front, parallel rows of stitching part way around the corset and vertical stitching through the folds from the upper and lower edges of the corset extending to the first-named stitching, the folds between the first-named stitching being free to expand substantially as described.

709,289. WATER-GAGE CONNECTION. Joel B. L. McKenzie, Rahway, N. J. Filed Feb. 6, 1902. Serial No. 92,796. (No model.)

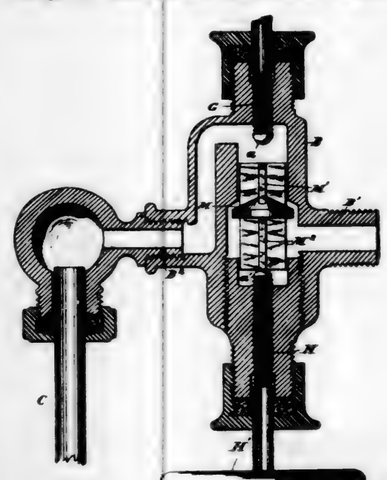

Claim.—In a safety connection for water-gage the closing-screw H and opening-screw G, arranged in a vertical line, and the vertically-moving valve M with its upper wings M' and lower wings M² loosely guided in the chambers *a* and *a'*, arranged to be acted on by the contracted ends of such screws, all adapted to serve substantially as herein specified.

709,240. GAGE FOR MEASURING KEYS FOR PIN-TUMBLER LOCKS. Edwin B. Phelps, New York, N. Y. Filed June 10, 1901. Serial No. 63,943. (No model.)

Claim.—1. A key-gage comprising a number of index-fingers, means for supporting a key, having depressions, in such relation to said fingers as to impart adjustment to said fingers to an extent governed by the depressions in the key, and a scale for indicating the extent of movement of the fingers, the scale being adapted in conjunction with the fingers to indicate in a multiplied ratio differences between the depressions of one key and corresponding depressions of another key, substantially as described.

2. A key-gage comprising a number of index-fingers and parts coöperating therewith to adjust the fingers to an extent determined by depressions in a key, means for supporting a key, having depressions, in such relation to said coöperating parts that said parts will enter the depressions in the key and determine the extent of movement of the index-fingers, and a scale adapted to indicate the extent of movement of the index-fingers, said fingers indicating upon the scale in a multiplied ratio differences that may exist between the depressions of one key and corresponding depressions of another key, substantially as described.

3. A key-gage comprising a number of index-fingers, means for supporting a key, having depressions, in such relation to said fingers as to impart adjustment to the fingers to an extent governed by the depressions in the key, and a scale for indicating the extent of movement of the fingers, said scale having parts adjustable to a predetermined normal movement of the index-fingers and in conjunction with the fingers adapted to indicate in a multiplied ratio differences that may exist between the depressions in a key which conform to the normal movement of the fingers and corresponding depressions in a duplicate key that cause an abnormal movement of the fingers, substantially as described.

4. A gage for measuring keys for tumbler-locks, comprising tumblers, movable index-fingers resting upon the tumblers, and a rack provided with pointers adjustable in relation to the index-fingers, substantially as described.

5. A gage for measuring keys for tumbler-locks, comprising a replaceable key-slotted lock-barrel, tumblers adapted to be operated by a key inserted in the slot of the barrel, pivoted index-fingers resting upon the tumblers, and a rack provided with pointers adjustable in relation to the index-fingers, substantially as described.

6. A gage for measuring keys for tumbler-locks, comprising tumblers, movable index-fingers resting upon the tumblers, and a folding rack provided with pointers adjustable in relation to the index-fingers, substantially as described.

7. A gage for measuring keys for tumbler-locks, comprising tumblers, movable index-fingers resting upon the tumblers, and a curved rack provided with pointers adjustable in relation to the index-fingers, substantially as described.

8. A gage for measuring keys for tumbler-locks, comprising tumblers, movable index-fingers resting upon the tumblers, a hinged rack provided with pointers adjustable in relation to the index-fingers, and means for locking the rack in an upright position, substantially as described.

9. A gage for measuring keys for tumbler-locks, comprising tumblers, movable index-fingers resting upon the tumblers, a hinged rack provided with pointers adjustable in relation to the index-fingers, stop-pins for checking the movement of the rack in one direction, and an eccentric lever for locking the rack against movement in the opposite direction, substantially as described.

709,241. VEHICLE-HUB. Emmett B. Phillips, Richmond, Va. Filed Oct. 1, 1901. Serial No. 77,349. (No model.)

Claim.—1. A vehicle-hub composed of the central wooden-block A formed with the central spindle-aperture and with the alternating mortises *a*, *a'*, those at *a* being arranged with their radial axes substantially at right angles to the axis of the hub and those at *a'* having their corresponding axes inclined to the axis of the hub, each of said mortises *a*, *a'*, having at its end a wall 2 inclined to the opposite wall, the spokes having relatively thin tenons *d* fitted in the said mortises and having one edge tapered or inclined and the clamping-ring B formed with the sockets *c*, *c'*, said sockets being each substantially uniform in cross-section.

2. The hub composed of the central wooden block A made in one piece and formed with the central spindle-aperture and the mortises *a*, *a'* separated each at its inner end from the next by a relatively wide mass of wood, as at a^3, in combination with the continuous metallic band B having the wide relatively thin base *b*, with the two rows of spoke-sockets *c*, *c'*, those of one row staggered as to those of the other, and surrounded by the upwardly-elongated flanges *b'*, the interior walls of each of the said flanges being parallel to each other from the outer surface of the metal to the surface of the wooden block front and rear, and the walls of the sockets *c'* being inclined relatively to the walls of the sockets *c*, and the spokes D having the tenons *d'* with their inner ends relatively remote from each other, and having the shouldered parts *d* uniform throughout in cross-section, as described.

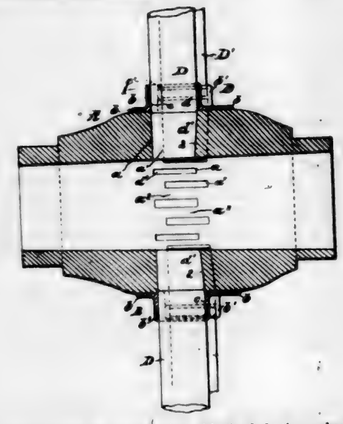

3. In a wheel, the combination with the hub, the spokes and the felly, of a spoke-supporting metallic band surrounding the hub and having outwardly-projecting rectangular sockets for the spokes, said sockets having opposing walls for the four sides of the spoke, the opposing walls being parallel with each other between the outer and inner peripheries of the said band.

4. In a wheel the combination with the hub, the spokes and the felly, of a spoke-supporting metallic band surrounding the hub and having sockets for the spokes, said sockets having opposing parallel inwardly and outwardly extending walls for the four sides of the spoke and said hub having mortises for the spoke-tenons, the mortises being formed with opposing parallel side walls and with end walls, one of which walls 2 is inclined relative to the other.

5. In a wheel, the combination with the mortised hub, the spokes provided with tenons, and the felly, of a metallic band having radial apertures for the spokes, the apertures of said band and those parts of the spokes engaged thereby being of uniform cross-section without taper, the spoke-tenons being tapered on one edge, and the mortises being shaped to correspond with said tenons, substantially as set forth.

709,242. ROTARY ENGINE. Thomas D. Prescott, Philadelphia, and James C. Prescott and Henry A. Prescott, Minersville, Pa., assignors of two-fifths to James H. Closson and Henry Bell, Philadelphia, Pa. Filed Sept. 20, 1901. Serial No. 75,864. (No model.)

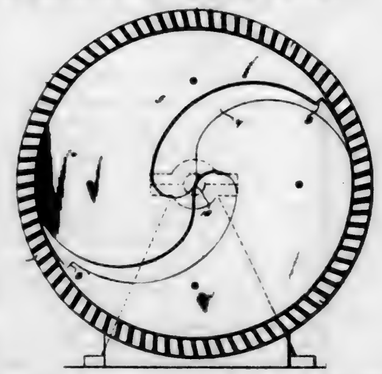

Claim.—1. In a rotary engine, the combination with a stationary cylinder, of a piston formed of two disks, each having recesses extending from the center to the periphery and adapted to form steam-passages, one

of said disks being provided with a division-wall to separate said recesses, and the opposite disk being provided with a steam-inlet pipe at a point directly in alinement with said division-wall.

2. In a rotary engine, the combination with a stationary cylinder, of two mating disks forming a piston, one of said disks having an enlarged hollow hub, an inlet pipe or nozzle extending through said hub, said hub and nozzle having interfitting flanges or shoulders, substantially as specified.

3. In a rotary engine, the combination with a stationary cylinder, of two mating disks forming a piston, one of said disks having an enlarged hollow hub forming an oil-receptacle, an inlet pipe or nozzle extending through said hub, there being at the opposite ends of the hub inwardly-projecting annular flanges adapted to form steam-tight joints between the hub and nozzle, substantially as specified.

4. A rotary steam-engine comprising in combination, a stationary cylinder having a series of steam-passages separated by inclined partitions forming abutments, a piston mounted for rotation within the cylinder, said piston comprising two mating disks having recesses forming steam-passages leading from the center to the periphery of the piston, said passages extending on curved lines and being of gradually-contracting area from the inlet to the outlet end and being provided near their outer ends with expansion-chambers, substantially as specified.

709,243. **RAILWAY-SIGNAL.** JONATHAN D. PRICE, Aurora, Ill., assignor to Miller Signal Company, Chicago, Ill., a Corporation of Illinois. Filed Sept. 21, 1900. Serial No. 30,674. (No model.)

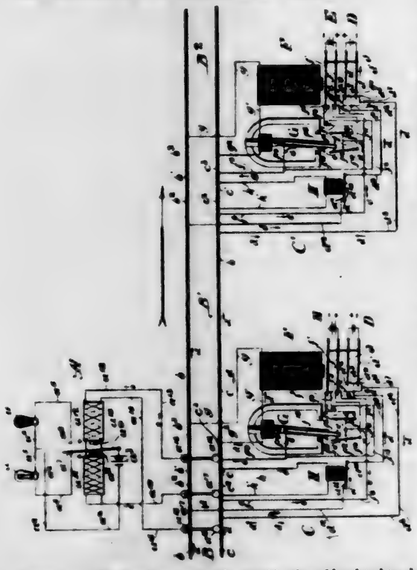

Claim.—1. In signal apparatus, the combination of insulated track-rail sections, a signal-controlling electric source connected with two sections located one in advance of the other, an electric source connected with the advance ends of two sections belonging to different track-rails, a transient signal with conductors engaging the track, one in advance of the other, and means for changing the pole connections of said first-named electric source, substantially as described.

2. In signal apparatus, the combination of insulated track-rail sections, a signal-controlling electric source connected with two sections located one in advance of the other, a transient signal with conductors engaging the track, one in advance of the other, an electric source connected with a rail-section of each track-rail near the advance end thereof, and means for changing the pole connections of said second-named electric source, substantially as described.

3. In signal apparatus, the combination of insulated track-rail sections, a signal-controlling electric source connected with two sections located one in advance of the other, a transient signal with conductors engaging the track, one in advance of the other, a second electric source connected with a rail-section of each track-rail near the advance end thereof, means for changing the pole connections of the first-named electric source with its rail-sections, and means for changing the pole connections of said second-named electric source with its rail-sections, substantially as described.

4. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated rail-sections, signal-controlling electric sources connected at the block-junctions with two rail-sections located one in advance of the other, pole-changers in the local partial circuits of said sources of energy, sources of electric energy, a transient signal with conductors engaging the track, one in advance of the other, connected with both track-rails near the advance ends of the blocks, and electromagnetic instruments controlling said pole-changers and connected with both track-rails near the rear ends of the blocks, substantially as described.

5. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated sections, including a relatively short section at each block-junction, sources of electric energy connected with both track-rails near the advance ends of the blocks, pole-changers for the partial circuits thus formed, and electromagnetic instruments controlling said pole-changers and connected with both track-rails near the rear ends of the blocks, a transient signal with conductors engaging the track, one in advance of the other, and signal-controlling electric sources at the block-junctions and each having a connection with its adjacent relatively short rail-section, substantially as described.

6. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated rail-sections, a signal-controlling source of electric energy connected with two rail-sections at a given block-junction, a pole-changer for the local partial circuit thus formed, an electromagnetic instrument controlling said pole changer and connected with both track-rails near the rear end of the block on the advance side of said junction, a transient signal with conductors engaging the track, a source of electric energy at the advance block-junction connected with both track-rails near the advance end of said block, a pole-changer for the circuit of said last-named electric source, and an electromagnetic instrument controlling said last-named pole-changer and connected with both track-rails near the rear end of the second advance block, the track-rails being maintained electrically continuous intermediate their points of connection with said first-named electromagnetic instrument and said second-named electric source, substantially as described.

7. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated sections, a transient signal with conductors engaging the track, one in advance of the other, signal-controlling sources of electric energy each connected with two rail-sections located one in advance of the other, switches in the local partial circuits of said sources of energy, electromagnetic controlling instruments for said switches connected with both track-rails near the rear ends of the blocks, switch-controlling sources of electric energy connected with both track-rails near the advance ends of the blocks, each controlling a switch for the local partial circuit of the signal-controlling electric source located at the block-junction in its rear, and means for changing the pole connections of said switch-controlling sources of energy, substantially as described.

8. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated rail-sections, a transient signal with conductors engaging the track, one in advance of the other, signal-controlling electric sources, each connected with two rail-sections located one in advance of the other, switches for the local partial circuits thus formed, electromagnetic instruments controlling said switches connected with both track-rails near the rear ends of the blocks, switch-controlling sources of electric energy connected with both track-rails near the advance ends of the blocks, pole-changers in the circuits of said last-named electric sources, electromagnetic instruments controlling said pole-changers and connected with both track-rails near the rear ends of the blocks, additional switches for the local partial circuits of said signal-controlling sources, and electromagnetic instruments connected with both track-rails near the rear ends of the blocks and serving to control the movements of said last-named switches through reversals in the direction of current from said switch-controlling electric sources, whereby the condition of a second advance block may be indicated at a given block-junction, substantially as described.

9. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated rail-sections, a transient signal with conductors engaging the track, one in advance of the other, signal-controlling electric sources each connected with two rail-sections located one in advance of the other and forming therewith a local partial circuit, switches for the local partial circuits thus formed, controlling instruments for said switches connected with both track-rails near the rear ends of the blocks, additional switches for the local partial circuits mentioned, controlling instruments for said additional switches connected with both track-rails near the rear ends of the blocks, sources of electric energy connected with both track-rails near the advance ends of the blocks, each serving to operate the instruments controlling the switches of the local partial circuits located at the block-junction in its rear, pole-changers in the circuits of the electric sources connected with the advance ends of the blocks, and instruments controlling said last-named pole-changers and connected with both track-rails near the rear ends of the blocks, substantially as described.

10. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated rail-sections, a transient signal with conductors engaging the track, one in advance of the other, signal-controlling electric sources each connected with two rail-sections located one in advance of the other and forming therewith a local partial circuit, pole-changers for the local partial circuits thus formed, controlling instruments for said pole-changers connected with both track-rails near the rear ends of the blocks, additional pole-changers for the local partial circuits mentioned, controlling instruments for said additional pole-changers connected with both track-rails near the rear ends of the blocks, sources of electric energy connected with both track-rails near the advance ends of the blocks, each serving to operate the instruments controlling the pole-changers of the local partial circuit located at the block-junction in its rear, pole-changers in the circuits of the electric sources connected with the advance ends of the blocks, and instruments controlling said last-named pole-changers and connected with both track-rails near the rear ends of the blocks, substantially as described.

11. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated rail-sections, a transient signal with conductors engaging the track, one in advance of the other, signal-controlling electric sources, each connected with two rail-sections located one in advance of the other and forming therewith a local partial circuit, switches in said local partial circuits, instruments controlling said switches and connected with both track-rails near the rear ends of the blocks, additional switches in said local partial circuits, instruments controlling said additional switches and connected with both track-rails near the rear ends of the blocks, sources of electric energy connected with both track-rails near the advance ends of the blocks, switches in the circuits of said last-named sources, instruments controlling said last-named switches, each of said instruments being connected with the same rail-sections as is the signal-controlling electric source of the same block-junction, whereby a circuit for the controlling source is completed through the instrument, and pole-changers for the sources of energy connected with the advance ends of the blocks, substantially as described.

12. In signal apparatus, the combination of a track divided into blocks, each track-rail having insulated rail-sections, a transient signal with conductors engaging the track, one in advance of the other, signal-controlling batteries E connected with rail-sections c c', batteries D connected with the advance ends of rail-sections b c, pole-changing armatures f f and d d' vibrating between suitable contact-points in the circuits of the batteries E and D, respectively, electromagnetic instruments controlling said armatures and connected with both track-rails near the rear ends of the blocks, instruments G connected with both track-rails near the rear ends of the blocks, armatures f^{12} controlled by the instruments G, contact-points in the circuits of the batteries E between which the armatures f^{12} vibrate, and suitable connections whereby a reversal in the direction of current is effected when the armature f^{12} shifts, substantially as described.

13. In signaling apparatus, the combination of transient clear and danger signals, electrically-controlled mechanism for changing the signals, conductors leading therefrom to the track, a track having two insulated rail-sections simultaneously engaged by said conductors, a signal-controlling generator connected with said two insulated rail-sections and forming therewith a local partial circuit, and means for disconnecting each pole of said local generator from its rail-section and connecting the same with the rail-section of the other pole, whereby the direction of current through said train-carried conductors may be changed, substantially as described.

14. In signal apparatus, the combination of transient clear and danger signals, an armature controlling said signals, permanent magnets between which said armature vibrates, a set of conductors leading to the track and engaging the same, one in advance of the other, said conductors being connected with helices for maintaining the armature in a given position, a third conductor engaging the track in the rear of said first-named conductors and connected with one of said first-named conductors through the medium of a helix wound to produce the same polarity as the first-named helices, a track having two insulated rail-sections simultaneously engaged by two of said conductors, a signal-controlling generator connected with two of said rail-sections and forming therewith a local partial circuit, and means for disconnecting each pole of said local generator from its rail-sections and connecting the same with the rail-section of the other pole, whereby the direction of current through said train-carried conductors may be changed, substantially as described.

15. In signal apparatus wherein are employed rail-sections separated by points of insulation, a battery connected with two rail-sections on opposite sides of a point of insulation, a switch in the partial circuit thus formed and an electromagnetic instrument connected with said last-named rail-sections and bridging the point of insulation between the same, said instrument serving to hold said switch normally closed, substantially as and for the purpose set forth.

16. In signal apparatus, the combination of insulated track-rail sections, a signal-controlling electric source connected with two sections located one in advance of the other and forming therewith a local partial circuit, an electric source connected with the advance ends of two sections belonging to different track-rails, means for changing the pole connections of said first-named electric source, transient, clear and danger signals, electrically-controlled mechanism for changing the signals, and conductors leading therefrom to the track and engaging the track, one in advance of the other, substantially as and for the purpose set forth.

17. In signal apparatus, the combination of a series of blocks with suitable insulated track-rail sections, a track-battery connected with both track-rails at each block-junction, a signal, a signal-controlling battery for each block-junction, a pole-changer for each track-battery, and electromagnetic mechanism connected with both rails at each block-junction and controlling the pole-changer and the circuit of the signal-controlling battery at said block-junction.

709,244. **CALCULATING-MACHINE.** FRANK C. REDDEN, St. Louis, Mo., assignor to Universal Accountant Machine Company, St. Louis, Mo., a Corporation of Missouri. Filed July 5, 1901. Serial No. 67,441. (No model.)

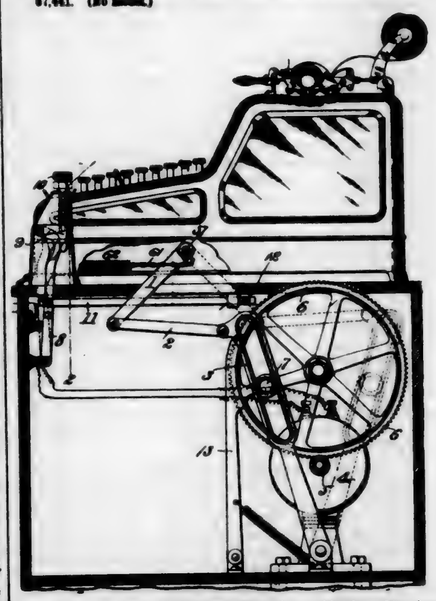

Claim.—1. In a calculating-machine, the combination with a keyboard, of registering and recording mechanisms, a rock-shaft for driving said mechanisms, a rock-arm on said shaft, a master-gear provided with a crank-pin, connections between said crank-pin and rock-shaft, a motor for driving said master-gear manually operable, means for completing the circuit through, of effecting the energization of said motor, and means operated by said motor for deenergizing the same; substantially as described.

2. In a calculating-machine, the combination with registering and recording mechanisms, of a master-gear for operating the same, a motor for driving said master-gear part of a revolution, and means independent of the motor, and in which power is stored by said motor for causing said gear to complete its revolution; substantially as described.

3. In a calculating-machine, the combination with registering and recording mechanisms, of a master-gear for operating the same, and a motor for driving said master-gear part of a revolution and for storing up power which becomes effective, when the motor is ineffective, to drive the master-gear to complete its revolution; substantially as described.

4. In a calculating-machine, the combination with registering and recording mechanisms, of a master-gear for operating the same, a motor

for driving said master-gear part of a revolution, and a spring in which power is stored by the motor in said action, said spring becoming operative to impart motion to said gear and cause it to complete its revolution; substantially as described.

5. In a calculating machine, the combination with registering and recording mechanisms, of a master-gear for operating the same, a motor for driving said master-gear a part of a revolution, said motion storing up power which becomes effective to drive the gear to complete its revolution, and means for rendering the motor ineffective when it has driven the gear part of a revolution; substantially as described.

6. In a calculating-machine, the combination with registering and recording mechanisms, of a power-shaft for driving the same, a master-gear for rocking said power-shaft, a motor for driving said master-gear part of a revolution, means for storing up power by such operation, and devices for disengaging the motor when it has driven the master-gear part of a revolution, whereby said stored power becomes effective to drive the gear to complete its revolution, and to restore the power-shaft and the connections therebetween and the motor to their normal position; substantially as described.

7. In a calculating-machine, the combination with registering and recording mechanisms, of a rock-shaft for driving the same, an arm on said shaft, an electric motor, connections between said motor and said arm for rocking the latter, a device in the motor-circuit accessible to the operator for completing the motor-circuit, means operated by the rock-arm as it approaches the end of the first half of its stroke, for breaking the circuit, and means in which power is stored during the second period of operation by the motor, which power becomes effective for driving the rock-arm the second half of its stroke independently of the motor; substantially as described.

8. In a calculating-machine, the combination with registering and recording mechanisms, of a power-shaft for driving the same, a motor, connections between said motor and power-shaft, in which connections is included a rock-arm on the power-shaft, a switch for cutting the motor in or out of circuit, and an arm connected to said switch and provided with a projection in the path of said rock-arm, whereby the switch is automatically operated when said rock-arm is at one extremity of its movement, substantially as described.

9. In a calculating-machine, the combination with registering and recording mechanisms, of a power-shaft for driving the same, a motor, connections between said motor and said power-shaft, a switch, an arm connected to said switch and provided with a projection, through the instrumentality of which said switch is automatically operated by the connections between the motor and the power-shaft, a dog cooperating with the switch, and a key for operating the dog, substantially as described.

10. In a calculating-machine, the combination with registering and recording mechanisms, of a power-shaft for driving the same, a motor for driving a master-gear, suitable connections between said master-gear and power-shaft, a brake for the master-gear, a switch for cutting the motor in or out of circuit, means for operating the switch when the master-gear has made part of a revolution, and a spring connected to the power-shaft for returning the parts to a normal or home position, substantially as described.

11. In a calculating-machine, the combination with registering and recording mechanisms, of a power-shaft for driving the same, a motor, a master-gear driven by said motor, a brake normally cooperating with said master-gear, a switch for cutting the motor in circuit, connections between said master-gear and power-shaft whereby the power-shaft is positively driven in one direction, means for automatically operating the switch and cutting the motor out of circuit, a brake tending to overcome the momentum of the parts, and a spring for restoring the parts to a normal or home position, substantially as described.

12. In a calculating-machine, the combination with registering and recording mechanisms, of a power-shaft for driving the same, a motor, connections between the master-gear and said power-shaft, a switch for cutting said motor in or out of circuit, and a key or lever accessible to the operator of the machine for operating said switch, substantially as described.

709,245. ELEVATING-TRUCK. ALEXANDER A. SCOTT, Knoxville, Tenn. Filed Jan. 11, 1902. Serial No. 89,262. (No model.)

Claim.—1. In an elevating-truck, a platform mounted for vertical movement, arms pivoted to the base of the truck having their upper ends bearing against and adapted to slide on the bottom of said platform, and means to cause said arms to swing parallel with each other, substantially as shown and described.

2. In an elevating-truck, platform-beams made of channel-steel and mounted for vertical movement, arms pivoted to the base of the truck having one end constructed to travel in the channels of said platform-beams, and means to cause said arms to swing parallel with each other, substantially as shown and described.

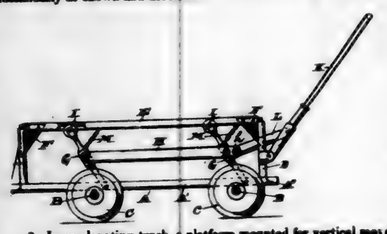

3. In an elevating-truck, a platform mounted for vertical movement, arms pivoted to the base of the truck, wheels journaled in said arms to bear against the bottom of said platform, and means to cause said arms to swing parallel with each other, substantially as shown and described.

4. In an elevating-truck, a platform mounted for vertical movement, arms pivoted to the base of the truck and adapted to swing parallel with each other, wheels journaled in said arms to bear against the bottom of said platform, rods pivotally connecting said arms in pairs, and a lever connected to said rods, substantially as shown and described.

5. In an elevating-truck, a platform mounted for vertical movement, arms pivoted to the base of the truck to bear against the bottom of said platform, a chain connecting each arm with the platform, and means to cause said arms to swing parallel with each other, substantially as shown and described.

6. In an elevating-truck, a platform mounted for vertical movement, arms pivoted to the base of the truck to bear against the bottom of said platform and adapted to swing parallel with each other, a chain connecting each arm with the platform, rods pivotally connecting said arms in pairs, and a lever connected to said rods, substantially as shown and described.

7. In an elevating-truck, a rectangular base, uprights rising therefrom, platform-beams mounted for vertical movement in said uprights, arms pivoted to said base, wheels journaled in said arms to bear against the bottom of said platform-beams, and means to cause said arms to swing parallel with each other, substantially as shown and described.

8. In an elevating-truck, a rectangular base, uprights rising therefrom, platform-beams mounted for vertical movement in said uprights, arms pivoted to said base, wheels journaled in said arms to bear against the bottom of said platform-beams, rods pivotally connecting said arms in pairs, and a lever connected to said rods, substantially as shown and described.

9. In an elevating-truck, a rectangular base comprising side beams made of channel-steel and end beams, uprights rising from said base made of channel-steel, platform-beams made of channel-steel mounted for vertical movement in said uprights, arms pivoted to the side beams of said base, wheels journaled in said arms to run in the channel of the platform-beam and bear against the top of said channel, and means to cause a simultaneous swinging of said arms through an arc, substantially as shown and described.

10. In an elevating-truck, a rectangular base comprising side beams made of channel-steel and end beams, uprights rising from said base made of channel-steel, platform-beams made of channel-steel mounted for vertical movement in said uprights, arms pivoted to the side beams of said base, wheels journaled in said arms to run in the channel of the platform-beam and bear against the top of said channel, rods pivotally connecting said arms in pairs, and a lever connected to said rods, substantially as shown and described.

11. An elevating-truck comprising an open rectangular frame mounted on wheels, channeled uprights rising from said frame, horizontal channeled beams comprising the platform, flat pieces of metal secured at the ends of each platform-beam, said pieces of metal bearing in said channeled uprights, arms pivoted to said rectangular frame, a wheel journaled in each arm to bear in the channel of the platform-beam, a chain connecting each arm with the platform-beam, and means to cause a simultaneous swinging of said arms through an arc, substantially as shown and described.

12. An elevating-truck comprising an open rectangular frame mounted on wheels, channeled uprights rising from said frame, horizontal channeled beams comprising the platform, flat pieces of metal secured at the ends of each platform-beam, said pieces of metal bearing in said channeled uprights, arms pivoted to said rectangular frame, a wheel journaled in each arm to bear in the channel of the platform-beam, a chain connecting each arm with the platform-beam, rods pivotally connecting said arms in pairs, a lever pivoted to the front uprights, and a link connecting the lever with each said rod, substantially as shown and described.

709,246. VALVE FOR FLUID-PRESSURE ENGINES. PHILIP T. STILLMAN, Elizabeth, N. J. Filed June 15, 1901. Serial No. 64,694. (No model.)

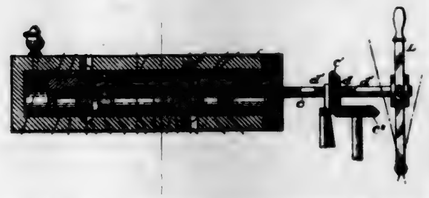

Claim.—1. In a steam or other fluid-pressure engine, the combination of a cylindrical valve seat or casing having admission, exhaust and cylinder ports permanently acting as such while the engine is running in either direction, and a continuously-rotating axially-movable valve seated in the casing and controlling the respective ports therein to reverse the engine by axial movement of the valve.

2. In a steam or other fluid-pressure engine, the combination of a cylindrical valve seat or casing having admission, exhaust and cylinder ports, and a continuously-rotating axially-movable valve seated in the casing and having heads connected by a diametric web and formed with peripheral apertures and chambers for the purposes set forth.

3. In a steam or other fluid-pressure engine, the combination of a cylindrical valve seat or casing containing an admission-port communicating with an interior annular groove, an exhaust-port also communicating with an interior annular groove, and cylinder-ports intermediate the two grooves, and a continuously-rotating axially-movable valve having heads connected by a diametric web and containing peripheral apertures and chambers communicating therewith extending beyond the heads toward the transverse center line of the valve for the purpose set forth.

4. In a steam or other fluid-pressure engine, the combination of a cylindrical valve seat or casing having admission, exhaust and cylinder ports, and a continuously-rotating axially-movable valve seated in the casing, means for varying the normal relation of the valve, in its rotation, to the cylinder-ports to obtain a "lead."

5. In a steam or other fluid-pressure engine, the combination of a cylindrical valve seat or casing having an admission-port communicating with an interior annular groove, an exhaust-port communicating with an interior annular groove and cylinder-ports intermediate said grooves, and a continuously-rotating axially-movable valve seated in the casing, comprising a central diametric web and cylindrical heads coöperating respectively with the admission and exhaust ports and each having a peripheral aperture, and a contained chamber extending axially beyond the head, the operation being substantially as described.

6. In a steam or other fluid-pressure engine, the combination of a cylindrical valve seat or casing having an admission-port communicating with an interior annular groove, an exhaust-port communicating with an interior annular groove and cylinder-ports intermediate said grooves, and a continuously-rotating axially-movable valve seated in the casing, comprising a central diametric web and cylindrical heads coöperating respectively with the admission and exhaust ports, and each having a peripheral aperture and a contained chamber extending axially beyond the head, and cut-off plates attached to the central web and coöperating with the cylinder-ports to determine the cut-off, the operation being substantially as described.

7. In a steam or other fluid-pressure engine, the combination with a valve seat or casing having an admission-port, an interior annular passage or groove into which it opens, an exhaust-port, an interior annular groove into which it opens and cylinder-ports, of a continuously-rotatable axially-movable valve seated therein and constructed to coöperate with the respective ports in the casing for the purpose set forth.

8. In a steam or other fluid-pressure engine, the combination with a valve seat or casing having an admission-port, an interior annular passage or groove into which it opens, an exhaust-port, an interior annular groove into which it opens and cylinder-ports, of a continuously-rotatable axially-movable valve seated in the casing and having two parts respectively coacting with the admission and exhaust ports to control the passage of steam between them and the cylinder-ports, each said part having a solid peripheral portion which in one position cuts off steam from, and in another position permits passage of steam to, a cylinder-port, and a chambered portion with a peripheral aperture, which chambered part in one position cuts off steam from, and in another position permits the passage of steam to, a cylinder-port, whereby the admission-port and exhaust-port constantly act as such when the engine is running in either direction and the engine may be reversed by the axial movement of the valve.

709,247. GRAIN-CAR DOOR. GEORGE BITERNEY, Brandon, Canada. Filed Sept. 13, 1901. Serial No. 75,313. (No model.)

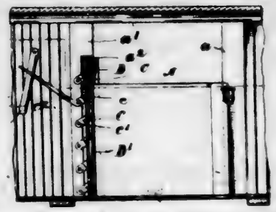

Claim.—1. The combination with the door-body and the door-posts, one of which has a rabbet therein, of a laterally-movable tongue, a series of links pivotally secured at one end to said tongue and at their opposite ends to said door-posts, one of said links being extended to form an operating-lever, and a secondary strip or tongue pivotally secured to said links, the edge of said auxiliary tongue being adapted to abut the edge of said door-body, and a locking-bar pivotally hung at one end upon the wall of the car or the door-post as and for the purpose specified.

2. The combination with the door-body and door-posts, of a laterally-movable tongue, a plurality of links pivotally secured at one of their ends to said tongue and at their other ends to said door-posts, one of said links being extended to form a lever, a locking-bar pivoted to the wall of the car or the door-post, a flange thereon having notches therein adapted to receive the end of the lever as and for the purpose specified.

3. The combination with the door-body and door-posts, of a laterally-movable tongue, a plurality of links pivotally secured at one of their ends to said tongue and at their other ends to said door-post, one of said links being extended to form a lever, and a locking-bar pivotally hung to the wall of the car and having a flange formed on one side and notches or holes formed in said flange, as and for the purpose specified.

4. A fastening device for grain-car doors and the like comprising a fixed tongue secured to the door-body and projecting slightly beyond one edge thereof, a laterally-movable tongue, a series of links pivotally connected at one of their ends to said laterally-movable tongue and at their other ends to the body of the door, a lever formed on the end of one of said links and means for holding said lever in any position to which it may be adjusted as and for the purpose specified.

709,248. PORKING, ELEVATING, AND CONVEYING MACHINE. ARTHUR P. TATTERSON, Stockton, Cal. Filed Dec. 6, 1901. Serial No. 84,927. (No model.)

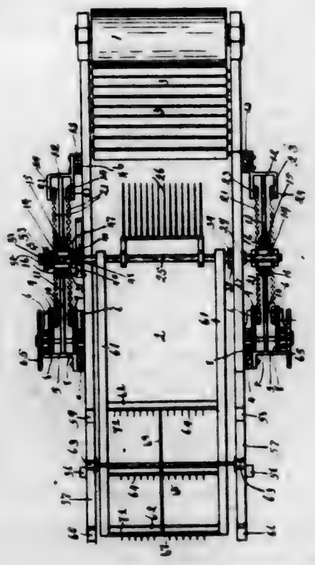

Claim.—1. In a machine of the class described, the combination with a suitable tub or vat of a shaft journaled on carriages arranged at each end thereof, the said carriages adapted to operate to and fro on tracks arranged at the sides of the tub or vat, a cog-wheel loosely journaled on the shaft aforesaid and adapted to engage with a cog-rack suitably mounted on the tub or vat, a ratchet-wheel rigidly attached to the shaft and adapted to be engaged by pawls pivoted to the said cog-wheel, a suitable fork rigidly attached to the shaft and suitable means for oscillating the said carriages to and fro all arranged and operating substantially as shown and described and for the purposes specified.

2. In a machine of the class described a fork rigidly attached to a shaft which is journaled in suitable bearings on carriages adapted to travel to and fro and suitable means for revolving said shaft, simultaneously with the forward movement of the carriages, in a manner so that the free ends of the tines of said fork will describe an involute in their rotation around said shaft all arranged and operating substantially as shown and for the purposes specified.

3. In a machine for the automatic washing of wool and analogous materials, a shaft driven intermittently by a cog-wheel which is loosely mounted thereon and adapted to engage a cog-rack, said cog-wheel having two or more pawls pivoted thereto, which are adapted to engage a ratchet-wheel as described, in combination with suitable journals for said shaft mounted on suitable carriages all arranged and operating substantially as shown and described and for the purposes set forth herein.

4. In a machine for washing wool or other analogous material a friction-wheel 48 loosely journaled on the main shaft and adapted to be engaged by a friction, the collar 50 provided with the finger or extension 51, adapted to engage the pin 52 in the side of the friction-wheel 49, rigidly attached to the main shaft aforesaid, said main shaft having a suitable fork rigidly attached and suitable means for operating said shaft all arranged and operating substantially as shown and described and for the purposes specified.

5. In a machine of the class described a ratchet-pawl composed of the curved arm 40 suitably pivoted on the pin or stud 39, and having the slot 41 arranged therein, the two pawls 42 pivoted in said slot, and adapted to engage the teeth of a ratchet-wheel 37, as described, the spring 43 adapted to engage the pawls 42, the pins 45 and 44 inserted in the arm 40 beneath the pawls 42 and over the spring 43 respectively, and the pin or stud 46 inserted in the leg 47 of the arm 40, in combination with the said ratchet-wheel 37 and the shaft 25 having the fork 26 and suitable means of operating said shaft all arranged and operating substantially as shown and for the purposes specified.

6. In a machine of the class described the mode of propelling the shaft 25 and its carriages, comprising the yoke 17 having the block 18 located between its parts, the pin 19 inserted through said block 18, the link-belt links 20, having the lugs 22 on one side, attached one on each end of the pin 19 and forming a part of the two link belts, said link belts 21 adapted to run over sprockets suitably journaled and suitable means of imparting motion to said sprockets all arranged and operating substantially as shown and for the purposes specified.

7. In a machine of the class described, the spring-teeth 30 inserted in the bar 27 and having the coil or helical spring 31 adapted to compressed the same and bear against the pin 32, said teeth 30 being placed a suitable distance from the cog-rack 28 the bar 27 adapted to receive the teeth 30, said rack 28 attached to said bar 27 and the cog-wheel 29 which is adapted and calculated to travel toward said cog-rack, in combination with a suitable shaft suitably journaled on carriages and having a fork rigidly attached thereto, all arranged and operating substantially as shown and described and for the purposes specified.

8. In a machine of the class described the combination of a suitable fork 26 rigidly attached to a shaft arranged transversely on a tub or vat, said shaft, journaled at each end in boxes mounted on independent carriages, arranged on opposite sides of the said tub or vat, the said carriages, which are adapted to operate to and fro on horizontal tracks rigidly attached on the sides of the tub or vat, the yoke 17 suspended from and rigidly attached to the said carriages and having the slot therein, the block 18 inserted in the yoke 17, the pin 19 introduced into an opening in the block 18, and having right and left screw-threads cut on either end thereof, the link-belt links 20 22 adapted to engage the said pin 19, said link-belt links 20 22 being embodied in the link belts 21, said link belts 21 taking over the sprocket-wheels 23 and 10, said sprocket-wheels 23 and 10 suitably journaled on brackets, the cog-wheels 9 rigidly attached to the sprockets 10, the cog-wheels 8 rigidly attached to a shaft 7 and engaging the wheels 9, said shaft 7 journaled on a bracket at the side of the tub or vat and suitable means for rotating said shaft 7 and the shaft 25, all arranged and operating substantially as shown and described, and for the purposes specified.

9. In a machine of the class described the combination with a suitable tub or vat of the shaft 25, having the fork 26, journaled on carriages 15 arranged on either side of the said tub or vat, said carriages 15, each mounted on a track and propelled to and fro by two link belts 21 which have the links 20 22 in their length, suitable power engaging said link belts, a cog-wheel 29 loosely journaled on the said shaft 25 and having the pawls 35, the ratchet-wheel 34 rigidly attached to the shaft 25, and adapted to be engaged intermittently by the said pawls, a suitable cog-rack 28 mounted on the said tub or vat, and adapted to engage the cog-wheel 29, the spring-teeth 30 31 32 located immediately in front of the cog-rack 28 and adapted to regulate the cog-wheel 29 for engagement with the said cog-rack 28, all arranged and operating substantially as shown and described and for the purposes set forth herein.

10. In a machine of the class described the combination with a suitable tub or vat, a fork and its shaft suitably mounted on carriages adapted to be propelled to and fro and suitable means for rotating said shaft and fork, of a rake composed of two arms 61 journaled at one end to the said fork-shaft, and having suitable cross-bars attached thereto, the free end being supported on tracks 63 adapted to rest on the track 57 58 60, said trank 58 60 having the tilting rail 57 angular in form pivoted on the post 56, the rock-shafts 72 journaled in the arms 61 and adapted to support rakes or forks 64, said rakes or forks which are rigidly attached thereto and depend therefrom, the arms 67 rigidly attached to the rock-shafts 72, the rod 69 attached to the free ends of the arms 67, the arm 68 attached to the rod 69 and engaging the pivot 70 73, and said pivot 70 73 all arranged and operating substantially as shown and described and for the purposes specified herein.

11. In a machine of the class described a suitable tub or vat on which a shaft is mounted transversely thereto on carriages, said shaft having a suitable fork rigidly attached thereto, said carriages being adapted to oscillate to and fro on the tub or vat, the chains or belts 21 adapted to engage the carriages, suitable cog-wheels adapted to communicate motion to the said chains or belts, a cog-wheel loosely mounted on the shaft aforesaid and adapted to engage a cog-rack in a manner so as to rotate the shaft intermittently, the friction device 50 51 49 53 55, attached to the said shaft the retaining ratchet-wheel 37 and its double pawls 40 41 42 43 44 45, which are adapted to engage the pin 46, and a rake attached to the said shaft so as to operate to and fro with the same, and suitable means for changing the angle of the forks or rakes, all arranged and operating substantially as shown and for the purposes specified.

709,249. PLATFORM-CAR. ERNEST F. VOGEL and MORITZ WEBER, St. Louis, Mo., assignors to St. Louis Car Company, St. Louis, Mo., a Corporation. Filed Sept. 30, 1901. Serial No. 76,994. (No model.)

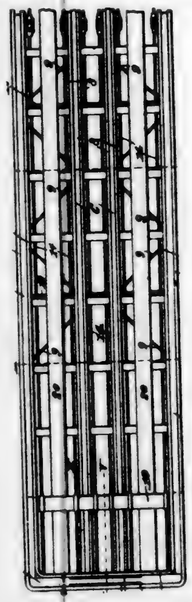

Claim.—1. In a platform car, the combination of framework, a pair of border sills extending continuously around said framework and apertured at the ends of the car, and strengthening-plates connected to said border sills at the location of said apertures, substantially as described.

2. In a platform-car, the combination of the framework, a pair of border sills extending continuously around said framework and apertured at the ends of the car, fillers positioned between the border sills, strengthening-plates connected to said border sills at the location of said apertures, and extending below the same, and fillers located between the strengthening-plates.

3. In a platform-car, the combination of a pair of continuous border sills, fillers located between the border sills, interior sills arranged in pairs and extending longitudinally of said border sills, and fillers located between said interior sills.

4. In a platform-car, the combination of a pair of continuous border sills, of channel form, fillers located between the border sills, interior sills arranged in pairs and extending longitudinally of said border sills, fillers located between the interior sills and braces located between the border sills and the interior sills.

5. In a platform-car, the combination of a pair of continuous border sills, fillers located between said sills, interior sills arranged in pairs extending longitudinally of said border sills, braces positioned obliquely between said border sills and the interior sills, flooring-strips supported intermediate their ends by said braces, and brackets supporting the flooring-strips at their ends.

709,250. PHOTOGRAPHIC-EXPOSURE METER. RUEL W. WHITNEY, Cleveland, Ohio. Filed Aug. 8, 1901. Serial No. 71,410. (No model.)

Claim.—A photographic-exposure meter comprising a holder having spaced flanges with designations and columns of numerals thereon and adapted to contain a strip of sensitized material, a sliding strip having on one end a color, and a sliding strip provided with columns of numerals, said parts being arranged so as to coact together, substantially as and for the purpose specified.

709,251. MITER-BOX. FRANK B. ABBOTT and ELMER H. RANDS, Pittsburg, Pa. Filed Mar. 5, 1902. Serial No. 97,242. (No model.)

Claim.—1. In a miter-box, the combination of two angle-iron sections hinged upon a central standard, a hinged extension connected to one of said sections, a segmental guide connecting said extension and said section, a guide carrying a slide and standard secured on said slide, arms pivotally connected to said slide and said sections, substantially as described.

2. In a miter-box, the combination of two angle-iron hinged sections, a central standard carrying a collar, arms connected to said collar and said sections, a hinged extension connected to one of said sections, an I-beam guide, a slide mounted thereon carrying a standard, and arms connected to said guide and said sections, substantially as described.

3. In a miter-box, the combination of two angle-iron sections hinged together, a hinged extension connected to one of said sections, means to lock said sections at any desired angle, a central standard, a guide extending therefrom, a slide mounted on said guide, a standard connected to said guide, all parts being arranged and operating substantially as described and for the purpose set forth.

709,252. COMBINATION DOOR-BELL AND BURGLAR-ALARM. FRANK B. ABBOTT, Pittsburg, Pa. Filed Mar. 18, 1902. Serial No. 98,738. (No model.)

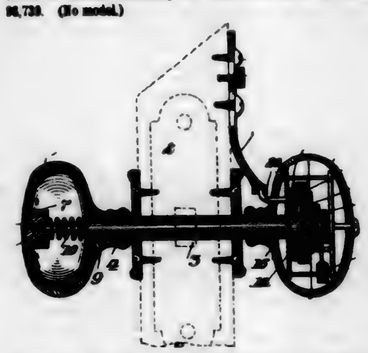

Claim.—1. In a door-bell and burglar-alarm, the combination with hollow knobs, a hollow shaft connecting said knobs, a rod extending through said shaft and one of said knobs, a push-button secured to the end of said rod, a clock mechanism secured in one of said knobs, a wheel carrying openings formed therein attached to said clock mechanism, a lever secured to the end of said rod, and means carried by said lever to engage one of said openings, substantially as described.

2. In a door-bell and burglar-alarm, the combination of hollow door-knobs, a hollow shaft connecting said knobs, a clock mechanism secured in one of said knobs, and means to actuate said clock mechanism when one of said knobs is turned, substantially as described.

709,258. MACHINE-TOOL CONSTRUCTION. WILLIAM H. RAUHE, Springfield, Mass. Filed July 31, 1901. Serial No. 70,367. (No model.)

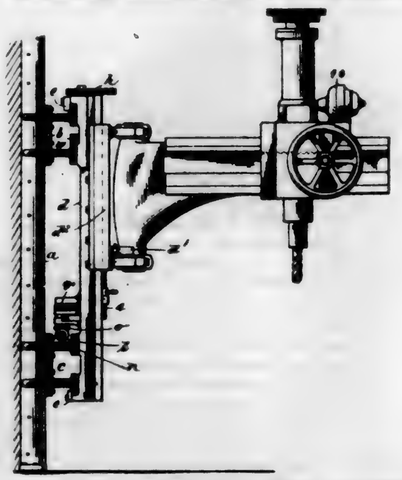

Claim.—1. The combination with a bearing-rail, of a plurality of tool-carrying frames independently slidable on said rail, one driving-shaft common to all of said frames; a bearing for said shaft in each of said

frames; a gear having a splice-and-groove connection with the driving-shaft, means for rotatably supporting said gear on the frame and constituting the bearing for the driving-shaft; means for sliding said frames on the bearing-rail, and a connection between the frame-sliding means and the gear on the driving-shaft, whereby said frame-sliding means may move said frames in opposite directions on the bearing-rail.

2. The combination with a bearing-rail, of a plurality of tool-carrying frames slidable on said rail independently one of the other, one driving member common to all of said frames, a gear on said member slidable thereon and rotatable therewith and a support on the frame for said gear; a rack on said bearing-rail, pinions on said frames, and means of connection between said pinions and the gear on said driving member whereby the pinions may be rotated to move the frames in opposite directions on the bearing-rail.

3. The combination with a bearing-rail, of a tool-carrying frame slidable horizontally thereon, a driving member for said frame, a counter-shaft supported on the frame, a tool-carriage on the frame movable vertically thereon, and means for imparting movements thereto, a clutch on said counter-shaft constituting a driving connection between said counter-shaft and the carriage-moving means; devices for moving said frame, and a second clutch on the counter-shaft constituting a driving connection between the counter-shaft and said frame-moving devices, whereby the frame and the tool may be operated separately or together, substantially as described.

4. The combination with a bearing-rail, of a tool-carrying frame slidable horizontally thereon, and means for moving said frame; a driving member for said frame, a counter-shaft supported on the frame, a driving connection between the frame-moving means and said counter-shaft, and a driving connection between said shaft and the driving member whereby said shaft may be either disconnected therefrom or rotated in either direction, substantially as described.

5. The combination with a bearing-rail, of a tool-carrying frame located transversely of said rail, and slidable horizontally thereon, means for moving said frame, a driving member for said frame, a clutch connection between said driving member and said frame-moving means, a tool-carriage supported, and vertically movable on, said frame, and a tool adapted to swing in a horizontal plane mounted on said carriage.

6. Two parallel rails, a plurality of frames supported on said rails transversely thereof, and means for sliding said frames on the rails independently in either direction; carriages on said frames having tools thereon adapted to swing in horizontal planes, and means for moving the carriages vertically; a driving member parallel with said rails and common to all of the frames, a counter-shaft on the frame, and independent means of connection between said shaft and the carriage-moving means, said shaft and the frame-moving means, and said shaft and the driving member, substantially as described.

709,254. ROTARY MOTOR. ALBERT L. REMY, Paris, France. Filed June 13, 1901. Serial No. 64,368. (No model.)

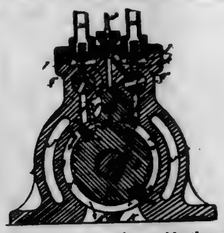

Claim.—1. In a rotary motor, the combination with the outer cylinder A, of the drum B rotatively mounted in the cylinder and provided with two oppositely-disposed pistons c, and the drum D, also rotatively mounted in a recess in the cylinder and in contact tangentially with the drum B, said drum D having a recess to receive the pistons c, of gearing between said drums whereby this drum B drives the drum D, the continuously-rotating valves H driven from the drum D and controlling port-passages to the cylinder, said valves having diametrical ports i, and the gear for driving said valves, substantially as set forth.

2. In a rotary motor, the combination with the cylinder A, of the drum B rotatively mounted therein and provided with oppositely-disposed pistons c, and teeth d which extend the entire length of the drum within the cylinder, and the auxiliary drum D, rotatively mounted in a recess in the cylinder and having teeth e which gear with those on the drum B, of the diametrically-ported valves H, controlling the inlet-passages of the motor, and gearing for continuously rotating said valves H, substantially as set forth.

3. In a rotary motor, the combination with the cylinder A, having two always open exhaust-ports, and two inlet-ports, the check-valves o at said inlet-ports, and the continuously-rotating valves H having diametrical ports controlling said inlets, of the rotatively-mounted drum B in the cylinder and provided with pistons c, the auxiliary recessed drum D mounted rotatively in a recess in the cylinder and in peripheral contact with the main drum B, and gearing between the drums B and D, whereby the former drives the latter, substantially as set forth.

709,255. HAIR-PIN. WILLIAM S. BECHTOLD, Newark, N. J. Filed May 2, 1902. Serial No. 105,557. (No model.)

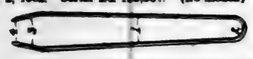

Claim.—1. A hair-pin or like article having its shanks in substantially the same plane the ends of its shanks converging and provided with entering members extended transversely in opposite directions relative to each other and to the plane of the pin, substantially as described.

2. A hair-pin or like article having its shanks in substantially the same plane, the ends of its shanks converging and obliquely directed on opposite sides of the plane of the pin and provided with entering members extending transversely in opposite directions to the plane of the pin, substantially as described.

709,256. HARROW. EDMUND B. BUTTS, Oberon, N. D. Filed June 7, 1901. Serial No. 63,495. (No model.)

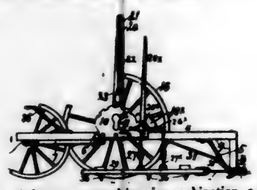

Claim.—1. A harrow comprising in combination, a series of harrow-sections adapted to be drawn side by side, a draft-bar link-fastened to the front ends of all the sections, a frame-bar secured with its front end to the middle of the draft-bar and extending upwardly and rearwardly over and beyond the harrow-sections, a driver's seat secured on the frame-bar, a horizontally-swinging arm pivoted under the rear part of the frame-bar and having a transversely-disposed short shaft with carrier-wheels at its ends; the serrated sectors 10, secured at both sides of the frame-bar, rock-shafts 14 extending transversely out from both sides of the frame-bar, near the sector-plates and journaled central with the latter, and carrying levers having latch-operated dogs adapted to engage the serrations of the sectors, ground-wheels 16 supporting the outer ends of the shafts 14, and adjustable arms, 26, link-fastened to the harrow-sections, and the braces 32 between the draft-bar and the shafts 14, substantially as and for the purpose set forth.

2. A harrow having a longitudinally-disposed elongated supporting-frame with a horizontally-swinging arm pivoted with its front end under the rear end of the frame, and provided at its rear end with a short axle having two ground-wheels traveling behind the harrow-sections.

3. In a harrow, the combination with a supporting-frame having the sector-plates 10 with serrations and each with a central vertical slot enlarged at its upper end, of the side shaft 14 having the neck 15 and head 13 and latch-lever with dog adapted to engage the serrations of the sector when the neck of the shaft is journaled in the narrow bottom end of the slot, and wheels supporting the outer ends of the shafts.

4. A harrow-frame having side bearings for side shafts to extend in opposite directions from the frame, and shafts journaled each with one end in such bearings, said journals consisting of an annular groove formed near the end of the shaft, and said bearing consisting of a plate having a vertically-elongated hole enlarged at its upper end for the insertion of the end of the shaft till its neck can be placed in the narrow bottom end of the slot which serves as its bearing.

709,257. CONSTRUCTION OF BUILDINGS. CHARLES E. COUTTRELL, Minneapolis, Minn. Filed Dec. 23, 1901. Serial No. 86,916. (No model.)

Claim.—1. In a building construction the combination with the boarding, of a lining arranged at the inner side thereof and consisting of crinkled or corrugated paper, substantially as set forth.

2. In a building construction the combination with the boarding, of a paper lining arranged at the inner side thereof and consisting of paper crinkled or corrugated longitudinally and transversely, substantially as set forth.

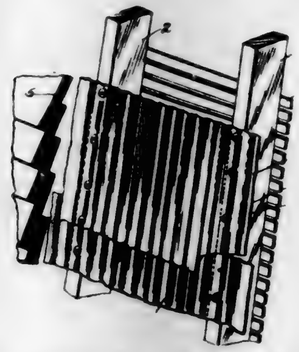

3. In a building construction the combination with the boarding, of a lining arranged at the inner side thereof and consisting of a plurality of layers of paper at least one of which is crinkled or corrugated, whereby it is rendered expansible and a dead-air space is formed between the layers of paper, substantially as set forth.

709,258. PNEUMATIC RAILWAY-SIGNAL. CYRUS S. DEAN, Port Erie, Canada. Filed Nov. 27, 1901. Serial No. 83,863. (No model.)

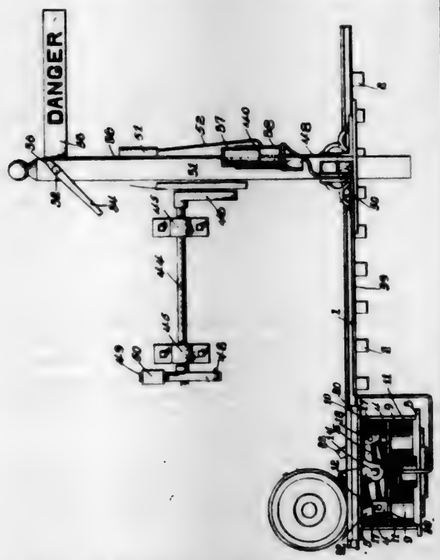

Claim.—1. In a railway signaling device, rails, a pneumatic-operated signal, a plurality of air-compressing cylinders, a walking-beam, having connection with the pistons of said cylinders and operating-bars connecting to the extremes of the walking-beam and extending above the rails, whereby the walking-beam is rocked from a passing train.

2. In a railway signaling device, a signal, air-actuated means for operating said signal, an air-compressing device having a plurality of air-cylinders, pistons in said cylinders, a walking-beam having connection with said pistons, operating-bars connecting to the extremes of the walking-beam, and compressed-air-conveying means connecting the cylinders to the air-actuated signal-operating means.

3. In a railway signaling device, a signal, air-actuated means for operating said signal, an air-compressing device having a pair of air-compressors and a reservoir connecting with said compressors, a walking-beam having operative connection with the air-compressors and operating-bars connecting to the walking-beam and adapted to be moved by a passing train to rock the walking-beam.

4. In a railway signaling device, a pneumatic-operated signal, an air-compressing device having a pair of air-compressors adapted to supply air to said pneumatic-operated signal, a walking-beam having operative connection with the air-compressors and operating-rods pivoted at their lower ends to the walking-beam and adapted to be moved by a passing train to rock the walking-beam.

5. In a railway signaling device, a main signal, pneumatic mechanism for operating said main signal including a tubular support, an air-bell operatively connected to said main signal and telescoping in the tubular support, a whistle and a pipe extending from the whistle and connecting to the tubular support, substantially as set forth.

6. In a railway signaling device, a main signal, pneumatic mechanism for operating said main signal including a tubular support, an air-bell operatively connected to said main signal and telescoping in the tubular support, a whistle and a pipe extending from the whistle and connecting to the tubular support at a point below the air-bell when in its elevated position, substantially as set forth.

7. In a railway-signal, air-compressors, a post, a signal operatively supported from the post, an air-bell having connection with the signal, a tubular support for the air-bell having pipe connection with the air-compressors and an opening in its side wall, and a locking device having a lever adapted to project through the opening and catch beneath the air-bell when in its elevated position, substantially as set forth.

8. In a railway-signal, air-compressors, a post, a signal operatively supported from the post, an air-bell having connection with the signal, a tubular support for the air-bell having pipe connection with the air-compressors and an opening in its side wall, a locking device having a lever adapted to project through the opening and catch beneath the air-bell when in its elevated position, and automatic means for retracting said lever, substantially as set forth.

9. In a railway-signal, air-compressors, a post, a signal operatively supported from the post, an air-bell having connection with the signal, a tubular support for the air-bell having pipe connection with the air-compressors, and a locking device having a lever adapted to engage the air-bell when in its elevated position, substantially as set forth.

709,259. MANIFOLDING NOTE-BOOK. WILLIAM F. ROELKE, Philadelphia, Pa. Filed Feb. 13, 1901. Serial No. 47,155. (No model.)

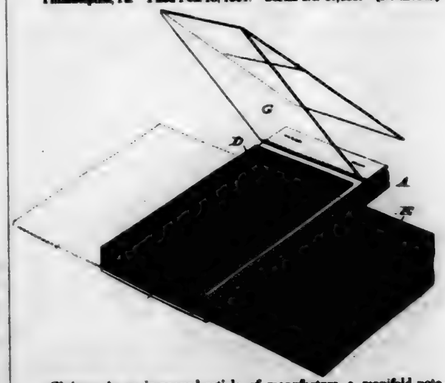

Claim.—As an improved article of manufacture, a manifold note-book comprising a back, a series of long and short leaves alternately bound at one end, carbons attached to said back on lines at right angles to the line of binding of said leaves, to fold in opposite directions from opposite edges, the short leaves constituting each a fixed leaf, and its stub integral and permanently secured in position, the long leaves constituting each a section independent of the fixed leaf and having a weakened line separating it from its stub, and a section readily separable from the first-mentioned section and having a weakened line forming readily-separable portions of different lengths foldable upon the separable first-mentioned section and with it foldable over the fixed leaf, the said cartons being foldable the one over the fixed leaf and the other between the sections of the separable leaf, all substantially as shown and described.

709,260. RESERVOIR-PEN. ROBERT T. GILLESPIE, Rochester, Pa. Filed May 15, 1901. Serial No. 60,316. (No model.)

Claim.—1. A penholder consisting of a ferrule provided with a socket for the pen-point and means for limiting its inward movement therein, a lid pivotally mounted between the sides of the ferrule adapted to be folded upon the pen-point and to form with it an ink-holding cavity, such lid being provided with circulation-apertures for the purpose specified, a lifting extension and a spring-bearing shoulder by which the lid is held in a lowered or raised position respectively, and a flat spring adapted to bear against such shoulder secured in the interior of the ferrule, substantially as set forth.

2. A penholder consisting of a ferrule provided with a socket for the pen-point and means for limiting its inward movement therein, a lid pivotally mounted between the sides of the ferrule adapted to be folded upon the pen-point and to form with it an ink-holding cavity, such lid being provided with a tubular reservoir portion, a lifting extension, spring-bearing shoulders by which the lid is held in a lowered or raised position respectively, and a flat spring adapted to bear against such shoulders secured in the interior of the ferrule, substantially as set forth.

3. A penholder consisting of an outer ferrule, and an inner ferrule inserted therein provided with a retaining-lip, an intervening cavity for the insertion of the pen-point, a pin connecting the ferrules together, with a lid pivotally mounted upon the pin between the sides of the inner ferrule, adapted to be closed downwardly and to form with the pen-point an ink-holding cavity, with means for holding the lid in a raised or lowered position, substantially as set forth.

4. A penholder consisting of an outer ferrule, and an inner ferrule inserted therein provided with a retaining-lip, an intervening cavity for the insertion of the pen-point, a pin connecting the ferrules together, with a corrugated lid pivotally mounted upon the pin between the sides of the inner ferrule adapted to be closed downwardly and to form with the pen-point an ink-holding cavity, with means for holding the lid in a raised or lowered position, substantially as set forth.

709,261. **MEANS FOR OPERATING GATES FOR RAILWAY-CARS.** EDWARD R. GOLD, New York, N. Y. Filed Oct. 16, 1901. Serial No. 78,898. (No model.)

Claim.—1. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means engaging the primary leaf and movable to swing it around its hinge-axis, and connected to the secondary leaf to fold it toward the primary leaf to open the gate.

2. A double railway-car gate comprising two leaves hinged together, the primary leaf being hinged to a support, combined with operating means connected to the primary leaf and movable to swing it around its hinge-axis, and means arranged within the closed position of the gate, connected to the secondary leaf and adapted to fold it toward the primary leaf to open the gate.

3. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means arranged within the closed position of the gate, connected to both leaves and movable to swing the primary leaf around its axis and to simultaneously fold the secondary leaf against the primary leaf to open the gate.

4. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising an adjusting part movable relatively to the primary hinge, a link connecting said part to the primary leaf, and an operative connection from said part to the secondary leaf, adapted to fold it toward the primary leaf as the latter swings open.

5. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating part for moving said slide, and an operative connection from said slide to the secondary leaf adapted to fold it toward the primary leaf as the latter swings open.

6. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating-lever for moving said slide, and an operative connection from said slide to the secondary leaf comprising a link extending approximately parallel with the primary leaf, said means adapted to fold the secondary leaf toward the primary leaf as the latter swings open.

7. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating-lever for moving said slide, and an operative connection from said slide to the secondary leaf comprising an arm projecting from the secondary leaf, and a link connecting said arm to said slide.

8. The combination of a double gate comprising two leaves hinged together, the primary leaf being hinged to a support, of operating means comprising a slide movable toward and from the primary hinge, a link connecting said slide to the primary leaf, an operating-lever having a toggle connection with said slide adapted to lock the slide in the closed position of the gate, and an operative connection from said slide to the secondary leaf adapted to fold it toward the primary leaf as the latter swings open.

709,262. **ONE-WAY VALVE.** ROBERT H. GOLD, Chicago, Ill. Filed Oct. 16, 1901. Serial No. 78,901. (No model.)

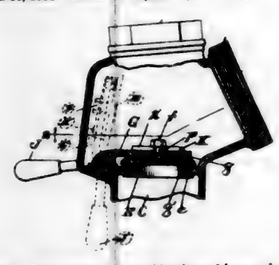

Claim.—1. In a valve, the combination with a casing, of a main valve seated therein, means for opening said main valve, a lost-motion connection between said main valve and said valve-opening means, a bleeding-port through said main valve, and at one side of the center thereof, a bleeding-valve carried by said valve-opening means and arranged to close said bleeding-port, and coengaging means upon said main valve and said valve-opening means to insure the seating of said bleeding-valve in said bleeding-port, substantially as described.

2. In a valve, the combination with a casing, of a valve-seat, a main valve arranged to be seated thereon, a valve-stem carried by said main valve, a lifting-arm journaled in one side of said casing, a lever-arm loosely engaging said valve-stem, a stop carried by said valve-stem to provide a lost motion between said valve and said lever-arm, a bleeding-port at one side of said valve-stem, and a bleeding-valve carried by said lever-arm, substantially as described.

3. In a valve, the combination with a valve-casing, of a main valve seated therein, an arm journaled in one side of said casing, a lost-motion connection between said arm and said valve, a bleeding-port at one side of said connection, a bleeding-valve carried by said arm and arranged to close said port, a spindle rigidly attached to the journaled end of said arm and extending through said casing, and means attached to the external end of said spindle for manually opening the said valve, substantially as described.

4. In a valve, the combination with a casing, of a main valve seated therein, a valve-stem carried by said main valve, an arm journaled within said casing, and at one side of said valve, a lost-motion connection between said arm and said valve-stem, a bleeding-port located at one side of said valve-stem, a bleeding-valve carried by said arm and arranged to close said bleeding-port, means connected with the journaled end of said arm for manually operating said valve, substantially as described.

5. In a valve, the combination with a casing, provided with an inlet and an outlet port, of a main valve arranged to close said outlet-port, an arm journaled within said casing, at one side of said main valve and opposite to said inlet-port, a lost-motion connection between said arm and said main valve, a bleeding-port at one side of said connection, a bleeding-valve carried by said arm and arranged to close said bleeding-port, and means for manually swinging said arm upon its journaled end so as to successively open first the bleeding-valve and then the main valve, and then to swing the valve mechanism to one side of said casing and away from said inlet-port, substantially as described.

709,263. **MONORAILWAY.** EDWARD A. GREEN, Battlecreek, Mich., assignor to American Construction Company, a Corporation of Delaware. Filed July 12, 1902. Serial No. 115,371. (No model.)

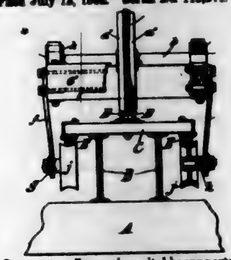

Claim.—1. In a monorailway, the suitably supported above the road-bed level, a main traction-rail presenting two parallel traction-surfaces and a channel dividing them, guide-rails presenting downwardly a single traction-surface pendent from the lower side of said ties on each side of and equidistant from said main traction-rail, in combination with a car running-gear comprising main traction-wheels having two traction-surfaces and an intermediate flange, a car-truck suspended from the axles of said wheels, pendent rigid supports carried by said truck, immovable bearings carried thereby and guide-wheels mounted upon said bearings and adapted to come into but normally out of engagement with said guide-rails, the peripheries of said guide-wheels being concave and arched to conform substantially to the arc inscribed by their bearings upon the oscillation of the car-truck.

2. In a monorailway, ties suitably supported above the road-bed level, a main traction-rail presenting two parallel traction-surfaces and a channel dividing them, guide-rails presenting downwardly a single traction-surface pendent from the lower side of said ties on each side of and equidistant from said main traction-rail, in combination with a car running-gear comprising main traction-wheels having two traction-surfaces and an intermediate flange, journal-bearings for the axles of said wheels, pedestal-yokes inclosing said bearings, a resilient buffer disposed between the top of said bearings and said pedestal-yokes, a car-truck suspended from said pedestal-yokes, pendent rigid supports carried by said truck, immovable bearings carried thereby and guide-wheels mounted upon said bearings and adapted to come into but normally out of engagement with said guide-rails, the peripheries of said guide-wheels being concave and arched to conform substantially to the arc inscribed by their bearings upon the oscillation of the car-truck.

709,264. **PUSH-RAKE.** HENRY GRIMM, Pekin, Ill., assignor to the Acme Harvester Company, Pekin, Ill., a Corporation of Illinois. Filed Feb. 1, 1901. Serial No. 46,003. (No model.)

Claim.—1. A push-rake consisting of a supporting-frame, a rake-head at the forward end thereof, a lifting mechanism for raising said head, the same consisting of an unyielding connection pivotally attached to the said rake-head and extending toward the rear of said supporting-frame, a draft-bar at the rear of the said frame the same being slidable thereon, but held rigidly at right angles to the length of the machine at all times and having connection with such rake-head lifting mechanism for raising the rake-head when moved forward by the pull of the horses.

2. A push-rake consisting of a supporting-frame, a rake-head at the forward end thereof and having the usual rake-teeth, lifting mechanism on the frame, the same consisting of an unyielding connection for raising the latter, a draft-bar to which said connection is attached, said bar being slidably mounted on the rear end of the frame and held at right angles to the length of the machine at all times, a hand-lever also at the rear end of the said frame, the same having pivotal connection with the said draft-bar and adapted to assist in lifting the rake-head, and means for locking the draft-bar in either of its two extreme positions for the purposes described.

3. A push-rake consisting of a supporting-frame, a rake-head at its forward end, lifting mechanism on the frame for operating the said rake-head, a hand-lever at the rear of the said supporting-frame and having connection with the said lifting mechanism, a single draft-bar having connection with said lever, a detent pivotally attached to the lower end of the lever, a rigid stop for engaging said detent and a tripping device for releasing the detent from the stop for the purposes set forth and described.

4. A push-rake consisting of a supporting-frame, a rake-head at its forward end, mechanism for raising and lowering said rake-head consisting of a connection attached at one end to the rake-head, a lever pivotally supported on the rake-frame and having the other end of the connection attached thereto above the pivotal support of said lever, a draft-bar at the rear end of said frame, said bar pivotally attached to the lever below the supporting-pivot of the latter, said bar being slidable on the frame but held rigidly at right angles to the length of the machine at all times, said connections causing the forward movement of said bar to raise the rake-head, means for locking the draft-bar in its forward position to retain the rake-head in its raised position and a tripping device for releasing said locking means for freeing the rake-head and permitting it to lower to the raking position.

5. A push-rake consisting of a supporting-frame, a rake-head at its forward end, mechanism for raising and lowering said rake-head, which consists of an unyielding pivotal connection pivoted to the rake-head, a draft-bar at the rear end of the said frame, the same being slidable thereon, and having connection with the said mechanism, said draft-bar at all times held rigidly at right angles to the length of the machine, and means for locking the rake-head in both the raised and lowered positions substantially as and for the purposes described.

6. In a push-rake, a supporting-frame, a rake-head at its forward end, mechanism for raising and lowering said rake-head, which consists of an unyielding connection pivotally attached to the rake-head, a single draft-bar at the rear end of the said supporting-frame adapted to have a shifting movement thereon in the direction of the length of the machine but held rigidly at all times at right angles to its direction of movement, said bar having connection with the said raising and lowering mechanism whereby a forward movement of the said draft-bar will raise the rake-head, a hand-lever for assisting the raising movement through the said mechanism with which it is connected, said lever being also attached to the draft-bar, a locking device substantially as described for sustaining the rake-head in the raised position and a tripping device for releasing the locking device for permitting the rake-head and draft-bar to return to their normal position as set forth.

7. A push-rake consisting of a supporting-frame A, a rake-head at its forward end, a rigid draft-bar B at the rear end of the frame, guides for keeping said draft-bar always at right angles to the length of the ma-

chine, mechanism for raising and lowering the said rake-head, pivotal connection between said draft-bar and said mechanism, which consists of a lever pivoted on the supporting-frame and having the said mechanism pivoted thereto above the supporting-pivot thereof, said draft-bar having pivotal connection with the lower end of the lever below said pivotal point whereby a forward movement of the said draft-bar on the frame, due to the pull of the horses, will communicate a reverse direction of movement of the rake-head mechanism and raise the said rake-head, means for locking the latter in the raised position, and a tripping device for releasing the locking means to allow the rake-head to fall, as set forth.

8. A push-rake consisting of a supporting-frame, a rake-head at its forward end, wheels for supporting the said rake-head and permitting it to rock on the axles thereof, means for pivotally connecting that portion of the rake-head behind the supporting-wheels with the said supporting-frame, lifting mechanism for the rake-head consisting of bell-cranks on the forward ends of the frame, having pivotal connection with the rake-head in front of the said supporting-wheels, a reach extending rearwardly from said bell-cranks, a draft-bar on the rake-frame, a lever mechanism connecting the said reach with the draft-bar, the latter having pivotal connection with each lever mechanism, said bar adapted to have a shifting movement on said supporting-frame whereby when moved forward on the frame the rake-head will be elevated, a locking device for sustaining the head in the elevated position and means for disengaging said locking device to permit the said rake-head to reach its normal position, such locking device also preventing the draft-bar shifting to elevate the rake-head when the latter is in said normal position.

9. In a push-rake, the combination of the supporting-frame A, the rake-head at the forward end thereof, lifting mechanism therefor consisting of the bell-cranks J, links K connecting the cranks with the said head, a reach attached to the cranks and extending rearwardly, the hand-lever U pivoted on the frame and having connection with the said reach, the draft-bar S having connection with each lever, the guides 15 and 19 for said draft-bar, a detent 2 connected to the lever, the stop 1 for engaging the said detent, and the trip 11 for raising the detent from the stop all being arranged substantially as and for the purposes set forth and described.

10. In a push-rake, the combination of a supporting-frame, a rake-head pivotally secured thereto at its forward end, means for raising and lowering said head, which consists of an unyielding connection pivoted thereto, a one piece draft-bar slidably mounted on the supporting-frame and connected with the said raising means, means for operating said rake-head whereby a pull on said bar will raise the rake-head and means for locking the bar against movement when the machine is in the act of raking.

11. In a push-rake, the combination of a supporting-frame A, a rake-head at its forward end adapted to rise and fall for the purposes set forth, mechanism for raising and lowering said head which consists of the reaches M pivotally attached to the rake-head, a bail O for supporting the rear ends of the reaches, a lever U pivoted on the supporting-frame, a rod X connecting each lever and reaches at a point above the pivotal support of said lever, a draft-bar S of a single rigid member having draft attachments, said bar adapted to slide on the supporting-frame and connected with the said lever U at a point below the pivotal support thereof, a roller 16 on said bar, guides 15 for said roller, members 18 connected to the bar and extending forward and converging at their forward ends, a link 19 attached to each converging ends, a roller 23 for guiding the link, means for locking the said bar stationary on the frame when the machine is in the act of raking and means for releasing said bar whereby the pull of the horses thereon will raise the rake-head as set forth.

12. In a push-rake the combination of a supporting-frame, a rake-head pivotally attached thereto at its forward end, mechanism connected pivotally to said head for raising and lowering it, a one-piece draft-bar slidably mounted on the supporting-frame to move in the direction of the length of the machine but held rigidly at right angles to the direction of movement said bar having connection with the said rake-head-operating mechanism, a lever pivoted on the frame and having pivotal connection below its point of support with the draft-bar and also having pivotal connection above its support with the said operating mechanism whereby a rearward pull on said lever in conjunction with a forward pull of the horses on the draft-bar will raise the rake-head as set forth.

709,265. TRANSMITTING MECHANISM. CHARLES W. HUNT, West New Brighton, N. Y. Filed Nov. 20, 1900. Serial No. 37,089. (No model.)

Claim.—1. In a device for transmitting power, the combination with a driving and a driven member, of a closed shell adapted for containing a fluid and connected to one of said members, a pump within said shell having its working parts connected respectively with said driving member and said driven member, said pump having inlet and outlet ports communicating with the interior of said shell whereby said shell may deliver fluid to and receive fluid from said pump, means in said outlet-port for regulating the flow, and means to control the rate of circulation of fluid through said pump.

2. In a device for transmitting power, the combination of a driving member, a driven member, a crank secured to one of said members, a closed shell adapted for containing a fluid and secured to the other of said members, a pump within said shell having one of its working parts connected to said crank and the other of said working parts connected to said shell, said pump having inlet and outlet ports communicating with the interior of said shell whereby said shell may deliver fluid to and receive fluid from said pump, means in said outlet-port for regulating the flow, and means to control the rate of circulation of fluid through said pump.

709,266. MATCH-MACHINE. WILLIAM F. HUTCHINSON, Boundbrook, N. J., assignor to Atlas Match Company, Mellenville, N. Y., a Corporation of New Jersey. Filed Mar. 23, 1901. Renewed Feb. 1, 1902. Serial No. 92,196. (No model.)

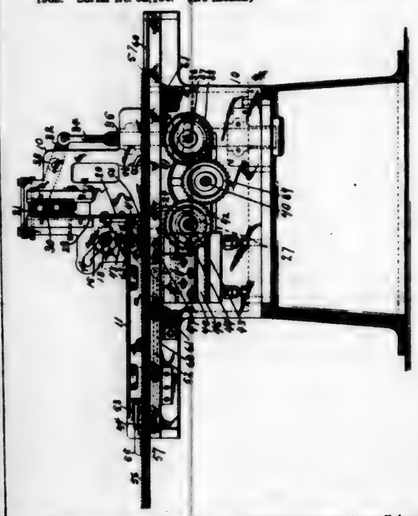

Claim.—1. A match-machine, comprising a series of parallel guide-fingers, means for feeding veneer strips between the fingers, means for cutting off the strips into splints while in engagement with the fingers, and means for opening and closing the slots between the fingers on the side opposite the cutting mechanism.

2. A match-machine, comprising a series of parallel guide-fingers, means for feeding veneer strips between the fingers, cutting mechanism to sever the splints from the strips while the strips are engaged by the fingers, a carrier movable across the finger ends, means for opening and closing the slots between the fingers on the side opposite the cutting mechanism, and ejecting means for forcing the splints from between the fingers into the carrier.

3. A match-machine, comprising a carrier, a series of guide-fingers perpendicular to the carrier, means for feeding veneer strips between the fingers, cutting mechanism arranged to move opposite one side of the fingers and sever the veneer strips, and a slotted back plate movable across the opposite side of the fingers, the said back plate being arranged to open when the carrier is advanced.

4. A match-machine, comprising a carrier, a series of guide-fingers perpendicular to the carrier, means for feeding veneer strips between the said fingers, cutting mechanism movable on one side of the fingers to sever the veneer strips, a slotted back plate on the opposite side of the fingers, the back plate and cutting mechanism being moved in unison so as to open and close the passage between the fingers and parallel with the plane of movement of the carrier, and means for forcing the severed splints from between the fingers into the carrier.

5. In a match-machine, the combination with a carrier, of four-walled guiding devices to guide the splints to the carrier, one wall of each devices being movable so as to open a passage for the forward movement of the splints after they are engaged by the carrier.

6. A match-machine, comprising a series of stationary guide-fingers adapted to receive veneer strips between them, a series of knife-blades movable across one side of the fingers so as to sever the veneer strips when engaged by the fingers, and a slotted back plate on the opposite side of the fingers, the back plate and knife-blades being movable in unison.

7. A match-machine, comprising a series of stationary guide-fingers adapted to receive veneer strips between them, a series of cutting-blades movable opposite one side of the fingers, a slotted back plate movable across the opposite side of the fingers, the knife-blades and back plate being adapted to open and close the finger-slots, plungers movable between the guide-fingers and parallel therewith, and a carrier movable in a plane perpendicular to that of the plunger and adapted to receive the splints when ejected from between the fingers.

8. A match-machine, comprising a series of stationary guides adapted to hold veneer strips in parallel relation, knife-blades movable across the face of the guides, a series of guide-fingers behind the knife-blades and in line with the guides, a slotted back plate movable behind the guide-fingers, the slots of the back plate registering with the slots between the knife-blades, plungers movable between and parallel with the guide-fingers, and a carrier to receive the match-splints, said carrier moving essentially perpendicular to the travel of the plungers.

709,267. MACHINE FOR BOXING MATCHES. WILLIAM F. HUTCHINSON, Boundbrook, N. J., assignor to Atlas Match Company, Mellenville, N. Y., a Corporation of New Jersey. Filed Mar. 27, 1901. Renewed Feb. 1, 1902. Serial No. 93,197. (No model.)

Claim.—1. A machine of the kind described, comprising an endless belt, a series of guide-plates held longitudinally to the belt and spaced apart so as to hold matches in parallel relation on the belt, and an inclined discharge-chute arranged to receive the matches from the belt, said chute having guide-plates registering with and forming continuations of the guide-plates of the belt.

2. A machine of the kind described comprising an endless belt, a series of guide-plates held longitudinally to the belt and spaced apart so as to hold matches in parallel relation on the belt, an inclined discharge-chute arranged to receive the matches from the belt, said chute having guide-plates registering with and forming continuations of the guide-plates of the belt, and a match-box-carrying means movable beneath the free end of the chute.

3. A machine of the kind described comprising an endless belt, a series of guide-plates held longitudinally to the belt and spaced apart so as to hold matches in parallel relation on the belt, an inclined discharge-chute arranged to receive the matches from the belt, said chute having guide-plates registering with and forming continuations of the guide-plates of the belt, a carrying means movable beneath the free end of the chute, and mechanism for tilting the carrying means transversely of its plane of motion.

4. A machine of the kind described comprising an endless belt, a series of guide-plates held in close relation to the upper member of the belt and spaced apart so as to hold matches in parallel relation between them, an inclined chute to receive the matches discharged from the belt, a box-carrying belt movable beneath the discharge end of the chute, and a tilting support for the upper member of the box-carrying belt, said support being adapted to shift the inclination of the carrying-belt transversely to its plane of motion.

5. In a machine of the kind described, the combination with the frame-holding means, of the frames, means for feeding the frames, the reciprocating plunger having pins to enter the frames and eject the matches therefrom, and mechanism for adjusting the feed of the frames by which the frames may be moved at a stroke so as to make the matches to be ejected register with the right number of pins on the plunger.

6. In a machine of the kind described, the combination with the inclined chute, of the belt running at right angles to the chute and adapted to receive the discharge therefrom, and means for tilting the upper member of the belt transversely to its plane of motion.

7. In a machine of the kind described, the combination with the match-discharging chute, of a carrying means movable beneath the discharge end of the chute, and mechanism for tilting said carrying means transversely so as to adjust its horizontal plane with relation to the inclination of the chute.

8. In a machine of the kind described, the combination with the match-discharging chute, of a belt movable beneath the discharge end of the chute, and a tilting plate held beneath the upper member of the belt so as to sustain the said member and hold it at the right inclination with respect to the chute.

9. In a machine of the kind described, the combination with the match-discharging chute, of the belt or carrier movable below the discharge end of the chute and at essentially right angles thereto, an adjustable plate arranged beneath the upper member of the belt or carrier by which the said belt or carrier can be held at the desired inclination with respect to the chute, and a top plate extending over the carrier, said top plate being adjustable in relation to the said belt or carrier.

10. In a machine of the kind described, the combination with the match-discharging chute, of a belt or carrier movable beneath the discharge end of the chute and at essentially right angles to the chute, a back plate near one edge of the carrier, said back plate rising opposite the discharge end of the chute, a guide-plate hinged to the back plate and extending beneath the upper member of the belt or carrier, and a top plate also hinged to the back plate and extending over the said belt or carrier.

11. In a machine of the kind described, the combination with the match-discharging chute, of the belt or carrier movable below the discharge end of the chute and at essentially right angles thereto, a stationary back plate opposite the front edge of the belt or carrier, a guide-plate hinged to the back plate and extending beneath the upper member of the belt or carrier, a top plate hinged to the back plate and extending over the belt or carrier, and means for adjusting the guide-plate and the top plate.

709,268. ALLOY. DANIEL P. JAMES, Bayside, Ill. Filed Mar. 24, 1902. Serial No. 99,200. (No specimens.)

Claim.—An alloy for the uses and purposes set forth consisting of copper, black-tin, nickel, silver and aluminium substantially as described.

709,269. CAR-DOOR. SHERMAN J. JOHNSON, Hatley, N. J. Filed May 7, 1901. Serial No. 59,155. (No model.)

Claim.—1. The combination with a car-body having a doorway and a door, of a track secured to said car-body above the doorway; hanger mechanism mounted on said track; means connecting the door with the hanger mechanism; a swinging actuator pivoted at its upper end to the door and connected with said connecting means and shiftable in the plane of the door, the major part of the mechanism being located above and free of the door.

2. The combination with a car-body having a doorway and a door,

of a track secured to said body above the door, hangers shiftably mounted on said track; means connecting the door with each hanger to control its lateral movement into an upward and outward one and integral to cause the same movement of the door with reference to each hanger; a lever connected to said means and operating in a plane parallel to the side of the car; and an actuator also operating parallel to the side of the car and connected to said lever through means operating only parallel to the side of the car.

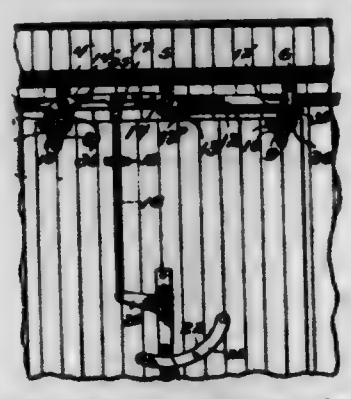

3. The combination with a car-body having a doorway and a door, of a track secured to said car-body; a set of hangers mounted on said track; rock-shaft mechanism connecting one side of said door with a pair of said hangers; crank mechanism connecting the other side of said door with another of said hangers; and actuating means connected with said mechanisms for shifting the door upwardly and outwardly.

4. The combination with a car-body having a doorway and a door, of a track secured to said body above the doorway; a plurality of hangers mounted on said track; rock-shaft mechanism connecting a pair of said hangers with the door; crank mechanism connecting another of said hangers with the door; variable-motion means connected with said mechanisms; and actuating means connected with said variable-motion means and effective to shift the door upwardly and outwardly into position to be moved away from the doorway.

5. The combination with a car-body having a doorway and a door, of means supporting said door on said body for movement upwardly and outwardly; an actuator; means coöperating with the bottom of the door; and a stop or stops carried free of the door for limiting the upward movement of the door and effective to prevent the disengagement of the bottom of the door from its coöperating means.

6. The combination with a car-body having a doorway and a door, of means for supporting said door on said body for upward and outward movement; an actuator connected with said supporting means; means coöperating with the bottom of the door; and a stop or stops carried free of the door and effective at one period to prevent the disengagement of said door from its bottom coöperating means and at another period to permit such disengagement.

7. The combination with a car-body having a doorway and a door, of means for supporting said door on said body for upward movement; and shiftable means for limiting the upward movement of the door.

8. The combination with a car-body having a doorway and a door, of means for supporting said door on said body for upward movement; and shiftable means having a plurality of door-limiting positions.

9. The combination with a car-body having a doorway and a door, of means for supporting said door on said body for upward movement; means coöperating with the bottom of the door; and shiftable means having a plurality of door-limiting positions, said means effective in one position to prevent the disengagement of the bottom of the door from its coöperating means and in another position to permit such disengagement while still limiting the upward movement of the door.

10. The combination with a car-body having a doorway and a door, of means for supporting said door on said body for movement upwardly and outwardly; actuating means; a shiftable stop or stops for limiting the upward movement of the door; and brackets coöperating with the bottom of said door, said stop or stops being effective in one position to prevent the disengagement of the door from the brackets and in another position to permit such disengagement.

11. The combination with a car-body having a doorway and a door, of a track secured to said body above said doorway; hanger mechanism mounted on said track; supporting means connecting said hanger mechanism with said door; an actuator effective to shift the door upwardly and outwardly; and shiftable means connected with said hanger mechanism for limiting the upward movement of the door.

12. The combination with a car-body having a doorway and a door, of a track secured to said body above the doorway; hanger mechanism mounted on said track; supporting means connecting said hanger mechanism with said door; an actuator effective to shift the door upwardly and outwardly; a shiftable stop connected with said hanger mechanism for limiting the upward movement of the door; and means coöperating with the bottom of the door, said stop being effective in one position to prevent the disengagement of the bottom of the door from said coöperating means and in another position to permit such disengagement.

13. The combination with a car-body having a doorway and a door, of a track secured to said body above said doorway; hanger mechanism mounted on said track; supporting means connecting said hanger mechanism with said door and embodying rock-shaft mechanism; an actuator effective to shift the door upwardly and outwardly; brackets coöperating with the bottom of the door; and a shiftable stop or stops located above the door for limiting the upward movement of said door.

14. The combination with a car-body having a doorway and a door, of a track secured to said body above said doorway; hanger mechanism mounted on said track; supporting means connecting said hanger mechanism with said door and embodying rock-shaft mechanism; an actuator effective to shift the door upwardly and outwardly; brackets supporting the bottom of the door; and a shiftable stop or stops located above the door and having a plurality of door-limiting positions.

15. The combination with a car-body having a doorway and a door, of a track secured to said body above said doorway; hanger mechanism shiftable thereon; rock-shaft mechanism connecting said hanger mechanism with the door; a swinging actuator located adjacent to one end of said rock-shaft mechanism and pivoted at its upper end to the door and shiftable in the plane thereof and effective to shift the door upwardly and outwardly; and a lever pivoted to said hanger mechanism adjacent to and at the outer side of said track and connected with said actuator and rock-shaft mechanism.

709,270. CAR-DOOR. SINCLAIR J. JOHNSON, Montclair, N. J.

Filed Dec. 23, 1901. Serial No. 87,394. (No model.)

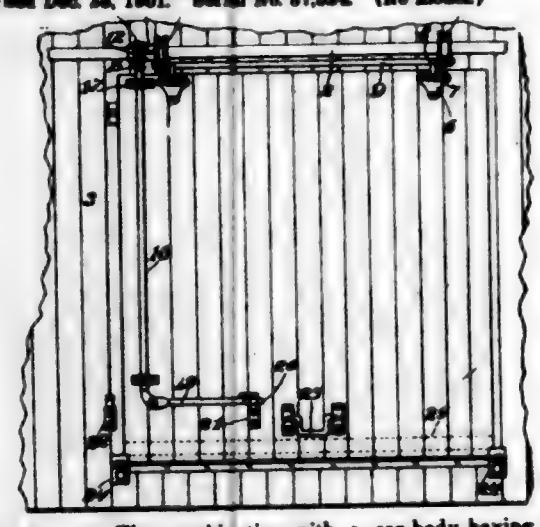

Claim.—1. The combination with a car-body having a doorway and a door, of a track secured to said body above the door; hangers shiftably mounted on said track; a shaft having a crank connection with one of the hangers and a pivotal bearing adjacent to its lower end; means carried by the door and against which the shaft has a cam-bearing in the motion imparted by the crank operating to shift the door toward and from its jamb; and integral means operating to cause the movement given to the door to be applied at both ends to shift the door outward and upward.

2. The combination with a car-body having a doorway and a door, of a track secured to said body above the door; hanger mechanism shiftably mounted on the track; a shaft having crank connection with said hanger mechanism and a pivotal bearing adjacent to its lower end; means carried by the door and against which the shaft has a cam-bearing in the motion imparted by the crank operating to shift the door toward and away from its jamb; and integral means operating to cause the movement given to the door to be applied at both ends to shift the door outward and upward.

3. The combination with a car-body having a doorway and a door, of a track secured to said body above the door; hanger mechanism shiftably mounted on the track; a jointed shaft having a crank connection with said hanger mechanism and a pivotal bearing adjacent to its lower end; means carried by the door and against which the shaft has a cam-bearing in the motion imparted by the crank operating to shift the door toward and from its jamb; and integral means operating to cause the movement given the door to apply at both ends to shift the door outward and upward.

4. The combination with a car-body having a doorway and a door, of a track secured to said body above the door; hanger mechanism shiftably mounted on the track; a shaft having a crank connected with a part movable on said track with the hanger mechanism and a pivotal bearing adjacent to its lower end; means carried by the door and against which

the shaft has a cam-bearing in the motion imparted by the crank operating to shift the door toward and from its jamb; and integral means operating to cause the movement given the door to be applied at both ends to shift the door outward and upward.

5. The combination with a car-body having a doorway, of a door therefor; two independent mechanisms located and operative in directions transverse to each other and free of linkage connection, one a mechanism connecting the door with the car-body adjacent to each end of such door for simultaneous movement of both ends outward and upward, and the other an actuating mechanism having a cam action relative to the door and effective to move the door outwardly, the organization being such that on the movement of the door outwardly by the actuating means it is moved upward.

6. The combination with a car-body having a doorway, of a door therefor; a pair of rock-shaft mechanisms located and operative in directions transverse to each other and free of linkage connection, one supporting the door adjacent to each end thereof for simultaneous movement of both ends outwardly and upwardly and the other having a cam action relative to the door and effective to move the door outwardly, the organization being such that on the movement of the door outwardly by the actuating means, it is simultaneously moved upward.

7. The combination with a car-body having a doorway, of a door set therein; a track carried by said body; hangers mounted on said track; two independent mechanisms located and operative in directions transverse to each other and free of linkage connection, one connecting the door adjacent to each end thereof with said hangers for simultaneous movement of both ends outwardly and upwardly and the other supported on one of said hangers and having a cam action relative to the door operative by power applied in a direction transverse to the plane of the door, thereby to shift the door outwardly from its seat; the organization being such that on the movement of the door outwardly it is simultaneously moved upward, and without the exertion of power in the direction of the plane of the door.

8. The combination with a car-body having a doorway of a door therefor; a track supported on said body; means shiftable on said track; means connecting the door with said shiftable means for movement outwardly and upward; a rock-shaft actuator secured to the door and having during its rocking movement an appreciable bodily movement relatively to the door, thereby to move such door outwardly, the organization being such that during its outward movement the door is moved upward.

9. The combination with a car-body having a doorway and a door fitting flush therein, of a track secured to said body above the door; hangers shiftably mounted on said track; a jointed shaft having a crank connection with one of the hangers, and a pivotal bearing adjacent to its lower end; a slotted keeper secured to the door and through which said shaft extends and against which the shaft has a cam-bearing in the motion imparted by the crank operating to shift the door toward and from its jamb; and an integral shaft operative to cause the movement given the door to be applied at both ends to shift the door outwardly and upward.

709,271. **MACHINE FOR FEEDING, PRINTING, AND CUTTING STRIPS OF MATERIAL.** SAMUEL KOPS, New York, N. Y., assignor to Kops Brothers, New York, N. Y. Filed Jan. 20, 1902. Serial No. 91,035. (No model.)

Claim.—1. In a machine for feeding, printing and cutting strips of material, the combination with a power-shaft, of printing devices and means for vertically moving the same and for actuating the same by said shaft, cutting devices and means for actuating the same by said shaft, devices for feeding along the strip of material and interchangeable gears and a suitable shaft therefor operated by said power-shaft for actuating the said feeding devices to a predetermined extent so as to regulate the cut lengths of the printed strips, substantially as set forth.

2. In a machine for feeding, printing and cutting strips of material, the combination with a power-shaft, of printing devices, means for actuating the same and connections therefrom to the power-shaft for imparting a vertical upward-and-downward movement to the printing devices, cutting devices and connections therefrom to said power-shaft whereby said cutting devices and said printing devices are positively actuated and a fixed relation maintained between the parts, devices for receiving and for feeding along a strip of material to be cut and printed, and gears interchangeable with one another actuated by said power-shaft for putting the feeding mechanism in motion whereby predetermined lengths of material may be fed and printed so as to provide different lengths of printed strips, substantially as set forth.

3. In a machine for feeding, printing and cutting strips, the combination with a power-shaft, means actuated thereby for severing the strips and other means actuated thereby for feeding said strips, of a platform carrying the type-form, and means connected therewith and to the power-shaft for imparting thereto a vertical downward-and-upward movement, an inking-roller, endless chains, connections from the ends of the inking-roller to the chains, and means substantially as shown and described and actuated by a fixed device through the medium of the vertical movement of the said platform for imparting to said chains and inking-roller a forward-and-backward movement, substantially as set forth.

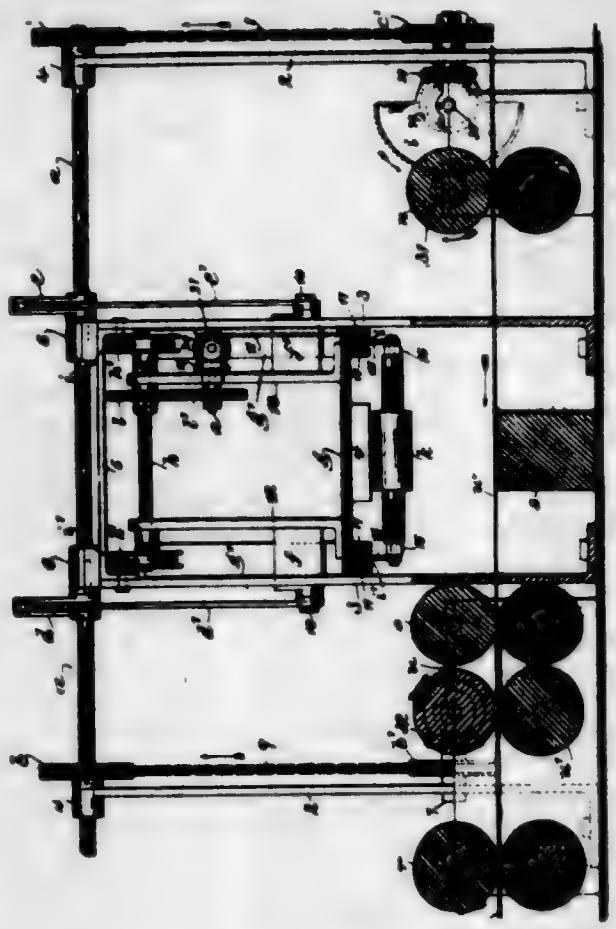

4. In a machine for feeding, printing and cutting strips, the combination with a power-shaft, means actuated thereby for severing the strips and other means actuated thereby for feeding said strips, of a platform carrying the type-form, and means connected therewith and to the power-shaft for imparting thereto a vertical downward-and-upward movement, an inking-roller, endless chains, connections from the ends of the inking-roller to the chains, a shaft and sprocket-wheels carried by said platform, a gear on said shaft, a second gear meshing therewith, a rack fixed on the frame of the machine, a pinion engaging the same and bevel-wheels actuated by the pinion for imparting movement to the gears, shaft, sprockets and chain with the up-and-down movement of the platform, substantially as set forth.

5. In a machine for feeding, printing and cutting strips of material into lengths, the combination with a power-shaft, printing devices and connections therefrom to the shaft for vertically moving said printing devices and printing the strip, and means actuated by said power-shaft for cutting the strip into lengths, of a series of feeding-rollers in pairs between which the strip is passed, means for connecting said series of rollers to cause them to move together, a shaft and connections therefrom to said power-shaft, a segment-gear mounted on said shaft and interchangeable with similar gears, and a pinion actuated thereby for effecting the movement of the feeding-rollers and the devices connecting the same, substantially as set forth.

6. In a machine for feeding, printing and cutting strips into lengths, the combination with a power-shaft, vertically-movable printing devices actuated by said power-shaft for printing upon the strip, cutting devices also directly actuated by the power-shaft for severing the material into lengths and feeding devices for progressively moving the strip along, of a segment-gear interchangeable with similar gears and so timed with the cutting and printing mechanism that the strip is fed and cut while the gear is operated and printed at a point intermediate of the rest period of the feeding mechanism during the revolution of said segment-gear, substantially as set forth.

7. In a machine for printing, feeding and cutting strips of material, the combination with a power-shaft, of printing devices, means for actuating the same with a vertical movement, cutting devices, means for actuating said cutting devices by said shaft, devices for feeding along a strip of material, interchangeable segmental gear-wheels and a suitable shaft for said gear-wheels operated by said power-shaft for actuating the said feeding devices to a predetermined extent so as to regulate the cut lengths of the printed strips, substantially as set forth.

8. In a machine for feeding, printing and cutting strips of material, the combination of feeding-rolls for moving the strip along, a cutter for cutting off the strip at predetermined lengths, a type form or block for printing upon the strip of material, and means for raising and lowering and actuating said parts so that after a strip is cut off the next strip is moved forward and stopped the necessary distance for the type form or block to be brought down to print upon the exact center of the length of the strip, and then after the block is raised, the strip is moved forward exactly one-half of the length of the predetermined strip and is then cut off, substantially as specified.

9. In a machine for feeding, printing and cutting strips of material, the combination with a power-shaft, printing devices, means for actuating the same by the power-shaft, feeding devices and means for actuating said feeding devices from the power-shaft, of a rotary cutter, suitable shaft and bearings therefor, a cylindrical cutter-block, a shaft, a sprocket and bevel-gear on said shaft, a chain connecting said sprocket with the power-shaft, and a bevel-gear on the rotary-cutter shaft and meshing with the aforesaid gear whereby the rotary cutter is actuated by the power-shaft, substantially as specified.

10. In a printing-machine, the combination with a frame and a power-shaft, of a platform adapted to hold the type-forms, standards secured to the said platform, blocks connected to the said standards and received in vertical slots in said frame, connections between said blocks and power-shaft whereby a vertical up-and-down movement may be imparted to said standards and platform, inking-rollers and means for actuating the same by the up-and-down movement of the platform and standards, substantially as set forth.

11. In a printing-machine, the combination with a frame and a power-shaft, of a platform adapted to hold the type-form, devices secured to and extending under both sides of the said platform and having internal grooved ways, standards secured to the said platform, blocks connected to the said standards and received in vertical slots in said frame, connections between said blocks and power-shaft whereby a vertical up-and-down movement may be imparted to said standards and platform, a shaft secured in the upper end of said standards, rollers on the said shaft, other rollers secured to the said platform, endless chains passing over said rollers and within said internal grooved ways, inking-rollers secured to said chains, and means for actuating said inking-rollers by the up-and-down movement of the platform and standards to operate the said inking-rollers, substantially as specified.

12. In a printing-machine, the combination with a frame and a power-shaft, of a platform adapted to hold the type-form, devices secured to and extending under both sides of the said platform and having internal grooved ways, standards secured to the said platform, blocks connected to the said standards and received in vertical slots in said frame, connections between said blocks and power-shaft whereby a vertical up-and-down movement may be imparted to said standards and platform, a shaft secured in the upper end of said standards, rollers on the said shaft, other rollers secured to the said platform, endless chains passing over said rollers and within said internal grooved ways, inking-rollers secured to said chains, a gear-wheel on said shaft, a short shaft secured in one of said standards, a gear-wheel on said short shaft and meshing with the aforesaid gear-wheel, a rack secured to said frame, a pinion meshing with said rack, a shaft for said pinion, and connections between the pinion, shaft and said short shaft, whereby with the up-and-down movement of the platform and standards the said chain is actuated to impart a back-and-forward movement to the said inking-rollers, substantially as set forth.

709,272. STAMP-AFFIXER. HENRY D. LOSE and JAMES JACKSON, Philadelphia, Pa. Filed June 27, 1902. Serial No. 113,406. (No model.)

Claim.—1. In a stamp-affixer, a head having an elastic pad thereon and a box adapted to receive said head and pad and being provided with inturned lips on its lower end, said pad being in frictional contact with said box.

2. In a stamp-affixer, a head having an elastic pad thereon, and a box adapted to receive said head and pad, said pad being in frictional contact with said box and adapted to retain said head and box in connection.

3. In a stamp-affixer, a hollow head having inturned tongues and a pad of elastic material having grooves in its sides adapted to receive said tongues forming interlocking joints connecting said pad with said head.

4. In a stamp-affixer, a hollow head, a handle at the upper end thereof, an elastic pad connected with the lower end thereof, said head and pad being connected by an interlocking joint and a box having inturned lips on its lower end.

5. In a stamp-affixer, a hollow head, a handle at the upper end thereof, an elastic pad connected with the lower end thereof, said head and pad being connected by an interlocking joint and a box having inturned lips on certain sides of its lower end.

709,273. VALVE FOR PUMPS, &c. THOMAS A. MACDONALD, Boston, Mass. Filed Oct. 20, 1898. Serial No. 694,148. (No model.)

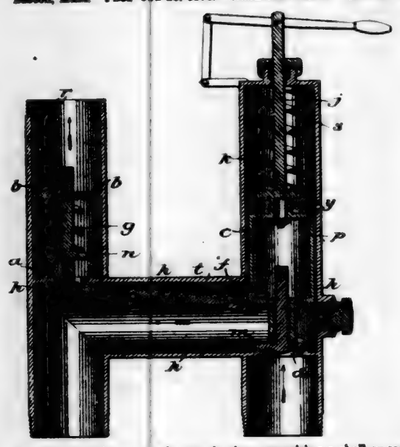

Claim.—1. A pump-valve mechanism comprising a shell or casing having an inlet or suction pipe, a chamber having a side aperture, a hollow piston or slide valve movable in said chamber, a suction-pipe valve adapted to be held to its seat by said piston, and means for moving the piston to open the valve and close the side aperture in the casing.

2. A pump-valve mechanism comprising a shell or casing having an inlet or suction pipe, a chamber opposite said inlet and having a side aperture, a hollow piston movable in said chamber and having an air inlet and outlet, a check-valve being provided for the inlet, a suction-pipe valve connected to the said piston and adapted to be held to its seat by said piston, and means for moving the piston to release the valve and to simultaneously close the side aperture in the casing and the air-outlet from said piston.

3. A valve mechanism for pumps comprising a shell or casing having suction and discharge connections *w r*, and a pump connection *o* and a chamber *k* opposite the suction connection, a piston-valve *p* in said chamber, a valve *m* guided by said piston, means for moving said piston in the chamber *k*, and means controlled by said piston for admitting air to the valve-shell below said piston.

4. A valve mechanism for pumps comprising a shell or casing having suction and discharge pipes, valves *w* and *n* for said pipes respectively, and means including a lever for causing the simultaneous alternate movements of said valves, a movable piston to which the valve *w* is connected, said piston bearing on one end of the lever, and a spring bearing on the valve *n*.

709,274. WITHDRAWN.

709,275. BORING-BAR. WILLIAM A. HEYLOR, Allegheny, and JOHN GOULDSBARRY, McKees Rocks, Pa. Filed Oct. 19, 1901. Serial No. 79,234. (No model.)

Claim.—1. A boring-bar provided with lateral recesses, cutters mounted therein, a central tapered expanding-block provided with longitudinal ways, wedges mounted in the ways and adapted to bear against the cutters, means for adjusting the block and means for securing the cutters.

2. A boring-bar provided with lateral recesses, cutters mounted therein, a central rigid bar provided with adjusting means on its outer end, an expanding-block mounted on the bar provided with tapered ways, and wedges mounted in the ways adapted to bear against the cutters.

3. A boring-bar provided with lateral recesses, cutters mounted therein, a central rigid bar provided with adjusting means on its outer end, an expanding-block mounted on the bar provided with tapered ways, wedges therein, and means for preventing longitudinal movement of the wedges.

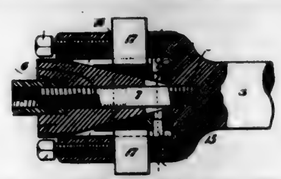

4. A boring-bar provided with lateral recesses, cutters mounted therein, a central rigid bar provided with adjusting means on its outer end, an expanding-block mounted on the bar provided with tapered ways, wedges therein, means for securing the cutters, and means for preventing longitudinal movement of the wedges.

5. In a boring-bar, the combination of a bar provided with a cylindrical head having a cylindrical longitudinal cavity, lateral recesses extending through the sides of the head, cutters mounted therein, set-screws mounted in the head adapted to bear on the cutters, a smooth central longitudinal stem rigidly secured in the head and threaded at its outer end, a cylindrical expanding-block slidingly mounted on the stem, having a bearing for its full length in the longitudinal cavity and provided with longitudinal tapered ways, an adjusting-nut on the outer threaded end of the stem rotatably inserted in the end of the block provided with an annular groove, and securing-pins mounted in the block and extending into said groove, substantially as set forth.

6. In a boring-bar, the combination of a bar provided with a cylindrical head having a cylindrical longitudinal cavity, lateral recesses extending through the sides of the head, pairs of cutters mounted in the recesses, one of each pairs being in advance of the other, set-screws mounted in the head adapted to bear on the cutters, a smooth central longitudinal stem rigidly secured in the head and threaded at its outer end, a cylindrical expanding-block slidingly mounted on the stem, having a bearing for its full length in the longitudinal cavity and provided with longitudinal tapered ways, an adjusting-nut on the outer threaded end of the stem, rotatably inserted in the end of the block, provided with an annular groove, and securing-pins mounted in the block and extending into said groove, substantially as set forth.

709,276. BOILER-TUBE EXPANDER. FREDERICK PALFREY, Macon, Mo. Filed Jan. 2, 1902. Serial No. 88,097. (No model.)

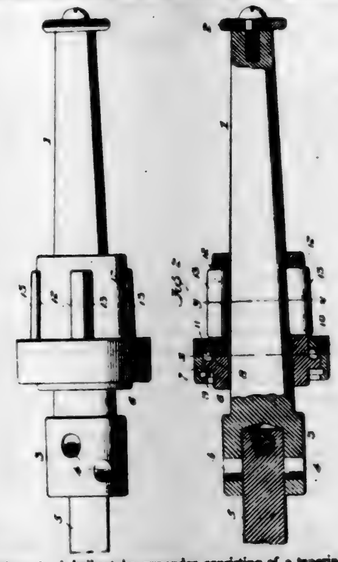

Claim.—1. A boiler-tube expander consisting of a tapering mandrel equipped and mounted with the parts as hereinbefore described, the body with its ball-bearing shoulder mounted on the mandrel, the five expanding-rollers in the body, the sleeve with its ball-bearing collar mounted on the body; the antifriction ball-bearings placed between sleeve-collar and body-shoulder; and the spring-ring inserted in the groove of the sleeve when placed in position on the body.

2. In a tube-expander, the combination of a mandrel, a sleeve fitting on said mandrel and carrying a series of expanding-rollers, a shoulder formed on said sleeve and having a ball channel or way, a collar fitting on said shoulder and having an overlapping portion formed with a ball channel or way, a series of balls in said ball track or channel, and means for holding the collar on the shouldered portion of the sleeve.

3. A tube-expander, consisting of a mandrel having a cap and screw at one end and having a hollow head at the other end, a sleeve on said mandrel carrying a series of expanding-rollers, a shoulder on said sleeve having a ball-channel, a collar fitting said shoulder having a ball-channel coincident with the channel of the shoulder and also having a groove, balls fitting in the way or channel of the collar and shoulder, and a spring in the groove of the collar to secure the collar.

709,277. TREATMENT OF NICKEL AND COPPER-NICKEL ORES. CAMILLO PERSON, Rome, Italy. Filed June 25, 1902. Serial No. 113,076. (No specimens.)

Claim.—1. A process of lixiviation of poor copper-nickel ores, which consists in the treatment of the said ores in crude or natural condition with sulfid of ammonium.

2. A process of lixiviation of copper-nickel ores which consists in the treatment of the said ores with sulfid of ammonium containing free ammonia.

3. A process of lixiviation of copper-nickel ores which consists in the treatment of the said ores with sulfids of the metals of the alkalies.

4. A process of lixiviation of copper-nickel ores which consists in the treatment of the said ores with sulfids of the metals of the alkalies containing free ammonia.

5. A process of extracting nickel from its ores which consists in treating nickel ore with a solution of the sulfids of the metals of the alkalies, stirring the same, collecting the liquid, washing the residue with cold water, and reducing the metallic nickel by means of hydrogen sulfid.

709,278. BURNER ATTACHMENT. THOMAS I. ROY and THOMAS MARSHALL, Jr., Chicago, Ill. Filed July 24, 1901. Serial No. 69,536. (No model.)

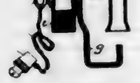

Claim.—1. The combination with a tube provided with a perforation in its wall to afford communication with its bore, of a ring surrounding the portion of the tube where the said perforation is located, and a burner-tube secured to the ring, the bore of the said tube continuing through the ring and adapted to be brought into and out of communication with the said perforation by the rotation of the said ring, substantially as described.

2. The combination with a tube provided with a perforation in its wall to afford communication with its bore, of a ring surrounding the portion of the tube where the said perforation is located, a burner-tube secured to the ring, the bore of the said tube continuing through the ring and adapted to be brought into and out of communication with the said perforation by the rotation of the said ring, and an added section of burner-tube located above the main tubular section to secure the thorough mixture of air and gas, substantially as described.

3. The combination with a tube provided with a perforation in its wall to afford communication with its bore, of a ring surrounding the portion of the tube where the said perforation is located, a burner-tube secured to the ring, the bore of the said tube continuing through the ring and adapted to be brought into and out of communication with the said perforation by the rotation of the said ring, and a support for the tool to be heated extending above the burner-tube, substantially as described.

4. The combination with a tube provided with a perforation in its wall to afford communication with its bore, of a ring surrounding the portion of the tube where the said perforation is located, a burner-tube secured to the ring, the bore of the said tube continuing through the ring and adapted to be brought into and out of communication with the said perforation by the rotation of the said ring, an added section of burner-

tube located above the main tubular section to secure the thorough mixture of air and gas, and a support for the tool to be heated extending above the supplemental-burner tube, substantially as described.

5. The combination with a tube provided with a perforation in its wall to afford communication with its bore, of a ring surrounding the portion of the tube where the said perforation is located, a burner-tube secured to the ring, the bore of the said tube continuing through the ring and adapted to be brought into and out of communication with the said perforation by the rotation of the said ring, and a support for the tool to be heated extending above the burner-tube, the said support being secured to the aforesaid ring, substantially as described.

6. The combination with a tube provided with a perforation in its wall to afford communication with its bore, of a ring surrounding the portion of the tube where the said perforation is located, a burner-tube secured to the ring, the bore of the said tube continuing through the ring and adapted to be brought into and out of communication with the said perforation by the rotation of the said ring, an added section of burner-tube located above the main-burner tube to secure the thorough mixture of air and gas, and a support for the tool to be heated extending above the burner-tube, the said support being secured to the aforesaid ring, substantially as described.

7. The combination with a main-burner tube provided with a removable burner-tip, of a supplemental-burner tube, a ring to which the latter tube is secured and with the bore of which the latter tube has communication, the main-burner tube being provided with a perforation adapted to be brought into and out of communication with the supplemental-burner tube upon the rotation of the said ring, and means for stopping the outlet of the main-burner tube when the supplemental-burner tube is to be brought into service, substantially as described.

8. The combination with a main-burner tube provided with a removable burner-tip, of a supplemental-burner tube, a ring to which the latter tube is secured and with the bore of which the latter tube has communication, the main-burner tube being provided with a perforation adapted to be brought into and out of communication with the supplemental-burner tube upon the rotation of the said ring, means for stopping the outlet of the main-burner tube when the supplemental-burner tube is to be brought into service, and a support for the tool to be heated extending above the supplemental-burner tube, substantially as described.

9. The combination with a tube provided with a perforation in its wall to afford communication with its bore, of a ring surrounding the portion of the tube where the said perforation is located, and a burner-tube secured to the ring, the bore of the latter tube continuing through the ring and adapted to be brought into and out of communication with the said perforation by the rotation of the said ring, the said ring being composed of soft metal to thoroughly seal the perforation, substantially as described.

10. The combination with a main-burner tube, of a supplemental-burner tube in communication with the bore of the main-burner tube through the side thereof, and a slip-support for the supplemental-burner tube, serving to support the supplemental tube away from the main-burner tube, whereby both burners may be lighted simultaneously, substantially as described.

11. The combination with a main-burner tube, of a supplemental-burner tube in communication with the bore of the main-burner tube through the side thereof, a slip-support for the supplemental-burner tube serving to support the supplemental tube away from the main-burner tube, whereby both burners may be lighted simultaneously, and an added section of the supplemental-burner tube separated from the main section of the supplemental tube to secure an intermixture of air and gas, substantially as described.

12. The combination with a main burner tube, of a supplemental-burner tube adapted for communication therewith, and a support including a slip-ring by which the supplemental-burner tube is supported upon the main-burner tube and away therefrom, whereby both burners may be lighted simultaneously, substantially as described.

709,279. WATER-MOTOR. EMELIUS SCHMIDT, Milwaukee, Wis. Filed Dec. 24, 1901. Serial No. 87,072. (No model.)

Claim.—1. In a water-motor, the combination of a motor-case; a shaft supported from the walls of said case; a motor-wheel having two separate sets of buckets, comprising a central plate or disk; two flanged disks located upon the sides of said central disk; two additional disks located upon the sides of said flanged disks in such a manner that a set of buckets is formed upon each side of said central disk between it and said side disks; means for clamping all of said disks together upon each set of buckets of said wheel, as set forth.

2. In a water-motor, the combination of a motor-case; a motor-wheel having two separate sets of buckets supported on a shaft from the opposing walls of said case; two water-discharge nozzles supported from said motor-case, each adapted to project a separate jet of water upon the respective set of buckets of the wheel; a single elastic packing inclosing the protruding ends of said discharge-nozzles and adapted to impinge against the inner walls of a faucet; means for clamping said case to a faucet; and means for forcing said packing up into the mouth of the faucet, to which it is clamped, as set forth.

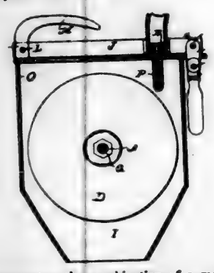

3. In a water-motor, the combination of a motor-case; a motor-wheel having two separate sets of buckets supported on a shaft from the opposing walls of said case; two water-discharge nozzles supported from said motor-case, each adapted to project a separate jet of water upon the respective set of buckets of the wheel; a single elastic packing inclosing the protruding ends of said discharge-nozzles, and adapted to impinge against the inner walls of a faucet; two parallel clamping-plates, pivotally connected at one end to the rear side of the motor-case, and adapted to engage at their front ends around the lower end of the faucet; a clamping-bolt extending through apertures formed in the front ends of said clamping-plates; a nut operating on said clamping-bolt, and adapted, as it is turned down thereon, to draw said clamping-plates together around said faucet; a cam or eccentric lever suspended by flexible connections from said clamping-plates beneath a projection of said motor-case, and adapted, as it is turned in one direction, to impinge against said case projection, whereby said case is drawn upwardly and said packing is forced into the mouth of said faucet, all substantially as set forth.

709,280. PNEUMATIC TIRE. IRVIN THERAFF, Springfield, Ohio. Filed Aug. 11, 1902. Serial No. 119,175. (No model.)

Claim.—1. A pneumatic tire comprising a tubular body having a thickened tread, lateral inwardly-arched diaphragms forming lateral protective chambers, and a central chamber for compressed air, fillings of sponge-rubber located in said lateral protective chambers, and a metallic protective strip located in the tread and of a width greater than the exposed portion of the central air-chamber, substantially as described.

2. A pneumatic tire comprising a tubular body having a thickened tread, lateral inwardly-arched diaphragms forming lateral protective chambers of elongated shape in cross-section, their longer axes converging outwardly, and a central chamber for compressed air, fillings of sponge-rubber located in said lateral protective chambers, and a metallic protective strip located in the tread and of a width greater than the exposed portion of the central air-chamber, substantially as described.

3. A pneumatic tire comprising a tubular body having a thickened tread, a tubular fabric inward of the same, and lateral bodies of sponge-rubber elongated in cross-section and with their longer axes inclined outwardly toward each other, fabric walls inclosing said sponge-rubber bodies and united with each other at the tread of the tire, a metallic protective strip located in the tread of the tire between the outer and inner layers of fabric and having a width greater than the exposed portion of the air-chamber, bodies of rubber located between the inner and outer layers of fabric inwardly from the edges of the metallic protective strip, and an inner air-tube of rubber, all united by vulcanization, substantially as described.

709,281. SWING. WILLIAM C. TUTTLE, Adrian, Mo., assignor of one-half to Reuben Bryant and Sanford A. McDaniel, Adrian, Mo. Filed Oct. 4, 1901. Serial No. 77,507. (No model.)

Claim.—1. A swing comprising a frame, a platform, swing-bars supporting the platform and arranged at the center and ends thereof, and a transverse handle-bar secured to the central swing-bars and arranged to be grasped by the occupants, substantially as and for the purpose described.

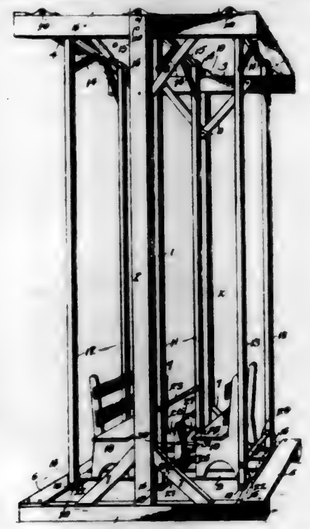

2. A swing comprising a frame, a platform, swing-bars supporting the platform and arranged at the center and ends thereof, seats located at the ends of the platform, and the foot-engaged devices mounted on the central bars near the lower ends thereof and arranged between the seats, substantially as described.

3. A swing comprising a platform, central and end swing-bars, the transverse handle-bar connecting the central swing-bars and arranged to be grasped by the occupants, and the devices mounted on the central swing-bars at points below the handle-bar and arranged to be engaged by the feet of the occupants, substantially as described.

4. A swing comprising a platform, swing-bars supporting the platform, a central standard or post mounted on the platform, an upright lever fulcrumed between its ends on the standard or post and provided at its lower arm with means to be engaged by the feet, and connections between the upper arm of the lever and the swing-bars, substantially as described.

5. A swing comprising a platform, swing-bars supporting the platform, a post or standard mounted on the platform, a forked or bifurcated lever straddling the post or standard and fulcrumed thereon and provided at opposite sides of the bifurcation with devices to be engaged by the feet of the occupants, and means for connecting the levers with the swing-bars, substantially as described.

6. A swing comprising a platform, central swing-bars provided near their lower ends with devices to be engaged by the feet of the occupants, seats located at the opposite sides of the central swing-bars, end swing-bars, and an upright lever mounted on the platform and connected with the end swing-bars and provided with devices to be engaged by the feet of the occupants, substantially as described.

709,282. MACHINE FOR BENDING ANGLE-IRON. WILHELM VOLLMER, Brooklyn, N. Y. Filed May 31, 1902. Serial No. 109,656. (No model.)

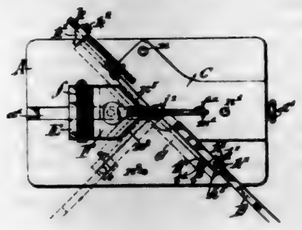

Claim.—1. In a machine for bending angle-iron, the combination, with a base or bed, of a guide-block on the same, a forming-block on said bed having two contiguous working surfaces, a bending-lever, an upsetting-abutment on said forming-block parallel with said working surfaces and being offset therefrom, and a presser-plate cooperating with said abutment to form a recess for the horizontal flange of the iron, substantially as set forth.

2. In a machine for bending angle-iron, the combination, with a base or bed, of a guide-block on the same, a forming-block on said bed having two contiguous working surfaces arranged at an angle each to the other, a bending-lever, an upsetting-plate on said forming-block, having faces disposed parallel to said working surfaces and offset some distance therefrom, and a pivoted presser-plate adapted to swing in a vertical plane centrally between said working surfaces and to cooperate with said upsetting plate to form a recess for the horizontal flange of the angle-iron, substantially as set forth.

3. In a machine for bending angle-iron, the combination, with the base or bed, of a guide-block on the same, a forming-block on the bed, a bending-lever, a presser-plate, a gage on the bending-lever for causing the upsetting of the metal simultaneously with the bending of the same, and a removable upsetting-plate on the forming-block, between the same and the presser-plate, said upsetting-plate being cut away at its forward portion in rounded form so as to receive the upset metal of the horizontal flange of the iron, substantially as set forth.

4. In a machine for bending angle-iron, the combination, with a base or bed, of a guide-block on the same, a forming-block on the bed, a bending-lever, interchangeable upsetting-plates for said forming-block, a presser-plate on said forming-block, and an adjustable retaining means on said guide-block for retaining the presser-plate in depressed position, substantially as set forth.

5. In a machine for bending angle-iron, the combination, with a base or bed, of a guide-block on the same, a forming-block having working portions at the edges of two adjacent sides and the top surface, a bending-lever, a presser-plate arranged on said forming-block, an upsetting-plate on said forming-block between the same and said presser-plate, a vertically-adjustable rest on said guide-block, and a longitudinally and laterally adjustable rest carried on said bending-lever, substantially as set forth.

6. In a machine for bending angle-iron, the combination of a bending-lever, a sliding rest carried on the same, said rest being recessed next to the lever-body for receiving the vertical flange of the angle-iron, a vertically-adjustable block secured in said recess, and means for adjusting said rest laterally on the lever for changing the width of said recess, substantially as set forth.

7. In a machine for bending angle-iron, the combination, with the base or bed, of a reversible guide-block on the same, a forming-block on the bed, a reversible top plate on the guide-block, a bending-lever, and means for securing said guide-block, top plate and lever in position on said bed at either side of the forming-block, substantially as set forth.

709,288. MACHINE FOR BENDING FLAT IRON. WILHELM VOLLMER, Brooklyn, N. Y. Filed May 31, 1902. Serial No. 109,659. (No model.)

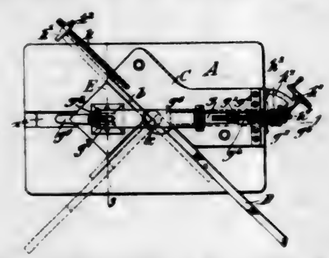

Claim.—1. In a machine for bending flat iron, the combination of a base or bed, a guide-block on the same, a laterally-movable bending-lever on the base, a forming-block adjustable longitudinally of the base and located at the forward side of the bending-lever, and an adjustable retaining member for said forming-block extending rearwardly from said forming-block and secured at its rear end at the opposite side of the bending-lever, against longitudinal movement, substantially as set forth.

2. In a machine for bending flat iron, the combination of a base or bed, a guide-block on the same, a bending-lever on the base, a forming-block adjustable longitudinally of the base, and two adjustable retaining members for said forming-block connected respectively one with the upper end and one with the lower end of the same, substantially as set forth.

3. In a machine for bending flat iron, the combination of a base or bed, a guide-block on the same, a bending-lever on the base, a forming-block adjustable longitudinally of the base, two adjustable retaining members for said forming-block connected respectively with the upper and lower ends of the same, and means for simultaneously adjusting both of said members, substantially as set forth.

4. In a machine for bending flat iron, the combination of a base or bed, a guide-block on the same, a bending-lever on the base, a forming-block adjustable longitudinally of the base, two adjustable retaining members for said forming-block connected respectively with the upper and lower ends of the same, and means for simultaneously and uniformly adjusting both members, substantially as set forth.

5. In a machine for bending flat iron, the combination of a base or bed, a guide-block on the same, a bending-lever on the base, a forming-block adjustable longitudinally of the base, and two retaining members for said forming-block connected respectively one with the upper end and one with the lower end of the same, substantially as set forth.

6. In a machine for bending flat iron, the combination of a base or bed, a guide-block on the same, a bending-lever on the base, a forming-block adjustable longitudinally of the base, two adjustable retaining members for said forming-block, and a locking device for locking said members together in position, substantially as set forth.

7. In a machine for bending flat iron, the combination of a base or bed, a guide-block on the same, a bending-lever on the base, a forming-block adjustable longitudinally of the base, a stud on the forming-block, a lower retaining member for adjusting said block, and an upper retaining member comprising an adjustable rear portion and a forward portion hinged to said rear portion and adapted to be raised or lowered into engagement with said stud, substantially as set forth.

709,284. MATRIX FOR STEREOTYPING. JOHANN E. WEISS, Vienna, Austria-Hungary. Filed Jan. 27, 1902. Serial No. 91,719. (No specimens.)

Claim.—1. The herein-described process for producing dry matrices for stereotype printing consisting of brushing a sheet of nipple plastic cardboard with a paste of vegetable glue, laying on a gauze-like fabric prepared in mucilage of gelatin and pressing thereover a sheet of unsized paper, the outer side of which unsized paper is coated with mucilage of carrageen-moss and albumen glue and pressing thereon any desired number of sheets of tissue-paper, substantially as and for the purpose set forth.

2. The herein-described process for producing dry matrices for stereotype printing, consisting of brushing a sheet of nipple, plastic cardboard with a paste of vegetable glue, glue of albumen and alcohol, laying on a gauze-like fabric prepared in mucilage of gelatin and pressing thereover a sheet of unsized paper, the outer side of which unsized paper is coated with mucilage of carrageen-moss and albumen glue and pressing thereon any desired number of sheets of tissue-paper, substantially as and for the purpose set forth.

3. The herein-described process for producing dry matrices for stereotype printing, consisting of brushing a sheet of nipple, plastic cardboard with a paste of vegetable glue, glue of albumen and alcohol, to which is added in small quantity glycerin, laying on a gauze-like fabric, prepared in mucilage of gelatin and pressing thereover a sheet of unsized paper, the outer side of which unsized paper is coated with mucilage of carrageen-moss and albumen glue, and pressing thereon any desired number of sheets of tissue-paper, substantially as and for the purpose set forth.

4. The herein-described process for producing dry matrices for stereotype printing, consisting of brushing a sheet of nipple, plastic cardboard with a paste of vegetable glue, glue of albumen and alcohol, to which is added in small quantities glycerin and calcium chlorid, laying on a gauze-like fabric prepared in mucilage of gelatin and pressing thereover a sheet of unsized paper, the outer side of which unsized paper is coated with mucilage of carrageen-moss and albumen glue, and pressing thereon any desired number of sheets of tissue-paper, substantially as and for the purpose set forth.

5. As an article of manufacture a matrix for stereotyping in the dry way, consisting of a sheet of nipple, plastic cardboard coated on one side with vegetable glue, glue of albumen and alcohol, a gauze-like fabric prepared in mucilage of gelatin lying between said pasted plastic cardboard and a sheet of hard unsized paper, on the outer side of which unsized paper any desired number of sheets of tissue-paper adhering by means of a paste of mucilage of carrageen-moss and albumen glue.

6. As an article of manufacture a matrix for stereotyping in the dry way, consisting of a sheet of nipple plastic cardboard coated on one side with vegetable glue, glue of albumen and alcohol, to which is added glycerin in small quantity, a gauze-like fabric prepared in mucilage of gelatin, lying between said pasted plastic cardboard and a sheet of hard unsized paper, on the outer side of which unsized paper any desired number of sheets of tissue-paper adhering by means of a paste of mucilage of carrageen-moss and albumen glue.

7. As an article of manufacture a matrix for stereotyping in the dry way, consisting of a sheet of nipple, plastic cardboard coated on one side with vegetable glue, glue of albumen and alcohol, to which are added in small quantities, a gauze-like fabric prepared in mucilage of gelatin and calcium chlorid lying between said pasted plastic cardboard and a sheet of hard unsized paper, on the outer side of which unsized paper any desired number of sheets of tissue-paper adhering by means of a paste of mucilage of carrageen-moss and albumen glue.

709,285. SWINGING TABLE FOR HYDRAULIC PRESSES. AARON WILKIS and SARAH B. GALLAGHER, (also known as Elizabeth G. Wilkes,) Trenton, N. J., administrators of Moses Wilkes, deceased. Filed May 24, 1902. Serial No. 108,801. (No model.)

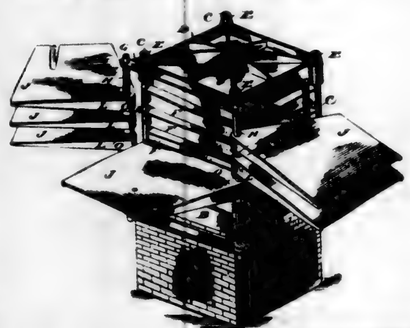

Claim.—1. In combination with a vulcanizing-press and vertically-movable platens connected therewith, one or more horizontal tables vibratively connected with the vertical frame of the press and in alinement with the space or spaces between the platens, whereby molds may be delivered from the table or tables, to the action of the platens, or removed from the platens to the table, substantially as hereinbefore set forth.

2. In combination with a press, one or more laterally-swinging and vertically-adjustable tables adapted to support and transport molds to and from the press, substantially as hereinbefore set forth.

3. In combination with a press and the pillars or posts thereof, the links or arms G, brace-bars I, vertical rods H, and adjustable swinging tables J, substantially as and for the purposes set forth.

4. In combination with a press, a series of swinging tables arranged in pairs on opposite sides, each pair adapted to swing in the same horizontal plane, substantially as and for the purposes set forth.

709,286. ROTARY AND FOLDING CHAIR. JOHN A. WILKINSON, New York, N. Y., assignor of one-half to George B. Frost, New York, N. Y. Filed Mar. 13, 1902. Serial No. 97,804. (No model.)

Claim.—1. A foldable, rotary chair, comprising a supporting-base, a rotary stem mounted thereon, a locking-plate movably mounted upon said stem and engaging the base for securing the stem to the base, and a cam connected with a movable part of the chair to release the lock when the chair is moved to open position, substantially as described.

2. A foldable, rotary chair comprising a supporting-base, a rotary stem mounted on said base, an angular head on said base, a locking-plate movably mounted upon said stem and coöperating with said angular head to lock the stem to the base, and means for moving said locking-plate out of engagement with said head, substantially as described.

3. A foldable, rotary chair, comprising a supporting-base having an angular head, a rotary stem mounted on said base, a locking-plate movably mounted upon said stem and coöperating with said angular head to secure the stem to the base, and a cam connected with a movable part of the chair and engaging said locking-plate to disengage the plate from the head when the chair is moved from open position, substantially as described.

4. A foldable, rotary chair, comprising a supporting-base having an angular head, a rotary stem mounted on said base, a spring-pressed locking-plate carried by said stem and provided with an aperture coöperating with said angular head to secure the stem to the base, and a cam-plate connected with a movable part of the chair and located adjacent to said locking-plate, whereby the latter is caused to disengage the head when the chair is moved from open position, substantially as described.

5. A foldable, rotary chair, comprising a supporting-base having an angular head, a rotary stem mounted on said base, a folding seat and back pivoted to said base, connection between the seat and back to operate them simultaneously, a locking-plate movably mounted upon said stem and coöperating with said angular head to secure the stem to the base, a cam for releasing the locking-plate, and a spring connected to the base and the stem to rotate the stem when said plate is released, substantially as described.

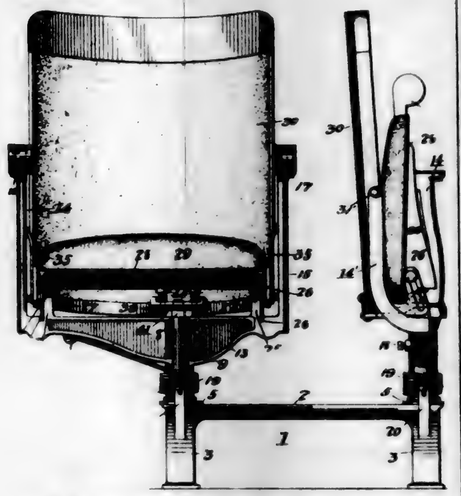

6. A foldable, rotary chair, comprising a supporting-base having an angular head, a rotary stem mounted on said base, a folding seat and back pivoted to said base, connection between the seat and back to operate them simultaneously, a locking-plate movably mounted upon said stem and coöperating with said angular head to secure the stem to the base, a cam-plate connected to the back and engaging the locking-plate to release the latter when the chair is moved from open position, and a spring connected to the base and the stem to rotate the stem when said plate is released.

7. A foldable, rotary chair, comprising a supporting-base having an angular headed post mounted thereon, a rotary stem provided with a hollow standard surrounding said post, a pin-and-slot connection between the post and standard to limit the rotation of said standard, a locking-plate movably mounted upon said stem and coöperating with said angular head to secure the stem to the base, and means for moving said locking-plate out of engagement with said head, substantially as described.

8. The combination in a pair of foldable, rotary chairs, of a stationary base, comprising a rectangular pedestal and two angular-headed posts mounted thereon, a rotary stem on each chair provided with a hollow standard engaging the respective posts, automatic means to rotate the chairs one-fourth around into a back-to-back position, a locking-plate movably mounted upon the rotary stem of each chair coöperating with the angular heads on the respective posts to lock the chairs in open position, and means to disengage the plates from the heads when the said chairs are moved from open position, substantially as described.

9. The combination with a stationary base, comprising a pedestal and an angular-headed post mounted on the top thereof, of a foldable rotary chair, having a hollow standard engaging said post, brackets projecting from opposite sides of said standard, coöperating foldable seat and back members pivotally connected with said brackets, a locking-plate mounted upon the upper faces of the brackets and provided with an angular orifice coöperating with the angular head of the supporting-post, and a sliding frame connected with the chair-back and provided with cam edges operating between the bracket-tops and the locking-plate to permit the latter to engage with the post-head when the chair is open and to break the engagement between the plate and the head when the chair is moved from open position; substantially as described.

10. The combination with a stationary base, comprising a pedestal and an angular-headed post mounted on the top thereof, of a foldable rotary chair, having a hollow standard engaging said post, brackets projecting from opposite sides of said standard, coöperating foldable seat and back members pivotally connected with said brackets, a locking-plate mounted upon the upper faces of the brackets and provided with an angular orifice coöperating with the angular head of the supporting-post, a sliding frame connected with the chair-back and provided with cam edges operating between the bracket-tops and the locking-plate to lift the latter and unlock the chair when the chair is opened, and a spring connected to the chair and to the pedestal to rotate said chair one-fourth around when the lock is released; substantially as described.

11. The combination with a stationary base, comprising a pedestal having a post-receiving socket, a post having an angular head and flanged base provided with a base engaging said socket, of a foldable, rotary chair having a hollow standard mounted upon said post, brackets projecting from opposite sides of said standard, coöperating foldable seat, back and arm members, pivotally connected with said brackets, a locking-plate provided with an angular orifice coöperating with the angular head of the supporting-post, pins supported in the tops of said brackets and guiding said locking-plate, a sliding frame provided with cam edges operating between the tops of the brackets and the locking-plates to lift the latter and unlock the chair when the chair is opened, and a spiral spring surrounding the standard and connected to the pedestal and the brackets and serving to rotate the chairs one-fourth around when the lock is released; substantially as described.

709,287. GEARING. HARRY L. WRIGHT, Chicago, Ill., assignor of one-half to George H. Cropsey, Chicago, Ill. Filed July 24, 1901. Serial No. 68,802. (No model.)

Claim.—1. In an engine, the combination of a reciprocating head the body of which comprises separate sections detachably secured together a shaft revolubly mounted parallel with the direction of motion of said head, having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in a detachable section or sections of said head, and a tongue or tongues thereon which engage said groove or grooves, substantially as described.

2. In an engine, the combination of a reciprocating head, a shaft revolubly mounted parallel with the direction of motion of said head, and having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly and adjustably mounted in bearings in a removable part of said head, and a tongue or tongues thereon which engage said spiral groove or grooves, said tongue or tongues being longer than the width of said grooves, substantially as described.

3. In an engine, the combination of a reciprocating head, a shaft revolubly mounted parallel with the direction of motion of said head, and having spiral grooves comprising right and left hand sections connected at their ends, said grooves being of different depths, stub-shafts revolubly mounted in said head and tongues thereon which engage said grooves.

the tongue of each stub-shaft being proportioned to the depth of the groove within which it is designed to travel, substantially as described.

4. In an engine, the combination of a tight casing constructed to contain a lubricant and provided on its upper side with an opening through which the interior thereof is accessible, a removable plate to close said opening, guides or ways in said casing, a head longitudinally movable in said guides, a shaft revolubly mounted in said casing parallel with said ways and having spiral grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in said head and having a tongue or tongues to engage the spiral grooves the reciprocation of the head serving to distribute to the moving parts the lubricant contained within the casing, substantially as described.

5. In an engine, the combination of a tight casing, through an opening in which the interior thereof is accessible, a removable plate which closes said opening, guides or ways in said casing, a head fitted to and longitudinally movable in said guides, a shaft revolubly mounted in said casing parallel with said ways, and having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in said head, a tongue or tongues on said stub shaft or shafts which engage said spiral groove or grooves, oil-pipes which extend over said guides or ways and over said head adapted to distribute oil upon said guides or ways and upon said head, and means to supply oil to said pipes, substantially as described.

6. In an engine, the combination of a tight casing provided with an opening through which the interior thereof is accessible, a removable plate which closes the opening in said casing, guides in said casing, a head fitted to and longitudinally movable in said guides, a shaft revolubly mounted in said casing parallel with said ways, and having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in said head, a tongue or tongues thereon which engage said spiral groove or grooves, oil-pipes which extend over said guides and over said head adapted to discharge oil thereupon and a pump within said casing operated by said spirally-grooved shaft adapted to deliver oil from the bottom of said casing to said pipes, substantially as described.

7. The combination with a reciprocating motor, and a cross-head reciprocated thereby, of guides in which said cross-head is movable, a shaft revolubly mounted parallel with said guides, and having spiral grooves comprising right and left hand sections connected at their ends, said grooves being of different depths, stub-shafts revolubly mounted in said cross-head and tongues thereon which engage and are proportioned to the depth of their respective grooves, substantially as described.

8. The combination with a reciprocating motor, and a cross-head reciprocated thereby, of guides in which said cross-head is movably supported, a shaft revolubly mounted parallel with said guides, and having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in said cross-head, a tongue or tongues thereon which engage said groove or grooves and operative connection between said grooved shaft and a part of the motor for controlling the movement of the motor, substantially as described.

9. The combination with a reciprocating motor, and a cross-head reciprocated thereby, of guides in which said cross-head is movably supported, a shaft revolubly mounted parallel with said guides, and having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in said cross-head, a tongue or tongues thereon which engage said spiral groove or grooves, a transverse shaft, a gear thereon, a gear on said spirally-grooved shaft and eccentric connection between said transverse shaft and a part of the motor for controlling the movement of the motor, substantially as described.

10. The combination with a reciprocating motor and a cross-head reciprocated thereby, of guides in which said cross-head is movably supported, a shaft revolubly mounted parallel with said cross-head guides, and having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in said cross-head, a tongue or tongues thereon which engage said groove or grooves, a transverse shaft, a gear thereon engaging a gear on the grooved shaft, and eccentric connections between said transverse shaft and a moving part of the motor (embracing a link-motion) whereby the engine may be reversed, substantially as described.

11. The combination with a motor imparting reciprocating motion, of a tight casing provided with an opening through which the interior thereof is accessible, a removable plate which closes said opening, guides in said casing, a cross-head fitted to and longitudinally movable in said guides, connection between the reciprocating part of the motor and cross-head, a shaft revolubly mounted in said casing parallel with said guides, having a spiral groove or grooves comprising right and left hand sections connected at their ends, a stub shaft or shafts revolubly mounted in said cross-head, a tongue or tongues thereon which engage said groove or grooves, connection between said spirally-grooved shaft and a moving part of the motor said connection comprising a shaft and gear thereon, a gear on said spirally-grooved shaft, a casing which incloses said gears, a pipe which leads from said gear-casing adjacent to the bottom of the casing inclosing said cross-head and adjunctive parts and perforated pipes which lead from said casing over the cross-head and cross-head guides, substantially as described.

709,288. PUMP. RODNEY H. YALE, Beatrice, Nebr. Filed July 29, 1901. Serial No. 70,126. (No model.)

Claim.—1. In a pump for moving liquids, the combination of a piston-chamber, a reciprocating piston therein adapted to move the liquid, a passage-way extending through the piston, a valve controlling said passage-way, and means for holding said valve open against the pressure of the liquid during the working stroke of the piston when said pressure is relatively light, and permitting it to close during said stroke when said pressure is heavier, substantially as set forth.

2. In a reciprocating pump, a piston-chamber and a piston working therein, a tube extending longitudinally from one side of said piston to the other, said tube having an opening at each end, a valve-seat within said tube between said openings, a valve adapted to engage said seat, and a spring adapted to hold said valve open against the pressure of the liquid during the working stroke of the piston when said pressure is relatively light, and permitting it to close during said stroke when said pressure is heavier, substantially as set forth.

3. In a pump, a cylinder and a piston working therein, said piston comprising a central tube carried by the piston-rod, having openings at the top and bottom for the passage of liquid, and having the usual piston-plates and valve mounted thereon, a valve-seat within said tube, between said openings, and a valve having a head adapted to engage said seat and a tapering stem extending through the seat and bearing against a spring tending to hold said valve normally open, substantially as set forth.

709,289. MERIDIAN ATTACHMENT FOR SOLAR TRANSITS. JAMES H. YOUNG, Pennsauken, N. J., assignor to Alfred C. Young, Philadelphia, Pa. Filed Nov. 30, 1901. Serial No. 84,217. (No model.)

Claim.—1. In a solar transit, a telescope, standards supporting the same, a solar telescope suitably pivoted at a point between said standards and moving independently of said first-mentioned telescope, a latitude-arc in the form of a quadrant connected and moving with said solar telescope, and a declination-arc suitably connected with said solar telescope and adapted to revolve in a plane outside of the plane of said standards.

2. In a solar transit, a telescope, standards supporting the same, a plate pivoted at a point between said standards, collars on said plate on opposite sides of the pivotal point of said plate, a solar telescope revolvable in said collars, a latitude-arc connected with said plate, and a declination-arc and vernier on said solar telescope between said collars, whereby the weight thereof will be distributed equally and improper operation of the parts will be obviated.

709,289.

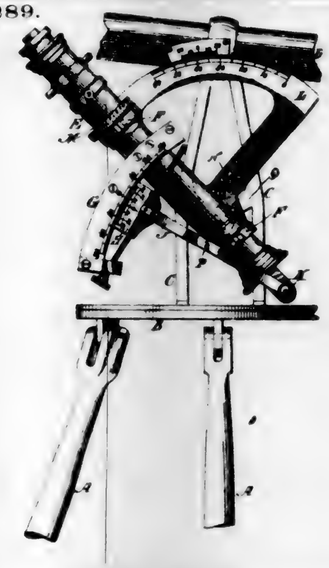

709,290. DOUGH-CUTTER. GEORGE F. ZIER, Cincinnati, Ohio. Filed May 26, 1902. Serial No. 108,886. (No model.)

Claim.—1. In a dough-cutter, the combination with the hollow body of the implement, the lower end of which is open and the edge of the side of which body around such open end constitutes the cutting edge, of an annular plunger in shape of an open ring fitted with its outer edge all around against the inside of this side, a rod on which it is carried, means connecting it thereto, means to support and guide this rod in a manner to permit the plunger to move to and from the open end of the body, a spring to hold the plunger normally elevated and means to depress the same.

2. In a dough-cutter, the combination with the hollow body of the implement, the lower end of which is open and the edge of the side of which body around such open end constitutes the cutting edge, of a plunger fitted within this open end, a rod on which it is carried, means to support and guide this rod in a manner to permit the plunger to move to and from the open end of the body, a spring to hold the plunger normally elevated, a laterally-projecting push-rod passing through the side of the body and means to operatively connect its inner end with the plunger-rod.

3. In a dough-cutter, the combination with the hollow body of the implement, the lower end of which is open and the edge of the side of which body around such open end constitutes the cutting edge, of a plunger fitted to the inside of the body and supported and guided therein in a manner to permit it to move to and from the open end of the body, a spring to hold the plunger normally elevated, a push-rod passing through the side of the body and with its outer end projecting therefrom and means to operatively connect its inner end with the plunger so that pressure on the push-rod depresses also the plunger.

4. In a dough-cutter, the combination with the hollow body of the implement, the lower end of which is open and the edge of the side of which body around such open end constitutes the cutting edge, of a plunger fitted within this open end, a rod on which it is carried, a frame consisting of upright members and cross-pieces and on which latter the plunger-rod is supported and guided in a manner to permit the plunger to move to and from the open end of the body, a spring encircling the plunger-rod and resting on the upper cross-piece of the frame, a projection on the upper end of the plunger-rod against which the spring also bears, thereby holding the plunger normally elevated, means operatively engaging the plunger-rod for the purpose of moving the same, said means also supported on the frame members and a laterally-projecting push-rod for actuating these means.

5. In a dough-cutter, the combination with the hollow body of the implement, the lower end of which is open and the edge of the side of which body around such open end constitutes the cutting edge, of a plunger fitted within this open end, a rod on which it is carried, means to support and guide this rod in a manner to permit the plunger to move to and from the open end of the body, a spring to hold the plunger normally elevated, a laterally-projecting push-rod passing through the side of the body and an angle-lever which connects the inner end of this push-rod with the plunger-rod.

6. In a dough-cutter, the combination with the hollow body of the implement, the lower end of which is open and the edge of the side of which body around such open end constitutes the cutting edge, of a plunger fitted within this open end, a rod on which it is carried, means to support and guide this rod in a manner to permit the plunger to move to and from the open end of the body, a spring to hold the plunger normally elevated, a laterally-projecting push-rod passing through the side of the body, a segmental pinion to which the inner end of this push-rod connects and teeth on the plunger-rod in mesh with the teeth of the pinion.

7. In a dough-cutter, the combination with the hollow body of the implement, the lower end of which is open and the edge of the side of which body around such open end constitutes the cutting edge, of an annular plunger fitted within this open end, a rod on which it is carried and of which it forms an integral part, the lower part of such rod being for such purpose bent and shaped accordingly, means to support and guide this combined plunger and rod in a manner to permit them to move to and from the open end of the body, a spring to hold this structure normally elevated and means to depress the same.

709,291. OLEAGINOUS COMPOUND. CURRING ADAMS, Bellows Falls, Vt. Filed June 7, 1901. Serial No. 63,591. (No specimens.)

Claim.—1. The herein-described oleaginous compound or composition of matter, consisting of approximately seven parts of a solution of cassin and sixty parts of a vegetable oil, thoroughly mixed and incorporated together, substantially as set forth.

2. The herein-described oleaginous compound or composition of matter, consisting of approximately seven parts of a solution of cassin and sixty parts of cotton-seed oil, thoroughly mixed and incorporated together, substantially as set forth.

3. The herein-described process for thickening or solidifying a vegetable oil to produce an oleaginous compound, such process consisting in gradually adding, with constant agitation, to about sixty parts of the oil to be thickened or solidified, about seven parts of a solution of cassin, substantially as set forth.

4. The herein-described process for thickening or solidifying cotton-seed oil to produce an oleaginous compound, such process consisting in gradually adding, with constant agitation, to about sixty parts of the oil to be thickened or solidified, about seven parts of a solution of cassin, substantially as set forth.

709,292. BOTTLE-CLOSURE. GEORGE J. ADAMS, Brooklyn, N. Y., assignor to Colgate & Company, New York, N. Y. Filed Feb. 27, 1902. Serial No. 96,864. (No model.)

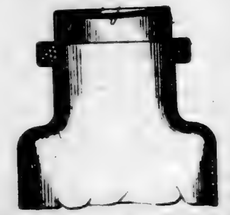

Claim.—1. A bottle-closure comprising a fixed cap having a perforated top, a cap having screw-threaded engagement with the first-named cap and also having a perforated top, and means for limiting the rotary movement of the last-named cap relatively to the first-named cap, the top portions of said caps being of spring yielding material, so as to maintain close engagement one with the other when the rotary cap is rotated, substantially as specified.

2. A bottle-closure comprising a cap having a flange engaging around

a bead on the neck portion of the bottle, the said cap having a perforated top, a cap mounted to rotate on the first-named cap and having a perforated top, the said tops being of spring yielding material, so as to maintain close engagement one with the other when the rotary cap is rotated, and means for limiting the rotary movement of the last-named cap, substantially as specified.

709,298. STATION-INDICATOR. JAMES S. ANDERSON, Brooklyn, N. Y. Filed May 2, 1901. Serial No. 58,620. (No model.)

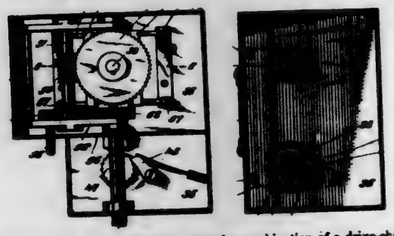

Claim.—1. In a station-indicator, the combination of a drive-shaft, a frame mounted to swing around the axis thereof, a worm carried in the frame and geared with the drive-shaft, a worm-wheel mounted stationary with respect to the frame and adapted to be engaged on either side by the worm, the frame being capable of swinging with the worm from one side of the worm-wheel to the other and indicating devices driven from the worm-wheel.

2. In a station-indicator the combination of a drive-shaft, a frame mounted to swing around the axis thereof, a worm mounted in the frame and swinging therewith, a gear connected with the worm, a gear mounted on the drive-shaft and meshed with the gear of the worm, a worm-wheel stationary with respect to the frame and engaged by the worm, the frame being capable of swinging to either side of the worm-wheel, for the purpose specified, and indicating devices driven from the worm-wheel.

3. In a station-indicator the combination of a drive-shaft, a frame arranged to swing around the axis thereof, a worm carried by the frame and driven by the drive-shaft, a worm-wheel arranged adjacent to the frame and capable of being engaged at either side by the worm, indicating devices driven from the worm-wheel and a spring-pressed arm at each side of the worm-wheel to engage and hold the frame in either position.

4. The combination with a railway-car, of a station-indicator carried thereby, a shaft arranged to drive the station-indicator, a wheel carried to swing around the axis of the shaft and geared therewith, the wheel being adapted to run on the ground, and a spring serving to hold the wheel yieldingly in a certain position with respect to the shaft.

5. The combination of a shaft, an arm arranged to swing around the axis thereof, a fork carried by the arm, a wheel mounted in the fork, gearing connecting the wheel to the shaft, and a spring serving to hold the fork and arm yieldingly in a certain position with respect to the shaft.

6. The combination with a railway-car, of an indicator mounted therein, a drive-shaft in the indicator, a shaft extending downward in proximity to the ground, the latter shaft having sliding connection with the drive-shaft of the indicator, and means connected with the latter shaft for imparting movement thereto.

7. A traction-wheel, comprising a wheel proper, a flexible tire arranged thereon, an expansive ring fitted within the tire, and means for forcing the ring outward to expand it against the tire.

8. The combination of an apron, two winding members connected together and also connected with the ends of the apron and adapted to have the apron wound thereon, means for transmitting winding movement to one of said winding members, the other of said winding members comprising an axial shaft, a drum mounted loosely thereon, a spring-arm lying wholly within the drum and fastened to the shaft intermediate the ends of the arm, and curved friction-shoes fastened to each end of the spring-arm and engaged with the inner circumference of the drum, for the purpose specified.

9. The combination of an apron, a winding member in connection with one end thereof, means for imparting movement to said member in either direction, a drum in connection with the other end of the apron, an axial shaft on which the drum is loosely mounted, means for establishing a frictional connection between the shaft and drum, and gearing connecting together the said winding member and the shaft, said gearing including a gear loose on the shaft and pawl-and-ratchet devices for rendering said gear fast to the shaft when the gear turns in one direction.

10. The combination of an apron, a winding member in connection with one end thereof, means for imparting movement to said member in either direction, a drum in connection with the other end of the apron, an axial shaft on which the drum is loosely mounted, means for establishing a frictional connection between the shaft and drum, and gearing connecting together the said winding member and the shaft, said gearing including a gear loose on the shaft and pawl-and-ratchet devices for rendering said gear fast to the shaft when the gear turns in one direction, and a second pawl and ratchet connected with the shaft to prevent idle movement of the shaft during the period that the before-mentioned gear turns loosely thereon.

11. In a station-indicator, the combination of a rotary driving member, a frame mounted to swing around the axis thereof, indicating devices, and gearing for driving the indicating devices from the said rotary driving member, said gearing comprising a gear element mounted on the swinging frame and connected with the rotary driving member and a gear element connected to the indicating devices, the frame being adapted to swing to engage the first-named gear element with either side of the second-named gear element, for the purpose specified.

12. In a station-indicator, the combination of an apron, a winding member connected with one end thereof, means for turning said member in either direction, a drum connected with the other end of the apron, a shaft on which the drum is frictionally mounted for the purpose specified, and means connecting together the shaft and the said winding member, said means driving the shaft from the winding member in one direction only.

709,294. CORN-PLANTER. JAMES BARCLAY, Moline, Ill., assignor to the Deere and Mansur Company, Moline, Ill. Filed June 7, 1900. Renewed June 25, 1902. Serial No. 113,145. (No model.)

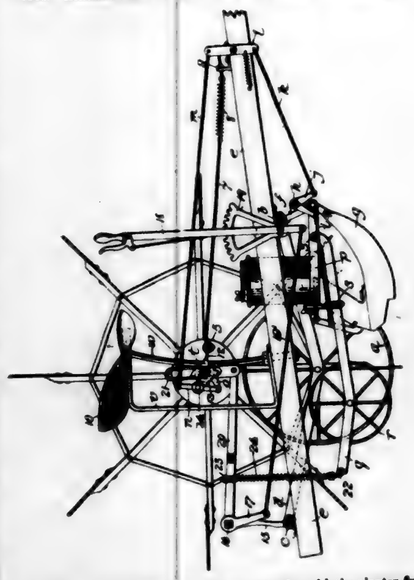

Claim.—1. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker being also pivotally connected with the planter so as to permit the latter to oscillate horizontally independently of the marker, and means for preventing the marker from swinging bodily laterally with respect to the planter.

2. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker comprising a shaft and spade-wheels, and being pivotally connected with the planter so as to permit the latter to oscillate horizontally independently of the marker, and means for imparting an endwise movement only to the marker-shaft corresponding to the sidewise deflection of the planter.

3. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker comprising a shaft and spade-wheels, and being pivotally connected with the planter so as to permit the latter to oscillate horizontally independently of the marker, and means for converting the sidewise movement of the planter due to crooked driving into an endwise movement only of the marker-shaft without swinging the latter shaft.

4. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker comprising a shaft and spade-wheels, the shaft of the marker being located over the planter-supporting wheels and in substantially the vertical plane of said wheels' axis, and the marker being pivotally connected with the planter, so as to permit the latter to oscillate horizontally independently of the marker.

5. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker comprising a shaft and spade-wheels, the shaft of the marker being located over the planter-supporting wheels and in substantially the vertical plane of the said wheels' axis, and the marker being pivotally connected with the planter at substantially the central point between the planter-wheels so as to permit the planter to oscillate horizontally independently of the marker.

6. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker being also pivotally connected with the planter so as to permit the latter to oscillate horizontally independently of the marker, and an elastic spring connection between said marker and planter.

7. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker being also pivotally connected with the planter so as to permit the latter to oscillate horizontally independently of the marker, a bar extending forwardly from the marker in the line of the planter-tongue, and a fore-and-aft spring reacting between said bar and tongue.

8. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker being also pivotally connected with the planter so as to permit the latter to oscillate horizontally independently of the marker, and an elastic draft connection between the marker and the planter.

9. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker being also pivotally connected with the planter so as to permit the latter to oscillate horizontally independently of the marker, a bar extending forwardly from the center of the marker in the line of the planter-tongue, a spring connected at its rear end to the forward end of the bar and at its forward end to the planter-tongue, and means for regulating the tension of the spring.

10. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall freely independently thereof, said marker comprising a shaft and spade-wheels, the shaft of the marker being located over the planter-supporting wheels and in substantially the vertical plane of the axis of said wheels, and the marker being pivotally connected with the planter at substantially the central point between the planter-wheels, and an elastic draft connection between said marker and planter at a point forward of and in line with the pivotal connection between the two.

11. In a corn-planter, the combination of the planter-frame, a post rising from the frame, a check-row marker comprising a shaft and spade-wheels, said shaft being pivotally connected with the post so as to oscillate thereon and be held thereby against lateral movement independently of the planter.

12. In a corn-planter, the combination of the planter-frame, a post rising centrally from the frame, a check-row marker comprising a shaft and spade-wheels, a transverse bar in front of the shaft and connected thereto by clips sleeved on the shaft, a draft-rod extending forward from the transverse bar, and a spring connecting the front end of the draft-rod with the planter-tongue in line with the rod.

13. In a corn-planter, the combination of the planter-frame, a post rising centrally from the frame, a check-row marker comprising a shaft and spade-wheels, said shaft being pivotally connected with the post so as to oscillate thereon, and be held thereby against lateral movement independently of the planter, a tappet-wheel on the marker-shaft in proximity to the post, and connections from said tappet-wheel to the seed-dropping devices of the planter, whereby the marker-shaft is permitted to rise and fall, and the planter-frame to oscillate independently thereof, without disconnecting the tappet-shaft from the seed-dropping connections.

14. In a corn-planter, the combination of the planter-frame, a post rising centrally from the frame, a check-row marker comprising a shaft and spade-wheels, and a transverse bar in front of the shaft and connected thereto by clips sleeved on the shaft, said post being embraced between the central clip in front and a friction-roller on the shaft behind.

15. In a corn-planter, the combination with the planter-frame having a tongue rigid therewith, and supporting-wheels each journaled at opposite ends of the frame in a pair of arms rigidly connected to the front transverse bar of the frame.

16. In a corn-planter, the combination of a single frame consisting of front and rear transverse bars, and a tongue rigidly connected with said frame, a pair of parallel bars connecting the front and rear sills of the frame at opposite ends, and supporting-wheels journaled in said connecting-bars.

17. In a corn-planter, the combination with the planter-frame, of a check-row marker connected to the planter so as to rise and fall independently thereof, said marker being also pivoted to the planter so as to allow the latter to oscillate horizontally independently of the marker.

709,295. ELECTRICAL SELF-PLAYING MUSICAL INSTRUMENT. HARRY B. BEACH, Newark, N. J., assignor, by mesne assignments, to G. Howlett Davis, Llewellyn Park, West Orange, N. J. Filed Sept. 3, 1901. Serial No. 74,053. (No model.)

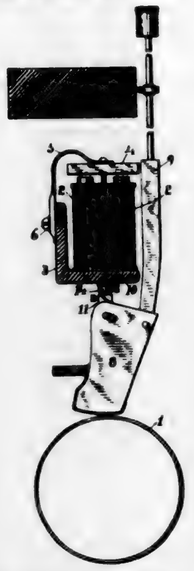

Claim.—1. In a self-playing musical instrument, the combination substantially as described, of a friction-shoe and actuating-drum and an electromagnet, of an extensible connection connecting the armature of the electromagnet and friction-shoe, and an adjustable stop device also carried by the armature and capable of adjustment independently of the adjustable connection between the armature and shoe.

2. In a self-playing attachment for musical instruments, the combination substantially as described of a friction-drum, a friction-shoe, an electromagnet, an armature connected with said shoe, a support for the armature and magnet adjustable toward and from the drum, and stop devices for the armature whereby the air-gap may be limited, said stop devices being carried by the armature and magnet support and both movable therewith when said support is adjusted to and from the drum.

3. In a self-playing attachment for musical instruments, the combination with a bank of magnets, armatures and spring-retracted friction-shoes, of adjustable stop devices for each armature of the bank, an adjustable bar or angle-piece supporting all of said parts, retracting-springs for said armatures wholly supported by said bar, and an actuating roller or drum with reference to which said bar or angle-piece is adjustable.

4. The combination in a self-playing musical instrument, of the bar 3 carrying the gang of magnets, an armature, an armature-rod 10 connected to said armature, a pivoted friction-shoe adjustably supported upon the rod, an adjustable collar 14 upon said rod and an operating roller or drum 4, as and for the purpose described.

5. In a self-playing musical instrument, the combination of an electromagnet, an actuating-drum, a pivoted shoe, an armature, a stop device adapted to limit the movement of the parts on the back stroke of the armature to limit the width of the air-gap, and an adjustable connection be-

tween the armature and shoe adjustable independently of said stop devices, as and for the purpose described.

709,296. **END-FASTENER FOR PERFORATED MUSIC-SHEETS.** HARRY B. BEACH, Newark, N. J., assignor, by mesne assignments, to G. Howlett Davis, Llewellyn Park, West Orange, N. J. Filed Oct. 16 1901. Serial No. 78,789. (No model.)

Claim.—1. The combination, with a perforated music-sheet, having an end portion provided with tapering edges, of an end-fastener, comprising, an enlarged member having tapering edges corresponding to the tapering edges of said music-sheet, said enlarged member being adapted to be arranged on one side of the said end portion of the music-sheet, a tongue extending from said enlarged member, said tongue being bent to form a loop and adapted to be arranged against the other side of the said end portion of the music-sheet, and a reinforcing-strip placed between the said enlarged member and the tongue of the end-fastener and the respective surfaces of the end portion of the said music-sheet, all of the said parts being secured in place, substantially as and for the purpose set forth.

2. The combination, with a perforated music-sheet, and a reinforcing means, such as a piece of paper or a label, attached to the said sheet, of an end-fastener, comprising, an enlarged member adapted to be secured on one side of the said end portion of the music-sheet, a squared end 9 forming a part of said enlarged member, over which a portion of the said reinforcing means is arranged and secured, and a tongue extending from said enlarged member, said tongue being bent over to form a loop and secured to the other side of the said end portion of the music-sheet, substantially as and for the purpose set forth.

3. The combination, with a perforated music-sheet, and a reinforcing means, such as a piece of paper or a label, attached to the said sheet, of an end-fastener, comprising, an enlarged member adapted to be arranged on one side of the said end portion of the music-sheet, a squared end 9 forming a part of said enlarged member, over which a portion of the said reinforcing means is arranged, and a tongue extending from said enlarged member, said tongue being bent into a loop and adapted to be arranged against the other side of the said end portion of the music-sheet, and a reinforcing-strip 16 placed between the said enlarged member and the tongue of the end-fastener and the respective surfaces of the end portion of the said music-sheet, all the said parts being secured in place, substantially as and for the purpose set forth.

4. The combination, with a perforated music-sheet, having an end portion provided with tapering edges, and a reinforcing means, such as a piece of paper or a label, attached to said end portion, of an end-fastener, comprising, an enlarged member having tapering edges corresponding to the tapering edges of said music-sheet, said enlarged member being adapted to be secured on one side of the said end portion of the music-sheet, the said tapering edges of said end-fastener terminating directly upon the tapering marginal edges of the music-sheet, whereby said edges are reinforced to prevent curling and tearing of the music-sheet, a squared end 9 forming a part of said enlarged member, over which a portion of the said reinforcing means is arranged and secured, and a tongue extending from said enlarged member, said tongue being adapted to be bent over to form a loop and secured to the other side of the said end portion of the music-sheet, substantially as and for the purpose set forth.

5. The combination, with a perforated music-sheet, having an end portion provided with tapering edges, and a reinforcing means, such as a piece of paper or a label, attached to said end portion, of an end-fastener, comprising, an enlarged member having tapering edges corresponding to the tapering edges of said music-sheet, said enlarged member being adapted to be arranged on one side of the said end portion of the music-sheet, a squared end 9 forming a part of said enlarged member, over which a portion of the said reinforcing means is arranged and secured, and a tongue extending from said enlarged member, said tongue being bent to form a loop and adapted to be arranged against the other side of the said end portion of the music-sheet, and a reinforcing-strip placed between the said enlarged member and the tongue of the end-fastener and the respective surfaces of the end portion of the said music-sheet, all of the said parts being secured in place, substantially as and for the purpose set forth.

709,297. **EVAPORATOR.** WILHELM RENDER, Düren, Germany, assignor to The Firm of Zellstoffabrik Düren Hermann Maria Schoeller & Co., Düren, Germany. Filed June 11, 1901. Serial No. 64,166. (No model.)

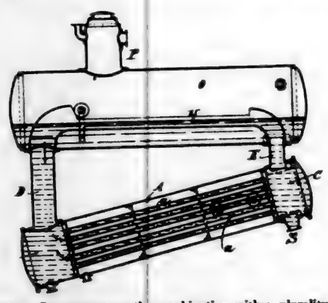

Claim.—In evaporators the combination with a plurality of tubes situated in an inclined position, a steam-jacket surrounding these tubes, chambers connected by means of the tubes and upright tubes connecting these chambers with a cylindrical reservoir, a cylindrical reservoir for gathering the vapors and a U-shaped trough-like channel open on its upper side, situated within the reservoir and connecting the upper ends of the upright tubes, substantially as described and for the purpose set forth.

709,298. **SHELL-ROLLS FOR SPINNING-MACHINES.** ARTHUR O. BOGERS, Tucapau, S. C. Filed Mar. 20, 1902. Serial No. 99,186. (No model.)

Claim.—1. In shell-rolls for spinning-machines, the combination of a hollow arbor and spindles, an oil-duct through the arbor which communicates with the chamber within the spindles, sleeves of larger interior diameter than the exterior diameter of the spindles, hollow trunnions which connect the inner sleeves to the spindles and at the same time provide oil-passages between the chamber in the spindles and the exterior of the inner sleeves, outer sleeves rotatively mounted on the inner sleeves, and antifriction-rolls between the shells, substantially as shown.

2. In top rolls for spinning-machines, the combination of non-rotative spindles, an inner shell pivoted thereto and capable of an oscillatory movement on the spindle, a pet carried by the outer end of the inner sleeve, an outer sleeve rotatively mounted on the inner sleeve and held against longitudinal movement in one direction by the nut, and antifriction-rolls between the shells, substantially as shown.

3. In shell-rolls for spinning-machines, the combination of a hollow arbor and spindles constructed to provide an oil-duct between the arbor and the spindles, an inner shell with flanges adjacent to the arbor and screw-threads near their outer ends, hollow trunnions pivotally connecting the inner shells to the spindles and providing oil-passages from the hollow spindles to the outer faces of the inner shells, nuts on the screw-threaded ends of the inner shells, antifriction-rolls between the shells and also between the flanges and nuts on the inner shells, and a shell-roll of sufficient length to cover the outer shell and the nuts, substantially as shown.

4. The combination with a non-rotative spindle, an inner shell of greater internal diameter than the external diameter of the spindle, hollow trunnions between the spindle and inner shell, an outer shell rotatively mounted on the inner oscillatory shell, a shell-roll carried by the outer rotary shell, and means removably connected to the non-rotative shell to hold the outer shell against longitudinal movement thereon, substantially as shown.

709,299. **BUCKET-BAR.** FRED T. BROSS, Quincy, Ill. Filed May 17, 1902. Serial No. 107,787. (No model.)

Claim.—1. A bail attacher comprising two body members bearing apertured ears connected at their tips, the apertures in said ears being formed by cutting out ears which are located to be turned over to secure the attacher to a receptacle, substantially as described.

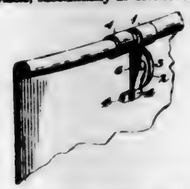

2. A handle and bail attacher, comprising two body members having lugs and apertured ears, said ears being connected at their tips, said ears being constructed to engage a slit in a receptacle and extend at right angles to said body members, and said lugs being adapted to be bent over to engage the sides of said slit, substantially as described.

709,300. **FENCE-POST.** JOSEPH BOGUTH, Portland, Oreg. Filed Apr. 17, 1901. Serial No. 56,254. (No model.)

Claim.—1. A fence-post, consisting in combination, a post or standard, having means for receiving and holding the wire strands, and having a circular shank, an anchor member having a top portion, provided with a central aperture, the edges of which have downwardly-bent clamping-prongs to engage the shank of the post, said anchor member having short pendent flanges on two of its opposite sides, and long penetrating members at the two other sides, said members having outwardly-bent anchoring-ribs, substantially as shown and described.

2. As an article of manufacture, an anchor member for fence-posts, consisting of a top portion having a central aperture, the edges of which have downwardly-bent clamping-prongs to engage the post; said anchor member having downwardly-bent flanges on two of its opposite sides and long downwardly-extending penetrating members on the two other sides, said penetrating members having outwardly-bent anchoring-ribs, as shown and described.

709,301. **MACHINE-GUN.** EDWIN M. GATTS, San Diego, Cal. Filed Nov. 1, 1901. Serial No. 80,807. (No model.)

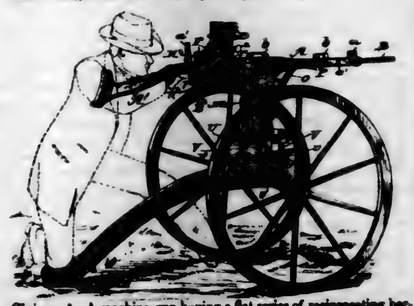

Claim.—1. A machine-gun having a flat series of reciprocating barrels combined with a supporting-frame, the barrels and frame being detachably connected by lugs and seats having vertical outlets whereby the barrels are made removable by a vertical lifting action, substantially as described.

2. A machine-gun having a flat series of barrels with transverse connecting-bars, lugs, and one or more handholds, combined with a supporting-frame having seats with upwardly-opening outlets and made removable therefrom by a vertical lifting action, substantially as described.

3. A machine-gun comprising a flat series of barrels having laterally-projecting lugs, combined with a supporting-frame having along its inner sides oppositely-facing grooves having outlets on their upper sides to permit the lugs to be lifted out.

4. A machine-gun comprising a flat series of barrels, a frame with guides adapted to receive said barrels and two check-blocks, one on each side of the barrels for locking the same against the explosive strain there being a free open space between the check-blocks above the barrels to permit the upward removal of the same.

5. A machine-gun comprising a flat series of barrels, a frame with guides adapted to receive said barrels, two check-blocks, one on each side of the barrels for holding the same against explosive strain and a spring for positively holding the check-blocks down, said spring being located behind the cartridge-feeding devices.

6. In a machine-gun having a horizontal flat series of barrels, the combination with said barrels of an independent vertical feed-throat for each barrel located in the rear of the breech end of the barrel and adapted to receive a separate strip of cartridges for each barrel, the cartridges of each strip being connected together and separately fed down its own guide whereby free individual feed for each barrel is maintained without cramping and binding from expansion by heat.

7. In a machine-gun having a horizontal flat series of barrels, the combination with the barrels and means for reciprocating them longitudinally; of an independent vertical feed-throat for each barrel having overhanging edges adapted to receive a strip bearing cartridges, said feed-throats having between them above the level of the barrels horizontally-projecting blades d^9 lying against the cartridges and arranged in vertical planes to guide the cartridges to proper alinement to enter the barrels.

8. In a machine-gun having a horizontal flat series of barrels, the combination of a series of vertical feed-throats extending transversely to the barrels at the breech end; an independent holder-strip for each series of cartridges for each barrel permanently fixed to each cartridge and having holes alternating with the cartridges, separate feed devices adapted to enter said holes and a detachable carrier with means for locking each strip of cartridges in the carrier the same distance apart as the feed-throats and simultaneously inserting them all into the feed-throats.

9. In a machine-gun having a horizontal flat series of barrels, the combination of a series of vertical feed-throats extending transversely to the barrels at the breech end; an independent holder-strip for each series of cartridges for each barrel having holes alternating with the cartridges, separate feed devices adapted to enter said holes and a detachable carrier for holding the cartridge-strips in alinement with the feed-throats said carrier consisting of a flat plate with spurs at its lower end adapted to enter the holes in the cartridge-holders and said plate also having spacing devices, and a handle, and also right-angular flanges on its opposite edges with slots forming locking-seats, and a locking-rod passing over the cartridge-holders and through said locking-seats.

10. The combination with a machine-gun having a flat series of barrels; of a transverse feed-trough having on its front side a separate channel-guide for each barrel, cartridge-holders for each guide having rigidly-fixed cartridges therein with alternating feed-holes, and a positively-acting feed-finger for each cartridge-holder.

11. In a machine-gun, the combination with the feed mechanism; of a firing mechanism comprising a rotary horizontal shaft having transverse slots c cut in the same, a series of horizontal firing-plungers H^3 arranged below said rotary shaft and having triggers h' projecting upwardly in rear of the said shaft and in line with the slots, a series of fixed tubular guides H' embracing the plungers and having slots at their rear ends, a stationary anchorage-bar H connected to the rear ends of said tubular guides, and a series of pendent springs H^3 fixedly supported at their upper ends and depending through the slots in the tubular guides and bearing against the plungers substantially as shown and described.

12. In a machine-gun, the combination with the cartridge-holders; of a reciprocating shaft having loosely-hung fingers thereon adapted to engage cartridge-holders, and having a projecting member arranged between two yielding surfaces which alternately lift the fingers and pull down the cartridge-holders as the shaft reciprocates.

13. In a machine-gun, the combination with cartridge-holders having a series of feed-openings along the same; of a reciprocating shaft H^2 having loosely-hung fingers I with downwardly-projecting members I', the guide J, the yielding bar K with springs K', and the springs L, the members I' being arranged to play between the bar K and springs L.

709,302. **PIPE-CLEANING APPARATUS.** EDWARD D. GAGE, Flint, Mich. Filed Nov. 7, 1901. Serial No. 81,376. (No model.)

Claim.—1. In a pipe-cleaning apparatus, the combination with a pipe to be cleaned, of a tank for cleaning solution arranged above the

outlet of the pipe, a downwardly-extending valve-controlled pipe leading from said tank, a valve-controlled water-inlet pipe connected with the pipe leading from the tank, the said pipes having a common communication with the pipe to be cleaned, cords or wires extending from the valve of the water-inlet pipe and the valve of the pipe leading from said tank, and a keyboard provided with turning devices to which said cords or wires are connected, substantially as specified.

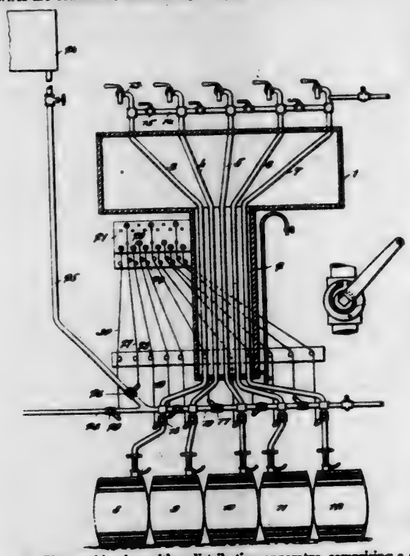

2. The combination with a distributing apparatus comprising a series of upwardly-extending pipes, a pipe connecting the lower parts of said series of pipes, a water-inlet pipe having direct connection with one end of said connecting-pipe, a tank for cleaning solution arranged above the upper or outlet ends of the distributing-pipes, and a pipe leading downward from said tank to a connection with the water-inlet pipe at or near its point of connection with the said connecting-pipe, a valve in said pipe leading from the tank, a valve in the water-inlet pipe, the said valves being located near the junction of said pipes, and valves in the connecting-pipe between the distributing-pipes, substantially as specified.

3. In a beer-distributing apparatus, a series of distributing-pipes, horizontally-extending pipe connections, between the upper portion of said pipes, valves arranged in said connecting-pipes between the distributing-pipes, horizontally-extending pipe connections between the lower portions of said distributing-pipes, valves in said connecting-pipes between the distributing-pipes, a water-inlet pipe connected direct with the lower connecting-pipes, a tank for cleaning solution supported above the outlet ends of the distributing-pipes, and a downwardly-extending valve-controlled pipe connecting said tank with the water-inlet pipe near its junction with the said connecting-pipes, substantially as shown and described.

709,303. CONSTRUCTION OF TANKS. EDWARD D. CHESTER, London, England, assignor to Edward Chester & Company, Limited, London, England. Filed Nov. 18, 1901. Serial No. 82,856. (No model.)

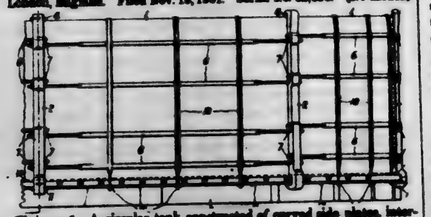

Claim.—1. A circular tank constructed of curved side plates, intermediate standards grooved to receive and make joint with the ends of the plates, a floor or bottom having the margin of its upper surface rabbeted to present both vertical and horizontal abutment-surfaces for making joint with the side plates and standards, circumferentially-extending tie-rods connecting each two adjacent standards and adapted to draw the plates and standards together, and means for drawing both the standards and the plates down upon the horizontal abutment-surface of the rabbeted margin of the tank-bottom, substantially as described.

2. A circular tank constructed of curved side plates, intermediate standards grooved to receive and make joint with the ends of the plates, circumferentially-extending tie-rods connecting each two adjacent standards, a floor or bottom extending beneath the lower edge of said plates, jaws formed on the lower ends of the standards and embracing the edge of the floor, and wedges interposed between the tank-bottom and the lower jaws of the standards for drawing the standards tightly down upon the tank-bottom.

3. A circular tank constructed of curved side plates, intermediate standards grooved to receive and make joint with the ends of the plates, circumferentially-extending tie-rods connecting each two adjacent standards, a floor or bottom extending beneath the lower edge of said plates, jaws formed on the lower ends of the standards and embracing the edge of the floor, a metal ring extending around the circuit of the tank beneath the under side of the margin of the bottom for binding together the floor-planks, and wedges interposed between the said ring and the lower jaws of the standards for drawing the standards tightly upon the tank-bottom.

4. A circular tank constructed of curved side plates, intermediate standards grooved to receive and make joint with the ends of the plates, circumferentially-extending tie-rods connecting each two adjacent standards, a floor or bottom extending beneath the lower edge of said plates, jaws formed on the lower ends of the standards and embracing the edge of the floor, wedges interposed between the tank-bottom and the lower jaws of the standards for drawing the standards tightly down upon the tank-bottom, slots in the upper ends of the standards in alinement with the grooves thereof, and wedges driven into the slots and bearing upon the upper edges of the plates for the purpose of pressing the lower edges of the plates down upon the tank-bottom.

5. A circular tank constructed of curved side plates, intermediate standards grooved to receive and make joint with the ends of the plates, circumferentially-extending tie-rods connecting each two adjacent standards, a floor or bottom extending beneath the lower edge of said plates, jaws formed on the lower ends of the standards and embracing the edge of the floor, wedges interposed between the tank-bottom and the lower jaws of the standards, and hook tie-bolts engaging with the upper edge of the side plates intermediate of the standards, the bolts being provided with tightening means, said means abutting against the under side of the tank-bottom so as to draw the lower edges of the plates down upon the tank-bottom.

6. A circular tank constructed of curved side plates, intermediate standards grooved to receive and make joint with the ends of the plates, circumferentially-extending tie-rods connecting each two adjacent standards, a floor or bottom extending beneath the lower edge of said plates, jaws formed on the lower ends of the standards and embracing the edge of the floor, wedges interposed between the tank-bottom and the lower jaws of the standards for drawing the standards tightly down upon the tank-bottom, slots in the upper ends of the standards in alinement with the grooves thereof, wedges driven into the slots and bearing upon the upper edges of the plates, and hook tie-bolts engaging with the upper edge of the side plates intermediate of the standards, the bolts being provided with tightening means, said means abutting against the under side of the tank-bottom so as to coact with the standards and their wedges in forcing the lower edges of the plates down upon the bottom of the tank.

7. A circular tank constructed of sides formed of curved plates with intermediate standards grooved to receive and make joint with the ends of the plates and provided with jaws extending beneath the tank-bottom, tie-rods connecting the standards circumferentially of the tank for drawing adjacent standards toward one another, a floor or bottom extending beneath the lower edge of the plates, wedges interposed between the standards and upper edge of the plates, wedges interposed between the jaws of the standards and the bottom of the tank for forcing the plates and bottom together, and hook-bolts intermediate of the standards, said bolts engaging with the upper edge of the plates and extending through the bottom of the tank and having nuts for drawing the plates and bottom of the tank together, substantially as specified.

8. In a circular tank constructed with curved side plates and intermediate standards grooved to receive and make joint with the ends of the plates, the combination with the plates and standards, of a circumferential series of ties in non-alined sections, the series forming with the standards to which they are connected a completely-closed circle, each tie-rod connecting two adjacent standards by the ends of the said tie-rod passing through holes in the standards and having tightening means bearing against the standards, the tightening means of consecutive rods bearing against opposite sides of the same standards so as to enable the joints between each pair of adjacent standards and the intermediate side plate to be independently tightened without disturbing the remainder.

9. A tank constructed of plates, standards intermediate of the plates, and a bottom or floor extending beneath the lower edge of the plates, the standards being adapted at one end to engage the upper edge of the tank and being provided at the other end with jaws which extend beneath the bottom or floor so as in conjunction with wedges or their equivalent to constitute cramps whereby to force the plates and standards against the bottom and so make a tight joint, substantially as specified.

709,304. POWER MECHANISM. FERDINAND CLEMENS, Jr., Delta, Iowa. Filed Sept. 12, 1901. Serial No. 75,208. (No model.)

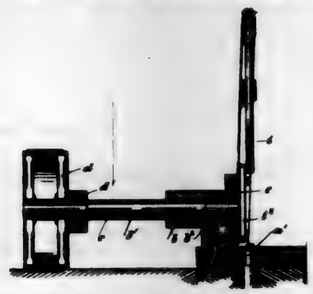

Claim.—1. The combination of a turning support, a vertically-extending frame erected thereon, a box mounted on the support, a shaft arranged to turn in the box, a traction-wheel connected to the shaft and running on the ground to rotate the shaft as it swings with the turning support, a crank attached to the inner end of the shaft, a connecting-rod attached to the crank, a slide mounted in the frame and attached to the connecting-rod, and a walking-beam with which the upper end of the slide is revolubly engaged.

2. The combination of a support arranged to turn on a vertical axis, a box hingedly mounted thereon, a shaft revolubly carried in the box, the shaft running radially of the axis of the turning support, a traction-wheel carried by the shaft and running on the ground to rotate the shaft as it swings with the turning support, a vertically-extending frame mounted rigidly on the turning-support, a crank in connection with the inner end of the shaft, a connecting-rod attached to the crank, a slide mounted in the frame and attached to the connecting-rod, and a walking-beam with which the upper end of the slide is loosely connected.

3. The combination of a support arranged to turn, a tube carried to swing with the support, a shaft revolubly mounted in the tube, means connected with the inner end of the shaft to transmit the motion thereof, a wheel carried on the outer end of the shaft and running on the ground as the shaft swings with the support, a beam mounted transversely on the tube alongside of the wheel, and weight-boxes attached to the ends of the beam and extending past the face of the wheel, for the purpose specified.

4. The combination of a support arranged to turn, a tube carried to swing with the support, a shaft revolubly mounted in the tube, means connected with the inner end of the shaft to transmit the motion thereof, a wheel carried on the outer end of the shaft and running on the ground as the shaft swings with the support, a beam mounted transversely on the tube alongside of the wheel, weight-boxes attached to the ends of the beam and extending past the face of the wheel, for the purpose specified, and a flange attached to one of the weight-boxes and adapted to have the draft apparatus engaged therewith.

5. The combination of a support arranged to turn, a tube carried to swing with the support, a shaft revolubly mounted in the tube, means connected to the inner end of the shaft to transmit the movement thereof, a wheel carried on the outer end of the shaft and running on the ground as the shaft swings with the support, and a weight sustained on the outer portion of the tube, for the purpose specified.

6. The combination of a turning support, a shaft revolubly mounted on the support, means connected to the inner end of the shaft to transmit the motion thereof, a wheel carried on the outer end of the shaft and running on the ground as the shaft swings with the support, a weight located immediately adjacent to the wheel, and means engaged with the shaft and with said turning support, whereby to sustain the weight.

709,305. SANITARY COMMODE. LYMAN B. DAMON, Dexter, Me. Filed July 13, 1901. Serial No. 66,726. (No model.)

Claim.—1. In a commode of the character described, an inclined floor; a vessel suitable to be used therewith adapted to be held in position on said floor; a spring-actuated roller fixed in an inclined position corresponding to the incline of said floor, at one side of said vessel, somewhat lower than the top of said vessel; supporting rails or shoulders affixed one on each side of said vessel and somewhat higher than its top, at right angles with said roller; a depression in each of said rails at its extremity opposite from said roller and beyond the top of said vessel, deep enough to reach below the top of said vessel; a side to each of said depressions next said vessel, at right angles with the top of said rails; a flexible blanket somewhat wider than the top of said vessel and long enough to reach from said roller across the top of said vessel, affixed at one extremity to said roller and adapted to be kept normally, wound thereon; a rod somewhat longer than the space between said supporting-rails, attached to said blanket across its other extremity, adapted to rest its ends upon said supporting-rails and slide upon them and carry the end of said blanket over the top of said vessel when same is drawn forward, and adapted to drop its ends into the depressions aforesaid lower than the top of said vessel and bring said blanket down upon the top of same, when drawn forward beyond the extremity of said supporting-rails; all in combination with means adapted to draw said rod and attached blanket off from said roller along said supporting-rails and into said depressions when desired.

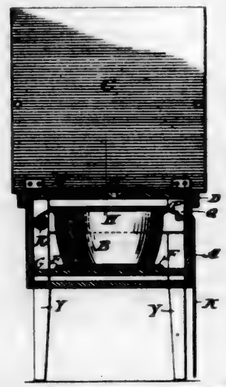

2. In a commode, a box larger and deeper than the vessel used in same; a floor in said box, arranged to incline from the front downward to the back; shoulders upon said floor to hold said vessel in place; a spring-actuated roller pivoted at one side of said box lower than the top of said vessel and inclined parallel with the incline of said floor; supports attached to the inside of said box at right angles with said roller one upon each side of same in position higher than the top of said vessel, one being higher than the other corresponding to the incline of said floor; notches or depressions in said supports near the side of box opposite said roller deeper than the level of top of said vessel; a rod or bar reaching across said box and resting its ends on said supports and adapted to slide upon same from near said roller to said depressions and drop into same when drawn forward; rings upon front of said rod, one near each end; a perforation in the side of said box opposite to each ring in front of said rod or bar; a cord crossing the side of said box outside passing through each of said perforations and thence to said bar and through said rings in front of same and connected together between said rings; in combination with a vessel suitable for said purpose, and a flexible blanket narrower than the distance between said supports attached to sides of box, connected with said roller at one end and adapted normally to be kept wound thereon, and connected at its other end with said rod or bar resting on said supports, and adapted to be unwound from said roller as said rod or bar is drawn toward the opposite side of box, carried by same over the top of said vessel and when said rod drops into the depressions in said supports to be let down upon the top of said vessel; all substantially as described.

3. In a commode, a receptacle for the vessel having an inclined floor the highest part of which is at the front of same; a spring-actuated roller pivoted upon one side of said receptacle in an inclined position corresponding to the incline of said floor; a flexible blanket adapted to be held when in normal position wound upon said roller; means for supporting the loose end of said blanket higher than the top of the vessel resting upon said inclined floor when it is unrolled and drawn forward over said vessel; means for dropping said blanket down closely upon the top of said vessel when so unwound from said roller and drawn over said vessel; means for drawing said blanket forward over said vessel from outside of said commode; means for holding said blanket in place upon the top of said

vessel when so drawn forward and dropped down, until released; a vessel suitable to be used in said commode; means for keeping said vessel in position upon said inclined floor; a lid perforated for a "seat" hinged upon the top of said box; a second lid hinged to said first-described lid and adapted to shut down closely upon it; a pin or knob attached to the outside of said commode near the bottom of each side; a strap attached at its ends to the front of said commode and adapted to pass around and support the top lid when thrown back upon its hinges, and when said lid is closed, adapted to be hooked around or under said pins or knobs so as to serve for a bail or handle for carrying said commode; all in combination, substantially as described and for the purpose alleged.

4. In a commode, a close box; an inclined floor in said box; a vessel held in position upon said inclined floor; means for holding same in position; a flexible blanket wider than said vessel, normally held in position at one side of said vessel; means for supporting and carrying said blanket over the top of said vessel when desired and dropping same upon the top of said vessel; means for holding said blanket in place tightly upon the top of said vessel; means for carrying said blanket when released back off from the top of said vessel to its normal position; a tube leading from the inside of said box and a flue connected with said inside of said box by said tube; all in combination, substantially as described.

5. In a commode, a close box; a vessel suitable for the purpose contained in said box; means for covering and closing the top of said vessel normally held away from it; a spring-actuated roller adapted to hold said means for covering said vessel in normal position; supports for holding said means higher than the top of said vessel while passing over it; all in combination with means for dropping said covering down upon the top of said vessel after it is drawn over and means for holding same from being drawn back to normal position until released, substantially as described.

6. In a commode, a vessel, a vessel-cover, supports attached to the inner side of commode-box, a rod attached to said vessel-cover adapted to be held by said supports higher than the top of said vessel and to slide upon same, in combination with depressions in said supports adapted to receive the ends of said rod and let said cover drop down upon the top of said vessel, and means for holding said rod from being drawn back over said supports after it has so dropped into said depressions; all substantially as described.

7. In a commode, a vessel, and a flexible blanket-cover for said vessel, normally held away from top of same, in combination with means for carrying said blanket over the top of said vessel and dropping it down upon it, and means for holding said blanket in such position until released, all substantially as set forth.

8. In a commode, a vessel, and a spring-actuated roller pivoted in box of said commode, in combination with a flexible blanket adapted when in normal position to be wound upon said roller, means for unwinding said blanket from said roller when desired, means for carrying same over the top of said vessel, and means for dropping said blanket down upon the top of said vessel and holding same in that position until released, all substantially as set forth.

709,806. **BICYCLE-PEDAL.** JOSEPH A. DREHER, New Orleans, La. Filed Feb. 10, 1902. Serial No. 93,622. (No model.)

Claim.—1. The improved triangular pedal-frame comprising two hubs and three quadrilateral sections formed of thin plate metal, the plane of the end bars of said sections being at a right angle to that of the side bars and engaged with the hubs, and the side bars being secured together flatwise and their edges forming footholds, as shown and described.

2. The improved triangular pedal-frame, formed of hubs provided with peripheral slits or slots and three quadrilateral frame-sections formed of sheet-steel, the end bars of the same being turned at a right angle to the side bars and inserted in the slots of the hubs, and the side bars being riveted together, substantially as shown and described.

3. The improved bicycle-pedal frame, comprising triangular hubs having radial slits at their angles and three frame-sections formed of sheet-steel, the end bars of the same being curved or cut out on the outer side, at the middle of their length, and bent at a right angle to adapt them for insertion in the slits of the hubs, and the side bars of said sections being riveted together and bent outward at their edges to form footholds, substantially as shown and described.

4. The improved pedal comprising triangular hubs having radial slits at their angles, and frame-sections formed of thin sheet metal, in quadrilateral shape, the end bars of the same being provided with projections on their inner sides and twisted or turned, at the middle of their length, at a right angle to the side bars, and their outer edges inserted in the slits of the hubs, the said side bars lying in contact and being serrated and bent outward at their edges to form footholds, substantially as shown and described.

5. The combination, with a pedal-frame, having flaring toothed edges constituting footholds, of a guard consisting of an elastic tube slitted lengthwise whereby the tube is adapted to be clamped on such toothed portions, and to clamp the same by its own elasticity and thus retain its position in use, substantially as shown and described.

709,807. **FOUNTAIN-PEN.** ROBERT B. DIOHR, Kenosha, Wis. Filed June 26, 1902. Serial No. 113,209. (No model.)

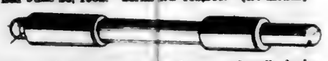

Claim.—1. In a pen of the character described, the combination with a barrel or reservoir and a pen-point, of an absorbent material arranged to retard the flow of ink from one to the other, and means for varying the density of said material, for the purpose of regulating the flow of ink, substantially as set forth.

2. In a pen of the character described, the combination with a barrel or reservoir, of a tubular pen-point communicating therewith, absorbent material located therein to retard the flow of ink, and means to vary the density of said material, substantially as set forth.

3. In a pen of the character described, the combination with a barrel or reservoir, of a tubular pen-point, absorbent material located therein, a tubular extension projecting from the barrel into the pen-point, and means for sliding the pen-point upon the tubular extension to vary the density of the absorbent material within the pen-point, substantially as set forth.

4. In a pen of the character described, the combination with a barrel or reservoir, of a tubular pen-point, absorbent material located therein, a tubular extension projecting from the barrel into the pen-point, and means for sliding the pen-point upon the tubular extension to vary the density of the absorbent material within the pen-point, said means consisting of a coupling-sleeve loosely connected to the pen-point and having a screw-threaded connection with the barrel or reservoir, substantially as set forth.

5. In a pen of the character described, the combination with an open-ended barrel or reservoir, of a capillary tube removably connected with one end of the barrel or reservoir and open at each end, substantially as set forth.

6. In a pen of the character described, the combination with an open-ended barrel or reservoir provided with a screw-threaded neck, of a capillary tube open at each end and provided with a screw-threaded head to engage the neck, substantially as set forth.

709,808. **SEWING-MACHINE ATTACHMENT FOR OVEREDGE OR BLIND STITCHING.** EDWIN DONALDSON, Brooklyn, N. Y., assignor to International Blind Stitch Company, New York, N. Y., a Corporation of New York. Filed Dec. 26, 1901. Serial No. 87,235. (No model.)

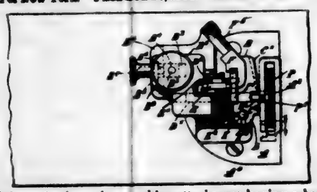

Claim.—1. A sewing-machine attachment having a base, a clamping-screw adapted to secure said base to the bed of the machine, a vertical circular perforation in said base, a cylindrical pin having an upper portion of enlarged horizontal cross-section eccentrically disposed and fitting and rotatable in said perforation and a lower portion centrally disposed and fitting and rotatable in a perforation in the work-plate of the machine, means for locking said pin in the desired position, and a pusher-bar reciprocating to move the edge of the fabrics from under the needle at each alternate descent thereof.

2. A sewing-machine attachment having a base, a clamping-screw adapted to secure said base to the bed of the machine, a vertical circular perforation in said base, a cylindrical pin having an upper portion of enlarged horizontal cross-section eccentrically disposed and fitting and rotatable in said perforation and a lower portion centrally disposed and fitting and rotatable in an elongated perforation in the work-plate of the machine, means for locking said pin in the desired position, and a pusher-bar reciprocating to move the edge of the fabrics from under the needle at each alternate descent thereof.

3. In a sewing-machine a presser-foot on one side of the needle, a pusher-bar on the opposite side of the needle reciprocating to move the edge of the fabrics under said presser-foot and from under the needle at each alternate descent thereof, under said presser-foot, a roughened feeder provided with a recess having a smooth surface opposite, and in proximity, to the end of said pusher-bar, and means for actuating said needle, pusher-bar, and feeder, substantially as and for the purposes described.

4. In a sewing-machine a presser-foot, on one side of the needle, a pusher-bar reciprocated from the opposite side of the needle to move the edge of the fabrics under said presser-foot and from under the needle at each alternate descent thereof, under said presser-foot, a roughened feeder having an unroughened recess tapered at each end, and having its greatest transverse horizontal and vertical dimensions opposite and in proximity to the end of said pusher-bar, and means for actuating said needle pusher-bar and feeder, substantially as and for the purposes described.

709,809. **LOCK.** HARRY W. ECKER, Meyersdale, Pa. Filed May 21, 1901. Serial No. 61,262. (No model.)

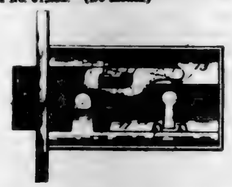

Claim.—The combination of the face-plate, a casing secured thereto, a lining-bar located in the lower part of the casing formed with vertical wards on each side of the keyhole, and an upwardly-projecting extension, a tumbler pivoted to the extension and formed with a longitudinal slot having recesses in its upper edge, and a sliding bolt having downwardly-projecting fingers, and a lug projecting from the bolt and adapted to rest in the edge recesses.

709,810. **NEEDLE-CONTROLLING MECHANISM FOR SEWING-MACHINES.** JOSHUA V. BYRN, Belfast, Ireland. Filed Feb. 7, 1902. Serial No. 93,095. (No model.)

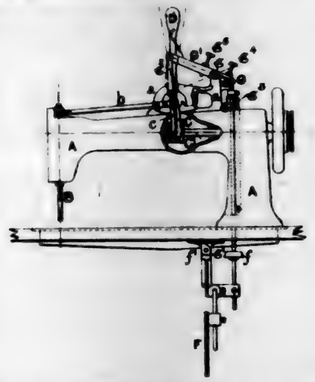

Claim.—1. In needle-controlling mechanism for sewing-machines, the combination of a traversing needle-bar, a radius-lever, a link connected with the needle-bar and radius-lever, a cam for actuating said radius-lever, a second lever having a pivot for the radius-lever and a projection, a spring-actuated notched lever, the notches of which are adapted to be engaged by said projection, and means for changing the position of said link said means including a knee-operated device.

2. In needle-controlling mechanism for sewing-machines, the combination of a traversing needle-bar, a link pivoted to said needle-bar, a radius-lever to which said link is connected, a cam for actuating said radius-lever, a hand-lever having a pivot for said radius-lever and a projection at its lower end, a lever having notches upon its upper side adapted to receive said projection said lever being pivoted at one end to the framing and a coiled spring connected with the other end of said lever.

3. In a needle-controlling mechanism for sewing-machines the combination with the traversing needle-bar B, the radius-lever C by which it is oscillated, a cam such as C' to oscillate the lever, and the link *b* connected to the needle-bar at one end and to the radius-lever at the other end, of a pivoted lever D carrying at its lower end the pivot upon which the radius-lever oscillates, a secondary lever E provided with three notches, a projection d^2 on the lever D to engage the notches in the lever E to determine the position of the center upon which the radius-lever oscillates, a lever G' by which the position of the link *b* can be varied relatively to the radius-lever C, the link g^2 connecting the lever G' with the link *b*, the lever G secured to the spindle of the lever G', the knee-presser F and levers *f f* connected to the lever G by the rod *g'* by which the levers G G' are operated, substantially as described.

4. In needle-controlling mechanism for sewing-machines the combination with the traversing needle-bar B, the radius-lever C by which it is oscillated, a cam such as C' to oscillate the lever, and the link *b* connected to the needle-bar at one end and to the radius-lever at the other end, of a pivoted lever D carrying at its lower end the pivot upon which the radius-lever oscillates, a secondary lever E provided with three notches, a projection d^2 on the lever D to engage the notches in the lever E, the link g^2 connecting the lever G' with the link *b*, the lever G secured to the spindle of the lever G', the knee-presser and levers *f f* connected to the lever G by the rod *g'* by which the levers G G' are operated and feed mechanism by which the work is carried through the machine, substantially as described.

709,811. **FEEDING MECHANISM FOR SEWING-MACHINES.** JOSHUA V. BYRN, Belfast, Ireland. Filed Feb. 7, 1902. Serial No. 93,096. (No model.)

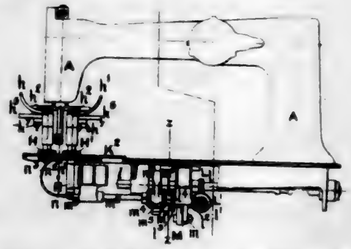

Claim.—1. In a feeding mechanism for sewing-machines, the combination with a traversing needle-bar and means for operating and controlling it, of a circular rotary presser and a spindle to support it, a rotary disk upon which the presser rests and means for rotating them comprising a driving-shaft *l* and worm L thereon, a worm-wheel L' gearing with the worm, a bevel-wheel l' attached to the worm-wheel, a bevel-wheel l^2 gearing therewith and rotating with it, a spur-wheel l^3 rotating with the bevel-wheel l^2, a loose spur-wheel l^4 driven by the spur-wheel l^3, a bevel-wheel m^2 attached to and rotating with the loose spur-wheel l^4, a bevel-wheel m^1 affixed to the shaft m^3 driven from the bevel-wheel m^2 by a carrier-wheel m^4, a shaft m^3 carrying the bevel-wheel m^1 on one end and a worm m^5 on the other end, a frame m^6 pivoted on the shaft m^3 to carry the carrier-wheel m^4 around the bevels m^1 and m^2 when the needle is embedded in the work, the cam m^7 actuating the frame m^6, the worm-wheel m^8 engaging with the worm m^5, the upright shaft N to which the worm-wheel m^8 is fixed, the pinion *n'* on the upper end of the shaft N and the pinion k^2 on the spindle *k'* of the rotary feed-disk K.

2. In a feeding mechanism for sewing-machines, the combination with a traversing needle-bar and means for operating and controlling it, of a circular rotary presser and a spindle to support it, a rotary disk upon which the presser rests and means for rotating them comprising a driving-shaft *l* and worm L thereon, a worm-wheel L' gearing with the worm, a bevel-wheel l' attached to the worm-wheel, a bevel-wheel l^2 gearing therewith and rotating with it, a spur-wheel l^3 rotating with the bevel-

wheel l^2, a loose spur-wheel l^4 driven by the spur-wheel l^2, a bevel-wheel m^3 attached to and rotating with the loose spur-wheel l^4, a bevel-wheel m^4 affixed to the shaft m^5 driven from the bevel-wheel m^3 by a carrier-wheel m^6, a shaft m^7 carrying the bevel-wheel m^4 on one end and a worm m^8 on the other end, a frame m^9 pivoted on the shaft m^7 to carry the carrier-bevel m^6 around the bevels m^3 and m^4 when the needle is embedded in the work, the cam m^{10} actuating the frame m^9, the worm-wheel n engaging with the worm m^8, the upright shaft N to which the worm-wheel m^9 is fixed, the pinion n' on the upper end of the shaft N and the pinion h^6 on the spindle h' of the rotary feed-disk K, and the train of gearing n^2, n^3 and h^5 to drive a second rotary disk K'.

709,812. POLISHING-WHEEL. FRANK G. FARNHAM, Honesdale, Pa. Filed Oct. 26, 1901. Serial No. 80,280. (Model.)

Claim.—1. A ring or section for a polishing-wheel comprising a plurality of projecting bunches, each of said bunches comprising a tube of textile material, substantially as described.

2. A ring or section for a polishing or cleaning wheel consisting of a series of independent projecting bunches, each of said bunches consisting of a folded material sewed near its center to form a tube and free edges, the tube being turned inside out to bring said free edges within the tube to serve as a filler therefor, substantially as described.

3. A ring or section for a polishing or cleaning wheel comprising a plurality of tubes of textile material secured to a suitable carrier and an independent tube secured separately to each of said main tubes, substantially as described.

4. A ring or section for a polishing-wheel comprising a plurality of tubes of textile material and reinforcing-disks of textile material, substantially as described.

5. A ring or section for a polishing-wheel comprising a plurality of tubes of textile material, said tubes being stitched together, substantially as described.

6. A ring or section for a polishing-wheel comprising a plurality of tubes of textile material and reinforcing-disks of double textile material stitched together, substantially as described.

709,813. SURVEYING INSTRUMENT. THOMAS T. H. PERKINS, Soochow, near Shanghai, China. Filed Nov. 23, 1901. Serial No. 83,389. (No model.)

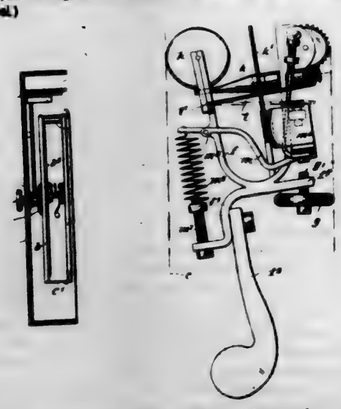

Claim.—1. In a surveying instrument, the combination of a means forming a flat supporting-surface arranged in a vertical plane, a recorder arranged thereon and adapted to maintain a vertical hanging position, and a device for propelling the recorder over the supporting-surface in a vertical direction, such device being actuated by the jolting of the instrument.

2. In a surveying instrument, the combination of a board forming a support having a plane surface arranged in a vertical plane, a recorder movable vertically over the said surface, and a device for propelling the recorder, said device comprising a poised propelling member driven by the jolting of the instrument.

3. In a surveying instrument, the combination of a member forming opposing supporting-surfaces, a recorder movable between the said surfaces and comprising a marking device, working on one of the surfaces, and a means for driving the recorder, said means being actuated by the jolting of the instrument.

4. In a surveying instrument, the combination of a means forming a supporting-surface, a recorder adapted to move thereon, gearing for driving the recorder, and a poised member connected with the gearing and oscillated by the jolting of the instrument, whereby to impart movement to the gearing.

5. In a surveying instrument, the member having parallel supporting-surfaces, the recorder arranged between the supporting-surfaces and comprising a marking device, and means for driving the recorder, said means being actuated by the jolting of the instrument.

6. In a surveying instrument, the recorder, comprising a marking device, gearing for driving it, and a poised member oscillated by the jolting of the instrument and connected with the gearing to drive it.

7. In a surveying instrument, a recorder comprising a spring frame member, wheels carried by the frame member and adapted to engage opposing supporting-surfaces, and means for driving one of the wheels, said means being actuated by the jolting of the instrument.

8. In a surveying instrument, a recorder having a spring frame member, wheels mounted on the frame member and pressed apart by the spring tendency thereof, the wheels being capable of engaging opposing supporting-surfaces and having their axes parallel with each other, means for driving one of said wheels to move the recorder, said means being actuated by the jolting of the instrument, and an additional wheel mounted on the frame below the first-named wheels and having its axis disposed at right angles to the axes of the first-named wheels.

9. In a surveying instrument, the recorder, comprising a frame, a toothed wheel mounted thereon, a worm meshing with the wheel to drive it, a ratchet engaged with the worm, a swinging bar to drive the ratchet, and a pivoted member connected with the bar and oscillated by the jolting of the instrument.

10. In a surveying instrument, the combination of an adjustably-mounted member forming a support, a recorder arranged thereon and working therewith, and a magnetic needle juxtaposed to said adjustable member to permit moving the adjustable member in coincidence with the movement of the needle.

11. In a surveying instrument, the combination of an adjustably-mounted member forming a support, a recorder arranged thereon and working therewith, means for driving the recorder, such means being actuated by the jolting of the instrument, and a magnetic needle juxtaposed to the movable member to permit of adjusting the said member in accord with the position of the needle.

12. In a surveying instrument, the combination of an adjustably mounted member forming a support, a recorder arranged thereon and working therewith, a magnetic needle, an indicator juxtaposed to the needle, and gearing connecting the indicator and the said adjustably-mounted member.

13. In a surveying instrument, the combination of a box or body member, two boards connected together and spaced apart and adjustably mounted in the box, a recorder movable between the boards, means for moving the recorder, such means being actuated by the jolting of the instrument, and a magnetic needle carried by the box adjacent to the said boards to permit adjusting the boards in accord with the position or positions of the needle.

14. In a surveying instrument, the combination of two boards spaced apart and secured together, means for adjustably mounting the boards, a recorder situated and movable between the boards, and a magnetic needle juxtaposed to the boards to permit adjusting them in accord with the position of the needle.

15. In a surveying instrument, the combination with a box or body portion, of a member adjustably mounted thereon, a recorder working with said member, means for driving the recorder, said means being actuated by the jolting of the instrument, an indicator, gearing connecting the indicator with the adjustably-mounted member, and a magnetic needle juxtaposed to the indicator.

16. In a surveying instrument, the combination of a member forming opposing supporting-surfaces, a recorder arranged between the supporting-surfaces and movable over the same, the recorder being adapted to maintain a vertical hanging position, and means actuated by the jarring or jolting of the instrument when carried for moving said recorder.

17. In a surveying instrument, an adjustable supporting member having its supporting-surface adapted to stand in a vertical plane when the instrument is in use, a recorder comprising a marking device coacting with said supporting-surface and adapted to travel vertically over the same, and means actuated by the jolting of the instrument for driving the recorder.

18. In a surveying instrument, a member comprising parallel flat supporting-surfaces, one of which is adapted to be covered with paper, a recorder arranged between the said surfaces and having a spring frame member, the recorder being provided with a toothed marking-wheel, the said recorder being adapted to hang perpendicularly between the said surfaces and to be held in position by frictional contact with the opposing surfaces, and mechanism actuated by the jolting of the instrument for revolving the said wheel to cause the recorder to move vertically between the said surfaces.

709,814. TRACK FOR DOOR-HANGERS. HENRY L. PERRIN, Harvard, Ill., assignor to The Firm of Hunt, Heim, Ferris & Company, Harvard, Ill. Filed Apr. 23, 1902. Serial No. 104,223. (No model.)

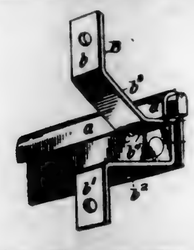

Claim.—1. In a device of the class described, the combination with a sheet-metal strip having its upper edge reserved to form a short downwardly-extending portion, the curve thereby forming a track, of a bracket secured to said strip in contact with said short downwardly-projecting portion, substantially as described.

2. In a device of the class described, the combination with an inverted-U-shaped track, of a bracket secured to one of the sides of said track and in contact with the edge of the other side, of said track, substantially as described.

3. In a device of the class described, the combination with a U-shaped track, of a bracket supporting the same, a block in the groove of said track adapted to embrace said bracket, being thereby secured against longitudinal movement with respect to said track, said block being a means of connection between the sections of track, substantially as described.

4. In a device of the class described, the combination with an inverted-U-shaped track having one shorter side, of a bracket secured to the longer side of said U-shaped track and in contact with the edge of the shorter side of said U-shaped track, a block in the groove of said U-shaped track above said bracket, lugs on said block embracing said track and adapted to prevent longitudinal movement of said block and a projecting portion on said block extending from the end of a section of track and adapted to receive the end of a similar section, substantially as described.

709,815. TURPENTINE-STILL. JOHN T. GILKEY, Mobile, Ala. Filed June 26, 1901. Serial No. 66,126. (No model.)

Claim.—1. A turpentine-still having a gum-vat, means for heating the vat, a strainer in the upper part of the vat, a funnel-like partition arranged below the strainer, and a filter in the mouth of said funnel-like partition, the filter being formed of an absorbent material sandwiched between screens or sieves.

2. The combination of a vat, means for exteriorly heating the same, a horizontal heater-rack or blanket contained in the vat, and comprising upper and lower plates spaced apart and having registering perforations and thimbles secured in the perforations, for the purpose specified, a strainer-basket placed over said rack or blanket and a connection between the interior of the heater-rack and the said means for exteriorly heating the vat.

3. The combination of a vat, means for exteriorly heating the same, a perforate, interiorly-chambered heater-rack or blanket contained in the vat, and a strainer-basket placed over said rack or blanket, and a filter located below the heater-rack or blanket, for the purpose specified.

4. The combination of a vat, means for exteriorly heating the same, a perforate, interiorly-chambered heater-rack or blanket contained in the vat, a strainer-basket placed over said rack or blanket, a funnel-shaped partition located below the blanket or heater-rack, and filtering devices carried in the mouth of said funnel-shaped partition.

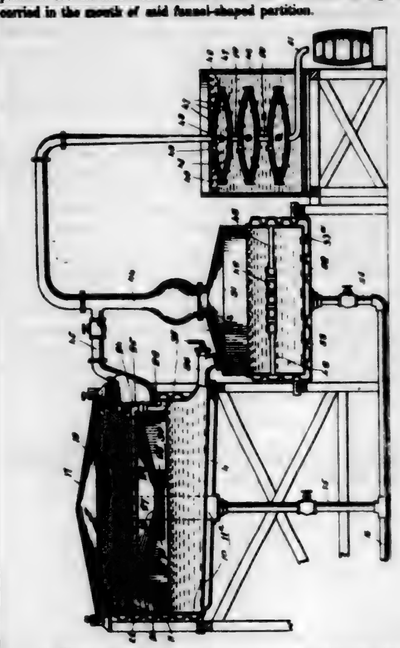

5. The combination of a vat, means for exteriorly heating the same, a perforate, interiorly-chambered heater-rack or blanket contained in the vat, a strainer-basket placed over said rack or blanket, the said means for exteriorly heating the vat including a steam-jacket, and connections between said steam-jacket and the chambers of said heater-rack or blanket, the said connections between the steam-jacket and heater-rack including separate pipe-sections and a device for removably holding them engaged.

6. The combination of a vat, means for exteriorly heating the same, a horizontal heater-rack or blanket located in the vat and comprising upper and lower plates spaced apart and having registering perforations, and thimbles secured in the perforations, for the purpose specified, and connections between the said means for exteriorly heating the vat and the interior of the heater-rack or blanket.

7. The combination of a vat, a steam-jacket exteriorly inclosing the same, an interiorly-located, horizontal heater-rack or blanket comprising upper and lower plates spaced apart and having registering perforations, and thimbles secured in the perforations for the purpose specified, and connections between the exterior jacket and the interior of the heater-rack.

8. The combination of a vat, a steam-jacket exteriorly inclosing the same, an interiorly-located, perforate, interiorly-chambered heater-rack or blanket, connections between the exterior jacket and the chamber of the heater-rack, the said connections including two separable pipe-sections, and means for removably holding them engaged.

9. The combination of a vat, means for heating the same, an imperforate partition located therein and having an essentially central passage through it, and a filter held in said passage of the partition and comprising a mass of absorbent material sandwiched between screens or sieves.

10. The herein-described heater-rack or blanket, comprising essentially parallel plates, each plate having portions indented toward the other, said indented portions registering with each other, and thimbles connecting the indented portions together and also forming passages through the rack or blanket.

11. The herein-described heater-rack or blanket, comprising two essentially parallel plates, one of said plates having portions indented toward the other, and thimbles extending through the said indented portions and through the other plate securely to connect said plates together, the thimbles being tubular to serve also to form passages through the rack or blanket.

12. The combination of a vat, a jacket surrounding the outer walls of the vat, said jacket having portions extended toward the walls of the vat, and fastening devices rigidly connecting the indented portions of the

jacket and the walls of the vat together, whereby to form a chamber between the jacket and vat and also to produce a rigid structure.

13. The combination of a vat, a jacket extending around the outer walls thereof, said jacket having a plurality of indented portions projected toward the vat, and fastening devices located in the indented portions of the jacket rigidly to connect said portions with the walls of the vat, the indented portions being removed from each other to permit the free circulation of fluid in all directions around the said fastening devices, for the purpose specified.

14. An apparatus for the manufacture of naval stores, comprising a vat, means for exteriorly heating the same, means for interiorly heating the vat, a strainer-basket located in the vat above said means for interiorly heating the same, a filter located in the vat below said means for interiorly heating the vat, a still, a means establishing communication between the vat and still, means for heating the still, and a condenser connected with the still.

15. An apparatus for the manufacture of naval stores, comprising a vat, means for exteriorly heating the same, means for interiorly heating the vat, a strainer-basket located in the vat above said means for interiorly heating the same, a filter located in the vat below said means for interiorly heating the vat, a still, a means establishing communication between the vat and still, means for heating the still, the said means for heating the still comprising an exterior steam-chamber, an exteriorly-located interiorly-chambered heater-rack, and connections between the heater-rack and the steam-chamber.

709,316. SYSTEM OF ERECTING AND ADJUSTING BRIDGE SUSPENSION-CABLES. WILLIAM J. CLOVER, St. Helens, England. Filed Apr. 29, 1902. Serial No. 105,126. (No model.)

Claim.—1. An apparatus for erecting and adjusting bridge suspension-cables, comprising a length of temporary cable passing over the space to be bridged from one pier to the other, pulleys on the piers and on the suspension-towers over which said temporary cable runs, clamping devices for attaching one end of the suspender-cable to the temporary one, means for driving said cable so that it will act as a traveler and haul the suspender-cable from one pier to the other, and devices for straining up and slacking said temporary cable, whereby the suspender-cable is first placed in position above its correct deflection and can afterward be lowered into position, while at same time any chance of interfering with traffic below is avoided.

2. For erecting and adjusting bridge suspender-cables, a temporary endless cable or traveler passing twice over the space to be bridged, pulleys on the piers and suspension-towers over which the temporary cable can run smoothly, a winch for driving said cable so that it will act as a traveler to draw the permanent cable over from one end, or from opposite ends at the same time, and tension-sheaves and a subsidiary winch for straining up any superfluous cable and making it taut, and for slackening said temporary cable so as to secure any desired deflection.

3. In apparatus for erecting and adjusting bridge suspender-cables, the combination with the traveler of a clamp for securing the suspender-cable thereto, consisting of a pair of cheeks adapted to grip both the cable and the traveler and bolts for binding the two cheeks together, the heads and nuts being in depressions in the cheeks so as not to project beyond the surface of the clamps.

4. In apparatus for erecting and adjusting bridge suspender-cables, the combination with the traveler of clamps V for hanging the suspender-cable (at intervals of twenty yards or so) from the traveler, each consisting of a pair of cheeks adapted to grip the traveler only but loose on the permanent cable so that they can be drawn by the traveler to one pier or the other to be removed, whereby there is no occasion for sending a man across the place to be bridged in cradles to detach the said clamps.

709,317. SHUTTLE-BINDER FOR LOOMS. FREDERICK A. GUILLETTE, WILLIAM J. LYNCH, and HENRY A. GUILLETTE, Taunton, Mass. Filed Nov. 4, 1901. Serial No. 81,067. (No model.)

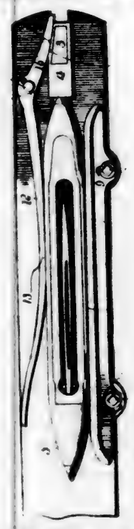

Claim.—1. In a loom attachment, the combination with the lay and the stationary wall of the shuttle-box, of a laterally-swinging binder substantially coextensive in length with the stationary wall and mounted upon a pivot disposed in proximate relation to the transverse plane of the outer end of the latter, the binder being provided intermediate its ends with an elongated swell, and with a member extended from one side of the pivot at an obtuse angle to the main portion of the binder, said member having a contact-surface disposed at an angle to the path of the backward motion of the picker and extending into said path to a point beyond the limit of the outward movement of the picker.

2. In a loom attachment, the combination with the lay and the stationary wall of the shuttle-box, of a pivotally-supported binder forming the movable wall of the shuttle-box, and an auxiliary binder-lever also pivotally mounted, said binder-lever bearing at one end upon the binder and provided at its other end with a short lever-arm extending into the path of movement of the picker.

3. In a loom, the combination with the stationary wall of the shuttle-box, of a binder consisting of two pivotally-mounted members, one bearing upon the other and having a lever-arm member extending into the path of motion of the picker, substantially as described.

709,318. LUBRICATOR FOR ELEVATOR-ROPES OR THE LIKE. MARTIN H. HALLORAN, Pittsburg, Pa. Filed Aug. 7, 1901. Serial No. 71,126. (No model.)

Claim.—In a lubricator, the combination with a lubricant-receptacle, of a pair of upwardly and outwardly extending curved guards, formed integral with the opposite ends of the said receptacle, said guards being approximately semicircular in cross-section and adapted to snugly inclose a portion of pulley-wheel, and a roller mounted in the said receptacle, substantially as described.

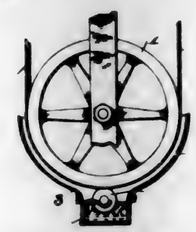

709,319. COMBINED CURD-KNIFE AND WHEY-STRAINER. LEWIS T. HANKINS, Troy, Ohio, assignor of one-half to Henry M. Case, Toledo, Ohio. Filed Dec. 16, 1901. Serial No. 86,103. (No model.)

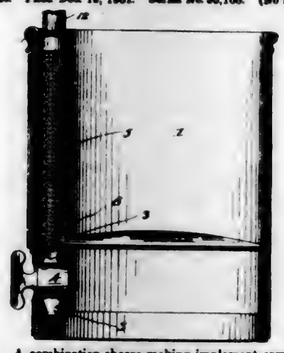

Claim.—1. A combination cheese-making implement comprising a strainer-tube, a stopper for closing the lower end of said tube, and a handle for the stopper to which said stopper is detachably secured, whereby the handle may be released from the stopper and utilized for a different purpose, substantially as described.

2. A combination cheese-making implement comprising a strainer-tube, a stopper for closing the lower end of said tube, and a handle for the stopper to which said stopper is detachably secured, said handle being formed with an edge to serve as a whey-knife, whereby the handle may be released from the stopper and utilized for a different purpose, substantially as described.

3. The combination, with a cheese vat or vessel provided with a port in its bottom for the discharge of the whey; of a strainer-tube having its lower end formed to fit within said port and provided at its upper end with a clasp to engage the upper edge of the wall of the vessel and support the tube in position, a stopper for closing the lower end of said tube, and a handle to which the stopper is detachably connected, substantially as described.

709,320. MANIFOLDING SALES OR COPYING BOOK. PHILIP HAHN, New York, N. Y. Filed Apr. 19, 1902. Serial No. 103,764. (No model.)

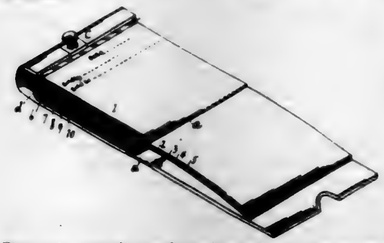

Claim.—1. A copying or sales book comprising a number of separate leaves forming a plurality of superposed sections, each section folded upon itself independently of the other sections.

2. A copying or sales book comprising a number of separate leaves arranged in sections, each section folded by itself so as to have its fold separate and distinct from the other sections.

3. A copying or sales book comprising a number of separate leaves each provided with a line of separation, said leaves arranged in series to form sections, each section being folded upon itself independently of the other section, and a carbon or transfer sheet adapted to successively come between the folds of each sheet of the sections.

4. A copying or sales book comprising a number of separate leaves arranged in series to form sections, each section being folded upon itself independently of the other sections, and said sections being adapted to receive carbon-leaves within their folds.

709,321. PROCESS OF SEPARATING SULFONIC ACIDS. LUDWIG O. HELMERS, Hamburg, Germany, assignor to Ichthyol-Gesellschaft Cordes, Hermanni & Co., Hamburg, Germany. Filed Aug. 30, 1901. Serial No. 73,863. (No specimens.)

Claim.—The process of separating sulfonic acids into compounds rich in sulfur and compounds poor in sulfur, which consists in converting the sulfonized products obtained by the action of sulfuric acid upon sulfureted hydrocarbons into salts of organic bases and separating the portions of the salts thus obtained which are soluble in water from the insoluble portions, substantially as and for the purpose set forth.

709,322. ROLLER-BEARING. ALBERT R. HENDERSON, Toronto, Canada, assignor to the Toronto Roller Bearing Company, Limited, Toronto, Canada, a Corporation of Ontario. Filed July 20, 1901. Serial No. 69,151. (No model.)

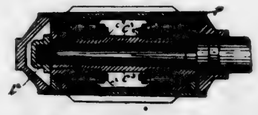

Claim.—1. An antifriction-bearing, comprising two sets of bearing elements one set of said elements having conical recesses and the other set having projecting tapering mandrels terminating in abruptly-conical points journaled in and of lesser diameters than the conical recesses.

2. In a roller-bearing, the combination of the external sleeve having internal annular flanges, an axle having peripheral flanges, antifriction-rollers contained between the axle and external sleeve, tapering mandrels for the ends of the rollers terminating abruptly in conical ends, bearing-rings loosely encircling the axle having conical recesses of greater diameters than and in which are contained the conical ends of the mandrels, and nuts fitted on the ends of the axle and into the ends of the external sleeve to prevent the outward displacement of the rollers, substantially as set forth.

3. In a roller-bearing, the combination of the external sleeve having internal annular flanges, an axle having peripheral flanges, bearing-rings loosely encircling the axle having conical recesses, bearing-rollers having mandrels terminating abruptly in conical ends journaled in said recesses, said ends being of lesser diameter than the recesses, and nuts fitted on the axle, substantially as set forth.

4. In a roller-bearing, the combination of an external sleeve having internal annular flanges, an internal sleeve having peripheral flanges, antifriction-rollers contained between the internal and external sleeves and prevented from inward displacement by the flanges, bearing-rings loosely encircling the internal sleeve having conical recesses, tapering mandrels for the ends of said rollers having abruptly-terminating conical ends of lesser diameters than the recesses journaled in said recesses, and end nuts to prevent the outward displacement of the rollers.

5. In a roller-bearing, the combination of an external sleeve having internal annular flanges, an internal sleeve mounted on the axle and having peripheral flanges the side faces of the flanges being in the same plane, antifriction-rollers contained between the sleeves prevented from inward displacement by the flanges, bearing-rings loosely encircling the internal sleeve having conical recesses, tapering mandrels for the ends of the rollers terminating in abruptly-conical ends, said ends being journaled in and of lesser diameters than the recesses, and end nuts to prevent the outward displacement of the rollers fitted with inwardly-projecting flanges to form contacting surfaces with the ends of the rollers.

6. In a roller-bearing, the combination of an external sleeve having internal annular flanges, an internal sleeve mounted on the axle and having peripheral flanges, antifriction-rollers with recessed ends contained between the internal and external sleeves, bearing-rings loosely encircling the internal sleeve having conical recesses, tapering mandrels for the ends of the rollers terminating in abruptly-conical ends of lesser diameters

than the recesses and journaled therein, and nuts fitted with inwardly-projecting flanges to form annular recesses in the inner faces of the nuts and contacting surfaces for the ends of the rollers, substantially as specified.

7. In a roller-bearing, the combination of the bearing-rings, bearing-rollers having recessed ends fitted with mandrels journaled in the retaining-rings, an axle having peripheral abutting shoulders, a hub-shell having internal annular abutting shoulders aligning with the annular abutting shoulders of the axle, to prevent the inward displacement of the bearing-rollers and adjustable nuts fitted on the axle and into the ends of the hub-shell having on their inner faces annular flanges to contact with the bearing-rollers, substantially as specified.

8. In a roller-bearing, the combination of a hub-shell having internal annular flanges, an internal sleeve having peripheral flanges, bearing-rings having conical recesses terminating in horizontally-disposed bores, tie-rods uniting the bearing-rings, bearing-rollers having recessed ends fitted with tapering mandrels terminating in abruptly-conical ends journaled in the conical recesses, antifriction-sleeves contained in the hub-shell encircling and contacting the bearing-rollers, antifriction-sleeves mounted on the internal sleeve encircled by and contacting the bearing-rollers, and nuts fitted on the internal sleeve and into the ends of the hub-shell having on their inner faces annular flanges contacting with the ends of the bearing-rollers.

9. The combination of a hub-shell having internal annular flanges an internal sleeve having peripheral flanges, bearing-rings, tie-rods for uniting the bearing-rings, bearing-rollers journaled in the bearing-rings, antifriction-sleeves contained within the hub-shell encircling and contacting the bearing-rollers, antifriction-sleeves mounted on the internal sleeve encircled by and contacting the bearing-rings, and nuts fitted on the internal sleeve and into the ends of the hub-shell having on their inner faces annular flanges contacting with the ends of the bearing-rollers.

10. The combination of the hub-shell having internal annular flanges, an internal sleeve having peripheral flanges, bearing-rings, tie-rods for uniting the bearing-rings, bearing-rollers journaled in the bearing-rings, antifriction-sleeves contained within the hub-shell encircling and contacting the bearing-rollers, separable abutting rings encircling the internal sleeve and prevented from inward displacement by the peripheral flanges, and antifriction-sleeves mounted on the internal sleeve prevented from inward displacement by the abutting rings, substantially as specified.

709,328. ROTARY STEAM-ENGINE. JOHN W. K. HODGE, Blair Station, Pa., assignor of one-fourth to Ewald R. Bahr, Blair Station Pa. Filed July 20, 1901. Serial No. 69,132. (No model.)

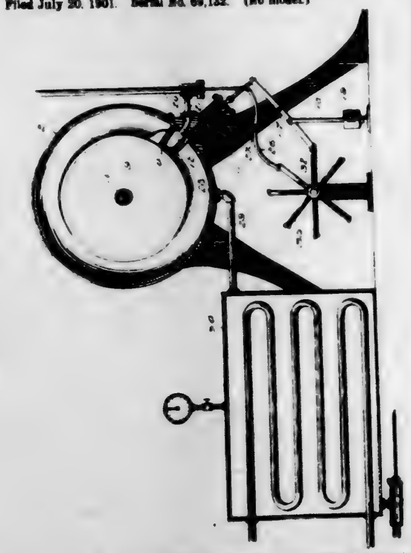

Claim.—1. In a rotary engine, the combination, with a hollow ring having a continuous slot in its inner surface communicating with the interior of the ring; of a disk revolubly mounted in the ring and extending into the slot, a piston projecting from the disk and fitting the interior of the ring, an abutment-casing projecting from the ring, a sliding abutment in said casing, a steam-inlet to the ring, a valve thereto, levers connected to the valve and abutment respectively, a rotary shaft, and a projection thereon adapted to operate the levers of the valve and abutment successively.

2. In a rotary engine, a series of slotted hollow rings, each containing a revolubly disk, pistons upon the disks and fitted in their respective rings, an inlet and an exhaust to each ring, a valve to regulate the flow of steam through the inlets, a sliding abutment in each ring, a revolubly shaft, and a projecting arm thereon for each ring, each arm being adapted to successively operate the abutment and the inlet-valve of its ring.

3. In a rotary engine, the combination with a slotted hollow ring; of a shaft, a disk mounted thereon and revolubly in the slot, a piston upon the disk and mounted in the ring, an inlet-valve and sliding abutment in the ring, a pivoted lever pivoted at one end to the abutment, a pivoted lever pivoted at one end to the inlet-valve, a revolubly shaft driven from the shaft of the disk, and an arm extending therefrom and adapted to successively contact with, and operate, the levers of the abutment and the inlet-valve.

4. A rotary engine comprising a casing formed of a series of similar slotted hollow rings, each of said rings having flanges for the reception of fastening means, whereby the rings are fastened together, a revolubly shaft extending through the rings, disks, secured to the shaft, one disk extending into the slot of each ring, a steam-inlet pipe opening into the ring, a valve to control the entrance of steam through the pipe, a sliding abutment in each ring, a piston upon each disk, said pistons being adapted to work in the rings, a pivoted lever connected to the inlet-valve, a similar lever pivoted to the sliding abutment, a shaft driven from the piston-shaft, and radially-disposed arms thereon at equal angles to each other, each arm being adapted to successively operate the abutment and the inlet-valve of its ring.

709,324. PUNCTURE-PROOF INFLATABLE WHEEL. ALEXANDER HOBRATH, Kiowa, Ind. Ter. Filed May 20, 1902. Serial No. 108,210. (No model.)

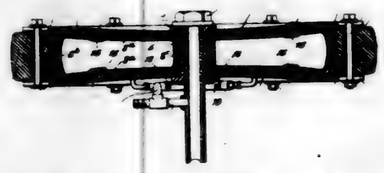

Claim.—1. An inflatable wheel comprising a hub, side members rigid with said hub and having peripheral tire-flanges, a tire having its inner edge portion slidably confined between said flanges and movable relatively thereto, and an inflatable pouch or pouches filling the space between the hub and the tire and affording a yieldable cushion for the latter, said tire being seated against the circumferential edge of the pouch or pouches.

2. An inflatable wheel comprising a hub, side members rigid with said hub and provided with peripheral tire-flanges, an elastic solid tire having its inner edge portion slidably and yieldably confined between the flanges of said side members, and an inflatable pouch or pouches filling the space between the tire and the hub and also between the side members, said tire being seated against the circumferential edge of the pouch or pouches which afford a yieldable cushion for the tire.

3. An inflatable wheel comprising a hub, side members rigid with said hub, a tire yieldably held between the peripheral edge portions of the side members, and a series of arcuate inflatable pouches filling the space between the hub and the tire and affording a yieldable cushion for the latter, each pouch having side walls joined by radial end walls and by inner and outer curved walls.

4. An inflatable wheel having a hub, side members attached thereto, a cushion formed by an intermediate pouch or pouches, a tire seated directly on the rim of said cushion and having its inner edge fitted between said side members and fasteners engaging slidably with said side members and confining the tire against radial and lateral displacement relative to said cushion and the side members.

5. An inflatable wheel having side members provided with radial slots, a cushion formed by an inflatable pouch or pouches confined laterally between the side members, a tire seated directly on the rim formed by said cushion, and bolts attached to the tire and fitted slidably in the slots of the side members.

6. An inflatable wheel comprising a hub, side members rigid with said hub, a tire yieldably held between the peripheral edge portions of the side members, and a series of inflatable pouches filling the space between the hub and the tire and affording a yieldable cushion for the latter, said tire being seated against the circumferential edges of the cushions; each pouch being made of yieldable material with radial end walls arranged to meet with similar walls of adjacent pouches, and all the pouches being laterally confined by the side members.

7. An inflatable wheel comprising a hub, side members rigid therewith, a tire yieldably held between said side members, a series of inflatable pouches filling the space between the hub and the tire, and a pressure-distributing means connected individually with the pouches of the series.

8. An inflatable wheel comprising a hub, side members rigid therewith, a tire yieldably confined between the side members, a series of inflatable pouches filling the space between the hub and the tire, and a curved pressure-distributing pipe having individual connection with the pouches, each connection having a check-valve.

9. An inflatable wheel comprising a hub, side members rigid therewith, a tire yieldably confined between the side members, a series of inflatable pouches filling the space between the hub and the tire and said pouches engaging with one another on radial lines of division between them, a pressure distributing pipe having individual connection with the pouches of the series, and means for supplying and inflating medium to said pipe.

10. An inflatable wheel having a series of pouches disposed in abutting relation and confined laterally between anyieldable side plates, a distributing-pipe mounted on one of said plates, and a series of valved branches communicating with the pipe and extending through openings in one side plate and having communication with the pouches.

11. An inflatable wheel comprising a hub, side members rigid with said hub, a tire yieldably confined between said members, and a series of inflatable pouches filling the space between the hub and the tire and affording a yieldable cushion for the latter, said pouches having individual interlocking engagement with the side members and sustained laterally thereby.

12. An inflatable wheel comprising a hub, side members rigid with said hub, a tire yieldably confined between the side members, and a series of inflatable pouches filling the space between the hub and the tire and affording a yieldable cushion for the latter, each pouch of the series having at its circumference an interlocking engagement with the inner edge of the tire.

13. An inflatable wheel comprising a hub, side members rigid with said hub, a tire yieldably confined between the side members, and a cushioned body filling the space between the tire and the hub and formed by an inflatable pouch or pouches, said body being laterally confined between the side members and having interlocking engagement with the inner edge of the tire and with the side members.

14. An inflatable wheel comprising a hollow axle forming a storage-reservior, a hub on said axle, side members rigid with the hub, a tire yieldably confined between the side members, a cushion-body filling the space between the tire and the hub and laterally confined between the side members, and a pipe attached to the axle and to the cushion-body to establish communication therebetween.

709,325. GRAIN-CAR DOOR. ALONZO L. HOOK, Coffeyville, Kans., assignor of two-thirds to James Robert Hutton, Rosco Kirby Long, and Robert Lincoln Plunkett, Coffeyville, Kans. Filed May 2, 1902. Serial No. 105,634. (No model.)

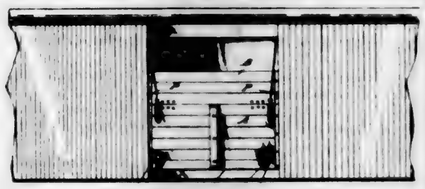

Claim.—The combination with a car-door adapted to be elevated, means for guiding the door and manually-operated means adapted to be worked for elevating the door, of peculiar guideways for the door and peculiar support for the said elevating means, the said guideways consisting of castings having in addition to means for guiding the door, a groove or socket at their upper ends, and the support for the elevating means consisting of castings having a tongue at their lower ends adapted to enter and fit a socket at the upper end of the lower casting and integral brackets providing support for the winding-shaft, chains leading therefrom with fixed connection to the door and also the means for working said shaft, a ratchet-wheel on the shaft, a lever having pivotal movement on the shaft and carrying a weighted dog having slipping movement from tooth to tooth of the ratchet-wheel, and a fixed pawl operating to hold the shaft as wound, substantially as described.

709,826. LABEL. GEORGE E. HOWARD, Washington, D. C. Filed June 21, 1902. Serial No. 112,667. (No model.)

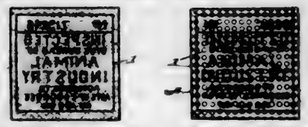

Claim.—1. A label or transfer, comprising a soluble gelatin having the label subject-matter or transfer matter thereon, and a backing of flexible material having perforations, slits or slots formed therein.

2. A label or transfer comprising a medium which consists in soluble gelatin, and an open-work paper backing, the medium having the transfer matter imprinted on one side thereof.

3. A label or transfer, comprising soluble gelatin, and a backing of tissue-paper perforated slitted or slotted, and the medium thus formed carrying the transfer matter thereon.

4. A label or transfer, comprising soluble gelatin and a backing of tissue-paper perforated slitted or slotted, and the medium thus formed carrying the transfer matter on the gelatin side, printed in reverse in transfer-ink.

709,327. TELEPHONE-CALL ANNUNCIATOR. LEREMIAH E. JACKSON, Atchison, Kans. Filed Mar. 8, 1902. Serial No. 97,223. (No model.)

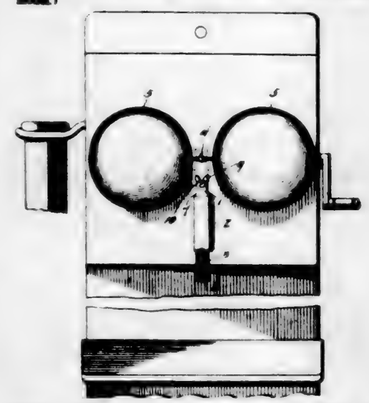

Claim.—A telephone-call annunciator comprising a stationary holder consisting of a closed sleeve-casing having at its longitudinal edges inturned combined guiding and attaching flanges, and also having an imperforate outer side constituting a cover member, and a flat indicator shutter-plate slidably working through the casing and provided at its lower extremity with an offset guard-stop for engagement against the lower end of the casing and contiguous to its upper end with opposite offset arresting stop projections for engagement with the top edge of the casing, the guard-stop and the side arresting-stops being spaced a greater distance apart than the length of the casing, said shutter-plate being further provided at its upper end with engaging means for releasable connection with the call-bell striker, and at its lower end and upon the outer face thereof being provided with a signal adapted to be normally housed and concealed entirely within the closed sleeve-casing behind the outer side or cover thereof, substantially as described.

709,328. COLOR-SCALE. CHARLES J. JORGENSEN, Milwaukee, Wis. Filed Feb. 17, 1902. Serial No. 94,484. (No model.)

Claim.—1. The method of constructing a scale of tertiary colors which consists in first taking the three primary colors yellow, red, and blue and forming the principal secondary colors by mixing them in pairs, and then taking each of said secondary colors in turn and mixing it with the primary lacking in the said secondary color taken and with every other secondary color which contains said lacking primary, substantially as described.

2. In a color-chart, a graduated series of colored figures comprising the secondary colors which can be formed by mixing in pairs the three primary colors, yellow, blue and red and the principal tertiary colors formed by mixing in pairs the said secondary colors, substantially as described.

3. In a color-chart, a series of colored figures arranged in rational sequence and comprising tertiary colors which are formed by taking the three primary colors, yellow, red and blue and mixing them in pairs to form secondary colors, and then taking each of said secondary colors in turn and mixing it with the primary lacking in the said secondary color taken, and with every other secondary color which contains said lacking primary, substantially as described.

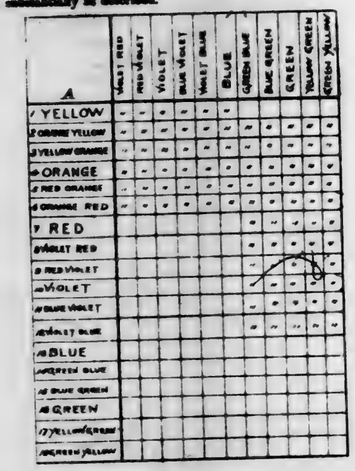

709,329. STEEL BOX-CAR. JAMES R. KILBOURNE, Columbus Ohio, assignor to the Kilbourne and Jacobs Manufacturing Company, Columbus, Ohio, a Corporation of Ohio. Filed Jan. 3, 1902. Renewed Aug. 27, 1902. Serial No. 121,174. (No model.)

Claim.—1. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a movable cover and means for moving said cover from one side of the car to the other under the bridge.

2. A railway-car comprising an open-top body, a cover consisting of sections adapted to slide upon each other, and a bridge extending from end to end of the car to form a permanent runway and a housing for the meeting edges of the cover, said cover sliding under the bridge.

3. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a movable cover, an endless belt secured to said cover and means to operate said belt.

4. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a cover consisting of a series of sections each extending from the bridge to a side of the car and movable from side to side beneath said bridge, and plates overlapping the meeting edges of said sections.

5. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a cover consisting of a series of movable sections, an endless belt connected to each of said sections, a guide-plate in which said belts are fitted and a plate overlapping the adjacent edges of the said sections.

6. A railway-car comprising an open car, a bridge extending from end to end thereof, a movable cover adapted to slide under said bridge, an endless belt connected to said cover and means for operating said belt.

709,330. BOX-CAR. JAMES R. KILBOURNE, Columbus, Ohio, assignor to the Kilbourne and Jacobs Manufacturing Company, Columbus, Ohio, a Corporation of Ohio. Filed Jan. 3, 1902. Renewed Aug. 27, 1902. Serial No. 121,175. (No model.)

Claim.—1. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a movable cover for said car extending from said bridge to the side of the car, and means mounted on said bridge for manipulating said cover.

2. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a movable cover for said car extending from said bridge to the side of the car, and means mounted on said bridge for manipulating said cover, said bridge being constructed in the form of a housing for said manipulating means.

3. A railway-car comprising an open-top body, a bridge, a flexible cover, and means on the bridge and on a side of the car for drawing said cover in opposite directions.

4. A railway-car comprising an open-top body, a bridge, a flexible cover, and means on the bridge and on a side of the car for drawing said cover in opposite directions, one of said means rolling the cover.

5. A railway-car comprising an open-top body, a bridge, a flexible cover, and means on the bridge and on a side of the car for drawing said cover in opposite directions, one of said drawing means rolling the cover and the other connected thereto by a flexible connection.

6. A railway-car comprising an open-top body, a bridge, a flexible cover, and means on the bridge and on a side of the car for drawing said cover in opposite directions, consisting of two winding-shafts, one of which is connected directly to and rolls the cover, and the other of which connects therewith through a flexible winding connection.

7. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a flexible cover for said car extending from said bridge to a side of the car, and means on said bridge for winding up said cover.

8. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a flexible cover for said car extending from said bridge to a side of the car, and means on the bridge for winding up said cover, and means on a side of the car connected with the cover and drawing it outward.

9. A railway-car comprising an open-top body, a bridge extending from end to end thereof, a flexible cover for said car extending from said bridge to a side of the car, and means on said bridge for winding up said cover, means on a side of the car connected with the cover and drawing it outward, said point of connection being within the edge of the cover, whereby the cover projects beyond the lines of the car.

10. In combination with an open car, a bridge, a flexible cover extending from the bridge to a side of the car, a winding-shaft for the cover, on said bridge, and the housing for said winding-shaft receiving the cover when wound on said shaft.

709,331. SHOW-CASE. WARREN KIRBY, Pike, Ark. Filed May 21, 1902. Serial No. 106,389. (No model.)

Claim.—1. The combination with the closing slide of a show-case, of a casing secured in the show-case, a shaft journaled in the casing, a spool fixed on the shaft, a ratchet mounted loose on the shaft, a second ratchet fixed on the shaft, a pawl on the loose ratchet to engage the fast ratchet and lock the first-named ratchet to the shaft in one direction, a coil-spring to rotate the shaft, an extensible and retractable cord having one end secured to the spool and the other end secured to the slide, a bell, and a clapper actuated by the loose ratchet when fast on the shaft.

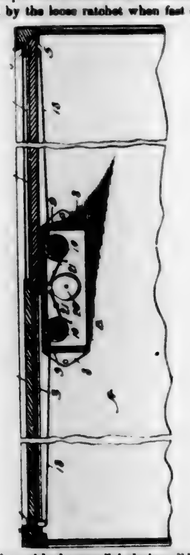

2. The combination with the parallel closing slides of a show-case, of a casing mounted in the casing, duplicate shafts journaled in the casing, a spool fixedly secured on each shaft, cords extending from the spools to the outer ends of the slides, combined disks and ratchets loosely mounted on the shafts, a ratchet fixed on the shafts, pawls on the disks to engage the fixed ratchets, springs to actuate the shafts, a bell interposed between the shafts and the mechanisms, and clappers actuated by the loose ratchets, substantially as described.

709,332. FOLDING STRETCHER OR COT. JOHN H. KOONS, Lehighton, Pa., assignor of one-half to Henry Schwartz, Lehighton, Pa. Filed Mar. 14, 1902. Serial No. 98,185. (No model.)

Claim.—1. A folding stretcher, cot or like article, comprising side rails, a flexible cover secured to the side rails, cross-bars made in sections hinged together and pivoted to the side rails, legs hinged on the side rails, and links connecting the cross-bars with the said legs, to swing the latter into a closed position on moving the rails toward each other to fold the device, and to swing the legs into an angular active position on moving the rails apart, as set forth.

2. A folding stretcher, cot or like article, comprising side rails, a flexible cover secured to the side rails, cross-bars for connecting the side rails with each other, each cross-bar being made in sections pivoted together and to the side rails by vertical pivots, legs hinged to the side rails, and sectional links, each pivoted to a leg by a horizontal pivot and to a section of the cross-bar by a vertical pivot, as set forth.

3. A folding stretcher, cot or like article, comprising side rails, a flexible cover secured to the side rails, cross-bars for connecting the side rails with each other, each cross-bar being made in sections pivoted together and to the side rails by vertical pivots, legs hinged to the side rails, and sectional links, each connecting a leg with a section of the cross-bar, each link being made of three sections connected with each other by hinges and pivoted to the cross-bar sections by vertical pivots and to the legs by horizontal pivots, as set forth.

4. A folding stretcher, cot or like article, comprising side rails, a flexible cover secured to the side rails, cross-bars for connecting the side rails with each other, each cross-bar being made in sections pivoted together and to the side rails by vertical pivots, legs hinged to the side rails, sectional and pivoted links, each link being pivoted to a leg by a horizontal pivot and to a section of the cross-bar by a vertical pivot, and a locking device for each cross-bar, to lock the sections thereof in an extended position, as set forth.

5. A folding stretcher, cot or like article, comprising side rails, a flexible cover secured to the side rails, cross-bars for connecting the side rails with each other, each cross-bar being made in sections pivoted together and to the side rails by vertical pivots, legs hinged to the side rails, sectional links pivoted together by pivots at right angles to each other, each link being pivoted to a leg by a horizontal pivot and to a section of the cross-bar by a vertical pivot, and a locking device for each cross-bar, to lock the sections thereof in an extended position, each locking device consisting of a bar fastened to one section and having means at its free end to engage the other section of the cross-bar to lock the sections in alinement, as set forth.

6. In a folding stretcher, cot or the like, the combination with side rails having openings therein and legs pivoted to the side rails adjacent to the openings thereof and provided with an opening near its pivoted end, of sectional and hinged cross-bars pivoted at their ends to the side bars, one section of said bars being provided with an opening, a bar secured at one end to one of the sections of each of the cross-bars and provided at its free end with a catch adapted to enter the opening in the other section when the sections are in alinement and to enter the openings of the legs and side rails when the device is folded, and links pivoted to the cross-bars and to the legs, as set forth.

709,333. CONVERTIBLE BED AND SOFA OR CHAIR. LOUIS KRAEMER, San Francisco, Cal. Filed Nov. 25, 1901. Serial No. 83,510. (No model.)

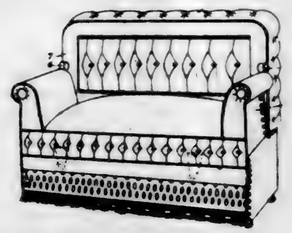

Claim.—1. In a convertible bed and sofa or chair, the combination of a suitable support, a seat resting thereon when used as a sofa or chair and hinged upon the front side of the support and swinging forward to form a bed, said seat being provided with suitable means for supporting the same in a horizontal position when so swinging forward and a back pivoted on the rear side of the support and hinged to swing forward and rest upon the support to form a bed, said back having an extension below the surface upon which the seat rests, said extension having hinged thereto a rear piece which swings outward in forming the bed, substantially as described.

2. In a convertible bed and sofa or chair, the combination of a suit-

able support, a seat resting upon said support when used as a sofa and hinged upon the front side of the support and swinging forward to form a bed, said seat being provided with means for supporting the same in a horizontal position when so swung forward, a back hinged upon the rear side of the support and having an extension depending below the support upon which the seat rests, said support having ends which are extended behind said hinges and past the sides of said extension of the back, substantially as described.

3. In a convertible bed and sofa or chair, the combination of a box, a seat hinged upon the front side of the box and swinging forward to form a bed, said seat having arms serving as supports therefor when so overturned, a back pivoted on the rear side of the box, the upper portion of the back being arranged to swing forwardly and rest upon the top of the box, and the lower portion of the back swinging rearwardly and upward, and brackets hinged to said box and swinging outward to support said lower portion of the back when raised, substantially as described.

4. In a convertible bed and sofa or chair, the combination of a suitable support, a seat resting upon said support when used as a sofa and hinged upon the front side of the support and swinging forward to form a bed, said seat being provided with suitable means for supporting the same in a horizontal position when so swung forward and having a mattress on its under side, and a pivoted back having an extension below its pivot said back being pivoted on the rear side of the support, the upper portion thereof swinging forward to rest upon the support in the place of the seat, and the extension swinging rearward and upward and projecting rearwardly or outwardly beyond said support when said back is so swung forward and downward, said back and extension having a mattress on the rear side, substantially as described.

5. In a convertible bed and sofa or chair, the combination of two main sections, one section comprising a seat, and the other section comprising a back and an extension below the pivotal point of said back, a suitable support upon which said seat and back are hinged to swing forward to form a bed, said seat and back having mattresses on their under sides respectively, and one of said sections having a supplementary piece hinged thereto to form an extension of said section, said supplementary piece having also a mattress on the upper side when so extended, substantially as described.

6. In a convertible bed and sofa or chair, the combination of a suitable support, a seat resting thereon to form a sofa or chair, hinged upon the front side of the support and swinging forward to form a bed, said seat being provided with suitable means for supporting the same in a horizontal position when so swung forward, and a back pivoted on the rear side of the support, the upper portion of the back swinging forwardly and resting upon the top of the support to form a bed, said back having an extension below the surface of the support upon which the seat rests, said extension swinging upward and rearwardly to form a bed and a supporting device movable independently of said pivotal connection and arranged to be moved beneath said extension when so swung upward and rearwardly to support the same, substantially as described.

709,384. LEAD FUSE FOR ELECTRIC CIRCUITS. FREDERICK H. KRESS, Copenhagen, Denmark. Filed Oct. 26, 1901. Serial No. 79,953. (No model.)

Claim.—1. A lead fuse-plug for electrical plants, comprising a hollow body provided in its lower end with a hole of conical shape, a lead wire provided with a contact-plate and adapted to be inserted in said body through said conical opening, the upper end of the wire being arranged for connection with a copper contact, as set forth.

2. A lead fuse-plug for electrical plants, comprising a hollow body having a conical-shaped opening in its lower end, a lead wire adapted to be inserted through said opening, and arranged for connection at its upper end with a copper contact, and a contact-plate connected with the lower end of the said wire and provided with hooks adapted to be fastened to the body by a bayonet-joint, as set forth.

3. A lead fuse-plug for electrical plants, comprising a hollow body having a conical-shaped opening in its lower end, the diameter of the opening at its inner or apex end corresponding to the predetermined diameter of the wire required for the purposes of the plug, thereby preventing the insertion of a wire of greater diameter, and a lead wire provided at one end with a contact-plate and adapted to be inserted in said plug through said opening, the other end of the wire being arranged for connection with a copper contact, as set forth.

4. As an article of manufacture, a fuse-plug for electrical apparatus, comprising a goblet-shaped insulating member provided with a small aperture, a metallic jacket secured upon said goblet-shaped member, a disk provided centrally with a fuse-wire for passing through said aperture and provided circumferentially with anchors, and means for securing said anchors upon said goblet-shaped member.

5. As an article of manufacture, a fuse-plug for electrical apparatus, comprising a hollow insulating member provided with an aperture of arbitrary size, and means located adjacent to said aperture for the purpose of engaging the ends of a fuse-wire passing through said aperture, the said arbitrary size of said aperture being such as to exclude the passage of fuse-wires exceeding a certain size.

6. As an article of manufacture, a fuse-plug for electrical apparatus, comprising a hollow insulating member provided with openings and with a passage of arbitrary area in cross-section, and means adjacent to said passage for engaging the ends of a fuse-wire to be threaded through said passage, the said passage constituting a wire-gage and preventing the admission of undesirably large fuse-wires.

7. As an article of manufacture, a fuse-plug for electrical apparatus, comprising an insulating member provided with openings, and also provided with a narrow passage constituting a wire-gage, and means for connecting a fuse-wire so that the latter will pass through said gage.

8. As an article of manufacture, a fuse-plug for electrical apparatus, comprising an insulating-section provided with a conical opening and with one member of a bayonet-joint, a disk provided with the other member of said bayonet-joint, and also provided with a fuse-wire having a conical portion, a metallic contact secured upon said insulating-section, and means for securing said fuse-wire to said section.

9. As an article of manufacture, a fuse-plug for electrical apparatus comprising a hollow insulating member provided with a conical-shaped passage constituting a wire-gage, and means for connecting a fuse-wire so that the latter will pass through said gage.

10. As an article of manufacture a fuse-plug for electrical apparatus, comprising an insulating member provided with a conical-shaped aperture, the opening at the inner or apex end of the aperture being of arbitrary size, and means for engaging the ends of the fuse-wire passing through said aperture.

11. As an article of manufacture, a fuse-plug for electrical apparatus comprising an insulating-section having an opening for the passage of the fusible wire, the said section being provided with one member of a bayonet-joint, and a contact-plate carrying the fusible wire and provided with hooks forming the other member of the bayonet-joints.

12. As an article of manufacture a fuse-plug for electrical apparatus, comprising an insulating member provided with a conical opening and having one member of a bayonet-joint, a contact-disk provided with hooks constituting the other member of the bayonet-joint, and a fuse-wire connected at one end with said disk and adapted to pass through the said conical opening.

709,385. PNEUMATIC TORPEDO-FIRING APPARATUS. SIMON LAKE, Bridgeport, Conn. Filed Jan. 30, 1902. Serial No. 91,871. (No model.)

Claim.—1. In combination, a submarine boat provided with a conning-tower rising above the hull of the same and normally separated therefrom by a water-tight wall or partition and a torpedo-tube, a compressed-air reservoir and a connection therefrom to the inner end of said torpedo-tube, and devices controlled by means within the conning-tower for admitting compressed air to the torpedo-tube for expelling a torpedo therefrom.

2. In combination, a submarine boat provided with a conning-tower disposed upon the exterior of and wholly above the hull of the same and normally separated therefrom by a water-tight wall or partition and a torpedo-tube, a compressed-air reservoir and a connection therefrom to the inner end of said torpedo-tube, and devices controlled by means within the conning-tower for admitting compressed air to the torpedo-tube for expelling a torpedo therefrom.

3. In combination, a submarine boat provided with a conning-tower rising above the hull of the same and a torpedo-tube, a compressed-air reservoir, a pipe connection from said compressed-air reservoir to the inner end of said torpedo-tube, a valve in said pipe connection, a motor the movable member of which is connected to said valve, and means within the conning-tower for controlling the operation of said motor for actuating the said valve.

4. In combination, a submarine boat provided with a conning-tower rising above the hull of the same and a torpedo-tube, a compressed-air reservoir, a pipe connection from said compressed-air reservoir to the inner end of said torpedo-tube, a valve in said pipe connection, a cylinder, a piston within said cylinder provided with a suitable connection with said valve, and means within the conning-tower for effecting the movement of said piston to actuate the said valve.

5. In combination, a submarine boat provided with a conning-tower rising above the hull of the same and a torpedo-tube, inboard and outboard caps for said torpedo-tube, mechanism for opening the outboard cap from within the boat, means connected with or applied to the inner end of said torpedo-tube to provide expulsive power for ejecting a torpedo, means within the conning-tower for operating the mechanism for opening the outboard cap of said torpedo-tube, and means also controlled from within the conning-tower for effecting the expulsion of the torpedo.

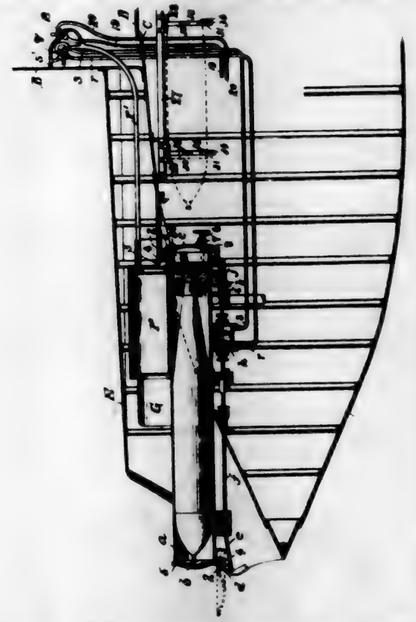

6. In combination, a submarine boat provided with a conning-tower rising above the hull of the same and a torpedo-tube, inboard and outboard caps for said torpedo-tube, mechanism for opening the outboard cap from within the boat comprising a cylinder and actuating-piston contained therein and connected with said mechanism, a compressed-air reservoir, a pipe connection from said compressed-air reservoir to the inner end of said torpedo-tube, a valve in said pipe connection, a second cylinder and actuating-piston contained therein and connected with said valve, and devices within the conning-tower for successively operating the said pistons to first open the outboard cap and thereafter open the valve in the said pipe connection for effecting the expulsion of the torpedo from said tube.

7. In combination, a submarine boat provided with a conning-tower rising above the hull of the same, a torpedo-tube, inboard and outboard caps for said torpedo-tube, mechanism for opening said outboard cap from within the boat, a stop device controlled by the inboard cap for locking the outboard cap in its closed position while the inboard cap is open, a compressed-air reservoir, a pipe connection from said compressed-air reservoir to the inner end of the torpedo-tube, air-cylinders containing actuating-pistons connected, respectively, with a valve in said pipe connection and said mechanism for opening the outboard cap, and means within the conning-tower for successively admitting air to said air-cylinders to first open the outboard cap and then actuate said valve to admit air to the torpedo-tube to expel a contained torpedo.

8. In combination, a submarine boat provided with a conning-tower rising above the hull of the same, a torpedo-tube, inboard and outboard caps for said torpedo-tube, mechanism for opening said outboard cap from within the boat, a stop device for preventing the operation of said mechanism while the inboard cap is open, a locking device normally engaging a torpedo within said tube provided with means for causing it to release said torpedo at a predetermined air-pressure in said tube, an air-reservoir, a valved connection from said air-reservoir to the inner end of the torpedo-tube, and means within the conning-tower for first actuating the outboard-cap-opening mechanism and then admitting air to the torpedo-tube for expelling the contained torpedo.

9. In combination, a submarine boat provided with a conning-tower rising above the hull of the same, a torpedo-tube, inboard and outboard caps for said torpedo-tube, a locking device normally engaging a torpedo within said tube provided with means for causing it to release said torpedo only at a predetermined minimum air-pressure within said tube, mechanism for opening said outboard cap from within the boat including a stop for preventing the releasing operation of said torpedo-locking device during the opening of said outboard cap, an air-reservoir, a valved connection from said air-reservoir to the inner end of the torpedo-tube, and means within the conning-tower for first actuating the outboard-cap-opening mechanism and then admitting air to the torpedo-tube for expelling the contained torpedo.

10. In a torpedo-boat, the combination with a torpedo-tube and outboard and inboard caps therefor, of means for preventing the opening of one of said caps while the other remains open.

11. In a torpedo-boat, the combination with a torpedo-tube and outboard and inboard caps therefor, of pneumatic apparatus for opening said outboard cap, and a stop device for preventing the operation of said apparatus to open said outboard cap while the inboard cap remains open.

12. In a torpedo-boat, the combination with a torpedo-tube and outboard and inboard caps therefor hinged thereto, a rod supported in bearings adjacent to said tube connected with said outboard cap and provided with means for moving the same to and fro for opening and closing said outboard cap, a stop device serving to normally lock said rod from movement while the inboard cap is open, and a device intermediate said inboard cap and the locking device whereby the latter is caused to release said rod to permit the opening of the outboard cap.

13. In a torpedo-boat, the combination with a torpedo-tube and outboard and inboard caps therefor, of an actuating-rod disposed parallel with said tube and connected with said outboard cap, and means for moving said rod to and fro for opening and closing said outboard cap, a locking device consisting of a transversely-movable plug normally projected into the path of movement of said actuating-rod, and a retracting device for said plug normally projecting into the path of said inboard cap and operated when the latter is closed to withdraw the said plug from the path of movement of said actuating-rod.

14. In a torpedo-boat, the combination with a torpedo-tube and hinged outboard and inboard caps for the same, of an actuating-rod connected with said outboard cap and disposed parallel with said tube, means for moving said rod to and fro to open and close said outboard cap, and a locking device for preventing the movement of said rod while the inboard cap is open, the same consisting of a socket-piece attached to the torpedo-tube and provided with a stop-plug having its projecting outer end normally lying in the path of said actuating-rod and closely adjacent to the end of the same, and beveled with an upward and backward incline, and a tappet-rod interposed between the beveled end of said plug and the path of movement of the inboard cap upon its hinge, whereby the closing of said inboard cap upon the end of said tappet-rod causes the withdrawal of said locking-plug from the path of movement of said actuating-rod to permit the opening of the outboard cap.

15. In a torpedo-boat, the combination with a torpedo-tube, of a cap for closing one end of the same, a hinge for said cap, a rigid seat formed upon or attached to said tube, an elastic or yielding packing interposed between said hinge and its seat, means for securing said hinge to its seat, and an elastic or yielding packing interposed between the end of said tube and its cap.

16. In a torpedo-boat, the combination with a torpedo-tube, of a cap for closing one end of the same, a hinge for said cap, a rigid seat formed upon or attached to said tube, an elastic or yielding packing interposed between said hinge and its seat, an elastic or yielding packing interposed between the end of said tube and its cap, and means for maintaining the said cap pressed to its seat upon the end of said tube.

17. In a torpedo-boat, the combination with a torpedo-tube, of a removable cap for closing one end of the same having a curved external seat, a packing interposed between said cap and the end of said torpedo-tube, and a yoke having arranged concentrically with said curved external seat a transverse pivotal connection with said tube and adapted to engage the external seat of said cap.

18. In a torpedo-boat, the combination with a torpedo-tube, of a removable cap for closing one end of the same having a curved external seat, a packing interposed between said cap and the end of said torpedo-tube, a yoke having arranged concentrically with said curved external seat a transverse pivotal connection with said tube and adapted to swing across the end thereof provided with said cap, and a clamp-screw carried by said yoke and adapted to engage the external seat of said cap.

19. In a torpedo-boat, the combination with a torpedo-tube, of a locking device for normally engaging a torpedo housed in said tube, and means actuated by a predetermined minimum pressure within said torpedo-tube for disengaging said locking device from the torpedo.

20. In a torpedo-boat, the combination with a torpedo-tube, of a locking-pin for normally engaging an external shoulder of a torpedo contained within said tube, a cylinder communicating with the interior of said torpedo-tube, and a piston within said cylinder and connected with said lock-

ing-pin to withdraw the latter at a predetermined minimum pressure within said torpedo-tube.

21. In a torpedo-boat, the combination with a torpedo-tube having a removable outboard or muzzle cap, of a locking-pin for normally engaging an external shoulder upon a torpedo contained within said tube, a cylinder communicating with the interior of said torpedo-tube, a piston within said cylinder connected with said locking-pin, and a stop device connected with said outboard cap and so constructed and arranged as to maintain the torpedo-locking device in operative position between the extreme open and closed positions of said outboard cap.

22. In a torpedo-boat, the combination with a torpedo-tube, and a compressed-air reservoir, of a pipe connection from said air-reservoir to the inner end of said torpedo-tube, a valve in said pipe connection, a cylinder, a piston within said cylinder having its rod operatively connected with said valve, and means for supplying motive power to said cylinder for actuating said piston to operate the said valve.

23. In a torpedo-boat, the combination with a torpedo-tube, and a compressed-air reservoir, of a pipe connection between said compressed-air reservoir and torpedo-tube, a gate-valve in said pipe connection, an air-cylinder disposed axially in line with said gate-valve and having a piston whose rod is directly connected with the stem of said gate-valve, and means for supplying compressed air for actuating said piston to open and close said gate-valve.

24. In a torpedo-boat, the combination with a torpedo-tube and a removable outboard cap therefor, of a power-operated device for opening and closing said cap, and a manual locking device for preventing the actuation of said power-operated device to open said cap, when desired.

25. In a torpedo-boat, the combination with a torpedo-tube and a removable outboard cap therefor, of a rod connected with said cap and extended within said boat, a stationary inboard bearing to which the inner portion of said rod is slidably fitted, and a longitudinally-movable thrust-collar upon said rod adapted to engage said inboard bearing for preventing the movement of said rod.

26. In a torpedo-boat, the combination with a torpedo-tube and a removable inboard cap therefor, of an overhead rail or track disposed in the vertical plane of and parallel with the axis of said tube, and torpedo-carrying slings depending therefrom.

27. In a torpedo-boat, the combination with a torpedo-tube and a removable inboard cap therefor, of an overhead rail or track disposed in the vertical plane of and parallel with the axis of said tube, carriages mounted upon said track, and torpedo-carrying slings removably attached to and depending from said carriages.

28. In a torpedo-boat, the combination with a torpedo-tube and a removable inboard cap therefor, of an overhead rail or track disposed in the vertical plane of and parallel with the axis of said tube, carriages mounted upon said rail or track, and torpedo-carrying slings removably attached to and depending from said carriages, said slings being formed each in two separable semi-annular sections united at the opposed ends by means of pivotal pins and by a clamp-bolt, respectively, and adapted to be separated for the reception of a torpedo.

29. In a torpedo-boat, the combination with a torpedo-tube and a removable inboard cap therefor, of an overhead rail or track disposed in the vertical plane of and parallel with the axis of said tube, carriages mounted upon said rail or track, and torpedo-carrying slings attached to and depending from said carriages, said slings being formed each in two semi-annular sections 30 having the opposed ends connected at the point of suspension to the carriage, through which they are united together, by means of removable pivotal pins 36 and clamp-bolt 35, and at the opposite point of connection by means of a clamp-bolt 32, each section being also provided with a suspension-eye 33.

30. In a torpedo-boat, the combination with a torpedo-tube having removable inboard and outboard caps, of a compressed-air reservoir, a valved pipe connection therefrom to the breech end of said torpedo-tube, and a valved pipe connection from said tube to the exterior of the boat.

709,886. TROUGH FOR SILVERING GLASS. CONSTANT LAVAL, Pittsburg, Pa. Filed May 9, 1902. Serial No. 106,634. (No model.)

Claim.—1. A device for silvering glass consisting of a trough having an inclined bottom and its inner face coated with an impermeable substance.

2. A trough consisting of a single piece of suitable material hollowed out and having a contracted discharge end, and a lining therefor of an impermeable substance.

3. A trough consisting of a single piece of suitable material hollowed out and having a contracted discharge end, and a lining of rubber therefor.

4. A device for silvering glass consisting of a trough having a contracted open end, and a lining therefor of an impermeable substance.

5. A device for silvering glass consisting of a trough having a contracted open end, and a rubber lining therefor.

6. A device for silvering glass consisting of a single piece of material hollowed out to form a trough with an inclined bottom and a closed and an open end, and a lining of an impermeable material therefor.

7. A device for silvering glass consisting of a single piece of material hollowed out to form a trough with an inclined bottom and a closed and an open end, and a lining of rubber therefor.

709,887. PENCIL-CASE. WILLIAM A. LEARY, Washington, D. C. Filed Apr. 21, 1902. Serial No. 104,071. (No model.)

Claim.—A pencil-holder comprising an elongated cylindrical body portion having one end adapted to receive a lead-pencil, the other end being extended to form a flat, integral cutting-blade which is reduced near its inner end to form rear cutting-shoulders, said blade being crimped longitudinally to form a strengthening-rib, as set forth.

709,888. CAR-COUPLING. WATSON S. LEMON, Tucson, Ariz. Filed Feb. 17, 1902. Serial No. 94,519. (No model.)

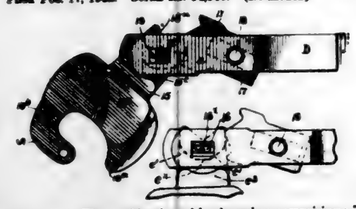

Claim.—1. The combination with a draw-bar, comprising a ⊐-shaped strap, a bearing-block, held between the ends thereof, and having yielding movement lengthwise thereof; of a draw-head having a shank, said shank and the bearing-block having pivotal coacting bearing-surfaces, and means for detachably connecting the draw-head shank with the ends of the ⊐-shaped draw-bar, as and for the purposes shown and described.

2. The combination with the draw-head, having a shank terminating in a <-shaped bearing end, said shank also having a coöperating pivot-stud on the upper and under sides, transversely-disposed bearing-shoulders, and angle shoulders on the said upper and under sides; of a ⊐-shaped draw-bar, having slotted ends to engage the pivot-studs on the draw-bar shank, and having transverse bearing-surfaces to engage the transverse and angle bearing-surfaces on the aforesaid shank, and the spring-held bearing-block mounted within the draw-bar members, said block having a ⋛-shaped bearing-face opposing the >-shaped end of the draw-head shank, all being arranged substantially as shown and described.

3. In a car-coupler, the combination with the draw-head formed with a shank having a <-shaped end bearing, a headed stud upon the upper and lower sides, adjacent the end bearing, and a projecting flange or lip on the said upper and lower faces, curved in transverse direction; of the ⊐-shaped draw-bar strap, having elongated slots, adapted to coöperate with the aforesaid headed studs, the extremities of said strap having curved members to slide under the curved lips or flanges on the draw-head shank, the bearing-block, longitudinally movable in the ⊐-shaped strap or bar, said block having a W-shaped end bearing to oppose the V-shaped bearing of the draw-head shank, and provided with a longitudinal slot, the cross pin or bolt for joining the block and the strap and the spring in said slot, all being arranged substantially in the manner and for the purposes shown and described.

709,889. ADJUSTABLE PLATEN. DANIEL M. LESTER, Norwich, Conn. Filed Feb. 24, 1902. Serial No. 96,208. (No model.)

Claim.—1. In combination with the platen of an envelop-machine, and a rim mounted to slide thereon, a spider as set forth, means for rigidly connecting the said spider and rim, and means for adjusting the combined spider and rim relatively to the said platen.

2. In combination with a platen and a rim mounted to slide thereon, a spider, and means consisting of bushings and screws, as herein set forth, for rigidly connecting the said spider and rim.

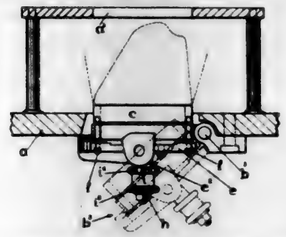

3. In combination with a platen having flanged sides, a rim mounted to slide on said platen, a spider, and means for rigidly connecting the rim and spider consisting of bushings and screws as set forth; the said bushings being slidably mounted in holes in the flange of the platen.

4. In combination, a platen, a rim slidably mounted on said platen, a threaded boss, means for rigidly connecting said boss with the said rim, a thumb-nut screwed upon the said boss, and means for retaining the said thumb-nut in a given relation to the platen whereby the rotation of the thumb-nut will cause the boss and connected rim to be adjusted relatively to the platen.

709,840. WALL WATER-HEATER. JAMES H. MACKLEY, Pocatello, Idaho. Filed Mar. 26, 1902. Serial No. 100,079. (No model.)

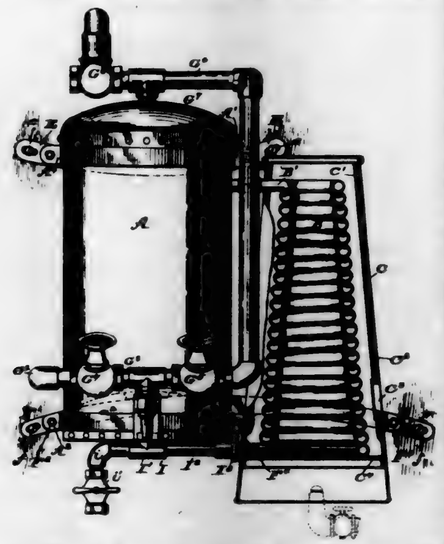

Claim.—1. The heater herein described, comprising the tank, the straps applied to the tank near its upper and lower ends, and provided at their ends with the lugs at the rear side of the tank, the heater proper located alongside the tank and comprising the coil connected at its upper and lower ends with the tank and tapering toward its upper end, the casing fitting over the coil and having the stop-plate closing the space between the casing and the coil at the lower end of the latter, the lug secured to the casing and arranged at the rear side thereof approximately in line with the corresponding lugs of the tank, the upper supporting-bar connected near its ends with the lugs at the upper end of the tank and deflected vertically at its ends which extend beyond said lugs, and having each extensions perforated for the securing-bolts, and the lower supporting-bar provided at its middle with means for connection with the lug at the rear side of the tank, and between the same and the heater proper, and secured near its ends to the lugs at the lower sides of the lower ends of the tank and heater proper, and having extensions beyond such connections, said extensions being deflected vertically and perforated, the water-supply pipe having a connection with the tank and a branch extending thence alongside the tank and provided with a discharge and with valves on opposite sides thereof, and a pipe connection leading thence to the upper end of the tank, substantially as and for the purposes set forth.

2. In a wall water-heater, the combination with the tank, and the heating means, of lugs in connection with the tank, and at the opposite sides thereof, and a supporting-bar detachably connected near its ends with said lugs and extended beyond such points of connection, and having its said extensions deflected vertically and perforated for the passage of the securing-bolts, substantially as set forth.

3. In a wall water-heater, the combination with the tank and the heater proper alongside the same, of the straps applied to the heater proper and the tank and having at their ends lugs or extensions for connection with the supporting-bars, and the bars secured to said lugs or extensions and having their ends deflected vertically and perforated, substantially as set forth.

709,841. TYPE-HOLDER FOR TYPE-WRITERS. ISAAC H. MALLER, Chicago, Ill., assignor of one-half to John F. Butler, Chicago, Ill. Filed Apr. 2, 1902. Serial No. 101,103. (No model.)

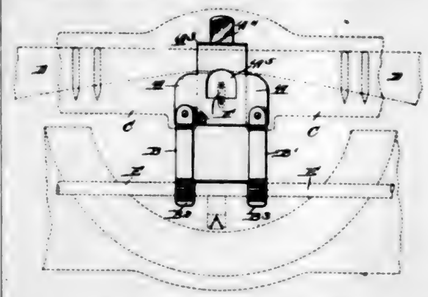

Claim.—1. In a device for holding type-writer types while being cleaned, the combination with the oscillatory shift-rail of the type-writer, of a plate having means for engagement under the type-head when elevated and means operatively connecting said plate with the shift-rail to cause it to alternately engage and release the type-head as the rail is oscillated, substantially as set forth.

2. In a device for holding type-writer types while being cleaned, the combination with the oscillatory shift-rail of the type-writer, of a plate having an orifice for the passage of the type, adapted to engage under the head when elevated, and means operatively connecting said plate with the shift-rail to cause it to alternately engage and release the type-head as the rail is oscillated, substantially as set forth.

3. In a device for holding type-writer types while being cleaned, the combination with the oscillatory shift-rail and a ribbon-guide of the type-writer, of a plate having means for engagement under the type-head when elevated and means operatively connecting said plate with the shift-rail to cause it to alternately engage and release the type-head as the rail is oscillated, said plate resting upon said guide, substantially as set forth.

4. In a device for holding type-writer types while being cleaned, the combination with the oscillatory shift-rail of the type-writer, of a plate having means for engagement under the type-head when elevated and means for engaging and deflecting the ribbon, and means operatively connecting said plate with the shift-rail to cause it to alternately engage and release the type-head as the rail is oscillated, substantially as set forth.

5. In a device for holding type-writer types while being cleaned, the combination with the oscillatory shift-rail of the type-writer, of a plate having means for engagement under the type-head when elevated, and a fork for engaging and deflecting the ribbon, and means operatively connecting said plate with the shift-rail to cause it to alternately engage and release the type-head as the rail is oscillated, substantially as set forth.

6. In a device for holding type-writer types while being cleaned, the combination with a ribbon-guide of the type-writer having a type-opening, of a plate having means for engaging and supporting the type when elevated, said plate having a wide portion adapted to rest upon said guide at the sides of said type-opening and a narrower portion having means for engaging and deflecting the ribbon, adapted to fit in said type-opening, substantially as set forth.

7. In a device for holding type-writer types while being cleaned, the combination with the oscillatory shift-rail of the type-writer, of a plate having means for engaging under the type-head when elevated and means

detachable from said plate for operatively connecting it with said shift-rail, substantially as set forth.

8. In a device for holding type-writer types while being cleaned, the combination of a plate having means for engagement under the type-head when elevated, means for supporting said plate and means on said plate for engaging and deflecting the ribbon, comprising a fork for receiving the ribbon and an extension on the lower prong of said fork for directing the ribbon into said fork, substantially as set forth.

709,842. TOY BIOGRAPH. WILLIAM MAXWELL, Pittsburg, Pa. Filed May 21, 1902. Serial No. 108,397. (No model.)

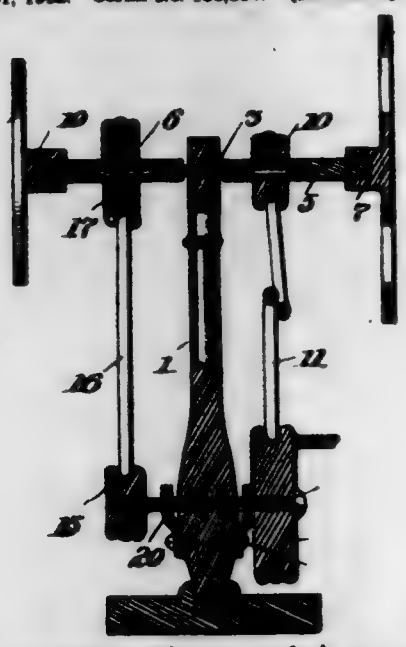

Claim.—1. In a device of the type set forth, the combination of a standard, a stationary shaft secured in the upper end of the said standard, rotatable shafts journaled on the ends of the said fixed shaft, a shutter secured on the outer end of one of the said rotatable shafts, a disk secured on the said other rotatable shaft, and means for rotating the said shutter and disk in opposite directions, substantially as described.

2. In a toy biograph, the combination of a standard, a shaft fixed in the upper end of the said standard, rotatable shafts journaled on the ends of the said fixed shaft, pulleys secured on the said rotatable shaft, a shutter, and a disk secured on the ends of the said rotatable shafts, a shaft journaled in the lower end of the said standard, a large and small pulley secured on the opposite ends of the said last-named shaft, spring-plates secured to the opposite sides of the standards adjacent the last-named pulleys, and means whereby said first-named pulleys and shafts are rotated in opposite directions at different speeds, substantially as and for the purpose specified.

709,843. SUSPENSION-RAILWAY. ALFRED H. MAYHEW, Balham, England. Filed Jan. 6, 1902. Serial No. 88,646. (No model.)

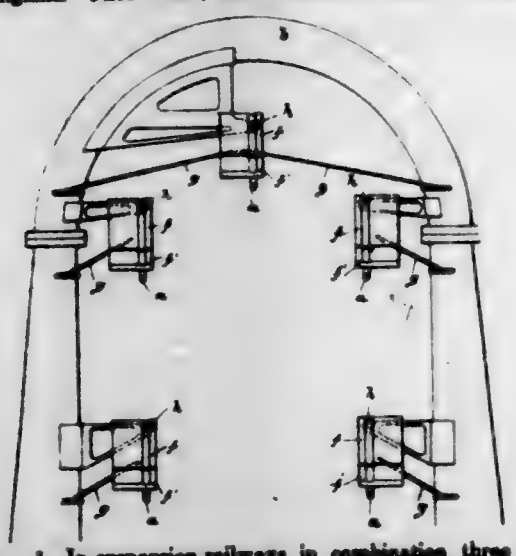

Claim.—1. In suspension-railways in combination, three or more wire cables or ropes, secured to a series of structures or supports, a car built into strong frames carrying grooved wheels or pulleys which run on aforesaid wire cables or ropes, hinged platforms carried by said structures or supports onto which the cars run when passing said structures or supports said hinged platforms being supported by sliding supports, a loose rope or cord running underneath each cable or rope, substantially as described and illustrated herein.

2. In tube or underground railways in combination, three or more wire cables or ropes, secured to a series of brackets or supports, a car built into strong frames carrying grooved wheels or pulleys which run on aforesaid wire cables or ropes, hinged platforms carried by said brackets or supports onto which the cars run when passing said brackets or supports, said hinged platforms being supported in lower position in a suitable manner, a loose rope or cord running underneath each cable or rope, curved rails or platforms at desired points onto which the cars run from the cables, substantially as described and illustrated herein.

709,844. ACETYLENE-GAS GENERATOR. CHARLES W. METCALF, Tucson, Ariz. Filed Sept. 9, 1901. Serial No. 74,814. (No model.)

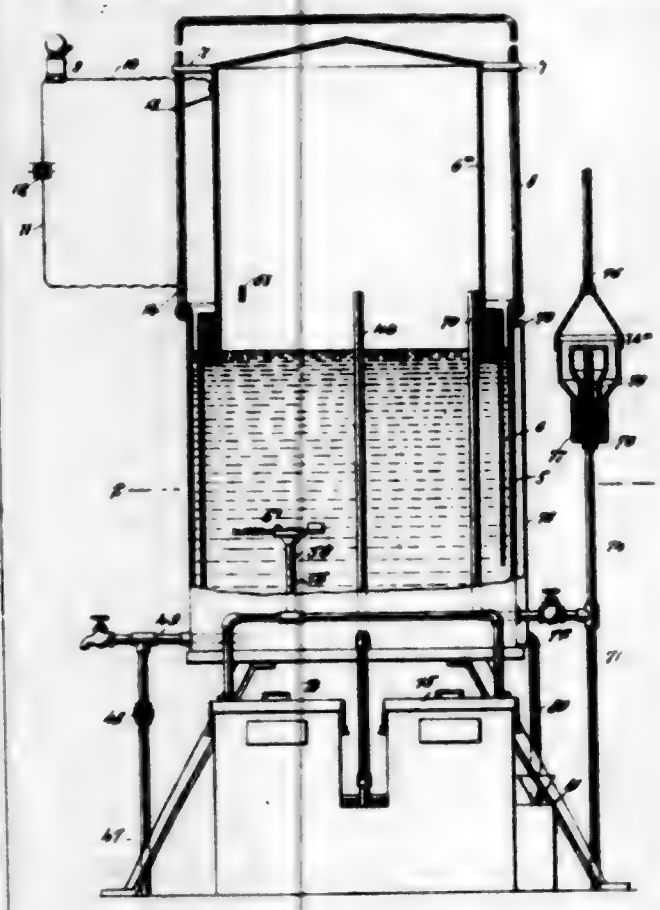

Claim.—1. In a gas-machine, a gasometer, a generator, a pipe providing communication between the gasometer and generator, the said pipe at its portion within the gasometer being provided with two upward extensions, one of said extensions having a bore or inlet smaller than the bore or inlet of the other extension, valves controlling the inlets, and means carried by the gasometer-bell for opening the valves one after the other, substantially as specified.

2. In a gas-machine, a gasometer, a generator, a pipe providing communication between the gasometer and generator, the said pipe at its portion within the gasometer, being provided with two upward extensions, one of said extensions having a bore or inlet smaller than the bore or inlet of the other of said extensions, swinging valves controlling the inlets, and means carried by the gasometer-bell for opening the valves, substantially as specified.

3. In a gas-machine, a generator comprising a carbid-holder for receiving pans or the like, a water-sealed casing in which the holder is arranged, means for controlling the supply of water to the holder, and a scrubber in one side of the holder through which the gas is designed to pass, substantially as specified.

4. In a gas-machine, a carbid-holder, a water-supply pipe adjacent the said holder, a cover for said holder extending over said pipe, a removable nozzle for the pipe adapted to extend into said holder, a yoke for locking the pipe and nozzle together, a valve in the nozzle, and a float having connection with said valve, substantially as specified.

709,845. PAPER BOX. HARRY S. MILLER, Westfield, Mass. Filed May 26, 1902. Serial No. 108,963. (No model.)

Claim.—A paper box formed of a single piece of material and comprising the bottom 1 formed with the sides 2 and ends 3, flaps 4 formed upon the sides 2 with the hooks 5 having projecting ears 6, flaps 9 provided with openings 10, formed upon the ends 3, tongues 7 having ears 8 stamped from the sides 2 adjacent to the hooks 5, and openings 11 provided in the ends 3 adjacent to the openings 10, the flaps 4 upon the sides being adapted to lap the ends 3 and the hooks 5 inserted from the out-

side inwardly into the openings 11, the ears 6 of said hooks engaging the tops of said openings, the flaps 9 upon the ends 3 being adapted to lap upon the inside of the sides 2, the tongues 7 inserted inwardly through the openings 10 and the ears 8 upon said tongue engaging the upper ends of said openings 10 whereby the sides of said box are doubly locked to the ends and the ends of said hooks and tongues located upon the inside of the box to prevent damage incident to rough usage, substantially as set forth.

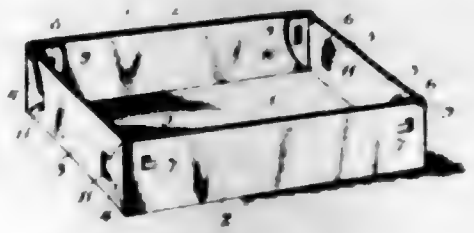

709,346. **WINDOW-SCREEN.** HENRY D. MILLS, Pisha Eddy, N. Y., assignor of one-half to Patrick H. Lawless, Eastbranch, N. Y. Filed July 3, 1901. Serial No. 67,050. (No model.)

Claim.—1. The combination with a window sash and frame, of a screen mounted in a chamber in the sill, an L-shaped plate secured to the upper end of the screen, and provided with an opening, and a bail provided with an operating-pin to extend through said opening permitting the bail to engage the under side of the horizontal member of the plate securing it to the sash.

2. The combination with a sash and frame, of a screen mounted on the frame, a bail provided with an operating-pin and constructed of a single piece of resilient material having its ends bent at right angles, means for securing the bail to the sash, and means carried by the screen to be clamped, by the bail, securing the screen to the sash.

3. The combination with a window sash and frame, of a screen mounted in a chamber in the sill, an L-shaped connecting-plate secured to the upper end of the screen and provided with a central opening, a bail provided with an operating-pin and constructed of a single piece of resilient material having its ends bent at right angles and perforated, and means for securing said bail to the sash.

709,347. **STEAM-TRAP.** JOHN MORRHEAD, Detroit, Mich. Filed Sept. 17, 1900. Serial No. 30,312. (No model.)

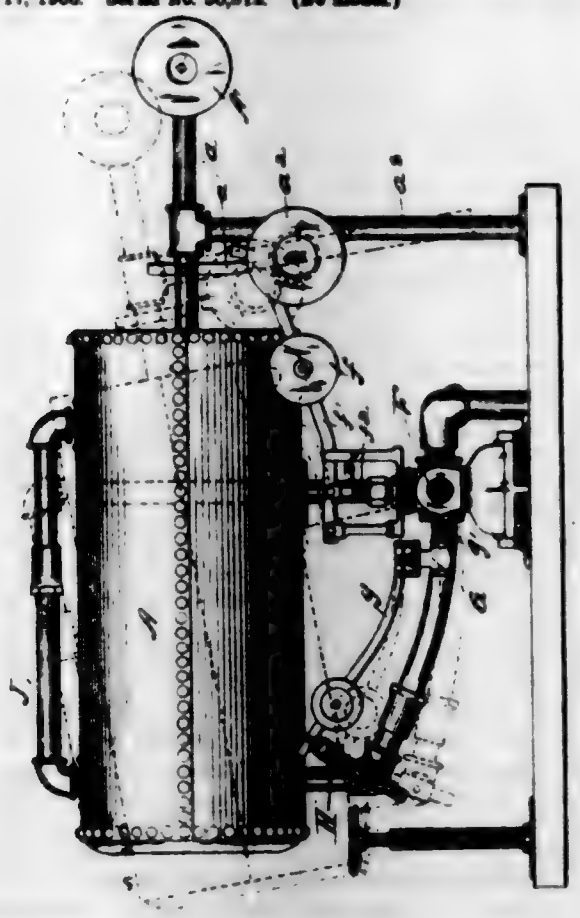

Claim.—1. In a steam-trap, the combination of a tilting receiving-chamber, a suitably-supported transverse rocking pipe having a closed partition to divide its length, a steam-pipe leading from one section of said transverse pipe into the receiving-chamber, a valve to control the admission of steam governed by the tilting of said chamber, a pipe leading from the opposite section of said transverse pipe into the receiving-chamber, a cross-pipe for conducting the water of condensation communicating with one end of the transverse pipe, and check-valves located in said cross-pipe, one on each side of the junction of the transverse and cross pipes, whereby the water of condensation may be admitted to, and discharged from the receiving-chamber through the section of the transverse rocking pipe opposite that through which steam is admitted to the receiving-chamber, as the position of the tilting chamber will determine, substantially as described.

2. In a steam-trap, the combination with a receiving-chamber, a water-inlet and discharge pipe suitably controlled, a steam-inlet pipe communicating with the interior and discharging near the top of the receiving-chamber, a valve for controlling the admission of steam to said pipe, an air-relief valve communicating with said steam-inlet pipe, and means for automatically opening the steam-inlet valve and closing the air-relief valve by the tilting of the receiving-chamber in one direction and for closing the steam-valve, and opening the air-relief valve when the chamber is tilted in the opposite direction, substantially as described.

3. In a steam-trap, a tilting receiving-chamber, pipes for admitting and discharging the water from the receiving-chamber suitably controlled, a steam-inlet pipe having its point of discharge in the receiving-chamber and near its top, and a pipe or steam-space located above said receiving-chamber and communicating with the interior at or near both ends of the chamber substantially as described.

709,348. **RAILROAD-TIE PLATE.** VARDRY E. McBEE, Norfolk, Va. Filed May 28, 1902. Serial No. 109,311. (No model.)

Claim.—1. The herein-described tie-plate for railroad-tracks, having the flat upper side to form a seat for the rail and provided at one end with an upwardly-projecting boss whose inner side is diagonal to the direction of length of the plate and forms a square stop-shoulder for the rail-base in the use of the device, the under side of the plate being formed with longitudinally-extending sloping sides merging at their lower edges in a cutting edge, and the said sloping sides extending at their upper edges to the upper flat face of the tie-plate, and provided at the opposite ends of the plate and said cutting edge with the depending conical prongs, substantially as and for the purposes set forth.

2. A railroad-tie plate provided on its under side with the central longitudinally-extending cutting edge and having at the ends of said edge the depending conical prongs whereby the plate may be forced into the face of the tie and be self-retaining in use, substantially as set forth.

3. The combination with the tie and the rail thereon, of the tie-plate embedded in the tie and below the rail and extending longitudinally in a direction diagonal to that of the rail and having on its upper side a shoulder to rest squarely against the rail-base and on its under side integral means for holding the tie-plate from lateral displacement on the tie, substantially as set forth.

4. A railroad-tie plate having its under side provided with a longitudinally-extending cutting edge and with the opposite sloping sides leading from such edge to the upper surface of the plate, whereby the plate may be forcibly embedded bodily in the tie, substantially as set forth.

5. A railroad-tie plate provided on its upper side at one end with a boss having its inner face arranged to form a shoulder for abutment by the rail-base and provided on its under side with the longitudinally-extending cutting edge and at the ends of said edge with the depending prongs to enter the tie, substantially as set forth.

6. A railroad-tie plate provided at its upper side at one end with a boss having its inner face arranged diagonally to the plate and arranged to form a shoulder for abutment by the rail-base and provided on the under side of said tie-plate with integral means for holding the tie-plate from lateral displacement on the tie, substantially as set forth.

709,349. **COMPENSATING ORGAN-PIPE.** JOHN A. McINTOSH and WILLIAM McINTOSH, Toronto, Canada, assignors, by direct and mesne assignments, to Peter Ryan, Joseph Ross, and David J. Johnston, Toronto, Canada. Filed Oct. 22, 1900. Serial No. 33,994. (No model.)

Claim.—1. A series of organ-pipes having compensating openings formed therein, in combination with a leveling-strip secured against the pipes, to form one edge of each opening, and a general regulator movable over the said openings and adapted to engage the said leveling-strip to close the openings, substantially as and for the purpose specified.

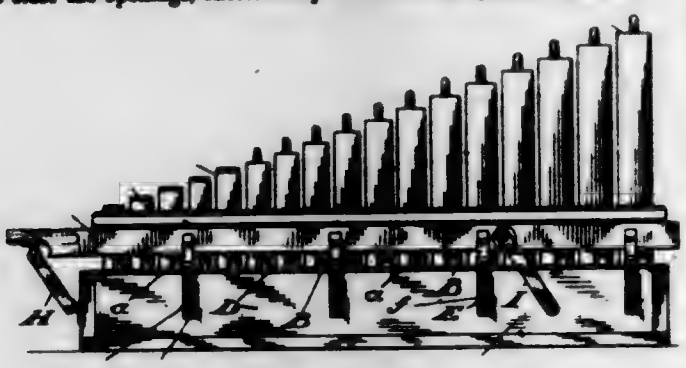

2. A series of organ-pipes having compensating openings formed therein, in combination with a general regulator formed of a strip of stiff non-warpable material faced with a strip of a yielding material on the side next the pipes, and spring-actuated means for pressing the regulator against the pipes, substantially as and for the purpose specified.

3. A series of organ-pipes having compensating openings formed therein, in combination with a leveling-strip secured against the pipes to form one edge of each opening, a general regulator movable over the said openings and adapted to engage the said leveling-strip to close the openings, and spring-actuated means for pressing the regulator against the pipes, substantially as and for the purpose specified.

4. A series of organ-pipes having compensating openings formed therein, in combination with a general regulator movable over the said openings and spring-actuated means for pressing the regulator against the pipes, substantially as and for the purpose specified.

5. A series of organ-pipes having compensating openings formed therein, in combination with a leveling-strip secured against the pipes to form one edge of each opening, a strip of yielding material secured to the said leveling-strip; and a general regulator movable over the said openings and adapted to engage the said leveling-strip to close the openings, substantially as and for the purpose specified.

6. A series of organ-pipes having compensating openings formed therein, in combination with a leveling-strip secured against the pipes to form one edge of each opening, substantially as and for the purpose specified.

7. A series of organ-pipes having compensating openings formed therein, in combination with a general regulator and a stop for limiting the motion of the regulator so that it always forms one edge of each opening, substantially as and for the purpose specified.

8. A series of organ-pipes having compensating openings formed therein, in combination with a leveling-strip secured against the pipes to form one edge of each opening, a general regulator movable over the said openings and adapted to engage the said leveling-strip to close the openings, and a stop for limiting the motion of the regulator so that it always forms the other edge of each opening, substantially as and for the purpose specified.

709,850. MITTEN. ROBERT B. MCMASTERS, Plymouth, N. Y. Filed Mar. 27, 1902. Serial No. 100,287. (No model.)

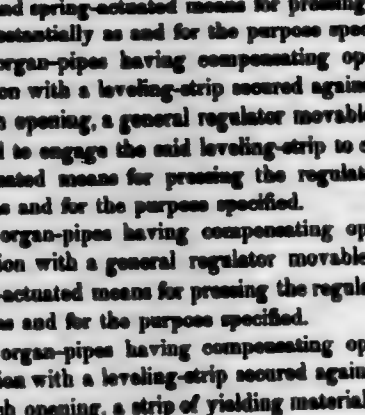

Claim.—1. As an improved article of manufacture, a glove or mitten with double protecting-guards, each sewed to the back and palm side thereof respectively by separate rows of stitching, as set forth.

2. As an improved article of manufacture, a glove or mitten, comprising in combination with the back and palm sides thereof with a welt in the joining-seam thereof, a protecting-shield folded twice upon itself forming an inner shield covering the joining-seam, and an outer shield stitched over the inner shield, as set forth.

3. As an improved article of manufacture, a mitten or glove comprising front and back sides joined together by a seam with welt therein, a double protecting guard-piece of cloth or skin which is stitched to said front and back pieces adjacent to the welt, one end of the protecting or guard piece bent upon itself and stitched to said front and back respectively, the outer end of the protecting-strip being bent upon itself and stitched over the inner end, thus forming a double guard-piece, as set forth.

709,851. TELEPHONE-SWITCH. COLUMBUS B. MCPHERSON, Birmingham, Ill. Filed Mar. 12, 1902. Serial No. 97,911. (No model.)

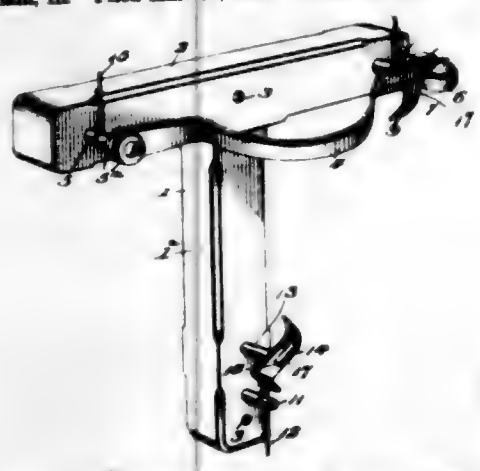

Claim.—1. The combination with a bracket having a plurality of binding-posts secured thereto, of a semicircular spring switch-lever having one of its ends fulcrumed and the other free for oscillatable movement, and a lever-rest secured upon said bracket adjacent to one of said binding-posts and having a curved bearing-face and a stop.

2. The combination with a bracket having a plurality of binding-posts secured thereto, of a semicircular spring switch-lever having one of its ends bent at an angle to be inserted in said bracket to form a combined binding-post and journal, and a lever-rest secured upon said bracket adjacent to one of said binding-posts, and having a curved bearing-face having one of its ends bent to form a stop.

3. The combination with a bracket, of a binding-post mounted upon the upper end thereof, a curved bearing-surface secured to said binding-post and having one of its ends bent to form a stop, a spring switch-lever having one of its ends bent at an angle and inserted in the bracket to form a combined binding-post and journal, a third binding-post secured to the lower end of the bracket, electric connections secured to said binding-post, and a lever-rest secured upon said bracket.

4. The combination of a bracket having a plurality of binding-posts secured thereto, lever-rests contiguous to the posts and provided with shouldered retaining-ribs, and a lever movable over the bracket.

709,852. PROCESS OF TREATING ANIMAL TENDONS. EDGAR NELSON, Lima, Ohio. Filed Oct. 24, 1901. Serial No. 79,816. (No specimens.)

Claim.—1. The process, herein described, of preparing packings; which consists in subjecting animal tendons to the action of preservatives and then impregnating the tendons thus treated with lubricants.

2. The process, herein described, of preparing packings; which consists in subjecting animal tendons to the long-continued action of a preservative, thus impregnating the entire substance of said tendons with said preservative, and then impregnating said tendons superficially with a lubricant for the purpose of rendering the exterior surfaces thereof smooth.

3. The process, herein described, of preparing packings; which consists in subjecting animal tendons to the action of preservatives for the purpose of rendering said tendons durable, and superficially impregnating the tendons thus treated with powdered talc for the purpose of rendering said tendons smooth and of giving them a suitable color.

4. The product herein described, consisting of packings made of preserved animal tendons impregnated superficially with lubricants.

5. The product herein described, consisting of packings made of preserved animal tendons impregnated superficially with a powdered mineral lubricant.

6. The product herein described, consisting of packings made of preserved animal tendons impregnated superficially with powdered talc for the purpose of rendering the same smooth and changing the color thereof.

709,858. CALENDAR. WILLIAM C. NORMAN, Smithton, Ark. Filed Feb. 26, 1902. Serial No. 96,754. (No model.)

Claim.—1. A perpetual calendar, consisting of three disks, the out-

side disk having a central depression, leaving an outer rim, and on said outer rim the days of the week indicated equal distances apart; in said central depression journaled a second disk, having a double depression, leaving an outer rim 2, and on this outer rim the names of the months of the year, and in the double depression of the second disk journaled a third disk, having a flange that works in the first step of the double depression just mentioned; said disk having radial lines extending from its center, leaving between them equal spaces, and in these spaces, numerals so arranged that by turning the second and third disks, the days of the week and the month may be read perpetually; said disks each having in its center a perforation and journaled together by a nut passing through said central perforations, substantially as shown and described and for the purposes set forth.

2. A perpetual calendar, consisting of three disks, the outside disk having a central depression, leaving an outer rim, and on said outer rim the days of the week indicated equal distances apart; in said central depression journaled a second disk, having a double depression, leaving an outer rim 2, and on this outer rim the names of the months of the year, and in the double depression of the second disk, journaled a third disk, having a flange that works in the first step of the double depression just mentioned; said disk having radial lines extending from its center, leaving between them equal spaces, and in these spaces, numerals so arranged that by turning the second and third disks, the days of the week and the month may be read perpetually; said disks each having in its center a perforation; a nut passing from the rear through said perforations, and having in its front end a female thread, and at the base of said female thread an enlargement, the bottom wall of which is convex; a bolt having at its threaded end, two projections which pass into the said enlargement, and are bent out when said screw is turned home, substantially as shown and described and for the purposes set forth.

709,354. COMBINED PRESSER-FOOT AND NEEDLE-BAR LIFTING MECHANISM FOR SEWING-MACHINES. EDMOND G. O'DONNELL, Fall River, Mass., assignor, by direct and mesne assignments, to American Hat Sweat Sewing Machine Company, Fall River, Mass., a Corporation of Maine. Filed Apr. 22, 1901. Serial No. 56,960. (No model.)

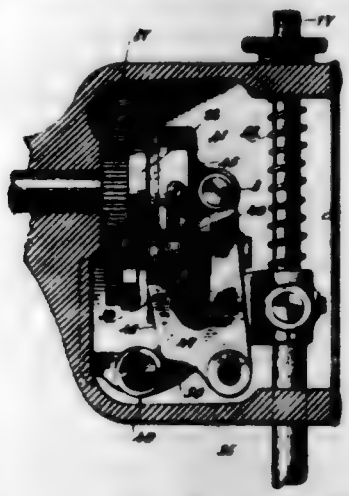

Claim.—1. In a sewing-machine, the combination with the needle and presser bars, of means for driving the needle-bar, said means including a clutch, and a device in connection with the clutch and with the needle-bar and actuated from the presser-bar, said device serving first to disconnect the clutch and then raise the needle-bar.

2. In a sewing-machine, the combination with the needle and presser bars, of a driving mechanism for the needle-bar, such mechanism including a clutch, and means for disconnecting the clutch and raising the needle-bar, said means being actuated from the presser-bar.

3. In a sewing-machine, the combination with the needle and presser bars, of a driving mechanism for the needle-bar, said mechanism including a clutch, a lever in connection with the clutch, a yoke connected with the presser-bar and engaging the lever to throw open the clutch, and a member engaged and moved by the yoke upon the opening of the clutch, such member having connection, with the needle-bar, to raise it.

4. In a sewing-machine, the combination with the needle-bar of means for driving the same, said means including a clutch, and manually-operative devices in connection with the clutch and with the needle-bar, said devices serving first to disconnect the clutch, second to raise the needle-bar.

5. In a sewing-machine, the combination with the needle and presser bars, of means for driving the needle-bar, and means acting first to disconnect the needle-bar-driving means, and second to raise the needle-bar, said latter means being fastened to the presser-bar to be actuated therefrom.

6. In a sewing-machine, the combination with the drive-shaft and with the needle and presser bars, of a gear loose on the drive-shaft, a toothed sector meshed with the gear, a cranked connection between the gear and needle-bar, a clutch for fastening the gear to the drive-shaft, and a member connected with the presser-bar, said member acting first to disengage the clutch, and second, to throw the toothed sector.

7. In a sewing-machine, the combination with the drive-shaft and with the needle and presser bars, of a gear loose on the drive-shaft, a toothed sector meshed therewith, a cranked connection between the needle-bar and the gear, a clutch connecting the gear with the drive-shaft, an elbow-lever in connection with the clutch, and a yoke carried by the presser-bar, said yoke serving first to throw the elbow-lever and next to swing the sector.

8. In a sewing-machine, the combination with the drive-shaft and needle and presser bars, of a gear loose on the drive-shaft, a collar fastened to the drive-shaft, a clutch-disk or key-holder having a key or pin movable loosely through the collar and into engagement with the gear to fasten the gear to the shaft, a cranked connection between the gear and the needle-bar, a toothed sector meshed with the gear, a lever having connection with the key-holder, and a yoke carried on the presser-bar and engaging first the lever and then the toothed sector.

9. In a sewing-machine, the combination with the needle and presser bars and the drive-shaft, of a gear loose thereon, a cranked connection between the gear and the needle-bar, a toothed sector meshed with the gear, a collar fast on the drive-shaft adjacent to the gear, a key-holder having a pin or key movable loosely through the collar and into engagement with the gear, a yoke or cap with which the key-holder is connected to rotate, a lever in connection with the cap, and means operated from the presser-foot for throwing first the lever and then the sector.

10. In a sewing-machine, the combination with the needle and presser bars and the drive-shaft, of a gear loose thereon, a cranked connection between the gear and the needle-bar, a toothed sector meshed with the gear, a collar fast on the drive-shaft adjacent to the gear, a key-holder having a pin or key movable loosely through the collar and into engagement with the gear, a yoke or cap with which the key-holder is connected to rotate, a lever in connection with the cap, and means operated from the presser-foot for throwing first the lever and then the sector, said lever being of elbow form and having a diagonally-disposed surface on one arm to be engaged by said yoke of the presser-bar.

11. In a sewing-machine, the combination with the needle and presser bars and the drive-shaft, of means for driving the needle-bar from the drive-shaft, said means including a clutch, an elbow-lever connected with the clutch and having on one arm a diagonal or cam surface, and a yoke carried by the presser-bar and arranged first to engage said diagonal surface of the elbow-lever and throw the same, thus disconnecting the clutch, and second, to impart a rising movement to the needle-bar.

12. In a sewing-machine, the combination with the needle and presser bars and with the drive-shaft, of means for driving the needle-bar from the shaft, said means including a clutch, a member movably connected with said means to impart a rising movement to the needle-bar, an elbow-lever connected with the clutch to operate it, the said elbow-lever having on one arm a diagonal or cam surface, and a yoke carried by the presser-bar and arranged to engage said diagonal surface of the elbow-lever and then to move the said member for lifting the needle-bar.

13. In a sewing-machine, the combination with the needle and presser bars and with the tubular drive-shaft, of a gear loose on the drive-shaft, a cranked connection between the gear and needle-bar, a collar fast to the drive-shaft, a key-holder having a key sliding loosely through the collar and engageable with the gear, a rod attached to the key-holder and passing into the tubular portion of the shaft, a spring within the shaft, the

spring pressing on the rod to hold the key-holder in active position, a cap with which the key-holder has rotary connection, means for moving the cap outward to disengage the pin or key from the gear without interfering with the rotary movement of the shaft and the parts directly attached thereto, a toothed sector meshed with the loose gear, and a means actuated from the presser-bar for throwing the sector.

14. In a sewing-machine, the combination with the needle-bar of means for driving the same, said means including a clutch, a spring holding the clutch yieldingly in active position, and manually-operative devices in connection with the clutch and with the needle-bar, said devices serving first to disconnect the clutch, second to raise the needle-bar.

709,855. SAW-TOOTH TOOL. TORJORN OLSEN, Manistee, Mich. Filed Dec. 10, 1901. Serial No. 85,335. (No model.)

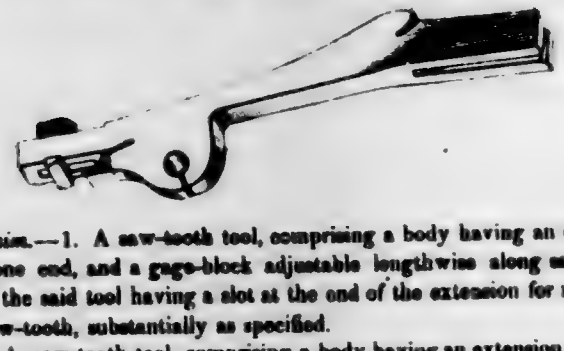

Claim.—1. A saw-tooth tool, comprising a body having an extension at one end, and a gage-block adjustable lengthwise along said extension, the said tool having a slot at the end of the extension for receiving a saw-tooth, substantially as specified.

2. A saw-tooth tool, comprising a body having an extension at one end provided with a slot, a gage-block adjustable along said extension, a bolt passing from said block through the slot, and a set-nut on the bolt, the said tool having a slot at the end of the extension for receiving a saw-tooth, substantially as specified.

709,856. GAS-BURNER. JAMES W. PIPER, Waltham, Mass. Filed Jan. 23, 1902. Serial No. 90,974. (No model.)

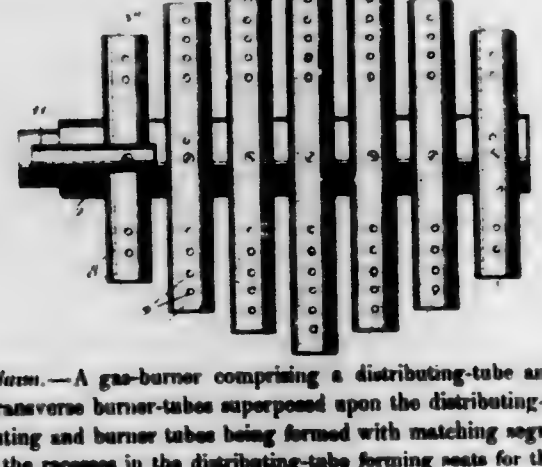

Claim.—A gas-burner comprising a distributing-tube and one or more transverse burner-tubes superposed upon the distributing-tube, said distributing and burner tubes being formed with matching segmental recesses, the recesses in the distributing-tube forming seats for the burner-tubes, each burner-tube having a longitudinal row of perforations, vertical air-passages and an annular row of jet-orifices around said passages, and fastenings detachably connecting the burner-tubes to the distributing-tube, substantially as described.

709,857. NUT-LOCK. GEORGE L. PITTMAN, Bethesda, Ohio. Filed Jan. 25, 1902. Serial No. 91,243. (No model.)

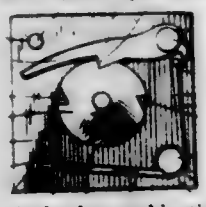

Claim.—1. In a nut-lock, the combination with a grooved bolt, of the nut, the pawl pivoted to said nut, and having upon one side of its pivot a lug extension, and upon the opposite side of its pivot and upon the same side thereof as the pawl-tooth a handle extension, and the pressure-spring engaging said lug extension, substantially as specified.

2. In a nut-lock, the combination with a grooved bolt, of the nut, the pawl pivoted to said nut, and having upon one side of its pivot a lug extension, and upon the opposite side of its pivot and upon the same side thereof as the pawl-tooth a handle extension, a pressure-spring engaging said lug extension, and means adapted to engage said handle extension for maintaining the pawl in elevated position, substantially as specified.

3. A nut having four corner perforations, and in connection with one of them, a pin, and thereon a pawl, having a rear lug and a forward extension, in connection with a second perforation, a pin and thereon a coil-spring having one of its arms engaging the rear lug of said pawl and its other arm engaging the third perforation, the fourth perforation being adapted to receive a hold-off pin, substantially as specified.

709,858. PROCESS OF DESULFURIZING FURNACE-GASES. EMIL POLLACSEK, Budapest, Austria-Hungary. Filed Mar. 10, 1902. Serial No. 97,631. (No specimens.)

Claim.—1. A method for desulfurizing furnace-gases, which consists in passing the gases through a filter arranged adjacent to the fuel-plates of the furnace and formed by the action of the gases upon a mass consisting of lime, sawdust, not-caking fuel, caking fuel and peat.

2. A method for desulfurizing furnace-gases which consists in passing the gases through a mass consisting of caustic lime, an easily-combustible component, a less-combustible component, and peat.

3. A method for desulfurizing furnace-gases which consists in passing the gases through a sponge-like material formed by the action of the gases upon a mass consisting of ten to fifteen parts by weight of sawdust, thirty to thirty-five parts by weight of not-caking fuel, twenty to twenty-five parts by weight of caking fuel, thirty to thirty-five parts by weight of peat and six to twenty parts by weight of caustic lime.

4. A method for desulfurizing furnace-gases which consists in passing the gases through a filter arranged adjacent to the fuel-plates and formed by the action of the gases upon a mass consisting of caustic lime, an easily-combustible component, a less-combustible componet, caking fuel, and peat.

709,359. OPTICAL INSTRUMENT. SETH A. RHODES, Chicago, Ill. Filed Mar. 13, 1902. Serial No. 97,998. (No model.)

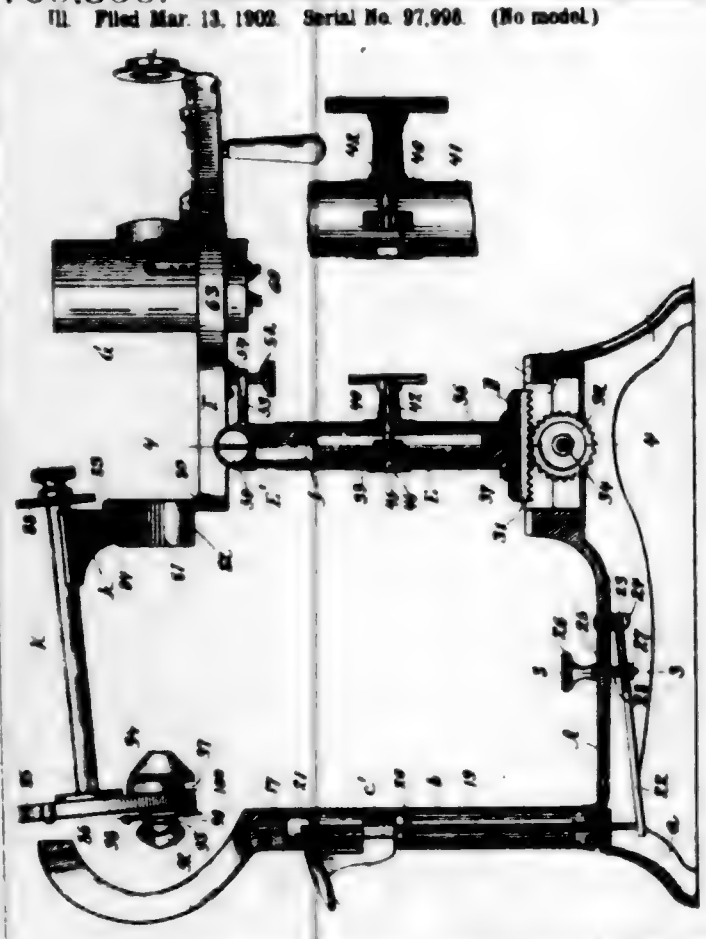

Claim.—1. In optical instruments, a suitable frame adapted at one end for the patient, a light-screen and a mirror having a peep-hole mounted at the opposite end, and means on said frame substantially midway between its ends and in the line of sight between said mirror and eyepiece for supporting an eyepiece and test-lens closely adjacent the patient's eye for refractive test and an object-glass midway between the ends of the instrument for ophthalmoscopic examination.

2. In optical instruments, a suitable frame having means at one end for positioning the patient's head, a light-screen and a mirror having a peep-hole mounted at the opposite end and a support substantially midway between the ends of the frame and in the line of sight between said mirror and eyepiece whereon may be interchangeably mounted suitable retinoscopic and ophthalmoscopic attachments.

3. In optical instruments, a suitable frame adapted at one end for the patient, a light-screen and a mirror having a peep-hole at the opposite end, a stub-socket on said frame substantially midway between the ends

and in the line of sight between said mirror and eyepiece and a lens-carrier removably supported on the frame at said stub socket.

4. In optical instruments, a frame having means at one end for positioning the patient's head, a light-screen and a mirror having a peep-hole at the opposite end, a horizontal tubular stub-socket on said frame substantially midway between its ends and in the line of sight between said mirror and eyepiece and a lens-carrier having a companion stub-socket removably carried on the frame thereby.

5. In optical instruments, a suitable base, means for positioning the patient's head mounted at one end of said base, a standard mounted at the opposite end, a horizontal support pivoted to swing upon the upper end of said standard, a light-screen and a mirror having a peep-hole carried on said support at its outer end, a stub-socket provided on said support midway between the ends of the instrument and a lens-carrier having a companion stub-socket removably carried thereby upon said frame.

6. In optical instruments, a frame comprising a suitable base having means at one end for positioning the patient's head, a supporting-arm mounted to swing in a horizontal plane at the opposite end, a light-screen and a mirror having a peep-hole mounted at the outer end of said supporting-arm, a stub-socket carried on said supporting-arm substantially midway between the ends of the instrument and a lens-carrier having a companion stub-socket removably carried thereby upon the frame.

7. In optical instruments, a frame having a head-rest at one end, a horizontally-disposed support at the opposite end, a light-screen and a mirror having a peep-hole mounted upon the outer end of said support, a horizontally-disposed stub-socket mounted upon said support substantially midway between said head-rest and said mirror and a lens-carrier having a companion stub-socket removably carried thereby upon the frame.

8. In optical instruments, a frame comprising a base having a standard at one end, a chin-rest carried thereby, a second standard at the opposite end of the base, a horizontally-disposed supporting-arm pivoted to the upper end of said supporting-standard, a light-screen and a mirror having a peep-hole mounted at the outer end of said supporting-arm, a stub-socket on said supporting-arm substantially midway between the ends of the instrument and a lens-carrier having a companion stub-socket removably carried thereby upon the frame.

9. In optical instruments, the combination with a suitable base having means at one end for positioning the patient's head, an adjusting-standard at the opposite end, an open, horizontally-disposed arm pivoted to the upper end of said adjusting-standard, a light-screen and a mirror having a peep-hole mounted upon the outer end of said supporting-arm, said light-screen and mirror being independently shiftable from side to side in a horizontal plane, a stub-socket upon the inner end of said arm and a lens-carrier having a companion stub-socket carried thereby upon the arm.

10. In optical instruments, a suitable base, a head-rest mounted thereon at one end, a supporting-standard at the opposite end, a support pivoted to swing in a horizontal plane upon the upper end of said second standard, a light-screen and a mirror having a peep-hole upon the outer end of said support, a stub-socket on said support substantially midway between said mirror and said head-rest and a lens-carrier having a companion stub-socket removably carried thereby upon said support and means for adjusting said support to and from said head-rest.

11. In optical instruments, the combination with a base having a head-rest at one end, a standard at the opposite end, a horizontally-disposed support pivoted to swing in a horizontal plane upon said standard, a light-screen and a mirror carried upon the outer end of said support, a stub-socket on said support, a lens-carrier having a companion stub-socket removably carried thereby upon the support and means for tilting said support in a vertical plane upon the upper end of said standard.

12. In optical instruments, a suitable base having a head-rest at one end, a supporting-standard at the opposite end, a horizontally-disposed support having a pivot-piece engaging said standard, a light-screen and a mirror mounted upon the outer end of said support, a stub-socket on said support substantially midway between said mirror and said head-rest, a lens-carrier having a companion stub-socket removably carried thereby upon said support, means for shifting said standard and parts carried thereby to and from said head rest, means for vertically adjusting said standard and means for tilting said support and parts carried thereby in a vertical plane upon the upper end of said pivot-piece.

13. In optical instruments, a hollow base portion having a hollow upright standard at one end, a chin-rest projecting through a slot in the upper end of said hollow standard, a vertical supporting-rod for said chin-rest within said hollow standard and projecting downwardly within said hollow base portion, guides within said standard for said rod, a substantially horizontal shift-lever within said hollow base portion and pivoted at one end thereto with its free end loosely engaging the lower end of said supporting-rod, a vertically-disposed adjusting-screw extending loosely through said base portion and loosely through said shift-lever intermediate its ends, an external thumb-piece upon the upper end of said adjusting-screw, a nut threaded to the lower end of said adjusting-screw and engaging said shift-lever and a spring coiled about said adjusting-screw and interposed between said base portion and said shift-lever, substantially as described.

14. In optical instruments, the combination with a suitable base, a hollow standard at one end, an oval head-rest carried at its upper end, a chin-rest projecting through an opening in the side of said hollow standard near its upper end, a supporting-rod for said chin-rest mounted to slide vertically within said tubular standard, a shift-lever arranged to engage the lower end of said rod and a thumb-nut for adjusting said shift-lever.

15. In optical instruments, a suitable base having a head-rest at one end and a supporting-standard at the opposite end, a support having a light-screen, a mirror and a lens-carrier in opposed relation mounted upon said standard and means for adjusting said standard and parts carried thereby to and from said head rest comprising a slide whereon said standard is mounted, guideways upon the base portion engaged by said slide, a rack upon the under side of said slide and a pinion journaled within a recess in said base portion engaging said rack.

16. In optical instruments, a suitable base portion having a head-rest at one end and a supporting-standard at the opposite end, a support carrying a light-screen, a mirror and a lens-carrier in opposed relation mounted upon the upper end of said standard, means for adjusting said standard and support to and from said head-rest comprising a dovetailed slide upon which said standard is mounted, dovetailed guideways upon said base for said slide, a rack fixed to the under side of said slide, a pinion mounted within a recess in said base and engaging said rack, a horizontal shaft extending through said base whereon said pinion is mounted and adjusting thumb-nuts secured to the end of said shaft.

17. In optical instruments, a suitable base portion, a support having a light-screen, mirror and lens-carrier in opposed relation, a standard for carrying said support upon said base portion, said standard comprising two tubular sections sleeved together one of which is shiftable longitudinally within the other, means for holding said shiftable section against lateral twist, a rack fixed to the inner face of said shiftable section, a pinion within said shiftable section engaging said rack, a stub-shaft extending through both of said tubular sections upon which said pinion is mounted, a sleeve wherein said shaft is journaled mounted upon said fixed section and an external adjusting thumb-nut secured to the outer end of said stub-shaft.

18. In optical instruments, a suitable base portion, a support having a light-screen, mirror and lens-carrier in opposed relation, a standard for carrying said support upon said base portion, said standard comprising inner and outer tubular sections sleeved together, a rack fixed to the inner face of said inner section, a pinion within said inner section engaging said rack, a stub-shaft whereon said pinion is mounted extending through a vertical slot in said inner section, a sleeve fixed to the outer section wherein said stub-shaft is journaled, a thumb-nut journaled upon the outer end of said shaft and a guide-piece fixed to the outer section engaging a longitudinal slot in the inner section.

19. In optical instruments, a suitable base portion, a support having a light-screen, mirror and lens-carrier in proper opposed relation, a standard for carrying said support upon said base portion, said standard comprising inner and outer sections sleeved together, a longitudinal rack fixed to the inner face of the inner section, a pinion engaging said rack, a horizontal stub-shaft whereon said pinion is mounted having a conical outer end, a sleeve having a corresponding conical bore within which said stub-shaft is journaled and an adjusting thumb-nut arranged to hold said stub-shaft snugly within the conical bore of said sleeve, whereby the inner section will be frictionally held in any one of its adjusted positions.

20. In optical instruments, a suitable base portion, a support having a light-screen, mirror and lens-carrier in proper opposed relation, a standard for carrying said support upon said base portion, said standard comprising inner and outer tubular sections sleeved together, a longitudinal rack fixed to the inner face of the inner section, a pinion engaging said rack, a horizontal stub-shaft for said pinion projecting through a slot in the inner section and having a conical outer end, a sleeve having a conical bore fixed to the outer section wherein said stub-shaft is journaled, an adjusting thumb-nut fitting the outer end of said shaft and engaging the outer end of said sleeve and a screw threaded through a central opening in said thumb-nut and into the outer end of said shaft for securely holding the latter within the conical bore of said sleeve.

21. In optical instruments, a suitable horizontally-disposed support, a light-screen, mirror and lens-carrier mounted on said support in opposed relation, a base portion and a standard for carrying said support upon said base portion, said standard comprising two tubular sections adjustably sleeved together, a pivot-piece fitted within the upper end of the inner standard-section and a hinge connection between said pivot-piece and said support, whereby the latter may swing in a horizontal plane and be tilted in a vertical plane.

22. In optical instruments, a horizontally-disposed support, a light-screen, mirror and lens-carrier mounted thereon in opposed relation, a

standard for said support, a pivot piece fitted within the upper end of said standard, a hinged connection between said pivot-piece and said support comprising abutting semicircular hinged sections and a connecting pivot-bolt, an arm fixed to the upper end of said pivot-piece and an adjusting-screw extending between the outer end of said arm and said support.

23. In optical instruments, a suitable base portion, a patient's head-rest mounted at one end thereof, an upright standard at the opposite end, a horizontally-disposed support swiveled upon the upper end of said standard to swing in a horizontal plane, a light-screen, mirror and lens-carrier mounted in opposed relation upon said support, means for adjusting said support vertically upon said standard and means for adjusting said support to and from said head-rest.

24. In optical instruments, a suitable base portion, a head-rest mounted at one end thereof, an upright standard at the opposite end, a pivot-piece swiveled in the upper end of said standard, a horizontally-disposed support hinged to said pivot-piece, a light-screen, mirror and lens-carrier mounted in opposed relation upon said support and means for adjusting said standard and support to and from said head-rest.

25. In optical instruments, a horizontally-disposed support having a light-screen and mirror mounted thereon at its outer end and a stub-socket at its inner end, a retinoscopic attachment comprising an abutment having a companion stub-socket removably carried thereby upon said support at its inner end, a substantially horizontal frame member fixed at its inner end to said abutment and a lens-carrier and patient's eyepiece carried at the outer end of said frame member.

26. In optical instruments, a suitable standard, a horizontally-disposed arm swiveled at the upper end of said standard, a light-screen and tilting mirror mounted to swing from side to side about a common center upon the outer end of said arm, an upright at its inner end, a horizontally-disposed tubular stub-socket fixed to said upright, a retinoscopic attachment comprising an abutment having a companion stub-socket removably carried thereby upon said arm, a substantially horizontal frame member fixed at its inner end to said abutment and a lens-carrier and patient's eyepiece mounted upon the outer end of said frame member.

27. In optical instruments, a suitable standard, a horizontal support upon the upper end of said standard having a light-screen and tilting mirror at its outer end and a stub-socket at its inner end, a retinoscopic attachment comprising an abutment having a companion stub-socket removably carried thereby upon said support, a horizontally-disposed tubular member fixed at its inner end to said abutment, a lens-casing and eyepiece mounted upon the outer end of said frame member, a lens-disk within said casing, an operating-rod therefor sleeved within said tubular frame member and an external adjusting-nut fixed to the inner end of said supporting-rod.

28. In optical instruments, a suitable standard, a horizontally-disposed arm swiveled to the upper end of said standard, a light-screen and tilting mirror carried upon the outer end of said arm, an upright having a horizontally-disposed stub socket upon the inner end of the arm, a retinoscopic attachment comprising an abutment having a companion stub-socket removably carried thereby upon the arm, a tubular frame member inclined to the horizontal and fixed at its inner end to said abutment, a lens-casing inclined to the vertical and fixed to the outer end of said tubular frame member, a patient's eyepiece carried upon said lens-casing, a lens-disk within said casing, an operating-rod for said lens-disk sleeved within said tubular frame member and an adjusting-nut fixed to the inner end of said rod.

29. In optical instruments, a suitable standard, a horizontally-disposed arm swiveled to the upper end of said standard having a light-screen and tilting mirror mounted in opposed relation upon its outer end and a stub-socket at its inner end, a retinoscopic attachment comprising an abutment having a companion stub-socket removably carried thereby upon said arm, a substantially horizontal frame member fixed at its inner end to said abutment, a cylindrical lens-casing mounted upon the outer end of said frame member, an eyepiece carried upon said lens-casing near its periphery, companion lens-disks mounted in adjacent relation in said casing, operating-rods therefor sleeved together and sleeved within said tubular frame member and actuating thumb-nuts fixed to the inner ends of said rods.

30. In optical instruments, a suitable standard, a horizontally-disposed supporting-arm fixed to the upper end of said standard having a light-screen and tilted mirror mounted in opposed relation at its outer end and a stub-socket at its inner end, a retinoscopic attachment comprising an abutment having a companion stub-socket removably carried thereby upon said arm, a substantially horizontal frame member fixed at its inner end to said abutment, a lens-casing upon the outer end of said frame member, a patient's eyepiece carried on the outer side of said lens-casing, a hood fixed to the inner face of said lens-casing opposite said eyepiece and a lens-holder within said hood.

31. In optical instruments, a suitable frame or support, a light-screen and tilting mirror mounted in opposed relation at one end, an eyepiece at the opposite end, companion lens-disks mounted in adjacent relation in front of said eyepiece, operating-rods therefor sleeved together and extending inwardly toward said mirror and a pair of scale-disks fixed in adjacent relation to the inner ends of said rods, the outer scale-disk having openings through which the figures upon the inner disk may be viewed.

32. In optical instruments, a suitable frame or support, a light-screen and tilting mirror mounted at one end thereof, a tubular support at its opposite end and a patient's eyepiece fitted telescopically within said tubular support whereby it may be rotatably and longitudinally adjusted, said eyepiece being of such an irregular outline as to fit securely about either eye of the patient.

709,860. CIGAR-MARKING MACHINE. FRANCIS H. RICHARDS, Hartford, Conn. Filed Jan. 2, 1901. Serial No. 41,832. (No model.)

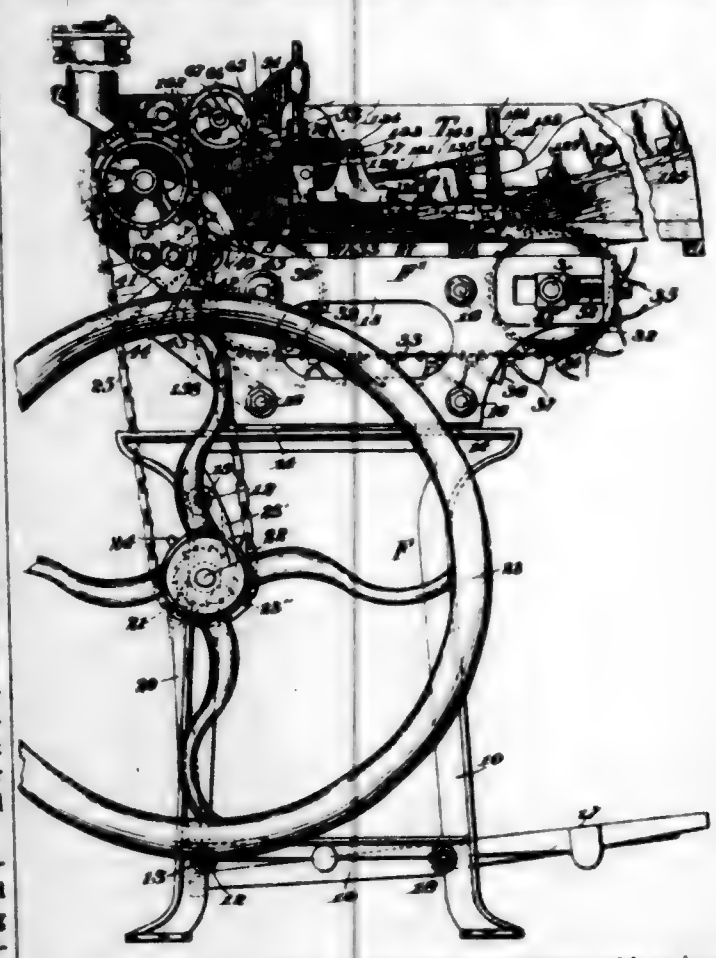

Claim.—1. In a marking-machine, the combination, with an intermittently-movable carrier, of intermittently-movable means for supplying marking material; and a marking device located adjacent thereto and effective to oscillate and to reciprocate toward and from each of said elements, the reciprocation relative to each element occurring at the intermission of movement of such element.

2. In a marking-machine, the combination, with a carrier adapted to support a plurality of objects to be marked, of means for supplying marking material; and a marking device located adjacent thereto comprising a plurality of sets of characters and effective to oscillate and to move toward the marking-material supply and to oscillate and to move toward the carrier.

3. In a marking device, the combination, with a carrier adapted to support a plurality of objects to be marked, of a plurality of means for supplying marking material; and a marking device located adjacent thereto, comprising a plurality of sets of characters and effective to oscillate and to move toward the marking-material supply and the carrier.

4. In a marking-machine, the combination with an intermittently-movable carrier, of a marking device located adjacent thereto and effective to move toward said carrier, and a brake operating with constant and unvarying pressure in connection with said carrier.

5. In a marking-machine, the combination, with an intermittently-movable carrier, of means for supplying marking material; a marking device located adjacent thereto and effective to move toward each of said elements; ratchet mechanism geared to the carrier; and a cam coacting with the pawl thereof for actuating the same.

6. In a marking-machine, the combination with a carrier, of a marking device located adjacent thereto and effective to move toward the carrier, and a support for the object to be marked adjacent to the carrier and normally out of contact with such object but effective to support the same upon pressure being applied thereto by the marking device.

7. In a marking-machine, the combination with a carrier, of a mark-

ing device located adjacent thereto and effective to move toward the carrier, and an adjustable support for the object to be marked adjacent to the carrier and normally out of contact with such object but effective to support the same upon pressure being applied thereto by the marking device.

8. In a marking-machine, the combination with a marking device and a carrier adapted to hold in single file longitudinally thereof the objects to be marked; of a feed-shelf adjacent to said carrier; and automatic means for delivering longitudinally to the carrier at one operation a plurality of objects to be marked.

9. In a marking-machine, the combination with a marking device adapted to mark a plurality of objects and a carrier adapted to feed in single file longitudinally thereof the objects to be marked; of a feed-shelf adjacent to said carrier; and automatic means adapted to deliver longitudinally to the carrier at one operation a plurality of objects to be marked.

10. In a marking-machine, the combination, with a marking device and a carrier, of a feed-shelf adjacent to said carrier; a movable stop coöperating with said feed-shelf to support the objects to be marked; and means for moving said objects from contact with the stop onto the carrier.

11. In a marking-machine, the combination, with a marking device and a carrier, of a feed-shelf adjacent to said carrier; a movable stop operating in connection with said feed-shelf; means for moving objects to be marked from contact with the stop onto the carrier; and a guide-plate located above the stop.

12. In a marking-machine, the combination, with a marking device and a carrier, of a feed-shelf adjacent to said carrier; a feed-arm for moving objects to be marked onto the carrier; and a pivoted guide for raising said arm upon its return movement.

13. A feeder, comprising a movable stop; a feed-arm adapted to withdraw objects from contact with said stop; and means comprising a crank-arm, a reciprocating arm and a pivoted guide-block for imparting a compound movement to the feed-arm.

14. In a marking-machine, the combination with a support for an object to be marked; means for supplying marking material; a marking device effective to oscillate and to reciprocate toward and from each of said elements; a sliding rod; a rocking guide traversed thereby; and means for regulating the length of reciprocation toward and from one of said elements.

15. In a marking-machine, the combination with means for holding an object to be marked, of means for supplying marking material; a marking device effective to oscillate and to reciprocate toward and from each of said elements; a rocking guide for supporting said device; and means for regulating the length of reciprocation toward and from one of said elements.

16. The combination, with a marking device having a plurality of marking means and a support for the objects to be marked, of a movable arm for actuating said device so connected thereto that the marking will take place while the arm is substantially parallel to the objects to be marked.

17. The combination, with a marking device having a plurality of marking means and a support for the objects to be marked, of a movable arm for actuating said device; and a plurality of means for supplying marking material provided with distributing-surfaces so situated that the arm is substantially parallel thereto during the contact of the printing device thereon.

18. In a marking-machine, the combination with a carrier, of means for supplying marking material; a marking device located adjacent thereto and effective to oscillate and to reciprocate toward and from each of said elements, and means for regulating the length of reciprocation toward and from one of said elements.

19. In a marking-machine, the combination with a carrier, of means for supplying marking material; a marking device located adjacent thereto and effective to oscillate and to reciprocate toward and from each of said elements, and means for regulating the length of reciprocation toward and from only one of said elements.

20. In a marking-machine, the combination with a carrier, of means for supplying marking material; a marking device located adjacent thereto and effective to oscillate and to reciprocate toward and from each of said elements, and means comprising an overgear device, for regulating the length of reciprocation toward and from one of said elements.

21. The combination of a marking device, an oscillating support for carrying the marking device; a movable arm upon which the support is mounted; an oscillating plate in proximity thereto; and means connecting the said arm and plate consisting of a spring.

22. The combination with a marking device and an oscillating support therefor, of a movable member upon which the support is mounted; an oscillating member in proximity thereto; a yieldable connection between the movable member and oscillating member; and a stop for the movable member.

23. The combination, with a marking device and a support for the object to be marked, of a movable member upon which said device is mounted; an oscillating mechanism in proximity thereto; a yieldable connection between said movable member and oscillating member; a stop for said movable member; and an adjustable contact device between the member and the stop.

24. The combination with a marking device and an oscillating support therefor, of a movable arm upon which the support is mounted; an oscillating plate in proximity thereto; and a spring secured to the plate and capable of contacting with the arm.

25. The combination, with a marking device and a support for the object to be marked, of a movable member upon which said device is mounted; an oscillating mechanism in proximity thereto; a yieldable connection between said movable member and oscillating mechanism; and means for adjustably limiting the amount of movement of the member independently of the oscillating mechanism.

26. A marking device, comprising a supporting member; a flexible marking-strip; and a lever system for connecting each end of the strip to the supporting member.

27. A marking device, comprising a supporting member; flexible marking means; and a compound lever for connecting each end of the strip to the supporting member, said levers being connected to each other.

28. A marking device, comprising a supporting member; a flexible strip provided with characters; compound levers for connecting the ends of the strip to the supporting member, said levers being connected to each other; and a connection between said compound levers and the supporting member.

29. The combination with a head carrying a plurality of marking devices, of a feeder comprising a reservoir; an opening therein; supply-rolls corresponding in number to the marking devices and adapted to receive the marking material from the reservoir; means for adjusting said supply-rolls toward and from each other; and means effective to bring the marking devices into contact with the supply-rolls.

30. The combination with a marking-head carrying a plurality of marking devices, and a feeder comprising a reservoir; an opening therein; supply-rolls corresponding in number to the number of marking devices; of an eccentric support for adjusting said supply-rolls toward and from each other; and means effective to bring the marking devices into contact with the supply-rolls.

31. In a marking-machine, the combination, with a marking device, driving means therefor, means for supplying marking material and a carrier, of a driving-shaft carrying means to actuate the marking device and carrier; and mechanism operative through the marking-device-driving means for actuating the supply means.

32. In a marking-machine, the combination, with a marking device, driving means therefor, means for supplying marking material and a carrier, of a driving-shaft carrying means to actuate the marking device continuously and the carrier intermittently; and mechanism operated by the marking-device-driving means for actuating the supply means.

33. In a marking-machine, the combination, with a marking device, driving means therefor, means for supplying marking material and a carrier, of a driving-shaft carrying means to actuate the marking device continuously and the carrier intermittently; and mechanism operated by the marking-device-driving means for actuating the supply means intermittently.

34. In a marking-machine, the combination, with a marking device, means for supplying marking material and a carrier, of a driving-shaft carrying a crank to actuate the marking device; and a cam contacting with ratchet mechanism to intermittently actuate the carrier.

35. In a marking-machine, the combination, with a marking device, means for supplying marking material and a carrier, of a driving-shaft carrying means to actuate the marking device; and a crank connection with ratchet mechanism to intermittently actuate the supply means.

36. In a marking-machine, the combination, with a marking device, of a carrier comprising links provided with arms adapted to support the object to be marked, one of said arms extending over that of the link next adjacent.

37. In a marking-machine, the combination, with a marking device, of a carrier comprising links provided with arms adapted to support the object to be marked, one of said arms being substantially straight and the other curved.

38. A chain, comprising links provided with arms, one of said arms adapted to extend over that of the link next adjacent.

39. A chain comprising links provided with seats to which are secured pieces having forked projections, one of which projections is straight and slightly inclined, and the other of which projections is curved in the opposite direction.

40. In a marking-machine having oppositely-located side frames, one of which extends above the other, the combination with marking means, of means for supplying marking material thereto, upon which ex-

tension the marking and supplying means are located and wholly supported.

41. A machine for marking carved objects, comprising a flexible marking-strip and yieldable means, constrained to yield in unison, supporting such strip at each end.

42. In a marking-machine, a flexible marking-strip; a supporting member therefor; and a system of levers connecting said marking-strip to said member and embracing compound levers supporting each end of said strip.

43. A marking device comprising a supporting member; a flexible marking-strip; a compound lever connected to each end of the strip; and a link connected to the opposite ends of said compound lever at one end and to said supporting means at the other end.

44. A marking device comprising a supporting member; a flexible marking-strip; a compound lever connected at one end to the end of each strip; and means for constraining said levers to move in unison.

45. A marking device comprising a supporting member; a flexible marking-strip; a compound lever connected at one end to the end of each strip; and a link pivoted to the ends of said levers.

46. A marking device comprising a supporting member; a marking-strip; plates pivoted to said supporting member and securing the respective ends of the marking-strip; arms extending transversely from said plates; and a link pivoted at one end to said supporting means and at the other end to links pivoted respectively to said transverse levers.

47. In a marking device, the combination of a supporting member having side plates extending therefrom; plates pivoted to the ends of the side plates; a system of compound levers connecting said plates to one end of an arm pivoted to one of said side plates; and a marking-strip carried by said pivoted plates.

48. In a marking device, a supporting member; a marking-strip; plates pivoted to said supporting member and carrying at their free ends the ends of the marking-strip; a compound lever connected to the respective plates; and an arm uniting the ends of said levers and connecting them to the supporting means.

49. In a marking device, the combination of a supporting member; side plates projecting therefrom; a plate pivotally supported by the free end of each of said side plates; a marking strip carried by the ends of said pivoted plates; arms projecting transversely from said pivoted plates; and a link pivoted to the free end of each of said transverse arms, said links being pivoted together.

50. In a marking-machine, the combination of a supporting means; a marking means; and a pair of toggle connections between said marking means and supporting means.

51. In a marking-machine, the combination of a supporting means; a flexible marking strip; and a pair of toggle connections between said marking-strip and supporting means.

52. In a marking-machine, the combination of a supporting means; a flexible marking-strip; a pair of toggle connections to which said strip is secured; and shiftable means for connecting said toggle connections with the supporting means.

53. In a marking-machine, the combination of a supporting means; a flexible marking-strip; a linkage connected to said supporting means and to each end of said marking-strip; and a linkage connecting said linkages together and to the supporting means.

54. In a marking-machine, the combination of a marking means; and a system of linkage adapted to permit the marking means to bend and effective to constrain the ends thereof to so bend in unison.

55. In a marking-machine, the combination of a supporting means; a flexible marking-strip; and means effective upon the contact of any portion of the marking means with the object to be marked, for constraining both ends of the marking means to move in unison.

56. In a marking-machine, the combination of a supporting means; a flexible marking-strip; and means embodying a system of linkage for making the ends bend in unison.

57. In a marking-machine, the combination of a yieldable marking-strip; and means effective upon the contact of any portion of the marking means with the object to be marked, for causing the ends of said strip to yield in unison.

58. In a marking-machine, the combination of a yieldable marking-strip; and means embodying a system of linkage for constraining the ends to move in unison.

59. In a marking-machine, the combination of a yieldable marking means; and means comprising a system of linkage after the analogy of toggles for constraining the ends to yield in unison.

60. In a marking-machine, the combination of a supporting member; a yieldable marking means; a system of linkage after the analogy of toggles connected to said marking means and to said supporting means and effective to cause the ends of said marking means to move in unison; and means for maintaining said toggles in working position.

61. In a marking-machine, the combination of a marking-strip, means operative partly by said strip for wrapping the same about an object to be marked, and means operative by the object and coöperative with the strip to effect the operation of the wrapping means.

62. In a marking-machine, the combination of a marking-strip, means comprising pivoted members for wrapping the strip about an object to be marked, said means being operative by said strip, and means operative by the object and coöperative with the strip to effect the operation of said wrapping means.

63. In a marking-machine, the combination of a marking-strip, means comprising pivoted members for wrapping the strip about an object to be marked, and means operative by said strip connecting said pivoted members and operating them to move in unison.

64. In a marking-machine, the combination of a marking-strip, means comprising pivoted members for wrapping the strip about an object to be marked, means operative by said strip connecting said pivoted members and operating them to move in unison, and means operative by the object and coöperative with said strip to effect the operation of said wrapping means.

65. In a marking-machine, the combination of side members, a marking-strip carried thereby and operating to draw said members inwardly to effect the wrapping of the strip about the object to be marked, and supplemental means coöperative with said strip for further wrapping the latter about the object.

66. In a marking-machine, the combination of side members, a marking-strip carried thereby, a toggle-joint connecting said side members, and means operated by said joint to bring said members toward each other in the region thereof on which said marking-strip is carried.

709,861. DRAFT SPRING-RIGGING FOR RAILROAD-CARS. EDWARD W. RAMES, Lasalle, Ill. Filed Jan. 21, 1902. Serial No. 90,685. (No model.)

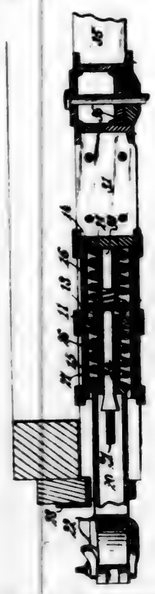

Claim.—1. In a draft-rigging for railroad-cars, a plurality of cylinders, springs in the cylinders, a draw-bar having a push-pin, means for preventing the withdrawal of said draw-bar, a plate separating the cylinders, and the pin extending through a perforation in said plate, a piston coöperative with said pin, and a stop in the rear cylinder adapted to be engaged by said piston to limit the compression of the spring in said rear cylinder.

2. In a draft-rigging for railroad-cars, a plurality of cylinders, springs in the cylinders, a draw-bar having a push-pin, means for preventing the withdrawal of said draw-bar, a plate separating the cylinders, and the pin extending through a perforation in said plate, a piston having a conaved face to receive and center the inner end of said push-pin, and a stop in the cylinder adapted to be engaged by said piston to limit the compression of the spring in said rear cylinder.

3. In a draft-rigging for railroad-cars, a plurality of cylinders, springs in the cylinders, a draw-bar having a push-pin, means for preventing the withdrawal of said draw-bar, a plate separating the cylinders, and the pin extending through a perforation in said plate, a piston coöperative with said pin, and a stop inclosed by the spring of the rear cylinder and adapted to be engaged by said piston.

4. In a draft-rigging for railroad-cars, a plurality of cylinders, springs in the cylinders, a draw-bar having a push-pin projecting through a perforation in the rear wall of said draw bar, a key carried by the draw-bar adapted to be engaged by the outer end of the push-pin, means for preventing the withdrawal of said key, a plate separating the cylinders and said push-pin extending through said plate, a piston coöperative with said pin, and a stop in the rear cylinder adapted to be engaged by said piston.

5. In a draft-rigging for railroad-cars, a plurality of cylinders, springs in the cylinders, a draw-bar having a transverse key, means for preventing the withdrawal of said key, a push-pin provided with an enlarged head adapted to abut against said key and said push-pin projecting through a perforation in the rear wall of the draw-bar, a plate separating the cylinders, and the pin extending through a perforation in said plate, a piston separated from and adapted to be engaged by said pin, and a stop in the rear cylinder adapted to be engaged by said piston.

6. A draft-rigging for railroad-cars, including a cylinder having a backing, a coiled spring in said cylinder, a stop inclosed by the coiled spring and adapted to engage said backing, a draw-bar, means for preventing the withdrawal of said draw-bar, a disk adapted to engage said spring, and a push-pin adapted to coöperate respectively with the draw-bar and disk, and the latter having a concaved face to receive and center said push-pin.

7. A draft-rigging for railroad-cars, including a series of circumferential enlargements extending lengthwise of the same, said enlargements forming elongated grooves to thereby accommodate a draw-bar.

8. A draft-rigging for railroad-cars, including a series of circumferential enlargements extending lengthwise of the same, said enlargements forming elongated grooves to thereby accommodate a draw-bar, and said cylinder being thickened at diametrically opposite places.

9. A draft-rigging for railroad-cars, including a series of circumferential enlargements extending lengthwise of the same, said enlargements forming elongated grooves to thereby accommodate a draw-bar, and said cylinder being thickened at diametrically opposite places, and having a projection upon its under side.

10. In a draft-rigging for railroad-cars, draft-arms, liner-plates secured to the upper and lower sides of the draft-arms, cylinders separated by the lower liner-plates, vertical plates, one of which separates the cylinders and the other of which serves to close the rear end of the rear cylinder, springs in said cylinders, a draw-bar having a push-pin extending through a perforation in the forward plate, a piston coöperative with the push-pin a stop in the rear cylinder adapted to be engaged by said piston, a timber between the draft-arms, a car body-bolster, a shoe secured to said bolster and abutting said timber and struts having a similar shoe also abutting against said bolster

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709,862. CALCULATING-MACHINE. ALEXANDER C. SCHUMAN, Louisville, Ky., assignor to Spalding Coleman, Louisville, Ky. Filed Dec. 18, 1901. Serial No. 86,455. (No model.)

Claim.—1. In a registering mechanism, the combination of registering-wheels, vibrating segments adapted to engage and actuate the registering-wheels, keys and connections for regulating the movement of said segments, means for returning the segments to normal position, a slotted guide-plate for said segments and means for moving said plate to and from the registering-wheels, substantially as described.

2. In a registering mechanism, the combination of registering-wheels, vibrating levers, segments connected therewith adapted to engage and actuate the registering-wheels, keys and connections for regulating the movement of said levers, a rock-shaft and cams for returning the levers to normal position, a slotted guide-plate for said segments and means for moving said plate to and from the registering-wheels, substantially as described.

3. In a registering mechanism, the combination of registering-wheels, segments adapted to engage therewith, means for reciprocating said segments, movable teeth on the segments and means for throwing said teeth into operative position to effect a "carrying over" from a wheel of lower to one of higher denomination, substantially as described.

4. In a registering mechanism, the combination of registering-wheels, vibrating segments adapted to engage therewith, vibrating levers and connections for reciprocating said segments, and a movable tooth pivoted to each segment of higher denomination, with means actuated by the adjacent registering-wheel of lower denomination for throwing said teeth into operative position, substantially as described.

5. In combination, registering-wheels, vibrating or reciprocating segments adapted to engage therewith, and means for reciprocating said segments; movable auxiliary teeth on the segments, and cams adapted to be actuated by registering-wheels of lower denomination, so as to cause the movable teeth of the segments of higher denomination to come into operation, substantially as described.

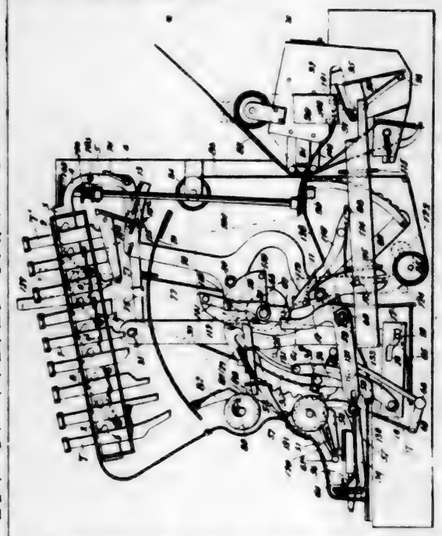

6. In combination, registering-wheels, swinging and reciprocating segments adapted to engage therewith, and vibrating key-controlled levers for reciprocating said segments; with movable auxiliary teeth on the segments, and cams adapted to be actuated by registering-wheels of lower denomination to cause the movable teeth of the segments of higher denomination to come into operation and effect the "carrying over," substantially as described.

7. In combination, registering-wheels, reciprocating segments adapted to engage therewith, and means for operating said segments; spring-retracted teeth on the lower ends of the segments, wiper-cams beside the disks adapted to engage the teeth and throw them into operative position, and means for setting the cam of a disk of higher denomination by and from the disk of lower denomination, substantially as described.

8. In combination, sliding bars, keys for shifting said bars, vibrating levers adapted to be limited in their movements by said keys, and rocking levers actuated by said bars having hooked ends adapted to be engaged by pins on the vibrating levers to restrain movement of the latter unless the corresponding bar has been shifted, substantially as described.

9. In combination, sliding bars, keys for shifting said bars, vibrating levers adapted to be limited in their movements by said keys, rocking levers actuated by said bars having hooked ends adapted to be engaged by pins on the vibrating levers, to restrain movement of the latter unless the corresponding bar has been shifted, and trip latches or dogs on the hooked ends of the rock-levers adapted to be engaged by the released levers as the latter are returned to normal position and thereby cause the resetting of the bar and keys, substantially as described.

10. In combination, the registering-wheels, reciprocating segments adapted to actuate the registering-wheels, vibrating levers for operating said segments, keys for controlling the movement of said vibrating levers, and a rock-shaft and connections for positively actuating said levers; with a movable slotted guide-plate for the segments adapted to hold them in or out of engagement with the registering-wheels, and means for periodically actuating the guide-plate from the rock-shaft, substantially as described.

11. In combination, the registering-wheels, segments adapted to actuate the registering-wheels, vibrating levers for operating said segments, keys for controlling the movements of said vibrating levers, and a rock-shaft and connections for positively actuating said levers; with a movable guide-plate for the segments adapted to hold them in or out of engagement with the registering-wheels, a swinging lever, connections between the free end of said lever and the plate, a disk on the shaft, and means for periodically actuating the swinging lever from the shaft, substantially as described.

12. In combination, a series of numeral-keys, sliding bars actuated thereby, type-hammers, and a laterally-adjustable device for cocking said

hammers; with means whereby said sliding bars effect the shifting of said plate so that only the proper hammers are cocked.

13. In combination, a series of numeral-keys, sliding bars actuated thereby, type-hammers, their actuating-levers, and a laterally-adjustable device engaging said levers to cock said hammers; with an arm adapted to be actuated by said sliding bars, a vibrating lever operating said slide, and connections between said arm and lever, whereby when a slide-bar is shifted, the corresponding type-hammer is cocked, substantially as described.

14. The combination of registering-wheels, reciprocating segments adapted to mesh therewith, a rocking guide for said segments, and a rock-shaft; with a swinging lever beside said shaft having its lower end connected with the guide, and means for swinging said lever by the rocking of the shaft, substantially as described.

15. The combination of the registering-wheels, the reciprocating segments adapted to mesh therewith, a rocking guide for said segments, and a rock-shaft; with a swinging lever beside said shaft having its lower end connected with the guide so as to shift the latter; and means for swinging said lever by the rocking of the shaft, said means comprising a latch pivoted on the lever, and a disk on the shaft having two pins adapted to alternately engage the latch, substantially as described.

16. In combination, the registering-wheels, reciprocating segments adapted to mesh therewith, a guide for said segments, a rock-shaft, a swinging lever for rocking said guide, so as to normally hold the segments and registering-wheels in mesh during the registering motion of the rock-shaft, and means for actuating said lever from said shaft; with a key and connections whereby upon depression of said key the guide is caused to move the segments out of mesh during the normally registering motion of the rock-shaft.

17. In combination, the registering-wheels, reciprocating segments adapted to mesh therewith, a guide for said segments, and dogs for locking the registering-wheels, a rock-shaft, a swinging lever for rocking said guide, so as to normally hold the segments and registering-wheels out of mesh during the forward or setting motion of the rock-shaft, and means for actuating said lever from said shaft; with a key and connections whereby upon depression of said key the guide is caused to hold the segments in mesh during the forward or "setting" motion of the rock-shaft, and the dogs disengaged from the registering-wheels.

18. In combination, the registering-wheels, reciprocating segments adapted to mesh therewith, a guide for said segments, a rock-shaft, a swinging lever for rocking said guide, so as to normally hold the segments and registering-wheels out of mesh during the "setting" motion of the rock-shaft, and in mesh during the return motion thereof, and means for actuating said lever from said shaft; with a key and connections whereby the guide is caused to hold the segments in mesh during the "setting" motion of the rock-shaft, and out of mesh during the return motion thereof, said connections comprising a slide on the swinging lever, a spring-pressed pawl thereon, and a disk on the shaft adapted to engage said pawl when the key is depressed, substantially as described.

19. In combination, the registering-wheels, reciprocating segments adapted to mesh therewith, a guide for said segments, a rock-shaft, a swinging lever for rocking said guide, so as to normally hold the segments and registering-wheels in mesh during the registering motion of the rock-shaft, and out of mesh during the "setting" movement of said shaft, and means for actuating said lever from said shaft; with a key and connection whereby the guide is caused to hold the segments in mesh during the setting stroke and to move the segments out of mesh during the return or registering motion of the rock-shaft, said connections comprising a slide on the swinging lever, a spring-pressed pawl thereon, and a disk on the shaft adapted to engage said pawl when the key is depressed, a rock-lever having a tripping-pawl also engaging said disk when the key is depressed, and dog-releasing devices operated by said rock-lever, substantially as described.

20. In an adding-machine, the combination of a series of laterally-adjustable registering-wheels, a series of corresponding indicator-wheels adjustable with the registering-wheels, mechanism for operating the registering-wheels, and a rock-shaft and connections for operating said mechanism; with a single reciprocating device adapted to engage and actuate the proper indicator-wheel when the rock-shaft is operated, whereby the displacement of the registering mechanism, and the number of operations of the rock-shaft during such displacement is indicated, substantially as described.

21. In an adding-machine, the combination of a series of laterally-adjustable registering-wheels, a series of corresponding indicator-wheels adjustable with the registering-wheels, mechanism for operating the registering-wheels, a rock-shaft and connections for operating said mechanism, and means for actuating the proper indicator-wheel when the rock-shaft is operated, said means comprising a single sliding spring-retracted bar adapted to engage a gear on the opposed indicator-wheel, and an arm on the shaft engaging and actuating said bar, whereby the displacements of the registering mechanism, and the number of operations of the rock-shaft during the displacement are indicated, substantially as described.

22. In a calculating-machine, a keyboard provided with a series of keys, a main vibrating lever for each series of keys provided with stops coöperating with said keys to set the lever at the desired point, each lever having a toothed rack-segment, a series of registering-wheels provided with gears coacting with the segments, a rocking plate in which the segments are guided, means for rocking said plate, and a crank-shaft provided with means for actuating the said lever, each segment excepting the first or unit segment having an extra movable tooth normally idle, and means for moving said movable tooth into operative position.

23. In a calculating-machine, a keyboard having a series of keys, sliding bars corresponding in number with the series of keys, and rocking catch-levers corresponding in number with the series of bars and connected thereto, and having hooked lower ends; combined with a series of vibrating levers provided with stops to limit their range of movement in accordance with the depressed keys of the appropriate series, and also having pins to engage the hooked ends of the rock-levers, substantially as described.

24. In a calculating-machine, a keyboard having a series of keys, sliding bars corresponding in number with the series of keys, and rock-levers corresponding in number with the series of bars and jointed thereto, and having hooked ends provided with trip-latches or dogs; combined with a series of vibrating levers corresponding in number with the number of series of keys and provided with stops to limit their range of movement in accordance with the depressed keys of the appropriate series, and also having pins adapted to engage under the hooked ends of the catch-levers, and to engage the trip-latches of the rock-levers, and an independently-controlled bar for simultaneously throwing the various trip-latches out of operative position with relation to the vibrating levers, for the purpose and substantially as described.

25. In a calculating-machine, a keyboard having a series of keys, sliding bars corresponding in number with the series of keys, and rock-levers corresponding in number with the series of bars and jointed thereto, and having hooked ends provided with dogs or trip-latches; combined with a series of vibrating levers corresponding in number with the number of series of keys and provided with stops to limit their range of movement in accordance with the depressed keys of the appropriate series, and also having pins to engage the hooked ends and trip-latches of the rock-levers, and a bail or rod coöperating with the rock-levers adapted to effect the disengagement of the keys and key-bars, substantially as described.

26. In a calculating-machine, a carriage containing registering-wheels having gears, spring-dogs normally engaging the gears of said wheels, a dog-releasing bar automatically controlled by means interposed between it and the setting mechanism, said automatic controlling means comprising a lever, a cam-disk on the main shaft of the machine, and a setting mechanism for placing said lever in operative relation to said cam-disk.

27. In a calculating-machine, a main shaft provided with a cam-disk, a rocking plate, reciprocating segments guided in said plate, registering-wheels actuated by said segments, vibrating levers for actuating said segments, keys for setting the said vibrating levers, a lever for rocking the said plate, and means for actuating said lever periodically from said cam-disk.

28. In a calculating-machine, a main shaft provided with a cam-disk, a rocking plate, segments guided in said plate, registering-wheels actuated by said segments, vibrating levers for actuating said segments, keys and connections for setting the said levers, a lever and connections for rocking the said plate, and means to connect said plate-rocking lever periodically with said cam-disk, substantially as described.

29. In a calculating-machine, a series of registering-wheels each having a laterally-projecting pin for carrying from one to the other, combined with levers normally standing in the path of movement of said pins, spring-latches adapted to engage said levers, and automatic means periodically actuated to release said latches.

30. In a calculating-machine, a setting mechanism including vibrating levers, and keys for limiting their movement; combined with printing-bars attached to said vibrating levers and operated thereby, printing-hammers, a slide for cocking said hammers, and a slide-actuating mechanism controlled by the vibrating-lever-setting mechanism.

31. In a calculating-machine, a setting mechanism including vibrating levers, and keys and connections for setting said levers, combined with printing-bars attached to said levers and operated thereby, printing-hammers, a slide for controlling the cocking of said hammers, a slide-actuating mechanism controlled by the lever-setting mechanism, and means for releasing the hammers to effect the impression.

32. In a calculating-machine, a printing mechanism comprising type-bars, vibrating levers and means to set the said levers, a main shaft and connections for actuating the said levers, an arm on said shaft, a rock-lever coacting with said arm, a push-bar actuated by said rock-lever, hammers, and a hammer selecting and cocking device, substantially as described.

33. In a calculating-machine, a printing mechanism comprising type-bars, vibrating levers connected therewith, means to set the said levers, and a main shaft for actuating the said levers, an arm on said shaft, a rock-lever coacting with said arm, a push-bar actuated by said rock-lever, spring-pressed hammers, and a hammer selecting and cocking device, substantially as described.

34. In a calculating-machine, a printing mechanism, comprising type-bars, main vibrating levers connected to said bars, means to set the said levers, and a main shaft for actuating the said levers; an arm on said shaft, a rock-lever coacting with said arm, a push-bar actuated by said rock-lever, spring-pressed hammers, a hammer selecting and cocking device, and a rocking support therefor actuated by said push-bar, substantially as described.

35. In a calculating-machine, a slidable carriage, a registering mechanism arranged therein, means to actuate said registering mechanism, including a handle, and a latch for locking said carriage against movement at all times, excepting at half-stroke of the operating-handle.

36. In a calculating-machine, a slidable carriage, registering-wheels mounted therein, and provided with gear-wheels, segments engaging said gear-wheels, a rocking guide for moving said segments into and out of engagement with the gear-wheels, means for locking the carriage against movements while the rack-bars are in engagement with the gear-wheels, actuated by the segment-carrier, and by said carrier released to permit the sliding of the carriage when the segments are withdrawn from engagement with the gear-wheels.

37. In a calculating-machine, an indicator mechanism comprising rotary drums, means to rotate said drums, a rocking guide for said means, and means to rock said guide comprising a lever, a disk on the main shaft, and a double-acting latch engaged at opposite ends alternately by said disk and thereby effecting a positive movement of the lever in both directions.

38. In a calculating-machine, an indicator mechanism, comprising rotary drums, means to rotate said drums, a rocking guide for said means, a swinging lever, a disk on the main shaft having laterally-projecting pins, and a double-acting latch on the lever engaged alternately by said pins, and thereby effecting a positive movement of the rocking lever in both directions, substantially as described.

39. In a calculating-machine, an indicator mechanism, comprising rotary drums, means to rotate said drums, a rocking guide for said means, a swinging lever, a disk on the main shaft having laterally-projecting pins, and a double-acting latch on the lever engaged alternately by said pins, and thereby effecting a positive movement of the rocking lever in both directions; with means to throw said latch out of engagement with said pins whenever it is desired to reset the registering-wheels to zero position or to print the total, substantially as described.

709,868. **COMPUTING-MACHINE.** ALEXANDER C. SCHUMAN, Louisville, Ky., assignor to Spalding Coleman, Louisville, Ky. Filed Dec. 18, 1901. Serial No. 86,514. (No model.)

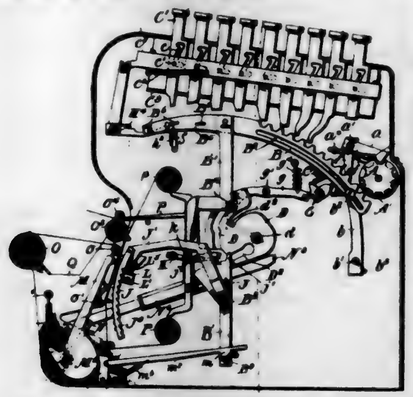

Claim.—1. The combination of a numbered wheel or disk, a vibrating segment adapted to mesh therewith, a lever actuating said segment having a series of stop-lugs, and a series of keys adapted when depressed to engage certain lugs on the lever to limit the movement thereof.

2. The combination of a number-disk, its pinion, a vibrating lever, a segment pivotally connected to the lever, a rock-arm supporting said segment, and means for rocking said arm to throw the segment into mesh with the pinion, substantially as described.

3. The combination of registering-disks having pinions, vibrating levers carrying segments adapted to mesh with the pinions, a rock-shaft beside the levers, cams hung on said shaft and engaging said levers, and keys and connections for limiting the forward movements of the levers.

4. The combination of a number-disk, its pinion, a vibrating lever, a segment pivotally connected to said lever, and means for vibrating said segment on the lever to throw it into and out of mesh with the pinion; with keys for limiting the forward movement of the lever and segment, substantially as described.

5. The combination of a numbered wheel or disk, a vibrating lever, a segment pivotally connected to the lever, a rock-arm supporting said segment, and means for rocking said arm to throw the segment into mesh with the wheel, substantially as described; with a spring for throwing the lever forward, and a rock-shaft having a cam adapted to engage and retract the lever, substantially as described.

6. The combination of toothed disks, vibrating levers carrying segments adapted to mesh with the disks, a rock-shaft beside the levers, cams hung on said shaft and engaging said levers, and keys and connections for limiting the forward movements of the levers; with means for throwing the segments into mesh with the disks on the return stroke of the levers, substantially as described.

7. The combination of toothed number wheels or disks, vibrating segments adapted to mesh therewith and key-controlled means for limiting the forward movements of said segments; with means for throwing said segments into mesh with the wheels on either stroke at will, substantially as described.

8. The combination of a vibrating lever, a catch for holding said lever in normal position, keys for limiting the forward movement of the lever, the key lock-bar adapted to be shifted by the depression of a key, connections between said lock-bar and said catch whereby the catch is caused to release the lever when the key is depressed, substantially as described.

9. The combination of the toothed number-wheels, the segment adapted to mesh therewith, the rocking arm slidably supporting the front end of the segment, the vibrating lever pivotally connected to the rear end of the segment, and means for rocking said arm and vibrating said lever, for the purpose and substantially as described.

10. The combination of the toothed number-wheels, vibrating segments adapted to mesh therewith, and rocking arms for throwing said segments into and out of mesh; with the auxiliary tripping devices beside the wheels whereby when a number is to be carried over from one wheel to the next, the arm of said next wheel is automatically locked long enough to make its segment move the wheel, substantially as described.

11. The combination of toothed number-disks, vibrating segments adapted to mesh therewith, key-controlled means for limiting the forward movements of said segments, and means for throwing said segments into mesh with the disks on one stroke, and dropping them out of mesh on the termination of such stroke; with means whereby said segments may be thrown into and held in mesh with the wheels on both strokes, substantially as described.

12. The combination of the vibrating lever, the vibrating catch for holding said lever in normal position, the dog pivoted to said catch, the keys for limiting the forward movement of the levers, the key lock-bar adapted to be shifted by the depression of a key, connections between said lock-bar and said catch whereby the catch is caused to release the lever when the key is depressed, and a pin on the lever adapted to engage the dog on the catch and cause the latter to shift the key lock-bar and reset the keys, substantially as described and for the purposes set forth.

13. The combination of the registering-disks, vibrating segments adapted to mesh therewith, rocking arms supporting said segments and means for rocking said arms to throw the segments in mesh; with levers pivoted beside the disks adapted to be rocked by contact with "carrying-lugs" thereon, each lever having an arm depending beside the rocking arm supporting the segment and adapted when the lever is tripped by a carrying-lug to hold said arm up in position to keep the segment in mesh.

14. The combination of registering or number wheels or disks, vibrating segments adapted to mesh therewith, and devices for setting and holding said segments in mesh; with levers suspended beside the disks each having an arm adapted to be engaged by the "carrying-lug" of one disk, and another arm adapted to engage the segment-setting devices of an adjoining disk and keep the segment in mesh until the "carrying over" is effected; and means for returning the lever to normal position after each operation, substantially as described.

15. The combination of number wheels or disks, the vibrating seg-

ments adapted to mesh therewith, and devices for setting and holding said segments in mesh on one stroke; with levers suspended beside the disks, each having an arm adapted to be engaged by the "carrying-lug" of one disk, and another arm adapted to engage the segment-setting devices of an adjoining disk and keep such segment in mesh until the "carrying over" is effected, a dog for locking the levers during the "carry-over" operation, and means for returning the dog and lever to normal position after such operation, substantially as described.

16. In an adding-machine, the combination of a series of registering or number wheels, a corresponding series of vibrating segments, and levers supporting said segments; with a series of rocking cams beside the levers, each having a cam-slot engaged by a pin on the adjoining lever, and means for returning said cams and levers to normal position, substantially as described

17. The combination of a series of registering disks or wheels, a series of vibrating segments, levers supporting said segments, a cam-plate loosely mounted beside each lever having a cam-slot engaging the adjoining lever, springs for throwing the cams and levers forward when the levers are released, and means for returning all the cam-plates, and levers, to normal position, the slots in the several cam-plates having dwells of successively greater length so that the levers will move the distance of the last tooth or notch of their return stroke in succession.

18. The combination of a series of registering disks or wheels, a series of vibrating segments, levers supporting said segments, a cam-plate loosely mounted beside each lever having a cam-slot engaging the adjoining lever, springs for throwing the cams and levers forward when the levers are released and means for returning all the cam-plates, and levers, to normal position, the slots in the several cam-plates having dwells of successively greater length so that the levers will move the distance of the last tooth or notch of their return stroke in succession; with means for throwing the segments into mesh with the wheel on their return stroke, and disengaging them from the wheels just before the completion of such stroke thereof, substantially as described.

19. In an adding-machine, the combination of a series of registering or number wheels, a corresponding series of vibrating segments, levers supporting said segments; with a rock-shaft beside the levers, a series of cam-plates, one for each lever, loosely mounted on said rock-shaft, each having a cam-slot engaged by a pin on the adjoining lever and springs for turning said cam-plates forward on the shaft when the levers are released, and means for returning said cams and levers to normal position, substantially as described.

20. The combination of a series of registering disks or wheels, a series of vibrating segments, levers supporting said segments, a rock-shaft beside the levers, a cam-plate loosely mounted on the rock-shaft beside each lever and having a cam-slot engaging the adjoining lever, springs for throwing the cams and levers forward when the levers are released, and a stop on the rock-shaft for returning all the cam-plates and levers to normal position, the slots in the several cam-plates having dwells of successively greater length so that the levers will move the distance of the last tooth or notch of their return stroke in succession, instead of simultaneously.

21. The combination of a series of registering disks or wheels, a series of vibrating segments, levers supporting said segments, a cam-plate loosely mounted beside each lever having a cam-slot engaging the adjoining lever, springs for throwing the cams and levers forward when the levers are released, and means for returning all the cam-plates, and levers, to normal position, the slots in the several cam-plates having dwells of successively greater length so that the levers will move the distance of the last tooth or notch of their return stroke in succession; with means for throwing the segments into mesh on one stroke with the wheels, and disengaging them from the wheels just before the completion of the return stroke, and auxiliary devices for keeping the segments in mesh during the final or "carry-over" movement in such return stroke, substantially as described.

22. The combination of a series of registering disks or wheels, a series of vibrating segments, levers supporting said segments, a rock-shaft beside the levers, a cam-plate loosely mounted on the rock-shaft beside each lever and having a cam-slot engaging the adjoining lever, springs for throwing the cams and levers forward when the levers are released, and a stop on the rock-shaft for returning all the cam-plates, and levers, to normal position, the slots in the several cam-plates having dwells of successively greater length so that the levers will move the distance of the last tooth or notch of their return stroke in succession, instead of simultaneously; with means for throwing the segments into mesh on one stroke with the wheels, and disengaging them from the wheels just before the completion of the return stroke, and auxiliary devices for keeping the segments in mesh during the final or "carry-over" movement of each return stroke, substantially as described.

23. The combination of a registering wheel or disk, a vibrating segment, a rock-shaft and connections for vibrating the segment; with a rocking arm supporting the segment, and a lever for rocking said arm to throw the segment in mesh with the wheel.

24. The combination of the registering wheels or disks, the vibrating segments for actuating the disks, a rock-shaft and connections for vibrating the segments, a series of catches for holding the segments in normal position; and a lever and connections for throwing the segments into mesh with the wheels substantially as described.

25. The combination of the registering wheels or disks, the vibrating levers, a rock-shaft and connections for operating said levers, key-controlled catches for said levers, and keys adapted when depressed to release the catches and limit the movement of the levers, and the segments pivoted to the levers adapted to be thrown into mesh with the wheels; a second rock-shaft, arms thereon supporting said segments and adapted to throw them into or out of mesh with the wheels; and a lever and connections for rocking said shaft from the first rock-shaft, all substantially as described.

26. The combination of a registering wheel or disk, a vibrating segment, keys for regulating the extent of movement thereof, and a rock-shaft and connections for vibrating the segment; with a rocking arm supporting the segment, a lever for rocking said arm to throw the segment in mesh with the wheel, and a cam on the rock-shaft for operating said lever, substantially as described.

27. The combination of the registering wheels or disks, the vibrating segments for actuating the disks, a series of catches for holding the segments in normal position, and a lever and connections for throwing the segments into mesh with the wheels; with a total-key and devices operated by the depression of said key whereby said lever is caused to throw and hold the segments in mesh, and whereby the segment-catches are simultaneously disengaged therefrom, substantially as described.

28. The combination of the registering wheels or disks, the vibrating levers, a rock-shaft and connections for operating said levers, key-controlled catches for said levers, keys adapted when depressed to release the catches and limit the movement of the levers, and segments pivoted to the levers adapted to be thrown into mesh with the wheels; a second rock-shaft, arms thereon supporting said segments and adapted to throw them into or out of mesh with the wheels, and a lever and connections for rocking said shaft from the first rock-shaft; with a key and connections whereby upon the depression of said key said segments are thrown and held in mesh with the gears and simultaneously the catches disengaged from the segments, substantially as described.

29. The combination of the registering-wheels, the oscillating segments for operating the wheels, and the vibrating levers operating said segments; with the plates pivoted beside the levers, the dogs on the levers engaging said plates to operate them when the levers move forwardly, and the type-bars moved by said plates, substantially as described.

30. The combination of the registering wheels or disks, the oscillating segments for operating the wheels, the vibrating levers operating said segments, the oscillating type-bars, mediate mechanism for shifting said bars from the levers, and impression-hammers and connections for setting the hammers upon the forward movement of the levers, and for releasing the hammers upon the return of the levers substantially as described.

31. The combination of the registering-wheels, the oscillating segments for operating the wheels, vibrating levers operating said segments, and the plates pivoted beside the levers; with dogs on the levers engaging said plates, the type-bars moved by said plates, and the stop-bars adapted to hold the dogs away from the plates on the return stroke of the levers.

32. The combination of the registering wheels or disks, the oscillating segments for operating the wheels, the vibrating levers operating said segments, the oscillating type-bars, mediate mechanism for shifting said bars from the levers, impression-hammers and connections for setting the hammers upon the forward stroke of the levers and releasing them upon the return of the levers substantially as described.

33. The combination of a series of registering-disks, a corresponding series of vibrating segments, levers supporting said segments, and means for throwing said segments into and out of mesh with the disks on either stroke thereof, substantially as described.

34. The combination of a series of registering-disks, a corresponding series of segments, means for vibrating said segments, and means for throwing them into and out of mesh with the disks; with means whereby the segments are moved simultaneously on their forward strokes, and means for causing them to complete their return strokes successively, substantially as described.

35. The combination of registering-wheels, oscillating levers and connections for shifting said wheels, the movable type-bars operated from said levers, the type-hammers opposite the bars, means for setting the hammers on the forward stroke of the levers, the dogs engaging the hammers, and connections whereby the levers cause the dogs to release the hammers, substantially as described.

36. The combination of the registering-wheels, the segments for operating the wheels, vibrating levers operating said segments, the swinging type-bars actuated from the levers, and means for locking said type-bars after the levers have made their forward stroke; with means for taking a record from the type upon the return stroke of the levers and subsequently restoring the parts to normal position, substantially as described.

37. The combination of a series of registering-disks, a corresponding series of vibrating segments, levers supporting said segments, and means for throwing said segments into and out of mesh with the disks; with means whereby the segments are caused to end their return strokes in succession, substantially as described.

38. The combination of a series of registering-disks, a corresponding series of segments, levers and connections for vibrating said segments, and means for throwing said segments into and out of mesh with the disks; with means whereby the segments are moved simultaneously on their forward strokes, means for bringing them into mesh on their return strokes, and means for causing them to complete their return strokes successively.

39. The combination of the registering-wheels, the oscillating levers and connections for shifting said wheels; the movable type-bars operated from said levers, the type-hammers opposite the bars, springs for actuating said hammers, the dogs engaging the hammers, and the pull-rods and connections whereby the levers cause the dogs to release the hammers, substantially as described.

40. The combination of the registering-wheels, the segments for operating the wheels, vibrating levers operating said segments, plates loosely pivoted beside the levers, dogs on the levers adapted to engage the plates when the levers move forwardly, the type-bars actuated from the plates, and means for locking said type-bars after the levers have made their forward stroke; with means for taking a record from the type, and means for subsequently restoring the parts to normal position, substantially as described.

41. The combination of the registering mechanism, the movable type-bars, and mechanism for shifting said bars by and from such registering mechanism; with a spring-actuated hammer opposite each type-bar, means for setting the hammers upon the actuation of the registering mechanism, means for feeding a strip of paper between the hammers and type-bars, and means for releasing the hammers to take an impression at each operation of the registering mechanism, substantially as described.

42. The combination of the registering-wheels, oscillating segments meshing therewith, and vibrating levers for actuating said segments; with plates pivoted beside said levers, movable type-bars connected to said plates, the dogs pivoted to the levers for engaging said plates, and the stop-bar for holding said dogs out of engagement with the plates in the normal position of the parts, substantially as described.

43. The combination of the registering-wheels, oscillating segments meshing therewith, and vibrating levers for actuating said segments; with plates pivoted beside said levers, movable type-bars connected to said plates, the dogs pivoted to the levers for engaging said plates, and the stop-bar for holding said dogs out of engagement with the plates in the normal position of the parts; with a series of spring-actuated impression-hammers, their locking-dogs, the pull-bars for disengaging said dogs adapted to be actuated by the vibrating levers, and means for feeding papers between the hammers and type-bar, all substantially as described.

44. The combination of the registering mechanism, the movable type-bars and mechanism for shifting said bars by and from such registering mechanism; a spring-actuated hammer opposite each type-bar, and means for feeding a strip of paper and an ink-ribbon between the hammers and type-bars; with means substantially as described for locking the type-bars in printing position, means for releasing the hammers to take an impression at each operation of the registering mechanism, and means actuated by the registering mechanism for subsequently resetting the hammers, substantially as described.

45. The combination of the registering-wheels, the oscillating segments meshing therewith, the vibrating levers for actuating said segments, the plates pivoted beside said levers, the movable type-bars connected to said plates, the dogs pivoted to the levers for engaging said plates, the stop-bar for holding said dogs out of engagement with the plates in the normal position of the parts, and means for causing said bar to release the dogs at the initial movement of the plates, substantially as described.

46. The combination of the registering-wheels, the oscillating segments meshing therewith, the vibrating levers for actuating said segments, the plates pivoted beside said levers, the movable type-bars connected to said plates, the dogs pivoted to the levers for engaging said plates, the stop-bar for holding said dogs out of engagement with the plates in the normal position of the parts, and means for causing said bar to release the dogs at the initial movement of the plates; with a series of spring-actuated impression-hammers, their locking-dogs, the pull-bars for disengaging said dogs adapted to be actuated by the vibrating levers, and means for feeding paper between the hammers and type-bars, all substantially as and for the purpose described.

47. The combination of registering mechanism, movable type-bars adapted to be shifted thereby, and means for locking said type-bars when shifted until an impression is taken; with spring-actuated impression-hammers opposite each type-bar, means actuated by the registering mechanism for setting said hammers, dogs for locking the hammers, and devices operated by the registering mechanism for releasing said dogs when an impression is to be taken, the dogs for the hammers of higher denominations being adapted to release hammers of lower denominations, substantially as described.

48. The combination of registering mechanism, a rocking plate operated therefrom, a type-bar suspended by said plate, and means for vibrating the latter; with a lock-bar for holding said type-bar in printing position, and means for shifting said lock-bar, substantially as described.

49. The combination of the registering-wheels, a vibrating lever and connections for operating the same; a vibrating-plate, connections for moving said plate from said lever, and a type-bar suspended from said plate; with an impression-hammer, a dog for locking said hammer, a pull-rod for releasing said dog, and a pin on the lever adapted to actuate said pull-rod, for the purpose and substantially as described.

50. The combination of a lever, a dog thereon, means for vibrating said lever, and a plate pivoted beside the lever having a notch and a tooth adapted to be engaged by said dog; with an arm attached to said plate, a type-bar suspended from said arm, and means for disengaging the dog from the plate when the parts are in normal position.

51. The combination of registering mechanism, a rocking plate operated therefrom, a type-bar suspended by said plate, means for vibrating said plate, a lock-bar for holding said type-bar in printing position, and means for shifting said lock-bar; with an impact-bar supporting the type-bars during impression, and spring-actuated impression-hammers, substantially as described.

52. The combination of the registering-wheels, a vibrating lever and connections for operating the same, a vibrating plate, and connections for moving said plate from said lever, a type-bar suspended from said plate, and means for locking said plate during the taking of an impression; with a spring-actuated impression-hammer, a dog for locking said hammer, a pull-rod for releasing said dog, and a pin on the lever adapted to actuate said pull-rod, for the purpose and substantially as described.

53. The combination of a registering-wheel, a segment adapted to mesh therewith, and a vibrating lever for operating said segment; with a rock-shaft beside the lever, a cam loosely mounted on the shaft, having a slot engaged by a pin on the lever, a spring connecting the cam to the shaft, and a stop-bar for returning the cam to normal position.

54. The combination of the depressible keys, with a vibrating lever thereunder having an enlarged head and lateral lugs on the head adapted to contact with the ends of depressed keys, substantially as described.

55. The combination of a registering-wheel, a segment adapted to mesh therewith, and a vibrating lever for operating said segment having an elongated head and laterally-projecting lugs thereon arranged at different distances from the pivot of the lever; with a rock-shaft beside the lever, a cam loosely mounted on the shaft having a slot engaged by a pin on the lever, a spring connecting the cam to the shaft, and the depressible keyed stops adapted to engage the lugs on the lever-head, substantially as described.

56. The combination of the keys and key lock-bar, the vibrating lever, a vibrating catch for said lever, and connections between said catch and lock-bar whereby the catch is caused to release the lever when a key is depressed; with a dog A' pivoted to the end of the catch and adapted to be actuated by the lever on the return stroke thereof to cause the key lock-bar to release the keys, substantially as and for the purpose described.

57. The combination of a vibrating lever, stop-keys for limiting the calculating movement of said lever, the key lock-bar, the lever-catch indirectly connected to said lock-bar and adapted to allow a limited movement of the lever when no key is depressed and to release the lever when a key is depressed, and whereby when the lever returns to normal position the lock-bar is moved and the keys reset.

58. The combination of a vibrating lever, stop-keys for limiting the calculating movements of said lever, a key lock-bar, and a lever-catch connected to said lock-bar, whereby when a key is depressed the lever is released, and when the lever returns to normal position the lock-bar is moved and the keys reset, said catch permitting a carry-over movement of the lever when no key is depressed; with a "repeating-key" and connections whereby the catch may be prevented from releasing the lock-bar at the will of the operator, substantially as described.

59. The combination of the keys and key lock-bar, the vibrating lever, a vibrating catch for said lever, adapted to arrest the latter after it has made a "carry-over" stroke, and connections between said catch and

lock-bar whereby the catch is caused to release the lever and permit further movement thereof when a key is depressed.

60. The combination of a toothed number-disk mounted on a laterally-immovable support or shaft, a vibrating segment, means for throwing the segment into mesh with the disk upon its return stroke, and disengaging it therefrom near the termination of such stroke, and means for positively returning said segment to normal position.

61. The combination of a numbered wheel, a key-controlled longitudinally-vibrating segment, and means for moving the segment laterally toward or from the wheel, adapted to throw the segment into mesh with the wheel upon its return stroke, and to disengage it from the wheel near the termination of such stroke; with a rock-shaft and connections for positively returning said segment to normal position.

62. The combination of a numbered wheel or disk, a vibrating lever having a series of stop-lugs, and a series of keys adapted when depressed to engage certain lugs on the lever to limit the movement thereof; with a segment actuated by said lever and means for holding the segment out of mesh with the wheel on its forward stroke, and for bringing it into mesh therewith on its return stroke, substantially as described.

63. The combination of register devices, movable type-bars adapted to be shifted by the register-actuating mechanism, and means for locking said type-bars when shifted until an impression is taken; with a spring-actuated impression-hammer opposite each type-bar, means actuated by the register-actuating mechanism for setting said hammers, dogs for locking the hammers, and devices operated by the register-actuating mechanism for releasing said dogs when an impression is to be taken, substantially as described.

64. In a register, a vibrating lever having an elongated head and laterally-projecting lugs thereon arranged at different distances from the pivot of the lever, in combination with a key-actuated stop adapted to engage the lugs, substantially as and for the purpose described.

709,364. DATING ATTACHMENT FOR CALCULATING-MACHINES. ALEXANDER C. SCHUMAN, Louisville, Ky., assignor to Spalding Coleman, Louisville, Ky. Filed Jan. 30, 1902. Serial No. 91,934. (No model.)

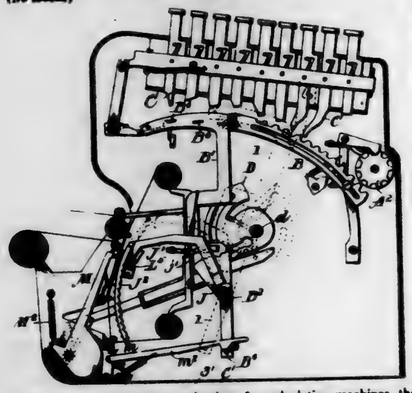

Claim.—1. In a dating mechanism for calculating-machines, the combination of vibrating levers, means for arresting the forward movement of said levers, type-bearers operated by and from said levers bearing types respectively for months and number of days of months; means for arresting said type-bearers when in printing position until an impression is taken therefrom, means for returning the levers to normal position, and for returning the type-bearers to normal position after the printing is effected, substantially as described.

2. In a dating mechanism for calculating and tabulating machines, the combination of three vibrating levers, sets of keyed stops for limiting the forward movement of said levers, one having twelve keys, another three, another ten; type-bearers connected to and operated by said levers respectively bearing type for the twelve months, three numerals and ten numerals, means for taking an impression from the type and for releasing the type-bearers after the impression is taken, substantially as described.

3. In a dating mechanism for tabulating and calculating machines, the combination with the calculating, tabulating and printing mechanism thereof, of a dating mechanism comprising vibrating levers, keys controlling the movements of the same, type-bearers having type for the months and days respectively actuated by and from said levers, means for locking said bearers until an impression is taken from the type thereon, and means for taking an impression from the dating-type bearers simultaneously with impressions from the tabulating-type, substantially as described.

4. A dating mechanism comprising vibrating levers, keys for controlling the movements of the levers, vibrating arms actuated by the forward movement of the levers, type-bearers actuated by said arms, means for locking said bearers until an impression is taken from the type thereon, and means for releasing the type-bearers after impression and means for returning the levers to normal position, substantially as described.

5. The combination with the calculating, tabulating and printing mechanism of a calculating-machine, of a dating mechanism comprising vibrating levers, keys for controlling the forward movements of the levers, vibrating arms actuated by the forward movement of the levers, type-bearers actuated by said arms, means for locking said bearers until an impression is taken from the type thereon, and means for releasing the type-bearers after impression, substantially as described.

709,365. CALCULATING-MACHINE. ALEXANDER C. SCHUMAN, Louisville, Ky., assignor to Spalding Coleman, Louisville, Ky. Filed Jan. 30, 1902. Serial No. 91,935. (No model.)

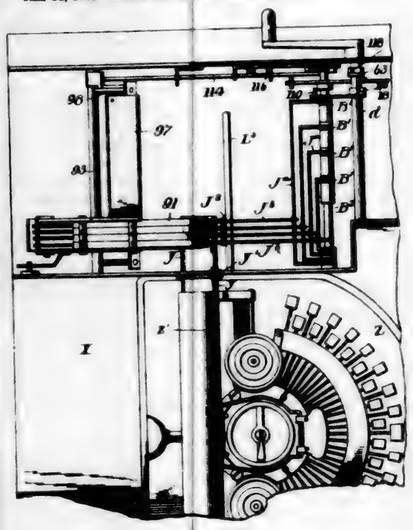

Claim.—1. The combination of the vibrating levers of a calculating-machine, and means for arresting the movements of said levers, the bars connected with and oscillated by said levers and extending laterally to the side of the calculating-machine, and the type-carriers connected to the outer ends of said extended bars and actuated thereby, and means for taking an impression from the type on said bars, substantially as described.

2. The combination of the vibrating levers of a calculating-machine, and key-controlled means for varying the movements of said levers, laterally-extending bars connected with and oscillated by said levers, the arms attached to the outer ends of said bars, the type-bars pivotally attached to and suspended from said arms, a paper-carriage, and means for taking an impression from the type on said bars upon the paper held by the carriage, substantially as described.

3. In a calculating and tabulating machine, the combination of the printing mechanism located at one side of the machine; with an exterior type-writing machine beside the calculating-machine, having a longitudinally-movable paper-carriage adjacent to the printing mechanism and adapted to present the paper to the said printing mechanism, substantially as described.

4. In a printing mechanism for calculating-machines, the combination of oscillating levers, the vibrating type carriers or bars actuated thereby, a type-writing machine beside said calculating-machine having a movable paper-holding carriage adapted when moved to one position to present the margin of the paper to the printing mechanism to receive impressions therefrom, substantially as described.

5. In a printing mechanism for calculating-machines, the combination of the oscillating levers, the type-bars actuated thereby, the inking-ribbon, the impression-hammers opposite said bars, and a type-writing machine beside the calculating-machine having a movable paper-holding carriage adapted to present the margin of the paper to the printing mechanism to receive impression therefrom, substantially as described.

6. In a printing mechanism for calculating-machines, the combination of vibrating levers, keyed stops for limiting the movement of said levers, the laterally-extending bars attached to and operated by the levers, the type-bars connected with and actuated by said bars, the impression-hammers, and means for actuating said hammers; with a type-writing machine beside the calculating-machine having a laterally-movable paper-carriage adapted to present the margin of a sheet of paper between the hammers and type-bars, substantially as described.

7. In a combined calculating and type-writing machine, the combination of the vibrating levers, means for vibrating said levers, keyed stops for limiting the movement of said levers, laterally-extending U-shaped bars attached to and operated by the levers, the arms attached to the outer ends of said bars, the type-bars pivotally attached to and suspended from said arms, the impression-hammers, and means for actuating said hammers; with a type-writing machine adjacent to the type-bars having a laterally-movable paper-carriage adapted to present the margin of a sheet of paper between the hammers and type-bars, substantially as described.

8. In a printing mechanism for calculating-machines, the combination of vibrating levers, keyed stops for limiting the movement of said levers, the bars attached to and operated by the levers and extended laterally to one side of the machine, the type-bars connected with the outer ends of and actuated by said bars, the impression-hammers, and means for actuating said hammers; with a type-writing machine beside the calculating-machine having a longitudinally-reciprocating paper-feed carriage, adapted to present the paper to the printing mechanism and hold the same in position during the taking of an impression thereon by the latter, all substantially as and for the purpose described.

709,366. SPLIT COLLAR. ERNEST H. SEXTON, Sandyhill, N. Y. Filed Jan. 21, 1902. Serial No. 90,619. (No model.)

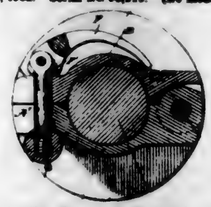

Claim.—1. A split collar, comprising members hinged together one of the members being provided with a recess in its periphery, a link pivotally connected with the free end of one of the members, and a cam-lever fulcrumed on the free end of the link and adapted to engage a surface on the other member and to lie within the recess thereof, as set forth.

2. A split collar, comprising flanged members hinged together, a link pivotally connected with one member and adapted to extend between the flanges of the members, and a cam-lever fulcrumed on the link and adapted to engage a lug on the other member, the said lever when closed extending between the flanges of the member having the said lug, as set forth.

3. A split collar, comprising members hinged together, a link adapted to be lengthened or shortened and having a ball-and-socket connection with the free end of one of the said members, and a cam-lever fulcrumed on the free end of the said link and adapted to engage the free end of the other member, as set forth.

4. A split collar, comprising members hinged together, a ball mounted in a socket in one member and having a screw-threaded socket, a link screwing into the ball, and a cam-lever pivoted to the free end of the link and adapted to engage a lug on the other member, as set forth.

709,367. SURGICAL INSTRUMENT. RICHARD H. SIMPSON, Turnersville, Tex. Filed Nov. 29, 1901. Serial No. 84,095. (No model.)

Claim.—1. A surgical instrument formed to coöperate with sutures in drawing and holding together the edges of a wound, rupture or laceration, and comprising a stiff open suture-receiving frame formed to rest against the lacerated portion surrounding the cut and with the lacerated edges exposed in the opening of the frame, so that the sutures can be stretched transversely around the frame from one side of the laceration to the other, for the purpose stated, the frame having transverse suture-holding notches along the outer edges of the opposite longitudinal portions.

2. In a device of the character described, the combination of a member having adjacent parallel angular portions; and a member having adjacent curved portions lying in parallel planes; the members being secured together at one extremity and inclosing a free open space substantially triangular in outline.

3. In a device of the character described, the combination of a member having adjacent parallel angular portions; and a member having adjacent curved portions lying in parallel planes; the members being adjustably secured together at one extremity and inclosing a free open space substantially triangular in outline.

4. In a device of the character described, the combination of a member having adjacent parallel angular portions; and a member having adjacent curved portions lying in parallel planes; the several portions having notches in their outer sides; the members being secured together at their extremities.

5. In a device of the character described, the combination of a member having adjacent angular portions; and a member having adjacent curved portions; each of the curved portions lying in the same plane with one of the angular portions; the members being secured together at one extremity and inclosing a free open space substantially triangular in outline.

6. In a device of the character described, the combination of a member having adjacent parallel angular portions, and a member having adjacent portions lying in parallel planes; each of the curved portions lying in the same plane with one of the angular portions; the members being secured together at their extremities.

709,368. MACHINE FOR PRODUCING WATER-MARKS ON FABRICS. EDWARD SMITH, Bradford, England. Filed May 13, 1902. Serial No. 107,114. (No model.)

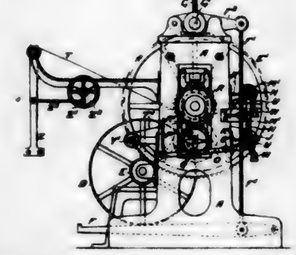

Claim.—1. In combination in a machine for squeezing cloths, two smooth-surfaced rolls, a pair of cloth-carrying beams from which the cloths in duplicate pass between the rolls and means for reciprocating one of said beams longitudinally substantially as described.

2. In combination, a pair of smooth-surfaced rolls, a pair of cloth-carrying beams to deliver the cloths to the rolls in duplicate, a changeable tappet, means for driving the same and lever connections between the tappet and one of the beams for giving the same a longitudinal displacement substantially as described.

3. In combination, the smooth-surfaced rolls, a pair of cloth-carrying beams, each capable of longitudinal displacement and means for reciprocating the same reversely to each other, substantially as described.

4. In combination, the smooth-surfaced rolls, a pair of cloth-carrying beams, each capable of longitudinal displacement and means for reciprocating the same reversely to each other, said means comprising a tappet, a lever O operated thereby, levers M M' at the opposite ends of the rolls and arranged to engage the axle of each and the link connection from the lever O to the lever M' for operating the same, substantially as described.

709,369. METHOD OF PRODUCING MOUTHPIECES ON CIGARETTES. LEWIS E. SONDHEIM, New York, N. Y. Filed Jan. 31, 1902. Serial No. 91,967. (No specimens.)

Claim.—1. The method of producing a mouthpiece on an open-ended cigarette, consisting in applying to an end thereof a temporary covering which is separate from the cigarette, then applying to the cigarette-wrap-

per while the covering is in place thereon, a substance which will harden on the wrapper and form a mouthpiece, and then removing the temporary covering.

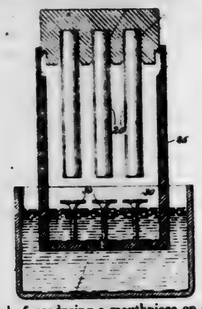

2. The method of producing a mouthpiece on an open-ended cigarette, consisting in covering the cigarette end and moistening the end of the wrapper, applying to said wrapper a substance which will harden thereon, and then removing the covering.

3. The method of forming a mouthpiece on an open-ended cigarette, consisting in applying to an end of the cigarette a closure-plate, dipping the cigarette, with the closure-plate in place, into a substance which will harden on the cigarette-wrapper, withdrawing from the substance the cigarette with the closure-plate in place, and then removing said plate from the cigarette.

709,870. **OIL-BURNER.** ELMORE STEWART, Los Angeles, Cal. Filed May 6, 1901. Serial No. 58,963. (No model.)

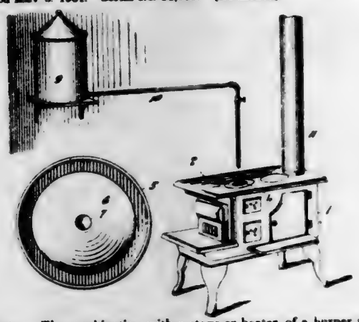

Claim.—The combination with a stove or heater, of a burner movable from place to place in the stove or heater, the said burner consisting of a cup-shaped body having a conical bottom closure provided with a depression at its apex, the said apex being below the open top of the body, an oil-supply tube arranged above the stove or heater and in line with said depression, and a downdraft-tube supported independently of and wholly above the burner, substantially as specified.

709,871. **STEAM-GENERATOR.** PETER STOLTZ, Berlin, Germany. Filed Oct. 26, 1901. Serial No. 80,086. (No model.)
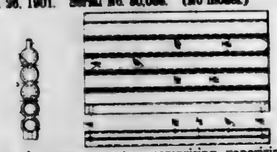
Claim.—1. A steam-generator, comprising vaporizing-chambers, each consisting of a single plate of metal provided with oppositely-disposed pairs of convex ribs extending from edge to edge of said plate, and with longitudinal passages concentric with said convex ribs and extending centrally through said plate substantially from edge to edge thereof, and also provided with short passages connecting said longitudinal passages.

2. A steam-generator, comprising vaporizing-chambers, each consisting of a single plate of metal provided with oppositely-disposed pairs of convex ribs extending longitudinally from edge to edge of said plate, and with longitudinal cylindrical passages concentric with said convex ribs, said plate being further provided with means for allowing intercommunication between said longitudinal passages at points adjacent to the ends thereof.

3. A steam-generator, comprising vaporizing-chambers each consisting of a single plate of metal provided with oppositely-disposed pairs of convex ribs integrally connected together, and also provided with longitudinal passages disposed closely together, said longitudinal passages being connected together by short passages extending directly through the substance of the plate, whereby the tendency toward leakage is greatly lessened and a structure of great strength is produced.

4. A steam-generator, comprising vaporizing-chambers each consisting of a plate of metal provided with longitudinal passages extending throughout the substance of said plate substantially from edge to edge thereof, and a plurality of hollow tubes disposed within said longitudinal passages and fitted steam-tight into the respective ends thereof, said hollow tubes at points intermediate of said ends being concentrically spaced within said passages, thereby forming steam-spaces each of a general tubular form, said plate being further provided with means for maintaining communication between said steam-spaces.

709,872. **COMBUSTION PROCESS.** JAMES TATHAM, Philadelphia, Pa. Filed Oct. 11, 1901. Serial No. 78,544. (No specimens.)

Claim.—1. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of one part of a mass of fuel, and then causing these gases to traverse in like sequence another part of said mass, substantially as specified.

2. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of a mass of fuel by means of a current of air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass of fuel, and then passing said gases in like sequence through another part of said mass, substantially as specified.

3. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of a mass of fuel by means of a current of preheated air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass of fuel, and then passing said gases in like sequence through another part of said mass, substantially as specified.

4. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of a mass of fuel by means of a current of air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, then passing these gases in like sequence through another part of the said mass of fuel, and finally passing the resulting ignited gases over that part of the mass of fuel in which the downdraft is maintained, substantially as specified.

5. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of a mass of fuel by means of a current of preheated air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, then passing these gases in like sequence through another part of the said mass of fuel, and finally passing the resulting ignited gases over that part of the mass of fuel in which the downdraft is maintained, substantially as specified.

6. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of part of a mass of fuel, mixing the gases thus produced with air and then causing the mixture to traverse in like sequence another part of the mass of fuel, substantially as specified.

7. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, mixing the gases thus produced with air and then passing the mixture in like sequence through another part of the mass of fuel, substantially as specified.

8. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of preheated air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, mixing the gases thus produced with air and then passing the mixture in like sequence through another part of the mass of fuel, substantially as specified.

9. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of the mass, mixing the gases thus produced with air, then passing the mixture in like sequence through another part of the said mass of fuel, and finally passing the resulting ignited gases over that part of the mass of fuel in which the downdraft is maintained, substantially as specified.

10. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of preheated air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, mixing the gases thus produced with air, causing the mixture to traverse in like sequence another part of the said mass of fuel and finally passing the resulting ignited gases over that part of the mass of fuel in which the downdraft is maintained, substantially as specified.

11. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in causing gases of combustion to pass from an incandescent portion of one part of the mass of fuel through a non-incandescent portion thereof, mixing the gases thus produced with preheated air and causing the mixture to traverse in like sequence another part of the mass of fuel, substantially as specified.

12. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, mixing the gases thus produced with preheated air, and causing the mixture to traverse in like sequence another part of the mass of fuel, substantially as specified.

13. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of preheated air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, mixing the gases thus produced with preheated air, and causing the mixture to traverse in like sequence another part of the mass of fuel, substantially as specified.

14. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of air, thereby causing the gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, mixing the gases thus produced with preheated air, causing the mixture to traverse in like sequence another part of the said mass of fuel, and then passing the resulting ignited gases over that part of the mass in which the downdraft is maintained, substantially as specified.

15. The mode herein described of effecting combustion of carbonaceous fuel, said mode consisting in creating a downdraft through one part of the mass of fuel by means of a current of preheated air, thereby causing gases of combustion to pass from an incandescent portion through a non-incandescent portion of this part of the mass, mixing the gases thus produced with preheated air, causing the mixture to traverse in like sequence another part of the said mass of fuel, and then passing the resulting ignited gases over that part of the mass in which the downdraft is maintained, substantially as specified.

709,873. **COAL-CHUTE.** WILLIAM H. TAYLOR, Kewanee, Ill. Filed Mar. 1, 1902. Serial No. 96,305. (No model.)

Claim.—1. A coal-chute comprising a bottom portion and side portions pivoted to the edges of the bottom and adapted to be folded down thereon when not in use.

2. The combination with a chute comprising a bottom portion, side portions hinged to the edges of the bottom and adapted to be folded down thereon when not in use, rollers carried by the bottom portion of the chute, and supporting and guiding tracks on which said rollers may travel.

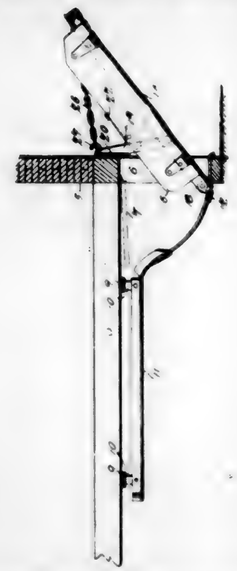

3. The combination with the supporting and guiding rails extending from a window-sill and having a storage portion arranged adjacent to a ceiling, of a coal-chute comprising a bottom portion and folding sides, and rollers extending from the bottom portion and adapted to rest on the rails.

4. A folding chute comprising a body or bottom portion, side portions hinged thereto, and a pivoted guard.

5. A folding chute comprising a body or bottom portion, folding sides, a pivoted guard, and means for interlocking the guard and sides.

6. A folding chute comprising a body or bottom portion, folding sides, a pivoted guard, and dogs pivotally connected to the sides and adapted to interlock the sides and the guard.

7. In a device of the class specified, guiding-rails extending from a window-sill and adapted to form a guiding and a storage support for a coal-chute, supporting-lugs carried by the tracks, a folding chute adapted to be supported by the lugs when in operative position, and auxiliary supporting devices for retaining the chute in operative position.

8. In a device of the class specified, guiding-rails extending from a window-sill and adapted to form a guiding and a storage support for a coal-chute, supporting-lugs disposed on the track at a point adjacent to said sill, a coal-chute, and supporting devices extending from the forward end thereof to a fixed support.

9. In a device of the class specified, guiding-rails extending from a window-sill and adapted to form a guiding and a storage support for a coal-chute, supporting-lugs disposed on the track at a point adjacent to the sill, a coal-chute having rollers adapted to the trackway and the inner end of the chute being supported by said lugs when in operative position, and chains connecting the outer end of the chute to a fixed support.

10. In a device of the class specified, guiding-rails extending from a window-sill and adapted to form a guiding and a storage support for a coal-chute, supporting-lugs disposed on the track at a point adjacent to the sill, a coal-chute having supporting-rollers adapted to the guiding-rails, folding sides and a protecting-shield forming part of said chute, and chains connecting the outer reinforced end of the chute to a fixed support.

709,874. **FIRE-ESCAPE.** WILLIAM H. TAYLOR, Kewanee, Ill. Filed Mar. 1, 1902. Serial No. 96,306. (No model.)

Claim.—1. A fire-escape comprising a brake-drum having a head at one end, with flanges 9, 10, respectively, above and below the drum and perpendicular thereto, said flange 9 having an opening 17, and said flange 10 having an elongated opening 16, substantially parallel with the drum, in combination with a cable passed through the said openings and having one or more turns around the drum, substantially as described.

2. A fire-escape comprising a brake-drum having a head at one end, with flanges 9, 10, respectively, above and below the drum and perpendicular thereto, said flange 9 having an opening 17, and said flange 10 having an elongated opening 16, substantially parallel with the drum, in combination with a cable passed through the said openings and having one or more turns around the drum, and means depending from the flange 10, to sustain the user.

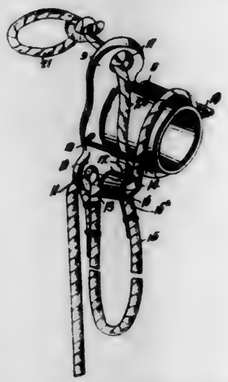

3. A fire-escape comprising a brake-drum having a longitudinal guide-loop on one side thereof, and having a head at one end with flanges, 9, 10, respectively above and below the drum and perpendicular thereto, said flange 9 having an opening 17, and said flange 10 having an elongated opening 16 substantially parallel with the drum, in combination with a cable passed through the said openings and having one or more turns around the drum, within the guide-loop thereof, substantially as described.

709,375. WHEEL-HUB. HORACE B. THAYER, Erie, Pa. Filed July 5, 1902. Serial No. 114,463. (No model.)

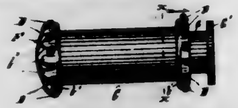

Claim.—1. The combination in a wheel-hub of a central thimble, inwardly-headed and outwardly-flanged collars with spoke-openings therein on said thimble, and an outer shell or covering between said collars held in place by the heads thereon, substantially as set forth.

2. The combination in a wheel-hub, of a central thimble, inwardly-headed and outwardly-flanged toothed collars thereon having spoke-openings therein, spokes in the openings of said collars extending through both collars and turned outward between the teeth thereon, a tubular shell between said collars covering the spokes and thimble, and a cap on the outer end of the hub secured in place by turning inward the teeth on the outer hub-collar, substantially as and for the purpose set forth.

3. The combination in a wheel-hub, of a central thimble, a sheet-metal collar having its periphery flanged outward on the outer end of the thimble, and a disk closing the outer end of the hub and secured thereto by bending the flanged portion of the sheet-metal collar down over the periphery of the disk, substantially as set forth.

4. The combination in a wheel-hub of a central thimble A, peripheral projections *a*, thereon, collars B B′ on said thimble, heads *b*′ on their inner faces, outwardly-flanged teeth *b*² on their peripheries and spoke-openings *b* in said collars, spokes D passed through the openings in said collars and bent outward against their outer faces between the peripheral teeth thereon, a shell C covering and inclosing the spokes D between the collars B and B′, a cap F closing the outer end of the hub and secured thereto by bending the teeth down over the periphery of said cap and a flanged sleeve G secured to the inner end of the thimble, substantially as and for the purpose set forth.

709,376. STAND-PIPE FOR RAILWAY USES. JOHN W. THOMAS, Jr., Nashville, Tenn. Filed Jan. 22, 1902. Serial No. 90,333. (No model.)

Claim.—1. A stand-pipe or water-crane for railway uses movable and adjustable bodily lengthwise of the railway-track alongside of which it is located substantially as described.

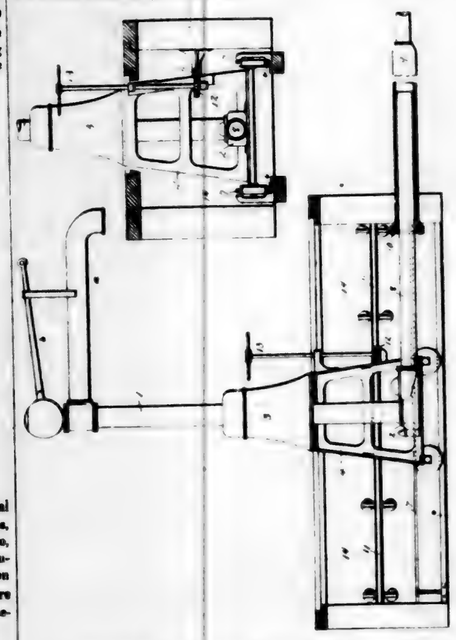

2. A stand-pipe or water-crane for railway uses movable lengthwise of the track alongside of which it is located, and swiveled so as to be capable of axial rotation, substantially as described.

3. A stand-pipe or water-crane for railway uses, movable and adjustable bodily lengthwise of the track alongside of which it is located, in combination with a source of water-supply and extensible connections between the same and the water-crane, substantially as described.

4. A stand-pipe or water-crane for railway uses movable and adjustable bodily lengthwise of the track alongside of which it is located, in combination with a source of water-supply and pressure-equalizing extensible connections between the same and the water-crane, substantially as described.

709,377. GRATE. JOHN T. VADDEN, Griffin, Ga. Filed Feb. 25, 1902. Serial No. 95,510. (No model.)

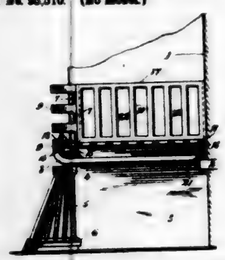

Claim.—A grate, comprising a grate-basket provided with horizontally-arranged longitudinal bars so disposed as to form a substantially flat bottom, and having upturned ends provided with a substantially arc-shaped member integrally mounted thereon, a fuel-rack provided with horizontally-arranged longitudinal bars disposed at right angles to the general direction of the bars of said grate-basket, said fuel-rack being provided at its front portion with upturned lugs for engaging said arc-shaped member, and provided at its back portion with depending lugs, each having a length substantially equal to the general depth of said grate-basket, and a pair of hollow end plates of substantially wedge shape, mounted upon said fuel-rack and provided with vertical slots to afford ventilation.

709,378. VEHICLE-SEAT BRACE. GEORGE W. VIRGIN, Hazlewood, Ky. Filed June 12, 1902. Serial No. 111,330. (No model.)

Claim.—As an article of manufacture, a brace-iron of the character described, consisting of vertical and horizontal flat flanges arranged at right angle one with the other and braced by a web in one piece with said flanges, the lower end of said web being bent at right angle forming a foot and the lower end of the vertical flange extended below said foot adapted to provide additional securing means, substantially as described.

709,379. APPARATUS FOR TREATING LIQUIDS WITH GASES OR GASES WITH LIQUIDS. ALEXANDER VOSMAER, Watergraafmeer, and ADRIAAN LEENST, Utrecht, Netherlands, assignors to Ozon Maatschappy Systeem A. Vosmaer, Amsterdam, Netherlands. Filed Apr. 2, 1902. Serial No. 101,026. (No model.)

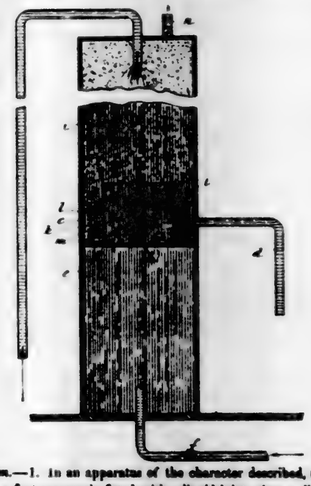

Claim.—1. In an apparatus of the character described, the combination of a first receptacle fitted with a liquid-inlet pipe, a liquid-outlet pipe and a separate gas-outlet, a part or second receptacle fitted with a gas-inlet and upon which rests the first receptacle, means for dividing in very small bubbles a gaseous current passing from the second receptacle into the first receptacle, the said means being located between the two receptacles and means for opposing a resistance in the first receptacle to the passage of the gas-bubbles through the liquid-outlet pipe, substantially as and for the purpose described.

2. In an apparatus of the character described, the combination of a receptacle fitted with liquid inlet and outlet pipes, a gas-inlet pipe and a gas-outlet, a perforated diaphragm placed in the said receptacle between the gas and liquid inlet pipes, the perforations of said diaphragm being of a sufficiently small diameter to prevent the liquid from flowing through said perforations, but allowing the passage of a current of gas under pressure and a resistance placed before the liquid-outlet pipe and preventing the passage of gaseous bubbles through said pipe, substantially as and for the purpose described.

3. In an apparatus of the character described, the combination of a receptacle fitted at its upper part with a liquid-inlet pipe and a gas-outlet and at its lower part with a gas-inlet pipe, a perforated diaphragm placed in said receptacle between the liquid and gas inlet pipes and adapted to prevent the flowing of the liquid through said diaphragm, a liquid-outlet pipe placed near said perforated diaphragm and a perforated screen placed before said liquid-outlet pipe, substantially as described and for the purpose set forth.

4. In an apparatus of the character described, the combination of a receptacle fitted at its upper part with a liquid-inlet pipe and a gas-outlet and at its lower part with a gas-inlet pipe, a perforated diaphragm placed in said receptacle between the liquid and gas inlet pipes and adapted to prevent the flowing of the liquid through said diaphragm, a liquid-outlet pipe placed near said diaphragm, a perforated screen placed before said liquid-outlet pipe and a tubular projection extending from the perforated diaphragm to above the screen of the liquid-outlet pipe, substantially as described and for the purpose set forth.

5. In an apparatus of the character described, the combination of a receptacle fitted at its upper part with a liquid-inlet pipe and a gas-outlet and at its lower part with a gas-inlet pipe, a perforated diaphragm placed in said receptacle between the liquid and gas inlet pipes and fitted with very small perforations adapted to prevent the flowing of the liquid through said diaphragm, a liquid-outlet pipe placed near said perforated diaphragm, a perforated screen forming an annular chamber in which opens said liquid-outlet pipe, the perforations of the said screen being of greater diameter than the perforations of the perforated diaphragm and a tubular projection extending from the perforated diaphragm to above the screen, substantially as described and for the purpose set forth.

709,380. FRAME FOR MOTOR-BICYCLES. GEORGE WAGNER and BURNEY B. REED, St. Paul, Minn. Filed Apr. 5, 1902. Serial No. 101,680. (No model.)

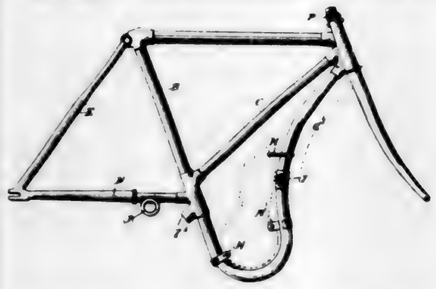

Claim.—1. A motor-cycle frame, having a diamond-shaped body, and an integral loop for supporting the motor, the loop extending below the lower front brace and forming a downward continuation of the center brace, as set forth.

2. A motor-cycle frame, having a diamond-shaped body, and an integral loop for supporting the motor, the loop extending below the lower brace and forming a downward continuation of the center brace, the said loop terminating at its front end in an extension-arm rigidly connected with the steering-head of the said body, as set forth.

3. A motor-cycle frame, having a diamond-shaped body, and an integral loop for supporting the motor, the loop extending below the center brace and forming a downward continuation of the center brace, the said loop being hollow and provided with an inlet and an outlet for the exhaust to pass through the loop, as set forth.

4. A motor-cycle frame, having a diamond-shaped body, and a loop for supporting a motor, the loop extending below the lower front brace and provided with an extension secured to the steering-head, said extension being curved to conform to the rim of the front wheel, as set forth.

5. A steering-fork for a motor-cycle frame, comprising a front-fork crown, a steering-post mounted in the crown, front-fork sides, each made of two members of which the inner members are integral with the said front-fork crown, and crown-plates carrying the outer members of the fork, the lower crown-plate being rigidly secured to the crown and the upper one detachably secured to the steering-post, as set forth.

6. A steering-fork for a motor-cycle frame, comprising a steering-post, front-fork sides, each made of two members, of which the inner members are secured by a crown to the steering-post, and crown-plates, of which one is rigidly secured to the outer members and to the said crown, while the other crown-plate is removably attached to the outer members and to the steering-post, as set forth.

7. A steering-fork for a motor-cycle frame, comprising a steering-post, front-fork sides, each made of two members, of which the inner members are connected by a crown to the steering-post, crown-plates, of which one is rigidly secured to the outer members and to the said crown, and the other upper crown-plate screws on the steering-post, and bolts for securing the upper crown-plate to the upper ends of the said outer members, as set forth.

8. A motor-cycle frame and steering-fork therefor, comprising a dia-

mond-shaped body, an integral loop for supporting the motor, extending below the lower brace and forming a downward continuation of the center brace, the said loop having an extension-arm rigidly connected with the steering-head of the said body, a steering-post mounted to turn in the said steering-head, front-fork sides, each made of two members, of which the inner members are connected by a crown with the said steering-post, and crown-plates, of which one is rigidly secured to the outer members and to the said crown, and the other crown-plate is detachably secured to the upper ends of the outer members and the said steering-post, as set forth.

709,381. TWO-SPEED GEAR-WHEEL. WILLIAM D. WARBROUGH, Lincoln, England. Filed Oct. 4, 1901. Serial No. 77,604. (No model.)

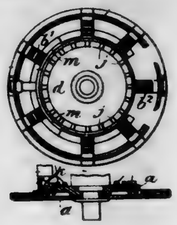

Claim.—1. In an adjustable wheel, the combination, with a back plate, of radially-movable jaws carried by the said back plate, a flexible divided ring secured to one of the said jaws and slidable in certain of the remaining jaws, and means for moving the said jaws simultaneously to expand and contract the said ring, substantially as set forth.

2. In an adjustable wheel, the combination, with a back plate, of radially-movable jaws carried by the said back plate, a flexible divided ring secured to one of the said jaws and slidable in certain of the remaining jaws, a bridge-piece secured to one of the said jaws in the gap of the said ring, and means for moving the said jaws simultaneously to expand and contract the said ring and change the position of the said bridge-piece, substantially as set forth.

3. In an adjustable wheel, the combination, with a back plate provided with radial slots and two concentric stop-flanges, of jaws slidable in the said slots, a flexible divided ring secured to one of the said jaws and slidable in certain of the remaining jaws and between the said flanges, and means for sliding the said jaws simultaneously, substantially as set forth.

4. In an adjustable wheel, the combination, with a back plate, of radially-movable jaws carried by the said back plate and provided with teeth, a flexible divided ring secured to one of the said jaws and slidable in certain of the remaining jaws, and an independently-revolvable disk revoluble upon the same axis as the said back plate and provided with a spiral thread which engages with the said teeth and operates to slide the said jaws simultaneously, substantially as set forth.

5. In an adjustable wheel, the combination, with a back plate, and a disk provided with a spiral thread and normally revolving with the said back plate; of radially-movable jaws carried by the said back plate and provided with teeth which engage with the said spiral thread, a flexible divided ring secured to one of the said jaws and slidable in certain of the remaining jaws, driving devices for revolving the said back plate continuously, and means for arresting the motion of the said disk intermittently, substantially as set forth.

709,382. SWEETMEAT-MACHINE. WILLIAM L. WHITE, Hedon, near Hull, England. Filed Feb. 24, 1902. Serial No. 95,496. (No model.)

Claim.—1. In a sweetmeat-machine, the combination, with a series of superposed supports for the sweetmeats inclined in opposite directions alternately and provided with false bottoms of textile material which polish the sweetmeats, and means for shaking the said supports; of guides for turning over the sweetmeats as they drop from one support to another, so that the opposite sides of the sweetmeats are alternately dried and polished, substantially as set forth.

2. In a sweetmeat-machine, the combination, with endless traveling conveyer-belts whereon the sweetmeats are dried in the upper part of the machine, of shaking-supports for the sweetmeats arranged under the said belts and inclined in opposite directions and provided with false bottoms of textile material for polishing the sweetmeats, and guides for turning over the sweetmeats as they fall from one shaking-support to another so that the opposite sides of the sweetmeats are polished alternately, substantially as set forth.

709,382.

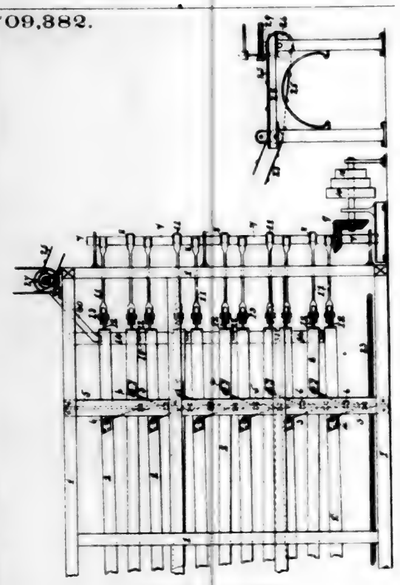

709,388. ASH-SIFTER. ELIJAH WILLCOX, Yonkers, N. Y. Filed Sept. 11, 1901. Serial No. 75,162. (No model.)

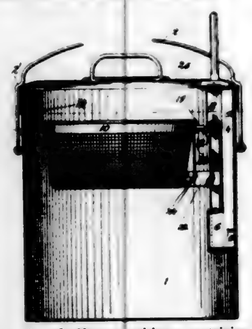

Claim.—1. An ash-sifter comprising a containing vessel, an oscillatory sieve mounted therein, a shoe movable with said sieve, and a lever shiftably mounted to change its fulcrum and having a slidable operative connection with said shoe.

2. An ash-sifter comprising a containing vessel, a rockable sieve mounted in said vessel, a lever for actuating said sieve, said lever being provided with a longitudinal slot which operatively engages with a fixed pivot, and the lever being longitudinally movable relative to said pivot for the purpose of shifting the fulcrum of said lever, and a slidable connection between the sieve and the lever, whereby the lever may be adjusted expeditiously in an endwise direction on the sieve.

3. An ash-shifter comprising a containing vessel, an oscillatory sieve mounted therein, a supporting-plate secured within said vessel and provided with spaced stops, a lever fulcrumed on said supporting device at a point above the stops thereof, a noise-deadening block carried by said lever and adapted to strike against either of said stops, and means for connecting said lever operatively with said sieve.

4. An ash-sifter, comprising a containing vessel provided with a lever-stud and with sieve-supports, an oscillatory sieve provided with hooks for engaging said supports, and a lever for actuating said sieve and provided with a cross-shaped slot for slidably engaging said lever-stud, whereby said lever is rendered readily detachable, and the fulcrum-point thereof is easily changed at will.

5. An ash-sifter comprising a containing vessel provided with a lever-stud and with sieve-supports, an oscillatory sieve having hooks which engage with said supports, a lever provided with a cross-shaped slot and adapted to slidably engage with said lever-stud, means connecting said lever and said sieve, and a bearing-plate on said vessel and provided with stops, the lower end of the lever being arranged to play between the stops.

709,384. METHOD OF TREATING GARBAGE. STEPHEN E. WILSON, Frenchlanding, Mich. Filed Sept. 8, 1897. Serial No. 650,936. (No model.)

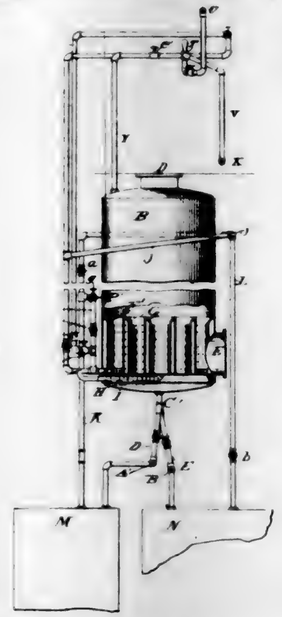

Claim.—1. The process of extracting liquid from a mass or charge of material, which consists in applying fluid under pressure to all parts of its surface simultaneously, and then passing the fluid under pressure through the mass.

2. The method of expressing liquids from a mass or charge of material, which consists in applying fluid under pressure to all parts of its surface simultaneously; reducing the pressure upon one side thereof, and passing the fluid under pressure through the mass.

3. The method of expressing liquids from a mass or charge of material which consists in dividing said mass into a number of comparatively small bodies; applying fluid under pressure to all surfaces of the divided bodies; and finally passing fluid under pressure from one side of the mass to the other.

4. The method of treating garbage and like material which consists in cooking the same, applying fluid under pressure simultaneously to the different faces or surfaces of the mass; and finally passing fluid under pressure from one side of the mass to the other.

5. The method of treating garbage and the like, which consists in cooking the same; applying fluid under pressure to all surfaces of the mass simultaneously; reducing the pressure upon one side thereof; passing fluid under pressure through said mass; and conducting the escaping fluid to a separate tank for cooking a new charge of material.

6. The method of expressing liquids from a mass or charge of material which consists in dividing said mass into a number of bodies; applying fluid under pressure to all parts of its surface simultaneously; reducing the pressure upon some of the faces of the mass; and finally passing fluid under pressure therethrough from the other faces.

7. The process of treating garbage and like material, which consists in cooking the same within a closed tank; connecting said tank with a separate tank wherein an equal pressure is maintained; applying fluid-pressure simultaneously to all the surfaces of the mass under treatment and allowing the contained liquid to pass through to said pressure-tank; shutting off said high-pressure tank and opening communication with a low-pressure tank; compressing the mass; and finally passing fluid under pressure through the mass under treatment into said low-pressure tank.

8. The process of treating garbage or like material, which consists in dividing said mass into a number of comparatively small bodies; cooking the same within a closed tank; connecting said tank with a separate tank wherein an equal pressure is maintained; applying fluid under pressure simultaneously to all the surfaces of the mass under treatment and allowing the contained liquid therein to pass through to said pressure-tank; shutting off said high-pressure tank and opening communication with a low-pressure tank; compressing the mass upon that side opposite the connection with the low-pressure tank; and finally passing fluid under pressure through the mass under treatment into said low-pressure tank.

709,385. MAGAZINE-FIREARM. CHARLES A. YOUPE, Enon, Ohio. Filed Mar. 7, 1902. Serial No. 97,190. (No model.)

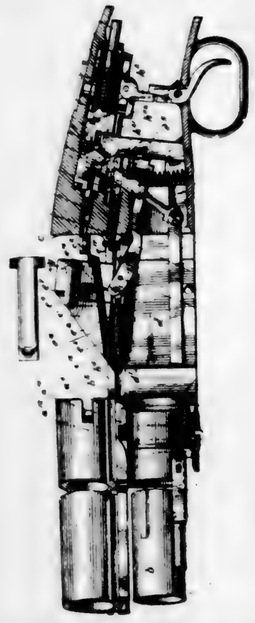

Claim.—1. In a firearm, the combination of a breech-block frame, a sliding barrel thereon and a sliding grip, a slotted tongue on the under side of the barrel and a metallic piece seated in the sliding grip having an elongated recess to receive the slotted tongue, and a pin engaging the metallic piece and passing through the slot of the tongue to connect the grip and barrel, said slot being of such length that the thrust of the grip on the barrel shall be borne by the contact of the ends of the tongue and recess in the metallic piece and not by the connecting-pin.

2. The combination of the breech-block frame, a sliding barrel thereon, a magazine under the barrel, a chamber in the breech-block frame under the breech of the barrel in the rear of the magazine to receive the carrier, the carrier, a spring-actuated finger in said carrier to project inward over the upper end of the carrier when the barrel is opened and means actuated by the end of the barrel to turn said finger out of said position when the barrel is closed, substantially as described.

3. The combination of a breech-block frame, a sliding barrel thereon, a chamber in the breech-block frame under the breech of the barrel to receive a cartridge or shell carrier, the carrier, a movable finger in said carrier, means to hold said finger to project inward over the upper end of said carrier when the barrel is opened and means actuated by the barrel to turn said finger out of said position when the barrel is closed.

4. The combination of the breech-block frame, a sliding barrel thereon, a magazine under the barrel, a chamber in the breech-block frame under the breech of the barrel and in rear of the magazine to receive the carrier, the carrier and a spring-actuated movable bottom in the carrier.

5. The combination of the breech-block frame, a sliding barrel thereon, a magazine under the barrel, a chamber in the breech-block frame under the barrel, and in rear of the magazine to receive the carrier, the carrier, and a spring-actuated movable bottom in said carrier hinged at its

forward end to the forward end of the carrier and adapted to engage the rim of the shell to hold said shell in the carrier.

6. The combination of the breech-block frame, a sliding barrel thereon, a magazine under the barrel, a chamber in the breech-block frame under the breech of the barrel and in rear of the magazine, the carrier, a cocking-rod actuated when the barrel is opened and closed, a projection on said cocking-rod adapted to engage said carrier to hold the same when in the chamber and to release the same when the barrel has been opened a predetermined distance, substantially as described.

7. In a firearm the combination of a breech-block frame having a breech-block, a barrel sliding on the breech-block frame toward and from the breech-block, and shell-extractors in the sides of the breech-block and in line with the barrel consisting of small blocks having rim-engaging rear ends and pivoted at their forward ends and springs for holding the rim-engaging ends inward toward each other, substantially as described.

8. The combination of the breech-block frame, a sliding barrel thereon, a spring-actuated latch to limit the forward movement of the same, a magazine under the barrel having a catch, and a finger-piece on the breech-block frame engaging both the barrel-latch and magazine-catch and adapted to be operated to simultaneously release the barrel and magazine from the breech-block frame.

9. In a firearm the combination of the breech-block frame and breech-block, a barrel sliding on the breech-block frame, a shell or cartridge carrier, spring-actuated extractors in the sides of the breech-block, to catch and hold the sides of the rim of the shell when the latter is pushed rearwardly on the carrier by the barrel, and a spring-protruded seat in the breech-block constructed to support the shell at the lower edge of its rim, substantially as described.

10. In combination with a breech-block frame, a sliding barrel thereon, a spring-actuated firing-pin, a sear to engage and hold the same when cocked, a cocking-lever adapted to cock said firing-pin when the barrel is moved forward, a spring-actuated safety-catch to prevent the operation of the sear when the barrel is moved forward and arranged to be operated by the cocking-lever upon the closing of the barrel to release the sear.

11. In combination with the breech-block frame, a sliding barrel thereon, a spring-actuated firing-pin, a sear to engage and hold the same when cocked, a cocking-lever adapted to cock said firing-pin when the barrel is moved forward, a spring-actuated safety-catch to prevent the operation of the sear when the barrel is moved forward and arranged to be operated by the cocking-lever to release the sear when the barrel is being closed, and a manually-operated safety-catch to engage and lock the sear when the barrel is closed.

12. The combination of a breech-block frame, a sliding barrel thereon, a chamber in the breech-block frame under the breech of the barrel to receive a cartridge or shell carrier, the carrier, a finger turning on a vertical pivot in the side of the carrier to be turned laterally across the top of the same and means for yieldingly holding said finger across the top of the carrier.

709,386. **SECURING DEVICE FOR BOXES, &c.** WILLIS G. YOUNG, Dayton, Ohio. Filed Apr. 12, 1902. Serial No. 102,680. (No model.)

Claim.—In a receptacle of the character described, a keeper having centrally-disposed slit, having at its end branches obliquely disposed in opposite directions from opposite sides and ends to form anchoring-teeth and longitudinally-disposed lip-sections engaged with the material of the receptacle, and a tongue having slits and securing-lips engaged with the material of the receptacle, the free end of the tongue being adapted to be passed through the central slit of the keeper and bent over the latter and held out of contact with the flap of the receptacle, substantially as described.

709,387. **HYDROCARBON-BURNER.** ERNEST BETZ, Washington, D. C., assignor to Columbian Hydro-Carbon Burner Company, Washington, D. C. Filed July 3, 1901. Serial No. 67,006. (No model.)

Claim.—1. In a hydrocarbon-burner, the combination with the base, its oil-receptacle and hot-air chamber below its top, the inclosing deflector-cap supported from said base, and having a depending flange extending downward nearly to said top, the mixing-tube and coil-pipe within said cap, the burner extension of said coil-pipe under said mixing-tube and above the top of said base-plate, and the oil-feed pipe extending within the hot-air chamber to said oil-receptacle, substantially as specified.

2. In a hydrocarbon-burner, the oil-receptacle and the adjacent hot-air chamber forming a base, the pipe from said receptacle, and its burner-tip, on said base, the mixing-tube above said base, said chamber having air inlet and exit openings in its bottom and top walls respectively, the deflector-plate above said exit-opening, and the oil-feed pipe passing through said hot-air chamber, substantially as specified.

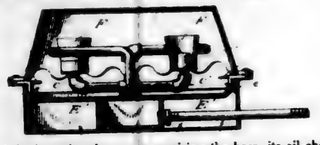

3. A hydrocarbon-burner, comprising the base, its oil-chamber and adjacent hot-air chamber, the mixing-tube supported therefrom, the coil-pipe from said oil-chamber extending to said mixing-tube, and provided with a burner-tip, and the deflector-cap supported upon said base-plate, and having a top and a depending flange inclosing said tube and coil, said flange being of such height as to leave only a narrow opening therebetween and the base-plate, whereby the flame takes an upward rise from the burner-tip, is deflected within the cap, and falls the full depth of the flange in intimate contact with said tube and coil, and with the base-plate, and emerging under the cap again, rises exteriorly around the same, substantially as specified.

4. A hydrocarbon-burner, comprising the base of box form divided by a partition to form an oil-receptacle and a hot-air chamber, the mixing-tube supported from said base, the cap supported upon said base, and having a top, and a depending flange inclosing said tube and coil, and the oil-feed coil-pipe extending from the oil-chamber upward between the base and cap, and downward under the mixing-tube, substantially as specified.

5. A hydrocarbon-burner, comprising the base of box form divided by a partition to form an oil-receptacle and a hot-air chamber, the mixing-tube supported from said base, the oil-feed coil-pipe provided with a burner-tip, the cap supported upon said base, and having a depending flange inclosing said coil and tube, said flange being of such vertical extent as to leave only a narrow opening between its margin and the base, and said hot-air chamber having air inlet and exit openings in its bottom and top walls respectively, substantially as specified.

709,388. **SCULPTURING-MACHINE.** AUGUSTO BONTEMPI, Naples, Italy, assignor to Mary Belle Scott-Uda, Naples, Italy. Filed May 23, 1901. Serial No. 61,598. (No model.)

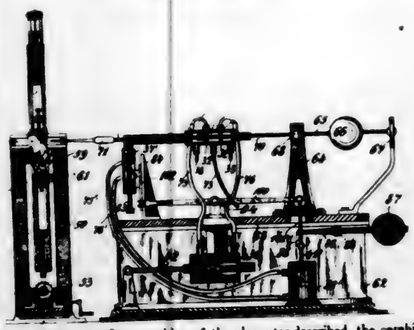

Claim.—1. In a machine of the character described, the combination with a frame, of a tracer carried by said frame, of cutting-tools also carried by said frame, means operating said tools, a plurality of means moving said tools in a plurality of directions, and means controlled by said tracer and determining in advance the extent of movement of said tools.

2. In a machine of the character described, the combination with a frame, of a tracer carried by said frame, of cutting-tools also carried by said frame, of a plurality of hydraulic-pressure means moving said tools in a plurality of directions, means controlled by said tracer and determining the extent of such movement, means carrying the material to be operated upon, means for adjusting said material to the operating position of said tools, and means operating said tools.

3. In a machine of the character described, the combination with a frame, of a tracer mounted upon said frame, of cutting-tools also mounted upon said frame, means for operating said tools, a plurality of suitable hydraulic-pressure means moving said tools in a plurality of directions, and means controlled by the movement of the tracer and determining in advance the extent of movement of the cutting-tools, while in operating position.

4. In a machine of the character described, the combination with a frame, of a tracer mounted thereon, of cutting-tools also mounted on said frame, means operating said tools, suitable pressure means effecting the movement of the tools in any desired direction, said pressure means comprising a working cylinder producing a vertical movement of the tools, a like cylinder producing a lateral movement of the tools, a third similar cylinder producing a longitudinal movement of the tools; of valve-cylinders, suitable connection between said valve-cylinders and said working cylinders, the valve-cylinders directing the flow of pressure into any one of said working cylinders; and suitable connection between the tracer and the valves in the valve-cylinders.

5. In a machine of the character described, the combination with a frame, of a tracer mounted thereon of cutting-tools also mounted on said frame, means operating said tools, suitable pressure means mounted on said frame and effecting the movement of the tools in any desired direction, said pressure means comprising a working cylinder producing a vertical movement of the tools, a like cylinder producing a lateral movement of the tools, a third similar cylinder producing a longitudinal movement of the tools; of a series of valve-cylinders, each of which is suitably connected with one of said working cylinders, of double piston-valves mounted on valve-rods and sliding within said valve-cylinders, said valves directing the pressure to said working cylinders and suitable connections between said tracer and the valve-rods to operate the valves.

6. In a machine of the character described, the combination with a frame, of a tracer mounted thereon, of cutting-tools also mounted on said frame, means operating said tools, of working cylinders suitably connected to said cutting-tools, one of said cylinders producing a lateral displacement of the tools, one of said cylinders producing a vertical displacement of the tools, and a third working cylinder producing a longitudinal displacement of the tools; of a valve-cylinder for each of said working cylinders, with suitable connection between the same, of a double piston-valve for each of said valve-cylinders, said valves being operated by the movement of said tracer to direct pressure into any one or more of said working cylinders.

7. In a machine of the character described, the combination with a frame, a tracer mounted thereon, of cutting-tools also mounted on said frame, a plurality of hydraulic-pressure means, each effecting the movement of said tools in a different direction, means actuated by the tracer for distributing said hydraulic pressure and determining in advance the extent of any movement of the tools, and means for operating said tools.

8. In a machine of the character described, the combination with a frame, a tracer mounted thereon, of cutting-tools also mounted thereon, means operating said tools, a plurality of hydraulic-pressure means moving said tools in a plurality of directions, means controlled by the tracer determining the extent of movement of the tools, and comprising means for putting into operation said pressure, and means for automatically cutting off said pressure when the tools have reached the end of their determined movement.

9. In a machine of the character described, the combination with a frame, of a table carried by said frame, of a support carried by said table, a tracer connected by a universal joint to said support, of cutting-tools also suitably supported on said table and capable of movement in a plurality of directions, means operating said tools, a plurality of hydraulic-pressure means moving said tools in a plurality of directions, and means operated by said tracer determining the extent of movement of said tools.

10. In a machine of the character described, the combination with a frame, of a table carried by said frame, of a tracer suitably mounted on said table to permit a movement of the same in any direction, of supports revolubly mounted on said table, of cutting-tools connected to said supports by universal joints, means for operating said tools, a plurality of hydraulic-pressure means moving said tools, in any direction while in operating position, and suitable connections between the tracer and said moving means to control the latter by the movement of the tracer, the movement of said tracer in any desired direction producing a movement of the tools in keeping therewith.

11. In a machine of the character described, the combination with a frame, of a table carried by said frame, of a tracer suitably mounted upon said table and movable thereon in any direction, of a series of shafts suitably mounted upon said table and cutting-tools carried thereby, of blocks suitably supported upon said table and concentric to said shafts, of pulleys loosely mounted upon said blocks, means for driving said pulleys, of pins carried by said pulleys, said pins engaging suitable slots in said shafts to rotate the latter, means for moving the said shafts in a plurality of directions and suitable connections between said moving means and said tracer to produce upon the movement of the tracer in any desired direction a subsequent corresponding movement of said shafts.

12. In a machine of the character described, the combination with a frame, of a slidable table carried thereby, of a tracer mounted on said table, of cutting-tools also mounted thereon, suitable pressure means for moving said tools in any desired direction, said means comprising working cylinders, one of said cylinders being secured to the under side of said table, a piston-rod being fixed to said frame and a piston within said cylinder, and carried by said rod, said cylinder moving said table to longitudinally displace said tools; the other cylinders being secured to said frame, a piston movable within each of said last-named cylinders, and suitable connection between said movable pistons and said tools, one of said movable pistons causing the lateral displacement of said tools; and the other causing the vertical displacement of said tools; of suitable connections between said tracer and said cylinders to control the pressure in said cylinders and means for operating said tools.

13. In a machine of the character described, the combination with a frame, of a sliding table carried thereby, of a tracer universally mounted on said table, of cutting-tools also universally mounted on said table, of valve-cylinders suitably mounted on said machine, of working cylinders, pistons working in said working cylinders, one of said working cylinders being mounted on said table, its piston being rigidly secured to said frame, the other working cylinders being mounted upon said frame, their pistons being suitably connected to said tools, means operating said tools, comprising shafts carrying said tools, blocks suitably mounted on said table and provided with central openings, said shafts extending through said openings, pulleys loosely mounted upon said blocks, slots in said shafts and pins projecting from said pulleys and engaging said slots; suitable valve-cylinders and suitable connections between said cylinders and the working cylinders; and double piston-valves within the valve-cylinders and mounted on valve-rods the outer ends of which are connected to said tracer.

709,389. **FAUCET.** RALPH W. BOOTH, New Brunswick, N. J. Filed Dec. 14, 1899. Renewed Mar. 13, 1902. Serial No. 98,089. (No model.)

Claim.—1. A faucet comprising a base-plate, an annular spout-flange rising therefrom with its upper edge turned over and apertured, an internal threaded drop-flange and a screw-cap designed to be screwed into the drop-flange with a portion extended over the aperture of the spout-flange.

2. A faucet having a central opening, an annular chamber thereabove provided with a vent, a spout communicating with the chamber, and a cap having a hollow flange to fit over the edge of the spout-wall to control said vent arranged to simultaneously control the vent and the flow of liquid to the chamber.

3. A faucet comprising an apertured base-plate, an annular spout-flange having its upper edge turned over and apertured and terminating in a drop-flange of less width than the height of the spout-flange, and a cap designed to fit into the drop-flange and provided with a flange extending over the aperture in the turned edge of the spout-wall.

4. A faucet comprising an apertured base-plate having an upturned annular flange surrounded by a depression, a spout-wall rising from the outer edge of the depression and having its upper edge turned over and terminating in a drop-flange, a spout secured to the spout-wall, a gasket in the depression, and a cap provided with a hollow flang designed to fit over the turned edge of the spout-wall to control a vent therein

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709,390. **JAR-COVER.** RALPH W. BOOTH, New Brunswick, N. J. Filed Dec. 14, 1899. Renewed Mar. 13, 1902. Serial No. 98,090. (No model.)

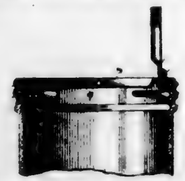

Claim.—1. The can-top described, consisting of a cover with spirally-grooved drop-flange, and central aperture with its surrounding wall inclined, and a lid hinged to the horizontal portion of said cover and having a central depression the surrounding wall of which is inclined in less degree than the inclined wall of the aperture in the cover to fit snugly within the same, as set forth.

2. The can-top described, consisting of the cover with depending annular flange spirally grooved, and a horizontal portion having central depressed aperture the surrounding wall of which is inclined, and a lid hinged to the horizontal portion of the cover with an annular horizontal portion bearing thereon and formed with a central depression with annular inclined wall of less degree than that of the said aperture to be sprung into and snugly fit the same, the latter being expanded and a snug fit assured, substantially as shown and described.

709,891. BOTTLE STOPPER AND SPRINKLER. HARRY O. BRAWNER, Baltimore, Md. Filed Aug. 1, 1901. Serial No. 70,580. (No model.)

Claim.—1. The herein-described improvement in bottle stoppers and sprinklers, consisting of a stopper adapted to be fitted to a bottle-mouth and having a laterally-projecting flange in contact with the upper surface of the said bottle-mouth, and a tapered passage extending through the bottle-stopper and terminating in a fine opening at the inner end of the stopper and gradually increasing in diameter from the opening at the inner end of the stopper toward its outer end, and a supplementary stopper having a lateral flange closing the enlarged end of the tapered passage, substantially as described.

2. The herein-described improvement in bottle stoppers and sprinklers, consisting of a main-stopper structure adapted to close the bottle-mouth, and having a lateral flange adapted to be seated on the outer surface of the bottle-mouth, and an inwardly-projecting nipple having a smooth outer surface, a washer surrounding said nipple, said main stopper having a passage therethrough gradually increasing from a fine opening at the inner end to an enlarged opening at the outer end of the stopper, a supplementary stopper adapted to be seated in the outer end of said passage having a laterally-projecting flange in contact with the outer end of said main stopper, and an inwardly-projecting nipple having a smooth outer surface with a washer surrounding said nipple, substantially as described.

709,892. SUTURE-CLAMP. HAYES BROWN, Surbiton Hill, England. Filed May 6, 1902. Serial No. 106,318. (No model.)

Claim.—1. A clamp for surgical purposes, comprising semicircular prongs lying in parallel planes and curved in the same direction and a bridge-piece connecting them, substantially as described.

2. A clamp for surgical purposes, comprising semicircular prongs lying in parallel planes and curved in the same direction, a bridge-piece at right angles to the prongs and connecting them substantially at the circumference of the semicircle, said bridge-piece and prongs formed of the same strip and bent into position, substantially as described.

709,893. LAMP-CHIMNEY PROTECTOR. WILLIAM C BURRUSS, Norfolk, Va. Filed June 5, 1901. Serial No. 63,207. (No model.)

Claim.—1. A lamp-chimney protector provided with a hollow conical perforate projection adapted to lie in the path of the rising heat-currents, and a supporting-rim carried by said projection for maintaining the protector in applied position, said rim being provided with a series of concentric grooves to adapt the protector for application to chimneys of varying sizes.

2. A lamp-chimney protector provided with a hollow conical perforate projection adapted to lie in the path of the rising heat-currents, said projection being corrugated to form a series of converging grooves on its exterior surface, and a supporting-rim carried by said projection for maintaining the protector in applied position, said rim being provided with means to adapt the protector for application to chimneys of various sizes.

3. A lamp-chimney protector provided with a hollow conical perforate projection adapted to lie in the path of the rising heat-currents, said projection being corrugated to form a series of converging grooves on its exterior surface, and a supporting-rim carried by said projection for maintaining the protector in applied position, said rim being provided with a series of concentric grooves to adapt the protector for application to chimneys of various sizes.

4. A lamp-chimney protector comprising a hollow perforated exteriorly-corrugated inverted conical body having a support and adapted to be arranged in position within the upper end of the chimney.

709,894. CAR-RECORD DEVICE. JOSEPH R. CAVANAGH, JOHN B. HARBAR, and JOSEPH D. CLARKE, Indianapolis, Ind. Filed June 5, 1901. Serial No. 63,310. (No model.)

Claim.—1. In a record device of the class described, a record-block consisting of a body having a recess or pocket provided with terminal transverse shoulders, holding-studs and guard-flanges carried by the block, said studs having interlocking engagement with the cards or slips.

2. In a record device of the class described, a record-block consisting of a body having a recess or pocket provided with terminal transverse shoulders, holding-studs arranged slightly in advance of said terminal shoulders, guard-flanges overhanging the end portions of the recess or pocket, and the record cards or slips having notched ends.

709,895. DRAIN-TILE PROTECTOR. JOHN W. COOK, Sr., Nevada, Iowa. Filed Mar. 15, 1902. Serial No. 98,344. (No model.)

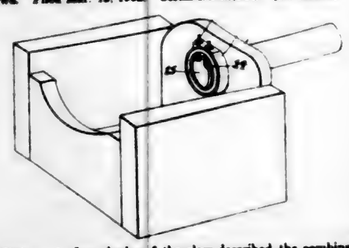

Claim.—1. In a device of the class described, the combination of a tile having one or more holes in the periphery thereof and near one end a collar fitting over the end of said tile and one or more holes in the periphery thereof, a cover to fit inside of said tile and on the inside of the collar, means for pivotally attaching the cover to the tile and the collar, and the box having a back through which the tile extends, substantially as and for the purposes stated.

2. In a device of the class described, the combination of a tile having two holes in the periphery thereof and near one end, a collar having holes corresponding with the holes in the tile to fit over the end of the tile, bolts extending through the holes in the collar and holes in the tile, loops on the ends of said bolts which are inside of the tile, a cover having a loop in the upper portion thereof, a bar designed to pass through the loop in the bolts and the loop in the cover, a box having two side portions, a back and front portion, said back portion having an opening in the upper portion thereof designed to receive the tile, the front portion being of less height in the sides and back and being curved downwardly to allow the water to flow from the interior of the box before it reaches the level even with the lower edges of the tile, substantially as and for the purposes stated.

709,896. SPRING SUSPENSION FOR VEHICLE-BODIES. FERDINAND CORNEEN, Ritzergut Saarmund, near Potsdam, Germany, assignor of one-half to Edward F. Wilhelm, Haymarket, Va. Filed Mar. 12, 1902. Serial No. 97,928. (No model.)

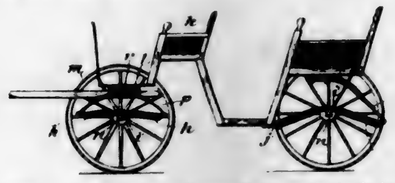

Claim.—1. In a wheeled vehicle, a spring suspension for the body portion thereof, consisting of spiral tension-springs connected at one end to the axle, the opposite ends of said springs being connected to the body portion, said spring suspension serving also as the draft connection to the axle; substantially as described.

2. In a wheeled vehicle, a spring suspension for the body portion thereof, consisting of spiral tension-springs, connected at one end to the axle and extending thence inwardly, the opposite ends being connected to the body portion, said spring suspension serving also as the draft connection to the axle; substantially as described.

3. In a wheeled vehicle, a spring suspension for the body portion thereof, consisting of spiral tension-springs connected at one end to the axle and extending thence inwardly and downwardly, the opposite ends being connected to the body portion, said spring suspension serving also as the draft connection to the axle; substantially as described.

4. In a wheeled vehicle, a spring suspension for the body portion thereof, consisting of spiral tension-springs connected at one end to the axle and extending thence inwardly and downwardly, the opposite ends being connected to the body portion through the intermediary of auxiliary leaf-springs, said spring suspension serving also as the draft connection to the axle; substantially as described.

5. In a wheeled vehicle, a spring suspension for the body portion thereof, consisting of spiral tension-springs, plates on the axle with which one end of the springs engages, said springs extending diagonally downward and inward and being connected at their opposite ends to the body portion, said spring suspension serving also as the draft connection to the axle; substantially as described.

6. In a wheeled vehicle, a spring suspension for the body portion thereof, consisting of a pair of spiral tension-springs at each axle end, the members of each pair extending oppositely in diagonal, downward and inward directions to connections with the body portion, said spring suspension serving also as the draft connection to the axle; substantially as described.

709,897. AUTOMATIC BICYCLE-PUMP. THEODORE A. DIEBOLD Stuart, Iowa. Filed Oct. 31, 1901. Serial No. 80,616 (No model.)

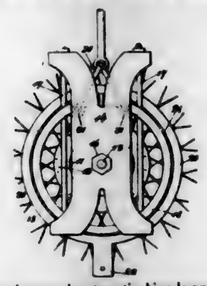

Claim.—1. An improved automatic bicycle-pump comprising, in combination, a bicycle-wheel, a stationary axle passed through the wheel-hub, and a pneumatic tire on the wheel, a frame secured to the wheel-axle, a ring vertically movable relative to said frame, a frame rotatable on said ring, a rod projecting from said frame inwardly toward the center of the bicycle-hub, a pump fixed to the hub, a piston in the pump connected with the said rod, and a tube leading from the pump to the tire of the wheel, and means for moving the ring and its frame to a position concentric relative to the axle or to a position eccentric relative thereto, for the purposes stated.

2. An automatic bicycle-pump, comprising in combination, a bicycle-wheel, a pneumatic tire thereon, a stationary axle passed through the wheel-hub, a frame fixed to the axle at one end of the hub, a split ring vertically movable relative to the frame, a circular frame mounted on the split ring and capable of rotation relative thereto, a pump fixed to the central portion of the hub, a rod connecting the circular ring with the pump-piston, a tube leading from the pump to the pneumatic tire, a lever connected with the machine-frame, an arm pivoted to the lever and two links pivoted to the said arm and to the end portions of the split ring, substantially as and for the purposes stated.

3. An improved bicycle-pump, comprising in combination, a bicycle-wheel, a pneumatic tire thereon, a stationary axle passed through the wheel-hub, a frame 14 fixed to the stationary axle, parallel rods 17 fixed to the frame 14 and extended vertically, a split ring vertically movable on said rods, a circular frame having an arm 20 mounted on the split ring, a pump fixed to the central portion of the wheel-hub, a piston in said pump, a rod connecting the arm 20 with the piston, a tube leading from the pump to the tire, a lever fulcrumed to the machine-frame, an arm pivoted to one end of the lever, two links pivoted to the arm and to the end portions of the split ring, substantially as and for the purposes stated.

709,898. ASBESTOS STEREOTYPE. LEOPOLD ELIAS Breslau, Germany. Filed May 14, 1901. Serial No. 60,294. (No specimens.)

Claim.—A stereotype-matrix composed of asbestos covered with a thin coating of plant-glue, substantially as described.

709,899. VISE. JOSEPH F. BEHERT, Waynesboro, Pa., assignor to Hummert Manufacturing Company, Waynesboro, Pa. Filed Jan. 7, 1902. Serial No. 88,710. (No model.)

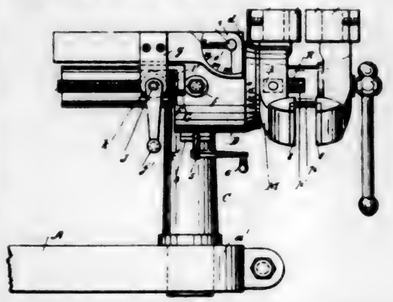

Claim.—1. In a vise, the combination, with a supporting-base, of a flat vise-table pivoted to the base and movable in a horizontal plane, a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth.

2. In a vise, the combination, with a supporting arm or base provided with a socket, of a flat vise-table provided with a downwardly-projecting pivot pillar or post which engages with the said socket, a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth.

3. In a vise, the combination, with a supporting-base, and a flat vise-table arranged above it; of a vertical pillar or post interposed between the said base and vise-table and pivotally connecting them, a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth.

4. In a vise, the combination, with a supporting-base, and a pillar projecting from it; of a flat vise-table provided with a contractible bearing which is pivoted on the said pillar, a bearing hinged to one edge of the said vise-table, and vise-jaws carried by the said bearing, substantially as set forth.

5. In a vise, the combination, with a flat vise-table, of a bearing arranged under and hinged to one edge of the said table, and vise-jaws carried by the said bearing, substantially as set forth.

6. In a vise, the combination, with a flat vise-table provided with a graduated scale, of a bearing arranged under and hinged to one edge of the said table, a hinge-pin secured to the said bearing and movable in the said table, a pointer secured to the said pin adjacent to the said scale, and vise-jaws carried by the said bearing, substantially as set forth.

7. In a vise, the combination, with a vise-table, a bearing pivoted to the table and movable in a vertical plane, and vise-jaws carried by the

said bearing; of a screw pivoted to the said bearing, a revolvable nut supported from the said table and engaging with the said screw, and means for revolving the said nut, substantially as set forth.

8. In a vise, the combination, with a vise-table, a bearing pivoted to the table, and vise-jaws carried by the said bearing; of a screw pivoted to the said bearing, a revolvable nut for engaging said screw supported from the said table and carrying a beveled toothed wheel, a beveled toothed wheel also supported from the said table and gearing into the said wheel, and means for revolving the said wheels, substantially as set forth.

9. In a vise, the combination, with a vise-table having two brackets, a bearing pivoted to the said table, and vise-jaws carried by the said bearing; of a screw pivoted to the bearing, a frame pivoted between the said brackets and provided with two slots, a nut for engaging the said screw arranged in one of the said slots and carrying a beveled toothed wheel, an operating-shaft which forms one of the pivots for the said frame, and a beveled toothed wheel arranged in the other said slot in gear with the said aforesaid wheel and secured upon the said operating-shaft, substantially as set forth.

10. In a vise, the combination, with a supporting-bearing, of an inner vise-jaw provided with a sleeve having worm-wheel teeth on it and journaled in the said bearing, means for preventing the sleeve from sliding longitudinally, a revolvable worm supported from the said bearing in gear with the worm-wheel teeth, and an outer vise-jaw which is slidable longitudinally of the said sleeve, substantially as set forth.

11. In a vise, the combination, with a supporting-bearing having a worm-chamber on one side, of a revolvable worm provided with an operating-shaft which is journaled in the ends of the said chamber, a cap which closes the worm-chamber and holds the worm-shaft in place, an inner vise-jaw provided with a sleeve which is journaled in the said bearing and provided with worm-wheel teeth which engage with the said worm, and an outer vise-jaw which is slidable longitudinally of the said sleeve, substantially as set forth.

12. In a vise, the combination, with an inner vise-jaw, and a slidable outer vise-jaw, said jaws being provided with projections arranged opposite to and parallel with each other, of removable blocks having a plurality of gripping-faces on their side portions and mounted on the said projections so that they may be turned around to grip the work between their various faces, substantially as set forth.

709,400. ROD-COUPLING. JAMES A. FITZPATRICK, Bakersfield, Cal. Filed Mar. 20, 1902. Serial No. 99,320. (No model.)

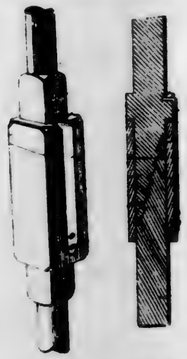

Claim.—In a rod-coupling of the class described, the combination with the rod-sections having matched interlocking toothed ends, one of said sections being further provided with an annular abutment-collar having a keeper-notch, and the other rod-section being further provided with a retaining-notch, a coupling-sleeve slidable upon the rod-sections and arranged to cover the joint, and a fastening-latch having a permanent connection with the coupling-sleeve and provided beyond one end of the latter with an engaging hook adapted to respectively engage in the separate notches.

709,401. TRAIN-PIPE COUPLING. THOMAS H. HENDERSON, Portsmouth, Va., assignor of two-thirds to Charles Paddock Storrs, Wilmington, Del., and Robert Randolph Hicks, Norfolk, Va. Filed June 5, 1902. Serial No. 110,262. (No model.)

Claim.—1. In train-pipe couplings, a pair of pipe-sections adapted to slide one within the other, the inner section being provided with a vent-hole intermediate its ends, a stuffing-box mounted on the outer section, a gland at one end of said stuffing-box, packing within the box adapted to be compressed by the gland, and a hand-wheel or lock-nut for fixing the adjustment of the gland, substantially as described.

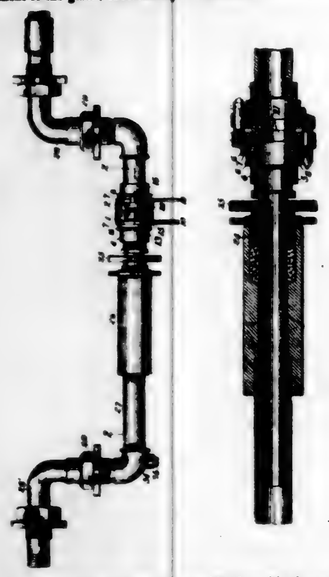

2. In train-pipe couplings, the combination with pipe-sections provided with couplings and a slip joint, of angular pipe-sections having an elbow connection therewith and provided with terminal extensions substantially at right angles thereto and substantially parallel with the main pipe-sections, the angular and terminal sections being each provided with a rotary box consisting of a coupling-nut, a lock-nut, flexible packing-rings inclosed by the nut, and a metal ring interposed between the flexible rings, substantially as described.

3. In train-pipe couplings, a pair of pipe-sections each consisting of substantially horizontal terminal portions, and a transverse connecting portion, rotary boxes for permitting relative rotating movement of the transverse and end portions of the sections, couplings for uniting the adjacent ends of the pipe-sections, and a slip-joint arranged adjacent to the couplings, said joint comprising a stuffing-box, adapted to receive the slidable end portion of the other section, which slidable end portion is provided with a lateral vent-hole, substantially as and for the purpose set forth.

709,402. EXTENSION-LADDER AND TRUCK THEREFOR. EDWARD A. HERNDON, LaGrange, Ga. Filed Apr. 26, 1902. Serial No. 104,866. (No model.)

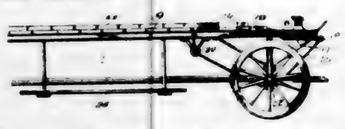

Claim.—1. In an apparatus of the class described, the combination with a suitable truck, of a ladder mounted thereon, and lifting means secured to the ladder and extending through an orifice in the said truck, said ladder, when lifted, being rotatable upon the said lifting means.

2. In an apparatus of the class described, the combination with a suitable support of a ladder mounted thereon, a bracket extending from said ladder through said truck and finding a bearing thereon, and means for swinging said bracket upon its bearing for lifting said ladder, the ladder being left free to rotate upon said bracket.

3. In a truck-ladder, the combination with a suitable truck, of an extension-ladder mounted thereon, a bracket or lifting-lever fixed to said ladder and extending therefrom substantially in line therewith, having an offset portion therein, whereby the ladder may lie flat upon the truck, while the bracket extends through the truck and lies in a parallel plane thereto, and means for pulling the free end of said bracket downwardly for lifting the ladder.

4. In a device of the class described, the combination with a suitable truck, of a ladder mounted thereon and means for lifting and pivotally supporting said ladder, such means comprising a hanger formed with converging arms and a depending portion extending therefrom, an eye formed at the end of the depending portion, a windlass mounted on the truck-body, and a cable having one end secured to the eye of the depending portion of the hanger and the other passed about said windlass.

5. A truck-ladder comprising a carrying truck or vehicle, an extension-ladder mounted thereon, a lifting, pivotally-supporting bracket for the ladder formed with a ladder-engaging bifurcated portion, and an elongated pivoting-lever portion, the said lever portion affording means for lifting and pivotally holding the ladder in its various positions, said ladder being rotatable upon said lever portion.

6. In a device of the class described the combination of a suitable truck, an extensible ladder mounted thereon, and means for elevating the said ladder and retaining it against lateral movement, such means comprising a hanger secured to the end of said ladder, a portion of said hanger extending through an orifice formed in the truck-body, a windlass on the truck-body, a cable secured to said hanger and adapted to be wound by said windlass, and a bracket fastened to the front of the truck-body and having arms extending on both sides of the said ladder-hanger.

7. A ladder-truck, comprising a truck or supporting-wagon, a ladder carried thereby, a lifting bracket or lever secured to the lower end of the ladder, one end of the same projecting through an engaging slot formed in the floor of the truck, an elongated guide-bracket arranged beneath the floor of the truck and bracing the forward bolster thereof, the said bracket guiding and bracing the ladder-lifting bracket in its various positions, substantially as described.

709,403. CHECK-ROW CORN-PLANTER. JOHN HILLERY, Colchester, Ill., assignor of one-third to John Robert Benson, Colchester, Ill. Filed Oct. 1, 1901. Serial No. 77,236. (No model.)

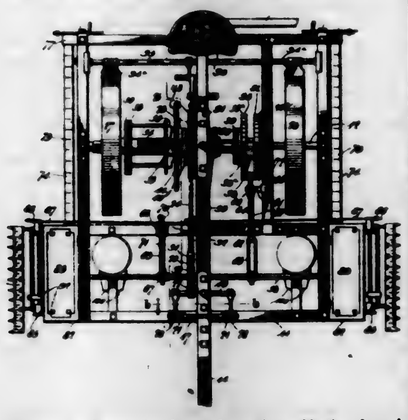

Claim.—1. In a check-row corn-planter, the combination of a seed-dropping mechanism, an axle-shaft, a master-wheel loose thereon, having tappets to operate said seed-dropping mechanism, and said master-wheel having reversely-disposed peripheral measuring-scales, a fixed pointer cooperating with said measuring-scales, and means to lock said master-wheel to the axle-shaft, substantially as described.

2. In a check-row corn-planter, a pointer-bar abreast of the seed-dropping mechanism and having a measuring-scale reaming forward from the seed-spout, substantially as described.

3. In a check-row corn-planter, a fixed pointer, an adjustable master-wheel having a measuring-scale coacting with said fixed pointer, seed-dropping mechanism, operated by said master-wheel, and a pointer-bar abreast of the seed-dropping mechanism having a measuring-scale running forward from the seed-spout, substantially as described.

4. In a check-row corn-planter, in combination with a seed-dropping mechanism, a shaft, a master-wheel loose thereon, to actuate the seed-dropping mechanism, a clutch to lock the master-wheel, a power-wheel, loose on said shaft, a clutch to lock said power-wheel and a hand-wheel, revolvable on said shaft, said hand-wheel and said clutches having coacting cams, whereby said clutches may be operated by said hand-wheel, substantially as described.

5. In a check-row corn-planter, a pivoted pointer-bar disposed abreast of the seed-dropping mechanism and having a measuring-scale reaming forwardly from the heel of the runner, said pointer-bar being adapted to be raised and lowered, means to raise said pointer-bar, and a spring compressed when said pointer-bar is raised, for the purpose set forth, substantially as described.

6. In a check-row corn-planter having an adjustable seed-dropper-actuating element and a scale by which to set the same, a longitudinally-movable hill finder-bar disposed to extend forwardly from the heel of the runner, and a pointer-bar having a measuring-scale, substantially as described.

7. In a planter, the combination of an axle, a main frame, a tongue pivotally connected to the axle, an element to raise and lower the front end of the frame, said element being carried by the tongue, a lever, and connections, including a spring, between said tongue and said raising and lowering element, substantially as described.

8. In a planter, a furrowing-runner having laterally-projecting wings, adapted to bear on the surface of the soil and forming rearwardly-descending inclined planes, substantially as described.

9. In a check-row corn-planter, in combination with a seed-dropping mechanism, an axle-shaft, a master-wheel loose thereon, to actuate the seed-dropping mechanism, supporting and traction wheels, one fast and the other loose on said shaft, a clutch to lock the master-wheel to the shaft, a spring to normally unclutch the same, a spring-pressed, normally effective clutch to lock said loose traction-wheel to the shaft, and a hand-wheel, free to revolve on said shaft, and between said clutches, said hand-wheel having stops on opposite sides and said clutches having cams coacting with said stops, substantially as described.

10. In a check-row corn-planter, in combination with a seed-dropping mechanism, an axle-shaft, a master-wheel loose thereon, to actuate the seed-dropping mechanism, supporting and traction wheels, one fast and the other loose on said shaft, a clutch to lock the master-wheel to the shaft, a spring to normally unclutch the same, a spring-pressed, normally effective clutch to lock said loose traction-wheel to the shaft, and a hand-wheel, free to revolve on a threaded portion of said shaft and between said clutches, said hand-wheel having stops on opposite sides, and said clutches having cams, coacting with said stops, substantially as described.

11. In a check-row planter, in combination with a seed-dropping mechanism, an axle-shaft, a master-wheel loose thereon, having a tappet to operate said seed-dropping mechanism, and provided with reversely-disposed measuring-scales, a fixed pointer coacting with said measuring-scales, supporting and traction wheels on said shaft, one fast and the other loose, a clutch to lock said master-wheel to said shaft, a disk free to travel longitudinally of the shaft, rods connecting said disk to said clutch, a drum fast to the shaft and through which said rods pass, a clutch to lock said loose traction-wheel to said shaft, said wheel having a disk, and a hand-wheel between said disks and free to revolve on said axle-shaft, said hand-wheel and said disks having coacting cams, substantially as described.

12. In a check-row corn-planter, in combination with a seed-dropping mechanism, an axle-shaft, a master-wheel, loose on said shaft, and having a tappet to operate the seed-dropping mechanism and reversely-disposed measuring-scales, a fixed pointer coacting with said measuring scales, supporting and traction wheels on said shaft, one fast and one loose, clutches to lock said master-wheel and loose traction-wheel to said shaft, and a hand-wheel, free to revolve on said shaft, said hand-wheel and clutches having coacting means to operate said clutches, substantially as described.

13. In a check-row corn-planter, in combination with a seed-dropping mechanism, an axle-shaft, a master-wheel, loose on said shaft, and having a tappet to operate the seed-dropping mechanism and reversely-disposed measuring-scales, a fixed pointer coacting with said measuring-scales, supporting and traction wheels on said shaft, one fast and one loose, clutches to lock said master-wheel and loose traction-wheel to said shaft, a hand-wheel, free to revolve on said shaft, said hand-wheel and clutches having coacting means to operate said clutches, and a hill finder-bar adapted to be extended longitudinally from the planter, substantially as described.

709,404. DRAFT-RIGGING FOR RAILWAY-CAR COUPLINGS. JAMES A. HIBBEN, Chicago, Ill. Filed Dec. 28, 1901. Serial No. 87,554. (No model.)

Claim.—1. A draft-rigging for cars comprising a draw-bar, a draw-bar spring or springs and supplemental resistance elements cooperating with said draw-bar spring or springs comprising coacting friction-surfaces at one side of the draw-bar, coacting inclined surfaces and a roller at the

other side of said bar, and a spring for holding said roller and inclined surfaces in coacting relation.

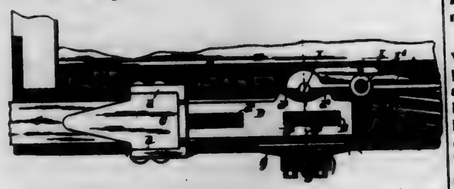

2. A draft-rigging for cars comprising a draw-bar, a draw-bar spring or springs and supplemental resistance elements coöperating with said draw-bar spring or springs comprising coacting friction-surfaces at one side of the draw bar, coacting inclined surfaces and a roller at the other side of said bar, and a spring for holding said roller and inclined surfaces in coacting relation, the pressure of said springs being exerted through the draw-bar yoke or tailpiece to said friction-surfaces to hold the same pressed one against the other.

3. A draft-rigging for cars comprising a draw-bar, a draw-bar spring or springs which are compressed through longitudinal movement of the draw-bar and supplemental resistance elements coöperating with said draw-bar spring or springs comprising coacting friction-surfaces at one side of the draw-bar, coacting oppositely-inclined surfaces, and a roller at the other side of said bar, and a spring for holding said roller and inclined surfaces in coacting relation, said inclined surfaces being connected by a curved surface formed on a greater radius than that of the roller, whereby the draw-bar spring or springs may be placed under preliminary compression prior to the operation of the supplemental resistance elements.

4. A draft-rigging for cars comprising a draw-bar provided with a tailpiece or yoke, a draw-bar spring or springs, a friction-plate on one side of said tailpiece or yoke, a coacting stationary friction-plate, a spring-pressed part at the other side of said draw-bar, and coacting parts on said spring-pressed part and the side of the draw-bar tailpiece or yoke remote from the friction-plates, comprising a roller on one of said parts and oppositely-inclined surfaces on the other part.

5. A draft-rigging for cars comprising draft-sills, a draw-bar provided with a tailpiece or yoke, a draw-bar spring or springs, a flat friction-plate on one side of said draw-bar tailpiece or yoke, a friction-plate stationary with the draft-sills and coacting with the movable friction-plate, a laterally-movable part supported on said draft-sills at the opposite side of the draw-bar, coacting parts on said part and the draw-bar tailpiece or yoke, embracing inclined surfaces on one of said parts and a spring supported on said draft-sills acting to maintain said coacting parts in operative relation.

6. A draft-rigging for cars comprising a draw-bar provided with a tailpiece or yoke, a draw-bar spring or springs, a friction-plate on one side of said draw-bar tailpiece or yoke, a coacting stationary friction-plate, a spring-pressed part at the other side of said draw-bar, and coacting parts on said spring-pressed part and the adjacent side of the draw-bar tailpiece or yoke, comprising a roller on one of said parts and oppositely-inclined surfaces on the other part, said stationary friction-plate having a limited oscillatory movement to maintain the friction-surfaces of the plates in parallelism.

7. A draft-rigging for cars comprising draft-sills, a draw-bar provided with a tailpiece or yoke, a draw-bar spring or springs, a friction-plate at one side of said draw-bar tailpiece or yoke, a stationary friction-plate supported on said draft-sills and coöperating with the movable friction-plate, a vertically-oscillatory lever supported between said draft-sills, a roller carried by said lever, oppositely-inclined surfaces on the draw-bar tailpiece or yoke coacting with said roller, and a spring supported on said draft-sills and acting on said lever to press said roller against said inclined surfaces of the draw-bar.

8. A draft-rigging for cars comprising draft-sills, a draw-bar provided with a tailpiece or yoke, a draw-bar spring or springs, a friction-plate at one side of said tailpiece or yoke, a stationary friction-plate supported on said draft-sills and coöperating with the movable friction-plate, a spring-pressed part supported between said draft-sills and a roller carried by said spring-pressed part, oppositely-inclined surfaces on the draw-bar coacting with said roller, said inclined surfaces of the draw-bar being connected by a curved surface formed on a radius greater than that of the roller.

9. A draft-rigging for cars, comprising draft-sills, a draw-bar provided with a yoke or tailpiece, a draw-bar spring or springs, a friction-plate at one side of the yoke or tailpiece, a friction-plate supported on said draft-sills and coöperating with the movable friction-plate, a spring-pressed part supported by the draft-sills, coacting parts on said spring-pressed part and the side of the yoke or tailpiece remote from the friction-plates embracing a roller on one of said parts, and inclined surfaces on the other part, one of said friction-plates having a limited or oscillatory movement with respect to its support whereby said plates may be maintained in parallelism.

10. A draft-rigging for cars comprising draft-sills, a draw-bar provided with a tailpiece or yoke, a draw-bar spring or springs, a friction-plate at one side of said tailpiece or yoke, a friction-plate supported on said draft-sills and coöperating with the movable friction-plate, an oscillatory lever supported between said draft-sills, a roller carried by said lever, oppositely-inclined surfaces on the tailpiece or yoke coacting with said roller, and a spring supported on said draft-sills and acting on said lever to press said roller against said inclined surfaces of the draw-bar, said stationary friction-plate having a limited oscillatory movement whereby said friction-plates may be maintained in parallelism.

11. A draft-rigging for cars comprising draft-sills, a draw-bar provided with a yoke or tailpiece, a draw-bar spring or springs, a friction plate on one side of said yoke or tailpiece, a bar or girder extending transversely between the draft-sills below said friction-plate, a second friction-plate carried by said bar or girder and coacting with the draw-bar friction-plate, said second friction-plate having a limited oscillatory movement on said bar, and coacting inclined surfaces and a spring-pressed roller at the other side of said yoke or tailpiece.

12. A draft-rigging for cars comprising a draw-bar, provided with a tailpiece or yoke to which the draw-bar is pivoted in a manner to swing horizontally, a draw-bar spring or springs, a friction-plate at one side of said tailpiece or yoke, a stationary friction-plate coacting with said tailpiece friction-plate, a spring-pressed part on the other side of said tailpiece, and coacting parts on the said spring-pressed part and the tailpiece, embracing oppositely-inclined surfaces on one of said parts, and a roller on the other part.

13. A draft-rigging for cars comprising draft-sills, a draw-bar, a tailpiece or yoke extending rearwardly from said car, follower-bars extending through openings in said tailpiece or yoke and through alined openings in the draft-sills, springs interposed between said follower-bars laterally outside of said draft-sills, a friction-plate at one side of said tailpiece or yoke, a coacting stationary friction-plate carried by the draft-sills, and coacting inclined surfaces and a spring-pressed roller on the other side of said tailpiece or yoke.

14. A draft-rigging for cars comprising draft-sills, a draw-bar, a tailpiece or yoke extending rearwardly therefrom, follower-bars extending through openings in said tailpiece or yoke and through alined openings in the draft-sills, springs interposed between said follower-bars laterally outside of said draft-sills, friction-plates on one side of said tailpiece or yoke, a friction-plate carried by the draft-sills, and coöperating with said friction-plate of the tailpiece or yoke, an oscillatory lever supported on said draft-sills, on the side of the tailpiece or yoke opposite to said friction-plates, a roller on said lever, inclined surfaces on the tailpiece or yoke coacting with said roller, and a spring supported on said draft-sills and acting through said lever to hold said roller in operative relation with respect to said inclined surfaces.

15. A draft-rigging for cars comprising draft-sills, a draw-bar, a tailpiece or yoke extending rearwardly from said draw-bar to which said draw-bar is pivoted in a manner to swing horizontally, follower-bars extending through openings in said tailpiece or yoke and through alined openings in the draft-sills, and springs interposed between said follower-bars laterally outside of said draft-sills.

16. A draft-rigging for cars comprising draft-sills, a draw-bar, a tailpiece or yoke extending rearwardly from said draw-bar, said tailpiece or yoke being provided on its forward end with oppositely-extending lugs, plates extending rearwardly from the upper and lower sides of the draw-bar and provided with openings through which said lugs extend, follower-bars extending through openings in said tailpiece or yoke and through alined openings in the draft-sills, and springs interposed between said follower-bars laterally outside of said draft-sills.

17. A draft-rigging for cars comprising draft-sills, a draw-bar, provided with a tailpiece or yoke, follower-bars extending transversely through openings in said tailpiece or yoke and through alined openings in the draft-sills, springs interposed between said follower-bars laterally outside of said draft-sills, and bearing-plates against which the ends of said springs bear, said plates being formed on or attached to loops which embrace said follower-bars and are attached thereto.

709,405. WINDOW-SCREEN. BENJAMIN HIPOLITO, Los Angeles, Cal. Filed Feb. 13, 1899. Serial No. 705,449. (No model.)

Claim.—1. In a screened window, the combination of grooved stiles; a tongue in the groove of one stile and provided with transverse grooves extending into the tongue from one side; staples set in the tongue and extending over the mouths of the grooves respectively; bow-springs in the stile-groove and respectively fastened at one end, said tongue being

seated in the stile-groove with the staples resting upon the bow-springs; nails set through the stile and passing through the slots respectively; a tongue in the groove of the other stile; and means for adjusting the pressure of the tongues.

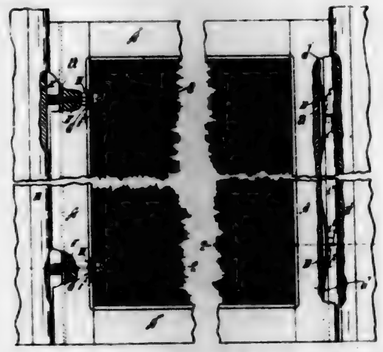

2. A screen comprising a frame, the stiles and rails of which are rabbeted and are provided with undercut channels extending along in the seats of the rabbets, respectively, between the edges of said seats, respectively, and sloping obliquely inward behind said seats; a wire sheet seated upon said seats and having its edges undercut into said channels; molding-strips on the wire sheet in the rabbets and respectively extending on both sides of their respective channels; and nails driven obliquely through the molding-strips into the seats respectively beyond the channels.

3. A screen comprising a frame, the stiles and rails of which are rabbeted and are provided with undercut channels extending along in the seats of the rabbets, respectively, between the edges of said seats, respectively, and sloping obliquely inward behind said seats; a wire sheet seated upon said seats and having its edges undercut into said channels; and molding-strips fastened on the wire in the rabbets and respectively extending on both sides of their respective channels.

4. In a window, the combination of a grooved stile; a tongue moving in the groove in said stile; a collar-plate; and an adjusting-screw through the plate, said screw consisting of a screw-threaded portion and a body portion, the body portion being provided at the end opposite the screw-threaded portion with an annular groove; said collar-plate being fastened to the stile on the edge thereof opposite the groove, and said adjusting-screw being inserted through a hole in the collar-plate and through a hole in the stile and screwed into the tongue and the perforated portion of the collar-plate fitting within the annular groove; the hole in said plate through which said screw is inserted being of less diameter than the body of the screw and being concealed in said annular groove by the walls of said groove.

709,406. STREET-CAR TRUCK. RAYMOND H. HORNBROOK and WILLIAM H. WOODCOCK, Canton, Ohio. Filed Apr. 22, 1902. Serial No. 104,117. (No model.)

Claim.—1. A car-truck having opposite sills of channel-iron stiffened as to their longitudinal central portions by means of depending angle-bar braces secured to the under side of the sills, substantially as specified.

2. A car-truck having the side sills of channel-iron stiffened as to their longitudinal central portions by means of depending angle-bars secured to the under sides of the sills, said side sills being connected by end angle-bars and intermediate angle-bars, substantially as specified.

3. A car-truck having the side sills composed of channel-bars with transverse bars connecting the same at the ends, and intermediate transverse angle-bars connecting the side sills and bent downward into a plane below the same, substantially as specified.

4. The combination of the side sill of the truck, with journal-box pedestals composed of a bar bent into yoke form and having projecting base-flanges, and pedestal-braces each comprising a vertical leg, a foot and a diagonal brace, the vertical leg and diagonal brace being connected at their upper ends to the sill and the foot being connected to the flanges of the yoke, substantially as specified.

5. The combination of the side sill of the truck, with journal-box pedestal-braces each comprising a vertical leg, a foot, and a diagonal brace, said vertical leg and diagonal brace being connected at their upper ends to the sill, and a bar or plate extending from the foot portion of one brace to that of the other and connected to each, substantially as specified.

6. The combination of the side sill of the truck, with journal-box pedestals composed of a bar bent into yoke form and having projecting base-flanges, pedestal-braces each comprising a vertical leg and foot, and a diagonal brace, the vertical leg and diagonal brace being connected at their upper ends to the sill and the foot being connected to the flanges of the yoke, and a bar or plate extending from one of said flanges to the other and connected to each, substantially as specified.

7. The combination of the side sills of a car-truck and the body-supporting bars at the corners of the truck, with elastic supports for said body-supporting bars each comprising a spring for supporting the bar, a plate supporting the spring, a plate resting on the sill and a pair of suspension-rods one on each side of the sill for connecting said plates, substantially as specified.

709,407. APPARATUS FOR USE IN DISPENSING AERATED LIQUIDS. WILLIAM HODER, Jr., Camden Town, London, England. Filed Apr. 30, 1902. Serial No. 105,212. (No model.)

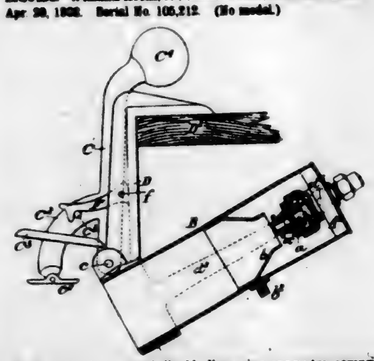

Claim.—1. An aerated-liquid-dispensing apparatus, comprising a casing, a closing device and a charging device within the casing connected to a container and adapted to be operated by pressure against the closing device, a presser and presser-lever adapted to press an intermediate vessel in the casing against the closing device to cause the vessel to be filled, substantially as described.

2. An aerated-liquid-dispensing apparatus, comprising a casing, a closing device and a charging device within the casing connected to a container and adapted to be operated by pressure against the closing device, a presser and presser-lever adapted to press an intermediate vessel in the casing against the closing device to cause the vessel to be filled,

in combination with means for catching excess liquid expelled in the closing during the filling operation, substantially as described.

3. Apparatus for dispensing aerated liquid, comprising a casing open at one end, a pressure-operated charging device and a closing device within the closed end of the casing, and a pressure-lever pivoted to the casing and adapted to press an intermediate vessel against the closing device to operate the charging device, substantially as described.

4. An aerated-liquid-dispensing apparatus, comprising a casing, a closing device and a charging device within the casing connected to a container and adapted to be operated by pressure against the closing device, a pressure and pressure-lever adapted to press an intermediate vessel in the casing against the closing device to cause the vessel to be filled said lever having a counterweight to hold the intermediate vessel in the casing, substantially as described.

5. An aerated-liquid-dispensing apparatus, comprising a casing, a valve in the casing, a longitudinally-movable funnel in the casing adapted to convey excess expelled liquid to an intermediate vessel as it is withdrawn from the casing, said funnel being provided with an opening to fit the mouth of the intermediate vessel, substantially as described.

709,408. DEVICE FOR CUTTING OFF PIECES OF BELTS, &c. ERWIN H. JAHN, Westend, Germany, assignor to Dr. Paul Meyer Actiengesellschaft, Berlin, Germany. Filed Aug. 5, 1901. Serial No. 70,932. (No model.)

Claim.—1. In devices for cutting off pieces of belts, strips of paper, weaving, and the like, rotary cutters cooperating in pairs and both rotating around their axes, the axes of rotation being vertical to the direction of the feed and parallel to the plane of the belt, one of said knives being yielding, substantially as described.

2. In devices for cutting off pieces of belts or strips of paper, weaving or the like rotary cutters cooperating together in pairs, the axes of rotation being vertical to the direction of the feed and parallel to the plane of the belt, both cutters *e*, *f* being of spiral form, the one of which *e* is firmly fixed in its roller *h* and the other *f* is pressed by a spring *m* against the edge of the cutter *e*, substantially as set forth and described.

709,409. MACHINE FOR REDUCING AND FINISHING HOLLOW BALLS. ALLEN JOHNSON, Ottumwa, Iowa. Filed Sept. 20, 1901. Serial No. 75,903. (No model.)

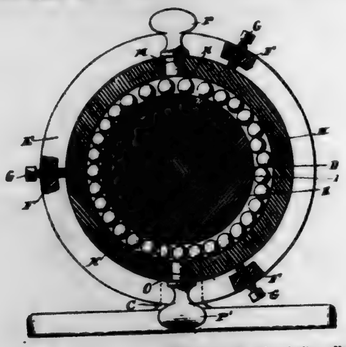

Claim.—1. In a machine for rolling hollow bearing-balls, a disk having a grooved periphery and mounted for rotation and a ring having a grooved inner face, said ring held closer to one side of the periphery of said disk than to the other side thereof, together with means whereby the balls may be discharged after they have been rolled around the disk a plurality of times and through each rolling are reduced on their several axes to the desired size and finish.

2. In a machine for rolling hollow bearing-balls a disk having a grooved periphery and mounted for rotation, and a ring having a grooved inner face and mounted eccentrically thereto, means for varying the eccentricity, together with means whereby the balls may be discharged after they have been rolled around the disk a plurality of times and through each rolling are reduced on their several axes to the desired size and finish.

3. In a machine for rolling hollow bearing-balls, a disk having a grooved periphery and mounted for rotation, and a ring having a grooved inner face, said ring held closer to one side of the periphery of said disk than to the other side thereof, means for retaining the balls between the same, together with means whereby the balls may be discharged after they have been rolled around the disk a plurality of times and through each rolling are reduced on their several axes to the desired size and finish.

4. In a machine for rolling hollow bearing-balls, a disk having a grooved periphery and mounted for rotation, a ring having a grooved inner face surrounding said disk and arranged to roll a contacting series of balls repeatedly and successively and means for adjusting the inner face of said ring relative to the periphery of said disk, and means for discharging the balls.

5. In a machine for rolling hollow bearing-balls, a casing having an annular face, lugs on the edge thereof, screws in said lugs, a ring having its inner face grooved, a disk with a grooved periphery mounted within said ring, means for rotating said disk and means whereby a plurality of balls may be discharged after they have rolled around the disk a predetermined number of times and have been reduced on their several axes to the required size and finish.

6. In a machine for rolling hollow bearing-balls, a grooved ring, a disk arranged to rotate within the ring, an opening to receive a series of balls in the groove between the ring and disk and means whereby each individual ball is assisted through the wider portion of said groove by impact of succeeding balls as they are passed from the narrower portion of said groove and are thus rolled and in turn advanced in the groove.

7. In a machine for rolling hollow bearing-balls, a grooved disk, a grooved ring eccentrically mounted opposite the periphery of said disk, an opening in said ring to receive the balls between the ring and disk, and means to permit the discharge of the balls or to discontinue their discharge.

8. In a machine for rolling hollow bearing-balls, in combination with a suitable pedestal and a circular plate bored to receive a shaft; a disk fixedly mounted on said shaft, a groove on the edge of said disk, a grooved ring mounted outside said disk and held in an eccentric relation thereto by means of screws inserted through projections on the edge of said circular plate, openings in said ring at the top and bottom of the machine to permit ingress and egress of the spherical bodies, and screw-plugs adapted to rest in said openings.

9. In a machine for rolling hollow bearing-balls, a disk having a grooved periphery, a ring eccentrically surrounding said disk and formed with a grooved inner face, adjusting means for varying the divergence or eccentrical arrangement of said ring relative to the periphery of said disk whereby such a number of balls may be repeatedly and successively rolled in the groove between the disk and ring as will cause those balls being moved in the narrower portion of the groove to push forward those balls in the wider part of the groove until, by reason of the converging space, each ball in turn becomes self-propelling.

10. In a machine for rolling hollow bearing-balls, a rotatable disk having a grooved periphery, a ring eccentrically surrounding said disk and formed with a grooved inner face and adjusting means for varying the divergence or eccentrical arrangement of the inner face of said ring relative to the periphery of said disk, whereby a series of balls may be repeatedly and successively rolled, between gradually-converging surfaces, to a predetermined size and finish through their various axes.

11. In a machine for rolling hollow bearing-balls, a disk having a grooved periphery and mounted for rotation, a ring having a grooved inner face secured eccentrically in relation to said disk, said disk and ring combined to roll a series of balls repeatedly and successively through the gradually-narrowing space between them with positive predetermined pressure.

709,410. DENTAL BRIDGEWORK. JOHN L. KELLY, St. Paul, Minn. Filed Nov. 21, 1901. Serial No. 83,211. (No model.)

Claim.—1. An improvement in removable dental bridgework, the same consisting of a holding-post rigid with and projecting beyond the surface of the root-crown, and a bridge-cap carried by the bridge and telescopically registering with said post.

2. An improvement in removable dental bridgework, the combination with a root crown-cap having no projection above the gum and provided with a top flat supporting-surface, a cup-like holding-post soldered upon and projecting beyond the said flat supporting-surface, and a cap-like bridge-cap carried by the bridge and telescopically registering with the said post.

709,411. PLAYING-BALL. ELEAZER KEMPSHALL, Boston, Mass. Filed May 26, 1902. Serial No. 108,923. (No model.)

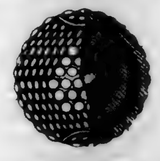

Claim.—1. A playing-ball comprising a spherical center piece, and a body composed of spherical windings of elastic material and a composite cord.

2. A playing-ball comprising a spherical center piece, and a body composed of alternating spherical envelops of windings of elastic material and a composite cord.

3. A playing-ball comprising a spherical center piece of hard elastic material and a body composed of spherical windings of elastic material and a composite cord.

4. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of alternating spherical envelops of windings of elastic material and a composite cord.

5. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of spherical windings of elastic material and a composite cord.

6. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of alternating spherical envelops of windings of elastic material and a composite cord.

7. A playing-ball comprising a spherical center piece, and a body composed of spherical windings of rubber thread and a composite cord.

8. A playing-ball comprising a spherical center piece, and a body composed of alternating spherical envelops of windings of rubber thread and a composite cord.

9. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of spherical windings of rubber thread and a composite cord.

10. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of alternating spherical envelops of windings of rubber thread and a composite cord.

11. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of spherical windings of rubber thread and a composite cord.

12. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of alternating spherical envelops of windings of rubber thread and a composite cord.

13. A playing-ball comprising a spherical center piece, and a body composed of spherical windings of elastic material and a cord having a sheathing of a derivative of pyroxylin.

14. A playing-ball comprising a spherical center piece, and a body composed of alternating spherical envelops of windings of elastic material and a cord having a sheathing of a derivative of pyroxylin.

15. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of spherical windings of elastic material and a cord having a sheathing of a derivative of pyroxylin.

16. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of alternating spherical envelops of windings of elastic material and a cord having a sheathing of a derivative of pyroxylin.

17. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of spherical windings of elastic material and a cord having a sheathing of a derivative of pyroxylin.

18. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of alternating spherical envelops of windings of elastic material and a cord having a sheathing of a derivative of pyroxylin.

19. A playing-ball comprising a spherical center piece, and a body composed of spherical windings of elastic material and a cord having a sheathing of celluloid.

20. A playing-ball comprising a spherical center piece, and a body composed of alternating spherical envelops of windings of elastic material and a cord having a sheathing of celluloid.

21. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of spherical windings of elastic material and a cord having a sheathing of celluloid.

22. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of alternating spherical envelops of windings of elastic material and a cord having a sheathing of celluloid.

23. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of spherical windings of elastic material and a cord having a sheathing of celluloid.

24. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of alternating spherical envelops of windings of elastic material and a cord having a sheathing of celluloid.

25. A playing-ball comprising a spherical center piece, and a body composed of spherical windings of rubber thread and a cord having a sheathing of plastic material.

26. A playing-ball comprising a spherical center piece, and a body composed of alternating spherical envelops of windings of rubber thread and a cord having a sheathing of plastic material.

27. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of spherical windings of rubber thread and a cord having a sheathing of plastic material.

28. A playing-ball comprising a spherical center piece of hard elastic material, and a body composed of alternating spherical envelops of windings of rubber thread and a cord having a sheathing of plastic material.

29. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of spherical windings of rubber thread and a cord having a sheathing of plastic material.

30. A playing-ball comprising a spherical center piece of gutta-percha, and a body composed of alternating spherical envelops of windings of rubber thread and a cord having a sheathing of plastic material.

709,412. PLAYING-BALL. ELEAZER KEMPSHALL, Boston, Mass. Filed July 5, 1902. Serial No. 114,433. (No model.)

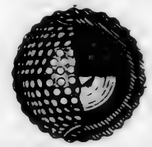

Claim.—1. A playing-ball comprising a core made up partially of windings of elastic belting, said elastic belting being cemented together with celluloid cement, and a shell of celluloid holding said core under compression.

2. A playing-ball comprising a yielding core, windings of elastic belting miscellaneously applied to said core, said belting being cemented together, and a shell consisting of plastic material and metal holding said core under compression.

3. A playing-ball comprising a rubber core, elastic belting wound thereon in different directions, celluloid cement holding layer upon layer, and a shell of celluloid and metal holding said core under compression.

4. A playing-ball comprising a rubber core, elastic belting wound thereon in different directions, said belting being fixed with celluloid cement and adhering one layer to another, and a shell composed of layers of plastic material and metal holding said core under compression.

5. A playing-ball comprising a rubber core, elastic belting wound thereon in different directions, said belting being fixed with celluloid cement and adhering one layer to another, a shell comprising layers of celluloid, and a hard perforated material holding said core under compression.

709,418. BOTTLE FILLING AND CORKING MACHINE. WILLIAM B. LARDAR, Hawley, Pa. Filed Mar. 22, 1902. Serial No. 99,466. (No model.)

Claim.—1. In a machine of the class described, the combination of a head adapted to receive the neck of a receptacle, a combined filling-tube and plunger extending into the head, one of the parts being movable, whereby the filling-tube is adapted to operate as a plunger, and means located within the head and mounted independently of the said tube for automatically swinging the stopper of a bottle over the neck when the tube is withdrawn from the bottle, substantially as described.

2. In a machine of the class described, the combination of a head having a casing adapted to receive the neck of a bottle, a filling-tube extending into the casing and capable of vertical movement and adapted to operate as a plunger, and means for automatically swinging the stopper of a bottle over the neck when the filling-tube is raised, substantially as described.

3. In a machine of the class described, the combination of a head having a casing arranged to receive the neck of a bottle, a combined filling-tube and plunger extending into the casing and capable of vertical

movement, and means for automatically swinging the stopper of a bottle over the neck when the tube is withdrawn from the bottle, substantially as described.

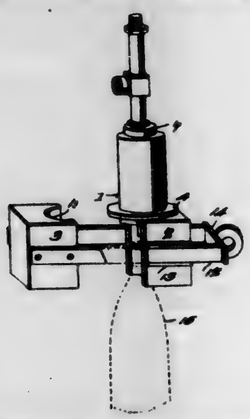

4. In a machine of the class described, the combination of a head adapted to receive the neck of a bottle, a vertical filling-tube extending into the head, one of the parts being vertically movable with relation to the other, whereby the filling-tube is adapted to operate as a plunger, and a spring carried by the head and arranged to swing a stopper automatically over the neck of a bottle when the tube is withdrawn from the latter, substantially as described.

5. In a machine of the class described, the combination of a head, a vertically-movable combined filling-tube and plunger, a spring arranged within the head and adapted to engage a stopper to swing the same over the neck of a bottle when the tube is withdrawn therefrom, and a support arranged to receive the stopper to limit the movement thereof, substantially as described.

6. In a machine of the class described, the combination of a head having a casing provided with a movable portion adapted to be opened to afford access to its interior, a vertically-movable combined filling-tube and plunger, and a spring arranged within the casing and adapted to automatically swing a stopper over the neck of a bottle when the tube is withdrawn from the latter, substantially as described.

7. In a machine of the class described, the combination of a head having a casing composed of stationary and movable sections, a frame slidably mounted on the stationary section and connected with the movable section, a vertically-movable combined filling-tube and plunger, and means arranged within the casing for automatically swinging the stopper of a bottle over the neck of the same when the tube is withdrawn therefrom, substantially as and for the purpose described.

8. In a machine of the class described, the combination of a head having a cylindrical upper portion and provided at its lower portion with a casing composed of stationary and movable sections, a block or support carried by the stationary section, a spring mounted on the movable section and arranged to engage a bottle-stopper, and a combined filling-tube and plunger, substantially as described.

9. In a machine of the class described, the combination of a head adapted to receive the neck of a receptacle, a vertically-movable combined filling-tube and plunger, and means for automatically swinging the stopper of the receptacle over the neck thereof when the tube is withdrawn therefrom, substantially as and for the purpose described.

10. In a machine of the class described, the combination of a head having a casing, a vertically-movable combined filling-tube and plunger, and a movable stopper support and carrier mounted within the casing independently of the tube and arranged to swing the stopper of a bottle over the latter when the tube is withdrawn therefrom, substantially as described.

11. In a machine of the class described, the combination of a head having a casing, a vertically-movable combined filling-tube and plunger, a movable stopper support and carrier mounted on the casing and arranged within the same, and a spring arranged to swing the stopper automatically over the neck of a bottle when the tube is withdrawn therefrom, substantially as described.

12. In a machine of the class described, the combination of a head, a vertically-movable combined filling-tube and plunger, a vertically-movable pivotally-mounted stopper support and carrier, and a spring arranged to swing the stopper automatically over the neck of a bottle when the tube is withdrawn therefrom, substantially as described.

13. In a machine of the class described, the combination of a head having a casing, a combined filling-tube and plunger, a stopper support and carrier provided with an engaging portion and adapted to hold a movable stopper, a link pivotally connected to the support and carrier and to the casing, and a spring for automatically swinging the stopper support and carrier, substantially as described.

14. In a machine of the class described, the combination of a head, a combined filling-tube and plunger, a stopper support and carrier provided with a claw or engaging portion, a link pivotally connected with the stopper support and carrier and pivotally mounted, and springs for engaging the link and for swinging the stopper support and carrier, substantially as described.

15. In a machine of the class described, the combination of a head having a casing, a combined filling-tube and plunger, an approximately U-shaped stopper-supporting carrier provided at the top with a claw, links connecting the sides of the stopper support and carrier with the casing, and springs for engaging the stopper support and carrier for swinging a stopper over the neck of a bottle and for swinging the links upward, substantially as described.

709,414. LOCOMOTIVE SAND-DELIVERING PIPE. ISAAC T. LEWIS, Philadelphia, Pa. Filed Oct. 16, 1901. Serial No. 78,886. (No model.)

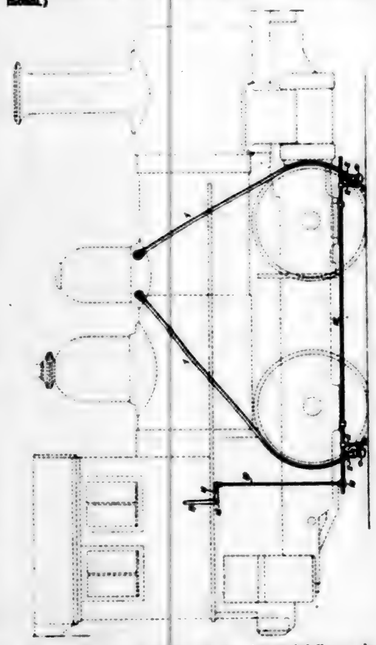

Claim.—1. The combination of opposite sand-delivery pipes of a locomotive, a transversely-swinging nozzle at the delivery end of each pipe, a transverse rod connecting said nozzles, a longitudinal rock-shaft having an arm connected to said rod, and connections from said rock-shaft to the cab of the locomotive, substantially as specified.

2. A locomotive sand-pipe curved to conform to the wheel and having secured to its lower end a fixed nozzle with vertical delivery end, and a nozzle mounted thereon so as to swing in a direction transversely to the rail, substantially as specified.

3. The combination of a locomotive sand-pipe with a fixed nozzle secured thereto and having a delivery portion with fore and aft trunnions projecting therefrom and a swinging delivery-nozzle having sockets for the reception of said trunnions, substantially as specified.

709,415. GRAPHOSCOPE. LEOPOLD LEWIS, New York, N. Y. Filed June 6, 1902. Serial No. 110,583. (No model.)

Claim.—1. In a graphoscope, the combination of a picture-rack 16, a lens 29, a frame 18, a socket 7, a rod 5, and a stand 10 with a lens-holder 25, mounted on a universal joint, substantially as described.

2. In a graphoscope, the combination of a picture-rack 16, a lens 29, a lens-holder 25, a frame 18, a rod 5, and a stand 10; with a support 31 for the graphoscope having a clamp 33, for attachment to an easel or the like, and independent of the said stand 10, legs 12 and 13 and a rack 31 having a clamp 33, substantially as described.

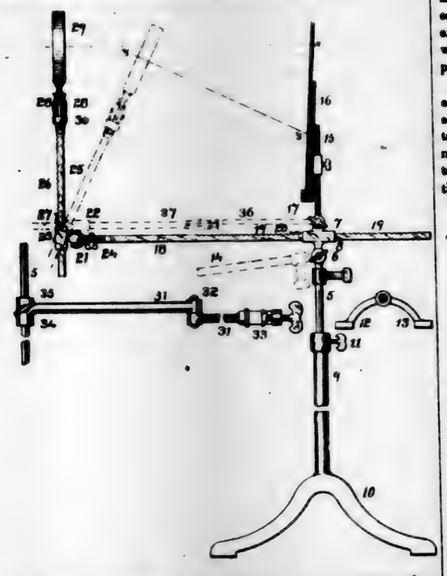

3. In a graphoscope the combination of a lens, a picture-rack, a frame, and means for focusing; together with means for bringing the center of the said lens opposite any part of the picture to be viewed, substantially as described.

4. In a graphoscope, the combination of a lens, a picture-rack, a frame, and means for focusing; together with means for moving the principal axis of the lens to impinge on any point of the picture to be viewed, substantially as described.

5. In a graphoscope the combination of a lens, a picture-rack, a frame, means for focusing; together with a universal joint for changing the relative positions of the said lens and said picture-rack, substantially as described.

6. In a graphoscope the combination of a lens, a picture-holder, a frame, and means for focusing; together with means for adjusting the relative lateral and vertical positions of the said lens and the said picture-holder, substantially as described.

7. In a graphoscope the combination of a lens, a picture-holder, a frame, and means for focusing; together with means for bringing the principal axis of said lens into any plane passing through the picture and the center of the said lens, substantially as described.

709,416. COOLING AND CONDENSING APPARATUS. WILHELM A. MAYBACH, Cannstadt, Germany, assignor to Daimler Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Mar. 22, 1901. Serial No. 53,241. (No model.)

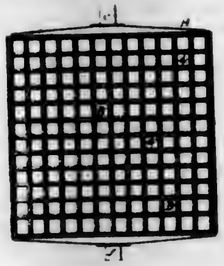

Claim.—1. The combination of a frame having screens at each end formed by wires crossing each other and tubes extending from one screen to the other, said tubes being secured to the wires and forming a chamber for the fluid to be cooled, substantially as described.

2. The combination of a frame having an inlet-pipe at one end, and an outlet-pipe at the other end, a series of wires crossing each other at each end of the frame forming supports, with prismatically-shaped tubes extending from one side of the frame to the other and separated by the wires, the wires spacing the tubes so as to form narrow channels for the passage of fluid through the apparatus, substantially as described.

3. The combination in a cooling apparatus of a frame, a screen at each end thereof formed by wires crossing each other, the meshes of the screen so formed being quadrangular in form with quadrangular tubes extending through one screen to the other and secured to the same, the side members of the frame extending a certain distance away from the said tubes thereby forming a distributing-chamber, and inlets and outlets to the chamber thus formed, substantially as described.

709,417. LIFE-BOAT. ROBERT D. MAYO, Frankfort, Mich. Filed Mar. 25, 1901. Serial No. 53,780. (No model.)

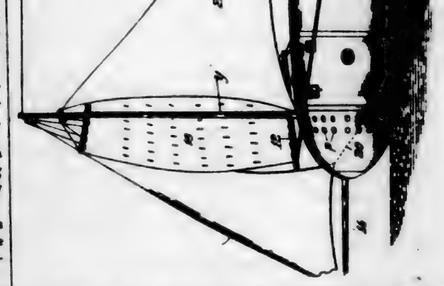

Claim.—1. In a life-boat of the class described, the combination of an outer rotatable shell, a foldable centerboard pivotally attached thereto, means for folding the centerboard against the side of the shell and permitting it to swing into operative position, an inner pendulous carriage rotatably mounted in the shell, and means for locking the pendulous carriage to the shell in any desired position with relation to the outer-board, substantially as described.

2. In a life-boat of the class described, the combination of an outer rotatable shell, a foldable centerboard pivotally secured thereto, means for swinging the centerboard into and out of operative position, a pair of transverse bulkheads arranged at each end of the shell forming an inner compartment between them, a pendulous carriage in each inner compartment movably mounted upon the bulkheads, and means for locking the pendulous carriage to the rotatable shell in any desired position with relation to the centerboard, substantially as described.

3. In a life-boat of the class described, the combination of an outer rotatable shell, an inner pendulous carriage, a foldable centerboard secured longitudinally to the outer rotatable shell to be opened or closed, means for locking the pendulous carriage to the shell in any desired position with relation to the centerboard when the centerboard is in its open position, a transverse partition in the shell provided with openings extending therethrough, and means passed down through such openings and connected with the foldable centerboard by which such board may be opened and closed, substantially as described.

4. In a life-boat of the class described, the combination of an outer

rotatable shell provided with two or more transverse partitions forming a living-compartment therein, a multiplicity of sheave-pulleys on the inner side of such bulkheads or partitions, a pendulous carriage, and a cable, cord, or similar element secured to the pendulous carriage and passed over a plurality of such sheave-pulleys to swingingly hold such carriage in the desired position, substantially as described.

5. In a life-boat of the class described, the combination of an outer rotatable shell, a foldable counterboard pivotally secured longitudinally thereto and arranged to be folded against the shell or opened into operative position, a pendulous carriage, means for locking the pendulous carriage and the rotatable shell together to form a balance or compensation for the list of the boat, seats arranged to be secured to the annular shell, and rails for such seats substantially as described.

709,418. BOTTLE-STOPPER. CHRISTIAN W. HEINEKE, Jersey City, N. J., assignor to Meinecke and Company, New York, N. Y., a Corporation of New Jersey. Filed Apr. 21, 1902. Serial No. 104,597. (No model.)

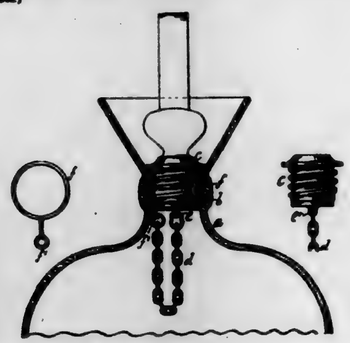

Claim.—1. A bottle or vessel having a threaded bushing and a stopper adapted to screw into the bushing, an attaching wire or ring secured about the bushing, and a chain connected to the wire and to the bottom of the stopper.

2. A bottle or vessel provided with a stopper having a button-like projection at its under side, a swivel connection on said projection, and a securing-chain for the stopper connected at one end to the swivel connection and at its other end secured to the interior of the bottle.

3. A bottle or vessel having a threaded bushing secured in the neck thereof, a threaded stopper adapted to engage the bushing and provided on its lower face with a button-like projection, a swivel connection on said projection, a securing-chain for the stopper connected at one end with said swivel connection, and means connected to the bushing and attached to the other end of said chain for securing the chain within the interior of the bottle or vessel.

709,419. BOTTLE. JOHN O'CONNOR, New York, N. Y., assignor of one-half to John Goodchild, guardian, New York, N. Y. Filed Mar. 1, 1902. Serial No. 96,265. (No model.)

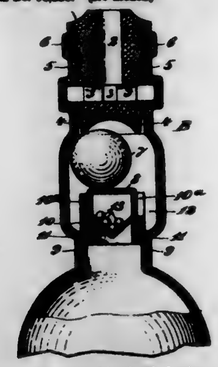

Claim.—The combination with a bottle having a neck integral with the body and provided at its lower end with a ledge 9 and a internally-expanded portion above said ledge to form a chamber 12, of the plug 1 mounted in the neck, said plug having a central bore 2, lateral passages 3 therefrom, and a concave inner end which is of reduced diameter so as to form an annular passage 4 within the neck, the glass valve-seat 10, recessed at its lower end and provided with a cork packing 11 which rests on the ledge 9, said valve-seat having a coned seating for the valve and triangular upright guides 10ª, the hollow glass valve 8, on said seat and containing a loose jar, and the glass ball 7 on the valve and caged between it and the inner end of the plug 1, the chamber 12 extending from a point below the conical seating for the valve up to and communicating with the annular passage 4, as and for the purposes set forth.

709,420. DREDGING-BUCKET. CHARLES PAY, Providence, R. I. Filed May 16, 1902. Serial No. 107,630. (No model.)

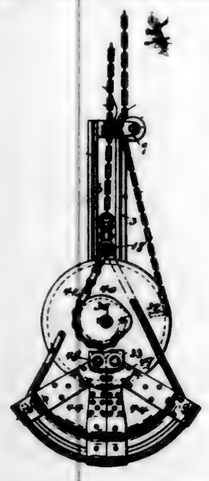

Claim.—1. In a dredging-machine, the combination of a bucket consisting of two sections or scoops, each of which has straight parallel sides and also a segmental-shaped bottom, said scoops pivotally mounted on a proper support, bail-arms connected with said scoops respectively at the digging edge of each, and means adapted to operate said arms for the purpose of opening and closing said scoops, substantially as shown and described.

2. In a dredging-machine, the combination of a bucket comprising two scoops pivotally mounted on a proper support, a properly-mounted cam-shaft, a pulley fixed on said shaft, two cams fixed on said shaft and each having a volute periphery, a lifting-bar, bail-arms mounted on said bar and connected with said scoops respectively, a chain adapted to raise and lower said bar, a chain adapted to rotate said pulley, and two chains mounted on said bar and adapted to operate said cams respectively, substantially as specified.

3. In a dredging-machine having a suitable frame provided with guideways, and two cast-steel blocks each of which is rigidly secured at the lower portion of said frame, in combination therewith, of a bucket comprising two scoops pivotally mounted on said blocks, a shaft rotatably mounted on said blocks, two cams rigidly secured on said shaft and each having a volute periphery, a lifting-bar movable in the guideways of said frame, bail-arms mounted on said bar and connected to said scoops respectively at the centers of the digging edge of each and means adapted to operate said arms in opening and closing said scoops, substantially as shown and described.

4. In a dredging-machine having suitable guideways, the combination therewith, of cast-steel blocks movable in said guideways, the lifting-bar, the shaft attached to said bar and having its ends mounted in said blocks, the bucket comprising two pivotally-mounted scoops, and arms extending from said shaft to said scoops, respectively, substantially as specified.

5. In a dredging-machine having suitable guideways, the combination therewith, of cast-steel blocks each of which is made in one piece and secured to said guideways between the lower portion thereof, a cam-shaft mounted rotatably in said blocks, and a bucket comprising two scoops pivotally mounted on said blocks and suspended beneath the said cam-shaft, substantially as shown and described.

709,421. STEAM-GENERATOR OF THE LOCOMOTIVE TYPE. HARRY FLOWERS, London, England. Filed Apr. 24, 1902. Serial No. 104,515. (No model.)

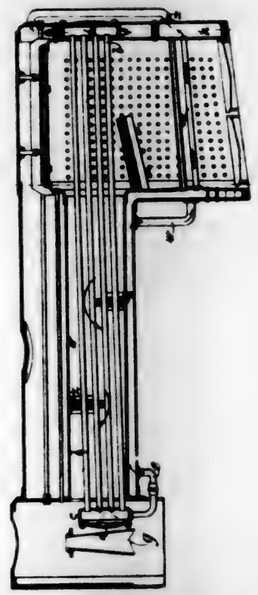

Claim.—1. In a steam-generator of the fire-tube type, a generator-body having a fireplace and a vertically-disposed combustion-chamber at one end, a plurality of fire-tubes extending horizontally from said chamber, a fire-flue located in proximity to said tubes, a plurality of water-tubes extending through the fire-flue and combustion-space, headers connected to said water-tubes at each end, a plurality of water-tubes extending above the grate, headers connecting the ends of said last-named tubes and connections from said headers to the steam or water spaces of the generator, substantially as described.

2. In combination with the fire-flue and combustion-space of a fire-tube generator, of a ring cutting off part of the water-space, a group of water-tubes passing through said flue, a header at each end to which said tubes are connected, and a bridge-piece and bolts with blank end nuts for clamping one of said headers to the ring, substantially as described.

3. The combination with the fire-flue and combustion-space of a fire-tube generator, of a ring cutting off part of the water-space, a group of water-tubes passing through said flue, a header at each end to which said tubes are connected, removable covers for said headers, and a bridge-piece and bolts with blank end nuts for clamping one of said headers to the ring, substantially as described.

4. In a steam-generator of the cylindrical marine type, the combination with the fire-flue and combustion-space, of a group of water-tubes passing through said flue and the upper part of the combustion-space, a second group of water-tubes in proximity to the fire-bed, headers at each end for each group of tubes, and connections from said headers to the steam and water space of the generator, substantially as described.

709,422. EMBOSSING-MACHINE. FRANK K. RUSSELL, Dallas, Tex. Filed Jan. 3, 1901. Serial No. 41,905. (No model.)

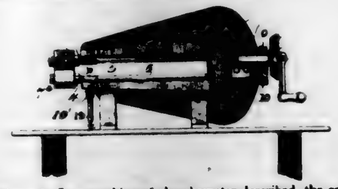

Claim.—1. In a machine of the character described, the combination of upper and lower geared roll-shafts and means for rotating the same, of a series of impression-rolls mounted upon said upper roll-shaft, the center one of which being fixedly mounted thereon and the rest loosely mounted thereon, a bearing or pressure roll fixed on said lower roll-shaft and adapted to bear upon said impression-rolls, and means for regulating the pressure of said bearing or pressure roll, substantially as and for the purpose described.

2. In an embossing-machine provided with a suitable frame and upper and lower geared roll-shafts mounted therein; a series of impression-rolls mounted upon said upper roll-shaft, the center one of which being fixedly mounted thereon and the rest loosely mounted thereon whereby in making carved figures upon leather or other material the roll or rolls between the center of the figures or impressions and said fixed roll will be permitted to run slower than the fixed roll and the roll or rolls outside of the fixed roll will be permitted to run faster than said fixed roll, a suitable bearing mounted on the lower roll-shaft, and means for operating the machine.

709,423. ROUGH BOX FOR BURIAL-CASKETS. PATRICK D. SEARER, Syracuse, N. Y. Filed Mar. 17, 1902. Serial No. 98,560. (No model.)

Claim.—A rough box for burial-casket formed from a sheet-metal blank which consists of a rectangular central section constituting the bottom of the box, side and end sections bent up from the central section and constituting the side and end walls of the box, the ends of the side walls bent at right angles and lapped onto the end walls, rivets passing through said lapping parts, the top portions of said walls bent horizontally outward and forming the seat of the lid, a metal band embracing the box and abutting with its top edge against the under side of said seat, and rivets fastening said band to the box substantially as set forth and shown.

709,424. CORN-HARVESTER. JOHN SYLAND, Mankato, Kans. Filed Aug. 2, 1901. Serial No. 70,533. (No model.)

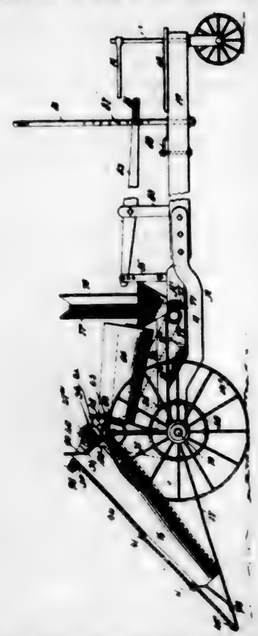

Claim.—1. In a corn-harvester, a wheel-supported frame, snapping rollers mounted in the frame to revolve in opposite directions, a housing for each snapping-roller, a trough within each housing parallel with the

outer sides of the snapping-rollers, and endless conveyers mounted to travel in each trough, arms supported opposite the rear end of each trough, and disk cutters mounted to revolve on said arms, adapted to slit the husks of corn as the ears drop from the conveyer, and thus prepare the ears for ready husking, as described.

2. In a corn-harvester, the combination with a wheel-supported frame, snapping-rollers mounted to revolve in the frame, housings for the snapping-rollers, guide-fingers extending from the forward ends of the housings, troughs in the said housings parallel with the outer side faces of the snapping-rollers, and endless conveyers mounted to travel in the troughs, of arms secured opposite the outlet ends of the troughs, disk cutters carried by said arms and located in the path of the ears discharged by the conveyers, husking-rollers arranged in pairs, one pair at the rear of and below the outlet end of each conveyer-trough, the husking-rollers receiving ears for contact with the slitting-disks, a trough arranged to receive the ears of corn from the husking-rollers, and an elevator in connection with the receiving-trough, all combined for the purpose set forth.

3. In a corn-harvester, the combination, with a wheel-supported main frame, an auxiliary frame pivotally carried by the main frame, and means for raising and lowering the said auxiliary frame at its rear portion, of housings located at the forward portion of the auxiliary frame and supported thereby, the housings being open at their opposing longitudinal faces and provided with guide-fingers at their forward ends, snapping-rollers mounted to revolve in the said housings, the snapping-rollers being provided with longitudinal teeth or ribs, means for driving the said rollers in opposite directions, conveyers located also within the housings or casings at the outer side portions of the snapping-rollers, a driving mechanism for the said conveyers, husking-rollers arranged in pairs, also mounted in the auxiliary frame and arranged to receive the ears delivered by the conveyers, a driving mechanism for the said husking-rollers, and an elevator carried also by the auxiliary frame and adapted to receive the cleaned ears from the husking-rollers, as set forth.

4. In a corn-harvester, the combination, with a wheel-supported main frame, an auxiliary frame pivotally mounted in the main frame, means for raising and lowering the rear portion of the auxiliary frame, housings or casings having a forward and downward inclination, their opposing inner longitudinal surfaces being open, guide-fingers carried by the forward ends of the said casings, and conveyor-chains for the stalks mounted upon the housings or casings adjacent to their inner longitudinal edges, of snapping-rollers, mounted in the housings or casings, means for revolving said snapping-rollers in opposite directions, each snapping-roller being of greater diameter at its rear than at its forward end and provided with longitudinal peripheral teeth or ribs, conveyers located also within the housings or casings adjacent to the outer side faces of the snapping-rollers, tension-controlled knives supported over the delivery ends of the conveyers, husking-rollers arranged in pairs having a downward and rearward inclination, each pair of husking-rollers having their rear ends of greater diameter than their forward ends, one roller of each pair being plain and the other roughened, tension devices for the husking-rollers, means for driving the said husking-rollers, an elevator arranged to receive the ears of corn from the husking-rollers, and means, substantially as described, for driving said elevator, for the purpose specified.

709,425. LAST. ARTHUR B. TAYLOR, Worcester, Mass., assignor to R. L. Golbert & Company, Worcester, Mass., a Copartnership. Filed Mar. 24, 1902. Serial No. 99,585. (No model.)

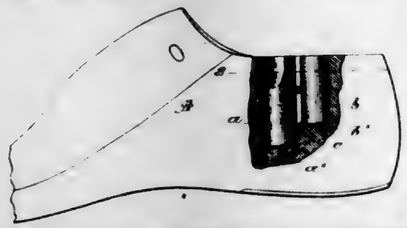

Claim.—1. A last having embedded in its heel an insert composed of a spindle-socket and impact-post formed in a single piece and terminating, respectively, at different depths within the last, the bottoms thereof resting on the solid wood of the last at right angles to the length thereof in different and approximately parallel planes.

2. A last having its heel portion provided with a single insert composed of two cylindrical parts of different lengths joined by a web part, the longer of said parts being hollow to constitute a spindle-socket, and the bottoms of said cylindrical parts resting flat upon the wood of the last in different horizontal planes.

3. A last having its heel portion provided with a single insert composed of two cylindrical parts of different lengths joined by a web part, the longer of said parts being hollow to constitute a spindle-socket, the bottoms of said cylindrical parts resting flat upon the wood of the last in different horizontal planes, and a retaining device extending transversely through said web part and the adjacent wood of the heel.

4. A last having its heel portion provided with a spindle-socket and impact-post joined integrally by a narrow part, said post being shorter than said socket, solid, and substantially the same size in cross-section as the socket, both being tightly set into the wood, the latter surrounding the same integrally on all sides, presenting a smooth integral surface of wood to bear against the shoe, and the inserted parts affording an extended metal bearing-surface at the top of the heel and having extended bearings in different horizontal planes within said heel portion.

709,426. SHEET-METAL CAN. FRANK TYSON, Philadelphia, Pa., assignor of one-half to George H. Colket, Philadelphia, Pa. Filed Mar. 19, 1902. Serial No. 99,008. (No model.)

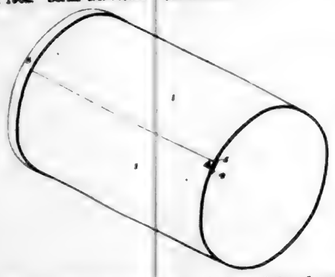

Claim.—A sheet-metal can having a body consisting of a strip of metal bent into cylindrical form and having an overlapping flush joint, and heads having flanges which overlap the body at each end, the overlapping portion of the body-strip having tongue-and-slot connections which are entirely within the limits of the flanges of the heads, substantially as specified.

709,427. OZONIZING APPARATUS. ALEXANDER VOSMAER, Haarlem, Netherlands, assignor to Company Ozon Maatschappy Systeem A. Vosmaer, Amsterdam, Netherlands. Filed Oct. 4, 1901. Serial No. 77,546. (No model.)

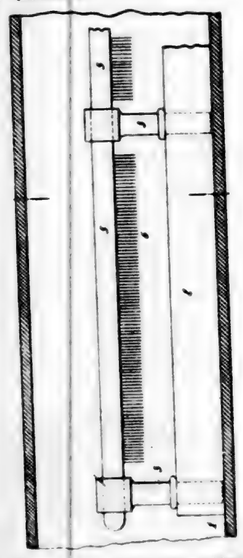

Claim.—1. In an ozonizing apparatus, the combination of metal bars of suitable section, insulating-supports fixed on the said bars, metal rods supported by the said insulating-supports and having depending points and a horizontally-arranged casing, each metal bar with its insulating-supports and the metal rod carried by the said supports forming a single structure which is loosely placed in the casing, substantially as described and for the purpose set forth.

2. In an ozonizing apparatus in combination metal bars of suitable section, insulating-supports fixed at intervals in the said bars and being provided with a fork at their upper part, rods with points resting in the forks of the insulating-supports and horizontally-arranged casings in which the metal bars supporting the rods with points through the insulating-supports, are loosely placed substantially as described and for the purpose set forth.

709,428. HYDROCARBON-FEEDER FOR EXPLOSIVE-ENGINES. FRANKLIN B. WARRING, San Jose, Cal., assignor to Otten's Foundry and Machine Company, San Jose, Cal. Filed Apr. 3, 1901. Serial No. 54,152. (No model.)

Claim.—1. The combination with a carburetor of an engine, of a casing having separate interior oil-supply and vacuum chambers, the latter having connection with the carburetor and having also an end opening, a valve-stem movable in said casing, a valve carried by said stem and controlling a port between the oil-supply and vacuum chambers, a piston on said stem within the vacuum-chamber, a retracting-spring connected with the said stem, and a guide for the opposite end of the valve-stem, all substantially as and for the purpose specified.

2. A feeding device of the class described comprising a valve-casing having separate interior oil-supply and vacuum chambers, the oil-supply chamber having an inlet-port, and the vacuum-chamber having an oil-delivery port, and also having an end opening and a guard-flange, a longitudinally-movable valve-stem carrying a feed-valve controlling communication between the two chambers, a valve-actuating piston fitted upon the stem and working within the vacuum-chamber, a supporting-bracket carried by the valve-casing at one end, a spring having a connection with said bracket and also with the valve-stem, a guide for the front end of said stem, and an adjusting device for limiting the movement of the stem carried by said guide.

709,429. LOCOMOTIVE. JOSEPH H. WILLIAMS, Upper Alton, Ill., assignor of three-fourths to Isaac Moore, H. B. Lindley, and H. L. Dickinson, Alton, Ill. Filed Jan. 9, 1902. Serial No. 89,013. (No model.)

Claim.—1. In a locomotive, the combination with a frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, disk-wheels for driving said gear-wheels, means for moving said disk-wheels into and out of engagement with said gear-wheels, and cylinders for driving said disk-wheels.

2. In a locomotive, the combination with a frame, of drive-wheels therefor, toothed gear-wheels carried by said drive-wheels, toothed disk-wheels for driving said gear-wheels, the teeth of one of said toothed wheels being yieldingly mounted, and cylinders for driving said disk-wheels.

3. In a locomotive, the combination with a frame, of drive-wheels therefor, toothed gear-wheels carried by said drive-wheels, toothed disk-wheels for driving said gear-wheels, the teeth of one of said toothed wheels being rotary, and cylinders for driving said disk-wheels.

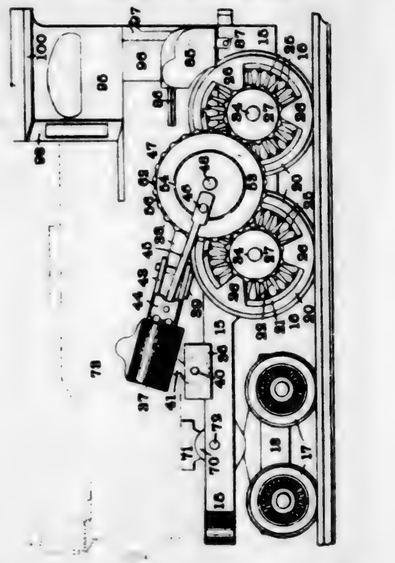

4. In a locomotive, the combination with a frame, of drive-wheels therefor, a set of toothed gear-wheels carried by said drive-wheels, a set of toothed disk-wheels engaging with said gear-wheels, the teeth of one of said sets of wheels being in the form of rollers and that of the other set being yieldingly mounted, and cylinders for driving said disk-wheels.

5. In a locomotive, the combination with a frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels and provided with yielding teeth, disk-wheels for driving said gear-wheels and provided with rotary teeth, and cylinders for driving said disk-wheels.

6. In a locomotive, the combination with a frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, each of said gear-wheels being provided with a circumferential row of teeth and a smooth circumferential bearing-strip, disk-wheels, each of said disk-wheels being provided with a circumferential row of teeth for engaging with the teeth of said gear-wheels and a smooth circumferential bearing-strip for engaging with the bearing-strips on said gear-wheels, and cylinders for driving said disk-wheels.

7. In a locomotive, the combination with a main frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, toothed disk-wheels connected with said gear-wheels, and a second frame movably mounted on said main frame and carrying said disk-wheels and cylinders for driving said disk-wheels.

8. In a locomotive, the combination with a main frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, a second frame pivotally mounted on said main frame, toothed disk-wheels carried by said second frame and connected with said gear-wheels, and cylinders for driving said disk-wheels.

9. In a locomotive, the combination with a main frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, a second frame movably mounted on said main frame, disk-wheels carried by said second frame, and reducing-gear adapted to be interposed between said gear-wheels and disk-wheels.

10. In a locomotive, the combination with a main frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, a second frame pivoted at one end to said main frame and at the other slidingly mounted in guides carried by said main frame, disk-wheels carried by said second frame and connected with said gear-wheels, cylinders carried by said second frame for driving said disk-wheels, and means for moving said second frame in said guides to disconnect said disk-wheels from said gear-wheels.

11. In a locomotive, the combination with a main frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, a second frame pivotally mounted on said main frame, disk-wheels carried by said second frame and connected with said gear-wheels, and a boiler pivotally mounted on said main frame.

12. In a locomotive, the combination with a main frame, of drive-wheels therefor, gear-wheels carried by said drive-wheels, a second frame pivotally mounted on said main frame, disk-wheels carried by said second frame and engaging with said gear-wheels, a boiler pivotally mounted on said main frame, means for raising said boiler on its pivot, and a stop adapted to be interposed between said main frame and boiler to hold the latter in its raised position.

13. In a wheel for locomotives or the like, the combination with a rim, a hub, spokes extending between said rim and hub, radial plates carried by said rim at one side of said spokes, and a gear-wheel secured to said radial plates.

709,430. **LOCOMOTIVE-BOILER.** JOSEPH H. WILLIAMS, Upper Alton, Ill., assignor of three-fourths to Isaac Moore, M. R. Lindley, and H. L. Dickinson, Alton, Ill. Filed Feb. 24, 1902. Serial No. 95,235. (No model.)

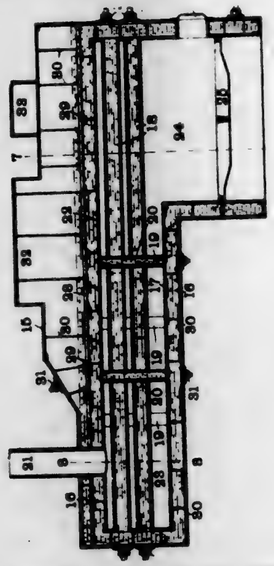

Claim.—A boiler for locomotives and the like, consisting of an inner shell, an outer shell, horizontal water-tubes passing through said inner shell, and vertical water-tubes passing through said inner shell and through said horizontal tubes.

709,431. **PROCESS OF PRESERVING FOOD PRODUCTS.** WILLARD D. BAKER, Rogers, Ark., assignor to E. B. Harrington, trustee, Kansas City, Mo. Filed Apr. 16, 1901. Serial No. 56,106. (No specimens.)

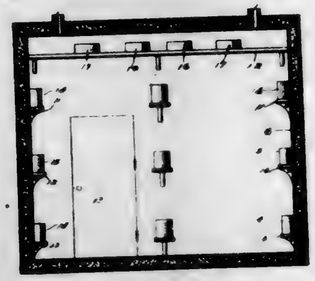

Claim.—1. The process of preserving food products, which consists in confining them in a chamber, and subjecting the air of the chamber to the action of an iron-sulfur mixture in the presence of an absorbent for gases.

2. The process of preserving food products, which consists in confining them in a chambe:, and subjecting the air in the chamber to the action of an aqueous mixture of sulfur and iron, and to that of charcoal.

3. The process of preserving food products, which consists in confining them in a chamber, and subjecting the air in the chamber to the action of an iron-sulfur mixture and to that of charcoal, and of a hygroscopic agent.

4. The process of preserving food products which consists in confining them in a chamber, and subjecting the air of the chamber to the action of an aqueous mixture of sulfur and iron, a dry mixture of iron, sulfur and potassium carbonate, and to an absorbent of gases and to a hygroscopic agent.

709,432. **PROCESS OF PRESERVING FOOD PRODUCTS.** WILLARD D. BAKER, Rogers, Ark., assignor to E. B. Harrington, trustee, Kansas City, Mo. Filed Apr. 16, 1901. Serial No. 56,107. (No specimens.)

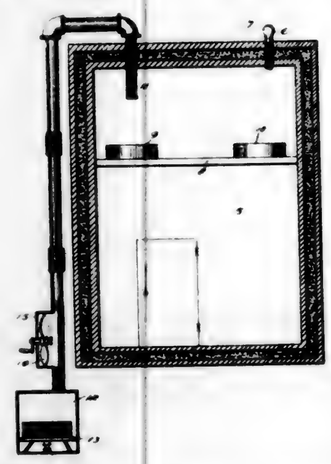

Claim.—1. The process of preserving food products which consists in subjecting them to the products of combustion of paper impregnated with potassium nitrate.

2. The process of preserving food products which consists in subjecting them to the products of combustion of paper impregnated with potassium nitrate, in the presence of an absorbent for gases and an absorbent for moisture.

3. The process of preserving food products which consists in confining them in a chamber charged with the fumes of burning paper having potassium nitrate associated therewith, in the presence of potassium carbonate to absorb the moisture of the atmosphere of the chamber, and of charcoal to take up ill-smelling gases.

4. The process of preserving food products which consists in confining them in an atmosphere charged with carbonic-acid gas, a percentage of the principles of creosote and of fresh oxygen, produced by the combustion of paper impregnated with potassium nitrate, in the presence of an absorbent for moisture.

5. The process of preserving food products which consists in confining them in an atmosphere charged with carbonic-acid gas, nitrogen, a percentage of the principles of creosote and of fresh oxygen produced by the combustion of paper impregnated with potassium nitrate.

6. The process of preserving food products which consists in confining them in an atmosphere charged with the fumes of burning paper having potassium nitrate associated therewith, in the presence of potassium carbonate to absorb the moisture from the atmosphere.

7. The process of preserving food products which consists in confining them in an atmosphere charged with carbonic-acid gas, nitrogen, and a percentage of the principles of creosote, produced by the combustion of paper impregnated with potassium nitrate, in the presence of an absorbent for ill-smelling gases.

8. The process of preserving food products which consists in confining them in an atmosphere charged with carbonic-acid gas, nitrogen, a percentage of the principles of creosote and a percentage of fresh oxygen, produced by the combustion of paper impregnated with potassium nitrate, in the presence of an absorbent for moisture and an absorbent for ill-smelling gases.

709,433. **NUT-LOCK.** SAMUEL C. BAUGHN, Jr., Comer, Ky., assignor to T. W. Cooper, Beechgrove, Ky. Filed Feb. 28, 1901. Renewed Feb. 13, 1902. Serial No. 93,944. (No model.)

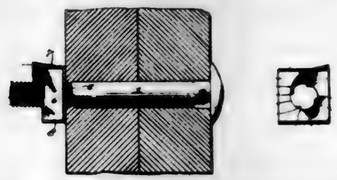

Claim.—The combination with a bolt having a screw-threaded extremity formed with a series of longitudinally-extending grooves, and a nut to removably engage said extremity, of a washer removably applied to the nut and bolt and having oppositely-disposed right-angular flanges to rest against opposite side edges of the nut, one flange being wider than the other and cut free longitudinally for a greater portion of its length to form a depending resilient pawl which is regularly curved downwardly and loosely projects over the outer face of the nut to have its free end enter either one of the grooves in the bolt, the flange carrying the pawl at the point of juncture of the latter therewith at one end being flared outwardly from and fully out of contact with the adjacent portion of the edge of the nut and at an inclination to the adjacent portion of the flange, said flared portion of the flange and pawl being located to one side of the center of the nut and also inclining in a transverse direction inwardly toward the inner side of the nut and main body of the washer, whereby a compression of the inclined portions of the flange and pawl toward the nut edge will positively disengage the free end of the pawl from the bolt-groove.

709,434. **TUBULAR DESPATCH APPARATUS.** WASHINGTON A. H. BOGARDUS, LLOYD COLLIE, and GEORGE O. POWELL, New York, N. Y. Filed Nov. 29, 1901. Serial No. 84,014. (No model.)

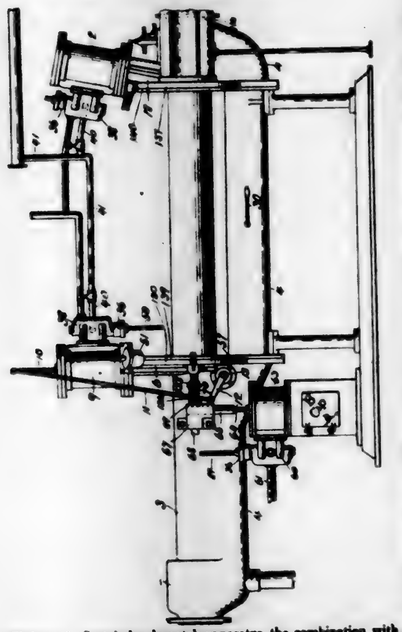

Claim.—1. In tubular despatch apparatus, the combination with a tube, of a chambered revolvable shifting member cooperating through its chambers at both ends with said tube to form a continuous alined passage-way, movable abutments in said tube adjacent the ends of said member, operating means for said member and said abutments and a controller for said operating means carried by one of said abutments and operable from within the chambers of said member.

2. In tubular despatch apparatus, the combination with an incoming tube and an outgoing tube, of a chambered revolvable shifting member coöperating with said tubes through any one of its chambers to form a continuous alined passage-way and a gate in said outgoing tube adjacent said member.

3. In tubular despatch apparatus, the combination with an incoming tube and an outgoing tube, of a chambered revolvable shifting member coöperating with said tubes through any one of its chambers to form a continuous alined passage-way and a gate in said incoming tube adjacent said member.

4. In tubular despatch apparatus, the combination with an incoming tube and an outgoing tube, of a chambered revolvable shifting member coöperating with said tubes through any one of its chambers to form a continuous alined passage-way and gates in said incoming and outgoing tubes adjacent said member.

5. In tubular despatch apparatus, the combination with an incoming tube and an outgoing tube, of a chambered revolvable shifting member coöperating with said tubes through any one of its chambers to form a continuous alined passage-way and means for obstructing said passage-way adjacent either end of said member independently of the revolution of said member.

6. In tubular despatch apparatus, the combination with an incoming tube and an outgoing tube, of a chambered revolvable shifting member coöperating through any one of its chambers with said tubes to form a continuous alined passage-way and a normally closed gate in said outgoing tube adjacent said member.

7. In tubular despatch apparatus, the combination with an incoming tube and an outgoing tube, of a chambered revolvable shifting member coöperating through any one of its chambers with the said tubes to form a continuous alined passage-way and means normally obstructing the outgoing tube adjacent said member.

8. In tubular despatch apparatus, the combination with a main receiving-chamber, an entrance-gate for said main chamber, of an auxiliary cushioning-chamber forward of said main chamber and a valve actuated by said entrance-gate to render said auxiliary cushioning-chamber operative when said gate is closed and inoperative when said gate is open.

9. In tubular despatch apparatus, the combination with a main receiving-chamber and an entrance-gate for said main chamber, of an auxiliary cushioning-chamber forward of said main chamber, a rotary valve communicating with the rearward end of said auxiliary cushioning-chamber, an operating-crank for said valve, and a link connection between said gate and valve designed to cause said valve and gate to open and close simultaneously.

10. In tubular despatch apparatus, the combination with a tube, of a gate in said tube, operating mechanism for said gate, and controlling mechanism carried by said gate designed to control said operating mechanism.

11. In tubular despatch apparatus, the combination with a tube, of a gate in said tube, operating mechanism for said gate, controlling mechanism for said operating mechanism carried by said gate and flexible connections between said controlling and operating mechanisms.

12. In tubular despatch apparatus, the combination with a tube, of a chambered revolvable shifting member intersecting said tube, revolving mechanism for said member, a gate in said tube adjacent the rearward end of said member, operating mechanism for said gate, and controlling members for said revolving and gate-operating mechanisms carried by said gate.

13. In tubular despatch apparatus, the combination with a tube, of a chambered revolvable shifting member, revolving means for said shifting member, an exit-gate in said tube adjacent the rearward end of said shifting member, operating mechanism for said exit-gate, an entrance-gate in said tube adjacent the forward end of said shifting member, operating mechanism for said entrance-gate, an auxiliary cushioning-chamber forward of said entrance-gate, operating mechanism for said auxiliary cushioning-chamber, a controlling member mounted in said exit-gate controlling said revolving, entrance-gate and auxiliary cushioning-chamber operating mechanisms, and a controlling member mounted in said exit-gate controlling said exit-gate-operating mechanism.

14. In tubular transit apparatus, the combination with a tube, of a chambered revolvable shifting member intersecting said tube, a locking-bolt for said shifting member, revolving mechanism for said shifting member, a gate in said tube forward of and adjacent said shifting member, and means actuated by said bolt simultaneously controlling said revolving mechanism and said gate.

15. In tubular transit apparatus, the combination with a tube, of a chambered revolvable shifting member, revolving mechanism for said shifting member, a gate in said tube forward of and adjacent said shifting member, an exit-gate, a controlling member mounted in said exit-gate controlling said revolving mechanism and said entrance-gate and a hand-controller for said revolving mechanism and said entrance-gate.

16. In tubular transit apparatus, the combination with a tube, of a chambered revolubie shifting member, revolving means for said shifting member, an exit-gate, operating mechanism for said exit-gate, a controlling member mounted in said exit-gate normally controlling said exit-gate-operating mechanism and a time-lock valve mechanism designed to transfer the control of the controlling member from the exit-gate-operating mechanism to the said revolving means.

17. In tubular despatch apparatus, the combination with an incoming tube, of a revolubie chambered shifting member, a gate in said incoming tube, operating mechanism for said gate, a locking-bolt for said shifting member and a valve actuated by said locking-bolt designed to control said operating mechanism.

18. In tubular despatch apparatus, the combination with an incoming tube, of a chambered revolubie shifting member, revolving means for said shifting member, a gate in said incoming tube, operating mechanism for said gate, a locking-bolt for said shifting member, and a valve actuated by said locking-bolt designed to control said revolving and operating mechanisms.

19. In tubular despatch apparatus, the combination with a tube, of a chambered revolubie shifting member, revolving means for said shifting member, a gate in said tube forward of and adjacent said shifting member, a gate in said tube adjacent the rear end of said shifting member, operating mechanisms for said gates, a locking-bolt for said shifting member and a valve actuated by said locking-bolt designed to control said revolving and operating mechanisms.

20. In tubular despatch apparatus, the combination with a tube, of a revoluble shifting member, a gate in said tube rearwardly of and adjacent said shifting member, a locking-bolt for said shifting member, operating mechanism for said locking-bolt, and a controlling member carried by said gate designed to control said operating mechanism.

21. In tubular despatch apparatus, the combination with a trip-finger and a time-lock valve, of a locking-pin designed to prevent the movement of said trip-finger, and operating mechanism for said locking-pin controlled by said time-lock valve.

709,485. **FOOT-POWER DEVICE.** GEORGE P. CLARK and GEORGE H. DAVIS, New York, N. Y. Filed Apr. 2, 1900. Serial No. 11,111. (No model.)

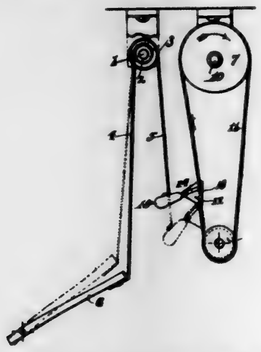

Claim.—1. In a device for transmitting motion the combination with a strap or belt, of a clutching member arranged to act upon one side thereof, a second clutching member pivotally connected to the first-named member and having a gripping edge arranged to act upon the opposite side of the strap or belt, means normally acting upon the pivoted gripping member to throw the gripping edge thereof out of contact with the strap or belt and to move the clutch idly over the belt, and means for lifting the outer end of the pivoted gripping member to cause its gripping edge to grip the strap or belt and impart a lifting action thereto to advance the same.

2. In a device for transmitting motion, the combination with a belt to be driven, of a treadle having a strap secured thereto at one end, a loose pulley to which the other end of said strap is secured, a second strap secured to said loose pulley, and a clutch device secured to said second strap, said clutch device comprising a member disposed on one side of the belt, a clutching member pivotally connected to the first-named member and having a gripping edge arranged to act upon the belt opposite said first-named member, and means normally acting upon said pivoted member to throw the gripping edge thereof out of contact with the belt and to move the clutch idly over the belt, substantially as described.

709,486. **AMMUNITION-HOIST FOR ORDNANCE.** ARTHUR T. DAWSON, Westminster, London, and JAMES HORNE, Barrow-in-Furness, England, assignors to Vickers Sons & Maxim, Limited, London, England. Original application filed Aug. 19, 1901, Serial No. 72,639. Divided and this application filed Jan. 10, 1902. Serial No. 89,247. (No model.)

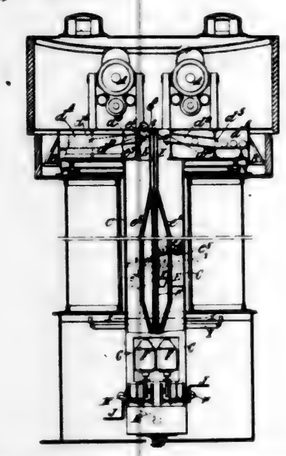

Claim.—1. In ammunition-hoists for ordnance, the combination with the gun-mounting and the trunk leading from the magazine to the mounting, of a pair of ammunition cages or carriers for each gun, of rails within the trunk for said cages to travel along, of means whereby each cage carries both the projectile and the powder charge, of means for supplying the projectile and powder charge to the cage and of means for automatically and simultaneously releasing said projectile and powder charge from the cage when it reaches its uppermost position so that the projectile is discharged from the cage longitudinally and the powder charge is discharged transversely, substantially as described.

2. In ammunition-hoists for ordnance, the combination with a cage or carrier provided with an upper inclined surface to receive the projectile, of a swinging tray for receiving the powder charge or charges, of a spring-bolt for normally retaining the projectile in place on the cage, of an arm on said swinging tray, of means for actuating said spring-bolt and said arm for liberating the projectile and powder charge when the cage reaches its uppermost position, of inclined chutes into which the powder charges enter transversely by the tilting movement of the swinging tray and of inclined troughs into which the projectiles slide longitudinally when released from the cage substantially as and for the purpose described.

3. In ammunition-hoists for ordnance, the combination with the gun-mounting and the trunk leading from the magazine to the mounting, of a pair of ammunition cages or carriers for each gun, of rails within the trunk for said cages to travel along, said rails affording a separate path for the cages during their upward and downward travel, of power hoisting apparatus for actuating said cages, of a hand-winch for enabling the cages to be actuated in the event of the power hoisting apparatus becoming inoperative, of trays near the bottom of the trunk for supplying the projectiles and powder charges to the cages, of inclined chutes near the top of the trunk for receiving and conveying the powder charges to trays provided for their reception, and of inclined troughs near the top of the trunk for receiving the projectiles and conveying them to the rear of the guns and level with the gun-platform, substantially as and for the purpose described.

709,487. **APPARATUS FOR COMPOSITE SYSTEMS OF SIMULTANEOUS TELEGRAPHY AND TELEPHONY.** JOHN M. FELL, Arlington, N. J., assignor to American Telephone and Telegraph Company, a Corporation of New York. Original application filed Sept. 16, 1901, Serial No. 75,491. Divided and this application filed Jan. 8, 1902. Serial No. 88,853. (No model.)

Claim.—1. In a system of composite and simultaneous telegraphy and telephony, the combination of a metallic or double-conductor telephone-circuit; two independent earth-return telegraphic circuits having for their line conductors the two main conductors respectively of the said metallic circuit; and impedance devices or electromagnetic resistances interposed between the instruments of the said telephone-circuit, and the two telegraphic circuits respectively; with call-signal apparatus connected with the telephonic circuit comprising a generating and transmitting device at one telephone-station adapted to develop and transmit alternating call-currents of such potential and frequency as to be obstructed by the said impedance devices; and a signal-receiving relay at another telephone-station responsive only to said alternating call-currents of appropriate frequency.
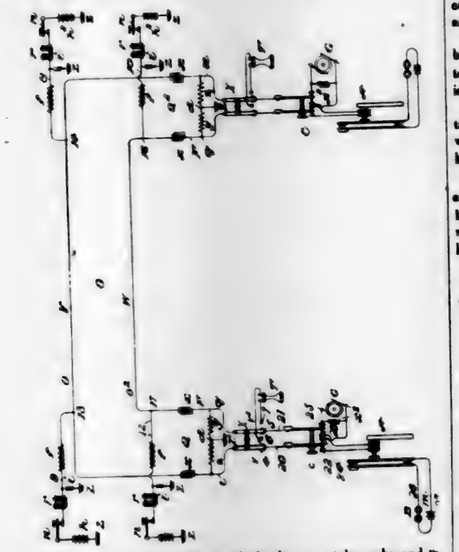
2. In a system of composite and simultaneous telegraphy and telephony, the combination of a metallic or double-conductor telephone-circuit; two independent earth-return telegraphic circuits having for their line conductors the two main conductors respectively of the said metallic circuit; and impedance devices or electromagnetic resistances interposed between the instruments of the said telephone-circuit, and the two telegraphic circuits respectively; with call-signal apparatus connected with the said telephonic circuit at the stations thereof, and comprising a generating and transmitting device at each telephone-station adapted to develop and transmit alternating call-currents of such potential and frequency as to be obstructed by the said impedance devices; and a signal-receiving relay at each station responsive only to said alternating call-currents of appropriate frequency, substantially as set forth.

709,488. **FEED-BOX FOR LIVE STOCK.** GEORGE M. FILLMORE, Washington, D. C., assignor, by direct and mesne assignments, of two-thirds to Jackson H. Ralston, Hyattsville, Md., and M. H. Ramage and Albert Schultein, Washington, D. C. Filed Jan. 17, 1902. Serial No. 90,109. (No model.)

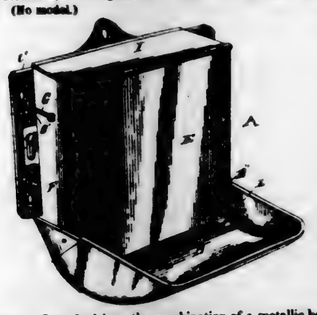

Claim.—1. In a feed-box, the combination of a metallic bowl having an inclined rear side, extending upward as a vertical back plate and provided with suspending devices, and a section forming a hopper front and sides, and adjustably and removably connected to the flat vertical back plate so as to form a receptacle between said hopper-section and the extended back of the bowl, substantially as described.

2. In a feed-box, the combination of a bowl having an upward extension at one side, an adjustable and removable hopper-section having front and ends, and means for securing the hopper-section in adjusted relation to the bowl, so that the opening under the hopper into the bowl may be of the desired capacity.

3. The combination with the bowl having an extended back plate, of the hopper-section removably secured thereto, and means for adjusting and securing the hopper-section vertically on said back plate.

4. The combination of the metallic bowl having upwardly-extended back plate, of the hopper-section having front and side flanges and slotted attaching-lugs, and set-screws extending through the slots in said lugs into the back plate.

5. The combination of a metallic bowl having a widened rear portion and a back plate, of a removable hopper-section fitting into the widened rear portion of the bowl, and attaching devices by which the hopper-section is attached to the back plate.

6. In a feed-box, the combination of a cast-metal bowl having an extension back piece provided with suspending devices and a sheet-metal hopper-section having a front and sides, and slotted outturned lugs which rest against said back, said hopper and back being secured in adjusted relation, substantially as described.

709,489. **REVERSIBLE PLOW.** JOHN W. GLENDY, Dublin, Va. Filed Apr. 4, 1902. Serial No. 101,394. (No model.)

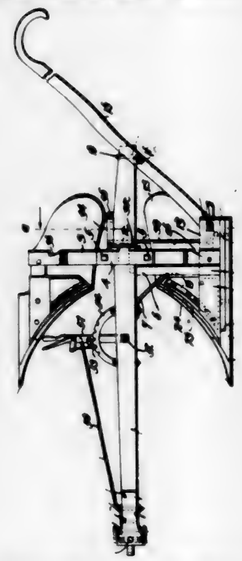

Claim.—1. In a reversible plow, the combination of a beam having a fixed standard and a footpiece at the lower end of said standard, a reversible standard pivotally mounted on said beam and shares carried by said reversible standard, said shares being adapted to bear successively on the footpiece and having stops to aline their landside-faces with the sides of the fixed standard, substantially as described.

2. In a reversible plow, the combination of a beam having a fixed standard and a footpiece at the lower end of and extending forwardly from said standard, a reversible standard pivotally mounted on said beam and shares carried by said reversible standard, said shares being adapted to bear successively on the footpiece, and said shares, fixed standard and reversible standard having sectional landsides adapted to aline with each other when one of the shares is in operative position on the footpiece, substantially as described.

3. In a reversible plow, the combination of a beam, having a fixed standard and a footpiece at the lower end of and extending forwardly and rearwardly from said standard, a reversible standard pivotally mounted on said beam, and shares carried by said reversible standard, said shares being adapted to bear successively on the footpiece and said shares, fixed standard, reversible standard and footpiece having sectional landsides adapted to aline with each other when one of the shares is in operative position on the footpiece, substantially as described.

4. In a reversible plow, the combination of a beam, having a fixed standard and a footpiece at the lower end of said standard, a reversible standard pivotally connected to the beam, and shares carried at the ends of said reversible standard and adapted to be successively disposed on the footpiece, each of said shares having a frame to which its moldboard and point are secured and a bridge-bar on the inner side of said frame connecting the latter to the reversible standard whereby clearance-spaces are formed between the said frames and the reversible standard 4, the reversible standard and said bridge-bars serving to arrest the rotation of the reversible standard by engaging one side of the fixed standard when one of the shares is disposed in operative position, substantially as described.

5. In a reversible plow, the combination of a beam having a fixed standard and a footpiece at the lower end of said fixed standard, a housing on said footpiece in rear of said fixed standard and spaced therefrom, the sides of said housing being coincident with those of the footpiece and fixed standard and together with the sides of the fixed standard forming sections of the landsides, a reversible standard pivotally connected to the beam, shares carried by the respective ends of said reversible standard and adapted to be successively disposed on the footpiece, said shares having landside-pieces adapted to register with the aforementioned sectional landsides, and a detent disposed in the housing and adapted to engage the reversible standard, for the purposes set forth, substantially as described.

6. In a reversible plow, the combination of a beam having a fixed standard and a footpiece at the lower end of said fixed standard, a reversible standard having its bearing on said beam and provided at its intermediate portion on its rear side with oppositely-disposed stop-notches, a pivoted detent on the beam adapted to successively engage said stop-notches, a detent pivotally disposed on the footpiece and adapted to engage and lock the lower end of the reversible standard, and a connection between said detents to cause the same to operate simultaneously, substantially as described.

7. In a reversible plow, a beam having a fixed standard, a footpiece at the lower end of the fixed standard and extending forwardly and rearwardly therefrom, and handles connected to the rear end of footpiece and to the beam, in combination with a reversible standard carrying shares at its opposite ends, and means to secure said reversible standard in position to dispose either of the shares for operation, substantially as described.

709,440. **WEFT-REPLENISHING LOOM.** HENRY I. HARRIMAN, New York, N. Y. Filed Apr. 14, 1902. Serial No. 103,510. (No model.)

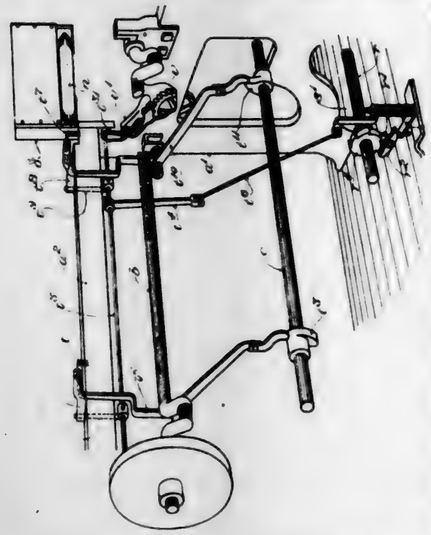

Claim.—1. In a weft-replenishing loom, in combination, weft-replenishing instrumentalities arranged to effect the replenishment of the working weft-supply, a take-up, weft-forks at opposite ends of the loom, a rod, as f^2, extending across the loom and having in connection therewith means operated thereby to arrest the taking up and occasion the action of the weft-replenishing instrumentalities, and means operatively connecting said rod with both of said weft-forks whereby said rod is operated when either weft-fork detects the absence of weft or filling.

2. In a weft-replenishing loom, in combination, the change-shaft, clutch devices for driving the same, a controller for the said clutch devices, weft-detectors at opposite ends of the loom in operative control of said controller, and thin-place-preventing devices under operative control of both of the said weft-detectors and actuated to arrest the taking up of the cloth when either weft-detector detects the absence of weft or filling.

3. In a weft-replenishing loom, in combination, weft-replenishing instrumentalities, a controller, as *s*, in connection therewith, a take-up, weft-forks at opposite ends of the loom, a rod, as f^2, extending across the loom and having in connection therewith means operated thereby to arrest the taking up, said rod also having operative connection with said controller, and means operatively connecting said rod with both of said weft-forks, whereby said rod is operated when either weft-fork detects the absence of weft.

4. In a weft-replenishing loom, in combination, the change-shaft, the toothed wheel and dog or pawl for driving the change-shaft, the controller in connection therewith, weft-detectors at opposite ends of said loom in operative control of said controller, a take-up, and thin-place-preventing devices under operative control of both of the said weft-detectors and actuated to arrest the taking up of the cloth when either weft-detector detects the absence of weft or filling.

5. In a weft-replenishing loom, in combination, the change-shaft, the toothed wheel and dog, a controller, a take-up, weft-detectors at opposite ends of said loom, a rod, as f^2, extending across the loom and having in connection therewith a thin-place-preventing device, said rod also having operative connection with said controller and both of said weft-works, whereby said rod is operated when either weft-fork detects the absence of weft.

709,441. **ROLLER-BEARING.** ALBERT E. HENDERSON, Toronto, Canada, assignor to The Toronto Roller Bearing Company, Limited, Toronto, Canada, a Corporation of Ontario. Original application filed July 30, 1901, Serial No. 69,151. Divided and this application filed June 5, 1902. Serial No. 110,334. (No model.)

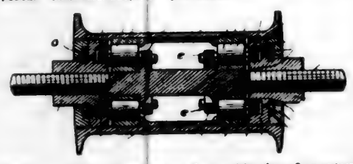

Claim.—1. In a roller-bearing, the combination of an external hub-shell having internal annular flanges, an axle having integral peripheral flanges alining substantially with the annular flanges of the hub-shell, bearing-rings having conical recesses terminating in horizontally-disposed bores, tie-rods having abutting shoulders engaging the inner faces and nuts engaging the outer faces of the bearing-rings, bearing-rollers having tapering mandrels terminating in abruptly-conical ends journaled in the conical recesses, antifriction-sleeves contained within the hub-shell encircling and contacting the bearing-rollers, and antifriction-sleeves mounted on the axle encircled by and contacting the rollers.

2. The combination of the hub-shell having internal annular flanges, an axle having integral peripheral flanges alining substantially with the annular flanges of the hub-shell, bearing-rings having conical recesses terminating in horizontally-disposed bores, tie-rods having abutting shoulders engaging the inner faces and nuts engaging the outer faces of the bearing-rings, bearing-rollers having tapering mandrels terminating in abruptly-conical ends journaled in the conical recesses, and antifriction bearing-surfaces for the rollers.

3. The combination of the hub-shell having internal annular flanges, an axle having integral peripheral flanges alining substantially with the annular flange of the hub-shell, bearing-rings having conical recesses terminating in horizontally-disposed bores, tie-rods for uniting the bearing-rings, bearing-rollers having recessed ends fitted with tapering mandrels terminating in abruptly-conical ends journaled in the conical recesses, antifriction-sleeves contained within the hub-shell encircling and contacting the antifriction bearing-rollers, and nuts fitted on the axle and into the ends of the hub-shell having on their inner faces annular flanges contacting with the ends of the bearing-rollers.

4. The combination of a hub-shell having internal annular flanges, an axle having integral peripheral flanges alining substantially with the flanges of the hub-shell, bearing-rings having conical recesses terminating in horizontally-disposed bores, tie-rods having abutting shoulders engaging the inner faces and nuts engaging the outer faces of the bearing-rings, bearing-rollers having recessed ends fitted with tapering mandrels terminating in abruptly-conical ends journaled in the conical recesses, antifriction-sleeves contained within the hub-shell encircling and contacting the bearing-rollers, antifriction-sleeves mounted on the axle encircled by and contacting the bearing-rollers, and nuts fitted on the axle and into the ends of the hub-shell having on their inner faces annular flanges contacting the ends of the bearing-rollers.

5. The combination of the hub-shell having internal annular flanges, an axle having integral peripheral flanges alining substantially with the flanges of the hub-shell, bearing-rings having conical recesses terminating in horizontally-disposed bores, tie-rods uniting the bearing-rings, bearing-rollers having recessed ends fitted with tapering mandrels terminating in abruptly-conical ends journaled in the conical recesses, antifriction-sleeves contained within the hub-shell encircling and contacting the bearing-rollers, antifriction-sleeves mounted on the axle and encircled by and contacting the bearing-rollers, and nuts fitted on the axle and into the ends of the hub-shell having on their inner faces annular flanges contacting with the ends of the bearing-rollers.

709,442. **SEED-PLANTER.** JAMES M. HIGBE, Manson, Iowa. Filed Jan. 2, 1902. Serial No. 88,063. (No model.)

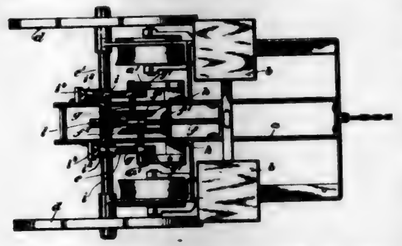

Claim.—1. A seed-planter, comprising a dropping mechanism, an axle in two sections, a traction-wheel connected to each section of the axle, and two trains of gears running respectively from the sections of the axle to the dropping mechanism, said trains of gears being operated simultaneously or independently to uniformly actuate the dropping mechanism.

2. A seed-planter, comprising dropping mechanism, a driving member, and two trains of gears from the driving member to the dropping mechanism, said trains of gears being operative independently or simultaneously to uniformly actuate the dropping mechanism.

3. A seed-planter, comprising dropping mechanism, a driving-axle, two trains of gears for driving the dropping mechanism from the axle, each of said trains comprising friction-wheels mounted on fixed axes, and an additional friction-wheel mounted to move toward and from the first friction-wheel to connect or disconnect the same.

4. A seed-planter, comprising dropping mechanism, a driving-axle, two trains of gears for driving the dropping mechanism from the axle, each of said trains comprising friction-wheels mounted on fixed axes, an additional friction-wheel mounted to move toward and from the first friction-wheel to connect or disconnect the same, said friction-wheels being carried in independently-movable hangers, and brackets for sustaining the hangers.

5. A seed-planter, comprising a frame, a dropping mechanism, a longitudinal shaft in connection therewith, pinions fastened to the shaft, counter-shafts, gears carried by the counter-shafts and respectively meshed with the pinions, an axle, and friction-gears connecting the axle with the counter-shafts, said friction-gears comprising shiftable elements for throwing the sets of gears into and out of action.

6. In a seed-planter, the combination of dropping mechanism, a driving member, two independently-operative groups of movement-transmitting means driven by the driving member, and a means (such as the shaft *f*) for connecting said groups of movement-transmitting means with the dropping mechanism.

709,443. **HYDROCARBON-BURNER.** MARY A. HODGE, San Jose, Cal., administratrix of Washington H. Stewart, deceased, assignor of three-fourths to Willis P. Holmes and Leonard M. Hodge, San Jose, Cal. Filed Nov. 20, 1901. Serial No. 83,004. (No model.)

Claim.—1. A hydrocarbon-burner comprising consecutively-arranged atomizing and vaporizing chambers, an oil-supply communicating with the atomizing-chamber, an oil-deflector in the atomizing-chamber, a deflector-supporting stem extending within the vaporizing-chamber, and a mass of meshed fabric surrounding the deflector-stem.

2. A hydrocarbon-burner comprising a spheroidal atomizing-chamber, a vaporizing-chamber, a concavo-convex oil-deflector in the atomizing-chamber, a deflector-supporting stem extending into the vaporizing-chamber, and a wire-gauze maze within the vaporizing-chamber and surrounding the deflector-stem.

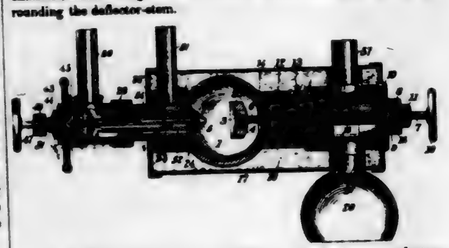

3. A hydrocarbon-burner comprising consecutively-arranged atomizing and vaporizing chambers, a deflector arranged in the atomizing-chamber, a deflector-supporting stem passing through the vaporizing-chamber, and a mass surrounding the deflector-stem within the vaporizing-chamber, the deflector being adapted to intercept the oil on its way toward the mass.

4. A hydrocarbon-burner comprising an atomizing-chamber, a vaporizing-chamber at one side of the atomizing-chamber, steam and oil supply pipes and controlling-valves therefor located at the opposite side of the atomizing-chamber, and an adjustable imperforate deflector located within the atomizing-chamber.

5. A hydrocarbon-burner comprising a mixing and atomizing chamber, a vaporizing-chamber arranged at one side of the atomizing-chamber, oil and steam supply pipes arranged at the opposite side of the atomizing-chamber, and a reversible deflector or deflecting-block located within the atomizing-chamber.

6. A hydrocarbon-burner comprising a mixing and atomizing chamber, a vaporizing-chamber arranged at one side of the atomizing-chamber, oil and steam supply pipes and controlling-valves therefor arranged at the opposite side of the atomizing-chamber, and an adjustable and reversible concavo-convex deflector located within the atomizing-chamber.

7. A hydrocarbon-burner comprising a vaporizing-chamber, an oil-supply leading toward the same, a spheroidal atomizing-chamber interposed between the oil-supply and vaporizing-chamber, and a normally stationary disk-shaped deflector arranged centrally within the atomizing chamber and adapted to intercept and spread the oil on its way toward the vaporizing-chamber.

8. A hydrocarbon-burner comprising consecutively-arranged atomizing and vaporizing chambers, a deflector adapted to intercept the oil while passing through the atomizing-chamber toward the vaporizing-chamber, a longitudinally-movable deflector-supporting stem extending through the vaporizing-chamber, and a mass composed of meshed fabric surrounding the deflector-stem and filling the vaporizing-chamber.

9. In a hydrocarbon-burner, consecutively-arranged atomizing and vaporizing chambers, a cap removably applied to one end of the vaporizing-chamber, a deflector arranged in the atomizing-chamber, a deflector-adjusting stem passing through the vaporizing-chamber and cap, and a mass encircling the deflector-stem within the vaporizing-chamber and removable together with the stem, deflector and cap.

10. In a hydrocarbon-burner, the combination with a vaporizing-chamber and means for introducing a mixture of steam and oil thereto, of a mass substantially filling said vaporizing-chamber, and an adjustable stop forming an abutment for one end of the mass.

11. In a hydrocarbon-burner, the combination with a mixing-chamber, of an oil-chamber terminating in a nozzle leading into the mixing-chamber, a tubular oil-supply valve mounted within the oil-chamber, and a rotary hand-wheel having a cam engagement with said oil-supply valve for adjusting the latter, substantially as described.

12. In a hydrocarbon-burner, the combination with a mixing-chamber, of an oil-chamber terminating in a nozzle leading into the mixing-chamber, a tubular oil-supply valve mounted within the oil-chamber, and a rotary hand-wheel provided with an oblique flange which cooperates with the oil-supply valve for adjusting said valve toward and away from its seat, substantially as described.

709,444. **ROLLER-BEARING FOR CARPET-SWEEPERS.** FRANCIS C. MASON, Grand Rapids, Mich., assignor to The Bissell Carpet Sweeper Company, Grand Rapids, Mich., a Corporation. Filed Oct. 30, 1901. Serial No. 80,554. (No model.)

Claim.—The combination of a casing having a driving-wheel, an axle carried by the casing and extending through the hub of said driving-wheel, and the hub extending outward beyond the rim of the wheel, a series of antifriction-rollers in the hub bearing against said axle, a guard

on the casing crossing the outer open end of the hub and adapted to directly engage the outer ends of said rollers to thereby prevent outward displacement of the same and to also hold the wheel on its axle, and independent means for preventing inward displacement of said rollers.

709,445. **ENGINE-SUPPORT.** ALBERT W. HEDEN, Revere, and ALBERTO T. VAN HORN, Malden, Mass., assignors to HEDEN-VAN HORN Motor Company, Portland, Me., and Boston, Mass., a Corporation of Maine. Filed Jan. 23, 1902. Serial No. 90,735. (No model.)

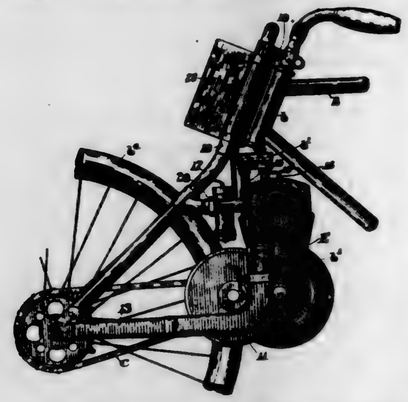

Claim.—1. The combination with a cycle, of engine mechanism supported wholly at the rear of the steering-wheel to swing therewith in its steering movement whereby the weight of said engine mechanism will exert a constant tendency to maintain the steering-wheel in a central position.

2. The combination with a cycle, of an engine supported at the rear of the steering-wheel beneath the fork-crown and connected therewith.

3. The combination with a cycle, of an engine supported between the forks of a single steering-wheel and at the rear of said wheel.

4. The combination with a cycle, of an engine supported between the forks of the steering-wheel to swing therewith in its steering movement and an arm secured to the engine and fork-crown.

5. The combination with a cycle having the forks of the steering-wheel so formed that a portion thereof will lie in a plane at the rear of the wheel, of an engine supported between the forks.

6. The combination with a cycle having the forks of the steering-wheel so formed that a portion thereof will lie in a plane at the rear of the wheel, of an engine supported between the forks, and arms connecting the engine and forks.

7. The combination with a cycle having forks extending downward in a substantially vertical direction from the crown and then forward in a substantially horizontal direction, of an engine mounted between the forks.

8. The combination with a cycle having forks comprising a substantially vertical member and a substantially horizontal member extending therefrom in opposite directions, of an engine supported at one end of the horizontal members.

9. The combination with a cycle having forks comprising a substantially vertical member and a substantially horizontal member extending therefrom in opposite directions, one of the ends of the horizontal members lying in proximity to the vertical members, of an engine supported by the horizontal members between the vertical members.

10. The combination with a cycle, of an engine supported between the forks of one of the wheels, and a stay extending from at or near the outer portion of the forks to a point upon the cycle above the forks.

11. The combination with a cycle, of an engine supported upon the forks of the steering-wheel to swing therewith in its steering movement, and a stay extending from at or near the outer portion of the forks to a point upon the cycle above the forks.

12. The combination with a cycle, of an engine supported upon the forks of the steering-wheel to swing therewith in its steering movement, and a stay connected with the outer portion of the forks and with an extension from the fork-crown.

13. The combination with a cycle, of an engine supported upon the forks of the steering-wheel to swing therewith in its steering movement, and a stay connected with the outer portion of the forks and with an extension from the handle-bar stem.

14. The combination with a cycle, of an engine supported upon the forks of the steering-wheel to swing therewith in its steering movement, and a stay connected with the outer portion of the forks and with an extension from the fork-crown and an extension from the handle-bar stem.

15. The combination with a cycle, of an engine supported upon the forks of the steering-wheel to swing therewith in its steering movement, a stay extending from at or near the outer portions of the forks to a point upon the cycle above the forks, and a fuel-tank mounted upon said stay.

16. The combination with a cycle, of an engine supported upon the forks of the steering-wheel to swing therewith in its steering movement, a hollow stay extending from the forks to a point above the forks, and means for delivering the engine-exhaust to the stay.

709,446. **MANUFACTURE OF CAR-WHEELS.** JOHN W. MOREAR, Jr., McKeesport, Pa. Filed Jan. 2, 1902. Serial No. 88,066. (No model.)

Claim.—1. In a car-wheel, the combination of a web and hub portion, projections of segmental form carried by said web portion and each provided at one of their edges with a semicircular internally-screw-threaded groove, a rim, inwardly-projecting lugs carried by said rim and each provided with a semicircular groove, said lugs extending across the lower face of the tire and adapted to fit between the projections of the rim, whereby the internally-screw-threaded grooves of each member will lie adjacent each other and form internally-screw-threaded sockets, and set-screws fitted in said sockets.

2. In a car-wheel, the combination of a web and hub portion, horizontally-disposed projections formed integral with and located adjacent the edge of the said web portion, a rim, inwardly-projecting lugs located on the inner surface of the rim, said lugs extending across the inner surface of the rim and adapted to fit between the horizontally-disposed projections of the web, whereby the rim's and web's projections will interlock, and keys fitted therebetween.

3. In a car-wheel, the combination of a web and hub portion, horizontally-arranged projections of segmental form spaced apart on one side of the web adjacent its periphery, said projections provided on one of their edges with a semicircular internally-screw-threaded groove, a rim, inwardly-projecting lugs spaced apart on its lower face and extending thereacross, said lugs provided on one of their edges with semicircular internally-screw-threaded grooves, said lugs adapted to fit between the web projections and interlock, whereby the internally-screw-threaded grooves of the web and tire will lie adjacent each other and form internally-screw-threaded sockets, and set-screws fitted in said sockets.

709,447. **LOOM FOR WEAVING PILE FABRICS.** ALFRED F. MCCOLLUM, Esqr., Pa., assignor of three-fifths to James Magee, 2d, Bloomsburg, Pa. Filed July 8, 1901. Serial No. 67,535. (No model.)

Claim.—1. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric, and a knife pivoted to said carrier and movable on its pivot so as to engage with or be disengaged from the pile-loops, substantially as specified.

2. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric and movable across the same, and a knife pivoted to said carrier and movable on its pivot so as to engage with or be disengaged from the pile-loops, substantially as specified.

3. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, with a plurality of knives mounted upon said carrier, and each adapted to cut a portion of a row of pile-loops, whereby the movement of the knife-carrier is less than the width of the fabric, substantially as specified.

4. In pile-cutting mechanism for looms, the combination of a grooved pile-wire, a knife-carrier mounted above and movable across the fabric, and a plurality of knives mounted upon said carrier and having cutting portions movable into and out of the groove of the pile-wire, substantially as specified.

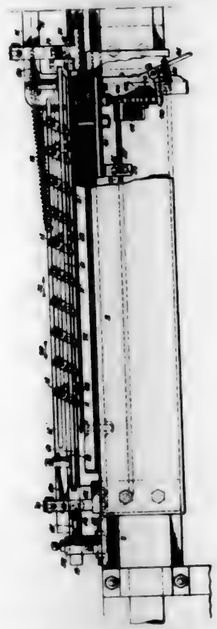

5. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, with a plurality of knives mounted on said carrier, and movable into and out of engagement with the pile-loops, substantially as specified.

6. In pile-cutting mechanism for looms, the combination of a grooved pile-wire, a knife-carrier mounted above the fabric and a cutting-knife pivoted to said carrier so that its cutting portion may be swung into and out of the groove of the pile-wire, substantially as specified.

7. In pile-cutting mechanism for looms, the combination of a grooved pile-wire, a knife-carrier mounted above the fabric and movable across the same, and a cutting-knife pivoted to said carrier so that its cutting portion can be swung into or out of the groove of the pile-wire, substantially as specified.

8. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric, a cutting-knife mounted upon said carrier so as to be moved into and out of cutting relation with the pile-loops, and a bar movable in respect to the knife-carrier for operating said knife, substantially as specified.

9. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric and movable across the same, a knife mounted on said carrier and movable into and out of cutting relation with the pile-loops, and a bar movable in respect to the knife-carrier and serving to move the cutting-knife into and out of cutting position, substantially as specified.

10. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, one or more cutting-knives mounted upon said carrier, and mechanism whereby the movement of the carrier in both directions is effected by a pulling action, substantially as specified.

11. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric and movable across the same, a knife mounted on said carrier and movable into and out of cutting relation with the pile-loops, and pattern mechanism for governing the movement of the knife-carrier across the fabric, substantially as specified.

12. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric and having a knife movable into and out of cutting relation with the pile-loops, a bar movable in relation to the knife-carrier and serving to move the cutting-knife into and out of cutting position, and pattern mechanism governing the movement of said knife-carrier and controlling-bar, substantially as specified.

13. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, a knife mounted on said carrier so as to be movable into and out of cutting relation with the pile-loops, and two sets of pattern mechanism one governing the movement of the knife, in one direction and the other governing its movement in the opposite direction, substantially as specified.

14. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, a knife mounted on said bar so as to be movable into and out of cutting relation with the pile-loops, a bar movable in respect to the knife-carrier for throwing the cutting-knife into and out of cutting position, and two sets of pattern mechanism, one controlling the movement of the knife-carrier in one direction and also controlling the movement of the knife-operating bar, and the other controlling the movement of the knife-carrier in the opposite direction, substantially as specified.

15. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric and having a knife movable into and out of cutting relation with the pile-loops, a bar for moving said cutter into and out of cutting position, and pattern mechanism governing the extent of movement of said knife-operating bar, substantially as specified.

16. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric, a knife pivoted to the said carrier and movable into and out of cutting relation with the pile-loops, a bar engaging said knife and swinging it into and out of cutting position, and pattern mechanism for governing the extent of movement of said knife-operating bar, substantially as specified.

17. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric and having a knife movable into and out of cutting relation with the pile-loops, and adjustable means for arresting the downward movement of the knife when it has reached the proper cutting position, substantially as specified.

18. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric and movable across the same, a knife mounted on said carrier and movable into and out of cutting relation with the pile-loops, and adjustable means for arresting the downward movement of the knife when it has reached its proper cutting position, substantially as specified.

19. In pile-cutting mechanism for looms, the combination of the knife-carrier mounted above and movable across the fabric, a knife mounted on said carrier so as to be movable into and out of cutting relation with the pile-loops, a bar for actuating said knife, and an adjustable stop whereby the movement of the knife-operating bar after it has moved the knife into cutting position, will be transmitted to the knife-carrier, substantially as specified.

20. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric, a knife mounted on said carrier and movable into and out of cutting relation with the pile-loops, means for moving the knife into and out of cutting position, and means for adjusting the knife-carrier into different lateral relations in respect to the fabric, substantially as specified.

21. In pile-cutting mechanism for looms, the combination of the knife-carrier mounted above and movable across the fabric, and a knife mounted on said carrier, with means for laterally shifting the limits of movement of the knife-carrier whereby the knives may act successively upon different lateral portions of the fabric, substantially as specified.

22. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, a knife mounted on said carrier and movable into and out of cutting relation with the pile-loops, means for moving the knife into and out of cutting position, and provision for laterally shifting the limits of movement of the knife-carrier so as to cause the knives to act upon different lateral portions of the fabric, substantially as specified.

23. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric, a series of knives thereon movable into and out of cutting relation with the pile-loops, means for moving the knife-carrier rearwardly with yielding pressure, and a series of stop-fingers movable with the knife-carrier and adapted to contact with the foremost of the inserted pile-wires at different points in its length, substantially as specified.

24. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, a knife thereon movable into and out of cutting relation with the pile-loops, a bar movable in respect to the knife-carrier for moving said knife into and out of cutting position, means for moving said knife-operating bar, and a frictional retarding device acting upon the knife-carrier and serving to prevent movement of the same with the knife-operating bar until said friction has been overcome, substantially as specified.

25. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above and movable across the fabric, a knife carried by said bar and movable into and out of cutting relation with the pile-loops, a second bar movable in respect to the first for moving said knife into and out of cutting position, means for moving said second bar, a frictional retarding device for preventing movement of the knife-carrying bar with the knife-operating bar and engaging portions of the two bars for causing their joint movement, substantially as specified.

26. The combination in pile-cutting mechanism for looms, of a knife-carrier and an operating-slide therefor having a cam and a spring-actuated bolt interposed between said cam and the end of the knife, substantially as specified.

27. The combination in pile-cutting mechanism for looms, of a knife-carrier, a bar movable in respect thereto for adjusting the knives to operative or inoperative position, a slide carrying a pattern-cam and a spring-actuated bolt interposed between said cam and the knife-carrier and knife-actuating bar, substantially as specified.

28. The combination in pile-cutting mechanism for looms, of a knife-carrier with knives pivoted thereto and yielding means for holding said knives in lateral position in respect to the carrier, substantially as specified.

29. The combination in a loom for weaving pile fabrics, of the pile-wire inserting and withdrawing mechanism having as one of its elements a reciprocating slide, and pile-cutting devices mounted above the fabric and having as elements a laterally-movable knife-carrying bar and a laterally-movable knife-operating bar, said bars receiving their movement from the reciprocating slide of the pile-wire mechanism, substantially as specified.

30. The combination in a loom for weaving pile fabrics, of pile-wire inserting and withdrawing mechanism having as one of its elements a reciprocating slide, a knife-carrier mounted above the fabric, and a pattern-cam mounted on said pile-wire slide and serving to operate the knife-carrier, substantially as specified.

31. The combination in a loom for weaving pile fabrics, of the pile-wire mechanism having as one of its elements a reciprocating slide, a knife-carrier mounted above the fabric and having knives movable into and out of cutting position, a knife-operating bar movable in respect to the knife-carrier, and a pattern-cam mounted on the pile-wire slide and serving to operate the knife-carrier and knife-actuating bar, substantially as specified.

32. The combination in a loom for weaving pile fabrics, of a knife-carrier mounted above the fabric, pile-wire mechanism having as one of its elements a reciprocating slide, a pattern-cam mounted on said slide and serving to operate the knife-carrier and mechanism operated by the movement of the slide for imparting movement to said cam, substantially as specified.

33. The combination in a loom for weaving pile fabrics, of a knife-carrier mounted above the fabric, pile-wire mechanism having as one of its elements a reciprocating slide, pattern-cams for determining the movement of the knife-carrier in each direction, and mechanism operated by the movement of the reciprocating slide and serving to impart movement to said pattern-cams, substantially as specified.

34. The combination in pile-cutting mechanism for looms, of a knife-carrier mounted above the fabric, a pattern-cam for determining the movement of said knife-carrier in one direction, and yielding tension devices for moving the knife-carrying bar in the opposite direction, substantially as specified.

35. The combination in pile-cutting mechanism for looms, of a knife-carrier mounted above the fabric, a pattern-cam for determining the movement of said knife-carrier in one direction, and yielding tension devices for moving the knife-carrying bar in the opposite direction, and a second pattern-cam for limiting such movement, substantially as specified.

36. In pile-cutting mechanism for looms, the combination of a knife-carrier mounted above the fabric, and adjusting mechanism for the knife-carrier having a series of stop-fingers adapted to contact with the foremost of the inserted pile-wires at different points in its length, said adjusting mechanism being so mounted that the outermost stop-finger can move forwardly as soon as the end of the pile-wire has been withdrawn past the same, substantially as specified.

37. The combination in a loom for weaving pile fabrics, of pile-wire inserting and withdrawing mechanism having as one of its elements a reciprocating slide with catch for engaging the heads of the pile-wires, pile-cutting mechanism operated by said slide, and a push-rod whereby the heads of the pile-wires may be thrust rearwardly out of range of the withdrawing mechanism, substantially as specified.

709,448. SAND-BLAST-CONTROLLING APPARATUS. JOSEPH SHAVER, Milwaukee, Wis. Filed Aug. 5, 1901. Renewed July 2, 1902. Serial No. 114,122. (No model.)

Claim.—1. In a sand-blast-controlling device, the combination of an air-tight sand-receiving reservoir; a cylinder, provided at its lower end with a plurality of apertures through its vertical walls, extending longitudinally through said reservoir; an air-duct communicating from the source of pressure through the upper end of said cylinder with said sand-reservoir above the sand therein; a hose connected with the lower end of said cylinder; a vertically-moving bollow plunger, provided with apertures at its upper end, located within said cylinder, and adapted to control the passage of sand through said apertures; a rod communicating from said plunger with the exterior of said reservoir; and means for raising and lowering said plunger, and opening and closing said apertures, as set forth.

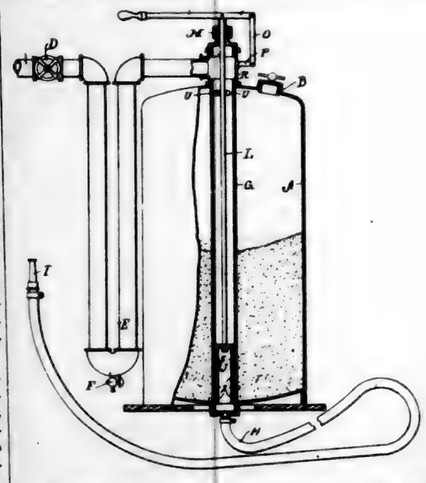

2. In a sand-blast-controlling device, the combination of an air-tight sand-receiving reservoir, a cylinder, provided at its upper and lower ends with a plurality of apertures formed through its vertical walls; extending longitudinally through said reservoir and protruding at its respective ends, through the ends of said reservoir; an air-duct communicating from a source of pressure with the upwardly-protruding end of said cylinder, a hose connected with the lower protruding end of said cylinder; a vertically-adjustable, hollow plunger, provided with apertures at its upper end, located in said cylinder and adapted to control the passage of sand through said apertures; a rod communicating from said plunger through a stuffing-box with the exterior of said reservoir; and a lever pivotally connected with the protruding end of said rod, substantially as and for the purpose specified.

3. In a sand-blast-controlling device, the combination of an air-tight sand-receiving reservoir; a cylinder, provided at its upper and lower ends with a plurality of apertures through its vertical walls, extending longitudinally through said reservoir; an air-duct, provided with U-shaped bends (in the lower end of which is a petcock) connected with the upper end of said cylinder; a hose connected with the lower end of said cylinder; a vertically-moving, hollow plunger, provided with apertures at its upper end, located within said cylinder, and adapted to control the passage of sand through said apertures; a rod communicating from said plunger with the exterior of said reservoir; and means for raising and lowering said plunger, and opening and closing said apertures, all substantially as and for the purpose set forth.

709,449. SINGLE PERCH-GEAR FOR VEHICLES. FRANK B. WILCOX, Mechanicsburg, Pa. Filed Aug. 2, 1902. Serial No. 118,084. (No model.)

Claim.—1. The herein-described means for securing the end of a perch to an axle, consisting of the perch heel-iron 26, the three-prong saddle-clip, and the top reach-iron 28 having a perforated upwardly-turned end.

2. The combination with an axle, axle-bed, and lower spring-leaves, of a recessed perch heel-iron; a three-prong clip; a perch; a top reach-iron having an upwardly-turned perforated end; and means for securing the perch to the irons, and the upwardly-turned end of the top perch-iron to the axle-bed.

3. The herein-described three-prong saddle-clip, having legs which are cylindrically shaped at the extreme ends and flattened throughout the remaining portions thereof, the downwardly-extending flange 33 upon one side, and the outwardly-extending ends 34, 34, as set forth.

709,450. APPARATUS FOR TREATING GARBAGE. STEPHEN R. WILSON, Frenchtanding, Mich. Original application filed Sept. 6, 1897, Serial No. 650,936. Divided and this application filed Apr. 11, 1902. Serial No. 102,443. (No model.)

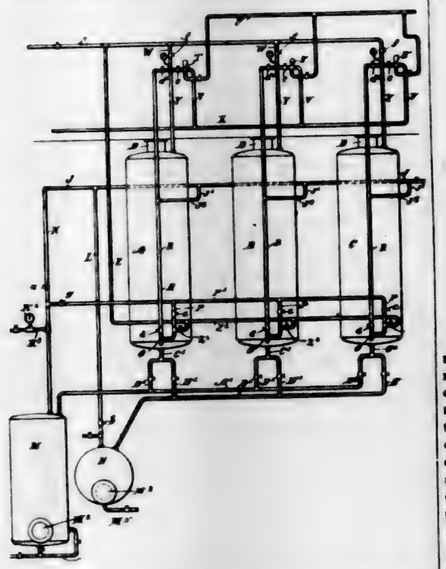

Claim.—1. In an apparatus for treating garbage and like material, the combination of a series of digesting-tanks; a fluid-supply connected thereto; a high-pressure tank connected with said fluid-supply and with the series of digesting-tanks; a low-pressure tank; connections between said low-pressure tank and the draw-off of said digesting-tanks; and connections between said low-pressure tank and the cooking apparatus of said digesting-tanks.

2. In an apparatus for treating garbage and the like; the combination of a series of digesting and compression tanks; a fluid-pressure-supply pipe connected thereto with the cooking apparatus thereof and with the top of said tanks; a high-pressure tank connected with the fluid-supply and with the draw-off of said digesting-tanks; a low-pressure tank connected with the draw-off of said digesting-tanks; a blow-off main; and connections between said blow-off main and the cooking apparatus of the digesting-tanks, substantially as and for the purpose described.

3. In an apparatus for treating garbage and like material, the combination of a series of digesting and compression tanks; a fluid-pressure-supply pipe; connections between said pipe and the cooking apparatus of the tanks and the upper ends of the tanks; a high-pressure tank connected with the fluid-pressure supply and the draw-off of the digesting-tanks; a low-pressure tank connected to the draw-off of the digesting-tanks and also with the fluid-pressure supply; a blow-off main; connections between said blow-off main and the low-pressure tank; a deodorizer intermediate the blow-off main and the connections from the low-pressure tank; and a water-supply for said deodorizer.

4. In an apparatus for treating garbage and the like, the combination of a series of digesting-tanks; cooking apparatus for said tanks; a low-pressure tank connected to said digesting-tanks; and connections between said low-pressure tank and said cooking apparatus, substantially as described, whereby the cooking agent may be passed from said low-pressure tank into the cooking apparatus of the digesting-tanks.

709,451. BAG-MAKING MACHINE. JOHN F. ANES, Portland, Oreg. Filed Feb. 28, 1900. Serial No. 6,827. (No model.)

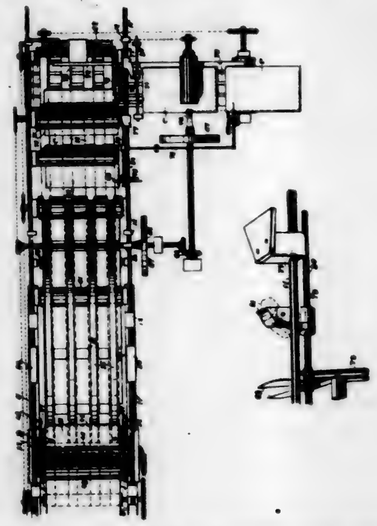

Claim.—1. An apparatus for the manufacture of bags comprising mechanism for supplying the material, mechanism for feeding the material intermittently, a cutting mechanism actuated during the intermission of the advance of the material, for severing the material into lengths, means for folding the severed material, a sewing-machine and means for transferring the folded material thereto, a second transferring mechanism operating at right angles with the first-named transferring means, a second sewing-machine for closing the open side of the bag, thread-cutting appliances for severing the thread after the bag passes each sewing-machine, and a single power device connected with the feeding devices, the severing mechanism, the folding devices, and the thread-cutting appliances.

2. In a bag-making machine, means for supplying the fabric continuously, means including a reciprocating rack and a pawl-and-ratchet mechanism by which the material is advanced and stopped intermittently, a mechanism for cutting the material into lengths suitable for the bags to be made, means for adjusting the movement of the rack whereby the advance of the material is varied to suit the size of the bag to be made, and means connected to the rack for operating the cutting mechanism.

3. In a bag-making machine, the combination of means for supplying material continuously, a feed mechanism, means for cutting the material into lengths at each intermission of its forward movement, a reciprocating slide mechanism for operating the feed mechanism, and means connected to said slide mechanism for operating the cutting mechanism.

4. In a bag-making machine, the combination of mechanism for supplying the material, a feed mechanism for the material, means for actuating the feed mechanism, a cutting mechanism for severing the material into lengths, a folding mechanism for the severed portions, a transfer mechanism for the folded portions, stitch-forming mechanism, a horizontally-reciprocating slide mechanism and connections between the same and the cutting and folding mechanisms whereby the said cutting and folding mechanisms are operated by the single reciprocating slide mechanism.

5. The combination of mechanism for supplying the material, a feed mechanism including rollers, a reciprocating rack and pawl-and-ratchet devices, means for regulating the movement of the rack and the consequent advance of the fabric, a cutting mechanism, a horizontal slide mechanism movable with said rack, and connections between said cutting mechanism and the slide mechanism whereby the former is operated by the latter at each intermission of the forward movement of the material.

6. In a bag-making machine, feed-rollers between which the fabric passes, a reciprocating rack at each side of the machine and coacting devices by which the rollers are intermittently turned to advance the fabric, other feed-rollers between which the material passes, a transversely-operating cutter, slide-rods connected with said racks and means connecting said rods with the cutter and operating the latter on the return movement

of the rack whereby the fabric is severed into lengths at each intermission of the forward movement of the fabric.

7. In a bag-making machine, mechanism for advancing the fabric intermittently, a cutting mechanism, a horizontal slide mechanism operated in unison with the mechanism for advancing the fabric, and connections including inclined blocks or plates connected to the slide mechanism and pivoted arms between the blocks or plates and the cutting mechanism, and capable of operating the latter for severing the fabric at each intermission of the forward movement of said fabric.

8. In a bag-making machine, means for supplying the material, mechanism by which the fabric is intermittently advanced, a horizontal slide-rod at each side of the machine and operating in unison with the means for advancing the fabric, a cutting mechanism, a folding mechanism for the severed portions, connections between the slide-rods and the cutting mechanism and other connections between these same rods and the folding mechanism whereby both the cutting and folding mechanisms are operated by a single slide mechanism.

9. In a bag-making machine, mechanism by which the fabric is intermittently advanced, a double set of rollers between which the fabric passes, a cutting device intermediate the two sets of rollers, and mechanism consisting of a reciprocating rod, a fulcrumed lever and an inclined plate carried by said rod adapted to engage said lever whereby the cutting device is actuated.

10. In a bag-making machine, mechanism for advancing the fabric intermittently through the machine, a supporting-belt and rollers over which it passes, said belt serving to support and carry the fabric for the bags, rollers over which said carrying-belt passes whereby its direction is changed to take it temporarily out of the line of travel of the fabric whereby the latter alone is presented between the rollers and a shears between the blades of which the fabric passes at this interval, and mechanism including a slide-rod at each side of the machine, a fulcrumed arm at each end of the movable shear-blade, and devices on the slide-rods to engage said arms and thereby operate said shear-blade by which the shears are actuated to sever the fabric.

11. In a bag-making machine, mechanism by which the bag fabric is advanced intermittently through the machine, a supporting-belt upon which the fabric rests, two pairs of rollers between which the fabric passes and by which it is advanced, a direction-roller out of the line of said rollers over which the carrying-belt passes while the fabric passes in a straight line between the two rollers, a stationary and a movable shear-blade between which the fabric passes in moving from one pair of rollers to the other, a slidable rod or rods movable in unison with the movement of the fabric-advancing mechanism, a fulcrumed lever connecting with the movable blade of the shears, an incline carried by the sliding rod adapted to engage the lever on the return movement of the rod and while the fabric is stationary to actuate the shear-blade and sever the fabric, and a spring by which the movable blade is separated from its fellow to allow a further forward movement of the fabric.

12. In a bag-making machine, mechanism for advancing the fabric intermittently, a cutter and a mechanism including a reciprocating slide-rod and connections therefrom for actuating the cutter during the intermission of the forward movement of the fabric whereby the fabric is separated into lengths, rollers between which the separated pieces pass and by which they are advanced from the cutter, folding-rollers situated below the line of movement of the fabric, a vertically-reciprocating blade by which the severed section is introduced between the rollers and the fabric is folded to the form of a bag, and connections between said slide-rod and the folding-blade whereby the latter operated.

13. In a bag-making machine, mechanism for feeding the fabric, and moving it intermittently through the machine, mechanism for severing the fabric into lengths, a mechanism for folding the severed sections, consisting of rollers revolvable in contact beneath the horizontal line of travel of the fabric, fulcrumed levers, a folding-blade carried thereby and adapted to press the fold of the fabric section between the folding-rollers, a longitudinally-reciprocating rod, said rod having an inclined surface engaging the lever which carries the folder-blade and operating it during the intermission of the forward movement of the fabric.

14. In a bag-making machine, mechanism for supplying a fabric and advancing it intermittently, mechanism for severing the fabric into lengths sufficient for bags, rollers between which the severed fabric is advanced, a folding device consisting of contact-rollers situated below the line of travel of the fabric, a blade by which the bight of the fabric is pressed down between the rollers, and fulcrumed levers by which the folding-blade is carried, reciprocating rods and inclines carried respectively thereby adapted to engage the levers and actuate the folder during their backward reciprocation, other fulcrumed levers connected with the blade-actuating levers, said second levers carrying the journal-boxes of one of the feed-rollers, and movable in unison with the first movement of the folder so as to raise said roller and release the pressure upon the fabric whereby the latter is left free to be moved by the folder.

15. In a bag-making machine, mechanisms for supplying the fabric, advancing it intermittently and severing it into lengths, a folder consisting of a double set of contact-rollers, and a vertically-movable blade between the two sets of rollers and by which the severed sections of the fabric are pressed between the rollers, a slide-rod and connections for operating the severing mechanism and folding-blade and fulcrumed and spring-pressed levers in which one of the folding-rollers is journaled whereby the roller is allowed to yield for the passage of thickened or creased portions of the fabric.

16. In a bag-making machine, mechanisms for advancing the fabric, cutting it into lengths and folding the severed lengths centrally so as to bring the edges together, a single horizontally-reciprocating mechanism, connections between the same and the cutting mechanism, and other connections between said reciprocating mechanism and the folding mechanism, a carrying-belt and tapes between which the folded fabric is delivered and returned to its original plane of travel, a sewing-machine disposed with relation to the line of travel of the folded fabric so that one end of the fabric passes through the machine and is sewed together.

17. In a bag-making machine, mechanisms for supplying the fabric continuously and advancing it intermittently, mechanism for severing the fabric into lengths to form bags, mechanism whereby the fabric is centrally folded to bring the edges together, a sewing-machine through which one end of the folded section is passed and sewed, a thread-cutter, feed-rollers between which the bag-section is received after leaving the thread-cutter, a stop against which the bag is delivered therefrom, a transversely-rotating roller and means for raising it while the bag is being advanced, and afterward depressing it so as to change the direction of motion of the bag, a second sewing-machine through which the edges of the bag are passed and sewed, and a device for cutting the thread before the bag is delivered from the machine.

18. In a machine for making bags, mechanisms for supplying the fabric continuously and advancing it intermittently, mechanism for severing it into lengths for folding it and sewing the end of the folded section, mechanism for changing the direction of motion of the bag at right angles with its first movement, a second sewing mechanism through which the unfinished folded edges are passed to complete the bag, and thread-cutters whereby the thread of each sewing-machine is cut after the bag leaves it, said cutters being actuated in the intervals of the forward movement of the fabric.

19. In a bag-sewing machine, mechanisms for cutting, folding and sewing the bag, a thread-cutting mechanism, longitudinally-reciprocating rods one at each side of the machine, inclined blocks or plates carried by said rods, and operative connections between the cutting mechanism, the folding mechanism and the thread-cutting mechanism operated by said blocks or plates.

20. In a bag-making machine, a mechanism for advancing the fabric intermittently, and mechanism for cutting it into lengths, and for folding said lengths centrally to bring the edges together, a sewing-machine through which one end of the folded section is passed and sewed, a thread-cutter acting after the bag has passed through the machine, a stop against which a partially-finished bag is delivered, a roller having its ends journaled in lever-arms, mechanism consisting of slidable rods with inclined blocks or plates adapted to engage the roll-carrying lever-arms whereby the roller is raised to allow the edge of the bag to pass beneath it from the first sewing-machine, and depressed so as to advance the bag at right angles with its former line of travel, and a second sewing-machine through which the unfinished edge of the bag is passed by said movement.

21. The combination in a bag-making machine of mechanism by which a sheet of material is intermittently advanced; a cutter transverse to the line of movement of the material; means for actuating said cutter to sever the material during the intermission of the forward movement; a folder transverse to the line of travel; means by which severed blanks are advanced to the folder; means for actuating the folder; and means for sewing superposed edges of the folded blank.

22. The combination in a bag-making machine of mechanism including feed-rolls and mechanism by which a sheet of material is intermittently advanced, a cutter transverse to the line of movement and means by which the cutter is moved to sever the material during the intermission of the forward movement, a folder transverse to the line of travel, means by which the severed material is advanced beneath the folder, means by which the folder is reciprocated and means for uniting superposed edges of the folded blank.

23. The combination in a bag-making machine of mechanism including feed-rolls; a transversely-located cutter, and means for operating the same; a transversely-located folder succeeding the cutter, and means for operating the folder; means by which a sheet of material is intermittently advanced, and severed; means by which the severed section is advanced and arrested beneath the folder; continuously-traveling belts to which the folded material is delivered; and sewing mechanisms to which the belts transmit the folded material, to unite superposed edges of the folded material.

24. An apparatus for the manufacture of bags, consisting of mechanism by which a sheet of material is intermittently advanced, a transversely-disposed cutter and mechanism actuating it while the material is at rest, a transversely-disposed folding-blade, means for intermittently advancing the severed material until its center is beneath the folder, means for subsequently reciprocating the folder, a continuously-traveling carrier to which the folded material is delivered, and sewing-machines located in the path of its travel whereby the bottom and open side are successively sewed.

25. In a bag-sewing machine the combination of feed-rolls and mechanism by which a sheet of material is intermittently advanced, a cutting mechanism next succeeding the feed mechanism and severing a portion of the fabric while the latter still remains in an unfolded condition; and a folding mechanism next succeeding the cutting devices and having a folding-blade arranged transverse to the line of movement of the material, for folding the severed blank across its shortest diameter and sewing mechanism for uniting the superposed edges of the folded material.

26. In a bag-making machine the combination of means for intermittently advancing a sheet of material, a cutting mechanism, and a folding mechanism said cutting mechanism being interposed between the folding and feeding mechanisms and severing the fabric crosswise into blanks, and said folding mechanism folding said blanks transversely so as to bring the two severed edges together, means for uniting said edges by stitching and independent means for sewing the two parts of the same finished edge to form the bottom of the bag.

709,452. **MATCH-SAFE ATTACHMENT FOR MINERS' LAMP-HOLDERS.** JAMES A. BROWN, Pictou, Colo., assignor of one-half to George M. Toumbling, Pictou, Colo. Filed Feb. 17, 1902. Serial No. 94,539. (No model.)

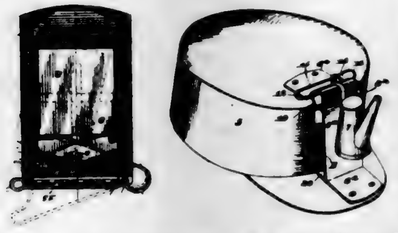

Claims.—1. The combination with a lamp-holder of the class described, of a match-box pivotally mounted on the inner surface of the holder and provided with a hinged lid and means connected with the lid for opening the same as the box is turned on its pivot, substantially as described.

2. The combination with a lamp-holder adapted to be attached to a cap, and having a flange projecting rearwardly from its upper extremity, of a match box or safe pivotally mounted on the holder below the flange and provided with a hinged lid, and means connected with the lid for opening the same as the box is turned on its pivot, substantially as described.

3. The combination of a lamp-holder comprising an upwardly-projecting plate having flanges projecting rearwardly from its opposite extremities, a match box or safe pivotally attached to said plate between the said flanges and having a hinged lid, and means connected with the lid for opening the same as the box is turned on its pivot, substantially as described.

4. The combination with a lamp-holder of the class described, of a match-box pivotally mounted on the holder and provided with a hinged lid, and suitable means mounted on the lamp-holder and connected with the lid for opening the same as the box is moved on its pivot, substantially as described.

5. The combination with a lamp-holder of the class described, of a match-box pivotally mounted on the holder and provided with a hinged lid, and a device movably mounted on the lamp-holder and connected with the box and lid whereby as the said device is actuated, the box is moved on its pivot and the lid opened, substantially as described.

6. The combination with a lamp-holder of the class described, of a match-box pivotally mounted on the inner surface of the holder and provided with a hinged lid, and a wire connected at one extremity with the hinge-pin of the lid, extending outwardly beyond the lamp-holder on one side where it is bent and carried in the opposite direction a suitable distance where it is coiled around a pin on the holder, and finally bent downwardly and carried across the match-box, its free extremity being passed through a loop or eye formed on the lid, substantially as described.

709,453. **SHEDDING MECHANISM FOR LOOMS.** GEORGE W. STAFFORD, Warwick, R. I., assignor to the Geo. W. Stafford Company, Readville, Mass., a Corporation of New York. Filed Jan. 2, 1902. Serial No. 88,028. (No model.)

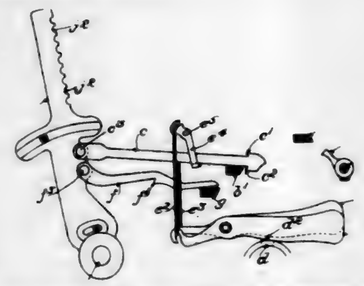

Claims.—1. In double-acting shedding mechanism for looms, in combination, the two lifters, the hook between said lifters, having engaging shoulders at its opposite edges, and adapted to be operated by either lifter to elevate the corresponding harness-frame when required, pattern devices to control the engagement of the said hook with the required lifter, and separate holding means for locking under the control of the pattern devices said harness-frame in its elevated position, substantially as described.

2. In double-acting shedding mechanism for looms, in combination, the two lifters, the hook between said lifters, having engaging shoulders at its opposite edges, and adapted to be operated by either lifter to elevate the corresponding harness-frame, pattern devices to control the engagement of the said hook with the respective lifters, and, a holding-hook, controlled by the said pattern devices, and adapted to lock the harness-frame in its elevated position, substantially as described.

3. In double-acting shedding mechanism for looms, in combination, the alternately-acting lifters, the hook between said lifters and having engaging shoulders at its opposite edges, the holding-hook partaking of the movements of the first-mentioned hook in shedding; the holding-bar cooperating with said holding-hook, and, pattern devices to control the engagement of the first-mentioned hook with the respective lifters and also control the engagement of the said holding-hook with said holding-bar, substantially as described.

4. In double-acting shedding mechanism for looms, in combination, the alternately-acting lifters, the hook between said lifters and having engaging shoulders at its opposite edges, the movable transmitter adapted to be connected with the corresponding harness-frame and having said hook movably connected therewith, the holding-hook also movably connected with the said transmitter, the holding-bar coöperating with said holding-hook, and pattern devices controlling the engagement of the first-mentioned hook with the respective lifters and also controlling the engagement of the said holding-hook with said holding-bar, substantially as described.

5. In double-acting shedding mechanism for looms, in combination, the alternately-acting lifters, the hook between said lifters and having engaging shoulders at its opposite edges, the harness-lever having said hook connected thereto, the holding-hook also connected to the said harness-lever, the holding-bar cooperating with said holding-hook, and pattern devices controlling the engagement of the first-mentioned hook with the respective lifters and also controlling the engagement of the said holding-hook with said holding-bar, substantially as described.

6. In double-acting shedding mechanism for looms, in combination, the two lifters working alternately, the hook between said lifters having shoulders at its opposite edges for engagement with the respective lifters, a pattern-surface, a pattern-finger coacting with said pattern-surface and means intermediate the same and said hook to control the engagement of the said hook with one of said lifters, and a second pattern-finger coacting with the said pattern-surface and means intermediate the same and the said hook to control the engagement thereof with the other lifter, substantially as described.

7. In a double-acting shedding mechanism for looms, in combination, the two lifters acting alternately, the double hook between said lifters, a pattern-surface, a pair of pattern-fingers, a needle between one of said pattern-fingers and said hook, a needle and lever between the other of said pattern-fingers and said hook, substantially as described.

8. In double-acting shedding mechanism for looms, in combination, the two lifters, the double hook between said lifters, a pattern-surface, a pattern-finger and means intermediate the same and said hook to control the engagement of the said hook with one of said lifters, a second pattern-finger and means intermediate the same and the said hook to control the engagement thereof with the other lifter, and means to hold the harness-frame which is operated by the said hook locked in the elevated position thereof, substantially as described.

9. In double-acting shedding mechanism for looms, in combination, two lifters acting alternately, a double hook between said lifters and adapted to be engaged with either lifter, a holding-hook, a pattern-surface, a pair of pattern-fingers and means for operating the holding-hook therefrom and also transmitting movement to the double hook from the respective pattern-fingers, in opposite directions, respectively, to occasion the engagement of said double hook with the respective lifters, substantially as described.

10. In double-acting shedding mechanism for looms, in combination, two lifters acting alternately, a double hook between said lifters, a movable transmitter adapted to be connected with a harness-frame and having said hook movably connected therewith, a holding-hook also movably connected with the said transmitter, the relatively stationary abutment engaged by said holding-hook, a pattern-surface, a pair of pattern-fingers and means for operating the holding-hook therefrom and also transmitting movement to the double hook from the respective pattern-fingers, in opposite directions, respectively, to occasion the engagement of said double hook with the respective lifters, substantially as described.

11. In double-acting shedding mechanism for looms, in combination, two lifters acting alternately, a double hook between said lifters, a harness-lever having said hook connected thereto, a holding-hook also connected to the said harness-lever, the relatively stationary abutment engaged by said holding-hook, a pattern-surface, a pair of pattern-fingers and means for operating the holding-hook therefrom and also transmitting movement to the double hook from the respective pattern-fingers, in opposite directions, respectively, to occasion the engagement of said double hook with the respective lifters, substantially as described.

12. In a double-acting shedding mechanism for looms, in combination, two lifters acting alternately, a double hook between said lifters, a holding-hook, a pattern-surface, a pair of pattern-fingers, a needle operated by one of said pattern-fingers and controlling the two hooks, and a needle and lever operated by the other of said pattern-fingers and controlling the hook first mentioned, substantially as described.

13. In double-acting shedding mechanism for looms, in combination, the upper and lower lifters acting alternately, the hooks between said lifters, the pattern devices constructed to cause said hooks to occupy normally an intermediate disengaged position, and arranged to indicate the hooks into engagement with the respective lifters at the required times for the elevation of the harness-frame, and means independent of the pattern devices acting upon the said hooks to connect with the upper lifter at the outer extreme of its stroke the hooks which should accompany the said lifter in its ingoing movement for the purpose of lowering the corresponding harness-frames, substantially as described.

14. In double-acting shedding mechanism for looms, in combination, the upper and lower lifters acting alternately, the hooks coöperating with the said lifters, the pattern devices provided with a pattern-surface having pegs or pins to indicate for the elevated position of the harness-frames, and means independent of the pattern devices to raise into engagement with the upper lifter at the outer extreme of its stroke the hooks pertaining to uplifted harness-frames and not already engaged with said lifter, to thereby connect with the latter hooks which should accompany said lifter in its ingoing movement, substantially as described.

15. In a double-acting shedding mechanism for looms, in combination, the two lifters acting alternately, the series of hooks coöperating with the said lifters, locking means whereby the harness-frames may be held in their elevated position for two or more picks, pattern devices controlling the engagement of said series of hooks with the lifters to occasion the elevation of the harness-frames, and the action of the said locking means, and means independent of the pattern devices, to connect with the upper lifter at the outer extreme of its lift the hooks pertaining to elevated harness-frames which should accompany said upper lifter in its ingoing movement, substantially as described.

16. In a double-acting shedding mechanism for looms, in combination, the two lifters acting alternately, the series of hooks coöperating with the said lifters, locking means whereby the harness-frames may be held in their elevated positions for two or more picks, pattern devices controlling the engagement of said series of hooks with the lifters to occasion the elevation of the harness-frames, and the action of the said locking means, and the hook-shift bar to place the hooks pertaining to elevated harness-frames in position to engage with the upper lifter, substantially as described.

17. In a double-acting shedding mechanism for looms, in combination, the two lifters acting alternately, the series of hooks coöperating with the said lifters, the holding-hooks, the pattern devices whereby the engagement of the hooks of said series with the respective lifters is controlled, and also the action of said holding-hooks, and means independent of the pattern devices to connect with the upper lifter at the outer extreme of its lift the hooks pertaining to elevated harness-frames which should accompany said upper lifter in its ingoing movement, substantially as described.

18. In a double-acting shedding mechanism for looms, in combination, the two lifters acting alternately, the series of hooks coöperating with the said lifters, the holding-hooks, the pattern devices whereby the engagement of the hooks of said series with the respective lifters is controlled and also the action of said holding-hooks, and the hook-shift bar to place the hooks pertaining to elevated harness-frames in position to engage with the upper lifter-bar, substantially as described.

19. In shedding mechanism for looms, in combination, a hook adapted to be connected operatively with a harness-frame, a lifter to operate said hook, pattern devices to control the engagement of said hook by said lifter, a holding-bar, and a holding-hook partaking of the movements in shedding of the hook, first mentioned, engaging with said holding-bar under control of said pattern devices and provided with means to cause its shoulder to clear in the receding movement the member of the pattern devices which contacts with the holding-hook, substantially as described.

20. In shedding mechanism for looms, in combination, a hook adapted to be connected operatively with a harness-frame, a lifter to operate said hook, pattern devices to control the engagement of said hook by said lifter, a holding-bar, and a holding-hook partaking of the movements in shedding of the hook first mentioned, engaging with said holding-bar under control of said pattern devices, and provided with the cam to cause its shoulder to clear in the receding movement the member of the pattern devices which contacts with the holding-hook, substantially as described.

21. In shedding mechanism for looms, in combination, a hook adapted to be connected operatively with a harness-frame, a lifter to operate said hook, pattern devices controlling the engagement of said hook by said lifter and including a movable needle, a holding-bar, a holding-hook cooperating with said holding-bar, engaged by said needle, and having a cam-face which in the rearward movement of the holding-hook causes the shoulder thereof to clear the said needle, substantially as described.

709,454. SHEDDING MECHANISM FOR LOOMS. GEORGE W. STAFFORD, Warwick, R. I., assignor to the Geo. W. Stafford Company, Readville, Mass., a Corporation of New York. Filed Jan. 2, 1902. Serial No. 88,039. (No model.)

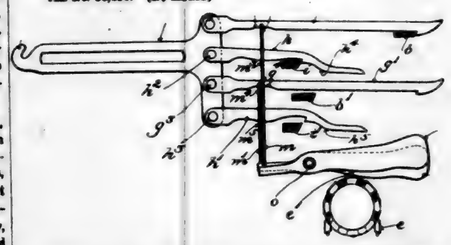

Claim.—1. In a double-acting shedding mechanism for looms, in combination, the lifters acting alternately, the holding-bars, two pairs of hooks, each pair respectively comprising a hook to engage with the corresponding lifter, and a holding-hook to engage with the corresponding holding-bar, means for transmitting to a harness-frame the movements which are communicated by the lifters to the hooks, and pattern devices whereby the engagement of the hooks with the lifters and holding-bar is controlled, substantially as described.

2. In a double-acting shedding mechanism for looms, in combination, the lifters acting alternately, the holding-bars, two pairs of hooks, each pair respectively comprising a hook to engage with the corresponding lifter, and a holding-hook to engage with the corresponding holding-bar, means for transmitting to a harness-frame the movements which are communicated by the lifters to the hooks, and pattern devices having a member which engages with the hooks of one pair to control the engagement of such hooks with the corresponding lifter and holding-bar, and a second member which engages with the hooks of the other pair for the like purpose, substantially as described.

3. In a double-acting shedding mechanism for looms, in combination, the lifters acting alternately, the holding-bars, two pairs of hooks, each pair respectively comprising a hook to engage with the corresponding lifter, and a holding-hook to engage with the corresponding holding-bar, means for transmitting to a harness-frame the movements which are communicated by the lifters to the hooks, and pattern devices having a needle which controls the engagement of the respective hooks of one pair with the corresponding lifter and holding-bar, and a second needle which controls the engagement of the respective hooks of the other pair with the corresponding lifter and holding-bar, substantially as described.

4. In a double-acting shedding mechanism for looms, in combination, the lifters acting alternately, the holding-bars, the transmitter, the two pairs of hooks connected therewith, each pair thereof comprising a hook to engage with the corresponding lifter and a holding-hook to engage with the corresponding holding-bar, and the pattern devices comprising essentially a pattern-surface, pattern-fingers, and needles operated by said pattern-fingers and coöperating, respectively with the respective pairs of hooks, substantially as described.

5. In a double-acting shedding mechanism for looms, in combination, the lifters acting alternately, the holding-bars, two pairs of hooks, each pair, respectively, comprising a hook to engage with the corresponding lifter, and a holding-hook provided with a cam to cause vertical movement of the hook as it moves across the corresponding holding-bar, to thereby clear the needle during the inward movement of the holding-hook, means for transmitting to a harness-frame the movements which are communicated by the lifters to the hooks, and pattern devices having a needle which controls the engagement of the respective hooks of one pair with the corresponding lifter and holding-bar, and a second needle which controls the engagement of the respective hooks of the other pair with the corresponding lifter and holding-bar, substantially as described.

709,455. SHEDDING MECHANISM FOR LOOMS. GEORGE W. STAFFORD, Warwick, R. I., assignor to the Geo. W. Stafford Company, Readville, Mass., a Corporation of New York. Filed Jan. 2, 1902. Serial No. 88,040. (No model.)

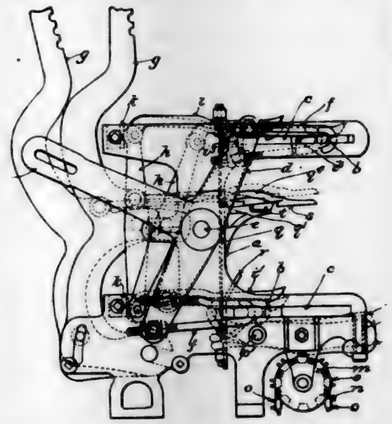

Claim.—1. In a double-acting shedding mechanism or dobby for looms, in combination, the transmitter, the lever connection connected with the said transmitter, the hooks or hooked jacks connected with the opposite extremities of the said lever connection, the lifters acting alternately, the pattern devices controlling the engagement of said hooks or hooked jacks with said lifters, and the holding-hook acting under control of the said pattern devices to retain the said transmitter in position to keep the corresponding harness-frame elevated, substantially as described.

2. In a double-acting shedding mechanism or dobby for looms, in combination, the transmitter, the lever connection connected with the said transmitter, the hooks or hooked jacks connected with the opposite extremities of the said lever connection, the lifters acting alternately, the pattern devices controlling the engagement of said hooks or hooked jacks with said lifters, the holding-bar, and the holding-hook carried by the said transmitter and engaging with the said holding-bar under control of the said pattern devices to retain the transmitter in position to keep the corresponding harness-frame elevated, substantially as described.

3. In a double-acting shedding mechanism or dobby in combination, the harness-lever, the lever connection, the hooks or hooked jacks connected with the opposite extremities of said lever connection, the lifters acting alternately, the pattern devices controlling the engagement of said hooks or hooked jacks with the lifters, and the holding-hook acting under control of said pattern devices to retain the transmitter in position to keep the corresponding harness-frame elevated, substantially as described.

4. In a double-acting shedding mechanism or dobby for looms, in combination, the transmitter, the lever connection pivoted to the said transmitter, the hooks or hooked jacks connected to the opposite extremities of the said lever connection, the lifters acting alternately, the holding-hook whereby said transmitter is retained in position to keep the corresponding harness-frame elevated, and the pattern devices including a hook or hooked-jack controlling member which controls also the action of the said holding-hook, substantially as described.

5. In a double-acting shedding mechanism or dobby for looms, in combination, the transmitter, the lever connection pivoted to the said transmitter, the hooks or hooked jacks connected to the opposite extremities of the said lever connection, the lifters acting alternately, the pattern devices, including one or more needles, to control the engagement of said hooks or hooked jacks with the said lifters, and the holding-hook also controlled by the said needle and acting to retain the said transmitter in position to keep the corresponding harness-frame elevated, substantially as described.

6. In a double-acting shedding mechanism or dobby for looms, in combination, the transmitter, the lever connection pivoted to the said transmitter, the hooks or hooked jacks connected to the opposite extremities of the said lever connection, the lifters acting alternately, the holding-hook connected with said transmitter and serving to retain the corresponding harness-frame in elevated position, and the pattern devices, including a jack-controlling needle which also controls the action of said holding-hook, substantially as described.

7. In a double-acting shedding mechanism or dobby for looms, in combination, the transmitter, the lever connection pivoted to the said transmitter, the hooks or hooked jacks connected to the opposite extremities of the said lever connection, the lifters acting alternately, the holding-bar, the holding-hook connected with said transmitter, serving to retain the corresponding harness-frame in elevated position, constructed to rest on said holding-bar while said harness-frame occupies a depressed position, and an upward bend as described to clear the controlling-needle, and the pattern devices, including a jack-controlling needle which also controls the action of said holding-hook, substantially as described.

REISSUES.

12,031. TELEPHONE SYSTEM. FRANCIS W. DUBRAY, Chicago, Ill., assignor to the Kellogg Switchboard and Supply Company, Chicago, Ill., a Corporation of Illinois. Filed June 17, 1902. Serial No. 112,060. Original No. 689,953, dated Dec. 31, 1901.

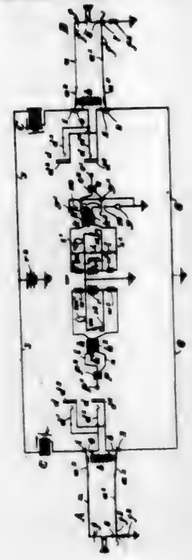

Claim.—1. The combination with a telephone-line, and a connection-terminal therefor, of a signal-controlling electromagnet normally connected with said line, a relay for disconnecting said electromagnet from the line, a cord-circuit terminating in a connecting-plug and adapted to be placed in conductive relation with the line, a source of electricity associated with the cord-circuit and adapted to be placed in the metallic circuit of the line, and means for closing the circuit of said source through said relay when connection is made with the line, said relay-circuit including a talking-strand of the cord-circuit, a main terminal of the connecting-plug, a line-contact and a portion of a talking-limb of the telephone-line with suitable return, substantially as described.

2. The combination with a telephone-line, of line-contacts therefor, a signal-controlling electromagnet normally connected therewith, a relay for disconnecting said electromagnet from the line, a cord-circuit terminating in a connecting-plug, and means for closing circuit through said relay over a circuit including the talking-strands of the cord-circuit, the main terminals of the connecting-plug, and the line-contacts of the telephone-line, substantially as described.

3. The combination with a telephone-line, of line-contacts therefor, a signal-controlling electromagnet normally connected therewith, a relay for disconnecting said electromagnet from the line, the windings of said relay being adapted to be connected between the opposite limbs of the telephone-line, a cord-circuit terminating in a connecting-plug, and means for closing circuit through said relay over a circuit including the talking-strands of the cord-circuit, the terminals of the connecting-plug, the line-contacts of the telephone-line and the portions of the talking-limbs of the telephone-line extending between the line-contacts and the winding of said relay, substantially as described.

4. The combination with a telephone-line, of a connection-terminal at the central station, a signal-controlling electromagnet normally connected therewith, a relay for disconnecting said electromagnet from the line, and having a winding adapted to be connected between the limbs of the telephone-line, a cord connector terminating in a connecting-plug, a source of electricity connected between the strands of said cord connecter, said source being adapted when the connecting-plug is inserted in the connection-terminal to send current over a circuit including the talking-strands of said cora connector, the terminals of the connecting-plug, the line-contacts of the telephone-line, and the portions of the talking-limbs of the telephone-line extending between said line-contacts and the relay, substantially as described.

5. The combination with a calling telephone-line and a connection-terminal normally disconnected therefrom, of a relay for connecting said connection-terminal with the line, a cord-circuit terminating in a connecting-plug, a source of electricity adapted to be included in the metallic circuit of the line to furnish current for talking purposes, and means for closing the circuit of said source through said relay when connection is made with the line in response to the call, said relay-circuit including one of the main terminals of the connecting-plug and a line-contact of the telephone-line, with suitable return, substantially as described.

6. The combination with a metallic telephone-line and a connection-terminal normally disconnected therefrom, of a relay for connecting said connection-terminal with the line, a cord-circuit terminating in a connecting-plug, a source of talking-current adapted to send current over the metallic circuit, and means for closing the circuit of said source through said relay when connection is made with the line, said relay-circuit including a talking-strand of the cord-circuit, a main terminal of the connecting-plug, a line-contact and a portion of a talking-limb of the telephone-line, substantially as described.

7. The combination with a telephone-line and a connection-terminal normally disconnected therefrom, of a relay for connecting said connection-terminal with the line, a cord-circuit terminating in a connecting-plug, and means for closing circuit through said relay continually during a connection and over a circuit including the talking-strands of the cord-circuit, the main terminals of the connecting-plug and the line-contacts of the connection-terminal, substantially as described.

8. The combination with a telephone-line and a connection-terminal normally disconnected therefrom, of a relay for connecting said connection-terminal with the line, a cord-circuit terminating in a connecting-plug, the winding of said relay adapted to be connected between the opposite limbs of the telephone-line, and means for sending current through said relay over a metallic circuit including the talking-strands of the cord connectors, the terminals of the connecting-plug, the line-contacts of the telephone-line and the portions of the talking-limbs of the telephone-line extending between the line-contacts and the winding of said relay, substantially as described.

9. The combination with a telephone-line and a connection-terminal normally disconnected therefrom, of a relay for connecting said connection-terminal with the line, and having a winding adapted to be connected between the limbs of the telephone-line, a cord-connector terminating in a connecting-plug, a source of electricity connected between the strands of said cord connector, said source being adapted when the connecting-plug is inserted in the connection-terminal to send current over a metallic circuit including the talking-strands of said cord connector, the terminals of the connecting-plug, the line-contacts of the telephone-line, and the portions of the talking-limbs of the telephone-line extending between said line-contacts and the relay, substantially as described.

10. The combination with a telephone-line adapted to be included in a talking-circuit, of a signal-controlling electromagnet normally connected therewith, a connection-terminal normally disconnected from said line, a relay for disconnecting said electromagnet from the line and for connecting said connection-terminal with the line, a central source of current adapted to be connected in the metallic circuit of the line to furnish current for talking purposes, and means for closing circuit through said relay over a portion of the talking-circuit when connection is made with the line, substantially as described.

11. The combination with a telephone-line, of a signal-controlling electromagnet normally connected therewith, a connection-terminal normally disconnected from said line, a relay for disconnecting said electromagnet from the line and for connecting said connection-terminal with the line, a cord connector terminating in a connecting-plug, a charging source of electricity connected therewith and adapted to be included in the metallic circuit of the line to furnish current for talking purposes, and means for closing the circuit of said source through said relay over a circuit including a talking-strand of the cord connector, a main terminal of the connecting-plug, a line-contact of the connection-terminal and a portion of the talking-limb of the telephone-line, substantially as described.

12. The combination with a telephone-line, of a signal-controlling electromagnet normally connected therewith, a connection-terminal normally disconnected from said line, a relay for disconnecting said electromagnet from the line and for connecting said connection-terminal with the line, a cord connector terminating in a connecting-plug and means for closing circuit through said relay over a metallic circuit including the talking-strands of the cord connector, the main terminals of the connecting-plug and the line-contacts of the connection-terminal, substantially as described.

13. The combination with a telephone-line, of a signal-controlling electromagnet normally connected therewith, a connection-terminal normally disconnected from said line, a relay for disconnecting said electromagnet from the line and for connecting said connection-terminal with the line, and having a winding adapted to be connected between the limbs of the telephone-line, a cord connector terminating in a connecting-plug, a source of electricity connected between the strands of said cord connector, said source of electricity being adapted when the connecting-plug is inserted in the connection-terminal to send current over a metallic circuit including the talking-strands of said cord connector, the terminals of the connecting-plug, the line-contacts of the telephone-line, and the portion of the talking-limbs of the telephone-line extending between said line-contacts and the relay, substantially as described.

14. The combination with a telephone-line having two limbs extending to the central station, of a connection-terminal for the line, a relay having movable contact members in which said limbs terminate, a magnet for actuating said movable members having the opposite ends of the winding connected between the line-contacts of the connection-terminal, back contacts for said movable relay members, a signal-controlling electromagnet included between said back contacts, front contacts for said relay members connected respectively with the line-contacts of the connection-terminal, a cord-circuit terminating in a connecting-plug, and a source of electricity associated with the cord-circuit, whereby when the connecting-plug is inserted in the connection-terminal, the circuit of said source is closed through the winding of said relay, substantially as described.

15. The combination with a telephone-line, of a connection-terminal normally disconnected therefrom, a relay for connecting said connection-terminal with the line, a central source of current adapted to be connected in the metallic circuit for talking purposes, means for operating said relay from said source when connection is made with the line by current flowing over a path including a portion of the talking-circuit, and means for sending a calling-current over the line of the called subscriber only and at the same time maintaining said relay in operated condition, substantially as described.

16. The combination with a telephone-line, of a connection-terminal normally disconnected therefrom, a relay for connecting said connection-terminal with the line, a charging source of electricity, and a calling source of electricity, said charging source of electricity being adapted to energize said relay when connection is made with the line, a ringing-key for connecting said calling source with the line of a called subscriber, and for disconnecting said charging source therefrom, and means for temporarily energizing said relay during the time the charging source is disconnected by the ringing-key, substantially as described.

17. The combination with a telephone-line, of a connection-terminal at the central station normally disconnected therefrom, a relay for connecting said connection-terminal with the line, a charging source of electricity adapted to energize said relay when connection is made with the line, a ringing-key adapted to disconnect said charging source from the line of a called subscriber during the sending of a calling-current, and a supplemental source of electricity adapted to temporarily energize said relay during the time said charging source is disconnected from the line, substantially as described.

18. The combination with a telephone-line, of a connection-terminal normally disconnected therefrom, a relay for connecting said connection-terminal with the line, said relay being adapted to respond to continuous and to non-continuous currents, a charging source of electricity adapted to energize said relay when connection is made with the line, a calling source of electricity adapted to transmit a non-continuous current, a ringing-key for connecting said calling source of electricity with the line of a called subscriber, and for disconnecting said charging source therefrom, said calling source being adapted to temporarily energize said relay during the time said charging source is disconnected from the line, substantially as described.

19. The combination with a telephone-line, of one of the talking-contacts of a spring-jack associated with said line, said contact being normally insulated from the line and from earth, a plug, a cord-circuit, a battery associated with said circuit to raise the potential of said talking-contact above that of the earth while the line is in use and adapted to be included in the metallic circuit of the line to furnish current for talking purposes, and a relay operated from said source to connect said contact with the line during such use, substantially as described.

20. The combination with a metallic telephone-line, of a talking-contact forming a part of a connection-terminal for the line, said contact being normally insulated from the ground, a central source of current associated with the line and adapted to be included in the metallic circuit of the line when a connection exists to furnish current to the substation-transmitters for talking purposes, means for disconnecting said contact from the line when the line is not in use, means operated by current from said source to connect the contact with the line when the line is in use, and testing apparatus to coöperate with said contact to indicate the condition of the line, substantially as described.

21. The combination with a metallic telephone-line, of a plurality of talking-contacts forming portions of connection-terminals for said line, said terminals being arranged at the several sections of a switchboard, said contacts being connected together and normally insulated from ground, means for disconnecting said plurality of contacts from the line when the line is not in use, means to connect said contacts with the line when the line is in use, plug connectors located at the several sections, and a battery associated therewith, and adapted to be included in the metallic talking-circuit to furnish current for talking and for the operation of said connecting means, whereby when a plug at any section is inserted into a jack the potential of all of said contacts is raised, and means for testing the electrical condition of said contacts to ascertain the condition of the line, substantially as described.

22. The combination with a metallic telephone-line, of a plurality of spring-jacks therefor and each having a contact for each limb of said line, a contact in each jack being normally insulated from the line and from ground, a plug and cord-circuit coöperating with said jacks, a relay to connect said contacts with the line when actuated, a supervisory-signal-controlling magnet and a battery associated with said cord-circuit and a switch at the subscriber's station, all coöperating for the purposes of testing and signaling, substantially as described.

23. The combination with a telephone-line having a limb extending to the central office, of a plurality of spring-jacks therefor and each having contact adapted to form a portion of the line-circuit and normally insulated from line and from ground, a plug and cord-circuit coöperating with said jacks, a relay to connect said normally insulated contacts with the limb of the line when actuated, a supervisory-signal-controlling magnet and a battery associated with said cord-circuit, and a switch at the subscriber's station, whereby when a connection is made, said contacts are charged for the purposes of testing, said jacks are placed in operative relation with the line and said supervisory-signal-controlling maguet is placed under the control of the subscriber, substantially as described.

24. The combination with a metallic telephone-line, of a test-terminal therefor, a relay for disconnecting said test-terminal from the telephone-line when the line is not in use, a cord-circuit and a connecting-plug, a source of electricity bridged across said cord-circuit and adapted to send current over the metallic telephone-line to energize said relay and to charge said test-terminal, and testing apparatus adapted to coöperate with said test-terminal to indicate the condition of the line, substantially as described.

25. The combination with a telephone-line, of a test-terminal normally disconnected therefrom, a relay for connecting said test-terminal with the line, testing apparatus, a cord-circuit terminating in a connecting-plug, supervisory signal apparatus associated with the cord-circuit, a source of electricity also associated with the cord-circuit, and means for closing the circuit of said source over the telephone-line to operate the said supervisory apparatus and through said relay when connection is made with the line, said relay-circuit including one of the main terminals of the connecting-plug and a line-contact of the telephone-line with suitable return, substantially as described.

26. The combination with a telephone-line and a connection-terminal therefor normally not in operative relation with the line, of a connecting-plug and cord-circuit to coöperate with said line, a supervisory-signal-controlling magnet and a battery associated with said cord-circuit, a telephone-transmitter and a switch at the subscriber's station, and means controlled by the insertion of the plug into the jack for placing the jack in operative relation with the line by current flowing over a path including a portion of the talking-circuit, whereby talking-current is furnished to said transmitter and said magnet is placed under the control of the subscriber, substantially as described.

27. The combination with a telephone-line, and a connection-terminal therefor normally not in operative relation with said line, of a connecting-plug and cord-circuit adapted to coöperate with said line, a supervisory-signal-controlling magnet and a battery associated with said cord-circuit, a switch at the subscriber's station, and means including a contact connected with the talking-circuit controlled by the insertion of the plug into the jack for placing said jack in operative relation with the line, whereby said signal-controlling magnet is placed under the control of the subscriber, substantially as described.

28. The combination with a metallic telephone-line adapted to be included in a talking-circuit, of a line-signal and a cut-off relay for the line, a cord-circuit, a battery associated with the cord-circuit, and means for closing circuit through said relay over a portion of both sides of the talking-circuit when connection is made with the line to render the line-signal inoperative, substantially as described.

29. The combination with a metallic telephone-line adapted to be included in a talking-circuit, of a line-signal and a cut-off relay for the line, a battery, and means for closing circuit from said battery through said relay over a portion of both sides of the talking-circuit, including a portion of the telephone line and the cord circuit, substantially as described.

30. The combination with a telephone-line and a connection-terminal in the form of a spring-jack normally not in operative relation with the line, of a cord-circuit and a connecting-plug, a central source of current associated with said line and circuit to furnish talking-current to the substations, and means including said source of current actuated by the insertion of said plug in the jack and by current flowing over a part of the talking-circuit for placing said jack in operative relation with said line, substantially as described.

31. The combination with a telephone-line and a connection-terminal in the form of a spring-jack normally not in operative relation with said line, of a cord-circuit and connecting-plug, supervisory signaling apparatus associated with said circuit, a central source of current associated with said line and circuit to operate said supervisory apparatus, and a relay adapted to be energized from said source over a path including a portion of the talking-circuit to place said jack in operative relation with the line when said plug is inserted in said jack, substantially as described.

32. The combination with a telephone-line and a connection-terminal in the form of a spring-jack, of a connecting-plug and a cord-circuit, a central source of current associated with said line and circuit to furnish current for talking purposes, supervisory signal apparatus associated with the cord-circuit and operated from said source of current, and a relay actuated from said source by the insertion of said plug into and its withdrawal from said jack for controlling the operative relation of said jack with said line, said relay being actuated by current flowing over a portion of a strand of the cord-circuit, a talking-contact of the plug and jack and a portion of the telephone-line, substantially as described.

33. In a telephone system, a metallic-circuit line, a connection-terminal in the form of a spring-jack normally not in operative relation with said line, a connecting-plug and a cord-circuit, a signaling device normally in operative relation with said line, a central source of current and supervisory signaling apparatus associated with said line and cord-circuit, said source being adapted to furnish current for the operation of said apparatus and for talking purposes, and a relay actuated from said source over a portion of the talking-circuit when said plug is inserted in said jack to place said signaling device in inoperative relation with said line and said jack in operative relation with said line, substantially as described.

34. The combination with a telephone-line having a limb extending to the central station, of a line-contact for said limb normally disconnected therefrom, a cord-circuit and connecting-plug, supervisory signaling apparatus connected with said circuit, a central source of current associated

with said line and circuit to furnish current for talking purposes and for the operation of said supervisory apparatus, and means actuated over a portion of the talking-circuit for automatically connecting said line-contact with said limb when the line is in use and for disconnecting the same therefrom when the line is not in use, substantially as described.

35. The combination with a telephone-line having a limb extending to the central station, of a signaling device normally connected with said limb, a line-contact for said limb normally disconnected therefrom, a cord-circuit and connecting-plug, supervisory signaling apparatus associated with said cord-circuit, a central battery to furnish current for talking purposes and for the operation of said apparatus, and a relay energized from said battery and connected directly to the talking-circuit and adapted to disconnect said limb from said signaling device and to connect the same with the line-contact when a connection is established with the line, substantially as described.

36. The combination with a telephone-line having a limb extending to the central station, of a spring or moving part with which said limb connects at the central office, a signaling device connected with said spring or part in its normal position, a line-contact for said limb, a cord-circuit and connecting-plug, a central battery associated with the said line-circuit, supervisory signals also associated with the circuit, said battery being adapted to furnish current to the substations for talking purposes and for operating said supervisory signals, and a relay also energized from said battery over a circuit including a portion of one side of the talking-circuit and adapted to disconnect said spring or part from the signaling device and to connect it with the line-contact when a connection is established with the line, substantially as described.

12,082. BOTTLE-SEAL. EDWARD D. SCHMITT, Baltimore, Md., assignor, by mesne assignments, to the Universal Seal and Stopper Company, Camden, N. J. Filed June 14, 1902. Serial No. 111,795. Original No. 685,236, dated Oct. 22, 1901. (Division A.)

Claim.—1. In a bottle-seal, the combination with a bottle formed with a shoulder in its neck and near the mouth thereof and a shoulder below the first-mentioned shoulder, of a sealing member adapted to make contact with the lower shoulder, a spring-metal securing member formed with inclined shoulders thereon to engage the upper shoulder in the bottle-neck and a portion adapted to bear upon the sealing member, and means for locking the shoulders of the securing member in contact with the shoulder of the bottle-neck, substantially as described.

2. In a bottle-seal, the combination with a bottle formed with a shoulder in its neck near the mouth thereof and a shoulder below the first-mentioned shoulder, of a sealing member adapted to make contact with the lower shoulder, a spring-metal securing member formed with inclined shoulders thereon to engage the upper shoulder in the bottle-neck and a portion adapted to bear upon the sealing member and also having arms extending above the bottle-mouth, a tongue secured to one of said arms and adapted to engage the opposite arm to lock the arms apart, substantially as described.

3. In a bottle-seal, the combination with a bottle having an inclined shoulder in the neck thereof and a shoulder below said inclined shoulder, of a sealing member adapted to make sealing contact with the lower shoulder, a spring-metal securing member formed with inclined shoulders thereon to engage the inclined shoulder in the bottle-neck and a portion adapted to bear upon the sealing member and also having arms extending above the bottle-mouth for the purpose set forth, and means for locking said arms apart, substantially as described.

4. In a bottle-seal, the combination with a bottle formed with an inclined shoulder in the neck thereof and a shoulder below said inclined shoulder, of a sealing member adapted to make sealing contact with the lower shoulder, a spring-metal securing member formed with inclined shoulders thereon to engage the inclined shoulder in the bottle-neck and a portion adapted to bear upon the sealing member, and also having arms extending above the bottle-mouth, a tongue hinged or otherwise secured to one of said arms and adapted to engage the opposite arm to lock said arms apart, substantially as described.

5. In a bottle-seal, the combination with a bottle formed with an inclined shoulder in the neck thereof and a shoulder below said first-mentioned shoulder, of a sealing member adapted to make sealing contact with the lower shoulder, a spring-metal securing member formed with shoulders thereon to engage the upper inclined shoulder in the bottle-neck and a portion adapted to bear upon the sealing member and also having arms extending above the bottle-mouth, and means for locking the shoulders of the securing member in contact with the upper shoulder of the bottle-neck, substantially as described.

6. In a bottle-seal, the combination with a bottle having the inner wall of its neck formed with a sealing-seat, and with a shoulder above the sealing-seat, of a sealing member, a securing member adapted to bear upon the sealing member and to engage the shoulder, and means whereby the securing member is locked in engagement with said shoulder and against accidental disengagement, substantially as set forth.

7. In a bottle-seal, the combination with a bottle having the inner wall of its neck formed with a sealing-seat and with a shoulder above the sealing-seat, of a sealing member, a securing member adapted to bear upon the sealing member and to engage the shoulder, said securing member being provided with arms extending outside the bottle-mouth, and a tongue loosely attached to one of said arms and adapted to engage the opposite arm, whereby the securing member is locked in engagement with said shoulder against accidental disengagement.

8. In a bottle-seal, the combination with a bottle having the inner wall of its neck formed with a sealing-seat and a shoulder above the sealing-seat, of a sealing member, a securing member adapted to bear upon the sealing member and to engage the shoulder, and means located above said shoulder whereby the arms of the securing member are locked in engagement with said shoulder.

12,088. BOTTLE-SEAL. EDWARD D. SCHMITT, Baltimore, Md., assignor, by mesne assignments, to the Universal Seal and Stopper Company, Camden, N. J. Filed June 14, 1902. Serial No. 111,796. Original No. 685,236, dated Oct. 22, 1901. (Division B.)

Claim.—1. A bottle-seal comprising a sealing member, a securing member formed with engaging arms, and means for locking said arms.

2. An article of manufacture, a sealing device comprising arms formed with engaging shoulders thereon, a base secured to said arms, and means for locking the arms apart.

3. An article of manufacture, a sealing device comprising arms formed with engaging shoulders thereon, and terminals above the shoulders, a base secured to said arms, and means for locking the terminals and arms apart, substantially as described.

4. A bottle-seal comprising arms formed with engaging shoulders thereon, and terminals above the shoulders, a base secured to said arms and carrying a sealing member, and means for locking the terminals and arms apart, substantially as described.

5. An article of manufacture, a bottle-seal comprising spring-arms each formed with an engaging shoulder and a terminal above the shoulder, a base, a tongue attached to the terminal of one arm and adapted to engage the terminal of the opposite arm for locking purposes, substantially as described.

6. An article of manufacture, a bottle-seal comprising oppositely-disposed spring-arms, each formed with an engaging shoulder, and a terminal above the shoulder, a base, a compressible sealing member secured to the base-piece, a tongue loosely attached to the terminal of one arm and adapted to engage the terminal of the opposite arm for locking purposes, substantially as described.

7. An article of manufacture, a bottle-seal comprising oppositely-disposed spring-arms, each formed with an inclined engaging shoulder, and a terminal above the shoulder, a base, the terminal of one arm being provided with a depression, a compressible sealing member secured to the base-piece, a tongue having one end attached to the terminal of one arm, and having the other end adapted to enter the depression in the opposite terminal to lock the arms apart, substantially as described.

8. An article of manufacture, a bottle-seal comprising arms formed with engaging shoulders thereon, a base secured to said arms and carrying a compressible sealing member, and means for locking the arms apart, substantially as described.

9. A bottle-seal comprising spring-arms formed with engaging shoulders thereon, a base secured to said arms and carrying a compressible sealing member, and means for locking the arms apart, substantially as described.

10. A bottle-seal comprising oppositely-disposed spring-arms formed with engaging shoulders thereon, a base secured to said arms and carrying a compressible sealing member, and means located above the shoulders for locking the arms apart, substantially as described.

11. A bottle-seal comprising a sealing member, a securing member formed with engaging arms, and means carried by said arms for locking the securing member.

DESIGNS.

36,074. HANDLE FOR BUTTONERS. MATILDA A. HILL, South Fallsburg, N. Y. Filed June 23, 1901. Serial No. 65,701. Term of patent 3½ years.

Claim.—The ornamental design for a handle for buttoners, as herein shown and described.

36,075. SIDE FRAME FOR CHATELAINE-BAGS. LOUIS WOLF, New York, N. Y. Filed June 4, 1902. Serial No. 110,842. Term of patent 7 years.

Claim.—The ornamental design for a side frame for chatelaine-bags herein shown and described.

36,076. CANOPY FOR LAMP-CHIMNEYS. AARON P. STOKES, Owego, N. Y. Filed Jan. 10, 1902. Serial No. 88,237. Term of patent 7 years.

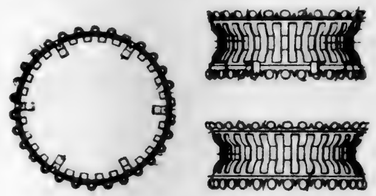

Claim.—The ornamental design for a canopy for lamp-chimneys described and shown.

36,077. GAS-STOVE FRONT. EMANUEL B. ADLER, Pittsburg, Pa., assignor to Henry Adler, Pittsburg, Pa. Filed Aug. 9, 1902. Serial No. 119,142. Term of patent 7 years.

Claim.—The ornamental design for a gas-stove front, substantially as herein shown and described.

36,078. SOAP. CHARLES A. CRARY, Huntington, W. Va., assignor to Enterprise Soap Works, Nashville, Tenn., a Corporation of Tennessee. Filed May 3, 1902. Serial No. 105,855. Term of patent 14 years.

Claim.—The ornamental design for a cake of soap, substantially as herein shown and described.

36,079. BRAID. MAX MITTENDORFF, New York, N. Y., assignor to Sutro Brothers Braid Company, New York, N. Y., a Corporation of New York. Filed July 31, 1902. Serial No. 117,908. Term of patent 14 years.

Claim.—The ornamental design for a braid, substantially as herein shown and described.

36,080. FABRIC. ADOLF PFANNKUCH, Brooklyn, N. Y. Filed July 24, 1902. Serial No. 116,679. Term of patent 3½ years.

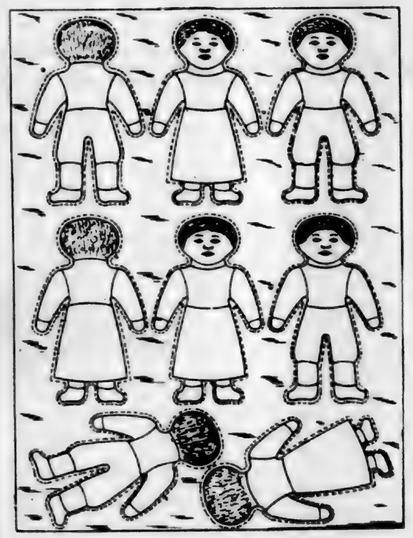

Claim.—The ornamental design for a fabric, substantially as herein shown and described.

TRADE-MARKS

REGISTERED SEPTEMBER 16, 1902.

38,896. POWDERS FOR RELIEF OF THE FEET. HYER STEAM-BURNER, Washington, D. C. Filed Aug. 16, 1902.

MAGIC

The word "MAGIC." Used since January, 1900.

38,897. PREPARED FLOURS, BREAD, CRACKERS, AND BISCUITS. WARD-MACKEY CO., Pittsburg, Pa. Filed July 3, 1902.

WAMACO

The word "WAMACO." Used since November 1, 1901.

38,898. CANNED VEGETABLES AND CANNED FRUITS. H. C. BAXTER & SON, Brunswick, Me. Filed Apr. 9, 1902.

The words "RED DRAGON" and a representation of a dragon resting upon a scroll-shaped figure. Used since 1896.

38,899. SEWING-MACHINES. ILLINOIS SEWING MACHINE COMPANY, Chicago, Ill. Filed July 31, 1902.

DIAMOND

The word "DIAMOND," ornamented with representations of diamonds set in a horizontal row extending across the central portions of the faces of the letters composing the name. Used since May 19, 1902.

38,900. SEWING-MACHINES. ILLINOIS SEWING MACHINE COMPANY, Chicago, Ill. Filed July 31, 1902.

KANTAUK

The word "KANTAUK." Used since May 19, 1902.

PHOTO LITH
THE NORRIS PETERS CO.

LABELS

REGISTERED SEPTEMBER 16, 1902.

9,441.—*Title:* "COUNTRY CLUB STOGIES." (For Stogies.) CHARLES F. FRAZEE STOGIE CO., Pittsburg, Pa. Filed August 25, 1902.

PRINTS

REGISTERED SEPTEMBER 16, 1902.

556.—*Title:* "PARIDE'S MIRACULOUS." (For a Medical Compound.) PARIDE GRASSO, New York, N. Y. Filed August 20, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE COLLINS.

Decided September 3, 1902.

1. ATTORNEYS—PROTEST AGAINST REVOCATION OF POWER.

Where the attorneys appointed by the inventor protest against the revocation of their power by him on the ground that they represent an assignee and the only evidence presented that there has been an assignment consists of *ex parte* affidavits, *Held* that the protest will be dismissed.

2. SAME—REVOCATION OF POWER BY APPLICANT—ASSIGNMENT.

Where the applicant appoints attorneys in the case, *Held* that he may revoke their power even after an assignment of the invention.

ON protest.

APPARATUS FOR ROASTING ORES.

Application of William F. Collins filed April 16, 1902, No. 103,156.

ALLEN, *Commissioner:*

This is a protest by Crosby and Gregory against the revocation of their power of attorney in the above-entitled case.

The protestants claim to represent an alleged assignee, the Boston Mineral Reduction Company, although the records show that they were originally appointed attorneys in the case by the applicant. The Boston Mineral Reduction Company has not joined in the protest, and no assignment to that company has been recorded in this Office. Certain affidavits have been filed alleging that such an assignment was executed and was left with one of the protestants' employees, but subsequently came into the possession of the inventor, who refuses to part with it. Notwithstanding the allegation as to the signing of the assignment, there is nothing to show that the instrument was delivered to the assignee or that the contract of sale was complete. This Office, furthermore, has no machinery for investigating such questions and has no jurisdiction to render a binding decision as to the validity of the assignment. It has been repeatedly announced that such questions must be left to the courts for determination.

Even if it could be conceded that the alleged assignment to the Boston Mineral Reduction Company is valid and in full force it would be necessary to dismiss this protest. The protestants do not claim to have an interest in the invention, and the inventor having given them a power of attorney is at liberty to revoke it. It is true that an assignee of the entire interest might assert his right to prosecute the case to the exclusion of the inventor and reappoint the same attorneys; but until the assignee asserts that right the inventor alone may control the appointment of the attorney and the revocation of his power. (*Ex parte Anderson*, 62 O. G., 449.)

The protest is dismissed.

EX PARTE NAEF.

Decided September 5, 1902.

1. ABANDONMENT OF APPLICATION—ACTION SUFFICIENT TO SAVE CASE.

Where the Examiner requires division between process and apparatus claims and between claims to different species of the apparatus without mentioning the particular claims by number, and the applicant amends by canceling the process claims and asks for reconsideration and a specific statement as to the apparatus claims, *Held* that his action is proper and saves the case from abandonment.

2. ACTIONS BY APPLICANT—SUFFICIENCY—PRACTICE.

An applicant may accept the ruling of the Office as to some of its requirements and at the same time controvert the ruling as to others, and when he does so, treating all requirements, his action cannot be objected to as insufficient.

ON petition.

TREATING MATERIALS SUCH AS FUEL.

Application of Paul Naef filed April 12, 1901, No. 55,480.

Mr. James L. Norris for the applicant.

ALLEN, *Commissioner:*

This is a petition from the Examiner's action holding that the above-entitled application is abandoned through a lack of proper prosecution.

In his first letter in the case, dated May 17, 1901, the Examiner required division between claims to the process and claims to the apparatus and between claims drawn to different species of the apparatus. In this letter the Examiner did not by grouping the claims indicate the lines upon which the apparatus claims were to be divided. In reply the applicant filed an amendment on May 13, 1902, within the time allowed by law, canceling the process claims and amending other claims. In that communication the applicant argued that all of his claims related to one apparatus and that he was entitled to an action upon the merits or "to a communication from the Examiner setting forth specifically the lines on which the Examiner required the different apparatus claims to be separated." The Examiner did not regard this as such

proper action as the condition of the case required and for that reason notified the applicant that the case is abandoned.

While it is true that the Office practice does not encourage piecemeal action upon cases, but, on the contrary, requires action as to all requirements at one time, it is also true that an applicant may accept the ruling of the Office as to some of its requirements and at the same time controvert the ruling as to others. This seems to be what the applicant has done in this case, and it is not piecemeal action. A party is under the plain provisions of the statute and rules entitled to a reconsideration of the first action upon a proper request therefor, and the fact that he accepts part of that action as correct does not deprive him of the right to a reconsideration of the balance.

The case of *ex parte Bassett*, (98 O. G., 2174,) cited by the Examiner, does not furnish authority for the ruling that the present case is abandoned. In that case the circumstances were such as to show that the applicant's action was a mere pretext to keep the case pending in the Office, and such is not the situation here. It is true, as stated by the Examiner, that it is well settled that a party will not be permitted to claim two species of his invention in one application, and a party familiar with the Office practice could not expect to advance the prosecution of the case by a request for reconsideration of a ruling upon that question of practice. The present applicant, however, has not disputed the general proposition that division should be required between different species. There may well be a difference of opinion as to whether certain claims are limited to one species or to another or are broad enough to cover both, and the applicant is clearly within his rights in asking that the Examiner indicate clearly the lines of division before he attempts to comply with the requirement. This is what he has done.

The petition is granted.

EX PARTE BALL.

Decided September 4, 1902.

1. SPECIFICATION — PRIVATE IDENTIFYING-MARKS — "CASE NO. 2332."

An applicant will not be permitted to include in the specification private identifying-marks which have no meaning to any one else, such as "Case No. 2332."

2. SAME—IRRELEVANT MATTER.

The object of the specification is to describe the invention, and it should not include matter which does not assist in accomplishing that result and which, if considered at all, may lead to confusion.

ON petition.

STEERING MECHANISMS FOR VEHICLES.

Application of Augustus A. Ball, Jr., filed January 24, 1902, No. 91,012.

Mr. Albert G. Davis for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner requiring the cancellation of the words "Case No. 2332" appearing in the specification.

The words and figures objected to are used by the attorney as his private identifying-marks, and they have no meaning to any one else, except possibly the assignee owning the invention and the patent to be issued. They clearly do not assist in disclosing the invention to the public, and they may lead to confusion by inducing the public to assume that they have reference to some other case. If they are permitted to appear in the patent, one reading it would naturally assume that they had some significance. The object of the specification is to describe the invention, and it should not include matter which does not assist in accomplishing that result and which, if considered at all, may lead to confusion.

It is said that the Office has permitted such marks to appear in some patents which have been granted; but no good reason is seen for the practice, and it should not be continued.

There is no necessity for private identifying-marks in applications filed in this Office, since they are given official numbers which serve for identification. If the applicant in his system of bookkeeping wishes to give them different identifying-numbers, there are many unobjectionable ways of doing so; but he should not be permitted to include them in the printed specification, which is intended merely to disclose the invention to the public.

The petition is denied.

EX PARTE SCHMIDT.

Decided September 5, 1902.

1. AMENDMENT AFTER FINAL REJECTION—REASONS FOR DELAY.

Where after a final rejection, which is regularly and properly given, the applicant wishes to amend and alleges that he did not before properly understand the invention, *Held* that he has not shown good and sufficient reasons why the amendment was not sooner presented and that it should be refused admission.

2. DIVISION—PROCESS AND PRODUCT.

Held that division was properly required between a claim for the process of making a box and a claim for the box where the box is not necessarily made by the process.

ON petition.

BOX AND METHOD OF MAKING SAME.

Application of Joseph Schmidt, Jr., filed October 4, 1900, No. 32,044.

Messrs. L. B. Coupland & Co. and *Mr. W. A. Bartlett* for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner refusing to enter an amendment presented on May 29, 1902, and from his action in requiring division between claims to the process and a claim to the article.

On July 9, 1901, the three claims in the case were finally rejected by the Examiner and the applicant was notified that the third claim, covering the article, was for a different invention from the others, covering the process of making the article. The applicant then presented the amendment of May 29, 1902, substituting four claims for those finally rejected, three of those claims being drawn to the process and one to the article. The final rejection of July 9, 1901, was proper and in order, and the only excuse given why the present amended claims

were not presented prior to the final rejection is that the attorney did not then properly understand the invention. This excuse may be given in any case, since the attorney will not wish to amend the claims unless new light has reached him. It cannot be accepted as the showing of good and sufficient reasons why the amendment was not earlier presented, and therefore under the rule the applicant is not entitled now to amend this application.

In regard to the question of division it is found that the article claimed is not necessarily made by the process claimed. That article claim is broad, covering the box disclosed without regard to the process by which it is made, and therefore in it the applicant has departed from the invention of the process claims. The box is capable of independent existence and is a separate invention from the process. Division was properly required.

The Examiner states that the three proposed process claims are, in his opinion, patentable and that he would admit the amendment if it were not for the presence of the article claim. If those claims alone are presented as substitutes for those in the application, they will be entered.

The petition is denied.

EX PARTE TURNER.

Decided September 5, 1902.

1. RENEWAL OF FORFEITED APPLICATION—ALLEGED ASSIGNEE.

Where an alleged assignee asks to be allowed to renew a forfeited application and files a copy of the alleged assignment saying that the original is lost and the inventor protests saying that no valid assignment has been made, *Held* that the request must be denied.

2. ASSIGNMENTS—DUTY OF OFFICE MINISTERIAL.

The Office cannot undertake to adjudicate the rights of parties on disputed questions of fact relating to assignments, since it acts in a ministerial capacity in such matters.

ON petition.

SUSPENDED-CAR TRANSFERS.

Application of Claude A. P. Turner filed April 22, 1901, No. 56,835.

Messrs. Paul & Hawley for the applicant.

ALLEN, *Commissioner:*

This is a petition by the American Bridge Company, an alleged assignee, asking that it be permitted to renew the above-entitled forfeited application.

There is no assignment on record in this Office transferring the invention to the American Bridge Company, although it is stated on behalf of the petitioner that such an assignment was executed. It is alleged that the original assignment has been mislaid or lost, and a copy of it, certified to by the notary before whom it was executed, has been filed. The applicant has filed a protest against the renewal of the application by the American Bridge Company and says that the alleged assignment is not valid, since the conditions have not been complied with by the assignee.

This Office has no jurisdiction to investigate and decide disputed questions of title, since those matters are left to the courts. It acts in a ministerial capacity in regard to assignments and must follow the record without attempting to adjudicate the rights of the parties on disputed questions of fact.

In so far as the records of this Office show the American Bridge Company has no interest in this application, and therefore it is not entitled to renew it.

The petition is denied.

EX PARTE BISCHOFF.

Decided September 6, 1902.

EXAMINATION—MAKING CASES SPECIAL.

Applications must be examined in regular order, and the Office cannot give one case precedence over others because of the applicant's business arrangements which are dependent upon a speedy allowance of the patent.

ON petition.

PROCESSES FOR MAKING TUBING.

Application of Frederick F. Bischoff filed April 9, 1902, No. 102,024.

Mr. R. W. Lotz and *Messrs. H. C. Evert & Co.* for the applicant.

ALLEN, *Commissioner:*

This is a petition asking that the above-entitled application be made special in the order of examinations.

It is alleged in the petition that certain business arrangements of the applicant are dependent upon a speedy allowance of this application and that if action thereon is postponed to await its regular turn among the cases pending before the Examiner great hardship will result to the applicant. The petitioner states his belief that the claims presented in an amendment filed by him are allowable; but the Examiner says that a further examination will be necessary before that question can be determined. To make this case special and order that examination be made at this time would result in delays in the actions upon other cases pending before the Examiner.

The rules require that applications be examined in regular order, (Rules 23 and 63,) except under certain conditions, which are not present in this case. The Office cannot take up cases in the order of their importance to the applicants, but must follow the rules.

The petition is denied.

EX PARTE STAR LOTION REMEDY COMPANY.

Decided September 6, 1902.

1. TRADE-MARKS—FACSIMILE—DESCRIPTIVE WORDS.

Where the facsimile of a trade-mark includes certain arbitrary symbols and the representation of the sea having printed thereon the word "Lotion," *Held* that the word "Lotion" being descriptive forms no part of the mark and should be removed.

2. SAME—DRAWINGS—DESCRIPTIVE WORDS NOT INCLUDED.

A descriptive word cannot be made a part of a trade-mark by association with arbitrary symbols in the ordinary way, and therefore the drawing of the application should disclose only the arbitrary symbols.

3. SAME—SAME—PARTS INSEPARABLE.

A descriptive word should not be retained in the drawing of a trade-mark application unless its parts are so interwoven with the arbitrary parts of the mark as to become an inseparable part thereof.

APPEAL from Examiner of Trade-Marks.

TRADE-MARK FOR TOPICAL REMEDIES.

Application for registration filed May 3, 1902, No. 65,723.

Mr. Emil Starek for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the action of the Examiner of Trade-Marks refusing to register the mark claimed for the reason that the facsimile filed includes the descriptive word "Lotion."

The mark was described in the original application as follows:

Our trade-mark consists of the representation of a bit of sea with choppy waves, with the sun partially submerged below the horizon, the whole inclosed by a circular border. At either end of the horizon is a sail-boat. The sun has emanating from its surface, two sets of rays, a long set alternating with a short set, each ray terminating in a star, the latter being disposed in two distinct semicircles. Over the waves and conforming to the contour of the sea-surface is the darkened outline of the word "Lotion." Across the body of the sun is the word "Star."

The Examiner said in his letter of June 5, 1902:

The word "Lotion" is descriptive and cannot be included in the description of the mark itself or in the illustration thereof. Manifestly descriptive words cannot form a part of a mark.

The word "Lotion" is undoubtedly descriptive of the goods upon which the mark is used, and it is well settled that a descriptive word cannot constitute a valid trade-mark. It is furthermore settled that such a word cannot be made a part of a trade-mark by association in the usual way with arbitrary symbols. (*Ex parte Tabor*, 96 O. G., 1036; *ex parte Holophane Glass Co.*, 100 O. G., 450.)

In most cases the arbitrary symbols alone constitute the mark and should be alone disclosed in the drawing; but, as indicated in *ex parte Tabor*, it is possible to produce a descriptive word in such a way and associate it with the arbitrary symbols in such a manner that it forms an inseparable part of the arbitrary mark. In such case the word cannot be omitted without changing the appearance of the mark as a whole, since it constitutes an element of that mark. To have such effect, however, there must be something more than merely printing the word, on or in connection with the arbitrary symbols, as any one would have the right to print it. Its parts must be so interwoven with the arbitrary parts of the mark as to become an inseparable part thereof. It is believed that the word "Lotion" as it appears in this case is not a part of the mark and should not be permitted to remain in the facsimile.

The decision of the Examiner of Trade-Marks is affirmed.

EX PARTE BADGLEY.

Decided September 8, 1902.

ASSIGNEE OF PART INTEREST—RIGHT TO PROSECUTE CASE—NOTICE TO OTHER PARTIES.

A petition asking that one of two joint owners be permitted to prosecute the application without the consent of the other will not be granted without serving a copy of the petition upon that other owner and giving him an opportunity to oppose it.

ON petition.

MANUFACTURE OF COMPOSITION PIPE OR TUBING FOR GAS, WATER, ETC.

Application of Eugene F. Badgley filed July 12, 1893, No. 480,321.

ALLEN, *Commissioner:*

This is a petition by Helen Henry, assignee of two-thirds interest in the invention, asking that she be permitted to prosecute the above-entitled application.

The records show that the inventor died after appointing an attorney to prosecute the case for him. Helen Henry was then appointed administratrix, and a one-half interest in the invention was transferred to H. P. Badgley and the other half was transferred to I. B. Hampton. Helen Henry was then discharged as administratrix by the court and the estate of the deceased inventor was declared closed. I. B. Hampton thereupon transferred her entire interest in the invention to Helen Henry and H. P. Badgley transferred to her one-third of his interest.

The inventor being dead and the administratrix having been discharged, there is no one to prosecute this application save the assignees. This petitioner makes affidavit that she has attempted to secure from H. P. Badgley a power of attorney to prosecute the case, but that he refuses to give her such power. There is nothing to show that notice of this petition has been served upon H. P. Badgley, and the notice of hearing sent to him by this Office was returned undelivered.

While the facts stated by the petitioner might be sufficient to warrant granting her request in the absence of a showing of reasons why it should not be granted, it is believed that Badgley should be served with a copy of the petition and given an opportunity to oppose the request if he so desires.

The present petition is dismissed without prejudice to the right of renewal upon proof of service of a copy upon the party H. P. Badgley.

Patents Nos. 709,456 to 709,856.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.

[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 13. TUESDAY, SEPTEMBER 23, 1902. PRICE—$5 per year.

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ISSUE OF SEPTEMBER 23, 1902.

Patents	401—No.	709,456 to No. 709,856, inclusive.
Designs	2—No.	36,081 to No. 36,082, inclusive.
Trade-Marks	41—No.	38,901 to No. 38,941, inclusive.
Labels	6—No.	9,443 to No. 9,449, inclusive.
Prints	None.	
Reissues	2—No.	12,084 to No. 12,085, inclusive.
Total issue	454	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama			Nebraska	3	
Alaska Territory			Nevada		
Arizona Territory			New Hampshire		
Arkansas			New Jersey	25	6
California	16	2	New Mexico Territ'y		
Colorado	5		New York	53	12
Connecticut	7	2	North Carolina	2	
Delaware	1		North Dakota	1	
District of Columbia	5		Ohio	23	2
Florida			Oklahoma Territ'y	1	
Georgia	4	1	Oregon	2	
Hawaii Territory	1		Pennsylvania	45	
Idaho			Rhode Island	3	
Illinois	30	5	South Carolina		
Indian Territory			South Dakota		
Indiana	11		Tennessee	4	
Iowa	4	1	Texas	5	1
Kansas	4	4	Utah	1	
Kentucky	2		Vermont	2	
Louisiana	2		Virginia	2	3
Maine	2		Washington	2	
Maryland	5	3	West Virginia	3	
Massachusetts	15	3	Wisconsin	3	1
Michigan	22		Wyoming	1	
Minnesota	6		U. S. Navy		
Mississippi	2				
Missouri	11	1	Total to citizens of the United States	347	46
Montana	3				

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina	1		Netherlands		
Austria-Hungary	1		Newfoundland		
Belgium			New South Wales		
Bermuda			New Zealand	2	
Brazil			Norway	1	
Canada	9	1	Portugal		
Cape Colony			Queensland		
Chile			Russia		
China			Santo Domingo		
Colombia			Scotland		
Cuba			South African Republic		
Denmark			South Australia		
Egypt			Spain		
England	10	2	Sweden		
France	2		Switzerland	2	
Germany	27		Uruguay		
Guatemala			Victoria	1	
India			Western Australia		
Ireland					
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Japan					
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Punctuation and Amendments.

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Cape Colony			Queensland		
Chile			Russia		
China			Santo Domingo		
Colombia			Scotland		
Cuba			South African Republic		
Denmark			South Australia		
Egypt			Spain		
England	10	2	Sweden		
France	2		Switzerland	2	
Germany	27		Uruguay		
Guatemala			Victoria	1	
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APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business September 16, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action. New.	Amended	No. of applications awaiting action.
	In arrears—Under one month.			
253	X. Carriages and Wagons	Aug. 25	Aug. 28	92
117	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	Aug. 19	Aug. 20	98
346	I. Tillage, etc., and Fences	Aug. 18	Aug. 21	272
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	Aug. 18	Aug. 16	160
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	Aug. 16	Aug. 21	163
	Between one and two months.			
266	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	Aug. 11	Aug. 23	202
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	Aug. 7	Aug. 19	263
106	II. Farm Products, etc., Lubricators, Presses, etc.	Aug. 7	Aug. 2	196
153	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	Aug. 6	Aug. 15	181
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	Aug. 4	Aug. 9	266
80	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	Aug. 4	July 26	360
228	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Aug. 2	Aug. 11	225
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	July 31	Aug. 21	175
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	July 19	July 23	373
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	July 18	Sept. 2	216
213	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	July 18	Aug. 18	234
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	July 18	Aug. 9	432
261	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	July 17	Aug. 12	346
	Between two and three months.			
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	July 14	Aug. 1	278
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	July 12	Aug. 13	363
109	XXII. Fire-Arms, Ordnance, Navigation.	July 3	Aug. 21	202
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	July 1	July 19	416
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	July 1	June 16	414
87	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	June 25	Aug. 6	262
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 25	July 15	309
91	XVI. Telegraphy and Telephony	June 25	June 9	284
122	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 24	July 22	243
128	XXIX. Wood-Working Machines, Coopering and Rooding.	June 21	Aug. 6	240
102	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 16	July 17	418
248	XVIII. Steam-Engineering, etc.	June 16	July 14	472
	Between three and four months.			
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	June 14	June 14	694
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	June 12	June 7	483
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	June 5	May 24	425
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	June 2	Aug. 1	463
223	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 26	July 7	660
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	May 26	July 7	573
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	May 24	June 19	555
	Between four and five months.			
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 9	July 12	742

Total number of applications awaiting action 18,035

In arrears—Under one month.			
*Designs	Aug. 18	Aug. 18	115
Between one and two months.			
†Trade-Marks	Aug. 1	Aug. 18	274
Under one month.			
‡Labels and Prints	Aug. 30	Aug. 18	30

Amendments to Allowed Applications.

Hereafter all amendments proposed to allowed applications and all petitions and requests relating thereto shall be filed with the docket clerk, Mr. J. M. Fowler, and transmitted by him to the Primary Examiner for report. If the Examiner shall report favorably to the admission of such amendment, the matter will be laid before the Commissioner for immediate determination. If the Examiner shall report unfavorably, the case will be docketed and will be heard and decided by the Commissioner in regular course, unless good reasons shall appear for immediate action. (Order 699 amended October 15, 1898.)

Renewal of Forfeited Applications.

Attention is called to section 4,897, Revised Statutes, relating to the renewal of allowed applications forfeited through failure to pay the final fee within six months from the date of allowance. The law requires the petition for renewal to be signed by the *inventor, discoverer*, or *assignee* and that the same be filed in this Office within two years after the allowance of the original application. If the inventor be dead, the petition must be signed by the administrator or executor; if insane, by the guardian, conservator, or legal representative. *It will not be accepted if signed by the attorney.* (Form 12, page 64, Rules of Practice, should be used.)

PATENTS

GRANTED SEPTEMBER 23, 1902.

709,456. THREAD-CONTROLLING DEVICE FOR SEWING-MACHINES. Edward H Allen, Elizabeth, N. J., assignor to The Singer Manufacturing Company, a Corporation of New Jersey. Original application filed Sept. 20, 1901, Serial No. 75,667. Divided and this application filed Dec. 4, 1901. Serial No. 84,656. (No model.)

Claim.—1. In a sewing-machine, the combination with upper and lower stitch-forming devices, comprising a needle and a shuttle for forming lock-stitches, and a bobbin-case for said shuttle, of means for drawing up the upper or needle thread in tightening the stitches, a pull-off device for the lower thread, an automatic lower-thread-nipping device comprising a rigid finger and a spring-finger on the said bobbin-case and between which the shuttle-thread passes, and a moving part timed to engage said spring-finger so as to cause said thread-nipping device to hold said shuttle-thread after a stitch has been "set" or tightened and while the said pull-off device is drawing lower thread through the lower tension device for the next stitch.

2. In a sewing-machine, the combination with upper and lower stitch-forming devices, the latter of which comprises a shuttle having a pull-off flange for the lower thread and a bobbin-case having an arm or projection which prevents the said bobbin-case from moving with the shuttle, and which arm or projection is constructed to form a thread-nipping device, a take-up device for tightening the stitches, and means for closing said thread-nipping device after a stitch has been tightened and while thread is being drawn from the bobbin for the next succeeding stitch; whereby after a stitch has been tightened it will remain undisturbed by any subsequent pull on the lower thread.

3. In a sewing machine, the combination with the upper and lower stitch-forming devices the latter of which comprises a shuttle having a pull-off flange for the lower thread and a bobbin-case having an arm or projection which prevents the said bobbin-case from moving with the shuttle, and which arm or projection is constructed to form a thread-nipping device, a take-up device for tightening the stitches, a spring-pressed plunger for closing the said thread-nipping device, a vibrating arm or lever by which the said spring-pressed plunger is carried, and means for operating the said arm or lever.

709,457. MAGAZINE TORPEDO-CANE. James R Allen, Detroit, Mich., assignor, by direct and mesne assignments, to James H. Bovington, Cleveland, Ohio. Filed May 19, 1902. Serial No. 107,919. (No model.)

Claim.—1. In a torpedo-cane, the combination with the cane-body having a bore extending from end to end and carrying at its lower end an exploding device communicating with said bore, of a vertically-sliding magazine-tube in the upper end of said bore closed at the bottom and normally projecting with its upper end through the top of the cane, a spring supporting said tube in said normal position free to be depressed into the bore of the cane by pressing upon the projecting end of said tube, a lateral discharge-orifice at the end of the tube near the bottom, a cavity in the body of the cane adapted to register with the aforesaid orifice when the magazine-tube is depressed and to receive a torpedo from said tube and discharge the same into the bore of the cane and means to charge the magazine-tube with torpedoes.

2. In a torpedo-cane, the combination of a cane-body having a knob at its upper end provided with a central depression and with a bore extending from end to end through said knob and through the entire body of the cane, an exploding device at the lower end of the cane-body and communicating with said bore, a magazine-tube closed at the ends and provided intermediate its length with an inlet-orifice for charging the tube and near its bottom with a lateral discharge-orifice, a coil-spring sleeved upon the tube and slidingly supporting the same in the upper end of the bore, with the upper end of the tube projecting normally into the depression in the knob whereby said tube may be actuated by depressing it with a finger, an orifice in the side of the cane registering with the charging-orifice of the tube when the tube is depressed and a pocket in the cane-body communicating with the bore of the cane below the magazine-tube and adapted to register with the discharge-orifice of said tube while the latter is depressed.

3. In a torpedo-cane the combination with the cane-body provided with a central bore and having a magazine-tube in its upper end for discharging torpedoes into said bore, of an exploding device at the lower end of the cane-body consisting of the spherical casing I formed with nipples *i j*, the former for securing the casing to the end of the cane-body through which the casing communicates with the bore of the cane, a firing-pin slidingly guided in the nipple *j* and projecting with its lower end through said nipple and with its upper end into the bottom of the casing, said upper end formed with a concave seat *m* and a bridge *n* extending crosswise in the casing above the firing-pin and forming an abutment between which and the firing-pin the torpedo is adapted to be exploded, said bridge rounded upon its upper side and adapted to guide a torpedo into the seat of the firing-pin.

709,458. CHECK-PERFORATING MACHINE. Frank Avery, Orin, Wyo. Filed Apr. 19, 1902. Serial No. 103,772. (No model.)

Claim.—1. A pocket check-protector comprising a watch-like casing having a base portion, a revolvable die-support mounted on the base, a plurality of perforating-dies carried by the support, and a protecting lid or cover hinged to the base and serving when closed to cover and protect all of the dies, said lid or cover forming a lever for effecting the depression of said dies.

2. A device of the class specified, comprising a base, a revoluble disk supported thereby, perforating-dies carried by said disk, a cover hinged to the base and forming an actuating-lever for engaging with the dies, said cover being movable to open position to permit the adjustment of the disk and serving when closed to protect all of the dies, and a female die and stripper for coöperation with all of such dies.

3. A device of the class specified, comprising a base, a revoluble disk supported thereby, a series of perforating-dies supported by said disk and adjustable to operative position by the movement of the disk, and a lid or cover hinged to the base, and movable to open position to permit the adjustment of the dies, said lid having a projecting lug for operative contact with an adjusted die during a closing movement of said lid.

4. A device of the class specified, comprising a base, a revoluble disk supported thereby, a series of perforating-dies carried by the disk, springs tending to hold said dies in elevated position, slotted heads carried by said dies, and a hinged lid or cover having a depending lug for engagement in said slotted heads, the slot in each head being disposed in the plane of movement of the lug.

5. A device of the class specified, comprising a base having a receiving-slot for the material to be cut, a revolable disk supported by the base, a series of perforating-dies carried by the disk, and a hinged lid or cover movable to open position to permit the adjustment of the dies and adapted during closing movement to depress and force a selected die through the material inserted in the slot.

6. A device of the class specified, comprising a base having a check-receiving slot, a revoluble disk, dies carried thereby, springs carried by the base and adapted for engagement in recesses in the disk thereby to hold said disk in an adjusted position, a hinged cover for coöperation with the dies, and a marking device comprising an intereengaging pin and opening for marking the article to be punched at each operative movement of the lid or cover.

709,459. **SKIRT-ELEVATOR.** CHARLES W. L. BARBER, Colorado Springs, Colo. Filed May 1, 1902. Serial No. 58,359. (No model.)

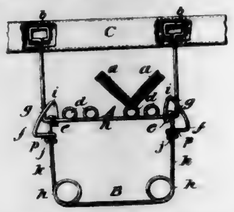

Claim.—1. A skirt elevator and supporter frame, comprising a cross-bar *n*, having a bar *g* at each end projecting at right angles thereto and having eyes *b*, for attaching to a belt, tapes *a* secured to a bar *n*, a frame B movably connected to the bar *n*, and having brackets *f*, to engage the arms *g*, substantially as shown and described.

2. In an improved skirt elevator and supporter, the combination with wire frame B, movably attached to bar *n*, of frame A, and hinged thereon, provided with spring-eyes A, connected by bar *m*, arms *k*, carrying bracket-catches *p*, so made as to engage arms *g*, of frame A, having bar *n*, provided with eyes *d*, to which are attached adjusting-tapes *a*, substantially as described and for the purposes set forth.

709,460. **POCKET.** REINHOLD BARTELL, Philadelphia, Pa. Filed July 8, 1899. Serial No. 723,182. (No model.)

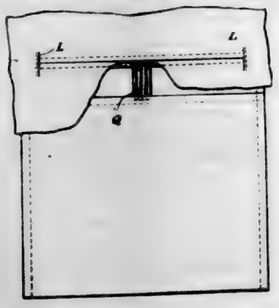

Claim.—1. In a garment having a pocket-opening, bars comprising a plurality of folds extending across the ends of the openings, said folds being stitched, a pocket-strip, a facing-strip secured thereto, a plait formed in the pocket-strip and means for yieldingly supporting the pocket-strip.

2. In a garment having a pocket-opening, bars at each end of the pocket-opening comprising folds of the material from which the pocket-opening is cut, said folds being stitched substantially as described.

709,461. **ACID-MIXER FOR FACILITATING THE TESTING OF MILK AND CREAM.** MILO D. BEACH, Litchfield, Conn., assignor to the Sharples Company, Chicago, Ill., a Corporation of Nebraska. Filed Feb 16, 1901. Serial No. 47,562. (No model.)

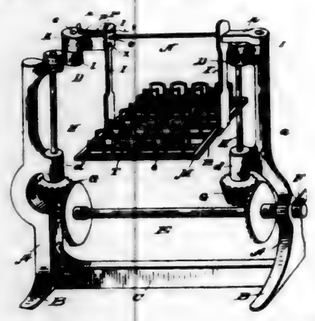

Claim.—1. In a device of the class described the combination with a frame, of a tray supported therein, means on the tray to removably hold a plurality of bottles, said means forming a constrictive engagement about each bottle independently of the others, and means for moving the tray and the bottles in a circle in a horizontal plane.

2. In a device of the class described the combination with an upright frame, of a tray supported therein and adapted to support a plurality of bottles, a series of clamps carried by the tray to form a constrictive engagement about each bottle, whereby the bottles are independently removable and securely held on the tray, means to permit the tray and bottles to be held in a tilted or inverted position, and means for moving the tray and bottles in a circle in a horizontal plane.

3. In a device of the character described, a frame, upright shafts journaled in the frame, crank-arms I secured to the shafts, links K pivoted to the arms I, a tray suspended by the links, yielding clamps secured to the tray to hold the bottles, and means for rotating the upright shafts to move the tray and bottles in a circle in a horizontal plane.

4. In a device of the character described, the combination with a frame having vertical shafts journaled therein, of a tray pivotally suspended within the frame to permit it to be swung vertically and provided with yielding clamps to hold a number of bottles, means for rotating the shafts, adjunctive mechanism between the shafts and the tray for moving the tray and bottles in a circle in a longitudinal plane.

5. In a device of the character described, a frame, a tray suspended within the frame, clasps attached to the tray for holding bottles, means for moving the tray and bottles in a circle in a horizontal plane, and means to permit the bottles to be tilted or inverted and hold them in such tilted or inverted positions, as and for the purposes shown.

6. In a device of the character described, an upright frame, a tray suspended from the frame, yielding clamps attached to the tray for holding bottles thereon, gearing for moving the tray in a circle in a horizontal plane, and means for tilting or inverting the bottles and holding them in such changed positions, as and for the purposes shown.

7. The combination of an upright frame, upright shafts H, arms I and links K, a tray pivotally suspended from the links K and provided with means to hold the bottles, means on one of the links K to hold the tray in a tilted or inverted position, and means for revolving the tray and bottles in a horizontal plane.

8. The combination of an upright frame, upright shafts H, a tray, crank-and-link connections between the tray and shaft, clamps on the tray for removably holding bottles, means for rotating the shafts to move the tray and bottles in a circle in a horizontal plane, and means for permitting the bottles to be inverted or tilted at an angle, and means for holding them in such changed positions.

9. The combination of the upright frame, shafts E and H, bevel gear G, arms I and links K, hangers suspended from the links K, one of said hangers having holes, a tray attached to the hangers, clamps attached to the tray for holding bottles, and a spring-actuated pin secured to one of the links K and adapted to engage one of the holes in a hanger, all combined as and for the purposes shown.

709,462. **MERRY-GO-ROUND.** EDMUND BOLLINGER, Fostoria, Ohio. Filed Feb. 17, 1902. Serial No. 94,503. (No model.)

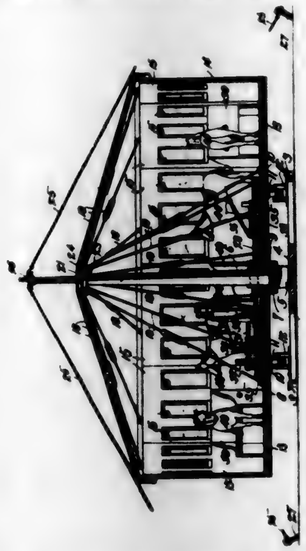

Claim.—1. A merry-go-round comprising a base, a centrally-arranged stationary mast, a rotary platform journaled on the mast and extending outward therefrom, antifriction devices located between the base and the rotary platform at a point remote from the mast and mounted on one of such parts and supporting the said rotary platform, a rack arranged on the rotary platform adjacent to the periphery of the stationary platform, a gear-wheel mounted on the latter and meshing with the rack, and means mounted on the stationary platform for rotating the gear-wheel, substantially as described.

2. A merry-go-round comprising a base, a centrally-arranged stationary mast, a rotary platform journaled on the mast, antifriction devices located between the base and the rotary platform and mounted on one of such parts and supporting the said rotary platform at points beyond the mast, a stationary platform fixed to the mast and arranged directly above and adjacent to the rotary platform and terminating short of the periphery of the same, a curved rack mounted on the rotary platform and located beneath the stationary platform, a gear-wheel extending through the stationary platform and engaging the rack, means mounted on the stationary platform for rotating the gear-wheel, and a brake mounted on the stationary platform and extending through the same and engaging the rotary platform, substantially as described.

3. A merry-go-round comprising a base, a stationary mast, a rotary platform journaled on the mast and extending outward therefrom, antifriction devices located between the rotary platform and the base and supporting the former at points beyond the mast, a stationary platform fixed to the mast directly above the rotary platform and terminating short of the periphery of the same, a vertical wall arranged at the periphery of the rotary platform, guys or braces extending from the upper portion of the mast to the rotary platform and to the upper portions of the vertical wall, the guys or braces which extend through the rotary platform being arranged adjacent to the periphery of the stationary platform, and means mounted on the stationary platform for rotating the other platform, substantially as described.

4. A merry-go-round comprising a base, a stationary mast interlocked with the base, antifriction-wheels mounted on the base at points beyond the mast, a rotary platform journaled on the mast and extending outward therefrom and supported by the antifriction-wheels, a stationary platform located above the rotary platform and terminating short of the periphery thereof, a circular rack mounted on the rotary platform and arranged adjacent to the outer edge of the stationary platform at a point above the antifriction-wheels, a brake extending through the stationary platform and engaging the rotary platform, a vertical wall mounted on the rotary platform, inclined braces extending from the top of the vertical wall to the mast, a cover supported by the inclined braces, a gear-wheel extending through the stationary platform and meshing with the rack, and means for operating the gear-wheel, substantially as described.

709,463. **CHAINLESS BICYCLE.** FREDERICK BOOTH, Tefft, Ind. Filed Oct. 14, 1901. Serial No. 78,642. (No model.)

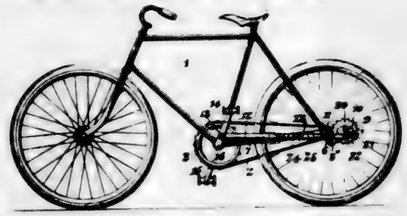

Claim.—1. A bicycle having one of its lower frame-bars extended rearward from the rear axle, a driven gear upon the rear hub, a driving-gear mounted on the extension and meshing with the rear of the driven gear, and a lever fulcrumed for reciprocatory movement upon one of the frame-bars and having one end in engagement with the driving-gear and the other end in engagement with one of the pedal-cranks.

2. In a bicycle, the combination with the frame thereof, the rear wheel and the pedal-crank shaft, of a driven gear carried by the rear hub, the adjacent lower frame-bar being extended downwardly below and in rear of the driven gear, thence extended inwardly beyond the gear, and then projected rearwardly, a driving-gear mounted upon the outer side of the rear end of the extended frame portion and in mesh with the driven gear, and a connecting-rod between the driving-gear and the adjacent pedal-crank.

709,464. **DRESS-PATTERN SEAL.** JOHN BROACH and GEORGE W. GODDRICH, New York, N. Y., assignors to the Independent Pattern Company, New York, N. Y., a Corporation of New York. Filed June 17, 1902. Serial No. 112,044. (No model.)

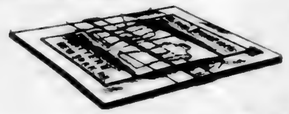

Claim.—1. In a paper dress-pattern the combination with a pattern formed of thin soft tissue-paper adapted to readily absorb glue or other adhesive and folded to form a package adapted to open along one of its edges, and a severable sealing-band glued to the soft tissue-paper forming said package and extending across the open or free edges of the folded parts thereof, whereby the package will be held closed until the sealing-band be broken.

2. In a paper dress-pattern, the combination with a pattern formed of thin soft tissue-paper adapted to readily absorb glue or other adhesive and folded to form a package, of a severable sealing-band extending across the free or open edges of the parts of the said package and being pasted or glued to the package, and a guard-sheet glued to the package outside of the sealing-band and extending over said band at its point of attachment to the pattern-package, for the purpose set forth.

3. In a dress-pattern, the combination with a pattern formed of thin soft tissue-paper adapted to readily absorb glue or other adhesive and folded to form a package, a severable sealing-band extending around the package and being pasted or glued thereto to hold said package folded, both ends of said band being secured to the same side of the package, and a guard-sheet glued to the package and covering the ends of the sealing-band and preventing the detachment thereof.

4. In a paper dress-pattern the combination with a pattern formed of thin soft tissue-paper adapted to readily absorb glue or other adhesive and folded to form a package adapted to open along one of its edges, and a severable sealing-band extending around said package, one end of said band being pasted to one side of the package, the band extending thence across the free or open edges of the folded parts, and thence around the package, its other end being pasted over the end that was first secured in place, the band midway its ends being pasted to the other side of the package, whereby the package is doubly sealed and the free edges of the parts of the package are held together substantially as described.

5. In a paper dress-pattern, the combination with a pattern formed of thin soft tissue-paper adapted to readily absorb glue or other adhesive

and folded to form a package adapted to open along one of its edges, and a severable sealing-band extending around said package one end of said band being pasted to one side of the package, the band extending thence across the free or open edges of the folded parts, and thence around the package, its other end being pasted over the end that was first secured in place, the band midway its ends being pasted to the other side of the package, and a guard-sheet glued to the package and covering the ends of the sealing-band, and preventing the detachment thereof, whereby the package is doubly sealed and the free edges of the parts are held together, substantially as described.

709,465. MEANS FOR CONTROLLING THE CHARGING OF SECONDARY BATTERIES. JOHN BURRY, Fort Lee, N. J. Filed Jan. 10, 1900. Serial No. 914. (No model.)

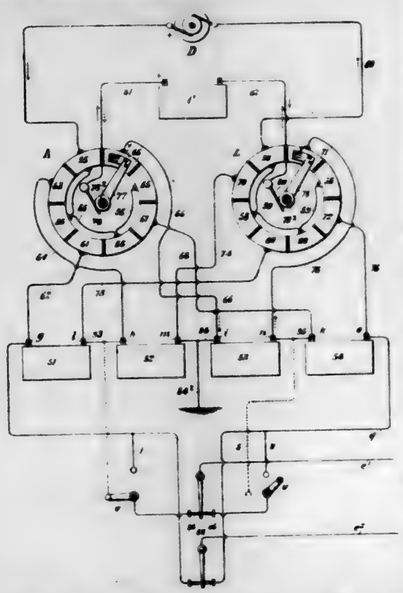

Claim.—1. In a system for supplying electric energy from a central station, the combination with a main line or feeder circuit, of a storage battery for supplying energy to a local or consumption circuit, said circuits being always isolated from each other, an energy-conveyer, and means for connecting said conveyer with and disconnecting it from said main and consumption circuits in alternation, whereby the said conveyer while disconnected from the feeder-circuit charges the storage battery and while disconnected from the consumption circuit receives energy from the feeder-circuit.

2. In a system for supplying electric energy from a central station, the combination with a main line or feeder circuit, of a plurality of storage batteries for supplying energy to a local or consumption circuit, said circuits being always isolated from each other, an energy-conveyer, and means for connecting said conveyer with said storage batteries one at a time in succession, said means disconnecting said conveyer from each storage battery before connecting it with the next in order and connecting the conveyer with said disconnecting it from the feeder-circuit in the intervals between the disconnection of the conveyer from one storage battery and its connection with the next in order, whereby said conveyer is charged while disconnected from the storage batteries and discharges while disconnected from the feeder-circuit.

709,466. ADVERTISING DEVICE. WILLIAM D. BUTT, Kansas City, Mo. Filed Apr. 9, 1901. Serial No. 55,044. (No model.)

Claim.—An advertising device comprising a plate having internal grooves and bifurcated at its outer end, the bifurcation registering with said grooves, a slidable plate in said grooves, an end bar pivoted at one end to the sides of the bifurcation at the lower corner of the plate and inclosed within the sides of the said bifurcation, and means for securing the upper end of said bar to the plate.

709,466.

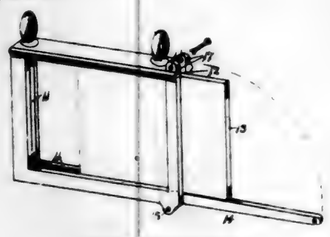

709,467. TOY BLOCKS. EDWARD A. CARSON, Casco, Wis., assignor to Carson Toy Company, Casco, Wis., a Corporation of Wisconsin. Filed Apr. 7, 1902. Serial No. 101,641. (No model.)

Claim.—1. The combination of longitudinal side connecting-blocks having longitudinal grooves in their upper sides, end connecting-blocks having longitudinal grooves upon their upper sides, side box-blocks fitting the grooves of the longitudinal side blocks, end box-blocks fitting the grooves of the end connecting-blocks, and a bottom block connected to the longitudinal connecting-blocks.

2. The combination of longitudinal side connecting-blocks having longitudinal grooves upon their upper and under sides, end connecting-blocks having longitudinal grooves upon their upper sides, side box-blocks fitting the upper grooves of the longitudinal side blocks, end box-blocks fitting the grooves of the end blocks, bearing-blocks fitted in the longitudinal grooves on the under sides of the side connecting-blocks, said bearing-blocks provided with openings therethrough, axle-blocks fitting in the openings of the bearing-blocks, and wheel-blocks mounted on the axle-blocks.

3. In toy blocks, the combination of a frame having the longitudinal side blocks, bearing-blocks fitted thereto and extending downwardly therefrom, said bearing-blocks provided with openings therethrough, an axle-block provided with reduced extremities fitting the openings, said reduced extremities forming shoulders removed from the ends, and wheel-blocks mounted on the reduced extremities of the axle-block between the shoulders of said axle-block and the inner sides of the longitudinal side blocks, said wheels adapted to contact with the inner sides of said longitudinal side blocks on the longitudinal movement of the axle-block, and thereby prevent said axle-block from working out of the openings of the bearing-blocks.

4. In toy blocks, a sled or sleigh consisting of side connecting-blocks having grooves upon their under sides, standard-blocks extending downwardly from the under sides of the side connecting-blocks, said standard-blocks provided with side grooves, and also having grooves in their lower ends, runner-blocks fitting the grooves at the lower ends of the standard-blocks, brace-blocks fitting the side grooves of the rear standard-blocks and the under grooves of the side connecting-blocks, similar brace-blocks fitting the rear side grooves of the forward standard-blocks and the under grooves of the side connecting-blocks, blocks fitting the forward side grooves of the forward standard-blocks and the under grooves of the side connecting-blocks, and forming the forward portions of the runners, said blocks provided with openings, and a spindle-block having reduced ends, said reduced ends fitting the openings of the blocks forming the forward portions of the runners.

5. In toy blocks, a sleigh or sled consisting of side connecting-blocks having grooves upon their under sides, standard-blocks extending downwardly from the under sides of the side connecting-blocks, said standard-blocks provided with grooves upon their forward, rear, and inner sides and at their lower ends, runner-blocks fitting the grooves at the lower ends of the standard-blocks, brace-blocks fitting the forward and rear side grooves of the standard-blocks, and a connecting-block having its opposite ends fitting the grooves on the inner sides of the standard-blocks.

6. The combination of side connecting-blocks provided with grooves upon their upper and under sides, bearing-blocks fitting in the under grooves of the side connecting-blocks, said bearing-blocks provided with openings, an axle-block having its opposite ends fitting in said openings, wheel-blocks mounted on the axle-block, upright blocks extending upwardly from the side connecting-blocks, said upright blocks provided with grooves upon two of their sides, end blocks each having its perpendicular edges fitting in two of the opposed grooves of two of the upright blocks, and its lower edge fitting in the upper groove of the side connecting-block, and side blocks, each having its opposed end edges fitting into the grooves of two of the upright blocks.

7. The combination of side connecting-blocks provided with grooves upon their upper, under, and inner sides, bearing-blocks fitting in the under grooves of the side connecting-blocks, said bearing-blocks provided with openings, an axle-block having its ends fitting in said openings, wheel-blocks mounted on the axle-block, upright blocks extending upwardly from the side connecting-blocks, said upright blocks provided with grooves upon two of their sides, end blocks each having its perpendicular edge fitting in two of the opposed grooves of two of the upright blocks, and its lower edge fitting in the upper groove of the side connecting-block, side blocks each having its opposed under edges fitting two of the grooves of two of the upright blocks, and a handle composed of side arm-blocks and end handle-bar block, said side arm-blocks having their inner ends fitting the inner grooves of the side connecting-blocks, and said handle-bar block having its opposite ends provided with grooves to receive the outer ends of the side arm-blocks.

8. In toy blocks, a wheel-rake consisting of a head-block having grooves on its under and inner sides, rake-teeth blocks fitting in said under grooves and extending downwardly therefrom, side connecting-blocks having grooves upon their under and inner sides, a bottom block having its edges fitting in the inner side grooves of the side connecting-blocks and the inner side groove of the head-block, bearing-blocks fitting the under grooves of the side connecting-blocks, said bearing-blocks provided with openings, an axle-block fitting the openings of the bearing-blocks, and wheel blocks mounted on the axle-block.

9. In toy blocks, a wheel-rake, consisting of a head-block having grooves on its under, inner, and upper sides, rake-teeth blocks fitting in the under groove, and extending downwardly therefrom, side connecting-blocks having grooves upon their under and inner sides, a bottom block having its edges fitting in the inner side grooves of the side connecting-blocks and the inner side groove of the head-block, bearing-blocks fitting the under grooves of the side connecting-blocks, said bearing-blocks provided with openings, an axle-block fitting the openings of the bearing-blocks, wheel-blocks mounted on the axle-block, and a seat extending upwardly from the head-block, said seat consisting of two upright blocks having grooves upon their inner and forward sides, a connecting-block having its opposite ends fitting the inner grooves of the upright blocks, horizontal blocks seated on top of the upright blocks, said horizontal blocks provided with grooves on their under and inner sides, brace-blocks fitting the forward grooves of the upright blocks and the under grooves of the horizontal blocks, and a seat-bottom block having its opposite ends fitting the inner side grooves of the horizontal blocks.

10. In toy blocks, a hay-rack consisting of the end pieces and the longitudinal slats, each end piece, consisting of two blocks having their inner ends beveled and fitted together, in order to give an obtuse-angular form to each end piece, and said end pieces blocks provided with grooves upon their upper sides, and grooves upon their inner sides, connecting-blocks having their ends fitting the upper grooves of the blocks of each end piece, and thereby holding said blocks together, and longitudinal slat-blocks having their opposite ends fitting the end grooves of the blocks of the end pieces.

11. In toy blocks, a plow consisting of a plow-beam block having a groove on its under side, a plowshare-block having its opposite ends beveled, one beveled end thereof fitting against the under side of the plow-beam block, whereby the plowshare-block extends downwardly from the plow-beam block at a forward incline, and said plowshare-block provided with a groove in its forward side, and a connecting-block fitting in the groove of the plowshare-block and also in the groove on the under side of the plow beam block.

12. In toy blocks, a plow consisting of a plow-beam block having a groove on its under side, a plowshare-block extending downwardly and at a forward incline from the under side of the plow-beam block, said plowshare-block provided with a groove in its forward side and also with a groove in one of its lateral sides, a connecting-block fitting in the groove in the forward side of the plowshare-block, and also in the groove in the under side of the plow-beam block, and a moldboard-block fitting in the groove in the lateral side of the plowshare-block and extending laterally therefrom.

13. In toy blocks, a plow consisting of a plow-beam block having a groove on its under side, a plowshare-block extending downwardly and at a forward incline from the under side of the plow-beam block, said plowshare-block provided with a groove in its forward side, a connecting-block fitting in the groove of the plowshare-block and also in the groove on the under side of the plow-beam block, and a cutter or colter block fitting in the groove on the under side of the plow-beam block and bearing against the plowshare-block.

709,468. CAR-COUPLING. ALBERT B. CARTER, Hazlehurst, Miss. Filed Apr. 26, 1902. Serial No. 104,848. (No model.)

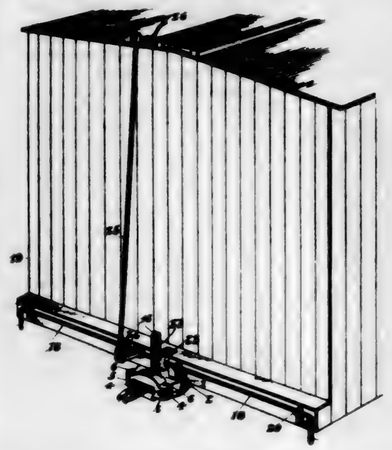

Claim.—1. In a car-coupler, the combination with a draw-head having a vertically-movable pin which is fixed against lateral movement, of a coupling-link which is separate from the draw-head and is provided with a lateral shoulder for engagement with the pin, and a spring to yieldingly hold the shoulder of the link in engagement with the pin.

2. In a car-coupler, the combination with a draw-head which is held against lateral movement, and is provided with a vertically-movable coupling-pin which is fixed against lateral movement, of a coupling-link which is separate from the draw-head and is provided with a lateral shoulder for engagement with the pin, and a spring to bear against the outer side of the link and yieldably hold the shoulder thereof in engagement with the coupling-pin.

3. In a car-coupler, the combination with a draw-head, having a vertically-movable pin, of a pair of links which have their opposite ends provided with lateral shoulders upon their inner sides for engagement with the locking-pin, and springs disposed at opposite sides of the pin to bear against the links and yieldably hold the same in engagement with the pin.

4. In a car-coupler, the combination with a draw-head, of a vertically-movable coupling-pin therefor, a coupling-link provided with lateral shoulders for engagement with the coupling-pin, and a spring having one end secured to the draw-bar with its free end portion bearing against the outer side of the link to hold the same in yieldable engagement with the pin and provided at its free end with a guide projection working in a guideway formed in the draw-head.

5. In a car-coupler, the combination with a draw-head, and a vertically-movable coupling-pin piercing the top thereof, of a pair of coupling-links which are provided with lateral inwardly-directed shoulders for engagement with the back of the pin, and leaf-springs located at opposite sides of the links with their free ends bearing against the same to hold the shoulders of the links yieldably in engagement with the pin, the free ends of the springs having lateral projections working in sockets formed in the opposite side walls of the draw-head.

6. In a car-coupler, the combination with a draw-head, of an endwise-movable coupling-pin, a headed link for detachable engagement with the pin, a spring to yieldably hold the link in engagement with the pin, and an abutment in rear of the pin to form a fulcrum-bearing for the link substantially as and for the purpose set forth.

7. In a car-coupler, the combination with a draw-head, of an endwise-movable locking-pin, a beveled abutment in rear of the pin, a pair of arrow-headed links for engagement with the pin, and springs to yieldably hold the heads of the links in detachable engagement with the pin, the abutment forming a fulcrum-bearing for the inner ends of the links in the manner substantially as described.

8. In a car-coupler, the combination with a draw-head, of an endwise-movable coupling-pin, a forwardly-tapered abutment-block fitted in the back of the draw-head and having its forward end provided with a reduced forwardly-tapered projection terminated adjacent to the rear side of the coupling-pin, leaf-springs secured between the opposite sides of the abutment-block and the corresponding sides of the draw-head, the forward free ends of the springs being projected beyond the position of the coupling-pin and having lateral projections working in recesses formed

in the sides of the draw-head, said projections closing the spaces between the free ends of the springs and the adjacent sides of the draw-head, and a pair of coupling-links provided at opposite ends with the arrow-heads for engagement with the coupling-pin, the springs normally lying in engagement with the links to hold the same yieldably in detachable engagement with the pin, and the reduced projection of the abutment forming a fulcrum for the inner ends of the links.

9. In a car-coupler, the combination with a draw-head having sockets in its opposite inner sides, of a coupling-pin, leaf-springs having their rear ends connected to the draw-head and inclined inwardly and forwardly, the free ends of the springs having lateral outwardly-directed projections working in the respective guide-sockets and closing the spaces between the free ends of the springs and the respective sides of the head, and a pair of headed links for engagement with the pin.

10. In a car-coupler, the combination with a draw-bar, of an endwise-movable coupling-pin having teeth upon the back thereof, a rock-bar located in rear of the pin, a pinion carried by the rock-bar and in mesh with the teeth of the pin, a crank-arm carried by the rock-bar, a connecting-rod rising from the crank-arm, and an intermediately-fulcrumed lever connected to the upper end of the rod.

709,469. DANGER-SIGNAL DEVICE FOR RAILWAYS. FRED G. CRANDELLE, Minneapolis, Minn. Filed Dec. 7, 1901. Serial No. 85,080. (No model.)

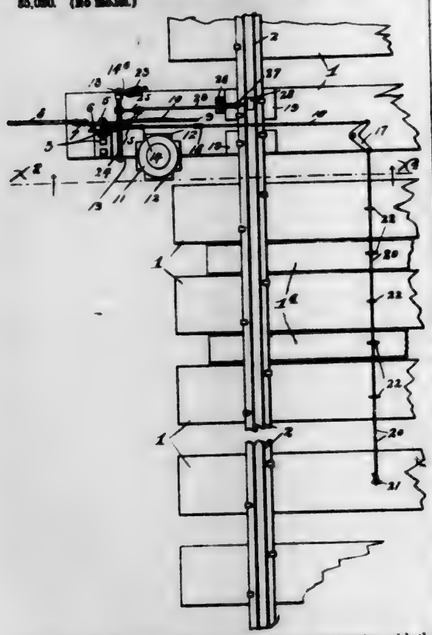

Claim.—1. A danger-signal for railways in combination with the bell-crank 14, actuating-spring 23 and trip connections 16, 17 and 20, the latter of which is anchored to the track at its extended end and is passed through intermediate guides on the track, substantially as described.

2. The combination with a lamp 11, of a semaphore provided with the bull's-eye 10 and sheave 6, the bell-crank 14 connected to said sheave 6 by connection 15, the trip connection 16, 17, 20 connected to said bell-crank and to the track, as described, and the actuating-spring 23 connected to and operating upon the said bell-crank 14, substantially as described.

3. The combination with a railway-track, of a torpedo-holder for moving a torpedo into and out of contact with the track, and means for automatically throwing said holder from an inoperative to an operative position, comprising the bell-crank 14, the actuating-spring 23, and the connection 16, 17, 20, which section 20 is anchored at its extended end and is passed through guides on the intermediate ties, substantially as described.

4. The combination with a railway-track involving auxiliary ties or ...ce, of a signal device and a trip device placed between the ordinary ties, therefor arranged to be actuated by movements of said auxiliary ties, substantially as described.

5. The combination with the rails and ties of a railway, of auxiliary ties loosely embedded between the said ties, and a signal device involving a flexible trip connection anchored at its extended end and passed loose through guides on the said auxiliary ties, substantially as described.

709,470. ACETYLENE-GAS GENERATOR. JOHN C. CHARBONEAU, Mount Clemens, Mich. Filed Nov. 22, 1901. Serial No. 83,221. (No model.)

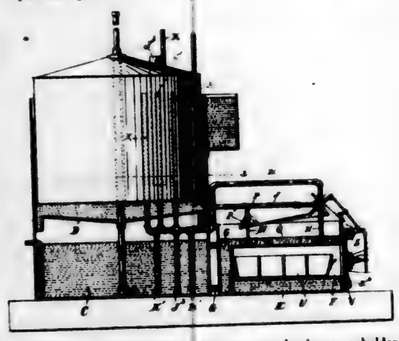

Claim.—1. In an acetylene-gas generator, having a gas-holder consisting of a tank and a bell, and having a gas-generator consisting of a cooling-tank open at the top and a generator-chamber within said cooling-tank, a false bottom in the tank of the gas-holder to form a drip-chamber in the lower end thereof, an annular channel around the edge of said bottom and depending below the same adapted to receive the lower end only of the gas-bell and form a water seal, and pipes connecting the drip-chamber with the cooling-tank at the top and bottom respectively to cause a circulation of water therein.

2. In an acetylene-gas generator, in combination, a gas-holder, a generator-chamber, a door hinged to said chamber, a water-feed pipe to supply water to said chamber, as hut-off in said water-feed pipe, an operating-lever for said shut-off, a gas-supply pipe leading from said chamber, a two-way valve in said gas-supply pipe, a vent-pipe leading from said valve, an operating-lever for said valve, a rod connecting said levers, a cam pivoted on said chamber and adapted to engage said door to hold the same closed, a rod connecting said cam and the lever on said valve and means whereby the operation of said valve is necessitated before the said door may be unfastened.

3. In an acetylene-gas generator, in combination, a gas-holder, a generator-chamber, a water-feed pipe to supply water to said chamber, a gas-supply pipe leading from said chamber, a two-way valve in said gas-supply pipe, a vent-pipe leading from said valve, an operating-lever for said valve, a door hinged at its lower side to said chamber, hooks on said chamber adjacent to the ends of said door, a spanner-bar to engage said hooks and having a screw-threaded opening, a screw engaging said opening and provided with a forked handle, ears on said chamber adjacent to the upper side of said door, a cam pivoted between said ears and provided with an operating-handle a rod pivotally connecting the operating-lever on said valve and said cam-handle, and a rod rigidly secured to said cam-handle and adapted to project into the fork of the handle of said screw.

709,471. TUG AND TRACE COUPLING. ALEXANDER M. CRAIG, Westport, Canada. Filed Mar. 5, 1902. Serial No. 96,743. (No model.)

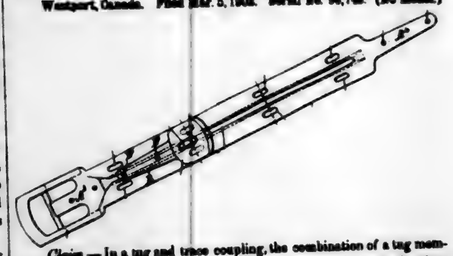

Claim.—In a tug and trace coupling, the combination of a tug member having a longitudinal slideway or channel and corrisative perforations

on opposite sides thereof, and a trace member having an enlarged head dished on the under side and containing a rock-shaft having an elbow thumb-lever projecting through said head and flush therewith, two tongues engaging said perforations in the tug member, and a guide-lug sliding in said channel or slideway to hold the tug and trace members connectedly, and a spring to keep said tongues in coupling engagement with the tug member, as set forth.

709,472. SEEDING-MACHINE. FRANK R. DAVIS, La Crosse, Wis. Filed Apr. 4, 1902. Serial No. 101,408. (No model.)

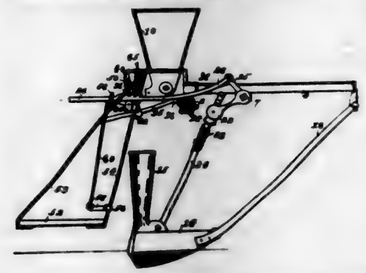

Claim.—1. In a seeding-machine, a frame mounted on carrying-wheels, shoes, means for pivotally attaching the front of the shoes to the frame, and a connection between the shoes and the wheels, whereby the draft of the team is utilized to raise the shoes.

2. In a seeding-machine a frame mounted on carrying-wheels, an axle adapted to rotate with the wheels, shoes, means for pivotally attaching the shoes to the front of the frame, and a connection between the wheels and shoes, whereby the draft of the team is utilized to raise the shoes.

3. In a seeding-machine a frame mounted on carrying-wheels, an axle, a rock-shaft, shoes connected to the rock-shaft, and a connection between the wheels and the rock-shaft for raising the shoes by the draft of the team.

4. In a seeding-machine a frame mounted on carrying-wheels, a rotating axle, a sprocket-wheel upon the axle, a rock-shaft, shoes, connection between the rock-shaft and the shoes, and a connection between the rock-shaft and sprocket-wheel on the axle, whereby the rotating of the wheel by the draft of the team will raise the shoes.

5. In a seeding-machine a frame mounted on carrying-wheels, an axle, a sprocket-wheel on the axle, a rock-shaft, shoes attached to the rock-shaft, a rack-bar attached to the rock-shaft and adapted to engage the sprocket-wheel on the axle, for the purposes shown.

6. In a seeding-machine the combination of an axle, a rock-shaft, shoes connected to the rock-shaft, a connection between the rock-shaft and the axle, means connected with the axle for rotating the rock-shaft to raise the shoes.

7. In a seeding-machine a frame mounted on carrying-wheels, a rotating axle, a sprocket-wheel mounted on the axle, a rock-shaft, shoes attached to the rock-shaft, a rack-bar connected with the rock-shaft and a lever for bringing the rack-bar into engagement with the sprocket-wheel on the axle, whereby the shoes are raised by the draft of the team.

8. In a seeding-machine a frame mounted on carrying-wheels, a rotating axle, a sprocket-wheel attached to the axle, shoes attached to the frame, a rock-shaft, connection between the rock-shaft and the shoes, a rack-bar connected to the rock-shaft, and means for bringing the rack-bar and sprocket-wheel into engagement for the purpose of utilizing the draft of the team in raising the shoes.

9. In a seeding-machine a frame mounted on carrying-wheels, shoes attached to the frame, a rock-shaft, a connection between the rock-shaft and the shoes, an axle, a connection between the axle and rock-shaft, whereby the draft of the team is utilized to raise the shoes, and means for holding the shoes in an elevated position for the purposes shown.

10. In a seeding-machine a frame mounted on carrying-wheels, shoes attached to the frame, a rock-shaft, connection between the rock-shaft and the shoes, a rotating axle, a sprocket-wheel on said axle, an arm attached to the rock-shaft, a rack-bar pivoted to said arm and adapted to engage the sprocket-wheel on said axle and means for holding the shoes in an elevated position, for the purposes shown.

11. In a seeding-machine, a frame, an axle, a sprocket-wheel on the axle, a rock-shaft suspended from the frame, shoes connected to the rock-shaft, a rack-bar pivoted to the rock-shaft, and adapted to engage the sprocket-wheel on the axle, means for holding the rack-bar out of engagement with the sprocket-wheel and a lever for bringing the rack-bar into engagement with the sprocket-wheel, whereby the draft of the team is utilized to raise the drills.

12. In a seeding-machine, a frame, a rock-shaft suspended from the frame, shoes attached to the rock-shaft, and means operated by the rock-shaft, for holding the shoes at a given depth in the ground, for the purposes shown.

13. In a seeding-machine, a frame, a rock-shaft suspended from the frame, shoes attached to the rock-shaft and means operated by the rock-shaft, for holding the shoes at a given depth in the ground, and means for releasing said shoes, for the purposes shown.

14. In a seeding-machine, the combination of a frame, mounted on carrying-wheels, a rock-shaft, shoes attached to the rock-shaft, a rock-bar attached to the rock-shaft, notches on said rock-bar, and a catch adapted to engage said notches to hold the shoes in a predetermined position in the ground.

15. In a seeding-machine, a frame mounted on carrying-wheels, a rotating axle, a rock-shaft, shoes attached to the rock-shaft, connection between the rock-shaft and the axle, and means for holding the shoes in a given position in the ground, and a lever for releasing the shoes and for bringing them into operative relation and the connection between the rock-shaft and the axle, for elevating the shoes by the draft of the team.

16. In a seeding-machine the combination of a frame mounted on carrying-wheels, a rotating axle, a rock-shaft, shoes attached to the rock-shaft, connection between the rock-shaft and the axle for elevating the shoes by the rotation of the axle, and means attached to the rock-shaft for holding the shoes in their elevated position.

17. In a seeding-machine a frame mounted on carrying-wheels, a rock-shaft, shoes connected with the rock-shaft, means for raising the shoes by the draft of the team, and means for holding the shoes in such elevated position for the purposes shown.

18. In a seeding-machine a frame mounted on carrying-wheels, an axle adapted to rotate with the wheels, a sprocket-wheel upon the axle, a rock-shaft, shoes attached to the rock-shaft, a rack-bar attached to the rock-shaft, an arm carrying a catch, a hanger with which the catch on the frame engages, a spring for holding the catch-bar out of engagement with the sprocket-wheel, and a lever for bringing the rack-bar into engagement with the sprocket-wheel on the axle, all combined for the purposes shown.

19. In a seeding-machine a rotating axle, a sprocket-wheel upon said axle, a rock-shaft, shoes attached to the rock-shaft, and a rack-bar attached to the rock-shaft, whereby the rotation of the axle will raise the shoes and throw the rack-bar out of engagement with the sprocket-wheel on the axle, for the purposes shown.

20. In a seeding-machine a frame mounted on carrying-wheels, a driver's riding-platform suspended from the machine, shoes attached to the frame, a connection between the axle and the shoes, and a foot-lever near the driver's riding-platform for the purpose of operating the shoes by the draft of the team while standing on the step.

21. In a seeding-machine a frame mounted on carrying-wheels, a driver's riding-platform, suspended from the rear of the machine, a foot-lever for operating said mechanism connected with and in close relation to the platform, for the purposes shown.

709,473. HITCHING DEVICE. AUSTIN H. DEBORD, Canon City, Colo. Filed July 3, 1902. Serial No. 114,254. (No model.)

Claim.—In a hitching device, the combination with a weight and suspending means of a plate through which said suspending means passes, said plate being provided with a hole or opening having one portion thereof larger than the other, and means on said plate for holding the suspending means in the smaller portion of the opening.

709,474. ANIMAL-POKE. HORATIO E. DOWNING, Reading, Okla. Filed Jan. 14, 1902. Serial No. 89,720. (No model.)

Claim.—1. An animal-poke comprising sides having spurs or projections, upper and lower connecting-bars hinged to the sides, and springs for holding the spurs or projections normally away from an animal, substantially as described.

2. An animal-poke comprising sides having spurs or projections, upper and lower connecting-bars hinged to the sides, one of the connecting-bars being provided with extended pintles, and coiled springs disposed on the extended pintles, and having arms engaging the sides and the adjacent connecting-bar, substantially as described.

3. An animal-poke comprising sides having spurs or projections means for hingedly connecting the sides, arms extending respectively from the front face of one side to the rear face of the other side, and a rod hinged to the arms and adapted to cause the sides to turn inward and outward simultaneously, substantially as described.

4. An animal-poke comprising sides having spurs or projections, means for hingedly connecting the sides, and upright loops extending from the front or outer faces of the sides and arranged to be engaged by the head of a cow, substantially as described.

5. An animal-poke comprising sides having spurs, upper and lower connecting-bars hinged to the sides, arms extending respectively from the front face of one side and from the rear face of the other side, a rod hinged to the arms and connecting the same to cause the sides to turn inward and outward simultaneously, and loops extending longitudinally of the sides and projecting from the outer or front faces thereof, substantially as described.

709,475. RAIL-JOINT. JOHN W. BLESS, Rantoul, Kans. Filed Jan. 9, 1902. Serial No. 89,047. (No model.)

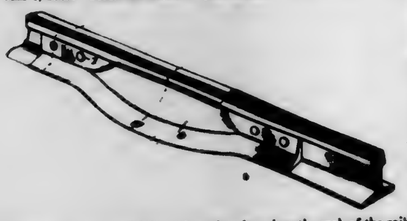

Claim.—1. In a rail-joint, a bar placed against the web of the rails forming the joint and having its end portions of angle form to overlap the foot and web of the rails and having its middle portion thickened and formed with an outwardly-curved basal flange apertured to receive a fastening, the end portions of the thickened part sloping and merging into the vertical and horizontal end portions of the said bar, substantially as specified.

2. In a rail-joint, a bar placed against the inner side of the web and having its middle portion thickened and upwardly sloped, a second bar placed against the outer side of the web and having its end portions of angle formation and its middle portion thickened and its upper edge constructed to form a seat for the lower corner of the rails, the thickened part of the outer bar having its end portions sloping and formed with an outwardly-curved basal flange apertured to receive a fastening, substantially as specified.

709,476. COOKING-CABINET. HERMAN FAGERLIN, San Francisco, Cal., assignor of one-half to Gustavus Zimmermann, San Francisco, Cal. Filed Mar. 31, 1902. Serial No. 100,574. (No model.)

Claim.—1. As an article of manufacture, the cooking-cabinet comprising the top, the back, the ends, and the swinging front, all lined with incombustible material, the oven fixedly secured in said cooking-chamber, spaced at the side and top from the side and top of said cooking-chamber, a gas-pipe entering said cooking-chamber, and having a branch entering said oven, and having burners fixedly secured in said cooking-chamber and oven respectively, the burners of said latter pipe being directed downward upon the floor of the oven, substantially as described.

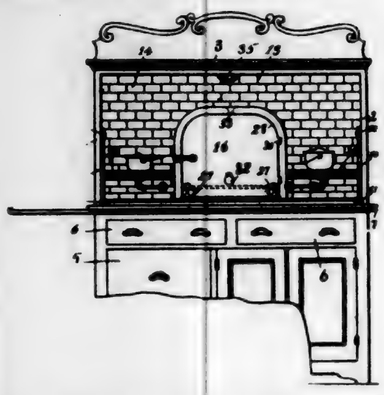

2. As an article of manufacture, the cooking-cabinet comprising the top, the back, the ends, and the swinging front, all lined with incombustible material, the oven fixedly secured in said cooking-chamber, having its body formed of non-metallic incombustible material, spaced at the side and top from the side and top of said cooking-chamber, a gas-pipe entering said cooking-chamber, and having a branch entering said oven, and having burners fixedly secured in said cooking-chamber and oven respectively, the burners of said latter pipe being directed downward upon the floor of the oven, substantially as described.

709,477. ADDING-MACHINE. BORIES FYOR, Astoria, N. Y., assignor to the Union Typewriter Company, Jersey City, N. J., a Corporation of New Jersey. Filed Nov. 28, 1898. Serial No. 697,508. (No model.)

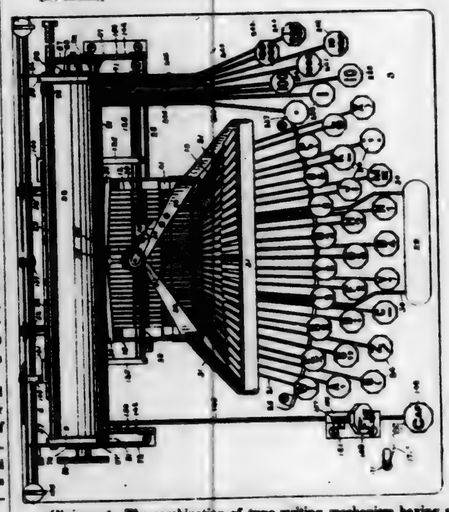

Claim.—1. The combination of type-writing mechanism having a carriage moved step by step for letter-spacing, adding-wheels, independent operating means for said wheels, a driver for operating said means one by one, said driver and said adding-wheels and operating means being relatively movable, toothed wheels connected with said driver, a single rectilinearly-movable sliding frame having two toothed bars for engaging said toothed wheels to actuate the driver, guideways for said frame, and means actuated by the type-operating mechanism of the type-writing machine and moving said frame variable distances from an initial position, substantially as described.

2. The combination of type-writing mechanism having a carriage moving step by step for letter-spacing, adding number-carriers, independent operating means for said number-carriers, a driver for operating said independent means one at a time, said driver and said adding mechanism and operating means being relatively movable, toothed wheels connected with said driver, a rectilinearly-movable frame provided with two toothed bars meshing with said toothed wheels, and cams operated by the type-operating mechanism of the type-writing machine for engaging and moving said frame variable distances from an initial position, substantially as described.

3. The combination of type-writing mechanism having a carriage moving step by step for letter-spacing, adding number-carriers provided with independent means for operating said number-carriers, a driver for operating said independent means one at a time, said driver and said number-carriers being relatively movable, toothed wheels connected with said driver, a reciprocatory frame or plate provided with a series of steps and with a toothed bar meshing with said toothed wheel, and cams for engaging said steps and operated by the type-operating mechanism of the type-writing machine for moving said frame or plate variable distances from an initial position, substantially as described.

4. The combination of type writing mechanism having a carriage moved step by step for letter-spacing, adding number-carriers, independent means for operating said number-carriers, a driver for operating said independent means one at a time, said driver and said number-carriers being relatively movable, two toothed wheels connected with said driver, a reciprocatory frame or plate provided with two toothed bars meshing with said toothed wheels and with a series of steps, and cams for engaging said steps and operated by the type-operating mechanism of the type-writing machine, substantially as described.

5. The combination of type-writing mechanism having a step-by-step moving carriage, adding number-carriers, independent means for operating said number-carriers, a driver for operating said independent means one at a time, said driver and said number-carriers being relatively movable, a reciprocatory plate or frame, gearing connecting said plate or frame and said driver for rotating the driver, and cams for engaging said frame and moving it different distances and operated by the type-operating mechanism of the type-writing machine, substantially as described.

6. The combination of type-writing mechanism having a carriage moving step by step for letter-spacing, adding number-carriers, independent means for operating said number-carriers, a driver for operating said independent means one at a time, said driver and said number-carriers being relatively movable, a reciprocatory plate or frame provided with a series of steps, gearing intermediate said plate or frame and said driver for rotating the driver, and cams operated by the type-operating mechanism of the type-writing machine and coacting with said steps, substantially as described.

7. The combination of a type-writer carriage, adding mechanism having independent means for operating its number-carriers, a variable-throw driver for operating said independent means one at a time, said driver and said adding mechanism being relatively movable, and mechanism for connecting said moving part with the type-writer carriage at a predetermined point in the forward traverse thereof to move therewith during the further progress of the carriage, substantially as described.

8. The combination of a type-writer carriage having a step-by-step letter-feed, adding mechanism having independent means for operating its number-carriers, a rotatable driver connected to and operated by the digit-keys of the type-operating mechanism and operating said independent means one at a time, said driver and said adding mechanism being relatively movable, and mechanism for connecting such moving part with the type-writer carriage at a predetermined point in the forward traverse thereof to move step by step during the further progress of the carriage, substantially as described.

9. The combination of a type-writer carriage, adding mechanism independently-operable number-carriers, a variable-throw driver for operating said carriers one at a time, said driver and said adding mechanism being relatively movable and being disengaged during a part of the forward traverse of the type-writer carriage, mechanism for connecting said moving part with the type-writer carriage at a predetermined point in the forward traverse thereof to move step by step during the further progress of the carriage, and means for locking said driver against said step-by-step movement until said carriage reaches said point, substantially as described.

10. The combination of the carriage of a type-writer, key-actuated adding mechanism comprising toothed wheels 178, 179, 181, 182 and 183, for operating its number-carriers, a driver for operating said toothed wheels 178 one at a time, and gearing for discontinuously but automatically connecting said driver with the type-writer carriage by a movement of said carriage to move the driver axially to engage with said toothed wheels 178 in succession, whereby said type-writer carriage may move during a portion of its travel independently of the driver, substantially as described.

11. The combination of the carriage of a type-writer, key-actuated adding mechanism comprising toothed wheels 178, 179, 181, 182 and 185, for operating its number-carriers, a rotatable driver for operating said toothed wheels 178 one at a time, and mechanism for discontinuously connecting said driver with the type-writer carriage and thrown automatically into operation when said carriage reaches a given point in the forward traverse thereof and then moving said driver step by step from one to another of said toothed wheels 178 as the carriage progresses, whereby said type-writer carriage may move during a portion of its travel independently of the driver, substantially as described.

12. The combination of a type-writer carriage, a key-actuated adding mechanism comprising toothed wheels 178, 179, 181, 182 and 183 for operating its number-carriers, a driver for operating said toothed wheels 178 one at a time and disengaged automatically and discontinuously therefrom during a part of the forward motion of the said carriage, means for variably rotating said driver, and mechanism operated by or controlled from the said carriage for moving said driver into engagement with and from one to another of said toothed wheels 178 as the carriage progresses, substantially as described.

13. The combination of the carriage of a type-writer, key-actuated adding mechanism comprising toothed wheels 178, 179, 181, 182 and 183, for operating its number-carriers, a driver-pinion disengaged from said toothed wheels 178, and disconnected from said carriage during a part of the forward traverse of the said carriage and mechanism for automatically connecting said carriage with the said driver at a given point in said forward traverse and moving said driver into engagement with and from one to another of said toothed wheels 178 as the carriage progresses, whereby said type-writer carriage may move during a portion of its travel independently of the driver, substantially as described.

14. The combination of the carriage of a type-writer, an adding mechanism having independent means for operating its number-carriers, a driver for operating said independent means one at a time and disengaged therefrom during a part of the forward traverse of said carriage, a to-and-fro movable rack with which said driver is connected to be moved axially, a pinion meshing with said rack, and mechanism for connecting said pinion with the type-writer carriage, substantially as described.

15. The combination of the carriage of a type-writer, an adding mechanism having independent means for operating its number-carriers, an axially-movable driver for operating said independent means one at a time and disengaged therefrom during a part of the traverse of said carriage, a reciprocatory rack connected with said driver to move it axially, a pinion meshing with said rack, and devices for connecting said pinion with the type-writer carriage at a given point in the forward traverse thereof, whereby said driver is moved into engagement with and from one to another of said independent means as the carriage progresses, substantially as described.

16. The combination of a type-writer carriage, an adding mechanism having independent means for operating its number-carriers, a driver disengaged from said operating means during a part of the forward traverse of the type-writer carriage, a short rack connected with said carriage, a pinion with which said rack meshes at a given point in the forward traverse of said carriage, and connections between said pinion and said driver for moving the driver axially step by step, substantially as described.

17. The combination of the type-writer carriage, an adding mechanism having independent means for operating its number-carriers, a driver for operating said independent means one by one and disengaged therefrom during a part of the forward traverse of the carriage, a short rack connected with said carriage, a pinion with which said rack meshes at a given point in the forward traverse of the carriage, a shaft carrying said pinion, a second pinion on said shaft, and a rack meshing with said pinion and connected with said driver to move the same axially into engagement with and from one to another of said operating means, substantially as described.

18. The combination of a type-writer carriage, an adding mechanism having independently-operable number-carriers, a driver disengaged from said adding mechanism during a part of the forward traverse of the type-writer carriage, said driver and said adding mechanism being relatively movable, a short rack connected with said type-writer carriage, a pinion with which said rack meshes at a given point in the forward traverse of said carriage, and connections between said pinion and said movable element for moving the same step by step and causing engagement between said driver and said adding mechanism, substantially as described.

19. The combination of a type-writer carriage, adding mechanism, means for actuating the adding mechanism and disconnected from the car-

riage during part of the forward traverse thereof and thrown into action by the carriage at a predetermined point in the forward traverse of the carriage, and means for locking or holding the said actuating means until the carriage reaches said predetermined point, substantially as described.

20. The combination of a type-writer carriage, an adding mechanism having independent means for operating its number-carriers, a driver for operating said means one at a time and disengaged therefrom during a part of the forward motion of the carriage, mechanism intermediate said driver and said carriage for moving the driver axially into engagement with and from one to another of said operating means after the carriage has reached a certain point in its forward traverse, and locking mechanism for preventing axial motion of said driver before said carriage reaches said point, substantially as described.

21. The combination of a type-writer carriage, adding mechanism having independent operating means for its number-carriers, a driver for operating said independent means one by one and disengaged therefrom during a part of the forward traverse of said carriage, mechanism having an element rotated by said carriage after the carriage has reached a predetermined point in its forward traverse and connected to said driver to move the same axially, a flat-faced block connected with said rotary element, and a bar connected with said carriage and coacting with said flat-faced block to prevent rotation of said element before the carriage reaches said predetermined point, substantially as described.

22. The combination of a type-writer carriage, adding mechanism, a driver for operating said adding mechanism and disengaged therefrom during a part of the forward motion of said carriage, a rack on said carriage, a pinion with which said rack is adapted to mesh at a given point in the forward motion of said carriage, mechanism intermediate said pinion and said driver for moving the driver step by step in the direction of its axis of motion, a lug or projection on and eccentric to said pinion, and a locking-bar connected with said carriage and coacting with said lug to prevent rotation of said pinion before the same meshes with said rack, substantially as described.

23. The combination of a type-writer carriage having a step-by-step letter-space feed, adding mechanism having independent operating means for its number-carriers arranged in line at distances apart greater than the uniform letter-space feed of said carriage, a driver for operating said independent means one by one, and motion-multiplying toothed gearing intermediate said driver and said carriage and including a rack upon the carriage and a pinion in mesh therewith for moving the driver from one to another of said independent means, substantially as described.

24. The combination of a type-writer carriage, adding mechanism having independent operating means for its number-carriers, said means being arranged at distances apart greater than the step-by-step feed of said carriage, a driver for operating said independent means one by one and disengaged therefrom during a part of the forward traverse of said carriage, and speed-multiplying gearing intermediate said driver and said carriage and including a rack upon said carriage and a pinion in mesh therewith for moving the driver from one to another of said independent means, substantially as described.

25. The combination of a type-writer carriage having a step-by-step letter-space feed, adding mechanism having independent operating means for its number-carriers, said means being at distances apart greater than said step-by-step feed, a driver disengaged from said independent means during a part of the forward traverse of said carriage, a rack on said carriage, a pinion with which said rack meshes at a given point in the forward traverse of said carriage, and speed-multiplying mechanism connecting said pinion with said driver and moving said driver axially into engagement with and from one to another of said independent means, substantially as described.

26. The combination of a type-writer carriage, adding mechanism having independent operating means for its number-carriers, said means being arranged at distances apart greater than the step-by-step feed of said carriage, a driver for operating said independent means one by one and disengaged therefrom during a part of the forward traverse of said carriage, and speed-multiplying mechanism intermediate said driver and said carriage for moving the driver axially into engagement with and from one to another of said independent means, with locking mechanism for preventing motion of said speed-multiplying mechanism until the carriage reaches a predetermined point in its forward motion, substantially as described.

27. The combination of a type-writer carriage having a step-by-step letter-space feed, adding mechanism having independent operating means for its number-carriers, said means being at distances apart greater than said step-by-step feed, a driver disengaged from said independent means during a part of the forward traverse of said carriage, a rack on said carriage, a pinion with which said rack meshes at a given point in the forward traverse of said carriage, and speed-multiplying mechanism connecting said pinion with said driver and moving said driver axially into engagement with and from one to another of said independent means, with mechanism for locking said pinion and multiplying mechanism against motion until the carriage reaches said predetermined point in its forward motion, substantially as described.

28. The combination of a type-writer carriage having uniform step-by-step letter-space feed, adding-wheels, independent gears for operating said wheels, said gears being placed at a uniform distance from center to center greater than the uniform feed of the carriage, a driving-pinion movable in the direction of its axis and engaging with said independent pinions one after another, and speed-multiplying mechanism connecting said carriage and said driving-pinion for moving the pinion axially, substantially as described.

29. The combination of a type-writer carriage having a uniform step-by-step letter-space feed, adding-wheels, independent gears for operating said wheels, said gears being at uniform distances from center to center greater than the uniform feed of the carriage, and an axially-movable driving-pinion for engaging said independent gears one at a time and disengaged therefrom during a part of the forward traverse of said carriage, and speed-multiplying connections between said carriage and said driving-pinion for moving the said pinion axially into engagement with and from one to another of said independent pinions, substantially as described.

30. The combination of a type-writer carriage having uniform step-by-step letter-space feed, adding-wheels, independent gears for operating said wheels, said gears being at a uniform distance from center to center greater than the uniform feed of the carriage, an axially-movable driving-pinion for operating said independent gears one after another and disengaged therefrom during a part of the forward traverse of the said carriage, a rack on said carriage, a pinion in the path of said rack and meshing therewith when the carriage reaches a given point in its forward traverse, and speed-multiplying connections between said pinion and said driver for moving the driver axially, substantially as described.

31. The combination of a type-writer carriage having uniform step-by-step letter-space feed, adding-wheels, independent gears for operating said wheels, said gears being at a uniform distance from center to center greater than the uniform feed of the carriage, an axially-movable driving-pinion for operating said independent gears one after another and disengaged therefrom during a part of the forward traverse of the said carriage, and speed-multiplying mechanism for connecting said driver with said carriage when the carriage reaches a given point in its forward traverse, with mechanism locking said speed-multiplying mechanism against motion until such time as the carriage reaches said given point, substantially as described.

32. The combination of a type-writer carriage having uniform step-by-step letter-space feed, adding-wheels, independent gears for operating said wheels, said gears being at a uniform distance from center to center greater than the uniform feed of the carriage, an axially-movable driving-pinion for operating said independent gears one after another and disengaged therefrom during a part of the forward traverse of the said carriage, a rack on said carriage, a pinion in the path of said rack and meshing therewith when the carriage reaches a given point in its forward traverse, and speed-multiplying connections between said pinion and said driver for moving the driver axially, and mechanism for locking said pinion against motion until the carriage reaches the said given point, substantially as described.

33. The combination of a type-writer carriage having uniform step-by-step letter-space feed, adding-wheels, independent gears for operating said wheels, said gears being at a uniform distance from center to center greater than the uniform feed of the carriage, an axially-movable driving-pinion for operating said independent gears one after another and disengaged therefrom during a part of the forward traverse of the said carriage, a rack on said carriage, a pinion in the path of said rack and meshing therewith when the carriage reaches a given point in its forward traverse, and speed-multiplying connections between said pinion and said driver for moving the driver axially, with a lug or projection eccentrically connected to said pinion, and a bar connected with said carriage and coacting with said lug to prevent rotation of said pinion until the carriage reaches said given point, substantially as described.

34. The combination of type-writing mechanism having a carriage moved step by step for letter-spacing, adding mechanism, a driver controlled and operated by type-operating mechanism and operating said adding mechanism, said adding mechanism and said driver being movable one past or before the other, and mechanism for preventing said driver from operating said adding mechanism until the type-writer carriage shall have reached a given point in its forward traverse, substantially as described.

35. The combination with type-operating keys and a carriage, of adding mechanism, a driver for independently operating each element of the adding mechanism, connections between said driver and said carriage for moving the driver in one direction from element to element of the adding mechanism, and connection from certain of the keys for moving said driver variable distances in another direction to operate said adding mechanism, substantially as described.

36. The combination of type-operating keys, a platen, independently-operable adding-wheels, a driver for said wheels movable independently in two directions and connected with said wheels one at a time beginning at a predetermined point of the letter-spacing, and two independent connections between said keys and said driver for moving the driver in a step-by-step manner in one direction and for moving it variable distances in the other direction to operate said wheels, substantially as described.

37. The combination of a type-writer mechanism having a step-by-step moving carriage, adding mechanism, a rotatory and sliding driver for actuating said adding mechanism, connections with type-operating mechanism for rotating said driver, and mechanism for connecting said driver with the carriage at a predetermined point in the forward traverse of said carriage and moving said driver axially into engagement with said adding mechanism, substantially as described.

38. The combination of type mechanism, a carriage, independently-operable adding-wheels, a rotatory and axially-movable driver for said wheels disconnected therefrom during a part of the forward movement of the carriage, mechanism connecting said driver with type-operating mechanism and rotating at variable distances, and means for moving the driver axially to bring the same into operative relation with said wheels one at a time after the carriage reaches a predetermined point in its forward progress, substantially as described.

39. The combination of type mechanism, a carriage, independently-operable adding-wheels, a rotatory driving-pinion for said wheels disconnected therefrom during a part of the traverse of the carriage, a journaled shaft with which the pinion rotates and along which it is movable, mechanism connecting said shaft with type-operating mechanism for rotating the shaft variable distances, and means for moving said driver along said shaft and connecting it with said wheels in succession after the carriage has reached a predetermined point in its forward traverse, substantially as described.

40. The combination of type mechanism, a carriage, independently-operable adding-wheels, a driving-pinion for said wheels disconnected therefrom during a part of the traverse of the carriage, a shaft with which the pinion rotates and along which it moves, mechanism connecting type-writing mechanism with said shaft for rotating it variable distances, and mechanism for connecting said driving-pinion with the carriage after the latter has reached a predetermined point and with said adding-wheels in succession, substantially as described.

41. The combination of type mechanism, having a carriage, independently-operable adding-wheels, a driver-pinion for said wheels disconnected therefrom during a part of the traverse of the carriage, a shaft with which the pinion turns and along which it may move, speed-multiplying mechanism intermediate said driver-pinion and the carriage thrown into operation at a predetermined point in the forward traverse of said carriage and moving said pinion along the shaft, means for connecting said driver-pinion with said adding-wheels one at a time, and means for connecting type-operating mechanism with said shaft and giving it a variable throw, substantially as described.

42. The combination with type-operating mechanism and a platen one of which moves for letter-spacing, of a series of independently-rotatable adding-wheels, independently-rotatable gears for rotating said wheels, and a pinion movable in the direction of its axis and controlled by type-operating mechanism for operating said independent gears one by one and brought into mesh with the first gear thereof at a predetermined point in the forward traverse of the moving element of said type-writing mechanism, with mechanism for discontinuously connecting said pinion with said moving element, substantially as described.

43. The combination with type-operating mechanism and a platen one of which moves for letter-spacing, of a series of adding-wheels independently rotatable on the same shaft, a series of independently-rotatable gears connected therewith to rotate the same independently, a driving-pinion adapted to mesh with said independent gear one by one and to be out of engagement therewith during the first part of the traverse of the moving element of the printing mechanism, mechanism controlled by type-operating mechanism for rotating the said driving-pinion variable distances, and mechanism thrown into operation during the latter part of the traverse of said moving element of the printing mechanism for moving said operating-pinion in a step-by-step manner into mesh with and from one to another of said independent gears, substantially as described.

44. The combination of type mechanism, a carriage, independently-rotatable adding-wheels, gears for independently rotating said wheels, an axially-movable driving-pinion for operating said independent gears one by one and brought into mesh with the first gear thereof at a predetermined point in the forward traverse of the carriage, connections between type-operating mechanism and said driving-pinion for giving the latter a variable throw, and connections between said carriage and said driving-pinion for moving the pinion axially, and said connections being inoperative until and thrown into action when the carriage reaches a predetermined point in its forward traverse, substantially as described.

45. The combination of type mechanism, a carriage, independently-operable adding-wheels, a driving-pinion, a shaft with which said pinion rotates and along which it moves, mechanism intermediate type-operating mechanism and said shaft for rotating the shaft variable distances, and mechanism intermediate the carriage and the driving-pinion and discontinuously connected with one of said parts for bringing the driving-pinion into mesh with the adding-wheel-operating gears one by one and with the first gear thereof at a predetermined point in the forward traverse of the carriage, substantially as described.

46. The combination of type mechanism, a carriage having a uniform step-by-step feed for letter-spacing, independently-operable adding-wheels, independent gear for operating said wheels placed at a uniform distance from center to center greater than the uniform feed of the carriage, a driving-pinion movable in the direction of its axis into mesh with and from one to another of said independent gears, speed-multiplying connections between said carriage and said driving-pinion for moving the pinion in the direction of its axis, said multiplying connections being inclusive of a rack upon the carriage and a pinion in mesh therewith, and mechanism controlled by type-operating mechanism for rotating said driving-pinion variable distances, substantially as described.

47. The combination of type mechanism, a carriage having a uniform letter-spacing feed, independently-operable adding-wheels, independent gears for rotating said wheels and placed at a uniform distance from center to center greater than the uniform letter-space feed of the carriage, a driving-pinion movable in the direction of its axis and out of mesh with said independent gears during a part of the forward traverse of the carriage, speed-multiplying mechanism between said carriage and said driving-pinion and thrown into operation at a predetermined point in the forward movement of the carriage and moving said driving-pinion axially into mesh with the first of said independent gears and from one to another thereof in succession, and mechanism intermediate type-operating mechanism and said driving-pinion for rotating the pinion variable distances, substantially as described.

48. The combination with type mechanism and a platen one of which moves uniform distances for letter-spacing, of independently-operable adding-wheels at a uniform distance apart from center to center greater than the uniform letter-space feed, an axially-movable rotary driver for said wheels and connected with said adding-wheels one at a time, and two independent mechanisms controlled by type-operating mechanism for moving the driver axially step by step in one direction and connecting it with said adding-wheels as described and for giving the driver variable motion in a rotary direction, substantially as described.

49. The combination with type-operating mechanism and a platen-carriage, of a series of independently-rotatable adding-wheels, a series of gears independently rotatable and connected each with a corresponding adding-wheel, a driving-pinion adapted to mesh with said independent gears and disengaged therefrom during the first part of the motion of said carriage to the left, connections thrown into operation at a predetermined point by said carriage for moving said driving-pinion axially into mesh with and from one to another of said independent gears, and mechanism controlled by type-operating mechanism for variably rotating said driving-pinion in one direction, substantially as described.

50. The combination of type mechanism, a carriage, a series of independently-rotatable adding-wheels each having a gear 179 thereon, a series of independent gears 178, intermediate gears 181 connecting gears 178 with the gears 179, a driving-pinion 190 automatically and discontinuously connected to the carriage during a part of the forward movement of the carriage, the said automatic connection being effected by the forward run of the carriage, and the pinion 190 being adapted to mesh with said gears 178 one at a time and to be disengaged therefrom, connections between said carriage and said pinion 190 for moving the pinion 190 into mesh with the gears 178 in succession, and mechanism controlled by type-operating mechanism for rotating said pinion 190 variably, substantially as described.

51. The combination of a series of adding-wheels, a series of independent gears 178 connected to and rotating said adding-wheels, a driving-pinion having a step-by-step motion into mesh with and from one to another of said pinions 178, a reciprocating frame connected with said driving-pinion for rotating the same, and a series of cams for moving said reciprocating frame variable distances, type-writing mechanism, and means for moving said driving-pinion endwise and for operating said cams, substantially as described.

52. The combination with type-operating mechanism, a platen-carriage, independently-operable adding-wheels, gears connected therewith and operating the same, an axially-movable driver-pinion, mechanism in-

terrediate said driver-pinion and the carriage including a rack on the carriage and a pinion on the frame disengaged from the rack during a part of the forward movement of the carriage, a locking-bar on said carriage, and a locking-leg connected with said pinion on the frame for preventing the rotation of said pinion before its engagement with said rack, with means for rotating said driver-pinion variable distances, substantially as described.

53. The combination with type-operating keys, a platen-carriage and adding mechanism, of mechanism for operating said adding mechanism and disengaged therefrom during a part of the forward movement of the carriage and said operating mechanism being partly operated by certain of the keys and partly by the carriage, and locking mechanism for said operating mechanism controlled by the carriage, substantially as described.

54. The combination of type mechanism, a carriage, adding mechanism, a driver for operating said adding mechanism and disengaged therefrom during a part of the forward motion of said carriage, a rack on said carriage, a pinion in the path of said rack with which the said rack meshes at a predetermined point in the forward motion of said carriage, mechanism intermediate said pinion and said driver for moving the driver in the direction of its axis of motion, a lug or projection connected and eccentrically placed with relation to said pinion, a locking-bar connected with said carriage and coacting with said lug to prevent rotation of said pinion until the carriage reaches said point, and means controlled from the keyboard for rotating said driver, substantially as described.

55. The combination of type mechanism, a carriage, adding-wheels and operating-gears therefor placed at a uniform distance from center to center greater than the letter-space feed of said carriage, an axially-movable driving-pinion which is disengaged from said adding-wheel gear during a part of the forward motion of the carriage, a reciprocating rack to which said driving-pinion is connected and by which it is moved axially, a large pinion engaging said rack, a shaft carrying said pinion, a smaller pinion on said shaft, a short rack on the carriage for engaging with said smaller pinion at a predetermined point in the forward motion of the carriage, and a lug connected with and eccentrically placed with relation to said shaft or smaller pinion, a bar on said carriage coacting with said lug to lock the shaft against rotation until said short rack is in mesh with said pinion, and means controlled from the keyboard for rotating said driving-pinion variable distances, substantially as described.

56. The combination with type mechanism, a carriage, and carriage release and stop mechanism adapted to release the carriage at any point and to arrest it at different distances from a predetermined point, of adding mechanism, and operating means for said adding mechanism disengaged therefrom during a part of the forward motion of said carriage and controlled partly from the keyboard and partly by said carriage, substantially as described.

57. The combination with type mechanism, a carriage and carriage release and stop keys adapted to coact with said carriage to release the same at any point and to arrest it at different distances from a given point, of adding mechanism, and operating means therefor disengaged therefrom during a part of the forward motion of said carriage and controlled partly from the keyboard and partly by said carriage, substantially as described.

58. The combination of type-writing mechanism including a carriage having uniform letter-space feed, independently-operable adding-wheels arranged side by side in a frame, independent pinions for operating said wheels placed at uniform distances from center to center greater than the uniform letter-space feed, an axially-movable driving-pinion, speed-multiplying connections between said carriage and said pinion for moving the pinion axially step by step into mesh with said pinions singly in succession, mechanism controlled from the keyboard for rotating said driving-pinion variable distances, and means for moving said adding mechanism into two positions in one of which the adding mechanism is operated by said driving-pinion and in the other of which the driving-pinion is not operatively connected with said mechanism, substantially as described.

59. In a type-writing machine, the combination with type-operating mechanism including a carriage having uniform letter-space feed, independently-operable adding-wheels, pinions connected therewith for rotating the same independently and placed at a uniform distance from center to center greater than the uniform letter-space feed, an axially-movable driving-pinion, speed-multiplying connections between said carriage and said pinion for moving the latter axially into mesh with said pinions singly in succession, mechanism controlled from the keyboard for rotating said driving-pinion variable distances, and means for moving said adding mechanism into two positions in one of which it may be operated by said driving-pinion and in the other of which it is not operated thereby, substantially as described.

60. The combination of type mechanism, a power-driven escapement-controlled carriage, adding mechanism normally disconnected from the carriage but adapted to be brought in coöperative relation with said carriage and type mechanism at a given point in the forward traverse of the carriage, mechanism for releasing said carriage, and a variable stop mechanism for arresting said carriage at different distances from a predetermined point, substantially as described.

61. The combination of type mechanism, a power-driven escapement-controlled carriage, adding mechanism normally disengaged from the carriage but adapted to be brought into coöperative relation with said mechanism and carriage at a given point in the forward traverse of the carriage, a mechanism for releasing said carriage from the control of said escapement, and a series of stops at letter-space distances apart for arresting said carriage at different distances from a predetermined point, substantially as described.

62. The combination of a type mechanism, a power-driven escapement-controlled carriage, adding mechanism normally disengaged from said carriage but adapted to be brought into coöperative relation therewith and with said type mechanism at a given point in the forward traverse of said carriage, a mechanism for releasing said carriage, and a series of stops equal in number at least to the number-carriers of the adding mechanism representing units, tens, hundreds, &c., and adapted to arrest said carriage at different distances from a predetermined point, substantially as described.

63. The combination of type mechanism, a power-driven escapement-controlled carriage, adding mechanism normally disengaged from said carriage but adapted to be brought into coöperative relation therewith and with said type mechanism at a given point in the forward traverse of said carriage, a mechanism for releasing said carriage from the control of said escapement, and key-actuated stops for arresting said carriage at different distances from a predetermined point, substantially as described.

64. The combination of type mechanism, a power-driven escapement-controlled carriage, adding mechanism normally disengaged from said carriage but adapted to be brought into coöperative relation therewith at a given point in the forward traverse of the carriage, a mechanism for releasing said carriage from the control of the escapement, and key-actuated stops arranged at letter-space distances apart and adapted to arrest said carriage at different letter-space distances from a predetermined point, substantially as described.

65. The combination with type mechanism, a power-driven escapement-controlled carriage, a carriage release and stop mechanism adapted to release the carriage and to reëngage and stop the carriage at a given point, of adding mechanism brought into operative relation with the carriage and type mechanism when the carriage reaches said point, substantially as described.

66. The combination with type mechanism, a power-driven escapement-controlled carriage, a mechanism for releasing said carriage, and a stop interposable in the path of said carriage or a part thereon and adapted to arrest the carriage at a given point, with adding mechanism brought into operative relation with the carriage and type mechanism when the carriage reaches said point, substantially as described

67. The combination with type mechanism, a power-driven escapement-controlled carriage, an adding mechanism adapted to be brought into operative relation with the carriage and type mechanism when the carriage reaches a predetermined point in its forward traverse, release mechanism adapted to release the carriage, and a stop interposable in the path of a part on or connected to and moving with the carriage to arrest the carriage so that upon the reingagement of the carriage with its controlling mechanism the adding mechanism will be in proper operative relation with said carriage and type mechanism, substantially as described.

68. The combination of type mechanism, a power-driven escapement-controlled carriage, adding mechanism normally disengaged from said carriage and inactive during a part of the forward traverse of said carriage and brought into operative relation therewith and with the type mechanism at a predetermined point in the forward motion of said carriage, a carriage-release mechanism adapted to release the carriage and permit it to run forward under the influence of the power, and a stop interposable in the path of a part on or connected to and moving with said carriage, said power, said release and said stop devices coöperating to permit or cause the power-driven carriage to move forward quickly to and to be arrested at said predetermined point on the release of the stop, substantially as described.

69. The combination of type mechanism, a power-driven escapement-controlled carriage, adding mechanism normally disengaged but adapted to be brought into coöperative relation with the carriage and type mechanism when the carriage reaches a predetermined point in its forward traverse, a series of carriage-stops arranged at letter-space distances apart and adapted to arrest the carriage at different distances from a given point and means for releasing the carriage and permitting it to be driven forward quickly until arrested by the selected interposed stop, substantially as described.

70. The combination of type mechanism, a power-driven escapement-controlled carriage, adding mechanism brought into operative relation with the carriage and type mechanism when the carriage reaches a predetermined point in its forward traverse, a carriage-release mechanism, a series of carriage-stops arranged at letter-space distances apart and adapted to arrest the carriage at different distances from a given point, and keys for simultaneously releasing the carriage and interposing said stops, substantially as described.

71. The combination of type mechanism, a power-driven carriage, and adding mechanism adapted to be brought into operative relation with the carriage and type mechanism when the carriage reaches a predetermined point in its forward traverse, a series of key-levers each having a carriage-stop at one end, a coöperating step or lug on the carriage adapted to coact with said key-operated stops, a universal bar actuated by all of said key-levers, a carriage-controlling escapement adapted to be operated by the operation of said universal bar and said key-levers to release the power-driven carriage and permit it to run forward freely until arrested by the stop interposed by the depression of one of said key-levers whereby the adding mechanism is brought into said operative relation and the carriage is immediately positioned for writing numbers in proper relation to other numbers in columnar arrangement, substantially as described.

72. The combination of type mechanism, a carriage, an adding mechanism having independent means for operating its number-carriers, a driver for operating said independent means one at a time and said driver and said means being disengaged during a part of the forward traverse of said carriage, and said driver and said adding mechanism being relatively movable step by step, means for automatically connecting said step-by-step element with the carriage when the latter reaches a given position in its forward traverse and moving step by step thereafter as the carriage moves into the positions in which there is engagement between said driver and said independent means, and means for moving the non-step-by-step movable element into position where there will not be engagement between said driver and said independent means while the said step-by-step moving element is in its positions for said engagement, substantially as described.

73. The combination of type mechanism, a carriage, an adding mechanism having independent means for operating its number-carriers, a driver for operating said independent means one at a time and disengaged therefrom during a part of the forward traverse of the carriage, mechanism for connecting said driver with said carriage when the carriage reaches a given point in its forward traverse and thereafter moving the driver step by step into positions for meshing with and from one to another of said independent means, and means for moving said adding mechanism into and out of position for actuation by said driver, substantially as described.

74. The combination of type mechanism, a carriage, a series of number-wheels each provided with two gears, as 179, 180, independent pinions 181 meshing with gears 179, independent pinions 182 meshing with gears 180, independent gears 178 meshing with pinions 181, pinions 183 journaled eccentrically of and on gears 178 and adapted to coact with pinions 182 to "carry," spring-detents engaging said pinions 183 and permitting them to rotate freely in but one direction, said number-wheels, gears 178, 179, 180, pinions 181, 182, 183 and detents forming an adding mechanism, a driver adapted to operate said gears 178 one at a time but out of engagement therewith during part of the forward traverse of the carriage and said driver and said adding mechanism being movable one relatively to the other in a step-by-step manner to cause engagement or mesh of said driver and said gear 178, mechanism connecting said driver with type-operating mechanism to rotate the driver, and mechanism for connecting the stop-by-step moving element of the driver adder-couple with the carriage when the carriage reaches a given point in its forward traverse and for moving said movable element step by step as the carriage further progresses step by step after such connection is made, substantially as described.

75. The combination of type mechanism, a carriage, a series of number-wheels each provided with two gears, as 179, 180, independent pinions 181 meshing with gears 179, independent pinions 182 meshing with gears 180, independent gears 178 meshing with pinions 181, pinions 183 journaled eccentrically of and on gears 178 and adapted to coact with pinions 182 to "carry," spring-detents engaging said pinions 183 and permitting them to rotate freely in but one direction, said number-wheels, gears 178, 179, 180, pinions 181, 182, 183 and detents forming an adding mechanism, a driver adapted to operate said gears 178 one at a time but out of engagement therewith during part of the forward traverse of the carriage, and said driver be movable step by step into engagement or mesh with and from one to another of said gears 178, mechanism connecting said driver with type-operating mechanism to rotate the driver and mechanism for connecting the driver with the carriage when the carriage has reached a given point in its forward traverse and for moving said driver step by step into engagement with and from one to another of said gears 178 as the carriage further progresses step by step after such connection is established, substantially as described.

76. The combination of type mechanism, a carriage, two independently-rotatable number-wheels having the same axis of motion, a gear 179 on the wheel of lower denomination, a gear 180 on the wheel of higher denomination, a pinion 181 meshing with gear 179, a pinion 182 meshing with gear 180, a gear 178 meshing with pinion 181, a one-way yielding detent on gear 178 adapted to intermittently actuate pinion 182 to carry, said number-wheels, gears 178, 179, 180, pinions 181, 182 and detent forming an adding mechanism, a driver adapted to operate said gear 178 but out of engagement therewith during part of the forward traverse of the carriage, and said driver and said adding mechanism being movable one relatively to the other in a step-by-step manner to cause engagement or mesh of said driver and said gear 178, mechanism connecting said driver with type-operating mechanism to rotate the driver and mechanism for connecting the stop-by-step moving element of the driver adder-couple with the carriage when the carriage reaches a given point in its forward traverse and for moving said movable element step by step as the carriage further progresses step by step after such connection is made, substantially as described.

77. The combination of type mechanism, a carriage, two number-carrying wheels independently rotatable on the same axis, a gear 179 on the wheel of lower denomination, a gear 180 on the wheel of higher denomination, a pinion 181 meshing with gear 179, a pinion 182 meshing with gear 180, a driver-gear 178 meshing with pinion 181, a pinion 183 pivoted on gear 178 eccentrically thereof and adapted to engage with pinion 182 to "carry," a detent permitting said pinion 183 to rotate freely in but one direction, said number-wheels, gears 178, 179, 180, pinions 181, 182, 183 and the detent forming an adding mechanism, a driver adapted to operate said gear 178 but out of engagement therewith during part of the forward traverse of the carriage, and said driver and said adding mechanism being movable one relatively to the other in a step-by-step manner to cause engagement or mesh of said driver and said gear 178, mechanism connecting said driver with type-operating mechanism to rotate the driver and a mechanism for connecting the step-by-step moving element of the driver adder-couple with the carriage when the last reaches a given point in its forward traverse and for moving said movable element step by step as the carriage further progresses after such connection is made, substantially as described.

78. The combination of type mechanism, a carriage, a series of number-wheels independently rotatable on the same shaft or axis, a series of independent driving or motion-transmitting gears operatively connected each with the corresponding number-wheel and provided with stop pins or lugs, a series of pivoted detent-fingers adapted to coact with said stop pins or lugs to arrest said gears in given positions, and a frictional device for reversely rotating said wheels and gears until said fingers arrest said pins or lugs and bringing said wheels and gears to their initial or zero positions with a driver for operating said gears one at a time and disengaged therefrom during a part of the forward traverse of the carriage and operatively connected with type-operating mechanism, and mechanism for connecting said driver with the carriage when the carriage has reached a given point in its forward traverse and for thereafter moving the driver step by step as the carriage progresses and into engagement with and from one to another of said gears, substantially as described.

79. The combination of type mechanism, a carriage, an adding mechanism having independently-operable number-carriers, driver mechanism for operating said adding mechanism and disengaged therefrom during a part of the forward traverse of the carriage, a shaft journaled in the framework and discontinuously geared with the carriage but continuously geared with the driver mechanism, and connections between the driver mechanism and type mechanism, substantially as described.

80. The combination of type mechanism, a carriage, an adding mechanism having independently-operable number-carriers, a driving mechanism for operating said adding mechanism, connections between the driver mechanism and type mechanism, and a shaft journaled in the framework intermediate said driver mechanism and said carriage and continuously geared with one and discontinuously geared with the other of said driver mechanism and carriage elements, substantially as described.

81. The combination with a type-writing mechanism, including a carriage, a series of letter and figure types, and keys therefor, of a tabulating mechanism for controlling the movement of the carriage, and an adding mechanism brought into operative connection with both the carriage and the figure keys upon the operation of the tabulating mechanism, substantially as described.

82. The combination of a platen, means for feeding said platen letter-space distances, a series of letter and figure types which coöperate with the platen and keys therefor, a series of adding-wheels, and key-controlled selecting means for automatically connecting the figure-keys with any of the adding-wheels, substantially as described.

83. The combination of a platen, means for feeding said platen letter-space distances, a series of letter and figure types which coöperate with the platen and keys therefor, a series of adding-wheels, a selecting-key associated with each adding-wheel, and means called into action upon the operation of any one of said selecting-keys for connecting its associated wheel with the figure-types, substantially as described.

84. The combination with the carriage of a type-writing machine, of a series of adding-wheels, means controlled by the carriage at one portion of its forward traverse for connecting any of the wheels to the figure-keys of the type-writing machine, and a series of tabulating-stops for arresting the carriage at any selected point in said portion of its travel, substantially as described.

85. The combination with the carriage of a type-writing machine of a series of adding-wheels, means controlled by the carriage at one portion of its forward traverse for connecting any of the wheels with the figure-keys of the type-writing machine, and a series of key-controlled stops for arresting the carriage at any selected point in said portion of its travel, substantially as described.

86. In a type-writing and adding mechanism, the combination of a power-driven carriage, a series of adding-wheels, means controlled by the carriage at one portion of its forward traverse for connecting any of the adding-wheels with the figure-keys of the type-writing machine, releasing mechanism for the carriage, a key constructed to operate the releasing mechanism, and a stop constructed to coact with the release-key for stopping the carriage, after its release, at the said portion of its forward traverse, substantially as described.

87. In a type-writing, tabulating and adding mechanism, the combination of a power-driven carriage, a series of adding-wheels, means controlled by the carriage at one portion of its forward traverse for connecting any of the adding-wheels with the figure-keys of the type-writer, a releasing device for the carriage, a series of keys constructed to operate the releasing device, and a series of stops constructed to coact with the releasing-keys for stopping the carriage, after its release, at any point in said portion of its travel, substantially as described.

88. The combination of a series of letter and figure types, a series of keys therefor, a carriage connected for letter-space movements to all the keys, whereby numbers may be written in a column on a predetermined portion of a page, and words may be written opposite numbers, a series of adding-wheels, and means automatically called into action only during the movement of the column past the printing-point in both directions of the carriage travel, for connecting the adding-wheels consecutively to the figure-keys at the forward traverse of the carriage, and for restoring said adding-wheel-connecting means to initial position at the return traverse thereof, substantially as described.

89. The combination of a series of letter and figure types, a series of keys therefor, a carriage connected for letter-space movements to all the keys, a series of adding-wheels, and means automatically called into action during only the final portion of the forward traverse of the carriage for connecting the adding-wheels consecutively to the figure-keys, and only during the initial portion of the reverse movement of the carriage for restoring said adding-wheel-connecting means to initial position, substantially as described.

90. The combination of a series of letter and figure types and keys therefor, a series of adding-wheels, a selecting-key associated with each adding-wheel, and means called into action upon the operation of any one of said selecting-keys for automatically connecting its associated wheel with the figure-keys and simultaneously moving the carriage so that the corresponding digit-column on the paper is brought to the printing-point, substantially as described.

91. The combination of a series of letter and figure types, a series of keys therefor, a power-driven carriage connected to all the keys for letter-space movements, a series of adding-wheels, a series of tabulating-keys connected to the carriage, each of which is constructed to release the carriage and cause it to be arrested at a predetermined point, the carriage being constructed, to automatically connect with the adding-wheels upon being so released, and to automatically bring into connection with the figure-keys the adding-wheel that corresponds to the digit-column that is brought to the printing-point when the carriage is so arrested, substantially as described.

92. The combination of a power-driven paper-carriage, including letter and figure types and keys therefor, a series of adding-wheels, driving means therefor, said wheels and said driving means being relatively movable, key-operated variable stop mechanism connected to the paper-carriage and constructed to release and encop the same to be arrested at different points, as determined by the particular stop-key operated, and means controlled by said carriage for automatically connecting said wheel-driving means to the carriage after it is so released and before it is so arrested, so as to produce a relative movement of the adding-wheels and their said driving means, and to thereby connect to the figure-keys the adding-wheel that corresponds to the digit-column that is brought to the printing-point when the carriage is so arrested, substantially as described.

93. In a combined type-writing and adding machine, mechanism whereby type-writing may be done on one part of the line without adding, and whereby adding may be done at the end of the line when writing figures in a column, a set of denomination or order keys connected to the adding mechanism and to the paper-carriage of the type-writer for variably positioning the paper-carriage and adding mechanisms, whereby when any selected denomination-key is actuated the paper-carriage is released and brought rapidly to a point corresponding to the denomination of the number to be written in the column, and at the same time the adding mechanism is automatically adjusted to a corresponding point, so that when a type-key is struck the figure will be printed in the proper position in the column, and the adding-wheel of the same denomination will be simultaneously affected, so as to correctly add the figure printed.

94. The combination of a series of letter-types and keys therefor, a series of figure-types and keys therefor, a carriage connected for letter-space movements to all the keys, whereby words may be written at one portion of each line in connection with numbers written at another portion of each line, a series of adding-wheels, means called into action at a predetermined portion of the traverse of the said carriage for engaging any adding-wheel to the figure-keys, and means for enabling any key to limit the rotative movement of the adding-wheel to an extent corresponding with the numeral represented by the key, whereby the successive numbers so written at such portion of the carriage traverse may be added, substantially as described.

95. The combination of a carriage, a series of figure-types and keys therefor, a series of number-carriers, a series of independently-movable devices, as 178, for operating said number-carriers, a variable-throw driver operatively connected to said figure-keys and constructed and arranged to drive said number-carrier-operating devices one at a time, automatically-operative means controlled by said carriage for causing a relative step-by-step movement between said driver and said number-carrier operating devices, and hand-operated means for positioning said movable devices where the step-by-step movement thereof and the driver with relation one to another will be ineffective to bring the parts into coöperative relation, substantially as described.

96. The combination of a series of figure-types and keys therefor, a series of number-carriers, a series of independently-movable devices for operating said number-carriers, a variable-throw driver connected to said figure-keys and constructed and arranged to drive said number-carrier-operating devices one at a time, means controlled by said carriage for causing a relative step-by-step movement between said driver and said number-carrier-operating devices, and key-controlled selecting means for automatically connecting the figure-keys and driver with any desired number-carrier, substantially as described.

97. The combination of figure-types and keys therefor, a, paper-carriage, number-wheels, a gear on each side of and fixed to each of the number-wheels, gears 178, one for each of the number-wheels, one or more pinions 183 pivoted to each of said gears 178, and intermediate pinions 181 and 182 between the gears 178 and the gears on the number-wheels, there being twice as many pinions 181 and 182 as there are gears 178.

98. The combination of a series of figure-types and keys therefor, a paper-carriage controlled by said keys, a rack 191 moved by said carriage, a pinion 195 meshing with said rack, a second pinion 198 moved by said pinion 195, a rack 199 meshing with the pinion 198, a gear 190, the axial movement of which is controlled by the rack 199, and number-carriers operable one at a time by said gear 190, substantially as described.

99. The combination of a series of key-controlled figure-types, a carriage, an adding mechanism including a second carriage, speed-multiplying connections between said carriages, and key-controlled selecting means for automatically connecting the figure-keys with any desired number-carrier in said adding mechanism, substantially as described.

100. The combination of a series of figure-types and keys therefor, a carriage, a series of number-carriers, a driver for operating said carriers one by one, connections between said driver and the figure-keys, speed-multiplying connections between said carriage and said driver, and a series of selecting-keys for automatically connecting the driver with any desired number-carrier, substantially as described.

101. The combination of a series of figure-types and keys therefor, a carriage, a series of number-wheels, a series of independently-operable gears for actuating said number-wheels, said gears being placed at intervals greater than the letter-space movements of said carriage, a driving-pinion movable in an axial direction from gear to gear, speed-multiplying mechanism connecting said carriage to said driving-pinion, connections from said pinion to said figure-keys, substantially as described.

102. The combination of a series of figure-types and keys therefor, a carriage, a series of number-wheels, a series of independently-operable gears for actuating said number-wheels, said gears being placed at intervals greater than the letter-space movements of said carriage, a driving-pinion movable in an axial direction from gear to gear, speed-multiplying mechanism connecting said carriage to said driving-pinion, connections from said pinion to said figure-keys, and a key-controlled selecting mechanism for automatically connecting the driver with any desired number-carrier, substantially as described.

103. The combination of a series of figure-types and keys therefor, a carriage, a series of number-wheels, a series of independently-operable gears which coöperate with and are adapted to actuate said number-wheels, gear 190 which is operatively connected to said figure-keys, rack 191, pinion 195, pinion 198, rack 199, said racks and pinions comprising intermediate mechanism between the carriage and gear 190, for bringing about an axial movement of said gear 190 and the actuating-gears with relation one to another, and a key-controlled selecting mechanism for automatically connecting said gear 190 with any desired number-wheel-actuating gear, substantially as described.

104. The combination of a key-operated type mechanism, a carriage, adding mechanism, a driver for independently operating each element of the adding mechanism, connections between said driver and said carriage for moving the driver in one direction from element to element of the adding mechanism, connections from said key-operated type mechanism for moving said driver variable distances in another direction to operate said adding mechanism, and a key-controlled selecting mechanism for automatically connecting said driver with any desired element of the adding mechanism, substantially as described.

105. The combination of a key-operated type mechanism, a spring-propelled carriage, a series of adding-wheels, a driver movable from wheel to wheel, connections from said driver to said key-operated mechanism for moving said driver in one direction, connections from said driver through said carriage to said key-operated mechanism for moving said driver in another direction, and connections from said driver through said carriage to an independent series of keys for automatically connecting said driver with any desired wheel, substantially as described.

106. The combination of a key-operated type mechanism, a series of adding-wheels, a series of independently-actuable gears for operating said adding-wheels, a driving-pinion common to all of said gears, a reciprocatory frame for operating said driving-pinion, a series of key-operated cams connected to said type mechanism for operating said reciprocatory frame, means for moving said driving-pinion from gear to gear, and a key-controlled selecting mechanism for automatically connecting said driving-pinion with any desired gear, substantially as described.

107. The combination of a key-operated type mechanism, a carriage, an adding mechanism including another carriage, said carriages being spring-propelled and the carriage of the adding mechanism being connected to move at greater speed than the first-mentioned carriage, and connections between said type mechanism and said adding mechanism, whereby the number printed at the operation of a key is automatically added, substantially as described.

108. The combination of a series of figure-types, keys therefor, a carriage, an adding mechanism including a carriage, said carriages being spring-propelled and the carriage of the adding mechanism being connected to move faster than the first-mentioned carriage, connections between said type-keys and said adding mechanism, whereby the number printed at the depression of a key is automatically added, and a key-operated mechanism for connecting said figure-keys simultaneously with any desired number-carrier of the adding mechanism, substantially as described.

109. The combination of a series of number-carriers, a key-controlled common actuator therefor, a propelling-spring for causing relative movements between said number-carriers and said actuator, an escapement mechanism for controlling said movements, a releasing mechanism, and a key-controlled stop mechanism, whereby said spring is enabled to cause a rapid relative movement between said number-carriers and said actuator, independently of said escapement mechanism, and whereby said relative movement is arrested at a point predetermined by said key-controlled stop mechanism, substantially as described.

110. The combination of a series of figure-types, keys therefor, a series of number-carriers, a common actuator for said carriers, connections from said keys to said actuator, a propelling-spring for causing relative movements between said number-carriers and said actuator, escapement mechanism for controlling said relative movements, releasing mechanism, and a key-controlled stop mechanism, whereby said spring is enabled to cause relative movement between said number-carriers and said actuator, independently of said escapement mechanism, and whereby said relative movement is arrested at a point predetermined by said key-controlled stop mechanism, substantially as described.

111. The combination of a series of figure-types, keys therefor, a series of number-wheels, a common rotary driver for said number-wheels, connections from said driver to said keys, a propelling-spring for moving said driver in an axial direction along said series of number-wheels, escapement mechanism for controlling said axial movements of the common driver, a releasing mechanism, a series of stops, and a series of denomination-keys connected to said stops and to said releasing mechanism, the construction and arrangement being such that at the depression of any of said denomination-keys said common driver is released from the control of said escapement mechanism and is moved rapidly by said propelling-spring until arrested by the stop associated with the operated denomination-key, and in position to effect a rotation of the number-wheel corresponding to the denomination of the said depressed key.

112. In a combined type-writing and adding machine, the combination of a carriage, letter-keys, means controlled by said letter-keys for effecting a letter-space feed of the carriage, adding mechanism, actuating means therefor, and key-controlled mechanism for effecting a movement of the carriage through any desired number of letter-space distances and to place the adding mechanism and its actuating means in coöperative relation.

113. In a combined type-writing and adding machine, the combination of a carriage, letter-keys, means controlled by said letter-keys for effecting a letter-space feed of the carriage, adding mechanism, actuating means therefor, means for maintaining said adding mechanism out of operation during a portion of the movement of the carriage, and key-controlled mechanism for effecting a movement of the carriage through any desired number of letter-space distances and to automatically place the adding mechanism and its actuating means in coöperative relation.

114. In a combined type-writing and adding machine, the combination of a carriage, letter-keys, means controlled by said letter-keys for effecting a letter-space feed of the carriage, adding mechanism, actuating means therefor, and key-controlled mechanism for effecting a movement of the carriage through any desired number of letter-space distances and to place any desired portion of the adding mechanism and its actuating means in coöperative relation.

115. In a combined type-writing and adding machine, the combination of a carriage, letter-keys, means controlled by said letter-keys for effecting a letter-space feed of the carriage, actuating mechanism therefor, and key-controlled mechanism for releasing the carriage from its letter-space-feeding mechanism to permit a free movement of the carriage through any desired number of letter-space distances and to place the adding mechanism and its actuating means in coöperative relation and to automatically reëngage the carriage with the letter-spacing means after the carriage has been moved as described.

116. In a combined type-writing and adding machine, the combination of a carriage, letter-keys, means for effecting a letter-space feed of the carriage, adding mechanism, actuating means therefor, and selecting mechanism for effecting a free movement of the carriage throughout any number of letter-space distances and to automatically arrest the carriage at any one of a number of positions where the adding mechanism and its actuating means are brought into coöperative relation.

117. In a combined type-writing and adding machine, the combination of a carriage, letter-keys, means for effecting a letter-space feed of the carriage, adding mechanism, actuating means therefor, a plurality of key-controlled selecting-stops carried by the framing of the machine and means coöperating therewith for effecting a free movement of the carriage throughout any number of letter-space distances and to automatically arrest the carriage at any one of a number of positions where the adding mechanism and its actuating means are brought into coöperative relation.

118. In a combined type-writing and adding machine, the combination of a carriage, letter-keys, means for effecting a letter-space feed of the carriage, adding mechanism which during certain portions of the movement of the carriage is maintained out of operation, actuating means for said adding mechanism, key-controlled mechanism for releasing the carriage from its letter-spacing means, and adjustable means for determining the point of arrest of the carriage and whether or not the adding mechanism is to be rendered operative.

119. The combination of a carriage, letter-keys, means for effecting a letter-space feed of the carriage, adding mechanism, means for maintaining the adding mechanism out of operation during certain portions of the movements of the carriage, but which causes the adding mechanism to be automatically brought into condition to be operated by a further movement of the carriage, actuating means for said adding mechanism, key-controlled mechanism for releasing the carriage from its letter-spacing means and for automatically selecting any desired element of the adding mechanism for operation, and adjustable means for determining the point of arrest of the carriage and whether or not the adding mechanism is to be rendered operative.

120. The combination with a type-writing machine, of adding mechanism operatively connected therewith, said adding mechanism comprising adding-wheels, a driver and means for moving said driver in an axial direction, and hand-operated means for adjusting said driver and its coöperating adding-wheels one with relation to the other without disconnecting the driver from said moving means, whereby the driver though rotated is rendered ineffective to coöperate with its coöperating mechanism.

121. The combination with a type-writing machine, of adding mechanism operatively connected therewith, said adding mechanism comprising number-wheels, a driver, means for automatically moving said driver in an axial direction, and a plurality of intermediate wheels which transmit motion to the number-wheels and which coöperate with the driver, and hand-operated means for adjusting said driver and its coöperating wheels one with relation to the other, whereby the driver though rotated is rendered ineffective to coöperate with its intermediate wheels and number-wheels.

122. The combination with a type-writing machine, of adding mechanism, key-controlled denominational mechanism for automatically rendering any desired portion of the adding mechanism operative and for simultaneously positioning the carriage of the type-writing machine to the corresponding denominational position.

123. The combination with a type-writing machine, of adding mechanism comprising number-wheels and means for operating the number-wheels, and key-controlled denominational mechanism for automatically rendering any desired number-wheel of the adding mechanism operative by its operating means and for simultaneously positioning the carriage of the type-writing machine to the corresponding denominational position.

124. The combination with a type-writing machine of adding mechanism, key-controlled denominational mechanism for automatically rendering any desired portion of the adding mechanism operative and for simultaneously positioning the carriage of the type-writing machine to the corresponding denominational position, and indices for said denominational mechanism.

125. The combination of a carriage, letter-keys, means controlled by said letter-keys for effecting a letter-space feed of the carriage, adding mechanism, actuating means therefor, key-controlled mechanism for effecting a movement of the carriage through any desired number of letter-space distances and to place the adding mechanism and its actuating means in operative relation, and denominational indices for said key-controlled mechanism.

126. The combination with a type-writing machine, of adding mechanism which is adapted to be automatically thrown into or out of coöperative relation with the type-writing machine by an operation of the machine, said adding mechanism comprising a plurality of disconnected independently-operable number-wheels, an axially-moved driver which rotates all of said wheels, and intermediate mechanism between said driver and number-wheels, whereby the said intermediate mechanism performs the "carrying" operation of the number-wheels.

709,478. SHEARS. SAMUEL H. FORTNEY, Jefferson township, Montgomery county, Ohio. Filed Mar. 29, 1902. Serial No. 100,588. (No model.)

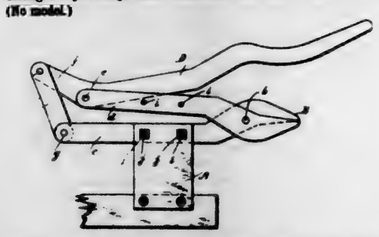

Claim.—The combination, with a pair of shear-blades having crossed and pivoted handles each provided with two similar bolt-holes *i* spaced at the same distance apart, and lever mechanism for operating the said handles; of a flat supporting-plate secured in a vertical position and having bolt-holes at its upper part corresponding with the said holes *i*, and two bolts which pass through the said bolt-holes and connect the said handles interchangeably with the said plate, substantially as set forth.

709,479. COASTER-BRAKE. CHARLES GLOVER, New Britain, Conn., assignor to P. & F. Corbin, a Corporation of Connecticut. Filed June 11, 1901. Serial No. 64,086. (No model.)

Claim.—1. In a device of the character described in combination, an axle, a wheel-hub, a driver, a worm carried thereby, internally-threaded sleeve mounted on said worm and coasting therewith, a brake and a brake-actuator, clutch devices separate from the sleeve and between said sleeve and said hub and between said sleeve and said brake-actuating means for independently connecting or disconnecting the driver with said hub or with said brake-actuating means.

2. In a power-transmitting and brake mechanism for cycles and the like in combination, a wheel-hub, a brake mechanism therefor, a driver, a clutch between said driver and said brake mechanism and a separate clutch between said driver and said hub and an internally-threaded sleeve separate from each of said clutches and located between the same and mounted on said driver, and means to impart both rotary and longitudinal movement to said sleeve to independently throw and detachably hold either of said clutches in operative engagement with the hub or the brake-actuator.

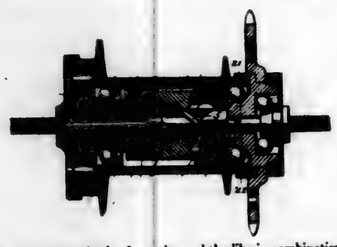

3. In a coaster-brake for cycles and the like in combination, an axle, a driving-wheel, a hub therefor, a brake, brake-actuating means, a driver, an extension from said driver, a worm thereon, an internally-threaded sleeve mounted on said extension, a clutch loosely mounted on said extension, a socket carried by the hub and adapted to receive said clutch, a second clutch on the opposite side of said sleeve coacting with said brake-actuating means, said sleeve and clutches having independent longitudinal movement, means for locking said parts against independent rotary movement, and a spring-lever carried by one of said parts and bearing against the other.

4. In a device of the character described in combination, a shifting device comprising three members arranged end to end said members being independent of one another for limiting the longitudinal movement, and means to couple the same against independent rotative movement, and a spring-lever mounted upon the intermediate member and bearing against the other members, and independent clutch devices coacting with the end members of said shifting device, a driving-wheel connected with one of said independent clutch devices, and a brake coacting with the other of said independent clutch devices.

5. In a device of the character described in combination, a wheel-hub, a brake mechanism therefor, a driver, means coacting with the driver and controlled by the direction of rotation of the same to engage either said wheel-hub or said brake mechanism, said means comprising a shifting device formed of three members arranged end to end, and a lever carried by the intermediate member, and means to normally project the ends of said lever beyond the end faces of said intermediate members.

709,480. FOLDING STEREOSCOPIC CAMERA. CARL P. GOERZ, Friedenau, near Berlin, Germany. Filed May 1, 1901. Serial No. 58,317. (No model.)

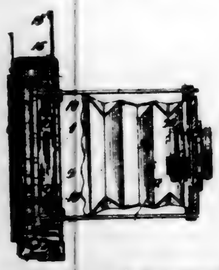

Claim.—1. A folding stereoscopic camera, comprising a body made out of a piece of especially-profiled tubing, having bellows parted by a movable partition in two attached thereto, the other end of which is closed by the objective board; pins in the corners of said objective board engaging slots and spring-pressed arms hinged to said body of the camera; a shutter for covering and uncovering the sensitized surface moving in front of same and having means for operating it; and means for shifting one of the objectives from its lateral position to the central one; substantially as shown and described.

2. In a folding camera of the kind hereinbefore described a partition-wall for separating the cones of rays produced by the two objectives, said partition formed by a flexible strip of light-proof material provided at its edges with narrow bands, said strip being fixed to the objective board and with the other end movably fastened to the body of the camera; substantially as shown and described.

3. In a folding stereoscopic camera of the kind hereinbefore described an objective board, having an oblong opening; two objectives carried by said board, one fixed and the other movable, one of the objective tubes movably arranged in said opening and means of suitable dimensions for closing said opening; substantially as shown and described.

4. In a folding stereoscopic camera of the kind hereinbefore described an objective board, an objective tube sliding in the same, a light-proof band fixed to said objective tube and guidings for the edges of the same; substantially as shown and described.

5. In a folding stereoscopic camera of the kind hereinbefore described an objective board, having a fixed and a movable objective and a central and a lateral opening for the movable objective tube; on front of said objective board being arranged movable means bearing the tube of the movable objective arranged in such a way that said tube may be brought to coincide with either of the openings; substantially as shown and described.

709,481. RAILROAD-TIE. JAMES L. GREER, Philadelphia, Pa. Filed Nov. 24, 1899. Renewed Jan. 20, 1902. Serial No. 91,851. (No model.)

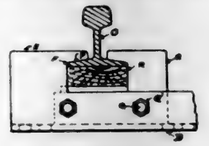

Claim.—1. A railway-tie consisting of base B, provided with openings C, and having sides D extending at right angles to said base; vertical extensions E at each end of said tie provided with a recess F; clamps G having lateral projections J and K forming recess L and adapted to be secured to said tie; and cushions R adapted to be interposed between the tie and rail and within the said recesses, substantially as shown and described.

2. An elastic cushion in combination with a metal bearing-plate having notches or recesses to fit in the upright sides of the tie and provided with one or more openings to secure said cushions thereon.

709,482. PROCESS OF ELIMINATING THE SULFUR FROM SULFID ORES. ADOLPH GUTTMANN, London, England, assignor to Sulphur Elimination Syndicate, Limited, London, England. Filed Feb. 21, 1901. Serial No. 48,363. (No specimens.)

Claim.—1. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with carbon and a sodium salt which will yield sulfid of sodium when the mixture is heated, the amount of carbon added being largely in excess of the amount required to form the sulfid of sodium heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

2. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with carbon and sodium sulfid, heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

3. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with crushed iron pyrites, carbon and a sodium salt which will yield sulfid of sodium when the mixture is heated, the amount of carbon added being largely in excess of the amount required to form the sulfid of sodium heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

4. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with crushed iron pyrites, carbon, sodium chlorid, and sodium sulfid, heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

5. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with carbon, sodium chlorid and a sodium salt which will yield sulfid of sodium when the mixture is heated, the amount of carbon added being largely in excess of the amount required to form the sulfid of sodium, heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

6. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with carbon, sodium chlorid and sodium sulfid, heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

7. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with crushed iron pyrites, carbon, sodium chlorid and a sodium salt which will yield sulfid of sodium when the mixture is heated, the amount of carbon added being largely in excess of the amount required to form the sulfid of sodium, heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

8. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with crushed iron pyrites, carbon, sodium, chlorid, and sodium sulfid, heating the mixture to a temperature approaching incipient redness, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

9. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with carbon and a sodium salt which will yield sulfid of sodium when the mixture is heated, the amount of carbon added being largely in excess of the amount required to form the sulfid of sodium, heating the mixture to a temperature approaching incipient redness, adding sodium chlorid during the heating, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

10. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with carbon and sodium sulfid, heating the mixture to a temperature approaching incipient redness, adding sodium chlorid during the heating, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

11. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with crushed iron pyrites, carbon and a sodium salt which will yield sulfid of sodium when the mixture is heated, the amount of carbon added being largely in excess of the amount required to form the sulfid of sodium, heating the mixture to a temperature approaching incipient redness, adding sodium chlorid during the heating, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

12. The hereinbefore-described process for the elimination of sulfur from sulfid ores, consisting in crushing the ore, mixing it with crushed iron pyrites, carbon and sodium sulfid, heating the mixture to a temperature approaching incipient redness, adding sodium chlorid during the heating, and then exposing it freely to air to effect its oxidation and burn off all sulfur that is set free.

709,483. TIRE AND FASTENER FOR VEHICLE-WHEELS. JACQUES C. HAINES, Chicago, Ill., assignor of two-thirds to William E. Huber and Chester Haines, Chicago, Ill. Filed Mar. 10, 1902. Serial No. 97,998. (No model.)

Claim.—1. A tire-fastener comprising a channel-rim, an elastic tire within the channel of said rim, a series of fastening members partially embedded in the tire and projecting therefrom, adapted to be brought into contact with the bottom surface of said rim, and binding-wires engaging and adapted to draw said projecting portions into contact with the bottom surface of said rim.

2. A tire-fastener comprising a channel-rim, an elastic tire within the channel of said rim, a series of fastening members partially embedded in the tire and projecting therefrom, the projecting portion of larger cross-

section than the embedded portion, and binding-wires engaging and adapted to draw said projecting portions into contact with the bottom surface of said rim.

3. A tire-fastener comprising a channel-rim, an elastic tire within the channel of said rim, a series of fastening members partially embedded in the tire and projecting from each side thereof, and binding-wires engaging and adapted to draw said projecting portions into contact with the bottom surface of said rim.

4. A tire-fastener comprising a channel-rim, an elastic tire within the channel of said rim, a series of fastening members partially embedded in the tire and projecting from each side thereof, a circumferentially-elastic structure embedded in said tire joining the two series of fastening members, and binding-wires engaging and adapted to draw said projecting portions into contact with the bottom surface of said rim.

5. A tire-fastener comprising a channel-rim, an elastic tire within the channel of said rim, a series of fastening members formed of a single wire partially embedded in said tire, projecting from each side of said tire, the projecting portions of larger cross-section than the embedded portions, and binding-wires engaging and adapted to draw said projecting portions into contact with the bottom surface of said rim.

6. A tire-fastener comprising a channel-rim, an elastic tire tapered gradually and outwardly toward each side from its transverse center, within said rim, a series of fastening members projecting from each side of said tire near the outside terminations of said tapered portions, and binding-wires engaging and adapted to draw said projecting portions into contact with the bottom surface of said rim and thereby compress that portion of the tire contained between said series of fastenings.

7. A tire-fastener comprising a series of fastening members attached at each side of the tire between its largest and smallest diameters, a resilient tire gradually tapered outwardly toward both sides from its smallest diameter at its transverse center, a channel-rim upon which said tire is mounted, and binding-wires adapted to draw the fastenings into contact with the bottom surface of the said rim.

8. A tire-fastener comprising a series of fastening members attached at each side of the tire between its largest and smallest diameters, a resilient tire gradually tapered outwardly toward both sides from its smallest diameter at its transverse center, a channel-rim upon which said tire is mounted, binding-wires adapted to draw the fastenings into contact with the bottom surface of the said rim, and transverse connections between said fastenings, embedded in the tire adapted to compress the tire between the respective fastenings when said fastenings have been drawn to their respective positions by said binding-wires.

709,484. MAGNETIC WHEEL. JOHN O. HEINER, Jr., Revere, Mass. Filed Feb. 24, 1902. Serial No. 95,169. (No model.)

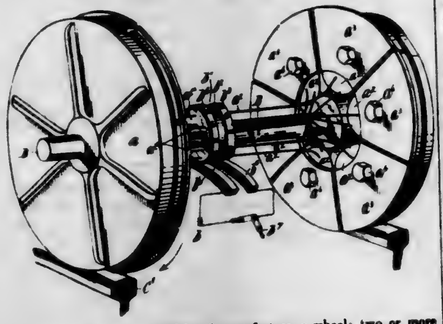

Claim.—1. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; a ring-plate made of magnetizable sections, concentric with said wheel, the circumference of said plate forming a portion of the tread of the complete wheel; and means for securing said ring-plate to said yokes; said wheel, yokes, and ring, being of magnetic material, and designed to permit free access to said yokes.

2. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; a ring-plate made of magnetizable sections, concentric with said wheel and having its circumference form a portion of the tread of the complete wheel, the inner face of said plate being cut away to engage shoulders formed on the yokes; and means to secure said plate to said yoke; said wheel, yokes and plate, being of magnetic material; all designed to give great strength to the complete wheel, and free access to said yokes and coils.

3. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; sector-like plates, whose arcs are concentric with said wheel and form portions of the tread of the complete wheel; and means to secure said sector-like plates to said yokes; said wheel, yokes, and plates, being of magnetic material; all designed to give free access to said yokes and coils.

4. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; sector-like plates whose arcs are concentric with said wheel, and form portions of the tread of the complete wheel; the inner face of each plate being cut away to engage a shoulder formed on the yokes, thereby increasing the strength of the complete wheel; coils of wire wound about said yokes; and means to secure said plates to said yokes; said wheels, yokes and plates being of magnetic material.

5. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; a ring-plate made up of magnetizable sections, concentric with said wheel, the circumference of said plate forming a portion of the tread of the complete wheel; means for securing said ring-plate to said yokes; insulated wire wound about each of said yokes; said wheel, yokes, and ring-plate being of magnetic material, and designed to permit free access to said yokes and coils.

6. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; a ring-plate made up of magnetizable sections, concentric with said wheel and having its circumference form a portion of the tread of the complete wheel, the inner face of said plate being cut away to engage shoulders formed on the yokes; means to secure said plate to said yokes; said wheel, yokes and plate being of magnetic material; and insulated wire wound about each of said yokes; all designed to give great strength to the complete wheel; and free access to said yokes and coils.

7. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; sector-like plates whose arcs are concentric with said wheel and form portions of the tread of the complete wheel; means to secure said sector-like plates to said yokes; said wheel, yokes, and plates, being of magnetic material; insulated wire wound about said yokes; all designed to give free access to said yokes and coils.

8. As an article of manufacture, a wheel; two or more yokes projecting from the side thereof; sector-like plates whose arcs are concentric with said wheel, and form portions of the tread of the complete wheel; the inner face of each plate being cut away to engage shoulders formed on the yokes, thereby increasing the strength of the complete wheel; coils of wire wound about said yokes; and means to secure said plates to said yokes; said wheels, yokes, and plates, being of magnetic material.

9. In a vehicle, the combination of an axle, and two wheels mounted thereon, each wheel having two or more yokes projecting from the side thereof; a ring-plate made up of magnetizable sections, concentric with said wheel, the circumference of said plate forming a portion of the tread of the complete wheel; means for securing said ring-plate to said yokes; insulated wire wound about each of said yokes; each of said wheels, yokes and rings being of magnetic material, and designed to permit free access to said yokes and coils.

10. In a vehicle, the combination of an axle and two wheels mounted thereon, each wheel having two or more yokes projecting from the side thereof; a ring-plate made up of magnetizable sections concentric with said wheel and having its circumference form a portion of the tread of the complete wheel, the inner face of said plate being cut away to engage shoulders formed on the yokes; means to secure said plate to said yokes; said wheels, yokes and plates being of magnetizable material; and insulated wire wound about each of said yokes; all designed to give great strength to the complete wheels and free access to said yokes and coils.

11. In a vehicle, the combination of an axle and two wheels mounted thereon, each wheel having two or more yokes projecting from the side thereof; sector-like plates whose arcs are concentric with said wheel and form portions of the tread of the complete wheel; means to secure said sector-like plates to said yokes; said wheel, yokes, and plates, being of magnetic material; an insulated wire wound about said yokes; all designed to give free access to said yokes and coils.

12. In a vehicle the combination of an axle and two wheels mounted thereon, each wheel having two or more yokes projecting from the side thereof; sector-like plates whose arcs are concentric with said wheel, and form portions of the tread of the complete wheel; the inner face of each plate being cut away to engage a shoulder formed on said yokes, thereby increasing the strength of the complete wheel; coils wound about said yokes; and means to secure said plates to said yokes; said wheels, yokes and plates being of magnetic material.

13. In a vehicle, the combination of an axle and two wheels mounted thereon, each wheel having two or more yokes projecting from the side thereof; a ring-plate made up of magnetizable sections, concentric with said wheel, the circumference of said plate forming a portion of the tread of the complete wheel; means for securing said ring-plate to said yokes; insulated wire wound about each of said yokes; each of said wheels, yokes and rings being of magnetic material, and designed to permit free access to said yokes and coils; and means whereby an electric current may be caused to pass around one or more of said yokes.

14. In a vehicle, the combination of an axle and two wheels mounted thereon, each wheel having two or more yokes projecting from the side thereof; a ring-plate made up of magnetizable sections concentric with said wheel and having its circumference form a portion of the tread of the complete wheel, the inner face of said plate being cut away to engage shoulders formed on the yokes; means to secure said plate to said yokes; said wheels, yokes and plates being of magnetizable material; and insulated wire wound about each of said yokes; all designed to give great strength to the complete wheels and free access to said yokes and coils; and means whereby an electric current may be caused to pass around one or more of said yokes.

709,485. INDUCTION-COIL. JOHN O. HEINER, Jr., Revere, Mass. Filed July 11, 1902. Serial No. 115,169. (No model.)

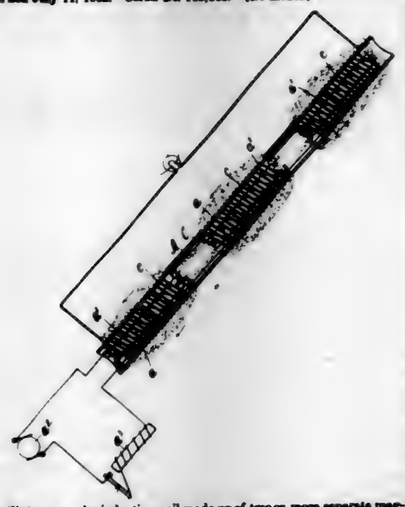

Claim.—1. An induction-coil made up of two or more separate magnetic cores; a primary coil surrounding the said cores and having as many sections as there are cores; a continuous insulating mass surrounding said primary coil and cores; a secondary coil wound about said insulating mass, and consisting of as many sections as there are cores, or sections in said primary coil.

2. The combination of an induction-coil, made up of two or more separate magnetic cores; a primary coil surrounding said cores; a continuous insulating mass surrounding said primary coil and cores; a secondary coil wound about said insulating mass; and a source of electrical energy for said primary coil, whereby it may be magnetized and demagnetized.

709,486. GRAIN-DOOR FOR CARS. LOUIS A. HOSIER, St. Louis, Mo. Filed Aug. 30, 1901. Serial No. 73,603. (No model.)

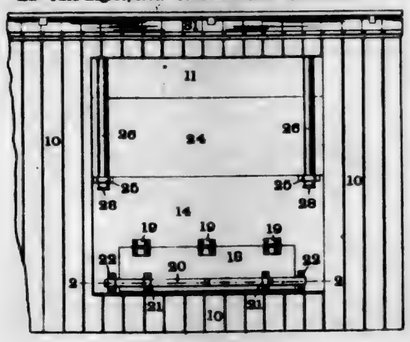

Claim.—The combination with a railway-car, of a pair of hanger-rods pivoted to said car, a door slidingly mounted on said hanger-rods, and an extension hinged to the upper edge of said door to swing against said hanger-rods when in its raised position.

709,487. BEVEL. DANIEL B. HOSHER, Rupp, Pa. Filed Apr. 24, 1902. Serial No. 104,505. (No model.)

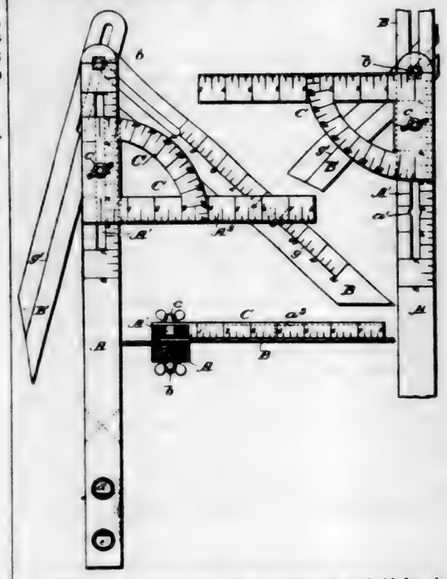

Claim.—1. In combination with the bifurcated stock, blades pivoted to one end thereof, of a protractor and square connected to the stock to be adjustable longitudinally thereon, substantially as shown.

2. In combination with a bifurcated and slotted stock, slotted blades pivoted to one end thereof so as to be slidable on the pivot, a protractor and square adjustably connected to the stock, said protractor and square having flanges at right angles to the faces thereof, substantially as set forth.

3. In combination with a bifurcated and slotted stock, of slotted blades pivotally attached to the stock, the blades having central gage-lines, one of the blades having in addition to the center gage-line a scale of inches, a scale of inches on the stock, and a combined protractor and square, the protractor having degree-marks and the square an inch-scale, the marks commencing on a line with the center of the slot through the stock, substantially as shown.

4. In a bevel, the combination with a bifurcated stock having a longitudinal slot, a pivot and clamping means at the end beyond the slot, a pair of slotted blades which are adjustable upon the pivot, a slide mounted on the stock and provided with depending sides which extend beyond the blades, substantially as shown.

5. In combination with a bevel having blades as shown, of a combined protractor and square which is adjustably attached to the stock of the bevel, the protractor having a scale indicative of degrees, the first degree being marked to register with the center of the stock and on a line with the center of the pivot which connects the blades to the stock, a flange depending from the outer edge of the protractor and marked to correspond with the mark indicative of degrees on said protractor, a member projecting at right angles and provided with a scale of inches and a depending portion with a corresponding scale, the depending portions of the protractor and square being adapted to abut against the side of the stock, substantially as shown.

709,488. PROCESS OF MAKING ARTIFICIAL LUMBER. WILLIAM S. HUNTINGTON, New York, N. Y., assignor to the Composite Board Company, a Corporation of New York. Filed Feb. 18, 1901. Serial No. 47,709. (No specimens.)

Claim.—1. The process of making artificial lumber which consists in forming and compacting wood-pulp into moist slabs or sheets, and dry-

ing the same in a heated atmosphere charged with materials capable of hardening and imparting flexibility to the same.

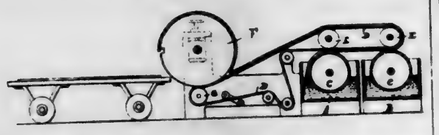

2. The process of making artificial lumber, which consists in forming and compacting wood-pulp into slabs or sheets, drying the same by heat in the vapor or fumes of materials capable of imparting hardness and flexibility to the same, and then flattening and finishing the sheets, as set forth.

3. The process of making artificial lumber which consists in subjecting slabs or sheets of wood-pulp in a wet state to the action of heat in the presence of the vapor or fumes of materials capable of imparting hardness and flexibility to the slabs and then superposing and uniting the dry slabs by pressure, as set forth.

4. The process of making artificial lumber which consists in subjecting individual wet slabs or sheets of wood-pulp to the action of heat in the presence of materials capable of imparting hardness and flexibility to the same, then subjecting the slabs to pressure to correct the distortion incident to drying, then applying adhesive material to the slabs and superposing and uniting two or more of the same by pressure, as set forth.

5. The process of making artificial lumber, which consists in drying individual wet slabs or sheets of wood-pulp in an atmosphere charged with materials capable of imparting hardness and flexibility thereto, then subjecting the slabs to pressure to correct the distortion incident to drying, then resurfacing the slabs to impart a smooth surface thereto, then applying an adhesive material to the surfaces, and then superposing and uniting two or more of the slabs and simultaneously imparting the desired form to the finished product by means of pressure, as set forth.

6. The process of making artificial lumber which consists in drying wet slabs or sheets of wood-pulp by the action of heat in the vapor or fumes produced by sulfuric acid, litharge, casein and an alkali, as set forth.

709,489. MANUFACTURE OF ALLOYS OF THE ALKALI METALS. GEORGES F. JAUBERT, Paris, France. Filed Feb. 23, 1901. Serial No. 48,415. (No specimens.)

Claim.—1. The method of manufacturing alloys of the alkali metals, such as potassium and sodium, which consists in mixing one of the metals with a caustic oxid of the other metal, then heating the mixture in vacuo at a temperature of from 200° to 300° centigrade, and in then allowing the residue to cool, substantially as and for the purposes described.

2. The method of manufacturing an alloy of the alkali metals, which consists in mixing potassium with caustic soda in required proportions, then heating the mixture in substantial vacuo at a temperature of from 200° to 300° centigrade, and in finally cooling the residue, substantially as and for the purposes described.

709,490. PROCESS OF COMPRESSING PEROXID OF SODIUM. GEORGES F. JAUBERT, Paris, France. Filed Apr. 22, 1901. Serial No. 57,115. (No specimens.)

Claim.—The method of compressing sodium peroxid, which consists in first pulverizing the sodium peroxid, then melting and pulverizing another salt, then mixing the pulverized sodium peroxid and the pulverized salt and finally compressing the mixture into pastils or tablets.

709,491. STRAIGHTWAY VALVE. DANIEL KENNEDY, Brooklyn, N. Y. Filed Nov. 16, 1901. Serial No. 82,501. (No model.)

Claim.—1. In a valve having inclined seats, disks with inclined outer faces and an operating-screw which is received between the disks, and posts D' D' in the backs having concave bearing-faces arranged on each side respectively of the operating-screw, the combination therewith of two lenticular bearing-pieces G' G' matching in the concave seats on such posts, all adapted to serve substantially as herein specified.

2. In a valve having inclined seats, disks with inclined outer faces an operating-screw which is received between the disks, and posts D' D in the backs having concave bearing-faces arranged on each side respectively of the operating-screw, the combination therewith of two lenticular bearing-pieces matching in the concave seats on each posts, and a ring G connecting such bearing-pieces adapted to hold such bearing-pieces apart, all arranged to serve substantially as herein specified.

3. A stop-valve provided with a ring arranged between the disks and having two lenticular bearing-pieces integral therewith and matching in corresponding recesses in the back of said disks so as to support the same with liberty to rock, all substantially as herein specified.

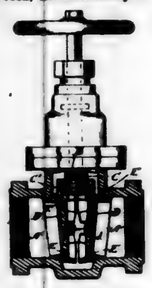

709,492. PIN-TICKET. JOHN P. KUHNS, Dayton, Ohio, assignor, by mesne assignments, to National Tag Company, Sanford, Me., a Corporation of Maine. Filed Oct. 19, 1901. Serial No. 79,227. (No model.)

Claim.—1. The combination of a ticket-blank having staple-prong openings therethrough, and a staple having staple-prongs in said openings and also having alined portions on one face of said ticket, said alined portions being integrally united at their inner ends by a laterally-bent portion lying in the same horizontal plane with said alined portions, said staple-prongs and portions being formed of a continuous piece of wire, substantially as specified.

2. The combination of a ticket-blank having oppositely-located staple-prong openings therethrough, and a staple having staple-prongs in said openings and also having an integral head upon one face of said ticket-blank, said head consisting of longitudinally-alined portions lying in a plane passing through said openings and integrally joining said staple-prongs at their outer ends, the adjacent ends of said alined portions being connected by a laterally-bent central portion lying in the same horizontal plane as said alined portions, said staple being formed of a continuous piece of wire, a portion of said ticket-blank folded back upon itself and there secured with said staple-head between said folded portions and said bent portion impinging in the crotch of said fold, substantially as specified.

3. In a pin-ticket, the combination of a pin-ticket blank divided into two portions by folding a portion thereof back upon said blank, two separated staple-prong openings extending through one portion of said blank at a distance from the crotch of said fold, and a staple having staple-prongs extending through said openings, and also having a staple-head integrally joining with and projecting inward in longitudinal parallelism from said prongs and lying within said fold of said blank, said staple-head having a projection impinging in the crotch of said fold, and said folded portions of said ticket-blank being secured together, substantially as specified.

709,493. ATMOSPHERIC GAS-HEATING BURNER. JAMES J. LAWLER, Mount Vernon, N. Y. Filed June 10, 1901. Serial No. 63,899. (No model.)

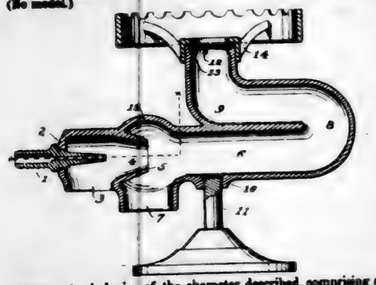

Claim.—1. A device of the character described, comprising a horizontally-arranged nozzle connected to the gas-inlet, a primary mixing-chamber having a closed end and its other end continued to form a tapering nozzle, one end of said first-named nozzle extending into said primary mixing-chamber, said primary mixing-chamber having a vertically-arranged air-inlet, a secondary mixing-chamber formed integral with the end of the primary mixing-chamber and having a vertical air-inlet, the tapering nozzle carried by the primary mixing-chamber extending into said secondary mixing-chamber, the secondary mixing-chamber being continued to form a tortuous mixing-chamber with an elbow carried by the end of the last-named mixing-chamber, and a burner supported by said elbow, substantially as described.

2. A device of the character described, comprising a horizontally-arranged primary mixing-chamber having a closed end and means connected thereto for supplying the gas to said chamber, the one end of said chamber being continued to form a nozzle, said chamber having an air-inlet on its under side, a secondary mixing-chamber carried by the primary mixing-chamber and having an air-inlet on its under side, the said nozzle extending into the secondary mixing-chamber, a tortuous mixing-chamber connected to the secondary mixing-chamber and carrying a burner, substantially as described.

709,494. SAFETY DEVICE FOR ELEVATORS. ABEL W. LEACH, Indianapolis, Ind. Filed June 5, 1902. Serial No. 110,308. (No model.)

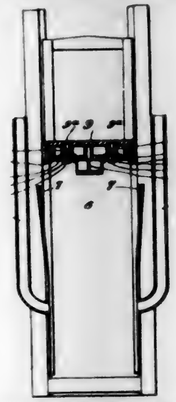

Claim.—1. In a safety device for elevators, the combination with a well having air-escapes operative only during the initial portion of the fall of the elevator-car therein, of a car having air-escape valves in the bottom thereof, operative during the remainder of the fall.

2. In a safety device for elevators, the combination of a well and car each having air-exits, the exits of the well closing successively at the fall of the car.

3. In a safety device for elevators, in combination with a well having a flared upper portion, and air-escape tubes between the flared portion and the bottom thereof, of a car having valves in its floor, whereby a gradually-decreasing air-escape is permitted, substantially as described.

4. The combination with an elevator-well, of a car therein having spring-pressed air-escape valves in the floor thereof, operated by compression of air in the well, and a relief-valve in said floor, substantially as described.

709,495. MOLDING-BOX FOR THE MANUFACTURE OF BUILDING-STONES. EDWARD LEVI, Zurich, Switzerland. Filed June 27, 1902. Serial No. 113,474. (No model.)

Claim.—1. A molding-box for the manufacture of building-stones consisting of a bottom and front and back walls attached thereto by joints, of removable side walls and intermediate partition-walls parallel to the same, running from the front to the back wall, dividing the space formed by the four walls into regular rectangular chambers, and of means to press the front and back walls against the side walls and partitions, the bottom of the box having rectangular hollowed channels in each separate chamber and above the chambers and projecting into them cross-bars which are removably adjusted in slits in the front and back walls and having in each chamber on the inner side of the front wall projections tapering downward and on the inner side of the back wall similarly-shaped hollowings for the purpose of producing stones of a rectangular form, having at their lower side rectangular nooses and at their upper side corresponding slits and on the one end hollowings tapering away downward and on the other end similarly-formed projections.

2. In a molding-box for the manufacture of building-stones consisting of a bottom and front and back walls attached thereto by joints, of removable side walls and intermediate partition-walls parallel to the same, means for pressing the front and back walls of the box against the side and intermediate walls, consisting of bows reversible upward, movably attached to the side walls, which bows have stretching-screws acting on the front and back walls and means to retain the bows in their lower position.

3. In a molding-box for the manufacture of building-stones consisting of a bottom and front and back walls attached thereto by joints, of removable side walls and intermediate partition-walls parallel to the same, bows reversible upward, movably adjusted to the side walls which bows are provided with stretching-screws for the purpose of pressing the front and back walls against the side and intermediate walls and means to retain the bows in their lower position consisting in the fact that the bows have nooses catching into pins which are fixed to the side walls of the box.

4. In a molding-box for the manufacture of building-stones consisting of a bottom and front and back walls attached thereto by joints, and of removable side walls, partition-walls parallel to the side walls dividing the space formed by the four exterior walls into regular, rectangular chambers, each separate chamber having in its bottom hollowed channels and, at the top, cross-bars, and having also on the front wall inner projections tapering coninally downward and on the back wall similarly-formed inner hollowings, and apertures in the front and back walls arranged longitudinally in every chamber in which rods of corresponding shape are inserted for the purpose of forming apertures running longitudinally right through the stone.

709,496. FOLDING MONEY HOLDER OR ENVELOP. EDWIN L. HELLER, Williamsport, Pa. Filed June 6, 1902. Serial No. 110,414. (No model.)

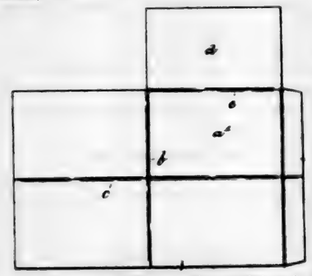

Claim.—1. A money holder or envelop, consisting of a flat sheet of cardboard or paper, creased and folded to form a flat tube, a strip projecting from one of the infolded portions of the tube and united to the other portion of said tube to complete said tube, said tube creased transversely intermediate of its open ends to form two pockets, a closure formed at said transverse crease and common to both pockets, and an end flap projecting from one of the infolded portions of the tube beyond one of the pockets and arranged to fold down over both pockets, when said pockets are folded inward along the common closure.

2. A blank for a money holder or envelop consisting of a rectangular body portion divided by bisecting creases into four rectangular panels, a rectangular flap projecting from one of said panels and coequal in area therewith, and an oblong strip projecting from one side of the rectangular body portion and adapted to be fastened to two of the rectangular panels when said panels are creased down upon the other panels of the body to form a tubular body portion, substantially as and for the purposes described.

709,497. CHURN. ALEXANDER MITCHELL, Orrisw, Canada. Filed Apr. 23, 1902. Serial No. 104,224. (No model.)

Claim.—1. In a churn or like device, a reciprocating means comprising a rectangular framework mounted upon supporting-legs, transverse shafts journaled in said framework and carrying rollers thereon, a platform having depending flanges and mounted on said rollers, a lever-arm pivoted to the lower side of said platform, a slotted beam mounted lon

gitudinally below said framework and extending beyond one end thereof, a transverse pin in said beam passing through a slot in the opposite end of said lever, a second lever pivoted at an intermediate point to said beam and connected at one end to the first said lever by an intermediate link, a hand-lever also pivoted at an intermediate point in said beam and connected to the opposite end of said second lever by a link, a treadle carried by said last-mentioned link, and means for removably securing a vessel upon said table to prevent lateral shifting thereon.

2. In a churn or like device, a reciprocating means comprising a rectangular framework mounted upon supporting-legs, transverse shafts journaled in said framework and carrying rollers thereon, a platform having depending flanges mounted on said rollers, a lever-arm pivoted to the lower side of said platform, a slotted beam mounted longitudinally below said framework and extending beyond one end thereof, a transverse pin in said beam passing through a slot in the opposite end of said lever, a second lever pivoted at an intermediate point to said beam and connected at one end to the first said lever by an intermediate link, a hand-lever also pivoted at an intermediate point in said beam and connected to the opposite end of said second lever by a link, a treadle carried by said last-mentioned link, transverse cleats mounted on said platform, and a peg projecting from the center of said platform adjacent to the side of one of said cleats.

3. A churn comprising a stationary framework having supporting-legs, rollers journaled therein, a platform having longitudinal guiding means supported upon said rollers and adapted to reciprocate thereon, a lever pivoted at one end to the lower side of said platform, a beam extending longitudinally beneath said framework and beyond one end thereof, a transverse pin upon which the other end of said lever is journaled, a hand-lever journaled in the end of said beam, a treadle connected thereto, intermediate mechanism connecting said hand-lever and treadle to said first-named lever, cleats upon the upper side of said table, and a covered vessel having interlocking cleats on its lower side to prevent lateral shifting on the platform.

709,498. APPARATUS FOR MIXING GASES. ALFRED MOLIT, Buenos Ayres, Argentina. Filed Oct. 5, 1900. Serial No. 32,151. (No model.)

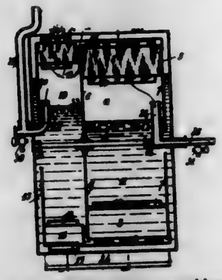

Claim.—1. A gas-mixing apparatus comprising a casing with air and gas inlets and an outlet for the mixed air and gas, and a plurality of drums mounted upon a common shaft, each of said drums having a series of adjacent peripheral chambers with inner and outer walls concentric to the central shaft with outer and inner tubular extensions overlapping the respective adjacent chambers, substantially as set forth.

2. In a gas-mixing apparatus of the kind described the combination with a casing having air and gas inlets and an outlet for the mixed air and gas, of a drum with a series of adjacent peripheral chambers forming a cellular periphery, each chamber having a contracted tubular outer and inner portion overlapping the respective adjacent chambers, substantially as set forth.

3. In a gas-mixing apparatus of the kind described the combination with a casing having air and gas inlets and an outlet for the mixed air and gas, of a plurality of drums mounted upon a common shaft, each provided with a series of adjacent peripheral chambers forming separate cells with contracted tubular outer and inner extensions overlapping the respective adjacent chambers, the outer and inner tubular extensions of one drum extending in the opposite direction to those of the other drum, substantially as set forth.

4. A gas-mixing apparatus of the kind described comprising a casing with air and gas inlets, and an outlet for the mixed air and gas, a plurality of rotatory drums mounted upon a common shaft, each drum having a series of peripheral chambers with inner and outer walls concentric to the central shaft, with outer and inner tubular extensions extending in opposite directions and a peripheral casing connecting one drum to the other, substantially as and for the purpose described.

5. In a gas-mixing apparatus of the kind described, a casing provided with gas-inlets and an outlet for the mixed air and gas, a plurality of drums mounted upon a common shaft, each drum having a series of peripheral chambers with outer and inner tubular extensions extending in opposite directions, and a bell arranged over one of the drums and an outlet from said bell, substantially as described.

709,499. CAN-LABELING MACHINE. FRED C. MORRISON, Chicago, Ill. Filed Sept. 20, 1895. Serial No. 563,575. (No model.)

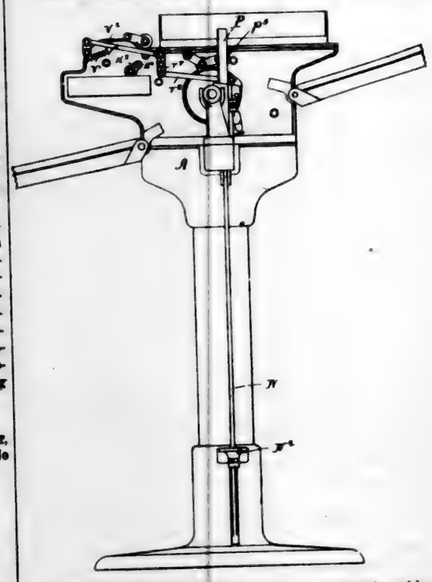

Claim.—1. In a can-labeling machine, the combination with a receptacle for the labels, of a feed-table, a paste pot or receptacle, an inclined track for the cans, a pair of reciprocating and rotating chuck-disks having tapering or bevel faces for lifting the cans from the can-track and rotating the same, stops for arresting the cans in position for being grasped by said chuck-disks, a track or guide for the labels, feed-rollers for the labels, a stop for arresting the movement of the label along its track, a grooved paste-roller for applying the paste in strips to the inner face of the label, a correspondingly-grooved pressure-roller for defleeting the label against the paste-roller, a grooved sealing-roller, a toothed spring guard or stripper fitting in and projecting through the grooves of the sealing-roller, a scraper for the paste-roller, and mechanism for operating said parts or devices, substantially as specified.

2. In a can-labeling machine, the combination with a track for the cans, and a sealing-roller, of a pair of reciprocating and rotating chuck-disks furnished with tapering or beveled faces to lift the cans from the can-track and into contact with the sealing-roller and rotate it upon its axis, substantially as specified.

3. In a can-labeling machine, the combination with the track for the cans and a sealing-roller, of a pair of reciprocating and rotating chuck-disks furnished with tapering or beveled faces for lifting the cans out of contact with the track and into contact with the sealing-roller and for grasping and rotating the can, and a pair of automatically-operating curved stop-arms, substantially as specified.

4. In a can-labeling machine, the combination with a can-track, of a pair of chuck-disks furnished with tapering or beveled faces to lift the can out of contact with the track and into contact with the sealing-roller and for grasping and rotating the can, a sealing-roller and a label-track doubled or reserved upon itself, feed-rollers and a paste-roller, substantially as specified.

5. In a can-labeling machine, the combination with a can-track and a pair of chuck-disks furnished with tapering or beveled faces to lift the can out of contact with the track and into contact with the sealing-roller and for rotating the can, of a grooved or sectional sealing-roller, and guard or stripping-fingers fitting in and projecting through the grooves of the sealing-roller, substantially as specified.

6. In a can-labeling machine, the combination with a pair of chuck-disks for rotating the can, of a grooved or sectional sealing-roller, and a guard or stripping-fingers fitting in and projecting through the grooves of the sealing-roller, said stripper-fingers projecting beyond the point of contact between the sealing-roller and the can, and curved so as to bear against the can and prevent the label winding around the sealing-roller, substantially as specified.

7. In a can-labeling machine, the combination with a pair of rotatable chucks for grasping and rotating the can, rollers for pasting the labels and feeding them to the can, mechanism for rotating the can connected with one of said chuck-disks, and mechanism for driving and rotating the feed and paste rollers connected to the other of said chuck-disks, so that the label feeding and pasting mechanism can only be driven when a can is present between the chuck-disks to communicate rotary motion from one to the other, substantially as specified.

8. In a can-labeling machine, the combination with a driven chuck-disk and a loose chuck-disk adapted to rotate with a can when the can is grasped between the chuck-disks, and a device for feeding the label and operating mechanism connecting it with the loose chuck-disk, so that the label will only be fed when the can is present, substantially as specified.

9. In a can-labeling machine, the combination with a track for the cans and a sealing-roller, of a pair of reciprocating and rotating chuck-disks furnished with tapering or beveled sockets for securing the can and lifting it from the can-track and into contact with the sealing-roller, and spring-ejector disks or plates to insure the proper discharge of the can from the chuck-disks to the track, substantially as specified.

10. In a can-labeling machine, the combination with a pair of rotating chuck-disks, of a track for the cans, a pair of movable stops to arrest the cans in the track, a spring for lifting the stops, a pawl for holding the stops retracted projecting into the path of the cans in the track, and provided with a cam or nose adapted to be engaged by a pin on the stop for moving the pawl, substantially as specified.

11. In a can-labeling machine, the combination with a paste-receptacle, of a grooved or sectional paste-roller and a grooved or sectional pressure-roller, the sections of the pressure-roller registering with the grooves of the paste-roller, and a track for the label having a series of lower guide-strips fitting in and projecting through the grooves of the paste-roller, said paste-roller being below the surface of said track, a track for the cans and a pair of revolving and reciprocating chuck-disks furnished with tapering or beveled faces to lift the can out of contact with the track and into contact with the pressure-roller, substantially as specified.

12. In a can-labeling machine, the combination with a paste-receptacle, of a grooved or sectional paste-roller and a grooved or sectional pressure-roller, the sections of the pressure-roller registering with the grooves of the paste-roller, a track for the label having a series of lower guide-strips fitting in and projecting through the grooves of the paste-roller, and having an upper guide with slots or openings cut through it for the disk or sections of the pressure-roller to project through said paste-roller being below the surface of said track, a track for the cans and a pair of revolving and reciprocating chuck-disks furnished with tapering or beveled faces to lift the can out of contact with the track and into contact with the pressure-roller, substantially as specified.

13. In a can-labeling machine, the combination with a paste-receptacle, of a grooved or sectional paste-roller and a grooved or sectional pressure-roller, the sections of the pressure-roller registering with the grooves of the paste-roller, a track for the label having a series of lower guide-strips fitting in and projecting through the grooves of the paste-roller, and having an upper guide with slots or openings cut through it for the disks or sections of the pressure-roller to project through, said paste-roller being below the label-track, and the pressure-roller being mounted movably so that a label may pass over said paste-roller without having paste applied thereto except when the pressure-roller is depressed, substantially as specified.

14. In a can-labeling machine, the combination with a paste-receptacle, of a grooved or sectional paste-roller and a grooved or sectional pressure-roller, the sections of the pressure-roller registering with the grooves of the paste-roller, a track for the label having a series of lower guide-strips fitting in and projecting through the grooves of the paste-roller, and having an upper guide with slots or openings cut through it for the disks or sections of the pressure-roller to project through, said paste-roller being below the label-track, and the pressure-roller being mounted movably so that a label may pass over said paste-roller, and means for automatically depressing said pressure-roller at intervals, substantially as specified.

15. In a can-labeling machine, the combination with the track for the cans, of rotating chuck-disks for revolving the cans furnished with bevel faces for lifting the cans out of contact with said can-track and into contact with the sealing-roller, a track for the labels, feed-rollers for feeding the labels along said track, a paste-pot, paste-roller and sealing-roller, and a movable frictional stop engaging the surface of the label for arresting the label in a certain position along said track before being applied to the can, substantially as specified.

16. In a can-labeling machine, the combination with the track for the cans, of rotating chuck-disks for revolving the cans furnished with bevel-faces for lifting the cans out of contact with said can-track and into contact with the sealing-roller, a track for the labels, feed-rollers for feeding the labels along said track, a paste-pot, paste-roller, and sealing-roller, and a movable frictional stop engaging the surface of the label for arresting the label in a certain position along said track before being applied to the can, one of said feed-rollers being movable to permit the movement of the label to be so stopped, substantially as specified.

17. In a can-labeling machine, the combination with the track for the cans, of rotating chuck-disks for revolving the cans furnished with bevel-faces for lifting the cans out of contact with said can-track and into contact with the sealing-roller, a track for the labels, feed-rollers for feeding the labels along said track, a paste-pot, paste-roller and sealing-roller, and a movable frictional stop engaging the surface of the label for arresting the label in a certain position along said track before being applied to the can, one of said feed-rollers being movable to permit the movement of the label to be so stopped, a vibratory yoke upon which said stop and feed-roller are mounted, and means for automatically vibrating said yoke, substantially as specified.

18. In a can-labeling machine, the combination with the track for the cans, of rotating chuck-disks for revolving the cans, a track for the labels, feed-rollers for feeding the labels along said track, a paste-pot, paste-roller and sealing-roller, and a movable stop for arresting the label in a certain position along said track before being applied to the can, one of said feed-rollers being movable to permit the movement of the label to be so stopped, a vibratory yoke upon which said stop and the feed-roller are mounted, means for automatically vibrating said yoke, a movable pressure-roller coöperating with said paste-roller, and means for automatically vibrating said pressure-roller, substantially as specified.

19. In a can-labeling machine, the combination with a track for the cans, of chuck-disks for rotating the cans and having bevel-faces for lifting the cans out of contact with said track and into contact with the sealing-roller, a grooved or sectional sealing-roller, a paste pot or receptacle, a grooved or sectional paste-roller, a sectional pressure-roller, and a curved spring-toothed stripper or guard projecting between the sections of the sealing-roller, substantially as specified.

20. In a can-labeling machine, the combination with a track for the cans of chuck-disks for rotating the cans and having bevel-faces for lifting the cans out of contact with said track and into contact with the sealing-roller, a grooved or sectional sealing-roller, a paste pot or receptacle, a grooved or sectional paste-roller, a sectional pressure-roller, a curved spring-toothed stripper or guard projecting between the sections of the sealing-roller, and two automatically-operated stops in the can-track for stopping the cans in position, substantially as specified.

21. In a can-labeling machine, the combination with a track for the cans, of chuck-disks for rotating the cans, a grooved or sectional sealing-roller, a paste pot or receptacle, a grooved or sectional paste-roller, a sectional pressure-roller, a curved spring-toothed stripper or guard projecting between the sections of the sealing-roller, a track for the labels, feed-rollers for the labels, and a movable stop for the labels, substantially as specified.

22. In a can-labeling machine, the combination with a track for the cans, of chuck-disks for rotating the cans, a grooved or sectional sealing-roller, a paste pot or receptacle, a grooved or sectional paste-roller, a sectional pressure-roller, a curved spring-toothed stripper or guard projecting between the sections of the sealing-roller, and two automatically-operated stops in the can-track for stopping the cans in position, a track for the labels, feed-rollers for the labels, and a movable stop for the labels, substantially as specified.

23. In a can-labeling machine, the combination with a track for the cans, and having bevel-faces for lifting the cans out of contact with said track and into contact with the sealing-roller, of chuck-disks for rotating

the cans, a grooved or sectional sealing-roller, a paste pot or receptacle, a grooved or sectional paste-roller, a sectional pressure-roller, a curved spring-toothed stripper or guard projecting between the sections of the sealing-roller, a track for the labels and feed-rollers for the labels, said track for the labels having a lower guide comprising a series of narrow strips or fingers registering with the grooves of the paste-roller, substantially as specified.

24. In a can-labeling machine, the combination with a track for the cans, of chuck-disks for rotating the cans, a grooved or sectional sealing-roller, a paste pot or receptacle, a grooved or sectional paste-roller, a sectional pressure-roller, a curved spring-toothed stripper or guard projecting between the sections of the sealing-roller, two automatically-operated stops in the can-track for stopping the cans in position, a track for the labels and feed-rollers for the labels, said track for the labels having a lower guide comprising a series of narrow strips or fingers registering with the grooves of the paste-roller, substantially as specified.

25. In a can-labeling machine, the combination with a track for the cans, of two reciprocating and rotating bevel-faced chuck-disks for lifting the can from the track and rotating the same, a reciprocating slide furnished with a cam to impart to the chuck-disks their reciprocating movement, and a reciprocating rack carried by said slide and having an independent reciprocating movement thereon for imparting to said chuck-disks their rotary movement whereby said chuck-disks are reciprocated or closed before being rotated, substantially as specified.

26. In a can-labeling machine, the combination with rotating and reciprocating chuck-disks F F', of operating-slide N, having a cam n, independently-reciprocating rack P carried by said slide N, levers Q Q connected to the shafts of said chuck-disks, intermediate lever Q', connecting-links Q^2 Q^2 and transverse slide Q^3 operated by said cam n and engaging said intermediate lever Q', substantially as specified.

27. In a can-labeling machine, the combination with rotating and reciprocating chuck-disks F F', of operating-slide N, having a cam n, independently-reciprocating rack P carried by said slide N, levers Q Q connected to the shafts of said chuck-disks, intermediate lever Q', connecting-links Q^2 Q^2 and transverse slide Q^3, and a spring Q^4 for retracting said chuck-disks, substantially as specified.

28. In a can-labeling machine, the combination with rotating and reciprocating chuck-disks F F', of operating-slide N, having a cam n, independently-reciprocating rack P carried by said slide N, levers Q Q connected to the shafts of said chuck-disks, intermediate lever Q', connecting-links Q^2 Q^2, transverse slide Q^3 operated by said cam n and engaging said intermediate lever Q', and springs f^{10} f^{10} inserted between said levers Q, Q, and their connection with the shafts of said chuck-disks, substantially as specified.

29. In a can-labeling machine, the combination with rotating and reciprocating chuck-disks F F', of operating-slide N, having a cam n, independently-reciprocating rack P carried by said slide N, levers Q Q connected to the shafts of said chuck-disks, intermediate lever Q', connecting-links Q^2 Q^2, transverse slide Q^3 operated by said cam n and engaging said intermediate lever Q', and a gear on the shaft of one of said chuck-disks engaging said rack P, substantially as specified.

30. In a can-labeling machine, the combination with rotating and reciprocating chuck-disks F F', of operating-slide N, having a cam n, independently-reciprocating rack P carried by said slide N, levers Q Q connected to the shafts of said chuck-disks, intermediate lever Q', connecting-links Q^2 Q^2, transverse slide Q^3 operated by said cam n and engaging said intermediate lever Q', and a gear on the shaft of one of said chuck-disks engaging said rack P, said rack P having a corner or projection engaging said transverse slide Q^3 to prevent movement of the rack P until after the transverse slide Q^3 has closed the chuck-disks, substantially as specified.

31. In a can-labeling machine, the combination with rotating and reciprocating chuck-disks F F', of operating-slide N, having a cam n, independently-reciprocating rack P carried by said slide N, levers Q Q connected to the shafts of said chuck-disks, intermediate lever Q', connecting-links Q^2 Q^2, transverse slide Q^3 operated by said cam n and engaging said intermediate lever Q', a gear on the shaft of one of said chuck-disks engaging said rack P, said transverse slide Q^3 being provided with a pawl q^3 and spring q^4, substantially as specified.

32. In a can-labeling machine, the combination with rotating and reciprocating chuck-disks F F' of operating-slide N, having a cam n, independently-reciprocating rack P carried by said slide N, levers Q Q connected to the shafts of said chuck-disks, intermediate lever Q', connecting-links Q^2 Q^2, transverse slide Q^3 operated by said cam n and engaging said intermediate lever Q', and a gear on the shaft of one of said chuck-disks engaging said rack P, said rack P having a corner or projection engaging said transverse slide Q^3 to prevent movement of the rack P until after the transverse slide Q^3 has closed the chuck-disks, said transverse slide Q^3 being provided with a pawl q^3 and spring q^4, and said rack P being provided with a pawl p^3 for engaging said pawl q^3 and tripping the same to release the chuck-disks and permit the same to separate to discharge the can before the rack P begins its backward movement, substantially as specified.

33. In a can-labeling machine, the combination with a can-track B of rotating and reciprocating chuck-disks F F', stops B' B^2, having rock-shafts b^2 b^2 provided with arms b^3 b^3 and connecting-link b^4, and a spring b^5 for automatically lifting the stops into position, sliding rack P having cam p^3, levers b^6 and b^{11}, locking-bolt b^9 carried by one of said levers and engaging the other and a cam b^{10} for operating said locking-bolt, substantially as specified.

34. In a can-labeling machine, the combination with a can-track B of rotating and reciprocating chuck-disks F F', stops B' B^2, having rock-shafts b^2 b^2 provided with arms b^3 b^3 and connecting-link b^4, and a spring b^5 for automatically lifting the stops into position, sliding rack P having cam p^3, levers b^6 and b^{11}, locking-bolt b^9 carried by one of said levers and engaging the other and a cam b^{10} for operating said locking-bolt, pawl b^{12} having springs b^{13}, a pin b^{17} on one of said stops engaged by said pawl b^{12}, said pawl projecting in the path of the cans so as to be tripped by their passage, substantially as specified.

35. In a can-labeling machine, the combination with a can-track B of rotating and reciprocating chuck-disks F F', stops B' B^2, having rock-shafts b^2 b^2 provided with arms b^3 b^3 and connecting-link b^4, and a spring b^5 for automatically lifting the stops into position, sliding rack P having cam p^3, levers b^6 and b^{11}, locking-bolt b^9 carried by one of said levers and engaging the other and a cam b^{10} for operating said locking-bolt, pawl b^{12} having spring b^{13}, a pin b^{17} on one of said stops engaged by said pawl b^{12}, said pawl projecting in the path of the cans so as to be tripped by their passage, and said pawl having a nose or cam b^{18} to cause said pin b^{17} to operate the pawl, substantially as specified.

36. The combination with a can-track of a movable stop for arresting the can, a spring for lifting the stop and a pawl projecting into the path of the can and adapted to be tripped by the can for holding said stop open or down, said pawl being provided with a cam or nose to cause the stop to turn or set the pawl, substantially as specified.

709,500. PHOTOGRAPHIC-SHUTTER MECHANISM. CHARLES A. MULLER, New York, N. Y. Filed Jan. 9, 1902. Serial No. 88,978. (No model.)

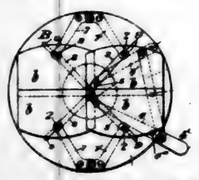

Claim.—1. In a shutter mechanism the combination with a plurality of overlapping shutter-sections each having the form of an elongated rectangle, three of whose interbearing sides are disposed substantially at right angles to each other of operating mechanism for rotating each of said shutter-sections.

2. In a shutter mechanism the combination with a plurality of shutter-sections mounted for combined angular and translational movement, of means for turning each of said sections and shifting the same bodily away from and toward the axis of the shutter-aperture.

3. In a shutter mechanism the combination with a plurality of shutter-sections mounted for combined angular and translational movement of means for turning each of said sections and simultaneously shifting the same first away from and then toward the axis of the shutter-aperture.

4. In a shutter mechanism the combination with a plurality of shutter-sections of operating mechanism movable from one position to another and back again for accomplishing during each of such forward and backward movements the opening and the closing of the shutter-aperture.

5. In a shutter mechanism, the combination with a shutter proper mounted for combined angular and translational movement, of operating mechanism movable from one position to another and back again for accomplishing during each of such forward and backward movements the turning and the bodily shifting of said shutter first away from, and then toward the shutter-aperture.

6. In a shutter mechanism, the combination with a shutter proper mounted for combined angular and translational movement, of an arm secured to the shutter, and mechanism operatively connected with the arm for turning the shutter about an axis and carrying it bodily to and fro.

7. In a shutter mechanism the combination with a pair of shutter-sections mounted for combined angular and translational movement of operating mechanism movable from one position to another and back again for accomplishing during each of such forward and backward movements the opening and closing of the shutter-aperture.

8. In a shutter mechanism the combination with a pair of shutter-sections mounted for combined angular and translational movement of operating mechanism movable from one position to another and back again for accomplishing during each of such forward and backward movements the turning and simultaneous bodily movement to and fro of each of said sections.

9. In a shutter mechanism the combination with a pair of shutter-sections of arms secured thereto and pivotally connected together and means for shifting the arms from one angular relation to another.

10. In a shutter mechanism the combination with a pair of shutter-sections of arms secured thereto and pivotally connected together, and a lever for shifting the arms from one angular relation to another.

11. In a shutter mechanism the combination with a pair of shutter-sections of arms secured thereto and pivotally connected together, and a lever for shifting the arms from one angular relation to another during each throw of the lever.

12. In a shutter mechanism the combination with a pair of shutter-sections of arms secured thereto and pivotally connected together, means for shifting the arms from one angular relation to another, and means for guiding the sections during their movements.

13. In a shutter mechanism the combination with a pair of shutter-sections of arms secured thereto and pivotally connected together, a lever for shifting the arms from one angular relation to another, and means for guiding the sections during their movements.

14. In a shutter mechanism the combination with a pair of shutter-sections of arms secured thereto and pivotally connected together, a lever for shifting the arms from one angular relation to another during each throw of the lever, and means for guiding the sections during their movements.

15. In a shutter mechanism, the combination with a pair of shutter-sections of jointed angularly-disposed arms secured thereto, a pair of articulated levers for guiding the sections during their movements, and an operating-lever for bringing said arms into alinement with each other and reversing their angular relation during each throw of the operating-lever.

16. In a shutter mechanism, the combination with a pair of shutter-sections of jointed angularly-disposed arms secured thereto, a pair of articulated levers for guiding the sections during their movements, and an operating-lever for bringing said arms into alinement with each other and reversing their angular relation during each throw of the operating-lever, and a supporting-plate upon which the parts are mounted.

17. In a photographic shutter, the combination with oppositely-disposed pairs of shutter-sections of angularly-disposed arms secured to the sections and pivotally connected together in pairs and means for bringing the jointed arms of each pair into alinement with each other and reversing their angular relation during a continuous movement of said operating means.

18. In a photographic shutter, the combination with oppositely-disposed pairs of shutter-sections of angularly-disposed arms secured to the sections and pivotally connected together in pairs and operating-levers for bringing the jointed arms of each pair into alinement with each other and reversing their angular relation during a continuous throw of said operating-levers.

19. In a photographic shutter, the combination with oppositely-disposed pairs of shutter-sections of jointed angularly-disposed pairs of arms secured to the sections, articulated levers for guiding the sections during their movements and compelling their simultaneous action, and operating-levers for bringing the jointed arms of each pair into alinement with each other and reversing their angular relation during the continuous throw of said operating-levers.

20. In a photographic shutter, the combination with oppositely-disposed pairs of shutter-sections of jointed angularly-disposed pairs of arms secured to the sections, articulated levers for guiding the sections during their movements and compelling their simultaneous action, and operatively-connected operating-levers connected to said pairs of jointed arms for bringing each pair of arms into alinement with each other and reversing their angular relation during each throw of said operating-levers.

21. In a photographic shutter, the combination with oppositely-disposed pairs of shutter-sections having projecting pins, of jointed angularly-disposed pairs of arms secured to said pins, articulated levers for guiding the sections during their movements and compelling their simultaneous action, and operatively-connected operating-levers connected to said pairs of jointed arms for bringing each pair of arms into alinement with each other and reversing their angular relation during each throw of said operating-levers, and a supporting-plate upon which the parts are mounted and through which said pins extend.

22. In a photographic shutter, the combination with oppositely-disposed pairs of shutter-sections, of angularly-disposed arms secured to the sections and pivotally connected together in pairs, and operating means for simultaneously bringing the jointed arms of each pair into alinement with each other and reversing their angular relation during the continuous movement of each operating means.

23. In a photographic shutter, the combination with a plurality of shutter-sections, of angularly-disposed arms secured to the sections and pivotally connected together in pairs; operating-levers, one for each pair of jointed arms, for bringing the arms of the pair into alinement with each other and reversing their angular relation during a continuous throw of the connected operating-lever; and a link connecting said levers.

24. In a photographic shutter, the combination with a plurality of shutter-sections of angularly-disposed arms secured to the sections and pivotally connected together in pairs; operating-levers, one for each pair of jointed arms, for bringing the arms of the pair into alinement with each other and reversing their angular relation during a continuous throw of the connected lever; and a link extending from each operating-lever to the corresponding pair of arms.

25. In a photographic shutter, the combination with a plurality of shutter-sections of angularly-disposed arms secured to the sections and pivotally connected together in pairs; operating-levers, one for each pair of jointed arms, for bringing the arms of the pair into alinement with each other and reversing their angular relation during a continuous throw of the connected lever; a link extending from each lever to the joint between the corresponding pair of arms; and a link connecting said levers.

709,501. MACHINE FOR REFOLDING PAPER TUBES. HARVEY S. MUNSON, New Haven, Conn. Filed Aug. 4, 1896. Serial No. 601,690. (No model.)

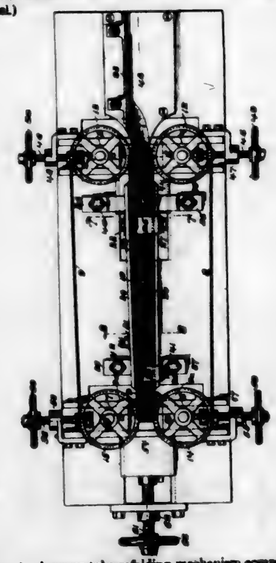

Claim.—1. A paper-tube-refolding mechanism comprising side carrying-belts, whose planes of travel gradually approach from their receiving to their delivering points, and opposed guides, the planes of whose bearing-faces gradually separate from their receiving to their delivering points, whereby the space within which the tube is compelled to travel is gradually contracted in one direction and expanded in the other, and strains are exerted upon the tube that cause its plies to move laterally upon its folding-lines and transform it from a flat or collapsed condition, into a hollow or distended one, substantially as described.

2. A paper-tube refolding mechanism comprising side carrying-belts, whose planes of travel gradually approach from their receiving to their delivering points and which diverge edgewise, and opposed guides, the planes of whose bearing-faces gradually separate from their receiving to their delivering points, whereby the space in which the tube is compelled to travel is gradually contracted in one direction as widthwise and expanded in the other direction, and one edge of the tube is moved out of the plane in which the other edge travels and strains are exerted upon it that cause its plies to move laterally upon its folding-lines and transform it from a flat or collapsed condition, into a hollow or distended one, substantially as described.

3. A paper-tube-refolding mechanism comprising side carrying-belts,

whose planes of travel gradually approach from their receiving to their delivering points, opposed guides, the planes of whose bearing-faces gradually separate from their receiving to their delivering points, whereby the space in which the tube is compelled to travel is gradually contracted in one direction and expanded in the other and strains are exerted upon the tube that cause its plies to move laterally upon its folding-lines and transform it from a flat or collapsed condition, into a hollow or distended one, and bearers holding the belts to duty against distortion, substantially as described.

4. A paper-tube-refolding mechanism comprising side carrying-belts, whose planes of travel gradually approach from their receiving to their delivering points, and opposed guides the planes of whose bearing-faces gradually separate from their receiving to their delivering points, whereby the space in which the tube is compelled to travel is gradually contracted in one direction as widthwise and expanded in the other direction, and strains are exerted upon the tube that cause its plies to move laterally upon its folding-lines and transform it from a flat or collapsed condition, into a hollow or distended one, one or both of said guides being provided with inward extensions at their delivering ends to impart an extra bend to the innermost foldings, substantially as described.

5. A paper-tube-refolding mechanism having side carrying-belts whose relative planes of travel gradually approach from their receiving to their delivering points, and opposed longitudinal guides whereby the tube is directed, said guides having outwardly-inclined ends to direct the tube to the belts, substantially as described.

6. In a paper-tube-refolding mechanism in which the tube is contracted widthwise between propelling-surfaces, a feeding-table having an inclined front end to admit of downward expansion or bulge of the tube, substantially as described.

7. In a paper-tube-refolding mechanism, the combination with pulleys 12, 14 and 13, 15 and side carrying belts supported thereby, of means for adjusting said pulleys to move the opposed faces of the belts toward or from each other, substantially as described.

8. In a paper-tube-refolding mechanism, the combination with pulleys 12, 14 and 13, 15, side carrying-belts supported thereby, and opposed guides, of means for adjusting said pulleys to move the opposed faces of the belts toward or from each other and for adjusting said guides toward or from each other, substantially as described.

9. In a paper tube-refolding mechanism, the combination with pulleys 12, 14 and 13, 15, side carrying-belts supported thereby and bearers for the belts, of means for adjusting said pulleys and bearers to move the opposed faces of the belts toward or from each other, substantially as described.

709,502. MACHINE FOR REFOLDING PAPER TUBES. HARVEY S. MINNOR, New Haven, Conn. Filed Aug. 4, 1898. Serial No. 687,700. (No model.)

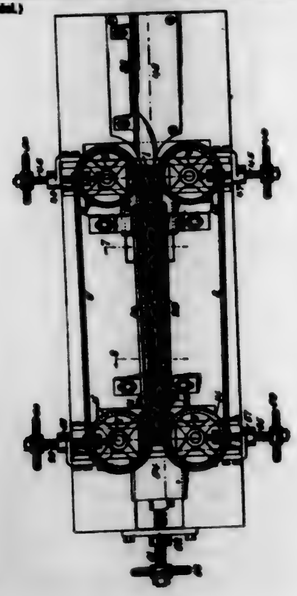

Claim.—1. A paper-tube-refolding mechanism comprising side carrying-belts whose planes of travel gradually approach from their receiving to their delivering points and which diverge edgewise, whereby one edge of the longitudinally-creased tube is moved out of the plane in which the other edge travels, and strains are exerted on the tube that cause it to travel onward and to be gradually contracted widthwise and enlarged in the other direction and thus become folded on its creased lines, and transform it from a flat or collapsed condition to a hollow or distended one, substantially as described.

2. A paper-tube-refolding mechanism comprising grooved side carrying-belts whose planes of travel gradually approach from their receiving to their delivering points with which are combined short opposed guides that gradually separate from their receiving to their delivering points, whereby the space in which the tube is compelled to travel is gradually contracted widthwise and expanded in the other direction and strains are exerted on the tube that cause its plies to move laterally upon its folding-lines and transform it from a flat or collapsed condition into a hollow or distended one, substantially as described.

3. In a paper-tube-refolding mechanism, the combination with grooved side carrying-belts, of pulleys 12, 14 and 13, 15 supporting said belts and provided with means for adjustment, substantially as described.

709,503. MACHINE FOR REFOLDING PAPER TUBES. HARVEY S. MINNOR, New Haven, Conn. Filed Aug. 4, 1898. Serial No. 687,701. (No model.)

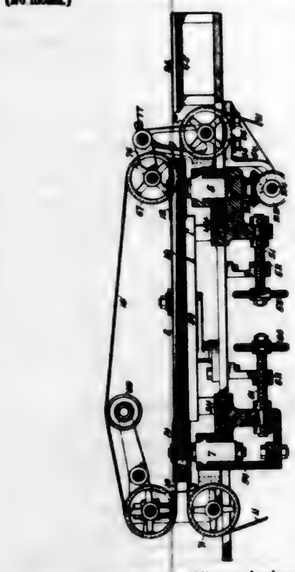

Claim.—1. A paper-tube-refolding mechanism comprising side belts whose planes of travel gradually approach from their receiving to their delivering points, and opposed top and bottom belts whose planes of travel gradually separate from their receiving to their delivering points, whereby the space within which the tube is compelled to travel is gradually contracted in one direction and expanded in the other, and strains are exerted on the tube that cause its plies to move laterally upon its folding-lines and transform it from a flat or collapsed condition into a hollow or distended one, substantially as described.

2. A paper-tube-refolding mechanism comprising side belts whose planes of travel gradually approach from their receiving to their delivering points and which diverge edgewise, and opposed top and bottom belts the planes of whose bearing-faces gradually separate from their receiving to their delivering points, whereby the space within which the tube is compelled to travel is gradually contracted in one direction and expanded in the other, and one edge of the tube is moved out of the plane in which the other edge travels, and strains are exerted on the tube that cause its plies to move laterally on its folding-lines and transform it from a flat or collapsed condition into a hollow or distended one, substantially as described.

3. A paper-tube-refolding mechanism comprising side belts whose planes of travel gradually approach from their receiving to their deliver-

ing points, opposed top and bottom belts the planes of whose bearing-faces gradually separate from their receiving to their delivering points, whereby the space within which the tube is compelled to travel is gradually contracted in one direction and expanded in the other, and strains are exerted upon the tube that cause its plies to move laterally on its folding-lines and transform it from a flat or collapsed condition into a hollow or distended one, and bearers holding one or both sets of belts to duty against distortion, substantially as described.

4. A paper-tube-refolding mechanism comprising side belts whose planes of travel gradually approach from their receiving to their delivering points, opposed top and bottom belts, the planes of whose bearing-faces gradually separate from their receiving to their delivering points, and an elastic bearing for the carrying-pulley for the delivery end of the top belt, substantially as described.

5. A paper-tube-refolding mechanism comprising side belts whose planes of travel gradually approach from their receiving to their delivering points, opposed top and bottom belts, the planes of whose bearing-faces gradually separate from their receiving to their delivering points, and adjustable arms for supporting the carrying-pulley for the receiving end of the top belt whereby the space for the tube between the pulleys of the top and bottom belt at the entrance-point may be adjusted, substantially as described.

709,504. CONDUIT. WILLIAM L. MCGOWAN, Philadelphia, Pa. Filed Feb. 8, 1902. Serial No. 93,120. (No model.)

Claim.—1. A conduit-section consisting of a tubular body having one end provided with a projection and the other end with a complementary recess, the highest point of the projection and the lowest point of the recess being located at different distances from the median line of the tubular body.

2. A conduit-section consisting of a tubular body having an end provided with a projection the highest point of which is out of the median line of the body.

3. A conduit-section consisting of a tubular body having an end provided with a recess the lowest point of which is out of the median line of the body.

4. A conduit-section consisting of a tubular outer body having longitudinal partitions or walls dividing it internally into a series of longitudinal ducts, said partition-walls at one end being extended beyond the ends of the walls of the outer body to form a projection composed of said partitions, the highest point of said projection being out of the median line of the tubular body.

5. A conduit-section consisting of a tubular outer body having longitudinal partitions or walls dividing it internally into a series of longitudinal ducts, said partition-walls at one end being abbreviated or terminated within the outer body at a distance from the end thereof, to form a recess between the ends of the partition and the ends of the outer body, the lowest point of said recess being out of the median line of the tubular body.

6. A conduit composed of tubular sections, the end of one section being provided with a projection and the end of the adjacent section having a complementary recess in which the projection of the other section fits, the highest point of the projection and the lowest point of the recess being relatively a different distance from the median line of the sections, whereby one section is caused to assume an angular inclination with reference to the other.

709,505. WING ATTACHMENT FOR PLOWS. GEORGE H. HOOPER, Dahlonega, Ga. Filed Mar. 18, 1902. Serial No. 98,410. (No model.)

Claim.—1. In combination with the standard and tongue or shovel of a plow, a foot-plate fitted and vertically adjustable between them and having a hinged wing, and an adjusting-lever connected to the wing, substantially as described.

2. In combination with a plow of the class described, a foot-plate detachably fitted and vertically adjustable between the standard and tongue or shovel and having a hinged wing, an adjusting-lever connected to the wing, and means to lock the lever and thereby cause the same to secure the wing when adjusted, substantially as described.

3. A foot-plate adapted to be detachably secured between the tongue or shovel and standard of a plow, in combination with a wing hinged to the foot-plate, a lever connected to the wing, a rack-bar between the handles to engage and secure the lever when adjusted and a fulcrum for said lever adapted to be detachably secured to the beam of the plow, substantially as described.

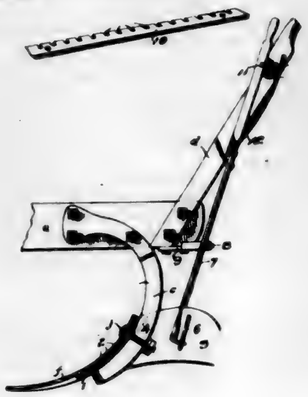

709,506. FODDER-LOADER. CHARLES L. PACKER, Wilton Junction, Iowa. Filed Feb. 27, 1902. Serial No. 96,979. (No model.)

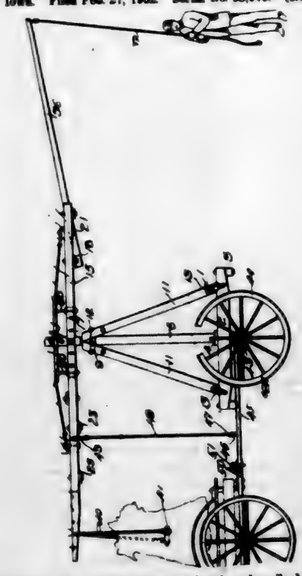

Claim.—1. In a fodder-loader of the class described, the combination of a base-frame having a bearing, brace-bars secured to the base-frame and having their upper ends secured together and provided with a bearing-opening formed directly in their inner opposing sides, a revolvable post having its lower end journaled in the base-bearing, and having a cylindrical neck near its upper end journaled also in the bearing-opening in the upper ends of the brace-bars, and a beam pivotally connected to the upper portion of the post, substantially as described.

2. In a fodder-loader, the combination of a post mounted for revolution, a beam pivotally connected to the post, and comprising side bars and cross-blocks connecting them, on their upper and lower sides, and a lever-bar and extension-arm adapted to be inserted between the bars and blocks at the opposite ends of the beam, and to be unshipped therefrom, substantially as described.

3. In a fodder-loader a pivoted beam comprising side bars, having cross-blocks secured on and under the bars at and near the ends of the beam, and a truss on its upper side having an element connected to the upper cross-blocks, in combination with a lever-bar having its inner end

inserted between the side bars and cross-blocks at one end of the beam and provided with a truss-rod, the inner end of the latter being detachably secured to one of the cross-blocks.

4. In a fodder-loader, a pivoted beam comprising side bars, spacer-blocks between the same and secured thereto near the center of the beam, cross-blocks under the bars at and near the ends thereof, cross-blocks on the bars and intermediate of the first-mentioned cross-blocks, links on the upper cross-blocks, bolts securing said links to said cross-blocks and the latter to the bars, a strut-link, bolts engaging the spacer-blocks and supporting the strut-link above the center of the beam, and rods attached to the links and adjustably connected to the ends of the strut-link, substantially as described.

5. In a fodder-loader, a pivoted beam comprising side bars and having cross-blocks secured on and under the bars at and near the ends of the beam, in combination with a lever-bar having its inner end inserted between the side bars and cross-blocks at one end of the beam and provided with a truss-rod, the inner end of the latter being detachably secured to one of the cross-blocks, substantially as described.

709,507. DEVICE FOR FEEDING TOBACCO IN CIGARETTE-MACHINES. JOSEF PASL, Dresden-Striesen, Germany, assignor to Fabrikenbesitzer G. Calberla, G. H. B. H., Dresden, Saxony, Germany. Filed Aug. 24, 1901. Serial No. 73,189. (No model.)

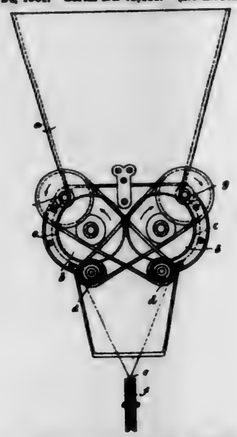

Claim.—1. A tobacco-feed device for cigarette-making machines, comprising in combination a hopper, two oppositely-rotating toothed rollers at the lower end of said hopper which rotate at the same speed, and two smaller toothed rollers adapted to remove the tobacco from the first rollers and thoroughly mix the same, substantially as set forth.

2. A tobacco-feed device for cigarette-making machines, comprising in combination, a hopper, two oppositely-rotating toothed rollers at the lower end of said hopper which rotate at the same speed, two smaller toothed rollers adapted to remove the tobacco from the first rollers and thoroughly mix the same, and rollers, one in contact with each of the first-named rollers and adapted by quickly rotating to prevent the passage of too much tobacco, substantially as set forth.

709,508. CHICKEN-BROODER. NILS PEDERSEN, Joliet, Ill., assignor to himself and Frederick C. Wilmz, Joliet, Ill. Filed Sept. 9, 1901. Serial No. 74,726. (No model.)

Claim.—1. The brooder provided with an overhead heater having a single outlet for the gases, &c., from the lamp, and also having both a direct and an indirect passage from the lamp to said flue, together with means for automatically determining which of said passages said gases shall take, substantially as specified.

2. The brooder provided with an overhead heater having a single outlet for gases, &c., from the lamp, and also having both a direct and an indirect passage from the lamp to said outlet, together with means for closing the direct passage automatically whenever the temperature falls too low in the brooding-chamber, substantially as specified.

3. In a brooder, a movable top 18 through which the chimney extends and carrying the loose pipe-section 43 flanged outwardly at its bottom, in combination with a stationary chimney-section 38 with which the pipe-section 43 offsets a junction when the cover is closed, substantially as specified.

4. In a brooder, a movable top 18 carrying the chimney-top 44 and a telescoping pipe-section 43 having its bottom flanged outwardly, in combination with a stationary chimney-section 38, substantially as specified.

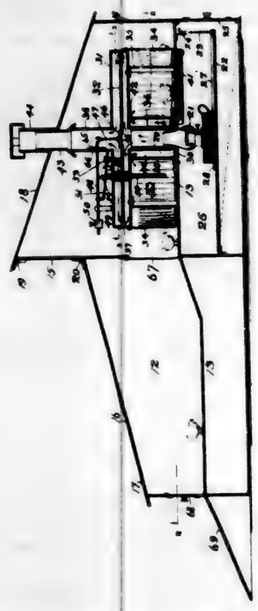

709,509. BOILER-TUBE CUTTER. JOHN H. POLLARD, Centralia, Ill. Filed June 4, 1902. Serial No. 110,222. (No model.)

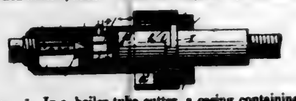

Claim.—1. In a boiler-tube cutter, a casing containing the cutting mechanism, the end of said casing formed with a slanting surface, and cutting-facets on said slanting surface, substantially as shown and described.

2. In a boiler-tube cutter, a casing formed with two communicating chambers, one chamber containing the cutting device, the other chamber containing oil and a screw-plug valve inserted in a screw-threaded bore in the end of the casing, substantially as shown and described.

3. In a boiler-tube cutter, a casing formed with two chambers by a partition having a valve-port, one of said chambers containing the cutting device, the other chamber containing oil, and a screw-plug valve inserted in a screw-threaded bore in the end of said casing having a head to register with said valve-port to control the flow of oil to the cutting-blade, substantially as shown and described.

4. In a boiler-tube cutter, a spindle having a recess in its end provided with a circular journal-bearing, a cutting-blade having a heavy body portion and a narrow cutting edge, one side of said body portion having an angular face, the other side having a recess therein, the base of the recess on said spindle having a surface to bear against the angular surface of said body portion in projecting the blade, and with a part to fit into the recess on the other side of the blade, substantially as shown and described.

5. In a boiler-tube cutter, the combination of a casing having two chambers separated by a valved partition and a slot in the wall of one chamber, a spindle rotatably mounted in said slotted chamber, a cutting-blade journaled on said spindle, and means to force the cutting-blade out of said slot and return it to its normal position, substantially as shown and described.

6. In a boiler-tube cutter, the combination of a casing having two chambers therein separated by a valved partition, one of said chambers having a slot in its wall, a spindle rotatably mounted in said slotted chamber, a cutting-blade journaled in said spindle, said cutting-blade having an angular edge and a recessed edge, and the spindle formed to bear against said angular edge to project the blade, and to fit into said recess to retract it, substantially as shown and described.

7. In a boiler-tube cutter, a casing having two chambers separated by a valved partition, a spindle rotatably mounted in one of said chambers, a cutting-blade journaled in the end thereof, a shoulder on said spindle, a clutch on said shoulder, a union fitting said spindle and shoulder and secured to the edge of the casing, and a lug on said union against which said clutch bears to turn the casing in cutting a tube, substantially as shown and described.

8. In a boiler-tube cutter, a spindle having a recess in its end provided with a journal-bearing, a cutting-blade mounted in said recess having a head to fit into said journal-bearing, a casing having two chambers separated by a valved partition, one of said chambers adapted to receive the end of said spindle and having a slot through which said cutting-blade extends in cutting a tube, an annular shoulder on said spindle, a clutch on said shoulder, a union fitting said spindle and shoulder and secured to the edge of the casing, and a lug on said union against which said clutch bears to turn the casing in cutting a tube, substantially as shown and described.

709,510. GIB-AND-KEY DEVICE. CHARLES B. PEET, New London, Ohio. Filed Apr. 26, 1902. Serial No. 104,866. (No model.)

Claim.—The combination with a shaft and inclosing sleeve or hub of a dog diagonally passing through said hub or sleeve and means for adjustably securing said dog in engagement with the shaft, consisting of a longitudinally-adjustable screw passing through said hub and dog, substantially as described.

709,511. PACKING FOR STUFFING-BOXES. PERCY REDFORD, Manchester, England. Filed July 3, 1901. Serial No. 66,972. (No model.)

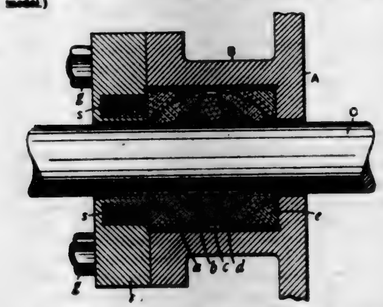

Claim.—A stuffing-box packing comprising a spherical structure made up of two hemispherical hollow parts and a separate core confined between them, an axial passage leading through the core and said parts, in combination with two rings having internal spherical surfaces embracing the opposite sides of the spherical structure and having openings in line with said passage, and means for forcing said rings toward each other to thereby press the hollow hemispherical parts against the core, substantially as described.

709,512. MECHANISM FOR TRUING SPINNING-RINGS. CHARLES F. ROPER, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Jan. 9, 1902. Serial No. 88,976. (No model.)

Claim.—1. In an organized machine for truing spinning-rings, the following instrumentalities viz: an arber adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the ring, means to support the ring while the arber is being inserted therein, arber-reciprocating mechanism, and mechanism operating automatically to cool the ring after it has been stretched upon the arber.

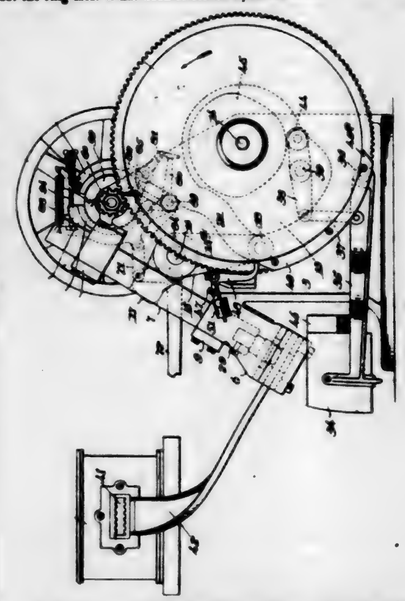

2. In an apparatus for truing spinning-rings, an arber adapted to be inserted into the ring, and having a cylindrical portion of the diameter desired for the interior of the ring, means to support the ring while the arber is being inserted therein, arber-reciprocating mechanism, arber-reciprocating mechanism and means independent from the arber-reciprocating mechanism to immerse the ring in a cooling-bath after it has been stretched upon the arber.

3. In an apparatus for truing spinning-rings, an arber adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, a support for the ring operating to hold the latter in fixed position while the arber is being inserted therein, arber-reciprocating mechanism, and means to cool the ring while stretched upon the arber and during the time that it is sustained by the support.

4. In a machine for truing spinning-rings, an arber adapted to be inserted into a spinning-ring and having a cylindrical portion of the diameter desired for the interior of the ring, a seat to support the spinning-ring, arber-reciprocating mechanism, and means separate from the latter to immerse said ring in a cooling-bath when stretched upon the arber.

5. In an apparatus for truing spinning-rings, an arber adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain a ring in fixed position, arber-reciprocating mechanism, the movement of the arber toward the support operating to force the arber into the ring, means to cool the ring when stretched upon the arber, and means to strip the ring from the arber during the backward movement of the latter.

6. In an apparatus for truing spinning-rings, a support to sustain a spinning-ring, an arber adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, arber-reciprocating mechanism, the movement of the arber toward the support operating to force the arber into the ring, means to cool the ring when stretched upon the arber, and means independent from the support to strip the ring from the arber during the backward movement of the latter.

7. In an apparatus for truing spinning-rings, a suitable frame, arber-reciprocating mechanism carried thereby, an arber detachably connected to said arber-reciprocating mechanism, a support for the ring detachably carried by the frame, the movement of the arber toward the support operating to force the arber into the ring, and means separate from the arber-reciprocating mechanism to immerse the ring in a cooling-bath while it is stretched upon the arber.

8. In a machine for truing spinning-rings, a suitable frame, arber-reciprocating mechanism, an arber detachably connected therewith, a support for the ring removably carried by the frame, the movement of the arber toward the support operating to force the arber into the ring, means to cool the ring when stretched upon the arber, and means to strip the ring from the arber as the latter recedes from the support.

9. In a mechanism for truing spinning-rings, a reciprocating arbor adapted to be inserted into a spinning-ring, and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain the ring, means to center the ring on the support in position to receive the arbor, said means being independent from the support and arbor-reciprocating mechanism.

10. In a mechanism for truing spinning-rings, a reciprocating arbor adapted to be inserted into a spinning-ring and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain the ring in fixed position, devices to center the ring on the support in position to receive the arbor, arbor-reciprocating mechanism, the arbor in its movement toward the support being forced into the ring, and means to cool the ring while stretched upon the arbor.

11. In a machine for truing spinning-rings, a reciprocating arbor adapted to be inserted into a ring and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain the ring in a fixed position, devices to center the ring on the support in position to receive the arbor, arbor-reciprocating mechanism, the arbor in its movement on the support being forced into the ring, means to cool the ring while stretched upon the arbor, and means to strip the ring from the arbor as the latter recedes from the support.

12. In an apparatus for truing spinning-rings, an arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain the ring while the arbor is being inserted therein, arbor-reciprocating mechanism, means to cool the ring when stretched upon the arbor, and means independent from the support to strip the ring from the arbor during the retrograde movement of the latter.

13. In an apparatus for truing spinning-rings, an arbor adapted to be inserted into a ring and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain the ring while the arbor is being inserted therein, means independent from the support to center the ring thereon in position to receive the arbor, arbor-reciprocating mechanism, and means independent from the support to strip the ring from the arbor during the retrograde movement of the latter.

14. In an apparatus for truing spinning rings, an arbor adapted to be inserted into the ring, and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain the ring while the arbor is being inserted therein, means independent from the support to center the ring, and means to cool the ring when stretched upon the arbor.

15. In a mechanism for truing spinning-rings, a reciprocating arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, a support to sustain the ring, means to center the ring on the support in position to receive the arbor, said means including a removable stop, arbor-reciprocating mechanism, the arbor in its movement toward the support being forced into the ring, means to strip the ring from the arbor during the receding movement of the latter, and means acting simultaneously to withdraw the stop from the path of the ring whereby the finished ring passes off from the support.

16. In a mechanism for truing spinning-rings, an arbor adapted to be inserted into the ring and moving in an inclined path, said arbor having a cylindrical portion of the diameter desired for the interior of the ring, an inclined support to sustain the ring in the path of movement of the arbor, arbor-reciprocating mechanism, the arbor during its reciprocation being forced into the ring, and means to strip the ring from the arbor during the backward movement of the latter, the inclined position of the parts allowing the finished ring to be discharged from the support by gravity.

17. In a mechanism for truing spinning-rings, an arbor adapted to be inserted into the ring and moving in an inclined path, such arbor having a cylindrical portion of the diameter desired for the interior of the ring, an inclined support to sustain said ring in the path of movement of the arbor, means to properly position said rings on the support to receive the arbor, said means including a removable stop, arbor-reciprocating mechanism, the arbor during its movement toward the support being forced into the ring, means to strip the ring from the arbor when the latter recedes from the support, and means to simultaneously remove the back-stop from the path of the ring, the inclined position of the parts allowing the finished ring to be discharged from the support by gravity.

18. In an apparatus for truing spinning-rings, an arbor adapted to be inserted into the ring and moving in an inclined path, said arbor having a cylindrical portion of the diameter desired for the interior of the ring, an inclined support to sustain said ring in the path of movement of the arbor, centering devices to properly position the ring on the support to receive the arbor, arbor-reciprocating mechanism, the arbor during its movement toward the ring being forced into the latter, a pan containing a cooling-bath and situated beneath the support, means to raise said pan to immerse the ring in the cooling-bath, and means to strip the ring from the arbor as the arbor recedes from the support.

19. In a mechanism for truing spinning-rings, an arbor adapted to be inserted into the ring and moving in an inclined path, such arbor having a cylindrical portion of the diameter desired for the interior of the ring, an inclined support to sustain said ring in the path of movement of the arbor, means to properly position said ring on the support to receive the arbor, said means including a removable stop, arbor-reciprocating mechanism, the arbor during its movement toward the support being forced into the ring, a pan containing a cooling-bath and situated beneath the support, means to raise said pan to immerse the ring in the cooling-bath, means to strip the ring from the arbor as the arbor recedes from the support, and means to simultaneously remove the stop from the path of the ring, the inclined position of the parts allowing the finished ring to be discharged from the support by gravity.

20. In a machine for truing spinning-rings, an arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, means to force said arbor into a ring, means to hold the ring in fixed position while the arbor is being inserted therein, means to cool the ring when stretched upon the arbor, and means to strip the ring from the arbor, combined with means acting automatically to stop the operation of the machine when the above-named cycle of operations has been completed.

21. In a machine for truing spinning-rings, an arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, devices to force the arbor into the ring, means to hold the ring in a fixed position while the arbor is being inserted therein, devices to cool the ring when stretched on the arbor, and devices to strip the ring from the arbor after the ring has been cooled, a driving-shaft operatively connected with each of said devices, a clutch mechanism by means of which said driving-shaft is rotated, and means to automatically render said clutch inactive after a complete cycle of operations has been performed.

22. In a mechanism for rehardening spinning-rings, a support to receive the ring to be treated, an arbor, arbor-reciprocating mechanism including a rotating cam device, the arbor in its movement toward the support being forced into the ring, a pan beneath the support, said pan adapted to receive a cooling-bath, cam devices rotating in unison with the first-named cam device, and operating to elevate the pan to immerse the ring therein while said ring is stretched over the arbor, means to rotate said cam devices, and means acting automatically to stop the rotation thereof when said cam devices have made one complete revolution.

23. In a mechanism for rehardening spinning-rings, a stationary support, a reciprocating arbor-carrier, an arbor secured thereto, an operating-lever engaging said carrier, a cam mechanism coöperating with said lever, and through the lever causing the arbor to be reciprocated, the arbor in its movement toward the support being forced into the ring, an oscillating arm carrying a pan at one end adapted to contain a cooling-bath, and a cam controlling the movement of said arm, the construction being such that after the arbor has been forced into the ring, the pan is raised to immerse the ring in the cooling-bath.

24. In a mechanism for rehardening spinning-rings, a stationary support, a reciprocating arbor-carrier, an arbor secured thereto, an operating-lever engaging said carrier, a cam mechanism coöperating with said lever, and through the lever causing the arbor to be reciprocated, the arbor in its movement toward the support being forced into the ring, an oscillating arm carrying a pan at one end adapted to contain a cooling-bath, a cam controlling the movement of said arm, and a stripper-plate situated above the support and having an aperture through which the arbor passes in its reciprocation, the construction of these devices being such that after the arbor has been forced into the ring, the pan is raised to immerse the ring in the cooling-bath, and as the arbor recedes from the support, the ring is brought against the stripper-plate and stripped from the arbor.

25. In a mechanism for rehardening spinning-rings, a frame, a stationary support detachably secured thereto, an arbor-carrier, an arbor detachably secured to said carrier, an actuating-lever engaging said carrier, a pan beneath the support, and adapted to contain a cooling-bath, an oscillating arm to which said pan is connected, and cam mechanism for actuating said lever and arm respectively, whereby the arbor and pan are moved toward and from the support, the construction being such that the arbor is forced into the ring as it moves toward the support, and the ring is immersed in the cooling-bath while stretched over the arbor.

26. In an apparatus for truing spinning-rings, a support adapted to sustain a ring, an arbor, an arbor-reciprocating lever, a pan to contain a cooling-bath, an oscillating lever or arm supporting said pan, rotating cam devices for actuating said lever and arm respectively, and means acting automatically to stop the rotation of the cam devices when they have made a complete rotation.

27. In apparatus for truing spinning-rings, an inclined support, a chute to deliver a ring to said support, an arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, means to reciprocate said arbor, said arbor in its movement toward the support being forced into the ring, a pan to contain a cooling-bath, said pan being situated beneath the support, means to raise the pan and immerse the ring in the bath while the said ring is stretched over the arbor, means to strip the ring from the arbor as the latter recedes from the support, and a chute to receive the ring as it is discharged from the inclined support by gravity.

28. In an apparatus for truing spinning-rings, a support to sustain a ring, an arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, automatic means to move one of said parts toward the other whereby the arbor is forced into the ring, devices separate from said automatic means to immerse the ring in a cooling-bath while stretched upon the arbor.

29. In an apparatus for truing spinning-rings, a support to sustain a spinning-ring, an arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, automatic means to move one of said parts toward and from the other, the arbor being forced into the ring during the relative movement of the parts toward each other, means operating automatically to cool the ring when stretched upon the arbor, and means independent from the support to strip the ring from the arbor as the arbor and support are separated from each other.

30. In an apparatus for truing spinning-rings, a frame, an inclined supporting-plate therein, having an aperture, an arbor adapted to be inserted into the ring and having a cylindrical portion of the diameter desired for the interior of the ring, means to give said arbor and supporting-plate a relative movement toward and from each other, the arbor being forced into the ring as the arbor and plate are brought toward each other relatively, means to cool the ring when stretched over the arbor, a stripper-plate above the support and having an aperture to receive the arbor as the arbor and support are moved toward each other, the said stripper-plate operating to strip the ring from the arbor, as the latter and the support are moved away from each other.

709,518. PROCESS OF FRAMING GLASS OR OTHER MATERIALS. HENRY W. SCATTERGOOD, Philadelphia, Pa. Filed June 18, 1902. Serial No. 112,381. (No specimens.)

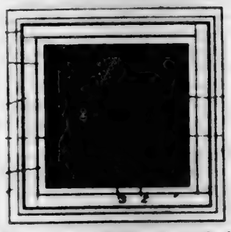

Claim.—1. The process of framing glass and other material, consisting in arranging the constituent pieces upon a removable base, with spaces between their contiguous edges and around the perimeter, filling said spaces with a substance capable of being dissolved or washed out, metallizing the filling in the spaces, applying a backing to the thus-metallized object, removing the base and filling, and then exposing the object to the action of an electrodepositing apparatus and thereby supplying the spaces with electrodeposited metal.

2. The process of framing glass and other material, consisting in arranging the constituent pieces upon a removable base, with spaces between their contiguous edges and around the perimeter, filling said spaces with a starch-like substance, covering the object with a removable supporting material, reversing the whole, detaching the base, metallizing the spaces, applying a backing to the thus-metallized object, removing the support and filling, and then exposing the object to the action of an electrodepositing apparatus whereby the spaces are supplied with electrodeposited metal.

3. The process of framing glass and other material, consisting in arranging the constituent pieces upon a removable base, with spaces between their contiguous edges and around the perimeter, filling said spaces with a fugitive soluble substance, covering the object with a removable supporting material, reversing the whole, detaching the base, metallizing the spaces, coating the thus-metallized object with an adhesive, applying a backing to the thus metallized and coated object, removing the support and filling, and then exposing the object to the action of an electrodepositing apparatus and thereby supplying the spaces with electrodeposited metal.

4. The process of framing glass and other material, consisting essentially in sticking the constituent elements of the object upon a fugitive base, such as tissue-paper, with intervening spaces between the said constituent elements, surrounding the object with a non-conducting border, with an intervening space, inclosing the thus-bordered object in a curb, filling the spaces with a fugitive substance, capable of being washed or dissolved out covering the object to the height of the curb with sand or other removable packing, reversing the object, removing the base and substituting thereafter metallization, sticking on such metallization, then applying a backing of plastic material, then removing the backing and the filling and cleaning the object, and finally exposing the object upon its backing to the action of an electrodepositing or an electroplating apparatus and depositing in the spaces the metal of the bath, and then removing the object, detaching the backing and cleaning said object.

5. The process of framing glass and other material, consisting essentially in sticking the constituent elements of the object upon a fugitive base, such as tissue-paper, with intervening spaces between the said constituent elements, surrounding the object with a non-conducting border, with an intervening space, inclosing the thus-bordered object in a curb, filling the spaces with a substance capable of being dissolved or washed out, covering the object to the height of the curb with a removable packing, reversing the object, removing the base and substituting thereafter metallization, sticking on such metallization, then applying a backing of plastic material, then removing the backing and the filling and cleaning the object, and finally exposing the object upon its backing to the action of an electrodepositing or an electroplating apparatus and depositing in the spaces a film of metal, then removing the object and introducing into the spaces a filling of metal powder, filings or other substance, then replacing in the bath and electrodepositing a finishing-film upon the filling, and finally removing the object from the bath and its backing, and cleaning it.

709,514. SHEET-METAL WINDOW FRAME AND SASH. CHAS B. SCHILLING, Chicago, Ill. Filed Mar. 24, 1902. Serial No. 99,743. (No model.)

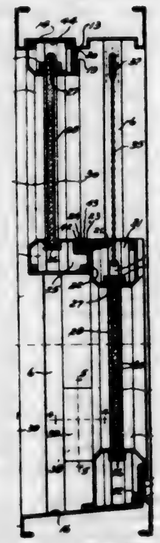

Claim.—1. The combination of a window-frame; a sheet-metal sash fitting within said frame and having on one face a flange lying in a plane substantially parallel with said face and adapted to hold a weather-strip in suitable position to engage said frame along the edge of said sash.

2. The combination of a window-frame; a weather-strip comprising a strip of packing secured on a suitable bar of sheet metal; and a sash mounted in said frame and having a side bar formed of sheet metal, said metal being bent upon itself along one face to form a flange adapted to secure said weather-strip against said face and in contact with said frame, substantially as shown and described.

3. The combination of a window-frame with stops thereon for a sliding sash; a sash having a side bar formed of sheet metal bent to form a groove for receiving the window-pane and having flanges on the face of said bar toward the frame; and a sheet-metal tongue having opposite flanges for slidably engaging the flanges on said sash; all arranged to

permit the lengthwise withdrawal and insertion of the tongue, and to permit the sash to be swung laterally free from the stops and removed from the frame when said tongue is withdrawn; said tongue being adapted to slidingly engage the stops to prevent sash removal of the sash when the tongue is inserted between the sash and frame; said side bar being formed of a single piece of sheet metal doubled upon itself on the inner face to form a flange adapted to engage a weather-strip substantially as shown.

4. A window-sash having a side bar formed of a piece of sheet metal bent to form a groove for receiving the window-pane, and being doubled upon itself upon the inner face to form a flange adapted to engage a weather-strip substantially as shown.

5. A window-sash having a cross-bar formed of sheet metal bent to form a channel for receiving the window-pane, said channel having a removable inner part to permit said pane to be passed entirely through said cross-bar, said cross-bar having its front and back extended beyond said inner part and bent to engage the edges of a sheet-metal cover, and a removable sheet-metal cover having its edges bent to interlock with the front and back of said cross-bar.

6. A window-sash having a cross-bar formed of sheet metal bent to form a channel for receiving the window-pane, said bar having its front and rear walls bent to engage a sheet-metal cover, and a removable sheet-metal cover having its edges bent to engage said front and rear walls and being doubled upon itself to form a flange and channel adapted to engage a weather-strip substantially as shown.

7. The combination of a window-frame, a sash slidably mounted in said frame, said sash being of sheet metal and being suitably bent to form a groove extending around three sides of same and lying in a plane substantially parallel with that of the sash, and a weather-strip removably seated in said groove and fitting against the adjacent surfaces of said frame.

8. The combination of a window-frame having ways or grooves therein for guiding a sliding sash, a sash slidably mounted in said frame and having a side bar arranged to slidingly engage a tongue seated in one of said grooves, and a tongue adapted to be inserted lengthwise between the side bar and frame in said groove and being formed of two sections suitably connected to permit the upper section to be tilted on the lower section for insertion in the groove, substantially as shown.

9. The combination of a window-frame having ways or grooves therein for guiding a sliding sash, a sash slidably mounted in said frame and having a side bar arranged to slidingly engage a tongue seated in one of said grooves, and a channel-shaped sheet-metal tongue adapted to be inserted lengthwise between the side bar and frame in said groove and being notched in its side walls to permit said tongue to bend at the notched part substantially as and for the purpose described.

10. A window-sash having a cross-bar formed of sheet metal bent to form a channel for receiving the window-pane, said channel having a removable inner part to permit said pane to be passed entirely through said cross-bar, said cross-bar having its front and back extended beyond said inner part and bent to engage the edges of a sheet-metal cover, and a removable sheet-metal cover having its edges bent to interlock with the front and back of said cross-bar, and being adapted to be withdrawn lengthwise from one end of said cross-bar, substantially as shown.

709,515. PRINTING-MACHINE. WALTER SCOTT, Plainfield, N. J. Filed Oct. 7, 1899. Serial No. 732,881. (No model.)

Claim.—1. In a rotary printing-press, an impression-cylinder having a longitudinal opening in the periphery thereof, grippers on said cylinder adapted to coact with the cylinder at one edge of said opening to retain sheets, and a removable section for placement in said opening to adapt the cylinder for web-printing, said grippers being held inside of said cylinder by said section.

2. In a rotary printing-press, an impression-cylinder provided with a longitudinal opening in the periphery thereof, grippers on said cylinder adapted to coact with the cylinder along one edge of said opening, a removable section for placement in said opening to adapt the cylinder to web-printing, said grippers being held inside of said cylinder by said section, and a tympan-web adapted to pass over said cylinder.

3. In a printing-machine, the combination of an impression-cylinder, a form or plate cylinder coacting with said impression-cylinder, guides at each side of but not crossing the printing-line of said cylinders and coacting with said impression-cylinder to retain the sheets thereon, and movable fingers on the plate-cylinder for coacting with the impression-cylinder to retain the heads of the sheets thereagainst while passing from one set of guides to the other, substantially as described.

4. In a printing-machine, the combination of an impression-cylinder, a tympan-web passing over said cylinder, a form or plate cylinder coacting with said impression-cylinder and web, guides at each side of but not crossing the printing-line of said cylinders and coacting with said impression-cylinder and web to retain the sheets thereon, and movable fingers on the plate-cylinder for coacting with the impression-cylinder to retain the heads of the sheets thereagainst while passing from one set of guides to the other, substantially as described.

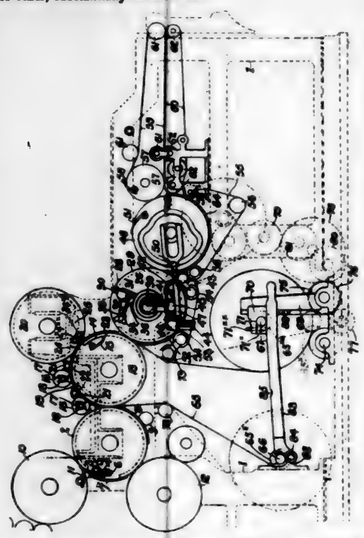

5. In a printing-machine, the combination of two rotary printing-couples, a tympan-web passing over the impression-cylinder of the second couple, means for retaining the sheets on the first impression-cylinder and transferring them to the second impression-cylinder, lifting-fingers on the second form or plate cylinder for coaction with the second impression-cylinder to hold the heads of the sheets against said second impression-cylinder as the said heads pass the plate-cylinder, and guides coacting with said second impression-cylinder at each side of but not crossing the printing-line thereof, substantially as described.

6. In a printing-machine, the combination of first and second impression-cylinders, first and second form or plate cylinders, a tympan-web, grippers and lifting-fingers on the first impression-cylinder for retaining the sheets thereon and for delivering them to the second impression-cylinder, guides coacting with said second impression-cylinder to take and retain said sheets, said guides not crossing the printing-line of said second impression-cylinder, other guides at the other side of but not crossing the printing-line of said second impression-cylinder, and outwardly-movable pressers on the second form or plate cylinder for coaction with the second impression-cylinder to hold the sheets thereagainst while passing said printing-line from one set of guides to the other, substantially as described.

7. In a printing-machine, the combination of first and second impression-cylinders, form or plate cylinders coacting therewith, a tympan-web on the second impression-cylinder, means for retaining sheets upon the first impression-cylinder and moving their heads away therefrom, guides coacting with said second impression-cylinder and with said delivery or retaining means of the first impression-cylinder to transfer the sheets to the second impression-cylinder, means carried by the second plate-cylinder for retaining the heads of the sheets against the second impression-cylinder as they pass the printing-line thereof, a take-off cylinder, and an exhaust on said take-off cylinder for drawing the heads of the sheets from said tympan-web, substantially as described.

8. In a printing-machine, the combination of an impression-cylinder, a tympan-web thereon, a take-off cylinder, and exhausts on said take-off cylinder for drawing the heads of sheets away from said tympan-web, substantially as described.

9. In a printing-machine, the combination of an impression-cylinder, a tympan-web thereon, a take-off cylinder provided with exhaust-nozzles for drawing the heads of sheets from said tympan-web, a transfer or collecting cylinder, and a delivery, substantially as described.

10. In a printing-machine, the combination of a blanket-cylinder, an air or exhaust pipe journaled on said cylinder adjacent one edge of said blanket-supporting surface of said cylinder and provided with nozzles, and means for rotating said pipe to press said nozzles against said edge and sheet or blanket to retain the same in place, substantially as described.

11. In a printing-machine, the combination of two rotary printing-couples for perfecting sheets, a tympan-web, means for retaining the sheets on the impression-cylinders of said couples and transferring from the first to the second thereof, a take-off cylinder 26, and an air-pipe 27 thereon having outlets 30, substantially as described.

12. In a printing-machine, the combination of impression-cylinder 2 provided with grippers 3 and lifting-fingers 4, pressure and feeding roll 9 coacting with cylinder 2 at a point intermediate the printing-line thereof and the point of transfer of the sheets to the second impression-cylinder, a plate or form cylinder coacting with cylinder 2, a second impression-cylinder, guides 19 coacting with said second impression-cylinder, and a plate or form cylinder coacting with said second impression-cylinder, substantially as described.

13. In a printing-machine, the combination of impression-cylinder 2 provided with grippers 3 and lifting-fingers 4, a coacting form or plate cylinder 12 below and to one side of cylinder 2, pressure-roll 9 coacting with cylinder 2 at a point intermediate the printing-line thereof and the point of transfer to the second impression-cylinder, a second impression-cylinder 13, guides 19 and 23 and pressure-rolls 16 coacting with cylinder 13, said guides 19 and 23 not crossing the printing-line of cylinder 13, a tympan-web on cylinder 13, a plate or form cylinder 20 coacting with cylinder 13 and provided with lifting-fingers 24, and means for taking the sheets from cylinder 12, substantially as described.

14. In a printing-machine, the combination of a rotary printing-couple for giving impressions on one side of sheets, a second impression-cylinder 13, guides 19 and pressure-rolls 16 coacting with said cylinder 13, said guides not crossing the printing-line of the cylinder 13, means carried by the impression-cylinder of said rotary couple for transferring sheets therefrom to said cylinder 13 and guides 19, a tympan-web on cylinder 13, a plate or form cylinder 20 coacting with cylinder 13, and lifting-fingers 24 on said cylinder 20, substantially as described.

15. In a printing-machine, the combination of an impression-cylinder (as cylinder 13), guides (as guides 19), and pressure-rolls (as rolls or pulleys 16) whose surface speed is greater than that of the said impression-cylinder, substantially as described.

16. In a printing-machine, the combination of an impression-cylinder, a take-off cylinder, air-ports in said take-off cylinder, means for drawing air into and for blowing it out of said ports, whereby sheets may be drawn against said take-off cylinder and may be blown therefrom, and means for receiving the sheets blown from the take-off cylinder.

17. In a printing-machine, the combination of an impression-cylinder, a tympan-web thereon, a take-off cylinder, air-ports in said take-off cylinder, means for drawing air into and blowing it out of said ports, whereby sheets may be drawn against said take-off cylinder and be blown therefrom, and means for receiving the sheets blown from the take-off cylinder.

709,516. END PANEL AND SEAT-POST FOR OPEN CARS. JOHN SEEBERGER, Watervliet, N. Y., assignor to John H. Jones, Watervliet, N. Y. Filed Apr. 24, 1902. Serial No. 104,443. (No model.)

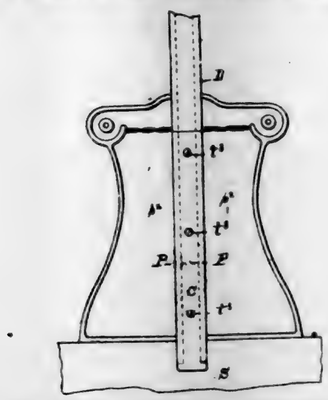

Claim.—1. The combination with a seat-post of an open car having a recessed or vertically cut-away portion on its outer face; of a seat-panel made of metal in two vertically-divided parts adapted to be placed with their inner vertical edges together within said recessed part and thereat secured to the seat-post; and a clamping-bar shaped to be inserted within said recessed or cut-away part of the post and be thereat secured outside of the inner edges of the panel parts, substantially as and for the purposes set forth.

2. The combination with a metal car-seat end panel made in two vertically-divided panel parts, each having ears for attachment to the car-floor; of a car-seat post having certain-groove part formed therein, and a vertically-recessed portion on its outer face below said certain-groove part; wherein said panel parts may be placed with the vertical edges in contact and thereat secured to the post; and a clamping-bar having formed therein a continuation of said certain-groove, said bar being adapted to be inserted within the recessed part of the post, and connected thereto exteriorly of said panel part and to extend downwardly and have the bottom of the certain-groove below the car-floor substantially as herein set forth.

709,517. END PANEL FOR OPEN-CAR SEATS AND THE SEAT-POST WITH WHICH IT CONNECTS. JOHN SEEBERGER, Watervliet, N. Y., assignor to John H. Jones, Watervliet, N. Y. Filed Apr. 24, 1902. Serial No. 104,444. (No model.)

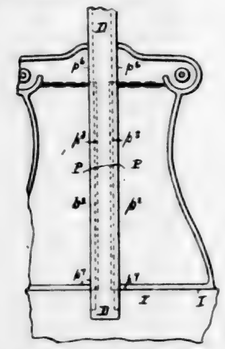

Claim.—1. The combination with the seat-posts of an open car each having a groove vertically formed therein at each of its opposite sides, of a metal panel formed in two vertically-divided parts, each provided with a tonguing part on its inner vertical edge, and each adapted to have its tonguing edge part inserted in one of said grooves in the seat-post, and outside its entered tonguing part to be secured to the post substantially as and for the purposes set forth.

2. The combination with the seat-posts of an open car each made to extend downwardly below, and outside of the car-sill into which it is mortised, and provided with a certain-groove arranged in each side thereof to extend downwardly below the car-floor, and having another groove in each of its opposite sides; of a metal panel vertically divided in two panel parts each of which latter is constructed with a tonguing inner edge; and each of which is adapted to be inserted in one of the last-named grooves, and be thereat secured to the post substantially as, and for the purposes set forth.

709,518. MESSAGE-DELIVERING DEVICE FOR TRAINS. PETER P. SHIVE, Dickeys Mountain, Pa., assignor of one-half to John V. Fisher, Baltimore, Md. Filed Feb. 13, 1902. Serial No. 93,962. (No model.)

Claim.—1. A movable shelf having a longitudinal passage for messages in combination with supports connecting it to the body of a car and holding it parallel thereto, and means for automatically moving it outward from said body or retracting it within the same at will substantially as set forth.

2. A shelf having a receiving-passage in one end for message-bearing cylinders, in combination with a hinged tube, in rearward continuation thereof, extending within the car, and mechanism for automatically moving said shelf out and in substantially as set forth.

3. A shelf having a receiving-passage for message-bearing cylinders, and a tube, movable with it, in continuation of the said passage, in combination with a receptacle carried on the end of the said tube within the car and automatic mechanism for moving the said shelf-tube and receptacle outward and inward together substantially as set forth.

4. A device carried by a car and adapted to receive a message-holding receptacle and deliver the same within the car, in combination with mechanism for automatically moving the said device inward and outward, a box moving with the said device and receiving what it discharges and means for attaching the latter to the car, but allowing its inward and outward movement substantially as set forth.

5. In combination with a receiving device for messages and means for automatically moving it inward and outward with respect to the body of a car, a box moving with the said device, receiving the discharge therefrom and provided with an interior deflecting-plate and cushion, substantially as set forth.

6. In combination with a guide-rail fixed along the track, a crank-shaft carried by a car and a message-receiving device and connections, adapted to be thrown out into operative position by the contact of the said shaft with the said guide-rail substantially as set forth.

7. In combination with a fixed device, a message receiving or delivering device carried by a car, supports connecting it to the body of a car and holding it parallel thereto and means connected with the latter and arranged for contact with the former in order that such contact may move outward said device thus carried substantially as set forth.

8. A telescopic crank-shaft, provided with means for adjusting it at will out of contact, in combination with a guide-rail arranged for contact with an attachment of the said shaft and means for receiving or delivering messages operated by the contact of said rail and shaft the said means and shaft being carried by a car substantially as set forth.

9. A guide-rail fixed beside the track and having one of its curved ends hinged to bend inwardly but not outwardly and provided with a spring for holding it in position, in combination with message receiving and delivering mechanism carried by a car and moved into operative position by contact of a part of the same with the said guide-rail, substantially as set forth.

10. A shelf adapted to present a message-holding cylinder for delivery and carried by a car, in combination with means for automatically moving said shelf out into operative position by contact with the said rail and a spring for replacing the same within the side of the car substantially as set forth.

11. A shelf carried by a car and provided with means for receiving and delivering message-holding cylinders, in combination with a hinged arm, connecting the said shelf to the side of the car, a crank-shaft, a second arm connecting the said shelf to the said shaft, a spring for retracting the said shelf flush with the side of the car, a fixed guide rail adapted to turn said crank-shaft, for throwing out the said shelf into operative position substantially as set forth.

12. A movable shelf carried by a car and adapted to receive and deliver message-holding cylinders, in combination with a pair of hinged arms, folding with said shelf into the side of the car, a receiving-tube extending from said shelf through the latter a crank-shaft and spring acting reversely on one of said arms and a guide-rail arranged for contact with said crank-shaft as set forth.

13. A movable shelf carried by a car and adapted to receive and deliver message-holding cylinders, in combination with a pair of hinged arms, folding with said shelf into the side of the car and adjustable as to length, a receiving-tube extending from said shelf into the car and a receptacle arranged to receive the cylinders from the said tube substantially as set forth.

709,519. FIRE-ESCAPE. JAMES W. GRIFFIN, Menlo, Ga. Filed July 2, 1902. Serial No. 114,224. (No model.)

Claim.—The herein-described safety appliance or fire-escape comprising suitable supporting-rails 3 operatively mounted in position upon the side of a building, in combination with a car or cage; means to operatively connect the car with said guiding-rails; a bail connected to the upper end of said car; a cable attached to said bail and passing around a pulley; a pair of gripping-arms operatively connected to said cable and said car and a brake carried by said car and adapted to be manually controlled whereby a gripping action may be set up between said brake and guiding-rails all operatively combined substantially as specified and for the purpose set forth.

709,519.

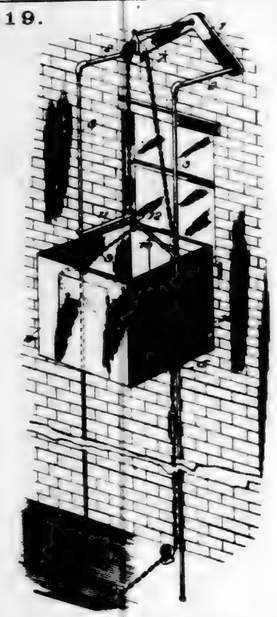

709,520. AIR-COMPRESSING APPARATUS. EDWARD J. ST. CROIX, Madrona, Wash. Filed Dec. 23, 1901. Serial No. 86,973. (No model.)

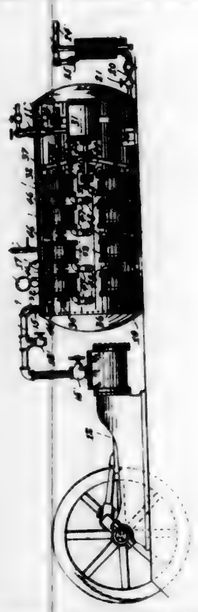

Claim.—In an apparatus for compressing and storing air; a reservoir, a main conduit adapted to convey air under pressure to said reservoir, a gate-valve to control said conduit and a second gate-valve in the conduit closely adjacent said reservoir, an auxiliary conduit adapted to convey steam to the main conduit and a gate-valve to control same, a driving-cylinder, a branch conduit leading from the main conduit to said

cylinder and having a gate-valve therein, a double series of air-compressing cylinders each of less length of bore than said driving-cylinder, said series arranged within the cylinders in tandem and disposed at opposite sides of the center line of the driving-cylinder, a conduit leading from one head of each compression-cylinder to the reservoir and a port of ingress in said end, a check-valve in last said conduit, and a check-valve arranged to control said port, a piston-rod for each series of cylinders and a like rod for the driving-cylinder, oppositely-disposed levers operably connected to the rod of the driving-cylinder and arranged to drive the piston-rods of the compression-cylinders, valve-operating mechanism for the valve of the driving-cylinder operably connected to one of said levers, and a manually-operative air-pump connected to said reservoir.

709,521. CHANGE-MAKING MACHINE. PASCAL H. SPERMAN, Newport, R. I. Filed Sept. 13, 1901. Serial No. 75,259. (No model.)

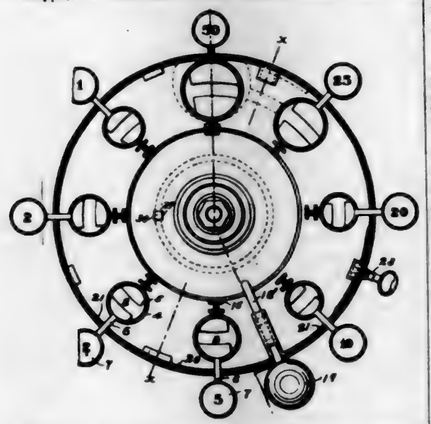

Claim.—1. A carrier provided with coin-tubes arranged to slide longitudinally in said carrier.

2. A carrier provided with coin-tubes arranged to slide longitudinally in said carrier, each of said tubes having a discharge-opening.

3. The combination of a carrier provided with a coin-tube arranged to slide therein and means for ejecting a coin from said tube, one of said parts, viz., the carrier and ejecting means, having a movement with relation to the other part to eject a coin from said tube.

4. The combination of a carrier provided with coin-tubes and means for ejecting coins from said tubes, one of said parts, viz., the carrier and ejecting means, having a rotary movement with relation to the other part to eject coins from said tubes, said coin-tubes being movable into and out of the path of said ejecting means.

5. The combination of a carrier provided with coin-tubes and means for ejecting coins from said tubes, one of said parts having a rotary movement with relation to the other part to eject coins from said tubes, said coin-tubes being independently movable into and out of the path of said ejecting means.

6. The combination of a carrier provided with coin-tubes and means for ejecting coins from said tubes, one of said parts having a rotary movement with relation to the other part to eject coins from said tubes, said coin-tubes being movable into the path of said ejecting means, and means for automatically moving said tubes out of the path of said ejecting means.

7. The combination of a carrier provided with coin-tubes and means for ejecting coins from said tubes, one of said parts having a rotary movement with relation to the other part to eject coins from said tubes, said coin-tubes being independently movable into the path of said ejecting means, and means for automatically moving out of said path all of the tubes that may have been moved into said path.

8. The combination of a carrier provided with coin-tubes and means for ejecting coins from said tubes, one of said parts having a rotary movement with relation to the other part to eject coins from said tubes, said coin-tubes being movable into and out of the path of said ejecting means, and means for locking said tubes out of said path.

9. The combination of a rotary carrier having a series of guide-tubes and a series of coin-tubes arranged to slide in said guide-tubes and means for automatically ejecting coins from said coin-tubes by revolving the carrier.

10. The combination of a rotary carrier, a series of guide-tubes, a series of coin-tubes arranged to slide in said guide-tubes, means for depressing said coin-tubes and means for automatically ejecting the coins from said coin-tubes when the carrier is revolved.

11. The combination of a rotary carrier having a series of guide-tubes, a series of coin-tubes arranged to slide in said guide-tubes and provided with laterally-projecting arms for depressing said tubes and means for automatically ejecting the coins from the coin-tubes when the carrier is revolved.

12. The combination, with a standard, of a rotary carrier having a series of guide-tubes, a series of coin-tubes arranged to slide in said guide-tubes, each coin-tube being provided with a laterally-projecting arm and a discharge-opening, and means for automatically ejecting a coin through said opening when the carrier is revolved.

13. The combination, with a standard, of a rotary carrier having a series of guide-tubes, a series of coin-tubes, arranged to slide in said guide-tubes, each coin-tube being provided with a laterally-projecting arm, a transverse slot in the bottom and a discharge-opening in the side of said tube, and means arranged to enter said slot for automatically ejecting a coin through said discharge-opening when the carrier is revolved.

14. The combination, with a standard, of a rotary carrier, a series of coin-tubes arranged to slide in said carrier, each coin-tube having a slot in one end and a discharge-opening in the side thereof, and a lug or projection arranged to enter said slot and eject a coin through said discharge-opening when the carrier is revolved.

15. The combination, with a standard, of a rotary carrier having a series of guide-tubes, a series of tubes arranged to slide therein, each coin-tube being provided with a curved slot in one end and a discharge-opening in the side thereof of a size to allow the passage of one of the coins in said tube, means arranged to enter said slot and engaging the lowermost coin in the coin-tube and eject it through said discharge-opening, and means for revolving the carrier.

16. The combination, with a standard provided with a cam, of a rotary carrier having a series of coin-tubes mounted to slide therein, each coin-tube being provided with a laterally-extending arm for moving it in one direction, means actuated by said cam for moving the coin-tubes in the other direction, and means for rotating the carrier.

17. The combination, with a standard provided with a stationary cam, of a rotary carrier having a series of coin-tubes mounted to slide therein, each coin-tube being provided with a laterally-extending arm, a series of slides having their upper ends arranged to engage said laterally-extending arms and their lower ends arranged to engage said stationary cam as the carrier is revolved and automatically raise the coin-tubes.

18. The combination, with a standard provided with a stationary cam, of a rotary carrier having a series of coin-tubes provided with laterally-extending arms for depressing said tubes, a series of slides mounted in the carrier having their upper ends engaging said laterally-extending arms and their lower ends arranged to engage the stationary cam on the standard when the coin-tubes are depressed and the carrier revolved.

19. The combination of a carrier provided with guide-tubes, coin-tubes arranged to slide in said guide-tubes and friction devices acting on said coin-tubes.

20. The combination, of a carrier provided with coin-tubes arranged to slide longitudinally in said carrier, and means for locking said coin-tubes against sliding movement in one direction.

21. The combination of a carrier provided with coin-tubes arranged to slide longitudinally in said carrier, a cover for said carrier, means for locking said cover in place and means for locking said coin-tubes against sliding movement in one direction.

22. The combination of a carrier provided with coin-tubes arranged to slide longitudinally in said carrier, a cover for said carrier, and means for locking said cover in place and also locking said coin-tubes against sliding movement in one direction.

23. The combination of a carrier provided with coin-tubes arranged to slide longitudinally in said carrier, a cover for said carrier, and means operating to lock said cover in place by one movement and by a further movement to lock said coin-tubes against movement in one direction.

24. The combination, with a rotary carrier, of a series of coin-tubes mounted to slide therein and provided with laterally-extending arms, a rotary ring mounted on the carrier and provided on its edge with a series of slots arranged to normally underlie the laterally-extending arms, and means for rotating said ring to bring the edge thereof under said arms and thereby lock said coin-tubes against sliding movement.

25. The combination of a rotary carrier, a cover therefor, a series of coin-tubes arranged to slide in said carrier, a rotary ring mounted on said carrier and provided with means for locking the coin-tubes against movement in one direction.

26. The combination of a rotary carrier, a cover therefor, a series of coin-tubes arranged to slide in said carrier, and provided with laterally-extending arms, a rotary ring mounted on said carrier and provided with a series of slots arranged to normally underlie said laterally-extending

arms and with means for engaging the cover to lock the same on the carrier.

27. The combination of a rotary carrier, a cover therefor, a series of coin-tubes arranged to slide in said carrier and provided with laterally-extending arms, a rotary ring mounted on said carrier and provided with a series of slots arranged to normally underlie said laterally-extending arms and with means for engaging the cover to lock the same on the carrier, and means for giving to said ring two movements, one movement to lock the cover and another movement to lock the coin-tubes against sliding movement in one direction.

28. The combination, with a standard, of a rotary carrier provided with a handle for rotating said carrier and means connected with said handle for locking the carrier against revolution.

29. The combination, with a standard provided with an opening, of a rotary carrier provided with a lever, a handle attached to one end of said lever and a bar attached to the other end of said lever, the free end of said bar being arranged to engage the opening in said standard when the bar is depressed.

30. The combination, with a standard provided with an opening and a series of notches, of a rotary carrier provided with a locking-bar for engaging said opening, and a detent for engaging said notches.

31. The combination of a carrier provided with coin-tubes, means for ejecting coins from said tubes, one of said parts having a movement with relation to the other part to eject coins from said tubes, said coin-tubes being movable into and out of the path of said ejecting means, and means for locking said tubes out of said path.

709,522. SHEARING TOOL OR CLIPPER. JOHN K. STEWART, Chicago, Ill. Filed Apr. 14, 1902. Serial No. 102,736. (No model.)

Claim.—1. A shearing-tool, comprising a fixed cutter and a vibrating cutter, a lever by which the latter is held in contact with the former, said lever having an upstanding knob or boss, a saddle having a downwardly-concave seat by which it is lodged upon the top of the knob, said saddle having a flat extended upper face, means for vibrating the cutter, and a tension-screw set through the top of the case having a flat lower end bearing upon the flat upper face of the saddle.

2. A shearing-tool, comprising a fixed cutter and a vibrating cutter, a lever by which the latter is held in contact with the former, said lever having an upstanding knob or boss, a saddle having a downwardly-concave seat by which it is lodged on the knob, said saddle having an extended flat upper face provided with a central concavity, means for vibrating the cutter, and a tension-screw set through the top of the case, terminating at the lower end in a flat face which bears upon the upper flat face of the saddle beyond the margin of the concavity in the latter, said tension-screw having an oil-cavity, and an oil-port leading from such cavity opening through its lower terminal flat face above the concavity of the saddle.

3. A shearing-tool, comprising a fixed cutter and a vibrating cutter, a tension-lever by which the latter is held in contact with the former, a lever for actuating the vibrating cutter and the tension-lever, said cutter-actuating lever being apertured and the tension-lever being exposed from above through such aperture, an upstanding knob or boss on the tension-lever, a saddle extending into such aperture and having a downwardly-concave seat by which it is lodged on the knob or boss, said saddle having a broadly-extended flat upper face, and a tension-screw set through the case, having a flat face at the lower end, bearing upon the flat upper face of the saddle.

4. A shearing-tool, comprising a fixed cutter and a vibrating cutter, and a lever for actuating the latter, having at its end remote from its engagement with the cutter a downwardly-projecting spindle, a ball having a vertical aperture to afford bearings for the spindle, a spherical seat in which such ball is retained, a longitudinal shaft and a crank-stud thereon engaging the lever forward of its fulcrum in the ball to vibrate it about the axis of the spindle, and means mounted on the case forward of the crank engagement with the lever for causing the lever to press upon the vibrating cutter.

5. A shearing-tool, comprising a fixed cutter and a vibrating cutter, a lever for actuating the latter, a ball to which said lever is pivoted for such vibration at its end remote from its engagement with the vibrating cutter, a spherical seat in which such ball is retained, a longitudinal shaft, and a crank-stud thereon engaging the lever forward of its pivot in the ball to vibrate it about said pivot, and means mounted on the case forward of the crank engagement of the shaft with the lever for causing the lever to press upon the vibrating cutter.

6. A shearing-tool, comprising a fixed cutter and a vibrating cutter, a lever for actuating the latter, a longitudinal shaft and a crank-stud thereon engaging the lever to vibrate it, a ball to which the lever is pivoted for such vibration, having a spherical seat above the bearing of the longitudinal shaft rearward from the crank engagement of said shaft with the lever, and means mounted on the case forward of said crank engagement for causing the lever to press upon the vibrating cutter.

709,528. PAPER-CLIP. SAMUEL R. STRATTAN, Washington, D. C. Filed Apr. 19, 1902. Serial No. 103,675. (No model.)

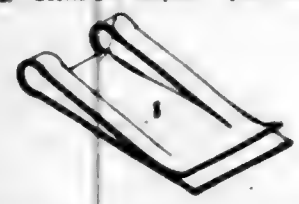

Claim.—1. A blank for paper-clips comprising a strip of resilient material having longitudinally-extending parallel slits intermediate its ends, the material between the slits being divided laterally at right angles to the slits to provide two tongues extending inwardly from the opposite ends of the strip.

2. A blank for paper-clips comprising a strip of resilient material having longitudinally-extending parallel slits intermediate its ends, the material between the slits being divided laterally at right angles to the slits to provide two tongues extending inwardly from the opposite ends of the strip, said tongues being of unequal length.

3. A blank for paper-clips comprising a strip of resilient material having longitudinally-extending parallel slits intermediate its ends, a portion of the material between the slits being cut away to provide two tongues extending inwardly from the opposite ends of the strip, said tongues being of unequal length, the cut edges of the tongues extending at right angles to said slits.

4. A paper-clip comprising a strip of resilient material folded to U shape and having a recess extending forwardly from the fold thereof; and an integral tongue formed on each end of said strip and extending rearwardly into said recess.

5. A paper-clip comprising a strip of resilient material folded to U shape and having a recess extending forwardly from the fold thereof; and opposing tongues extending rearwardly from the mouth of the clip into said recess.

6. A paper-clip comprising a strip of resilient material folded to U shape and having an open recess extending forwardly from the fold thereof; and opposing tongues extending rearwardly from the mouth of the clip into said recess, the upper tongue having its free end turned up to permit its being raised from the paper.

7. A paper-clip comprising a strip of resilient material folded to U shape, and having laterally-extending opposing surfaces adapted to bear on the paper at spaced points longitudinally of the clip, said surfaces being of unequal width, an open recess being formed in rear of said surfaces extending from the fold of the clip.

8. A paper-clip comprising a strip of resilient material folded to U shape, and having independent laterally-extending opposing surfaces adapted to bear on the paper at spaced points longitudinally of the clip, the rear surface being of less width than the forward surface, an open recess being formed in rear of said surfaces extending from the fold of the clip.

9. A paper-clip comprising a strip of resilient material folded to U shape, the mouth thereof forming laterally-extending opposing surfaces, and independent opposing surfaces located in rear of said mouth, said rear surfaces being of less width than the mouth, an open recess being formed in rear of said surfaces extending from the fold of the clip.

10. A paper-clip comprising a strip of resilient material folded to U shape, the mouth thereof forming laterally-extending opposing surfaces, and independent opposing surfaces parallel with and located in rear of the center of said mouth, said rear surfaces being of less width than said mouth, an open recess being formed in rear of said surfaces extending from the fold of the clip.

11. A paper-clip comprising a strip of resilient material folded to U shape, the mouth thereof forming laterally-extending opposing surfaces, and an independent tongue extending rearwardly from each of the ends of said strip, said tongues being of less width than the strip, whereby independent opposing surfaces will be provided in rear of said mouth, an open recess being formed in rear of said surfaces extending from the fold of the clip.

12. A paper-clip comprising a strip of resilient material folded to U shape, and having a recess extending forwardly from the fold thereof, and tongues extending rearwardly from the ends of the strip into said recess, said tongues being of unequal length.

13. A paper-clip comprising a strip of resilient material folded to U shape, and having a recess extending forwardly from the fold thereof, and an independent tongue formed integral with and extending rearwardly from each end of said strip, said tongues being of unequal length and opposing each other to form, with the mouth, inturned-extending opposing surfaces adapted to bear on the paper at spaced points longitudinally of the clip.

709,524. PROCESS OF INTENSIFYING THE LUSTER OF SILK. CHARLES STUART, Paterson, N. J. Filed July 10, 1902. Serial No. 115,169. (No specimens.)

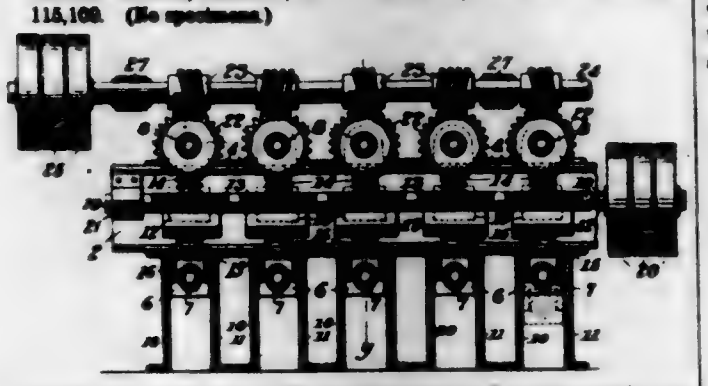

Claim.—1. The process of intensifying the luster of silk, which consists in taking the skeins directly from the hydro-extractor after dyeing, and, while still damp, stretching them and simultaneously maintaining them in a stretched condition, causing them to be gradually revolved and subjecting them while so stretched and being revolved in a closed chamber to dry air at a temperature of about 120° Fahrenheit, thereby preventing shrinking during the drying, as set forth.

2. The process of intensifying the luster of silk, which consists in taking the skeins, after dyeing, from the hydro-extractor, and, while they are still damp, stretching them and simultaneously maintaining them in a stretched condition, causing them to be gradually revolved and calendered, and subjecting them while so stretched and being revolved and calendered, in a closed chamber, to dry air at a temperature of about 120° Fahrenheit thereby preventing shrinking during the drying, as set forth.

709,525. STOVEPIPE-VENTILATOR. FRANK E. TAFT, Jamestown, N. Y. Filed July 3, 1902. Serial No. 114,318. (No model.)

Claim.—1. The combination with a stovepipe and an exterior ventilating-drum, of an open-top receiver interposed between the drum and pipe and adapted to collect particles of soot and foreign matter carried into the drum.

2. The combination with a stovepipe or like flue, and a ventilating-drum surrounding the same, of a funnel-shaped receiver within the drum and surrounding the pipe or flue, and having its larger end presented upwardly and adapted to receive soot and particles of foreign matter which may enter the drum.

3. The combination with a stovepipe having openings, a drum of conical form surrounding the pipe and inclosing said openings, and damper-controlled inlets to said drum, of a funnel-shaped piece within the base of the drum and surrounding said pipe, and having its upper end open to receive particles of foreign matter which may be carried into the drum and prevent said particles being carried into the room.

709,526. METAL-CUTTING-TOOL HOLDER. FREDERICK W. TAYLOR, South Bethlehem, and SIDNEY NEWHOLD, Bethlehem, Pa. Filed Nov. 24, 1900. Serial No. 37,583. (No model.)

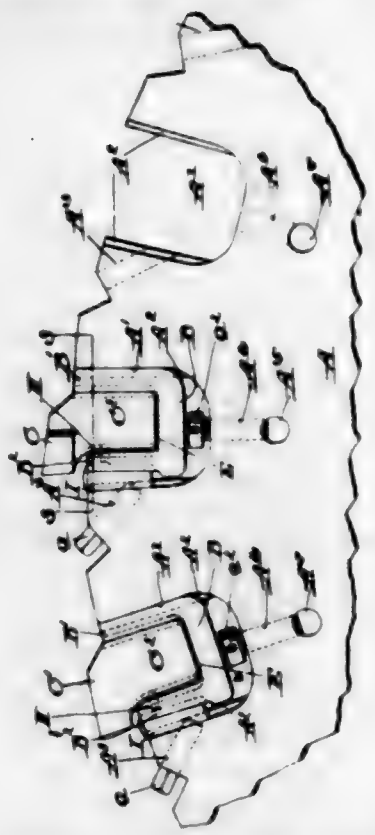

Claim.—1. A tool-holder having a cavity to receive a portion of a metal-cutting tool in combination with a metal-cutting tool having a portion inserted in said cavity and abutted against the wall thereof which receives the main thrust in working, and a packing of metal more easily fused than the metals of the tool and holder said metal being, in a fused condition, run into the spaces left between the walls of the cavity and the inserted portion of the tool and allowed to cool and solidify in said spaces to hold the tool in position.

2. A tool-holder having a cavity to receive a portion of a metal-cutting tool in combination with a metal-cutting tool having a portion inserted in said cavity and abutted against the wall thereof which receives the main thrust in working, said holder-cavity and inserted tool portion having one or more grooves, as b^1 C^1, formed therein, and a packing of metal more easily fusible than the metals of the tool and holder said metal being, in a fused condition, run into the spaces left between the walls and grooves of the cavity and the inserted portion of the tool and allowed to cool and solidify in said spaces to hold the tool in position.

3. A tool-holder having a cavity to receive a portion of a metal-cutting tool and said cavity having its wall which receives the main thrust in working smooth-finished, in combination with a metal-cutting tool having a portion inserted in said cavity the bottom side of said portion being smooth-finished on one face and directly abutted against the smooth-finished wall of the holder-cavity and a packing of metal more easily fusible than the metal of the holder and tool said metal being, while fused, run into the spaces left between the tool and the walls of the cavity in the holder and allowed to cool therein.

4. A tool-holder having a cavity to receive a portion of a metal-cutting tool in combination with a metal-cutting tool having a portion inserted in said cavity and abutted against the wall thereof which receives the main thrust in working, and a packing of metal more easily fused than the metals of the tool and holder and having the property of expanding in becoming solid, said metal being, in a fused condition, run into the

spaces left between the walls of the cavity and the inserted portion of the tool and allowed to cool and solidify in said spaces to hold the tool in position.

5. A tool-holder having a cavity to receive a portion of a metal-cutting tool in combination with a metal-cutting tool having a portion inserted in said cavity and abutted against the wall thereof which receives the main thrust in working, said holder-cavity and tool portion having one or more grooves, as b^3 C^1, formed therein and a packing of metal more easily fused than the metals of the tool and holder and having the property of expanding in becoming solid, said metal being, in a fused condition, run into the spaces left between the walls and grooves of the cavity and the tool and allowed to cool and solidify in said spaces to hold the tool in position.

6. A tool-holder having a cavity to receive a portion of a metal-cutting tool and said cavity having its wall which receives the main thrust in working smooth-finished, in combination with a metal-cutting tool having a portion inserted in said cavity, the bottom side of said portion being smooth-finished and directly abutted against the smooth-finished wall of the holder-cavity and a packing of metal more easily fused than the metal of the holder and tool and having the property of expanding on becoming solid, said metal being, while fused, run into the spaces left between the tool and the walls of the cavity in the holder and allowed to cool therein.

7. A tool-holder having a cavity to receive a portion of a metal-cutting tool in combination with a metal-cutting tool having a portion inserted in said cavity and abutted against the wall thereof which receives the main thrust in working, a device for holding the tool in proper position in the holder independently of the metal packing, and a packing of metal more easily fused than the metals of the tool and holder, said metal being in a fused condition, run into the spaces left between the walls of the cavity and the tool and allowed to cool and solidify in said spaces to hold the tool in position.

8. A U-shaped tool-holder in combination with a metal-cutting tool having a portion set in the space between the arms of the holder and abutted against the arm in the direction of which the tool is thrust in working and a packing of metal more easily fused than the metals of the tool and holder which metal is run into the spaces between the tool and holder while fused and allowed to cool and solidify in said spaces.

9. A U-shaped tool-holder having grooves b^3 b^3 in its arms in combination with a metal-cutting tool having a grooved portion set in the space between the arms of the holder and abutted against the arm in the direction of which the tool is thrust in working and a packing of metal more easily fused than the metal of the holder and tool which metal is run into the spaces and grooves between the tool and holder while fused and allowed to cool and solidify in said spaces.

709,527. PROCESS OF TREATING GASES. EDWARD THEISEN, Baden, Germany. Filed Nov. 15, 1901. Serial No. 82,339. (No specimens.)

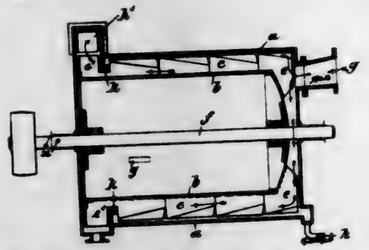

Claim.—The process of causing gases and liquids to flow in opposite directions in contact with each other, which consists in imparting a longitudinal motion to a body of gas, exposing said gas during its longitudinal travel to centrifugal action, and simultaneously applying to said gas a force tending to produce a motion in a contrary direction to that of the main longitudinal motion of said gas, interposing a liquid film in the path of the gas projected outwardly by centrifugal action and holding said liquid against outward movement under the influence of said gas, whereby the gas thrown outward with a tendency to travel in a direction opposite to its main flow, will cause the liquid to travel spirally in a direction opposite to the main flow of the gas.

709,528. MOSQUITO-CANOPY. MARY E. WEBBER, Collierville, Tenn. Filed Dec. 13, 1901. Serial No. 86,566. (No model.)

Claim.—1. In combination with a hub member, radial ribs having their inner ends pivotally connected thereto, stirrup-levers pivotally connected to said hub member and adapted to swing outwardly and upwardly under the ribs, to extend the ribs radially and support them, and operating-levers pivotally connected to the hub member, having arms projecting outwardly therefrom to engage the under sides of said stirrup-levers, extend the same radially and support the same in said position, and having stop-shoulders to bear on the hub member, substantially as described.

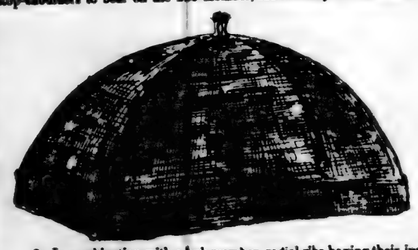

2. In combination with a hub member, radial ribs having their inner ends pivotally connected thereto, stirrup-levers pivotally connected to said hub member and adapted to swing outward and upwardly under the ribs, to extend the ribs radially and support them, operating-levers pivotally connected to the hub member, having arms projecting outwardly therefrom to engage the under sides of said stirrup-levers, extend the same radially and support the same in said position, having eyes at their outer ends to overlap each other and one having a hook to engage the eye of the other and lock said levers with the stirrup-levers and ribs in extended position, and being further provided with stop-shoulders, to bear on the hub member, for the purpose set forth, substantially as described.

709,529. LEAF FOR BOOKS. CHARLES H. WHEATON, Iola, Kans. Filed Mar. 12, 1902. Serial No. 97,891. (No model.)

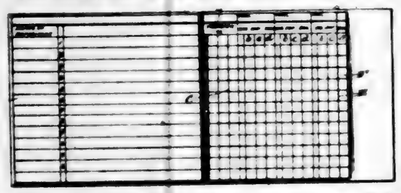

Claim.—A leaf for books having on one side an appropriately-designated balance-column at its right-hand outer edge, a vertical crease at the left thereof, said edge containing the balance-column designed to be turned to the right and folded on the line of said crease onto the opposite side of the leaf, substantially as described.

709,530. MANUFACTURE OF ENAMELED METAL PLATES. DANIEL WIRZER, Zurich, Switzerland, assignor to H. Salzbach & Co., Zurich, Switzerland, a Firm. Filed Apr. 14, 1902. Serial No. 103,943. (No specimens.)

Claim.—1. The method of enameling metal plates consisting in coating the plates with a mixture of zinc-white and oil-varnish, then drying them, coating the plates thus dried with greasy lacquer color and again drying them, then rubbing said plates with fine pumice-stone mixed with water, then printing them with permanent colors.

2. The method of manufacturing enameled metal plates consisting in coating fine and smooth rolled metal plates with a mixture of zinc-white and oil-varnish, then drying them, coating the plates thus dried with greasy lacquer color and again drying them, then grinding them dull by means of fine pumice-stone powder mixed with water, printing the dull-ground plates with permanent colors, drying the printed plates, then coating with greasy copal lacquer and finally drying them.

709,531. CORK-FASTENER. RICHARD BLECHNER, Cralfsheim, Germany. Filed Mar. 15, 1902. Serial No. 98,412. (No model.)

Claim.—The improved cork-fastener herein described and shown consisting of a single integral wire or rod having a U-shaped base portion adapted to fit around the neck of a bottle, horizontally-disposed spring-coils at the ends of the base portion, horizontal arms extending inward from the coils toward and engaging under the base portion and then extending outward from the same, vertical arms rising from the ends of said horizontal arms and having inwardly-curved portions at their upper ends, and holding points or pins extending horizontally inward from the ends of said curved portions.

709,532. WINDOW APPLIANCE. CHARLES E. BRADSHAW, Cleveland, Ohio. Filed Aug. 20, 1901. Serial No. 73,730. (No model.)

Claim.—1. In a window hinge and lock, the combination of a stud member having a button, separate hinge-pieces secured to the window-frame in which said member is pivoted, the pivotal portions and the button of the member being at the apices of a triangle and the hinge-pieces being spaced apart opposite the button, and a socket member carried by the window-sash in position to engage with the stud member when it is in one position to form a hinge.

2. In a window-hinge, a stud member having a button, a pair of hinge-pieces secured to the window-frame in which said member is pivoted, a socket member carried by the window-sash, said member comprising a plate with a flat portion and a projected portion having a U-shaped slot and side flanges extending into securing-spurs which enter the sash, against the side of which the plate is set and secured by screws through the flat portion, substantially as described.

3. In a window-hinge, a stud member having a button, separate hinge-pieces secured to the window-frame in which said member is pivoted, the pivotal portions and the button of the member being at the apices of the triangle and the hinge-pieces being spaced apart opposite the button, a socket member carried by the window-sash, said member having an inverted-U-shaped socket in position to engage with the button on the stud member, and spurs projecting from the rear of the socket member on each side of the socket for assisting in holding the member to the sash, said socket members being projected in front and hollowed out at the rear to receive the head of the button without recessing the window-sash.

4. In a device of the character described, a lower and an upper window-sash, means whereby the lower sash may be swung about one of its edges, a plate secured to the rear side of the lower sash, said plate being concaved on its inner side and having a U-shaped notch opening upwardly therein, and a button secured to the upper sash above the said plate for the purpose specified, said button having a flange and a screw integral therewith, and said flange being provided with a hole for a screw by which the button may be prevented from turning.

709,588. ADJUSTABLE ELECTRIC-LAMP HANGER. HERMAN S. RENTSCHLER, Brooklyn, N. Y. Filed Nov. 20, 1901. Serial No. 83,033. (No model.)

Claim.—In an adjustable electric-lamp hanger, the combination of: a cylindrical vertical rod 7; two lazy-tongs arms 8 and 9 each pivoted and supported at one end on pivot-blocks 22 attached pivotally to the vertical rod; a cross-head block 16 to which the other ends of the two lazy-tongs arms are pivotally connected, said last aforesaid pivotal connections forming one and the same horizontal axis; two slotted adjusting-strips 12 one connected with each lazy-tongs arm near the cross-head block, one end of each of said adjusting-strips being riveted loosely together with two adjoining strips of lazy-tongs arms, a thumb-screw 14, provided with washer 15, passing through the slot in said strip and into the next two adjoining strips of the lazy-tongs arm; and a pair of insulated wires passing along the successive strips of one of the lazy-tongs arms and attached thereto by passing through holes provided with rubber bushings in ears 26, which ears form part of the metallic strips of the lazy-tongs, for the purpose specified and substantially as shown.

709,533.

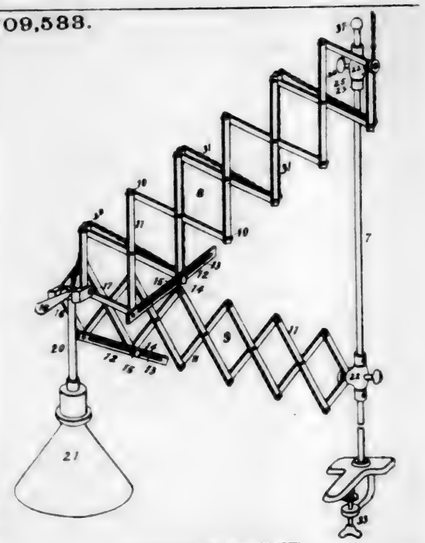

709,534. LACING-HOOK FOR WOMEN'S SHOES OR THE LIKE. NEHEMIAH H. CLARK, San Francisco, Cal. Filed Feb. 12, 1902. Serial No. 93,801. (No model.)

Claim.—A lacing-hook for shoes comprising an eye portion arranged to be clamped in the shoe-upper, said eye portion having a flange, said flange having a straight extension therefrom of uniform thickness therewith in the same plane toward the edge of the upper, said extension forming the first part of the hook, said hook being then bent upwardly or parallel with the edge of the upper, but in the plane of the flange and in a straight line for a distance equal to the width of a flat lace, and then bent outwardly at a sharp angle also in the plane of the flange for a distance equal to the thickness of the lace to form a tooth, the whole hook thus formed being of uniform thickness with the flange, substantially as described.

709,585. KINDERGARTEN-LOOM. LEVI H. COMSTOCK, Highland Park, Ill. Filed Feb. 16, 1901. Serial No. 47,642. (No model.)

Claim.—1. In a loom, the combination with a support, of oppositely-disposed blocks mounted thereon, means upon said blocks for engaging the warp-threads, a lay arranged to be reciprocated between said blocks and provided with means for beating up the weft-threads of a fabric being woven upon said loom, and means whereby said thread-engaging means upon said lay may, at will, be brought into the plane of said weft-threads or dropped below said plane, substantially as described.

2. In a portable hand-loom, the combination with a base-board, of pin-blocks adjustably mounted on said base-board with relation to each other, a lay mounted upon said base-board and adapted to be reciprocated between said pin-blocks, a stem upon said lay, and a guide for said stem, substantially as described.

3. In a loom, the combination with a base-board, of a pin-block

rigidly mounted thereon, a second pin-block slidably mounted upon said base-board, means for locking said second pin-block to said base-board, a lay slidably mounted upon said base-board and between said pin-blocks, a stem upon said lay, and a guide for said stem, substantially as described.

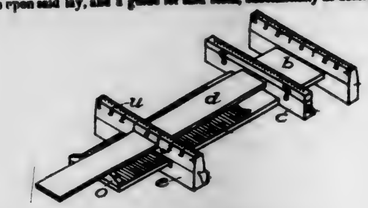

709,586. CLASP OR FASTENER. NEWTON CRANE, Boston, Mass. Filed Dec. 12, 1896. Serial No. 620,910. (No model.)

Claim.—1. A clasp or fastener comprising two complemental members, one being elongated with a plurality of engaging shoulders in its edges and the other having a transverse aperture to receive the first said member, said aperture being contracted at its front end whereby the end wall of the aperture provides shoulders b^3 to engage the said first-mentioned shoulders.

2. A clasp or fastener comprising two complemental members each formed of sheet metal and each having means at its outer end for attachment to a shoe or garment, one of said members being elongated with a plurality of engaging shoulders on its edges, and the other having an aperture between its ends to receive the first-mentioned member, said aperture being contracted at its front end to provide shoulders to engage the first-mentioned shoulders, whereby the elongated member may be passed through the aperture in the apertured member and by its engagement with both faces thereof be held with its shoulders in firm contact with the shoulders of the said apertured member.

3. A clasp or fastener comprising two complemental detachable members and an attaching-loop for one of said members, said loop consisting of a metallic strip doubled upon itself and being cut away to provide a resilient tongue with its end at or near the bend in the loop to normally hold said members in engagement.

4. A clasp or fastener comprising two complemental detachable members having engaging parts, one of said members having a cross-bar or pintle at its outer end, and an attaching-loop for encircling said cross-bar or pintle, said loop consisting of a metallic strip doubled upon itself and being cut away to provide a spring-tongue to bear against said cross-bar or pintle and hold said member in either of two positions.

5. A clasp or fastener comprising two complemental detachable members having engaging parts, one of said members having a cross-bar or pintle at its outer end, and an attaching-loop for encircling said cross-bar or pintle, said loop being formed of a single strip of resilient metal bent upon itself, and having a spring-tongue integral therewith extending into the space between its two portions, and bearing against said cross-bar, substantially as set forth.

709,587. WIRE BUTTON. ROBERT A. PORTER, Detroit, Mich. Filed Apr. 9, 1902. Serial No. 102,071. (No model.)

Claim.—1. A button and its attaching means comprising a central head, a loop extending from one side of the head and pins extending from the opposite side of the head, said pins being bent upon themselves and returned beneath and behind the head for engagement with the loop.

2. A button and its attaching means consisting of a single wire including a loop, arches beyond the loop and lying in a common plane at an angle to the plane of the loop and pins extending from the ends of the arches opposite to the loop, said pins being bent upon themselves and returned beneath and behind the arches for engagement with the loop.

3. A button and its attaching means consisting of a wire bent upon itself to form separate members and a connecting portion, the wire adjacent to the connecting portion being bent to form a loop and the members beyond the loop being arched in opposite directions, and the members beyond the arches being bent upon themselves and returned to the loop for engagement therewith, the members between the loop and the arches being twisted together.

709,588. LATCH. CHRISTIAN GARBER, Findlay, Ohio. Filed May 19, 1902. Serial No. 107,935. (No model.)

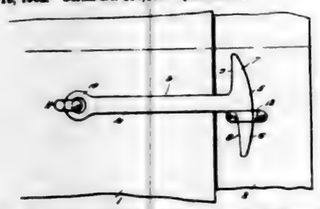

Claim.—1. In a latch of the character described, the combination, with a keeper-eye constituting one member of the latch, of a hook constituting the other member of the latch and comprising a shank, a connecting device rotatably mounted in the part to which the hook is applied, the shank of the hook being pivotally connected at one end to said connecting device, and being provided at its other end with oppositely-directed fixed heads or engaging members, the engaging edges of which are at different distances from the pivotal connection of the shank, said hook being reversible, substantially as described.

2. In a latch of the character described, the combination, with a pivoted hook constituting one member, of a keeper constituting the other member and consisting of an eye provided with an eccentric shank rotatably mounted in the part to which it is applied, the engaging edges of the eye being at different distances from the axis of the shank, substantially as described.

3. In a latch of the character described, the combination, with a keeper-eye constituting one member of the latch, said eye having an eccentric shank rotatably mounted in the member to which it is applied, and the engaging edges of the eye being at different distances from the axis of the shank, of a hook constituting the other member of the latch and comprising a shank, a connecting device rotatably mounted in the part to which the hook is applied, the shank of the hook being pivotally connected at one end to said connecting device, and being provided at its other end with oppositely-directed fixed heads or engaging members, the engaging edges of which are at different distances from the pivotal connection of the shank, said hook being reversible, substantially as described.

4. The combination, with a gate or door and gate-post or door-post, of a latch comprising a screw-eye mounted in the door, a hook having a shank provided at one end with an eye to engage the screw-eye and having at its other end oppositely-directed fixed heads with engaging edges at different distances from the screw-eye, and a keeper consisting of an elongated eye having an eccentric threaded shank to engage the post, substantially as described.

709,589. MACHINE FOR CUTTING MEAT, &c. FRIEDRICH GRAFF, Wiken, Germany. Filed May 2, 1902. Serial No. 105,667. (No model.)

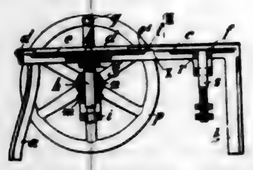

Claim.—1. In a meat-cutting machine, the combination of a frame with a cover depressed in the middle, a circular knife rotating between them, a table *f* which also serves as a gage, means for vertically adjusting said table, and mechanism for rotating the said knife substantially as set forth.

2. In a meat-cutting machine, the combination of a table-like frame with a fixed cover having a depressed middle part, a rotary circular knife arranged between said frame and the depressed part and the said cover, a spindle carrying the said knife, a driving-shaft and gearing for operating the said spindle, a vertically-adjustable piece arranged in proximity to the said knife and serving as a gage, a screw-spindle supporting the said piece, a nut engaging the threads on the latter and a fixed device for contact with the said nut, in order that the turning of the latter may adjust the said piece higher or lower substantially as set forth.

709,540. MACHINE FOR WEAVING CROSS-WIRES IN FENCES. WILLIAM GROVES and GRANVILLE D. O'DAY, Mount Sterling, Ohio. Filed Jan. 8, 1902. Serial No. 88,821. (No model.)

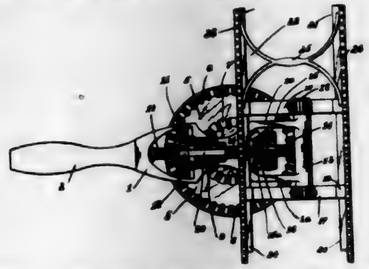

Claim.—1. In a machine for weaving cross-wires in fences, the combination with a vertically-arranged frame 22 adapted to be slidably supported upon the horizontal wires of a fence, of a main machine-bar 1, a fence gear-wheel journaled in connection therewith and having an inner and an outer row of gear-teeth on its face, a horizontally-journaled shaft in front of said wheel, a pinion-wheel 11 carried on said shaft and a double bevel-wheel 15 slidably mounted on said shaft, a longitudinally-recessed weaver-tube supported from said bar 1, a correspondingly-recessed gear-wheel 11 connected with said weaver-tube, a wire-spool-carrying pin projecting from said gear-wheel, and a swinging connection of the bar 1 with the supporting-frame 22, substantially as specified.

2. In a machine for weaving cross-wires in fences, the combination with a vertically-arranged frame 22 comprising connected angular standards 24 and toothed bars 26 projecting from said standards, of a weaving-machine comprising a main bar, a recessed weaver-tube projecting therefrom and means for imparting rotary motion to said tube, a frame or gate 17 pivotally connected with one end of said bar, said gate having laterally-recessed corner portions adapted to receive loosely the interned wings or flanges of said standards 24, and friction-wheels 21 journaled within said gate corner portions, as and for the purpose set forth.

709,541. APPARATUS FOR THE MANUFACTURE OF MOLDERS' CHAPLETS. ROBERT B. HASKINS, Cincinnati, Ohio. Filed May 7, 1902. Serial No. 106,308. (No model.)

Claim.—1. In an apparatus for the manufacture of molders' chaplets or anchors, a die formed of a metal bar or rod of flattened form in cross-section, the end of which is provided with an open-ended slot or kerf extended through it from one flattened side to the other to receive the end of a blank and box on opposite sides of said slot or kerf, side portions about which the blank is adapted to be bent, substantially as set forth.

2. In an apparatus of the character described, the combination of a die having a slot or kerf to receive an end of a blank and provided at the sides of said slot or kerf with side portions about which said blank is adapted to be bent, a matrix having an opening adapted to receive the die and blank carried thereon and a press-plate above the matrix for forcing the die and blank into the opening of the matrix, substantially as set forth.

3. In an apparatus of the character described, the combination of a die having a slot or kerf to receive an end of a blank and provided with side portions at the sides of said slot or kerf and about which the blank is adapted to be bent, a matrix having an opening to receive the die and blank carried thereon and a spring-supported press-plate above the matrix for forcing the die and blank into the opening of the matrix, substantially as set forth.

4. In an apparatus for the manufacture of molders' chaplets or anchors, a die having an opening extended through it to receive each end of a blank, and devices between which said die is adapted to be pressed, one of said devices having means for forcing one end of the blank through its opening, substantially as set forth.

5. In an apparatus for the manufacture of molders' chaplets or anchors, a die having an end portion formed with flattened sides and having two openings extended through it from one flattened side to the other, each of said openings being adapted to receive an end of a blank and said end portion of the die having at opposite sides of said openings side portions about which each blank is adapted to be bent, substantially as set forth.

709,542. FOLDING CRATE. CHARLES W. HELLER and EVERLY A. JOSEPH, Coon City, Mich. Filed May 13, 1902. Serial No. 107,880. (No model.)

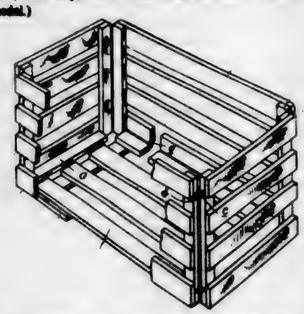

Claim.—A folding crate, comprising end and side sections hinged one to another at their ends to form when unfolded an oblong rectangular inclosure, each section being composed of a series of horizontally-extending spaced slats connected at their ends by vertical cleats arranged upon the inner faces of the sections, a bottom section, comprising similarly-arranged slats and cleats, hinged to the lower edge of one of the sides, said bottom fitting between the cleats on said side and folding into parallelism and contact therewith, a supporting-strip upon the lower edge of the opposite side fitted between the vertical cleats thereon, and a bridging-strip fitted between the cleats on each end section and projecting inwardly from the lower edge thereof, as and for the purpose set forth.

709,543. GATE. TERRELUS A. HILL, Maryville, Tenn. Filed Oct. 24, 1901. Serial No. 80,366. (No model.)

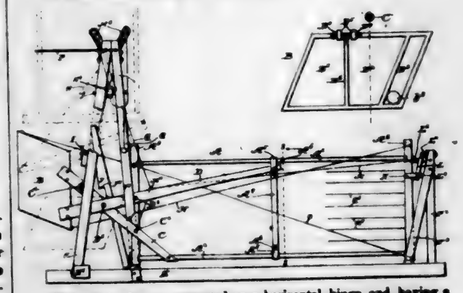

Claim.—1. A gate supported on a horizontal hinge and having a counterbalance and oblique braces, C and D, crossing each other and having their ends joined to said counterbalance and the gate, substantially as described.

2. A gate supported on a horizontal hinge and having a counterbalance and oblique braces, C and D, crossing each other and having their rear ends joined to said counterbalance and having their forward ends joined to the top and bottom rails of the gate, substantially as described.

3. A gate supported on a horizontal hinge and having a counterbalance and oblique braces, C and D, crossing each other and joined to each other where they cross and having their ends joined to said counterbalance and the gate, substantially as described.

4. A gate supported on a horizontal hinge and having a counterbalance and oblique braces, C and D, crossing each other and joined to each other where they cross, and having their rear ends joined to said counterbalance and their forward ends to the top and bottom rails, substantially as described.

5. A gate supported on a horizontal hinge and having a counterbalance and oblique braces, C and D, crossing each other and having their rear ends joined to said counterbalance and having the portions forward

of the point of crossing jointed to the rear upright and the top and bottom rails, substantially as described.

6. A gate supported on a horizontal hinge and having a counterbalance and oblique braces, C and D, crossing each other and jointed to each other where they cross and having their rear ends jointed to said counterbalance and having the portions forward of the point of crossing jointed to the rear upright and the top and bottom rails, substantially as described.

7. In a gate, the combination with the gate-frame, of a counterbalance, and two pairs of braces extending obliquely from said counterbalance to said gate-frame and crossing each other, and a horizontal hinge-shaft extending through two of said braces, substantially as described.

8. In a gate, the combination with the gate-frame, of a counterbalance, and two pairs of braces extending obliquely from said counterbalance to said gate-frame and crossing each other, a horizontal hinge-shaft extending through two of said braces, two posts, one located at each side of the gate and supporting said shaft, and a bar, I, connecting said posts above said braces, substantially as described.

9. The combination with a gate-frame, counterbalance, and braces connecting said counterbalance and frame, posts, F, and a bar, I, connecting said posts, of a latch-bar adapted to engage said bar and to hold said gate in the upright position, substantially as described.

10. The combination with a gate-frame and posts to which said gate is hinged, of a latch-bar hinged to said gate-frame, and a member suitably secured to said posts for making engagement with said latch-bar when the gate is in the upright position, substantially as described.

11. A gate supported on a horizontal hinge and having a counterbalance-chest comprising two compartments which are at opposite sides of a plane cutting said gate lengthwise and near which said hinge lies, and a third compartment adapted to receive a freely-shifting weight, substantially as described.

12. A gate supported on a horizontal hinge and having a counterbalance-chest comprising two compartments which are at opposite sides of a plane cutting said gate lengthwise and near which said hinge lies, and a third compartment having its ends adjacent to vertical lines extending through the hinge of the gate when the latter is opened or closed, substantially as described.

13. In a gate, the combination of the posts, F and F', shaft, *f*, arm, H, an operating-cord, staple, *f'*, and a guy, substantially as described.

14. In a gate, the combination of the posts, F and F', arm, H, suitably hinged to said posts, and two guys, both joined to said posts, and one joined to the outer end of said arm and the other near the middle of the latter, and an operating-cord, substantially as described.

15. The combination with a gate supported on a horizontal hinge, of a latch-bar secured vertically to the rear end of said gate and arranged to bear against the rear end of the latter when the latch has been released, and a cord attached to said latch-bar and arranged for lifting the latter whereby the gate is released and turned from the upright position, substantially as described.

16. The combination with the gate-frame and latch-bar secured to the rear portion of said frame, posts, F and F', arm, H, and suitable pulleys secured upon the outer end of said arm and upon said posts, of a cord extending from the rear portion of said gate upward and over a pulley on said posts, thence around the pulley on the outer end of said arm, thence over a pulley on said posts, and thence downward to said latch-bar, substantially as described.

17. In a gate, the combination with two posts, one standing at each side of the gate, of plates, Q, attached to the inner faces of said posts and having upturned ends having apertures, Q', substantially as described.

18. The combination with a gate-frame having a latch mounted thereon at each end, of posts and a cord-supporting arm, and duplex cords each extending from the outer end of said arm, one to one and the other to the other of said latches, substantially as described.

19. In a gate, the combination with the gate-frame, counterbalance, and two pairs of rigid braces crossing each other and jointed by their ends to said frame and said counterbalance, of a pair of wire braces, N, jointed to the lower portion of said counterbalance and to the upper, outer portion of said frame, substantially as described.

20. In a gate, the combination with a frame and counterbalance, and two pairs of rigid braces crossing each other and jointed by their ends to said counterbalance and frame, of a wire brace extending from the upper portion of said counterbalance to the lower forward corner of said frame, substantially as described.

21. In a gate, the combination with a gate-frame, a counterbalance, two pairs of oblique braces joining said counterbalance and frame, posts, F, F, supporting said gate, and a bar, I, connecting said posts above said braces, of a wire brace extending from the upper portion of said counterbalance over said bar, I, to the lower forward corner of the gate-frame, substantially as described.

22. In a gate, the combination with a frame and counterbalance, and a pair of braces rigidly joining said counterbalance and frame, of a pair of wire braces jointed to the front of the gate and extending along opposite sides of the latter and crossed between the gate-frame and counterbalance and then attached to the counterbalance, substantially as described.

709,544. ADHESIVE. ARTHUR S. HOYT, Brooklyn, N. Y. Filed June 5, 1901. Serial No. 62,258. (No specimens.)

Claim.—1. A new adhesive, containing the solid matter from gluten-water of wheat-starch manufacture concentrated, cooked and reduced to dryness, the same consisting of a mixture of converted starch and albumen forming a soluble powder.

2. A new adhesive containing the solid matter from gluten-water of wheat-starch manufacture, concentrated, cooked and reduced to dryness, the same consisting of a mixture of converted starch and albumen forming a slightly-colored powder soluble in cold water.

709,545. STOVEPIPE ATTACHMENT. JOHN C. HOYT, Richmond, Me. Filed Oct. 18, 1901. Serial No. 79,209. (No model.)

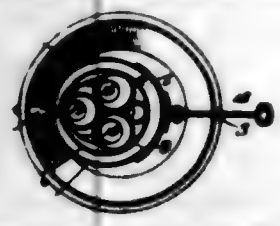

Claim.—1. A stovepipe attachment, comprising a stovepipe, an upwardly-tapering tube therein; said tube being pitched or inclined rearwardly from its lower to its upper end, and having its lower end fitting tightly in and of substantially the same area as the lower end of the pipe, and its upper end of much smaller diameter than the pipe, and provided in its front side with a vertically-elongated opening, a damper controlling said opening, a handle connected to the damper and projecting through the inclosing pipe, and a smaller tube secured within the lower portion of the tapering tube and containing a nest of smaller tubes or nozzles; said smaller tubes or nozzles tapering upwardly likewise.

2. A stovepipe attachment, comprising a stovepipe, an upwardly-tapering tube therein and pitched or inclined rearwardly from its lower to its upper end and provided with a vertical elongated opening in its front side, the lower end of said tube being of substantially the same diameter as the contiguous part of the pipe, while its upper end is of smaller diameter than the contiguous portion of said pipe, a bolt connecting the rear sides, of the pipe and tube, a sleeve upon said bolt and separating the pipe and tube, a damper 9, controlling the elongated opening of the tube, and hinged at its lower end to the tube contiguous to the lower margin of said opening, and a handle pivoted to said damper and projecting forwardly through the pipe, and provided with a plurality of notches to engage said pipe and secure the damper in the desired position.

709,546. VEHICLE-WHEEL. GEORGE S. LEE, Hawthorne, N. J. Filed Jan. 27, 1902. Serial No. 91,498. (No model.)

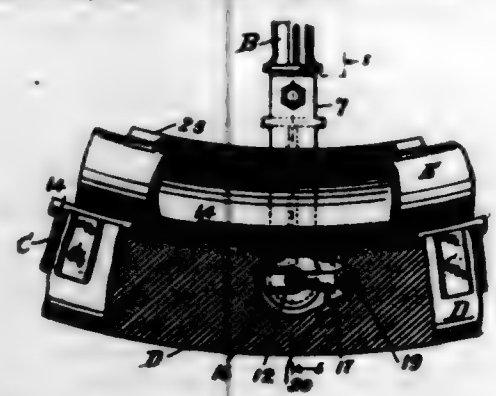

Claim.—1. The combination with a hub, spokes and rim rigidly connected together, of a pneumatic tube on said rim, a tire on said rim adapted to have an eccentric curvilinear motion around the rim within a limited range to compress said tube, and stops on the rim to limit the range of motion of the tire.

2. In a vehicle-wheel a spoke having a forked outer end adapted to span a tire and made in two separable pieces bolted together, substantially as shown.

3. In a vehicle-wheel, a spoke having a forked outer end adapted to span a tire and made in two pieces one of which is integral with the body of the spoke and the other is separable therefrom but secured thereto.

4. In a vehicle-wheel, the combination with a tire and rims C C of a spoke B having a fork at its outer end which spans said rims C C, said

fork being in two separable pieces which are bolted together through said rims and also nearer the center of the wheel.

5. In a vehicle-wheel, the combination of the two-part forked spokes, the saddle 25, pneumatic tube E, rim C and movable tire D.

6. The combination with the hub, spokes and rim, of a chambered tire, and forked levers pivoted in the tire and engaging pins on the spokes to permit of limited movement of the tire on the rim.

7. The combination with a hub, spokes and rim, of a chambered tire and devices in the tire adapted to permit of limited motion thereof on the rim.

709,547. **HOISTER AND CONVEYER.** GEORGE W. MERRITT, Berkeley, Cal. Filed Apr. 16, 1902. Serial No. 103,282. (No model.)

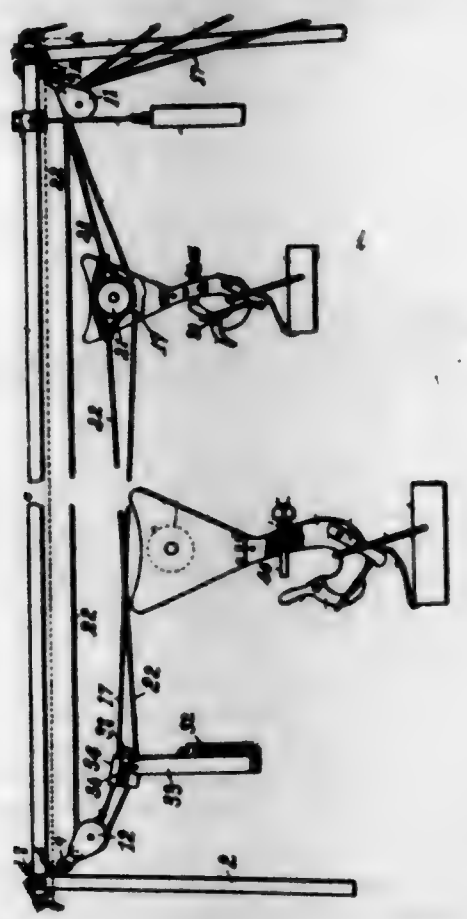

Claim.—1. In an apparatus of the character described, the combination of pulley-blocks, means for securing the same at a distance from each other, two cables attached to one of said blocks and running over pulleys in the other block, a carrier having rollers running on said cables, a rope attached to said carrier, a pulley on the block to which the cables are attached and between said cables around which passes the rope attached to the carrier, and two pulleys between the pulleys of the other block around which pass the aforesaid rope and a second rope also attached to said carrier, substantially as described.

2. In an apparatus of the character described, the combination of two pulley-blocks, means for securing said blocks at a distance from each other, two truck-cables attached to one of said blocks and passing over pulleys in the other block, a carrier having rollers running upon said cables, ropes for drawing said carrier, a trip for said hook, a hanger, and a frame for said hanger attached to the cables and having a pulley about which passes one of said ropes, said hanger being in the path of the trip to release the device carried by the hook, substantially as described.

3. In an apparatus of the character described, a carrier having a hook, a trip pivoted on said hook and having a forwardly-projecting lower end and a recess in its upper edge, a guideway for a rope loop, in combination with the bucket having a bail around said hook, and a rope loop passing through said guideway and engaging said trip in said recess, substantially as described.

4. In an apparatus of the character described, a carrier having a hook, a trip pivoted on said hook, a guide-passage through said hook, a spring-actuated stem passing through said passage, the end of said stem engaging said trip, whereby on contact of the head of said stem with an obstacle, said trip is sprung to release the device carried by the hook, substantially as described.

5. In an apparatus of the character described, the combination with two truck-cables and a carrier thereon having a trip, of a V-shaped hanger-frame, the ends of said V being bent back on themselves to secure the same around the cables, a roller pivotally secured in said V, and a hanger supported by said frame, and in the path of the carrier-trip, substantially as described.

6. In an apparatus of the character described, the combination with two truck-cables and a carrier thereon having dividing-plates and a trip, of a hanger suspended from said cables, having a plate against which the trip abuts, said hanger having also a protector at its upper portion against which the corners of the plates of the carrier impinge, substantially as described.

7. The union comprising the W-shaped frame having two thimbles in its upper portion and cable ends secured in said thimbles, and a single thimble in its lower central portion and a chain or rope secured in said lower thimble, substantially as described.

8. In an apparatus of the character described, the combination of a strainer-beam, a pulley-block supported thereby, cables passing said block, a carrier on said cables having a hook, a striker-plate suspended from said strainer-beam, and a tripping device carried by said hook arranged to impinge against said striker-plate to release the load, substantially as described.

709,548. **GATE.** JOHN MEYER, Yuton, Ill. Filed Mar. 27, 1902. Serial No. 100,242. (No model.)

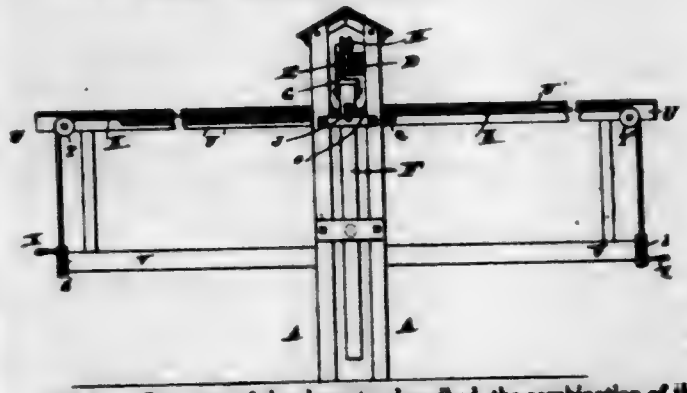

Claim.—In a gate of the character described, the combination of the gate mounted to slide on an overhead track, a catch J at each end of the gate, a keeper L for each catch, a rope K attached at one end to one of the catches, pulleys secured to the center posts of the supporting structure, beams U projecting at right angles to the length of the gate, the pulleys T thereon, the beams V below the said beams U, the pulleys S thereon, the said rope K passing over the pulleys on the center posts, thence over the pulley T of the beam U, thence down and around the pulley S, thence up over pulley T and back to the center posts and over pulleys thereat, thence to the catch J on the opposite end of the gate from which the rope started all arranged to operate as described, and the springs Y at each end of the movement of the gate, the same adapted to be put under tension whereby when released they assist in throwing the gate as set forth and described.

709,549. **MOTOR ATTACHMENT FOR CYCLES.** LEONARD H. MEYRICK-JONES, East Dereham, England. Filed Sept. 30, 1901. Serial No. 76,777. (No model.)

Claim.—1. The combination of two bicycles, a set of clamps engaging their frames, a second set of clamps adjustably carried by the first set, and a motor-frame carried by the second set of clamps.

2. In a motor attachment for cycles, the combination of a set of clamps engaging the bicycle-frames, a second set of clamps adjustably carried by the first set, longitudinal bars carried by the second set, a motor carried by the longitudinal bars, and means for driving the bicycle-wheels from the motor.

3. In a motor attachment for cycles, the combination of a set of clamps engaging the bicycle-frames, a second set of clamps adjustably carried by the first set, longitudinal bars carried by the second set, a motor carried by the longitudinal bars, a shaft driven by the motor, and pinions on the shaft engaging pinions on the hubs of the bicycle-wheels.

709,550. **MOTOR ATTACHMENT FOR CYCLES.** LEONARD H. MEYRICK-JONES, East Dereham, England. Filed Jan. 21, 1902. Serial No. 90,068. (No model.)

Claim.—1. The combination of two bicycles, a framework connected to the frame of both bicycles by clamps and coupling them side by side at a distance apart, a road-wheel carried by the framework and a motor driving this wheel also carried by the framework.

2. The combination of two bicycles, a framework connected to the frame of both bicycles by clamps and coupling them side by side at a distance apart a road-wheel carried by the framework, springs acting to press downward this road-wheel and a motor driving the road-wheel.

3. The combination of two bicycles side by side at a distance apart, a tie-rod, clamps at its ends secured to the two bicycle-frames, a road-wheel mounted upon and capable of being revolved around the rod, a motor attached to the rod and driving the wheel, stays extending from the rod to the ends of the bicycle-frames and a tie-bar holding apart the ends of these frames.

4. The combination of two bicycles side by side at a distance apart, a tie-rod, clamps at its ends secured to two bicycle-frames, a road-wheel mounted upon and capable of being revolved around the rod, a motor attached to the rod and driving the wheel, portions of the rods formed as springs to force the road-wheel against the ground, a tie-bar holding apart the ends of the bicycle-frames and cross-stays for keeping the rod and tie-bar at right angles to the bicycle-frames.

5. In a motor attachment for bicycles the combination of a rod, a road-wheel mounted upon and capable of being revolved around the rod, a motor attached to the rod and driving the wheel, a clamp at one end of the rod by which it can be attached to the bicycle-frame so as to stand out sidewise at right angles to it, and a stay fast at one end with the rod and at the other adapted to be secured to the bicycle-frame.

6. In a motor attachment for bicycles the combination of a rod, a road-wheel mounted upon and capable of being revolved around the rod, a motor attached to the rod and driving the wheel, a clamp at one end of the rod by which it can be attached to the bicycle-frame so as to stand out sidewise at right angles to it, a portion of the rod formed as a spring to force the road-wheel against the ground, and a stay fast at one end with the rod and at the other adapted to be secured to the bicycle-frame.

709,551. METAL BEDSTEAD. JOSEPH A. MOLLITOR, Chicago, Ill. Filed Mar. 4, 1902. Serial No. 96,995. (No model.)

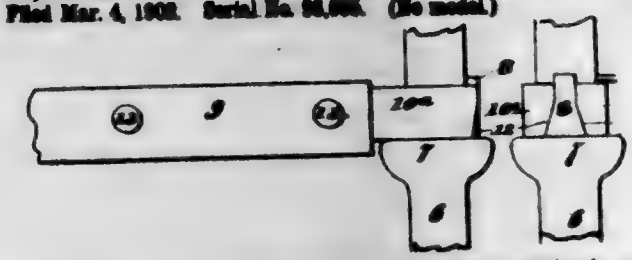

Claim.—1. In a corner-fastening for bedsteads, the combination with a corner-post and a side rail, of a lug on the corner-post, plates embracing said corner-post and abutting against the aforesaid lug, said plates being secured to the side rail, substantially as shown and described.

2. In a corner-fastening for bedsteads, the combination with a corner-post, of a lodge and lug thereon, plates supported on said lodge embracing the corner-post and abutting against the aforesaid lug, said plates being secured to the side rail, substantially as shown and described.

709,552. PRINTING DEVICE. WILLIAM L. MORRIS, Cleveland, Ohio, assignor to the Austin Cartridge Company, Cleveland, Ohio, a Corporation of Ohio. Filed Mar. 13, 1899. Serial No. 708,802. (No model.)

Claim.—1. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said oscillatory support, means for imparting an oscillatory movement to said support, and a reciprocating movement to said carrier, and means for causing a partial reciprocating stroke in one direction prior to the return oscillatory stroke, whereby the position of the carrier relative to said support will be different during the two oscillatory strokes.

2. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted on said support, means for reciprocating said carrier, means for oscillating said support intermittently intermediate the reciprocating movements, a partial reciprocating movement in one direction being provided prior to the return oscillatory stroke, and means for preventing oscillation during the initial and final strokes of the reciprocating movement of said carrier, whereby the position of the carrier relative to said support will be different during the two oscillatory strokes.

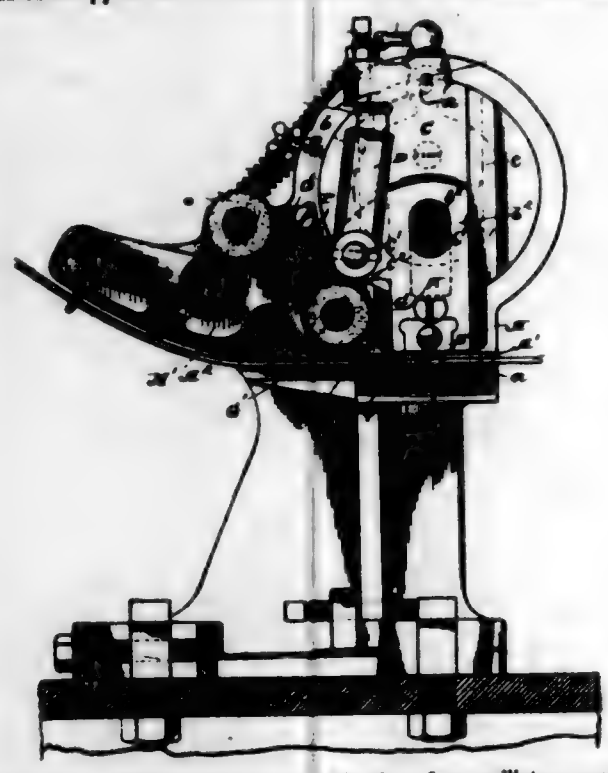

3. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for oscillating said support and carrier, means for imparting a sliding movement in one direction prior to one oscillatory stroke, and means for imparting a sliding movement of a length less than the full reciprocating movement and in the opposite direction prior to the opposite oscillatory stroke, whereby the position of the carrier relative to said support will be different during the two oscillatory strokes.

4. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for oscillating said support and carrier, means for imparting a sliding movement in one direction prior to one oscillatory stroke, and independent means for imparting a sliding movement only in the opposite direction prior to the opposite oscillatory stroke.

5. In a printing device, the combination of a type-carrier capable of oscillation, means for effecting such oscillation, means for imparting a sliding movement to said carrier prior to one oscillatory stroke, and a spring adapted to impart to said carrier a movement in a direction opposite to that of said sliding movement, substantially as set forth.

6. In a printing device, the combination of a type-carrier capable of oscillatory and reciprocal movement, means for effecting such oscillation, means for imparting a sliding movement to said carrier prior to one oscillatory stroke of said carrrier, and a spring for imparting a sliding movement to said carrier prior to the other oscillatory stroke, substantially as set forth.

7. In a printing device, the combination of a type-carrier suitably mounted and capable of an oscillatory and reciprocal movement, a guide adapted to contact said carrier whereby one reciprocating stroke may be effected, said guide located in a manner such that it may be disengaged from said carrier, and an actuating-arm journaled upon said carrier eccentrically whereby reciprocation of said carrier may be effected during such contact and oscillation of same effected during such disengagement, substantially as set forth.

8. In a printing device, the combination of a type-carrier suitably mounted and capable of an oscillatory and a reciprocating movement, means for effecting such movement and a roller for engaging said carrier and adapted to prevent oscillation during one reciprocal movement thereof, substantially as set forth.

9. In a printing device, the combination of a support, a type-carrier suitably mounted upon said support and capable of a reciprocating movement, means for oscillating said support and reciprocating said carrier, and a roller for engaging said carrier and adapted to prevent oscillation of said support during one reciprocal movement of said carrier, substantially as set forth.

10. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means tending to retain said carrier, a guide-roller for engaging the latter, and means for withdrawing same from contact with said roller, whereby said retaining means are rendered operative, substantially as set forth.

11. In a printing device, the combination of an oscillatory support,

a type-carrier slidably mounted upon said support, driving means journaled without the axial plane perpendicular to said carrier, a guide-roller for engaging said carrier, the latter adapted to be withdrawn from contact with said roller by said driving means, whereby the carrier may be rotated, substantially as set forth.

12. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for imparting an oscillatory and a reciprocating movement to said carrier, type carried thereby, and relatively stationary inking means located in the path of movement of the type and adapted to ink the same during but one of the oscillatory movements of the carrier, said type being out of contact with the inking means during the opposite oscillatory stroke.

13. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, means for oscillating said carrier, an ink-roller, and means for rotating said roller during one stroke of the oscillatory movement of the said carrier, said means being inoperative during the other oscillatory stroke, substantially as set forth.

14. In a printing device, the combination of an oscillatory support, a type-carrier slidably mounted upon said support, driving means journaled without the axial plane perpendicular to said carrier, a guide-roller for engaging said carrier, the latter adapted to be withdrawn from contact with said roller by said driving means, whereby said carrier may be rotated, and means for limiting such rotation, substantially as set forth.

709,553. BREAD-CUTTER. WILLIAM O. H. MORRISON, Belvidere, Ill. Filed Apr. 28, 1902. Serial No. 105,080. (No model.)

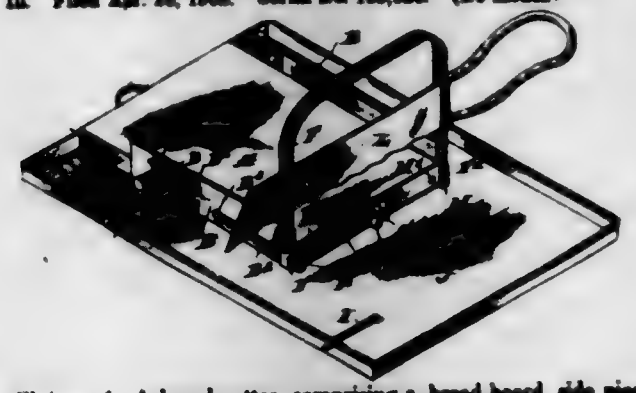

Claim.—1. A bread-cutter, comprising a bread-board, side pieces, projecting above the board and slidably connected with the edges thereof, a longitudinally-slotted knife-guide mounted, by its ends, on the side pieces, substantially as and for the purpose specified.

2. A bread-cutter, comprising a bread-board, side pieces projecting above the board and slidably connected with the edges thereof, a longitudinally-slotted knife-guide mounted, by its ends, on the side pieces, and a vertically-slidable end piece connected with the inner end of the board—said side pieces and end piece serving as stops to retain a loaf of bread in position on the board while slices are being cut therefrom—substantially as and for the purpose specified.

709,554. ELECTRIC-WIRE POLE. BERT MCFARREN, Havana, Ohio. Filed June 9, 1902. Serial No. 110,745. (No model.)

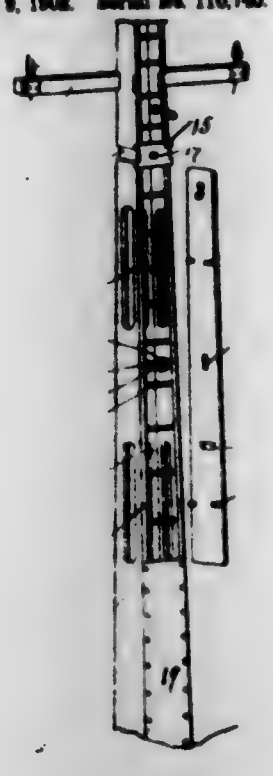

Claim.—1. As an improved article of manufacture a pole for electric wires formed of metal and provided with integral flanges and open upon one of its sides, rungs or bars secured to the flanges of the pole, a cover-plate removably attached to the pole and located over all or part of the rungs or bars, and means for securely holding the cover-plate in fixed relative position with the pole, substantially as and for the purpose specified.

2. A pole for electric wires provided with an open side, rungs secured to the pole, a bar or bolt provided with an apertured head, said bolt fixed to the pole, a cover-plate normally located over the open side of the pole and a lock adapted to secure the cover-plate in fixed position upon the pole, substantially as and for the purpose specified.

709,555. WASHBOILER. JOHN I. POWERS, Peoria, Ill. Filed Mar. 27, 1902. Serial No. 100,256. (No model.)

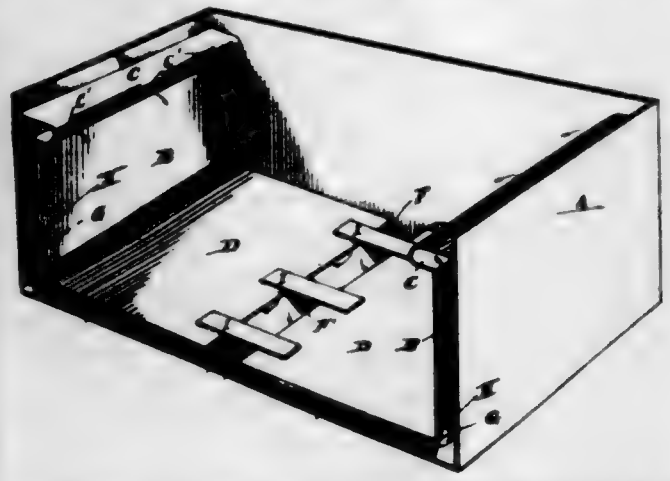

Claim.—In a washboiler, the tank A of rectangular form, the fixed false ends therein at each end, the same leaving spaces between them and the ends proper of said tank, the enlarged heads at the top of the said false ends, the same having apertures therein for the issuance of water as described, said ends extending down toward the bottom of the tank but leaving a space between them and said bottom, and the removable false-bottom portions adapted to enter the spaces between the false ends and the ends of the tank and interlock with the said false ends, said false-bottom portions arranged to approach each other but leave a space between them all for the purposes set forth and described.

709,556. APPARATUS FOR DISPERSING LIQUIDS OR MAKING SPRAY. CARL H. PROTT, Rheydt, Germany. Filed June 14, 1902. Serial No. 111,631. (No model.)

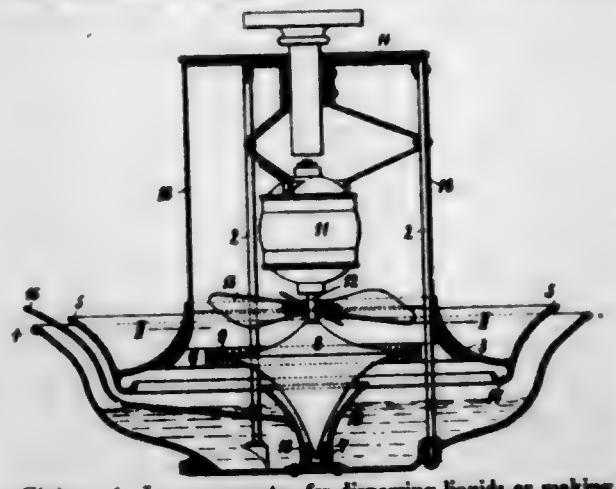

Claim.—1. In an apparatus for dispersing liquids or making spray a basin 1 containing the liquid to be dispersed in combination with a paraboloid-shaped body 8 ending in a horizontal disk 9, a pan or bearing 7 carrying the foot of said paraboloid, a spindle 12 at top of the paraboloid, a fan 13 keyed to said spindle, an electromotor driving said spindle and the paraboloid, columns 2 fixed to the bottom of the basin 1, a U-shaped trough 3 fixed to said columns centrally over the basin 1, so as to leave an annular space between the side of the basin 1 and the outside edge of the trough, a series of radial wings 6 forming coils and arranged exactly in the level of the disk 9 at the inner side of the trough 3, the whole as described and illustrated and for the purpose set forth.

2. In an apparatus for dispersing liquids or making spray a basin 1 containing the liquid, columns 2 fixed to the bottom of said basin, a U-shaped trough 3 fixed to said columns centrally over the basin so as to leave an annular space between the side of the basin 1 and the outer edge

of the trough 3, a channel 17 at the foot of the trough 3, wings 6 projecting radially inward from the inner side of the trough, in combination with a rotating paraboloid shaped body 8 guided in a pan 7 fixed to the bottom of the basin 1, a spindle 12 projecting upward from the top of the paraboloid 8, a fan 13 keyed to said spindle, an electromotor coupled to the spindle and driving the same at a high speed, a perforated casing 18 surrounding the upper part of the apparatus, a cover 14 at top of said casing 18, an adjustable casing 10 surrounding the lower part of the paraboloid and the pan 7, slits 16 in said casing 10 and in the pan 7, a hand-lever 15 for adjusting the width of opening of the slits 16 and regulating the flow of liquid into the space inside of the casing 10, the whole as described and illustrated and for the purpose set forth.

709,557. CLEANER FOR GUNS. EDWIN A. PUGH, Springfield, Ill., assignor of one-half to Charles A. Orr, Springfield, Ill. Filed Sept. 22, 1899. Serial No. 731,306. (No model.)

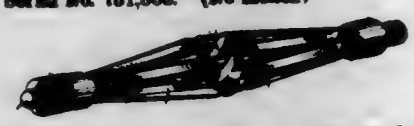

Claim.—1. A cleaner for guns, &c., consisting of a tool provided with a series of longitudinally-extending, flexible bars, each having intermediate its ends a portion extending crosswise of the tool to form a scraper, and each bar, intermediate its ends being concavo-convex in cross-section, substantially as and for the purpose described.

2. In a cleaner, the combination of a rod, two collars thereon, a series of bars interposed between said collars, having longitudinally and obliquely extending portions, said bars being flat, or substantially flat in cross-section adjacent the collars, and concavo-convex in cross-section at other points, and means for moving one collar along the rod relative to the other, substantially as and for the purpose described.

709,558. APPARATUS FOR CONVEYING GRAIN IN MALT-HOUSES. WILLIAM P. RICE, Chicago, Ill. Filed Sept. 7, 1901. Serial No. 74,642. (No model.)

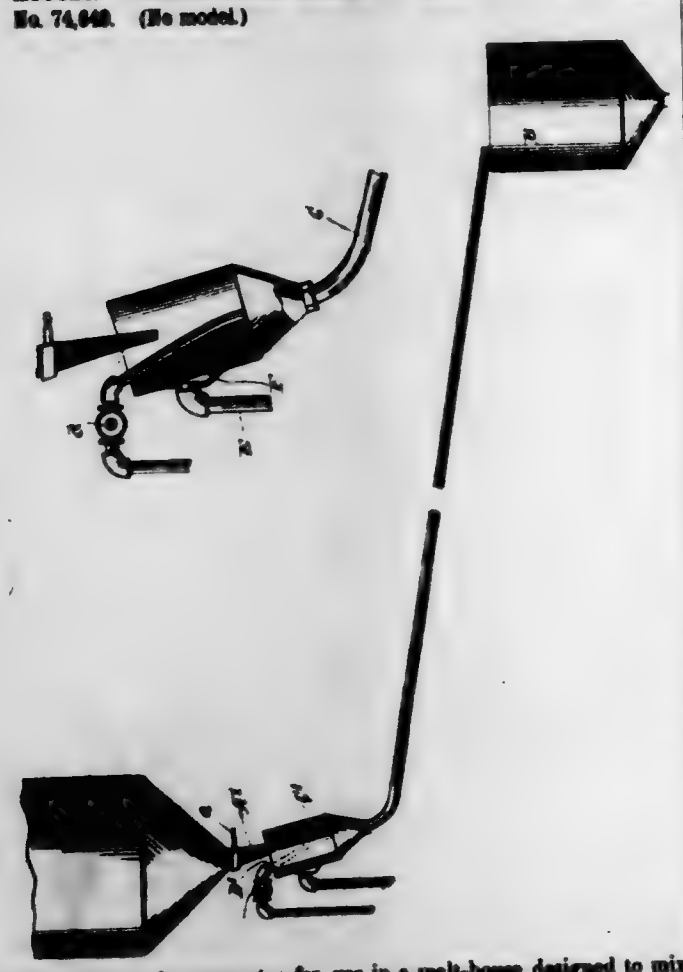

Claim.—1. An apparatus for use in a malt-house designed to mix grain and water and to thereafter convey the same to a steeping-tank for the purpose of steeping the grain comprising, in combination with a steeping-tank, a pipe or conduit, means for delivering grain to said pipe or conduit, means for delivering water thereto, said pipe or conduit being inclined downwardly from its receiving to its discharge end and emptying directly into said tank, whereby the admixture of grain and water is conveyed by gravity through said pipe or conduit, is discharged into said tank and the grain is steeped in the water admixed therewith in said pipe.

2. The combination with a grain-bin and a steeping-tank, of means for conveying to said tank grain and water comprising a supply-passage leading from the grain-bin, a pipe or conduit leading from the bin to the said tank and which receives grain from said supply-passage, a water-supply pipe discharging into the receiving end of said pipe or conduit, said pipe or conduit being inclined downwardly from its receiving to its discharge end and emptying into said tank, and means for controlling the supply of grain and water to said pipe or conduit, whereby the grain and water may be delivered in desired proportionate quantities to the receiving end of the said pipe or conduit and will be conveyed by gravity through said pipe or conduit and discharged together into said tank.

3. The combination with a grain-bin provided with a discharge-spout and a steeping-tank, of means for conveying grain and water to said tank comprising a pipe or conduit which leads to said tank and into which said bin-spout discharges, and a water-pipe entering said pipe or conduit adjacent to the bin-spout and passing downwardly thereinto below the discharge end of said bin-spout, said pipe or conduit being inclined downwardly from its receiving to its discharge end and emptying into said tank, whereby the admixture of water and grain is conveyed by gravity through said pipe or conduit and is discharged into said tank.

4. The combination with a grain-bin and a steeping-tank, of a pipe or conduit which receives grain from said bin and discharges into said tank, a water-pipe discharging into the receiving end of said pipe or conduit, said pipe or conduit being inclined downwardly from its receiving to its discharge end whereby the grain and water is conveyed to the tank by gravity, and an overflow-pipe connected with the receiving end of said pipe or conduit.

5. The combination with a grain-bin and a steeping-tank, of a pipe or conduit which receives grain from said bin and discharges into said tank, a water-pipe discharging into the receiving end of said pipe or conduit, said pipe or conduit being inclined downwardly from its receiving to its discharge end, whereby the grain and water is conveyed to the tank by gravity, an overflow-pipe connected with the receiving end of said pipe or conduit, and a screen located between the receiving end of said overflow-pipe and said pipe or conduit.

6. The combination with a grain-bin provided with a discharge-spout and a steeping-tank, of a pipe or conduit provided at its receiving end with an enlarged receiving-chamber into which the bin-spout discharges, said conduit discharging into said steeping-tank, a water-pipe entering said receiving-chamber and discharging centrally of said chamber below the level of the discharge end of said bin-spout, said pipe or conduit being inclined downwardly from its receiving to its discharge end, whereby the grain and water are conveyed to the tank by gravity, and the receiving-chamber being obliquely disposed at a downward inclination toward the tank greater than that of said pipe or conduit.

709,559. FILE FOR PAPERS AND DOCUMENTS. GEORG H. SCHNEIDER, Nuremberg, Germany. Filed Apr. 19, 1902. Serial No. 103,760. (No model.)

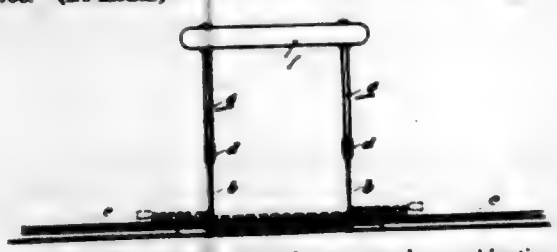

Claim.—In a file for papers and documents, the combination with a suitable back, of flexible metal bands adapted to be bent up to a perpendicular from said back, to pass through and receive the papers, and then to be bent down flatwise thereon; tubular extensions at the free ends of said bands, and a bar having perpendicular receiving-pins adapted to be inserted in said extensions when the flexible bands are bent up to their receiving position, whereby such of the papers as overlie the one desired may be temporarily removed and afterward restored.

709,560. BUGGY-BOOT. JAMES W. SIMMONS, Bloomington, Ind. Filed Apr. 3, 1902. Serial No. 101,201. (No model.)

Claim.—1. In a buggy-boot, the combination of the boot proper formed of thin board material, and an edge binding on said board formed of endwise-overlapping sheet-metal sections of general U shape in cross-section and provided with tubular beaded edges, substantially as described.

2. In a buggy-boot, the combination of the boot proper formed of thin board material, and an edge binding on said board formed of endwise-overlapping sheet-metal sections of general U shape in cross-section and provided with tubular beaded edges and shoulders on one side, substantially as described.

3. In a buggy-boot, the combination of the boot proper formed of thin board material, a binding on each of the lateral edges and the rear edge of the board formed of endwise-overlapping sheet-metal sections of

general U shape in cross-section and provided with tubular headed edges, and one or more angular reinforcing-rods extending in said heads and presenting rounded corners at the corners of the frame formed by said binding, substantially as described.

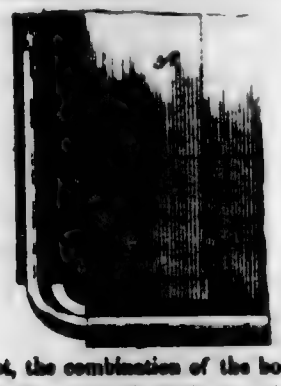

4. In a baggy-boot, the combination of the boot proper formed of thin board material, a binding on each of the lateral edges and the rear edge of the board formed of endwise-overlapping sheet-metal sections of general U shape in cross-section and provided with tubular headed edges and shoulders on one side, and an angular rod at each corner of the frame formed by the binding, having its legs extended into the tubular heads thereof and presenting rounded corners between the adjacent ends of the frame-sections, substantially as described.

5. In a baggy-boot, the combination with a metal-bound boot proper formed of thin board material, of a riser provided near its opposite ends with depending legs to fit against the inner sides of a baggy-box and adapted to be fastened thereto, substantially as and for the purpose set forth.

6. In a baggy-boot, the combination with a metal-bound boot proper formed of thin board material, of a riser formed of said material and provided with a sheet-metal binding on each lateral edge, and a flaring sheet-metal leg near each said edge of the riser fastened at its upper end under the binding and depending to fit against an inner side of a baggy-box and adapt it to be fastened thereto, substantially as and for the purpose set forth.

709,561. POUCH. JOHN A. SMITHLIER and ADAM F. ZAMBER, Los Angeles, Cal. Filed Oct. 17, 1901. Serial No. 79,044. (No model.)

Claim.—1. A pouch comprising a body and a neck extending from the body; a clasp composed of members pivoted together and surrounding the neck intermediate the ends of the neck; and resilient means for holding such members in position to clasp and close the neck.

2. The combination with a pouch furnished with a neck; of a clasp connected with the pouch independently of the neck and comprising four members pivotally connected together in pairs to form a frame surrounding the neck intermediate the ends thereof; and means for yieldingly holding the pairs extended to close the clasp.

3. In a pouch, a clasp comprising four members pivoted together in pairs, said pairs being pivotally connected together; means for yieldingly holding the pairs of members extended to close the clasp; and finger-shields pivotally connected with the joints between the pairs and provided with portions to intercept the members of the clasp to prevent the clasp from being opened too widely.

4. A pouch-clasp comprising hollow members pivoted together in pairs and said pairs being also pivoted together at their ends; and springs in the pairs respectively to hold said pairs extended to close the clasp.

5. In a pouch-clasp, the combination of two members pivoted together and constructed for attachment to a pouch; and a spring fastened to said members at the joint thereof and engaging said members to hold them normally extended to close the clasp.

6. In a clasp, the combination of two trough-shaped members; a pivot connecting said members together; and a spring chambered in said members and connected with the pivot thereof and arranged to engage said members to hold them normally extended.

7. A pouch comprising a body; a neck extending therefrom; a clasp connected with the body and constructed to clasp the neck intermediate the ends of the neck; and four binding-strips fastened to the edges of the neck to stiffen the same and separated from each other at corners of the mouth of the neck to allow flexure.

8. A pouch comprising a body furnished with side extensions; a neck extending between said side extensions; a clasp fastened to the side extensions and constructed to clasp the neck; and springs contained in the clasp and arranged to hold the clasp in its clasping position.

9. A pouch comprising a body furnished with side extensions; a neck extending between said extensions; a clasp fastened to the extensions and constructed to clasp the neck; and four binding-strips fastened to the edges of the neck to stiffen the same outside the clasp.

709,562. MACHINE FOR BRUSHING AND CLEANING FRUIT, PART OF WHICH IS APPLICABLE TO FRUIT-GRADERS. MORTON G. SWAN and EARL H. RICHARDSON, North Ontario, Cal.; said Swan assignor to Frank James Kimball, Los Angeles, Cal. Filed Feb. 9, 1901. Serial No. 46,733. (No model.)

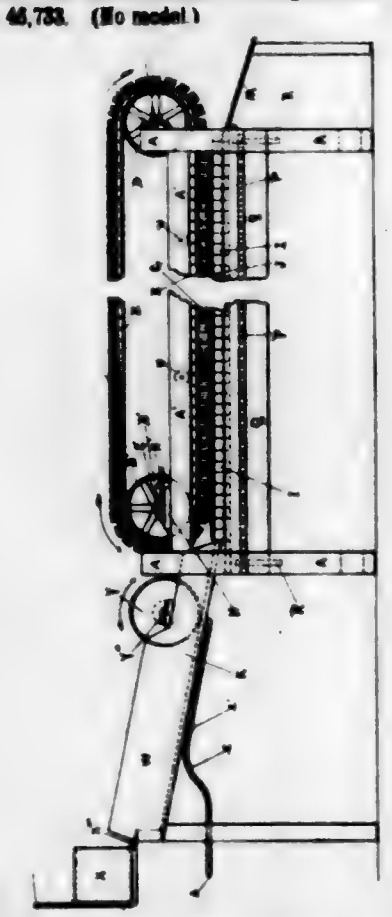

Claim.—1. In a fruit cleaning and brushing machine, the combination of means for feeding the fruit by gravity in regulated quantity, a horizontal traveling, endless brush-surfaced belt, a trough-shaped bed beneath said belt, said bed comprising stationary brushes, and means for adjusting the distances between said brushes; an elastic or yielding support for said brushes; and a slatted or other open frame below said support; the openings between the brushes and in the bed permitting the escape of the impurities detached from the fruit, substantially as hereinbefore described.

2. The combination with a fruit-cleaning machine of a hopper having an inclined bottom to feed the fruit to the machine by gravity, a feed-regulator in said hopper, comprehending a roller having a reduced central section, two relatively large end sections in close proximity to the hopper-bottom, said end sections being adjustable toward and from each other, means for adjusting said end sections and means for driving said roller in a direction opposite to the direction of feed, substantially as hereinbefore described.

3. The combination with a fruit-cleaning machine of a hopper having an inclined bottom, a feed-regulator in said hopper, comprehending a transversely-arranged roller having two sections with an intervening space between the same, and adjustable toward and from each other, said sections being arranged in close proximity to the hopper-bottom, means for adjusting said roller-sections and means for rotating the same in a direction opposite to the direction of feed, substantially as hereinbefore described, and shown upon the annexed drawings.

709,568. PROCESS OF PRODUCING IRON. OTTO THIEL, Kaiserslautern, Germany. Filed Aug. 19, 1899. Serial No. 727,848. (No specimens.)

Claim.—In the manufacture of iron, heating a regenerative furnace by the introduction of heated reducing-gas, adding part of the flux to be employed and heating same, shutting off the gas-supply and adding the charge of ore, carbon and the remainder of the flux, readmitting the gas and then cutting it off to allow of an equalization of the temperature of the apparatus, then readmitting the gas until the desired degree of reduction is obtained and afterward adding molten iron to take up the reduced iron substantially as described.

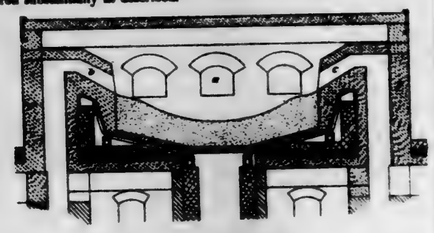

709,564. PIVOTED ROCKER-BEARING CENTER-PLATE FOR RAILWAY-CARS. CHARLES M. THOMPSON, Newark, Ohio. Filed May 12, 1902. Serial No. 106,861. (No model.)

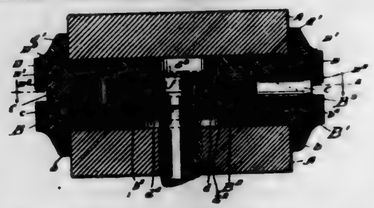

Claim.—1. In a railway car or vehicle, the combination with the truck and body bolster of a lower center-plate secured to the truck-bolster and provided with an annular track or channel for rockers, a body center-plate furnished with an annular track or bearing for rockers, a series of interposed radially-arranged rockers each having concentric upper and lower curved bearing-surfaces of different radii and provided with recesses in their ends at their lower portions, said lower or truck center-plate having a series of radial lugs or projections fitting in the recesses of the rockers to insure the rocking movement of the rockers and maintain their radial positions, substantially as specified.

2. In a railway car or vehicle, the combination with the truck or body bolster of a lower center-plate secured to the truck-bolster and provided with an annular track or channel for rockers, a body center-plate furnished with an annular track or bearing for rockers, a series of interposed radially-arranged rockers each having concentric upper and lower curved bearing-surfaces of different radii and provided with recesses in their ends at their lower portions, said lower or truck center-plate having a series of radial lugs or projections fitting in the recesses of the rockers to insure the rocking movement of the rockers and maintain their radial positions, said upper center-plate having a projecting central pivot or hub portion fitting in a central opening or bearing in the lower center-plate and pivotally connecting the center-plates together, substantially as specified.

3. The combination with a lower or truck center-plate having inner and outer flanges and an annular track or bearing for rockers between said flanges and a central pivot opening or bearing, of an upper or body center-plate having an annular track or bearing for rockers, an outer flange embracing the outer ends of the rockers and a central pivot or hub portion fitting in the central opening of the lower center-plate and a series of radially-arranged rockers interposed between the upper and lower center-plates and having upper and lower concentric bearing-surfaces of different radii, substantially as specified.

4. The combination with a lower or truck center-plate B having flanges b to embrace the truck-bolster and provided with an annular track B' for rockers, inner flange B^2, outer flange B^3, a central opening b^3, of upper or body center-plate D having flanges d' embracing the body-bolster, an annular track or bearing D' for the rockers, outer flange D^2, central hub portion d furnished with tapered end d^3 and radially-disposed rockers C having upper and lower concentric curved bearing-surfaces C' C^2 and recesses c in their ends, said lower center-plate B having a series of lugs or projections d^4, substantially as specified.

5. The combination of a lower center-plate provided with an annular track or channel for rockers, of an upper center-plate furnished with an annular track or bearing for rockers, a series of interposed radially-arranged rockers having concentric upper and lower bearing-surfaces of different radii and connections for causing the rockers to rock as the center-plates turn in respect to each other, substantially as specified.

6. The combination of a lower center-plate provided with an annular track or channel for rockers, of an upper center-plate furnished with an annular track or bearing for rockers, a series of interposed radially-arranged rockers having concentric upper and lower bearing-surfaces of different radii and connections for causing the rockers to rock as the center-plates turn in respect to each other, one of said center-plates having a central opening or bearing and the other a central pivot or hub portion fitting in said central opening, substantially as specified.

7. The combination with a pair of center-plates each having an annular track or bearing for rockers and one provided with a central opening or bearing and the other with a central pivot or hub fitting therein and a series of concentric rockers interposed between said center-plates and a series of interengaging lugs and recesses on the rockers and one of said center-plates to cause the rockers to rock and retain them in position as the center-plates turn in respect to each other, substantially as specified.

709,565. CORSET-STIFFENER. HEINRICH TOELKY, Ober-Kaufungen, near Cassel, Germany, assignor to Bertha Schenck, Ober-Kaufungen, near Cassel, Germany. Filed May 25, 1901. Serial No. 61,891. (No model.)

Claim.—1. A spring for corset-stiffeners and other purposes consisting of a series of parallel spiral spring-wires a wound to leave one edge of the spring undulating and open while the other is straight or closed, and a binding wire or wires passed through the loops of said coils on the open or undulating side, the whole being flattened substantially as set forth.

2. A flat corset-stiffener consisting of a series of parallel spiral spring-wires presenting a closed straight edge and an open undulating edge and a binding-wire forming loops which interlock with the loops of the said coils at the open or undulating edge of the spring substantially as set forth.

3. A flat corset-stiffener consisting of a series of parallel spiral spring-wires presenting a closed straight edge and an open undulating edge and a pair of binding-wires forming loops which interlock with the loops of the said coils substantially as set forth

4. A flat corset-stiffener consisting of a series of parallel spiral spring-wires presenting a closed straight edge and an open undulating edge and a pair of binding-wires crossing each other and forming loops which interlock alternately with the loops of the said coils substantially as set forth.

709,566. PERFORATING-MACHINE. EMORY A. TRUSSELL, St. Louis, Mo., assignor to Sieber & Trussell Manufacturing Company, St. Louis, Mo., a Corporation. Filed Nov. 21, 1901. Serial No. 83,103. (No model.)

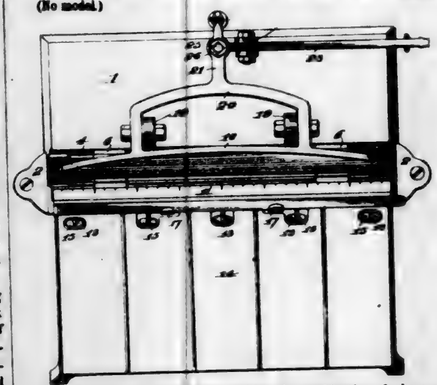

Claim.—1. In a perforating-machine, the combination of a base, removable punch-holders seated in said base, punches in said holders, a pivotally-supported pressure-head surmounting said punch-holders and adapted to operate said punches, a lever by which said pressure-head is carried, a spring arranged to hold said pressure-head in elevated position, an operating-lever, and an adjustment bearing-screw mounted in said pressure-head lever and adapted to receive said operating-lever, substantially as described.

2. In a perforating-machine, the combination of a grooved base, removable punch holders seated in the groove in said base, punches in said holders, a pressure-head, means for operating said pressure-head, a clamp-bar arranged to hold said punch-holders, binding-screws mounted in said base and adapted to bear against said clamp-bar to hold it to said punch-holders, and a table removably held to said base by the heads of said set-screws, substantially as described.

3. In a perforating-machine, the combination of a grooved base, removable punch-holders seated in the groove in said base, punches in said holders, a pressure-head, means for operating said pressure-head, a clamp-bar arranged to hold said punch-holders, binding-screws mounted in said base and adapted to bear against said clamp-bar to hold it to said punch-holders, and a gage slidingly mounted on said base, substantially as described.

709,567. CLUTCH-OPERATING MECHANISM. EDWARD TURNEY, Portland, Oreg. Filed Nov. 28, 1901. Serial No. 83,615. (No model.)

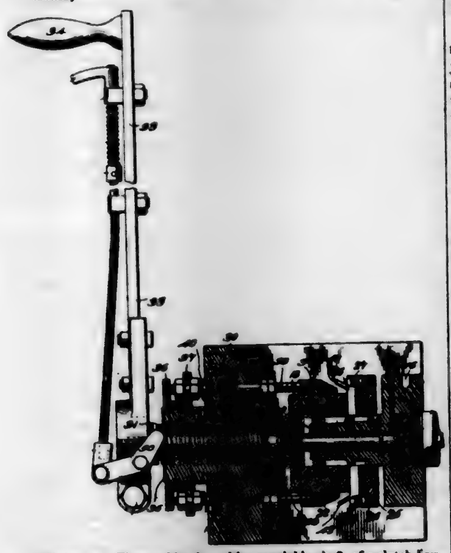

Claim.—1. The combination with a revolvable shaft, of a clutch having a movable member, a clutch-operating mechanism comprising an endwise-movable clutch-operating member carried by the shaft and operatively connected to the movable member of the clutch, a member affixed to and rotating with the shaft, a movable collar, means for moving the collar, mechanism for transmitting the movement of the collar to the clutch-operating member and means for locking the collar to the shaft member.

2. A clutch-operating mechanism comprising in combination, a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the shaft, a movable collar carried by the nut, a pin carried by the collar for engagement with the clutch-operating member, and mechanism for locking and unlocking the nut and collar, substantially as specified.

3. A clutch-operating mechanism comprising in combination, a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the end of the shaft, a collar mounted on the nut and adapted to be locked thereto, a pin carried by the collar for engagement with the clutch-operating member, and a thrust-screw adapted to engage with the collar-pin, substantially as specified.

4. A clutch-operating mechanism comprising in combination, a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a thrust-screw, mechanism for transmitting the movement of the screw to said clutch-operating member, and mechanism for locking said member in clutch-engaging position, said locking mechanism being independent of the screw, substantially as specified.

5. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the end of the shaft and having a locking-groove, a collar carried by and movable on said nut, locking-pins carried by the collar for engagement in said groove, a pin carried by the collar and adapted for engagement with the clutch-operating member, mechanism for imparting longitudinal movement to said pin, and means for unlocking the nut and collar.

6. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the end of the shaft and provided with an annular groove, a collar carried by the nut, radial pins adapted to guiding-openings in the collar, springs normally tending to move the pins into locking engagement in the groove, a pin adjustably secured to the collar and adapted to engage the clutch-operating member, means for effecting a longitudinal movement of said pins, and means for withdrawing the locking-pins from said annular groove, substantially as specified.

7. The combination of a revolvable shaft, a clutch having a movable member, a nut carried by the shaft and having an annular groove, adjustable nuts carried by said shaft-nut, a collar carried by said nut and adapted to be locked thereto, stops carried by the collar for engagement with said adjustable nuts, thereby to limit the longitudinal movement of the collar, an adjustable pin carried by said collar for engagement with the clutch-operating member, means for operatively connecting the clutch-operating member to the movable member of the clutch and means for effecting the longitudinal movement of said pin and collar, substantially as specified.

8. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the shaft and having a locking-groove, a collar mounted on said nut, a pin carried by the collar for engagement with the clutch-operating member, a series of locking-pins carried by the collar and adapted to engage in the groove of the nut, each of said pins having a projected finger, and a movable collar or ring having an inclined face for engagement with said fingers, and means for moving said collar and ring, substantially as specified.

9. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut having an annular locking-groove, a collar mounted on the nut, a series of locking-pins carried by said collar and adapted to enter said locking-groove, each of said pins being provided with a laterally-projected finger, a ring or collar having an inclined edge or face for engagement with said finger, means for moving said ring or collar into and out of engagement with the fingers, springs adapted to force the locking-pins into engagement with the locking-groove, an adjustable pin carried by the said collar for engagement with the clutch-operating member, and means for moving said pin and collar, substantially as specified.

10. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the end of the shaft, and having a guiding-opening in alinement with said clutch-operating member, a pin adapted to said opening and to engage the clutch-operating member, means for imparting endwise movement to said pin, and means for effecting the locking of said pin to said nut.

11. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the end of the shaft and having a guiding-opening in alinement with the clutch-operating member, a pin adapted to said opening and to engage the clutch-operating member, a thrust-screw for imparting endwise movement to the pin, and means independent of the thrust-screw for locking said pin in clutch-engaging position.

12. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the end of the shaft and having a guiding-opening in alinement with the clutch-operating member, a collar mounted on the shaft, means for locking and unlocking said collar and nut, a threaded pin carried by the collar and adjustable therein, a locked nut for securing the pin in adjusted position, said pin being adapted to enter the guiding-

opening of the nut and to engage the clutch-operating member, and a thrust-screw for imparting endwise movement to said pin, substantially as specified.

13. The combination of a revolvable shaft, a clutch having a movable member, a longitudinally-movable clutch-operating member carried by said shaft and operably connected to the movable member of the clutch, a nut secured to the shaft and having an annular groove, a collar mounted on the nut, pins carried by said collar for engagement in the groove, each of said pins having a laterally-projected finger, a pin carried by the collar for engagement with the clutch-operating member, a thrust screw, a stationary nut in which said thrust-screw is mounted, an operating-lever secured to said thrust-screw, a ring mounted on a boss forming part of said stationary nut, a ring or collar for engagement with the fingers of the locking-pins, and cams carried by said levers and movable into engagement with the ring carried by the nut, substantially as specified.

14. In a clutch-operating mechanism of the character described, the combination of the shaft, a clutch having a movable member, a nut carried by said shaft, a collar mounted on the nut, locking-pins carried by said collar, a ring mounted on said collar and adapted to engage with and unlock said pins, a stationary nut having a central boss, rings mounted on said boss and connected to the pin-engaging rings, a thrust-screw mounted in the stationary nut, mechanism for transmitting the endwise movement of the screw to the clutch-operating mechanism, and to the movable member of the clutch, an operating-lever secured to the screw, cam-levers pivoted to said operating-lever and adapted to engage the ring carried by the boss, and a handled rod connected to said levers, substantially as specified.

709,568. **DRILL-PRESS.** ADOLPH VIE, Chicago, Ill. Filed Apr. 2, 1902. Serial No. 101,847. (No model.)

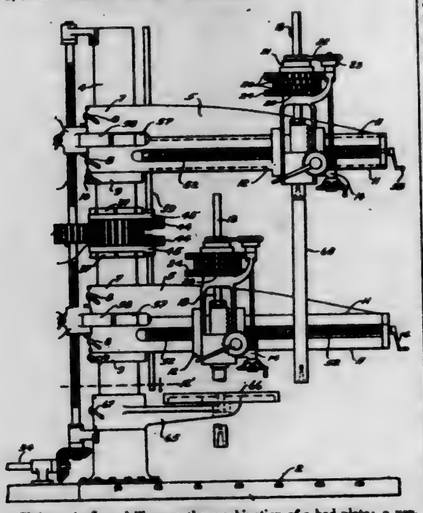

Claim.—1. In a drill-press, the combination of a bed-plate; a vertical post rigidly secured to said bed-plate; a pair of arms independently journaled on said post and independently slidable longitudinally of same; drilling mechanism mounted on each of said arms; and means for operating said drilling mechanism independently of each other and of the relative angular or longitudinal position of said arms.

2. In a drill-press, the combination of a bed-plate; a vertical post rigidly secured to said bed-plate; a pair of arms independently journaled on said post and independently slidable longitudinally of same; drilling mechanism mounted on each of said arms; a screw-threaded shaft journaled in said frame in parallel relation to said post; each of said arms having secured to same a suitable clamp, adapted to be thrown into or out of engagement with the thread on said shaft and adapted when in engagement with said thread, to move said arm longitudinally of said post, through the revolution of said shaft; suitable means for securing said arms against movement longitudinally of said post; and means for operating said drilling mechanism independently of each other or of the relative angular or longitudinal position of said arms.

3. In a drill-press, the combination of a bed-plate; a vertical post rigidly secured to said bed-plate; a pair of arms independently journaled on said post and independently slidable longitudinally of same; drilling mechanism mounted on each of said arms; a gear journaled on said post between said arms; a driven shaft journaled on each of said arms and in parallel relation to said post; a pinion secured to each of said driven shafts and meshing with said gear; suitable mechanism connecting each of said driven shafts to the drilling mechanism on its respective arm; and means for transmitting power to said gear.

4. A drill-press comprising a frame; a vertical post rigidly secured to said frame; an arm journaled on said post and slidable longitudinally of same; drilling mechanism mounted on said arm; a screw-threaded shaft journaled in said frame and disposed in parallel relation with said post; means for rotating said shaft; suitable gearing connecting said shaft with said drilling mechanism whereby said drilling mechanism may be driven by said shaft regardless of the position of said arm along said post; a clutch for disconnecting said shaft from said drilling mechanism; a suitable clamp secured to said arm and adapted to be thrown into or out of engagement with the thread on said shaft, and adapted, when in engagement with said thread, to move said arm longitudinally of said post, through the revolution of said shaft; and suitable means for securing said arm against movement longitudinally of said post.

5. A drill-press comprising a frame; a vertical post rigidly secured to said frame; an arm journaled on said post and slidable longitudinally of same; a screw-threaded shaft journaled in said frame and disposed in parallel relation with said post; means for rotating said shaft; a suitable clamp secured to said arm, adapted to be thrown into and out of engagement with the thread on said shaft, and adapted, when in engagement with said thread, to move said arm longitudinally of said post, through the revolution of said shaft; suitable means for securing said arm longitudinally of said post; a gear secured to said threaded shaft; a gear journaled on said post and meshing with the gear on said shaft; a driven shaft, journaled to said arm on a vertical axis, having mounted thereon and revolvable therewith a pinion meshing with the gear on said post, said pinion being secured against movement longitudinally of said post; drilling mechanism mounted on said arm; and suitable gearing connecting said drilling mechanism with said driven shaft.

6. A drill-press comprising a frame; a vertical post rigidly secured to said frame; an arm journaled on said post and slidable longitudinally of same; drilling mechanism mounted on said arm; a screw-threaded shaft journaled in said frame and disposed in parallel relation with said post; means for rotating said shaft; suitable gearing connecting said shaft with said drilling mechanism whereby said drilling mechanism may be driven by said shaft regardless of the position of said arm along said post; a clutch for disconnecting said shaft from said drilling mechanism; a member slidably mounted on said post and adapted to engage said arm; a suitable clamp secured to said member and adapted to be thrown into or out of engagement with the thread on said shaft and adapted, when in engagement with said thread, to move said member and cause same to carry said arm longitudinally of said post; and means for securing said arm independently of said member.

7. In a drill press, the combination of a bed-plate; a vertical post rigidly secured to said bed-plate; a pair of arms independently journaled on said post and independently slidable longitudinally of same; drilling mechanism mounted on each of said arms; a gear journaled on said post between said arms; a driven shaft journaled on each of said arms and in parallel relation to said post; a pinion secured to each of said driven shafts and meshing with said gear; said pinions being of less width than said gear and being adapted to pass each other while in mesh with said gear; suitable mechanism connecting each of said driven shafts to the drilling mechanism on its respective arm; and means for transmitting power to said gear.

8. In a drill-press, the combination of a frame; a vertical post secured to said frame; a screw-threaded shaft journaled in said frame in parallel relation to said post; an arm having a hub journaled on said post and slidable longitudinally of same, said hub having therein an annular groove extending around said post; a segment loosely seated in said groove; a pair of screw-threaded clamp-jaws secured to said segment, adapted to be thrown into or out of engagement with said shaft and adapted to move said arm along said post through the revolution of said shaft.

709,569. **FLASK.** EDMUND WEIDENBAUER, Chicago, Ill. Filed Feb. 3, 1902. Serial No. 92,266. (No model.)

Claim.—1. A flask having divided side portions and independent adjustable extension-pieces connecting each portion.

2. A flask having sides and ends each divided into separable portions, and adjustable extension-pieces connecting each portion.

3. A flask having sides and ends each divided into separable portions, flanges on said portions forming retaining-channels, and extension-pieces connecting said portions and slidable in the channels.

4. A flask having sides and ends divided into separable portions the inner faces of which are flush with each other, slotted adjustable exten-

sion-pieces connecting said portions, bolts fixed to the portions and extending through the slots, and nuts on the bolts to bind the parts at the desired adjustment, substantially as described.

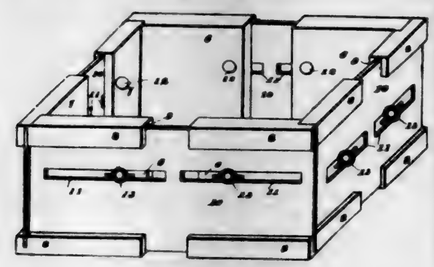

709,570. **PROCESS OF PRODUCING CYANATE OF POTASSIUM.** SYLVESTER BOCKEWERDT, Leopoldshall, Germany. Filed June 4, 1900. Serial No. 19,029. (No specimens.)

Claim.—The process herein described for the separation of cyanate of potassium from cyanid and carbonate, thereby producing pure cyanate of potassium, which consists in first treating the salt mixture obtained from the synthetic cyanogen processes, with sufficient water to dissolve the carbonate and at a temperature not over 66° centigrade, whereby the cyanid and cyanate remain undissolved, and then treating the said remaining undissolved salt mixture with sufficient water to dissolve the cyanid and at a temperature not exceeding 5° centigrade, whereby the cyanate remains undissolved.

709,571. **PERFECT-COMBUSTION FURNACE.** WILLIAM H. BUNT, Los Angeles, Cal., assignor of two-thirds to John H. Bunt and Bura Bunt, Quincy, Ill. Filed May 27, 1901. Serial No. 62,168. (No model.)

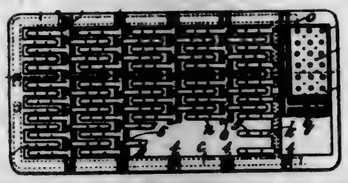

Claim.—1. In a furnace, the combination of a hollow grate-frame with bearings therein and air-outlets opening from the chamber of the grate-frame into said bearings; and hollow perforated grates furnished with journals which turn in said bearings and having perforations in the journals to register with the perforations in the bearings; means for supplying compressed air to the hollow grate-frame to supply said grates with air; and means for partially rotating the grates on their journals.

2. A furnace comprising a hollow grate-frame furnished with bearings and holes leading from the hollow chamber to the bearings; hollow perforated removable shaker-grates having journals which turn in said bearings and furnished at their ends respectively with holes to register with the holes in said bearings, said holes leading into the hollow chambers of the grates, respectively, to furnish air to the hollow grates.

3. A furnace comprising a support furnished with an air-passage; grates pivoted in said support and respectively furnished with a main air-trunk and with fingers; said trunk and fingers being hollow and perforated to conduct air from said main trunk into the furnace; a drop-grate furnished with perforations therethrough and pivoted in the support and also furnished with air-passages and with outlets opening from said air-passages; means for shaking the grates; and means for operating the drop-grate.

4. In a furnace, a grate-support furnished on its opposite sides, respectively, with independent air-passages and with journal-bearings; openings being provided in said bearings to communicate with the air-passages of their sides respectively; hollow grates mounted in the bearings and furnished with openings to register with the openings of the bearings, respectively, said grates being perforated to form outlets for the air.

709,572. **HOISTING-HOOK.** SAMUEL OGWAN, Jardine, Mont. Filed Mar. 27, 1902. Serial No. 100,202. (No model.)

Claim.—1. In a hoisting-hook, the combination with a housing, of a hook proper, a slidable section forming a continuation of the hook proper teeth on said section, a shaft, teeth on the shaft, a locking-flange coöperating with said shaft, and a spring adapted to hold the aforesaid flange in engagement with notches upon a boss located on the housing, substantially as set forth.

2. In a hoisting-hook, the combination with a housing, of a slidable hook-section having teeth, a segment engaging said teeth, the width of said segmental teeth being less than that of the teeth of the hook-section, a flange by which the segment may be turned, means for locking said flange, and a spring to hold the flange in a locked position, substantially as described.

3. In a hoisting-hook, the combination with a housing, of a slidable hook-section having teeth, a shaft, a segment on the shaft engaging said teeth, a flange on the shaft, notches being formed with which the flange engages, and a spring to normally hold the flange in contact with the notches, substantially as set forth.

4. In a hoisting-hook, the combination with a housing, of a movable hook-section having teeth, a shaft, a segment on said shaft, a flange on said shaft, a hollow boss projecting from the housing having two sets of notches, and a spring for forcing the flange on the shaft into either designated set of notches, substantially as described.

709,573. **SAFETY-OUTLET IN LONGITUDINAL WALLS OF RAILWAY-CARRIAGES.** DEUTSCH EISENBAHNBAU, Ottweiler, Germany. Filed May 20, 1902. Serial No. 108,183. (No model.)

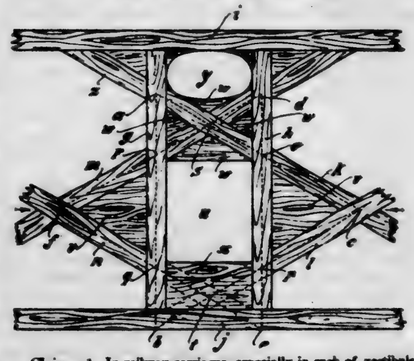

Claim.—1. In railway-carriages, especially in such of vestibule or corridor trains, the arrangement of strengthened parts in the longitudinal walls, each consisting of two congruent equicrural beam-triangles *a b c* and *d e f*, being laid upon each other in such a manner, that their vertices point outward in opposite directions along the carriage and their bases run parallelly, and being immovably connected with each other and with the longitudinal beams or frame-irons *i*, *j* of the carriage, the base-beams *g*, *h* of the two triangles forming traverses between the latter, and the safety-exits consisting of suitable closed openings *n* lying between the parallel base-beams *g*, *h* and the lower adjoined parties of the triangle side beams *k*, *l* and *m*, *o* crossing each other.

2. In railway-carriages, especially in such of vestibule or corridor trains, provided with strengthened parts in the longitudinal walls, each

containing a safety-exit, the strengthened wall parts each consisting of two congruent equicrural beam-triangles *a b c* and *d e f*, being laid upon each other in such a manner, that their vertices point outward in opposite directions along the carriage and their bases run parallelly, and being immovably connected with each other and with the longitudinal beams or frame-irons *i*, *j* of the carriage, the base-beams *g*, *h* of the two triangles forming traverses between the latter, and the safety-exits consisting of suitable closed openings *u* lying between the parallel base-beams *g*, *h* and the lower adjoined parties of the triangle side beams *k*, *l* and *m* *n* crossing each other a special arrangement of the strengthened parts with safety-exits in the opposite walls, these parts and exits being arranged alternately in the one and in the opposite wall of the carriage.

3. In railway-carriages, especially in such of vestibule or corridor trains, provided with strengthened parts in the longitudinal walls, each containing a safety-exit, the strengthened wall parts each consisting of two congruent equicrural beam-triangles *a b c* and *d e f*, being laid upon each other in such a manner, that their vertices point outward in opposite directions along the carriage and their bases run parallelly, and being immovably connected with each other and with the longitudinal beams or frame-irons *i*, *j* of the carriage, the base-beams *g*, *h* of the two triangles forming traverses between the latter, and the safety-exits consisting of suitable closed openings *u* lying between the parallel base-beams *g*, *h* and the lower adjoined parts of the triangle side beams *k l* and *m*, *n* crossing each other, the arrangement of the strengthened parts with safety-exits not only in the two side walls, but also in the floor and in the roof of the carriage.

709,574. EYEGLASSES. ROBERT B. FISH, Denver, Colo., assignor of one-half to Edwin T. Jones, Denver, Colo. Filed Mar. 19, 1901. Serial No. 51,954. (No model.)

Claim.—1. In eyeglasses the combination with the bridge and lens-holder, of a post connected with the lens-holder by means of a lug, a guard provided with separated, apertured ears which engage the post, and a spring coiled around the post and bearing against the lug at one extremity and the ear of the guard at the other extremity, the opposite ear engaging the lug on the opposite side from the spring, whereby the guard is locked against movement in the direction of the spring's action.

2. In eyeglasses the combination with a bridge and the lens-holder of a post connected with the lens-holder, a guard having two separated, apertured ears through which the post passes, a spring coiled around the post on one side of its connection with the lens-holder, means for forming a stop for the spring in one direction, the other extremity of the spring engaging an ear of the guard and having a tendency to push it off the post, and means engaging the opposite ear of the guard to prevent the guard-ear acted on by the spring, from being disengaged from the post by the spring, the arrangement being such that by pressing one ear against the spring, the other ear may be disengaged from the post, and the guard readily detached.

3. In eyeglasses the combination with the bridge and lens-holder, of a post mounted on the lens-holder, a guard provided with separated, apertured ears through which the extremities of the post pass, a spring coiled around the post, a stop on the post engaging the spring at one extremity, the other extremity of the spring bearing against an ear of the guard, and having a tendency to push it off the post, and a stop connected with the post and engaging the other ear of the guard and arranged to hold the guard in place on the post in opposition to the tendency of the spring.

4. In eyeglasses the combination with a bridge and a lens-holder, of a post made fast to the lens-holder, a guard provided with separated apertured ears, said ears being in sliding engagement with the post, a spring coiled around the post, a stop connected with the post and engaging one extremity of the coil, the other extremity of the coil bearing against one ear of the guard, and a stop connected with the post and engaged by the other ear of the guard, the arrangement being such that the expansion of the spring holds the guard in place on the post, while its torsional force is exerted to throw the guard toward the bridge whereby it grasps the nose of the wearer.

5. In eyeglasses the combination with a bridge and lens-holder, of a post mounted on the lens-holder, a guard provided with two separated, apertured parts forming bearings for the post and slidable thereon, a spring coiled around the post, a stop for one extremity of the coil whose opposite extremity engages a bearing of the guard, and a stop against which the opposite bearing of the guard is held by the action of the spring.

6. In eyeglasses the combination with a bridge and lens-holder, of a post mounted on the lens-holder, a guard having separated, apertured parts forming bearings which are slidable on the post, a spring coiled around the post between the guard-bearings, one extremity of which engages the lens-holder, while the other extremity bears against the guard, a stop for one extremity of the coil whose opposite extremity engages a bearing of the guard, and a stop against which the opposite bearing of the guard is held by the action of the spring.

7. In eyeglasses the combination with a bridge and lens-holder, of a post supported by the lens-holder, a guard having two separated, apertured parts forming bearings for the post and slidable thereon, a spring coiled around the post and engaging at one extremity, one of the bearing parts of the guard, a stop which the opposite extremity of the spring engages, and a stop against which the other bearing of the guard is held by the spring, the arrangement being such that as pressure is applied to the bearing engaged by the spring, the other bearing may be slipped from the post.

8. In eyeglasses the combination with a bridge and lens-holder, of a post mounted on the bridge, a guard mounted on the post and having two separated arms terminating in nosepieces, said arms being spring-pressed toward the bridge, the guard having two separated bearings engaging the post, a spring coiled around the post and having one extremity engaging one bearing of the guard, a stop against which the opposite extremity of the spring bears, and a stop against which the other bearing of the guard is held by the expansive action of the spring, the arrangement being such that if pressure is applied to the bearing engaged by the spring, the other bearing may be detached from the post.

9. In eyeglasses the combination with a bridge and a lens-holder, of a post mounted on the lens-holder, a guard provided with two separated apertured parts forming bearings for the post and slidable thereon, a spring coiled around the post, a stop on the frame preventing longitudinal movement of the spring, said spring engaging a bearing of the guard, and a stop against which the opposite bearing of the guard is held by the action of the spring, substantially as described.

10. In combination with a pair of lenses and a bridge, a pair of upright pivots one at each end of the bridge, a nose-guard journaled on each pivot and consisting of a handle portion lying in front of the bridge and adjacent lens and a pair of arms extending inwardly and spread apart to straddle the bridge and provided with bearing-tips at their extremities, and springs pressing the tip-carrying ends of the arms toward each other.

11. The combination with a pair of lenses and a bridge, of a pair of upright pivots mounted on the bridge, a nose-guard journaled on each pivot and consisting of a handle portion lying in front of the bridge and a pair of arms extending inwardly and spread apart to straddle the bridge and provided with bearing-tips at their extremities, and springs pressing the tip-carrying ends of the arms toward each other.

12. The combination with a pair of lenses and a bridge, of a pair of nose-guards pivotally mounted on the bridge, each nose-guard consisting of a handle portion lying in front of the bridge, and a pair of arms extending inwardly and spread apart to straddle the bridge, said arms being provided with bearing-tips at their extremities, and springs pressing the tip-carrying ends of the arms toward each other.

13. The combination with a pair of lenses and a bridge, of a nose-guard pivotally mounted at each end of the bridge and consisting of a handle portion lying in front of the bridge, and a pair of arms extending inwardly and spread apart to straddle the bridge, said arms being provided with bearing-tips at their extremities, and springs pressing the tip-carrying ends of the arms toward each other.

709,575. COMBINED SEED-PLANTER AND FERTILIZER-DISTRIBUTER. EDWARD G. HENRY, Powellville, Ga., assignor of one-half to Benjamin J. Merrill, Carrollton, Ga. Filed May 28, 1902. Serial No. 108,562. (No model.)

Claim.—1. The combination of the beam, the hopper supported thereon near the rear end and having seed-tubes disposed one on each side of the beam, the standard connected with the latter in front of the hopper, the brackets secured to and extending downwardly and rearwardly from the rear end of the beam carrying the supporting-wheel, and beams having rigid connection with said brackets and with the front standard, said beams being formed with outwardly-disposed yokes forming guards for the seed-tubes and intermediate parts, substantially as set forth.

2. The herein-described frame comprising the bifurcated front standard, the brackets adapted for attachment to the rear end of the beam and the beams connecting said bifurcated standard with the said brackets and extended downwardly and rearwardly from the latter, said beams being provided with outwardly-disposed yokes located intermediately between the front standard and the rear brackets, substantially as set forth.

3. In a device of the class described, the combination of the beam having downwardly and forwardly extending brackets carrying the supporting-wheel, the front standard having bifurcated upper end rigidly connected with the beam and carrying a furrow-opener, the rear standards carrying covering-shovels and having beams rigidly connected with the brackets and with the front standard and having outwardly-disposed yokes intermediately between their points of attachment, the hopper mounted upon the beam and having downwardly-extending seed-tubes disposed inside of said yokes, a partition in said hopper, means for agitating the contents of the hopper-compartments, and operating means driven from the supporting-wheel, substantially as set forth.

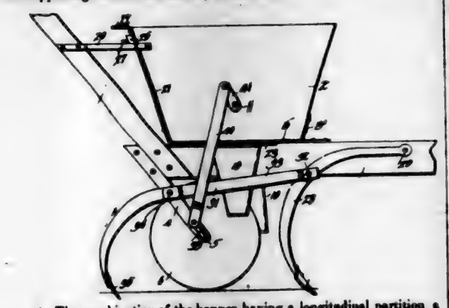

4. The combination of the hopper having a longitudinal partition, a bottom for said hopper having a central slot or opening, a plate secured longitudinally across said slot or opening which is thereby divided into two separate slots, and seed-tubes connected with and depending from the edges of said central dividing-plate, substantially as set forth.

5. The combination of the hopper, the bottom plate having a central slot or opening, a dividing-plate secured longitudinally across said slot or opening and having depending flanges forming the inner walls of the seed-tubes, and wings extending from said flanges and bent to form the front, rear and outer walls of the seed-tubes, substantially as set forth.

6. The combination of the hopper, the bottom plate for the same having a central opening, a dividing-plate secured longitudinally across said opening, the seed-tubes depending from said plate, the beam arranged between said seed-tube and supporting the hopper, the front standard carrying an opening-shovel, the rear standards carrying the covering-shovels, and beams extending forwardly from said rear standards and having connection with the front standard and with the supporting-brackets, said beams being formed with yokes disposed outside of and serving to guard the seed-tubes and intermediate parts, substantially as set forth.

7. The combination of the hopper, the bottom plate for the same having a central opening, a dividing-plate secured longitudinally across said opening, the seed-tubes connected with and depending from the edges of said plate directly below the divisions of the central slot, a partition arranged longitudinally within the hopper, and levers mounted pivotally upon the rear side of the latter and having slides extending forward between the bottom plate of the hopper and the other ends of the seed-tubes, substantially as set forth.

709,576. MACHINE FOR PRODUCING WOOD FIBER. HORACE M. HOOVER, Perrysburg, Ohio. Filed June 26, 1901. Serial No. 66,141. (No model.)

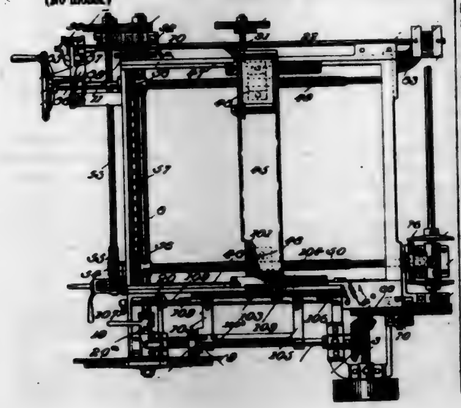

Claim.—1. In a machine of the character described, a cutter-head, a carriage carrying head and tail stocks, a screw-shaft for advancing said carriage to and from said cutter-head, automatic means for operating said screw-shaft rapidly, and means for operating it relatively slower, substantially as described.

2. In a machine of the character described, a cutter-head, a carriage carrying head and tail stocks, a screw-shaft for advancing said carriage, a worm and worm-wheel near one end of said shaft for operating it, and means near the opposite end of said shaft for giving it a relatively high speed, substantially as described.

3. In a machine of the character described, a cutter-head, a carriage carrying head and tail stocks, a screw-shaft for advancing said carriage, a worm and worm-wheel near one end of said shaft, and friction-gearing near its other end, substantially as described.

4. In a machine of the character described, a cutter-head, a carriage for supporting the work, means for giving it a comparatively slow movement when the work is being done, and automatic means for shifting it rapidly in each direction, substantially as described.

5. In a machine of the character described, a cutter-head, a carriage for supporting the work, means for giving the carriage a comparatively slow motion, when the work is being done, automatic means for shifting it rapidly in each direction, and an automatic device for stopping it, substantially as described.

6. In a machine of the character described, a cutter-head, a carriage for supporting the work, a screw-shaft for advancing said carriage, a worm and worm-wheel for rotating said shaft, and means actuated by the carriage for separating said worm and worm-wheel, substantially as described.

7. In a machine of the character described, a carriage, a screw-shaft for moving it, a worm-wheel, a worm, a pivoted arm supporting said worm in mesh with said worm-wheel, and automatic means for releasing said pivoted arm and allowing the worm and its wheel to separate, substantially as described.

8. In a machine of the character described, a carriage, a screw-shaft for moving it, a worm-wheel on said shaft, a worm meshing therewith, a pivoted arm supporting said worm, an upright for holding said arm with the worm and its wheel in mesh, and means operated by the carriage for moving said upright and allowing the arm and worm to drop, substantially as described.

9. In a machine of the character described, a cutter-head, a carriage for supporting the work, means for giving motion to the carriage, a rock-shaft controlling said means, and means for rocking said shaft as the carriage nears the end of its movement to stop the carriage, substantially as described.

10. In a machine of the character described, a cutter-head, a carriage for supporting the work, means for giving motion to the carriage, a rock-shaft controlling said means, a quadrant, and a spring-actuated arm acting between said rock-shaft and quadrant, substantially as described.

11. In a machine of the character described, a cutter-head, a carriage for supporting the work, means for giving motion to the carriage, a rock-shaft controlling said means, a quadrant, a spring-actuated arm acting between the rock-shaft and quadrant for manually rocking said shaft, and means for automatically rocking said shaft by the movement of the carriage, substantially as described.

12. In a machine of the character described, a cutter-head, a carriage for supporting the work, means for giving motion to said carriage comprising a screw-shaft, friction-disk and shiftable friction-wheels, a shaft supporting said friction-wheels, a rock-shaft and means for rocking it, and gearing between said shafts whereby the rocking of the shaft shifts the friction-wheels and their shaft, substantially as described.

13. In a machine of the character described, a cutter-head, a carriage for supporting the work, means for giving the carriage movement comprising a screw-shaft, a longitudinally-movable shaft, and gearing between said shafts, a rock-shaft and means for rocking it, and a rack and segment between said rock-shaft and the longitudinally-moving shaft, whereby the rocking of the rock-shaft controls the said gearing, substantially as described.

14. In a machine of the character described, a head-stock spindle and its center, a wheel acting on the work, and mechanism driven by said spindle for positively rotating said wheel and thereby rotating the work independently of said center.

15. In a machine of the character described, a head-stock spindle, a wheel acting on the work and adapted to rotate the same, and intermediate gearing between the head-stock spindle and said wheel for giving it motion, substantially as described.

16. In a machine of the character described, a head-stock spindle, a wheel acting on the work and adapted to rotate the same, and a train of gears between the head-stock spindle and said wheel for rotating the latter, the said wheel being spring-actuated so as to follow any irregularities of the work, substantially as described.

17. In a machine of the character described, a head-stock spindle,

and a spring-actuated wheel driven from said spindle for acting against and rotating the work, substantially as described.

18. In a machine of the character described, a head-stock spindle, a spring-actuated wheel driven from said spindle for acting against and rotating the work, and means for holding said wheel away from the work, substantially as described.

19. In a machine of the character described, a head-stock spindle, a toothed wheel, a spring acting to press said toothed wheel into the work, and intermediate mechanism between the head-stock spindle and said wheel for driving the latter, substantially as described.

20. In a machine of the character described, a head-stock spindle, a toothed wheel acting to press against and rotate the work, a shaft carrying said wheel, a pivoted bearing-box for said shaft, and intermediate mechanism for driving said shaft and wheel, substantially as described.

21. In a machine of the character described, a frame, a carriage, changeable-speed gearing for giving the work rotary motion, a pinion operated from said carriage, a movable rack meshing with said pinion and arranged to be moved thereby, the movement of one of the elements of the changeable gearing being controlled by the movement of said rack, substantially as described.

22. In a machine of the character described, a frame, a carriage, changeable-speed gearing for giving the work rotary motion, a pinion operated from said carriage, a longitudinally-movable rack moved by said pinion, an arm projecting from said rack and controlling the movement of one of the elements of said changeable-speed gearing, whereby the rotary movement of said pinion moves the rack and changes the speed of the work, substantially as described.

23. In a machine of the character described, a frame, a carriage, changeable-speed gearing for giving the work rotary movement, a pinion operated from said carriage, a rack moved longitudinally by said pinion, the movement of one of the elements of said speed-gearing controlled by the longitudinal movement of the rack, and means for putting said rack and pinion in and out of gear, substantially as described.

24. In a machine of the character described, a cutter-head, a carriage carrying head and tail stocks, mechanism controlled both manually and automatically for giving rapid movement to said carriage in each direction and means for moving the carriage relatively slower, substantially as described.

25. In a machine of the character described, a cutter-head, a carriage carrying head and tail stocks, a screw-shaft for advancing said carriage to and from said cutter-head, manual and automatic means for operating said screw-shaft rapidly and means for operating it relatively slower, substantially as described.

26. In a machine of the class described, a head-stock spindle and its center, a wheel acting on the end of the work for feeding the same, and mechanism for positively rotating said wheel and thereby rotating the work independently of said center, substantially as described.

27. In a machine of the class described, a head-stock spindle, a wheel for feeding the work, and mechanism for positively rotating said wheel and thereby rotating the work; the said wheel being conical or tapering whereby it continues to feed the work as the latter is reduced in size, substantially as described.

709,577. DROP-HAMMER. LEONARD D. HOWARD, St. Johnsbury, Vt. Filed May 13, 1902. Serial No. 106,955. (No model.)

Claim.—1. In a drop-hammer, the combination with the pitman having vertical side members, of a casting mounted slidingly between said side members and having pivotal connection with the wrist-pin of the operating-disk, and means for supporting the pitman with relation to said casting, substantially as set forth.

2. In a drop-hammer, the combination with the pitman having vertical side members, of a casting mounted slidingly upon said side members and having pivotal connection with the wrist-pin of the operating-disk, and an adjusting-nut engaging threads upon the pitman members and having a seat or support upon the upper end of the casting, substantially as set forth.

3. In a drop-hammer, the combination with a pitman having vertical side members, of a casting mounted slidingly between said side members and having pivotal connection with the wrist-pin of the operating-disk, arms extending laterally from the upper part of said casting in front and in rear of the pitman members, and an adjusting-nut seated upon said arms and engaging threads in the upper ends of the pitman members, substantially as set forth.

4. In a drop-hammer, the combination of a pitman having vertical side members, with a casting mounted slidingly between said side members and having pivotal connection with the wrist-pin of the operating-disk, said casting being provided with an opening or core extending throughout its length, and means for supporting the pitman adjustably upon said casting, substantially as set forth.

5. In a drop-hammer, the combination of a pitman, a casting having means for pivotal connection with the wrist-pin of the operating-disk, said casting having sliding connection with the pitman, means for supporting the pitman upon the casting, a cross-arm at the lower end of the pitman, cylindrical projections above said cross-arm, yokes mounted upon said cylindrical projections, springs seated upon the latter within the yokes, adjusting-nuts upon the outer ends of said cylindrical projections, a hammer-head movable with respect to the pitman, and suitable connections between the yokes and the hammer-head, substantially as set forth.

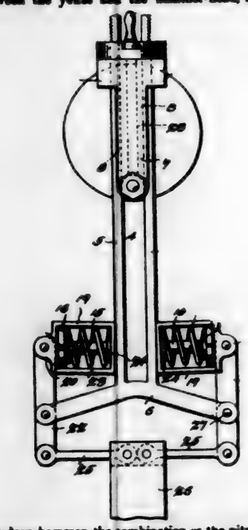

6. In a drop-hammer, the combination of the pitman having a cross-arm at its lower end and provided with laterally-extending cylindrical projections or bolts above said cross-arm, the yokes mounted upon said bolts, springs mounted upon said bolts bearing upon the inner ends of the yokes, adjusting-nuts upon the outer ends of the bolts, a hammer-head movable with relation to the pitman and suitable connections between the said yokes and the hammer-head, substantially as set forth.

7. In a drop-hammer, the combination of the pitman having laterally-extending cylindrical projections or bolts, adjusting-nuts upon the outer ends of the latter, yokes mounted upon the said bolts and receiving the adjusting-nuts, springs mounted upon the said bolts between the adjusting-nuts and the inner ends of the yokes, a hammer-head movable in relation to the pitman and suitable link connections between the said yokes and the hammer-head, substantially as set forth.

709,578. COMBINED CURTAIN-FIXTURE AND CURTAIN-SUPPORT. CHARLES B. JACOBY, West Hazleton, Pa. Filed Apr. 9, 1902. Serial No. 102,113. (No model.)

Claim.—As a new article of manufacture a combined curtain-fixture and curtain-pole support formed from a single piece of sheet metal and comprising a base-plate having an opening to receive a fastening-screw and provided on opposite sides of said opening with V-shaped struck-up spurs to engage the window-casing, said plate being provided at one end with a curtain-roller bracket bent at right angles thereto and with an arm bent forwardly over and beyond said curtain-bracket to form a curtain-pole support, substantially as set forth.

709,579. APPARATUS FOR SPRAYING AND BURNING LIQUID FUEL. ANDREW KIESLER, Hamburg, Germany. Filed May 23, 1900. Serial No. 17,094. (No model.)

Claim.—1. In an apparatus for spraying and burning liquid fuel, the combination with air and fuel reservoirs, and pipes leading therefrom, of a distributing-box having a pivotal connection with said pipes, tubes leading from the distributing-box, and burners carried at the opposite end of said tubes, each of said tubes being pivotally jointed intermediate its respective burner and the distributing-box, as and for the purpose specified.

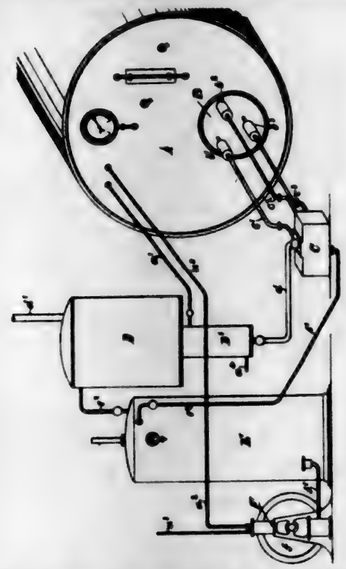

2. In an apparatus for spraying and burning liquid fuel, the combination with air and fuel reservoirs, and pipes leading therefrom, of a distributing-box arranged intermediate the outer ends of the said pipes and having a pivotal connection with said ends, tubes leading from the distributing-box at points to one side of the point at which said box is pivoted, and burners carried at the other end of the tubes, each of said tubes being pivotally jointed intermediate its respective burner and the distributing-box, as and for the purpose specified.

709,580. SUCKER-ROD GRAB FOR OIL-WELLS, &c. WARREN LA RUFFE, Cairo, W. Va. Filed May 20, 1902. Serial No. 108,532. (No model.)

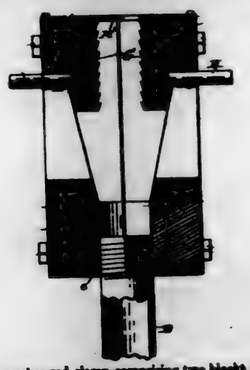

Claim.—A center-rod clamp comprising two blocks having mating semicylindrical grooves forming a cylindrical bore interiorly screw-threaded to be attached to the screw-threaded end of a well-tube, a wedge-shaped opening in each block above said semicylindrical groove having a groove in the vertical walls thereof at each side of the oblique surface, wedge clamps slidably mounted in said wedge-shaped opening and having flanges to fit into said grooves, a bolt entered in the oblique face of each clamp and extending through a vertical slot in the block, eyebolts entered in said blocks, a lever pivoted in said eyebolts formed to surround said blocks, slotted surfaces on each side of said lever to receive said bolts, and a plate secured to the tops of said blocks, substantially as shown and described.

709,581. TABLE-FASTENER. JOHN HEMMELLER, Janesville, Wis. Filed Feb. 24, 1902. Serial No. 95,227. (No model.)

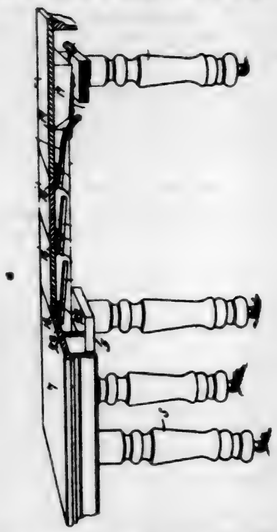

Claim.—In an extension-table, the combination with the separable end members provided respectively with a catch-lip and with a suitably-operated catch-lever, of intermediate leaves adapted to be inserted between said end members, each of said leaves being provided on its under side with a catch-lip located near one of its edges, a bearing located near the edge opposite to that having said catch-lip, and a catch-lever mounted pivotally in said bearing, adapted to engage the lip of the adjacent leaf, and having its operating end extended nearly to the edge of the leaf supporting said lever which is provided with a catch-lip, whereby the operating end of said lever is rendered accessible without necessity of reaching under the leaf, substantially as set forth.

709,582. TAKE-UP MECHANISM FOR LOOMS. GOTTLOB SCHMIDT, Sr., Colmar, Germany. Filed Feb. 26, 1901. Serial No. 48,317. (No model.)

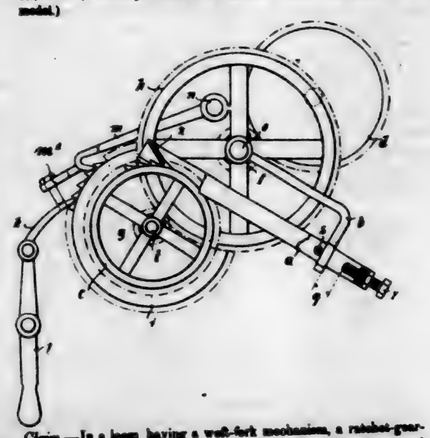

Claim.—In a loom having a weft-fork mechanism, a ratchet-gearing comprising an actuating-pawl, means for controlling the backward movement of the cloth-beam and means for throwing the said ratchet-gearing out of action when the weft-fork mechanism is operated, the combination of a sliding pawl *a* mounted between bars *c* and adapted to rest loosely on one of the ratchet-wheels, a holder-arm *b* in which the bars of the pawl may slide, a stop *s* between the said bars at one side of the guide or holder-arm and an adjustable screw *r* also mounted between the said

bars at the opposite side of the holder-arm in the manner and for the purpose substantially as described

709,583. PROCESS OF PRESERVING EGGS. WILLIAM SMITH, Christiania, Norway. Filed May 23, 1901. Serial No. 61,630. (No specimens.)

Claim.—Process for preserving eggs, which consists in first warming the fresh eggs in warm water for a few seconds and then immediately they are removed from the warm water, allowing them to cool in a solution of cold salt water, sal-ammoniac, and silicate of soda, in the manner and for the purpose substantially as described.

709,584. WAGON-BODY LIFTER. HERMAN SOTTEBIER, Union, Mo. Filed Apr. 5, 1902. Serial No. 101,564. (No model.)

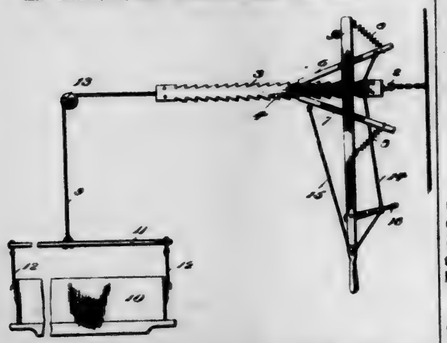

Claim.—1. In hoisting mechanism, the combination of the following instrumentalities, namely, a bar composed of transversely-spaced members having opposite edges correspondingly toothed, a lever freely movable in the space formed between the members of said bar, spring-actuated pawls applied to said lever and located upon opposite sides of the bar for alternate coöperation with the teeth thereof, a second lever pivoted to the first-mentioned lever, and flexible connections between said second lever and the spring-actuated pawls for alternately throwing the latter out of engagement with the toothed bar, one of said flexible connections being deflected by passing around a portion of the first-mentioned lever, substantially as set forth.

2. The herein-described means for lifting wagon-bodies and the like, comprising a bar, attaching means at the ends of the bar for connection with the object to be lifted, a toothed bar comprising transversely-spaced members having opposite edges correspondingly toothed, a lever freely movable in the space between the members of the toothed bar, a hoisting-rope attached to the said lever and connected with the first-mentioned bar midway of its ends, spring-actuated pawls applied to the lever and located upon opposite sides of the toothed bar for alternate coöperation therewith, a second lever pivoted to the operating-lever, and flexible connections between said second lever and the spring-actuated pawls for alternately throwing them out of engagement with the toothed bar, substantially as specified.

709,585. REIN-HOLDER. THOMAS I. THOMPSON, Lewisburg, Tenn. Filed Aug. 27, 1901. Serial No. 73,436. (No model.)

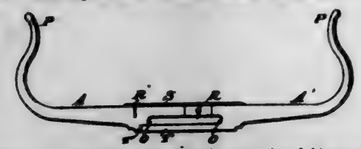

Claim.—A rein-holder comprising the parts A and A' pivoted together, a spring S fixed at one end to part A, and held yieldingly against part A', a tongue T projecting beyond the pivotal points of said parts and adapted to rest against a shoulder T', the adjacent faces of said tongue and parts A forming an elongated slot to receive a hook-strap of a harness, as set forth.

709,586. MOP-WRINGER. JOHN C. THOMSEN, Rock Island, Ill. Filed Sept. 23 1901. Serial No. 76,144. (No model.)

Claim.—1. A mop-wringer comprising a frame with means for clamping it to the top of a pail, a stationary roller journaled therein, a sliding yoke supported by said frame, a roller journaled in said yoke, and a foot-lever having its rear portion hinged to the edge of the frame and its front portion hinged to said yoke, substantially as described.

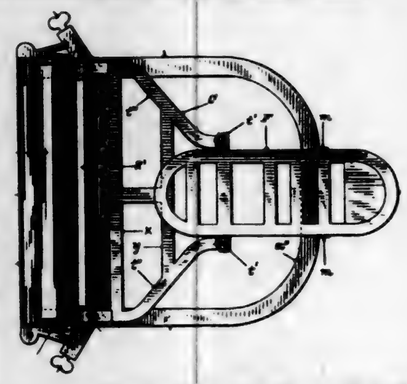

2. A mop-wringer comprising a frame with means for clamping it to the top of a pail, a stationary roller journaled therein, a sliding yoke supported by said frame, a roller journaled in said yoke, and a foot-lever having its rear portion hinged to the edge of the frame and its front portion hinged to said yoke, said foot-lever extending beyond both of its hinged connections, substantially as described.

709,587. CHENILLE-SPOTTING MACHINE. LOUIS O. TRIVETT and FRED RANDALL, Nottingham, England; said Randall assignor to said Trivett. Filed Oct. 24, 1900. Serial No. 34,167. (No model.)

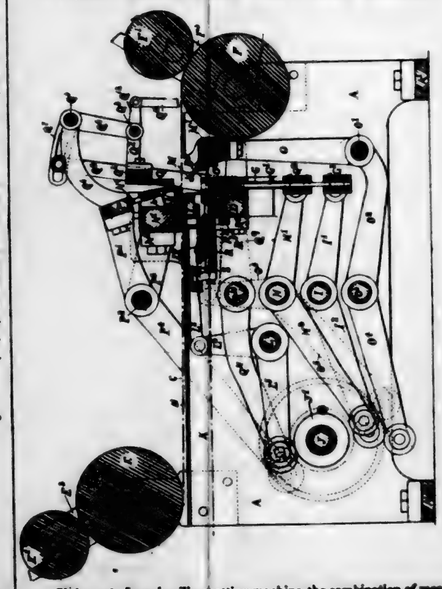

Claim.—1. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, means for feeding the chenille, mechanism for cutting off a length of chenille and forming same into a staple, a net-registering instrument for selecting, positioning, and holding a thread of the fabric directly over the staple-forming mechanism comprising a stock, a point or projection on said stock to enter the net provided with a flute in its inner side across which a thread of the net can lie, and means for closing the staple on said thread.

2. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, means for feeding a plurality of lengths of chenille, mechanism for cutting off lengths of chenille and forming the same into staples, a plurality of net-registering instruments for selecting, positioning, and holding threads of said fabric over the staple-forming devices each of which comprises a stock, a point or projection on said stock to enter the net provided with a flute in its inner side across which a thread of the net can lie, and means for closing said staples on said threads.

3. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, means for feeding a plurality of lengths of chenille, mechanism for cutting off lengths of chenille and forming the same into staples, means for holding alternate chenille-feeders out of action, a plurality of net-registering instruments for selecting, positioning, and holding threads of said fabric each comprising a stock, a point or projection on said stock to enter the net provided with a flute in its inner side across which a thread of the net can lie, and means for closing said staples on said threads.

4. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, means for feeding a plurality of lengths of chenille, mechanism for cutting off lengths of chenille and forming same into staples, a holding-plate above the net fabric having a hole which is inclined to the face of the plate so as to run out at the lower front corner of the same forming openings in both its under and front face, a clenching device in said hole, a net-registering instrument beneath said fabric comprising a stock, a point or projection on said stock to enter the net provided with a groove or flute in its inner side across which a thread of the net can lie, means for causing the point on the registering instrument to pierce the fabric, means for moving said point up to the opening in said plate, and means for operating the staple-forming mechanism and clenching device to close a staple on the fabric in the cavity formed by the holding-plate and flute in the point of the registering instrument.

5. In a chenille-spotting machine the combination of means for intermittently moving the fabric, means for feeding lengths of chenille, mechanism for cutting off lengths of chenille and forming said lengths into staples, a holding-plate above the net fabric, a hole in said plate forming an opening in its edge above said staple-forming mechanism, a clenching device in said hole, a net-registering instrument beneath said fabric comprising a stock, a point or projection on said stock to enter the net provided with a flute in its inner side across which a thread of the net can lie, a brush above the fabric, means for causing said registering instrument and brush to meet at the plane of the fabric, means for moving the point of the registering instrument against the opening in the holding-plate, means for moving the brush in a direction away from the holding-plate and opposite to that in which the registering instrument is moved, and means for operating the staple-forming mechanism and clenching device to close a staple on the fabric in the opening in the holding-plate.

6. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, staple cutting and forming rams for each length of chenille, a bed to carry the said rams, a cutting-plate forming part of the bed, passages for the chenille on the under side of the cutting-plate, a chenille-feeder for each staple-forming mechanism, means for holding alternate chenille-feeders out of action, and means for closing said staples on the fabric.

7. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, mechanism for cutting off lengths of chenille and forming same into staples, a chenille-feeder for each staple-forming mechanism, a notched bar, below the feeders, a connection between each feeder and the notched bar, and means for closing said staples on the fabric.

8. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, mechanism for cutting off lengths of chenille and forming same into staples, a chenille-feeder for each staple-forming mechanism, means for holding alternate chenille-feeders out of action, a holding-plate above the net fabric having a hole above each staple-forming mechanism, a clenching-ram in each of said holes, and means for operating the staple-forming mechanism and clenching device to close said staples on the fabric.

9. In a chenille-spotting machine, the combination of means for intermittently moving the fabric, a plurality of rams beneath said fabric, an ejector within each ram, a cutting-plate between said rams and said fabric, a looper-bar, means for advancing said looper-bar opposite the operative ends of said rams and for withdrawing it, a plurality of extensions on the looper-bar, a feeder hinged to each of said extensions and engaging with the chenille, a bar beneath said feeders, a series of notches in said bar, a pin between each feeder and the notched bar, means for reciprocating said notched bar, a holding-plate above the net fabric having a plurality of inclined holes which run out at the angle of the bar forming openings on both the lower and front faces of the same, a clenching-ram in each hole, a plurality of net-registering instruments beneath said fabric each comprising a stock, a point or projection on said stock to enter the net provided with a groove or flute in its inner side across which a thread of the net can lie, a brush above the fabric, means for causing said registering instrument and brush to meet at the plane of the fabric, means for moving the projection of the registering instrument against the holding-plate, means for moving the brush in a direction away from the holding-plate and opposite to that in which the registering instrument is moved, means for moving the rams beneath the fabric up to the holding-plate, and means for operating the clenching-rams to clench the chenille staples against the lower ram, substantially as described.

709,588. CYCLE-REST. HANS U. VON TREUENFELS, Hanover, Germany. Filed Dec. 16, 1901. Serial No. 86,117. (No model.)

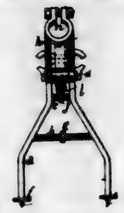

Claim.—In a cycle-rest the combination of a clamping part adapted to be secured to the frame-tubing close to the crank-axle bearing, a pin journaled in said clamping part, a bifurcated rest composed of two legs symmetrically bent out of the middle plane of the cycle, said legs being pivoted on said pin, cross-braces connecting the bent legs of the said rest, an extension of the said clamping part adapted to partly surround the crank-axle bearing, a clamp forming the end of the said extension adapted to be clamped about the frame-tube supporting the saddle or the legs of the rear wheel-fork, a helical spring, secured with one end to the upper cross-brace and with the other end to the said extension-clamp, and a wire, chain, cord, or the like, attached to the lower cross-brace, guided through suitably-arranged eyes or rings and adapted to be secured with its upper free end at different heights to the frame-tubing, the parts being constructed, arranged and working, substantially as and for the purpose set forth.

709,589. FOLDING HARROW. ALVA T. UPTON, Mount Vernon, Ill., assignor of one-half to Cyrus C. Johnson, Mount Vernon, Ill. Filed Apr. 16, 1902. Serial No. 103,186. (No model.)

Claim.—1. In combination with a harrow having transversely-disposed bars and flexible connections between them, a flexible element attached to the rear bar of the harrow, passed forwardly over the harrow and thence downwardly and rearwardly under the same, for the purpose set forth, substantially as described.

2. In combination with a harrow having transversely-disposed bars and flexible connections between them, a flexible element attached to the rear bar of the harrow, passed forwardly over the harrow and thence downwardly and rearwardly under the same, and a pedal-lug attached to said flexible element, for the purpose set forth, substantially as described.

3. A flexible harrow having cross-bars and hinge-links flexibly connecting them together, said hinge-links having steps adapted to come in contact with each other when the harrow is folded, substantially as described.

4. A flexible harrow having cross-bars and hinge-links flexibly connecting them together, said hinge-links having mutually-engaging upstanding cars at their ends pivotally connected together and transversely-disposed steps extended laterally from said cars, said steps being adapted to come in contact with each other when the harrow is folded, substantially as described.

5. A flexible harrow having cross-bars and hinge-links flexibly connecting them together, said hinge-links having mutually-engaging steps on one side adapted to come in contact with each other when the harrow is folded in one direction with the points of its teeth outward, and adapted to turn in the reverse direction to dispose the harrow compactly with the points of its teeth inward, substantially as described.

6. A harrow having transversely-disposed bars, flexible connections between them, a flexible element attached to the rear bar of the harrow, passed forwardly over the harrow and thence downwardly and rearwardly under the same, whereby the harrow may be folded, and steps, coacting with the flexible connections, to support the bars when the harrow is folded, substantially as described.

709,590. TROLLEY-TRACK SWITCH. PAUL F. WERNER, Wilmington, Mass. Filed Apr. 7, 1902. Serial No. 101,734. (No model.)

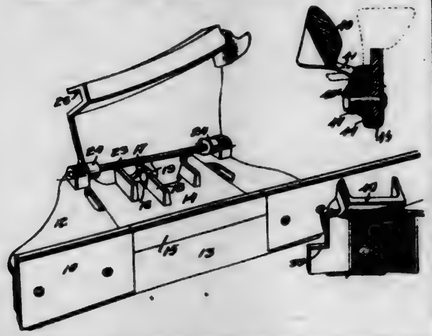

Claim.—1. The combination of the interrupted main-line and branch-line tracks, a bracket secured to the opened sections of the main-line track and having its outer face flush with the surface of the track, a guideway formed in the upper surface of the bracket, a reciprocating slide guided therein and having a track-section movable into and out of alinement with the opened sections of the main-line track, a pair of opened legs carried by said slide, a pivoted branch-line member also having a track-section, a pin carried by the branch-line member and held in constant engagement with said legs to transmit the movement of the branch-line member to the slide, said branch-line member when in open position having its center of gravity to the rear of the supporting-pivot and carving through the pin and legs to hold the slide in proper position, substantially as specified.

2. The combination of the interrupted main-line and branch-line tracks, a bracket connected to the sections of the main-line track and having its upper surface recessed to form a guide, a slide disposed in the recessed portion and guided thereby, said slide having a track-section movable into and out of alinement with the sections of the main-line track, a depending recessed lug carried by said slide to prevent excessive outward movement thereof and to hold said slide from vertical movement, a pair of opened legs carried by the slide, a pivoted branch-line member also having a track-section, and a pin carried by the branch-line member and engaging between the legs to thereby assist in holding the slide in proper position and to prevent excessive rearward movement of the branch-line member.

3. The combination of the main-line and branch-line tracks, switch members having track-sections for preserving the continuity of the main line, or for connecting the main line and branch line, a pivotally-mounted locking-block carried by the branch-line track, an operating-arm and lug forming part of said block, and a projecting finger carried by one of the switch members and adapted to operatively engage said arm and lug to effect the movement of the locking-block to operative or inoperative position.

4. In a device of the class specified, the combination of the track, a pivot-plate fitted to one face thereof and provided with a projecting lip extending under and embracing the edge of the track, a securing means passing through the plate and track and serving in connection with the lip to hold said plate in proper position, there being a pivot-recess formed partly by the plate and partly by the rear face of the track, a locking-block pivoted in said recess, and means for automatically moving said block to operative and inoperative positions.

5. In a device of the class specified, the combination with the track, of a plate secured thereto, a block pivotally connected to the plate and adapted to be moved across the top of the rail, an operating-arm 41 and a lug 43 disposed at an angle to each other and forming a part of the block, and a pivoted switch-track member having a projecting finger for operative engagement with the arm to move the block to operative position, said finger being adapted to engage the lug when the switch-track member is moved in the opposite direction to move said locking-block to inoperative position.

709,591. SASH-LOCK. WILSON BENNETT, Waynesboro, Va. Filed Sept. 10, 1901. Serial No. 74,918. (No model.)

Claim.—1. A sash-lock consisting of a plate adapted to be attached to a sash, a lever attached to said plate, a second plate adapted to be attached to the opposite sash, said second plate having an arched portion, a D-shaped link retained by said arched portion and adapted to pass over the free end of the said lever.

2. A sash-lock consisting of a plate adapted to be attached to a sash, a lever attached to said plate, a second plate having a perforation and an arched portion, a D-shaped link retained by said arched portion and adapted to pass over the free end of the lever, said lever having a tost adapted to enter said perforation.

3. A sash-lock consisting of a plate adapted to be attached to a sash, said plate having a perforation, a dome erected on said plate about said perforation, said dome having two channels merging into each other at right angles, a lever secured at one end under said dome and being free to swing through the channels, a second plate adapted to be attached to the opposite sash, said second plate having a perforation and an arched portion, a D-shaped link retained by said arched portion, said lever having a tost adapted to enter the perforation of the said second plate.

4. A sash-lock consisting of a plate adapted to be attached to a sash, a dome erected on said plate, said dome having two channels cut therein and merging into each other at an angle, a lever secured at one end under said dome and being free to swing through the channels, said lever being retained from revolving axially, said lever being adapted to swing in two directions, but when having entered one channel being prevented from moving toward the other channel by the intermediate portion of the dome between the said channels, a second plate adapted to be secured to the opposite sash and having a means for securing the free end of the lever.

709,592. TRACTION-ENGINE. DANIEL BEST, San Leandro, Cal. Filed June 28, 1902. Serial No. 112,777. (No model.)

Claim.—1. The combination in a traction-engine of the frame; the bearing-wheels; the axle; transverse plates forming a channel within which the axle is movable; yokes suspended directly from the axle, and plates through which the ends of the yoke pass; and springs disposed between the last-named plates; said first-named plates bearing directly upon the uppermost of the last-named plates.

2. The combination with a traction-engine and frame of a main axle bearing and traction wheels carried upon the ends thereof, yokes passing over and suspended from the axle, plates to which the ends of said yokes are secured, springs carried upon said plates, supports upon which the engine-frame or boiler rests, said supports including transverse plates standing vertically on edge and constructed to receive and form a guide or channel in which the axle is movable, said supports resting upon the uppermost of the first-named plates.

3. The combination with a traction-engine, the frame thereof, of an axle having bearing and traction wheels upon each end, yokes passing over said axles inside of the spindles upon which the wheels are mounted, plates suspended from the lower ends of the yokes, springs supported upon said plates, other plates resting upon the tops of the springs through which plates and springs the yokes pass, parallel bars on edge extending transversely beneath the boiler and frame of the machine, the ends of said bars resting upon the plates carried by the springs, said transverse bars forming a trough or channel within which the axle is vertically movable.

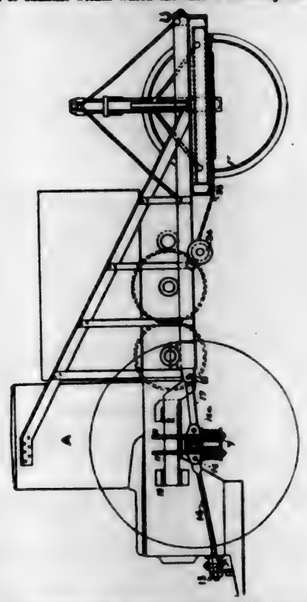

4. The combination with a traction-engine and its frame, of transverse bars forming a channel, a main wheel-axle extending through and movable within said channel and having traction and bearing wheels turnable upon the outer ends thereof, horizontal plates and springs upon which the channel-irons rest, similar plates upon which the springs rest and yokes passing over the axle having the legs extending down through the springs and plates and secured to the lowermost plates.

5. The combination with a traction-engine and its frame of an axle upon the ends of which the bearing and traction wheels are carried, a channel-frame extending transversely beneath the boiler and engine-frame which are supported thereon and within which channel the axle is vertically movable, springs and supporting yokes and plates connecting the axle and the boiler-support whereby a vertical yielding movement is effected, pivoted links extending substantially horizontally front and rear from the channel-frame and connecting the axle-supports with the main frame and the boiler in front of and behind the axle.

6. The combination in a traction-engine of a boiler and frame, an axle with bearing and traction wheels at each end, springs suspended below the axle and located intermediate of the axle and the main frame and boiler, whereby a vertical yielding movement is effected, upward transverse plates forming a vertical guide for the axle, a bar extending across the rear of the boiler, links connecting the ends of the bar with the vertical guide between which the axle moves, other links connecting said guide with the front of the frame.

7. In a traction-engine, a front steering-wheel, a circular ring-frame within which it is journaled, an exterior rigid circular frame connected with the main engine-frame within which the steering-wheel ring is turnable, vertically-journaled rollers interposed between the two rings, frames extending upwardly from the main and from the wheel frame respectively, guide-sheaves carried by said frames substantially centrad above the wheel, and a spring interposed between said sheaves.

8. A traction-engine steering-wheel, a circular frame to which it is journaled, an exterior circular frame carried by the main engine-frame, vertically-journaled rollers interposed between the rings, vertically-disposed frames extending upwardly from the main and from the wheel frame respectively convergent so as to stand substantially in line above the wheel, a spring interposed between the two frames, a vertical guide-stem extending through the spring from one frame to the other, and a ball-bearing support between the spring and the wheel-frame upon which it is carried.

9. A traction-engine steering-wheel, a circular ring to which it is journaled, an exterior circular ring carried by the main engine-frame, journaled rollers interposed between the rings, vertically-convergent frames carried by the two circular rings, a vertical guide-stem extending between the two, and a surrounding spring, chains connected with the steering-wheel circle, and winding-drums upon the main frame whereby the chains are moved to turn the wheel.

709,598. APPARATUS FOR TREATING PULVERIZED ORES OF GOLD OR SILVER. DANIEL C. BOLEY, Chicago, Ill., assignor to Henry Hunt, Pekin, Ill. Filed Sept. 23, 1901. Serial No. 76,365. (No model.)

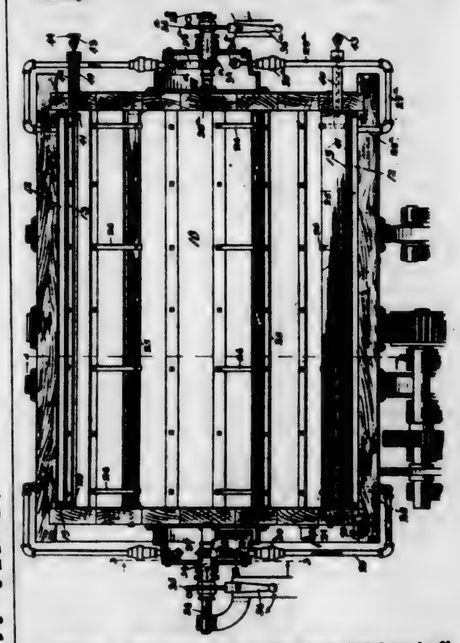

Claim.—1. In an apparatus for treating finely-divided ores by filtration, the combination with a moving filter-surface, of means for creating a vacuum beneath the filter as it passes a portion of its course, and means for producing at a different time an air-pressure backward through the filter, at the same portion of its course, substantially as specified.

2. In an apparatus for treating finely-divided ores by filtration, the combination with a moving filter-surface, of means for creating a vacuum beneath the filter as it passes a portion of its course, and means for producing at the same time an air-pressure backward through the filter as it passes another portion of its course, and with means for producing at a different time an air-pressure backward through the filter, at the same portion of its course, substantially as specified.

3. The combination of the rotatable barrel having around its inside surface a series of chambers separated from the interior of the barrel by filtering fabric, and means for inducing a vacuum in said chambers during a portion of the revolution of the barrel, said means consisting in part of pipes containing valves controlled automatically by a cam caused to operate by the motion of the barrel, substantially as specified.

4. The combination of the rotatable barrel having around its inside surface a series of chambers separated from the interior of the barrel by filtering fabric, means for inducing a vacuum in said chambers during a portion of the revolution of the barrel, and means for producing an air-pressure backward through the filter fabric at a different time, substantially as specified.

5. The combination of the rotatable barrel having around its inside surface a series of chambers separated from the interior of the barrel by filtering fabric, means for inducing a vacuum in said chambers during a portion of the revolution of the barrel, said means consisting in part of pipes containing valves controlled automatically by a cam caused to operate by the motion of the barrel, and means for producing an air-pressure backward through the filter fabric at a different time, substantially as specified.

6. In an apparatus for treating finely-divided ore by filtration, the combination of the rotatable barrel, the series of filtering-chambers around the interior surface of the barrel, the filtering fabric separating the chambers from the barrel, the radial longitudinal internal wings, the means for inducing a vacuum or pleasure in the chambers consisting of pipes provided with valves leading to an axial pipe connected with a vacuum and pleasure reservoir, the connection being controlled by cocks, substantially as specified.

7. The combination of the rotatable barrel, the series of filtering-chambers separated from the interior of the barrel by filtering fabric and means for inducing a vacuum in said chambers during a portion of the revolution of the barrel, and means for drawing the liquid contents out of said chamber, consisting in part of pipes, each chamber having two outlets to the pipes, so that the liquid contents will flow out whatever the position in the vacuum zone the chamber may occupy during the rotation of the barrel, substantially as specified.

709,594. **PENDULUM-REGULATOR FOR CLOCKS.** JOSEPH BUTCHER, New York, N. Y. Filed Feb. 21, 1902. Serial No. 95,023. (No model.)

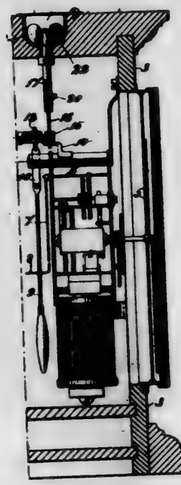

Claim.—1. The combination in a clock, of the pendulum, the spring forming a prolongation of the latter, the screw on and forming a prolongation of said spring, the crotch in which said spring plays, the nut on said screw, means for collaring said nut, and means for rotating said nut for raising and lowering the pendulum.

2. The combination with a clock-case and a clock inclosed therein, of the clock-pendulum, the flat spring forming a prolongation of said pendulum, the crotch, a screw device for raising and lowering the pendulum, and means for operating said screw device, said means comprising an arbor extending out at the top of the clock-case, a thumb-piece thereon occupying a recess in the top of the case, and a pinion thereon gearing with the wheel-nut of the said screw device.

3. The combination with the case of a clock, having a recess in its top, an arbor extending down from said recess and having a pinion 15 at its lower end, and the said pinion, of the crotch, the pendulum, its spring, engaging said crotch, the screw on the upper end of said spring and parallel with said pinion-arbor, and a collared wheel-nut on said screw and gearing with said pinion.

4. The combination with a clock-case having a recess in its top, and an extensible arbor extending down into the case from said recess, of the clock-pendulum, its spring, the crotch which said spring engages, the screw on said spring, and the collared wheel-nut on said screw.

5. The combination with the movement-frame of a clock provided with a crotch for the pendulum-spring, and the case of the clock, having a recess in its top, of the pendulum, its spring, engaging said crotch, the screw on and forming a prolongation upward of said spring, the wheel-nut on said screw, the means on the movement-frame for collaring said nut, a telescopic and extensible arbor dependent into the case from the recess in the top thereof and parallel with the said screw on the pendulum-spring, a thumb-piece on said arbor in said recess, and a pinion on said arbor and in gear with said wheel-nut.

709,595. **GLOVE.** ROBERT H. GARDEN, San Francisco, Cal. Filed July 3, 1902. Serial No. 114,259. (No model.)

Claim.—1. The combination with a glove of a reinforcing palm-piece having an extension surrounding the forefinger, and a corresponding extension surrounding the inner portion of the thumb.

2. The combination with a glove of a reinforcement consisting of a piece extending across the palm from the outer side of the little finger, thence extending up and surrounding the inner part of the forefinger, and having an extension in continuation therewith surrounding the inner portion of the thumb.

3. In combination with the palm and finger portion of a glove, a reinforcing-piece consisting of a part to surround the inner portion of the thumb, a part to surround the inner portion of the forefinger and a part extending across the palm, all cut from a single continuous piece of material.

709,596. **STOCK-CAR.** WILLIAM CLINE, Lancaster, Pa., assignor to the Cline Stock-Car Company, Philadelphia, Pa., a Corporation of New Jersey. Filed Nov. 13, 1899. Serial No. 736,742. (No model.)

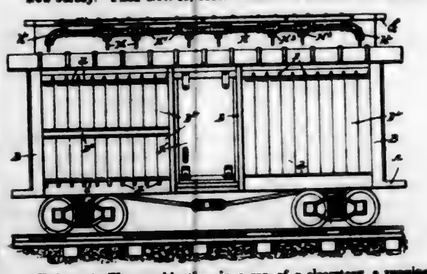

Claim.—1. The combination, in a car, of a clearstory, a running-board extending lengthwise of the top of the clearstory, outwardly-projecting flanges on the sides of the running-board and having gutters lengthwise thereof, joists supporting the running-board, and doors hinged to the side walls of the clearstory and adapted, when closed, to have their swinging edges rest on said flanges of the running-board.

2. The combination, in a car, of a clearstory, joists extending across the clearstory and having gutters, a plate countersunk in the joists and extending lengthwise of the clearstory, a running-board of less width than said plate and resting on the center thereof, gutters longitudinally of the projecting edges of said plate and connecting with gutters in the joists, and doors hinged to the side walls of the clearstory and adapted, when closed, to have their edges rest on the projecting edges of said plate.

3. The combination, in a car, of a clearstory, a door on the top of the clearstory, a rod or tube extending along the side of the clearstory, and hinge-straps connecting said door and the rod, for the purpose specified.

4. The combination, in a car, of a clearstory, a door on the top of the clearstory, jaws projecting outward from the side of the clearstory, hinge-straps projecting from said doors, and a hinge-pin connecting the outer ends of the jaws and of the hinge-strap, for the purpose specified.

5. The combination, in a car, of a clearstory, a door on the top of the clearstory, a rod or tube extending along the side of the clearstory, jaws projecting outward from the rod or tube, hinge-straps projecting from said doors, and a hinge-pin connecting the outer ends of the jaws and of the hinge-strap, for the purpose specified.

6. The combination, in a car, of a clearstory, a running-board extending lengthwise of the center of the clearstory and having outwardly-projecting flanges provided with gutters, joists supporting the running-board and having gutters connected with the gutters in the flanges, series of doors at the sides of the running-board and having their edges adapted

to rest on said flanges and on the joists, jaws projecting outward from the sides of the walls of the clearstory, outwardly-projecting hinge-straps on the doors, and hinge-pins connecting the outer ends of said jaws and of the hinge-straps, for the purpose specified.

7. The combination, in a car, of a clearstory, a door on the top of the clearstory, a ventilator-flue extending along the outside of a wall of the clearstory, branches of said flue and extending through the wall of the clearstory and supporting said flue in place, jaws on said flue, hinge-straps on the door, and hinge-pins connecting the outer ends of said jaws and of the hinge-straps, for the purpose specified.

8. The combination, in a car, of a clearstory, a door on the top of the clearstory, a ventilator-flue extending along the outside of a wall o the clearstory, branches of said flue and extending through the wall of the clearstory and supporting said flue in place, outwardly-projecting jaws on said flue, hinge-straps extending outward from the door, and hinge-pins connecting the outer ends of said jaws and of the hinge-straps, for the purpose specified.

9. The combination, in a car, of a clearstory, a running-board extending lengthwise of the clearstory and having outwardly-projecting flanges provided with gutters, joists supporting the running-board and having gutters connected with the gutters in the flanges, series of doors at the sides of the running-board and having their edges adapted to rest on said flanges and on the joists, ventilator-flues extending along the outside of the walls of the clearstory, branches on said flues and extending through the walls of the clearstory and secured therein by nuts, outwardly-projecting jaws on said flue, hinge-straps extending outward from the doors, and hinge-pins connecting the outer ends of said jaws and of the hinge-straps, for the purpose specified.

709,597. **ROTARY FORCE-PUMP.** SAMUEL M. FRANK, San Antonio, Tex. Filed Mar. 21, 1902. Serial No. 99,302. (No model.)

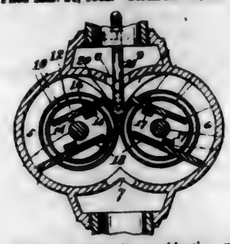

Claim.—1. In a force-pump, the combination, with the cylinders, and the rotary pistons, of the slidable valves adapted to work through the walls of the pistons at points diagonally opposite, the valve-shoes, and the roller-valve operated between the pistons to check the backward escape of air between the pistons.

2. The combination, with the rotary pistons, the valve-shoes at each end of the pistons, and the spring-valves working against the shoes and having a projection or pin and slidable through the piston walls at points diagonally opposite, of the stop-plates adjustably secured upon the interior of the pistons and engaged by said projections or pins to control the outward movement of the valves.

3. The combination, with the removable valve-shoes having a groove, of the roller-valve journaled in the shoe-grooves, and the screw-rods having collars through which the roller-valve is revolved, and means to adjust the rods to vary the position of the said valve.

4. The combination, with the communicating cylinders, a shaft extending through each cylinder, a piston secured on each shaft and having valveways out of line with the shafts or the center of the pistons, a pair of valves slidable parallel with each other through the walls of the pistons, and the springs to project the valves, of the valve-shoes to retract the valves, the roller-valve operated between the pistons, and means to vary the bearing of the roller-valve on the pistons.

709,598. **ELECTRIC IGNITER FOR EXPLOSIVE-ENGINES.** EDWARD A. GRAY, Plainfield, Ill. Filed Oct. 1, 1901. Serial No. 77,210. (No model.)

Claim.—1. In an explosive-engine, in combination, a cylinder, a pair of intermittently-contacting igniting-electrodes one of which is rotatable, means for rotating said electrode, a charge-controlling valve, means for actuating the valve, a governor for interrupting the action of the valve, and an adjunct of the valve-actuating means engaging the electrode-rotating means to hold the rotatable electrode against movement.

2. In an explosive-engine, in combination, a cylinder, intermittently-contacting electrodes, one of which is rotatable, means for rotating said electrode, a clutch-controlling connection between the rotatable electrode and the rotating means, a reciprocating rod, and a detent carried by the rod and separating the clutch to prevent rotation of the electrode.

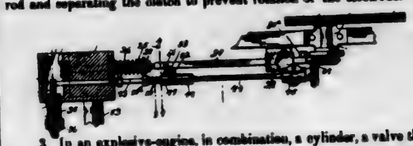

3. In an explosive-engine, in combination, a cylinder, a valve therefor, a rod controlling the valve, means for moving the rod, a pair of electrodes one of which is rotatable, a shaft to which the rotatable electrode is fixed, and a connection between such shaft and the valve-controlling rod for holding the rotatable electrode against movement.

4. In an explosive-engine, in combination, a cylinder, a valve therefor, a rod controlling the valve, means for moving the rod, a pair of electrodes, a rotating shaft to which one of the electrodes is fixed, a clutch for the shaft, an arm carried by the rod and for separating the clutch to throw the electrodes out of action, a governor, and a lever operated by the governor for holding the rod against movement.

5. In an explosive-engine, in combination, a cylinder, an exhaust-valve, a rod controlling the valve, means for moving the rod, a pair of electrodes one of which is rotatable, a shaft to which the rotatable electrode is fixed, and an arm carried by the valve-rod for holding the rotatable electrode against movement.

6. In an explosive-engine, in combination, a cylinder, a valve therefor, a rod controlling the valve, a cam actuating the rod, a reciprocating electrode, a second electrode, a rotating shaft comprising two sections to one of which the second electrode is fixed, a clutch connecting the two shaft-sections, a pin projecting from one of the clutch members, and an arm secured to the valve-rod and having a beveled extension for engaging the pin to uncouple and also turn the shaft-section to which the second electrode is fixed.

7. In an explosive-engine, in combination, a cylinder, a valve therefor, a rod for opening the valve, means for moving the rod, a pair of electrodes one of which is rotatable, a shaft to which the rotatable electrode is fixed, means controlled by the valve-rod for holding the rotatable electrode against movement, a governor, and connection between the governor and the valve-rod.

8. In an explosive-engine, in combination, a cylinder, a valve therefor, a rod for opening the valve, a cam engaging the rod, a pair of electrodes one of which is rotatable, a shaft to which the rotatable electrode is fixed, an arm carried by the valve-rod for holding the rotatable electrode against movement, a governor, and connection between the governor and the rod.

9. In an explosive-engine, in combination, a cylinder, a valve therefor, a rod controlling the valve, means for moving the rod, a pair of electrodes, a shaft comprising two sections to one of which one of the electrodes is fixed, a clutch coupling the two sections, an arm carried by the valve-rod and uncoupling the clutch to throw the electrodes out of action, and a spring for throwing the clutch into engagement when released by the arm.

10. In an explosive-engine, in combination, a cylinder, a valve therefor, a cam driven by the engine and moving the rod, a movable electrode, a second electrode, a shaft comprising two sections to one of which the second electrode is fixed, a clutch for coupling the two shaft-sections and one of the members of which is slidably mounted upon the shaft, a pin projecting from such clutch member, an arm secured to the valve-rod and having a beveled extension for engaging the pin to uncouple the clutch and also turn the shaft-section to which the electrode is fixed, a spring for coupling the clutch when the arm is withdrawn from the pin, a governor, and a pivoted lever actuated by the governor and for engaging the valve-rod when advanced by the cam.

11. In an explosive-engine, in combination, a cylinder, intermittently-contacting electrodes one of which is rotatable, means for rotating said electrode, a clutch controlling connection between the rotatable electrode and the rotating means, and means timed to set intermediate of contacts between the electrodes for separating the clutch members to prevent movement of the rotatable electrode.

12. In an explosive-engine, in combination, a pair of electrodes one of which is moved intermittently into contact with the other, a shaft to which the moving electrode is fixed, a valve, a rod controlling the valve, a pin rotatable with the electrode-shaft, and a cam carried by the valve-controlling rod and for engaging the pin to throw the moving electrode out of action.

13. In an igniting device for explosive-engines, in combination, a pair of electrodes, a shaft comprising two sections and to one of which one of the electrodes is secured, a clutch for coupling the two sections, a spring for holding the clutch members in engagement, a valve, means for

operating the valve, and means carried by the valve-operating means for operating the clutch members.

14. In an igniting device for explosive-engines, in combination, a pair of electrodes, a shaft comprising two sections and to one of which one of the electrodes is secured, a clutch for coupling the two sections, a spring for holding the clutch members in engagement, a valve, means for operating the valve, means carried by the valve-operating means for operating the clutch members, a governor, and means controlled by the governor for holding the valve-operating means against movement.

709,599. BOOKBINDING-SHEET. GODFREY HAGEN, Brooklyn, N. Y. Filed May 11, 1901. Serial No. 59,705. (No model.)

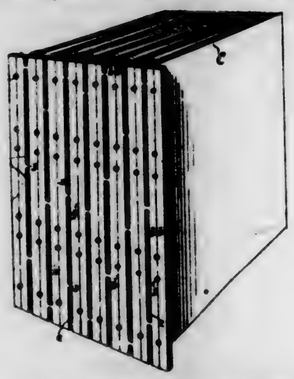

Claim.—1. As a new article of manufacture, an integral strip-sheet for backing and assembling book-signatures, embodying a plurality of pairs of strips, adjacent members of two pairs being connected by bridges and having notches which register with each other, and the members of each pair being in parallel position with a uniform intervening space bridged by integral narrow connecting-necks extending between them substantially as shown and described.

2. As an improved article of manufacture, an integral strip-sheet for backing and assembling book-signatures, embodying pairs of strips in parallel position, adjacent members of two pairs having notches which register with each other, said members being connected by bridges, and the members of each pair being separated by a uniform intervening space bridged by integral narrow connecting-necks, said strip-sheet being provided with and carrying upon its back an adhesive substance, whereby it may be applied to a flexible base, substantially as shown and described.

3. As an improvement in bookbinding sheets for assembling book-signatures, the combination, with a flexible base or fabric, of an integral strip-sheet embodying pairs of strips, adjacent members of two pairs having notches in their meeting edges which register with each other, said members bridged by integral portions, said pairs being in parallel position, and the members of each pair being separated by uniform intervening space bridged by integral narrow connecting-necks, and means for attaching said strip-sheet to the flexible base, substantially as shown and described.

709,600. MEASURING DEVICE. EDGAR HILL, Philadelphia, Pa. Filed Oct. 21, 1901. Serial No. 79,232. (No model.)

Claim.—1. A measuring instrument, a casing, a dial carried by the casing, hands pivoted in the casing, one hand adapted to record the revolution of the other, a suitable train of gearing for operating the hands, a leg secured to the casing, a second leg pivoted to the casing at a point eccentric to the pivotal point of the initial gear-wheel of the train of gears, a link connecting the movable leg with the initial gear-wheel, the distance the movable leg is pivoted from the pivotal point of the initial wheel to be set so that the dial will register correctly distances measured by the legs upon a straight line, substantially as and for the purpose specified.

2. In a measuring instrument of the character described, a casing, an indicating device carried by the casing, an initial gear-wheel pivoted in the casing and adapted to actuate and control the indicating device, a leg secured to the casing, a second leg pivoted to the casing at a point eccentric to the pivotal point of the initial gear-wheel, an arm D' extending outward from the movable leg, a link pivoted to said arm, a pin carried by the initial gear-wheel, said link connected to said pin, pointers adjustable on the legs, graduations for indicating the scale of the drawing to be measured represented upon the legs, substantially as and for the purpose specified.

3. In a device of the character described, a casing, a toothed wheel journaled within the casing, a leg secured to the casing, a second leg pivoted to the casing at a point eccentric to the pivotal point of the toothed wheel, said movable leg adapted to rotate the toothed wheel equal distances for equal distances measured by the legs upon a straight line, substantially as and for the purpose specified.

4. In combination with a device of the character described, a casing, a dial located upon the front of the casing, a circle of graduations represented upon the dial, a hand pivoted in the center of the dial, a train of gears adapted to actuate said hand, a hand pivoted to the arbor of the initial gear of the train of gears, a series of figures arranged concentric to the pivotal point of the initial gear, the second hand adapted to record the revolutions of the first-named hand, a leg secured to the casing, a second leg pivoted to the casing eccentric to the pivotal point of the initial gear, a connection between the movable leg and the initial gear, pointers located upon each of the legs and adapted to be adjusted along the same, graduations formed upon each of the legs, a coil-spring so set as to be tightened when the legs are separated, substantially as and for the purpose specified.

709,601. CULTIVATING-PLOW. ALBERT HOEFER, Pinnsville, Hawaii. Filed June 26, 1902. Serial No. 113,255. (No model.)

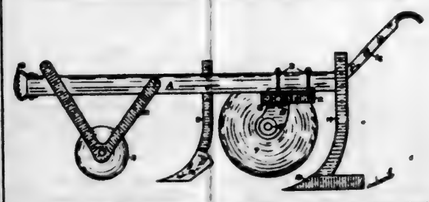

Claim.—1. The combination in a cultivator of a pair of angularly-journaled disks upon each side the beam, the shovel-plow traveling centrally from front of said disks and a subsoiling-plow fixed to travel centrally behind the disks.

2. The combination in a cultivator of disks, plates or standards from the lower ends of which they are journaled and turnable, a triangular casting to which the upper ends of the standards are secured, a plow-beam and means for securing the casting to the beam, a shovel-plow having its standard connected with the beam and located in front of the disks and a subsoil-plow located in the rear of the disks.

3. A land-cultivating apparatus consisting of a beam, a triangular casting secured to the beam having perforations in its convergent sides, plates or standards adjustably bolted to said sides of the casting extending downwardly and forming supports for journal-shafts, disk plows mounted thereon converging from the rear toward the front, a shovel-plow having its standard adjustably connected with the plow-beam and located in front of the disks, guiding-handles carried thereby and a supporting-wheel adjustably connected with the front of the plow-beam.

4. A land-cultivating apparatus consisting of a plow-beam having a bearing-wheel adjustably connected with the front and handling clevises, a double or shovel plow having a standard adjustably connected with the plow-beam, a triangular casting adjustably secured to the plow-beam convergent from the rear toward the front, plates or standards adjustably secured to said convergent sides and movable so as to bring them nearer to or further from each other, disks journaled and turnable from the lower ends of said standards and correspondingly movable to or from each other, a subsoiling-plow having a standard adjustably connected with the rear of the beam and handles carried therewith.

5. A land-cultivating apparatus comprising a beam with centrally-located adjustable plows near the front and rear ends, a pair of intermediate divergently-mounted revolvable disks, a support for the hangers of said disks, consisting of a triangular casting adjustably secured to the beam and convergent toward the front, and attachments by which the hangers may be moved forward or backward along the convergent sides to move the disks to or from each other.

709,602. ELECTRIC BRANDER. HARRY L. JENKINS and OSCAR F. F. ROEHLAMB, Indianapolis, Ind., assignors of one-third to MAX DAVIS, Indianapolis, Ind. Filed Mar. 31, 1902. Serial No. 100,872. (No model.)

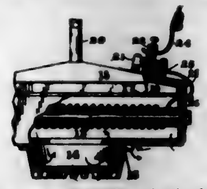

Claim.—1. In an electric brander, a heating-box containing a plurality of electrically-connected heating-coils, a rubber or depression from the bottom of the heating-box having outside branding characters, said rubber having communication with the outside air and a cover for the heating-box having a dead-air space.

2. In an electric brander, a heating-box containing a plurality of electrically-connected heating-coils, a rubber or depression from the bottom of the heating-box having outside branding characters, said rubber having communication with the outside air, and a cover for the heating-box having a dead-air space therein, binding-posts, a supporting-plate for said posts of material which is a poor conductor of electricity, said plate supported above the cover of the box to provide an air-space between it and said cover, electric-current-supply wires connecting with said binding-posts and wires connecting the posts with the heating-coils.

709,603. SCREW-DRIVER. JAMES F. LARSEN, Chicago, Ill. Filed Mar. 28, 1902. Serial No. 100,693. (No model.)

Claim.—1. The combination with a hollow handle, of a rod located therein and having on its lower end a collar, a bit having at its upper end a crank or horizontal portion located in said collar, and a locking member movably secured on the lower end of the handle and having means to engage the crank of the bit, substantially as described.

2. The combination with a hollow handle having in its upper end a recess, of a rod located in the hollow of the handle and having on its lower end a collar, a spring-actuated head on the upper end of the rod within the recess of the handle, a bit having at its upper end a crank or horizontal portion provided with a groove and located in said collar, and a locking member movably secured on the lower end of the handle and having a projection to fit in the groove of the crank, substantially as described.

709,604. GRAPPLE FOR LUBRICATING-PADS. JOHANNES LEMKWITZ, Witten, Germany. Filed Feb. 24, 1902. Serial No. 95,626. (No model.)

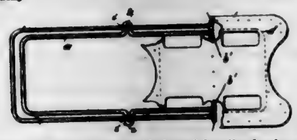

Claim.—1. A pair of crossed U-shaped handles having short laterally-projecting pivots at their free ends, the side portions of the said handles being free to spring laterally, and means for pivotally connecting the middle parts of the side portions of the said handles, substantially as set forth.

2. A pair of crossed and pivoted U-shaped handles formed of bent rods having laterally-projecting pivots at their free ends, the side portions of one of the said handles being bent around to form eyes *i*, and the side portions of the other said handle being bent double to form projecting pivots *k* which engage with the said eyes, substantially as set forth.

709,605. BOILER-FURNACE. ALEXANDER MIER, Joliet, Ill. Filed Feb. 17, 1902. Serial No. 94,307. (No model.)

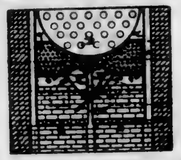

Claim.—1. In a furnace, a fire-box divided longitudinally into two compartments provided with separate doors at their front ends and separate dampers at their rear ends, a flue located at the front end portion of each compartment, said flue formed of perforated plates, and closed at its ends so that the smoke and gases must pass through the perforations in said plates, both upon entering and leaving said flue, substantially as set forth.

2. In a furnace, a fire-box divided longitudinally into two compartments provided with separate doors at their front ends and with separate dampers at their rear ends, a flue located at the front end portion of each compartment, said flue formed of perforated plates, and closed at its ends so that the smoke and gases must pass through the perforations in said plates upon entering and leaving said flue, and means for closing the openings in one or more of the said plates, substantially in the manner and for the purpose set forth.

3. In a furnace, a fire-box divided longitudinally into two compartments provided with separate doors at their front ends, and with separate dampers at their rear ends, a flue located at the front end portion of each compartment, said flue formed of perforated plates, and closed at its ends so that the smoke must pass through said perforations, and said flue having plates extending downwardly toward the bed of the fire, and means for closing one or more of said plates against the passage of smoke therethrough, substantially in the manner and for the purpose set forth.

709,606. LADY'S HOSE-SUPPORTER. LOUIS A. FERRAVAL, Jersey City, N. J., assignor to Frank & Guttmann, New York, N. Y., a Firm. Filed July 3, 1902. Serial No. 114,183. (No model.)

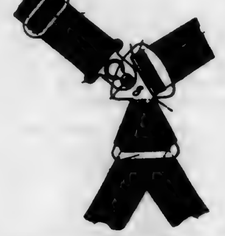

Claim.—1. A hose-supporter comprising a belt, a plate connected thereto, said plate having a loop and a continuous strip interwoven through the loop to form a pair of stocking-supporting straps.

2. A hose-supporter comprising a belt, a plate connected thereto, said plate having a triangular loop and a continuous strip interwoven through the loop to form a pair of diverging stocking-supporting straps extending obliquely to a vertical line through the plate.

3. A hose-supporter comprising stocking-supporting straps, a plate secured thereto and a belt, said plate having elongated slots therein arranged diagonally to the vertical line through the plate for permanently securing one end of the belt to the plate, the other end of the belt being fitted to be removably secured to the said plate.

709,607. ELECTRICAL RELEASER FOR FIRE-DOORS, &c. HENRY J. PERLMAN, Lincoln, Nebr. Filed Mar. 16, 1897. Serial No. 627,772. (No model.)

Claim.—1. In automatic release devices the combination of a toggle-lever pivoted to a frame or beam, a locking-lever pivoted to said beam and having one arm jointed to said toggle-lever, the other arm adapted to engage and hold a hook when the toggle-lever is in the right position, said hook being attached to the door or other device to be released, an electromagnet mounted upon said frame and provided with a movable, pivoted armature having a rod or bar connected therewith and, adapted, upon movement of said armature, to shift or bend the toggle-lever to allow the lock-

ing-link to be withdrawn from locking engagement, an electric battery and an electric circuit for energizing said electromagnet to effect the movement of said armature substantially as described and for the purpose as described above.

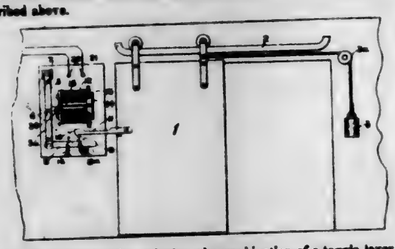

2. In automatic release devices the combination of a toggle-lever, a locking-lever jointed to said toggle-lever, an electromagnet having a pivoted movable armature, a rod or bar connected to said armature and thus adapted to transmit the movement of the armature to the joint of the toggle-lever sections, and to shift or bend same out of the rigid position, to allow the locking-link to disengage the locking-lever, an electric circuit deriving electric current from a battery or other source of electricity for energizing said electromagnet, to produce movement of the armature, a second electric circuit containing a source of electricity, an electromagnetic switch, and thermostatic devices, whereby, when the temperature in the proximity of the thermostatic devices reaches a dangerous point or degree the release-circuit is closed, substantially as and for the purpose described.

709,608. TICKET-HOLDER FOR CAR-SEATS. Gustave H. Ranzau, Sr., New York, N. Y., assignor to himself and Charles Wedin, New York, N. Y. Filed Jan. 15, 1902. Serial No. 89,813. (No model.)

Claim.—1. A ticket-holder comprising a base member adapted to be secured to a support, a clamping member extending longitudinally over the base member and having a convex under surface to contact with the base, and a block interposed between the two members.

2. A ticket-holder comprising a base member adapted to be secured to a support, a clamping member extending over said base member secured thereto at one end and turned upward at its free end, and a block interposed between the two members at their connected ends.

709,609. ADJUSTABLE LOADING-CHUTE. Louis Rosenfeld, New York, N. Y. Filed Oct. 26, 1900. Serial No. 734,344. (No model.)

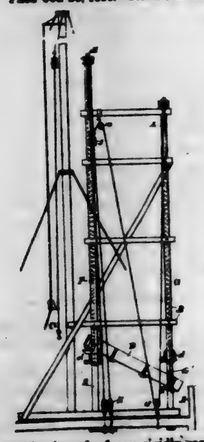

Claim.—The combination of a frame rigidly secured to the deck of a vessel, an inclined chute, one end of said chute resting upon a transverse timber having its ends slidable in vertical guides on the frame, the other end of said chute suspended directly from a second transverse timber disposed in the same horizontal plane with the first timber, and having its ends vertically slidable in guides on the frame, ropes attached to each end of said timbers and extending upwardly over pulleys disposed transversely of the frame, the pairs of ropes at each end of the chute connecting with a separate block, guide-blocks at top and bottom of the frame, a rope running through said guide-blocks and connecting the two first-named blocks and connections with a source of power whereby the chute may be adjusted vertically substantially as described.

709,610. BRUSH. Joseph Schreiner, Irvington, N. J., assignor to Rubber and Celluloid Harness Trimming Co., a Corporation of New Jersey. Filed Nov. 20, 1901. Serial No. 82,961. (No model.)

Claim.—1. A brush, comprising, a handle having a butt, a knot or bunch of bristles arranged against the said butt, said butt being provided with a slot or saw-cut, arranged to allow for a contraction of the said butt toward the center when moist, substantially as and for the purposes set forth.

2. A brush, comprising, a handle having a butt, and an annular groove in said handle, a knot or bunch of bristles arranged against the said butt, a ferrule surrounding the said knot or bunch of bristles provided with an internal shoulder extending into said groove, and the butt of said handle, and said butt being provided with a slot or saw-cut, arranged to allow for a contraction of said butt toward the center when moist, substantially as and for the purposes set forth.

709,611. SECONDARY BATTERY. William L. Silvey, Dayton, Ohio. Filed Feb. 6, 1902. Serial No. 93,173. (No model.)

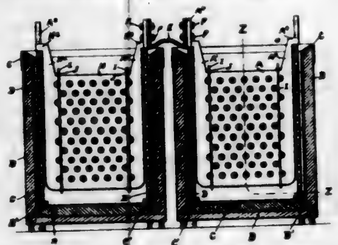

Claim.—1. In a secondary battery the combination of a battery-plate having supporting-ears with a lug on one of the ears, a bolt passing through the lug and provided with a screw-thread, a nut for clamping the bolt to the lug, an equalizing-bar, the bolt extending into the equalizing-bar and nuts for clamping the equalizing-bar and the bolt together independent of the lug as set forth.

2. In a secondary battery, the combination of two battery-plates having supporting-ears, a lug on the ear of each plate, an equalizing-bar between the ears, and bolts passing through the lugs and equalizing-bar, and nuts for clamping the lugs and equalizing-bar to the bolts, as set forth.

3. In a secondary battery, the combination of a battery-plate having supporting-ears, a lug on one of the ears, support-plates on which the battery-plates are borne by means of the ears and an equalizing-bar, a battery-bolt and nuts, the bolt clamped to the lug and the equalizing-bar by means of the nuts as set forth.

4. In a secondary battery, the combination of a battery-plate having ears for the support of the plate, a lug on one of the ears, the lug having a hole in it, a screw-threaded rod in the hole, an equalizing-bar with a hole in it, the rod extending from the lug on the plate to the equalizing-bar and means for clamping the rod to the lug on the plate and the equalizing-bar as set forth.

5. In a secondary battery, the combination with the battery-plate of supporting hanger-ears for the plate, one of the ears having a lug, the lug having a hole in it and an equalizing-bar, the bar connected to the lug on the plate by means of a rod extending from the lug on the plate to the equalizing-bar as set forth.

6. In a secondary battery, the combination with the body of the plate of ears at the top of the plate, the ears having hooks for supporting the plate, a lug on one of the ears, the lug having a receptacle in it and a screw-threaded rod and equalizing-bar, the equalizing-bar and lug on the plate connected together through the intermediate screw-threaded rod, as set forth.

7. In a secondary battery, the combination with the body of the plate A of hanger-ears, a hook on one of the hangers, a lug on one of the ears, a hole in the lug, a rod and connecting-bar the rod extending from the lug to the connecting-bar and plates for supporting the plate A and a battery jar or cell for supporting the battery-plates and battery-plate supports as set forth.

8. In a secondary battery, the combination of a battery-plate, hangers on the plate, ears on the hangers, a lug on one of the ears, an equalizing and distributing bar E and a rod F, the rod extending from the equalizing-bar to the lug and clamps for maintaining the lug and the rod and the rod and equalizing-bar in close metallic contact, as set forth.

9. In a secondary battery, the combination of an equalizing and distributing bar E bolt F, nuts F^2 with a battery-plate, the plate having hangers, ears on the hangers, a lug on one of the ears, the bolt F extending from the lug to the equalizing-bar, the nuts clamping the bar to one end of the bolt, the other end of the bolt clamped to the lug on the battery-plate, as set forth.

10. In a secondary battery, the combination of an equalizing and distributing bar E bolt F nuts F^2 with a battery-plate, the plate having hangers, ears attached to the hangers, a lug on one of the ears, the bolt extending from the lugs to the equalizing-bar, the nuts clamping the bar to one end of the bolt, the other end of the bolt being clamped to the lug on the battery-plate, as set forth.

709,612. ADJUSTABLE CAMERA-STAND. James H. Smyth, Chicago, Ill. Filed Feb. 20, 1902. Serial No. 94,942. (No model.)

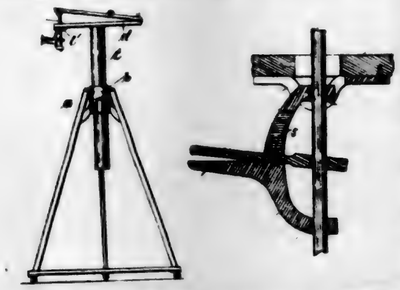

Claim.—1. The combination of a stationary support, a vertically-movable supporting-rod, a hand-lever having diverging branches provided with bores therein through which said supporting-rod is loosely passed, means for pivoting said lever to said stationary support, and a gravity clamping member arranged to rest pivotally upon said lever adjacent to said rod, the same being interposed between the branches of said lever and having a bore therein to receive said supporting-rod.

2. The combination with an adjustable supporting-rod of an element supported thereby, a hand-lever having diverging branches bored at the ends to receive said supporting-rod, one of said branches being pivotally mounted upon a stationary support, and a gravity clamping member pivoted upon said hand-lever, said clamping member being provided with a bore to receive said supporting-rod, the normal or clamping position of said member being at an angle to the handle of said lever, whereby the simultaneous pressure in opposite directions upon the two, may serve to release said clamp and to act as a friction-brake upon said rod.

3. The combination with a tilting member hinged at one end, of a supporting-rod loosely depending from the opposite end, a hand-lever having diverging branches bored to receive said supporting-rod, means for pivoting one of said branches to a stationary support and a gravity clamping member pivotally supported by said hand-lever, said clamping member being arranged approximately at right angles to said supporting-rod and provided with a bore to receive the latter; whereby said supporting-rod may be lifted at will or caused to descend gradually by simultaneously pressing said hand-lever upon said rod to produce the requisite friction and releasing said clamping member.

4. A combined clamping device and friction-brake for a vertically-adjustable supporting-rod, consisting of a bifurcated hand-lever having one of its branches pivoted to a stationary support, bores in said branches for the reception of said rod, and a friction clamping member pivoted in a slot in the uppermost branch, said clamping member having a bore therein for the reception of said rod, and being provided with a rear extension arranged to stand normally at an angle to the handle portion of said lever.

709,613. FRUIT-GRADER. Fred Stebler, Riverside, Cal. Filed July 5, 1901. Serial No. 67,235. (No model.)

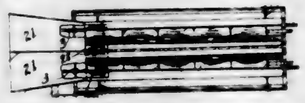

Claim.—1. A fruit grader or sizer provided with a frame, yielding supporting-tubes, conveyers, said conveyers and tubes diverging from each other and means for operating the conveyers.

2. A fruit grader or sizer provided with a frame, yielding supporting devices, conveyers diverging therefrom and means for operating the conveyers.

3. A fruit grader or sizer provided with a frame, constructed to receive and discharge the fruit, laterally-yielding supporting-tubes, conveyers diverging therefrom and imparting a rotary motion to the fruit, and means for operating the conveyers.

4. A fruit grader or sizer provided with a frame constructed to receive and discharge the fruit, laterally-yielding tubes disposed longitudinally thereof, conveyers arranged at unequal distances therefrom and constructed to impart a rotary motion to the fruit, sheaves for the conveyers and means for operating the sheaves.

5. A fruit grader or sizer provided with a frame constructed to receive and discharge the fruit, pneumatic tubes therein, sheaves mounted in the frame, conveyers passing over said sheaves and arranged at unequal distances from said tubes and means for operating said sheaves.

6. A fruit grader or sizer provided with a frame, adjustable guides to rotate the fruit thereon, conveyers in said guides, sheaves carrying said conveyers, pneumatic tubes diverging from the latter, and means for operating said sheaves.

7. A fruit grader or sizer provided with a frame, guide-plates thereon having a longitudinal groove, endless conveyers traveling in said groove, means for adjusting the guide-plates and means for operating said conveyers.

8. A fruit grader or sizer provided with a frame, guide-plates thereon, conveyers traveling in said plates, supports upon the said frame, screw-threaded rods connected with said plates and having screw-thread connections with said supports to effect the adjustment of the latter to and from an intermediate yieldable supporting-surface and means for operating the conveyers.

9. A fruit grader or sizer provided with a frame, sheave-wheels mounted in the opposite ends thereof, an endless conveyer passing over said wheels, the shaft carrying one set of wheels carrying a crank-arm, a rocking lever, a rod or link connected to said crank and arm and a treadle connected with said lever, whereby the conveyers may be operated.

709,614. SWITCH-STAND. Axel A. Strom, Chicago, Ill., assignor to Strom Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed July 15, 1902. Serial No. 115,716. (No model.)

Claim.—1. In a switch-stand, the combination with a bed-plate, of the frame formed of structural metal of the character described, having formed upon one end, integral therewith, a base B provided with openings through which to secure the frame to the bed-plate.

2. In a switch-stand, the combination with a bed-plate, of the frame formed of structural-metal bars of the character described, each bar having formed upon one end integral with it, a base B provided with openings through which to secure it to the bed-plate.

3. In a switch-stand, the combination with a bed-plate, of the frame formed of structural-metal bars of the character described, each bar having formed upon one end, integral with it, a base B provided with openings through which to secure it to the bed-plate, and a table having depending ears through which it is fastened to webs of said bars.

4. In a switch-stand, the combination of the rotary spindle provided with a crank on its lower end and having in said lower end a socket, and a bed-plate having a journaling-stud projecting into said socket sufficiently far to bring said stud and the crank into the same horizontal plane, substantially as and for the purpose set forth.

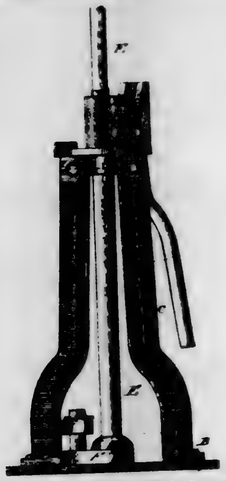

5. In a switch-stand, the combination with its frame, its rotary spindle provided with a crank and the table surmounting the frame, of a yoke embracing and secured to the spindle above the table and open between its ends to form an unobstructed space between the extremity of the extended end of the yoke and the side of the spindle facing it, and an operating-lever fulcrumed between the sides of said yoke in said extended end and working at its shorter arm in said space, substantially as and for the purpose set forth.

6. In a switch-stand, the combination with its frame and the table surmounting it, of a rotary crank-carrying spindle projecting through said table and flat-sided above the same, a yoke embracing and secured to the flat-sided section of the spindle and open between its ends to form an unobstructed space between the extremity of the extended end of the yoke and the side of the spindle facing it, and an operating-lever fulcrumed between the sides of the yoke in said extended end and working at its shorter arm in said space, substantially as and for the purpose set forth.

709,615. **LACE-PAPER MACHINE.** JOHN R. THOMPSON, Brooklyn, N. Y. Filed Aug. 7, 1901. Serial No. 71,152. (No model.)

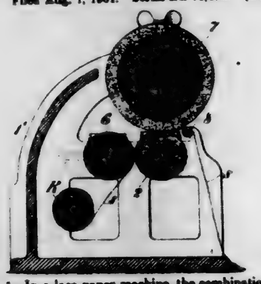

Claim.—1. In a lace-paper machine, the combination with the die-roll, having on its face projecting cutters and surfaces in relief for embossing, of the cutting-roll in peripheral contact with the die-roll on the side where the strip of paper enters, and the embossing-roll of yielding material bearing on the top of the die-roll, of guiding means, at the point where the strip emerges from the bite of the die-roll and embossing-roll, said guiding means adapted to support the strip of paper while the cutters are drawing out the same, and then permit the strip to fall away from the embossing-roll, whereby the moving strip of lace-paper is freed from the rolls without parting, substantially as set forth.

2. In a machine for producing a continuous strip of lace-paper, the combination with a die-roll having on its face cutters 4 and embossing, relief-surfaces, 5, a cutting-roll 6, and an embossing-roll 7, with a yielding surface, situated over the die-roll, of a transverse guide parallel with the roll-axes and situated a little above a horizontal plane passing through the bite of the rolls 2 and 7, near the point of discharge of the lace-paper strip, the latter passing out over said guide and being relieved thereby successively from the cutters on the die-roll and the embossing-recesses in the roll 7, substantially as set forth.

3. The combination with the die-roll 2, having cutters 4 and relief-surfaces 5 on its face, the cutting-roll 6, in peripheral contact with the die-roll where the strip of paper enters, the yielding embossing-roll 7, situated above the die-roll and in embossing contact therewith, and the guide 8, in the form of a roller, said guide having its axis substantially parallel with the roll-axes and its upper surface slightly above the horizontal plane through the embossing-point, substantially as set forth.

709,616. **APPARATUS FOR THE TREATMENT OF GARBAGE OR SIMILAR MATERIAL.** ROOSIER THORNE, Greenwich, Conn. Filed June 30, 1902. Serial No. 113,762. (No model.)

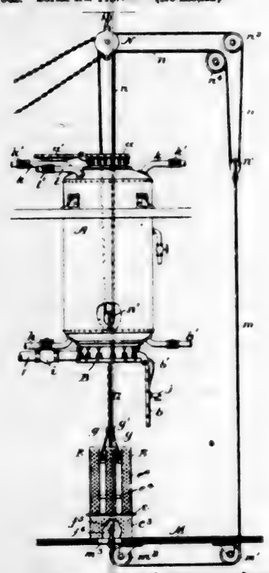

Claim.—1. In an apparatus for the treatment of garbage or similar material, the combination substantially as hereinbefore described, of a tank or receptacle provided with a perforated false bottom, one or more drainage-conduits projecting upwardly from said bottom and affording a channel or channels for the drainage of liquids, and means whereby said conduits may be lowered below the working plane of said perforated bottom.

2. In an apparatus for the treatment of garbage or similar material, the combination substantially as hereinbefore described, of a tank or receptacle provided with a perforated false bottom, a discharge-port in the bottom of said receptacle, one or more drainage-conduits, projecting upwardly from said false bottom and affording one or more channels for the drainage of liquids, and means for lowering said conduit or conduits through said opening.

3. In an apparatus for the treatment of garbage or similar material, the combination substantially as hereinbefore described, of a tank or receptacle provided with a discharge-port at its lower end, one or more drainage-conduits affording a channel or channels for the drainage of liquids, a perforated support for said conduits, and means whereby said conduits and support may be lowered through said discharge-port and replaced for service.

4. In an apparatus for the treatment of garbage or similar material, the combination substantially as hereinbefore described, of a tank or receptacle provided with a discharge-port at its lower end, a removable perforated false bottom, one or more drainage-conduits attached to and supported thereby and means for lowering said false bottom and conduits through said discharge-port.

5. In an apparatus for the treatment of garbage or similar material, the combination substantially as hereinbefore described, of a tank or receptacle provided with a discharge-port in the bottom thereof, a perforated support in said receptacle, one or more drainage-conduits removably attached to and supported by said support, and means for lowering said support and conduits through said discharge-port, for the purpose set forth.

6. In an apparatus for the treatment of garbage or similar material, the combination substantially as hereinbefore described, of a tank or receptacle having a removable bottom, a perforated false bottom or support normally supported by said removable bottom, and one or more drainage-conduits supported by said perforated support and affording one or more channels for the drainage of liquids.

7. In an apparatus for the treatment of garbage or similar material, the combination substantially as hereinbefore described, of a tank or receptacle having a discharge-port in the bottom thereof, a perforated support in said receptacle, drainage-conduits consisting of a series of perforated tubes connected together and removably attached to said perforated support, and means for lowering said support and conduits through said discharge-port and replacing them for service.

709,617. **METALLIC FENCE-POST.** JOSEPH A. UTTER, Crawfordsville, Ind., assignor to John F. Utter, San Francisco, Cal. Filed Jan. 24, 1902. Serial No. 91,054. (No model.)

Claim.—1. The combination in a metallic fence-post of a cement base having embedded therein a pair of upright parallel metallic bars secured together at the top, adjustable clamps having slotted arms embracing the outer sides of the bars, latch-bolts passing between the inner separated sides of the bars and through the clamps, and nuts securing said bolts.

2. In a metallic fence-post, the combination of a cement base, a pair of upright bars embedded in said base and having smooth surfaces, a substantially U-shaped clamp embracing the exterior of both bars and having its broad base bearing against the edges of the bars, and having its arms adapted to receive a line-wire, and means for holding the clamp to the bars.

3. The combination of an inseparable base; spaced upright bars fixed therein; a metallic clamp having a broad back and slotted parallel arms said arms embracing the outer sides of the bars and said back having a hole through it; a latch-bolt passing between the inner faces of the bars and having an end extending through the back of the clamp; and means for securing said end said clamp having means at the opposite end to engage a fence-wire.

4. In a metallic fence-post for wire fence the combination of a cement base having a metallic band around its top or embedded therein and a metallic core, and upright bars fixed in said base, the upper end of said core being attached to said upright bars and the lower end of said core attached to a weight near the bottom of said base substantially as described.

5. In a metallic fence-post, the combination of a cement base having a flange, a pair of parallel and spaced upright bars fixed in said base, said base having a metallic band embedded in it near its top, U-shaped clamps embracing the outside of the upright bars and having means for receiving the line-wire; and a bolt passing through the space between the pair of upright bars, and also through the back of the clamp, and having a hook end to engage the portion of wire between the pair of bars, and a means for securing the bolt.

6. The combination in a fence of substantially parallel and separated vertical bars, a cement base in which they are fixed, a cap-piece with a tongue interposed to hold the bars apart, wire-holding clamps inclosing the bars with the backs across their rear edges and slots for the wires in the front ends of the clamps, bolts having hooks to engage the wires between the arms of the clamps, screw-threaded rear ends passing through the backs of the clamps and nuts fitting thereon, the shanks of said bolts acting as braces at intervals between the post-sections.

709,618. **HINGE-KNOB.** HARRY J. VALENTINE, Hempstead, N. Y., assignor to the Columbian Hardware Company, Cleveland, Ohio, a Corporation of Ohio. Filed Apr. 21, 1902. Serial No. 103,891. (No model.)

Claim.—1. The combination, with a hinge having a socket or knuckle, of a hinge-knob, composed of an outer sheet-metal section, and a cylindrical inner sheet-metal section, said outer section having an enlarged rim and said inner section having a rim fitted firmly in the enlarged rim and being provided with a square shoulder at the joint adjoining its cylindrical surface, the said rims combined being the thickness of the socket or knuckle, and the shoulder being less than such thickness and resting and turning upon the end of the socket or knuckle, substantially as set forth.

2. A sheet-metal hinge-knob, comprising in its construction two hollow sections each closed, or substantially closed, at one end and so constructed and joined at their open ends as to form an internal annular shoulder, and an annular core-disk seated on said shoulder, substantially as set forth.

3. A sheet-metal hinge-knob, comprising in its construction two hollow sections each closed, or substantially closed, at one end and so constructed and joined at their open ends as to form an enlarged annular chamber, and an annular core-disk seated and filling in said chamber, substantially as set forth.

4. A hinge-knob, composed of an outer sheet-metal section having an annular shoulder at its juncture with its rim, and an inner sheet-metal section having an annular shoulder, the rim of said inner section resting firmly against the shoulder of the outer section, and a core confined between the shoulders, substantially as set forth.

5. A sheet-metal hinge-knob provided with a series of keeper-holes, in combination with a fixed core therein, reinforcing the weaker perforated portion of the knob, substantially as described.

6. A sheet-metal hinge-knob provided with a series of keeper-holes, in combination with a fixed transverse core-disk provided with holes registering with the other holes, and reinforcing the weaker perforated portion of the knob, substantially as described.

709,619. **IMPLEMENT-SEAT.** JOHN G. WAGGERIN, Springfield, Minn. Filed Mar. 26, 1902. Serial No. 99,961. (No model.)

Claim.—In an implement-seat, the combination of the angular supporting-post 10 secured at its lower end to an implement, of the hinge member 16 attached to the upper end of the post 10 by a bolt, of the member 15 hinged to the member 16 carrying on its rear end the cross-bar 20, of the seat 12 secured to the member 15 and the bar 20, of the cross-bar 18 secured to the rear end of the member 16 at right angles thereto and carrying the coil-springs 14' and 14'' on its outer ends, all substantially as shown and described and for the purposes specified.

709,620. WOVEN FEATHER FABRIC. EDWARD K. WARREN and JONAS H. HOLDEN, Threesaks, Mich. Filed Nov. 21, 1900. Serial No. 737,328. (No specimens.)

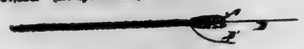

Claim.—1. A fabric made up of strands formed of feathers wrapped upon a longitudinal fibrous strand by a wrapping-thread, as specified.

2. A fabric containing in its warp or weft, strands made up of down or feathers wrapped upon a longitudinal strand by wrapping-thread as specified.

3. A strand for use in making fabrics formed out of down or feathers secured upon a longitudinal fibrous strand by a wrapping-thread, as specified.

4. A fabric made up of strands formed of downy material wrapped upon a longitudinal fibrous strand by a wrapping-thread, as specified.

5. A fabric containing in its warp or weft, strands made up of downy material wrapped upon a longitudinal strand by wrapping-thread as specified.

6. A strand for use in making fabrics formed out of downy material secured upon a longitudinal fibrous strand by a wrapping-thread, as specified.

7. A strand for use in making fabrics formed from down or plumage of feathers retained by a wrapping-thread having its coils close together so as to embrace the same to compact the said down or plumage into a firm strand, as specified.

709,621. WOVEN FEATHER FABRIC. EDWARD K. WARREN and JONAS H. HOLDEN, Threesaks, Mich. Filed Nov. 21, 1900. Serial No. 737,329. (No specimens.)

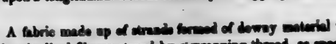

Claim.—1. A fabric made up of strands formed of down or plumage of feathers closely compacted together.

2. A fabric containing in its warp or weft, strands made up of down and plumage of feathers felted together.

3. A strand for use in making fabrics formed out of feathers suitably collected and closely compacted together.

4. A strand for use in making fabrics formed out of feathers felted together.

709,622. WOVEN FEATHER FABRIC. EDWARD K. WARREN and JONAS H. HOLDEN, Threesaks, Mich. Filed Nov. 21, 1900. Serial No. 737,330. (No specimens.)

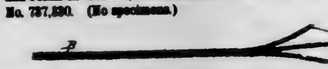

Claim.—1. A fabric made up of strands of feathers and other retaining fibers twisted together into close compact strands as specified.

2. A fabric containing in its warp or weft, strands made up of feathers and other fibers incorporated and twisted together into close compact strands, as specified.

3. A strand for use in making fabrics formed out of feathers twisted together into close compact strands, as specified.

709,623. ROTARY ENGINE. SAMUEL J. WIRE, Minden, La. Filed Feb. 2, 1900. Serial No. 3,730. (No model.)

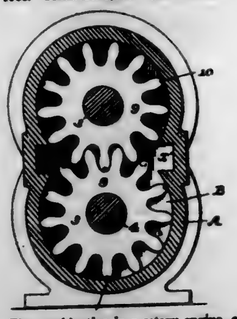

Claim.—1. The combination in a rotary engine, of parallel shafts, each carrying a plurality of piston-wheels with radial blades, a casing partitions containing valve-chambers and valves extending across the casing between the wheels, and ports arranged to conduct the exhaust-steam from one pair of wheels to position to act upon the next pair, substantially as set forth.

2. The combination of the casing, partitions, piston-wheels provided with blades, chambers *x x'*, and ports and channels in the partitions affording communication between the chamber *x* at one side of each partition and the chamber *x'* at the other side, substantially as set forth.

3. The combination of the casing, parallel shafts, piston-wheels and intermediate partitions with chambers, and ports in the said partitions and valves controlling said ports, whereby the direction of steam passing through the partitions may be reversed, substantially as set forth.

4. The combination of the casing, parallel shafts carrying pairs of piston-wheels, rotating with but sliding on the shaft, and movable partitions provided with channels, ports and valves, substantially as set forth.

5. The combination of the casing, shafts, piston-wheels, partitions provided with chambers, ports and valves, and a rock-shaft outside the casing, and connections between the latter and the said valves, substantially as set forth.

6. The combination of the casing, shafts, piston-wheels, sliding partitions provided with channels, ports and valves, a rock-shaft outside of the casing, valve-stems connected therewith, and flexible connections between the valve-stems and the valves of the movable partitions, substantially as described.

709,624. UMBRELLA. EARL M. ZENN, Marion, Ind. Filed Jan. 11, 1902. Serial No. 89,339. (No model.)

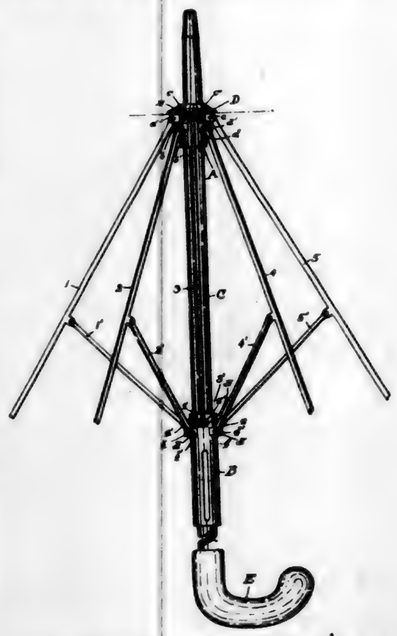

Claim.—In an umbrella, the combination with the pole, of a band rigidly affixed thereto at one end thereof, a series of ears arranged on the periphery of the band, with a second series of ears arranged below said first-named series and out of vertical alinement therewith, the lower series extending outwardly beyond the upper series, a washer seated on the upper end of said band and having its upper face beveled and its edge extending beyond the said ears, a band slidably mounted on the pole and carrying an upper and a lower series of ears out of vertical alinement, ribs secured in the upper series of ears of the stationary band and carrying braces secured in the upper series of ears of the sliding band, with ribs secured in the lower series of ears of the stationary band and carrying braces secured in the lower series of ears of the sliding band, substantially as described.

709,625. MUSIC-LEAF TURNER. JAMES AKERS, Washington, D. C. Filed Feb. 15, 1902. Serial No. 94,312. (No model.)

Claim.—1. In a music-leaf turner, the combination with a spring-pressed arm for turning the sheet and a detent for holding said arm in its set position with the spring under tension, of a releasing device for said detent embodying a wing or vane freely suspended in position and adapted to be operated by a puff of the performer's breath; substantially as described.

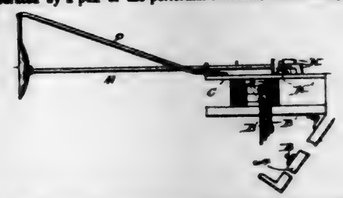

2. In a music-leaf turner, the combination with a spring-pressed arm for turning the sheet and a detent for holding said arm in its set position with the spring under tension, of a pusher for releasing said detent and a wing or vane connected with said pusher with means for supporting said wing or vane in front of the arm and in position to be operated by a puff of the performer's breath; substantially as described.

3. In a music-leaf turner, the combination with a spring-pressed arm and a detent for holding said arm in its set position with the spring under tension, of a releasing-pusher for said detent, a wing or vane connected therewith and adapted to be operated by a puff of the performer's breath and a support for said wing or vane extending over the path of travel of the spring-pressed arm in turning a leaf; substantially as described.

4. In a music-leaf turner, the combination with a spring-pressed arm and a detent for holding said arm in its set position with the spring under tension, of a pusher for releasing said detent and a freely-suspended wing or vane having a concave face, connected with said pusher and supported in position and adapted to be operated by a puff of the performer's breath; substantially as described.

5. In a music-leaf turner, the combination with a support, a spring-pressed arm mounted thereon and a detent for holding said arm in its set position with its spring under tension, of a longitudinally-movable rod carried by said support and extending out over the path of travel of the arm, a detent-releasing device connected with the inner end of the rod and a wing or vane connected with the outer end of the rod and adapted to be moved by a puff of the performer's breath to release the detent and allow the arm to swing; substantially as described.

6. In a music-leaf turner, the combination with a plurality of independent spring-pressed arms, detents for holding said arms in set position with the springs under tension, and a pusher for releasing said detents, of pusher-stops moved by the arms and adapted to arrest said pusher when an arm is released and to be moved out of the path of said pusher by the movement of the released arm; substantially as described.

7. In a music-leaf turner the combination with a series of spring-pressed arms having detent-shoulders, a series of detents coöperating with said shoulders to hold the arms in set position with the springs under tension and a pusher coöperating with said detents successively of independent detent-stops moving with the arms each coöperating with the pusher to arrest its movement when an arm is released and itself moved out of the path of the pusher by the released arm; substantially as described.

8. In a music-leaf turner, the combination with a pivoted spring-pressed arm, a detent therefor and a releasing mechanism for said detent, of leaf-clamping fingers pivotally mounted on the end of said arm whereby a leaf may be turned by said arm when the axis of the leaf and arm are out of alinement; substantially as described.

709,626. SEAL. EDWARD J. BROWN, East Orange, N. J. Filed May 26, 1902. Serial No. 108,269. (No model.)

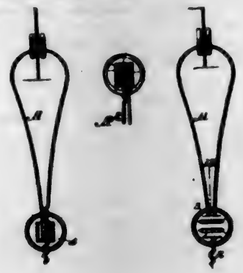

Claim.—1. An improved seal composed of a flexible shackle of wire having one end provided with fakes transverse to its length in the plane of the body of the shackle, and a two-part seal-disk of sheet metal having a socket-forming raised portion originally adapted to receive such faked end of the shackle and wire and depressed at its sides upon such faked end to retain it, the narrower socket so formed being adapted to receive the outer end of the shackle and to be depressed upon such outer end to fasten the seal.

2. An improved seal composed of a flexible shackle of wire having one end provided with fakes transverse to its length in the plane of the body of the shackle, and an outer end of zigzag shape, and a two-part seal-disk of sheet metal having a socket-forming raised portion originally adapted to receive such faked end of the shackle endwise and depressed at its sides upon such faked end to retain it, the narrower socket so formed being adapted to receive the outer end of the shackle and to be depressed upon such outer end to fasten the seal.

3. An improved seal composed of a flexible shackle of wire having one end provided with fakes transverse to its length in the plane of the body of the shackle, and an outer end of zigzag shape, and a sheet-metal seal-disk composed of two parts constructed respectively with a marginal joint-forming flange and with a raised portion forming an open-ended socket; such socket having the faked end of the shackle fastened therein and constructed to receive the zigzag shackle end and to locate said zigzag end across the fakes of said faked end, preliminary to fastening the seal by a seal-press, substantially as hereinbefore specified.

709,627. SAWMILL LOG-REFLECTOR. WILLIAM T. S. DODDRIDGE, Centralia, W. Va., assignor of one-half to Artemus F. Holden, Centralia, W. Va. Filed Mar. 20, 1902. Serial No. 100,598. (No model.)

Claim.—1. In a sawmill log-reflector, the combination of a track, a carriage movable upon the track, a reflector located adjacent to the said track and in the rear of the carriage, adjustable devices adapted for securing the said reflector in inclined positions, mechanism constructed and arranged to support the said reflector rotatively about a vertical axis, and releasable means for securing the reflector-supporting mechanism in different rotational positions.

2. In a sawmill log-reflector, the combination of a track, a carriage movable upon the track, a reflector, reflector-supports adjustable vertically and rotatively about a vertical axis, releasable means for securing the said reflector-supports in different rotational positions, adjustable devices adapted for securing the reflector in inclined positions, a reflector-cleaner, mechanism adapted to actuate the said reflector-cleaner, and attachments borne by the carriage and constructed and arranged to operate the said cleaner mechanism.

3. In a sawmill log-reflector, the combination of the carriage-track, a movable carriage, an adjustable reflector, devices for adjusting the re-

flector with respect to the end of a leg borne by the carriage, a reflector-cleaner, mechanism constructed and arranged to actuate the said reflector-cleaner, the said mechanism including a slide-rod, a spring-supported foot-rod borne by the carriage and adapted when depressed to be brought into contact with the slide-rod by movement of the carriage, and means for returning the slide-rod after its displacement by the foot-rod, substantially as described.

709,628. CLOTHES-WRINGER. ELBER B. GAY, Woonsocket, R. I. Filed Jan. 2, 1902. Serial No. 88,118. (No model.)

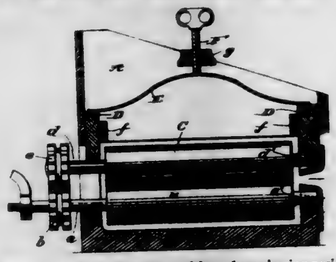

Claim.—A clothes-wringer comprising a frame having upright ends, one of which is made up of a lower portion and an upper portion separated by a way or opening which extends throughout its width, guides on the upper portions of the frame ends, a lower roll having trunnions journaled in the lower portions of the frame ends, spring-pressed, slidable bearings arranged in the guides on the upper portions of the frame ends, an upper roll having trunnions journaled in said bearings, a guard connected to the lower portion of the sectional frame end and resting over one trunnion of the lower roll and having an upper convex face, a guard connected to and movable with one slide-bearing and resting below one trunnion of the upper roll, and having a convex lower face, and gearing connecting the rolls whereby power applied to one will turn both.

709,629. AUTOMATIC SWITCH-LOCK. JOHN R. GILLIES, Jersey City, N. J., assignor to the Union Switch and Signal Company, Swissvale, Pa., a Corporation of Pennsylvania. Filed July 23, 1901. Renewed Aug. 19, 1902. Serial No. 119,914. (No model.)

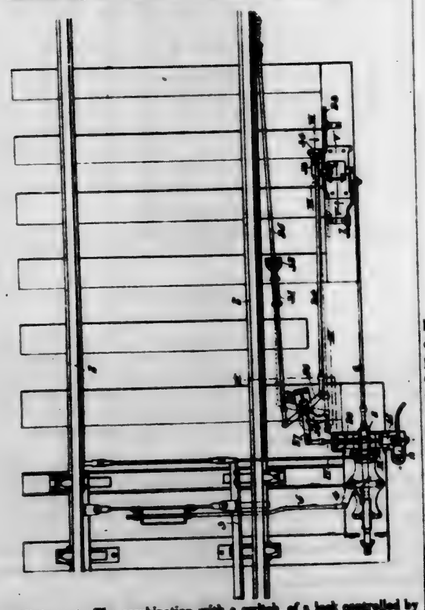

Claim.—1. The combination with a switch, of a lock controlled by the entrance of a train upon a portion of the track, means for locking the same when the train so enters that portion of the track, unlocking mechanism adapted to be operated by a car in proximity to the switch to unlock therewith, and means adapted to be controlled by a switchman and arranged to put the unlocking mechanism into operative position; substantially as described.

2. The combination with a switch, of a lock controlled by the entrance of a train upon a portion of the track, means for locking the same when the train so enters that portion of the track, unlocking mechanism adapted to be operated by a car in proximity to the switch to restore the lock to its locked position, means adapted to be controlled by a switchman and arranged to put the unlocking mechanism into operative position, and a signal-circuit operated by motion of the last-named means; substantially as described.

3. The combination with a switch, of a lock controlled by the entrance of a train upon a portion of the track, means for locking the same when the train so enters that portion of the track, unlocking mechanism adapted to be operated by a car in proximity to the switch to unlock therewith, means adapted to be controlled by a switchman and arranged to put the unlocking mechanism into operative position; and a locking device by which said unlocking mechanism when operated by the car is held in unlocking position; substantially as described.

4. The combination of a treadle-bar normally below the level of the rail, mechanism for raising the treadle-bar to a level slightly above the rail, and a switch-lock operated by the treadle-bar; substantially as described.

5. The combination of a treadle-bar normally below the level of the rail, mechanism for raising the treadle-bar to a level slightly above the rail, a spring which resists motion of the treadle-bar and is adapted to resist weights substantially as described.

6. The combination of a treadle-bar normally below the level of the rail, mechanism for raising the treadle-bar to a level slightly above the rail, a lock operated on a depression of the treadle-bar to lock the same in depressed position, and mechanism for releasing said lock; substantially as described.

709,630. PIANOFORTE-ACTION. GEORGE M. GUILD, Cambridge, Mass., assignor to Louise Adams Guild, Cambridge, Mass. Filed Dec. 17, 1901. Serial No. 86,296. (No model.)

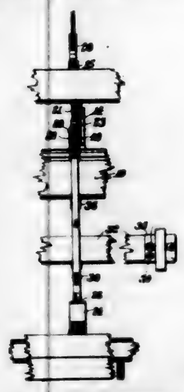

Claim.—1. In a piano-action, the combination with a combined lifter-rod and jack extending from the hammer-butt to the key and a downwardly-inclined link pivoted at one end to a support and at its opposite end to the lifter-rod and jack near its lower end, whereby said lower end is thrown outward as it is raised, of a rest or bearing contacting with the rear side of said lifter-rod and jack between its ends and forming a center or fulcrum on which it will turn, whereby a continuous inward movement of its upper end toward the hammer-butt pivot is produced as its lower end is forced outward.

2. In a piano-action, the combination with a combined lifter-rod and jack extending from the hammer-butt to the key, and means whereby the lower end of the lifter-rod and jack is thrown outward as it is raised, of a rest or bearing contacting with the rear side of said lifter-rod and jack between its ends and forming a center or fulcrum on which it will turn, whereby a continuous inward movement of its upper end toward the hammer-butt pivot is produced as its lower end is forced outward, and a throw-off device for producing a sudden withdrawal of the jack from the shoulder of the hammer-butt when the hammer has nearly reached the string.

3. In a piano-action, the combination with a combined lifter-rod and jack extending from the hammer-butt to the key, and means whereby the lower end of the lifter-rod and jack is thrown outward as it is raised, of a rest or bearing contacting with the rear side of said lifter-rod and jack between its ends and forming a center or fulcrum on which it will turn, whereby a continuous inward movement of its upper end toward the hammer-butt pivot is produced as its lower end is forced outward, a throw-off device for producing a sudden withdrawal of the jack from the shoulder of the hammer-butt when the hammer has nearly reached the string, and a back-catch for holding the hammer close to the string.

4. In a piano-action, the combination with a hammer-butt, the latter having the jack-butt formed thereon, of a lifter-rod and jack extending from the key to the jack-butt, a key for actuating said lifter-rod and jack, a hammer-retracting spring connected with the lifter rod and jack, a downwardly-inclined link pivoted at one end to a support and at its opposite end to the lower portion of the lifter-rod and jack, whereby the lower end of the latter is thrown outward as it is raised, a throw-off lever bearing at its front end against the rear side of the lifter-rod and jack and connected therewith by a pin projecting from said lifter-rod and jack into a hole at the front end of the lever, said lever forming a center or fulcrum for the lifter-rod and jack on which it will turn when its lower end is thrown outward, to produce a continuous inward movement of its upper end toward the hammer-butt pivot.

5. In a piano-action, the combination with a lifter-rod and jack provided with a rearwardly-extending pin and a throw-off button, of a throw-off lever provided with an arm adapted to be brought into contact with said said throw-off button, and the front end of said lever forming a rest or fulcrum for said lifter-rod and jack on which it will turn as it rises to operate the hammer, the inner end of said pin during the first part of the upward movement of the lifter-rod and jack taking a bearing against the front end of the throw-off lever to raise the same slowly, and the outer end of said pin when near the termination of its upward movement taking a bearing against said throw-off lever at a point much nearer to its fulcrum, whereby the movement of said lever is accelerated to produce a quick throw-off during the latter part of the stroke of the key.

6. In a piano-action, the combination with a lifter-rod and jack extending from the hammer-butt to the key and provided with a rearwardly-extending pin, and a throw-off button beneath the same, and means whereby the lower end of the lifter-rod and jack is thrown outward as it is raised, of a throw-off lever having a downwardly-extending arm adapted to be brought into contact with the throw-off button, said lever bearing at its front end against the rear side of the lifter-rod and jack and forming a center or fulcrum on which the latter will turn as it is raised, and having an aperture at its front end for the free reception of said pin, the inner end of the latter during the first part of the upward movement of the lifter-rod and jack taking a bearing on the lever at the front end of its aperture, and the outer end of said pin when near the end of its upward movement taking a bearing against the upper wall of said aperture at a point much nearer to the fulcrum of the lever to thereby accelerate the movement of the latter and produce a quick throw-off when the key is near the end of its stroke.

7. In a piano-action, the combination with a combined lifter-rod and jack extending from the hammer-butt to the key, of a rest or bearing contacting with the rear side of said lifter-rod and jack between its ends and forming a center or fulcrum thereby on which it will turn, and a downwardly-inclined link pivoted at one end to said lifter-rod and jack and at its opposite end to a support, whereby the lower end of said lifter-rod is thrown outward as it is raised, said support being made adjustable toward and from its bracket to vary the normal distance of the jack from the hammer-pivot in accordance with the dip or stroke of the key.

8. In a piano-action, the combination with a combined lifter-rod and jack extending from the hammer-butt to the key, and a downwardly-inclined link pivoted at one end to a support and at its opposite end to the lifter-rod and jack near its lower end, whereby said lower end is thrown outward as it is raised, of a rest or bearing contacting with the rear side of said lifter-rod and jack between its ends and forming a center or fulcrum on which it will turn, whereby a continuous inward movement of its upper end toward the hammer-pivot is produced as its lower end is forced outward, and a spring for holding said lifter-rod and jack against said rest or fulcrum.

9. In a piano-action, the combination with the hammer-butt, the latter having the jack-butt formed thereon, of a lifter-rod and jack extending from the key to the hammer-butt and provided with a rearwardly-extending pin and a throw-off button beneath the same, a key for actuating said lifter-rod and jack, a hammer-retracting spring connected with the lifter-rod and jack, means whereby the lower end of the lifter-rod and jack is thrown outward as it is raised, a throw-off lever having a downwardly-extending arm adapted to be brought into contact with the throw-off button, said lever bearing at its front end against the rear side of the lifter-rod and jack and forming a fulcrum on which the latter will turn as it is raised, and having an aperture at its front end for the free reception of the pin projecting from the lifter-rod and jack, whereby the throw-off lever is actuated by the lifter-rod and jack, a damper, damper-lever and damper-spring, an arm projecting upwardly from the rear end of the throw-off lever and acting on the damper-lever as the front end of the throw-off lever is raised by the lifter-rod and jack.

709,631. PROCESS OF HARDENING PROJECTILES. ROBERT A. HADFIELD, Sheffield, England. Filed May 17, 1898. Serial No. 680,956. (No specimens.)

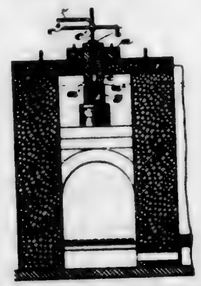

Claim.—1. The method of hardening projectiles, which consists in gradually heating the point and shoulder of the projectile to a temperature suitable for hardening; wholly removing it from the action of the heating medium; subsequently cooling the projectile initially from its interior, and finally completely immersing the projectile in a cooling liquid.

2. The method of hardening projectiles, which consists in gradually heating the point and shoulder of the projectile to a bright-red or low-yellow heat, and wholly removing it from the action of the heating medium; thereafter cooling the projectile initially from its interior, and after such internal cooling has begun completely immersing the projectile in a cooling fluid.

3. The method of hardening projectiles, which consists in rotating the projectile and gradually heating the point thereof to a dull red, continuing the heating until the point and shoulder are brought to a temperature suitable for hardening; removing the projectile from the heating medium, and thereafter circulating a cooling medium through the chamber of the projectile, and completely immersing the projectile in a cooling fluid after the internal cooling has been initiated.

4. The method of hardening projectiles, which consists in suspending the projectile, point down, in a furnace, rotating the projectile, and gradually heating the point and shoulder of the same to a hardening temperature while rotating the projectile, and protecting the point thereof from the direct action of the heat, and finally completely immersing the projectile in a cooling medium.

5. A method of hardening projectiles, which consists in raising the temperature of the point and shoulder to a bright-red or low-yellow heat by successive heatings while protecting the point of the projectile from the direct action of the heat; circulating a cooling medium under pressure through the chamber of the projectile after removal of the same from the heating medium; withdrawing the protection from the point of the projectile, and completely immersing the latter in a cooling medium after internal cooling and hardening has begun.

6. The method of hardening projectiles, which consists in raising the temperature of the point and shoulder to a bright-red or low-yellow heat by successive heatings, while protecting the point from the direct action of the heat; thereafter circulating a cooling medium under pressure and at a temperature of about 60° Fahrenheit through the chamber of the projectile, beginning before and continuing throughout the immersion, and completely immersing the projectile in a cooling liquid having a temperature of about 80° Fahrenheit until the projectile is quite cool.

7. The method of hardening chambered projectiles, which consists in rotating the projectile, suspended, point downward, in a furnace, and gradually heating the point and shoulder to a hardening temperature while protecting the point from the direct action of the heat; removing the projectile from the furnace to a hardening-tank; circulating a cooling medium under high pressure through the chamber of the projectile after its removal from the furnace, and completely immersing the projectile in a cooling medium in the tank.

709,632. GAME APPARATUS. HENRY A. HARRIS, Cassadaga, N. Y. Filed Dec. 5, 1901. Serial No. 84,734. (No model.)

Claim.—1. A game apparatus consisting of a box provided with a permanently-attached bottom plate, a plate attached to the rim of the

box below the top thereof and forming a compartment under said plate, a tortuous main path upon the said plate, ports through said plate disposed with by-paths between the ports and wall of the main path, an aperture in said plate separate from the ports, a lever pivotally supported in the aforesaid compartment and having one end directly under one of the ports, a figure carried on the opposite end of said lever in range with the aforesaid aperture, a ball propelled in the main path and adapted to drop through the ports, and an opening in the aforesaid compartment for expulsion of the dropped ball as set forth.

2. A game apparatus consisting of a plate, a main path disposed spirally upon said plate, ports distributed longitudinally of said path and disposed with by-paths between the ports and wall of the main path, an aperture in the plate beyond said ports, a figure normally concealed under the plate and movable to exposure through said aperture, and a weight propelled in the main path by manipulation of the plate and adapted to enter the ports and throw the concealed figure into the aforesaid exposure as set forth.

3. A game apparatus consisting of a plate, a main path upon said plate, ports through the plate within the said main path and disposed with by-paths between the ports and walls of the main path, an aperture in the plate, a vertically-oscillatory lever pivotally supported beneath the plate and disposed with one of its ends directly under one of the ports, a figure projecting upward from the opposite end of said lever in range with the aforesaid aperture, and a ball propelled in the paths by manipulation of the plate and adapted to enter the ports as set forth.

4. A game apparatus consisting of a plate, a main path upon said plate, ports through the plate within said path and disposed with by-paths between them and the walls of the main path, an inclosure upon the plate separated from the aforesaid paths, apertures in the plate within said inclosure, levers pivotally supported beneath the plate and each disposed with one end directly under one of the ports, figures on the opposite ends of the levers and in range with the apertures in the inclosure, and a ball propelled in the main path by manipulation of the plate and adapted to pass through the ports and to depress the underlying end of one of the aforesaid levers as set forth.

5. A game apparatus consisting of a plate, a main path upon said plate, ports through the plate within said path and disposed with by-paths at their sides, an inclosure upon the plate separated from said paths, apertures in the plate within the inclosure, a stationary post beneath said plate, levers pivoted to the sides of said post, a spring pressing the levers into frictional contact with the post, each of said levers disposed with one of its ends directly under one of the ports, figures carried on the opposite ends of the levers in range with the apertures in the inclosure, and a ball propelled in the main path and adapted to pass through the ports and depress the underlying end of one of the levers as set forth.

6. A game apparatus consisting of a plate, a main path upon said plate, ports through the plate within said path and disposed with by-paths at their sides, the end of the main path contracted in width and a discharge-port in said end, an inclosure upon the plate separated from said paths, apertures in the plate within the inclosure, a stationary post beneath said plate, levers pivoted to the sides of said post, a spring pressing the levers into frictional contact with the post, each of said levers disposed with one of its ends directly under one of the ports, figures carried on the opposite ends of the levers in range with the apertures in the inclosure, and a ball propelled in the main path and adapted to pass through the ports and depress the underlying end of one of the levers as set forth.

709,684. GAME-BOARD. HENRY I. HASKELL, Ludington, Mich. Filed July 14, 1900. Serial No. 23,669. (No model.)

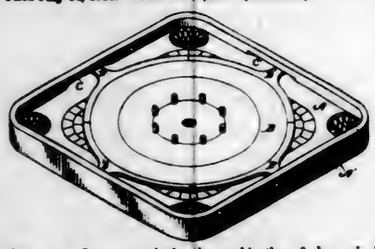

Claim.—1. In a game device the combination of the main board A, substantially rectangular in form having a raised rim A' surrounding the same, the said rim containing recesses C at each side just above the surface of the board A; an auxiliary board B having projections or arms B', B', B', B', to project and swing within the recesses C; and pads of felt or suitable material on the under side of the board B and on the ends of the projections B' to prevent the boards rubbing upon each other and to permit the arms B' to be swung into and out of the recesses with ease, whereby the auxiliary board is readily attached and detached, for the purpose specified.

2. In a game device the combination of the main board A, substantially rectangular in form having a raised rim A' surrounding the same, the said rim containing recesses C at each side just above the surface of the board A; an auxiliary board B having projections B', B', B', B', to project and swing within the recesses C; and pads of felt or suitable material on the under side of the board B to prevent the boards rubbing upon each other and to permit the arms B' to be swung into and out of the recesses with ease, whereby the auxiliary board is readily attached and detached, for the purpose specified.

3. In a game device, the combination of a main game-board A', substantially rectangular in form, having a raised rim A'; recesses C in said rim just above the surface of the game-board A; an auxiliary game-board B having projections, or arms, B' adapted to swing into and be engaged by the said recesses, whereby said auxiliary game-board is retained in position and is readily attached and detached from the main board, for the purpose specified.

4. In a game device, the combination of a main game-board having a rim projecting above its surface; inwardly-opening recesses in said rim; an auxiliary game-board having projections adapted to extend into and be engaged by said recesses, whereby said auxiliary game-board is detachably held in position; cushions on the under side surface of said auxiliary board, as specified.

5. In a game device, the combination of a main game-board having a rim projecting above its surface; inwardly-opening recesses in said rim; an auxiliary game-board, adapted to rest on the surface of said main game-board having projections adapted to extend into said recesses, whereby said auxiliary game-board is detachably held in position, as specified.

6. In a game device, the combination of a main game-board; an auxiliary game-board having projecting portions to engage suitable retaining devices on the main game-board; and suitable pads, or cushions, between the main game-board and the auxiliary game-board, as specified.

7. In a game device, the combination of a main game-board; an auxiliary game-board adapted to rest on the surface of said main game-board having projecting portions adapted to engage suitable retaining devices on the main game-board, as specified.

709,685. GAME-BOARD. HENRY I. HASKELL, Ludington, Mich. Filed Feb. 8, 1902. Serial No. 93,314. (No model.)

Claim.—1. As an article of manufacture, a game-board formed of a sheet of metal having a raised portion A, with a central depression A'' and circular grooves *a*, *a*, *a'*, and cross-grooves *b*, formed therein; a trough-like portion A' surrounding said raised portion; and a rim portion B, adapted to receive and retain a suitable deadening-cushion in position to receive the impact of the playing-disks.

2. As an article of manufacture, a game-board formed of a sheet of metal having a raised portion A, with a central depression A''; a trough-like portion A' surrounding said raised portion; and a rim portion B, adapted to receive and retain a suitable deadening-cushion in position to receive the impact of the playing-disks.

709,688. DICE-CUP. HENRY I. HASKELL, Ludington, Mich. Filed Apr. 5, 1900. Serial No. 11,997. (No model.)

Claim.—In a dice cup or box, the construction of the side walls A, suitably hinged together, two of the adjacent corners being notched as at B; a bottom C of a size and shape to closely fit the interior of said box, hinged to the inner wall opposite the said notched corners, and adapted to fold downwardly against the said notches, and retain the walls in position when the box is distended and to fold against the side to permit the box to collapse, all constructed substantially as described and for the purpose specified.

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3. As an article of manufacture, a game-board formed of a sheet of metal having a raised portion A, with a central depression A'' and circular grooves *a*, *a*, *a'*, and cross-grooves *b*, formed therein; a trough-like portion A' surrounding said raised portion; and a rim portion B, adapted to receive and retain a suitable deadening-cushion.

4. As an article of manufacture, a game-board formed of a sheet of metal having a raised portion A, and circular grooves *a*, *a*, *a'*, and cross-grooves *b*, formed therein; a trough-like portion A' surrounding said raised portion; and a rim portion B, adapted to receive and retain a suitable deadening-cushion.

5. As an article of manufacture, a game-board formed of a sheet of metal having a raised portion A, and circular grooves *a*, *a*, *a'*, and cross-grooves *b*, formed therein; a trough like portion A' surrounding said raised portion; and a rim.

6. As an article of manufacture, a game-board formed of sheet metal having a rim portion adapted to receive and retain a deadening-cushion.

709,686. GRAIN-DRILL. WILL F. HOYT, Dowagiac, Mich. Filed Mar. 10, 1900. Serial No. 8,394. (No model.)

Claim.—In a grain-drill, the combination of the shoe B made up of side plates opened outwardly at the heel and curved outwardly at the bottom to open a wide furrow; a boot having a downwardly and rearwardly curved projecting portion A' with a centrally-located fin A'' secured within the shoe so as to divide the stream of grain descending through the boot in substantially equal streams and so distribute it in the bottom of the furrow in double rows, all constructed substantially as described, for the purpose specified.

709,687. GRAIN-DRILL. WILL F. HOYT and DAVID B. SALISBURY, Dowagiac, Mich. Filed Oct. 3, 1901. Serial No. 77,603. (No model.)

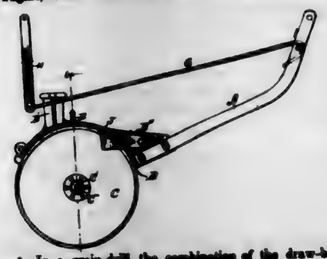

Claim.—1. In a grain-drill, the combination of the draw-bars A adapted to be pivoted to the main frame; the bracket B with a boot B' having a flange extension B'' of equal width extending from said boot to the draw-bars; suitable axles carried by said draw-bars projecting at each side forwardly and downwardly; flat disks carried on said axle and beneath the said flange B''; spring-pressure rods connected at their forward ends to the draw-bars and extending rearwardly on each side of the boot B'; and a fork or yoke H connected to the rear ends of the same whereby pressure can be applied to the rear ends of the pressure-rods, all cooperating for the purpose specified.

2. In a grain-drill, the combination of the draw-bars A adapted to be pivoted to the main frame; the bracket B with a boot B' having a flange extension B''; suitable axles carried by said draw-bars projecting at each side forwardly and downwardly; flat disks carried on said axle and beneath the said flange B''; spring-pressure rods connected at their forward ends to the draw-bars and extending rearwardly on each side of the boot B'; and a fork or yoke H connected to the rear ends of the same whereby pressure can be applied to the rear ends of the pressure-rods, all cooperating for the purpose specified.

3. In a grain-drill, the combination of a draw-bar; a suitable bracket with a boot; a disk furrow-opener carried by said bracket; a flange extension on said bracket extending over said furrow-opener; and spring-pressure rods at each side of the boot, adapted to be guided thereby, for the purpose specified.

4. In a grain-drill, the combination of the bracket B, with a transverse aperture therethrough; an axle D with a lug *a* to fit into said transverse aperture; a set-screw for retaining the same in position; an oil-tube E passing down through the bracket to deliver oil into the axle D; flat disks C, C, with hubs fitting onto the opposite ends of said axle and bolt F through the said axle to retain said hubs in position; caps over the ends of said hubs, all cooperating for the purpose specified.

5. In a grain-drill, the combination of the bracket B, with a transverse aperture therethrough; an axle D with a lug *a* to fit into said transverse aperture; a set-screw for retaining the same in position; flat disks C, C, with hubs fitting onto the opposite ends of said axle and bolt F through the said axle to retain said hubs in position; caps over the ends of said hubs, all cooperating for the purpose specified.

6. In a grain-drill, the combination of the bracket B; downwardly and forwardly projecting axles at each side thereof; disks with suitable hubs to revolve on said axle; a boot extending down to the rear of said axle; a scraper *f* below the said axle and between the said disks; and adjustable scrapers I supported on a rearward extension of said bracket to scrape the same toward their peripheries.

7. In a grain-drill, the combination of a bracket; laterally-projecting axles therefrom; disks upon the axles; a flange above said disks; and a scraper secured beneath the flange and extending rearwardly in contact with the exterior of said disks toward their peripheries, for the purpose specified.

8. In a grain-drill, the combination of the bracket B, with a transverse aperture therethrough; an axle D with a lug *a* to fit into said transverse aperture; suitable means for retaining same in position; flat disks, C, C, with hubs fitting onto the opposite ends of said axle and bolt F through the said axle to retain said hubs in position; caps over the ends of said hubs, all cooperating for the purpose specified.

709,688. GASOLENE-REGULATOR. CHARLES J. JOHNSON, St. Louis, Mo., assignor to CHARLES ROY LOCK & MANUFACTURING COMPANY, St. Louis, Mo., a Corporation. Filed Dec. 3, 1901. Serial No. 84,533. (No model.)

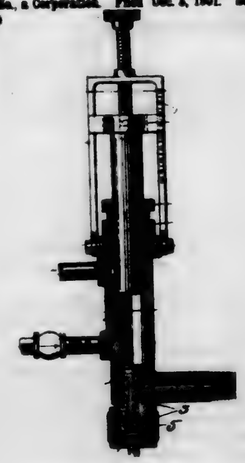

Claim.—The combination of a reservoir, inlet and overflow pipes in communication with said reservoir, an adjustable plunger controlling the capacity of said reservoir, a duct on the side of said reservoir and leading to said overflow-pipe, a valve located at the bottom of said reservoir to reciprocate within the same longitudinally thereof, an outlet-pipe situated beneath said valve, substantially as described.

709,689. APPARATUS FOR CARRYING GOODS THROUGH DRYING-CHAMBERS. JAMES KEITH and WILLIAM W. WARDLE, London, England. Filed Jan. 14, 1902. Serial No. 89,763. (No model.)

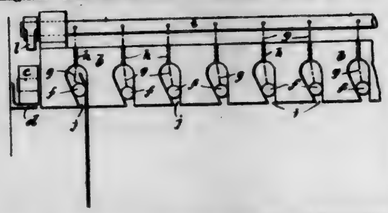

Claim.—1. Apparatus for conveying goods through drying-chambers, comprising in combination, a series of frames or carriages adapted to travel on rails, transverse slotted bars connected to said frames, roller-clips in the slots in said bars for carrying the goods, rock-shafts carried on the slotted bars and connected to said clips so as to raise or lower them, and means for automatically raising the clips to free the goods at the delivery end of the chamber, substantially as described.

2. Means for conveying goods through drying-chambers, consisting of a movable bar or bars each formed with tapered slots on its under side, roller-clips fitted in said slots, a rocking shaft and cords adapted to raise and lower said clips to engage with the goods to be carried through the drying-chamber and to free them at the delivery end, substantially as described.

3. In apparatus for conveying goods through drying-chambers, means for transferring the frames or carriages carrying the goods from one rail or set of rails to another, said means comprising in combination, short movable rails, arms pivoted within the drying-chamber and pivotally jointed to the movable rails for raising and lowering these, and connecting-rods and a hand-lever for operating the pivoted arms, substantially as described.

709,640. FILE. GERHARD H. KRAVIK, Detroit, Minn. Filed Mar. 21, 1900. Renewed Apr. 14, 1901. Serial No. 56,167. (No model.)

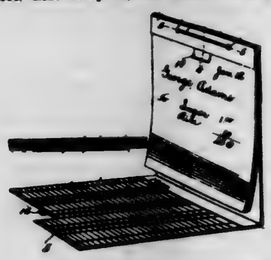

Claim.—1. In an accounting system, the combination with a filing-cabinet, of a series of file-wrappers arranged therein, each of said wrappers comprising a pair of leaves hinged together at their bottom edges and provided upon their inner or opposed faces with a ledger-ruled page and a retaining device for loose sales-slips, respectively, means for holding the leaves of each wrapper in closed position, and name-strips extending from the several file-wrappers and disposed alternately at the opposite sides of the cabinet.

2. In an accounting system, the combination with a cabinet, and a series of file-wrappers therein provided with name-strips extended above the wrappers and arranged alternately at opposite sides of the cabinet to leave a vista at the middle of the cabinet between the inner ends of the name-strips, of index-cards arranged within the cabinet and separating the wrappers into alphabetically or otherwise designated groups, reference-tabs formed on the index-cards and displayed within the vista, said filing-wrappers each comprising a pair of hinged leaves, one having a clamp for loose sales-slips or like data, and the other having on its inner face a ledger-ruled page, and means for holding the leaves of each wrapper in closed position to facilitate its removal from and its replacement within the cabinet.

3. An individual file for filing systems comprising a pair of leaves hinged together at one edge, one of said leaves being provided with a holder for loose file-data, and the other leaf being provided with a locking element, and a name strip or tab projecting beyond said element, and a fastener carried by one of the leaves and arranged to engage with the locking element of the opposing leaf.

4. An individual file for filing systems comprising a folded body consisting of front and back leaves hinged together, the front leaf being provided at one end with an inturned hinged clip-flap, and the other leaf being provided at one edge with a projecting catch-tongue, and an elastic fastener engaging with the clip-flap, and also with said catch-tongue, substantially as set forth.

709,641. RAILWAY-TRACK-LAYING MACHINE. HUGH MAIR, Winnipeg, Canada. Filed Aug. 6, 1901. Renewed July 16, 1902. Serial No. 116,537. (No model.)

Claim.—1. The combination with the rail-cars and pilot-car and crane, of the uprights and cross-bars and parallel longitudinal girders and inclined girders supported thereby and the rails supported on the girders and the carriages having lower extensions and the blocks and ropes and tongs supported thereby and the rope connecting the carriages as and for the purpose specified.

2. The combination with the rail-cars and pilot-car and crane, of the uprights and cross-bars and parallel longitudinal girders and inclined girders supported thereby and the rails supported on the girders and the carriages having lower extensions and the blocks and ropes and tongs supported thereby and the rope connecting the carriages and a supplemental rope designed to be connected to the rearmost carriage on each rail alternately and a pulley at the upper end of the incline through which each rope extends as and for the purpose specified.

709,642. GRINDING OR CRUSHING HEAD OR ROLL. VOLNEY W. MASON, Jr., New York, N. Y. Filed Dec. 27, 1901. Serial No. 87,453. (No model.)

Claim.—1. A grinding or crushing head or roll composed of a core, and a number of hard, tough yet ductile unmachinable external segments, capable of distortion, secured thereto and disposed relatively to each other to provide very narrow spaces between them, substantially as described.

2. A grinding or crushing head or roll composed of a core, or provided with dovetailed grooves and a number of hard, tough yet ductile unmachinable external segments, capable of distortion, formed or provided with dovetailed ribs which enter said grooves, said segments being disposed relatively to each other to provide very narrow spaces between them, substantially as described.

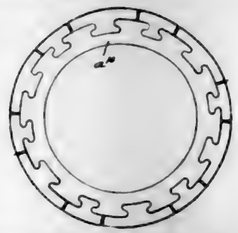

3. A grinding or crushing head or roll composed of a core formed or provided with dovetailed grooves a number of hard, tough yet ductile unmachinable external segments, capable of distortion, formed or provided with dovetailed ribs which enter said grooves, and means for locking said segments to the core, said segments being disposed relatively to each other to provide very narrow spaces between them, substantially as described.

4. A grinding or crushing head composed of a core, a number of distortionable segments secured thereto and disposed relatively to each other with narrow spaces between them, wide enough to provide for distortion of the segments, yet narrow enough to prevent breaking down their adjacent sides, substantially as described.

709,643. HAT-BRIM STRETCHER. EDWARD J. MELLEN, Newark, N. J., assignor to Henry Berg, Orange Valley, N. J. Filed Mar. 13, 1901. Serial No. 51,980. (No model.)

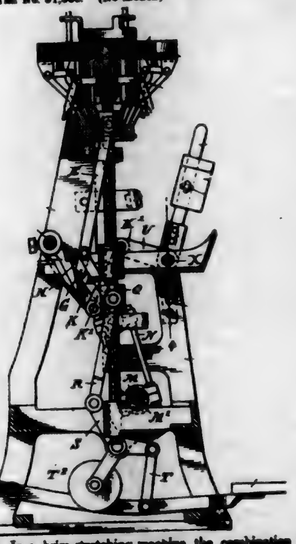

Claim.—1. A brim-stretching machine, the combination of the vibrating stretching and brim-forming mechanism provided with a bearing-surface, a compensating weight, a supporting-lever pivoted in the frame of the machine, an arm upon which the aforesaid bearing travels and connections between said arm and the weighted lever, all adapted to operate substantially as and for the purposes set forth.

2. In a brim-stretching machine, the combination of the vibrating, stretching and brim-forming mechanism provided with a bearing-surface, a compensating weight, a supporting-lever pivoted in the frame of the machine, an arm upon which the aforesaid bearing travels, connections between said arm and the weighted lever, and means for throwing said weighted lever into an inoperative position, as and for the purposes set forth.

709,644. MECHANICAL MOTOR. ROBERT K. MCLAUGHLIN, Rochester, N. Y. Filed Feb. 5, 1902. Serial No. 4,016. (No model.)

Claim.—1. A mechanical motor comprising the combination of: a driving-shaft 2; a fly-wheel surrounding the driving-shaft; bearing-rings fixed in the hub of the fly-wheel; balls in the ball-channels; a sleeve on the driving-shaft within said bearings and fly-wheel, the sleeve being capable of rotating with the driving-shaft; and mechanism to transmit motion from the driving-shaft to the fly-wheel; substantially as described.

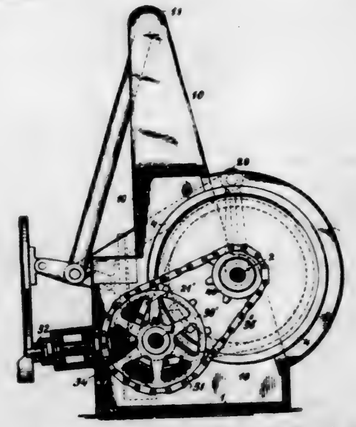

2. A mechanical motor comprising the combination of: a driving-shaft 2; a fly-wheel surrounding the driving-shaft; bearing-rings fixed in the hub of the fly-wheel; a sleeve on the driving-shaft within the hub of the fly-wheel, the sleeve being capable of rotating with the driving-shaft; bearing-rings on said sleeve; balls between the bearing-rings fixed in the hub of the wheel and those on the sleeve; and mechanism to transmit motion from the driving-shaft to the fly-wheel; substantially as described.

3. A mechanical motor comprising the combination of: a driving-shaft 2; a fly-wheel surrounding the driving-shaft; bearing-rings fixed in the hub of the fly-wheel; a sleeve on the driving-shaft within the hub of the fly-wheel, the sleeve being capable of rotating with the driving-shaft; means to attach the sleeve to the shaft; bearing-rings on said sleeve; balls between the bearing-rings fixed in the hub of the wheel and those on the shaft; and mechanism to transmit motion from the driving-shaft to the fly-wheel; substantially as described.

4. A mechanical motor comprising the combination of: a driving-shaft 2; a fly-wheel; ball-bearings confined in the hub of the fly-wheel; a sleeve fitting on the shaft and extending through the hub of the fly-wheel and supporting the bearings; a gear-wheel on the shaft in contact with one end of the sleeve; a projection on the shaft, engaging with the sleeve at the other end thereof; and mechanism for transmitting motion from said gear-wheel to the fly-wheel; substantially as described.

5. A mechanical motor comprising the combination of: a driving-shaft 2; a fly-wheel 4 on said shaft; bearing-rings 41 and 41' fixed in the hub 4' of the fly-wheel; a sleeve 42 within the hub of the fly-wheel; bearing-rings 43 and 43' on said sleeve; balls between the bearing-rings fixed in the hub of the wheel and those on the shaft; a pin 46' in the shaft, fitting in the groove 46 in one end of the sleeve and in the bearing-ring 43'; a stop on the shaft at the other end of the sleeve; a set-screw 44 extending through the bearing-ring 43' over the fluted part 42' of the sleeve; and mechanism for imparting motion to the fly-wheel; substantially as described.

709,645. APPARATUS FOR APPLYING THE PREPARATION TO STRIKING-SURFACES OF MATCH-BOXES, &c. STEPHEN R. PAPILLA, Plumstead, England. Filed Oct. 18, 1901. Serial No. 79,141. (No model.)

Claim.—1. In combination, in apparatus for painting or similarly treating match-boxes or other articles, a chute *a* down which the match-boxes or articles are fed; catch-fingers a^2, a^3 and a catch a^4 arranged in the path of the chute *a* and connected together and simultaneously operated to allow a match-box or article to pass the catch-fingers a^2, a^3, then to be held back by the catch a^4, and finally released from the catch a^4; traveling tapes B, B, provided with double partitions *b b*, *b' b'*, adapted to receive the match-boxes or articles from the chute *a* and to hold them securely for treatment; devices in connection with the traveling tapes B, B and the partitions *b b*, *b' b'* in conjunction with devices for actuating

the catch-fingers c^3, c^3, and the catch c^4, substantially as set forth and illustrated.

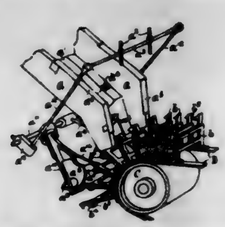

2. Feed mechanism for apparatus for painting or similarly treating match-boxes or other articles, comprising a chute a; catch-fingers c^3, c^3 and a catch c^4 disposed in the path of the chute a; and devices for effecting the automatic operation of the catch-fingers c^3, c^3 and the catch c^4, consisting of the cam c^7 operated from the apparatus to be fed and carried by a tipping-piece c^5, a shaft c^6 adjacent to the chute a and carrying the tipping-piece c^5, an arm or lever c^{10} upon which the tipping-piece c^5 normally lies, but to which the tipping-piece is not attached, a shaft c^{11} fitted adjacent to the chute a and carrying the arm or lever c^{10} and the catch c^4, links c^{12}, c^{12} carrying the rod c^9 and the fingers c^3, c^3 attached by arms c^{13}, c^{13} to the shaft c^{11}, and springs c^{14}, c^{15}, and c^{16} for insuring the return movements of the parts; all constructed, arranged and adapted for operation substantially as set forth and illustrated.

3. In apparatus for painting or similarly treating match-boxes or other articles, traveling tapes B, B suitably operated and guided, the partitions b b on the traveling tapes B, B and having on their upper portions projections b^2 b^2, and partitions b' b' fitted adjacent to the partitions b b and having bosses b^3 and projecting pins b^4, the pins b^4 successively engaging and rotating a cam c^7 carried by a tipping-piece c^5 operating a shaft c^{11} which is rigidly attached to the catch-fingers c^3, c^3; all arranged, constructed, and adapted for operation substantially as set forth and illustrated.

709,646. BRAN-SEPARATOR. WILLIAM P. PILLSBURY and DAVID ANDERSON, Westerville, N. Y. Filed Mar. 11, 1902. Serial No. 97,734. (No model.)

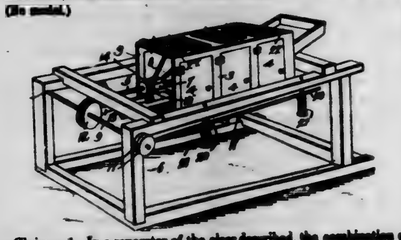

Claim.—1. In a separator of the class described, the combination of a screen-box of polygonal form having screens longitudinally movable independently thereof, a support on which said screen-box is revolubly, means to impart reciprocating motion to the screens of said screen-box, and a yieldably-supported hopper having transverse partitions to bear against the under side of the screen-box, substantially as described.

2. In a separator of the class described, the combination of a supporting and guide bar, a screen-box of polygonal form mounted for longitudinal and revolubly movement on said bar, means to impart reciprocating motion to said screen-box, and a yieldably-supported hopper having partitions to bear against the under side of the screen-box, for the purpose set forth, substantially as described.

3. In a separator of the class described, the combination of a guiding and supporting bar, a screen-box of polygonal form mounted for revolution on said bar, and having certain of its sides formed by screens which are slidably connected thereto, so that said screens may be moved longitudinally independently of the box, means to impart reciprocating motion to the said screens, and a yieldably-supported hopper bearing against the lower side of the revolubly box, substantially as described.

709,647. GARBURETER. ARVIN M. BOSSHARDT, Shelby, Ohio, assignor of one-half to Hiram H. Davis, Shelby, Ohio. Filed Dec. 2, 1901. Serial No. 84,694. (No model.)

Claim.—1. In combination with a carbureting-chamber; a normally closed hydrocarbon-feed leading to said chamber; a suitable air-supply also communicating with the chamber; a valve for opening and closing the hydrocarbon-feed; and a motor located in the air-supply pipe and connected to the valve, said motor serving to regulate the quantity of air passing to the carbureting-chamber and to open and close the gasolene-feed valve in proportion to the amount of air-gas withdrawn from the carbureting-chamber.

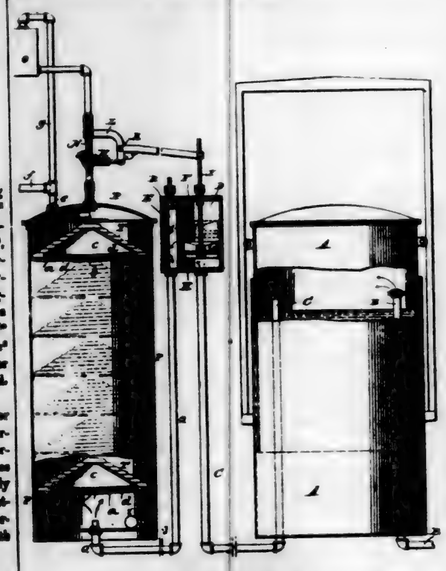

2. In combination with a carbureting-chamber; a normally closed hydrocarbon-feed leading to said chamber; a suitable air-supply also communicating with the chamber; a valve for opening and closing the hydrocarbon-feed; and a motor located in the air-supply pipe and connected to the valve, said motor serving to regulate the quantity of air passing to the carbureting-chamber and to open and close the gasolene-feed valve in proportion to the amount of air-gas withdrawn from the carbureting-chamber.

3. In combination with a carbureting-chamber; a normally closed hydrocarbon-feed leading to said chamber; a suitable air-supply also communicating with the chamber; a valve for opening and closing the hydrocarbon-feed; a motor located in the air-supply pipe and connected to the valve, said motor serving to regulate the quantity of air passing to the carbureting-chamber and to open and close the hydrocarbon-feed valve in proportion to the amount of air-gas withdrawn from the carbureting-chamber; and means for regulating the action of the motor.

4. In combination with a carbureting-chamber; a hydrocarbon-feed leading to said chamber; a source of air-supply; a pipe connecting said source of supply and the carbureting-chamber; a cylinder located in said pipe; a piston mounted within said cylinder and serving to open and close the passage in the pipe in proportion to the amount of air-gas withdrawn from the carbureting-chamber; a valve for opening and closing the hydrocarbon-feed; and connections intermediate said valve and the piston, whereby the valve will be operated in consonance with the movements of the piston.

5. In combination with a carbureting-chamber; a hydrocarbon-feed leading to said chamber; a source of air-supply; a pipe leading from said source of air-supply; a cylinder connected to said pipe; a piston mounted in said cylinder; a valve-chamber communicating with said cylinder; a regulating-valve located in said chamber; a pipe leading from said chamber to the carbureting-chamber; a valve located in the hydrocarbon-feed; and connections intermediate said valve and the piston-rod, whereby the piston and valve work in unison.

6. In combination with a carbureting-chamber; a hydrocarbon-feed leading to said chamber; a suitable air-supply also communicating with said chamber; a valve for opening and closing the hydrocarbon-feed; means connected to said valve and operated by the air passing to the carbureting-chamber from the air-supply, said means opening and closing the valve in proportion to the amount of air-gas withdrawn from the carbureting-chamber; a series of dished disks or pans mounted in said carbureting-chamber, each provided with a central opening; a cone-shaped deflector mounted on said pans at a slight distance above the same; and a foraminous cone-shaped member also mounted on the pans and standing at a slight distance from the deflector.

7. In combination with a carbureting-chamber; means for supplying gasolene to the upper end thereof; means for supplying air to the lower end thereof; a series of dished disks or plates mounted in said chamber, each plate being provided with a central opening or aperture; a cone-shaped deflector mounted on each of said disks and at a slight distance therefrom; and a foraminous body seated on each of said disks and surrounding the deflectors at a slight distance therefrom, said bodies being formed with a spiral channel or depression which extends from the upper to the lower end thereof.

8. An evaporating-surface for hydrocarbon-vaporizers, comprising a foraminous body having a generally cone-shaped contour, with a spiral channel or depression extending around the same from the upper end to the lower edge thereof.

709,648. SHEARS-SHARPENER. KONRAD ROESLER, Fort Worth, Tex. Filed Jan. 14, 1901. Serial No. 43,123. (No model.)

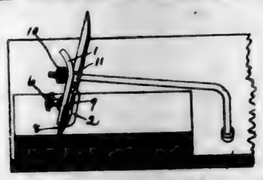

Claim.—1. A sharpener for shears comprising a curved body and a jaw adapted to engage a blade and a guide detachably secured to said body and adapted to hold said body in such position that a predetermined bevel will be given to said blade, said guide being attachable at different points of said body whereby the curvature of said body determines the bevel to be given to the blade.

2. A sharpener for shears comprising a body and a jaw adapted to engage a blade, and a guide detachably secured to said body and adapted to hold said body at any desired angle for giving a predetermined bevel to the blade, said guide having a bottom whereby said guide is adapted to slide on even surfaces.

3. A sharpener for shears comprising a body and a jaw adapted to engage a blade and a guide adapted to hold said body at a constant angle, said body having a slot therein and being curved and being provided with means for securing said guide in said slot at various adjustments whereby any desired bevel may be given to the blade.

4. A sharpener for shears comprising a body and a jaw adapted to engage a blade, a thumb-bolt for securing said jaw to said body and on the blade, said body having shoulders for holding the blade in place and a slot therein, said jaw having a tongue resting in said slot, and a guide for said body.

709,649. TUBE FOR GRAIN-DRILLS. LEONARD J. SARGENT and JOSEPH H. SULLIVAN, Cleveland, Ohio. Filed Sept. 30, 1901. Serial No. 77,048. (No model.)

Claim.—1. A grain-drill tube comprising the combination with a tubular duct, of a two-part cup secured upon the outside of one end thereof.

2. The combination with a duct constructed of a helically-wound strip, of a cup secured upon the outside of one end thereof and provided upon the interior with a helical web forming an integral part of the cup and adapted to project between adjacent convolutions of such duct.

3. The combination with a duct constructed of a helically-wound strip, of a two-part cup secured upon the outside of one end thereof, each cup part provided with a helical web adapted to project between adjacent convolutions of such duct.

4. The combination of a duct constructed of a helically-wound strip, a two-part cup adapted to receive one end of said duct, and means for securing said two cup parts, whereby said cup is secured upon said duct.

5. The combination of a duct constructed of a helically-wound strip, a two-part cup adapted to receive one end of said duct, each part provided with a helical web adapted to project between adjacent convolutions of said duct, and means for securing said two parts whereby said cup is secured upon said duct.

709,650. INCUBATOR. OLIVER P. SCOTT, Chicago, Ill. Filed Sept. 23, 1901. Serial No. 76,191. (No model.)

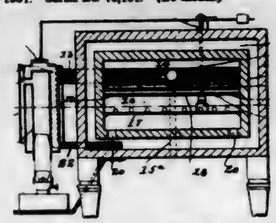

Claim.—1. In an incubator, in combination, outer and inner casings, air-mixing and egg chambers in the inner casing, a perforated air-spreading partition between said chambers, to deliver air from the mixing-chamber to various parts of the egg-chamber, and hot and cold air supply pipes having numerous adjacent discharge-openings in remote parts of the mixing-chamber.

2. In an incubator, in combination, a casing, an egg-chamber and an air-mixing chamber therein, hot-air and cold-air inlet pipes communicating with the mixing-chamber, and a perforated partition between the mixing-chamber and the egg-chamber.

3. In an incubator, in combination, an egg-chamber and an air-chamber therein, an inlet air-pipe having a number of small openings in remote parts of the air-chamber, and a partition between the egg-chamber and the air-chamber having openings therein only near the outer edge thereof.

4. In an incubator, in combination, a casing, a perforated air-distributing partition therein forming air and egg chambers, and foraminate hot and cold air supply pipes extending in proximity to remote parts of the air-chamber.

5. An incubator comprising inner and outer casings spaced apart, an egg-chamber in the inner casing, a heater, an air-supply pipe extending therefrom into the inner casing, air-discharge openings in the bottom of the inner casing communicating with the space between the bottoms of the casings, a tube extending from said space to the heater whereby the air is heated to accelerate the discharge, and independent discharge-passages extending from the egg-chamber through the casings.

709,651. ADHESIVE CEMENT. JOHN T. ROGER, Woodstock, Canada. Filed Feb. 17, 1902. Serial No. 94,484. (No specimens.)

Claim.—1. The herein-described composition of matter consisting of casein, combined with an alkali, infusible oxid, free from acidity or alkalinity, preferably oxid of magnesia, and boiling water.

2. The herein-described composition of matter for casein glue or cement, consisting of casein, sixteen parts, alkali, preferably pure (caustic soda) one-half to one and one-half parts, infusible oxid, free from acidity or alkalinity, preferably oxid of magnesia, two parts, water substantially thirty-six parts as described.

709,652. APPARATUS FOR CLEANING CELLULAR TISSUES USED IN CLARIFYING BEER. CHARLES SPRENGER, Jersey City, N. J. Filed Apr. 2, 1902. Serial No. 101,660. (No model.)

Claim.—1. An apparatus of the class described comprising a tub, a bracket or support secured across the top thereof, a vertically-arranged tube mounted therein and provided at its lower end with a tubular cross-head adapted to turn in said tub, said cross-head being provided with downwardly-directed tubular arms, said tube being provided at its upper end with a coupling having a plurality of branches and means for turning said tube, said tub being also provided near its top with overflow ports or passages, and beneath the same with an annular screen which is secured therein and between which and the walls of the tub is an annular space, substantially as shown and described.

2. In an apparatus of the class described, a tub, a bracket or support secured across the top thereof, a vertically-arranged tube mounted therein and extending downwardly into said tub, and provided at its lower end with a tubular cross-head adapted to turn with said tube in said tub, downwardly-directed tubular arms connected with said cross-head and a three-way coupling connected with the upper end of said tube above said bracket or support, and means for turning said tube, substantially as shown and described.

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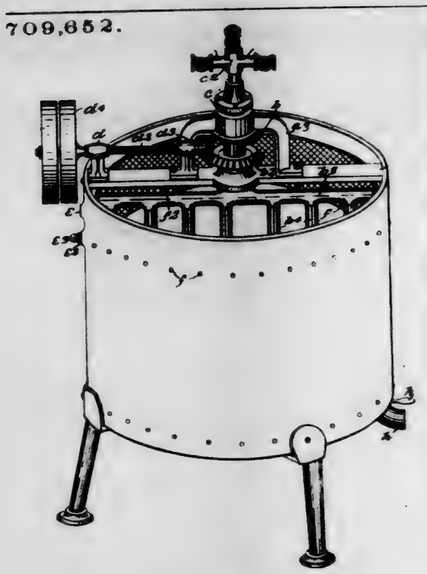

709,653. CROSS-WINDING MACHINE. RUDOLPH VOIGT, Chemnitz, Germany. Filed June 19, 1900. Serial No. 20,843. (No model.)

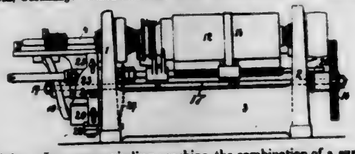

Claim.—In a cross-winding machine, the combination of a supporting-frame, a bobbin-spindle journaled in the same, a thread-guide adjacent said spindle, a shaft journaled in said frame, and carrying a cam engaging said thread-guide for reciprocating the same, a cone-pulley on said spindle, a counter-shaft, a cone-pulley on said counter-shaft, a belt connecting said cone-pulleys, gearing connecting said counter-shaft with the shaft of the cam, a longitudinally-movable shaft mounted in said frame, and provided with a belt-guide for said belt, a cam-plate engaging said longitudinally-movable shaft, mechanism connected with the thread-guide and controlled by the bobbin and engaging said cam-plate, for actuating the same, and a driving-pulley located on the shaft of the bobbin-spindle, substantially as set forth.

709,654. COMBINED LAMP AND LANTERN. FREDERICK B. WAIBEL, Brooklyn, N. Y., assignor to Manhattan Brass Company, New York, N. Y., a Corporation of New York. Filed Sept. 23, 1901. Serial No. 76,188. (No model.)

Claim.—1. In a combined lamp and lantern, the combination with the lantern-base and the reservoir for oil, of a device comprising a spring-arm and integral handle secured to the reservoir and having parts adapted to engage the base of the lantern in connecting the same to the reservoir, said device also serving as a handle for carrying about the reservoir for oil and the parts connected therewith, substantially as set forth.

2. In a combined lamp and lantern, the combination with the lantern-base and the reservoir for oil, of an annulus or collar surrounding and secured to the upper portion of the said reservoir and between which parts there is provided an annular chamber connected to the said annulus or collar and having portions protruding from the opposite sides thereof through apertures in said annulus or collar, the said spring-arms together projecting from the annulus or collar and being bent over into a form to provide a handle with the free ends thereof connected to the reservoir, substantially as set forth.

3. In a combined lamp and lantern, the combination with the reservoir for oil, of an annulus or collar surrounding and secured to the upper portion of the said reservoir and between which parts there is provided an annular chamber, the said annulus or collar having mortises at opposite points and a notch in the lower edge at an intermediate point, and spring-arms of curved form within said annular chamber and concentric to the said annulus or collar and having bends 4 5 extending through said mortises and connected by solder to the annulus or collar at a point intermediate to the bends, and the said arms projecting from the said annulus or collar through the said notch and being bent to a configuration forming a handle for the reservoir with the free ends connected rigidly and permanently to the reservoir, substantially as set forth.

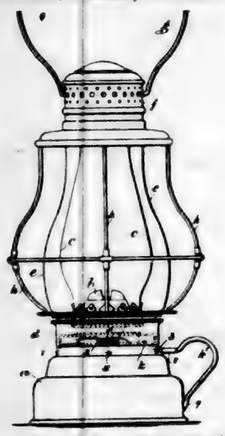

4. In a combined lamp and lantern, the combination with the reservoir for oil, of an annulus or collar surrounding and secured to the upper portion of the said reservoir and between which parts there is provided an annular chamber, the said annulus or collar having mortises at opposite points and a notch in the lower edge at an intermediate point, and spring-arms of curved form within said annular chamber and concentric to the said annulus or collar and having bends 4 5 extending through said mortises and connected by solder to the annulus or collar at a point intermediate to the bends and the said arms projecting from the said annulus or collar through the said notch and being bent to a configuration forming a handle for the reservoir with the free ends connected rigidly and permanently to the reservoir, and sleeves 8 surrounding the spring-arms adjacent to and outside of the said annulus or collar and indicating the place to be grasped by the fingers in operating the device, substantially as set forth.

5. In a combined lamp and lantern, the combination with the lantern-base and the reservoir for oil, of an annulus or collar surrounding and secured to the upper portion of the said reservoir and between which parts there is provided an annular chamber, spring-arms within the said annular chamber, and connected to the said annulus or collar and having portions protruding from the opposite sides thereof through apertures in said annulus or collar, the said spring-arms together projecting from the annulus or collar and terminating in devices adapted to be grasped by the fingers of the hand for operating the spring-arms, substantially as set forth.

709,655. METHOD OF SUPERHEATING STEAM. HOSEA WEBSTER, Montclair, N. J. Filed Dec. 12, 1901. Serial No. 85,554. (No model.)

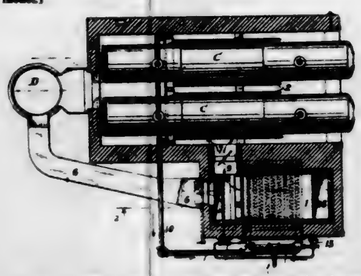

Claim.—1. The method herein described, consisting in superheating steam, primarily by the heat of the combustion in the generator, and then augmenting the temperature of the steam superheated, by a separate and independent source of heat, as set forth.

2. The method herein described, consisting in superheating steam, primarily by the heat of the combustion in the generator, then augmenting the temperature of said superheated steam by a separate and independent source of heat, and then utilizing the waste products of the latter combustion to augment the primary superheating of the steam in the generator, as set forth.

3. The method herein described, consisting in first superheating steam by the heat of combustion in the generator, second, augmenting the temperature of the steam superheated by an auxiliary source of heat, and third, regulating the temperature of the superheated steam, as set forth.

709,656. COIN-CASE. BEAVER B. ANDERSON, Cleveland, Ohio. Filed Jan. 16, 1902. Serial No. 89,943. (No model.)

Claim.—1. A coin-case made of paper comprising a pair of channel-shaped sides, a top piece, and a bottom arranged to be bent to form a hinge for said sides, the edges of the sides not meeting, a strap formed on the outside of one of the sides, and a tongue projecting from the top piece, and adapted to tuck under said strap, substantially as described.

2. A coin-case comprising top and bottom pieces, a pair of channel-shaped sides, said bottom piece adapted to form a hinge for said sides, the edges of the sides not meeting, a strap formed on the outside of one of the sides, a tongue projecting from the top piece adapted to tuck under said strap, and adhesive material adapted to be rendered active by moisture on the under side of said strap, substantially as described.

3. A coin-case made of paper and consisting of a circular bottom portion, a pair of sides extending therefrom, said sides being of channel shape and having their projecting ends bent inward at right angles and glued to the bottom portion, a circular top portion carried by one of the sides and having the ends of that side glued to its under surface, a tongue projecting from the free side of said top portion, an integral strap formed by cutting a pair of slits in the other side, said tongue being adapted to project under said strap, substantially as described.

4. A coin-case made of paper and having an integral bottom portion and sides bent upward therefrom, the edges of said sides bent inward onto the sides and there glued to reinforce the sides and to provide slot-openings, top portions projecting inward from the sides, the ends of the outer portions of the sides being glued to the bottom and top portions, and one of the top portions having a tongue adapted to project through a strap carried by the other side, substantially as described.

5. A coin-case made from a single piece of paper, cut to form in consecutive order a top portion, a side, a bottom portion, another side, another top portion, and a projecting tongue, the sides being bent at right angles to said top and bottom portions, and being rounded laterally and glued to the upper surface of the bottom portion and the under surface of the top portion, the edges of the sides being turned inwardly to provide slot-openings, there being a pair of slits cut through the side which does not carry the tongued top piece, whereby there is formed on each side a strap on the inner side of which said tongue may lie, substantially as described.

709,657. PEA-SHELLER. LEWIS A. ASPINWALL, Jackson, Mich., assignor to Aspinwall Manufacturing Company, Jackson, Mich., a Corporation of Michigan. Filed Sept. 26, 1901. Serial No. 76,822. (No model.)

Claim.—1. In a pea-sheller, the combination with the heads or ends having openings forming bearings, of a cylinder comprising a rubber roller with an integral spiral rib, a cylindrical core, end journals or caps and a rod extending through the core and the end journals or caps and by which the said parts are securely clamped together, and devices coacting with the said cylinder for effecting the shelling of the peas, substantially as set forth.

2. In a pea-sheller, the combination with the heads or ends having conical openings forming bearings, of a cylinder comprising a rubber roller with an integral spiral rib, a cylindrical core, end journals or caps and a rod extending through the core and the end journals or caps and by which the said parts are securely clamped together, said end journals or caps being of conical form, and a pinion clamped between one end of the rod and one end journal or cap, and an internal spur-gear meshing with said pinion, a handle for rotating the parts, and devices coacting with the said cylinder for effecting the shelling of the peas, substantially as specified.

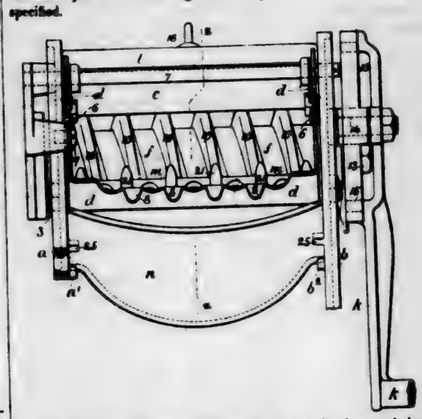

3. In a pea-sheller, the combination with the heads or ends having conical openings forming bearings, of a cylinder comprising a rubber roller with an integral spiral rib, a cylindrical core, end journals or caps and a rod extending through the core and the end journals or caps and by which the said parts are securely clamped together, said end journals or caps being of conical form, and a pinion clamped between one end of the rod and one end journal or cap and an internal spur-gear meshing with said pinion, a handle for rotating the parts, and a cam on the opposite end of the said rod, and a shaker device actuated thereby with the rotation of the cylinder for delivering the pods from the machine, and devices coacting with the said cylinder for effecting the shelling of the peas, substantially as set forth.

4. In a pea-sheller, the combination with the heads or ends having conical openings forming bearings, of a cylinder comprising a rubber roller with an integral spiral rib, a cylindrical core, end journals or caps, and a rod extending through the core and the end journals or caps and by which the said parts are securely clamped together, said end journals or caps being of conical form, and a pinion clamped between one end of the rod and one end journal or cap, and an internal spur-gear meshing with said pinion, a handle for rotating the parts, a cam 11 on the opposite end of the rod, and a shaker device comprising a yoke-bar *e* pivoted to the rod 7 of the machine, and an elongated U-shaped plate *d* also pivoted to the same rod of the machine, and a screw connecting the said yoke-bar *e* and the plate *d* and the plate made with downwardly-bent fingers 8 along its delivery edge, and devices coacting with the said cylinder for effecting the shelling of the peas, substantially as set forth.

5. In a pea-sheller, the combination with the heads and a revolvable cylinder having a rubber roller-surface and spiral rib, of a concave pivotally connected between the heads and adjustable in its relation to the cylinder and having on its inner surface ribs inclined in a direction opposite to the spiral of the cylinder, a second concave also connected between the heads of the machine, and means for supporting the same and ribs upon the inner surface of the second concave extending in the same direction as the spiral of the cylinder but at a greater inclination, substantially as set forth.

6. In a pea-sheller, the combination with the heads and a revolvable cylinder having a rubber roller-surface and spiral rib, of a concave pivotally connected between the heads and adjustable in its relation to the cylinder and having on its inner surface ribs inclined in a direction opposite to the spiral of the cylinder, a second concave also connected between the heads of the machine and means for supporting the same, and ribs upon the inner surface of the second concave extending in the same direction as the spiral of the cylinder but at a greater inclination, there being openings between the ribs of the second concave and between the meeting edges of the respective concaves through which the peas are delivered, and a delivery-incline beneath the concaves, substantially as set forth.

7. In a pea-shelling machine, the combination with the heads and a revolvable cylinder having a rubber roller with a surface spiral rib, of the concave / having ribs on its inner surface inclined in a direction opposite to that of the adjacent rubber spiral, said ribs being stepped off in their surface configuration, pivots 16 connecting one edge of the concave between the heads of the machine, stops 20 on the heads, a bar 17 pivoted between the two heads, and an adjusting-screw 18 passing through the bar 17 and bearing against the free edge of the concave / for adjusting the position thereof, substantially as set forth.

8. In a pea-shelling machine, the combination with the heads, and a revoluble cylinder having a rubber roller and spiral rib thereon, of the concave *m* having flanged ends, a rod 3 passing through the flanged ends and through the heads of the machine for connecting said concave between said heads, a second rod 3 upon which the free edge of the concave rests and is supported, said concave having on its inner surface spirally-arranged ribs extending in the same direction as the spiral of the rubber roller, but at a greater inclination and said concave having openings for the peas to pass through, substantially as set forth.

9. In a pea-shelling machine, the combination with the heads and a revoluble cylinder having a rubber roller and spiral rib thereon, of the concave *m* having flanged ends, a rod 3 passing through the flanged ends and through the heads of the machine for connecting said concave between said heads, a second rod 3 upon which the free edge of the concave rests and is supported, said concave having on its inner surface spirally-arranged ribs extending in the same direction as the spiral of the rubber roller, but at a greater inclination and said concave having openings for the peas to pass through, and steps 24 on the inner surfaces of the respective heads coming above the upper surface of the concave at the ends thereof so as to look the same between said legs and the rods 3, substantially as set forth.

10. In a pea-shelling machine, the combination with the heads and stops 6 on the heads of a rod 7 passing across through said heads, a feed-plate *c* having end lugs through which said rod 7 passes for pivotally connecting the said feed-plate thereto between the heads, the free edge of the feed-plate resting upon the stops 6, substantially as and for the purpose set forth.

11. In a pea-shelling machine, the combination with the heads *a b* having ribs *a' b'* and legs 25 upon their lower portions, of the curved delivery-incline *n* resting at its opposite edges upon the said ribs and having notches in said edges receiving the said legs 25 whereby the said incline is held between and supported by the heads and movement thereof prevented, substantially as set forth.

12. In a pea-shelling machine, the combination with the heads, a revolubie cylinder and a cam on one end of the shaft of said cylinder, of a rod 7 passing across through the heads, a feed-plate pivoted to said rod, concaves surrounding the larger portion of the revolubie cylinder and means for supporting the same, a yoke-bar *e* having a jaw receiving the said cam and pivoted to the said rod 7, an elongated U-shaped plate *d* also pivoted to the said rod 7 between the heads, and a screw for securely connecting the same to the yoke-bar *e*, said plate *d* having an edge in close proximity to the edge of one of the concaves and its opposite edge provided with downwardly-bent fingers whereby a shaking motion is imparted to the said plate *d* as the same receives the peas from the concave for delivering the peas over the fingers of the said plate, substantially as set forth.

13. In a pea-shelling machine, the combination with the head *a*, of the head *b* and means for connecting the same together, a spanner *b'* integral with a prolongation of said head and adapted to pass over the edge of a table or point of support, a clamp-screw 4 passing up through the lower end of said spanner and said spanner being provided with a vertical mortise, and a plate having a portion thereof recessed to receive the end of the screw 4, and a portion formed as a fan-tail end and passing through the mortise of the spanner and engaging the same when occupying its normal position, whereby the said plate comes between the end of the screw and the point of support and is removably connected to the spanner to prevent accidental separation, substantially as set forth.

14. In a pea-sheller, the combination with the heads or ends having openings forming bearings, of a cylinder comprising a rubber roller with an integral spiral rib, a cylindrical core, end journals or caps and a rod extending through the core and the end journals or caps and by which the said parts are securely clamped together, and a pinion clamped between one end of the rod and one end journal or cap, and an internal spur-gear meshing with said pinion, and a handle for rotating the parts, substantially as specified.

709,658. POTATO-SORTER. LEWIS A. ASPINWALL, Jackson, Mich., assignor to Aspinwall Manufacturing Company, Jackson, Mich., a Corporation of Michigan. Filed Sept. 26, 1901. Serial No. 76,594. (No model.)

Claim.—1. In a potato-sorter, a sorting device for separating the potatoes and retaining only larger potatoes, comprising parallel endless chains, cross-bars extending between and connecting the same, a series of sorting-plates scalloped or serrated along one edge, devices for loosely pivoting and for adjustably connecting said plates to said arms so that in use the scalloped edges rest upon the next adjacent cross-bars and on the return movement the said sorting-plates turn over and hang freely.

2. In a potato-sorter, the combination with an inclined hopper, of two endless parallel chains, devices for connecting said chains and operating the same, cross-bars extending between the chains and connected to opposite links, sorting-plates each having one edge scalloped or serrated, devices at their respective ends for adjustably and loosely pivoting said plates to said cross-bars, so that each plate is pivoted to one cross-bar and is normally supported by the adjacent cross-bar, means for agitating said plates as they are drawn along by the cross-bars with the forward movement of the chains, whereby the sorting-plates turn over and hang free from the chains on the return movement.

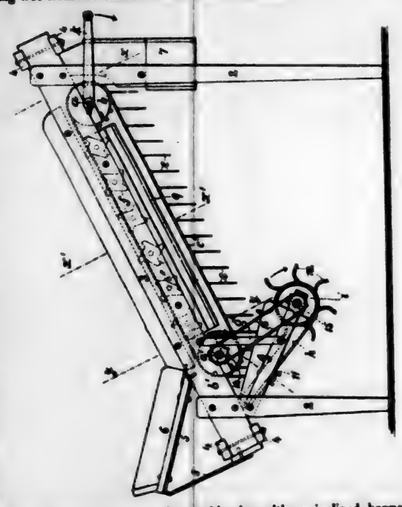

3. In a potato-sorter, the combination with an inclined hopper, of two endless parallel chains, devices for connecting said chains and operating the same, cross-bars extending between the chains and connected to opposite links, hubs with arms extending therefrom loosely surrounding the said cross-bars at the respective ends, sorting-plates having at their respective ends a series of holes by which with bolts they are adjustably connected with the arms of said hubs, and toothed-wheel agitators in pairs secured to the frame of the machine beneath the chains and adapted to be operated by the movement of the chains and to come into contact with the said sorting-plates alternately and progressively for raising the same and agitating the potatoes, substantially as set forth.

4. In a potato-sorter, the combination with an inclined hopper, of two endless parallel chains, devices for connecting said chains and operating the same, cross-bars extending between the chains and connected to opposite links, hubs with arms extending therefrom loosely surrounding the said cross-bars at the respective ends, sorting-plates each having one edge scalloped or serrated and having at their respective ends a series of holes by which with bolts they are adjustably connected to the arms of said hubs, and toothed-wheel agitators in pairs secured to the frame of the machine beneath the chains and adapted to be operated by the movement of the chains and to come into contact with the said sorting-plates alternately and progressively for raising the same and agitating the potatoes, substantially as set forth.

5. In a potato-sorter, the combination with an inclined hopper, of two endless parallel chains, cross-bars connected at their ends to links of the chains, sorting-plates having one edge scalloped or serrated, devices pivoted to the cross-bars and adjustably engaging the ends of the sorting-plates, the said sorting-plates at their serrated edges normally resting upon the said cross-bars so that between their incurves and the cross-bars there are openings, the sizes of which may be increased or diminished and through which openings potatoes may pass, substantially as set forth.

6. In a potato-sorter, the combination with an inclined hopper, of two endless parallel chains, cross-bars connected at their ends to links of the chains, sorting-plates having one edge scalloped or serrated, devices pivoted to the cross-bars and adjustably engaging the ends of the sorting-plates, the said sorting-plates at their serrated edges normally resting upon the said cross-bars so that between their incurves and the cross-bars there are openings the sizes of which may be increased or diminished and through which openings potatoes may pass, and toothed-wheel agitators pivotally connected to the inner faces of the side frames and rotated by the movement of the chains for raising alternate sorting-plates and so agitating the mass of potatoes carried by the said devices, substantially as set forth.

7. In a potato-sorter, the combination with an inclined hopper, of two endless parallel chains, cross-bars connected at their ends to links of the chains, sorting-plates having one edge scalloped or serrated, devices pivoted to the cross-bars and adjustably engaging the ends of the sorting-plates, the said sorting-plates at their serrated edges normally resting upon the said cross-bars so that between their incurves and the cross-bars there are openings the sizes of which may be increased or diminished and through which openings potatoes may pass, and toothed-wheel agitators securely connected to the inner faces of the bar sides and each tooth of which comprises one radial and one inclined edge, the radial edges being acted upon by the chains and the inclined edges raising the sorting-plates alternately and progressively with the movement of the parts, substantially as set forth.

8. In a potato-sorter, the combination with the inclined hopper *g*, of the metal plate 11 transversely thereof, the inclined fingers *h* connected to said plate 11 and let into the upper face thereof, the cylinder *i* above the free ends of said fingers, and pickers 12 arranged in two spiral sets about the cylinder so that there are two pickers at the respective ends of the cylinder coming between the end fingers and four pickers in circular rows upon the said cylinder coming between each of the other fingers, substantially as and for the purposes set forth.

709,659. POTATO-DIGGER. LEWIS A. ASPINWALL, Jackson, Mich., assignor to Aspinwall Manufacturing Company, Jackson, Mich., a Corporation of Michigan. Filed Feb. 3, 1902. Serial No. 92,224. (No model.)

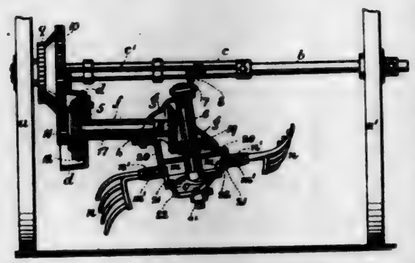

Claim.—1. In a potato-digger, the combination with a plow and grating, of a pulverizer device including bent swinging arms and means for controlling the movements and operative position of said arms when the same are in operative position, and which devices permit the arms out of position to be free, and a separator device including a series of swinging forks, and devices substantially as shown and described for supporting said forks in their operative position but which allow said forks to deliver the potatoes and tops and to hang in a position of gravity during part of their movement, substantially as set forth.

2. In a potato-digger, the combination with the plow and grating, of a pulverizer device comprising a series of bent pivoted arms, a shaft and devices connected thereto and to which said arms are pivotally connected, cranks and rollers on the inner ends of said arms and a cam acting upon said rollers for controlling the movements of said arms and permitting said arms during part of their movement to hang free, substantially as set forth.

3. In a potato-digger, the combination with the plow and grating, of a pulverizer device comprising a series of bent pivoted arms, a shaft and devices connected thereto and to which said arms are pivotally connected, cranks and rollers on the inner ends of said arms, and a cam acting upon said rollers for controlling the movements of said arms and permitting said arms during part of their movements to hang free, a sleeve forming part of the frame of the machine and secured thereto and on one end of which said cam is formed, and gears connecting the opposite end of said shaft to the axis of the machine for effecting the rotary movement of the pulverizer device, substantially as set forth.

4. In a potato-digger, the combination with the plow and grating, of a bearing-sleeve *c* forming part of and secured to the frame of the machine and having a cam *c'* at one end, a shaft 14 passing through said sleeve, a disk *l* and plate *l'* secured together and connected upon one end of the said shaft, a pinion 13 upon the opposite end of said shaft, pulverizer-arms 15 of bent form journaled between the disk *l* and plate *l'*, crank-arms 16 on the ends of said pulverizer-arms and rollers carried thereon and for part of the rotary movement of said pulverizer device bearing upon the surface of the cam *c'*, substantially as and for the purposes set forth.

5. In a potato-digger, the combination with the plow and grating, of a bearing-sleeve *c* forming part of and secured to the frame of the machine and having a cam *c'* at one end, a shaft 14 passing through said sleeve, a disk *l* and plate *l'* secured together and connected upon one end of the said shaft, a pinion 13 upon the opposite end of said shaft, pulverizer-arms 15 of bent form journaled between the disk *l* and plate *l'*, crank-arms 16 on the ends of said pulverizer-arms and rollers carried thereon and for part of the rotary movement of said pulverizer device bearing upon the surface of the cam *c'*, substantially as and for the purposes set forth, a bevel-gear 12, a pinion 11 connected therewith, a shaft and bearings therefor, a gear 10 and ratchet 9 connected together upon the main shaft of the machine with the gear 10 meshing with the pinion 11 for communicating the power and movement of the axle to the pulverizer device, substantially as set forth.

6. In a potato-digger, the combination with the wheels, the axle and a sleeve *c* having side flanges *c'* surrounding said axle, of a dishing frame *d* secured to said flanges *c'*, a frame *h* secured to the frame *d*, a grating-frame *k* secured to the frame *h* and the grating and plow secured respectively to the frame *h* and the grating-frame *k*, substantially as set forth.

7. In a potato-digger, the combination with the wheels, the axle, a sleeve surrounding the axle and side flanges formed with the sleeve, of a dishing frame *d* secured to the said side flanges, a sleeve *f* passing through an opening in the frame *d* and having a flange 5 by which the same is secured to said frame *d*, a lug also formed with the frame *d*, a sleeve *e* and integral cam *e'*, said sleeve passing through a second opening in the frame *d*, and a flange 2 formed with the sleeve *e* and coming against the surface of the frame *d*, flanges 3 formed with the sleeve *e*, and bolts for connecting the said flanges and sleeve to the flange 4 and the lug of the frame *d*, substantially as set forth.

8. In a potato-digger, the combination with the wheels, the axle, a sleeve surrounding the axle and side flanges formed with the sleeve, of a dishing frame *d* secured to the said side flanges, a sleeve *f* passing through an opening in the frame *d* and having a flange 5 by which the same is secured to said frame, a flange 4 formed with the sleeve *f*, a hollow casing *g*, an axle 6 within the same, a bracket 8 secured to the side flanges of the axle-sleeve, and a bolt 7 passing through said bracket and through the hollow casing and axle for connecting the parts, and a ring-frame 20 secured to the sleeve *f* and coming below the hollow casing *g*, substantially as set forth.

9. In a potato-digger, the combination with a fixed axis and means for supporting and inclosing the same, of a separater device comprising a revolubie head *m* and connected bevel-gear 19 surrounding the said axis, a series of swinging forks *n* pivotally mounted in said revolubie head, cranks and rollers on their inner ends, and an adjustable cam-disk secured to the said fixed axis below the plane of the swinging forks, substantially as and for the purpose set forth.

10. In a potato-digger, the combination with a fixed axis and means for supporting and inclosing the same, of a separater device comprising a revolubie head *m* and connected bevel-gear 19 surrounding the said axis, a series of swinging forks *n* pivotally mounted in said revolubie head, cranks and rollers on their inner ends, and an adjustable cam-disk secured to the said fixed axis below the plane of the swinging forks, a shaft 17, a bevel-gear 18 on one end thereof meshing with the aforesaid bevel-gear 19, a pinion 11 on the shaft 17, a gear 10 and connected ratchet 9 on the axis of the machine by which power and rotation are communicated to the device of the separator, substantially as set forth.

11. In a potato-digger, a separater device comprising a revolubie head *m* having tangent sleeves *m'* projecting from the main portion of said head, a sleeve at the center of said head the same being open underneath, a bevel-gear connected to said head, a fixed axle-support passing through the bevel-gear and sleeve of the head, a series of swinging forks each comprising a multiplicity of tines, an arber passing through a tangent sleeve, a crank on the other end of the arber and within the said head, and a roller on the crank, and a cam disk adjustably mounted on the central supporting-axis and upon which the said rollers bear, substantially as set forth.

12. In a potato-digger, a separater device comprising a revolubie head *m* having tangent sleeves *m'* projecting from the main portion of said head, a sleeve at the center of said head, the same being open underneath, a bevel-gear connected to said head, a fixed axle-support passing through the bevel-gear and sleeve of the head, a series of swinging forks each comprising a multiplicity of tines, an arber passing through a tangent sleeve, a crank on the other end of the arber and within said head, and a roller on the crank, and a cam-disk *o* adjustably secured upon the central supporting-axis and having two substantially flat faces at approximately obtuse angles to one another, the higher surface of said cam being the operative surface thereof and acting to hold the series of forks in their operative position, and the inclined surface permitting the forks to swing upon their arbors, substantially as set forth.

13. In a potato-digger, a separater device comprising a revolubie head *m* having tangent sleeves *m'* projecting from the main portion of said head, a sleeve at the center of said head, the same being open underneath, a bevel-gear connected to said head, a fixed axial support passing through

the bevel-gear and sleeve of the head, a series of swinging forks each comprising a multiplicity of tines, an arbor passing through a tangent sleeve, a crank on the other end of the arbor and within said head, and a roller on the crank, and a cam-disk adjustably mounted on the central supporting-axis and upon which the said rollers bear, and projections 23 upon the cranks of the swinging forks and bearing against the revolvable head for limiting the downward or gravity movements of said swinging forks, substantially as set forth.

709,660. POTATO-PLANTER. LEWIS A. ASPINWALL, Jackson, Mich., assignor to Aspinwall Manufacturing Company, Jackson, Mich., a Corporation of Michigan. Filed Feb. 3, 1902. Serial No. 92,940. (No model.)

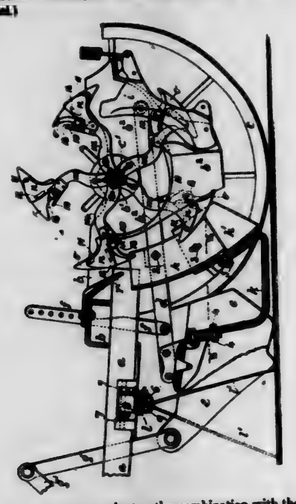

Claim.—1. In a potato-planter, the combination with the plow and the chute for delivering the potatoes, of a device rigidly and immovably connected respectively to said parts, extending between the same, and having a horizontal portion lying near the ground and adapted to move with the plow and to come in contact with an obstruction to prevent injury to the chute, substantially as set forth.

2. In a potato-planter, the combination with the plow and the two-part chute and support, of a runner in the form of a bent bar having one end rigidly and immovably connected to the lower part of the chute and the opposite end rigidly and immovably connected to the plow devices, and having a horizontal portion lying near the ground and approximately on the plane of the lower edge of the plow, and adapted to come in contact with an obstruction passed by the plow so as to raise the chute and carry the same over the obstruction and prevent injury thereto, substantially as set forth.

3. In a potato-planter, the combination with the axle and a disk and arms mounted thereon, of picker devices secured to the respective ends of said arms and each comprising plates secured upon opposite sides thereof, a blade between the same and pivoted thereto and having a mortise receiving a pin passing through the same and the outer plates, and a prong and coacting roller secured to said parts and acting to engage or pick up the potatoes and to remove the same, substantially as set forth.

4. In a potato-planter, the combination with the axle and a disk and arms mounted thereon, of picker devices secured to the respective ends of said arms and each comprising plates secured upon opposite sides thereof, a blade between the same and pivoted thereto and having a mortise receiving a pin passing through the same and the outer plates, prongs extending out from the arms and a roller secured to the central blade and moving between said prongs, the prongs passing into the potatoes and said movement swinging the central blades and intermediate roller so as to bring the advancing point of the central blade adjacent to the prongs and the roller acting in the reverse movement of the central blade against the potatoes to remove the same from the prongs, substantially as set forth.

709,661. GAME-BOARD. ARTHUR ARNEAU, New York, N. Y. Filed Sept. 26, 1902. Renewed Feb. 14, 1902. Serial No. 94,128. (No model.)

Claim.—1. A billiard-table comprising a central level floor or field, a marginal inclined floor or field and a rim uprising from and surrounding the inclined floor or field, the said rim being substantially non-resilient and forming a step for changing the direction of the ball while the inclined floor serves to impart to the ball its return motion, substantially as set forth.

2. A game board or table comprising a central level floor or field, a marginal inclined floor or field, a rim surrounding the inclined floor or field, a ball-receiving channel exterior to the said rim and ridges interposed in said channel, the said rim being provided with openings opposite the said ridges, and the exterior wall of the channel being provided with abutments opposite the said openings, whereby a ball, after passing through the opening onto the ridge, will find its way along the channel under the influence of gravity, substantially as set forth.

709,662. AUTOMATIC SIPHON-PUMP. ALBERT BRIESE, Chicago, Ill. Filed Mar. 5, 1902. Serial No. 96,811. (No model.)

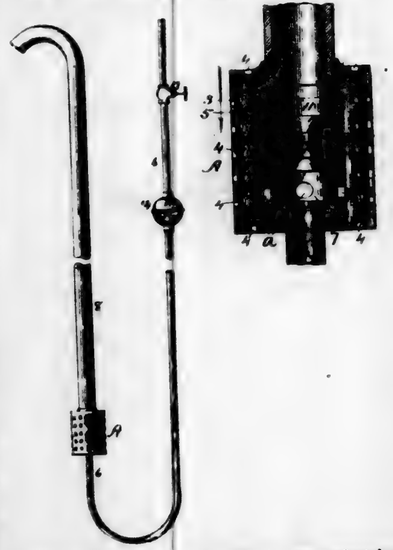

Claim.—1. A siphon-head, comprising an outer perforated casing and an inner hub part, with an annular space between, said hub part having a continuous passage longitudinally therethrough and chambers located in the respective ends thereof connected by a contracted passage and the communicating openings between said annular space and the interior of the hub, substantially as set forth.

2. In a draining device, a siphon-head, comprising an outer perforated casing and an inner tubular hub part having a passage longitudinally therethrough, the passage opening into the lower hub-chamber from said annular space, the feed-pipe, and the discharge-pipe, connected to the opposite ends of the hub part, substantially as set forth.

709,663. DISPLAY-BOX. BERNHARD BEHRENDS, Chicago, Ill. Filed May 21, 1902. Serial No. 108,236. (No model.)

Claim.—1. A folding box, composed of two end members, and an intermediate member pivotally connecting said end members together and consisting of a bottom and two stiff ends wider transversely than the bottom and substantially at right angles therewith, one of said end members being adapted to fold over upon the other and with said intermediate member inclose the same, substantially as described.

2. A folding box, composed of two end members, an intermediate member pivotally connecting said end members together and consisting of a bottom and two stiff ends wider transversely than the bottom and substantially at right angles therewith, one of said end members being adapted to fold over upon the other and with said intermediate member inclose the same, and a cross-bar connecting said stiff ends together, substantially as described.

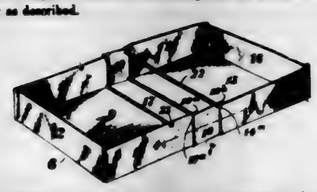

3. A folding box, composed of two end members, an intermediate member pivotally connecting said end members together and consisting of a bottom and two stiff ends wider transversely than the bottom and substantially at right angles therewith, one of said end members being adapted to fold over upon the other and with said intermediate member inclose the same, and steps adapted to limit the opening of said box, substantially as described.

4. A folding box, composed of two end members, each forming a box-like division open at the top and one side, and an intermediate member pivotally connecting said end members together and consisting of a bottom and two stiff ends wider transversely than said bottom and substantially at right angles therewith, one of said end members being slightly larger than the other and adapted to fold over upon it and with said intermediate member to inclose the same, said intermediate member being adapted when the box is open to form a portion of the bottom and sides of the open box, substantially as described.

5. A folding box, composed of two end members, each consisting of bottom, sides and end portions, and an intermediate member pivotally connecting said end members together and consisting of a bottom and two stiff ends wider transversely than said bottom and substantially at right angles therewith, one of said end members being adapted to fold over upon the other end member and with said intermediate member to inclose the same, said intermediate member being adapted when said box is open to form a portion of the bottom and sides of the open box, the ends of said intermediate member being adapted when said box is closed to lie between the side portions of the end members, on their respective sides of the box, substantially as described.

6. A sample-display box, consisting of a member composed of a bottom, two sides and an end, a second member composed of a bottom, two sides and an end and adapted to shut down over said first member, and a connecting member pivotally connected at its sides with said first two members and composed of a bottom and two stiff ends substantially at right angles therewith, and steps adapted to limit the opening of said box, whereby when said box is open said connecting member will form a portion of the sides and bottom of the open box and when said box is closed, the end pieces of said connecting member will be inclosed within said box and the bottom of said connecting member will inclose said first member, substantially as described.

7. In a sample-display box, the combination with a member composed of a bottom, two sides and an end, of a second member composed of a bottom, two sides and an end and adapted to shut down over said first member, a connecting member hinged along the sides of its bottom to said first and second members and composed of a bottom and two stiff ends, the ends and bottom of said connecting member, when said box is open, forming a part of the sides and bottom of said open box, and the ends of said connecting member, when said box is closed, abutting outside of the sides of the first member and inside the sides of the second member, and steps adapted to limit the opening of said box, substantially as described.

8. In a sample-display box, the combination with a member composed of a bottom, two sides and an end, of a second member composed of a bottom, two sides and an end and adapted to shut down over said first member, a connecting member composed of a bottom and two stiff ends and hinged along the sides of its bottom to said first and second members, the ends and bottom of said connecting member, when said box is opened, forming a part of the sides and bottom of said open box, the ends of said connecting member, when said box is closed, abutting outside of the sides of the first member and inside the sides of the second member, and steps adapted to limit the opening of said box, substantially as described.

9. In a sample-display box, the combination with a member composed of a bottom, two sides and an end, of a second member composed of a bottom, two sides and an end and adapted to shut down over said first member, a connecting member composed of a bottom and two stiff ends and hinged along the sides of its bottom to said first and second members, the ends and bottom of said connecting member, when said box is opened, forming a part of the sides and bottom of said open box, the ends of said connecting member, when said box is closed, abutting outside of the sides of the first member and inside the sides of the second member, when said box is closed, abutting outside of the sides of the first member and inside the sides of the second member, and steps adapted to limit the opening of said box, and a cross-bar secured to the ends of said connecting member, substantially as described.

709,664. PROCESS OF PREPARING BOG-PEAT FOR FUEL PURPOSES. ANTOINE CHABOT, Montreal, Canada, assignor to Alexandre Ducros, Montreal, Canada. Filed Jan. 16, 1902. Serial No. 90,061. (No specimens.)

Claim.—1. A process for the manufacture of fuel from peat consisting in passing the same between disintegrators and causing a current of electricity to pass through the peat between said disintegrators thereby simultaneously pulverizing and carbonizing the same.

2. A process of making fuel from bog-peat consisting in drying the peat, passing the same between a pair of disintegrators, moving the disintegrators relatively to one another to act upon the peat, and passing a current of electricity between said disintegrators and through the peat, thereby simultaneously pulverizing and carbonizing the same.

3. A process of making fuel from bog-peat consisting in drying the peat, passing the same between a pair of disintegrators, causing a current of electricity to pass between said disintegrators and through the peat, thereby simultaneously pulverizing and carbonizing the same, and mixing the carbonized powder with petroleum.

4. A process of making fuel from bog-peat consisting in drying the peat, passing the same between a pair of disintegrators, causing a current of electricity to flow through the peat between said disintegrators, thereby simultaneously pulverizing and carbonizing the same, mixing the carbonized peat with a small proportion of petroleum, and pressing the mixture into briquets or cakes, substantially as described.

5. A process for the manufacture of fuel from bog-peat consisting in subjecting the peat to centrifugal action to eliminate the moisture therefrom, then loading it between a pair of disintegrators, causing the disintegrators to move relatively to each other to act upon the peat, causing a current of electricity to pass between the disintegrators and through the peat, mixing the peat with a proportion of inflammable material, and thereafter pressing it into cakes or briquets substantially as described.

6. A process for the manufacture of fuel from bog-peat consisting in pulverizing the peat and simultaneously carbonizing the same by a current of electricity.

7. A process for the manufacture of fuel from bog-peat consisting in simultaneously drying, pulverizing and carbonizing the peat by passing through it a current of electricity.

8. A process of carbonizing bog-peat for fuel purposes consisting in passing through it a current of electricity.

709,665. FOOT-MEASURING DEVICE FOR SHOEMAKERS. THOMAS CORT, South Orange, N. J. Filed Feb. 5, 1901. Serial No. 46,501. (No model.)

Claim.—1. A shoemaker's foot-measuring device, comprising a case *c*, adapted to engage the heel of a foot, a drum in said case and a flexible measure wound on said drum and projecting from the case, and a tongue *d*, adapted to engage the toe of the foot, slidably mounted upon said flexible measure and connected thereby to the case *c*.

2. A shoemaker's foot-measuring device, comprising a case *c*, and a tongue *d*, said parts having adjacent faces adapted to receive between themselves a foot to be measured, a drum in said case, and a flexible measure wound on said drum and adapted to be drawn out of the case, said measure having at one side size-marks for determining the number of shoe needed and at the other side standard graduations for measuring distances, and said tongue being slidably mounted on the measure.

3. A shoemaker's foot-measuring device, comprising a case *c*, and a tongue *d*, each having a base and a face at right angles to said base, means for fastening said case and tongue together with their faces in contact, and a flexible measure mounted in the case and having its end projecting therefrom and passing loosely through the tongue, and means for preventing said tongue from being slid off the measure.

4. In a shoemaker's foot-measure, the combination of a heel-rest and toe-tongue, means for separably connecting said parts, a reel in said toe-tongue, means for separably connecting said parts, a reel in said heel-rest, a tape wound on said reel and extending out from said heel-rest and passing slidably through the toe-tongue, and a stop on the end of said tape beyond the toe-tongue.

5. In a shoemaker's foot-measure, the combination of a heel-rest, a toe-tongue, and a flexible tape connecting said parts, one of the said parts having means for winding up the tape and the other being slidable on said tape.

709,666. WINDOW FRAME AND SASH. EDWARD DAVEY, New Rochelle, N. Y. Filed Jan. 22, 1902. Serial No. 90,767. (No model.)

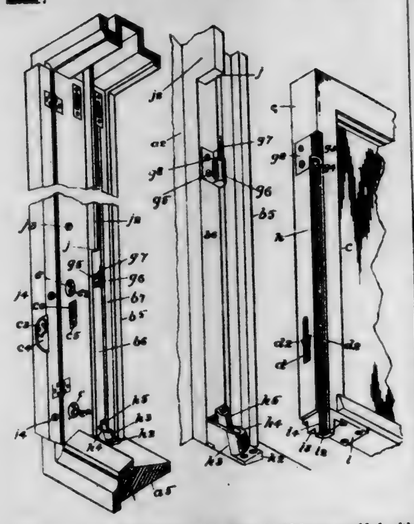

Claim.—1. A window-frame, the sides of which are provided with vertically-arranged spaces adapted to receive the sashes, the upper sash and the space in which it is placed being narrower than the lower sash and the space in which it is placed, hinged beads or strips at the front of the frame for holding the lower sash in place, and central beads or strips the upper portions of which are provided with thickened or inwardly-directed members for holding the upper sash in place, vertically-movable sashes mounted in said frame and provided with hinges at one side, a part of said hinges being secured to the frame and a part to the sash, and said parts of said hinges being adapted to engage when the sashes are lowered, whereby said sashes may be swung inwardly, substantially as shown and described.

2. A window-frame, the sides of which are provided with vertically-arranged spaces adapted to receive the sashes, the upper sash and the space in which it is placed being narrower than the lower sash and the space in which it is placed, hinged beads or strips at the front of the frame for holding the lower sash in place and central beads or strips the upper portions of which are provided with thickened or inwardly-directed members for holding the upper sash in place, sashes mounted in said frame and provided with hinges at one side, a part of said hinges being secured to the frame and a part to the sash and said parts of said hinges being adapted to engage when the sashes are lowered, whereby said sashes may be swung inwardly, the hinges of the upper sash being counterhinges and adapted to raise said sash in the operation of swinging it inwardly, substantially as shown and described.

3. A window-frame provided with sashes which are vertically movable therein, said sashes being each provided at one side with hinges composed of separate parts, parts of said hinges being secured to the frame and parts to the sashes, said parts of said hinges being adapted to engage only when said sashes are in the lowered position, and the connection between the separate parts of said hinges when said sashes are lowered, being automatic, said frame being also provided with hinged front beads or strips at the sides thereof and with central beads, the upper portions of which are wider than the bottom portions thereof, substantially as shown and described.

4. A window-frame provided with a vertically-movable sash detachably hinged at one side and adapted to turn inwardly, the upper hinge consisting of a cylindrical head secured to the frame and provided with an upwardly-directed plate and a socket-plate secured to the sash and adapted to engage said plate, said sash being grooved vertically to form a space for said head to move in, and the lower hinge consisting of a cam member secured to the frame and a corresponding member secured to the bottom of the sash and adapted to engage therewith, substantially as shown and described.

5. A window-frame provided with a vertically-movable sash and counterbalance cord and weight, the cord being detachably connected with the sash by means of an oblong block *c'* having a transverse piece *c''* and a bottom foot *g* and the window-frame being provided with a pivoted catch *f'* in connection with which said foot operates, substantially as shown and described.

709,667. CAR-LOCK GUARD. HENRY DITCHBURN, Gravenhurst, Canada. Filed Mar. 26, 1902. Serial No. 100,019. (No model.)

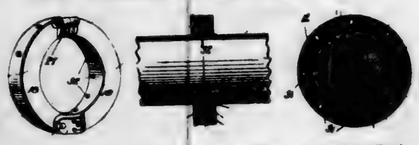

Claim.—1. An car-lock guard comprising a removable collar having points projecting radially inward therefrom and adapted to be adjustably clamped over the loom of the car.

2. An car-lock guard comprising an adjustable metallic collar adapted to be clamped over the loom of the car, and a leather wear-collar secured to said metallic collar to take the wear of the rowlocks.

3. An car-lock guard comprising a separable metallic collar adapted to be adjustably clamped upon the loom of the car, a leather collar secured to said metallic collar, and a series of inwardly-projecting points adapted to bite into the car and hold the guard in position thereon.

4. An car-lock guard comprising a flanged separable metallic collar having the two parts thereof hinged at one side and adapted to be adjustably clamped together at the other side, whereby to clamp said collar in position on the car-loom, and a leather collar secured to said metallic collar.

5. An car-lock guard comprising a metallic flanged collar made in two semicircular halves pivoted together at one end and adapted to be adjustably secured to each other at the other, a circular divided leather collar surrounding said metallic collar and having the point of division thereof opposite the free ends of the halves of said metallic collar, and a series of points projecting inwardly from the interior of said metallic collar, said points being adapted to bite into the car-loom or into the leather shield carried thereon and hold the guard in place.

6. An car-lock guard comprising a flanged metallic collar made in two semicircular halves pivoted together at their ends and adapted to be adjustably clamped together at their other ends, a leather collar surrounding said metallic collar and lying against the flanges thereof, and a series of radial screws fitted in sockets formed in the cylindrical flange of said metallic collar and passing through apertures in said leather collar to secure the latter to the metallic collar.

7. An car-lock guard comprising a flanged metallic collar made in two semicircular halves pivoted together at their ends and adapted to be adjustably clamped together at their other ends, a leather collar surrounding said metallic collar and lying against the flanges thereof, and a series of radial screws fitted in sockets formed in the cylindrical flange of said metallic collar and passing through apertures in said leather collar to secure the latter to the metallic collar, said screws having pointed extremities adapted to project inwardly from the inner surface of said metallic collar so as to bite into the car-loom and hold the guard in place when the two halves of the collar are clamped together.

8. An car-lock guard comprising a metallic collar having a cylindrical and a radial flange and formed in two semicircular halves pivoted together at their ends, and having clamping means formed at their other ends, a leather collar surrounding said cylindrical flange and seated against said radial flange, and a series of radial screws fitted in threaded apertures in said cylindrical flange and passing through said leather collar to hold the same in position on the cylindrical flange, said screws having pointed extremities adapted to project inwardly from the inner surface of said cylindrical flange and to bite into the car-loom to hold the guard in place thereon.

9. An car-lock guard comprising a metallic collar formed in two semicircular halves, each having a cylindrical and a radial flange and a pair of pivot-ears connected by a pivot-rod, a pair of clamping-lugs formed at the opposite ends of said collar-halves, a clamping-screw turning in a socket in one of said lugs and in an aperture in the other, whereby to adjustably clamp the halves together, a circular leather collar surrounding said cylindrical flange and projecting slightly thereover and seated against the inner face of said radial flange, said collar being divided at a point opposite the clamped ends of said collar-halves, and a series of radial screws fitted in threaded apertures around the periphery of said cylindrical flange and projecting through said leather collar, whereby to secure the same to said metallic collar; said screws having conically-pointed ends adapted to bite into the car-loom or a leather shield carried thereover and to clamp the guard in place thereon.

709,668. MECHANICAL MOTOR. HENRY S. DURAND, Rochester, N. Y. Filed Feb. 5, 1902. Serial No. 4,812. (No model.)

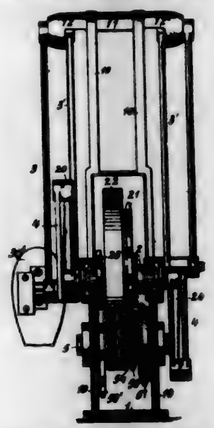

Claim.—1. In a mechanical motor comprising: a stationary frame having upright sides; a driving-shaft in the forward part of the frame; a counter-shaft behind the driving-shaft; bearings for these shafts secured immediately to each of the upright sides of the frame; and gearing connecting said shafts between their bearings; the combination of: a fly-wheel loosely mounted on and supported by the driving-shaft within the frame and at one side of said gearing; and other gearing connecting the counter-shaft with the fly-wheel between the bearings of the shafts, the latter gearing being at one side of the fly-wheel and between it and the frame; substantially as described.

2. In a mechanical motor comprising: a stationary frame having upright sides; a driving-shaft in the forward part of the frame; a counter-shaft behind the driving-shaft; bearings of these shafts secured immediately to each of the upright sides of the frame; a bevel-gear on the counter-shaft between the sides of the frame and near one of these sides; and gearing connecting said shafts between their bearings; the combination of: a fly-wheel loosely mounted on and supported by the driving-shaft within the frame and at one side of said gearing; other gearing connecting the counter-shaft with the fly-wheel between the bearings of the shafts, the latter gearing being at one side of the fly-wheel and between it and the frame; and a bevel-pinion extending behind the gearing that connects the shafts, and engaging with the bevel-gear; substantially as described.

3. In a mechanical motor comprising: a stationary frame having upright sides; a driving-shaft 2 in the forward part of the frame; a shaft 5 behind the driving-shaft; bearings for these shafts secured immediately to each of the upright sides of the frame; and a bevel-gear 51 on the shaft 5 between the sides of the frame and near one of these sides; the combination of: a fly-wheel loosely mounted on and supported by the driving-shaft within the frame; gearing on one side of the fly-wheel, composed of sprockets 21 and 20 on the shafts 2 and 5 respectively and a chain 21'; gearing on the other side of the fly-wheel, composed of sprockets 50' and 23 on the shaft 5 and fly-wheel respectively and a chain 24; and a bevel-pinion 54 extending behind the sprocket 50 and engaging with the bevel-gear 51; substantially as described.

709,669. SET-SUPPORT FOR PING-PONG TABLES. ARVID BE, Portland, Me. Filed July 25, 1902. Serial No. 116,594. (No model.)

Claim.—1. The herein-described post-holder for ping-pong tables consisting of a sliding bar, a post held by said bar, a holding-block having a horizontal opening for the passage of said bar and a narrower horizontal slot beneath said opening and connected therewith, a clamping-block having an I-shaped cross-section, the lower flange of said clamping-block being adapted to rest on the table, the shank fitting in said slot and the upper flange pressing against said bar to hold the same, said holding-block having an L-shaped arm extending beneath the table and a clamping-screw in the lower end of said arm adapted to press upward against the under side of the table.

2. The herein-described post-holder for ping-pong tables consisting of a sliding bar, a post held by said bar, a holding-block having a horizontal opening for the passage of said bar and a narrower horizontal slot beneath said opening and connected therewith, a clamping-block having an I-shaped cross-section, the lower flange of said clamping-block being adapted to rest on the table, the shank fitting in said slot and the upper flange pressing against said bar to hold the same, a pin passing laterally through said clamping-block, said holding-block being provided with a vertical slot through which said pin passes, said holding-block having an L-shaped arm extending beneath the table and a clamping-screw in the lower end of said arm adapted to press upward against the under side of the table.

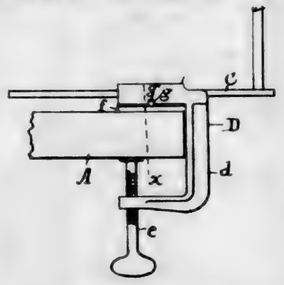

709,670. HATTER'S HAIR-STRAINER. HARRIS B. FOSTER, Jr., Orange, N. J. Filed Oct. 17, 1901. Serial No. 78,908. (No model.)

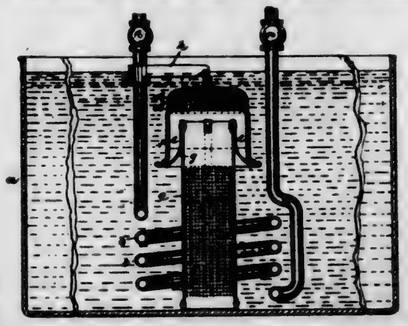

Claim.—1. The improved hair-strainer for hatters' rattles, &c., comprising the receptacle *c*, having perforated side walls and an open top, and a hood arranged over the said open top, and forming with said receptacle a passage *e*, substantially as set forth.

2. The combination with the perforated receptacle *c*, having an open top, of a hood arranged over the open top, of said receptacle, and having the upper part thereof perforated, substantially as set forth.

3. The combination with the perforated receptacle *c*, of a flange *f*, secured thereto, and a perforated hood-body removable from said flange, substantially as set forth.

4. The combination with the tank and steam-pipes, of a receptacle open at the top and perforated below said open top and a hood larger in plan than said open top arranged above said steam-pipes and secured in said tank to form a passage *e*, around said open top substantially as set forth.

5. The combination with the tank and steam-pipes, of the receptacle *c*, having cut-passages for the liquid of the tank and an in-passage at the top thereof, and a hood secured over said open top and above said steam-pipes and having perforations above said open top, substantially as set forth.

6. The combination with the tank and steam-pipes, and the receptacle *c*, having an open top and perforated lower part and unperforated upper part, of a hood arranged above said steam-pipes and said receptacle and having a perforated upper part and unperforated lower part, a passage between being formed at said unperforated parts substantially as set forth.

709,671. ACCORDEON. JOHN GALAS, Joliet, Ill. Filed June 13, 1901. Serial No. 64,362. (No model.)

Claim.—1. In an accordion, the combination with a reed-board located in the bellows-chamber, of a keyboard positioned below said reed-board, with an intervening air-space, the cankoo and whistle apertures in the keyboard and opening above the reed-board, the operating key-valves, the enlarged air-aperture, the air-valve covering said enlarged aperture, the push-button, protruding through the bottom of the case, and the independent lever connecting the air-valve and push-button, substantially as described.

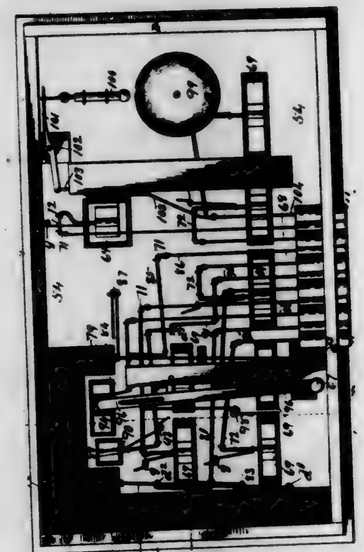

2. In an accordion, the combination with a reed-board, located in the bellows-chamber, the series of reeds attached thereto, one or more of which lie in different planes, the keyboard, positioned below its reed-board and providing an intervening space, the key-valves, opening downwardly from said keyboard, the push-buttons, seated in the lower part of the case, and the operative connection between said buttons and valves, substantially as described.

3. In an accordion, the combination with a reed-board, located in the lower part of the bellows-chamber, a keyboard, positioned below the reed-board, the cankoo and whistle apertures in the keyboard and opening above said reed-board, the series of valves, the push-buttons, seated in the lower part of the case, the operative connections between the valves and buttons, a bell, secured to the keyboard, a plunger-hammer, positioned to strike the bell, and means for actuating said plunger in sounding said bell, substantially as described.

709,672.

709,673. HEATING-STOVE. LEWIS W. HEEP, St. Louis, Mo. Filed Apr. 24, 1902. Serial No. 104,483. (No model.)

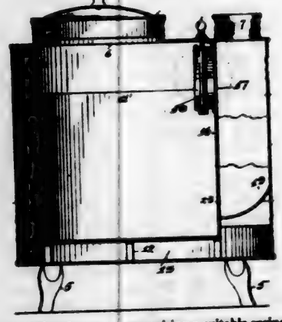

Claim.—A heating-stove comprising a suitable casing having a fuel-opening in the forward part of its top, and having a chimney-opening in the rear part of its top, and having draft-openings one on each side of the chimney-opening; draft-inlet dampers controlling said draft-openings; a fire-box mounted in said casing and held up from the bottom to form part of the hot-air space, said fire-box being shortened at the rear to form a second part of the hot-air space communicating with the first hot-air space and with the chimney-opening, and said fire-box being shortened at the front to form a third part of the hot-air space communicating with the first hot-air space and with the top of the fire-box; a wall extending upwardly from the rear edge of the fire-box to the top of the casing in front of the chimney-opening, there being damper-openings in said wall; a draft-directing damper in said damper-opening; and cold-air flues leading from said draft-openings through said second hot-air space and communicating with the fire-box; so that when the draft-directing damper is closed the air will pass through said draft-openings downwardly through said cold-air passages, upwardly through the fire-box, downwardly through said third hot-air space, backwardly under the fire-box through said first hot-air space, upwardly through said second hot-air space, and out through said chimney-opening; and so that when the draft-directing damper is open the air will pass downwardly through said cold-air passages, upwardly through the fire-box, and then through the damper-opening to the chimney-opening, substantially as specified.

709,674. HEATING-STOVE. LEWIS W. HEEP, St. Louis, Mo. Filed Apr. 24, 1902. Serial No. 104,484. (No model.)

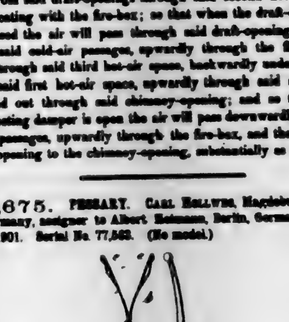

Claim.—A heating-stove comprising a suitable casing having a fuel-opening in the forward part of its top, and having a chimney-opening in the rear part of its top, and having draft-openings one on each side of the chimney-opening; draft-inlet dampers controlling said draft-openings; a fire-box mounted in said casing and held up from the bottom to form part of the hot-air space, said fire-box being shortened at the rear to form a second part of the hot-air space communicating with the first hot-air space and with the chimney-opening, and said fire-box being shortened at the front to form a third part of the hot-air space communicating with the first hot-air space and with the top of the fire-box; a wall extending upwardly from the rear edge of the fire-box to the top of the casing in front of the chimney-opening, there being a damper-opening in said wall; a draft-directing damper in said damper-opening; and walls extending backwardly from the fire-box to the casing to reduce the size of said second hot-air space, and forming cold-air passages one on each side of said second hot-air space, said cold-air passages connecting the draft-inlet openings with openings in the lower part of the fire-box, there being bottoms in said cold-air passages; so that when the draft-directing damper is closed the air will pass through said draft-openings downwardly through said cold-air passages, upwardly through the fire-box, downwardly through said third hot-air space, backwardly under the fire-box through said first hot-air space, upwardly through said second hot-air space, and out through said chimney-opening; and so that when the draft-directing damper is open the air will pass downwardly through said cold-air passages, upwardly through the fire-box, and then through the damper-opening to the chimney-opening, substantially as specified.

709,675. PESSARY. CARL HELLWIG, Magdeburg-Sudenburg, Germany, assignor to Albert Heinemann, Berlin, Germany. Filed Oct. 4, 1901. Serial No. 77,563. (No model.)

Claim.—1. A pessary comprising a stout wire of suitable material, one free end of which is split longitudinally forming two spring-acting bent legs while the other end is bent in shape of a ring at an angle to the longitudinal axis of said wire.

2. A pessary comprising in combination a stout wire, one end of which is split longitudinally while the other end is annularly shaped and bent at angle to the body of the wire, a hinged lid at the annular part, substantially as described.

709,676. ELECTRICALLY-OPERATED RAILWAY-SWITCH. JAMES LOMEY, Detroit, Mich. Filed June 21, 1902. Serial No. 112,580. (No model.)

Claim.—1. The combination with the movable contact on the car adapted to be connected with the source of electricity on the car and fixed contacts in the road-bed, of a switch-point structure comprising a vertically-movable switch-point in line with the inner rail of the side track at the junction therewith with the corresponding main rail and formed with an incline or inclines upon the lower face, a box in the road-bed into which the lower portion of the switch-point projects, vertical guide-bearing for said switch-point and operating mechanism instead in said box and comprising two electromagnets in line with the switch-point and adapted to be connected in circuit with the source of electricity on the car, and a bar or carriage slidingly supported in the box beneath the switch-point in line therewith and forming with its opposite ends cores for said electromagnets and means carried by said bar or carriage intermediate said cores and adapted to coöperate with the incline or inclines on the switch-point to raise or lower the same.

2. The combination with the movable contact on the car adapted to be connected to a source of electricity and fixed contacts on the ground adapted to electrically connect therewith in the travel of the car, of a switch-point structure comprising a vertically-movable switch-point in line with the inner rail of the side track at the junction with the corresponding main rail and formed with an incline or inclines upon its lower face, a box in the road-bed formed with an opening in its top through which the switch-point projects into the box and with flanges depending from the top forming vertical guides for said switch-point, two electromagnets arranged oppositely each other in line with the switch-point and having movable cores, parallel guide-bars rigidly uniting said cores together in line with each other and means secured between said guide-bars adapted to coöperate with the incline or inclines on the switch-point to raise or lower the same by the movement of the guide-bars in opposite directions.

3. The combination with the electric car carrying a movable contact adapted to be lowered in contact with the ground and fixed contacts in the road-bed in line with the movable contact and adapted to be electrically connected therewith in the travel of the car, of a switch structure comprising a box in the road-bed at the junction of the inner rail of the side track with the corresponding main-line rail and carrying integral portions of said rails, a switch-point vertically movably supported in line with the inner rail in an opening in the top of the box and forming a junction of said inner rail with the main rail at the elevated position of said switch-point, an incline or inclines formed upon the lower face of the switch-point, a sliding bar or carriage beneath the switch-point in line therewith and provided with means coöperating with the inclines on the switch-point to raise and lower the same by the endwise movement of the sliding bar, and a pair of electromagnets arranged oppositely each other in line with the sliding bar or carriage and independently connected in circuits between the fixed contacts and the return-rail, the ends of the sliding bar or carriage forming cores for said magnets.

4. The combination with the movable contact on the car adapted to be connected to a source of electricity and fixed contacts on the ground adapted to electrically connect therewith in the travel of the car, of a switch-point structure comprising a vertically-movable switch-point in line with the inner rail of the side track at the junction with the corresponding main rail and formed with an incline upon its lower face, a box in the road-bed formed with an opening in its top through which the switch-point projects into the box, two electromagnets arranged oppositely each other in line with the switch-point and having movable cores, parallel guide-bars rigidly uniting said cores in line with each other, a bar having an inclined shoulder carried by said guide-bars and adapted to coöperate with the incline on the switch-point to raise or lower the same by the movement of the guide-bars in opposite directions, a stirrup straddling said bars and a pin carried by said stirrup upon which the switch-point is free to have a limited vertical movement.

709,677. AXLE-BEARING. ROBERT MCLAUGHLIN, Oshawa, Canada. Filed Mar. 5, 1902. Serial No. 96,755. (No model.)

Claim.—1. An axle-bearing comprising an axle-arm and a hub-sleeve both having thrust-bearing surfaces formed thereon, and a compound thrust-washer freely rotatable as a whole between said bearing-

surfaces and comprising an elastic washer faced on both sides by metallic bearing-washers, one or both of which have ears formed on their flat lateral faces interlocking with corresponding notches in the elastic washer.

2. An axle-bearing comprising an axle-arm having a collar, a hub having a thrust-bearing surface formed thereon coacting with said collar, and a compound thrust-washer comprising a washer freely rotatable on a shank between said bearing-surfaces and of resilient material, and metallic washers one on each side thereof, one of which has a lateral flange embracing said elastic washer to hold it in place.

3. An axle-bearing comprising an axle-arm having a thrust-collar, a hub-sleeve having a thrust-shoulder formed thereon, and a compound resilient thrust-washer located between said collar and shoulder and consisting of a heavy washer of elastic material having notches formed in one face thereof, a metallic washer having ears formed on the adjacent face adapted to interlock with said notches, and a second metallic washer having a lateral flange adapted to freely embrace said elastic washer and to form a seat therefor.

4. An axle-bearing comprising an axle-arm, a hub-sleeve turning thereon and having a bearing-surface formed on its outer end, a hub-cap having a lateral flange forming a recess, a washer of resilient material located in said recess, and a notched metallic bearing-washer overlying said resilient washer, said lateral flange of the hub-cap having ears formed on its internal periphery adapted to coact with the edges of said metallic washer to hold the same in place and to permit the same to be removed when the notch therein is brought opposite one of said ears, substantially as described.

5. An axle-bearing comprising an axle-arm, a hub-sleeve turning thereon and having a shouldered bearing-surface at its inner end and a squared bearing-surface upon its outer end, a collar upon said axle-arm coacting with the shoulder, a compound bearing-washer comprising a metallic washer having a lateral flange, a heavy elastic washer seated within said flange and having notches in its opposite face, and a second metallic washer having ears on its adjacent face coöperating with said notches; a hub-cap upon the outer end of the axle having a laterally-projecting flange with a pair of ears formed at opposite sides thereof and on its inner periphery, a heavy resilient washer fitting within the recess of said hub-cap, and a metallic bearing-washer overlying said last-named resilient washer and adapted to take the thrust at the outer end of the wheel, said last-named metallic washer having a notch in its periphery whereby it may be removed from the hub-cap when said notch is brought opposite one of the ears thereon, substantially as described.

6. In a bearing an axle having a collar formed thereon provided with one or more lateral projections, in combination with an axle-box having a shoulder formed therein opposed to the said collar, an elastic washer located between the said collar and shoulder and engaging the said projections, and a metal washer adjacent to the said shoulder and flanged to partly lap over the said elastic washer, substantially as described.

7. In a bearing an axle, and a nut screwed on the end of the axle, in combination with an axle-box, an elastic washer located between the end of the axle-box and the nut, a flange formed on the nut extending inwardly, two projections formed on the flange extending toward the axle, and a metal washer adapted to fit within the flange against the elastic washer and provided with notches in its edges so that it may be pressed to past the aforesaid projections and turned to engage them to hold the elastic washer in place, substantially as described.

8. In a bearing, an axle having a collar formed thereon provided with one or more lateral projections, in combination with an axle-box having a shoulder formed therein opposed to the said collar, an elastic washer located between the said collar and shoulder and engaging the said projections, a nut screwed on the end of the axle, an elastic washer located between the end of the axle and the nut, a flange formed on the nut extending inwardly, two projections formed on the flange extending in toward the axle, and a metal washer adapted to fit within the flange against the elastic washer and provided with notches in its edges so that it may be pressed in past the aforesaid projections and turned to engage them to hold the elastic washer in place, substantially as described.

709,678. TYPE-WRITER. JAMES R. HEARE, Buffalo, N. Y., assignor to the Wagner Typewriter Company, New York, N. Y., a Corporation of New York. Filed Aug. 2, 1901. Serial No. 70,748. (No model.)

Claim.—1. In a type-writing machine, the combination of a carriage having a platen, means for supporting a plurality of paper strips, an endless copying-ribbon adapted to be received between said paper strips, a guide located near that portion of the platen at which the paper strips and endless copying-ribbon leave it and through which guide all of said paper strips and the endless copying-ribbon pass, said guide consisting of two knives by means of which portions of said paper strips may be detached, and additional guides whereby the endless copying-ribbon is continuously directed between the paper strips and around the platen.

2. In a type-writing machine, the combination of a platen, the carriage having lugs, and a longitudinally-slotted guide-plate located on the delivery side of the platen and provided with arms that ride on the lugs of the carriage.

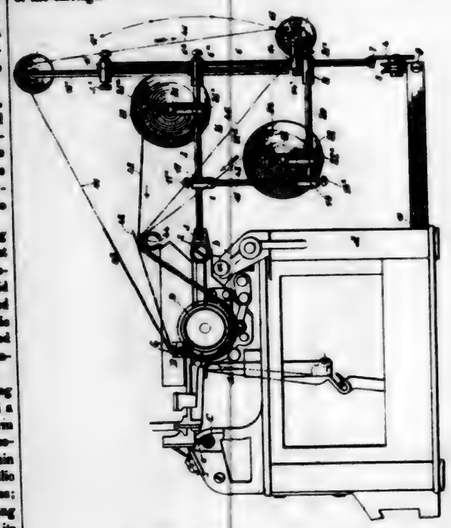

3. In a type-writing machine, the combination of a carriage having a platen, with a frame connected to move with said carriage, guides adjustable vertically on said frame, an endless copying-ribbon extending around the platen and said vertically-adjustable guides, and roll-holders carried by said frame and adjustable forward and rearward, said roll-holders being adapted to carry rolls of paper.

4. The combination, in a type-writing machine, of a carriage provided with lugs, and a guide-plate slotted for the passage of the paper and provided with arms arranged to embrace the said lugs of the carriage and to ride thereon.

5. The combination, in a type-writing machine, of a carriage, a platen, and a slotted paper-guide mounted to slide up and down on the carriage on the delivery side of the platen.

6. The combination, in a type-writing machine, of a carriage having lugs projected therefrom, and a longitudinally-slotted paper guide having upward arms which embrace the said lugs of the carriage and ride thereon.

7. In a type-writing machine, the combination with a platen, means for supporting a plurality of paper strips, and an endless copying-ribbon adapted to be received between said paper strips, of a guide located above the platen and somewhat in the rear of the forward portion thereof, the said copying-ribbon passing through the said guide, and additional guides whereby the endless copying-ribbon is continuously directed between the paper strips and around the platen, the copying-ribbon being thus rearwardly inclined from the point at which it leaves the platen so that it will serve as a support for the original paper strip which is similarly inclined.

709,679. BICYCLE. CHARLES H. CHAPMAN, Rochester, N. Y. Filed Apr. 29, 1898. Serial No. 679,184. (No model.)

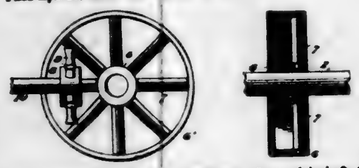

Claim.—In a bicycle, the combination of a pedal-shaft, the cup-shaped wheel having an interior sleeve fixed to the shaft and a concentric rim, rollers journaled to revolve wholly within the cup-shaped depression of the wheel near its mouth, the ends of the rollers being mounted in the sleeve and rim, and a disk-shaped wheel having radially-arranged

pin-rollers to mesh with the rollers of the cup-wheel, substantially as described.

709,680. NECKTIE. CHARLES REYNOLDS, Jersey City, N. J. Filed July 8, 1902. Serial No. 114,784. (No model.)

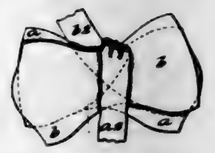

Claim.—A butterfly tie consisting of two separate similar parts a and b, said parts being provided with end members a' and b' one of which is folded forwardly and the other backwardly, said parts being then placed together so that the end pieces will be adjacent and across each other, the front end piece being then folded backwardly and the back end piece forwardly and downwardly and backwardly, and said end piece being secured at the back, substantially as shown and described.

709,681. SAFETY DEVICE FOR MOTOR-VEHICLES. ANDREW L. RIKER, New York, N. Y., assignor, by mesne assignments, to Horton Trust Company, trustee, a Corporation of New York. Filed Mar. 2, 1900. Serial No. 7,119. (No model.)

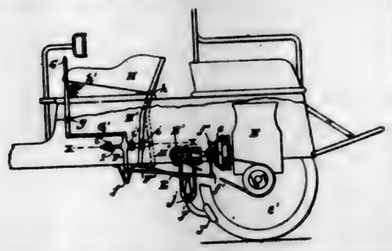

Claim.—1. In a motor-vehicle, a motor, a driven road-wheel, intermediate transmission mechanism and a clutch between said transmission mechanism and the motor, means under the control of the occupant to apply and disconnect the clutch to propel the vehicle, and automatic means to release said clutch upon rising of the occupant from the seat of the vehicle.

2. In a motor-vehicle, a motor, a driven road-wheel, intermediate transmission mechanism and a clutch between said transmission mechanism and the motor, means under the control of the occupant to apply and disconnect the clutch to propel the vehicle, and automatic means to release said clutch, a brake for said vehicle, and means for applying said brake simultaneously with the automatic release of the clutch.

3. In a motor-vehicle, a motor of the type adapted to operate irrespective of variations in speed or stopping of the vehicle, a driven road-wheel, clutch connections to make or interrupt transmission of power from the engine, automatic means to release the connections, means under the control of the occupant to effect connections between the motor and the driven wheel, a brake for retarding the vehicle and automatic means for applying the brake.

4. In a motor-vehicle, a driving-motor and a driven road-wheel, intermediate transmission mechanism and a clutch to operatively connect or disconnect the power-transmission system, a single operating connection for said clutch and a plurality of means for actuating said connections, including an automatic means.

5. In a motor-vehicle, a driving-motor and a driven road-wheel, intermediate transmission mechanism and a clutch to operatively connect or disconnect the power-transmission system, a single operating connection for said clutch, a plurality of means for actuating said connections including an automatic means, a brake and means operating with said automatic connections to apply the brake upon the release of the clutch.

6. In a motor-vehicle, an engine adapted to rotate upon the stopping of the vehicle, a friction-clutch for disconnecting said engine from the power-transmission mechanism, a brake for retarding the vehicle, an automatic means for releasing said vehicle-clutch and applying the brake, said means including a spring-actuated cam adapted to be released upon removing the weight of the occupant.

709,682. ROTARY SLIDE-VALVE FOR PUMPS, COMPRESSORS OR MOTORS. LOUIS ROEDEL, Passaic, N. J. Filed Mar. 24, 1900. Renewed June 10, 1902. Serial No. 111,033. (No model.)

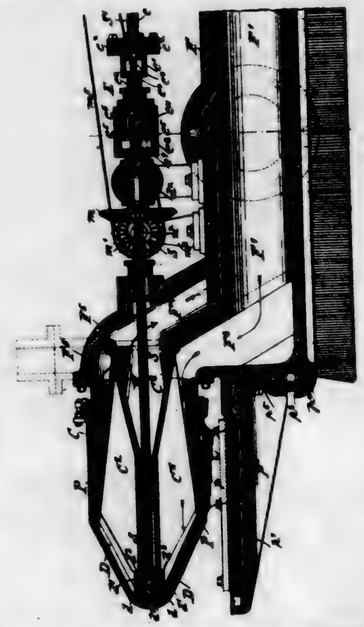

Claim.—1. The combination, with a stationary cylinder having interior inlet and outlet channels, of a rotary slide-valve at the head of said cylinder, a shaft connected at one end with said valve, means for imparting rotary motion to said shaft, and a balancing device arranged at the opposite end of said shaft, substantially as set forth.

2. The combination, with a stationary cylinder having interior inlet and outlet channels and inlet and outlet ports, of a rotary slide-valve having ports registering with the inlet or outlet ports of the cylinder, and a reciprocating plunger guided on the cylinder, substantially as set forth.

3. The combination, with a stationary cylinder having interior inlet and outlet channels and inlet and outlet ports, and a supporting-frame having supply and discharge channels communicating with one end of said channels, of a rotary slide-valve having ports registering successively with the inlet and outlet ports, a plunger on the cylinder, and means for imparting reciprocating motion to said plunger substantially as set forth.

4. The combination of two stationary cylinders having interior inlet and outlet channels and inlet and outlet ports and provided each with a conical outer end, conical slide-valves, one for each cylinder, rotating in contact with the same, thrust-bearings, one for each slide-valve, arranged at the apex of its cylinder, and a shaft connecting the slide-valves of both cylinders, substantially as set forth.

5. The combination, with two stationary cylinders having interior inlet and outlet channels, of rotary slide-valves at the heads of said cylinders, shafts connected with said valves, means for imparting rotary motion to said shafts, and a balancing device interposed between the inner ends of the shafts, substantially as set forth.

6. The combination, with two stationary cylinders arranged axially in line with each other and provided with interior inlet and outlet channels, of conical slide-valves at the ends of said cylinders, means for imparting rotary motion to the slide-valves, plungers guided on said cylinders, and means for imparting reciprocating motion to said plungers, substantially as set forth.

7. The combination, with two stationary cylinders having interior inlet and outlet channels, of slide-valves on the heads of said cylinders, shafts connected with the slide-valves, means for imparting rotary motion to said shafts, and a balancing device between the inner ends of said shafts, said balancing device consisting of a differential piston, a larger piston, cylinders for said pistons, and couplings between the shafts and cylinders, substantially as set forth.

8. The combination, with two stationary cylinders having interior

inlet and outlet channels, of rotary slide-valves on the heads of said cylinders, plungers guided on said cylinders, means for connecting said plungers, and means for simultaneously reciprocating both plungers, substantially as set forth.

9. The combination, with a stationary cylinder having interior inlet and outlet channels and inlet and outlet ports and provided with a conical outer end, of a slide-valve, a thrust-bearing for the head of the slide-valve at the apex of the cylinder, a cut-off valve interposed between said slide-valve and cylinder, and a thrust-bearing for said cut-off valve at the apex of the cylinder in line with the bearing of the slide-valve, substantially as set forth.

10. The combination of a stationary cylinder having interior inlet and outlet channels and inlet and outlet ports and provided with a conical outer end, of a slide-valve, a thrust-bearing for the head of the slide-valve at the apex of the cylinder, a shaft connected with said slide-valve, means for imparting rotary motion to said shaft, and a balancing device arranged at the opposite end of said shaft, substantially as set forth.

11. The combination, with a stationary cylinder having interior inlet and outlet channels, said cylinder being provided with spring-plates in its outlet-ports, of a rotary slide-valve on the head of said cylinder, and a reciprocating plunger guided on said cylinder, substantially as set forth.

709,683. ROTARY SLIDE-VALVE FOR PUMPS, COMPRESSORS, OR MOTORS. LOUIS ROSSEL, Passaic, N. J. Original application filed Mar. 24, 1900, Serial No. 10,086. Divided and this application filed June 28, 1900. Renewed June 10, 1902. Serial No. 111,037. (No model.)

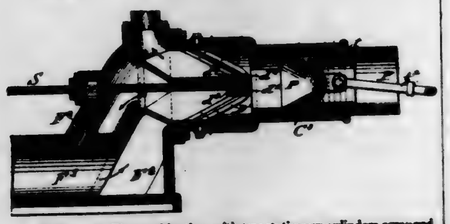

Claim.—1. The combination, with two stationary cylinders arranged axially in line with each other and provided with interior inlet and outlet channels, of conical slide-valves at the ends of said cylinders, means for imparting rotary motion to the slide-valves, plungers guided in said cylinders, and means for imparting reciprocating motion to said plungers, substantially as set forth.

2. The combination, with a stationary cylinder having interior inlet and outlet channels, of a rotary slide-valve on the head of said cylinder, a stationary pressure-receiving plate having ports corresponding to the ports of the cylinder, and a reciprocating plunger for said cylinder, substantially as set forth.

3. The combination, with a stationary cylinder having interior inlet and outlet channels, of a rotary slide-valve on the head of said cylinder, a stationary pressure-receiving plate having ports corresponding to the ports of the cylinder, a reciprocating plunger for said cylinder, and a balancing device at the inner end of the valve-shaft, substantially as set forth.

709,684. STEERING DEVICE FOR AUTOMOBILES. GUSTAV R. SCHLOSSBERGER, Allegheny, Pa. Filed Jan. 21, 1902. Serial No. 90,092. (No model.)

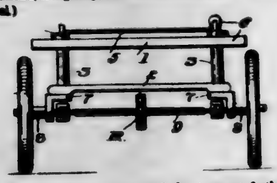

Claim.—In a steering apparatus of the type set forth, the combination of a vehicle-body and a cross-piece carried thereby with hollow standards interposed between said vehicle-body and cross-piece, rods turnably secured within said hollow standards and carrying collars at their upper ends engaging the vehicle-body, right-angular extensions rigidly secured to the lower ends of said rods and engaging the under face of the cross-piece, sleeves formed integral with the depending portions of said extensions with wheeled axles mounted in said sleeves, the inner ends of said axles extending beyond said depending portion of the extension and carrying knuckle-joints, and a connecting-rod secured to the upper ends of the rods, substantially as described.

709,685. TOY RAILWAY. ADOLF RICHTER, Rudolstadt, Germany, assignor to Friedrich Adolf Richter, Rudolstadt, Schwarzburg-Rudolstadt, Germany. Filed June 20, 1902. Serial No. 112,423. (No model.)

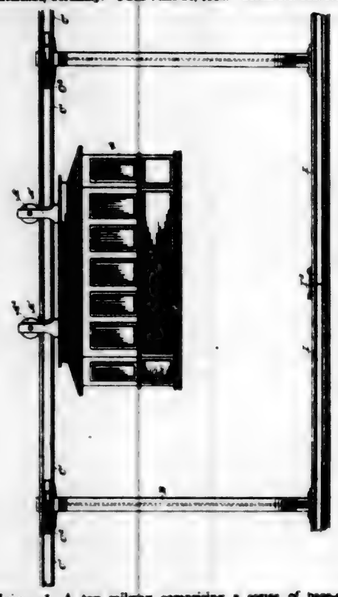

Claim.—1. A toy railway comprising a series of base-sections, means for detachably connecting them, a series of posts carried by said base-sections detachably, and track-sections detachably carried by the posts.

2. A toy railway comprising a series of base-sections, means for detachably connecting them, posts carried by said base-sections, and a track detachably carried by said posts.

3. A toy railway comprising base-sections, means for connecting them, posts, clamps for connecting the posts with the base-sections, and a track detachably carried by the posts.

4. A toy railway comprising base-sections provided at their adjacent ends with pins and sockets to receive them, and with means for preventing a separation of the sections by a longitudinal pull, posts carried by said sections, and a track detachably carried by the posts.

5. In a toy railway, a track and an operating projection movable transversely of the track and adapted to engage a brake-actuating mechanism on the car.

6. In a toy railway, a series of posts, a junction-piece carried by each post, and rail-sections arranged for detachable engagement with said junction-piece.

7. In a toy railway, a series of posts, a rail-support carried by each post, and rail-sections arranged for detachable connection with said supports.

8. In a toy railway, a series of posts, a rail-support carried by each post, clamping members projecting from said rail-supports, and rail-sections arranged to engage the said supports.

9. In a toy railway, a series of posts, a rail-supporting junction-piece carried by each post and provided with clamping members projecting from its ends, and rail-sections arranged for detachable engagement with said junction-piece and its clamping members.

10. In a toy railway, a series of posts, a junction-rail carried by each post and provided with a hollow head, and with spring members projected therefrom longitudinally, and rail-sections adapted to be engaged by said spring members and provided with pins arranged to enter the hollow head of the junction-rail.

709,686. CAR-COUPLING. WILLIAM T. SEARLE and EDWARD M. KEPPLE, Goff, Pa. Filed June 5, 1902. Serial No. 110,314. (No model.)

Claim.—1. In a car-coupling, the combination with a draw-head, of a swinging holder mounted within said draw-head having an opening through the same, and a coupling-pin passing through said opening and through an opening in the bottom of the draw-head and adapted to swing with said holder by the engagement of the coupling-link with said pin during the insertion of said link in the draw-head, said pin being adapted to pass through said link and come in contact with the forward end of the opening in the draw-head when the link is in its position for coupling.

2. In a car-coupling, the combination with a draw-head, of a swinging holder mounted within said draw-head having an opening through the same, a coupling-pin passing through said opening and through an opening in the bottom of said draw-head and adapted to swing with said holder by the engagement of the coupling-link with said pin during the insertion of said link in the draw-head, said pin being adapted to pass through said link and come in contact with the forward end of said opening in the draw-head when the link is in position for coupling, and a stop within said draw-head to limit the movement of said link during its insertion in said draw-head.

3. In a car-coupling, the combination with a draw-head, of a swinging holder mounted within said draw-head having an opening through the same, a coupling-pin passing through said opening and through an opening in the bottom of said draw-head and adapted to swing with said holder by the engagement of the coupling-link with said pin during the insertion of said link in the draw-head, said pin being adapted to pass through said link and come in contact with the forward end of said opening in the draw-head when the link is in position for coupling, and a dog mounted in said draw-head adapted to be raised by the swinging of said pin to permit of the insertion of said link in the draw-head and engage with said pin to return and hold said pin and holder in their normal positions.

4. In a car-coupling, the combination with a draw-head, of a swinging holder mounted within said draw-head having an opening through the same, a coupling-pin passing through said opening and through an opening in the bottom of said draw-head and adapted to swing with said holder by the engagement of the coupling-link with said pin during the insertion of said link in the draw-head, said pin being adapted to pass through said link and come in contact with the forward end of said opening in the draw-head when the link is in position for coupling, a dog mounted in said draw-head adapted to be raised by the swinging of said pin to permit the insertion of the link in the draw-head and engage with said pin to return and hold said pin and holder in their normal positions, and a stop or projection on said dog adapted to hold said link in position around said pin.

709,687. COVER FOR MEMORANDUM-BOOKS. HILDA VERNON, Brooklyn, N. Y. Filed Apr. 17, 1902. Serial No. 103,376. (No model.)

Claim.—1. As a new article of manufacture, a memorandum, note, blank or other book cover formed with pockets upon the outer surfaces of the covers of the material surfacing the covers, said pockets having a fold within the boundaries of the covers, substantially as set forth.

2. As a new article of manufacture, a memorandum, note, blank or other book cover having pockets upon the outer surfaces of the covers formed from the fabric or material surfacing the covers by folding such material prior to securing the same to the cover-boards, said pockets having a fold within the boundaries of the covers, substantially as set forth.

3. As a new article of manufacture, a memorandum, note, blank or other book cover having pockets upon the outer surfaces of the covers, formed from the fabric or other material surfacing the covers, by folding such material over twice, that is, with a double fold upon itself, so that there is an inner folded edge 2 and an outer folded edge 3, prior to securing the same to the cover-boards, substantially as set forth.

4. As a new article of manufacture, a memorandum, note, blank or other similar book, having pockets upon the outer surfaces of both covers formed by folding the fabric or other surface material of the cover over double upon itself so that there is an inner folded edge 2 and an outer folded edge 3, and the fold for the back of the cover comes upon a line 4 at right angles to the said folded edges, whereby in the completed cover there are pockets in the outer faces of both covers and the folded edge 3 comes adjacent to the upper part of the book-cover, substantially as set forth.

5. As a new article of manufacture, a memorandum, note, blank or other book cover formed from binders'-board sides, and a piece of fabric or other suitable surfacing material that is folded over twice, that is, with a double fold upon itself, so that there is an inner folded edge 2 and an outer folded edge 3, and so that a receptacle or pocket is formed between the folded portions on the outer surface of the cover.

6. As a new article of manufacture, a memorandum, note, blank or other book cover formed from binders'-board sides, and a piece of fabric or other suitable surfacing material that is folded over twice, that is, with a double fold upon itself, so that there is an inner folded edge 2 and an outer folded edge 3 that extend across both covers and around the book, and so that a receptacle or pocket is formed between the folded portions on the outer surfaces of the covers, and which, when the book is opened out flat extends between the extreme edges of the covers.

709,688. ADJUSTABLE FOLDING CHAIR. FRITZ VOGEL, Dusseldorf, Germany. Filed Apr. 2, 1901. Serial No. 54,095. (No model.)

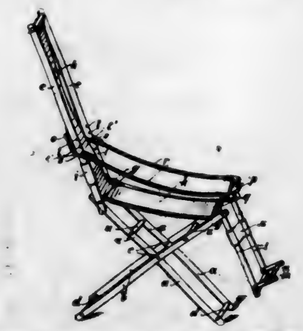

Claim.—In a folding chair, the combination of the hinged and folding base consisting of crossed legs *a a* and *b b*, connected at their common center by pivots *c*; the back-frame *e e* hinged to the upper ends of the legs *a a*; the leg-rest *l l* pivoted to the upper ends of the legs *b b* and having standards *q q* projecting from the upper ends of its respective members; the flexible arm-rests *r r* connected in front to the tops of the standards *q q* and at back at variable height to the members *e e* of the back-frame; springs *o* affording yielding support to the rear ends of the arm-rests and means for limiting the automatic vertical movement of the rear ends of said arm-rests; substantially as described.

709,689. CHILIAN MILL. GEORGE F. WADDELL and WILLIAM J. EVANS, Anaconda, Mont. Filed Jan. 11, 1902. Serial No. 89,340. (No model.)

Claim.—1. The combination, substantially as set forth, of a main shaft, a sphere mounted thereon, a spider-hub loosely mounted on the sphere, journal-arms projecting rigidly from the hub, rolls mounted on the journal-arms, a die cooperating with the rolls, drag-arms projecting from the hub, journal-pins carried by the drag-arms, a rotary annular pan discharging on the die and rolls, secured to the shaft above the hub, journal-pins projecting from the bottom of the rotary pan, and links connecting the journal-pins of the water-pan with those of the drag-arms.

2. The combination, substantially as set forth, of a main shaft, a sphere mounted thereon, a spider-hub mounted on the sphere, journal-arms projecting from the hub, rolls mounted on the journal-arms, a die cooperating with the rolls, drag-arms projecting from the hub, journal-

pins carried by the drag-arms, a driving-disk secured to the shaft above the hub, journal-pins projecting from the driving-disk to positions in front of the drag-arms, and links connecting the journal-pins of the driving-disk with those of the drag-arms, said links having vertical play upon said journal-pins.

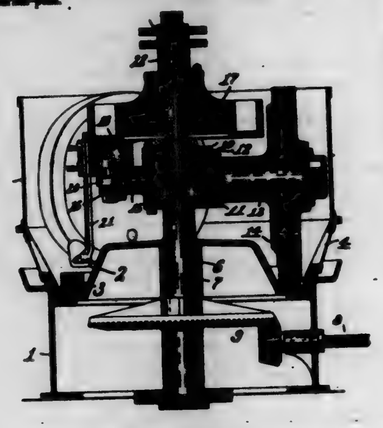

709,690. VARIABLE-SPEED AND REVERSING GEAR. HENRY J. WHITCOMB, Mount Vernon, N. Y., assignor to H. Ward Leonard, Bronxville, N. Y. Filed Aug. 30, 1901. Serial No. 73,772. (No model.)

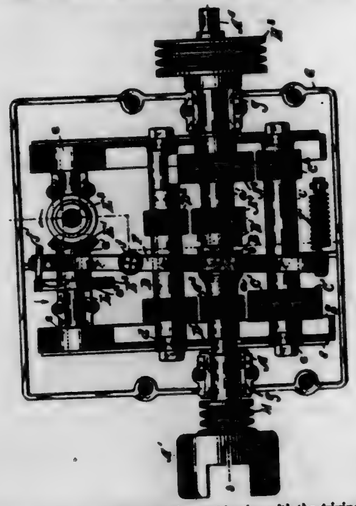

Claim.—1. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, a lower-speed gear for connecting said shafts around said clutch, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, and a shifting mechanism for placing said lower-speed gear into and out of mesh with the driving and driven shafts, substantially as set forth.

2. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, two lower-speed gears for connecting said shafts around said clutch, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, and a shifting mechanism for placing said lower-speed gears into and out of mesh with the driving and driven shafts, substantially as set forth.

3. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, a lower-speed gear for connecting said shafts around said clutch, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, a reciprocating slide for placing said lower-speed gear into and out of mesh with the driving and driven shafts, and means for shifting said slide, substantially as set forth.

4. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, two lower-speed gears, two shafts on which said gears are mounted and arranged parallel with the first-named shafts, for connecting said shafts around the clutch, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, a reciprocating slide for placing said lower-speed gears into and out of mesh with the driving and driven shafts, and means for shifting said slide, substantially as set forth.

5. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, a lower-speed gear for connecting said shafts around said clutch, a spring-actuated lever for moving said clutch, a cam for controlling the movement of said lever, means for moving said cam to permit said lever to shift the clutch, and a shifting mechanism for placing said lower-speed gear into and out of mesh with the driving and driven shafts, substantially as set forth.

6. In a power-transmitting gear, the combination with a driving and a driven shaft, of a clutch for making direct connection between said shafts, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, and a reversing-gear for connecting said shafts around the clutch to rotate the driven shaft in a direction opposite to the direction of rotation of the driving-shaft, substantially as set forth.

7. In a power-transmitting gear, the combination with a driving and a driven shaft, of a clutch for making direct connection between said shafts, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, and a reversing-gear for connecting said shafts around the clutch to retain the driven shaft in a direction opposite to the direction of rotation of the driving-shaft, substantially as set forth.

8. In a power-transmitting gear, the combination with a driving and a driven shaft, of a clutch for making direct connection between said shafts, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, and a reversing-gear for connecting said shafts around the clutch to retain the driven shaft in a direction opposite to the direction of rotation of the driving-shaft, said gear comprising driven and driving pinions mounted independently, an intermediate gear for changing the direction of rotation, and means for shifting said reversing-gear into and out of mesh, substantially as set forth.

9. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, a lower-speed gear for connecting said shafts around said clutch, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, a shifting mechanism for placing said lower-speed gear into and out of mesh with the driving and driven shafts, and means forming part of the shifting mechanism whereby said lower-speed gear will be locked in operative position, substantially as set forth.

10. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between the said shafts, two lower-speed gears for connecting said shafts around said clutch, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, a shifting mechanism for placing the said lower-speed gears into and out of mesh with the driving and driven shafts, and means forming part of the shifting mechanism whereby said lower-speed gears will be locked in operative position, substantially as set forth.

11. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, a lower-speed gear for connecting said shafts around said clutch, means for controlling said clutch, a reciprocating slide for placing said lower-speed gear into and out of mesh with the driving and driven shafts, means for shifting said slide, said means also constituting a locking means for locking said slide against movement when said lower-speed gear is in mesh with said driving and driven shafts, substantially as set forth.

12. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between the said shafts, two lower-speed gears, two shafts on which said gears are mounted and arranged parallel with the first-named shafts for connecting said shafts around the clutch, means for controlling said clutch, a shifting mechanism for placing said lower-speed gears into and out of mesh with the driving and driven shafts, and means forming part of the shifting mechanism whereby said lower-speed gears will be locked in operative position, substantially as set forth.

13. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between the said shafts, two lower-speed gears, two shafts on which said gears are mounted and arranged parallel with the first-named shafts for connecting said shafts around the clutch, means for controlling said clutch, a reciprocating slide for placing said lower-speed gears into and out of mesh with the driving and driven shafts, means for shifting said slide, said means also constituting a locking means for locking said slide against movement when said lower-speed gears are in mesh with the driving and driven shafts, substantially as set forth.

14. In a variable gear, the combination with the driving and driven shafts, of a clutch for making direct connection between said shafts, a lower-speed gear for connecting said shafts around said clutch, means for controlling said clutch, a reciprocating slide for placing said lower-speed gear into and out of mesh with the driving and driven shafts, eccentrics for reciprocating said slide, said eccentrics being arranged so as to be on dead-centers when the lower speed is in mesh, and means for rotating said eccentrics, substantially as set forth.

15. In a variable gear, the combination with the driving and driven shafts, a clutch for making direct connection between said shafts, a lower-speed gear on each side of said driving and driven shafts, said lower-speed gears being mounted on shafts parallel with the first-named shafts for connecting said first-named shafts around the clutch, a lever for shifting one member of said clutch, a cam for controlling the movements of said lever, a reciprocating slide carrying the shafts of said lower-speed gears, and means for reciprocating said slide for simultaneously moving one lower-speed gear into mesh with the gears of the driving and driven shafts and the other out of mesh, substantially as set forth.

16. In a variable gear, the combination with the driving and driven shafts, a clutch for making direct connection between said shafts, a lower-speed gear on each side of said driving and driven shafts, two shafts on which said gears are mounted and arranged parallel with the first-named shafts for connecting said first-named shafts around the clutch, means for controlling said clutch, a reciprocating slide carrying the shafts of said lower-speed gears, and eccentrics for reciprocating said slide for simultaneously moving one lower-speed gear into mesh with the gears of the driving and driven shafts and the other out of mesh, and said eccentrics being arranged so as to be on dead-centers when either of the lower-speed gears are in mesh, substantially as set forth.

17. A driving-shaft provided with a pinion, a driven shaft in line therewith provided with a gear-wheel, a jaw-clutch for connecting and disconnecting said shafts, a lever for operating said clutch, a parallel speed-reducing shaft, a gear-wheel and pinion on said shaft which mesh respectively with the pinion and gear-wheel on the driving and driven shafts, and operating means whereby said gears or said clutch can be brought into operative relation, and said means operating to prevent the simultaneous engagement of said gears and said clutch.

18. A driving-shaft provided with a pinion, a driven shaft in line therewith provided with two gear-wheels, a jaw-clutch for connecting and disconnecting said shafts, a lever for operating said clutch, a parallel speed-reducing shaft provided with a gear-wheel and pinion which mesh respectively with the pinion on the driving-shaft and one of the gear-wheels on the driven shaft, a second parallel speed-reducing shaft provided with a gear-wheel adapted to mesh with the pinion on the driving-shaft and a pinion adapted to mesh with the second gear-wheel on the driven shaft, and operating means whereby said gears or said clutch can be brought successively into operative relation, and said means operating to prevent the simultaneous engagement of either of said low-speed gears and said clutch.

19. A change-speed gear having in combination two end-to-end shafts, gear-wheels on said shafts, a clutch for connecting said shafts, a spring-actuated lever for operating said clutch, a cam for controlling the movement of said lever, a reciprocating slide, a speed-changing shaft carried by said slide and provided with a gear-wheel and pinion adapted to mesh with the gear-wheels on the first-named shafts, and a single means for simultaneously reciprocating said slide and rotating said cam, whereby, by a continuous movement of said means, said clutch and speed-changing gears are respectively moved into and out of engagement.

20. A change-speed gear having in combination two end-to-end shafts, gear-wheels on said shafts, a clutch for connecting said shafts, a spring-actuated lever for operating said clutch, a cam for controlling the movement of said lever, a reciprocating slide, two speed-changing shafts carried by said slide and each provided with a gear-wheel and pinion adapted to mesh with the gear-wheels on the first-named shafts, and a single means for simultaneously reciprocating said slide and rotating said cam, whereby, by a continuous movement of said means, said clutch and speed-changing gears are successively moved into and out of engagement.

709,691. CAR-HAUL. ALFRED H. ADELER, Pittsburg, Pa. Filed Feb. 13, 1902. Serial No. 94,073. (No model.)

Claim.—1. A device for moving or controlling the movement of cars, comprising an endless chain, so arranged that a portion of said chain will move the cars in one direction, while another portion is moving or controlling the movement of cars in the opposite direction, so that the cars traveling in one direction will move alongside of the cars traveling in the opposite direction, hinged or pivoted joints within the links to said chain to enable the same to conform to the different curves or courses in its movements, hooks on one side of said hinged or pivoted joints for engaging the cars moving in both directions, and wheels or rollers mounted on the opposite side of said hinged or pivoted joints and adapted to travel on tracks to support the chain in its movements.

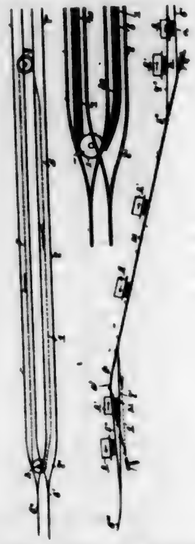

2. A device for moving or controlling the movement of cars, comprising an endless chain, so arranged that a portion of said chain will move the cars in one direction, while another portion is moving or controlling the movement of cars in the opposite direction, so that the cars traveling in one direction will move alongside of the cars traveling in the opposite direction, hinged or pivoted joints within the links to said chain to enable the same to conform to the different curves or courses in its movements, hooks on one side of said hinged or pivoted joints for engaging the cars moving in both directions, and bearings on the opposite side of said hinged or pivoted joints having wheels mounted therein adapted to travel on tracks and support the chain in its movements.

3. A device for moving or controlling the movement of cars, comprising an endless chain, so arranged that a portion of said chain will move the cars in one direction, while another portion is moving or controlling the movement of cars in the opposite direction, so that the cars traveling in one direction will move alongside of the cars traveling in the opposite direction, hinged or pivoted joints within the links of said chain to enable the same to conform to the different curves or courses in its movements, hooks on one side of said hinged or pivoted joints for engaging the cars moving in both directions, and wheels or rollers mounted on the opposite side of said hinged or pivoted joints and adapted to travel on tracks to support the chain in its movements.

4. A device for moving or controlling the movement of cars, comprising an endless chain, so arranged that a portion of said chain will move the cars in one direction, while another portion is moving or controlling the movement of cars in the opposite direction, so that the cars traveling in one direction will move alongside of the cars traveling in the opposite direction, hinged or pivoted joints within the links of said chain to enable the same to conform to the different curves or courses in its movements, hooks on one side of said hinged or pivoted joints for engaging the cars moving in both directions, bearings on the opposite side of said hinged or pivoted joints and directly beneath the said hooks, and wheels or rollers mounted in said bearings and adapted to travel on tracks to support the chain in its movements.

5. A device for moving or controlling the movement of cars, comprising an endless chain, so arranged that a portion of said chain will move the cars in one direction, while another portion is moving or controlling the movement of cars in the opposite direction, so that the cars traveling in one direction will move alongside of the cars traveling in the opposite

direction, means on one of the links of said chain for engaging the cars moving in both directions, means for supporting the chain in its movements, and hinged or pivoted joints within the links of said chain containing the engaging means and between and in line with the engaging and supporting means to enable said chain to conform to the different curves or courses in its movements.

6. A device for moving or controlling the movement of cars, consisting of a single chain adapted to engage with cars for moving the same along an up-haul track and for moving or controlling the movement of the cars along a down-haul track, the portion of said chain carrying the last-named cars being substantially on the same inclined plane as the portion carrying the first-named cars, hinged or pivoted joints within the links of said chain to enable the same to conform to the different curves or courses in its movements, hooks on one of said hinged or pivoted joints for engaging the cars in both directions, and wheels mounted on said chain adjacent to the hinged or pivoted joints therein and traveling on tracks for supporting said chain in its movements.

7. A device for moving or controlling the movement of cars, consisting of a single chain adapted to engage the cars for moving the same along an up-haul track and for moving or controlling the movement of the cars along a down-haul track, the portion of said chain carrying the last-named cars being substantially on the same inclined plane as the portion carrying the first-named cars, hinged or pivoted joints within the links of said chain to enable the same to conform to the different curves or courses in its movements, hooks on one side of said hinged or pivoted joints for engaging the cars in both directions, and bearings on the opposite side of said hinged or pivoted joints having wheels mounted therein adapted to travel on tracks and support the chain in its movements.

8. As a new article of manufacture, a chain having some of its links provided with pivoted or hinged joints therein, the axes of which are at right angles to the hinged or pivoted joints connecting the ends of the links together, hooks on one side of said chain, and wheels mounted on the opposite side of said chain and directly beneath said hooks for traveling on tracks to support said chain.

9. As a new article of manufacture, a chain having some of its links provided with hinged or pivoted joints therein, the axes of which are at right angles to the hinged or pivoted joints connecting the ends of the links together, hooks on one side of said chain, and wheels mounted on the opposite side of said chain, said hooks and wheels being in line with said hinged joints.

10. As a new article of manufacture, a chain having some of its links provided with hinged or pivoted joints therein, the axes of which are at right angles to the hinged or pivoted joints connecting the ends of the links together, and extensions on the ends of said connecting-links adapted to bear on said hinged or pivoted links to support the same.

709,692. OVERHEAD TRAMWAY. ALFRED M. ACKLIN, Pittsburg, Pa. Filed Feb. 27, 1902. Serial No. 95,950. (No model.)

Claim.—1. An overhead tramway comprising a single or main rail or track, two trolley-frames carrying buckets adapted to be moved in both directions on said rail or track, and an auxiliary rail vertically above said main rail or track adapted to engage with one of said trolley-frames to enable it to pass the other trolley-frame at a given point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

2. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track and at one side of the same at the passing-point for engaging with one of said trolley-frames to enable it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

3. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track at the passing-point, and another set of wheels on one of said trolley-frames adapted to engage with said auxiliary rail to enable it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

4. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track and at one side of the same at the passing-point, and another set of wheels on one of said trolley-frames adapted to engage with said auxiliary rail to enable it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

5. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track at the passing-point having downwardly-inclined ends thereon, and another set of wheels on one of said trolley-frames adapted to engage with said auxiliary rail to enable it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

6. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track and at one side of the same at the passing-point having downwardly-inclined ends thereon, and another set of wheels on one of said trolley-frames adapted to pass up said inclined ends to raise said trolley-frame from engagement with the main rail or track and permit it to pass the other trolley-frame at the said passing-point.

7. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track at the passing-point, and another set of wheels on one of said trolley-frames and above the first-named wheels, said second-named wheels being adapted to engage with said auxiliary rail to enable it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

8. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track and at one side of the same at the passing-point, and another set of wheels on one of said trolley-frames and above the first-named wheels, said second-named wheels being adapted to engage with said auxiliary rail to enable it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

9. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track at the passing-point having downwardly-inclined ends thereon, and another set of wheels on one of said trolley-frames and above the first-named wheels, said second-named wheels being adapted to pass up said inclined ends to raise said trolley-frame from engagement with the main rail or track and permit it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

10. An overhead tramway comprising a single or main rail or track, two trolley-frames having wheels thereon adapted to engage with the main rail or track and be moved along the same in both directions, an auxiliary rail vertically above said main rail or track and at one side of the same at the passing-point having downwardly-inclined ends thereon, and another set of wheels on one of said trolley-frames adapted to pass up said inclined ends to raise said trolley-frame from engagement with the main rail or track and permit it to pass the other trolley-frame at the said passing-point, one of said trolley-frames being adapted to travel on both the main and auxiliary rails, and both ends of said auxiliary rail being adapted to lift one of the trolley-frames from the main rail.

709,693. TOOL-POST. JOHN R. BACK, Worcester, Mass., assignor to the F. H. Reed Company, Worcester, Mass., a Corporation of Massachusetts. Filed Oct. 13, 1897. Serial No. 655,011. (No model.)

Claim.—1. The combination of a tool-rest having a plane upper surface and provided with a T-shaped slot, a post resting upon said tool-rest and having on one side a projecting flange resting upon the tool-rest and on its opposite side a lug overhanging said tool-rest, said flange and lug being disposed in the same direction as said tool, a clamping-screw held in said lug whereby a tool resting upon the tool-rest is held in position, a bolt extending vertically through said post and having an elongated head also in the direction of the T-slot and inclined in said slot, substantially as described.

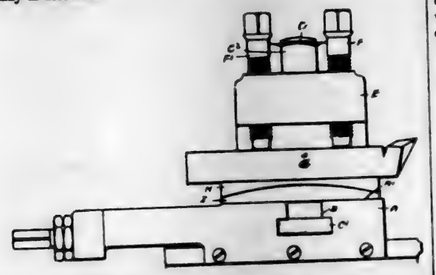

2. The combination of a tool-rest having a plane upper surface and provided with a T-shaped slot, a post resting upon said tool-rest and having on one side a projecting flange resting upon the tool-rest and upon the opposite side a lug overhanging the tool-rest, a clamping-screw held in said lug, blocks having oppositely-curved surfaces in contact and resting upon the upper surface of the tool-rest and beneath the clamping-screw in order to support the tool and permit the same to be tilted, substantially as described.

709,694. DRAW-OFF OR STRETCHING ROLLERS FOR TEXTILE MACHINERY. ALFRED BUTTENSCHÖN, Hammerstiel, Germany. Filed July 28, 1901. Serial No. 69,346. (No model.)

Claim.—1. Draw-off or stretching rollers, provided with fluted surfaces, and elastic cushion-strips bedded in said rollers, said flutes forming sharp edges which are adapted to mesh with said elastic cushion-strips, substantially as set forth.

2. Draw-off or stretching rollers, provided with fluted surfaces forming sharp edges, and elastic cushion-strips bedded in the flutes of said rollers, and having central longitudinal grooves in their exposed surfaces, said sharp edges adapted to mesh with said grooves, substantially as set forth.

709,695. METAL FASTENING FOR CROSS-WIRES. BYRON S. BLAKE, Rochester, N. Y. Filed Mar. 7, 1902. Serial No. 97,201. (No model.)

Claim.—The fastener for wire-supports herein described, consisting of a strip of spring-wire formed near one end with a transverse loop and near the other end with a rounded and constituting an open loop to engage the stake, said fastener having two substantially parallel straight portions of different lengths, the shorter portion being extended along the longer portion and having its terminal intermediate said loops and its free end bent out of the plane of the longer portion and terminating in a backturned hook to form a stop for the string-wire all substantially as and for the purpose specified.

709,696. RADIANT-HEAT BATH. GEORGE BRUSH, New York, N. Y. Filed Mar. 13, 1902. Serial No. 97,941. (No model.)

Claim.—1. In a radiant-heat bath, the combination of an exterior polygonal casing having an opening in one of its sides, a plurality of hinged outwardly-swinging doors, one above the other, for closing said opening, two vertical rows of incandescent electric lamps arranged on said side of the casing, one row at each side of the doors, reflectors for throwing the light from said lamps inwardly into the casing, and an electric-arc lamp adjustably supported outside of said casing and provided with a reflector for throwing the rays of light therefrom through said openings, substantially as set forth.

2. In a radiant-heat bath, the combination, of an upright casing of regular polygonal cross-section having alternate sides provided with extended portions at a suitable height and in communication with the interior of the casing, interior rows of incandescent lamps arranged vertically along the edges of the intermediate sides, interchangeable screen devices for said extended portions, sources of light in said extended portions, one of said intermediate sides forming an entrance-door, and another intermediate side having a plurality of vertically-arranged doors adapted to open independently for the admission of light from an exterior source, substantially as set forth.

709,697. HEAT-REDUCING DEVICE. HENRY C. CHAMBERS, Cincinnati, Ohio, assignor to the Cincinnati Butchers Supply Co., Cincinnati, Ohio. Filed Mar. 15, 1902. Serial No. 98,276. (No model.)

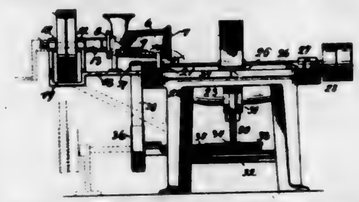

Claim.—The combined attaching-plate and supporting-base whereby in a meat-reducing device consisting of a preliminary and a finishing cutter, the first cutter is supported and attached to the second cutter, said combined plate and base disposed in a horizontal direction and adapted for attachment at one end to the finishing-cutter and having at its other end a frame 19 which is provided with bearings 12, 12, adapted to support the driving-shaft of the preliminary cutter.

709,698. BOTTLE-RINSER. HARRY W. OSLEY and HENRY O. HEINEMANN, Chicago, Ill. Filed Apr. 12, 1902. Serial No. 102,888. (No model.)

Claim.—1. In a bottle-rinsing machine, the combination of two series of vertical rinsing-tubes mounted to rotate upon a water communication having a central valve-seat, said valve-seat being mounted in turn upon a valve-plug, the latter being carried by a vertical water-supply pipe, and a stuffing-box connecting the valve-seat and the vertical supply-pipe, substantially as specified.

2. In a bottle-rinsing machine, the combination of two series of vertical rinsing-tubes mounted to rotate upon a water communication having a central valve-seat, said valve-seat being mounted in turn upon a valve-plug, the latter being carried by a vertical water-supply pipe, a stuffing-box connecting the valve-seat and the vertical supply-pipe, a drainage-pan rotating with the rinsing-tubes and a stationary bowl beneath to receive the said drainage, substantially as specified.

3. In a bottle-rinsing machine, the combination of two series of vertical rinsing-tubes mounted to rotate on a water communication, each series being provided with a platform for centering and supporting a multiplicity of bottles, and each platform being mounted upon a spring depressed by the weight of the bottles, and a bottle-carrier for spacing the multiplicity of bottles, substantially as specified.

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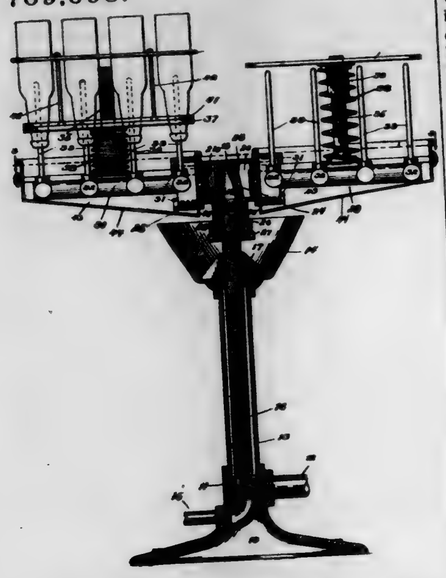

709,699. VENTILATOR. WILLIAM T. COTTIER, Chicago, Ill. Filed Apr. 8, 1902. Serial No. 101,494. (No model.)

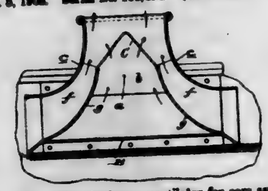

Claim.—In a suction device or ventilator for cars and the like, the combination with an upright, hollow body open at its upper end, and having lateral, inwardly and upwardly extending air-inductors, the upper ends of the inner walls of which are disposed in the same horizontal plane; of an upwardly-bulged screen arranged in the body over the space between the inner walls of the inductors and connected at its edge to the upper ends of said inner walls, whereby it is adapted to shed cinders, dirt and the like into the air-inductors, and the currents of air passing upwardly through said inductors are enabled to prevent the collection of dust on the screen.

709,700. BRIDLE-BIT. CHARLES W. DROWN, Brattleboro, Vt. Filed Jan. 9, 1902. Serial No. 88,861. (No model.)

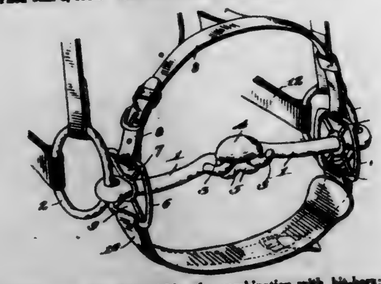

Claim.—1. In a jointed bit; the combination with bit-bars; of a center bit-roll with which said bars are connected at their inner ends; stops on said bit-roll against which the said bit-bars impinge so as to prevent breaking of the bit at the joint in a downward direction, but leaving it free to break in other directions, whereby a straight bit rigid against downward pressure is provided; cheek-plates slidingly mounted on said bit-bars, an adjustable lower jaw-strap secured to the lower ends of said cheek-plates; and an adjustable upper jaw-strap and cheek-rein secured to the upper ends of said cheek-plates.

2. A jointed bit comprising bit-bars; and a center bit-roll to which said bit-bars are jointed, said bit-roll having a flat bottom or under side and centrally-placed eyes depending therefrom to form joint connections for the bit-bars; said bit-bars impinging against said flat bottom so as to prevent breaking the bit downwardly, but leaving it free to break in other directions.

709,701. FIRING-PIN ARRANGEMENT FOR BREECH-LOADING ORDNANCE. GUSTAV BERNARDT, Eisenach, Germany. Filed Apr. 3 1902. Serial No. 101,379. (No model.)

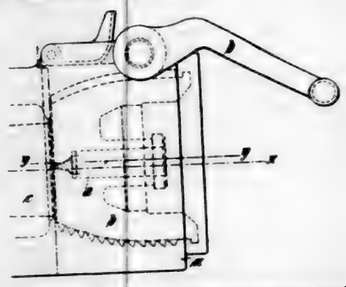

Claim.—1. A breech-closing mechanism in which the breech-block is arranged eccentric of the bore and secured in operative relation thereto by an interrupted thread, and a firing-pin arranged eccentrically in the breech-block.

2. A breech-closing mechanism in which the breech-block is unlocked by a rotary movement and opened to the rear and in which the axis of the breech-block is arranged eccentrically to the bore and the firing-pin eccentrically to the breech-block, and in such relation that the firing-pin shall coincide with the axis of the bore when the breech-block is locked in operative position.

3. A breech-closing mechanism in which the breech-block is mounted for limited rotative and retractive movement eccentrically of the bore, and the firing-pin mounted eccentrically on the breech-block and in such relation thereto that the axis of its rotative movement shall cut the longitudinal axis of the bore when the breech-block is in locked position.

4. In a breech-closing mechanism, a breech-block mounted eccentrically of the bore, means for locking and unlocking the breech by a limited rotative movement, means for retracting and advancing the breech-block, and a firing-pin arranged eccentrically in the breech-block in such relation thereto that the pin shall coincide with the bore when the breech-block is in the locked position.

5. In a breech-closing mechanism, an eccentrically-arranged breech-block adapted to be locked and unlocked by a limited rotative movement and to be opened and closed by swinging pivotally as upon a hinge, and a firing-pin arranged eccentrically in the breech-block in such relation thereto that the arc of movement of the pin shall intersect the longitudinal axis of the bore when the breech-block is in locked position.

709,702. ROTARY ENGINE. BYRON W. FELLOWS, Beverly, Mass. Filed June 21, 1901. Renewed May 28, 1902. Serial No. 109,380. (No model.)

Claim.—1. The combination, with a main bearing, and a sleeve journaled in it and provided with projecting arms; of an engine-shaft journaled eccentric of the said sleeve, power-cylinders mounted on the said shaft and operatively connected with the said arms whereby the said sleeve is revolved, and toothed wheels connecting the said shaft and sleeve and constraining them to revolve at the same speed and in the same direction, substantially as set forth.

2. The combination, with a main bearing, and a sleeve journaled in it and provided with projecting arms; of power-cylinders secured to the said shaft and provided with piston-rods, guides arranged alongside the said cylinders, cross-heads secured to the piston-rods and provided with slides which work in the said guides, and connecting-rods between the said slides and the projecting arms, substantially as set forth.

3. The combination, with a main bearing, and a sleeve journaled in it and provided with projecting arms; of an engine-shaft journaled eccentric of the said sleeve and provided with an axial steam-passage, power-cylinders provided with steam-chests and mounted on the said shaft, steam-pipes connecting the said steam-chests with the said passage in the shaft, connections between the said cylinders and arms whereby the said sleeve is revolved, and toothed wheels connecting the said shaft and sleeve, substantially as set forth.

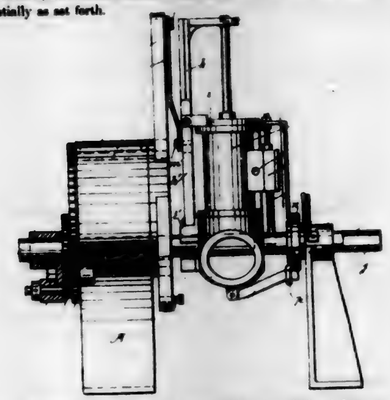

4. The combination, with a revolvable engine-shaft, of three power-cylinders secured to the said shaft and provided with valve-spindles, an eccentric mounted on the said shaft and provided with a single eccentric-strap, means for preventing the said eccentric from revolving with the engine-shaft, a jointed driving device which connects the said eccentric-strap with the said shaft so that the strap is revolved by the shaft, and eccentric-rods operatively connecting the said eccentric-strap with the valve-spindles, substantially as set forth.

5. The combination, with a revolvable engine-shaft, of three power-cylinders secured to the said shaft and provided with valve-spindles, an eccentric mounted on the said shaft and provided with a single eccentric-strap, eccentric-rods operatively connecting the said eccentric-strap with the valve-spindles, a jointed driving device which connects the said eccentric-strap with the said shaft so that the eccentric may be moved to reverse the engine and so that the said eccentric-strap is revolved by the said shaft, a reversing-lever secured to the eccentric, a stationary quadrant, and a catch for connecting the said lever and quadrant, substantially as set forth.

6. The combination, with a revolvable engine-shaft, of three power-cylinders secured to the said shaft and provided with valve-spindles, an eccentric mounted on the said shaft, means for preventing the eccentric from revolving with the engine-shaft, an eccentric-strap provided with a projecting loop, an arm pivotally connected with the shaft and engaging with the said loop whereby the eccentric-strap is constrained to revolve with the shaft, and eccentric-rods operatively connecting the said eccentric-strap with the valve-spindles, substantially as set forth.

709,703. CARBURETER. THOMAS J. FORBS, Geneva, Ohio. Filed Mar 18, 1902. Serial No. 98,714. (No model.)

Claim.—1. In a gas-carbureting apparatus, a generating-coil, a generating-base on which said coil is supported having a valve-controlled gas-duct open to said coil, a main to which the gas flows from the coil and a mixer at the opening for the gas into the said main, substantially as described.

2. A generating-coil for hydrocarbon gas and a generating-base supporting said coil having a plurality of gas-outlets, a burner on said base at the bottom of said coil and a valve for each of said outlets, substantially as described.

3. The generator-coil and the base on which it is removably secured, a cap over said coil and a conduit connecting said base and cap, and a main to which the gas flows from said base, substantially as described.

4. The generator-base and a generator-coil detachably supported thereon and open thereto, a cap over the coil and a gas-duct therein and a conduit-support for the cap rising on said base and open to the duct therein and to the said cap, substantially as described.

5. The generator-base and the generator-coil open thereto, a cap over the coil supported on said base, and a gas-conduit from the said base through said cap, in combination with a main to which the gas is delivered, and a valve-controlled connection from the duct in said cap to said main to deliver the gas, substantially as described.

6. The generator-base and the generator-coil open thereto, the casing about the said parts having a depressed bottom, and a drain-pipe from said bottom, substantially as described.

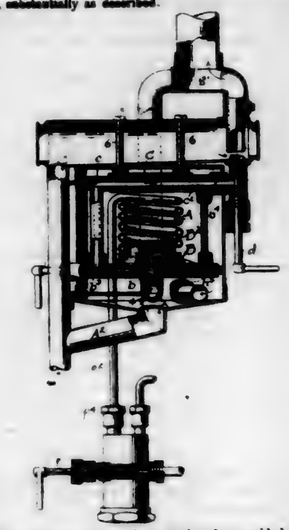

7. The generator-coil and the base therefor provided with a vapor-duct open to said coil, a vaporizing device for the oil and a tube leading therefrom and having a burner at its extremity beneath said base, whereby the said base is initially heated, substantially as described.

8. The combination of the generator-base, and generator-coil thereon and open thereto and a burner on said base within the lower portion of the coil, a cap over the coil and a duct from said base through said cap, an air-supply tube over said cap, a mixer therein and a valve controlling said duct and opening into said mixer, substantially as described.

9. The generator-base and the coil in open connection therewith and the burner on said base, in combination with a valve-controlled duct from base, and a return-pipe arranged to discharge a portion of the outgoing gas through said duct to the burner on said base, substantially as described.

709,704. ROTARY DRIER. LEVI GRILL, Cleveland, Ohio. Filed Jan. 13, 1902. Serial No. 89,804. (No model.)

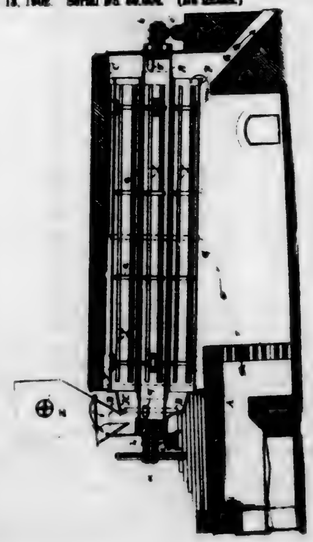

Claim.—1. In a power-operated drier, the combination of a rotating central tube and a plurality of flues moved by said central tube, all communicating with a hopper for receiving their charges as shown, and for the purpose described.

2. In a power-operated drier, comprising a central tube and a plurality of auxiliary tubes, all being connected as shown, the center tube terminating in trunnions and having side openings for the passage of material therethrough.

3. In a drier, in combination, a central drying-tube rotatively mounted, and a plurality of exterior drying-tubes positioned relative to and rotatable with said central tube and forming a unitary structure therewith.

4. In a power-operated drier, in combination, a furnace, and a series of rotatable flues for the passage of gases from said furnace, said flues being combined to form a unitary structure and forming independent drying-chambers, one of said flues forming the support for the remaining flues.

5. In a drier, in combination, a plurality of flues mounted in rotating heads to form a unitary structure, one of said flues forming the support for said heads.

6. In a drier, in combination, a plurality of rotating drying-tubes connected by rotating heads, one of said tubes forming the support for said heads, a hopper, and means for feeding the material from the hopper to said tubes.

7. In a drier, a furnace, a fan, and a plurality of flues mounted in rotating heads to form a unitary structure, one of said flues forming the support for said heads, said flues forming the sole passage-way leading to said fan, whereby the gases will be drawn through each tube in the same direction.

709,705. **METALLIC WAGON-BOX.** WALLACE GROSVENOR and WILLIAM MILNER, Canonton, N. D. Filed May 3, 1902. Serial No. 105,719. (No model.)

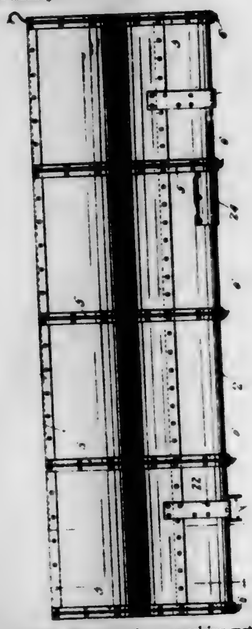

Claim.—1. A metallic wagon-box comprising metallic side plates, channel-like bottom plates, and flat end plates, in combination with sectional metallic ribs secured to said side and bottom plates and connecting the same and joint-irons connecting the abutting ends of the rib-sections, substantially as described.

2. A metallic wagon-box comprising the bent side plates 1, channel-shaped bottom plate 2 and flat end plates 3 and 4, in combination with the sectional ribs 5 secured to said plates 1 and 2, and the channel-shaped couplings 6 embracing and riveted to the flanges of said ribs 5, at their abutting ends, substantially as described.

3. A metallic wagon-box comprising the side plates 1, channel-like bottom plate 2 and end plates 3 and 4, in combination with the ribs 5 and 7 connecting the said plates 1 and 2 together and said ribs 7 being riveted to said end plates, and the coupling-channels 6 riveted to the flanges of said ribs 5, at their abutting ends, substantially as described.

4. A metallic wagon-box having metallic side and end plates and metallic ribs and reinforcing angle-irons secured to the upper edges of the side and end plates with their flanges projecting inward over the upper end of the box and serving as wind-guards, substantially as described.

709,706. **UNCOUPLING MECHANISM FOR RAILWAY-CARS.** GEORGE GROOBEY, Chicago, Ill. Filed Nov. 8, 1901. Serial No. 81,619. (No model.)

Claim.—1. A guide-plate for cars, having two pairs of sheaves revolubly supported thereon, the sheaves of each pair being disposed at an angle to each other.

2. The combination with a car-coupling, an uncoupling device, and a head block, of a guide-plate having two sets of guide-sheaves disposed in pairs at an angle to each other, a flexible connection rove over one or both sheaves of either pair of guide-sheaves, said connection adapted to be attached at one end to the uncoupling device of the coupler, and means for fastening the opposite end of the flexible connection.

3. The combination with an uncoupling device, of a car-coupling, and a flexible connection, of a locking-plate having an inverted-L-shaped slot, the horizontal portion of which has means for fastening the connection.

4. The combination with an uncoupling device, of a car-coupling, and a flexible connection, of a locking-plate having an inverted-L-shaped slot with two notches in different horizontal planes to lock the connection.

5. The combination with a car-coupling, and an uncoupling device, of a guide-plate having two sets of guide-sheaves disposed in pairs at an angle to each other, a flexible connection rove over one or both sheaves of either pair of guide-sheaves, said connection adapted to be attached at one end to the uncoupling device of the coupler, and means for fastening the opposite end of the flexible connection.

709,707. **MEANS FOR UNCOUPLING CARS.** GEORGE GROOBEY, Chicago, Ill. Filed Nov. 14, 1901. Serial No. 82,266. (No model.)

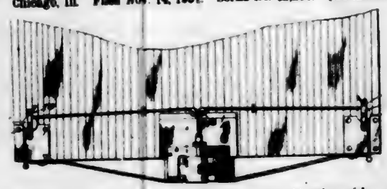

Claim.—1. In uncoupling mechanism, the combination with a guide-plate, and a sheave-block adjustably connected therewith and carrying sheaves, of a flexible connection adapted to extend over said sheaves in opposite directions to the sides of the cars.

2. The combination with a guide-plate, and a sheave-block, adjustably connected therewith and carrying sheaves, of a flexible connection adapted to extend over said sheaves in opposite directions to the sides of the cars, and means for locking said connection or connections.

3. The combination with a grooved plate having notches therein, of a sheave-block having a lug adapted to enter one of said notches, and a bolt and nut for securing the block to the plate.

4. The combination with a grooved plate having notches therein, of a sheave-block having a lug adapted to enter one of said notches, and a bolt and nut for securing the block to the plate, said sheave-block carrying a pair of sheaves at an angle to each other, and flexible connection extending over said sheaves.

5. The combination with an uncoupling device, and a flexible connection extending therefrom, of a locking-sheave over which said connection passes, said sheave mounted both to turn and move endwise on its support or bearing, and means for locking the sheave.

6. The combination with an uncoupling device, and a flexible connection extending in opposite directions therefrom, of an adjustable sheave-block, a pair of locking-sheaves, having rosettes of teeth thereon, housing

having similar teeth thereon and keys or wedges for locking the sheaves to the housings.

7. The combination with a guide-plate having an undercut groove extending lengthwise thereof, and notches in said plate, of a sheave-block having a lug adapted to enter one of said notches, a bolt the head of which is fitted to the groove and the opposite end of which passes through the groove and block, a nut adapted to screw on the bolt to fasten it in place to clamp the block, and a flexible connection adapted to extend over said sheaves to the device to be operated.

8. In uncoupling mechanism, the combination with a guide-plate, of a sheave-carrying plate having a pair of sheaves journaled thereon, said plate capable of several adjustments upon said guide-plate whereby to bring the adjacent points of the sheaves in line with the uncoupling device of different types of car couplings.

9. The combination with a car, uncoupling means thereon, and a block adjustably connected widthwise of or across the car, and adapted to be located in line with the uncoupling means, said block carrying sheaves, of a flexible device connected with the uncoupling means, thence extended upwardly over a sheave on the block and finally to an edge of the car within easy reach of the trainman.

10. In an uncoupling mechanism, the combination with a guide-plate having a groove extending longitudinally thereof, a block, and means extending through the block into the groove by which the block is adjustable lengthwise of the groove, and a flexible device connected with the uncoupling means, thence extended to the block and finally to an edge of the car within easy reach of the trainman.

709,708. **UNCOUPLING MECHANISM FOR RAILWAY-CARS.** GEORGE GROOBEY, Chicago, Ill., and SAMUEL P. DUNN, Columbus, Ohio. Filed Dec. 2, 1901. Serial No. 84,653. (No model.)

Claim.—1. A guide-plate for railway-cars, comprising a housing-plate having sheaves journaled thereon, a flexible connection extending from the coupling mechanism over one of said sheaves, and means for guiding said connection located at the forward edge of the plate and upon which said connection bears, said means being of sufficient extent with respect to the coupling used so that some part of it is always in line with the uncoupling mechanism of any known car-coupling of the Janney type.

2. A guide-plate for railway-cars, having an elongated antifriction-roller journaled at its forward edge, sheaves journaled on the plate in approximately the same plane with the elongated roller, and flexible connections extending from the coupling mechanism over the roller and around two of the sheaves.

3. A guide-plate for railway-cars, having an elongated antifriction-roller journaled at its forward edge, sheaves housed in the plate in approximately the same plane with the roller, said plate having openings at its opposite ends rearward of the sheaves, and flexible connections extending from the coupling means over the antifriction-roller and around two of the sheaves and out through the opening or openings in the ends of the plate.

4. A guide-plate for railway-cars, having two outer sheaves, an intermediate sheave and an elongated antifriction-roller disposed at the edge thereof, said sheaves and roller located in substantially the same plane and adapted to form guides for a flexible uncoupling device.

5. The combination with a guide-plate having sheaves journaled thereon and an elongated antifriction-roller journaled on said plate, of an uncoupling device, flexible connections extending therefrom over the roller and two of the sheaves to opposite sides of the car, and means for fastening the flexible connections, said means consisting of a plate having an opening through which the connection passes, and a gravity-latch operating in conjunction therewith for locking the connection.

6. The combination with a plate having guiding means at its forward edge, of a pair of horizontally-disposed sheaves adjustably connected with the plate, and a flexible connection which passes between said sheaves.

7. The combination with a plate having guiding means at its forward edge, of a pair of sheaves disposed horizontally and adjustable endwise of the plate, and flexible connections extending between said sheaves.

709,709. **SHOW-CASE.** SOLOMON HIRSH, Baltimore, Md. Filed Apr. 29, 1902. Serial No. 105,169. (No model.)

Claim.—1. In a glass show-case the combination of two glass plates: a strip having a channel at one side and a flat surface at the opposite side, said channel receiving the edge of one plate and the opposite flat surface of said strip abutting against the inner side surface of the adjoining plate and having one or more tangs projecting from the flat surface of said strip and parallel with the side surface of said adjoining plate, and a bolt passing through said tang and securing the last-named plate against the flat surface of said strip.

2. In a glass show-case the combination of corner-posts; vertical glass plates abutting against said corner-posts; a top glass plate; horizontal top strips having a channel and a flat surface opposite said channel, the channel of said strips taking over the upper edges of the vertical plates, and said strips provided with tangs flush with and projecting from the said flat surface and contacting with the bottom surface of the top plate, and means for securing said top plate to said tangs.

3. In a glass show-case the combination of two glass plates; a metal strip having a channel and a flat surface opposite said channel, the channel of said strip receiving the entire edge of one glass plate and the flat surface of said strip abutting against the side surface of an adjoining glass plate and two sets of tangs projecting from said metal strip at an angle with respect to each other, one set of tangs extending parallel and flush with one plate and the other set of tangs extending parallel and flush with the other plate.

4. In a glass show-case the combination of two glass plates; a strip having a channel at one side and a flat surface at the opposite side, said flat-surfaced side also being provided with one or more dovetailed grooves; a dovetailed tang fitted in each of said grooves and projecting laterally therefrom whereby the channel of said strip will receive the edge of one plate and the flat surface and tangs of said strip will abut against the side surface of the adjoining plate.

709,710. **MACHINE FOR FORMING BLANKS FROM MATCHED BOARDS.** CHARLES JOHNSON, Minneapolis, Minn., assignor of one-half to Arthur R. Rogers, Minneapolis, Minn. Filed Apr. 15, 1902. Serial No. 102,973. (No model.)

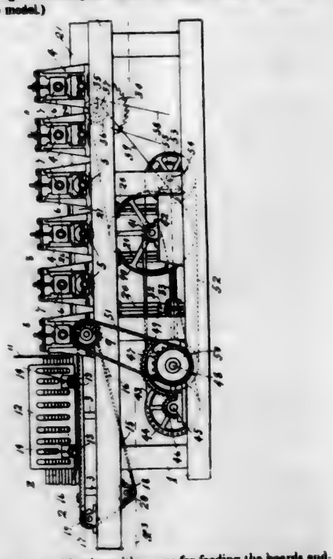

Claim.—1. The combination with means for feeding the boards endwise, of means for pressing the boards together edgewise, to unite the

joints thereof, involving a plurality of hammers, means for setting said hammers under strain, and means for suddenly releasing them to render the same operative, substantially as described.

2. The combination with means for feeding the boards endwise, of means for pressing the boards together edgewise to unite the joints thereof, involving a plurality of independently-pivoted hammers, means for setting said hammers under strain and means for suddenly releasing them, to render the same operative substantially as described.

3. The combination with means for feeding the boards endwise, of means for pressing the boards together edgewise to unite the joints thereof, involving a plurality of independently-pivoted presser-hammers, a spring operating independently on each hammer and tending to render the same operative, and means for moving said hammers into retracted positions against the tension of the springs and then suddenly releasing the same, substantially as described.

4. The combination with means for feeding the boards endwise, of means for pressing the boards together edgewise to unite the joints thereof, involving a plurality of presser-hammers 24 independently pivoted at 25 and provided with hammering-heads 26 beveled at 25°, springs 27 independently connected to said hammers 24, and tappets 32 operating one on each hammer 24 and serving to move the same against their springs 27 then to suddenly release the same, substantially as described.

709,711. **WRENCH.** RALPH JOHNS, Allegheny, Pa. Filed June 27, 1902. Serial No. 113,535. (No model.)

Claim.—In a wrench, the combination with a fixed jaw, a rack-bar rigidly secured thereto, a movable jaw, an extension formed to said movable jaw having approximately U-shaped guideways, a block having a seat formed therein, extensions carried by said block operating in said guideways, a plate detachably secured to the said movable jaw inclosing the outer ends of said guideways, and a spring arranged in said seat bearing against the inner face of said plate, all parts being arranged and operating substantially as described and for the purpose set forth.

709,712. **FILTER.** JOSEF KONÁLEK, Prague-Vinohrady, Austria-Hungary, assignor to Society Maschinenbau-Actiengesellschaft vormals Breitfeld, Danek & Co., Akciová Spolecnost Strojirny Drive Breitfeld, Danek I Spol., Karlin, Bohemia, Austria-Hungary. Filed Apr. 19, 1902. Serial No. 103,690. (No model.)

Claim.—1. The combination in a filtering apparatus, of a reservoir, 1, a filtering medium practically filling such reservoir, a horizontal, or nearly horizontal layer of tubes, 2, extending over practically an entire horizontal area of the reservoir, and which have slits or openings their whole length inside the reservoir, preferably located at the bottom of the individual tubes, and a gutter exterior to, immediately below, and surrounding the upper rim of the reservoir for the reception of the clarified liquid falling over said rim.

2. The combination in a filtering apparatus, of a reservoir, 1, a filtering medium practically filling such reservoir, a horizontal, or nearly horizontal layer of tubes, 2, extending over practically an entire horizontal area of said reservoir, and which have slits or openings their whole length inside the reservoir, preferably at the bottom of the individual tubes, a series of horizontal sieve-partitions in the reservoir above the layer of tubes, and a gutter outside of, below, and surrounding the upper rim of the reservoir.

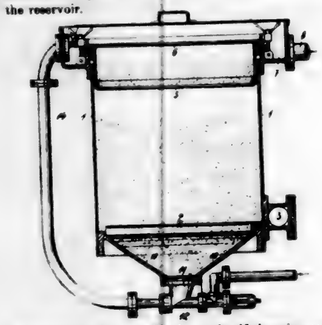

3. The combination in a filtering and self-cleansing apparatus, of a reservoir, 1, a filtering medium practically filling the same, a layer of perforated tubes for introducing the liquid to be filtered into said filtering medium, a gutter outside of, below, and surrounding the upper rim of the reservoir, a draw-off pipe leading therefrom, funnels formed in the bottom of said reservoir and having discharge-openings at their apexes, water-injectors beneath each of said openings and into which the openings discharge, and return-pipes leading from said injectors to the top of the reservoir to discharge the mingled sand and water therein.

4. The combination in a filtering and self-cleansing apparatus, of a reservoir, 1, a filtering medium practically filling the same, a layer of perforated tubes for introducing the liquid to be filtered into said filtering medium, a gutter outside of, below, and surrounding the upper rim of the reservoir, a draw-off pipe leading therefrom, removable sieve-partitions extending horizontally across the reservoir, funnels formed in the bottom of said reservoir and having discharge-openings at their apexes, water-injectors beneath each of said openings and into which the openings discharge, and return-pipes leading from said injectors to the top of the reservoir to discharge the mingled sand and water therein.

709,713. **PROCESS OF MANUFACTURING NON-ALCOHOLIC BEER.** VALENTIN LAPP, Lindenau, Germany. Filed May 22, 1901. Serial No. 61,418. (No specimens.)

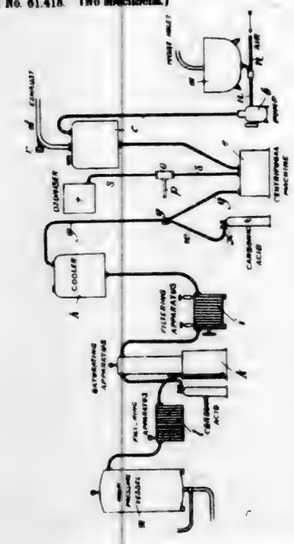

Claim.—The method of manufacturing non-alcoholic beer, consisting in heating wort, ventilating it by means of pure air, saturating it with ozone, adding carbonic acid having a tension of about ten atmospheres, cooling the wort while being under that pressure, filtering it and relieving it at the same time from part of said pressure, saturating it with carbonic acid, filtering it again, and storing the thus-obtained product under a carbonic-acid pressure of ten atmospheres until the bottling or racking-off.

709,714. **METHOD OF CONTROLLING THE ENERGY DELIVERED TO ELECTRICAL TRANSLATING DEVICES.** HARRY W. LEONARD, East Orange, N. J. Filed Jan. 31, 1896. Serial No. 577,590. (No model.)

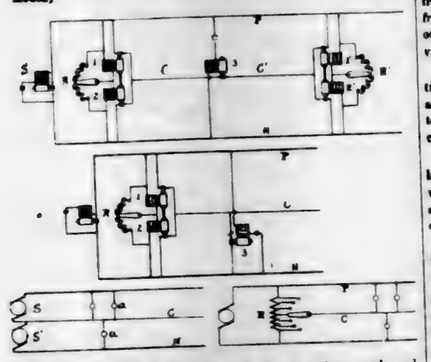

Claim.—1. The method of reversing the direction of current through a translating device, consisting in connecting the terminals of the translating device with two conductors of constant but different potential, developing an electromotive force between the translating device and one of the said conductors, and varying the said electromotive force so that the potential at one terminal of the translating device can be made higher or lower than the potential at the other terminal, whereby the current through the translating device will be reversed.

2. The method of reversing the direction of current through a translating device, consisting in connecting the terminals of the translating device between two conductors which are electrically connected with a source of electromotive force, and varying by magnetic induction the relative potential of the two conductors independent of and without altering the connections with the source so that the potential of one of them is made to become higher or lower than that of the other, whereby the current through the translating device is reversed.

3. The method of reversing the direction of rotation of an electric motor, consisting in connecting the terminals of the motor-armature between two conductors which are electrically connected with a source of electromotive force, and varying the relative potential of the two conductors independent of and without altering the connections with the source so that the potential of one of them is made to become higher or lower than that of the other, whereby the current through the motor-armature is reversed.

4. The method of controlling the energy delivered to a translating device, consisting in connecting the terminals of the translating device between two conductors which are electrically connected with a source of electromotive force, varying by magnetic induction the potential upon either or both of said conductors to vary the electromotive force at the terminals of said translating device, and varying the potential upon said conductors so that the potential upon either of them may be made to become higher or lower than the potential upon the other conductor, whereby the current through the translating device may be reversed.

5. The method of controlling the energy delivered to an electric motor, consisting in connecting the armature-terminals of the motor between two conductors which are electrically connected with a source of electromotive force, varying by magnetic induction the potential upon either or both of said conductors to vary the electromotive force at the armature-terminals of said motor, and varying the potential upon said conductors so that the potential upon either of them may be made to become higher or lower than the potential upon the other conductor, whereby the current through the motor-armature will be reversed.

6. The method of reversing the direction of current through a translating device, consisting in connecting the terminals of the translating device with the terminals of a source of electromotive force and developing in series with the translating device between it and the source by means of a second source of electromotive force, a variable counter electromotive force which can be varied from an electromotive force lower than the effective electromotive force in the circuit of the translating device to an electromotive force higher than the effective electromotive force in the circuit of the translating device, or vice versa, whereby the direction of the current through the translating device is reversed.

7. The method of reversing the direction of current through a translating device consisting in developing between the source and the translating device, an electromotive force counter to that of the source and varying that electromotive force so that the current through the translating device is reversed.

8. The method of reversing the direction of current through a translating device connected in a circuit in which there are two opposing electromotive forces which consists in varying one of the electromotive forces from an amount below to an amount above the electromotive force of the other, whereby the direction of the current through the translating device is reversed.

9. The method of reversing the direction of current through an electric motor-armature consisting in developing in the circuit of the motor-armature in series with it and the source, an electromotive force counter to that of the source, and which can be varied over a range sufficient to cause the current through the motor-armature to reverse.

10. The method of reversing the direction of current through a translating device, consisting in developing in series with the translating device and the source two independent electromotive forces and varying said two electromotive forces relative to each other to cause the direction of current through the translating device to reverse.

11. The method of reversing the current through a translating device connected between two conductors of variable potential, consisting in supplying to said conductors currents of variable potential by means of two independent sources of electromotive force which are electrically connected together, and varying the potential upon one of said conductors from a potential less than, to a potential greater than the potential of the other conductor, or vice versa.

12. The method of reversing the current through a translating device connected between two constant potentials, consisting in developing two variable potentials intermediate the first-named potentials and electrically connected therewith and connecting the translating device between these two points of intermediate potential and then varying the potential of said intermediate potentials relative to each other until they are equal and then continuing the relative variation, whereby the current is reversed.

13. The method of varying the current through a translating device consisting in developing in series with a source and the translating device, an electromotive force counter to the electromotive force of the source and variable from an amount less than the electromotive force of the source to an amount greater than that of the source.

14. The method of varying the current through the armature of an electric motor, consisting in developing in series with a source and said armature, an electromotive force counter to the electromotive force of the source and variable from an amount less than the electromotive force of the source to an amount greater than that of the source.

15. The method of reversing the current through a translating device consisting in producing two divided sources of electromotive force and connecting the translating device between the two points of division and then varying the potential at the points of division relative to each other to reverse the current through the translating device.

16. The method of reversing an electric motor, consisting in developing in a circuit two points of potential independently of the source of electromotive force, connecting between said two points of potential the element of the motor to be reversed, and varying the potential at one or both of said points so that the potential at one point will be higher than at the other point, thereby producing a flow of current in either direction from the point of higher to the point of lower potential.

709,715. **DUMPING-WAGON.** WILLIAM LEONHARDT, Baltimore, Md. Filed Oct. 4, 1901. Serial No. 77,525. (No model.)

Claim.—1. In a wagon, the body thereof provided with a roller having a flexible cover which is wound thereon, the free end of the said cover being shod and provided with a strip with its ends turned down to form lips which engage with the edge of the body and serve to prevent lateral displacement of the cover, substantially as specified.

2. In a dumping-wagon, the sills thereof at one side of the wagon provided with a standard, and combined with a hand-lever pivoted to the upper end of the said standard, a cross-lever pivoted to near the bottom of the said standard, a pitman to connect one end of the said cross-lever to a stud on the side of the body, and another pitman which unites the other end of the said cross-lever to the said hand-lever, substantially as specified.

709,715.

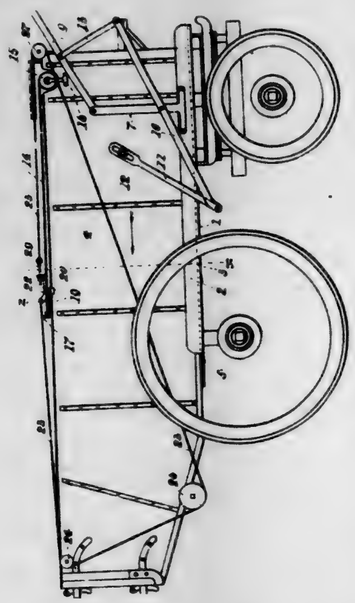

709,716. DUMPING CART OR WAGON. WILLIAM LEONHARDT, Baltimore, Md. Filed July 14, 1902. Serial No. 115,795. (No model.)

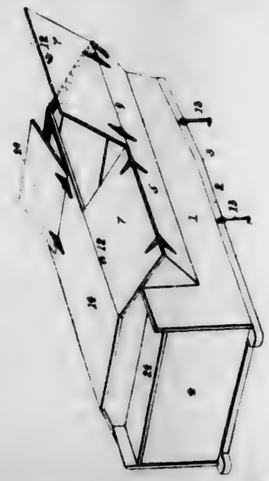

Claim.—In a dumping-wagon, the body proper thereof of rectangular shape in cross-section, and provided at its sides with flaring extensions the edges of which are lower than those of the rectangular portion, and downwardly-inclined lids or covers for the said extensions, substantially as, and for the purpose specified.

709,717. NUT-LOCK. THOMAS LYTHE, Puritan, Pa. Filed Mar. 14, 1902. Serial No. 98,198. (No model.)

Claim.—1. The combination, with a bolt provided with longitudinal grooves, of a nut having a chamber and a slot in its upper part, a spring locking-pawl provided with a shank which engages with the said slot and a flange which projects laterally from the top of the shank, and means for securing the said flange to the nut, substantially as set forth.

2. The combination, with a grooved bolt, of a nut provided with a slot in its upper part, a spring locking-pawl provided with a flanged and tapering shank which is wedged tightly into the said slot, and a fastening device which secures the flange of the said shank to the nut, substantially as set forth.

709,718. BICYCLE-FRAME. ROBERT F. MOSAHAN, Buffalo, N. Y. Filed Sept. 20, 1901. Serial No. 75,676. (No model.)

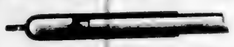

Claim.—1. A bicycle wheel-frame, having resilient frame-bars extended between the saddle-post and the rear axle, and a brace extending between the resilient frame-bars and the saddle-post.

2. A bicycle wheel-frame, having two resilient frame-bars extended between the saddle-post and the rear axle, a brace extending between the resilient frame-bars and saddle-post, and means for adjusting the length of said brace for the control of the resilience of said frame-bars.

3. A bicycle wheel-frame having an air-cushion device on the rear frame-fork, and connected with the upper part of the saddle-post, two resilient frame-bars extending between the saddle-post and the rear axle, a brace extending between the resilient frame-bars and the saddle-post, and means for adjusting the brace.

4. A bicycle wheel-frame, comprising two independent spring members loosely mounted at one end on the rear axle of the bicycle, bracket-arms having hubs loosely mounted on projections from the lower end of the saddle-post, and arms integral with the said hubs, and with which the opposite ends of the said spring members are adjustably connected.

5. A bicycle wheel-frame, embodying two spring members pivotally connected at their rear ends with the ends of the rear axle, a bracket-arm on the front end of each spring member, having a hollow hub mounted on projections from the lower end of the saddle-post, and a brace extended from an arm on the saddle-post and adapted for connection with the two bracket-arms on the spring members.

6. A bicycle wheel-frame having two spring members pivotally connected at their rear ends with the ends of the rear axle, a bracket-arm on the front end of each spring member and each having a hub mounted on the ends of the crank-shaft box, and an upright brace adjustably connected at its upper end with an arm on the saddle-post, the lower end of said brace having lateral limbs held in engagement with boxes mounted on the said bracket-arms.

7. A bicycle wheel-frame having two spring members loosely mounted at one end on the rear axle of the bicycle, and brackets each comprising a hub mounted on the respective end of the crank-axle box of the frame, and an integral arm slitted horizontally and adapted to receive the other end of the corresponding spring member.

8. A bicycle wheel-frame, embodying a two-part rear frame-fork, the hollow upper member thereof sliding air-tight upon the cylindrical stem of the lower part, two spring-bars extended from the rear axle carried by the rear frame-fork, and brackets having hubs mounted on projections on the lower ends of the saddle-post of the frame and arms integral with the respective hubs and slitted horizontally to receive the forward ends of said spring-bars.

9. A bicycle wheel-frame, embodying a two-part rear frame-fork, the hollow upper member thereof sliding air-tight upon the cylindrical stem of the lower part, two spring-bars extended from the rear axle carried by the rear frame-fork, bracket-arms connecting the forward ends of the spring-bars with the crank-axle box of the frame, and a brace adjustably connected with an arm on the saddle-post of the frame, and adapted for a slightly-yielding connection with the bracket-arms.

709,719. STEAM-ENGINE. ARSINOLE P. MORRIS and HENRY J. BERGERON, Jeanerette, La. Filed Apr. 30, 1902. Serial No. 105,365. (No model.)

Claim.—1. A steam-engine embracing a revolving piston-cylinder, a crank, whose axis is eccentric with the axis of said cylinder, a bent-arm connection between said crank and the piston-rod of said cylinder, said arm connection having its bent or right-angled terminal connected radially to said crank, and means for supplying pressure to said cylinder, substantially as set forth.

2. A steam-engine embracing a revolving piston-cylinder, a crank-wheel whose axis is eccentric with the axis of said cylinder, a bent-arm connection between the piston-rod of said cylinder and said crank-wheel, said bent-arm connection having its bent or right-angled terminal connected to the periphery of said crank-wheel, substantially as set forth.

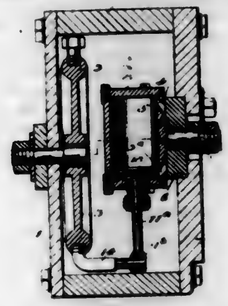

709,720 BEET-TOPPER. MERRITT W. PALMER, Hamilton, Mich. Filed July 2, 1902. Serial No. 114,051. (No model.)

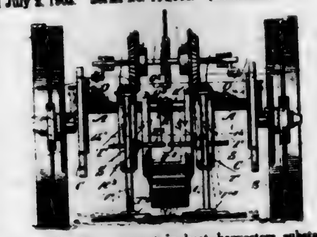

Claim.—1. The improvement in beet-harvesters substantially as herein described comprising the main frame having the end bars and the guide-frames secured to the inner sides of the end bars and having upright guide-slots for the carrier-frame, the axle-frames fitted against the outer sides of the end bars, the bolts securing the axle-frames and the guide-frames to said end bars, the stud-axles projecting from the axle-frames and having the non-circular portions adjacent to the axle-frames, the rearwardly-inclined arms fitting at their lower ends on the non-circular portions of the stud-axles and provided near their upper ends with bearings for the counter-shaft, the counter-shaft, the carrier-frame guided at its ends in the slots of the guide-frames and provided with the cutters, the shafts therefor and the main shaft geared with the cutter-shafts, and gearing between the main shaft and the counter-shaft, swinging links connecting the main shaft with the counter-shaft, means for suspending the carrier-frame from the main frame and means for operating the counter-shaft substantially as set forth.

2. In a carrier-frame for beet-harvesters the combination with the front and rear bars having at their ends inwardly-projecting ears, the end plates secured to said ears, the lugged plates secured to the inner sides of the front and rear bars and having at their upper edges near their opposite ends the inwardly-projecting lugs, and the bars secured on said lugs and provided with bearings for the main shaft, substantially as set forth.

3. The combination substantially as herein described with the carrier-frame and the devices operating therein, of the main frame having end bars, the guide-frames secured to the inner sides of the end bars and having guide-slots for the carrier-frame, the axle-frames secured to the main frame and having stud-axles, the arms secured to the stud-axles and extending upwardly and rearwardly therefrom, the counter-shaft, means for driving the counter-shaft, and connections between the counter-shaft and the devices operating on the carrier-frame substantially as set forth.

4. The combination of the topper-shafts, the main shaft geared with the topper-shafts and the swinging links having bearings for the main shaft substantially as set forth.

5. The combination with the main frame and the carrier-frame sliding therein and provided with the topping devices, of the gage devices consisting of the roller, the bent-frame for said roller, hangers connecting the said frame with the sliding carrier, and connections between the bent-frame and parts connected with the main frame substantially as set forth.

6. The combination of the main frame, the carrier-frame movable vertically therein, the main lever extending across the main frame and pivoted at one end, devices suspending the carrier-frame from the main lever, and the operating-lever arranged to operate upon the main lever substantially as set forth.

7. The combination with the main frame, of the counter-shaft, bearings for the counter-shaft supported on the main frame, the drive-wheels arranged to operate the counter-shaft, the carrier-frame movable vertically in the main frame, means for suspending and adjusting the carrier-frame in the main frame, the main shaft, the topping devices, and connections between the counter-shaft and the main shaft substantially as set forth.

8. In a beet-topper substantially as described the combination of the carrier-frame, the main frame in which said carrier-frame is slidably supported, the arc-bar supported on the main frame and extending from front to rear thereof and provided with the keeper portion at its rear end and with means for supporting the movable end of the main lever adjustably in said keeper, the main lever pivoted at one end and movable at its other end in the keeper portion of the arc-bar, the pivoted operating-lever engaging the main lever, and means connecting the main lever with the carrier-frame, substantially as set forth.

9. The combination substantially as herein described of the main frame, the carrier frame slidable vertically therein and having the front and rear bars, and the front and rear lugged plates, the front plate having between its ends the upper and lower lugs, the suspending devices for the carrier-frame connected with the upper lugs, the rocking frames supported in the carrier-frame, stop devices for the rocking frames, and the hanger R supporting the stop devices and secured at its upper end to the lower lug of the front lugged plate of the carrier-frame, the topping devices and means for operating the same substantially as set forth.

10. In a machine substantially as described, the combination of the main frame provided at its ends with the stud-axles and between its ends with the transversely-extending main lever, the arms secured to the stud-axles and extending upwardly and rearwardly therefrom, the counter-shaft journaled in the upper rear ends of the said arms, the drive-wheels geared with the counter-shaft, the sliding carrier-frame provided with the topping devices and with the main shaft geared therewith, devices suspending the carrier-frame from the main lever, the swinging links connecting the main shaft with the counter-shaft, gearing between the main shaft and the counter-shaft, and the operating-lever engaging the main lever substantially as set forth.

709,721. CENTRIFUGAL TAILINGS-ELEVATOR. WALTER PECK, Dunedin, New Zealand. Filed July 9, 1901. Serial No. 67,853. (No model.)

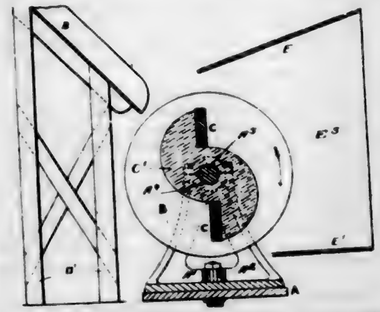

Claim.—In a machine of the class described, a wheel provided with beaters, said wheel being mounted for rotation, and being free of an inclosing casing, whereby, on the rapid rotation of said wheel, material supplied thereto will be centrifugally scattered, and the standard of the wheel being swivelly mounted.

709,722. BLACKBOARD-ERASER. FRANKLIN G. RAMER, Akron, Ohio. Filed Mar. 31, 1902. Serial No. 100,788. (No model.)

Claim.—1. A blackboard-eraser comprising a body carrying an erasive surface, and a rim formed of a non-dust-absorbing material surrounding said erasive surface and projecting beyond the outer face thereof, substantially as described.

2. A blackboard-eraser comprising a body carrying an erasive sur-

face, and a rim formed of a non-dust-absorbing material surrounding said erasive surface and spaced therefrom, substantially as described.

709,728. CHUTE-WAGON. ALEXANDER RAY, Philadelphia, Pa., assignor to Edward S. Lowry, Philadelphia, Pa. Filed Aug. 1, 1902. Serial No. 117,997. (No model.)

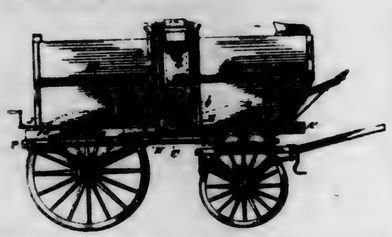

Claim.—1. In a wagon for delivering coal, &c., the combination of two body-compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a traveling conveyor extending into the intermediate compartment or space and directed transversely upward from the side of the wagon for receiving and elevating the coal, &c., and delivering it at one side of the wagon.

2. In a wagon for delivering coal, &c., the combination of two body-compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a conveyer extending into the intermediate compartment or space and extending transversely and upward from the side of the wagon for receiving the coal, &c., and delivering it at one side of the wagon, and a chute detachably connected to the upper end of the conveyer for receiving the coal or other material therefrom and allowing it to travel by gravity to the place of reception.

3. In a wagon for delivering coal, &c., the combination of two body-compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a conveyer extending into the intermediate compartment or space and extending transversely and upward from the side of the wagon for receiving the coal, &c., and delivering it at one side of the wagon the said conveyer being jointed and comprising a relatively fixed portion arranged between the body-compartments and a jointed portion adapted to be extended obliquely upward and away from the fixed portion or turned backward from the fixed portion and within the intermediate compartment during transportation.

4. In a wagon for delivering coal, &c., the combination of two body-compartments separated by an intermediate compartment or space, gates or doors opening from the body-compartments into the intermediate compartment or space, a conveyer extending into the intermediate compartment or space and extending transversely and upward from the side of the wagon for receiving the coal, &c., and delivering it at one side of the wagon the said conveyer being jointed and comprising a relatively fixed portion arranged between the body-compartments and a jointed portion adapted to be extended obliquely upward and away from the fixed portion or turned backward from the fixed portion and within the intermediate compartment during transportation, and means carried by the wagon for driving the conveyer.

5. In a wagon for delivering coal and other material in loose form, the combination of a compartment having a discharge-opening at one end, a fixed trough arranged transversely across the end of the compartment and close to the discharge-opening therefor, a movable trough hinged to the fixed trough at one end adjacent to the side of the wagon-body, means for holding the movable trough at an oblique angle, an endless conveyer adapted to said troughs, hand-operated means on the wagon to propel the conveyer, and an adjustable gravity-actuated chute leading from the upper end of the inclined trough.

6. In a wagon for delivering coal and other material in loose form, the combination of a compartment having a discharge-opening at one end, a fixed trough arranged transversely across the end of the compartment and close to the discharge-opening therefor, a movable trough hinged to the fixed trough at one end adjacent to the side of the wagon-body, means for holding the movable trough at an oblique angle, an endless conveyer consisting of two endless chains and transverse blades adapted to said troughs, guide-wheels at the distant ends respectively of the fixed and movable troughs for the conveyer, guides *c c* for holding the conveyer-chains down to the fixed trough adjacent to the hinged part of the movable trough, hand-operated means on the wagon to propel the conveyer, and an adjustable gravity-actuated chute leading from the upper end of the inclined trough.

7. In a wagon, the body part consisting of two body-compartments having oppositely-inclined bottoms, an intermediate chamber or space between the body-compartments, discharge-gates from the body-compartments into the intermediate compartment, and a movable endless conveyer extending transversely upward from the intermediate chamber for elevating the material and discharging it to one side of the wagon.

8. In a wagon, the body part consisting of two body-compartments having oppositely-inclined bottoms, an intermediate chamber or space between the body-compartments, and discharge-gates from the body-compartments into the intermediate compartment, the side walls on one side of the wagon being continuous over the intermediate compartment and on the other side divided and omitted at the intermediate compartment, in combination with an elevating-conveyer hinged to the lower part of the intermediate compartment and movable into or from the intermediate compartment through the open side thereof.

709,724. GLASS-SHAPING APPARATUS. DANIEL C. RIPLEY, Pittsburg, Pa. Filed May 10, 1902. Serial No. 106,734. (No model.)

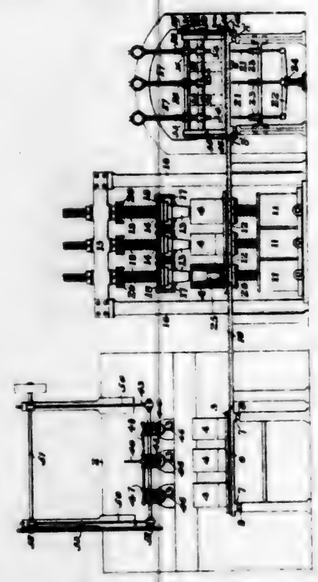

Claim.—1. A furnace, a gathering-station adjacent thereto, a track extending from the gathering-station to a pressing-station, and means for returning the molds to the gathering-station; substantially as described.

2. In glass-shaping apparatus, a gathering-station, a pressing-station having pressing apparatus, press-molds, a track extending between the gathering-station and pressing-station, and another track for returning the molds to the gathering-station; substantially as described.

3. In glass-shaping apparatus a group of molds, a support therefor, a gathering-station having gathering apparatus, a pressing-station having pressing apparatus, and mechanism for transferring the support from the gathering to the pressing station, and vice versa; substantially as described.

4. In glass-shaping apparatus, a support having a group of molds thereon, a gathering-station having gathering apparatus, a pressing-station, and an ejecting-station, mechanism for transferring the molds from the gathering-station successively to the pressing and the ejecting station, and mechanism for returning the molds to the gathering-station; substantially as described.

5. In glass-shaping apparatus, a gathering-station, a plurality of tracks extending therefrom to a pressing-station, and a movable track-section at the gathering-station arranged to be brought into alinement with either track; substantially as described.

6. In glass-shaping apparatus, a pair of tracks, a movable track-section at each end of the tracks, glass-molds supported upon the tracks, and a pressing-station along one of the tracks; substantially as described.

7. In glass-shaping apparatus, a gathering-station having gathering apparatus, a pressing-station, an ejecting-station, mechanism for transferring the molds between said stations, and ejector mechanism arranged to lift the articles from the molds; substantially as described.

8. In glass-shaping apparatus, a furnace having a gathering-hole, a mold beneath the gathering-hole and between it and the operator's station, a glass-shaping station having shaping apparatus, and mechanism for transferring the filled mold from the gathering-station to said shaping-station; substantially as described.

9. The combination with a glass-furnace having a gathering-hole, of gathering apparatus, a mold beneath the gathering-hole and between it and the operator's station, a glass-shaping station having shaping apparatus, and mechanism for transferring the filled mold from the gathering-station to the shaping-station; substantially as described.

10. A glass-mold, an ejector arranged to lift the article therefrom, a clamp, and mechanism for causing the clamp to engage the article and for moving the clamp; substantially as described.

11. In glass-shaping apparatus, a lear, a glass-mold, an ejector for the mold, a clamp arranged to seize the article lifted by the ejector, and mechanism for moving the clamp to deposit the article in the lear; substantially as described.

12. In glass-shaping apparatus, a mold, an ejector therefor, a lear having an entrance-opening, a swinging clamp arranged to seize the article lifted by the ejector, and mechanism for swinging the clamp and opening it to deposit the article at the lear-entrance; substantially as described.

13. In glass-shaping apparatus, a glass-mold, a lear, mechanism for transferring the article from the mold to the lear-opening, a pusher arranged to move the articles longitudinally into the lear, and connections for actuating the pusher; substantially as described.

14. A glass-mold, an ejector therefor, a movable clamp, mechanism for moving the clamp, an opening device, and mechanism for disengaging the opening device to allow the clamp to seize the article; substantially as described.

15. A glass-mold, a lifter for the article, a separate swinging clamp device, a lear, mechanism for swinging the clamp to bring the article to the lear-opening, and mechanism for disengaging the clamp; substantially as described.

709,725. BOOKKEEPING. CLARK SELTZ, Seattle, Wash. Filed Jan. 20, 1902. Serial No. 90,483. (No model.)

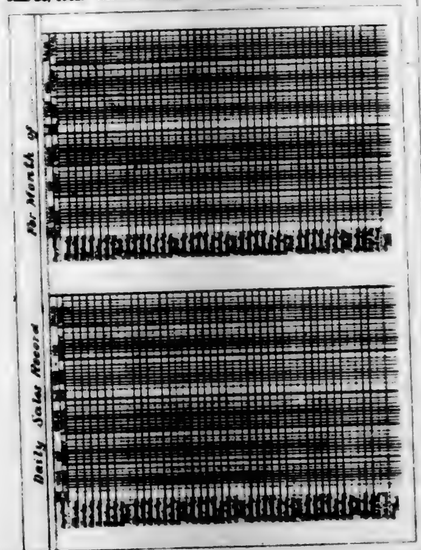

Claim.—1. A quadrennial book, having a set of leaves suitably ruled and appropriately designated for the reception of data relating to notes or bills; another set of leaves designated to receive respectively and in succession, data for successive periods of time, each leaf having appropriately-designated spaces for the reception of amounts of daily sales, one for each day of the period to which the page is devoted, the spaces of each page being arranged in several columns respectively designated to receive the said amounts, for the same period of a different year; another set similarly ruled and designated for the reception of daily cash receipts and disbursements; and another set of leaves having appropriately-designated spaces for the monthly business of each of the four years, each half-page having the names of the months of each year on the left side, and columns respectively designated for the amounts of the "cash sales," "credit sales," "purchases," "receipts," "disbursements," "ledger folio," and "expenses," of each month of one year, with the totals for each of the several items, substantially as described.

2. In a "quadrennial book-summary," a "daily sales-record," double-paged, each single page being so ruled as to make it a double page and designated as follows: over the first and second columns of the first and third subpages, with the words: "Day of week;" and "Day of month," under the words "Day of week," the words "Monday" and the successive days of the week, the second and fourth subpages being like the first and third, except the words "Day of week" are not set forth at the heading thereof, in a separate column, each of the subpages having the following words and figures, at the head of separate columns: "Year" under which is the word "Cash;" "190-" under which is the word "Credit;" "Sales" under which is the word "Total;" after the word "Sunday" of each week, the word "Week:" at the lower end of the first column, on the first and third subpages, on separate lines, the words "Total for mo.;" "Amount forw'd;" "Grand total," whereby a "daily sales-record" may be kept, substantially as and for the purposes set forth.

3. In a "quadrennial book-summary," a "daily cash-record," double-paged, each single page being so ruled as to make it a double page and designated as follows: over the first and second columns, of the first and third subpages, with the words: "Day of week;" and "Day of month;" under the words "Day of week," the words "Monday" and the names of the successive days of the week, the second and fourth subpages being like the first and third, except the words: "Day of week," are not at the head of a separate column, with the days of the week following; the words: "Receipts;" "Disbursements;" "On hand;" being at the head of separate columns, on each subpage, and above these words, the word and figures "Year 190-;" at the lower end of the first column, on the first and third subpages, on separate lines, the words: "Total for mo.;" "Amount forw'd;" "Grand total," whereby, a "daily cash-record," may be kept as and for the purposes set forth.

709,726. WINDOW-FASTENING DEVICE. DANIEL SHELL, Harmony, Ind. Filed May 14, 1902. Serial No. 107,221. (No model.)

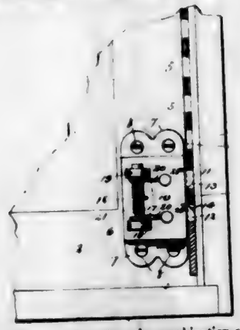

Claim.—In a window-fastening, the combination of a rack having rectangular apertures thereon rounded off on their upper and lower edges, a casing mounted on a sliding sash, a bolt slidingly mounted in said casing and having a beveled head constructed to positively engage the said rack to hold the window against being raised, a bolt slidingly mounted in said casing and having a beveled head constructed to positively engage said rack to hold said window against being lowered, said bolts having slots in their ends, pins mounted transversely said slots, a rod mounted on said casing, elbow-levers fulcrumed on said rod and bearing thumb-pieces, said levers having forked arms which engage said pins, and a spiral spring mounted on said rod and arranged to actuate said levers, substantially as described.

709,727. GLASS-MELTING MACHINE. JOHN C. TRIAMM, Rochester, Pa., assignor of two-thirds to Mathew J. Fantini and John A. Deckter, Tarentum, Pa. Filed Feb. 20, 1902. Serial No. 94,944. (No model.)

Claim.—1. In a tumbler-finishing machine, the combination with an inclined table, means for adjusting the height of said table, a carrier-

belt bearing tumbler-holders, and means for driving said carrier-belt, substantially as described.

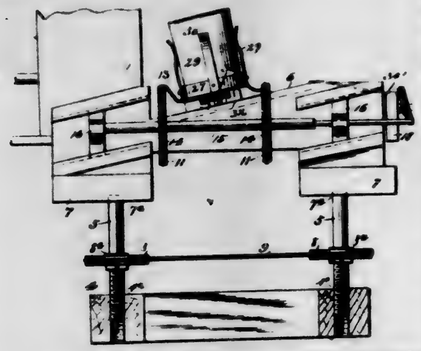

2. In a machine for finishing tumblers, the combination, of two pairs of slidingly-mounted brackets, the members of each pair being connected to move in unison, shafts journaled in said brackets, guides bearing a rack-bar and mounted to be moved transversely, a carrier-belt mounted on said sheaves and bearing rotatable holders constructed to be actuated by said rack-bar, and means for moving said brackets and said guides in unison to adjust the machine for different sizes of tumblers, substantially as described.

3. In a tumbler-finisher, the combination with a table, of transversely-adjustable brackets mounted on said table, shafts journaled in said brackets and bearing pulleys, and a conveyer bearing tumbler-holders mounted on said pulleys, substantially as described.

709,728. TOY. JESS M. K. WALDSTEIN, Chicago, Ill. Filed May 24, 1902. Serial No. 108,782. (No model.)

Claim.—1. A toy for distributing confetti, or like substances, composed of a receptacle for the substances, and a hollow plunger adapted to fit the discharge end of such receptacle and to permit air to be forcibly discharged therethrough, thereby discharging at the same time the confetti from the receptacle; substantially as and for the purpose set forth.

2. A toy comprising a conical receptacle open at its discharge end, and a hollow plunger adapted to comfortably fit said discharge end of the receptacle and to permit air to be forcibly blown therethrough; substantially as and for the purpose set forth.

3. A toy for the discharge of confetti, or like substance, consisting of a conical receptacle, open at its discharge end, and a hollow plunger having a flaring end adapted to fit the discharge end of the receptacle and also open at its other end; substantially as and for the purpose set forth.

4. A toy comprising a conical receptacle open at its discharge end, and a hollow plunger having a flaring open end adapted to the discharge end of the receptacle, and provided with notches in such flaring end; substantially as and for the purpose set forth.

5. A toy comprising a receptacle for confetti, or similar material, open at its discharge end, and having a hollow plunger fitted to the interior of such receptacle, said plunger provided also with an open discharge end and an open outer end fitted with a musical device capable of being operated by the air forced through the plunger to discharge the confetti from the receptacle; substantially as and for the purpose set forth.

6. A toy comprising a receptacle for confetti, or similar substance, and a hollow plunger adapted to such receptacle and constructed to act as a blowpipe and also as a horn; substantially as and for the purpose set forth.

7. A toy comprising a conical receptacle and a hollow plunger flared and notched at its discharge end and provided with a wind instrument at its other end; substantially as and for the purpose set forth.

709,729. LAND-ROLLER. ADOLPH YOOST, Kankakee, Ill. Filed June 26, 1902. Serial No. 113,269. (No model.)

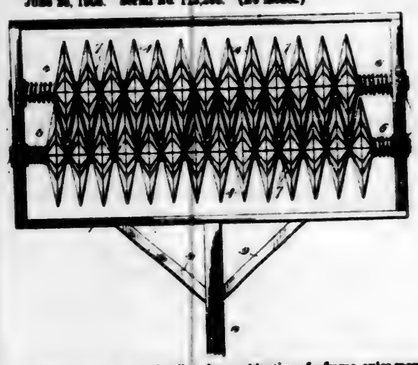

Claim.—1. In a land-roller, the combination of a frame, axles mounted in bearings on said frame, rollers independently mounted to rotate on said axles, the rollers on one axle being adapted to intermesh with the rollers on the other axle, and means whereby the said rollers on each axle are held in yielding contact with the adjacent rollers on said axle, substantially as described.

2. In a land-roller, the combination with a frame, of axles mounted in bearings on said frame, rollers independently mounted to rotate on said axles, the rollers on one axle being adapted to intermesh with the rollers on the other axle, springs coiled around each end of said axles, between the end rollers and the bearings of the axles, to hold said rollers in yielding contact, substantially as and for the purpose described.

709,730. VEHICLE-JACK. AUGUST SWICKER, Rusk, Tex. Filed Jan. 31, 1902. Serial No. 92,068. (No model.)

Claim.—1. A jack of the class set forth, comprising an upright, a slide mounted on the upright and having a support pivotally connected thereto, a winding mechanism above the slide, and a flexible connection between the winding mechanism and slide.

2. A jack of the class set forth comprising an upright, a slide mounted on the upright and having a support pivotally attached thereto, a winding mechanism having a pivoted winding device, upper and lower stops to engage the winding device, and a flexible connection between the winding mechanism and the slide.

3. A jack of the class set forth comprising an upright, a slide mounted thereon and provided with a pivoted support, a winding mechanism having a winding device pivotally attached thereto, upper and lower stops with inclined edges and concave seats for engagement by said winding device, and a flexible connection between the winding mechanism and the slide.

4. In a jack of the class set forth, the combination of an upright, a slide mounted thereon and having antifrictional rollers engaging opposite edges thereof, a support pivotally carried by the said slide, winding mechanism above the slide, and a flexible connection between the slide and winding mechanism.

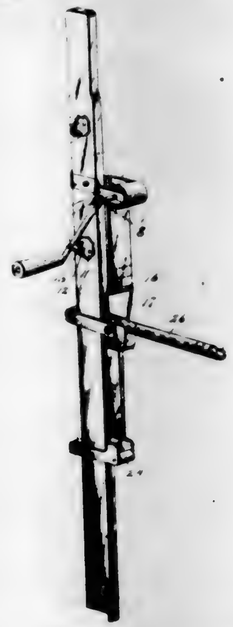

709,731. FILLING OR REFILLING FOUNTAIN-PENS. ROBERT H. ASHCROFT, Dunedin, New Zealand. Filed June 6, 1901. Serial No. 63,420. (No model.)

Claim.—In a fountain-pen, a barrel having a pair of circumferential and circular shoulders, and diametrically opposite slots between said shoulders, the opposite ends of the slots terminating short of the respective shoulders to thereby leave the barrel solid between the ends of said slots and said shoulders, and an elastic sleeve embracing the barrel between said shoulders and the ends of the sleeve abutting against said shoulders.

709,732. ELEVATOR. CHARLES L. BALDWIN and OLLIE A. GREEN, New York, N. Y.; said Baldwin assignor to Maud E. Baldwin, New York, N. Y. Filed Dec. 28, 1901. Serial No. 87,642. (No model.)

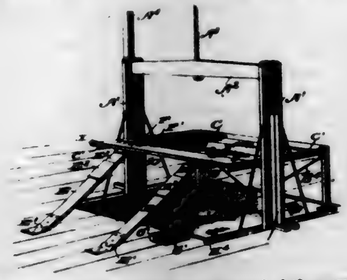

Claim.—1. An elevator having a supplemental platform arranged above the main floor or platform, said supplemental platform being hinged or pivoted at its rear end, substantially as described.

2. An elevator having a supplemental platform arranged above the main floor or platform, and the inclined skids leading to the said supplemental platform, substantially as described.

3. An elevator having a supplemental platform arranged above the main floor or platform in combination with the hinged skids adapted to rest upon the supplemental platform, and means for automatically releasing the said skids, as set forth.

4. An elevator having a supplemental platform arranged above the main floor or platform and pivoted at its rear end, in combination with means for elevating and inclining the said supplemental platform for the purpose described.

5. An elevator having a supplemental platform arranged above the main floor or platform, in combination with the hinged skids, and the spring-actuated bars or bolts carried by the supplemental platform adapted to hold the said skids elevated, and means for releasing said bars or bolts, substantially as set forth.

6. An elevator having a supplemental platform arranged above the main platform or floor, said supplemental platform being provided with forwardly-projecting spring-actuated bars or bolts, each bar or bolt having an upwardly-projecting arm working in a slot produced in the platform in combination with the hinged skids, each skid having a hinged end, for the purpose described.

7. The combination with the elevator having a supplemental platform arranged above the main floor or platform, said supplemental platform being pivoted at its rear end and provided with guide-rollers at its forward ends, of the inclined side bars upon which the guide-rollers are adapted to travel whereby the supplemental platform is elevated or inclined, for the purpose described.

8. The combination with the elevator having a supplemental platform arranged above the main platform and pivoted at its rear end and provided with guide-rollers at its forward end, of the guide-bars with which the guide-rollers are adapted to contact, said guide-bars having the adjustable extensions at their upper ends, as and for the purpose described.

709,733. MINING-DREDGE. HENRY J. BARTON and AUGUST C. LA BUD, Oakbar, Cal. Filed June 20, 1901. Serial No. 65,288. (No model.)

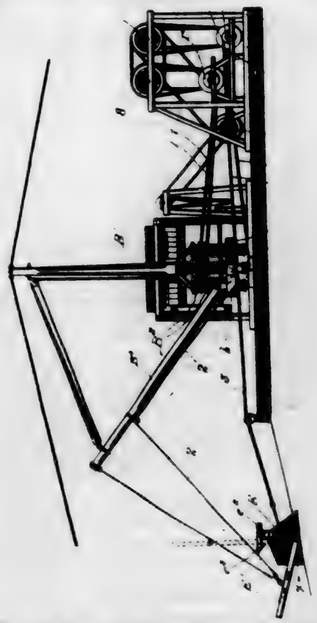

Claim.—1. In a mining dredge or excavator, the scoop of shovel form, the draft-loop connected to the lateral walls of said scoop just above the center of the height thereof, the rear handle-lever pivoted to said scoop, a catch carried by the scoop for holding said lever upright, the loading-drum located near the surface of the ground, the draft or loading cable carried by said drum, and connected to said draft-loop, and the hoisting-cable connected to said handle-lever, substantially as specified.

2. In a mining dredge or excavator, the dredge bucket or scoop having a lever pivoted thereto, a catch carried by the scoop for said lever, a derrick, guide-pulleys, and a hoisting-cable connected at one end portion thereof, to the outer end of the derrick-beom looped around a connection of the scoop-lever, and thence passing around said guide-palleys to the hoisting-drum, substantially as specified.

3. In a mining dredge or excavator, the scoop of shovel form, having the forward draft-loop, and the rear handle and hoisting-lever, and a catch carried by the scoop for said lever to hold the lever upright, substantially as specified.

4. In a mining dredge or excavator, the scoop of shovel form, having the handle and hoisting-lever pivoted thereto, said lever having the scoop-embracing fork and the rear power or handle extension thereof, a catch carried by the scoop for said lever to hold the lever upright, such lever being arranged to swing rearwardly of the scoop when released, substantially as specified.

5. In a mining-dredge, the straight forked carrier, the scoop of shovel form pivoted to said carrier, a catch upon the scoop for said carrier, the draft-cable connected to the scoop and the hoisting-cable connected to the carrier in rear of the fork thereof, substantially as specified.

6. In a mining-dredge, the straight forked carrier, the scoop of shovel form pivoted to said carrier, and having a catch arranged to engage the transverse arms of the carrier-fork, the draft-cable connected to the forward end portion of the scoop above the center of the height thereof and the hoisting-cable connected to said carrier, substantially as specified.

7. In a dredge-excavator, the scoop, the draft-cable connected to the forward part of said scoop, a lever pivoted to said scoop, a catch carried by the scoop for said lever, the derrick, and a cable carried by said derrick and connected to said lever and arranged to first effect the catch between lever and scoop, and to subsequently hoist the scoop, substantially as specified.

8. In a dredge-excavator, the scoop of shovel form having the rearwardly-extending catch-shoulders, the lever pivoted to said scoop and having the cross-arm, and the hoisting-cable connected to said lever and arranged to first effect an engagement of said catch-shoulders and cross-arm, and to subsequently hoist the scoop, substantially as specified.

709,784. **KNITTED FABRIC.** DAVID C. BELLIS, Elizabeth, N. J., assignor to Robert W. Scott, Philadelphia, Pa., and Louis Napoleon Devon Williams, Ashbourne, Pa. Filed Feb. 15, 1902. Serial No. 94,194. (No model.)

Claim.—1. A knitted fabric comprising two webs, one overlying the other and united at intervals by a loop of the yarn of one web engaging the other web, said points of union being separated in the direction of the wales, substantially as specified.

2. A knitted fabric comprising two webs one overlying the other and united at intervals by yarn of one web forming loops in the other web, said loops not being drawn through the stitches in the latter web, substantially as specified.

3. A knitted fabric comprising two webs one overlying the other and connected at intervals by yarn of one web forming loops in wales of the other web instead of in corresponding wales of its own web, substantially as specified.

4. A knitted fabric comprising two webs one overlying the other and connected together by yarn of one web forming loops in wales of the other web throughout an entire course of such web, substantially as specified.

5. A knitted fabric comprising two webs of different texture one overlying the other, said webs being united by yarn of one web engaging the other web at intervals in the direction of the wales, substantially as specified.

6. A knitted fabric comprising two webs one overlying the other, one web being composed of stitches of coarser yarn than those of the other web, said webs being united at intervals in the direction of the wales by loops of the finer yarn engaging with wales of the coarser web, substantially as specified.

709,735. **FENCE-POST.** CHARLES O. BLEE and JAMES H. REDDING, Rensselaer, Ind. Filed Apr. 30, 1902. Serial No. 105,360. (No model.)

Claim.—A fence-post comprising an angular body of molded material having a hollow base, a single tie-rod embedded therein at diagonally opposite corners looped at the top and having both ends projecting from the bottom of the post, binding-nuts on said ends, and wire-attaching holes across a corner of the post within and adjacent the tie-rod.

709,786. **DRAFTING-PLOTTER.** R. L. BOTTS, St. Paul, Minn. Filed Jan. 14, 1901. Serial No. 43,265. (No model.)

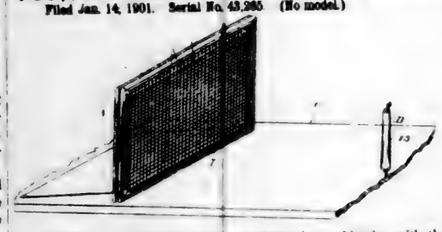

Claim.—1. A drafting-plotter, consisting in combination with the sight D, composed of the standard 15, having a screw 16 for fastening upon a suitable support, and a clip 17 carried by said standard having the sight-opening 18, a screen, composed of evenly-spaced horizontal and vertical cords, a frame to which said cords are suitably fastened, having cord-indicating marks, a brace hinged to said frame adapted to support the screen erect upon a suitable support when open and to close so as to hold the picture upon the screen, and a tongue and groove for locking the brace closed.

2. A drafting-plotter, consisting of a frame composed of two sections, a plurality of intersecting cords fastened between said sections and forming a screen, a combined back and brace hinged to said frame adapted to rest flat against the intersecting cords when closed and to support the frame in upright position when open, a thumb-catch by which said combined back and brace is locked closed, a sight-standard, and a clip attached to said standard, perforated for viewing an object through the screen formed by the intersecting cords.

709,737. **CONVEYER.** MASON BRADFIELD, Los Angeles, Cal., assignor to Emma N. Bradfield, Los Angeles, Cal. Filed May 24, 1901. Serial No. 61,758. (No model.)

Claim.—1. A conveyer provided with a main bail and having a supplemental bail pivotally connected therewith, a hoisting-line and a device attached thereto and connected with the latter bail constructed to support the conveyer in carrying position when in engagement with the former bail and when disengaged therefrom to rotate about the point of connection thereof with said line out of reëngagement therewith to effect the discharge of the conveyer upon the tightening of said line.

2. A conveyer provided with a main and a supplemental bail, a hook connected with the latter constructed to detachably engage the former when forced away from the conveyer and to rotate about the point of suspension thereof out of accidental reëngagement with the main bail when such force is released.

3. A conveyer provided with a main and supplemental bail, a supporting-line and a hook attached thereto and detachably connected with said supplemental bail constructed to retain engagement with said main bail while said line is taut and to rotate about the point of connection thereof with said line out of such engagement when said line is relaxed to prevent accidental reëngagement.

4. A conveyer provided with a main and a supplemental bail, a supporting-line and a hook attached thereto and having swivel connection with said supplemental bail constructed to engage said main bail when said line is taut and to rotate upon said swivel and the point of connection thereof with said line out of engagement when said line is relaxed.

5. A conveyer having a main bail rigidly secured thereto and having a supplemental bail movably connected therewith near the bottom thereof, a supporting-line, a snap connected with said supplemental bail and a hook swiveled to said snap at one side and connected at the straight end with said line, whereby the hook retains engagement with said main bail while the line is taut and rotates on said swivel and the point of connection thereof with said line out of reëngagement therewith when said line is relaxed.

6. An engaging hook having a loop or eye at one end thereof to receive a hoisting-line and provided with an apertured lug or ear near the opposite end to be connected with the article employed, said hook being constructed to rotate about the point of connection thereof with said line when the line is relaxed.

709,738. **COMPASSES.** CLAUS BRANDELL, Chicago, Ill. Filed Apr. 8, 1902. Serial No. 101,974. (No model.)

Claim.—1. A compass comprising a head having spaced transverse pivots, legs pivoted on the said pivots and mounted to swing in unison, a point pivoted on one leg, a bar pivotally connecting the said point with the said head, a marking device pivoted on the other leg, and a second bar pivotally connecting the marking device with the said head, as set forth.

2. A compass comprising a head carrying spaced pivots, legs pivoted on the pivots and having gear-segments in mesh with each other, a point pivoted on one leg, a bar connecting the said point with one of the pivots, a marking device pivoted on the other leg, and a second bar connecting the said marking device with the other pivot, as set forth.

3. A compass, comprising a head carrying spaced pivots, legs pivoted thereon and having their heels in mesh with each other, a point pivoted on one of the legs, a marking device pivoted on the other leg, and bars, of which one is pivotally connected with the needle-point and with the pivot for the other leg, and the other bar is pivoted on the pivot for the leg carrying the needle-point and is pivotally connected with the marking device, as set forth.

4. A compass, comprising a head carrying spaced pivots, legs pivoted thereon and having their heels in mesh with each other, a point pivoted on one of the legs, a marking device pivoted on the other leg, and bars, of which one is pivotally connected with the needle-point and with the pivot for the other leg, and the other bar is pivoted on the pivot for the leg carrying the needle-point and is pivotally connected with the marking device, the pivotal ends of the said bars having segmental slots for engaging the pivots, as set forth.

5. A compass, comprising a head carrying spaced pivots, legs pivoted thereon and having their heels in mesh with each other, a point pivoted on one of the legs, a marking device pivoted on the other leg, bars, of which one is pivotally connected with the needle-point and with the pivot for the other leg, and the other bar is pivoted on the pivot for the leg carrying the needle-point and is pivotally connected with the marking device, and a horizontal lengthening bar for the marking device, as set forth.

6. A compass, comprising a head carrying spaced pivots, legs pivoted thereon and having their heels in mesh with each other, a point pivoted on one of the legs, a marking device pivoted on the other leg, bars, of which one is pivotally connected with the needle-point and with the pivot for the other leg, and the other bar is pivoted on the pivot for the leg carrying the needle-point and is pivotally connected with the marking device, and a horizontal lengthening bar for the marking device, the lengthening bar having an extension-bar, as set forth.

709,739. **AUTOMATIC TELEPHONE-EXCHANGE.** ALBERT M. BULLARD, Somerville, Mass., assignor to the American Bell Telephone Company, a Corporation of Massachusetts. Filed Nov. 16, 1900. Serial No. 36,770. (No model.)

Claim.—1. In an automatic telephone-exchange, a selecting device, a polarized electromagnet for operating the same, and an alternating-current generator all at the central station, and a normally open circuit between said central station and a substation, in combination with an indicating mechanism, a polarized electromagnet, and a circuit-controller, all at the said substation, the said indicating mechanism being adapted to be operated in one direction by hand and in the opposite direction by said electromagnet, and the said circuit-controller being adapted to be actuated by said indicating mechanism to close the said circuit through both said electromagnets and said generator while said indicating mechanism is in operation, and to open the same when said mechanism is at rest, substantially as described.

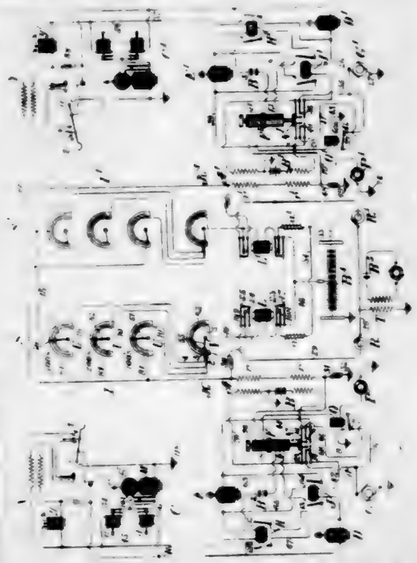

2. In an automatic telephone-exchange, a selecting device in two parts, a separate polarized electromagnet for each of said parts to operate it independently of the other part, and an alternating-current generator, all at the central station, and two normally open circuits between said central station and a substation each including one of said polarized electromagnets, in combination with a polarized electromagnet, an indicating mechanism provided with a zero-point and adapted to be operated away from said zero-point by hand and restored thereto by said electromagnet, two electromagnetic clutch-switches associated with the said two circuits respectively, and a circuit-controller, all at the said substation, the said electromagnetic switches being adapted to connect each the conductor of its respective circuit to said circuit-controller, and the said circuit-controller being adapted to be actuated by said indicating mechanism to close either circuit in which such connection has been made through its own central-station electromagnet, the said generator, and the substation electromagnet, while said indicating mechanism is in operation, and to open the same when said mechanism is at rest, substantially as described.

3. In a selecting and connecting mechanism at the central station of an automatic telephone-exchange, two shafts each provided with a selector-arm, and each provided with a separate electromagnet whereby it may be rotated separately, and the two provided with a third electromagnet whereby they may be moved together longitudinally, substantially as described.

4. In an automatic telephone-exchange, the combination of a dial-pointer at a substation, and a selector-arm at the central station, motor mechanism for each adapted to impart rotary motion thereto, a polarized electromagnet for each adapted to actuate said mechanism, an alternating-current generator at said central station, an electric circuit between said central station and substation containing said generator and said polarized electromagnets, and a circuit-controller for said circuit associated with the motor mechanism of said pointer and adapted to be operated thereby to break the said circuit after said pointer has moved a predetermined distance, whereby the said pointer and selector-arm move synchronously and stop simultaneously, substantially as described.

5. In an automatic telephone-exchange, multiple-contact central-sta-

tion apparatus for each subscriber's line, consisting of a separate row of fixed contacts for each group of one hundred subscribers, *i. e.* a row for the subscriber's lines numbered from 100 to 199, a second row for the subscriber's lines numbered from 200 to 299, &c., each said contact being electrically united to a separate subscriber's line, and to all of the multiple fixed contacts thereof, a stationary common contact for each row of said multiple contacts adapted to be bridged to any one of the multiple contacts in its respective row by a movable conducting member, a further row of contacts similar to the said row or rows of multiple contacts, there being one contact in such further row for each one hundred subscribers in permanent electrical connection with the said stationary common contact appropriated to the row of multiple contacts belonging to the same one hundred subscribers, and a further stationary common contact likewise adapted to be bridged by a movable member with any of the multiple contacts in said further row, substantially as described.

6. In an automatic telephone-exchange separate rows of multiple contacts each representing a different group of lines, *i. e.* those from one group of subscribers in one row, those from another group of subscribers in a second row, &c., a common contact for each said row of multiple contacts in juxtaposition thereto, a further row of contacts in permanent connection each respectively with a separate one of said common contacts, and a common contact in juxtaposition to said further row, in combination with a shaft adapted to both rotate and move longitudinally, the said shaft being provided with selector-arms projecting therefrom, one for each row of multiple contacts adapted to pass along each row of multiple contacts during the rotary motion of the said shaft, and to make electrical connection between a multiple contact in each row and the common contact in juxtaposition thereto upon the longitudinal movement of said shaft, and a second shaft, also adapted to both rotate and move longitudinally, and provided with a single selector-arm adapted to pass over the said further row of contacts during the rotary motion of said second shaft, and to make electrical connection between any contact in said further row and the common contact in juxtaposition to said further row upon the longitudinal motion of said second shaft, substantially as described.

7. In an automatic telephone-exchange apparatus at the central station for each subscriber consisting of separate rows of multiple contacts for the several groups of one hundred lines each centering at said station, *i. e.*, the multiple contacts for lines numbered from 100 to 199 in one row, those for lines numbered from 200 to 299 in a second row, &c., a common contact for each row of said multiple contacts in juxtaposition thereto but normally insulated therefrom, a further row of contacts similar to said rows of multiple contacts, there being one contact in said such further row for each of said groups of subscribers in permanent electrical connection with the common contact appropriated to the row of multiple contacts belonging to the same group, and a further common contact in juxtaposition to said further row, in combination with selecting and connecting electromechanism in two parts, whereby an electrical connection can be established between any separate multiple contact in any of said rows of multiple contacts appropriated to a group of subscribers and the said common contact in juxtaposition to said row, and also an electrical connection be established between the contact in said further row appropriated to the same group of subscribers and the common contact in juxtaposition to said further row, substantially as described.

8. In an automatic telephone-exchange, two shafts each provided with a selector-arm, and each provided with a separate polarized electromagnet whereby it may be rotated separately from the other, and the two provided with a third electromagnet whereby they may be moved together longitudinally, an alternating-current generator, two relays and a battery, all at the central station in combination with two line-wires leading from the central station to a substation, a circuit-breaker at said substation provided with a polarized electromagnet for operating it adapted to be connected up separately in circuit with said generator and either of the said two central-station polarized electromagnets employed for imparting rotary motion to said shafts, and a telephone switch-hook at said substation adapted to act automatically when the telephone is removed from the hook to establish momentarily a current from said generator through both said line-wires and said relays, whereby in turn a local circuit is established from said battery through said third electromagnet at the central station employed to impart longitudinal motion to said shafts, substantially as described.

9. In an automatic telephone-exchange, two shafts each provided with a selector-arm, and each provided with a separate electromagnet whereby it may be rotated separately from the other, and the two provided with a third electromagnet whereby they may be moved together longitudinally, two relays and a source of electromotive force, all at the central station in combination with two line-wires leading from the central station to a substation, a circuit-breaker at said substation provided with an electromagnet for operating it adapted to be connected up separately in circuit with said source of electromotive force and either of the said two central-station electromagnets employed for imparting rotary motion to said shafts, and a telephone switch-hook at said substation adapted to act automatically when the telephone is removed from the hook to establish momentarily a current from said source of electromotive force through both said line-wires and said relays, whereby in turn a local circuit is established from said source of electromotive force through said third electromagnet at the central station employed to impart longitudinal motion to said shafts, substantially as described.

10. The combination with a semicircular row of multiple contacts, a shaft provided with a selector-arm and also with a polarized electromagnet for imparting a rotary movement to said shaft and thereby causing said selector-arm to swing over said semicircular row of contacts, electromechanical means for imparting a longitudinal motion to said shaft and an alternating-current generator all at the central station, of a circuit-breaker at the substation provided with a polarized electromagnet for operating it adapted to be connected up in circuit with said generator and said polarized electromagnet employed for imparting rotary motion to said shaft, the said selector-arm being provided with a self-centering contact for making connection with a desired contact in said row of multiple contacts upon the longitudinal movement of said shaft, whereby compensation is made for slight deviations in synchronism between the action of the selector-arm at the central station and the circuit-breaker at the substation, substantially as described.

11. In a selecting and connecting mechanism at the central station of an automatic telephone-exchange the combination with two rows of multiple contacts, two shafts each provided with a separate electromagnet whereby it may be separately revolved, and selector-arms carried by the said shafts respectively and adapted to pass over the said two rows of contacts respectively, of motor mechanism interposed between the said shafts and their respective actuating electromagnets, a mechanical clutch for each shaft adapted to transmit power thereto from said mechanism to rotate the said shafts independently of each other, and a third electromagnet adapted to act upon both shafts and to move them together longitudinally, substantially as described.

709,740. AUTOMATIC TELEPHONE-EXCHANGE SYSTEM AND APPARATUS. ALBERT M. BULLARD, Somerville, and MALCOLM C. ROBY, Dedham, Mass., assignors to the American Bell Telephone Company, Boston, Mass., a Corporation of Massachusetts. Filed Aug. 29, 1901. Serial No. 73,742. (No model.)

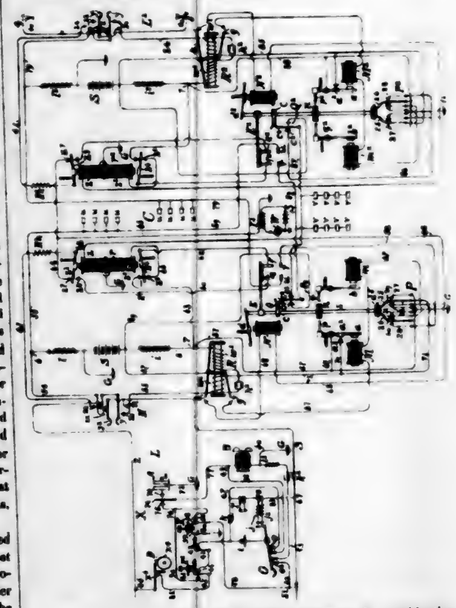

Claim.—1. In an automatic telephone-exchange, the combination of a group of metallic substation-circuits each provided with a pair of movable terminals one for each main conductor and with multiple pairs of fixed contact-terminals associated with and within range of the movable terminals of the other circuits respectively, a selecting and connecting device for each circuit adapted to move the said movable terminals thereof over the pairs of fixed terminals of the other circuits successively to select any desired or particular pair and connect the said movable terminals therewith, a selecting-electromagnet responsive to periodic interruptions of the main-line current and controlling the selecting mechanism of said device, a connecting-electromagnet responsive to a sustained main-line current to actuate the connecting mechanism thereof, and a source of current common to all said circuits, all at the central station, and a periodic interrupting device at each substation adapted to produce the requisite number of current interruptions for the operation of said selecting-electromagnet and then to close the circuit continuously for the establishment of the said sustained current required for the operation of said connecting-magnet, substantially as set forth.

2. A central-station switching apparatus for each subscriber's circuit of an automatic exchange, comprising an arc-shaped switch-plate supporting at its edge a number of pairs of insulated contact points or strips constituting multiple fixed terminals for a corresponding number of other metallic subscribers' circuits, a central shaft therefor capable of circular and longitudinal motion, a motor mechanism for the circular motion of said shaft consisting of a ratchet-wheel mounted thereon, an actuating-pawl therefor, a quick-acting electromagnet to operate said pawl by successive steps in response to periodic interruptions of the main circuit, a slow-reacting electromagnet controlling a retaining-pawl for the retention and release of said ratchet-wheel, a connecting-electromagnet adapted in response to a sustained current in said main circuit to impart longitudinal motion to said shaft, a selector-arm in electrical connection with one conductor of the main circuit extending radially from said shaft over the said fixed terminals, an insulated contact-plate electrically connected with the other main-circuit conductor mounted concentric with the switch-plate, and two contact-pieces connected with the two main conductors of the circuit through the selector-arm and contact-plate respectively and forming the movable terminals thereof, the said contact-pieces being mounted on said selector-arm over the fixed terminals of said switch-plate and adapted pursuant to the circular and longitudinal motion of said shaft to select and connect with any desired pair of said fixed terminals, substantially as herein described.

3. In the central-station apparatus of an automatic telephone-exchange, the combination with a controlling main-circuit relay having two armatures of diverse inertia and two exciting-coils in series one developing magnetism for the attraction of both said armatures into operative position and the other acting upon the heavier armature only and developing magnetism for the retention and retraction thereof, and two local circuits containing respectively a selecting and a connecting electromagnet the former controlled by the lighter and the latter by the heavier and more sluggish of said relay-armatures, of a normally open short circuit around the said retracting-coil and two circuit-closers therefor actuated by the said selecting and connecting electromagnets respectively, whereby a short circuit may be established around the said retracting-coil by the action of the selecting-magnet, and maintained by the action of the connecting-magnet, as set forth.

4. The combination in an automatic telephone-exchange switch apparatus, of a substation telephone-circuit having its main conductors provided with normally detached movable terminals to select and connect with the fixed terminals of other circuits and also provided with multiple fixed contact-terminals to be selected and connected with by the movable terminals of other circuits, a selecting and connecting device for bringing the said movable terminals into juxtaposition to any predetermined pair of fixed terminals and uniting them therewith, a selecting-electromagnet and a retaining-pawl magnet in a local circuit for operating and maintaining the operation of the selecting mechanism of said device, a connecting-magnet in a separate local circuit for operating the connecting mechanism thereof; a relay having its exciting-coils in the main substation-circuit together with a source of current, and provided with a quick-acting armature controlling the former and a sluggish armature controlling the latter of said local circuits, and an electromagnetic switch controlling the said detached movable terminals of said first-mentioned main circuit and acting when energized to unite them to their respective conductors, substantially as set forth.

5. The combination in an automatic telephone-exchange system, of a substation telephone-circuit having its main conductors provided with normally detached movable terminals to select and connect with the fixed terminals of other circuits and provided also with multiple fixed contact-terminals to be selected and connected with by the movable terminals of other circuits, a selecting and connecting device associated with said circuit and adapted to connect the movable terminals thereof with the fixed terminals of any other selected circuit, a controlling-relay in the said circuit, a local circuit governed thereby and including a connecting-electromagnet to actuate the connecting mechanism of said device, an electromagnetic switch having its actuating-electromagnet in the said local circuit controlling the said detached movable terminals and acting when energized to unite them to their respective main-circuit conductors, a normally closed short circuit around the said magnet of said switch, and means actuated by said connecting-electromagnet to remove said short circuit, substantially as and for the purposes set forth.

6. The combination in an automatic-exchange system of a substation circuit having normally detached movable terminals, selecting and connecting apparatus for connecting the said terminals with fixed terminals of another substation-circuit, an electromagnetic switch associated with said connecting apparatus controlling the said detached movable terminals and adapted when energized to unite them conductively to their respective main conductors, and means for preventing the operation of the said electromagnetic switch when the said other substation-circuit is already engaged, substantially as set forth.

7. In an automatic-exchange system, the combination of a substation-circuit having normally detached movable terminals, selecting and connecting apparatus for uniting the said terminals to fixed terminals of another substation-circuit, a testing or discriminating differential relay associated with said connecting apparatus controlling the said detached movable terminals and adapted to become energized by the passage of current through but one of its coils and to unite them to their respective main conductors, but on the passage of current through both coils to remain quiescent and to maintain the detachment of said terminals, and means for establishing current through one or both of the said coils, substantially as specified.

8. In the central-station switching apparatus of an automatic exchange, the combination substantially as herein described, of a substation main circuit having active and multiple passive terminal contacts, a selecting and connecting mechanism for said circuit, a battery or like source of electromotive force, a normally discontinuous circuit connection between said source and the several passive terminals of said main circuit, and a circuit-closing device operated by said selecting and connecting mechanism to establish the continuity of said connection when said main circuit becomes engaged, whereby an electric potential is imparted to said passive terminals to furnish current for the intrusion-preventing devices of other circuits.

9. In the central-station switching apparatus of an automatic exchange, the combination of a main substation-circuit having active and passive terminal contacts, a selecting mechanism acting to move said active terminals step by step into juxtaposition to the passive terminals of any other selected or wanted main circuit, a source of electromotive force, a normally open direct-circuit connection between said source and the said passive terminal contacts, and a commutator or switch actuated by said selecting mechanism on the first step taken thereby, to close said direct connection and thus to establish a potential on said passive terminals and indicate the engagement of the circuit to which they belong, substantially as and for the purposes specified.

10. The combination in an automatic telephone-exchange central-station apparatus, of two constituent substation-circuits each having one set of active and multiple sets of passive-terminal contacts formed or connected into a compound talking-circuit by engagement of the active terminals of the call-originating circuit with one set of the passive terminals of the call-receiving circuit, a selecting and connecting mechanism for each of the said circuits, and a source of electromotive force, with devices for impressing an intrusion-preventing potential on the vacant passive terminals of both circuits comprising for each a normally incomplete circuit connection between said source and the said passive terminals, and a circuit-closer therefor, the said circuit-closer being operated by the said selecting and connecting mechanism respectively of the call-originating substation-circuit, substantially as set forth.

11. In an automatic telephone-exchange, the combination with a call-originating or calling line, and a call-receiving or wanted line, both having a normally detached movable or active terminal and multiple fixed or passive terminals, and a switching device for each line actuated by selecting and connecting magnets in separate local circuits and adapted to connect the movable terminals of the calling-line with the fixed terminals of the wanted line, of a source of current having one pole connected to the said fixed terminals of the wanted line when said line is engaged and the other pole connected with the movable terminal of the calling-line to form a testing-circuit adapted to be closed by connecting said terminals, and a differential relay for said calling-line controlling the said detached movable terminals thereof, the said relay having an exciting-coil in the connecting-magnet local circuit and a neutralizing-coil in said testing-circuit, and being adapted to become energized and to attach the said movable terminals to their respective line conductors, and to remain quiescent and maintain their detachment according as the engagement or disengagement of said wanted line may determine the presence or absence of neutralizing-current in the testing-circuit and the neutralizing relay-coil included therein, substantially as and for the purpose set forth.

12. In the central-station apparatus of an automatic telephone-exchange, the combination of a call-originating or calling-subscriber's line,

a call-receiving or wanted subscriber's line, and connecting mechanism for each, with a busy-signal tone current device in a normally open circuit, means actuated by said connecting mechanism of the calling-line for completing said open circuit through said calling-line, a relay-magnet for said calling-line adapted to become excited on the connection of said line with a disengaged wanted line, but to remain quiescent if said line be busy, and a switch-lever controlled by said magnet and adapted during the quiescence thereof to maintain the continuity of the busy-signal circuit, and on the excitation thereof to open the said busy-signal circuit at substantially the same instant at which it is closed by said connecting mechanism, substantially as described.

13. The combination in an automatic exchange system, of a substation-circuit having normally detached movable terminals, switching apparatus for connecting the said terminals with fixed terminals of another substation-circuit, an appliance for producing distinctive busy-signal currents, means actuated by said switching apparatus for connecting the same to the said first-named circuit, an electromagnetic switch associated with said switching mechanism controlling the said busy-signal apparatus and the said detached movable terminals and acting when quiescent to maintain the connection of the said busy-signal apparatus and the detachment of the said terminals, and when energized to disconnect the said busy-signal connection and unite the said terminals to their respective main-circuit conductors, and means for preventing the operation of said switch when said other substation-circuit is already engaged.

14. In an automatic telephone-exchange, the combination at the central station, with substation-lines having normally detached movable terminals and multiple fixed terminals any of which lines may be a line calling for another or a line wanted by another, and switching mechanism for each line actuated by selecting and connecting magnets in separate local circuits and operating to unite the movable terminals of a calling-line to the fixed terminals of a wanted line, of a battery or like source of current adapted to be attached to the fixed terminals of an engaged line by the normal operation of the switching mechanism establishing such engagement, an incomplete non-intrusion circuit for a calling-line to be completed through the said attached battery and fixed terminals of any engaged line when the movable terminals of said calling-line are connected therewith by the switching mechanism of said calling-line, a normally discontinuous busy-signal circuit and a tone-current-producing apparatus included therein, means actuated by the said calling-line switching mechanism for continuing said busy-signal circuit through said calling-line, and a differential discriminating relay for said calling-line having an operating-coil in the local circuit of said connecting-magnet a neutralizing or operation preventing coil in the non-intrusion circuit and two switching armature-levers adapted each to move between a back contact upon which it normally rests and a front contact and control respectively the non-interruption and busy-signal circuits as well as the connection of the calling-line main conductors withsaid their normally detached movable terminals, the said circuits leading through the said normal contacts, and the said connection leading through the said front contacts, substantially as and for the purposes specified.

15. In an automatic telephone-exchange, the combination of a main telephone-circuit normally open at its substation, central-station apparatus therefor comprising selecting mechanism adapted to bring the movable terminals of said circuit into juxtaposition to the fixed terminals of any desired other circuit, a quick-acting selecting-electromagnet to actuate and a slow-reacting electromagnet to control said selecting mechanism, connecting mechanism adapted to unite the said juxtaposed terminals, a connecting-electromagnet to operate said connecting mechanism, a main-line relay having a quick-acting armature capable of following rapid successive current-interruptions and controlling the said selecting-magnet and a sluggish armature responsive to a steady or sustained current only and controlling the said connecting-magnet, a source of current also in said main circuit, and substation devices comprising a switch for closing the main circuit through the telephone apparatus for the establishment of a sustained current from said source therein for the responsive operation of both armatures of said main-line relay, and a periodic circuit-breaker for interrupting or intermitting the said current when established, for the responsive intermittent operation of the quick-acting armature only of said relay, substantially as specified.

16. In an automatic telephone-exchange, a call-originating subscriber's circuit and a call-receiving or called subscriber's circuit one or both being a polystation-circuit and each having two main conductors, a switching or connecting device for each at the central station adapted to unite the said main conductors of each to those of the other and thereby constitute a compound or through circuit, electromagnetic call-bells associated one at each substation with the corresponding conductors of the respective circuits, a normally disconnected call-generator at each substation, a key therefor to connect the same with the other or complementary main conductor of each circuit, and a transposing-commutator for the calling-circuit at the central station operated by the said switching device thereof to transpose the conductors of the said calling-circuit, whereby a preliminary-call-signal circuit may be established comprising the said complementary main conductor of the calling-circuit and the bell main conductor of the called circuit and including the bell or bells of the said called circuit, and the generator at the calling-station of the calling-circuit but excluding the bells at all other stations of the said calling-circuit, substantially as set forth.

17. In an automatic telephone-exchange, two main conductors of a metallic circuit extending from a central station to a plurality of substations, an electromagnetic bell at each substation connected with one of said conductors, a magneto-electric call-generator at each of said substations normally disconnected from both conductors, a grounded battery and controlling-relay looped between said conductors at the central station, an individual switching device at said central station adapted to unite the said main conductors with those of other substation-circuits, two keys associated with each said substation-generator one adapted to connect the same with the bell main conductor of the same circuit to operate the bells at other stations thereof, and the other adapted to simultaneously ground said bell-conductor and thereby complete the circuit of said grounded battery and relay therethrough and to connect said generator to the other main conductor to operate the bells of a second circuit connected by said central-station switching device, and a transposing-commutator actuated by said switching device and acting to unite the said other main conductor to the bell-conductor of said second circuit, substantially as and for the purposes specified.

18. In an automatic telephone-exchange composed of polystation subscribers' circuits each having two main conductors one associated with the call-bells at the several circuit-substations and the other dissociated from said bells and an individual switching device at the central station for each circuit, a temporary signaling-circuit established between a call-originating and a wanted circuit by the action of the switching device of the former, and comprising the call-bell-associated main conductor of the wanted circuit, the station-call bells connected with said conductor each in a ground branch thereof, the said dissociated main conductor of the call-originating circuit grounded at the calling-station thereof, and a call-generator connected therein at said calling-station, substantially as described.

19. In an automatic telephone-exchange, the combination at each station of a polystation-line, of two main conductors, an electromagnetic bell included in a ground branch from one of them, a grounded call-generator in a normally incomplete circuit, two keys associated with said generator and with the said main conductors respectively and adapted to complete the said generator-circuit through their respective main conductors, and a normally open circuit connection extending between the ungrounded terminals of the bell and generator and adapted to be closed during the operation of said generator as a branch circuit thereof including the coils of said bell, whereby the said generator is enabled to ring the bell of its own station when operated in connection with either main conductor, as set forth.

20. In an automatic telephone-exchange, the combination of a compound talking-circuit between two substations formed by uniting the normal circuits of said substations at a central station, and comprising telephone apparatus at the said substations, a bridged source of current connecting through parallel impedance-coils on each side with the two main conductors respectively, and two shunted relays maintaining the connection of said constituent circuits and having their windings in series in one of the said main conductors, with means for balancing in the other main circuit-conductor the said shunted relays, and for regulating the amount of current supplied from said source to the two constituent circuits respectively as set forth.

21. In an automatic telephone-exchange, a compound talking-circuit between two substations formed of two constituent subscribers' circuits switched together at a central station, and comprising telephone apparatus at the said substations, a battery supplying current for said telephone apparatus bridged between the main conductors at the central station, two impedance-coils in series in each main conductor one on each side of said battery-bridge connection, two connection-maintaining condenser-shunted relays having their electromagnets in series in one of said main conductors, and a low-resistance conductor shunting the impedance-coils in the main conductor which contains said relays, combined with a balancing and regulating resistance shunting the impedance-coils in the other main conductor, substantially as specified.

22. In an automatic exchange, and in combination with the two main conductors of a polystation subscribers' line thereof, apparatus and circuit connections at each substation comprising an electromagnetic bell and condenser in a ground branch from one of the said main conductors, a balancing impedance corresponding to that of the magnet of said bell and a second condenser in a ground branch from the other main conductor, a switch serving as a telephone-receiver support and operated by the removal and replacement of said receiver, and two circuit-breakers connected respectively in the said bell and balancing earth branches and both controlled by said switch, substantially as described and for the purposes set forth.

709,741. GRAIN-DRILL. GEORGE H. BURRILL, Adaville, Iowa. Filed June 18, 1902. Serial No. 112,102. (No model.)

Claim.—1. The combination with the drill-tube, shoe and supporting-beams, of the colter arranged between the beams, the bifurcated bar carrying the colter, and a spring adapted to bear upon the said bar for the purpose of holding the colter in contact with the earth, as specified.

2. The combination with the drill-tube, shoe and beams, of a colter arranged between the beams, bifurcated bar carrying the colter, and the spring-rod, one end of which engages the said bar adjacent to its bifurcation, the other end engaging the beams, said spring-rod normally holding the colter in contact with the earth, substantially as specified.

3. The combination with the drill-tube, shoe and beams, of the colter arranged between the beams and having its axle adapted to engage the said beams, a bar bifurcated at one end and carrying a colter within said bifurcated end, and a spring-rod hooked at one end and adapted to engage the said bifurcated bar adjacent to its bifurcation, the opposite end being hooked or bent when brought into engagement with the under side of the beams for the purpose specified.

709,742. WRENCH. CHARLES BOBBY, Powell, Oreg. Filed Apr. 13, 1901. Serial No. 55,773. (No model.)

Claim.—In a wrench, the combination with the toothed bar having a handle and a removably-fixed jaw therewith, of a movable jaw having a sleeve therein mounted on said bar, the rear lower portion of the movable jaw having a dog pivoted thereto with a catch-leg thereon to coact with the teeth of the bar, an offset on said dog at right angles with the catch-leg so as to coact with the under surface of said teeth, a lip with a recess therein, a leaf-spring secured at one end to the movable jaw, the opposite end loosely connected in the recess of said lip and the sleeve of the movable jaw having spaced rollers at opposite ends to coact with the upper surface of the bar, and one of said rollers mounted above the movable jaw, the other above the dog whereby to equalize the movement of said dog and said movable jaw, substantially as specified.

709,743. TRACK-BRAKE. THOMAS S. BUTLER, Vandergrift, Pa. Filed Apr. 15, 1902. Serial No. 102,947. (No model.)

Claim.—1. The combination in a brake mechanism substantially as described, of the supporting-beams, the brackets secured thereto, and spaced apart and having at their upper ends the upright and horizontal wings lapping alongside the beam and the intermediate inwardly-inclined wings and the depending wings at the inner lower ends of the inclined wings the levers comprising side plates pivoted between their ends to the said depending wings of the brackets, and provided between the side plates near their inner adjacent ends with the weight-blocks and between their side plates near their outer ends with the brake-wheel movable vertically and with the bearing-blocks operating above said wheels, the shaft mounted in bearings on the beam, between the opposite brackets thereof, the drum on said shaft, connections between said drum and the inner adjacent ends of the brake-levers and means whereby the drum may be turned, substantially as set forth.

2. The combination in a brake mechanism with a supporting-beam, of the brackets secured at their upper ends to the supporting-beams and inclining inwardly below the said beams, the brake-levers pivoted between their ends to the lower ends of the said brackets and provided at their outer ends with the brake-wheels, and lifting means connected with the inner adjacent ends of the brake-levers, substantially as set forth.

3. The combination in a brake mechanism with a suitable support, of the lever pivoted thereto, and composed of side plates, a weight-block between the side plates of said lever on the long arm of said lever, and the brake-wheel and bearing-block supported between the side plates of the short arm of the lever, and means whereby the lever may be operated, substantially as set forth.

4. A brake substantially as described, comprising the lever, the brake-wheel movable in the lever and arranged to bear upon the track, and a bearing-block supported by the lever and arranged to set upon the opposite side of the wheel from the track, substantially as set forth.

5. The combination of the brake-lever provided with a lateral opening for the bearing-block, the bearing-block fitted in said opening, and the brake-wheel movable in the brake-lever below the bearing-block and toward and from the same, substantially as set forth.

6. The combination of the brake-lever having the opposite side plates, and provided therein with the slots for the shaft of the brake-wheel and above said slots with the openings for the bearing-block, the bearing

block fitted and held in said openings, and the wheel below said bearing-block and having its shaft movable in the slots of the side plates, substantially as set forth.

7. The combination with the beam, of the levers below the same and pivoted near their outer ends, the brake-wheels and bearing-blocks in the outer ends of the said levers, and lifting devices connected with the inner ends of the levers, substantially as set forth.

8. In a brake mechanism, the combination of the bracket, the lever having side plates extending on opposite sides of and pivoted to the bracket, the brake-wheel and bearing-block between the said plates on one side of the bracket, and the lifting device connected with the lever on the opposite side of the bracket, substantially as set forth.

709,744. MECHANICAL MONEY-CHANGER. GEORGE W. CASTLEN, Owensboro, Ky. Filed Dec. 21, 1900. Serial No. 40,605. (No model.)

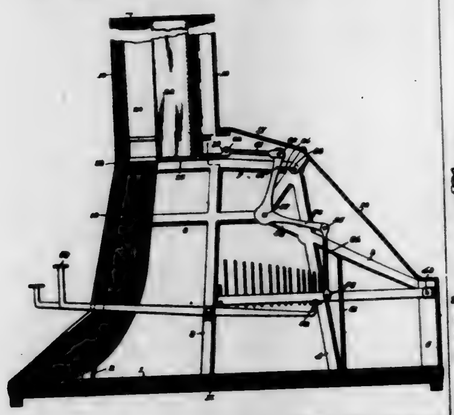

Claim.—1. In a money-changer the combination with a key operatively connected with a key-bar, said key-bar being pivoted at one end, of a connecting member provided with stirrups adapted to engage said key-bar near its opposite end and to actuate said key-bar independently of the operation of said key.

2. In a money-changer the combination with a key operatively connected with a key-bar, said key-bar being pivoted at one end, of a connecting member provided with stirrups adapted to engage said key-bar near its opposite end and to actuate said key-bar independently of the operation of said key, and a special key in operative connection with said connecting member.

3. In a money-changer, coin-selective mechanism, comprising the combination with a plurality of key-bars, pivoted at one end, respectively, and a connecting member adapted to operatively engage said key-bars near their free ends, respectively, of plungers, bell-crank levers linked to the plungers and key-bars, respectively, and keys operatively connected with the key-bars.

4. In a money-changer, coin-selective mechanism comprising the combination with a plurality of plungers, and a plurality of key-bars operatively connected with the plungers, respectively, of a connecting member provided with stirrups in which a plurality of key-bars work, and a special key-bar and key for actuating said connecting member, substantially as set forth.

5. In a money-changer, coin-selective mechanism comprising the combination with a case, of a key-bar terminally pivoted thereto, and plunger operatively connected therewith, a key operatively connected, by a lever connection, with the key-bar, and means for preventing lateral movement of the keys and key-bar, respectively, whereby during their respective movements, they are held in true operative relations.

6. As a part of a money-changer, a coin-bar-assembling member provided with a coin-bar recess, and a central plunger-guideway.

7. In a money-changer the combination with a case provided with means for containing coins of different denominations, of coin-selective mechanism comprising key-bars, plungers operatively connected with the key-bars, keys operatively connected with the key-bars, connecting members adapted to engage a plurality of said key-bars and to actuate them independently of the operation of their keys, said connecting member being provided with stirrups, and keys and key-bars adapted to actuate said connecting members, substantially as set forth.

709,745. PROCESS OF TREATING ORES AND BY-PRODUCTS CONTAINING SULFUR AND IRON. ARTHUR W. CHASE, Avoca, Iowa. Filed Mar. 4, 1899. Serial No. 707,773. (No specimens.)

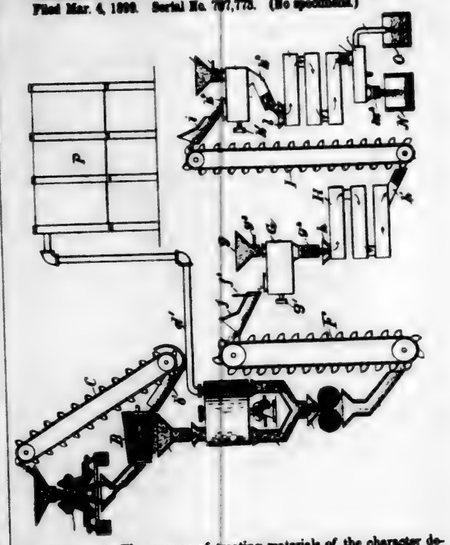

Claim.—1. The process of treating materials of the character described, which consists in subjecting said ores or ash to the action of heat and a suitable reducing agent, whereby the iron is completely changed to an insoluble form, and whereby the sulfur is either volatilized or reduced to a soluble form, and leaching out the residual soluble sulfur salts, substantially as described.

2. The process of treating materials of the character described, which consists in mixing said ores or ash with carbonaceous material and roasting the mixture, whereby the iron is changed to insoluble oxids and the sulfur is either volatilized or changed to a soluble salt or salts, and leaching out the soluble salts, substantially as described.

3. The process of treating materials of the character described, which consists in pulverizing said ore or ash, mixing it with finely-divided carbonaceous material, heating the mixture to a full-red heat with free access of air, stirring the mixture during the roasting operation, whereby the iron is changed to insoluble oxids and the sulfur is either volatilized or changed to a soluble salt or salts, and leaching out the soluble salts, substantially as described.

4. The process of treating materials of the character described, which consists in mixing said ore or ash with carbonaceous material, roasting said mixture until the sulfur contained therein is reduced to a percentage equal to or slightly in excess of the copper contained in said ores or ash, mixing with the product a quantity of common salt chemically equivalent to the quantity of copper present, roasting this mixture and leaching out the soluble salts, substantially as described.

5. The process of treating materials of the character described, which consists in pulverizing said ores or ash, mixing them with finely-divided carbonaceous material, roasting said mixture at a full-red heat with free access of air, stirring said mixture during the roasting operation until the sulfur is reduced to a percentage equal to or slightly in excess of the copper present, mixing the product with a quantity of common salt chemically equivalent to the quantity of copper present, roasting said mixture at a dull-red heat, mechanically stirring the same, leaching out the soluble salts and treating the solution thus obtained and the residue by any of the well-known methods for the recovery of the valuable constituents thereof, substantially as described.

6. The process of treating materials of the character described, which consists in roasting them with the admission of a suitable quantity of air for the production of sulfuric acid, pulverizing the ash therefrom, mixing said pulverized product with a small percentage of finely-divided carbonaceous material, roasting said mixture at a full-red heat with free access of air, mechanically stirring said mixture during said roasting operation, mixing the roasted material with a quantity of common salt chemically equivalent to the copper present, roasting the mixture at a dull-red heat with free access of air, mechanically stirring said mixture during the roasting operation, subjecting the product to the action of hot water and steam under pressure, thereby forming a solution of all the soluble salts present, and treating the solution and residue by any of the well-known methods to obtain the valuable constituents thereof, substantially as described.

709,746. TRAIN SIGNALING APPARATUS. WILLIAM D. CLOSTON, Lewisburg, W. Va. Filed Jan. 23, 1902. Serial No. 90,879. (No model.)

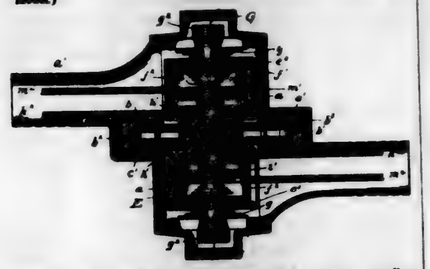

Claim.—1. In a device of the class specified, a pair of coupling members each having two contact-blocks connected to line-wires and separated from each other when the coupling members are connected, and means for automatically moving said blocks into contact with each other to complete a circuit between the line-wires when the coupling members are separated.

2. A slip-coupling for connecting the wires of an electric circuit between the cars of a train, said coupling comprising two similarly-shaped, interfitting sections, each having two contact-blocks forming the terminals of an electric circuit and springs carried by each section tending to cause the parts to lock together laterally, and when so locked to separate the two blocks of each section, the two said sections being free to separate longitudinally under a tensional strain and the springs serving to connect said blocks and establish a circuit when the sections are separated, substantially as specified.

3. A coupling for connecting the wires of an electric circuit between the cars of a train said coupling comprising two similarly-shaped interfitting sections, each section having an outer shell or casing, two metallic contacts situated within said casing and electrically connected to the line-wires of the circuit, and springs acting in said contacts and tending to connect the same when the coupling-sections are separated, substantially as specified.

4. A coupling-section comprising a casing, having an integral ribbed and grooved portion for connection with the similar portions of the mating section, metallic contact-plates within and insulated from said casing, and springs acting on said plates to effect the lateral locking of the sections and tending to connect said plates when the sections are separated, substantially as specified.

5. A coupling member comprising an outer shell or casing having an opening at one end, a cup fitting in said casing and partly projecting through said opening, a spring tending to thrust said cup outwardly, a pin located within said cup and having its end projecting through an opening in the same, a spring tending to force said pin through said opening, and insulating material within the cup to prevent contact between the sides of the same and the pin, substantially as specified.

6. The combination in a coupling member, of the casing, an insulated cup within the casing and forming part of an electric circuit, a spring-projected pin within and partly insulated from said cup, and forming part of an electric circuit, said cup and pin being both projected through an opening in the casing, but at different distances from the surface of the same, substantially as specified.

7. A coupling member comprising a casing, having an end opening, a cup fitting within the casing and partly projecting through the opening, and electrical conductor connected to said cup, a pin within and insulated from said cup, an electrical conductor connected to said pin, and a spring tending to force the pin and cup into contact to complete a circuit between said conductors, substantially as specified.

8. A coupling member comprising a casing *e*, a cup E within the same, a spring tending to force said cup through an opening in the casing, insulation *f*, *f'* in said cup, a headed pin *i*, *i'* within the cup and projecting partly through an insulated opening in the same, a spring *n* between the top of the pin and the cup, and electrical conductors connected to said cup and pin, substantially as specified.

709,747. TAKE-UP DEVICE FOR AXLE-SPINDLES. JOHN J. COOK, Columbus City, Iowa. Filed Oct. 30, 1900. Renewed July 11, 1902. Serial No. 115,213. (No model.)

Claim.—1. In devices for taking up wear in worn axle-spindles, the nut having a recessed inner face provided with a series of removable washers therein arranged to bear against the shoulder of the spindle, said nut having also a second recess in its inner face, and provided with a spring-washer arranged to bear against the shoulder of the boxing, substantially as specified.

2. In a device for taking up wear in axle-spindles, the combination with the nut engaging the end of said spindle, and having a recess in its inner face, of a face attachment for said nut, having also a recess in its inner face, and the washers in said recesses, arranged to bear against shoulders of the spindle and boxing, substantially as specified.

709,748. SHIFT-KEY-ACTUATING DEVICE. ROBERT S. COPP, New York, N. Y. Filed June 24, 1902. Serial No. 113,040. (No model.)

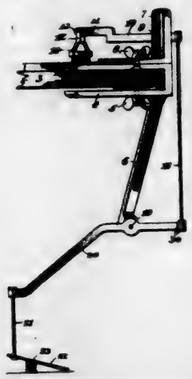

Claim.—1. The combination with a clamp member, an angle-piece thereon, shift-key-operating lever, a leaf-spring to normally hold the lever retracted, and treadle mechanism to actuate the said lever, substantially as described.

2. The combination with a clamp member having a depending arm, an adjustable angle-piece thereon, a spring-retracted shift-key-operating lever carried by said angle and treadle mechanism to operate the said lever, substantially as described.

3. The combination with a clamp member having a depending arm, of an angle-piece adjustably secured thereto, a spring-retracted shift-key-operating lever, a treadle-actuated lever pivoted on the depending arm and a connection between the two levers, substantially as described.

4. The combination with a clamp member having a depending arm, of an angle-piece adjustably secured thereto, a spring-retracted shift-key-operating lever having an end adapted to engage and hold the shift-key,

a treadle-actuated lever pivoted on the depending arm and a connection between the two levers.

5. The combination with a clamp member having a depending arm, of an angle-piece adjustably secured thereto, a slotted pivot-pin in the angle, a shift-key-operating lever pivoted on the pin, a leaf-spring held in said slot and holding said lever normally retracted, a treadle-operated lever pivoted on the depending arm and an adjustable connection between said lever and the shift-key-operating lever, substantially as described.

6. The combination with a suitable support to be clamped to a table or stand, of a shift-key-operating lever pivoted on the support, a finger pivoted on the end of the lever and provided with claws to engage and hold the shift-key, and treadle mechanism to operate the said lever, substantially as described.

709,749. COMBINATION-TOOL FOR MANIPULATING WIRE. EDWIN C. COLLIER, Colorado, Tex. Filed Feb. 8, 1902. Serial No. 93,161. (No model.)

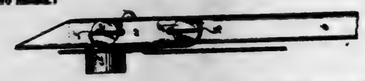

Claim.—1. A combination-tool for manipulating wire, comprising a handle, a bifurcated claw, a plurality of formers provided with slots for engaging the wire, and a cylindrical boss for temporarily securing said wire to the tool.

2. A combination-tool for manipulating wire, comprising a handle, a bifurcated claw, a plurality of formers provided with slots for engaging the wire, a cylindrical boss for temporarily securing said wire to the tool, a longitudinal arm disposed at right angles to said handle, and a comb flexibly connected with the said longitudinal arm for the purpose of temporarily engaging the wire.

3. A combination-tool for manipulating wire, comprising a longitudinal member provided with a handle, and with a pair of substantially cylindrical formers disposed parallel with each other and provided with slots, said slots being in alinement, and also provided with a cylindrical boss disposed with its axis at a right angle to the axes of the said cylindrical formers.

4. A combination-tool for manipulating wire, comprising a lever made of two longitudinal members disposed at right angles to each other, one of said members being provided with a comb flexibly connected therewith, and the other being provided with a bifurcated claw, a cylindrical boss, a pair of substantially cylindrical formers provided with slots, said slots being in alinement with each other and all for manipulating wire, and a fastening for temporarily securing said comb in a folded position when the same is not in active use.

709,750. GRAPPLE. ARTHUR DAILY and RILEY BAKER, Otisco, Ind. Filed Apr. 26, 1902. Serial No. 104,632. (No model.)

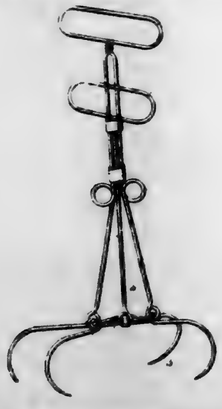

Claim.—1. A grapple comprising a strand formed intermediate its ends with a loop, the free ends being run parallel to each other for a suitable distance and thence bent to form spring-arms, and finally terminating in spring-arms, jaws connected to the ends of the spring-arms, and a reciprocating rod connected to each of the jaws and adapted to be operated so as to open and close said jaws.

2. In a grapple, the combination with a pair of spring-actuated jaws, rods extending above the spring and connected at the top by a loop, said rods being spaced apart, a rod interposed between the first-named rods and connected to the jaws so as to operate them, and sleeved clips secured to the first-named rods and encircling the last-named rod, whereby it may be guided in a reciprocating relation to the device.

709,751. PROCESS OF PRESERVING FROZEN FOOD PRODUCTS. DAVID W. DAVIS, Detroit, Mich., assignor to Sidney R. Dixon, trustee, Detroit, Mich. Filed May 21, 1902. Serial No. 108,318. (No specimens.)

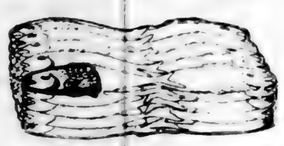

Claim.—The herein-described process of preserving fresh animal-food products, consisting in first freezing the products to a temperature below freezing-point, then immersing the said products while in a frozen condition in water having a temperature of 32° Fahrenheit to form an inclosing shell of ice about the products to thoroughly exclude the air therefrom without extracting the frost from the products, and finally storing the products thus prepared without further treatment in a temperature below freezing-point, substantially as and for the purpose specified.

709,752. MEANS FOR HANDLING TELEGRAPHIC RECEIVING-TAPES FOR TRANSLATION. PATRICK B. DELANY, South Orange, N. J. Original application filed Dec. 18, 1896, Serial No. 615,796. Divided and this application filed Aug. 20, 1901. Serial No. 72,622. (No model.)

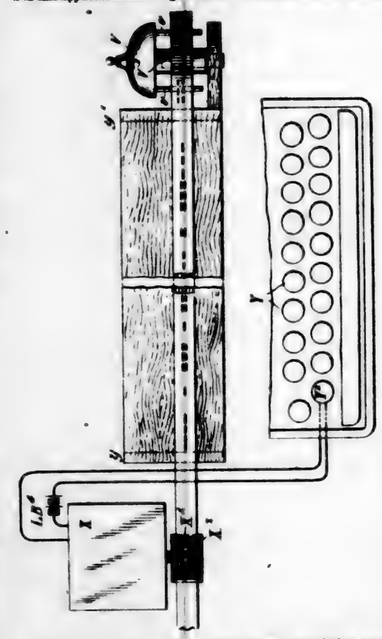

Claim.—1. A telegraphic receiving-tape-translating mechanism comprising the combination of a reel upon which the receiving-tape is wound, a drawing device adapted to be intermittently actuated at the will of the operator to draw from the reel a definite length of tape, means by which the operator may manually control the operation of the drawing device, and a board or support between the reel and drawing device upon which the lengths of tape successively lie in view of the operator.

2. A telegraphic receiving-tape-translating mechanism comprising the combination of a board or tape-support upon which the tape may be in view of the operator, a drawing device arranged at one side of the board and adapted to be intermittently actuated at the will of the operator to draw a definite length of the tape across the board, and means by which the operator may manually control the operation of the drawing device.

709,753. METAL-BENDING MACHINE. FRANK DEVENFIELD, Avalon, Pa., assignor to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed July 1, 1902. Serial No. 113,961. (No model.)

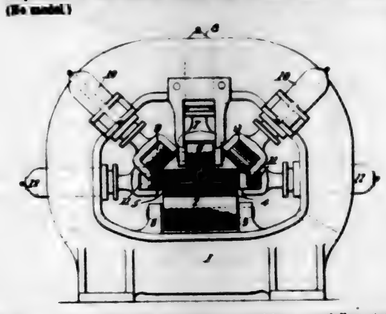

Claim.—A metal-bending machine, comprising essentially a stationary frame, a power-actuated holddown-roll, power-actuated edge-turning rolls arranged in pairs upon opposite faces of the frame, flanging-rolls arranged upon opposite sides of the frame and between the edge-turning rolls, and a movable former mounted upon the frame between said rolls.

709,754. METAL-BENDING MACHINE. FRANK DEVENFIELD, Avalon, Pa., assignor to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed July 1, 1902. Serial No. 113,962. (No model.)

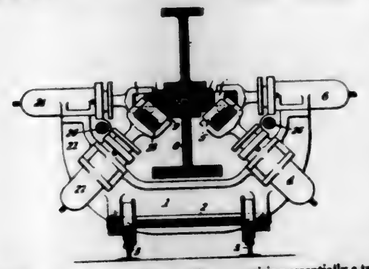

Claim.—1. A metal-bending machine, comprising essentially a traveling frame provided with obliquely-disposed edge-turning rolls and horizontally-arranged flanging-rolls, a stationary former, a bed-piece, and a pressure-beam between which and the former the work is clamped.

2. A metal-bending machine, comprising essentially a traveling frame provided with obliquely-disposed edge-turning rolls and horizontally-arranged flanging-rolls, a stationary former, a pressure-beam upon which it is mounted, and a bed-piece between which and the former the work is clamped.

709,755. CENTER-BEARING FOR RAILWAY-CARS. FRANK DEVENFIELD, Avalon, Pa., assignor to Pressed Steel Car Company, Pittsburg, Pa., a Corporation of New Jersey. Filed July 1, 1902. Serial No. 113,963. (No model.)

Claim.—1. A center-bearing plate, for railway-cars, having a projecting member of any desired height and conformation, and a base member shrunk thereon.

2. A pressed-steel center-bearing plate, having a central projecting member of appropriate height and profile, and a base having a horizontal flange and a vertical flange fitted to the projecting member and shrunk thereon.

3. Center-bearing plates for cars, comprising a body member and a truck member, each composed of a projecting portion of appropriate height and profile, and a base portion, the several base portions being shrunk upon the projecting portions.

4. A center-bearing plate for cars, having a projecting portion of appropriate height and profile, and a base portion, the base portion being shrunk upon the projecting portion, combined with a reinforcing-annulus.

5. A center-bearing plate for cars, comprising a projection of appropriate height and profile having a flanged king-bolt hole, and a base shrunk upon the projection.

709,756. HAY RAKE AND LOADER. EDWARD D. DORSEY, Ovando, Mont. Filed Sept. 3, 1901. Serial No. 74,067. (No model.)

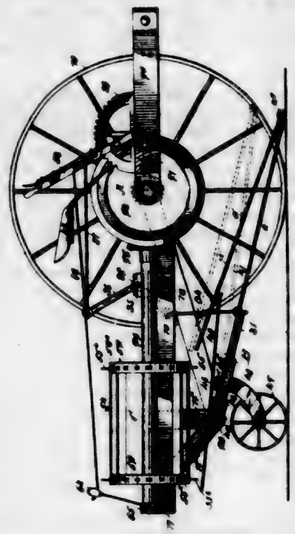

Claim.—1. The combination of a main frame, a wheeled rake-head connected therewith, means for adjusting said rake-head relative to said main frame, a table in operative relation to the rake-head, rake-fingers each having upper and lower members and said lower members connected to the rake-head and the upper members arranged to discharge a load to said table, horizontal shafts over said table, and a conveyer supported and driven by said shafts and arranged to sweep the table.

2. The combination of a wheeled rake-head, a substantially horizontal table supported by and arranged above said rake-head, double rake-fingers each having the lower member loosely connected to the rake-head and with the upper member arranged to extend over said table, a conveyer having teeth arranged to sweep the table, means for propelling the conveyer in a horizontal path, and means for adjusting the rake-head and the table relative to said conveyer.

3. In a hay rake and loader, a rake-head, teeth constructed of spring-wire carried by the said head, each tooth comprising a lower member and an upper member diverging from the lower member, each tooth having an upward bend where the members connect at a forward end of the tooth, the lower member of each tooth resting loosely in guide-recesses in the rake-head, a device for securing the rear ends of the lower members of the teeth to the rear portion of the rake-head, and a binding-strip extending from end to end of the rake-head over the lower members of the teeth, being secured to the said head at the spaces between the teeth, the said binding-strip having arched sections over each teeth, so that each tooth is capable of limited upward movement, as described.

4. In a hay rake and loader, a rake-head, teeth constructed of spring-wire carried by the said head, each tooth comprising a lower member and an upper member diverging from the lower member, each tooth having an upward bend where the members connect at a forward end of the tooth, the lower member of each tooth resting loosely in guide-recesses in the rake-head, a device for securing the rear ends of the lower members of the teeth to the rear portion of the rake-head, and a binding-strip extending from end to end of the rake-head over the lower members of the teeth, being secured to the said head at the spaces between the teeth, the said binding-strip having arched sections over each teeth, so that each tooth is capable of limited upward movement, a wheel-supported frame

upon which the rake-head is pivotally mounted, and a shifting device carried by the said frame and connected with the rake-head, whereby the rake-head may be raised and lowered, and all of the teeth simultaneously raised and lowered, as described.

5. In a hay rake and loader, the combination, with a wheeled driving-axle, a frame supported thereon, a shaft extending from side to side of the frame, a drive-shaft extending from front to rear of the frame, and a driving connection between the drive-shaft and driving-axle of the frame, of a rake-head pivotally mounted on the shaft extending from side to side of the frame, the rake-head being provided with a series of spring-teeth capable of independent vertical movement, a table located over the rake-head, center-wheel supports for the rake-head, a conveyer located over the said table and extending from end to end thereof, an elevator located at one side of the frame at one end of the conveyer, and means, substantially as described, for imparting movement to the conveyer and elevator aprons through the medium of the said driving-shaft, for the purpose set forth.

6. In a hay rake and loader, the combination, with a wheeled driving-axle, a frame supported thereon, a shaft extending from side to side of the frame, a drive-shaft extending from front to rear of the frame, and a driving connection between the drive-shaft and driving-axle of the frame, of a rake-head pivotally mounted on the shaft extending from side to side of the frame, the rake-head being provided with a series of spring-teeth capable of independent vertical movement, a table located over the rake-head, center-wheel supports for the rake-head, a conveyer located over the said table and extending from end to end thereof, an elevator located at one side of the frame at one end of the conveyer, and means, substantially as described, for imparting movement to the conveyer and elevator aprons through the medium of the said drive-shaft, a shifting shaft mounted on the frame and connected with the rake-head, a lever connected with the shifting shaft, a pulley-controlled regulating rope or chain connected with the elevator, and a lever connected with the said pulley-controlled rope or chain, for the purposes set forth.

7. The combination of a wheeled axle, a frame, a pivotal shaft or rod supported by said frame, a rake-head connected to said shaft, a table over said rake-head and projecting in front and in rear of the same, rake-fingers connected to the rake-head and provided with upper members arranged to deliver to the table, horizontal conveyer-shafts mounted on the frame, a conveyer supported and driven by said shafts and arranged to travel lengthwise of the table and in a path crosswise of the series of rake-fingers, and means for adjusting said rake-head and the rake-fingers carried thereby.

8. The combination of a wheeled axle, a frame, a rake-head suspended from said frame and supported by ground-casters, a table over said rake-head, rake-fingers each having two members, one series of said members of the rake-fingers being loosely connected to the rake-head and the other members of said fingers arranged to extend over the table, rake-head-adjusting devices on said frame, and a conveyer mounted on the frame and arranged to travel lengthwise of the table.

9. The combination of a wheeled axle, a frame, a horizontal conveyer-driving shaft geared to said axle, another horizontal conveyer shaft mounted on the frame, an endless conveyer fitted to said shafts and arranged to travel in a horizontal path, a rake-head and the rake-fingers below the conveyer mechanism, said rake-fingers having the upper members, a table supported between the conveyer and the rear ends of the upper members of the rake-fingers, said table extending in front and in rear of said rake-head, an inclined elevator having one end mounted on the frame and disposed in loading relation to the table and the conveyer, means for driving the elevator, and elevator-adjusting devices on the frame.

709,757. PHOTOGRAPH-BURNISHER. CLATHIA J. DORTSON, Newton, N. J., assignor to the Dortson Manufacturing Co., a Corporation of Colorado. Filed Aug. 18, 1902. Serial No. 27,104. (No model.)

Claim.—1. The herein-described means for burnishing photographs, embracing two rollers, to bear on opposite surfaces of the photograph, one of said rollers acting to feed the photograph and engaging the card side thereof, and the other of said rollers being heated when in use and constituting the burnishing-roller of the device and engaging the print side of the photograph, said burnishing-roller being free to rotate under the influence of the moving photograph being fed in contact with it and being rotated thereby at the same speed as the feed-roller, whereby the friction on the photograph produced by gearing connecting the two rollers is eliminated, as and for the purposes set forth.

2. The herein-described means for burnishing photographs, embracing two rollers, to bear on opposite surfaces of the photograph, one of said rollers acting to feed the photograph and engaging the card side thereof, and the other of said rollers being heated when in use and constituting the burnishing-roller of the device and engaging the print side of the photograph, said burnishing-roller being free to rotate under the influence of the moving photograph being fed in contact with it and being rotated thereby at the same speed as the feed-roller, whereby the friction on the photograph produced by gearing connecting the two rollers is eliminated, and means for supporting one of said rollers yieldingly with relation to the other.

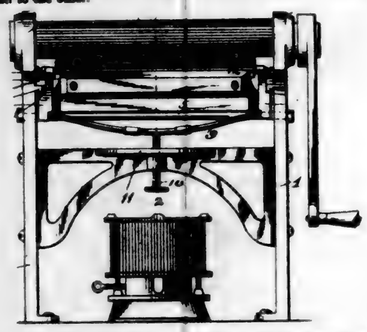

3. The herein-described means for burnishing photographs, embracing two rollers, to bear on opposite surfaces of the photograph, one of said rollers acting to feed the photograph and engaging the card side thereof, and the other of said rollers being heated when in use and constituting the burnishing-roller of the device and engaging the print side of the photograph, said burnishing-roller being free to rotate under the influence of the moving photograph being fed in contact with it and being rotated thereby at the same speed as the feed-roller, whereby the friction on the photograph produced by gearing connecting the two rollers is eliminated, a spring supporting one of said rollers yieldingly with relation to the other, and an adjusting-screw engaging said spring.

4. A combined rotary and stationary photograph-burnisher, comprehending, in combination, a feed-roller and a support for the burnishing-tool, relatively adjustable to give access to the burnishing-tool, said support being adapted to both rotary and stationary burnishing-tools, and a burnishing-tool adapted to said support and removably mounted therein.

5. A combined rotary and stationary photograph-burnisher, comprehending, in combination, a feed-roller and a support for the burnishing-tool, relatively adjustable to give access to the burnishing-tool, said support being adapted to both rotary and stationary burnishing-tools, a spring attached to the adjustable part at its ends and yieldingly supporting the same during the burnishing operation, an adjustable abutment for said spring mounted so as not to interfere with said adjustment, and a burnishing-tool adapted to said support and removably mounted therein.

6. A combined rotary and stationary photograph-burnisher, comprehending, in combination, a feed-roller and a support for the burnishing-tool, relatively movable to give access to the burnishing-tool and said support being adapted to both rotary and stationary burnishing-tools, and a burnishing-roller journaled in said support and adapted to be removed therefrom, said burnishing-roller being disconnected from said feed-roller.

7. In a photograph-burnisher, the combination with a frame, a feed-roller, and a burnishing-tool, of a support for said tool, engaging said frame and slidably mounted to permit it to be moved bodily rearward thereon from beneath said feed-roller, for the purpose set forth.

8. In a photograph-burnisher, the combination with a feed-roller, and a burnishing-tool, of a support for said tool, slidably mounted to permit it to be moved from beneath said feed-roller to thereby afford access to said burnishing-tool, a spring attached at its ends to said support, and an abutment for the center of said spring.

9. In a photograph-burnisher, the combination with a feed-roller, and a frame, of a support for the burnishing-tool engaged with said frame and slidably mounted thereon so as to permit it to be moved bodily rearward out of line with said feed-roller, and a burnishing-tool removably mounted in said support.

10. In a photograph-burnisher, the combination with a feed-roller, a slidably-mounted support for the burnishing-tool, a burnishing-tool removably mounted in said support, a spring yieldingly supporting said tool-support and having its ends attached to the same, and an adjustable abutment which bears against the center of said spring.

11. In a photograph-burnisher, the combination with the feed-roller, and a burnisher-roller disconnected from said feed-roller, of a support for said burnishing-roller slidably mounted to enable the burnishing-roller to be carried out of line with said feed-roller to thereby afford unobstructed access to said burnishing-roller.

12. In a photograph-burnisher, the combination with the feed-roller, and a burnishing-roller disconnected from said feed-roller, of a support for said burnishing-roller, slidably mounted to enable the burnishing-roller to be carried out of line with said feed-roller to thereby afford unobstructed access to said burnishing-roller, and a spring attached at its ends to said support and yieldingly supporting the burnishing-roller during the burnishing operation, and an adjustable abutment for the center of said spring.

13. A combined rotary and stationary photograph-burnisher, comprehending, in combination, a feed-roller, a support for the burnishing-tool, slidably mounted to permit it to be moved out of line with said feed-roller to give access to the burnishing-tool and adapted to both rotary and stationary burnishing-tools, and a burnishing-tool removably mounted in said support.

14. A combined rotary and stationary photograph-burnisher, comprehending, in combination, a feed-roller, a support for the burnishing-tool slidably mounted to permit it to be moved out of line with said burnishing-tool, a spring attached at its ends to said support, an adjustable abutment bearing against the center of said spring, and a burnishing-tool removably mounted in said support.

15. In a photograph-burnisher, the combination with the frame and feed-roller, of a support for a burnishing-tool, mounted to be moved from beneath said feed-roller, a spring engaging the front end of said burnishing-tool support and supporting the same yieldingly with relation to the feed-roller, an adjusting-screw engaging said spring, a burnishing-tool removably mounted in said support, a rod to support the rear end of the burnisher-support, and coöperating guide-flanges and stop-lugs on the tool-support and frame.

16. A combined rotary and stationary photograph-burnisher, consisting of a frame, a feed-roller, a support for a burnishing-tool adapted to both rotary and stationary tools and mounted to be moved from beneath said feed-roller, a burnishing-tool adapted to said support and removably mounted therein, a spring engaging the front end of said support and supporting the same yieldingly with relation to the feed-roller, an adjustable abutment for said spring, means for supporting the rear end of said tool-support, and coöperating guide-flanges and stop-lugs on the frame and tool-support.

17. A combined burnishing and bending tool for photograph-burnishers having a burnishing-surface provided with means for determining its position within the burnisher, the relation of the burnishing-surface to said means being such that the burnishing-surface will be permanently inclined when mounted in the burnisher.

18. The combination with a feed-roller and a tool-support, of a stationary burnishing-tool mounted in said support and having its axis alined with that of said feed-roller, said burnishing-tool having its upper surface formed to present a continuous incline from its front to its rear side and its said rear side arranged at a greater distance from said support than its front side.

19. A burnishing-tool having one surface formed flat and plane for regular work and another surface formed in a continuous incline from one side to the other, said tool being constructed so that it may be adjusted in its support to present either of said surfaces and be held fixedly in adjusted position.

20. A burnishing-tool having one side formed to both burnish and bend a photograph and another surface formed simply to burnish, and a support for said tool, said tool being adapted to be mounted in said support so that it may be turned to present either of said surfaces to the photograph.

21. In a photograph-burnisher, the combination with a frame and a feed-roller, of a fire-pan, having ends which project beyond the edges of said pan and are mounted to slide with said pan bodily rearward from beneath said feed-roller, a burnishing-tool carried by said pan, a spring attached to the projecting parts of said ends and adapted to support the pan and tool yieldingly in relation to the feed-roller in the operation of the device, an adjustable abutment for said spring, and coöperating guide-flanges and stop-lugs on said frame and ends.

22. A photograph-burnisher, comprehending, in combination, a feed-roller, a burnishing-roller having a rigid burnishing-surface, and means for heating said burnishing-roller, said feed-roller and burnishing-roller being disconnected from each other and so related that the latter will be rotated from the former by the movement of the interposed photograph, whereby the friction due to gearing will be eliminated, as and for the purpose specified.

23. A photograph-burnisher, comprehending, in combination, a feed-roller, a burnishing-roller having a rigid burnishing-surface, means for heating said burnishing-roller, and means for supporting one of said rollers yieldably with relation to the other, said feed-roller and burnishing-roller being disconnected from each other and so related that the latter will be rotated from the former by the movement of the interposed photograph, as and for the purpose specified.

24. A photograph-burnisher, comprehending, in combination, a feed-roller, a burnishing-roller having a rigid burnishing-surface, means for heating said burnishing-roller, a spring connected at its ends with one of said rollers for yieldingly supporting the same, and an abutment for said spring, adjustably mounted to adjust the tension of said spring, said feed-roller and burnishing-roller being disconnected from each other and so related that the latter will be rotated from the former by the movement of the interposed photograph, as and for the purpose specified.

709,758. RADIATOR. ASCHER ROSENBERG, Orange, N. J. Filed Apr. 18, 1901. Serial No. 56,057. (No model.)

Claim.—1. A radiator, comprising a number of radiator-sections joined together to have unrestrained intercommunication at their lower portions, a steam-lead pipe passing into one end of the radiator at the bottom thereof and projecting longitudinally along the radiator to a point intermediate the ends thereof, at which point the lead-pipe discharges the steam, said pipe coacting with the radiator-sections as explained, and an air-cock for each of said divisions of the radiator.

2. A radiator, comprising a number of radiator-sections joined together to have unrestrained intercommunication at their lower portions, a steam-lead pipe passing into one end of the radiator at the bottom thereof and projecting longitudinally along the radiator to a point intermediate the ends thereof, at which point the lead-pipe discharges the steam, said pipe coacting with the radiator-sections as explained, and an air-cock for each of said divisions of the radiator, the said steam-lead pipe having an orifice in its bottom portion directly adjacent to the end of the radiator through which the lead-pipe passes, such orifice serving to conduct away the water of condensation.

3. In a radiator, the combination with the radiator-sections and an air-valve attached thereto, of a thimble fastened in one end of the radiator, said thimble having an eccentric orifice therein adjacent to the lower side of the thimble, and a steam-lead pipe fastened in the orifice of the thimble and projecting into the radiator, and said lead-pipe having an orifice in its lower side directly adjacent to the thimble, whereby to carry off the water of condensation.

4. In a radiator, the combination with the radiator-sections and an air-valve attached thereto, of a thimble fastened in one end of the radiator, said thimble having an eccentric orifice therein adjacent to the lower side of the thimble, and a steam-lead pipe fastened in the orifice of the thimble and projecting into the radiator, and said lead-pipe having an orifice in its lower side directly adjacent to the thimble, whereby to carry off the water of condensation.

5. A radiator formed of a number of radiator-sections fastened together to have unrestrained intercommunication at their lower portions, a thimble fastened in one end of the radiator at the lower portion thereof, a steam-lead pipe fitted in an eccentric orifice in the thimble, said orifice being near the lower side thereof and the lead-pipe projecting into the radiator to a point intermediate its ends, at which point the steam is discharged, for the purpose specified, and the steam-lead pipe having an orifice in its under side directly adjacent to the thimble to carry off the water of condensation, and an air-valve for each of said divisions of the radiator.

709,759. TRY-SQUARE. PETER H. ELLENBERGER, Belvidere, N. J. Filed Apr. 24, 1902. Serial No. 104,681. (No model.)

Claim.—1. A straight-edge implement having an arm provided with a dovetail channel in its upper side, parallel with its straight edge, a bar fitted and disposed to slide in said channel, and an arm 16 secured on said bar, bearing on the arm of the implement and having its outer portion bent to engage the straight edge thereof and formed with a scribing edge 16ª, substantially as described.

2. A straight-edge implement having an arm provided with a longitudinal channel parallel with its straight edge, a bar fitted and disposed to slide in said channel, and a scriber secured to said bar and having a

downturned blade extending across and disposed to travel on the straight edge and having a scribing edge 10° projecting below the lower side of the arm of said implement, substantially as described.

709,760. SEED-CAKE TRIMMER. SAMUEL J. ELLIS and CHRISTEN HELGEN, Memphis, Tenn. Filed Nov. 26, 1901. Serial No. 83,743. (No model.)

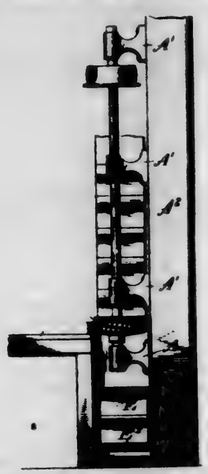

Claim.—1. In a seed-cake trimmer, a support, a vertically-disposed driving-shaft at one side thereof, and a cutter-head thereon provided with teeth disposed diagonally to the plane of the support, substantially as specified.

2. In a seed-cake trimmer, a support, a vertically-disposed driving-shaft at one side thereof, a cutter-head thereon provided with teeth disposed diagonally to the plane of the support, and a series of grooves extending laterally of said teeth and through the same; substantially as specified.

3. In a seed-cake trimmer, a support, a vertically-disposed driving-shaft at one side thereof, a cutter-head thereon at one side of said support and provided with teeth disposed diagonally to the plane of the support, and a series of grooves extending laterally of said teeth and through the same at substantially a right angle to the inclination thereof; substantially as specified.

4. In a seed-cake trimmer, a support or table, a vertical driving-shaft at one side thereof, a toothed cutter-head carried by said shaft, and provided with teeth disposed diagonally to the plane of said support, a guard having an opening next said support and surrounding said head, an inclined discharging-wall to said guard beneath the head, an open collecting-receptacle to receive from the lower end of said wall, and a conveyer adapted to remove material from said collecting-receptacle and having a roller-bearing therein; substantially as specified.

709,761. ENVELOP-SEALING MACHINE. HARRY E. GAVITT, Topeka, Kans. Filed Nov. 14, 1901. Serial No. 82,220. (No model.)

Claim.—1. In a machine for sealing envelops the combination of the hopper provided at one side with an infeed-belt and at its opposite side with a gage-plate whose rear end may be adjusted relatively to the infeed-belt, means for operating the infeed-belt, and means for moistening, turning and sealing the flap, substantially as set forth.

2. In a machine for sealing envelops a hopper arranged to support envelops edgewise and provided at one side with an adjustable gage-plate which may be set laterally with relation to the thickness of the envelops to be sealed, substantially as set forth.

3. An envelop-sealing machine having its hopper arranged to support envelops edgewise and provided at one side with a gage-plate standing longitudinally at an inclined angle to the direction of length of the machine, means for adjustably supporting the gage-plate and means for feeding the envelops substantially as set forth.

4. In an envelop-sealing machine a hopper provided transversely across its bottom with the feed-roller projecting into the hopper and arranged to operate upon the lower edges of the envelops, means for operating the said roller, and gage devices for controlling the discharge of the envelops from the hopper substantially as set forth.

5. A machine substantially as described provided with means for moistening and sealing the flaps of the envelops and having a hopper provided at one side with an adjustable gage-plate, at its opposite side with an infeed-belt, and at its bottom with a transverse feed-roller, substantially as set forth.

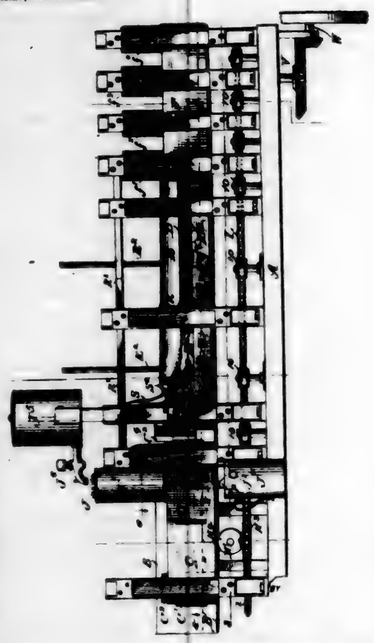

6. In an envelop-sealing machine the combination with a suitable framing of the hopper provided at one side with an adjustable gage-plate and at its opposite side with the infeed-belt, the intermediate carrier-belt and the sealing-belt in line with each other and in rear of the infeed-belt, the main carrier-belt lying opposite the sealing-belt, the intermediate belt and the inner end of the infeed-belt, means for driving the belts, flap-turning devices, and flap-moistening devices substantially as set forth.

7. In a machine substantially as described the combination of means for feeding the envelops and for moistening the flaps thereof, the devices for turning the flaps toward sealed position, the main carrier-belts, the intermediate carrier-belt opposite and extending parallel to the main belt, and the sealing-belt opposite the main carrier-belt in rear of the intermediate belt, the intermediate belt being of less width than the sealing-belt substantially as set forth.

8. In a machine substantially as described the combination of the hopper provided at one side with an adjustable gage-plate and at its opposite side with an infeed belt and at its bottom with a transverse feed-roller, a moistening device at the discharge end of the hopper, flap-turning devices in rear of the moistening device, the main carrier-belt, the intermediate carrier-belt, the sealing-belt, and means for driving the belts, substantially as set forth.

9. In a machine for sealing envelops the combination of the moistening device, means for feeding the envelops to and past the moistening device, sealing devices in rear of the moistening device, a flap-holder arranged between the moistening device and the sealing devices and means at the front end of the flap-holder by which the flap may be turned toward the sealing position, substantially as described.

10. The combination in an envelop-sealing machine of the hopper provided at one side with an adjustable gage-plate and at its opposite side with the infeed-belt, the sponge-holder at the discharge end of the hopper and provided with an opening in one side, the moistening-roller operating at one side in said opening and arranged to receive the flap of the envelop discharged from the hopper, the pressing-roller opposite the moistening-roller, and means for turning and sealing the flap substantially as set forth.

11. In an envelop-sealing machine the combination with devices for feeding and moistening the envelop, of a flap-turner in rear of the moistening devices and a channeled or U-shaped flap-holder in rear of the flap-turner, substantially as set forth.

12. An envelop-sealing machine comprising moistening devices, means for feeding the envelops to the moistening devices with the flap turned up, flap-turning devices in rear of the moistening devices, and opposing belts in rear of the moistening devices and arranged with their runs vertically edgewise, substantially as and for the purposes set forth.

13. In an envelop-sealing machine the combination with means for moistening and turning the flaps, of the opposing carrier-belts, means for driving the belts on one side and devices for adjusting the opposite belt substantially as set forth.

14. In a machine for sealing envelops the combination of the infeed-belt, the intermediate carrier-belt, and the sealing-belt and the rollers of said belts having shafts provided with sprocket-wheels, of the sprocket-chain meshing with the sprocket-wheels whereby to drive said belts, and the main carrier-belt, substantially as set forth.

15. In a machine substantially as described, the combination with the main framing, and the main carrier-belt and its rollers, of the bearing for said rollers slidable in the main frame, the tubular belts threaded in the main frame, the rods passed through said tubular belts and secured at their inner ends to the bearings and provided at their outer ends with nuts, and the springs on said rods between the bearings and the tubular belts, substantially as set forth.

16. The combination in a machine substantially as described of means for feeding the envelops, moistening the flaps and turning said flaps toward sealing position, the sealing-belt, an opposing belt, and rollers supporting said belts, and rollers operating within the belts between their end rollers and arranged to press the envelop successively as it is passed between the belts, substantially as set forth.

17. The combination in the machine substantially as described of the hopper having an infeed-belt, a beam-roller and an adjustable gage-plate opposite the infeed-belt, the moistening-roller in rear of the discharge end of the hopper, flap-turning devices in rear of the moistening-roller, the main carrier-belt, the intermediate carrier-belt, and the sealing-belt, substantially as set forth.

18. A machine for sealing envelops having a feed-hopper arranged to support envelops edgewise and provided with a feed-roller extending at a right angle to the envelops and adapted to operate upon the edges of the envelops to feed the same lengthwise.

19. The combination in an envelop-sealing machine with belts for feeding and sealing the envelops, of a flap-moistening roller and a pressing roller opposite the moistening-roller, the latter being arranged above the plane of the carrier-belts and to operate upon the upturned flap of the envelop, and means for turning the flap toward sealed position, substantially as set forth.

20. A machine for sealing envelops having a feed-hopper, an infeed-belt at one side thereof and arranged vertically edgewise whereby it may operate upon one face of the envelop and the transverse feed-roller extending across the bottom of the feed-hopper.

21. The combination in an envelop-sealing machine, of a longitudinally-extending flap-holder or trough, and mechanism at the front end of said holder by which to turn the flap toward the sealing position.

22. An envelop-sealing machine having a hopper adapted to feed envelops longitudinally edgewise and provided at one side with a gage-plate extending diagonally to the direction of feed of the machine, and adjustably in the direction of its length whereby its longitudinal movement will operate to adjust the gage-plate laterally, substantially as shown and described.

709,762. COUPLING FOR CONDUIT-RODS. JOHN F. GREAVES, St. Louis, Mo. Filed Apr. 7, 1902. Serial No. 101,698. (No model.)

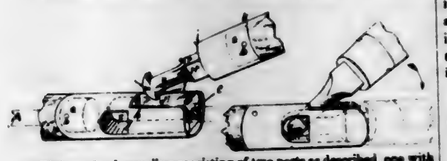

Claim.—1. A coupling consisting of two parts as described, one with rectangular opening in end and along the side as shown, connecting with circular cavity in the part, which cavity is wider than the rectangular opening connecting with it, forming shoulders on each side of the cavity, and the other part, having round part *a* with convex head fastened on sides, as described with projecting points on the two sides adapted to engage the shoulders formed by the cavity at the end of the rectangular opening, in the other part when inserted into the cavity of the other part, through the rectangular opening, substantially as specified.

2. A coupling consisting of two parts as described, one with round part *a* and rectangular part *c* having rectangular faces *p* and *p p* for the purposes specified which fit into the opening in the other part, which opening is in the form of a rectangular box open at the end of the part at *c* and open along the top at *d* and opening at *e* into the closed cavity which cavity is wider than the rectangular box thereby forming shoulders, which engage the projecting points on the two sides of the convex head on round part *a* as described when the rectangular part *c* is brought down into position so that one of the faces *p p* rests on the bottom of the rectangular box and the faces *p* rest against either side of the rectangular box and fit securely into the rectangular box, substantially as described.

709,768. APPARATUS FOR COOLING AND FILTERING COMPRESSED AIR. FRIEDRICH GROSSMANN, Charlottenburg, near Berlin, Germany. Filed June 7, 1902. Serial No. 110,694. (No model.)

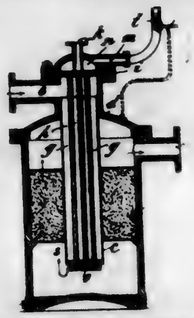

Claim.—1. An apparatus for cooling and filtering air comprising a filtering-chamber the filtering layer of which is penetrated by a central pipe, the upper end of the latter fitting tightly into the cover of the filtering-chamber and connected to a supply-pipe, and the lower end of the said central pipe being open, in combination with a system of cooling-pipes arranged within the central pipe and provided at one end with a closed common chamber and connected at the other end respectively with a collecting-chamber and supply-pipe, essentially as and for the purpose set forth.

2. An apparatus for cooling and filtering air comprising a filtering-chamber the filtering layer of which is penetrated by a central pipe, the upper end of the latter fitting tightly into the cover of the filtering-chamber and connected to a supply-pipe, and the lower end of the said central pipe being open, a system of cooling-pipes arranged within the central pipe and provided at one end with a closed common chamber and connected at the other end respectively with a collecting-chamber and supply-pipe, in combination with a supply-cistern and a serpentine pipe from the said cistern to the supply-pipe of the cooling-pipe system essentially as and for the purpose set forth.

3. An apparatus for cooling and filtering air comprising a filtering-chamber the filtering layer of which is penetrated by a central pipe, the upper end of the latter fitting tightly into the cover of the filtering-chamber and connected to a supply-pipe, and the lower end of the said central pipe being open, a system of cooling-pipes arranged within the central pipe and provided at one end with a closed common chamber and connected at the other end respectively with a collecting-chamber and supply-pipe, in combination with a supply-cistern, a serpentine pipe from the said cistern to the supply-pipe of the cooling-pipe system, and a rising pipe connected to the collecting-chamber of the cooling-pipe system and leading to the said supply-cistern, and a pipe for compressed air supplied to the pipe should give upward motion to the water coming from the cooling-pipes, essentially as and for the purpose set forth.

709,764. ILLUSION APPARATUS. WILLARD L. HALL, Philadelphia, Pa. Filed Mar. 24, 1902. Serial No. 99,727. (No model.)

Claim.—1. The combination in an illusion apparatus of the character described, of a scenic tunnel and an illuminated car arranged to be moved through said tunnel, said car carrying a series of exterior lights having independent circuits, said lights serving to illuminate only that portion of the tunnel directly adjacent to the car, and means for controlling the light-circuits.

2. The combination in an illusion apparatus of the character described, of the scenic tunnel, a track structure mounted therein and an illuminated car arranged to be moved on said track structure, said car carrying a series of exterior lights having independent circuits, said lights serving to

illuminate only that portion of the tunnel adjacent to the car, and means for controlling the light-circuits.

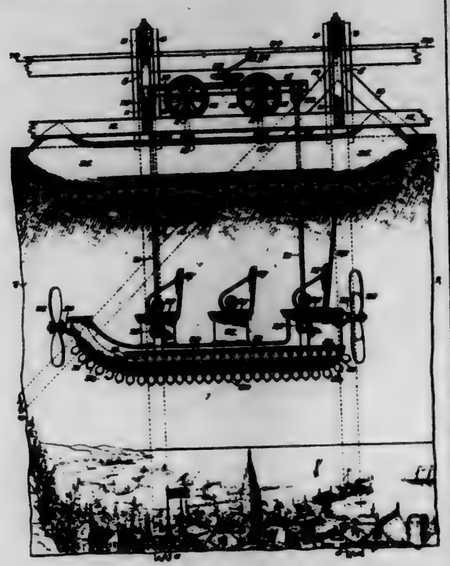

2. The combination in an illusion apparatus of the character described, of the scenic tunnel, a track structure mounted within said tunnel, an illuminated car suspended from said track structure and arranged to be moved through the tunnel, said car having a series of lights having independent circuits, said lights serving to illuminate only that portion of the tunnel adjacent to the moving car, and means for controlling said light-circuits.

4. The combination in an illusion apparatus of the character described, of a continuous scenic tunnel, a car arranged to be moved through said tunnel, means for operating said car, means for illuminating the tunnel within the space occupied by the car as the latter is moved through the tunnel, said means comprising lamps carried by the car on the outside of the same, independent circuits for said lamps, and means for controlling said circuits.

5. The combination in an illusion apparatus of the character described, of the scenic tunnel, a trackway mounted therein, a suitable motor-truck adapted to said trackway, a suspended swinging car carried by said truck, and a balloon-like structure interposed between said swinging car and its supporting-truck.

6. In an illusion apparatus of the character described, the combination of the scenic tunnel, a truck arranged within said tunnel, a motor car or truck mounted on said track, means for traversing said car or truck, a passenger-car suspended from said truck and arranged to have a forward and rearward swinging motion, and a balloon-like structure carried by the supporting-rods for the car and interposed between said car and its supporting-truck.

7. The combination in an illusion apparatus of the character described, of the scenic tunnel, a trackway mounted within said tunnel, a car adapted to traverse the trackway, said car being illuminated and lighting up the tunnel at the portion occupied by the moving car, and a darkened portion through which said car passes, with means for extinguishing the lights carried by the car as it approaches the darkened tunnel and turning the same on automatically after said car leaves the darkened tunnel, substantially as described.

8. The combination in an apparatus of the character described, of the scenic tunnel, a trackway adapted to the same, a suitable supporting structure having suspension-rods for carrying said trackway, a truck mounted on the track, guard-wheels carried by said truck, guard-rails carried by the main track structure to which the guard-wheels are adapted, depending swinging arms carried by said truck, cross-arms supported thereby, depending swinging arms carried by said cross-arms, a passenger-car pivotally hung to said latter swinging arms.

9. The combination in an apparatus of the character described, of the scenic tunnel, a trackway adapted to the same, a suitable supporting structure having suspension-rods for carrying said trackway, a truck mounted on the track, guard-wheels carried by said truck, guard-rails carried by the main track structure to which the guard-wheels are adapted, depending swinging arms carried by said truck, cross-arms supported thereby, depending swinging arms carried by said cross-arms, a passenger-car pivotally hung to said latter swinging arms, and a balloon-like structure interposed between the passenger-car and the supporting-truck and serving to hide the operating mechanism from the passengers in the car, as well as heighten the illusion of riding in a flying-machine.

10. In an illusion apparatus of the character described, a suspended passenger-car arranged to swing forwardly and rearwardly, fans mounted at the front and rear of said car, means for driving said fans, means for suspending said car from a suitable trackway, and means for driving the car, said fans being operated only when the car is in motion.

11. In an illusion apparatus of the character described, a suspended passenger-car arranged to swing, means for suspending said car from a suitable trackway, rotary fans mounted at the front and rear of said car, means for driving said fans, said latter means being only operated when the car is in motion, a series of electric lights carried by said car and having independent circuits, and means for controlling said lamp-circuits.

12. In an illusion apparatus of the character described, the combination of the scenic tunnel, a trackway, a suspended car, a series of lamps carried by said car and having independent circuits, said lamps serving to illuminate the scenic tunnel only at the point adjacent to the car, means for suspending the car from the trackway, means for driving the car and means for controlling the lamp-circuits.

13. In an illusion apparatus of the character described, a suspended car, a series of lamps carried by said car, said lamps being of various colors and having independent circuits, means for suspending said car from a suitable trackway, and means for driving the car.

14. In an illusion apparatus of the character described, a suspended car, a series of lamps carried by said car, said lamps being of various colors and having independent circuits, means for suspending said car from a suitable trackway, means for driving the car and means for controlling the lamp-circuits independently.

15. In an illusion apparatus of the character described, the combination of the scenic tunnel, a car adapted to pass through said tunnel, and a movable lamp structure carried by the tunnel-wall.

16. In an illusion apparatus of the character described, the combination of the scenic tunnel, a car adapted to pass through said tunnel, a movable lamp structure carried by the tunnel-wall, means for moving said lamp across the face of the scenery, and means for controlling the movement of the lamp by the moving car.

17. In an illusion apparatus of the character described, the combination of the scenic tunnel, a car adapted to pass through said tunnel, a movable lamp arranged adjacent to the tunnel-wall, an endless belt or chain carrying said lamp, a connection from the main feed-wire to said lamp, means for operating the chain or belt to move the lamp across the face of the scenery, and means for controlling such movement by the moving car.

18. In an illusion apparatus of the character described, the combination of the continuous scenic tunnel, a continuous endulatory trackway arranged within said tunnel, a car suspended from said trackway and adapted to be swung as it traverses said undulatory trackway, lights carried by said car to illuminate the scenic tunnel as it passes through the same, independent circuits for said lights, and means for controlling said circuits.

19. In an illusion apparatus of the character described, the combination of the continuous scenic tunnel arranged in a serpentine course, a continuous trackway arranged in said tunnel, a car adapted to said trackway, said car being illuminated on its exterior by a series of lights, independent circuits for said lights, and means for controlling said circuits.

20. In an illusion apparatus of the character described, the combination of the continuous scenic tunnel arranged in a serpentine course, a continuous undulatory trackway arranged in said tunnel, and a swinging car adapted to be moved along said trackway, the swinging movement of the car being imparted by the track, said car being illuminated on its exterior, substantially as and for the purpose set forth.

21. The combination in an illusion apparatus of the character described, of a scenic tunnel, a car arranged to be moved through said tunnel, a series of lights arranged on the under portion of said car, said lights serving to illuminate only that portion of the tunnel directly adjacent to and below the car, independent circuits for said lights, and means for controlling said circuits.

22. The combination in an illusion apparatus of the character described, of a scenic tunnel, a moving structure adapted to be traversed through said tunnel, means for operating the moving structure, a series of lights with independent circuits arranged to illuminate the scenic tunnel within the space occupied by the moving structure as the latter traverses said tunnel, counting means carried by the moving structure and the tunnel structure for controlling said circuits, and a shield or deflector disposed to cut off the light rays from the moving structure and reflect them onto the scenery of the tunnel.

23. The combination in an illusion apparatus of the character described, of a scenic tunnel, a trackway mounted therein, a motor-truck mounted on said trackway, means for operating said truck, a car carried thereby, a series of lights with independent circuits arranged to illuminate the scenic tunnel within the space occupied by the car as the truck traverses said tunnel, counting means carried by the truck and the tunnel structure for controlling said circuits, and a shield or deflector disposed to cut off the light rays from the car and reflect them onto the scenery of the tunnel.

709,765. CAR-MOVER. HARRY C. HARRINGTON and WILLIAM H. TOWERS, Rome, Ga. Filed June 20, 1902. Serial No. 113,117. (No model.)

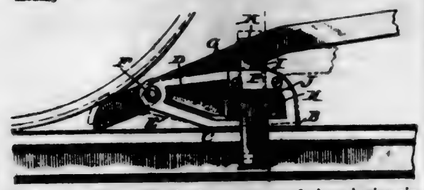

Claim.—1. The combination in a car-mover, of a lever having pivotal action, a tilting body portion supporting the lever and adapted to rest upon the track-rail, and means at the rear of the body portion adapted to grip the under side of the head of the track-rail upon tilting movement of the body portion substantially as described.

2. The combination in a car-mover employing a lever, of a support for the lever consisting of a substantially U-shaped body portion having its rear under side horizontal and its forward end elevated or inclining downwardly to said horizontal under side, the side walls of said forward end being perforated to receive a pin passing through the lever, and means at the rear end of the body portion, upon pressure being applied by the lever effecting tilting action of the body portion, adapted to grip the track-rail and lock the said body portion against rearward movement substantially as described.

3. The combination with a car-mover employing a lever, means for supporting the lever, and means for locking the lever-supporting means against rearward movement involving jaws adapted in operation to grip the under side of the head of the rail, the lever-supporting means consisting of a body portion having tilting movement upon the track-rail, its forward end having pivotal connection with the lever and its rear end adapted to support the locking means substantially as described.

4. The combination in a car-mover employing a lever and a body portion, the latter resting upon the track-rail and adapted to be tilted, said body portion having its forward end inclined upwardly and providing pivotal support for the lever, clamping devices at the rear of the body portion having lateral adjustment and adapted to engage the under side of the head of the rail, means for supporting the clamping devices in spaced position adapted to receive the lever between them whereby they are held against lateral movement and, upon the body portion being tilted, operating to clamp the rail and secure the lever-support against rearward movement substantially as described.

5. The combination with a car-mover employing a lever and tilting means for supporting the lever, the latter consisting of a substantially U-shaped body portion having the lever pivoted to its forward end, inclined and horizontal under surfaces on the body portion, sockets at the rear of and in the side walls of the body portion, clamping devices supported in the said sockets, upon whereby the said clamping devices may be adjusted permitting removal of the body portion, means whereby they are held against lateral movement and means whereby they are drawn upwardly and thereby engaging the rail and locking the lever-support against rearward movement substantially as described.

709,766. SEED-CLEANER AND GRAIN-SEPARATOR. BENJAMIN F. HATFIELD, Dublin, Ind. Filed Nov. 15, 1901. Serial No. 82,362. (No model.)

Claim.—1. In a machine as described, the combination with the hopper, and the separater-shoe, supported on the main frame, and having reciprocal movement thereon; of the chaff-shoe, supported on the main frame for reciprocal movement, and disposed between the separater-shoe and the hopper, said chaff-shoe including a series of separating-screens and a deflector device, a bottom consisting of two members slidable to or from each other, and a trough extended transversely under the shoe, at the lower side of said bottom, and means for imparting reciprocal movement to the two shoes in opposite directions, as set forth.

2. In a machine as described, the combination with the separater-shoe, the blast devices including the grain-chute, said chute having an opening at a point opposite its receiving-mouth, and a closure member for said opening; of a grain-box connected to the receiving-mouth of said chute, said box having portions adapted to extend over or straddle the discharge end of the separater-shoe, said grain-chute having a longitudinal, transverse partition dividing it into two compartments; and air-boards extending from the fan-box up into each of said compartments, the board in one compartment extending further up than the board in the other, as set forth.

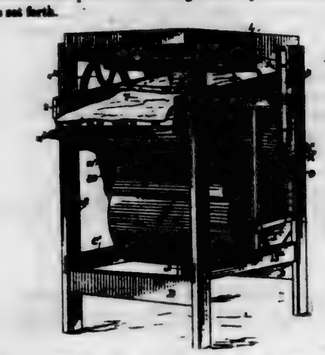

3. In a machine of the character described, the combination with the chaff-shoe, and the separater-shoe, said shoes being inclined in opposite directions, their contiguous ends being slidably supported on rollers on the main frame; of the vibratory hangers H, having at their upper ends and above their fulcrum-point in the bracket 36, the rigidly-attached angle-brackets A, pivotally connected to the upper end of the chaff-shoe; and at their lower ends below the fulcrum-point provided with the rigidly-secured bracket portions A' having the pivots A^2; the plates 3^2 provided with the notches A^3, secured to the separater-shoe to receive the pins A^2, to adjustably connect the separater-shoe to the lower end of said hangers H; the fan-shaft, and intermediate devices driven thereby for imparting a vibratory motion to the hangers H, all being arranged as specified and shown.

4. The combination with the chaff-shoe 2, the apron 7, the separater-shoe 3, and the fan-shaft, having crank portions, said shoes 2 and 3, having roller-bearings at their contiguous ends, the shoe 2, having internally-projecting studs at its upper end; of the hangers H H, each fulcrumed on the main frame in the bracket 36, at a point between the shoes 2 and 3, their angle-brackets A being pivotally joined to the studs A', at the upper end of the chaff-shoe, said hangers each having a supplemental dependent member A' carrying a stud A^2; a plate 3^2 carried on the shoe 3, and having vertical notches in its lower face, adapted to receive and rest upon the said lateral studs A^2 on the lower end of the arm A'; and the cranks on the fan-shaft, all being arranged substantially as shown and for the purpose described.

709,767. BANDAGE. CLARA J. HIGGINS, Wanatah, Ind. Filed Apr. 8, 1902. Serial No. 102,117. (No model.)

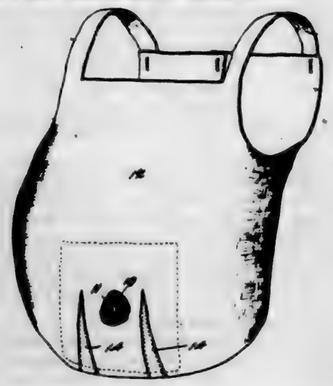

Claim.—1. In a device of the class specified, a perforated pad formed of a number of layers, one of which is of waterproof material, said pad being unconfined and free to move with the body, a secondary layer of fabric, an outer protecting-sheet of waterproof material covering said layer, there being ventilating-openings in both the secondary layer and the protecting-sheet.

2. In a device of the class specified, a perforated pad formed of an inner and outer layer of soft fabric and an intermediate layer of waterproof material, a secondary sheet of fabric for the reception of an antiseptic, and an outer protecting-sheet of waterproof material, both the secondary layer and the outer sheet being perforated, substantially as specified.

3. In a device of the class specified, a perforated pad, a layer of cloth adapted to receive an antiseptic, an outer protecting-sheet of waterproof material, and an abdominal band entirely disconnected from the bandage, said band having its lower edge reduced in length, and its upper edge provided with shoulder-straps, and means for securing the band in position, substantially as specified.

709,768. FLASK FOR MAKING SEAMLESS SASH-WEIGHTS. ADDISON S. HOUGHS, Everett, Mass. Filed Aug. 16, 1900. Serial No. 27,167. (No model.)

Claim.—In a flask for making seamless sash-weights, the combination of the parallel sides A, A, the metal end bars B, B, connecting said sides, the bottom board L, removably secured to said sides, the core-prints I, extending transversely of the flask between said sides, the adjustable pattern-supports G opposite said core-prints, the supplementary bars N, extending transversely of the flask and in contact with said pattern-supports, and the stop-bars K extending transversely of and adjustably secured to said sides behind said core-prints and supports, as and for the purpose set forth.

709,769. HARROW DRAW-BAR. ALBERT O. HOSPERS, Sandwich, Ill. Filed May 1, 1902. Serial No. 105,474. (No model.)

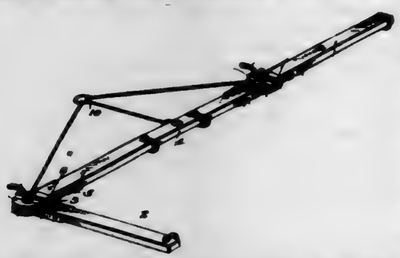

Claim.—A harrow draw-bar having heads at its ends, extensions having heads at their ends, bolts for connecting the heads, one set of heads being provided with ribs and the other set with receiving-grooves to form an interlocking joint, and nuts engaging said bolts for clamping the parts in locked position, substantially as and for the purpose described.

709,770. CONCENTRATOR. JOHN A. HOLMES, Salt Lake City, Utah, and JOHN F. WERN, Denver, Colo. Filed Oct. 2, 1901. Serial No. 77,261. (No model.)

Claim.—1. A concentrator, comprising a sluice-box, a series of pans arranged one above another in the sluice-box, the said pans being longitudinally curved and laterally inclined, the said sluice-box having openings for discharge of gangue at the higher sides of the pans, and openings at the lower sides of the pans for discharge of values, launders arranged one within another and receiving material from the first-named openings and means for imparting a reciprocating motion both laterally and longitudinally to the sluice-box carrying the pans, substantially as specified.

2. An ore-concentrator, comprising a sluice-box, a series of pans arranged one above another in the sluice-box, the said pans being longitudinally curved and arranged to discharge at one side from one pan to another intermediate of the ends, launders at the opposite sides in which material is discharged from the pans, means for imparting a longitudinal reciprocating motion to the sluice-box, and means comprising a shaft and a plurality of levers for imparting a transverse reciprocating motion to the sluice-box, substantially as specified.

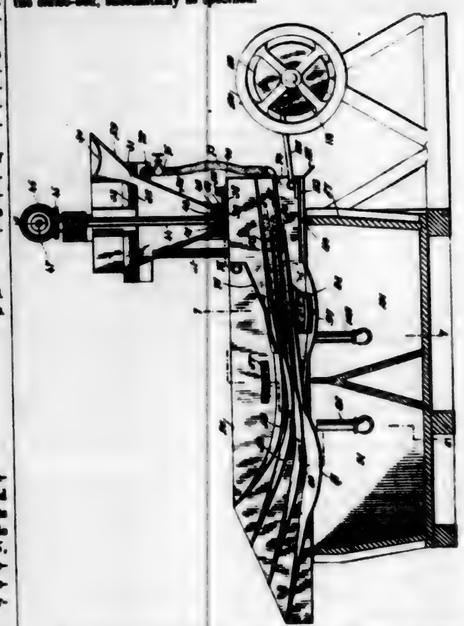

3. An ore-concentrator, comprising a sluice-box, a series of pans arranged one above another in said box, the said pans being longitudinally curved and inclined laterally, valve-controlled outlets at the lower sides of the pans, launders for receiving material from said outlets and adapted to discharge into the pans consecutively from the second pan to the lowermost one, the said launders being arranged one within another, and launders at the opposite side for receiving the gangue from the pulp, substantially as specified.

4. An ore-concentrator, comprising a sluice-box mounted to reciprocate, a series of longitudinally-curved pans arranged one above another in vertical alinement in the sluice-box and adapted to discharge material from one pan to another, means for discharging water upon the pans one independently of another, a divided tank on which the box is supported, and amalgamating devices in the tank, substantially as specified.

5. An ore-concentrator, comprising a sluice-box, pans arranged therein one above another, a series of hoppers arranged above the feed end of the sluice-box, a feed-trough common to all the hoppers, a valve for the outlet of each hopper, an agitator carried by each valve, a sieve material at the top of each hopper, and a filter material on the sieve material, substantially as specified.

6. An ore-concentrator, comprising a sluice-box, means for imparting reciprocating longitudinal movement to the sluice-box, a series of longitudinally-curved pans arranged in the box one above another, a series of hoppers arranged above the feed end of the sluice-box and having outlet-ports through the bottoms, valves for regulating said outlet-ports, means for operating said regulating-valves, rotary valves for opening and closing said ports, means for simultaneously operating all of said rotary valves, and agitators carried by said rotary valves, substantially as specified.

7. An ore-concentrator, comprising a sluice-box, means for imparting reciprocating motion to said sluice-box, a series of pans arranged one above another in said box, a series of hoppers arranged above the feed end of the sluice-box, each hopper having a discharge-opening in its bottom, a valve for regulating the opening in said port, rotary valves in the hoppers and having ports adapted to move into register with the ports in the bottoms of the hoppers, shafts extended upward from said rotary valves, a driving-shaft, and gear connections between said driving-shaft and the valve-shafts, substantially as specified.

8. An ore-concentrator, comprising a sluice-box, a series of pans arranged one above another in said box, a series of hoppers placed above the feed end of said sluice-box, means for opening and closing discharge-openings through the bottoms of said hoppers, a filter material arranged in the upper portion of the hoppers, water-boxes for receiving water passing through the filter material, and means for conveying water from box of said boxes to the pans, substantially as specified.

9. An ore-concentrator, comprising a sluice-box, means for imparting a longitudinal reciprocating motion to said box, a series of pans arranged in said box one above another, the said pans being longitudinally curved and inclined laterally, discharge-openings through a side wall of the box at the highest side of the pans, discharge and inlet openings at the opposite side of the box, a reservoir upon which the box moves, receiving-pans carried by the box and adapted to be submerged in the water contained in said reservoir, inclined amalgamated plates for receiving material from said receiving-pans, the said plates being arranged in the reservoir, and mercury-troughs supported below said plates, substantially as specified.

10. An ore-concentrator, comprising a sluice-box, means for imparting a longitudinal reciprocating motion to said box, means for imparting a transverse reciprocating motion to said box, a tank on which the box moves and into which the values finally discharge from the pans, longitudinally-curved pans arranged one above another in the box, means for supplying pulp to the uppermost pan, a water-distributing pan extended over the uppermost pan, and a perforated pipe for discharging water onto said water-pan, substantially as specified.

11. An ore-concentrator, comprising a sluice-box, having both a longitudinal and a transverse motion, a series of longitudinally-curved pans arranged one above another in said box and adapted to discharge material at one side one upon another and to discharge gangue at the opposite side, means for discharging water upon the several pans, a reservoir upon which the sluice-box moves, the said reservoir being divided into two compartments, inclined amalgamated plates arranged in the compartments of the reservoir and adapted to receive values from the pans, overflow-pipes for the compartments, a separator for receiving the overflow, a sieve material in the upper portion of the separator, and a filter on said sieve material, substantially as specified.

12. An ore-concentrator, comprising a sluice-box, means for imparting reciprocating motion to said sluice-box, a series of pans arranged one above another in said box, the said pans being longitudinally curved and inclined transversely, the sluice-box having discharge-openings and inlet-openings at one side, valves for the outlet-openings, means for adjusting the valves, and launders arranged one within another for receiving material from the higher sides of the pans, said material discharging through openings in a side of the box, substantially as specified.

13. An ore-concentrator, comprising a sluice-box, means for imparting motion to said sluice-box, a series of pans arranged one above another in said box, the said pans being longitudinally curved and inclined transversely, launders arranged on the sluice-box one within another and adapted to receive material from the pans at the higher side, and launders at the opposite side of the sluice-box and adapted to receive values from the lower sides of the pans and to discharge material received from one pan to the next lower pan, substantially as specified.

14. In a concentrator, a sluice-box, means for imparting longitudinal reciprocating motion to said sluice-box, means for imparting transverse reciprocating motion to said box, a series of pans arranged one above another in the box, a reservoir on which the sluice-box is mounted to move, said reservoir being divided into two compartments, launders for receiving material discharged from one side of the pans, a pipe for discharging water into said launders, launders at the opposite side for receiving values from the pans, and amalgamated plates arranged in the compartments of the reservoir for receiving values from the lowermost pans, substantially as specified.

15. An ore-concentrator, comprising a sluice-box, means for imparting motion to said sluice-box, a series of pans arranged one above another in said box, a series of feed-hoppers arranged above the feed end of the box, valves in the hopper and carrying agitators, water-receiving troughs for receiving water discharged over the upwardly-extended wall portion of the end hoppers, and means for conveying water from said boxes to the machine, substantially as specified.

16. An ore-concentrator, comprising a sluice-box, a series of pans arranged one above another in said sluice-box, the said pans being longitudinally curved and inclined transversely, means for directing water to the pans, a series of hoppers, a feed-trough common to all the hoppers and having a sieve in its upper portion, means for controlling the discharge of pulp from said hoppers onto the uppermost pan, a filter in each hopper, and a receiver for water passing through said filters, substantially as specified.

17. An ore-concentrator, comprising a reservoir, a sluice-box mounted on the reservoir, means for imparting a longitudinal reciprocating motion to the box, and means for imparting lateral movement to the box, comprising a shaft, a sliding connection between said shaft and the box, a lever connection between the lower portion of the shaft and the box, an arm extended from the lower portion of the shaft and having pivotal connection with a fixed support, and a slotted arm above the first-named arm, substantially as specified.

709,771. CLUTCH. PAUL A. HOUGHTALING, Riverton, N. J. Filed June 3, 1902. Serial No. 110,059. (No model.)

Claim.—1. In a clutch, the combination with a driving and a driven member of a device including a toothed wheel, pawls constructed to be engaged therewith and disengaged therefrom, a carrier for the pawls supported by a portion of the toothed wheel, pins for operating said pawls and transmitting the power from the driving to the driven member, and cams for actuating said pins and causing them to engage or to disengage from the toothed wheel, substantially as described.

2. In a clutch, the combination of two members, one of the same including a casing having ratchet-teeth and a bearing-surface formed integral with said casing, a device provided with pawls carried on said bearing-surface, pins for transmitting power from one of the members of the clutch to the other and also serving to operate said pawls, with means for causing the pawls to engage or disengage from the ratchet-teeth, substantially as described.

3. The combination in a clutch, of two members, one of the same including a structure having two substantially cylindrical surfaces extending parallel to each other, ratchet teeth on one of the surfaces and a pawl-carrier supported on the other, pawls on the carrier, with means on the second member for causing the pawls to engage with or disengage from said ratchet-teeth when the relative speed of the members is varied, substantially as described.

4. The combination in a clutch of two members, one including an internally-toothed casing having a bearing portion, a pawl-carrier supported on said bearing portion, pawls pivoted to said carrier and placed to engage with the teeth of the casing, the second member including a shaft and a structure fixed thereto, said structure and the pawls comprising two parts of which one has cam-slots and the other has pins projecting into said slots whereby the pawls are caused to engage with or disengage from the said teeth under certain conditions of speed variation of the two members, substantially as described.

5. In a clutch, the combination of a toothed ratchet-wheel, a carrier, a pawl or pawls supported thereby, means for operating the pawls, the same including projecting portions for directly transmitting power from one member of the clutch to the other and means other than the portion of the carrier for the support of the pawl, whereby the pawl or pawls are retained in operative position within the clutch, substantially as described.

6. In a clutch, the combination of a toothed ratchet-wheel, a carrier, a pawl or pawls supported thereby, means for operating the pawls, the same including projecting portions for directly transmitting power from one member of the clutch to the other, and an arm on the carrier other than the portion thereof for supporting the pawl, said arm retaining the pawl or pawls in operative position within the clutch, substantially as described.

7. In a clutch, the combination of a toothed ratchet-wheel, a pawl or pawls lying in approximately the plane of the teeth of said wheel, a carrier for said pawls lying in a plane outside of but parallel to the said plane of pawls and ratchet-teeth, with means for operating the pawls, the same including projecting portions and a device for operating the same whereby said portions are made to directly transmit power between the members of the clutch, substantially as described.

709,772. APPARATUS FOR PURIFYING GAS. HERBERT A. HUMPHREY, Westminster, London, England. Filed May 5, 1902. Serial No. 106,088. (No model.)

Claim.—1. In apparatus for purifying gases the combination of a series of centrifugal apparatus each delivering into the next succeeding it, pipes connecting the delivery and suction sides of the said centrifugal apparatus and valves in the said pipes, substantially as described.

2. In combination, a series of centrifugal apparatus for purifying gas each delivering into the next succeeding it, pipes connecting the delivery and suction sides of the said apparatus, valves in the said pipes and pipes connecting the drainage-sump of each apparatus with the intake of the apparatus next preceding it, substantially as described.

3. In combination, a series of centrifugal fans for purifying gas each delivering into the next succeeding it, a cyclone into which the last delivers, pipes connecting the delivery and suction sides of the said fans, and valves in the said pipes, substantially as described.

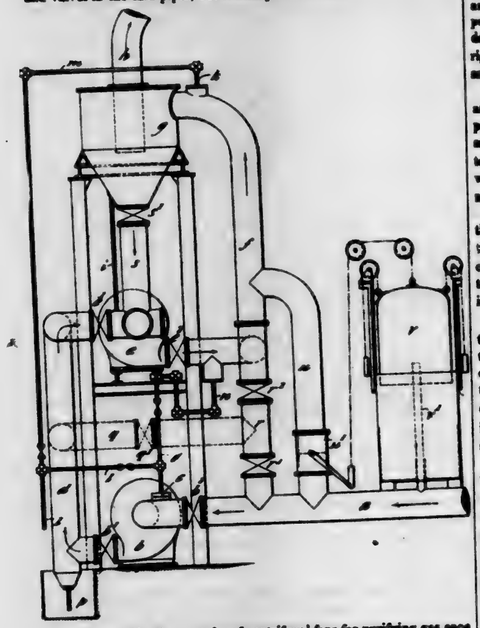

4. In combination, a series of centrifugal fans for purifying gas each delivering into the next succeeding it, a cyclone into which the last delivers, pipes connecting the delivery and suction sides of the said fans, valves in the said pipes, and pipes connecting the drainage-vamp of each fan with the intake of the fan next preceding it, substantially as described.

709,778. ROTARY ENGINE. OLIVER C. JONES, Philadelphia, Pa. Filed Mar. 8, 1902. Serial No. 97,261. (No model.)

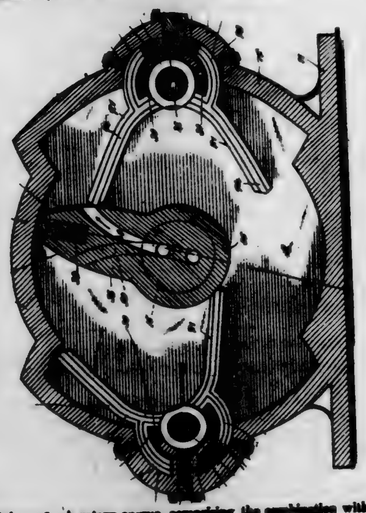

Claim.—1. A rotary engine, comprising the combination with the cylinder and piston, of an abutment mounted in the cylinder and a tailpiece attached to the abutment and moving therewith, the tailpiece lying in a chamber in the cylinder, means for supplying steam-pressure to said chamber, and a packing device carried in the walls of the cylinder and acting against the tailpiece, to keep the chamber steam-tight.

2. A rotary engine, comprising the combination with the cylinder and piston, the former having a chamber therein, of means leading steam-pressure to said chamber, and an abutment mounted to rock in the cylinder, said abutment being directly opposite the chamber and having a rigid and curved part projecting from its pivoted end and extending into said chamber, for the purpose specified.

3. A rotary engine, comprising the combination with the cylinder and piston, the former having a chamber therein, of means leading steam-pressure to said chamber, an abutment mounted to move in the cylinder, said abutment being directly opposite the chamber and having a part extended therefrom, for the purpose specified, and a packing carried in the walls of the cylinder and bearing against said extended part of the abutment.

4. In a rotary engine, the combination with the cylinder and piston, the former having a chamber therein, of an abutment mounted to swing, the pivoted end of the abutment being adjacent to and opposite to said chamber, a tailpiece rigidly secured to the abutment and curved around the center of the swinging movement thereof, said tailpiece projecting into the chamber, and means for supplying steam pressure to the chamber.

5. In a rotary engine, the combination with the cylinder and piston, the former having a chamber therein, of an abutment mounted to swing, the pivoted end of the abutment being adjacent to and opposite to said chamber, a tailpiece carried by the abutment and curved around the center of the swinging movement thereof, said tailpiece projecting into the chamber, means for supplying steam-pressure to the chamber, and a packing carried in the walls of the cylinder and bearing against the convex side of the tailpiece.

6. In a rotary engine, the combination with the cylinder and piston, the former having a boxing therein and a chamber in the boxing, of a rockable shaft mounted transversely in the boxing, an abutment carried thereby opposite the chamber, a tailpiece attached to the abutment and projecting into the chamber, means for supplying steam-pressure to the steam-chamber, and packing devices bearing respectively against the shaft and against the outer side of the tailpiece to keep the said chamber steam-tight.

7. In a rotary engine, the combination with the cylinder and piston, the former having a chamber therein, of an abutment mounted to swing in the cylinder and lying opposite the open end of the chamber, a curved tailpiece rigidly secured to the pivoted end of the abutment and projecting into the chamber to form a moving wall thereof, and means for supplying steam-pressure to said chamber.

8. In a rotary engine, the combination with the cylinder and piston, of an abutment arranged to swing therein, and steam feed and exhaust devices, the piston having a by-pass groove arranged to permit the passage of the steam past the abutment during the time that the end of the abutment lies over said groove, for the purpose specified.

9. A rotary engine, comprising the combination with the piston and cylinder, of a rockable shaft mounted therein, an abutment carried on the shaft, a packing working against the shaft, the packing comprising two strip-sections, a spring pressing said sections longitudinally from each other, and additional springs pressing the strip-sections sidewise against the shaft.

10. In a rotary engine, the combination with the cylinder and piston, the former having a boxing therein with an interior chamber opening into the cylinder, of an abutment mounted to rock at the mouth of the chamber, a tailpiece rigidly secured to the pivoted end of the abutment and projecting against the side walls of the chamber to keep the chamber closed irrespective of the movements of the abutment, and means for supplying steam-pressure to the chamber.

11. In a rotary engine, the combination with the cylinder and piston, the former having a boxing therein with an interior chamber opening into the cylinder, of an abutment mounted to rock at the mouth of the chamber, a tailpiece rigidly secured to the abutment and projecting against the side walls of the chamber to keep the chamber closed irrespective of the movements of the abutment, and means for supplying steam-pressure to the chamber, the said tailpiece being curved around the center of the swinging movement of the abutment and the adjacent walls of the chamber being correspondingly shaped.

12. In a rotary engine, the combination with the cylinder and piston, the former having a boxing therein with an interior chamber opening into the cylinder, of an abutment mounted to rock at the mouth of the chamber, a tailpiece carried by the abutment and projecting against the side walls of the chamber to keep the chamber closed irrespective of the movements of the abutment, means for supplying steam-pressure to the chamber, the said tailpiece being curved around the center of the swinging movement of the abutment and the adjacent walls of the chamber being correspondingly shaped, and a packing device carried by the cylinder and working against the convex or outer walls of the tailpiece.

13. In a rotary engine, the combination with the cylinder and piston, the former having a boxing therein with an interior chamber opening into the cylinder, of an abutment mounted to rock at the mouth of the chamber, a tailpiece carried by the abutment and projecting against the side walls of the chamber to keep the chamber closed irrespective of the movements of the abutment, means for supplying steam-pressure to the chamber, a rocking shaft mounted in the cylinder and carrying the abutment, and packing devices working with the shaft and with the tailpiece to keep the said chamber steam-tight.

14. In a rotary engine, the combination of a cylinder, a piston arranged to turn therein, and an abutment mounted to swing in the cylinder, for the purpose specified, the said piston having a port leading through the side thereof and a by-pass groove in said side at the outer end thereof, said groove permitting the steam to pass the abutment when the abutment lies over the groove.

15. A rotary engine, comprising a cylinder, a piston arranged to turn therein and having a by-pass groove, an abutment working with the piston, and means for applying steam-pressure continuously to the abutment to return it to normal position, the by-pass groove permitting the passage of steam past the abutment as it lies over the groove, whereby to accelerate the return movement of the abutment.

16. A rotary engine, comprising the combination of a cylinder having a boxing with two chambers therein, a rocking trunnion-shaft mounted in the boxing between the chambers, two abutments carried to rock with the shaft and lying opposite the chambers, tailpieces carried respectively by the abutments and projecting into the chambers for the purpose specified, and means for supplying steam-pressure to either one of said chambers, and a piston working in the cylinder and coacting with the abutments.

17. A rotary engine, comprising the combination of a cylinder having a boxing with two chambers therein, a rocking trunnion-shaft mounted in the boxing between the chambers, two abutments carried to rock with the shaft and lying opposite the chambers, tailpieces carried respectively by the abutments and projecting into the chambers, for the purpose specified, means for supplying steam-pressure to either one of said chambers, a piston working in the cylinder and coacting with the abutments, packing devices lying against the trunnion-shaft to keep the said chambers steam-tight from each other, and additional packing devices lying against the tailpieces to keep the respective chambers steam-tight.

18. In a rotary engine, the combination with the cylinder having an offset therein divided by a horizontally-located boxing, said boxing having two chambers formed therein and opening into the cylinder, of a rocking trunnion-shaft mounted in the boxing intermediately said chambers, abutments carried on the trunnion-shaft and movable therewith to swing into the respective offsets of the cylinder, tailpieces carried respectively by the abutments and projecting into the chambers, for the purpose specified, means for supplying steam-pressure to either one of the chambers as desired, and a piston working in the cylinder and coacting with the abutments.

19. In a rotary engine, the combination with the cylinder having an offset therein divided by a horizontally-located boxing, said boxing having two chambers formed therein and opening into the cylinder, of a rocking trunnion-shaft mounted in the boxing intermediately said chambers, abutments carried on the trunnion-shaft and movable therewith to swing into the respective offsets of the cylinder, tailpieces carried respectively by the abutments and projecting into the chambers, for the purpose specified, means for supplying steam-pressure to either one of the chambers as desired, a piston working in the cylinder and coacting with the abutments, a packing-strip carried transversely at the end of the piston, and a spring pressing said packing-strip outward, whereby to effect steam-tight connection with the cylinder and abutments.

20. In a rotary engine, the combination of a cylinder, an abutment mounted to swing therein, a shaft mounted to turn in the cylinder, and a piston carried by the shaft within the cylinder and coacting with the abutment, said shaft having longitudinal passages formed therein and the steam-passages turning laterally into the piston and opening at opposite sides thereof, the said abutment being in two parts standing at an angle to each other and mounted at the middle to work in the manner specified.

21. In a rotary engine, the combination of a cylinder, an abutment mounted to swing therein, a shaft mounted to turn in the cylinder, a piston carried by the shaft within the cylinder and coacting with the abutment, said shaft having longitudinal passages formed therein and the steam-passages turning laterally into the piston and opening at opposite sides thereof, and cut-off devices working over the shaft to command the steam-passages.

22. In a rotary engine, the combination of a cylinder, an abutment mounted to swing therein, a shaft mounted to turn in the cylinder, a piston carried by the shaft within the cylinder and coacting with the abutment, said shaft having longitudinal passages formed therein and the steam-passages turning laterally into the piston and opening at opposite sides thereof, and cut-off devices working over the shaft to command the steam-passages, said cut-off devices comprising shoes loosely engaged with the shaft to open and close the steam-passages as the shaft turns.

23. A rotary engine having steam-passages formed in the piston-shaft, and radially-movable cut-off shoes loosely engaged with the shaft to open and close the steam-passages as the shaft turns.

24. A rotary engine having steam-passages formed in the piston-shaft, cut-off shoes loosely engaged with the shaft to open and close the steam-passages as the shaft turns, and means for mounting the cut-off shoes to allow their independent engagement with and disengagement from the shaft.

25. A rotary engine having steam-passages formed in the piston-shaft, cut-off shoes loosely engaged with the shaft to open and close the steam-passages as the shaft turns, and means for mounting the cut-off shoes to allow their independent engagement with and disengagement from the shaft, said means comprising hand-cams attached to the shanks of the shoes and working with a relatively stationary support.

26. In a rotary engine, the combination of the engine-shaft having a steam-passage therein, a gland in which the shaft turns, a chamber-ring located around the shaft and within the gland and communicating with the steam-feed and with the steam-passage in the shaft, and a radially-movable cut-off shoe located in the chamber-ring and engaged with the shaft in the manner specified.

27. In a rotary engine, the combination of the engine-shaft having a steam-passage therein, a gland in which the shaft turns, a chamber-ring located around the shaft and within the gland and communicating with the steam-feed and with the steam-passage in the shaft, a cut-off shoe located in the chamber-ring and engaged with the shaft in the manner specified, and means for removably holding the cut-off shoe in engagement with the shaft.

28. In a rotary engine, the combination of the engine-shaft having a steam-passage therein, a gland in which the shaft turns, a chamber-ring located around the shaft and within the gland and communicating with the steam-feed and with the steam-passage in the shaft, a cut-off shoe located in the chamber-ring and engaged with the shaft in the manner specified, and means for removably holding the cut-off shoe in engagement with the shaft, said means comprising a hand-cam connected with the shank of the cut-off shoe and working against the outer face of the gland.

29. In a rotary engine, the combination of the engine-shaft having a steam-passage therein, a gland in which the shaft turns, a chamber-ring located around the shaft and within the gland and communicating with the steam-feed and with the steam-passage in the shaft, and a cut-off shoe located in the chamber-ring and engaged with the shaft in the manner specified, the chamber-ring being H-shaped in cross-section and having its web perforated to permit the passage of steam.

30. A rotary engine having a cylinder provided with chambers, abutments at the mouths of the chambers and each provided with a curved tailpiece rigid therewith and extending into the chambers, a piston, a piston-shaft having two steam-passages, steam-pipes communicating with the said passages, and branch pipes leading from the steam-pipes to the said chambers.

709,774. MILKING-SHIELD. HENRY H. KABBY, Ashland, Ohio. Filed Apr. 21, 1902. Serial No. 103,998. (No model.)

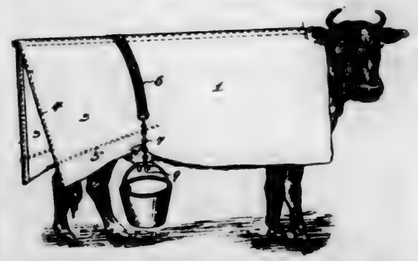

Claim.—1. A bar adapted to lie on the back and extend in rear of an animal, a flexible cover, doubled over the bar, and also extending in rear of the animal, thereby forming rearwardly-extended flaps, the latter being stiffened, for the purpose set forth, and a girth passed around the cover and the body of the animal, substantially as described.

2. A milking-shield comprising a flexible cover adapted to lie on and extend in rear of the animal, means to support the rearwardly-extended portion of said cover and means to stiffen the rearwardly-extended portion of said shield or cover, substantially as described.

5. A [illegible] the hook of and extend [illegible] over said bar and adapted to [illegible] formed by the rearwardly-extended [illegible] substantially as described.

709,775. CHECK-PERFORATOR. MAXWELL KRAUS, New York, N. Y., assignor to Eugene B. Hendrix, Newark, N. J. Filed Apr. 24, 1902. Serial No. 104,435. (No model.)

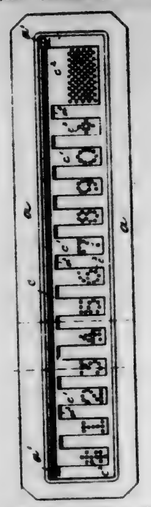

Claim.—1. In a check-perforator, the combination of a base-plate having spaced abutments and intermediate teeth, with a hinged lid having a series of perforated fingers which are adapted to fold flush upon the base-plate intermediate the abutments, the latter being in advance of the hinge of the lid, substantially as specified.

2. A check-perforator comprising the base having spaced abutments and the lid hinged to the base in rear of said abutments and having fingers operating between said abutments and its body portion arranged to be stopped by said abutments in using the device said abutments being adapted to form stops for both the check and the lid substantially as and for the purposes set forth.

709,776. DRAFTING-RULE. MARY C. KELLEY, Wilmington, Del. Filed Jan. 4, 1902. Serial No. 88,630. (No model.)

Claim.—A device of the kind described, comprising a body portion and a curved arm, the end of said arm being bifurcated, one edge of the body portion being a straight edge, the other edge being a constantly-varying curve, one edge of the curved arm containing a long arc of a circle, the other edge of the curved portion containing a short arc of a circle, said short arc intersecting the straight edge of the body portion, substantially as described.

SEAL-LOCK. JULIUS P. KERBAUM, South Yarra, Victoria. Filed Jan. 6, 1902. Serial No. 88,633. (No model.)

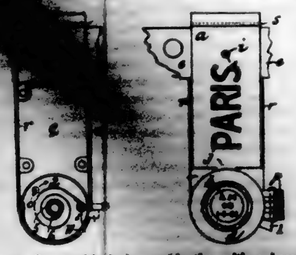

Claim.—1. In a seal-lock, in combination with a base-plate supporting a movable plate having a cutter, a seal-box adapted to be secured on said base-plate and slotted to permit said cutter to protrude into the seal-box, whereby a seal may be placed in said seal-box and be impaled on said cutter, a lid for said seal-box having means for engaging said seal to hold it stationary, locking means for holding said lid closed and means carried by said movable plate for disengaging said locking means.

2. In a seal-lock, in combination with a base-plate, a rotary, spring-controlled disk mounted thereon having a cutter, a seal-box adapted to be secured on said base-plate and slotted to permit said cutter to protrude into the seal-box, whereby a seal may be placed in said seal-box and be impaled on said cutter, a lid for said seal-box having a tongue adapted to puncture said seal and hold it stationary, a locking device engaging said tongue, and means carried by said disk for engaging the locking device and unlocking said lid when said disk is rotated.

3. In a seal-lock, in combination with a seal-box having a movable cutter working therein, a label having a head adapted to be inserted in said seal-box and provided with a slot to receive, and permit unobstructed movement of said cutter, whereby a seal may be placed in said seal-box over said head and be impaled on said cutter.

4. In a seal-lock, in combination with a seal-box having a movable cutter working therein and provided with a lid having a tongue adapted to puncture a seal placed in said seal-box, a reversible label having a head adapted to be inserted in said seal-box and provided with a slot to receive, and permit unobstructed movement of, said cutter and on opposite sides with apertures through one or the other of which said tongue may pass.

709,778. CHECKREIN-HOOK. JOHN P. KETTERINGHAM, Pineridge, Miss., assignor of one-half to Olivia D. Ireland, Pineridge, Miss. Filed Sept. 28, 1901. Serial No. 76,935. (No model.)

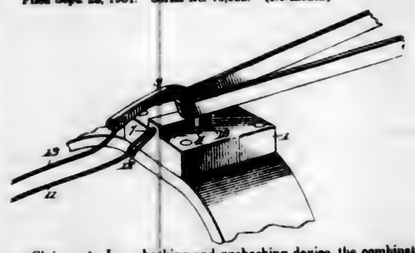

Claim.—1. In a checking and unchecking device, the combination with a laterally-swinging spring-actuated rotatable hook, a spindle on which said hook is mounted and formed with oppositely-disposed recesses, spring-actuated means for alternately engaging the recesses in the spindle to lock the hook in its determined position, and means for releasing the same.

2. In a checking and unchecking device, the combination with a casing provided with a projection near the center thereof, a spring-actuated rotatable hook carried by the casing, means for locking said hook in its normal position to hold the checkrein, means for releasing the hook, and means carried by the hook to engage the projection on the casing whereby the rotation of the hook will be limited.

3. In a checking and unchecking device, the combination with a casing adapted to be secured to the harness-saddle, of a spindle carried thereby, a spring within the casing and connected to the spindle for rotating the same, a hook carried by the spindle, diametrically oppositely located recesses in the spindle, a flexible connection secured to the hook, a spring-actuated pawl adapted to engage the recesses, and a connection for actuating the pawl.

4. In a checking and unchecking device, the combination with a casing, a spring-actuated rotatable hook carried thereby and adapted to swing in a lateral plane, means for locking the said hook to hold the checkrein, means for releasing the checkrein, and means for holding the hook rigid with relation to the casing and in a locked position when the checkrein is released.

5. In a checking and unchecking device, the combination with a casing, a spring-actuated rotatable spindle mounted therein and provided with oppositely-disposed recesses, a hook carried at one end of the spindle and adapted to swing in a lateral plane, a spring-pressed pawl for engaging the recesses to lock the hook, a pin arranged on the casing and adjacent the spindle and a laterally-projecting pin on the spindle adapted to abut against the first-named pin to limit the movement of said spindle.

709,779. PIPE-COUPLING. ARDEIS H. KIRD and WALLACE A. GIBBONS, Joplin, Mo.; said Kird assignor to said Gibbons. Filed Dec. 17, 1901. Serial No. 86,278. (No model.)

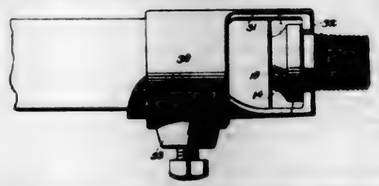

Claim.—1. A clamp for hose-coupling comprising an encircling band provided with an arm having an interned flange, an inner clamp member provided with an arm having an interned flange, and means to force the inner member against the hose to be clamped.

2. A clamp for hose-couplings comprising an encircling band provided with an arm having an interned flange, an inner clamp member provided with an arm having an interned flange, and means carried by the encircling band to force the inner member against the hose to be clamped.

3. A clamp for a hose-coupling comprising an encircling band provided with an arm having an interned flange, a shoulder on said band having an internally-screw-threaded aperture therein, an inner clamp member provided with an arm having an interned flange, and a clamping-screw adapted to extend through said aperture and engage said inner member thereby compressing it firmly against the hose to be clamped.

709,780. POWER-HAMMER. CHARLES H. KENNEDY, Mound-ridge, Kans. Filed May 6, 1902. Serial No. 106,135. (No model.)

Claim.—1. A power-hammer comprising an operating-lever for the hammer, a carrier mounted to swing, means for imparting motion to said carrier, and a flexible connection adjustable on the carrier and attached to said operating-lever, to raise or lower the same relative to the said carrier, as set forth.

2. A power-hammer comprising an operating-lever for the hammer, a carrier mounted to swing, means for imparting a positive stroke to said carrier, a flexible connection adjustable on the carrier and attached to the said operating-lever, to move the same on the carrier, and manually-controlled means for adjusting said flexible connection on said carrier, as set forth.

3. A power-hammer comprising an operating-lever for the hammer, a carrier mounted to swing, means for imparting a positive stroke to said carrier, a flexible connection extending over pulleys on said carrier and rigidly attached to said operating-lever, drums on which wind, in opposite directions, the ends of said flexible connection, and means under the control of the operator for turning said drums, as set forth.

4. A power-hammer comprising an operating-lever for the hammer, a carrier mounted to swing, means for imparting a positive stroke to said carrier, a flexible connection extending over pulleys on said carrier and rigidly attached to said operating-lever, drums on which wind, in opposite directions, the ends of said flexible connection, and means under the control of the operator for turning said drums, said drums being held adjustably on their shaft and the latter forming the fulcrum for said carrier, as set forth.

5. A power-hammer, comprising a carrier mounted to swing, means for imparting a positive swinging motion to said carrier, an operating-lever fulcrumed on the carrier and connected with the hammer, and means secured to said operating-lever and adjustable on the said carrier to raise or lower the lever on the carrier, and thereby move the hammer to or from the anvil, as set forth.

6. A power-hammer comprising a carrier mounted to swing, means for imparting a positive swinging motion to said carrier, an operating-lever fulcrumed on the carrier and connected with the hammer, means held adjustably on the carrier and secured to said operating-lever, said means comprising a rope extending over pulleys on the carrier, drums on which the ends of the rope wind in opposite directions, the shaft of the drums forming the fulcrum for said carrier, and a handle on said shaft and under the control of the operator for turning said drums, as set forth.

7. A power-hammer, comprising a hammer proper having a shank mounted to slide vertically, a spring-pressed sleeve held to slide loosely on the hammer-shank, a reciprocating rod pivotally connected at one end with the hammer-sleeve and carrying a spring-pressed sleeve at its other end, an operating-lever pivotally connected at its free end with the said sleeve, a carrier mounted to swing and on which the said operating-lever is fulcrumed, means for imparting a swinging motion to the carrier, and means held adjustable on the carrier and secured to said operating-lever, as set forth.

8. A power-hammer, comprising an operating-lever connected with the hammer, a carrier mounted to swing and carrying the said lever, means for imparting motion to said carrier, and means for adjusting the said lever on the said carrier to vary the distance of the hammer from the anvil, as set forth.

9. A power-hammer, comprising an operating-lever connected with the hammer, a carrier mounted to swing and carrying the said operating-lever, means for imparting motion to said carrier, means for moving the said lever on the carrier to adjust the hammer toward or from the anvil, and a fastening device for said means, as set forth.

10. A power-hammer, comprising an operating-lever for the hammer, a carrier mounted to swing, means for imparting motion to said carrier, and a rope or chain attached to said operating-lever and adjustable on the carrier, as set forth.

11. A power-hammer, comprising an operating-lever for the hammer, a carrier mounted to swing, means for imparting a positive stroke to the carrier, a flexible connection adjustable on the carrier, means connected with the ends of the said flexible connection for adjusting the same; the said connection being attached between its ends to the said operating-lever, as set forth.

12. A power-hammer, comprising a shaft mounted to turn, an eccentric on said shaft, a carrier mounted to swing and pivotally connected with the eccentric-rod, an operating-lever fulcrumed on the carrier and connected with the hammer, a rope extending over pulleys on the carrier, and connected with the operating-lever, drums on which the ends of the rope wind in opposite directions, and means under the control of the operator for turning said drums.

13. A power-hammer, comprising a carrier mounted to swing, means for imparting a swinging motion to the carrier, an operating-lever fulcrumed at one end on the carrier, a rod connecting the other end of said lever with the hammer, a flexible connection secured to the operating-

lever and adjustable on the carrier, and means connected with the ends of said flexible connection for moving the same in opposite directions as set forth.

14. A power-hammer, comprising a shaft mounted to turn, a carrier mounted to swing loosely on the shaft, means for imparting a positive stroke to the carrier, an operating-lever for the hammer, the said lever being fulcrumed on the carrier, drums adjustable on the shaft, means for fastening the drums in position on the shaft, and a flexible connection adjustable on the carrier, the said connection being attached to the operating-lever and connected at its ends with the said drums, as set forth.

709,781. **APPARATUS FOR TRANSFERRING AMMUNITION FROM THE AMMUNITION-CARRIAGE INTO THE LOADING AXIS OF THE GUN.** JOHANNES KRONE, Essen, Germany, assignor to Fried. Krupp, Essen, Germany. Filed Apr. 23, 1902. Serial No. 104,188. (No model.)

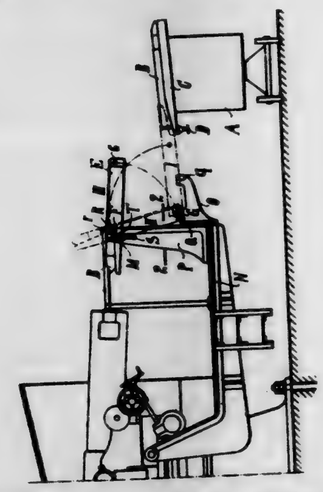

Claim.—1. An apparatus for transferring ammunition from a lower level into the loading-axis of the gun, comprising a loading-tray and a series of supports at progressively-increasing elevations constructed to receive the ends of said tray, whereby it may be tilted end over end from the lower level into successive elevations until it reaches the loading-axis of the gun.

2. An apparatus for transferring ammunition from a lower level into the loading-axis of the gun, comprising a loading-tray, having hand-grips projecting from its opposite ends, and a series of supports at progressively-increasing elevations constructed to receive the ends of said tray, whereby it may be tilted end over end from the lower level into successive elevations until it reaches the loading-axis of the gun.

3. An apparatus for transferring ammunition from the ammunition-carriage into the loading-axis of the gun, comprising a series of bearings suitably supported at progressively-increasing elevations, and a loading-tray having at or near its opposite ends trunnions entering the bearings as the loading-tray is tipped end over end from the lower position to the higher.

4. An apparatus for transferring ammunition from the ammunition-carriage into the loading-axis of the gun, comprising a series of bearings suitably supported at progressively-increasing elevations, and a loading-tray having at or near its opposite ends trunnions entering the bearings as the loading-tray is tipped end over end from the lower position to the higher, and hand-grips projecting from said trunnions.

5. An apparatus for transferring ammunition from the ammunition-carriage to the loading-axis of the gun, comprising a support provided with a plurality of bearings at different heights, opening to one side, and the loading-tray having two pairs of trunnions at or near its opposite ends adapted to engage successively in said bearings as the loading-tray is tilted end over end.

6. An apparatus for transferring ammunition from the ammunition-carriage to the loading-axis of the gun, comprising a support provided with a plurality of bearings at different heights, opening to one side, and the loading-tray having two pairs of trunnions at or near its opposite ends adapted to engage successively in said bearings as the loading-tray is tilted end over end, and a catch holding the trunnions in one pair of bearings while the other end of the tray is being swung.

7. An apparatus for transferring ammunition from the ammunition-carriage to the loading-axis of the gun, comprising a support provided with a plurality of bearings at different heights, opening to one side, and the loading-tray having two pairs of trunnions at or near its opposite ends, adapted to engage successively in said bearings as the loading-tray is tilted end over end, and a catch holding the trunnions in one pair of bearings while the other end of the tray is being swung, said catch being carried by one trunnion and engaging a groove formed in the body of the corresponding bearing.

8. An apparatus for transferring ammunition from the ammunition-carriage to the loading-axis of the gun, comprising a support provided with a plurality of bearings at different heights, opening to one side and the loading-tray having two pairs of trunnions at or near its opposite ends adapted to engage successively in said bearings, as the loading-tray is tilted end over end, hand-grips projecting from said trunnions, the catch on one of said hand-grips and trunnions, and a recess on the bearing in which said catch engages, as the trunnion enters its bearing, to hold one pair of trunnions while the tray is being lifted by the other pair.

9. An apparatus for transferring ammunition from the ammunition-carriage to the loading-axis of the gun, comprising a support provided with a plurality of bearings at different heights, opening to one side, and the loading-tray having two pairs of trunnions at or near its opposite ends, adapted to engage successively in said bearings as the loading-tray is tilted end over end, and a catch holding the trunnions in one pair of bearings while the other end of the tray is being swung, said catch being carried by one trunnion and engaging a groove formed in the body of the corresponding bearing, and the groove being concentric with the bearing so that the tray can swing while the catch is in engagement.

10. An apparatus for transferring ammunition from the ammunition-carriage to the loading-axis of the gun, comprising a tray having trunnions, and studs adjacent to said trunnions, a support having bearings receiving said trunnions to permit the tray to swing thereon, and arresting-bearings receiving said studs to sustain the tray in horizontal position.

11. An apparatus for transferring ammunition from the ammunition-carriage to the loading-axis of the gun, comprising a tray having trunnions, and studs adjacent to said trunnions, a support having bearings receiving said trunnions to permit the tray to swing thereon, and arresting-bearings receiving said studs to sustain the tray in horizontal position, and provided with a releasable catch to retain the studs in their bearings.

12. An apparatus for transferring ammunition to the loading-axis of the gun, comprising a tray with trunnions, and a support upon which said tray is tilted end over end, constructed with a horizontal bracket holding the tray in receiving position and a vertical standard containing trunnion-bearings upon which the tray is tilted.

13. An apparatus for transferring ammunition to the loading-axis of the gun, comprising a tray with trunnions, and a support upon which said tray is tilted end over end, constructed with a horizontal bracket holding the tray in receiving position and a vertical standard containing trunnion-bearings at its upper end, which receives the trunnions of the tray when the tray is tilted upward and upon which the tray is tilted.

14. An apparatus for transferring ammunition to the loading-axis of the gun, comprising a tray with trunnions, at or near its respective ends, and a support constructed with lower bearings that receive the trunnions at one end of the tray and with a rearwardly-projecting bracket that supports the tray in receiving position, and bearings on the upper portion of the support that receive the other pair of trunnions.

709,782. **HYDROCARBON-BURNER.** LOUIS K. LEARY, Los Angeles, Cal. Filed Jan. 20, 1902. Serial No. 90,371. (No model.)

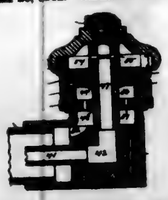

Claim.—1. In a hydrocarbon-burner two valves having valve-stoppers in shape the frustum of a cone, adjustably connected together at their smaller ends, and adapted to be locked together whereby both valve-stoppers rotate as one, one of said valve-stoppers being provided with a lever and being adapted to control the flow of oil to the burner-tip and the other valve-stopper being adapted to control the flow of steam to the burner-tip.

2. In a hydrocarbon-burner, a burner-tip therefor comprising a casing having a central opening therethrough and a second opening at one side of the central opening; a plug having two flanges, the lower one of which screws into the top of the tip-casing; the upper flange projecting beyond the top of the casing-tip; a central opening extending longitudinally to near the top of the plug and having a plurality of ports extending through the plug above the top flange, as shown; ports in the lower flange connecting the space between the flanges with the side passage in the casing of the tip; a cap affixed to the top of the plug projecting below and beyond the top flange thereof, all constructed as shown and described.

3. A burner-tip for a hydrocarbon-burner, adapted to use steam and oil, comprising a casing having a central and a side passage therethrough; a plug attached to said casing having two flanges, the upper one of which projects beyond the lower, and having a central opening registering with the central passage of the casing, extending therein to above the top flange; ports extending through the plug and terminating above the upper flange; ports in the lower flange connecting the space between the flanges with the side passage in the casing; annular channels in the upper and lower faces of the upper flange; sections of annular rings in said flanges; a cap attached to said plug extending beyond and below the top flange of the plug; an annular internally-threaded ring screwed on the tip-casing, an annular ring above the threaded ring, all constructed and operated substantially as illustrated and described herein.

4. In the herein described hydrocarbon-burner, an automatic regulator therefor comprising a spring-pressed valve, mounted in a valve-chamber, connected by a pipe running from below the valve to the steam-space in the boiler; a port in the valve-chamber, above the valve, connected with a port in the piston-chamber at one side of and at the bottom of the spring-pressed piston in said chamber; said piston having a stem extending into a valve-chamber and connected therein to a hollow valve; said hollow-valve chamber being in communication with the steam-chest of the boiler and also being in communication with the oil and steam valve regulating piston-chamber; a piston in said last chamber having a stem connected to an adjustable link; said link being connected to a lever affixed to the stem of the oil-valve, all constructed and operated substantially as described herein.

5. In the herein-described hydrocarbon-burner means to detach the burner-tip and connecting-pipes from the regulating-valves comprising a coupling member externally and centrally threaded; said member having a central passage therethrough in the front end of which is screwed the oil-conduit which leads to the burner-tip, the rear end of which when in place registering with the passage leading from the oil-regulating valve; ports through said member exterior the oil-conduit opening into the steam-conduit which leads the steam to the burner-tip, which said conduit is screwed into the front end of said member; an internally-threaded coupling-ring having a handle, said coupling-ring being adapted to screw upon said coupling member and attach the same to the casing of the valve-chambers.

709,783. **INSECT-DESTROYING COMPOUND.** JAMES H. LESTER, Roanoke, Va. Filed Apr. 17, 1902. Serial No. 103,447. (No specimens.)

Claim.—A composition for destroying insects comprising the following ingredients in substantially the following proportions, by weight: gunpowder, ten ounces, saltpeter, eight ounces, copperas, four ounces, sulfur, sixteen ounces, substantially as set forth.

709,784. **HAME-HOOK.** GEORGE F. LINDSAY, Sherman, Tex. Filed Apr. 10, 1902. Serial No. 102,300. (No model.)

Claim.—1. The combination with a hame-staple; of a hame-hook comprising two leaves the inner edges of which are provided with eyes which are pivoted upon the hame-hook and the outer edges of which are provided with overlapping hooked bills which project in opposite directions, and a spring exerting its energy to draw the leaves together and thus hold the hooked bills in closed position, substantially as specified.

2. The combination with a hame-staple; of a hame-hook comprising two leaves the inner edges of which are provided with eyes which are pivoted upon the hame-hook and the outer edges of which are provided with overlapping hooked bills which project in opposite directions, a bolt passing through both leaves and provided with a nut, and a spring confined between the nut and the inner leaf and exerting its energy to draw the two leaves together, substantially as and for the purpose set forth.

709,785. **TOBACCO-TRUCK.** WILLIAM G. LITTLE, Farmville, N. C., assignor of one-half to Robert L. Davis, Farmville, N. C. Filed June 20, 1902. Serial No. 112,469. (No model.)

Claim.—1. The truck herein described comprising a bed having the longitudinal side beams, and the cross top boards secured at their outer ends upon the upper sides of the side beams, the cross-beam secured beneath the side beams near the front ends of the latter, the brackets for the rear wheels secured at their upper ends to the side beams and inclining thence inwardly toward the lower ends, and provided at such ends with means for securing the rear axle, the rear wheels supported on said axle within the lines of the sides of the bed, the front-wheel frame having a top plate provided with a block and the king-bolt extending therefrom and journaled in the front cross-beam of the bed, the side and intermediate plates secured to the under side of the top plate and spaced apart, the wheels between the side plates and the intermediate plate and spaced apart by the intermediate plate, the draft-bar provided at its rear ends with a central longitudinal slot forming side arms pivoted between their ends between the side plates and the intermediate plate, and a step-rod supported by the said plates and operating above the rear ends of the arms of the draft-bar substantially as and for the purposes set forth.

2. The combination in a truck with the bed and the rear wheels and the supporting devices for the rear wheels, of a pair of front wheels, the front-wheel frame having a top plate, and side and intermediate plates depending from the top plate and spaced apart, the front wheels journaled between the side and intermediate plates and spaced apart by the intermediate plate, the king-bolt connecting the wheel-frame within the truck-bed and the draft-bar provided at its rear end with arms operating between the intermediate plate and the side plates and pivoted thereto, substantially as set forth.

3. The combination in a truck with the bed and the rear wheels, of the front-wheel frame having pivotal connection with the bed and comprising the top plate, and the side and intermediate plates depending from the top plate and spaced apart, the pair of front wheels journaled between the side and intermediate plates and spaced apart by the intermediate plate, the draft-bar provided at its rear end with the arms operating between the intermediate plate and the side plates and pivoted to said plates between their ends, and stop devices for limiting the movement of the draft-bar substantially as set forth.

709,786. POWER-DRIVEN SAW. WILLARD D. LLOYD, Beaver Falls, Pa. Filed Apr. 21, 1902. Serial No. 103,886. (No model.)

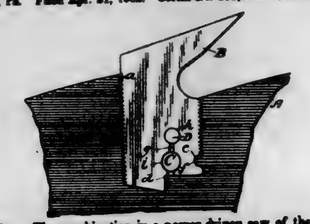

Claim.—The combination in a power-driven saw of the saw-plate, having the edge-beveled, lugged and stepped tooth-recess; the saw-tooth, having the bevel-fitting edge groove, the lug-fitting recess at the front end, the rigid, step-fitting shoulder at the extreme lower end, the two-holed, oblique, expansible, flush-edged slit in the lower part of the tooth; and the short, blunt rivet fitted expansively to and in the lower of the holes in the slit of the saw-tooth, all substantially as described, for the purpose of simply and strongly attaching the saw-tooth to the saw-plate.

709,787. COMBINED RAILWAY CROSS-TIE AND CHAIR. SAMUEL LOVE, New York, N. Y., assignor of one-half to Monroe L. Simon. Filed May 29, 1902. Serial No. 109,548. (No model.)

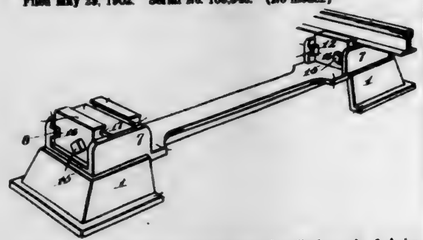

Claim.—1. In a device of the character described, a pair of chairs, a cross-tie integral therewith, a strengthening web integral with the cross-tie, a strengthening-rib integral with each of the chairs and terminating at its top in the said web, a pair of vertical plates integral at each end with the said cross-tie, a bearing-plate arranged between each pair of the said plates, a clamping-plate arranged at each side of the said bearing-plate, a clamping-screw for each of the said clamping-plates extending through the bearing-plates, and a cushioning device mounted upon each of the bearing-plates and engaging the said vertically-extending plates.

2. In a device of the character described, a pair of chairs, a cross-tie integral therewith, a pair of vertical plates at each end of the said cross-tie and provided on the inner face thereof with a rib, a bearing-plate arranged between and integral with said vertical plate, and a clamping device arranged between and engaging the ribs of said vertical plates and removably connected to said bearing-plates.

3. In a device of the character described, a pair of chairs, a cross-tie integral therewith, a pair of vertical plates at each end of the said cross-tie and provided on the inner face thereof with a rib, a bearing-plate arranged between and integral with said vertical plate, a clamping device arranged between and engaging the ribs of said vertical plates and removably connected to said bearing-plates, and a cushioning device arranged between and mounted upon said vertical plates.

4. In a device of the character described, a cross-tie provided on its inner face with a strengthening-web, means for supporting said tie, a pair of vertical plates connected to each end of the said tie, a bearing-plate integral with and arranged between the said vertical plates, a clamping device mounted within and retained upon each end of the tie by the said vertical and bearing plates, and a cushioning device mounted upon the said vertical and bearing plates.

5. In a device of the character described, a pair of chairs of shell-like formation, each of which is provided with a strengthening-rib on its inner face, a cross-tie integral with the said chairs and provided with a strengthening-web on its inner face terminating in the rib of the chairs, and a pair of clamping devices for track-rails mounted upon and connected with the said cross-tie.

6. In a device of the character described, a pair of chairs of shell-like formation, each of which is provided with a strengthening-rib, a cross-tie integral with the said chairs and provided with a strengthening-web terminating in the ribs of the chairs, a pair of vertical plates integral with the cross-tie at each end thereof and each of which is provided on its inner face with a rib, a clamping device arranged between each pair of plates and retained therein by means of the ribs of the plates, and a cushioning device mounted upon and extending between the said plates.

709,788. GAS-GENERATOR. CHARLES J. LUTHER, Rodbank, N. J. Filed Dec. 4, 1901. Serial No. 84,666. (No model.)

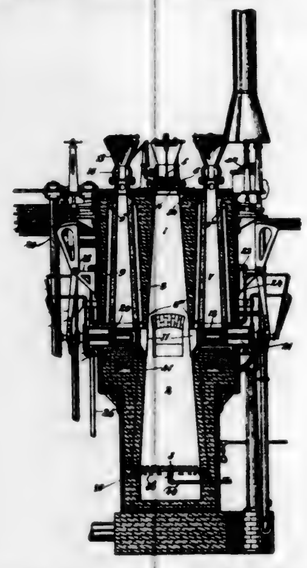

Claim.—1. In a gas-machine, a generating-chamber, a vaporizing-chamber above the generating-chamber, means for directing liquid to the vaporizing-chamber, vertical retorts surrounding the vaporizing-chamber, there being gas-spaces around the retorts and having communication with the generating-chamber, and valves for normally closing the lower ends of the retorts and adapted to close the gas-spaces, substantially as specified.

2. In a gas-machine, a generator, a vaporizer above generator, means for directing liquid thereto, a series of vertical retorts around the vaporizer, the said retorts being tapered, the larger end being downward, and valves normally closing the lower ends and serving as a means for forcing material into the generator, substantially as specified.

3. A gas-machine comprising a vaporizing-chamber, means for directing liquid to the chamber, retorts surrounding the vaporizing-chamber and having gas-spaces at opposite sides and communicating one with the other at the top, the said gas-spaces communicating with the vaporizing-chamber, hoppers on said retorts, valves in the retorts below the hoppers, and pipes leading outward from the upper ends of the retorts, substantially as specified.

4. A gas-machine comprising a generator, a vaporizing-chamber, means for directing liquid to the chamber, retorts arranged vertically around the vaporizing-chamber and having gas-spaces at their opposite sides, the said gas-spaces communicating one with the other at the top only, and at the bottom with the generator, valve-casings, and valves for operating in said casings and forming the bottoms of the retorts and serving to force material into the generator, substantially as specified.

5. A gas-machine comprising a generator and a vaporizing-chamber, means for directing liquid to the chamber, retorts surrounding the vaporizing-chamber, valves forming the bottoms of the retorts, levers connecting with the stems of the valves, segment-racks on said lever, and operating-gearing engaging with said racks, substantially as specified.

6. A gas-machine comprising a generator and a vaporizing-chamber, means for directing liquid to the chamber, retorts surrounding the vaporizing-chamber, there being gas-spaces between the retorts and the said vaporizing-chamber and communicating with the generator, valves for closing the bottoms of the retorts and also for closing said gas-spaces, and means for directing air to the lower portion of the generator, substantially as specified.

7. A gas-machine comprising a generator, a vaporizing-chamber above the same, vertical retorts around the vaporizing-chamber, water-jacketed valve-casings supporting the retorts, valves movable in said casings and adapted to contain water, means for directing water into said valves, and gearing for operating the valves, substantially as specified.

8. In a gas-machine, the combination with a vaporizing-chamber and a generator, of retorts, water-jacketed valve-casings supporting the retorts, discharge-pipes leading from the casings, hollow valves operating in the casings and serving to close the lower ends of the retorts, means for supplying water to the hollow valves, and means for operating the said valves to force material dropping from the retorts to the generator, substantially as specified.

709,789. MECHANISM FOR REMOVING SELVAGE FROM BOX OR CARTON BLANKS. JOSEPH MEEK, Toronto, Canada, assignor to Lever Brothers, Limited, Port Sunlight, England. Filed Mar. 17, 1902. Serial No. 98,610. (No model.)

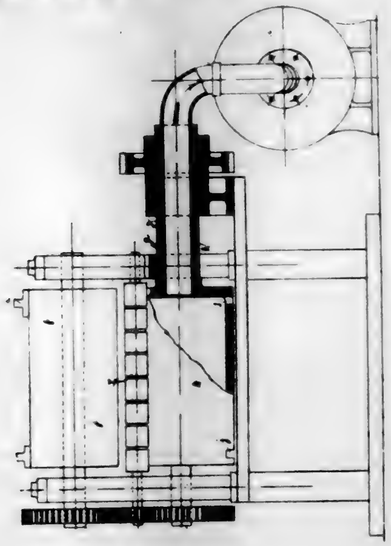

Claim.—1. A mechanism for removing selvage from box and carton blanks, comprising a pair of rollers, one of the same being hollow, means for rotating said rollers in timed relation to each other, punches carried by one of said rollers, apertures being formed in the hollow roller for receiving said punches whereby said selvage is designed to be passed into said hollow roller, and pneumatic means for removing said selvage therefrom, substantially as described.

2. In a mechanism of the class described, the combination with a suitable support, of a hollow roller journaled therein, a tube communicating with one of the journals of said roller, means for exhausting atmosphere within said tube, and means for removing the selvage from carton-blanks and delivering the same within said roller, substantially as described.

3. In a mechanism of the class described, the combination with a suitable support, of a hollow roller journaled therein, a second roller mounted contiguous the hollow roller, said hollow roller being provided with a plurality of apertures, a plurality of punches carried by said second-mentioned roller designed to enter said apertures whereby selvage from a carton-blank passed between said rollers may be directed into said hollow roller, and pneumatic means communicating with one of the journals of said hollow roller for removing the selvage therefrom, substantially as described.

709,790. OPHTHALMOSCOPE. EMIL B. MEYROWITZ, New York, N. Y., assignor to the Meyrowitz Manufacturing Company, a Corporation of New Jersey. Filed Sept. 26, 1901. Serial No. 76,901. (No model.)

Claim.—1. In an ophthalmoscope, the combination of a lens-disk, and a concentric supplemental lens-carrier, frictionally connected to rotate together, a frame supporting the disk and carrier, and a look for the said carrier, preventing its rotation with the disk.

2. In an ophthalmoscope, the combination of a supporting-frame, a lens-disk, and a concentric supplemental lens-carrier, frictionally connected to rotate together and a look for the said carrier, preventing its rotation with the disk, and means for releasing and relengaging said look at the end of each rotation of the disk.

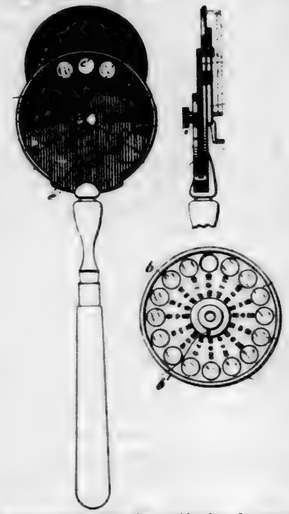

3. In an ophthalmoscope, the combination of a supporting-frame, a lens-disk, and a concentric supplemental lens-carrier, frictionally connected to rotate together and a pawl pivoted to the frame normally engaging the carrier to prevent its rotation and means carried by the disk, for removing the pawl at the end of each rotation, substantially as described.

4. In an ophthalmoscope, the combination of a supporting-frame, a lens-disk, having a plurality of scales marked thereon, a concentric segment carrying supplemental lenses to which the scales correspond, openings in the segment respectively exposing the scales, a guard covering all of said openings except one, a pawl pivoted to the frame adapted to hold the segment stationary and a pin carried by the disk and adapted to remove the pawl.

709,791. ARTIFICIAL-STONE BOARD. ALEXANDER McDONALL, Duluth, Minn. Filed Nov. 14, 1901. Serial No. 82,382. (No model.)

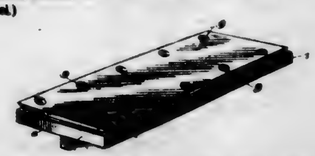

Claim.—1. As an improvement in artificial-stone boards, the combination with the four square edges 1, and the integral web or rib 12, removed some distance from the edges, the said web being of greatest depth adjacent to its center, the depth diminishing gradually toward each end, substantially as set forth.

2. As an improvement in artificial-stone boards, the combination with the four square edges 1, and the integral web or rib 12 removed some distance from the edges with horizontal perforations 13 for the passage of attaching means, substantially as set forth.

3. As an improvement in artificial-stone boards, the combination with the square edges 1, and the integral web or rib 12 interrupted at 17, adjacent to each end, and with horizontal perforations 13 for the passage of attaching means, substantially as set forth.

4. As an improvement in artificial-stone boards, the combination of the square edges 1, with cut-away portions 4, retaining means for the binding material, and the integral web or rib 12, with horizontal perforations 13, for the passage of attaching means, substantially as set forth.

5. As an improvement in artificial-stone boards, the combination of the square edges 1, with cut-away portions 4, retaining means for the binding material, and the integral web or rib 12, interrupted at 17, adjacent to each end, substantially as set forth.

6. As an improvement in artificial-stone boards, the combination of the square edges 1, with cut-away portions 4, retaining means for the

9. As an improvement in artificial-stone boards, the combination with the square edges 1, the cut-away portions 4, the dovetailed edges 6, forming retaining means for the binding material, and the integral web or rib 12, interrupted at 17, adjacent to each end, and with horizontal perforations 13, for the passage of attaching means, substantially as set forth.

10. As an improvement in artificial-stone boards, the combination of the square edges 1, with cut-away portions 4, retaining means for the binding material, and holes 9, through the entire thickness of the board, for fastenings, substantially as set forth.

11. As an improvement in artificial-stone boards, the combination of the square edges 1, with cut-away portions 4, dovetailed edges 6, forming retaining means for the binding material, and holes 9, through the entire thickness of the board for fastenings, substantially as set forth.

709,792. EDUCATIONAL OPTICAL INSTRUMENT. GEORGE W. MCFATRICH, Chicago, Ill. Filed Apr. 16, 1902. Serial No. 103,174. (No model.)

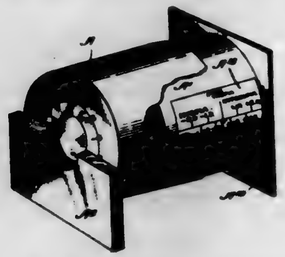

Claim.—In an educational optical instrument, in combination, a cylinder open at one end and closed at the other save for a pupilary opening; a support for the closed end of said cylinder; two lens-receiving cells and an astigmatic scale of degrees on the exterior of said cylinder adjacent to said pupilary opening; two lens-receiving cells on the interior of said cylinder adjacent to said pupilary opening, a biconvex lens for one of said interior cells; a second cylinder open at one end and at the other end provided with a ground-glass screen and a support for the cylinder, said second cylinder being adapted to telescope with said first-mentioned cylinder; and a scale on one of said cylinders for indicating the relative position of said cylinders.

709,793. MEASURING AND DISCHARGING APPARATUS FOR FILLING CANS. JOHN MCSHERRY, South Omaha, Nebr. Filed Dec. 31, 1901. Serial No. 87,805. (No model.)

Claim.—1. A can-filling machine comprising a casing, a revolving member moving therein, having receptacles or pockets for receiving the material operated upon, plungers moving in said pockets and means for drawing the said plungers into position to permit material to enter the pockets, the said means releasing the plungers as they may eject the material from the said pockets, substantially as described.

2. A filling-machine made up of a casing, a rotating member moving within the same having a series of pockets formed therein, ejecting means moving in the said pockets and arranged to regulate the amount of material received in each pocket, and means for releasing the ejecting means to force material out at the delivery portion of the machine, substantially as described.

3. A filling-machine comprising a casing, a rotating member moving within the same having a series of pockets in its periphery, a plunger moving in each pocket, means for normally holding the plungers in their outermost positions, means for drawing the plungers inwardly a proper distance to permit each pocket to receive a suitable charge of the material to be handled, and means for releasing the said plungers quickly for

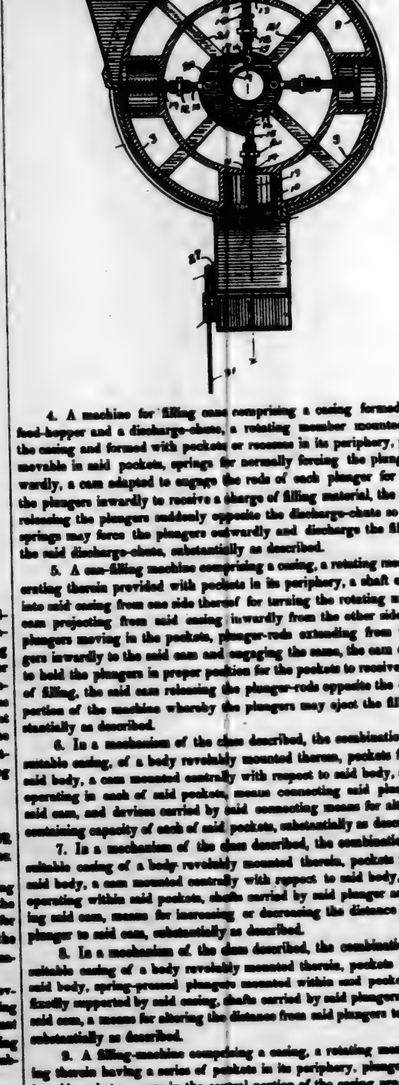

4. A machine for filling cans comprising a casing formed with a feed-hopper and a discharge-chute, a rotating member mounted within the casing and formed with pockets or recesses in its periphery, plungers movable in said pockets, springs for normally forcing the plungers outwardly, a cam adapted to engage the rods of each plunger for drawing the plungers inwardly to receive a charge of filling material, the said cam releasing the plungers suddenly opposite the discharge-chute so that the springs may force the plungers outwardly and discharge the filling into the said discharge-chute, substantially as described.

5. A can-filling machine comprising a casing, a rotating member operating therein provided with pockets in its periphery, a shaft extending into said casing from one side thereof for turning the rotating member, a cam projecting from said casing inwardly from the other side thereof, plungers moving in the pockets, plunger-rods extending from the plungers inwardly to the said cam and engaging the same, the cam operating to hold the plungers in proper position for the pockets to receive a charge of filling, the said cam releasing the plunger-rods opposite the discharge portion of the machine whereby the plungers may eject the filling, substantially as described.

6. In a mechanism of the class described, the combination with a suitable casing, of a body revolubly mounted therein, pockets formed in said body, a cam mounted centrally with respect to said body, a plunger operating in each of said pockets, means connecting said plunger with said cam, and devices carried by said connecting means for altering the containing capacity of each of said pockets, substantially as described.

7. In a mechanism of the class described, the combination with a suitable casing of a body revolubly mounted therein, pockets formed in said body, a cam mounted centrally with respect to said body, plungers operating within said pockets, shafts carried by said plunger and engaging said cam, means for increasing or decreasing the distance from said plunger to said cam, substantially as described.

8. In a mechanism of the class described, the combination with a suitable casing of a body revolubly mounted therein, pockets formed in said body, spring-pressed plungers mounted within said pockets, a cam fixedly supported by said casing, shafts carried by said plungers engaging said cam, a means for altering the distance from said plungers to said cam, substantially as described.

9. A filling-machine comprising a casing, a rotating member moving therein having a series of pockets in its periphery, plungers moving in said pockets, a cam in the central portion of the casing provided with a groove in its periphery, antifriction-rollers carried by the plunger-stems engaging the overhanging flanges of the cam-groove, the said cam-groove having an opening at one portion and being shaped so as to lead the rollers inwardly for a distance and then suddenly release them so that the plungers may be forced outwardly at this point after which the rollers

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plungers and projecting inwardly through the bottoms of said receptacles, a cam carried by said casing, shafts engaging the same, all of said shafts being threaded upon their free ends, and elongated nuts connecting the plunger-shafts with the cam-connecting shafts, substantially as described.

12. In a mechanism of the class described, the combination with a suitable casing, of receptacles movably mounted therein, a cam carried by said casing, plungers operable within said receptacles, shafts carried by said plungers and projecting inwardly through the bottoms of said receptacles, and threaded on their inner ends, shafts engaging said cam, projecting outwardly and provided with threads upon their outer ends running in an opposite direction to that of the threads of the plunger-shafts, elongated nuts threaded onto and inclosing the contiguous ends of said shafts, and means for preventing rotation of said shafts, substantially as described.

709,794. CONCRETE ARCH CONSTRUCTION. WALTER C. PARKER, Cleveland, Ohio. Filed Feb. 28, 1902. Serial No. 96,603. (No model.)

Claim.—1. In a concrete arch, the combination of bars transverse to the axis of the arch and passing through regions of tension in both intrados and extrados, and other bars extending longitudinally with the axis of the arch.

2. In a concrete arch, the combination of bars transverse to the axis of the arch and passing continuously through all the regions of tension in intrados or extrados of the arch, other transverse bars passing through regions of tension in both intrados and extrados of the arch, and longitudinal bars extending in the direction of the axis, substantially as described.

3. In a concrete arch, the combination of bars transverse to the axis and passing continuously through all the regions of tension in one side of the arch, other transverse bars in one of the sides of the arch and passing through part only of that side, and longitudinal bars extending in the direction of the axis.

4. In a concrete arch, the combination of bars transverse to the axis of the arch and passing continuously through all the regions of tension in one side thereof, other transverse bars in one of the sides of the arch and passing through part only of that side, and longitudinal bars attached to the transverse bars at points intermediate the tensional regions.

5. In a concrete arch, the combination of bars transverse to the axis of the arch and each passing continuously through regions of tension in both intrados and extrados, and other bars extending longitudinally with the axis of the arch, said longitudinal bars being attached to the transverse bars at points intermediate between the intrados and extrados tensional regions.

6. In a concrete arch, the combination of bars transverse to the axis of the arch in both intrados and extrados, the bars on one side extending continuously through all the regions of tension on that side, and those on the other side extending through a single tensional region and far enough beyond to give secure anchorage, and longitudinal bars attached to the continuous tensional bars, substantially as described.

7. In a concrete arch, the combination of bars transverse to the axis of the arch and extending continuously through all the regions of tension in one side of the arch, other transverse bars attached thereto and passing through the body of the arch and into the other side where they pass through a single tensional region, and longitudinal bars extending in the direction of the axis of the arch.

8. In a concrete arch, the combination of bars transverse to the axis of the arch in the intrados thereof, and other bars in the extrados thereof,

11. In a concrete arch, the combination of bars transverse to the axis of the arch and passing continuously through all the regions of tension in both intrados and extrados, with longitudinal bars extending in the direction of the axis.

12. In a concrete arch, the combination of bars transverse to the axis of the arch and passing continuously through all the regions of tension in both intrados and extrados, with longitudinal bars extending in the direction of the axis and being attached to the transverse bars at points intermediate the tensional regions, substantially as described.

13. In a concrete arch, the combination of bars transverse to the axis of the arch and passing continuously through regions of tension in both intrados and extrados, and other bars extending longitudinally with the axis of the arch, substantially as described.

14. In a concrete arch, the combination of bars transverse to the axis of the arch and extending continuously through all the regions of tension in one side of the arch, other transverse bars attached thereto and passing through the body of the arch and into the other side, and longitudinal bars extending in the direction of the axis.

709,795. STEAM-ENGINE GOVERNOR. RALPH J. PATTERSON, Woburn, Mass. Filed Apr. 12, 1901. Serial No. 55,602. (No model.)

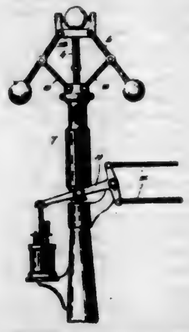

Claim.—1. In an engine-governor, a governor-spindle, centrifugal arms pivoted thereto, vertically-disposed arms rigidly but detachably connected to the said centrifugal arms at their pivotal point of connection with the governor-spindle, an inertia-weight loosely carried by said governor-spindle, and flexible connections between the said vertically-disposed arms and the inertia-weight.

2. In a centrifugal governor, a governor-spindle, centrifugal levers connected thereto, vertical arms detachably secured to the said centrifugal levers at their pivotal points, a head mounted for rotation on said governor-spindle and having oppositely-disposed arms extending therefrom, inertia-weights on said arms, and flexible connections between said vertically-disposed arms and the arms supporting the inertia-weights.

3. In a centrifugal governor, a governor-spindle, centrifugal levers connected thereto, vertical arms detachably secured to the said centrifugal levers at their pivotal points, a head mounted for rotation on said governor-spindle and having oppositely-disposed arms extending therefrom, inertia-weights on said arms, links pivotally connected to said vertically-disposed arms, and to the arms supporting the inertia-weights.

4. In a centrifugal governor, a governor-spindle, centrifugal levers connected thereto, vertical arms detachably secured to the said centrifugal levers at their pivotal points, a head mounted for rotation on said governor-spindle and having oppositely-disposed arms extending therefrom, inertia-weights on said arms, links pivotally connected to said vertically-disposed arms and to the arms supporting the inertia-weights, the dis-

tance between the axis of the governor-spindle and the point of connection between the said links and the arms supporting the inertia-weights being equal to the distance between the axis about which the centrifugal levers turn and the point of pivotal connection between the said links and the vertically-disposed arms.

5. In an apparatus of the class described, a centrifugal governor, combined with a dash-pot connected to the reach-rods of the engine, said dash-pot comprising a cylinder containing a resistance medium, a piston in said cylinder, and adjustable mechanism to independently regulate the speed of the piston in each direction, whereby the said piston may be made to move more freely in one direction than in the other.

6. In an apparatus of the class described, a centrifugal governor, an inertia device carried thereby, combined with a dash-pot connected to the reach-rods of the engine, said dash-pot comprising a cylinder containing a resistance medium, a piston in said cylinder, and adjustable mechanism to independently regulate the speed of the piston in each direction, whereby the said piston may be made to move more freely in one direction than in the other.

7. A dash-pot for engine-governors, comprising a cylinder containing a resistance medium, a piston working in said cylinder, said piston having two ports or openings therethrough, and spring-pressed valves controlling said ports and openings in opposite directions, the stems of said valves extending through the head of the cylinder.

8. A dash-pot for engine-governors, comprising a cylinder containing a resistance medium, a piston working in said cylinder, said piston having two ports or openings therethrough, spring-pressed valves controlling said ports and opening in opposite directions, and means operable from the outside of the cylinder to vary the tension on the two springs independently, whereby the piston may be made to move more freely in one direction than in the other.

9. A dash-pot for engine-governors, comprising a cylinder containing a resistance medium, a piston in said cylinder having two ports therein, spring-controlled valves controlling said ports, said valves opening in opposite directions and having their stems projecting through the head of the cylinder, and means for adjusting the tension of the springs, whereby the valves may be so regulated that the piston will move freely in one direction but will be retarded in its movement in the opposite direction.

10. A dash-pot for engine-governors, comprising a cylinder containing a resistance medium, a piston in said cylinder having two ports therein, valves controlling said ports and opening in opposite directions, each valve being carried by a stem which projects through the head of the cylinder, a cross-piece fast on the piston-rod, and means for yieldingly connecting said valve-stems to said cross-piece.

11. In an engine-governor, a governor-spindle, weighted centrifugal levers pivoted thereto, vertically-disposed arms detachably secured to said centrifugal levers at their pivotal point, an inertia-weight loosely carried by said governor-spindle, and flexible connections between the said arms and the inertia-weight, combined with a dash-pot connected to the governor, said dash-pot comprising a cylinder containing a resistance medium, a piston working therein, said piston having two ports, spring-controlled valves controlling said ports, and opening in opposite directions, and means for adjusting the tension of the springs.

12. In an engine-governor, a governor-spindle, weighted centrifugal levers pivoted thereto, vertically-disposed arms rigidly but detachably secured to said centrifugal levers, said vertical arms extending upwardly beyond the pivotal points of the said centrifugal levers, an inertia-weight loosely carried by said governor-spindle, and flexible connections between said vertically-disposed arms and the inertia-weight.

709,796. METHOD OF MAKING HOLLOW GLASS ARTICLES. DANIEL C. RIPLEY, Pittsburg, Pa., assignor to United States Glass Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Oct. 23, 1901. Serial No. 79,511. (No model.)

Claim.—1. The method of forming a blank for cut-glass articles, consisting in expanding glass within a mold and simultaneously forming small projections or indentations upon its exterior, and then cutting a pattern thereon using said projections or indentations as guides; substantially as described.

2. The method of forming hollow glass articles, consisting in feeding glass upon a base within a frame, rotating the base and surrounding the glass within the frame, bringing the frame with the contained glass plate into opposition to a mold, and forcing the plate into the mold-cavity; substantially as described.

3. The method of forming hollow glass articles, consisting in spreading plastic glass into plate form with one face out of contact with any forming-surface, and then forcing the glass plate while still plastic into a matrix with the side of the plate which was in contact with the forming-surface directed toward the matrix; substantially as described.

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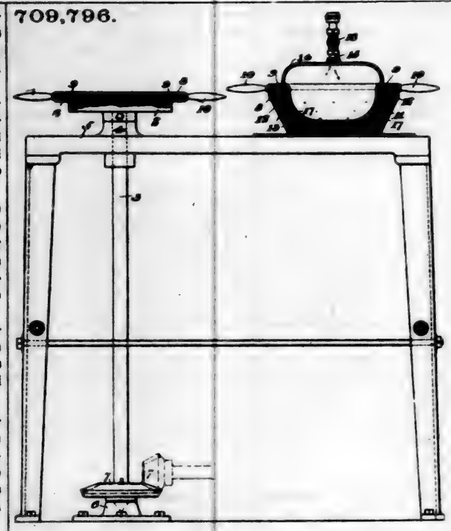

709,797. APPARATUS FOR THE MANUFACTURE OF GLASSWARE. DANIEL C. RIPLEY, Pittsburg, Pa., assignor to United States Glass Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Nov. 13, 1901. Serial No. 82,103. (No model.)

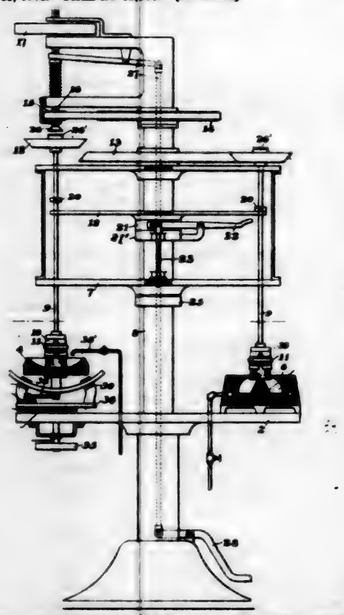

Claim.—1. Apparatus for finishing blown-glass articles, comprising at successive stations a cracking-off and a finishing device, and a carrier having inverted dependent holders adapted to carry glass articles successively to said stations; substantially as described.

2. Apparatus for finishing blown-glass articles, comprising at successive stations a cracking-off, a grinding, and a fire-finishing device, and a carrying-frame having inverted dependent holders adapted to carry glass articles at their lower ends successively to said stations; substantially as described.

3. Apparatus for finishing glass articles, comprising at successive stations a cracking-off, a grinding, a drying, and a fire-finishing device, and a carrier having inverted holders by which glass articles are carried successively to said stations; substantially as described.

4. Apparatus for finishing glass articles, comprising at successive stations, a grinding and a fire-finishing device, and a carrier having inverted dependent holders adapted to carry glass articles successively to said stations; substantially as described.

5. Apparatus for finishing glass articles, comprising at successive stations, a cracking-off, a grinding, and a fire-finishing device, and a carrier having inverted dependent holders adapted to carry glass articles successively to said stations, substantially as described.

6. Apparatus for finishing glassware, comprising stations at which glass articles are successively treated by devices situate thereat, of spindles carrying the glass articles, a rotary frame for the spindles, and means for raising the spindles and the glass articles above the level of the said devices; substantially as described.

7. A drying and wiping device for glass articles comprising an air-blast pipe, and a rotary brush, the one adapted to direct a blast of air upon the article, and the other to brush the surface of the same; substantially as described.

8. Apparatus for finishing blown-glass articles, comprising at successive stations, a cracking-off, a grinding, and a finishing device, and a carrier having inverted dependent holders adapted to carry glass articles successively to said stations; substantially as described.

9. Apparatus for finishing blown-glass articles, comprising at successive stations a cracking-off, a grinding, and a fire-finishing device, a chuck arranged to hold the article, and a carrier by which the chuck is carried in inverted dependent position successively to said stations; substantially as described.

10. Apparatus for finishing glass articles, comprising at successive stations a cracking-off, a grinding, a drying, and a fire-finishing device, a chuck arranged to hold the article, and a carrier by which the chuck is carried in inverted dependent position successively to said stations; substantially as described.

11. Apparatus for finishing glass articles comprising at successive stations a grinding and a fire-finishing device, a chuck arranged to hold the article, and a carrier by which the chuck is carried in inverted dependent position successively to said stations; substantially as described.

709,798. RAILWAY SIGNALING APPARATUS. EDWARD ROWE, Indiana, Pa. Filed June 1, 1901. Serial No. 62,785. (No model.)

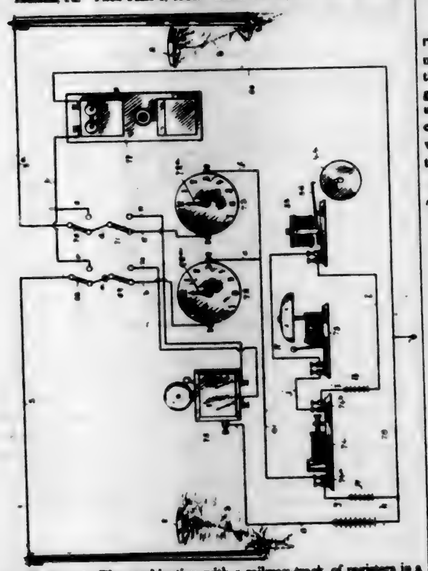

Claim.—1. The combination with a railway-track, of registers in a station or tower, contacts arranged adjacent the track and in circuit with the registers, a locomotive having a contact adapted to engage with the first-named contact, and an alarm in the locomotive to operate, said operation being controlled by the operator in the station.

2. The combination with a railway-track, of registers, contacts arranged adjacent the track in circuit with the registers, a locomotive having a contact adapted to engage with the first-named contact, and an alarm in the locomotive, a second circuit provided for said alarm, and an increased battery-power in the path of the second circuit whereby a current may be generated in the second circuit to actuate the alarm.

3. The combination with the railway-track, of registers, contacts arranged adjacent the track in circuit with the registers, a locomotive having a contact adapted to engage with the first-named contact and an alarm in the locomotive, a second circuit provided for said alarm and having an increased battery-power whereby the alarm in the locomotive will ring only when the second circuit is closed.

4. The combination with a railway-track, of registers in a station or tower, contacts arranged adjacent the track and in circuit with the registers, a locomotive having a contact adapted to engage the first-named contact, an alarm in the locomotive adapted to operate, said operation being controlled by the operator in the station, and an annunciator in the station to show that the alarm has been sounded on the locomotive.

5. The combination with a railway-track, of registers in a station or tower, contacts arranged adjacent the track and in circuit with the registers, a locomotive having a contact adapted to engage the first-named contact, and a circuit arranged, whereby communication may be had between the operator in the station and an operator in the locomotive.

6. A system comprising registers in a tower or station, a circuit provided for the registers, contacts arranged adjacent a track in the path of the circuit, a second circuit including an alarm arranged in a locomotive, and an annunciator in the tower, said circuit being designed to be closed when the first circuit is broken so as to actuate the alarm and the annunciator, and another circuit including wires whereby communication may be had between the operator in the tower and the operator in the locomotive when the first two circuits are cut out.

7. A system comprising a circuit including registers, and a receiving device arranged in a tower or station, contacts in the path of the circuit and arranged adjacent a railway-track, a second circuit including an alarm arranged in a locomotive, and an annunciator in the tower, said circuit being designed to be closed when the first circuit is broken so as to actuate the alarm and the annunciator, and another circuit including wires whereby communication may be had between the operator in the tower and the operator in the locomotive, when the first two circuits are cut out.

709,799. METHOD OF IMPREGNATING WOOD. MAX RÜPING, Charlottenburg, Germany. Filed Mar. 31, 1902. Serial No. 100,902. (No specimens.)

Claim.—A method of impregnating wood and other porous material consisting in subjecting the material to be impregnated before its treatment with the impregnating liquid, to a strong air or gas pressure, so that the cells, pores or cavities are first filled with highly-compressed air or gas which after the material has been treated with impregnating liquid under still greater pressure, presses by its expansion when the pressure is cut off and if desired a vacuum created the excess of impregnating liquid wholly or partly out of the cells, pores or cavities of the material substantially as described.

709,800. AUTOMATIC RELEASING DEVICE FOR WINDOW-SASHES. CHARLES RUPP, Philadelphia, Pa., assignor to J. S. Thorne Company, Philadelphia, Pa., a Corporation of Pennsylvania. Filed June 7, 1902. Serial No. 110,687. (No model.)

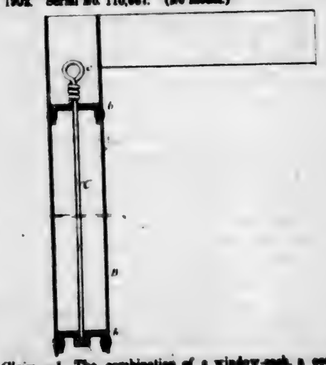

Claim.—1. The combination of a window-sash, a counterweight having means for operatively connecting it to said sash, said means be-

ing detachably held to the sash at a point adjacent to its lower edge, substantially as described.

2. The combination of a window-sash, a counterweight and a connection between said two members, the same having means attaching it to the sash at a point adjacent to the lower edge thereof, and being constructed to automatically operate to disconnect said sash from its counterweight upon a predetermined rise of pressure, substantially as described.

3. The combination of a window-sash, a counterweight and a connection between said two members, with a device normally attaching said connection to the lower portion of said sash and including fusible material whereby the sash is disconnected from the counterweight when said device is exposed to a predetermined rise of temperature, substantially as described.

4. The combination of a window-sash, a counterweight therefor, a connection between said two members, a portion of said connection extending to the lower part of the sash, a body of material upon the connection whereby the latter is attached to said sash, said material having a relatively low fusing-point, substantially as described.

5. The combination of a sash, a counterweight therefor, a connection extending between said two members, said connection passing through a side member of the sash to the lower portion thereof, with a body of the material of relatively low fusing-point holding the connection to the sash, substantially as described.

6. The combination of a window-sash, a counterweight therefor, a chain extending between said two members, a portion of the chain passing through the side member of the sash to the lower edge thereof and having a body of material of relatively low fusing-point normally holding it to the sash, substantially as described.

7. The combination of a window-sash, a counterweight therefor, a chain connecting said two members, said chain passing through one of the side members of the sash, and being held to the sash by a body of material of relatively low fusing-point having a body of relatively infusible material substantially surrounding it, substantially as described.

8. The combination of a frame, a window-sash mounted therein, rods extending through the side members of the sash, counterbalancing devices attached to the upper ends of said rods and a flexible band attached to the lower end of the rods and bearing against the outer side of the sash, substantially as described.

9. The combination of a frame, a window-sash mounted therein, rods extending through the side members of the sash, counterbalancing devices attached to the upper portions of said rods, the lower ends of the rods being roughened and a flexible band secured to the roughened portions of the rods and bearing against the outer side of the sash, substantially as described.

709,801. PROPELLER. DAVID SELKIRK, Brooklyn, N. Y. Filed Nov. 21, 1901. Serial No. 83,197. (Model.)

Claim.—1. A propeller-blade provided at one edge with lateral curved blades of varying pitch extending at an angle to the working face of the blade substantially as described.

2. A propeller-blade provided with lateral blades extending from one edge thereof, said lateral blades arranged at an angle to the working face of the propeller-blade.

3. A propeller-blade having extending from one edge thereof, laterally-curved blades of varying pitch.

709,802. BOWLING-ALLEY. HENRY J. SHEELAN, Brooklyn, N. Y. Filed July 3, 1902. Serial No. 114,351. (No model.)

Claim.—1. In a bowling-alley, the combination of a playing-floor provided with longitudinal slots, pins upon the upper surface of the floor, an operating device extending beneath the floor, and cords extending through the slots and connecting the pins with the operating device, said cords having free movement in the slots when the pins are forced back under the impact of a ball, substantially as described.

2. In a bowling-alley, the combination of a playing-floor provided with longitudinal slots, pins upon the upper surface of the floor, an operating device extending beneath the floor, and elastic cords extending through the slots and connecting the pins with the operating device, substantially as specified.

3. In a bowling-alley, the combination of a playing-floor provided with longitudinal slots, pins upon the upper surface of the floor, an operating device extending beneath the floor, and cords extending through the slots and connecting the pins with the operating device and having elastic sections, substantially as set forth.

709,803. OIL-BURNER. JOHN P. SWANSON, Oakland, Cal. Filed June 6, 1901. Serial No. 63,403. (No model.)

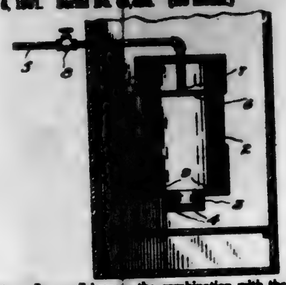

Claim.—In an oil-burner, the combination with the shell having a free and unobstructed inner surrounding vertical wall, a flat ledge secured to and surrounding the bottom of the shell having a depending perforated nipple, a central opening in the ledge in communication with the nipple, of an oil-pipe having a supply-opening, said pipe projecting centrally within the shell and provided on its free end with a disk arranged out of contact with the wall of the shell and made of a diameter larger than the opening in the ledge so as to permit of the oil from said disk to flow therefrom to said ledge, substantially as specified.

709,804. SIX-GUN. HENRY B. SWEENY, Gunnedah, N. Y. Filed Nov. 13, 1901. Serial No. 82,132. (No model.)

Claim.—1. An ice-run, comprising a permanent inclined delivery-chute, a pair of distributing-chutes, the lower chute normally occupying an aligned relation to the delivery-chute and the upper chute being carried

to a point beyond the lower chute, and a switch pivotally supported on the lower chute and having its pivoted end in aligned relation to the upper distributing-chute, the free end of said switch being shiftable relative to the delivery-chute and adapted to bridge the space between said delivery-chute and that end of the upper distributing-chute which has a disaligned relation to said delivery-chute.

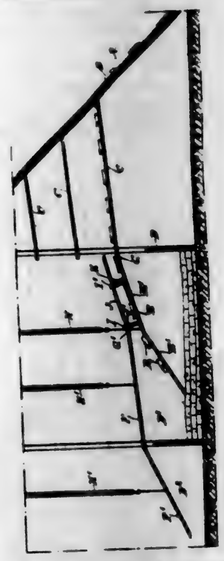

2. An ice-run having a distributing-chute, upstanding pivotal and guide posts on said chute, an overlying distributing-chute, a switch pivoted on said pivotal posts to occupy an aligned relation to the overlying chute and shiftably fitted between the guide-posts, means for adjusting said switch, and suitable delivery means to direct the load to one or the other of the chutes.

3. An ice-run having a series of permanent delivery-chutes, a pair of connected distributing-chutes having an intermediate adjustable switch, and means for vertically adjusting the connected chutes and the switch to bring the same into operative relation to either of the permanent delivery-chutes.

4. An ice-run having a series of permanent delivery-chutes, a pair of connected distributing-chutes, the lower of which has an inclined upper section extending beyond the upper end of the upper distributing-chute, means for suspending and vertically adjusting the pair of chutes to bring them into operative positions relative to either of the delivery-chutes of the series, a switch mounted on the lower distributing-chute, with a pivoted end in flank relation to the upper distributing-chute, and extending over the projecting end of the lower chute, and means for adjusting the switch.

5. An ice-run, provided with a series of fixed chutes, two distributing-chutes, one arranged above and extending beyond the other, a switch pivoted on one of said chutes at a suitable point above the bottom thereof, means for adjusting the switch into an open or closed position, and means for adjusting said distributing-chutes and the switch into several operative positions and with relation to the series of fixed chutes.

709,805. ENVELOP. FRANK R. STRAHIN and CLYDE R. WEBER, Greeley, Colo.; said Weber assignor to said Strahin. Filed Oct. 22, 1901. Serial No. 79,726. (No model.)

Claim.—The combination with an ordinary envelop having directly marked on the upper left-hand corner of the face thereof the name and address of the writer, of a rectangular strip of paper having on one portion printed instructions provided with perforations surrounding the same, and a continuous surrounding gummed marginal edge whereby to secure the strip over and around the name and address of the writer so as to conceal the same from view, and the said printed instructions adapted to be detachably disconnected from the said gummed marginal edge by means of said perforations thereby exposing the said name and address of the writer, substantially as specified.

709,805.

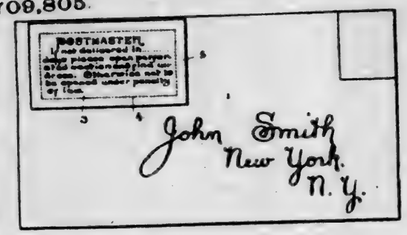

709,806. ELECTRICAL INDICATOR. HORATIO S. TITUS, Los Angeles, Cal., assignor of five-sixths to Frank F. Wear, Adolph Gensenderfer, and William Barker, Los Angeles, Cal. Filed Nov. 20, 1901. Serial No. 84,138. (No model.)

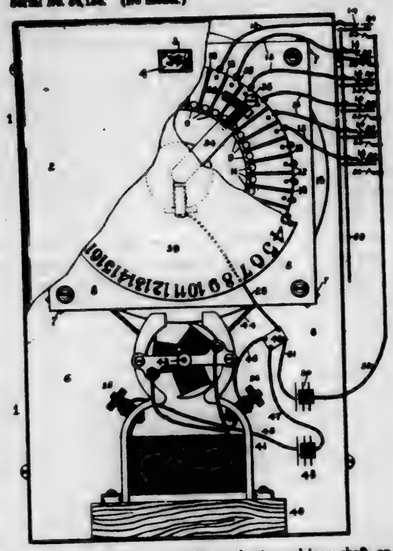

Claim.—1. An electrical indicator having a driven shaft, an indicator-shaft, a dial thereon, segments having connections, circuit-closers having connections, an arm on the indicator-shaft in contact with said segments and having connections and means for forcing the indicator-shaft normally into contact with the driven shaft.

2. An electrical indicator having a driven shaft, an indicator-shaft, a dial thereon, segments having connections, circuit-closers having connections, an arm on the indicator-shaft in contact with said segments and having connections and an electromagnetic clutch for forcing the indicator-shaft normally into contact with the driven shaft.

3. An electrical indicator provided with a driven shaft carrying a sheave-wheel, a motor having an armature-shaft carrying a sheave-wheel belted to the first wheel, connections between the motor and the source of electrical supply, an indicator-shaft, a dial thereon, an arm on the latter shaft constructed to make contact with the terminals of electrical connections and means for causing said shafts to rotate together, so that a predetermined character on the dial may be displayed.

4. An electrical indicator provided with a motor having connection with the source of electrical supply and having an armature-shaft, a sheave-wheel thereon, a driven shaft, a sheave-wheel on the latter belted to the first wheel, whereby the driven shaft is rotated when the motor-circuit is closed and means for closing said circuit.

5. An electrical indicator provided with a driven shaft carrying a contact-disk, means for rotating said shaft, an indicator-shaft, terminals having connection with the source of electrical supply, a device on the indicator-shaft to make connection with said terminals and means on the latter shaft having electrical connection therewith and with said source of supply, whereby said means is caused to contact and move with said disk when the circuit through said means is closed.

6. An electrical indicator provided with a driven shaft carrying a contact-disk, means for rotating said shaft, an indicator-shaft, terminals having connection with the source of electrical supply, circuit-closers in said connections, a device on the indicator-shaft to make connection with said terminals, and means on the indicator-shaft having electrical connection therewith and with said source of supply, whereby said means is caused to contact with said disk when said circuit-closers are operated.

7. An electrical indicator provided with a driven shaft carrying a contact-disk, means for rotating said shaft, an indicator-shaft, terminals having connection with the source of electrical supply, a device on the indicator-shaft to make contact with said terminals and an electromagnetic clutch having electrical connection with the latter shaft and with said source of supply, constructed to contact and move with said disk when the circuit is closed through said clutch.

8. An electrical indicator having a casing provided with a vision-opening, a motor having electrical connection with the source of supply and having an armature-shaft carrying a wheel, a driven shaft carrying a wheel belted to the first wheel and having a contact-disk, an indicator-shaft carrying a dial, terminals having connection with the source of supply, circuit-closers in said connections, a device on the indicator-shaft to make contact with said terminals and means on said shaft having connections, whereby when the circuit-closers are operated said means is caused to contact and move with said disk.

9. An electrical indicator having a casing provided with a vision-opening, a motor having electrical connection with the source of supply and having an armature-shaft carrying a wheel, a driven shaft carrying a wheel belted to the first wheel and having a contact-disk, an indicator-shaft carrying a dial, terminals having connection with the source of supply, circuit-closers in said connections, a device on the indicator-shaft to make contact with said terminals and an electromagnetic clutch on said shaft having connections, whereby when the circuit-closers are operated said clutch is caused to contact and move with said disk.

709,807. LEVER MECHANISM. HARRIS J. TOOT, Buffalo, N. Y., assignor to Buffalo Pitts Company, Buffalo, N. Y., a Corporation of New York. Filed Sept. 30, 1901. Serial No. 76,681. (No model.)

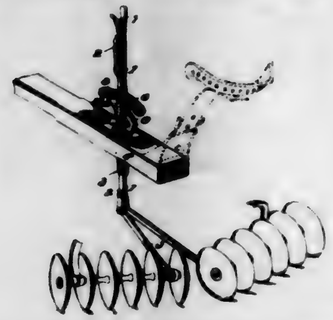

Claim.—1. The combination with a main lever, of a lever mounted on one side of and carried by said main lever, said second lever having a tooth on one side, means for holding the main lever, and a segmental rack mounted on each main lever with which the teeth of the other lever engages, said latter lever being movable laterally away from the main lever to disengage the teeth from each segmental rack, as set forth.

2. The combination with a main lever, of a lever mounted on one side of and carried by said main lever, said second lever having a tooth on one side, means for holding the main lever, a segmental rack on one side of each main lever, having a guide-bar parallel therewith, the other lever being movable between each rack and guide-bar, and a spring bearing against the guide-bar for holding the teeth of the lever in engagement with each rack, substantially as set forth.

709,808. CARBORUNDUM ARTICLES AND PROCESS OF MAKING SAME. FRANK J. TONE, Niagara Falls, N. Y., assignor to the Carborundum Company, Niagara Falls, N. Y., a Corporation of Pennsylvania. Filed Jan. 2, 1901. Serial No. 41,288. (No specimens.)

Claim.—1. The method herein described which consists in compressing into coherent form a mass containing non-crystalline material adapted under heat to form crystalline carbid, and then crystallizing it by subjecting it to intense heat; substantially as described.

2. The method herein described which consists in compressing into coherent form a body of amorphous carbid and then crystallizing it by subjecting it to intense heat; substantially as described.

3. As a new article of manufacture, a coherent crystallized body containing non-crystalline carbid having a porous structure and formed by crystallization of a compressed mass of carbid-forming material; substantially as described.

4. The method herein described which consists in compressing into coherent form a mixture composed partly of amorphous carbid and partly of the crude materials from which carbid is made, and then crystallizing such body by subjecting it to intense heat; substantially as described.

709,809. WATER-ELEVATOR. LUTHER WELLS, Versailles, Ky. Filed Nov. 5, 1901. Serial No. 81,314. (No model.)

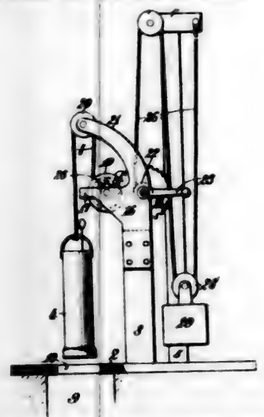

Claim.—In a water-elevator, the combination of a standard, a bracket having side cheeks or plates rigidly fastened to the opposite sides of said standard, and a transverse bar united to said side cheeks or plates said cheeks or plates having upwardly and outwardly projecting arms, a drum supported between said plates at the forward side thereof, a guide-pulley supported between said arms, a rope wound on said drum and extending upwardly therefrom and then downwardly and passing over said pulley, a bucket carried by said rope and having a valve, means for operating said valve, an arm loosely mounted upon the shaft of said drum having a wedge adapted to be inserted between one end of the drum and the adjacent cheek or plate of said bracket, a weight provided with a pulley, a second drum also supported between said cheeks or plates and operatively connected with the other drum and having a hand-crank, a pulley supported above said second drum, and a rope wound upon said second drum and extending upward therefrom over said last-mentioned pulley and then downward and under the pulley on said weight and then upward and fastening at a suitable point.

709,810. PRINTING-MACHINE. FRANK J. WEBER, Chicago, and BYRON B. CARTER, Hinsdale, Ill., assignors, by mesne assignments, to the D. & W. Manufacturing Company, Chicago, Ill., a Corporation of Illinois. Filed Aug. 13, 1900. Serial No. 26,736. (No model.)

Claim.—1. In a machine of the type described the combination of a printing-drum, means to impart a reciprocating motion to said drum, said means comprising rods fitted to and longitudinally movable in suitable bearings in the machine-frame to which said drum is rigidly secured, a cross-head secured to said rods, a toggle or toggles connected to said cross-head at one end and to the machine-frame at the other, means to flex and straighten said toggle or toggles, a numbering mechanism comprising opposed number-wheels and platen-wheels, shafts supported so as to be movable toward and from each other on which said number-wheels and platen-wheels are carried, means, controlled by the movement of the printing-drum, for imparting movement to said shafts toward and from each other and for rotating said number-wheels and platen-wheels, a feed mechanism consisting of sectional feed-rolls and means for rotating said feed-rolls, a perforating cutter or cutters secured between sections of one of said feed-rolls and a groove or grooves adapted to receive said cutter or cutters formed in the opposed feed-roll, substantially as described.

2. In a machine of the type described, the combination of a printing-drum, means to impart a reciprocating motion to said drum, said means comprising rods fitted to and longitudinally movable in suitable bearings in the machine-frame to which said drum is rigidly secured, a cross-head secured to said rods, a toggle or toggles applied to said cross-head and means to straighten and flex said toggle or toggles, a numbering mechanism comprising opposed number-wheels and platen-wheels, shafts supported so as to be movable toward and from each other on which said number-wheels and platen-wheels are carried, means, controlled by the movement of the printing-drum for imparting movement to said shafts toward and from each other and for rotating said number-wheels and platen-wheels, a feed mechanism consisting of sectional feed-rolls and means for rotating said feed-rolls, a perforating cutter or cutters secured between sections of one of said feed-rolls and a groove or grooves adapted to receive said cutter or cutters formed in the opposed feed-roll, substantially as described.

bearings in the machine-frame to which said drum is rigidly secured, a cross-head to which said rods are secured, a toggle or toggles applied to said cross-head, means to straighten and flex said toggle or toggles, heads or disks revolubly supported at the ends of said printing-drum, inking-rolls held yieldingly in contact with the perimeter of said printing-drum and connected to said revolubly heads or disks, means to rotate said heads or disks, said means comprising a shaft revolubly mounted in arms carried on the rods which support the printing-drum, pinions on said shaft which engage gears on said heads or disks, a shaft secured against longitudinal movement in a suitable bearing in the machine-frame, a beveled gear splined to said shaft and maintained in permanent engagement with a beveled gear secured to the pinion-shaft and a beveled gear on said shaft so mounted in the machine-frame which engages a beveled gear on the main driving-shaft of the machine, a numbering mechanism comprising opposed number-wheels and platen-wheels, shafts supported so as to be movable toward and from each other on which said number-wheels and platen-wheels are carried, means, controlled by the movement of the printing-drum for imparting movement to said shafts toward and from each other and for rotating said number-wheels and platen-wheels, a feed mechanism consisting of sectional feed-rolls and means for rotating said feed-rolls, a perforating cutter or cutters secured between sections of one of said feed-rolls and a groove or grooves adapted to receive said cutter or cutters formed in the opposed feed-roll, substantially as described.

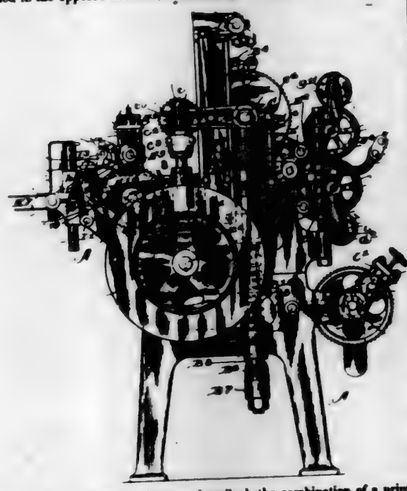

3. In a machine of the type described, the combination of a printing-drum, means to impart a reciprocating motion thereto, said means comprising rods fitted to and longitudinally movable in suitable bearings in the machine-frame to which said drum is rigidly secured, a cross-head secured to said rods, a toggle or toggles applied to said cross-head, means to straighten and flex said toggle or toggles, springs inserted between collars on said rods and a rigid portion of the machine-frame, a numbering mechanism comprising opposed number-wheels and platen-wheels, shafts supported so as to be movable toward and from each other, on which said number-wheels and platen-wheels are carried, means controlled by the movement of the printing-drum for imparting movement to said shafts toward and from each other to effect contact of said number-wheels and platen-wheels and means to regulate the approach of said shafts toward each other and for rotating said number-wheels and platen-wheels, a feed mechanism consisting of sectional feed-rolls and means for rotating said feed-rolls, a perforating cutter or cutters secured between sections of one of said feed-rolls and a groove or grooves adapted to receive said cutter or cutters formed in the opposed feed-roll, substantially as described.

4. In a machine of the type described, the combination of a printing-drum, means to impart a reciprocating movement thereto, said means comprising rods fitted to and longitudinally movable in bearings in the machine-frame to which said drum is rigidly secured, a cross-head secured to said rods, a toggle or toggles applied to said cross-head and means to straighten and flex said toggle or toggles, a numbering mechanism comprising opposed number-wheels and platen-wheels, shafts supported so as to be movable toward and from each other on which said number-wheels and platen-wheels are carried, means controlled by the movement of the printing-drum for imparting movement to said shafts toward and from each other and for rotating said number-wheels and platen-wheels, a feed mechanism consisting of feed-rolls and means for rotating said feed-rolls, a reciprocating cross-knife and means to impart a reciprocating motion thereto, both said feed-rolls and the cross-knife being actuated through the medium of levers pivoted upon the machine-frame to which oscillatory movement is imparted by means of sleeves pivoted to a stud or crank-pin on a driven shaft to which one end of each of said levers is fitted, substantially as described.

5. In a machine of the type described the combination with intermittently-driven feed-rolls, of constantly-driven delivery-rolls, said delivery-rolls being driven through the medium of a friction, manually-operated means to rotate said delivery-rolls independently of said driving mechanism and a tension operating in combination with the feed-rolls to maintain the paper taut through the machine, substantially as described.

6. In a machine for operating on a web of paper the combination of feed-rolls and a reciprocating cross-knife, means to impart an intermittent rotary movement to said feed-rolls and to reciprocate said cross-knife, said means comprising a driven shaft, a crank thereon, a stud or crank-pin secured in said crank, levers pivoted upon the machine-frame, an end of each of which is fitted to a sleeve pivoted upon said crank-pin or stud and operative connection between one of said levers and the feed-rolls and between the other of said levers and the reciprocating cross-knife, substantially as described.

7. In a machine for operating on a web of paper the combination with feed-rolls of means to rotate the same, said means comprising a driven shaft, a crank thereon, a sleeve pivoted on a stud or crank-pin in said crank, a lever pivoted adjacent to said crank and fitted to said sleeve and operative connection between said lever and said feed-rolls, said means comprising a ratchet-wheel and a pawl adapted to engage the teeth thereof, substantially as described.

8. In a machine for operating on a web of paper the combination with feed-rolls of means to rotate the same, said means comprising a driven shaft, a crank thereon, a sleeve pivoted on a stud secured in said crank, a lever pivoted adjacent to said crank and fitted to said sleeve and operative connection between said lever and the feed-rolls, said connection comprising a ratchet-wheel and a pawl adapted to engage the teeth thereof and a brake applied to said feed-rolls, substantially as described.

9. In a machine for operating on a web of paper the combination with feed-rolls and a reciprocating cross-knife, of means to rotate said rolls and to reciprocate said cross-knife, said means comprising a driven shaft, a crank thereon, sleeves pivoted to a stud or crank-pin in said crank, pivoted levers fitted to and longitudinally movable in said sleeves, operative connection between one of said levers and the feed-rolls, said connection comprising a ratchet-wheel and pawl and operative connection between the other of said pivoted levers and said cross-knife, said connection comprising studs fitted to and longitudinally movable in bearings in the machine-frame and to which said cross-knife is secured, a revolubly shaft, gears thereon adapted to engage teeth in said studs and a link connecting said lever with a crank on said shaft, substantially as described.

10. The combination with a cross-knife of means to reciprocate the same, said means comprising a driven shaft, a crank thereon, a stud or crank-pin secured in said crank, a sleeve pivoted on said stud or crank-pin, a pivoted lever fitted to said sleeve, studs to which said cross-knife is secured, pivoted gears adapted to engage teeth formed in said studs and operative connection between said gears and said pivoted lever whereby oscillatory movement will be imparted to said gears, substantially as described.

11. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platens, shafts movable toward and from each other on which said number-wheels and platens are carried, means controlled by the movement of the printing-drum for imparting movement to said shafts toward and from each other and means to rotate said shafts, substantially as described.

12. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, sleeves in which said shafts are revolubly mounted, studs on which said sleeves are longitudinally movable, levers pivoted to said sleeves, gear-teeth thereon which engage racks on the studs to which said sleeves are fitted, a pivoted lever or levers, links which connect said pivoted lever or levers with the levers pivoted upon the sleeves in which the number-wheel shafts are mounted and a link or links which connect said pivoted lever or levers with the housing of the printing-drum and means to rotate said number-wheel and platen shafts, substantially as described

13. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, sleeves in which said number-wheel and platen shafts are mounted, studs on which said sleeves are longitudinally movable, levers pivoted to said sleeves, gear-teeth thereon which engage

racks on said studs, a pivoted lever or levers, links which connect said pivoted lever or levers with the levers upon said sleeves and an adjustable link or links which connect said pivoted lever or levers with the bearing of the printing-drum and means to rotate said number-wheel and platen shafts, substantially as described.

14. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, sleeves in which said number-wheel and platen shafts are mounted, studs on which said sleeves are longitudinally movable, pivot-shafts mounted in said sleeves, levers secured to said pivot-shafts, gear-teeth thereon which engage racks formed on said studs, links which connect a lever on each of said shafts with a pivoted actuating-lever and a link which connects said actuating-lever with the bearing of the printing-drum and means to rotate said number-wheel and platen shafts, substantially as described.

15. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means controlled by the movement of the printing-drum to impart movement to said number-wheel and platen shafts toward and from each other and means to rotate said number-wheel shafts, said means comprising ratchet-wheels secured to said shafts, levers pivoted upon said shafts, pawls on said levers adapted to engage the teeth of said ratchet-wheels and means to impart oscillatory movement to said levers relatively to said number-wheel shafts, substantially as described.

16. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means controlled by the movement of the printing-drum to impart movement to said shafts toward and from each other and means to rotate said number-wheel shafts, said means comprising ratchet-wheels secured to said shafts, levers pivoted upon said shafts, pawls on said levers adapted to engage the teeth of said ratchet-wheels and links which connect said levers with a fixed support, substantially as described.

17. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means controlled by the movement of said drum to impart movement to said shafts toward and from each other, frictions applied to the number-wheel shafts and means to impart an intermittent movement to said shafts, substantially as described.

18. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising number-wheels and platens, shafts on which said number-wheels and platens are carried, means controlled by the movement of the printing-drum for imparting movement to said shafts toward and from each other, frictions applied to said shafts and means to rotate said shafts, said means comprising ratchet-wheels secured to said shafts and oscillating pawls adapted to engage the teeth thereof, substantially as described.

19. The combination with a printing-drum and means to impart a reciprocating movement thereto, of a numbering mechanism comprising opposed number-wheel and platens, shafts on which said number-wheels and platens are carried, means controlled by the movement of the printing-drum to impart movement to said shafts toward and from each other, frictions applied to said shafts and means to rotate said shafts, said means comprising ratchet-wheels adjustably secured to said shafts and oscillating pawls adapted to engage the teeth of said ratchet-wheels, substantially as described.

20. The combination with a printing-drum and means to impart a reciprocating movement thereto, of a numbering mechanism comprising opposed number-wheels and platen-wheels, shafts on which said number-wheels and platen-wheels are carried, sleeves in which said number-wheel and platen-wheel shafts are mounted, studs on which said sleeves are longitudinally movable, pivot-shafts mounted in said sleeves, levers secured to said pivot-shafts, gear-teeth thereon which engage racks in said studs, a lever on each of said pivot-shafts, links which connect said levers with an actuating-lever and a link which connects said actuating-lever with the printing-drum or the bearing thereof, frictions applied to the number-wheel and platen-wheel shafts, ratchet-wheels adjustably secured to said shafts, levers pivoted upon said shafts, pawls on said levers adapted to engage the teeth of said ratchet-wheels and links which connect said levers with a rigid support, substantially as described.

21. The combination with a printing-drum and means to impart a reciprocating movement thereto, of a numbering mechanism comprising opposed number-wheels and platens, shafts movable toward and from each other on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other, means to rotate said number-wheel shafts and means to apply ink to said number-wheels, said means comprising hollow ink-cylinders, pads secured to the perimeters thereof, holes or openings in said ink-cylinders adapted for the delivery of ink from the interior of said cylinders to said pads, rods on which said ink-cylinders are supported so as to be revolvable, the relation of parts being such that the pads on said ink-fountains will be in contact with the number-wheels and means to maintain said ink-cylinders in engagement with said number-wheels, substantially as described.

22. The combination with a printing-drum and means to impart reciprocating movement thereto, of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, bearing-blocks, which are movable toward and from each other to which said shafts are mounted, means controlled by the movement of the printing-drum for imparting movement to said bearing-blocks toward and from each other, means to rotate said number-wheel shafts and means to apply ink to said number-wheels, said means comprising hollow ink-cylinders, pads secured to the perimeters of said ink-cylinders, holes or openings in said ink-cylinders adapted to deliver ink from the interiors of said cylinders to said pads, rods secured in arms on said number-wheel-shaft bearing-blocks, on which said ink-cylinders are supported, the relation of parts being such that the pads on said ink-cylinders will be in contact with said number-wheels and flanges on said ink-cylinders adapted to embrace the sides of said number-wheels, substantially as described.

23. The combination with a printing-drum and means to impart reciprocating movement thereto, of a numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, bearing-blocks which are movable toward and from each other in which said number-wheel and platen shafts are mounted, means controlled by the movement of the printing-drum for imparting movement to said bearing-blocks toward and from each other, means to rotate said shafts and means to apply ink to said number-wheels, said means comprising hollow ink-cylinders, pads secured to the perimeters thereof, holes or openings in said ink-cylinders adapted to deliver ink from the interiors of said cylinders to said pads, rods secured in arms on said number-wheel-shaft bearing-blocks on which said ink-cylinders are supported, the relation of parts being such that the pads on said ink-cylinders will be in contact with said number-wheels, springs applied to said rods and adapted to maintain said ink-cylinders yieldingly in contact with said number-wheels and flanges on said ink-cylinders adapted to embrace the sides of said number-wheels, substantially as described.

24. The combination with a printing-drum and means to impart a reciprocating movement thereto of a numbering mechanism comprising opposed number-wheels and platen-wheels, shafts on which said number-wheels and platen-wheels are carried and on which they are longitudinally adjustable, means controlled by the movement of the printing-drum to impart movement to said shafts toward and from each other and means to rotate said shafts, substantially as described.

25. A numbering mechanism comprising opposed number-wheels and platens, shafts movable toward and from each other on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other and means to rotate said shafts, substantially as described.

26. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, sleeves in which said shafts are mounted, studs on which said sleeves are longitudinally movable, levers pivoted to said sleeves, gear-teeth thereon which engage racks on said studs, a pivoted actuating lever or levers, links which connect said levers so pivoted upon said sleeves with said actuating lever or levers, means to impart an oscillating movement to said actuating-levers and means to rotate said number-wheel shafts, substantially as described.

27. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, sleeves in which said shafts are mounted, studs on which said sleeves are longitudinally movable, levers pivoted to said sleeves, gear-teeth thereon which engage racks on said studs, a pivoted actuating lever or levers, links which connect said levers so pivoted upon said sleeves with said actuating lever or levers, means to impart an oscillating movement to said actuating lever or levers, means to adjust the approach of said number-wheels and platens toward each other and means to rotate said number-wheel shafts, substantially as described.

28. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, sleeves in which said shafts are mounted, studs on which said sleeves are longitudinally movable, pivot-shafts mounted in said sleeves, levers secured to said pivot-shafts, gear-teeth thereon which engage racks formed on said studs, links which connect a lever on each of said pivot-shafts with a pivoted actuating-lever, means to impart an oscillating movement to said actuating-lever and means to rotate said number-wheel shafts, substantially as described.

29. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other and means to rotate said shafts, said means comprising ratchet-wheels secured to said shafts, levers pivoted upon said number-wheel shafts, pawls on said levers adapted to engage the teeth of said ratchet-wheels and means to oscillate said levers relatively to said number-wheel shaft, substantially as described.

30. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other and means to rotate said number-wheel shafts, said means comprising ratchet-wheels secured to said shafts, levers pivoted upon said shafts, pawls on said levers adapted to engage the teeth of said ratchet-wheels and links which connect said levers with a fixed support, substantially as described.

31. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels are carried, means to impart movement to said shafts toward and from each other, a friction applied to the number-wheel shaft and means to impart rotary movement thereto, substantially as described.

32. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other, frictions applied to said shafts and means to rotate said shafts, said means comprising ratchet-wheels secured to said shafts and oscillating pawls adapted to engage the teeth of said ratchet-wheels, substantially as described.

33. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other, frictions applied to said shafts and means to rotate said shafts, said means comprising ratchet-wheels adjustably secured to said shafts and oscillating pawls adapted to engage the teeth of said ratchet-wheels, substantially as described.

34. A numbering mechanism comprising opposed number-wheels and platen-wheels, shafts on which said number-wheels and platen-wheels are carried, sleeves in which said number-wheel and platen-wheel shafts are mounted, studs on which said sleeves are longitudinally movable, pivot-shafts mounted in said sleeves, levers secured to said pivot-shafts, gear-teeth thereon which engage racks on said studs, a lever on each of said pivot-shafts, links which connect said levers with an actuating-lever, means to impart an oscillating movement to said actuating-lever, frictions applied to said number-wheel and platen-wheel shafts, ratchet-wheels adjustably secured to said shafts, levers pivoted upon said shafts, pawls on said levers adapted to engage the teeth of said ratchet-wheels and links which connect said levers with a fixed support, substantially as described.

35. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other, means to rotate said number-wheel shafts and means to apply ink to said number-wheels, said means comprising hollow ink-cylinders, pads secured to the perimeters thereof, holes or openings in said ink-cylinders adapted for the delivery of ink from the interiors of said cylinders to said pads, rods on which said ink-cylinders are supported so as to be revolvable and means to maintain said ink-cylinders in engagement with said number-wheels, substantially as described.

36. A numbering mechanism comprising opposed number-wheels and platens, means to impart relative movement to said number-wheels and platens toward and from each other, means to rotate said number-wheels and means to apply ink thereto, said means comprising revolvable hollow ink-cylinders, pads secured to the perimeters of said ink-cylinders, holes or openings in said ink-cylinders adapted for the delivery of ink from the interiors of said cylinders to said pads and means to maintain said ink-cylinders in contact with said number-wheels, substantially as described.

37. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, means to impart movement to said shafts toward and from each other, means to rotate said shafts and means to apply ink to said number-wheels, said means comprising hollow ink-cylinders revolubly supported with their perimeters in contact with said number-wheels, pads secured to the perimeters of said ink-cylinders, holes or openings in said ink-cylinders adapted for the delivery of ink from the interiors of said cylinders to said pads and means to maintain said ink-cylinders in contact with said number-wheels, substantially as described.

38. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, bearing-blocks which are movable toward and from each other to which said shafts are mounted, means to impart movement to said bearing-blocks toward and from each other, means to rotate said number-wheel shafts and means to apply ink to said number-wheels, said means comprising hollow ink-cylinders, pads secured to the perimeters thereof, holes or openings in said ink-cylinders adapted to deliver ink from the interiors of said cylinders to said pads, rods secured in arms on said number-wheel-shaft bearing-blocks on which said ink-cylinders are supported and flanges on said ink-cylinders which embrace the sides of said number-wheel shafts, substantially as described.

39. A numbering mechanism comprising opposed number-wheels and platens, shafts on which said number-wheels and platens are carried, bearing-blocks in which said number-wheel and platen shafts are mounted, means to impart movement to said bearing-blocks toward and from each other, means to rotate said shafts and means to apply ink to said number-wheels, said means comprising hollow ink-cylinders, pads secured to the perimeters thereof, holes or openings in said ink-cylinders adapted to deliver ink from the interiors of said cylinders to said pads, rods secured in arms on said number-wheel-shaft bearing-blocks on which said ink-cylinders are revolubly supported, springs applied to said rods and adapted to maintain said ink-cylinders yieldingly in contact with said number-wheels and flanges on said ink-cylinders adapted to embrace the sides of said number-wheels, substantially as described.

40. In a machine for operating on a web of paper, the combination with feed-rolls, means to rotate the same and a reciprocating cross-knife, of a support beneath said cross-knife and fingers on said cross-knife which deliver the sheets of paper severed by said cross-knife to said support, substantially as described.

709,811. MACHINE FOR CUTTING COCOANUTS. FRANKLIN BAKER, Jr., and EDWARD J. FRITSCH, Philadelphia, Pa.; said Fritsch assignor to said Baker. Filed Oct. 20, 1900. Serial No. 34,093. (No model.)

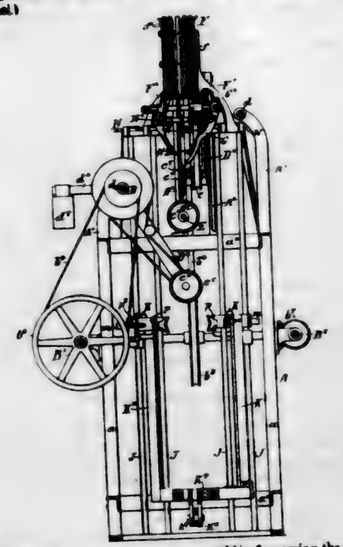

Claim.—1. The combination in a machine for sawing the shells of cocoanuts, of a number of saws placed one before the other along the line of motion of a cocoanut through the machine, means for gripping the cocoanut and causing different portions of its surface to pass successively into contact with said saws, substantially as described.

2. The combination in a machine for sawing the shells of a cocoanut, of a number of saws arranged one before the other along the line of motion of the cocoanuts through the machine so that they will operate successively upon a cocoanut passed before them, and a carrier for moving the cocoanuts successively in the paths of the saws and causing different portions of their surfaces to contact successively with said saws, with means for limiting the depth of the cut of said saws, substantially as described.

3. The combination in a cocoanut-shell-cutting machine, of saws carried by yielding bearings, said saws having their axes placed in different but parallel planes, a hopper and means for gripping the cocoanut and carrying it from the hopper past the saws, said saws being arranged to contact successively with different portions of the surface of a cocoanut-shell, substantially as described.

4. The combination of saws mounted on yielding bearings, means for driving the saws, a hopper having yielding side members movable parallel to themselves, whereby the hopper is made to accommodate different sizes of cocoanuts, with means for gripping the cocoanuts and carrying them from the hopper past the saws, substantially as described.

5. The combination in a cocoanut-cutting machine, of saws and gripping mechanism for holding the cocoanut during its passage through the machine, said mechanism including spring-plungers movable in lines at right angles to the line of motion of the cocoanuts through the machine, with means for operating the same, substantially as described.

6. The combination in a machine for cutting cocoanuts, of a hopper, series of saws mounted on yielding bearings, said saws being arranged successively and around the line of motion of the cocoanut through the machine, with carriers for moving the cocoanuts successively from the hopper past the saws, substantially as described.

7. The combination in a machine for sawing cocoanuts, of a hopper, saws for cutting the shell of a cocoanut, carriers for moving the cocoanuts from the hopper past the saws, a set of fingers constructed to retain the cocoanuts in the hopper until one is gripped by the carriers, and a second set of fingers constructed to act at a level different from the first set to retain successive cocoanuts within the hopper, while the first set of fingers is open to permit the removal of a cocoanut by the carriers, substantially as described.

8. The combination in a machine for sawing cocoanuts, of a hopper, two sets of fingers directly under the hopper, means for moving one set of fingers toward the center line of the hopper, while the other fingers are moved out from the central line, saws for severing the shell of the cocoanut arranged under the fingers, and carriers having jaws for gripping the cocoanut and carrying it from the hopper past the saws, substantially as described.

9. The combination of a hopper, a series of saws, carriers for the cocoanuts, each carrier having movable jaws, springs for projecting the jaws, detents for holding the jaws in the projected and in the retracted position, and stops for releasing the detents, substantially as and for the purpose set forth.

10. The combination of a hopper, saws, carriers for the cocoanuts, each carrier having jaws, springs for projecting the jaws, two cam-shaped detents, arms on the detents, springs for holding the detents in position, means for operating one of the detents at the end of the upstroke, means for operating the other detent at the end of the downstroke, and a cam for withdrawing the jaws, substantially as described.

11. The combination of a hopper, saws mounted in the hopper, carriers for carrying the cocoanuts from the hopper past the saws, each carrier having a jaw movable toward and from the center of the machine, springs for moving the jaws out toward the center of the machine, two detents, one for retaining the jaw in the projected position and one for retaining the jaw in its retracted position, a pin mounted above one of said detents, a plate, an arm attached to the plate and controlled by the cocoanut, an opening in the plate in line with the pin on the carrier when the cocoanut is not in position, a cam for retracting the jaw, and a stop for releasing the jaw prior to the action of the cam so as to release the cocoanut, substantially as described.

709,812. **DENTAL MOUTH-MIRROR.** GEORGE S. BENNETT and JOSEPH W. THATCHER, San Francisco, Cal.; said Bennett assignor, by direct and mesne assignments, to said Thatcher and August Meyenborg, San Francisco, Cal. Filed Aug. 31, 1901. Serial No. 73,986. (No model.)

Claim.—In a dental mouth-mirror, the combination of the metallic casing, a mirror carried thereby, a resistance-coil within said casing, a lining of insulating material entirely surrounding said resistance-coil, a tubular stem secured to said casing and provided with an internal insulating-sleeve, a metallic tube arranged within said sleeve, and having one of its ends electrically connected to a terminal of the coil, an insulating-tube arranged within said metallic tube, an insulating-handle secured to the tubular stem, a conductor extending through the handle and insulating-tube and connected to the opposite terminal of the coil, a conducting-plug carried by the handle, a conducting-wire electrically connected thereto, a spring-conductor secured to said plug and adapted to be moved into contact with the said metallic tube to complete the circuit, and a push-button carried by said spring and extending through an opening in the handle, substantially as specified.

709,818. **WASHING-MACHINE.** ANDREW G. BRANDT, Scranton, and DAVID L. GRIFFITHS, Olyphant, Pa.; said Brandt assignor to said Griffiths. Filed Feb. 12, 1902. Serial No. 93,734. (No model.)

Claim.—1. A washing-machine comprising a body having a lid or cover, a rotary lower rubber provided with a shaft or stem, an upper shaft mounted on the lid or cover and provided with means for connecting it with the shaft of the lower rubber, said shafts being adapted to be coupled and uncoupled as the lid or cover is opened and closed, and an upper vertically-movable rubber mounted on the lid or cover and held against rotation, substantially as described.

2. A washing-machine comprising a washing-machine body having a lid or cover, a lower rubber arranged within the body and capable of rotation and provided with a shaft or stem, an operating-shaft mounted on the lid or cover and detachably engaging the shaft or stem, an upper vertically-movable rubber, and a yoke supporting the vertically-movable rubber and holding the same against rotation and extending through the lid or cover, substantially as described.

3. A washing-machine comprising a body provided with a lid or cover, a lower rubber journaled on the body at the bottom thereof and provided with a stem or shaft, an operating-shaft provided with a socket receiving the stem or shaft of the lower rubber, a bearing-bracket mounted on the cover and supporting the shaft, an upper rubber having an opening receiving the operating-shaft and the lower stem or shaft, and a yoke slidably arranged on the operating-shaft and supporting the upper rubber and extending through slots of the cover or lid, substantially as described.

4. A washing-machine comprising a washing-machine body having a lid or cover provided with slots, a plate mounted on the lid or cover and provided at the said slots with recesses and having a bearing-opening, a bearing-bracket mounted on the lid or cover, a lower rotary rubber having a shaft or stem, an upper operating-shaft arranged in the opening of the plate and in an opening of the bearing-bracket and provided with a socket receiving the shaft or stem, said operating-shaft being also provided with a supporting-shoulder, a yoke supported by the shoulder of the operating-shaft and extending through the slots of the cover and the recesses of the plate, and an upper non-rotatable rubber supported by the yoke, substantially as described.

709,814. **REFRIGERATING APPARATUS.** CLYDE J. COLEMAN, Chicago, Ill., assignor, by mesne assignments, to Clarence W. Coleman. Filed Oct. 14, 1899. Serial No. 733,696. (No model.)

Claim.—1. In a refrigerating apparatus, the combination with a condenser and a cooling-chamber, of a static-column conduit containing a liquid column constituting a piston at its upper end, valved conduits connecting the top of the static-column conduit with the condenser and cooling-chamber, and an electrically-operated pumping apparatus containing a piston or diaphragm arranged to press directly upon the liquid column at the lower portion thereof.

2. In a refrigerating apparatus, the combination with a condenser and a cooling-chamber, of a static-column conduit containing a liquid column constituting a piston at its upper end, valved conduits connecting the top of the static-column conduit with the condenser and the cooling-chamber, an electromagnetic pumping apparatus containing a piston or diaphragm arranged to press directly upon the liquid column at the lower portion thereof, and a thermostat arranged within the influence of the cooling-chamber and connected to the electromagnetic pumping apparatus so as to control the operating electric current thereof.

3. In a refrigerating apparatus, the combination with a condenser and a cooling-chamber, of a static-column conduit containing a liquid column constituting a piston at its upper end, valved conduits connecting the top of the static-column conduit with the condenser and with the cooling-chamber, an electromagnetic pumping apparatus containing a piston or diaphragm arranged to press directly upon the liquid column at the lower end thereof, an automatically-operated circuit make and break device controlling such electromagnetic pumping apparatus, and a thermostat arranged within the influence of the cooling-chamber and connected to the electromagnetic pumping apparatus so as to control the operating electric current thereof.

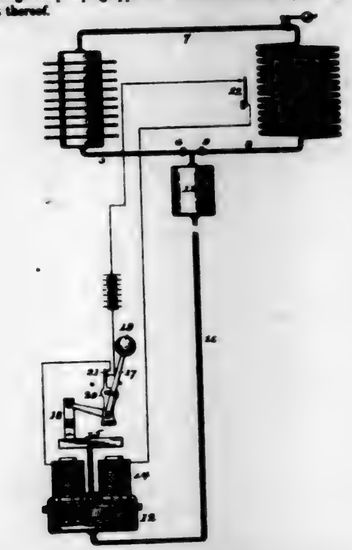

709,815. **PIPE-HANGER.** HARRY S. COLLINS, Pittsburg, Pa., assignor to Collins Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Feb. 15, 1902. Serial No. 94,304. (No model.)

Claim.—1. A pipe-hanger comprising two straps, the lower ends of which are pivotally connected and the upper ends having hooks or projections, a ring or collar having pockets in opposite sides thereof adapted to be brought into alinement with the hooks or projections on said straps and in which recesses said hooks are adapted to be seated, an interiorly-threaded nut loosely fitting in said ring or collar having a flange of greater diameter than the opening in said ring, and laterally-projecting abutments adapted to be brought into alinement with and close the top of said pockets.

2. In a pipe-hanger, the combination of a stirrup, comprising two straps pivotally connected at their lower ends and provided with projections near their upper ends, a collar having pockets in opposite sides thereof adapted to receive the projections on said straps, a nut having a flange of greater diameter than the opening in said collar, an adjacent cylindrical surface fitting loosely in said opening, and laterally-projecting abutments adapted to be brought into alinement with and close the top of said pockets and prevent the projections on said straps from being lifted thereout.

709,816. **BEAM-CLAMP.** HARRY S. COLLINS, Pittsburg, Pa., assignor to Collins Manufacturing Company, Pittsburg, Pa., a Corporation of Pennsylvania. Filed Feb. 15, 1902. Serial No. 94,305. (No model.)

Claim.—An adjustable beam-clamp comprising two similar horizontally-disposed members having hooked portions and provided with longitudinally-disposed slots, a separable thimble in which said horizontal members are movably secured, and a screw-bolt projecting through said thimble and the slots of said horizontal members, whereby said members may be held stationary.

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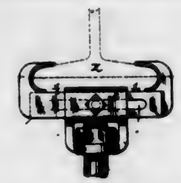

709,817. **ELECTROLYTICALLY TREATING ORES.** CLIFTON R. DOLBEAR, Boston, Mass., assignor to American Mining and Metal Extraction Company, Boston, Mass. Filed June 8, 1901. Serial No. 62,309. (No specimens.)

Claim.—1. The method of reducing metals from their ores, which consists in dissolving the crushed ores in a nitrate of the suitable metal, adding to the mixture thus formed sulfuric acid, and subjecting the solution to the action of an electric current, whereby the metal is plated out of the solution, substantially as described.

2. The method of reducing metals from their ores, which consists in dissolving the crushed ore in a compound containing a nitric acid radical, adding to the mixture sulfuric acid, and subjecting the resultant compound to the action of an electric current, substantially as described.

709,818. **ELECTRIC CLOCK.** NEWTON HARRISON, New York, N. Y., assignor of one-half to William Henry Laird, New York, N. Y. Filed May 11, 1901. Renewed Jan. 18, 1902. Serial No. 90,283. (No model.)

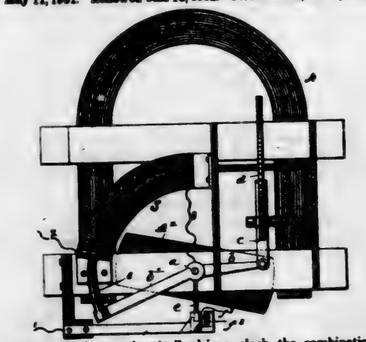

Claim.—1. In an electrically-driven clock, the combination with the clock-train, of two magnets, one of which is a permanent magnet and the other an electromagnet, the permanent magnet being adapted to act first upon the train through a limited movement, and the electromagnet adapted to act at the end of such movement to restore the permanent magnet to the beginning of its working position.

2. In an electrically-driven clock, the combination with the clock-train, of a permanent magnet having a pivoted armature adapted to engage the train, and an electromagnet, the permanent magnet being adapted to act independently on its armature to drive the clock through a limited stroke, and the electromagnet being adapted to restore the armature to the beginning of its stroke after each completion thereof, substantially as described.

3. In an electrically-driven clock, the combination with the clock-train of a permanent magnet having a pivoted armature adapted to engage the train and an electromagnet adapted to move the armature, the permanent magnet acting independently of the electromagnet to move the train through a limited stroke, and a switch adapted to close the circuit of the electromagnet at the end of the stroke of the armature, substantially as described.

4. In an electrically-driven clock, the combination with the clock-train of a permanent magnet having a pivoted armature adapted to engage the train and an electromagnet adapted to move the armature, the permanent magnet acting independently of the electromagnet to move the train through a limited stroke, and a switch adapted to close the circuit of the electromagnet at the end of the stroke of the armature and hold it closed for a prolonged period.

5. In a clock, a permanent magnet movably mounted and connected to the train, a second permanent magnet having its poles opposed to those of the first and within the influence thereof, whereby the combined action of the two permanent magnets will drive the clock.

6. In an electrically-driven clock, the combination with the clock-train of two magnets, one of which is adapted to act independently of the other to drive the clock-train, and the second of which acts upon the first at regular intervals to restore it to the beginning of its working position.

7. In an electric clock, the combination of the clock-gearing, an electromagnet and a circuit-controller consisting of a movable contact and two fixed contacts arranged in the path of movement of the movable contact, one of said two contacts having insulation on one side against which the movable contact normally bears and means whereby the movable contact will first be carried onto the naked face of the insulated contact to maintain the closure, substantially as described.

709,819. **BOTTLE-STOPPER.** JOHN T. HIGER, Boston, Mass. Filed Oct. 31, 1901. Serial No. 80,632. (No model.)

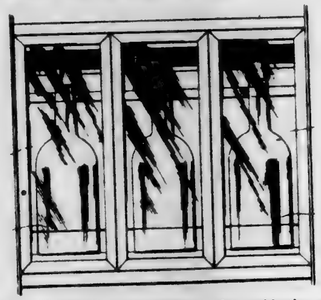

Claim.—A bottle-stopper consisting in the combination with a stationary block of rubber secured to some suitable support, of a bottle-support located vertically opposite to the rubber, said support having an inclined surface at an angle to the axis of the bottle when the latter is in its normal position, and upon which incline the bottom of the bottle rises for the purpose of causing the mouth of the bottle to be tightly closed by the rubber, and a notched guide that engages and keeps the bottle-neck in position.

709,820. **POWER-HAMMER.** JAMES H. JACKSON, Denver, Colo., assignor of one-fourth to Frederic Schoff, Philadelphia, Pa. Filed Feb. 9, 1901. Serial No. 46,688. (No model.)

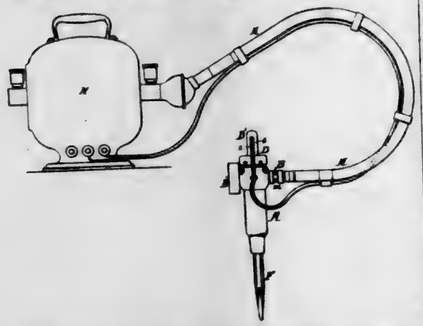

Claim.—1. The combination in a power-hammer, of a casing, a crank-shaft mounted in bearings therein, a tool carried by the opposite end of the casing, a hammer within the casing, a connecting-rod on the crank of the shaft and loosely connected to the hammer whereby the blow of the hammer depends entirely upon momentum, substantially as described.

2. The combination in a power-hammer, of a casing, a tool carried by said casing, means in the casing for striking said tool, a shaft for operating said means, an electric motor, a flexible shaft connecting the motor with the operating-shaft, means on the tool for making and breaking an electric circuit, and wires extending from the said means on the tool to the electric motor, substantially as described.

3. The combination in a power-hammer, of a casing, a hammer within the casing, a crank-shaft, means for connecting the crank-shaft to the hammer, a handle for the tool, a device carried by the handle for making and breaking an electric circuit, an electric motor, a flexible shaft connecting the electric motor with the crank-shaft of the tool, and wires extending from the circuit making and breaking device on the handle of the tool to the electric motor, substantially as described.

4. The combination in a power-hammer, of a casing, a handle flexibly connected thereto, a hammer within the casing, a crank-shaft extending through the casing, a rod connecting the crank-shaft to the hammer, a flexible shaft coupled to the crank-shaft, an electric motor coupled to the flexible shaft, a circuit-breaker carried by the handle, and wires extending from the circuit-breaker to the electric motor, substantially as described.

5. The combination in a power-hammer, of a casing, a tool carried by said casing, a floating hammer within the casing and arranged to strike the tool, a crank-shaft mounted in bearings in the casing, a rod connecting the crank-shaft to the hammer, a plunger mounted within the hammer and bearing against the end of the rod, and a spring mounted between the plunger and the hammer, substantially as described.

6. The combination of a casing, a crank-shaft mounted in said casing, a floating hammer in the casing, a plunger within the hammer, a flexible connection between the plunger and the hammer, a rod connected to the crank of the shaft and slotted at the opposite end, and a pin on the hammer passing through the slot in the rod, substantially as described.

7. The combination of a casing, a crank-shaft mounted therein, a floating hammer within the casing, a plunger, a spring between the plunger and the hammer, a rod connecting the plunger and the crank of the shaft, a tool extending through the end of the casing, and a spring tending to force the tool out, the end of said tool being in position to be struck by the hammer, substantially as described.

8. The combination of a casing, a crank-shaft, a floating hammer, a plunger, a rod connecting the plunger with the crank of the shaft, a spring mounted between the plunger and the hammer, a tool projecting into the casing into position to be struck by the hammer, and a handled cap at the rear of the casing, substantially as described.

9. The combination of a casing, a crank-shaft, a floating hammer, a plunger, a rod connecting the plunger with the crank of the shaft, a spring mounted between the plunger and the hammer, a tool projecting into the casing in position to be struck by the hammer, a handled cap at the rear of the casing, and a spring mounted between the rear of the casing and the cap, substantially as described.

10. The combination of a slotted casing, bushings in the slot, blocks back of the bushings, means for securing the blocks to the casing, a crank-shaft mounted in the bushings, a floating hammer, means for connecting the hammer to the crank-shaft, and a tool carried by the opposite end of the casing, substantially as described.

11. The combination of a casing, a tool in one end of the casing, a floating hammer, a crank-shaft, a plunger within the floating hammer and connected to the crank of the shaft, an electric motor coupled to the said crank-shaft, a handle attached to the casing, a device in the handle for making or breaking the motor-circuit, and wires extending from the handle to the motor, substantially as described.

12. The combination of a casing, a crank-shaft mounted in the casing, a floating hammer, a plunger within the hammer, a spring mounted between the end of the plunger and the hammer, a tool projecting into the casing in position to be struck by the hammer, a rod connecting the crank-shaft with the plunger, a handled cap at the rear of the casing, a spring between the cap and the rear of the casing, a tube mounted in the handle, and a push-button device for making and breaking the electric circuit to start and stop the driving mechanism of the hammer, substantially as described.

13. The combination of a casing, a tool carried by one end of the casing, a handle secured to the opposite end of the casing, a fly-wheel mounted on one end of the crank-shaft, the opposite end of the crank-shaft being arranged to be coupled to a flexible shaft, a hammer within the casing arranged to strike the tool, and a connecting-rod mounted on the crank of the shaft and loosely connected to the hammer, substantially as described.

14. The combination in a power-hammer, of a casing, a tool mounted in one end of the casing, a handle yieldingly connected to the opposite end of the casing, an electric circuit-breaker within the handle, a crank-shaft mounted in bearings in the casing, a fly-wheel on said crank-shaft, a hammer mounted within the casing and arranged to strike the tool, a rod mounted on the crank of the shaft and connected loosely to the hammer, and a spring between the end of the rod and the hammer, substantially as described.

15. In a power-hammer, the combination, of the flexible shaft connecting the motor with the tool having wires extending from the handle of the tool to the motor; with the tool, consisting of the casing, the hammer operating within the casing, the shaft, means for connecting the shaft to the hammer, the handle for the tool, the controlling device provided in the handle for connecting and breaking the electric circuit, substantially as specified.

709,821. **SPINDLE-BEARING.** JOHN KILBURN, Belmont, Mass., assignor to the Sawyer Spindle Company, of Maine, a Corporation of Maine. Filed Feb. 27, 1897. Serial No. 626,287. (No model.)

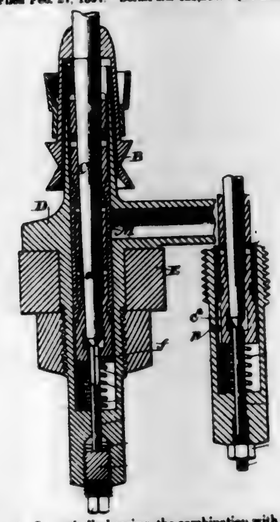

Claim.—1. In a spindle-bearing, the combination with a bolster-case having an interiorly smooth aperture in its base, of a step-pintle tightly fitted in said aperture, a tapered spindle-pintle, a bolster provided with a tapered bearing for the spindle-pintle, and with an aperture in its base to receive the step-pintle, and means for yieldingly supporting said bolster in said bolster-case independently of, and so as to be capable of freely moving vertically with relation to, the step-pintle, substantially as described.

2. In a spindle-bearing, the combination with a bolster-case having an interiorly smooth aperture in its base, of a step-pintle tightly fitted in said aperture and projected through the bottom of the bolster-case, a tapered spindle-pintle, a bolster provided with a tapered bearing for the spindle-pintle and with an aperture in its base to receive the step-pintle, and means for yieldingly supporting said bolster independently of, and so as to be capable of freely moving vertically with relation to, the step-pintle, substantially as described.

3. In a spindle-bearing, the combination with a spring-supported bolster having an aperture in its lower end, of a step-pintle free to reciprocate in said aperture, and means to adjust said step-pintle extending below and outside of the bolster-case, substantially as described.

4. In a spindle-bearing the combination with a spring-supported bolster provided with an aperture in its lower end, of a step-pintle projecting into said aperture, and means engaging said step-pintle to guide said bolster as it moves downwardly thereon against the tension of its spring-support, substantially as described.

5. In a spindle-bearing, the combination with a tapered spindle-pintle, a bolster provided with a tapered bearing therefor and a bolster-case, of a step-pintle fitted with a driving-fit in the lower end of the bolster-case to prevent the escape of oil therethrough and to hold said pintle in adjusted position, said step-pintle being projected beyond the end of the bolster-case, an adjusting device carried by said projecting end and means for yieldingly supporting said bolster independently of the step-pintle, substantially as described.

6. In a spindle-bearing the combination with the bolster, step-pintle and stop carried by said step-pintle, of a spring surrounding said step-pintle, and a flanged tube free to move along said step-pintle and interposed between said spring and bolster, substantially as described

7. In a spindle-bearing, the combination with the bolster-case, spring, bolster supported by said spring, and step, of means projected through the bottom of the bolster-case to adjust the relative longitudinal positions of the bolster and step, to adjust the tension of the spring, substantially as described.

8. In a spindle-bearing, the combination with a bolster-case having an interiorly smooth aperture in its base, of a step-pintle tightly fitted in said aperture capable of vertical movement therein, and having a polygonal upper end, a bolster loosely supported in said case, said bolster having a polygonal aperture in its lower end loosely engaging the upper end of said pintle and capable of vertical movement thereon, substantially as described.

9. In a spindle-bearing, the combination with a bolster-case, of a tapered spindle-pintle, a step-pintle supported by the bolster-case, a bolster provided with a tapered bearing for the spindle-pintle having an aperture in its lower end to receive the step-pintle, and means for yieldingly supporting said bolster independently of the step-pintle and so as to be capable of freely moving vertically with relation to said step-pintle, substantially as described.

10. In a spindle-bearing, the combination with a bolster-case having an interiorly smooth aperture in its base, of a step-pintle tightly fitted in said aperture, a loosely-supported bolster located in the bolster-case provided with an aperture in its base to loosely receive the upper end of the step-pintle, a yielding support for the bolster independent of the step-pintle capable of freely moving vertically in the bolster-case and permitting the bolster freely to move vertically with relation to the step-pintle, substantially as described.

709,822. **ORE-CRUSHING MACHINE.** CHARLES C. LANE, Los Angeles, Cal. Filed Nov. 18, 1899. Serial No. 737,518. (No model.)

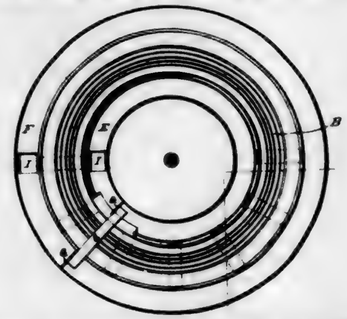

Claim.—An ore-crusher comprising a revolving frame; revolving crushing-rolls mounted in said frame; a tread for said rolls composed of a plurality of concentric rings, having spaces therebetween; supports for said rings; screens below the tread, adapted to deflect the crushed ore into the troughs at the side of and below the tread; arms affixed to the revolving frame, having scrapers on the bottom thereof adapted to work in said troughs.

709,828. **SKIRT-HOLDER OR SKIRT-SUSPENDER.** WILHELMINE MEHLFELD, Barmen, Germany, assignor to Philipp Barthels, Barmen, Germany. Filed Mar. 11, 1902. Serial No. 97,751. (No model.)

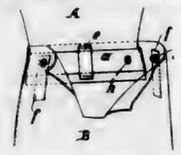

Claim.—A belt *a* provided with eyelets *h* and with detachable strips *i* parallel with said belt, each strip being divided into sections adapted to form respectively loops *c* and straps *f* having studs *g*, the said studs serving in the first instance to hold the said strips to the belt and the said loops and straps being adapted to hold respectively an upper and a lower garment to said belt after they have been sewed on the said garments and the belt has been passed through the loops and the studs have been pressed into the eyelets substantially as described.

709,824. **EYEGLASSES.** EDWARD H. SCHELD, Baltimore, Md. Filed Apr. 9, 1902. Serial No. 102,054. (Model.)

Claim.—1. In combination with a pair of lenses and a bridge connecting the same, of a pair of nose-guards, each being supported at one

end and having its other end free and provided with a nose-engaging part extending inward past the bridge, a portion of the body of the guard lying in front of the bridge and forming a spring to normally press said nose-engaging part toward the nose-engaging part carried by the other guard.

2. In combination with a pair of lenses and a bridge connecting the same, of a pair of nose-guards, each being supported at one end and having its other end free and provided with a nose-engaging part extending inward past the bridge, a portion of the body of the guard lying in front of the bridge and forming a spring to normally press said arms toward the pair carried by the other guard, and a handle attached to each guard in front of the bridge.

3. In combination with a pair of lenses and a connecting nose-bridge, of a pair of nose-guards, each being rigidly supported at one end adjacent to the lens-mounting and having its other end free said provided with diverging arms straddling the bridge and extending inward and provided with bearing-tips, the body portion of each guard between its point of attachment and said arms being resilient and serving to normally press the bearing-tips of one guard toward those of the other guard, and a handle or finger-piece carried by each guard in front of the lenses and bridge.

4. In combination with a pair of lenses and a connecting nose-bridge, of a pair of nose-guards each constructed of a single piece of metal having one end formed into two diverging arms and its other end into an eye, the body portion between the eye and the arms being formed into a spring and each guard being provided with a handle.

5. In combination, a pair of lenses, a connecting nose-bridge, a nose-guard attached rigidly at each end of the bridge and provided with a pair of arms diverging and extending inward and straddling the bridge, the body portion of the guard between its point of attachment and the arms being coiled into a spring, a handle or finger-piece attached to each guard in front of the bridge and lenses.

6. In combination with a pair of lenses and a connecting nose-bridge, of a nose-guard attached at each end of the bridge and having its free end provided with a nose-engaging part extending beyond the bridge, the body of the guard in front of the bridge being coiled into a spring, and a finger-piece attached to the inner end of the spring and working through a slot in the body of the coil.

7. The combination with a pair of lenses and a connecting nose-bridge, of a pair of nose-guards, each being rigidly supported at one end adjacent to the lens-mounting and having its other end free and provided with a nose-engaging part extending inward past the bridge, the body portion of each guard between its point of attachment and the bearing-tips of the nose-engaging part being resilient and serving to normally press the bearing-tips of one guard toward those of the other guard, and a handle or finger-piece carried by each guard in front of the lenses and bridge.

8. The combination with a pair of lenses and a connecting nose-bridge, of a pair of nose-guards, each being supported at one end adjacent to the lens-mounting and having its other end free and provided with a nose-engaging part, the body portion of each guard between its point of attachment and the bearing-tips of the nose-engaging part being coiled into a convolute spring the tendency of which is to normally press one nose-engaging part toward the other, and a handle or finger-piece carried by each guard in front of the lenses and bridge.

709,825. **KNITTED FABRIC.** ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed Feb. 10, 1902. Serial No. 93,231. (No specimens.)

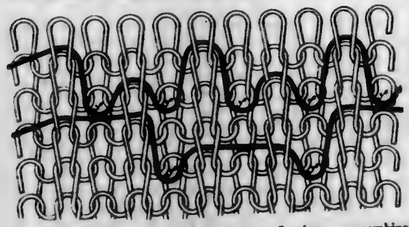

Claim.—A ribbed knitted fabric having a fleecing-yarn combined therewith and engaging first a wale, or wales, in one course, and then a wale or wales, in another course of the fabric, thereby providing a zig-zag disposition of the points of attachment of said fleecing-yarn, substantially as specified.

709,826. **RIBBED KNITTED FABRIC.** ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed Feb. 19, 1902. Serial No. 94,761. (No specimens.)

Claim.—A ribbed knitted fabric having a fleecing-yarn laid in between stitches of one course of the fabric and projected so as to form loops between the stitches of an adjoining course of the fabric, whereby it is caused to pass around the sinker-wales of the fabric, substantially as specified.

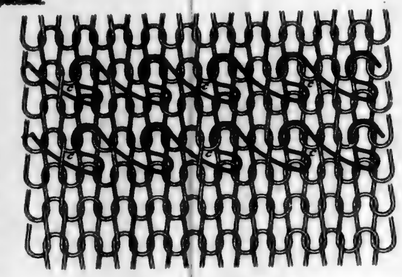

709,827. **KNITTED FABRIC.** ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed Feb. 25, 1902. Serial No. 96,505. (No specimens.)

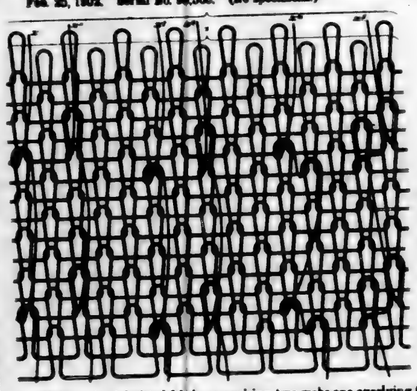

Claim.—1. A knitted fabric comprising two webs one overlying the other, said webs being held together by a knitting yarn or yarns independent of those of which the webs are composed, substantially as specified.

2. A knitted fabric comprising two webs one overlying the other, said webs being held together by yarn or yarns independent of those of which the webs are composed, and engaging with wales of the two webs alternately, substantially as specified.

3. A knitted fabric comprising two webs one overlying the other said webs being held together by yarn or yarns independent of those composing the webs and forming loops or stitches in wales of the webs alternately, substantially as specified.

4. A knitted fabric comprising two webs one overlying the other, said webs being held together by yarn or yarns independent of those composing the webs, forming loops or stitches in wales of the webs alternately, and floating from each group of loops or stitches to the next, substantially as specified.

5. A knitted fabric comprising two webs, one overlying the other, said webs being held together by yarn or yarns independent of those of which the webs are composed, the tying yarn or yarns extending in the direction of the courses of stitches of the knitted webs, and engaging with wales of the two webs alternately, substantially as specified.

6. A knitted fabric comprising two webs, one overlying the other, said webs being held together by yarn or yarns independent of those composing the webs, said tying yarn or yarns extending in the direction of the courses of stitches of the knitted webs, forming loops or stitches in wales of the webs alternately, and floating from each group of loops or stitches to the next, substantially as specified.

709,828. **RIBBED KNITTED FABRIC.** ROBERT W. SCOTT, Philadelphia, Pa., assignor of one half to Louis H. D. Williams, Ashbourne, Pa. Filed Feb. 26, 1902. Serial No. 95,786. (No specimens.)

Claim.—1. A knitted fabric having fleecing-yarns combined therewith, each of said fleecing-yarns engaging first a wale in one course of the fabric and then a wale in another course of the fabric above or below the said first course, and forming between said points of attachment a loop projecting above the surface of the fabric, and floating over a plurality of courses of the fabric, substantially as specified.

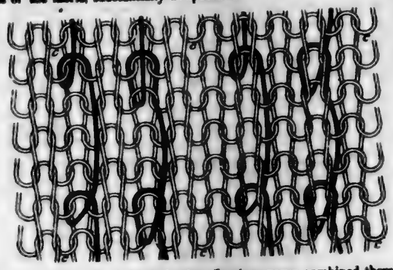

2. A ribbed knitted fabric having fleecing-yarns combined therewith, each of said fleecing-yarns engaging first a wale in one course of the fabric and then a wale in another course of the fabric above or below the said first course, the yarn floating in the form of a projecting loop over a plurality of courses of the fabric between its successive points of engagement with the fabric, substantially as specified.

3. A knitted fabric having fleecing-yarns combined therewith said fleecing-yarns extending in a direction parallel with the wales of the fabric, engaging with wales in separate courses of the fabric, and forming between successive points of attachment loops projecting above the surface of the fabric, and floating over a plurality of courses of the fabric, substantially as specified.

4. A ribbed knitted fabric having fleecing-yarns combined therewith, said yarns extending in a direction parallel with the wales of the fabric, engaging with wales in separated courses of the fabric, and forming projecting loops between their points of engagement, said loops floating over a plurality of courses of the fabric, substantially as specified.

5. A ribbed knitted fabric having fleecing-yarns combined therewith, each of said yarns engaging wales of both faces of the fabric, first in one course of said fabric, and then in a course above or below said first course, and forming projecting loops between successive points of engagement, which loops float over a plurality of courses of the fabric, substantially as specified.

709,829. **RIB-KNITTING MACHINE.** ROBERT W. SCOTT, Philadelphia, Pa., assignor of one-half to Louis H. D. Williams, Ashbourne, Pa. Filed Apr. 3, 1902. Serial No. 101,267. (No model.)

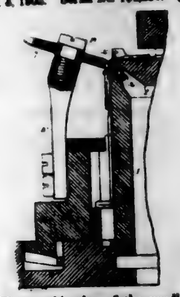

Claim.—1. The combination of the needle-carriers, needles, cam-carriers, cams, and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, and a toothed wheel acting upon said fleecing-yarn to loop the same and cause it to project beyond the face of the fabric, substantially as specified.

2. The combination of the needle-carriers, needles, cam-carriers, cams, and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide and a pair of toothed wheels acting on said fleecing-yarn to loop the same said wheels being so disposed that one looping action precedes the formation of the knitting-stitches and the other follows the same, substantially as specified.

3. The combination of the needle-carriers, needles, cam-carriers, cams, and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide and a rotating toothed wheel engaging the fleecing-yarn and mounted so that its teeth project between the sinker-wales of the fabric, substantially as specified.

4. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

5. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, longitudinally-adjustable hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

6. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, laterally-resilient hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

7. The combination of the needle-carriers, needles, cam-carriers, cams and knitting-yarn guide or guides of a rib-knitting machine, with a fleecing-yarn guide, longitudinally-adjustable and laterally-resilient hooked sinkers carried by one of the needle-carriers and constructed to engage with the fleecing-yarn, and a rotating toothed wheel for acting upon the fleecing-yarn so as to cause such engagement, substantially as specified.

709,880. **GAS-BLOWPIPE.** GEORGE B. SNOW, Buffalo, N. Y., assignor to the Snow Dental Company, Buffalo, N. Y., a Corporation of New York. Filed July 27, 1899. Serial No. 24,960. (No model.)

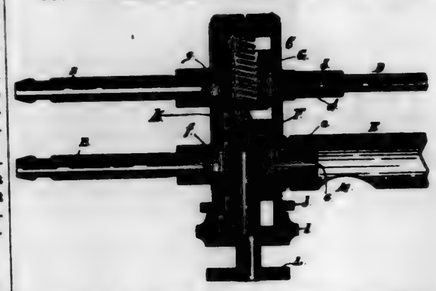

Claim.—1. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, a spring for closing said valves, and a screw-cap, threaded upon one end of the casing, whereby said valves are confined therein and suitably adjusted; substantially as described.

2. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, an adjusting-screw, whereby the distance between the two valves may be varied, and a spring for closing said valves; substantially as described.

3. A gas-blowpipe having a valve-casing, an air-valve and a gas-valve having a stem located therein and adapted to be opened by pressure of the finger, an adjusting-screw located in a central longitudinal hole in the gas-valve, a spring for closing said valves, and a screw-cap, threaded upon one end of the valve-casing, whereby said valves are confined therein and suitably adjusted; substantially as described.

4. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, a spring for closing said valves, a screw-cap threaded upon one end of said casing, whereby said valves are confined therein and suitably adjusted, and a mixing-tube attached to the gas-nozzle on the exit side of the valve-casing and having an air-inlet arranged to be conveniently opened or closed; substantially as described.

5. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein and adapted to be opened by pressure of the finger, an adjusting-screw whereby the distance between the two valves may be varied, a spring for closing said valves, and a mixing-tube, attached to the gas-nozzle on the exit side of the valve-casing and having an air-inlet arranged to be conveniently opened or closed; substantially as described.

6. A gas-blowpipe having a valve-casing, a gas-valve and an air-valve located therein, said gas-valve having a projecting stem by means of which it may be opened by pressure of the finger, an adjusting-screw located in a central longitudinal hole in the gas-valve, a spring for closing said valves, a screw-cap, threaded upon one end of the valve-casing, and a mixing-tube attached to the gas-nozzle on the exit side of the valve-

casing and having an air-inlet arranged to be conveniently opened or closed; substantially as described.

7. A gas-blowpipe having a valve-casing, an air-tube and a gas-tube joined together at or near the flame end of said gas-tube; one of said tubes being united to the casing by a screw-thread, the other by a butt-joint; substantially as described.

709,831. **BUR-WHEEL SUPPORT FOR KNITTING-MACHINES.** BURTON A. STEWART, Troy, N. Y., assignor of one-half to Ira Albert Tompkins, Troy, N. Y. Filed Apr. 7, 1902. Serial No. 101,823. (No model.)

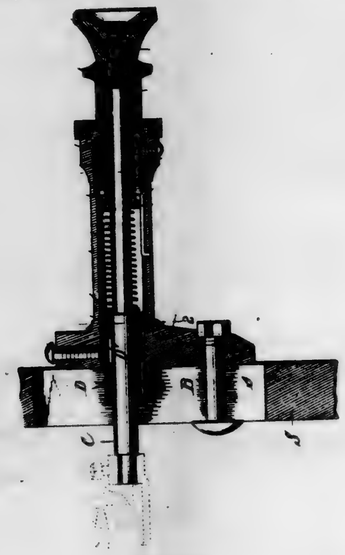

Claim.—1. In a bur-holder for knitting-machines, the combination of the body, the bur-holding shaft extending therethrough, a rotatable sleeve surrounding the shaft, a threaded cylinder engaging said sleeve, and a spring interposed between a step on the shaft and the said cylinder, substantially as specified.

2. In a bur-holder for knitting-machines, the combination of the body, the bur-supporting shaft extending therethrough, a rotatable internally-threaded sleeve in the end of the body, a threaded cylinder within said sleeve, and a spring interposed between a step on the shaft and the said cylinder; with means for rotatively adjusting and locking said shaft, and devices for regulating the forward projection of said shaft, substantially as described.

3. In a bur-holder for knitting-machines, the combination of the body, rotatable sleeves journaled in the front and rear ends thereof, a bur-holding shaft extending through and supported in said sleeves, the front sleeve being non-rotatable on the shaft, but the rear sleeve rotatable thereon, and means for locking the front sleeve; with a threaded cylinder on the shaft engaging a threaded portion of the rear sleeve, a spring interposed between said cylinder and a step on the shaft, and means for adjusting the forward projection of the shaft, substantially as described.

4. In a bur-holder for knitting-machines, the combination of the standard, the body adjustably secured thereto, rotatable sleeves journaled in the front and rear ends of the body, and means for preventing longitudinal movement of said sleeves; with a bur-holding shaft extending through and supported in said sleeves, and rotatable with the front sleeve, a setting-bolt for locking the front sleeve; a threaded cylinder on the shaft within the body engaging a threaded portion of the rear sleeve, a spring interposed between said cylinder and a step on the shaft, and means for adjusting the forward projection of the shaft, substantially as described.

709,832. **AIR-COMPRESSOR.** WELLS J. STEVENS, Shawhegan, Me., assignor to the Stevens Air Brake Company, Shawhegan, Me., a Corporation. Filed Jan. 3, 1902. Serial No. 88,207. (No model.)

Claim.—1. In a compressor, the combination of cylinder, a piston therein, a hollow shaft suitably mounted, a clutch member on the hollow shaft, a pin slidable in the hollow shaft, a second clutch member moved by the pin into engagement with the clutch member on the hollow shaft, an eccentric on the hollow shaft, a piston-rod and eccentric-strap, a controlling-cylinder on the cylinder-head of the first-named cylinder, a piston therein, a spring engaging the piston, a reservoir, a valve between the reservoir and controlling-cylinder, a piston-rod extending through one head of the controlling-cylinder, and levers connecting the piston-rod and pin, as and for the purpose described.

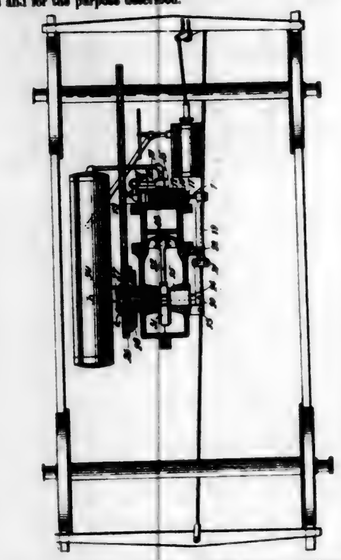

2. In a compressor, a cylinder, a piston therein, a hollow shaft suitably supported, an eccentric on the shaft, a connection between the eccentric and piston, a clutch member on the shaft, a pin in the shaft, a clutch member carried by the pin, means for turning the last-named clutch member, a lever pivoted to a stud of a frame and to the pin, a second lever pivoted to a stud, a link connecting the levers, a controlling-cylinder, a piston and piston-rod therein, the last-named lever being pivoted to the piston-rod, a spring in the controlling-cylinder holding the piston back, a reservoir and connections whereby excess pressure in the reservoir moves the piston against the spring in the controlling-cylinder as and for the purpose described.

709,833. **CREEL FOR SELVAGE-SPOOLS ON SLASHERS.** DAVID M. SULLIVAN, Greensboro, N. C., assignor of one-half to Cesnar Cone, Greensboro, N. C. Filed Jan. 24, 1902. Serial No. 91,050. (No model.)

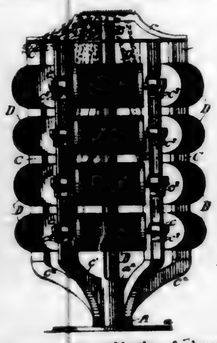

Claim.—1. In a creel, the combination of a base, vertical standards carried thereby, a piece connecting the upper ends of said standards, a yoke-piece extending between two sections of said connecting-piece, means on the standards for supporting shafts for a number of spools, and means on the yoke-piece for guiding threads from spools carried by said shafts, substantially as described.

2. The combination in a creel, of a base, standards supported by the same, shafts carried by said standards, spools on the shafts, each standard supporting the ends of two of said shafts in the same horizontal plane, a central standard carried by the base, a yoke-piece supported by said central standard and by the shaft-carrying standards and means upon said yoke-piece for guiding the threads from the spools, substantially as described.

3. The combination of a base-piece, a number of radiating arms thereon, standards carried by the arms having a headpiece in engagement with their upper portions, spools and means on the standards for supporting the same, a central standard projecting upwardly from the base and a yoke-piece resting upon said central standard and the headpiece and carrying means for guiding the threads from the spools, substantially as described.

709,834. **DENTAL GAGE.** CLARENCE R. VANDERPOOL, Grand Rapids, Mich. Filed Mar. 4, 1902. Serial No. 96,707. (No model.)

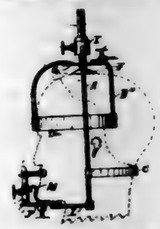

Claim.—1. In a dental gage, a vertically-adjustable head-plate, a laterally-adjustable spring-band for the forehead, a forwardly and backwardly adjustable chin-gage and a spring for the back of the neck, substantially as and for the purpose set forth.

2. In a dental gage, a supporting-frame, a vertically-adjustable head-plate therein, a permanent arm secured to said plate and to a spring-gage for the forehead, two auxiliary arms secured to said plate by the links D, an adjusting-rod and thumb-screw attached to said arms, a spring-gage for the forehead supported by said arms and made adjustable thereby, and an adjustable chin support and gage, substantially as and for the purpose set forth.

3. In a dental gage, a supporting-frame, an adjustable head-plate, an adjustable gage for the forehead, an adjustable chin-gage and a back support for the neck, with an adjustable mouth-gage composed of two plates upon vertically-adjustable posts supported upon the chin-gage, substantially as shown and described.

4. In combination with a dental gage, a forwardly and backwardly adjustable chin-gage, and a vertically-adjustable two-plated mouth-gage, substantially as and for the purpose set forth.

709,835. **FENCE-POST.** ISAAC M. WARNER, Union City, Mich., assignor to Frank C. Boise, Union City, Mich. Filed Oct. 1, 1901. Serial No. 77,237. (No model.)

Claim.—1. The combination of a buried anchor, a base-plate above the anchor, anchor-rods attached to the anchor and to the base-plate at diverging points on the latter, means to adjust the base-plate on the respective anchor-rods, a post having its lower end tiltably connected to and secured against lateral movement on the base-plate at a point intermediate the anchor-rods, and brace-rods connected to and extended radially from the post and detachably and adjustably connected to the base-plate at diverging points, whereby the base-plate and post may be adjusted independently of each other, to accommodate the base-plate to the surface of the ground and preserve the perpendicular disposition of the post, substantially as described.

2. The combination of a buried anchor, a rod extending upwardly therefrom to a point above the surface, a base-plate resting on the surface and having an opening near one side through which the upper portion of the said rod extends, the latter being screw-threaded and provided with an adjusting-nut which bears on said base-plate, a post having its lower end tiltably connected to and secured against lateral movement on the base-plate, and a brace-rod secured to said post and detachably and adjustably secured to the base-plate at a point near the anchor-rod, whereby the base-plate and post may be adjusted independently of each other, substantially as described.

709,836. **APPARATUS FOR COOKING GARBAGE.** CHARLES S. WHEELWRIGHT, Bristol, R. I. Filed Apr. 24, 1902. Serial No. 104,451. (No model.)

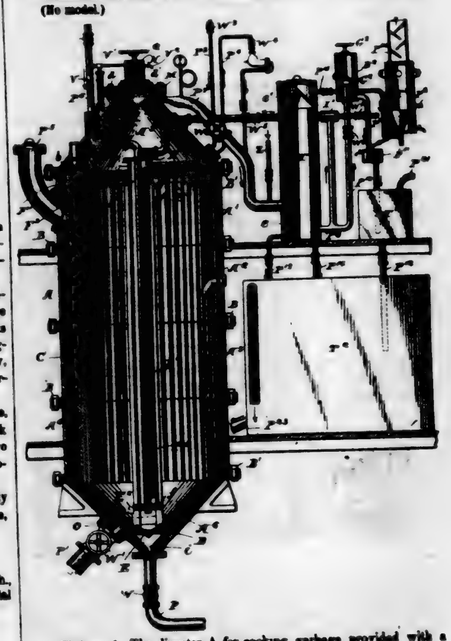

Claim.—1. The digester A for cooking garbage provided with a central heating apparatus, consisting of the steam-tight cylinder D' extending from the bottom to near the top of said digester, a steam-pipe P^s for providing direct steam to said cylinder and a steam-relief pipe P^r leading from near the bottom of said cylinder, in combination with a live-steam pipe P^s passing through the said cylinder which is provided with suitable packing-boxes at the ends thereof, the heat in said pipe P^s being adapted to be maintained by steam from said pipe P^s, substantially as described.

2. The digester A for cooking garbage provided with a central heating apparatus consisting of the steam-tight cylinder D', extending from the bottom to near the top of said digester, live-steam pipe P^s and steam-relief pipe P^r, in combination with live-steam pipe P^s passing through said cylinder, suitable packing-boxes being provided in the ends of said cylinder and the deflector K, for turning hot steam upward through the mass of garbage, substantially as described.

3. The digester A for cooking garbage provided with a water-pipe P entering at the bottom, and a central heating apparatus, consisting of the steam-tight cylinder D' extending from the bottom to near the top of said digester, live-steam pipe P^s passing through said cylinder, suitable packing-boxes being provided in the ends of said cylinder, and furnishing

direct steam to the contents of said digester, and live-steam pipe P^4 whereby said cylinder is heated and heat is maintained in said pipe P^3, substantially as described.

4. A digester for cooking garbage provided with a steam-pipe adapted to deliver its steam at the bottom of the digester, a valve in said steam-pipe, an exit-pipe for liquid near the top of said digester, a pipe communicating with said steam-pipe inside of the valve therein, and a steam-injector adapted to return a portion of the contents of said exit-pipe through said communicating pipe and said steam-pipe, to the bottom of the digester after the valve in said steam-pipe is closed, substantially as described.

5. A digester for cooking garbage formed in sections with conical ends, and provided with means for causing steam to permeate the contents of the digester from bottom to top, in combination with a filtering or clarifying apparatus having large tanks below the upper conical section of said digester, substantially as described.

6. The combination with the digester A of live-steam pipe P^4 delivering its steam at the bottom of said digester, valve W^2 in said pipe P^3, exit-pipe P^7 for the escape of steam and hot water from said digester, valve W^6 in said pipe P^7, receiving-tank T provided with compartment *c* for receiving steam and hot water from said exit-pipe P^7, pipe P^8 communicating with tank T, pipe I entering pipe P^3, valve W^3 in said pipe I, live-steam pipe P^9, valve W^7 in said pipe P^8, and injector I', whereby when said valve W^2 in said pipe P^3 is closed and the other said valves are open, a circulation of hot water saturated with steam may be maintained, substantially as described.

7. The combination with the digester A, of water-pipe P and valve W therein for furnishing a supply of water, and live-steam pipe P^4, delivering its steam at the bottom of said digester, valve W^2 in said pipe P^3, exit-pipe P^7 for the escape of steam and hot water from said digester, valve W^6 in said pipe P^7, receiving-tank T provided with compartment *c* for receiving steam and hot water from said exit-pipe P^7, pipe P^8 communicating with tank T, pipe I entering pipe P^3, valve W^3 in said pipe I, live-steam pipe P^9, valve W^7 in said pipe P^8, and injector I', whereby when said valves W and W^2 are closed and the other said valves are open, a circulation of hot water saturated with steam may be maintained, substantially as described.

8. The combination with digester A provided with central heating apparatus, cylinder D', and pipes P^5 and P^6, of steam-pipe P^9, valve W^7 pipe P^8, valve W^6, pipe I, valve W^3, receiving-tank T provided with compartment *c*, pipe P^8, and injector I', substantially as described.

709,837. **ELECTRICALLY-CONTROLLED OPTICAL APPLIANCE.** WEBSTER B. WHEELER, Fullerton, Nebr. Filed May 9, 1902. Serial No. 106,699. (No model.)

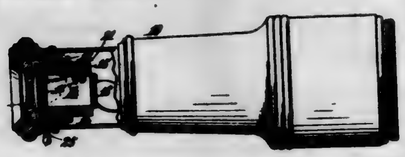

Claim.—1. In an electrically-controlled optical appliance, a barrel having a shutter carrying a core, and a solenoid, the core being attracted by said solenoid when the latter is energized to thereby operate said shutter.

2. In an electrically-controlled optical appliance, a barrel having a shutter, and a solenoid, a core for said solenoid, carried by said shutter, and an iron strip connected with and adapted to be magnetized by said solenoid and being adapted to be engaged by said core when the same is attracted by the solenoid.

3. In an electrically-controlled optical appliance, a barrel having a shutter controlling the bore of said barrel, and a solenoid, a core for the solenoid carried by the shutter, and means independent of said shutter for also controlling the bore.

4. In an electrically-controlled optical appliance, a barrel having an auxiliary shutter controlling the bore of said barrel, and a pair of auxiliary shutters movable about axes diagonal to the axis of the other shutter, the axes of the two shutters converging toward each other.

5. In an electrically-controlled optical appliance, a barrel having an auxiliary shutter controlling the bore of said barrel, a pair of auxiliary shutters movable about axes diagonal to the axis of the other shutter the axes of the two shutters converging toward each other, and means for positively operating the first-mentioned shutter.

6. In an electrically-controlled optical appliance, a barrel having an auxiliary shutter controlling the bore of said barrel, a pair of auxiliary shutters movable about axes diagonal to the axis of the other shutter, the axes of the two shutters converging toward each other, and a solenoid and its core, the latter being carried by the first-mentioned shutter.

7. In an electrically-controlled optical appliance, a barrel, a shutter for controlling the same, a solenoid inclosing said shutter, and a core for the solenoid carried by said shutter.

8. In an electrically-controlled optical appliance, a barrel, a solenoid in the barrel, a shutter controlling the bore of the barrel and carrying a core for said solenoid, and an iron strip extending longitudinally of the solenoid interiorly of the same, said strip being adapted to be magnetized when the solenoid is energized and serving to hold the core when the same is attracted by said solenoid.

9. In an electrically-controlled optical appliance, a barrel, a shutter for controlling the bore of the barrel, an apertured disk carrying said shutter, a circular plate provided with a flange to receive said apertured disk, also having an aperture in registration with that of the disk, a solenoid into which said flange is fitted, and a core for the solenoid carried by the shutter.

10. In an electrically-controlled optical appliance, a barrel having a solenoid provided exteriorly with a spring-finger adapted to engage the barrel, an apertured plate fitted against one end of the solenoid, and having a circular flange fitted in said solenoid, a disk fitted in said circular plate, a shutter pivotally supported by said disk, carrying a core for the solenoid, a binding-post embedded in the coil of the solenoid and insulated from the barrel, and an iron strip in the solenoid adapted to be engaged by the core of said shutter.

709,838. **MEANS FOR PREVENTING ROAD-VEHICLES FROM SLIPPING SIDEWISE.** RICHARD T. L. WILLIAMS, London, England. Filed July 22, 1902. Serial No. 116,570. (No model.)

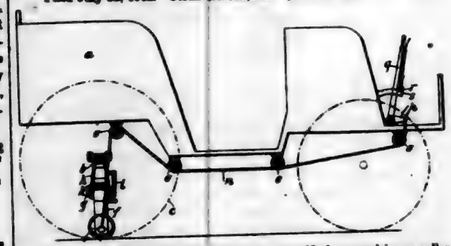

Claim.—1. A device for the purpose specified, comprising a roller having a conical running-surface, a sharp edge at the end of said conical surface, a bearing for said roller, and a swing-arm carrying said bearing, substantially as described.

2. The combination, with a road-vehicle, of two arms pivoted thereto so as to be free to swing inwardly, one arm being adjacent to each wheel, stops to limit the outward swing of said arms, conical rollers rotatably carried by said arms, the axes of the rollers being inclined inwardly and rearwardly, substantially as described.

3. A device for the purpose specified, comprising rollers having conical running-surfaces, sharp edges at the ends of said conical surfaces, bearing-surfaces on said rollers, bearing-pins to receive said rollers, swinging arms to support said pins, brackets pivotally attached to said arms, stops for limiting the outward motion of said arms, and springs connecting said arms and said brackets, substantially as described.

4. The combination, with a road-vehicle, of brackets, arms pivotally attached to said brackets, stops for said arms, conical rollers rotatably mounted on said arms, and means for raising said rollers out of contact with the ground, substantially as described.

5. The combination, with a road-vehicle, of arms pivotally mounted on said vehicle, stops for said arms, conical rollers rotatably mounted on said arms and having their axes inclined backward at their inner ends, and sharp edges on the inner ends of said rollers, substantially as described.

6. The combination, with a road vehicle, of arms pivotally mounted thereon, stops for said arms, and rollers having projecting edges and rotatably mounted on said arms, the axes of said rollers being inclined backward at their inner ends, substantially as described.

7. The combination, with the rear wheels of a road-vehicle, of arms pivotally mounted on the inner sides of said wheels, means for limiting the movement of said arms in an outward direction, conical rollers having projecting edges and rotatably mounted on said arms, and means for raising said rollers out of contact with the ground, substantially as described.

709,839. **KNITTED FABRIC.** LOUIS H. D. WILLIAMS, Ashbourne, Pa., assignor of one-half to Robert W. Scott, Philadelphia, Pa. Filed Feb. 19, 1902. Serial No. 94,861. (No specimens.)

Claim.—1. A knitted fabric having a flooring-yarn combined therewith, and forming projecting loops, said flooring-yarn being independent of the knitting-yarn and being wrapped or twisted around the stitches of the wales with which it engages, substantially as specified.

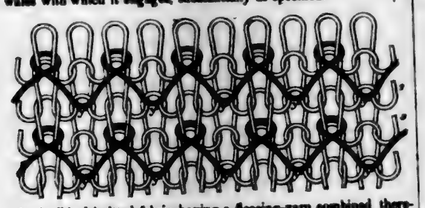

2. A ribbed knitted fabric having a flooring-yarn combined therewith and forming projecting loops, said flooring-yarn being independent of the knitting-yarn and being wrapped or twisted around the knitting-yarn or wale whereby its hold will be tightened by a pull upon the loop tending to lengthen the same, substantially as specified.

3. A ribbed knitted fabric having a flooring-yarn combined therewith and forming projecting loops, said flooring-yarn being independent of the knitting-yarn and being wrapped or twisted around the stitches of the wales with which it engages, substantially as specified.

4. A ribbed knitted fabric having a flooring-yarn combined therewith and forming projecting loops, said flooring-yarn being independent of the knitting-yarn and being wrapped around the knitting-yarn where the same crosses from a wale of one face of the fabric to a wale of the other face of the same, substantially as specified.

709,840. **KNITTED FABRIC.** LOUIS H. D. WILLIAMS, Philadelphia, Pa., assignor of one-half to Robert W. Scott, Philadelphia, Pa. Filed Feb. 22, 1902. Serial No. 95,021. (No specimens.)

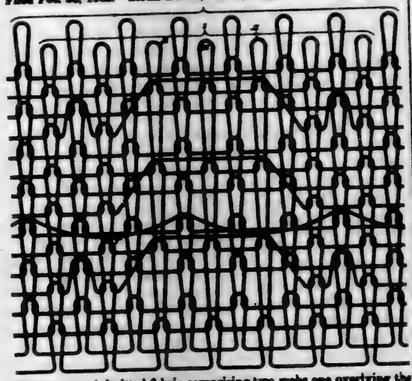

Claim.—1. A knitted fabric comprising two webs one overlying the other and the webs being united at intervals, the face web having open-work portions and the back web having closely-knitted portions behind said open-work portions, substantially as specified.

2. A knitted fabric comprising two webs one overlying the other, said webs being united at intervals and one web being composed of yarn differing from that of the other web, the face web having open-work portions and the back web having closely-knitted portions behind said open-work portions of the face web, substantially as specified.

3. A knitted fabric comprising two webs one overlying the other, said webs being united at intervals, one web being composed of yarn having a greater degree of shrinkage than the yarn composing the other web, and the web composed of said first-mentioned yarn having longer stitches than those of the other web, substantially as specified.

4. A knitted fabric comprising two webs one overlying the other, said webs being united at intervals and one face of the fabric having projecting loops of flooring-yarn which yarn is confined to the fabric by engagement with wales of that face web only, substantially as specified.

709,841. **KNITTING-MACHINE.** LOUIS H. D. WILLIAMS, Ashbourne, Pa., assignor of one-half to Robert W. Scott, Philadelphia, Pa. Filed May 20, 1902. Serial No. 108,187. (No model.)

Claim.—1. The combination of the needle-carrier and cam-carrier of a knitting-machine, with a templet whereby the needles may be adjusted to such position that their butts will register with the cam-path of the cam-carrier or segment thereof which normally receives said butts, substantially as specified.

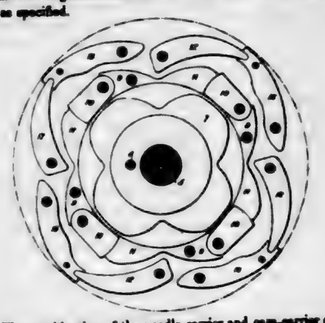

2. The combination of the needle-carrier and cam-carrier of a knitting-machine, with a templet serving by contact with the ends of the needle-stems, to so adjust the latter that their butts are in register with the cam-path of the cam-carrier or segment thereof, substantially as specified.

709,842. **WINDOW-SHADE FIXTURE.** CHARLES I. WIENER, Columbus, Ohio, assignor of one-third to Jennie Moore, Columbus, Ohio. Filed Jan. 14, 1902. Serial No. 89,643. (No model.)

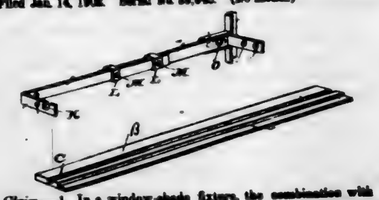

Claim.—1. In a window-shade fixture, the combination with the window-frame, the guide-strips secured to the frame, the brackets having the vertical flange fitting in and guided by said strips, the slotted arm formed at a right angle to and on the brackets and having lips, the plates each having their inner ends overlapping and adjustable in the slotted lipped arms of the brackets, angled portions on the plates to receive the shade, and means for raising and lowering the fixture.

2. In a window-shade fixture, the combination with the frame, the vertical strips having the guide groove or channel, the brackets having the flange fitting in and adjustable in the channels, the inward-extending lipped portion formed on the opposite side of the brackets, the plates having the angle-arm adjustably connected with the lipped portion of the brackets, the shade-roller mounted in the angle-arms, and the raising and lowering means secured to the arms.

709,843. **LOCKING MECHANISM FOR CARD-INDEX SYSTEMS OR THE LIKE.** DARWIN R. WRIGHT, Washington, D. C. Filed May 22, 1902. Serial No. 108,564. (No model.)

Claim.—1. A filing-receptacle having means for holding and locking the papers or cards to be filed, means for locking the receptacle, operative connections between the receptacle-lock and the paper or card lock, whereby the operation of one will operate the other; substantially as described.

2. A filing drawer or receptacle, a card rod or support therein, a locking-bolt for the drawer or receptacle, and means for locking the card rod or support, with connections between the locking-bolt and the card rod or support locking devices, whereby in the operation of one of said locking devices, the other is also operated; substantially as described.

3. In a filing-receptacle, a card rod or support, a locking-bolt for the receptacle, a locking-lever for the rod, and devices brought into action by the movement of the bolt in one direction to unlock the card-rod, means for holding the bolt in its retracted position, and means for actuating the card-rod-locking lever, when the locking-bolt is released; substantially as described.

4. In a filing-receptacle, a card rod or support, a locking-bolt for the receptacle, a locking-lever for the bolt, a locking-lever for the rod normally engaging the latter, means for releasing the card-rod-locking lever when the locking-bolt is retracted, a catch for holding the bolt in retracted position, and means for releasing the catch to allow the bolt and card-lock to operate; substantially as described.

5. In a filing-receptacle of the character described, a locking-bolt for the receptacle, and means for operating it, a card-rod, a locking-lever engaging therewith and having a portion arranged in the path of movement of the locking-bolt, whereby the retraction of the bolt releases the lever from the rod, and means for returning the parts to normal position; substantially as described.

6. In a filing-receptacle of the character described, a locking-bolt for the receptacle, and means for retracting it, a card-rod, a locking-lever engaging therewith, and having a portion arranged in the path of movement of the locking-bolt, whereby the retraction of the bolt releases the lever from the rod, a catch for holding the bolt in retracted position, and means for releasing the same to allow the return of the parts to normal position; substantially as described.

7. In a filing-receptacle of the character described, a locking-bolt, means for retracting it, a spring-catch to hold it in retracted position, a card-rod, a swinging arm normally spring-pressed to engage the rod, and arranged to be operated to release the rod, by the retraction of the bolt a predetermined distance; substantially as described.

8. In a filing-receptacle of the character described, a locking-bolt, means for retracting it, a spring-catch to hold it in retracted position, a card-rod, a swinging arm normally engaging the rod, and having a projection adapted to be engaged by the bolt when the latter has been retracted a predetermined distance, and means for releasing the spring-catch to allow the parts to return to normal position; substantially as described.

9. In a filing-receptacle of the character described, a locking-bolt for the receptacle, a key-lever engaging the same to retract it under the action of the key, a catch for holding the bolt in retracted position, means extending within reach of the operator for releasing the catch, a card-rod, a locking-lever therefor brought into inoperative position by the retraction of the bolt and released to operate when the spring-catch is released; substantially as described.

10. In a card-index system or similar filing apparatus, a locking device for the receptacle, a card rod or support, and means for locking the same, with suitable connections between the locking device for the receptacle and the card-rod-locking device, whereby the operation of one will effect the operation of the other either to lock or unlock; substantially as described.

11. In a card-index system or similar filing apparatus, a locking device for the receptacle, a plurality of card-rods, a single locking-lever for said card-rods, and means for unlocking in one operation both the receptacle and the card-rods, and means for returning the devices to locking position; substantially as described.

12. In a card-index system or similar file apparatus, a locking device for the receptacle, a card rod or support and means for locking the same, means for unlocking in one operation both the receptacle and the card rod or support and means for returning the devices to locking position; substantially as described.

13. In a card-index system or similar file apparatus, a locking device for the receptacle, a card rod or support and means for locking the same, means for unlocking in one operation both the receptacle and the card rod or support and means for successively returning at one operation the devices to locking position; substantially as described.

14. A card-index system or similar file apparatus, a locking device for the receptacle, a card rod or support and means for locking the same, means for unlocking successively at one operation both the receptacle and the card rod or support and means for returning the devices to locking position; substantially as described.

709,844. LOCKING DEVICE FOR FILING-RECEPTACLES OR THE LIKE. DARWIN R. WRIGHT, Washington, D. C. Filed May 28, 1902. Serial No. 109,202. (No model.)

Claim.—1. In a card-indexing system or similar filing apparatus, a locking device for the receptacle, a card rod or support, and means for locking the same, means for unlocking at one operation both the receptacle and the card rod or support, and means for returning the devices to locking position independently of each other; substantially as described.

2. In a card-indexing system or similar filing apparatus, a locking device for the receptacle, a card rod or support, and means for locking the same, means for simultaneously unlocking both the receptacle and the card rod or support, and means for returning the devices to locking position; substantially as described.

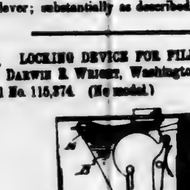

3. In a card-indexing system or similar filing apparatus, a locking device for the receptacle, a card rod or support, and means for locking the same, means for simultaneously unlocking both the receptacle and the card rod or support, and independently-operated means for returning the devices to locking position; substantially as described.

4. In a card-indexing system or similar filing apparatus, a locking-bolt for the receptacle, a card rod or support, and a locking-lever therefor, means for retracting the bolt and locking-lever, means for holding them in retracted position, and means for releasing them independently; substantially as described.

5. In a card-indexing system or similar filing apparatus, a locking-bolt for the receptacle, a card rod or support, and a locking-lever therefor, means for retracting the bolt and locking-lever, catches for holding the same in retracted position, and means for releasing the catches independently; substantially as described.

6. In a card-indexing system or similar filing apparatus, a locking-bolt for the receptacle, a card rod or support, and a locking-lever therefor, means for simultaneously retracting the bolt and locking-lever, catches for holding the same in retracted position, and means for releasing the catches independently; substantially as described.

7. In a card index system or similar filing apparatus, a locking device for the receptacle, a card rod or support, and means for locking the same, means for unlocking the receptacle and card rod or support in one operation, catches for holding the parts in unlocked position, and means for releasing the catches independently of each other; substantially as described.

8. A filing-receptacle having a locking-bolt, a card rod or support, and a locking-lever therefor; a pivoted lever connecting the locking-bolt and locking-lever, means for operating the pivoted lever to retract the locking-lever in one operation with the bolt, and means for releasing the bolt and locking-lever; substantially as described.

9. A filing-receptacle having a locking-bolt, a card rod or support, and a locking-lever therefor, a pivoted lever normally engaging the locking-bolt and locking-lever, means for operating the same to retract the bolt and locking-lever, and means for releasing the bolt and locking-lever; substantially as described.

10. A filing-receptacle having a locking-bolt, a card rod or support, and a locking-lever therefor, a pivoted lever normally engaging the locking-bolt and locking-lever, means for operating the same to retract the bolt and locking-lever, catches for holding the bolt and locking-lever retracted, and means for operating the catches to cause them to release the bolt and locking-lever; substantially as described.

709,845. LOCKING DEVICE FOR FILING-RECEPTACLES OR THE LIKE. DARWIN R. WRIGHT, Washington, D. C. Filed July 12, 1902. Serial No. 115,374. (No model.)

Claim.—1. In a card-index system or similar filing apparatus, a card rod or support, a locking device therefor, a locking device for the receptacle, and a movable support carrying both locking devices, and means for unlocking and locking them in one operation; substantially as described.

2. In a card-index system or similar filing apparatus, a card rod or support, a locking device therefor, a locking device for the receptacle, and a movable support carrying both locking devices, and means for unlocking them, a catch for holding the movable support in retracted position, and means for releasing the catch to allow the return of the support; substantially as described.

3. In a card-index system or similar filing apparatus, a card rod or support, a locking device therefor, a locking device for the receptacle, and a movable support carrying both locking devices, and means for unlocking them, said movable support having a series of notches, a catch respectively engaging said notches as the support is moved to successively unlock the receptacle and card-rod, and means for releasing the catch; substantially as described.

4. In a card-index system or similar filing apparatus, a locking device therefor, a card rod or support, a locking device therefor, and a single pivoted lever carrying the locking device for the receptacle and for the card rod or support, and means for operating it; substantially as described.

709,846. AMMONIA-GENERATOR. JAMES A. YOUNG, Nyack, N. Y., assignor, by direct and mesne assignments, to Conrad Doerrsch, trustee, Nyack, N. Y. Filed June 3, 1901. Serial No. 62,582. (No model.)

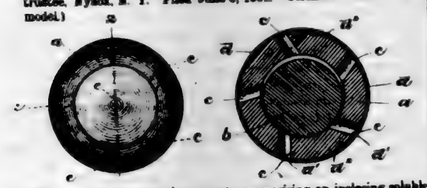

Claim.—1. An ammonia-generator comprising an inclosing soluble member, and an inner soluble member or core, the inclosing member having orifices which receive liquid and conduct it to the inner member.

2. An ammonia-generator comprising an inclosing soluble member, and an inner soluble member or core, the inclosing member having orifices which receive liquid and conduct it to the inner member and are sealed at their outer ends by penetrable and relatively insoluble caps.

3. An ammonia-generator comprising an inclosing soluble member, and an inner soluble member or core, the inclosing member having a shell which is relatively insoluble, and orifices which extend to the inner member.

4. An ammonia-generator comprising an inclosing soluble member, and an inner soluble member or core, the inclosing member having a shell which is relatively insoluble, and orifices which extend to the inner member and are closed at their outer ends by parts of said shell.

5. An ammonia-generator comprising an inclosing soluble member, and an inner soluble member or core, the inner member being loose within the outer member, so that a space exists between the two members, while the outer member has orifices extending to said space.

6. A soluble ammonia-generator comprising a rotatable inclosing member, and an inner member or core, the inclosing member having orifices which are tangentially arranged, whereby the gases generated by the entrance of water into said orifices are caused to rotate the generator.

7. A soluble ammonia-generator comprising a spherical hollow outer member, and a spherical inner member or core within the outer member, the outer member having tangential orifices.

8. A soluble ammonia-generator comprising an inclosing member, and an inner member or core, the inclosing member having a shell which is relatively insoluble, and orifices which extend to the inner member, said shell being composed of an inner layer d^2 and an outer layer d.

709,847. MEANS FOR DRIVING GENERATORS BY POWER TAKEN FROM CAR-AXLES. JOHN L. CREVELING, New York, N. Y. Filed Sept. 11, 1901. Serial No. 75,014. (No model.)

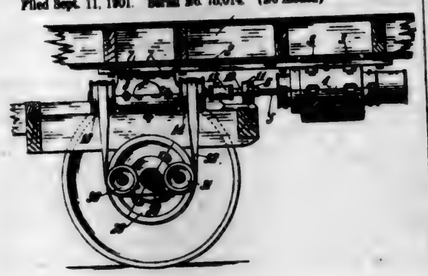

Claim.—1. The combination of a movable vehicle and bed-plate or frame secured thereto, a generator and a driving-gear, embodying a pulley intermediate the generator and the support for the driving-gear, means for securing the generator and driving-gear to the bed-plate in operative positions fixed with respect to each other, and a shaft and disengageable coupling or connection 11 intervening between the generator and the driving-gear, and an endless belt, whereby either the generator or the driving-gear may be removed from the structure and replaced by a duplicate without the necessity of readjustment of the parts, and the coupling may be separated in order that the belt may be placed around the pulley without disturbing the relations of the parts.

2. The combination of a bed-plate or frame secured to a car, a generator and its driving-gear and means for supporting the generator and driving-gear from the car in fixed operative relation to each other from the common bed-plate or frame, an endless belt, a separable coupling intervening between the generator and driving-gear and a pulley driven from the car-axle, the said endless belt connecting the said pulley and driving-gear.

3. The combination of a car and generator supported thereby, an endless belt receiving motion from the motion of the car and a driving-gear also supported by the car, and a freely-disengageable coupling or connection intervening between the driving-gear and the generator which when separated affords an opening for the passage of the endless belt.

4. The combination of a source of power liable to reversals in direction of movement, a direct-connected generator and a driving-gear therefor driven from the source of power aforesaid and connected by a separable clutch and a single endless belt whose direction of movement follows the direction of movement of the reversible source of power, and which may be passed through the separable clutch, the said driving-gear being organized to drive the generator in a single direction, notwithstanding reversals in direction of movement of the belt.

5. The combination of a generator, a source of power whose direction of motion is liable to reversals, a driving-gear intervening between the source of power and the generator, and embodying in its structure a plurality of clutches adapted to communicate motion in one direction only to the generator, irrespective of the reversals of the direction of movement of the source of power, one of the said clutches by its engagement causing complete disengagement of the other.

6. The combination of a car, a generator, and belt deriving its movement from the rotation of the axle of the car, and a suitable shaft provided with a plurality of clutches each comprising separable parts and means for separating the parts of one clutch by the engagement of the parts of the other clutch.

7. The combination of a generator and a driving-gear comprising in its structure a plurality of automatic clutches deriving motion from a single belt, one of the clutches being entirely disengaged and the other engaged during the entire time that it is in service or until a reversal of movement of the belt takes place.

8. The combination of a generator and a driving-gear comprising in its structure a plurality of connected clutch members only one of which is in driving engagement at a time, the other being entirely disengaged, and a spring device forming part of the connection between the clutches and acting upon the said clutch members to permit either to yield.

9. In a driving-gear the combination of a shaft and a plurality of clutches coöperating therewith, and adapted to be driven in opposite directions and each subject to reversals of motion and means whereby disengagement of one clutch causes the engagement of the other.

10. The combination of a generator having a rotary shaft, a driving-gear having a rotary shaft adapted to be driven in one direction only irrespective of reversals of the driving power, and a clutch or coupling serving to transmit motion from one of the shafts to the other in one direction only whereby the generator may be rotated in one direction without affecting the driving-gear clutch mechanism.

11. The combination of a generator and driving-gear and a clutch or coupling intervening between the said generator and driving-gear having means adapted to be engaged or disengaged by the relative direction of rotation of the respective shafts of the generator and driving-gear.

12. The combination of a generator and a driving-gear therefor, comprising in its structure a shaft, a plurality of separable clutches coöperating therewith and means whereby one clutch entirely disengages the other clutch by motion derived from its own engagement.

13. The combination of a generator and a driving-gear therefor comprising in its structure driving clutch members, a shaft, clutch mechanism fixed upon the shaft to revolve therewith and having a lateral motion thereon to engage the driving clutch members.

14. The combination of a generator and a driving-gear therefor, comprising in its structure a shaft, a plurality of separable clutches and a plurality of coöperating pulleys rotatable in opposite directions, and means whereby the rotation of one pulley will cause lateral movement and en-

gagement of a laterally-movable member of the clutches with the other pulley.

15. The combination of a generator having a rotary shaft, a driving-gear having a rotary shaft adapted to be driven in one direction only irrespective of reversals of the driving power and a clutch or coupling serving to transmit motion from one of the shafts to the other in one direction only whereby the driving-gear may be rotated in one direction without rotating the armature.

16. The combination of a generator and driving-gear arranged in fixed operative relation to each other, and a driving-pulley and an endless belt transmitting motion from the driving-pulley to the driving-gear, of a disengageable coupling 17 connecting the generator and driving-gear and permitting the application of an endless belt, substantially as described.

709,848. COMBINED DYNAMO AND DRIVING-GEAR. JOHN L. CHEVELIER, New York, N. Y. Filed Nov. 18, 1901. Serial No. 82,717. (No model.)

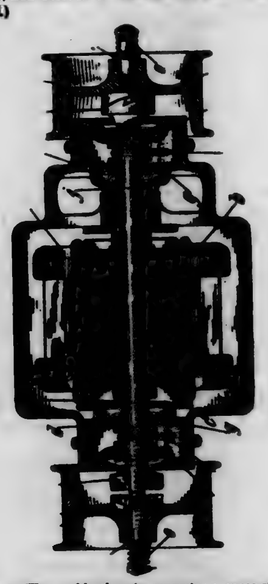

Claim.—1. The combination of a generator, a source of power whose motion is liable to reversals, a driving-gear intervening between the source of power and the generator and embodying in its structure clutch mechanism and coöperating pulleys placed on opposite sides of the armature adapted to communicate motion in one direction only to the generator, irrespective of the reversals of the direction of movement of the source of power.

2. The combination of a generator, a source of power whose direction of motion is liable to reversals and clutch mechanism and coöperating pulleys placed at opposite ends of the armature, adapted to communicate motion in one direction only to the generator, irrespective of the reversals in direction of movement of the source of power.

3. In a car system of distribution, the combination of a generator, a hanger therefor, pulleys and coöperating clutch members on each side of the hanger, a pulley driven from the axle of the car and an endless belt engaging all of said pulleys.

4. In a system of distribution for railway-cars, the combination of a generator, a hanger therefor, pulleys on either side of the car-axle and hanger and clutch members and coöperating means intervening between the pulleys, the clutch members of one pulley being entirely out of engagement when the clutch members of the other pulley are engaged.

5. The combination of a generator, provided with a shaft, a plurality of pulleys, a hollow shaft concentric with said shaft adapted to communicate motion to a movable part of the generator and clutch mechanism intervening between the pulleys and the hollow shaft.

6. The combination of a generator having a shaft, a plurality of clutches upon the said shaft, one on each side of the generator, and means whereby one of the clutches is entirely disengaged and the other is entirely engaged during the entire time it is in service or until a reversal of movement of the driving force.

7. The combination in a car-lighting system of a generator having a reversible source of power, a movable part, a plurality of shafts concentric with each other, a plurality of clutches each clutch having a member carried by one shaft and a plurality of pulleys each carrying a clutch member, said clutch mechanism being so connected to the generator as to communicate motion thereto in one direction only irrespective of the reversals of movement of the source of power.

8. The combination in a car-lighting system of a variable source of power, a generator comprising in its structure a rotary part and a shaft for driving the same, the said shaft being provided with pulleys one on each side of the said rotary part and clutches intervening between the said pulleys and the said rotary part, whereby the said rotary part is driven in one direction only.

9. The combination of a generator driven from a reversible source of power, a shaft, a plurality of pulleys concentric with the said shaft on opposite sides of the generator and a plurality of positively-engaging clutches adapted to communicate motion to the generator in one direction only irrespective of the reversals of direction of movement of the source of power.

10. A generator provided with a shaft combined with a plurality of pulleys concentric with said shaft one on each side of the generator and clutch members each clutch member coöperating with a part forming a part of the driving-gear of the generator, the said clutch members being engaged one from the other by reciprocal action and one clutch member being entirely disengaged when the other is engaged.

11. The combination of a dynamo-frame constituting a shaft hanger or support and a shaft and a plurality of pulleys, one on each side of the dynamo-frame each adapted to drive the dynamo and means intervening between the pulleys whereby the pulleys may be driven in opposite direction.

12. In a system of distribution for railway-cars, the combination of a generator, a casing therefor serving as a hanger or support for the generator, and pulleys and coöperating clutches on either side of the same, each pulley open at one side to permit the application thereto of an endless belt passing around other pulleys without the necessity of opening or splicing the belt.

13. The combination of a generator, a dynamo-frame serving as a hanger or support therefor, driving-pulleys for the said generator on opposite sides thereof, and revolving in opposite directions, and a plurality of clutches, one clutch coöperating with each pulley and means whereby the movement of engagement of one clutch serves to effect the complete disengagement of the other clutch.

14. The combination with a car of a pulley deriving rotation from motion of the car of a generator having an armature and pulleys in proximity to the ends of the armature and clutch members transmitting motion from the pulleys to the armature in one direction only and an endless belt engaging all the above-named pulleys.

709,849. VAULT-LIGHT. ALPHONSE DU MAS, New York, N. Y. Filed Oct. 19, 1901. Serial No. 79,258. (No model.)

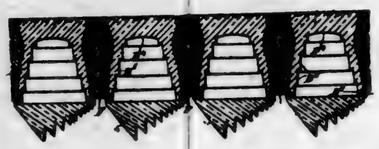

Claim.—1. A vault-light, comprising a self-sustaining concrete slab and diverging lenses embedded therein, and each having a hollow extension at its under side, the opening of the extension increasing in size toward the bottom, the top of the lens being so constructed relative to the extension-opening that the downward rays emerging from the inner face of the top will pass in diverging beams through the extension-opening, the extension having prismatic ribs running crosswise of the axis of the lens at the inner surface of the extension-walls, as set forth.

2. A vault-light having a diverging lens provided with an integral hollow extension at its under side, the opening of the extension increasing in size toward the bottom, the top of the lens being so arranged relative to the extension-opening that the downward rays emerging from the inner face of the top will pass in diverging beams through the extension-opening, the said inner face of the extension being provided with prismatic ribs extending crosswise of the axis of the lens and arranged to intercept and refract through the prisms downward rays of light entering into the mass of the wall of the extension, the outer side of said extension being contracted between the top and the bottom as set forth.

3. A vault-light having a diverging lens, and a hollow extension at the under side of the lens, the opening of the extension increasing toward the bottom, the inner face of the top of the diverging lens being concave, the curvature of said surface corresponding to the size of the extension-opening, so that the downward rays emerging from the said inner face of the top of the lens will pass through the extension-opening in a direction approximately parallel with the inner face of the wall thereof, the inner wall of the extension having a series of prismatic ribs extending crosswise of the axis of the lens and arranged in step form to intercept and refract through the prisms the downward rays entering into the mass of the wall of the extension, the outer side of the wall of said extension having a curved constructed portion between the top and bottom, as set forth.

4. A vault-light having a diverging lens with a hollow extension therefor, the opening of the extension increasing toward the bottom of the extension so as to bring the inner face of the wall of the extension parallel with the rays emerging from the inner surface of the lens above, the said inner face of the wall of the extension having prismatic ribs running crosswise of the axis of the lens and arranged in step form to intercept and refract through the prisms, the downward rays entering into the mass of the wall of the extension, as set forth.

5. A vault-light, comprising a concrete slab, reinforce members embedded therein, and lenses embedded in the said slab and extending from the top to the bottom thereof, the lenses each having a hollow extension the opening of which increases in size toward the bottom, the inner side of the wall of the extension having prismatic ribs crosswise of the axis of the lens and arranged in step form and deflecting the rays of light sidewise through the prisms, the reinforce members extending in the slab material between adjacent lenses, as set forth.

6. A vault-light having lenses with hollow extensions and pendants secured thereto, the lenses and the extensions serving to send the rays of light in a downward direction, and the said pendants closing up the lower part of the hollow extension, the under part of each pendant being provided with graduated prism-ribs, the lower projecting edges of the prism-ribs extending in a slanting line whereby the horizontal refracted rays will not be intercepted by adjoining prism-ribs, as set forth.

7. A lens for vault-lights, comprising a top having its under side concave and a hollow extension for the top, the opening in the said extension increasing in size from the top to the bottom, the curvature of the under face of the top corresponding to the size of the opening to cause the downward rays emerging from the inner face of the top to pass through the extension-opening parallel with the inner surface thereof, the said inner surface of the extension having prismatic cross-ribs arranged one above the other in different vertical planes, to intercept and refract through the prisms the downward rays entering into the mass of the wall of the extension, a pendant closing the bottom opening of the hollow extension and having graduated prismatic ribs, and a transparent material in the joint of said extension and bottom pendant, as set forth.

8. A vault-light, comprising a concrete slab and lenses embedded therein, each lens having a contracted outer surface and comprising a top having its under surface concave to diverge the rays of light, and a hollow extension for the top having its opening increasing in size toward the bottom, the curvature of the under surface of the top corresponding to the size of the extension-opening to cause the downward rays emerging from the inner concave surface of the top to pass through the extension-opening approximately parallel with the inner surface of the wall thereof, the inner face of the extension having prismatic ribs, and a waterproof and elastic material interposed between the slab material and the lens and forming with the latter a mirror-surface to reflect the rays passing into the extension-body, as set forth.

9. A vault-light, comprising a top and a hollow integral extension on the under side of the said top, the said top having its upper and under surfaces arched, and the inside of the said extension being provided with prism-ribs extending crosswise of the axis of the lens, and a pendant having a flange for attachment to a flange on the said extension, the said pendant also having graduated prism-ribs at its under side and arranged in step form, as set forth.

10. A lens for a vault-light, comprising a top, a depending hollow extension therefor, the opening in the extension increasing in size from the top to the bottom, the inner wall of said extension being provided at its opposite sides with undercuts forming prism-ribs, the ribs of each side being arranged one above the other but in different vertical planes, and a pendant closing the said hollow extension at the lower end, the pendant having a series of prism-ribs at its under side, the ribs of the pendant being graduated in size and arranged in step form, as set forth.

11. A vault-light comprising a concrete slab, lenses embedded therein, each lens being rectangular in shape and comprising a top and a depending hollow extension for the top, the lenses each having a contracted outer surface, a coating for the said outer surface to form a reflecting mirror-surface thereof, the opening of the said hollow extension increasing in size from the top to the bottom and the inner surface of said extension being provided at opposite sides with undercuts forming prism-ribs, the ribs of each side being in different vertical planes, and a pendant closing the hollow extension at the lower end and having a series of prism-ribs at its under side, the ribs being graduated in size and arranged in step form, as set forth.

12. A vault-light provided with a lens comprising a top, concave on its under side for diverging the rays passing through the top, and a depending hollow extension for said top, the opening in the extension increasing in size from the top to the bottom, the inner face of the wall of said extension being so arranged relative to the concave top that the diverging rays extend parallel therewith, the lens having a contracted outer surface and a coating for said outer surface to form a reflecting mirror-surface thereafter, the said inner wall of the extension being provided at opposite sides with a series of undercuts forming prism-ribs arranged one above the other in different vertical planes, the said prism-ribs being arranged to intercept and refract the downward rays entering the mass of the wall of the extension as set forth.

13. In vault-lights having prismatic-ribbed surfaces for deflecting the rays of light, a series of graduated prismatic ribs running parallel side by side and having their projecting edges on a slanting line to allow the emerging rays to pass clear of the projecting edges of adjoining prismatic ribs, the opposite sides of each prismatic rib being inclined at different angles to a vertical plane passing through the projecting edge or apex of the rib, whereby one side of each prism deflects the downward rays and the other side allows the deflected rays to pass through and emerge in a lateral direction, as set forth.

14. A lens for vault-lights rectangular in shape and comprising a top and a depending hollow extension, the inner surface of said extension being provided at opposite sides with parallel prismatic ribs extending crosswise of the axis of the lens, the ribs of each side being arranged one above the other but in different vertical planes, as set forth.

15. A lens for vault-lights comprising a top concave on the under surface for diverging the downward rays passing through the top, and a depending hollow extension for said top, the opening in the extension increasing in size from the top to the bottom, and so arranged relative to the curvature of the concave top that the rays emerging from the inner surface of the top will pass through the extension-opening approximately parallel with the inner face thereof, the said inner face of the extension being provided at opposite sides with parallel prism-ribs, the ribs of each side running crosswise of the axis of the lens, and arranged one above the other in different vertical planes, as set forth.

709,850. METALLIC TIE. WILLIAM W. PIKE, Garrett county, Md. Filed Oct. 16, 1901. Renewed Aug. 16, 1902. Serial No. 119,915. (No model.)

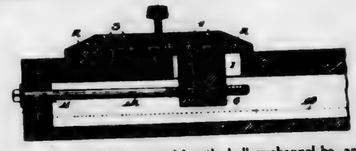

Claim.—A metallic tie comprising the hollow channel-be. apertured as at 7 in its upper wall, the plates 2, one of which is fixedly held to the top of said tie, a block 6 movable in said aperture, to which block the second of said plates is secured, a block 8 in the end of the tie, a bolt passing through said block 8 and having threaded connection with block 6, substantially as shown and described.

709,851. ARTIFICIAL FUEL. CHARLES B. HARRIS, New York, N. Y., assignor to S. I. Atwater, trustee, New York, N. Y. Filed Jan. 7, 1902. Serial No. 88,783. (No specimens.)

Claim.—1. The herein-described artificial fuel, consisting of petroleum-coke, Texas asphalt, rosin, glutinous matter, water and coal-dust.

2. The herein-described artificial fuel, consisting of petroleum-coke, rosin, glutinous matter, water and coal-dust.

3. The herein-described artificial fuel, consisting of weight of five pounds of petroleum-coke, three and one-half pounds of Texas asphalt, one and one-half pounds of glutinous matter, ten pounds of water and eighty pounds of coal-dust.

4. The herein-described artificial fuel, consisting of petroleum-coke, glutinous matter, water and coal-dust.

709,852. CINDER-SIFTER. HORSEMAN MAYNARD, Montreal, Canada. Filed Dec. 14, 1900. Serial No. 39,996. (No model.)

Claim.—1. In a device of the class described the combination with an inclosing case and a portable screening-box, of a skeleton frame con-

sisting of two rectangular sections centrally secured together substantially at right angles to each other and journaled in said case, means for revolving said frame, and a cover over said frame to hold said screening-box in the frame and to close the screening-box when revolved by the frame.

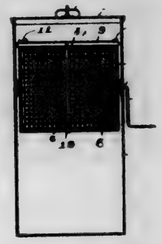

2. A cinder-sifter, consisting of a frame formed by two rectangular sections centrally secured together at right angles to each other and journaled in a support, a crank attached to said frame for rotating the same, a case surrounding the frame, locking mechanism for holding the skeleton frame in normal position, a portable screening-box adapted to be carried by the frame, a cover over the frame and screening-box, and means for locking the cover; said screening-box consisting of a pair of side walls with wire screening extending across three of its sides and fastened to said walls.

3. A cinder-sifter, consisting of a case A, a skeleton frame B journaled in said case and consisting of two rectangular sections centrally secured together at right angles to each other, a crank for revolving said frame, a screening-box C, and a cover over the skeleton frame adapted to close and hold the screening-box in said frame.

4. A cinder-sifter, consisting of a casing A, a screening-box C, a skeleton frame B formed by two rectangular sections centrally secured together at right angles to each other and adapted to receive the screening-box, a crank carried by said frame for rotating the same in the casing, a cover over the frame adapted to close and hold the screening-box within the frame, a lip 10 for receiving the edge of the cover, a jaw 13 carried by the frame and a lever 11 pivoted on the cover to engage the jaw and lock the cover over the screening-box, and the hook 15 for holding the frame in normal position.

709,853. MANIFOLD DUPLICATING DEVICE. HENRY H. NORRINGTON, West Bay City, Mich. Filed Mar. 31, 1902. Serial No. 100,794. (No model.)

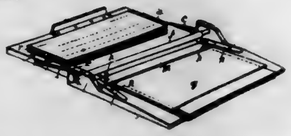

Claim.—1. In a duplicating device, a base, provided with a revoluble carbon-roller, means to secure a series of blanks upon the base, a pressure-plate, and springs having a removable engagement upon said plate.

2. In a duplicating device, a base, brackets upon said base, a revoluble carbon-roller carried by said brackets, means for holding a block of blanks upon said base, a reversible cover provided with arms pivotally engaged at their extremities with said brackets, and with the cover intermediate the longitudinal marginal edges thereof whereby the cover may fold either side uppermost when opened or closed, and means to hold a separate block of blanks upon said cover.

709,854. EXPLOSIVE PROJECTILE OR SHELL FOR ORDNANCE. CARL PUPP, Spandau, Germany. Filed Dec. 9, 1901. Serial No. 85,199. (No model.)

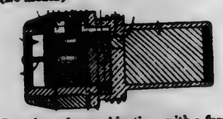

Claim.—1. In a fuse, the combination, with a fuse-case, a fulminate and a firing-pin within said case and a plunger arranged to bring said fulminate and firing-pin together upon impact, of a delay-action device, a carrier mounted on the plunger and supporting the delay-action device, said carrier having an open bore through which the fulminate may communicate with the shell charge, and means for rotating said carrier whereby either the open bore or the delay-action device may be alined with the fulminate.

2. In a fuse, the combination, with the fuse-case, a fulminate and a firing-pin within said case, and a plunger arranged to bring said fulminate and firing-pin together upon impact, of a carrier journaled upon the plunger and provided with an open bore, a delay-action device mounted on said carrier, and means for adjusting the delay-action device or the open bore into alinement with the fulminate.

3. In a fuse, the combination, with a fuse-case, a fulminate and a firing-pin within said case, and a plunger arranged to bring the firing-pin and the fulminate together, said plunger having a central standard, of a carrier rotatable on said standard and provided with an open bore, a delay-action device mounted in said carrier, and means for rotating said carrier from the exterior of the fuse-case.

4. In a fuse, the combination, with a fuse-case, a fulminate and a firing-pin within the same, and a plunger arranged to bring said fulminate and firing-pin together upon impact, of a carrier movably mounted on the plunger and provided with a tongue and an open bore, a delay-action device mounted in said carrier, and a ring movably mounted on the exterior of the fuse-case and arranged to engage the tongue of the carrier, whereby the same may be rotated.

5. In a fuse, the combination with a fuse-case having a longitudinal slot, a cap-ring threaded onto said fuse-case, and an adjusting-ring movable about the fuse-case below the cap-ring, said adjusting-ring having an internal recess opposite the slot in the fuse-case, of a fulminate and a firing-pin within the fuse-case, a plunger arranged to bring said fulminate and firing-pin together upon impact, a delay-action device, and a carrier upon which said device is mounted, said carrier having an open bore through which the ignition device may communicate with the shell charge, and also having a tongue extending through the slot in the fuse-case and into the recess in the adjusting-ring.

709,855. REIN-HOLDER. WILLIAM P. SAMPSON, Kansas City, Mo., assignor of one half to Pierre S. Brown, Kansas City, Mo. Filed May 22, 1902. Serial No. 108,568. (No model.)

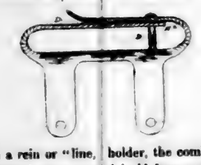

Claim.—1. In a rein or "line, holder, the combination of a base-plate with four U-shaped arms curved in U form equidistant from each other with holes near their outer ends in combination with two narrow spring-arms formed from a portion of the base-plate and extending from the ends of said base-plate and curved outwardly and back until one overlaps the other, the end of the outer lapped spring-arm being curved slightly upward or outward, a hole through both of said spring-arms and a bolt or pin passing through both, the hole in the lower or inner spring-arm being slotted or made oblong for free movement of said arm on the bolt or pin which passes through it, all substantially as set forth.

2. In a rein-holder the combination of two spring-arms formed from a portion of the base-plate and curved oppositely from the four U-shaped arms, returning until one overlaps the other and when held by a securing-pin causing a strong spring-pressure between the two surfaces in contact.

3. In a rein-holder the combination of a base-plate with four U-shaped arms curved in U form equidistant from each other with holes near their outer ends in combination with two spring-arms having corrugated or milled faces on their contact-surfaces, they being held firmly together by a pin or bolt, said bolt also preventing the reins from passing over and beyond the spring-surfaces.

709,856. POWER-TRANSMITTING MACHINERY. EDWIN WILSON, New York, N. Y. Filed June 10, 1902. Serial No. 111,012. (No model.)

Claim.—1. In a power-transmitting device or clutch, the combination with the driving and driven members thereof, of a crank connecting with one of said members; a grip-lever connecting with the other; and a slot-and-pin connection between said crank and lever substantially as and for the purposes set forth.

2. In a power-transmitting device or clutch, the combination with the driving and driven members thereof, of a crank connecting with one of said members; a grip-lever connecting with the other; a slot-and-pin connection between said crank and lever; and a spring-operated pawl

pressing upon the grip end of said grip-lever, substantially as and for the purposes set forth.

REISSUES.

12,084. THILL-COUPLING. CHRISTOPHER C. BRADLEY, Syracuse, N. Y. Filed June 7, 1902. Serial No. 110,691. Original No. 697,603, dated Apr. 15, 1902. (Division A.)

Claim.—1. In a thill-coupling, the combination of a fixed jaw and a movable jaw, a lever, and a longitudinally-movable bar actuated by the lever and provided with means to open and close the movable jaw, said bar being enabled to change its position lengthwise with reference to the movable jaw.

2. In a thill-coupling, the combination of a fixed jaw, a movable jaw provided with a transverse slot, a lever, and a tightening-bar operated by said lever and arranged with its free end in the slot and capable of lengthwise movement therein for the purpose set forth.

3. In a thill-coupling, the combination of a fixed jaw, a movable jaw provided with a transverse slot, a lever, and a tightening-bar attached to said lever and arranged with its free end in the slot and capable of lengthwise movement therein, said free end having a projection for opening the jaw.

4. A thill-coupling comprising fixed and movable jaws, a lever having a fixed fulcrum, and means actuated by the lever and having a sliding engagement with and independently of the movable jaw to close the same for the purpose described.

5. A thill-coupling comprising fixed and movable jaws, a sliding bar engaging the jaw to close and open the same and having one end movable relatively to the jaw beyond its pivot when the jaw is closed, and means for operating the bar.

6. A thill-coupling comprising a fixed jaw and a movable jaw having a slot, a sliding member having one end movable in the slot relatively to the movable jaw and a lever having a fixed fulcrum and connected to slide said member for the purpose described.

7. A thill-coupling comprising a fixed jaw and a movable jaw having a slot, a lever having a fixed fulcrum, a bar having one end pivoted to the lever and its other end provided with a hook and movable in said slot independently of the movable jaw, the free end of the bar having a sliding contact with one of the walls of the slot to close the jaw as the lever is moved in one direction and the hook engaging the other wall of the slot to open the jaw as the lever is moved in the opposite direction.

12,085. THILL-COUPLING. CHRISTOPHER C. BRADLEY, Syracuse, N. Y. Filed June 7, 1902. Serial No. 110,692. Original No. 697,603, dated Apr. 15, 1902. (Division B.)

Claim.—1. A thill-coupling comprising a fixed jaw and a movable jaw having a slot, a spring having one end inserted in the slot, the movable jaw having a lengthwise-sliding engagement with the spring, and a lever to act on the spring to close the movable jaw.

2. In a thill-coupling, a fixed jaw and a movable jaw, a spring having one end fixed and its other end free and bearing with a sliding engagement against the movable jaw, and a movable cam acting on the spring to close the jaw.

3. A thill-coupling comprising two jaws, one being movable and provided with separated bearing-faces, a spring having one end fixed and its other end in sliding contact with said bearing-faces and tensioned to separate the jaws, and a lever acting upon and against the tension of the spring to close the jaws.

4. A thill-coupling comprising two jaws, one being movable and provided with separated bearing-faces, a spring having one end fixed and its other end in sliding contact with said bearing-faces and tensioned to separate the jaws and a movable cam engaging the spring between its fixed end and the bearing-faces to close the jaws.

5. A thill-coupling comprising a fixed jaw, a movable jaw having separated bearing-faces, a spring fixed at one end and having its other end inserted between the bearings in sliding contact therewith, and a lever provided with a cam to control the operation of the movable jaw.

DESIGNS.

36,081. TOY STOVE. CHARLES A. BAILEY, Cromwell, Conn., assignor to the J. and E. Stevens Co., Cromwell, Conn. Filed June 11, 1902. Serial No. 111,211. Term of patent 7 years.

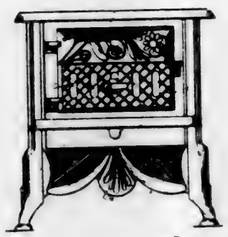

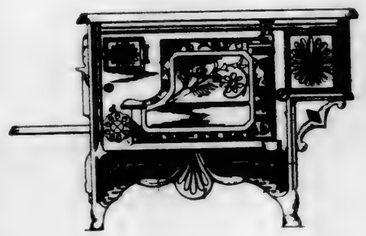

38,081.

Claim.—The ornamental design for a toy stove, as herein shown and described.

38,082. STOVE. MORRIS MAGEE, Philadelphia, Pa. Filed Aug. 26, 1902. Serial No. 121,154. Term of patent 7 years.

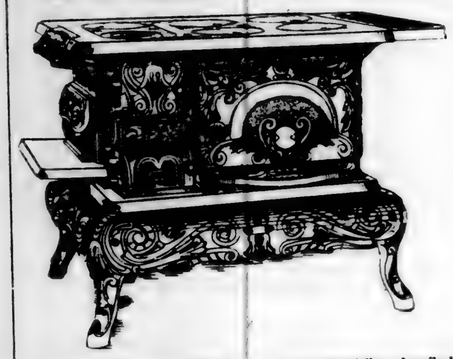

Claim.—The ornamental design for a stove, substantially as described and as shown in the accompanying drawing.

TRADE-MARKS

REGISTERED SEPTEMBER 23, 1902.

38,901. PENS. C. HOWARD HUNT PEN CO., Camden, N. J. Filed Aug. 9, 1902.

A symbol representing the point of a writing-pen in a field inclosed by a circular line. Used since July 19, 1902.

38,902. PENCIL-SHARPENERS. EAGLE PENCIL CO., New York, N. Y. Filed Aug. 6, 1902.

EAGLE

The word "EAGLE." Used since 1870.

38,903. SHIRTS, COLLARS, AND CUFFS. HENRY DOBSON, Paterson, N. J. Filed July 30, 1902.

Metropolitan.

The word "METROPOLITAN." Used since July 1, 1902.

38,904. SHIRT-WAISTS AND SKIRTS. GOTTLIEB & BIRK, New York, N. Y. Filed June 30, 1902.

DEFENDER

The word "DEFENDER." Used since January 1, 1900.

38,905. OVERALLS AND SHIRTS AND JUMPERS TO BE WORN IN CONNECTION WITH OVERALLS. JAMES E. ADAMS, Quincy, Ill. Filed June 10, 1902.

The letters "A I" upon a black ground surrounded by a border of concentric rectangular lines. Used since May 1, 1902.

38,906. SILKS. CONSUMERS SILK MILLS AND COUPON EXCHANGE CO., Newark, N. J. Filed July 14, 1902.

The pictorial representation of mills at one hand, women working at sewing-machines at the other hand, and, between, a horn of plenty supplying a stream of coupons flowing from the mills toward the women. Used since June, 1902.

38,907. BOOTS AND SHOES. JOHN W. CARROLL, Lynchburg, Va. Filed May 26, 1902.

The words "LONE JACK" and the representation of the bust of a man smoking a pipe. Used since May, 1900.

38,908. BOOTS AND SHOES. JOHN W. CARROLL, Lynchburg, Va. Filed May 26, 1902.

Brown Dick

The words "BROWN DICK." Used since May, 1900.

38,909. BOOTS AND SHOES. SANGER BROS., Dallas, Tex. Filed July 25, 1902.

The representation of an ox's head surmounting a ribbed shield, with scrollwork forming a semicircle about the ox's neck and the word "HEREFORD" printed on the shield. Used since April 1, 1902.

38,910. MISSES' AND CHILDREN'S BOOTS AND SHOES. DONGOLA DONG SHOE CO., Montclair, N. J., and Boston, Mass. Filed July 31, 1902.

The representation of a young woman standing by a table upon which are various models of boots and shoes, sketches, papers, and designing and drawing appliances. Used since June 1, 1902.

38,911. CERTAIN NAMED BOOTS AND SHOES. DOROTHY DODD SHOE CO., Boston, Mass. Filed July 31, 1902.

Dorothy Dodd

The words "DOROTHY DODD." Used since January 1, 1902.

38,912. MEN'S, BOYS', AND YOUTHS' SHOES. R. A. CORBIN & SON CO., Webster, Mass. Filed July 22, 1901.

OWL

The representation of an owl or the word "OWL," either or both. Used since August 9, 1888.

38,913. FELT AND CERTAIN NAMED FELT GOODS. BINGHAMTON FELTING CO., Binghamton, N. Y. Filed July 15, 1902.

MONOGRAM

The word "MONOGRAM." Used since February 1, 1902.

38,914. COTTON BELTING. THE WHITEHURST BELTING CO., Baltimore, Md. Filed May 23, 1902.

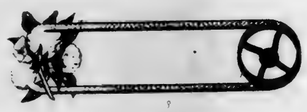

The pictorial representation of flowers or blooms, leaves, and bolls of the cotton-plant. From the cotton bolls the fiber thereof is extended in the form of a belt, which passes over a pulley, shown in perspective. Used since May 3, 1902.

38,915. SOAP. GOODHAIR REMEDY COMPANY, Newark, Ohio. Filed June 9, 1902.

The word "GOODHAIR" and the bust portrait of Fred Johnson, of Newark, Ohio. Used since October, 1900.

38,916. TONIC MEDICINAL COMPOUND. WALTER B. KREHER, Chicago, Ill. Filed July 23, 1902.

38,916.

The figure of a nude athletic muscular man in an upright position, with hands crossed in front and well-developed muscles clearly shown. Used since August 1, 1901.

38,917. TONIC FOR THE BLADDER AND KIDNEYS. THE A. STRIEGL CO., Milwaukee, Wis. Filed July 14, 1902.

JUNIBUCHU

The word "JUNIBUCHU." Used since May 15, 1902.

38,918. CERTAIN NAMED REMEDIAL AGENT. MAIRSDEN & KNAPPE, Sharon Springs, N. Y. Filed July 15, 1902.

PHANGO

The word "PHANGO." Used since June 24, 1902.

38,919. REMEDIES IN TABLET FORM FOR CERTAIN NAMED DISEASES. BERNARD HOYES ROSCHMONT, Centreeoit, Canada. Filed June 19, 1902.

The representation of two circles, within which are Japanese characters, a stork standing on each side, and the words "YASAI ZUTOO" appearing between the circles. Used since May 1, 1902.

38,920. MEDICINE FOR CERTAIN NAMED AILMENTS. WILLIAM JOHN BAILEY, Cowes, England, executor of the estate of Alfred Fennings, deceased. Filed Oct. 7, 1901.

The representation of a child lying in a cradle. Used since January 12, 1857.

38,921. MEDICINES FOR THE CURE OF PULMONARY TROUBLES AND DISEASES OF THE BLOOD. HALLS CREOSOTE COUGH CURE CO., Cordele, Ga. Filed Aug. 24, 1902.

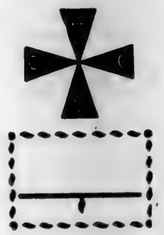

A cross-shaped figure having the letters "HCCC" on the respective arms of the cross and a rectangular-shaped figure formed of broken lines inclosing a straight line and having a dot below the central portion thereof. Used since April 18, 1901.

38,922. MEDICINAL PREPARATIONS HAVING DIGESTIVE AND NUTRITIVE PROPERTIES. REED & CARNRICK, Jersey City, N. J. Filed Mar. 14, 1902.

The representation of a diamond-shaped figure having ornamental projections at and near the ends of its long axis and near each end a circle, one containing the monogram composed of the letters "R C" and the other the letters "P B," and having between said circles the letters and word "R. and C." Used since December 10, 1901.

38,923. LINIMENTS. ROLLAND R. SHAFER, Hamilton, N. J. Filed July 21, 1902.

The representation of a padlock and two crossed keys. Used since May, 1902.

38,924. PORT AND SHERRY WINES. GEO. G. SANDEMAN SONS & CO., London, England. Filed May 27, 1902.

The representation of rocks appearing on a crest-roll and below a ribbon which bears the words "STAT VERITAS," the said representation, with the ribbon, appearing in a circle. Below the circle and inclining upwardly is the facsimile signature, "GEO. G. SANDEMAN SONS & CO." Below and to the right of the facsimile signature is the representation of rocks on a crest-roll, above which appears a ribbon bearing the words "Stat Veritas." Used since December, 1880.

38,925. CIGARS. JOSEPH H. EDWARDS, Kansas City, Mo. Filed Jan. 21, 1902.

38,925.

The pictorial representation of Charles Darwin; Congo, the African cannibal, and Joe, the famous orang-outang, seated in chairs, appropriately costumed and smoking cigars, the words "CHARLES DARWIN, AUTHOR OF THE THEORY OF EVOLUTION," below the representation of Darwin; the words "CONGO, THE AFRICAN CANNIBAL," below the representation of the cannibal, and the words "JOE, THE FAMOUS ORANG-OUTANG," below the representation of the orang-outang, a chain formed of three links and a broken link above said representations, and the words "THE MISSING LINK" below the said words descriptive of said representations. Used since September 15, 1901.

38,926. FLOUR. DEITZ & ORSHER, Cleveland, Ohio. Filed Aug. 5, 1902.

BOZENA

The word "BOZENA." Used since April, 1900.

38,927. CEREAL FOOD PRODUCT. THE FAIR HAVEN FOOD COMPANY, INC., New Haven, Conn. Filed Aug. 2, 1902.

READY BITS

The words "READY BITS." Used since March 15, 1902.

38,928. CEREAL FOOD PRODUCT. THE FAIR HAVEN FOOD COMPANY, INC., New Haven, Conn. Filed Aug. 2, 1902.

A picture of a grain field and the figure of a man in the foreground cutting the grain. Used since March 15, 1902.

38,929. CERTAIN NAMED PACKING-HOUSE PRODUCTS. SCHWARZSCHILD & SULZBERGER COMPANY, Kansas City, Kans., Chicago, Ill., and New York, N. Y. Filed June 24, 1902.

CENTURY

The word "CENTURY." Used since May 1, 1901.

88,930. CERTAIN NAMED PACKING-HOUSE PRODUCTS. SCHWARZSCHILD & SULZBERGER COMPANY, Kansas City, Kans.; Chicago, Ill., and New York, N. Y. Filed June 24, 1902.

AMERICAN BEAUTY

The words "AMERICAN BEAUTY." Used since July 1, 1898.

88,931. CERTAIN NAMED PACKING-HOUSE PRODUCTS. SCHWARZSCHILD & SULZBERGER COMPANY, Kansas City, Kans.; Chicago, Ill., and New York, N. Y. Filed June 24, 1902.

MAJESTIC

The word "MAJESTIC." Used since May 1, 1901.

88,932. CERTAIN NAMED PACKING-HOUSE PRODUCTS. SCHWARZSCHILD & SULZBERGER COMPANY, Kansas City, Kans.; Chicago, Ill., and New York, N. Y. Filed June 24, 1902.

LAUREL

The word "LAUREL." Used since May 1, 1901.

88,933. LARD. THOMAS L. BOYD, Chicago, Ill. Filed July 5, 1902.

WHITE CREST

The words "WHITE CREST." Used since May 7, 1902.

88,934. CANNED SALMON. ALASKA PACKERS ASSOCIATION, San Francisco, Cal. Filed June 16, 1902.

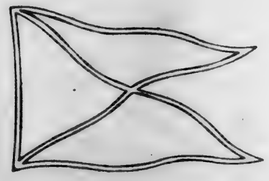

The representation of a divided or fish-tailed flag. Used since November 1, 1893.

88,935. LIQUID-COOLERS. OTTO ROSENWALD, Chicago, Ill. Filed July 26, 1902.

The representation of a spirally-grooved cylindrical shell held on a support with one hand and a scrubbing-brush in the other or right hand applied in the direction of the said grooves. Used since May 16, 1902.

88,936. CERTAIN NAMED PAINTERS' SUPPLIES. THE UNIVERSAL PAINT-SOLVENT COMPANY, San Francisco, Cal. Filed July 7, 1902.

PINXOL

The word "PINXOL." Used since June 24, 1902.

88,937. LAMPS FOR BURNING ACETYLENE GAS. ELECTRO LAMP CO., New York, N. Y. Filed Nov. 8, 1901.

Electrolite

The word "ELECTROLITE." Used since December, 1900.

88,938. PORTABLE ACETYLENE-GAS GENERATORS. JOHN J. HEISLER, Chicago, Ill. Filed Aug. 2, 1902.

"PATHFINDER"

The word "PATHFINDER." Used since May 13, 1902.

88,939. WALL FINISHING AND DECORATING MATERIAL. THE MURALO COMPANY, New Brighton, N. Y. Filed July 26, 1902.

The figure of a double five-pointed star, upon the face of which is represented the sun peeping over the upper part and side of a mutilated pyramid, the latter being partly shown as upon the face of the star-like figure. Used since December 1, 1901.

88,940. ASPHALT AND CERTAIN NAMED PRODUCTS. WEST INDIES COMPANY, New York, N. Y. Filed July 2, 1902.

ROYAL PALM

The words "ROYAL PALM." Used since June 12, 1902.

88,941. SKYLIGHTS. ARTHUR B. REHDA, New York, N. Y. Filed June 13, 1902.

Paradigm

The word "PARADIGM." Used since 1889.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

LABELS

REGISTERED SEPTEMBER 23, 1902.

9,442.—*Title:* "CANASTOTA'S BEST 5c. CIGAR." (For Cigars.) DETOR BROS., Canastota, N. Y. Filed August 29, 1902.

9,443.—*Title:* "MI TODO." (For Cigars.) MARGARET FERNANDEZ, Brooklyn, N. Y. Filed August 29, 1902.

9,444.—*Title:* "E. PONCELET FRÈRES." (For Creme de Menthe.) J. CLAVEL WINE & CORDIAL CO., New York, N. Y. Filed August 28, 1902.

9,445.—*Title:* "CHESTERFIELD SPLITS." (For Aperient Water.) SWINEFORD'S ARSENIC-LITHIA WATER CO., Richmond, Va. Filed August 26, 1902.

9,446.—*Title:* "MEXOJA COFFEE." (For Coffee.) ARBUCKLE BROS., New York, N. Y.; Pittsburg, Pa., and Chicago, Ill. Filed August 28, 1902.

9,447.—*Title:* "MARYLAND LEADER." (For Canned Peaches.) PHILLIPS PACKING CO., Cambridge, Md. Filed August 29, 1902.

9,448.—*Title:* "CAMEO HAIR FOOD." (For Hair-Food.) CAMEO CHEMICAL CO., Baltimore, Md. Filed August 29, 1902.

9,449.—*Title:* "DR. A. L. SCHMIDT'S 'U-GO' BLOOD PURIFIER RHEUMATIC CURE." (For a Medicine.) FRITZ T. SCHMIDT & SONS, Davenport, Iowa. Filed August 21, 1902.

PRINTS

REGISTERED SEPTEMBER 23, 1902.

(None.)

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

EX PARTE EICKELBERG.

Decided September 4, 1902.

PETITION—APPEAL TO EXAMINERS-IN-CHIEF—REJECTION OF CLAIMS.

Where the Examiner has finally rejected the claims on the ground that they are not patentable, *Held* that his action will not be reviewed upon petition, but only upon appeal to the Examiners-in-Chief.

ON petition.

BUCKSAW-FRAMES.

Application of Louis N. Eickelberg filed September 18, 1900, No. 30,389.

Mr. Eickelberg pro se.

ALLEN, *Commissioner:*

This is a petition asking that the Primary Examiner be instructed to reconsider the claims presented in the above-entitled case.

The record shows that the Examiner has given the case careful consideration and after numerous actions has finally rejected the claims as unpatentable. There is no allegation that the final rejection was premature or that there has been irregularity in the Examiner's action. It appears from the brief filed by the petitioner that he is of the opinion that the Examiner erred in reaching the conclusion that the claims are not patentable. His remedy in such case is an appeal to the Examiners-in-Chief from the rejection of the claims. The propriety of that rejection will not be considered upon a petition taken directly to the Commissioner.

The petition is dismissed.

EX PARTE SEITZINGER.

Decided September 5, 1902.

DRAWINGS—CLEAR DISCLOSURE NECESSARY.

The requirement for additional illustration is proper when the drawing does not disclose with certainty what the invention is.

ON petition.

SHAFT-SUPPORT.

Application of Monroe W. Seitzinger filed May 13, 1902, No. 107,065.

Mr. Ed. A. Kelly for the applicant.

ALLEN, *Commissioner.*

This is a petition from the action of the Primary Examiner requiring additional illustration.

The invention consists in means for supporting a pair of shafts at any desired height or angle, and in his first letter in the case the Examiner said that—

it is not clear whether the part D is a draw-bar connected with each one of a pair of shafts or thills, or whether it is an auxiliary device, whose purpose is to support the thills in any desired position.

An examination of the case shows that the Examiner's objection is well founded. The disclosure is not such that a mechanic could with certainty from it make and use the device which the inventor has in mind, since, as stated by the Examiner, it is not clear whether the parts shown are to constitute a separate attachment for supporting the shafts or are to form a part of the shafts themselves and constitute the means of attaching them to the vehicle. Additional illustration is necessary, and therefore this petition is denied.

EX PARTE BRYANT.

Decided September 8, 1902.

1. ALLOWANCE OF APPLICATION—WITHDRAWAL FROM ISSUE.

After an application has been allowed and the notice of allowance sent to the applicant or his agent the act of allowance is complete and the application can be returned to the jurisdiction of the Examiner only by a formal withdrawal from the issue files by the Commissioner.

2. SAME—REGULARITY AND IMPROPRIETY DISTINCT QUESTIONS.

Where the Examiner allows an application and the notice of allowance is properly sent, *Held* that the allowance cannot be set aside after a forfeiture of the case for failure to pay the final fee upon the allegation that it was an error for the Examiner to have allowed it.

3. SAME—NOTICE REGULAR—FORFEITED CASE.

Where a notice of allowance is sent to the attorney who has been prosecuting the case and he afterward raises the question as to his right to prosecute the case and the final decision is in favor of his right, *Held* that the case was regularly allowed and that the final fee not having been paid within six months it is forfeited.

ON petition.

GAS-BURNERS.

Application of Henry Bryant filed December 18, 1896, No. 616,154.

Mr. Vernon M. Dorsey for the applicant.

ALLEN, *Commissioner:*

This is a petition that a new and proper notice of allowance be sent in the above-entitled application.

The records show that the application was prosecuted by an attorney appointed by the inventor and that on the death of said attorney the present attorney was appointed on July 30, 1901, by the

United Acetylene Companies as assignees of the entire interest.

Acting under this appointment, an amendment was filed on October 1, 1901.

On October 21, 1901, the application was examined and forwarded by the Examiner to the Issue Division, and on October 23, 1901, the notice of allowance was mailed to the care of the present attorney.

The records further show that on November 27, 1901, a communication was received by this Office from the attorney for the United Acetylene Companies requesting that the right of said companies to appoint an attorney to prosecute this application be formally recognized by the Office.

Upon consideration of the assignment records the Office replied that, in its opinion, the alleged assignees had no authority to appoint an attorney to prosecute the case and that "the acceptance of the power of attorney seems to have been an oversight."

The power of attorney was consequently returned to the alleged assignees.

Upon a rehearing, however, the power of attorney given by the said United Acetylene Companies was accepted on June 10, 1902.

The petitioner states that—

> the undersigned is aware that a notice of allowance was mailed to him on October 23rd, 1901, and that this case is now placed in the forfeited files, but this notice of allowance was issued on an amendment made by the undersigned in virtue of a power of attorney, which the Office on December 4th, 1901, returned to the undersigned, with a statement that its acceptance "seems to have been an oversight."
>
> The undersigned submits that this return of the power of attorney rendered nugatory the said amendment made by him on October 1st, 1901, and likewise set aside the allowance granted on this amendment, so that the application now awaits action in response to the Office letter of July 3, 1900.

If this reasoning is to be accepted, the present petition would have to be denied.

If, as contended by the petitioner, the action of the Office in returning the power of attorney "set aside the allowance," the subsequent acceptance of the power of attorney must, by following the same reasoning, affirm the allowance.

Under the practice of the Office after an application has been allowed and the notice of the allowance sent to the applicant or his agent the act of allowance is complete and the application can only be returned to the jurisdiction of the Examiner by a formal withdrawal of the application from the issue files.

There can be no question but that the application was examined and sent to the issue files by the Examiner on October 21, 1901. It remained, therefore, to complete the act of allowance by sending to the applicant or his agent formal notice thereof. This was done on October 23, 1901, and the receipt thereof is acknowledged.

The only question, therefore, for determination, in view of all the facts, is whether or not the notice was properly sent. The propriety of the Examiner's action in forwarding the application to issue cannot now be questioned. If a mistake is made by an Examiner in sending an application to issue, the mistake cannot be cured after the notice of allowance has been formally sent except by formally withdrawing the application from issue.

In this case the notice of allowance was sent to the agent, and at that time the authority of the agent to receive said notice had not been questioned. He was, therefore, at the time of the receipt of the notice, both in fact and in law, the agent and was under the provisions of section 4885 the proper person to send the notice of allowance to.

Having reached this conclusion, the application must be held under the provisions of the same section (No. 4885) to be a forfeited application for failure to pay the final fee within six months from the time that the application was passed and allowed "and notice thereof was sent to the applicant or his agent."

The petition is denied.

IN RE MACWILLIAM.

Decided September 9, 1902.

REQUEST FOR COPY OF APPLICATION—IDENTIFICATION OF CASE.

Where a party asks for a copy of an application for use in court and as authority for the request alleges that the applicant testified in the case that such an application was on file, *Held* that the request should identify the application.

IN the matter of the petition of Hugh G. Macwilliam to inspect and be furnished copies of abandoned application of Louis Neuberger for suspender-ends, filed in the year 1899.

Messrs. Collamer & Co. for Macwilliam.

Mr. Herbert Knight for Neuberger.

ALLEN, *Commissioner:*

This is a petition for permission—

> to inspect and make copies of the file in an alleged abandoned application for patent by Louis Neuberger.

It appears from an affidavit filed by the petitioner that on February 19, 1901, Letters Patent No. 668,261 were issued to him and that he has brought suit in the Circuit Court of the United States for the Southern District of New York against the Connecticut Web Company *et al.* for infringement of said Letters Patent and that the Connecticut Web Company in answer to the complaint pleaded prior use of said invention.

It is further stated that one Louis Neuberger was called as a witness on behalf of the defendants and on cross-examination stated that he had abandoned a certain application for Letters Patent which he had filed in the Patent Office in the early part of the year 1899 and that when said application was pending he had marked certain exhibits referred to in evidence with the words "Patent applied for."

The verified statements have not been denied, and therefore are to be accepted as true. (*Metropolitan West Side Elevator Railroad Company* v. *Siemens*, 85 O. G., 290.)

This case differs from one in which the request is made by a defendant for copies of an abandoned application belonging to the complainant, the abandoned application being referred to in the patent upon which the suit is brought. This request is made by the party who has instituted the suit, and the copies of the alleged abandoned application, which is supposed to belong to the defendant, are desired in order to rebut the testi-

mony of the defendant upon the question of prior public use.

The request is defective in that it is not sufficiently explicit. The particular application, copies of which it is desired to obtain, is not specified. In these respects this case differs from that considered in the *Metropolitan West Side Elevator Railroad Company* v. *Siemens*, *supra*.

The petition as now presented is denied.

EX PARTE ROYAL MEDICINE COMPANY.

Decided September 12, 1902.

1. PRINTS—MUST BE DESCRIPTIVE.

A print in order to be registrable must be descriptive of the article which it is intended to advertise.

2. PRINTS AND LABELS—DESCRIPTIVE.

Prints and labels are made registrable by the same section of the copyright law, and the requirement that they indicate the article to which they refer applies to both.

ON appeal.

PRINT FOR PROPRIETARY MEDICINES.

Application filed July 29, 1902, No. 3,195.

Mr. F. W. Smith, Jr., for the applicant.

ALLEN, *Commissioner:*

This is an appeal from the decision of the Examiner refusing to register a print entitled "Bisque Doll" to be used for advertising purposes for proprietary medicines.

As stated in the specification—

> * * * the said print consists of the words and figures, to wit: The representation of a richly-dressed French doll with hat on and standing erect, and the words "Bisque Doll" printed at the bottom about on a level with the feet of the doll.

The Examiner has refused registration on the ground that the copies of the print filed are not descriptive of medicine and cites in support of this holding the decision *ex parte Regina Music Box Company*, (100 O. G., 1112.)

The appellant admits that this print is not descriptive of any medicine, but insists that it is not necessary in order to warrant the registration of a print for said print to be descriptive of the articles advertised.

The decision relied upon by the Examiner is approved by the appellant; but it is argued that said decision does not here apply, as the registration of a label was there considered.

Prints differ from labels only in name and use. Provision is made in the same section of the statute (section 3 of the act approved July 18, 1874, 18 Stat. L., p. 78) for the registration in the Patent Office of both prints and labels. A label is used on the article referred to and of which it is descriptive, and a print though descriptive of the article to which it refers must not be borne on the said article. These being the only differences between the two, the doctrine announced in *ex parte Regina Music Box Company* applies to this case. In fact, said decision did not make a distinction between prints and labels, for it was therein stated—

> the indication must be in the print or label itself and not merely in a statment made by the applicant accompanying it.

In support of the doctrine announced in said decision the decision *ex parte Barnhart Bros. and Spindler* (87 O. G., 2118) was referred to with approval, in which latter decision a "print" alone was considered.

The decision of the Examiner is affirmed.

EX PARTE HOWLETT.

Decided September 15, 1902.

AMENDMENTS—NEW MATTER—PRACTICE.

Where the Examiner is of the opinion that certain descriptive matter inserted by amendment and included in a claim is not warranted by the original disclosure, *Held* that he should reject the claim.

ON petition.

GAS-BURNERS.

Application of Charles A. S. Howlett filed July 29, 1901, No. 70,070.

Messrs. Offield, Towle & Linthicum for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Examiner objecting to certain descriptive matter which has been inserted by amendment in the specification and in claim 2.

It appears that the Examiner is of the opinion that this descriptive matter is not warranted by the original disclosure. Being of this opinion, he should reject the claims on the ground that these amendments involve a departure from the invention originally presented. (Rule 133.)

From such rejection an appeal lies in the first instance to the Examiners-in-Chief.

The petition is dismissed.

EX PARTE SCHÜPPHAUS.

Decided September 13, 1902.

1. APPEAL TO EXAMINERS-IN-CHIEF—REJECTION AFTER INTERFERENCE—RULE 132.

Where a final decision on priority has been rendered against a party in an interference and his claims involved have been finally rejected under Rule 132, *Held* that he has the right of appeal to the Examiners-in-Chief from the rejection.

2. DECISION IN INTERFERENCE—RIGHT TO A PATENT.

Held that a final decision on priority in an interference is not a decision that the defeated party is not entitled to a patent upon the claims, although it may furnish a basis for such a decision.

3. SUBSTITUTE APPLICATION—REFUSAL TO CONSIDER—RIGHTS OF APPLICANT.

Where after a decision against him in an interference a party files a new application as a substitute for the one involved, *Held* that he is entitled to take any action in the new case which he could have taken in the old and that the Office cannot refuse to consider the new case.

ON petition.

IMPROVEMENTS IN MANUFACTURE OF PYROXYLIN COMPOUNDS AND IN PYROXYLIN COMPOUNDS.

Application of Robert C. Schüpphaus filed July 23, 1901, No. 69,455.

Mr. Harold Binney for the applicant.

ALLEN, *Commissioner:*

This is a petition from the action of the Primary Examiner refusing to consider the claims of the above-entitled application on the ground that the question as to their patentability is *res adjudicata*.

This application was filed as a substitute for an earlier one, No. 594,006, covering the same inven-

tion. That earlier case was involved in interference with one Stevens, and in that interference the final award of priority was in favor of Stevens. (95 O. G., 1452.) The petitioner has in the present case reproduced his claims which were included in the declaration of that interference, and the Examiner takes the position that it is *res adjudicata*, that Schüpphaus is not the first inventor and is not entitled to a patent.

The history of Schüpphaus's original application up to the final decision on priority and the contentions made on his behalf are fully stated in the decision of the court of appeals above cited. In the interference Schüpphaus contended that the invention made by Stevens and disclosed in Stevens's application although prior in point of time was not the same as the invention claimed by him. He still makes that contention and upon it bases his present claim that he is entitled to a patent. In other words, considering Stevens's invention as a part of the prior art, he still insists that he is entitled to a patent. The Examiner makes the point that the interference might have been dissolved on motion under Rule 122 if the inventions were not the same, and since it was not, that the question of identity is *res adjudicata*.

The question presented by this petition is not whether Schüpphaus is entitled to a patent upon his claims, but whether the Examiner has authority to refuse to consider those claims. The petitioner contends that he should either reject them upon the proceedings in the interference, and thus give him the right of appeal, or should allow them.

Rule 132 provides that when a final decision on priority has been rendered in an interference the Examiner shall notify the defeated party that his claims involved stand finally rejected. It would seem that the applicant would under the rules have the right of appeal from such a rejection as well as from any other, notwithstanding the improbability in most cases of obtaining any advantage by such an appeal. The decision on priority settles some of the most important questions bearing upon his right to a patent; but it is not a direct decision that he is not entitled to one.

The present application was filed to take the place of that involved in the interference and is therefore a continuation of it. The applicant is entitled to take any action in this case which he could have taken in the original if this had not been substituted for it. He is not attempting to commence the prosecution of the case over again, but is attempting to take the matter up on these new papers where it was left off in the prior case. He was entitled to an appeal in the prior case and should not be deprived of that right in this substitute application.

The petition is granted.

THE
OFFICIAL GAZETTE
OF THE
United States Patent Office.
[BY AUTHORITY OF CONGRESS.]

VOL. 100.—No. 14. TUESDAY, SEPTEMBER 30, 1902. PRICE—$5 per year.

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Patents	541	No. 709,857 to No. 710,397, inclusive.
Designs	11	No. 36,083 to No. 36,093, inclusive.
Trade-Marks	32	No. 38,942 to No. 38,973, inclusive.
Labels	24	No. 9,450 to No. 9,473, inclusive.
Prints	2	No. 557 to No. 558, inclusive.
Reissues	6	No. 12,036 to No. 12,041, inclusive.
Total issue	616	

TO CITIZENS OF THE UNITED STATES.

States.	Patents and Designs.	Trade-Marks, Labels, and Prints.	States.	Patents and Designs.	Trade-Marks, Labels, and Prints.
Alabama	1	----	Nebraska	1	----
Alaska Territory	----	----	Nevada	----	----
Arizona Territory	1	----	New Hampshire	2	----
Arkansas	----	----	New Jersey	30	4
California	15	----	New Mexico Territ'y	1	----
Colorado	7	----	New York	80	16
Connecticut	9	1	North Carolina	1	----
Delaware	1	----	North Dakota	1	----
District of Columbia	9	----	Ohio	28	2
Florida	1	1	Oklahoma Territ'y	4	----
Georgia	3	1	Oregon	65	5
Hawaii Territory	----	----	Pennsylvania	6	----
Idaho	----	----	Rhode Island	1	1
Illinois	64	4	South Carolina	1	----
Indian Territory	1	----	South Dakota	5	----
Indiana	18	----	Tennessee	7	2
Iowa	10	1	Texas	2	----
Kansas	1	----	Utah	1	----
Kentucky	4	1	Vermont	2	----
Louisiana	1	----	Virginia	1	----
Maine	5	1	Washington	4	----
Maryland	1	2	West Virginia	13	----
Massachusetts	38	3	Wisconsin	----	----
Michigan	21	1	Wyoming	----	----
Minnesota	12	2	U. S. Navy	----	----
Mississippi	2	----	Total to citizens of the United States	492	52
Missouri	13	2			
Montana	3	2			

TO CITIZENS OF FOREIGN COUNTRIES.

Countries.	Patents and Designs.	Trade-Marks and Prints.	Countries.	Patents and Designs.	Trade-Marks and Prints.
Argentina	----	----	Netherlands	----	----
Austria-Hungary	3	----	Newfoundland	----	----
Belgium	2	----	New South Wales	----	----
Bermuda	----	----	New Zealand	----	----
Brazil	----	----	Norway	1	----
Canada	5	2	Portugal	----	----
Cape Colony	----	----	Queensland	1	----
Chile	----	----	Russia	----	----
China	----	----	Santo Domingo	----	----
Colombia	----	----	Scotland	2	----
Cuba	----	----	South African Republic	----	----
Denmark	----	----	South Australia	----	----
Egypt	----	----	Spain	----	----
England	17	----	Sweden	1	----
France	8	----	Switzerland	2	2
Germany	14	2	Uruguay	----	----
Guatemala	----	----	Victoria	2	----
India	----	----	Western Australia	----	----
Ireland	1	----	Total to citizens of foreign countries	60	6
Italy	----	----			
Japan	----	----			
Mexico	1	----			

Prohibiting Changes in Office Papers.

It is hereby ordered that no erasures be made or any note, interlineation, or other mark in pencil or otherwise, except by formal amendment duly signed, in the body or written portions of the specification or of any other paper filed in an application for patent.

It is further directed that no change be made by any person in any record of this Office without the written approval of the Commissioner of Patents.

Attorneys, employees of the Patent Office, and all others will be held to strict accountability for any violation of this order.

Indexes to Periodicals.

The following journals containing indexes to periodical literature may be found on file in the reading-room of the Scientific Library:

Electrical World and Engineer, a weekly digest of electrical articles.

Engineering Magazine, a monthly title-index of engineering articles.

Journal of the United States Artillery, a bimonthly title-index of current artillery literature.

Railroad Digest, a monthly synopsis of universal railroad literature.

School of Mines Quarterly, a quarterly synoptical index of articles on analytical chemistry and title-index of metallurgical literature.

Science Abstracts, physics and electrical engineering. Monthly abstracts of the principal articles on physics published in the American and foreign journals.

APPLICATIONS UNDER EXAMINATION.

Condition at Close of Business September 23, 1902.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
	In arrears—Under one month.			
240	VII. Velocipedes, Clutches, Fire-Escapes, Games and Toys, Ladders, Mechanical Motors, and Paper Manufactures.	Sept. 10	Sept. 11	187
253	X. Carriages and Wagons	Sept. 2	Aug. 29	144
153	XX. Builders' Hardware, Artificial Limbs, Dentistry, Locks and Latches, Safes, and Undertaking.	Aug. 26	Sept. 9	172
217	XXXIII. *Designs, †Trade-Marks, ‡Labels and Prints, Optics, and Photography.	Aug. 26	Aug. 26	101
221	XXIII. Acoustics, Electric Signaling, Horology, Recorders, and Registers.	Aug. 25	Sept. 8	165
126	XXXII. Carbonating and Dispensing Beverages, Metallic Shipping and Storing Vessels, Refrigeration, etc.	Aug. 25	Aug. 25	236
246	I. Tillage, etc., and Fences	Aug. 23	Sept. 10	245
	Between one and two months.			
281	XXXIV. Railways, Railway-Brakes, Draft Appliances, and Rolling-Stock.	Aug. 22	Aug. 15	318
256	VI. Chemistry, Explosives, Fertilizers, Medicines, Sugar and Salt, Surgery, etc.	Aug. 20	Sept. 2	276
106	II. Farm Products, etc., Lubricators, Presses, etc.	Aug. 14	Aug. 18	199
256	XXXVI. Curtains, Shades, and Screens, Drafting, Driers, Measuring Instruments, and Wind-Wheels.	Aug. 12	Aug. 25	249
255	XII. Elevators, Journal-Boxes, Pulleys and Shafting, and Machine Elements.	Aug. 9	Sept. 3	309
80	IV. Cranes and Derricks, Bridges, Fire-Proof Buildings, Excavating, Iron Structures, Conveyers, Hoisting, etc.	Aug. 9	Aug. 9	382
147	XXXI. Gas, Ammonia, Water, and Wood Distillation, Charcoal and Coke, Hides, Skins, and Leather, Oils, Fats, and Glue, Painting, etc.	Aug. 4	Aug. 7	281
251	XIII. Metal-Working, Arms and Projectiles, Making, Boring and Drilling, Hardware-Making, Nails and Spikes, Needles and Pins, Turning, etc.	Aug. 2	Sept. 9	223
223	XXVII. Brushing and Scrubbing, Grinding and Polishing, Laundry, etc.	Aug. 2	Aug. 15	246
213	XVII. Printing, Type-Writing Machines, Linotyping, and Matrix-Making.	July 26	Aug. 20	229
250	VIII. Furniture, Beds, Kitchen and Table Articles, and Check-Controlled Apparatus.	July 26	July 24	500
	Between two and three months.			
44	XXXV. Accoutrements, Baggage, Buckles, Buttons, and Clasps, Card, Picture, and Sign Exhibiting, Packing and Storing Vessels, etc.	July 19	Aug. 28	451
207	XV. Plastics, Paper-Making, Paving, Cutlery, Glass, Fuel, Bread-Making, etc.	July 14	Aug. 22	353
123	XXIX. Wood-Working Machines, Coopering and Roofing.	July 11	Aug. 18	272
109	XXII. Fire-Arms, Ordnance, Navigation.	July 7	Aug. 29	194
127	XXX. Fluid-Pressure Regulators, Lamps and Gas-Fittings.	July 7	July 29	405
243	XXV. Butchering, Mills, Threshing, and Vegetable Cutters and Crushers.	July 7	June 23	437
123	XXIV. Sewing-Machines, Apparel, Tents, Umbrellas, and Canes, and Toilet.	June 30	July 25	297

Applications Under Examination—Continued.

Room No.	Divisions and subjects of invention.	Oldest new application and oldest action by applicant awaiting office action.		No. of applications awaiting action.
		New.	Amended	
57	XXVI. Electricity, Generation, Motive Power, Medical and Surgical, and Electric Railways.	June 25	Aug. 15	251
149	III. Metallurgy, Metal-Founding, Electro-Chemistry, Coating with Metal, etc.	June 25	Aug. 1	350
91	XVI. Telegraphy and Telephony	June 25	July 12	264
248	XVIII. Steam-Engineering, etc.	June 23	July 14	462
218	XXVIII. Pneumatics, Air and Gas Engines and Pumps.	June 23	June 23	577
	Between three and four months.			
98	XXI. Textiles, Carding, Knitting, Spinning, Weaving, etc.	June 19	June 7	510
102	XIX. Stoves and Furnaces and Steam-Boiler Furnaces.	June 16	July 19	419
209	XIV. Metal Bending, Ornamenting, and Personal Wear, Farriery, Nut and Bolt Locks, Tools, Wire-Working, Sheet-Metal Ware, Making, etc.	June 5	June 4	443
143	V. Fine Arts, Book-Binding, Harvesters, Jewelry, and Music.	June 4	July 7	573
105	XI. Boots and Shoes, Harness, Hose and Belting, Leather Manufactures, Nailing and Stapling, Button-Setting, and Whips.	June 3	July 9	579
120	IX. Hydraulics, Fire-Extinguishers, Baths and Closets, Pumps, Sewerage, and Water Distribution.	June 2	Aug. 9	440
89	XXXVII. Electricity, Conductors, Special Applications, Electric Heaters, Lighting, and Signaling.	May 29	July 12	740
222	XXXVIII. Artesian and Oil Wells, Bottles and Jars, Care of Live Stock, Educational Appliances, Fishing and Trapping, Signals, Stationery, Stone-Working, Store Furniture.	May 29	July 7	614

Total number of applications awaiting action 13,053

In arrears—Under one month.			
*Designs	Aug. 29	Sept. 16	104
Between one and two months.			
†Trade-Marks	Aug. 11	Sept. 11	229
Under one month.			
‡Labels and Prints	Sept. 15	Sept. 20	23

Oaths of Applicants in Foreign Countries.

It is hereby directed that oaths accompanying applications for patents made within the following-named foreign countries must be taken before a minister, chargé d'affaires, consul, or commercial agent holding commission under the Government of the United States:

Austria-Hungary.
Argentine Republic.
Belgium.
Brazil.
Costa Rica.
Denmark.
Haiti.
Honduras.
Italy.
Mexico.
Netherlands.
Norway.
Peru.
Portugal.
Russia.
San Salvador.
Servia.
Sweden.
Switzerland.

Applications filed in this Office presenting oaths not executed in compliance with this order will be treated as incomplete.

Patents to Assignees.

RULE 201. In every case where it is desired that the patents shall issue to an assignee the assignment must be recorded in the Patent Office at a date not later than the day on which the final fee is paid. (See Rule 26.) The date of the record is the date of the receipt of the assignment at the Office.

PATENTS

GRANTED SEPTEMBER 30, 1902.

709,857. SAW. WILLIAM S. ANDERSON, Boston, Mass., assignor of one-half to Prescott Bigelow, Boston, Mass. Filed Feb. 17, 1902. Serial No. 94,350. (No model.)

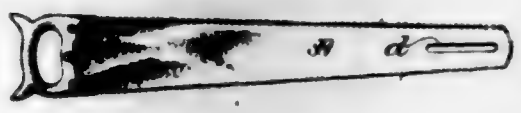

Claim.—1. A handsaw having a cutting edge across its end opposite the handle.

2. A handsaw having a cutting edge across its end opposite the handle and substantially at right angles to the longitudinal axis of the saw.

3. A handsaw having a cutting edge across its end opposite the handle and provided with an aperture adjacent said end, for receiving a pivot.

4. A handsaw having cutting edges upon two sides and across the end opposite the handle and provided with an aperture adjacent said end for receiving a pivot.

709,858. MEASURING AND EMPTYING DEVICE FOR BOTTLES. RUDOLF ARTHUR, Pittsburg, Pa. Filed Dec. 27, 1901. Serial No. 87,444. (No model.)

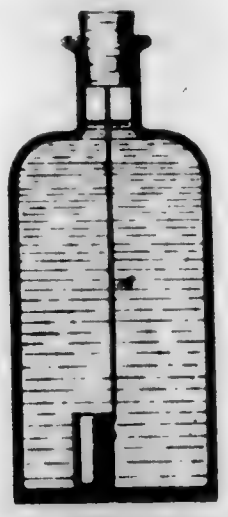

Claim.—1. A measuring-cup for bottles, &c., consisting of a cylindrical metallic shell, a wire secured thereto and constituting a stem adapted to be inserted in a cork, a coating of enamel covering the stem and the inner and outer surfaces of the shell, and a bottom inserted in the lower end of the shell.

2. A measuring-cup for bottles, &c., consisting of a cylindrical metallic shell, a wire secured thereto and constituting a stem adapted to be inserted in a cork, a coating of enamel covering the stem and the inner and outer surfaces of the shell, and a bottom of cork inserted in the lower end of the shell.

709,859. MOTOR-VEHICLE. WALTER C. BAKER, Cleveland, Ohio. Filed Feb. 14, 1902. Serial No. 94,021. (No model.)

Claim.—1. The combination in a motor-vehicle, of the body, the running-gear including the rear axle; and a motor, said motor being supported mainly from the rear axle and means for attaching the motor to the body of the vehicle, said means comprising a rocking bar pivotally secured to the under side of the vehicle-body, and hangers pivotally secured to the opposite ends of the said rocking bar and pivotally connected to the motor, substantially as set forth.

2. In a motor-vehicle, the combination with the rear axle, of a casing, surrounding said rear axle, a receiving-gear casing fixed to the said axle-casing, a transmitting-shaft casing communicating with the receiving-gear casing, and the motor, braces connected to said axle-casing, at or near its outer ends, said braces converging toward and connected to the transmitting-shaft casing, whereby the motor is braced laterally in relation to the rear axle, and allowed free vertical movement at right angles to said axle, substantially as and for the purpose set forth.

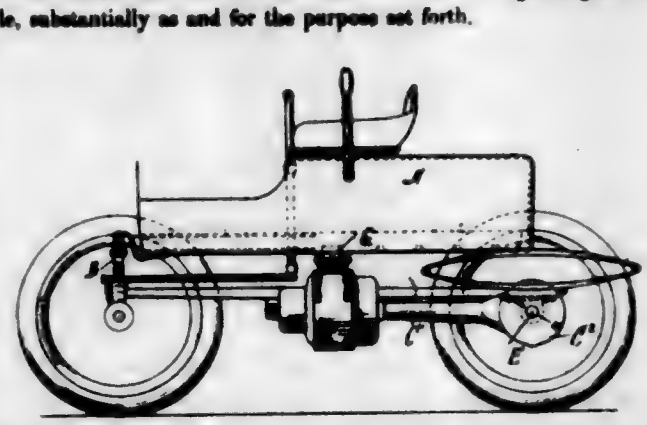

3. In a motor-vehicle, a motor and its casing, transversely-arranged rock-shafts pivotally secured to the vehicle-body, hangers pivotally secured to the opposite ends of said rock-shafts and having their opposite ends in pivotal engagement with the motor-casing, whereby a forward as well as lateral movement of the motor is permitted independent of the vehicle-body, and means for supporting and bracing said motor in relation to the rear axle of the vehicle.

4. In a motor-vehicle, the combination with the rear axle, of an axle-casing loosely mounted on said axle, a receiving-gear casing fixed to the said axle-casing, a motor-casing rigidly secured to said receiving-gear casing, and hangers in pivotal engagement with the vehicle-body and the motor-casing, whereby the motor will be permitted to move laterally and longitudinally of the vehicle-body, substantially as described.

5. In a motor-vehicle, the combination with the rear axle, of a motor in fixed relation thereto, and means for permitting the motor to move laterally as one end of the axle is raised or lowered, the said motor pivotally secured to the vehicle-body, and capable of movement independent thereof.

709,860. SAFETY-PIN. WILLIAM F. BALDWIN, Boston, Mass. Filed Apr. 15, 1901. Serial No. 55,840. (No model.)

Claim.—In a safety-pin, the combination of a body member terminating at one end in a spring and at the other end in a pointed return-curve, and an arm extending from the spring and carrying upon its outer terminal a shield to receive and guide the curved point of the body member.

709,861. CUTTER-HEAD FOR HYDRAULIC DREDGERS. LIBBEUS W. BATES, Chicago, Ill. Filed Jan. 14, 1900. Serial No. 1,906. (No model.)

Claim.—1. In combination with a suction-pipe, a substantially vertically disposed cutter-head revolubly attached to the lower end thereof; knives carried by said head; and a unitary means for imparting power directly to said head, alike at both ends thereof, substantially as described.

2. In combination with a suction-pipe, a vertically-disposed hollow cutter-head revolubly connected thereto; knives carried by said head; a unitary means for imparting power directly to said head throughout its entire length, whereby power is applied to both ends of the knives alike, substantially as described.

3. In combination with a suction-pipe, a hollow head revolubly attached thereto; a shaft directly connected to the head for imparting mo-

tion thereto; a disk carried at the lower end of said shaft beneath the head; and a series of knives attached to the head and disk, substantially as described.

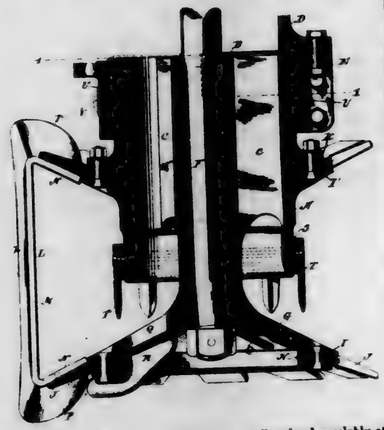

4. In combination with a suction-pipe, a hollow head revolubly attached thereto; a shaft extending through said head and securely fastened thereto; a disk G secured to the lower end of said shaft, said disk being provided with a downwardly-inclined upper face; and a series of knives connected to said head and disk respectively.

5. In combination with a suction-pipe, a hollow cutter-head revolubly connected thereto; a unitary means for applying power throughout the length of said head for imparting rotary motion thereto; and knives connected to the upper and lower ends of said head, substantially as described, whereby the power may be applied to both ends of the knives alike.

6. In combination with a suction-pipe, a hollow cutter-head revolubly connected thereto; a driving-shaft extending through said hollow head and securely fastened thereto; a conical disk G secured to the lower end of said shaft; and a series of knives attached at their ends to the head and disk respectively.

7. In combination with a hollow cutter-head A, a shaft secured to said head and extending therethrough for driving the same; a disk secured to the lower end of said shaft; rings connected to said head and disk respectively; and a series of cutters connected at their ends to said rings, substantially as described.

8. In combination with a hollow cutter-head, a driving-shaft secured to and extending therethrough; a disk G secured to the lower end of said shaft, said disk being provided with a downwardly-inclined face; rings attached to said head and disk respectively; and a series of cutters connected to said rings, substantially as described.

9. In combination with a hollow cutter-head, provided with an outwardly-extending rim or flange; a driving-shaft extending therethrough and secured to said head; a conical disk G secured to the lower end of said shaft; rings I', I attached to said cutter-head and disk respectively, said rings being provided with outwardly-extending lugs; and a series of cutters attached to said lugs, substantially as described.

10. In combination with a hollow cutter-head, a shaft secured to said head and extending therethrough for operating the same; a conical disk attached to and carried by the lower end of said shaft; a pair of reversible rings carried by said head and disk; and a series of cutters attached to said rings, substantially as described.

11. In combination with a hollow cutter-head, a shaft extending therethrough for driving the same; a disk G secured to the lower end of said shaft and provided with a downwardly-inclined upper face; rings attached to said head and disk respectively; a series of cutters attached to said rings; and a second series of cutters attached to the lower end of the head and extending down toward the upper face of the disk, substantially as and for the purpose described.

12. In combination with a hollow cutter-head, a shaft extending through the same for imparting rotary motion thereto; a conical-shaped disk G attached to the lower end of said shaft; rings attached to said head and disk respectively; cutters carried by said rings; a second series of cutters carried by the lower end of said cutter-head and extending down toward the upper face of said disk G; and a third series of cutters secured upon the under face of the disk in line with a series of openings formed therein, substantially as described.

13. In combination with a suction-pipe, a hollow cutter-head, a ring or band E secured to the lower end of said suction-pipe around the upper portion of the cutter-head; a groove or channel intermediate said band or collar and cutter-head; and means for forcing water under pressure into said groove or channel.

14. In combination with a hollow cutter-head, a shaft secured to said head and extending therethrough for driving the same; a conical disk G secured to the lower end of said shaft; rings I, I' carried by said disk and head respectively; and a series of cutter-blades attached to said rings, said blades comprising a straight body-section M, flanges N adapted to bear upon the rings, and inclined cutting-sections O, P, substantially as described.

709,862. **SKIRT-HOLDER.** CHARLES W. BAUSEMAN, Baltimore, Md. Filed Dec. 1, 1900. Serial No. 38,361. (No model.)

Claim.—As an article of manufacture, a skirt-elevator comprising an integral strip of fabric, a series of depending rings carried thereby, said strip adapted to be sewed to the inside of a skirt, said strip also having a perforation at its upper end adapted to register with a similar perforation in the waistband of a skirt, and a cord, one end of which is adapted to be secured to the inner side of a skirt at or near the lower end of said strip and its opposite end to pass upward through the depending rings and the registering perforations and adjustably secured to the holding device on the outer side of the waistband of the skirt, substantially as described.

709,868. **ENGRAVING-MACHINE.** CHARLES B. BISHOP, New Britain, Conn., assignor to P. & F. Corbin, New Britain, Conn., a Corporation of Connecticut. Filed Nov. 7, 1901. Serial No. 81,461. (No model.)

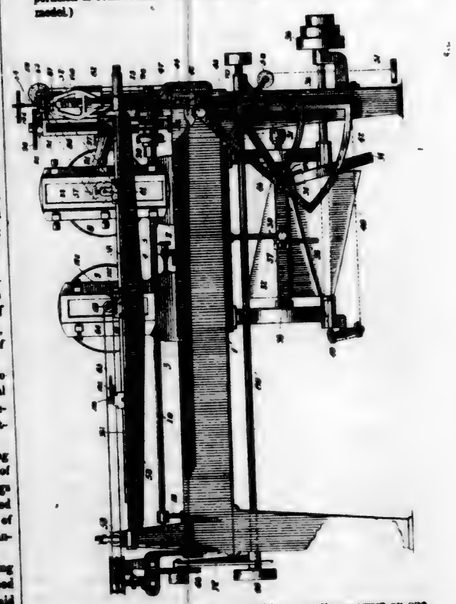

Claim.—1. In a metal-working machine, a pattern-carrier on one side thereof, a die-carrier on each side thereof, means for rotating the pattern-carrier and die-carriers at the same angular speed, a beam on each side of the machine said beams being universally mounted and engaged with each other, and styles and cutting tools carried by said beams.

2. In a metal-working machine, a pattern-carrier on one side thereof, a die-carrier on each side thereof, means for rotating said carriers at the same angular speed, a beam on each side of the machine one end of each of said beams being pivotally mounted, the said beams being engaged with each other at the other ends, and styles and cutting tools carried by said beams.

3. In a metal-working machine, a pattern-carrier, and die-carrier, means for rotating the same at like angular speed, a stylus adapted to follow the irregularities of the pattern as the pattern is revolved, a cutting-tool adapted to engage with and work into the die-block, means for rotating the pattern and die carriers, at a variable speed, said means including a pair of cone-pulleys and a belt connecting same, and a means for shifting said belt including a cam and a device coacting with said cam to move the same,

4. In a metal-working machine, a cutting-tool, means to guide the same, a die-carrier, and means to revolve the same, and means to reduce the speed of rotation of said die-carrier as the cutter works away from the center of the die or increase the speed of rotation of said carrier as said cutter works toward the center of the die, said means including a swinging cam-bar, a driver therefor, and a variable-speed-changing device controlled by said cam-bar.

5. In an engraving-machine, a cutter, a stylus, means for supporting said cutter and stylus and causing the same to move correspondingly, pattern and die carriers, means for rotating the same, means for shifting the position of said cutter and stylus, and means to reduce the speed of rotation of said die-carrier as the cutter works away from the center of the die and vice versa, said means including a swinging cam, a driver therefor, and a variable-speed-changing device controlled by said cam.

6. In an engraving-machine, a cutter, a die-carrier, means for rotating the die-carrier, means for controlling the position of the cutter, a speed-controller for said die-carrier including a variable-speed mechanism, a swinging member connected thereto, a cam carried by said swinging member, and a driver for engaging with said cam to swing said member.

7. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier, a die-carrier and a shaft for rotating said carriers, a fast pulley and a slow pulley and means for engaging said shaft with either of said pulleys and means for automatically controlling the engagement between said shaft and either of said pulleys.

8. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier, a die-carrier and a shaft for rotating said carriers, a fast pulley, a slow pulley, a clutch member carried by the shaft and adapted to engage either the fast pulley or the slow pulley, and means for automatically controlling the movement of said clutch member whereby the speed of the carriers may be varied.

9. In a metal-working machine, a cutter, a stylus and means for carrying the same, a pattern-carrier, a tripper carried thereby, a die-carrier, a shaft for rotating said carriers, a slow pulley normally in engagement with said shaft, a fast pulley adapted to engage said shaft, but normally disengaged therefrom, means for engaging the shaft with said fast pulley, said means being controlled by said tripper.

10. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier, a die-carrier, and a shaft for rotating said carriers, a fast pulley and a slow pulley, a clutch member free to slide on the shaft and adapted to engage with either of said pulleys, a two-part lever in engagement with said clutch member, means for freeing one of said parts from said clutch member, and means for controlling both parts of the lever to move said clutch member into engagement with either of said pulleys.

11. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier and a die-carrier and a shaft for rotating said carriers, a fast pulley and a slow pulley, means for connecting either of the same with said shaft, and means for blocking out the said cutter and stylus during the period when the fast pulley is in engagement with said shaft.

12. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier and a die-carrier and a shaft for rotating said carriers, a fast pulley and a slow pulley, means for connecting either of the same with said shaft, and means for blocking out the said cutter and stylus during the period when the fast pulley is in engagement with said shaft, said means comprising a tilting latch located in the path of movement of the means for carrying said cutter and stylus.

13. In a metal-working machine, a cutter, a stylus, means for carrying the same, a pattern and a die-block, means for driving the same, means for causing the cutter and stylus to bear against and follow the design of the pattern and a controlling means for varying the speed of rotation of the pattern and die-block said controlling means comprising a swinging member, a cam controlling the same, connections between said member and the said pattern and die-block driving means, cone-pulleys, an endless belt movably mounted between said cone-pulleys and in connection with said member whereby by the position of said member the position of the belt is determined and the transmitted speed varied.

14. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier and a die-carrier and a shaft for rotating said carriers, a fast pulley and a slow pulley and a clutch member for engaging either of the same with said shaft, a sector and means for gradually swinging said sector, a pair of cone-pulleys, one of the same being in connection with the slow pulley, a transmitting-belt between said cone-pulleys, the position of said belt being determined by said sector, a second shaft rotated by the shaft driving said carriers, a cross-head carried thereby, a cam on said sector, said cross-head being in engagement with said cam through an extension, tripper-bars carried by said pattern-carrier, and means intermediate of said tripper-bars and said clutch member for transmitting movement from the former to the latter.

15. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier, a die-carrier, and a shaft for rotating said carriers simultaneously and at the same speed, a fast pulley, a slow pulley, and means for engaging said shaft with either of said pulleys whereby the speed of rotation of said carriers may be increased or diminished, a tripper-bar mounted on one of said carriers and controlling said means.

16. In a metal-working machine, a cutter and a stylus and a beam for carrying the same, a pattern-carrier and a die-carrier and means for rotating said carriers, a fast pulley and a slow pulley and means for transmitting power and speed of one of said pulleys or the other to the pattern and die carrier, and means for engaging with the beam to hold the cutter and stylus away from their work while the parts are being rotated by the fast pulley.

17. In a metal-working machine, a cutter and a stylus and a beam for carrying the same, a pattern-carrier and a die-carrier and means for rotating said carriers and means for abruptly accelerating or diminishing the speed of rotation of said carriers, and means for engaging the beam to hold the cutter and stylus away from their work while the rotation of the carrier is accelerated.

18. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier and a die-block carrier and means for rotating said carriers, means for moving the cutter and the stylus-carrying means simultaneously, means for varying the working speed of rotation of the cutter and the die-carrier relatively to each other, and means for automatically increasing the speed of rotation of the pattern and die carriers said means being operative when the cutter is performing no work.

19. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier and die-carrier and means for rotating said carriers, means for moving the cutter and stylus-carrying means simultaneously, and automatic means for abruptly increasing the speed of rotation of the die-carrier said means being operative when the cutter is performing no work.

20. In a metal-working machine, a cutter and a stylus and means for carrying the same, a pattern-carrier, a die-carrier, a shaft for rotating said carriers, means for gradually varying the speed of rotation of said shaft and other means including a shifting device for automatically and abruptly varying the speed of rotation of said shaft whereby the speed of rotation of the pattern and die carriers may be correspondingly varied either gradually or abruptly without interrupting the operation of the cutter.

21. In an engraving-machine, a plurality of oppositely-arranged rotatable cutters in axial alinement with movable means supporting said cutters, a stylus carried by said means for controlling the position thereof, said cutters working in opposite directions to simultaneously produce a force and a die.

22. In an engraving-machine, a pattern, a stylus, a universally-movable beam carrying said stylus, a cutter carried by said beam, a second universally-movable beam and a cutter carried thereby and a connection between said beams whereby motion from one beam is imparted to the other, said cutters being arranged in axial alinement and working in opposite directions to simultaneously produce a die and a force.

23. In a metal-working machine, a pattern-carrier, a plurality of cutter-carrying beams mounted on opposite sides of the machine, one end of each beam being mounted in a universal joint, the other end of each beam being supported by a suitable arm-head or the like, a cutter carried by each of said beams, and a stylus carried by one of said beams and means to cause both cutters to move in harmony with the stylus.

24. In a metal-working machine, a cutter and a stylus carried by a suitable beam, a rotatable die-carrying member and a rotatable pattern-carrying member, means to normally cause the stylus to bear against the pattern and the cutter to bear against the die-block, tripper-bars carried by the pattern-carrier, a lever controlled thereby and in turn controlling a clutch member feathered upon a shaft in turn connected with the pat-

tern-carrier and the die-carrier, a fast and a slow pulley located in the path of movement of the clutch member and adapted to be engaged thereby, a latch for blocking out the cutter-carrying device, said latch being controlled by said tripper-bars.

25. In a machine of the character described, a rotatable pattern-carrier and a rotatable die-carrier, a stylus and cutter, a pivotally-mounted beam supporting said stylus and a cutter, curved tripper-bars carried by one of said carriers the curve of said bars being substantially concentric with the pivotal center of said beam.

26. In a machine of the character described, a pattern-carrier and a die-carrier, a stylus and a cutter, a pivotally-mounted beam supporting said stylus and cutter, adjustably-mounted tripper-bars carried by one of said carriers, the curve of said bars being substantially concentric with the pivotal center of said beam.

27. In an engraving-machine, a cutter, a stylus, and means for carrying the same, a pattern-carrier, a die-carrier, a tripping device carried by one of said carriers, a shaft for rotating said carriers, a slow pulley normally in engagement with said shaft, a fast pulley, adapted to engage said shaft but normally disengaged therefrom, means for engaging the shaft with said fast pulley, said means being controlled by said tripping device.

28. In an engraving-machine in combination, a cutter and a stylus and means for carrying the pattern and die carriers and means for rotating the carriers, automatic means for abruptly accelerating or diminishing the speed of rotation of said carriers and means to automatically and positively hold the cutter away from the block on the die-carrier during the period of accelerated rotation.

29. In an engraving-machine, a cutter and a stylus and means for carrying the same, pattern and die carriers and means for abruptly accelerating the speed of rotation of said carriers, means for positively elevating said cutter and stylus and means for blocking out the cutter to hold it away from its work during the period of accelerated rotation of said carriers.

30. In a metal-working machine, a pattern-carrier and a die-carrier, a stylus and a cutter, means for raising said stylus and cutter and means holding them to their work respectively, means for varying the speed of rotation of the pattern and die carriers, said means comprising a pair of cone-pulleys, a belt for transmitting speed from one pulley to the other, a belt-shifter and a hinged member, a cam-bar carried thereby, said cam-bar and hinged member being movable by the rotation of the pattern or die carrier, the said member being connected to said belt-shifting device through a suitable flexible medium.

31. In a machine of the character described, a rotatable pattern and die carrier, a beam pivotally mounted at one end and mounted upon anti-friction-bearings at the outer end in a device whereby said outer end can be elevated or depressed, means for elevating or depressing said device controlled by the rotation of the pattern or die carrier, a cam-actuator carried by said beam-supporting device, a speed-controller, a cam constituting one of the parts of said controller and engaged by said actuator.

32. In a machine of the character described, a pattern and die carrier, a stylus and cutter, a beam supporting the same, cross-head supporting one end of said beam, a threaded shaft for elevating or depressing said cross-head, and a worm-wheel on said shaft, a shaft having an endless screw meshing with said worm-gear, a latch for holding the same in operative position, said latch being controlled by the position of said cross-head, and means to disengage said endless screw from said gear when said latch is tripped.

33. In a machine of the character described, means for carrying a pattern and a block in which a reproduction of the pattern is to be formed, a cutter, means for varying the speed of rotation of the pattern and block relatively to the speed of rotation of the cutter, said means comprising a hinged arm carrying a cam and means for bearing against the cam to swing said arm which in turn operates the variable-speed mechanism.

34. In a machine of the character described, a revolvable pattern-carrier, and a revolvable die-block carrier, and means for abruptly varying the speed of said carriers comprising a pulley and means for rotating the same, said pulley being connected by means of a pawl and ratchet with the shaft for driving said carriers, a clutch member feathered upon said shaft and means for shifting the same, a second pulley being in the line of action of said clutch member and adapted to be engaged thereby, and means for rotating said second pulley at a higher speed than said first-mentioned pulley engaging the same, and thereby increasing the speed of said shaft.

35. In an engraving-machine, pattern and die carriers, a stylus and cutter, means for carrying the same comprising a beam hinged at one end and supported at the other end by a yoke or bracket, a vertically-movable cross-head supporting said yoke and adjustable connections between said beam and yoke to vary the center height of the cutter and stylus independent of any adjustment of the cross-head.

36. In a metal-working machine, pattern and die carriers, a stylus and a cutter, means for supporting said stylus and cutter comprising a beam supported at one end so as to swing universally and supported at the other end by a vertically-moving yoke, and a blocking-out device comprising a lever one end of which is adapted to project into the path of movement of the swinging end of the beam, and means for controlling said blocking-out lever.

709,864. APPARATUS FOR EDGE-UNITING VENEERS. WILLIAM M. BOEHRINGE, Fort Washington, Wis. Filed Aug. 1, 1901. Serial No. 70,468. (No model.)

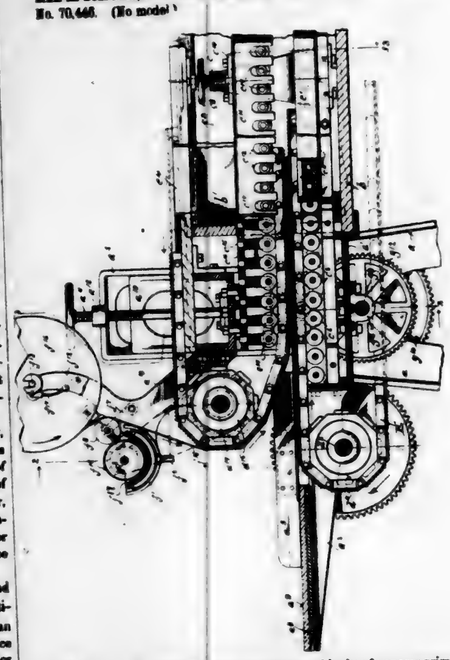

Claim.—1. In a device for edge-uniting two blanks of veneer or similar material, a two-part endless conveyer for carrying said blanks through said device, rollers tending to force one of said blanks at an angle to the line of travel of said conveyer and means adapted to act in conjunction with said conveyer for placing a strip of adhesive material above the joint between said blanks, substantially as described.

2. In a device for edge-uniting two blanks of veneer or similar material, a conveyer comprising two endless portions between which said blanks will be placed and by means of which they will be carried through said device, rollers arranged to force one of said blanks toward the other at an angle to the line of travel of said conveyer, mechanism for driving said conveyer and said rollers in unison, in combination with a supply of paper or fabric, and a glue-distributing device, substantially as described.

3. In a device for edge-uniting two blanks of veneer or similar material, a conveyer comprising two endless portions, a roller-way adapted to support one of said portions throughout a portion of its length, rollers mounted so as to yieldingly bear on the other portion throughout a portion of its length, said rollers tending to keep the adjacent faces of said portions in contact one with the other, said conveyer adapted when two blanks of veneer are placed in said device to grip said blanks adjacent to their abutting edges, means tending to force one of said blanks in close contact with the other at an angle to the line of travel of said conveyer, a glue-distributing roller, a source of supply of paper or fabric arranged so that said fabric may contact with said glue-distributing roller and be guided and placed over the joint between said blanks by means of one portion of said conveyer, substantially as described.

4. In a device for edge-uniting two blanks of veneer or similar material, means for carrying said blanks in one direction, mechanism tending to force one of said blanks at an angle to the line of travel of said means and a distributer for placing a strip of adhesive material above the joint between said blanks.

5. In a device for edge-uniting two blanks of veneer or similar material, a conveyer adapted to grip said blanks adjacent to their abutting edges and to carry the same through said device, means tending to force one of said blanks toward the other or at an angle to the line of travel of the conveyer, and mechanism acting in conjunction with said conveyer for placing a strip of adhesive material on said blanks over their abutting edges.

6. In a device for edge-uniting two blanks of veneer or similar material, a conveyer comprising two endless portions between which the two blanks to be joined will be fed and by which they will be carried through said device, rollers arranged so as to force one of said blanks toward the other or at an angle to the line of travel of said conveyer and a source of supply of adhesive material situated so that said material will be carried by one of the portions of said conveyer and placed on said blanks above the joint between them, substantially as described.

7. In a device for edge-uniting two blanks of veneer or similar material, means tending to force said blanks in close contact with each other, a housing and mechanism moving in the direction of the length of the joint between said blanks adapted to hold said blanks in close contact and convey the same through said housing, substantially as described.

8. In a device for edge-uniting two blanks of veneer or similar material, means tending to force said blanks together, a housing and a conveyer moving longitudinally of the abutting edges of said blanks adapted to hold said blanks in close contact and convey the same through said housing, substantially as described.

9. In a device for edge-uniting two blanks of veneer or similar material, rollers tending to force one of said blanks toward the other, mechanism moving in the direction of the length of the joint between said blanks adapted to hold the same in close contact and convey them through said housing in combination with mechanism working in conjunction with said conveying means for placing a strip of adhesive material on said blanks above their abutting edges, substantially as described.

10. In a device for edge-uniting two blanks of veneer or similar material, a table on which said blanks are placed, means for gripping said blanks simultaneously and imparting movement thereto, mechanism tending to force one of said blanks toward the other or out of the line of movement given by said means, a supply of adhesive material and a distributer acting in conjunction with said means for placing said adhesive material on said blanks above the joint between them, substantially as described.

11. In a device for edge-uniting two blanks of veneer or similar material, a table or support upon which said blanks are placed side by side, a moving bed or conveyer, a press adapted to move in unison with said bed, said press and said bed each adapted to grip both of said blanks simultaneously and to carry the same along said bed, means located at one side of said bed adapted to contact with one of said blanks and force the same toward the other, said bed and said press being formed so as to hold said blanks in close contact, one with the other, a source of supply of narrow paper or other suitable material, a device for distributing glue to said paper or other material, said material being adapted after the end thereof has been placed on said blanks above their abutting edges being distributed on the succeeding blanks to be fed into said device by means of said press, and mechanism for moving said bed, substantially as described.

12. In a device for edge-uniting two blanks of veneer or similar material, a conveyer comprising an endless bed, and means for holding the blanks on said bed, a table on which said blanks are placed, said table being provided with an opening through which said bed moves, rollers arranged back of said table at one side of said bed with which said blanks in the movement given to them by said bed are adapted to contact, said rollers being arranged so as to force said blank toward other blanks, means operating in conjunction with said conveyer for placing a strip of adhesive material on the succeeding blanks over their abutting edges after said adhesive material has been placed on said first-mentioned blanks above their abutting edges, and means for moving said conveyer, substantially as described.

13. In a device for edge-uniting two blanks of veneer or similar material, a conveyer for said blanks, rollers standing at right angles to the line of travel of said conveyer between which one of said blanks is adapted to pass, rollers standing at acute angles to the line of travel of said conveyer between which the other of said blanks is adapted to pass, a housing through which said conveyer passes and means for heating said housing.

14. In a device for edge-uniting two blanks of veneer or similar material, a conveyer for said blanks, upper and lower rollers standing at right angles to the line of travel of said conveyer between which one of said blanks is adapted to pass, means tending to yieldingly hold the upper rollers in contact with said blank, upper and lower rollers standing at acute angles to the line of travel of said conveyer between which the other of said blanks is adapted to pass, means yieldingly holding the upper of said last-mentioned rollers in contact with said last-mentioned blank and mechanism for driving said conveyer and the lower of said rollers at the same speed.

15. In a device for edge-uniting two blanks of veneer or similar material, a conveyer moving longitudinally of the abutting edges of said blanks, means tending to force said blanks together and a distributer acting in conjunction with said conveyer for placing a strip of adhesive material above the abutting edges of said blanks.

16. In a device for edge-uniting two blanks of veneer or similar material, a two-part endless-chain conveyer for conveying said blanks through the device, one chain adapted to support said blanks and one chain adapted to bear on the upper surfaces of said blanks; the veneer-contacting faces of one of said chains formed with sharp projections for penetrating said veneer to hold said veneer from movement laterally of said chain; the other of said chains being formed with recesses to accommodate said projections when no veneer lies between said chains.

17. In a device for edge-uniting two blanks of veneer or similar material, a two-part endless conveyer moving in the direction of the length of the joint between said blanks adapted to grip said blanks and convey them through said device and rollers arranged at one side of said conveyer to force one of said blanks toward the other.

18. In a device for edge-uniting two blanks of veneer or similar material, a conveyer moving in the direction of the length of the joint between said blanks for carrying said blanks through said device, a roller arranged at one side of the conveyer adapted to contact with one of said blanks and force it toward the other blank and protruding members on said conveyer for holding said blanks in close contact one with the other.

19. In a device for edge-uniting two blanks of veneer or similar material, a two-part endless conveyer moving longitudinally of the abutting edges of said blanks, moving means tending to force said blanks together and mechanism acting in conjunction with said conveyer for placing a strip of adhesive material above the abutting edges of said blanks.

20. In a device for edge-uniting two blanks of veneer or similar material, rollers tending to force said blanks together, a conveyer moving longitudinally of the abutting edges of said blanks for carrying the same through said device and means on said conveyer for preventing said blanks after they have been forced together from separating.

21. In a device for edge-uniting two blanks of veneer or similar material, means tending to force said blanks together, a conveyer moving longitudinally of the abutting edges of said blanks for carrying the same through said device and protruding members on said conveyer adapted to hold said blanks in close contact one with the other.

22. In a device for edge-uniting two blanks of veneer or similar material, rollers arranged to force said blanks together, two endless chains forming a conveyer and having their adjacent faces moving longitudinally of the abutting edges of said blanks, a rigid roller-way for one of said chains and a yielding roller-way for the other of said chains for yieldingly forcing said last-mentioned chain toward the other.

709,865. RAILWAY-SWITCH-OPERATING DEVICE. JAMES C BOOTH, Monessen, Pa. Filed May 14, 1902. Serial No. 107,210. (No model.)

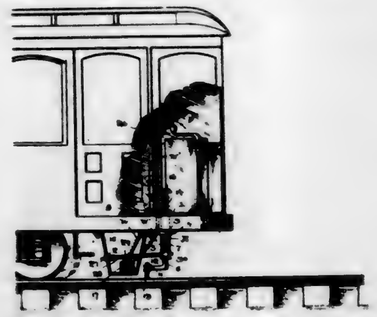

Claim.—1. In a switch-operating device, the combination with a laterally-movable switch-point, a vertically-movable shaft on the car, a plow carried by the shaft to engage the switch-point on either side, an electric circuit, magnets interposed in the circuit, an armature-lever actuated by the magnets and connected to the said shaft, and means on the car to make and break the circuit.

2. In a switch-operating device, the combination with the switch-rails, of a cross-bar uniting their free ends, a flanged bed-plate arranged and secured in the road-bed, a tapering switch-point movably arranged on said bed-plate and pivotally secured to said cross-bar, a hanger secured to the car, an electric circuit, electromagnets in the circuit and supported on the hanger, a vertically-movable shaft, a plow carried by the shaft and adapted to engage between the switch-point and the flanges of the bed-

plate, an armature-lever pivotally supported by the hanger and connected to the vertically-movable shaft, and means to make and break the circuit.

3. A device for throwing a switch from a car, comprising a vertically-movable shaft, a plow carried by the shaft, means to lift the shaft after its downward movement, a hanger fastened to the car, an electric circuit, magnets in the circuit, an armature-lever pivotally supported by the hanger, an insulated sleeve on said shaft and connected to the armature, and means on the car to make and break the circuit.

709,866. CARBURETER. EDOUARD BOURLARD-PEAUCHE, Angoulême, France. Filed Mar. 28, 1901. Renewed Aug. 26, 1902. Serial No. 121,095. (No model.)

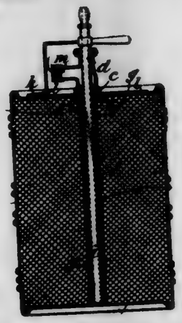

Claim.—A carbureter comprising a receptacle completely filled with porous material adapted to retain hydrocarbons and which is pervious to the passage of air to form a combustible mixture, and a cock consisting of two concentric tubes, the outer one being stationary and having a helicoidal opening and the inner one forming the rotating plug and having a straight groove, the crossing of which with the helicoidal opening determines the level of the orifice, whereby said level can be varied by the turning of one tube relatively to the other.

709,867. PROCESS OF MANUFACTURING NITROGEN COMPOUNDS FROM ATMOSPHERIC NITROGEN. CHARLES S. BRADLEY and DURRETT R. LOVEJOY, New York, N. Y., assignors, by mesne assignments, to Atmospheric Products Company, Niagara Falls, N. Y., a Corporation of New York. Filed Mar. 9, 1900. Serial No. 8,008. (No specimens.)

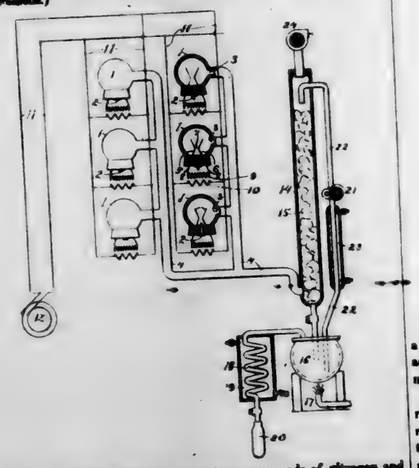

Claim.—1. The process of procuring compounds of nitrogen and oxygen, consisting in exposing to the action of an electric arc, a mixture of nitrogen and oxygen and forcing the said mixture through the space containing the arc of minimum volume in sufficient volume, and with sufficient rapidity of removal, to carry away the nitrous products from the arc and substantially prevent dissociation.

2. The process of producing compounds of nitrogen and oxygen, consisting in establishing in a mixture of nitrogen and oxygen, an electric current in the form of an arc of minimum volume, and maintaining such arc at the minimum volume sufficient to prevent its breaking.

3. The process of producing compounds of nitrogen and oxygen, consisting in establishing in a mixture of nitrogen and oxygen an electric current in the form of an arc of minimum volume, and repeatedly interrupting and reëstablishing such arc.

4. The process of producing compounds of nitrogen and oxygen consisting in repeatedly establishing in a mixture of nitrogen and oxygen, an electric current in the form of an arc of minimum volume, elongating said arc and interrupting same.

5. The process of producing compounds of nitrogen and oxygen, consisting in removing from atmospheric air substantially all moisture contained therein, then exposing the dried air to the action of the electric arc, separating the resulting nitrous products as anhydrous oxids of nitrogen from the unaltered air, and discharging such unaltered air.

6. The process of producing compounds of nitrogen and oxygen, consisting in removing the moisture from air by cooling, subjecting the dried air to the action of the electric arc, cooling the air to remove by condensation the nitrous products, and separating such condensed products.

7. The process of producing compounds of nitrogen and oxygen, consisting in exposing a mixture of the gases to the action of an interrupted current in an electric circuit, and setting up in such circuit by the inductive effect of such interrupted current, induced counter electromotive forces resisting rapid increase of current.

8. The process of producing compounds of nitrogen and oxygen, consisting in establishing in a mixture of nitrogen and oxygen, an electric current in the form of an arc of minimum volume, elongating such arc with sufficient rapidity to prevent any substantial increase of quantity of current passing, and, by such elongation, breaking such arc before it passes into a spark.

9. The process of producing compounds of nitrogen and oxygen, consisting in exposing air to the action of the electric arc, then cooling the mixed gases sufficiently to condense the resulting nitrogen tetroxid, separating and collecting such nitrogen tetroxid, then further cooling the remaining gases to condense the nitrogen trioxid and separating and collecting the said nitrogen trioxid.

709,868. APPARATUS FOR SUBJECTING GASES TO HIGH-TENSION DISCHARGES. CHARLES S. BRADLEY, New York, and DURRETT R. LOVEJOY, Niagara Falls, N. Y., assignors, by mesne assignments, to Atmospheric Products Company, Niagara Falls, N. Y., a Corporation of New York. Original application filed Mar. 9, 1900, Serial No. 8,008. Divided and this application filed Aug. 29, 1901. Serial No. 73,674. (No model.)

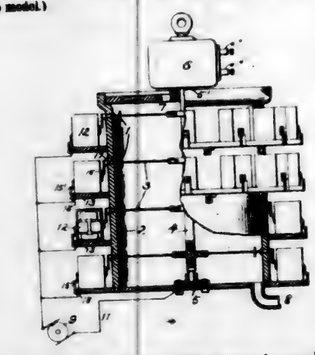

Claim.—1. The combination with a high-tension supply-circuit and a plurality of discharge devices connected thereto in parallel, of inductance devices located in circuit with the respective discharge devices and means for subjecting gases to the action of the discharge devices.

2. The combination with a high-tension supply-circuit and a plurality of discharge devices connected thereto in parallel and comprising relatively movable terminals, of inductance devices located in circuit with the respective discharge devices and means for subjecting gases to the action of the discharge devices.

3. The combination of the containing vessel, fixed terminals arranged therein, the shaft rotatably mounted in said vessel and carrying movable terminals, means for passing gases through the vessel, induction devices connected in circuit with said fixed terminals, means for detachably supporting said induction devices on said vessel, and means for supplying high-tension current connected to the induction devices and the aforesaid shaft.

4. The combination of the containing vessel, fixed terminals arranged therein, the shaft rotatably mounted in said vessel and carrying movable terminals, means for passing gases through the vessel, induction devices connected in circuit with said fixed terminals, means for detachably supporting said induction devices on said vessel, means for detachably placing the induction devices in circuit when they are placed on their supporting means, and means for supplying high-tension current connected to the induction devices and the aforesaid shaft.

709,869. CHIMNEY OR OTHER CURVED FIREPROOF STRUCTURE. PAUL BRADBURN, Brooklyn, N. Y. Filed Mar. 3, 1902. Serial No. 96,871. (No model.)

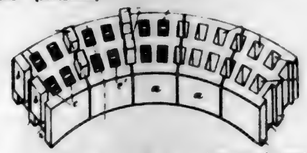

Claim.—1. A chimney or similar curved fireproof structure composed of hollow fireproof blocks having arched faces and converging grooved sides, combined with key-bricks engaging the grooves of adjoining blocks, and filling-bricks set within the perforations of the blocks, substantially as specified.

2. The method of constructing a chimney or similar curved fireproof structure which consists in setting a circular course of grooved fireproof blocks, partly filling the grooves with mortar, and then driving key-bricks into the grooves to spread the blocks and to simultaneously fill the opening joints with the displaced mortar, substantially as specified.

709,870. TILL. CORNELIUS S. CLARK and JOSIAH T. JONES, Norfolk, Va.; said Clark assignor to said Jones. Filed Oct. 11, 1901. Serial No. 78,260. (No model.)

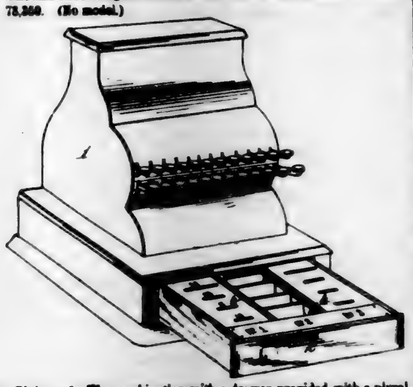

Claim.—1. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, means for independently locking all of said covers as long as said drawer remains closed, and means for independently releasing said covers after the drawer has been opened, substantially as described.

2. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, means for separately locking all of said covers independently of the movement of the drawer, and means operative only when the drawer is open for independently releasing said covers, substantially as described.

3. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, means for separately locking all of said covers, means for independently releasing said covers after the drawer has been opened, and means for automatically opening said covers when they are released, substantially as described.

4. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, means for separately locking all of said covers, and means for separately releasing any number of said covers after the drawer has been opened, substantially as described.

5. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, means for separately locking all of said covers, means for independently releasing said covers after the drawer has been opened, and means for preventing access to the releasing mechanism while the drawer is closed, substantially as described.

6. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, independent permutation-locks for separately locking said covers, and means for preventing access to said locks until the drawer is opened, substantially as described.

7. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, independent permutation-locks set on different combinations for separately locking said covers, and means for preventing access to said locks until the drawer is opened, substantially as described.

8. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, independent permutation-locks set on different combinations for separately locking said covers, means for locking the locks when the drawer is closed, and means for preventing access to said locks until the drawer is opened, substantially as described.

9. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, independent permutation-locks set on different combinations for separately locking said covers, means for preventing access to said locks until the drawer is opened, and means for closing and locking said covers when the drawer is closed, substantially as described.

10. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, means for separately locking all of said covers, means for releasing any one of said covers after the drawer has been opened, means for automatically opening the covers when they are released, and means for closing the covers when the drawer is closed, substantially as described.

11. The combination with a drawer provided with a plurality of separate compartments, of independent covers for said compartments, means for independently locking all of said covers, means for releasing any of said covers after the drawer has been opened, means for automatically opening the covers when they are released, means for automatically closing the covers when the drawer is closed, and means for preventing access to said releasing mechanism when the drawer is closed, substantially as described.

12. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments, means for independently locking all of said covers, and means for releasing any of said covers after the drawer has been opened, substantially as described.

13. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments, means for independently locking all of said covers, means for releasing any of said covers after the drawer has been opened, and means for automatically sliding the covers from off the compartments when said covers are released, substantially as described.

14. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments, means for independently locking all of said covers, means for releasing any of said covers after the drawer has been opened, means for automatically sliding the covers from off the compartments when said covers are released, and means for preventing access to the releasing mechanism until the drawer is opened, substantially as described.

15. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments, means for independently locking all of said covers, means for releasing any of said covers after the drawer has been opened, and springs arranged to draw the covers from off the compartments when said covers are released, substantially as described.

16. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments, means for independently locking all of said covers, means for releasing any of said covers after the drawer has been opened, springs arranged to draw the covers from off the compartments when said covers are released, and means for compressing the springs when the drawer is closed, substantially as described.

17. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments, means for independently locking all of said covers, means for releasing any of said covers after the drawer has been opened, springs arranged to draw the covers from off the compartments when said covers are released, and means for yieldingly arresting the movement of the covers

when the latter are retracted from over the compartments, substantially as described.

18. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments each having depending flanges at their opposite ends, longitudinal rods passing through said flanges and on which said covers are arranged to travel, springs interposed between the rear of the drawer and the rear flanges of the covers and operating to retract the covers when the latter are released, means for independently locking said covers, and means for releasing any of the covers after the drawer has been opened, substantially as described.

19. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments each having depending flanges at their opposite ends, longitudinal rods passing through said flanges and on which the covers are arranged to slide, springs interposed between the rear of the drawer and the rear flanges of the covers and operating to retract the covers when the latter are released, fixed stops arranged to arrest the movement of the covers when the latter are retracted, means for independently locking said covers, and means for releasing any of the covers after the drawer has been operated substantially as described.

20. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments each having depending flanges at their opposite ends, longitudinal tubes passing through said flanges and fixed in the opposite ends of the drawer, stationary rods fixed at their rear ends in rear of the drawer and telescoping at their forward ends in said tubes, means for independently locking the covers, means for releasing any of the covers after the drawer has been opened, and springs arranged to retract the sliding covers from over the compartments when said covers are released, substantially as described.

21. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments each having a depending slotted flange, latches carried by the drawer for engaging said slotted flanges and holding the covers closed, and means for independently releasing said latches at will after the drawer has been opened, substantially as described.

22. The combination with a drawer provided with a plurality of separate compartments, of independent sliding covers for said compartments each having depending slotted flanges, latches carried by the drawer arranged to automatically engage said slotted flanges and lock the covers when the drawer is closed, means for independently releasing said catches at will after the drawer has been opened, and means for automatically retracting said covers from over the compartments when the covers are released, substantially as described.

709,871. TRAP. JAMES A. CLEKINS, St. Louis, Mo., assignor to Louis Stoltz and Bertha Clukies, St. Louis, Mo. Filed Nov. 25, 1901. Serial No. 83,498. (No model.)

Claim.—1. In a trap, the combination of a pipe carrying a ring, a bowl provided with a horn, a plate connected to said horn and seated on said ring, said plate held in position on said ring by said pipe, substantially as described.

2. In a device of the character described, a bowl provided with a horn, a plate formed integral with said horn, a pipe carrying a resilient ring, said plate seated on said ring and held in position by said pipe, and means for expanding said ring, substantially as described.

3. In a trap, the combination of a pipe, provided in its upper end with an annular groove, a ring seated in said groove, a bowl provided at its lower end with a horn, a plate connected to said horn, said plate seated on said ring and held in position by the turned edge of said pipe, substantially as described.

4. In a trap, the combination of a pipe, provided with a flange having reduced edges, a ring seated in said pipe, a bowl, a plate having reduced edges connected to said bowl and seated on said ring, said plate being held in position by said flange, and means for expanding said ring, substantially as described.

5. In a trap, the combination of a pipe provided with an annular groove, a ring within said groove, a bowl provided at its lower portion with a horn, a plate having reduced downwardly-deflected edges connected to said horn, said plate positioned on said ring, said pipe provided with reduced edges adapted to overlap said plate and hold same in position, and means adapted to force said ring against said plate, substantially as described.

6. In a trap, the combination of a pipe carrying a ring, a bowl provided with a horn, means connected to said horn and seated on said ring, said means held in position on said ring by said pipe, and means connected to said pipe for raising the latter whereby the said ring is compressed by engagement with said first-named means, substantially as described.

709,872. MEANS FOR ATTACHING BOWLS TO THE SLABS OF WASHSTANDS. JAMES A. CLEKINS, St. Louis, Mo., assignor to Louis Stoltz and Bertha Clukies, St. Louis, Mo. Filed Nov. 25, 1901. Serial No. 83,500. (No model.)

Claim.—The combination of a slab, a bowl having a flange, angle-irons, shells gripping said slab, bolts cooperating with said shells, a collar surrounding the drain-pipe and supporting-straps engaging said collar and fastened to said bolts, substantially as described.

709,873. MACHINIST'S V-BLOCK. ELMER M. COBB and EUGENE A. SPAULDING, Portland, Me. Filed Dec. 19, 1901. Serial No. 86,484. (No model.)

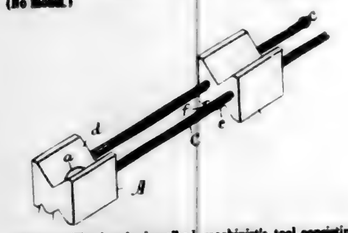

Claim.—The herein-described machinist's tool consisting of a pair of V-blocks having their notches in line with each other, and a pair of guide-rods secured to one of said blocks and passing through the other block and upon which it is adapted to slide.

709,874. SPECTACLES. MOSES H. COHEN, Marseilles, Ill. Filed June 19, 1902. Serial No. 112,208. (No model.)

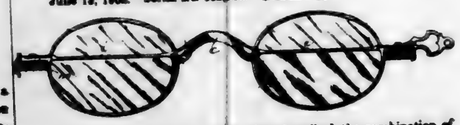

Claim.—1. In spectacles of the class described, the combination of a pair of main lenses, a nose-bridge connecting such lenses, an outer shoulder for each lens attached thereto and extending outward and backward from the outer end thereof, a detached pair of supplementary lenses provided with a bridge extending over the nose-bridge and connecting such supplementary lenses, and a shoulder attached to the outer ends of such supplementary lenses and extending outward over the outer shoulders of the main lenses, substantially as described.

2. In spectacles of the class described, the combination of a pair of main lenses, a nose-bridge extending upward and backward from the inner ends of such lenses and in operative connection therewith, a shoulder attached to and extending outward and backward from the outer end of each lens, a detached pair of supplementary lenses removably mounted back of the main lenses, a bridge attached to the supplementary lenses connecting them and extending over the nose-bridge of the main lenses, and a shoulder attached to and extending outward from the outer end of each supplementary lens and having a downwardly and inwardly extending portion adapted to yieldingly engage the shoulder on the adjacent main lens, substantially as described.

3. In spectacles of the class described, the combination of a pair of oval lenses provided with a nose-bridge operatively connecting the inner ends thereof and extending backwardly and upwardly, a detached pair of semi-oval lenses removably mounted back of the main lenses having their top edge extending horizontally central of the main lenses, a bridge extending over the nose-bridge of the oval lenses and connecting the supplementary lenses, and means for yieldingly and removably connecting the supplementary lenses with the oval lenses, substantially as described.

4. In spectacles of the class described, the combination of a pair of main lenses, a pair of rims in which such lenses are mounted provided with a nose-bridge extending from and connecting the inner ends of such rims and thereby the lenses and forming a main frame, a shoulder on the outer end of each rim extending outwardly and backwardly therefrom, a bow pivotally mounted in each of the shoulders, a supplementary frame consisting of a pair of rims and a connecting-bridge removably mounted back of the main lenses, a detached pair of supplementary lenses in such frame, a connecting-bridge in the supplementary frame extending over the nose-bridge of the main lenses and connecting the rims of the supplementary frame and thereby the supplementary lenses, and a shoulder upon the outer end of each rim of the supplementary frame extending outward over the shoulders of the main frame and resting removably thereon, substantially as described.

5. In spectacles of the class described, the combination of a main frame consisting of a pair of rims and a nose-bridge connecting the inner ends of such rims, a shoulder extending outwardly and backwardly from the outer end of each rim, a bow pivotally mounted in each shoulder, a pair of oval lenses mounted in such main frame, a supplementary frame removably mounted back of the main frame having shoulders extending outward from the outer ends thereof over and resting removably upon the shoulders of the main frame, and a pair of substantially semi-oval lenses mounted in such supplementary frame and having their top edges extending horizontally centrally of the oval lenses, substantially as described.

6. In spectacles of the class described, the combination of a main frame having a nose-bridge extending backward and upward therefrom and provided with end shoulders extending outward and backward from the outer ends thereof, a pair of lenses mounted in such main frame, a detached supplementary frame consisting of a pair of rims having a connecting-bridge adapted to extend over the nose-bridge of the main frame, a pair of shoulders extending outward longitudinally of the supplementary frame over the shoulders of the main frame, each having a downwardly-extending hook portion for engaging a shoulder of the main frame, and a pair of semi-oval lenses mounted in the supplementary frame, substantially as described.

709,875. HEATING OR COOLING PIPE. RUDOLF OSSENKOPP, Magdeburg-Sudenburg, Germany. Filed May 5, 1902. Serial No. 106,044. (No model.)

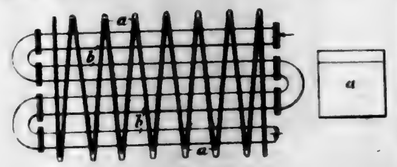

Claim.—1. The combination with a pipe for conveying a heating or cooling medium, of an integral radiating-plate bent or folded in a zigzag manner and having each of its folds provided with an aperture through which said pipe extends, substantially as described.

2. The combination with a pipe for conveying a heating or cooling medium, of an integral radiating-plate bent or folded in a zigzag manner and having each of its folds provided with an aperture through which said pipe extends, the said folds of said radiating-plates being rigidly connected with said pipe by metallic connection, substantially as described.

3. The combination with a plurality of pipes for conducting a heating or cooling medium, of a radiating-plate bent or folded in a zigzag manner, each of the folds of said plate being provided with an aperture for each of said pipes, and each of said pipes extending through all the folds of said plate, substantially as described.

709,876. SUMMER COOK-STOVE. CHARLES E. COOKE, Kansas City, Mo. Filed May 31, 1901. Serial No. 62,589. (No model.)

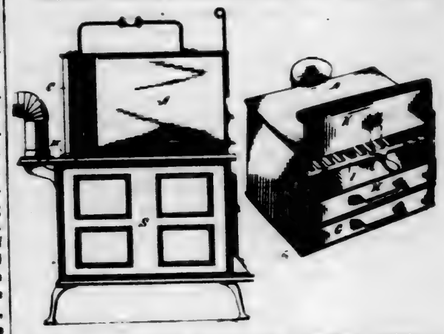

Claim.—1. A portable stove or broiler as described, consisting essentially of the substantially cubical body having drawer-slides, a down-flue outside said body and opening into the same through the rear wall, an ash-pan and a charcoal-pan above the same, and a sliding door extending downward at the front of the stove-body to the top of the upper pan when closed, all substantially as described.

2. In a portable stove, the rectangular body having a rear down-flue, slideways arranged on the inner sides of said body, an ash-pan drawer and a charcoal-drawer arranged to fit and move on the lower slideways having the upper slideways for a gridiron, and a sliding front to close downward in suitable channels at the front of the body, all combined.

3. In a portable auxiliary stove, the sheet-metal casing having a rear down-flue, and a handle-bar attached to the top of the down-flue and to top of the body proper, and serving as a brace and handle, all combined substantially as described.

709,877. MOTOR. CHARLES J. OSBURN, Jersey City, N. J. Filed Nov. 14, 1901. Serial No. 82,330. (No model.)

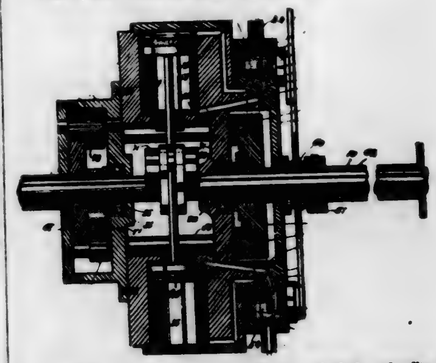

Claim.—1. A motor comprising a fixed crank-shaft, a plurality of cylinders mounted to rotate around the crank-shaft, pistons in the cylinders having connection with the crank of the crank-shaft, a two-section driving-shaft, and compounding-gear connections between the driving-shaft sections and the cylinders, substantially as specified.

2. A motor, comprising a fixed crank-shaft, a cylinder-body mounted to rotate around the crank-shaft and having a plurality of cylinders arranged one cylinder opposite another, pistons arranged in the cylinders, rod connections between opposite pistons, yoke members arranged in said rods and engaging with the crank, a shaft movable around the crank-shaft, and fixed gear connections between the movable shaft and the motor-body, substantially as specified.

3. A motor, comprising a fixed crank-shaft, a cylinder-body mounted to rotate around said crank-shaft and having a plurality of cylinders arranged one cylinder opposite another, pistons for operating in the cylinders, rod connections between opposite pistons, yokes in said rod connections for engaging with the crank, a driving-shaft comprising tubular sections surrounding the crank-shaft, and driving connections between the motor-body and said tubular shaft-sections, substantially as specified.

4. A motor, comprising a fixed crank-shaft, a motor-body mounted to rotate relatively to the crank-shaft, the said body having a plurality of cylinders, pistons operating in the cylinders, rod connections between opposite pistons, yoke members in said rod connections for engaging with the crank, tubular driving-shaft members mounted to rotate on the crank-shaft, gear-wheels on said tubular shaft members, shafts carried by the body, pinions on said shafts for engaging with the gear-wheel on one of the tubular shaft members, pinions on the opposite ends of said shafts and pinion connections between said last-named pinions and the gear-wheel on the other of said tubular shaft members, substantially as specified.

5. A motor, comprising a fixed crank-shaft, a motor-body mounted to rotate on said shaft and having a series of cylinders, the cylinders being arranged in pairs, one cylinder opposite another, pistons for operating in the cylinders, opposite pistons being connected and having connection with the crank of the crank-shaft, ports leading into the outer and inner ends of the cylinders, a fixed port-plate having channels with which the respective inner and outer ports communicate, means for directing a motive agent into said channels and a driving-shaft having gear connection with the motor-body, substantially as specified.

6. A motor, comprising a fixed crank-shaft, a motor-body mounted to rotate on the shaft and having a series of cylinders, the said cylinders being arranged in pairs one cylinder opposite another, pistons operating in the cylinders, opposite pistons being connected and having connection with the crank of the crank-shaft, a driving-shaft gear connections between the driving-shaft and the motor-body, a fixed port-plate having two channels for communicating with ports leading to the inner and outer ends of the cylinders, a valve for controlling the inlet of steam to said channels, a valve for controlling the exhaust of steam from said channels, and means for simultaneously operating said valves, substantially as specified.

7. A motor, comprising a fixed crank-shaft, a motor-body mounted to rotate on the shaft and having a series of cylinders, the said cylinders being arranged in pairs one cylinder opposite another, pistons operating in the cylinders, opposite pistons being connected and having connection with the crank of the crank-shaft, a driving-shaft, gear connections between the driving-shaft and the motor-body, a fixed port-plate having two channels for communicating with ports leading to the inner and outer ends of the cylinders, a valve for controlling the inlet of steam through said channels, a valve for controlling the exhaust of steam from said channels, means for simultaneously operating said valves, and means for holding the port-plate yieldingly against the body of the motor, substantially as specified.

709,878. **MANUFACTURE OF RAIL-BONDS.** FRED H. DANIELS and HORACE W. WYMAN, Worcester, Mass. Filed Feb 7, 1902. Serial No. 92,958. (No model.)

Claim.—1. The herein-described method of making electrical conductors or bonds, consisting in forming the head with a cup-shaped central recess or depression and an open transverse slot or groove across the end over the recess, placing in said recess a ball or other expander of harder metal than the head, fitting the conducting-strands in the slot over the expander, and uniting said strands to the head and simultaneously closing the recess and causing the metal of the head to close around the expander by forging or welding.

2. The herein-described electrical conductor or bond, consisting of the head *a*, having a spreader or expander of harder metal inclosed in a central recess therein, and the conductor *b* united to the head by being forged or welded into an open groove extending transversely across head.

709,879. **GARMENT-SUPPORTER.** CALVIN A. DEARDORFF, Washington, D. C. Filed Oct. 30, 1901. Serial No. 80,857. (No model.)

Claim.—1. A garment-supporter of the class described, comprising a belt-loop member having a closed eye arranged intermediate the ends of the loop, and a safety-pin member having a closed eye in one arm thereof intermediate the ends of the pin, said eyes being interlocked to loosely connect the two members.

2. A garment-supporter of the class described, comprising an elongated belt-loop member formed of a single strand of wire having one bar thereof bent intermediate the ends of the loop to provide a closed eye, and a safety-pin member having one of its arms bent to provide a closed eye intermediate the ends of the pin, said eyes being interlocked to loosely connect the two members.

3. A garment-supporter of the class described, comprising a belt-loop member formed of a single strand of wire and having one of its bars bent intermediate the ends of the loop to provide a closed eye, said loop being split at one point and having reduced overlapping ends, and a safety-pin member provided with a closed eye intermediate the ends of the pin, the eyes of said members being interlocked.

709,880. **AUTOMATIC RAPID-FIRE GUN.** VICTOR P. DE KNIGHT, Washington, D. C., assignor, by direct and mesne assignments, to the Victor P. De Knight Gun Company, Washington, D. C., a Corporation of Delaware. Filed Sept. 5, 1900. Serial No. 29,072. (No model.)

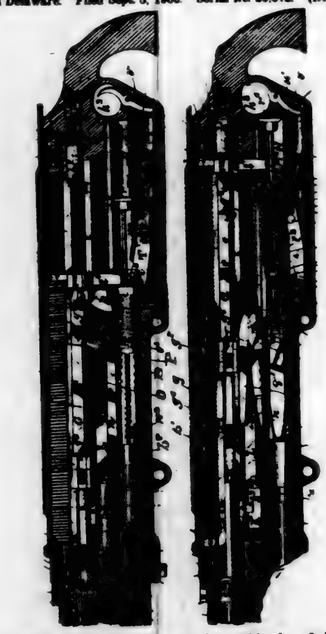

Claim.—1. In a machine-gun, the combination of the receiver or cradle for the breech mechanism, the detachable wedge-block at the rear of the receiver, a top plate or cover hinged at one end and having a pendent lug at the other end thereof engaging a recess in the wedge-block, and a single fastening device securing said receiver, wedge-block and top plate together, substantially as described.

2. In a machine-gun, the combination with the breech mechanism, of the receiver or cradle therefor having the detachable safety or wedge block and the removable top plate hinged at one end and having a projection at the other end thereof occupying a recess in said wedge-block, and a fastening-pin inserted through the receiver-walls and the said wedge-block and projection, whereby the wedge-block and top plate are secured together and to the receiver, substantially as described.

3. In a machine-gun, the receiver or cradle containing the cartridge loading and firing mechanism, and having a longitudinal slot in its bottom, in combination with the trigger mechanism located below said bottom, and a detachable bottom plate inclosing the space occupied by said trigger mechanism outside of the receiver; whereby said trigger mechanism is housed underneath the receiver-bottom and access thereto is readily afforded by removing said bottom plate, substantially as described.

4. In a machine-gun, the combination with the operating mechanism, of the receiver or cradle therefor having the detachable wedge-block adapted to be slid down into place, and the trough-like plate or cover detachably secured to the under side of the receiver for housing a portion of the operative mechanism, said plate having a supporting-lug engaging a support on the under side of the receiver and being held in place by the wedge-block, and a spring constituting a portion of said operative mechanism bearing against said plate so as to actively force out said plate when the wedge-block is lifted and the plate disengaged from its support; substantially as described.

5. In a machine-gun, the combination with the operative mechanism, of the receiver or cradle therefor having the detachable wedge-block adapted to be slid down into place, and the removable top and bottom plates or covers, said bottom plate being secured in place by the wedge-block and adapted to be slid backward and detached from the receiver only when said wedge-block is raised, and said top plate being hinged to the receiver at one end and detachably secured thereto and to said wedge-block at the other end thereof so as to confine the wedge-block and through it the bottom plate in place by a single fastening device; substantially as described.

6. In a machine-gun, the receiver or cradle containing the cartridge loading and firing mechanism, and having a wedge-block adapted to be slid down into place to close its rear end, in combination with the trigger mechanism located below said bottom, and a detachable longitudinally-slidable bottom plate inclosing the space occupied by said trigger mechanism outside of the receiver; said bottom plate and receiver having co-acting engaging means for retaining said plate in a fixed position on the receiver and adapting it to be slid backward and removed only when the wedge-block is raised, substantially as described.

7. In a machine-gun, the combination with the breech portion and the barrel, of the water-jacket inclosing said barrel, and a storage tube or chamber inclosed within the water-jacket and having its open end accessible through an opening in said jacket; substantially as described.

8. In a machine-gun, the combination with the breech portion and barrel, and the water jacket inclosing said barrel, of a storage tube or chamber inclosed within said jacket and having its open end protruding through an opening in the forward end of the latter; said jacket having an interior projection or bracket for supporting the other end of said tube or chamber; substantially as described.

9. In a gas-operated rapid-fire gun, the combination of the barrel having a screw-threaded socket on one side with a port through the bottom thereof, a gas conduit or pipe having a transversely-apertured and screw-threaded head, a longitudinally-bored plug uniting said head and socket to provide communication between said gas-conduit and the bore of the barrel, and a plug or "choker" inserted through an aperture in the jacket and entering the aperture in said head; substantially as described.

10. In a gas-operated rapid-fire gun, the combination of a barrel having a screw-threaded socket on one side with a port through the bottom thereof, a gas-conduit having screw-threaded sockets formed on opposite sides thereof with ports therethrough, a hollow plug or coupling uniting one of the latter sockets with the socket on the barrel, and a plug or "choker" in the form of a set-screw protruding through the socket on the gas-conduit opposite said hollow plug into the bore of the gas-conduit; substantially as described.

11. In a gas-operated rapid-fire gun, the combination with the barrel, the gas-conduit communicating therewith in the rear of its muzzle and extending back to the operating parts of the gun, and the water-jacket inclosing said conduit and barrel, of the valve or choker in the form of a thumb-screw entered through an aperture in said jacket and having its end protruding into the bore of the gas-conduit; substantially as described.

12. In a gas-operated rapid-fire gun, a gas-conduit communicating with the bore of the gun-barrel at the forward part of the same, and a cylinder forming a continuation of said conduit and having an interior recess near its rear end and a port communicating with said recess to provide for the escape of spent gases and refuse from the conduit, in combination with a piston in said cylinder having a recessed terminal portion or reduced extension coincident with the recess in the cylinder in the normal position of the piston, and mechanism adapted to be operated by said piston, substantially as described.

13. In a gas-operated rapid-fire gun, a gas-conduit communicating with the bore of the gun-barrel at the forward part of the same, a cylinder compounded with said conduit, a plunger or piston in said cylinder, and mechanism adapted to be operated by said plunger; said cylinder having an interior annular recess near its rear end and a hollow plug communicating with a port leading from said recess to provide for the escape of gas and air from the conduit; substantially as described.

14. In combination with the gun-barrel, the water-jacket, the gas-conduit communicating with the forward portion of the barrel and extending back to the operating parts of the gun and having an annular recess therein, and a hollow plug entered through an aperture in said jacket and communicating with said recess, so as to provide for the escape of gas and refuse from the gas-conduit to without the gun; substantially as described.

15. In a gas-operated rapid-fire gun, the combination with the barrel and a gas-conduit connected to and communicating therewith rearwardly of its muzzle and extending back for cooperation with the breech mechanism, of a water-jacket inclosing said conduit and barrel, and a pair of set-screws entered through apertures in said jacket near its opposite ends into registering apertures in said conduit and adapted to prevent rotation or relative displacement of said jacket, conduit and connected barrel, one of said set-screws being adapted to control the gas-inlet to said conduit, and the other being in the form of a hollow plug through which spent gases may escape from the conduit; substantially as described.

16. In a gas-operated rapid-fire gun, a gas-conduit communicating with the barrel and having a cylinder and a piston working therein, said cylinder having an interior annular recess provided with a port for the escape of gas and refuse from the conduit, in combination with a reciprocatory actuator for the breech mechanism independent of the piston having a forward extension adapted to enter said conduit and to be backwardly impelled by the piston; substantially as described.

17. In a gas-operated rapid-fire gun, the combination of a gas-conduit communicating with the barrel at the forward part thereof and extending rearwardly therefrom, a plunger or piston working in a cylindrical portion of said conduit, a reciprocatory actuator for the breech mechanism movable independent of the plunger and adapted to be impelled in one direction by said plunger, and a single retractile spring arranged to act directly on the actuator in opposition to the impelling action of the plunger so as to store power which is exerted in impelling the actuator in the opposite direction; substantially as described.

18. In a machine-gun, the combination with the receiver or casing having the removable top plate and the reciprocatory actuator or slide inclosed therein, of an interposed spiral spring for advancing said actuator having one end secured to the top plate and its other end detachably connected with the actuator so that said spring may be detached from the actuator and removed with said top plate to permit access to the operating parts in said receiver; substantially as described.

19. In combination with the breech mechanism of a machine-gun, and a reciprocatory actuator therefor, a rocking cartridge depressing and pointing arm, a cam piece or wiper pivotally supported on said arm and extending into the path of movement of a part carried by the actuator, together with said part having an elongated contacting surface adapted to engage said wiper and thereby depress and hold the arm down when the actuator is moving in one direction; said wiper being adapted to yield by contact with said part when the actuator is moving in the opposite direction, substantially as described.

20. In combination with the breech mechanism of a machine-gun, and a reciprocatory actuator therefor, a rocking cartridge depressing and pointing arm, a spring-pressed cam piece or wiper pivotally supported on said arm and extending into the path of movement of a contacting portion carried by the actuator, so as to contact therewith when the latter is reciprocated, together with an elongated projection forming said contacting portion adapted to engage said wiper and thereby depress and hold said arm down when the actuator is moving in one direction; said wiper being adapted to yield by contact with said projection when the actuator is moving in the opposite direction, substantially as described.

21. In combination with the reciprocatory actuator for the breech mechanism, a pair of cartridge-extracting arms pivotally connected at their upper ends, and a spring secured on one arm having a free end bearing on the other arm and adapted to yieldingly force the pendent portions of the arms toward each other; substantially as described.

22. In a rapid-fire machine-gun, the combination with the reciprocatory actuator for the breech mechanism, of the rocking cartridge depressing arm or lever having a spring-pressed cam piece or wiper pivoted thereon with which an engaging part of the actuator contacts, on the forward movement of the latter, depressing the arm and directing the cartridge into the cartridge-chamber of the barrel; said cam-piece being adapted to yield or recede out of the path of said engaging part on the backward movement of said bar, so as not to affect the position of said arm, substantially as described.

23. The combination, in a machine-gun, of a receiver having openings in opposite sides and a passage-way between said openings for the passage of the cartridge-belt; a ledge at each side of said passage-way to support opposite ends of the cartridge, which ledges converge toward their inner ends, internal steps or shoulders at the terminal of said ledges to arrest the cartridge, one of said shoulders having an extension which is adapted to overlie and hold the cartridge down, means for drawing the

cartridge-belt through said passage-way to feed the cartridges successively against said shoulders and beneath said overhanging extension, and means for extracting the arrested cartridge from the belt; substantially as described.

24. In a rapid-fire machine-gun, the combination with the receiver, and the longitudinally-reciprocating actuator, and the reciprocatory feed-slide arranged to slide across the path of movement of said actuator to successively advance a cartridge into a passage-way through the receiver, of the vibratory lever for actuating said slide arranged substantially parallel with the actuator and having an extension loosely fitting a transverse slot or recess in the feed-slide, and means for actuating the lever by direct contact with the actuator; substantially as described.

25. In a rapid-fire machine-gun, a reciprocatory structure adapted to be actuated in one direction by force resulting from a discharge and advanced by a spring in the opposite direction; said structure comprising an actuator for receiving the direct impact of the retracting force and having abutment pieces or shoulders, and a breech-block having a bifurcated arm which embraces said actuator between the abutment-shoulders thereof, said breech-block being thus detachable from said actuator, and a sufficient space being provided between said abutment-shoulders to permit movement of the actuator independent of the breech-block; substantially as described.

26. In a rapid-fire machine-gun, a reciprocatory structure adapted to be actuated in one direction by force resulting from a discharge and advanced by a spring in the opposite direction; said structure comprising an actuator for receiving the direct impact of the retracting force and having abutment pieces or shoulders, and a breech-block having a bifurcated arm which embraces said actuator between the abutment-shoulders thereof, said breech-block being thus detachable from said actuator, and a sufficient space being provided between said abutment-shoulders to permit movement of the actuator independent of the breech-block, said actuator being operatively connected with means for feeding a belt of cartridges into the receiver, extracting them one by one, and loading and firing the extracted cartridges; substantially as described.

27. In a rapid-fire machine-gun, the combination of a breech-block, a spring-pressed hammer carried thereby, a locking-piece spring-pressed to lock the breech-block and having a rearwardly-extending heel, a sear pivoted concentrically with said locking-piece and having a rearwardly-extending heel confronting that of the latter, said sear being pressed to hammer-engaging position by a spring inferior to that which actuates the locking-piece, a wedge entered between said confronting heels and carried by a horizontally-disposed flexible rod or piece slidable through the rear end of the gun-casing, and means for manipulating said wedge; substantially as described.

28. In combination with the breech-block and spring-pressed hammer carried thereby, the concentrically-pivoted sear and breech-block lock arranged horizontally beneath the breech-block chamber and spring-pressed upward for locking said breech-block and hammer, respectively; said sear and lock having rearward confronting projections or heels, a horizontally-disposed wedge entered between said heels, and means for manipulating said wedge; substantially as described.

29. In combination with the reciprocatory actuator for the breech mechanism having a pair of vertical apertures therethrough, a pair of cartridge-extracting arms depending through said apertures and having inwardly-extending portions or lugs at their upper ends pivotally connected, and a spring on one of said arms having a bearing on the other adapted to yieldingly force the depending portions thereof toward each other; substantially as described.

30. In a gas-operated machine-gun, the combination with the gas-conduit in communication with the barrel, and the plunger cylinder, of the reciprocatory plunger, and the independently-movable reciprocatory actuator; one of said reciprocatory parts being provided with a hand-pull projecting through a longitudinal slot in the casing, for manual operation; substantially as described.

709,881. AUTOMATIC RAPID-FIRE GUN. VICTOR P. DE KNIGHT, Washington, D. C., assignor, by direct and mesne assignments, to the Victor P. De Knight Gun Company, Washington, D. C., a Corporation of Delaware. Filed Sept. 12, 1902. Serial No. 73,854. (No model.)

Claim.—1. In combination with the receiver having a transverse passage-way for a belt of cartridges, the actuator for the breech mechanism, the gas-impelled piston for moving said actuator in one direction, and a spring for moving the same in the opposite direction, a slide with means for moving the cartridge-belt having a direct connection with a forward extension of the actuator; said extension having a part arranged at an angle to the line of movement of the actuator and engaging the slide, whereby the latter is reciprocated at each reciprocation of the actuator; substantially as described.

2. In combination with the reciprocatory actuator operatively connected with the breech mechanism, a passage-way through the receiver for a belt of cartridges, a reciprocatory slide having a pawl adapted to advance said belt when the slide is impelled in one direction and to recede to position for engaging another cartridge when the slide is moved in the opposite direction, said slide having a slot therein and a portion of said actuator extending through said slot having a part arranged at an angle to the line of movement of the actuator so as to move back and forth therein for directly operating the slide when the actuator is reciprocated; substantially as described

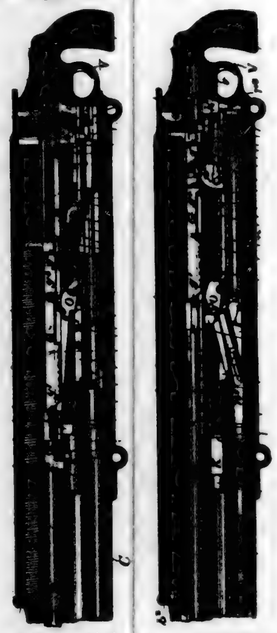

3. In combination with the reciprocatory actuator operatively connected with the breech mechanism, a passage-way through the receiver for a belt of cartridges, a reciprocatory slide having a pawl adapted to advance said belt when the slide is impelled in one direction, and to recede to position for engaging another cartridge when the slide is moved in the opposite direction, said slide having an angular slot therein and an angular portion of said actuator extending through said slot so as to move back and forth therein and having a part arranged at an angle to the line of movement of the actuator for directly operating the slide when the actuator is reciprocated; substantially as described.

4. In a rapid-fire gun, a reciprocatory breech-block, in combination with a relatively stationary cartridge-depressing rocking arm, and means on said block for engaging and depressing said arm when the block moves rearward and for raising it when the block moves forward together with a reciprocatory actuator and means carried thereby for engaging and holding said arm in its raised and depressed positions during reciprocatory movement of the actuator; substantially as described.

5. In a machine-gun, the cartridge depressing and pointing rocking arm having adjacent to its pivot, back of the cartridge-manipulating portion of the arm, a pair of pendent lugs arranged in different vertical planes, one on each side of said pivot, in combination with the reciprocatory breech-block having oppositely-inclined portions or cam-surfaces thereon; one of said lugs being arranged in the path of and adapted to contact with one of said inclines so as to depress said arm when moving in one direction, and the other lug arranged in the path of and adapted to contact with the other incline so as to raise said arm when moving in the opposite direction, substantially as described.

6. In a rapid-fire gun, the cartridge-depressing rocking arm having a pair of pendent lugs near its pivot, back of the cartridge-manipulating portion of the arm; one lug being located in front of and the other in the rear of said pivot, in combination with the reciprocatory breech-block having parallel grooves adapted to receive and guide said lugs and terminating in oppositely-inclined surfaces one of which is adapted to contact with one lug and depress said arm when moving in one direction and the other to contact with the other lug and raise said arm when moving in the opposite direction; substantially as described.

7. In a rapid-fire gun, the cartridge-depressing rocking arm having one depending lug in front of its pivot and another in the rear thereof, in combination with an underlying reciprocatory breech-block having longitudinal grooves or slots in its upper surface forming ways or guides to receive said lugs; said slots terminating at opposite ends in oppositely-inclined portions, one of which is adapted to contact with one of said lugs and depress said arm when the breech-block is moving rearward and the other incline to contact with the other lug and raise said arm when the breech-block is moving forward; substantially as described.

8. In combination with the actuator for the breech mechanism operatively connected with the breech-block for imparting a reciprocatory movement thereto, an intermediate cartridge-depressing rocking arm, and means whereby said arm is depressed by the breech-block on the backward movement thereof and raised when the breech-block is moved forward; said rocking arm having a part adapted to be engaged by the actuator on its rearward movement and positively held up until the cartridge has been carried into position for the action of the breech-block, whereupon said arm will be released by the actuator and depressed by the breech-block, for pointing the cartridge to enter the cartridge-chamber; substantially as described.

9. In combination with the actuator for the breech mechanism operatively connected with the breech-block for imparting a reciprocatory movement thereto, an intermediate cartridge-depressing rocking arm, and means whereby said arm is depressed by the breech-block on the backward movement thereof and raised when the breech-block is moved forward; said rocking arm having a part adapted to be engaged by the actuator on its forward movement and positively held down, and to be also engaged on the rearward movement of the actuator and positively held up until the cartridge has been carried into position for the action of the breech-block, whereupon said arm will be released by the actuator and depressed by the breech-block for pointing the cartridge to enter the cartridge-chamber; substantially as described.

10. In combination with the actuator for the breech mechanism and means whereby it is impelled backwardly by a force resulting from a discharge and forwardly by a spring in which power is stored by the aforesaid force, said actuator being operatively connected with the breech-block for imparting a reciprocatory movement thereto, an intermediate cartridge-depressing rocking arm, and means whereby said arm is depressed by the breech-block on the backward movement thereof and raised when the breech-block is moved forward; said rocking arm having a part adapted to be engaged by the actuator on its rearward movement and positively held up until the cartridge has been carried into position for the action of the breech-block, whereupon said arm will be released by the actuator and depressed by the breech-block for pointing the cartridge to enter the cartridge-chamber; substantially as described.

11. In a rapid-fire machine-gun, the combination with the actuator operatively connected with the breech-block, so as to impart a reciprocatory movement to the latter, of an interposed cartridge-depressing rocking arm having a depending lug thereon in front of its pivot and another lug back of its pivot for engagement with the breech-block, and means whereby the latter will engage said lugs and depress said arm when moved in one direction and raise the same when moving in the opposite direction, together with means carried by the actuator adapted to engage an element on said arm and maintain it in a horizontal or raised position until the cartridge has been carried back to a position to be dropped in front of the cartridge-chamber, whereupon said arm will be released by the actuator and depressed by the breech-block; substantially as described.

12. In combination with the cartridge-depressing rocking arm and means whereby it is depressed by the movement of the breech-block in one direction and raised by the movement thereof in the opposite direction, a projection on said arm having a cross-head and a T-shaped slot in a portion of the actuator adapted to receive the neck and head of said projection when the actuator is moving rearwardly so as to insure a horizontal position of the arm until the cartridge has been carried back to a position to be dropped in front of the cartridge-chamber; substantially as described.

13. In a gas-operated rapid-fire gun, the combination with the receiver for the breech mechanism and the water-jacket having a gas-conduit compounded therewith, of the latter having an elongated slit therein, of a piston working in said conduit, a sliding cover having a connection with said piston through said slit, and a handle or pull-piece for manually operating the piston independently of its adaptability for automatic action; substantially as described.

14. In a rapid-fire machine-gun, the receiver for housing the breech mechanism and an actuator housed in said receiver and operatively connected with said mechanism, in combination with the water-jacket containing the gun-barrel and a gas-conduit compounded with a piston-cylinder having an elongated slit therein, together with a piston working in said cylinder carrying a sliding cover which is connected to the piston through said slit, and a handle or pull-piece connected to said cover to adapt the gun for manual as well as automatic action; substantially as described.

15. In a gas-operated rapid-fire gun, a cradle or receiver for housing the breech mechanism having a water-jacket for housing the gun and connected parts formed integrally therewith; said water-jacket having an integral gas-conduit with a cylinder adapted to receive a reciprocatory piston and a hollow post or coupling-piece connecting with the forward part of the gun-barrel coincident with an aperture in the latter to establish communication with the conduit through said post; substantially as described.

16. In a rapid-fire machine-gun, the receiver consisting of an elongated trough-like body adapted to receive the breech mechanism formed integrally with a water-jacket containing a gas-conduit and adapted to receive a gun-barrel having a port registering with a port communicating with said gas-conduit; substantially as described.

17. In a rapid-fire machine-gun, the receiver consisting of an elongated trough-like body adapted to receive the breech mechanism having a cylindrical water-jacket formed integrally therewith; the latter having a gas-conduit compounded therewith and constructed to receive a gun-barrel having a port registering with a port communicating with said gas-conduit; substantially as described.

18. In a rapid-fire machine-gun, the receiver consisting of an elongated trough-like body, adapted to receive the breech mechanism and having an open top provided with a removable cover and an open rear end provided with a vertically-slidable detachable wedge-block; said trough-like body having a tapered integral tubular extension containing a gas-conduit provided with a port adapted to register with a port in a gun-barrel also contained in said tubular extension; substantially as described.

19. In a gas-operated rapid-fire gun, the combination with a cartridge feeding, loading and firing mechanism and a reciprocatory actuator operatively connected therewith and adapted to be impelled in one direction by a force resulting from a discharge and in the opposite direction by a spring in which power is stored by said force, a gas-conduit having a port communicating with a port in the forward part of the gun-barrel and a piston independent of the actuator fitting a cylindrical portion of said conduit; said piston having a handle or pull-piece for manual operation thereof independently of its adaptability for automatic action; substantially as described.

20. In a rapid-fire gun, the actuator for the breech mechanism consisting of a longitudinally-slidable bar constructed with means for operatively engaging said mechanism and having a forward angular extension having a part arranged at an angle to the line of movement of the actuator for operative engagement with an angular slot in the feed-slide; substantially as described.

21. In combination with the actuator having the angular extension having a part arranged at an angle to the line of movement of the actuator, the feed-slide slotted to receive said extension so as to connect said actuator and slide and adapt them to reciprocate in planes at right angles to each other; substantially as described.

22. In a gas-operated rapid-fire gun, a breech-block having a firing-pin mounted therein, and mechanism for locking the same in firing position and for unlocking them in turn, in combination with an actuator having a limited movement independent of the breech-block, a power-storing cushioning device therefor adapted to first cushion the actuator and then the breech-block as each approaches the limit of its backward movement, and means for utilizing the power thus stored for impelling the firing-pin; substantially as described.

23. In combination with the breech-block and firing-pin carried thereby, and means for locking the same in firing position, the reciprocatory actuator and connections between the same and the breech-block allowing a limited movement only of one independently of the other, means for cushioning the actuator and breech block near the limit of their rearward movement; means for imprisoning the power stored in cushioning said devices to adapt said power to be utilized in impelling the firing-pin when it is released, and means for releasing said cushioning means and firing-pin when the breech-block is locked in firing position, substantially as described.

24. In a machine-gun, the longitudinally-bored breech-block carrying a firing-pin movable freely back and forth within said bore, means for locking the breech-block in firing position, a reciprocatory actuator connected to said breech-block so as to impel the same while allowing a limited movement of the one independently of the other, a cushioning device for said actuator independent of the hammer for the firing-pin and adapted to store power when cushioning the actuator to be utilized in impelling the firing-pin when the latter is released, and means for releasing said cushioning device and firing-pin when the breech-block is locked in firing position.

25. In combination with the breech-block carrying the firing-pin and hammer, a reciprocatory actuator for impelling the breech-block having a limited movement independent thereof, means for cushioning said actuator and breech-block, and means for releasing said cushioning devices, firing-pin and hammer when the breech-block is locked in firing position; said cushioning means being independent of the hammer but adapted to store power which is utilized in impelling said hammer when the latter is released.

26. In combination with the reciprocatory actuator and breech-block and connections between the same allowing a limited movement only of one independently of the other, a cushioning device adapted to first cushion the actuator and then the breech-block as each of said parts approaches the limit of its rearward movement.

27. In combination with the reciprocatory actuator and breech-block connected together in such manner that one may move independently of the other to a limited extent only, and means for successively cushioning said actuator and breech-block as each nears the limit of its rearward movement and storing the power used in cushioning said parts, means for releasing and utilizing the power stored by said cushioning means in impelling the firing-pin, substantially as described.

28. In combination with the reciprocatory breech-block and the actuator therefor, the firing-pin carrying a hammer and slidable longitudinally in a bore through said block, means for cushioning said actuator near the limit of its rearward movement, and means for utilizing the power stored by said cushioning means for impelling the firing-pin when the actuator and breech-block move forward and the firing-pin is released: said cushioning means being independent of the hammer and adapted to act indirectly thereon only when the latter is released by the forward movement of the breech-block.

29. In a machine-gun, the combination with the receiver, and the actuator and breech-block slidably arranged therein, of the breech-block lock comprising a slideway having an abutment and a swinging trailing arm or locking-piece carried by the breech-block adapted to engage said abutment and lock the breech-block when in firing position, said arm having an upwardly and forwardly extending projection, and a cooeting cam device carried by the actuator adapted to positively engage and depress said swinging arm on the forward movement and to engage said projection and lift the said arm on the backward movement of the actuator, substantially as described.

30. In a machine-gun, the combination with the receiver, and the actuator and breech-block slidably arranged therein, of the breech-block lock comprising a slideway having an abutment and a swinging locking-piece carried by the breech-block and having its trailing portion provided with an upward forwardly-curved arm or projection, the free end of said locking-piece being adapted to engage said abutment and lock the breech-block when in firing position, and a cooperating cam member carried by the actuator adapted to engage said curved arm and lift the locking-piece on rearward movement of the actuator, thereby unlocking the breech-block; substantially as described.

31. In combination with the actuator and breech-block, the breech-block lock consisting of a swinging arm carried by the breech-block having its free end arranged to drop down and engage a step in a guideway therefor when the breech-block is in firing position; said arm having an upturned forwardly curved or inclined finger or cam device, and means carried by the actuator adapted to contact with said cam device and unlock the breech-block on the rearward movement of the actuator, together with a firing-pin and trigger and sear devices arranged to effect the release of the firing-pin by interfering with said swinging arm; substantially as described.

32. In a rapid-fire gun, the reciprocatory actuator and the breech-block impelled thereby, in combination with a cushioning device for said actuator adapted to store power when cushioning the same, means for imprisoning said device when power is stored therein, means for impelling the actuator to and fro, a firing-pin, a hammer independent of said cushioning device, and means for utilizing the power thus stored for impelling said firing-pin when the actuator is advanced; substantially as described.

33. In a rapid-fire machine-gun, the combination with the longitudinally-reciprocatory actuator for operating the breech mechanism, of the transversely-reciprocatory feed-slide for feeding a belt of cartridges transversely through the gun, said actuator having a cam portion thereon engaging a slot in the feed-slide, whereby the latter is reciprocated across the line of movement of the former at each reciprocation of said actuator; substantially as described.

34. In an automatic rapid-fire gun, the combination with the actuator and breech-block impelled thereby carrying a firing-pin, the swinging locking-piece carried by and pivotally connected with the breech-block, and means carried by the actuator for positively actuating said locking-piece to lock the breech, together with trigger and sear devices arranged to effect the release of the firing-pin by interfering with said swinging arm; substantially as described.

709,882. **RAPID-FIRE GUN.** VICTOR P. DE KNIGHT, Washington, D. C., assignor, by direct and mesne assignments, to the Victor P. De Knight Gun Company, Washington, D. C., a Corporation of Delaware. Filed Oct. 18, 1900. Serial No. 33,472. (No model.)

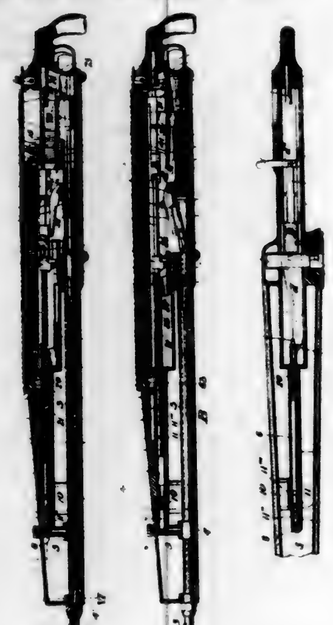

Claim.—1. In a gas-actuated gun, a piston-chamber formed in the casing having a reduced terminal in communication with the bore of the barrel, an exhaust-port leading outwardly from the chamber through the casing back of such reduced terminal and a piston mounted in the chamber provided with a reduced extension and shoulder adapted to interfit with the reduced terminal of the chamber and its shoulder, substantially as set forth.

2. In a gas-actuated gun, a piston-chamber formed in the casing comprising the water-jacket, an exhaust-port leading outwardly and downwardly therefrom through the casing, a reduced extension of the piston-chamber beyond such exhaust-port in communication with the bore of the barrel, an intervening pressure-regulating device, and a piston mounted in the chamber provided with a reduced extension loosely fitting into the extension of the chamber, and provided with a shoulder adapted to abut against the shoulder formed by such reduced extensions, and to receive the gas-pressure, substantially as set forth.

3. In a gas-actuated gun, a piston-chamber formed in the casing comprising the water-jacket, an exhaust-port leading outwardly and downwardly therefrom through the casing, a reduced extension of the piston-chamber, beyond such exhaust-port in communication with the bore of the barrel, an intervening pressure-regulating device, and a piston mounted in the chamber provided with a reduced extension loosely fitting into the extension of the chamber provided with a shoulder of the full diameter of the piston-chamber adapted to abut against the shoulder formed by such reduced extension, and having a reduced neck back of each shoulder to permit clearance, substantially as set forth.

4. In a gas-actuated gun, a piston-chamber, the forward portion of which communicates with the barrel and the rear portion of which is of larger diameter than the forward portion and communicates with an exhaust-opening, and a piston mounted in said rear portion, and provided with a reduced extension, projecting into said forward portion.

5. In a gas-actuated gun, a piston chamber, the forward portion of which communicates with the barrel and the rear portion of which is of larger diameter than the forward portion and communicates with an exhaust-opening, and a piston consisting of a collar portion and a plunger portion, the collar portion fitting against the rear of the front portion and the plunger extending thereinto.

6. In a gas-actuated gun, a piston-chamber, the forward portion of which communicates with the barrel with an intervening pressure-regulating device, and the rear portion of which is of larger diameter than the forward portion and communicates with an exhaust-opening, and a piston, consisting of a collar portion fitting against the rear of the front portion and a plunger extending therefrom.

7. In a gas-actuated gun, the combination with a piston-chamber formed in the casing and communicating with the bore of the barrel, of an enlargement of the chamber communicating with an exhaust-opening, and a piston mounted in the chamber through the enlargement, provided with a reduced extension freely fitting in the forward terminal of the chamber and having a shoulder adapted to abut against the shoulder formed by the reduced terminal of the chamber, beyond the enlargement, substantially as set forth.

8. In a gas-actuated gun, the combination with the piston, of a reciprocating actuator, a spring-controlled pin, said pin being beveled on its lower end, the actuator being provided with a beveled tip adapted to engage the beveled face of the pin and lift the pin to automatically effect connection of the actuator and piston.

9. In a gas-actuated gun, the combination with a piston mounted in a chamber having a port communicating with the bore of the barrel, of a reciprocating actuator, and a device for automatically connecting the piston and actuator, and for automatically disconnecting such parts by drawing the actuator backward and bringing the connecting device into contact with a stationary abutment, substantially as set forth.

10. In a gas-actuated gun, the combination with a piston mounted in a chamber having a port communication with the bore of the barrel, of a reciprocating actuator having a reduced extension fitting into the end of the piston and a pin passing through the extension of the actuator extending downwardly from a tapered spring-bar laid in the top of the piston, and adapted to withdraw the pin to detach the actuator, by lifting action of an interfering abutment, substantially as set forth.

11. In a gas-actuated gun, the combination with a piston mounted in a chamber having a port communicating with the bore of the barrel, of a reciprocating actuator having a reduced extension fitting into the end of the piston and a spring secured to the piston, provided with a beveled pin projecting through the piston and actuator extension, and having an extended under sloping lifting tip, substantially as set forth.

12. In a gas-actuated gun adapted to use belt-carried cartridges, the combination of a piston-chamber communicating with the bore of the barrel, a piston mounted in the chamber and provided with a push-bolt extension, and a rearwardly-removable actuator detachably connected with the piston.

13. In a gas-actuated gun provided with means for feeding a cartridge-belt transversely through the gun, the combination of a piston-chamber communicating with the bore of the barrel, a piston mounted in the chamber provided with a push-bolt extension adapted to push the cartridge from the belt, and rearwardly-removable means for feeding the cartridge-belt detachably connected with the piston.

14. In a machine-gun having a piston-chamber formed in the casing communicating with the bore of the barrel, and a piston mounted in the chamber, the combination with a cartridge-filled belt and a rearwardly-removable actuator detachably connected with the piston, actuated by the discharge of the gun for feeding the belt through the gun, of a push-bolt extending below and beyond the piston, operating in conformity with the belt and adapted to discharge the cartridge therefrom by impact against the tip of the bolt.

15. In a gas-actuated gun, the combination with a cartridge-filled belt and a reciprocating feed-block provided with means for engaging the belt, of a cam-bar adapted to reciprocate the feed-block and a piston connected with the cam-bar and mounted in a piston-chamber communicating with the bore of the barrel.

16. In a gas-actuated gun, the combination with a cartridge-filled belt, means for limiting the movement of the belt and a reciprocating feed-block provided with means for engaging the belt, of a cam-bar adapted to reciprocate the feed-block, and a piston detachably connected with the cam-bar and mounted in a piston chamber communicating with the bore of the barrel.

17. In a gas-actuated gun, the combination of a piston mounted in a chamber having a port communicating with the bore of the barrel, a push-bolt extension of the piston adapted to push the cartridge from the belt, a rearwardly-removable reciprocating actuator detachably connected to the piston, and means connected with the actuator for manipulating and firing the ammunition, substantially as set forth.

18. In a rapid-fire gun, the combination with the cartridge-depressing arm, of the actuator-bar provided with means for supporting the depressing arm erect and means for positively forcing the depressing-arm downwardly from such support when released therefrom, substantially as set forth.

19. In a rapid-fire gun, the combination with the cartridge-depressing arm provided with a supporting-button, of the actuator-bar provided with slotted ways for engaging and supporting the depressing-arm in one direction and a pressure-spring adapted to close the opening to the ways against the resistance of the supporting-button, substantially as set forth.

20. In a rapid-fire gun, the combination with means for discharging a cartridge from a belt, of vertical guiding-faces corresponding to the sides of the cartridge adapted to facilitate its vertical fall, supporting-lugs for the rim of the cartridge, a pivoted depressor adapted to point the cartridge, and a reciprocating breech-block adapted to manipulate the depressor and to insert the cartridge in the breech of the barrel, substantially as set forth.

21. In a rapid-fire gun, the combination of a piston mounted in a piston-chamber in communication with the barrel, an actuator connected with the piston, a reciprocating breech-block in engagement with the actuator and provided with a locking device operated by the actuator, a central firing-pin mounted in the breech-block, a sear and trigger, and means incorporated with the actuator for disengaging the sear to release the firing-pin, substantially as set forth.

22. In a rapid-fire gun, the combination of a piston mounted in a piston-chamber, in communication with the barrel, an actuator detachably connected with the piston, a reciprocating breech-block in engagement with the actuator and provided with a locking device operated by the actuator, a central firing-pin mounted in the breech-block, a sear and trigger, and means incorporated with the actuator for disengaging the sear to release the firing-pin, substantially as set forth.

23. In a rapid-fire gun, the combination of a piston mounted in a piston-chamber in communication with the barrel, an actuator detachably connected with the piston, a reciprocating breech-block in engagement with the actuator and provided with a locking device operated by the actuator, a central firing-pin mounted in the breech-block having a lateral lug, a pivoted sear adapted to engage the lug, and means incorporated with the actuator for disengaging the sear to release the firing-pin, substantially as set forth.

24. In a rapid-fire gun, the combination of a piston mounted in a piston-chamber in communication with the barrel, an actuator detachably connected with the piston, a reciprocating breech-block in engagement with the actuator and provided with a locking device, operated by the actuator, a central firing-pin mounted in the breech-block having a lateral lug, a pivoted sear adapted to engage the lug, a trigger-rod having an enlarged end resting on the opposite end of the sear, and a pin connected with the actuator adapted to engage the enlargement of the trigger-rod to depress the sear and release the firing-pin, substantially as set forth.

25. In a rapid-fire gun the combination with a reciprocating actuator connected with a piston mounted in a chamber having a port communicating with the bore of the barrel, and a spring-actuated buffer block having an impelling-bracket, adapted to be engaged by the firing-pin and retracted, and to exert a forward impulse thereto; of a firing-pin provided with an enlarged hollow head for the purpose set forth, and having lateral bearings with intervening air-passages, substantially as set forth.

26. In a rapid-fire gun, the combination of a pivotally-mounted spring-actuated locking-sear in engagement with a firing-pin, provided with an extension extending beyond the pivotal bearing, a trigger-rod extending over the extension and provided with a beveled enlargement, and a reciprocating shoe secured to the actuator provided with a lateral pin adapted to ride over the enlargement of the trigger-rod and to depress it and the sear extension, to release the firing-pin, substantially as set forth.

27. In a rapid-fire gun, in combination with a reciprocating breech-block and a locking-sear for the firing-pin, a lock pivotally secured to the breech-block and bearing against it, a reciprocating shoe traveling with the actuator adapted to raise and support the lock and to depress it into locking position, and provided with a lateral pin adapted to depress the end of the sear to release the firing-pin, substantially as set forth.

28. In a rapid-fire gun, provided with a reciprocating actuator; a slot in the side of the locking-cam projecting downwardly and outwardly to prevent entrance of the elements, and similarly-shaped pull-bar extending from the actuator outwardly through the slot, substantially as set forth.

29. In a gun provided with a tension-storage spring and having a hinged lid for the case; a securing-eye on the lid for one end of the spring, projecting below the hinge whereby when the lid is raised the eye is thrown rearwardly to release the tension on the spring, substantially as set forth.

30. In a gas-actuated gun, the combination of an integral receiver and water-jacket; a piston-chamber in the water-jacket communicating with the barrel; a piston therein provided with a push-bolt, a reciprocating actuator connected with the piston and adapted to be retracted thereby, a tension-spring, a slide-block transversely arranged across the throat of the gun operated by the actuator; a sear, a buffer-block and spring, and means for releasing the sear, substantially as set forth.

31. In a rapid-fire gun, the combination of a reciprocating actuator provided with a downwardly-projecting beveled shoe extension having a lateral pin, a reciprocating breech-block in engagement with the actuator, a lock pivotally secured to the breech-block provided with shoulders adapted to bear against it in a raised or lowered position, and having a horn adapted to be engaged by the shoe extension, a firing-pin mounted in the breech-block provided with a locking-lug, a pivoted rear adapted to engage the locking-lug, and a trigger-rod having an enlarged end resting on the rear extremity, adapted to be depressed by the pin on the shoe extension, substantially as set forth.

32. In a rapid-fire gun, the combination of a reciprocating actuator, a spring-actuated buffer-bar adapted to be retracted thereby and provided with an impelling-bracket, a breech-block operating in conformity with the reciprocating actuator provided with a central opening for the firing-pin and air-outlet opening through the breech-block; of a firing pin centrally mounted in the breech-block, adapted to be retracted thereby for the full travel of the breech-block, and provided with a head adapted to be engaged by the impelling-bracket, substantially as set forth.

33. In a rapid-fire gun, the combination of a reciprocating actuator, a spring-actuated buffer-bar adapted to be retracted thereby and provided with an impelling-bracket, a breech-block operating in conformity with the reciprocating actuator provided with a central opening for the firing-pin and air-outlet openings through the breech-block; of a firing-pin centrally mounted in the breech-block, adapted to be retracted thereby for the full travel of the breech-block, and provided with a head adapted to be engaged by the impelling-bracket, each head providing lateral bearings for the pin and having air-passages therein, substantially as set forth.

34. In a rapid-fire gun, the combination of a reciprocating actuator, a spring-actuated buffer-bar adapted to be retracted thereby and provided with an impelling-bracket, a breech-block operating in conformity with the reciprocating actuator provided with a central opening for the firing-pin, and air-outlet openings through the breech-block; of a firing-pin centrally mounted in the breech-block, adapted to be retracted thereby for the full travel of the breech-block and provided with a head to hold it in a retracted position and for releasing it to fire, substantially as set forth.

709,883. AUTOMATIC RAPID-FIRE GUN. VICTOR P. DE KNIGHT, Washington, D. C., assignor, by direct and mesne assignments, to The Victor P. De Knight Gun Company, Washington, D. C., a Corporation of Delaware. Filed July 12, 1901. Serial No. 68,066. (No model.)

Claim.—1. In a machine-gun, a reciprocatory actuator and means for imparting a reciprocating movement thereto; said actuator carrying an integral parts thereof a part adapted to encounter the flange of a cartridge in the cartridge feed-belt and withdraw the cartridge therefrom when moving backward, a second part adapted to engage the breech-block lock and release the breech-block on the same movement, and a third part to engage an element on the breech-block and move the latter rearward the instant it is unlocked; said unlocking part adapted to engage another portion of the locking device and move the breech-block forward on the forward movement of the actuator, and said second engaging part adapted to engage the firing-pin and discharge the gun the instant the breech-block is locked in firing position, substantially as described.

2. In a machine-gun, the combination with a receiver, of a reciprocatory actuator and breech-block, the former having a limited movement independent of the latter and adapted to move the same in the direction of its own movement at the limit of its independent movement in either direction, and a locking device, comprising a stop or abutment within the receiver and a locking-dog on the breech-block adapted to be engaged by said abutment to lock the breech-block in firing position, said dog being pivotally secured between its ends to the breech-block and having a projection at each end lying in the path of movement of a part carried by the actuator for engagement therewith, together with said engaging element arranged between said projections so as to engage one projection when moving forward and thereby lock the breech-block in firing position, and to engage the other projection when moving backward and thereby release the breech-block on the return movement of the actuator.

3. In a machine-gun, the combination with a reciprocatory breech-block, an actuator arranged to reciprocate the same, of a bell-crank-shaped locking-dog pivoted to the breech-block, an abutment with which said dog engages to lock the breech-block when the latter is in closing position, and a projection on the actuator arranged between the members of said locking-dog and adapted to engage said members alternately, on forward and rearward movement of the actuator, thereby tilting the dog to lock and unlock the breech block; substantially as described.

4. The actuator comprising a reciprocatory bar having a cylindrical extension at its forward end, and a terminal piston or plunger integral therewith adapted to fit a suitable piston-cylinder, means carried by the actuator for impelling the breech-block and locking the latter in firing position on its forward movement, and for unlocking the breech-block and impelling it rearwardly on the rearward movement of the actuator, together with means carried by the actuator adapted to withdraw a cartridge from the feed-belt when the actuator moves rearward and to impel the firing-pin when the actuator moves forward.

5. In combination with the receiver containing the breech mechanism, including a breech-block, a cartridge-depressing device and a reciprocatory actuator for imparting movement thereto, a passage-way within the receiver for conducting a cartridge extracted from the feed device into position to be inserted in the breech of the gun-barrel, one wall of said passage having a spring fitted thereon or thereto for maintaining the cartridge in proper position until it reaches the limit of its rearward movement.

6. In a machine-gun, a passage-way for a belt of cartridges, and a reciprocatory feed-slide for advancing said belt, and a feed-dog carried by said slide having a limited independent movement in the direction of the travel of the slide, a stud on the dog adapted to contact with the slide on forward travel so as to retain the dog in engagement with the cartridge, and a recess in said slide in which said stud recedes on backward travel to release the dog and permit it to slip back freely past the next cartridge; substantially as described.

7. In a machine-gun, a passage-way for a belt of cartridges, and a feed-slide for advancing said belt step by step, a pivoted feed-dog carried by said slide having a slidable pivot permitting a limited movement of the dog in the direction of travel of the slide, a stud on said dog adapted to contact with the slide on forward travel, and a recess in said slide in which said stud recedes on backward travel; substantially as and for the purpose described.

8. In a gas-operated machine-gun, the combination of a receiver, a water-jacket having an internal gas-conduit, and a barrel fitted in the front of the receiver and extending through coaxial openings in the gas-conduit and front of the jacket, said barrel having a lateral gas-exit port registering with the bore of the gas-conduit, annular grooves on the barrel in the openings in said gas-conduit and jacket, and packing-rings fitted in said grooves forming water-tight joints while permitting expansion and contraction of the barrel; substantially as described.

9. In a gas-operated machine-gun, the reciprocatory actuator and means integral therewith for actuating the breech-block and feed-slide and for extracting a cartridge from a belt of cartridges when the actuator moves rearward, said actuator having a forward integral cylindrical extension and a reduced terminal portion forming a piston proper to fit a piston-cylinder communicating with a gas-conduit; substantially as described.

10. In a gas-operated machine-gun, the reciprocatory actuator having integral contacting portions thereon adapted to extract a cartridge from the cartridge-belt on its rearward movement, and impart movement to the breech-block on both its backward and forward movements; said actuator having a limited movement independently of the breech-block, and provided with a forward integral extension forming a piston or plunger adapted to fit a piston-cylinder communicating with a gas-conduit leading from a port in the gun-barrel; substantially as described.

11. In a gas-operated machine-gun, the receiver having a water-jacket secured thereto and an internal gas-conduit and piston-cylinder compounded integral with said water-jacket, said conduit communicating with a port in the gun-barrel, in combination with the reciprocatory actuator having a forward integral extension forming a piston or plunger working in said piston-cylinder; substantially as described.

12. The water-jacket formed with a recess to provide an outlet therefrom into the open air, the said recess dividing the conduit and piston-cylinder proper from the rearward extension of the cylinder which receives and guides a cylindrical extension of the actuator carrying said piston; substantially as described.

13. In an automatic rapid-fire gun, the combination with the receiver, barrel and gas-conduit communicating with the latter, of a reciprocatory actuator arranged above the barrel and having a plunger portion contained in the conduit, said actuator being rearwardly impelled by the gases of discharge and forwardly impelled by a spring, cartridge-feeding mechanism operated by the actuator and arranged above the breech of the barrel, means carried by the actuator for raising a cartridge on rearward travel, means for inserting the cartridge in the breech of the barrel, a reciprocatory breech-block carrying a firing-pin and a trailing locking-dog, said actuator having a limited movement independent of the breech-block but impelling the same at the limit of its independent movement in either direction, a pendent lug on the actuator engaging said locking-dog to lock the breech-block in closing position but to release the same after firing, and a pendent lug on the actuator adapted to impel the firing-pin when the breech-block stands locked; substantially as described.

709,884. CAR-BRAKE. JOHN H. DE MAY and FREDERICK HEYLAND, Jr., Jackson, Mich. Filed Jan. 20, 1902. Serial No. 91,000. (No model.)

Claim.—1. In brake-setting mechanism, a drum adapted to be connected with the brake to be applied, a pinion connected for rotation with the drum, a worm, a brake-setting shaft for actuating the said worm, and a differential-speed gear having its toothed portions in mesh with, respectively, the said worm and pinion, substantially as set forth.

2. In brake-setting mechanism, a frame of approximately U form, parallel shafts journaled in the longitudinal or side portions of the frame, a drum secured to the innermost shaft, a differential-speed gear keyed to the other shaft and having the toothed portion of greater diameter in mesh with the teeth of a pinion connected for rotation with the said drum, and a worm-gear in mesh with the other toothed portion of the differential-speed gear and journaled at a right angle to the aforementioned shaft, substantially as set forth.

3. In brake-setting mechanism, a frame, parallel shafts, spaced drums secured to one of the shafts, a pinion intermediate of the drums and connected for rotation therewith, a differential-speed gear mounted upon the other shaft and in mesh with the said pinion, and a drive worm-gear in mesh with a toothed portion of the differential-speed gear, substantially as set forth.

709,885. STENCIL-PRINTING MACHINE. ALBERT B. DICK, Chicago, Ill. Filed July 19, 1901. Serial No. 68,268. (No model.)

Claim.—1. In a stencil-printing machine of the type described, the combination with a stencil-carrier and a paper-carrying frame geared together, of a shaft connected to the stencil-carrier, a pinion on the shaft, an oscillating segment engaging with said pinion, a hand-operated balance-wheel, and connections between said balance-wheel and said segment for oscillating the latter, a ratchet and pawl being interposed in said connections, substantially as set forth.

2. In a stencil-printing machine, the combination with a shaft and means for operating the same, of a stencil-carrier loosely mounted on said shaft, and a worm-gear for adjusting the stencil-carrier with respect to the shaft, substantially as set forth.

3. In a stencil-printing machine, the combination with a shaft and means for operating the same, of a stencil-carrier loosely mounted on said shaft, a worm-gear for adjusting the stencil-carrier with respect to the shaft, and means for disengaging the elements of said worm-gear, substantially as set forth.

4. In a stencil-printing machine, the combination with a shaft and means for operating the same, of a stencil-carrier mounted on said shaft and adjustable longitudinally with respect to the same, a plurality of grooves in said shaft, and a latch on the stencil-carrier for engaging said grooves, substantially as set forth.

5. In a stencil-printing machine, the combination with a shaft and means for operating the same, of a stencil-carrier adjustable circumferentially with respect to the shaft, and a braking-spring connected to the shaft and engaging the stencil-carrier, substantially as set forth.

6. In a stencil-printing machine, the combination with a shaft and means for operating the same, of a stencil-carrier adjustable longitudinally and circumferentially with respect to said shaft, a latch for locking the stencil-carrier against longitudinal movement, and a braking-spring connected to the shaft for resisting radial movement of the stencil-carrier, substantially as set forth.

7. In a stencil-printing machine, the combination with a shaft and means for operating the same, of a stencil-carrier adjustable longitudinally and circumferentially of the shaft, a latch for locking the stencil-carrier against longitudinal movement, a worm-gear on the stencil-carrier, and a worm connected to the shaft engaging said worm-gear, substantially as set forth.

8. In a stencil-printing machine, the combination with a shaft and means for operating the same, of a stencil-carrier adjustable longitudinally and circumferentially of the shaft, a latch for locking the stencil-carrier against longitudinal movement, a worm-gear on the stencil-carrier, a worm connected to the shaft engaging said worm-gear, and a braking-spring connected to the shaft, engaging the stencil-carrier and moving the same longitudinally to disengage the worm from the worm-gear when said latch is operated, substantially as set forth.

9. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame geared to said stencil-carrier, of an impression-roller coöperating with the stencil-carrier, a lever connected with said impression-roller, a cam for operating said lever, and levers coöperating with stops on the paper-carrying frame for partially turning said cam in reverse directions, substantially as set forth.

10. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carry-

ing frame geared to said stencil-carrier, of an impression-roller coöperating with the stencil-carrier, a lever connected with said impression-roller, a cam for operating said lever, levers coöperating with stops on the paper-carrying frame for partially turning said cam in reverse directions, and an equalizing-lever coöperating with said cam, substantially as set forth.

11. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame geared to said stencil-carrier, of an impression-roller coöperating with said stencil-carrier, a cam for elevating and depressing the said impression-roller, a lever connected directly with the shaft of said cam for partially turning the cams in one direction, and another lever connected to the cam for turning the cam in the opposite direction, substantially as set forth.

12. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame geared to said stencil-carrier, of an impression-roller coöperating with said stencil-carrier, a cam for elevating and depressing the said impression-roller, a lever connected directly with the shaft of said cam for partially turning the cams in one direction, another lever connected to the cam for turning the cam in the opposite direction, and an equalizing-lever coöperating with said cams, substantially as set forth.

13. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame geared to said stencil-carrier, of an impression-roller, two bell-cranks carrying the impression-roller, a cam-shaft, cams on said shaft with which the bell-cranks engage, and levers coöperating with stops on the paper-carrying frame for partially rotating the cams, as and for the purposes set forth.

14. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame geared to said stencil-carrier, of an impression-roller, two bell-cranks carrying the impression-roller, a cam-shaft, cams on said shaft with which the bell-cranks engage, levers coöperating with stops on the paper-carrying frame for partially rotating the cams, and equalizing-levers coöperating with said cams, as and for the purposes set forth.

15. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame geared to said stencil-carrier, of an impression-roller, two bell-cranks carrying the impression-roller, a cam-shaft, cams on said shaft with which the bell-cranks engage, levers coöperating with stops on the paper-carrying frame for partially rotating the cams, equalizing-levers coöperating with said cams, a pair of springs at each side of the machine connected to the equalizing-levers and bell-cranks, and a common adjusting mechanism for each pair, substantially as set forth.

16. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame connected to said stencil-carrier, of an impression-roller coöperating with the stencil-carrier, a cam-shaft for depressing and elevating said impression-roller, an arm carried by said shaft, a counter connected to said arm, and a latch for holding said arm in a normally elevated position to keep the impression-roller normally depressed, substantially as set forth.

17. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame, of a stationary jaw mounted on said frame, a shaft mounted in the frame beneath the jaw, a gripper on said shaft, a pinion on said shaft, and a rack engaging said pinion to rotate the shaft to withdraw the gripper, substantially as set forth.

18. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame, of a stationary jaw mounted on said frame, a shaft mounted in the frame beneath the jaw, a gripper on said shaft, a pinion on said shaft, a rack engaging said pinion to rotate the shaft to withdraw the gripper, a rod for operating said rack, and a buffer on said rod engaging a stationary stop on the main frame, substantially as set forth.

19. In a stencil-printing machine of the type described, the combination with an oscillating stencil-carrier and a reciprocating paper-carrying frame, of a stationary jaw mounted on said frame, a shaft mounted in the frame beneath the jaw, a gripper on said shaft, a pinion on said shaft, a rack engaging said pinion to rotate the shaft to withdraw the gripper, a rod connected to said rack, a block on said rod, and a spring-latch for normally locking said block to hold the gripper in a retracted position, substantially as set forth.

709,886. BOBBIN HOLDER-CASE FOR SEWING-MACHINES. ALBERT DÖRING, Dresden, Germany, assignor to Aktiengesellschaft, vormals Seidel & Naumann, Dresden, Saxony, Germany. Filed June 12, 1902. Serial No. 111,304. (No model.)

Claim.—A sewing-machine bobbin-case carrier, comprising a double-armed pivotal catch one arm of which constitutes a bolt for the movable half of the case, a cam device actuated by the said catch, and a hinged fork operated by said device, for preventing the bobbin sliding down on opening the case, substantially as described.

709,887. APPARATUS FOR COOLING WATER. WILLIAM J. BERRY, Rhome, Tex. Filed May 20, 1901. Serial No. 61,668. (No model.)

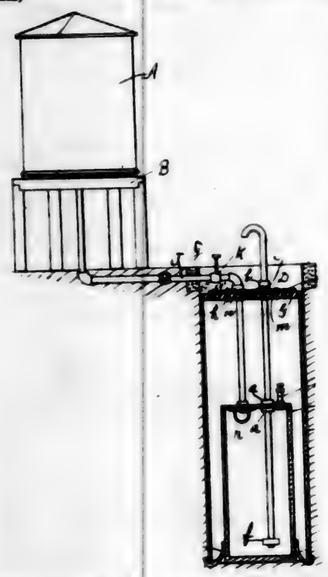

Claim.—A water-cooling apparatus comprising a subterranean cistern, a pipe connected with a water-supply source and projecting in said cistern, a discharge-pipe projecting in said cistern, a cavity for said cistern, a facing-wall for said cavity, a cover for said cavity, and means for locking said facing-wall and said cover and said cistern together consisting of nuts for attaching said pipes rigidly to said cistern, hooks attached to said cistern and engaging the bottom edge of said facing-wall, and nuts on said pipes for pressing said cover on said facing-wall.

709,888. PUZZLE. WILLIAM H. BERRY, Auburn, Me., assignor to Payson T. Sykes, Auburn, Me. Filed Jan. 20, 1902. Serial No. 91,344. (No model.)

Claim.—1. In a puzzle, a body portion having a cylindrical opening and an annular groove in the wall of said opening in combination with a plunger fitting within the opening, said plunger having an annular recess opposite to and wider than the groove in the cylinder and having an inclined pocket extending from said recess into the plunger, and a ball of greater diameter than the depth of said groove or recess adapted to fit into said pocket.

2. In a puzzle, a body portion having a cylindrical opening and an annular groove in the wall of said opening in combination with a plunger fitting within the opening, said plunger having an annular recess opposite to and wider than the groove in the cylinder and having a pocket extending from said recess into the plunger, a ball of greater diameter than the depth of said groove or recess adapted to fit into said pocket, and a stop for said plunger arranged to hold the latter with the pocket opposite the groove when the plunger is in its inmost position.

3. In a puzzle, a body portion having a cylindrical opening and an annular groove in the wall of said opening, in combination with a plunger fitting within the opening, said plunger having two heads and an annular recess between said heads, and having a pocket extending into the plunger at the base of one of said heads, and a ball of greater diameter than the depth of said groove or recess adapted to fit into said pocket.

709,889. FILE. HENRY F. HOLLANDER, Chicago, Ill. Filed Apr. 21, 1902. Serial No. 104,011. (No model.)

Claim.—1. A file for the temporary or permanent preservation of papers, journals, charts, plats, maps, plans, drawings, blue-prints and other documents, comprising a main staff preferably of wood, and cylindrical in form and of one piece, said staff being constructed with several longitudinal channels of triangular form and closed at one end of said staff, the openings at the other end of said staff being enlarged and rounded out, and also having a transverse groove across the end of said staff and between the open ends of said channels; a plate corresponding in form to the end of said staff and affixed thereto and having openings corresponding to the shape of the open ends of the channels in said staff and covering said transverse groove; a spring adapted to be retained and to be operated in said transverse groove the free end of said spring extending therefrom and beyond the diameter of said staff, the fixed end extending through a hole in the center of said plate and formed into an eye; a number of loose rods or files corresponding to the number of channels in the staff and adapted to be freely inserted and removed therefrom, and a cap adapted to fit over the end of the staff and to cover the open ends of the channels and to be held in position on said staff by the fixed end of said spring and having an opening in its periphery corresponding in form with the open ends of the channels in the staff, said cap being arranged to be rotated on said staff and the opening in said cap brought into line with the openings of the channels in the staff and to close all of said channels and to be locked in the closed position by the free end of the spring, substantially as described and for the purposes specified.

2. The combination in a file of the class described of a main staff having a series of longitudinal channels, the interior sectional area of each of said channels increasing in size from the exterior opening and toward the axis of said staff, so as to provide ample space for the insertion therein and removal therefrom of a loose rod or file and for the folds of paper or fabric surrounding said rod or file when adjusted and held in said channel, and a series of rods or files corresponding in number with the said channels, with means for closing the ends of said channels and thereby retaining said rods therein, substantially as described.

3. The combination of a file of the class described of a main staff having a transverse groove in its end, and several longitudinal channels triangular in form; rods or files corresponding in number to said channels and adapted to be inserted and removed therefrom and a movable cap adapted to be attached to one end of said staff and having an opening corresponding to the open ends of said channels, with a spring adapted to be retained and operated in the transverse groove in the end of said staff and by a plate affixed to said staff and covering said groove and to hold said cap and lock it in position to close said channels, substantially as described and for the purposes specified.

4. The combination in a file of the class described of a main staff having several longitudinal triangular channels and a transverse groove in one end of said staff and rods or files adapted to be inserted in and removed from said channels and to hold papers and documents therein, with a plate adapted to be attached to the end of said staff and to cover said transverse groove therein and to hold the fixed end of the spring retained and supported in said groove, and a spring held by said cap and retained in said groove adapted to lock the adjustable cap on said staff, substantially as described and for the purposes specified.

709,890. LOG-CARRIAGE OFFSET FOR SAWS. SAMUEL BEE Chesmisses, Canada, assignor of one-half to the William Hamilton Manufacturing Co., L't'd., Peterborough, Ontario, Canada. Filed Jan. 13, 1902. Serial No. 89,562. (No model.)

Claim.—1. In an offset mechanism for the carriage of a saw; toggle-levers horizontally disposed adjacent to one or more of the axles of the carriage-wheels, one end of each toggle being pivoted on a ring in which the axle is rotatable, while incapable of end movement through it, the other end of the toggle being pivotally connected to the underframe of the carriage; and an endless rope passing around grooved wheels, one of which is connected to a brake-pulley; and means connecting said toggle with said rope whereby the toggle mechanism may be actuated from and to the straight, so as to draw the carriage laterally on its axle-bearings from the cutting plane of the saw, and restore it as desired.

2. In a saw-log carriage, the wheels of which have a lateral hold on the rails on which they run, and having a toggle mechanism adapted to move the underframe of the carriage laterally on the axles of its wheels as desired; stops in the center joint of the toggle in the extended or straight position, so that the underframe of the carriage shall be rigidly held to the cutting plane of the saw, a lever controlling said toggle and having its free end adapted to frictionally engage an endless rope; flanged wheels for carrying said rope, one of said wheels, through its shaft, being in rigid connection with a pulley having a brake-strap, whereby the movement of the rope in either direction is sufficiently resisted to operate the toggle, and shift the carriage to the desired lateral position in both its forward and its return movements, as specified and for the purpose set forth.

3. In the log-carriage of a saw as described, having an offset mechanism to move the carriage-underframe laterally on its axles; an endless line passing over sheaves beyond the extreme limit of each end of the carriage travel, each line being attached to the offsetting mechanism on the carriage; means for keeping the line tight; and a designed frictional resistance to the movement of the line with the carriage, so that as the carriage moves in one direction, an opposite pull may be exerted on the line to operate the offset mechanism.

4. In a mechanism for offsetting the log-carriage of a saw by means of a toggle connected at one end to one or more of the axles of the carriage, and at the other to its underframe; a lever fulcrumed to the carriage-underframe adjacent to the toggle, and having its opposite end attached to the operating-line; a link or links connecting the joint-pin of the toggle to the aforesaid lever, whereby the pull of the operating-line may be commenced to the toggle with an increased effort.

5. In a device for offsetting a saw-log carriage, the wheels of which have a lateral hold on the rails; the grooved roller 2 secured to one or more of the carriage-axles; the ring 3 having studs 3^a adapted to fit the groove of 2, so that 2 shall be rotatable in it; the stop-toggle composed of members 4 and 4^a, one extreme of which is adapted to receive the studs 3^a while the other is pivotally attached to the carriage-underframe; the lever 11 fulcrumed to the underframe adjacent to the toggle; the links 12 connecting each lever to the toggle; the endless line 13 passing around the sheaves 14, one of which is mounted in a tightening-frame, each line being attached to the free end of each lever 11; and the brake-pulley 16 keyed to the axle of one of the sheaves 14, and having a friction-strap or brake-block whereby a resistance is offered to the movement of the line 13 with the log-carriage sufficient to operate the mechanism and offset the carriage-frame on the axles of its wheels.

6. The combination with the wheeled axles, movable in reverse directions on suitable supporting-rails, an endless cable connected to the axles for imparting reverse movement thereto, and the supporting frame C loosely mounted on the axles, and a friction-brake for retarding the action of the cable at the beginning of its reverse movements; of a toggle mechanism, comprising the members 4 4^a having a stop-hinge connection, the member 4^a being connected to one frame member C, the other toggle member 4 having a pivotal and slidable connection with one of the wheeled axles, the lever 11, having a fixed pivotal connection at one end, its other end being joined with the driving-cable, and a link joining said lever 11 and the pivotal connection of the two toggle members 4 and 4^a, all being arranged substantially as shown and for the purposes described.

709,891. SPECTACLES OR EYEGLASSES. WALTER S. BIRDS, Reading, Pa. Filed Feb. 13, 1901. Serial No. 47,001. (No model.)

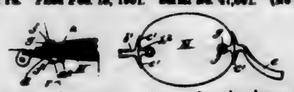

Claim.—1. In spectacles or eyeglasses a frameless lens and a fitting therein having one clamping-ear only to contact with one face of the lens, registering perforations in said lens and clamping-ear, and a clamping bolt or rivet passing therethrough and having its axis radial to the curvature on the opposite face of the lens.

2. In spectacles or eyeglasses a frameless lens and a fitting therein having one clamping-ear only to contact with one face of the lens, registering perforations in said lens and clamping-ear, and a clamping bolt or

rivet passing therethrough and having its axis radial to the curvature on the opposite face of the lens said clamping bolt or rivet having a head adjustably seated in said clamping-ear and a washer or nut thereon squarely seated against the opposite face of the lens.

2. An integrally-formed sheet-metal fitting for frameless spectacle-lenses, comprising a lens-attaching ear, a plate extension thereof beyond the edge of the lens lying in the plane of said ear, and opposite wings on said extension-plate having their outer ends turned approximately at right angles to said plane to contact flatwise with the periphery of the lens and form separated stops against the latter substantially as set forth.

4. An integrally-formed sheet-metal fitting for frameless spectacle-lenses, comprising a lens-attaching ear, a plate extension thereof beyond the edge of the lens lying in the plane of said ear, and opposite wings on said extension-plate having their outer ends turned approximately at right angles to said plane to contact flatwise with the periphery of the lens and form separated stops against the latter, the inner portions of said wings extending within the periphery of the lens and serving to rigidly brace said stops substantially as set forth.

5. A sheet-metal blank for a spectacle or eyeglass lens-fitting, comprising a lens-attaching ear, a stem extension therefrom terminating in temple joint-ears, and intermediate wings on opposite sides of said stem extension adapted to form stops against the edge of the lens, all lying normally in the same plane, substantially as set forth.

6. A sheet-metal blank for a spectacle or eyeglass lens, comprising a lens-attaching ear, a stem extension therefrom, and opposite wings on said stem extension, all lying normally in the same plane, the ends of said wings being extended lengthwise of the stem beyond their connection to the latter substantially as and for the purpose set forth.

709,892. EYEGLASSES. WILLIAM W. REECE, Reading, Pa. Filed Sept. 11, 1901. Serial No. 75,020. (No model.)

Claim.—1. The combination with the lens-clip having a rim portion and an angular-bodied clamping-post projecting outwardly from said rim, of separate members strung upon said angular body so as to be held from rotation thereon and means for clamping said members on the post.

2. The combination with the lens-clip having a rim portion provided with an angular countersunk perforation in the plane of the lens, of an angular-bodied clamping-post having its head seated in said countersunk perforation so as to be held from rotation therein, a bow and guard perforated to fit the angular body of the bolt and strung thereon, and means for clamping said bow and guard on the post.

3. The combination with the lens-clip having a rim portion provided with an angular countersunk perforation in the plane of the lens, of an angular-bodied clamping-post having its head seated in said perforation so as to be held from rotation therein, a distance-piece nose-bridge and guard strung upon said angular body so as to be held from rotation thereon, and means for clamping said members on the post.

709,893. TYPE-WRITING MACHINE. MATTHEW S. BYLES, New York, N. Y., assignor to Hiett & Hatch Book Typewriter Company, a Corporation of New York. Filed Jan. 17, 1902. Serial No. 90,213. (No model.)

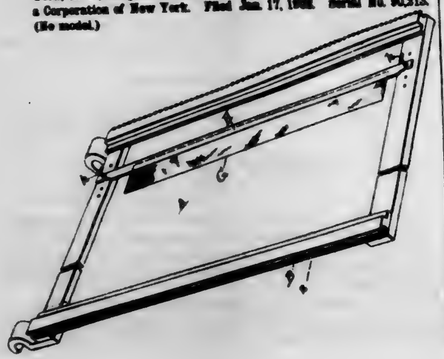

Claim.—1. In a type-writing machine, the combination of a flat bed or platen, a paper-confining frame, movable in relation to the platen and subporting therewith to confine the paper thereon, and an insulating-sheet connected with and supported by said frame.

2. In a type-writing machine, the combination of the platen A, the paper-confining frame B, the bar H attached to said frame, and an insulating-sheet O carried by the bar.

3. In a type-writing machine, the combination of a flat platen A, a subporting relatively movable paper-confining frame B, a downwardly-acting writing mechanism, an insulating-sheet G, a support H for said sheet, and means connecting said support to the frame B that it may be moved laterally thereon.

709,894. MAIL-CAR. PATRICK J. FARRELL, Joliet, Ill. Filed May 13, 1902. Serial No. 107,051. (No model.)

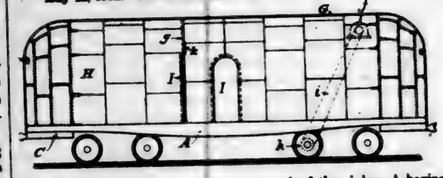

Claim.—1. In a car, a frame composed of the girders A having their end portions bent as shown, longitudinal beams B arranged between the girders, transverse beams B', ribs F formed of T-bars, and the bar G, extending from end to end of the car and having its ends secured to the girders and bent as shown.

2. In a car, the ribs F composed of T-irons, sheet-metal plates riveted to the flanges of the bars and forming the sheathing of the car, the lining V spaced from the sheathing, and means for securing the lining in place consisting of bars or plates bolted to the ribs and having their outer edges bearing against said lining, substantially in the manner shown.

3. In a car, girders A formed of angle-irons and having their ends bent as shown, an outer car-floor *b* resting on said girders, the sheathing U, angle-irons *a* extending around the corner formed by the junction of the bottom plate *b* and the sheathing U, and the upper floor-plate *c*, said floor-plates angle-iron and girder being riveted together, substantially as shown.

709,895. COTTON-PLANTER. WILLIAM FURLOW, Monroe county, Miss., assignor of two-thirds to W. R. Parker and Julius Frank, Jr., Monroe county, Miss. Filed Feb. 10, 1902. Serial No. 93,384. (No model.)

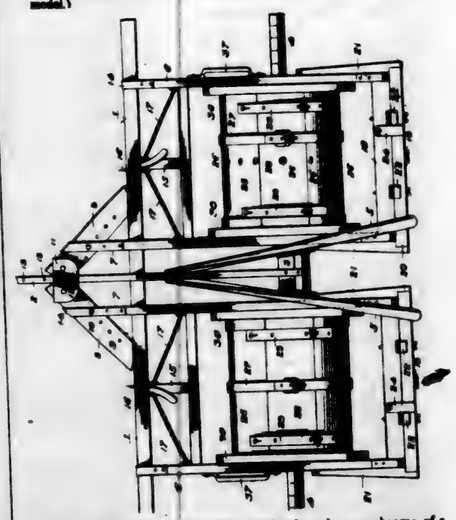

Claim.—The combination with a fixed axle and a cross-beam; of a tongue secured thereto, frames slidably mounted on the beam and axle, links adjustably connecting the tongue and frames, a drum in each frame and revolubly mounted on the axle, means in each drum for locking the frame against lateral movement on the axle, means for closing discharge-apertures in the drums, plows in advance of, and in alinement with the apertures in the drums, vertically-movable shovels secured to the frame in rear of the drums, and means for locking the shovels in operative position

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709,896. FUME-ARRESTER. ANDREW W. GILLILAND, St. Louis, Mo. Filed Apr. 18, 1901. Serial No. 56,057. (No model.)

Claim.—1. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, and openings in said partitions at alternately opposite ends and near the floor-level only, as set forth.

2. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, openings in said partitions at alternately opposite ends and near the floor-level only, and means in one or more of the compartments for cooling the gases passed through them, as set forth.

3. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, openings in said partitions, and means in one or more of the compartments, extending up from the floor of each compartment between said openings, for cooling the gases passed through them, as set forth.

4. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, openings in said partitions at alternately opposite ends and near the floor-level only, and a cooling-passage in one or more of said compartments, communicating with the external atmosphere, as set forth.

5. A fume-arrester, comprising a compartment having an inlet and outlet, and a cooling-passage in said compartment, communicating with the external atmosphere, and having a roof of such pitch that any solid particles deposited thereon will slide off, as set forth.

6. A fume-arrester, comprising a compartment having an inlet and outlet, a cooling-passage in said compartment, communicating with the external atmosphere, and doors in the walls of said passage for the removal of precipitated fume, as set forth.

7. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, openings in said partitions at alternately opposite ends, and a cooling-passage in one or more of said compartments, communicating at each of its ends with the external atmosphere, as set forth.

8. A fume-arrester, comprising a chamber, divided into compartments by transverse partitions, openings in said compartments at alternately opposite ends, and a cooling-passage in one or more of said compartments, communicating with the external atmosphere, and having a roof of such pitch that any solid particles deposited thereon will slide off, as set forth.

9. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, openings in said partitions at alternately opposite ends, a cooling-passage in one or more of said compartments, communicating with the external atmosphere, and doors in the walls of said passage for the removal of precipitated fume, as set forth.

10. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, openings in said partitions at alternately opposite ends, and cooling-passages in each of said compartments, said passages communicating at each of their ends with the external atmosphere, and having steep-pitched roofs and doors for the removal of precipitated fume, as set forth.

11. A cooling-tower having vertical passages communicating at their upper ends, a fume-inlet and a vertical series of removable superposed screens in one of said passages, an outlet from the other passage, and means for spraying water down each of said passages, as set forth.

12. A cooling-tower having its lower end extending down into a water-tank, vertical passages in said tower, communicating at their upper ends and opening below into said tank, a fume-inlet to one passage and an outlet from the other passage, as set forth.

13. A cooling-tower having its lower end extending down into a water-tank, vertical passages in said tower, communicating at their upper ends and opening below into said tank, a fume-inlet and a vertical series of superposed screens in one of said passages, an outlet from the other passage, and means for spraying water down both of said passages, as set forth.

14. A cooling-tower having its lower end arranged in a water-tank, a lateral outlet in the lower end of said tower, and adjustable means for varying the height of said outlet, as set forth.

15. A cooling-tower having its lower end extending down into a water-tank, means for spraying water down said tower, a filter, and a passage leading from the water-tank to the filter, as set forth.

16. A cooling-tower having its lower end extending down into a water-tank, vertical passages in said tower, communicating at their upper ends, and opening below into said tank, a fume-inlet to one passage, and an outlet from the other, and a filter connected with said water-tank, as set forth.

17. A cooling-tower having its lower end extending down into a water-tank, vertical passages in said tower communicating at their upper ends and opening below into said tank, a fume-inlet and a vertical series of superposed screens in one of said passages, an outlet from the other passage, means for spraying water down both of said passages, and a filter connected with said water-tank, as set forth.

18. A cooling-tower having its lower end arranged in a water-tank, vertical passages in said tower, communicating at their upper ends and opening below into said tank, a fume-inlet to one of said passages, a lateral outlet from the other passage into said water-tank, and adjustable means for varying the height of said outlet, as set forth.

19. A fume-arrester, comprising a chamber divided into compartments by transverse partitions, openings in said partitions at alternately opposite ends, a cooling-passage in each of said compartments, communicating at each of its ends with the external atmosphere, a cooling-tower communicating with the last compartment and having its lower end arranged in a water-tank, vertical passages in said tower communicating at their upper ends and opening below into said tank, a vertical series of superposed screens in one of said passages, and means for spraying water down each of said passages, as set forth.

709,897. MOTOR-VEHICLE. FRANK C. GODDARD, Akron, Ohio. Filed Sept. 9, 1901. Serial No. 74,801. (No model.)

Claim.—1. The combination, with the framework of a vehicle, a driving-wheel, and an explosive-engine having its cylinder rigid with the framework, of a mixing-chamber having an air-inlet, a port arranged to conduct the combustible mixture from the said chamber to the chamber of the cylinder, a passage-way for supplying the gaseous or vaporous fluid to the said mixing-chamber, and a valve having a port adapted to register with the discharging end of the said passage-way and having another port for registering with the aforesaid air-inlet, and the arrangement of parts being such that the said air-inlet will be in registry with one of the valve-ports when the other valve-port is in registry with the aforesaid passage-way.

2. The combination, with the framework of a vehicle, the driving-wheel having a centrally-located hub, and an explosive-engine having its cylinder rigid with the framework, of a cylindrical case forming a mixing-chamber having an air-inlet, a port arranged to conduct the combustible mixture from the said chamber to the chamber of the cylinder, a passage-way for supplying the gaseous or vaporous fluid to the said mixing-chamber, and a rotary valve-forming ring having a port adapted to register with the discharging end of the said passage-way and having another port for registering with the aforesaid air-inlet, and the arrangement of parts being such that the said air-inlet will be in registry with one of the valve-ports when the other valve-port is out of registry with the aforesaid passage-way.

2. A motor-vehicle having a framework comprising tubular members forming a reservoir, a driving-wheel, an explosive-engine which has its shaft operatively connected with the said wheel and has its cylinder rigid with the framework and provided with a port for supplying the combustible fluid to the chamber of the cylinder, a mixing-chamber communicating with the said port, a passage-way arranged to conduct gas or vaper from the aforesaid reservoir to the mixing-chamber, and means for regulating the supply of air and combustible fluid to the mixing-chamber.

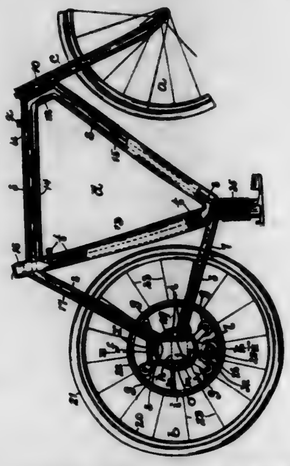

4. In a motor-vehicle, a driving-wheel, an explosive-engine operatively connected with the said wheel and having a cooling-jacket, a reservoir for supplying the combustible fluid for use in operating the engine, and a pipe-line extending through the reservoir and having opposite ends thereof in open relation with the chamber of the jacket, substantially as and for the purpose set forth.

5. The combination of the driving-wheel of a motor-vehicle, an explosive-engine operatively connected with the said wheel, an oil-reservoir, a passage-way arranged to conduct vaper-laden air from the reservoir, means for supplying fluid from the said passage-way to the chamber of the cylinder, and an air-pipe arranged to discharge into the oil-space of the said reservoir.

6. The combination of a driving-wheel of a motor-vehicle, an explosive-engine operatively connected with the said wheel, a tubular framework forming an oil-reservoir and a passage-way arranged to conduct vapor-laden air from the upper portion of the said reservoir, means for supplying fluid from the said passage-way to the chamber of the cylinder, and an air-pipe arranged to discharge air into the oil-space or lower portion of the said reservoir.

7. In a motor-vehicle, a driving-wheel, an explosive-engine operatively connected with the said wheel and having a cooling-jacket, a reservoir, a passage-way for conducting fluid from the reservoir to the engine, and a pipe-line having opposite ends communicating with the chamber of the jacket and extending interiorly of the aforesaid reservoir.

8. In a motor-vehicle, a driving-wheel, an explosive-engine operatively connected with the driving-wheel and having a cooling-jacket, the tubular framework forming a reservoir and a passage-way for conducting fluid from the said reservoir to the engine, and a pipe-line having opposite ends communicating with the chamber of the jacket, which pipe-line extends interiorly of and along the aforesaid passage-way.

709,898. BINOCULAR PRISM-TELESCOPE. CARL P. GOERZ, Friedenau, near Berlin, Germany. Filed May 1, 1901. Serial No. 58,319. (No model.)

Claim.—1. A binocular prism-telescope comprising a plurality of telescopes, prisms, a bridge uniting the telescopes, said bridge being provided with means for altering the distance of the axis of the telescopes and constructed to itself serve as a support for the optical systems, substantially as described.

2. A binocular prism-telescope, comprising two sets of perforated plates, each set comprising a pair of plates with spacing-tubes therebetween, an ocular tube and prism carried by one, an objective and a second prism carried by the other plate, a bridge uniting the two single telescopes and serving directly as carriers and supports for the single optical systems, substantially as described.

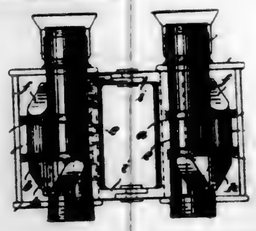

3. A binocular prism-telescope comprising two sets of perforated plates, each set comprising a pair of plates with spacing-tubes therebetween, an ocular tube and prism carried by one, an objective and a second prism carried by the other plate, a bridge uniting the two single telescopes and serving directly as carriers and supports for the single optical systems, and means for adjusting the distance of the axis of the telescopes.

4. A binocular prism-telescope comprising two sets of perforated plates, each set comprising a pair of plates with spacing-tubes therebetween, an ocular tube and a prism carried by one plate, an objective and a second prism carried by the other plate, two adjustable bridges uniting the two single telescopes together and formed at their ends directly as supports and carriers for the single optical systems, and means carried by said bridges for altering the distance of the axis of the telescopes, substantially as shown and described.

5. A binocular prism-telescope comprising two sets of perforated plates, each set comprising a pair of plates with spacing-tubes therebetween, an ocular tube and a prism carried by one plate, an objective and a second prism carried by the other plate, two adjustable bridges uniting the two single telescopes together and formed at their ends directly as supports and carriers for the single optical systems, means carried by said bridges for altering the distance of the axis of the telescopes, and a separate covering for each of said systems.

709,899. PROCESS OF BRAZING. HORACE E. CRAFT, Pittsburg, Pa. Filed May 11, 1900. Serial No. 16,308. (No specimens.)

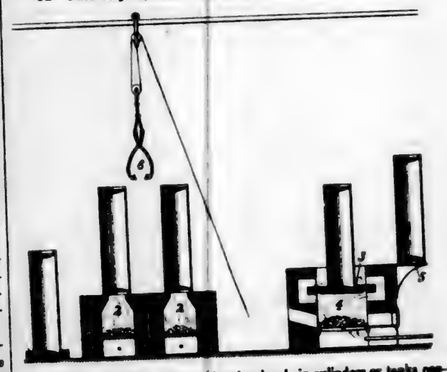

Claim.—1. The process of brazing heads in cylinders or tanks consisting in heating the head to at least a red heat, and then dipping into a pot of molten brazing metal; substantially as described.

2. The method of brazing heads in cylinders or tanks, consisting in placing the heads within the end of the cylinder, heating the central portion of the head to at least a red heat and then dipping the flanges into a pot of molten brazing metal; substantially as described.

709,900. FREE-WHEEL OR LIKE CLUTCH. WILLIAM H. OSBURY and SAMUEL L. TAYLOR, Falmouth, England. Filed Mar. 6, 1901. Serial No. 50,096. (No model.)

Claim.—1. In a clutch, the combination of a driving member, a driven member, ratchet-teeth carried by one member between the driving and driven members, a cylindrical surface adjacent to the teeth and carried by the same member, a rocking pawl carried loosely by the other member to rotate with it and move relatively thereto, a rolling body situated between the pawl and the cylindrical surface and which rocks the pawl into and out of engagement with the teeth and a spring which maintains the rolling body in contact with the cylindrical surface, substantially as set forth.

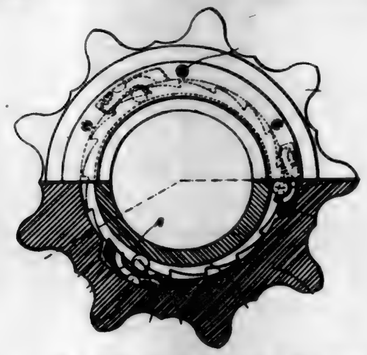

2. In a clutch, the combination of a driving member, a driven member, ratchet-teeth carried by one member between the driving and driven members, a cylindrical surface adjacent to the teeth and carried by the same member, a rocking pawl carried loosely by the other member and separate from it, a rolling body situated between the pawl and the cylindrical surface and which rocks the pawl both into and out of engagement with the teeth and a spring which maintains the rolling body in contact with the cylindrical surface, substantially as set forth.

3. In a clutch, the combination of a driving member, a driven member, ratchet-teeth carried by one member between the driving and driven members, a cylindrical surface adjacent to the teeth and carried by the same member, a stationary rocking pawl carried by the other member, a rolling body situated between the pawl and cylindrical surface and a spring carried by the pawl and disposed between the pawl and rolling body, substantially as set forth.

4. In a clutch, the combination of a driving member, a driven member, ratchet-teeth carried by one member between the driving and driven members, a cylindrical surface adjacent to the teeth and carried by the same member, a recess in the other member, a stationary rocking pawl carried in this recess, a rolling body situated between the pawl and the cylindrical surface, and a spring to maintain the rolling body in contact with the cylindrical surface, substantially as set forth.

5. In a clutch, the combination of a driving member, a driven member, ratchet-teeth carried by one member between the driving and driven members, a cylindrical surface adjacent to the teeth and carried by the same member, a recess in the other member, a stationary rocking pawl carried in this recess, a rolling body situated between the pawl and cylindrical surface, and a spring carried by the pawl and disposed between the pawl and rolling body, substantially as set forth.

6. In a clutch, the combination of a driving member, a driven member concentric with the driving member, ratchet-teeth carried on the periphery of one member, a cylindrical surface adjacent to the teeth and carried by the same member, a rocking pawl carried by and fulcrumed loosely on the other member which is formed annular, a rolling body situated between the pawl and cylindrical surface to rock the pawl into and out of engagement with the teeth and a spring to maintain the rolling body in contact with the cylindrical surface, substantially as set forth.

7. In a clutch, the combination of a driving member, a driven member concentric with the driving member, ratchet-teeth carried on the periphery of one member, a cylindrical surface adjacent to the teeth and carried by the same member a rocking pawl carried by and fulcrumed loosely on the other member which is formed annular, a rolling body situated between the pawl and cylindrical surface and a spring carried by the pawl and disposed between the pawl and rolling body, substantially as set forth.

8. In a clutch, the combination of a driving member, a driven member concentric with the driving member, ratchet-teeth carried on the periphery of one member, a cylindrical surface adjacent to the teeth and carried by the same member, a recess in the other member which is formed annular and lies outside the ratchet-teeth, a stationary rocking pawl carried in this recess, a rolling body situated between the pawl and cylindrical surface, and a spring carried by the pawl and disposed between the pawl and rolling body, substantially as set forth.

9. In a clutch, the combination of an inner member carrying ratchet-teeth on its periphery and a cylindrical surface adjacent to the teeth, an outer annular member, a recess in this member, a stationary rocking pawl carried in this recess, a rolling body situated between the pawl and the cylindrical surface of the inner member and a spring carried by the pawl and situated between the pawl and the rolling body substantially as set forth.

10. In a clutch, the combination of an inner member carrying ratchet-teeth on its periphery and a cylindrical surface adjacent to the teeth, an outer annular member, a recess in this member, a stationary rocking pawl carried in this recess, a recess in this pawl, a rolling body situated in the recess in the pawl and between the pawl and the annular surface of the inner member and a spring carried by the pawl and situated between the pawl and rolling body, substantially as set forth.

709,901. PLOW. ELIAS HANKINS, Purdon, Tex. Filed May 28, 1902. Serial No. 109,373. (No model.)

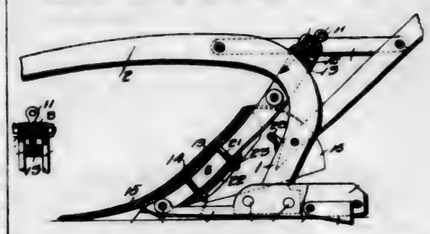

Claim.—1. In a plow, the combination of the beam, the landside secured at the lower end of the depending part of the same and having a forwardly-extended portion, the bifurcated stock or standard connected pivotally with the front end of the landside, a nut interposed between the upper ends of the side pieces constituting said stock and having laterally-extending pins extending through and connected with the sides of said stock, an eyebolt mounted in said nut, and a toothed slide pressed by said bolt against the curved portion of the beam, substantially as set forth.

2. In a plow, the combination of the beam, the landside connected with the lower end of said beam and having a forwardly-extended portion, the bifurcated stock having pivotal connection with the front end of the landside, a swiveled nut interposed between the sides of the said bifurcated stock at the upper end of the same, a bolt in said swiveled nut, and a toothed plate adapted to be pressed by said bolt against the curved portion of the beam, substantially as set forth.

3. In a plow, the combination with the bifurcated stock having pivotal connection with the landside and means for securing it in position, of the V-shaped plate mounted upon said bifurcated stock and having at its lower end a downturned nose bearing against the point of said stock, and the point and moldboard constituting a breaking-plow mounted securely upon said V-shaped plate, substantially as set forth.

4. In a plow, the combination with the bifurcated stock having pivotal connection with the landside and means for securing it in position, of a V-shaped plate having its edge flattened to receive bolts whereby it is connected with the bifurcated standard, said V-shaped plate being provided at its lower edge with a downturned point engaging against the point of the bifurcated stock, the point and moldboard constituting a double breaking-plow mounted securely upon said V-shaped plate, and a brace having its end detachably connected with the under sides of the rims of the moldboard, substantially as set forth.

5. In a plow, the combination with the beam, of the landside composed of two separate parts mounted on opposite sides of the enlarged lower end of the depending portion of the beam, one of said parts being provided with an enlargement forming a seat or washer on its inner side, a knife or cutter mounted pivotally between the parts constituting the landside adjacent to the seat or washer, a bolt connecting the sides of said landside in rear of said knife which may thus be clamped and held at any desired adjustment, and an extension of one of the parts of the landside having pivotal connection with the lower end of the plow-standard, substantially as set forth.

6. In a plow, the combination with the bifurcated stock having pivotal connection with the landside and means for securing it in position, of a V-shaped plate having its edge flattened to receive bolts whereby it is connected with the bifurcated standard, said V-shaped plate being provided at its lower edge with a downturned point engaging against the point of the bifurcated stock, the point and moldboard constituting a double breaking-plow mounted securely upon said V-shaped plate, plates connecting the abutting edges of said point and moldboard, on the under sides thereof, adjacent to the V-shaped plate, and a brace having its ends detachably connected with the under sides of the wings of the moldboard, substantially as set forth.

709,902. HOOK AND EYE. JOHN R. HAZE, New York, N. Y. Filed Apr. 19, 1901. Renewed Feb. 24, 1902. Serial No. 95,147. (No model.)

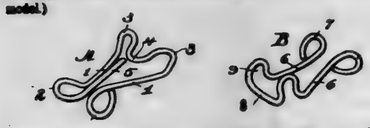

Claim.—1. In a hook and eye, the combination with an eye having a flat base and at its engaging end a bail with an inwardly-bent bight, and having a spring locking prong or member which extends forward substantially to said bight, the bight and the free end of said locking member being elevated above said base, in combination with a hook having a base, and a downwardly-curved loop-like bill which takes over the bight of the eye and interlocks with said locking member.

2. A hook having a closed loop-like bill, arched at 9 and with its tip 8 directed downward, in combination with an eye having a bail with an elevated bight 4, and a spring locking member 5 having its free end elevated above the base or main portion of the eye and adjacent to said bail, the bill of the hook taking over the said bight of the eye and interlocking with the locking member of the eye, substantially as and for the purpose set forth.

3. The combination with an eye A, having a base portion which rests on the fabric, a bail with an inwardly-bent bight 4 elevated above the level of the base and with a locking-tongue, the free end of which is also elevated above the base, of a hook B, having a base portion which rests on the fabric, an elevated, arched, loop-like bill adapted to take over and interlock with the bail and said locking-tongue of the eye, substantially as and for the purpose set forth.

709,903. ASPHALT-HOE. SMITH HARPER, Abington township, Montgomery county, Pa., assignor to Smith Harper, Charles S. Harper, and Frank W. Harper, trading as Smith Harper & Sons. Filed Dec. 7, 1901. Serial No. 85,053. (No model.)

Claim.—1. In an asphalt-hoe, a blade, a shank therefor, a handle for the shank, a scraper-plate in alinement with the hoe-plate and having an aperture for the insertion of the shank, and means to secure the plate to the blade aforesaid, in alinement therewith and at the blade's upper part so that the plate shall extend above the upper edge of the blade, and above its shank.

2. In an asphalt-hoe, a blade, an integral shank therefor, a ferrule and a handle secured to the shank, a plate secured to the blade in alinement therewith and projecting beyond the upper edge of the blade, an aperture in the plate through which the shank is inserted, and an upper edge to the aperture adapted to closely fit the shank and thereby support it to resist the pressure upon the front of the plate.

3. In an asphalt hoe and scraper, a blade, a shank integral with the blade, the shank upwardly tending and backwardly curved, a handle secured to the shank so that the blade shall stand at about an angle of sixty degrees from a horizontal line at its working edge; a scraper-plate secured to the blade at its upper part, and in alinement therewith, an aperture in the scraper-plate having its upper side formed to closely fit and be supported against the curve of the shank at a point below its highest part.

709,904. SADDLE. JOHN R. HASTINGS and CLARENCE R. HASTINGS, Longmont, Tex. Filed July 29, 1901. Serial No. 69,423. (No model.)

Claim.—A saddle of the class set forth, comprising a tree having the usual seat portion, cantle, front horn and front leg-support, a sheet-metal covering for the seat having a front projecting portion between the horn and leg-support and laterally-projecting front flanges around the front and outer side portions of the bases of the said horn and leg-support to thereby provide a substantially smooth surface for the application of other coverings, a girth-rigging, and skirtings and other coverings for the several parts.

709,904.

709,905. HOISTING AND TRANSPORTING DEVICE. WILLIAM H. HATFIELD, Wade, Ill. Filed Oct. 30, 1901. Serial No. 80,572. (No model.)

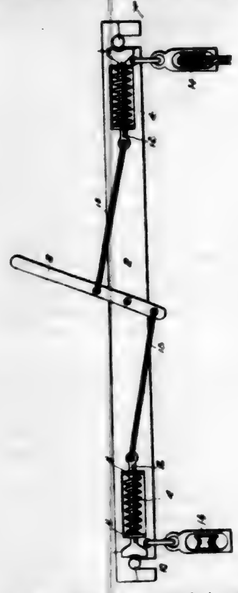

Claim.—1. In hoisting and transporting devices of the character described a carriage comprising a frame, legs thereto, and alining holders thereon having a space formed between their adjacent ends.

2. In hoisting and transporting devices of the character described, the combination with a frame having legs thereto; of supporting-bails at the ends of the frame, and U-shaped holders arranged in alinement upon the frame, a space being formed between their adjacent ends.

3. In hoisting and transporting devices of the character described the combination with supporting-rods; of a cross-beam having slots for the reception of the rods, clamping-blocks upon the beam normally engaging the rods, means for retracting the blocks, and a carriage suspended from the beam.

4. The combination with a carriage comprising a frame, holders thereon and bails extending from the frame; of a cross-beam having slots therein, blocks adapted to project over the slots, a spring-controlled stem to each block, a lever pivoted to the beam, and links connecting the lever and stems, whereby the blocks may be simultaneously retracted, pulleys suspended from the beams, and a cable mounted on each pulley and connected to a bail.

709,906. TYPE-WRITING MACHINE. CLARENCE F. HOPKINS, New York, N. Y., assignor to Hlett & Hatch Book Typewriter Company, a Corporation of New York. Filed Mar. 26, 1902. Serial No. 100,070. (No model.)

Claim.—1. In a type-writing machine, the combination of a flat platen, a downwardly-writing mechanism movable thereover, means for delivering a web of paper across the platen, means for confining the paper on the platen during the printing operation, and a shearing mechanism

located beyond the printing field and acting independently of the writing mechanism to sever the printed end of the sheet from the remainder.

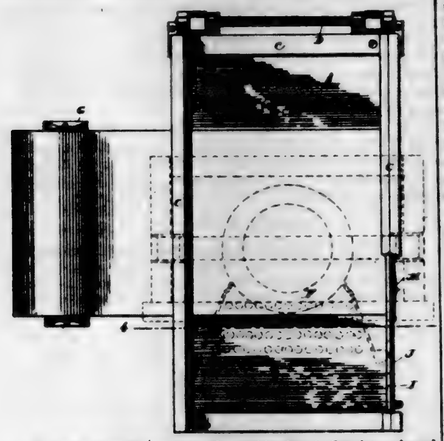

2. In a type-writing machine, the combination of a flat platen adapted to sustain the paper to be written upon, a frame cooperating with the platen to confine the paper thereon, and a shearing device connected with said frame and arranged to operate independently of the writing mechanism.

3. In a type-writer and in combination with a downwardly-acting writing mechanism movable thereover, a flat platen to sustain the paper, a vertically-movable frame acting to confine the paper upon the platen, and two shearing-blades attached respectively to the platen and the frame.

4. In a type-writer, the combination of a flat platen, means located at one side of the platen for sustaining a roll or web of paper, means at the opposite side of the platen for confining the paper thereto, and a shearing device connected with the paper-confining means whereby the printed end of the sheet may be severed from the remainder and the newly-formed end confined in position.

5. In a type-writing machine and in combination with the writing mechanism, means for sustaining a roll of paper and delivering one end across the printing field, means for confining the paper in position during the printing operation, and a shearing mechanism connected with and operated by said paper-confining means.

6. In a type-writing machine, the combination of the fixed platen, a traveling writing mechanism thereover, a rising and falling frame to confine the paper upon the platen, a shearing device connected to said frame, a foot-lever and lifting connections from the lever to the frame.

709,907. SPRINKLER-HEAD. PAUL HUNNIUS, Milwaukee, Wis. Filed Mar. 20, 1902. Serial No. 98,592. (No model.)

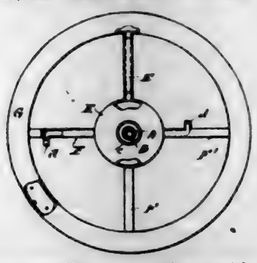

Claim.—1. A sprinkler-head comprising a straight apertured tube closed at one end and provided with bearing-collars one of which is adjustable, a hollow hub loose on the tube to inclose the apertures of same and provided with diametrically opposite sockets engaged by the bearing-collars, hollow distributing-spokes that being in connection with the hub have their outlets at different distances from the same, and a perforated annular tube in connection with the said spokes.

2. A sprinkler-head comprising a straight apertured tube closed at one end and provided with bearing-collars one of which is adjustable, a hollow hub loose on the tube to inclose the apertures of same and provided with diametrically opposite sockets engaged by the bearing-collars, spokes in connection with the hub, and a perforated annular tube in connection with the spokes some of which are hollow their entire length to establish communication between said hub and annular tube, the remainder being partly hollow outward from the aforesaid hub and having their outlets at different intervals of the radius.

3. A sprinkler-head comprising a straight apertured tube having a bearing-collar rigid thereon, a plug in screw-thread connection with one end of the tube, a bearing-collar in like connection with said plug, a hollow hub loosely on said tube to inclose its apertures and provided with diametrically opposite sockets engaged by the bearing-collars, spokes in connection with the hub, and a perforated annular tube in connection with the spokes some of which are hollow their entire length to establish communication between said hub and annular tube, the remainder being partly hollow outward from the aforesaid hub and having their outlets at different intervals of the radius.

709,908. ROTARY ENGINE. WALTER JAMESON, Brooklyn, N. Y., assignor to John Jameson, Brooklyn, N. Y. Filed Nov. 5, 1901. Serial No. 81,173. (No model.)

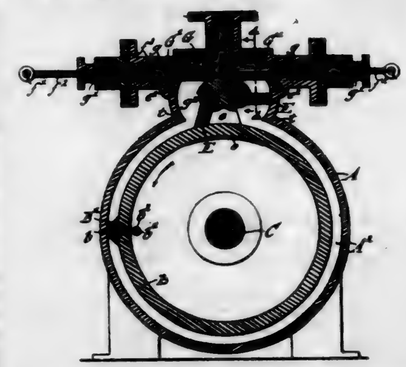

Claim.—1. A rotary engine, consisting of a cylindrical casing, a cylindrical rotary piston in said casing, an abutment on said piston, a valve-chest on said casing provided with steam inlet and outlet ports, said inlet-port having two openings into the valve-chest, two swinging abutments in said valve-chest, independent reciprocating supply-valves located in said valve-chest, one for each of said inlet-port openings, means for oscillating one of said swinging abutments during each rotation of the piston, and means for reciprocating either of said supply-valves independently of the other, substantially as set forth.

2. A rotary engine, consisting of a cylindrical casing, a cylindrical rotary piston in said casing, an abutment on said piston, a valve-chest on said casing provided with steam inlet and outlet ports, said inlet-port having two openings, one at either side, into the valve-chest, independent reciprocating supply-valves each controlling independently one of said openings, channels, one at each side, communicating with said openings and with the interior of the casing, swinging abutments, one in each channel, adapted to close the same when in raised position, means for maintaining either abutment in raised position, means for maintaining the corresponding supply-valve in closed position, and means for independently reciprocating the other supply-valve, substantially as set forth.

3. A rotary engine, consisting of a cylindrical casing, a cylindrical rotary piston in said casing, an abutment on said piston, a valve-chest on said casing provided with steam inlet and outlet ports, two swinging abutments arranged in the lower part of said valve-chest, reciprocating supply-valves located at the opposite ends of said valve-chest, operating-rods provided with hooked ends and connected with the stems of said supply-valves, a rocking lever engaging one of said operating-rods at a time, a cam on the piston-shaft for actuating said rocking lever, thumb-levers pivoted to the valve-chest, means connecting said thumb-levers with the swinging abutments, and a reversing mechanism connecting said thumb-levers, substantially as set forth.

4. The combination, with a cylindrical casing, of interior segmental cams on the heads of said casing, a cylindrical rotary piston in said casing, an abutment on said piston, a packing for said abutment, and a spring-actuated stirrup connected with said packing, and adapted to be engaged by the segmental cams on the heads of the casing for withdrawing the packing into the piston-abutment while the latter passes over the supply and exhaust ports of the engine, substantially as set forth.

5. The combination, with a cylindrical casing, of a cylindrical rotary piston in the same, an abutment on said piston, a packing, means for holding said packing below the edge of the abutment when passing over the supply and exhaust ports of the casing, a valve-chest above the cylinder, provided with steam inlet and exhaust ports, reciprocating supply-valves at opposite ends of said chest, two swinging abutments in the lower part of the valve-chest, a valve-operating gear, a rocking lever engaging said valve-operating gear, a cam on the piston-shaft engaging said rocking lever, means for bringing either valve-operating gear into engagement with the rocking lever for operating the supply-valve, and means for simultaneously operating said swinging abutments, substantially as set forth.

6. In a rotary engine, the combination of a casing having an opening in its wall, a piston mounted rotatably in said casing, an abutment between said piston and cylinder, a packing carried by said abutment, means actuating said packing in outward direction toward the casing, and means drawing said packing in inward direction during the passage of the abutment over said opening, substantially as set forth.

709,909. GARMENT FASTENER OR SUPPORTER. JOEL JENKINS, Mt. Holly, N. J. Filed Jan. 24, 1902. Serial No. 91,622. (No model.)

Claim.—1. In a garment fastener or supporter, a supporting device having a loop formed upon its lower end, an opening formed upon its upper end, and an engaging projection secured upon the device directly above the lower loop.

2. In a garment fastener or supporter, a supporting device having a loop formed upon its lower end, openings formed upon its upper end, an engaging projection secured to the device directly above the said lower loop and adapted to engage the end of a suspender-strap or like supporting means, and means for attaching the device to the garment to be supported.

3. In a garment fastener or supporter, a device having a loop formed upon its lower end, loops formed upon its upper end through which a suspender-strap or like supporting means is adapted to engage, means intermediate of said upper end lower loops over which the end of the said suspender-strap is adapted to engage, and means for attaching the device to the garment to be supported.

4. In a garment fastener or supporter, a device having means upon one end for engaging the garment to be supported, means upon the opposite end for engaging a supporting-strap, and means intermediate of the aforesaid means comprising a tapering shank for securely holding the said strap in engagement with the device.

5. In a garment fastener or supporter, a supporting-loop having a contracted loop formation upon its lower end, openings upon its upper end, a tubular connection connecting the upper ends of the device and securely fastened to one of the ends, a tapering shank formed upon the device directly above the said supporting-loop, a strap having an engaging projection secured thereto engaging around the said tapering shank and adapted to move upon same, and means for attaching the device to the garment to be supported, substantially as described.

6. In a garment fastener or supporter, a supporting-loop having a contracted loop formation upon its lower end, openings upon its upper and through which a suspender-strap is adapted to engage, a tapering shank formed upon the device directly above the said supporting-loop, a strap having an engaging projection and engaging around the said tapering shank and adapted to move upon same when acted upon by the suspender-strap with which the said projecting lip is adapted to engage, and means for attaching the device to the garment to be supported, substantially as described.

7. In a garment fastener or supporter, a supporting-loop provided with suitable means for attaching to a suspender or supporting strap, a tapering shank formed upon the device directly above the said supporting-loop, a strap having an engaging projection and, engaging around the said tapering shank and adapted to move upon same to contract the sides of the aforesaid supporting-loop, and a supporting-button fastened to the garment to be supported and adapted to engage with the said supporting-loop in combination with a supporting-strap or suspender to which the device is adapted to be attached, substantially as described.

8. In a garment fastener or supporter, means to engage a garment to be supported; means adjacent thereto comprising a tapering neck to receive a supporting-strap, whereby the pull upon the strap will cause the garment-engaging means to hold more securely.

9. In a garment fastener or supporter; means to engage a garment to be supported; means adjacent thereto comprising a tapering neck; a sleeve slidable on said neck; and a projection on said sleeve to receive a supporting-strap, whereby the pull upon the strap will cause the garment-engaging means to hold more securely.

10. In a device for engaging a suspender-end, means for detachably engaging said suspender-end; means to engage a garment to be supported; together with means adapted to project through the eye of the suspender-end for securely but detachably holding the supporting strap or band in engagement with the device.

709,910. MECHANISM FOR CONTROLLING LOOMS BY THE QUANTITY OF WEFT IN THE SHUTTLER. JOHANN H. KLEMT, Sunbury, Pa., assignor to Susquehanna Silk Mills, Sunbury, Pa., a Corporation of Pennsylvania. Filed Dec. 10, 1901. Serial No. 85,399. (No model.)

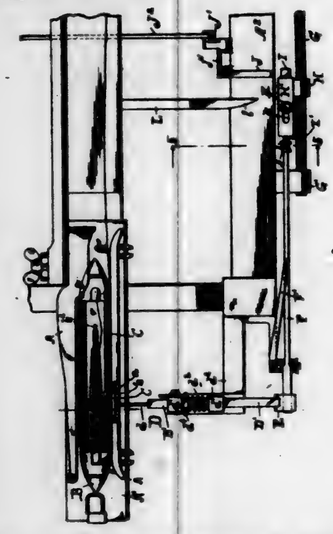

Claim.—1. In a loom the combination with the shuttle-box, of a movable feeler device, constructed and fitted to enter the shuttle in the shuttle-box when the lay beats up, whereby the movement of the feeler device is under control of the weft or filling in the shuttle, a lever device pivoted to oscillate in a plane substantially at right angles to the oscillation of said feeler device, means intermediate of said feeler device and said pivoted lever device, whereby the feeler device may effect such oscillation of the lever device so long as the weft is not exhausted in the predetermined point, a part for bringing about or controlling the operation of a weft or filling-removing mechanism or a loom-stop mechanism, and operative means intermediate of said part and a moving part of the loom, said means under control of the said lever device, whereby a loom-stop or filling-removing mechanism may be operated upon failure or substantial exhaustion of the weft or filling.

2. In a loom the combination of a to-and-fro moving member adapted to vibrate in harmony with the lay and under control of the weft or filling in the shuttle in play, a part for bringing about or controlling the operation of a loom-stop or filling-removing mechanism, mechanism adapted to intermittently actuate said part and a lever device pivoted to oscillate in a vertical plane through, and under control of the said to-and-fro moving member for preventing the actuation of such part, when the shuttle is well supplied with filling and for permitting its actuation upon the failure or substantial exhaustion of the weft or filling.

3. In a loom the combination of a movable feeler device constructed and fitted to enter the shuttle in play to press upon the weft therein, whereby the feeler device may vibrate in harmony with the lay, and its amplitude of vibration be under control of the filling or weft in the shuttle; mechanism for bringing about or controlling the operation of a loom-stop or filling-removing mechanism; a moving part of the loom adapted to engage and actuate the said controlling mechanism; a cam for placing said mechanism in inoperative position, and means under control of the said feeler device for engaging to retain in inoperative position said mechanism, whereby it may prevent the engagement of said moving part of the loom with said controlling mechanism to actuate it, until the failure or substantial exhaustion of the weft or filling in the shuttle, and then permit such engagement.

4. In a loom the combination with a feeler device vibrating in harmony with the lay, and under control of the weft or filling in the shuttle, a movable arm or member for bringing about or controlling the operation of a loom-stop or filling-removing apparatus, a power-actuated buntor, a reciprocating part carried on said movable arm or member adapted to be engaged by said buntor, whereby the movable arm or member is actuated, means to periodically reciprocate said reciprocating part to remove it from the action of said buntor, or into inoperative position, a catch device adapted to engage said reciprocating part to hold it in such inoperative position, while the said buntor passes its critical position, and means intermediate of the said feeler device and said catch device whereby the latter is moved periodically into operative position to prevent actuation of the aforesaid movable arm or member until the failure or substantial exhaustion of the weft.

5. In a loom the combination with a feeler device vibrating in harmony with the lay, its amplitude of vibration under control of the weft or filling in the shuttle, a rock-shaft for bringing about or controlling the operation of a loom-stop or filling-removing mechanism, and mechanism for actuating said rock-shaft comprising an arm extending from the rock-shaft, a reciprocating part carried on said arm, a continuously-moving buntor for engaging said reciprocating part to actuate said rock-shaft, and mechanism under control of the said feeler device for removing the said reciprocating part from the path of said buntor when the shuttle is well supplied with weft or filling.

6. In a loom the combination with the lay and the shuttle box thereof of the feeler device D vibrating in harmony with the lay, and adapted to enter the shuttle in the shuttle-box A, whereby the amplitude of vibration of the feeler device is under control of the filling or weft in the shuttle; a cam E' operated by the feeler device to oscillate a lever F so long as sufficient quantity of weft or filling remains in the shuttle; said lever F; a rock-shaft G for bringing about or controlling the operation of a loom-stop or filling-removing mechanism, an arm as H, connected to said shaft, a movable slide I carried on said arm, a buntor J adapted to coact with said slide I to actuate arm H, a cam L carried by the lay for shifting said slide I and engaging hook devices *i f* carried by said slide and said lever F respectively, substantially for the purpose described.

7. In a loom the combination with the lay of a movable arm or member for bringing about or controlling the operation of a weft-removing or loom-stop apparatus, a reciprocating part carried on said arm or member, a spring acting on said part to hold it in normal or operative position, means as a cam, for periodically moving said part against the action of said spring and an intermittently-actuated and weft-controlled device for engaging and holding said part in inoperative position, and a buntor for actuating said part when said weft-controlled device fails to engage the same, whereby a weft-removing or loom-stop mechanism may be brought into operation upon failure or substantial exhaustion of the weft in the shuttle.

8. In a loom the combination with the lay of a device fitted to move to and fro in harmony with the lay provided with a member for entering the shuttle to coact with the weft therein, whereby the amplitude of movement of said to-and-fro device is controlled by the quantity of weft in the shuttle; a buntor, and mechanism actuated thereby adapted to control or bring about the operation of a loom-stopping or weft-removing apparatus; means for intermittently moving said mechanism into inoperative position; and a lever device for intermittently maintaining said mechanism in such inoperative position; and means intermediate said lever device and said to-and-fro device for producing such intermittent movement of said lever device, until the amplitude of movement of said to-and-fro device reaches a predetermined point.

9. In a loom the combination with the lay of a feeler device adapted to move to and fro in harmony with the lay, its amplitude of movement under control of the weft in the shuttle; mechanism for bringing about or controlling the operation of a loom-stopping or filling-removing apparatus, said mechanism including a shifting block; a moving part of the loom for engaging said block to actuate said mechanism; a second moving part of the loom for shifting said block out of the path of said first-named moving part; means for returning said block to normal position; a lever device adapted and fitted to be oscillated by said feeler device until the weft is exhausted to a predetermined extent, and means intermediate of said lever device and said shifting block whereby said lever device may intermittently retain said shifting block in its inoperative position, and thereby prevent the operation of the loom-stopping or filling-removing mechanism until the predetermined exhaustion of weft.

10. In a loom the combination with the lay of the feeler device D for coacting with the weft in the shuttle in play, and operated to move to and fro in harmony with the vibrations of the lay, the oscillating lever device F, the cam E constituting means whereby the feeler device may oscillate the lever device when there is sufficient weft in the shuttle, the rock-shaft G adapted to be connected with loom-stopping, or weft-removing apparatus, the arm H carried thereon, the shifting block I fitted to said arm to actuate shaft G, the oscillating cam L for shifting said block I to inoperative position, and a hook *f* carried on said lever device F, adapted to retain said block I in inoperative position while the buntor J is actuated.

709,911. MECHANISM FOR CONTROLLING LOOMS BY THE QUANTITY OF WEFT IN THE SHUTTLER. JOHANN H. KLEMT, Sunbury, Pa., assignor to Susquehanna Silk Mills, Sunbury, Pa., a Corporation of Pennsylvania. Filed Dec. 10, 1901. Serial No. 85,398. (No model.)

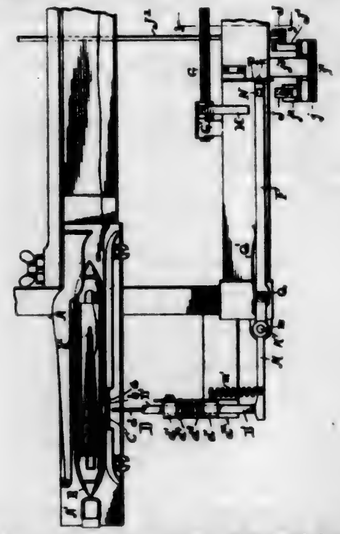

Claim.—1. In a loom the combination with the lay of a lever device fitted to oscillate, means under control of the filling or weft in the shuttle in play, for effecting oscillations of said lever device in harmony with the vibrations of the lay, whereby such oscillations will be diminished in extent or amplitude in accordance with the quantity of weft or filling in the shuttle, a member for bringing about or controlling the operation of a loom-stop or filling-removing mechanism, a buntor for actuating said member, through the medium of said lever device, and means connected with said lever device for controlling the actuation of said member, whereby on the failure or substantial exhaustion of the weft in the shuttle in play, the operation of the loom-stop or filling-removing mechanism may be effected.

2. In a loom the combination with the lay of a lever device fitted to oscillate in harmony with the vibrations of the lay, means coacting with the weft or filling in the shuttle in play for effecting oscillations in said lever device in accordance with the quantity of weft or filling in the shuttle, a pivot contained in said lever to permit part thereof to be intermittently displaced independently of the main portion, a buntor adapted to effect such intermittent displacement, a member for bringing about or controlling the operation of a loom-stop or filling-removing mechanism, said member adapted to be actuated by said lever device when the latter is displaced by the said buntor, and means controlled by the oscillation of said lever device to prevent its engagement with either the buntor or with the said controlling member until the failure or substantial exhaustion of the weft or filling, and for then permitting such engagement.

3. In a loom the combination with the lay of a shuttle-box, a movable feeler device, constructed and fitted to enter the shuttle in the shuttle-box when the lay beats up, whereby the movement of the feeler device is under control of the weft or filling in the shuttle, a lever device operatively connected with said feeler device so as to oscillate in harmony with the vibration of the lay under control of the weft or filling in the shuttle, a member for bringing about or controlling the operation of a loom-stop or filling-removing mechanism, and operative means including

5. The combination, with a cylindrical casing, of a cylindrical rotary piston in the same, an abutment on said piston, a packing, means for holding said packing below the edge of the abutment when passing over the supply and exhaust ports of the casing, a valve-chest above the cylinder, provided with steam inlet and exhaust ports, reciprocating supply-valves at opposite ends of said chest, two swinging abutments in the lower part of the valve-chest, a valve-operating gear, a rocking lever engaging said valve-operating gear, a cam on the piston-shaft engaging said rocking lever, means for bringing either valve-operating gear into engagement with the rocking lever for operating the supply-valve, and means for simultaneously operating said swinging abutments, substantially as set forth.

6. In a rotary engine, the combination of a casing having an opening in its wall, a piston mounted rotatably in said casing, an abutment between said piston and cylinder, a packing carried by said abutment, means actuating said packing in outward direction toward the casing, and means drawing said packing in inward direction during the passage of the abutment over said opening, substantially as set forth.

709,909. GARMENT FASTENER OR SUPPORTER. JOEL JENKINS, Mrs. Atlantic, N. J. Filed Jan. 24, 1902. Serial No. 91,022. (No model.)

Claim.—1. In a garment fastener or supporter, a supporting device having a loop formed upon its lower end, an opening formed upon its upper end, and an engaging projection secured upon the device directly above the lower loop.

2. In a garment fastener or supporter, a supporting device having a loop formed upon its lower end, openings formed upon its upper end, an engaging projection secured to the device directly above the said lower loop and adapted to engage the end of a suspender-strap or like supporting means, and means for attaching the device to the garment to be supported.

3. In a garment fastener or supporter, a device having a loop formed upon its lower end, loops formed upon its upper end through which a suspender-strap or like supporting means is adapted to engage, means intermediate of said upper and lower loops over which the end of the said suspender-strap is adapted to engage, and means for attaching the device to the garment to be supported.

4. In a garment fastener or supporter, a device having means upon one end for engaging the garment to be supported, means upon the opposite end for engaging a supporting-strap, and means intermediate of the aforesaid means comprising a tapering shank for securely holding the said strap in engagement with the device.

5. In a garment fastener or supporter, a supporting-loop having a contracted loop formation upon its lower end, openings upon its upper end, a tubular connection connecting the upper ends of the device and securely fastened to one of the ends, a tapering shank formed upon the device directly above the said supporting-loop, a strap having an engaging projection secured thereto engaging around the said tapering shank and adapted to move upon same, and means for attaching the device to the garment to be supported, substantially as described.

6. In a garment fastener or supporter, a supporting-loop having a contracted loop formation upon its lower end, openings upon its upper end through which a suspender-strap is adapted to engage, a tapering shank formed upon the device directly above the said supporting-loop, a strap having an engaging projection and engaging around the said tapering shank and adapted to move upon same when acted upon by the suspender-strap with which the said projecting lip is adapted to engage, and means for attaching the device to the garment to be supported, substantially as described.

7. In a garment fastener or supporter, a supporting-loop provided with suitable means for attaching to a suspender or supporting strap, a tapering shank formed upon the device directly above the said supporting-loop, a strap having an engaging projection and, engaging around the said tapering shank and adapted to move upon same to contract the sides of the aforesaid supporting-loop, and a supporting-button fastened to the garment to be supported and adapted to engage with the said supporting-loop, in combination with a supporting-strap or suspender to which the device is adapted to be attached, substantially as described.

8. In a garment fastener or supporter, means to engage a garment to be supported; means adjacent thereto comprising a tapering nook to receive a supporting-strap, whereby the pull upon the strap will cause the garment-engaging means to hold more securely.

9. In a garment fastener or supporter; means to engage a garment to be supported; means adjacent thereto comprising a tapering nook; a sleeve slidable on said nook; and a projection on said sleeve to receive a supporting-strap, whereby the pull upon the strap will cause the garment-engaging means to hold more securely.

10. In a device for engaging a suspender-end, means for detachably engaging said suspender-end; means to engage a garment to be supported; together with means adapted to project through the eye of the suspender-end for securely but detachably holding the supporting strap or band in engagement with the device.

709,910. MECHANISM FOR CONTROLLING LOOMS BY THE QUANTITY OF WEFT IN THE SHUTTLES. JOSIAH H. KLEEK, Sunbury, Pa., assignor to Susquehanna Silk Mills, Sunbury, Pa., a Corporation of Pennsylvania. Filed Dec. 10, 1901. Serial No. 85,269. (No model.)

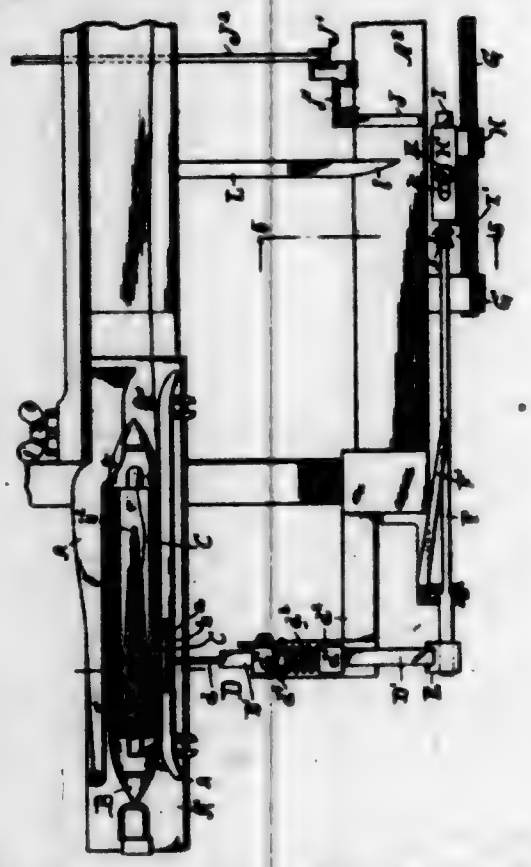

Claim.—1. In a loom the combination with the shuttle-box, of a movable feeler device, constructed and fitted to enter the shuttle in the shuttle-box when the lay beats up, whereby the movement of the feeler device is under control of the weft or filling in the shuttle, a lever device pivoted to oscillate in a plane substantially at right angles to the oscillation of said feeler device, means intermediate of said feeler device and said pivoted lever device, whereby the feeler device may effect such oscillation of the lever device so long as the weft is not exhausted to the predetermined point, a part for bringing about or controlling the operation of a weft or filling-renewing mechanism or a loom-stop mechanism, and operative means intermediate of said part and a moving part of the loom, said means under control of the said lever device, whereby a loom-stop or filling-renewing mechanism may be operated upon failure or substantial exhaustion of the weft or filling.

2. In a loom the combination of a to-and-fro moving member adapted to vibrate in harmony with the lay and under control of the weft or filling in the shuttle in play, a part for bringing about or controlling the operation of a loom-stop or filling-renewing mechanism, mechanism adapted to intermittently actuate said part and a lever device pivoted to oscillate in a vertical plane through, and under control of the said to-and-fro moving member for preventing the actuation of such part, when the shuttle is well supplied with filling and for permitting its actuation upon the failure or substantial exhaustion of the weft or filling.

3. In a loom the combination of a movable feeler device constructed and fitted to enter the shuttle in play to press upon the weft therein, whereby the feeler device may vibrate in harmony with the lay, and its amplitude of vibration be under control of the filling or weft in the shuttle; mechanism for bringing about or controlling the operation of a loom-stop or filling-renewing mechanism; a moving part of the loom adapted

to engage and actuate the said controlling mechanism; a cam for placing said mechanism in inoperative position, and means under control of the said feeler device for engaging to retain in inoperative position said mechanism, whereby it may prevent the engagement of said moving part of the loom with said controlling mechanism to actuate it, until the failure or substantial exhaustion of the weft or filling in the shuttle, and then permit such engagement.

4. In a loom the combination with a feeler device vibrating in harmony with the lay, and under control of the weft or filling in the shuttle, a movable arm or member for bringing about or controlling the operation of a loom-stop or filling-renewing apparatus, a power-actuated hunter, a reciprocating part carried on said movable arm or member adapted to be engaged by said hunter, whereby the movable arm or member is actuated, means to periodically reciprocate said reciprocating part to remove it from the action of said hunter, or into inoperative position, a catch device adapted to engage said reciprocating part to hold it in such inoperative position, while the said hunter passes its critical position, and means intermediate of the said feeler device and said catch device whereby the latter is moved periodically into operative position to prevent actuation of the aforesaid movable arm or member until the failure or substantial exhaustion of the weft.

5. In a loom the combination with a feeler device vibrating in harmony with the lay, its amplitude of vibration under control of the weft or filling in the shuttle, a rock-shaft for bringing about or controlling the operation of a loom-stop or filling-renewing mechanism, and mechanism for actuating said rock-shaft comprising an arm extending from the rock-shaft, a reciprocating part carried on said arm, a continuously-moving hunter for engaging said reciprocating part to actuate said rock-shaft, and mechanism under control of the said feeler device for removing the said reciprocating part from the path of said hunter when the shuttle is well supplied with weft or filling.

6. In a loom the combination with the lay and the shuttle box thereof of the feeler device D vibrating in harmony with the lay, and adapted to enter the shuttle in the shuttle-box A, whereby the amplitude of vibration of the feeler device is under control of the filling or weft in the shuttle; a cam E' operated by the feeler device to oscillate a lever F as long as sufficient quantity of weft or filling remains in the shuttle; said lever F; a rock-shaft G for bringing about or controlling the operation of a loom-stop or filling-renewing mechanism, an arm as H, connected to said shaft, a movable slide I carried on said arm, a hunter J adapted to coact with said slide I to actuate arm H, a cam L carried by the lay for sliding said slide I and engaging hook devices *i f* carried by said slide and said lever F respectively, substantially for the purpose described.

7. In a loom the combination with the lay of a movable arm or member for bringing about or controlling the operation of a weft-renewing or loom stop apparatus, a reciprocating part carried on said arm or member, a spring acting on said part to hold it in normal or operative position, means as a cam, for periodically moving said part against the action of said spring and an intermittently-actuated and weft-controlled device for engaging and holding said part in inoperative position, and a hunter for actuating said part when said weft-controlled device fails to engage the same, whereby a weft-renewing or loom-stop mechanism may be brought into operation upon failure or substantial exhaustion of the weft in the shuttle.

8. In a loom the combination with the lay of a device fitted to move to and fro in harmony with the lay provided with a member for entering the shuttle to coact with the weft therein, whereby the amplitude of movement of said to-and-fro device is controlled by the quantity of weft in the shuttle; a hunter, and mechanism actuated thereby adapted to control or bring about the operation of a loom-stopping or weft-renewing apparatus; means for intermittently moving said mechanism into inoperative position; and a lever device for intermittently maintaining said mechanism in such inoperative position; and means intermediate said lever device and said to-and-fro device for producing such intermittent movement of said lever device, until the amplitude of movement of said to-and-fro device reaches a predetermined point.

9. In a loom the combination with the lay of a feeler device adapted to move to and fro in harmony with the lay, its amplitude of movement under control of the weft in the shuttle; mechanism for bringing about or controlling the operation of a loom-stopping or filling-renewing apparatus, said mechanism including a shifting block; a moving part of the loom for engaging said block to actuate said mechanism; a second moving part of the loom for shifting said block out of the path of said first-named moving part; means for returning said block to normal position; a lever device adapted and fitted to be oscillated by said feeler device until the weft is exhausted to a predetermined extent, and means intermediate of said lever device and said shifting block whereby said lever device may intermittently retain said shifting block in its inoperative position, and thereby prevent the operation of the loom-stopping or filling-renewing mechanism until the predetermined exhaustion of weft.

10. In a loom the combination with the lay of the feeler device D for coacting with the weft in the shuttle in play, and operated to move to and fro in harmony with the vibrations of the lay, the oscillating lever device F, the cam E constituting means whereby the feeler device may oscillate the lever device when there is sufficient weft in the shuttle, the rock-shaft G adapted to be connected with loom-stopping, or weft-renewing apparatus, the arm H carried thereon, the shifting block I fitted to said arm to actuate shaft G, the oscillating cam L for shifting said block I to inoperative position, and a hook *f* carried on said lever device F, adapted to retain said block I in inoperative position while the hunter J is actuated.

709,911. **MECHANISM FOR CONTROLLING LOOMS BY THE QUANTITY OF WEFT IN THE SHUTTLES.** JOHANN H. KLEIN, Sunbury, Pa., assignor to Susquehanna Silk Mills, Sunbury, Pa., a Corporation of Pennsylvania. Filed Dec. 10, 1901. Serial No. 85,230. (No model.)

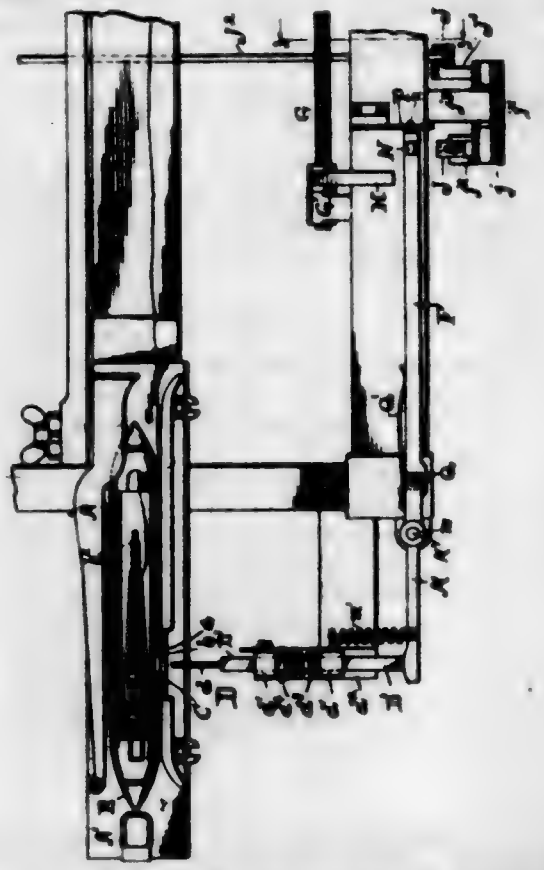

Claim.—1. In a loom the combination with the lay of a lever device fitted to oscillate, means under control of the filling or weft in the shuttle in play, for effecting oscillations of said lever device in harmony with the vibrations of the lay, whereby such oscillations will be diminished in extent or amplitude in accordance with the quantity of weft or filling in the shuttle, a member for bringing about or controlling the operation of a loom-stop or filling-renewing mechanism, a hunter for actuating said member, through the medium of said lever device, and means connected with said lever device for controlling the actuation of said member, whereby on the failure or substantial exhaustion of the weft in the shuttle in play, the operation of the loom-stop or filling-renewing mechanism may be effected.

2. In a loom the combination with the lay of a lever device fitted to oscillate in harmony with the vibrations of the lay, means coacting with the weft or filling in the shuttle in play for effecting oscillations in said lever device in accordance with the quantity of weft or filling in the shuttle, a pivot contained in said lever to permit part thereof to be intermittently displaced independently of the main portion, a hunter adapted to effect such intermittent displacement, a member for bringing about or controlling the operation of a loom-stop or filling-renewing mechanism, said member adapted to be actuated by said lever device when the latter is displaced by the said hunter, and means controlled by the oscillation of said lever device to prevent its engagement with either the hunter or with the said controlling member until the failure or substantial exhaustion of the weft or filling, and for then permitting such engagement.

3. In a loom the combination with the lay of a shuttle-box, a movable feeler device, constructed and fitted to enter the shuttle in the shuttle-box when the lay beats up, whereby the movement of the feeler device is under control of the weft or filling in the shuttle, a lever device operatively connected with said feeler device so as to oscillate in harmony with the vibration of the lay under control of the weft or filling in the shuttle, a member for bringing about or controlling the operation of a loom-stop or filling-renewing mechanism, and operative means including

said lever device, intermediate of said member and a moving part of the loom, said means being under control of the said lever device, whereby a loom-stop or filling-renewing mechanism may be operated upon failure or substantial exhaustion of the weft or filling.

4. In a loom the combination with the lay, of the shuttle-box carried on the lay, of a feeler device D constructed to enter the shuttle in the shuttle-box to coact with the weft or filling and fitted to move to and fro in harmony with the vibrations of the lay, whereby the extent or amplitude of movement of the feeler device will depend upon the quantity of weft or filling in the shuttle in play, a lever device M F actuated by and in unison with said feeler device, a hunter J, a block N carried on said lever device adapted to be engaged by said hunter, a lever H connected with a controlling-shaft and adapted to be actuated upon the engagement of said hunter and block N, and a stationary cam H adapted to effect the removal periodically of said block from the path of the hunter until with the consumption of weft or filling the oscillations of the lever device are diminished in extent to a predetermined point, whereby until such time the engagement of said hunter and block is avoided.

709,912. STATION-INDICATOR. ADAM KEMPF, Colby, Wis. Filed Feb. 20, 1902. Serial No. 95,002. (No model.)

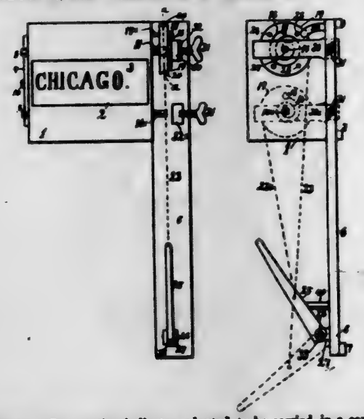

Claim.—In a station-indicator adapted to be carried in a car, and suitably framed, the combination with a box having an aperture in its front side of two rollers journaled in the box, a slip of flexible material secured with one end on each roller and having the names of stations or streets marked upon the side adjacent to the aperture in the front of the box, a friction spring-bar pressing upon one journal of each roller; each roller having a square end portion, a ratchet-wheel having a square central hole adapted to fit upon either of said journals with either side of the wheel toward the roller, a pulley surrounding the ratchet-wheel and revolving on the hube of it, a spring-pressed pawl pivoted in the pulley and engaging the ratchet-wheel, the pins 18 and 18× projecting from both sides of the pulley, the spiral spring 16 having a loop at its outer end adapted to go on the pins 18 and 18×, the central stem 15 secured to the inner end of the spring and having square ends, the post 20 having a square hole adapted to fit the square ends of the spring-stem, two set-screwed pockets in the framework for holding the post 20 near either of the roller-journals, the chain or cord 23 secured to the pulley, and hand-lever 26 pivoted on an extension of the framework and connected to said cord or chain, and means for limiting the motion of the lever, substantially as and for the purpose set forth.

709,918. AWNING. BENJAMIN F. LAMB and ELIJAH G. GOULD, Portland, Me. Filed May 14, 1902. Serial No. 107,309. (No model.)

Claim.—1. An awning having an aperture, a flap covering said aperture, and means connecting the free edge of said flap with the body of the awning, said means serving to permit the upward movement of the free edge of said flap and to limit the movement of the same in an upward direction.

2. The combination with an awning having an aperture therethrough, of a flap covering said aperture, a bar secured near the free edge of said flap, a corresponding bar secured to the body of the awning, and connecting means, so connecting the said bars as to permit them to separate when the flap is raised by the impact of the wind and to lie closely together upon the cessation of such pressure.

3. An awning having an aperture, a flap covering said aperture and connected by one edge to the awning, oppositely-disposed bars connected respectively to the outer edge of said flap and to said awning, and crossed, pivotally-connected bars connected movably to said oppositely-disposed bars.

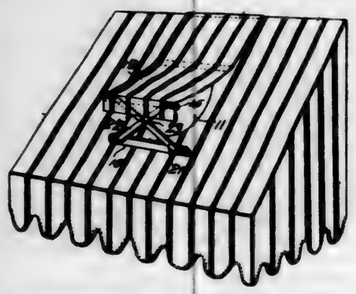

4. An awning having an aperture, a flap covering said aperture and connected at one edge to the awning, oppositely-disposed bars connected respectively to the free edge of said flap and to said awning, said bars having longitudinal slots, and reversedly-disposed diagonal bars connected movably to said slots.

709,914. MOORING BLOCK OR CLUMP. GEORGE C. L. LEMON, London, England. Filed June 30, 1902. Serial No. 113,237. (No model.)

Claim.—1. The combination with a wedge-shaped mooring block or clump provided with a narrow vertical slot at the front of a shank passing through the slot having a limited vertical movement therein and pivoted at the rear of it.

2. The combination with a hollow wedge-shaped mooring block or clump consisting of a back plate a slotted front plate inclining backward and upward and two side plates of a shank passing through the slot and pivoted to the back plate.

3. The combination with a hollow wedge-shaped mooring block or clump consisting of a back plate a slotted front plate narrower than the back plate and inclining backward and upward and two side plates inclining inward and upward of a shank passing through the slot and pivoted to the back plate.

709,915. CONTROL OF ELECTRIC MOTORS. HARRY W. LEONARD, Bronxville, N. Y. Filed Aug. 26, 1901. Serial No. 73,242. (No model.)

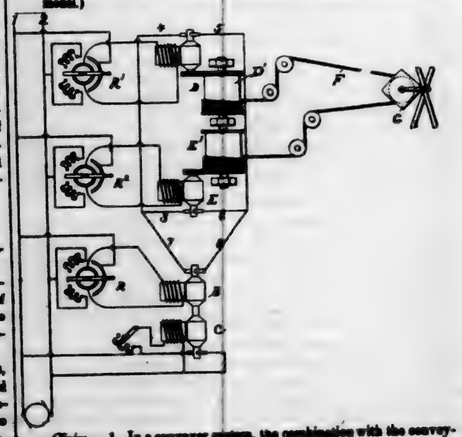

Claim.—1. In a conveyer system, the combination with the conveying apparatus, of two dynamo-electric machines for operating said apparatus, one of said machines operating as a motor to drive the apparatus, and the other machine operating as a generator or driven by said apparatus.

2. In a conveying system, the combination with the conveying apparatus, of two dynamo-electric machines for operating said apparatus, and a main source of electric energy to which said machines are connected, one of said machines operating as a motor through energy received from said source to drive the apparatus, and the other machine operating as a generator driven by said apparatus and supplying energy to the motor.

3. In a conveyer system, the combination with the conveying apparatus, of two dynamo-electric machines for operating said apparatus, said machines being connected in series in a closed loop, and a main source to which said loop is connected, one of said machines operating as a motor to drive the apparatus, and the other machine operating as a generator driven by said apparatus, and said motor receiving energy from the source and said generator.

4. In a conveyer system, the combination with the conveying apparatus, of two dynamo-electric machines for operating said apparatus, one of said machines operating as a motor to drive the apparatus, and the other machine operating as a generator driven by said apparatus, and means for controlling the direction of movement of said conveying apparatus.

5. In a conveyer system, the combination with the conveying apparatus, of two dynamo-electric machines for operating said apparatus, one of said machines operating as a motor to drive the apparatus and the other machine operating as a generator driven by said apparatus, and means for controlling the direction of rotation of said machines.

6. In a conveyer system, the combination with the conveying apparatus, of two dynamo-electric machines for operating said apparatus, one of said machines operating as a motor to drive the apparatus, and the other machine operating as a generator driven by said apparatus, and means for controlling the speed of rotation of said machines.

7. In a conveyer system, the combination with the conveying apparatus, of two dynamo-electric machines for operating said apparatus, one of said machines operating as a motor to drive the apparatus, and the other machine operating as a generator driven by said apparatus, and means for simultaneously controlling the speed and direction of rotation of said machines.

8. The combination with a source of electric energy, of three dynamo-electric machines B, D and E, having their field-windings connected with said source, and the armatures of machines D and E being connected in multiple-arc relation across the armature-terminals of machine B, the latter machine and one of said machines D and E generating electric energy and the other machine absorbing electric energy.

9. The combination with a main source of electric energy, of a dynamo-electric machine B, having its field-winding connected with said main source and its armature driven by energy received from said source, and two dynamo-electric machines D and E having their field-windings connected with said source, and their armatures connected in multiple-arc relation across the armature-terminals of machine B, the latter machine and one of said machines D and E generating electric energy and the other machine absorbing electric energy.

10. The combination with a main source of electric energy, of a dynamo-electric machine B, having its field-winding connected with said main source and its armature driven by energy received from said source, and two dynamo-electric machines D and E having their field-windings separately excited from said source, and their armatures connected in multiple-arc relation across the armature-terminals of machine B, the latter machine and one of said machines D and E generating electric energy and the other machine absorbing electric energy.

11. The combination of a source of electromotive force, two dynamo-electric machines whose armatures are in multiple arc across said source, means for varying the electromotive force of said source to vary the speed of the said armatures, the field-windings of said dynamo-electric machines being connected across an independent electromotive force, and means for inductively varying the relative speeds of the two armatures.

12. The combination of a dynamo-electric machine having a separately-excited field-winding and two other dynamo-electric machines whose armatures are connected in multiple-arc relation across the armature-terminals of the first named dynamo, and both of said machines having separately-excited field-windings.

13. The combination of a local circuit, two dynamo-electric machines whose armatures are connected in said circuit, a cable or equivalent device mechanically connecting the two armatures and means whereby the current in the local circuit can be varied for the purpose of varying the tension of the cable.

14. The combination of a local circuit, two dynamo-electric machines whose armatures are connected in said circuit, a cable or equivalent device mechanically connecting the two armatures, and means for varying the electromotive forces supplied to the two armatures for the purpose of varying the speed of the cable.

15. In a conveyer system connected between moving objects, the combination of a conveying-cable or equivalent device, means for driving said cable, and electrical means for varying or controlling the tension of said cable.

16. In a conveyer system connected between moving objects, the combination of a conveying-cable or equivalent device, means for driving said cable, and apparatus for generating electric energy for controlling the tension of said cable.

17. In a conveyer system connected between moving objects, the combination of a conveying-cable or equivalent device, an electric motor for driving said cable, and electrical means for varying or controlling the speed of said cable.

18. In a conveyer system connected between moving objects, the combination of a conveying-cable or equivalent device, an electric motor for driving said cable, and electrical means for varying or controlling the direction of movement of said cable.

19. The combination of two dynamo-electric machines whose armatures are electrically connected together, a cable or equivalent device mechanically connecting the two armatures and electric means whereby the tension of the cable can be varied at the will of the operator.

20. The combination of two dynamo-electric machines whose armatures are electrically connected together, a cable or equivalent device mechanically connecting the two armatures, and means whereby the relative speeds of the two armatures can be varied at the will of the operator.

21. The combination of two dynamo-electric machines whose armatures are electrically connected together, each armature being geared to a drum, a cable mechanically connecting the two drums, and means for controlling the speed of at least one of the dynamo-electric machines.

22. In an apparatus for coiling at sea, the combination of a moving cable and electric means for controlling the tension of the cable by the generation of electric energy.

23. In an apparatus for conveying materials to or from a vessel which is free to move upon the water, the combination of a cable connecting the vessel with another object above the surface of the intervening water, and electric means for controlling the tension of said cables so as to maintain the cable clear of the water under conditions of relative movement of the vessel and the other object.

24. In an apparatus for conveying materials to or from a vessel which is free to move upon the surface of the water, the combination of a cable, chain, or equivalent device connecting the vessel with another object, a dynamo-electric machine whose armature is mechanically connected with said cable, chain, or equivalent device, and means for controlling the current in said armature whereby the tension of said cable can be controlled.

25. In an apparatus for conveying materials to or from a vessel which is free to move upon the surface of the water, the combination of a cable, chain, or equivalent device connecting the vessel with another object, a dynamo-electric machine whose armature is mechanically connected with said cable, chain, or equivalent device, and electric means for keeping the tension upon the cable sufficiently constant to keep the cable clear of the water when the distance between the vessel and the other object is reduced.

26. In an apparatus for conveying materials to or from a vessel which is free to move upon the surface of the water, the combination of a cable, chain, or equivalent device connecting the vessel with another object, a dynamo-electric machine whose armature is mechanically connected with said cable, chain, or equivalent device, and means for controlling the tension upon said cable when there is a movement of the vessel relative to the other object, by controlling the torque of the armature of said dynamo-electric machine.

27. In an apparatus for conveying materials to or from a vessel which is free to move upon the surface of the water, the combination of a cable, chain or equivalent device connecting the vessel with another object, a dynamo-electric machine whose armature is mechanically connected with said cable, chain, or equivalent device, and means for controlling the tension upon said cable when there is a movement of the vessel relative to the other object by controlling the current in one of the elements of said dynamo-electric machine.

709,916. METHOD OF CONTROLLING ELECTRIC MOTORS. HARRY W. LEONARD, Bronxville, N. Y. Original application filed Aug. 26, 1901, Serial No. 73,242. Divided and this application filed Dec. 10, 1901. Serial No. 85,260. (No model.)

Claim.—1. The method of varying the tension of a moving cable, consisting in causing said cable to drive a generator of electric energy and varying the energy so produced.

2. The method of controlling the tension upon a cable or equivalent

device connecting two objects, consisting in mechanically connecting the cable with the revolving element of a dynamo-electric machine and varying the current in one element of said dynamo-electric machine whereby the tension upon said cable is controlled.

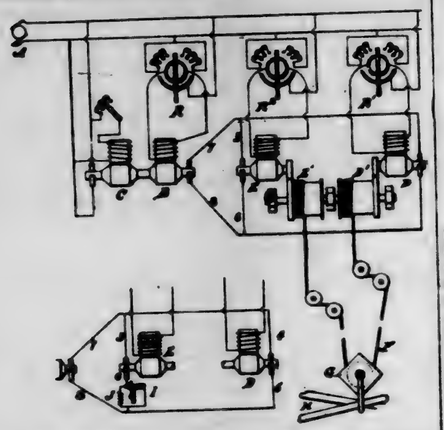

2. The method of controlling the tension upon a moving cable or equivalent device connecting two objects, which consists in running the moving cable to generate electric energy and controlling the amount of electric energy generated.

4. The method of controlling the tension upon a cableway between two ships at sea, which consists in winding up one end of the cable by means of an electric motor, driving by means of the other end of the cable an electric generator, and controlling the output of said generator.

5. The method of operating a cableway between two ships at sea, which consists in stretching between the ships a cable, the two ends of which are upon one ship and the bight of which is upon the other ship, winding up one end of the cable by means of an electric motor, driving an electric generator by means of the other end of the cable in order to produce motion of the conveying cable in one direction, and reversing the direction of motion of the cable by reversing the necessary elements of said dynamo-electric machine.

709,917. **SEINE-RIPPER.** FRANK I. MARSHALL, Boston, Mass. Filed Oct. 28, 1901. Serial No. 79,621. (No model.)

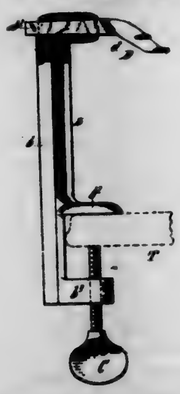

Claim.—1. A stitch-ripper, comprising a cutter, having one or more cutting edges and one or more blunt points, and a holder.

2. A stitch-ripper, comprising a cutter having a curved blade, the outer edge of which is sharpened, terminating in a blunt guide and a holder, substantially as described.

3. A stitch-ripper, comprising a cutter A, having the blade a with one cutting edge and the guide a' and the holder B, all substantially as described.

709,918. **FRICTION-CLUTCH.** ANTON HILL, Cincinnati, Ohio, assignor to the American Tool Works Company, Cincinnati, Ohio, a Corporation of West Virginia. Filed Dec. 5, 1901. Serial No. 84,944. (No model.)

Claim.—1. The combination of a revolvable agency, a pair of oppositely-arranged concentric friction-faces facing each other, and oppositely-arranged friction-ring members, with a rock-pin having wings thereon engaging said friction-ring members and rocking about an axis located between said friction-ring members, and means for rocking said pin thereby causing one of the friction-ring members to be pressed longitudinally and inwardly and the other to be pressed longitudinally and outwardly into frictional engagement with said faces.

2. The combination of a plurality of friction-faces concentric with the axis of a revolving agency one of which faces outwardly from and the other inwardly toward said axis and toward each other, with expanding and contracting ring members for said faces, a rock-key having wings integral therewith and rocking therewith about a common axis located between said members and means for rocking said key thereby causing engagement of said ring members with said faces by having said wings press said rings respectively longitudinally and inwardly and longitudinally and outwardly by pressure upon the ends of the same, substantially as described.

3. The combination of a revolvable agency, a pair of friction-surfaces facing respectively inwardly and outwardly with relation to the axis of the revolvable agency and toward each other's planes, a pair of friction-rings, one expansibly and the other contractibly arranged for engagement with said friction-surfaces, a shoulder for a ring, an engaging face on the other ring, a rock-key and wings thereon having a common axis located between the planes of said friction-rings for engagement with said shoulder and the engaging face of the other ring and means for rocking said key thereby simultaneously causing frictional engagement between the friction-rings and said pair of friction-surfaces.

4. The combination of a revolvable agency, a pair of friction-surfaces concentric therewith and facing each other, a pair of friction-ring members between the same, a shaft, a flanged collar, means for securing the ring members to the flanged collar, a shoulder for a ring member, a rock-shaft having wings integral therewith between said shoulder and the other ring member, and a rocker-arm secured to said rock-shaft and by its movement causing said wings to move concentrically about the axis of the said rock-shaft between the planes of said ring members and thereby engaging said shoulder and the other ring member and means for rocking said rocker-arm thereby simultaneously causing said members to engage said concentric friction-surfaces.

5. In a friction-clutch, the combination with a shaft, of a revolvable agency surrounding the shaft and having a pair of friction-surfaces facing respectively inwardly and outwardly with relation to the axis of the revolvable agency and toward each other's planes, a pair of split friction-rings, one expansibly and the other contractibly arranged for engagement with said friction-surfaces, a contact-face for each ring and a rock-key having a pair of wings arranged to engage said contact-faces and having their axis extending longitudinally of the shaft between the planes of said friction-rings and arranged to turn on that axis and means for rocking said key.

6. In a friction-clutch, the combination of the hub E, the friction-faces e' e^2, the split friction-rings G G', the collar D, the key I having wings i' i^2, the journal i for the key, the bearing d^2 on the collar D in which the journal i rocks, with the engaging faces g' g^2 on the said friction-rings for engagement by said wings and means for rocking said key, substantially as described.

7. In a friction-clutch, the combination with a shaft, of a collar D therefor, a hub E surrounding the shaft, with an annular groove for the hub having therein the friction-faces e' e^2 facing each other, the friction-rings G G' between said faces, the rock-key I having wings i' i^2 and journal i rocking about a common axis extending longitudinally of the shaft between said friction-rings and rocking on that axis for simultaneously expanding and contracting said friction-rings for simultaneously respectively increasing and decreasing their diameter uniformly and causing uniform engagement between said rings and said friction-faces throughout

their length, with a cone on the shaft, and a rock-arm K for the key for rocking the latter, substantially as described.

8. In a friction-clutch, the combination of two concentric friction-faces facing each other, and a pair of concentric friction-rings between the same, a rock-pin having engaging faces for the pair of friction-rings, the axis of said rock-pin being between said friction-rings and with the rock-pin and said engaging faces rocking about said axis of said rock-pin eccentrically and thereby force the friction-rings into engagement with said friction-faces, and means for rocking the rock-pin.

709,919. **PAIL-HOOK.** CHARLES W. MITCHELL, Brooklyn, N. Y., assignor to Twisted Wire Box Strap Company of New York, a Corporation of New York. Filed June 15, 1902. Serial No. 112,171. (No model.)

Claim.—1. As article of manufacture consisting of a metal strap of convenient shape, the end portions thereof being flat and folded each on itself and provided with corners bent outwardly to form approximately perpendicular barbs, substantially as described.

2. As an article of manufacture, a strap, pointed end portions thereon folded each on itself, each end portion being provided with a barb on each folded edge, substantially as described.

3. As an article of manufacture, a metal strip, the end portions of the same being folded longitudinally and disposed at an angle to said strip to form fastening-points, and oppositely-projecting barbs formed on the adjacent edges of said folded portions, substantially as described.

4. As an article of manufacture, a pail-hook consisting of a strap, pointed end portions thereon each folded longitudinally on itself and bent over into contact with said strap to form a relatively heavy base for the folded portion, and opposite and outwardly-bent barbs on the adjacent folded edges, substantially as described.

5. As an article of manufacture, a pail-hook consisting of a strap, pointed end portions thereon, folded to form fastening-points of double thickness, the said folded portion being bent over into close contact with the body of the strap to form a flat and relatively heavy base portion and oppositely-projecting barbs on said folded portions and approximately perpendicular thereto, substantially as described.

6. As an article of manufacture, an oblong piece of metal, the end portions of the same being disposed at an angle to the body of the piece and folded longitudinally to form fastening-points of double thickness, corners on the adjacent edges of said folded portions formed by removing therefrom a part of the metal and bent outwardly to constitute barbs for the fastening-points, substantially as described.

709,920. **FEEDER FOR CIGARETTE-MACHINES.** TRAHOUT MONTGOMERY, Brooklyn, N. Y. Filed Mar. 21, 1900. Renewed Mar. 6, 1902. Serial No. 96,970. (No model.)

Claim.—1. In a tobacco-feeder, the combination of an endless conveying-belt and means for feeding particles of tobacco thereto upon a line at an angle to the delivery end of the belt, substantially as set forth.

2. The combination in a tobacco-feeder, of an endless traveling belt, means for feeding tobacco thereto, at an angle to the delivery end of the belt, and a picker-roll arranged opposite said end, substantially as set forth.

3. The combination in a tobacco-feeder, of an endless traveling belt, means for feeding tobacco thereto, at an angle to the delivery end of the belt, a picker-roll arranged opposite said end, and a chute arranged below the delivery end of the belt and provided with a curved mouth, substantially as described.

4. The combination in a tobacco-feeding machine, of an endless traveling delivery-belt, and a feed-belt arranged above the delivery-belt at an angle thereto, and an intermediate chute, substantially as described.

5. The combination of a delivery-belt and a feed-belt at an angle thereto, and a picker-roll opposite the end of the feed-belt, substantially as set forth.

709,921. **GRADING AND EXCAVATING MACHINE.** WILLIAM H. HOSKINS, Lakeview, Iowa, assignor to Frederick C Austin, Chicago, Ill. Filed Jan. 26, 1901. Serial No. 44,793. (No model.)

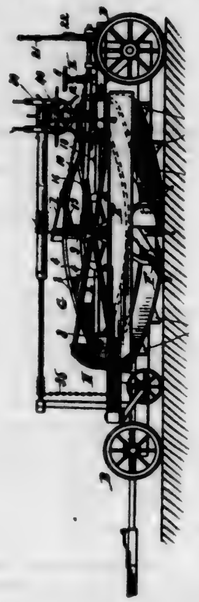

Claim.—1. In a grading and excavating machine, a rotary elevating conveyer-wheel supported to run upon the ground in an inclined position and adapted to receive the soil from a plow and carry such soil up to the point of discharge; a combined scraper and deflector arranged to scrape and deflect the soil from the wheel and supported to swing about the axis of said wheel; and a device for operating the combined scraper and deflector arranged and adapted to be actuated at will by an attendant upon the machine.

2. A grading and excavating machine comprising a rotary elevating conveyer-wheel supported to run upon the ground in an inclined position and having a soil-carrying portion adapted to receive the soil from a plow and carry such soil up to the point of discharge; and a combined scraper and deflector adapted to deflect the soil from the soil-carrying portion of the elevating conveyer-wheel and, having a swinging adjustment about the axis of the elevating conveyer-wheel, and also away from and toward the plane of the soil-carrying portion of such wheel.

3. A grading and excavating machine comprising a rotary elevating conveyer-wheel supported to run upon the ground in an inclined position and having a soil-carrying portion adapted to receive the soil from a plow and carry such soil up to the point of discharge; a combined scraper and deflector arranged to deflect the soil from the soil-carrying portion of the elevating conveyer-wheel and supported to swing about the axis of such wheel; a chain or equivalent flexible connection between the combined scraper and deflector; and an operating device provided for varying the length of flexible connection between such operating device and the combined scraper and deflector, and thereby shift the point of discharge by an adjustment of the combined scraper and deflector.

4. A grading and excavating machine comprising a rotary elevating conveyer-wheel supported to run upon the ground in an inclined position and having a soil-carrying portion adapted to receive the soil from a plow and carry such soil up to the point of discharge; a combined scraper and deflector adapted to deflect the soil from the soil-carrying portion of the elevating conveyer-wheel and supported to swing about the axis of such wheel and to swing away from and toward the soil-carrying portion of the latter; a rotary shaft applied for swinging the combined scraper and deflector toward and away from the plane of the soil-carrying portion of the elevating conveyer-wheel and adapted for automatic longitudinal extension and contraction with reference to the swing of the combined scraper and deflector about the axis of the elevating conveyer-wheel; and a suitable operating device for actuating the rotary shaft.

5. A grading and excavating machine comprising a rotary conveyer

wheel which runs upon the ground in an inclined position to receive the soil from the plow and carry such soil up to the point of discharge; a tilting bearing centrally supporting the elevating conveyor-wheel and hinged to a tilting support which is in turn carried by the body-frame of the machine; means for tilting the elevating conveyor-wheel and its central supporting-bearing independently of the tilting support on the body-frame; and means for raising and lowering the tilting support on the body-frame so as to bodily raise or lower the elevating conveyor-wheel.

6. A grading and excavating machine comprising a wheeled body-frame; a plow; a rotary elevating conveyor-wheel which runs upon the ground in an inclined position to receive the soil from the plow and carry such soil up to the point of discharge; a tilting bearing centrally supporting the elevating conveyor-wheel and hinged to a tilting support which is carried by the body-frame of the machine; means for tilting the elevating conveyor-wheel and its central supporting-bearing; a lever fulcrumed upon the body-frame of the machine and applied for adjusting said tilting support which is carried by the body-frame; and an adjusting device for operating said lever.

7. A grading and excavating machine comprising a wheeled body-frame; a plow; a tilting conveyor-wheel which runs upon the ground in an inclined position to receive the soil from the plow and carry such soil up to the point of discharge; a rotary winding-drum or hollow shaft; a chain or cable applied whereby the elevating conveyor-wheel can be tilted by operating the winding-drum or hollow shaft; and a plow raising and lowering mechanism involving a rotary shaft which extends through the said winding drum or shaft.

709,922. PROCESS OF MAKING CELLULOSE ESTERS. HARRY S. HEDE, Boston, ARTHUR D. LITTLE, Brookline, and WILLIAM H. WALKER, Newton, Mass., assignors, by mesne assignments, to Chemical Products Company, Boston, Mass., a Corporation of Maine. Filed Jan. 17, 1902. Serial No. 89,397. (No specimens.)

Claim.—1. The process of making cellulose esters, which consists in treating cellulose with an acid anhydrid in the presence of an aromatic sulfonic acid.

2. The process of making cellulose esters of fatty acids, which consists in treating cellulose with a fatty-acid anhydrid in the presence of an aromatic sulfonic acid.

3. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid in the presence of an aromatic sulfonic acid.

4. The process of making cellulose esters, which consists in treating cellulose with an acid anhydrid in the presence of a sulfonic acid.

5. The process of making cellulose esters of the fatty acids, which consists in treating cellulose with a fatty-acid anhydrid in the presence of a sulfonic acid.

6. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid in the presence of a sulfonic acid.

7. The process of making cellulose esters, which consists in treating cellulose with an acid anhydrid in the presence of an aromatic sulfonic acid, together with a salt of said acid.

8. The process of making cellulose esters of the fatty acids, which consists in treating cellulose with a fatty-acid anhydrid in the presence of an aromatic sulfonic acid, together with a salt of said acid.

9. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid in the presence of an aromatic sulfonic acid, together with a salt of said acid.

10. The process of making cellulose esters, which consists in treating cellulose with an acid anhydrid in the presence of a sulfonic acid, together with a salt of said acid.

11. The process of making cellulose esters of the fatty acids, which consists in treating cellulose with a fatty-acid anhydrid in the presence of a sulfonic acid, together with a salt of said acid.

12. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid in the presence of a sulfonic acid, together with a salt of said acid.

13. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid, acetic acid, and phenol-sulfonic acid, substantially as described.

14. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid, acetic acid, phenol-sulfonic acid, and a salt of phenol-sulfonic acid in the proportion and under the conditions, substantially as described.

15. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid and naphthol-sulfonic acid.

16. The process of making cellulose acetate, which consists in treating cellulose with acetic anhydrid, naphthol-sulfonic acid, and a salt of naphthol-sulfonic acid.

709,923. MOMENTUM CAR-BRAKE. THOMAS R. MCCOLLAM, Toronto, Canada. Filed Jan. 2, 1902. Serial No. 88,294. (No model.)

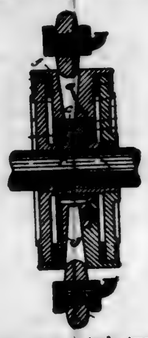

Claim.—1. In a momentum car-brake, two friction-disks fast on the axle, in combination with two friction-disks loose on the axle between the fixed disks; means whereby the loose disks are held so that they are free to move longitudinally with respect to one another but are held from rotating independently; means for winding a chain carried by one of the loose disks; and means for spreading the loose disks into contact with the fixed disks, substantially as described.

2. In a momentum car-brake, two friction-disks fast on the axle, in combination with two friction-disks loose on the axle between the fixed disks; means whereby the loose disks are held so that they are free to move longitudinally with respect to one another but are held from rotating independently; means for winding a chain by the rotation of the loose disks; one or more wedge-wheels; and means for forcing the said wedge-wheels between the loose friction-disks, substantially as described.

3. In a momentum car-brake, a sleeve fast on the axle; a friction-disk fast on the sleeve at one end; and a friction-disk detachably secured to the other end of the sleeve, in combination with two disks loose on the sleeve between the fixed disks; means whereby the loose disks are held so that they are free to move longitudinally with respect to one another but are held from rotating independently; means for winding a chain carried by one of the loose disks; and means for spreading the loose disks into contact with the fixed disks, substantially as described.

4. In a momentum car-brake, a sleeve fast on the axle; a friction-disk fast on the sleeve at one end; and a friction-disk detachably secured to the other end of the sleeve, in combination with two disks loose on the sleeve between the fixed disks; means whereby the loose disks are held so that they are free to move longitudinally with respect to one another but are held from rotating independently; means for winding a chain carried by one of the loose disks; one or more wedge-wheels; and means for forcing the said wedge-wheels between the loose friction-disks, substantially as described.

5. In a momentum car-brake, two friction-disks fast on the axle, in combination with two friction-disks loose on the axle between the fixed disks; means whereby the loose disks are held so that they are free to move longitudinally with respect to one another but are held from rotating independently; means for winding a chain carried by one of the loose disks; means for spreading the loose disks into contact with the fixed disks; and spring mechanism normally tending to draw the loose disks together, substantially as described.

6. In a momentum car-brake, two friction-disks fast on the axle, in combination with a friction-disk loose on the axle between the fixed disks; a flanged hub formed on the said disk; a second disk loose on the axle and recessed to receive the flange on the said hub; one or more pins secured to one of the loose disks and loose in holes in the other; and means for spreading the loose disks into contact with the fixed disks, substantially as described.

709,924. JOINTED POLE. MARTIN HEDGE, Emerson, Iowa. Filed July 16, 1902. Serial No. 115,207. (No model.)

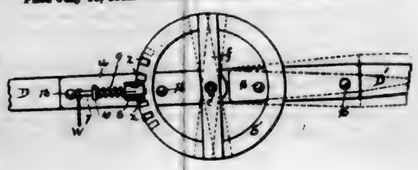

Claim.—In a joint for poles, the combination with a male member provided with a projecting perforated ear and secured upon one side with an annulus provided with a cross-bar centrally perforated, said perforation coming within alinement with the perforation within aforesaid ear, a female member provided with a perforated socket adapted to receive aforesaid perforated ear, and having a projecting annulus provided with a transverse bar perforated, said perforations coming in alinement within the perforations within said first-mentioned member, the annulus secured to said male member being notched, and a latch secured to said female member adapted to engage within the notches of the annulus secured to said male member, as and for the purpose set forth.

709,925. TILTING-FLASK SUPPORT. CHARLES PHELPS, Ostrander, Iowa. Filed June 28, 1901. Serial No. 66,466. (No model.)

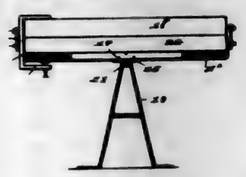

Claim.—1. In a device of the class described, the combination of two flask-sections, means for holding the sections against lateral movement relative to each other, each section comprising side and end pieces and a cross-piece near each end having a notch or recess therein, an open-ended tube resting in said notches with its ends projected beyond the cross-pieces, the end portions of the flask-sections being designed to receive and to surround the ends of the tubes and in which to form mold-cavities, said cross-pieces being provided with openings through which the metal may be poured into the mold-cavities, for the purposes stated.

2. In a device of the class described, the combination of two flask-sections, means for holding the sections against lateral movement relative to each other, each section comprising side and end pieces, and a cross-piece near each end, an open-ended tube having its central portion between the cross-pieces and its ends projecting beyond the cross-pieces, the end portions of the flask-sections being designed to receive and to surround the ends of the tube and in which to form mold-cavities, and cores in the ends of the tubes to enter the mold-cavities.

709,926. STEAM-GENERATOR. EDOARD DE POZZO-RIZZI, Paris, France. Filed Feb. 19, 1901. Serial No. 47,942. (No model.)

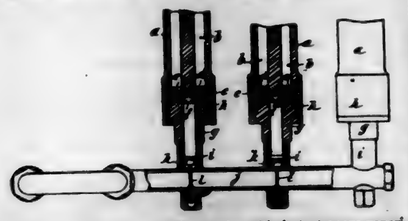

Claim.—1. A steam-generating device with instantaneous vaporization wherein each element is composed essentially of longitudinal passages, entirely independent of each other, embedded in the body of a metal bar and provided each one separately with feed-water.

2. A steam-generating device with instantaneous vaporization wherein each element is composed essentially of longitudinal passages, entirely independent of each other, embedded in the body of a metal bar and adapted each one separately to receive feed-water, which feed-water is supplied by means of small conduits discharging into the respective vaporizing-channels and emerging from a small basin, into which the water of the collector flows directly.

709,927. TOOTH-BRUSH AND POWDER CABINET. OSWYN T. PRICE, Washington, D. C., assignor to the Keds Company, a Corporation of West Virginia. Filed Jan. 28, 1902. Serial No. 91,577. (No model.)

Claim.—1. A tooth-brush and powder cabinet comprising a back made of a single piece of metal, having wings which are adapted to be bent to form brush-carrying racks and bearings therefor, a powder-box having a spring-actuated slide adapted to regulate the feed of powder from the box, flanges on the edges of said box which are adapted to be engaged by upset portions of said back, which holds the box to said back, as set forth.

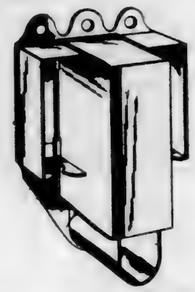

2. A tooth-brush and powder cabinet comprising a back stamped from a single piece of metal and provided with winged portions which are adapted to be bent against the back to form racks to support tooth-brushes, a powder-box, having a spring-actuated slide mounted in said box and adapted to regulate the feed of powder issuing therefrom through its apertured bottom, flanges on the longitudinal edges of said box, and a partition-wall, having flanges along its longitudinal edges, said partition being adapted to be inserted in said box, with the flanges of the partition and box in contact with each other, upset portions or lugs on the back of the receptacle, adapted to be turned over the edges of said flanges which are in contact with each other, whereby box and partition are held securely to the back of the receptacle, as set forth.

3. A tooth-brush and powder cabinet comprising a back cut from a single blank of metal and having integral wings which are bent to form tooth-racks and bearings therefor, a powder-box having flanged edges which are recessed, a partition adapted to be inserted within said box, and provided with flanges, on its longitudinal edges, which are recessed, the flanges of said box and partition being designed to be held in contact, with the recesses in said flanges in registration, lugs or upset portions on the back of the receptacle, adapted to be turned over the two edges of the flanges, and the lower inwardly-bent ends of said wings adapted to enter said registering recesses in the flanges, and a spring-actuated slide mounted within the box and adapted to regulate the feed of powder issuing therefrom as set forth.

4. A tooth-brush and powder cabinet comprising in combination with a back made of a single piece of metal and having wings which are bent to form racks for tooth-brushes and bearings therefor, a powder-box having flanged edges which are recessed, an inclined portion adapted to be inserted within said box and having longitudinal flanges which are recessed and adapted to be held against the flanges of said box, with the recesses in said flange in registration, a flange at the lower end of said partition, which has an upset portion, a slide mounted and guided in the upset flange at the lower end of said inclined partition, a spring held at one end, to the back of the receptacle, and engaging a slot in the slide, lugs on the back of the receptacle which are adapted to engage over flanges on the back of partition, the lower inturned ends of said wings being adapted to engage registering recesses in said flanges, as set forth.

5. In a tooth-brush and powder receptacle having a back made of a single piece of metal and having wings which are adapted to be bent to form racks for supporting tooth-brushes, and bearings therefor, a spring held at one end in slits formed in said back, a powder-box made of a single piece of metal having flanges along its longitudinal edges, an inclined partition inserted within said box, registering notches in the flange of said box and partition, upset portions or lugs integral with the back, adapted to engage said flanges, the lower inturned ends of the wings of said back adapted to engage in said registering recesses, an apertured slide resting upon the bottom of the powder-box, and guided in the upset portion of the flange at the bottom of said inclined partition, the lower end of said spring passing through a slot in said slide, a U-shaped projection having flanges which are held to the under surface of bottom of the powder-box, substantially as shown and described.

709,928. HAT-FASTENER. ARMSBALD P. RANKIN, Lakewood, and ALBERT C. BURDICK, Cleveland, Ohio. Filed Nov. 28, 1901. Serial No. 84,048. (No model.)

Claim.—1. The combination, with a hat-brim surrounding frame or guard, the hat-brim resting upon said guard and having its turpentine or

flexible covering extending over and adown the outer side of the guard, brackets rigidly secured to the guard a suitable distance below the hatch and arranged externally of and at suitable intervals along the guard, and each bracket having an upwardly-projecting arm arranged a suitable distance laterally of and outside of the guard and provided with two slots or channels formed in opposite sides, respectively, of and extending up and down the arm and having upper rounded end walls and open at their lower ends, and a button resting upon the said bracket and arranged to hold the tarpaulin or covering against the outer side of the guard, of a bell-crank having journals arranged to engage the said end walls in the operative position of the bell-crank, which bell-crank has one of its arms provided with a jaw arranged to bear downwardly upon the hatch and has its other arm arranged to depend between the adjacent button and the button-facing surface of the bracket-arm, and a wedge between the said button and the button-facing surface of the depending bell-crank arm

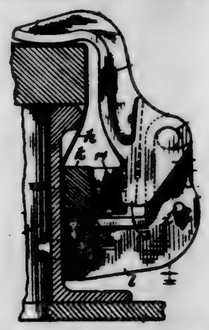

2. The combination, with a hatchway-surrounding frame or guard, the hatch resting upon the said guard and having its tarpaulin or flexible covering extending over and adown the outer side of the guard a suitable distance below the hatch and arranged externally of and at suitable intervals along the guard, and each of the said brackets having an upwardly-projecting arm arranged a suitable distance laterally of and outside of the guard and provided with two slots or channels formed in opposite sides, respectively, of and extending up and down the arm and having upper end walls and open at their lower ends, of a bell-crank having a jaw-bearing arm and a pressure-receiving arm, which bell-crank has two flanges or wings arranged at opposite sides, respectively, of the bracket-arm and journal-forming lugs formed upon the inner sides of the said wings or flanges and engaging the aforesaid channels, and means for exerting pressure against the pressure-receiving arm of the bell-crank, and the arrangement of parts being such that the jaw of the bell-crank shall bear downwardly upon the hatch upon rendering the pressure-applying means operative.

3. The combination with a hatchway-surrounding frame or guard, a hatch resting upon said guard, and having its tarpaulin or flexible covering extending over and down the outer side of the guard, brackets rigidly secured to the guard, a suitable distance below the hatch and arranged externally of and at suitable intervals along the guard each bracket having an upwardly-projecting arm arranged a suitable distance laterally of and outside of the guard and provided with two slots or channels formed in opposite sides, respectively, of and extending up and down the arm, and upper rounded end walls, and open at their lower ends, and a button resting upon the said bracket and arranged to hold the tarpaulin or covering against the outer side of the guard, of a bell-crank having journals arranged to engage the said end walls in the operative position of the bell-crank, which bell-crank has one of its arms provided with a jaw arranged to bear downwardly upon the hatch and has its other arm arranged to depend between the adjacent button and the button-facing surface of the bracket-arm, a pin arranged in the wall between the respective channel in the said bracket-arm, for locking the said bell-crank on the said bracket, and a wedge interposed between the depending arm of the bell-crank and the said button, substantially as described and for the purpose set forth.

709,929. BLOWING-ENGINE. ARSENE RAVEN, Jemappe, Belgium. Filed Mar. 13, 1901. Serial No. 50,752. (No model.)

Claim.—1. In a blowing-engine in combination with the cylinder and the piston, automatic inlet and outlet valves, supplementary automatic inlet-valves 28 at each end of the cylinder, levers 44 adapted to act upon the said supplementary valves, two shafts 45 carrying the said levers, a crank 47 at the end of each shaft, tappets 61 mounted on rocking levers 50 connected to said cranks, a shaft 53 rotating at a speed proportional or equal to the working speed of the engine, a sleeve 56 rotating with said shaft but adapted to be displaced longitudinally upon said shaft, cams 62 on said sleeve, adapted to engage the tappets 61, and an air-governor acting to regulate the value of the portion of the compression-stroke during which the cams 62 must be in engagement with the tappets substantially as described and for the purpose set forth.

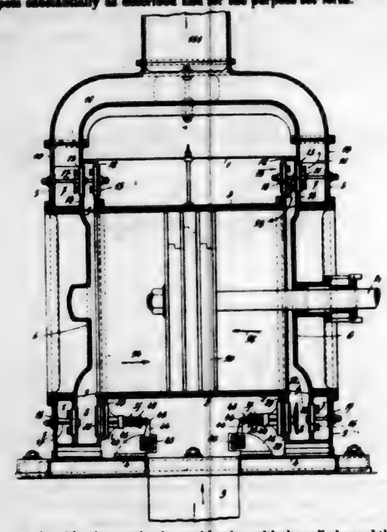

2. In a blowing-engine in combination with the cylinder and the piston, automatic inlet and outlet valves, supplementary automatic inlet-valves 28 arranged on a straight line at each end of the cylinder, levers 44 adapted to act upon the said supplementary valves, two shafts 45 carrying the said levers, a crank 47 at the end of each shaft, tappets 61 mounted on rocking levers 50 connected to said cranks 47, balancing dashpots acting on the oscillating levers 50, a shaft 53 rotating at a speed proportional or equal to the working speed of the engine, a sleeve 56 rotating with said shaft but adapted to be displaced longitudinally upon said shaft 53, cams 62 on the sleeve 56, the said cams being adapted to engage the tappets 61, oscillating rods 57 connected at one end with the sleeve 56 and at the other end with the rod 64 of a piston 60 adjusting tightly in a cylinder 60, springs 61 acting upon said piston and a communication between the cylinder 60 and the outlet-pipe for the compressed air, substantially as described and for the purpose set forth.

709,930. PNEUMATIC SADDLE-PAD. HENRY R. REHMAN, Chicago, Ill., assignor of one-half to Louis Kwiatkowski, Chicago, Ill. Filed Oct. 14, 1901. Serial No. 78,586. (No model.)

Claim.—A harness-pad comprising an upper and a lower cover-strip, a continuous inflatable tube secured between the cover-strip and extending entirely around the margin of the same and providing a seat for and conforming to the contour of the saddle used therewith, the portion of the cover-strips in the space bounded by the tube being secured together and lying between the top and bottom of the tube.

709,931. HOT-AIR APPARATUS FOR THE HUMAN BODY. GEORGE W. SAWYER, Marietta, Ind. Ter. Filed Oct. 18, 1901. Serial No. 79,177. (No model.)

Claim.—1. An apparatus of the class set forth comprising a base having straps attached thereto, a frame with a lower ring for engagement by said straps and an upper clamping-ring, and an interposition adjustable annular support.

2. A heating apparatus of the class described comprising a frame, a drum supported by the frame and having an open bottom, a conduit extending from the upper portion of the drum, removable pins extending through the walls of the drum at the lower portion thereof and projecting into the same to form an interiorly-arranged support, and a removable receptacle open at the top, arranged upon the inner portions of the pins, said pins being adapted to be withdrawn to permit the receptacle to be detached from the drum, substantially as described.

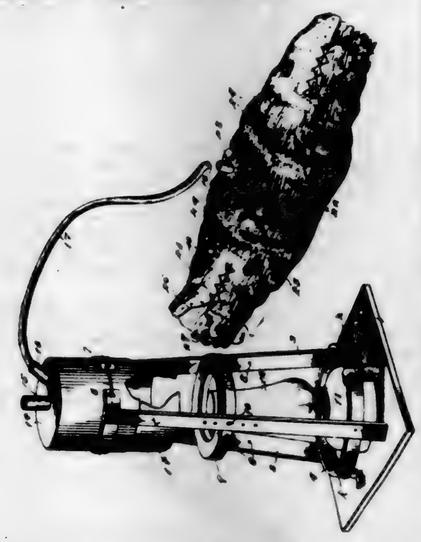

3. A heating apparatus of the class described comprising a frame having separable standards provided with perforations, an adjustable support provided with projections detachably engaging the said perforations, a clamp arranged at the top of the frame and connecting the standards and holding the projections in the perforations of the same, a drum engaged by the clamp, and a conduit extending from the drum, substantially as described.

4. A heating apparatus of the class described comprising a frame composed of separable standards provided at intervals with perforations, a clamp connecting the upper portions of the standards, and a support provided with projections adapted to engage the perforations, whereby the support may be adjusted, a drum open at the bottom arranged within the clamp, removable supporting devices projecting into the drum, a receptacle located within the drum and removably arranged on the supporting devices and adapted to contain a liquid, and a conduit extending from the drum, substantially as described.

5. An apparatus of the class described comprising a frame, a drum open at the bottom supported by the frame, a removable receptacle arranged within the drum and open at the top, a heating device located beneath the receptacle, an inclosure of approximately cylindrical shape constructed of flexible material and adapted to receive a portion of the human body and provided at its ends with adjustable means for constricting it, whereby it is closed at those points on the body, said inclosure being also provided with an outlet, and a conduit extending from the drum and connected with the inclosure, substantially as described.

6. The combination of a base-plate having a heat-generator disposed thereon, a supporting-frame comprising uprights, a ring connected to the lower ends of said uprights, means connected with said base-plate for detachably engaging said ring, an adjustable annular support connected with said uprights, and means for detachably engaging a drum.

709,932. WIRE-REEL TRUCK. FRANK W. SUMMERLY, Dublin, Ind., assignor of one-half to Burt L. Hiatt, Dublin, Ind. Filed Dec. 26, 1901. Serial No. 87,282. (No model.)

Claim.—1. In a wire-reel truck, the combination of a pair of wheels mounted on a common axle, each wheel being provided with a hub with an inward and an outward projecting flange, a wire-reel provided with hubs journaled on the inner flanges of the hubs of the wheels, removable guards to be attached to each side of the reel and secured thereto, a frame formed of one piece of material to provide a handhold and extending half-way around the truck with its ends journaled on the outer flanges of the hubs of the wheels, and keys passing through holes in each end of the axle, all substantially as shown and described and for the purposes set forth.

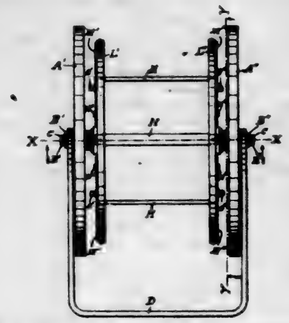

2. The reel formed of outwardly-projecting arms I' and I'' connected by the members H at right angles thereto and secured to the outer ends thereof, removable guards adapted to be secured to each side of the reel by screws N' and O' and N'' and O'', said guards consisting of the bands L' and L'' with arms M' and M'' projecting inward therefrom and each provided with two L-shaped slots to engage said screws in the reel, and hubs H' and H'' journaled on the inner flanges of the hubs of the drive-wheels.

3. In a wire-reel truck the combination of the axle, transporting-wheels mounted on the ends thereof, a reel mounted between said wheels and journaled on the hubs thereof, the U-shaped member D each end of which is journaled on the outer flange of one of the hubs, and keys E' and E'' for securing the mechanism on the axle C, all substantially as shown and described and for the purposes set forth.

709,933. ROLLER PRINTING-MACHINE. THOMAS J. SMITH, Shotton, Flints-upon-Trent, England. Filed Apr. 15, 1902. Serial No. 102,966. (No model.)

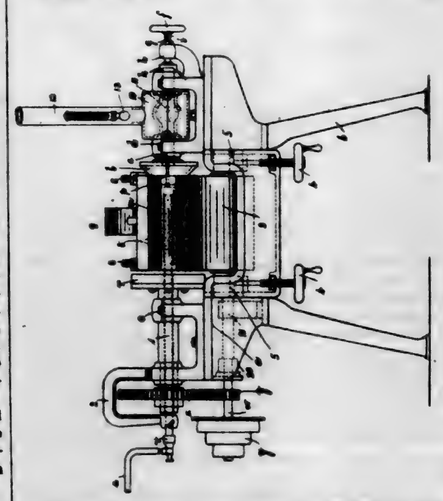

Claim.—1. In a cylinder supporting and actuating device for printing-machines, the combination with a hollow printing-cylinder of a driving-spindle, a chuck having adjustable jaws on the end of said spindle, said jaws being adapted to engage in the end of the hollow printing-cylinder, a second spindle at the opposite end of the cylinder, a cone on the end of said spindle, and means for adjusting said second spindle and cone longitudinally so as to press the cone into the end of the cylinder.

2. In a cylinder supporting and actuating device for printing-machines, the combination with a hollow printing-cylinder of a driving-spindle, a chuck having adjustable jaws on the end of said spindle, said jaws

being adapted to engage in the end of the hollow printing-cylinder, a second spindle at the opposite end of the cylinder, a cone on the end of said spindle nearest to the cylinder, and a screw device having a bearing adapted to engage with the end of said second shaft, whereby the cone may be pressed into the end of the printing-cylinder to hold it in position.

3. In a cylinder-supporting device for printing-machines the combination with a hollow printing cylinder, of a chuck adapted to engage in one end of said cylinder, a cone adapted to engage in the other end of said cylinder, means for pressing said cone into the cylinder end, a groove in the face of the cone, and a key adapted to engage in said groove and with the cylinder whereby the cone may be keyed to and caused to revolve with the cylinder.

4. In a supporting, and heating device for printing-cylinders, the combination with a hollow cylinder of a hollow spindle, a chuck on the end of said spindle adapted to engage in the cylinder end, bearings for said spindle, means for admitting gas to the interior of said spindle, a perforated burner-tube extending into the printing-cylinder from the end of said spindle, a cone adapted to engage in the other end of said cylinder, a hollow spindle upon which said cone is carried, a passage through said cone communicating with the interior of said spindle, and means for withdrawing the waste gases from said spindle.

5. In a supporting, actuating and heating device for printing-cylinders, the combination with a hollow cylinder of a spindle, means for actuating said spindle, a chuck on the end of said spindle adapted to engage in the cylinder end, a burner-tube formed within said spindle and extending within said cylinder, means for admitting gas to the interior of said spindle, means for supporting the other end of said cylinder, and means for taking off the waste gases from the latter end of said cylinder.

6. In a supporting, actuating and heating device for printing-cylinders, the combination with a hollow cylinder of a hollow spindle, means for actuating said spindle, a perforated tube extending from said spindle into the cylinder, means for admitting gas to said hollow spindle, a hollow shaft at the other end of said cylinder, means for supporting the cylinder upon said shaft, means for drawing off the waste gases from said hollow shaft, and a graduated thermometer whereby the temperature of the gases in the printing-cylinder may be seen and regulation of temperature facilitated.

709,984. BICYCLE SPROCKET AND CRANK. GIDEON STRONG, Newport, R. I. Filed July 16, 1901. Serial No. 68,773. (No model.)

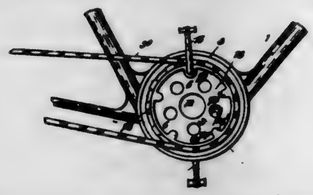

Claim.—1. A cycle-sprocket, comprising a central stationary casing, a revolvable disk mounted centrally within the same and provided with an angular aperture, a sprocket-ring connected with said disk and spaced asunder therefrom for the purpose of alinement with another sprocket, and a crank-arm provided with an angular portion for engaging the said angular aperture of the disk, said crank-arm serving the double purpose of retaining said disk and sprocket together and of causing the same to rotate.

2. A cycle-sprocket, comprising a fixed annular casing provided with a raceway, a revolvable disk provided with a comparatively thin edge for entering said raceway and with shouldered edges and also provided with angular apertures for engaging crank members, rolling bodies located in said raceway and engageable by said disk, a sprocket-ring connected to said disk and spaced apart therefrom, and crank members connected with said disk for rotating the same, one of said crank members passing through the sprocket-ring and constituting a fastening between the same and said disk.

3. A cycle-sprocket comprising a revolvable disk provided with an aperture, a sprocket-ring also provided with an aperture, cylindrical bolts detachably engaging said revolvable disk and said sprocket-ring for the purpose of removably securing said disk and sprocket-ring together, and of spacing said parts asunder, and a crank-arm extending through said aperture in said sprocket-ring and engaging said aperture in said disk, thus serving as an additional fastening for securing said disk and said sprocket-ring together, and also serving to rotate said parts.

709,985. DRESS-SHIELD. ALEXANDER T. STEVENSON, Bay City, Mich. Filed June 21, 1901. Serial No. 65,305. (No model.)

Claim.—1. In a dress-shield the combination with an inner folded lining having a thin flexible leaf of non-corrosive metal connected thereto and covering one side thereof; of a round cord secured in the fold of the inner lining, and an outer lining removably secured to said inner lining, substantially as described and for the purposes set forth.

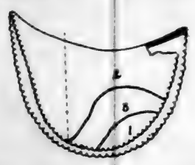

2. In combination with a dress-shield having an inner and outer folded lining and a thin folded leaf of flexible non-corrosive metal interposed between said linings; a round cord secured to the fold of one of said linings beneath the fold of the metal sheet, for the purposes set forth.

3. A dress-shield comprising an inner cloth lining, a thin flexible leaf of non-corrosive metal secured to said lining and covering the entire area of one side thereof, together with an outer cloth lining removably sewed to the inner lining over the metal leaf, substantially as described and for the purposes set forth.

4. In combination with the inner and outer linings of a dress-shield, a thin leaf of flexible non-corrosive metal interposed between said linings, and covering the entire area of their contiguous surfaces, substantially as described.

709,986. PACKAGE-CARRIER. EDGAR J. STEWART, Chicago, Ill. Filed Jan. 22, 1902. Serial No. 90,791. (No model.)

Claim.—1. A package-carrier comprising a tubular handle having a transverse groove on one side thereof communicating with the passage of the tube, and slots in the wall of the tube extending from the ends of the transverse groove to the opposite ends of the tube.

2. A package-carrier comprising a tubular handle having a transverse groove on one side thereof communicating with the passage of the tube, and inclined slots in the wall of the tube extending from the ends of the transverse groove to the opposite ends of the tube.

3. A package-carrier comprising a tubular handle having a transverse groove on one side thereof communicating with the passage of the tube, and spiral slots in the wall of the tube extending from the ends of the transverse groove to the opposite ends of the tube.

4. A package-carrier comprising a tubular handle having a diagonal groove on one side thereof communicating with the passage of the tube, and spiral slots in the wall of the tube extending from the ends of the transverse groove to the opposite ends of the handle, the said slots being spiraled in the same direction.

5. A package-carrier comprising a tubular handle having a transverse groove on one side thereof communicating with the passage of the tube, slots in the wall of the tube extending from the ends of the transverse groove to the opposite ends of the tube, and a right-angle slot at each end of the tube on the under side thereof and providing a lug, the said lug being grooved.

709,987. COW-TAIL HOLDER. JAMES D. STRONG, Buffalo, Minn. Filed Mar. 31, 1902. Serial No. 100,689. (No model.)

Claim.—1. A cow-tail holder involving a pair of pincers and a flexible connection attached to the same, which pincers have the curved jaws 3 with radial extensions or ends equipped with teeth 4, which jaws 3 are adapted to embrace the cow's tail, and which teeth 4 are adapted to pass through the hank of the tail, substantially as described.

2. In a cow-tail holder, the combination with the pincers 1 and 2, of the coil-spring 8 connecting said pincers, the pincers 1 being provided with the curved jaws 3 having the extended radial ends equipped with the interlapping teeth 4, and said pincers 1 being provided with the spring 5, and said pincers 2 being provided with the serrated jaws 6 and having the spring 7, with all of said parts arranged to coöperate, substantially as described.

709,987.

709,988. TOBACCO-ORDERING CHAMBER. JAMES M. TALIAFERRO, Lynchburg, Va. Filed July 1, 1901. Serial No. 66,716. (No model.)

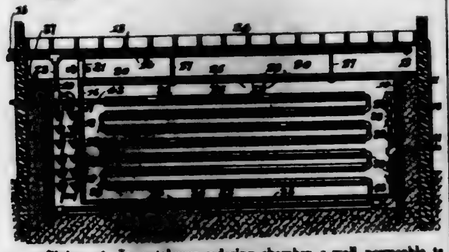

Claim.—1. In a tobacco-ordering chamber, a wall permeable to moisture, means for supplying a liquid to the rear face of the wall, and a heater located adjacent to the exposed face of the wall.

2. In a tobacco-ordering chamber, a wall permeable to moisture, means for supplying a liquid to the rear face of the wall, and heating-pipes secured to the exposed face of the wall.

3. In a tobacco-ordering chamber, a wall permeable to moisture, absorbent material located against the rear face of the wall, means for supplying water to the absorbent material, and a heating device located adjacent to the exposed face of the wall.

4. In a tobacco-ordering chamber, a tobacco-receiving chamber, an air-flue having an air-inlet, one wall of said flue being permeable to moisture, an absorbent filling located against the rear face of the wall, means for supplying water to the filling, a distributing air-chamber having a communication with the air-flue and provided with an escape-orifice communicating with the tobacco-receiving chamber, and a fan for creating and driving a current of air through the flue and into the distributing-chamber.

5. In a tobacco-ordering chamber, an upright flue having an air-inlet, one wall of said flue being permeable to moisture, an absorbent filling located against the rear face of the wall, means for supplying water to the filling, a distributing air-chamber located in the upper portion of the ordering-chamber and having communication with the air-flue, said chamber being provided with escape-orifices that communicate with the chamber, and a fan for creating and driving a current of air through the flue and into the distributing-chamber.

6. In a tobacco-ordering chamber, side walls comprising an outer moisture-proof sheathing, an inner sheathing permeable to moisture, a filling of earth located between and resting against the inner faces of the sheathings, and a perforated water-supply pipe arranged longitudinally above the earth.

7. In a tobacco-ordering chamber, side walls comprising an outer moisture-proof sheathing, an inner sheathing of brick spaced from the outer moisture-proof sheathing, a filling of earth located between the sheathings and resting against the inner face of the brick, and means for supplying water to the earthen filling.

8. In a tobacco-ordering chamber, a floor made of absorbent material, a deck located over and spaced from the floor forming an intermediate air-space, said deck being provided with an air-inlet, an air-conducting flue leading from the air-space to the upper portion of the chamber, an air-distributing chamber located in the upper portion of the ordering-chamber, said distributing-chamber having a communication with the air-flue and provided with discharge-orifices, and means for creating a current of air and driving it from the lower air-space through the flue into the distributing-chamber.

9. In a tobacco-ordering chamber, an earthen floor, a deck comprising spaced slats located over said floor and forming an intermediate air-space, an air-conducting flue leading from the air-space to the upper portion of the ordering-chamber, an air-distributing chamber communicating with the air-flue and having its lower wall consisting of spaced slats, and a fan for creating a current of air and driving it from the lower air-space through the flue and into the distributing-chamber.

10. In a tobacco-ordering chamber, a floor made of absorbent material, a deck located above the floor whereby an air-space is formed between the deck and floor, said deck having an air-inlet and an air-outlet that are in communication with the chamber, means for supplying water to the floor, and means for passing a current of air over the floor and through the outlet.

11. In a tobacco-ordering chamber, the tobacco-receiving chamber, an end wall comprising an inner sheathing permeable to moisture, an absorbent filling located in rear of the sheathing, means for supplying a liquid to the absorbent, a partition located adjacent to but spaced from the sheathing and forming an intermediate passage-way or flue which is in communication with the said chamber, and means for passing a current of air through said passage-way.

12. In a tobacco-ordering chamber, a floor made of absorbent material, a deck located over and spaced from the floor forming an air-receiving chamber, said deck being provided with an air-inlet, air-moistening means located in the air-receiving chamber, an inclosed air-flue leading from the air-space to the upper portion of the ordering-chamber, and a fan for driving the air from the air-space and into the flue.

13. In a tobacco-ordering chamber, an earthen floor, means for moistening said floor, a deck located over and spaced from the floor forming an intermediate space, said deck being provided with an air-inlet, an air-conducting flue leading from the air-space to the upper portion of the chamber, vertically-disposed rows of troughs arranged in said flue, absorbent wicks leading from one trough to the next, an air-distributing chamber arranged in the upper portion of the ordering-chamber, said distributing-chamber having a communication with the air-flue and provided with discharge-orifices, and a fan for creating a current of air and driving it from the lower air-space through the flue and into the distributing-chamber.

14. In a tobacco-ordering chamber, an end wall comprising an inner sheathing permeable to moisture, an absorbent filling located in rear of the sheathing, means for supplying a liquid to the absorbent, a partition located adjacent to but spaced from the sheathing and forming an intermediate passage-way, and a fan for creating a current of air in said passage-way.

15. In a tobacco-ordering chamber, an end wall comprising an inner sheathing permeable to moisture, an absorbent filling located in rear of the sheathing, a water-supply pipe arranged above the filling, a partition located adjacent to but spaced from the sheathing forming an intermediate air passage-way, a deck located above the floor of the chamber forming an intermediate air-space that is connected with the passage-way said deck being provided with an air-orifice, and a fan for creating a current of air in said passage-way and air-space.

16. In a tobacco-ordering chamber, an end wall comprising an inner permeable sheathing, an earthen filling located in rear of the sheathing, a supply-pipe located above the earthen filling, a partition arranged adjacent to but spaced from the sheathing forming an intermediate passage-way, an earthen floor, a water-supply pipe arranged upon the floor, a deck disposed over the floor and forming an intermediate air-space that is connected with the passage-way, said deck being provided with an air-orifice, a ceiling, a wall arranged beneath the ceiling and forming a distributing-chamber therebetween which communicates with the air passage-way, said wall having a discharge orifice, and a fan for moving the

air from the lower air-space through the flue and into the distributing-chamber,

17. In a tobacco-ordering chamber, a wall comprising an inner sheathing permeable to moisture, an absorbent filling located against the rear face of the sheathing, means for supplying a liquid to the absorbent, and heater-pipes arranged upon the exposed face of the sheathing.

18. In a tobacco-ordering chamber, side walls comprising spaced sheathings, the inner of which is permeable to moisture, an earthen filling arranged between the sheathings, a perforate water-pipe disposed over the filling, heater-pipes mounted upon the exposed face of the inner sheathing, and casings covering the heater-pipes.

19. A tobacco-ordering chamber having an air-conducting flue, an air-moistener consisting of troughs arranged one below the other within the flue, absorbent wicks leading from one trough to the next, and means for generating and moving a current of air over said moistener.

20. In a tobacco-ordering chamber, a floor, a deck comprising spaced slats located over said floor and forming an intermediate air-space, an air-conducting flue leading from the air-space to the upper portion of the ordering-chamber, an air-distributing chamber communicating with the air-flue, and a fan for creating a current of air and driving it from the lower air-space through the flue and into the distributing-chamber.

21. In a tobacco-ordering chamber, a floor, a deck located over and spaced from the floor forming an intermediate space, provided with an air-inlet, an air-conducting flue leading from the air-space to the upper portion of the chamber, rows of troughs arranged in said flue, absorbent wicks leading from one trough to the next, an air-distributing chamber arranged in the upper portion of the ordering-chamber, said distributing-chamber having a communication with the air-flue and provided with discharge-orifices, and a fan for creating a current of air and driving it from the lower air-space through the flue and into the distributing-chamber.

709,939. COUCH. CLARK F. TRAVER, Erie, Pa., assignor to Wilcox Brothers, Joliet, Ill., a Corporation of Illinois. Filed Jan. 9, 1902. Serial No. 88,081. (No model.)

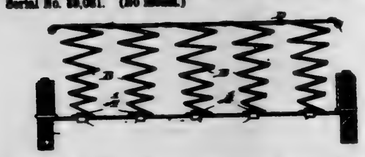

Claim.—In a couch, in combination, a frame; spiral springs supported by the frame; longitudinal side wires; and zigzag cross-wires extending between alternate opposite springs and secured to said springs near the upper ends of the latter, said cross-wires having loops at their ends for surrounding said longitudinal side wires for providing a sliding and yielding connection between the cross-wires and the side wires.

709,940. VALVE-LEVER SPOOL. PHILIP THOMAS, Brooklyn, N. Y., assignor to Henry R. Worthington, a Corporation of New Jersey. Filed Dec. 19, 1901. Serial No. 86,490. (No model.)

Claim.—1. A valve-lever spool consisting of a piece of metal with piston-rod opening 1 at one side of the center and groove 7 and ears 8 at the opposite side of the center adapted to receive the valve-lever, substantially as described.

2. A valve-lever spool consisting of a cylindrical piece of metal with piston-rod opening 1 at one side of the center of the spool and with the center of the piston-rod opening in line with the center of the spool, and groove 7 and ears 8 at the opposite side of the center adapted to receive the valve-lever, and having position-pin opening 2 transverse to and intersecting the piston-rod, and a set-screw opening 5 on the opposite side of the piston-rod opening from the position-pin opening, substantially as described.

3. The combination with piston-rod C and valve-lever A, of spool D formed of a piece of metal with piston-rod opening 1 at one side of the center, and groove 7 and ears 8 at the opposite side of the center receiving the valve-lever, and means for securing the spool on the piston-rod, substantially as described.

4. The combination with piston-rod C and valve-lever A, of spool D formed of a cylindrical piece of metal with piston-rod opening 1 at one side of the center of the spool and with the center of the piston-rod opening in line with the center of the spool, and groove 7 and ears 8 at the opposite side of the center receiving the valve-lever, position-pin 3 passing through opening 2 in the spool and notch 4 in the piston-rod, and set-screw 6 bearing against the piston-rod on the opposite side from the position-pin, substantially as described.

5. A spool for connecting a lever to a reciprocating rod consisting of a cylindrical piece of metal with opening 1 for the rod at one side and in line with the center of the spool, and groove 7 and ears 8 on the opposite side of the center adapted to receive the lever, substantially as described.

709,941. OIL-BURNER. SABIEN M. TRAFF, San Diego, Cal. Filed Sept. 25, 1901. Serial No. 76,269. (No model.)

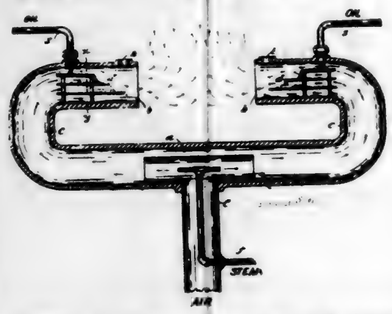

Claim.—1. In an oil-burner, the combination with a burner-pipe circular in cross-section and having two oppositely-arranged discharge branches, oil-supply pipes communicating with the discharge branches, and air and steam supply pipes communicating with the burner-pipe, of a series of shelves arranged in each discharge branch, beneath the oil-supply pipes, said shelves disposed at a slight incline toward the discharge end of the discharge branches, and the uppermost shelf having side flanges and a flange at its rear end, the said shelves being stepped at one end whereby the oil spreads over the surface of each shelf before being discharged therefrom, as and for the purpose described.

2. In a device of the character described, the combination of a burner having integral oppositely-arranged discharge branches circular in cross-section, means for feeding air or steam to said burner, oil-supply pipes communicating with the discharge-orifices, and shelves arranged within the discharge branches under the discharge of the supply-pipes, the ends of the shelves adjacent the discharge of the branches being stepped, with side and rear end flanges on the uppermost shelf, as and for the purpose described.

709,942. CASTING-BOX. EDWIN D. TURNER, New York, N. Y., assignor, by direct and mesne assignments, to Robert Hoe and Charles W. Carpenter, under the firm-name of R. Hoe & Company, New York, N. Y. Filed Oct. 7, 1899. Serial No. 732,846. (No model.)

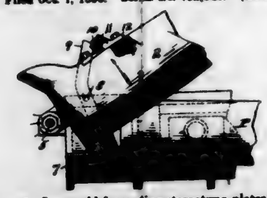

Claim.—1. In a mold for casting stereotype-plates, the combination with the body and cover, one of said parts being movable, of means operated by the movable part for displacing the plate lengthwise of the mold, said means being thrown into operation by the act of opening the box, substantially as described.

2. In a mold for casting stereotype-plates, the combination with the body and the movable cover, of means for displacing the plate lengthwise of the mold, and devices positioned to be operated by the cover for throwing said means into operation when the box is opened, substantially as described.

3. In a mold for casting stereotype-plates, the combination with the body and cover, of a movable head-gage, and mechanism operating on the gage for giving it a movement to displace the plate lengthwise of the mold, substantially as described.

4. In a mold for casting stereotype-plates, the combination with the body and cover, of a pivoted head-gage, and mechanism operating on the gage to swing it on its pivot whereby it displaces the plate lengthwise of the mold, substantially as described.

5. In a mold for casting stereotype-plates, the combination with the body and cover, one of said parts being movable, of a movable head-gage and means whereby the movable part moves the gage when the box is opened, the movement of the gage serving to displace the plate lengthwise of the mold, substantially as described.

6. In a casting-box, the combination with the body and cover, of a movable head-gage, and means actuated by the cover for moving said head-gage to displace the cast when the box is opened, substantially as described.

7. In a mold for casting stereotype-plates, the combination with the body and cover, of a movable head-gage, and a projection moving with the cover and operating when the cover is lifted to move the head-gage and displace the cast, substantially as described.

8. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a head-gage, and means carried by the cover and operating to move the head-gage to displace the cast when the cover is turned on its pivot to open the box, substantially as described.

9. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a head-gage pivoted in the box, and a projection moving with the cover and operating when the cover is turned on its pivot to swing the head-gage on its pivot and displace the cast, substantially as described.

10. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a head-gage, and a projection moving with the cover and operating to move the head-gage to displace the cast when the cover is swung on its pivot, said projection being arranged to yield on the closing movement of the cover, substantially as described.

11. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a head-gage, and a spring-controlled projection moving with the cover and operating to move the head-gage to displace the cast when the cover is swung on its pivot, substantially as described.

12. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a head-gage also pivoted thereto, and a spring-controlled projection moving with the cover and operating when the cover is swung on its pivot to swing the head-gage on its pivot and displace the cast, substantially as described.

13. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a head-gage also pivoted thereto, and devices independent of the gage, said devices acting to swing the gage on its pivot to displace the cast lengthwise of the box when the box is opened, substantially as described.

14. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a projection on the cover, and a head-gage having a part lying in the path of the projection, whereby as the cover is swung on its pivot to open the box the projection strikes the head-gage and moves it to displace the cast, substantially as described.

15. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a projection on the cover, and a pivoted head-gage having a part lying in the path of the projection, whereby as the cover is swung on its pivot to open the box the projection strikes the head-gage and turns it on its pivot to displace the cast, substantially as described.

16. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a projection pivoted to the cover, and a head-gage pivoted to the body and having a part lying in the path of the projection on the cover, the projection being arranged so that it strikes and moves the head-gage as the cover moves in one direction and turns on its pivot to allow the gage to pass as the cover moves in the other direction, substantially as described.

17. In a mold for casting stereotype-plates, the combination with the body, of a cover pivoted thereto, a projection pivoted to the cover, a spring for controlling the movement of the projection, and a head-gage pivoted to the body and having a part lying in the path of the projection on the cover, the projection being arranged so that it strikes and moves the head-gage as the cover moves in one direction and turns on its pivot to allow the gage to pass as the cover moves in the other direction, substantially as described.

709,948. CIGAR-MACHINE. WILLIAM A. TYRRER, Providence, R. I. Filed Jan. 31, 1902. Serial No. 92,003. (No model.)

Claim.—1. In a cigar-machine, the combination of three rolls shaped to form the body portion of a cigar, comprising two bottom rolls and a movable top roll, means for operating said rolls, a rigid piece having a thimbling-socket with a notch therein, a conical roll connected to the top roll at an angle with the axis thereof, and means for moving the top roll down so that its conical roll will set into said notch in the rigid thimbling-socket.

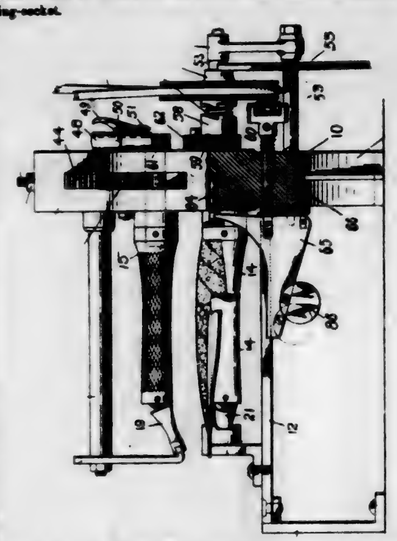

2. In a cigar-machine, the combination of a rigid piece having a thimbling-socket, and rolls abutting against and journaled in the rigid piece with their peripheries slightly overlapping the edges of the thimbling-socket.

3. In a cigar-machine, the combination of three rolls shaped to form the body portion of a cigar, comprising two bottom rolls and a movable top roll, means for operating said rolls, a rigid piece having a thimbling-socket with a notch therein, a conical roll connected to the top roll at an angle with the axis thereof, and adapted to set into said notch in the thimbling-socket, and short conical rolls connected with the bottom rolls at angles with their axes, and abutting against the thimbling-socket piece so that their edges slightly overlap the edge of the thimbling-socket.

4. A roll for cigar-machines shaped to conform to the body portion of a cigar, and having serring extending helically around the surface thereof.

5. The combination of the roll of a cigar-machine, a conical extension therefor, and a ball-and-socket joint connecting said parts, comprising a ball, a fastening-screw securing the ball on the spindle of the conical extension, a ring holding the ball in place, a screw threaded partly into the ring, and partly into the body portion of the roll to fasten the ring in place, and a screw acting as a spline and engaging a groove in the ball, said parts being arranged so that the walls of the spherical socket will prevent the fastening-screw from working loose.

6. In a cigar-machine, the combination of rolls shaped to form the body of a cigar, and a thimbling device for the end of the cigar, one of said rolls being provided with serring extending helically around the same and acting to feed the material toward the thimbling end of the machine.

7. In a cigar-machine, the combination of rolls shaped to form the body of a cigar, a thimbling device for the end of the cigar, a normally retracted pusher for engaging the other end of the cigar to force the same toward the thimbling end of the machine, and a starting device connected to release said pusher, permitting the same to automatically move into operative position when the machine is started.

8. In a cigar-machine, the combination of rolls shaped to form the body of a cigar, a thimbling device for the end of the cigar, a plunger for engaging the opposite end of the cigar, a weighted bell crank for operating the plunger, the weight on which may be adjusted, and a spring-pressed retracting-rod normally holding the plunger out of operation, and arranged to release the pusher when engaged by the driving-pulley as the same is shifted laterally to start the machine.

9. In a cigar-machine, the combination of rolls shaped to form the body portion of a cigar, comprising bottom rolls, a vertically-movable piece, a top roll journaled therein, a handle for moving the top roll into and out of operative position, pinions turning with ends of said rolls, a central driving-gear arranged to mesh with and drive all three of said pinions when in operative position, and a starter-gear driven from one of

the bottom-roll pinions and located at one side of the center in position to start the rotation of the top roll before the same is fully brought into operative position.

10. In a cigar-machine, the combination of the bottom rolls, a vertically-movable piece, a top roll having its shaft seated in half-bearings in the vertically-movable piece, a spring holding the top roll down in its bearings, means for adjusting the tension of the spring, a rack carried by the vertically-movable piece, a lifting-gear meshing therewith, and an operating-handle for the lifting-gear for moving the top roll into and out of operative position.

709,944. PIPE-VISE. JOHN B. VOORHAAGE and THOMAS GRAY, Brooklyn, N. Y. Filed Jan. 3, 1902. Serial No. 88,572. (No model.)

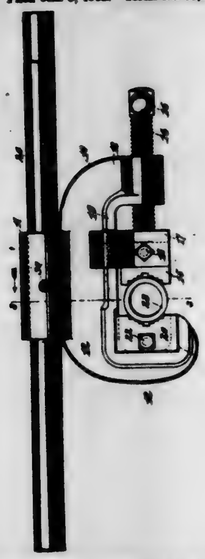

Claim.—1. The portable vise comprising the frame, the gripping-jaws, and the operating-screw for the movable one of said jaws, combined with the longitudinal sleeve 11 at the outer edge of said frame and parallel with the axial center of said screw and adapted to receive the handle 24; substantially as set forth.

2. The portable vise comprising the frame, the operating-screw, the sliding frame 17 carried by said screw, and the jaws carried by said frames and recessed on their edges to offset the requisite gripping action, combined with the sleeve 11 constituting a part of said frame and adapted to receive the piece of pipe or handle by which the vise may be suspended; substantially as set forth.

3. The vise comprising the frame, operating-screw, sliding frame 17 carried by said screw, jaw 15 carried by said frame 17, and the jaws 20, and the vise-frame having the recesses 21 to receive said jaws 20, and said jaws 20 being drawn toward one another and held in said recesses by the bolt 23, combined with the sleeve 11 extending longitudinally of the vise-frame and at outer edge thereof, said sleeve 11 being adapted to detachably receive a handle 24 by which the vise may be suspended between the knees of a workman; substantially as and for the purpose set forth.

709,945. BACK AND ARM REST FOR WATER-CLOSET OR OTHER SEATS. HARRY J. WARE, Iowa City, Iowa. Filed Apr. 3, 1902. Serial No. 101,151. (No model.)

Claim.—1. A back and arm rest for water-closets and commodes, the back and arm rest being unattached and independent thereof, and means for rendering the same vertically adjustable, substantially as and for the purpose set forth.

2. A back and arm rest for water-closets and commodes, said back and arm rest being independent thereof and unattached thereto, and connected to a vertically-adjustable rod, substantially as and for the purpose described.

3. A back and arm rest for water-closets and commodes unattached thereto and independent thereof, said back and arm rest being integral and vertically adjustable, substantially as and for the purpose specified.

4. A back and arm rest for water-closets and commodes unattached thereto and independent thereof, said back and arm rest being substantially at right angles to each other and having a vertical adjustment, substantially as and for the purpose set forth.

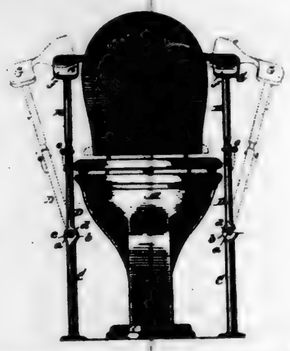

5. A back and arm rest for water-closets and commodes independent thereof and unattached thereto and having a vertical and lateral adjustment, substantially as and for the purpose specified.

6. A back and arm rest for water-closets and commodes, independent thereof and unattached thereto, a swingable standard, and a rod to which the back and arm rest is connected, said rod being adjustably connected to the standard, substantially as and for the purpose specified.

7. In a back and arm rest for the seats of water-closets or commodes, a stationary standard, a standard pivotally connected thereto, a rod carrying the back and arm rest and adjustably connected to the standard, and means for holding the rod in its adjusted position, substantially as and for the purpose specified.

709,946. GARBAGE-FURNACE. ROBERT I. WALKER, New York, N. Y. Filed Apr. 19, 1900. Serial No. 13,674. (No model.)

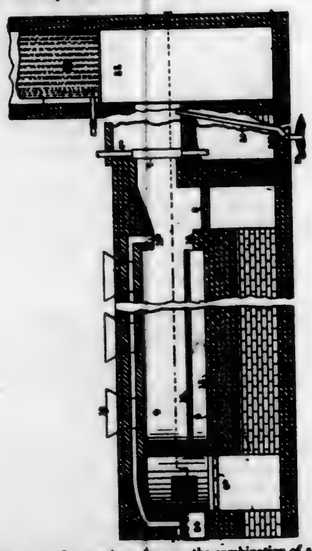

Claim.—1. In a garbage-furnace, the combination of a pair of fires, a wall separating said fires; a third fire and an imperforate false garbage-floor between said third fire and each of said first two fires, the said false floor being concave and being exposed both below and above to the action of the heat and flame.

2. In a garbage-furnace, the combination of three fires and an imperforate false garbage-floor, the said floor being concave and exposed both above and below to the action of the heat and flame and located between said fires so that two fires are consuming solid and liquid garbage and the third fire gases from said garbage.

3. In a garbage-furnace, the combination of three fires; an imperforate false garbage-floor; the said garbage-floor being concave and exposed both above and below to the action of the heat and flame and located between said fires so that two fires are consuming solid and liquid garbage and the third fire the gases from said garbage and means for reversing the draft over said fires.

4. In a garbage-furnace, the combination of a pair of fires located near the stack end of the furnace; a third fire located near the forward end of the furnace; an imperforate false garbage-floor, said floor being concave and exposed both above and below to the action of the heat and flame and located between said third fire and each of the pair of fires; a wall separating said garbage-floors and a swinging damper adapted to reverse the draft over said fires.

709,947. HEATER. WILLIAM L. WARNER, Chicago, Ill. Filed Sept. 26, 1901. Serial No. 76,606. (No model.)

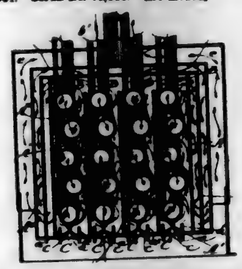

Claim.—1. A heater comprising a chamber; approximately horizontal pipes in the chamber one above another connected consecutively in continuous course, the uppermost pipe being extended out through the wall of the chamber and serving as the cold-air inlet; and a pipe leading from the lowest of said pipes upward and out of the chamber; burners having their flames directed against the lowest pipe, the chamber having ingress for air to support combustion below the lowest pipe, and having egress for the products of combustion after passing to the upper part.

2. A heater comprising a chamber and plurality of air-ducts therein, each consisting of a plurality of approximately horizontal sections of pipe connected consecutively in continuous course, one above the other, the upper section of each duct leading out through the wall of the chamber, and serving as a cold-air inlet for the air-duct to which it pertains, the lowest section having connection leading upward and out of the chamber; independently-controlled burners under the lowest section of each of the ducts and means for causing the flame from each burner to circulate about the several sections of the ducts, respectively, under which they are located, to heat said ducts each independently of the remainder.

3. A gas-heater comprising a chamber and a plurality of air-ducts therein, each duct being arranged in successive pipe-sections one above another connected in continuous course emerging from the chamber at the upper end of the course, and having connection from the lowest section leading upward and also emerging from the chamber; burners located under said ducts respectively, and means for independently controlling said burners, the chamber having vertical partitions between said several air-ducts, whereby the flame and the current of products of combustion from each burner is confined about the pipe-section of the duct under which the burner is located, the chamber having escape for the products of combustion at the upper part and ingress for air at the lower part.

4. A gas-heater comprising a chamber and air-ducts therein, consisting of successively-connected pipe-sections one above another, forming a continuous course, said course of pipe leading out of the chamber at the upper part, and having connection from the lower end leading upward and out of the chamber; burners having their flames directed against the lowest section of said course and means for controlling each burner; the chamber having escape for the products of combustion at the upper part, and ingress for air to support combustion at the lower part.

5. A gas-heater comprising a chamber and an air-pipe consisting of zigzag courses one above another continuously connected, the upper course leading out of the chamber, and the lowest course leading upward and out of the chamber; burners underneath the lowest course, with means for controlling the same, the chamber having an interior false wall, an intermediate and outer wall with two inner spaces, the inner false wall being apertured at the upper part to permit the escape for the products of combustion, the intermediate wall being apertured at the lower part to continue such escape, and a final discharge being provided through the outer most wall at the upper part; whereby the gaseous products of combustion are taken from the top of the chamber and forced to circulate downward and upward before final escape.

6. A gas-heater comprising a chamber and air-duct in the chamber, consisting of a series of approximately horizontal sections one above another connected in continuous course, such ducts leading out of the chamber at the upper end, and having from its lower end connection leading upward and out of the chamber; burners under the lowest pipe-section; the chamber having ingress for air to support combustion, and egress for the product of combustion above the duct, said sections of the air-duct being placed with a narrow space at one side and a wider space at the opposite side for the passage of the gases of combustion, alternate sections having the spaces of corresponding width on opposite sides; whereby the current of gases of combustion is forced to circulate back and forth between the pipe-sections as it rises to escape from the chamber.

7. A gas-heater comprising a chamber and air-pipe duct in the chamber, consisting of successive sections one above another connected in continuous course, the uppermost section leading out of the chamber at the upper end, and the duct having connection from the lower end leading upward and out of the chamber; burners having their flame directed against the lowest section of the duct with means for controlling the same; the chamber having a false inner wall apertured at the upper part for the escape of gases and having a second wall outside such false wall apertured at the bottom for such escape.

8. A gas-heater comprising a chamber and plurality of air-ducts therein each consisting of successively-connected pipe-sections, and elbows forming a continuous course leading out of the chamber at the upper part and having connection from the lower end leading upward out of the chamber; burners under the lower section of each such course means for controlling such burners; the wall of the chamber having an interspace and having apertures at the lower part leading into such interspace and apertures for the escape for the products of combustion leading from said interspace at the upper part of the chamber and jacket inclosing the chamber with an intervening air-space; accesses for air at the lower part of said air-space and a heating-pipe leading from the air-space at the upper part.

709,948. MEANS FOR PROMOTING COMBUSTION. FREDERICK W. WERNER, Hempstead, N. Y. Filed Apr. 21, 1900. Serial No. 13,732. (No model.)

Claim.—1. As a new article of manufacture the exit-pipe section B for stoves and furnaces, said pipe-section B presenting the usual exterior surfaces and having secured within it the inner concealed sleeve G forming the air-chamber H which is closed at its outer end to the interior of said section B and contains the restricted outlets at its inner end leading into the interior of said section B, said section B also having the inlet-apertures E for air to the outer end of said chamber, and said sleeve G being in the form of two truncated cones merging into one another and forming the contracted throat at their meeting ends; substantially as set forth.

2. As a new article of manufacture the exit-pipe section B for stoves and furnaces, said pipe-section B presenting the usual exterior surfaces and having centered within it the inner concealed sleeve G forming the air-chamber H which is closed at its outer end to the interior of said section B and contains the restricted outlets at its inner end leading into the interior of said section B, said section B also having the inlet-apertures E for air to the outer end of said chamber, and being provided at a point beyond the outer end of said sleeve G with the damper D; substantially as set forth.

709,949. VALVE-GEAR. PAUL H. WHITE, Indianapolis, Ind., assignor to White Steam Wagon Company, Indianapolis, Ind., a Corporation of Indiana. Filed Oct. 3, 1901. Serial No. 77,373. (No model.)

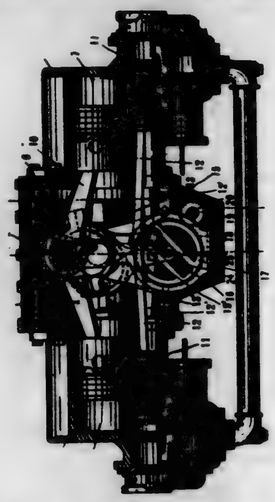

Claim.—1. In a valve-gear, the combination of a pair of eccentrics, a pair of straps and eccentric-arms mounted on said eccentrics, a pair of valves, intermediate connections between each valve and one of the eccentric-arms, means for engaging and guiding each of said eccentric-arms, and means for shifting said guiding means so as to simultaneously and oppositely offset both of the eccentric-arms.

2. The combination of two pairs of cylinders, a pair of eccentrics, an eccentric-arm carried by each eccentric, intermediate driving connections between said cylinders and the eccentrics, a valve for each cylinder, intermediate connections between the valves of one pair of cylinders and one of the eccentric-arms, intermediate connections between the valves of the other pair of cylinders and the other eccentric-arm, means for engaging and guiding both eccentric-arms, and means for shifting said engaging and guiding means so as to simultaneously and oppositely offset both eccentric-arms.

3. In a valve-gear, the combination of a pair of eccentrics, a pair of eccentric-arms mounted upon said eccentrics, a slide-block carried by each of said eccentric-arms, a pair of valves, a pair of links connecting said valves to said eccentric-arms, a circular plate having a single guide-slot adapted to receive both of the slide-blocks, means for supporting said plate, and means for rotating said plate in its support.

4. In a valve-gear, the combination of a pair of eccentrics, a pair of eccentric-arms mounted upon said eccentrics, a circular plate provided with means for engaging and guiding both of said eccentric-arms, a support for said plate, means for rotating said plate in its support, a pair of valves, and intermediate connections between each valve and an eccentric-arm.

5. The combination with a pair of high-pressure cylinders and a pair of low-pressure cylinders, of a pair of eccentrics, intermediate driving connections between said cylinders and the eccentrics, an eccentric-arm carried by each of said eccentrics, a pair of valves for the high-pressure cylinders, intermediate connections between the said pair of valves and one of the eccentric-arms, a pair of valves for the low-pressure cylinders, intermediate connections between said pair of valves and the other eccentric-arm, a circular plate provided with means for engaging and guiding both eccentric-arms, a support for said plate, and means for rotating said plate in its support.

6. The combination with two pairs of cylinders, of a pair of eccentrics, an eccentric-arm carried by each eccentric, intermediate driving connections between said cylinders and the eccentrics, a valve for each cylinder, intermediate connections between the valves of one pair of cylinders and one of the eccentric-arms, intermediate connections between the valves of the other pair of cylinders and the other eccentric-arm, a circular plate provided with means for engaging and guiding both eccentric-arms, a support for said plate, and means for rotating said plate in its support.

7. In a valve-gear, the combination of an eccentric, an eccentric-arm mounted thereon, a valve, intermediate connections between said arm and valve, a circular plate, means carried by said plate for engaging and guiding the eccentric-arm, a fixed support for the plate, a series of gear-teeth carried by said plate, and a rotatable pinion arranged to engage said gear-teeth, for the purpose set forth.

709,950. HAME AND TRACE CONNECTOR. GEORGE B. WITTENS, Marion, Iowa. Filed Aug. 1, 1901. Serial No. 70,488. (No model.)

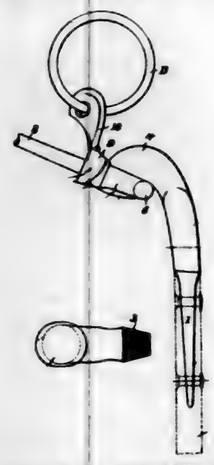

Claim.—1. A hame-clip adapted to be rigidly attached to the front end of a hame-tug or trace in the line of draft, and constructed with a rigid body curved laterally toward the hame and terminating in a strong rounded neck and a flaring head, in combination with a staple having a bow through which said neck extends and against the front of which it is adapted to pull, and a bold-out bearing against which said flaring head of the clip is adapted to press at the back of the staple, substantially as hereinbefore specified.

2. A combined hame-clip, staple and bold-out bearing comprising a clip adapted to be rigidly attached to the front end of a hame-tug or trace in the line of draft, and constructed with a rigid body curved laterally toward the hame and terminating in a strong rounded neck and a flaring head, a staple having a heavy rounded bow and a bold-out bearing constructed with a rounded notch in its back, the surfaces of said bow and bearing merging into each other and loosely fitted to said neck and to the adjoining side of said head of the clip, substantially as hereinbefore specified.

709,951. GAS-BURNING GRATE-BAR. JOHN A. ADAMS, Akron, Ohio. Filed Aug. 5, 1901. Serial No. 70,987. (No model.)

Claim.—1. An improved gas-burning grate-bar consisting of a bar adapted to be interposed in a furnace having a line of tubes integral therewith with mixing-tubes in alinement therewith and slightly separated therefrom, and a gas-supply pipe having jet-openings coincident with the lower ends of said mixing-tubes and slightly separated therefrom, substantially as shown and described.

2. An improved gas-burning grate-bar consisting of a bar adapted to be interposed in a furnace having a line of tubes integral therewith, with mixing-tubes detachably connected, and in alinement therewith and slightly separated therefrom, and a gas-supply pipe detachably connected with said mixing-tubes having jet-openings coincident with the lower ends of said mixing-tubes slightly separated therefrom, substantially as shown and described.

3. An improved gas-burning grate-bar consisting of a bar adapted to be interposed in a furnace having a line of tubes integral therewith and lateral openings at the sides of said tubes, with mixing-tubes in alinement with said tubes and slightly separated therefrom and a gas-supply pipe having jet-openings coincident with the lower ends of said mixing-tubes, and slightly separated therefrom, substantially as and for the purpose hereinbefore set forth.

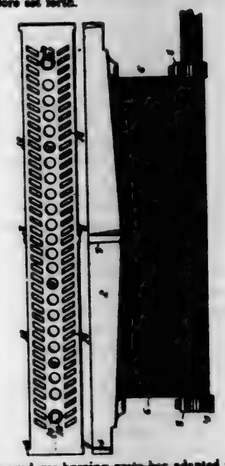

4. An improved gas-burning grate-bar adapted to be interposed in a grate having a line of tubes united with and extending from its lower face, their openings being coincident with holes in said grate-bar, in combination with mixing-tubes in alinement therewith and slightly separated therefrom, and a gas-supply pipe having jet-openings coincident with the lower end of said mixing-tubes and slightly separated therefrom, substantially as shown and described.

709,952. ENVELOP. ANDREW J. ARENDELL, Sparta, Tenn. Filed Mar. 21, 1901. Serial No. 52,216. (No model.)

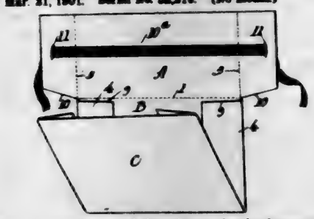

Claim.—An envelop, consisting of a pocket having an open edge, an address-front connected to one side of the open edge of the pocket and capable of being folded over upon the pocket to close the open edge thereof, opposite sealing-flaps carried by the opposite ends of the foldable front, and a cord lying across the inner side of the foldable front and projected outwardly through perforations in the end flaps, the projected ends of the cord being of a length for mutual connection when the envelop is sealed, whereby the cord is constructed and arranged to embrace the pocket.

709,953. TOOL-HOLDER. JOHN F. RACHMAN, Greensburg, Pa. Filed Feb. 15, 1902. Serial No. 94,169. (No model.)

Claim.—A tool-holder comprising a head carrying an integral shank with grooves formed in the upper face of the head, a clamp-nut carried by the head and having grooves upon its under side registering with said grooves of the head, an extension formed integral with the shank and head and having a groove formed on its upper side registering with one of the grooves on the said head for receiving the shank of the tool, a clamp-nut carried by the head and having grooves on its under side and registering with the grooves of the head, a bolt for clamping the clamp-nut to the head comprising a rounded apertured shank engaging the head and clamp-nut and having an enlarged milled head on its lower end forming a shoulder for engagement with the under side of the first-named head, a reduced threaded upper end on said bolt forming a shoulder, the clamp-nut being recessed to form a washer on its under side adapted for engagement with said last-named shoulder of the bolt, a nut upon the said threaded end of the bolt, the shank of the bolt being peripherally grooved, and a screw operating through the head and engaging in said groove of the bolt-shank, substantially as described.

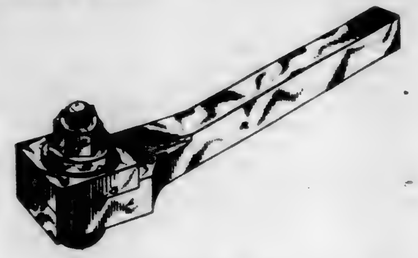

709,954. APPARATUS FOR PRODUCING WHITE LEAD. JOHN W. BAILEY, Jersey City, N. J., assignor to the General Lead Company, a Corporation of New Jersey. Filed Aug. 1, 1900. Serial No. 25,503. (No model.)

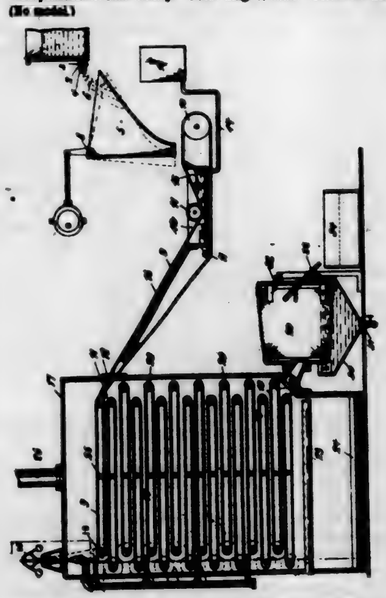

Claim.—1. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a belt adapted to carry the comminuted lead into the corroding-chamber, means for supporting and moving the belt and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

2. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to support the comminuted lead and convey it into the corroding-chamber, means for supporting and moving the carrier, and means for supplying a suitable corroding-gas to the chamber, substantially as described.

3. In apparatus for making white lead or similar products, the combination with a corroding-chamber, a belt adapted to carry the comminuted lead into the corroding-chamber, means for supporting and moving the belt, means for feeding comminuted lead to the belt, means for supplying a moistening agent to the lead and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

4. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to support the comminuted lead and convey it into the corroding-chamber, means for supporting and moving the carrier, means for feeding comminuted lead to the carrier in masses wholly or partly separated, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

5. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the

comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for applying a moistening agent to the lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

6. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting the lead and feeding it into the feed-chute, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

7. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

8. In apparatus for making white lead or similar products, the combination with a corroding-chamber, a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means to automatically maintain a predetermined level of the liquid in said bath, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

9. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, means for feeding comminuted lead to the carrier in masses wholly or partly separated, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

10. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

11. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting lead and feeding it into the feed-chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

12. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means adapted to support the comminuted lead in an uncompacted condition and carry it in that condition through said chamber and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

13. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support adapted to carry the comminuted lead through said chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

14. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means adapted to support the comminuted lead in an uncompacted condition and carry it in that condition into and through said chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

15. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support adapted to carry the comminuted lead into and through said chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

16. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting the comminuted lead and carrying it into said chamber without substantial disturbance, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

17. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting the comminuted lead and carrying it into and through said chamber without substantial disturbance, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

18. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support for carrying comminuted lead into said chamber without substantial disturbance, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

19. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support for carrying comminuted lead through said chamber without substantial disturbance, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

20. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting comminuted lead and carrying it into said chamber without substantial disturbance, means for feeding comminuted lead onto said carrier and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

21. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for supporting comminuted lead and carrying it into and through said chamber without substantial disturbance, means for feeding the comminuted lead onto said carrying means, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

22. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for comminuting metallic lead so that it may be maintained in an uncompacted condition, means for supporting the comminuted lead and carrying it into said chamber without compacting it, said comminuting means being arranged to feed the comminuted material onto said carrying means, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

23. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for comminuting the lead in the form of fiber, and means for supporting the fiber and carrying it into said chamber without compacting it, said comminuting means being arranged to feed the comminuted lead onto said carrier and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

24. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means for so comminuting the lead as to form fiber, and means for supporting the fiber and carrying it into and through said chamber without compacting it, said comminuting means being arranged to continuously feed the fiber as it is formed onto said carrying means, means for supporting and continuously moving the carrying means, and means for supplying moisture to the corroding-chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

25. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a reticulated or permeable support for carrying comminuted lead through said chamber without substantial disturbance, means for feeding comminuted lead to said support, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

26. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, substantially as set forth.

27. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier and means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, substantially as set forth.

28. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, substantially as set forth.

29. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting the lead and feeding it into the feed-chute, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

30. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, means for feeding comminuted lead to the carrier in masses wholly or partly separated, a bath provided with a moistening agent, through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

31. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier, a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

32. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the comminuted lead into the corroding-chamber, means for supporting and moving the carrier a feed-chute to feed comminuted lead to the carrier, the chute being adapted to rock on a pivot, means for rocking the chute, means for comminuting the lead and feeding it into the feed-chute, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, and means for supporting and moving the carriers in said chamber, substantially as set forth.

33. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a series of traveling carriers for the lead arranged vertically in said chamber, each carrier overlapping the carrier above it at one end, means for supporting and moving said carriers, and means for supplying a suitable corroding-gas to the chamber whereby the lead in passing from one carrier to another is inverted without substantial disturbance, substantially as set forth.

34. In apparatus for making white lead or similar products, the combination with a corroding-chamber of means adapted to support the comminuted lead and convey it into and through the corroding-chamber, means for supporting and moving the carrying means, means for applying a moistening agent to the lead, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

35. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of means adapted to support the comminuted lead and convey it into and through the corroding-chamber, means for supporting and moving said carrying means, means for moistening the comminuted lead while in the corroding-chamber, and means for supplying a suitable corroding-gas to the chamber substantially as set forth.

36. In apparatus for making white lead or similar products, the combination with a corroding-chamber, means for supporting and moving the carrier, a bath provided with a moistening agent through which the carrier moves before passing into the corroding-chamber so as to wet the comminuted lead, means for supplying a suitable corroding-gas to the chamber and means for moistening the comminuted lead in the corroding-chamber, substantially as set forth.

37. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a traveling carrier for the lead in said chamber, and, means for supporting and moving said carrier, means for moistening the comminuted lead in the corroding-chamber, and means for supplying a suitable corroding-gas to the chamber, substantially as set forth.

38. In apparatus for making white lead or similar products, the combination with a corroding-chamber, of a carrier adapted to convey the lead into the corroding-chamber, means for supporting and moving the carrier, means for supplying a suitable corroding-gas to the chamber, one or more traveling carriers for the lead in said chamber adapted to receive the lead from the first carrier, means for supporting and moving the carriers in said chamber, whereby the lead in passing from one carrier to another is inverted or changed in position without substantial disturbance, and means for moistening the comminuted lead in the corroding-chamber, substantially as set forth.

709,955. METHOD OF PRODUCING LEAD CARBONATE. JOHN W. BAILEY, Jersey City, N. J., assignor to the Union Lead and Oil Company, a Corporation of New Jersey. Filed Jan. 20, 1901. Serial No. 43,208. (No specimens.)

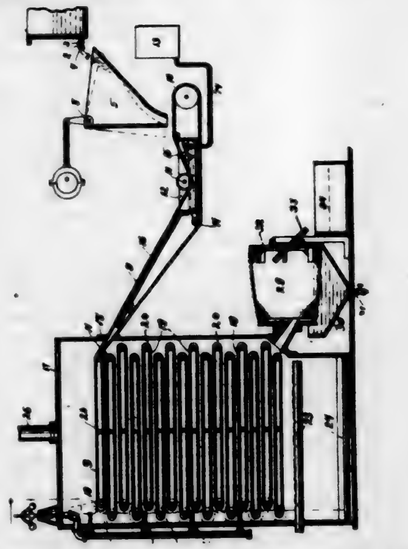

Claim.—1. The method of producing lead carbonate which consists in so comminuting metallic lead that it may be maintained in an uncompacted condition, conveying the lead in this condition without substantial disturbance into a corroding-chamber, causing it to move through said chamber without substantial disturbance and subjecting it therein to the action of a suitable corroding-gas whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated, substantially as described.

2. The method of producing lead carbonate which consists in so comminuting metallic lead that it may be maintained in an uncompacted condition, applying a moistening agent to the lead without disturbing the lead, conveying the lead in this condition without substantial disturbance into a corroding-chamber, causing it to move through said chamber without substantial disturbance and subjecting it therein to the action of a suitable corroding-gas whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated, substantially as described.

3. The method of producing lead carbonate which consists in so comminuting metallic lead that it may be maintained in an uncompacted condition, conveying the lead in a substantially undisturbed condition through a bath containing a moistening agent and then into a corroding-chamber, causing it to move through said chamber without substantial disturbance, and subjecting it therein to the action of a suitable corroding-gas whereby compacting of the comminuted lead is avoided and the uniform attack of the moistening and corroding agents is facilitated, substantially as described.

4. The method of producing lead carbonate which consists in subdividing metallic lead into a hair-like or fibrous condition, forming the lead thus comminuted into uncompacted waves or masses wholly or partly separated, applying a moistening agent to the lead without disturbing the lead, conveying the lead in this condition without substantial disturbance into a corroding-chamber, causing it to move through said chamber with-

out substantial disturbance and subjecting it therein to the action of a suitable corroding-gas whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated, substantially as described.

5. The method of producing lead carbonate which consists in forming lead fiber into uncompacted waves or masses wholly or partly separated, applying a moistening agent to the lead without disturbing the lead, conveying the lead in this condition without substantial disturbance into a corroding-chamber, causing it to move through said chamber without substantial disturbance and subjecting it therein to the action of a suitable corroding-gas whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated, substantially as described.

6. The method of producing lead carbonate which consists in comminuting the lead so as to form it into lead fiber, forming the lead fiber into unicompacted waves or masses, conveying the lead in this condition without substantial disturbance through a bath containing a moistening agent, then conveying the lead without substantial disturbance through the air and into a corroding-chamber, causing the lead to move through said chamber without substantial disturbance and subjecting it therein to the action of a suitable corroding-gas, substantially as described.

7. The method of producing lead carbonate which consists in comminuting the lead so as to form it into lead fiber, forming the lead fiber into unicompacted wave-like masses, applying a moistening agent to the lead without disturbing the lead, conveying the lead in a substantially undisturbed condition through the air for a certain distance and then into a corroding-chamber, causing it to move through said chamber without substantial disturbance, applying a moistening agent to the lead in said chamber and subjecting the lead in said chamber to the action of a suitable corroding-gas, substantially as described.

8. The method of producing lead carbonate which consists in so comminuting the lead that it may be maintained in an uncompacted condition, applying a moistening agent to the lead without disturbing the lead, forwarding predetermined quantities of the lead without substantial disturbance into the corroding chamber successively and at intervals, causing said lead to move in said corroding-chamber without substantial disturbance while each fresh supply of lead is being fed into said chamber and to remain at rest during the intervals between the forwarding operations, subjecting the lead in said chamber to the action of a suitable corroding-gas, substantially as described.

9. The method of producing lead carbonate which consists in conveying comminuted lead through a corroding-chamber and at suitable intervals inverting the lead therein without compacting the same, and subjecting the lead in said chamber to the action of a suitable corroding-gas whereby new surfaces are presented to the attack of the gas in a definite and organized manner, substantially as described.

10. The method of producing lead carbonate which consists in so comminuting the lead that it may be maintained in an uncompacted condition, applying a moistening agent to the lead without disturbing the lead, conveying the lead in this condition without substantial disturbance into a corroding-chamber, causing the lead to move through said chamber without substantial disturbance and at suitable intervals inverting the lead and subjecting it in said chamber to the action of a suitable corroding-gas, substantially as described.

11. The method of producing lead carbonate which consists in so comminuting the lead that it may be maintained in an uncompacted condition, applying a moistening agent to the lead without disturbing the lead, conveying the lead in this condition without substantial disturbance into a corroding-chamber, causing the lead to move through said chamber without substantial disturbance and at suitable intervals inverting the lead, applying a moistening agent to the lead in said chamber at intervals without disturbing the lead, and subjecting it in said chamber to the action of a suitable corroding-gas, substantially as described.

12. The method of producing lead carbonate which consists in arranging the comminuted lead so as not to compact it but to present an extended surface to the action of the different agents employed, applying to it in this condition a solution of acetic acid and water, passing it without substantial disturbance through the air to the corroding-chamber so as to form acetate of lead, causing it to move without substantial disturbance in said chamber for a period of time and exposing it during said time to the action of a current of carbonic-acid gas, then causing it to fall through said chamber for a sufficient distance to rearrange the mass without compacting it so as to expose new surfaces to the corroding-gas, then causing it to move again through said chamber and repeating this operation until the lead is sufficiently corroded, substantially as described.

13. The method of producing lead carbonate which consists in arranging the comminuted lead so as not to compact it but to present an extended surface to the action of the different agents employed, applying to it in this condition a solution of acetic acid and water, passing it without substantial disturbance through the air to the corroding-chamber so as to form acetate of lead, causing it to move without substantial disturbance in said chamber for a period of time and exposing it during said time to the action of a current of carbonic-acid gas, then causing it to fall through said chamber for a sufficient distance to rearrange the mass without compacting it so as to expose new surfaces to the corroding-gas, then causing it to move again through said chamber, moistening it at intervals in said chamber with a solution of acetic acid and water and repeating this operation until the lead is sufficiently corroded, substantially as described.

14. The method of producing lead carbonate, which consists in so comminuting metallic lead that it may be maintained in an uncompacted condition, conveying the lead in this condition into a corroding-chamber, and without substantial disturbance subjecting the lead therein to the action of a suitable corroding-gas, whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated.

15. The method of producing lead carbonate, which consists in so comminuting metallic lead that it may be maintained in an uncompacted condition, conveying the lead in this condition into a corroding-chamber, applying a moistening agent to the lead while in the corroding-chamber, and without substantial disturbance subjecting the lead in the corroding-chamber to the action of a suitable corroding-gas, whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated.

16. The method of producing lead carbonate, which consists in subdividing metallic lead into a fine hair-like or fibrous condition, conveying the lead in this condition without substantial disturbance into a corroding-chamber, and without substantial disturbance subjecting the lead in the corroding-chamber to the action of a suitable corroding-gas, whereby compacting of the comminuted lead is avoided and a uniform attack of the corroding agent is facilitated.

17. The method of producing lead carbonate which consists in subdividing metallic lead into a fine hair-like or fibrous condition, conveying the lead in this condition without substantial disturbance into a corroding-chamber, applying a moistening agent to the lead while in the corroding-chamber, and without substantial disturbance subjecting the lead in the corroding-chamber to the action of a suitable corroding-gas, whereby compacting of the comminuted lead is avoided and the uniform attack of the corroding agent is facilitated.

709,956. APPARATUS FOR PRODUCING WHITE LEAD. JOHN W. BAILEY, Jersey City, N. J., assignor to Union Lead and Oil Company, a Corporation of New Jersey. Filed Mar. 14, 1901. Serial No. 51,149. (No model.)

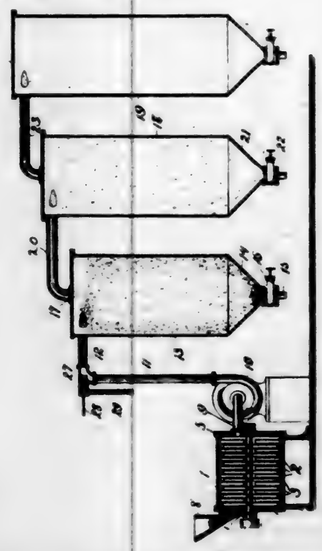

Claim.—1. An apparatus for producing lead carbonate comprising a corroding-chamber, means for introducing suitable corroding-gases into said chamber, and means for diffusing powdered lead in said chamber, substantially as described.

2. An apparatus for producing lead carbonate comprising a corroding-chamber, means for maintaining a current of a suitable corroding-gas in said chamber, and means whereby a quantity of pulverized or powdered lead may be uniformly subjected to the action of said current of corroding-gas, substantially as described.

3. An apparatus for producing lead carbonate comprising a corroding-chamber, means for maintaining a current of a suitable corroding-gas in said chamber, and means for diffusing powdered lead in said chamber, substantially as described.

4. An apparatus for producing lead carbonate comprising a corroding-chamber, means for maintaining a circulation of a suitable corroding-gas in said chamber, and means for diffusing powdered lead in said chamber, substantially as described.

5. An apparatus for producing lead carbonate comprising a corroding-chamber, means for supplying powdered lead to said chamber, an air-blast for diffusing the lead in said chamber, and means for maintaining a supply of a suitable corroding-gas in said chamber, substantially as described.

6. An apparatus for producing lead carbonate comprising a closed corroding-chamber having an inlet and suitably-screened outlet, of means for creating a blast through the inlet of said chamber, means for introducing powdered lead into said blast, and means for maintaining a supply of said corroding-gas in said corroding-chamber, substantially as described.

7. An apparatus for producing lead carbonate comprising a closed corroding-chamber having an inlet and a suitable screened outlet, means for creating a blast through the inlet of said chamber, and means for introducing powdered lead and a suitable corroding-gas into said blast, substantially as described.

8. An apparatus for producing lead carbonate comprising a substantially cylindrical vertically-arranged corroding-chamber having an inlet-passage tangentially arranged near the top, means for creating a blast through said inlet, means for introducing powdered lead into the blast, and means for maintaining a supply of a suitable corroding-gas in said chamber, substantially as described.

9. An apparatus for producing lead carbonate comprising a substantially cylindrical vertically-arranged corroding-chamber having an inlet-passage tangentially arranged near the top, means for creating a blast through said inlet-passage, and means for introducing powdered lead and a suitable corroding-gas into the blast, substantially as described.

10. An apparatus for producing lead carbonate comprising a substantially cylindrical vertically-arranged corroding-chamber having an inlet-passage tangentially arranged near the top, means for creating a blast through said inlet-passage, means for introducing powdered lead into the blast, and an injector for introducing steam and a suitable corroding-gas into the blast, substantially as described.

11. An apparatus for producing lead carbonate comprising a series of substantially cylindrical vertically-arranged corroding-chambers having tangential inlet-passages, the first of said chambers having substantially central outlet-passages communicating with the inlet-passages of the succeeding chambers and the last chamber having a screened outlet, means for creating a blast through the inlet-passage of the first chamber, means for introducing powdered lead into the blast, and means for maintaining a supply of a suitable corroding-gas in said chamber, substantially as described.

12. An apparatus for producing lead carbonate comprising a series of substantially cylindrical vertically-arranged corroding-chambers having tangential inlet-passages the first of said chambers having substantially central outlet-passages communicating with the inlet-passages of the succeeding chambers and the last chamber having a screened outlet, means for creating a blast through the inlet-passage of the first chamber, and means for introducing powdered lead and a suitable corroding-gas into the blast, substantially as described

13. An apparatus for producing lead carbonate comprising a series of substantially cylindrical vertically-arranged corroding-chambers having tangential inlet passages, the first of said chambers having substantially central outlet-passages communicating with the inlet-passages of the succeeding chambers and the last chamber having a screened outlet, means for creating a blast through the inlet-passage of the first chamber, means for introducing powdered lead into the blast, and an injector for introducing steam and a suitable corroding-gas into said blast, substantially as described.

14. An apparatus for producing lead carbonate comprising a series of substantially cylindrical vertically-arranged corroding-chambers having tangential inlet-passages, the first of said chambers having substantially central outlet-passages communicating with the inlet-passages of the succeeding chambers and the last chamber having a screened outlet, a fan-blower for creating a blast through the inlet-passages of the first chamber, a pulverizing-mill for supplying powdered lead to the blower, and an injector for introducing steam and a corroding-gas into the blast from the blower, substantially as described.

15. An apparatus for producing lead carbonate comprising a corroding-chamber, means for producing a current of finely-divided lead in said chamber, and means for producing a current of a suitable corroding-gas in said chamber, substantially as described.

709,957. METHOD OF PRODUCING WHITE LEAD. JOHN W. BAILEY, Jersey City, N. J., assignor to Union Lead and Oil Company, a Corporation of New Jersey. Filed Mar. 14, 1901. Serial No. 51,150. (No specimens.)

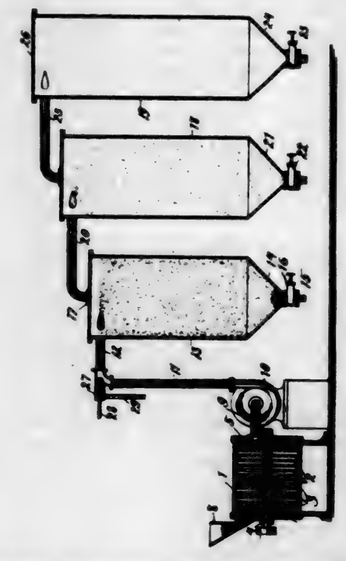

Claim.—1. The method of producing lead carbonate, which consists in subjecting lead in the form of an impalpable powder to the action of a suitable corroding-gas, substantially as described.

2. The method of producing lead carbonate, which consists in subjecting lead in the form of an impalpable powder to the action of a current of a suitable corroding-gas, substantially as described.

3. The method of producing lead carbonate, which consists in diffusing pulverized or powdered lead in a suitable corroding-gas, substantially as described.

4. The method of producing lead carbonate, which consists in diffusing pulverized or powdered lead in a current of a suitable corroding-gas, substantially as described.

5. The method of producing lead carbonate, which consists in floating pulverized or powdered lead in a suitable corroding-gas, substantially as described.

6. The method of producing lead carbonate, which consists in floating pulverized or powdered lead in a current of a suitable corroding-gas, substantially as described.

7. The method of producing lead carbonate, which consists in diffusing pulverized or powdered lead throughout a suitable corroding-gas confined in a closed chamber and creating a circulation of the gas in the chamber, substantially as described.

8. The method of producing lead carbonate, which consists in subjecting lead in the form of an impalpable powder to the action of a series of successive currents of a suitable corroding-gas, substantially as described.

9. The method of producing lead carbonate, which consists in floating pulverized or powdered lead in a suitable corroding-gas by means of a series of successive currents of said gas, substantially as described.

10. The method of producing lead carbonate, which consists in reducing lead to an impalpable powder and then subjecting it to the action of carbonic-acid gas and acetic acid in the presence of air and moisture, substantially as described.

11. The method of producing lead carbonate, which consists in reducing lead to an impalpable powder and then subjecting it to the action

of a corroding-gas composed of air, carbonic-acid gas, and vapors of acetic acid and water, substantially as described.

12. The method of producing lead carbonate, which consists in reducing lead to an impalpable powder and then floating the powder in a corroding-gas composed of air, carbonic-acid gas, and vapors of acetic acid and water, substantially as described.

13. The method of producing lead carbonate, which consists in dividing the lead into a fine condition producing a current of said finely-divided lead, and bringing said current into contact with a current of a suitable corroding-gas, whereby the lead is diffused throughout said current of gas and thoroughly exposed to the same, substantially as described.

14. The method of producing lead carbonate, which consists in pulverizing the lead passing a current of air through the pulverized lead so as to carry away the particles of lead that are fine enough to float in said current, bringing said current into contact with a current of a suitable corroding-gas, and causing the combined currents to intermingle and circulate together in a suitable chamber, substantially as described.

15. The method of producing lead carbonate, which consists in pulverizing the lead passing a current of air through the pulverized lead so as to carry away the particles of lead that are fine enough to float in said current, bringing said current into contact with a current of a suitable corroding-gas, and causing the combined currents to intermingle and circulate together in a suitable chamber, and filtering the gases as they escape from the chamber so as to prevent the loss of lead, substantially as described.

16. The method of producing lead carbonate, which consists in pulverizing the lead, passing a current of air through the pulverized lead so as to carry away the particles of lead that are fine enough to float in said current, bringing said current into contact with a current of a suitable corroding-gas, and causing the combined currents to circulate around the outer portion of a suitable chamber so as to produce an area of less disturbance in the middle of the chamber and leading off the waste gases from the middle portion of said chamber, substantially as described.

17. The method of producing lead carbonate, which consists in pulverizing the lead, passing a current of air through the pulverized lead so as to carry away the particles of lead that are fine enough to float in said current, bringing said current into contact with a current of a suitable corroding-gas, and causing the combined currents to circulate around the outer portion of a suitable chamber so as to produce an area of less disturbance in the middle of the chamber and leading off the waste gases from the middle portion of said chamber and filtering the gases as they escape from said chamber, substantially as described.

18. The method of producing lead carbonate, which consists in subjecting powdered lead to the action of suitable corroding-gases, the lead being in such a fine state of division that when the corroding action has once begun on a particle the entire particle will be corroded.

19. The method of producing lead carbonate, which consists in subjecting powdered lead to the action of carbonic-acid gas, air and the vapors of acetic acid and water, the lead being in such a fine state of division that when the corroding action has once begun on a particle the entire particle will be corroded.

20. The method of producing lead carbonate, which consists in diffusing powdered lead throughout a suitable corroding-gas, the lead being in such a fine state of division that when the corroding action has once begun on a particle the entire particle will be corroded.

21. The method of producing lead carbonate, which consists in diffusing powdered lead in a corroding-gas consisting of air, carbonic-acid gas and the vapors of acetic acid and water, the lead being in such a fine state of division that when the corroding action has once begun on a particle the entire particle will be corroded.

22. The method of producing lead carbonate, which consists in subjecting powdered lead to the action of suitable corroding-gases, the lead being in such a fine state of division that substantially all of the lead is at once exposed to the action of the corroding-gases.

23. The method of producing lead carbonate, which consists in subjecting powdered lead to the action of carbonic-acid gas, air and the vapors of acetic acid and water, the lead being in such a fine state of division that substantially all the lead is at once exposed to the action of the corroding-gases.

24. The method of producing lead carbonate, which consists in diffusing powdered lead throughout a suitable corroding-gas, the lead being in such a fine state of division that substantially all the lead is at once exposed to the action of the corroding-gas.

25. The method of producing lead carbonate, which consists in diffusing powdered lead in a corroding-gas consisting of air, carbonic-acid gas and the vapors of acetic acid and water, the lead being in such a fine state of division that substantially all the lead is at once exposed to the action of the corroding-gas.

709,958. ROLLING METAL TUBES OR OTHER HOLLOW OR SOLID BODIES. ARTHUR R. BODE, Barlaston, England, assignor to Perrins, Limited, Warrington, England, a registered Company. Filed Feb. 8, 1902. Serial No. 93,376. (No model.)

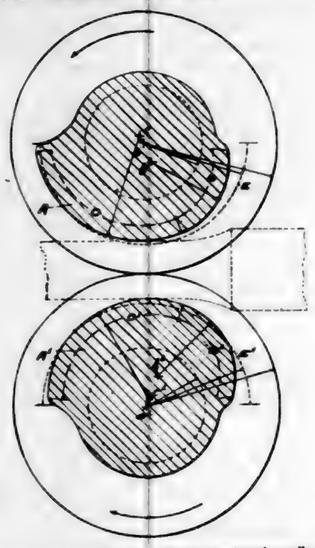

Claim.—1. A pair of gapped, pilger, or back-action rolls having eccentrically-grooved projecting or working portions, the eccentricity of one roll being different from that of the companion roll, substantially as set forth.

2. A pair of gapped, pilger, or back-action rolls having eccentrically-grooved projecting or working portions, corresponding portions of the respective grooves in the two rolls being of the same curvatures and other corresponding portions of different curvatures, substantially as described.

709,959. VEHICLE-TIRE. FRANK P. BRIGGS, Westgrove, Pa. Filed Feb. 14, 1902. Serial No. 93,992. (No model.)

Claim.—1. A felly having an annular groove formed in the same, a ring of soft rubber secured within said groove, undercut grooves formed in the walls of the groove, a rubber tire, beveled edges or tongues formed upon the tire adapted to fit within the undercut grooves, an opening formed through the tire, a slit formed from the opening to the inner face of the tire, beveled surfaces formed upon the outside of the soft-rubber ring, beveled surfaces formed upon the inner face of the rubber tire adapted to fit upon the beveled surfaces of the ring, substantially as and for the purpose specified.

2. In a device of the character described, a felly having an annular channel formed therein, undercut grooves formed in the walls of said channel, a ring of soft rubber secured in the channel the outer face of said ring beveled upon each side, a tire having an opening formed therethrough, the inner face of said tire divided by a slit formed from the opening to the inner face, said tire so formed as to be sprung into the undercut grooves of the felly and to impinge upon the soft-rubber ring within the same so that the two portions of the inner edge of the tire will be spread by the beveled surfaces of said ring when pressure is applied to the tire, substantially as described and for the purpose specified.

709,960. STREET-SPRINKLER VALVE. MORTON G. BRIDELL, Chicago, Ill., assignor to F. G. Austin Manufacturing Company, Chicago, Ill., a Corporation. Filed Sept. 9, 1901. Serial No. 74,797. (No model.)

Claim.—1. A street-sprinkler valve comprising relatively adjustable

valve members adapted to separate or draw apart and provide a discharge opening or slot having relatively wide and narrow portions which cause the water to discharge in the form of a spray or sheet having relatively thick and thin portions and adapted to vary the size of said discharge-slot and at the same time maintain the relative proportions of the said relatively wide and narrow portions of the slot and thereby vary the volume of the discharge without changing or varying the relative proportions of said relatively thick and thin portions of the sheet or spray.

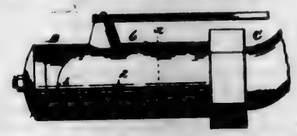

2. A street-sprinkler valve comprising relatively adjustable members, the space between said members when drawn apart forming a discharge opening or slot, said discharge opening or slot having relatively wide and narrow portions, so as to permit the water to escape in the form of a sheet or spray having relatively thick and thin portions, the relatively wide portion or portions of the slot or opening being practically or substantially transverse to the direction of said relative adjustment, and the relatively narrow portion or portions of said slot or discharge-opening being more or less oblique to the direction of said relative adjustment, so as to permit the discharge slot or opening to be opened and closed and the volume of the discharge varied without varying the relative proportions of the said relatively wide and narrow portions of the slot or discharge-opening.

3. A street-sprinkler valve comprising a cylindric head comprising two relatively adjustable members, the space between said members when drawn apart forming a circumferentially-extending discharge opening or slot, the two members having a relative formation adapted to provide said slot or discharge-opening with relatively wide said narrow portions, the relatively narrow portions of the discharge slot or opening being more or less oblique to the direction of said relative adjustment, so as to permit the slot or opening to be opened or closed and the volume of discharge varied without varying the relative proportions of the said relatively wide and narrow portions of the slot or opening.

4. A street-sprinkler valve comprising a cylindric, or substantially cylindric body portion, a cap fitted to slide upon said body portion and close the latter's open end, the discharge slot or opening formed by the joint or meeting surfaces of the cap and body portion being formed along a circumferentially-extending line which is curved or irregular, the curvature or irregularity of the line along which the discharge slot or opening is formed causing the latter to have relatively wide and narrow portions, the relatively wide portions of said slot or opening extending practically or substantially crosswise of the sprinkler-head formed by the said cap and body portion, and the relatively narrow portions of the discharge slot or opening being more or less oblique to the length of said head, whereby the said relatively wide and narrow portions of the slot or opening retain their relative proportions when the said cap is adjusted for the purpose of varying the volume of discharge.

709,961. ROTARY ENGINE. THOMAS J. BUSH, Lexington, Ky. Filed Mar. 24, 1902. Serial No. 99,703. (No model.)

Claim.—1. The combination, with a horizontal support provided with an annular fixed fulcrum, of a lever-forming ring resting loosely on said support eccentric to and fulcruming at its periphery against the inner wall of said annular fulcrum, a rotary means for discharging fluid under pressure against the inner wall of said ring at one side of its fulcrum-point, and means extending from the said ring at the other side of its fulcrum-point to the said rotary fluid-supply to rotate it from said ring.

2. A rotary engine or motor comprising, a fixed horizontal plate or support provided with a fulcrum ring or band, of a lever-forming ring engaging and of less diameter than the fulcrum-ring and resting loosely on said plate or support, a rotary fluid pipe or member arranged centrally of said plate or support and provided with a radial discharge-pipe having its outlet end in close proximity to the inner wall of said lever-forming ring, and a lever-forming arm projecting radially from said fluid pipe or member and engaging at its outer end the inner wall of said lever-forming ring; whereby the pipe or member will be rotated to form a drive means or shaft.

3. A rotary engine or motor comprising, a fixed horizontal plate or support provided with a fulcrum ring or band, and a lever ring or band engaging and of less diameter than the fulcrum-ring and resting loosely on said plate or support, of a central vertical rotary fluid-supply pipe projecting up therethrough and having an inlet-opening, a fluid cylinder or chamber surrounding the pipe at its inlet end and having a fluid-supply, a radial discharge-pipe extending from said rotary pipe or member into close proximity to the inner wall of said lever-forming ring, and a radial lever-arm projecting from said cylinder and provided at its outer end with an antifriction-roller engaging the inner wall of said lever-forming ring.

4. A rotary engine or motor comprising, a fixed horizontal plate or support provided with a fulcrum ring or band, and a lever ring or band engaging and of less diameter than the fulcrum-ring and resting loosely on said plate or support, of a central vertical rotary fluid-supply pipe projecting up therethrough, a fluid cylinder or head through which said pipe passes and is supplied with fluid therefrom, a radial discharge-pipe extending from said pipe into close proximity to the inner wall of said lever-forming ring, and a radial longitudinally-extensible lever-arm projecting from said pipe and provided at its outer end with an antifriction-roller engaging the inner wall of said lever-forming ring.

5. A rotary engine or motor comprising, a fixed horizontal plate or support provided with a fulcrum-forming ring on its upper side, a lever-forming ring smaller than and engaging said fulcrum-ring, a rotary fluid-supply pipe projecting up through the center of said plate or support, a fluid-supply cylinder on the under side of said horizontal plate and through which said rotary pipe passes, a discharge-pipe extending radially from said cylinder into close proximity to the inner wall of said lever-forming ring and formed in telescopic sections, and a radial lever-arm having an antifriction device at its outer end also engaging the inner wall of the said lever-forming ring and serving to rotate said rotary pipe therefrom.

6. A rotary engine or motor comprising, a base, standards projecting therefrom, a horizontal plate or support on the upper ends of the standards, a circular fulcrum-ring on the upper side of said plate or support, a vertical rotary pipe extended from the base up through the center of said plate or support, an adjustable bearing on the base for the lower end of said pipe, a cylinder or chamber through which the pipe passes and supplying it with fluid, a lever-forming ring resting loosely on said plate and in peripheral engagement with and of smaller size than the fulcrum-ring, a discharge-pipe extending radially from the rotary pipe into close proximity to the said lever-forming ring, and a radial lever-forming arm also projecting from the rotary pipe and having an antifriction device at its outer end in contact with the inner wall of the lever-forming ring.

7. A rotary engine or motor comprising, a horizontal plate or support having a circular fulcrum-forming ring or flange, a lever-forming ring resting loosely on said plate or support, of less size than the fulcrum-ring and in peripheral engagement therewith; the inner wall of said lever-forming ring being provided with corrugations or pockets and a plain portion, a rotary fluid pipe or member at the center of said horizontal plate or support and provided with a radial discharge-pipe extending at its discharge end into close proximity to the corrugations or pockets of the lever-ring, and a lever-arm also projecting radially from said rotary pipe and provided at its outer end with an antifriction device engaging the plain portion of the lever-forming ring.

8. The combination, with a horizontal support provided with an annular fixed fulcrum, of a lever-forming ring resting loosely on said support, eccentric to and fulcruming at its periphery against the inner wall of said annular fulcrum, and a rotary pulley-forming or power-transmitting device provided with a radial extending-arm engaging the inner wall of said lever-forming ring at one side of its fulcrum-point and a radial pipe or conductor also projecting from said pulley-forming or power-transmitting device close to the inner wall of said lever-forming ring at a point to the other side of its fulcrum; the constant power or force from said pipe or conductor serving to roll the lever-ring on its fulcrum and in so doing causing the ring to rotate the pulley or power transmitting device through the medium of its extending-arm.

9. The combination, with a horizontal support provided with an an-

ruler fixed fulcrum, of a lever-forming ring resting loosely on said support, eccentric to and fulcruming at its periphery against said annular fulcrum, and a rotary pipe or power-transmitting member provided with a radial actuating-arm engaging the inner wall of said lever-ring at one side of its fulcrum-point, and a radial pipe also projecting from said rotary pipe or transmitting device close to the inner wall of the lever-forming ring at a point to the other side of its fulcrum-point; the outer end of the radial pipe being provided with an inclined port discharging the fluid against the lever-ring in a direction contrary to the direction of rotation of said rotary pipe or member.

709,962. **AUTOMATIC PLAYER FOR KEYED INSTRUMENTS.** MELVILLE CLARK, Chicago, Ill. Filed Dec. 4, 1899. Serial No. 739,190. (No model.)

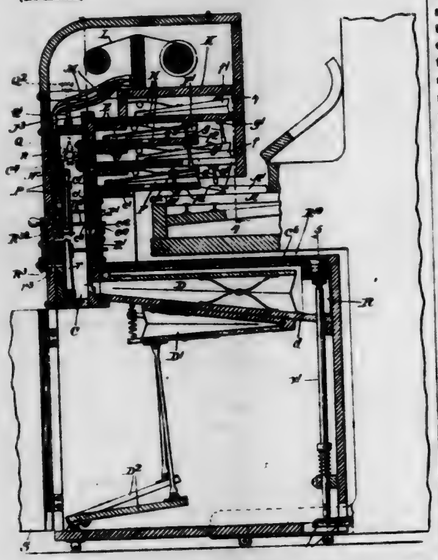

Claim.—1. An automatic player for a keyed instrument, comprising motor-pneumatics having rigid projections which terminate beyond the case and air-chambers of the automatic player and are arranged to overhang and act directly upon the exposed surface of the manual-keys of the instrument to be played.

2. An automatic player for a keyed instrument, comprising motor-pneumatics located exterior to the wind-chest or air-chamber, by which they are controlled or actuated, the moving walls of such motor-pneumatics having rigid projections which terminate beyond the case of the automatic player and are arranged to overhang and act directly upon the exposed surfaces of the manual-keys of the instrument to be played.

3. An automatic player for a keyed instrument, comprising motor-pneumatics which are wholly exterior to the wind-chest or air-chamber by which they are controlled or actuated; the moving walls of such motor-pneumatics having rigid projections which are also wholly exterior to such wind-chest or air-chamber, and which terminate beyond the case and air-chamber of the automatic player and are arranged to overhang and act directly upon the exposed surfaces of the manual-keys of the instrument to be played.

4. An automatic player for a keyed instrument, comprising motor-pneumatics in position to overhang the manual-keys of the instrument to be played, said pneumatics having a moving wall, hinged at one end, fingers rigid with said moving wall, projecting downward therefrom between the hinge and the other end of the cavity of the pneumatic, and adapted to act directly upon the manual-keys respectively.

5. An automatic player for a keyed instrument, comprising two sets of motor-pneumatics for operating the keys of the instrument; one set of primary pneumatics, and ducts by which said primary pneumatics respectively control the corresponding motor-pneumatics of both sets, the ducts leading to the second set being provided with means for closing and opening the passage through them without affecting the ducts of the first set, whereby said first set may alone give the stroke to the keys, or may be reinforced by the second set when the ducts leading to the latter are open.

6. In an automatic player for a keyed instrument, in combination with a wind-chest erected vertically in front of the manual-breast of the instrument, motor-pneumatics located upstanding between the wind-chest and the manual-breast, and lever connections by which such motor-pneumatics cause the manual-keys to be struck.

7. In an automatic player for an instrument having a horizontal bank of manual-keys, a wind-chest erected vertically in front of the manual-breast of the instrument, a set of motor-pneumatics extended horizontally from the wind-chest to act upon the manual-keys, in combination with a second set of motor-pneumatics located upstanding between the wind-chest and the manual-breast, and lever connections between corresponding pneumatics of the two sets, by which the action of the latter set is directed upon the moving elements of the former set.

8. In an automatic player for a keyed instrument, in combination with a wind-chest, a system of motor-pneumatics supported by and deriving their air tension from such wind-chest, and projected horizontally therefrom toward the instrument to act upon the manual-keys of the latter; a second system of motor-pneumatics arranged vertically in the interval between the wind-chest and the manual-breast, each of the pneumatics in said second system being in vertical fore-and-aft plane with the corresponding pneumatic of the first system, the moving element of the pneumatics of one set having each a lever-arm which extends along the face of the moving element of the corresponding pneumatic of the other set, and an abutment on said element which encounters the lever-arm to cause the movement of one of said parts to be communicated to the other.

9. An automatic player for a keyed instrument comprising pneumatics for all the keys to be struck; a tracker-duct board and perforated music-sheet having respectively ducts and apertures for controlling the pneumatics pertaining to a portion, only, of the keys; a coupling-slide having ports adapted to register with the ducts of a portion of the pneumatics, and tubes from such ports respectively to the ducts of octave-distant pneumatics, the ducts at one end of the tubes being those for which the perforated music-sheet has controlling-apertures, and the ducts at the other end being beyond the range of the music-sheet.

10. In an automatic player for a keyed instrument, comprising pneumatics for all the keys to be struck, a tracker-duct board and perforated music-sheet having respectively ducts and apertures for controlling the pneumatics pertaining to a portion, only, of the keys; a coupling device, consisting of a slide having ports adapted to register with the ducts pertaining to the pneumatics which are to be coupled, and flexible tubes from the ports of one half of the entire set of ports on the slide to the corresponding ports of the other half of said set, and means for moving the slide at will to cause its ports to register or not to register with the pneumatic ducts respectively.

11. In an automatic player for a keyed instrument, in combination with the motor-pneumatics which operate the manual-keys, primary pneumatics which control them respectively; secondary pneumatics controlled by a lower or base-range portion of the system of said primary pneumatics, and motor-pneumatics which operate the pedal-keys of the instrument and connections by which said secondary pneumatics control said pedal motor-pneumatics.

12. In an automatic player for a keyed instrument, in combination with pneumatics for operating the manual-keys, other pneumatics for operating the pedal-keys, a perforated music-sheet and duct-board having, respectively, perforations and a system of ducts corresponding to a portion, only, of the manual; branch ducts from the ducts of the lower or base-range portion of the system of tracker-ducts, and primary pneumatics controlled through such branch ducts; secondary pneumatics controlled by said last-mentioned primary pneumatics, and connections by which the secondary pneumatics control the motor-pneumatics which operate the keys of the pedal-base.

13. In an automatic player for a keyed instrument, in combination with motor-pneumatics which operate the manual-keys, primary pneumatics which control them respectively; secondary pneumatics controlled by a lower or base-range portion of the system of said primary pneumatics; motor-pneumatics controlled by said secondary pneumatics and operating the pedal-keys of the instrument; the connection between said primary and secondary pneumatics by which the former control the latter comprising the slide, U^2, flexible tubes leading from its ports respectively, to the secondary pneumatics; and suitable means for adjusting the slide to register or not register with the air-passages controlled by the valves operated by the primary pneumatics.

14. In a pneumatically-operated automatic player for an instrument having manual-keys and pedal stops, in combination with the wind-chest, motor-pneumatics for operating the pedal-stops and mechanical connections therefrom to such pedal stops; primary pneumatics which control said pedal-stop motor-pneumatics; vent-valves for the primary pneumatics, and manual-stops for operating such vent-valves.

15. In combination with an instrument having a system of pedal-keys, the system of thrust-rods, X', and the frame in which they are mounted, secured in fixed relation to the pedal-keys, and an automatic player having motor-pneumatics arranged to overhang and operate upon the thrust-rods, respectively.

16. In combination with an instrument having a system of pedal-keys, the system of thrust-rods, X', the frame in which they are mounted secured in fixed relation to the pedal-keys; the automatic player having motor-pneumatics which are arranged to act upon the thrust-rods respectively, said rods having adjustable terminals to receive the action of the motor-pneumatics.

17. In combination with an instrument having a system of pedal-keys, the system of thrust-rods, X'; the frame in which they are mounted, secured in fixed relation to the pedal-keys; springs which tend to uphold the thrust-rods respectively; the automatic player having motor-pneumatics arranged to act upon the thrust-rods, said thrust-rods having adjustable terminals at their lower ends to reach and act upon the pedal-keys respectively.

18. In an automatic player for an organ, a system of pneumatics for operating the manual-keys of the organ; a wind-chest from which they derive their air tension; means for supporting the player in adjustable relation to the manual of the organ, and a flexible tube connecting the wind-chest of the player and arranged to be connected to the wind-chest of the organ.

19. The combination, in an instrument having a horizontal bank of manual-keys, of an automatic player for the same, arranged to be located in front of the manual-breast, vertically-adjustable supports for such player on the instrument being provided, comprising a horizontal arm projecting from the frame of the player under the manual-breast of the instrument, and lodgment for such arm mounted on the instrument.

20. An automatic player for a manual-keyed instrument, arranged to be located in front of the manual-breast of the instrument with the means for operating upon the keys overhanging the same, and having a rigid arm or extension of its frame projected under the manual-breast, in combination with lodgments for such arm, securably and vertically adjustable on the case of the instrument to be played.

21. The combination with an instrument having a horizontal bank of manual-keys of an automatic player for the same arranged to be located in front of the manual-breast of the instrument and having a rigid arm or extension of its frame projected under the manual-breast, and lodgments for such arm secured and vertically adjustable on the case of the instrument.

709,968. **TRANSPOSING DEVICE FOR MUSICAL INSTRUMENTS.** MELVILLE CLARK, Chicago, Ill. Filed July 14, 1898. Renewed Feb. 14, 1901. Serial No. 47,353. (No model.)

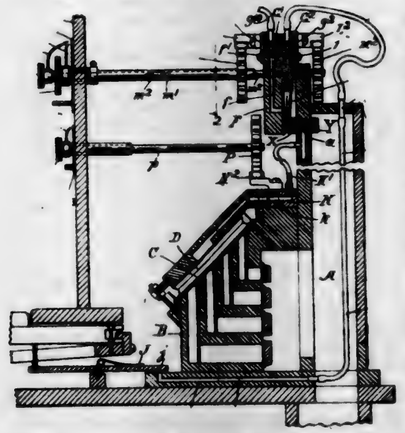

Claim.—1. In a pneumatically-operated musical instrument, in combination with the pneumatics which control the sounding devices respectively, ducts leading from such pneumatics respectively, and ports to which said ducts lead; suitable means for controlling such ports and thereby controlling said ducts individually, thereby selecting the sounding device which is to be brought into action, said ducts all being disjoined or severed at a line transverse to their extent, abutting or adjusting bars having or supporting respectively the two disjoined portions of the ducts, such portions extending respectively to the pneumatics on the one hand and to the controlled ports on the other hand, one of said bars being movable and constructed and arranged to carry in its movement without severance thereof that portion of said ducts which is contained or supported by it, and means for moving such bar to shift the registration or connection of such ducts across the line of severance.

2. In an instrument having sounding devices, and motor devices and their connections for causing the sounding devices respectively to speak; pneumatics for controlling the motor devices; ducts from said pneumatics; valves controlling said ducts, and mechanical connections from the manual-keys for operating said valves respectively, said ducts each comprising two parts which terminate respectively in adjacent boards or bars, one of said parts extending to the pneumatic and the other part extending to the valve, one of said boards or bars being movable on the other carrying the terminals thereon without severance thereof from the parts of the ducts to which they respectively pertain to shift the registration of the terminal mouths of said ducts at the plane of contact, and suitable means for moving said movable board or bar at will.

3. In an instrument having sounding devices, and motor devices and their connections for causing the sounding devices to speak; pneumatics for controlling the motor devices, and ducts from said pneumatics to the tracker-range, said ducts each comprising two parts which terminate respectively in adjacent boards or bars, one of said boards or bars being movable on the other carrying the terminals thereon without severance thereof from the parts of the ducts to which they respectively pertain to shift the registration of the terminal mouths of said ducts at the plane of contact, and suitable means for moving said movable board or bar at will.

4. In an instrument having sounding devices, motor-pneumatics, and connections by which they cause the sound devices to speak; primary pneumatics, and valves by which they respectively control the motor-pneumatics; ducts leading from the primary pneumatics respectively, and ports to which said ducts lead and suitable means for controlling such ports and thereby controlling said ducts individually, and thereby selecting the sounding devices to be brought into action; said ducts being all disjoined or severed at a line transverse to their extent; abutting or adjusting bars having or supporting respectively the two disjoined portions of the ducts, such portions extending respectively to the primary pneumatics on the one hand and to the controlled ports on the other; one of said bars being movable, and constructed and arranged to carry in its movement, without severance thereof, the portion of said ducts contained or supported by it; and means for moving such bar to shift the registration or connection of such ducts across the line of severance.

5. In an instrument having sounding devices and motor devices and their connections for causing the sounding devices respectively to speak, pneumatics for controlling the sounding devices; ducts from the pneumatics, and valves for controlling said ducts; mechanical connections from the manual-keys for operating the valves respectively, the ducts each comprising two parts, one part extending to the pneumatics and the other part extending to the valve-seats, said parts terminating respectively in adjacent boards or bars, one of said boards or bars being movable on the other to shift the registration of the terminal mouths of said ducts at the plane of contact of the bars, the portions of said ducts pertaining to said movable bar being flexible tubes to permit such movement of the bar; and suitable means for moving the bar at will.

6. In an instrument having sounding devices and motor devices and their connections for causing the sounding devices to speak; pneumatics for controlling the motor devices, a tracker-range and ducts therefrom said pneumatics, said ducts each comprising two parts which terminate respectively in adjacent boards or bars, one of said boards or bars being movable on the other to shift the registration of the terminal mouths of said ducts at the plane of contact of the boards or bars; the portions of said ducts pertaining to said movable bar comprising tubes which are flexible to permit the movement of the bar without rupture or disconnection of the ducts, and suitable means for moving such movable board or bar at will.

7. In a pneumatically-operated musical instrument, in combination with the pneumatics which control the sounding devices respectively, ducts from said pneumatics respectively each provided with two branches; slides which respectively have apertures corresponding to said branches, and flexible tubes connected to said apertures, those thus connected to the apertures of one of said slides being arranged to afford communication with a tracker-range and adapted to be controlled by a perforated music-sheet thereat, and those connected to the other slide being arranged to afford communication with a valve-board and adapted to be controlled by the manual-keys respectively.

8. In a pneumatically-operated musical instrument, in combination with the pneumatics which control the sounding devices respectively, ducts from said pneumatics respectively each provided with two branches; slides which respectively have apertures corresponding to said branches, and flexible tubes connected to said apertures, those thus connected to the apertures of one of said slides being arranged to afford communication

with a tracker-range and adapted to be controlled by a perforated music-sheet thereat, and those connected to the other slide being arranged to afford communication with a valve-board and adapted to be controlled by the manual-keys respectively; mechanical devices for moving the slides respectively, and a graduated plate and index-finger to indicate the steps of such movement.

9. In a pneumatically-operated musical instrument, in combination with the pneumatics which control the sounding devices respectively, ducts from said pneumatics respectively, each provided with two branches; slides which respectively have apertures corresponding to said branches, and flexible tubes connected to said apertures, those thus connected to the apertures of one of said slides being arranged to afford communication with a tracker-range and adapted to be controlled by a perforated music-sheet thereat, and those connected to the other slide being arranged to afford communication with a valve-board and adapted to be controlled by the manual-keys respectively; said slides being provided with rack-bars; pinions engaging said rack-bars, respectively, having their shafts coaxial, one of said shafts being a sleeve on the other; index-fingers on said shafts, and a graduated dial-plate over which both said index-fingers move as the shafts are rotated.

10. In a musical instrument, in combination with the sounding devices, motor-pneumatics for causing the sounding devices to speak, and primary pneumatics to control the motor-pneumatics; ducts controlled by the primary pneumatics and leading to the motor-pneumatics and each comprising a flexible tube, a slide into which all said flexible tubes are connected; the apertures through said slide being adapted to register at the slide-seat with the continuations of the ducts respectively; and means for moving the slide in its seat to shift the registration of said ducts.

709,964. SHADE-ROLLER BRACKET. WILLIAM CLOWES and OTIS H. STEVENS, Hardwick, Vt.; said Stevens assignor to said Clowes. Filed June 26, 1902. Serial No. 113,257. (No model.)

Claim.—The combination with a base-plate provided with two holes and with a marginal laterally-projecting guide-flange, fastening means inserted through one of said holes, a bracket having an angular arm formed with a longitudinal slot the lower edge of said arm resting upon said guide-flange, and a set-screw extending through said slot and the unoccupied hole of the plate and adapted to prevent pivotal movement of the plate and to hold the bracket in longitudinal adjustment, substantially as set forth.

709,965. FOLDING BOX. FLORENCE CRESSER, East Liverpool, Ohio. Filed July 26, 1901. Serial No. 69,657. (No model.)

Claim.—A folding box comprising a bottom carrying cleats and ends, and a cover secured to one of said ends, said ends being formed with openings, and said sides carrying wings which overlap the vertical edges of the said ends, metallic straps attached to said wings and secured in the openings of the said ends, said cover carrying at its free end a depending wing, a handle secured to the box at one of its ends, and having its free end extending through openings in the cover and the flap thereof, and a band secured to the end of the box adjacent the said top flap, said band and said handle being tied together, substantially as and for the purpose specified.

709,966. CARBONIZING APPARATUS. GEORGE W. CURTIS, Peoria, Ill., assignor to Morrow Protective Process Company, a Corporation of Illinois. Filed Nov. 30, 1901. Serial No. 84,273. (No model.)

Claim.—1. In an apparatus for carbonizing ink on paper, the combination with a casing having a heating-chamber and insertion and discharge apertures, of means for heating said chamber, a support within the heating-chamber for the paper carrying the lines of writing to be carbonized, a gate or door closing the discharge-aperture, and an operating device having a predetermined time movement to automatically tilt the support and open the door at a definite interval after starting, whereby the carbonization of the lines of writing is timed, by inserting the paper into the heating-chamber before or after the starting of the operating device, substantially as set forth.

2. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and insertion and discharge apertures, means for heating said chamber, a tilting tray or rack arranged within said chamber for supporting the paper carrying the lines of writing to be carbonized, a door closing the discharge-aperture and carrying a contact-piece, a rock-shaft for tilting the tray, and means for simultaneously operating the rock-shaft to tilt the tray and engaging said contact-piece to open the door to allow the paper to discharge, substantially as set forth.

3. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and insertion and discharge apertures, means for heating said chamber, a tilting tray or rack arranged within said chamber for supporting the paper carrying the lines of writing to be carbonized, a door closing the discharge-aperture and carrying a contact-piece, a rock-shaft for tilting the tray, a cam carried by the rock-shaft for engaging said contact-piece to open the door, and means for operating the rock-shaft, substantially as set forth.

4. In an apparatus for carbonizing ink on paper, the combination with a casing having a heating-chamber and insertion and discharge apertures, of means for heating said chamber, a tilting tray or rack arranged within said chamber for supporting the paper carrying the lines of writing to be carbonized, a door closing the discharge-aperture and carrying a contact-piece, a rock-shaft for tilting the tray, means for simultaneously operating the rock-shaft to tilt the tray and engaging said contact-piece to open the door, and further means having a predetermined time movement to actuate the means first named to tilt the rack or tray and open the door at a definite interval after starting, whereby the carbonization of the lines of writing is timed, by inserting the paper into the heating-chamber before or after the starting of the operating means, substantially as set forth.

5. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and insertion and discharge apertures, means for heating said chamber, a tilting tray or rack arranged within said chamber for supporting the paper carrying the lines of writing to be carbonized, a door closing the discharge-aperture and carrying a contact-piece, a rock-shaft for tilting the tray, means for simultaneously operating the rock-shaft to tilt the tray and engaging said contact-piece to open the door, a cam for operating the means first named, and a spring-motor for automatically operating the cam, and a stop device for starting and stopping said spring-motor, substantially as set forth.

6. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and a discharge-aperture, a device within the chamber for supporting the paper carrying the lines of writing to be carbonized, said device having comparatively thin-spaced linear strands forming an open-work surface for the paper to rest upon, and means for actuating said device for discharging the paper through said aperture, substantially as described.

7. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and a discharge-aperture, a support within the chamber for the paper carrying the lines of writing to be carbonized, and a rock-shaft connected to the support at one of its edges and adapted to be positively turned to tilt the support to discharge the paper through said aperture, the portion of the support contiguous to the shaft being shaped to form a surface devoid of crevices or projections in which the paper may hang or lodge as it slides off the support, substantially as set forth.

8. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber provided at its top with a transparent panel and discharge-aperture for the heated air, one of which apertures serves as an inlet for the insertion of the paper carrying the lines of writing to be carbonized, said casing also having a discharge-aperture at the base of the heating-chamber, a gate or door closing said aperture, a tilting tray or rack to support the paper, a heating device located in the base of the casing for heating said chamber, a spreader or deflector located between the heater and tray for equably distributing the heat and conducting the heated air to opposite sides of the chamber, and means for simultaneously tilting the tray and opening the door to discharge the paper through said discharge-aperture, substantially as set forth.

9. In an apparatus for carbonizing ink on paper, a casing having a heating-chamber, a heating device below said chamber, a spreader above the heater for equalizing the distribution of heat to the chamber, and a tilting tray above the deflector for supporting the paper carrying the lines of writing to be carbonized, substantially as set forth.

10. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and a discharge-aperture, means for heating said chamber, a foraminous or open-work support within the heating-chamber for the paper carrying the lines of writing to be carbonized, and means for actuating said support to discharge the paper through said aperture, substantially as set forth.

11. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber, and a discharge-aperture, means for heating said chamber, a support within the heating-chamber for the paper carrying the lines of writing to be carbonized, a gate or door closing the discharge-aperture, and means counting between the support and gate whereby said support and gate may be simultaneously and positively tilted and opened to discharge the paper, substantially as specified.

12. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and a discharge-aperture, means for heating said chamber, a support within the heating-chamber for the paper carrying the lines of writing to be carbonized, a gate or door closing the discharge-aperture, and an operating device engaging the support and gate for simultaneously tilting the support and opening the gate to discharge the paper, substantially as set forth.

13. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and a discharge-aperture, means for heating said chamber, a support within the casing for the paper carrying the lines of writing to be carbonized, means for normally sustaining the support in a fixed position relative to the casing and contiguous to the aperture, and an exterior operating device for temporarily inclining the support to discharge the paper after the lines thereon have been carbonized, substantially as described.

14. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and a discharge-aperture, means for heating said chamber, a support within the chamber for the paper carrying the lines of writing to be carbonized, said support being in a position contiguous to the aperture, and means projecting to and operable from the exterior of the chamber for actuating the support to discharge the paper through said aperture, substantially as specified.

15. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber and a discharge-aperture, means for heating said chamber, a tilting support within the chamber for the lines of writing to be carbonized, said support having a fixed axis, means for tilting said support, said means being connected to said support and insertible and removable therewith through the discharge-aperture, substantially as set forth.

16. An apparatus for carbonizing written or printed matter upon paper embodying a heating-chamber and means for heating the same, in combination with a support for the paper, and means adapted to be operated from the exterior of the casing for actuating said support to discharge the paper, substantially as described.

17. In an apparatus for carbonizing ink on paper, the combination of a casing having a heating-chamber provided at its top with a transparent panel and discharge-aperture for the heated air, one of which apertures serves as an inlet for the insertion of the paper carrying the lines of writing to be carbonized, said casing also having a discharge aperture at the base of the heating-chamber, a gate or door closing said aperture, a tilting tray or rack to support the paper, means for heating the chamber, and means for simultaneously tilting the tray and opening the door to discharge the paper through said discharge-aperture, substantially as set forth.

18. In an apparatus for carbonizing ink on paper, the combination of a heating-chamber provided at its top with a transparent panel and vent-apertures for the heated air, one of which apertures serves as an inlet for the insertion of the paper carrying the lines of writing to be carbonized, said casing also having a discharge-aperture for the paper at or near the base thereof, a support within the casing for the paper carrying the lines of writing to be carbonized, and means for actuating said support for discharging the paper through said discharge-aperture, substantially as specified.

709,967. CARBONIZING APPARATUS. GEORGE W. CURTIS, Peoria, Ill., assignor to Morrow Protective Process Company, a Corporation of Illinois. Filed Nov. 30, 1901. Serial No. 84,274. (No model.)

Claim.—1. A portable apparatus for carbonizing ink on paper comprising a heating-chamber provided with feed and discharge apertures, a tray within the chamber and movable to register with said apertures, a gate or valve closing the feed-aperture, means for moving the tray, and means carried by the tray for opening said gate or valve as the tray moves into register with the feed-aperture, substantially as set forth.

2. A portable apparatus for carbonizing ink on paper comprising a heating-chamber provided with feed and discharge apertures, a tray within the chamber and movable to register with said apertures, a gate or valve closing the feed-aperture, means for moving the tray, and a cam carried by the tray for opening said gate or valve as the tray moves into register with the feed-aperture, substantially as set forth.

3. A portable apparatus for carbonizing ink on paper comprising a heating-chamber provided with feed and discharge apertures, a tray within the chamber and movable to register with said apertures, a gate or valve closing the feed-aperture, means for moving the tray, and a cam carried by the tray for opening said gate or valve as the tray moves into register with the feed-aperture, said cam being so constructed as to effect the quick opening and gradual closing of the valve, substantially as set forth.

4. A portable apparatus for carbonizing ink on paper comprising a heating-chamber provided with feed and discharge apertures, a rotary tray within the chamber and movable to come in register with said apertures, a gate or valve closing the feed-aperture, means for rotating the tray, a rock-shaft carrying the valve and provided with an arm, and a cam upon the tray for engaging said arm to rock the shaft and open the valve as the tray moves into register with the feed-aperture, substantially as set forth.

5. A portable apparatus for carbonizing ink on paper comprising a heating-chamber provided with feed and discharge apertures, a rotary tray within the chamber and movable to come in register with said apertures, a gate or valve closing the feed-aperture, means for rotating the tray, a rock-shaft carrying the valve and provided with an arm, a cam upon the tray for engaging said arm to rock the shaft and open the valve, and a stop device for engaging said cam to arrest the motion of the tray, substantially as set forth.

6. In an apparatus for carbonizing ink on paper, the combination of a heating-chamber provided with feed and discharge apertures, a rotary tray within the chamber and movable to come in register with said apertures, a gate or valve closing the feed-aperture, means for rotating the tray, a stop-lug projectable into the path of the tray to arrest the motion thereof, a rock-shaft carrying said lug, and means for maintaining the rock-shaft and lug in adjusted position, substantially as set forth.

7. In an apparatus for carbonizing ink on paper, the combination of a heating-chamber provided with feed and discharge apertures, means for

heating said chamber, a tray movable within the chamber to register with said apertures, means for moving the tray, a gate or valve closing the feed-aperture, a rock-shaft carrying said valve, a cam upon the tray for actuating said rock-shaft, a lug projectable into the path of the cam to arrest the motion of the tray, a rock-shaft for actuating said lug, and means for maintaining the lug in adjusted position, substantially as set forth.

8. In a device for carbonizing ink on paper, the combination of a heating-chamber provided with feed and discharge apertures, means for heating said chamber, a shaft, end pieces upon the shaft, slats connected to the end pieces, a series of V-shaped arms connected to the slats and forming a tray or pocket for the reception of the paper carrying the lines of writing to be carbonized, means for clamping the vertex portions of the arms to the shaft, and means for rotating said shaft, substantially as set forth.

9. In a device for carbonizing ink on paper, the combination of a heating-chamber provided with feed and discharge apertures, means for heating said chamber, a shaft, end pieces upon the shaft, slats connected to the end pieces, a series of V-shaped arms connected to the slats and forming a tray or pocket for the reception of the paper carrying the lines of writing to be carbonized, collars on the shaft between the arms, means for forcing the collars toward each other to clamp the vertex portions of the arms to the shaft, and means for rotating said shaft, substantially as set forth.

10. A portable apparatus for carbonizing ink on paper comprising a supporting-base having a heater arranged therein, a casing mounted upon the base and having inlet and discharge apertures, a drum arranged within the base, heads closing the ends of the cylinder, a wheel rotatably supported by the heads and provided with pockets to receive the papers carrying the lines of writing to be carbonized, and means for operating the wheel, substantially as specified.

11. A portable apparatus for carbonizing ink on paper comprising a heating-chamber provided with feed and discharge apertures, means for heating said chamber, a rotary wheel mounted within the chamber and provided with a series of trays or pockets for receiving the papers carrying the lines of writing to be carbonized from said feed-aperture and moving the same through the heated chamber to the discharge-aperture, a gate or valve closing the feed-aperture, cams upon the wheel for automatically opening said valve as each tray or pocket moves into receiving position, and means for operating said wheel, substantially as set forth.

12. A portable apparatus for carbonizing ink on paper comprising a heating-chamber provided with feed and discharge apertures, means for heating said chamber, a rotary wheel mounted within the chamber and provided with a series of trays or pockets for receiving the papers carrying the lines of writing to be carbonized from said feed-aperture and moving the same through the heated chamber to the discharge-aperture, means for opening the valve as each tray or pocket moves into receiving position, means for engaging the wheel to arrest the motion thereof, and means for operating said wheel, substantially as set forth.

13. In a device for carbonizing ink on paper, the combination of a heating-chamber provided with feed and discharge apertures, a shaft arranged therein, disks mounted upon the shaft, slats connected to said disks, rows of metallic V-shaped arms having their vertex portions bearing on the shaft and their free ends connected to the slats, forming a series of trays or pockets, collars about the shaft between the arms, fastening devices for forcing said collars toward each other to clamp the arms to the shaft, and means for rotating the shaft, substantially as set forth.

14. A portable apparatus for carbonizing ink on paper comprising a base having a heating device arranged therein, a casing supported by and in communication with the base, a drum arranged within the casing and in communication therewith, said casing and drum being provided with hot-air inlets and outlets and feed and discharge apertures for the papers carrying the lines of writing to be carbonized, a wheel arranged within the drum and provided with a series of trays or pockets, and means for rotating said wheel, substantially as set forth.

15. In an apparatus for carbonizing ink on paper, the combination, with a casing provided with vent-openings, of a drum therein and spaced therefrom, the space suitably partitioned to form inlet and outlet spaces for heated air, said spaces being in communication with the casing and the casing and drum provided with feed and discharge apertures, means for supplying heated air to the inlet-space, a tray movable within the drum to register with said apertures, and means for moving the tray, substantially as set forth.

16. In an apparatus for carbonizing ink on paper, the combination, with a casing provided with vent-openings, of a drum therein and spaced therefrom, the space suitably partitioned to form inlet and outlet spaces for heated air, said spaces being in communication with the casing and the casing and drum provided with feed and discharge apertures, means for supplying heated air to the inlet-space, a rotary wheel mounted within the drum and provided with a series of trays or pockets for receiving the papers carrying the lines of writing to be carbonized from said feed-aperture and moving the same through the drum to the discharge-aperture, and means for operating said wheel, substantially as set forth.

709,968. AIR-PUMP. CHARLES M. DAY, Maltabend, Mo., assignor of one-half to Milton W. Walker, Maltabend, Mo. Filed Apr. 10, 1900. Serial No. 12,366. (No model.)

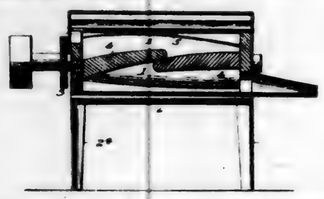

Claim.—In a device of the character described, the combination of a closure or casing and twin screws or worms, arranged in said closure, said casing or closure having an air-inlet in one side, and one end, and a blast-outlet in its other end and at or near its other side, substantially as set forth.

709,969. SPRING-CUSHION. EDWARD DENEGRE, Chicago, Ill., assignor to McCord & Company, Chicago, Ill., a Corporation of New Jersey. Filed May 22, 1902. Serial No. 108,551. (No model.)

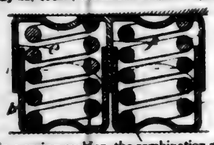

Claim.—1. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a friction element upon the exterior of the coiled spring formed of resilient spring metal and moving with one of the parts to be cushioned, and a rigid friction element moving with the other part to be cushioned, substantially as described.

2. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a friction element upon the exterior of the coiled spring formed of resilient spring metal and moving with one of the parts to be cushioned, and a rigid friction element moving with the other part to be cushioned, the first aforesaid friction element being in the form of a cap-plate inclosing the coiled spring, substantially as described.

3. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a friction element upon the exterior of the coiled spring formed of resilient spring metal and moving with one of the parts to be cushioned, and a rigid friction element moving with the other part to be cushioned, the second aforesaid friction element being in the form of a cap-plate inclosing the coiled spring, substantially as described.

4. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a friction element upon the exterior of the coiled spring formed of resilient spring metal and moving with one of the parts to be cushioned, and a rigid friction element moving with the other part to be cushioned, the first friction element being in the form of a flexible cap-plate, while the second friction element is in the form of a rigid cap-plate, substantially as described.

5. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a friction element upon the exterior of the coiled spring formed of resilient spring metal and moving with one of the parts to be cushioned, and a rigid friction element moving with the other part to be cushioned, the first friction element being in the form of a flexible cap-plate while the second friction element is in the form of a rigid cap-plate, the rigid cap-plate inclosing the flexible cap-plate, substantially as described.

6. The combination with a plurality of coiled springs interposed between the parts to be cushioned, of a plurality of flexible cap-plates moving with one of the parts to be cushioned, structurally distinct from each other and formed of spring metal to thereby secure friction, and a plurality of cap-plates formed in a single unitary structure with which the flexible cap-plates have frictional engagement and having side walls *e*, *e* and webs *f*, *f* affording pockets for receiving the coiled springs, substantially as described.

7. The combination with a plurality of coiled springs interposed between the parts to be cushioned, of a plurality of flexible cap-plates moving with one of the parts to be cushioned, structurally distinct from each other and formed of spring metal to thereby secure friction, and a plurality of rigid cap-plates formed in a single unitary structure with which the aforesaid cap-plates have frictional engagement and having side walls *e*, *e* and webs *f*, *f* affording pockets for receiving the coiled springs, substantially as described.

8. The combination with a plurality of coiled springs interposed between the parts to be cushioned, of a plurality of flexible cap-plates moving with one of the parts to be cushioned, structurally distinct from each other and formed of spring metal to thereby secure friction, and a plurality of cap-plates formed in a single unitary structure with which the flexible cap-plates have frictional engagement, and having side walls *e*, *e* and webs *f*, *f* affording pockets for receiving the coiled springs, the first aforesaid cap-plates being inclosed by the second aforesaid cap-plates, substantially as described.

9. The combination with a plurality of coiled springs interposed between the parts to be cushioned, of a plurality of flexible cap-plates moving with one of the parts to be cushioned, structurally distinct from each other and formed of spring metal to thereby secure friction, and a plurality of rigid cap-plates formed in a single unitary structure with which the aforesaid cap plates have frictional engagement, and having side walls *e*, *e* and webs *f*, *f* affording pockets for receiving the coiled springs, the first aforesaid cap-plates being inclosed by the second aforesaid cap-plates, substantially as described.

709,970. GARMENT-HOLDER. NATHAN DOUGLAS, Cambridge, Mass. Filed Jan. 23, 1902. Serial No. 90,896. (No model.)

Claim.—1. A garment-holder comprising a body portion, a pair of separated engaging projections in proximity to each end of said body portion, and adjacent portions in connection with each of the engaging projections lying between the same and providing a practically continuous stop-face of at least double the width of each of said engaging projections.

2. A garment-holder comprising a body portion, a pair of separated engaging projections in proximity to each end of said body portion, and adjacent portions in connection with each of the engaging projections occupying substantially the entire width between the same and providing a practically continuous stop-face of at least double the width of each of said engaging projections.

3. A garment-holder comprising a body portion, a plurality of separated engaging projections in proximity to each end of said body portion, and a coil connecting the body portion with each of the engaging projections, said coils lying closely adjacent to one another.

4. A garment-holder comprising a body portion, a plurality of separated engaging projections in proximity to each end of said body portion, and a coil connecting the body portion with each of the engaging projections, said coils lying closely adjacent to one another and having their inner side closing the space between the body portion and the engaging projections.

5. A garment-holder comprising a body portion, a pair of separated engaging projections in proximity to each end of said body portion, and a coil connecting the body portion with each engaging projection, said coils lying between the engaging projections and closely adjacent to one another.

709,971. ELECTROLYTIC DECOMPOSITION OF ALKALINE SALTS. EDWIN ESSER and MEYER WILDERMANN, London, England. Filed Mar. 28, 1901. Serial No. 53,276. (No specimens.)

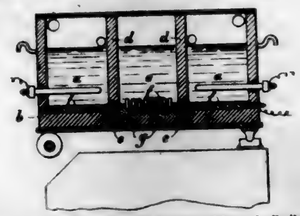

Claim.—1. In the electrolytic decomposition of alkaline salts, the herein-described process of increasing the speed with which alkaline metal existing as amalgam combines with water which consists in applying to pieces of carbon a conductive material independent of the amalgam, and then placing of said carbon pieces in contact with the amalgam, substantially as described.

2. In the electrolytic decomposition of alkaline salts, the process of increasing the speed with which alkaline metal existing as amalgam combines with water, consisting in placing small pieces of a combination of carbon and metal filings on the amalgam, substantially as described.

709,972. ROLLING-MILL. VICTOR E. EDWARDS, Worcester, Mass. Filed Aug. 8, 1900. Serial No. 26,258. (No model.)

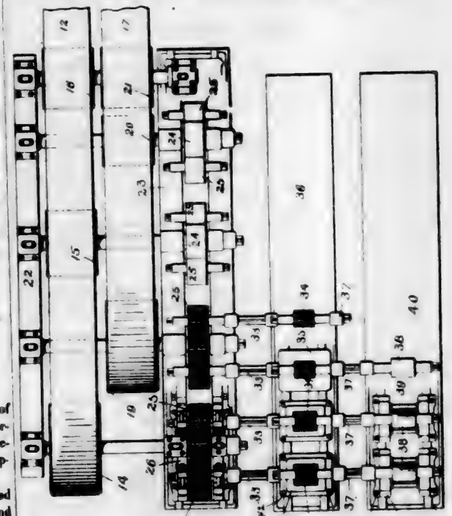

Claim.—1. The combination of a continuous rolling-mill comprising a plurality of sets of rolls, driving connections, and means for coupling the rolls with different members of the driving connections, so that successive sets of rolls may be driven at different relative speed ratios to adapt the rolling-mill to the production of different products.

2. In a continuous rolling-mill, the combination of a bed plate or frame, roll-stands adjustably mounted thereon, and driving connections having spindles turning at different relative speeds, said parts being arranged so that the rolls may be coupled to and driven from different sets of spindles to adapt the rolling-mill to the production of a variety of products.

3. In a continuous rolling-mill, the combination of a bed plate or frame, roll-stands adjustably mounted thereon, and driving connections having pinion-housings adjustably mounted thereon, and driving connections having shafts turning at different relative speeds, said parts being arranged so that by adjusting the roll-stands and pinion-housings the rolls may be driven from different sets of shafts to adapt the rolling-mill to the production of a variety of products.

4. The combination of a set of primary shafts, a set of secondary shafts geared to turn at different speeds from the primary shafts, and a continuous rolling-mill arranged so that its roll-stands may be adjusted to have the rolls thereof driven from either the primary or secondary set of shafts, as desired.

5. The combination of a set of primary shafts, a set of secondary shafts arranged below and geared to turn at different speeds from the primary shafts, a continuous rolling-mill and driving-pinions therefor arranged so that the upper pinions may be driven from the primary shafts or the lower pinions driven from the secondary shafts, as desired.

6. In a continuous rolling-mill, the combination of a bed plate or frame, roll-stands adjustably mounted thereon, a second bed plate or frame having pinion-housings adjustably mounted thereon, a primary set of driving-shafts, and a secondary set of driving-shafts geared to turn at different speeds from the primary shafts, said parts being arranged so that the rolls may be coupled to and driven either from the primary or secondary set of shafts, as desired.

7. The combination of a set of primary shafts, a pulley, belts for driving the shafts from said pulley, a set of secondary shafts geared to turn at different speeds from the primary shafts, and a continuous rolling-mill arranged so that its roll-stands may be relocated to have its rolls driven from either the primary or secondary set of shafts, as desired.

8. The combination of gears for turning the rolls of a continuous

rolling-mill, gear-housings therefor, consisting of side plates, each of which has a main box or center bearing, and a tapering split socket at each side thereof, tapered flanged boxes fitting into said sockets, bolts extending through the flanges of the boxes, and clamping-bolts for clamping said boxes in place, substantially as described.

709,973. DENTAL APPARATUS. LOUIS BELESTEN, Paris, France. Filed Feb. 25, 1901. Serial No. 48,881. (No model.)

Claim.—1. The combination with the two denture-plates and securing-hooks secured thereto, of a coiled spring, and small disks secured to the ends of the spring and provided with notches in which the securing-hooks are adapted to engage.

2. The combination with the two denture-plates and tubes secured therein and securing-hooks carried by said plates, of a coiled spring, small disks secured to the ends thereof and provided each with a notch within which the securing-hooks engage, and pins secured to the disks and entering the tubes in the plates.

3. A coiled spring for use as described, provided with securing-disks at its ends, and antiseptic soft rubber between the windings of the spring.

709,974. ELEVATOR. CHARLES R. BEERS, Chicago, Ill., assignor of one-half to Joseph Rice, Chicago, Ill. Filed Feb. 3, 1901. Serial No. 45,680. (No model.)

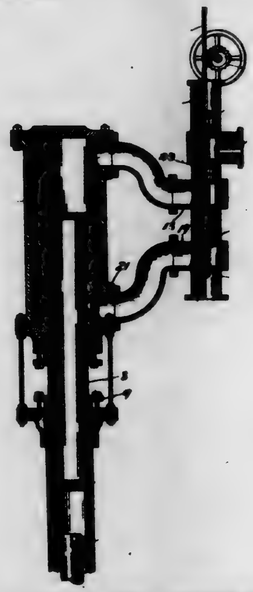

Claim.—An elevator comprising an elevator-plunger, an elevator-cylinder surrounding, and of greater internal diameter than, the elevator-plunger, having a stuffing-box, a receiving-cylinder of greater internal diameter than the elevator-cylinder, having a stuffing-box of the same internal diameter as the stuffing-box of the elevator-cylinder, a high-pressure plunger of the same diameter as the internal diameter of the elevator-cylinder and working through the stuffing-boxes and in both the elevator-cylinder and receiving-cylinder, having a piston of the internal diameter of and working in the receiving-cylinder, a valve-housing having inlet, outlet and intermediate ports, the ports connecting the receiving-cylinder, at opposite sides of the piston with the intermediate ports, a balance piston-valve having four pistons for controlling the ports in the valve-casing and means for operating the piston-valve so that the pressure may be admitted to the outer end of the receiving-cylinder for forcing the piston of the latter inward while permitting the liquid on the inner side of the piston of the receiving-cylinder to escape, and for placing the ports of the receiving-cylinder in communication through the intermediate ports of the valve-casing, substantially as set forth.

709,975. RAILWAY-TRACK STRUCTURE. EDWARD B. ENTWISLE, Johnstown, Pa., assignor to the Lorain Steel Company, a Corporation of Pennsylvania. Filed Feb. 8, 1902. Serial No. 93,229. (No model.)

Claim.—1. In a switch mate, a body portion formed of cast metal, rail members extending therefrom for connection with the adjacent track-rails, a guard-rail secured to one side of said body portion, and a hard-metal track-surfaced plate seated on said body portion between a flange thereof and the said guard-rail.

2. In a switch mate, a body portion of cast metal having an upwardly-extending flange at one side, a guard-rail secured to the opposite side of said body portion, and a hard-metal track-surfaced plate seated between said flange and guard-rail.

3. In a switch mate, a body portion of cast metal having an upwardly-extending flange at one side, a guard-rail removably secured to the opposite side of said body portion, and a hard-metal track-surfaced plate seated between said flange and guard-rail.

4. The herein-described switch mate, consisting of the body A of cast metal, having the side flange a, the rail members cast into said body portion, the guard-rail secured thereto, and the hard-metal track-surfaced plate seated between the said flange and the guard-rail, and provided with a lip which fits under the head of the said rail.

5. A track structure, consisting of a body of cast metal having rail-member extensions for connection with the adjacent rails of main and branch tracks, a guard-rail removably secured to one side of said body, and a hardened track-surfaced plate whose ends abut the inner ends of said extensions, and which is seated in a recess or pocket, one wall of which is formed by the removable guard-rail.

709,976. LAWN-TRIMMING IMPLEMENT. CHARLES PERSTROM, Chicago, Ill. Filed Sept. 12, 1901. Serial No. 75,189. (No model.)

Claim.—1. A lawn-trimming implement comprising a trough-shaped head adapted to cut into the sod, a guide adapted to rest upon the sidewalk and the like, to control the depth of furrow, and a handle suitably secured to said head.

2. A device for trimming lawns adjacent to sidewalks and the like, comprising substantially a head having sharpened cutting edges adapted to cut a narrow furrow, and a guide adapted to rest upon the sidewalk and control the depth of furrow.

3. A device for trimming lawns adjacent to sidewalks, comprising substantially a head having the sides, a, a', and connecting-bottom, a^2, sharpened upon their forward edges, and adapted to cut into the sod to produce a narrow furrow, a flange, a', extending outward from the side a, and adapted to rest upon the sidewalk to guide the device in its movement with respect thereto, and a handle suitably secured to said head.

709,977. PNEUMATIC CUSHION. JOHN H. PERRET, Chicago, Ill., assignor of one-half to David G. Stearns, Chicago, Ill. Filed Sept. 26, 1901. Serial No. 76,079. (No model.)

Claim.—1. A tie-hub for cushions comprising a body portion having a fixed flange, of a clamping-washer, a wedge-key piercing said body for adjusting the clamping-washer thereon, and a triangular bail pivoted upon the body aforesaid adapted to receive at its centrally-located swinging apex a cushion tie-band, substantially as described.

2. A tie-hub for cushions comprising a body portion, a fixed flange and an adjustable clamping-washer said flange and washer having opposing concave faces, of a wedge-key piercing said body for adjusting the clamping-washer thereon, and a triangular self-centering bail pivoted upon the body aforesaid adapted to receive at its swinging apex a cushion tie-band, substantially as described.

3. In a cushion the combination with oppositely-arranged tie-hubs each having a body portion, a screw-cap, a fixed flange and an adjustable clamping-washer, said cap, flange, and washer having opposing concave faces between which portions of the cushion are secured; of a triangular self-centering bail pivoted upon each body portion aforesaid, and a flexible tie-band connecting said bails by their swinging apexes, substantially as described.

709,978. AURIPHONE. FRANK I. GANS, Anaconda, Mont. Filed May 8, 1902. Serial No. 106,656. (No model.)

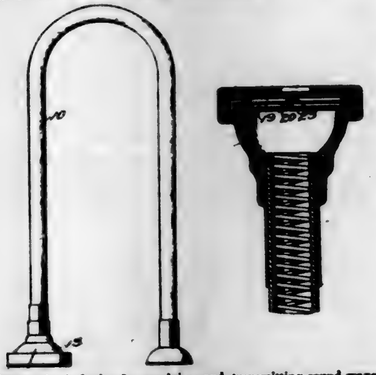

Claim.—1. A device for receiving and transmitting sound-waves, comprising a box or casing having inlet and outlet openings, a pair of rigidly-confined imperforate diaphragms spaced to form an air-chamber, and a centrally-disposed cone carried by one of said diaphragms and disconnected from but adapted for contact with the other diaphragm.

2. An acoustic appliance comprising a box or casing having inlet and outlet openings, a pair of separated imperforate diaphragms arranged to form an intervening air-space, and a centrally-disposed block carried by one diaphragm and disconnected from but disposed in contact with the other diaphragm.

3. An acoustic appliance comprising a box or casing having inlet and outlet openings, a pair of separated imperforate diaphragms, means for clamping and holding the edge portions of said diaphragms, and a block carried by one of the diaphragms, said block being of a height slightly greater than the space between the edge portions of the diaphragms.

4. An acoustic appliance comprising a box or casing having inlet and outlet openings and provided with a flange or shoulder, an outer imperforate diaphragm seated on the flange or shoulder and separated from the adjacent wall of the box or casing by an air-chamber, a clamping-ring for holding the diaphragm against the flange, a second imperforate diaphragm mounted on the ring and having a centrally-disposed cone disconnected from but adapted for contact with the central portion of the outer diaphragm, and means for confining the diaphragms and ring in place.

5. An acoustic appliance comprising a box or casing having inlet and outlet openings, a flange within the same, an outer diaphragm mounted on said flange, a spacing-ring engaging the opposite face of said diaphragm, a second diaphragm mounted on the spacing-ring, a clamping-ring mounted on the second diaphragm, means for engaging the clamping-ring to firmly hold the diaphragms and ring in position, and a pair of cones mounted centrally on the opposite faces of the second diaphragm, either of said cones being movable to a position in contact with the central portion of the outer diaphragm.

6. In an acoustic appliance, the combination of the sectional box or casing having a threaded connection between the sections, a flange or shoulder formed within one of said sections, an outer imperforate diaphragm mounted on said flange or shoulder, a spacing-ring mounted on the imperforate diaphragm, a second diaphragm mounted on the spacing-ring, a clamping-ring arranged in contact with said diaphragm and adapted to be engaged and clamped in place by a portion of the box or casing, and a cone secured to the central portion of the second diaphragm and in engagement with the outer diaphragm, the height of said cone being greater than the thickness of the spacing-ring.

709,979. FUSE-IGNITING TAPE. JULIUS H. GARDIN, Denver, Colo., assignor of one-half to David H. Foreman and William C. Beans, Denver, Colo. Filed Nov. 11, 1901. Serial No. 82,071. (No model.)

Claim.—1. As an improved article of manufacture, an igniting device composed of a strip of material folded to form a flat tape, said device having a fragile igniting-line whereby perfect contact of the same with the powder core, may be effected by inserting the flat igniting-tape in the split end of the blasting-fuse.

2. As an improved article of manufacture, a fuse-igniting tape, composed of a ribbon of suitable material, coated with a readily-inflammable substance, and folded longitudinally and fastened in the folded position, substantially as described.

3. As an improved article of manufacture, a fuse-igniting tape, composed of a ribbon or strip of suitable material coated upon one side with a suitable readily-inflammable compound, folded inwardly from the edge by a succession of longitudinal folds and fixed in the folded position, forming an igniting-tape having a fragile igniting-line longitudinally disposed thereon.

4. As an improved article of manufacture, a fuse-igniting tape, composed of a ribbon of suitable material coated with an explosive substance or compound, and folded longitudinally, and suitably fixed, forming an inflammable tape the same being coated to render the fabric impervious to water.

5. A fuse-igniting tape, composed of a strip of material coated with an explosive substance, and folded to form a fragile fuse-igniting line, longitudinally disposed for the purpose set forth.

6. A fuse-igniting tape constructed of suitable material and of a length to be attached to a plurality of blasting-fuses, whereby all of the fuses may be lighted from a single ignition of the tape, the said tape being formed from a strip of suitable material coated with an inflammable substance and folded.

7. A fuse-igniting tape having a fragile, readily-inflammable igniting-line, longitudinally disposed thereon for the purpose set forth.

8. A fuse-igniting tape formed from a strip of material coated on its inner surface with an inflammable or explosive substance, and its exterior surface with a substance adapted to prevent injury from moisture, the said strip being folded, substantially as described and for the purpose set forth.

9. A fuse-igniting tape composed of a strip of suitable material coated with an inflammable substance and folded to form a number of loose layers permitting circulation of air to facilitate the travel of the fire, substantially as described.

10. A flat, inflammable, fuse-igniting tape having fragile igniting-lines disposed upon the edges thereof, substantially as described.

709,980. GARDING-MACHINE. ERNEST GELLAIR, Lauenburg, Germany. Filed Feb. 4, 1901. Serial No. 46,917. (No model.)

Claim.—A differential friction-clutch for imparting alternately different velocities to a cleaning-roller of a carding-machine comprising one fixed friction-cone upon the shaft of the cleaning-roller, a friction-band on the face of said cone, a belt-pulley and a rope-pulley sliding and rotating upon the hub of said friction-cone, a concentric ball-race in the web of said rope-pulley, a conical rim on the inner side of said belt-pulley suitable to engage with the friction-band of said cone, a spring between the webs of said pulley and said friction-cone tending to separate them, an adjustable friction-cone, a friction-band on the face of said adjustable cone, a pulley sliding and rotating on the hub of said adjustable cone, a ring fixed in the rim of said pulley having a concentric groove comprising a shallow and a deeper portion, a friction-ball running alternately in said shallow portion or in the deeper portion of said groove in connection with the ball-race of the rope-pulley, a set-collar on the adjustable cone, a spring between the set-collar and the hub of the belt-pulley provided with the ring containing the groove with the shallow and deeper portions, said spring tending to press the conical rim of said belt-pulley upon the friction-band of the adjustable cone.

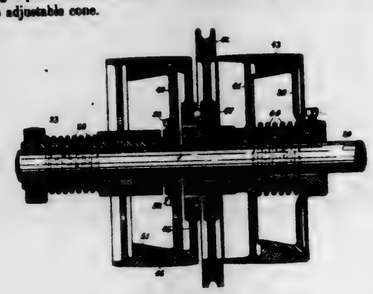

709,981. CAR-BRAKE. GEORGE M. GRIGGS, Scottdale, Pa. Filed Sept. 3, 1901. Serial No. 74,100. (No model.)

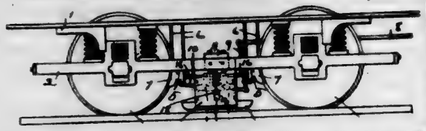

Claim.—The combination with the brake-beams having shoes at each end and adapted to engage the wheels, and means of forcing said shoe-carrying beams toward the wheels, of a frame arranged at each side of the track between the wheels, a pair of cams pivoted in each of said frames, rods connecting said cams with said brake-beams, a block suspended in each frame by a spring to cause engagement with said cams, and a rail braking-shoe carried by each of said blocks, as shown and set forth.

709,982. APPARATUS FOR SEPARATING MAGNETIC AND NON-MAGNETIC MATERIALS FROM ONE ANOTHER. JOSEF W. R. T. HEBERLE, Sala, Sweden. Filed Dec. 28, 1897. Serial No. 664,097. (No model.)

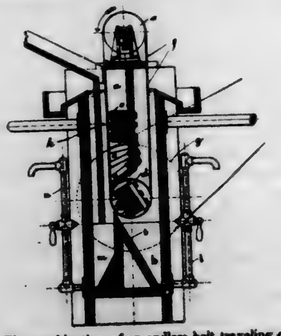

Claim.—The combination, of an endless belt traveling over pulleys in such a manner that one of its free sides moves downward vertically, a system of magnets inside said belt, a tank in which said belts and magnets are immersed, a vertical partition between the downward-moving part of the belt and the wall of said tank, another partition extending from the bottom of the tank and the lower pulley close to the same, and inlets and outlets for the water from said tank, substantially as and for the purpose set forth.

709,988. GARBAGE-RECEPTACLE. FREDERICK H. HOLSHAUER, Detroit, Mich. Filed Mar. 12, 1902. Serial No. 97,845. (No model.)

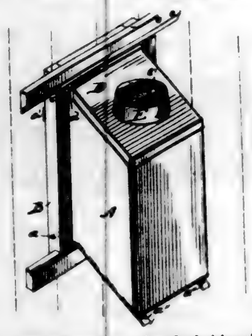

Claim.—1. In a garbage-receptacle, a deodorizing-chamber, secured to said cover, a wall for dividing said chamber into two compartments one of said compartments adapted to support a liquid deodorizer, absorbent material located within the other compartment and means whereby the removal of the cover will project a small quantity of the liquid deodorizer onto the absorbent material, substantially as described.

2. In a garbage-receptacle, a hinged cover, a receptacle for a liquid deodorizer mounted on said cover, a chamber adapted to support absorbent material and communicating with the garbage-receptacle, a suitable absorbent located within said chamber, communicating means between the liquid-chamber and that containing the absorbent material whereby when the cover is raised a portion of the liquid will be projected upon the absorbent material, substantially as described.

3. In a garbage-receptacle, a hinged cover, a deodorizing-chamber mounted on said cover, a dividing-wall located within said deodorizing-chamber, a spout mounted in said wall to provide a passage between the compartments, one of said compartments adapted to receive a liquid deodorizer, the other to support cotton-batting or other absorbent material, a grating adapted to serve as a support for the absorbent material and afford communication between said compartments and the garbage-chamber, substantially as described.

709,984. RESONATOR OR AMPLIFIER FOR PHONOGRAPHS. WILLIAM S. HOW, London, England, assignor of one-half to George Lindsay Johnson, London, England. Filed Mar. 1, 1901. Serial No. 49,476. (No model.)

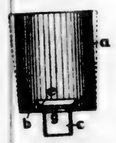

Claim.—1. In a resonator or amplifier for phonographs and the like the combination of a tube *a* having a flat bottom *b* and a cylindrical neck *c* with one or more cup-shaped modulators *d e* having apertures *f g* in the bottom thereof all substantially as specified for the purpose stated.

2. In a resonator or amplifier for phonographs and the like the combination of a tube *a* having a flat bottom *b* and a cylindrical neck *c* with one or more cup-shaped modulators *d e* and a cone *h* adapted to fit the mouth of the tube *a* all substantially as specified for the purpose stated.

3. In a resonator or amplifier for phonographs and the like the combination with the tube *a* attached to the sound-box of the instrument, of a reflector consisting of a semicylinder *k* having a curved top *m* and side wings *n n*, the semicylinder *k* being secured to a ring *l* adapted to fit the mouth of the tube *a*, all substantially as specified for the purpose stated.

4. In a resonator or amplifier for phonographs and the like the combination of a tube *a* having a flat bottom *b* and a cylindrical neck *c* with one or more cup-shaped modulators *d e* a cone *h* adapted to fit the tube *a* and a reflector *k* having a curved top *m* and side wings *n n* and a ring

l secured to the reflector *k* all substantially as specified and for the purpose stated.

709,985. SHOW-WINDOW CONSTRUCTION. HAMILTON HUNTER, Covington, Ky., assignor of one-half to Shelley D. Rouse, Covington, Ky. Filed Nov. 4, 1901. Serial No. 81,030. (No model.)

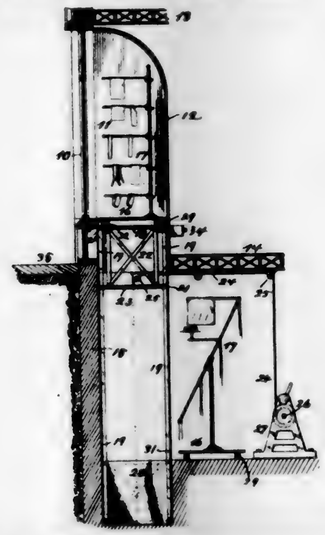

Claim.—1. The combination with a show-window inclosure being open vertically in one direction, of a floor for it independent from the other parts which form the inclosure of the show-window provided with casters on its under side and intended to carry the fixtures, a platform upon which this floor rests, means for moving this platform and floor thereon vertically out of the space below the show-window inclosure to a position where the floor with the fixtures thereon may be laterally moved off therefrom, and whereby this platform with these parts may be returned again to bring the floor back to its normal position within the show-window inclosure, means for detachably holding it in each normal position guides to hold platform and floor in proper position during their vertical movement, each guides being cut out at 31 to permit the lateral movement of the floor to and from the platform and curbs 32 to guide the floor in such lateral movement.

2. The combination with a show-window inclosure being open below, where it communicates with a laterally open space, of a floor for this inclosure which normally closes this opening therein, a combined platform and frame 22 upon which this floor rests in a manner to be free for lateral removal therefrom, said platform-frame being capable of a descending movement into the laterally open space below and to a depth therein permitting removal therefrom and corresponding replacing of the show-window floor and the goods thereon, in a lateral direction, means for raising these parts to return the floor to its normal position within the show-window inclosure, guides extending downwardly from the lower part of the show-window inclosure into the open space below between which this platform-frame travels during its movements and which are so spaced as to permit between them the lateral removal of the floor mentioned and resting on said platform, which latter remains in guiding contact with and between said guides and means to hold the parts in their raised position.

3. The combination with a show-window inclosure being open below, of a floor for this inclosure which normally closes this opening therein, a combined platform and frame 22 upon which this floor rests in a manner to be free for lateral removal therefrom, said platform-frame being capable of a descending movement, a pit to receive this platform-frame to permit its descent to a depth bringing the show-window floor to a level with the stationary floor surrounding the top of the pit to permit such show-window floor to be laterally moved off and on from such platform, supports 38 bridging the clearance between the platform-frame and the edge of the pit when the former is in its lowest position, means for raising these parts to return the floor to its normal position within the show-window inclosure, guides between which this platform-frame travels during its movements and means to hold the parts in their raised position.

709,986. APPARATUS FOR OPERATING LUBRICATING-PUMPS. BARRY IVES, Chicago, Ill., assignor to Charles M. Rogers and Louis C. Rollo, Chicago, Ill. Filed Feb. 2, 1901. Renewed Dec. 30, 1901. Serial No. 87,848. (No model.)

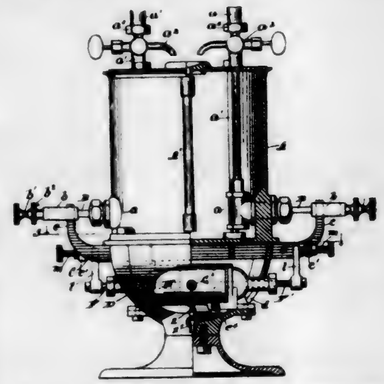

Claim.—1. In an apparatus for operating lubricating-pumps, the combination with the pump-body, of a slide comprising two parallel bars movably located in the lower portions of the body for the purpose of reciprocating the pistons of the pump, means at the ends of the slide to adjustably secure it to the piston-rods of the pump, a steam-engine located beneath the pump-body, reciprocating piston-rods extending from each end of said engine, an arm on each of said rods extending upwardly and between the bars of the slide, and adjustable means located at each end of the slide whereby the movement thereof imparted by the arms may be changed.

2. In an apparatus for operating lubricating-pumps, the combination with the pump-body, of a slide for the purpose of reciprocating the pistons of the pump, means at the ends of the slide to adjustably secure it to the piston-rods of the pump, an engine for operating the said slide, said engine comprising an expansion-chamber and a reciprocating piston-head therein, arms connected to and operated by means of said piston-head, and adjustable means engaged by said arms whereby the range of movement imparted to said slide may be changed.

709,987. WALKING TOY. EDWARD A. JEFFERIS, Moseley, near Birmingham, England. Filed June 17, 1902. Serial No. 112,062. (No model.)

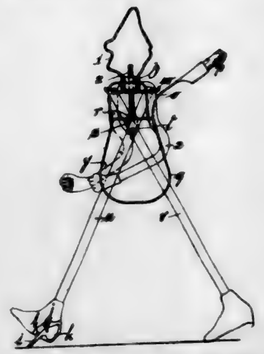

Claim.—1. In walking toys, the combination with a jointed figure of a counterweighted stilt-piece in a foot of the said figure automatically varying the length of the leg, a propelling-handle, and a leg-jerking attachment on the body of the figure, substantially as set forth.

2. In walking toys, the combination with a jointed figure of a counterweighted stilt-piece in a foot of the said figure automatically varying the length of the leg, a propelling-handle, and a leg-jerking spring attachment disposed and fixed between the handle and the body of the figure, substantially as set forth.

3. In walking toys, the combination with a jointed figure of a counterweighted stilt-piece in a foot of the said figure automatically varying the length of the leg, a propelling-handle, a leg-jerking attachment on the body of the figure, and connections between the legs and the arms transmitting movement from the one to the other, substantially as set forth.

4. In walking toys, the combination with a jointed figure of a counterweighted stilt-piece in a foot of the said figure automatically varying the length of the leg, a propelling-handle, a leg-jerking spring attachment, and a pair of arms in rigid connection with each other and jointed with extensions from the legs of the figure, substantially as set forth.

5. In walking toys, the combination with a jointed figure of a counterweighted stilt-piece in a foot of the said figure automatically varying the length of the leg, a propelling-handle, a leg-jerking spring attachment, and a pair of arms in rigid connection with each other and with the head of the figure and jointed with extensions from the legs of the same, substantially as set forth.

6. In walking toys, the combination with a jointed figure of a counterweighted stilt-piece in a foot of the said figure automatically varying the length of the leg, a propelling-handle, a leg-jerking spring attachment, a pair of arms in rigid connection with each other and with the head of the figure and jointed with extensions from the legs of the same, and a steadying-piece fixed to the body part and projecting into the interior of the head, substantially as set forth.

709,988. **BURIAL-CASE.** JOHN B. KERR, Jr., Toronto, Ohio. Filed Feb. 15, 1902. Serial No. 94,170. (No model.)

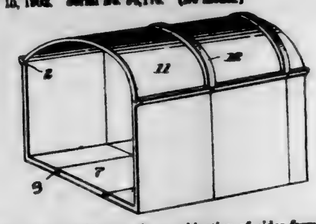

Claim.—In a burial-case, the combination of sides formed in sections with upwardly-extending flanges carried by the sections, V-shaped tongues carried by the sides of the sections with corresponding grooves formed in the sides of the adjacent sections to receive said tongues, inwardly-extending portions carried by the lower ends of the sections with flanges carried by the ends of said portions, a flanged bottom engaging said flanges of the said portions, the end sections being curved, and a flanged arched cover provided with strengthening-ribs, the ends of the cover being seated against the flanges of the side sections, and the strengthening-ribs engaging the upper face of the side-section flanges, substantially as described.

709,989. **HAIR-CRIMPER.** JOHN A. KLARER, Pittsburg, Pa. Filed Sept. 3, 1901. Serial No. 74,118. (No model.)

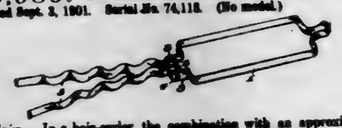

Claim.—In a hair-curler, the combination with an approximately rectangular frame having its forward end formed intermediate its sides with an outwardly-extending loop, the inner end thereof being contracted, the rear end of said frame provided with angular extensions having openings, of a pair of resilient corrugated prongs pivotally mounted upon a pin arranged in the openings of the said extensions, the free ends of said prongs adapted to normally spring apart when in open position and pressed together and fitted between the contracted portion of the loop when in closed position, a washer interposed between the rear ends of the said prongs, and a washer interposed between each prong and the angular extensions of the frame, substantially as described.

709,990. **LEVEL, PLUMB, AND INCLINOMETER.** GEORGE W. LEMLE, Hagingrove, Iowa, assignor of one-half to George J. Bushbeck, Hagingrove, Iowa. Filed Dec. 28, 1901. Serial No. 86,723. (No model.)

Claim.—1. An instrument of the character described, comprising a block, a ring having a hollow extension, rotatably mounted within said block, an adjustable support within said hollow extension, and a pointer suspended from said adjustable support, adapted to swing over an indicator in said ring, substantially as set forth.

2. An instrument of the character described, comprising a block, a ring, having a hollow extension, rotatably mounted within said block, a plug adjustable within said extension, and a pointer suspended from said plug, adapted to swing over an indicator in said ring, substantially as set forth.

3. An instrument of the character described, comprising a block, a ring, having a tubular extension, rotatably mounted within said block, a plug adjustable with said extension, and a pointer suspended from said plug, adapted to swing over an indicator in said ring, substantially as set forth.

4. An instrument of the character described, comprising a block having a recess therein, bearing-plates secured to the sides of said block, having openings opposite said recess and annular depressions at the edge of said openings, a ring, having a hollow extension, rotatably mounted between said bearing-plates, a plug adjustable within said hollow extension, and a pointer, suspended from said plug, adapted to swing over an indicator within said ring, substantially as set forth.

5. An instrument of the character described, comprising a block, a ring, having a hollow extension, rotatably mounted within said block, a pointer, suspended from within said hollow extension, adapted to swing over the indicator in said ring, and a plate, connected to said ring, adapted to be flush with the edge of said block, substantially as set forth.

6. An instrument of the character described, comprising a block, having bearing-plates provided with openings secured to said block, a ring, having a hollow extension, rotatably mounted between said bearing-plates, a pointer, suspended from within said hollow extension, adapted to swing over an indicator in said ring, and transparent disks interposed between said bearing-plates and said ring, substantially as set forth.

7. An instrument of the character described, comprising a block, a ring having a hollow extension, rotatably mounted within said block, an indicator within said ring, comprising a wire suitably held at opposite ends in the edges of a cup, and a pointer, suspended from within said tubular extension, adapted to swing over said indicator, substantially as set forth.

709,991. **CAR-FENDER.** JOHN H. LOTTER, Covington, Ky., assignor to the Fred J. Meyers Manufacturing Company, Hamilton, Ohio. Filed June 23, 1902. Serial No. 113,788. (No model.)

Claim.—1. In a car-fender, the combination, substantially as set forth, with a car, a scoop-shaft supported thereunder forward of the front wheels, a forwardly-projecting scoop fast to the scoop-shaft, means for elevating the scoop, a buffer articulately supported at the front end of the car, a trip-shaft supported under the car to the rear of the buffer, and arms fast thereon and linked to the buffer, of a lever longitudinally disposed below the car and mounted on a pivot between and above said two shafts, a trigger-arm fast on the scoop-shaft and normally engaging the rear end of said lever, a forwardly-projecting trip-arm fast on said trip-shaft under the forward end of said lever, and a connection between said trip-arm and the forward end of said lever.

2. In a car-fender, the combination, substantially as set forth, with a car, a scoop-shaft supported thereunder forward of the front wheels, a forwardly-projecting scoop fast to the scoop-shaft, means for elevating the scoop, a buffer articulately supported at the front end of the car, a trip-shaft supported under the car to the rear of the buffer, and arms fast thereon and linked to the buffer, of a lever longitudinally disposed below the car and mounted on a pivot between and above said two shafts, a trigger-arm fast on the scoop-shaft and normally engaging the rear end of said lever, a forwardly-projecting trip-arm fast on said trip-shaft under the forward end of said lever, a connection between said trip-arm and the forward end of said lever, and a hook-lug projecting downwardly from the rear portion of said lever and adapted to engage to the rear of said trigger-arm when the scoop is in depressed active position.

3. In a car-fender, the combination, substantially as set forth, with a car, a scoop-shaft supported thereunder forward of the front wheels, a forwardly-projecting scoop fast to the scoop-shaft, means for elevating the scoop, a buffer articulately supported at the front end of the car, a trip-shaft supported under the car to the rear of the buffer, and arms fast thereon and linked to the buffer, of a lever longitudinally disposed below the car and mounted on a pivot between and above said two shafts, a trigger-arm fast on the scoop-shaft and normally engaging the rear end of said lever, a forwardly-projecting trip-arm fast on said trip-shaft under the forward end of said lever, a connection between said trip-arm and the forward end of said lever, and a spring acting between the car and said lever and serving to urge the lever to normal position.

4. In a car-fender, the combination, substantially as set forth, with a car, a scoop-shaft supported thereunder forward of the front wheels, a forwardly-projecting scoop fast to the scoop-shaft, means for elevating the scoop, a buffer articulately supported at the front end of the car, a trip-shaft supported under the car to the rear of the buffer, and arms fast thereon and linked to the buffer, of a lever longitudinally disposed below the car and mounted on a pivot between and above said two shafts, a trigger-arm fast on the scoop-shaft and normally engaging the rear end of said lever, a forwardly-projecting trip-arm fast on said trip-shaft under the forward end of said lever, a connection between said trip-arm and the forward end of said lever, and a spring acting between the car and said trip-arm and serving to elastically resist the retreat of the buffer.

5. In a car-fender, the combination, substantially as set forth, with a car, a scoop-shaft supported thereunder forward of the front wheels, a forwardly-projecting scoop fast to the scoop-shaft, means for elevating the scoop, a buffer articulately supported at the front end of the car, a trip-shaft supported under the car to the rear of the buffer, and arms fast thereon and linked to the buffer, of a lever longitudinally disposed below the car and mounted on a pivot between and above said two shafts, a trigger-arm fast on the scoop-shaft and normally engaging the rear end of said lever, a forwardly projecting trip-arm fast on said trip-shaft under the forward end of said lever, a connection between said trip-arm and the forward end of said lever, and a spring acting between the car and said lever and serving to urge the lever to normal position.

7. In a car-fender, the combination, substantially as set forth, with a car, a scoop-shaft supported thereunder forward of the front wheels, a forwardly-projecting scoop fast to the scoop-shaft, means for elevating the scoop, a buffer articulately supported at the front end of the car, a trip-shaft supported under the car to the rear of the buffer, and arms fast thereon and linked to the buffer, of a lever longitudinally disposed below the car and mounted on a pivot between and above said two shafts and having its rear end heavier than its forward end, a trigger-arm fast on the scoop-shaft and normally engaging the rear end of said lever, a forwardly-projecting trip-arm fast on said trip-shafts under the forward end of said lever, and a connection between said trip-arm and the forward end of said lever.

709,992. **UNIVERSAL COUPLING.** ALLAN G. MATHER, Milwaukee, Wis., assignor of one-half to Allis-Chalmers Company, Chicago, Ill., a Corporation of New Jersey. Filed May 2, 1902. Serial No. 105,662. (No model.)

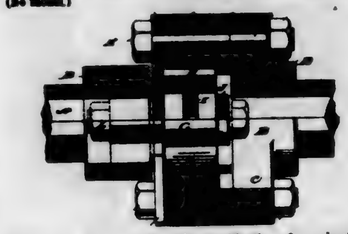

Claim.—1. In a coupling, the combination of a pair of shafts; a driver rigidly affixed to each shaft, each driver having a pair of outwardly-extending arms, the arms of one driver being placed at right angles to those of the other; a roller extending outwardly from the end of each arm; a slotted block located intermediate the arms with the rollers extending into the slots; and means for securing the block to the drivers.

2. In a coupling, the combination of a pair of shafts; a driver rigidly affixed to each shaft, each driver having a pair of outwardly-extending arms, the arms of one driver being placed at right angles to those of the other; a roller extending outwardly from each arm at right angles thereto; a block located between the arms of the drivers, said block being provided with radial slots into which the rollers extend; a strap passed down upon each side of the block; and means for securing each strap to the driver which occupies a position upon the opposite side of the block therefrom.

3. In a coupling, the combination of a pair of shafts; a driver rigidly affixed to each shaft, each driver having a pair of outwardly-extending arms, and each arm having a socket formed therein; shoulder-pins seated in said sockets; rollers carried by the outer ends of said pins; a block located between the arms of the drivers, said block being formed with a series of radial slots into which the rollers pass; straps passed down upon opposite sides of the block in line with the ends of the rollers; and bolts extending through the straps, the shoulder-pins and the drivers.

709,998. **ARTICLE OF MANUFACTURE HAVING AN ELASTIC PORTION AND A SECURING PORTION.** JOSEPH G. MOONY, Erie, Pa. Filed Apr. 28, 1902. Serial No. 105,015. (No model.)

Claim.—1. In a rubber article of manufacture having a securing portion and an elastic tread portion, a securing portion formed of fiber-

of the securing portion, both portions being formed of the same compound.

709,994. TIP FOR THE ENDS OF PNEUMATIC-TIRE TUBES. JOSEPH G. MOONEY, Erie, Pa. Filed Apr. 23, 1902. Serial No. 105,016. (No model.)

Claim.—A tip for pneumatic tire tubes formed of fiber-stock with the general longitudinal direction of fibers.

709,995. FOLDING MAGAZINE HAND-CAMERA. EDWARD H. MORSE, New Orleans, La. Filed May 13, 1901. Serial No. 60,023. (No model.)

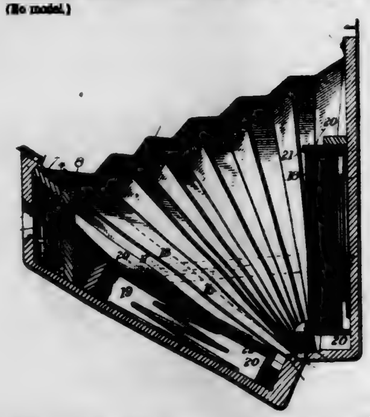

Claim.—1. In a camera, a folding box comprising separate hinged sections, a magazine arranged in each of said box-sections and provided at two of its angularly-related edges with plate-holding projections, said plate-holding projections of one magazine being arranged in opposite relation to those of the other so that the said projections of one magazine will overlap the edges of the outermost plate in the other, plate-displacing means carried by one of the magazines, a shifting device coöperating with the said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor, a bellows permanently fitted to one of the box-sections and detachably secured to the other box-section, a brace having a longitudinal slot terminating in a notch, said brace being pivoted to one of the box-sections, a stud disposed upon the other box-section, and upon which the said brace is adapted to slide for holding the box-sections in their spread-apart positions.

2. In a camera, a folding box comprising separate hinged box-sections, a magazine arranged in each box-section and provided with plate-retaining means, auxiliary plate-retaining means, plate-displacing means carried by one of the magazines, means coöperating with said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor, and a bellows arranged to detachably cover the open side of the box between the separate sections thereof.

3. In a camera, a folding box comprising separate hinged box-sections, a magazine arranged in each box-section and provided with plate-retaining means, auxiliary spring-actuated plate-retaining means, plate-displacing means carried by one of the magazines, and a shifting device coöperating with said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor.

4. In a camera, a folding box comprising separate hinged sections, a magazine arranged in each of said sections, and provided at two of its angularly-related edges with plate-holding projections, said plate-holding projections of one magazine being arranged in opposite relation to those of the other so that the said projections of one magazine will overlap the edges of the outermost plate in the other, springs of different strength arranged respectively in the separate magazines, and a plate-shifting device, ing shifting-arm adapted to engage with the diagonally opposite corner of the said plate.

6. In a camera, a folding box comprising separate hinged box-sections, a magazine arranged in each box-section and provided with plate-retaining means, plate-displacing means carried by one of the magazines, a shifting device cooperating with said plate-displacing means for effecting a transferal of an exposed plate into the magazine therefor, a bellows permanently fitted to one of the box-sections and carrying a rectangular-shaped frame at its free end, angular levers pivoted upon the inner face of the other box-section, adapted to swing over said frame and secure the free end of the bellows thereto, and a brace for holding the box-sections in their spread-apart positions.

7. In a camera, a folding box having in each of its separate sections a magazine provided with plate-retaining means, said magazines being brought into superposed matched relation by the folding action of the box-sections, plate-displacing means in one of the magazines, means for shifting a plate from one magazine to the other when brought into said superposed matched relation, a bellows permanently fitted to one of the box-sections and having a reinforced free end, levers disposed upon the inner face of the other box-section and adapted to detachably secure the free end of the bellows thereto, and a brace for holding and locking the box-sections in their spread-apart positions.

8. In a camera, a folding box comprising separate hinged box-sections, each having a magazine provided with plate-retaining means, plate-displacing means carried by one of the magazines, means coöperating with the said plate-displacing means for effecting a transferal of a plate from one magazine to the other, a bellows permanently fitted to one of the box-sections and having a reinforced free end, means disposed upon the other box-section adapted to detachably secure the free end of the bellows thereto, and means for holding the box-sections in their spread-apart positions.

709,996. SIGNAL-LAMP FOR TELEPHONE-SWITCHBOARDS. FRANK R. MCBERTY and FREDERICK H LOVERIDGE, Evanston, Ill., assignors to the Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed May 14, 1900. Serial No. 16,553. (No model.)

Claim.—1. An incandescent lamp comprising the open tubular stem *a* having the enlargement *a'* a short distance below its tip, terminal wires *b b'* sealed to the upper edge of the stem and extending down outside the stem past the enlargement *a'*, a filament *b²* carried by the terminal wires, and a cylindrical cap *d* rounded at the upper end, with its lower end fitting over the stem, inclosing the filament and sealed to the enlarged portion of the stem in an annular seal, the terminal wires passing through and sealed in the annular seal, substantially as set forth.

2. In combination, in an electric lamp, the cylindrical cap *d* having the rounded extremity, the tubular stem *a* having the enlargement *a'* formed thereon, the said enlargement being sealed at its equator to the lower edge of the said cap *d*, the leading-in wires passing through said seal and secured to the stem near its end within the bulb, said stem being open within the bulb, the filament carried upon the leading-in wires, the stem being sealed off after exhaustion outside the said seal, as described.

3. In a base for cylindrical incandescent lamps, the combination with the block *f* having the central perforation, of the terminal pieces *e* and *e'* formed to partially embrace the lamp-bulb, and having contracted portions extending through and secured in the central perforation of said block *f*, as described.

4. In combination with a cylindrical incandescent lamp-bulb, terminals therefor, consisting of the plates *e* and *e'* partially embracing the bulb, situated on opposite sides thereof, having contracted extensions, the cylindrical block *f* having a central perforation through which said extensions pass, said block having the wedge-shaped transverse groove therein, against which the terminal plates bear, and the extensions being bent outward at the rear of the block to hold them in place, as described.

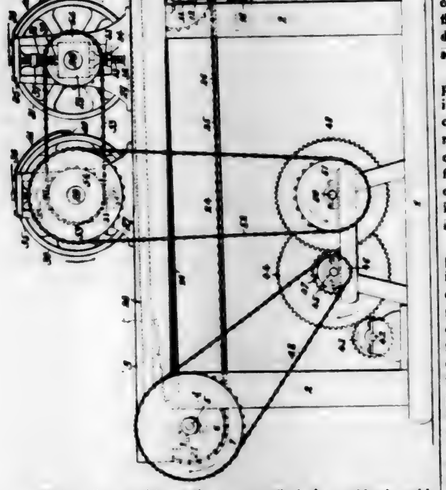

Claim.—In a machine of the type described, the combination with the framework, bearings attached to one end thereof, a shaft journaled therein and having sprocket-wheels, a second shaft at the other end of the framework located normally higher than the first-mentioned shaft and having sprocket-wheels, bearings for this shaft having depending angle-arms sliding vertically in brackets on the framework, screws engaging said angle-arms and having gears, and a cross-shaft having gears meshing with those on the screws and provided with a crank-handle; of parallel bars having other bearings connected and mounted upon both said shafts, guides on said bars, a conveyer comprising chains traveling around said sprocket-wheels and cross-slats moving over the guides; and upper rollers mounted on the framework above the conveyer, as and for the purpose set forth.

709,998. SPRING-CUSHION. ALVIN C. MCCORD, Chicago, Ill., assignor to McCord & Company, Chicago, Ill., a Corporation of New Jersey. Filed Jan. 8, 1902. Serial No. 88,961. (No model.)

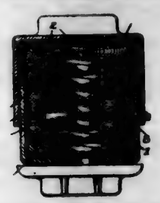

Claim.—1. The combination with a plurality of coiled springs arranged one within another, of upper and lower cap-plates constituting inclosing retaining-plates for the coiled springs and having side flanges arranged adjacent to each other, one of said plates being formed to have its flanges sprung into frictional engagement with the companion flanges under pressure, substantially as described.

2. The combination with a coiled spring, of upper and lower cap-plates constituting inclosing retaining-plates for the coiled spring and having side flanges arranged adjacent to each other, one of said plates being formed to have its flanges sprung into frictional engagement with the companion flanges under pressure, substantially as described.

3. The combination with a plurality of coiled springs arranged one within another, of upper and lower cap-plates constituting inclosing retaining-plates for the coiled springs and having side flanges arranged adjacent to each other, one of said plates being formed to have its flanges sprung into frictional engagement with the companion flanges under pressure, the plate that is adapted to have its flanges sprung being formed flanges sprung being formed into two parts, each having a flange, thus dividing the said cap-plate into two distinct levers, substantially as described.

5. In combination with one or more coiled springs, an upper cap-plate having downwardly-depending flanges, and a lower cap-plate having flanges upwardly extending adjacent to the upper plate-flanges, one of said plates having a convexly-formed base and having its flanges arranged within the flanges of the other plate, whereby the flanges of the convexly-formed cap-plate may be sprung outwardly under pressure into frictional engagement with the flanges of the other cap-plate, the said cap-plates, in addition to acting as recoil-retarders, also acting as inclosing retaining-plates for the coiled spring or springs, substantially as described.

6. In combination with one or more coiled springs, an upper cap-plate having downwardly-depending flanges, and a lower cap-plate having flanges upwardly extending adjacent to the upper plate-flanges, one of said plates having a convexly-formed base and having its flanges arranged within the flanges of the other plate, whereby the flanges of the convexly-formed cap-plate may be sprung outwardly under pressure into frictional engagement with the flanges of the other cap-plate, the said cap-plates, in addition to acting as recoil-retarders, also acting as inclosing retaining-plates for the coiled spring or springs, the cap-plate that is provided with the convexly-curved base being divided into structurally distinct levers, each having a flange and a portion of the base of the said cap-plate, substantially as described.

7. The combination with a spring, of a cap-plate therefor and a friction element, the said cap-plate being formed to have its flanges relatively moved to bring the cap-plate into frictional contact with the friction element, the spring being disposed between said flanges substantially as described.

8. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, said cap-plate moving or tending to move with reference to the latter part, whereby it may be brought into frictional engagement with a friction element to reduce the vibration of the spring, substantially as described.

9. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, the said cap-plate having a flanged portion moving or tending to move with respect to the latter part, whereby frictional engagement may be effected with a friction element to decrease the vibration of the spring, substantially as described.

10. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a spring-operated cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, whereby the spring-operated cap-plate may be moved into frictional engagement with the friction element to decrease the vibration of the spring, substantially as described.

11. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, the said cap-plate having a spring-operated flange portion whereby frictional engagement may be effected with a friction element to decrease the vibration of the spring, substantially as described.

12. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of cap-plates upon the ends of the spring and inclosing or surrounding the same, one of the said cap-plates being spring-operated to effect its frictional engagement with a companion cap-plate, substantially as described.

13. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of cap-plates provided upon the ends thereof and inclosing or surrounding the same, one of the said cap-plates tending to move with reference to its cushioned part to bring it into frictional engagement with the companion cap-plate, substantially as described.

14. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of cap-plates upon the ends thereof and inclosing or surrounding the same, one of the said cap-plates being provided with a flange which moves or tends to move with respect to its cushioned part to bring it into frictional engagement with the companion cap-plate, substantially as described.

15. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of cap-plates provided upon the ends thereof and inclosing or surrounding the same, one of the said cap-plates being spring-operated, whereby it is brought into frictional engagement with the companion cap-plate, substantially as described.

16. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of cap-plates upon the ends thereof and inclosing or surrounding the same, one of the said cap-plates being provided with a spring-operated flange to bring the same into frictional engagement with the companion cap-plate, substantially as described.

17. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, and a friction element, said cap-plate moving or tending to move with reference to the latter cushioned part, whereby it may be brought into frictional engagement with said friction element to reduce the vibration of the spring, substantially as described.

18. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, and a friction element, the said cap-plate having a flanged portion moving or tending to move with respect to the latter cushioned part, whereby frictional engagement may be effected with said friction element to decrease the vibration of the spring, substantially as described.

19. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a friction element, and a spring-operated cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, whereby the spring-operated cap-plate may be moved into frictional engagement with the friction element to decrease the vibration of the spring, substantially as described.

20. In a spring-cushion, the combination with a coiled spring interposed between the parts to be cushioned, of a friction element, and a cap-plate inclosing or surrounding the spring and interposed between the spring and one of the said parts, the said cap-plate having a spring-operated flange portion, whereby frictional engagement may be effected with the friction element to decrease the vibration of the spring, substantially as described.

709,999. SPRING-CUSHION. ALVIN C. McCORD, Chicago, Ill., assignor to McCord & Company, Chicago, Ill., a Corporation of New Jersey. Filed Apr. 5, 1902. Serial No. 101,801. (No model.)

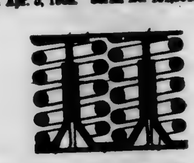

Claim.—1. In a spring-cushion, the combination with a plurality of coiled springs placed side by side, of upper and lower cap-plates, friction elements carried by the upper cap-plate corresponding in number with the number of coiled springs and extending to the interior thereof, and friction elements carried by the lower cap-plate corresponding in number with the number of coiled springs and also extending into the interior of the coiled springs, a friction element within each coiled spring being formed of spring metal, whereby it is brought into frictional engagement with a companion friction element by reason of its resiliency, substantially as described.

2. In a spring-cushion, the combination with four coiled springs arranged at the corners of a quadrilateral, of upper and lower cap-plates, friction elements carried by the upper cap-plate corresponding in number with the number of coiled springs and extending to the interior thereof, and friction elements carried by the lower cap-plate corresponding in number with the number of coiled springs and also extending into the interior of the coiled springs, a friction element within each coiled spring being formed of spring metal, whereby it is brought into frictional engagement with a companion friction element by reason of its resiliency, substantially as described.

3. In a spring-cushion, the combination with a coiled spring, of a friction element composed of spring metal extending into the interior thereof, and a second friction element adapted for frictional and sliding connection with the aforesaid friction element by reason of the resiliency of the first aforesaid friction element, substantially as described.

4. In a spring-cushion, the combination with a coiled spring, of a friction element composed of spring metal extending into the interior thereof, and a second friction element adapted for frictional and sliding connection with the aforesaid friction element by reason of the resiliency of the first aforesaid friction element, one of said friction elements being formed at its base to fit the interior of the coiled spring, substantially as described.

5. In a spring-cushion, the combination with a coiled spring, of a friction element composed of spring metal extending into the interior thereof, and a second friction element adapted for frictional and sliding connection with the aforesaid friction element by reason of the resiliency of the first aforesaid friction element, both of said friction elements being formed at their bases to fit the interior of the coiled spring, substantially as described.

6. In a spring-cushion, the combination with a coiled spring, of a pair of spring-jaws within the same, mounted at one end of the coiled spring, a tongue also within the coiled spring and mounted at the other end thereof, the tongue being engaged between the jaws and being adapted for sliding and frictional engagement therewith, the jaws engaging the tongue by reason of the resiliency of the jaws, substantially as described.

7. In a spring-cushion, the combination with a coiled spring, of an element for frictional contact formed of resilient material and projecting within the coiled spring, substantially as described.

710,000. RAIL-JOINT. JOSEPH J. McDERMOTT, New Brighton, Pa. Filed Dec. 10, 1901. Serial No. 85,522. (No model.)

Claim.—1. A rail-joint comprising a chair having a portion thereof bent upon itself and forming a fish-plate, bolts, passing through the portions bent upon themselves, and adapted for engagement with a tie, combined with a second fish-plate, and a bolt for holding said plates against the opposite sides of a rail, as set forth.

2. A rail-joint, comprising a chair having a portion thereof bent upon itself and forming a fish-plate, bolts, passing through said portions bent upon themselves, and adapted for engagement with a tie, combined with a second fish-plate, each fish-plate being bent upon itself twice in vertical planes, and bolts passing through the web of a rail and connecting said plates, as set forth.

3. A rail-joint comprising a chair having a portion thereof bent upon itself, and forming a fish-plate, a bolt, passing through such portions bent upon themselves, and adapted for engagement with a tie, a second fish-plate resting upon said chair, and engaging an upturned edge of said chair, said plates each being bent upon itself twice in vertical planes, a bolt connecting said plates and designed to hold vertical portions of the plates against the under surface of the tread of a rail and the flanges of the base of the rail, as set forth.

4. A rail-joint, comprising a chair having a portion thereof bent upon itself, and forming a fish-plate, said portion then bent, being bolted to the chair, a second fish-plate bolted to the chair and engaging an upturned edge of the latter, each of said plates being bent upon itself twice in vertical planes, a bolt passing through the adjacent vertically-disposed portions of the plates on opposite sides of the web of a rail, each plate being bent to form a brace between the horizontal and outer vertically-disposed portions of said plates, as set forth.

710,001. PRESCRIPTION-CABINET. JOHN J. HEMMITT, Warren, Pa., assignor of one-half to John J. Taylor, Bnd, Warren, Pa. Filed July 30, 1901. Serial No. 70,288. (No model.)

Claim.—1. A device of the class described comprising a receptacle, a follower loosely arranged within the receptacle, and the resilient binders mounted on the follower and consisting of laterally-movable loops engaging the sides of the receptacle and holding the follower in an upright position, said loops being also arranged to engage the bottom of the receptacle and the sides thereof when the follower is tilted, whereby the follower is firmly held in an inclined position, substantially as described.

2. A device of the class described comprising a receptacle, a follower loosely arranged within the receptacle, and the opposite binders consisting of resilient clamping and supporting loops offset from the follower and having terminal portions arranged adjacent to each other and normally spaced from the follower and adapted to be simultaneously operated, substantially as described.

3. A device of the class described comprising a receptacle, a follower loosely arranged therein, and opposite binders consisting of inwardly-extending resilient loops arranged approximately parallel with the follower and provided with angularly-disposed arms connected with the latter and arranged to engage the opposite walls of the receptacle, said loops having terminal portions arranged contiguous to each other and adapted to be simultaneously operated, substantially as described.

4. A clamping device for a follower comprising oppositely-disposed binders, each composed of an inwardly-extending converged loop having the outer ends thereof merged into angular members, coils disposed at the lower ends of said angular members, and inwardly-projecting arms connected with said loops and having rearwardly-curved terminals.

5. A cabinet for holding prescriptions having means for tightly pressing and firmly supporting the latter in the form of opposite binders each comprising a rear inwardly-extending converged loop merging into outer angular members continuing into front coils from which arms inwardly project, the said arms having rearwardly-curved terminals, the latter and the inner terminals of the loops extending across the planes of each other.

6. A cabinet for holding prescriptions having means for tightly holding and supporting the latter in the form of a follower having binders comprising rear inwardly-converged loops and front curved terminals, the curved terminals and the inner terminals of the loops being free to move past each other.

7. A prescription-cabinet having oppositely-disposed binders comprising inwardly-extending loops merging into angular members, said members continuing into coils having inwardly-projecting arms.

8. A prescription-cabinet provided with a follower having binders comprising inwardly-extending loops and inwardly-extending terminals disposed on different planes.

9. A prescription-cabinet provided with a follower having binders comprising inwardly-extending loops and inwardly-extending terminals, and angular arms connecting said terminals and loops at their outer ends.

710,002. WHEEL-HUB. EDWARD HOLAR, Wolf Summit, W. Va. Filed Oct. 21, 1901. Serial No. 79,698. (No model.)

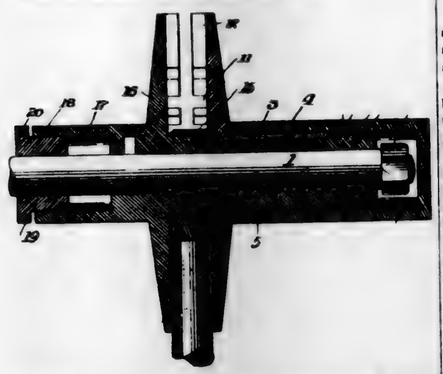

Claim.—The hub comprising the exteriorly-threaded portion 3, the integral spoke-flange 16 having openings in its inner face, and the hollow extension 17, in combination with the spoke-flange 11 sleeved on the hub and provided on its inner face with openings, a collar sleeved on the hub between the spoke-flanges and receiving the ends of the wheel-spokes, a cap threaded on the outer end of the hub, and means for securing the cap to the hub, substantially as described.

710,008. PLATFORM-SUPPORT FOR SCALES. FRANCIS C. OSBORN, Detroit, Mich. Filed Dec. 17, 1900. Serial No. 40,180. (No model.)

Claim.—1. In scale construction, the combination of the base provided with fixed bearings, the frame B and the main platform-lever having one end pivoted directly on the fixed pivot-bearings on the base at two points and the other end pivoted directly to the frame B at two points, whereby the lever and frame are held against horizontal movement of translation, substantially as described.

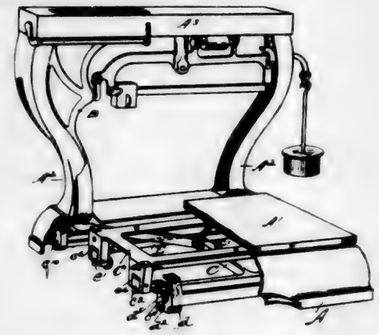

2. The combination of the base, the subbase, pivots on which the subbase rests, lugs on the base and subbase, and means for drawing the lugs together to lift the subbase off from the pivots, substantially as described.

710,004. PIPE-COUPLING. RUBA L. OSGOOD, Tooele, Utah, administratrix of Leonard S. Osgood, deceased. Filed June 13, 1901. Serial No. 64,472. (No model.)

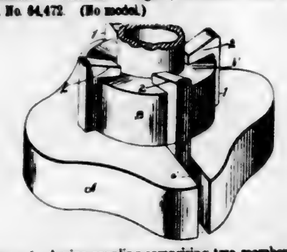

Claim.—1. A pipe-coupling comprising two members, having substantially flat contiguous faces to adapt them to be brought together by a lateral movement, one of said members carrying a plurality of stationary clamping-bolts and a removable clamping-bolt, each of which is provided with lateral offset and downwardly-inclined heads, the other member having an inclined outer face to be engaged by the inclined heads of the clamping-bolts, and means on the bolts to clamp the members together.

2. In a pipe-coupling, the combination of a flanged member having a plurality of transverse apertures and a radial slot, a ring member having its outer face inclined inwardly and downwardly, a plurality of clamping-bolts stationarily mounted in the apertures, a removable clamping-bolt in the slot, each of said bolts having laterally-offset and downwardly-inclined heads, the contiguous faces of the members being substantially flat to adapt them to be brought together by a lateral movement.

710,005. PROCESS OF MAKING ORGANIC PEROXIDS. RALPH H. PAGE, Detroit, Mich. Filed Sept. 10, 1901. Serial No. 74,904. (No specimens.)

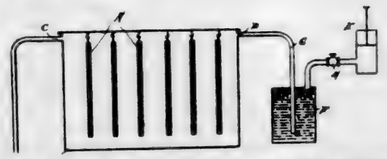

Claim.—1. The process of making organic peroxids, which consists in mixing an aromatic aldehyde and the anhydrid of a fatty acid and then oxidizing the mixture and limiting the action of the oxidizing agent to obtain a restricted oxidation for the purpose set forth.

2. The process of making organic peroxids which consists in subjecting a mixture of aromatic aldehyde and anhydrid of a fatty acid in film form to the action of a restricted supply of a gaseous oxidizing agent.

3. The process of making organic peroxids which consists in saturating a sheet or strip of absorbent material with a mixture of aromatic aldehyds and anhydrid of a fatty acid, and subjecting the saturated strip or sheet to retarded oxidation, for the purpose set forth.

4. The process of making organic peroxids which consists in saturating a sheet or strip of absorbent material with a mixture of aromatic aldehyds and anhydrid of a fatty acid, and oxidizing the mixture while supported upon those strips.

710,006. BUNG-BUSHING. GEORGE H. REMER, Cincinnati, Ohio, assignor to the Perfection Bush Company, Covington, Ky., a Corporation of Kentucky. Filed Jan. 8, 1902. Serial No. 88,841. (No model.)

Claim.—1. A bung-bushing comprising an annulus adapted to lie within a bung-hole and carrying at its periphery a flange to enter a recess in the edges of the abutting staves around the bung-hole, said recess being of a less depth than the width of the flange, a space being left between the edges of said staves and the periphery of the annulus, substantially as set forth.

2. A bung-bushing comprising an annulus adapted to lie within a bung-hole and carrying at its periphery a flange having a cutting edge to enter a groove in the edges of the abutting staves around the bung-hole, said groove being of a less depth than the width of the flange, a space being left between the edges of said staves and the periphery of the annulus, substantially as set forth.

3. In a device of the character described, an annulus carrying at its periphery a flange having a groove in its outer edge, said groove being substantially shallower than the width of the flange, in combination with a pair of abutting staves between which the annulus fits.

710,007. ELEVATOR. JOSEPH ESSE, Chicago, Ill., assignor of two-thirds to William H. Ready and William I. Ready, Chicago, Ill. Filed Apr. 8, 1901. Serial No. 54,894. (No model.)

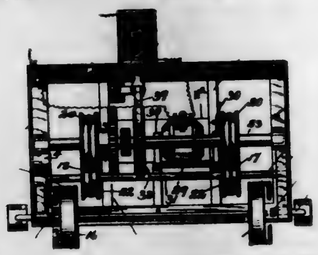

Claim.—1. In an elevator the combination of a flexible strand or cable fixed against movement, a traveling sheave, gripping means operatively connected with said sheave and gripping said cable or strand, means for actuating said gripping means to cause the same to move along said cable or strand and impart motion to said sheave, a second sheave and a lifting-cable operatively related to said sheaves, substantially as set forth.

2. In an elevator the combination of a fixed cable or strand, a friction-grip engaging said cable or strand, means for actuating said grip to cause it to move along said cable or strand, a lifting-cable and means operatively connecting said lifting-cable with said friction-grip whereby a pull will be imparted to the lifting-cable by the movement of said grip along said strand, substantially as set forth.

3. In an elevator the combination of a fixed cable or strand, friction grip-wheels engaging said cable, means for rotating one of said wheels to cause the same to travel along said cable, a lifting-cable and means operatively connecting said lifting-cable with said friction-wheels for imparting a pull to said lifting-cable, substantially as set forth.

4. In an elevator the combination of a fixed cable or strand, a grip for said cable or strand comprising friction-wheels adapted to pinch the cable between them, means movable with said grip for rotating one of said wheels, a lifting-cable and means operatively connecting said lifting-cable with said grip whereby a pull will be imparted to the lifting-cable as the grip moves along said fixed cable, substantially as set forth.

5. In an elevator the combination of a fixed cable or strand, a pair of grip-wheels engaging the same on one side, a friction-wheel engaging said cable on the opposite side between said other wheels, means for elastically pressing said friction-wheel against the cable, means for rotating one of said wheels and thereby causing them to travel along said cable, a lifting-cable and means operatively connecting said lifting-cable with said wheels whereby a pull will be imparted to the lifting-cable as said wheels move along said fixed cable, substantially as set forth.

6. In an elevator the combination of a fixed cable or strand, traveling gripping means engaging said cable or strand and adapted to move therealong, means movable with said gripping means for operating the latter, a brake for arresting the operation of the last said means, a lifting-cable and means operatively connecting said lifting-cable with said gripping means whereby a pull will be imparted to the lifting-cable as the gripping means move along said fixed cable, substantially as set forth.

7. In an elevator the combination of a fixed strand or cable, gripping means movable therealong, a motor movable with said gripping means for actuating the same to move along said cable, a brake-wheel operatively connected with said motor, a brake for engaging said wheel, means continually tending to apply said brake, an electric device for releasing said brake, a lifting-cable and means operatively connecting said lifting-cable with said gripping means whereby a pull will be imparted to the lifting-cable as the gripping means move along said fixed cable, substantially as set forth.

8. In an elevator the combination of a carriage, a track or way upon which said carriage travels, a motor mounted on said carriage, fixed strands or cables passing said carriage on opposite sides of said motor, grip-wheels operatively connected with said motor and engaging both of said strands or cables for causing said carriage to move lengthwise of said strands or cables, a lifting-cable and means operatively connecting said lifting-cable with said carriage, substantially as set forth.

9. In an elevator the combination of a carriage, a track or way on which said carriage travels, a motor mounted on said carriage, cables or strands fixed with relation to said carriage and passing the same on opposite sides of said motor, grip-wheels operatively connected with the motor and engaging both of said cables or strands, a lifting-cable and means operatively connecting said lifting-cable with said carriage at a point between said first cables, substantially as set forth.

710,008. EJECTOR MECHANISM FOR REVOLVERS. JAMES D. ROSENTHAL, Norwich, Conn., assignor, by mesne assignments, to the Thames Arms Company, (Corporation,) Norwich, Conn. Filed Nov. 4, 1901. Serial No. 80,975. (No model.)

Claim.—1. In combination with the ejector-stem and frame of a hinged firearm, a cam for operating said stem and a spring mounted in said cam to lie on the outer edge thereof to be normally eccentric therewith, the said spring being formed with a shoulder adapted to engage the said frame, substantially as described.

2. In combination with the ejector-stem and frame of a hinged firearm, a cam for operating said stem having its edge cut away and a slit beyond the cut-away portion, and a spring having one end secured rigidly in said slit and its free end having an angular bend to engage the lower portion of the frame and a portion to extend beyond the said bend and lie in the cut-away portion, the said spring traversing the cut-away portion and disposed to lie normally eccentric with the edge of the cam, substantially as shown and described.

710,009. WARDROBE. LEMUEL ROBERTSON, Penarth, England. Filed Mar. 26, 1901. Serial No. 52,267. (No model.)

Claim.—1. In a wardrobe, a plurality of upwardly-extending oscillatory garment-supports arranged one in front of the other, having their lower ends mounted in the lower part of said wardrobe and each capable of being turned into a forward and backward position and means for normally holding said garment-supports in a vertical position, substantially as described.

2. A wardrobe having a hollow box-like lower portion, a plurality of upwardly-extending garment-supports arranged one in front of the other and having their lower ends mounted in bearings in said hollow lower portion of the wardrobe and capable of being turned into a forward or backward position, at will, and means for normally holding said garment-supports in the backward and upright position.

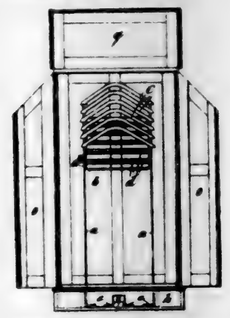

3. In a wardrobe, a plurality of upwardly-extending garment-supports arranged one in front of the other and having their lower ends journaled in the lower part of said wardrobe and each capable of being turned inward and outward, and means for holding each of said garment-supports in its vertical and inclined positions.

4. A wardrobe having a hollow lower portion the top of which is formed with transverse slots, a plurality of upwardly-extending garment-supports arranged one in front of the other and having their lower ends mounted to turn in said hollow lower portion and their upper portions extending through said slots and capable of being turned backward and forward therein, and means for holding said supports in a yielding manner in their normal position.

5. In a wardrobe, a plurality of normally vertical garment-supports arranged one in front of the other and each mounted at its lower end to turn about a horizontal axis, and springs adapted to hold each garment-support in position but so as to allow of its being pulled forward into an inclined position and of its being returned to the vertical position, substantially as described.

6. In a wardrobe, a plurality of normally vertical garment-supports made of different heights, arranged one in front of the other, supported at their lower ends on the lower portion or base of said wardrobe and capable of being turned inward and outward, means for limiting the extent of inward and outward motion of said garment-supports, and means for holding each of said garment-supports in its vertical and inclined positions.

7. A wardrobe having a hollow lower portion the top of which is formed with transverse slots, a plurality of normally vertical garment-supports arranged one in front of the other and of gradually-increasing height from front to back, each of said garment-supports having its lower end mounted in said hollow lower portion and its sides extending upwardly through said slots and capable of being turned inward and outward, and means for holding each of said garment-supports in the position into which it is moved.

8. In a wardrobe, a plurality of normally vertical garment-supports each comprising a frame mounted to turn about a horizontal axis at its lower end and provided at the top with a headpiece adapted to support a garment such as a coat and with one or more lower horizontal rods, and means for normally holding each of said garment-supports in a vertical position while allowing of its being tilted forward into an inclined position, substantially as described.

9. In a wardrobe, a plurality of normally vertical garment-supports each comprising a frame provided with one or more cross-rods, bearings in which the lower ends of said supports are mounted to turn about a horizontal axis, and springs engaging the lower ends of said garment-supports and adapted to hold the latter in a vertical position while allowing of their being pulled forward into an inclined position, substantially as described.

10. A wardrobe having a hollow lower portion that is arranged to move transversely in and out of said wardrobe, a plurality of upwardly-extending garment-supports arranged one in front of the other and having their lower ends supported on said movable lower portion and capable of being turned inward and outward, and means carried by said hollow lower portion for holding said garment-supports in position for use, substantially as described.

11. A garment-support having a hollow lower box-like portion that is arranged to move transversely in and out of the wardrobe and has its top formed with transverse slots, a plurality of garment-supports extending upwardly through said slots and having their lower ends mounted to turn in said box-like lower portion, and means for holding said garment-supports in position for use, substantially as described.

12. A wardrobe having folding doors at the front and a hollow box-like lower portion that is arranged to move transversely in and out of said wardrobe and formed with transverse slots in its top part, a plurality of garment-supports having their side members extending upwardly through said slots and their lower portions mounted to turn in said movable box-like lower portion and capable of being turned inward and outward in said slots, means for holding said garment-supports in position for use, and means connecting said movable lower portion of the wardrobe to the doors of said wardrobe and adapted to move the said lower portion outward and inward respectively when said doors are opened and closed, substantially as described.

710,010. COMBINED CUTTING AND COLLATING MACHINE. WILLIAM ROBERTSON and ANDREW ROBERTSON, Glasgow, Scotland. Filed Nov. 2, 1901. Serial No. 80,916. (No model.)

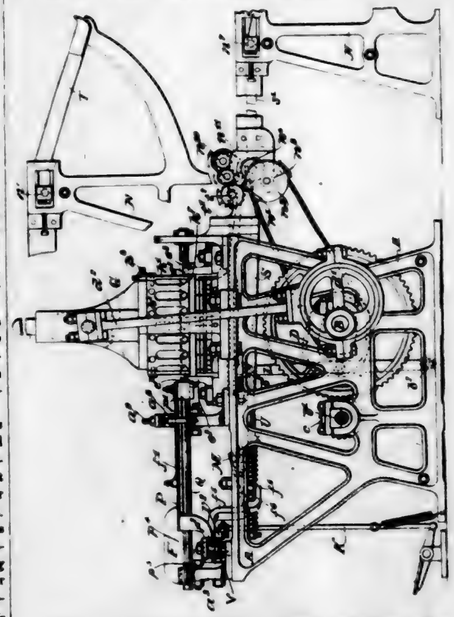

Claim.—1. A combined cutting and collating machine, comprising a supporting-frame to which is attached a rigid feeding-table with mirror and other registering guides, a set of spring-grippers adapted for being moved upon slide-rods, gripper slide-rods, a set of knives vertically fixed in "saw-gates" contained in adjustable bars, a set of plungers (fixed to a head-stock) adapted for being moved vertically between the knives, a head-stock for carrying a set of plungers fitted to vertical slide-rods, vertical slide-rods for the head-stock, a cam, spring-rod, slotted lever and other devices for operating the grippers, traveler webs and tray with trailer web or tube device and driving mechanism all substantially as and for the purposes herein described.

2. A machine for cutting up sheets of baked biscuits and collating the severed biscuits, comprising a supporting-frame, a rigid feeding table, registering guides thereon including a mirror, a set of spring biscuit-grippers, slide-rods upon which said grippers are movable, a set of saw-edged knives vertically fixed in "saw-gates" contained in adjustable bars, a set of plungers with "saw-gate" divisions adapted for fitting with precision between the knives, means to actuate said plungers, traveler webs and tray with trailer web or tube device and driving mechanism, substantially as described.

3. In a machine for cutting up sheets of baked biscuits, the combination of the registering devices comprising a perforated and ribbed feeding-table and a mirror permanently fixed beneath the said table and adapted for reflecting those parts of the embossed surface of a biscuit-sheet which cover the said perforations when the sheet is adjusted upon and to the ribs upon the perforated table, substantially as described.

4. In a machine for cutting up sheets of baked biscuits, the combination with two oppositely-placed fixed slide-rods, of two sets of oppositely-arranged grippers mounted upon said slide-rods and adapted for simultaneously gripping the two opposite margins of the sheet of baked biscuits, and means for simultaneously moving said grippers horizontally along the slide-rods, substantially as described.

5. In a machine for cutting up baked biscuits, the combination of a series of saw-edged knives vertically fixed in adjustable slotted bars and threaded together and through with tubes or bars, a series of plungers above said knives fitted with precision by saw-gate spaces to the knives, and means to move said plungers vertically between and out from the knives, substantially as described.

6. In a machine for cutting up sheets of baked biscuits, the combination of a set of stationary saw-edged cutting-knives, a series of rectangular plungers in size and shape like the said biscuits and their selvages, and means to move said plungers vertically with precision into and out from the said set of knives, substantially as described.

7. In a cutting-machine, the combination of two endless webs adapted for being moved upon rollers at different speeds; a slack web, tube or "trailer" obliquely suspended from a roller and a screw worm scraper adapted for being operated through a series of geared wheels all substantially as and for the purposes herein set forth.

8. In a cutting-machine, the combination of a slack web or tube obliquely suspended from a roller and adapted for being revolved by means of the said roller when the latter is in motion and for trailing upon the surface beneath it all substantially as and for the purposes herein set forth.

710,011. **COMBINED FERTILIZER-DISTRIBUTER AND SEED PLANTER.** WILLIAM B. ROEMER, Bay St. Louis, Miss. Filed June 19 1901. Serial No. 65,170. (No model.)

Claim.—1. In a device of the character described, the combination of a wheel-supported fertilizer-box having an upper forwardly-directed extension constructed to register with the rear end of a vehicle, and provided with means for loose connection with the vehicle, a seedbox located in rear of the fertilizer-box, brace connections between the two boxes, a cut-off for the fertilizer-box, a lever connected to the cut-off and mounted between the two boxes, and controlling means connected to the lever and projected forwardly to be under the control of the driver of the vehicle.

2. A device of the character described, embodying a front fertilizer-box, a seedbox located in rear of the fertilizer-box, brace connections between the two boxes, the fertilizer-box being provided with a forwardly-directed extension to register with the rear end of a vehicle and having means for loose connection therewith, a cut-off for the fertilizer-box, cut-off-operating means mounted between the two boxes, and a controlling device connected to said operating means and extended to be under the control of the driver of the vehicle.

3. The combination with a vehicle to contain fertilizer, of a fertilizer-distributer comprising a box having its front portion provided with vertical slots, and a bolt piercing the sides of the vehicle and passing through the slots to loosely connect the box to the vehicle.

4. A fertilizer-distributer having its fertilizer-box provided with a forwardly-extending member having its side walls provided with vertical slots, in combination with a vehicle having its side-boards each provided with an opening, and a bolt-rod passing through the openings in the side-boards and the slots in the fertilizer-box to hold the parts assembled.

5. A fertilizer-distributer having its fertilizer-box provided with a forwardly-extending member having its side walls provided with vertical slots, in combination with a vehicle having its side-boards each provided with an opening, a bolt-rod passing through the openings in the side-boards and the slots in the fertilizer-box to hold the parts assembled, and flexible means connecting the fertilizer-box with the vehicle.

6. The combination of a front-wheeled fertilizer-box, having a forwardly-directed extension to register with the rear end of a vehicle and having means for connection therewith, a seedbox located in rear of the fertilizer-box, brace connections between the two boxes, whereby the rear box is supported upon the front box, feed mechanism for the fertilizer-box in operative relation to the wheels thereof, a cut-off for the fertilizer-box, a controlling-lever mounted between the boxes and connected to the cut-off, a discharge-spout for the fertilizer-box, an opener carried by the front of the fertilizer-box and immediately in front of the spout, coverers carried by the rear of the fertilizer-box, feed mechanism for the seedbox in operative relation to the wheels of the fertilizer-box, and coverers carried by the rear of the seedbox.

7. In a device of the class described, the combination with a box or hopper, of a yoke pivoted to the front of the box, a furrow-opener carried by the yoke, and means carried by the front of the box for holding the shovel in engagement and out of engagement with the ground.

8. In a device of the class described, the combination with a box or hopper, of a yoke pivoted to the front of the box, an opener carried by the yoke, a keeper carried by the front of the box, and a rod detachably held within the keeper and projected at opposite ends across the yoke, the latter being capable of a vertical swing to positions above and below the rod, whereby the latter forms a stop to hold the opener in engagement and also out of engagement with the ground.

9. In a device of the character described, the combination with a wheeled box, of front and rear yokes pivoted to the fertilizer-box, coverers carried by the rear yoke, an opener carried by the front yoke, keepers upon the front and rear of the box, and rods detachably held within the respective keepers and projected at opposite ends beyond the respective yokes, the latter being capable of vertical movement to positions above and below the adjacent bars, whereby the said bars are adapted for holding the opener and coverers in engagement and also out of engagement with the ground.

10. In a device of the character described, the combination with a box or receptacle having its lower end provided with a contracted discharge-opening, of a pair of toothed feed and agitating rollers mounted beneath the discharge-opening, one of said rollers being yieldable toward and away from the other roller, and a cut-off located between the rollers and the discharge-opening.

11. In a device of the character described, the combination with a box or receptacle having a contracted discharge-opening in its lower end, of a pair of toothed feed and agitator rollers mounted beneath the discharge-opening, one of the rollers being relatively fixed, and the other roller having slidable bearings which are movable toward and away from the relatively fixed roller, springs bearing against the slidable bearings to yieldingly force the movable roller toward the fixed roller, and a cut-off located between the rollers and the discharge-opening.

12. A fertilizer-distributer comprising a box or hopper having feed mechanism, and provided at its upper end with an offset forwardly-directed body extension constructed to fit within the rear end of a wagon-body and rest upon the bottom thereof after the end-gate has been removed, and carrying means for connection with the wagon-body.

13. A fertilizer-distributer, comprising a box or hopper having feed mechanism, and provided at its upper end with an offset forwardly-directed body extension provided with a closed front end, said extension being constructed to fit within the rear end of a wagon and rest upon the bottom thereof after the end-gate has been removed and carrying means for connection with the wagon to prevent separation therefrom, the front end of the extension forming an obstruction to prevent fertilizer being jolted from the wagon into the box or hopper.

14. A fertilizer-distributer, comprising a box or receptacle having feed mechanism, the upper front portion of the box being provided with an opening, a flat bottom projected forwardly from the lower edge of the opening, opposite upstanding sides rising from the bottom, an outer end also rising from the bottom, said bottom, opposite sides and front end forming a forward extension of the box to fit within the rear end of a vehicle, and means carried by the extension for connecting the same to a vehicle.

710,012. **BORING APPARATUS.** ADAM L. RONALDSON, London, England. Filed July 6, 1900. Serial No. 22,741. (No model.)

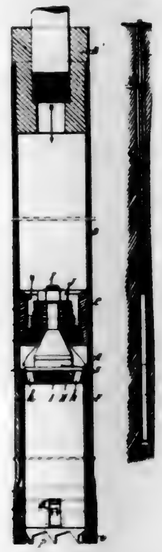

Claim.—1. In core-boring apparatus, means for arresting the flow of water through the core-barrel, consisting of a valve arranged to be moved longitudinally of the core-barrel by the pressure from the core to close, said valve having movement independent of the core-barrel for the purpose hereinbefore described.

2. In combination, the core-barrel, an inner core-tube and a valve, said valve and inner core-tube being connected and being movable upwardly under the action of the core independently of the core-barrel, substantially as described.

3. In core-boring apparatus, means for arresting the flow of water through the core-barrel, consisting of a valve, an inner core-tube connected to said valve, said core-tube being movable and closing the valve automatically when a core has been formed, an outer core-barrel, a valve-seat secured within said core-barrel, and a spring resting upon the valve-seat for supporting the inner core-tube, substantially as described.

4. In core-boring apparatus, means for arresting the flow of water through the core-barrel, consisting of a valve closed by the core, said valve having a movement independent of the core-barrel, and means for gripping the core upon the flow of water being arrested, substantially as described.

5. In core-boring apparatus in combination, means for arresting the flow of water through the core-barrel by the action of the core, and means for gripping the core on such flow of water being arrested consisting of a movable inner core-tube, a ring mounted at the bottom of said inner core-tube and movable between the same and the core-barrel, said ring carrying spring core-grippers, said grippers being held back from contact with the core by the outer wall of the inner core-tube, substantially as described.

6. In core-boring apparatus in combination, means for arresting the flow of water through the core-barrel, and means for gripping the core on the flow of water being arrested consisting of a movable inner core-tube, a ring mounted at the bottom of said inner core-tube, carrying spring-grippers, said spring-grippers lying within vertical slots in the inner core-tube and carrying projections which engage upon the periphery of the inner core-tube to prevent the grippers engaging the core till the ring is caused to move downwardly.

7. In core-boring apparatus, in combination, automatically-operating means for arresting the flow of water through the core-barrel, said means comprising a valve having movement under the action of the core independent of movement of the core-barrel, means for gripping the core on such flow of water being arrested, said gripping means being normally retracted from the core-space and entering the core as the valve is operated, and means for adjusting the closure to the valve in relation to the gripping means when the core is formed.

710,013. **OIL-DISTRIBUTING APPARATUS FOR CALMING WAVES.** ELIS SALVESEN, Grimstad, Norway. Filed Sept. 28, 1901 Serial No. 76,936. (No model.)

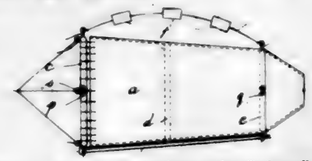

Claim.—1. In a device of the character described, a collapsible bag, a series of suitably-spaced annular rings of slightly-varying diameter secured to said bar, one of said rings being secured at the forward end and one at the rear end of said bag, said bag to the rear of said last-named ring having a contracted opening therein, lugs carried by the said rings, means secured to said lugs and extending in alinement with the length of said bag for preventing the bag from turning over on its longitudinal axis, and means connected to said forward ring for connection with the vessel, substantially as described.

2. In a device of the character described, a collapsible bag, a series of rings secured to said bag for retaining the same in an expanded conical shape, one of said rings being secured to the front end and one to the rear end of the bag, said bag having a tapering extension with an opening therein beyond said rear end of the bag, lugs secured to the rings on the under side thereof, a ballast-rod secured in said lugs and extending the length of the bag, swimmers carried by the said lugs, and means for connecting the bag to the vessel, substantially as described.

710,014. **BEATING-ENGINE.** ERNEST L. SAVAGE, Lancaster, N. H. Filed Feb. 17, 1902. Serial No. 94,404. (No model.)

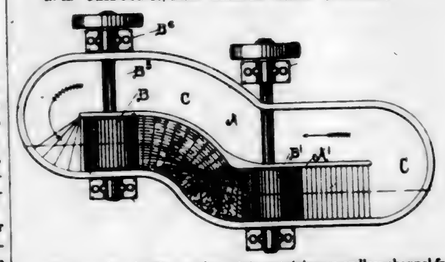

Claim.—In a beating-engine, a tub containing an endless channel for the circulation of the paper-stock, a section of the channel being crooked to cause eddy-currents in the stream of stock, combined with two horizontal beating-cylinders acting in conjunction with suitable bed-plates and backfalls to beat the stock, the cylinders being placed one at each end of the crooked section of the channel the arrangement of the backfalls and the ratio of speed of the two cylinders being such as to cause the stock to flow rapidly through the crooked section of the channel, and slowly through the remaining portion of the channel, and with means for rotating the cylinders above and in close proximity to the bed-plates, substantially as described

710,015. **SPECTACLE-FRAME.** FRANK SCHICK, St. Louis, Mo. Filed Nov. 2, 1901. Serial No. 80,881. (No model.)

Claim.—1. As an improved article of manufacture, an integral frame for spectacles, having a bridge with a joint on one side and integral upon the other side, lens-receiving openings formed by arms which project in opposite directions from each end of the bridge, said arms being covered at their ends, substantially as shown.

2. A spectacle-frame consisting of an integral piece having a bridge with a joint upon one side and integral upon the other side, lens-receiving openings formed by arms which project in opposite directions from each end of the bridge, lateral extensions on the ends of the arms, and

projections beyond said lateral extensions, the arms being secured at their ends, in combination with temples which are pivotally connected to the lateral extensions on the ends of the arms, substantially as shown.

710,016. BANANA-SHIPPING CASE. FRANK SCHMITZ, Chicago, Ill. Filed Jan. 13, 1902. Serial No. 90,250. (No model.)

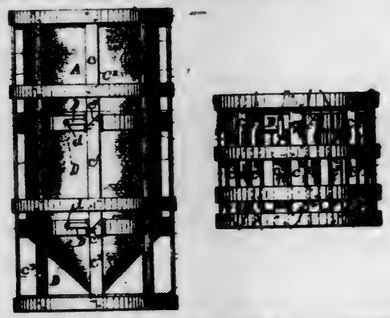

Claim.—1. The combination with a flexible bag, of an outer rigid crate secured thereto and out of contact therewith, said crate being divided longitudinally into a series of parts brought together and extended by relative rotation and provided with means for securing them in their extended position; substantially as described.

2. In a banana-shipping case, the combination with a flexible bag, of a crate secured thereto and out of contact therewith, consisting of a series of encircling hoops and longitudinal slats secured thereto, said longitudinal slats being divided obliquely, adjacent to certain of the hoops and provided with means for holding the portions end to end and for releasing them from this position so that they may slide one alongside of the other to shorten the crate for transportation; substantially as described.

710,017. BANANA-SHIPPING CASE. FRANK SCHMITZ, Chicago, Ill. Filed Jan. 22, 1902. Serial No. 90,735. (No model.)

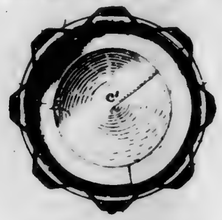

Claim.—1. In a banana-shipping case, the combination with a suitable open crate, of an elastic tubular casing, a top and bottom therefor, a cord encircling said casing, and a second cord laced alternately over members of the crate and under the encircling cord; substantially as described.

2. In a banana-shipping case, the combination with a suitable open crate, of conical top and bottom pieces suspended therein, and an elastic tubular casing secured around the bananas by means of an encircling cord, and centered in the casing by means of a cord laced alternately over the slats and under the encircling cord; substantially as described.

3. In a banana-shipping case, the combination with a suitable open crate, of an elastic tubular casing, a cord encircling the casing and adapted to hold it firmly in place about a bunch of bananas and a series of loops running from said encircling cord to the members of said crate and adapted to center the casing in the crate; substantially as described.

710,018. TOBACCO-CONVEYING DEVICE FOR CIGAR-BUNCHING MACHINES. JOSEPH B. SCHMITT, Oberrad, Germany. Filed Jan. 31, 1902. Serial No. 3,868. (No model.)

Claim.—1. The combination of the hopper *h*, exchangeable, channeled conveying-trough *b*, slide bars *d* and central elastic bar *g* serving to hold down the tobacco in the trough with yielding pressure, as described.

2. In a machine of the character described, the combination of a tobacco-conveying trough *b*; a pair of reciprocating compressing and feeding racks *o*; reciprocating feeding-arms 8, the forked arm 7 and link 9 connecting the feeding-arms 8 and racks *o*; suitable lever mechanism connected with the racks and feeding-arms, adapted to move them forward and backward above the trough; independent lever mechanism engaging the racks and adapted to raise and lower them; and connecting-rods *r*, on which the raising and lowering device oscillates, substantially as set forth.

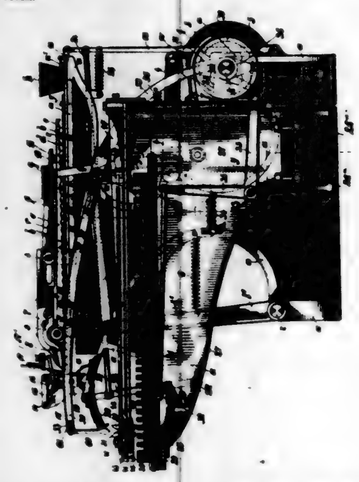

3. In a machine of the character described, the combination of a tobacco-conveying trough *b* having a cross-section corresponding to the form of the bunches to be made, the compressing and feeding racks *o* and the feeding-arms 8 operating above the conveying-trough *b*, the connecting-rods *r*; the forked arm 7 and link 9 connecting feeding-arms 8 and racks *o*; levers 1′ suitably connected with the racks *o* and feeding-arms 8, means for oscillating said levers 1′, rods *t* suitably connected with the lever *u* and the other lever, and suitable mechanism for oscillating the lever *u*, substantially as and for the purpose set forth.

4. In a machine of the character described, the combination of a tobacco-conveying trough *b*; the levers 1′; the racks *o* journaled at one end to the levers 1′, the feeding-arms 8 formed with a rearwardly-projecting yoke portion 7, a rod or bar engaging the yoke portion 7, a link 9 connecting the feeding-arms 8 with the racks *o*, a yoke *p* mounted upon the feeding-racks *o*, a bar *q* engaging the yoke *p*, a link *r* connecting bar *q* with the rigid bar *s*, and suitable means for raising and lowering the bar *q*, substantially as and for the purpose set forth.

5. In a machine of the character described, the combination of a tobacco-conveying trough *b*, with a compressing and feeding rack *o*, means for reciprocating the rack *o*, and a spring-bar *g* engaging the tobacco in the trough to prevent its expansion, substantially as set forth.

6. In a machine of the character described, the combination of a tobacco-conveying trough *b*, with the plates *d*, and spring-bar *g*, adapted to prevent the expansion of the tobacco in the trough, the compressing and feeding racks *o* operating in trough *b*, the feeding-arms 8 operating in the trough *b* in front of the racks, and means for operating the racks and feeding-arms to cause them to operate successively upon the tobacco, substantially as set forth.

7. In a machine of the character described, the combination of a tobacco-conveying trough *b*, and means for compressing and feeding tobacco therein, with a retarding device comprising spring-pressed plates arranged at the outlet end of the trough to retain the tobacco while being cut, and a cutter operating at the end of the trough and adapted to sever the successive charges from the tobacco in the trough, substantially as set forth.

8. In a machine of the character described, the combination of a tobacco-conveying trough *b* and means for compressing and feeding tobacco therein, with the spring-pressed tobacco-retarding plates 13 arranged at the outlet end of the trough, the reciprocating cutter 17, and means operated by the cutter for raising the plates, substantially as set forth.

9. In a machine of the character described, the combination of a tobacco-conveying trough *b* and means for compressing and feeding tobacco therein, with the spring-pressed tobacco-retarding plates 13, arranged at the outlet end of the trough, the reciprocating cutter 17, the lever 15, supporting-plates 13, the bell-crank lever 18 engaging lever 15, and an adjustable device carried by cutter 17 and adapted to engage and operate lever 18, substantially as and for the purpose set forth.

10. The combination of a wrapping-table 20 and suitable means for applying the wrapper; a mold 26 for receiving the bunches after wrapping; the vertical rock-shaft 27, lever 28 and cam 29 for oscillating said shaft; the beam 40 mounted on said rock-shaft and receiving horizontal reciprocating movement therefrom; the headpiece 41 mounted on the free end of the beam 40; the rigid arm 42 mounted on the headpiece 41; the swiveled yoke 43 carried by the arm 43; the roller 44 mounted in the swiveled yoke 43; the lever 45 fulcrumed intermediately of its ends and bearing at one end against the roller 44 and at the other end against the end of the beam 40 and the catching-jaws 50, 51 operating to carry the wrapper-bunches from the wrapping-table to the mold, substantially as described.

710,019. PHOTOGRAPHIC EMULSION. TOBIAS SCHWARTZ, Hanover, Germany. Filed June 11, 1902. Serial No. 111,227. (No specimens.)

Claim.—A photographic emulsion, containing an emulsifying agent, silver phosphate, silver chlorate, and a silver salt of an organic acid, substantially as described.

710,020. RAT-TRAP. BENJAMIN F. SHORT, Brantley, Ga. Filed Feb. 12, 1902. Serial No. 93,905. (No model.)

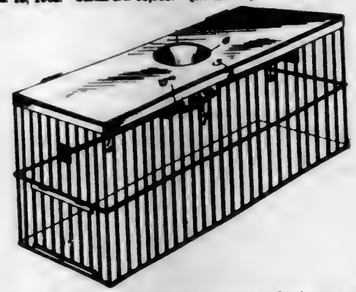

Claim.—1. The combination with a trap-casing having an opening in its upper end, of a shaft extending across the trap below the top thereof, a rotary cylindrical bait-holder carried by said shaft, and a funnel depending from said opening and having its smaller end in close proximity to the bait-holder, whereby the vision of the rodent will be directed and concentrated only to the bait-holder carried by said shaft, substantially as set forth.

2. The combination with the trap-casing having an opening in its upper end, and a funnel surrounding said opening, of a rotatable bait-holder journaled in said trap immediately below the funnel, substantially as set forth.

710,021. DETACHABLE WATER-CLOSET SEAT. HENRY M. SELVIDGE, Chicago, Ill. Filed Nov. 27, 1901. Serial No. 83,827. (No model.)

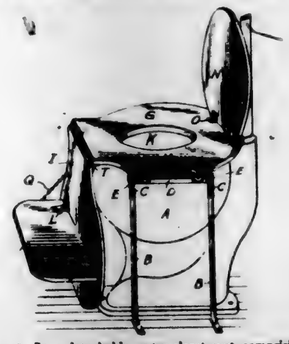

Claim.—1. In a detachable water-closet seat comprising a pair of legs or standards, a bracket adjustably secured to said legs or standards, a seat portion, a lid, a step-support and a step hingedly connected together, allowing the seat, lid, step-support and step to be compactly folded along the side of the closet-bowl, substantially as described.

2. In a detachable water-closet seat comprising a pair of legs or standards, a seat, a lid, a step-support and a step hingedly connected together and adapted to be folded along the legs or standards, the seat portion hingedly secured to a bracket, the bracket adjustably secured to slots in the legs or standards by means of thumb-screws, substantially as described.

710,022. BRACE FOR SCREENS, BLINDS, &c. MILTON H. STEVENS, Waltham, Mass. Filed May 26, 1902. Serial No. 108,206. (No model.)

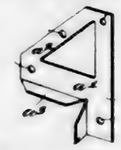

Claim.—1. A strengthening-brace for screens, blinds, &c., comprising a vertical portion, a horizontal part and an oblique part, integrally connected and adapted to lie flat against the material adjacent a corner of a blind or screen, the oblique part extending over the cross-bar or other member of the screen and lapping onto the upright thereof, and the vertical portion extending along the latter below the cross-bar, the lower edge of the horizontal part and the inner edge of the vertical portion being provided with inwardly-turned flanges extending substantially at right angles to each other for engaging the edges of the said cross-bar and upright.

2. A strengthening-brace for screens, blinds, &c., comprising a vertical portion, a horizontal part and an oblique part, integrally connected and adapted to lie flat against the material adjacent a corner of a blind or screen, the oblique part extending over the cross-bar or other member of the screen, and the vertical portion extending along the latter below the cross-bar, the lower edge of the horizontal part and the inner edge of the vertical portion being provided with inwardly-turned flanges extending substantially at right angles to each other for engaging the edges of the said cross-bar and upright, said vertical portion having provision for a fastening device at its lower end below said horizontal part, the latter having provision for a fastening device at the end adjacent said oblique part, and the upright having provision for another fastening device adjacent the opposite end of said oblique part.

710,028. FILLING-REPLENISHING LOOM. EDWARD S. STEPHENS, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Apr. 24, 1902. Serial No. 104,447. (No model.)

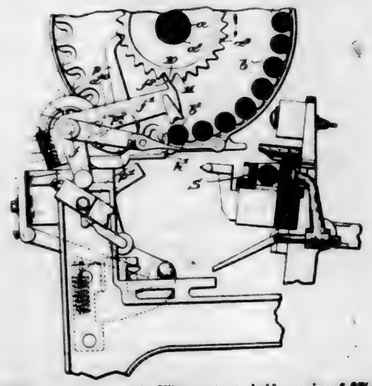

Claim.—1. A movable filling-feeder to hold a series of filling-carriers, a starter therefor, a transferrer, means controlled by transferring movement thereof to render said starter operative to effect initial movement of the feeder, and a device to positively complete the feeder movement as the transferrer resumes its normal position.

2. A movable filling-feeder to hold a series of filling-carriers, a starter therefor, a transferrer, means controlled by transferring movement thereof to render said starter operative to effect initial movement of the feeder, and a device to positively complete the feeder movement as the transferrer resumes its normal position and to positively lock the feeder between successive operations of the transferrer.

3. A movable filling-feeder to hold a series of filling-carriers, a starter therefor, a transferrer, means controlled by transferring movement thereof to render said starter operative to effect initial movement of the feeder, and a device movable with the transferrer to complete such feeder movement as the transferrer resumes its normal position.

4. A movable filling-feeder to hold a series of filling-carriers, means independent of the filling-carriers to normally lock the feeder from movement, a transferrer, operative movement thereof releasing the feeder from the locking means, and means controlled by such operative movement of the transferrer to immediately effect initial movement of the feeder when released.

5. A movable filling-feeder to hold a series of filling-carriers, means independent of the filling-carriers to normally lock the feeder from movement, a transferrer, operative movement thereof releasing the feeder from the locking means, and means, including a spring set by operative movement of the transferrer, to yieldingly start the feeder when unlocked.

6. A rotatable filling-feeder to hold a circularly-arranged series of filling-carriers, a transferrer, means movable therewith to normally lock the feeder from movement, and a starting device for the feeder, including a spring set by operative movement of the transferrer, to render the starting device operative to effect movement of the feeder when released from the control of the locking means.

7. A rotatable filling-feeder to hold a circularly-arranged series of filling-carriers, an attached toothed disk, a transferrer, means controlled by operative movement thereof to coöperate with said disk and start the rotative movement of the feeder, and an independent device movable with the transferrer to also coöperate with the disk and lock the feeder when the transferrer is in normal position.

8. A rotatable filling-feeder, means independent of the filling-carriers held thereby and movable with the transferrer to normally lock the feeder from movement, a transferrer to remove the filling-carriers one by one, and means controlled by operative movement of the transferrer to yieldingly start the movement of the feeder, such transferrer movement unlocking the feeder, return of the transferrer to normal position acting through the locking means to complete the feeder movement and positively lock it with the filling-carrier next to be removed in the path of the transferrer.

9. A rotatable filling-feeder to hold a plurality of circularly-arranged filling-carriers, an attached toothed disk, a coöperating pawl having a rocking and a bodily movement, a transferrer, a spring adapted when set to rock and move the pawl bodily to initiate rotation of the feeder, and means to normally lock the feeder, operative movement of the transferrer releasing the feeder from the locking means and also setting the spring.

10. A rotatable filling-feeder adapted to hold a series of filling-carriers, a disk notched to correspond to the position of the filling-carriers, a transferrer, a dog thereon to normally enter a notch of the disk and lock the feeder, and means, including an actuating-spring, rendered effective by operative movement of the transferrer, to impart initial movement to the feeder when the dog is withdrawn from the disk, return of the transferrer to normal position acting through the dog and disk to complete the movement of the feeder and to relax the actuating-spring.

11. A movable filling-feeder to hold a series of filling-carriers, a transferrer to engage and remove the latter one by one, means controlled by the transferrer to normally prevent movement of the feeder, a starter to initiate movement of the feeder, a normally inactive operating-spring for said starter and means governed by operative movement of the transferrer to render the spring active to effect the operation of the starter and start the feeder when free to move during such movement of the transferrer.

12. A movable filling-feeder to hold a series of filling-carriers, a transferrer to engage and remove the latter one by one, means controlled by the transferrer to normally prevent movement of the feeder, and means to overcome the inertia of the feeder when free to move, said means including a normally inactive spring and a starting-pawl, transferring movement of the transferrer releasing the feeder and also rendering the spring active to move the pawl and start the feeder during such movement of the transferrer.

13. A step-by-step rotatable holder adapted to contain a plurality of filling-supplies, a transferrer to remove the latter one by one, means to unlock the holder by transferring movement of said transferrer, and means actuated by the latter during such movement to effect rotation of the holder.

14. A rotatable holder to support a series of filling-supplies, an attached toothed disk, a transferrer, starting means actuated by and operating during transferring movement of the transferrer to effect initial rotative movement of the holder, and means actuated by and operating upon return movement of the transferrer to complete the movement of the holder, both of said means coöperating with the toothed disk.

15. A rotatable filling-supply holder, a transferrer to remove the filling-supplies singly therefrom, and means controlled by the transferrer to effect step-by-step movement of the holder and to lock it between successive operations of the transferrer, said means including a normally inoperative spring-acting member and a positively-acting member, coöperating alternately with the holder during the operating and return movement of the transferrer, both members coacting with the holder when at rest.

16. A movable filling-supply holder, a transferrer, and means to move the holder, said means including a normally quiescent pawl, and a spring interposed between the pawl and the transferrer, operative movement of the latter compressing the spring and acting through it upon the pawl to effect movement of the holder.

17. A movable filling-supply holder, a transferrer having a socketed extension, a spring seated therein, and means to move the holder, said means including a normally quiescent pawl having a tail extended in the path of the spring, operative movement of the transferrer moving the spring into engagement with and compressing it against the tail, the force of the spring when compressed moving the pawl to coöperate with and effect movement of the holder.

18. A rotatable filling-supply holder having an attached toothed disk, a pawl coöperating with the disk and having a tail, a transferrer provided with an extension, and a spring interposed between said extension and the tail of the pawl, operative movement of the transferrer compressing the spring and acting therethrough to yieldingly move the pawl to effect movement of the holder.

19. A rotatable filling-supply holder having an attached toothed disk, a pawl coöperating with the disk and having a tail, a transferrer provided with an extension, a spring interposed between said extension and the tail of the pawl, and a locking-dog on the transferrer, operative movement of the latter compressing the spring and therethrough causing the pawl to move the holder, return movement of the transferrer effecting engagement of the dog with the disk to lock the holder from movement.

710,024. LET-OFF-ARRESTING MECHANISM FOR LOOMS. EDWARD S. STEPSON, Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., a Corporation of Maine. Filed Apr. 23, 1902. Serial No. 104,971. (No model.)

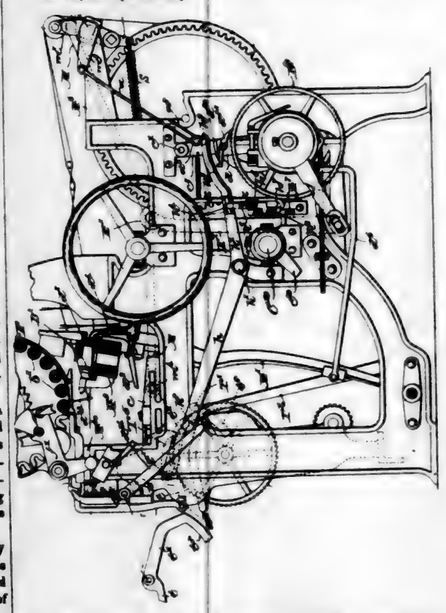

Claim.—1. In a loom, filling-replenishing mechanism, let-off mechanism, and means to temporarily arrest the operation thereof upon actuation of the replenishing mechanism.

2. In a loom, let-off mechanism, means operative by or through an abnormal condition of the filling to arrest the operation of said mechanism, and a device to release the latter from the control of said means after a predetermined number of picks.

3. In a loom, a controlling rock-shaft, let-off mechanism, means to turn said rock-shaft by or through an abnormal condition of the filling, and connections between said rock-shaft and let-off mechanism, to temporarily arrest the latter when the former is turned.

4. In a loom, filling-replenishing mechanism, let-off mechanism, means to arrest its operation when the replenishing mechanism is actuated, and a device to automatically release the let-off mechanism from the control of said means.

5. In a loom provided with automatic filling-replenishing mechanism, let-off mechanism including an actuating-pawl, means operated by or through actuation of the replenishing mechanism to render the pawl inoperative, said means including a locking-detent, and a device to act upon the detent and automatically release the let-off mechanism from control of said means after a predetermined number of picks.

6. In a loom, filling-replenishing mechanism, let-off mechanism, a controller-arm operated upon filling replenishing to render the pawl inoperative, a detent to engage and lock said arm at such time, to maintain the let-off inoperative, and a device to act upon the detent after a predetermined number of picks and release the controller-arm, to thereby restore the let-off to operative condition.

7. In a loom, let-off mechanism, means to arrest the operation thereof by or through an abnormal condition of the filling, and separate means to arrest the operation of said mechanism when the loom bangs off.

8. In a loom, let-off mechanism, including an actuating-pawl, a device to act upon and render it inoperative, and two separate means to actuate said device, one of said means being operative by or through an abnormal condition of the filling, and the other being operative when the loom bangs off.

9. In an automatic filling-replenishing loom, let-off mechanism, means to arrest its operation upon filling replenishing, and separate means to arrest the operation of said mechanism when the shuttle is improperly boxed.

10. In a loom, a movable whip-roll, let-off mechanism, including an actuating-pawl, means operative upon improper boxing of the shuttle to positively move the whip-roll to slacken the warps, and a device operative by such movement of the whip-roll to render the actuating-pawl inoperative and thereby arrest the let-off mechanism.

11. In a loom, a movable whip-roll, let-off mechanism, including an actuating-pawl, means operative upon improper boxing of the shuttle to positively move the whip-roll to slacken the warps, a controller-arm for the pawl, actuated by such movement of the whip-roll to engage and render the pawl inoperative, a detent to engage the arm and maintain it in engagement with the pawl, and a device to automatically release the controller-arm from the detent after a predetermined number of picks.

12. In a loom provided with automatic filling-replenishing mechanism, means to govern the time of operation thereof, take-up and let-off mechanisms, and separate controlling connections between said mechanisms and the said governing means, to arrest the take-up and let-off upon actuation of the replenishing mechanism.

13. In a loom provided with filling-replenishing mechanism, means to govern the time of operation thereof, a movable whip-roll, means operative upon improper boxing of the shuttle to positively move the whip-roll and slacken the warps, let-off mechanism, including an actuating-pawl, a normally inoperative pivotally-mounted controller-arm for the pawl, having a cam-ledge, a locking-detent to coöperate with said cam-ledge when the controller-arm is moved to engage and render the pawl inoperative, separate connections between the said governing means and whip-roll and the controller-arm, to move the latter upon replenishment of filling or by movement of the whip-roll, to thereby render the let-off-actuating pawl inoperative, and a device to automatically act upon the detent and move it to release the controller-arm and permit it to return to inoperative position, the cam-ledge thereafter acting to hold the detent out of the path of movement of said device until the controller-arm is again moved and locked.

14. In a loom provided with automatic filling-replenishing mechanism, means to govern the time of operation thereof, take-up mechanism, including an actuating pawl and ratchet, and a device controlled by said governing means to disengage the pawl and ratchet upon operation of said governing means and maintain such disengagement during filling replenishing.

15. In a loom provided with automatic filling-replenishing mechanism, means to govern the time of operation thereof, take-up mechanism including an actuating pawl and ratchet, and a detent-pawl, and a device actuated by operation of said governing means to disengage the actuating-pawl from the ratchet and prevent reëngagement therewith until filling replenishment has been effected.

710,025. STRIP FOR SECURING GLASS PANES. JOSEPH SWARSEL, Redbank, N. J. Filed Dec. 4, 1901. Renewed Aug. 26, 1902. Serial No. 120,979. (No model.)

Claim.—1. As an article of manufacture, a fastening for glass panes, comprising a longitudinal strip of resilient material provided at one of its edges with a flange bent at an acute angle for the purpose of engaging a pane of glass, and bent at its other edge at a suitable angle for engaging the woodwork of the sash, and provided also with a resilient flat portion intermediate of its edges, the said flat portion having apertures for the passage of nails, the arrangement being such that substantially watertight joints are formed between said strip and said pane, and also between said strip and said woodwork, yet the pressure of the nails is cushioned and the strain thereof equalized.

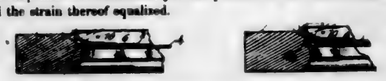

2. As an article of manufacture, a fastening for glass panes, comprising a longitudinal strip of resilient material provided at its edges with oppositely-disposed flanges, one forming substantially a right angle and the other forming an acute angle with the general position of said strip, said strip being provided with nail-holes placed intermediate of said edges where said strip is more or less strong.

3. As an article of manufacture, a fastening for glass panes, comprising a longitudinal strip of resilient material provided at one of its edges with a flange forming an acute angle with the general plane of said strip and provided at its other edge with a flange free to engage the woodwork of the sash, the arrangement being such that when said strip is placed loosely in position said acute angle may engage panes of different thicknesses, the difference in thickness being compensated by the angle assumed by said strip, and means for securing said strip in place.

4. As an article of manufacture, a fastening for glass panes, comprising a longitudinal strip of resilient material, provided at one of its edges with a flange forming an acute angle with the general plane of said strip, and provided at its other edge with a flange free to engage the woodwork of the sash, said strip being provided with a beveled end for abutting against the body of a similar strip disposed at right angles thereto.

710,026. LUBRICATOR FOR EXPLOSIVE-ENGINES. CARL W. WEISS, New York, N. Y., assignor of one-half to August Mieta, New York, N. Y. Filed Aug. 13, 1900. Serial No. 26,713. (No model.)

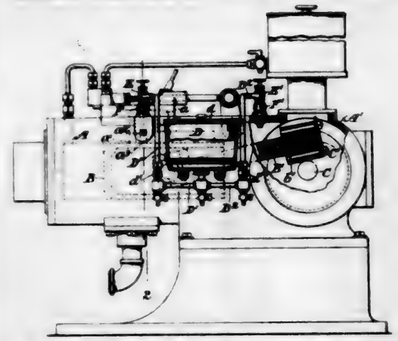

Claim.—1. The combination with an explosive-engine having a chamber in which a partial vacuum is produced by the rearward movement of the piston, of an oil-receptacle, a conductor to deliver oil from said receptacle to a port in the cylinder-wall, said receptacle being below said port and said conductor terminating in said receptacle below the surface of the oil, and a vent from said port to said chamber whereby the flow of oil is induced by the partial vacuum in said chamber, substantially as shown and described.

2. The combination with an explosive-engine having a chamber in which a partial vacuum is produced by the rearward movement of the piston, of an oil-receptacle, a conductor to deliver oil from said receptacle to a port in the cylinder-wall, said receptacle being below said port, and said conductor terminating in said receptacle below the surface of the oil, a check-valve in said conductor, and a vent from said port to said chamber whereby the flow of oil is induced by the partial vacuum in said chamber, substantially as shown and described.

3. The combination with an explosive-engine having a chamber in which a partial vacuum is produced by the rearward movement of the piston, and a passage from said chamber to the working cylinder through a port adapted to be covered by the piston, of an oil-receptacle, a conductor to deliver oil from said receptacle to an oil-port in the cylinder-wall, said receptacle being below said port and said conductor terminating in said receptacle below the surface of the oil, and the vent from said oil-

port to the passage between the chamber and the air-port, substantially as shown and described.

4. The combination of an explosive-engine having a chamber in which a partial vacuum is produced by the rearward movement of the piston, a pitman and a trunk-piston with an oil-opening therethrough, of an oil-receptacle, a conductor to deliver oil from said receptacle to an oil-port in the cylinder-wall, said receptacle being below said port and said conductor terminating in said receptacle below the surface of the oil, said port being in line with said oil-opening in the piston, and a vent from said oil-port to said chamber whereby the flow of oil is induced by the partial vacuum in said chamber, substantially as shown and described.

5. The combination with an explosive-engine having a chamber in which a partial vacuum is produced by the rearward movement of the piston, of an oil-receptacle, a conductor to deliver oil from said receptacle to a port in the cylinder-wall, said receptacle being below said port, and said conductor terminating in said receptacle below the surface of the oil, a sight-glass in said conductor, and a vent from said port to said chamber whereby the flow of oil is induced by the partial vacuum in said chamber, substantially as shown and described.

6. The combination with an explosive-engine having a chamber in which a partial vacuum is produced by the rearward movement of the piston and a passage from said chamber to the working cylinder through an air-port adapted to be covered by the piston, of an oil-receptacle, a conductor to deliver oil from said receptacle to an oil-port in the cylinder-wall, said receptacle being below said port, and said conductor terminating in said receptacle below the surface of the oil, a sight-glass in said conductor, and a vent from said oil-port to the passage between said chamber and the air-port whereby the flow of oil is induced by the partial vacuum in said chamber, substantially as shown and described.

7. The combination with an explosive-engine, of a receptacle for lubricating-oil disposed below the top of the cylinder and open to the atmosphere, a sight-feed above the cylinder, and connections between said receptacle, sight-feed and cylinder, whereby the oil is drawn from the receptacle under atmospheric pressure by the movements of the engine and the feed of the oil is stopped when the engine is stopped.

710,027. MACHINE FOR STRINGING TOBACCO-LEAVES. SAMUEL D. WHEELER, Powelstown, Ga., assignor of one-half to David H. Miller, Attapulgus, Ga. Filed June 2, 1902. Serial No. 108,937. (No model.)

Claim.—1. A machine of the class described comprising a frame having a bench and provided above the same with an upright guide, a slide mounted in the guide and capable of upward and downward movement in the guide and provided with an upright needle having means for engaging thread, means for supporting the needle in an elevated position, and means for supporting a thread in the path of the needle, whereby the thread will be carried through the stems by the downward movement of the slide, substantially as described.

2. A machine of the class described comprising a frame, a vertically-movable slide mounted on the frame and provided at its bottom with a depending needle having a board for engaging thread, a tray adapted to receive the leaves and provided with means for holding the same in position, and means for supporting a thread in the path of the needle, whereby the thread will be carried through the stems by the downward movement of the slide, substantially as described.

3. A machine of the class described comprising a frame, a slide mounted in the frame and provided with a projecting handle or arm, a needle carried by the slide, a pulley located above the slide, a flexible connection arranged on the pulley and attached to the slide, means arranged to be engaged by the flexible connection for supporting the needle in an elevated position, and a tray for holding the leaves, substantially as described.

4. A machine of the class described comprising a frame having a bench or support and provided with uprights having shoulders located above the bench or support, a slide, a thread-holder mounted on the frame and located above the shoulders, and a needle carried by the slide and provided with a recess located in alinement with the said shoulders when the slide is elevated, substantially as described.

5. A machine of the class described comprising a frame having a support provided with an opening at its rear end and having a stud or projection at its front portion, a slide mounted on the frame above the support and provided with a needle, and a tray provided with means for holding the leaves and having openings to register with the opening of the support and to receive the projection thereof, substantially as described.

6. A machine of the class described comprising a frame having the support, a vertically-movable needle provided with a board for engaging thread, means for operating the needle, a tray adapted to receive the leaves and provided at the back with means for engaging the stems, and for supporting the latter in a vertical series beneath the needle, and means for supporting a thread in the path of the needle, whereby the thread will be carried through the stems by the downward movement of the slide, substantially as described.

7. In a machine of the class described, the combination with a frame, a needle, and means for operating the latter, of a tray adapted to receive the leaves and provided with a clamp composed of an upwardly-extending rigid jaw, a movable jaw arranged adjacent to the rigid jaw, and a locking device mounted on the tray and engaging the movable jaw, substantially as described.

8. In a machine of the class described, the combination with a frame, a needle, and means for operating the same, of a tray adapted to receive the leaves and provided with a clamp composed of an upwardly-extending rigid jaw, an upwardly-extending movable jaw pivoted to the tray and provided at its upper portion with a notch, and a pivoted dog mounted on the tray and engaging the shoulder formed by the notch, substantially as described.

710,028. TENDER FOR TRACTION-ENGINES. FRANK J. WOOD, Des Moines, Iowa. Filed Aug. 13, 1902. Serial No. 119,504. (No model.)

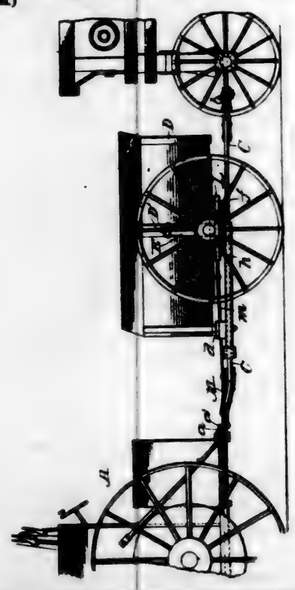

Claim.—1. In a tender for traction-engines, a body-supporting frame mounted on an axle constructed to provide an unobstructed opening between the upper and lower members of said axle, in combination with a draw-bar the size thereof being such that it may be passed through the axle and be movable therein without moving the tender, substantially as shown and for the purpose set forth.

2. In a tender for traction-engines, a rigidly-connected axle and body-supporting saddle, uprights journaled between the axle and saddle each upright having a spindle and an arm, the arm of one upright projecting rearward and that on the other upright forward, a disk between the axle and saddle, bars attached to the disk and to the arms on the uprights, and means for connecting the disk to the traction-engine, substantially as shown.

3. In a tender for traction-engines, an axle made up of two connected members, bars attached between the members of the axle and maintained at right angles thereto, a body-supporting saddle carried by the axle, uprights journaled between the ends of the axle and the supports for the saddle, a spindle and an arm on each of the uprights, a disk mounted centrally on the axle between the axle and saddle, links between each arm and the disk, flexible connections attached to the disk, and rods attached to the flexible connections for engagement with the traction-engine, substantially as shown and for the purpose set forth.

4. In a tender for traction-engines, the combination with a trussed axle having an open central portion, saddle and wheel supporting fixtures on the axle, pivotal uprights between the ends of the axle and the fixtures, spindles and arms integral with the uprights, a disk journaled between the axle and saddle, links which extend from the arms to the disk, and means for connecting the disk to the steering-wheel supports of the traction-engine, substantially as set forth.

710,029. WATER-WHEEL. ROBERT E. WOOLMAN, St. Joseph, Mo. Filed Sept. 25, 1901. Serial No. 76,490. (No model.)

Claim.—A water-wheel comprising horizontal annular supports arranged one above the other, vertical supports attached to the annular supports at points upon their inner peripheries, the ends of said supports being taken inwardly and upwardly toward the axis of the wheel, a conical bearing-block attached to the upper ends of the vertical supports, a bearing-cap disposed above the conical bearing-block, said conical bearing-block and bearing-cap having perforations therethrough, a shaft passed through the perforations and rigidly attached to the conical bearing-block, balls disposed between the conical bearing-block and the bearing-cap, a sleeve encircling the shaft and of inner length than the shaft, disposed against the under side of the conical bearing-block and extending to a point in the center and slightly below the plane of the lowermost annular support, a second conical bearing-block disposed against the lower end of the sleeve and rigidly mounted upon the lower end of the shaft, a second bearing-cap disposed below the second-named conical bearing-block, balls disposed between the conical bearing-block and the bearing-cap, horizontal rods attached at their inner ends to the sleeve and at their outer ends to the vertical supports, the uppermost and lowermost rods being passed through the vertical supports and the annular supports to hold them together, and wings pivotally attached to the horizontal rods with the exception of the lowermost of said rods by means of loops upon their upper edges, said wings having their lower edges disposed below the horizontal rod next below.

710,030. PUMP. CHARLES G. WORTHINGTON, Dunellen, N. J. Filed Aug. 28, 1900. Serial No. 27,781. (No model.)

Claim.—1. A direct-acting steam-pump having separate chambers for the opposite ends of the pump, a cross-head between said chambers with the plungers for the opposite pump ends on opposite sides of the cross-head, connections from the steam pistons or pistons to said cross-head, and compensating mechanism connected to said cross-head, substantially as described.

2. A duplex direct-acting steam pumping-engine having separate chambers for the opposite ends of the pump, a cross-head between said chambers on each side of the pump with the plungers for the opposite ends of the pump on opposite sides of the cross-heads, connections from the steam-pistons to said cross-heads, and compensating cylinders connected to said cross-heads, substantially as described.

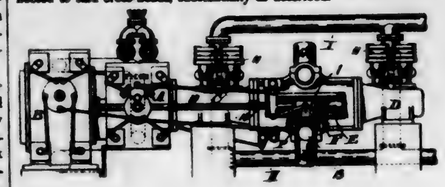

710,081. FENCE-POST AND FENCE-STAY. VIRGIL H. ABBOTT, Carrollton, Ky. Filed Mar. 19, 1902. Serial No. 98,081. (No model.)

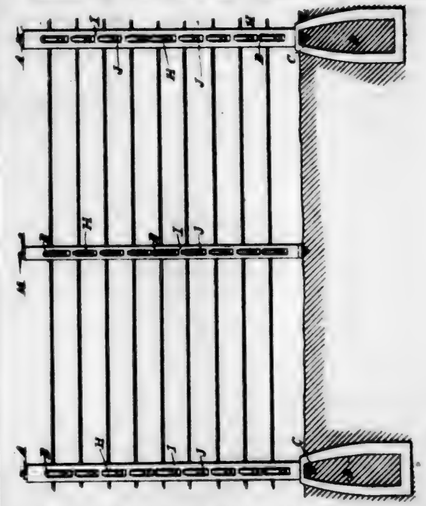

Claim.—1. In a device of the type set forth, the combination with a base, of a post secured thereto and having a series of horizontally-disposed notches extending entirely across the outer face of the post, the said outer face of the post being flat and carrying a series of teeth centrally arranged and inclined slightly in an upward direction with their engaging faces in alinement with said notches, a face-plate having a flat inner face and provided with apertures to receive said teeth, said face-plate being clamped to the post and having its inner face contacting with the outer face of the post throughout, with separate means for clamping the face-plate to the post.

2. In a device of the type set forth, the combination with a base, of a post having a flat outer face secured thereto, teeth centrally arranged on said face of the post, with horizontally-disposed notches on the outer face of the post extending entirely thereacross and located at the junction of the teeth and the post, to receive the strands of wire, and a face-plate having a flat inner face and provided with apertures to receive the teeth, with bolts and nuts for securing the inner face of the face-plate in contact with the outer face of the post throughout, substantially as described.

710,082. MACHINE FOR MAKING GLASS PLATES. LEON APPERT, Paris, France, assignor to the Appert Glass Company, a Corporation of New Jersey. Filed Feb. 6, 1901. Serial No. 46,167. (No model.)

Claim.—1. In a machine for rolling glass plates, the combination with one or more rolls and a table for receiving glass, of a fluid-circulating system arranged to be employed for cooling the said table, having its inlet arranged relatively close to the central portion of the table upon which the molten glass is poured, and its outlet relatively far from such portion, substantially as and for the purposes set forth.

2. In a machine for rolling glass plates, the combination with one

or more rolls, of a table for receiving the glass to be acted on by the rolls, and provided with channels or passages in its bed for the circulation of water, said channels having inlets at the center line or section of the table and outlets at the sides, whereby the water in passing through the channel is caused to flow from the center of the table toward its sides, as set forth.

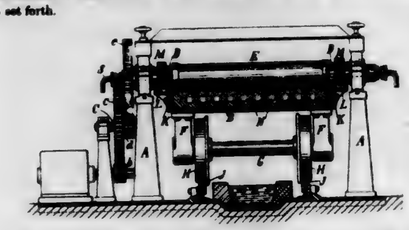

3. In a machine for rolling glass plates the combination with one or more rolls mounted on stationary bearings, of a longitudinally-movable table, having channels or passages in its bed, with inlets at the center line or section of the table and outlets at the sides, and flexible connections between the inlets and a source of water-supply, as set forth.

710,033. APPARATUS FOR THE COMBUSTION OF FINELY-DIVIDED SOLID FUEL. JOHN W. BAILEY, Jersey City, N. J. Filed Jan. 18, 1901. Serial No. 43,680. (No model.)

Claim.—1. The combination, of a burner-tube; a plug arranged within the same, to afford a free interspace between the proximate surfaces of the plug and the burner-tube; an air-blast pipe communicating with the interior of the burner-tube; means for supplying pulverized solid fuel to said interspace; a water-pipe running longitudinally through said plug and having a discharge-orifice within the discharge-orifice of the burner-tube; and an air-pipe, surrounding said water-pipe and having a discharge-orifice adjacent to the discharge-orifice of the water-pipe, the interior of said air-pipe communicating with the interior of the burner-tube, substantially as set forth.

2. The combination, of a burner-tube having an internally-tapering portion; a tapering plug arranged within the same to afford a free interspace between the proximate surfaces of the plug and burner-tube; means for adjusting said plug longitudinally with relation to the burner-tube; means for supplying pulverized solid fuel to the interspace between said plug and burner-tube; an air-blast device communicating with the interior of the burner-tube; and means for diffusing watery vapor within the region of discharge of the burner, substantially as set forth.

3. The combination, of a burner-tube; a plug arranged within the same, to afford a free interspace between the proximate surface of the plug and the burner-tube; an air-blast pipe communicating with the interior of the burner-tube; means for supplying pulverized solid fuel to said interspace; a water-pipe running longitudinally through said plug and having a discharge-orifice within the discharge-orifice of the burner-tube; an air-pipe surrounding said water-pipe and having a discharge-orifice adjacent to the discharge-orifice of the water-pipe, the interior of said air-pipe communicating with the interior of the burner-tube; and means for adjusting said air-pipe longitudinally with relation to the water-pipe, substantially as described.

4. The combination of a burner having a definite annular discharge-orifice and an interior chamber communicating with said orifice; means for supplying pulverized solid fuel to said chamber; means for supplying to said chamber an air-blast adapted to project said solid fuel through said orifice; means for regulating said air-blast; means for supplying and discharging watery vapor within the area surrounded by said annular orifice; means for regulating said watery-vapor discharge; means for supplying and discharging a distinct air-blast within the area surrounded by said annular orifice; and means for regulating said last-mentioned air-blast, substantially as and for the purposes set forth.

5. The combination of a burner-tube; a plug of less diameter arranged therein to afford an annular interspace and discharge-orifice; means for supplying pulverized solid fuel to said interspace; means for regulating said supply of solid fuel; means for supplying an air-blast to said interspace; means for supplying and discharging watery vapor within the area surrounded by said annular orifice; means for regulating said discharge of watery vapor; means for supplying and discharging a distinct air-blast within the area surrounded by said annular orifice; and means for regulating the said air-blasts, substantially as and for the purposes set forth.

710,034. PAPER-ROLL HOLDER. WILLIS H. BELKNAP, Summit, N. J. Filed Oct. 11, 1901. Serial No. 78,361. (No model.)

Claim.—1. In a paper-roll holder, a bracket having perforated arms, a roller mounted for rotation between said arms having a central opening therein and a slot, a single continuous rod to insert in said central opening and the perforations in the arms, and means for preventing the withdrawal of said rod, substantially as shown and described.

2. In a paper-roll holder, a roller having a longitudinal bore therethrough, a bracket having perforated arms, a single continuous rod for engaging the holes in said arms and the bore in the roller, said rod and roller being adapted to rotate between said arms, and means for preventing the withdrawal of said rod, substantially as shown and described.

3. In a paper-roll holder, a roller having a longitudinal bore therethrough, a slot connecting said bore and the surface of the roller, a bracket having perforated arms, a rod to fit in the holes in said arms and the bore in the roller, and a spring-actuated catch on said rod adapted to fit in said slot, said rod and roller being adapted to rotate between said arms, substantially as shown and described.

4. In a paper-roll holder, a bracket having perforated arms, a roller having a longitudinal central bore, a single rod inserted through the perforation in one of the arms, the bore in the roller, and the perforation in the other arm, the projecting ends of said rod forming trunnions on which said roller rotates, and means to prevent the withdrawal of said rod, substantially as shown and described.

5. In a paper-roll holder, a bracket having perforated arms, a roller having a longitudinal central bore, holes cut into said roller intersecting said bore, and a slot connecting said holes, a rod inserted in the perforations in said arms and the bore in said roller, and a catch to prevent the withdrawal of said rod adapted to fit into said slot and register with one of said holes at times, substantially as shown and described.

6. In a paper-roll holder, a roller having a longitudinal bore therethrough, triangular holes cut into said roller and intersecting said bore, a slot connecting said holes, a bracket having perforated arms, a rod to fit in the holes in said arms and the bore in the roller, and a catch on said rod adapted to fit in said slot and register with one of said triangular holes at times, substantially as shown and described.

7. In a paper-roll holder, a base-plate provided with screw-holes to receive screws for fastening it to a support, perforated side arms extending outwardly from said plate, a roller having a longitudinal bore therethrough, triangular holes cut into said roller intersecting said bore, a slot connecting said holes, a rod for engaging the holes in said side arms and said bore, and a catch adapted to engage said slot and register with one of said triangular holes at times, substantially as shown and described.

8. In a paper-roll holder, a bracket having perforated arms, a roller having a longitudinal central bore, triangular holes cut into said roller intersecting said bore, and a slot connecting said triangular holes, a rod inserted in the perforations in said arms and the bore in said roller, a slot in said rod, a catch pivoted in said slot and held normally out of line of the surface of said rod by a spring, a pin inserted in said rod across said slot, and a projection on the base of said catch to engage said pin, said catch adapted to engage said slot and to register with one of said triangular holes at times, substantially as shown and described.

710,035. ADJUSTABLE ROCKING-CHAIR. CARL A. BERGSTROM, Tacoma, Wash. Filed Jan. 10, 1902. Serial No. 89,130. (No model.)

Claim.—1. A rocking-chair having a pivotal connection of the rear legs with the rockers and having adjustable front legs.

2. A rocking-chair having in combination with the rockers and legs, an extensible or adjustable connection between the rockers and the front legs and a pivotal connection between the rockers and the rear legs.

3. In a rocking-chair the combination with a seat and rockers, of a pivotal connection interposed between the seat and rockers at one side of a median line of said seat, and an adjustable connection interposed between said seat and rockers at the other side of such median line of said seat.

4. The combination with a hollow base-piece having a shoe for attachment to a rocker of a chair, of a socket to receive a front leg of the chair provided with an extension arranged and adjustable in the base-piece.

710,036. BANANA-SHIPPING CASE. HARRY BUTLER, Berwyn, Ill., assignor to Frank Schmitz, Chicago, Ill. Filed Jan. 18, 1902. Serial No. 90,257. (No model.)

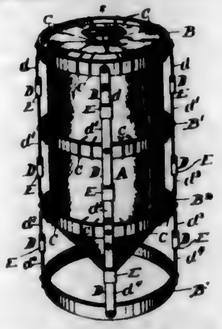

Claim.—1. In a banana-shipping case, the combination with a flexible sack, of a crate surrounding the same and secured thereto, out of contact therewith, said crate being made up of a series of encircling hoops and a series of longitudinal braces divided into portions pivoted together and to the hoops and provided with adjustable means for locking the joints against angular movement to prevent the collapse of the case; substantially as described.

2. The combination with the flexible sack, A, of an encircling supporting-crate surrounding the same and secured thereto, out of contact therewith, said crate being made up of a series of encircling hoops, B, B', B², and the braces, D, composed of intermediate portions, d', d^2, pivoted between their ends, to the intermediate hoops and at one end to each other, and end portions, d, d^1, pivoted at one end to the adjacent ends of the intermediate portions and at the other end to the end hoops, said braces being provided with the slides, E, to lock the joints against movement; substantially as described.

710,037. TELESCOPING VALISE. CHARLES A. BODWELL, Jr., Lakeville, Cal. Filed June 2, 1902. Serial No. 109,867. (No model.)

Claim.—1. A telescoping valise, one portion of which comprises two sections, each rectangular in form and having substantially rigid sides, the outer section telescoping snugly over the inner section, and a web of flexible material extending around the whole periphery of each section, one edge of which is secured to the inner section throughout its whole periphery to make a dust-proof joint, and the other edge of which is secured to the outer section throughout its whole periphery to make a dust-proof joint, said web being of such width and attached to the inner and outer sections at such heights throughout as to permit and to limit the movement of the outer section relatively to the inner section through substantially the height of said inner section, substantially as described.

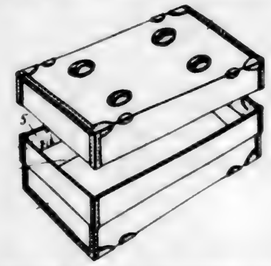

2. A telescoping valise, one portion of which comprises two sections, each rectangular in form and having substantially rigid sides, the outer section telescoping snugly over the inner section and a web of flexible material extending around the whole periphery of each section, the lower edge of which is attached to the top of the inner section, and the inner edge of which is attached to the top of the outer section, each of such attachments being dust-proof and extending around the entire periphery of the section, substantially as described.

710,038. SAFETY-ELEVATOR. PHILIP H. BURGART, Payne, Ohio. Filed May 23, 1902. Serial No. 108,558. (No model.)

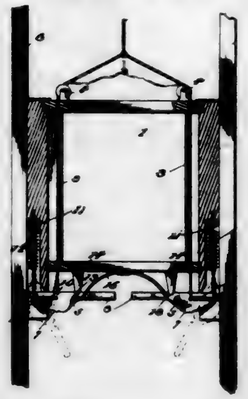

Claim.—1. In an elevator and in combination with the car, a dog mounted for pivotal and sliding movement, a spring for exerting an upward pull upon the outer end of the dog, a second spring for exerting a downward pressure upon the inner end of said dog, and restraining means exerting a force upon the dog at a point intermediate of the two springs for normally holding the dog out of action against the tension of the said springs, substantially as set forth.

2. In an elevator, and in connection with the car, a dog mounted for pivotal and sliding movement, a stud adapted to interlock with the dog and limit its movement in one direction, a spring for throwing the dog outward and upward into operative position, a second spring for disengaging the dog from the said stud, and restraining means for holding the dog out of action against the tension of the two springs, substantially as set forth.

3. In an elevator, and in combination with the car having a side portion recessed, a dog comprising a cam and stem portions, the cam portion having a longitudinal slot and the stem portion having a notch, a spring located in the recess of the car and exerting an upward pull upon the dog, a stud for limiting the upward movement of the dog at its inner end and adapted to enter the notch thereof, a second spring normally exerting a downward pressure upon the inner end of the dog to effect a dis-

engagement thereof from the stud, a pin forming a pivotal and slidable support for the dog, and restraining means for normally holding the dog out of action against the tension of both of said springs, substantially as set forth.

710,089. HYDROSTATIC PRESS. WILLIAM D. BOYD, Kansas City, Mo. Filed Aug. 30, 1901. Serial No. 73,830. (No model.)

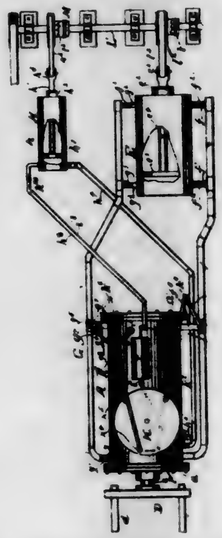

Claim.—1. In a hydrostatic press, press-cylinder and its piston, said cylinder having separate induction and eduction openings upon opposite sides and at each end and normally closed openings for the supply of fluid to the cylinder, a double-acting suction and forcing pump having eduction and induction openings upon the respective opposite sides and at the forward and rear ends, separate suction and supply conductors for the fluid on opposite sides of said press-cylinder and the said double-acting suction and forcing pump and closed at one end, branch pipes connected with said fluid suction and supply conductors and also with the respective eduction and induction openings to said pump, and branch pipes connected with the suction and supply conductors, and also with the respective induction and eduction openings to said press-cylinder, means for operating said pump, and three-way valves in the supply and suction pipes at the junction of the branch pipes communicating with the rear end of the press-cylinder, and means for operating said valves automatically.

2. In a hydrostatic press, press-cylinder and its piston, said cylinder having separate eduction and induction openings upon opposite sides and at its forward and rear ends and normally closed openings for the supply of the fluid to the cylinder, a double-acting suction and forcing pump having separate eduction and induction openings upon opposite sides and at its forward and rear ends, means for operating said pump, separate suction and supply conductors on opposite sides of the press-cylinder, and said pump closed at one end, branch pipes connected with the respective eduction and induction openings to said press-cylinder and the forward ends of the respective suction and supply conductors, and branch pipes connected with said rear ends of said suction and supply conductors and the respective eduction and induction openings to said pump, three-way valves in the suction and supply conductors, at the junction of the branch pipes leading to the rear end of the press-cylinder, and valve-stems to said valves, means for operating said valve-stems and said three-way valves simultaneously, and a high-pressure pump and its conductor connected with the press-cylinder.

3. In a hydrostatic press, the combination with a press-cylinder having duplex eduction and induction openings upon opposite sides, and with the piston of a piston rod or plunger, a compressing-plate, a double-acting low-pressure suction and forcing pump having duplex eduction and induction openings upon opposite sides, and separate suction and supply pipes on each side of the said press-cylinder extending upon both sides of said pump and connected with the respective duplex induction and eduction openings to said press-cylinder and said pump, means for supplying said press-cylinder and said pump with fluid, and a high-pressure pump having induction and eduction openings, and pipes connected therewith, one of which is connected with the eduction-opening to said pump and provided with a check-valve adjacent thereto, and also connected with the rear end of the press-cylinder, and the other pipe being connected with the induction-opening to said force-pump and also connected with the front end of said press-cylinder, a check-valve in said pipe, means for operating said low-pressure and high-pressure pumps alternately, and three-way valves in the suction and supply pipes to the press-cylinder.

4. In a hydrostatic press the combination with a press-cylinder having duplex induction and eduction openings at the forward and rear ends, a piston and a piston-rod, branch pipes connected with said duplex induction and eduction openings, and suction and supply pipes on opposite sides of the cylinder connected with the branch pipes, three-way valves in the suction and supply pipes at the junction of the branch pipes leading to the rear end of the press-cylinder, crank-rods connected with said three-way valves, means for forcing the fluid in the supply and drawing of the fluid from the press-cylinder, a pivoted disk on the press-cylinder, rods pivotally connected therewith, and also with the crank-rods operating said three-way valves, a fluid-operated cylinder on the press-cylinder, a piston and a piston-rod eccentrically connected with said disk, a spring acting to force the piston in one direction and a fluid-pipe connected with the other end, and means for forcing the fluid through said pipe.

5. The combination in a hydrostatic press with the press-cylinder having duplex induction and eduction openings at the forward and rear ends of a piston a piston-rod and a compressing-plate, a double-acting suction and forcing pump having duplex induction and eduction openings, separate suction and supply pipes upon each side of said press-cylinder and extending upon each side of said pump, branch pipes connected with the said suction and supply pipes and with the duplex eduction and induction openings to said press-cylinder and said pump, check-valves in the branch pipes leading to said pump and three-way valves in the suction and supply pipes at the junction of the branch pipes leading to the rear end of the press-cylinder, and crank-rods operating said valves, a valve-releasing cylinder on the press-cylinder having a leak-opening, a piston and a piston-rod, a spring within said cylinder actuating said piston in one direction, and a high-pressure-fluid-forcing pump and a conductor of the fluid connected with said pump and also with said valve-releasing cylinder upon the opposite side of the piston having said spring, and a check-valve in said conductor, a separate pipe leading from the induction-opening to said pump to the forward end of the press-cylinder, a disk on the press-cylinder and rods pivotally connected therewith and also pivotally connected with the crank-rods operating the three-way valves, and means substantially as described for operating said double-acting and said high-pressure pumps alternately.

710,040. WRENCH. THOMAS H. GAHLL, Terra Alta, W. Va., assignor of one-half to William F. Dailey, William Bishop, and Charles A. Miller, Terra Alta, W. Va. Filed Jan. 23, 1902. Serial No. 90,994. (No model.)

Claim.—1. The improvement in wrenches herein described comprising the handle having a mortise for the butt of the adjusting-key, the shank having a fixed jaw and provided with the longitudinal groove for the adjusting-key, the sliding jaw, the locking-bar having a groove in its inner side coinciding with that in the shank and provided at its ends with projecting tenons engaging with the handle and the fixed jaw, and the adjusting-key operating in the grooves of the locking-bar and of the shank and having its butt-end operating in the handle and provided with a thumb-piece, and the spring for actuating said key substantially as set forth.

2. The combination of the handle, the shank having the fixed jaw, the sliding jaw, the locking-bar hold at its ends to the handle and to the fixed jaw, and the key operating between the locking-bar and the handle and having in rear of the locking-bar a projection or thumb-piece operating in a recess in the handle substantially as set forth.

3. A wrench comprising the handle, the shank, the fixed jaw, the sliding jaw, the locking-bar arranged for adjustment to engage the sliding jaw and held loosely at one end to the fixed jaw and at its other end to the handle and the sliding key bearing between the shank and locking-bar and extended at its rear end within the handle beyond the rear end of the locking-bar substantially as set forth.

710,041. DEVICE FOR LIFTING METAL PLATES. BYRON B. CLARK, 2nd, Chicago, Ill. Filed May 13, 1901. Serial No. 59,967. (No model.)

Claim.—1. The combination with a lifting-magnet, of a yoke secured thereto and having an upper curved portion above the magnet, an inclined portion and a lateral curved portion, and a movable shackle engaging with the yoke for facilitating the operation of handling metal plates, substantially as described.

2. The combination with a lifting-magnet, of a curved yoke and a tipping or rolling shackle therefor for facilitating the operation of lifting and stacking up metal plates vertically in a rack, or removing them from the rack and laying them down in a horizontal position, substantially as described.

3. The combination with a lifting-magnet, of a curved yoke secured to the opposite sides thereof, and having lateral loops adjacent to the magnet, and a roller held in a connecting-link, applied to said yoke to form a tipping or rolling shackle, whereby plates may be conveniently lifted from a horizontal position and set up on edge in an approximately vertical position, substantially as described.

710,042. SEWING-MACHINE TABLE OR CABINET HEAD. JOHN OSBER and ANTON HAGENBUCH, Chicago, Ill., assignors to F. Patzack Manufacturing Company, a Corporation of Illinois. Filed Oct. 19, 1901. Serial No. 79,199. (No model.)

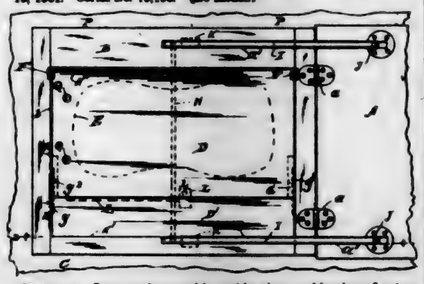

Claim.—1. In a sewing-machine table, the combination of a top-leaf and a board thereunder, each board provided with an aperture therein, hinges connecting the top-leaf and the board thereunder, a sewing-machine base-board pivotally attached adjacent to one of the edges thereof to the first-named board, a bracket on the under side of the machine base-board adjacent to the edge of each base-board which is opposite the pivotal hinges thereof, depending brackets attached to the first-named board, levers pivotally attached at one of the ends thereof, respectively, to the hinged top-leaf, each levers resting on the depending brackets, a rod connecting the levers at the ends of each levers opposite the pivoted ends respectively on which connecting-rod the bracket on the machine base-board rests and by which rod the position of the bracket and of the base-board is determined; substantially as described.

2. In a sewing-machine table, the combination of a top-leaf, a board thereunder, each board provided with an aperture therethrough, hinges connecting the top-leaf and the board thereunder, a sewing-machine base-board pivotally attached adjacent to one of the edges thereof to the first-named board so as to be brought into the aperture in each board when in a horizontal plane, a leaf, pivotal hinges connecting each leaf and the machine base-board, a bracket on the under side of the machine base-board adjacent to the edge of the base-board opposite to the pivotal hinges thereof, depending brackets attached to the first-named board, levers pivotally attached at one of the ends thereof, respectively, to the hinged top-leaf, each levers resting on the depending brackets, a rod connecting the levers, on which connecting-rod the bracket on the machine base-board rests and by which rod the position of the bracket and of the base-board is determined and on which rod, also, the leaf pivotally attached to the machine base-board rests when each machine base-board is suspended on its pivots; substantially as described.

3. In a sewing-machine table, the combination of a top-leaf, a board thereunder, each board provided with an aperture therethrough, hinges connecting the top-leaf and the board thereunder, a sewing-machine base-board pivotally attached adjacent to one of the edges thereof to the first-named board so as to be brought into the aperture in each board when in a horizontal plane, a leaf, pivotal hinges connecting each leaf and the machine base-board, each leaf forming an extension of the machine base-board when each base-board is in a horizontal plane and forming a part of the dust-proof casing of the sewing-machine on the base-board, when each base-board is lowered, and a bottom board extending substantially in a horizontal plane from the ends of the table and from the back side of the table to contact with each leaf when the machine base-board is down, a bracket on the under side of the machine base-board and a connection between the top hinged leaf and each bracket whereby the raising and lowering of the machine base-board is effected by the opening and closing of the hinged top-leaf; substantially as described.

710,043. LAND, MARINE, OR SUBMARINE MERRY-GO-ROUND. ALEXANDER DAVIDSON, Joliet, Ill. Filed Jan. 23, 1902. Serial No. 90,792. (No model.)

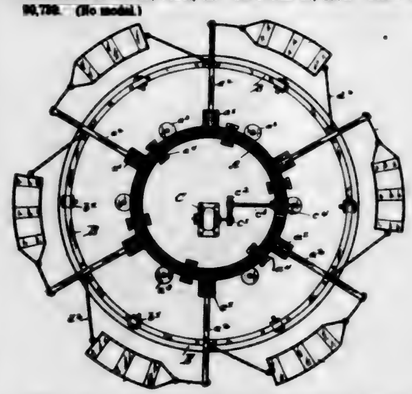

Claim.—In an apparatus of the character described, a passenger-holding device consisting of a closed cylindrically-shaped chamber having water-tight windows and doors therein, and provided with an air-shaft communicating with the interior of the chamber and adapted to project above the surface of the water, in combination with an inclined platform, a carrier rotatably mounted on said platform and adapted to support and propel said passenger-holding device, substantially in the manner and for the purpose set forth.

710,044. SYSTEM OF SUBMARINE TRANSPORTATION. ALEXANDER DAVIDSON, Joliet, Ill. Filed Mar. 3, 1902. Serial No. 96,592. (No model.)

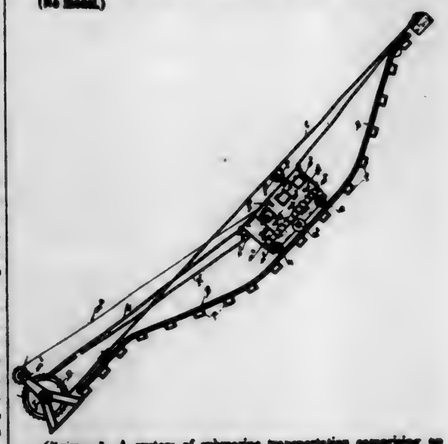

Claim.—1. A system of submarine transportation comprising an observation-car, a trunk over which said car is adapted to travel, means

for propelling or hauling said car, means for supplying the car with air while submerged, and means for transmitting signals between the occupants of the car and persons on land, all substantially in the manner and for the purpose set forth.

2. A system of submarine transportation comprising an observation-car, a track over which said car is adapted to travel, means for hauling said car, means for supplying the car while submerged, with air, and for renewing said supply of air while submerged, and means for transmitting signals between the occupants of the car and persons on land, substantially as set forth.

3. A system of submarine transportation, comprising an observation-car, a track over which said car is adapted to travel, means located on shore for hauling said car, an air-compressor located on shore and connected with the car by a flexible pipe, and means for exhausting the foul air within the car, and for admitting fresh air as needed, substantially as set forth.

710,045. ELECTRICAL STEERING-GEAR. MAXWELL W. DAY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Aug. 23, 1901. Serial No. 73,073. (No model.)

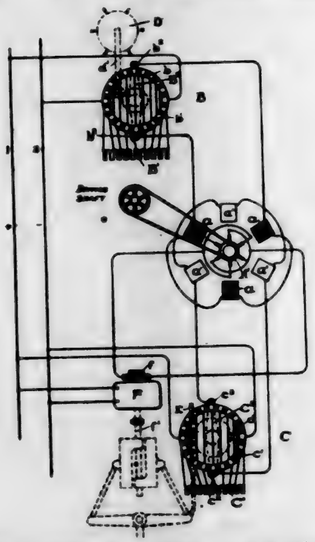

Claim.—1. In a system for controlling movement at a distance, the combination with a generator, of a motor in circuit with the armature of said generator, manually-controlled means for inducing a field of force in said generator, and means controlled by the motor for inducing an opposing field of force in said generator.

2. In a system for controlling movement at a distance, the combination with a generator, of a motor in circuit with the armature thereof, manually-controlled means for inducing a variable field of force in said generator, and means controlled by the motor for inducing an equally-variable opposing field of force in said generator.

3. In a system for controlling movement at a distance, the combination with a generator having a differential field-winding, comprising two independent windings arranged to be supplied with current from a suitable source, of means for causing unequal currents to flow in the two windings, a motor in circuit with said generator, and means controlled by the motor for equalizing the currents in the two windings.

4. In a system for controlling movement at a distance, the combination with a generator having two independent field-windings, of means for sending balanced currents through said windings, means for unbalancing said currents, a motor in circuit with said generator, and means controlled by the motor for restoring the balance between said currents.

5. In a system for controlling movement at a distance, the combination with a generator having a differential field-winding, of a motor, means for manually controlling one part of the field-winding, and means whereby the motor controls the other part.

6. In a system for controlling movement at a distance, the combination with a generator having two independent field-windings, of a motor in circuit with the armature of said generator, means for sending a current of varying volume through one of said field-windings, and means controlled by the motor for sending a similar current in the opposite direction through the other winding.

7. In a system for controlling movement at a distance, the combination with a generator having two independent field-windings, of a motor in circuit with the armatures of said generator, means for sending a current of varying volume in either direction through one of said field-windings, and means controlled by the motor for sending a similar current in the opposite direction through the other winding.

8. In a system for controlling movement at a distance, the combination with a generator having two opposing field-windings, of two rheostats respectively connected with said windings, means for controlling one of said rheostats manually, and an electrodynamic device actuated by current from said generator, and controlling the other rheostat.

9. In a system for controlling movement at a distance, the combination with a generator having two independent field-windings, of a movable contact connected with each terminal of said windings, a source of current-supply, two resistances connected therewith, means for manually shifting two of the contacts along one of said resistances, a motor actuated by the generator-current, and means whereby said motor can shift the other contacts along the other resistance.

10. In a system for controlling movement at a distance, the combination with a generator having two independent field-windings, of a movable contact connected with each terminal of said windings, a source of current-supply, two resistances connected therewith, means for manually shifting the contacts connected with one of said windings to cut out more or less of one resistance, and means actuated by the generator-current for shifting the contacts of the other winding to cut out more or less of the other resistance.

11. In a system for controlling movement at a distance, the combination with a generator having two independent field-windings, of means for supplying current to said windings and producing therein opposing and equal magnetizing effects, means for manually varying the current in one winding, a motor in circuit with said generator, and means controlled by the motor for varying the current in the second winding to a degree corresponding with the variation of that in the first winding.

12. In a system for controlling movement at a distance, the combination with a generator having two independent field-windings, of means for supplying current to both windings, a resistance in circuit with each winding, means for manually varying one resistance, a motor in circuit with the generator, and means controlled by the motor for similarly varying the other resistance.

13. In a steering apparatus, the combination with a rudder-actuating motor, of a generator for supplying energy thereto, having a differential field-winding, means connected with the steering-wheel for controlling one part of the field, and means connected with the rudder-actuating motor for controlling the other part of the field.

14. In a steering apparatus, the combination with a rudder-actuating motor, of a generator for supplying energy thereto having a differential field-winding, a rheostat geared to the steering-wheel for controlling one part of said field, and a rheostat geared to the motor for controlling the other part of the field.

710,046. TUBE-MACHINE. FERDINAND DEKING, Waterbury, Conn. Filed May 31, 1901. Serial No. 62,490. (No model.)

Claim.—1. In a tube-forming machine, the combination with the drawing-die; of a drawing-punch; means for imparting a reciprocating movement thereto toward and away from the drawing-die; and automatic means for moving the same into and out of alinement therewith.

2. In a tube-forming machine, the combination with the drawing-die; of a drawing-punch; means for imparting a reciprocating movement thereto toward and away from the drawing-die; and automatic means for moving the same into and out of alinement therewith during the reciprocation of said drawing-punch.

3. In a tube-forming machine, the combination with the drawing-die; of a hydraulically-actuated piston; a drawing-punch pivotally connected therewith; means for moving said drawing-punch toward and away from the said drawing-die; and automatic means for swinging the same upon its pivot-mountings into and out of alinement with said drawing-die.

4. In a tube-forming machine, the combination with the drawing-die; of a hydraulically-actuated piston; a drawing-punch pivotally connected therewith and movable toward and away from the said drawing-die; and cam mechanism for moving the said drawing-punch into and out of alinement with the said drawing-die.

5. In a tube-forming machine, the combination with a drawing-die; of a hydraulically-actuated piston; a drawing-punch pivotally connected with said piston at one end; and a member, through which the said punch slides during its reciprocation, for sustaining the other end of said punch.

6. In a tube-forming machine, the combination with the drawing-die 27; of the piston 3 having the cross-head 11 connected therewith, the drawing-punch 15 pivotally secured to the said cross-head by the swivel-pin 20; cam 21; and roll 24 connected with said drawing-punch, all constructed and operating substantially as described.

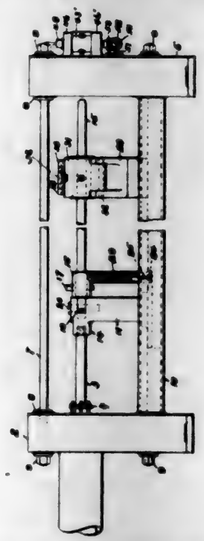

7. In a tube-machine; a punch-support comprising a rigid standard; a movable member connected therewith; and means for adapting said support to punches of varying sizes, said means comprising halved boxes, the bores of which correspond in size with that of the punch; and threaded means for separably securing said halved boxes to said standard and a movable member, substantially as shown and described.

8. In a tube-forming machine, the combination with the bulkhead having an aperture therethrough for the passage of a drawing-punch; of projecting parts upon said bulkhead; stripper mechanism comprising stripper-carriers having stripper-blocks connected therewith and movably mounted between said projecting parts; and means rotatably mounted within said projecting parts and said stripper-carrier for moving said stripper-carriers toward and away from the center of said aperture, substantially as described.

9. In a tube-forming machine, the combination with the drawing-die and bulkhead; of stripper-blocks mounted within stripper-carriers; means for moving said strippers and stripper-carriers toward and away from each other and means for actuating the said stripper-blocks synchronously, the said means comprising an idler-shaft having gears thereon which mesh into gears upon the said crank-shafts.

10. In a tube-forming machine, the combination with the drawing-die and bulkhead; of the strippers 41 removably secured within the stripper-carriers 43; crank-shafts 45, having cranks 44 thereon; idler-shaft 50 having the gears 52 52 thereon; and gears 53 53 fixed to the crank-shafts 45 and meshing into the said gears 52 52, all constructed and operating substantially as described.

11. In a tube-forming machine, the combination with a punch; of a support, through which the said punch slides during its movement, said support having a movable member which, when open, permits the said punch to be moved out of said support, substantially as shown and described.

12. In a tube-forming machine, the combination with a swinging punch; of a support, through which the said punch slides during its movement, said support having a hinged member connected therewith, so arranged that when in its open position, the said punch can be moved laterally out of said support, substantially as shown and described.

710,047. PYROTECHNIC COMPOUND. ARTHUR RHEINHARDT, Eberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y., a Corporation of New York. Filed Feb. 3, 1902. Serial No. 92,468. (No specimens.)

Claim.—The herein-described new pyrotechnic compound being a mixture of magnesium with manganese peroxid, substantially as described.

710,048. RAILWAY-CAR. SIMEON H. ELLIS, Brooklyn, N. Y., assignor to Hugh L. Fox, New York, N. Y. Filed Jan. 27, 1902. Serial No. 91,363. (No model.)

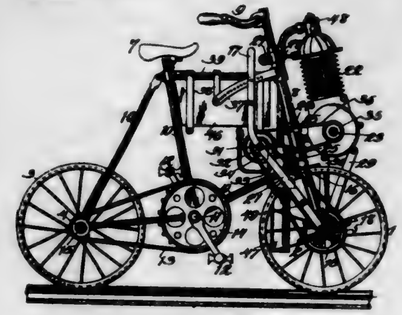

Claim.—1. The combination with the framework and running-gear of a car, of a motor supported upon said framework, a rotating part to which such motor imparts rotary motion, a pivoted lever controllable by the operator to be thrown into or out of operative position, and power receiving and transmitting means carried by the pivoted lever for transmitting motion from such rotating part to the running-gear of the car and connected with such rotating part and the running-gear, such connection including a friction belt connection controlled by the movement of the lever and another connection maintained independently of the movement of the lever.

2. The combination with the framework and running-gear of a car, of a motor supported upon said framework, a rotating part to which such motor imparts rotary movement, a pivoted lever controllable by the operator to be thrown into or out of operative position, and power receiving and transmitting means carried by the pivoted lever and connected to the running-gear of the car so as to rotate at all times with the running-gear and movable relatively to and having a friction belt connection with the rotary part actuated by the motor, such friction belt connection being controllable by the movement of such lever.

3. The combination with the framework and wheels and axles of a railway-car, of a motor supported upon said framework, a rotating part to which such motor imparts rotary motion, a lever pivoted concentrically with an axle of the car and carrying a rotating part connected to such axle so as to rotate at all times therewith, and a frictional rotative connection between the rotating part actuated by the motor and the rotating part carried by the lever, whereby the transmission of motion between the motor and the rotating part carried by the lever may be varied by the actuation of the lever.

4. The combination with a framework and running-gear of a car, of a motor supported upon said framework, a pivoted lever provided with power receiving and transmitting means controllable by the position of such lever for variably transmitting motion between the motor and running-gear, and a clamping-arm carried by the framework, the controlling-lever and clamping-arm being provided with projected and depressed engaging parts whereby the controlling-lever may be held in any one of a number of positions.

5. The combination with the framework and wheels and axles of a car, of a motor supported upon said framework, a rotating part to which such motor imparts rotary motion, a lever pivoted concentrically with an axle of the car and carrying a rotating part connected to such axle so as to rotate at all times therewith, a frictional rotative connection between the rotating part actuated by the motor and the rotating part carried by the lever, such frictional rotative connection being controllable by the position of such lever, and clamping means whereby such lever is held in desired position.

6. The combination with the framework and wheels and axles of a car, of a motor supported upon said framework, a rotating part to which such motor imparts rotary motion, a lever pivoted concentrically with an axle of the car and carrying a rotating part connected to such axle so as to rotate at all times therewith, a frictional rotative connection between the rotating part actuated by the motor and the rotating part carried by the lever, such frictional rotative connection being controllable by the position of such lever, and a clamping-arm carried by the framework, the controlling-lever and clamping-arm being provided with projected and depressed engaging parts whereby the controlling-lever may be held in any one of a number of positions.

7. The combination with the framework and running-gear of a car, of a motor supported upon said framework, a pivoted lever provided with means controllable by the position of such lever for variably transmitting

motion between the motor and running-gear, a clamping-arm carried by the framework and having a series of depressions therein, the controlling-lever being provided with a projection adapted to enter and engage any one of such depressions controlling lever relatively to the clamping-arm, and a spring working between the clamping-arm and controlling-lever and constructed to normally press the projection into the depression with which it is engaged.

8. The combination with the framework and wheels and axles of a car, of a motor adapted to be driven by explosive force and supported upon said framework, a pivoted lever carrying a rotating part connected to an axle of the car so as to rotate at all times therewith, a frictional connection between the motor and the rotating part carried by the controlling-lever, and clamping means constructed to hold the controlling-lever in desired position.

710,049. CLAMP. SEELE H. ELLIS, Brooklyn, N. Y., assignor to Hugh L. Fox, New York, N. Y. Filed Jan. 27, 1902. Serial No. 91,369. (No model.)

Claim.—1. A clamp comprising an elongated sleeve divided longitudinally into parts, a plurality of clamping-yokes at different points along the length of such sleeve and bearing upon such sleeve to clamp the parts thereof upon a support, and attaching means for engagement with the device to be supported, such attaching means being carried by one of the parts of the sleeve.

2. A clamp comprising an elongated sleeve divided longitudinally into two parts, a plurality of clamping-yokes each having a band bearing upon one of such parts and a cap engaging with such band and bearing upon the other of such parts, and lugs for attachment to the device to be supported or carried by one of the parts of the sleeve.

3. A clamp comprising an elongated sleeve divided longitudinally into two parts, a cross-bar and lugs for attachment to the part to be supported medially carried by one of the parts of the sleeve, two clamping-yokes, one at each side of the attaching-lugs and between the attaching-lugs and the end of the sleeve, each clamping-yoke having a band bearing upon one of the parts of the sleeve and a cap engaging with the band and bearing upon the other part of the sleeve.

4. A clamp comprising an elongated sleeve divided longitudinally into parts, a plurality of clamping-yokes each comprising a U-shaped band having a bearing-surface upon such sleeve conforming thereto and also comprising a cap engaging with such band and bearing upon the sleeve oppositely to the band, and attaching means for engagement with the device to be supported, such attaching means being carried by one of the parts of the sleeve.

5. In a clamp, the combination of the part sleeves 2 and 3, the cross-bar 4 and lugs 5 secured to the part sleeve 2, the braces 6 between the cross-bar and part sleeve, and the clamping-yokes each comprising the U-shaped band 7 having a bearing-surface upon the sleeve conforming thereto and also comprising a cap 9 bearing upon the sleeve oppositely to the band, each U-shaped band 7 having ends engaged by clamping means with the cap of the corresponding yoke, substantially as set forth.

710,050. CONSTANT-CURRENT TRANSFORMER. AUGUSTUS R. EVERETT, Lynn, Mass., assignor to the General Electric Company, a Corporation of New York. Filed Mar. 4, 1899. Serial No. 707,721. (No model.)

Claim.—1. The combination of relatively fixed and movable coils, one of which is attached by suitable means to one end of an oscillating lever, a device adjustably secured to the opposite end of the lever, and having a curved winding-surface, the centers of curvature of parts of which are non-coincident with the axis of oscillation of the lever.

2. In an alternating-current transformer the combination of primary and secondary coils, means for allowing the force of repulsion between the currents in the coils to cause a relative motion in a straight line between the coils, and means for opposing the force of repulsion by a force which decreases as the load decreases.

3. In an alternating-current transformer the combination of primary and secondary coils, means for allowing the force of repulsion between the current in the coils to cause a relative motion in a straight line between the coils, and means for opposing the force of repulsion by a force which is less at some given load than at a higher load.

4. In an alternating-current transformer the combination of primary and secondary coils movable in a straight line relatively to each other, and means for opposing to the force of repulsion between the currents in the coils, a force which varies in such a manner as to make the current in the secondary coil at full load equal in value to the current in the secondary coil when the load is small.

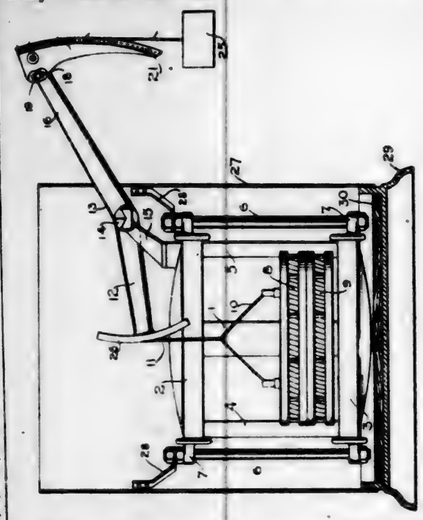

5. The combination of relatively fixed and movable coils, in mutual inductive relation to each other, an oscillating lever to one end of which one of the coils is suitably attached, and a device with a curved winding-surface pivoted to the other end of the lever.

6. The combination of a core, a relatively movable coil cooperatively related thereto, a pivoted member, means for supporting said coil from said member, a device having an eccentric winding-surface carried by said member, a weight, and a flexible connection attached to said weight and passing over said winding-surface.

7. The combination of a core, a relatively movable coil cooperatively related thereto, a pivoted member, means for supporting said coil from said member, an adjustable winding-surface carried by said member, and a counterbalancing-weight suspended by a flexible connection passing over said surface.

8. The combination of a lever, a coil suspended from one end of the lever, an eccentric winding-surface carried by the other end of the lever, and a counterbalancing-weight having a flexible connection passing over said winding-surface.

9. The combination of a lever, a coil suspended from one end of the lever, means for applying a force of constant value to the other end of the lever, and means for automatically varying the point of application of said force to said lever.

710,051. GATE-HINGE. PATRICK PULLAR, Churubusco, Ind. Filed Dec. 16, 1901. Serial No. 86,153. (No model.)

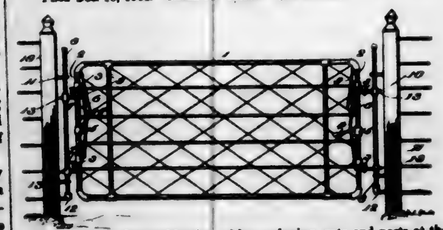

Claim.—1. In combination with a swinging gate and posts at the ends of the gate-opening, hinge-rods connected to the said posts, hinge members applied to the hinge-rods, coöperating hinge members applied to the ends of the gate, and means for simultaneously moving the hinge members at either end of the gate to admit of their separation from or connection with the hinge members applied to the hinge-rods, substantially as specified.

2. In combination, posts, a gate, hinge members applied to the said posts and having their outer ends enlarged, hinge members applied to the ends of the gate and approximately of the form of a grab-hook, and means for disconnecting the hinge members at either end of the gate from the post members to admit of opening the gate from either side or at opposite ends, substantially as described.

3. In combination, posts, a gate, hinge members applied to the said posts and having their outer ends forked and the fork members oppositely deflected, hinge members applied to the ends of the gate and approximately of the form of a grab-hook, and means for disconnecting the hinge members at either end of the gate from the post members to admit of opening the gate from either side or at opposite ends, substantially as described.

4. In combination, a post, a rod connected with the post so as to turn about a vertical axis, hinge members adjustably connected with the said rod and having their outer ends forked, a gate, grab-hooks loosely mounted upon the gate, a connection between the grab-hooks, and a lever for operating said connection to simultaneously move the grab-hooks, substantially as set forth.

710,052. APPARATUS FOR MAINTAINING UNIFORM RESISTANCE IN ELECTRIC CIRCUITS. FREDERICK A. GILBERT, Brookline, and ELIHU O. LOMBER, Beechmont, Mass., assignors to the General Electric Company, a Corporation of New York. Filed Dec. 17, 1897. Renewed Feb. 3, 1899. Serial No. 704,434. (No model.)

Claim.—1. An electric-arc lamp provided with series and shunt regulating coils, and a controlling-magnet in shunt to the arc for cutting out part of one of said coils after a determinate rise of temperature due to starting the lamp, to compensate for change of arc length due to such rise of temperature.

2. In an electric-arc lamp, series and shunt wound carbon-feed-controlling coils, and means, including an electromagnet in circuit with the shunt-winding and responsive to increase of voltage at the arc, to increase the effectiveness of the shunt-winding.

3. In an electric-arc lamp, series and shunt wound carbon-feed-controlling coils, means, including an electromagnet in circuit with the shunt-winding and responsive to increase of voltage at the arc, to increase the effectiveness of the shunt-winding, and a manually-operated regulating device to determine the time of operation of the electromagnet.

4. In an electric-arc lamp, series and shunt wound carbon-feed-controlling coils, a shunt-circuit, including a portion of one of said coils, and a controlling-magnet for said circuit, in circuit with the shunt-winding, to operate the shunt-circuit and cut out the portion of the coil included therein upon increase of voltage at the arc.

5. In an electric-arc lamp, series and shunt wound coils to control the carbon, a controlling-magnet in circuit with the shunt-winding, its armature, means to control its time of operation, said armature forming one terminal of a shunt-circuit including a portion of one of said coils, and a fixed contact forming the other terminal, whereby increase of current in the shunt-winding will energize the controlling-magnet to close the shunt-circuit, and thereby cut out the included coil portion.

6. In an electric-arc lamp, the combination of two magnets operating on a common feed-controlling mechanism, and means controlled by rise of temperature of the magnet-coils after starting the lamp to compensate for change of arc length due to such rise of temperature.

7. In an electric-arc lamp, the combination of two magnets differentially mounted in relation to a common feed-controlling mechanism, and an electromagnet controlled by change of voltage in the arc to vary the strength of one magnet after starting the lamp to compensate for change of arc length due to rise of temperature.

8. An electric-arc lamp provided with regulating devices for the arc traversed by the current, and means for increasing the effectiveness of said devices after heating under the transit of current, to maintain uniform the arc length.

9. An arc-lamp provided with a regulating-coil and a cut-out controlled by increase of temperature after starting of the lamp, to compensate for change of resistance of the regulating-coil due to heating.

710,053. GAS-STOVE. MATTHEW GERWOLD, Jr., Erie, Pa. Filed July 23, 1901. Serial No. 69,345. (No model.)

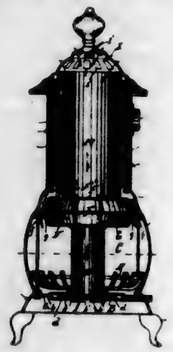

Claim.—In a gas-stove, the combination of a base, a gas-burner secured to lugs thereon, inwardly-extending arms on said gas-burner, a fire-box resting upon said base, a central air-flue secured at its lower end to the inwardly-projecting arms of the gas-burner, a heating-chamber resting upon and supported by said flue so as to leave an annular space between it and the shell of the fire-box, a baffle-plate in said heating-chamber having an annular opening around its periphery, an air-flue on the top of said heating-chamber discharging through openings in the stove-top, and a smoke-flue resting upon the top of the shell of the fire-box and surrounding the air-flue above the heating-chamber, substantially as set forth.

710,054. DREDGER AND EXCAVATOR. ISAAC B. HAMMOND, Portland, Oreg. Filed Feb. 9, 1900. Serial No. 4,690. (No model.)

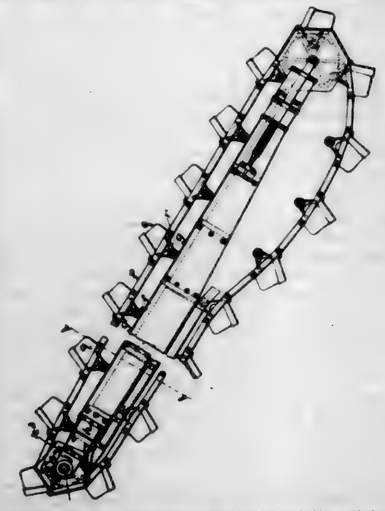

Claim.—1. The combination with the dredge-ladder and the tumbler for the dredge-chain, of an endless dredge-chain and buckets; traveling carriers therefor, attached below the chain and narrowed toward the bow, so that such carriers in width occupy only a portion of the space within the span of the buckets; a railed way extending the length of the

upper surface of the ladder leading from and to the tumblers; a railed way extending from the upper tumbler along the under surface of the ladder for a part of its length, being disconnected at a convenient point, allowing enough of the dredge-chain and buckets at the lower end of the ladder to hang free, to provide sufficient drag; and a guard for holding the chain-carriers traveling along the railed way on the under side of the ladder against a lateral thrust or strain, the tumblers being adapted to allow the traveling carriers to pass between their sides while the chain passes over their rims, substantially as described.

2. The combination with the dredge-ladder of the tumblers for the dredge chain, consisting of two side plates having projecting ledges on their inner faces, providing interrupted, narrow rims on which to receive the dredge-chain, and leaving ample space between such rims for the carriers to pass through; an endless dredge-chain and buckets; traveling carriers therefor attached below the chain and narrowed toward the base, so that such carriers in width occupy only a portion of the space within the span of the buckets; a railed way extending the length of the upper surface of the ladder and leading from and to the tumblers; a railed way extending from the upper tumbler along the under surface of the ladder for a part of its length, being disconnected at a convenient point allowing enough of the dredge-chain and buckets at the lower end of the ladder to hang free, to provide sufficient drag; and a guard for holding the chain-carriers traveling along the railed way on the under side of the ladder against a lateral thrust or strain, substantially as described.

3. The combination in a dredging or excavating machine of a tower; bearings thereby supported; a dredge-ladder provided at its upper end with hollow trunnions, supported in said bearings; a shaft journaled in the trunnions; tumblers for the dredge-chain, the upper of which is mounted on said shaft; a railed way extending the length of the upper surface of the ladder and leading from and to the tumblers; a railed way extending from the upper tumbler along the under surface of the ladder for part of its length, being disconnected at a convenient point, allowing enough of the dredge-chain and buckets at the lower end of the ladder to hang free, to provide sufficient drag; and a guard for holding the chain-carriers traveling along the railed way on the under side of the ladder against a lateral thrust or strain, the tumblers being adapted to allow the traveling carriers to pass between their sides, while the chain passes over their rims, substantially as described.

4. The combination in a dredger or excavating-machine of a tower; bearings thereby supported, comprising the plates *m* and caps therefor; the trunnions having flanges i^3; a dredge-ladder provided at its upper end with perforated plates *h h'*, inserted on the trunnions, and the latter being supported in the tower-bearings; a shaft journaled in the trunnions; tumblers for the dredge-chain, the upper of which is mounted on such shaft; an endless dredge-chain and buckets; traveling carriers therefor, attached below the chain and narrowed toward the base, so that such carriers in width occupy only a portion of the space within the span of the buckets; a railed way extending the length of the upper surface of the ladder and leading from and to the tumblers; a railed way extending from the upper tumbler along the under surface of the ladder for part of its length, being disconnected at a convenient point, allowing enough of the dredge-chain and buckets at the lower end of the ladder to hang free, to provide sufficient drag; and a guard for holding the chain-carriers traveling along the railed way on the under side of the ladder against a lateral thrust or strain, the tumblers being adapted to allow the traveling carriers to pass between their sides while the chain passes over their rims, substantially as described.

5. The combination with the dredge-ladder and the tumblers for the dredge-chain, of an endless dredge-chain and buckets; traveling carriers therefor attached below the chain and narrowed toward the base, so that such carriers in width occupy only a portion of the space within the span of the buckets; a railed way extending the length of the upper surface of the ladder, leading from and to the tumblers, a railed way extending from the upper tumbler along the under surface of the ladder for a part of its length, being disconnected at a convenient point, allowing enough of the dredge-chain and buckets at the lower end of the ladder to hang free, to provide sufficient drag, such railed way consisting of the channel-irons suspended from the ladder and provided with rails on the interior of their upper and lower flanges; and a guard for holding the chain-carriers traveling along the railed way on the under side of the ladder against a lateral thrust or strain; the tumblers being adapted to allow the traveling carriers to pass between their sides while the chain passes over their rims, substantially as described.

6. The combination with the dredge-ladder and the tumblers consisting of two side plates having ledges on their inner faces, providing interrupted, narrow rims on which to receive the dredge-chain, and leaving ample space between such rims for the carriers to pass through; a railed way extending the length of the upper surface of the ladder and leading from and to the tumblers; a railed way extending from the upper tumbler along the under surface of the ladder for part of its length; the dredge-chain and buckets; and the carriers therefor attached below such buckets, the carriers comprising a body having a journal-box at its base and axle, the flanged wheels adapted to revolve independently of each other, and the beveled glands *l* and packing therein, projecting the abutting faces of the hubs of said wheels, and the ends of the journal-boxes, substantially as described.

710,055. ELECTRIC-ARC LAMP. CHARLES E. HARTMAN, Lynn, Mass., assignor to the General Electric Company, a Corporation of New York. Filed July 24, 1900. Serial No. 24,671. (No model.)

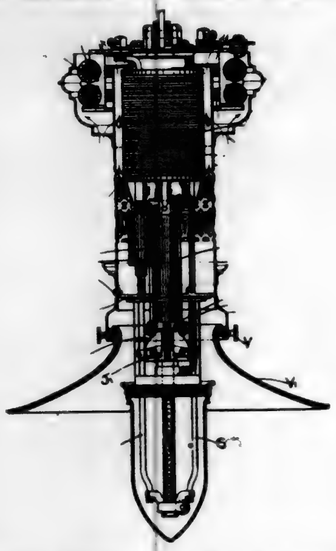

Claim.—1. In an electric-arc lamp, the combination of a tube, a coil and a spool both of which surround the tube, and adjusting devices mounted on the spool for centering or adjusting the relation of the tube and the spool.

2. In an electric-arc lamp, the combination of a vertically-extending tube forming the central portion of the lamp, a coil and a spool surrounding the tube, lugs formed on the spool, and adjusting-screws mounted in the lugs for centering the tube.

3. In an electric-arc lamp, the combination of a coil, a spool therefor, a tube which is screw-threaded to one head of the spool, lugs extending downwardly from the other head of the spool, and adjusting-screws mounted in the lugs for centering the tube and spool with respect to each other.

4. In an electric-arc lamp, the combination of a central tube which forms the lamp-frame, a spool separated from the tube and having a winding thereon, a tubular armature mounted for movement between the tube and the spool and independent of both, a clutch suspended by the armature, and a dash-pot for checking violent movements.

5. In an electric-arc lamp, the combination of a central tube which forms the lamp-frame, a cylindrical armature surrounding the tube and arranged to move independent thereof, a plate carried by the armature, and having a projection to which an element of a dash-pot is secured, a clutch, rods which connect the plate with the clutch, and a tripping-platform for the clutch which is rigidly secured to the tube.

6. In a resistance-supporting device, the combination of a plate, a ring, metal pieces which are riveted to the plate and to the ring, and are provided with projections, and insulators mounted between the projections for supporting the resistance.

7. In a carbon-holder, for an arc-lamp, the combination of a pair of side rods, a yoke having a U-shaped opening which yoke holds the lower ends of the rods in place, a pin or projection on said yoke, a clamp having an opening into which the pin projects, and a screw which acts to hold the carbon and clamp in place.

8. In an electric-arc lamp, the combination of a central tube, a detachable contact-cap having a spring-pressed finger, which cap is capable of sliding through the tube and is arranged to be mounted therein, a holder for the carbon rod, and a flexible cable which connects the cap and the holder.

9. In an electric-arc lamp, the combination of a slotted central tube, a detachable cap capable of sliding through the tube and arranged to be seated therein, a holder for the carbon which is provided with a projection that works in the slot in the tube to prevent the holder from turning, and a coiled cable which connects the cap and the holder.

10. As an article of manufacture, a holder for carbons, comprising a cap having a spring-pressed portion adapted to engage with a conducting-tube in the lamp, which cap is capable of being inserted or withdrawn from the tube, a holder containing a weight, and a flexible cable which connects the cap and holder.

11. In an electric lamp, the combination of an actuating-magnet, a resistance which is separated therefrom by an air-space, and a detachable cylindrical inclosing casing which extends between the coil and resistance-wire and prevents the heated air from directly striking the magnet.

12. In an electric-arc lamp, the combination of an actuating-magnet, a resistance which is separated therefrom by an air-space, a detachable cylindrical inclosing casing which extends between the coil and resistance-wire and prevents the heated air from striking the magnet, and a ventilated cornice which incloses the resistance-wire and is secured to the detachable casing.

13. In an arc-lamp, the combination of a magnet, a resistance which is separated therefrom by an air-space, a detachable ventilated cylindrical casing which surrounds the coil and prevents the hot air from striking the magnet, and a ventilated cornice which surrounds the resistance and is secured to the casing below the resistance, the openings in the cornice and the casing being so arranged that the same air will freely circulate in both.

14. In an electric-arc lamp, the combination of a tubular conductor, a cap arranged to make frictional engagement with the interior of the tubular conductor and so constructed that it can be forced into the end of the conductor, a carbon-holder, and a flexible conductor connecting the cap with the carbon-holder.

710,056. AUTOMATIC CIRCUIT-BREAKER. CARYL D. HASKINS, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Dec. 14, 1900. Serial No. 39,535. (No model.)

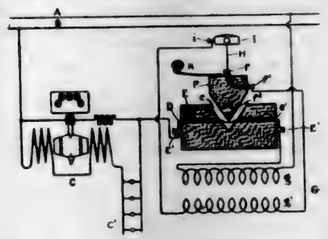

Claim.—1. The combination of an electric circuit, automatic means for mechanically cutting a conductive part thereof upon determinate circuit conditions, and means for expulsively extinguishing the arc formed at the cut part.

2. The combination with direct-current electrical apparatus, of a circuit-breaker therefor, and a separate controlling-circuit for said circuit-breaker supplied with energy through said apparatus and energized by a high-potential alternating current in the circuit of the apparatus.

3. The combination with direct-current electrical apparatus, of a circuit-breaker therefor, and a transformer in series with the apparatus and energized by a high-potential alternating current in the circuit of said apparatus and controlling the circuit-breaker.

4. An automatic circuit-breaker for electrical apparatus, comprising a transformer having its primary coil in circuit with the apparatus, a fragile conductor in said circuit, and means responsive to a current in the secondary coil for rupturing said fragile conductor.

5. An automatic circuit-breaker for electrical apparatus, comprising a transformer having its primary coil in circuit with the apparatus, a fragile conductor in said circuit, a device for mechanically severing said conductor, and means responsive to a current in the secondary coil for causing said device to operate.

6. An automatic circuit-breaker for electrical apparatus, comprising a transformer having its primary coil in circuit with the apparatus, a fragile conductor in said circuit, a block suspended above said conductor and adapted when released to sever said conductor, and means responsive to a current in the secondary coil for releasing said block.

7. An automatic circuit-breaker for electrical apparatus, comprising a transformer having its primary coil in circuit with the apparatus, a block having a notch, a fragile wire forming part of the circuit and spanning said notch, a wedge block to fit the notch, means for suspending the wedge block above the notch, and means responsive to a current in the secondary coil for releasing the wedge block.

8. The combination with a block of insulating material having a small passage intersected by a deep notch, of a fragile wire led through said passage and spanning said notch, and a wedge block adapted to fit said notch.

9. The combination with a block of insulating material having a deep notch and an intersecting small passage, of binding-posts near the ends of said passage, a fragile wire led through said passage across the notch and held in the binding-posts, and a block of insulating material adapted to fit the notch, and containing passages near its lower end.

10. The combination with direct-current electrical apparatus, of a transformer having its primary coil in the circuit thereof, a fragile conductor forming part of said circuit, a block adapted, when dropped, to sever said conductor, and a fusible wire suspending said block, and in circuit with the secondary coil of said transformer.

710,057. TYPE-LINE-DETACHING MECHANISM. LOUIS E. JOHNSON and ABBOT A. LOW, Brooklyn, N. Y., assignor to Alden Type Machine Company, New York, N. Y. Filed Apr. 6, 1901. Serial No. 54,578. (No model.)

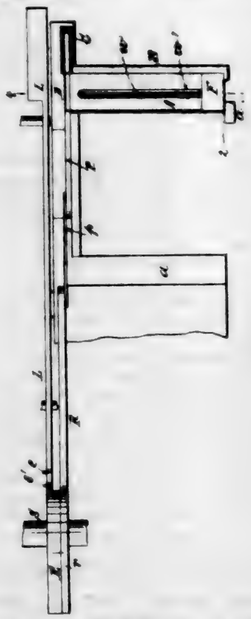

Claim.—The combination of the pivotally-supported type-galley A, adapted to assume both a horizontal and a vertical position, a stationary front plate B, for supporting the types in the galley when in a vertical position, a follower F, for advancing the types in said galley, an abutment D, for supporting the types against the action of such type-forwarding mechanism, type-channel C, arranged to receive a line of type from the galley, a pusher-blade P, for forwarding lines of types consecutively in said type-containing channel C, and mechanism for reciprocating said line-forwarder P, substantially in the manner and for the purpose set forth.

710,058. ADJUSTABLE PITCH-BOARD. ALBERT JOHN, Red Wing, Minn. Filed Mar. 13, 1902. Serial No. 98,132. (No model.)

Claim.—1. The combination with a square; of a strip parallel to one member thereof, means for adjusting the strip from or toward said member, an arm to the square parallel to the strip, a strip between said arm and parallel strip, and means for adjusting the intermediate strip laterally.

2. The combination with a square having a slot in each member thereof and graduations adjacent to each slot; of a pin adjustably secured in each slot and movable longitudinally therein, and a detachable wedge-strip secured to each member of the square.

3. The combination with a square; of a strip parallel to one member thereof, means for adjusting the strip from or toward said member, an arm to the square parallel to the strip, a strip between said arm and parallel strip, means for adjusting the intermediate strip laterally, and a longitudinally-movable block in the intermediate strip.

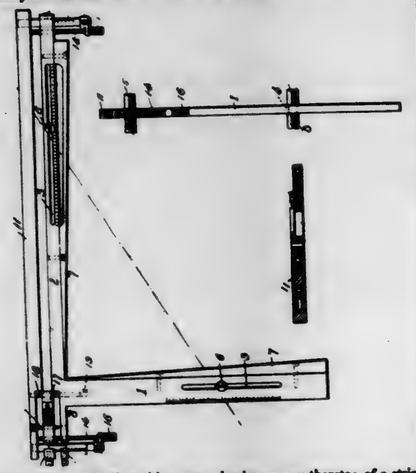

4. The combination with a square having an arm thereto; of a strip parallel to one member of the square and to said arm, means for adjusting the strip from or toward the arm, an intermediate strip between the arm and parallel strip, means for adjusting the intermediate strip laterally, a block slidably mounted in a slot in the intermediate strip, and adjusting means for said block.

710,059. BROWN-VIOLET AZO DYE. PAUL JULIUS, Ludwigshafen, Germany, assignor to Badische Anilin und Soda Fabrik, Ludwigshafen, Germany. Filed July 1, 1902. Serial No. 114,022. (No specimens.)

Claim.—The coloring-matter obtainable by means of diazotized 1-chlor-2-naphthylamin-5-sulfo-acid, carbonate of soda, and beta-naphthol, which dyes wool brown-violet shades, which shades on treatment with potassium bichromate and acetic acid become black-blue to black and on treatment with copper sulfate violet, which on reduction with stannous chlorid and hydrochloric acid yields 1.2-amido-naphthol and an amido-naphthol-mono-sulfo-acid, which coloring-matter in the form of its free acid yields with hot water a claret solution, and with concentrated sulfuric acid a violet solution, whose sodium salt is soluble in water yielding a blue solution, which solution on the addition of caustic soda becomes violet.

710,060. CAPSULE FOR MEDICINES. DRESDNER & KANN Weinberge, Austria-Hungary, assignor to Arthur Freund, Prague, Austria-Hungary. Filed June 11, 1902. Serial No. 111,234. (No model.)

Claim.—As a new article of manufacture, a dry-closing capsule, consisting of two cup-shaped parts capable of being introduced one within the other, one of said parts having a double wall within which the other part engages, substantially as described.

710,061. SUSPENSION-HOOK. JOHN P. EMES and ANDREW LAUTER, Paterson, N. J. Filed May 24, 1902. Serial No. 108,769. (No model.)

Claim.—A suspension-hook, comprising a body portion and two extension members, integral therewith, the upper member turning and depending from the body forming a broad inverted-U-shaped hook the sides of which are substantially parallel, and the extremity of which curves outwardly, and the lower member turning from the body, projecting upwardly forming a U-shaped hook, opposite the upper hook, and thence extending outwardly forming a somewhat upwardly-inclined arm the outer extremity of which terminates in a short upturned hook, substantially as set forth.

710,062. PAVING BRICK OR BLOCK. WILLIAM J. LEARY, Buffalo, N. Y. Filed Feb. 10, 1902. Serial No. 93,894. (No model.)

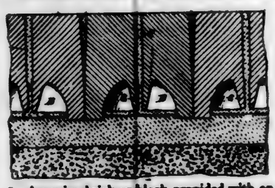

Claim.—1. A paving brick or block provided with an air-chamber a test extending into said air-chamber and an air-vent opening extending through the brick or block and through said test, substantially as set forth.

2. A paving brick or block provided in its under face with a cavity forming an air-chamber, a test extending into said cavity and terminating above the base of the brick, and an air-vent opening extending through the body of the brick or block and through said test, substantially as set forth.

3. A paving brick or block formed with an open cavity in its bottom or base and with a central test extending down into said cavity and terminating above the bottom face of the brick, and an air-vent opening extending vertically through the central portion of the body of the brick and through said test, said air-vent opening being open at its upper and lower ends, substantially as set forth.

710,068. AUTOMOBILE. HERMANN LEMP, Lynn, Mass., assignor to Ellen Thomson, Swampscott, Mass. Filed Mar. 28, 1900. Serial No. 10,448. (No model.)

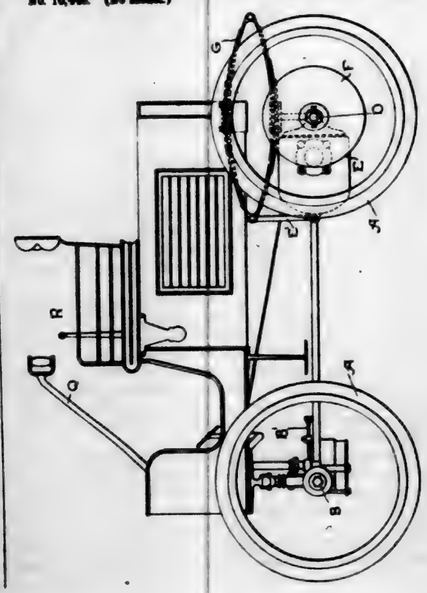

Claim.—1. The combination, in a vehicle, of fixed front and rear axles, a triangular frame rigidly connected at two points with the front axle and pivotally connected at a single point to the rear axle, driving-wheels, and motors supported on the rear axle and located between the pivotal point of the triangular frame and the driving-wheels.

2. In a vehicle, the combination of front and rear axles both of which are fixed, short movable axles pivotally secured to the front axle, a triangular frame which is rigidly secured at two points to the front axle and at its point or apex to the rear axle, unions or couplings for uniting the frame with the fixed axle, a clamp on the rear axle for pivotally supporting the apex of the frame, and a driving-motor secured on the rear axle and mechanically connected to a driving-wheel.

3. In a vehicle, the combination of a fixed front axle, a fixed rear axle, a triangular frame, a clamp on the rear axle to which the apex of the triangular frame is secured by a horizontal pivot, couplings on the front axle which are widely separated for receiving and holding the diverging ends of the frame, and a motor secured on the axle, to which the frame is pivotally secured.

4. In a vehicle, the combination of fixed front and rear axles, a triangular frame rigidly connected to the front axle at two points and pivotally connected to the rear axle at one point, a vehicle-body, a single spring secured to the front axle and to the body, which spring extends parallel with the axle, a pair of springs secured to, and extending at right angles to, the rear axle for supporting the rear end of the body, and motors mounted one on each side of the pivotal connection.

5. In a vehicle, the combination of two axles, a triangular frame rigidly connected to the front axle at two points and pivotally connected to the rear axle at one point, steering-wheels carried by the front axle, a vehicle-body, a single transversely-extending spring secured to the front axle and to the vehicle-body, a pair of longitudinally-extending springs connected to the rear axle, and motors supported by the rear axle and the longitudinally-extending springs.

6. In a vehicle, the combination of a pair of fixed axles, a triangular frame, a pair of unions for rigidly connecting the diverging ends of the triangular frame with the front axle, a fork for connecting the converging ends of the frame, a clamp on the rear axle, a pivotal connection between the fork and the clamp, a vehicle-body, a single spring mounted on the front axle for supporting the vehicle-body at that point, and a pair of springs extending at right angles to the rear axle and connected to said axle and to the body.

7. In a vehicle, the combination of a front and a rear axle, steering-wheels pivotally secured to one of the axles, a triangular frame the diverging ends of which are rigidly secured to one axle while the opposite ends of the frame are united by a fork, a band or clamp which surrounds the other axle, and a pivot which is mounted in the band or clamp and extends at right angles to the rear axle and engages with the fork for fastening the triangular frame in place.

8. In a vehicle, the combination of a fixed axle, a short steering-axle having a stud thereon, and a frame or hanger rigidly mounted on the fixed axle, comprising two vertically-extending portions, one of said portions being adapted to receive one end of a leaf-spring, the other portion being tubular and arranged to receive the stud of the short steering-axle.

9. As an article of manufacture, a hanger for vehicles, comprising two vertically-extending portions, one of said portions being provided with an opening for receiving a fixed support, and a fork for receiving the end of a leaf-spring, the other portion being tubular and adapted to receive and form a bearing for the steering-axle stud.

710,064. LAMP. THOMAS J. LITLE, Jr., Cleveland, Ohio, assignor to the New Process Lighting Company, Cleveland, Ohio, a Corporation of Ohio. Filed Jan. 31, 1900. Renewed Feb. 4, 1901. Serial No. 46,003. (No model.)

Claim.—1. In a lamp, in combination, an incandescible material, a heating-burner associated therewith, a caloric-engine operated by the heat thereof, means operated by the caloric-engine for compressing a gas, means for causing such compressed gas to escape in a jet, and a passage-way leading from said jet to the burner and adapted to convey the gas and air thereto.

2. In a lamp, the combination of a Bunsen burner, a caloric-engine operated by the heat from said burner, means driven by said engine for compressing the fuel supplied to said burner, and an incandescible material adapted to be rendered luminous by said burner.

3. In a lamp, in combination, an incandescible material, a heating-burner associated therewith, a gas-supply pipe, a caloric-engine operated by the heat of said burner, means operated by said engine for compressing the gas from the supply-pipe, means for causing such compressed gas to escape in a jet and carry air with it to the burner, and a lamp-frame carrying all of said parts.

4. In a lamp, in combination, a gas-supply pipe, a caloric-engine and means driven thereby for compressing the gas from such pipe, said engine being operated by the heat generated by burning gas from such pipe, an incandescible material, and a heating-burner associated therewith, and means for causing the compressed gas to escape in a jet thereto and take combustion-supporter with it.

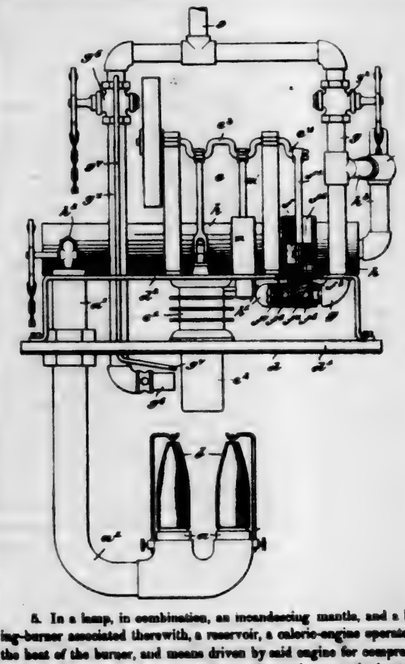

5. In a lamp, in combination, an incandescing mantle, and a heating-burner associated therewith, a reservoir, a caloric-engine operated by the heat of the burner, and means driven by said engine for compressing gas in the reservoir, and means for conveying such gas to the burner.

6. In a lamp, in combination, an incandescible material, a heating-burner associated therewith, a reservoir, a gas-supply pipe, a caloric-engine operated by the heat of said burner, and means driven by said engine for compressing in the reservoir gas from the supply-pipe, and means for causing the gas to escape from the reservoir in a jet and carry air with it to the burner.

7. In a lamp, in combination, a reservoir, a gas-supply pipe, a caloric-engine operated by the heat of the burner, means driven by said engine for compressing gas from the supply-pipe in the reservoir, an incandescing mantle, a burner, a burner-pipe leading thereto and having an air-opening, and a discharge-pipe from said reservoir into said burner-pipe.

8. In a lamp, in combination, an incandescible material, a heating-burner associated therewith, a conduit leading to said burner and having an opening to the outer air, a reservoir, a gas-supply pipe, a caloric-engine operated by the heat of the burner, means driven by said engine for forcing gas from the supply-pipe into the reservoir under pressure, an exit-pipe leading from said reservoir and discharging into said conduit, and a cock for governing said exit-pipe.

9. In a lamp, in combination, a caloric-engine, a main burner and an initial heating-burner for the same, an incandescible material associated with said main burner, means operated by said engine for compressing gas, means for feeding compressed gas with air to said main burner, and means for feeding the initial-heating burner with uncompressed gas.

10. In a lamp, in combination, an incandescing mantle, a heating-burner associated therewith, a reservoir, a caloric-engine operated by the heat of the burner, means driven thereby for compressing gas in the reservoir, means for conveying the gas from the reservoir to the burner, and a governor limiting the pressure in the reservoir.

11. In a lamp, in combination, an incandescible material, a heating-burner associated therewith, a reservior, means operated by the heat of the burner for compressing gas in the reservoir, means for conveying such gas to the burner, and a return-pipe leading from the reservoir to the gas-supply, and a spring-valve for controlling said return-pipe.

12. In a lamp, in combination, a reservoir, a gas-supply pipe, a ca-

loric-engine and means driven thereby for compressing gas from the supply-pipe into the reservoir, an incandescible material, a burner therefor, a burner-pipe leading thereto and having an air-opening, a discharge-pipe from said reservoir into said burner-pipe, and a suspensible frame carrying all of said parts.

13. In a lamp, in combination, an incandescible material, a heating-burner associated therewith, a caloric-engine adapted to be operated by the heat thereof, a pump driven by said engine, a reservoir into which said pump discharges, a supply-pipe adapted to convey gas to said pump, whereby the engine may compress the gas in the reservoir, a discharge-pipe leading from said reservoir, and a pipe having an air-opening for conveying such discharge and air to the burner.

14. In a lamp, in combination, an incandescible material, a heating-burner associated therewith, a caloric-engine operated by the heat thereof, a pump driven by said engine, a reservoir into which said pump discharges, a supply-pipe adapted to convey gas to said pump whereby the engine may compress the gas in the reservoir, a discharge-pipe leading from said reservoir, a pipe for conveying such discharge and air to the burner, a return-pipe leading from the reservoir to the fuel-supply, a spring-valve for governing the same, and cocks in the supply-pipe and discharge-pipe respectively.

15. In a lamp, the combination with an incandescible material, a heating-burner associated therewith, a caloric-engine which converts a portion of the waste heat from said burner into rotary mechanical movement, mechanism operated by such rotary movement for compressing the gas, and means for causing such compressed gas to escape in a jet to said burner whereby it may take air with it.

16. In a lamp, in combination, an incandescible material, a burner therefor, a burner-pipe leading to the burner and having an opening for the reception of air, a caloric-engine above the incandescible material, a heat-diaphragm across the engine for maintaining the upper portion thereof cool, a pump operated by said engine, a gas-supply pipe leading thereto, a reservoir into which said pump is adapted to discharge, and a discharge-pipe from said reservoir to said burner-pipe.

17. In a lamp, in combination, a caloric-engine, a main burner, and an initial-heating burner for the same, an incandescible material associated with said main burner, a reservoir, a pump operated by said engine for compressing gas from the supply into said reservoir, a burner-pipe leading to said main burner, a jet-pipe from the reservoir discharging into said burner-pipe, and two gas-supply pipes branching from a common pipe and one leading to said pump and the other to said initial-heating burner.

710,065. SELF-RESTORING TELEPHONE. LOUIS J. LOMPLER, New York, N. Y. Filed Oct. 22, 1901. Serial No. 79,740. (No model.)

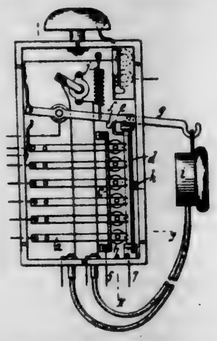

Claim.—1. A signal-wire terminal, a swinging catch forming a talking-wire terminal, a spring for moving the catch to engaging position, an arm carried by the catch, a releasing nose or incline for the catch made to engage the arm, a weight-actuated lever on which said incline is mounted, a contact-spring made to normally move clear of the terminals, and a button or handle for moving the contact to the signal-terminal, said contact-spring being adapted for engagement by the catch when released to clear the signal-terminal substantially as described.

2. A swinging spring-pressed catch forming a talking-circuit terminal and having an inclined and shoulder portion, a push-button and line contact-spring made to contact with the incline to retract or pass the catch and to be held by or make talking contact with the shoulder when the push-button is freed, a ringing-circuit bar with which the contact-spring closes when pressed by the button past or clear of the shoulder, said spring being made to return to and be held by the shoulder clear of the ringing-circuit on the release of the button, a receiver-carrying hook or lever having a nose, and an arm on the swinging catch engaged by the nose for forcing the catch to release the line contact-spring, the latter being made to normally spring away from or clear both the ringing and talking circuits substantially as described.

3. A signal-wire terminal and a talking-wire terminal combined with a contact-spring normally out of contact with both terminals and made to contact with either terminal while clear of the other terminal, means for causing the engagement of said contact-spring with one of said terminals, a pawl engaging the contact-spring for retaining the same in engagement with the other of said terminals, a spring engaging said pawl for retaining it in engagement with the said contact-spring, an arm connected with said pawl, a lever, and a nose carried by the lever and engaging the said arm for releasing the pawl from its engagement with the said contact-spring.

710,066. TYPE-DISTRIBUTING APPARATUS. ABBOT A. LOW, Brooklyn, N. Y., assignor to Alden Type Machine Company, New York, N. Y. Filed Jan. 29, 1901. Serial No. 45,194. (No model.)

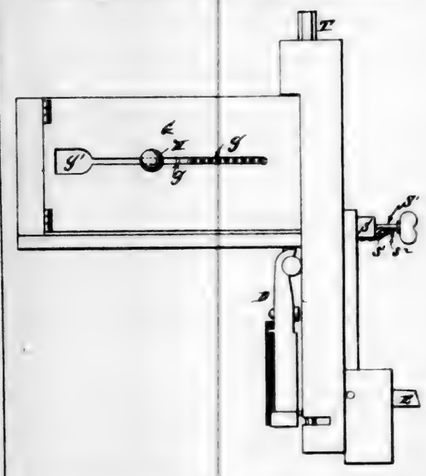

Claim.—1. In type-distributing apparatus, the combination of a vertical type-galley, vertically-movable type-line-transfer plate, a vertical movable type-line cut-off or follower and type-feeling mechanism, arranged and operating substantially in the manner and for the purpose described.

2. In type-distributing apparatus, the combination of a vertical type-galley A, line-forwarder A, formed with the handle H, the retractable transfer-plate P, for lowering the types into the feeler-channel C, the type-line cut-off and follower T, and the type-feeling mechanism, all arranged and operating substantially in the manner and for the purpose described.

3. In type-distributing apparatus, the combination of the galley A, the distributer-frame formed with the vertical feeler-channel C, the retractable and vertically-movable transfer-plate P, the type-line cut-off T, type-feeling mechanism and a vertical cover G, upon the galley A, for the purpose of sustaining the types in the galley A, substantially in the manner described.

4. In type-distributing apparatus, the combination with the vertical galley A, type-line cut-off T, the frame formed with the vertical feeler-channel C, and type-feeling mechanism, of the transfer-plate P, extending through the vertical slot f^3, and mounted upon the end of the spring-bolt S', upon the vertical movable cross-head S, said bolt S', being forced with a shoulder s', for engagement with the ends of a ratchet-spring s^2, and with a flange p, for the purpose and substantially in the manner described.

5. In type-distributing apparatus, the combination with the type-line cut-off T, retractable transfer-plate P, of a vertical galley A, provided with a cover G, formed with a horizontal slot g, said galley being also provided with a line-forwarder A, the handle of which H, is formed with notches h', for the reception of the edges of the slot g, whereby the handle H, is made to lock the cover G, in position, during the forward movement of the line-forwarder, substantially in the manner and for the purpose described.

710,067. SYSTEM OF ELECTRICAL DISTRIBUTION. ALEXANDER D. LEVY, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Jan. 31, 1901. Serial No. 45,488. (No model.)

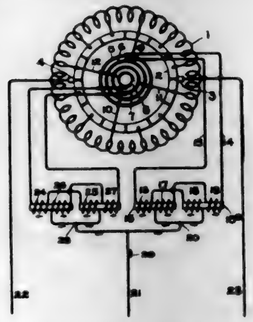

Claim.—1. The combination of a plurality of inductance-coils, the windings of which are traversed by superposed alternating and direct current, and connections between said windings such that the direct current has no resultant magnetizing effect.

2. The combination of a plurality of cores, windings on said cores traversed by superposed alternating and direct current, and connections between the said windings such that there is no resultant magnetizing effect due to the direct current.

3. The combination of a plurality of cores of magnetic material, a plurality of windings on each of said cores, and connections interlinking all of the windings in series, the connections being such that no two windings on a single core are interlinked in immediate succession.

4. The combination of a plurality of cores of magnetic material, a plurality of windings on each of said cores, means for passing superposed alternating and direct current through said windings, and connections between said windings such that the direct current in one of the windings on a core is balanced in its magnetizing effect by direct current in another of said windings.

5. The combination of an armature, a plurality of windings connected in series across points in said armature, means for passing direct current through said windings, and connections between said windings such as to render negligible the resultant magnetizing effect of the direct current in said windings.

6. The combination with the armature-winding of a dynamo-electric machine, of a commutator connected to said winding, sets of inductively-related coils, a main leading to a connection between two of the coils, and interconnections between the coils such that current in said main has no resultant magnetizing effect.

7. The combination of a plurality of series-connected sets of inductively-related coils, a main leading to a connection between two of the coils, the interconnection between all of the coils being such that current in said main has no resultant magnetizing effect, and means for supplying current to said main.

8. The combination of a plurality of cores of magnetic material, a plurality of windings on each of said cores, connections interlinking said windings in series, means for passing alternating current through said windings in series, and means for passing direct current through a divided or branched circuit formed of said windings.

710,068. METHOD OF MAINTAINING UNIFORM RESISTANCE IN ARC-LAMP CIRCUITS. RUFUS G. LEBARON, Boston, Mass., and WILLIAM A. PAINE and EVERETT W. BURDETT administrators of Frederick A. Gilbert, deceased. Original application filed Dec. 17, 1897, Serial No. 662,234. Divided and this application filed Apr. 26, 1902. Serial No. 105,314. (No model.)

Claim.—1. The method of regulating electric-arc lamps having series and shunt regulating-coils, which consists in varying the regulating power of said coils when the heat after starting the lamp, inversely to, and to compensate for, change of voltage at the arc accompanying such heating.

2. The method of regulating arc-lamps having series and shunt arc-regulating coils, which consists in automatically cutting out a part of one of said coils when it heats after starting the lamp, to compensate for the change of voltage at the arc accompanying such heating.

3. The method of regulating electric-arc lamps having series and shunt regulating-coils, which consists in increasing the power of the shunt-coil when it heats after starting the lamp, to compensate for the increased voltage at the arc accompanying the rise of coil resistance due to such heating, whereby the shunt-winding is rendered uniform in the starting and running condition of the lamp, and the length of arc is also maintained uniform.

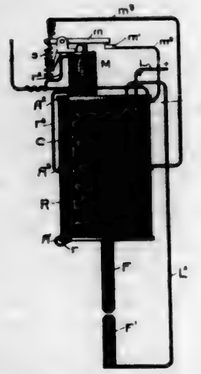

4. The method of regulating electric-arc lamps and maintaining uniform arc length, which consists in automatically controlling the operation of the feed-regulating circuit when it heats after starting the lamp, by, and to compensate for, variation of voltage at the arc accompanying the change of coil resistance due to such heating.

5. The method of regulating electric-arc lamps, which consists in automatically increasing the effective power of the feed-controlling circuit to compensate for loss of power due to heating of the circuit when the voltage at the arc rises as a consequence of such heating to a determinate degree.

710,069. FIRE-EXTINGUISHING AND LIFE-SAVING APPARATUS. WALTER A. HERRESOFF, Houlton, Me. Filed July 6, 1901. Serial No. 67,262. (No model.)

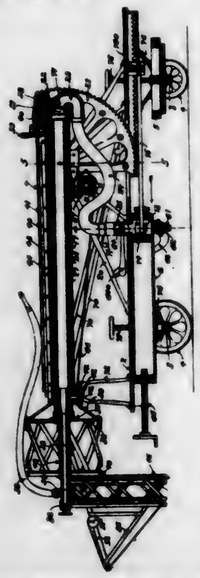

Claim.—1. An apparatus of the character referred to, comprising a body, a telescopic water-tower pivotally connected with the body, a fixed cylinder attached to the body, a supply-pipe entering the inner end portion of the cylinder and adapted for connection with a source of water-supply, a conduit having a flexible portion connecting the inner end portion of the cylinder with the tower, a piston in the cylinder and having

its rod provided with a cross-head, gearing connecting the piston with the tower, said gearing comprising racks attached to said cross-head and gear-segments connected with said tower, and a valve in the said conduit between the cylinder, and tower, whereby water admitted to the cylinder at the said inner end thereof may be first confined therein and caused to swing the tower upwardly, and may then be admitted to the tower to extend the latter.

2. An apparatus of the character referred to, comprising a vehicle-body, a fixed cylinder thereon having duplicate supply-pipes entering its inner end portion from opposite sides, automatic outwardly-closing check-valves at the inner ends of said pipes, whereby when either pipe is in use the other is kept closed by the liquid-pressure in the cylinder, a piston in the cylinder, a swinging tower having direct fluid connection with the said inner portion of the cylinder, and mechanical connections between the piston and tower, said connections comprising a cross-head and racks connected with the piston-rod and gear-segments connected with the tower.

3. An apparatus of the character referred to, comprising a fixed cylinder having a supply-pipe entering its inner end portion, a swinging tower, direct liquid connections between the inner end portion of the cylinder and the tower, a piston in the cylinder, a piston-rod passing out from the inner end of the cylinder, mechanical connections between the piston-rod and the tower, said connections comprising a cross-head and racks connected with the piston-rod and gear-segments connected with the tower, and a valved outlet at the inner end portion of the cylinder.

4. An apparatus of the character referred to, comprising a cylinder having a supply-pipe entering its inner end portion, a swinging tower, liquid connections between the inner end portion of the cylinder and the tower, a piston in the cylinder, mechanical connections between the piston and the tower, and an adjustable rigid stop located in the path of movement of the liquid-impelled mechanism whereby the movement of the piston and the tower-raising parts connected therewith may be arrested at any desired point.

5. An apparatus of the character referred to, comprising a fixed cylinder having a supply-pipe entering its inner end portion, a swinging tower, direct liquid connections between the inner end portion of the cylinder and the tower, a piston in the cylinder, a piston-rod passing out from the inner end of the cylinder, mechanical connections between the piston-rod and the tower, said connections comprising a cross-head and racks connected with the piston-rod and gear-segments connected with the tower and a valved outlet at the lower portion of the tower.

6. In an apparatus of the character referred to, a water-tower comprising an oscillating base-section secured against longitudinal movement, a sliding intermediate section within the base-section, a sliding end section within the intermediate section, and a telescopic ladder composed of a base-section attached at both ends to the base-section of the tower, and intermediate and end sections attached at their upper ends to the upper ends of the intermediate and top sections of the tower respectively, the intermediate section being narrower than and guided and confined between the side bars and rungs of the base-section, while the top section is narrower than and guided between the side bars and rungs of the intermediate section, the side bars of the base and intermediate sections of the ladder being made of flight-pieces having a uniform shape in cross-section to form tracks or guides for the next narrower section.

7. An apparatus of the character referred to, comprising a telescopic water-tower, a hydrant on the top section of the tower, a sleeve or collar surrounding the hydrant, a platform affixed to the said top section, a railing around said platform, a telescopic platform the inner section of which is secured to and partially supported by said sleeve or collar, and is additionally supported by said railing.

8. An apparatus of the character referred to, comprising a telescopic water-tower, a hydrant on the top section of the tower, a sleeve or collar surrounding the hydrant, a platform affixed to the said top section, a railing around said platform, a telescopic platform the inner section of which is secured to and partially supported by said sleeve or collar, and is additionally supported by said railing, a guy-rope-supporting frame affixed to said inner section, and a guy-rope adjustably secured to said frame and connected with the outer section of the telescopic platform.

9. A water-tower section having a cup-washer at its lower portion, clamping-collars engaged with the flange of said washer, one collar being above and the other below said flange, and screws entering the upper collar, the heads of said screws being countersunk in the said upper collar whereby the screws may be prevented from removal by the inner wall of another section.

710,070. APPARATUS FOR SUBSTRATE SECTIONING. BENJAMIN GELST, Lynn, Mass., assignor to the General Electric Company, a Corporation of New York. Filed Mar. 6, 1899. Serial No. 707,172. (No model.)

Claim.—1. In a metering system, the combination of supply-mains, a meter or meters for recording the amount of energy consumed at the various points of consumption, means capable of changing the rate of registration of the meters, and an automatic control apparatus operated by current derived from the system for actuating said means.

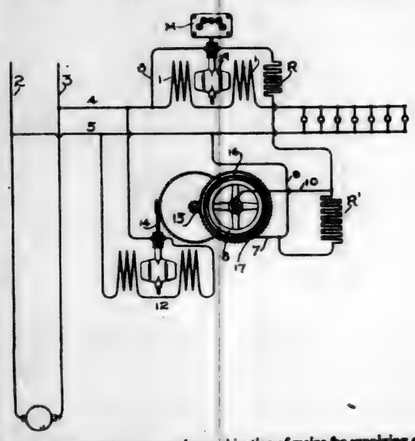

2. In a metering system, the combination of mains for supplying current to the consumers, meters for recording the consumption of energy, a resistance capable of being inserted in the circuit in a manner to change the rate of registration of the meters, and an automatic control apparatus operated by current received from the system for inserting and withdrawing the resistance from the circuit.

3. In a metering system, the combination of supply-mains, meters for recording the amount of energy consumed at the various points of consumption, a resistance device capable of changing the rate of registration of the meters, and automatically-actuated apparatus receiving current from the supply-mains for operating the resistance device.

4. In a system of electrical distribution, the combination with a suitable metering mechanism located at a single point of consumption, of a resistance capable of being inserted in and withdrawn from a circuit of said metering mechanism, and an automatic control apparatus operated by current derived from the system at said point of consumption, to insert and withdraw said resistance, at predetermined hours, substantially as described.

5. In a system of electrical distribution, the combination with a suitable metering mechanism installed at a single point of consumption, of a resistance capable of insertion in and withdrawal from the shunt-circuit of said metering mechanism, a time-controller, to vary the hour of insertion and withdrawal, and a meter-control operated by current derived from the system to actuate said limit-controller continuously, after the latter is set, substantially as described.

6. In a system of electrical distribution, the combination with a suitable metering mechanism, of means for reducing the speed, or rate of registration of current, during predetermined hours, a time-controller capable of adjustment to fix said hours, and a local controller consisting of a motor continuously actuated by current derived from the system, substantially as described.

7. In a system of electrical distribution, the combination with a suitable metering mechanism located at a point of consumption, of a time-controller composed of two parts, one having constant movement relatively to the other, and a local meter-controller operated by current derived from the system to impart said movement, substantially as described.

8. In a system of electric metering, the combination of a plurality of meters located at the various points of consumption, each meter being arranged to register at more than one rate, and a single automatic control device operated by current received from the system for changing the rate at which the meters register.

9. In an electric metering system the combination of means for indicating the consumption of energy, two circuits controlling the recording apparatus, and an automatic control apparatus receiving current from the supply-lines for rendering either circuit operative.

710,071. LOCK. WILLIAM B. FAHEN and HENRY A. ROOSE, Chicago, Ill. Filed Mar. 1, 1902. Serial No. 96,252. (No model.)

Claim.—1. In a device of the character described, the combination with a lock having a casing, of slidable means in said casing adapted to be normally held in a retracted position, and means in said casing adapted when engaged by a false key to release said first-named means and allow the same to shoot forward into position to prevent the withdrawal of said false key.

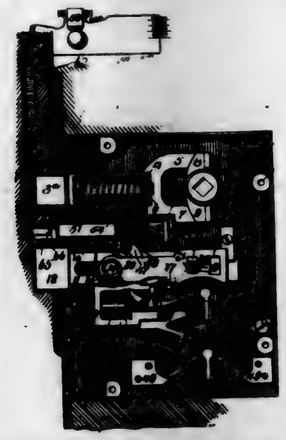

2. In a device of the character described, the combination of a lock-casing provided with an auxiliary keyhole, notched plates secured to the casing at each side of the said keyhole adapted to correspond with the wards of the key, a gripping-frame slidably mounted in the casing, and means secured to the casing for holding said frame normally in the retracted position, substantially as described.

3. In a device of the character described, the combination with a lock-casing having an auxiliary keyhole formed therein, of notched guard-plates secured to the casing at opposite sides of the keyhole, a gripping-frame mounted to slide in the casing of the lock, a spring-held trigger engaging the gripping-frame to hold the same normally retracted, and means adapted when the trigger is released to project the gripping-frame into the path of travel of the key.

4. In a device of the character described, the combination of a lock-casing having an auxiliary keyhole, guard-plates secured at opposite sides of said keyhole, a spring-pressed gripping-frame slidably mounted in the lock-casing, and a spring-held trigger normally holding said frame in the retracted position, the end of said trigger projecting into the path of travel of the key and notched to permit the passage of the proper key, substantially as described.

5. In combination with a lock having a casing provided with a main and an auxiliary keyhole, means secured at opposite sides of the auxiliary keyhole for preventing the rotation of a false key after insertion into the casing, a gripping-frame slidably mounted in the casing and adapted when released to project into the path of travel of a key inserted through the main keyhole, and means for holding said gripping-frame normally in the retracted position, said means adapted to prevent the rotation of a false key inserted into the casing through the main keyhole, substantially as described.

6. In combination with a lock having its casing provided with a main keyhole and an auxiliary keyhole, spring-actuated means adapted to be engaged by a false key inserted through the main keyhole, spring-actuated means adapted to be released when the said first-named means is actuated by the false key whereby the second-named means is shifted to a position in the casing to prevent the removal of the false key, and means for locking said second-named means in the shifted position.

7. In combination with a lock having its casing provided with a main keyhole and an auxiliary keyhole, spring-actuated means adapted to be engaged by a false key inserted through the main keyhole, spring-actuated means adapted to be released when the first-named means is actuated by the false key whereby the second-named means is shifted to a position in the casing to prevent the removal of the false key, and means within the casing to prevent the rotation of a false key therein after insertion through the false keyhole.

8. In combination with a lock having its casing provided with a main keyhole and an auxiliary keyhole, spring-actuated means adapted to be engaged by a false key when inserted through the main keyhole, spring-actuated means adapted to be released when the first-named means is actuated by the false key whereby the second-named means is shifted to a position within the casing to prevent the removal of the false key, means for locking said second-named means in the shifted position, and means within the casing to prevent the rotation of a false key therein when inserted through the auxiliary keyhole, substantially as described.

9. In combination with a lock having a casing provided with a keyhole, and an alarm electrically connected to the lock, of means whereby the lock-bolt of the lock may be operated by the proper key without completing the circuit to the alarm, and means adapted when actuated by a false key to simultaneously shift into position to prevent the withdrawal of said false key and to complete a circuit with said alarm.

10. In a lock, the combination with the lock-casing having a main keyhole, and an alarm electrically connected to the lock, of means for operating the lock-bolt by the proper key without completing the circuit to said alarm, and spring-actuated sliding means arranged in the casing adapted when actuated by a false key to simultaneously shift into position to prevent removal of the false key and to complete a circuit to the alarm, substantially as described.

11. In a lock, the combination of a casing having a main keyhole and an auxiliary keyhole, a latch-bolt and a lock-bolt arranged within the casing and operative independently, an alarm electrically connected to the lock and normally out of circuit therewith, and means arranged within the lock-casing and adapted when actuated to shift into position to prevent the withdrawal of the actuating-key and to simultaneously complete a circuit to the alarm.

12. In a lock, the combination with the lock mechanism including a lock-bolt, and an alarm electrically connected to the lock mechanism but normally out of circuit therewith, of means whereby the lock-bolt may be operated by the aid of the proper key without completing the circuit to the alarm, and means adapted when actuated by a false key to complete the electrical circuit to said alarm, substantially as described.

13. In a lock, the combination with the lock mechanism including a lock-bolt, operative by the proper key to desired positions without operation of the other parts of the lock mechanism, of means adapted when actuated by a false key to be shifted into position to prevent the removal of said key and to simultaneously release mechanism to sound an alarm.

14. In a lock, the combination with the lock mechanism, and the casing having a main and an auxiliary keyhole, of spring-actuated means arranged within the casing and adapted when released by a false key inserted in the main keyhole to be shifted into position to prevent the removal of the false key, substantially as described.

15. In a lock, the combination with the lock mechanism, and the casing having a main keyhole and an auxiliary keyhole, of spring-actuated means slidably arranged within the casing and adapted when released by a false key inserted through the main keyhole to be shifted into position to prevent the removal of the false key, substantially as described.

16. In a lock, the combination with the lock mechanism, and the casing having a main keyhole and an auxiliary keyhole, of spring-actuated means slidably arranged within the casing and adapted when released by a false key inserted through the main keyhole to be shifted into position to prevent the removal of the false key, and means for locking the first-named means in the shifted position, substantially as described.

17. In a lock, the combination with the lock mechanism, and the lock-casing having a main keyhole, and an auxiliary keyhole, of notched guard-plates arranged at opposite sides of the auxiliary keyhole, as and for the purpose described.

18. In a lock, the combination with the lock mechanism, and the lock-casing having a main keyhole and an auxiliary keyhole, of means actuated only by a false key inserted through the main keyhole to prevent the removal of said false key, substantially as described.

19. In a lock, a lock-bolt operative by the proper key when inserted through the main keyhole in the casing, means held normally retracted in the casing and adapted when released by a false key inserted through the main keyhole to project into the path of travel of said key, a spring-arm for locking said means in its projected position, and guard-plates disposed to prevent the release of the said means by a secondary false key inserted into the lock, substantially as described.

20. In a lock, a casing having a main and a false or auxiliary keyhole, a lock-bolt operative by a proper key inserted through the main keyhole, means adapted to project into the path of travel of a false key when inserted into the main keyhole to prevent the removal of said false key, and an alarm-circuit closer automatically operated by said means, substantially as described.

21. In a lock, the combination with the casing having a main and an auxiliary keyhole, of the lock mechanism, the circuit-closing device, and the false-key-retaining device, substantially as described.

710,072. ELECTRIC-RAILWAY SYSTEM. WILLIAM B. POTTER, Schenectady, N. Y., assignor to General Electric Company, a Corporation of New York. Filed Feb. 28, 1901. Serial No. 48,217. (No model.)

Claim.—1. The combination with an electric-railway car, of a sanding device comprising a rotatable conveyer, a rotating electric motor connected therewith, and means whereby the motorman can start and stop said motor at will.

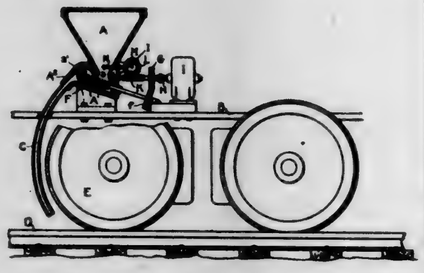

2. The combination with an electric-railway car, of two or more sanding devices each comprising a rotatable conveyer, a rotating electric motor for each, and circuit connections whereby the motorman can start and stop said motors at will.

3. The combination with an electric-railway car, of two or more sanding devices each provided with an electromagnetic operating mechanism, and circuits connecting said mechanisms in multiple.

4. The combination with one or more electric-railway cars, of two or more sanding devices on each car, a rotating electric motor for operating each device, and means for simultaneously connecting said motors in multiple.

5. In combination, a plurality of cars united to form a train, sand-boxes on some or all of said cars, electric motors controlling the delivery of sand therefrom, a train-conductor to which said motors are connected, a source of current-supply, and means located at several desired points on the train for connecting said conductor to said source of supply.

710,078. ELASTIC TIP. PHILIP W. PRATT, Boston, and ROLOF B. FOSTER, Revere, Mass., assignors to Daniel S. Pratt, Brookline, Mass. Filed Dec. 28, 1901. Serial No. 87,501. (No model.)

Claim.—1. An elastic tip forming the bottom of a socket and having an annular flange forming the wall of the socket, the body portions of said tip and flange being of elastic vulcanized rubber, and an inextensible reinforcing layer of frictioned stock vulcanized to said tip between its tread-surface and the socket-cavity.

2. An elastic tip forming the bottom of a socket and having an annular flange forming the wall of the socket, the body portions of said tip and flange being of elastic vulcanized rubber, and an inextensible reinforcing layer of frictioned stock vulcanized to said tip between its tread-surface and the socket-cavity, said layer having a flange surrounding the socket-cavity.

3. An elastic tip having suitable means for attachment to a chair, crutch or cane, the body portion of said tip being of elastic vulcanized rubber, and a frictional tread composed of a strip of frictioned textile material formed into dished or tapered convolutions which are vulcanized to each other and to the elastic body of the tip.

4. An elastic tip forming the bottom of a socket and having a flange forming the wall of the socket, the body portion and flange being of elastic vulcanized rubber, a relatively inelastic tread-piece attached to the lower side of the elastic body of the tip, and an inextensible reinforcing layer of frictioned stock vulcanized to the tip between the tread-piece and the socket-cavity, said reinforcing layer having a flange extending upwardly and surrounding the socket-cavity.

710,074. CRUTCH, CANE, &c. PHILIP W. PRATT, Boston, Mass. Filed Feb. 27, 1902. Serial No. 95,916. (No model.)

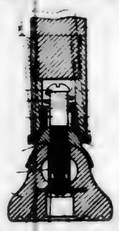

Claim.—1. A crutch or cane comprising a body having a rigid annular socket member at its lower portion, a ball member fitted to oscillate in said socket member, a stud affixed rigidly to the ball member and projecting therefrom through the opening of the socket member and movable laterally therein, a spring engaged with said stud and with a fixed abutment within said body, said spring and stud holding the ball member yieldingly against the socket member and permitting one member to oscillate on the other, and an elastic tread secured to the ball member.

2. A crutch or cane comprising a body having a rigid annular socket member at its lower portion, a ball member fitted to oscillate in said socket member, a stud affixed rigidly to the ball member and projecting therefrom through the opening of the socket member and movable laterally therein, a spring engaged with said stud and with a fixed abutment within said body, said spring and stud holding the ball member yieldingly against the socket member and permitting one member to oscillate on the other, an elastic tread, and means for detachably securing the said tread to the ball member.

3. A crutch or cane comprising a body having a rigid annular socket member at its lower portion, a ball member fitted to oscillate in said socket member, a stud affixed rigidly to the ball member and projecting therefrom through the opening of the socket member and movable laterally therein, a spring engaged with said stud and with a fixed abutment within said body, said spring and stud holding the ball member yieldingly against the socket member and permitting one member to oscillate on the other, a shank attached to and extending downwardly from the ball member, and an elastic tread attached to said shank.

4. A crutch or cane comprising a body having a rigid annular socket member at its lower portion, a ball member fitted to oscillate in said socket member, a stud affixed rigidly to the ball member and projecting therefrom through the opening of the socket member and movable laterally therein, a spring engaged with said stud and with a fixed abutment within said body, said spring and stud holding the ball member yieldingly against the socket member and permitting one member to oscillate on the other, a shank attached to and extending downwardly from the ball member and provided with a footpiece at its lower portion, and an elastic tread attached to said shank and footpiece.

5. A crutch or cane comprising a body having a rigid annular socket member at its lower portion, a ball member fitted to oscillate in said socket member, a stud affixed rigidly to the ball member and projecting therefrom through the opening of the socket member and movable laterally therein, said stud having a threaded extension projecting downwardly through and below the ball member, a spring engaged with said stud and with a fixed abutment within said body, said spring and stud holding the ball member yieldingly against the socket member and permitting one member to oscillate on the other, a tubular shank engaging said threaded extension, and an elastic tread attached to said shank.

6. An elastic tread-piece provided with a rigid attaching member embedded in the tread-piece, and a flexible footpiece secured to the inner end of said attaching member and having its marginal portion embedded in the tread-piece.

710,075. BEET-HARVESTER. JOHN J. ROCKUS, Zeeland, Mich. Filed Jan. 27, 1902. Serial No. 91,433. (No model.)

Claim.—1. In a beet-harvester two separate diggers adapted to operate upon separate rows of beets, a frame connecting the same, and a blade attached to the frame and adapted to enter and traverse the soil and prevent lateral movement of the frame, substantially as described.

2. In a beet-harvester a post having a blade at the lower end adapted to enter and traverse the soil, rearwardly extended and diverging bars attached to the post, posts attached to the rear of the bars and having diggers attached at their lower ends and inwardly-extended upper ends adjustably secured to a cross-bar, and handles connected to the ends of the cross-bar and to the first-named bars, substantially as described.

3. In a beet-harvester the combination of diverging and horizontally-flexible bars, rigidly connected at the forward ends, and posts attached to the respective rear ends, and having diggers attached to the lower ends, and having flexible upper ends extending upward and inward and adjustably connected to each other, substantially as described.

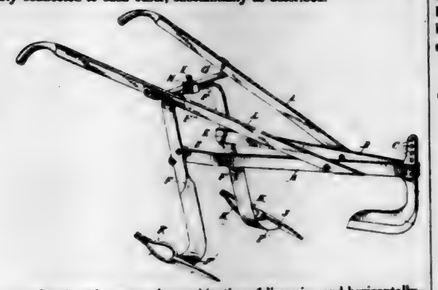

4. In a beet-harvester the combination of diverging and horizontally-flexible bars, bent in parallel ends at the ends and rigidly attached at the front ends, posts attached at the rear ends of the bars and extending downward and thence outward, diggers attached to the outer ends of the posts to operate upon separate rows of beets, said posts also extending upward and inward and adjustably secured to a cross-bar, and handles attached to the respective ends of the cross-bar and to the diverging bars, substantially as described.

5. In a beet-harvester a post at the front having a blade at the bottom, diverging and rearwardly-extended bars attached to the post, posts attached to the rear ends of the bars, and extending downward therefrom, diggers on the lower ends of the posts to operate on separate rows of beets, said posts also extending upward and inward and having their inner ends overlapping and adjustable, a cross-bar, a clip, surrounding the cross-bar and overlapping ends of the posts, and handles attached to the cross-bar and to the first-named bars substantially as described.

6. In a beet-harvester, a frame, a post attached to the frame and having a laterally-extended lower end, and rearwardly and upwardly extended fingers attached to the said lower end, substantially as described.

7. In a beet-harvester, a frame, a post attached to the frame and having a laterally-extended lower end and a forwardly-projecting point, and rearwardly-projecting fingers attached to the said lower end, substantially as described.

8. In a beet-harvester, a frame, a post attached to the frame and having a laterally-extended lower end, a point attached to the post, and upwardly and rearwardly extended and converging fingers at the rear of the point, substantially as described.

9. In a beet-harvester, a frame, a post attached to the frame and having a laterally-extended lower end, and upwardly and rearwardly extended converging and flexible fingers attached to said lower end, substantially as described.

10. In a beet-harvester means for severing the soil at the side of the row of beets and for loosening the soil beneath the same, and upwardly-inclined and converging flexible fingers attached to the said means, substantially as described.

11. In a beet-harvester, a frame, a post attached to the front of the frame and having a blade to enter the soil and guide the frame, posts attached to the respective sides of the frame and having outwardly-turned lower ends, and points and inwardly-projecting upwardly-inclined fingers attached to the said ends, substantially as described.

710,076. HOSPITAL-MATTRESS. DORA T. ROSETT, New York, N. Y. Filed May 28, 1901. Serial No. 62,236. (No model.)

Claim.—An improved hospital-mattress, comprising a plurality of longitudinal sections each complete and indivisible in itself, and means operable by a single movement for detachably associating and securing said indivisible individual longitudinal sections together in composite separable form to form a mattress which is divisible longitudinally only, whereby a mattress is produced in which the complete longitudinal sections may be separately removed from the bed and reassociated one side portion at a time substantially without disturbing the occupant of the bed.

710,077. PIPE-WRENCH. CHARLES C. RUDGER, Butte, Mont. Filed Nov. 29, 1901. Serial No. 83,967. (No model.)

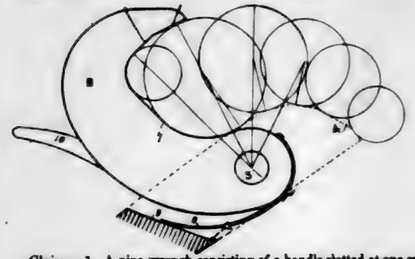

Claim.—1. A pipe-wrench consisting of a handle slotted at one end, a movable jaw pivoted in said slot, a fixed jaw on the handle in relation to said movable jaw, said jaws adapted to engage pipes of various sizes, the relation of the grip-surfaces of said jaws being such that the angle between a pipe-radius perpendicular to the engaged surface of the fixed jaw, and a line from the center of said pipe to the center of the pivot of said movable jaw is less than twenty degrees.

2. The combination in a wrench of a lever having a fixed jaw, the outer portion of said jaw being made polygonal, a hook-jaw pivoted on said lever and movable in relation to said fixed jaw, a portion of the gripping-surface of said hook-jaw, adjacent to the lever, indented to arcs corresponding to the peripheries of pipes to be taken by the wrench, and the outer portion of the grip-surface of said jaw consisting of a plurality of plane surfaces tangential to an arc struck from the pivot of said jaw.

3. A wrench consisting in the combination of a lever, a longitudinal slot in said lever, a hook-jaw pivoted and movable in said slot, a fixed jaw in relation to said movable jaw, said fixed jaw having polygonal faces which subtend an arc eccentric to the pivot of the movable jaw, said jaws so adapted to engage a pipe that the angle between a pipe-radius that is perpendicular to the engaged face of the fixed jaw, and a line from the center of the pipe to said pivot, is less than twenty degrees, a spring fixed to the hub of the movable jaw and movable in the slot in which said jaw operates, and a trigger upon said movable jaw.

4. In a wrench, the combination with a lever forked at one end and having the ends of the fork members formed as a polygonal-faced jaw or cam and with certain of the faces of the cam having serrations and certain other portions made plane-surfaced, and a hook-jaw pivotally mounted between the forks in relation to the fixed jaw, the relation of the grip-surfaces of the jaws being such that the angle between a pipe-radius perpendicular to the engaged surface of the fixed jaw, and a line from the center of the pipe to the axis of the movable jaw is less than twenty degrees.

710,078. EGG-STAND. JACOB SALOMON, San Francisco, Cal. Filed Sept. 21, 1901. Serial No. 76,071. (No model.)

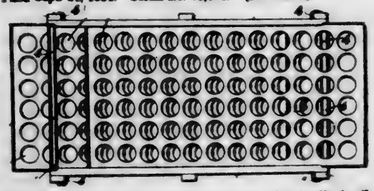

Claim.—An egg-stand comprising standards, longitudinal rails connected with said standards and having grooves on their inner sides, said grooves being open at both ends and unobstructed from end to end, trays of sheet metal perforated to contain eggs sliding in said grooves, and wire ties 4 connecting the standards across the ends of the stand at points sufficiently below the level of the tray above the same to permit the lower ends of the eggs to pass thereover, and sufficiently above the tray below the same to permit the upper ends of the eggs in said tray to pass thereunder, the space between the standards at the ends being otherwise unobstructed, substantially as described.

710,079. MEANS FOR SUSTAINING AND ADJUSTING WINDOW-SHADES. ANTHONY SERAPIGNI, Jersey City, N. J. Filed June 13, 1901. Serial No. 64,451. (No model.)

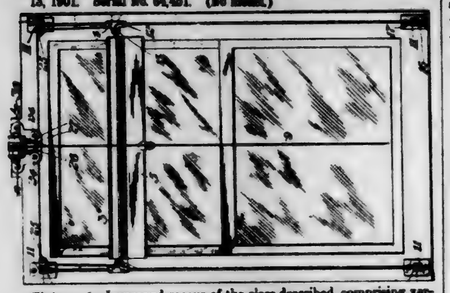

Claim.—1. Improved means of the class described, comprising vertical guides secured at the sides of the window and embodying sockets provided with set-screws at the top and bottom of the window-frame, those at the top provided at one side with pulleys and rods having their ends secured in said sockets, sleeves slidable on said guides and provided at one side with sockets, a shade-roller carried by said sockets, a windlass mounted at the top of the window and provided with three annular peripheral grooves, said windlass having on one of its heads pivoted dogs adapted normally to engage sockets in the windlass-spindle, flexible devices connected with the slidable sockets and extending over pulleys to and winding around the end grooves in the windlass and a flexible device wound around the middle groove of the windlass.

2. Improved means of the class described, comprising vertical guides secured at the sides of the window-frame and embodying sockets provided with set-screws at the top and bottom of the window-frame, those at the top provided at one side with pulleys and rods having their ends secured in said sockets, a shade-roller, sockets adapted to receive the ends of the roller and provided at one side with a vertical opening through which the guides pass, a windlass mounted at the top of the window-frame and provided with three annular peripheral grooves, said windlass having on one of its heads pivoted dogs adapted normally to engage sockets in the windlass-spindle, flexible devices each connected at one end with one of the sockets and at the other end with one of the end grooves of the windlass, a flexible device connected at one end with the middle groove of the windlass, and guards whereby such flexible devices are prevented from displacement upon the windlass and pulleys.

3. Improved means of the class described, comprising vertical guides adapted to be detachably secured at the sides of the window-frame and embodying sockets provided with set-screws at the top and bottom of the window-frame, those at the top provided at one side with pulleys and rods having their ends secured in said sockets, sleeves slidable on said guides and provided at one side with sockets, a shade-roller having its ends secured in said sockets, a windlass mounted at the top of the window-frame and provided with three annular peripheral grooves, said windlass having on one of its heads pivoted dogs adapted normally to engage sockets in the windlass-spindle, flexible devices each connected at one end with one of the sockets and at the other end with one of the end grooves of the windlass, a flexible device connected at one end with the middle groove of said windlass, and guards whereby such flexible devices are prevented from displacement upon the windlass.

4. Improved means of the class described, comprising vertical guides secured at the sides of the window-frame and embodying sockets provided with set screws at the top and bottom of the window-frame, those at the top provided at one side with pulleys and rods having their ends secured in said sockets, sleeves slidable on said guides and provided at one side with sockets, a shade-roller carried by said sockets, a windlass mounted at the top of the window-frame and provided with three annular peripheral grooves, said windlass having on one of its heads pivoted dogs adapted normally to engage sockets in the windlass-spindle, flexible devices each connected at one end with one of the sockets and at the other end with one of the end grooves of the windlass, a flexible device connected at one end with the middle groove of the windlass, and guards whereby such flexible devices are prevented from displacement upon the windlass.

5. Improved means of the class described, comprising brackets mounted on each side of the window-frame at the top and bottom and provided with sockets, the upper brackets being also provided with pulleys; guide-rods secured in the opposing sockets; sleeves slidable on the rods and provided at one side with sockets; a shade-roller having its ends secured in the sliding sockets; a windlass mounted at the top of the window and provided with three annular peripheral grooves, said windlass having on one of its heads pivoted dogs adapted normally to engage sockets in the windlass-spindle; flexible devices connected with the sliding sockets and passing over pulleys and the grooves in the windlass, a flexible device adapted to wind around the middle groove of the windlass, and guards slightly spaced from the pulleys and windlass and the middle one provided with an elongated slot to prevent displacement of the flexible devices.

710,080. MACHINERY FOR CUTTING AND FOLDING PAPER OR OTHER FABRICS. RALPH C. SETHOUR, South Orange, N. J., assignor to C. B. Cottrell & Sons Company, New York, N. Y., and Stonington, Conn., a Corporation of New Jersey. Filed May 31, 1902. Serial No. 109,606. (No model.)

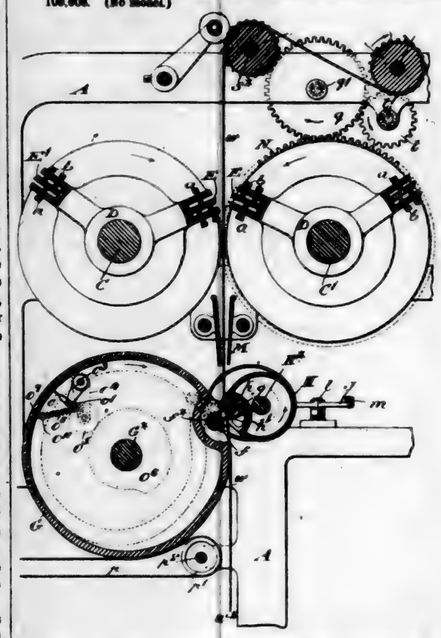

Claim.—1. The combination with means for continuously feeding a web, of two rotary cutter-carriers geared together and each having upon it a plurality of cutters arranged at unequal distances apart for cutting sheets of different length from the web during each revolution of said cutters, substantially as herein described.

2. The combination with means for continuously feeding a web, of two rotary cutter-carriers and shafts therefor geared together and each having two cutting-blades the spaces between the edges of which on a circle concentric with the axes of their shafts are unequal in opposite directions for cutting sheets of different length from the web during each revolution of said cutters, substantially as herein described.

3. The combination of two rotary cutter-carriers and shafts therefor geared together and each having two cutting-blades the spaces between the edges of which on a circle concentric with the axes of their shafts are two hundred and forty degrees in one direction and one hundred and twenty degrees in the opposite direction for cutting at each revolution two sheets one of which is double the length of the other, substantially as herein described.

4. The combination with two rotary cutter-carriers each having two cutter-blades whose edges are spaced at two hundred and forty degrees and one hundred and twenty degrees apart as described, of two rotary cylinders of which one is of a circumference three times that of the other, a folding-blade carried by the larger of said cylinders, folding-grippers carried by the smaller of said cylinders and coöperating with said folding-blade and means for producing the rotation of said cylinders and cutter-carriers with a surface velocity of the cylinders corresponding with that of the cutter edges, substantially as herein set forth.

5. The combination with two folding-cylinders one of which is provided with a folding-blade and the other of which is provided with folding-grippers coöperating with said blade, of impaling-pins carried by the first-mentioned cylinder and coöperating with said grippers to take folded sheets therefrom, substantially as herein described.

6. The combination of two folding-cylinders, a folding-blade carried by one of said cylinders, a rock-shaft provided with gripper members pivoted on the other of said cylinders and impaling-pins on the first-specified cylinder, one of said gripper members having in it holes for the reception of the ends of said impaling-pins, substantially as herein described.

7. The combination of two rotary folding-cylinders one of which is provided with a folding-blade and the other of which is provided with grippers consisting of one member directly pivoted to the cylinder and the other member pivoted to said directly-pivoted member, and a spring between the two members for holding them in a closed or nearly-closed condition at the time of entry of the folding-blade between them in the rotation of the two cylinders, substantially as herein described.

8. The combination of two rotary folding-cylinders one of which is provided with a folding-blade and the other of which is provided with grippers consisting of one member directly pivoted to the cylinder and the other member pivoted to said directly-pivoted member, a spring between the two members for closing them, and a stop between the two members against which the spring holds them nearly closed at the time of the entry of the folding-blade between them in the rotation of the two cylinders, substantially as herein described.

9. The combination of two rotary cutter-carriers and cutting-blades thereon spaced to cut a longer and a shorter sheet at each revolution, two rotary cylinders one of which is provided with a folding-blade and the other with folding-grippers coöperating with said blade to fold a longer sheet presented between said cylinders, pins carried by the first-specified cylinder and coöperating with said grippers first to impale together an unfolded shorter sheet presented between said cylinders and the so-folded longer sheet and afterward to take both sheets together from between the cylinders, substantially as herein described.

10. In a folding-machine, the combination with a rotary cylinder, a rock-shaft journaled on said cylinder and grippers carried by said rock-shaft, of a cam located at one end of said cylinder and engaging with said rock-shaft for turning the same to bring the grippers to a position radial or tangential to said cylinder, a cam located at the other end of said cylinder and engaging with said rock-shaft to hold the grippers in the tangential position, connections between said cams and means for moving them together to place either one into engagement and the other one out of engagement with the rock-shaft, substantially as herein described.

11. In a folding-machine, the combination of a horizontal rotary cylinder, a rock-shaft journaled on said cylinder and grippers carried by said rock-shaft, a non-rotative cam located at one end of said cylinder for engaging with said rock-shaft for turning the same to bring the grippers radial or tangential to said cylinder, a non-rotative cam located at the other end of said cylinder and engaging with said rock-shaft to hold the grippers in the tangential position, the said cams being movable toward and from the ends of the cylinder, connections between said cams whereby when either one is moved toward the cylinder into engagement with said rock-shaft the other is moved from the cylinder and out of engagement with the rock-shaft, and an upright shaft on which is a cam for moving the before-mentioned cams together into and out of engagement respectively, substantially as herein described.

12. In a folding-machine, the combination of a rotary cylinder, a rock-shaft journaled on said cylinder and gripper members carried by said rock-shaft, a second rock-shaft journaled into the first one and forming part of one member of said grippers, a non-rotative cam located at one end of said cylinder and movable toward and from the cylinder and into and out of engagement with the first-mentioned rock-shaft for holding the grippers in and releasing them from a position tangential to the cylinder, and a projection on said cam for operation on said second rock-shaft to open the grippers while in their tangential position, substantially as herein described.

710,081. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES P. STEINMETZ and WILLIAM L. R. EMMET, Schenectady, N. Y., assignors to the General Electric Company, a Corporation of New York. Filed Dec. 21, 1899. Serial No. 741,101. (No model.)

Claim.—1. The combination of a rotary converter having an odd number of phases, and means for supplying said converter with current derived from quarter-phase electromotive forces.

2. The combination of a rotary converter having an odd number of phases, and means for supplying said converter with current derived from quarter-phase magnetomotive forces.

3. The combination of a converter having a number of phases equal in number to a multiple of three, and means for operating said converter with current derived from quarter-phase electromotive forces.

4. The combination of four transformer-windings, means for generating electromotive forces of the same phase in two of the windings, means for generating in the other windings electromotive forces bearing a quarter-phase relation to the electromotive forces in the first two windings, and a six-phase alternating-current dynamo-electric machine supplied with current from said windings.

5. The combination of a plurality of sources of resultant three-phase electromotive forces, each source consisting of two windings having the middle point of one connected to a terminal of the other, a dynamo-electric machine, and connections between each source and points in a winding on said machine.

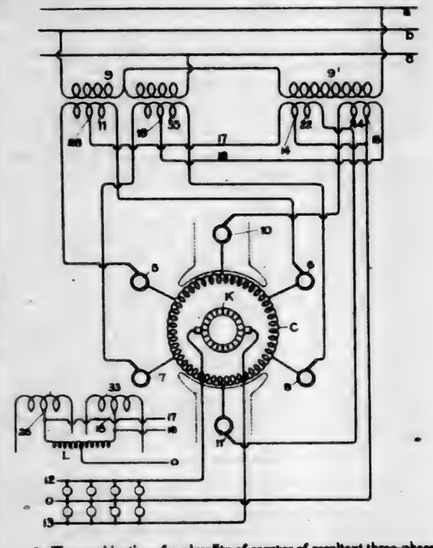

6. The combination of a plurality of sources of resultant three-phase electromotive forces, each source consisting of two windings having the middle point of one connected to a terminal of the other, a dynamo-electric machine, and connections between each source and points in a winding on said machine displaced by one-third of the polar pitch.

7. The combination of a dynamo-electric machine having a number of phases represented by a multiple of three, and a plurality of sources of resultant three-phase electromotive forces, each of said sources consisting of two windings the terminal of one of which is connected into an intermediate point in the length of the other.

8. The combination of a rotary converter having a number of phases represented by a multiple of three, and a plurality of sources of resultant three-phase electromotive forces, each of said sources consisting of two windings the terminal of one of which is joined to the middle point of the other.

9. The combination of a rotary converter having a number of phases represented by a multiple of three, a plurality of sources of resultant three-phase electromotive forces, each of said sources consisting of two windings, the terminal of one of which is joined to the middle point of the other, and a neutral conductor connected to the junctions of the windings of said sources.

10. A multiphase rotary converter, a multiphase alternating-current system, and a neutral conductor leading from a point of neutral potential in one phase only of said alternating-current system.

11. The combination of a dynamo-electric machine, provided with taps leading from equally-spaced points in a winding thereon, a plurality of coils carrying currents of different phases, connections between coils of the same phase and points in said winding separated by one-half the polar pitch, and connections between other coils and points in said winding displaced by less than half the polar pitch.

12. A multiphase dynamo-electric machine, a multiphase alternating-current system, and a neutral conductor leading from points of neutral potential in a plurality of coils in one phase only of said alternating-current system.

13. The combination of a six-phase rotary converter, means for generating a set of quarter-phase electromotive forces, means for impressing said electromotive forces upon points in the winding of said converter in such manner as to cause six-phase currents to flow, and a conductor leading from a point of neutral potential in the system of conductors generating the quarter-phase electromotive forces, and coöperating with direct-current mains leading from the commutator of said converter.

14. The combination of a multiphase rotary converter having a number of phases represented by a multiple of three, means for generating quarter-phase electromotive forces, and means for impressing said electro-

motive forces upon said converter in such a manner as to cause the currents acting therein to have a phase relation different from that of said electromotive forces.

15. The combination of a multiphase rotary converter having a number of phases represented by a multiple of three, means for generating quarter-phase electromotive forces, means for impressing said electromotive forces upon said converter in such a manner as to cause the currents acting therein to have a phase relation different from that of said electromotive forces, and a conductor leading from a point of neutral potential on the generating system for the quarter-phase electromotive forces and cooperating with the direct-current mains of said converter.

16. The combination of an armature provided with a commutator, and T-connected windings connected to the armature through collector-rings.

17. The combination of an armature provided with a commutator, two windings having a terminal of one connected to an intermediate point in the length of the other, and connections between the armature and the free terminals of said windings.

18. The combination of an armature provided with a commutator, two windings having a terminal of one connected to an intermediate point in the length of the other, connections between the armature and the free terminals of said windings, direct-current mains leading from the commutator, and a neutral conductor connected to an intermediate point in the length of one of said windings and cooperating with said mains.

19. The combination of an armature, a commutator, T-connected windings connected to the armature, direct-current mains extending from the commutator, and a neutral conductor connected to one of said windings.

20. The combination of an armature, a commutator, T-connected windings connected to the armature, direct-current mains extending from the commutator, and a neutral conductor connected to an intermediate point in the length of one of said windings.

710,082. SYSTEM OF ELECTRICAL DISTRIBUTION. CHARLES P. STEINMETZ and WILLIAM L. R. EMMET, Schenectady, N.Y., assignors to General Electric Company, a Corporation of New York. Original application filed Dec. 21, 1899, Serial No. 741,101. Divided and this application filed Feb. 13, 1902. Serial No. 93,532. (No model.)

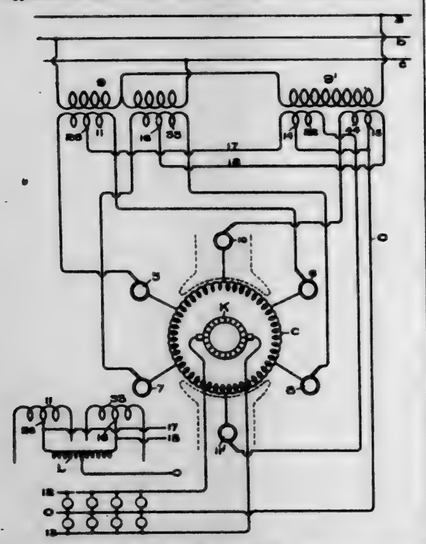

Claim.—1. The method which consists in deriving quarter-phase electromotive forces by the action of three-phase currents, combining said electromotive forces in proper proportions to produce resultant six-phase electromotive forces, and deriving direct current from said six-phase electromotive forces.

2. The method which consists in setting up quarter-phase electromotive forces, combining said electromotive forces in such relations and in such proportions as to produce six-phase electromotive forces and deriving direct current from said six-phase electromotive forces.

3. The method which consists in setting up quarter-phase electromotive forces, combining said electromotive forces in such relations and in such proportions as to produce a system of polyphase electromotive forces having a number of phases greater than two and deriving direct current from said system of electromotive forces.

710,088. ELECTRIC METER. GEORGES STEIN, Charlottenburg, Germany, assignor to the General Electric Company, a Corporation of New York. Filed Dec. 11, 1900. Serial No. 39,594. (No model.)

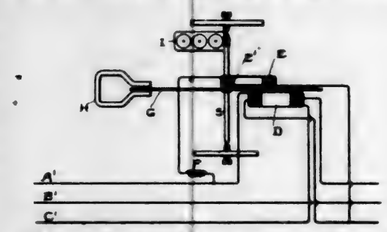

Claim.—1. In an induction-meter for three-phase circuits, a main-current winding consisting of a single coil comprising a plurality of sections suitably connected to the three-phase mains, a shunt-winding connected across points, the potential between which is in phase with the resultant of the currents in the sections of the main-current winding on non-inductive load, and means for causing the magnetic field due to the shunt-winding to be displaced by substantially ninety degrees from the electromotive force impressed upon the shunt-circuit.

2. In an induction-meter for three-phase circuits, a main-current winding consisting of a single coil comprising a plurality of sections each connected in circuit with one of the three-phase mains, a shunt-winding connected between two of the mains, and means for causing the field due to the shunt-winding to be displaced by substantially ninety degrees from the electromotive force impressed upon the shunt-circuit.

3. In an induction-meter for three-phase circuits, a main-current winding consisting of a single coil comprising two sections each connected in circuit with one of the three-phase mains, a shunt-winding connected between the mains in which the series sections are included, and means for causing the field due to the shunt-winding to be displaced by substantially ninety degrees from the electromotive force impressed on the shunt-circuit.

710,084. CLOCK-CHIME. GEORGE M. STEVENS, Cambridge, Mass., assignor to George M. Stevens Co., Kittery, Me., a Corporation of Maine. Filed July 23, 1901. Serial No. 69,223. (No model.)

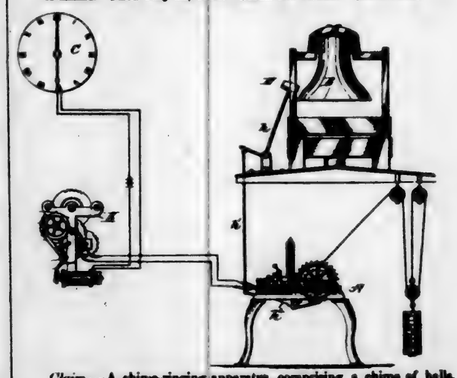

Claim.—A chime-ringing apparatus, comprising a chime of bells, each having a hammer adapted to strike its bell; mechanisms for operating said hammers; electrical circuits including an electrical generator and make-and-break disks adapted to cause said mechanisms to operate; a series of make-and-break disks having contact-points arranged to cause the said mechanisms to strike the bells in musical order; a motor-train for actuating the said make-and-break disks; a mechanism for starting said motor-train; a clock-movement for timing the operation of said starting mechanism, all adapted to operate together, substantially as and for the purpose set forth.

710,085. POTATO SLICER AND CUTTER. LAWRENCE L. STEVENS, Los Angeles, Cal. Filed Jan. 24, 1902. Serial No. 91,129. (No model.)

Claim.—1. In slicing-machines, the recessed stationary plate having grooves upon the under face thereof throughout the entire length of said plate, the cutter-handle plate carrying the cutter-blade and the reversible stop secured to said stationary plate.

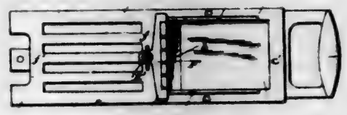

2. The recessed stationary plate provided with longitudinal grooves, the cutter-handle plate adapted to slide in said grooves, and carrying the cross-cutter blade, the reversible stop secured to the stationary plate, the cutter-handle plate having one or more series of ways and an adjustable well-bottom plate carrying cutter-knives adapted to slide in said ways.

3. The recessed bed-plate having longitudinal grooves upon the under face thereof, the reversible stop removably secured to said bed-plate, the cutter-handle plate carrying the cross-cutter blade, the cutter-handle plate provided with one or more series of longitudinal ways below the upper face thereof, a well-bottom plate carrying a series of adjustable knives and adapted to slide longitudinally in said series of ways in the cutter-handle plate.

4. In slicing and cutting machines, the recessed stationary bed-plate provided with longitudinal grooves upon the under face thereof and extending substantially the entire length of said plate, the removable and reversible stop secured to said bed-plate, the cutter-handle plate carrying the cross-cutter blade and having one or more series of longitudinal ways below the upper face thereof, a well-bottom plate provided with serrations or slots in the front edge thereof, said well-bottom plate carrying a series of adjustable cutter-knives adapted to operate in said slots.

5. The potato slicing and cutting machine comprising the recessed stationary bed-plate having the clamping-bracket at the rear end thereof and cast integral therewith, said plate provided with grooves upon the under side thereof and extending substantially the entire length of said plate, the reversible stop removably secured to said plate, the cutter-handle plate carrying the cutter-blade adapted to slide in said grooves, the said cutter-handle plate provided with one or more series of horizontal ways below the upper face thereof, a well-bottom plate having open-ended slots or serrations at the front edge thereof, the said well-bottom plate carrying one or more series of cutter-knives adjustably secured thereto and adapted to slide longitudinally in said horizontal ways.

710,086. CABINET FOR BOOKCASES, LETTER-FILES, &c. FELIX TRAMBLAY, Chicago, Ill. Filed May 11, 1901. Serial No. 59,729. (No model.)

Claim.—1. An expansible knockdown cabinet structure comprising a plurality of compartments each constructed of separable bottom, top and end members, provided in their margins with grooves, connecting-plates fitting in said grooves and detachably connecting said parts, the outer end and top walls of certain of the compartments constituting the single partition-wall between said compartment and other compartments formed by the addition to said first compartment of members which are substantial duplicates in size of the members constituting said first compartment.

2. An expansible and knockdown cabinet structure comprising two or more compartments, each consisting of separable bottom, top and end and back members, connecting-plates detachably connecting the margins of the bottom, top and end members, the said end members being provided with rearwardly-opening L-shaped slots and the back member being provided with lugs adapted to enter said slots when the back member is in place, the outer end and top walls of certain of the compartments constituting the single partition-wall between said compartment and other compartments formed by the addition to said first compartment of members which are substantial duplicates in size of the members constituting said first compartment.

3. An expansible and knockdown cabinet structure comprising two or more compartments, each constructed of separable bottom, top and end and back members, connecting-plates detachably connecting the margins of the bottom, top and end members, the said end members being provided with rearwardly-opening L-shaped slots and the back member being provided with lugs adapted to enter said slots when the back member is in place, the outer end and top walls of certain of the compartments constituting the single partition-wall between said compartment and other compartments formed by the addition to said first compartment of members which are substantial duplicates in size of the members constituting said first compartment.

4. A cabinet structure comprising a plurality of compartments, with two or more compartments located side by side, each compartment being constructed of vertical and horizontal members which are duplicates of the members composing the other compartment or compartments, and each two adjacent, laterally-separate compartments having a common end member constituting the partition between said compartments, and provided in its upper and lower margins with grooves, and flanged connecting-plates fitting in grooves in the margins of the horizontal members, the flanges of the plates of two adjacent horizontal members of adjoining compartments engaging with the same groove of the common partition member thereof.

5. The combination, with a horizontal shelf member provided in one margin with a groove, and two end members adapted for attachment to the grooved margin of the shelf member, said end members being provided in their margins adjacent to the shelf member with grooves, of a locking-plate fitting in the groove of said shelf member and provided with oppositely-directed flanges which enter the grooves of said end members, said plate extending laterally to, but not beyond, the grooves of the end members, and the flanges at the opposite sides of the plate extending only a part of the way across the same, whereby the like flanges of a second laterally-extending locking-plate may enter the grooves of said end members in the same plane with the flanges of the first-mentioned locking-plate.

6. In a cabinet structure, the combination with two shelf members disposed end to end and provided at their adjacent margins with grooves, and two end members intersecting said shelf members and having grooves in their adjacent margins, of locking-plates fitting in the grooves of said shelf members and provided on their adjacent margins each with oppositely-extending flanges which enter the grooves of said end members.

7. In a cabinet structure, the combination with two shelf members disposed end to end and provided in their adjacent margins with grooves, and two end members intersecting said shelf members and having grooves in their adjacent margins, of connecting-plates fitting in the grooves of said shelf members and provided on their adjacent margins each with oppositely-directed prongs which enter the grooves of said end members, the prongs of one of said plates being located out of line with the prongs of the adjacent plate.

8. In a cabinet structure, the combination with shelf members disposed end to end and provided in their adjacent margins with grooves, and two end members intersecting said shelf members and having grooves in their adjacent margins, of connecting-plates fitting in the grooves of said shelf members and provided on their adjacent margins each with oppositely-directed prongs which enter the grooves of said end members, the prongs of one of said plates being located out of line with the prongs of the adjacent plate, certain of the prongs of said plates being provided with auxiliary prongs which are bent oppositely to the direction of the prongs from which they are formed.

9. In a cabinet structure, the combination with a shelf member having a groove in one of its margins, and end members having grooves in their adjacent margins, said end members intersecting the shelf member, of a connecting-plate made of sheet metal and comprising a flat web which enters the groove in said shelf member and having its margins cut and folded in opposite directions to form prongs, the prong at one side of said web being located out of line with the prong at the other side thereof, said prongs entering the grooves in said end members, and the plates extending but half the distance across the margins of said end members.

10. A sheet-metal connecting-plate comprising a flat web provided at its margin with oppositely-directed prongs, the prongs at one side of the plate being located out of line with the prongs at the other side thereof, the prongs at the end of said plate being cut and folded to form auxiliary prongs which are bent oppositely to the direction of the prongs from which they are formed.

11. A cabinet structure consisting of members provided at their margins with grooves and which are detachably interlocked at their margins, the interlocking devices consisting of metal plates, each of which enters

the groove in the margin of one member and is provided at its free margin with oppositely-directed prongs which enter the grooves in the two members which intersect the first-mentioned member, the two prongs at the ends of the plates being provided with auxiliary prongs which are bent oppositely to the direction of the prongs from which they are formed.

12. A cabinet structure comprising a plurality of members which are provided in their margins with grooves and are detachably interlocked at their margins, the interlocking devices consisting of metal plates, each of which enters the groove in the margin of a horizontal member and is provided at its free margin with upwardly and downwardly extended prongs which are adapted to enter the grooves in the upper and lower margins of intersecting vertical members, the connecting-plate of each horizontal member extending but half the distance across the margins of the intersecting vertical members.

13. A cabinet structure comprising a plurality of compartments each consisting of a plurality of horizontal and vertical members, connecting-plates for detachably interlocking said horizontal and vertical members at their margins, said plates being separable from the vertical members by movement thereof in the direction of the planes of the vertical members, and said vertical members being provided on their inner faces adjacent to their rear margins with L-shaped slots which open at their rear ends through the rear edges of the vertical members, back members for the several compartments, and projecting lugs on the margins of said back members adapted for engagement with said L-shaped slots.

14. A cabinet structure comprising a plurality of compartments each consisting of a plurality of horizontal and vertical members, metal plates for detachably interlocking said members at their meeting margins, said vertical members being provided at their rear margins with locking-slots, back members provided with projecting lugs adapted to engage said locking-slots, said vertical members being also provided on their adjacent or inner faces with horizontal grooves which are closed at their front ends and open at their rear ends through the rear edges of said vertical members, and shelves supported in said grooves, said back members engaging the rear edges of the shelves, when locked in position, to hold the shelves in place in said grooves.

710,087. FEED-CONTROLLING MECHANISM FOR HYDROCARBON-MOTORS. WILLIAM W. TUCK, Richmond Hill, and AUGUST WASSMANN, Astoria, N. Y. Filed Oct. 15, 1901. Serial No. 78,675. (No model.)

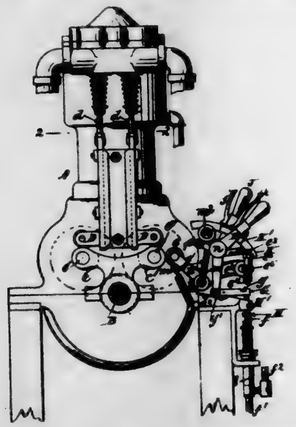

Claim.—1. In feed-controlling mechanism for hydrocarbon-motors, the combination of the fly-wheel W, of the engine, the tangential segment T, pivotally connected thereto, and actuated by centrifugal force, the rock-lever M, adapted for contact with said tangential segment T, at one end and having the controlling-slide G, pivotally connected at its outer end, said controlling-slide G, formed with the recess *g*, and resting upon the oil-pump piston-rod, the rock-lever E, carrying the contact-point e', at its outer extremity, adapted for contact with the cam *c'* at its inner extremity, said cam *c'*, actuated indirectly by the crank-shaft, spring K, for throwing the inner end of said rock-lever E, in contact with said cam, and a stop for limiting the upward thrust of the outer arm e^3, of said lever for the purpose set forth.

2. In feed-controlling mechanism for hydrocarbon-motors, the combination of the fly-wheel W, of the engine, the tangential segment T, pivotally connected thereto and actuated by centrifugal force, the rock-lever M, carrying the roller m', upon its upper end for contact with the tangential segment T, and pivotally connected at its other end to the controlling-slide G, a stop *a'* for limiting the motion of said lower arm *m*, of the rock-lever M, the coil-spring m^5, which tends constantly to force said lever against said stop *a'*, said controlling-slide G, resting upon the oil-pump piston-rod, and formed with the recess *g*, and with the spring *g'*, resting against a stop a^3 the rocking lever E, provided with the contact-roller *e*, at its inner end and carrying the contact-point e', at its lower end, a spring for throwing the rock-lever E, into contact with the cam *c'*, said cam *c'*, actuated indirectly by the crank-shaft for the purpose and substantially in the manner set forth.

3. In feed-controlling mechanism for hydrocarbon-motors, the combination of the fly-wheel W, of the engine, the tangential segment T, pivotally connected thereto and actuated by centrifugal force, the rock-lever M, carrying the contact-roller m^3, at one end and the controlling-slide G, at the other, said controlling-slide G, resting upon the oil-pump piston rod, and formed with the recess *g*, the rock-lever E, fulcrumed upon the stud *i*, upon the eccentric I, and carrying the contact-roller *e*, at its inner end and the contact-point e', at its outer end, means for thrusting said rock-lever E, in contact with the cam *c'*, said cam *c'*, actuated indirectly by the crank-shaft, the lever J, rigidly connected to the eccentric I, and provided with the hand-pawl *j'*, and the segmental rack K, the whole arranged and operating substantially in the manner and for the purpose set forth.

4. In feed mechanism for controlling hydrocarbon-motors, the combination of the fly-wheel W, of the engine, the tangential segment T, pivotally connected thereto and actuated by centrifugal force, the rock-lever M, carrying the roller m^3, for contact with said segment T, at one extremity and the controlling-slide G, at the other extremity, said controlling-slide resting upon the oil-pump piston-rod, and formed with the recess *g*, of the rock-lever E, provided with the contact-roller *e*, at its inner end for engagement with the cam *c'*, actuated indirectly by the crank-shaft, and the rock-lever P, carrying the contact-roller *p'*, at its inner end for engagement with the roller m^3, upon the rock-lever M, for the purpose set forth.

5. In feed-controlling mechanism for hydrocarbon-motors, the combination of the fly-wheel W, of the engine, the tangential segment T, pivotally connected thereto, and actuated by centrifugal force, the rock-lever M, carrying the roller m^3, for contact with said segment T, at one extremity and the controlling-slide G, at the other extremity, said controlling-slide G, resting upon the oil-pump piston-rod and formed with the recess *g*, the rock-lever E, provided with the contact-roller *e*, at its inner end for engagement with the cam *c'*, actuated indirectly by the crank-shaft, the rock-lever P, carrying the contact-roller *p'*, at its inner end for engagement with the roller m^3, upon the rock-lever M, a hand-pawl p^3, on the lever J, and the segmental rack K', the whole arranged and operating substantially in the manner and for the purpose set forth.

6. In feed-controlling mechanism for hydrocarbon-motors, the combination of the fly-wheel W, of the engine, the tangential segment T, pivotally connected thereto and actuated by centrifugal force, the rock-lever M, carrying the roller m^3, for contact with the said segment T, at one extremity, and the controlling-slide G, at the other extremity, said controlling-slide G, resting upon the oil-pump piston-rod, and formed with the recess *g*, the rock-lever E, provided with the contact-roller *e*, at its inner end for engagement with the cam *c'*, and carrying the contact-point e', on its other extremity, said cam *c'*, actuated indirectly by the crank-shaft, the rock-lever P, carrying the contact-roller *p'*, at its inner end and provided with the hand-pawl p^3, the segmental rack K', the eccentric I, having the stud *i*, upon which the rock-lever E, is fulcrumed, and connected rigidly to a lever J, said lever J, provided with the hand-pawl *j'*, and the segmental rack K, the whole arranged and operating substantially in the manner and for the purpose described.

710,088. ROLLER-BUSHING FOR SHEAVES. WILLARD F. WELLMAN, Belmont, Me. Filed Feb. 3, 1902. Serial No. 92,294. (No model.)

Claim.—1. A roller-bushing comprising two separable bushing members adapted to enter a socket in a sheave or pulley, each member having a cylindrical recess at its inner side the margin of which forms a raceway and an annular flange at its outer end forming an end wall of the recess, a series of bearing-rolls in contact with the cylindrical margin of the chamber, a series of separating-rolls in contact with the said cylindrical margin and with the bearing-rolls, the said rolls being confined against endwise displacement by said end walls, and a sleeve in contact with the inner surfaces of the bearing-rolls and preventing inward movement thereof, toward the axis of the bushing, said sleeve being confined against endwise displacement by said end walls and formed internally to receive the journal or pintle on which the sheave rotates.

2. A roller-bushing comprising two separable bushing members adapted to enter a socket in a sheave or pulley, each member having a cylindrical recess at its inner side the margin of which forms a raceway and an annular flange at its outer end forming an end wall of the recess, a series of bearing-rolls in contact with the cylindrical margin of the chamber, a series of separating-rolls in contact with the said cylindrical margin and with the bearing-rolls, the said rolls being confined against endwise displacement by said end walls, and a sleeve in contact with the inner surfaces of the bearing-rolls and preventing inward movement thereof, toward the axis of the bushing, said sleeve being confined against endwise displacement by said end walls and internally tapered to receive and engage a tapered journal or pintle.

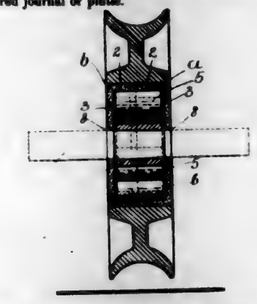

710,089. TYPE-WRITING MACHINE. GEORGE H. WILLIAMS, Boston, Mass., assignor to Stenotype Company, Boston, Mass., a Corporation of Maine. Filed July 11, 1900. Serial No. 23,242. (No model.)

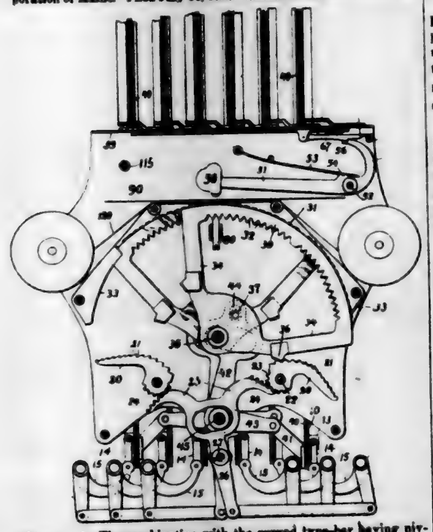

Claim.—1. The combination with the curved type-bar having pivotal support connected thereto by radial arms and the rigidly-projecting pin; the lever having the slot engaging said pin, and the arm; the longitudinal bar connected with said arm, and having the series of inclined cam-slots; and the row of depressible keys located over said bar and having the rolls adapted to engage said cam-slots, substantially as set forth.

2. The combination with the curved oscillatory type-bar, having the series of type characters upon its peripheral face; and the row of keys adapted when any one thereof is depressed to shift said type-bar; of the longitudinally-movable bar located beneath said keys and having the inclined cam-slots adapted to be engaged by said keys; and a variously-stepped stop adapted to be shifted into proper relation with said type-bar when any one of said keys is depressed, substantially as set forth.

3. The combination with the curved oscillatory type-bar having the type upon its periphery and the impact-lug; and the row of keys adapted when depressed singly to shift said type-bar; of the pivoted stop having the graded impact-notches and the teeth; the lever having the rack-arm meshing with said teeth, and means whereby the depression of any one of said keys is adapted to move said lever and present the proper notch to the impact of said impact-lug, substantially as set forth.

4. The combination with the curved oscillatory type-bar having the type upon its periphery, and the impact-lug; of the row of keys adapted when depressed singly to shift said type-bar; of the pivoted stop having the graded impact-notches and the teeth; the lever having the rack-arm meshing with said teeth; the longitudinally-movable bar located beneath said row of keys and having the inclined cam-slots adapted to be engaged by said keys, and intermediate connections between said bar and lever for enabling the reciprocation of said bar to actuate said lever, substantially as set forth.

5. The combination with the curved oscillatory type-bar having the type upon its periphery and normally presenting its median point to the printing device; of the row of keys adapted when depressed singly to shift said type-bar to one side or the other of said median point; the longitudinally-movable bar located beneath said keys and having the inclined cam-slots adapted to be engaged by said keys; the lever having the two rack-arms; intermediate connections between said lever and bar and enabling the reciprocation of the latter to operate said lever; and the two pivoted stops having the graded impact-notches and the teeth, substantially as set forth.

6. In a type-writing machine, the pivoted hammer having the flat surface centrally located with respect to the pivotal point; the spring pressing upon said surface; and means for raising and releasing said hammer, substantially as set forth.

7. In a type-writing machine, the combination of the pivoted hammer; the spring controlling the same; the longitudinally-reciprocative detent having the inclined shoulder, and the detent-shoulder engaging the tail rigidly projecting from said hammer; and the post; whereby the movement of said detent first acts to raise the hammer, and then the engagement of said inclined shoulder with said post serves to release said hammer from the detent, substantially as set forth.

8. In a type-writing machine, the combination of the row of depressible keys; the bar located beneath the same and adapted to be depressed when any one of said keys is moved; the bell-crank lever connected with said bar; the slotted plate pivotally supporting said lever; the pivoted arm; the rod joined to said lever and arm; the detent carried by said rod; and the hammer adapted to be actuated by said detent, substantially as set forth.

9. In a type-writing machine, the combination of the row of depressible keys; the bar located beneath the same and adapted to be depressed when any one of said keys is moved; the pivoted bell-crank levers supporting said bar upon their substantially horizontal arms; the slender rod pivoted to the upright arms of said levers, and elastic means for keeping said bar in a normally elevated position, substantially as set forth.

10. In a type-writing machine, the combination with the apertured case, of the key having the stem; the spiral spring surrounding said stem and supporting the key; and the sleeve inclosing said spring and movable in said aperture, substantially as set forth.

11. In a type-writing machine, the combination of the keys having the stem and the slotted shoulder; the antifriction devices in said slot; the two bars located side by side with their upper edges in said slot and having the inclined cam-slots entered by said antifriction devices; and the depressible bar engaged by said shoulder, substantially as set forth.

12. In a type-writing machine, the combination of the curved oscillatory type-bar having the type upon its periphery and the V-notches opposite thereto; the row of depressible keys; the bar adapted to be depressed by the movement of any one of said keys; the lock fitted to said notches in said type-bar; and means whereby the depression of said bar acts to throw said lock into engagement with one of said notches, substantially as set forth.

13. In a type-writing machine, the combination with the printing devices, of the reel for winding the paper tape; the drum connected with said reel; the tensioned cord wound on said drum; the drag-roll; the pressure-roll; and means for permitting the intermittent movement of said drag-roll, substantially as set forth.

14. In a type-writing machine, the combination with the type-bar and the row of keys controlling the same, of the depressible bar actuated by any one of said keys; the post depending from said bar; the rod in line with said post, and means for elastically raising it; the pawl pivoted to the lower end of said rod; the face-plate having the pins engaged by said pawl; the worm turning with said face-plate; the worm-gear meshing with said worm; the roll turning with said gear; and the pressure-roll elastically pressed against said roll, substantially as set forth.

15. In a type-writing machine, a case formed in two separable sections, the upper or cover portion of which is provided with keys upon its exterior reaching through to its interior; type-writing devices secured within said cover portion and adapted to be actuated by said keys; and paper-feeding devices located in the lower section of said case, the type-writing devices being constructed to receive the paper when the said sec-

tions are folded together or closed, and to release the paper when opened, substantially as set forth.

710,090. TOY. DAVID J. WILLIS, Washington, D. C., assignor to Herrell Repoy Manufacturing Company, Washington, D. C. Filed Aug. 7, 1902. Serial No. 118,835. (No model.)

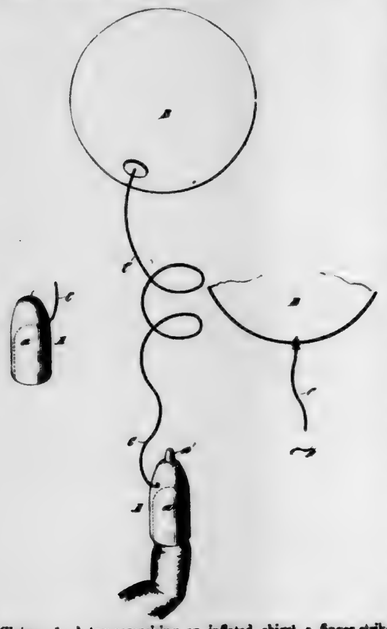

Claim.—1. A toy comprising an inflated object, a finger-striker, said striker preventing contact of the finger and object, and an elastic connection between the object and striker.

2. A toy comprising an inflated object, a finger-striker having a striking-surface, said striker preventing contact of the finger and object, and a permanent connection between the object and striker.

3. A toy comprising an inflated object, a striker having a finger-socket and a striking-surface, said striker preventing contact of the finger and object, and a permanent connection between the object and striker.

4. A toy comprising an inflated object, a striker consisting of a block having one end semispherical in form and its opposite end provided with a finger-socket, said striker preventing contact of the finger and object, and a permanent connection between the object and striker.

5. A toy comprising an inflated object, a striker having at one end a finger-socket and its other end provided with a semispherical surface, the latter end carrying a projecting striking-surface, and a permanent elastic cord connecting the striker and object.

710,091. APPARATUS FOR DISCHARGING INFLAMMABLE OR OTHER LIQUIDS FROM STORAGE-TANKS AT THE OUTBREAK OF FIRE. CHARLES ALLENOU, Serres, France. Filed Apr. 3, 1902. Serial No. 101,989. (No model.)

Claim.—1. The combination with a tank for the storage of inflammable liquid, and a discharge-pipe leading from the bottom thereof, of a diaphragm arranged across and normally closing said discharge-pipe, a puncture device supported above said diaphragm by a fusible joint, and means connected with said puncture device for automatically closing the discharge-pipe after the liquid has been discharged from the tank.

2. The combination with a tank for the storage of inflammable liquid, and a discharge-pipe leading from the bottom thereof, of a frangible disk or plate arranged across and normally closing the discharge-pipe, a rod supported by a fusible joint and adapted when released to break said disk or plate and establish communication between the tank and discharge-pipe, and means connected with said rod for closing the discharge-pipe after the liquid has been discharged from the tank.

3. The combination with a tank for the storage of inflammable liquid, and a discharge-pipe leading from the bottom thereof, of a frangible disk or plate arranged across the inner end of the discharge-pipe, a rod supported above said disk or plate by a fusible joint and adapted when released to break said disk or plate, a stop or plug mounted on said rod and adapted to close the discharge-pipe, and means controlling the movement of said rod, whereby when released it will first break the frangible disk or plate and after the liquid from the tank has been discharged will be again operated to bring the plug thereon into position to close the discharge-pipe.

4. The combination of a tank for the storage of inflammable liquid having an aperture in its top, a discharge-pipe leading from the bottom of the tank, frangible disks or plates normally closing said discharge-pipe and the aperture in the top of the tank, means for breaking said disks or plates normally held in active position by suitable fusible material, a water-supply duct, and a valve in said duct connected with and adapted to be opened by said breaking means, said parts being so arranged that when the breaking means is released, the water-valve will be opened and the disks or plates closing the discharge-pipe and the aperture in the top of the tank successively broken.

5. The combination of a tank for the storage of inflammable liquid having an aperture in its top, a discharge-pipe leading from the bottom of the tank, frangible disks or plates normally closing the discharge-pipe and said aperture in the top of the tank, a rod supported by the fusible joint above the disk closing the discharge-pipe, means connected with said rod for breaking the disk closing the aperture in the top of the tank, a water-supply duct having a valve connected with said rod, and means connected to said rod for closing the discharge-pipe, said parts being so arranged that when the rod is released the disk closing the discharge-pipe will be broken and the valve in the water-supply duct opened and thereafter the discharge-pipe will be closed and the disk closing the aperture in the tank-top broken to admit water to the interior of the tank.

6. The combination with a tank for the storage of inflammable liquid, a discharge-pipe leading therefrom, and a water-pipe arranged above the tank, of means for normally closing said pipes, automatic means for opening said pipes, a fusible joint normally holding said means in inactive position, and supplemental means for closing the discharge-pipe and admitting water to the interior of the tank.

7. The combination of a tank for the storage of inflammable liquid, having a plurality of apertures in its top, frangible disks closing one or more of said apertures, outwardly-swinging valves closing the other of said apertures, a discharge-pipe leading from the bottom of the tank, a water-pipe adapted to deliver water into the tank, and means, normally held in inactive position by a fusible joint, for actuating a valve in the water-pipe and successively opening the discharge-pipe and breaking the frangible disk or disks at the top of the tank.

8. The combination of a tank for the storage of inflammable liquid, a discharge-pipe leading from the bottom of the tank and consisting of three concentrically-arranged members the inner member being completely open at its lower end, and communicating at its upper end with the tank, the intermediate member having outlets in its bottom and side walls, and the outer member having air-inlets in its side walls above the plane of the outlets in the intermediate member, frangible disks or plates arranged across the upper end of the inner member and the lower end of the intermediate member of said pipe, a rod supported by a fusible joint above the disk or plate at the upper end of the inner member of the discharge-pipe, a plug or stopper mounted on said rod above its lower end, and adapted to fit snugly within the lower end of the inner member of the discharge-pipe when said rod is in its lowest position, means for forcing the rod downwardly when released, to cause its lower end to successively break or pierce the disks or plates across the discharge-pipe, and means for preventing the rod from assuming its lowest position until the liquid in the tank has been discharged.

710,092. LOOP FOR SUSPENDER-ENDS. HENRY H. BARNEY, Easthampton, Mass., assignor to Nashawannuck Mfg. Co., Easthampton, Mass., a Corporation. Filed Apr. 17, 1902. Serial No. 103,311. (No model.)

Claim.—The combination with the cast-off strap of suspenders, the free end of the strap having a socket member of a ball-and-socket fastener secured thereto, of a loop consisting of a flat plate with which the suspender-end is connected and formed with a slot through which the cast-off strap extends, the upper bar of said slot being outwardly bowed, whereby the cast-off strap for the socket member may freely pass through the slot, substantially as described.

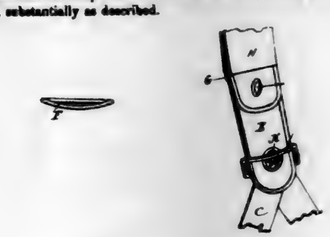

710,093. DISPLAY-TRAY. WILLIAM BRAND, Oshkosh, Wis. Filed Oct. 25, 1901. Serial No. 80,269. (No model.)

Claim.—1. A display-tray consisting of an outer frame, one of the side pieces thereof having its lower edge recessed, and a reticulated bottom piece secured to the sides of the frame below the top edges and above the bottom edges thereof, and being a sufficient distance below the top edges to form a substantial receptacle for the display of goods, and a sufficient distance above the lower edges to leave a space beneath the bottom piece.

2. A display-tray consisting of an outer frame, cleats secured to the inner sides of the side pieces thereof below the upper edges and above the lower edges of the side pieces, said cleats having their upper edges beveled downwardly, and a reticulated bottom piece secured to the cleats, the position of the cleats being such that said bottom piece is below the top edges and above the lower edges of the sides of the frame, and being a sufficient distance below the top edges to form a substantial receptacle for the display of goods, and a sufficient distance above the lower edges to leave a space beneath the bottom piece.

710,094. MAGAZINE-GUN. JOHN M. BROWNING, Ogden, Utah. Filed Jan. 11, 1902. Serial No. 89,265. (No model.)

Claim.—1. In a gun, the combination with a barrel having a barrel extension, of a reciprocating breech-closure formed with an upwardly-opening vertical slot, a locking-block located in the said slot and adapted at its forward end to extend upward through the slot to engage with the said barrel extension, one or more segmental ribs on which the locking-block swings instead of upon a true pivot, and means connected with the lower portion of the block for swinging it into its locking and retired positions.

2. In a gun, the combination with a barrel having a barrel extension, of a reciprocating breech-closure, a locking-block mounted therein and adapted to engage at its forward end with the upper portion of the barrel extension to lock the breech-closure in its closed position, two segmental ribs upon which the locking-block swings from its rear end instead of upon a true pivot, an operating-link connected directly with the rear end of the lower portion of the said locking-block, an operating-spring coacting with the said link, and means coacting with the lower portion of the said block for locking the same in its retired position.

3. In a gun, the combination with a barrel having a barrel extension, of a breech-closure, an extractor carried thereby, and an ejection-cam mounted in the barrel extension and acting to lift the spent shell out of engagement with the extractor.

4. In a gun, the combination with a barrel having a barrel extension, of a breech-closure, an extractor carried thereby, and an ejection-cam mounted in the said extension and formed with two inclines separated from each other sufficiently to permit the extractor to pass between them, and operating to lift the spent shell out of engagement with the extractor, and also formed with one or more ejecting-shoulders.

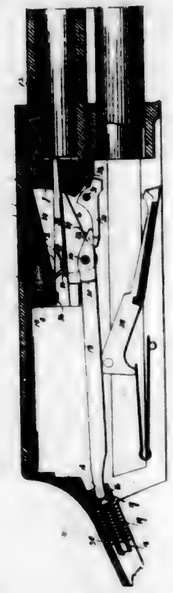

5. In a gun, the combination with the breech-closure thereof, of a locking-block mounted in the said breech-closure so as to swing from its rear end as upon a center located above the upper edge of the block.

710,095. SPOOL-STAND. EVELYN BUFFUM, Chicago, Ill. Filed Feb. 8, 1902. Serial No. 93,216. (No model.)

Claim.—1. In a spool-cushion, the combination of a circular holder or bracelet in two parts hinged at one side and with a catch mounted at the opposite side, two or more adjustable legs mounted upon the bracelet and one leg whose upper part forms a pin for said hinge for the purpose set forth substantially as described.

2. The combination in a spool-cushion of a circular holder or bracelet in two parts, hinged at one side, a catch mounted at the other, legs mounted upon the bracelet, means for securing said legs in position, annular openings in the bracelet with tension-springs mounted thereon, for the purpose set forth substantially as described.

3. In a spool-cushion, the combination of a circular holder or bracelet in two parts, a hinge at one side, a catch at the other, adjustable legs mounted upon the bracelet, one leg whose upper part forms a hinge-pin for said hinge, annular openings in the bracelet, springs mounted in said openings, a cushion and case mounted in the center of the circle formed by the bracelet, means for securing said cushion and case to the holder for the purpose set forth as substantially described.

4. In a spool-cushion, the combination of a circular spool-holder or bracelet in two parts, hinged at one side, a catch mounted at the opposite side, adjustable legs mounted upon the tube, means for holding said legs in place, annular openings in the holder, tension-springs mounted in said

openings, a cushion and case, in the center of the circle, composed of two parts, with a hinge on one side and a clasp on the other, means of securing said cushion and case in said circle to said bracelet, the upper part forming a cushion and the lower part a receptacle for the purpose set forth substantially as described.

710,096. ELECTRIC CONTROLLER. WILBUR A. CARRELL, West Homestead, Pa., assignor of one-half to John O. Horning, Pittsburg, Pa. Filed June 21, 1901. Serial No. 65,459. (No model.)

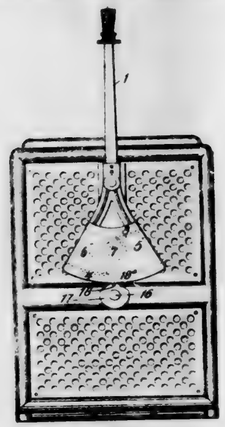

Claim.—1. A regulator or controller having in combination, a series of contact-plates connected to resistances, a head carrying contacts and movable along the line of the contact-plates, a circuit-changer consisting of electromagnets having contact-plates in circuit with the magnets and stationary contact-plates, and means for shifting the head and circuit-changer in succession, substantially as set forth.

2. A regulator or controller having in combination, a series of contact-plates connected to resistances, a head carrying contacts so arranged with reference to the contact-plates as to maintain a closed circuit at all times and a circuit-changer provided with a magnetic blow-out, substantially as set forth.

3. A regulator or controller having in combination a series of contact-plates connected to resistances, a shaft having toothed sectors formed on arcs of different radii, a contact-head carried by said shaft and a lever having toothed racks formed on arcs of different radii and adapted to engage said sectors alternately, whereby the angular movement of the shaft will always correspond to the angular movement of the lever, substantially as set forth.

4. A regulator or controller having in combination a series of contact-plates connected to resistances, a shaft having toothed sectors formed on arcs of different radii, a contact-head carried by said shaft, a lever having toothed racks formed on arcs of different radii and adapted to engage said sectors alternately, a circuit-changer operated by the lever and a lock for the circuit-changer adapted to lock the same in either position as against further movement by the lever, substantially as set forth.

710,097. VALVE FOR PIANO-PLAYERS. JOSEPH H. CHASE, Buffalo, N. Y. Filed Oct. 2, 1901. Serial No. 77,337. (No model.)

Claim.—1. In a mechanical piano or organ player, the combination of a valve-board having a longitudinal passage, recesses on opposite sides of said board, rings secured in said recesses and providing inwardly-facing valve-seats, guide-bars extending across the said rings, a valve-stem extending through openings in said guide-bars, and a pair of disks mounted upon said stem between said valve-seats.

2. In a mechanical piano or organ player, the combination of the exhaust apparatus and power-pneumatics, the tracker-board, perforated music and music-rolls, the fingers actuated by the said power-pneumatics, a valve-board provided with a longitudinally-extending passage, said valve-board being also provided on opposite sides with recesses, flat rings seated in said recesses, guide-bars flush with the opposite surfaces of said valve-board and extending across said rings, a valve-stem arranged to reciprocate in central openings in said guide-bars, and a pair of valve-disks mounted upon said stem between said valve-seats.

3. In a mechanical piano or organ player, the combination of a valve-board made in one piece and having a longitudinally-extending channel or passage, a transversely-extending passage in said valve-board communicating with said longitudinally-extending passage, recesses or offsets formed around the opposite ends of said transverse opening or passage, flat rings seated in said recesses and providing inwardly-facing valve-seats, guide-bars extending across said rings, a valve-stem extending through openings in said guide-bars, and a plurality of valve-disks mounted upon said stem and arranged to play between said valve-seats.

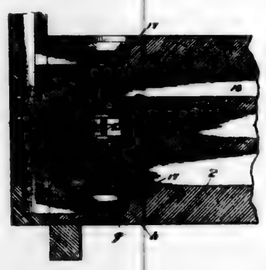

4. In a mechanical piano or organ player, the combination of a valve-board formed with a longitudinally-extending passage, a transverse opening through one end of the board communicating with said longitudinal passage, annular recesses or offsets formed around the opposite ends of said transverse opening, metal rings seated in said annular recesses or offsets, guide-bars extending across the rings and flush with the outer surface of said valve-board, a valve-stem arranged to reciprocate in openings in said guide-bars, a pair of valve-disks mounted upon said stem between said rings, and a pneumatically-actuated diaphragm arranged to engage an adjustable head on the end of said valve-stem.

5. In a mechanical piano or organ player, the combination of a longitudinally and internally channeled valve-board, a transverse opening or passage extending through the end of said board and communicating with said longitudinal channel, annular recesses or offsets formed around the opposite ends of said transverse opening, flat rings seated in said recesses and providing inwardly-facing seats, guide-bars extending across the said rings and having their inner sides recessed, a valve-stem extending through central openings in the recessed portions of said guide-bars, and a pair of valve-disks mounted upon said stem between said valve-seats.

6. In a mechanical piano or organ player, the combination of the tracker-board and perforated music, the fingers actuated by power-pneumatics, the exhaust apparatus, a horizontally-disposed valve-board provided with a longitudinally-extending passage, a transverse vertical passage extending through said board and communicating with said longitudinal passage, annular recesses or offsets formed around the upper and lower ends of said transverse opening, flat metal rings seated in said recesses or offsets, guide-bars extending across the transverse opening outside the said rings, said guide-bars having their central portions reduced or cut away on their inner surfaces, a vertically-disposed valve-stem arranged for reciprocation in said reduced central portion of said guide-bars, a pair of valve-disks mounted upon said stem between said rings, and a pneumatically-actuated diaphragm arranged to engage the lower end of said valve-stem.

7. In a mechanical piano or organ player, the combination of a valve-board having a transverse opening or passage, annular seats or recesses formed around the ends of said transverse opening, flat metal rings seated in said annular recesses and providing inwardly-facing valve-seats, guide-bars extending across the outer surfaces of said rings, screws extending through the said guide-bars and rings and into the valve-board, a valve-stem arranged for reciprocation in openings in said guide-bars, and a pair of separated valve-disks mounted upon said stem and arranged to play between said valve-seats.

8. In a mechanical piano or organ player, the combination of a valve-board provided with oppositely-arranged recesses or seats, rings seated in said recesses or seats and providing inwardly-facing valve-seats, and an internally-arranged valve arranged to play between said valve-seats.

9. In a mechanical piano or organ player, the combination of a valve-board provided with annular recesses or seats, valve-seats seated in said annular recesses, and a pair of rigidly-connected valve-disks arranged to engage said valve-seats.

10. In a mechanical piano or organ player, the combination of the recessed valve-board, the annular valve-seats secured in the recesses in the valve-board, a valve-stem provided with valves adapted to engage said valve-seats, and centrally recessed or grooved guide-bars provided with openings adapted to receive said stem.

710,098. EMERY GRINDER. NOAH CORSFIELD, Chicago, Ill., assignor to Abraham Hartz, trustee, Chicago, Ill. Filed Oct. 7, 1901. Serial No. 77,811. (No model.)

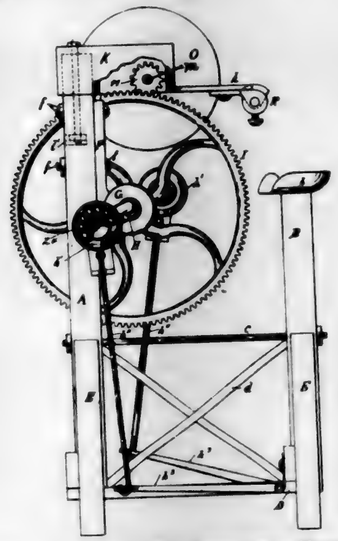

Claim.—1. In an emery grinder, the combination with a frame comprising a gear-post and seat-post with a seat thereon; of a main gear and gear-case mounted on the gear-post, driving mechanism therefor, and a pinion mounted on the gear-case, substantially as set forth.

2. In an emery grinder, a frame comprising a gear-post, seat-post, means for securing the same together and a pedal attached to the frame; combined with a main gear and crank-shaft on the gear-post, a pitman-rod connecting the pedal to the crank-shaft, a gear-case attached to the gear-post and a pinion mounted on the gear-case, substantially as set forth.

3. In an emery grinder, a frame comprising a gear-post, seat-post, means for securing the same together, and a pedal attached to the frame; combined with a main gear and crank-shaft on the gear-post, a pitman-rod connecting the pedal to the crank-shaft, a gear-case attached to the gear-post, a pinion mounted on the gear-case, an abrasive wheel on the pinion-shaft, and an operating-table carried by said case, substantially as set forth.

4. In an emery grinder, a gear-post, and a main gear, combined with a gear-case and operating-table; said gear-case adapted to fit over and be framed to the gear-post and having the operating-table extended horizontally therefrom, substantially as set forth.

5. In an emery grinder, a gear-post, and a main gear, combined with a gear-case and operating-table; said gear-case adapted to be supported by the gear-post and having an integrally-formed operating-table extended horizontally therefrom, substantially as set forth.

6. A frame for an emery grinder comprising a seat-post and gear-post, means for securing the same together and supporting them in their normal positions, and a gear-case and operating-table formed integrally with each other and supported by the gear-post, substantially as set forth.

7. A frame for emery grinders comprising a seat-post and a gear-post, the latter having upright holes in its upper end and side recesses intersecting said holes near their lower extremities, and a driving-gear journaled on said gear-post; combined with a gear-case fitting over the upper end of the gear-post, an emery-carrying shaft journaled therein, a pinion on the shaft meshing with the driving-gear, bolts passing downward through said case into the holes of the post, and nuts on the bolts within the recesses of the post.

8. In an emery grinder, the combination with the seat-post and gear-post, and braces connecting them and standing in an upright plane; of the driving-shaft supported in bearings on the gear-post and having two cranks, a driving-wheel between them, a driven mechanism connected with said wheel, two treadles hinged to the frame, and pitman-rods connecting the treadles with the cranks, one treadle and its pitman-rod on either side of said braces.

9. In an emery grinder, the combination with the seat-post and gear-post, braces connecting them and standing in an upright plane, legs secured at their upper ends to the sides of both said posts with their bodies leading obliquely downward and outward, and cross-braces connecting said feet and secured between their ends to the lower ends of the posts; of the driving-shaft supported in bearings on the gear-post and having two cranks, a driving-wheel between them, a driven mechanism connected with said wheel, two treadles hinged to the frame, and pitman-rods connecting the treadles with the cranks, one treadle and its pitman-rod on either side of said braces.

10. In a machine of the character described, the combination with the two posts connected by braces in an upright plane, a driving-shaft mounted in bearings on one post and having oppositely-disposed grooved cranks, ball-cases surrounding said cranks, and series of balls therein; of two treadles hinged to the opposite post, and two pitman-rods each connecting a treadle with a casing, each treadle and rod standing to one side of said braces.

11. In a machine of the character described, the combination with the driven shaft and mechanism, the driving-shaft having cranks, the driving-wheel between said cranks and connected with the driven shaft, and an upright post having bearings for said driving-shaft and a slot for said driving-wheel; of ball-bearings mounted within casings on said cranks, two treadles, and pitman-rods connecting the treadles with the casings respectively.

12. The combination of a crank-shaft, with a hinged treadle, a pitman-rod pivoted at one end to the treadle, and a ball-bearing between its other end and the crank, substantially as described.

710,099. METHOD OF EXHAUSTING INCANDESCENT ELECTRIC LAMPS OF RELATIVELY LOW VOLTAGE. SAMUEL E. DOANE, Marlboro, Mass., assignor to The Bryan-Marsh Company, New York, N. Y., a Corporation of New York. Filed Feb. 7, 1902. Serial No. 93,049. (No model.)

Claim.—The described method or process of exhausting an incandescent electric lamp of relatively low voltage, consisting in first, producing a partial vacuum within the bulb thereof; second, generating a gas therein; third, passing a current of electricity through the filament of the lamp sufficient to heat it to incandescence and finally, passing an additional current of electricity of higher voltage directly through the gases in the vacuous space so as to act upon said gases in such manner as to dissipate them.

710,100. SHIPPING-BOX. JOHN T. HIGGS, Boston, Mass. Filed May 23, 1902. Serial No. 108,612. (No model.)

Claim.—1. In a shipping-box, the combination with the body of the box having compartments, of a sectional cover, two portions of which are permanently attached to the body while the third part is removable, said cover being provided with longitudinal and transverse reinforcing bars or cleats, and means for locking the cover in position consisting of longitudinal pieces passing through passages in the longitudinal bars, and a transverse rod engaging said pieces and provided with means for locking it.

2. The combination in a shipping-box, with the box-body, of a sectional cover, one part of which is removable while the other parts are permanently attached to the body, said cover having reinforcing-bars thereon provided with passages, strips located in said passages for holding the removable section of the cover in position, and a locking-rod engaging said strips.

3. The combination with a box-body, of a cover made in sections, one of which is removable while the others are permanently attached to

the body, said cover having strengthening-bars thereon, and locking means for the removable portion of the cover consisting essentially of pieces situated in passages in the bars.

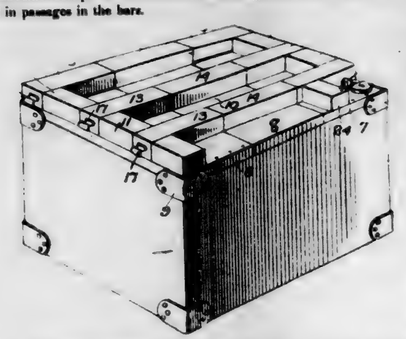

4. The combination with the body of the box, of a cover made in sections, one of which is removable while the others are permanently attached to said body, said cover having strengthening-bars provided with passages, locking means for securing the removable portion of the cover consisting of strips located in the passage in the bars, a transverse rod engaging said strips, and means for securing said rod against removal.

710,101. APPARATUS FOR THE MANUFACTURE OF CLOSED VESSELS FROM PULP. FRANK B. HOWARD, New York, N. Y., assignor to Laflin & Rand Powder Company, New York, N. Y., a Corporation of New York. Filed Jan. 16, 1902. Serial No. 90,027. (No model.)

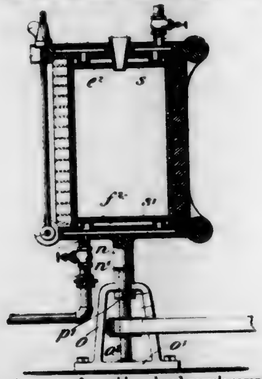

Claim.—1. Apparatus for making closed vessels comprising a mold having its body portion perforated and its heads provided with vacuum-chambers in communication with the interior of the mold, means for placing the vacuum-chambers in communication with a vacuum appliance and means for rotating the mold, substantially as set forth.

2. The combination with a mold mounted to rotate and comprising a perforated body and heads each provided with a vacuum-chamber in communication with the interior of the mold, of means for connecting and disconnecting the said heads with a vacuum appliance, for holding previously-formed vessel-heads on the inner faces of the heads of the mold during the molding of the body portion, substantially as set forth.

3. The combination with a mold mounted to rotate and comprising a perforated body, and heads, each provided with a vacuum-chamber in communication with the interior of the mold of means for connecting and disconnecting the heads with a vacuum appliance, the said mold-heads being provided with inwardly-projecting bases to determine the height of chime and to receive previously-formed vessel-heads thereon during the molding of the body portion.

710,102. OPERATING-ROLL FOR LEATHER-WORKING MACHINES. ALBERT F JOHNS, Salem, Mass. Filed Jan. 9, 1902. Serial No. 89,016. (No model.)

Claim.—1. In a leather-working machine, an operating-roll having helically-arranged yielding ribs, each comprising a set of springs projecting from the roll and a "felt covering" therefor, substantially as described

2. In a leather-working machine, an operating-roll having helically-arranged yielding ribs, each comprising a set of springs seated in sockets in the roll and projecting therefrom, and a "felt covering" therefor, substantially as described.

3. In a leather-working machine, an operating-roll having helically-arranged yielding ribs, each comprising a set of springs projecting from a roll, means for confining said springs and for holding them relatively disposed, and a "felt covering" therefor, substantially as described.

4. In a leather-working machine, an operating-roll having helically-arranged yielding ribs, each comprising a set of springs projecting from the roll, edge strips for said set of springs, and a "felt covering" inclosing said springs and edge strips, substantially as described.

5. In a leather-working machine, an operating-roll having helically-arranged ribs, each comprising a set of springs projecting therefrom and a "felt covering" therefor and means for detachably securing said "felt covering," substantially as described.

6. In a leather-working machine, an operating-roll having helically-arranged yielding ribs, each comprising a set of springs projecting from a roll, edge strips for said set of springs, a flexible strip superimposed on said springs and edge strips for confining said springs and holding them relatively disposed, and a "felt covering," substantially as described.

710,103. SYSTEM OF BOOKKEEPING. FREDERIC LAPOINTE, Montreal, Canada. Filed Sept. 23, 1901. Serial No. 76,235. (No model.)

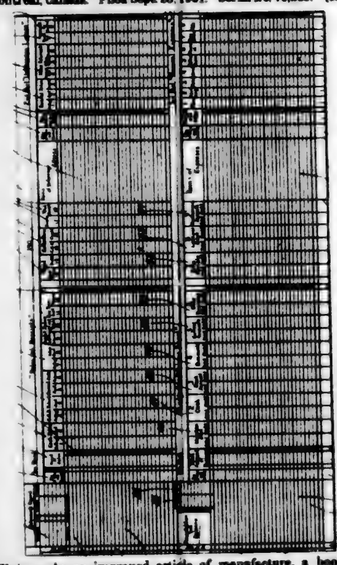

Claim.—As an improved article of manufacture, a bookkeeping-sheet comprising in a single element four correlated sections or parts, the middle portion of said sheet being ruled to provide an intermediate space dividing the upper and lower portions, a reserved space at the left-hand edge thereof headed "Recapitulation and balance" for recapitulation in condensed form of the entries contained in the fourth section, and having a numbered column corresponding to the number of vertical columns in the said fourth section, said four sections being arranged in each of the four quarters of the sheet with the first and fourth and the second and third sections in vertical alinement, and the first and fourth sections of greater width than the second and third, each section having columns with appropriate headings relating to each section, and the fourth section having a total-business column, and each section and the recapitulation and balance space having corresponding columns for the number of folio, and all arranged for use, substantially as shown and described.

710,104. BOOK-SUPPORT AND ARM-REST. OLIVER G. LAW, Dayton, Ohio. Filed Apr. 6, 1901. Serial No. 54,701. (No model.)

Claim.—A book rest or support comprising a base-board A, a desk having a hinged connection to the front end of said base board, adjustable side pieces on said desk, the side pieces being of substantially triangular shape and having two inclined slots therein, pins projecting from the stationary sides of the desk and entering said inclined slots, by means of which said side pieces are slidingly supported in position to elevate the desk to desired positions, ratchet mechanism interposed between the rear ends of the base-board and the desk whereby said desk may also be elevated to suitable positions, and additional means for supporting the desk in higher positions, substantially as shown and described.

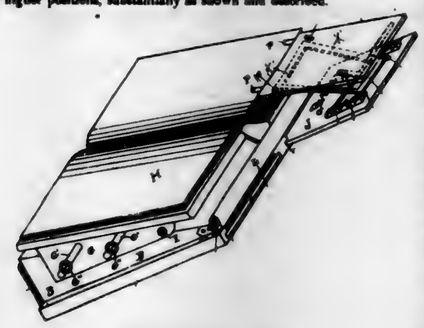

710,105. BRACELET. SIGMUND LIMBURG, Providence, R. I. Filed Apr. 17, 1902. Serial No. 103,289. (No model.)

Claim.—1. In a bracelet, the combination with yokes comprising a cross-bar and ears extending at right angles therefrom and provided with openings in their ears, of links passing through said openings, and an elastic core longitudinally traversing the bracelet.

2. In a bracelet, the combination with yokes comprising a cross-bar and ears extending at right angles therefrom and provided with openings in their ears and inwardly-directed guides, of links passing through said openings, and an elastic core longitudinally traversing the bracelet through said guides.

3. In a bracelet, the combination with a series of yokes comprising a cross-bar and ears extending at right angles therefrom and provided with openings in their ears, of a series of links lying in a plane parallel to the cross-bars of the yokes and passing through said openings, and an elastic core engaging said yokes and links.

4. In a bracelet, the combination with a series of yokes comprising a cross-bar and ears extending at right angles therefrom and provided with openings in their ears and inwardly-directed guides, of a series of links lying in a plane at right angles to the ears of the yokes, and passing through said openings, inwardly-directed guides upon the links, and an elastic core longitudinally traversing the bracelet through the guides.

5. In a bracelet, the combination with a series of yokes comprising a cross-bar and ears extending at right angles therefrom and provided with openings in their ears and inwardly-directed guides, of a series of links lying in a plane at right angles to the ears of the yokes, and passing through said openings, inwardly-directed guides upon the links of lesser diameter than the yoke-guides, and an elastic core longitudinally traversing the bracelet through the guides.

710,106. PROCESS OF PRODUCING NEGATIVE PLATES FOR BICHROMATED-GELATIN PROCESSES. AUGUST LUMIÈRE, Brooklyn, N. Y. Filed July 20, 1901. Serial No. 69,063. (No specimens.)

Claim.—1. The process hereinbefore described of producing a negative plate for bichromated-gelatin process, consisting in producing a photographic negative of the object to be reproduced, making a positive print therefrom and coloring features thereof with colors of different reflecting potency, photographing the colored print, and then developing and fixing the negative thus produced upon a transparent plate.

2. The process described of producing a negative plate for bichromated-gelatin process, consisting in producing a photographic negative of the object to be reproduced, making a positive print therefrom and coloring features thereof with colors of different reflecting potency, coloring the background of the picture with color of less reflecting potency than that used on the features of the picture, photographing the colored print, and then developing and fixing the negative thus produced upon a transparent plate.

3. The process described of producing a negative plate for bichromated-gelatin process consisting in producing a photographic negative of the object to be reproduced, making a positive print therefrom and coloring the most prominent features in the picture with a color of high reflecting potency and successively coloring the less prominent features with colors of correspondingly less reflecting potency, photographing the colored print, and developing and fixing the negative thus produced upon a transparent plate.

4. The process described of producing a negative plate for bichromated-gelatin process, consisting in producing a photographic negative of the object to be reproduced, making a positive print therefrom and coloring the prominent features in the picture with a color of high reflecting potency, retouching the receded parts with tints of less reflecting potency, photographing the print thus colored, and developing and fixing the negative thus produced upon a transparent plate.

5. The process described of producing a negative plate for bichromated-gelatin process, consisting in producing a photographic negative of the object, to be reproduced, making a positive print therefrom, and coloring the more prominent features thereof with a color of high reflecting potency and the less prominent features with colors of correspondingly less reflecting potency, retouching the receded parts in each group of features with darker tints of the colors applied to the features of each group, photographing the colored print, and developing and fixing the negative thus produced.

6. The process described of producing a negative-plate for bichromated-gelatin process consisting in producing a photographic negative of the object to be reproduced, making a positive print therefrom and coloring the more prominent features thereof with color of high reflecting potency and successively coloring the less prominent features with colors of correspondingly less reflecting potency, retouching the receded parts of the features of each successive group with darker tints of the color applied to the features in that group, coloring the background with a color of less reflecting potency than the color used upon more receded features of the object, photographing the colored print, and developing and fixing the negative thus produced.

7. The process described of producing a negative plate for bichromated-gelatin process, consisting in producing a photographic negative of the object to be reproduced, making a positive print therefrom and coloring the more prominent parts thereof with a color of high reflecting potency and the less prominent parts with colors of correspondingly less reflecting potency, retouching the receded parts of the features of each group with successively darker tints of the colors applied to the features in each group, coloring the background in a similar manner as the features of the picture with colors of correspondingly less reflecting potency than those used on the features of the more receded group, photographing the colored print, and developing and fixing the negative thus produced.

8. The process described of making a negative plate from a photograph, for purposes of reproduction, which consists in shading features of the photograph with colors of different reflecting potency as required, and producing a photographic negative plate of the picture thus prepared.

9. The process of producing a negative plate for bichromated-gelatin process from a pictorial representation, which consists in shading the features of the same with colors of different reflecting potency, as described, and producing a full-tone picture, and then producing a photographic negative plate from the picture thus prepared.

710,107. LAPPING-MACHINE. WILLARD I. LEWIS, Walpole, Mass. Filed Apr. 29, 1901. Serial No. 57,914. (No model.)

Claim.—1. In a lapping-machine, in combination, a fleece-supplying machine, a triangular doubler receiving the fleece from said machine and over the apex and sides of which the fleece passes and is doubled longitudinally, supporting-surfaces for the side portions of the fleece adjacent the sides of said doubler, and a lap-former on which the doubled fleece is received, substantially as described.

2. In a lapping-machine, in combination, a fleece-supplying machine, a triangular doubler over which the fleece from said machine passes and is doubled lengthwise of itself, endless aprons at opposite sides of the doubler supporting the side portions of the fleece, and a lap-former on which the doubled fleece is received, substantially as described.

3. In a lapping-machine, in combination, the fleece-supplying machine, the plurality of lap-formers arranged side by side, means for de-

livering the fleece from said machine to said lap-formers adjustable to deliver to either of said lap-formers as desired, substantially as described.

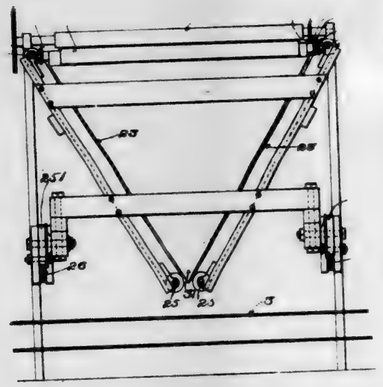

4. In a lapping-machine, in combination, the fleece-supplying machine, the plurality of lap-formers arranged side by side, and a doubler by which the fleece is doubled lengthwise upon itself, said doubler being adjustable to deliver to either of said lap-formers as desired, substantially as described.

5. In a lapping-machine, in combination, the plurality of lap-formers arranged side by side, the movable doubler-frame, and the doubler connected with said doubler-frame and adapted to be placed in operative position with relation to either of said lap-formers as desired, substantially as described.

6. In a lapping-machine, in combination, the plurality of lap-formers arranged side by side, the movable doubler-frame, the doubler, adapted to be placed in operative position with relation to either of said lap-formers as desired, the fleece-supplying machine and means for conveying the fleece therefrom to the doubler, and the transfer-apron to transfer the fleece from the said means to the doubler when the latter is in operative relations with the more remote lap-former, substantially as described.

7. In combination, means for supplying a fleece, the triangular doubler over which the fleece is doubled lengthwise upon itself, the clearer-roll at the receiving end of the face of the doubler, and the surfaces to support the sides of the fleece, at the sides of the doubler, substantially as described.

8. In combination, means for supplying a fleece, the triangular doubler over which the fleece is doubled lengthwise upon itself, the clearer-roll at the receiving end of the face of the doubler, and the endless aprons at the sides of the doubler to support the sides of the fleece, substantially as described.

9. In combination, the fleece-conveying apron 4, the clearer-roll adjacent the delivery portion of the said apron serving to detach the fleece from said delivery portion, and the triangular doubler having its main face inclined with reference to the vertical and to which the fleece descends from the clearer-roll, substantially as described.

10. The combination, in devices for folding or doubling longitudinally a fleece of fibrous material, of a delivery-apron, an inclined triangular guide presenting a smooth surface throughout its superficial area and arranged to receive the fleece from the delivery-apron, and inclined aprons mounted upon rollers which are parallel to each other, traveling under the guide and toward each other whereby the fleece is folded or doubled longitudinally, substantially as described.

11. The combination, in devices for folding or doubling longitudinally a fleece of fibrous material, of a delivery-apron, two aprons arranged to travel at right angles to the travel of the delivery-apron, and arranged on an incline and spaced apart for the passage of the folded fleece, with an inclined triangular guide presenting a smooth surface throughout its superficial area, mounted in the space above the two aprons and arranged to receive the fleece from the delivery-apron, substantially as described.

12. The combination, in devices for folding or doubling longitudinally a fleece of fibrous material, of a frame, an inclined guide-surface thereon presenting a smooth surface throughout its superficial area, a set of rollers on each side of said guide, and a continuous apron on each set of said rollers whereby a fleece of fibrous material may be received from the guide-surface and folded or doubled longitudinally, substantially as described.

710,108. HYDROCARBON-HEATER. ABBOT A. LOW, Brooklyn, N. Y. Filed June 17, 1901. Serial No. 64,739. (No model.)

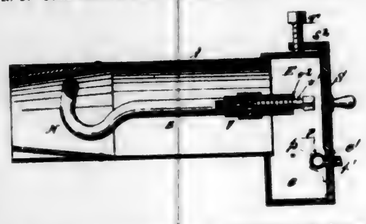

Claim.—1. The combination of the cylindrical shell, the vaporizing-tube, needle-valve, and hydrocarbon-supply pipe, the extension-box fitting on the end of the cylindrical shell, the starting-cup formed in the lower part of the extension-box, the compressed-air nozzle situated inside the extension-box and at the back of the starting-cup, means for supplying compressed air to said nozzle, and an adjustable gate-slide having a lug extending over the top of the box and a screw passed through said lug and engaging the top of the box for regulating the amount of air under atmospheric pressure admitted to the extension-box in proximity to the compressed-air nozzle, substantially as and for the purpose herein set forth.

2. The combination of the cylindrical shell, the vaporizing-pipe, needle-valve, and pipe for supplying hydrocarbon thereto, the extension-box fitting on the rear end of the cylindrical shell, the starting-cup formed in the lower part of the extension-box, the compressed-air nozzle situated below the rear edge of the starting-cup, a gate-slide situated at the rear side of the extension-box and having a horizontal lug extending over the top of the box, and means engaging said lug and the top of the box for adjusting said gate-slide with relation to the rear edge of the starting-cup for the purpose of regulating the admission of air under atmospheric pressure to the extension-box, substantially as described.

3. The combination of the cylindrical shell A, the vaporizing-tube B, the needle-valve V, the hydrocarbon supply-pipe *b*, the extension-box E, fitting the end of the cylindrical shell A, the starting-cup *e*, the compressed-air nozzle P, formed with the inclined passages *p*, means for supplying compressed air to the said nozzle P, the bodily-removable gate-slide S, and means for adjusting it with relation to the rear edge *e'*, of the starting-cup *e*, substantially in the manner and for the purpose set forth.

4. The combination with the cylindrical shell A, vaporizing-tube B extending lengthwise within said shell, needle-valve V in the end of said tube, supply-pipe *b*, the extension-box E, formed with the starting-cup, the compressed-air nozzle P disposed within said box and extending transversely along the edge thereof, and the supply-pipe connected therewith and formed with the funnel-shaped coupling p^3, for the reception of the nose of a hand-bellows, substantially in the manner and for the purpose described.

710,109. CUTTING DEVICE. ABBOT A. LOW, Horseshoe, N. Y. Filed Feb. 21, 1902. Serial No. 95,026. (No model.)
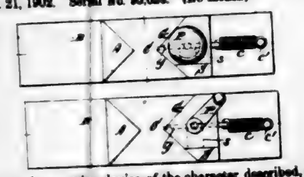
Claim.—1. In a cutting device of the character described, the combination with a stationary cutting-block, of a horizontally-reciprocatory cutting-blade having inclined upper face, guides for said blade, a spring acting on the blade to hold it normally away from said block, and a vertically-movable plunger movable in guides with its lower end resting on said inclined face of the blade.

2. In a cutting device of the character described, the combination with a stationary cutting-block, of a horizontally-reciprocatory cutting-blade, a vertically-movable plunger with its lower end resting upon the upper face of the said blade which is inclined, and means for forcing said plunger downward to cause the blade to move toward the said block, and means for retracting said blade when the plunger is moved upward.

3. The combination with a stationary cutting-block, of a horizontally-reciprocatory cutting-blade having inclined upper face at one end, a guide-block for said cutting-blade, a raceway in said block, a plunger disposed vertically with its lower end movable through said guide-block guides for said plunger, means for moving said plunger downward to force the blade endwise, and means for retracting said blade when the plunger is moved upward, all as set forth.

710,110. CARBONATING LIQUIDS. PETER E. MALMSTROM, New York, N. Y. Filed Jan. 17, 1901. Renewed Feb. 24, 1902. Serial No. 95,229. (No model.)

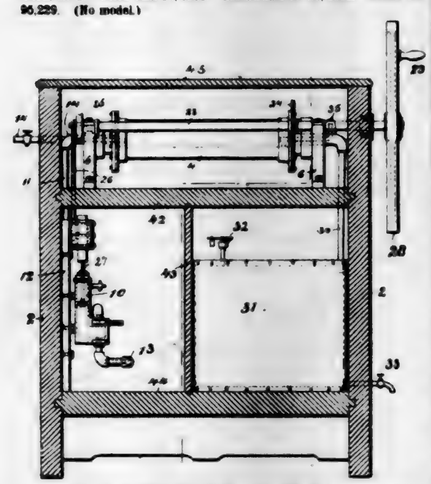

Claim.—1. In an apparatus of the class described, the combination with a revolving mixing-chamber, of hollow bearings, closed at their outer ends, supporting said mixing-chamber and communicating with the interior thereof, means for simultaneously injecting water and gas through one of said hollow bearings into said chamber, and means leading from said other hollow bearing for carrying off the commingled contents of said mixing-chamber, substantially as described.

2. In an apparatus of the class described, the combination of a hollow stationary shaft having closed ends, a revolable mixing-chamber mounted on said shaft, apertures in said shaft communicating with said chamber, means for injecting gas and water into said chamber through said hollow shaft, and means for drawing off the commingled contents of said chamber, substantially as described.

3. In an apparatus of the class described, the combination of a stationary shaft having counterbored ends, a revolable mixing-chamber mounted on said shaft, apertures in said shaft communicating with said chamber, means for injecting gas and water into said chamber through one of said counterbored ends and means for drawing off the commingled contents of said chamber through the other counterbored end, substantially as described.

4. In an apparatus of the class described, the combination with a rotatable cylinder, a stationary shaft provided with tubular bearing ends supporting said cylinder, means for simultaneously injecting liquid and gas through one of said tubular ends into said cylinder, a storage-receptacle, and communicating means between said storage-receptacle and the other of said tubular bearings, substantially as described.

5. In an apparatus of the class described, the combination with a revolving mixing-chamber, of hollow bearings, closed at their outer ends supporting said mixing-chamber and communicating with the interior thereof, means for simultaneously injecting water and gas through one of said hollow bearings into said chamber, means leading from said other hollow bearing for carrying off the commingled contents of said mixing-chamber, and a series of narrow continuous strips projecting radially within said mixing-chamber and disposed longitudinally substantially the length thereof, substantially as described.

6. In an apparatus of the character described, the combination with a revolving cylinder, of a stationary shaft having tubular ends supporting said cylinder and communicating with the interior thereof, a pump, connection between said pump and one of said tubular ends, means for drawing off the contents of said cylinder through the other said tubular end, a shaft mounted in proximity to said revolving cylinder, and means on said shaft for simultaneously operating said revolving cylinder and pump, substantially as described.

7. In apparatus of the character described, the combination with a revolving mixing chamber, a gas and water inlet for said chamber, an exit-pipe for said chamber, a force-pump connected with said water-inlet, a gear-wheel on said revolving chamber, a shaft mounted in proximity to said revolving chamber carrying a pinion meshing with said gear-wheel, means on said shaft for operating said force-pump, and means for revolving said shaft, substantially as described.

8. In an apparatus of the character described the combination with a revolving mixing-chamber mounted on hollow bearings opening into said chamber, a gas and water inlet opening into one of said hollow bearings, a storage or carbonating tank, connections between the other of said hollow bearings and said storage-tank, a force-pump controlling the supply of water to said water-inlet, a shaft mounted in proximity to said revolving chamber, connections between said shaft and said revolving chamber, connections between said shaft and said force-pump, and means for simultaneously operating said shaft, revolving chamber and force-pump, substantially as described.

9. In apparatus of the class described, the combination with a hollow cylinder having longitudinal ribs on the inside, a stationary shaft or axle on which said cylinder revolves, stuffing-boxes at the ends of the cylinder, one end of said shaft being counterbored, and opening into the cylinder, gas and liquid mains connected therewith, the other end of the shaft being also counterbored and opening inside the cylinder, this opening being extended down near the lower side of the cylinder, and a pipe leading away from said last-named counterbore.

10. In apparatus of the class described, the combination with a revolving mixing-chamber having a hollow stationary journal, a water gage or indicator communicating with the interior of said chamber through said hollow journal, and means for equalizing the pressure on top of the water in the chamber and in the gage.

11. In apparatus of the class described, the combination with a revolving mixing-chamber having a stationary hollow journal, a water-gage outside said chamber, and communicating with the interior thereof through said hollow journal, and a small pipe or tube also leading through said hollow journal, and ending above the water in both the mixing-chamber and the water-gage, whereby the gas-pressure in both are equalized.

12. In apparatus of the class described, the combination with a revolving cylinder having a gear-wheel secured thereto, a shaft parallel with said cylinder and carrying a pinion or gear-wheel meshing with said other gear-wheel, an eccentric also carried by said shaft, a force-pump connected with said cylinder, and having a connecting-rod secured to said eccentric, a balance-wheel and handle or crank on said shaft whereby upon applying power to the wheel or crank the cylinder is revolved and the force-pump operated to inject liquid into the cylinder.

13. The combination with a revolving cylinder having hollow stationary journals, a force-pump connected with one of the hollow journals to force water thereinto, a gas-pipe also connecting with said hollow journal, a storage or carbonating cylinder having a connection with the other hollow journal, and means to operate the cylinder and the pump.

14. In a carbonating apparatus, a box-like structure having an upper compartment closed by a lid or cover to the box, and two lower compartments closed by doors in the side of the box, a revolable commingling-chamber in the upper compartment, a force-pump in one of the lower compartments, a pipe leading from the main outside the box to the force-pump and to the said chamber, a gas-pipe also leading from outside the said chamber, a storage or carbonating cylinder or tank located in the other lower compartment into which the mingling-chamber discharges through a tube or pipe, the tank being provided with a safety-valve and dispensing-pipe, a water-gage for said chamber, and means projecting outside said box for operating said chamber and pump, the whole box and apparatus being adapted to be kept cool by ice placed in the upper compartment.

15. In an aerating apparatus, the combination of a mechanically-operated cylinder, longitudinal ribs projecting radially within said cylinder, fixed hollow cylindrical supports for the said cylinder, pipes connected to each end of the said cylinder through the said supports, packing-boxes fastened to the said cylinder, and conical packing-rings located in the said boxes.

710,111. PROPELLER. CARRY A. MANNER, Pearl, Ill. Filed June 28, 1901. Serial No. 66,417. (No model.)

Claim.—1. The combination with a ship, of a propeller composed of a series of slats attached to the ship by an unyielding connection, means for revolving said slats continuously, and means for temporarily retaining said slats at an angle whereby said propeller will both buoy and propel the boat, substantially as specified.

2. The combination of a rotating propeller composed of the frame A and the slats B pivoted to said frame A, a rotating skeleton frame C, C', C for supporting said frame A, a semicircular wheel E, a frame D, a drive-shaft K, cranks L and N, and the rod M connecting said cranks, substantially as specified.

3. In a propeller for boats, ships, &c., a frame, a series of slats carried thereby, means for temporarily retaining said slats at an angle and unyielding connections between the propeller and the boat for revolving

said frame and slats continuously to both raise and propel the boat or ship forwardly, substantially as specified.

4. In a propeller for boats, ships, &c., a frame, a series of slats carried thereby, means for moving said frame and slats to any desired angle, and means for revolving said propeller to buoy and propel the boat, substantially as specified.

5. A propeller, consisting of the frame A and the slats B pivotally carried upon the bearings U, and shoulders A' for holding said slats in alinement in combination with suitable means for revolving the frame and slats so that the boat will be both buoyed and propelled, substantially as specified.

6. In a propeller of vehicles for water navigation, the combination of pivoted slats which close together in a frame and compose thereby an extended surface for action against the water, said slats under reverse action open apart, allowing the water to flow between them, and suitable devices for revolving the frame and slats so that they will both buoy and propel the vehicle.

7. In a propeller of vehicles for water navigation, closing and opening slatted plates attached to a revolving and interrevolving skeleton C, C', C by means of which, said plates are given a reciprocally chopping or plunging and revolving motion in combination with means for temporarily retaining said slatted plates at an angle, substantially as specified.

8. In a propeller for boats, ships, &c., a frame, a slat carried thereby, means and unyielding connections for moving said frame and slat to any desired angle, and means for revolving said propeller to both buoy and propel the boat, substantially as specified.

9. A propeller, consisting of an inclined plane attached to the ship by an unyielding connection and constructed to be forced downwardly to simultaneously lift the ship upwardly and propel it forwardly in any desired direction, in combination with means arranged to cause said plane to rise edgewise for the purpose of minimizing the resistance to the medium in which the ship is floating or riding, substantially as specified.

710,112. SUPPORTING DEVICE FOR PUNCHING-BAGS. GEORGE S. MAXWELL, Madison, N. J., assignor of one-half to Henry Durell Crippen, New York, N. Y. Filed May 14, 1901. Serial No. 60,160. (No model.)

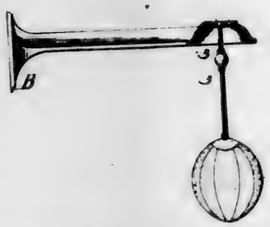

Claim.—1. In combination, in a device for supporting a punching-bag, a rod to which said bag is attached, said rod being of substantially uniform cross-section, a joint member carrying in its sides pivot-pins engaging directly with said rod and a bracket carrying pivot-pins for engaging the ends of said joint member substantially as and for the purpose specified.

2. In combination, in a device for supporting a punching-bag, a rod to which said bag is attached, said rod being of substantially uniform cross-section, an elongated rectangular joint member carrying in its sides pivot-pins engaging directly with said rod, and a bracket carrying pivot-pins for engaging the ends of said rectangular joint member, substantially as and for the purpose described.

710,113. PUNCHING-BAG SUPPORT. GEORGE S. MAXWELL, Jersey City, N. J., assignor of one-half to Henry D. Crippen, New York, N. Y. Filed June 12, 1902. Serial No. 111,340. (No model.)

Claim.—1. In a device of the class described, a bracket having a dome in the end thereof, a spring-disk closing the opening of said dome, a bag-supporting rod passing through an aperture in said disk, and a plate carried by said rod adjacent a face of the said disk whereby the swing of said rod will be regulated by the contact between said plate and disk.

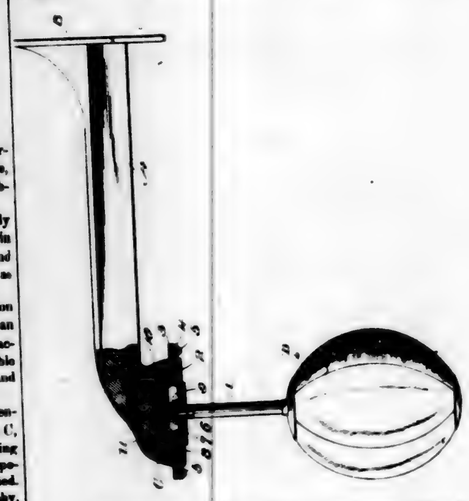

2. In a device of the class described, a bracket having a dome in the end thereof, a spring-disk closing the opening of said dome, and a bag-supporting rod passing through an aperture in the center of said disk carrying clamping-plates one adjacent each face of said disk.

3. In combination, a bracket having a dome C in the end thereof, a disk 2 closing the opening of said dome and secured thereto, and a bag-supporting rod 1 flexibly suspended by said disk by means of clamping-plates 7 and 8 attached to said rod on each side of said disk.

4. In combination, a bracket, a dome in the end thereof, a flexible disk 2 closing the opening of said dome and secured thereto, a bag-supporting rod 1, passing through an aperture in said disk, a plate 8 secured to said rod adjacent the inner face of the said disk, and a buffer located within said dome in position to be engaged by said plate during the swing of said rod.

5. In combination, a bracket A, a dome C on the end thereof, a flexible disk 2 closing the opening of said dome and secured thereto, a bag-supporting rod 1 passing through an aperture in said disk, clamping-plates 7 and 8 secured to said rod one on each side of said disk, and a yielding buffer secured to the top of said dome in position to be engaged by the upper clamping-plate during the latter portion of the swing of the rod substantially as and for the purpose set forth.

6. In a device of the class described, a bracket having a dome in the end thereof, a spring member extending across said dome, a bag-supporting rod passing through an aperture in said spring member, and a plate carried by said rod adjacent a face of said spring member whereby the swing of said rod will be regulated by the contact between said plate and said spring member.

710,114. NIPPLE. EDWARD R. MEDDEN, New Haven, Conn., assignor to the Seamless Rubber Co., New Haven, Conn., a Corporation. Filed Apr. 17, 1902. Serial No. 103,207. (No model.)

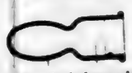

Claim.—A flexible rubber nipple for nursing-bottles having a smooth, auxiliary coating of rubber applied directly to its exterior surface, which is thereby given a smooth finish, substantially as described.

710,115. CRIB. HERMAN NEUMAN, Painesdale, Mich. Filed Mar. 24, 1902. Serial No. 99,669. (No model.)

Claim.—1. A crib having outstanding upwardly-presented ledges on its outer walls, substantially as shown and described.

2. A crib comprising superposed frames having upwardly-presented horizontal ledges on the outside edges thereof, substantially as shown and described.

3. A crib comprising a series of superposed horizontal beams, the upper surface of each beam being of greater width than the lower surface of the adjoining upper beam, forming earth-engaging ledges on the outside of the crib.

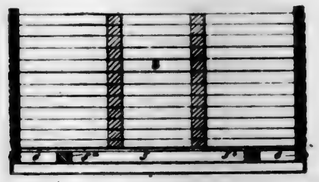

4. A crib having outstanding upwardly-presented ledges on its outer walls, and a cutting edge at its base, substantially as shown and described.

710,116. TAPPING AND STUD-SETTING DEVICE. CARL G. OSTEMAN and CHARLES W. H. BLOOD, Boston, Mass.; said Osteman assignor to said Blood. Filed May 20, 1898. Serial No. 682,371. (No model.)

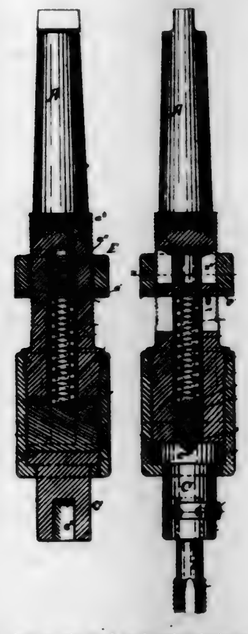

Claim.—1. In a tapping and stud-setting device, the combination of a main spindle, a tap-holder operatively attached to the end thereof, a yielding clutch-driver inserted in the end of said spindle forming operative connection between the spindle and the tap-holder, an adjustable nut on the outside of said spindle, and means for applying pressure with said nut upon said clutch-driver, substantially as described and for the purpose set forth.

2. In a tapping and stud-setting device, the combination of a main spindle, a tap-holder operatively attached to the end thereof, a transverse groove across the abutting end of said tap-holder, a yielding clutch-driver inserted in the end of said spindle and engaging with the groove in the tap-holder, an adjustable nut on the outside of said spindle, and means for applying pressure with said nut upon said clutch-driver, substantially as described and for the purpose set forth.

3. In a tapping and stud-setting device, the combination of a main spindle, a tap-holder operatively attached to the end thereof, a yielding clutch-driver inserted in the end of said spindle forming operative connection between the spindle and the tap-holder, an adjustable nut on the outside of said spindle, and means for applying a yielding pressure upon said nut with said clutch-driver for forcing the latter to release from engagement with the groove in the tap-holder, substantially as described and for the purpose set forth.

4. In a tapping and stud-setting device, the combination of a main spindle, a clutch-driver having an inclined edge inserted in a transverse slot across the end thereof, a tap-holder operatively attached to and abutting the end of said spindle, a transverse groove across the abutting end of said tap-holder and engaging with the inclined edge of said clutch-driver, and an adjustable nut on the outside of said spindle with means for engaging said nut with said clutch-driver for forcing the same into operative engagement with the tap-holder, substantially as specified and for the purpose set forth.

5. In a tapping and stud-setting device, the combination of a main spindle, a tap-holder operatively attached to the end thereof, a clutch-driver inserted in the end of said spindle, forming operative connection between the spindle and the tap-holder, a spring contained within a central bore in said spindle and bearing upon said clutch-driver and acting to force the same into operative engagement with the tap-holder, and a nut on the outside of said spindle and means for engaging the same with said spring, whereby the tension of the latter may be regulated, substantially as specified and set forth.

6. In a tapping and stud-setting device, the combination of a main spindle, a tap-holder held at one end thereof and operatively connected therewith by means of a self-acting clutch-driver, a central bore within said spindle forming a chamber for a spring, one end thereof bearing on said clutch-driver and the other end supported by means of a cross-bar passing transversely through the body of the spindle by means of suitable openings therein, the ends of said cross-bar extending beyond the sides of the spindle and engaging with, and adjustable by a nut thereon, substantially as and for the purpose specified.

7. In a tapping and stud-setting device, the combination of a main driving-spindle, an outwardly-flanged tap-holder abutting one end thereof, an inwardly-flanged thimble rigidly secured to said spindle, said inward flange on the thimble engaging with the outward flange of the tap-holder for holding the latter in operative position, and a clutch-driver of uniform cross-section inserted in a transverse slot across the end of said spindle and being positively driven thereby, and forming operative connection between said spindle and tap-holder, and adjustable means on the outside of said spindle for applying a yielding pressure upon said clutch-driver, substantially as specified and for the purpose set forth.

8. In a tapping and stud-setting device, the combination of a main driving-spindle, an outwardly-flanged tap-holder abutting one end thereof, an inwardly-flanged thimble rigidly secured to said spindle, said inward flange on the thimble engaging with the outward flange of the tap-holder for holding the latter in operative position, and a clutch-driver of uniform cross-section inserted in a transverse slot across the end of said spindle and retained in place laterally by the inner walls of said thimble, and adjustable means on the outside of said spindle for applying a yielding pressure upon said clutch-driver, substantially as specified and for the purpose set forth.

9. In a tapping and stud-setting device, the combination of a tap-holder or head and means for driving the same, a polygonal recess or socket in the end thereof, a bushing adapted to fit said socket, and a pin passing through the side of said socket and bushing and projecting to and into the tap-receiving hole in the latter and engaging with a tap therein, thereby holding the bushing and tap in position and enabling the latter to be removed without disturbing the former, substantially as specified and for the purpose set forth.

10. In a tapping and stud-setting device, the combination of a tap-holder or head and means for driving the same, a polygonal recess or socket in the end thereof, a bushing adapted to fit said socket, and a pin passing through the side of said socket and bushing and extending to and into the tap-receiving hole in the latter and adapted to engage with a tap therein, and a spring engaging with the outer end of said pin for forcing it into engagement with the tap, substantially as specified and for the purpose set forth.

11. In a tapping and stud-setting device, the combination of a tap-holder or head and means to drive the same, a socket in the end thereof, a bushing consisting of two or more wings or members capable of being spread apart or opened from each other, a threaded hole formed in the end between said adjoining members and adapted to engage the end of a threaded stud, said bushing when closed being adapted to fit in the tap-holder socket and prevented from opening thereby, substantially as specified and for the purpose set forth.

12. In a tapping and stud-setting device, the combination of a tap-holder or head and means for driving the same, a socket in the end thereof, a bushing consisting of two or more wings or members capable of being spread apart or opened from each other, a threaded hole formed in the end between said adjoining members and adapted to engage the end of a threaded stud, said bushing being adapted for attachment to the tap-holder or head for the purpose specified and set forth.

710,117. MACHINE FOR ROLLING SHEET-METAL CYLINDERS. MAJOR M. PARKER, Cohoes, N. Y., assignor to David S. Johnston, Cohoes, N. Y. Filed Jan. 31, 1901. Serial No. 45,594. (No model.)

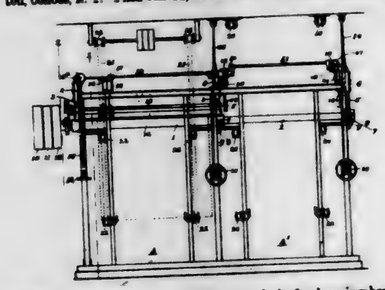

Claim.—1. The combination with a mandrel of a hanging-bracket supporting the forward end thereof, hanging brackets provided with detachable caps supporting the central portion and rear of said mandrel, a carriage movable lengthwise of said mandrel and having a vertically-adjustable hanger provided with a planishing-disk, ways arranged parallel with said mandrel and on opposite sides thereof, threaded shafts arranged on opposite sides of said mandrel and parallel therewith, adapted to move said carriage, and mechanism for operating said threaded shafts, substantially as shown and described.

2. The combination with a mandrel, of a hanging bracket supporting the forward end thereof, detachable brackets supporting the central portion and rear end of said mandrel, ways extending parallel with said mandrel, a carriage mounted on said ways and provided with a vertically-adjustable bracket having a planishing-wheel pivoted thereto, threaded shafts engaging said carriage, mechanism connecting said threaded shafts adapted to turn said shafts in unison, an eccentric mounted on said mandrel, and adjustable mechanism connecting said eccentric and one of said threaded shafts, substantially as shown and described.

3. The combination with a mandrel, hangers supporting said mandrel, ways extending lengthwise of said mandrel on opposite sides thereof, threaded shafts arranged on opposite sides of said mandrel and parallel therewith, a carriage mounted on said threaded shafts and ways, an auxiliary roller, vertically-adjustable hangers provided with bearings for said roller, threaded shafts engaging said hangers each provided at its upper end with a beveled gear, a longitudinal shaft provided on each end with a beveled gear engaging the gears on said shafts, and means for operating said hangers, substantially as shown and described.

4. The combination with a mandrel, of a hanger supporting the forward end thereof, detachable hangers supporting the central portion and rear end of said mandrel, an auxiliary roller adapted to bear against the rear half of said mandrel, endless belts mounted upon pulleys and adapted to aid in supporting and rotating a cylinder of sheet metal placed upon said mandrel and operated upon by said roller, substantially as shown and described.

5. The combination with a main frame, of a mandrel, detachable hangers supporting the rear end and central portion of such mandrel, a roller adapted to bear against the rear half of said mandrel, transverse bars attached at their outer ends to said main frame and provided on their inner ends with rods extending parallel to said mandrel, substantially as shown and described.

6. The combination with a main frame, of a mandrel, endless belts adapted to bear against the lower half of a cylinder supported on said mandrel, pulleys attached to said main frame and to a counter-shaft adapted to support said pulleys, substantially as shown and described.

7. The combination with a main frame, of a mandrel, ways arranged on opposite sides of and parallel with said mandrel, threaded shafts extending parallel with said mandrel and ways, sprocket-wheels attached to the forward end of said shafts, an endless chain engaging said sprocket-wheels, an eccentric mounted upon each mandrel, a lever secured to one of said threaded shafts and adjustably connected with said eccentric, a ratchet-wheel mounted upon one of said threaded shafts, a pawl mounted upon said lever and adapted to engage with said ratchet-wheel and operate said threaded shafts, substantially as shown and described.

8. The combination with a mandrel, of ways arranged parallel with said mandrel and on opposite sides thereof, hangers supporting the central portion and ends of said mandrel, threaded shafts arranged on opposite sides of and parallel with said mandrel, a traveling carriage movable on said ways and having a threaded engagement with said shaft, and mechanism for operating said threaded shafts, substantially as shown and described.

9. The combination with a mandrel, of ways arranged parallel with said mandrel and on opposite sides thereof, threaded shafts extending parallel with said ways, a carriage movable lengthwise of said ways and having a threaded connection with said shafts, a vertically-adjustable hanger mounted on said carriage, a shaft provided on its lower end with a threaded engagement with said bracket, and on its upper end with a beveled gear, a horizontal shaft provided with a feather, a beveled gear having a sliding engagement on said shaft, and mechanism for operating said horizontal shaft, substantially as shown and described.

10. The combination with a main frame, of a mandrel, vertical hangers supporting the central portion and ends of said mandrel, ways arranged parallel therewith and on the opposite sides of said mandrel, threaded shafts extending parallel with said ways, a traveling carriage movable along said ways and provided with a threaded engagement with said shafts, a vertically-adjustable hanger mounted on said carriage and provided on its lower end with a pivoted disk, substantially as shown and described.

11. The combination with a main frame, of a mandrel, ways extending parallel with said mandrel on opposite sides thereof, threaded shafts extending parallel with said ways, a carriage movable on said ways and provided with a threaded engagement with said shafts, a vertically-adjustable hanger mounted on said carriage, levers pivoted to the lower end of said hanger and provided on their outer ends with pivoted disks and adjustably secured at their upper ends to said hanger, substantially as shown and described.

12. The combination with a main frame, of a mandrel, ways extending lengthwise of said mandrel on both sides thereof and parallel therewith, threaded shafts arranged on both sides of and parallel with said mandrel, a traveling carriage movable on said ways and having a threaded engagement with said shafts, a vertically-adjustable hanger mounted on said carriage, a vertical shaft having a threaded engagement at its lower end with said hanger and provided on its upper end with a beveled gear journaled on a bracket secured to said carriage, a shaft provided with a feather engaging said journaled gear and mechanism adapted to operate said feathered shaft, substantially as shown and described.

710,118. DOOR-SECURER. HESTOR PRUD'HOMME, Manchester, N. H. Filed Feb. 27, 1902. Serial No. 96,920. (No model.)

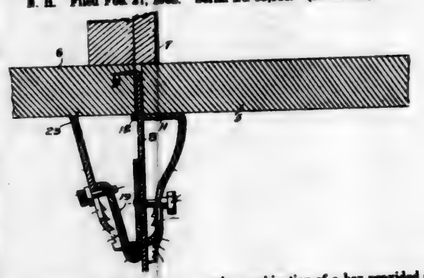

Claim.—1. In a door-securer, the combination of a bar provided at one end with laterally-extending teeth to engage a door-jamb and provided near its other end with oppositely-extending serrated ribs, a plate having a laterally-extending abutting portion provided with grooves in which said bar is slidingly mounted, the opposite end of said plate having a curved notched portion to engage said serrated ribs, a set-screw engaging a threaded perforation in the bar and extending through a slot in the plate whereby the latter may be held at the desired adjustment with relation to said bar, and an adjustable brace hingedly connected with said plate, substantially as set forth.

2. In a door-securer, the combination with a plate having notched ribs and provided with means whereby it has sliding engagement with an extension-bar, of the said extension-bar having teeth engaging said notched ribs and an intermediate portion engaging between said ribs to prevent lateral displacement, means for retaining said plate and extension-bar in contact with each other at the desired adjustment, and an adjustable brace hingedly connected with said plate, substantially as set forth.

3. In a door-securer, a bar having lateral spurs on one end, a plate disposed adjustably upon said bar, on one side, a plate hinged by one end to the opposite side of said bar and with spaced serrations at the other end, an extension-bar engaging said serrations by one end and with spurs upon the other end, and means whereby said extension-bar may be clamped adjustably to said hinged plate, substantially as described.

710,119. SEEDING-MACHINE. ROBERT L. REEA, Peoria, Ill. Filed May 31, 1900. Serial No. 109,795. (No model.)

Claim.—1. In a seeding-machine, and in combination substantially as described, a hopper and seeding devices supported on an end gate, a horizontally-arranged power-shaft having on one end a clutch part for throwing in and out power devices for actuating said shaft, a fan-shaft vertically arranged and a fan beneath the hopper, a sheave-wheel revoluble with the power-shaft and a sheave-wheel revoluble with the fan-shaft, a cable-drive traveling around the said wheels whereby the fan is rotated, and an idler journaled on a suitable support for guiding the cable from one wheel to the other and for taking up slack in the cable, for the purposes set forth.

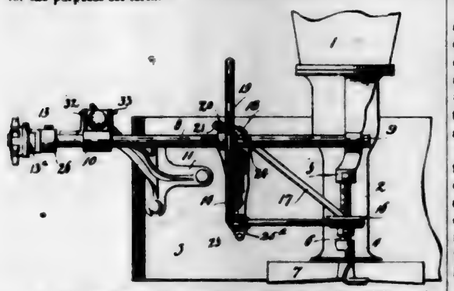

2. In a seeding-machine, and in combination substantially as described, a hopper and seeding devices supported on an end gate, a distributing-shaft journaled on the seeder and a distributer mounted for rotation thereon and beneath the hopper, a driving-shaft suitably actuated, its outer end supported from the end gate and its inner end journaled in the seeder-frame, of a sheave-wheel on the driving-shaft and a sheave-pinion on the distributing-shaft, and a cable-drive connecting the sheave-wheels, for the purposes set forth.

3. In a seeding-machine, and in combination substantially as described, an end gate, a hopper and seeding devices supported thereby, a driving-shaft suitably actuated and a power-sheave revolvable therewith, a fan-shaft, and a fan mounted thereon and beneath the hopper, a sheave-wheel on the fan-shaft, a cable-drive connecting the drive and fan sheave wheels, and a device for taking up slack in the cable, for the purposes set forth.

4. The mechanism for actuating the fan-shaft and fan of an end-gate seeder, comprising a horizontal driving-shaft, and a vertically-arranged fan-shaft and fan rotatable therewith, sheave-wheels, one on the drive and one on the fan shaft, an endless cable connecting the wheels, two idlers disposed to the rear of said wheels and in front of the end gate, and arranged for directing the cable to and from the said wheels and one of said idlers arranged for taking up any slack in the cable, substantially as described.

5. In a seeding-machine, the combination with an end gate, of seeding devices supported thereby, a driving-shaft and a power-sheave revolvable therewith, a fan-shaft, and a fan mounted thereon, a sheave-wheel on the fan-shaft, a cable-drive connecting the drive and fan sheave wheels, and an adjustably-supported guiding device for the cable between the aforesaid sheave-wheels, for the purpose set forth.

6. In a seeding-machine, the combination with the seeding devices and end gate supporting the same, of the sheave-wheel 14, the shaft 8 supporting the same, the driven sheave 16 on the fan-shaft 6, the said shaft having on its lower end a seed-distributer, and an idler arranged for receiving the cable as it leaves the sheave 14 for guiding it to the fan-sheave and the same disposed between the end gate and the sheave 14, all substantially as and for the purposes set forth.

7. In combination with seeding devices and end gate supporting the same, a driving-shaft and a sheave-wheel 14 revolvable therewith, a fan-shaft and fan, and the sheave-wheel 16 mounted on said fan-shaft, a cable-drive engaging said wheels, an idler supported from the end gate journaled to swing on its support, around which the cable is directed as it leaves the sheave 14 and the same held under tension of a yielding device for taking up slack in the cable, substantially for the purposes set forth.

8. In combination with seeding devices, a fan-shaft, and a driving-shaft, means for actuating the driving-shaft, sheave-wheels, one on the fan-shaft and one on the driving-shaft, a cable for transmitting power from the driving-shaft to the fan-shaft, two idlers, one revolvable on a swinging frame, a spring for holding the frame for taking up slack in the cable, the other idler revolvable on a stationary frame for guiding the cable from the fan-sheave to the driving-sheave, substantially as described.

9. In combination with seeding devices, fan and driving shafts, clutch members of the driving-shaft, one loose and the other keyed to the shaft, clutch-shifting devices comprising a sliding member, a half-worm of said member and a swinging device carrying means engaging the said sliding device for controlling the movements of the clutch members, substantially as described.

10. In combination with seeding devices, fan and driving shafts, clutch members of the driving-shaft, one loose and the other keyed to the shaft, clutch-shifting devices comprising a swinging member, having a sectional worm-wheel, a sliding member having a clutch-shifting member and provided with means engaged by the sectional worm-wheel, arranged for controlling the movements of the clutch members, substantially as described.

11. In a seeding-machine, the combination of fan and driving shafts, a sprocket-pinion actuated by suitable driving device and slidably arranged on the driving-shaft, a clutch member forming a part of said sprocket, a clutch member fixed to the shaft, means for shifting the clutch part of the aforesaid sprocket, comprising a slidable rod provided with a partial worm, a weighted lever having a segmental worm-wheel engaging the worm of the rod, and driving connections between the fan and driving shafts, as and for the purpose described.

12. The combination with a seeding-machine, comprising a hopper, fan-shaft and fan, and a driving-shaft, a sprocket-pinion loosely carried on the driving-shaft arranged to be continuously driven and provided with a clutch member, a clutch member fast to the shaft, a sliding rod having connection with the member of the sprocket, a segmental worm forming part of said rod, and a lever having engagement with said worm for the purpose of controlling the movements of the clutch parts, substantially as described.

13. The mechanism for actuating the fan-shaft and fan of an end-gate seeder, comprising a horizontal driving-shaft, and a vertically-arranged fan-shaft and fan revoluble therewith, sheave-wheels, one on the drive-shaft and one on the fan-shaft, an endless cable connecting the wheels, two idlers arranged for directing the cable toward and from the aforesaid sheave-wheel, one mounted on a stationary support, and the other adjustable on its support, for the purpose described.

14. In combination with seeding devices and end gate supporting the same, a driving-shaft, a fan-shaft and fan, a sheave-wheel mounted on the driving-shaft having a peripheral edge, of alternately-extended lips forming an annular groove, a cable-drive engaging said wheels, and an idler supported from the end gate shiftable on its support around which the cable is directed, as and for the purposes set forth.

710,120. BLAST-FURNACE. GIBBS C. SHACKLEFORD, Allegheny, Pa. Filed June 14, 1902. Serial No. 111,759. (No model.)

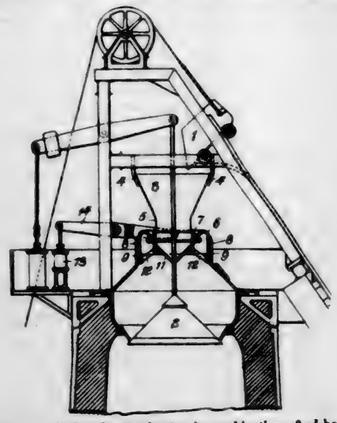

Claim.—1. A blast-furnace having in combination a feed-hopper, a bell-chamber, doors, arranged between the hopper and chamber, means for closing said doors, the closing means and the doors being carried by suitable independent supports movable relative one to the other to close the doors, substantially as set forth.

2. A blast-furnace, having in combination, a feed-hopper, a bell-chamber, doors arranged between the hopper and bell-chamber, a movable ring, means for closing the doors operative on the shifting of the ring, substantially as set forth.

3. A blast-furnace, having in combination, a feed-hopper, a bell-chamber, a movable ring, doors pivotally connected to said ring and adapted to close the feed-hopper, and links having their ends pivotally connected to the doors and the bell-chamber, substantially as set forth.

710,121. WIRELESS-TELEGRAPH SYSTEM. HARRY SHOEMAKER, Philadelphia, Pa., assignor to Gustavo P. Gehring, Philadelphia, Pa., and American Wireless Telephone & Telegraph Company, a Corporation of Arizona Territory. Filed Dec. 11, 1901. Serial No. 85,452. (No model.)

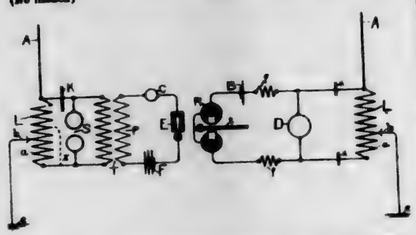

Claim.—1. In a wireless-telegraph system, a transformer; connections from the secondary of said transformer to an oscillator and to the terminals of a winding, a portion of said winding operating as the inductance element of a resonant radiating circuit.

2. A transmitter for wireless telegraphy, whom comprises means for generating high-frequency oscillations, and connections from said generator to the terminals of a winding, a portion of said winding operating as the inductance element of a resonant radiating circuit.

3. A transmitter for wireless signaling, which comprises a source of high-frequency oscillations; and connections from the terminals of said source to the terminals of an autotransformer, one winding of said transformer operating as the inductance element of a resonant radiating circuit.

4. In a signaling system, the combination with a source of high-frequency electrical oscillations, of connections through a condenser to the terminals of an autotransformer, one winding of said autotransformer comprising the inductance element of a resonant radiating system.

5. In a signaling system, a transmitter which comprises a source of high-frequency electrical oscillations; means for controlling said oscillations in accordance with the signal sent; and connections from said source of oscillations to the terminals of a winding, a portion of said winding comprising the inductance element of a resonant radiating system.

6. In a signaling system, a transmitter which comprises a source of high-frequency electrical oscillations; connections from said source to the terminals of an autotransformer; and a connection from earth to one terminal of said autotransformer, the portion of the winding so determined operating as the inductance element of a resonant radiating system.

7. In a wireless signaling system, the combination with the transmitter, of a receiver, which comprises an aerial conductor and an inductance, said inductance forming one winding of an autotransformer.

8. In a signaling system, a receiver which comprises a resonant circuit, the inductance element of said circuit forming one winding of an autotransformer.

9. A receiver, comprising an aerial circuit, a rider for adjusting said circuit to resonance, the inductance member of said resonant circuit forming one winding of an autotransformer; and connections from said autotransformer to a wave-responsive device.

10. A receiver, comprising an aerial circuit, a rider for adjusting said circuit to resonance, the inductance member of said resonant circuit forming one winding of an autotransformer; connections from the terminals of said autotransformer to a wave-responsive device; and a local circuit controlled by said wave-responsive device.

11. In a signaling system, a freely-oscillating circuit, a radiating circuit of the same natural period, and a frequency-determining element common to both circuits.

12. In a signaling system, a freely-oscillating circuit, a radiating circuit, and an inductance common to both circuits.

13. In a signaling system, an aerial circuit selective of the transmitted energy, an inductance element of said circuit forming a winding of an autotransformer, and a wave-responsive device subjected to the potential of said autotransformer.

14. In a signaling system, a receiver which comprises a selective circuit, an inductance element of said circuit forming a winding of an autotransformer.

15. In a signaling system, a receiver comprising a circuit selective of the transmitted energy, an inductance element of said circuit forming a winding of an autotransformer, a condenser in series with said inductance, a local circuit in shunt to said condenser, and a wave-responsive device influenced by said autotransformer and controlling said local circuit.

16. In a signaling system, a receiver comprising a circuit selective of the transmitted energy, an inductance element of said circuit forming a winding of an autotransformer, a condenser in series with said inductance approximate its middle, a local circuit in shunt to said condenser, and a wave-responsive device influenced by said autotransformer and controlling said local circuit.

710,122. WIRELESS-TELEGRAPH SYSTEM. HARRY SHOEMAKER, Philadelphia, Pa., assignor to Mario V. Gehring, Philadelphia, Pa., and American Wireless Telephone & Telegraph Company, a Corporation of Arizona Territory. Filed Jan. 11, 1902. Serial No. 89,349. (No model.)

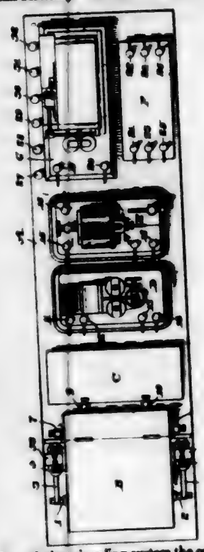

Claim.—1. In a wireless signaling system the combination of a conductor for receiving the energy from the natural media, a wave-responsive device influenced by the received energy, a main polarized relay controlled by said wave-responsive device, a second sluggish relay controlled by the main polarized relay and a recording device controlled by the second relay.

2. In a wireless signaling system the combination of a conductor for receiving the energy from the natural media, a wave-responsive device in communication with said conductor, a main polarized relay controlled by said wave-responsive device, a second sluggish relay and tapping device controlled by said main polarized relay and a recording device controlled by the second relay.

3. In a wireless signaling system, the combination of a conductor for emitting energy into and receiving energy from the natural media, a switch-blade in communication with said conductor, solenoids operative to throw said switch-blade into communication with either the receiving or sending apparatus, an operator's switch, and a segment on said switch in series with a source of energy and said solenoids.

4. A switch for wireless signaling system comprising an insulating-plate, a rotary spindle mounted on said plate and carrying a switch-arm and a pinion in connection with said spindle, a connection from the receiving and transmitting conductor and contacts on said insulating-plate engaged alternately by said switch-blade in putting the conductor into communication with the transmitter or receiver.

5. A switch for wireless signaling system comprising an insulating-plate, a rotary spindle mounted on said plate and carrying a switch-arm, and a pinion in connection with said spindle, a connection from the receiving and transmitting conductor and contacts on said insulating-plate engaged alternately by said switch-blade in putting the conductor into communication with the transmitter or receiver, and solenoids and rack-bars coöperating with the pinion.

6. In a wireless signaling system, a receptacle for isolating a wave-responsive device and its tapper, electromagnetic means outside said receptacle and mounted on the walls thereof for entirely removing the wave-responsive device from the receiving-circuit.

7. In a wireless-telegraph system the combination with the walls of a receptacle of electromagnets mounted on said walls, armatures for said electromagnets, contacts in communication with the terminals of the wave-responsive device and means for causing at a predetermined time the attraction of said armatures to remove said wave-responsive device entirely from communication with the receiving-conductor.

8. An operator's switch for a wireless-telegraph system which comprises a base and switch-arm pivoted to said base, a plurality of segments mounted on said base and engaged successively by said switch-arm and a brush adapted to engage with said switch-arm in a predetermined position.

9. In a signaling system, a transmitting and receiving conductor, means for putting said conductor into communication with either the transmitter or receiver, said means comprising a switch, a pinion for operating said switch, rack-bars meshing with said pinion, solenoids operating the rack-bars, and means for energizing a solenoid when changing the character of the station.

10. In a signaling system, a transmitting and receiving conductor, means for putting said conductor into communication with either the transmitter or receiver, said means comprising a switch, a pinion for operating said switch, rack-bars meshing with said pinion, solenoids operating the rack-bars, and means for momentarily energizing a solenoid when changing the character of the station.

11. In a signaling system, a transmitter and a receiver, means for putting either into communication with the radiating and absorbing conductor, electromagnetic means for operating said means, and means for energizing the electromagnetic means momentarily when changing the character of the station.

12. In a wireless signaling system, a transmitter and receiver, and an operator's switch having a contact in the circuit of the wave-producing means, an interrupter, a motor for driving the same, and a contact in the circuit of the interrupter-motor.

13. In a wireless signaling system, a transmitter, a receiver, an operator's switch for bringing either into action, a wave-producing means, a contact of said switch in the circuit of said wave-producing means, an interrupter-motor for said wave-producing means, and a contact of said switch in the circuit of said interrupter-motor.

14. In a wireless signaling system, a conductor, a transmitter and receiver, circuits for bringing each into action, an operator's switch controlling said circuits, and having a segment in the circuit of the wave-producing device.

15. In a wireless signaling system, a conductor, a transmitter, a motor driving the interrupter, an operator's switch for putting the transmitter into operative relation with said conductor, and having a contact in the circuit of the wave-producing means and another in the circuit of the interrupter-motor.

16. In a wireless signaling system, a conductor, a transmitter, a motor driving the interrupter, an operator's switch for putting the transmitter into operative relation with said conductor, and having a contact in the circuit of the interrupter-motor and another in the circuit of means for putting the transmitter into communication with the radiator.

17. In a wireless signaling system, a transmitter, means for putting the transmitter into communication with the radiator, an operator's switch having a contact in the circuit of a wave-producing means and another in the circuit of the means for putting the transmitter into communication with the radiator.

18. In a wireless signaling system, a receiver, electroresponsive means for putting the receiver into communication with the aerial conductor, an operator's switch, and a contact of said switch in a circuit for energizing said electroresponsive means.

19. In a wireless signaling system, a receiver and an operator's switch having a contact in the circuit of means for isolating the wave-responsive device, and another contact in a separate circuit of means for removing the receiver from communication with the receiving-conductor.

20. In a wireless signaling system, a receiver, means for putting the receiver into communication with the receiving-conductor, an operator's switch having a contact in the circuit of means for isolating the wave-responsive device, and another contact in the circuit of said means for putting the receiver into communication with the receiving-conductor.

21. In a wireless signaling system, a transmitter in combination with electromagnetic means for removing the receiver from communication with the radiating-conductor, and an operator's switch having a contact in the circuit of said electromagnetic means.

22. In a wireless signaling system, a transmitter in combination with an operator's switch having a contact in the circuit of wave-producing means and another contact in a separate circuit of means for removing the receiver from communication with the radiating-conductor.

23. In a wireless signaling-system, a receiver in combination with electromagnetic means for removing the transmitter from communication with the radiating-conductor, and an operator's switch having a contact in the circuit for energizing said means.

24. In a wireless signaling system, a receiver in combination with means for isolating the wave-responsive device, means for removing the transmitter from communication with the radiating-conductor, and an operator's switch having contacts in the circuits of said means.

25. In a wireless signaling system, a receiver in combination with an operator's switch having a contact in the circuit of means for isolating the wave-responsive device and another contact in a separate circuit of means for putting the transmitter into communication with the radiating-conductor.

26. In a wireless signaling system, a transmitter comprising in part a transformer, an interrupter in the primary of said transformer comprising a reciprocating contact and a movable contact, and an operator's key controlling a circuit for bringing said movable contact into the path of the reciprocating contact.

27. In a wireless signaling system, a transmitting-transformer, a reciprocating contact in a winding thereof, a contact movable into the path of the reciprocating contact, an operator's key, and means controlled by said key for causing engagement of the contacts.

28. In a wireless signaling system, a transmitting-transformer, a reciprocating contact in a winding thereof, a contact movable into the path of said reciprocating contact, an operator's key, and electromagnetic means controlled by said key for bringing the contacts into engagement.

29. In a wireless signaling system, a key, a transmitter comprising in part a transformer, an interrupter in the primary of said transformer comprising a reciprocating and rotating contact, and a contact movable into the path of the reciprocating contact under the control of said key.

30. In a wireless signaling system, a key, a transmitting-transformer, a reciprocating and rotating contact in a winding thereof, a contact movable into the path of the reciprocating contact, and means controlled by said key for causing engagement of the contacts.

31. In a wireless signaling system, a key, a transmitting-transformer, a reciprocating and rotating contact in a winding thereof, a contact movable into the path of said reciprocating contact, and electromagnetic means controlled by said key for bringing the contacts into engagement.

32. In a wireless signaling system, a key, a transmitting-transformer, a reciprocating contact in the circuit of a winding thereof, a motor for driving said contact, a movable contact, means controlled by said key for bringing the movable contact into the path of a reciprocating contact, and an operator's switch having a contact in the circuit of said motor.

33. In a wireless signaling system, a key, a transmitting-transformer, a reciprocating contact in the circuit of a winding thereof, a motor for driving said contact, a movable contact, means controlled by said key for bringing the movable contact into the path of the reciprocating contact, means for putting the transmitter into communication with the radiating-conductor, and an operator's switch having a contact in the circuit of said motor and another in the circuit of said means for putting the transmitter into communication with the radiating-conductor.

34. In a wireless signaling system, a key, a transmitting-transformer, a reciprocating contact in the circuit of a winding thereof, a motor for driving said contact, a movable contact, means controlled by said key for bringing the movable contact into the path of the reciprocating contact, means for putting the transmitter into communication with the radiating-conductor, means for isolating the wave-responsive device, and an operator's switch having a contact in the circuit of said motor, another contact in the circuit of said means for putting the transmitter into communication with the radiating-conductor, and a third contact in the circuit of said means for isolating the wave-responsive device.

35. In a receiver, a wave-responsive device, a relay controlled thereby, a sluggish relay controlled by said relay, a circuit controlled by said sluggish relay and an electrolytic cell connected across the terminals of said circuit, for the purpose described.

36. In a receiver, a wave-responsive device, a relay controlled thereby, a sluggish relay controlled by said relay, a circuit controlled by said sluggish relay and an electrolytic cell connected across the break of each relay, and a resistance in shunt to the winding of each relay, for the purpose described.

37. In a receiver, a wave-responsive device, a relay controlled thereby, a second sluggish relay controlled by said relay, and a recorder controlled by the second relay, for the purpose described.

38. In a receiver, a wave-responsive device, a relay controlled thereby, a second sluggish relay controlled by said relay, and a recorder controlled by the second relay and electrolytic cells connected across the relay-breaks, for the purpose described.

39. In a receiver, a wave-responsive device, a relay controlled thereby, a second sluggish relay controlled by said relay, a recorder controlled by the second relay, and a resistance in shunt to each relay-winding.

40. In a receiver, a wave-responsive device, a relay controlled thereby, a second sluggish relay controlled by said relay, a recorder controlled by the second relay, electrolytic cells connected across the relay-breaks and a resistance in shunt to each relay-winding.

41. In a wireless signaling system, a key and switch juxtaposed, a generator, said key controlling said generator, electroresponsive means for removing the receiver from electrical communication with the radiating-conductor, and a contact on said switch for energizing said electroresponsive means.

42. In a wireless signaling system, an operator's table, a key and switch mounted thereon, a radiating and absorbing conductor, a transmitter, a receiver, electroresponsive means for removing the receiver from communication with said conductor, and a contact of said switch controlling the circuit for energizing said electroresponsive means.

43. In a wireless signaling system, an operator's table, a key and switch located thereon, a radiating and absorbing conductor, a transmitter, said key controlling said transmitter, electroresponsive means for disconnecting said transmitter from said conductor and placing the receiver in communication with said conductor, and a contact on said switch and controlling the circuit for energizing said electroresponsive means.

44. In a wireless signaling system, an operator's table, a key and switch juxtaposed thereon, a transmitter, a receiver, a radiating and absorbing conductor, electroresponsive means for placing the transmitter in operative relation with said conductor, electroresponsive means for isolating the receiver, and contacts on said switch controlling the circuits of said electroresponsive means.

45. In a wireless signaling system, an operator's switch, a source of radiant energy, an interrupter in a circuit of said source, a key for controlling said interrupter, a motor driving said interrupter, a source of energy, a connection from said source to a member of said switch, a segment of said switch momentarily engaged by the switch member and in the circuit of means for disconnecting the receiver and connecting the source of radiant energy to the radiating-conductor, a segment controlling the circuit including the interrupter, a contact in the circuit of said motor, and a segment in the circuit of means for isolating the wave-responsive device.

46. In a wireless signaling system, an interrupter, a motor for driving the same, an operator's switch comprising an arm and a plurality of contacts engageable thereby, a source of energy, a connection from said source to said switch-arm, a contact of said switch controlling the interrupter-motor, and a contact in the circuit of the interrupter.

47. In a wireless signaling system, a wave-responsive device, a receptacle inclosing the same, connections from said wave-responsive device to contacts located on the walls of said receptacle, a receiving-conductor, an earth-conductor, and electroresponsive means for removing said contact from electrical communication with said conductors.

48. In a signaling system, a wave-responsive device, a tapper therefor, a relay controlled by said wave-responsive device, a sluggish relay controlled by said relay, and an electrolytic cell in shunt to the break of said tapper and each of said relays.

49. In a wireless signaling system, a wave-responsive device, a tapper therefor, a relay controlled by said wave-responsive device, a sluggish relay controlled by said relay, and a resistance in shunt to the winding of said tapper and to the winding of each of said relays.

50. In a wireless signaling system, a wave-responsive device, a relay controlled thereby, a sluggish relay controlled by said relay, and a recorder controlled by said sluggish relay, for the purpose described.

51. In a wireless signaling system, a wave-responsive device, a relay controlled thereby, a sluggish relay controlled by said relay and energized by a source of energy, and a recorder controlled by said sluggish relay and operated by said source of energy.

52. In a wireless signaling system, a wave-responsive device, a polarized relay controlled thereby, a sluggish relay controlled by the polarized relay and a Morse register controlled by said sluggish relay.

710,123. PLACKET-FASTENER. THOMAS M. STEARE, Washington, D. C., assignor of one third to John Scrivener, Washington, D. C. Filed June 17, 1902. Serial No. 112,057. (No model.)

Claim.—1. In a placket-fastener the combination with the fastening 1, having securing-tangs formed integrally therewith at both ends thereof and rigidly formed thereon, the sides of said fastening being waved to form series of loops, and a fastening-stud adapted to be held in said loops, said tangs being adapted to be inserted in material and bent permanently to secure the fastening in position.

2. A placket-fastener having its sides waved to form a series of loops, the sides of said fastener being twisted together near each end, the free ends of said sides forming securing-tangs.

710,124. FIRING MECHANISM FOR GUNS. VERNON C. TASKER, Bridgeport, Conn. Filed Mar. 8, 1902. Serial No. 97,310. (No model.)

Claim.—1. The combination with a plunger; of a fulcrumed arm adapted to retract said plunger; and a spring actuating said arm to retract said plunger and reacting on said plunger, substantially as described.

2. The combination with a plunger; of a fulcrumed arm adapted to retract said plunger; and a spring actuating said arm to retract said plunger and reacting on said plunger, said arm energizing said spring on its reverse movement, substantially as described

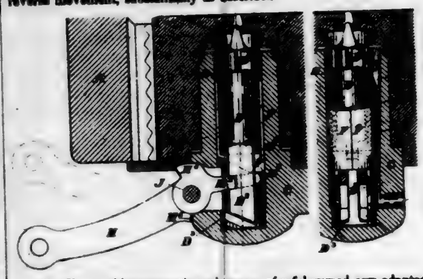

3. The combination with a plunger; of a fulcrumed arm adapted to retract said plunger; a spring actuating said arm to retract said plunger and reacting on said plunger, said arm energizing said spring on its reverse movement; a detent for engaging said plunger in a retracted position; and means for disengaging said detent, substantially as described.

4. The combination with a plunger; of a fulcrumed arm adapted to retract said plunger; a spring actuating said arm to retract said plunger and reacting on said plunger; and a detent for engaging said plunger in a retracted position, said arm energizing said spring on its reverse movement and adapted to disengage said detent, substantially as described.

5. The combination with a plunger; of a fulcrumed arm adapted to retract said plunger; a shoe acting on said arm; a spring urging said shoe to act on said arm to retract said plunger and reacting on said plunger; a detent for engaging said plunger in a retracted position, said arm energizing said spring on its reverse movement and adapted to disengage said detent through said shoe, substantially as described.

6. The combination with a plunger; of a fulcrumed arm adapted to retract said plunger; an energized spring actuating said arm to retract said plunger; and means for applying the reactive force of said spring to said arm, with a different leverage, substantially as described.

7. The combination with a plunger; of a fulcrumed arm adapted to retract said plunger; an energized spring actuating said arm to retract said plunger, and guided in a path different from that of the arm; and means for applying the opposing forces of the spring to said arm in opposite directions, and with unequal leverage, substantially as described.

8. The combination with a fulcrumed arm; of a plunger guided in a path different from that of the arm and adapted to be retracted by said arm; an energized spring tending to actuate the plunger; and means for applying the opposing forces of the spring to said arm in opposite directions with differential leverage, substantially as described.

9. The combination with a fulcrumed arm; of a plunger guided in a path different from that of the arm and adapted to be retracted by said arm; and an energized spring acting upon said arm, with a suitable leverage, through the plunger, and reacting on the arm with a different leverage, substantially as described.

10. The combination with a fulcrumed arm; of a plunger guided in a path different from that of the arm, and bearing on said arm in one direction with a suitable leverage and adapted to be retracted thereby; and an energized spring urging said plunger to bear on said arm and reacting against said arm in the other direction with a greater leverage, substantially as described.

11. The combination with a fulcrumed arm; of an energized spring; a shoe transmitting the force of said spring to said arm at a suitable distance from its fulcrum; and a plunger normally transmitting the reactive force of said spring to said arm at a less distance from its fulcrum, substantially as described.

12. The combination with a fulcrumed arm; of an energized spring; a shoe transmitting the force of said spring to said arm at a suitable distance from its fulcrum; and a plunger normally transmitting the reactive force of said spring to said arm at a less distance from its fulcrum, said shoe and plunger being guided in a path divergent from that of said arm, substantially as described.

13. The combination with a fulcrumed arm; of a plunger having an engagement with said arm operative in one direction; a spring acting forwardly on said plunger and rearwardly on said arm and tending to maintain said engagement; a detent for detaining said plunger during the forward movement of said arm; means for releasing said plunger and means for retracting said plunger operated by said spring, substantially as described.

14. The combination with a firing-lever; of an independently-movable firing-pin; an engagement between said pin and lever acting forwardly on the lever with a suitable leverage; an energized mainspring acting rearwardly on said lever with a greater leverage, and acting forwardly on said firing-pin; a detent for detaining said firing-pin during the forward movement of the firing-lever; and means for releasing said firing-pin, substantially as described.

15. The combination with a firing-lever; of a firing-pin; an energized mainspring acting forwardly on the firing-pin and rearwardly on the lever; a detent for detaining the firing-pin when the lever is operated to compress the mainspring; means for releasing the firing-pin, and means for applying the unexpended energy of the mainspring to retract the firing-lever and firing-pin, substantially as described.

16. The combination with a firing-pin; of a firing-lever acting rearwardly on said pin at a suitable leverage to retract said pin; a mainspring acting rearwardly on said lever at a greater leverage and reacting forwardly on said pin, substantially as described.

17. The combination with a firing-pin; of a firing-lever; an engagement between said pin and lever acting rearwardly on said pin at a suitable leverage; a mainspring acting rearwardly on said lever at a greater leverage, and reacting forwardly on said pin; a detent for engaging said pin in a retracted position; and means operated by the forward movement of the lever for disengaging said detent, substantially as described.

18. The combination with an oscillatory firing-lever; of a firing-pin; an engagement between said lever and pin bearing forwardly on said lever at a suitable leverage; a shoe bearing rearwardly on said lever at a greater leverage; a mainspring acting forwardly on said pin and reacting rearwardly on said shoe; and a detent engaging said firing-pin in a retracted position, and means for disengaging said detent on the forward movement of the shoe, substantially as described.

19. The combination with a firing-lever; of a firing-pin; an energized spring acting on the lever and reacting on the pin; and an engagement between the lever and pin for retracting the pin by means of said spring, substantially as described.

20. The combination with a plunger; of a spring for actuating said plunger; means for energizing said spring and means for retracting said plunger to its armed position operated by said spring, substantially as described.

21. The combination with a plunger; of a spring for actuating said plunger; a fulcrumed arm adapted to energize said spring on its movement in one direction, and to retract said plunger on its reverse movement operated by said spring, substantially as described.

22. The combination with a plunger; of a detent for engaging said plunger in a retracted position; a spring adapted to actuate said plunger; means for retracting said plunger to its armed position operated by said spring, substantially as described.

710,125. METHOD OF CURING FOOD PRODUCTS. CHARLES B. TERRY, Portland, Oreg. Filed June 5, 1902. Serial No. 110,102. (No specimens.)

Claim.—1. In the curing of food matter, the method of preparing the preservative for objection therein, which consists in simultaneously drying and scrubbing it by and under refrigeration, and then bringing it to the temperature adapted to the particular article to be cured, substantially as described.

2. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative fluid, reheating the same, and subjecting the matter to be cured to the action of said fluid, substantially as described.

3. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative fluid, reheating the same, and subjecting the matter to be cured to the action of said fluid in an inclosed space, substantially as described.

4. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative products of combustion, heating the same to a desired temperature, and subjecting the matter to be cured to the action of such preservative, substantially as described.

5. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative products of combustion, reheating the same, and then subjecting the matter to be cured to the action of such preservative in an inclosed space, substantially as described.

6. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative products of combustion, reheating the same to the degree best adapted to the kind of food matter under treatment, and subjecting said matter to the action of said preservative in an inclosed space, substantially as described.

7. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative fluid by bringing the same into contact with a refrigerating-surface, reheating the same, and subjecting the matter to be cured to the action of said fluid, substantially as described.

8. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative products of combustion by bringing the same into contact with a refrigerating-surface, heating the same to a desired temperature, and subjecting the matter to be cured to the action of such preservative, substantially as described.

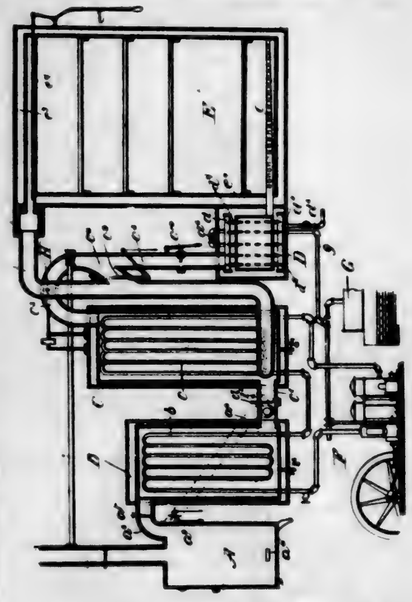

9. In the curing of food matter, the hereinbefore-described method of preparing the preservative fluid for presentation to food matter, which consists in simultaneously drying and scrubbing, and then reheating the same, substantially as described.

10. In the curing of food matter, the hereinbefore-described method of preparing the preservative products of combustion for presentation to food matter, which consists in simultaneously drying the same and removing unconsumed carbon therefrom, and then reheating, substantially as described.

11. In the curing of food matter, the hereinbefore-described method of preparing the preservative products of combustion for presentation to food matter, which consists in simultaneously removing moisture and unconsumed carbon therefrom, and then reheating said preservative, substantially as described.

12. The method of curing food matter, which consists in simultaneously drying and scrubbing the preservative products of combustion, uniformly maintaining the same at the degree of temperature best adapted to the particular kind of food matter to be cured and causing a continuous circulation of the preservative about the matter to be treated, and permitting escape of a small portion of such preservative, to be replaced by fresh preservative, substantially as described.

13. The method of curing food matter, which consists in taking the preservative products of combustion and simultaneously drying and removing therefrom unconsumed carbon, then subjecting the preservative thus treated to a heating medium, then causing the preservative thus heated to circulate around and against the food matter placed in an inclosed space, then again causing such preservative to be subjected to simultaneous drying and scrubbing, and reheating and permitting a portion of the preservative to escape, to be replaced by fresh preservative, substantially as described.

710,126. SKEIN-HOLDER. LOTTA M. TREMBLY, Canton, Ohio. Filed June 17, 1901. Serial No. 64,944. (No model.)

Claim.—1. A skein-holder, comprising a card having arranged on the face thereof a row of vertically-projecting tongues, a row of horizontally-projecting tongues below the row of vertically-projecting tongues, said last-mentioned tongues being arranged in pairs, the tongues comprising each pair extending in opposite directions, and a binding-strip arranged beneath each of the said pairs, substantially as described.

2. A silk-skein holder, comprising a card provided with a row of longitudinally-projecting tongues arranged across the face thereof, said tongues being arranged in pairs, the tongues in each pair extending in opposite directions, and the last tongue in one pair touching the first tongue in the next pair, so as to form mutual guards to prevent the skein from being accidentally displaced from either of the abutting tongues, substantially as described and for the purpose set forth.

3. A silk-skein holder, comprising a card having secured to the face thereof a vertically-projecting tongue, a vertical row of horizontal tongues secured below said vertical tongue, said horizontal tongues being arranged in pairs and having the tongues constituting the respective pairs projecting in opposite directions, and a binding-strip secured below said row of horizontal tongues, substantially as described and for the purpose set forth.

710,127. WINDOW-SEAT. LOUIS WAGNER, Jacksonville, Fla. Filed Apr. 21, 1902. Serial No. 104,094. (No model.)

Claim.—1. In a window-seat, the combination with a platform, of a foldable back hinged thereto, side pieces hinged to the back, brace connections between the side pieces and the platform, and means carried by the back for engagement with the inner side of a wall to brace the device.

2. The combination with a window-seat, of an arm and a wall-engaging member hinged to the outer end of the arm, said member being foldable in a substantially horizontal direction against the outer side of the arm and limited in its movement.

3. The combination with a window-seat, of an arm having its outer end provided with a wall-engaging member which is hinged thereto and foldable in a substantially horizontal direction against the outer side of the arm, the movement of said member being limited substantially to a quarter-swing.

4. The combination with a window-seat having a back, of an arm carried by the back and projected inwardly across the seat, and means for engagement with the inner side of a window-frame, said means being hinged to the outer end of the arm and foldable against the outer side thereof, and also limited substantially to a quarter-swing outwardly from the arm.

5. The combination with a window-seat, of an arm, means for engaging the inner side of a window-frame hinged to the outer end of the arm and foldable against the outer side thereof, and a stop device carried by the frame-engaging means and adapted to engage the arm and support said means when disposed at substantially right angles with respect to the arm.

6. The combination with a window-seat, of an arm, means hinged to the outer end of the arm for engagement with the inner side of a window-frame and foldable against the outer side of the arm, and an angular stop carried by the inner end of the said means and embracing the inner side of the joint between the same and the arm.

7. The combination with a window-seat, of a back hinged thereto, arms carried by the opposite ends of the back and normally projected inwardly across the platform, and window-frame-engaging members hinged to the outer ends of the arms to lie across the inner sides of the window-frame, and provided with means to hold the same against pivotal movements when engaged with a window-frame.

8. In a window-seat, the combination with a platform, of a back thereafter, arms hinged to the opposite ends of the back and normally projected across the platform, window-frame-engaging members hinged to the free ends of the arms and foldable against the outer sides thereof, and means for limiting the pivotal movements of the window-frame-engaging members to substantially a quarter-swing outwardly from the arms.

9. In a window-seat, the combination with a platform, of a back hinged thereto, side pieces hinged to the back, detachable fastenings between the side pieces and the platform, arms hinged to the opposite ends of the back, window-frame-engaging devices hinged to the outer ends of the arms to bear across the inner sides of a window-frame and foldable against the outer sides of the arms, and means to limit the pivotal movements of said devices to substantially quarter-swings outwardly from the arms.

10. The combination with a window-seat, of a wall-engaging brace formed in hinged sections, the outer or free section being adapted to lie across the inner side of a window-frame to brace the device when in use, each of the brace-members consisting of a metal plate having its peripheral edge beaded and provided with a stiffening-wire, the end portion of one member being formed into a sleeve pivotally embracing the adjacent end portion of the stiffening-wire of the other member, and an angular stop carried by one of the members and disposed to engage the other member to limit the swing of the movable member.

11. The combination with a window-sill, of inner and outer strips secured longitudinally thereto, and a window-seat supported upon the inner strip and provided with longitudinal cleats bearing against the respective strips on the window-sill to prevent endwise displacement of the seat.

12. A window-seat having a transverse slot in the bottom thereof, a comparatively broad cleat applied to the under side of the bottom of the seat, a narrow cleat carried by the lower side of the first-mentioned cleat and at the outer edge thereof, and a fastening carried by said first-mentioned cleat and adjustable throughout the length of the slot in the seat.

13. In a window-seat, the combination of a platform having opposite transverse slots formed therein, a comparatively broad cleat applied to the under side of the bottom and provided with upstanding bolts adjustable in the slots of the seat, a narrow cleat secured to the under side of the wide cleat, a stationary back and opposite stationary side pieces for the platform, a foldable back hinged to the stationary back, foldable side pieces hinged to the opposite ends of the foldable back, eyes carried by the platform, swinging hooks carried by the foldable side pieces for detachable engagement with the eyes, opposite window-frame-engaging braces hinged to opposite ends of the foldable back, each brace embodying hinged sections, the outer section being of a length to bear across the inner side of a window-frame, angular stops carried by the inner ends of the outer sections of the braces and adapted to bear against the other sections to limit the movement of said outer sections, and pendent fastenings carried by the inner portion of the platform.

710,128. WATER-CLOSET VALVE. EARL G. WATROUS, Chicago, Ill. Filed Dec. 26, 1899. Serial No. 741,610. (No model.)

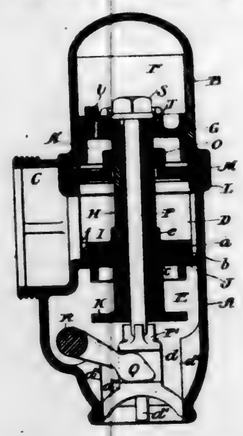

Claim.—1. In a water-closet valve, the combination of valve-controlling piston operating at the closing movement of the main valve against the resistance of a body of water confined in a chamber in front of the piston, and a check-valve independent of the piston for controlling communication between the water-supply and said chamber and operating to permit such communication during the opening movement of the main valve and to cut it off during the closing movement thereof, substantially as described.

2. In a water-closet valve, the combination of a valve-controlling piston, an inlet-chamber, a cushioning-chamber located above said inlet-chamber and between the latter and piston, and a check-valve independent of the piston controlling communication between the inlet and cushioning chambers, substantially as described.

3. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the retarding-chamber from the cushioning and inlet chambers, and a check-valve controlling communication between the inlet and cushioning chambers, substantially as described.

4. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the cushioning and retarding chambers and provided with a by-pass directly connecting said chambers, and a check-valve controlling communication between the inlet and cushioning chambers, substantially as described.

5. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the cushioning and retarding chambers, and a check-valve independent of said piston for controlling communication between the inlet and cushioning chambers, substantially as described.

6. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the cushioning and retarding chambers and provided with a by-pass directly connecting said chambers, and a check-valve independent of said piston for controlling communication between the inlet and cushioning chambers, substantially as described.

7. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the retarding-chamber from the cushioning and inlet chambers and provided with a by-pass directly connecting the cushioning and retarding chambers, and a check-valve independent of said piston for controlling communication between the inlet and cushioning chambers and operating at the closing movement of the main valve to cut off such communication and confine the water in the cushioning-chamber in front of the piston, substantially as described.

8. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the inlet and retarding chambers, a check-valve controlling a discharge-outlet from the retarding-chamber, and a second check-valve controlling communication between the inlet and cushioning chambers, substantially as and for the purpose described.

9. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the retarding-chamber from the cushioning and inlet chambers and provided with a hollow stem furnishing communication between the retarding-chamber and the discharge end of the valve, a check-valve controlling such communication, and a second check-valve controlling communication between the inlet-chamber and cushioning-chamber, substantially as and for the purpose described.

10. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a valve-controlling piston separating the cushioning and retarding chambers and provided with a hollow stem extending through the cushioning and inlet chambers and furnishing communication between the retarding-chamber and the discharge end of the valve, a check-valve controlling such communication, and an annular check-valve surrounding and sliding upon the hollow piston-stem and controlling communication between the inlet and cushioning chambers, substantially as and for the purpose described.

11. In a water-closet valve, the combination of inlet, cushioning and retarding chambers, a piston separating the cushioning and retarding chambers and having a hollow stem furnishing communication between the retarding-chamber and the discharge end of the valve, a rod extending through the piston-stem and connected at one end with the operating device for opening the main valve and carrying at its opposite end a check-valve controlling communication between the retarding-chamber and discharge-outlet of the valve, said rod being capable of slight longitudinal movement independently of the main valve and piston, and an annular check-valve surrounding the piston-stem and controlling communication between the inlet and cushioning chambers, substantially as described.

12. In a water-closet valve, inlet, cushioning and retarding chambers normally in communication with the water-supply and filled with water under pressure, a valve-controlling piston separating the retarding-chamber from the cushioning and inlet chambers, a check-valve controlling communication between the retarding-chamber and the discharge-outlet of the valve, and a second check-valve controlling communication between the inlet-chamber and the cushioning-chamber, substantially as described.

13. A water-closet valve comprising inlet, discharge, cushioning and retarding chambers, a piston separating the cushioning and retarding chambers and a main valve moving with said piston and controlling communication between the inlet and discharge chambers, a check-valve controlling communication between the retarding and discharge chambers, operating devices for opening said check-valve and lifting the main valve from its seat, and a check-valve independent of the piston for controlling communication between the inlet and cushioning chambers, substantially as described.

14. A water-closet valve comprising inlet, discharge, cushioning and retarding chambers, a piston separating the cushioning and retarding chambers and having a hollow stem extending through the cushioning and inlet chambers and furnishing communication between the retarding and discharge chambers, a main valve carried by said piston-stem and controlling communication between the inlet and discharge chambers, a check-valve controlling communication of the retarding-chamber with the discharge-chamber through the hollow piston-stem, operating devices for lifting the main valve from its seat and opening said check-valve, and an annular check-valve surrounding the piston-stem and controlling communication between the inlet and cushioning chambers, substantially as described.

15. The herein-described water-closet valve, comprising the casing A B containing the chambers E, D, N, F, the piston G separating the chambers N and F and having the hollow stem H, the main valve I carried by said stem, the rod P extending through said stem and connected at its lower end with the lifting devices for the main valve and carrying at its upper end the check-valve S, and the annular check-valve surrounding the piston-stem and controlling communication between the chambers D and N, substantially as described.

16. The herein-described water-closet valve, comprising the casing A B containing the chambers E, D, N, F, the piston G separating the chambers N and F and having the hollow stem H, the main valve I carried by said stem and provided with the by-pass or slit *f*, the rod P extending through said stem and connected at its lower end with the lifting devices for the main valve and carrying at its upper end the check-valve S, and the annular check-valve O surrounding the piston-stem and controlling communication between the chambers D and N, substantially as described.

17. The herein-described water-closet valve, comprising the casing A B containing the chambers E, D, N, F, the piston G separating the chambers N and F and having the hollow stem H provided with the enlargement *e*, the main valve I and disk K carried by the piston-stem, the rod P extending through said stem and connected at its lower end with the lifting devices for the main valve and carrying at its upper end the check-valve S, the diaphragm M separating the chambers D and N and provided with the central circular opening adapted to receive the enlargement *e* of the piston-stem at the end of the upward movement of the main valve, and the annular check-valve O surrounding the piston-stem within the chamber N and seating upon the diaphragm M.

710,129. VALVE. EARL G. WATROUS, Chicago, Ill. Filed Nov. 18, 1901. Serial No. 82,913. (No model.)

Claim.—1. A pair of pipe-sections, and a coupling-nut for connecting them, in combination with a valve located within said nut, and means for opening and closing said valve by oscillation of said nut; substantially as described.

2. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a valve having a threaded support in one of said sections whereby it will be moved toward or from its seat by turning it in one direction or the other, and means for turning said valve continuously in one direction by oscillation of the coupling-nut; substantially as described.

3. A pair of pipe-sections, in combination with a ring rotatable between said sections, and a valve having a threaded support in one of said sections and rotatable with the ring, whereby the valve may be moved toward and from its seat by turning the ring in one direction or the other; substantially as described.

4. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a ring rotatable within said nut, and a valve within said nut movable toward and from its seat by rotation of said ring; substantially as described.

5. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a ring rotatable between said pipe-sections within said nut, means for turning said ring continuously in one direction by oscillation of said nut, and a valve within said nut movable toward and from its seat by the rotation of said ring; substantially as described.

6. A pair of pipe-sections, and a coupling-nut connecting them, in

combination with a ring rotatable between said sections within said nut, means for turning said ring continuously in one direction by oscillation of said nut, a valve having a threaded support in one of said sections, and a connection between the valve and ring for causing the valve to turn with the ring while having it free to move toward and from its seat independently of the ring; substantially as described.

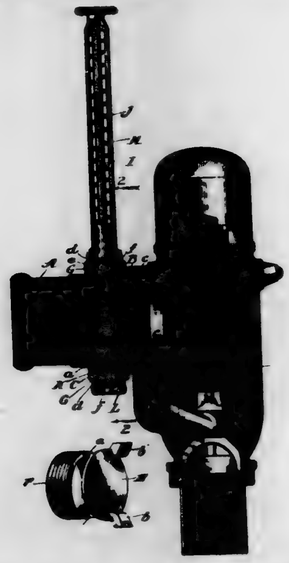

7. The pipe-sections A B, and coupling-nut C connecting them, in combination with the valve E having a threaded support in the section A and provided upon its opposite side with the ears *b*, and the rotatable ring G provided with the fingers *c* engaging said ears; substantially as described.

8. The pipe-sections A B, and coupling-nut C connecting them, in combination with the valve E provided with the ears *b*, the exteriorly-threaded sleeve F screwed into the section A and connected to the valve E by the lugs *a* leaving water-passages between the sleeve and valve, and the rotatable ring G provided with the fingers *c* engaging the ears *b* on the valve E; substantially as described.

9. The pipe-sections A B, in combination with the ring G rotatable between them, the packing-rings K between the ring G and the ends of the pipe-sections, and the valve E located within the ring G and movable toward and from its seat by rotation of said ring; substantially as described.

10. The pipe-sections A B, in combination with the ring G rotatable between them and provided with the fingers *c*, the packing-rings K between the ring G and ends of the pipe-sections, and the valve E having a threaded support in the section A and provided with the ears *b* engaging the fingers *c*; substantially as described.

11. The pipe-sections A B, and coupling-nut C connecting them, in combination with the valve E having a threaded support in the section A and provided upon its opposite side with the ears *b*, the rotatable ring G provided with the fingers *c* engaging said ears, and the packing-rings K between the ring G and ends of the pipe-sections; substantially as described.

12. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a ring within said nut, a valve movable toward and from its seat by rotation of said ring, an operating-handle applicable to said nut for oscillating the same, and means intermediate said handle and the rotatable ring within the nut for turning said ring continuously in one direction by oscillating the nut; substantially as described.

13. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a ring within said nut, a valve movable toward and from its seat by rotation of said ring, an operating-handle applicable to said nut for oscillating the same, and means intermediate said handle and the rotatable ring within the nut for turning said ring at will in either direction by oscillating the nut; substantially as described.

14. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a rotatable ring located within said nut and having a notched periphery, a valve within said nut movable toward and from its seat by the rotation of said ring, an operating-handle applicable to said nut for oscillating the same, and a pawl-tooth carried by said handle and adapted to engage the periphery of the rotatable ring, to rotate the same continuously in one direction by oscillating said nut; substantially as described.

15. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a rotatable ring located within said nut and having a notched periphery, a valve within said nut movable toward and from its seat by the rotation of said ring, an operating-handle applicable to said nut for oscillating the same, and a reversible pawl-tooth carried by said handle and adapted to engage the notched periphery of the rotatable ring, whereby said ring may be turned at will in either direction by oscillating said nut; substantially as described.

16. A pair of pipe-sections, and a coupling-nut connecting them, in combination with a rotatable ring located within said nut, a valve movable toward and from its seat by rotation of said nut, a tubular operating-handle applicable to said nut for oscillating the same, and a spring-pressed rod located within said handle and projecting at one end beyond the same and formed into a tooth adapted to engage the periphery of the notched ring within the coupling-nut; substantially as and for the purpose described.

17. A pair of pipe-sections and a coupling-nut connecting them, in combination with a rotatable ring located within said nut, a valve movable toward and from its seat by rotation of said nut, a tubular operating-handle applicable to said nut for oscillating the same, and a spring-pressed rod located within said handle and projecting at one end beyond the same and formed into a tooth adapted to engage the periphery of the notched ring within the coupling-nut, said spring-pressed rod being free to turn within the handle when disengaged from the coupling-nut and ring, to reverse the position of the toothed inner end; substantially as and for the purpose described.

18. A coupling-nut C provided with an opening *f* surrounded by the threaded boss *d*, in combination with the tubular handle H having the threaded end adapted to engage said boss, the rod I located within the handle H and having its end projecting beyond the threaded end of the handle H formed into a pawl-tooth *s* adapted to pass through the opening *f* in the nut C, the thumb-piece *g* secured to the opposite projecting end of said rod, and the coiled spring J surrounding the rod within the handle; substantially as and for the purpose described.

19. The combination of the tubular handle H, the rod I rotatable therein and projecting beyond the opposite ends thereof, formed into a pawl-tooth at one end and having the thumb-piece *g* secured to its opposite end, and the coiled spring J surrounding said rod within the handle H; substantially as and for the purpose described.

710,180. REGENERATOR-BURNER. CARL W. WEISS, New York, N. Y. Filed May 9, 1899. Serial No. 716,098. (No model.)

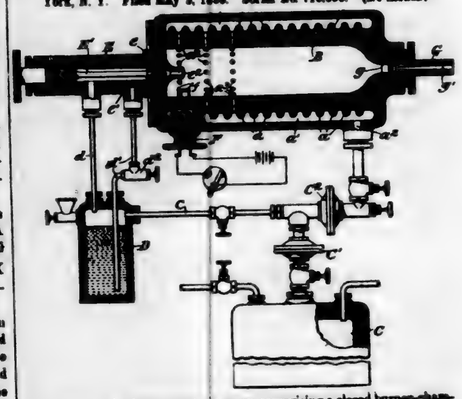

Claim.—1. A regenerator-burner, comprising a closed burner-chamber having an outlet-nozzle at one end, and air-inlets at its other end, means for supplying air to said inlets to support combustion, an injector also at said last-named end, an oil-reservoir, a pipe leading from below the oil-level up to one member of the injector, a second pipe leading from above the oil-level in said chamber to the other member of the injector, and a compressed-air pipe discharging air into the upper end of the oil-receptacle to force oil through one pipe and carbureted air through the other; substantially as described.

2. A regenerator-burner comprising a closed air-jacketed burner-chamber, having air-inlets at one end from said jacket and provided at its opposite end with a discharge-nozzle, an injector at the air-inlet end of the chamber, an oil-reservoir, a pipe leading from below the oil-level of said reservoir to one member of the injector, a second pipe leading from above the oil-level to the other member of said injector; a compressed-air reservoir, and pipe leading from said air-reservoir to the air-jacket and upper part of the oil-reservoir and provided with pressure-regulating valves to cause the pressure at the air-inlets of the burner-chamber to be less than the pressure at the injector; substantially as described.

3. The combination with an air-jacketed burner-chamber, having air-inlets from its jacketed space, an injector for the chamber, means for supplying oil to the injector, a compressed-air reservoir, piping connecting the reservoir with the injector and oil-reservoir, and piping leading from the air-reservoir to the air-space around the burner-chamber, of an engine or motor having an air-jacket incorporated in the piping leading to said burner-chamber, and a nozzle or pipe connecting the outlet end of the burner-chamber with the motor or engine; substantially as described.

4. The combination with the air-jacketed burner-chamber having air-inlets from its jacketed space, and an injector for combustible material, of a compressed-air reservoir, piping connecting the reservoir with the injector and the said air-jackets respectively, and pressure-reducers in said piping to cause the air from said reservoir to be of greater force at the injector than at the air-inlets of the berner-chamber; substantially as described.

5. A regenerator-burner, comprising the jacketed chamber A having a contracted outlet end, a lining fitting the chamber and also having a contracted outlet registering with that of the chamber, inlet-apertures from the jacketed space to the interior of the combustion-chamber, an annular plug screwed into the open end of the chamber and engaging that end of the lining to hold it in place, a blast-nozzle at the opposite end of the chamber, an air-nozzle screwed into said annular plug, an oil-nozzle screwed into the air-nozzle, an air and oil supply for said nozzle, and an air-supply for the chamber-jacket; substantially as described.

710,181. LAWN-MOWER. FRED L. ADAMS, Prophetstown, Ill. Filed Jan. 3, 1902. Serial No. 88,322. (No model.)

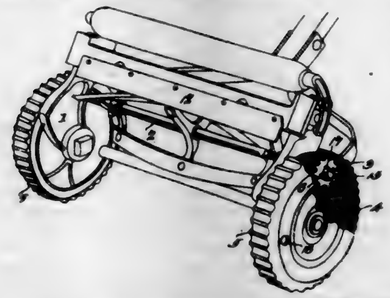

Claim.—1. A lawn-mower having as elements, a cutter-bar, a reel-shaft having a key-seat, a driving-wheel having an opening in alinement with said key-seat, a pinion having a key-seat and normally mounted loosely on the reel-shaft, a clutching mechanism for connecting the pinion to the reel-shaft in one direction of movement, and a key adapted to fit in the key-seat of the shaft and pinion to lock the two together when it is desired to sharpen the cutter-bar.

2. The combination of the reel shaft and its loosely-mounted pinion, each having a key-seat, mechanism for clutching the pinion to the shaft in one direction of movement, a driving-wheel having an opening which may be moved in alinement with the key-seat, and a key adapted to be inserted in said key-seat to offset the locking of the pinion to the shaft, substantially as specified.

710,182. COFFEE-MAKER. THOMAS K. BAKER, Minneapolis, Minn. Filed Nov. 11, 1901. Serial No. 81,816. (No model.)

Claim.—1. A device of the class described, consisting of a can tapering toward an open end for the purpose of fitting different-sized apertures in coffee-pots, a collar, and a conical strainer removably attached to the open end of the can by said collar, with its apex projecting into said end; whereby, when the can is inverted, the liquid coffee is strained through said opening.

2. A device of the class described, consisting of a vessel having a tapering end for the purpose of fitting different-sized openings in coffee-pots, an opening in said tapering end, a strainer with a reverse taper in said opening, a collar by which the strainer is detachably fastened to said vessel, and a frame carried by said collar for holding said strainer in position when the vessel is tilted or inverted.

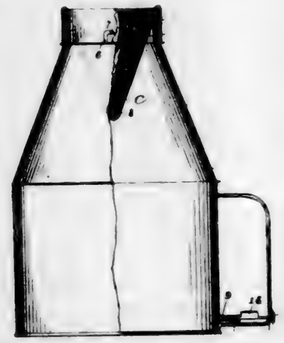

3. A device of the class set forth, consisting in combination of a vessel closed at one end and having a truncated funnel at the other for the purpose of fitting different-sized openings in coffee-pots, a flange around the mouth of said funnel, a tapering strainer reversed in said funnel with its outer edge overlapping said flange, a collar by which said overlapping edge is clamped to said flange, a tapering frame, carried by said collar adapted to support the apex end of said strainer in said vessel, and an air-valve near the bottom of the vessel.

4. A device of the class set forth, consisting in combination of a vessel A, tapering toward an open end B, a circular flange around said open end, a conical strainer C, a collar 5 by which said strainer is attached to said flange, a V-shaped frame 8 carried by said collar, by which one end of said strainer projects through said opening and into said vessel, and a valve near the bottom of the vessel.

710,183. COFFEE-MAKER. THOMAS K. BAKER, Minneapolis, Minn. Filed Jan. 30, 1902. Serial No. 91,840. (No model.)

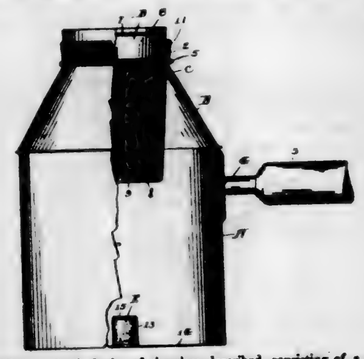

Claim.—1. A device of the class described, consisting of a vessel having one end tapering to an opening for the purpose of fitting different-sized apertures in coffee-pots, a flange around said open end, a strainer, and a holder for said strainer, said strainer being provided with an elastic open end, whereby it is adapted to enfold the outer surface of the flange for the purposes specified.

2. A device of the class set forth, consisting in combination of a vessel having an open end terminating in a flange, a strainer also having an open end framed in an elastic ring, adapted to enfold said flange, and means for holding said strainer in the mouth of the vessel.

3. A coffee-maker closed at one end and terminating in an opening at the other, a flange surrounding said opening, an automatic valve in said closed end, substantially as shown and described, a strainer surrounding a holder in said opening, an expansible ring at the open end of the strainer adapted to clasp the strainer and outer surface of said flange together.

4. A coffee-maker consisting of a vessel closed at one end and tapering at the other to an opening, a valve in the closed end of said vessel, a tapering strainer reversed in said opening, and means for attaching said strainer in said vessel, consisting of a skeleton holder within the strainer and split ring around the open end thereof.

710,184. SAND-DISTRIBUTER FOR RAILROADS. WATSON H. BELL, Brooklyn, N. Y. Filed May 7, 1902. Serial No. 106,362. (No model.)

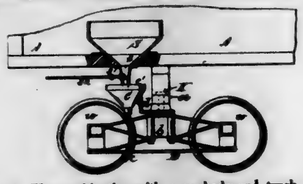

Claim.—1. The combination with a car-body and truck pivotally connected by means of a king-bolt, of a sand-distributing funnel rigidly secured to the truck and disposed angularly with relation to the line of travel of the same and arranged to conduct the sand to the track immediately adjoining the periphery of one of the wheels of said truck and a sand-hopper rigidly secured to the car-body in a prescribed relation to the said funnel and king-bolt, substantially as and for the purpose set forth.

2. The combination with a car-body and truck pivotally connected by means of a king-bolt, of a sand-distributing funnel rigidly secured to the truck and disposed angularly with relation to the line of travel of the same and formed with a mouth concentric with the said king-bolt, and a sand-hopper rigidly secured to the car-body in a prescribed relation to the sand-distributing funnel and king-bolt, substantially as and for the purpose set forth.

3. The combination of the sand-hopper S, rigidly secured to the car-body A, and provided with a suitable sand-releasing valve, the truck B, pivotally secured to the car-body by a king-bolt K, and the sand-distributing funnel C, rigidly secured to the said truck B and disposed angularly to the line of travel, the parts being relatively arranged and operating substantially in the manner and for the purpose herein set forth.

4. The combination of the car-body A, and truck B, pivotally connected by the king-bolt K, the sand-hopper S, rigidly secured to the car-body, and formed with the spout *s* and valve *s'*, and the distributing-funnel C, rigidly secured to the truck B and disposed angularly to the line of travel, and formed with the mouth *c'*, concentric with the king-bolt K, and with the discharge-spout *c*, the whole arranged and operating substantially in the manner and for the purpose described.

710,185. RUBBER-TIRE-SETTING MACHINE. JOHN C. BLAKE, Toledo, Ohio, assignor to The Indiana Rubber and Insulated Wire Company, Jonesboro, Ind. Filed Aug. 20, 1901. Serial No. 73,710. (No model.)

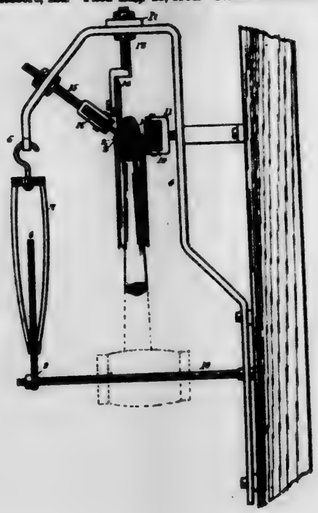

Claim.—1. An improved machine for placing rubber tires having fillets on opposite sides of the base, in metal tires having opposite grooves to receive and fit said fillets, which consists of means for revolubly supporting the wheel, a plano-convex roller to bear against the side of the rubber tire, and an adjacent narrow-edged roller to bear diagonally against the tire above the fillet, substantially as shown and described.

2. An improved machine for placing rubber tires having fillets on opposite sides of the base, in metal tires having opposite grooves to receive and fit said fillets, which consists of means for revolubly supporting the wheel, a plano-convex roller to bear against the side of the rubber tire, an adjacent narrow-edged roller to bear diagonally against the tire above the fillet, and an abutment-roller to bear against the metallic tire, substantially opposite the other rollers, substantially as shown and described.

3. An improved machine for placing rubber tires having fillets on opposite sides of the base, in metal tires having opposite grooves, which consists of a housing bearing an abutment-roller to support the wheel against side thrust, a plano-convex roller to bear against the side of the tire opposite said abutment-roller, an adjacent narrow-edged roller to bear diagonally against the tire above the fillet, said plano-convex and narrow-edged rollers being adjustable in said housing and adjustable means for supporting the wheel, substantially as shown and described.

710,186. ENGINE. WILLIAM A. BOLE, Pittsburg, Pa., assignor to the Westinghouse Machine Company, a Corporation of Pennsylvania. Filed Aug. 16, 1897. Serial No. 648,325. (No model.)

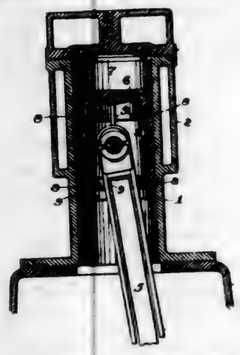

Claim.—1. The combination with a cylinder, of a piston adapted to work therein and provided with means for permitting the free escape of oil from the space between the cylinder and piston through the latter below its head in all of its positions, substantially as set forth.

2. The combination with a cylinder, of a piston having a groove or grooves and a passage or passages extending therefrom to the interior and below the piston-head for discharging oil from between the piston and cylinder and for preventing or hindering the passage of oil to the head of the piston or to the space between the piston and the cylinder-head, substantially as set forth.

3. The combination with a cylinder and a crank-case, of a piston adapted to work in the cylinder, and having a free passage or passages extending inward from its periphery to the space below its head, through which oil may flow from the space between the piston and cylinder to the crank-case or to a space communicating therewith, substantially as set forth.

4. The combination with a crank-case, of a cylinder connected with and opening into the crank-case and a trunk-piston adapted to work in the cylinder, and having a circumferential groove and a free passage, or passages, leading from the groove into the interior of the piston below its head, whereby oil may pass freely from the space between the cylinder and piston to the interior of the crank-case, substantially as set forth.

5. In an engine, the combination with a closed crank-case and a cylinder, of a piston operating in said cylinder and provided with one or more external, circumferential grooves having a downwardly and inwardly inclined upper side and one or more passages leading from the inner edge of said groove to the interior of the piston.

6. In an engine, the combination with a closed crank-case and a cylinder, of a piston operating in said cylinder and provided with an external, circumferential groove having an inwardly and downwardly inclined upper side and a substantially horizontal lower side and one or more passages leading from said groove to the interior of the piston.

710,187. SEPARATING MECHANISM FOR CORN-HUSKING MACHINES. OLIVER BOYER, Lima, Ohio, assignor, by direct and mesne assignments, of one-half to William H. OTT, Lima, Ohio. Filed Apr. 11, 1901. Serial No. 55,362. (No model.)

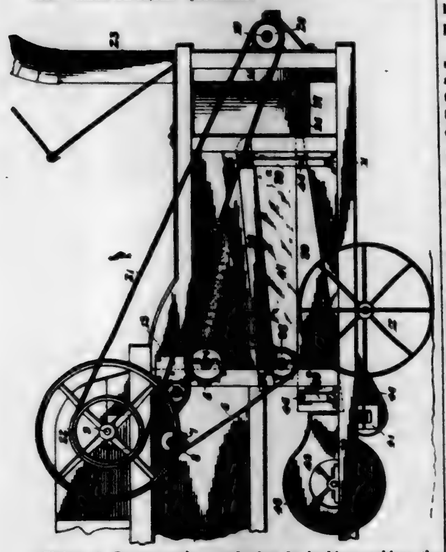

Claim.—1. In a separating mechanism for husking-machines, the combination with a separating-rack designed to receive the husks and to permit the gravitation of the shelled corn, of a blower disposed to project a blast below the separating-rack to clean the corn as the latter is precipitated into the blast, a suction-fan located in a direct line with the blast from the blower, and means intermediate of the separating-rack and fan for sustaining the husks in a plane below the rack and in position to be fed to the fan by the blast from the blower.

2. In separating mechanism for husking-machines, the combination with a vibratory separating-rack designed to receive the husks, and a vibratory riddle-shoe disposed below the rack, of a blower disposed to project a blast endwise between the riddle-shoe and the rack to offset the cleaning of the corn as it drops into the shoe from the rack and to remove the husks as the latter are dropped into the direct range of the blast from the end of the rack opposite the blower.

3. In separating mechanism for husking-machines, the combination with a vibratory separating-rack and a vibratory riddle-shoe, of a husk-chamber located beyond one end of the rack with its bottom disposed in a plane below the rack, a blower disposed to project a blast endwise between the rack and shoe and through the husk-chamber, and a suction-fan located beyond the husk-chamber to receive the husks expelled therefrom by the blast from the blower.

4. In separating mechanism for husking-machines, the combination with a separator-casing and separating mechanism therein comprehending means for mechanically feeding the husks endwise of the casing, of a husk-chamber disposed beyond the separating mechanism and having its bottom disposed in a plane below said mechanical feeding means, a blower located at or adjacent to the front end of the casing likewise below said mechanical feeding means and disposed to direct a blast of air through the separating mechanism and husk-chamber, and a suction-fan located in the direct line of blast from the blower, and disposed at the rear side of the husk-chamber.

5. In separating mechanism for corn-husking machines, the combination with a vibratory separating-rack designed to receive the husks and to feed them toward the end of the rack, of a vibratory riddle-shoe located below the rack and having an inclined bottom disposed to facilitate the discharge of corn at the end of the riddle-shoe opposite the end of the rack at which the husks are discharged, a blower disposed at or adjacent to the discharge end of the riddle-shoe to direct a blast therethrough in opposition to the corn moving toward the discharge end of the chute, whereby the blast after performing its function as a cleaning agent for separating the corn, assists in removing the husks as the latter gravitate into the blast at the rear end of the rack and a suction-fan disposed beyond the rack to receive the husks blown back by the first-named blower.

6. In separating mechanism for corn-husking machines, the combination with a vibratory rack, and an upstanding swinging support for one end thereof, of a riddle-shoe disposed below the rack and having pivotal connection at one end with said upstanding swinging support, a swinging link supporting the opposite end of the riddle-shoe, and means for imparting motion to the rack.

7. In separating mechanism for corn-husking machines, the combination with a separator-casing, separating mechanism therein comprising a longitudinally-inclined separating-rack and a riddle-shoe disposed below the rack and having a longitudinally-inclined bottom wall and a horizontal screen constituting the top of the shoe, of means located below the discharge end of the riddle-shoe to receive the corn therefrom, a vertically-disposed suction-fan located beyond the separating mechanism to receive the husks, and a blower located to project a blast of air into the discharge end of the riddle-shoe and into the fan located thereboyond and means for sustaining the husks in a plane below the rack and in position to be fed to the fan by the blast from the blower.

8. In separating mechanism for corn-husking machines, the combination with a vibratory separating-rack, of a vibratory riddle-shoe disposed therebelow, flexible vertical side walls extending between the rack and shoe, and a blower located at one end of the riddle-shoe and disposed to project a blast of air through the space defined by the riddle-shoe, rack and flexible side walls.

9. In a separating mechanism for husking-machines, the combination with a separator-casing, of a suction-fan disposed directly across the rear end thereof, means for feeding the material to be separated into the casing at its front end, a separating-rack disposed longitudinally of the casing to convey the husks toward the rear end thereof, a husk-chamber located intermediate of the rack and suction-fan and having its bottom disposed in a horizontal plane below the rack, a riddle-shoe located below the rack and having its bottom wall inclined downwardly from the bottom of the husk-chamber to the front end of the separator-casing, and a blower located beyond the front end of the casing and disposed to direct a blast longitudinally between the separator and the bottom wall of the riddle-shoe and through the husk-chamber to the suction-fan.

10. In a separating attachment for corn-husking machines, the combination with a separator-casing, of a suction-fan disposed at one end of the casing, a blower located at the opposite end of the casing and projecting a blast directly into the suction-fan, and separating mechanism disposed above the blower and spaced from the suction-fan to permit the husks to drop from the rear end of the separating mechanism and into the blast of air projected from the blower to the suction-fan.

11. A separating-rack for corn-husking machines comprising an open frame, a series of separated transverse slats extending across the frame and fixed thereto, a series of longitudinally-disposed toothed rack-bars carried by the frame above the slats, and screen-bars disposed longitudinally of the frame and extending between the slats in the intervals between the toothed bars.

12. A separating-rack for corn-husking machines comprising an open frame, a series of separated transverse slats extending across the frame and fixed thereto, a series of longitudinally-disposed toothed bars carried by the frame above the slats, the teeth of said bars being directed toward the rear end of the rack, screen-bars disposed longitudinally of the frame and extending between the slats in the intervals between the toothed bars, said screen-bars having their front ends driven into a slat and their rear ends resting upon the next succeeding slat.

13. In separating mechanism for corn-husking machines, the combination with a separator-casing, and separating mechanism therein including a longitudinally-inclined open-work supporting-rack, and a riddle-shoe disposed below the rack and having a longitudinally-inclined bottom wall, and a horizontal screen constituting the top of the shoe and of a length at least equal to the length of the rack, of means for imparting vibratory movement to the rack and shoe, means located beyond the discharge end of the riddle-shoe to receive the corn therefrom, a blower located to project a blast of air into the discharge end of the riddle-shoe, through the screen thereof and rearwardly between the rack and shoe, and conveying means located beyond the rear end of the rack, said conveying means being so located that the husks delivered from the rear end of the rack will fall into the blast from the blower, whereby said blast will assist in the delivery of the husks to the conveying means.

14. In separating mechanism for corn-husking machines, the combination with a vibratory supporting-rack, of a vibratory riddle-shoe disposed therebelow, flexible side walls extending between the rack and shoe, a blower located at one end of the riddle-shoe and disposed to project a blast of air through the space defined by the riddle-shoe, rack and flexible walls, and conveying means located beyond the rack to offset the removal of the husks, said conveying means being so disposed that the delivery of the husks thereto will be assisted by the blast from the blower.

15. In separating mechanism for corn-husking machines, the combination with a separator-casing, of a blower, a conveyor located directly

in the blast from the blower, and separating mechanism located in a plane above the blower and having its discharge end spaced from the conveyer, to permit the husks to drop from the end of the separating mechanism into the blast and be blown back to the conveyer with the light particles previously separated from the falling corn by the blast.

16. In a separating attachment for corn-husking machines, the combination with a separator-casing, of a conveyer located at one end of the casing, a blower located at the opposite end of the casing and projecting a blast directly to the conveyer, and separating mechanism disposed above the blower and spaced from the conveyer, to permit the husks to drop from the rear end of the separating mechanism into the blast of air projected from the blower to the conveyer.

17. In separating mechanism for corn-husking machines, the combination with a casing, of a blower, a conveyer located directly in the blast therefrom, and separating mechanism intermediate of the blower and conveyer, said separating mechanism comprising an inclined separating-rack disposed in a plane above the blower and having its discharge end spaced from the conveyer, to permit the husks to drop from the end of the rack into the blast, a riddle-shoe disposed below the rack and having its bottom wall downwardly inclined toward the blower, and a horizontal screen constituting the upper wall of the riddle-shoe and intersecting the line of the blast, whereby the blast from the blower serves first to clean the dropping corn and to blow the light particles back into the body of husks falling from the end of the rack and delivered by the blast to the conveyer.

710,138. CUP. JOHN BRÄUNLICH, Lorain, Ohio. Filed July 29, 1901. Serial No. 70,144. (No model.)

Claim.—A lamp heating-cup comprising a body having its lower end fluted, a bottom having radial corrugations registering with the flutes, and a centrally-disposed draft-flue carried by the bottom and extending above the rim of the body.

710,139. NON-REFILLABLE BOTTLE. HERMAN BREUHS and HENRY J. WALDEYER, New York, N. Y. Filed Feb. 26, 1902. Serial No. 96,770. (No model.)

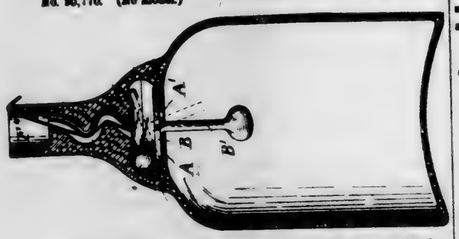

Claim.—1. In a device of the character described, the combination of a diaphragm near the neck of the bottle, a disk seated thereon, a portion of said neck overhanging the disk, an arm projecting through the said diaphragm and a weight on the end of said arm, an annular groove in said neck and a ball within said groove, the diameter of which is greater than the distance from the disk to the overhanging portion of the neck.

2. In a device of the character described, the combination of a diaphragm in the upper part of the bottle, a central opening in said diaphragm, a neck joined to said bottle above the diaphragm, a disk seated on said diaphragm, notches in the vertical edge of said disk, an arm extending from the center of said disk through said opening, a weight on the inner end of said arm, and a ball between the upper surface of said disk and the neck.

710,140. NUMBERING-MACHINE. JOHN J. CRATTAWAY, Brooklyn, N. Y. Filed Oct. 20, 1900. Serial No. 33,733. (No model.)

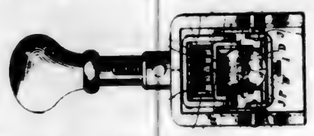

Claim.—1. In a numbering-machine, the combination of the numbering-wheels and their ratchet-wheels, with a pawl-yoke, a pawl plate or block pivoted in said yoke, pawls secured to said plate and operatively engaging said ratchet-wheels when in normal position, and a part pivoted to the pawl plate or block and adjustable into position to engage a part of the framework of the machine and withdraw said pawls out of operative relation with said ratchet-wheels.

2. In a numbering-machine, the combination of the numbering-wheels, ratchet-wheels controlling the movements of said numbering-wheels, a pivoted pawl plate or block, and pawls secured to said plate or block and engaging said ratchet-wheels for consecutive numbering, with a part pivoted to said pawl plate or block and adjustable into relation with a part of the framework of the machine to turn said pawl plate or block in its pivot and thus withdraw said pawls from operative engagement with said ratchet-wheels for repeat numbering.

3. In a numbering-machine, the combination of numbering-wheels, ratchet-wheels controlling the movements of said numbering-wheels, a pivoted pawl plate or block, and pawls secured thereto and normally engaging said ratchet-wheels, an idler ratchet-wheel having alternate deep and shallow notches, an idler-pawl engaging said notches and a part pivoted to said pawl plate or block and adjustable into engagement with a part of the machine to withdraw the pawl plate or block and its sustained pawls out of engagement with the ratchet-wheels for repeat numbering, and also adjustable over the idler-pawl, whereby it will be engaged by said idler-pawl when in the shallow notches of the idler ratchet-wheel, for duplicate numbering.

4. In a numbering-machine, the combination of numbering-wheels, ratchet-wheels controlling the movements of said numbering-wheels, a pawl-yoke, a pawl plate or block pivoted to said yoke, and pawls secured thereto, with a disk pivoted to said pawl-plate and having a part adjustable into engagement with said yoke to raise the pawl plate or block and its sustained pawls out of operative relation with their ratchet-wheels, for repeat numbering.

5. In a numbering-machine, the combination of numbering-wheels, ratchet-wheels, controlling the movements of said numbering-wheels, a pawl-yoke, a pawl plate or block pivoted to said yoke, pawls secured thereto, an idler ratchet-wheel having alternate deep and shallow notches, and an idler-pawl engaging said notches, with a member pivoted to said pawl plate or block and having one part adjustable into the path of the idler-pawl when in the shallow notches of the idler ratchet-wheel, for duplicate numbering, and another part adjustable into engagement with said pawl-yoke whereby said pawl plate or block and its sustained pawls are withdrawn from their ratchet-wheels for repeat numbering.

710,141. SHOW-CASE OR SHOW-FRONT. JAMES L. CRANE, Cleveland, Ohio. Filed Nov. 18, 1901. Serial No. 82,730. (No model.)

Claim.—1. In a show-case or show-front, the combination, with two glass plates arranged with a side edge of each plate adjacent a side edge of the other plate, which plates are separated the distance required to accommodate the interposition between them of the thickness of another plate and are provided with oppositely-arranged recesses in the aforesaid edges, of a plate interposed laterally between the said recessed edges, and means instrumental in fastening the first-mentioned plates to the intervening plate and comprising the following: two metal straps arranged at opposite sides respectively of the intervening plate and extending through the aforesaid recesses and having members overlapping the outer sides of the first-mentioned plates and comprising, also, members overlapping the inner sides of the first-mentioned plates, and means fastening the metal straps to the intermediate plate.

2. In a show-case or show-front, the combination, with two glass plates arranged with a side edge of each plate opposite a side edge of the other plate, which plates are separated the distance required to accommodate the interposition between them of the thickness of another plate and are provided with oppositely-arranged recesses in the aforesaid edges, of a plate interposed laterally between the said recessed edges, and means instrumental in fastening the first-mentioned plates to the intervening plate and comprising the following: two metal straps arranged at opposite sides, respectively, of the intervening plate and extending through the aforesaid recesses and having members overlapping the outer sides of the first-mentioned and recessed plates, other metal straps arranged at the outer sides of the first-mentioned and inner straps and having members overlapping the inner sides of the said recessed plates, a bolt extending through all of the said straps and through the intervening plate and arranged with its head at the outer side of one of the outer straps, and a nut upon the shank of the bolt at the outer side of the other outer strap, substantially as and for the purpose set forth.

3. In a show-case or show-front, the combination, with two glass plates arranged with a side edge of each plate adjacent a side edge of the other plate, which plates are recessed at the said edges, of a brace arranged adjacent and extending along the said edges, and means secured to the brace and instrumental in fastening the plates to the brace and comprising the following: metal straps extending through recesses of the aforesaid recessed plates and having portions overlapping the outer sides of the recessed plates, and other straps or members overlapping the inner sides of the said plates, and means fastening the metal straps to the aforesaid brace, substantially as and for the purpose set forth.

4. In a show-case or show-front, the combination, with two glass plates arranged with a side edge of each plate adjacent a side edge of the other plate; of a brace arranged adjacent and extending along the said edge, and means secured to the brace and instrumental in fastening the plates to the brace and comprising metal straps extending between the plates, and having portions overlapping the outer sides of the plates and other members overlapping the inner sides of the said plates, and means fastening the metal straps to the aforesaid brace.

710,142. BEAN-CLEANING MACHINE. GEORGE R. DAVIDSON, Lenox, Mich. Filed Nov. 14, 1901. Serial No. 82,302. (No model.)

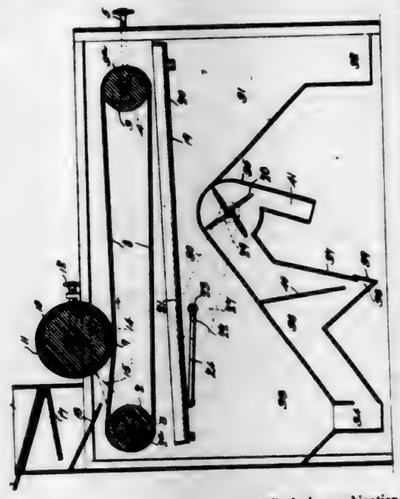

Claim.—1. In a machine of the class described, the combination of an endless traveling belt and a roller engaging and driven at a surface speed different from that of the belt, said roller having a resilient friction-surface, whereby the beans are prevented from adhering to the roller and their surfaces are subjected to attrition which pulverizes and dislodges the impurities from the surfaces of the beans, without breaking the latter, substantially as described.

2. The combination of an endless traveling belt, a roller engaging the belt, means to drive the belt and roller at different rates of speed, said roller having a resilient friction-surface, whereby the beans are prevented from adhering to the roller and their surfaces are subjected to attrition which pulverizes and dislodges the impurities from the surfaces of the beans without breaking the latter, a screen onto which the beans are discharged from the traveling belt, said screen having a section to sift the pulverized impurities from the beans and a section through which the beans drop, and means to winnow the beans, substantially as described.

710,143. RESISTANCE-COIL AND SUPPORT THEREFOR. HARRY P. DAVIS, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Co., a Corporation of Pennsylvania. Filed Dec. 26, 1901. Serial No. 87,305. (No model.)

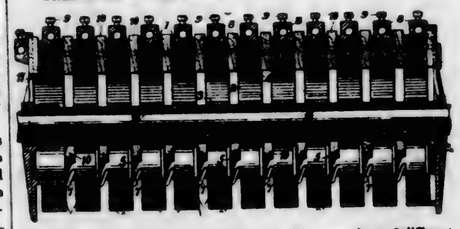

Claim.—1. A resistance element comprising two rings of different diameters projecting in opposite directions from an open-work frame, a spiral coil of resistance material surrounding the smaller ring and a plurality of insulating-blocks mounted in the frame at one side of the coil.

2. A resistance element comprising two rings of different diameter located in parallel planes and connected by a plurality of parallel arms and insulating-blocks severally located between said pairs of arms.

3. A frame for a resistance-coil comprising two rings of different diameter and located in parallel planes and connected by a plurality of pairs of substantially parallel arms.

4. A resistance-column consisting of a set of superimposed frames each of which comprises two rings of different diameter located in different planes and connected by a plurality of pairs of arms, insulating-blocks between the several pairs of arms and resistance-coils concentrically disposed between the several rings of lesser diameter and the rings of larger diameter that pertain to the adjacent frames.

5. A resistance-column consisting of a set of superimposed annular frames each of which comprises two concentric rings in the same plane and a third ring in a different plane, a plurality of pairs of arms between the last-named ring and the outer ring in the other plane, insulating-blocks between the several pairs of arms and spiral resistance-coils interposed between the outer rings and the rings of lesser diameter pertaining to adjacent frames.

6. A resistance-element frame comprising two concentric rings in the same plane connected by radial arms, a third ring in a different plane and a plurality of pairs of arms between the third ring and the outer ring in the other plane.

7. A resistance element consisting of a frame comprising two concentric rings and connecting-arms, a third ring in a different plane and a plurality of pairs of arms between the same and the outer ring in the other plane and a spiral coil of interleaved, conducting and non-conducting strips wound upon one of said rings.

8. A resistance-column consisting of a rod and a set of resistance elements mounted thereon, each of which comprises a frame having two rings of different diameter located in parallel planes and connected by a plurality of pairs of arms, non-conducting blocks located between said arms and a spiral resistance-coil interposed between each ring of lesser diameter and the concentrically-disposed ring pertaining to the adjacent frame.

710,144. OPERATING DEVICE FOR DATING OR OTHER STAMPS. HARRY DE WALLACE, St. Paul, Minn. Filed June 22, 1899. Serial No. 721,422. (No model.)

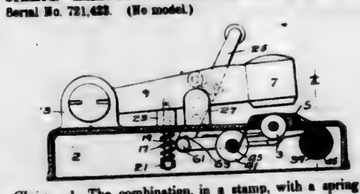

Claim.—1. The combination, in a stamp, with a spring actuated plunger, of a pivoted lever, a cam or projection on said lever arranged to engage said plunger, whereby as said lever is moved on its pivot in either direction said plunger is raised against the tension of its actuating-spring and quickly released, for the purpose set forth.

2. The combination, in a stamp, with a spring-actuated plunger, of the pivoted lever 25, a cam or projection arranged upon said lever and adapted to engage said plunger and raise the same against the tension of its actuating-spring at each movement of said lever either in the forward or backward direction, for the purpose set forth.

3. The combination, in a stamp, with a spring-actuated plunger, of the pivoted lever 25, the pivoted cam 33 located on said lever and adapted to engage and operate said plunger at each stroke of said lever, for the purpose set forth.

4. The combination, in a stamp, with a plunger, type-wheels or dies and inking-ribbon, of an operating-lever, and means connected with said lever for feeding said ribbon one step in either direction with every other stroke of said lever, for the purpose set forth.

5. The combination, in a stamp, with a plunger, type-wheels or dies and inking-ribbon, and means for supporting said ribbon, of a pivoted operating-lever 25, a rod 53 connected with said lever and adapted to engage either of the ribbon-supporting wheels and feed the ribbon one step in either direction with every other stroke of said lever, and means for shifting the position of said rod, for the purpose set forth.

6. The combination, in a stamp, with a plunger, type-wheels or dies, an inking-ribbon and means for supporting said ribbon, of a pivoted operating-lever 25, a rod 53 connected with said lever and adapted to engage either of the ribbon-supporting wheels and feed the ribbon one step in either direction with every other stroke of said lever, and a slide 65 provided on said lever and adapted to shift the position of said rod, substantially as described.

7. The combination, in a stamp, of a base with a plunger mounted thereon, a spring to actuate said plunger to perform the stamping movement, a lever pivoted on said base, a cam provided on said lever and adapted to engage and raise said plunger against the tension of said spring when said lever is operated in either direction, substantially as described.

8. The combination, in a stamp, with a plunger and type-wheels or dies and inking-ribbon, of a vertically-pivoted operating-lever provided with means at each stroke for operating said plunger, and means connected with said lever for feeding said ribbon in either direction, substantially as described.

9. The combination, in a stamp, with a plunger and type-wheels or dies and inking-ribbon, of a pivoted operating-lever provided with means with each stroke for operating said plunger, and means for feeding said ribbon in either direction, substantially as described.

10. In a stamp, the combination, of a plunger and type-wheels or dies and inking-ribbon, with an operating-lever provided with means for moving said plunger from its seat with each stroke of said lever, and means for returning said plunger to its seat when each stroke of said lever is completed.

710,145. BEER-COOLER. JOHN M. DENTZELS, St. Louis, Mo. Filed Feb. 13, 1902. Serial No. 93,996. (No model.)

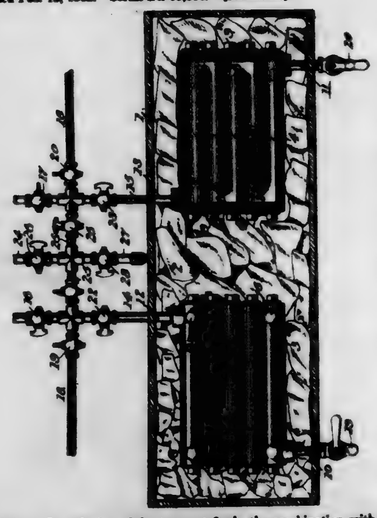

Claim.—In a device of the type set forth, the combination with an ice-box, of an integral body entirely inclosed by said ice-box and having a plurality of horizontal cylindrical passages formed therein, with ports located adjacent the ends of the body portion and establishing communication between said cylindrical passages, the said ports being located alternately at opposite ends of the cylindrical passages, threaded plugs engaging in each of the ends of each of said cylindrical passages, feet extending above and below the body on the ends of said body, an inlet on one end of the body with a pipe connected thereto and extending through the ice-box, an exit located at the other end of the body diagonally opposite to said inlet, with a pipe connected to the said exit and extending without the ice-box, substantially as described.

710,146. AUTOMATIC ELECTRIC TIME-SWITCH. HENRY E. GARDNER, Providence, R. I. Filed Feb. 5, 1902. Serial No. 92,619. (No model.)

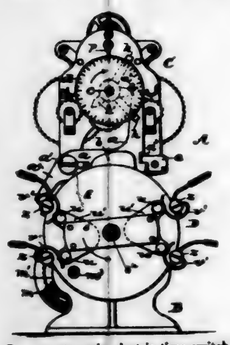

Claim.—1. In an automatic electric time-switch, the combination with a motor-actuated or mechanically-movable switch member and clock or time mechanism, detached or disconnected from said switch, of a suitably-graduated time-dial adjustably mounted on and adapted to revolve in unison with the center or time spindle of said clock, time-tripper members adjustably secured to and revolving with the said time-dial, and normally stationary releasing mechanism connected with said switch having a member thereof arranged in the path of and adapted to be engaged by said moving time-trippers at predetermined intervals of time, substantially as hereinbefore described and for the purpose set forth.

2. In an electric time-switch, provided with clock mechanism and a motor-actuated switch having a movable member, an escapement device comprising a spring-pressed initial lever *a* having stop pins or lugs, a locking-lever *b* having its upper portion provided with lugs adapted to engage those of said lever *a*, and an escapement-wheel F, arranged to revolve in unison with the movable member of said switch, having pins arranged to coact with lugs formed on lever *b* and located in the path of said pins, substantially as described and for the purpose set forth.

3. In an electric time-switch, time mechanism provided with suitable tripping members, and a revolvable motor-actuated member *a* of an electric switch, in combination with interlocking escapement-levers *a b*, arranged with respect to said tripping members, and an escapement-wheel F revolving in unison with said switch member provided with means for controlling the angular movements of said lever *b*, whereby upon actuating the escapement-lever *a* the combined action of said members, *b* and F, allows the said switch member *a* to revolve to open or close the electric circuit, substantially as described.

4. In an automatic electric time-switch, the combination with a revolvable time-dial having tripping-fingers connected therewith, and a motor-actuated intermittingly-revolvable switch or contact member *a*, of an escapement-wheel working in unison with said contact member, a lever *b* having its angular movements controlled by said wheel, and a lever *a* in normal engagement with said lever *b* arranged in the path of and adapted to be actuated by said tripping-fingers, substantially as described.

5. In an automatic electric time-switch, the combination of a suitably notched or graduated dial, adjustable tripping-fingers arranged with respect to said dial, clock mechanism for continuously rotating the dial and fingers, stationary contact points or poles, an intermittently-revolvable motor-actuated member *a* arranged to engage said points thereby closing the electric circuit, a spring-pressed lever *a* arranged to be engaged and actuated by said tripping-fingers, a lever *b* normally locked to said lever *a*, and an escapement-wheel revolving in unison with said member *a* provided with means for controlling the angular movements of said lever *b*, substantially as hereinbefore described and for the purpose set forth.

6. In an automatic electric time-switch having independent clock and switch-actuating mechanisms, an escapement device consisting of a revolvable pin-carrying escapement-wheel F adapted to be actuated by said switch mechanism, a movable lever *b* provided with stops or pins arranged with respect to and adapted to engage the pins of said wheel, a movable spring-pressed initial lever *a* having pins arranged to engage and interlock with fellow pins of the lever *b*, a stop for limiting the angular movement of lever *a*, and revolving tripping means actuated by said clock mechanism arranged to engage with and actuate said lever *a*, thereby for the instant releasing the lever *b* and permitting the wheel to revolve a certain angular distance, substantially as described and for the purpose hereinbefore set forth.

710,147. ROWING APPLIANCE. WILLIAM B. GOODWIN, San Francisco, Cal. Filed Jan. 31, 1901. Serial No. 44,132. (No model.)

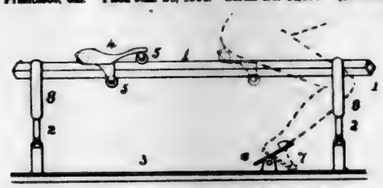

Claim.—1. In combination with the hull of a boat, a seat for an oarsman and a knee-rest suitably placed to receive the thrust of his knees when pulling on the oars.

2. In combination with the hull of a boat, a slidable seat for an oarsman and a knee-rest suitably placed to receive the thrust of his knees when pulling on the oars.

3. In combination with the hull of a boat, a straddle or saddle seat for an oarsman and a knee-rest suitably placed to receive the thrust of his knees when pulling on the oars.

4. In combination with the hull of a boat, a straddle slidable seat for an oarsman and a knee-rest suitably placed to receive the thrust of his knees when pulling on the oars.

5. A boat provided with a longitudinal bar suitably secured therein and a saddle-seat slidable thereon, said boat being provided with a transversely-pivoted foot-rest and a knee-rest suitably placed to receive the thrust of the oarsman's knees when pulling on the oars.

6. A boat provided with a longitudinal bar vertically adjustable, suitably secured therein and a saddle-seat slidable thereon.

7. A boat provided with a longitudinal bar vertically adjustable, suitably secured therein and a saddle-seat slidable thereon and a foot-rest transversely pivoted in said boat.

8. A boat provided with a longitudinal bar vertically adjustable, secured therein and a saddle-seat slidable thereon, said boat provided with a transversely-pivoted foot-rest and a knee-rest suitably placed to receive the thrust of the oarsman's knees when pulling on the oars.

710,148. BALANCING-MACHINE. FRANCIS HODGKINSON, Wilkinsburg, Pa., assignor to the Westinghouse Machine Company, a Corporation of Pennsylvania. Filed Mar. 1, 1900. Serial No. 6,967. (No model.)

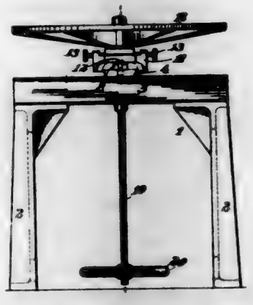

Claim.—1. The combination with a frame provided with knife-edge bearings, of a beam supported on said bearings, and a turn-table supported by said beam and adjustable laterally with reference to said knife-edge bearings.

2. The combination with a frame provided with knife-edge bearings, of a beam supported on said bearings, a turn-table mounted on said beam, means for adjusting the turn-table on the beam transversely with reference to the knife-edge bearings, and means for adjusting the center of gravity of the combined apparatus that is supported on the knife-edge bearings.

3. The combination with a frame provided with knife-edge bearings, of a beam supported on said bearings, a block adjustably mounted on said beam and having a vertical spindle and a turn-table mounted on said spindle.

4. In a balancing-machine, a turn-table, a support therefor mounted upon knife-edge bearings and means for adjusting the turn-table on its support transversely with reference to the knife-edge bearings.

5. In a balancing-machine, a turn-table and a support therefor mounted upon knife-edge bearings, in combination with means for vertically adjusting the center of gravity of the parts which are supported upon the knife-edge bearings.

6. A block having a knife-edge in its upper face and a pin projecting from its lower face, said lower face being spherically curved, in combination with a support having a spherically-curved seat and an aperture for said pin.

7. A block having a knife-edge projecting from its upper face and a pin projecting from its lower face, said lower face being spherically curved, in combination with a support having a spherically-curved seat and an aperture for the pin, said aperture being wider than the pin in the direction of the knife-edge.

8. A block having a knife-edge in its upper face and a pin projecting from its lower face, said lower face being spherically curved, in combination with a support having a spherically-curved seat and an oblong aperture for said pin, the smaller diameter of which is substantially the same as that of the pin.

9. A block having a knife-edge projecting from its upper face and a pin projecting from its lower face, said lower face being spherically curved, in combination with a support having a spherically-curved seat and an aperture for the pin, said aperture being wider than the pin in the direction of the knife-edge and of substantially the same diameter as the pin at right angles to the knife-edge.

10. In a balancing-machine, the combination with a suitable frame, having self-aligning knife-edge bearings, of a beam supported on said bearings, and a turn-table adjustably mounted on said beam.

11. In a balancing-machine, the combination with a suitable frame having self-aligning knife-edge bearings, of a beam supported on said bearings, a turn-table supported on said beam and adjustable laterally with reference to said bearings and a vertically-adjustable weight suspended from the turn table.

12. In a balancing-machine, the combination with a suitable frame having self-aligning knife-edge bearings, of a beam supported on said bearings, a block adjustably mounted on said beam, a turn-table supported upon said block, and a vertically-adjustable weight suspended from said block.

710,149. BUTTONHOLE-SEWING MACHINE. JAMES T. HOGAN, Jersey City, N. J., assignor to the National Machine Company, a Corporation of New York. Filed Mar. 13, 1899. Serial No. 708,891. (No model.)

Claim.—1. In a buttonhole-sewing machine the combination with stitch-forming mechanism, of a work-support comprising a substantially rectangular plate having racks on a portion of two of its edges and notches in the two other edges, a pinion to engage said racks, a finger to engage said notches, and means to actuate said pinion and finger substantially as described.

2. In a buttonhole-sewing machine adapted to sew side stitches and barring-stitches, the combination with stitch-forming mechanism of a work-support comprising a substantially rectangular plate having racks on a portion of two of its edges, a pinion to engage said racks, a finger to engage suitable notches in the two other edges of the work-support, a cam and ratchet-wheel to actuate said plate, and means to throw said ratchet-wheel into operative position when the work-support is adjusted to sew barring-stitches.

3. In a buttonhole-sewing machine adapted to sew side stitches and barring-stitches, the combination with stitch-forming mechanism of a work-support comprising a substantially rectangular plate having racks on two of its edges, a pinion to engage said racks, means to rotate said pinion, a plate having a finger to engage notches in the two other edges of the work-support, a ratchet-wheel and cam to actuate said plate, said wheel being so constructed as to be inoperative during the formation of side stitches, and means to throw it into operative position when barring-stitches are to be formed.

4. In a buttonhole-sewing machine the combination of a work-carrier plate, a driving-shaft, a cam on said shaft, a lever oscillated by said cam, a link connected to said lever, a pawl-carrier plate connected to said link, a pawl on said plate, a ratchet-wheel engaged by said pawl, a cam connected with said ratchet-wheel, an arm actuated by said cam, and engaging the work-carrier plate, substantially as described.

5. In a buttonhole-sewing machine the combination with stitch-forming mechanism, of a work-support comprising a substantially rectangular plate having racks on a portion of two of its edges, a pinion to engage said racks, a driving-shaft, and adjustable levers actuated by said shaft and connected by intermediate mechanism to said pinion whereby the number of stitches to a given length of feed may be varied, substantially as described.

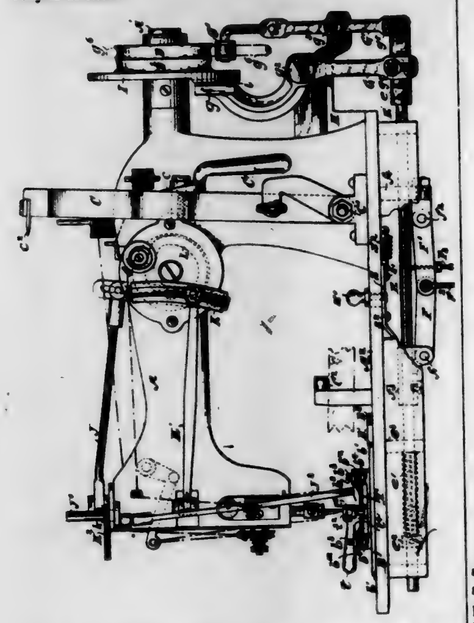

6. In a buttonhole-sewing machine the combination with stitch-forming mechanism, of a work-support comprising a substantially rectangular plate having racks on a portion of two of its edges, a pinion to engage said racks, a ratchet-wheel to actuate said pinion, a driving-shaft and adjustable levers intermediate said shaft and ratchet-wheel to drive the latter, substantially as described.

7. In a work-carrier plate for sewing-machines, the combination of a lower plate, an upper clamping-plate, supported by studs on the face of the former plate, and a spring surrounding each of said studs, and bearing against the under side of the upper plate, to normally hold it out of contact with the lower plate, substantially as described.

8. In a work-carrier plate for sewing-machines, the combination of a lower plate, an upper clamping-plate supported by studs on the face of the former plate, a spring surrounding each of said studs, and bearing against the under side of the upper plate to normally hold it out of contact with the lower plate, and means to tilt the free end of the clamp, substantially as described.

710,150. SEWING-MACHINE. JAMES T. HOGAN, Jersey City, N. J., assignor to the National Machine Company, New York, N. Y., a Corporation of New York. Filed Oct. 23, 1900. Serial No. 34,094. (No model.)

Claim.—1. In a sewing-machine the combination with stitch-forming mechanism comprising a vertical reciprocating needle, of a work-support, means to feed said support, a rock-lever and means to actuate the same, a pitman connecting said lever and the needle-bar frame, and means to simultaneously suspend the movements of said lever and the feed of the work-support at the end of the sewing of a cycle of stitches while the vertical reciprocating movement of the needle continues, to permit the sewing of tying-stitches, substantially as described.

2. In a sewing-machine the combination with stitch-forming mechanism, of a work-support, means for simultaneously vibrating the needle and work-support and means to automatically and periodically suspend the vibratory movement of both of said devices at the same time to permit tying-stitches to be sewed, substantially as described.

3. In a sewing machine the combination with stitch-forming mechanism, of a work-support, a cam for imparting to the work-support a vibratory movement, means for imparting to the needle a vibratory movement in a direction at right angles to the plane of movement of the work-support, a lever actuated by said cam to suspend the vibratory movement of the needle, said cam being so constructed as to cause the suspension at the same time of the vibratory movement of the work-support, substantially as described.

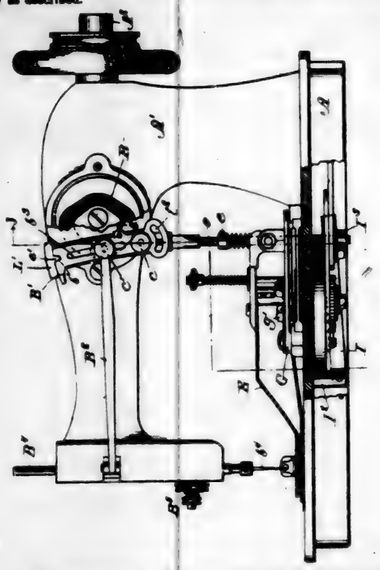

4. In a sewing-machine the combination with stitch-forming mechanism, of a work-support, a rock-shaft, a lever rigidly secured to said shaft and engaging a cam, a main rock-lever loosely mounted on said shaft, a pitman connecting said last-named lever to the needle-bar, a latch connection between said levers, a cam and suitable connections to impart to the work-support a vibratory movement, levers between the said last-named cam and said latch mechanism, said cam being so constructed as to simultaneously suspend the vibratory movement of the work-support and to release said latch to permit the sewing of tying-stitches, substantially as described.

5. In a sewing-machine the combination with stitch-forming mechanism comprising a vertically-reciprocating needle, of a work-support, means to vibrate said work-support in a given path relatively to the needle and means to automatically suspend said vibratory movement while the vertically-reciprocating movement of the needle continues, to permit the sewing of tying-stitches, substantially as described.

710,151. WIRE-STRAIGHTENER. JOHN G. IVERSON, Minneapolis, Minn., assignor to Charles E. Cottrell, Minneapolis, Minn. Filed May 23, 1902. Serial No. 108,613. (No model.)

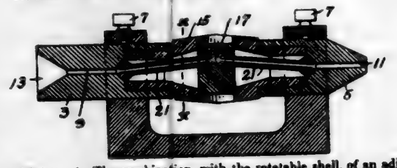

Claim.—1. The combination, with the rotatable shell, of an adjustable block arranged therein, and tubes each having one end supported in said adjustable block and its opposite end carried by a suitable support, substantially as described.

2. The combination, with the rotatable shell, of an adjustable block arranged therein, and tubes each having one end supported in said adjustable block and its opposite end carried by a fixed support, substantially as described.

3. The combination, with the rotatable shell, of the adjustable block arranged therein, and tubes, each having one end supported in said block and its opposite end carried by a fixed support, each of said tubes being free to rotate upon its own axis, substantially as described.

4. The combination, with the stationary bearing-pieces, of the rotatable shell supported in said bearing-pieces, the adjustable block mounted in said shell, and the tubes, each having one end mounted in said block and its opposite end mounted in one of said bearing-pieces, and each of said tubes being free to rotate upon its own axis.

5. The combination, with the base 2 provided with suitable standards, of the bearing-pieces 3 and 5 adjustably supported in said standards, and provided with central openings 9 and 11, the rotatable shell mounted in said bearing-pieces and provided with the adjustable block 17, the tubes 21 each having one end mounted in said adjustable block and its opposite end mounted in one of said bearing-pieces, and each of said tubes being free to rotate upon its own axis, substantially as described.

710,152. RAIL-SUPPORT. WILLIAM E. JAQUES, Grand Rapids, Mich., assignor to Alfred O. Crozier, Grand Rapids, Mich. Filed Jan. 24, 1902. Serial No. 91,061. (No model.)

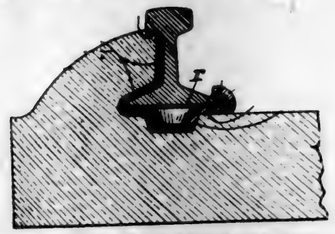

Claim.—1. The combination, with the rail, and the tie arranged below and transversely of the rail, of means for bracing the outer side of the rail; a plate interposed between the base of the rail and the tie and provided, at one side of the rail, with a flange which is arranged opposite the side edge of the rail-base at the said side of the rail, which plate is provided, at the opposite side of the rail, with an upwardly-projecting flange, and a wedge interposed between the inner side of the last-mentioned flange and the rail-base.

2. The combination, with the rail, and the tie arranged below and transversely of the rail, of a plate interposed between the base of the rail and the tie and provided, at the outer side of the rail, with an upwardly-projecting flange extending along the rail-base at the said outer side of the rail, which plate is provided, at the inner side of the rail, with an upwardly-projecting flange, and a wedge interposed between the inner side of the last-mentioned flange and the rail-base.

3. The combination, with the rail, and the tie arranged below and transversely of the rail and provided with a recess below the rail, of a plate interposed between the under side of the rail-base and the tie and provided, below the rail, with a depressed portion snugly engaging the aforesaid recess, means for holding the rail down upon the plate, and means for preventing upward displacement of the rail and the plate.

4. The combination, with the rail, and the tie arranged below and transversely of the rail and having a lug arranged to brace the outer side of the rail, of a plate interposed between the rail-base and the tie and having a portion or member extending into the tie, which plate is provided, at the outer side of the rail, with a flange which overhangs and extends upwardly between the aforesaid lug and the rail, and means for preventing lateral displacement of the rail inwardly from the aforesaid lug.

5. The combination, with the rail, and a tie arranged below and transversely of the rail and having a lug overhanging the base of the rail at the outer side of the rail and bracing the said side of the rail, of a plate interposed between the under side of the rail-base and the tie, which plate is provided, at the outer side of the rail, with a flange which overhangs the rail-base and extends upwardly between the outer side of the web of the rail and the aforesaid lug, and means for preventing lateral displacement of the rail inwardly from the aforesaid lug.

710,153. RAIL-SUPPORT. WILLIAM E. JAQUES, Grand Rapids, Mich., assignor to Alfred O. Crozier, Grand Rapids, Mich. Filed Jan 27, 1902. Serial No. 91,443. (No model.)

Claim.—1. The combination, with the rail, and the tie arranged below and transversely of the rail, a plate interposed between the under side of the rail-base and the tie and having a recess below the rail-base, and means holding the rail down upon the said plate, of a fastening device arranged to hold the plate down and having a member engaging the aforesaid recess under the rail-base and comprising another member embedded in the tie below the aforesaid plate.

2. The combination, with the rail, and the tie arranged below and transversely of the rail, a plate interposed between the under side of the rail-base and the tie and having a recess below the rail, and means holding the rail down upon the said plate, of an upright bolt having its head within the said recess and arranged to hold the plate down and having its shank extending downwardly into the tie, and a nut embedded in the tie and engaging the said shank.

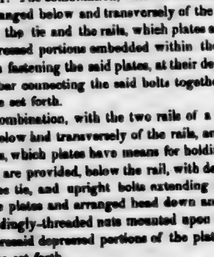

3. The combination, with the rail, and the tie arranged below and transversely of the rail, a plate interposed between the under side of the rail-base and the tie and having a recess below the rail, and means instrumental in holding the rail down upon the plate, of an upright bolt having its head within the said recess and arranged to hold the plate down and having a slot or recess, a nut embedded in the tie and engaging the shank of the bolt, and a key engaging the slot or recess in the bolt-head and extending into the aforesaid plate, substantially as and for the purpose set forth.

4. The combination, with the rail, and the tie arranged below and transversely of the rail, a plate interposed between the under side of the rail-base and the tie and provided, below the rail, with a depressed or depending upwardly-flaring annular portion or member, of an upright bolt having its head snugly engaging the recess formed within the said flaring member and having its shank extending downwardly into the tie, and a nut embedded in the tie and engaging the shank of the bolt, substantially as and for the purpose set forth.

5. The combination, with the rail, and the tie arranged below and transversely of the rail, a plate interposed between the under side of the rail-base and the tie and having a bolt-head-receiving recess below the rail and two depressions or recesses arranged in line at opposite sides, respectively, of and connecting with the first-mentioned recess, and means instrumental in holding the rail down upon the plate, of an upright bolt arranged shank down and having its head engaging the aforesaid bolt-head-receiving recess and provided with a transversely-extending slot or recess; a key extending through the slot or recess in the bolt-head into the aforesaid alined depressions or recesses, and a nut engaging the bolt-shank and embedded in the tie, substantially as and for the purpose set forth.

710,154. RAIL SUPPORT. WILLIAM E. JAQUES, Grand Rapids, Mich., assignor to Alfred O. Crozier, Grand Rapids, Mich. Filed Feb. 6, 1902. Serial No. 92,815. (No model.)

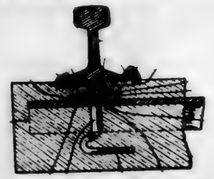

Claim.—1. The combination, with the two rails of a railway-track, and the tie arranged below and transversely of the rails, and plates interposed between the tie and the rails, which plates are provided, below the rails, with depressed portions embedded within the tie, of bolts and nuts instrumental in fastening the said plates, at their depressed portions, to the tie, and a tie-bar connecting the said bolts together, substantially as and for the purpose set forth.

2. The combination, with the two rails of a railway-track, and the tie arranged below and transversely of the rails, and plates interposed between the rails, which plates have means for holding the rails down upon the plates and are provided, below the rail, with depressed portions which depend into the tie, and upright bolts extending through the depressed portions of the plates and arranged head down and embedded in the tie, and correspondingly-threaded nuts mounted upon the shanks of the bolts within the aforesaid depressed portions of the plates, substantially as and for the purpose set forth.

3. The combination, with a rail and the tie arranged below and

transversely of the rail, and a plate interposed between the under side of the base of the rail and the tie and having means instrumental in holding the rail down upon the plate, which plate is provided, below the rail, with a depressed portion which is embedded within the tie and forms a chamber 4 which is arranged next under the base of the rail and has a bottom provided with a bolt-hole 5, of an upright bolt extending through the said bolt-hole and arranged head down with the head embedded in the tie, and a nut mounted upon the bolt-shank within the aforesaid chamber, substantially as and for the purpose set forth.

4. The combination, with the two rails of a railway-track, and the tie arranged below and transversely of the rails and plates interposed between the rails and the tie and having means instrumental in holding the rails down upon the plates, which plates are provided, below the rails, with depressed or depending portions, of upright bolts extending through the said depending portions of the plates, nuts mounted upon the bolt-shanks and arranged to hold the aforesaid plates down, and an angle-bar embedded in the tie next below the aforesaid plates and tying the aforesaid bolts together.

5. The combination, with the two rails of a railway-track, and the tie arranged below and transversely of the rails, and plates interposed between the rails and the tie and having means instrumental in holding the rails down upon the plates, which plates are provided, below the rails, with depressed or depending portions, of upright bolts extending through the said depending portions of the plates, nuts mounted upon the bolt-shanks and arranged to hold the aforesaid plates down, and a tie-bar extending longitudinally of the tie below the aforesaid plates and tying the aforesaid bolts together and having lugs or flanges bracing apart the said plates.

6. The combination, with the two rails of a railway-track, and the tie arranged below and transversely of the rails and plates interposed between the rails and the tie and having means instrumental in holding the rails down upon the plates, which plates are provided, below the rails, with depressed or depending portions, of means securing the said plates, at their depending portions, to the tie, and a bar embedded in the tie next below the aforesaid plates and arranged longitudinally of the tie and having upwardly-projecting lugs or flanges arranged to prevent displacement of the aforesaid plates longitudinally of the tie.

7. The combination, with the two rails of a railway-track and a tie arranged below and transversely of the rails, of plates interposed between the rails and the tie and provided, below the rails, with depressed or depending portions; means instrumental in holding the rails down upon the plates, and a bar embedded in and arranged longitudinally of the tie and connected with the depending portions of the aforesaid plates.

710,155. **SAFETY APPLIANCE FOR ENGINES.** JAROSLAV KARLIK, Gottenberg, and HARRIS WITTE, Waldenburg, Germany. Filed Sept. 3, 1901. Serial No. 74,194. (No model.)

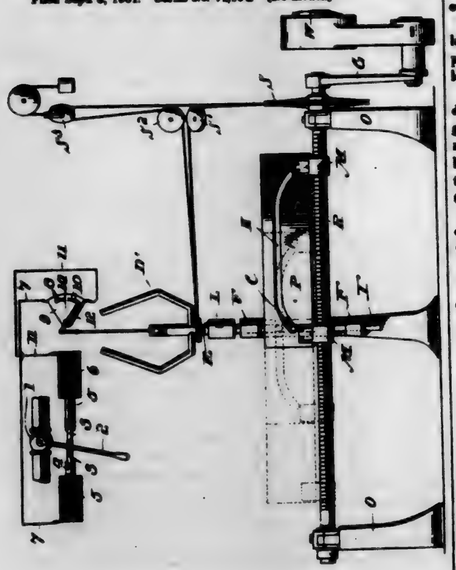

Claim.—1. In a safety appliance for engines, a screw-threaded shaft or rod connected to the crank thereof, a plate having a detent form therein mounted on said rod, and a vertically-movable shaft carrying means engaging in said detent, and a three-branched mercurial tube at its upper end, means connected to said rod or shaft for actuating said vertical rod, and means operating in the middle of said three-branched mercurial tube for establishing an electrical current, substantially as described.

2. In a safety appliance for engines, a screw-threaded rod connected to the crank thereof, a plate having a detent formed therein and carrying nuts engaging said screw-threaded rod, a vertically-movable shaft carrying a bolt operating in said detent, a mercurial three-branched tube carried at the upper extremity of said shaft, a pulley carried by said shaft, a pulley carried by the said screw-threaded rod and connected to said first-named pulley, and a float operating in the middle of said three-branched mercurial tube and suitably connected in an electrical contact.

710,156. **BRIDLE AND BIT.** BENJAMIN W. KINDIG, Jr., York Pa. Filed Jan. 21, 1902. Serial No. 90,662. (No model.)

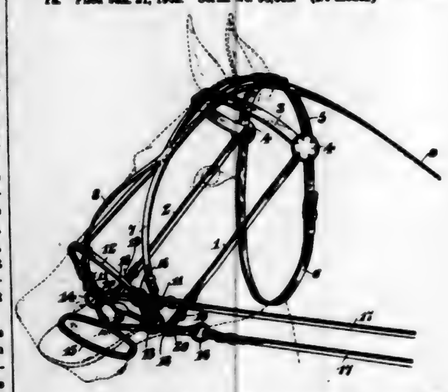

Claim.—1. The combination with an overdraw-bit provided with guides, of a flexible loop-bit designed to encircle the lower jaw of a horse and having its ends passed through said guides.

2. The combination with an overdraw-bit provided with guides, of a flexible loop-bit designed to encircle the lower jaw of a horse and having its ends passed through said guides, and means for supporting the ends of the bit beyond the guides.

3. The combination with an overdraw-bit provided with guides, of a loop-bit designed to encircle the lower jaw of a horse and having its ends passed through the guides, and cheek-straps secured to the ends of the loop-bit beyond the guides to support said ends.

4. The combination with a bridle including cheek-straps, an overdraw and a nose-strap, of an overdraw-bit connected to the overdraw, guide-rings encircling the overdraw-bit and connected to the ends of the nose-strap, a flexible loop-bit designed to encircle the lower jaw of a horse and having its ends passed through the guide-rings and connected to the lower ends of the cheek-straps, and means for attaching the lines to the ends of the loop-bit.

5. A flexible loop-bit designed to be looped around the lower jaw of an animal and crossed in the mouth, and provided at its opposite ends with means for the direct attachment of the lines.

710,157. **AXLE.** LEWIS W. KYES, Hammond, Wis. Filed July 11, 1901. Serial No. 67,340. (No model.)

Claim.—1. A device of the class described, consisting in combination of a wheel-hub journaled on a shank, a stationary sleeve between said shank and hub, a shoulder on the inner end of said sleeve, a nut threaded on said shank and impinging against the outer end of said sleeve, and a second nut locked against the first nut; said second nut having an annular shoulder projecting against the outer end of said hub.

2. A device of the class set forth, consisting in combination with a wheel-hub and a shank, of an antifriction-sleeve between said shank and hub, a shoulder between the inner end of said sleeve and shank for preventing longitudinal movement of said sleeve, a nut threaded on said shank and impinging against the outer end of said sleeve, and a second nut locked against said first nut; said second nut having an annular shoulder adapted to impinge against the outer end of said hub.

710,158. **SYSTEM OF ELECTRICAL DISTRIBUTION.** BENJAMIN G. LAMME, Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. Filed Oct. 14, 1901. Serial No. 78,563. (No model.)

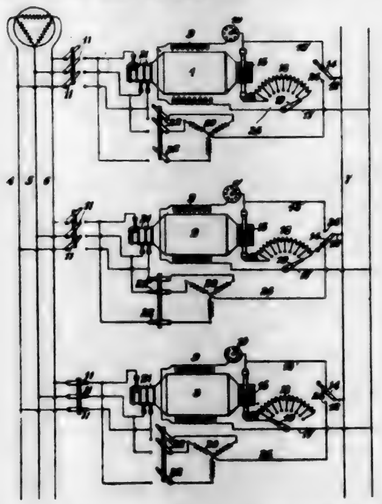

Claim.—1. The combination with a rotary converter and a source of direct-current electromotive force, of a plurality of "star-connected" balancing-coils, means for making and breaking connection between the outer terminals of said coils and the alternating-current end of the rotary converter and means for making and breaking connection between the common terminal of said coils and one side of the source of direct current.

2. The combination with a rotary converter and a source of direct-current electromotive force, of a variable resistance between the rotary-converter armature and one side of said source, a plurality of "star-connected" balancing-coils, means for making and breaking connections between the outer terminals of said coils and the alternating-current end of the rotary converter and means for making and breaking connection between one side of the source of direct current and one of the rotary-converter brushes and between said source and the common terminal of the balancing-coils.

3. The combination with a rotary converter and a source of direct-current electromotive force, of a plurality of "star-connected" balancing-coils, a variable resistance and means for making half-voltage connections between the armature-winding of the rotary converter and the source of direct-current electromotive force, through the balancing-coils and the variable resistance, to bring the rotary converter to synchronous speed and voltage.

4. The combination with a rotary converter and a source of approximately constant direct-current electromotive force, of a plurality of "star-connected" balancing-coils, a variable resistance, means for making and breaking connection between the outer terminals of the balancing-coils and the alternating-current end of the rotary converter and means for making and breaking connection between the common terminal of the balancing-coils and the source of direct-current electromotive force.

5. In a system of electrical distribution, the combination of an alternating-current-supply circuit and a direct-current-distributing circuit, of a plurality of rotary converters for transferring energy from the alternating-current circuit to the direct-current circuit and means for utilizing an electromotive force from the direct-current circuit that is less than the normal voltage of the rotary converters for bringing them to synchronous speed and voltage.

6. In a system of electrical distribution, the combination with an alternating-current-supply circuit and a direct-current-distributing circuit, of a plurality of rotary converters for transferring energy from the alternating-current circuit to the direct-current circuit, a balancing device and a variable resistance for each rotary converter and means for connecting each rotary converter to the direct-current circuit through the balancing device so as to raise the converter to synchronous speed and voltage by direct-current voltage that is approximately one-half the normal voltage of the rotary converter.

7. In a system of electrical distribution, the combination with an alternating-current-supply circuit and a direct-current-distributing circuit, of a plurality of rotary converters for transferring energy from the alternating-current to the direct-current circuit, means for making and breaking connection between the alternating-current circuit and each of the rotary converters and means for supplying, to each rotary converter, direct-current electromotive force of approximately one-half the value of its normal electromotive force to raise the rotary converter to synchronous speed and voltage.

8. A rotary converter for converting alternating-current energy into direct-current energy, in combination with means for supplying direct-current energy to the commutator of said converter at less than the normal voltage of the latter and a balancing device having "star" connections with the alternating-current end of the converter and having a common terminal connection with the direct-current-supply circuit.

9. A rotary converter for converting alternating-current energy into direct-current energy, in combination with means for supplying direct-current energy to the commutator of the converter at less than the normal voltage of the converter, a variable resistance in said direct-current-supply circuit and a balancing device having "star" connections with the alternating-current end of the converter and having its common terminal connected to the direct-current-supply circuit.

710,159. **ACETYLENE-GAS GENERATOR.** JÉRÔME LEDEU, Basècles, Hainaut, Belgium. Filed Apr. 9, 1902. Serial No. 102,080. (No model.)

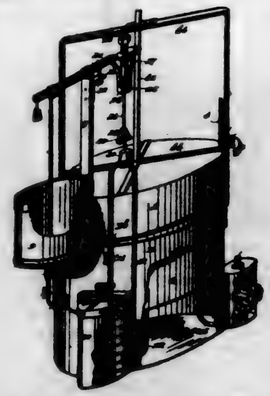

Claim.—In an acetylene-gas generator, the combination with the gas-tank and bell, of a carbid-chamber in communication with the tank, a water-tank arranged above the carbid-chamber, a pipe leading from the water-tank into the carbid-chamber and provided with a valve-seat, a vertical support secured to the gas-tank, a lever pivotally mounted in the upper end of the said lever and having its lower end extending through said water-tank into the valve-seat of the said pipe, a pair of depending spring-arms secured to the inner end of the said lever, a spindle having an enlarged screw-threaded upper end loosely mounted in an opening in the inner end of the said lever, and arranged between the said spring-arms, a nut on the upper end of the said spindle, and a weight on the lower end thereof, said weight being arranged directly above the bell, substantially as described.

710,160. **MANIFOLD-BOOK AND CARBON THEREFOR.** ALEXANDER LEVINSE, San Francisco, Cal. Filed Feb. 19, 1902. Serial No. 94,618. (No model.)

Claim.—1. A manifold-book composed of sections, each section comprising in order a sheet carbonized on both sides, a plurality of recording-sheets, and a cardboard backing, the recording-sheet being divided into three substantially equal parts by weakened lines parallel to the line

of binding, the carbon-sheets extending the width of two of said parts, and the cardboard backing extending the width of two of said parts, said recording-sheets and backing, having stubs to which they are attached along lines of perforations, said stubs and the edges of the carbon-sheets being all bound together to form a book, substantially as described.

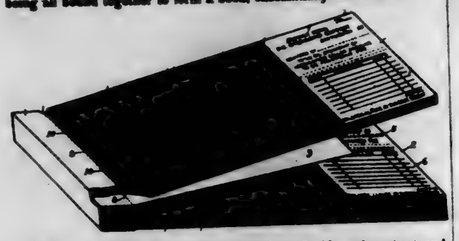

2. A manifold-book comprising in order a double carbon-sheet, and a plurality of recording-sheets, each of said sheets outside the stubs being divided into a plurality of separable parts by weakened lines parallel to the line of binding, the carbon-sheet extending the width of said parts except the outermost, said recording-sheets having stubs to which they are attached along lines of perforations, said stubs and one side of the carbon-sheets being all bound together to form a book, said book having in its upper edge in line with the perforations between the recording-sheets and the stubs, a semicircular notch to start the tearing off of the recording-sheets, substantially as described.

710,161. **BRUSH.** FRED H. LOVELESS, Lafayette, Ind., assignor of one-half to Charles L. Daniels, Tiffin, Ohio. Filed Apr. 4, 1902. Serial No. 101,343. (No model.)

Claim.—1. A brush-head having holes to receive the bunches and bunches secured in each of said holes, each bunch comprising a core, a layer of bristles surrounding the core and wired at its middle thereto and a layer of fiber surrounding the bristles and wired thereto after which both fiber and bristle layers are bent back upon themselves to form a bunch wherein said fiber is in an annular body between a center body of bristles and an outside layer of bristles.

2. In a brush, a brush-head having a series of holes to receive the bunches and bunches secured in each of said holes said bunches comprising a wooden core kerfed transversely, a wire laid in said kerf with a projecting end bent toward the end of the core and held by wrapping the wire over it; a layer of bristles evenly distributed around the core and held thereto by a wrapping of wire; a layer of fiber around the bristles held by a further wrapping of the same wire and a tank driven into the core to which the remaining loose end of the wire is fastened, said wire wrappings of bristles and fiber being at approximately their middles and the fiber and bristles being doubled at the wrappings to form a bunch in which an annular layer of fiber is between a central body of bristles and an outside layer of bristles.

710,162. **GAS HEATING-STOVE.** GEORGE B. HOOK, Columbus, Ohio. Filed Jan. 28, 1902. Serial No. 91,605. (No model.)

Claim.—The gas heating-stove herein described comprising an upright casing having an opening in its bottom and its front bulged and formed of open lattice-work with hinged door and transparent panels, an inclined burner-plate in the lower portion of said casing with its upper end terminating in line with the inner line of said bulge, a burner adjacent the lower end of said burner-plate, a supply-pipe leading into the casing beneath said burner over said opening in the bottom of the casing, a transverse flue at the end of said casing and a series of vertically-arranged and parallel flue-pipes having their lower ends communicating with the lower portion of the casing upon one side of the burner-plate and their upper ends communicating with said transverse flue, the said pipes being of sinuous form and the whole arranged to serve substantially as herein shown and described.

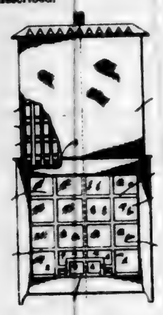

710,163. **KEYBOARD-PERFORATOR.** DONALD MURRAY, New York, N. Y. Filed July 30, 1901. Serial No. 69,041. (No model.)

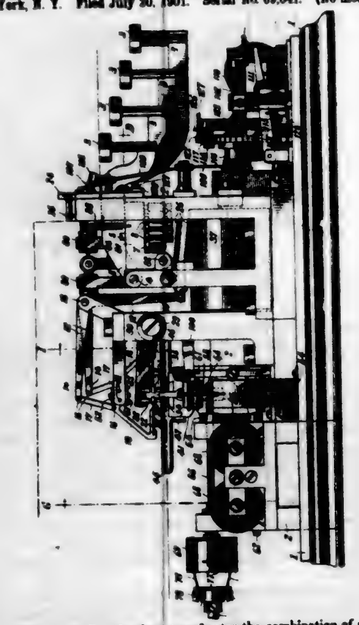

Claim.—1. In a keyboard-perforator the combination of a series of independent keys, a series of independent punches arranged to perforate a tape or strip, an operating or striking device common to all said punches, a series of independently-movable mechanical devices arranged to make and break the mechanical connection between said punches and striking device, means for operating said striking device by the depression of a key, and means for changing the position of one or more of said mechanical connecting devices during the movement of a key-lever and prior to the operation of the striking device.

2. In a keyboard-perforator the combination of a series of independent keys, a series of independent punches arranged to perforate a tape or strip, an operating or striking device common to all said punches, a series of movable mechanical connections normally in position to connect said punches and striking device, an electromagnet to operate said striking device, a circuit therefor, a circuit-closer operated upon the depression of a key and means whereby one or more of said mechanical connections is removed during the depression of a key and prior to closing the circuit.

3. In a keyboard-perforator the combination of a series of independent key-levers, a series of separately-movable punches arranged in two parallel, equidistant and coextensive rows to perforate a tape or strip, a striking device to simultaneously actuate said punches and means for dividing said punches into two groups and subjecting one group to the action of said striking device consisting of a series of separately-movable sections or blocks, one for each punch, each section being supported upon a hinged or pivoted arm and a separately-movable mechanical connection between each block and said key-levers.

4. In a keyboard-perforator the combination of a series of independent key-levers, a series of separate, uniform punches arranged in two parallel, equidistant and coextensive rows, a striking device for said punches, a series of sections or blocks, one for each punch, each block supported upon the free end of a hinged or pivoted lever and movable in the arc of a circle and means for shifting the position of one or more of said blocks to subject one or more punches of each row to the action of the striking device.

5. In a keyboard-perforator the combination of a series of independent key-levers, a series of separate, uniform punches arranged in two parallel, equidistant and coextensive rows, a striking device for actuating said punches, a series of blocks, one for each punch, each supported upon a hinged or pivoted arm, and movable into and out of line with said punches, respectively, a mechanical connection between each block and said key-levers, and means for feeding a tape or strip a uniform distance upon each complete operation of the striking device.

6. In a keyboard-perforator the combination of a series of independent key-levers, a series of separate, uniform punches arranged in two parallel, equidistant and coextensive rows, a striking device for actuating said punches, a series of blocks, one for each punch, supported upon a hinged or pivoted arm, and movable into and out of line with its punch, a mechanical connection between each of said arms and said key-levers, means for feeding a tape or strip a uniform distance upon each complete operation of the striking device, an electromagnet to operate the striking device, an electromagnet to operate the spacing device, electric circuits and connections therefor, and a circuit-controlling device operated by the movement of the key-levers.

7. In a keyboard-perforator, a series of independently-movable, uniform punches arranged in two parallel, equidistant and coextensive rows to perforate a tape or strip in parallel lines, a universal striker-bar for said punches, a series of independently-movable key-levers, means for subjecting one or more of said punches to the action of the striker-bar upon the depression of a key-lever, an electromagnet to operate the striker-bar, an electric circuit therefor, and a circuit-closer operated by the key-levers.

8. In a keyboard-perforator a series of independently-movable punches arranged in two parallel, equidistant and coextensive rows to perforate a tape or strip in parallel lines, a striker-bar for said punches, a series of independently movable key-levers, means for subjecting one or more of said punches to the action of the striker-bar upon the depression of a key-lever, a motor-driven sprocket-wheel and an escapement therefor to advance the tape or strip a series of successive uniform steps upon each operation of the striker-bar, an electromagnet to operate said bar, an electromagnet to operate said escapement, an electric circuit therefor, and a circuit-closer controlled by the key-levers.

9. In a keyboard-perforator a series of independently-movable punches arranged in two parallel, equidistant and coextensive rows to perforate a tape or strip, a universal striking device for the punches, a series of independently-movable key-levers, means for subjecting one or more of the said punches to the action of the striker-bar upon the depression of a key-lever, a motor-driven sprocket-wheel having an escapement arranged to advance the tape or strip, step by step, a uniform step or distance at each operation of the striker-bar, an electromagnet to operate the striker-bar, an electromagnet to operate the escapement, an electric circuit for said magnet, a normally open branch of said circuit including the coils of the striker-bar magnet, a normally closed branch of said circuit containing the coils of the escapement-magnet and a circuit-closer operating break-points in said branch circuits alternately, under control of said key-levers.

10. In a keyboard-perforator the combination of a series of separately-movable punches arranged to perforate a tape or strip, a universal striking device for said punches, an electromagnet with its circuit and circuit-closer to operate said striking device and means to advance the tape or strip a uniform distance upon each complete operation of said striking device, said means including an electromagnet, an electric circuit and circuit-closers controlled by the key-levers, so arranged that the depression and release of a key first operates the escapement-magnet, second the punching-magnet, and third, the escapement-magnet, in the order named, to produce sectional advance movements of a single uniform step or letter-space of the paper-feed.

11. In a keyboard-perforator the combination of a series of independent key-levers, a series of separate punches, a universal striking device for said punches, a movable block for each punch, carried upon a pivoted lever, a hinged mechanical connection between each lever and a series of pivoted block-selecting devices, means for actuating one or more of said selecting devices upon the depression of a key-lever, an electromagnet for operating said striking device, an electric circuit therefor, and a circuit-closer operated by the key-levers.

12. In a perforator a series of independently-movable punches in combination with means for actuating one or more of said punches, consisting of a universal striking device, a movable block for each punch, a series of pivoted levers or "kickers" in number corresponding to the number of punches, a separable mechanical connection between said levers or "kickers" and said blocks, respectively; and means for actuating one or more of said levers consisting of a series of independently-movable key-levers characteristically slotted and a series of hinged strips or "fiddle-bows."

13. In a perforator a series of independently-movable punches in combination with a universal striking device, a movable block for each punch supported upon a pivoted lever, a series of pivoted levers or "kickers" in number corresponding to the number of punches, a mechanical connection between said levers or "kickers" and the levers supporting said blocks, respectively, and means for actuating one or more of said levers or "kickers" consisting of a series of independently-movable key-levers characteristically slotted upon their contact-surfaces and a series of hinged strips or "fiddle-bows" in position to engage with said levers or "kickers."

14. In a perforator an electromagnetic punching device and an electromagnetic spacing device, an electric circuit for the electromagnets having two branches, a punching-magnet in one branch, a spacing-magnet in the other branch, a series of independent key-levers, a normally closed circuit-breaker in the escapement-magnet branch, a normally open circuit-closer in the punching-magnet branch, and means whereby the depression of a key operates said circuit-breaker.

15. In a perforator the combination of a paper-punching device and a paper-feeding device, a motor driven sprocket-wheel over which the paper strip is passed, a constantly-operating motor-driven shaft, a friction-clutch and a helical spring connecting the sprocket-wheel shaft with the motor-driven shaft and an electromagnetic escapement for said sprocket-wheel.

16. In a keyboard-perforator the combination of a series of separately-movable punches, means for selecting and operating one or more of said punches and means for advancing a paper strip step by step consisting of a constantly-operating motor-driven shaft, a sprocket-wheel and its shaft, a friction-clutch connected to said motor-shaft, a helical spring uniting said sprocket-wheel shaft to said clutch, an electromagnetic escapement for said shaft, an electric circuit in which the escapement-magnet is located and a circuit-breaker in said circuit controlled by the punching device.

17. In a perforator an electromagnetic punching device combined with an electromagnetic paper-feeding device and means for advancing the paper strip a uniform and equal step or space for each character perforated consisting of an electric circuit including said electromagnet and a circuit-closer controlled by the depression of a key to operate the escapement-magnet, the punching-magnet, and the escapement-magnet in the order named whereby said space or step is produced by sectional advance movements.

18. In a perforator the combination of a series of independently-movable punches, a punching-magnet, a spacing-magnet, an electric circuit for said magnet, a series of independent key-levers, separable mechanical connections between the key-levers and the punches including a series of pivoted spring-retracted levers or fiddle-bows, a circuit-closer in said circuit and means for operating said circuit-closer by the depression of a key-lever consisting of a spring-retracted lever or fiddle-bow on an independent support arranged parallel with the said series of fiddle-bows and an operating connection between said fiddle-bow and the movable element of said circuit-closer.

19. In a perforator the combination of a punching device, a spacing device, a series of independent key-levers and means for blocking the movement of said key-levers at a predetermined point consisting of a locking-bolt normally out of engagement with said levers, a traveling actuator therefor, a pawl and ratchet mechanically connected to said actuator, an electromagnet to operate said pawl, an electric circuit therefor and a circuit-closer in said circuit operated by the spacing device.

20. In a perforator the combination of a punching device, a spacing device, a series of independent key-levers, and means for blocking the movement of said key-levers at a predetermined point consisting of a toothed strip normally out of engagement with said levers, an actuator therefor advanced step by step to move said strip, a retracting device for said strip, a pawl and ratchet to operate said actuator and means for operating said pawl upon the operation of the spacing device.

21. In a perforator the combination of a punching device, a spacing device, a series of independent key-levers to control the punching and spacing devices and means for blocking the movement of said key-levers

at a predetermined point in the operation of perforating consisting of a spring-retracted toothed strip, an actuator therefor, a pawl and ratchet to advance said actuator step by step and an operating connection between said pawl and the said key-levers.

22. In a perforator the combination of a punching device, a spacing device, a series of independent key-levers, a locking device for said key-levers, an actuator for said locking device, a pawl and ratchet to advance said actuator step by step, a retracting device for said actuator, a retracting device for said locking-bolt and means for releasing the actuator-retracting device.

23. In a perforator the combination of a punching device, a spacing device, a series of independent key-levers, a locking device for said key-levers, an actuator for said locking device, a pawl and ratchet to advance said actuator step by step, an electromagnet to operate the pawl, an electric circuit therefor, and a circuit-closer in said circuit operated by the depression of a key-lever.

710,164. WRENCH. MAURICE H. MURRAY, Baxter, Cal. Filed Feb. 7, 1902. Serial No. 93,861. (No model.)

Claim.—A vehicle-wrench consisting of a square body portion with a square central opening therein with three lugs radiating from and at obtuse angles to the body portion, of auxiliary blocks, adapted to fit in the opening in the body portion, each provided with central openings therein of various diameters, all substantially as shown and described.

710,165. ROAD-ROLLER. LEWIS S. MCALPINE, Marathon, N.Y., assignor to Climax Road Machine Company, Marathon, N. Y., a Corporation of New York. Filed Jan. 16, 1902. Serial No. 90,095. (No model.)

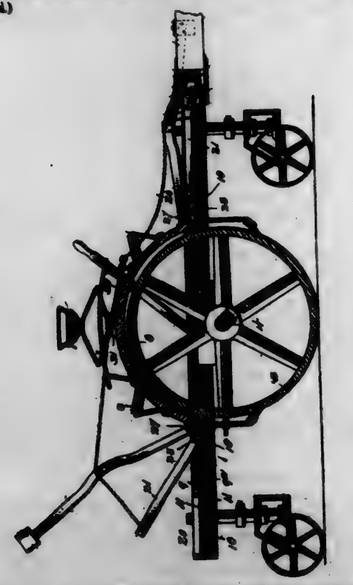

Claim.—1. In a machine of the class described, the carrying-frame having a continuous runway, and a draft appliance shiftable to any position on the frame.

2. In a machine of the class described, the carrying-frame having a continuous runway, and a draft appliance having a permanent shiftable engagement with the runway to permit the appliance to be shifted to any position and disposed at any angle with reference to the said frame.

3. In a machine of the class described, the combination with the roller, of a continuous carrying-frame horizontally encircling the roller, and a draft appliance having a traveling trolley connection with the frame and shiftable to any position thereon.

4. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller and having a continuous runway, and a shiftable draft appliance having a trolley connection with the runway.

5. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller and providing a continuous runway, and a shiftable draft appliance carrying a trolley having a traveling engagement with the frame.

6. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller and providing a continuous runway, and a shiftable draft appliance carrying a trolley having interior and exterior rollers coöperating with the frame.

7. In a machine of the class described, the combination of the roller, of a carrying-frame encircling the roller and having separate upper and lower track portions, and a shiftable draft appliance carrying a trolley having separate guide-rollers engaging the separate track portions of the frame.

8. In a machine of the class described, the combination with the roller, of a continuous carrying-frame encircling the roller, and a draft appliance having a trolley provided with interior guide-rollers working inside of the frame and with an exterior guard-roller working on the outside of the frame.

9. In a machine of the class described, the combination with the roller, of a continuous carrying-frame encircling the roller, and a draft appliance having a trolley provided with interior guide-rollers working inside of the frame and with a yieldably-supported exterior guard-roller working on the outside of the frame.

10. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller and having upper and lower members provided with inwardly-projecting guiding-flanges, and a draft appliance having a trolley provided with interior guide-rollers engaging the separate flanged portions of the frame, and an exterior spring-supported guard-roller working upon the exterior of the frame.

11. In a machine of the class described, the combination with the roller, of a carrying-frame encircling the roller, a shiftable draft appliance having a traveling engagement with the frame, and a latch comprising means for holding the draft appliance to a fixed position and also constituting a pivot-bearing therefor.

12. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller, a shiftable draft appliance carrying a trolley engaging the frame and provided with an interior roller, and a latch having a bearing-keeper adapted to engage said trolley-roller.

13. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller, a shiftable draft appliance having a trolley connection with the frame, and a pair of latches arranged at each end of the frame and adapted to engage respectively with said trolley connection and with the draft appliance or pole beyond the frame.

14. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller, a shiftable draft appliance having a trolley connection with the frame, and a pair of vertically-swinging latches arranged at each end of the frame and adapted to engage respectively with said trolley connection and with the draft appliance beyond the frame.

15. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller, a shiftable pole having a trolley connection with the frame, a pair of vertically-swinging latches pivotally supported at each end of the frame, one of said latches having a bearing-keeper for engagement with the trolley, and the other of said latches having a locking-cuff adapted to engage astride the pole beyond the frame, and a lifting device having operative connections with the said latches.

16. In a machine of the class described, the combination with the roller, of a carrying-frame horizontally encircling the roller, a shiftable pole having a trolley connection with the frame, a trolley and a pole-latch pivotally supported at each end of the frame, and a lifting device mounted upon the machine and including a pull arm having flexible connections with both sets of latches.

710,166. DOOR-CLOSER FOR HAY-PRESSES. PHILIP H. HOVIAR, Livermore, Cal. Filed Aug. 26, 1901. Serial No. 73,201. (No model.)

Claim.—1. In combination with a baling-chamber, a plunger reciprocating therein, a hinged door opening to said chamber, a suitable sweep connected to said plunger, a series of toggle-arms connected to said chamber and said door, an arm in the path of and adapted to be operated by said sweep, a projection on said toggle-arms inclining away from said chamber, and a chain connecting said projection with said arm and adapted to draw said projection toward said chamber, said chain passing under said plunger, said arms extending below the path of said plunger, for the purpose set forth.

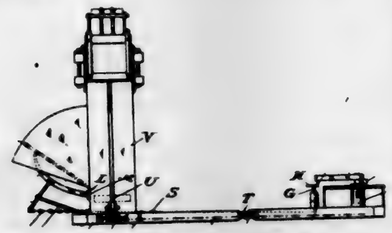

2. In combination with a baling-chamber, a plunger therein, a hinged door opening to said chamber, a suitable sweep connected to said plunger, a horizontal shaft beneath said door and formed with a plurality of projecting arms, a bar pivoted to each of said arms and connected to the body of the press by means of a pivoted link, a shaft operated by the revolution of said sweep, and an arm projecting from said shaft and connected to said bars by means of a suitable chain, said former arms being independent of but bearing against said door, all arranged substantially as set forth and for the purpose described.

3. In combination with a baling-chamber, a plunger reciprocating therein, a hinged door opening to said chamber, a suitable sweep connected to said plunger, a series of arms connected to said chamber and said door, a vertical shaft below said sweep, two crank-arms on said shaft, one of said crank-arms being in the path of said sweep and adapted to be operated thereby, while the other crank-arm is connected with said first-mentioned arms for the purpose set forth.

4. In combination with a baling-chamber, a plunger reciprocating therein, a hinged door opening to said chamber, a suitable sweep connected to said plunger, a series of toggle-arms connected to said chamber and said door, a secondary sweep at an angle to and secured to said former sweep, an arm in the path of and adapted to be operated by said secondary sweep, and a chain passing beneath said chamber and connected with said toggle-arms and said latter arm substantially as set forth.

5. In combination with a baling-chamber, a plunger reciprocating therein, a hinged door opening to said chamber, a suitable sweep connected to said plunger, a series of toggle-arms connected to said chamber and said door, a crank-arm in the path of and adapted to be operated by said sweep, a singletree interposed between said toggle-arms and said crank-arm and a connection between said singletree and said toggle-arms and said crank-arm for the purpose set forth.

6. In combination with a baling-chamber, a plunger therein, a hinged door opening to said chamber, a suitable sweep connected to said plunger, a horizontal shaft beneath said door and formed with a plurality of projecting arms, a bar pivoted to each of said arms and connected to the body of the press by means of a pivoted link, a shaft formed with a projecting arm and operated by a projection on said sweep, and a secondary arm projecting from said shaft and connected to said bars by means of a suitable chain, all substantially as described and for the purpose set forth.

710,167. ANCHOR. JAMES A. PETTIS, Grand Manan, Canada. Filed Jan. 10, 1902. Serial No. 89,182. (No model.)

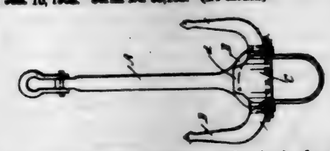

Claim.—In an anchor, the combination, with a shank, of a ring pivoted to the lower end of the shank and having scoop-shaped projections on its upper edge, and flukes having curved lower portions which project laterally from the sides of the said ring between the scoop-shaped projections, said flukes being arranged at a greater distance from the shank than the said projections and terminating in barbed points, substantially as described and shown.

710,168. STOVEPIPE-THIMBLE. ALEXANDER SPARR, Fort Wayne, Ind. Filed June 3, 1901. Serial No. 62,532. (No model.)

Claim.—A stovepipe-thimble comprising a thimble-head; an annular shoulder on said thimble-head; a cylinder with its end ranging around said shoulder and seated upon said thimble-head; and the long-shanked hooks, their heads engaged in said thimble-head, their shanks ranging vertically and parallel with the sides of the said cylinder, and their ends passing through the sides thereof and clenched practically flush therewith.

710,169. FLOOR CLAMP OR JACK. ADOLPH TREISNER, Milltown, Wis. Filed Apr. 12, 1902. Serial No. 102,516. (No model.)

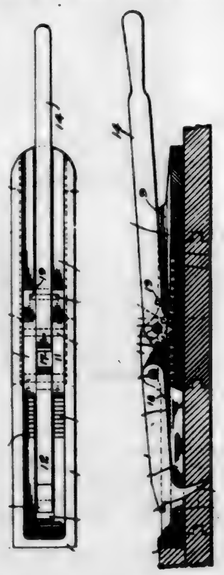

Claim.—1. A floor-clamp, comprising a base-plate having an end to engage the edge of the board to be clamped, and provided with a rack-bar and ratchet-teeth near said bar, of sliding bars mounted on said plate and having teeth to engage said ratchet-teeth, a dog pivoted on said sliding bars having a point to pass into the floor or wall beneath, and a lever pivoted on said sliding bars and having teeth to engage said rack-bar and adapted when reciprocated to advance said plate and force it forward against the edge of the board.

2. A floor-clamp, comprising a base-plate having an end to engage the edge of the board to be clamped and provided with a longitudinal slot and with a rack-bar along its central line and also having ratchet-teeth near said rack-bar, of bars mounted on said plate and having teeth to engage said ratchet-teeth, a dog pivoted on said bars and having a point to pass through said slot into the floor or wall beneath, and a lever having teeth to engage said rack-bar and adapted when reciprocated to advance said plate and force in forward and against the edge of a board, substantially as described.

3. A floor-clamp, comprising a base-plate adapted to engage the edge of a board to be clamped and provided with a longitudinal slot and with a rack-bar and with suitable ratchet-teeth, of a member slidable in guides on said plate and having teeth to engage said ratchet, a dog, a lever having teeth to engage said rack, a pin loosely mounted in slots in said member and carrying said lever and permitting the teeth of the same to be disengaged from said rack-bar to release the clamp.

4. A floor-clamp, comprising a base-plate adapted to engage the edge of the board to be clamped and provided with a rack-bar and suitable ratchet-teeth, of a member slidable in guides on said plate and having teeth to engage said ratchet, a dog carried by said member to engage

tee floor or stud whereon the clamp is placed, a lever having teeth to engage said rack, a pin loosely mounted in slots in said member and carrying said lever and permitting the teeth of the same to be disengaged from said rack-bar to release the clamp.

5. The combination, with a base-plate having a face to engage the edge of the board to be clamped and provided with a longitudinal groove, of a member slidable in said groove, a dog pivoted on said member and operable through the bottom of said plate to enter the floor or wall, a rack and ratchet bar provided in said groove, said member having teeth to engage said ratchet-bar, a lever loosely pivoted on said member and having teeth to engage said rack-bar, and a pin carried by said lever and adapted when said lever is depressed to elevate its toothed end out of engagement with said rack-bar and disengage the teeth of said member from said ratchet.

6. The combination, with a base-plate having a face to engage the edge of the board to be clamped and provided with a longitudinal trough having grooves in its side walls, of a member having pins to enter said grooves and slidable therein, a dog pivoted on said member and operable through a slot in the bottom of said plate to enter the floor or walls, a rack and ratchet bar provided in the bottom of said trough beneath said member, said member having teeth to engage said ratchet-bar, a lever loosely pivoted on said member and having teeth to engage said rack-bar, and a pin provided on said lever and adapted when said lever is depressed to elevate its toothed end out of engagement with said rack-bar and disengage the teeth of said member from said ratchet-teeth, substantially as described.

710,170. MARINE DOCK. DIED F. WENDORF, Erie, Pa. Filed May 8, 1902. Serial No. 106,607. (No model.)

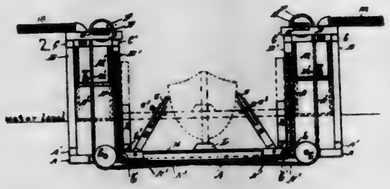

Claim.—1. The combination in a marine dock, of a base-frame, upright frames on each side thereof, a vertically-movable keel-block platform between said upright frames, vertically-movable counterbalance-tanks in the upright frames, sheaves on the tops of the upright frames, and chains passing around said sheaves and connecting the counterbalance-tanks with the keel-block platform, substantially as and for the purpose set forth.

2. The combination in a marine dock, of a base-frame, upright frames on each side thereof, a vertically-movable keel-block platform between said upright frames, vertically-movable counterbalance-tanks in the upright frames, longitudinal shafts mounted on the upper parts of the upright frames, chain-sheaves secured to said shafts so as to rotate in unison, chain-sheaves mounted in the bases of said upright frames, chains leading from said tanks over the shaft-sheaves and down to the sides of the keel-block platform, and chains from the bottoms of each tank passing under chain-sheaves at the bottom of the upright frames and connecting at the opposite ends thereof with the keel-block platform, substantially as and for the purpose set forth.

3. The combination in a marine dock, of a base-frame A, upright frames B B' on each side thereof, a keel-block platform H, trusses K on each side thereof, shafts E mounted in bearings on the top of the upright frames B B', chain-sheaves F secured to said shafts, chain-sheaves G G' mounted in the base-frames A at the bottoms of the upright frames B B', vertically-movable counterbalance-tanks M M' in the upright frames B B', means *m m'* for filling and emptying said counterbalance-tanks, chains N' leading from the tanks M and M' up over the chain-sheaves F and down to the ends A and A' of the keel-block platform H, chains N' leading from the bottom of the tank M under the chain-sheaves G below said tank and thence under the sheaves G' at the side A of the keel-block platform H to which the chain N' is there attached, and other chains N' leading from the bottom of the tank M' under the chain-sheaves G below said tank, and thence under the sheaves G' at the side A' of the keel-block platform H to which the chain is there attached, substantially as and for the purpose set forth.

4. In a marine dock, a base-frame A, and vertical side frames B B' thereon, a keel-block platform H having side trusses K thereon and adapted to move up and down between said side frames, and adjustable braces O on said keel-block platform, substantially as and for the purpose set forth.

710,171. MECHANICAL STOKER. NICOL S. ARTHUR, Glasgow, and JOHN S. BURNET, Kilmalcolm, Scotland. Filed Aug. 20, 1901. Serial No. 73,633. (No model.)

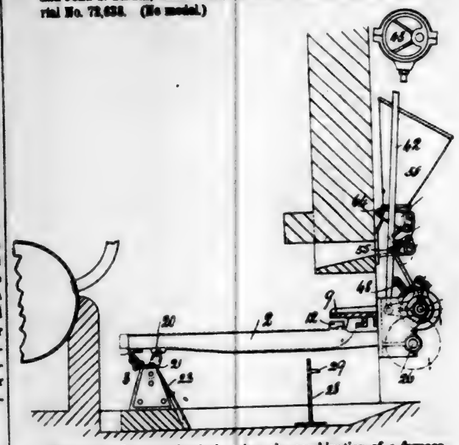

Claim.—1. In a mechanical stoker the combination of a furnace-grate consisting of movable bars each made with a longitudinal depending web, side pops and overhanging pusher, and being interealated with fixed bars, said movable bars being connected to a bearer at their front ends and working on a toggle-bar carried by the bridge at their rear ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, ratchet-gear for driving the cam-shaft, means for operating the ratchet-gear, and means for feeding the coal upon said grate, substantially as hereinbefore described.

2. In a mechanical stoker the combination of a furnace-grate consisting of movable bars each made with a longitudinal depending web, side pops and overhanging pusher, and being interealated with fixed bars, said movable bars being connected to a bearer at their front ends and working on a toggle-bar carried by the bridge at their rear ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, ratchet-gear for driving the shaft, a bell-crank and driving-pawl for operating the ratchet-gear, a connecting-rod and eccentric for operating the bell-crank, means for operating the eccentric, and means for feeding the coal upon said grate, substantially as hereinbefore described.

3. In a mechanical stoker the combination of a furnace-grate consisting of movable bars each made with a longitudinal depending web, side pops and overhanging pusher, and being interealated with fixed bars, said movable bars being connected to a bearer at their front ends and working on a toggle-bar carried by the bridge at their rear ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, ratchet-gear for driving the shaft, a bell-crank and driving-pawl for operating the ratchet-gear, a regulating-lever for controlling the action of the driving-pawl, means for locking said regulating-lever in position, means for operating the bell-crank, and means for feeding the coal upon said grate, substantially as hereinbefore described.

4. In a mechanical stoker the combination of a furnace-grate consisting of movable bars each made with a longitudinal web, side pops and overhanging pusher, and being interealated with fixed bars, said movable bars being connected to a bearer at their front ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, a spur-wheel on the shaft, a second shaft, a pinion on this shaft gearing with the spur-wheel, a ratchet-wheel on the second shaft, a bell-crank mounted on the hub of the ratchet-wheel, a driving-pawl on the bell-crank adapted to gear with the ratchet-wheel, means for operating the bell-crank, means for controlling the driving-pawl, and means for feeding the coal upon the grate while the latter is being operated, substantially as described.

5. In a mechanical stoker the combination of a furnace-grate consisting of movable bars interealated with fixed bars said movable bars being connected to a bearer at their front ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, a second shaft, means for driving the cam-shaft from the second shaft, means for driving the second shaft, a ratchet-wheel fitted loosely on the second shaft, a bell-crank mounted on the hub of the ratchet-wheel, a driving-pawl on the bell-crank adapted to gear with the ratchet-wheel, means for operating the bell-crank, means for feeding fuel to the grate, and means for operating said fuel-feeding means from the ratchet-wheel, substantially as hereinbefore described.

6. In a mechanical stoker the combination of a furnace-grate consisting of movable bars interealated with fixed bars said movable bars being connected to a bearer at their front ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, a second shaft, means for driving the cam-shaft from the second shaft, means for driving the second shaft, a ratchet-wheel fixed on the second shaft, a ratchet-wheel mounted loosely on the second shaft, a bell-crank mounted on the hubs of the ratchet-wheels, driving-pawls on the bell-crank, means for operating the bell-crank, means for controlling the action of the pawls, means for feeding fuel to the grate, and means for operating said fuel-feeding means from the loose ratchet-wheel, substantially as hereinbefore described.

7. In a mechanical stoker the combination of a furnace-grate consisting of movable bars interealated with fixed bars, said movable bars being connected to a bearer at their front ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, a spur-wheel on the shaft, a second shaft, a pinion on this shaft and gearing with the spur-wheel, a ratchet-wheel fitted loosely on the second shaft, a bell-crank mounted on the hub of the ratchet-wheel, a driving-pawl on the bell-crank adapted to gear with the ratchet-wheel, means for operating the bell-crank, means for controlling the driving-pawl, a disk on the hub of the ratchet-wheel, a crank-pin in said disk, a rod connecting the pin with a wiper on a rock-shaft, and means for feeding fuel to the grate, substantially as described.

8. In a mechanical stoker the combination of a furnace-grate consisting of movable bars interealated with fixed bars, said movable bars being connected to a bearer at their front ends, cams arranged in connection with said bearer and adapted to give it and the movable fire-bars a combined vertical and horizontal movement, a cam-shaft, a spur-wheel on the shaft, a second shaft, a pinion on this shaft gearing with the spur-wheel, a ratchet-wheel fixed on the second shaft, a ratchet-wheel mounted loose on the second shaft, a bell-crank mounted on the hubs of the ratchet-wheels, driving-pawls on the bell-crank, means for operating the bell-crank, means for controlling the action of the pawls, check-pawls for the ratchet-wheels, a disk on the hub of the loose ratchet-wheel, a crank-pin in said disk, a rod connecting the pin with a wiper on a rock-shaft, and fuel-feeding means operated by said rock-shaft, substantially as described.

9. In a mechanical stoker provided with means for automatically feeding the coal upon the grate-surface and means for simultaneously operating the movable bars of the grate, the combination with said movable bars of fixed bars, as 1, each made with a longitudinal depending web, side cheeks, a raised catch at the front end and a lug at the rear end, substantially as and for the purposes set forth.

10. In a mechanical stoker provided with means for automatically feeding the coal upon the grate-surface and means for simultaneously moving the movable fire-bars, the combination with the fixed bars of the movable bars each made with a longitudinal depending web, side pops, and overhanging pusher, a hook, as 14, at the front end, and a recess, as 13, at the other end, the whole being arranged for combined operation substantially in the manner and for the purposes set forth.

11. In a mechanical stoker having means for automatically feeding the coal upon the grate-surface and means for simultaneously operating the movable bars of the grate, the combination with the fixed grate-bars of the said movable bars each of which is provided with a hook at one end and a recess at the other, a bearer having a recess for the reception of the hooks, a toggle-bar adapted to work in the recesses of the movable fire-bars, and a cross-bar and hook-bolts for connecting the movable fire-bars to the bearer, the parts being arranged for operation substantially in the manner and for the purposes set forth.

710,172. METALLIC RAILWAY TIE. HENRY W. AVERY, Cleveland, Ohio, assignor to the Avery Stamping Company, Cleveland, Ohio, a Corporation of Ohio. Filed Mar. 3, 1902. Serial No. 97,238. (No model.)

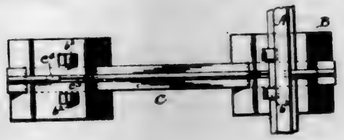

Claim.—1. A metallic tie formed of a sheet-metal plate bent on its medial longitudinal line and flanged outwardly near its edges and having a recess through the bent web to receive the base of a rail, said recess being undercut to provide a double hook in the outer side of the rail combined with a foot-plate having a slot for receiving said tie-beam, and lugs for receiving the other flange of the rail, substantially as described.

2. A metallic foot-plate in the form of an inverted channel having aligned T-shaped slots formed in its sides and a connecting-slot formed through its top, combined with a sheet-metal tie-beam formed of a plate bent on itself along the medial line and flanged outwardly near its edges, there being formed a bipennated hole through said plate at the medial line to provide a hook to engage the flange of the rail, substantially as described.

3. A sheet-metal T-shaped tie-beam made from a plate having bipennated openings punched in it and doubled on its medial longitudinal line and flanged outwardly near its edges, substantially as described.

710,178. REFRIGERATOR. HENRY AYLMER, Shortbroke, Canada. Filed June 22, 1901. Serial No. 65,637. (No model.)

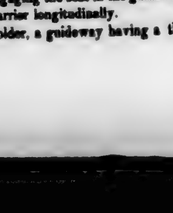

Claim.—In combination, in a refrigerator, an outer casing, an axle therein, an inner frame supported upon said axle, means for revolving the axle, an uncovered ice-receptacle supported upon the top of the inner frame, an uncovered water-receptacle supported upon the inner frame below the ice-receptacle, said ice-receptacle having an upwardly-projecting tube surrounding the said axle, substantially as described.

710,174. TOOL-HOLDER. ARTHUR H. BEDWORTH and JOHN A. BEDWORTH, Boston, Mass., assignors of one-third to F. S. Webster Company, Boston, Mass., New York, N. Y., Chicago, Ill., and London, England, a Corporation of Maine. Filed May 16, 1901. Serial No. 60,477. (No model.)

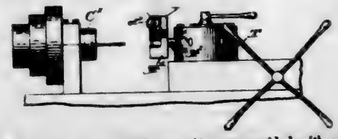

Claim.—1. In a tool-holder, a guideway provided with a threaded seat, a longitudinally-movable tool-carrier, a feed-screw in engagement with the seat, micrometer mechanism to rotate the feed-screw, the latter and said mechanism being mounted on the tool-carrier, and means to provide for rough adjustment of the tool-carrier independently of the micrometer mechanism.

2. In a tool-holder, a guideway provided with a threaded seat, a longitudinally-movable tool-carrier, a feed-screw in engagement with the seat, micrometer mechanism to rotate the feed-screw, the latter and said mechanism being mounted on the tool-carrier, and means to lock the tool-carrier on the guideway, with the feed-screw in engagement with the threaded seat, release of said means permitting the feed-screw to be disengaged from the seat and reseated thereon, to roughly adjust the tool-carrier.

3. In a tool-holder, a guideway provided with a threaded seat, a longitudinally-movable tool-carrier, a feed-screw mounted thereon and in engagement with the seat in the guideway, an actuating-worm and worm-gear for the feed-screw, a graduated dial mounted on the worm, and adapted to coöperate with a pointer on the tool-carrier, and means to lock the dial on and to rotate the worm.

4. In a tool-holder, an undercut, longitudinal guideway having a threaded seat, a tool-carrier having a recess therein to engage the guideway, a removable gib adapted to be interposed between one side of the recess and guideway, to prevent removal of the tool-carrier, and a feed screw and micrometer-actuating mechanism therefor, mounted on the tool-carrier the screw engaging the seat in the guideway, rotation of the screw adjusting the tool-carrier longitudinally.

5. In a tool-holder, a guideway having a threaded seat, combined

with a tool-carrier longitudinally movable on the guideway, a longitudinal shaft mounted in bearings on the tool-carrier and having a feed-screw and a worm-gear fast upon it, a transverse worm also mounted in the tool-carrier and in mesh with the worm-gear, and a setting-dial on the worm, the feed-screw normally engaging the threaded seat, whereby rotation of the screw will effect longitudinal movement of the tool-carrier to adjust the same.

6. In a tool-holder, a guideway provided with a threaded seat, a longitudinally-movable tool-carrier, a feed-screw mounted thereon, and in engagement with the seat in the guideway, and micrometer mechanism to rotate the feed-screw, said mechanism including a worm-gear and actuating-worm, and a graduated dial rotatable with the worm.

710,175. GONDOLA CAR. ARTHUR B. BELLOWS, Pittsburg, Pa. Filed Dec. 21, 1901. Serial No. 86,782. (No model.)

Claim.—1. A gondola-car side having an upper angular flange, an intermediate angular flange, and a lower angular flange, all said flanges extending longitudinally of the car-body; substantially as described.

2. A gondola-car side having upper, lower and intermediate angular flanges, and a floor secured to the intermediate flange; substantially as described.

3. A gondola-car side having a cover-angle riveted along its top with one flange inside the side plate of the car, a similar angle secured along the lower edge of the car side, and an intermediate longitudinal angle riveted along the car side intermediate of its height; substantially as described.

4. A gondola-car side having rolled angles secured along its top and bottom edges, an intermediate angle secured to the interior of the car side, and a floor secured to said intermediate angle; substantially as described.

5. A gondola-car side having an intermediate longitudinal angular flange, and cross-sills and floor-plates secured to said flange; substantially as described.

6. A gondola-car side having rolled angles secured along its top and bottom edges with their vertical flanges on the inner side of the side plates; substantially as described.

7. A steel gondola car having a load-inclosing superstructure, said car having a floor-plate partly within the load-inclosing structure and forming a part of the load-carrying floor, said plate extending to the end of the car beyond the superstructure, and a depending end plate secured to the end of said floor-plate by a flanged member attached to both; substantially as described.

8. A steel gondola car having a load-inclosing superstructure, said car having a floor-plate partly within the load-inclosing structure, and forming a part of the load-carrying floor, said floor-plate extending beyond the load-inclosing structure to the end of the car, a depending end plate secured to the end of said floor-plate by a flanged shape, and a flanged shape secured to the lower end of the said depending plate; substantially as described.

9. A steel gondola car having a floor-plate secured to the end of the car-body and extending beyond it and a depending end plate secured to the end of the floor-plate and having upper and lower angles secured thereto to form an end sill; substantially as described.

10. A steel car having a cover-plate extending transversely over the floor-plates above the bolster and secured to the flying transoms of the bolster on both sides of the center sill; substantially as described.

11. A steel gondola car having a floor-plate extending to the end of the car beyond the superstructure, and a depending end plate secured to the end of said floor-plate by an outer inclosing flanged shape to form a portion of the end sill; substantially as described.

12. A gondola-car side having a flanged shape riveted along its top and arranged to cover the edge of the side, said side having an intermediate angular flange, and a lower angular flange, all of said flanges extending longitudinally of the car-body; substantially as described.

710,176. GONDOLA CAR. ARTHUR B. BELLOWS, Pittsburg, Pa. Filed Dec. 21, 1901. Serial No. 86,784. (No model.)

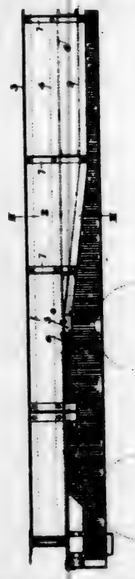

Claim.—1. A gondola car having the sides terminating at substantially the floor-line in the end portions of the car, plate extensions of said sides extending below the floor-line in the central portion of the car, and an angular flange extending along the lower edge of the truss extension; substantially as described.

2. A gondola car having side plates terminating at the floor-line in the end portions of the car, said car sides having upper and lower parallel angular flanges, the floor being secured to the lower of said flanges, plate extensions for the sides in the central part of the car, and an angular flange on each extension; substantially as described.

3. A gondola car having an angle secured along the top of the side, an angle secured to the interior of the side at the floor-line, plate extensions for the side in the intermediate part of the car, and angles riveted along the lower edge portions of the truss extensions; substantially as described.

4. A steel car having depending side extensions consisting of flanged-down floor-plates, and plate sides secured to the edge portions of said flanged-down floor-plates; substantially as described.

5. A gondola car having floor-plates provided with depending side flanges in the planes of the car side; substantially as described.

710,177. STEEL GONDOLA CAR. ARTHUR B. BELLOWS, Pittsburg, Pa. Filed Dec. 21, 1901. Serial No. 86,785. (No model.)

Claim.—1. A gondola car having plate sides terminating at the floor-line and provided with vertical strengthening members, and a truss member extending downwardly from the floor-line below the side and longitudinally of the car; substantially as described.

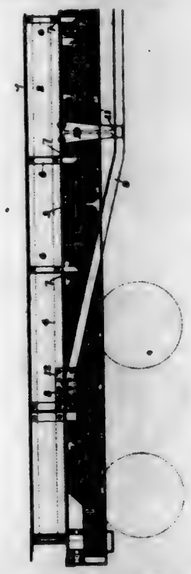

2. A gondola car having plate sides extending to the floor-line and having vertical strengthening members, and truss members extending from the floor-line near the bolster-points downwardly and longitudinally of the car-body; substantially as described.

3. A gondola car having the side terminating at the floor-line, a depending plate secured to the side, and a truss member having its end portion secured to the depending plate and to the car-floor; substantially as described.

4. A gondola-car side having an upper longitudinal angle and a lower longitudinal angle secured thereto and a truss member secured to the lower angle; substantially as described.

5. A gondola-car side having an upper cover-angle riveted along its top, an inner angle riveted along the lower edge portion, floor-plate secured to the lower angle, and a truss member secured to said lower angle at its ends; substantially as described.

6. A gondola car having its sides terminating at the floor-line, truss members secured substantially at the floor-line and extending downwardly and longitudinally of the car-body, said members consisting of rolled angles with horizontally-extending flanges, and struts between said angles and the car-body; substantially as described.

710,178. BEVEL. CHRISTIAN BECKER, New Britain, Conn., assignor of one-half to James A. Trant, New Britain, Conn. Filed Sept. 6, 1901. Serial No. 74,492. (No model.)

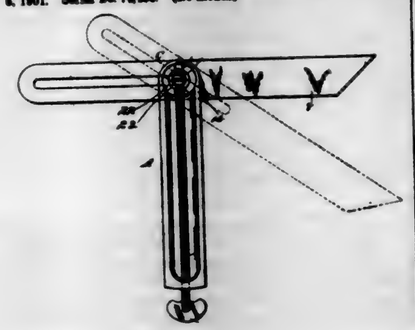

Claim.—1. In a bevel, the combination of a stock kerfed for a distance and provided at one end with a pivot-seat; a pivot occupying said seat; an adjustable blade located in said kerf and on said pivot; and means entering said stock at the end opposite said pivot-seat, traversing said pivot and engaging the stock beyond the pivot-seat and effective to thereby clamp said blade in its adjusted position relatively to the stock.

2. In a bevel, the combination of a stock; an adjustable blade carried thereby; a pivot for said blade carried by said stock; and means passing through said pivot and engaging said stock beyond the pivot and effective to clamp the stock and the blade in their adjusted positions relatively to each other.

3. In a bevel, the combination of a bifurcated stock; a pivot provided with a screw-threaded hole in adjustable engagement with one side of said bifurcated stock and freely traversing the other side thereof; an adjustable blade mounted on said pivot; and screw-threaded means traversing said hole in said pivot and engaging one side of said stock beyond said pivot and effective to clamp said sides upon the blade.

4. In a bevel, the combination of a stock kerfed for a distance, and at one end having one of its sides provided with a tapped boss constituting a pivot-seat, and the other of said sides provided with a plain pivot-seat; a pivot having a tapped opening provided with a screw adapted to enter said tapped boss, and with a plain portion adapted to traverse said plain pivot-seat; clamping means entering said stock at its end opposite said pivot and having a screw-threaded portion traversing the hole in said pivot and projecting thereboyond and engaging a face upon said stock.

5. In a bevel, the combination of a stock kerfed for a distance, and at one end having one of its sides provided with a tapped boss constituting a pivot-seat, and the other of said sides provided with a plain pivot-seat; a pivot having a tapped opening provided with a screw adapted to enter said tapped boss, and with a plain portion adapted to traverse said plain pivot-seat; a beveled face upon the side of the stock; a clamping-rod entering said stock at its end opposite said pivot and having a screw-threaded portion traversing the hole in said pivot and projecting thereboyond and engaging the beveled face upon said stock.

6. In a bevel, the combination of a stock kerfed for a distance, and at one end having one of its sides provided with a tapped boss constituting a pivot-seat, and the other of said sides provided with a plain pivot-seat; a pivot having a tapped opening provided with a screw adapted to enter said tapped pivot-seat; a clamping-rod entering said stock at its end opposite said pivot and having a screw-threaded portion traversing the hole in said pivot and projecting thereboyond, and having a conical end, and engaging a face upon said stock.

7. In a bevel, the combination of a stock kerfed for a distance, and at one end having one of its sides provided with a tapped boss constituting a pivot-seat, and the other of said sides provided with a plain pivot-seat; a pivot having a tapped hole provided with a screw adapted to enter said tapped boss, and with a plain portion adapted to traverse said plain pivot-seat; a beveled face upon the side of the stock; a clamping-rod entering said stock at its end opposite said pivot and having a screw-threaded portion traversing the hole in said pivot and projecting thereboyond, and having a conical end, and engaging the beveled face upon said stock.

8. In a bevel, the combination of a stock made from a single piece and having straight working faces and reduced central portions; a central web; a kerf cut through said working faces in a plane parallel to the plane of said web, the internal edges of the stock at each kerf being substantially transverse thereto; a tapped boss in one side of said stock comprising a pivot-seat and a plain pivot-seat in the other side of said stock; a pivot provided with a tapped hole, and having screw-threaded engagement with said tapped boss and adapted to traverse said plain pivot-seat, a beveled engaging face in line with the hole of the pivot; and a rod entering said stock from the end opposite the pivot and thereof and passing through said pivot, and having a conical end projecting therethrough, and effective to slide up on said beveled face and clamp the sides of the stock upon the blade.

9. A bevel comprising a stock constructed with a longitudinal recess and having a kerf and a blade adjustable therein, said stock being formed on one side of the kerf with a threaded bore or opening and on the other side thereof with a smooth bore, a connection engaging said threaded bore and working in said smooth bore, and means operatively engaging said connection and cooperating with a portion of the stock to clamp the blade in position, said means being seated in said recess and having a bearing in the end of the stock most remote from said bores.

10. A bevel comprising a stock having a kerf and a blade adjustable therein, said stock being formed on one side of the kerf with a threaded bore, and on the other side thereof with a smooth bore, and having an inclined surface beyond each bore, a threaded screw adjustably engaging said threaded bore, and having enlarged head formed with a threaded transverse opening, said head working freely in the smooth bore, and an operating-rod having a threaded portion working in the opening in the

pivot-head and formed with a conical portion cooperating with said inclined surface to clamp the blade in position.

11. A bevel comprising a stock having a recess in its outer surface substantially the full length thereof, and formed with a kerf and an adjustable blade therein, said stock having a threaded bore on one side of the kerf and a smooth bore on the other, and provided with an inclined surface beyond such bores, a threaded pivot adjustably engaging the threaded bore and having an enlarged head working freely in the smooth bore and provided with a threaded transverse opening, and an operating-rod having a threaded portion working in the opening in the pivot-head and made conical at the end to engage said inclined surface, said rod being housed in the recess of the stock below the general or working surface of the latter.

12. A bevel comprising a stock having a recess in its outer surface substantially the full length thereof, an adjustable blade on the stock, and means securing the blade in different positions including an operating-rod housed within said recess below the general or working surface of the stock.

13. A bevel comprising a stock having a recess in its outer surface substantially the full length thereof, an adjustable blade on the stock, and means securing the blade in different positions including an inclined surface, a rivet having an enlarged head provided with a transverse hole, and an operating-rod having a conical or beveled end passing through the rivet-hole and engaging said inclined surface, said rod being housed within the recess of the stock below the general or working surface of the latter.

14. A bevel comprising a stock formed with side flanges or working faces and an integral substantially continuous and relatively thin connecting-web, said stock being also formed with a kerf for a blade cut in the said side flanges in a plane outside of and adjacent to and parallel with the surface of said connecting-web.

710,179. WRENCH. JAMES T. BURR, Cleveland, Ohio. Filed May 19, 1902. Serial No. 107,930. (No model.)

Claim.—1. In a wrench, a combined handle and body formed from two pieces of sheet-steel of different temper and thickness, the said handle being hollow and welded to the body, and the body formed with parallel sides and edges terminating at said weld, substantially as described.

2. The wrench having a pair of substantially hook-shaped jaw-supports at its gripping end integral with its body and projecting above the same at an inclined angle, and a jaw set between said supports and across the front thereof, the said body having parallel toothed edges, in combination with gripping-wheels opposite said jaw and pinions connected with said wheels engaging said toothed edges, substantially as described.

3. The combined handle and body of the wrench having a set of integral shouldered hook-shaped jaw-supports and a jaw having its body clamped between said supports and provided with a transversely-serrated face overlapping the front edges thereon, in combination with a rotatable gripping-jaw and mechanism engaged on the body of the wrench carrying said gripping-jaw, both said jaws being above the plane of the body of the wrench, substantially as described.

4. The combined body and handle of the wrench having a pair of hook-shaped jaw-supports 3 and internal flanges 5 in the neck thereof forming an abutment for a jaw, in combination with a jaw clamped between said supports and seated against said flanges, and a rotatable jaw supported on the body of the wrench, and comprising a set of wheels and a separate pinion for each wheel, substantially as described.

5. In a wrench, a set of separate gripping-wheels side by side and a pinion detachably interlocked with each wheel, and a single shaft for said wheels and pinions, a slidable carrier engaged around the body of the wrench and supporting said shaft, whereby new pinions and wheels may be substituted, and a fixed jaw opposite said wheels, substantially as described.

6. In a pipe-wrench, a suitable body and handle, a wheel-carrier slidable thereon and consisting of a main portion engaged above the side of said body and an auxiliary portion across the top of the wrench and having ears at its sides interlocked with corresponding ears on said main portion, and separate screws at the sides uniting said auxiliary portion with the main portion of the carrier, whereby the carrier can be taken apart, substantially as described.

7. The wrench comprising a set of rotatable gripping-wheels, a carrier in which said wheels are mounted comprising a body 6 having outwardly-projecting ears 7 at its rear, and a top cross part 9 having inwardly-projecting ears 8 engaging the ears 7 and screws connecting said parts together, substantially as described.

8. The wrench-body and handle thereon having a rounded outer extremity, and a gripping-wheel carrier on said body having a downwardly-projecting tongue 10, in combination with means to hold said carrier in working position comprising a spiral spring and a rod supporting the same, and a guide-tube for said rod within the wrench-handle and centered in said rounded extremity, substantially as described.

710,180. MACHINE FOR GRINDING LENSES. JOHN F. BYINGTON, Hillsdale, Mich., assignor to F. A. Hardy & Co., Chicago, Ill., a Corporation of Illinois. Filed Dec. 30, 1901. Serial No. 87,687. (No model.)

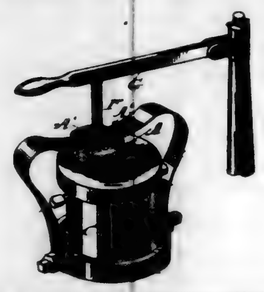

Claim.—1: In a lens-grinding machine, the combination with two cooperating grinding-tools and means for rotating one of them, of means for preventing the tools from revolving about their respective axes, independently of each other, said means including a yoke engaging one of said tools and a pivotal support for the yoke, permitting it to oscillate relatively to the other tool, substantially as described.

2. In a lens-grinding machine, the combination with two cooperating grinding-tools and means for rotating one of them, of means for preventing the tools from revolving about their respective axes, independently of each other, said means including a spring-yoke engaging one of the tools and a pivotal support for the yoke, permitting it to oscillate relatively to the other tool, substantially as described.

3. In a lens-grinding machine, the combination with the block and lap and means for rotating one of them, of means for preventing them from revolving about their respective axes, independently of each other, said means including a yoke engaging the block, a gimbal-ring carrying the yoke, and a pivotal support for the gimbal-ring, whereby the yoke is permitted to oscillate relatively to the lap, substantially as described.

4. In a lens-grinding machine, the combination with the block and lap and a revolvable chuck carrying the lap, of means for preventing the block and the lap from revolving about their respective axes, independently of each other, said means including a yoke engaging the block, said yoke being pivotally supported by the chuck whereby it may oscillate relatively to the lap, substantially as described.

5. In a lens-grinding machine, the combination with the block and lap and a revolvable chuck carrying the lap, of means for preventing the block and the lap from revolving about their respective axes, independently of each other, said means including a spring-yoke engaging the block and extending downward upon opposite sides of the lap, said yoke being pivotally supported by the chuck whereby it is permitted to oscillate relatively to the lap, substantially as described.

6. In a lens-grinding machine, the combination with the block and the lap and a revolvable chuck carrying the lap, of means for preventing the block and the lap from revolving about their respective axes, independently of each other, said means including a spring-yoke engaging the block and extending downward upon opposite sides of the lap, and a gimbal-ring supporting the yoke, said gimbal-ring being, in turn, pivotally supported by the chuck whereby the yoke is permitted to oscillate relatively to the lap, substantially as described.

710,181. BOLT AND NUT CUTTER. WILLIAM B. CARSLOW, Sterling, Ill. Filed May 19, 1902. Serial No. 108,049. (No model.)

Claim.—1. In an implement of the character described, a cutter-frame comprising suitably-spaced sheet-metal side plates connected at one end, and sheet-metal connection joining said side plates rigidly together and forming therewith a box open at one end, for the purpose set forth.

2. In an implement of the character described, a cutter-frame comprising suitably-spaced sheet-metal side plates connected at one end, and sheet-metal connection joining said side plates rigidly together and forming therewith a box open at one end, said first-named plates having pivot-perforations at their rear extremities, for the purpose set forth.

3. In an implement of the character described, a frame comprising a U-shaped sheet-metal member with integrally-formed sides and end web, and separately-formed connecting means joining said sides firmly together, for the purpose set forth.

4. In an implement of the character described, a frame comprising top and bottom side plates and a U-shaped sheet-metal strip secured between said plates, for the purpose set forth.

5. In an implement of the character described, a frame comprising top and bottom side plates, and suitably-spaced sheet-metal members having lugs formed integrally therewith and passing through perforations in said side plates and riveted in place, for the purpose set forth.

6. In an implement of the character described, a frame comprising a U-shaped sheet-metal member with integrally-formed side plates and end web, and suitably-spaced sheet-metal plates having lugs at their lateral edges secured in perforations in said first-named member, for the purpose set forth.

7. In an implement of the character described, a frame comprising a U-shaped sheet-metal member with integrally-formed side plates and end web, and a U-shaped connecting member with integrally-formed sides and connecting end web, said last-named member forming a box with said first-named member, for the purpose set forth.

8. The combination with a stationary blade, a reciprocable blade, and a pair of levers, of a frame, comprising a U-shaped sheet-metal member having integrally-formed side plates and connecting end web, said last-named member having lever-connecting means at the rear extremities of its side plates, and connecting means joining said side plates rigidly together, for the purpose set forth.

9. In an implement of the character described, a frame comprising a U-shaped sheet-metal member with integrally-formed side plates and end web, a U-shaped connecting member with integrally-formed sides and connecting end web, said last-named member forming a box with said first-named member, and having lugs on its lateral edges connected with the side plates of said first-named member, for the purpose set forth.

10. In an implement of the character described, the combination with a frame, a fixed blade, and a pair of levers, of a reciprocable block connected with said levers and having a forward extension of reduced cross-section with shoulders at its base, and blades secured to said block and having abutting shoulders, for the purpose set forth.

11. In an implement of the character described, the combination with a frame, a fixed blade, and a pair of levers, of a reciprocable block connected with said levers and having a forward extension of reduced cross-section with shoulders at its base, a nut-cutting blade with an extension abutting against a shoulder at the base of said first-named extension and a shoulder abutting against the end of said first-named extension, a second blade abutting at its base against the remaining shoulder at the base of said first-named extension, and a connecting-screw, for the purpose set forth.

12. In an implement of the character described, the combination with a frame, a fixed blade, and a pair of levers, of a reciprocable block connected with said levers and having a forward extension of reduced cross-section with shoulders at its base, a nut-cutting blade with an extension abutting against a shoulder at the base of said first-named extension and a shoulder abutting against the end of said first-named extension, a second blade abutting at its base against the remaining shoulder at the base of said first-named extension and a connecting-screw, said last-named blade being adjustable, for the purpose set forth.

710,182. BOLT AND NUT CUTTER. WILLIAM B. CARSLOW, Sterling, Ill. Filed May 19, 1902. Serial No. 108,045. (No model.)

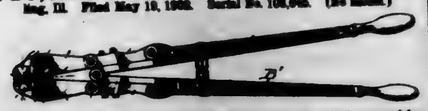

Claim.—1. An implement of the character described, comprising pivoted blades with cutter edges lying in one plane and blades carried by said first-named blades and having edges substantially perpendicular to those of the first-named blades and separated by a space in the closed position, for the purpose set forth.

2. An implement of the character described, comprising pivoted blades having beveled surfaces on one side and blades at substantially right angles to said first-named blades and lying on the beveled side thereof and separated by a space in the closed position of the implement, for the purpose set forth.

3. An implement of the character described, comprising pivoted blades having beveled surfaces on one side and blades at substantially right angles to said first-named blades and lying on the beveled side thereof and projecting over said beveled surfaces for the purpose set forth.

4. An implement of the character described, comprising pivoted bolt-cutting blades and nut-cutting blades formed integrally therewith and having cutting edges at substantially right angles thereto and separated by a space in the closed position of the implement, for the purpose set forth.

5. An implement of the character described, comprising pivoted blades swinging in a given plane and bearing nut-cutting edges substantially perpendicular to said plane, said edges being separated by a space in the closed position of the implement, for the purpose set forth.

6. An implement of the character described, comprising pivotally-joined blades swinging in a given plane and bearing nut-cutting edges substantially perpendicular to said plane and separated by a space in the closed position of the implement, and operating-levers pivotally joined together and to the base ends of said blades, for the purpose set forth.

710,183. TWO-ROW CULTIVATOR. JACOB CLAUSEN, Council Bluffs, Iowa. Filed Sept. 13, 1901. Serial No. 75,238. (No model.)

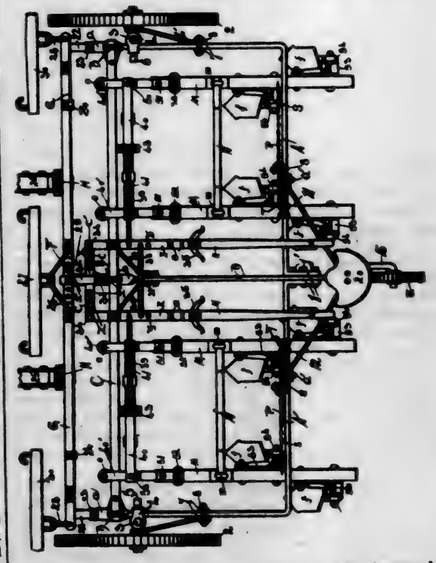

Claim.—1. The combination in an implement of the character described, of two wheel-supported axle-beams, of a four-sided frame vertically adjustably secured to said axle-beams a center-wheel vertically adjustably secured to said frame, a draft-bar laterally adjustably secured to said frame, four cultivator-beams movably secured to said frame at the side adjacent said draft-bar, arched bars adjustably connecting said cultivator-beams in sets of twos, adjustably-secured bars secured to said cultivator-beams, two shifting-levers adjustably-supported rods connecting said shifting-levers, connecting-bars extending from said levers to said cultivator-beams to provide each set of cultivator-beams with a lateral shifting mechanism, adjustable levers secured to said frame, and chains extending from said cultivator-beams and adjustably secured to said last-mentioned levers, to provide a means to vertically adjust said sets of cultivator-beams.

2. In an implement of the character described, the combination with a skeleton frame, of a transverse bar, of cultivator-beams shiftably secured to said transverse bar, adjustably-secured bars sliding one upon the other

having their ends secured to said cultivator-beams, shifting-levers pivotally secured to said frame, and a rod connecting said shifting-levers to said bars, as and for the purpose set forth.

3. The combination with a supporting-frame, of holders adjustable in a horizontal plane secured to said supporting-frame, axle-stems secured to said adjustably-secured holders and adjustable in a vertical plane, wheels secured to said axle-stems, a center-wheel adjustably secured to said supporting-frame, so that the whole supporting-frame may be raised and lowered, a transverse bar, a plurality of cultivator-bars slidably secured to said bar shifting-levers secured to said cultivator-bars, and adjusting-levers secured to said cultivator-bars, so that said bars may be vertically adjusted, as set forth.

710,184. LUBRICATOR AND LIQUID-DISPENSER. CHARLES F. CLEMENS, Peoria, Ill. Filed Mar. 11, 1901. Serial No. 50,750. (No model.)

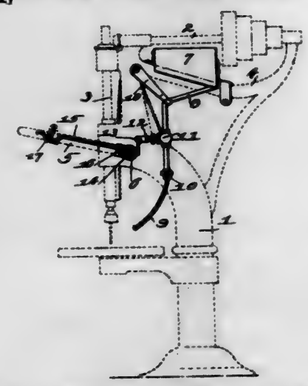

Claim.—1. In a lubricator or liquid-dispenser, a reservoir suitably supported, a shaft, a suitable dust leading from the supply to a drilling-tool, a spring-valve in said dust, a shiftable collar adapted to be mounted on said shaft and connected with said valve, a lever adapted intermittingly to engage said shiftable collar and means for turning said shaft, substantially for the purposes set forth.

2. In a lubricator a reservoir suitably supported, a dust or tube leading therefrom and to a tool operatively mounted on a drill-machine, a suitable spring-valve in said tube, a shiftable collar having connection with said spring-valve and adapted to be mounted on a shaft and connections between said collar and the operating mechanism of the tool whereby intermittent friction-pressure may be applied to said collar to open the valve substantially as described and shown.

3. In a lubricator or liquid-dispenser a reservoir suitably supported, a dust or tube leading therefrom and to a drilling-tool operatively mounted in a drilling-machine, the said dust or tube being formed in two sections, the lower section being swiveled to the upper section, a suitable spring-valve in the dust or tube and means connected with the pressure-lever of the drilling-machine having suitable connection with said valve adapted to intermittingly open and close the valve

4. A lubricator for drilling-machines, comprising a reservoir suitably mounted thereon, a tube or dust leading therefrom and to the drill-tool, said tube being formed in two sections, the lower one swiveled to the upper section, a spring-valve in the tube or dust, a shiftable collar connected with said valve and a lever arranged to engage said collar frictionally and thereby operate said valve, substantially as described.

5. A lubricator for drilling-machines, comprising a reservoir, the dust 8 having the lower swiveled section 9 attached thereto and provided with the valve 11 therein, the collar 14 shiftably mounted on shaft 6 and connected with the valve by means of arm 13 thereon and the link 12, the friction-lever 15, pivoted to the lever of the machine and provided with the clutch-finger 16, the said lever being held normally from engagement with the collar by means of spring 17, all substantially as described and shown.

6. In a lubricator or liquid-dispenser, a fluid-supply pipe or dust leading to a drilling-tool, a spring-valve in said dust, a shiftable collar suitably connected with said valve, a shiftable lever adapted to frictionally engage said shiftable collar and means for turning the collar.

7. In a lubricator or liquid-dispenser, a suitable dust leading from a source of supply to a drilling-tool, a valve in said dust, a shaft, a shiftable collar mounted on said shaft and connected with said valve, a shiftable lever supported from said shaft and adapted intermittingly to frictionally engage said shiftable collar, and means for turning said shaft, substantially as and for the purposes set forth.

710,185. RATCHET-WRENCH. JAMES R. DORIN, Gillespie, Ill. Filed Feb. 24, 1902. Serial No. 95,344. (No model.)

Claim.—1. A ratchet-wrench comprising a ratchet-plate having oppositely-disposed annular ratchets lying one within the inclosure of the other and a central stud, a handle rotatably mounted upon the stud and provided with a longitudinal slot, a reciprocatory pin slidably mounted in the slot for movement radially of the ratchet-plate into cooperative relation with the ratchets interchangably said pin having a slotted head, and a spring attached to the handle and engaged loosely in the slot of the head of the pin to permit of movement of the pin from one ratchet to the other and to hold the pin yieldably in engaging position.

2. A ratchet-wrench comprising a ratchet-disk having annular ratchets on one face and provided with a central stud projecting at opposite sides thereof, a handle rotatably mounted upon the stud and having a pawl for engagement with the ratchets interchangably, said ratchet-disk having radial grooves in its opposite face, a disk mounted upon the stud at the opposite side of the ratchet-plate from the handle and having cam-slots therein, and jaws having stems and adjacent shoulders, the stems of the jaws being passed through the slots of the cam-disk and into the slots of the ratchet-plate with the shoulders of the jaws against the outer face of the cam-disk to hold the latter upon the stud.

710,186. METHOD OF EXHAUSTING INCANDESCENT ELECTRIC LAMPS. SAMUEL R. DRAKE, Marlboro, Mass., assignor to the Bryan-Marsh Company, New York, N. Y., a Corporation of New York. Filed Dec. 10, 1900. Serial No. 39,249. (No model.)

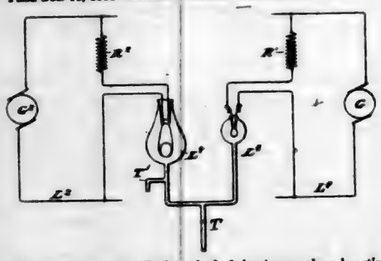

Claim.—1. The described method of simultaneously exhausting incandescent electric lamps of different voltage, consisting in first, producing a partial vacuum by withdrawing the air therefrom through a tube or outlet common to both; second, forcing a vapor or gas into both lamps for the purpose of further perfecting the vacuum, and third, simultaneously passing a current of high voltage through the filament of the high-voltage lamp and a current of low voltage through the filament of the low-voltage lamp until they are both sufficiently heated to dissipate the gases which surround the filaments.

2. The described method of exhausting an incandescent electric lamp of relatively low voltage, consisting in first, simultaneously exhausting the air from it and a companion lamp or chamber connected thereto and inclosing an electrical conductor of relatively high resistance; second, forcing a vapor or gas into the lamp and companion chamber and finally heating both the lamp and the conductor by currents of low and high voltage respectively, until the gases are dissipated.

710,187. ADJUSTABLE ICE-CREEPER. JOHN H. DOWNER, Allenport, Pa. Filed Oct. 8, 1901. Serial No. 78,080. (No model.)

Claim.—An ice-creeper comprising two interlocking members having upturned end portions, and downturned serrated side portions forming gripping edges, one of said members having an elongated longitudinally-arranged slot adjacent its inner end, a tongue formed integral with the inner end of said member and terminally curved downwardly, said second member having a transverse slot in its upturned end, the upper portion of said end bent outwardly at right angles thereto, an extension on the lower edge of said upturned end and projecting outwardly therefrom in a plane parallel to the extension on the upper end thereof, a cam member pivotally secured between the lug and the outwardly-bent portion of the second-named member and adapted to project through the said transverse slot, said second-named member formed on its inner end with a T-shaped extension, and provided adjacent thereto for a portion of its length with a series of transverse slots spaced apart, said T-shaped extension adapted to project through the said slot of the first-named member and bear upon its upper face, and said tongue adapted to lie upon the second-named member and have its downwardly-curved end fit in the said transverse arranged slots.

710,188. ELECTRIC SWITCH. BARTHOLOMEW J. FOLEY, Pittsburg, Pa. Filed Sept. 22, 1900. Serial No. 30,647. (No model.)

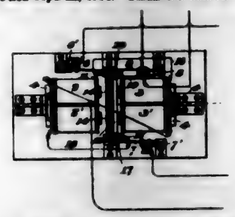

Claim.—1. An electric switch comprising a pair of electromagnets, an armature in position to be attracted by either electromagnet alternately, a pair of contacts carried by said armature, a second pair of contacts in position to cooperate with the movable contacts, connections from each contact of one pair to a source of current and from each contact of the other pair to one electromagnet, connections from the other ends of the electromagnet-windings to said source of current, and a contact make and break for an independent circuit, controlled by said armature, substantially as described.

2. An electric switch comprising a pair of electromagnets, an armature movably arranged between said electromagnets, a pair of contacts carried by said armature, a second pair of contacts in position to cooperate with the movable contacts, connections from each contact of one pair to a source of current and from each contact of the other pair to one electromagnet, connections from the other ends of the electromagnet-windings to said source of current, and a contact make and break for an independent circuit, controlled by said armature, substantially as described.

3. An electric switch comprising a pair of electromagnets, an armature arranged to oscillate between said electromagnets, a pair of contacts carried by said armature, a second pair of contacts in position to cooperate with the movable contacts, connections from each contact of one pair to a source of current and from each contact of the other pair to one electromagnet, connections from the other ends of the electromagnet-windings to said source of current, and a contact make and break for an independent circuit, controlled by said armature, substantially as described.

710,189. SASH-LOCK. DUNBAR FORBES, Newark, N. J. Filed May 28, 1902. Serial No. 109,209. (No model.)

Claim.—1. The combination with the upper and lower sash members and a bolt for fastening the said parts together, of a casing adapted to be secured over the said members, and locked thereto substantially as set forth.

2. The combination with the upper and lower sash members, one of the said members having a keyway or means for controlling the movements of the key and a lock-bolt having recesses to receive the bit of the key, said lock-bolt being adapted to move from one member into locking relation with the other member and thence into locking relation with the casing, of said casing adapted to be secured by said lock-bolt over said lock members, substantially as set forth.

3. The combination with the sash members, and a lock-bolt slidable on one member into locking engagement with the other, of a casing adapted to inclose both of said members and to be locked by said bolt and key for operating the bolt and locking all said parts together, substantially as set forth.

4. The combination with the sash members having loops and ways for a locking-bolt, and a casing of said locking-bolt, having separate recesses *f*, *f*, to receive the bit of the key and a key for moving said bolt from the loop on one member into the loop of the other, the said bit when first rotating with the key being adapted to enter one recess and throw the bolt to lock the sash members together and, on the second turning, to enter the next recess in order and threw the bolt into locking engagement with the casing, substantially as set forth.

5. The combination with the sash members having loops and slideways and one of said members having a keyway, a bolt arranged and adapted to be moved on said slideways and in said loops to lock said members together and a casing inclosing said members and having projections to engage one of said members and said bolt and be locked upon said members substantially as set forth.

710,190. PROCESS OF EXTRACTING VEGETABLE ALBUMEN. FREDERICK W. GAERTNER, Saginaw, Mich. Filed Jan. 27, 1902. Serial No. 91,234. (No specimens.)

Claim.—1. The process of extracting vegetable albumen from vegetable matter, which consists in subjecting the vegetable matter reduced to powdered form to water at a temperature below that which would coagulate the albumen, rendering the dissolved albumen insoluble by adding alcohol and separating the precipitated albumen from the liquid by centrifugal action.

2. The process of extracting vegetable albumen from vegetable matter, which consists in subjecting the vegetable matter reduced to powdered form to water at a temperature below that which would coagulate the albumen, rendering the dissolved albumen insoluble by adding alcohol to the mixture, extracting the albumen from the liquid in a centrifugal machine, and drying the same in the same centrifugal machine.

710,191. HANGER. HOWARD T. HALLOWELL, Davisgrove, Pa. Filed Apr. 8, 1901. Serial No. 54,836. (No model.)

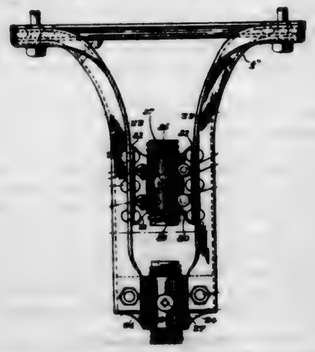

Claim.—1. A hanger comprising a plate, having a longitudinally-extending rib, a plurality of legs provided with feet attached to said plate, said legs having longitudinally-extending ribs which terminate laterally in flanges, said flanges being deflected downwardly and outwardly in proximity to said feet, a brace located at the intermediate portions of said legs and secured to said flanges by suitable fastening devices, a clamp located at the lower portion of said legs and secured to the flanges thereof, and upper and lower adjusting devices located in said brace and lower clamp respectively.

2. A hanger, comprising a plate, a plurality of legs having hollow longitudinally-extending strengthening-ribs provided with feet attached to said plate, said legs having flanges on their outer portions, said outer portions of said legs being deflected outwardly and downwardly thereby forming stiffening-flanges which extend longitudinally on the outer edges of said legs and feet, said legs terminating in a plurality of U-shaped contours at their lower extremities, a brace located at the intermediate portions of said legs and secured to said legs by suitable fastening devices, a

clamp located at the lower portion of said legs and secured thereto by suitable fastening devices, and upper and lower adjusting devices located in said brace and lower clamp respectively.

710,192. LOOSE-REED MOTION FOR LOOMS. EDWARD HERBST, Union Hill, N. J. Filed Feb. 21, 1901. Serial No. 48,262. (No model.)

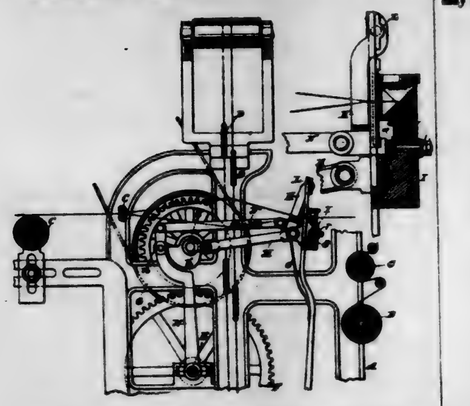

Claim.—1. In a loom, the combination of a batten, a reed carried by the batten and movable with respect thereto, means for imparting an auxiliary beat-up motion to the reed, a yielding check interposed between reed and batten, and means for adjusting the said check both laterally and longitudinally of the batten.

2. In a loom, the combination of a batten, a reed carried by the batten and movable with respect thereto, means for imparting an auxiliary beat-up motion to the reed, and an adjustable yielding check device of a general wedge shape interposed between the reed and batten.

3. In a loom, the combination of a batten, a reed carried by the batten and movable with respect thereto, and means for moving the reed, the meeting faces of the reed and batten being substantially parallel, and a yielding check of a general wedge shape adjustably secured to the batten, the said batten being cut away on a line inclined to its plane, and being provided with a wedge *r*, whereby the check may be adjusted laterally, and at the same time maintain its parallelism with the face of the reed.

4. In a loom, the combination of a batten, a reed movably carried by the batten, a check for limiting the movement of the reed relatively to the batten, said check being adjustable transversely of the movement of the reed, and means for operating the reed and the batten.

5. In a loom, the combination of a batten, a reed movable relatively to the batten, one of said parts having an inclined surface on the side facing the other part, a substantially wedge-shaped check adjustable on said inclined surface, and means for operating the reed and batten.

6. In a loom, the combination of a batten, a reed movable relatively to the batten, one of said parts having an inclined surface on the side facing the other part, a substantially wedge-shaped check adjustable on said inclined surface, a wedge engaging the opposite surface of the part having the inclined surface, and a securing connection from the check to the wedge.

710,193. STOVE. ERNST ERNSTL, St. Louis, Mo. Filed Mar. 9, 1898. Serial No. 673,627. (No model.)

Claim.—1. A stove comprising a suitable body forming a fire-box; a hot-air flue mounted in the fire-box; a framework connecting the lower end of the hot-air flue to the lower end of the fire-box; a top connecting the upper end of the hot-air flue to the upper end of the fire-box and having a fuel-opening; a grate mounted upon the framework around the lower end of the hot-air flue; an ash-pan box mounted under the fire-box; an ash-pan removably mounted in the ash-pan box; and an air-flue mounted in the ash-pan in vertical alinement with the first-mentioned hot-air flue, there being an opening through the ash-pan box in vertical alinement with said flues; substantially as specified.

2. A stove comprising a suitable body forming a fire-box; a hot-air flue mounted in the fire-box; a framework connecting the lower end of the hot-air flue to the lower end of the fire-box; a top connecting the upper end of the hot-air flue to the upper end of the fire-box and having a fuel-opening; a grate mounted upon the framework around the lower end of the hot-air flue; an ash-pan box mounted under the fire-box; an ash-pan removably mounted in the ash-pan box; an air-flue mounted in the ash-pan in vertical alinement with the first-mentioned hot-air flue, there being an opening through the ash-pan box in vertical alinement with said flues; a framework extending downwardly from the bottom of the ash-pan box around said opening; and a pan mounted in said framework in vertical alinement with said flues to catch any fire and ashes that may fall down the flues; substantially as specified.

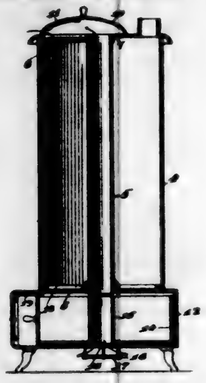

710,194. DEVICE FOR UNLOADING COAL-FLATS OR THE LIKE. HARRY H. ESSERS, Duquesne, Pa. Filed May 28, 1902. Serial No. 109,610. (No model.)

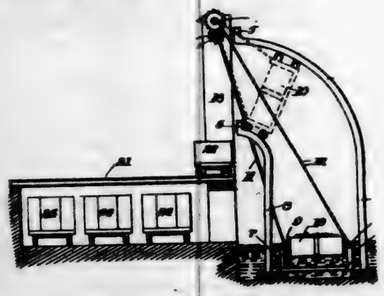

Claim.—1. In an unloading device, the combination of suitably mounted and spaced standards having their upper portions curved, a carriage operating between said standards, and revolvable means movable in unison and having differential speeds suitably connected to the carriage whereby the latter may be simultaneously raised and tilted.

2. In an unloading device, the combination of standards suitably spaced and secured in the bed of the river, or the like, the upper portions of the standards being curved and having their ends extending in substantially vertical alinement with the shore, a carriage operating between said standards, and actuating means on the shore connected to said carriage whereby the latter may be raised and simultaneously tilted.

3. In an unloading device, the combination of standards anchored in the river-bed having their upper ends curved, a carriage operating between said standards, a barge secured above said carriage, and means whereby said carriage and barge may be raised, lowered and tilted, substantially as described.

4. In an unloading device, the combination of standards anchored upon the shore, shafts secured thereto, cog-wheels secured upon said shafts, means to rotate said shafts, standards anchored in the river-bed having their upper ends curved, a carriage operating between said standards, a barge secured above said carriage, lifting-cables operating over said shafts and secured to said carriage, and shiftable connections between said barge and said carriage, all parts being arranged and operating substantially as described.

710,195. ADVERTISING DISPLAY DEVICE. DORA JONES, Chicago, Ill. Filed Dec. 19, 1901. Serial No. 86,493. (No model.)

Claim.—1. The combination with a vehicle-wheel, of a collar surrounding the hub and fitting closely thereon, means for attaching the collar to the spokes of the wheel, said collar being provided with an annular groove, a plate or disk supported on said collar, means preventing rotation of the same with the wheel, and antifriction-rollers located in said groove and interposed between the collar and the plate or disk.

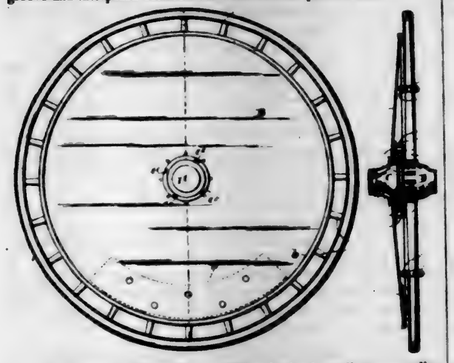

2. The combination with a vehicle-wheel, of a collar surrounding the hub and fitting closely thereon, and provided in its outer surface with an annular groove, means for attaching the inner end of the collar to the spokes of the wheel, means for clamping the outer end of the collar on the hub, a plate or disk supported on the collar, means for preventing rotation thereof with the wheel, and antifriction-rollers interposed between said plate or disk and the groove of said collar.

3. The combination with a vehicle-wheel, of a collar surrounding the outer end of the hub and provided with an annular groove, clips surrounding the spokes and attached to the inner end of the said collar, clamping means for clamping the outer end of the collar to the hub, a plate or disk, and rollers between said plate or disk and said groove in the collar.

4. The combination with a vehicle-wheel, a collar surrounding the outer end of the hub and provided on its outer surface with an annular groove, and means for attaching the collar to the spokes of the wheel, of a plate or disk having a central opening through which the end of the wheel-hub extends, a ring attached to said plate or disk and surrounding said opening and antifriction-rollers interposed between said ring and the groove of said collar.

5. The combination with a vehicle-wheel and a collar surrounding the outer end of the wheel-hub and provided on its outer surface with an annular groove, of a plate or disk having a central opening through which the outer end of the wheel-hub extends, a ring attached to the inner face of said plate or disk and surrounding said opening, a plurality of studs projecting inwardly from said ring, and rollers on said studs which rest and roll in said groove of the collar.

6. The combination with a vehicle-wheel, of a plate or disk provided with a central opening through which the end of the wheel-hubs extends, rollers on said plate or disk which rest and roll on the hub of said wheel, pins attached to the spokes of said wheel and projecting laterally therefrom, and antifriction-rollers journaled in the ends of said pins and adapted to bear against said plate or disk.

7. The combination with a vehicle-wheel, of a plate or disk provided with a central opening through which the outer end of the hub extends, rollers on said plate or disk which rest and roll on said hub, a casing extending inwardly from the said plate and inclosing said rollers, and a removable casing attached to the outer face of said plate and inclosing the outer end of the hub.

710,196. PNEUMATIC TOOL. JOSEPH KELLER, Philadelphia, Pa., assignor to Philadelphia Pneumatic Tool Company, a Corporation of New Jersey. Filed Sept. 30, 1901. Serial No. 76,704. (No model.)

Claim.—1. In a pneumatic riveter or other tool, the combination of a nozzlepiece adapted to have the shank of a working tool inserted therein, and a retaining device contained within said nozzlepiece and adapted to engage said shank, in combination with a distribution-valve, means for controlling said valve and mechanism intermediate said retaining device and said means for controlling said valve, whereby the latter is operated.

2. In a pneumatic riveter or other tool, the combination of a nozzlepiece and a combined retaining device within said nozzlepiece adapted to engage the shank of the working tool, in combination with a distribution-valve, means for controlling said valve and mechanism intermediate said retaining device and said means for controlling said valve, whereby the latter is operated.

3. In a pneumatic riveter or other tool, the combination of a nozzlepiece, and means within said nozzlepiece for encircling and engaging the shank of the working tool, whereby the latter is normally retained within said nozzlepiece, in combination with a distribution-valve, a stop-valve and mechanism intermediate said means and stop-valve.

4. In a pneumatic riveter or other tool, the combination of a nozzlepiece adapted to have the shank of the working tool inserted therein, and a clamping device contained within said nozzlepiece for retaining said shank therein, in combination with a distribution-valve, means for controlling said valve and mechanism intermediate said retaining device and said means for controlling said valve, whereby the latter is operated.

5. The combination of the nozzlepiece of a pneumatic tool, the shank of a working tool, a stop-valve ring contained within said nozzlepiece, and a retaining device carried by said stop-valve ring and adapted to engage the shank of said working tool.

6. The combination of a nozzlepiece of a pneumatic tool, the shank of a working tool, a stop-valve ring contained within said nozzlepiece, a retaining device carried by said stop-valve ring and adapted to engage the shank of said working tool, and tension devices for said stop-valve ring.

7. The combination of the nozzlepiece of a pneumatic tool, retaining devices for the shank of the working tool contained within said nozzlepiece and adapted to engage said shank, and means contained within the cylinder of the pneumatic tool for effecting the starting of the latter operated by suitable intermediate means when the shank of said working tool is pressed inwardly.

8. In a pneumatic riveter or other tool, the combination of a nozzlepiece, a retaining device for the shank of a working tool retained therein, a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool, a piston, a distribution-valve therefor, and a stop-valve operated by suitable means actuated by the act of pressing the tool to its work for controlling the operation of the tool after motive fluid has been admitted thereto by the opening of the manually-operated valve.

9. In a pneumatic riveter or other tool, a nozzlepiece, a combined retaining device within said nozzlepiece adapted to engage the shank of a working tool, a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool, a stop-valve operated by suitable means actuated by the act of pressing the tool to its work and controlling the admission of the motive fluid to the working parts of the tool and operating mechanism intermediate said throttle-valve and the working tool.

10. In a pneumatic riveter, a nozzlepiece, means within said nozzlepiece for encircling and engaging the shank of a working tool, whereby the latter is normally retained within said nozzlepiece, a manually-operated

throttle-valve controlling the initial admission of motive fluid to the tool, a piston, a distribution-valve therefor and a stop-valve operated by suitable means actuated by the act of pressing the tool to its work and controlling the operation of the tool after the admission of the motive fluid to the working parts of the tool.

11. In a pneumatic riveter or other tool, the combination of a nosepiece, adapted to have the shank of a working tool inserted therein, a clamping device contained within said nosepiece for retaining said shank therein, a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool, a stop-valve controlling the admission of the motive fluid to the working parts of the tool, and connecting mechanism intermediate the shank of the working tool and said stop-valve

12. The combination of a nosepiece of a pneumatic tool, the shank of a working tool, a stop-valve ring retained within said nosepiece, a retaining device carried by said valve-ring and adapted to engage the shank of said working tool, tension devices for said stop-valve ring, a stop-valve, mechanism intermediate the latter and said stop-valve ring, and a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool.

13. The combination of a nosepiece of a pneumatic tool adapted to have the shank of a working tool inserted therein, a shoulder on said shank, and a retaining device contained within said nosepiece and adapted to encircle said shank and be engaged by said shoulder, in combination with means for effecting the starting of the pneumatic tool when the shank of the working tool is pressed inwardly.

14. In a pneumatic riveter or other tool, the combination of a nosepiece, a shank for the working tool having a shoulder thereon and a combined retaining device within said nosepiece adapted to engage said shank and to contact with said shoulder, in combination with means for effecting the starting of the pneumatic tool when the shank of the working tool is pressed inwardly.

15. The combination with a nosepiece of a pneumatic tool, of a combined retaining device contained within said nosepiece and adapted to encircle and engage the shank of a working tool, a shoulder on said shank against which said retaining device is adapted to abut, and means actuated by intermediate means when said retaining device is pressed inwardly for effecting the reciprocation of the piston of the tool.

16. In a pneumatic tool, a cylinder, a nosepiece secured thereto and adapted to have the shank of a working tool inserted therein, a retaining device within said nosepiece, and adapted to engage said shank, a grasping-handle, a valve-box retained between said handle and cylinder, a distribution-valve and a stop-valve contained in said valve-box, and operating mechanism intermediate said retaining device and stop-valve.

17. In a pneumatic tool, a cylinder, a nosepiece secured thereto, and adapted to have the shank of a working tool inserted therein, a retaining device within said nosepiece and adapted to engage said shank, a stop-valve ring, a piston, a distribution-valve therefor, and means intermediate said valve and stop-valve ring for the operation of said valve, when the working tool is pressed to its work.

18. In a pneumatic tool, a cylinder, a nosepiece secured thereto and adapted to have the shank of a working tool inserted therein, a retaining device within said nosepiece and adapted to engage said shank, a shoulder on the latter, a stop-valve ring, a piston in said cylinder, a distribution-valve therefor and means intermediate said valve and stop-valve ring for the operation of said valve when the working tool is pressed to its work.

19. In a pneumatic tool, a cylinder, a nosepiece secured thereto and adapted to have the shank of a working tool inserted therein, a retaining device within said nosepiece and adapted to engage said shank, a stop-valve ring adjacent to said retaining device, a combining device for said stop-valve ring, a piston in said cylinder, a distribution-valve therefor and means intermediate said valve and stop-valve ring for the operation of said valve when the working tool is pressed to its work.

20. In a pneumatic tool, a cylinder, a nosepiece secured thereto and adapted to have the shank of a working tool inserted therein, a retaining device within said nosepiece and adapted to engage said shank, a grasping-handle, a valve-box retained between said handle and cylinder, a distribution-valve in said valve-box, and means intermediate said valve and retaining device for the operation of said valve when the working tool is pressed to its work.

21. In a pneumatic tool, a cylinder, a nosepiece secured thereto and adapted to have the shank of a working tool inserted therein, a retaining device within said nosepiece and adapted to engage said shank and be actuated thereby, a stop-valve ring, a piston in said cylinder, a hollow differential distribution-valve therefor and means intermediate said valve and stop-valve ring for the operation of said valve when the working tool is pressed to its work.

22. In a pneumatic tool, a cylinder, a nosepiece secured thereto and adapted to have the shank of a working tool inserted therein, a retaining device within said nosepiece and adapted to engage said shank, a piston in said cylinder, a distribution-valve therefor and a stop-valve operated by suitable means actuated by the act of pressing the tool to its work and controlling the operation of the tool after the admission of the motive fluid to the working parts of the tool, a passage leading from said port to the larger area of said distribution-valve, said passage being controlled by said stop-valve and connections intermediate said stop-valve and retaining device whereby said stop-valve is operated when the working tool is pressed to its work.

23. In a pneumatic tool, the combination of a nosepiece, a retaining device for the shank of the working tool within said nosepiece and adapted to engage said shank, a piston in the cylinder of said tool and means for effecting the starting of said piston when the shank of said working tool is pressed inwardly, said means being operated in one direction mechanically and in the opposite direction by fluid-pressure.

24. In a pneumatic tool, a handle, an inlet-passage for the motive fluid in said handle, a manually-operated throttle-valve controlling the initial admission of motive fluid to said handle, a cylinder to which said handle is attached, a piston in said cylinder, a distribution-valve for said piston, a stop-valve for controlling the movement of said distribution-valve, a nosepiece attached to said cylinder, retaining devices for the shank of the working tool contained within said nosepiece and adapted to engage said shank, mechanism intermediate said retaining devices and stop-valve for operating the latter in one direction and a port for conducting live motive fluid to the opposite end of said stop-valve, whereby the latter is operated in the opposite direction.

25. In a pneumatic tool, a cylinder, a nosepiece attached thereto, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a stop-valve ring, a spring therefor, a stop-valve, a piston in said cylinder, a distribution-valve for said piston, a rod leading from said stop-valve ring to said stop-valve for operating the latter in one direction and means for operating said stop-valve in the opposite direction.

26. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a piston in said cylinder, a distribution-valve for said piston, a stop-valve, a port uncovered by said piston in its forward stroke, passages leading from said port to a large pressure area of said distribution-valve, said passages being controlled by said stop-valve, means intermediate said retaining device and stop-valve for actuating the latter in one direction, and means for operating said stop-valve in the opposite direction.

27. In a pneumatic tool, a handle, a cylinder, a valve-box retained between said handle and cylinder, a piston in said cylinder, a differential distribution-valve in said valve-box, a nosepiece attached to said cylinder, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a port adapted to be uncovered by the piston during its forward stroke, passages 36, 37, 38 and 39 leading from said port to the larger area of said distribution-valve, a stop-valve for controlling the flow of fluid to actuate said distribution-valve and means for operating said stop-valve in either direction.

28. In a pneumatic tool, a cylinder, a nosepiece attached thereto, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a normally closed valve located within the body of the tool and means intermediate of said valve and working tool for opening said valve by the act of pressing the tool to its work.

29. In a pneumatic tool, the combination of a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool, a cylinder, a nosepiece attached to said cylinder, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, and means intermediate said retaining device and stop-valve for controlling the operation of the tool after motive fluid has been admitted thereto by the opening of the manually-operated valve.

30. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool, and mechanism intermediate said stop-valve and retaining device, said mechanism being operated by the act of pressing the tool to its work and controlling the admission of the motive fluid to the working parts of the tool.

31. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool, a stop-valve intermediate said throttle-valve and the working parts of the tool, means interposed between said stop-valve and retaining device for opening said stop-valve by the act of pressing the tool to its work, and a port for leading live motive fluid to said valve to actuate the same in an opposite direction.

32. In a pneumatic tool, a cylinder, a grasping-handle at the rear end thereof, a manually-operated throttle-valve located in said handle for controlling the initial admission of motive fluid to the tool, a stop-valve located within the body of the tool, a nosepiece attached to a cylinder of the tool, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank and mechanism intermediate said retaining device and stop-valve whereby the latter is opened by the act of pressing the tool to its work, so as to admit the motive fluid to the working parts of the tool.

33. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a stop-valve ring adapted to be moved in one direction by its contact with said retaining device, means for moving said stop-valve ring in the opposite direction, a stop-valve located in the rear portion of the cylinder or body of the tool, and a rod extending longitudinally through said cylinder from said valve to said stop-valve ring at the front end of the tool, whereby said stop-valve will be moved rearwardly to permit the operation of the tool when the latter is pressed against the work.

34. In a pneumatic tool, a cylinder, a stop-valve located within the body of the tool near its rear end and normally pressed forward into position to obstruct the circulation of the motive fluid necessary to the operation of the tool, a nosepiece for said cylinder, a retaining device within said nosepiece for the shank of the working tool and adapted to engage said shank, a stop-valve ring adjacent to said retaining device, a shoulder on the shank of the working tool adapted to engage said retaining device and an actuating-rod extending longitudinally to the cylinder of the tool between said stop-valve and said valve-ring.

35. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a piston in said cylinder, a distribution-valve therefor, ports intermediate of said piston and valve, means for controlling said ports, mechanical devices for operating said means in one direction and mechanism for directing fluid-pressure upon said means in an opposite direction.

36. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a valve-box, a differential valve therein and a stop-valve in said valve-box for controlling said differential valve, said stop-valve being operated in one direction when the working tool is placed against the work and in the opposite direction when the working tool is removed from the work.

37. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a piston in said cylinder, a differential valve therefor, a valve-box, and a stop-valve in said valve-box, said stop-valve consisting of heads joined by a neck and adapted to control the movement of said valve, said stop-valve being operated in one direction mechanically and in the opposite direction by fluid-pressure.

38. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a rod extending longitudinally of said cylinder, a distribution-valve, a stop-valve for controlling the latter, means for actuating said rod when the tool is placed against the work, and means for operating said stop-valve in an opposite direction.

39. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a rod extending longitudinally of said cylinder, a differential distribution-valve, a stop-valve for controlling the latter, means for mechanically actuating said rod and stop-valve in one direction and means for actuating said stop-valve in an opposite direction.

40. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a piston in said cylinder, a valve for controlling ports common thereto and to said piston, said valve consisting of a hollow shell, or cylinder the interior surface thereof being always open to fluid-pressure and a stop-valve for controlling the movement of said valve while live-fluid pressure is thereon, said stop-valve being operated in one direction mechanically and in the opposite direction by fluid-pressure.

41. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a piston in said cylinder, a valve controlling ports common thereto and to said piston, said valve consisting of a hollow shell or cylinder, the interior surface thereof being always open to fluid-pressure, said valve being located exterior to said hammer in alinement therewith and adapted to move in the same direction as said hammer and a stop-valve for controlling the movement of said valve while live-fluid pressure is thereon.

42. In a pneumatic tool, a cylinder, a nosepiece therefor, a retaining device for the shank of the working tool contained within said nosepiece and adapted to engage said shank, a piston in said cylinder, a valve adapted to move in the same direction as said piston, said valve consisting of a cylindrical shell having its interior surface always open to fluid-pressure and located out of the path of said piston, the movement of the latter terminating exterior to said valve and said valve being provided with opposing pressure areas against which the motive fluid acts to shift the valve in opposite directions, and means for controlling the movement of said valve while live-fluid pressure is thereon, said means being operated in one direction mechanically and in the opposite direction by fluid-pressure.

43. The combination of a nosepiece of a pneumatic tool, the shank of a working tool, a stop-valve ring contained within said nosepiece, a retaining device carried by said stop-valve ring and adapted to engage the shank of said working tool, and devices for controlling said stop-valve ring.

44. The combination of a nosepiece of a pneumatic tool, the shank of a working tool, a stop-valve ring retained within said nosepiece, a retaining device carried by said valve-ring and adapted to engage the shank of said working tool, devices for controlling said stop-valve ring, a stop-valve, mechanism intermediate the latter and said stop-valve ring, and a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool.

45. In a pneumatic riveter or other tool, the combination of a nosepiece, a shank for the working tool having a shoulder thereon and a retaining device within said nosepiece adapted to engage said shank and to contact with said shoulder, in combination with means for effecting the starting of the pneumatic tool when the shank of the working tool is pressed inwardly.

710,197. **PNEUMATIC RIVETER.** JULIUS KELLER, Philadelphia, Pa., assignor to Philadelphia Pneumatic Tool Company, a Corporation of New Jersey. Filed Mar. 28, 1902. Serial No. 99,480. (No model.)

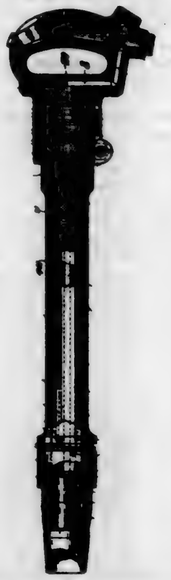

Claim.—1. In a pneumatic riveter, a cylinder, a handle, an extension or sleeve on said handle in threaded engagement with said cylinder, a valve-box within said extension, a distribution-valve and a stop-valve contained within said valve-box, lugs projecting from said extension, a slot between said lugs, and a threaded bolt passing freely through one of said lugs and being in threaded engagement with the other of said lugs, said bolt having a jam-nut thereon.

2. In a pneumatic riveter, a cylinder, a handle, an extension or sleeve on said handle in threaded engagement with said cylinder, lugs projecting from said extension, a slot between said lugs, and a threaded bolt passing freely through one of said lugs and being in threaded engagement with the other of said lugs, said bolt having a jam-nut thereon, in combina-

tion with a valve-box containing a distribution and a stop valve located within said extension, a plate intermediate said valve-box and cylinder, said plate, valve-box and extension being held in position by the tightening of said bolt.

3. In a pneumatic riveter, the combination of a cylinder, a handle, an extension or sleeve on said handle, said extension being in engagement with said cylinder, a valve-box containing a distribution-valve and a stop-valve located in said extension, lugs projecting from said extension and a threaded bolt engaging said lugs and having a nut thereon.

4. In a pneumatic riveter, the combination of a cylinder, a handle, an extension or sleeve on said handle, said extension being in threaded engagement with said cylinder, a valve-box containing a distribution-valve and a stop-valve located in said extension, lugs projecting from said extension and a threaded bolt engaging said lugs and having a nut thereon.

5. In a pneumatic riveter, the combination of a cylinder, a nosepiece in engagement therewith, and a band or lock-spring located in juxtaposition to said nosepiece and cylinder, said spring having deflected terminals and recesses in said cylinder and nosepiece respectively adapted to be engaged by said terminals.

6. In a pneumatic riveter, the combination of a cylinder, a nosepiece in threaded engagement therewith, and a band or spring located in juxtaposition to said nosepiece and cylinder and surrounding the same, said spring having deflected terminals and recesses in said cylinder and nosepiece respectively adapted to be engaged by said terminals.

7. In a pneumatic riveter the combination of a cylinder, a nosepiece in threaded engagement therewith, a groove located in the juxtaposed walls of said cylinder and nosepiece, a band or spring located in said groove and having deflected terminals, and recesses in said cylinder and nosepiece respectively, said terminals being adapted to engage said recesses.

8. In a pneumatic riveter, the combination of a cylinder, a nosepiece therefor, an annular groove common to said cylinder and nosepiece, a spring located in said groove and means whereby the ends of said spring engage said cylinder and nosepiece respectively.

9. In a pneumatic riveter, the combination of a cylinder, a valve-box, means for holding said cylinder and valve-box in assembled position, a distribution-valve in said valve-box, a stop-valve in said valve-box, ports intermediate said valves and cylinder, means for normally holding said stop-valve in closed or seated position, and means for unseating said stop-valve when the tool is pressed against the work.

10. In a pneumatic riveter, a cylinder, a distributing-valve, a stop-valve located exteriorly of said cylinder and in proximity to said distributing-valve, which latter is adapted to be operated when the said stop-valve is unseated, means for normally holding said stop-valve in closed or seated position, and means for unseating said stop-valve when the tool is brought in contact with the work.

11. In a pneumatic riveter, a cylinder, a stop-valve for controlling the admission of the motive fluid behind the piston, a distribution-valve adapted to be operated when said stop-valve is unseated, a spring normally pressing said stop-valve forwardly and holding it in closed or seated position, a stop-valve ring, a clamp adapted to engage the shank of the working tool, and to be in contact with said stop-valve ring, when the working tool is pressed to the work, and devices intermediate said stop-valve ring and stop-valve whereby the latter is actuated by the act of pressing the tool to its work.

12. In a pneumatic riveter, the combination of a cylinder, a valve-box therefor, a cylindrical stop-valve within said valve-box, a spring normally pressing said valve forward whereby the same is normally seated, a clamp adapted to engage the shank of a working tool, said shank having a shoulder thereon in contact with said clamp, a stop-valve ring adapted to contact with said clamp, and devices intermediate said stop-valve ring and stop-valve for actuating the latter against the pressure of said spring.

13. In a pneumatic riveter, a cylinder, a valve-box separable therefrom, a cylindrical stop-valve for controlling the admission of motive fluid to the rear end of said cylinder, a spring normally pressing said stop-valve forward, a working tool carried by the front end of the cylinder, a shoulder on the shank of said working tool, a clamp engaging said shoulder, a stop-valve ring, and rods extending longitudinally through the cylinder between said stop-valve ring and stop-valve, whereby the latter is actuated by the act of pressing the tool to the work.

14. In a pneumatic riveter, the combination of a manually-operated throttle-valve, controlling the initial admission of the motive fluid to the tool, a stop-valve for controlling the admission of the motive fluid to the rear end of the cylinder, a spring normally pressing said stop-valve forward, a working tool carried by the front end of the cylinder, a clamp engaging the shank of said working tool, a stop-valve ring adapted to contact with said clamp and rods extending longitudinally through the cylinder between said stop-valve ring and stop-valve, whereby the latter is actuated by the act of pressing the tool to the work.

15. In a pneumatic riveter, the combination of a manually-operated throttle-valve controlling the initial admission of motive fluid to the tool, a cylinder, a piston therein, a distribution-valve, a valve-box intermediate said throttle-valve and cylinder, a stop-valve located in said valve-box, a spring normally pressing said stop-valve to its seat, a working tool carried by the front end of the cylinder, a clamp engaging the shank of said working tool, a stop-valve ring adapted to contact with said clamp, and rods extending longitudinally through the cylinder between said stop-valve ring and stop-valve whereby the latter is actuated by the act of pressing the tool to the work.

16. In a pneumatic riveter, the combination of a cylinder, a manually-operated throttle-valve controlling the initial admission of motive fluid to said cylinder, a stop-valve intermediate said first-mentioned valve and the working parts of the tool, a spring normally holding said stop-valve closed and cutting off the motive fluid from said cylinder, a working tool having its shank engaged by a clamp, a stop-valve ring adapted to contact with said clamp, and rods extending longitudinally of said cylinder between said stop-valve ring and stop-valve, whereby the latter is opened by the act of pressing the tool to its work.

17. In a pneumatic riveter having a grasping-handle secured to its rear end, the combination of a manually-operated throttle-valve located in said handle for controlling the initial admission of motive fluid to the tool, a stop-valve located intermediate of said first-mentioned valve and the working parts of the tool and within said handle, a spring normally holding said stop-valve closed and cutting off the motive fluid behind the piston, a clamp engaging a shank of the working tool, a stop-valve ring, and rods intermediate said stop-valve ring and stop-valve whereby the latter is opened by the act of pressing the tool to its work.

18. In a pneumatic riveter, the combination of a cylinder, a piston therein, a distribution-valve, ports intermediate of said piston and valve, a nosepiece in threaded engagement with said cylinder, a spring having its ends interlocked with said nosepiece and cylinder, a clamp contained within said nosepiece and adapted to engage the shank of the working tool, a stop-valve ring adapted to contact with said clamp, a stop-valve and rods intermediate said stop-valve ring and said stop-valve.

19. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve therefor, ports serving as inlet and exhaust ports, controlled by said distribution-valve and leading to the rear end of said cylinder, a stop-valve controlling said ports only, a spring for normally holding said stop-valve to its seat, and means for unseating said stop-valve when the working tool is pressed to its work.

20. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve controlling the inlet of the motive fluid to both ends of said cylinder, a stop-valve, a spring for keeping said stop-valve normally against its seat, and means for unseating said stop-valve when the working tool is pressed to its work.

21. In a pneumatic riveter, a cylinder, a piston therein, a differential valve therefor, said valve controlling the inlet to both ends of said cylinder, a stop-valve controlling said inlet and exhaust ports for one end of said cylinder only, and means for unseating said stop-valve and effecting the reciprocation of said piston when the working tool is pressed to its work.

22. In a pneumatic riveter, a cylinder, a piston therein, a hollow differential distribution-valve for said cylinder, said valve being located exteriorly to said piston, in alinement therewith, and adapted to move in the same direction as the latter, inlet-ports controlled by said valve and leading to both ends of the cylinder, and exhaust-ports located at the forward end of said cylinder and uncontrolled by said distribution-valve.

23. In a pneumatic riveter, a cylinder, a piston therein, a hollow differential distribution-valve for said cylinder, said valve being located exteriorly to said piston, in alinement therewith, and adapted to move in the same direction as the latter, inlet-ports controlled by said valve and leading to both ends of the cylinder, and exhaust-ports located at the forward end of said cylinder and uncontrolled by said distribution-valve, in combination with a stop-valve adapted to control the inlet-ports at the rear end of said cylinder.

24. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve having differential pressure areas, said valve having an opening therethrough and being constantly subjected to live-air pressure, a series of ports controlled by the forward end of said valve leading to the rear end of said cylinder, said ports serving as both inlet and exhaust ports and the exhaust from the rear end of said cylinder being controlled by said valve, a series of inlet-ports controlled by said valve and leading to the forward end of said cylinder, a port controlled by said piston for intermittently admitting live-air pressure to the large area of said distribution-valve, exhaust-ports in the front end of said cylinder always open to the atmosphere and means for permitting the exhaust from the large pressure area of said valve.

25. In a pneumatic riveter, a cylinder, a piston therein, a hollow differential distribution-valve, a series of ports leading into said cylinder at the rear end thereof, said ports serving respectively for the inlet and exhaust of the motive fluid, a series of inlet-ports leading to the forward end of said cylinder, and controlled by said valve, a series of exhaust-ports located at the forward end of said cylinder leading to the atmosphere and uncontrolled by said distribution-valve, a passage controlled by the piston for intermittently admitting live-air pressure to the larger differential area of said valve, and a passage also controlled by said piston for permitting the exhaust from the larger area of said valve to the atmosphere.

26. In a pneumatic riveter, a cylinder, a piston therein, a hollow differential distribution-valve, ports leading to the rear end of said cylinder and controlled by the forward end of said distribution-valve, said ports serving for the inlet and exhaust of the motive fluid to said rear end of said cylinder and said valve controlling said exhaust from said rear end, inlet-ports controlled by the rear end of said valve and leading to the forward end of said cylinder, and exhaust-ports controlled by the piston for permitting the exhaust from the larger area of said valve to escape through the forward extremity of said cylinder.

27. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve, a valve-box therefor, a stop-valve in said valve-box, ports intermediate said valves and cylinder, a spring for holding said stop-valve against its seat, and means for unseating said stop-valve when the tool is pressed against its work.

28. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve, a valve-box therefor, a stop-valve in said valve-box, ports intermediate said valves and cylinder, a spring for holding said stop-valve against its seat, and means for unseating said stop-valve when the tool is pressed against its work, in combination with a grasping-handle, having an air-supply duct therethrough leading to said valve-box and a manually-operated throttle-valve in said handle for controlling said duct.

29. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve, a valve-box therefor, a stop-valve in said valve-box, ports intermediate said valves and cylinder, a spring for holding said stop-valve against its seat, and means for unseating said stop-valve when the tool is pressed against its work, in combination with a grasping-handle, having an air-supply duct therethrough leading to said valve-box, a manually operated valve in said handle for controlling said duct, and an extension on said handle in engagement with said cylinder for inclosing said valve-box.

30. The combination in a pneumatic riveter, of a cylinder, a valve-box, a grasping-handle having an extension engaging said cylinder and inclosing said valve-box, a distribution-valve in said valve-box, a stop-valve in said valve-box, a spring for normally seating said stop-valve and means for unseating said stop-valve when the riveter is pressed to the work.

31. The combination in a pneumatic riveter of a cylinder, a valve-box, a grasping-handle having an extension engaging said cylinder and inclosing said valve-box, a distribution-valve in said valve-box, a stop-valve in said valve-box, a spring for normally seating said stop-valve, and means for unseating said stop when the riveter is pressed to its work.

32. In a pneumatic riveter, a cylinder, a piston therein, a valve-box, a distribution-valve, a stop-valve in said valve-box, a spring for holding said stop-valve in seated position, and means for unseating said stop-valve, operated by the act of pressing the tool to its work.

33. In a pneumatic riveter, a cylinder, a piston therein, a valve-box, a distribution-valve, a stop-valve located wholly exterior to said cylinder, a spring for holding said stop-valve in seated position, and means for unseating said stop-valve, operated by the act of pressing the tool to its work.

34. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve located wholly exterior to said cylinder, a stop-valve also located wholly exterior to said cylinder, a spring for holding said stop-valve in seated position, and means for unseating said stop-valve operated by the act of pressing the tool to its work.

35. In a pneumatic riveter, a cylinder, a piston therein, a distribution-valve located wholly exterior to said cylinder, a stop-valve also located wholly exterior to said cylinder, a spring for holding said stop-valve in seated position, and means for unseating said stop-valve operated by the act of pressing the tool to its work, in combination with a grasping-handle having a manually-operated throttle-valve therein, said handle having an extension inclosing said valves and in engagement with said cylinder.

36. In a pneumatic riveter, a cylinder, a piston therein, a stop-valve located exteriorly to said cylinder, a spring for keeping said stop-valve normally seated, means for unseating said stop-valve by the act of pressing the tool to the work, and devices coacting with said stop-valve for effecting the reciprocation of said piston after said stop-valve is unseated.

710,198. MANUFACTURE OF PLAYING-BALLS. ELIAKIM KNIGHTHALL, Boston, Mass. Filed June 23, 1902. Serial No. 113,096. (No model.)

Claim.—1. A process in producing a playing-ball, consisting in inclosing a collapsible sphere of soft, resilient material between segments of plastic material, and welding said segments together by means of heat and compression; the compression being carried to an extent to reduce said rubber sphere in bulk.

2. A process in producing a playing-ball, consisting in inclosing a collapsible sphere of soft rubber between segments of plastic material, and applying heat and compression to said segments so as to cause them to soften and weld and also to reduce said rubber sphere in bulk; the compression being maintained while the shell cools and hardens.

3. A process in producing a playing-ball, consisting in surrounding a collapsible sphere of soft rubber by heated plastic material and subjecting the whole to compression to an extent to reduce the bulk of said rubber sphere.

4. A process in producing a playing-ball, consisting in inclosing a collapsible sphere of soft rubber in plastic material which is rendered soft by heat, subjecting the whole to compression to an extent to reduce said sphere in bulk, and maintaining the compression while said plastic material hardens.

5. A process in producing a playing-ball, consisting in forming a rubber sphere with a cavity, inclosing said sphere in plastic material which is rendered soft by heat, subjecting the whole to compression to an extent to substantially close said cavity, and maintaining the compression while said plastic material hardens.

6. A process in producing a playing-ball, consisting in inclosing a collapsible sphere of soft rubber between heated segments of gutta-percha, and applying compression to said segments so as to reduce said sphere in bulk and also cause the segments to weld.

7. A process in producing a playing-ball, consisting in inclosing a sphere of soft rubber having a central cavity between segments of gutta-percha, applying heat and compression to said segments so as to cause them to soften and weld and also to substantially close said cavity, and maintaining the compression while the shell cools and hardens.

8. A process of producing a playing-ball, consisting in inclosing a collapsible sphere of soft rubber in heated gutta-percha and subjecting the whole to compression to an extent to cause said sphere to collapse, and maintaining the compression while said plastic material hardens.

710,199. CLUTCH FOR POWER-PRESSES. WILLIAM KLOSER, Brooklyn, N. Y., assignor to E. W. Bliss Company, New York, N. Y., a Corporation of West Virginia. Filed Mar. 12, 1902. Serial No. 97,916. (No model.)

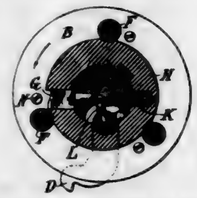

Claim.—1. The combination with a shaft, of a hub surrounding the same, a clutch adapted to connect said shaft and hub whereby one is driven by the other, a holdback adapted to prevent the driven part from moving forward relatively to the driving part, and means whereby the movement of the clutch to the clutching position brings said holdback into operation.

2. The combination with a shaft, of a hub surrounding the same, a clutch adapted to connect said shaft and hub whereby one is driven by the other, a holdback adapted to prevent the driven part from moving forward relatively to the driving part, a spring tending to move said holdback to an operative position, and means for restraining said spring, in the unclutching position of the clutch, and for releasing said spring in the clutching position thereof.

3. The combination with a shaft, of a hub surrounding the same, a

clutch-key journaled in said shaft, means for turning said key to clutch said shaft and hub whereby one may be driven by the other, a holdback adapted to prevent the driven part moving forward relatively to the driving part, and means between said holdback and said key whereby turning said key to the clutching position brings said holdback into operation.

4. The combination with a shaft, of a hub surrounding the same, a clutch-key journaled in said shaft, means for turning said key to clutch said shaft and hub whereby one may be driven by the other, a holdback adapted to prevent the driven part moving forward relatively to the driving part, a spring tending to bring said holdback into operation, and means between said holdback and said key for restraining said spring in the unclutching position of the key, and for releasing the same in the clutching position of the key.

5. The combination with a shaft of a hub journaled thereon, a clutch-key journaled in said shaft, means for turning said key to clutch said shaft and hub whereby one may be driven by the other, a fixed stop on said hub, a shouldered bolt carried by said shaft, a spring pressing said bolt in a direction to engage said fixed stop to prevent the driven part from moving forward relatively to the driving part, a pin on said key engaging the shoulder on said bolt for restraining said bolt in the unclutching position of the key, said pin being out of engagement with said shoulder to release the bolt in the clutching position of the key.

6. The combination with a shaft, of a hub surrounding the same, a clutch adapted to connect said shaft and hub whereby one is driven by the other, a fixed stop on one of said parts, a movable stop on the other of said parts, and means for bringing said stops into engagement with each other to prevent the driven part from moving forward relatively to the driving part, said fixed stop being removable at will to permit such relative forward movement of the driven part when the movable stop is in operative position.

7. The combination with a rotary shaft, of a clutch-operating arm carried thereby, a member normally in the path of said arm for moving it backward to the unclutching position, a yielding support for said member permitting it to be displaced by said arm, and means for adjusting the normal distance of projection of said member into said path.

8. The combination with a rotary shaft, of a clutch-operating arm carried thereby, a pivoted member normally in the path of said arm for moving it backward to the unclutching position, a yielding abutment for supporting said member, and means for adjusting the position of said abutment toward or away from said shaft.

9. The combination with a rotary shaft, of clutch-operating mechanism carried thereby comprising a clutch-operating arm, a spring pressing it in a forward direction toward a clutching position and a stop limiting its backward movement, a member normally in the path of said arm adapted to move said arm backward against its stop, and a yielding support for said member permitting it to yield in a direction away from said shaft.

10. The combination with a rotary shaft, of clutch-operating mechanism carried thereby comprising a clutch-operating arm, a spring pressing it in a forward direction toward a clutching position and a stop limiting its backward movement, a member normally in the path of said arm adapted to move said arm backward against its stop, a yielding support for said member, and means for adjusting the position of said abutment toward or from said shaft.

710,200. MAILING-ENVELOP. WILLIAM T. LEE, Altoona, Pa. Filed Jan. 14, 1902. Serial No. 89,841. (No model.)

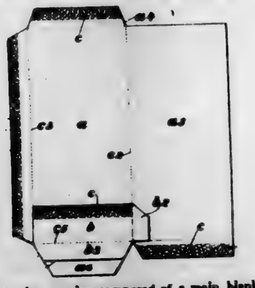

Claim.—1. An envelop composed of a main blank and a sealing-strip, the body portion of the main blank being provided at its opposite side with folding flaps or members, and at one end with a folding flap or member and said sealing-strip being sealed or secured at one end thereof to the end of the main blank opposite the last-named folding flap or member, the end of the body portion of the main blank with which the sealing-strip is connected being also provided with a flap which is adapted to be folded transversely and centrally thereof and also at the end of said body portion of the main blank, and said sealing-strip being also provided with a flap which is adapted to be folded at the end of the body portion of the main blank and which is adapted to overlap part of the last-named flap of the body of the main blank, substantially as shown and described.

2. An envelop composed of a main blank and a sealing-strip, the body portion of the main blank being provided at its opposite side with folding flaps or members and at one end with a folding flap or member and said sealing-strip being sealed or secured at one end thereof to the end of the main blank opposite the last-named folding flap or member, the end of the body portion of the main blank with which the sealing-strip is connected being also provided with a flap which is adapted to be folded transversely and centrally thereof and also at the end of said body portion of the main blank, and said sealing-strip being also provided with a flap which is adapted to be folded at the end of the body portion of the main blank and which is adapted to overlap part of the last-named flap of the body of the main blank, the folding flaps or members at the opposite sides of the main blank being also provided at the ends thereof adjacent to the sealing-strip with flaps, substantially as shown and described.

710,201. MEANS FOR PREVENTING INJURY IN USING X-RAYS. LUDDEY T. LOWDER, Bloomington, Ind. Filed Nov. 23, 1901. Serial No. 83,396. (No model.)

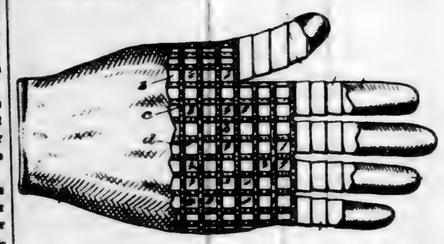

Claim.—1. Means for preventing injury incidental to the use of X-rays to parts of the human form while permitting the rays to penetrate parts designed to be operated upon, the same comprising armor substance that is impervious to the X-rays conforming to the parts of the human form about or surrounding the part designed to be operated upon, and a supporting substance for the armor substance also conforming to the parts of the human form about the parts to be operated upon.

2. Means for preventing injury incidental to the use of X-rays to parts of the human form while permitting the rays to penetrate parts designed to be operated upon, the same comprising an armor substance that is impervious to the X-rays conforming to the parts of the human form about or surrounding the part operated upon by the rays, the armor substance being changeable or alterable for admitting the rays to the parts operated upon, and a supporting substance for the armor substance also conforming to the parts of the human form about the parts operated upon.

3. Means for preventing injury incidental to the use of X-rays to parts of the human form, the same comprising an armor substance that is impervious to the X-rays formed into small thin plates slightly flexible in themselves, a form extending against the said armor substance conforming thereto, and means securing the said substance to the form.

4. Means for preventing injury incidental to the use of X-rays comprising an armor substance that is impervious to the X-rays conforming to the back parts of the human hand, and a form extending against the said armor substance conforming thereto and also extending therefrom and conforming to the inner parts of the human hand, the said armor substance being attached to the said form, substantially as set forth.

5. In a hand-covering, the combination with the glove composed of flexible material, of the armor-plates composed of small perforated sections of material impervious to X-rays extending over the back parts of the glove with the edges abutting, the welt-strips extending over the abutting edges of the plates, the securing devices extending through the perforations and into the glove structure, and the outer covering extending over the plates and the welt-strips, substantially as and for the purposes set forth.

6. In a means for preventing injury by X-rays, the combination of the hand-glove, the rectangular plates that are impervious to the X-rays and having perforations therein and extending over the back parts of said glove, the semibands impervious to the X-rays extending over the backs of the glove-fingers and having the pivotal fasteners, the fastening devices extending through said perforations and into the structure of the glove, and the outer covering extending over the said plates and said semibands and secured to said glove, substantially as and for the purposes set forth.

7. In a means for protecting the hand from the X-rays, the combination of the glove having the thin small plates that are impervious to X-rays and having the perforations near the edges thereof and extending with the abutting edges over the back of said glove, the securing devices extending through said perforations, the long welt-strips extending over abutting edges of the plates in one direction, the short welt-strips extending over abutting edges in a transverse direction and between said long strips, said strips being impervious to the X-rays, and the outer covering extending over the said plates and said strips, substantially as and for the purposes set forth.

8. In means for preventing injury incidental to the use of X-rays, the combination of the supporting form, an armor substance that is impervious to the X-rays comprising extremely thin frail plates attached to the supporting form, the welt-pieces also composed of substance that is impervious to the X-rays and covering the joints of said plates, and the covering for the said armor substance, for the purposes set forth.

710,202. VARIABLE-MOVEMENT-CONTROLLING MECHANISM. HUGH D. MEHR, Brooklyn, N. Y. Filed July 22, 1901. Serial No. 69,269. (No model.)

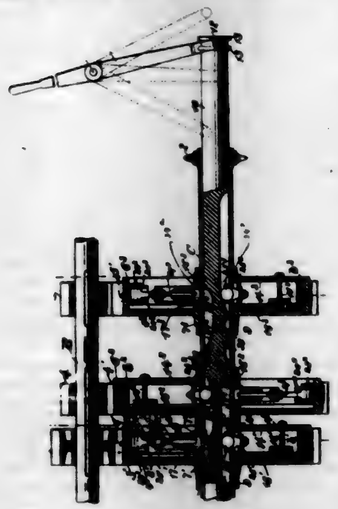

Claim.—1. The combination with a driving member and a driven member, of a shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the shaft; a slidable wedge for actuating said ring and causing its engagement with its associated member; means for shifting said wedge to and fro axially of said shaft; and an intermediate connector extending between said wedge and said ring for transmitting motion from the former to the latter, said connector embodying an interposed resilient member whose resilient action is independent of that which said ring may possess whereby the actuation of the ring occurs independently of the wear of the wedge and other parts.

2. The combination with a driving member and a driven member, of a shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the shaft; a slidable wedge for actuating said ring and causing its engagement with its associated member; means for shifting the wedge to and fro axially of said shaft; a toggle device for expanding the ring; and an intermediate connector extending between said wedge and said toggle device for transmitting motion from the former to the latter, said connector embodying an interposed resilient member whose resilient action is independent of that which said ring may possess whereby the actuation of the ring occurs independently of the wear of the wedge and other parts.

3. The combination with a driving member and a driven member, of a shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the shaft; a slidable wedge for actuating said ring and causing its engagement with its associated member; means for shifting said wedge to and fro axially of said shaft; and an intermediate connector extending between said wedge and said ring for transmitting motion from the former to the latter, said connector embodying an interposed resilient member whose resilient action is independent of that which said ring may possess whereby the actuation of the ring occurs independently of the wear of the wedge and other parts.

4. The combination with a driving member and a driven member, of a shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the shaft; a slidable wedge for actuating said ring and causing its engagement with its associated member; means for shifting the wedge to and fro axially of said shaft; a toggle device for expanding the ring; means for guiding the toggle device; and an intermediate connector extending between said wedge and said toggle device for transmitting motion from the former to the latter, said connector embodying an interposed resilient member whose resilient action is independent of that which said ring may possess whereby the actuation of the ring occurs independently of the wear of the wedge and other parts.

5. The combination with a driving member and a driven member, of a tubular shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the tubular shaft; a rod extending through said tubular shaft and provided with an inclined surface; means for shifting the rod axially; a toggle device for expanding said ring; and an intermediate connector extending between said inclined surface and said toggle device for transmitting motion from the former to the latter, said connector embodying an interposed resilient member whose resilient action is independent of that which said ring may possess whereby the actuation of the ring occurs independently of the wear of the inclined surface and the other parts.

6. The combination with a driving member and a driven member, of a tubular shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the tubular shaft; a rod extending through said tubular shaft and provided with an inclined surface; means for shifting the rod axially; a toggle device for expanding said ring; an intermediate connector extending between said inclined surface and said toggle device for transmitting motion from the former to the latter, said connector embodying an interposed resilient member whose resilient action is independent of that which said ring may possess whereby the actuation of the ring occurs independently of the wear of the inclined surface and the other parts; and means for locking said connector temporarily in position after the ring has been actuated.

7. The combination with a driving member and a driven member, of a tubular shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the tubular shaft; a rod extending through said tubular shaft and provided with an inclined surface; means for shifting the rod axially; a toggle device for expanding said ring; an intermediate connector extending between said inclined surface and said toggle device for transmitting motion from the former to the latter, said connector embodying an interposed resilient member whose resilient action is independent of that which said ring may possess whereby the actuation of the ring occurs independently of the wear of the inclined surface and the other parts; and means for locking said connector temporarily in position after the ring has been actuated; embodying a depression adjacent to the upper end of the inclined surface and in which said connector may rest itself.

8. The combination with a driving member and a driven member, of a tubular shaft upon which one of said members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the tubular shaft; a rod extending through said tubular shaft and provided with a slot having an inclined end; a circular spring encircling said shaft; means engaging with the slot in said rod and which is mounted on said spring; a toggle device for expanding said ring; and a guided rod disposed on the opposite side of the shaft to the said means and jointed to the toggle device and connected to said spring.

9. The combination with a driving member and a driven member, of a tubular shaft upon which one of said members is loosely mounted, a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the tubular shaft; a rod extending through said tubular shaft and provided with a slot having an inclined end, adjacent to which is a detent depression; a circular spring encircling said shaft; means engaging with the slot in said rod and which is mounted on said spring; a toggle device for expanding said ring; and a guided rod disposed on the opposite side of the shaft to the said means and jointed to the toggle device and connected to said spring.

10. The combination with a plurality of driving-pinions and driven gears of a tubular shaft upon which the driven gears are loosely mounted;

friction-rings adapted to expand against the respective driven gears and operatively connect the same, one at a time, with the tubular shaft; a rod extending through the tubular shaft and provided with slots at different points circumferentially of the rod and which end in inclined surfaces; means for shifting said rod axially and thereby rendering the said inclined surfaces operative, one at a time; and intermediate connectors for transmitting motion from each inclined surface to each respective friction-ring, each connector embodying an interposed resilient member whose resilient action is independent of that which the ring may possess whereby the actuation of each respective ring occurs independently of the wear of the inclined surface and the other parts.

11. The combination with a driving-pinion and a driven gear, of a tubular shaft upon which the driven gear is loosely mounted; a friction-ring adapted to expand against said driven gear and thereby operatively connect the same with the tubular shaft; a rod extending through said tubular shaft and provided with an inclined surface; means for shifting said rod axially; toggle-links connected to the opposed ends of said friction-ring; a spring operatively connected to said links, and a friction-roller carried by said spring and adapted to move lengthwise of said inclined surface when said rod is shifted and thereby actuate the spring and expand said friction-ring.

12. The combination with a driving-pinion and a driven gear, of a tubular shaft upon which the driven gear is loosely mounted; a friction-ring adapted to expand outwardly against the inner wall of said driven gear and operatively connect the same with the tubular shaft; a rod extending through said tubular shaft and provided with an inclined surface; means for shifting said rod axially; toggle-links connected to the opposed ends of said friction-ring; a spring operatively connected to said links; a friction-roller adapted to bear against and move up the inclined surface when said rod is moved axially; and a socket secured to said spring in which said roller is seated.

13. The combination with a plurality of driving-pinions and driven gears of different diameters, of a tubular shaft upon which the driven gears are loosely mounted; friction-rings adapted to expand against the respective driven gears and operatively connect the same, one at a time, with the tubular shaft; a rod extending through said tubular shaft and provided with a series of inclined surfaces and adjacent slots and detent depressions; means for shifting said rod axially; toggle-links connecting together the opposed ends of each of said friction-rings; springs operatively connected one to each set of links, and friction-rollers carried by the respective springs and adapted to each move lengthwise of its respective inclined surface on said rod when the rod is shifted and thereby actuate the associated spring and expand its associated friction-ring.

14. The combination with a plurality of driving-pinions and driven gears of different diameters, of a tubular shaft upon which the driven gears are loosely mounted; friction-rings adapted to expand against the respective driven gears and operatively connect the same, one at a time, with the tubular shaft; a rod extending through said tubular shaft and provided with a series of inclined surfaces and adjacent slots and detent depressions; means for shifting said rod axially; toggle-links connecting together the opposed ends of each of said friction-rings; means for guiding said toggle-links in their movement; springs operatively connected one to each set of links; a bearing supported on each spring; and a friction-roller mounted in each bearing and extending through the tubular shaft and adapted to each move lengthwise of its slot in said tubular shaft and up its corresponding inclined surface on said rod when the rod is shifted, the detent depressions being effective to lock a roller in place upon a further movement of said rod.

15. The combination with a driving member and a driven member, of a shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the shaft; a slidable wedge for actuating said ring and causing its engagement with its associated member; and an intermediate connector extending between said wedge and said ring for transmitting motion from the former to the latter and comprising a friction-roller adapted to bear against and move up the wedge when the latter is operated.

16. The combination with a driving member and a driven member, of a shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the shaft; and means for actuating said ring to cause its engagement with its associated member, said means comprising an interposed resilient member whose resilient action is independent of that which the said ring may possess whereby the actuation of the ring occurs independently of the wear of the parts.

17. The combination with a driving member and a driven member, of a shaft upon which one of the members is loosely mounted; a friction-ring adapted to engage said loosely-mounted member and thereby operatively connect the same with the shaft; and means for actuating said ring to cause its engagement with its associated member, said means comprising an interposed toggle and a resilient member whose resilient action is independent of that which the said ring may possess whereby the actuation of the ring occurs independently of the wear of the parts.

710,208. ACETYLENE-GAS LAMP. ARTHUR K. MILLER, New York, N. Y. Filed Oct. 26, 1900. Serial No. 034,526. (No model.)

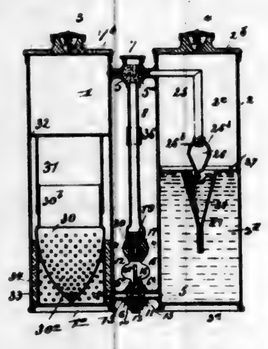

Claim.—1. A lamp comprising two vertically-disposed receptacles placed side by side, interposed connections securing said receptacles together, one connection having a bore, a tube connected with and depending from said bore to conduct gas, and a burner connected with said tube, a cock to control the passage of gas from said tube to said burner, the other connection leading to said receptacles having a cock to control the passage of water through said connection, substantially as described.

2. A lamp comprising two receptacles, a casting or tube connecting said receptacles near one end, a cock to control said casting or tube, a casting or tube secured to said receptacles near the opposite ends and communicating with the gas-generating receptacle, a tube depending from said casting or tube, a casting 17 connected with said tube, a burner connected with the casting 17, a cock to control the passage of gas to said burner, and means for operating said cocks simultaneously, substantially as described.

3. A lamp comprising a pair of receptacles, a casting or tube connecting said receptacles and having a chamber and narrow slits in the wall of said chamber for the passage of liquid, a stem located in said chamber and having tapering recesses in its sides communicating through the stem, a passage-way connecting said receptacles near the opposite end, a tube connected with said passage-way, a chamber connected with said tube and having a slit in its wall, a burner communicating with said slit, and a stem in said chamber having a bore and a tapering recess in its side communicating with said bore to coact with said slit in controlling the passage of gas to said burner, substantially as described.

4. In a lamp the combination of two receptacles placed side by side and connected together so as to provide an air-space between them, said receptacles being in communication at their lower ends, a tube communicating with one of said receptacles near its upper end to receive gas therefrom, a burner connected with said tube, and cocks comprising a stem having one portion provided with an aperture adapted to control the passage of liquid between the lower ends of the receptacles, and the other portion having an aperture adapted to control the passage of gas through said tube, substantially as described.

5. In a lamp the combination of two receptacles placed side by side and connected together by interposed castings located near opposite ends thereof, one casting having a bore communicating with both receptacles near their lower ends and also having a chamber, the other casting communicating with the gas-generating receptacle, a tube connected with said casting, another casting connected with said tube and provided with a chamber, a burner connected with said chamber, and cocks comprising a stem having a portion located in the chamber of the lower casting and having an aperture therein, another portion of said stem being located in the chamber of the third-mentioned casting and having an aperture, whereby said cocks may simultaneously control the passage of liquid and gas, substantially as described.

6. The combination of a pair of receptacles connected together by castings near opposite ends and spaced apart to provide an air-space between them, the lower casting having a passage-way and a cock to regulate the same, the upper casting communicating with the gas-generating receptacle, a tube connected with said casting, a burner connected with said tube, a cock to control the passage of gas through said tube, a reflector to which the burner leads, and a support for the reflector connected to said tube, substantially as described.

7. The combination of two receptacles placed side by side and connected together by castings located near opposite ends, the lower casting having a passage-way connected with said receptacles and a cock to control said passage-way, the upper casting communicating with the gas-generating receptacle, a tube connected with said casting, a casting connected with said tube and having a chamber, a burner connected with said chamber, and a cock having a bore leading into the same axially and leading through the side wall at an angle to the axis thereof to communicate with said burner, substantially as described.

8. In a lamp the combination of two receptacles connected together by a passage-way, means to control the passage of water through said passage-way, a burner connected with one of said receptacles, a carbid-holder provided with a flange and comprising two shells one adapted to receive the other, one shell having perforations, a space being formed between the walls of the receptacle and the carbid-holder, and a circular absorbent or fibrous material surrounding the perforations of said shell, substantially as described.

9. In a lamp the combination of two receptacles connected together by a passage-way, means to control the passage of liquid through said passage-way, a burner connected with one of said receptacles, and a carbid-holder comprising a perforated shell and a shell detachably connected therewith and having a flange adapted to fit within one of said receptacles, to provide a space between the walls of the receptacle and the carbid-holder, and an absorbent or fibrous material surrounding the perforations of said shell, substantially as described.

10. A carbid-holder comprising a shell perforated near one end, and a cap connected to the opposite end, said cap having a flange to fit within a receptacle to provide a space around the carbid-holder, and an absorbent or fibrous material surrounding the perforated shell, in combination with a receptacle to receive said carbid-holder, substantially as described.

11. A lamp comprising two receptacles placed side by side, interposed connections securing said receptacles together, one connection leading to said receptacles and having a cock to control the passage of water through said connection, a burner, and a tube communicating with the other of said connections and depending therefrom outside of the receptacle to communicate with the burner, the gas in the carbid-receptacle having access to the delivery end of the water-passage, substantially as described.

12. A lamp comprising two receptacles secured together side by side, a water-passage connecting said receptacles to permit water to feed from one to carbid in the other, a carbid-holder, a burner communicating with the carbid-receptacle, the delivery end of the water-passage in the carbid-receptacle being open to the action of the gas in said receptacle, an absorbent material in the carbid-receptacle opposed to the delivery end of the water-passage, and means to control the passage of water to the carbid, substantially as described.

13. A lamp comprising two receptacles secured together side by side, a water-passage connecting said receptacles to permit water to feed from one to carbid in the other, a burner communicating with the carbid-receptacle, a carbid-holder provided with means to establish within the carbid-receptacle a gas-space in communication with the delivery end of the water-receptacle, and an absorbent material interposed between the carbid-holder and the delivery end of the water-passage, substantially as described.

710,204. ACETYLENE-GAS LAMP. ARTHUR K. MILLER, Waterbury, Conn. Filed Jan. 13, 1900. Serial No. 1,263. (No model.)

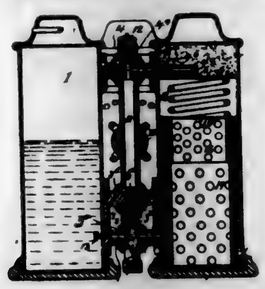

Claim.—1. A lamp comprising a pair of receptacles, braces secured to said receptacles near opposite ends, one brace having a bore communicating with both receptacles near their lower ends, the upper brace having a bore communicating with one receptacle, a tube extending between said braces and communicating with said upper bore, a burner connected with a bore in the lower brace, said tube communicating with the last-mentioned bore, and means to control the passage of water between the receptacles, substantially as described.

2. A lamp comprising a pair of receptacles, braces interposed between said receptacles near opposite ends and secured thereto, the lower brace having a bore communicating with said receptacles and a bore communicating with a burner, a key to control said bores, and a tube interposed between said braces and communicating with the upper bore in the lower brace and with a bore in the upper brace that communicates with one of said receptacles, substantially as described.

3. A lamp comprising a pair of receptacles, braces interposed between said receptacles near opposite ends and secured thereto, the lower brace having a bore communicating with said receptacles and a bore for the passage of gas and also having a centrally-disposed opening located between key-seats communicating respectively with said bores, a key, a spring to hold said key to its seats, and a tube interposed between said braces and communicating with the gas-bore in the lower brace and with a bore in the upper brace, the latter bore communicating with one of said receptacles, substantially as described.

4. A lamp comprising a pair of receptacles, braces interposed between said receptacles and secured thereto, the lower brace having a bore communicating with said receptacles, means to control said bore, the upper brace having a bore and a tubular extension passing into one receptacle, a burner connected with said bore, a cap in said receptacle receiving said extension, and means for retaining carbid in said receptacle, substantially as described.

5. A lamp comprising a pair of receptacles having a passage through which they communicate, a burner connected with one of said receptacles, and a key to control said passage, said key being interposed in the path of the gas to the burner to be operated by excess gas-pressure exerted directly upon the key to let off excess gas-pressure, substantially as described.

6. A lamp comprising a pair of receptacles, braces connecting said receptacles, one brace having a bore and key to control the passage of water, the other brace having a bore, a tube, a burner connected therewith, a fire-chamber to receive said burner, a support for the fire-chamber connected with said tube, and a bracket connected with said support, substantially as described.

7. A carbid-holder comprising a perforated shell having a flange, a perforated cap to fit said shell and having a corresponding flange, and an absorbent material surrounding said shell between said flanges, substantially as described.

8. A pair of water and gas receptacles secured together side by side and connected by a passage-way, a key to control said passage-way and fitted to have longitudinal movement, a spring to hold the key to its seat, a tube connecting the gas-receptacle with said key to lead gas thereto to unseat the key, and a burner communicating with the gas-receptacle, substantially as described.

9. The combination of a receptacle and means to supply it with water, with a carbid-holder adapted to fit within said receptacle, an absorbent material around said holder, and flanges to maintain the holder within the receptacle to provide a gas-space between the latter and the absorbent material, substantially as described.

10. The combination of a pair of receptacles secured together side by side and communicating through a passage-way, a carbid-holder to fit in one receptacle, an absorbent material around the holder, and flanges to maintain the holder in the receptacle to provide a gas-space between the latter and the absorbent material in communication with the water-delivery end of said passage-way, the absorbent material being opposed to the delivery end of the passage-way, substantially as described.

710,205. CLOTHES-LINE HOLDER. GEORGE W. McDONALD, Jersey City, N. J., assignor of one-half to Henry McDonald, Jersey City, N. J. Filed Nov. 16, 1901. Serial No. 82,514. (Model.)

Claim.—A device of the class described comprising a bracket or frame having parallel side members and adapted at one end to be connected with a suitable support and provided at the opposite end with a transverse member having guides near the opposite side of said frame which project in opposite directions, and a spool mounted in said frame and adapted to receive a line which is passed through said guides and around said spool, said guides being adapted to prevent the line from crossing in its movement around the spool, substantially as shown and described.

710,206. APPARATUS FOR TRANSPOSING ELECTRIC-CIRCUIT WIRES SO AS TO EQUALIZE INDUCTION. JAMES O'BRIEN and JOHN MATTIMORE, Staten Island, N. Y. Filed Aug. 12, 1901. Serial No. 71,573. (No model.)

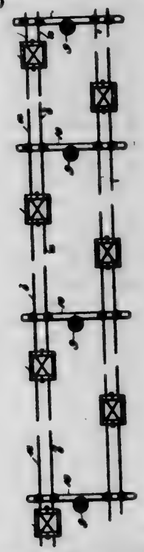

Claim.—1. The herein-described means for equalizing induction in telephone and other circuit wires, comprising a base or frame mounted on and adjustable on a plurality of said wires, and within which said wires are crossed, substantially as shown and described.

2. The herein-described means for equalizing induction in telephone or other circuit wires comprising a device mounted on a plurality of said wires and adjustable longitudinally thereon and within which the wires are crossed, said devices being provided with insulators, by means of which connection thereof with said wires is made, substantially as shown and described.

3. A device for equalizing induction in telephone and other circuit wires, said devices being adapted to be connected with a plurality of circuit-wires and to be adjustable longitudinally thereon and being also provided with insulators, by means of which connection thereof with said wires is made, substantially as shown and described.

4. The herein-described transposing devices for use in connection with electric-circuit wires and for equalizing induction, comprising a frame having insulating devices at its opposite corners and with which the circuit-wires are adapted to be connected, said circuit-wires being crossed within said frame, substantially as shown and described.

5. The herein-described transposing devices for use in connection with electric-circuit wires and for equalizing induction, comprising a frame having insulating devices at its opposite corners and with which the circuit-wires are adapted to be connected, said circuit-wires being crossed within said frame, and means for separating the circuit-wires where they cross within the frame, substantially as shown and described.

6. The herein-described device for equalizing induction in electric-circuit wires, comprising a frame mounted on said wires and longitudinally adjustable thereon and within which said wires are crossed, said frame being provided with insulating devices for said wires, substantially as shown and described.

7. A transposer for telephone-lines, comprising a pair of wires permanently crossed, means for insulating said wires, and a casing for protecting said wires.

710,207. STOPPER FOR WATER-BOTTLES. BRIL PHILLIPSON, Brooklyn, N. Y., assignor to Anton C. Eggers, trustee, Brooklyn, N. Y. Filed May 15, 1902. Serial No. 107,379. (No model.)

Claim.—1. The combination, with the neck of a water-bottle, of a bushing secured therein, said bushing having a suitable screw-threaded portion, a stopper having a thumb-piece, a gasket fitted on said stopper, and a screw-threaded shank on said stopper adapted to engage said threaded portion of the bushing, substantially as set forth.

2. The combination, with the neck of a water-bottle, of a bushing secured in the same, said bushing being provided with a perforated bottom having a central screw-threaded portion, a stopper provided with a thumb-piece, a gasket fitted on the head of the same, and a shank provided with a threaded portion adapted to engage the threaded portion of the bushing, substantially as set forth.

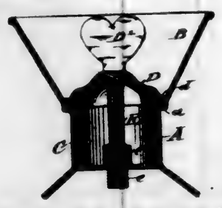

3. The combination, with the neck of a water-bottle, of a bushing secured therein, said bushing having a suitable screw-threaded portion, a stopper having a thumb-piece, a gasket fitted on said stopper, a screw-threaded shank on said stopper adapted to engage said threaded portion of the bushing, means for preventing the accidental detachment of the stopper from said bushing, and means for permitting the detachment of the same, substantially as set forth.

4. The combination, with the neck of a water-bottle, of a bushing secured in said neck, an interiorly-threaded socket supported by said bushing, a stopper provided with a shank having a threaded portion engaging said socket, and a stop device between the socket and shank for arresting the motion of the stopper, substantially as set forth.

710,208. STOPPER FOR WATER-BOTTLES. BRIL PHILLIPSON, Brooklyn, N. Y., assignor to Anton C. Eggers, trustee, Brooklyn, N. Y. Filed May 15, 1902. Serial No. 107,380. (No model.)

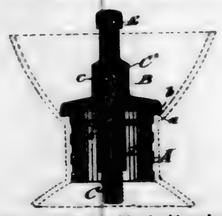

Claim.—1. The combination, with a bushing adapted to be secured in the neck of a water-bottle, of an adjustable stopper provided with an elastic gasket, a tubular member connecting said stopper with the bushing, and a screw-cap for the end of said stopper-head, substantially as set forth.

2. The combination, with a bushing secured in the neck of a water-bottle, of a socket supported in said bushing, a stopper provided with a tubular shank secured therein, a bore in the head of said stopper, said stopper being adapted to be adjusted relatively to the bushing, a screw-cap at the end of the stopper, and a swivel connection between the screw-cap and the stopper for retaining it in position on the same, substantially as set forth.

710,209. SEWER-TRAP. JOSEPH PRATT, McKeesport, Pa. Filed May 12, 1902. Serial No. 106,903. (No model.)

Claim.—1. In a sewer trap and flush, the combination with a box or casing in communication with the house connection, a tilting trap mounted in said box or casing, a hinged door carried by said trap, and means for limiting the tilting movement of the trap, substantially as described.

2. In a sewer trap and flush, a box or casing having the base provided with a gutter, and with a discharge-chute in communication with the sewer, a tilting trap mounted in the box or casing, a hinged door carried by said trap, a partition in the box or casing, and a hinged door carried by said partition, substantially as described.

3. In a sewer trap and flush, a box or casing in communication with the house connection, a tilting trap mounted in said box or casing, deflector-plates carried by the box or casing for discharging the material into the trap, a hinged door carried by said trap, and means for limiting the tilting movement of the trap, substantially as described.

4. In a sewer trap and flush, a box or casing in communication with the house connection, a water-supply pipe communicating with the box or casing, a tilting trap mounted in the box or casing, a partition in said box or casing, and a hinged door carried by said partition, substantially as described.

5. In a sewer-trap, a box or casing having the base provided with a gutter and an inclined discharge-chute, combined with a tilting trap mounted in the box or casing, a partition in the box or casing, and a hinged door carried by said partition lying above the gutter, substantially as described.

710,210. LACING-HOOK. BERNHARD L. PEPER, East Orange, N. J., assignor to the Agatine Shoe Hook & Eyelet Company, Newark, N. J., a Corporation of New York. Filed Apr. 2, 1902. Serial No. 101,087. (No model.)

Claim.—In an open lacing-hook permitting the passage of a lace between the bill and body of the hook, an attaching member having an opening in its upper face, and a head overhanging and secured to the attaching member and provided with a downwardly-extending bill, the complete extremity of which enters the opening of the attaching member, substantially as described.

710,211. DISK CUTTER ATTACHMENT FOR CORN-PLANTERS. HENRY REUTER, Boone, Mo. Filed June 3, 1902. Serial No. 110,102. (No model.)

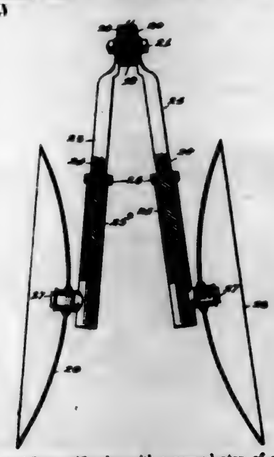

Claim.—1. The combination with a corn-planter, of a supporting-bar, two supporting-posts 23 fixed to and extending downwardly from said supporting-bar, tubes 25 revolubly mounted upon said posts, disks carried by said tubes, and means whereby the latter may be adjusted at various angles upon the said posts, substantially as specified.

2. The combination with a corn-planter; of an adjustable supporting-bar; the central portion of which is wedge-shaped in cross-section, and narrower at the top than at the bottom; clamping-plates adjustably mounted upon the supporting-bar; posts extending downwardly from the clamping-plates; and disks adjustably mounted upon the posts; substantially as specified.

3. The combination with a corn-planter, of a supporting-bar, two supporting-posts 23 fixed to and extending downwardly from said supporting-bar, and provided with screw-threads, tubes 25 provided with internal screw-threads and revolubly mounted upon said posts, locking-nuts 26 for securing said tubes against rotation upon said posts, and disks carried by the said tubes, substantially as described.

710,212. FLUID-METER. WILLIS H. REYNOLDS, Chicago, Ill., assignor to Michael J. Doherty and Thomas Gahan, Chicago, Ill. Filed Dec. 2, 1901. Serial No. 84,312. (No model.)

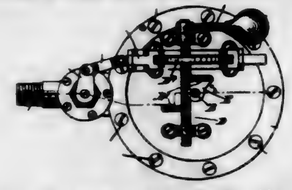

Claim.—1. In a fluid-meter, in combination with a chamber; a shaft at the axis of the chamber; a radial diaphragm in the chamber extending to the shaft; a diaphragm fixed on the shaft and oscillating therewith from one side to the other of the radial diaphragm; a shaft mounted on the chamber extending transverse and proximate to the axial shaft, said axial shaft having two tappets or radial fingers at opposite sides respectively of the plane of the transverse shaft, the latter having abutments projecting in the path of said tappets respectively; whereby the oscillation of the diaphragm rocks the transverse shaft; and connections by which the rocking of the latter shaft operates the valve.

2. In a fluid-meter, in combination with a chamber; an oscillating diaphragm therein; inlets and outlets for each chamber; an exterior shaft, and means by which the diaphragm rocks said exterior shaft; a tumble-bob connected to the exterior shaft; a cam operated by the tumble-bob; a slide-bar operated by the cam; and means by which the slide-bar operates the valve.

710,213. BOX OR CRATE. WILLIAM H. ROGERS, New York, N. Y. Filed Mar. 26, 1902. Serial No. 99,845. (No model.)

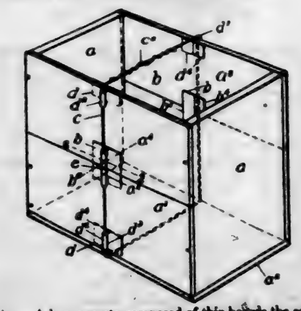

Claim.—A box or crate composed of thin boards the edges of which are slitted transversely, fastening devices for securing the adjacent edges of said boards together consisting of sheets of metal folded centrally to form a tubular member, and the ends of which are passed through said slits and spread outwardly on the inner side of said boards whereby the adjacent edges of said boards are connected and strengthened, and a wire or other flexible device passed around said box or crate and through said tubes and the ends of which are connected, substantially as shown and described.

710,214. DUMPING-WAGON. EDWARD H. SAXBY, Baton, Colo. Filed July 21, 1902. Serial No. 116,416. (No model.)

Claim.—1. In a dumping-wagon, the combination of a body having sides which are hinged thereto at their lower edges; catches which are secured to the sides; flexible connections attached to the ends of the body, which engage the said catches so as to hold the sides closed, or to support them when they are lowered; ways secured to the under side of the body; a frame having revolvable supports, upon which said ways rest; means which operate in connection with the revolvable supports, for shifting the body laterally in either direction so as to tilt the same, and means for limiting both the lateral and tilting movement of the body, substantially as shown.

2. In a dumping-wagon, the combination of a body having hinged sides with catches secured thereto; chains attached to the ends of the body which engage said catches to hold the sides closed, or to support them when they are lowered; racks secured to the under side of the body; a frame for supporting the body, having flanged pinions mounted thereon, which engage the said racks; rods which extend lengthwise of the frame and through the pinion for turning the same, so as to shift the body lat-

orally in either direction, in order to tilt the same, and flexible connections secured to the rods and to the body, which limit both the lateral and tilting movement of said body, substantially as shown.

2. In a dumping-wagon, the combination of a supporting-frame which is mounted upon wheels; bearings secured upon each side of the said frame; sleeves journaled in said bearings; flanged pinions keyed to said sleeves; rods which extend through the said sleeves, and means for locking the rods and sleeves, so that they may turn either in unison or independently; a body having racks secured upon its under side, which lie upon the said pinions, between the flanges thereof, and are engaged thereby, so that the said body may be moved laterally in either direction in order to tilt the same; flexible connections secured at one end to the rods and at the other end to the body, which limit both the lateral and tilting movement of the body, the said body being provided with hinged sides, and with means for holding the sides closed and for supporting them when they are open, substantially as shown.

4. In a dumping-wagon, the combination of a supporting-frame which is mounted upon wheels; bearings secured upon each side of said frame; sleeves journaled in said bearings having a clutch-face formed upon one of their ends; flanged pinions keyed to the sleeves; rods, one of which is passed through the sleeve on one side of the frame, while the other is passed through the sleeve on the opposite side of the frame; collars having clutch-faces, one of said collars being secured upon the forward end of each rod, in proximity to the clutch-face of the forward sleeves; a crank-handle which is adapted to be slipped upon the rear end of either of the rods, the hub of said handle being formed with a clutch-face which engages the corresponding face of the rear sleeve, said rod and sleeves being adapted to turn independently or in unison; a body having racks secured to its under side, which lie upon the said pinions, between the flanges thereof, and are engaged thereby, so that the body may be moved laterally in either direction in order to tilt the same; flexible connections, as chains, secured at one end to the rods, and at the other end to the body, which limit both the lateral and tilting movement of the body, the said body being provided with hinged sides, and with means for holding the sides closed and for supporting them when lowered, substantially as shown.

5. In a dumping-wagon, the combination of a supporting-frame which is mounted upon wheels; bearings secured upon each side of said frame; sleeves journaled in said bearings and pinions keyed to said sleeves, the said pinions being flanged, and having an annular tread portion adjoining each flange between which the teeth are formed; rods which pass loosely through the sleeves, and means for locking the rods and sleeves together, so that they may turn independently or in unison; a body having racks secured upon its under side which lie upon the pinions, between the flanges thereof, and are engaged thereby, so that the said body may be moved laterally in either direction in order to be tilted, said racks having a smooth surface or track on each side of its teeth, which ride on the annular tread portion of the pinion, and prevent the weight of the body from coming upon the teeth thereof; flexible connections which are secured to the rods and to the body which limit the lateral and tilting movements; sides in hinged engagement with the body, and flexible attachments for holding the said sides closed, and supporting them when open, substantially as shown.

6. In a dumping-wagon, the combination with a frame having pinions mounted thereon, and a body having hinged sides and racks secured upon its under side which are engaged by the said pinions, and means for turning the pinions so as to shift the body laterally, and for limiting its movement; of a combined fastening and supporting device for the said hinged sides, consisting of metal strips secured to the sides so as to extend above the upper edges thereof, the extended portion being formed into an eye which has a slot extending downward from the lower side of its periphery; and of a chain secured to the end of the body and passed through the eye of the said metal strip, said chain having at its lower end a ring of greater diameter than the aforesaid eye; a link of the chain being passed edgewise into the said slot when it is desired to hold the sides closed, and the ring contacting with the eye when the side is lowered, so as to support the weight of the side upon the said chain, substantially as shown.

7. In a dumping-wagon, the combination with a frame having pinions mounted thereon which are flanged and provided with annular tread portions adjoining the inner sides of the flanges; and of a body having hinged sides; of racks secured upon the under side of said body, said racks having a smooth way or track on each side of their teeth, which, when the racks are in position upon the pinions, will ride upon the annular tread portions of said pinions; and means for turning the pinions so as to convey movement to the racks, substantially as shown.

8. In a dumping-wagon, the combination of a body having hinged sides, and flexible connections which hold said sides closed and support them when they are opened; racks secured to the under side of the body; a frame having pinions mounted thereon which engage the said racks; means for revolving the pinions so as to shift the body laterally in either direction, in order to tilt the same; means for limiting both the lateral and tilting movement of the body, and means as chains, which are secured to the sides of the frame and have a hooked engagement with the body of the wagon, for holding said body in its normal position, substantially as shown.

710,215. ADJUSTABLE WINDOW-SHADE BRACKET. WILLIAM H. SATTELBERG, Washington, Pa., assignor of one-half to Andrew J. Smith, Pittsburg, Pa. Filed Sept. 14, 1901. Serial No. 75,385. (No model.)

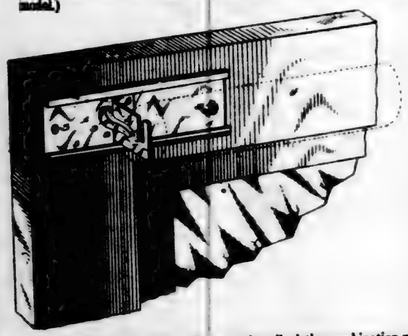

Claim.—1. In a device of the character described, the combination with the bracket, comprising a plate provided at one of its ends with an approximately rectangular flat portion of less width than the said plate and being bent at right angles thereto, said bent portion being provided with an aperture, of a flat base having only its long edges bent over to form guides in which the said plate is received, a cam-lever pivotally secured to the bent portion of the said bracket, and adapted to contact with the said base-plate between the guides thereof, and means for securing the said base-plate in position.

710,216. INSULATING-HANGER. JOHN M. SHEEHY, Elkhorn W. Va. Filed June 12, 1902. Serial No. 111,875. (No model.)

Claim.—1. An insulating-hanger, comprising a shell, having an inwardly-deflected serrated flange; a thimble, having an outwardly-projecting serrated flange, loosely fitted into the shell, the conformation of the flange of the thimble corresponding reversely with the serrated flange of the shell, an insulating-filling between the thimble and the shell, and means for securing to the shell and to the thimble of the auxiliary devices substantially as herein shown and described, for affixing the hanger in place and for connecting thereto of wires.

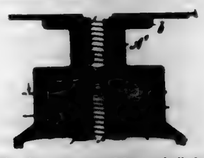

2. An insulating-hanger, comprising a shell, having outwardly the form of a screw-nut, and provided with a screw-threaded bore; an insulating-filling contained in the shell, a thimble provided with a screw-threaded bore, embedded in the insulating-filling contained in the shell.

3. The combination with an insulating-hanger, comprising a shell having a neck extending from the body of the shell, a flange surrounding the terminus of the neck, and a screw-threaded bore in the neck; an insulating-filling contained in the shell, a thimble provided with a screw-threaded bore and interlocking flanges, embedded in the insulating-filling, with a screw-threaded bore, of a screw-threaded stud fitted into the screw-threaded bore of the hanger, for affixing the hanger in place or for connecting thereto of devices for supporting a wire thereon.

4. The combination with an insulating-hanger provided with a screw-threaded bore and with a device for affixing the hanger fitted into the screw-threaded bore, of a centrally-perforated disk fitted upon the device for affixing the hanger and set thereon.

5. The combination with an insulating-hanger, provided with a screw-threaded bore, of a device for suspending the hanger from a span-wire comprising a slotted bolt fitted into the screw-threaded bore, provided in the hanger and a filling for the slot of the bolt, substantially as herein shown and described.

6. The combination with an insulating-hanger provided with a screw-threaded bore, of a device for supporting a wire comprising a hook adapted to receive the feed-wire and having its shank perforated, and a screw-bolt fitted into the perforation of the shank of the hook and into the screw-threaded bore of the hanger.

7. The combination with an insulating-hanger having a screw-threaded bore, of a bracket perforated approximately midway between the ends thereof, and having one end formed to hold a feeder-wire and provided with means for connecting to it the ear or lug carrying the trolley-wire on the other end; and of a screw-threaded bolt, fitted into the perforation of the bracket and into the screw-threaded recess of the hanger.

710,217. FURNACE FOR SEPARATING ZINC FROM ORES. ARMAND M. G. SEBILLOT, Paris, France. Filed Feb. 19, 1900. Serial No. 5,762. (No model.)

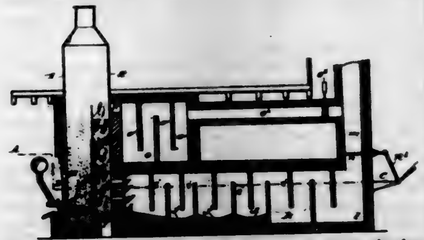

Claim.—In a furnace for extracting zinc from ores, a combustion-chamber divided into front and rear compartments adapted to hold the ores to be treated, and charcoal, respectively, air-blast pipes communicating with the front compartment, said compartments connected by openings in their division-wall, and condensing-chambers connected by suitable openings with the upper and lower portions of said rear compartment of the furnace, substantially as set forth.

710,218. HOBBY-HORSE. JAMES SIMS, Allegheny, Pa. Filed July 7, 1902. Serial No. 114,564. (No model.)

Claim.—A hobby-horse mounted within a suitable framework, said framework carrying an auxiliary frame, a link mounted within said frame and connecting to the girth of the horse, a crank connected to the opposite end of said link, said crank having its other end pivotally secured to a shaft carried by the main framework, a bar connected to said shaft, the other end of said bar being pivotally connected to the forward end of the horse, a pulley carried by last-named shaft and connecting to a shaft carried by the auxiliary framework, said shaft carrying cranks on its outer end, a pulley mounted upon the last-named shaft, said pulley connecting to the first-named pulley by a suitable belting, substantially as described and for the purpose set forth.

710,219. BOTTLE-STOPPER. ARTHUR E. SNOW, Syracuse, N. Y. Filed Apr. 10, 1902. Serial No. 103,315. (No model.)

Claim.—1. A stopper for bottles consisting of a paper disk having the central portion of its body partially detached and depressed within the margin of the disk.

2. A bottle-stopper consisting of a flat circular plate of suitable material having a portion of its body cut concentric with its periphery and partially detached for the purpose set forth.

3. A bottle-stopper comprising a circular flat body of paper or equivalent material having the intermediate portion cut or stamped through a portion of its thickness in a line concentric with its periphery for the purpose described.

4. A bottle stopper consisting of a body of suitable material having a part of its intermediate portion depressed for the purpose set forth.

5. A bottle-stopper consisting of a flat circular disk having a central flap depressed to form a central opening to receive the finger as described.

710,220. CORSET. CHARLES W. STIMSON, New York, N. Y. Filed June 26, 1902. Serial No. 113,611. (No model.)

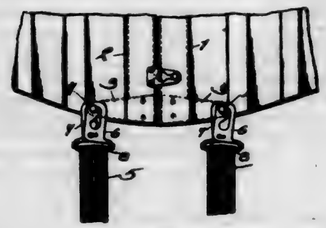

Claim.—1. As an article of manufacture, a corset-steel adapted for use at the front of a corset or similar garment and having a laterally-projecting portion provided with means for attaching a stocking-supporter thereto.

2. As an article of manufacture, a corset-steel adapted for use at the front of a corset and having at its lower end a laterally-projecting portion shaped to conform to the lower edge of a corset and provided with means for attaching a stocking-supporter thereto.

3. Corset-steels adapted for use at the front of a corset and each having a laterally-projecting portion provided with means for attaching a stocking-supporter thereto, in combination with the other parts of a corset or similar garment.

4. Corset-steels adapted for use at the front of a corset or similar garment and each provided at its lower end with a laterally-projecting portion provided with means for attaching stocking-supporters thereto, and shaped to conform to the lower edge of the corset, in combination with the other parts of a corset or similar garment.

710,221. **AMMONIA-STILL.** GEORGE STROH, Detroit, Mich., assignor of one-half to George Osius, Detroit, Mich. Filed Feb. 24, 1902. Serial No. 95,152. (No model.)

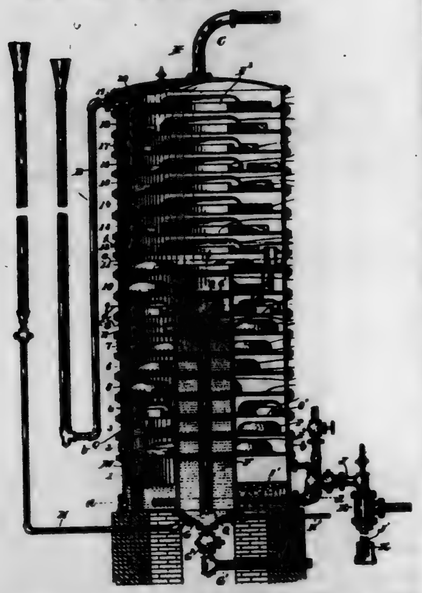

Claim.—1. In a still-column, the combination with an upper series of superimposed pans for the volatilization of the free ammonia contained in the crude liquors; of a lower series of superimposed pans provided with inner and outer walls forming an outer chamber in each pan and a well extending upward from the bottom of the column, said well being closed at its top by the lower pan of the upper series and provided with openings in its sides for the overflow of the liquor therein into said outer chambers, a pipe to conduct the residue of liquor from the pans of the upper series into said well, a pipe to supply milk of lime to said well and means for heating said column.

2. In a still-column, the combination with the upper portion thereof adapted to receive the crude liquors and volatilize the free ammonia therein contained; of a lower portion provided with a central vertical well having overflow-openings near its top, a conical casting to close the bottom of said well, a blow-off pipe connected to said casting, a pipe extending downward within the well to conduct the residue of the liquor from the portion of the column above to the bottom of the well, a supply-pipe connected to the bottom of the well to supply milk of lime thereto, and a steam-pipe to supply a jet of steam for agitating the liquor within said well.

3. In combination with a still-column having an inner vertical well within its lower portion dividing the same into an inner lining chamber or well and an outer volatilizing-chamber, a base having an inner chamber forming the lower end of said well and an outer chamber to receive the spent liquor from the column above, a steam-pipe within said outer chamber to supply steam thereto and maintain a pressure therein, a discharge-pipe provided with branches which are connected to said outer chamber, one near its top and the other near its bottom, a water seal into which the discharge-pipe extends, and an overflow-pipe connected to the top of said water seal.

4. In a still-column, in combination, an upper series of superimposed pans each having a central opening to form a passage for the ascending gases, a lower series of superimposed pans each provided with a central opening surrounded by a wall to engage the pan above and form a vertical well, and a pan having a bottom to close the upper end of the well and provided with openings in its bottom outside of the wall for the passage of the gases from the lower to the upper series of pans.

5. In a still-column, a series of superimposed pans each provided with an outer wall, a bottom and a central opening in said bottom having an upwardly-extending flange or wall, a wall in each pan extending outward from said flange to the outer wall, a pipe to supply liquor to the pan located at one side of said outwardly-extending wall and an overflow-pipe at the opposite side of the same, walls extending radially outward from said flange to near the outer wall, and walls located intermediately of the radial walls and extending inward from the outer wall to near the said flange.

6. In a still-column, the combination with an upper series of superimposed pans to the upper pan of which series the crude liquor is supplied and from which the gaseous vapors are drawn off, said pans being provided with central openings for the passage of the ascending gases, overflow-pipes for the descending liquor, and means for causing the liquor in each pan to be alternately cooled and heated; of a lower series of superimposed pans each having a central opening surrounded by a wall to form a well within the axis of the lower series of pans, said pans being also provided with openings for the passage of the ascending gases and overflow-pipes for the downward passage of the liquor, a pan having a bottom to close the upper end of said well and also provided with openings for the passage of the gases and an overflow-pipe, a pan having openings for the passage of the gases and also a nozzle extending into the well from its inner wall for the escape of the liquor into said well, a pan provided with openings in its inner wall through which the liquor in said well overflows into said pan, said pan being also provided with openings for the passage of the gases and an overflow-pipe for the escape of the liquor into the series of pans, a steam-pipe in the lower pan of the lower series, a discharge-pipe leading from said lower pan, and means for maintaining the liquor at a certain height in the lower pan.

710,222. **GRASS-CUTTING MACHINE.** JOHN SWANSON, Wadena, Minn. Filed Jan. 20, 1902. Serial No. 90,266. (No model.)

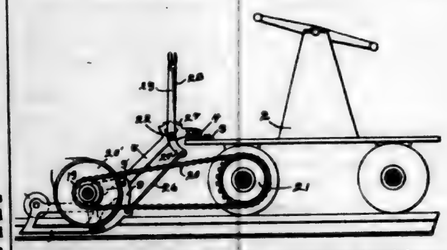

Claim.—1. The combination, with a car, of bars 5 pivoted thereon, rolls provided at the forward ends of said bars and adapted to rest upon the track-rails, curved shoes also carried by said bars and depending upon opposite sides of the rails to press the grass away from the same into the path of the knives, quadrants 9 pivoted on said bars and having long bearings or hubs 10, a shaft mounted in said bearings, a rotary knife provided on said shaft, means for driving said shaft from the car-axle, a fixed knife provided between said quadrants and adapted to coöperate with said rotary knife to cut the grass between the rails, and means for oscillating said quadrants on their pivots to swing said knives clear of any obstruction between the rails, substantially as described.

2. The combination, with a car, of bars pivoted thereon, rolls mounted in said bars and adapted to rest upon the track-rails, a frame pivoted on said bars, a shaft mounted in bearings in said frame, means for driving said shaft from the car-axle, a rotary knife mounted on said shaft between the rails, a stationary knife mounted in adjustable bearings on said frame and adapted to coöperate with said revolving knife to cut the grass between the rails, and means for oscillating said frame, for the purpose specified.

3. The combination, with a car, of a frame pivoted thereon, rolls carried by said frame and adapted to bear upon the track-rails, quadrants 9 pivoted on said bars between the track-rails, hubs 10 mounted on said quadrants and extending laterally therefrom, quadrants 11 provided on said hubs outside the track-rails, a shaft mounted in said hubs and operatively connected with the car-axle, rotary knives provided on said shaft near the middle and the ends thereof, stationary knives 12 and 15 provided on said quadrants 11 and 9 respectively and coöperating with said rotary knives to cut the grass between and outside the rails, hangers 18 provided on the ends of said shaft and supporting the outer ends of said fixed knives 12, and means for oscillating said quadrants 9 on their pivots to raise or lower said knives, substantially as described.

4. The combination, with a car, of the bars 5 pivoted thereon, the rolls carried by said bars and adapted to rest upon the track-rails, quadrants 9 pivoted on said bars and having long bearings or hubs, a shaft mounted in said bearings and driven from the car-axle, a stationary knife 15 supported between said quadrants 9, stationary knives 12 supported by said hubs, hangers connecting the outer ends of said knives 12 and said shaft, rotary knives mounted on said shaft and adapted to coöperate with said knives 12 and 15 to cut the grass outside and between the rails, and means for tilting said quadrants 9 on their pivots to swing said knives away from or toward the ground, for the purpose specified.

5. The combination, with a car, of bars pivoted thereon and supported at their forward ends upon the track-rails, a frame pivoted on said bars, a shaft mounted in bearings in said frame, means for driving said shaft from the car-axle, a rotary knife mounted on said shaft between the rails, a stationary knife carried by said frame and adapted to coöperate with said revolving knife to cut the grass between the rails, and means for oscillating said frame to swing said knives into or out of their working position.

6. The combination, with a car, of bars pivoted thereon, rolls carried by said bars and adapted to rest upon the track-rails, curved shoes provided on said bars and depending beside the rails to push the grass away from the same into the path of the knives, a frame pivoted on said bars, a shaft mounted in bearings in said frame, means for driving said shaft from the car-axle, a rotary knife mounted on said shaft between the rails, a stationary knife carried by said frame and adapted to coöperate with said revolving knife to cut the grass between the rails, and means for oscillating said frame to swing said knives to an operative or inoperative position.

710,223. **POWER-SHOVEL.** RICHARD THEW, Lorain, Ohio, assignor to the Thew Automatic Shovel Company, Lorain, Ohio, a Corporation of Ohio. Filed June 10, 1901. Serial No. 63,980. (No model.)

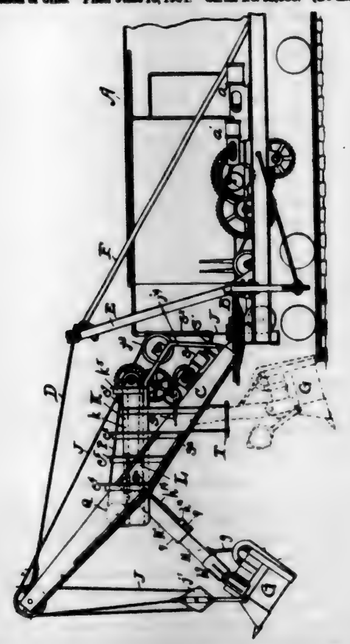

Claim.—1. In a machine of the general character described, the combination of a diagonal swinging boom, a trackway secured at its forward end directly to the boom and at its rear end by brackets or braces rising from the boom, a trolley movable along said trackway, and a dipper-arm carried by said trolley, substantially as described.

2. In a machine of the general character described, in combination, a diagonal swinging boom having a pair of separated side plates, a trackway carried by said boom intercepting it and extending rearward therefrom at an angle thereto, said trackway being secured forwardly to the side plates of said boom and supported at its rear by a bracket or brace, a trolley slidable in said trackway, a dipper-arm pivoted to said trolley, and a bucket or scoop on said dipper-arm, substantially as described.

3. In a machine of the general character described, in combination, a diagonal swinging boom, a trackway supported thereby at an angle thereto, a dipper-arm whose upper end is guided by said trackway, an engine carried by said boom, and suitable connections between the same and the upper end of the dipper-arm for racking the same in or out, substantially as described.

4. In a machine of the general character described, a diagonal swinging boom having a pair of parallel separated side plates, a horizontal trackway having also a pair of side plates passing between those of the boom and there riveted, said trackway projecting rearward of the boom on the upper side thereof, braces secured to the boom and the trackway at the rear portion of the latter, a trolley movable in said trackway, a driving-motor supported by said boom, and a racking connection between said motor and trolley, substantially as described.

5. In a machine of the general character described, in combination, a diagonal swinging boom, an intercepting trackway supported thereby at an angle thereto, a trolley guided in said trackway, a dipper-arm pivoted to said trolley, a rotatable drum, and flexible connection between the same and said trolley whereby the rotation of the drum may rack the trolley in or out, and a driving-motor carried by said boom and suitably connected to said drum, substantially as described.

6. In a machine of the general character described, in combination, a metallic boom having a pair of parallel separated side plates, a metallic trackway intercepting the boom at an angle thereto and having side plates riveted to the side plates of the boom, substantially as described.

7. In a machine of the general character described, in combination, a metallic boom having a pair of parallel separated side plates, a metallic trackway intercepting the boom at an angle thereto and having side plates riveted to the side plates of the boom, and brackets or braces connected to said boom and to the trackway for supporting its extending portion, substantially as described.

8. In a machine of the general character described, in combination, a diagonal boom having a pair of separated parallel side plates, a trackway also having a pair of separated parallel side plates, the side plates of the trackway passing between those of the boom and being riveted thereto, and angle-strips riveted to the inner side of the side plates of the trackway to form a trolley-track, substantially as described.

9. In a machine of the general character described, in combination, a metallic boom having a pair of parallel separated side plates, a metallic trackway intercepting the boom at an angle thereto and having side plates riveted to the side plates of the boom, and an arched brace passing over the trackway and secured to the sides thereof and to the sides of the boom, substantially as described.

10. In a machine of the general character described, in combination, a metallic boom having a pair of parallel separated side plates, a metallic trackway intercepting the boom at an angle thereto and having side plates riveted to the side plates of the boom and guide-strips on the inner side of the trackway-plates, a trolley slidable upon said strips, and a bucket-arm carried by said trolley, substantially as described.

11. In a machine of the general character described, in combination, a metallic boom having a pair of parallel separated side plates, a metallic trackway intercepting the boom at an angle thereto and having side plates riveted to the side plates of the boom and guide-strips on the inner side of the trackway-plates, a trolley slidable upon said strips, a bucket-arm secured to said trolley, a rotatable drum carried by said trackway, a flexible connection leading from the same in one direction to the trolley, and a flexible connection leading from the drum around a guide-sheave in the opposite direction to the trolley, and means for rotating said drum to move the trolley in or out, substantially as described.

12. In a machine of the general character described, in combination, a diagonal boom, an intercepting-trackway carried thereby at an angle thereto, a trolley in said trackway, a rotatable drum carried at the rear of said trackway, a flexible cable leading from said drum directly to the trolley, and a cable leading from said drum around a sheave at the forward end of the trackway and connected to the trolley, and means for rotating said drum, substantially as described.

13. In a machine of the general character described, in combination, a diagonal boom, an intercepting-trackway carried thereby at an angle thereto, a trolley in said trackway, a rotatable drum carried at the rear of said trackway, a flexible cable leading from said drum directly to the trolley, and a cable leading from said drum around a sheave at the forward end of the trackway and connected to the trolley, said drum being rigid in operation but being composed of relatively adjustable parts, one cable being secured to one part and one to the other, and means for locking together the two parts of the drum, and means for rotating the drum, substantially as described.

14. In a machine of the general character described, the combination of a diagonal boom having a pair of parallel separated side plates, said boom being open on its under side, a trackway intercepting said boom, a trolley in said trackway, a bucket-arm pivoted to said trolley, and in-

wardly-projecting bars along the lower edge of the boom which form braces for the boom and guides for said arm, substantially as described.

15. In a machine of the general character described, in combination, a trackway having a pair of parallel side plates, angle-strips riveted to the inner side of the side plates to form a trolley-track, a trolley slidable in said trackway and consisting of a pair of blocks and a connecting-axle, removable rub-plates secured to said blocks, and an arm journaled on said axle, substantially as described.

16. In a machine of the general character described, in combination, a diagonal boom having a pair of separated parallel side plates, a trackway also having a pair of separated parallel side plates, the side plates of the trackway passing between those of the boom and being riveted thereto, angle-strips riveted to the inner side of the side plates of the trackway to form a trolley-track, a trolley slidable in said trackway, a bucket-arm pivoted to said trolley, said trolley consisting of a pair of blocks connected by an axle on which the bucket-arm is journaled and having removable rub-plates on the upper and lower surfaces, substantially as described.

17. In a machine of the general character described, the combination of a boom, a trackway carried thereby, a trolley in said trackway, a dipper-arm secured thereto, driving mechanism, a connection between the same and said trolley to rack the trolley in or out, and an automatic stop engaged at the extreme position of the trolley and connected to shut off the driving mechanism, substantially as described.

18. In a machine of the general character described, the combination of a trackway, a trolley in the same, a driving-motor, a connection between the same and the trolley to rack it in or out, a pair of stops adapted to be engaged by the trolley at opposite ends of its movement, a reversing device for the motor, a connection between the said stops and said reversing device whereby the forward stop is thrown into position to be engaged by the trolley when said device is moved to rack the trolley forward and the rearward stop when said device is moved to rack the trolley rearward, substantially as described.

19. In a machine of the general character described, the combination of a boom, a trackway carried thereby, a trolley in said trackway, a driving-motor, a connection between the same and said trolley to rack the trolley in or out, a reversing device for said motor, a longitudinally-movable bar carrying a pair of shoulders and connected to said device in such manner that the bar is shifted rearward when the device is moved to rack the trolley forward and vice versa, said shoulders being adapted to be engaged by said trolley and moved thereby to bring the reversing device to the off position, substantially as described.

20. In a machine of the general character described, the combination of a trackway, a trolley slidable along the same, a bucket-arm having a pair of telescoping members, the upper member being pivoted to said trolley, a lock for said members to hold them rigid, and means carried by the trolley and connected to throw said lock, substantially as described.

21. In a machine of the general character described, in combination, a trackway, a trolley therein having a cross-axle, a bucket-arm pivoted on said axle, a telescoping arm adapted to slide within said pivoted arm, a rack on said telescoping arm, a movable pawl carried by the pivoted arm, and a link carried by the pivoted arm for throwing said pawl, substantially as described.

22. In a machine of the general character described, in combination, a diagonal boom having side plates and open on its under side, a trackway intercepting said boom and having side plates secured to the side plates of the boom, a trolley traveling on the inner side of the trackway, said trolley comprising a pair of blocks and a cross-axle, a hollow bucket-arm journaled on said axle, a telescoping arm within said hollow arm, a bucket carried by said telescoping arm, a lock for locking together the two parts of the bucket-arm, mechanism for operating said lock irrespective of the position of the arm, and mechanism for racking the trolley in or out, substantially as described.

710,224. UNLOADING APPARATUS. FRANCIS H. TREAT, Pittsburg, Pa. Filed Mar. 14, 1902. Serial No. 98,260. (No model.)

Claim.—1. In unloading apparatus an outwardly-extending bridge arranged to receive a boat or receptacle beneath it, an inclined leg mounted upon and extending laterally from the bridge, and means for adjusting the leg up and down in the plane of its inclination; substantially as described.

2. In unloading apparatus, a cantaliver, a supporting-cage thereon, an adjustable leg supported in inclined position in the cage and projecting sidewise from the cantaliver, said leg carrying hoisting mechanism, and means for adjusting the leg up and down in the plane of its inclination; substantially as described.

3. In unloading apparatus an outwardly-projecting bridge arranged to receive a boat or receptacle beneath it, a stationary cage mounted on the bridge and having guides, an inclined leg projecting sidewise from the bridge, said leg being supported and held by the guides, scooping and hoisting mechanism mounted on the leg, and mechanism for adjusting the leg up and down in its inclined plane and for holding it in adjusted position; substantially as described.

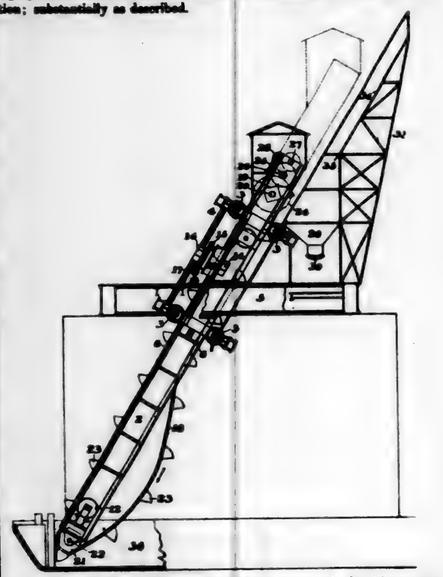

4. In unloading apparatus a projecting bridge, an inclined leg mounted thereon, mechanism for adjusting the leg up and down in its inclined plane, and a stationary inclined apron extending parallel with the leg and arranged to receive the material directly therefrom; substantially as described.

5. In unloading apparatus, an inclined leg supported between guides, mechanism for adjusting the leg up and down in its plane, conveyer mechanism on the leg, a hopper arranged to receive the material directly from the conveyer when the leg is in its lower position, and an inclined apron parallel with the leg and arranged to receive the material when the leg is adjusted to a higher position; substantially as described.

6. In unloading apparatus, an overhung cantaliver a vertically-adjustable inclined leg supported on the cantaliver and arranged in a plane transverse to the cantaliver, conveyer mechanism on the leg, and connections for adjusting the leg up and down in its inclined plane and holding it in adjusted position; substantially as described.

7. In unloading apparatus, a cage having upper and lower guides, an inclined leg supported between the guides and having conveyer mechanism, winding-drums on the cage having cables connected to the leg, and mechanism for actuating the drums to adjust the leg; substantially as described.

710,225. SPEED-CHANGING DEVICE. CHARLES G. TYLER, Pittsburg, Pa., assignor to Westinghouse Electric and Manufacturing Company, a Corporation of Pennsylvania. Filed May 8, 1901. Serial No. 59,332. (No model.)

Claim.—1. The combination with a rotatable shaft having a plurality of gear-wheels keyed thereon, of a supplemental shaft having a plurality of gear-wheels loosely mounted thereon in position to mesh with the wheels mounted on the first-named shaft, a plurality of keys mounted in the second shaft, springs tending to force said keys outward to lock the gear-wheels to the shaft and a cam-plunger for withdrawing all or all but one of said keys from locking position.

2. The combination with a shaft having a plurality of gear-wheels of different diameters keyed thereon, of a supplemental shaft having gear-wheels of different diameters loosely mounted thereon in position to mesh with the gear-wheels on the first-named shaft, a plurality of keys provided with lateral projections and movably mounted in the supplemental shaft, springs for moving said keys into engagement with the corresponding gear-wheels and a cam-plunger for engaging said projections to withdraw the keys from the corresponding gear-wheels.

3. The combination with a driving-shaft having a plurality of gear-wheels of different diameters keyed thereon, a second shaft having a corresponding number of gear-wheels of different diameters arranged to mesh with the first-named gear-wheels, keys corresponding in number and position to the gear-wheels on the second shaft and provided with lateral projections, springs tending to force said keys outward and means for engaging the projections on all but one of said keys to hold said keys out of engagement with the corresponding gear-wheels.

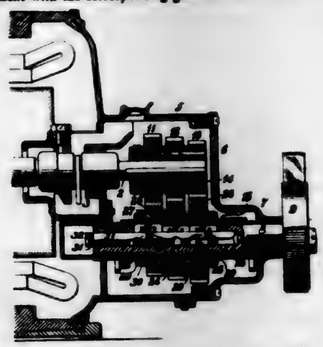

4. The combination with a driving-shaft having a plurality of gear-wheels of different diameters keyed thereon, of a second shaft having a corresponding number of gear-wheels of different diameters loosely mounted on the shaft in position to mesh with the first-named wheels, spring-actuated keys mounted in the second shaft and provided with lateral projections, a cam-plunger located in said shaft and means for shifting said plunger longitudinally to engage the projections on the keys and move them inwardly in opposition to their springs.

710,226. FIREPLACE. GEORGE VIVIT, Montclair, N. J. Filed May 19, 1902. Serial No. 107,941. (No model.)

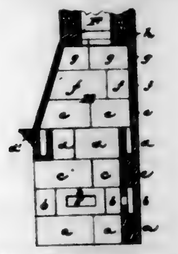

Claim.—1. The improved fireplace comprising courses of hollow tile having vent-openings for ventilating the room, the upper course of hollow tile having a shelf integral with the forward section thereof, tiles *e*, *f*, *g*, with inclined outer surfaces, a plate A, seated, on the upper course *g*, *g*, of the last tiles on which the chimney may be built, substantially as set forth.

2. The improved fireplace comprising courses of tile, the lower courses of which are of hollow tile open to the room, and the upper courses of which have inclined outer faces converging at the top to receive a single top plate, said top plate having a flue-hole therethrough, substantially as set forth.

3. The improved fireplace herein described comprising lower courses of hollow tile, the chambers in the plurality of courses of which coincide to form a passage or flue and the upper course of said lower courses forming a shelf, the passage or flue opening into the lower part of the fireplace and through the shelf course into the fireplace-chamber E, and upper courses above said shelf course forming said chamber E, said chamber having at the top a plate having a hole therethrough and adapted to support the chimney, whereby an exit is provided for both the smoke and the vitiated air of the room issuing up from said flue or passage, substantially as set forth.

710,227. GUARD FOR EYEGLASSES. ALBERT S. WEAVER, Providence, R. I., assignor of one-half to Peter Oehs, Providence, R. I. Filed July 13, 1901. Serial No. 68,094. (No model.)

Claim.—In eyeglasses, the combination with a post, of a guard comprising a shank fastened at its outer end to said post, a semicircular nosk integral at a point intermediate of its ends with said shank, each portion of which nosk beyond its junction with the shank has two differently-directed transverse curves, and two separate blades extending angularly from the ends of said nosk, respectively, which are disposed in different planes with respect to each other, substantially as specified.

710,228. MOWING-MACHINE. BOOKER C. WHITE and THOMAS J. JONES, Catlin, Ill.; said Jones assignor to said White. Filed Oct. 16, 1901. Serial No. 78,816. (No model.)

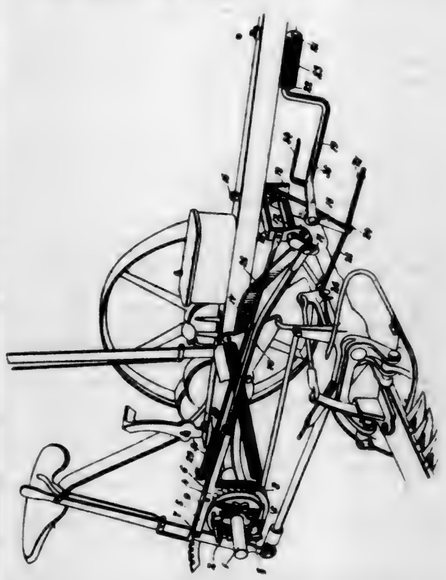

Claim.—1. In a mowing-machine, the combination of the axle, the ratchet-wheel fixed thereto, the pawl and yoke, and means for reciprocating said yoke, comprising a longitudinally-movable rod, a draft appliance attached to the latter, and a spring, whereby the rod may be drawn forward and held by draft applied thereto and may be returned to its original position by the elasticity of the spring when the draft ceases.

2. In a mowing-machine, the combination of the axle, the ratchet-wheel fixed thereto, the pawl and yoke, and means for reciprocating said yoke, comprising a longitudinally-movable rod, a draft appliance attached to the latter, a spring, and means for limiting the forward movement of said rod, whereby the rod may be drawn forward and held by draft applied thereto and may be returned to its original position by the elasticity of the spring when the draft ceases.

710,229. MECHANISM FOR OPERATING DOORS. ELI WELLS, Grand Rapids, Mich., assignor to the Shaw-Walker Company, Muskegon, Mich., a Corporation. Filed June 26, 1900. Serial No. 21,456. (No model.)

Claim.—1. The combination of a case, a door adapted to turn from vertical to horizontal, rockers pivotally attached to the door, and ways traversed by the rockers, whereby the upper side of the door is carried horizontally inward within the case when the door is opened, substantially as described.

2. The combination of a case, a door, rockers pivoted to the door at their upper ends, ways traversed by the rockers and stop-pins to support the door when open and to stop the front of the door when the door is closed, substantially as described.

3. The combination of a case, a door, rockers having convex sides and pivotally attached to the door and having teeth on their convex sides and curved ways having concave sides and attached to the case and having teeth on their concave sides engaging the teeth in the rockers, whereby the door is carried horizontally inward in a right line, substantially as described.

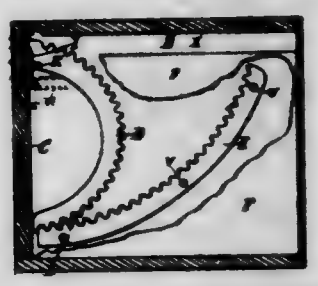

4. The combination of a case, a door, toothed ways attached to the ends of the case, a rod journaled on the door, and toothed rockers fixed on the respective ends of the rod and engaging the ways attached to the case, substantially as described.

5. The combination of a case, a door, toothed ways attached to the case, a rod journaled on the door, toothed rockers attached to the rod, and engaging the ways attached to the case, and stop-pins to engage the rockers on the door, substantially as described.

6. In combination with a case and a door adapted to turn to a horizontal plane and run back into the same, a spring having one end attached to the back of the case, and extending horizontally, and thence vertically, and thence again horizontally, a link connecting the free end of the spring and the upper part of the door, and a staple engaging the vertical portion of the spring, substantially as described.

7. The combination of a case, a door, toothed ways fixed on the ends of the case, toothed rockers pivotally connected at their upper ends to the door and engaging the ways on the case, and springs attached to the back of the case near the bottom thereof, and thence extended vertically, and thence horizontally, in opposite directions, and links pivotally connecting the free ends of the springs with the upper part of the door, substantially as described.

8. The combination of a case, a door, toothed ways attached to the ends of the case, a rod journaled on the door, toothed rockers rigidly attached to the respective ends of the rod and engaging the ways on the case, stop-pins in the case to engage the rockers on the door, springs attached to the back of the case near the bottom thereof and extending vertically and thence horizontally, a staple slidably engaging the vertical portions of the springs, and links connecting the free end of the springs with the upper part of the door, substantially as described.

9. In a bookcase, the combination of a suitable section made up of end pieces with suitable top and bottom; a door to the front side of the same and hinge-rod secured to the upper back side of said door; plates rigidly secured to said rod and at right angles thereto extending within the ends of said section to serve as guides to the door and suitable guides for the plates to guide them back within the section when the door is swung to the horizontal position; and means for withdrawing the door automatically within the section, for the purpose specified.

10. In a bookcase, the combination of a suitable section made up of end pieces with suitable top and bottom; a door to the front side of the same and hinge-rod secured to the upper back side of said door; plates rigidly secured to said rod and at right angles thereto extending within the ends of said section to serve as guides to the door and suitable guides for the plates to guide them back within the section when the door is swung to the horizontal position, for the purpose specified.

11. In a bookcase, the combination of a suitable section made up of end pieces with suitable top and bottom; a door to the front side of the same; hinge-rod secured to the upper back side of said door; plates rigidly secured to said rod and at right angles thereto extending within the ends of said section to serve as guides to the door, for the purpose specified.

12. In a bookcase having two ends and a suitable top and bottom, a sliding door at the front of the case, a rod attached to said door, and links rigidly attached to said rod and extending at right angles thereto within the case to form guides when the door is pushed into the case.

13. In a bookcase having two ends and a suitable top and bottom, a slidable door at the front of the case, a rod connected thereto, a pair of links rigidly secured together by said rod, said links having supports and being adapted to move longitudinally as the door is slid into and moved out of the case.

710,230. PAIL-FILLING AND INDICATING DEVICE. JAMES H. WILSON, Lowell, Mass. Filed Nov. 14, 1898. Serial No. 696,336. (No model.)

Claim.—The combination of a supply-pipe, having a suitable nozzle, a valve, to close said pipe, having a stem provided with projections, a lever, having an arm, provided with means for supporting a vessel and with a heavier arm, the free end of which reaches between said projections and is adapted, when said vessel is empty, to strike one of said projections, to open said valve, and to be forced, by the weight of said pail and its contents, when said pail is properly filled, to strike the other of said projections and to close said valve, and an open electric circuit, containing a circuit-closer, adapted to be closed by said valve-stem, when said valve is opened, and a signal arranged in said circuit and operated by the closing of the same.

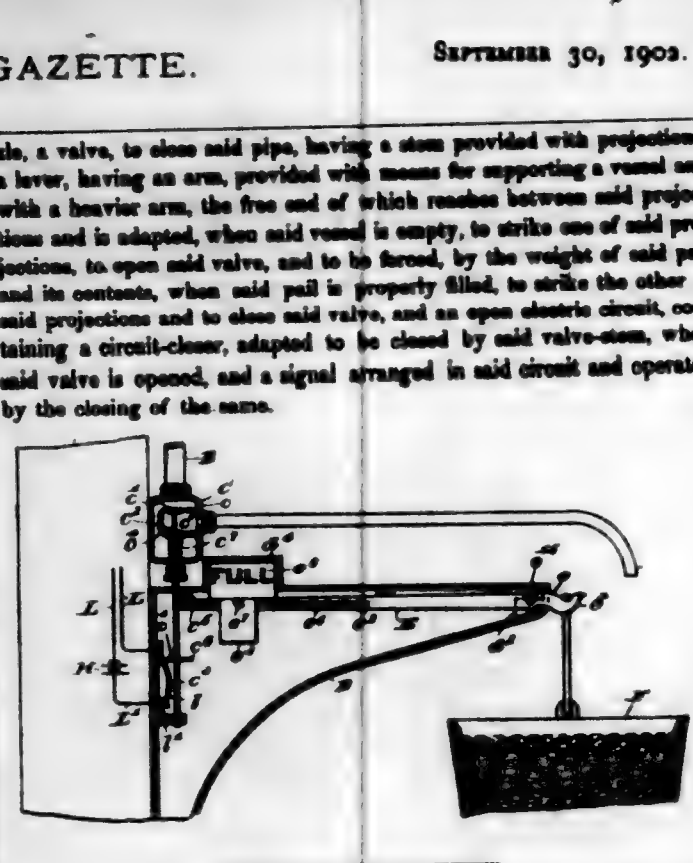

710,231. VENEER-BENDING MACHINE. EDGAR ASHE, Jacksonville, Tex. Filed Feb. 4, 1902. Serial No. 92,512. (No model.)

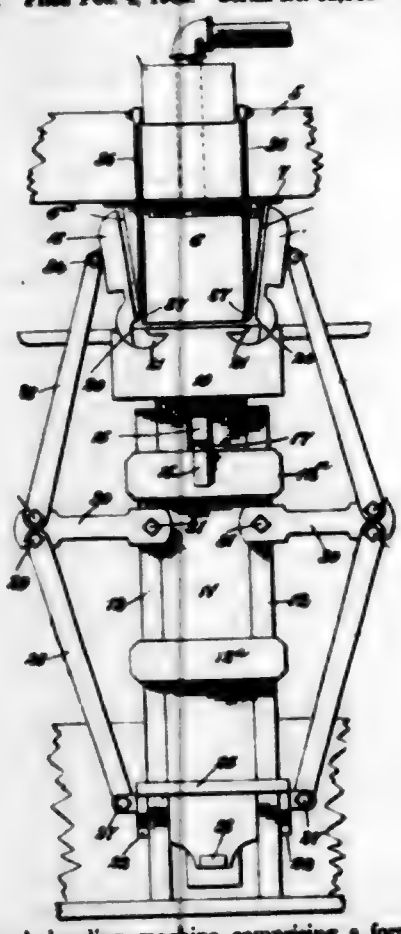

Claim.—1. A bending-machine comprising a form, a flat platen movable toward and from said form, flat bending-leaves hinged to said platen and arranged to fold outwardly into flush relation therewith, levers having means for urging said leaves and the platen independently of each other toward said form, and an operating device related to said levers to first move the leaves flush with the platen and thereafter withdraw the leaves and the platen away from said form.

2. A bending-machine, comprising a bending-form having means for heating the same, a platen movable relatively thereto, bending-leaves having means for normally urging them toward said form, and moistening devices adjacent to the form and disposed in the path of feed of the work to the platen, said moistening devices adapted to apply moisture to the work along the lines of the crease or fold on the introduction of the work between the form and the platen.

3. A bending-machine, comprising a heatable form, a platen having means for normally urging the same toward said form, bending-leaves hinged to said platen, and independent means for normally urging the bending-leaves toward the form.

4. A bending-machine, comprising a suspended heatable form, a platen disposed below said form and having means for urging the same

toward the form, leaves having hinges located below the active face of the platen, said leaves arranged to lie flush with said platen, and independent means for urging the members normally toward said form.

5. A bending-machine, comprising a heatable form, a platen normally urged toward said form, bending-leaves movable relative to the platen and the form, and moistening devices having brushes disposed at the sides of the form and in the path of feed of the work to said platen.

6. A bending-machine comprising a form, a slidable post carrying a platen and movable with relation to said form, means for normally urging said post and the platen toward said form, bending-leaves hinged to the platen, levers having tension devices for normally urging said leaves toward the form and independently of the movement of the platen, and means for withdrawing the platen subsequent to the retraction of the bending-leaves from the form.

7. A bending-machine comprising a form, a platen coöperating therewith, a tension-controlled lever for normally urging said platen toward the form, bending-leaves movable relative to said platen and said form, tension-controlled levers having a train of operative connections with said leaves and normally urging the latter toward the form independently of the platen, and means for depressing the leaves flush with the platen and subsequently withdrawing the platen and the leaves from the form.

8. A bending-machine, comprising a form, a platen movable relative thereto, bending-leaves in coöperative relation to the form, an elevated fountain or reservoir, and moistening-brushes disposed at the sides of the form and having operative connection with said fountain or reservoir.

9. A bending-machine, comprising a form, a platen disposed in coöperative relation to the form and provided in its active face with undercut recesses, bending-leaves having projections slidably fitted in said recesses and hinging the leaves to said platen so as to fold flush therewith, the downward movement of said leaves being limited by the projections abutting the closed ends of said recesses, and means for actuating said platen and said leaves.

710,282. STALK-CHOPPER. WILLIAM L. ADAMSON, Weston, Tex., assignor of one-half to Curren Adamson, Weston, Tex. Filed July 8, 1902. Serial No. 114,792. (No model.)

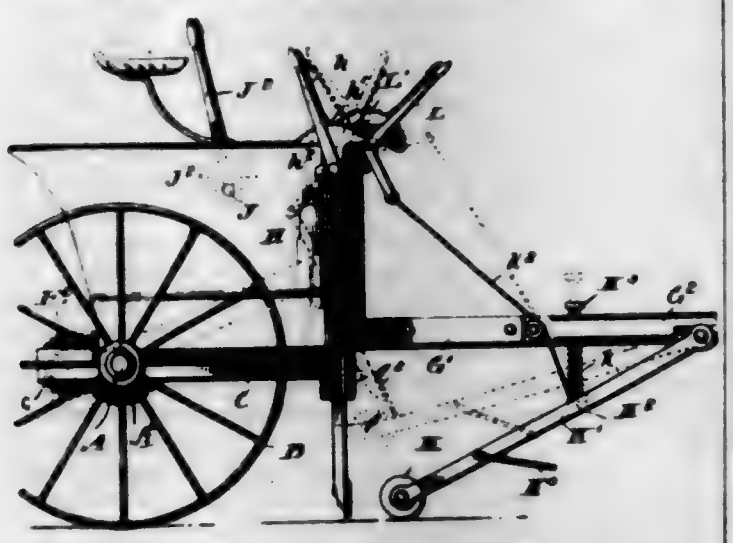

Claim.—1. The combination of the rotatable axle, the wheels, the frame swiveled on the axle, the shaft journaled in said frame, gearing for rotating said shaft from the axle, a crank on the forward end of the shaft, a reciprocating bar, a pitman connecting said crank to said bar, and a cutter on the lower end of said bar, substantially as described.

2. The combination of the axle, the wheels thereon, clutches for locking said wheels to the axle, the frame swiveled on the axle, the forwardly-extending shaft journaled in said frame, gearing for rotating said shaft from the axle, a crank on the forward end of the shaft, a reciprocating bar, a pitman connecting said crank to said bar, and a chopping-blade on the lower end of said bar, substantially as described.

3. The combination of the rotatable axle, the wheels, the frame swiveled on the axle, the shaft journaled in said frame, gearing for rotating said shaft from the axle, a crank on the forward end of the shaft a reciprocating bar, a pitman connecting said crank to said bar, and a cutter on the lower end of said bar; with means for raising and lowering the cutter end of the frame, and means for engaging or disengaging the axle from the wheels, substantially as described.

4. The combination of the axle, the wheels thereon, clutches for locking said wheels to the axle, the frame swiveled on the axle, the forwardly-extending shaft journaled in said frame, gearing for rotating said shaft from the axle, a crank on the forward end of the shaft, a reciprocating bar, a pitman connecting said crank to said bar, and a chopping-blade on the lower end of said bar; with means for raising and lowering the cutter end of the frame, and means for engaging or disengaging the axle-clutches from the wheels, substantially as described.

5. The combination of the axle, its supporting-wheels, clutches for locking the wheels to the axle, a frame swiveled to the axle, a rotating shaft journaled in said frame and reciprocating chopping mechanism actuated by said shaft, a roller in front of the chopper, bars connecting said roller to the shaft, a spring for depressing the roller, and means for raising it, substantially as described.

6. The combination of the axle, its supporting-wheels, clutches for locking the wheels to the axle, a frame swiveled to the axle, a rotating shaft journaled in said frame and reciprocating chopping mechanism actuated by said shaft, a roller in front of the chopper, bars connecting said roller to the shaft, a spring for depressing the roller, and means for raising it; with means for throwing the clutches into or out of operation, and means for raising and lowering the cutting-frame, substantially as described.

7. In a chopping-machine, the combination of the axle, the wheels thereon, clutches for locking the wheels to the axle, a swinging frame hung on the axle, a shaft journaled in said frame, amplifying gearing between the shaft and axle, a vertically-reciprocating bar guided in the front of the frame, a chopper on the lower end of said bar, and means for reciprocating the chopper from said shaft; with a roller hung in front of the chopping mechanism, and means for throwing the wheel-clutches into and out of operation, substantially as described.

8. In a chopping-machine, the combination of the axle, the wheels thereon clutches for locking the wheels to the axle, a swinging frame hung on the axle, a shaft journaled in said frame, amplifying gearing between the shaft and axle, a vertically-reciprocating bar guided in the front of the frame, a chopper on the lower end of said bar, a crank on said shaft, and a pitman connection between said crank and bar; with means for raising and lowering the frame, a roller hung in front of the chopping mechanism, means for raising and lowering the roller, and means for throwing the wheel-clutches into and out of operation, all substantially as described.

710,283. PRINTING COLOR FOR LITHOGRAPHIC OR METALLOGRAPHIC PRINTING. JOHANN ADELSBERGER and HUGO FEIERABEND, Vienna, Austria-Hungary, assignors to Simon Wechsler, Vienna, Austria-Hungary. Filed July 5, 1901. Serial No. 67,185. (No specimens.)

Claim.—1. A composition of matter consisting of varnish, glycerin, a salt of the alkalies, tartar and a volatile resinous oil, for the purpose set forth.

2. A composition of matter consisting of varnish, glycerin, a salt of the alkalies, tartar, a volatile resinous oil and a pigment, for the purpose set forth.

710,284. VACCINE-CONTAINER. HAMILL M. ALEXANDER, Hartsville, Pa. Filed May 12, 1902. Serial No. 106,507. (No model.)

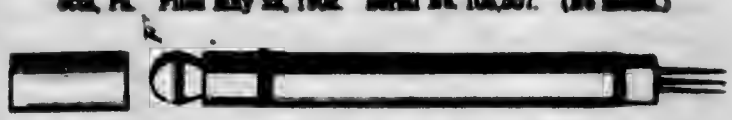

Claim.—1. A hollow case adapted to receive vaccine-containing capillary tubes, having one end open and provided with an inturned bead-like edge, in combination with a bulb, F, fitted into the said open end of the case, substantially as set forth.

2. A hollow case adapted to receive vaccine matter open at both ends, a reversible plug fitted into one end of the case, scarifying-needles carried by the said plug, a bulb fitted into the other end of the case, and a cap arranged to fit over the said bulb, substantially as set forth.

710,285. MIRROR-HANGING. JAMES G. ALLEN, Ubly, Mich., assignor of one-half to Jacob C. Balauf, Ubly, Mich. Filed Apr. 8, 1902. Serial No. 101,864. (No model.)

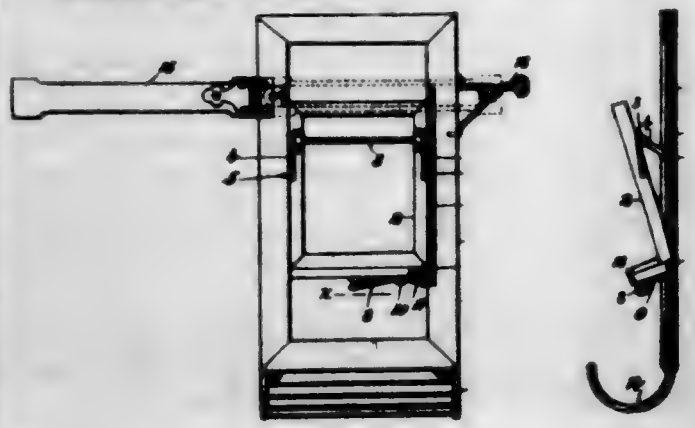

Claim.—1. A mirror-hanging comprising a main frame, the opposite side members of which are provided with slots at the inner sides, a mirror-frame, pins extended from said mirror-frame at the lower end into said slots, a rock-shaft mounted on the back of the mirror-frame and having crank portions extended into said slots, and a locking device carried by the mirror-frame, substantially as specified.

2. A mirror-hanging comprising a main frame, the opposite side members of which are slotted at the inner sides, a mirror-frame, pins extended from the lower portions of the mirror-frame into said slots, a rock-shaft mounted on the back of the mirror-frame near its top, the said shaft having its ends turned downward and then outward, the said outward portions engaging in said slots, and a locking-lever mounted to swing on the lower end of the mirror-frame and adapted for frictional engagement with a member of the main frame, substantially as specified.

710,286. HOLDER FOR POLICEMEN'S CLUBS. FRANCIS H. AUDLEY, New York, N. Y. Filed Sept. 14, 1901. Serial No. 75,338. (No model.)

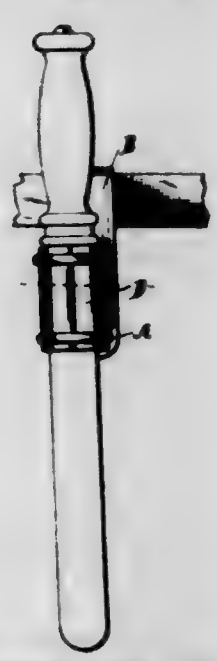

Claim.—1. The combination with a belt of a support suspended from said belt, and a ring or socket carried by said support, said ring or socket comprising a section pivoted at one end, the pivot of said section being located at the circumference of and at the rear of said ring, and the opposite end of said section being located at the front of said ring, and a spring for normally holding said section in a closed position.

2. A holder for policemen's clubs, said holder consisting of an attachment provided with a loop through which the belt is adapted to be passed, and a holder which is secured to said attachment, and which consists of two segmental spring-jaws, the free edges of which are normally held together by spring-power, said jaws being covered by leather or similar material inside and outside, and the abutting edges thereof being turned outwardly, and said jaws being hinged to a circular plate which is secured to said attachment, and provided with springs, which are connected with said hinges, and which bear upon the free edges of said jaws, and on the outer sides thereof.

3. A holder for policemen's clubs, comprising a support, a curved plate secured to said support, and curved, spring-actuated arms jointed at their inner ends to the outer ends of said plate and with their outer ends separable, the said plate and arm forming in conjunction with each other a circular band.

4. A holder for policemen's clubs, comprising a support, a curved plate secured to said support, curved arms jointed at their inner ends to the outer ends of said plate, and springs between said plate and arms for closing the free ends thereof, said plate and arms forming in conjunction with each other a circular band.

5. A holder for policemen's clubs, comprising a support, a curved plate secured to said support, curved arms jointed at their inner ends to the outer ends of said plate, springs between said plate and arms for closing the free ends thereof, said plate and arms forming in conjunction with each other a circular band, and a locking device for connecting the separable ends of said jaws.

6. In a holder for policemen's clubs the combination with a belt of a support suspended from said belt and a divided ring carried by said support, the said ring having a pair of spring-actuated vertical jaws at the division in said ring, said jaws normally abutting to close said ring and a latch for locking said ring closed, whereby when said latch is released the club may be removed either vertically or laterally, and when said latch is fastened the club may be removed vertically only.

7. In a holder for policemen's clubs the combination with a belt, of a support suspended from said belt, and a divided ring carried by said support, the said ring having a pair of spring-actuated vertical jaws at the division in said ring, said jaws normally abutting to close said ring, whereby a socket of definite form size and circular contour is maintained in order to hold the club uniformly and constantly with exactly the desired freedom of vertical removal while permitting its immediate lateral removal through the division in the ring.

8. In a holder for policemen's clubs the combination with a support adapted to be suspended from a belt, of a divided ring carried by said support, the said ring having a pair of spring-actuated vertical jaws at the division on said ring, said jaws normally abutting to close said ring, the division of the ring and its abutting jaws being at the front of the ring or socket whereby the club is removed by a forward movement of its handle and will in any attempted rearward movement be seated in the undivided portion of the ring or socket.

9. A policeman's-club holder consisting of a ring or socket formed of a main fulcrum-section and two sections pivoted thereto and having their ends normally and resiliently directed toward one another.

10. A policeman's-club holder consisting of a ring or socket formed of a main fulcrum-section and two sections pivoted thereto, and having their ends normally and resiliently directed toward one another, one of the sections being longer than the other.

710,287. PHOTOCHROMOSCOPIC APPARATUS. THOMAS K. BARNARD, Hammersmith, London, England. Filed June 16, 1902. Serial No. 111,930. (No model.)

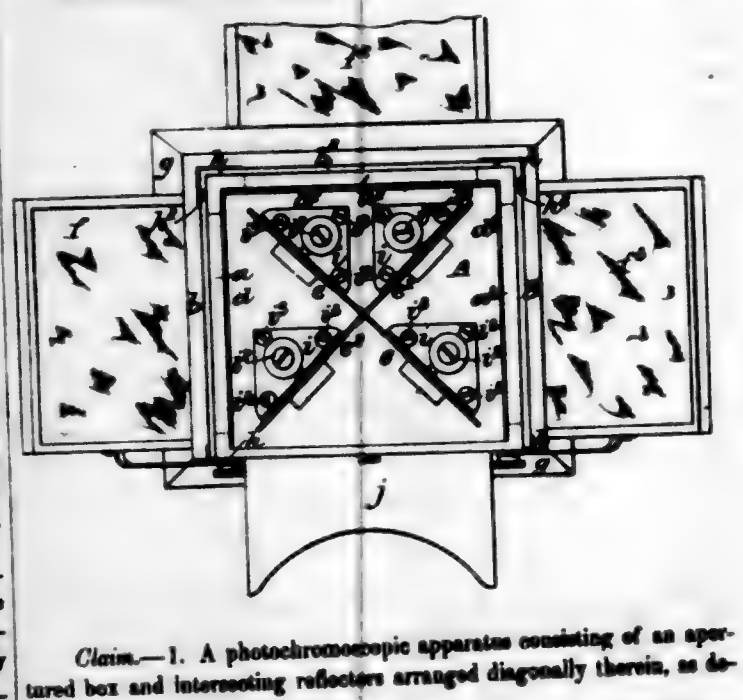

Claim.—1. A photochromoscopic apparatus consisting of an apertured box and intersecting reflectors arranged diagonally therein, as described.

2. A photochromoscopic apparatus consisting of a rectangular apertured box, intersecting reflectors therein and chromograms perpendicular to the base of the box, as described.

3. A photochromoscopic apparatus consisting of a rectangular apertured box with two intersecting, diagonally-arranged, reflectors perpendicular to the base, substantially as described.

4. A photochromoscopic apparatus, consisting of a box having the back and two sides open, the openings being adapted to contain transparencies of substantially the same length as the sides and the back, substantially as described.

5. A photochromoscopic apparatus, having a base and a covered top, means in the front for viewing chromograms, the two sides and the back being open, except at the corners, and adapted to contain chromograms, and reflectors within the box arranged diagonally, substantially as described.

6. A photochromoscopic apparatus, comprising an apertured box, chromograms in the sides and back and a viewing means in the front and intersecting reflectors arranged diagonally within the box, substantially as described.

7. A photochromoscopic apparatus, comprising an apertured box having a closed top and base, lenses in the front, openings of substantially the same area of the back and sides in said back and sides, diagonally-arranged reflectors within the box, and hinged mirrors at the sides and back, substantially as described.

8. A photochromoscopic apparatus, having diagonally-arranged intersecting reflectors mounted in an apertured box and adapted to be individually adjusted, substantially as described.

9. A photochromoscopic apparatus, comprising an apertured box and reflectors therein, each reflector being mounted in a tripod-adjusting means.

10. A photochromoscopic apparatus, comprising an apertured box and four reflectors mounted therein, all meeting centrally and extending away from the center to form substantial diagonals, as described.

11. A photochromoscopic apparatus, comprising an apertured box and four reflectors mounted therein, each reflector having an individual adjusting means, all the reflectors meeting centrally and extending away from the center to form substantial diagonals, as described.

710,288. INDICATOR FOR SAWMILL-KNEES. JOHN D. BEATTY, Klondike, N. C. Filed June 22, 1901. Serial No. 65,644. (No model.)

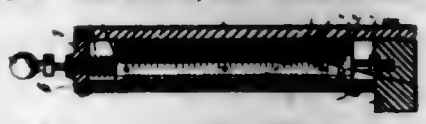

Claim.—An indicator, comprising a slideway, a frame provided with a slot and slidably mounted upon the same, a needle mounted adjacent to said frame and free to travel relatively thereto, means for actuating said needle, a cylinder mounted within said frame and adjacent to said slot, said cylinder being provided with a graduated scale and with a toothed disk, a toothed disk mounted upon said frame and mating said first-mentioned toothed disk, and means controllable at will for adjusting the positions of said disks in the general longitudinal direction of said cylinder.

710,289. BOX-TOE. HARRY H. BUCKWITH, Quincy, Mass. Filed Nov. 22, 1901. Serial No. 84,076. (No model.)

Claim.—1. As an article of manufacture, a moldable box-toe blank comprising a layer of cork skived at its margin, and a confining layer of fabric secured to the outer surface of the cork layer, whereby when the blank is molded on the toe portion of a last, the outer portion of the cork layer is prevented from cracking and its inner portion is compressed to close the crevices in the cork layer and increase its resilience, so that the molded box-toe is rendered impervious to water and is adapted to spring outwardly after receiving an indenting pressure.

2. A moldable box-toe blank comprising a layer of cork and a confining layer of fabric saturated with a sizing composition and secured to the outer surface of the cork layer, the cloth layer being adapted to prevent the outer portion of the cork layer from cracking and to cause the compression of the inner portion of the cork layer, while the sizing composition enables the molded box-toe as a whole to permanently retain the shape of the toe portion of a last.

710,240. LOCK-NUT FOR VEHICLE-AXLES. WILLIAM BELFIELD, ROBERT SHEARER, JOHN PERRAY, and GABALIM BELFIELD, Minooka, Ill., assignors of one-fifth to George Gleason, Minooka, Ill. Filed Feb. 24, 1902. Serial No. 95,371. (No model.)

Claim.—In a lock-nut for vehicles, the combination with a vehicle-spindle, the outer end of which is provided with a longitudinally-grooved and laterally-recessed tip, of a nut the inner end of the bore of which is provided with inwardly-projecting lugs adapted to slide within the grooves, and to be moved laterally into the recesses, a ring at the outer end of the nut the inner face of which is provided with inwardly-projecting lugs fitted to slide longitudinally within the grooves of the tip, and means whereby the nut and the ring may be engaged at one relative position and be disengaged at another, for the purpose stated.

710,241. HUB. JOHN W. BLANCHETT, Chicago, Ill. Filed May 24, 1902. Serial No. 107,826. (No model.)

Claim.—1. In a device of the class described, the combination with the hub having the cups in the ends thereof and the balls in the cups, of the tubular axle, the cones on said axle, one of which is movable longitudinally to regulate the distance between said cones to adjust the bearings formed by the cups, balls and cones, and means coöperating with said cones to secure them in the desired position of adjustment, the tubular axle being of such a length relative to the length of the hub that the outer end of one of said cones is beyond the end of the tubular axle in all positions of adjustment; substantially as described.

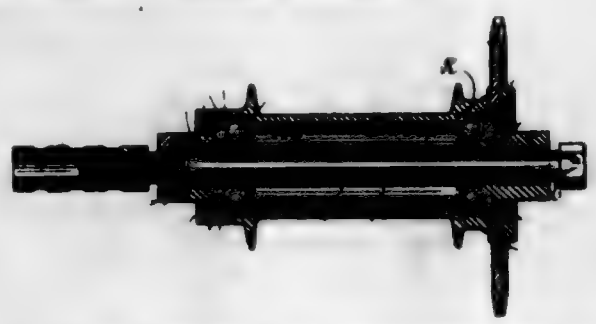

2. In a device of the class described the combination with the hub, the cups in its ends and the balls in the cups, of the tubular axle, the cones on the ends of said axle adjustable longitudinally thereon relative to each other to regulate the distance between them to adjust the bearings formed by the cups, balls and cones, and means coöperating with said cones to secure them in the desired position of adjustment, the tubular axle being so short that in all positions of adjustment the outer ends of the cones are necessarily beyond the adjacent ends of the axle for the purpose described.

3. In a device of the class described, the combination with the hub, the cups in its ends and the balls in the cups, of the tubular axle, the cones on the ends of said axle, one of which is movable longitudinally thereon to regulate the distance between said cones to adjust the bearings formed by the cups, balls and cones, the rod adapted to pass through the tubular axle and having an abutment at one end and screw-threaded at the other end, and the nut on the end of the rod whereby the cones and tubular axle can be clamped between said abutment and nut, the tubular axle being so short that in all positions of adjustment the outer end of one of the cones is necessarily beyond the coöperating end of the axle for the purpose described.

4. In a device of the class described, the combination with the hub, the cups in its ends and the balls in the cups, of the tubular axle, the cones on said axle having their outer ends extending beyond the ends of said axle in all positions of adjustment of the cones longitudinally thereon to regulate the distance between said cones to adjust the bearings formed by the cups, balls and cones, the rod adapted to pass through the tubular axle and having the abutment at one end and screw-threaded at the other end, and the nut coöperating therewith so that the cones can be clamped on the tubular axle between said abutment and nut.

5. In a device of the class described, the combination with the hub, the cups in its ends and the balls in the cups, of the tubular axle screw-threaded on one end and having a longitudinal groove in the same end, the cones on the ends of said axle, one of which is movable longitudinally thereon and is prevented from turning, a key on the interior thereof sliding in the groove in the axle, the adjusting-nut controlling the position of the adjacent cone and adapted to be secured on the end of the tubular axle, and means coöperating with said cones and adjusting-nut to secure them in the desired position of adjustment, the tubular axle being so short that in all positions of adjustment the outer end of the adjusting-nut is necessarily beyond the coöperating end of the axle for the purpose described.

6. In a hub, the combination, with balls, ball-cups and a tubular axle having screw-threads at one end, of bearing-cones fitted to and pressed upon said axle, one of such cones having a movement longitudinal of the axle, an adjusting-nut on the screw-threaded end of the axle, one end of such axle being within one cone and the other end within the adjusting-nut, and a clinching stud or bolt securing the hub to a frame whereby the pressure is against the cones and not against the ends of the axle.

7. In a hub, the combination, with balls, ball-cups and a hub-casing, of a bearing-cone having two substantially parallel annular flanges extending circumferentially thereof and in close proximity to the sides or walls of the barrel of the hub-casing.

8. In a hub, the combination, with balls, ball-cups and a hub-casing, of a bearing-cone having two substantially parallel annular circumferential flanges extending into close proximity to the barrel of the hub-casing, and an annular ring fitting said barrel and depending into the space between said flanges.

710,242. NEEDLE-COMPASSES. JOHANN BOMART-BÄCHLI, Suhr, Switzerland. Filed Mar. 12, 1902. Serial No. 97,943. (No model.)

Claim.—1. A compass-leg, a suitably-guided point therein, a rack

on the point, a pinion engaging the rack, and a spring to frictionally hold the pinion, substantially as described

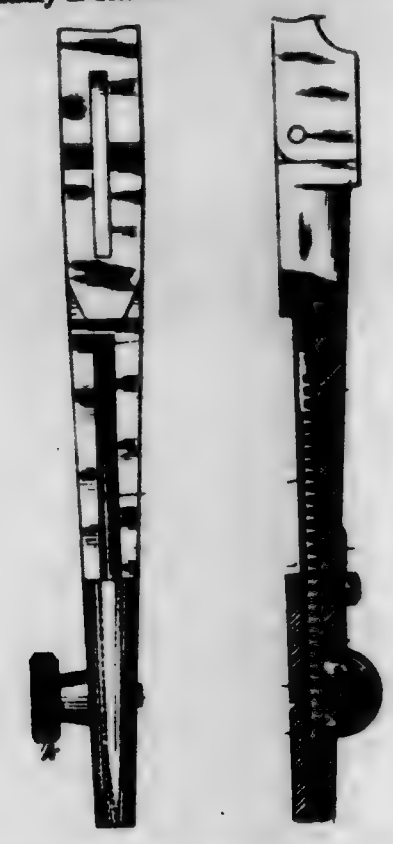

2. A compass-leg, a suitably-guided point mounted therein, a rack on the point, a pinion engaging the rack and a spring bearing on and partly encompassing the pinion, for the purpose set forth.

3. A compass-leg, a suitably-guided point mounted therein, a rack on the point, a pinion engaging the rack and a spring secured to the compass-leg to bear on the pinion to frictionally hold it, and means to regulate the friction on the pinion, for the purpose specified.

4. A compass-leg, a suitably-guided point mounted therein, a rack on the point, a pinion engaging the rack, and a spring having a curved end to bear on the pinion, and a screw to secure said spring to the leg and to regulate the amount of friction on the pinion, for the purpose specified.

5. A longitudinally-bored compass-leg, a needle mounted in said bore, a rack formed on the needle, a pinion adapted to engage the rack and a spring to frictionally hold the pinion in engagement with the rack, and means for regulating the amount of friction, for the purpose specified.

6. A longitudinally-bored compass leg, a reversible needle adapted to be drawn entirely within the bore and having its points eccentric to the axis thereof, said points when within the bore adapted to contact with the wall thereof, a rack on the needle, slotted lugs mounted on both sides of a slot formed in one wall of the bore, a toothed wheel mounted in the slots of said lugs and in engagement with the rack, and a spring adapted to bear on the wheel, for the purpose specified.

710,243. ECLIPSING-SCREEN FOR REVOLVING GROUP FLASHING LIGHTHOUSE-LIGHTS, &c. ALAN BREMNER, London, England. Filed Dec. 28, 1899. Serial No. 741,641. (No model.)

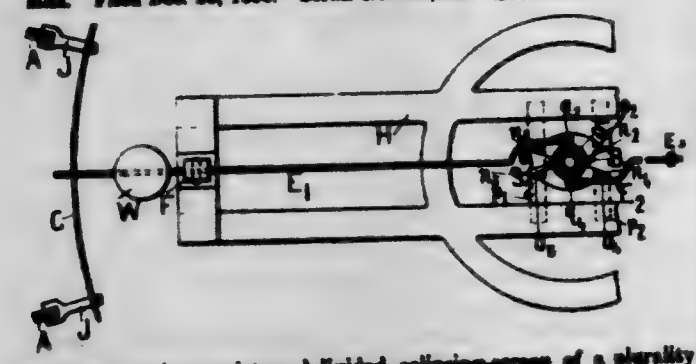

Claim.—1. A complete subdivided eclipsing-screen of a plurality of subdivisions, which can be opened or closed independently of one another in combination with a burner and with a revolving optical apparatus composed of two or more panels, each panel permitting to pass one beam of light and having one subdivision of the said eclipsing-screen adapted to affect it and it alone, and means for opening and closing the subdivisions of the eclipsing-screen, substantially as set forth and for the production of group-flashing lights.

2. In combination with a burner and with a revolving optical apparatus of two or more single beam panels, a complete subdivided eclipsing-screen of two or more subdivisions, each subdivision of screen corresponding to one single-beam panel of the said optical apparatus and being provided with extended borders, and means for opening and closing the subdivisions of the eclipsing-screen, substantially as set forth and for the production of group-flashing lights.

3. A complete subdivided eclipsing-screen of two or more subdivisions combined with a burner and a revolving optical apparatus of two or more corresponding single-beam panels, a lever connected to each of the subdivisions of the screen, and carried by the revolving optical apparatus, and a stationary guide-cylinder having slits in which said levers travel.

4. A complete subdivided eclipsing-screen of two or more subdivisions of unequal horizontal angle in combination with a burner and with a revolving optical apparatus of two or more corresponding single-beam panels of unequal horizontal angle for the production of group-flashing lights containing flashes of different color.

5. A complete subdivided eclipsing-screen of two or more subdivisions of unequal horizontal angle in combination with a burner and with a revolving optical apparatus of two or more corresponding single-beam panels of unequal horizontal angle for the production of group-flashing lights containing flashes of different duration.

6. A revolving optical apparatus of a plurality of panels consisting in part of a complete subdivided eclipsing-screen, one subdivision of the said eclipsing-screen corresponding to each panel of the said optical apparatus, with the necessary operative means therefor and with a burner, for the production of group-flashing lights.

7. Sets of complete subdivided eclipsing-screens of a plurality of subdivisions combined with burners and with sets of revolving optical apparatus of two or more corresponding single-beam panels, for the production of light-signals of a code of signals in which each signal can be represented by a group of flashes.

8. In a device of the character described, a revolving optical apparatus comprising a burner, a number of single-beam panels, and a complete eclipsing-screen composed of subdivisions, one subdivision for each panel, a lever attached to each subdivision of the screen and carried by the revolving optical apparatus, and a stationary guide-cylinder having two horizontal slits in which the levers are adapted to ride, a pair of crossed slits connecting the horizontal slits, and a switch mechanism arranged to control said levers, substantially as described.

9. In a device of the character described, a revolving optical apparatus comprising a burner, a number of single-beam panels, and a complete eclipsing-screen composed of subdivisions, one subdivision for each panel, a lever attached to each subdivision of the screen and carried by the revolving optical apparatus, a stationary guide-cylinder having two horizontal slits in which the levers are adapted to ride and a pair of crossed slits connecting the horizontal slits, and locking means located at the junction of the slits, substantially as described.

10. In combination, a source of light, a plurality of groups of lenses or projectors arranged about said source, means for rotating said groups of lenses or projectors, and means for cutting off the light from said source to each of said groups of lenses or projectors in rotation whereby the light emanating from the said source is by successive stages in rotation entirely obscured from and in the same manner allowed to again fall upon the said lenses or projectors.

11. In combination, a source of light, a plurality of groups of lenses arranged about said source, means for rotating said groups of lenses, and means for cutting off the light from said source to each of said groups of lenses, consisting of adjustable tubular shields, each of said shields cutting off the light from one of said groups of lenses.

12. In combination, a source of light, a plurality of groups of lenses arranged about said source, means for rotating said groups of lenses, and means for vertically cutting off the light from said source to each of said groups of lenses, consisting of adjustable tubular shields, each of said shields cutting off the light from one of said groups of lenses.

710,244. REVOLVING GROUP-FLASHING APPARATUS. ALAN BREMNER, London, England. Filed Apr. 9, 1902. Serial No. 102,042. (No model.)

Claim.—1. A revolving optical apparatus of not less than three sides together with screens fitted to two only of these sides, with mechanism for opening and closing the screens and with a central luminary, substantially as set forth and for the production of certain group-flash signals.

2. In a device of the character described a central luminary, a revolving optical apparatus of not less than three sides, a screen attached to each of two only of these sides and capable of intercepting all light from the luminary falling on each of these two sides, a lever connected to each screen and carrying a pin and roller, a cam-grooved wheel causing each screen to open and remain open for a certain time and to close and

remain closed for a certain time, and gearing-wheels revolving with each screen-provided side of revolving optical apparatus and kept in motion relatively to the optical apparatus by a toothed ring fixed to the stationary lantern, substantially as set forth and for the production of group-flash signals.

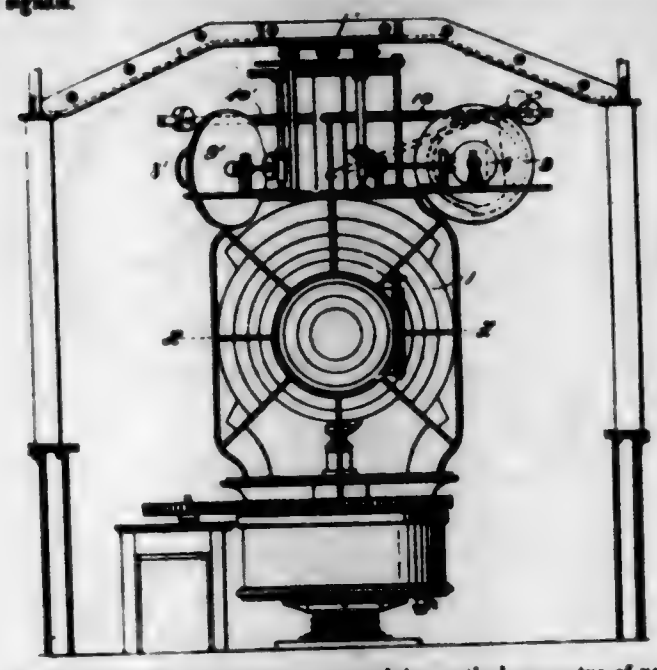

3. In combination, a luminary, a revolving optical apparatus of not less than three sides, a two-part partial screen and the necessary mechanism for operating the said two-part partial screen, substantially as set forth and for the production of group-flash signals in lighthouses or elsewhere.

4. In the combination of continuously-revolving optical apparatus and screens for producing group-flashing characteristics, a continuously-revolving cam-grooved wheel by means of which said screens are operated and kept constantly under control, substantially as described.

710,245. DRIVING MECHANISM FOR BICYCLES. KARNELL BROOKS, New York, N. Y. Filed Mar. 7, 1901. Serial No. 50,208. (No model.)

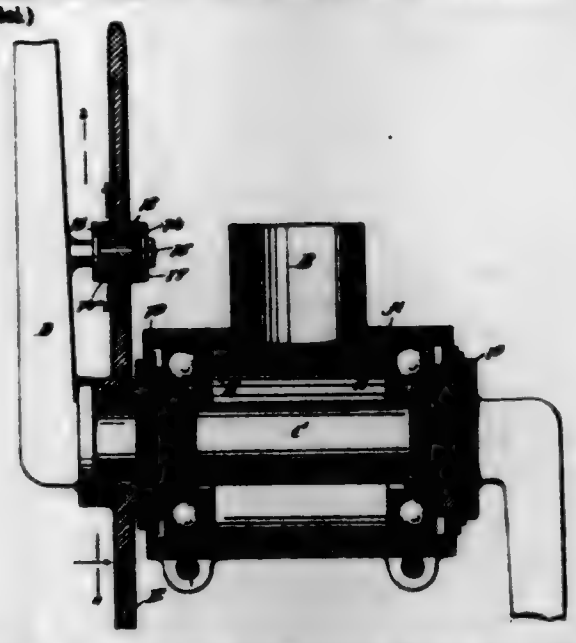

Claim.—1. In a driving mechanism for bicycles and similar machines, a pedal-shaft and its crank-arms one of the crank-arms being provided with a lateral projection, a driving-wheel loosely mounted on the said pedal-shaft, and a cushion connection between the said driving-wheel and the projection of the crank-arm of the pedal-shaft, as set forth.

2. In a driving mechanism for bicycles and similar machines, a crank or pedal shaft and its crank or pedal arms, a front sprocket-wheel loosely mounted on the pedal or drive shaft adjacent to one of the said arms of the crank or pedal shaft and provided with an opening, and a lateral projection on one of said arms of said crank or pedal shaft, which projection is yieldingly held in the opening of the front sprocket-wheel, as set forth.

3. In a driving mechanism for bicycles and similar machines, a pedal or crank shaft, crank or pedal arms carried by the shaft, a bearing for said crank or pedal shaft, a forward sprocket-wheel loosely mounted on said shaft between its bearings and one of its crank or pedal arms, the said wheel being provided with an opening therein, a cushion located within said opening, a pin extending through the said cushion from the crank-arm adjacent to the forward sprocket-wheel, and means for holding said pin in position in said forward sprocket-wheel, as set forth.

4. In a driving mechanism for bicycles and like machines, the combination with the drive or pedal shaft and its crank or pedal arms, of a forward sprocket-wheel loosely mounted on said shaft, said wheel being provided with an opening therein and a sleeve secured in said opening, a tubular cushion located within said sleeve, and a pin secured to one of the crank or pedal arms and passed through the said cushion, and means for retaining the pin in position in the sprocket-wheel, as set forth.

5. In a driving mechanism for bicycles and like machines, the combination with a drive or pedal shaft, and its crank or pedal arm, of a sprocket-wheel loosely mounted on the said shaft and provided with an opening and an annular flange surrounding the opening on each face of the wheel, a cushion in said opening, a pin secured to the pedal-arm and passing through the said cushion and provided with a nut on its end, and washers on the pin and bearing against the flanges around the opening in the wheel, as set forth.

710,246. TELEGRAPH FIRE-HOSE. JAMES BOOTH, Portland, Oreg. Filed Dec. 16, 1901. Serial No. 86,094. (No model.)

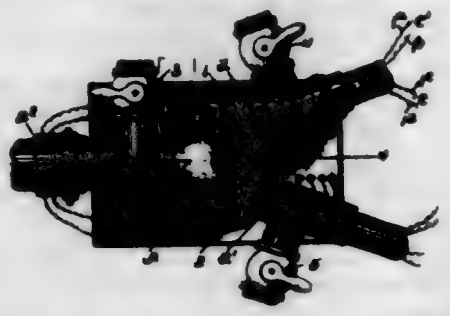

Claim.—1. In a telegraph-hose under the control of the pipeman which has means of signaling to a station; the combination of a supply-pipe, a plurality of offtakes, a connection at the station for joining said supply-pipe and offtakes, and valved flood-gates for said offtakes, for the purposes described.

2. In a telegraph-hose under the control of the pipeman, and having means for signaling to a station; the combination of a Y connection at the station, comprising a supply-pipe and a plurality of flood-sections, flood-gates in said flood-sections, one for each section, said gates including valved discharges, and a hydraulic signaling mechanism cooperatively joined with the flood-pipe sections and the connection therefor, as specified and for the purposes described.

3. The combination with a plurality of ordinary hose-sections, terminating at a common station and having telegraphic communication, whereby the hosemen may communicate therewith; of a Y-shaped connection for uniting said hose-sections to one common source of supply, said Y-shaped section consisting of a supply-pipe, offtake-sections, a connection joining the supply-pipe and said offtakes; a valved flood-gate for each of said offtakes, affording independent means for communicating with each of the hosemen; and a valved flood-gate 3, whereby all of the hosemen may be simultaneously given the same signal by a single operation, for the purposes set forth.

4. The combination with a plurality of ordinary hose-sections terminating at a common station and having telegraphic communication therewith; of a Y-shaped connection for uniting said hose-sections to a common source of supply, said Y-shaped connection having means for varying the water-supply, whereby the station-man may communicate with the hosemen, as described and for the purposes set forth.

710,247. BLAST-REGULATOR FOR FURNACES. JOHN W. CABOT, Johnstown, Pa., and SAMUEL W. VANDEVER, Lorain, Ohio. Filed Mar. 3, 1902. Serial No. 96,414. (No model.)

Claim.—1. In the smelting of ores with hot blast, an apparatus for automatically mixing hot blast and cold blast together, consisting of a hot-blast pipe, a cold-blast pipe, a branch pipe connecting the two, a valve situated in said branch pipe, and means for opening such valve upon increase of back pressure in the furnace, substantially as specified.

2. The combination with a blast-furnace, of a hot-blast main, a cold-blast-supply pipe, a branch pipe of said main connected to the cold-blast-supply pipe, a cold-blast-admission valve, a cylinder, the piston in said cylinder, and having an operating connection with said valve, a pipe for conveying furnace-blast pressure to said cylinder, and a balanced valve in said pipe, substantially as specified.

3. The combination with a blast-furnace, of a hot-blast main, a cold-blast-supply pipe, a branch pipe of said main connected to said cold-blast-supply pipe, a cold-blast-admission valve, a cylinder, and an operating-piston for said valve therein, and having means in connection therewith

for closing the valve upon decrease of back pressure in the furnace, substantially as specified.

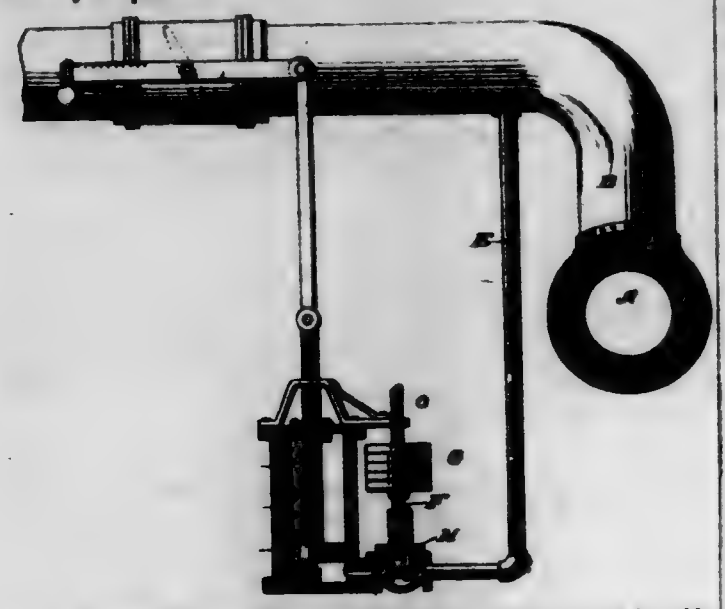

4. The combination with a blast-furnace, of a hot-blast main, its cold-blast-supply pipe, a branch pipe of said main connected to the cold-blast-supply pipe, a pivoted cold-blast valve, a lever connected to the pivot of such valve, a cylinder having a piston therein connected with said lever, a pipe for conveying the furnace-blast pressure to said cylinder, and a balanced valve in said pipe, substantially as specified.

5. The combination with a blast-furnace, of a hot-blast main, its cold-blast-supply pipe, a branch pipe of said main connected to the cold-blast-supply pipe, a cold-blast valve, a cylinder having a piston for operating said valve, a pipe for conveying furnace-blast pressure to said cylinder, and a balanced valve in said pipe having a hollow valve-stem for exhausting said cylinder, substantially as specified.

710,248. GAS-HEATER. JOHN W. CARTER, Rutherford, N. J., assignor to Wesley S. Hook, Brooklyn, N. Y. Filed July 20, 1900. Renewed June 4, 1902. Serial No. 110,188. (No model.)

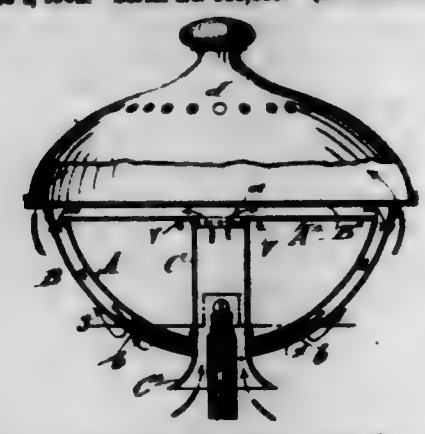

Claim.—1. A gas-heater, composed of an interior and an exterior shell, said exterior shell being provided with outlet-slots in the lower part, a central tube passing through the bottom of the interior and exterior shells to and communicating with the space above the top part of the interior shell, and an outwardly-flaring mouthpiece at the lower end of the central tube, substantially as set forth.

2. A gas-heater, composed of interior and exterior shells, said exterior shell being provided with outlet-slots in the lower part, the top part of said shells being flat, a central tube passing through the bottom part of the shells to and communicating with the space above the top part of the interior shell, said interior shell forming a heating-space with the exterior shell, and an outwardly-flaring mouthpiece at the lower end of the central tube, substantially as set forth.

3. A gas-heater, composed of an interior and an exterior shell, said exterior shell being provided with outlet-slots, a central tube connected with said shells, and terminating at the top of the interior shell and communicating with the space between the shells and a cover of larger diameter than the exterior shell and supported on lugs of the exterior shell, said cover being provided with discharge-openings at its upper part, substantially as set forth.

710,249. ROAD-VEHICLE. PEER CHRISTIANSEN, Scriven, Minn. Filed Nov. 30, 1901. Serial No. 84,165. (No model.)

Claim.—In a machine of the character described, the combination with a traction-wheel having a gear 7, of a drive therefor involving the gear 14, the vertically-movable gears 8 and 11, the former engaging the gear 7, and the latter said gear 14 and operating as described, of the foot-operated lever 33 pivoted at 34 and acting on said gears 8 and 11 to throw the former into and out of engagement with the coöperating gear 7 and means for driving said traction-wheels involving cranks located in position to be engaged by the rider's hands, substantially as described.

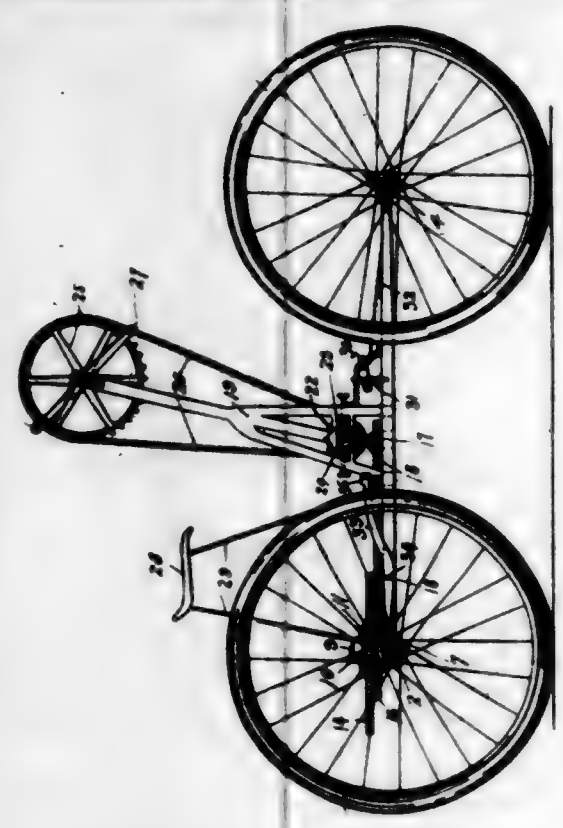

710,250. GATE. JOHN CLIFTON, Livingston, Mont., assignor to Thomas D. Millen, John D. Millen, and Michael J. Carroll, Springfield, Mass. Filed Jan. 9, 1902. Serial No. 88,965. (No model.)

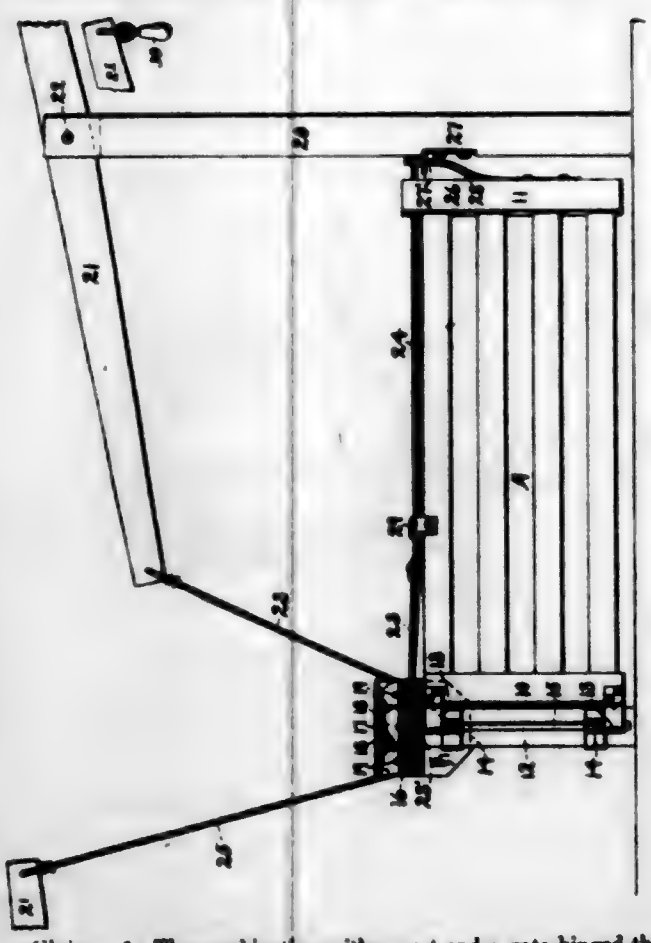

Claim.—1. The combination with a post and a gate hinged thereto, of a rotary member at the rear of said gate, a spring-latch on the front of the gate, a post having a catch interposed in the path of travel of said gate-latch which is adapted to be engaged by and disengaged from said catch, a reciprocating rod attached at one end to the latch, cords fastened to the other end of said rod and at opposite points on said rotary member, idlers bracketed to the first-mentioned gate-post, under which said

cords pass, and operating-levers to which the cords are attached, substantially as herein shown and described.

2. The combination with a post and a gate connected therewith by hinges and a rod, of a rotary member fast on said rod, a spring-latch on the front of said gate, a post having a catch interposed in the path of travel of said gate-latch which is adapted to be engaged by and disengaged from said catch, a reciprocating rod attached at one end to the latch, cords fastened to the other end of said rod and at opposite points on said rotary member, idlers bracketed to the first-mentioned gate-post, under which said cords pass, and operating-levers to which said cords are attached, substantially as herein shown and described.

710,251. SEEDING-MACHINE. FREDERICK S. COLLEY, Macedon, N. Y., assignor to Bickford and Huffman Company, Macedon, N. Y., a Corporation of New York. Filed June 21, 1902. Serial No. 113,703. (No model.)

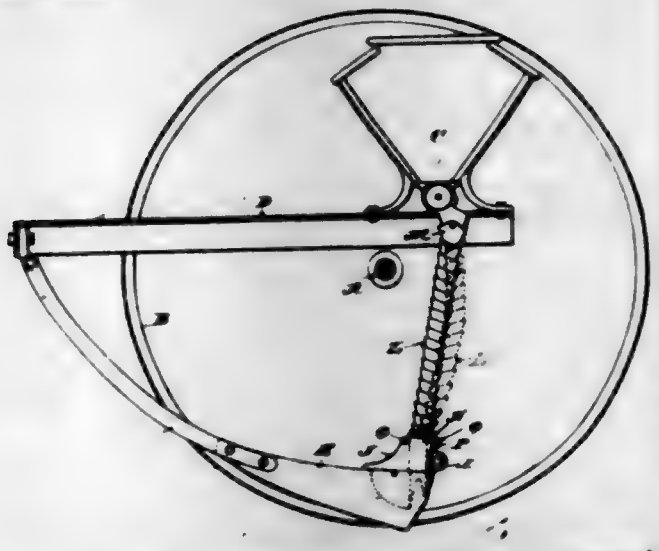

Claim.—1. In a seeding-machine, the combination of a grain-delivery mechanism and a shoe, with a flexible telescopic tube connected at one end to the grain-delivery mechanism and positively connected at the other end to the shoe, the flexible and telescopic construction of the tube permitting it to yield both laterally and longitudinally.

2. In a seeding-machine, the combination of a grain-delivery mechanism and a shoe, the shoe being provided with a short boot, with a flexible telescopic tube connected at one end to the grain-delivery mechanism and positively connected at the other end to the boot, the flexible and telescopic construction of the tube permitting it to yield both laterally and longitudinally.

3. In a seeding-machine, the combination of a grain-delivery mechanism and a shoe, with a flexible telescopic tube connected at one end to the grain-delivery mechanism and detachably connected at the other end to the shoe, the flexible and telescopic construction of the tube permitting it to yield both laterally and longitudinally.

4. In a seeding-machine, the combination of a grain-delivery mechanism and a shoe, with a flexible telescopic tube connected at one end to the grain-delivery mechanism and detachably connected at the other end to the shoe, the said detachable connection comprising two projecting lugs on the tube, a pin formed upon the shoe for engagement with one of the lugs, and a second pin to detachably connect the other lug to the shoe.

5. In a seeding-machine, and in combination with a shoe and a grain-delivery tube, a detachable connection therefor comprising two projecting lugs upon the tube, a pin formed upon the shoe to engage one of the lugs, the shoe being also formed with a recess to embrace the other lug, and a pin to hold the lug in the recess.

710,252. KNOCKDOWN BANANA-SHIPPING CRATE. JACOB CONRAD, Chicago, Ill. Filed Jan. 8, 1902. Serial No. 88,231. (No model.)

Claim.—1. A shipping-crate of the class described, comprising the complemental members connected together for folding compactly one on the other and adapted to be set up to form an open-ended rigid supporting framework, means for locking the members of said framework rigidly in their active positions, and a bag attached to and disposed within said members and collapsible or expansible with the framework.

2. A shipping-crate of the class described, comprising complemental members each having slats and yieldable band or hoop sections, said members having the band or hoop sections thereof connected together to permit the members to be folded compactly or to be assembled to form a rigid framework, means for locking said band or hoop sections to retain the members in their active positions, and a bag collapsible or expansible with the framework formed by the members.

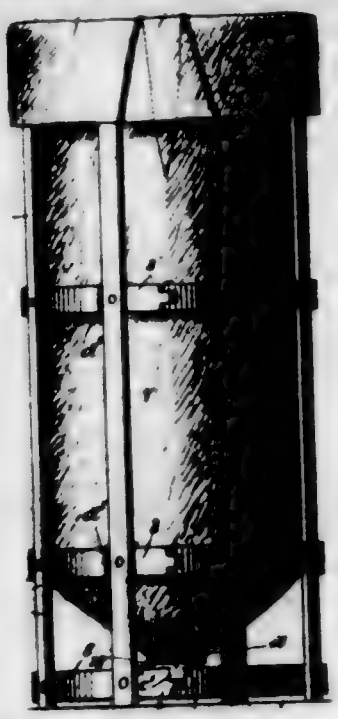

3. A shipping-crate of the class described, comprising a collapsible framework having complemental members each formed by a series of slats and a series of band or hoop sections, means for pivotally connecting the hoop or band sections of said members, means for locking said band or hoop sections in place on the adjustment of the complemental members in their active positions, and a bag collapsible or expansible with the framework formed by the sections.

4. A shipping-crate of the class described, comprising an open-ended surrounding framework, a bag attached to said framework and provided in its open end with an inserted gusset adapted to form an expanded or enlarged mouth, said expanded mouth portion of the bag adapted to extend beyond the framework, and means adapted to extend across the end portions of the framework and the bag when the latter is closed, said means adapted to partly sustain the load in the bag.

5. A knockdown shipping-crate, comprising a surrounding framework, and a bag arranged within and attached to said framework, said bag having a closed end terminating within the framework, and an expanded end which is formed by an inserted gusset.

6. A knockdown shipping-crate, comprising a surrounding framework, a bag arranged within and attached to said framework, and load-take-up chains or cables attached to the framework and across the closed ends of the bag.

7. A knockdown shipping-crate, comprising foldable sections having attached hoop members, means for connecting said hoop members together, and clamps arranged to straddle the joints between the hoop members and to maintain the hoops in non-collapsible order and to hold the foldable sections in rigid operative condition.

8. A knockdown shipping-crate, comprising foldable members having attached hoop-sections, means for detachably connecting the hoop members together, and clamps straddling the hoop members and spanning the joints between the same, said clamps holding the hoops and the foldable members in operative condition.

9. A shipping-crate of the class described, comprising a framework, a bag supported within the framework, and load-sustaining means disposed across end portions of the bag when the same are closed, said means being attached to the framework and adapted to be readily displaced to permit access to an end portion of the bag.

710,258. BRAKE MECHANISM. HARRY W. OOLEY, Lost Valley, Oreg., assignor of one-half to Herbert Halstead, Lost Valley, Oreg. Filed Feb. 24, 1902. Serial No. 96,271. (No model.)

Claim.—1. A brake-operating mechanism comprising a segment-rack, a lever adapted for connection with a brake, a weight-lever pivoted to the first-named lever, a dog having swinging connection with the weight-lever, a latch pivoted to the forward end of the dog and adapted for engagement with the weight-lever, and a tripping device for moving said latch out of engagement with the weight-lever, substantially as specified.

2. A brake-operating mechanism comprising a segment-rack, an operating-lever, a weight-lever pivoted to the operating-lever, a dog having swinging connection with the weight-lever, a latch pivoted to the forward end of the dog and having an upwardly-extended portion designed to en-

gage with the forward end of the weight-lever, a tripping device pivoted to the forward end of the dog and having a portion for engaging the upper side of the latch, and a projection on said tripping device for engaging with a tooth of the rack, substantially as specified.

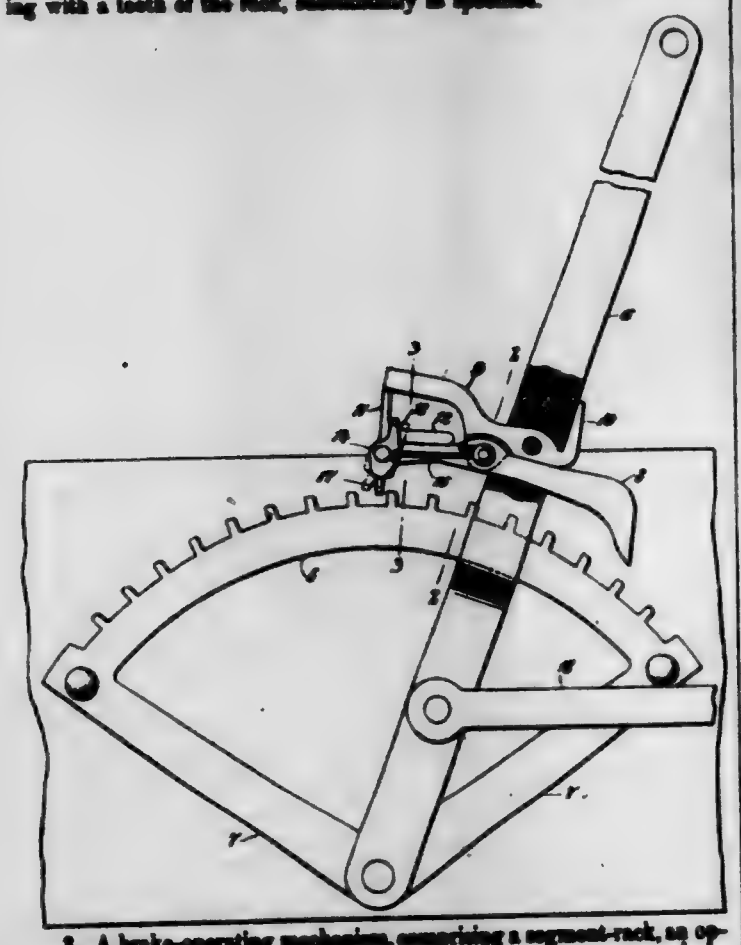

3. A brake-operating mechanism, comprising a segment-rack, an operating-lever, a weight-lever having swinging connection with the operating-lever, a dog having swinging connection with the weight-lever, a latch pivoted to the forward end of the dog and having an upwardly-extended portion for engaging underneath the forward end of the weight-lever and a rearwardly-extended portion for engaging on the upper surface of the dog, a tripping device pivoted to the forward end of the dog and having a portion for engaging with the upper side of the rearwardly-extended part of the latch, a spring for holding the tripping device in normal position, and a downward projection on said tripping device for engaging with a tooth of the rack, substantially as specified.

4. A brake-operating mechanism comprising a segment-rack, an operating-lever, a weight-lever having swinging connection therewith and having a rear portion adapted for engagement with the rear side of the operating-lever, a dog pivoted to the weight-lever, a latch pivoted to the forward end of the dog and having an upwardly-extended portion for engaging underneath the forward end of the weight-lever and a horizontally-disposed portion for engaging on the upper side of the dog, a cam projection at the junction of said two portions, a tripping device pivoted to the forward end of the dog and having portions extended along the sides of the latch and portions for engaging on the upper side thereof, and a projection on said tripping device for engaging with a tooth of the rack, substantially as specified.

710,254. VEHICLE-AXLE. JOHN H. COOPER, Madera, Cal., assignor of one-half to Levi Wilcox, Merced, Cal. Filed May 31, 1902. Serial No. 109,982. (No model.)

Claim.—1. The combination with an axle, of stubs having cylindrical extensions with screw-threads at the inner portions, and a tubular spindle fitting over each of the said extensions and having substantially square extensions at the inner end corresponding approximately in shape with the axle, said square extensions being internally threaded to engage the threads at the inner end of the tubular extension of the stub.

2. The combination with an axle, of a stub having a cylindrical extension provided, at the inner end, with screw-threads; a tubular sleeve extending the length of, and fitting over, the cylindrical extension, and having a square extension at the inner end fitting over the threaded portion of the cylindrical extension and internally threaded to engage the latter, means for clamping said extension of the sleeve and the stub to a main portion of the axle, and a nut upon the outer end of the cylindrical extension for retaining the wheel in place.

3. The combination in a wheel-axle of the stub having a cylindrical extension, a sleeve or spindle fitting said extension forming a bearing upon which the wheel-hub box turns, said cylindrical extension having a threaded portion at its inner end and said sleeve having a square extension at its inner end internally threaded to engage the threads of the cylindrical extension, and means clamping the squared end of the sleeve extension to a main part of the axle, said cylindrical extension having threads upon its outer end, and a chambered nut fitting upon said threads adapted to contain washers whereby compensation for wear is effected.

4. The combination in a vehicle-axle of a stub having a cylindrical screw-threaded extension, a tubular sleeve or spindle fitting over said extension having the inner end screw-threaded to fit corresponding threads of the stub whereby the two parts are united with the rectangular portions of the axle coincident, a clip-plate extending across beneath the joint of the two having lugs at each end, and clips fitting over the two parts of the axle adjacent to the joint whereby the latter is locked and strengthened.

710,255. PENCIL AND SHARPENER THEREFOR. ROBERT Y. CORNACK, Jamaica, N. Y. Filed Dec. 5, 1901. Serial No. 84,719. (No model.)

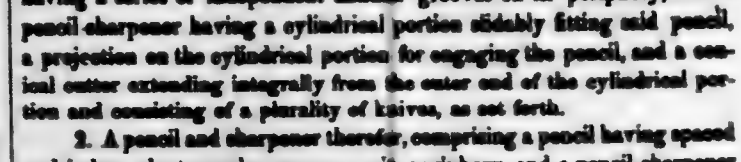

Claim.—1. A pencil and sharpener therefor, comprising a pencil having a series of independent annular grooves on its periphery, and a pencil-sharpener having a cylindrical portion slidably fitting said pencil, a projection on the cylindrical portion for engaging the pencil, and a conical cutter extending integrally from the outer end of the cylindrical portion and consisting of a plurality of knives, as set forth.

2. A pencil and sharpener therefor, comprising a pencil having spaced and independent annular grooves on its periphery, and a pencil-sharpener having a cylindrical portion slidably fitting said pencil, a projection on the cylindrical portion for engaging the pencil, and a conical cutter extending integrally from the outer end of the cylindrical portion, said conical cutter being formed of a plurality of spaced knife-blades, each blade having one edge turned inward to form a cutting edge, and the other edge of the blade having a portion bent inward to form a roughening edge, as set forth.

3. A pencil and a sharpener therefor, comprising a pencil having peripheral grooves, and a pencil-sharpener having a cylindrical portion slidably fitting said pencil, a projection on the cylindrical portion for engaging the pencil, a conical cutter extending integrally from the outer end of the cylindrical portion and consisting of a plurality of knives, and a manually-controlled spring-arm extending integrally from the inner edge of the cylindrical portion, said arm having a bend engaging one of the grooves in the pencil, as set forth.

4. A pencil and a sharpener therefor, comprising a pencil having peripheral grooves, and a pencil-sharpener having a cylindrical portion slidably fitting said pencil, a projection on the cylindrical portion for engaging the pencil, a conical cutter extending integrally from the outer end of the cylindrical portion and consisting of a plurality of knives, and a manually-controlled spring-arm extending integrally from the inner edge of the cylindrical portion, said arm having a bend engaging one of the grooves in the pencil, said bend and the projection being so arranged that when one engages a groove, the other extends on the peripheral face of the pencil between adjacent grooves, as set forth.

5. A pencil and sharpener therefor, comprising a pencil having peripheral grooves, and a pencil-sharpener having a cylindrical portion slidably fitting said pencil, a projection on the cylindrical portion for engaging the pencil, and a conical cutter extending integrally from the outer end of the cylindrical portion and consisting of a plurality of knives, each cutter having near its outer end a cut-out portion to render the point of the cutter flexible, as set forth.

6. A pencil and a sharpener therefor, comprising a pencil having a series of independent annular grooves on its periphery, and a pencil-sharpener consisting of a cylindrical portion and a conical cutter projecting from one end thereof the said cylindrical portion slidably mounted on the pencil and provided with means for preventing it from turning and sliding on the pencil; as set forth.

710,256. CAR-COUPLING. DAVID J. DAVIS, Vanlear, Pa. Filed Dec. 19, 1901. Serial No. 86,542. (No model.)

Claim.—In a car-coupling, the combination with the boxing attached having its rear end closed, and a partition extending across the boxing, of a draw-bar mounted to slide in said boxing in advance of said partition, a stem connected to the rear end of said draw-bar and project-

ing through the partition and through the rear end of said boring, a coiled spring about said stem, a stop secured to the stem in advance of the partition and between which and the draw-bar the coiled spring is confined, and a second stop secured to the end of the stem, and, when the stem and draw-bar are in normal position and not under the stress of the spring, adapted to abut against the forward end of the draw-bar and relieve the partition of undue pressure caused by shock or jar in the coupling of cars, substantially as set forth.

710,257. MAGNETIC DRILLING-JIG. ADOLPH L. DE LEEUW, Hamilton, Ohio. Filed Mar. 24, 1902. Serial No. 99,624. (No model.)

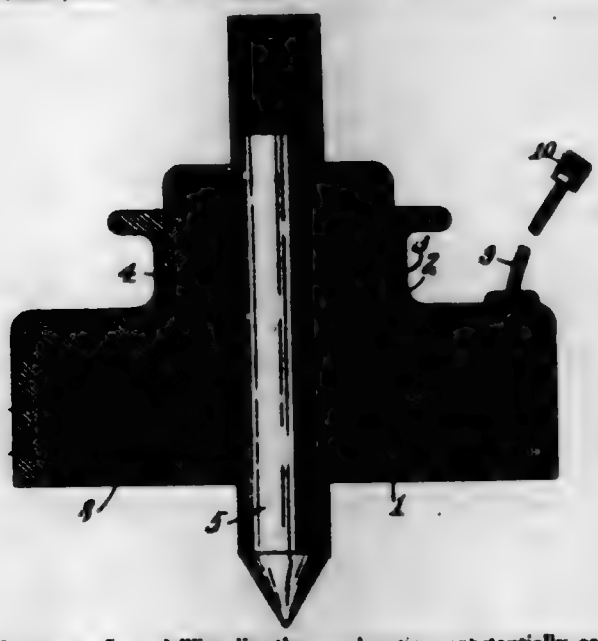

Claim.—1. In a drilling-jig, the combination, substantially as set forth, of an electromagnet having a polar face adapted for contact with the surface of the work to be drilled and provided with a cylindrical guideway having its axis at right angles to the plane of said polar face and terminating at or near the plane of said polar face, and a concentric guiding-bushing separably disposed within said guideway and adapted to engage the body of the drill near the cutting-lips thereof.

2. In a drilling-jig, the combination, substantially as set forth, of an electromagnet having a polar face adapted for contact with the surface of the work to be drilled and provided with a cylindrical guideway having its axis at right angles to the plane of said polar face and terminating at or near the plane of said polar face and adapted to engage the body of a drill, and a conically-pointed center plug concentrically disposed within said guideway and mounted for endwise movement therein and removable therefrom.

3. In a drilling-jig, the combination, substantially as set forth, of an electromagnet having a polar face adapted for contact with the surface of the work to be drilled and provided with a cylindrical guideway having its axis at right angles to the plane of said polar face and terminating at or near the plane of said polar face, a bushing of non-magnetic material fixed within said guideway, and a drill-guiding bushing separably disposed within said first-mentioned bushing and adapted to engage the body of the drill.

4. In a drilling-jig, the combination, substantially as set forth, of an electromagnet having a polar face adapted for contact with the surface of the work to be drilled and provided with a cylindrical guideway having its axis at right angles to the plane of said polar face and terminating at or near the plane of said polar face, a concentric bushing separably disposed within said guideway and adapted to engage the body of the drill, and a conically-pointed center plug separably disposed within said bushing.

5. In a drilling-jig, the combination, substantially as set forth, of an electromagnet having a polar face adapted for contact with the surface of the work to be drilled and provided with a cylindrical guideway having its axis at right angles to the plane of said polar face and terminating at or near the plane of said polar face, a bushing of non-magnetic material fixed within said guideway, a concentric bushing separably disposed within said first-mentioned bushing and adapted to engage the body of the drill, and a conically-pointed center plug separably disposed within said separable bushing.

6. In a drilling-jig, the combination, substantially as set forth, of a disk formed of magnetic material and having its lower face concentrically grooved and having a central bore, an energizing-coil disposed within said groove, and a center plug concentrically and separably disposed within said central bore.

7. In a drilling-jig, the combination, substantially as set forth, of a disk formed of magnetic material and having its lower face concentrically grooved and having a central bore, an energizing-coil disposed within said groove, a lining-bushing of non-magnetic material fixed in said central bore, a concentric bushing separably disposed within said lining-bushing, and a conically-pointed center plug disposed within said separable bushing.

8. In a drilling-jig, the combination, substantially as set forth, of a disk formed of magnetic material and having its lower face concentrically grooved and having a central bore, an energizing-coil disposed within said groove, a retaining-ring of non-magnetic material secured to said disk and forming a floor to said concentric groove, a concentric bushing separably disposed within said bore, and a conically-pointed center plug concentrically and separably disposed within said bore.

9. In a drilling-jig, the combination, substantially as set forth, of a guide having a cylindrical drill-guiding bore whose inner end terminates in substantial juxtaposition with the face of the work when the jig is in position on the work whereby it is adapted to engage the body of the drill at the surface of the work to be operated upon, and an electromagnet connected therewith and adapted to adjustably fix said guide in relation to the work to be drilled.

10. The improved centering and drilling jig comprising a guideway transversely adjustable upon the face of the work to be drilled and adapted to engage the body of the drill to be employed and adapted to alternatively engage a center plug, an electromagnet connected with said guideway and serving to hold it to the face of the work after adjustment, and a cylindrically-bodied conically-pointed center plug adapted to fit said guideway and serve in positioning the guideway concentric with a center-mark engaged by the point of the center plug, combined substantially as and for the purpose set forth.

11. The improved centering and drilling jig comprising a jig-body having a guideway whose inner end terminates in substantial juxtaposition with the face of the work when the jig is in position on the work whereby it is adapted to fit the body of a drill and having a contact-surface at right angles thereto to engage the flat surface of the work to be drilled, and means for sticking said contact-surface to the flat surface of the work independent of the margins of the surface of the work, substantially as and for the purpose set forth.

12. The improved device for aiding in the production of drilled holes concentric with a center-punch mark established in the surface of the work, said device consisting of a jig-body having a guideway whose inner end terminates in substantial juxtaposition with the face of the work when the jig is in position on the work whereby it is adapted to engage the body of the drill and be shifted over the surface of the work till it is concentric with the established center-punch mark, means for sticking said guideway to the surface of the work after it has been adjusted, and a concentric-pointed center plug slidably and removably mounted in the guideway of the jig and serving to position the jig while the point of the center plug is in the established center-punch mark, substantially as and for the purpose set forth.

13. The improved device for aiding in the production of drilled holes concentric with a center-punch mark established with the surface of the work, said device consisting of a cylindrical plug with a pointed end adapted to be set in said center-punch mark, a jig-body having a guideway in which said plug slidably and removably fits and having a contact-surface at right angles to the axis of said guideway, and means for sticking said contact-surface to the surface of the work while the guideway engages the body of the plug and the point of the plug engages the established center-punch mark, substantially as and for the purpose set forth.

710,258. KEYBOARD MECHANISM FOR CASH-REGISTERS. ISAAC S. DENNEY, East Orange, N. J., and PETER J. HILL, Brooklyn, N. Y., assignors, by mesne assignments, to American Mechanical Cashier Company, a Corporation of New Jersey. Filed Sept. 23, 1901. Serial No. 76,048. (No model.)

Claim.—1. A keyboard mechanism for cash registers and recorders, comprising a plurality of groups of keys, a plurality of groups of coöperating slides operated by said keys and a plurality of controller-slides pro-

vided with actuating means and adapted to engage the selector-slides and to be limited in their movement by such engagement, each controller-slide being movable to carry its engaging portion in a path adjacent and parallel to the stop portions of the selecting-slides, which are arranged in a line transverse to the movement of said selecting-slides so that the same portion of the controller-slide engages with any one of the selecting-slides that has been projected, and the movement of the controller-slide is determined by the transverse distance between the selecting-slides.

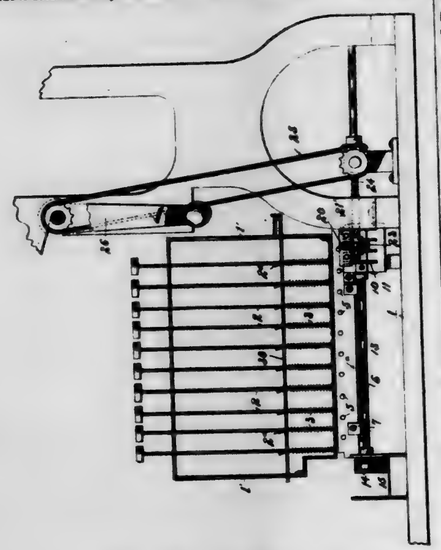

2. In combination with the controller-slides for a cash register or recorder, and means for actuating said controller-slides, of a plurality of selecting-slides arranged parallel to one another and transversely to the controller-slides, said selecting-slides being arranged in groups one group for each controller-slide, and each of the controlling-slides being adapted to be engaged and stopped by any one of the corresponding groups of selecting-slides, and keys for operating said selecting-slides, each controller-slide being movable to carry its engaging portion in a path adjacent and parallel to the stop portions of the selecting-slides, which are arranged in a line transverse to the movement of said selecting-slides so that the same portion of the controller-slide engages with any one of the selecting-slides that has been projected, and the movement of the controller-slide is determined by the transverse distance between the selecting-slides.

3. In combination with the controller-slides for a cash register or recorder and means for actuating said controller-slides, of pawls engaging the respective controller-slides, selecting-slides arranged in groups engaging the respective pawls to release the pawls from the controller-slides on the operation of any selecting-slide of the group, said selecting-slides also engaging the controller-slides when so released to stop same in selective position, and keys for operating said selecting-slides, each controller-slide being movable to carry its engaging portion in a path adjacent and parallel to the stop portions of the selecting-slides, which are arranged in a line transverse to the movement of said selecting-slides so that the same portion of the controller-slide engages with any one of the selecting-slides that has been projected, and the movement of the controller-slide is determined by the transverse distance between the selecting-slides.

4. In a keyboard mechanism for the purposes described, the combination of the selectors controlling the extent of movement of a register or recorder and the tumblers engaging therewith to operate same, and to lock the unoperated selectors.

5. The combination with the keys and the selectors, of tumblers operated by the keys and operating the selectors and locking the unoperated selectors and also the unoperated keys.

6. In a keyboard mechanism, the combination with the digit and zero keys, and the selectors, of tumblers for the digit-keys and tumblers for the zero-keys, the latter having means for automatically restoring same to normal position, and the selectors having means adapted to be engaged by all the tumblers to lock the same, and also having means adapted to be engaged by the digit-tumblers only, to operate the selectors.

7. In a keyboard mechanism, the combination with the digit and zero keys, and the selectors, of tumblers for the digit-keys and tumblers for the zero-keys, the latter having counterpoise means for automatically restoring same to normal position, and the selectors having means adapted to be engaged by all the tumblers to lock the same, and also having means adapted to be engaged by the digit-tumblers only, to operate the selectors.

8. In a keyboard mechanism for the purpose described, the combination with the plurality of keys and the plurality of selecting-slides, of the plurality of pivoted tumblers engaged by the respective keys and engaging with the selecting-slides to operate a slide on the operation of the corresponding key and to lock the other slides.

9. In a keyboard mechanism for the purpose described, the combination with the plurality of groups of keys and the corresponding groups of selecting-slides, of groups of pivoted tumblers arranged between said keys and slides, each tumbler being engaged by a corresponding key and engaging a corresponding slide, to operate the latter, and also engaging all the other selector-slides of the same group to lock the same from movement.

10. The combination of the sliding-keys, the selecting-slides moving transversely to the keys, the pivoted tumblers interposed between said slides and keys, each tumbler serving to operate one slide and lock other slides, and controlling mechanism for the purpose set forth, whose movement is controlled by said selecting-slides.

11. The combination with the sliding-keys, and the pivoted tumblers; of the selecting-slides, each having a lug engaged by one of said tumblers to operate the slide, and lugs cooperating with all the other tumblers when operated to prevent operation of the slide after said other tumblers are operated.

12. The combination with a plurality of selecting devices moving in parallelism, of a controller-slide serving to control apparatus of the character described and movable transversely to the selecting devices, actuating means for said controller-slide, and a pawl engaging with a stop part of said controller-slide to normally arrest said slide, said pawl being of sufficient width to be engaged by all of said selecting devices, so that on operation of any selecting device the pawl will be released from the controller-slide and the latter will move under the influence of its actuating means until it engages the operated selecting device.

710,259. INK-WELL. JAMES D. DENSON, New Brighton, N. Y. Filed June 2, 1902. Serial No. 109,861. (No model.)

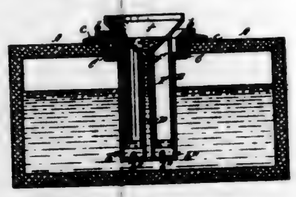

Claim.—1. The combination of an ink-well, a sealing-tube connected with said well by means of an air-tight joint and extending downward approximately to the bottom of the ink-well with which it communicates at its lower extremity, a float within said sealing-tube formed with an ink-tube and dipping-cup, and a stationary tube engaging telescopically with the ink-tube of said float, and communicating at its lower extremity with the ink-well, for the purpose and substantially in the manner set forth.

2. The combination with an ink-well of a sealing-tube connected with said ink-well by means of an air-tight joint, said sealing-tube extending downward approximately to the bottom of the well, its lower extremity being closed and it being formed with lateral openings above said closed end for communication with the ink-well, a float within said sealing-tube formed with an ink-tube and dipping-cup, and a stand-tube engaging telescopically the ink-tube on the float and opening into the ink-well below the closed lower end of the sealing-tube, for the purpose described.

710,260. SUPPORT FOR SPRING STRUCTURES. WILLIAM G. RUSH, Baldwin, N. D. Filed Nov. 22, 1901. Serial No. 83,208. (No model.)

Claim.—A support for a spring structure comprising a socket and a rod vertically movable in the said socket and provided with a head at the upper extremity formed of malleable metal and provided with an outer reinforced enlargement, the said head having bendable jaws leading to an elongated bore in the plane at right angles to the rod.

710,260.

710,261. ROTARY ENGINE. WILLIAM F. EVANS, Chicago, Ill. Filed July 8, 1902. Serial No. 114,769. (No model.)

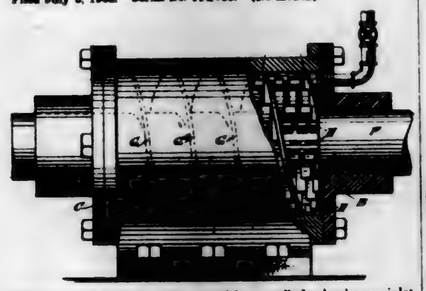

Claim.—1. A rotary engine comprising a cylinder having an inlet at one end and an outlet at the other end, a piston mounted to turn in the said cylinder, comprising a shaft extending centrally in the cylinder, spirals on the shaft extending to the inner surface of the cylinder, and blades on the shaft, between adjacent spirals and extending to the inner surface of the cylinder, as set forth.

2. A rotary engine comprising a cylinder having an inlet at one end and an outlet at the other end, a piston mounted to turn in the said cylinder, comprising a shaft extending centrally in the cylinder, spirals on the shaft extending to the inner surface of the cylinder, and blades on the shaft, between adjacent spirals and extending to the inner surface of the cylinder, the said blades being arranged in longitudinal rows and the blades of adjacent rows breaking joints, as set forth.

3. A rotary engine comprising a cylinder having an inlet at one end and an outlet at the other end, a piston mounted to turn in the said cylinder and having a shaft extending centrally in the cylinder, opened spirals on the shaft, extending to the inner surface of the cylinder, and blades extending radially on the shaft between adjacent spirals and reaching to the inner surface of the cylinder, the blades being arranged in longitudinal rows, the blades of adjacent rows breaking joints, as set forth.

710,262. SHEET-METAL PIPE. FRANK L. FILSON, Point Pleasant, W. Va. Filed June 6, 1902. Serial No. 110,470. (No model.)

Claim.—1. A sheet-metal pipe having a double fold upon itself at one edge, the fold members being opened apart forming an opening at the edge, a hole being provided at the bend of the folded members, and a wire on the opposite edge adapted to pass between the fold members and having a portion for passing through said hole, substantially as specified.

2. A sheet-metal pipe having a double fold upon itself at one edge, the fold members being opened apart forming an opening at the edge, a hole being provided at the bend of the folded members, a wire at the opposite edge, said opposite edge being lapped over the wire, and an outwardly-extended loop formed in said wire for passing through said hole, substantially as specified.

3. A sheet-metal pipe having a double fold upon itself at one edge, the fold members being opened apart forming an opening at the edge, a hole being provided at the bend of the folded members, and a wire secured in a lapped portion of the opposite edge and having a looped portion for passing through said hole, the ends of the wire being extended beyond the pipe length whereby the ends of wires of connected lengths or joints may be twisted together, substantially as specified.

710,268. CULTIVATOR. JOSHUA FRANKLIN, Moseley, Ala. Filed Apr. 4, 1902. Serial No. 101,954. (No model.)

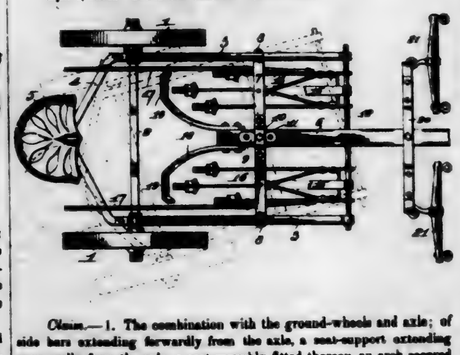

Claim.—1. The combination with the ground-wheels and axle; of side bars extending forwardly from the axle, a seat-support extending rearwardly from the axle, a seat movably fitted thereon, an arch secured to the side bars intermediate their ends, a tongue pivotally mounted upon the arch, push-arms attached to the rear ends of the tongue, an arch-hanger forming a forward rest for the tongue, having its ends turned outwardly, and seated in the forward ends of the side bars, plows having a vertical movement upon outwardly-turned end of the arch-hanger, and lift-lever extending from the plows rearwardly to a point adjacent to the seat.

2. The combination with the ground-wheel and axle; of side bars extending forwardly from the axle, an arch secured to the side bars intermediate their ends, a tongue pivotally mounted upon the arch, push-arms attached to the rear ends of the tongue, an arch-hanger forming a forward rest for the tongue, having its ends turned outwardly, and seated in the forward ends of the side bars, and plows having a vertical movement upon outwardly-turned end of the arch-hanger.

3. The combination with the ground-wheels and axle, of a rectangular frame extending forwardly from the axle, plows pivoted to the front of the frame to swing vertically only and operating in advance of the axle, an arch secured to the side bars of the frame intermediate their ends, a tongue having pivotal connection with the arch, and means carried by said tongue adapted to receive pressure to produce a lateral swing of the plows simultaneously with the frame, axle and wheels.

710,264. ELECTRICAL TYPE-WRITER. CHARLES GIBBS, New York, N. Y. Filed Apr. 18, 1902. Serial No. 103,581. (No model.)

Claim.—1. An electric type-writer, comprising a mechanical type-writer provided with levers, a plurality of magnetic members connected individually with said levers for operating the same, a battery for energizing said magnetic members, a plurality of brushes connected separately with said magnetic members and provided with contact-surfaces, a revolvable member provided with contact-surfaces for engaging said brushes, means for actuating said revolvable member, and a manually-operated key connected with said cylinder and with said battery for the purpose of closing the circuit thereof.

2. An electric type-writer, comprising a mechanical type-writer provided with levers, a plurality of magnetic members connected individually with said levers for operating the same, a battery for energizing said magnetic members, brushes connected to said battery and provided with contact-surfaces, a member of conducting material, means for intermit-

tingly making and breaking contact between said brushes and said members, and a manually-operated key connected with said battery and with said member.

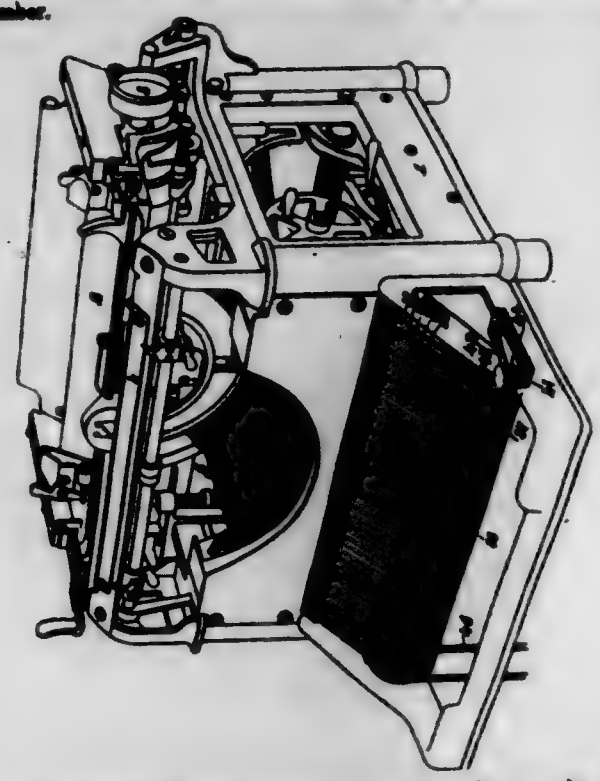

3. An electric type-writer comprising a mechanical type-writer provided with levers, a plurality of magnetic members connected individually with said levers for operating the same, a battery for energizing said magnetic members, brushes provided with contact-surfaces, a revoluble cylinder of conducting material, means for rotating the same, a jacket of insulating material provided with apertures and mounted upon said cylinder, said apertures being in alinement with said brushes, and a manually-operated key connected with said cylinder of conducting material and with said battery.

4. An electric type-writer, comprising a mechanical type-writer provided with levers, a plurality of magnetic members connected individually with said levers for operating the same, a battery for energizing said magnetic members, a series of separable contacts, means for automatically opening and closing said contacts in a predetermined relative order, and manually-operated mechanism provided with contacts free to open and close independently of said first-mentioned contact.

5. An electric type-writer, comprising a mechanical type-writer provided with levers, a plurality of magnetic members connected individually with said levers for operating the same, a source of electrical supply for energizing said magnetic members, a plurality of conductors connecting said source of electrical supply and said magnetic members together in parallel, a plurality of brush-contacts connected individually with said conductors, a revoluble member provided with a series of contact-surfaces to be engaged individually by said brush-contacts, means for causing said brush-contacts to engage said contact-surfaces periodically and in a predetermined order, and a single electric key connected with said member and with said source of electrical supply for opening and closing the circuits thereof at will.

6. An electric type-writer, comprising a mechanical type-writer provided with levers, a plurality of magnetic members connected individually with said levers for operating the same, a battery for energizing said magnetic members, a plurality of brushes connected in parallel with said battery and said magnetic members, a cylinder of conducting material, an insulating-jacket mounted thereon and provided with holes disposed in parallel spiral rows, said holes being in alinement with said brushes, and a single key electrically connected with said cylinder and said battery.

710,265. HOLDER FOR TRAIN-ORDERS. Louis C. Guss, Leslie, Mich. Filed July 10, 1902. Renewed Mar. 8, 1902. Serial No. 97,262. (No model.)

Claim.—1. In a holder for train-order sheets, a main or carrying frame composed of a closed bottom, an open top, and side pieces, each side piece having a channel or groove on its inner face, a slide consisting of two transparent plates and a binding or protecting strip inclosing each plate and furnishing a separation for the plates to form a receptacle between them, protected when the slide is inserted in the main frame, to receive and retain a train-order for the order to be visible and readable through the transparent plates, and means for pivotally supporting, locking and retaining the main or carrying frame in the position for reading the order, substantially as described.

2. In a holder for train-orders, a main or carrying frame composed of a closed bottom, an open top, and side pieces, each side piece having a channel or groove on its inner face, two transparent plates, each having side and end binding-pieces or protecting-strips, separating the plates when placed side by side and inserted in the channel or groove of the main-frame side pieces, for the transparent plates to have a space between them, for receiving and retaining train-orders therein, for the orders to be visible and readable through the transparent plates, and means for pivotally securing and holding the main frame in position for the orders to be readable when held in position between the transparent plates, substantially as described.

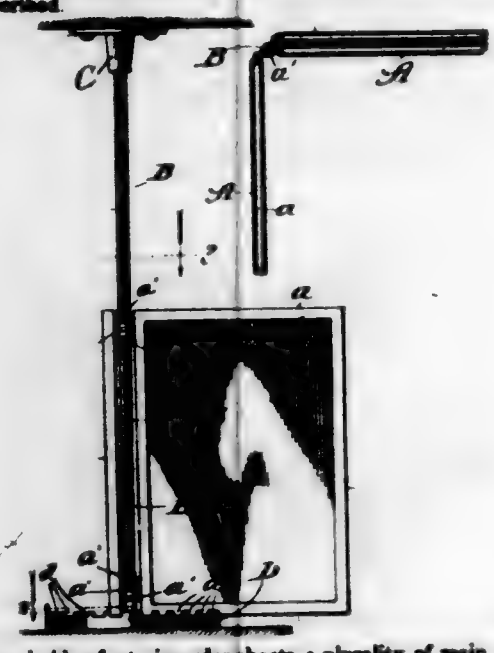

3. In a holder for train-order sheets, a plurality of main or carrying frames, each composed of a closed bottom, an open top, and side pieces, each side piece having a channel or groove on its inner face, two transparent protecting-plates, each plate having a binding strip or piece on each side edge, separating the plates and leaving a space between them when placed side by side and entered into the grooves or channels of the main frame, for the space to form a receptacle for the insertion and retention of train-orders, for such orders to be readable through the plates, a supporting-bracket, a vertical post on the supporting-bracket having the main or carrying frame pivotally directed thereto, and fixed notches in the supporting-brackets receiving the lower edges of the main or carrying frames and holding such frames in position for reading the orders, substantially as described.

710,266. AEROPLANE. Theodore Sinor, Clarksville, Texas. Filed Apr. 24, 1901. Serial No. 57,228. (No model.)

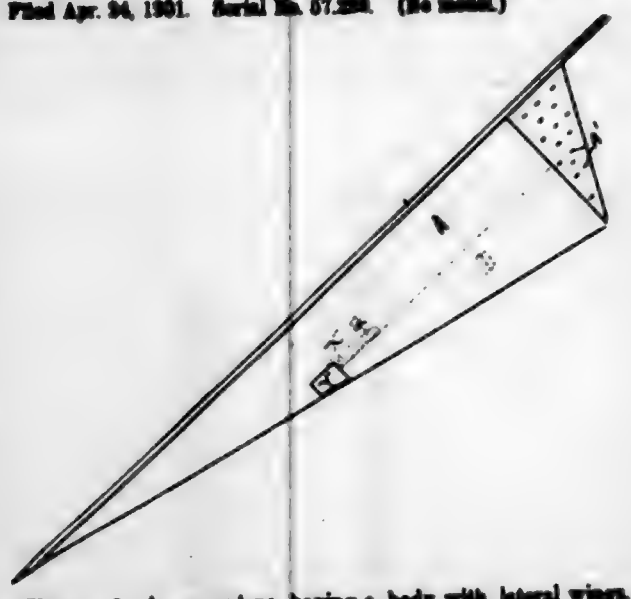

Claim.—1. An aeroplane having a body with lateral wings, said wings having openings for the discharge of motive fluid to operate by reaction.

2. An aeroplane, having a body with lateral wings, a motive-fluid supply, and pipes leading therefrom to discharge-outlets in different sections of the aeroplane, and valves in the pipes to control the discharge of motive fluid from the different sections, as and for the purpose described.

3. An aeroplane, having a body with lateral wings, discharge-outlets in sections, in the wings, a motive-fluid supply and valved pipes leading from the latter to the different sections of discharge, as and for the purpose described.

710,267. APPARATUS FOR TRAINING HORSES. ALOIS GRAF, Stuttgart, Germany. Filed Feb. 15, 1902. Serial No. 94,579. (No model.)

Claim.—1. In a training apparatus for horses, the combination with a saddle-like frame carrying large and small winding-rollers for the bridle and training reins, a bridle-bit and snaffle connected to the bridle-reins by means of straps and rollers, substantially as and for the purposes as described.

2. In a training apparatus for horses, the combination with the driving and bridle reins of a frame 17 carrying a bridge 19 and winding-rollers 21, 22, small rollers 23, 24, arranged in same line as the large rollers, horizontal guide-rollers 25, 26, the whole for guiding the bridle and training reins, substantially and for the purpose as set forth.

3. In a training apparatus for horses the combination with bridle-reins 14, 16, snaffle 3, and bridle-bit 2, the bridle-reins being connected to the snaffle and bridle bit, and a connection 9 connecting the lower ends of the side arms of the bridle-bit, for the purpose substantially as described.

4. The combination with the bridle, its curb and snaffle bits and a saddle-like support, of a strap extending from the upper end of the curb-bit at one side around to the snaffle at the opposite side, a second strap extending from the lower end of the curb-bit around to the other side of the snaffle, and bridle-reins secured at one end to said support and in running connection between their ends with the said straps; substantially as described.

5. A training apparatus, comprising a bridle having curb and snaffle bits, a saddle-like support provided with a pair of differential winding-pulleys, a strap extending from the upper end of the curb-bit at the off side, around to the snaffle at the near side, a second strap extending from the lower end of the curb-bit around to the off side of the snaffle, bridle-reins extending from the smaller pulleys forward to a running connection with the said two straps and thence rearwardly to the said support to which they are fixed and driving-reins wound on the larger pulleys.

6. The combination with the bridle and a saddle-like support, provided with a pair of differential pulleys, of the bridle-reins wound at one end on the smaller pulleys and the driving-reins wound on the larger pulleys; substantially as described.

7. In a training apparatus, the combination with the bridle and driving reins of the saddle-like support, comprising a horizontal bar, a pair of vertically-disposed differential pulleys thereon for the driving and bridle reins, supporting-rods for the pulleys having eyes at their upper ends, and spring arms or pins secured to the middle of the bar with their outer ends passing through said eyes; substantially as described.

8. In a training apparatus, the combination with the bridle and driving reins of the saddle-like support, comprising the horizontal bar, the vertically-disposed pair of differential pulleys thereon for the bridle and driving reins, and a frame secured to the said bar and curved around the driving-rein pulleys to hold the reins from displacement; substantially as described.

9. In a training apparatus, the combination with the bridle and driving reins of the saddle-like frame having a horizontal bar provided with recesses at opposite sides of its middle, a pair of differential winding-pulleys mounted thereon for the driving and bridle reins, and guide-rollers in advance of the lower smaller winding-pulleys; substantially as described.

710,268. FOLDING BED. CLAYTON M. HAMILTON, Boston, Mass., assignor to William H. Davis, Boston, Mass. Filed Nov. 15, 1901. Serial No. 82,488. (No model.)

Claim.—A bed having its wall end weighted and provided with lateral projections adapted to support said wall end; a framework attached to a fixed base and supporting slotted bars pivoted at or near their centers, and adapted to receive the said lateral projections, whereby the bed may be moved forth and back so as to place its weight at either side of the supporting-framework, and the said slotted bars, substantially as and for the purpose set forth.

710,268.

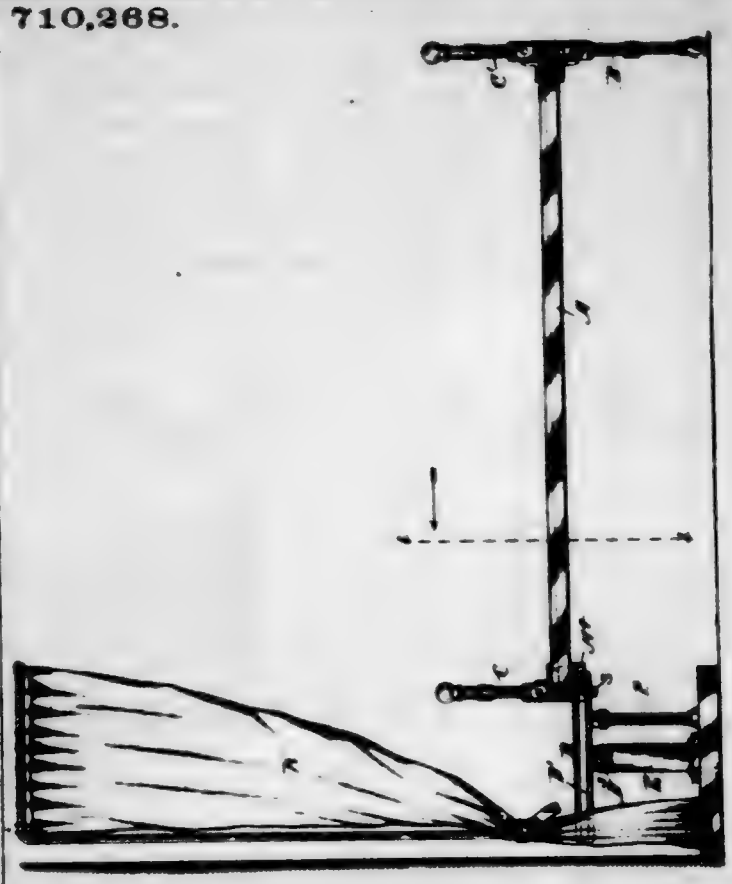

710,269. FOUNTAIN-COMB. JULIAN R. HARRISON, Barnwell, S. C., assignor of one-half to John M. Easterling and James R. Easterling, Barnwell, S. C. Filed Mar. 10, 1902. Serial No. 97,471. (No model.)

Claim.—1. A fountain-comb, comprising a chambered body, a normally open vent in communication with the chamber of said body, a number of hollow teeth communicating with said chamber of the body and each provided near its lower end with an internal valve-seat, hollow plugs secured in the upper part of the teeth and allowing liquid to pass freely from said chamber of the body to the teeth, valves arranged in the lower parts of the hollow teeth to fit said seats therein and having stems extending through said seats and beyond the ends of the teeth, and springs seated against the plugs and the valves.

2. A fountain-comb, comprising a chambered body, a normally open vent in communication with the chamber of said body, a number of hollow teeth extending therefrom, hollow plugs screwed adjustably in said teeth and each having a solid contracted portion depending below the hollow body of the plug, springs fitted to said contracted portions of the plugs and held in place thereby without interrupting the flow of liquid from the chambered body to the teeth, and valves normally held to their seats by the springs and provided with projecting pins or stems.

3. A fountain-comb, comprising a chambered body having on its under side a rib formed with threaded apertures, a normally open vent in communication with the chamber of said body, a number of hollow teeth each having an interiorly and exteriorly threaded nipple which is screwed into one of the apertures of said rib, valve-seats near the lower ends of the teeth, hollow plugs screwed adjustably into the nipples of the teeth and located at the upper ends thereof, valves having stems and adapted to said seats, and springs arranged between and engaging with the valves and the plugs.

710,270. ELECTRIC SWITCH. FREDERICK H. KEARSLEY, St. Austell, England. Filed Jan. 21, 1901. Serial No. 44,184. (No model.)

Claim.—1. An electric switch consisting of the combination of a base-board, four circuit-terminals arranged thereon, two pivots mounted thereon, two levers pivoted on said two pivots, one arm of each lever being in the form of a toothed segment which is adapted to engage with the toothed segment on the other lever, connecting bridge-pieces carried by and insulated from the other arms of the levers, said connecting bridge-

pieces being adapted to make and break contact with the four circuit-terminals, a handle loosely mounted on one of the pivots of one of the pivoted levers and provided with abutments which when the handle is operated engage with said pivoted lever, lost motion between the handle and said pivoted lever being able to occur, and a spring attached at its two ends to the two pivoted levers in such a way that when the switch is closed the spring is inoperative, being on a dead-center, but when the switch is being opened by means of the handle the spring actuates the levers and produces quick breaks at the circuit-terminals and finally maintains the pivoted levers in their open position, substantially as described.

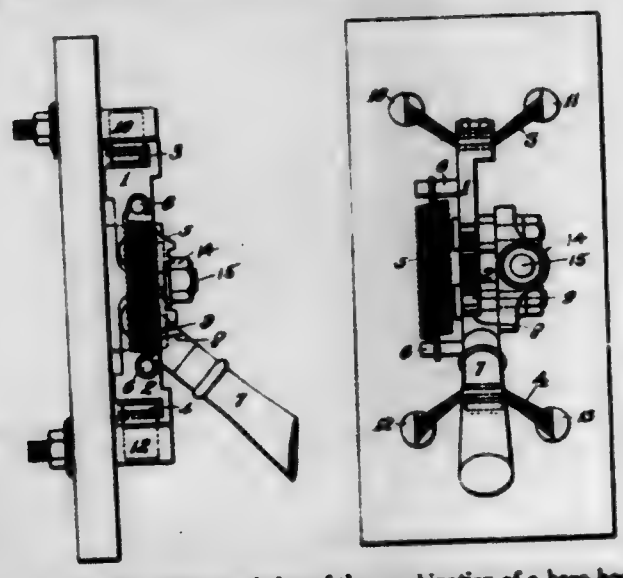

2. An electric switch consisting of the combination of a base-board, four circuit-terminals arranged thereon, two pivots mounted thereon, two levers pivoted on said two pivots, one arm of each lever being in the form of a toothed segment which is adapted to engage with the toothed segment on the other lever, connecting bridge-pieces carried by and insulated from the other arms of the levers, said connecting bridge-pieces being adapted to make and break contact with the four circuit-terminals, a handle loosely mounted on one of the pivots of one of the pivoted levers and provided with abutments which when the handle is operated engage with said pivoted lever, lost motion between the handle and said pivoted lever being able to occur, a spring attached at its two ends to the two pivoted levers in such a way that when the switch is closed the spring is inoperative, being on a dead-center, but when the switch is being opened by means of the handle the spring actuates the levers and produces quick breaks at the circuit-terminals and finally maintains the pivoted levers in their open position, and a releasing-nut and a bolt coacting therewith by the removal of which all the purely mechanical parts can be readily detached from the base-plate, substantially as described.

710,271. SPEED MECHANISM. JAMES S. HEATH, LAWRENCE HEATH, and ERNEST BAKEMAN, Macedon, N. Y., assignors to Bickford and Huffman Company, Macedon, N. Y., a Corporation of New York. Filed June 21, 1902. Serial No. 112,668. (No model.)

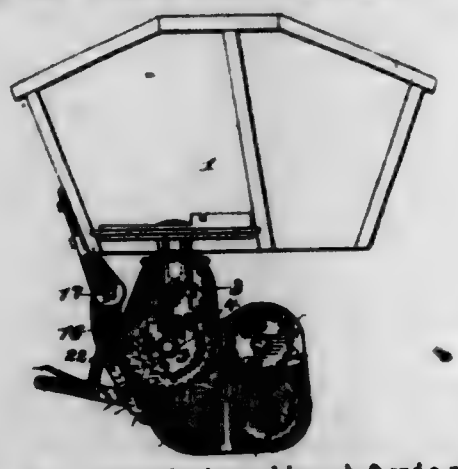

Claim.—1. In a speed mechanism, a driven shaft and a gear thereon, a frame or case supported on the driven shaft and gearing therein connected to the gear on the driven shaft, combined with a driving-shaft, a second frame or case pivotally mounted thereon, a double gear within the case and fast upon the driving-shaft, other gears within the case gearing into the double gear, and gears on the outside of the case connected to the driving-gears therein, and means for moving the case so that any one of the outside gears may be engaged with the gearing in the first-mentioned frame or case.

2. In a speed mechanism, a driven shaft and a gear thereon, a frame or case supported on the shaft and gearing therein which meshes into the gear on the driven shaft, combined with a driving-shaft, a frame or case pivotally mounted thereon, a double gear fast upon the driving-shaft within the case, and other gears located within the case and meshing into the double gear and provided with studs projecting through the case, outside gears upon the studs, and means for moving the frame or case so that any one of the outside gears may be engaged with the gearing in the first-mentioned frame or case.

3. In a speed mechanism, a driven shaft and a gear thereon, a frame or case supported upon the shaft and gearing therein which meshes into the gear on the driven shaft, combined with a driving-shaft, a second case or frame pivotally mounted thereon, a double gear upon the driving-shaft and within the case, other gears within the case meshing into the double gear, gears on the outside of the case connected to the driven gears within, and means for adjusting the case so that any one of the outside gears may be engaged with the gearing in the first-mentioned frame or case, and further means for locking the second frame or case in its adjusted position.

4. In a speed mechanism, a driven shaft and a gear thereon, a frame or case pivotally mounted on said shaft and gearing therein which meshes into the gear on the driven shaft, combined with a driving-shaft, a second case or frame pivotally mounted thereon, a double gear upon the driving-shaft and within the case, other gears within the case gearing into the double gear, gears on the outside of the case connected to the driven gears within, means for adjusting the case so that any one of the outside gears may be engaged with the gearing in the first-mentioned frame or case, and suitably-actuated means whereby the first-mentioned frame or case may be moved from its operative position.

5. In a speed mechanism, a driven shaft and gearing connected therewith, combined with a driving-shaft and a movable case or frame thereon, gearing actuated by the driving-shaft and carried by the case, a pawl pivoted to the frame to lock the case in its operative and inoperative positions, and means connected to the case controlling the pawl.

6. In a speed mechanism, a driven shaft and suitable gearing connected thereto, combined with a driving-shaft, a movable case or frame thereon, and gears connected to the driving-shaft and mounted in the case, a pawl pivoted to the frame to lock the case in its operative and inoperative positions, a handle connected to the case whereby the latter may be shifted, and a pivoted lever attached to the handle and acting to control the movements of the pawl.

7. In a speed mechanism, a driven shaft and suitable gearing connected thereto, combined with a driving-shaft, a movable case or frame thereon, gears connected to the driving-shaft and mounted in the case, the case being formed with three notches, and a spring-actuated pawl pivoted to the frame to engage the several notches whereby the case may be held in two operative and one inoperative positions, a handle attached to the case to permit of its adjustment, and a pivoted lever attached to the handle to control the movements of the pawl.

710,272. SEEDING-MACHINE. JAMES S. HEATH and ERNEST BAKEMAN, Macedon, N. Y., assignors to Bickford and Huffman Company, Macedon, N. Y., a Corporation of New York. Filed June 21, 1902. Serial No. 112,667. (No model.)

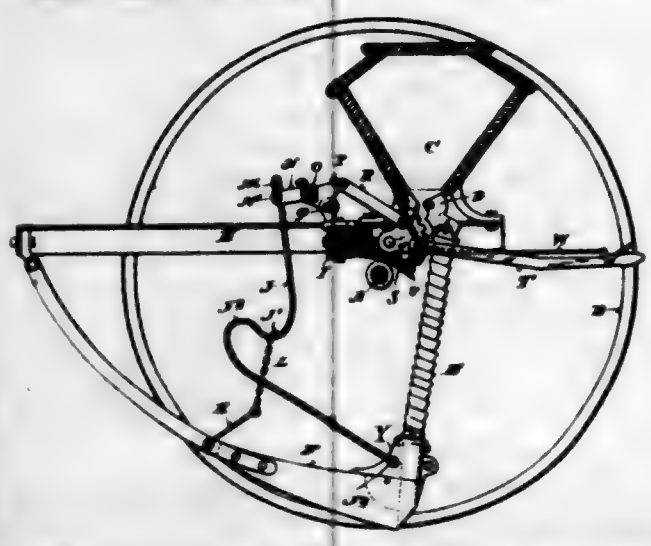

Claim.—1. In a seeding-machine, the combination of a shoe with a spring for applying pressure to the shoe, means for operating the spring, a chain attached to the spring, and a link connecting the chain and shoe, so that when the pressure of the spring upon the shoe is relieved, the spring, chain and link form a lifting connection to elevate the shoe.

2. In a seeding-machine, the combination of a shoe with a spring for applying pressure to the shoe, means for operating the spring, a chain

attached to the spring, and a link connecting the chain and the shoe, the spring being formed with a loop or eye by which it is attached to the operating means in such manner as to effect a loose connection therewith.

3. In a seeding-machine, the combination of a shoe with a spring for applying pressure to the shoe, the spring being formed with a downwardly-extending portion, a portion which curves upward and forward, and a portion which recurves downward and rearward to the point of attachment with the shoe, a connection from the vertical part of the spring to the shoe, and means for operating the spring located over its downwardly-extending portion.

4. In a seeding-machine, the combination of a shoe with a spring for applying pressure to the shoe, the spring being formed with a downwardly-extending portion, a portion which curves upward and forward, and a portion which recurves downward and rearward to the point of attachment to the shoe, and a connection from the downwardly-extending portion of the spring to the shoe, and means located above the downwardly-extending portion of the spring for operating the spring, which means are attached to the spring by means of an eye formed therein in such manner as to permit of a loose connection therewith.

5. In a seeding-machine, the combination of a shoe with a spring for applying pressure to the shoe, the said spring being formed with a downwardly-extending portion, a portion which curves upward and forward, and a portion which recurves downward and rearward to the point of connection to the shoe, a chain attached to the downwardly-extending portion of the spring, and a link attached to the chain and to the shoe, together with means for operating the spring located directly above the downwardly-extending portion.

710,273. LOCKING-BRACE FOR BUGGY-TOPS. THOMAS F. HOEER, Denver, Colo. Filed Feb. 20, 1902. Serial No. 94,965. (No model.)

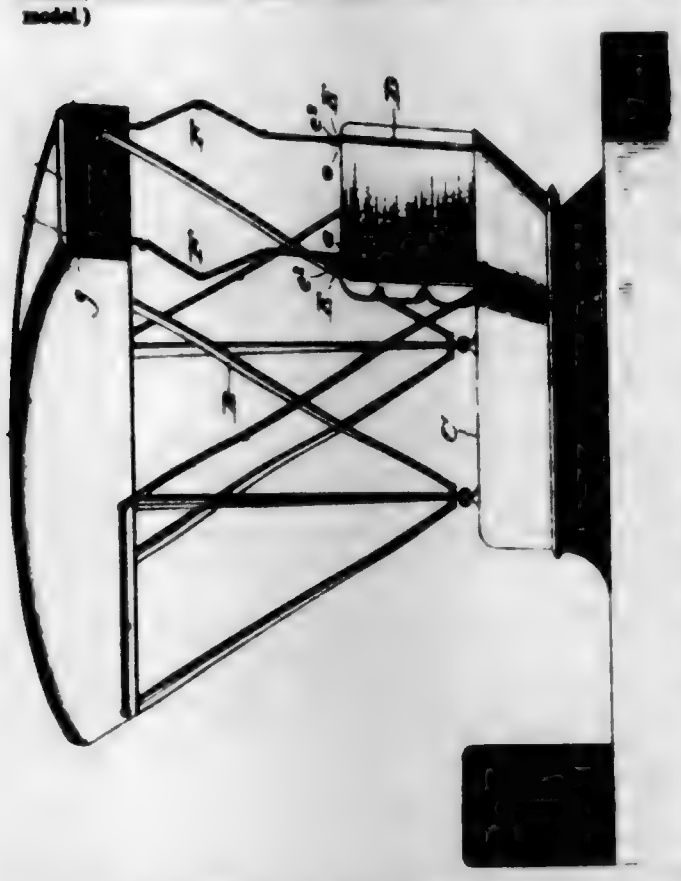

Claim.—1. The combination with the seat-back and rear bow of a buggy of clips secured to the same, jointed rods connecting the said clips and pivotally engaging the same, the said rods operating to hold the buggy-top in its lowered position and prevent jolting of the same during the movement of the said buggy, and springs carried by the clips which contact with the lowered end of the brace-rods, and assist in holding them in this braced position, substantially as shown.

2. In a buggy, the combination with the rear bow and seat-back of clips secured to the same; rods pivotally secured at their ends to the said clips so as to connect them, the said rods being made up of sections which are connected by hinge-joints which break in opposite directions the object of the rods being to hold the buggy-top in its lowered position and prevent jolting of the same during the movement of the said buggy, and springs secured in recesses formed in the clips which are attached to the seat-back, the said spring contacting with the lower ends of the said brace-rods, so as to assist in holding them in their braced position, substantially as shown.

3. In a buggy, the combination with the seat-back and rear bow, of clips secured thereto; rods pivotally attached at one end, to the clip secured to the seat-back and at their other end to the corresponding clip, attached to the bow; the said rods being made in sections which are connected by lock or knuckle joints which break in opposite directions, the length of said rods when extended being greater than the distance between the seat-back and rear bow when the top is raised, but substantially equal to the distance between these points, when the top is lowered, the said rods when locked in their extended positions serving to hold the buggy-top lowered and prevent any upward jolting or sidewise movements of the same during the movement of the buggy, and springs secured in recesses formed in the upper end of the seat-strap clip, which bear upon the lower ends of the brace-rods, and assist in holding them in their braced position, substantially as shown.

710,274. TIRE FOR WHEELS. EVERETT HORTON, Bristol, Conn. Filed May 28, 1902. Serial No. 109,313. (No model.)

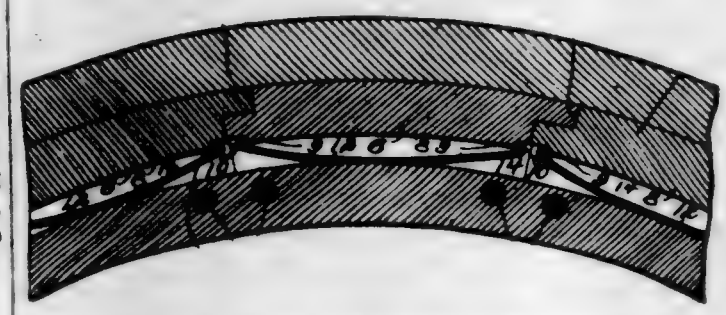

Claim.—1. In a resilient tire for wheels, the combination, with an inner rim, of a segmental rim composed of segments having longitudinal ribs and grooves on their sides; springs interposed between said rims; and plates carried by the inner rim, and having flanges fitting over the ribs formed upon the segmental rim and entering the longitudinal grooves thereof.

2. In a tire or rim for wheels, the combination with an outer rim, composed of segments having grooves and ribs on their sides, of an inner rim; springs between said rims; plates carried by the inner rim and having flanges which fit over the ribs of the outer rim and enter the grooves thereof, and a tire placed over the outer rim.

3. In a tire or rim for wheels, the combination, with a segmental rim having longitudinal grooves in the side of each segment thereof, of an inner rim; plates secured to said inner rim and having flanges which enter said grooves and are limited in movement by the walls thereof; and springs secured to the segments and located between the segmental rim and the inner rim.

4. In a tire or rim for wheels, the combination, with a series of longitudinally-grooved segments united by overlapping joints, of springs carried by each of said segments; an inner rim against which said springs bear; and plates secured to the inner rim and having flanges entering the grooves of the segments and limited in their movement by the walls of said grooves.

5. In a wheel, the combination, with a felly, of flanged plates secured to said felly; a series of segments having end projections and longitudinal grooves; springs carried by said segments and bearing against the felly; and a resilient tire surrounding the segments.

6. In a wheel, the combination, with the felly thereof, of plates having inwardly-projecting flanges, interlocking segments having grooves to receive said flanges; bow-springs carried by said plates, and bearing against the felly; and a tire surrounding said segments.

7. In a wheel, the combination, with the felly thereof; of plates having inwardly-projecting flanges secured to said felley; longitudinally-grooved, interlocking segments having undercut projections; bow-springs having flanges engaging said projections; and a tire surrounding said segments.

710,275. LIFE-PRESERVER. CHARLES HUEY, Belfast, Ireland. Filed Nov. 15, 1901. Serial No. 82,264. (No model.)

Claim.—1. In a life-preserver, the combination of a plurality of rubber tubes packed with granulated cork, means for hermetically closing said tubes, a canvas sheath for each rubber tube, a waist-belt above and below which said sheathed tubes are attached in rows, loops upon the lower extremities of the lower row of said canvas-sheathed tubes, a cord passing through said loops and adapted to be tied together at its ends to bind the said tubes around the wearer, loops on the upper extremities of the front and back members of said upper sheathed tubes, and a cord adapted to pass through said loops and over the shoulders of the wearer, whereby said tubes may be bound around the chest and sides of the wearer; substantially as described.

2. In a life-preserver, the combination of a plurality of rubber tubes

packed with granulated cork, means for hermetically closing said tubes, a separate canvas sheath for each rubber tube, a waist-belt to which said canvas-covered tubes are attached separately in two rows, one row above and one row below said belt, and releasable means for binding the ends of said tubes around the body of the wearer; substantially as described.

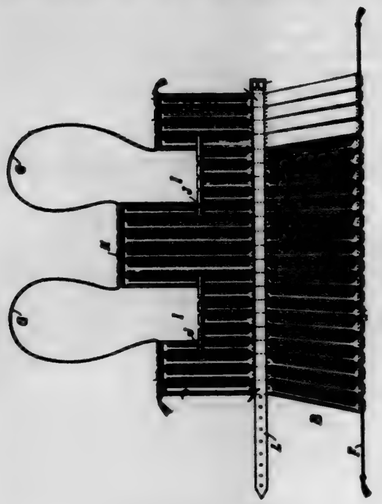

710,276. BURNER. JOHN L. JONES, Jr., Dallas, Tex. Filed Mar. 14, 1902. Serial No. 98,181. (No model.)

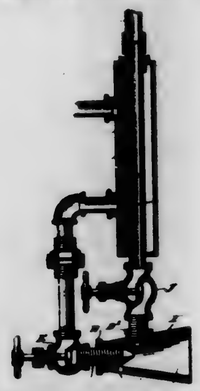

Claim.—1. A hydrocarbon-burner, comprising a conical shell having its large end open and provided with an air-inlet near its small end, said shell being arranged in front of and adjacent to an opening in the combustion-chamber of a boiler, a drum arranged above the shell, a pipe leading from the drum to the steam-compartment of the boiler, an oil-pipe extending through the drum and having a downwardly-inclined opening therein, a valve connected with the lower end of the oil-pipe, an adjustable oil-nozzle secured to the valve-casing and projecting into the conical shell through one side thereof, an adjustable steam-nozzle projecting into the shell through the small end of said shell and beyond the air-inlet of the same, a valve, to the casing of which the steam-nozzle is secured, and a pipe leading from the valve-casing to the lower portion of the drum, substantially as herein shown and described.

2. A hydrocarbon-burner, comprising a conical shell having its large end open and provided with an air-opening in one side near its small end, a steam-drum, an oil-pipe extending through the drum and provided with an opening within the drum for the entrance of steam, a valve secured to the lower end of the oil-pipe, an oil-nozzle secured to the valve-casing and projecting into the shell through one side thereof, a steam-nozzle projecting through the small end of the shell and extending into the same beyond the air-opening thereof and to within a short distance of oil-nozzle, a valve, to the casing of which the outer end of the steam-nozzle is secured, and a pipe leading from the valve-casing to the lower part of the steam-drum, as set forth.

3. A hydrocarbon-burner, comprising a shell having an air-inlet, a steam-nozzle projecting into the shell beyond the air-inlet, an oil-nozzle also projecting into the shell and standing at an angle to the steam-nozzle, a heater having a drum connected with a steam-supply and with the said steam-nozzle, and an oil-tube extending through the said drum and connected at one end with an oil-supply and at the other end with the said oil-nozzle, the said oil-tube having a steam-inlet within the said drum and opposite the steam-entrance thereto, to allow steam to pass from the latter into the oil-tube, as set forth.

4. A hydrocarbon-burner, comprising a shell having an air-inlet, a steam-nozzle projecting into the shell beyond the air-inlet, an oil-nozzle also projecting into the shell and standing at an angle to the steam-nozzle, a heater having a drum connected with a steam-supply and with the said steam-nozzle, and an oil-tube extending through the said drum, connected at one end with an oil-supply and at the other end with the said oil-nozzle, the said oil-tube having a steam-inlet within the said drum, to allow steam to pass from the latter into the oil-tube, the said inlet being inclined in an inward and downward direction, as set forth.

710,277. WIND-TURBINE. JOSEPH KAISER, Columbus, Ohio. Filed July 13, 1901. Serial No. 68,220. (No model.)

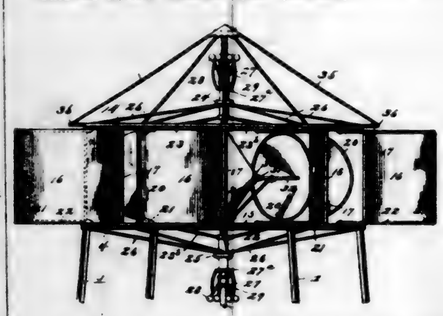

Claim.—1. A wind-turbine comprising a supporting stand or tower, a frame including a ring mounted thereon, cup-shaped blades mounted and spaced apart upon the said ring, a vertical shaft upon which the said ring is mounted, and hinged gathering-wings carried by the turbine-frame and adapted to extend outward therefrom so as to direct the air-currents to the blades.

2. A wind-turbine comprising a supporting stand or tower, a cylindrical rotary frame mounted thereon, blades mounted within said frame, hinged gathering-wings carried by the turbine-frame, and adapted to extend outward therefrom, an oscillatory ring, links interposed between said ring and the gathering-wings, a governor connected with the said turbine, and operative connections between the said governor and ring for automatically controlling the gathering-wings.

3. A wind-turbine comprising a suitable stand or tower, a turbine-frame rotatably mounted thereon, a vertical shaft on which said turbine-frame is fastened, a series of blades mounted within the turbine-frame, gathering-wings hinged to the frame and adapted to project outward therefrom, an oscillatory ring, links interposed between said ring and gathering-wings, pivoted governor-arms mounted on said shaft, and means for rotating the said ring through the medium of the said governor-arms.

4. A wind-turbine comprising a suitable stand or tower, a rotatable turbine-frame mounted thereon, a vertical rotary shaft on which the turbine-frame is fastened, blades within the turbine-frame, gathering-wings hinged to the frame, an oscillatory ring, links connecting the gathering-wings with said ring, governor-arms mounted on the shaft, runners on the shaft, links connecting said runners with the governor-arms, means for preventing rotary movement of said runners, and connecting-rods interposed between said runners and oscillatory ring.

5. A wind-turbine comprising a suitable stand or tower, a rotary turbine-frame mounted thereon, curved gathering-wings hinged to said frame and projecting outward therefrom, cup-shaped blades mounted within the turbine-frame, cuffs extending from the apex of the blades, an annular brace and spacing-ring adapted to pass through each cuff of the several blades, and means for folding the gathering-wings.

6. A wind-turbine comprising a supporting stand or tower, a cylindrical turbine-frame rotatably mounted thereon, a vertical shaft on which the turbine-frame is fastened, cup-shaped blades mounted within the frame, gathering-wings hinged to the frame, and adapted to project outward therefrom, a pair of oscillatory rings mounted above and below the said cup-shaped blades, link connections between the said rings and gathering-wings, governor-arms fixed to the said shaft above and below the turbine and operative connections between the said governor-arms and oscillatory rings for automatically opening and closing the gathering-wings.

7. A wind-turbine comprising a supporting stand or tower, a cylindrical turbine-frame rotatably mounted thereon, cup-shaped blades mounted within the frame, curved gathering-wings hinged to the frame and adapted to project outward therefrom, said wings being described on the same arc of a circle as the outer portion of the turbine-frame, an oscillatory ring, links interposed between said ring and the gathering-wings, and means controlled by the wind for oscillating said ring.

8. A wind-turbine comprising a suitable stand or tower, a rotatable turbine-frame mounted thereon, a vertical rotary shaft on which the turbine-frame is fastened, a series of cup-shaped blades within the turbine-frame, a corresponding series of gathering-wings hinged to the frame, an oscillatory ring, links connecting the gathering-wings with said ring, governor-arms mounted on the shaft, runners on the shaft operated by the governor-arms, and connecting-rods interposed between said runners and oscillatory ring.

9. A wind-turbine comprising a stand or tower, a turbine-frame rotatably mounted thereon, gathering-wings hinged to the turbine-frame, means for automatically swinging said wings, hollow conical blades rigidly mounted within the turbine-frame and arranged approximately in radial alinement with the inner ends of the gathering-wings, cuffs applied to the vertices of said blades, and an annular brace and spacing-ring passing through the cuffs of the several blades.

710,278. ELECTRIC BATTERY. TEREE H. ELLIKER, Jr., and RICHARD GABRIELSKY, Jersey City, N. J. Filed Apr. 5, 1902. Serial No. 101,605. (No model.)

Claim.—1. In an electric battery the combination of an inclosure, a positive electrode having upwardly-projecting tubular members rising from a bottom thereof, a chambered negative electrode suspended in the center between the upwardly-projecting members of the positive electrode, and an exciting-filling in contact with the said electrodes.

2. In a battery, the combination of an inclosure, a positive electrode having upwardly-projecting members provided with conduits accessible from the exterior, a negative electrode having a chamber with lower outlets and an upper inlet, and an exciting-filling engaging the said electrodes.

3. In a battery, the combination of an inclosure, a positive electrode disposed therein and having opposite side members projecting above the top of the inclosure and provided with conduits open at the bottom and normally closed at their upper ends, a negative electrode having a chamber therein with an upper inlet and lower outlet at different elevations, the said negative electrode being suspended between the opposite portions of the positive electrode, and an exciting-filling engaging the said electrodes.

710,279. BILLIARD-CUE. WILLIAM H. LAMB, Ithaca, N. Y. Filed Feb. 24, 1902. Serial No. 95,328. (No model.)

Claim.—1. A cue having one end formed with a lengthwise groove, a sleeve fitting said end of the cue and having a groove alined with the former groove, a tip, and prongs secured to the tip and inserted in the alined grooves for locking the sleeve and tip to the body of the cue.

2. A cue having a reduced end provided with lengthwise grooves in its periphery, a sleeve fitting the reduced end and having lengthwise grooves on its inner face alined with the former grooves, a tip and prongs secured to the tip and inserted in the grooves for the purpose described.

3. A cue having one end reduced in diameter and formed with lengthwise grooves, a sleeve having a socket in one end and its other end closed, the walls of the socket being formed with lengthwise grooves alined with the former grooves and the closed end of the sleeve having apertures alined with the latter grooves, a tip and prongs secured to the tip and inserted in the apertures and grooves for the purpose described.

4. A cue comprising a main body having a reduced end provided with lengthwise grooves in its periphery, a sleeve or cap having one end formed with a socket and its other end closed the walls of the socket having lengthwise grooves alined with the former grooves, and the closed end being provided with apertures alined with the latter grooves, a tip having sockets with lateral offsets extending inwardly from its inner face, prongs having lateral shoulders inserted in said sockets and lateral offsets, a washer having apertures for receiving the prongs, said prongs being inserted in the apertures of the sleeve and also in the grooves of the sleeve and said reduced portion of the cue for the purpose described.

5. A billiard-cue comprising a main body having a reduced end for forming an abutting face, said reduced end being provided with lengthwise grooves in its periphery, a sleeve or cap having one end closed and its other end provided with a socket of substantially the same length as said reduced portion whereby the end face of the sleeve abuts against said abutting face and the end wall of the socket abuts against the end of said reduced portion, the walls of the socket being provided with lengthwise grooves alined with the former grooves and the closed end of the sleeve or cap being formed with apertures alined with said grooves, prongs inserted in the grooves and a tip secured to the prongs for the purpose described.

710,280. CREAM-ELEVATOR. ANDERS P. LAURSEN, Centerpoint, S. D. Filed Apr. 2, 1902. Serial No. 101,081. (No model.)

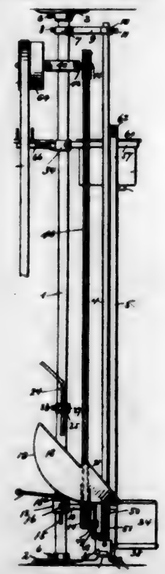

Claim.—1. The combination of a column or upright, a sleeve mounted upon the same near its lower end, a rod vertically adjustable in said sleeve and having a laterally-extending arm, a tank mounted tiltingly upon said arm and having excess of weight in its receiving end, and means for supporting the said tank normally in an approximately horizontal position, substantially as set forth.

2. The combination with the supporting-arm extending laterally from a vertically-adjustable rod, of the receiving-tank, a tubular bearing secured transversely across the bottom of said tank whereby it is mounted tiltingly upon the supporting-arm, and means secured to the vertically-

adjustable rod for supporting the tank normally in approximately horizontal position, substantially as set forth.

3. The tilting receiving-tank having on its rear side a pair of parallel horizontal flanges, the lower extending beyond the upper of said flanges, in combination with the vertically-reciprocating carrier, a bracket attached to said carrier, a roller journaled to said bracket and adapted to engage the flanges of the tilting tank, means for supporting the tank and carrier, and means for imparting to the latter a vertically-reciprocating motion, substantially as set forth.

4. The combination of the tilting receiving-tank, the vertically-reciprocating carrier, means attached to the latter for operating the receiving-tank, an arm extending laterally from the carrier, the elevator-bucket mounted tiltingly upon the said arm, the discharge-tank located near the upper limit of the movement of the carrier, the guide-rod terminating at its upper end in a gooseneck connected rigidly with the support of the discharge-tank, and suitable supporting and operating means, substantially as set forth.

5. The combination of the vertically-reciprocating carrier, an arm extending laterally from the same, the elevator-bucket mounted tiltingly upon said arm and having excess of weight in its receiving end, the rollers journaled upon pins extending laterally from said bucket, one below and in rear of the other, the vertical guide-rod engaging between said rollers and terminating in a gooseneck at its upper end, the tilting receiving-tank, the discharge-tank, a supporting-hoop for the latter, a rigid connection between said supporting-hoop and the gooseneck at the upper end of the guide-rod, and suitable supporting and operating means, substantially as and for the purpose set forth.

710,281. SHINGLING CARRIAGE AND GAGE. FRANK C. LEEK, Surrey, Ind. Filed Feb. 26, 1902. Serial No. 96,721. (No model.)

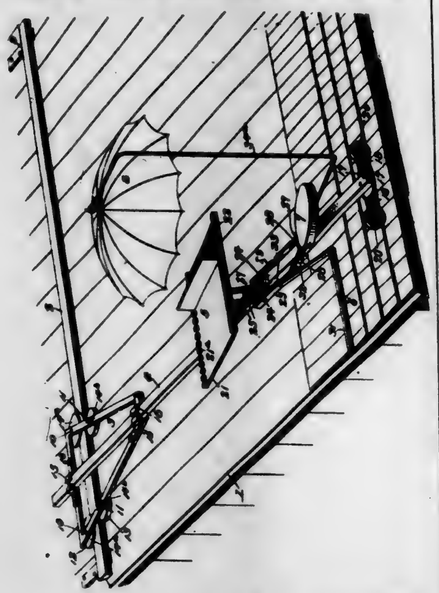

Claim.—1. The combination with a rail, of a carriage mounted thereon, an arm adjustably secured to the carriage, a supporting-bracket adjustably secured to the arm and carrying a shingle-bracket and a seat, and a gage.

2. The combination with a rail, of a carriage mounted thereon, pivoted and rigid jaws upon the carriage, an arm adjustably secured to the carriage through the medium of the jaws, a supporting-bracket adjustably mounted upon the arm and carrying a shingle-bracket and a seat, and a gage adjustably secured to the bracket.

3. The combination with a rail, of a carriage mounted thereon, an arm adjustably mounted upon the carriage, a supporting-bracket carrying upon one end a shingle-bracket, and on the opposite end a bolt, a U-shaped bracket fulcrumed upon the bolt placing the connecting-bar thereof upon the under side of the arm, a seat carried by the free ends of the last-mentioned bracket, causing the bolt and connecting-bar to bind the arm adjustably securing the seat and shingle-bracket thereon, and a gage adjustably secured upon the carrying-bracket.

4. The combination with a rail, of a carriage mounted thereon, rigid and pivoted jaws on the carriage, an arm adjustably mounted upon the carriage through the medium of the jaws, a trunk secured to the lower end of the arm, a supporting-bracket provided with a plurality of slots, and a gage having a shank with oppositely-disposed flanges and adapted to fit in one of said slots.

5. The combination with a rail having one edge thereof inclined and means for securing the rail in applied position, of a carriage having depending from the under side thereof pintles, rollers journaled upon the pintles, some of which are conical in form and provided with guards, of an arm adjustably secured to the carriage, and a supporting-bracket adjustably secured to the arm and carrying a shingle-bracket and a seat.

6. The combination with an arm, of a supporting-bracket carrying a shingle-bracket and seat, and adjustably secured to the arm, and a gage adjustably secured to the supporting-bracket and movable therewith.

7. In a shingling device, the combination of a supporting-rail having a beveled edge, and a carriage for adjustably holding parts of the device provided with depending rollers, a part of the latter being beveled correspondingly to the rail edge and having guards.

8. In a shingling device, the combination with an adjustable arm, of a bracket and seat adjustably mounted in the arm, and an angle-gage adjustably mounted in the bracket.

710,282. INSULATOR. EDWIN LEFEVER, Climax, Ohio. Filed Mar. 29, 1902. Serial No. 100,801. (No model.)

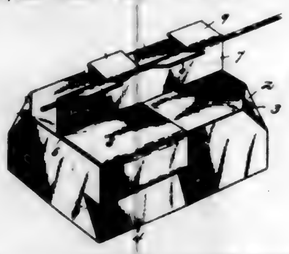

Claim.—1. In a device of the class set forth, the combination of a body, and a support fastened to the body and having an upstanding member provided with tongues adapted to be bent in reverse direction over a feeder or conducting wire.

2. In a device of the class set forth, the combination of a body having recesses in opposite sides, and a support provided with securing-flanges at opposite extremities projecting in reverse directions and having portions engaging the said recesses, the support also having wire-holding means.

3. In a device of the class set forth, the combination of a body, and a support secured on the body and provided with an upstanding member having tongues adapted to alternately bend in reverse direction to hold a feeder or conducting wire.

4. A device of the class set forth having a wire, fastening means comprising an upstanding member with tongues adapted to be alternately bent in reverse directions to hold a feeder or conducting wire.

710,288. CAR-COUPLING. WATSON S. LEMMON, Tucson, Ariz. Filed May 8, 1902. Serial No. 106,394. (No model.)

Claim.—1. A car-coupling of the character described, comprising in combination, a draw-head, a pivoted knuckle, detachably mounted on the draw-head, a gravity-drop supported and endwise movable on the draw-head and normally in position to automatically drop in front of the knuckle, when the latter is swung into a closed position to its limit, said knuckle having a locking-seat to receive the gravity-drop and arrest its downward movement, when the knuckle is swung partially back, when

on curves; and detachably-mounted means for limiting the outward swing of the knuckle, all being arranged substantially as shown and described.

2. In a car-coupling of the character described, the combination with a draw-head, having a pair of projecting ears to receive the pivotal portion of the knuckle, said ears having each a segmental shoulder about the axial point, whose terminals are cut in planes at right angles to each other; of a knuckle having slotways in its upper and lower faces, whereby the knuckle, when adjusted to its open position, can be slipped between the projecting ears, said slotways having semicircular bearings to coöperate with the aforesaid segmental shoulders, substantially as shown and described.

3. In a car-coupling of the character described, the combination with a draw-head, having a pair of projecting ears to receive the pivotal portion of the knuckle, said ears having each a segmental shoulder about the axial point, whose terminals are cut in planes at right angles to each other; of a knuckle having slotways in its upper and lower faces, whereby the knuckle, when adjusted to its open position, can be slipped between the projecting ears, said slotways having semicircular bearings to coöperate with the aforesaid segmental shoulders, and means for limiting the outward swing of the knuckle detachably mounted on the draw-head, all being arranged substantially as shown and for the purposes described.

710,284. OVEN OR FURNACE. JOHN W. LEWELLEN, Philadelphia, Pa. Filed Nov. 12, 1900. Serial No. 36,344. (No model.)

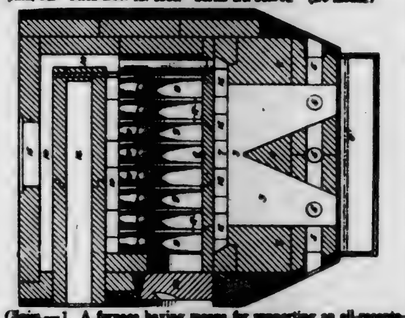

Claim.—1. A furnace having means for supporting an oil-receptacle and provided with a combustion-chamber above said supporting means, a wedge-shaped partition within said combustion-chamber, the walls of said combustion-chamber having within their lower portions lateral openings in communication with the atmosphere through which a free flow of air by natural draft is permitted into the flame as it passes outwardly through the flaring combustion-chamber, substantially as described.

2. A furnace having means for supporting an oil-receptacle and provided with a combustion-chamber above said supporting means, said chamber having openings in its bottom whereby flame from the receptacle is admitted into said chamber, a wedge-shaped partition within the combustion-chamber, said partition and also the walls of the chamber having within their lower portions lateral openings in communication with the atmosphere through which a free flow of air by a natural draft is permitted into the flame as it passes upwardly through the flaring combustion-chamber, substantially as described.

710,285. FILTER. THEODORE LEMEK, New York, N. Y. Filed Jan. 31, 1902. Serial No. 92,662. (No model.)

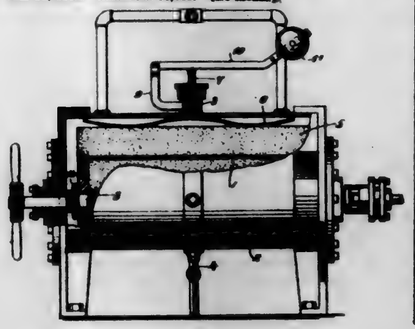

Claim.—1. In a filter comprising a filter-stone and a cleaner-stone, a pin movable in a wall of the filter-casing for pressing on said cleaner-stone, a lever engaging with the pin, and a weight on said lever, substantially as specified.

2. In a filter comprising a filter-stone, a cleaner-stone and a casing in which the stones are located, a tube attached to the outer wall of said casing, a pin movable through said tube, a plate mounted on the cleaner-stone and with which said pin engages, an arm extended from said tube, a lever pivoted to said arm, and a weight on the free end of said lever, substantially as specified.

710,286. HYDRAULIC FORGING-PRESS. HENRIK V. LOSS, Philadelphia, Pa. Filed Mar. 7, 1902. Serial No. 97,197. (No model.)

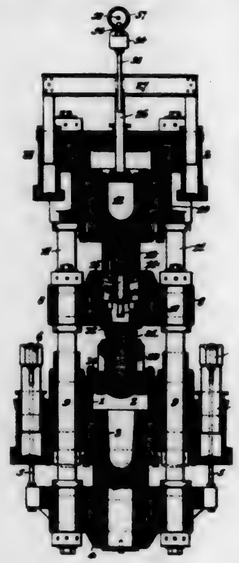

Claim.—1. A hydraulic press, having a stationary bed-plate and cylinder, a die-holder fixed to said cylinder, a plunger arranged within said cylinder, a cross-head supporting the plunger, rams to return the said cross-head and plunger, and a second cross-head arranged above said cylinder and rigidly connected to said first cross-head and moving with it, combined with a punch working in said second cross-head, and independent actuating mechanism for said punch.

2. A hydraulic forging-press, comprising essentially a stationary bed-plate and cylinder, a plunger arranged in said cylinder, a cross-head arranged below the bed-plate and carrying the plunger, means to return said cross-head, a second cross-head arranged above the bed-plate, connecting-rods having bearings in the bed-plate and uniting the cross-heads to cause them to move in unison, a die-holder arranged upon the cylinder and containing a die, and a die applied to the upper cross-head, combined with a punch working in said second cross-head and independent actuating mechanism for said punch.

3. A hydraulic forging-press, comprising essentially a stationary bed-plate and cylinder, a plunger arranged in said cylinder, a cross-head arranged below the bed-plate and carrying said plunger, means to return said cross-head, a second cross-head arranged above the bed-plate, connecting-rods having bearings in the bed-plate and uniting the cross-heads to cause them to move in unison, a die-holder fixed to the cylinder and containing a die, and a die applied to the upper cross-head, combined with a punch-plunger and a cylinder therefor arranged above the upper cross-head, a punch-holder carried by the punch-plunger and working within the upper cross-head and carrying a punch, and means to retract the punch mechanism independently of the die mechanism.

4. In a forging apparatus, a punch-stem and means to move it, combined with a punch-holder, a detachable punch end, latches pivotally suspended from said punch-holder to engage said detachable punch end, and a counterweight grooved to receive said latches, which latches have eccentric supports for said counterweight, and the counterweight serving

to hold the latches in engagement with the punch end and automatically movable to permit the said latches to free themselves from said punch end.

5. In a forging apparatus, a movable bottom die, combined with a stripping and discharging device, comprising a gated passage-way having a lateral discharge-chute, and a ram for coöperative with said gated passage-way to strip the blank from the die.

6. In a die forging apparatus, a movable bottom die, combined with a stripping and discharging device including a gated passage-way having a lateral discharge-chute, a ram coöperating with said passage-way to strip the blank from the die, and means to move the said die into coöperative relation with the said stripping and discharging device.

7. In a die forging and punching apparatus, having a detachable punch end, a crane for handling the punch end, having an arm provided with a spring-supported cup for carrying the punch end into position and applying it to its holder.

8. In a die forging and punching machine, a punch-plunger and means to adjust the same, comprising a cross-head to which the plunger is connected, an adjusting-screw secured to said cross-head, a nut in which the screw is arranged, a beam to receive said nut, gearing for actuating said screw, and a manual controlling device for said gearing.

710,287. PRODUCTION OF PLASTIC ARTICLES. ERNEST LOTTIER, West Hoboken, N. J. Filed Mar. 24, 1902. Serial No. 99,684. (No specimens.)

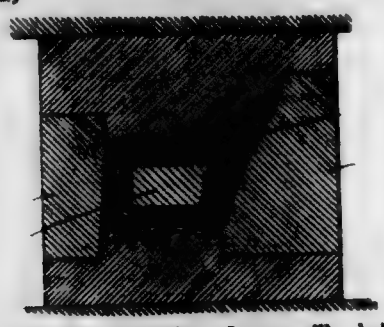

Claim.—1. An article, consisting of waste silk, shellac, and alcohol mixed together in about the proportions specified and pressed into form while subjected to heat, as set forth.

2. As a new article of manufacture, a boot or shoe heel formed of silk fiber and dissolved shellac, molded into form, as set forth.

3. As a new article of manufacture, a boot or shoe heel formed of silk fiber, shellac and alcohol in about the proportions specified, molded into form while subjected to heat, as set forth.

4. As a new article of manufacture, a boot or shoe heel formed of silk fiber and dissolved shellac, molded into form around a central wooden core, as set forth

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710,288. COMPUTING-CHART. LEITON B. MARLEY, Duluth, Minn. Filed Nov. 19, 1901. Serial No. 82,855. (No model.)

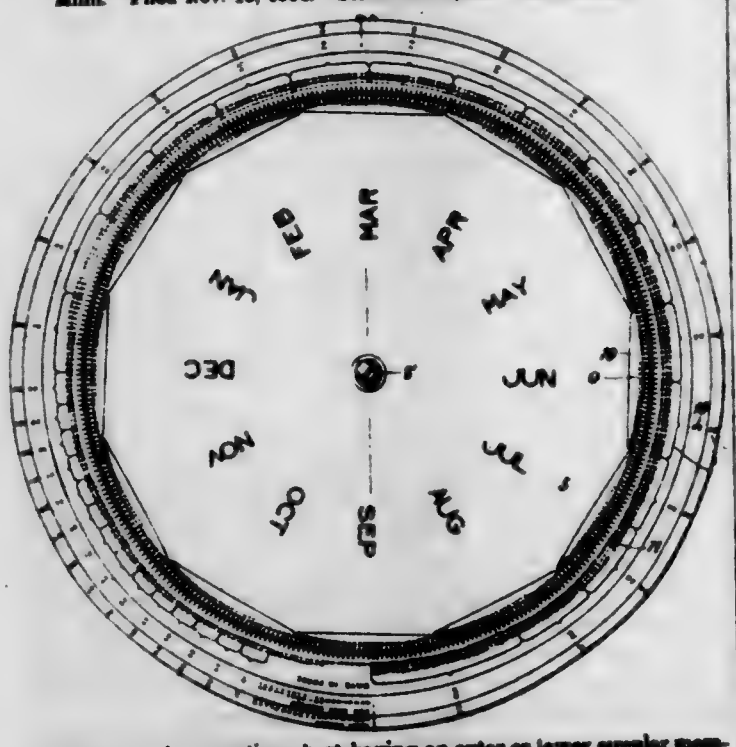

Claim.—A computing-chart having an outer or lower circular member and an upper or inner circular member movable one relatively to the other, one of said members having indicia indicating months and dates thereof and the other member having a series of consecutively-arranged numbers, a central supporting-base, a post secured on said base, a sleeve secured to the outer or lower member and mounted to turn on said post, the said sleeve extending loosely through the upper or inner member, a washer on the upper end of the sleeve and engaging a recess in the upper face of the inner member, and a headed bolt screwing into the upper end of the post, substantially as specified.

710,289. MOWER. ADOLF MAYER, Stuttgart, Germany. Filed Jan. 2, 1902. Serial No. 88,204. (No model.)

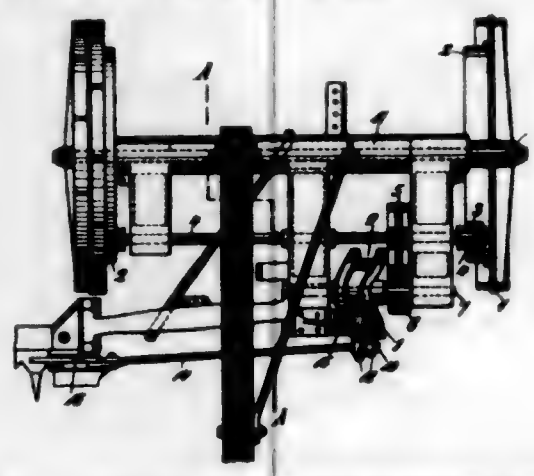

Claim.—A mowing machine comprising the horizontal frame 11, the main axle mounted in said frame and provided with the ground-wheels 1, 1, having internally-toothed gears 2, 2, on their inner sides, the shaft 4 mounted in bearings in the frame in front of the axle and provided at its ends with pinions 3, 3, meshing with the gears 2, 2, a short shaft 7, mounted in the frame in front of the shaft 4, gears 5, 6, connecting the shafts 4, 7, the bearings for all three shafts being formed by longitudinal bores through the frame, a disk on shaft 7 having a peripheral cam-groove, an arm 15 extending up from the frame, a laterally-vibrating lever pivoted at its upper end to the arm and having an antifriction-wheel between its ends working in the said cam-groove, and a connecting-rod pivotally connected at one end to the lower end of the vibrating lever and adapted at its opposite end for connection with a knife-bar; substantially as described.

710,290. RAIL-JOINT. HARRY MINCK and HENRY L. DROSTE, Richmond, Ind. Filed Feb. 7, 1902. Serial No. 92,996. (No model.)

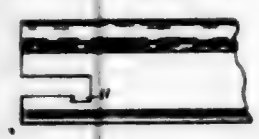

Claim.—In a rail-joint, the combination-sections A and B each provided with a slot extending inward therefrom and terminating in enlarged inclave portions, the slot in each end of each rail being adapted to receive one half of the connecting-bar 12, the other half of the connecting-bar being adapted to enter a similar slot in the opposite rail, of the connecting-bar 12 with downwardly-projecting portions 13 and 14, adapted to be inclosed by a slot in the abutting ends of two rails in combination with the rail-chair, all substantially as shown and described and for the purposes set forth.

710,291. DISPENSING APPARATUS FOR LIQUIDS. STEPHEN W. MORAN, Boston, Mass., assignor of one-half to Samuel H. Hollen, Wakefield, Mass. Filed Feb. 13, 1902. Serial No. 93,927. (No model.)

Claim.—1. In a dispensing apparatus for liquids, a receptacle containing the liquid, a source of pneumatic pressure, a main pressure-pipe from said source of pressure communicating with said receptacle above the liquid therein, a discharge-pipe from said receptacle, a discharge-faucet on said discharge-pipe, a supplemental pressure-pipe under uniform pressure with that in the main pressure-pipe, said supplemental pressure-pipe located in part above the discharge-pipe near the discharge-faucet thereon and connected to the discharge-pipe at that place from above said discharge-pipe, and a stop-cock above the discharge-pipe and within the supplemental pipe near its connection with the discharge-pipe, whereby the liquid in the discharge-pipe may be allowed to return by gravity to said receptacle by the operating of said stop-cock and the liquid be prevented from leaking into the supplemental pressure-pipe from the discharge-pipe.

2. In a dispensing apparatus for liquids, a receptacle containing the liquid, a source of pneumatic pressure, a main pressure-pipe from said source of pressure communicating with said receptacle above the liquid therein, a discharge-pipe from said receptacle, a discharge-faucet on said discharge-pipe, a supplemental pressure-pipe under uniform pressure at all

times with that in the main pressure-pipe, said supplemental pressure-pipe located in part above the discharge-pipe near the discharge-faucet thereon and connected to the discharge-pipe at that place from above said discharge-pipe, a stop-cock within the supplemental pressure-pipe near its connection with the discharge-pipe leaving a vertically-arranged passage between said stop-cock and discharge-pipe, whereby the liquid in the discharge-pipe may be allowed to return by gravity alone to the receptacle by opening said stop-cock and whereby a cushion of air will remain within said vertically-arranged passage and prevent the liquid from the discharge-pipe from connecting with said stop-cock when the stop-cock is closed.

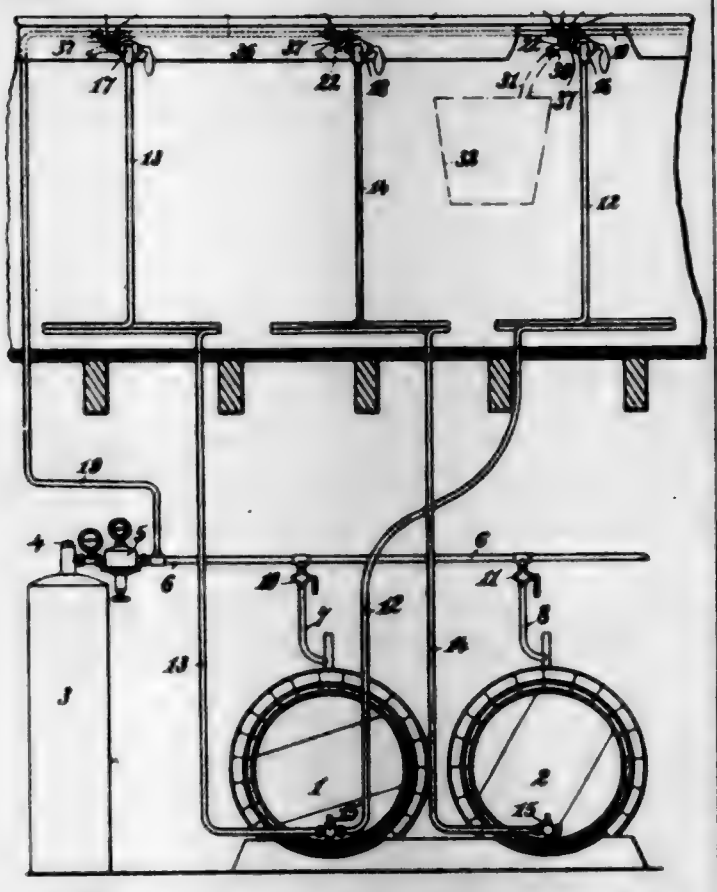

3. In a dispensing apparatus for liquids, a receptacle containing the liquid, a source of pneumatic pressure, a main pressure-pipe from said source of pressure communicating with said receptacle above the liquid therein, a discharge-pipe from said receptacle, a discharge-faucet on said discharge-pipe, a supplemental pipe under uniform pressure at all times with that in the main pressure-pipe and connected to the discharge-pipe near the discharge-faucet thereon, and a stop-cock having a contracted passage through it when opened located within the supplemental pressure-pipe near its connection with the discharge-pipe, whereby the liquid in the discharge-pipe may be allowed to return by gravity alone to said receptacle when said stop-cock is opened and its returning movement be retarded as desired by the contracted passage through said stop-cock.

4. In a dispensing apparatus for liquids, a plurality of receptacles each containing liquid, a source of pneumatic pressure, a main pressure-pipe from said source of pressure communicating with each of said receptacles above the liquid therein, discharge-pipes from receptacles, a discharge-faucet on each discharge-pipe, a supplemental pressure-pipe under uniform pressure with that in the main pressure-pipe connected to each discharge-pipe near the discharge-faucet thereon from above the highest part of said discharge-pipe, and a stop-cock in each connection between the supplemental pressure-pipe, and the discharge-pipes, whereby the liquid in each of the discharge-pipes may be allowed to return by gravity alone to its respective receptacle, independent of the liquids in the other discharge-pipes when its respective stop-cock is opened.

5. In a dispensing apparatus for liquids of the class described having a receptacle for liquid, a discharge-pipe therefrom with discharge-faucet thereon, a source of pneumatic pressure, a main pressure-pipe connected to said receptacle, and a supplemental pressure-pipe leading to the discharge-pipe near the discharge-faucet thereon; an integral casing having a tubular portion with couplings thereon to form a portion of the supplemental pressure-pipe, a tubular portion with couplings thereon to form a portion of the discharge-pipe, a duct through said casing connecting both of said tubular portions, and a stop-cock within said duct controlling said duct, said casing forming a connection between said supplemental pressure pipe and the discharge-pipe near the discharge-faucet thereon and said stop-cock allowing the liquid in the discharge-pipe of the apparatus to return by gravity to its receptacle when said stop-cock is opened.

6. In a dispensing apparatus for liquids of the class described having a receptacle for liquid, a discharge-pipe therefrom with discharge-faucet thereon, a source of pneumatic pressure, a main pressure-pipe connected to said receptacle, and a supplemental pressure-pipe leading to the discharge-pipe near the discharge-faucet thereon; an integral casing having a tubular portion with couplings thereon to form a portion of the supplemental pressure-pipe, a tubular portion with couplings thereon to form a portion of the discharge-pipe, a duct through said casing connecting both of said tubular portions, a stop-cock in said duct controlling said duct, a second duct in said casing, communicating with the first duct between the stop-cock and the tubular portion of the casing which forms a portion of the discharge-pipe, and a removable cap covering the entrance to said second duct and allowing the attachment of a hand-hose to said second duct, said casing forming a connection between said supplemental pressure-pipe and the discharge-pipe near the discharge-faucet thereon, said stop-cock allowing the liquid in the discharge-pipe of the apparatus to return by gravity to its receptacle when said stop-cock is opened, and said second duct in the casing affording means for cleansing the discharge-pipe of the apparatus.

7. In a dispensing apparatus for liquids, a receptacle for liquid, a discharge-pipe from said receptacle, a discharge-faucet on said discharge-pipe, means to force the liquid from said receptacle to said discharge-faucet, an entrance to said discharge-pipe near said discharge-faucet, a removable cap covering said entrance, means to attach a hose to said entrance, through which liquid may be admitted to said discharge-pipe to cleanse said pipe, a pressure-pipe communicating with the passage between said entrance and the discharge-pipe, and a stop-cock controlling the admission of pressure from the pressure-pipe to said passage to be used in forcing the liquid from the hose through the discharge-pipe to cleanse said pipe.

8. In a dispensing apparatus for liquids, a receptacle for liquid, a discharge-pipe from said receptacle, a discharge-faucet on said discharge-pipe, means to force the liquid from said receptacle to said discharge-faucet, an entrance to said discharge-pipe near said discharge-faucet, a removable cap covering said entrance, means to attach a hose to said entrance, through which liquid may be admitted to said discharge-pipe to cleanse said pipe, a pressure-pipe communicating with the passage between said entrance and the discharge-pipe, a stop-cock controlling the admission of pressure from the pressure-pipe to said passage, and an injector-nozzle introduced into said passage from said entrance to cause liquid to be drawn through said hose and forced through the discharge-pipe to cleanse said discharge-pipe.

710,292. GARMENT-SUPPORTER. ALMIRA A. HUDD, St. Louis, Mo. Filed Oct. 19, 1901. Serial No. 79,281. (No model.)

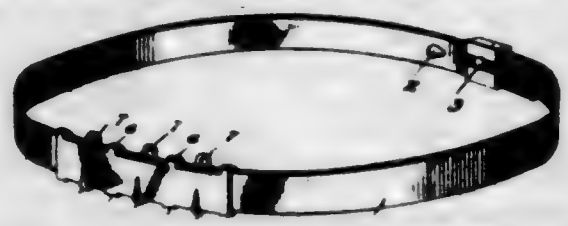

Claim.—In a garment-supporter, the combination with a metallic belt, of an imperforate metallic plate having lugs on its upper and lower edges which are bent inwardly over the upper and lower edges of the belt, and wedge-shaped prongs formed on the upper and lower edges of the plate which decrease in size as they extend outwardly from the plate so as to terminate in tapering pointed ends, the prongs on the upper edge of the plate being made longer than those on the lower edge, and said prongs bent on opposite sides of the plate to points midway the width of the same to form hooks of different sizes, the curved bend of the upper larger hooks being arranged to extend above the upper edge portion of the plate whereby to more readily facilitate the connection of said larger hooks with the waistband of a body of a garment, substantially as specified.

710,293. PEN OR PENCIL HOLDER. JAMES S. MCCLURE, Pueblo, Colo. Filed Nov. 18, 1901. Serial No. 82,864. (No model.)

Claim.—1. A holder for pens or pencils, comprising a tray-board, spaced parallel walls arranged on the tray-board, forming intermediate channels, said walls having alined transverse slots therein, intermediately of their ends, and an endless resilient band, having both runs held taut in the slots, so as to present two edges of the band toward inserted pens or pencils, and press upon the pen-stocks or pencils that may vary in thickness.

2. A holder for pens or pencils, comprising a flat tray-board, a plurality of spaced division-walls arranged parallel with each other on the tray-board, forming intermediate channels, said walls having alined transverse slots therein intermediately of their ends, an endless gum band held

in the slots by pins at the looped ends thereof and engaging the tray-board, a cap-piece covering all the channels, and designating characters placed on the tray-board opposite an end of each channel.

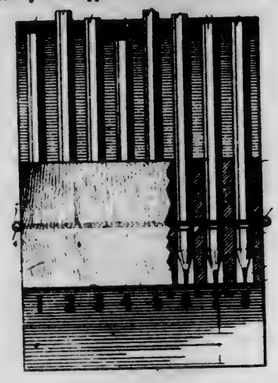

710,294. INDICATOR. THOMAS F. MCCLELLAND, Memphis, Tenn. Filed Jan. 27, 1902. Serial No. 91,412. (No model.)

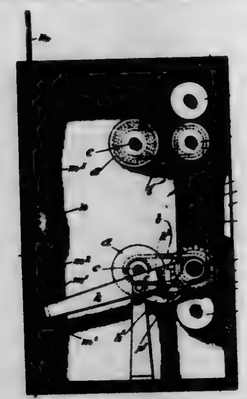

Claim.—1. In an indicator substantially as described, the combination with the apron and the drive-rollers therefor, of a ratchet-wheel in connection with one of said rollers, a lever having a pawl engaging the said ratchet-wheel, a tubular shaft fitting around the axle of the roller which carries the ratchet-wheel, and provided at its outer end with means whereby the said tubular shaft can be turned, and an arm on said shaft provided with means for disengaging the pawl from the ratchet-wheel, substantially as set forth.

2. The combination of the roller or drum having a ratchet-wheel, and the apron for operation by said roller or drum, the axle or shaft of said drum, the tubular shaft controlling said axle and provided at its outer end with a handle and at its inner end with an arm extending adjacent to the ratchet-wheel and provided with a pin for releasing the operating-pawl, and the lever having a pawl arranged to engage the ratchet-wheel and to be released therefrom by the pin on the projecting arm of the tubular-shaft, substantially as set forth.

3. The combination of the casing, the drum therefor, having a series of projecting pins and having axles at its ends, the apron having a series of openings receiving the pins of the drum, the tubular shaft fitting around the axle of the drum and provided at its outer end with a handle and at its inner end with a projecting arm having a pin or stud for releasing the operating-pawl, the ratchet-wheel on the drum, and the lever having a pawl engaging said ratchet-wheel, and arranged to be released therefrom by the arm of the tubular shaft, substantially as and for the purposes set forth.

710,295. FAN. WILLIAM MCFARLANE, Boston, Mass. Filed Mar. 19, 1902. Serial No. 98,998. (No model.)

Claim.—1. A fan formed of a thin sheet of resilient material and provided with stiffening portions or beads at its lower side portions which constrain the fan to bend at a predetermined line when used violently, substantially as set forth.

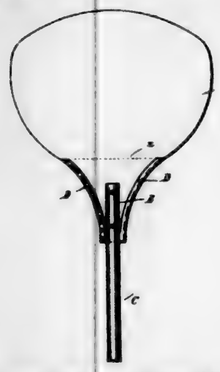

2. A fan formed of a thin sheet of metal and having a shank which is formed integral with its blade and provided with stiffening flanges or beads which constrain the fan-blade to bend when used violently on a line above the top of the shank, substantially as set forth.

710,296. MACHINE FOR CAPPING BOTTLES. GERRIT HORTON, New York, N. Y., assignor to Martha M. Horton, New York, N. Y. Filed Dec. 4, 1901. Serial No. 84,654. (No model.)

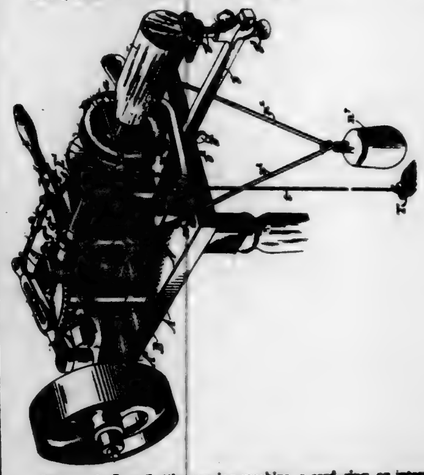

Claim.—1. In a bottle-capping machine, a cord-ring, an interior ring secured within the same, means for attaching capping-cords at diametrically opposite points to said cord-ring, and a guard-ring supported on the interior ring, substantially as set forth.

2. In a machine for capping bottles, the combination, with a winding device, of a rotatable shaft, a longitudinally-slotted tubular shaft mounted to slide longitudinally on said rotatable shaft and to rotate therewith, a gear-wheel splined adjacent one end of said tubular shaft, a collar provided on the opposite end thereof, a toothed segment meshing with said gear-wheel, and reciprocating means for engaging said collar and actuating said toothed segment, substantially as set forth.

3. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft slidably mounted thereon and rotatable therewith, a collar provided on said tubular shaft, a lever provided with lugs for engaging said collar, a toothed segment connected with said lever for rotating said shafts, and means for reciprocating said lever and said toothed segment, substantially as set forth.

4. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft slidably mounted thereon, said shafts being adapted to rotate together, a collar provided on said tubular shaft, a lever for engaging said collar, a toothed segment connected with said lever for rotating said shafts, means for reciprocating said lever and toothed segment, and means for automatically stopping said reciprocating means, substantially as set forth.

5. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft slidably keyed thereto with, a collar provided on said tubular shaft, a reciprocating lever for engaging said collar, a toothed segment connected with said lever for rotating said shafts, a power-transmitting shaft, a bevel-gear provided at one end thereof, a suitably-supported toothed disk meshing therewith, a slotted lever having its slotted end pinned to said toothed disk, and an adjustable means connecting said reciprocating lever with said slotted lever, substantially as set forth.

6. In a machine for capping bottles, the combination of a rotatable shaft, a tubular shaft, a reciprocating lever for imparting longitudinal motion to said tubular shaft, a toothed segment connected with said lever for rotating said shafts, a power-transmitting shaft, a bevel-gear provided at one end thereof, a suitably-supported toothed disk meshing therewith, a slotted lever having its slotted end pinned to said toothed disk, a rod adjustably connecting said reciprocating lever and said slotted lever, a pulley-wheel loosely mounted on said power-transmitting shaft, and a spring-actuated clutch on said power-shaft for engaging said pulley-wheel, substantially as set forth.

7. In a power-transmitting mechanism for a bottle-capping machine, the combination of a power-transmitting shaft, a bevel-gear at one end thereof, a toothed disk meshing therewith, a pulley loosely mounted on said power-transmitting shaft, a spring-actuated clutch for engaging said pulley-wheel, a pin projecting from said clutch, a slide-plate having an inclined surface for engaging said pin, a lever for actuating said plate, means on said toothed disk for actuating said lever, and a treadle-actuating device connected with said lever, substantially as set forth.

710,297. INSULATOR. RALPH S. PERRIN, Chicago, Ill. Filed Feb. 10, 1902. Serial No. 93,277. (No model.)

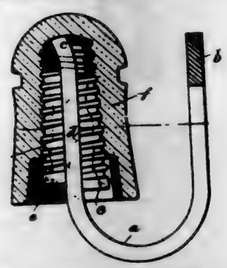

Claim.—1. The combination of an insulator having a screw-threaded bore therein, a metal strip projecting within said bore, and a pair of wooden blocks placed against the opposed sides of said metal strip and formed with exterior screw-threads for engagement with the threads of the insulator-bore.

2. The combination of an insulator having a tapered screw-threaded bore therein, a metal strip projecting within said bore, and a pair of wooden wedge-blocks placed against the opposed sides of said metal strip, and projecting beyond the edges thereof, said wedge-blocks having a screw-threaded exterior surface for engagement with the threads of the insulator-bore.

3. The combination of an insulator having a tapered screw-threaded bore therein, a metal strip projecting within said bore, and having a bent or outturned upper end, and a pair of wooden wedge-blocks placed against the opposed sides of said metal strip, below the said upper end thereof, said wedge-blocks having a screw-threaded exterior surface for engagement with the threads of the insulator-bore.

4. The combination of an insulator having a tapered screw-threaded bore therein, a metal strip projecting within said bore, and having a bent or outturned upper end, and a pair of wooden wedge-blocks placed against the opposed sides of said metal strip, below the said upper end thereof, one of the said blocks being held with its upper end at a lower plane than the upper end of the other, and said blocks having a screw-threaded exterior surface for engagement with the threads of the insulator-bore.

710,298. DISSOLUBLE FAN. JOHN L. PERKINS, Holyoke, Mass. Filed Apr. 30, 1902. Serial No. 105,321. (No model.)

Claim.—1. In a dissoluble fan, the combination, with a rotatable shaft; and fan-blades detachably mounted on said shaft; of bearings for supporting said shaft; a substantially circular casing comprising a plurality of separately-formed sections; and brace-rods radially disposed for positioning said bearings and the casing relatively to each other, and having detachable connections with the bearings and said casing-sections.

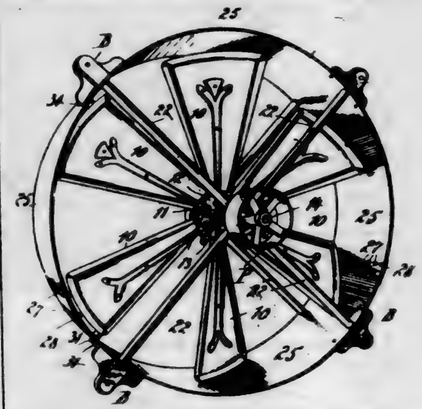

2. In a dissoluble fan, the combination, with a rotatable shaft; a central member detachably secured thereon; a series of fan-blades; and means for positioning said blades detachably on said member; of bearings disposed at opposite sides of, and adjacent said central fan-carrying member; a circular casing comprising a plurality of separately-formed and detachably-united sections; brace-rods radially disposed around said shaft for positioning said bearings and the casing relatively to each other having detachable connections with the bearings, and said casing-sections, and detachably-applied means for aligning said bearings with each other.

3. In a dissoluble fan, the combination, with a rotatable shaft; a central member detachably secured thereon; a series of fan-blades; and means for positioning and detachably securing said blades on said member; of bearings disposed at opposite sides of, and adjacent said central fan-carrying member; a circular casing comprising a plurality of separately-formed detachably-united sections; brace-rods radially disposed around said shaft and for positioning said bearings and the casing relatively to each other and detachably connected with the bearings and the casing-sections; means for aligning said bearings with each other; and a thrust-collar between one of said bearings and said central member.

4. In a dissoluble fan, the combination, with a rotatable shaft; and detachable bearings therefor; of a casing comprising a plurality of separately-formed sheet-metal sections; means for uniting said sections into a unitary circular structure; and fan-blades detachably mounted for rotation with said shaft.

5. In a dissoluble fan, the combination, with a rotatable shaft; and detachable bearings therefor; of a casing comprising a plurality of separately-formed sections; removably-applied bearing-frames for adjustably receiving said bearings; and brace-rods removably secured to said bearing-frames and said casing-sections.

6. A dissoluble portable fan comprising a circular casing made in sections; detachable means for uniting said sections into a unitary structure; a shaft; a central member removably secured on said shaft; a plurality of fan-blades; removable bearings for said shaft; removable frames for adjustably receiving said bearings; and brace-rods removably secured to said bearing-frames and to said casing-sections, substantially as described.

7. In a dissoluble portable fan, in combination, a shaft; the central member 12 detachably secured thereon, and having the radial screw-threaded bobs 13; the separately-formed fan-blades 10, having the screw-threaded inner end stems 11; and the set-screws 13; the bearing members 15, 15, detachably encircling the shaft, and having positions at the opposite sides of the central member 12; the frames 16, detachably embracing the bearings 15, having the opposite faces 17 of their apertures vertical and parallel, having the penetrating adjustment-screws 18 and 19 centrally at their top and bottom, and having the radial screw-threaded bobs 20; the sheet-metal casing-sections 25 separately formed and constructed with the perforations 30, and with the perforations 26, 26; the tie-plates 28 and the uniting-bolts 27; the brace-rods 22 having screw-stems at their inner ends detachably engaging in said bobs 20, and having their outer end portions constructed with screw-threaded sockets; and headed bolts 31, having their threaded shanks passed through the perforations 30 in the casing-sections, and with a screw engagement into the threaded sock-

ets in the brace-rods; and operating by their heads to clamp the said casing-sections in position against the ends of the brace-rods.

8. In a dismountable portable fan, in combination, a shaft; the central member 12 detachably secured thereon, said having the radial screw-socketed hubs 13; the separately-formed fan-blades 10, having the screw-threaded inner end stems 11; and the set-screws 13; the bearing-members 15, 15, detachably encircling the shaft, and having positions at the opposite sides of the central member 12; the frames 16, detachably embracing the bearings 15, having the opposite faces 17 of their apertures vertical and parallel, having the penetrating adjustment-screws 18 and 19 centrally at their top and bottom, and having the radial socketed hubs 20; the sheet-metal casing-sections 25 separately formed and constructed with the perforations 30 and with the perforations 26, 26; the tie-plates 28 and the uniting-bolts 27; the brace-rods 22 having screw-stems at their inner ends detachably engaging in said hubs 20, and having their outer end portions constructed with screw-threaded sockets; the brackets B having flanges 34 conforming to the contour of the casing, and each provided with an aperture 33; and two sets of headed bolts 31, one set having their threaded shanks passed through the perforations 33 and 30 of the bracket-flanges and casing-sections, and the other set passing through the perforations 30 of the casing-sections, and all with a screw-thread engagement into the socketed ends of the brace-rods, for the purposes set forth.

710,299. METHOD OF PRODUCING SOUND-RECORDS IN CELLULOID. ADDISON N. PETTY, Newark, N. J., assignor to the International Phonograph and Indestructible Record Company, Limited, Liverpool, England. Filed July 30, 1900. Serial No. 25,201. (No model.)

Claim.—1. The method herein specified of forming phonograph-records of celluloid, consisting in coating or otherwise treating the surface of the celluloid cylinder with a liquid material absorbed or taken up by the celluloid and so rendering the same temporarily soft and plastic, cutting the sound-record in the surface of the celluloid cylinder and allowing the said material to evaporate and the surface to dry and harden before use, substantially as set forth.

2. The method of producing sound-records in celluloid, which consists in first softening the celluloid, then permitting it to stand until it assumes a crisp consistency, and while in that condition cutting or engraving therein a record of sound, substantially as described.

710,300. METHOD OF TREATING MATTER. JOHN A. POTTER and WILLIAM C. HARVIE, Monterey, Mexico. Filed Sept. 1, 1900. Serial No. 28,288. (No specimens.)

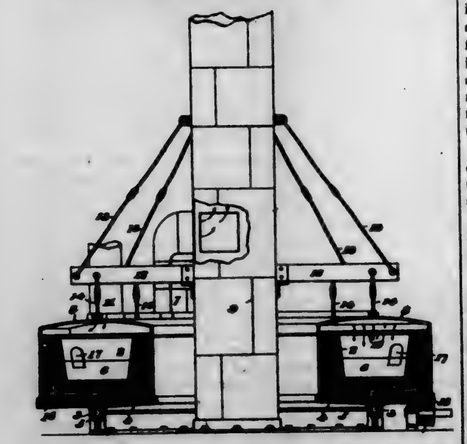

Claim.—1. The method of treating matter, consisting in exposing the surface of a bath of liquid matter to the action of an air-blast, breaking up the crust which forms on the surface of the bath, and bringing fresh portions of the bath into position to be acted upon by the air; substantially as described.

2. The method of treating matter, consisting in exposing the surface of a bath of liquid matter to the action of air-jets, and at the same time rubbing the surface anew, thereby breaking up the crust which forms on the surface of the bath and bringing fresh portions of the bath into position to be acted upon by the air; substantially as described.

3. The method of treating matter, consisting in subjecting the surface of a bath of liquid matter to the action of a blast of air, agitating the bath, and then boiling the pasty mass; substantially as described.

4. The method of treating matter, consisting in exposing the surface of a bath of liquid matter to the action of an air-blast, breaking up the crust which forms on the surface of the bath and bringing fresh portions of the bath into position to be acted upon by the air, subjecting a second bath of molten matter to a similar operation, and supplying heat from the second bath to the first bath while the latter is in a later stage of desulfurization; substantially as described.

5. The method of treating matter, consisting in introducing a bath of liquid matter into a chamber, agitating the bath and subjecting its surface to the action of a blast of air, moving the chamber to a different point, supplying fresh matter to another chamber, agitating and supplying air to the fresh matter, and supplying heat from the fresh matter to the matter in a later stage of desulfurization in the first chamber; substantially as described.

710,301. MEANS FOR REGULATING THE TEMPERATURE OF HEATING SYSTEMS. WILLIAM P. POWERS, Chicago, Ill. Filed Dec. 26, 1898. Serial No. 617,121. (No model.)

Claim.—1. In a heat-controlling device the combination of a source of fluid-pressure supply with a chamber having a movable wall and an inlet-port and an outlet-port, a thermostatically-actuated valve for one of said ports, a second chamber having an inlet and an outlet port, a valve for the inlet-port, a principal valve, a motor for said valve communicating with the outlet-port of the second chamber, the inlet-valve of said second chamber being so connected with the movable wall of the first-named chamber as to be moved thereby, and the two chambers being so related that the pressure in the second chamber will act in opposition to the pressure in the first-named chamber.

2. In a heat-controlling device, the combination with an expansible chamber, having an inlet and an outlet for fluid-pressure, one of which is thermostatically controlled; of a pressure-chamber having a fluid-pressure supply; a valve controlling said supply, said valve being adapted to be opened by the movable wall of the expansible chamber, whereby to admit the pressure fluid to act on said movable wall in opposition to the pressure thermostatically produced in the expansible chamber.

3. In a heat-controlling device, the combination of a source of fluid-pressure, a chamber having an inlet-port and an outlet-port communicating with the source of fluid-pressure, a thermostatically-actuated valve for one of said ports, a second chamber having an inlet-port and an outlet-port, a source of fluid-pressure therefor, a valve for the inlet-port, a movable wall forming one side of each chamber, a principal valve, a motor for said valve communicating with the outlet-port of the second chamber, the inlet-valve of the second chamber being actuated by the movable wall, and the pressures in the two chambers acting in opposition to each other, substantially as described.

4. In a heat-controlling device, the combination of a source of fluid-pressure, a chamber having an inlet-port and an outlet-port communicating therewith, a thermostatically-actuated valve for one of said ports, a second chamber having an inlet-port and an outlet-port, a valve for the inlet-port, a source of fluid-pressure for the second chamber, a movable wall forming one side of each chamber, the sides of the wall which are exposed to pressure being of unequal areas, a principal valve, a motor therefor communicating with the outlet-port of the second chamber, the inlet-valve of the second chamber being actuated by the movable wall, and the pressures in the two chambers acting in opposition to each other, substantially as described.

5. In a heat-controlling device, the combination of a source of fluid-pressure, a chamber having an inlet-port and an outlet-port communicating therewith, a thermostatically-actuated valve for one of said ports, a second chamber having an inlet-port and an outlet-port, a source of fluid-pressure for said second chamber, a valve for the inlet-port, a flexible diaphragm forming one side of each chamber, a principal valve, a motor for said valve communicating with the outlet-port of the second chamber, a waste-port in the second chamber, the inlet-valve for the second chamber adapted to be actuated by the movable wall, and the pressures in the two chambers acting in opposition to each other, substantially as described.

6. In heat-regulating apparatus, the combination with a fluid-pressure supply, a heat-controlling valve or damper and a fluid-pressure motor for operating the same, of valve mechanism for controlling the supply and release of the fluid-pressure medium to and from said motor, a secondary fluid-pressure motor for operating said valve mechanism, two fluid-pressure-supply connections arranged to admit the fluid-pressure to opposite sides of the movable part of said motor, whereby to act in opposite directions upon said movable part, one of said connections being controlled by said valve mechanism, and a thermostat controlling the relative supply and waste of the pressure fluid admitted through the other connection, the source of fluid-pressure supply being independent of the thermostat.

7. In a heat-controlling device, the combination of a source of fluid-pressure, a chamber having an inlet-port and an outlet-port communicating with the source of pressure, a thermostatically-actuated valve for one of said ports, a second chamber having an inlet-port and an outlet-port, a source of fluid-pressure for the second chamber, a movable wall forming one side of each of said chambers having an orifice forming communication between the second chamber and the external atmosphere, a valve governing the inlet-port of the second chamber, a valve-stem attached to the valve of the second chamber, another valve on the opposite end of this stem adapted to control the orifice through the movable wall, a principal valve, a motor for said valve communicating with the outlet-port of the second chamber, the inlet-valve for the second chamber being actuated by the movable wall, substantially as described.

710,302. INTERNAL-COMBUSTION ENGINE. JOHN A. PRENTICE, Tottenham, England. Filed Apr. 29, 1902. Serial No. 105,165. (No model.)

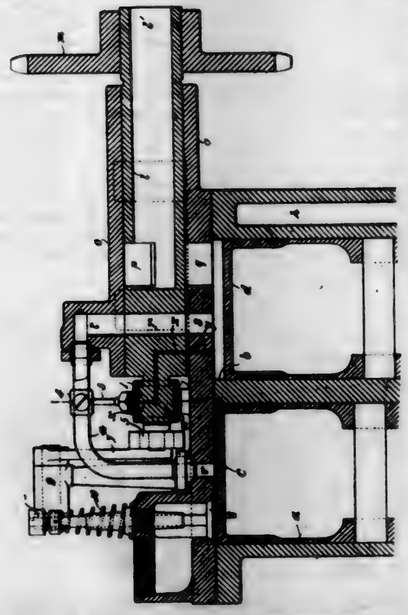

Claim.—1. The improvements in internal-combustion engines comprising the combination of a compression-cylinder, a working cylinder, a piston in the compression-cylinder, a piston in the working cylinder moving in advance of the piston in the compression-cylinder, a rotary valve, an air-admission port in said valve coinciding at the proper time with an admission-port in the compression-cylinder, a discharge-port in said rotary valve coinciding at the proper time with a discharge-port from the compression-cylinder, and a compressed-air-admission port to the working cylinder, an oil-supply valve formed by an extension of said rotary valve, an oil-charging port in said valve, a corresponding oil-supply port in the valve-casing, a compressed-air-inlet port in the path of travel of one end of said oil-port and leading to the compression-cylinder, an oil-discharging port in the valve-casing at the other end of the oil-passage, connections between said port and the compressed-air channel between the cylinders, an exhaust-valve in the working cylinder, a means for actuating said exhaust-valve by the rotation of the main valve, means for rotating the valve from the crank-shaft of the engine, all substantially as and for the purpose set forth.

2. The improvements in internal-combustion engines, comprising the combination with two cylinders and pistons arranged respectively for compressing and exploding the charge, of a rotary spindle forming the inlet and outlet valve to the compression-cylinder and the oil measuring and discharging device, and also having means for operating the exhaust-valve of the working cylinder and means for rotating said spindle-valve at the proper speed from the crank-shaft of the engine, substantially as and for the purpose set forth.

710,303. CORN-PLANTER. HENRY RENTSCH, Bacon, Ala. Filed Dec. 16, 1901. Serial No. 86,110. (No model.)

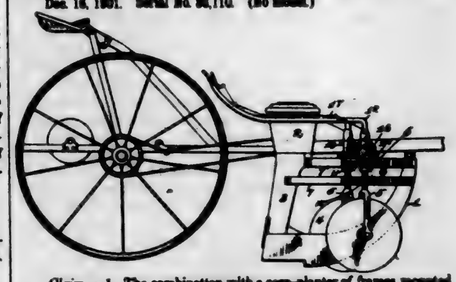

Claim.—1. The combination with a corn-planter of frames mounted adjacent to each runner, a bearing-block mounted on each of said frames, means for holding said blocks stationary, and standards projecting through each of said bearing-blocks, and disks carried by said standards, a gear-rack rigid with each of the bearing-blocks, a lever connected to each said standard for rotating the same, a pawl carried by each of said levers for engaging with the said rack and suitable connections adjacent to the side of the planter for releasing the pawls, so that the standards may be turned, substantially as described.

2. The combination with a corn-planter having a runner or furrow-opener; of frames mounted one on each side of said runner; bearing-blocks mounted one in each of said frames, and adapted to be adjusted back and forth; disk-holding standards mounted in said bearing-blocks; disks carried by said standards; a rack rigid with each of said bearing-blocks; a lever connected to each of said standards for rotating the same; and a pawl carried by each of said levers for engaging said racks and holding said standards in a desired position, substantially as specified.

3. The combination with a corn-planter having a runner or furrow-opener; of frames mounted one on each side of said runner; bearing-blocks mounted one in each of said frames; disk-holding standards mounted in said bearing-blocks, and adapted to be adjusted up and down; disks carried by said standards; a gear-rack rigid with each of said bearing-blocks; a lever connected to each of said standards; and a pawl carried by each of said levers for engaging said racks, substantially as specified.

710,304. BED-BOTTOM. EDWARD ROSS and ISAAC ISBELL, Chattanooga, Tenn. Filed Dec. 26, 1901. Serial No. 87,266. (No model.)

Claim.—1. The combination with a bedstead having supporting-rails, of a bed-bottom supported in the bedstead, a roller for tightening the bed-bottom, connections between the roller and the bed-bottom and bearings in which the roller is mounted, the bearings being supported upon and laterally adjustable along one of the bedstead-rails, substantially as set forth.

2. The combination with a bedstead having a supporting-rail, of a bed-bottom mounted in the bedstead, a roller for adjusting the tension for the bed-bottom, connecting means between the roller and the bed-bottom and bearings in which the roller is mounted, provided with hooks adapted to engage with the bedstead-rail, substantially as set forth.

3. The combination with a bedstead having a supporting-rail, of a bed-bottom mounted in the bedstead, a roller for adjusting the tension of the bed-bottom, bearings in which the roller is mounted, ratchet-wheels carried by the roller and pawls for engaging with the ratchet-wheels, supported by and laterally adjustable along the end rail of the bedstead, substantially as set forth.

4. The combination with a bedstead having a supporting-rail, of a bed-bottom mounted in the bedstead, a roller for adjusting the tension of the bed-bottom, a ratchet-wheel carried by the roller, and a pawl for engaging with the ratchet-wheel, provided with a hook adapted to engage with and partly encircle the bedstead-rail by which it is supported, substantially as set forth.

5. A bed-bottom comprising a fabric provided at its opposite ends with binding-strips, one of the strips being perforated and the other provided with a series of straps, detachable hooks for engaging with the perforated strip and uniting the fabric with a bedstead, a tension-adjusting roller to which the straps are secured, a ratchet-wheel on the said roller, bearings for the said roller arranged to detachably engage with and be supported by a rail of the bedstead, and a pawl for the said ratchet-wheel arranged to detachably engage with and be supported by a rail of the bedstead, substantially as set forth.

710,805. SIPHON-BOTTLE. BRUNO SCHREIER and EMIL KNYATSEK, Vienna, Austria-Hungary. Filed July 20, 1901. Serial No. 69,114. (No model.)

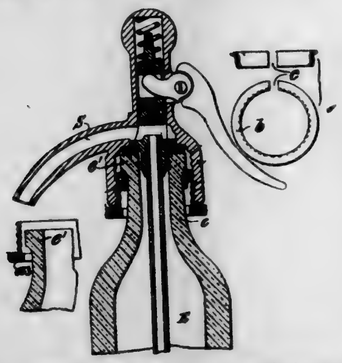

Claim.—1. The combination with a siphon-bottle having an annular shoulder below its mouth and an externally-threaded sleeve adapted to be slipped over said shoulder onto the neck of the bottle; of a flanged lock-ring fitting said neck below the shoulder and adapted to be inserted into the threaded sleeve after it has been slipped over said shoulder whereby the flange on the lock-ring will project over one end of said sleeve and abut against said shoulder, for the purpose set forth.

2. The combination with a siphon-bottle having an annular shoulder below its mouth and an externally-threaded sleeve adapted to be slipped over the shoulder onto the neck of the bottle; of a sectional flanged lock-ring adapted to be inserted into the sleeve after it has been slipped over the shoulder, whereby the flange on the ring sections will project over the end of the sleeve and abut against said shoulder, for the purpose set forth.

710,806. RUBBER-DAM HOLDER. GEORGE W. TODD, Elmwood, Nebr., assignor of one-third to HANS PETER JENSEN, Omaha, Nebr. Filed June 16, 1902. Serial No. 111,903. (No model.)

Claim.—1. The combination with a suitable frame provided with two transverse bars, of a plurality of tooth-clamps extending from said frame and pivotally secured thereto and working over said transverse bars.

2. The combination with a suitable spring-frame provided with two transverse bars at opposite ends, of a plurality of tooth-clamps pivotally secured to said frame and working over said transverse bars, each tooth-clamp being provided with an upwardly-extending lip and an opening adjacent said lip.

710,807. FIREPROOF FRAME BUILDING. GEORGE B VOELKER, Los Angeles, Cal. Filed July 14, 1902. Serial No. 115,548. (No model.)

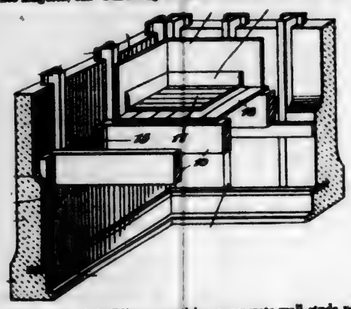

Claim.—1. A building comprising a concrete wall, studs partly embedded in the inner face of the wall and boards secured to the outer faces of the studs and completely embedded in the wall, the inner faces of the studs being exposed for attachment of laths thereto.

2. A building comprising a concrete wall, studs partly embedded in the inner face of the wall and boards secured to the outer faces of the studs and completely embedded in the wall, the inner faces of the studs being exposed for attachment of laths thereto, the upper portions of the studs projecting inwardly beyond the inner face of the wall to provide air-spaces between the studs, the wall and the lathing.

3. A building comprising a concrete wall, having its lower portion of greater thickness than the upper portion and having a wall-plate embedded in the inner face of the thickened portion, studs each having a board secured to its outer face and projecting beyond the side faces of the stud, said studs being disposed upon the wall-plate with the boards and adjacent portions of the studs embedded in the wall, said studs extending inwardly from the inner face of the upper thinner portion of the wall, seats formed in the wall, joists engaged in the seats and against the studs, an inner wall portion secured to the studs above the joists and separated from the outer wall portion by interspaces between the studs, and grates secured between the joists and extending from the upper faces of the latter to the thicker portion of the wall.

710,808. FIREPROOF FLOOR CONSTRUCTION. MERRILL WATSON, New York, N. Y. Filed May 14, 1902. Serial No. 107,230. (No model.)

Claim.—1. In concrete and metal construction a monolithically-embedded bar having sloping incisions and outstanding barbs at opposite sides and with the incisions in adjacent sides out of line.

2. In concrete and metal construction, an embedded bar having a sloping-inclined and barbed surface to form a bond between the metal and concrete.

3. In concrete and metal construction, a monolithically-embedded bar having a barbed surface and with the barbs extending transverse of the bar and having their points barred or rolled backward.

4. In concrete and metal construction, a monolithically-embedded bar having a combined inclined and barbed surface, the incisions whereof extend obliquely into the bar and the barbs project beyond the plane of the outer sides of said bar.

5. In concrete and metal construction, a bar having sloping incisions in its surfaces and with the incisions in two adjacent surfaces out of line and made in reverse order, the walls of the corrugations forming barbs which project beyond the plane of the surfaces.

710,809. TELEPHONE-TRANSMITTER. MATHIAS WEBBER, Milwaukee, Wis. Filed Jan. 11, 1902. Serial No. 89,262. (No model.)

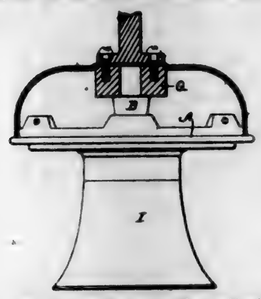

Claim.—1. In a telephone-transmitter, the combination comprising a supporting-arm; a spider or bracket rigidly affixed to said arm; a front or body portion rigidly supported from said bracket or spider; and a metallic shell centrally supported between the hub of said bracket or spider and the bearings of said supporting-arms, as set forth.

2. In a telephone-transmitter, a supporting-arm; a spider or bracket; a front or body portion; and a mouthpiece rigidly secured together, in combination with an inclosing shell clamped at its center between the hub of said spider or bracket and the bearings of said supporting-arm, and adapted to bear at its front edge against the rear surface of the front of the transmitter, all substantially as and for the purpose specified.

710,810. FRAME FOR METAL-SHEARING MACHINES. BRUNO WHEELHAHN, Gross Lichterfelde, Germany. Filed May 31, 1902. Serial No. 109,696. (No model.)

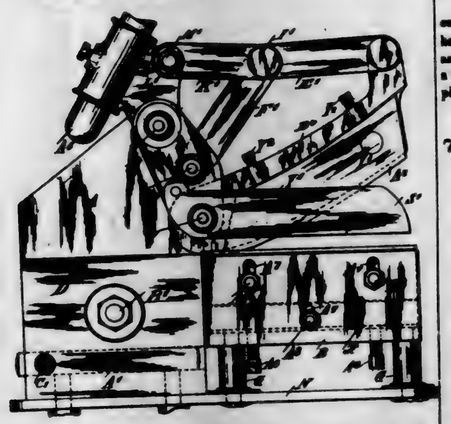

Claim.—1. A frame for metal-shears having the carrier for the stationary cutter made separate from the body of the frame and detachably secured thereto, and a support for the said carrier independent of the body of the frame as set forth.

2. A frame for metal-shears comprising a main body portion, a carrier for the stationary cutter, a bolt or pin connecting one end of the said carrier with the said body portion, and means for adjustably supporting the other end of the carrier, as set forth.

3. A frame for metal-shears, comprising a body portion, a carrier for the stationary cutter a bolt or pin connecting one end of the said carrier with the said body portion, a support for the said end of the carrier, and an adjustable support for the free end of the carrier, as set forth.

4. A frame for metal-shears, comprising a body, a carrier for the stationary cutter, detachably secured to the body, a bed-plate, means for adjustably supporting one end of the carrier on the bed-plate, and an adjusting device between the other end of the carrier and the body, as set forth.

5. A frame for metal-shears, comprising a body, a carrier for the stationary cutter detachably secured to the body, a bed-plate, adjusting-heads between one end of the carrier and the bed-plate, and a wedge interposed between the other end of the carrier and a portion of the body, as set forth.

6. A frame for metal-shears, comprising a body having a downwardly-projecting portion provided with a ledge at its lower end, a carrier for the stationary cutter, detachably secured to the said projecting portion, a bed-plate, adjusting devices between one end of the carrier and bed-plate, and a wedge between the other end of the carrier and the said ledge, as set forth.

7. In a frame for metal-shears, a body provided with a ledge having a curved upper surface, a carrier for the stationary cutter, detachably secured to the body and resting upon the ledge thereof, a support, and means for adjustably supporting one end of the carrier, as set forth.

8. In a frame, for metal-shears, a body, a carrier for the stationary cutter, detachably secured to the body, a bed-plate, means for detachably connecting the bed-plate with the body, adjusting device between one end of the carrier and the bed-plate, and an adjusting device between the other end of the carrier and the body, as set forth.

9. A frame for shearing machinery, comprising a pair of brackets for carrying fixed and movable cutters respectively, said brackets being so disposed upon said frame as to bear distinct and independent strains, and means for flexibly connecting said brackets together so as to allow a slight movement between the same when actuated by strains of opposite direction.

10. A frame for shearing machinery, comprising a bed-plate, a bracket mounted thereon for supporting a stationary cutter, means for adjusting said cutter relatively to said bracket, and a bracket detachably mounted upon said bed-plate and provided with mechanism for supporting a movable cutter, said brackets being so disposed as to bear distinct strains having opposite directions.

11. A frame for shearing machinery, comprising a bed-plate, a bracket mounted thereon for supporting a stationary cutter, means for adjusting said cutter relatively to said bracket, a bracket mounted upon said bed-plate and provided with mechanism for supporting a movable cutter, said brackets being so disposed as to bear distinct strains, and means for flexibly connecting said brackets together, so as to allow slight relative movements due to said strains.

12. In a metal-shearing machine, the combination with a body, a cutter-carrier detachably secured to the body, and a bed-plate, of a head having one end reduced and fitting in an aperture of the cutter-carrier, and its other end fitting in an aperture of the bed-plate and provided with a threaded end projecting through the bed-plate, and a nut on the bed-plate and with which the threaded end of the head engages, as set forth.

710,811. ELECTROMAGNETIC DEVICE FOR CONTROLLING THE ROTATION OF SHAFTS. PAUL V. AVRIL, Paris, France, assignor to himself and LA SOCIÉTÉ MARINIER, HAVET ET JOUANNE, Paris, France. Filed Apr. 23, 1901. Serial No. 56,054. (No model.)

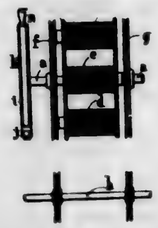

Claim.—1. The combination with a shaft adapted to be operatively connected to a prime mover, and an electromagnetic device carried by the shaft and adapted when energized to connect the shaft with the prime mover to cause the operation of said shaft, of a disk mounted upon said shaft, contact-strips carried thereby, means engaging the said strips for making and breaking an electrical circuit for energizing and deenergizing

said magnetic device to control the movement of the said shaft, and electrical connections between said means, magnetic device and source of electrical energy.

2. The combination with a shaft adapted to be operatively connected to a prime mover, and an electromagnetic device carried by the shaft and adapted when energized to connect the shaft with the prime mover to cause the operation of said shaft, of a disk mounted upon said shaft, contact-strips carried thereby, a movable contact engaging the said strips for making and breaking an electrical circuit for energizing and deënergizing said magnetic device to control the movement of the said shaft, and electrical connections between said movable contact, magnetic device and a source of electrical energy.

3. The combination with a shaft adapted to be operatively connected to a prime mover, of an electrical magnetic device carried by the shaft and adapted when energized to connect the shaft with the prime mover to cause its operation, a disk mounted upon said shaft, contact-strips secured to the periphery of said disk a suitable distance apart, means engaging the said strips for making and breaking an electrical circuit for energizing and deënergizing said magnetic device to control the movement of said shaft, and electrical connections between said means, magnetic device and a source of electrical energy.

4. The combination with a shaft adapted to be operatively connected to a prime mover, of an electromagnetic device supported by said shaft and comprising in its construction a disk loosely mounted upon the shaft, said disk suitably connected to a prime-mover and forming the armature of the magnetic device, a disk fixed to said shaft, contact-strips carried thereby, means engaging with said strips for making and breaking an electrical circuit for energizing and deënergizing said magnetic device to control the movement of said shaft and to connect said shaft with the said prime mover to cause the operation of the shaft, and electrical connections between said means, magnetic device and a source of electrical energy.

5. The combination with a shaft adapted to be operatively connected to a prime mover, of an electromagnetic device supported by said shaft and comprising in its construction a disk loosely mounted upon the shaft, said disk suitably connected to a prime mover and forming the armature of the magnetic device, a disk fixed to said shaft, contact-strips carried thereby, a movable contact engaging with said strips for making and breaking an electrical circuit for energizing and deënergizing said magnetic device to control the movement of said shaft and to connect said shaft with the said prime mover to cause the operation of the shaft, and electrical connections between said movable contact, magnetic device and a source of electrical energy.

6. The combination with a shaft adapted to be operatively connected to a prime mover, of an electromagnetic device supported by said shaft and comprising in its construction a disk loosely mounted upon the shaft, said disk suitably connected to a prime mover and forming the armature of the magnetic device, a disk fixed to said shaft, contact-strips secured to the periphery of said disk a suitable distance apart, means engaging with said strips for making and breaking an electrical circuit for energizing and deënergizing said magnetic device to control the movement of said shaft and to connect said shaft with the said prime mover to cause the operation of the shaft, and electrical connections between said means, magnetic device and a source of electrical energy.

710,812. IGNITER FOR EXPLOSIVE-ENGINES. EDWARD R. BARLOW, Providence, R. I., assignor of one-half to Louis H. Schneider, Boston, Mass. Filed July 25, 1901. Serial No. 69,650. (No model.)

Claim.—1. In an explosive-engine, the combination with the piston and cylinder, of a chamber communicating with the compression end of the cylinder, an ignition device located in the chamber, a pressure device, a passage connecting the pressure device with the cylinder and so disposed as to be covered by the piston at the latter part of its compression-stroke, and a pipe connecting the pressure device with the ignition-chamber.

2. In an explosive-engine, the combination with the piston and cylinder, of a chamber communicating with the compression end of the cylinder, an ignition device located in the chamber, a pressure device, a passage connecting the pressure device with the cylinder and so disposed as to be covered by the piston at the latter part of its compression-stroke, a check-valve located in said passage, and a pipe connecting the pressure device with the ignition-chamber.

3. In an explosive-engine, the combination with the piston and cylinder, of a chamber communicating with the compression end of the cylinder, an ignition device located in the chamber, a pressure device; a passage connecting the pressure device with the cylinder and so disposed as to be covered by the piston at the latter part of its compression-stroke, a pipe connecting the pressure device with the ignition chamber, a valve in the passage between the cylinder and the ignition-chamber, and means cooperative with the piston for controlling said valve.

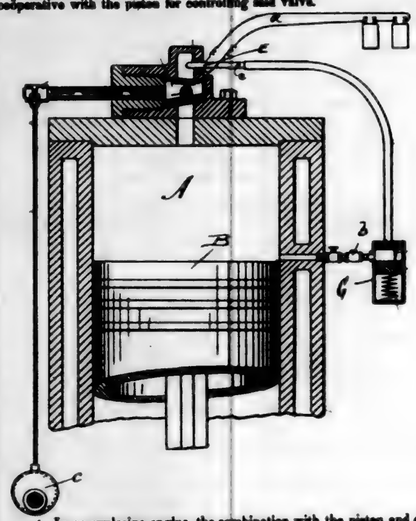

4. In an explosive-engine, the combination with the piston and cylinder, of a chamber communicating with the compression end of the cylinder, an ignition device located in the chamber, an equalizing-chamber, a piston reciprocating in the latter cylinder, a compression-spring between the latter piston and one end of its cylinder, a pipe connecting the other end of this latter cylinder with the ignition-chamber, and a pipe connected to the equalizing-chamber in proximity to this last-mentioned end and connected to the engine-cylinder at a place so disposed as to be covered by the piston at the latter part of the compression-stroke.

710,818. STEAM-GENERATOR. ROBERT J. BARTON, Philadelphia, Pa. Filed Jan. 10, 1902. Serial No. 88,131. (No model.)

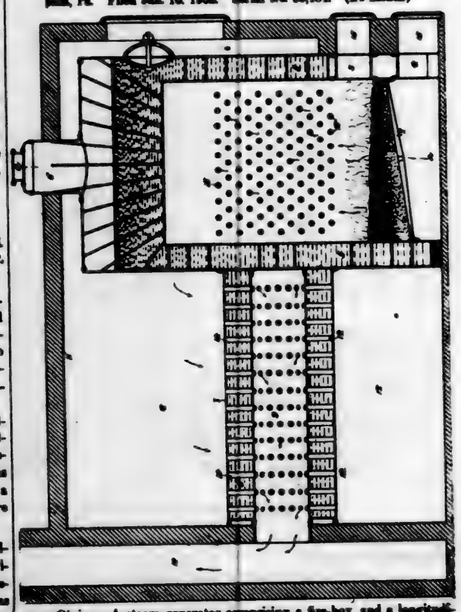

Claim.—A steam-generator comprising a fire-box and a longitudinal flue, a casing inclosing said fire-box and having a cylindrical barrel inclosing the flue so as to provide a water-chamber containing said fire-box and flue, and transverse tubes extending between the fire-box and its inclosing casing and between the cylindrical barrel and flue, in combination with an outer casing containing a combustion-chamber which communicates through said tubes with the fire-box and flue, substantially as specified.

710,814. BOTTLE. VICTOR BARTCAVITS, Chicago, Ill. Filed Mar. 12, 1902. Serial No. 97,942. (No model.)

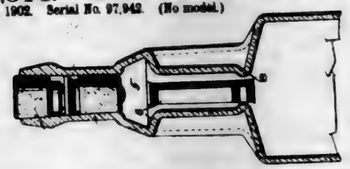

Claim.—1. A device of the class described, comprising a neck having an upper stopper-receiving portion and provided with a lower stopper-receiving portion provided with passages, and a stopper arranged within the upper stopper-receiving portion of the neck and adapted to be forced inward into the lower portion of the neck, said stopper being provided with means for preventing its return into the upper portion of the neck, substantially as and for the purpose described.

2. A device of the class described, comprising a neck having an upper stopper-receiving portion and provided at its lower portion with a series of longitudinal ribs, a stopper located within the upper portion of the neck and adapted to be forced inward into the lower portion, and means for preventing the return of the stopper into the upper portion of the neck, substantially as and for the purpose described.

3. A device of the class described, comprising a neck having an upper stopper-receiving portion and provided at its lower portion with a series of ribs forming a stopper-receiving portion and providing grooves or passages, said ribs being spaced from the upper stopper-receiving portion and the neck being provided between the ribs and the upper portion with an enlarged portion forming an intermediate chamber, a stopper arranged within the upper portion of the neck and adapted to be forced inward into the lower portion, and an expansible device carried by the stopper and arranged to engage the intermediate chamber for locking the stopper to prevent the return of the same into the upper portion of the neck, substantially as and for the purpose described.

4. A device of the class described, comprising a neck having an upper stopper-receiving portion and provided with a lower portion having a longitudinal passage, said neck being also provided with an intermediate chamber of greater diameter than the upper stopper-receiving portion, a stopper arranged within the upper portion of the neck and adapted to be forced into the lower portion of the same and an expansible device carried by the stopper and arranged to engage the intermediate chamber to prevent the return of the stopper into the upper portion of the neck, substantially as and for the purpose described.

710,815. FIRE-LIGHTER. HENRY BRADY, Ayr, Queensland, Australia. Filed Apr. 22, 1901. Renewed July 17, 1902. Serial No. 116,001. (No model.)

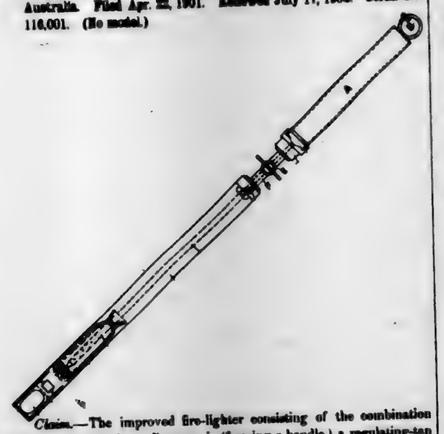

Claim.—The improved fire-lighter consisting of the combination and arrangement of an oil-reservoir (forming a handle,) a regulating-tap between the said reservoir and a perforated distributing-pipe, the end of the said pipe being enveloped in an asbestos or other suitable wick, and a sheath for the reception of the pipe when not in use substantially as hereinbefore described and explained and as illustrated in the drawings.

710,816. THILL-COUPLING. JOHN M. BRYANT, Minneapolis, Minn., assignor of three-fourths to Ebenezer J. Hewell and Percy A. Barnard, Detroit, Mich., and Joseph L. Henry, Chicago, Ill. Filed May 16, 1902. Serial No. 107,494. (No model.)

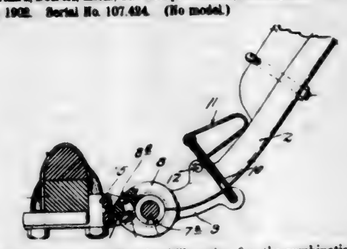

Claim.—1. In a coupling for thills, poles, &c., the combination with a pair of coupling-jaws having, at their rear ends, interlocking parts forming a separable joint adapted to be connected and disconnected by angular movements of one of said jaws with respect to the other, of a clamping device applied to the forward ends of said clamping-jaws for holding the same in working position, substantially as described.

2. In a coupling for thills, poles, &c., the combination with a pair of separable jaws connected at their rear ends by a cooperating hook and hook-seat, one on each of said jaws, of a link pivoted to one of said jaws, and a spring-lever pivoted to the other of said jaws and to said link, and movable from one side to the other of a dead-center, to lock and release the said movable jaw, substantially as described.

3. In a coupling for thills, poles, &c., the combination with the jaws 8 and 9 having, respectively, the hook-seat 8* and hook 9*, detachably engageable as described, of the link 10 pivoted to the outer end of said jaw 9, and the U-shaped spring-lever 11 pivoted to said link 10 and pivoted to said jaw 8, which spring-lever 11 is movable rearward of its dead-center, to release said jaw 9, and is movable forward of its dead-center to lock the said jaw 9, substantially as described.

710,817. AUTOMATIC BOILER-FEEDER. CHARLES CUMMINGS, San Francisco, Cal., assignor to Automatic Boiler Feed-Water Regulator Co., San Francisco, Cal., a Corporation of California. Filed Sept. 20, 1901. Serial No. 75,714. (No model.)

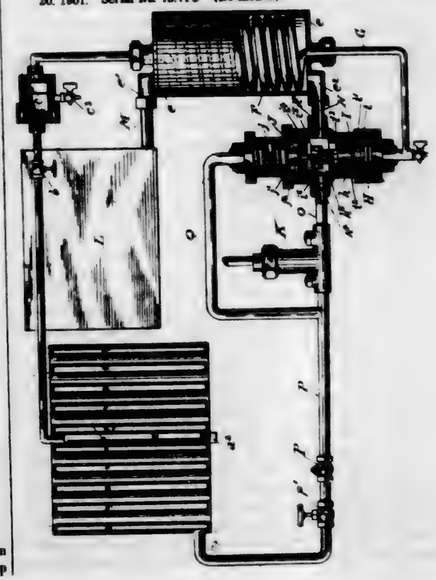

Claim.—1. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage, to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, a condenser in said passage, for condensing the steam passing therethrough, and differentiating its pressure from that of the water, and a device differentially controlled by said differentiated pressures, for controlling the water supplied to the boiler.

2. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage, to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, a condenser-coil let into said passage for condensing the steam passing therethrough, and differentiating its pressure from that of the water, a device differentially controlled by said differentiated pressures for controlling the water supplied to the boiler, and a passage for the feed-water from the source of supply to the boiler, said passage surrounding the condenser-coil, whereby the latter is rendered operative.

3. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage, to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, means, in said passage, for differentiating the pressures between the water and steam flowing therethrough, a passage from the source of feed-water supply to the boiler, a return by-pass in said passage, and a valve differentially controlled by said differentiated pressures, for controlling both the passage and the by-pass, whereby the feed-water is directed alternately through either.

4. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage, to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, a condenser in said passage, for condensing the steam passing therethrough and differentiating its pressure from that of the water, a passage from the source of feed-water supply to the boiler, a return by-pass in said passage, and a valve differentially controlled by said differentiated pressures, for controlling both the passage and the by-pass, whereby the feed-water is directed alternately through either.

5. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage, to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, a condenser-coil let into said passage for condensing the steam passing therethrough and differentiating its pressure from that of the water, a passage for the feed-water from the source of supply to the boiler, said passage surrounding the condenser-coil, a return by-pass in said passage, and a valve differentially controlled by said differentiated pressures, for controlling both the passage and the by-pass whereby the feed-water is directed alternately through either.

6. In an automatic boiler-feed, the combination of a continuously-driven pump, having a communication with the water-supply tank and with the boiler, a return by-pass in said communication, a valve adapted to control alternately said communication and by-pass, an outlet from the boiler in the horizontal plane of the predetermined water-level therein, a passage from said outlet connecting it with the valve, and a means in said passage for differentiating the pressures between the water and steam flowing therethrough, whereby the valve is differentially controlled, to control the main communication or the by-pass alternately.

7. In an automatic boiler-feed, the combination of a continuously-driven pump, having a communication with the water-supply tank and with the boiler, a return by-pass in said communication, a valve adapted to control alternately said communication and by-pass, an outlet from the boiler in the horizontal plane of the predetermined water-level therein, a passage from said outlet connecting it with the valve, and a condenser-coil let into said passage and surrounded by the main water-feed communication, to condense the steam, and differentiate its pressure from that of the water, whereby the valve is differentially controlled, to control the main communication or the by-pass alternately.

8. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, means in said passage, for differentiating the pressures between the water and steam flowing therethrough, a fluid-pressure reducer in said passage, and a device differentially controlled by said differentiated pressures for controlling the water supplied to the boiler.

9. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, a condenser in said passage, for differentiating the pressures between the water and steam flowing therethrough, a fluid-pressure reducer in said passage consisting of plates or disks each with an aperture smaller than the interior diameter of said passage, and a device differentially controlled by said differentiated pressures for controlling the water supplied to the boiler.

10. In an automatic boiler-feed, the combination of controllable means for supplying water to the boiler, an outlet from the boiler, in the horizontal plane of the predetermined water-level therein, said outlet having a passage, to convey water or steam from the boiler, according to whether said predetermined water-level is exceeded or not, a condenser in said passage, for condensing the steam passing therethrough and differentiating its pressure from that of the water, plates or disks in said passage, in advance of and behind said condenser, said plates or disks, each having apertures smaller than the diameter of the passage, whereby the fluid-pressure in the passage is reduced, and a device differentially controlled by said differentiated pressures for controlling the water supplied to the boiler.

11. In an automatic boiler-feed, the combination of a continuously-driven pump, having a communication with the water-supply tank and with the boiler, a return by-pass in said communication, a valve adapted to control alternately said communication and by-pass, an outlet from the boiler in the horizontal plane of the predetermined water-level therein, a passage from said outlet connecting it with the valve, a condenser-coil let into said passage and surrounded by the main water-feed communication, to condense the steam, and differentiate its pressure from that of the water, whereby the valve is differentially controlled, to control the main communication or the by-pass alternately, and disks or plates in said steam and water passage in advance of and behind said condenser-coil and having apertures smaller than the diameter of the passage, whereby the fluid-pressure in the passage is reduced.

12. In an automatic boiler-feed dependent for operation upon the water or steam passing from the boiler according to whether a predetermined water-level in the boiler is exceeded or not, the means for obtaining an outlet for said water or steam from the boiler, consisting of a tube in the boiler having one end closed, and the other end communicating with the connections to the operative parts of the automatic feed, and a hole in said tube in the horizontal plane of the predetermined water-level, to permit water or steam to enter said tube, according to whether said level is exceeded or not.

710,318. TOLL APPARATUS FOR TELEPHONE EXCHANGES. WILLIAM W. DEAN, Chicago, Ill., assignor to Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed Jan. 14, 1902. Serial No. 89,657. (No model.)

Claim.—1. The combination with a telephone-line extending from a substation to a central office, of a blocking-switch at the central office, a magnet connected with the line at the central office, mechanism controlled by said magnet for restoring the blocking-switch, a toll device at the substation and means controlled in the operation of the toll device for determining the flow of current through said magnet independent of the blocking-switch.

2. The combination with a telephone-line extending from a substation to a central office, of a transmitting-telephone at the substation of the line, a source of current connected with the line at the central office, adapted to supply current to said transmitting-telephone, means at the central office for making connection between said telephone-line and another line, a blocking-switch at the central office adapted when set to interrupt the flow of current from said battery through the subscriber's transmitter, a toll device at the substation to be actuated by the subscriber, and means controlled in the operation of said toll device for restoring said blocking-switch to reëstablish the flow of current through said transmitter, substantially as set forth.

3. The combination with a telephone-line extending in two limbs from a substation to a central office, of a transmitting-telephone connected in circuit between the limbs of the line at the substation, a source of current normally included in a bridge of the line at the central office, for supplying current to said transmitting-telephone, a blocking-switch at the central office adapted when set to disconnect one limb of the line from its normal battery connection, whereby the flow of current through the transmitting-telephone is interrupted, means controlled by the flow of current in the other limb of the line for releasing said blocking-switch and thereby restoring the normal circuit connections of the battery with the line, and a switch at the substation for completing the circuit from the aforesaid battery through said last-mentioned limb of the line.

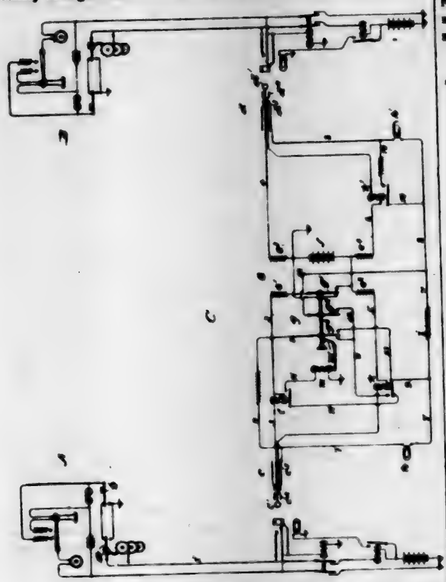

4. The combination with a telephone-line extending from a substation to a central office, of a transmitting-telephone in a bridge of the line at the substation, a source of current in a bridge of the line at the central office, adapted to supply current to said transmitting-telephone, a blocking-switch adapted to be set at the central office, for interrupting the flow of current from said battery through the transmitter, a magnet connected with the line and mechanism controlled thereby for restoring said blocking-switch, and means at the substation of the line, for determining the flow of current through said magnet independent of said blocking-switch, substantially as described.

5. The combination with a signal-circuit including serially a source of current *f*, a resistance *i* and a signal *h*, of a shunt 9 about said signal, a relay *k* controlling said shunt, a switch *g* adapted when set to open said shunt 9, and to close a second shunt 9, 13, about said signal independent of said relay, and a shunt 12 about the resistance *i* brought under the control of the relay when said switch is set, substantially as described.

6. The combination with two united telephone-lines having transmitting and receiving telephones in bridges at the respective substations thereof, of a source of current normally connected in a bridge of the united lines for supplying current to the substation-transmitters, an induction device, a switch at the central office adapted to block one of said lines by disconnecting one limb thereof from its normal connection with said source of current, said source being left connected between the blocked line and a return-conductor, the lines being telephonically united through said induction device, but the transmitter of the blocked line being deprived of current for its operation, a toll device for the blocked line, adapted for actuation by the subscriber, a switch actuated in the operation of the toll device for controlling the circuit of said source of current through the blocked line and the aforesaid return-conductor, and a responsive device at the central office in the last-mentioned circuit.

7. The combination with two line-conductors, of a source of current, one pole whereof is connected to a return-conductor, relays one in each of said line-conductors, a signal controlled by one of said relays, a local circuit controlled by both of said relays jointly, closed in the normal switch-contacts of one relay and the alternate contacts of the other, a responsive device in said local circuit, and switches for independently completing the circuit of either line-conductor.

8. The combination with a telephone-line extending in two limbs from a substation to a central office, of a source of current normally connected in a bridge of the line at the central office for supplying current to the substation, one pole of said source being connected to a return-conductor, a blocking-switch adapted to be set to connect both limbs of the line with the free pole of said source, magnets, one in the path of current to each line-conductor, a toll device at the substation, a switch actuated in the operation of said toll device for opening the circuit of one limb of the line and connecting the other to the return-conductor, and a restoring device for said blocking-switch, controlled jointly by said magnets and brought into operation by the simultaneous excitement of one magnet and inert condition of the other.

710,819. NON-REFILLABLE BOTTLE. JOHN W. EDWARDS, Cleveland, Ohio. Filed Mar. 12, 1902. Serial No. 98,202. (No model.)

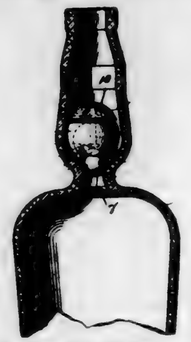

Claim.—1. A non-refillable bottle having a contracted neck portion, an enlargement above the contracted portion, a valve in the enlarged portion, means for holding the valve in an unseated position for the filling operation and for preventing the valve from returning to its original position, substantially as described.

2. A non-refillable bottle having within its enlarged neck portion a valve, means for yieldingly suspending the valve above its seat prior to filling the bottle, and means for forcing the valve to its seat and for preventing its return to its original position after the bottle has been filled, substantially as described.

3. A non-refillable bottle comprising a shell within the neck of the bottle, yielding supports connected to the shell, a ball suspended by the supports prior to filling the bottle, and means for pushing the ball beyond the yielding supports after the bottle has been filled, substantially as described.

4. A non-refillable bottle consisting of a bottle having a contracted neck portion, a hollow shell within the enlargement, yielding supports connected to the shell, a ball within the shell and resting upon the supports, a stem extending through the shell and bearing upon the ball, and a cap connected to the opposite end of the stem, substantially as described.

5. A non-refillable bottle having a contracted neck forming an interior seat for a ball-valve, an enlargement above the seat, a shell within the enlargement, said shell having an open lower end, holes in the top, and yielding supports attached thereto, a stem passing through the shell and resting upon the ball, and a perforated cap attached to the opposite end of the stem, substantially as described.

710,820. SIGNALING APPARATUS. HOWARD A. FREDERICK, Detroit, Mich., assignor to Detroit Electric Signal Company, Detroit, Mich., a Partnership. Filed Sept. 6, 1901. Serial No. 74,579. (No model.)

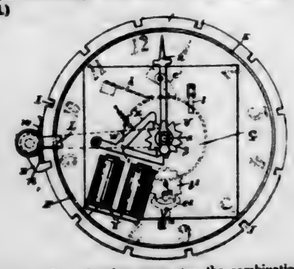

Claim.—1. In a signaling apparatus, the combination with a signal-circuit including a signal adapted to operate progressively, of a circuit breaker and closer included in said circuit, an adjustable operating device for the circuit breaker and closer, and connecting instrumentalities between said operating device and said circuit breaker and closer permitting

an initial movement of the operating device to the desired extent of its adjustment and a relatively reluctant corresponding movement of the circuit breaker and closer, substantially as described.

2. In a signaling apparatus, the combination with a signal-circuit including a signal adapted to operate progressively, of a circuit breaker and closer included in said circuit, an adjustable operating device for the circuit breaker and closer, connecting instrumentalities between said operating device and said circuit breaker and closer permitting an initial movement of the operating device to the desired extent of its adjustment and a relatively reluctant corresponding movement of the circuit breaker and closer, and means for retarding the operation of the circuit breaker and closer after its actuation has been effected, substantially as described.

3. In a signaling apparatus, the combination with a signal-circuit including a signal adapted to operate progressively, of a circuit breaker and closer included within said circuit, a signal-operating device mounted for movement into different positions of adjustment and adapted to be locked in each of its adjusted positions, a yielding operative connection between said operating device and the circuit closer and breaker and means for retarding the operation of said circuit closer and breaker after its actuation has been effected.

4. In a signaling apparatus, the combination with a signal-circuit including a signal adapted to operate progressively, of a rotatable circuit breaker and closer included within said circuit, a revolable operating-arm adapted to actuate and control the operation of the circuit breaker and closer, a spring forming a yielding connection between the arm and said circuit breaker and closer, and a lock for retaining the arm in each of its different positions of adjustment.

5. In a signaling apparatus, the combination with a supporting-frame, of a shaft journaled therein, an operating-arm for rotating the shaft in one direction and adapted to move independently of the shaft when turned in the opposite direction, a rotatable circuit breaker and closer loosely sleeved upon the shaft and having a yielding connection with the latter, a progressively-operating signal, and a circuit including the signal and the circuit breaker and closer.

6. In a signaling apparatus, the combination with a supporting-frame, of a shaft journaled therein, an operating device for rotating the shaft in one direction, a rotatable circuit breaker and closer sleeved upon the shaft, a spring connection connecting said circuit breaker and closer with the shaft, a signal adapted to be operated progressively, and a signal-circuit including the signal and the circuit breaker and closer.

7. A signal and return-signal system, including a combined receiving and transmitting instrument provided with a dial, a shaft, an operating device in engagement with the shaft, a signal located at a point remote from said instrument, an operating device for said signal in operative communication with said shaft, an index operable independently of said shaft, and means independent of said signal-operating device for actuating said index, substantially as described.

8. A signal and return-signal system including a combined receiving and transmitting instrument provided with a dial, a shaft, an operating device in engagement with the shaft, a signal located at a point remote from said instrument, an operating device for said signal in operative communication with said shaft, an index operable independently of said shaft, and magnetic devices for actuating said index, substantially as described.

710,821. FOOT-REST FOR CHAIRS. WALLACE D. GROSJEAN, Canastota, N. Y., assignor to Charles A. Lee, Canastota, N. Y. Filed Mar. 23, 1901. Serial No. 52,501. (No model.)

Claim.—1. In combination with the body of a chair or the like; a bar or rod supported thereby; a frame slidably connected to said bar and suspended at one end therefrom; a folding foot-rest pivotally connected to said frame; and means carried by the rest and adapted to be brought into operative relation to the rod for maintaining the rest and frame in an elevated position when they are moved back beneath the body.

2. In combination with the body of a chair or the like, a frame; a pivotal sliding connection between one end of said frame and the under side of the body; legs pivoted to the forward end of said frame; stops to maintain the legs in an upright position; and a foot-rest carried by the legs, whereby the frame may be withdrawn from beneath the body, and swung to any desired position in front of the chair, substantially as described.

3. In combination with the body of a chair or the like, a bar or rod carried thereby; a frame slidably mounted on said bar and pivotally suspended therefrom; legs pivoted to the forward end of the frame; stops to maintain the legs in an upright position; and a foot-rest carried by the legs.

4. In combination with the body of a chair or the like, a bar or rod carried thereby; a frame; a hanger connected to said frame; a sliding connection intermediate said rod and hanger; legs pivoted to the forward end of the frame; stops to maintain the legs in an upright position; and a foot-rest hinged to the upper ends of the legs.

5. In combination with the body of a chair or the like, a bar or rod carried thereby; a frame; a hanger extending upwardly from the rear portion of the frame and provided with an eye encircling the rod; legs pivotally connected to the forward end of the frame; stops acting to maintain the legs in an upright position; and a foot-rest hinged to the upper ends of the legs.

6. In combination with the body of a chair or the like, a bar or rod carried thereby; a frame comprising side bars F, F and cross-bar G; a hanger extending upwardly from said cross-bar and having an eye encircling the rod; a pair of legs pivotally connected to the inner faces of the bars F, F; a foot-rest hinged to the upper forward faces of the legs; stops carried by the legs; and a hook also connected to the legs.

7. In combination with the body of a chair, a bar or rod carried thereby; a frame slidably connected to the bar and suspended therefrom; a foot-rest pivotally connected to the forward end of the frame; and means carried by the rest to engage the bar when the rest is folded down upon the frame and the whole moved back beneath the body.

8. In combination with the body of a chair or the like, a rod or bar M removably mounted therein; a folding foot-rest; a pivotal, suspending connection intermediate said rest and the rod; and means carried by the rest engaging the bar and maintaining the folded rest in an elevated position beneath the body.

710,822. SLIDING WINDOW. WILLIAM E. HARDEMAN, Carlton, Victoria, Australia. Filed Dec. 3, 1901. Serial No. 84,572. (No model.)

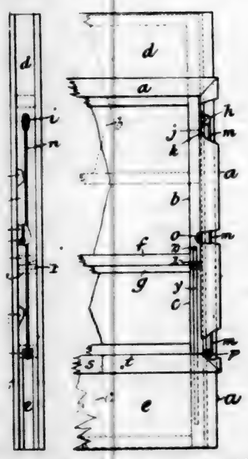

Claim.—1. In a sliding window, the combination with the window-frame, the upper and lower sashes, and a pulley located in the upper part of each side of said frame, of a cord connected to one side of the upper sash, passing upward over one of said pulleys, then downward and across said lower sash, in supporting engagement therewith, then upward over the other of said pulleys, and connected to the other side of said upper sash.

2. In a sliding window, the combination with the window-frame, the upper and lower sashes, and a pulley located in the upper part of each side of said frame, of a cord connected to one side of the upper sash, passing upward over one of said pulleys, then downward and across said lower sash, in supporting engagement therewith, then upward over the other of said pulleys, and connected to the other side of said upper sash, and means for adjusting said cord.

3. In a sliding window, the combination with the window-frame, the upper and lower sashes, and a pulley located in the upper part of each side of said frame, of a cord connected to one side of the upper sash, passing upward over one of said pulleys, then downward and across said lower sash, in supporting engagement therewith, then upward over the other of said pulleys, and connected to the other side of said upper sash, means for adjusting said cord, and means for determining the meeting-point of said sashes when they are in closed position.

4. In a sliding window the combination with the window-frame, the upper and lower sashes, upper and lower walls for said sashes, and a pulley located in the upper part of each side of said frame, of a cord connected to one side of the upper sash, passing upward over one of said pulleys, then downward and across said lower sash, in supporting engagement therewith, then upward over the other of said pulleys, and connected to the other side of said upper sash, means for adjusting said cord, means for determining the meeting-point of said sashes when they are in closed position, means located between said sashes for excluding dust, rain, and the like, a pivoted shutter located at the upper part of said lower well, for excluding dust, rain and the like therefrom, said shutter being adapted to be tilted out of the path of said lower sash when it is lowered in opening the window, and means on said lower sash for restoring said tilted shutter to normal position when said lower sash is raised in closing the window.

5. In a sliding window, the combination with the window-frame and a pulley located in the upper part of each side of said frame, of a groove in each side of said frame, a lower sash fitted into said grooves, an upper sash superimposed above said lower sash in said grooves, and a cord connected to one side of said upper sash, passing upward over one of said pulleys, then downward and across said lower sash, in supporting engagement therewith, then upward over the other of said pulleys and connected to the other side of said upper sash.

6. In a sliding window, the combination with the window-frame, and a pulley located in the upper part of each side of said frame, of a groove in each side of said frame, a lower sash fitted into said grooves, an upper sash superimposed above said lower sash in said grooves, means for determining the meeting-point of said sashes when they are in closed position, a cord connected to one side of said upper sash, passing upward over one of said pulleys, then downward and across said lower sash, in supporting engagement therewith, then upward over the other of said pulleys and connected to the other side of said upper sash, and means for adjusting said cord.

710,823. TORPEDO-SHELL PROTECTOR. JOSEPH M. HAVILES, Corning, Ohio. Filed Feb. 6, 1902. Serial No. 92,857. (No model.)

Claim.—1. An oil-well-torpedo shell provided at its opposite ends with a guard or guide composed of salt rubber and consisting of the cylindrical body expanded over the shell and the ribs or lugs extending longitudinally on the outer side of the cylindrical body from end to end thereof and slightly rounded at their ends, substantially as and for the purposes set forth.

2. A guide or guard for an oil-well-torpedo shell consisting of the cylindrical body, and the ribs or lugs projecting from the outer side thereof, substantially as set forth.

3. A guide or guard for torpedo-shells, consisting of a soft-rubber cylinder to be expanded over the shell and longitudinal ribs or lugs on the outer side of the said cylinder, substantially as set forth.

4. An oil-well-torpedo shell provided with the spaced-apart soft-leaning guides or guards composed of the cylindrical bodies expanded over the shell and the ribs or flanges on the outer side of said cylindrical bodies, substantially as and for the purposes set forth.

710,824. BANDOLEER OR CARTRIDGE-BELT. JOHN HYLAND, St. Kilda, Victoria, Australia, assignor to Frederic Godfrey Hughes, Melbourne, Victoria, Australia. Filed Oct. 29, 1900. Serial No. 34,333. (No model.)

Claim.—A belt having secured thereto throughout its length, a series of cartridge-containers, each of said containers consisting of a plate forming a rear wall and having its upper edge extending downwardly at an inclination and a portion of its lower edge at each end extending inwardly and upwardly at an inclination, said upwardly and inwardly inclined portions of the lower edge terminating in the remaining portion of the lower edge which extends at an inclination, said plate having a portion at one end bent upon itself to form a flat side wall and a flat front wall, the edge of said front wall extending at an inclination toward each other, the lower portion of said front wall slitted to form a spring-clip adjacent to the lower portion of the flat side wall, said plate further bent upon itself at its other end to form a curvilinear side wall and a flat front wall, means integral with the top of the said front wall, curvilinear side wall and said plate for closing the space formed at the top of the front wall, curvilinear side wall and plate, the lower portion of said last-mentioned front wall slitted to form a spring-clip adjacent to the lower portion of the curvilinear side wall, said front walls arranged a suitable distance from and disengaging each other, substantially as herein shown and described.

710,825. APPARATUS FOR TRANSPORTING LIVE AQUATIC ANIMALS. MAX KERR, St. Gall, and ALFRED WIDEY, Zurich, Switzerland. Filed Feb. 6, 1901. Serial No. 46,248. (No model.)

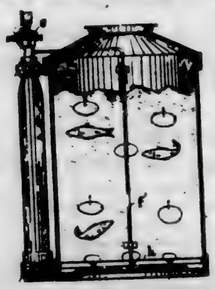

Claim.—The combination with a receptacle for the transportation and storage of live fish and the like, of a pressure-bottle removably mounted thereon, an exhaust-valve in the top of said bottle, means for operating said valve, a pipe connected to the pressure-bottle, a gage for measuring the pressure therein, a pressure-reducing valve mounted on said pipe, a gage for measuring the pressure of the reducing-valve, an air-pipe detachably connected to the aforesaid pipe extending into the receptacle and terminating in a perforated coil near the bottom thereof, and a foraminous plate mounted above said coil in close proximity thereto, substantially as and for the purpose specified.

710,826. KRAUT-CUTTER. GUSTAV H. KIESAU and LOUIS MAUER, Berlin, Ill. Filed Apr. 22, 1902. Serial No. 104,101. (No model.)

Claim.—1. A kraut-cutter comprising a plurality of sections, one of said sections being provided with oppositely-rotating drawing and cutting

knives, one or more sections provided with oppositely-rotating circular cutting knives, and means for rotating said knives.

2. A kraut-cutter comprising a frame provided with a hopper, a series of oppositely-rotating hook-shaped drawing and cutting knives, a series of circular cutting-knives arranged below the said drawing-knives and means for simultaneously rotating both series of knives.

3. A kraut-cutter comprising a frame consisting of a plurality of hinged sections, one of said sections supporting a pair of removable shafts carrying a series of hook shaped drawing-knives, one or more of said sections below the drawing-knife section supporting a pair of removable shafts carrying a series of circular cutting-knives, clearing fingers or bars secured to the ends of the said sections, and projecting between the series of knives of each section, and means for imparting a rotary motion to the respective shafts.

4. A kraut-cutter comprising a frame consisting of a plurality of hinged sections, one of said sections carrying a hopper, a second section below said hopper-section carrying a pair of oppositely-rotating shafts provided with a series of oppositely-arranged hook-shaped drawing-knives, a section below said drawing-knife section, carrying a pair of oppositely-rotating shafts provided with a series of circular cutting-knives, each of said knife-carrying sections being provided with clearing fingers or bars projecting between the series of knives, a horizontally-projecting bar secured to the lower section, and provided with a central opening, and means for simultaneously rotating each pair of shafts in the knife-carrying sections toward each other.

5. A kraut-cutter comprising a frame consisting of a plurality of sections, one section carrying a pair of shafts provided with a series of overlapping hook-shaped drawing and cutting knives having their working edges reversely curved, a section below said drawing-knife section, carrying a pair of shafts provided with a series of overlapping circular cutting-knives, the circular knives being set on the shafts in closer relation than the series of drawing-knives, and means for rotating each pair of shafts toward each other simultaneously.

710,827. LITHOGRAPHING OR PRINTING PRESS ROLLER. ALOYS W. KLEIN, Dayton, Ohio. Filed July 31, 1902. Serial No. 117,754. (No model.)

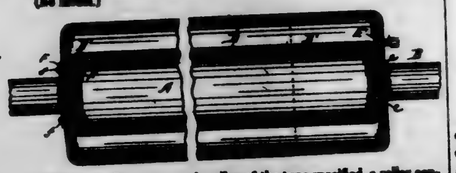

Claim.—1. In a pneumatic roller of the type specified, a roller consisting of an enlarged body or core terminating in journals, an outer elastic casing inclosing the sides and ends of said roller-body, one end of said outer casing having an annular wire band which surrounds a journal of the roller, and the other end of said outer casing being secured between washers which surround the other journal of said roller, an inner tubing having its ends extending around the ends of the body of said roller and confined within the ends of the outer casing, the chamber within said inner tubing extending around the ends of the core or body of the roller, and an air-valve located adjacent to one of said journals, substantially as specified.

2. In a pneumatic roller of the type specified, the combination of a roller having an enlarged body terminating in journals, an outer elastic casing inclosing the circumference of the ends of said body, an annular metallic band inclosed in one end of said outer casing, said band surrounding one of the journals of the roller, the other end of said outer casing terminating in a series of tongues with perforations therein, said tongues being adapted to fit around the other end of the body of said roller, washers inclosing said end and surrounding the other journal of the roller, screws penetrating said washers and the openings in the end of the outer casing whereby that end of the outer casing is secured in position, an inner pneumatic tube or casing extending around the ends of the body of the roller, and providing an extended chamber which lies around the ends of said body and approaches the journals of the roller, and an air-valve located in proximity to one of said journals, substantially as set forth.

3. In a roller of the type specified, a roller having an enlarged body terminating in journals, an elastic casing having its ends carried around the ends of said body, washers inclosing the ends of said elastic casing and serving to prevent liquids from coming in contact with said casing, an outer leather casing inclosing said elastic casing and said washers, and an inner pneumatic casing the ends of which extend around the ends of the body of the roller, said inner pneumatic casing providing an air-chamber which extends on each end of the body of the roller in proximity to the journals of the roller, and an air-valve arranged adjacent to said roller-journal, substantially as specified.

710,828. UMBRELLA RIB AND STRETCHER-JOINT. CLYDE MACMILLAN, Williamsport, Pa., assignor of two-thirds to Lewis J. Bilger and A. S. Mahaffey, Williamsport, Pa. Filed Dec. 17, 1901. Serial No. 86,322. (No model.)

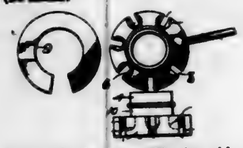

Claim.—1. In an umbrella, the combination with a notch having sockets therein and ribs having enlarged heads, of an expansible split ring having an aperture normally narrower than a rib-head.

2. In an umbrella, the combination with a sleeve or ferrule, an annular flange thereon having a series of sockets, ribs having heads to enter said sockets, said flange also having slots for the passage of said ribs or braces, the sleeve or ferrule having a groove adjacent to said flange, and an expansible split ring disposed in said groove and having an aperture normally narrower than a rib-head.

3. In an umbrella, the combination with a sleeve, and an annular flange on said sleeve, said flange having a series of independent sockets and having slots communicating with said sockets, of a series of ribs or braces having heads mounted independently in said sockets, and an expansible split ring, said ring mounted on the sleeve and normally inclosing the heads of the ribs or braces in the sockets in said flange and having an aperture normally narrower than a rib-head.

710,829. EXPLOSIVE-ENGINE FOR MOTOR-VEHICLES. ROY C. MARES, San Diego, Cal. Filed Sept. 7, 1901. Serial No. 74,654. (No model.)

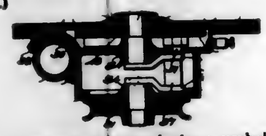

Claim.—1. A gas-operated motor having a crank-shaft, a crank-casing, a recessed fly-wheel into which said casing extends to form a closed chamber, valve-operating mechanism contained within said chamber, and gearing connecting said valve-operating mechanism to the crank-shaft.

2. A gas-operated motor having a crank-casing, an annular flange on said casing, and a fly-wheel having a recess for the reception of the flange of the crank-casing, the whole forming a closed chamber for the protection of the valve-operating mechanism.

3. The combination in a motor, of a crank-shaft, a casing therefor, a fly-wheel on said crank-shaft, a pinion carried thereby, gears having journals on the crank-shaft casing and intermeshing with said pinion, spark-timing and valve-operating cams carried by said gears, and a protective casing for said gears, said casing being formed partly by the fly-wheel and partly by said crank-casing.

4. The combination in a motor, of a crank-shaft, a crank, a crank-casing, a recessed fly-wheel mounted on the crank-shaft at a point outside the casing, and a valve-gear casing formed partly by the outer portion of said crank-casing and partly by said fly-wheel.

5. The combination in a motor, of a crank-shaft, a toothed and flanged hub secured thereto, pins carried by the flange, a recessed fly-wheel having in its central web openings for the reception of said pins, a securing-nut adapted to threads on the hub, and valve-operating gearing intermeshing with the teeth of said hub.

6. The combination in a motor, of a crank-shaft, a hub secured thereto and having gear-teeth, a recessed fly-wheel secured to said hub, a crank-casing having an annular flange adapted to fit within the recess

of the wheel, gear-wheels mounted on studs carried by the crank-casing and intermeshing with the teeth of the hub, a spark-timing cam operatively connected to one of said gear-wheels, a contact-breaker adapted to be operated by said cam, a valve operating cam operatively connected to the second gear-wheel, and mechanism connecting said cam to the exhaust-valve of the motor.

710,880. CARBURETER FOR EXPLOSIVE-ENGINES. ROY C. MARES, San Francisco, Cal. Filed Jan. 3, 1902. Serial No. 88,836. (No model.)

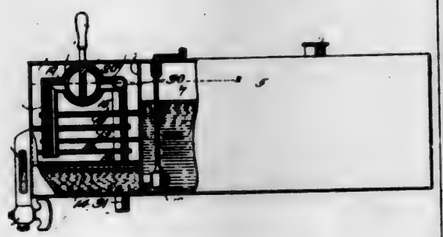

Claim.—1. The combination in a carbureter, of an oil tank or reservoir having at one end a carbureting-chamber, a valve for controlling the flow of hydrocarbon from the reservoir to the chamber, a gage-glass arranged on one side of said chamber, a series of superposed shelves in the carbureting-chamber, absorbent material on said shelves, side wicks for conveying hydrocarbon from the lower portion of the chamber to the absorbent material, and a ported air-valve arranged in the upper portion of said carbureting-chamber.

2. In a device of the class specified, a tank or reservoir having at one end a carbureting-chamber, a valve for controlling the flow of hydrocarbon from the tank to the chamber, a horizontally-disposed partition extending across the lower portion of the chamber at a point above the liquid-level, a series of superposed shelves arranged within said chamber, absorbent material disposed on said shelves and at the sides of the chamber, and a valve situated in the upper portion of said chamber for controlling the supply of air to the carbureter.

3. In a device of the class specified, a tank or reservoir having a vertical partition dividing the same into two compartments one of which forms a reservoir, and the other a carbureting-chamber, a valve for controlling the flow of hydrocarbon from the reservoir to the chamber, a horizontally-disposed partition extending across the lower portion of the chamber at a point above the liquid-level, a gage-glass communicating with said chamber and having a discharge-cock, a series of superposed shelves arranged within said chamber, absorbent material disposed on said shelves and at the sides of the chamber, and a ported valve arranged in the upper portion of the chamber for controlling the supply of air to the carbureter.

4. The combination in a carbureter, of the chamber having a horizontally-disposed partition situated above the liquid-level and adapted to prevent the splashing of the liquid into the upper portion of the chamber, a series of superposed shelves arranged within said chamber, absorbent material carried by the shelves and disposed on opposite sides of the chamber, and a valve arranged in the upper portion of said chamber for controlling the supply of air thereto.

5. The combination in a carbureter, of the casing forming a carbureting-chamber and provided with absorbent material for effecting the saturation of the air, a valve-casing disposed within the chamber and having two pairs of alining ports or passages, a valve-body having its central portion divided into three chambers and ports or passages arranged in the valve and movable into alinement with the ports of the casing to govern the admittance of air to be carbureted and the admittance of pure air for admixture with the gas, substantially as specified.

6. The combination in a carbureter, of a casing forming a carbureting-chamber and provided with absorbent material for effecting the saturation of the air, a valve-casing disposed within the chamber and having ports or passages 19, 20, 21 and 23, a condensing-pipe leading from the port 19 to the lower portion of the carbureting-chamber, a pipe or passage 30 extending between the ports 20 and 22, a discharge-pipe 31 leading from said pipe 30, a hollow valve having chambers 23, 24 and 25, elongated ports 21' and 22' in alinement with the ports 21 and 22, and ports 19' and 20' disposed at an angle to each other and movable into alinement with the casing-ports 19 and 20 to govern the supply of air to be carbureted and the admittance of air to be admixed and discharged with the gas, substantially as specified.

710,881. MOLDING-FLASK. JAMES MILLS, Wilmington, Del. Filed Jan. 14, 1901. Serial No. 43,208. (No model.)

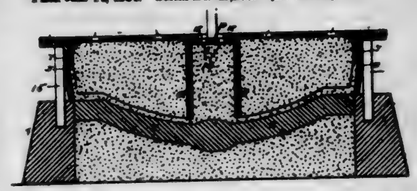

Claim.—1. A molding-flask cope comprising an outer portion with straight upper part and inwardly-inclined lower part, and an inner portion capable of sliding within said straight upper part of the outer portion of the cope, said sliding inner portion having a top plate and transverse ribs below the same, said ribs compressing the sand beneath them and the top plate compressing the sand between the ribs, substantially as specified.

2. A molding-flask cope having a top plate provided with an opening and with depending ribs separated by spaces which extend up to the top plate, said ribs terminating at their inner ends near the center of the plate and forming a central passage communicating with the opening in the plate, whereby when the top plate is pressed upon the sand in the cope, said ribs will be thrust into the sand and the latter will be compressed by the top plate within the central passage and in the spaces between the ribs, substantially as specified.

3. A molding-flask cope having a top plate with depending ribs separated by spaces which extend up to the top plate, and a depending tubular portion, whereby, when the top plate is pressed upon the sand in the cope, said ribs and the depending tube will be thrust into the sand and the latter will be compressed by the top plate within the tube and in the spaces between the ribs, substantially as specified.

4. A molding-flask cope having a top plate with depending ribs separated by spaces which extend up to the top plate, and a depending tube having a detachable stopper-plate at its upper end, substantially as specified.

5. A molding-flask cope having a top plate with depending outer flange, depending central tube and depending ribs extending between said outer flange and tube, and separated by spaces which extend up to the top plate, substantially as specified.

710,882. PACKAGE-WRAPPER. LULA S. MILLER, Bluebell Oaks. Filed Dec. 5, 1901. Serial No. 84,735. (No model.)

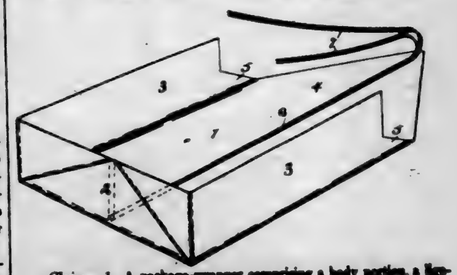

Claim.—1. A package-wrapper comprising a body portion, a ligament longitudinally arranged in respect thereto, and connected to the inner side throughout its entire length, one end of said ligament extending beyond the body portion, and a second ligament connected to the first adjacent the end of the body portion, substantially as described.

2. A package-wrapper comprising a body portion having one end and two side walls at right angles to the body portion, said side walls and end wall permanently connected, and a ligament extending longitudinally the body portion and connected thereto, and one end of said ligament extending beyond the body portion, and said portion beyond the body portion being divided longitudinally, substantially as described.

3. An improved package-wrapper comprising a body portion having an end and two side walls extending at right angles thereto, the end and side walls being connected, the opposite end of the body portion having a lip projecting in a plane therewith, and a ligament extending longitudinal the package with an end projecting beyond the end of the said projecting lip, substantially as described.

4. A package-wrapper comprising a body portion having a lip projecting in a plane therewith, a ligament extending longitudinally the said

body portion and lip and connected thereto, through its entire length, one end of said ligament extending beyond the body portion, and a second ligament connected to the first adjacent the end of said lip, substantially as described.

5. A package-wrapper comprising a body portion having an end and two side walls, extending at right angles thereto, the end and side walls being connected, the opposite end of the body portion having a lip projecting in a plane therewith, a ligament extending longitudinal the package with an end projecting beyond the end of the said projecting lip, and a second ligament connected to the first adjacent the end of said lip, substantially as described.

6. A package-wrapper comprising a body portion having one end wall and two side walls extending at right angles to the body portion, said end wall and side walls permanently connected, thereby forming a receptacle for the article to be wrapped, a ligament extending from the outer edge of the end of the body portion and connected thereto, said ligament extending beyond the body portion, and a second ligament connected to the first adjacent the end of the body portion, substantially as described.

710,883. SELECTIVE CALLING APPLIANCE FOR TELEPHONE-LINES. FRANK B. MCBERTY, Evanston, Ill., assignor to the Western Electric Company, Chicago, Ill., a Corporation of Illinois. Filed May 21, 1898. Renewed May 24, 1902. Serial No. 718,107. (No model.)

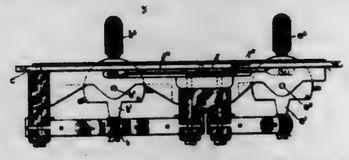

Claim.—1. The combination with two ringing-keys and pivoted switch-levers thereof, of a pivoted arm, a target or indicator carried thereon, and links between the said switch-levers and the said target-lever, whereby the target is set in a different position in the movement of each of the keys, as described.

2. The combination with two calling-keys in a telephone-switch-board, and the actuating-levers thereof movable in the same direction to call, of a centrally-pivoted lever and an indicator carried thereby, a link connecting one of the actuating-levers with one extremity of the said target-lever and a link connecting the other actuating-lever with the other extremity of the target-lever, whereby the target is moved in different directions in the use of the different keys, as described.

3. The combination with two telephone calling-keys and the pivoted actuating-levers thereof, of a pivoted target-lever and an indicator carried thereby, and links connecting each of the actuating-levers of the keys with the target-lever, each of said links having play to permit movement of the target by one link without moving the other link, as described.

4. The combination with two selective calling-keys having pivoted switch-levers movable in the same direction to send different calls, of a centrally-pivoted target-lever and an indicator carried thereby, a link connecting one of said levers with one extremity of the target-lever, and another link connecting the other actuating-lever with the other end of the target-lever, each of said links having play to permit the movement of the target by the other link, as described.

5. The combination with a combination listening and calling key, and a pivoted actuating-lever therefor adapted for movement in opposite directions to actuate the listening or the calling key, and an independent special calling-key having a pivoted lever, of a target-lever, and mechanism connecting each of the actuating-levers with the target-lever, said mechanism being adapted to permit the actuation of the listening-key without moving the target, as described.

6. The combination with the listening and calling key and the pivoted actuating-lever b' therefor, the special calling-key and the pivoted actuating-lever d therefor, of the target-lever f and the indicator carried thereon, the links f^3 f^4 engaging pins on the target-lever at opposite sides of the pivotal point thereof, link f^3 having play to permit the actuation of the listening-key without moving the target-lever, and each of the links f^3 and f^4 having play to permit free movement of the target by the other lever, as described.

710,884. BOOM-RIGGING. FREDERICK V. HUELSER, San Francisco, Cal. Filed Mar. 13, 1902. Serial No. 98,720. (No model.)

Claim.—1. The combination substantially as herein described of the mast, the collars thereon, the rod extending between and supported by said collars and spaced away from the mast, the boom-carrier sliding on said rod and provided with a projecting lug, the boom, the boom-clasp, a bolt by which the inner end of the boom-clasp is pivoted in connection with the lug of the boom-carrier, the clue-line ring, the bolt securing said ring and the opposite plates fitted at their upper ends on opposite sides of the clue-line ring and secured at their lower ends by the pivot bolt of the boom substantially as set forth.

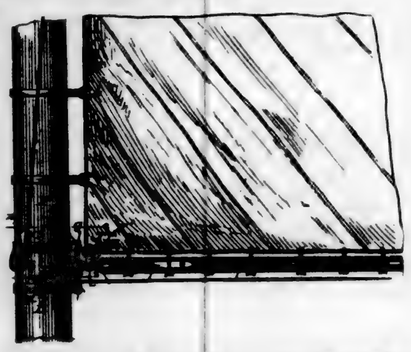

2. In a boom-rigging substantially as described the combination with the mast and the boom, of the upper and lower collars, and guide-rod extending between the said collars, a carrier for the boom supported on said rod, and rings on the lower collar for the deck-load lashing, substantially as set forth.

3. The combination with the upright guide-rod and means for securing the same to the mast, of the carrier sliding on said rod and provided with a lug, the boom, the boom-clasp provided at its inner end with lugs fitting on opposite sides of the lug of the carrier, the clue-ring, the plates fitting at their upper ends alongside the ring and provided with a bolt for securing said ring and fitting at their lower ends along the outer sides of the opposite lugs of the boom-clasp, and the bolt passed through said plates and the lapped lugs of the boom clasp and carrier, substantially as and for the purposes set forth.

710,885. SELECTIVE CALL FOR TELEGRAPH OR TELEPHONE LINES. WILLIAM PALMER, Jr., Rincon, N. Mex., assignor of one-half to Charles H. Dasponah, El Paso, Tex. Filed Dec. 11, 1901. Serial No. 85,444. (No model.)

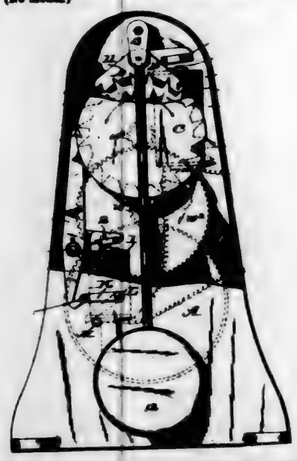

Claim.—1. A selective-call device consisting of a pendulum under the control of an electromagnet arranged to be set in motion from a remote point, a notched disk and mechanism for rotating it, and a tripping device for an alarm-circuit arranged to be set into action by the notched disk and tripping mechanism substantially as described.

2. A selective-call system, comprising for each station a pendulum vibrating synchronously with the pendulums of other stations, electromagnets for starting said pendulums by electric impulses from a distance, a notched disk with a vibrating mechanism for each instrument, a tripping mechanism set into action by the notched disk, and a switch with local circuit and bell arranged to be closed by the said tripping mechanism substantially as described.

3. A selective-call device comprising a pendulum-escapement, an electromagnet for starting the pendulum into action through electric impulses, and a tripping device for closing a local alarm-circuit consisting of an escapement-wheel and a rigidly-attached notched disk with locking-hook arranged to be released by the initial backward movement of the escapement substantially as described.

4. A selective-call device comprising a pendulum-escapement, an electromagnet for starting the pendulum into action, a notched disk operated by said escapement, a locking-lever arranged to engage the notched disk, a spring for throwing the lever out of engagement with the notched disk, an electromagnet for throwing said lever against the tension of said spring, and a switch arranged to be closed by the movement of the lever in response to its electromagnet, and a bell-circuit arranged to be closed by said switch substantially as described.

5. In a device of the kind described, a pendulum-escapement, an electromagnet for starting the pendulum-escapement, and an armature acted upon by said electromagnet and having a loose connection with the pendulum to start the latter to swinging by a tappet or impact action without obstructing its swing substantially as described.

710,886. APPARATUS FOR MANUFACTURING GAS. HILMAR M. PAPST, San Francisco, Cal. Filed Dec. 17, 1901. Serial No. 86,336. (No model.)

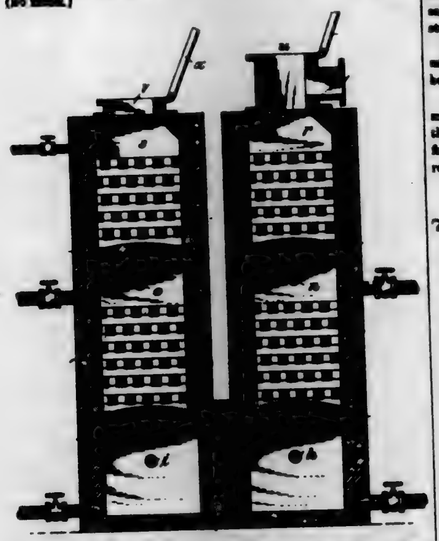

Claim.—1. In an apparatus for manufacturing gas, the combination of a base divided into two chambers connected by a passage in said base, whereby a continuous combustion-chamber is formed, and regenerative or fixing devices supported on said base.

2. In an apparatus for manufacturing gas, the combination of a base, having a wall extending partly through said base, forming two chambers united together, whereby a continuous combustion-chamber is formed, regenerative devices, located over each of said chambers, and inlet-pipes for steam, air and oil, leading into said combustion-chambers and regenerative devices.

3. In an apparatus for manufacturing gas, the combination of a base, a wall passing partly through said base, forming two chambers united together at the rear, whereby a continuous combustion-chamber is formed, a cupola-like structure located over each of said chambers, each of said structures being divided into two parts, each having checker-work therein, inlet-pipes for air and oil leading into each of said chambers in said base, inlet-pipes for steam, air and oil, leading into each of said regenerative or fixing structures and outlet-pipes for the product of said apparatus.

710,887. ROD-PACKING. ALBERT S. PRATT, Boston, Mass. Filed Apr. 26, 1902. Serial No. 104,093. (No model.)

Claim.—1. A body of rod-packing consisting of a ring comprising a fibrous body, and a metallic body combined with the fibrous body, and a wrapper for the combined fibrous body and the metallic body, the latter consisting of two strips or bars of metal wedge shape or triangular in cross-section, placed side by side with the thin edge of one strip or bar next the thick edge of the other, substantially as and for the purpose set forth.

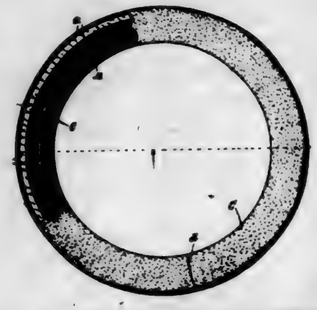

2. A body of rod-packing consisting of a body of fibrous material, and a body of metal in two parts placed longitudinally of the fibrous body, a metallic wrapper for the metallic body, and a fibrous wrapper to inclose said fibrous body and the metallic body with the metallic wrapper, substantially as and for the purpose set forth.

3. A ring of packing for piston-rods, consisting of a body of fibrous material, a metallic body of wedge-shaped leaden strips with a lubricant between them, and an envelop of fibrous material enveloping the whole.

4. A ring of packing for piston-rods consisting of a fibrous body, a metallic body of wedge-shaped triangular strips with a lubricant between them and adhesive fabric enveloping said strips and bearing against the face of the fibrous body, and a fibrous wrapper enveloping the whole and retaining it in compact form.

710,888. BUTTER-PACKER. FREDERICK PRENTON, Deerwood, Minn. Filed Feb. 18, 1902. Serial No. 94,689. (No model.)

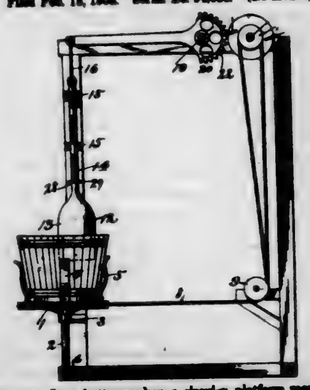

Claim.—1. In a butter-packer, a circular platform mounted to revolve and having a groove in its periphery, a belt engaging said groove, means for driving said belt, a pounder and means for reciprocating said pounder, said belt being arranged to slip while said pounder is in contact with the butter in the tub, substantially as described.

2. In a butter-packer, a circular platform mounted to revolve and having a groove in its periphery, means for securing a tub to said platform, a pounder mounted to be reciprocated, a lever bearing a circular rack, a shaft bearing a pinion located to mesh with said rack, a pulley mounted on said shaft, and a belt passing around said pulley and said platform, substantially as described.

3. In a butter-packer, a circular platform mounted to revolve and having a groove in its periphery, means for securing a tub to said platform, a slidingly-mounted pounder, means for reciprocating said pounder, a pulley, a belt passing around said pulley and fitting the groove in said platform, said belt being arranged to slip when said pounder is in contact with the butter in the tub, substantially as described.

4. In a butter-packer, a platform mounted to revolve, means for securing a tub to said platform, a pounder, means for reciprocating said pounder, and means for driving said platform, which means is arranged to yield when said pounder is in contact with the butter in the tub, substantially as described.

710,889. APPARATUS FOR ANIMATED PHOTOGRAPHY. HENRY M. REICHENBACH, Dobbs Ferry, N. Y. Filed July 27, 1901. Serial No. 69,362. (No model.)

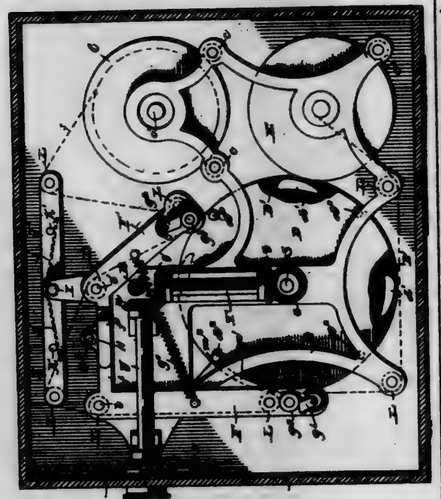

Claim.—1. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of means interposed between said reels, alternately engaging and advancing portions of the film on opposite sides of the lens, said means when engaging the film on one side of the lens being out of engagement with the film on the opposite side of the lens.

2. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of means interposed between said reels, alternately engaging and advancing portions of the film on opposite sides of the lens, said means when engaging the film on one side of the lens being out of engagement with the film on the opposite side of the lens, and means for regulating the period of engagement between said interposed means said film on opposite sides of the lens, for controlling the advancement of the film in predetermined lengths.

3. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable disk interposed between said reels, and means on said disk alternately engaging and advancing at different intervals, portions of the film on opposite sides of the lens in predetermined lengths.

4. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable disk interposed between said reels and provided with projections around the periphery thereof alternately engaging and advancing portions of the film on opposite sides of the lens, and means for regulating the engagement between said projections and film for controlling the advancement of said film.

5. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable disk interposed between said reels alternately engaging and advancing portions of the film on opposite sides of the lens, a lever mounted in proximity to said disk provided with a feed-roller adapted to press the film against said disk, and means for limiting the contact between said film and disk for controlling the advancement of said film.

6. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable disk interposed between said reels alternately engaging and advancing portions of the film on opposite sides of the lens, a bell-crank lever mounted in proximity to said disk provided with a feed-roller adapted to press the film against said disk, and a cam operating on one of the arms of said bell-crank lever for limiting the inward movement of said feed-roller.

7. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable disk interposed between said reels provided with a plurality of projections around the periphery thereof alternately engaging and advancing portions of the film on opposite sides of the lens, a lever mounted in proximity to said disk provided with a feed-roller adapted to press the film against said projections, and means for limiting the contact between said film and projections for controlling the advancement of said film.

8. In an apparatus for animated photography, the combination with a dispensing and a receiving film-reel, of a rotatable disk interposed between said reels provided with a plurality of peripherally-tapering projections, a pair of rollers adapted to engage said projections, pivotally mounted in proximity to said drum, means for holding said rollers in frictional contact with said projections, and means for limiting the inward movement of said rollers.

9. In an apparatus for animated photography, the combination with a dispensing and a receiving film-reel, of a rotatable drum interposed between said reels, provided with a plurality of rounded projections around the periphery thereof, a pair of frames carrying rollers engaging said projections pivotally mounted in proximity to said drum, a spring connection between said pivoted frames, and a cam engaging said frames for limiting their inward movement.

10. In an apparatus for animated photography, the combination with a dispensing and a receiving film-reel, of a rotatable drum interposed between said reels, provided with a plurality of rounded projections around the periphery thereof, a pair of bell-crank levers mounted in proximity to said drum, feed-rollers mounted in one set of arms of said levers, adapted to engage said projections, dogs limiting the backward movement of said rollers, and a cam operating on the other arms of said levers for limiting the inward movement of said rollers.

11. In an apparatus for animated photography, the combination with a dispensing and a receiving film-reel and means for advancing the film, of an equalizing device for taking up the slack in said film, comprising a pair of pivoted arms carrying rollers in their free ends over which the film passes and a spring in engagement with said arms for operating one of said arms when the other is moved from its normal position.

12. In an apparatus for animated photography, the combination with a dispensing and a receiving reel and means for advancing the film, of an equalizing device comprising a pair of oppositely-disposed pivoted frames having rollers journaled in their free ends over which the film passes, and a spring in engagement with said frames for operating the opposite frame when one of said frames is moved out of its normal position.

13. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel and means interposed between said reels for alternately engaging and advancing portions of the film on opposite sides of the lens in predetermined lengths, of means for equalizing the tension on said film during its advancement before exposure, comprising a pair of oppositely-disposed spring-operated pivoted frames having rollers in their free ends over which the film passes.

14. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable disk interposed between said reels adapted to engage and advance portions of the film on opposite sides of the lens, means for regulating the engagement between said disk and film permitting longer or shorter portions of the film to be advanced, and means for equalizing the tension on said film comprising a pair of spring-operated pivoted frames provided with rollers over which the film passes.

15. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable drum interposed between said reels, levers mounted in proximity to said drum provided with feed-rollers adapted to alternately press the film in engagement with said drum on opposite sides of the lens, means for limiting the engagement of said film and drum for controlling the advancement of said film, and a pair of spring-operated arms provided with rollers engaging said film for regulating the tension on said film during its advancement.

16. In an apparatus for animated photography, the combination with a dispensing and a receiving film-reel, of a rotatable drum interposed between said reels, provided with a plurality of projections around the periphery thereof, a lever mounted in proximity to said drum provided with a feed-roller adapted to press the film against said projections, means for limiting the engagement between said film and projections for controlling the advancement of said film, and a pair of spring-operated arms provided with rollers engaging said film for regulating the tension on said film during its advancement.

17. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a rotatable drum interposed between said reels provided with a plurality of projections around the periphery thereof for alternately engaging and advancing portions of the film on opposite sides of the lens, a pair of bell-crank levers carrying rollers in one of their arms adapted to press the film against said projections, a cam operating on the other arms of said bell-crank levers limiting the inward movement of said rollers for controlling the advancement of said film, and a pair of spring-operated pivoted arms for regulating the tension on said film during its advancement.

18. In an apparatus for animated photography, the combination with a lens, a dispensing and receiving film-reel, of a rotatable drum interposed between said reels, means on said drum for alternately engaging and advancing at different intervals portions of the film on opposite sides of the lens in predetermined lengths, a film-trap adapted to engage and clamp the film before the lens when open, and means on said drum for opening said film-trap after exposure.

19. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-wheel, of a rotatable drum interposed between said reels, means on said drum for alternately engaging and advancing at different intervals portions of the film on opposite sides of the lens, means for equalizing the tension on said film during its advancement, a film-trap located in proximity to said drum, for clamping said film during its advancement, and means for opening said film when clamped.

20. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-wheel, of a rotatable drum interposed between said reels, means on said drum for alternately engaging and advancing at different intervals portions of the film on opposite sides of the lens in predetermined lengths, means for equalizing the tension on said film during its advancement, comprising a pair of spring-operated frames over which the film passes, a film-trap adapted to engage and clamp the film before the lens when open, and means on said drum for opening said film-trap after exposure.

21. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, of a drum interposed between said reels provided with projections around the periphery thereof adapted to engage and advance portions of the film on opposite sides of the lens, means regulating the engagement between said projections and film for controlling the advancement of said film, means for equalizing the tension on said film during its advancement, and a film-trap for clamping said film before the lens during each successive advancement.

22. In an apparatus for animated photography, the combination with a dispensing and a receiving film-reel, of a film-advancing drum provided with a plurality of rounded projections around the periphery thereof, a pair of rollers adapted to press the film in engagement with said projections pivotally mounted in proximity to said drum, means for controlling the advancement of said film between said rollers and said rounded projections, means for equalizing the tension on said film during its advancement, a film-trap comprising two sections for clamping said film before the exposure-opening when open, and means on said drum engaging one section of said film-trap for opening the same against a spring tension, substantially as described.

23. In an apparatus for animated photography, the combination with the box or casing, the lens, and the film and film-advancing means, of a mirror pivotally supported behind said film, a door in said casing, and a connection between said door and mirror for simultaneously adjusting said mirror behind the lens and admitting of the projection of light on the mirror.

24. In an apparatus for animated photography, the combination with a lens, a dispensing and a receiving film-reel, a drum alternately engaging and advancing portions of the film on opposite sides of the lens in predetermined lengths, a film-trap adapted to engage and clamp the film before the lens when open, means on said drum for opening said film-trap after exposure, and a mirror behind said film-trap for projecting light through the film when the lens is open.

710,840. WATER-TUBE BOILER. EDWIN S. RUSE, Pueblo, Colo. Filed May 20, 1902. Serial No. 108,582. (No model.)

Claim.—1. The combination in a water-tube boiler, of a plurality of main drums having water-tubes extending between them, an auxiliary drum, a plurality of relatively small headers connected thereto by comparatively long substantially perpendicular tubes and to certain of the main drums by comparatively short and inclined tubes, and water-tubes connecting said auxiliary drum to the main drum or drums, substantially as described.

2. The combination in a water-tube boiler, of a plurality of main drums having water-tubes extending between them, an auxiliary drum adjacent to certain of said drums, a plurality of relatively small headers adjacent to others of the drums, water-tubes connecting said headers with the adjacent main drum or drums, and tubes connecting the auxiliary drum with its adjacent main drums, substantially as described.

3. In a water-tube boiler, the combination of a plurality of pairs of main drums having water-tubes extending between them an auxiliary drum adjacent to and between two of the main drums substantially parallel to the same, a series of relatively small headers adjacent to others of the main drums, tubes connecting the auxiliary drum and the headers, and other tubes connecting the headers and the auxiliary drum with their adjacent main drums respectively, substantially as described.

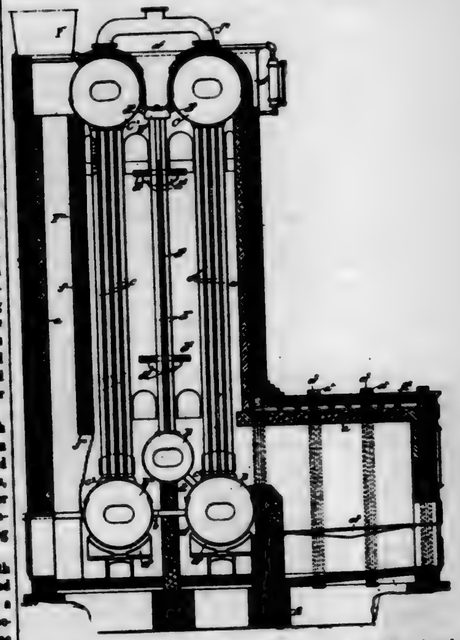

4. In a water-tube boiler, the combination of a plurality of main drums having water-tubes connecting them, an auxiliary drum having series of water-tubes, headers connected to said tubes, a baffle-wall extending between said series of tubes, brackets supported by said wall and projecting therefrom between certain of the tubes and deflecting-walls carried by said brackets, substantially as described.

5. In a water-tube boiler, the combination of a plurality of main drums having water-tubes connecting them in pairs, an auxiliary drum between two of the main drums and parallel to the same, headers having series of water-tubes connecting them to the said auxiliary drum, a baffle-wall between the said series of tubes, brackets projecting substantially at right angles to the wall and supported thereby, and deflecting-walls carried by said brackets, substantially as described.

6. In a water-tube boiler, having upper and lower main drums connected by water-tubes, an auxiliary drum parallel to and above the lower drums, a series of headers adjacent to the upper drums and each connected to the auxiliary drum by a tube or tubes, with tubes connecting the said auxiliary drum and the headers to their respective adjacent main drums, substantially as described.

7. A plurality of upper and lower main drums, an auxiliary drum adjacent and connected to certain of the same, a series of independent headers adjacent to others of said drums, a tube or tubes connecting each header with the auxiliary drum and other tubes connecting each header with the adjacent main drums, substantially as described.

8. In a water-tube boiler, the combination with substantially cylindrical main drums of a series of independent headers of relatively small capacity placed adjacent to certain of said drums and having a curbed or surface substantially parallel to the surface of the main drums, an auxiliary drum having its long axis substantially parallel to certain of the axes of the main drums, tubes connecting said auxiliary drum with the main drums, other tubes connecting it with the headers and tubes extending between the adjacent surfaces of the drums and headers, substantially as described.

710,841. FUSEE OR MAINSPR. WILLIAM H. RYDER, Liverpool, England. Filed Aug. 16, 1900. Serial No. 26,955. (No model.)

Claim.—1. A combined basket and mainspr, comprising a vessel provided with a swinging bail, a hook secured to the upper edge of the basket between the bail-pivots to engage a bar or support, and a flexible connection or chain secured to the middle of the bail and of a length to extend from the bail, when the latter is folded, downwardly under the

vessel and provided at its free end with means to fasten or secure it to a lower fixed support and prevent the vessel from rising or tilting; substantially as described.

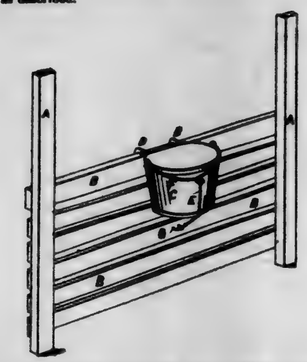

2. A combined bucket and manger, comprising a vessel provided with a swinging bail and hooks projecting outwardly from the upper edge of the vessel between the bail-pivots to hook over a suitable support, said hooks being pivoted to swing downwardly with their free ends against the side of the bucket in nesting the latter, and a flexible connection or chain secured to the middle of the bail, and of a length to extend downwardly and inwardly under the vessel, and provided at its free end with means for connecting it to a lower fixed support; substantially as described.

710,842. WATER-CLOSET. DAVID S. SCHUERMAN, Rockford, Ill. Filed Dec. 17, 1901. Serial No. 86,263. (No model.)

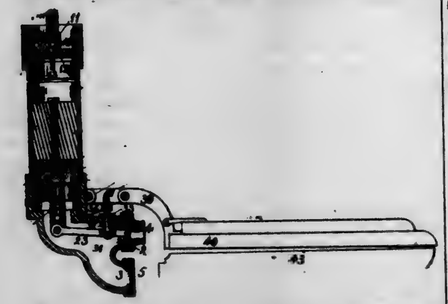

Claim.—1. In a water-closet, the combination of a vertically-arranged stand-pipe, a movable weight located within the stand-pipe, a stationary water-supply pipe located within the stand-pipe, a double-ended valve guided by the water-pipe, a seat, and a connection between the seat and valve, the valve adapted to press against the weight when the weight is down.

2. In a water-closet, the combination of a vertically-arranged stand-pipe, a movable weight located within the stand-pipe, a stationary water-supply pipe located within the stand-pipe, a double-ended valve guided by the water-pipe, a seat, a connection between the seat and valve, the valve adapted to press against the weight when the weight is down, and a valve located at the upper end of the stand-pipe and operated by the weight.

3. In a water-closet, the combination of a stand-pipe, a weight located within the stand-pipe, a double-ended valve located within the stand-pipe, a lever, a plunger connected with the lever, a spring operating on the plunger, and a seat operating upon the plunger.

4. In a water-closet, the combination of a vertically-arranged stand-pipe, a water-supply pipe extending from near the upper end of the stand-pipe and communicating with the lower portion of the stand-pipe, a valve within the water-supply pipe and located at the upper end of the stand-pipe, and a movable weight within the stand-pipe adapted to move the valve in one direction.

710,843. GUARD FOR HEEL-TRIMMING AND EDGE-TRIMMING MACHINES. BOURNE STRATTON and FREDERIC A. OSLE, New York, N. Y. Filed Apr. 24, 1901. Serial No. 57,101. (No model.)

Claim.—1. In a guard attachment for edge-trimming machines, the revolvable eccentric guard carried by the cutter-head, and having a spur-gear upon the hub thereof, the casing carried by said guard, and carrying a pinion in mesh with said spur-gear, means for turning said pinion, and the bracket carried by the main frame of the machine, said casing having an arm engaging a slot of such bracket, and means for securing said guard in adjusted position, substantially as specified.

2. In a guard attachment for edge-trimming machines, the revolvable guard eccentrically mounted upon a laterally-projecting hub portion of the cutter-head, and having also a laterally-projecting hub portion carrying a spur-gear, the casing mounted upon the hub of the guard, and carrying a pinion in mesh with said gear, and provided with means for turning the same, said casing having a laterally-projecting arm, and the bracket carried by the main frame of the machine, and having a slotted head for engagement with such arm, and a set-screw carried by said holder and engaging the hub of said guard to hold it stationary as adjusted, substantially as specified.

3. In a guard attachment for edge-trimming machines, the revolvable eccentric guard carried by the cutter-head, and having a spur-gear upon the hub thereof, the casing carried by said guard, and having a pinion in mesh with said gear, means for turning said pinion, the bracket carried by the main frame of the machine, said casing having an arm engaging said bracket, means for securing the guard as adjusted, a nut upon the cutter-shaft, and a spring located between said nut and the hub of the guard, substantially as specified.

4. In a guard attachment for edge-trimming machines, the revolvable eccentric guard carried by the cutter-head, and having a spur-gear upon the hub thereof, the casing carried by said guard, and carrying a pinion in mesh with said spur-gear, means for turning said pinion, means for securing the casing against rotation, and means for securing the guard as adjusted, substantially as specified.

710,844. FLUE-SCRAPER. HENRY K. SWINBURNE and ROBERT J. MCCARTY, Clinton, Mass. Filed Oct. 11, 1901. Serial No. 78,343. (No model.)

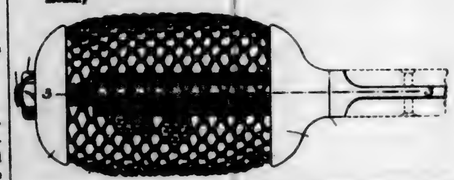

Claim.—1. A flue-scraper comprising an open-ended tube of flexible woven-wire fabric, and a holder having heads detachably engaging the ends of said tube to support it and impart relative rigidity thereto.

2. A flue-scraper comprising an open-ended tube of flexible woven-wire fabric, and a holder having heads detachably engaging the ends of said tube to support it and impart relative rigidity thereto, said heads being formed to overlap the end portions of the outer surface of the tube, and to furnish bearings or abutments for the ends of the tube.

3. A flue-scraper comprising an open-ended tube of flexible woven-wire fabric, and a holder having heads detachably engaging the ends of said tube to support it and impart relative rigidity thereto, and means for varying the distance between said heads to vary the diameter of the tube.

4. A flue-scraper comprising an open-ended tube of flexible woven-wire fabric, and means for confining and holding the ends of said tube and imparting relative rigidity to it.

5. A flue-scraper comprising an open-ended tube of flexible, expansible woven-wire fabric, and a holder therefor having means for longitudinally compressing the tube to increase its diameter.

6. A flue-scraper comprising an open-ended tube of flexible, expansible woven-wire fabric, and a holder therefor having means for longitudinally compressing the tube to increase its diameter, and means for limiting the longitudinal compression of the tube.

7. A flue-scraper comprising an open-ended tube of flexible woven-wire fabric, the wire members of said tube being formed to present alternating helical ridges and depressions, a tube-holder having heads engaged with the ends of said tube, said heads being formed to overlap the ends of the tube, and auxiliary helical scraping members contained in said helical depressions and extending at their ends under the overlapping portions of said heads.

8. As an article of manufacture, a scraper member consisting essentially of a tube having its greatest diameter between its ends, said tube being composed of flexible woven-wire fabric susceptible of presenting, under longitudinal compression, a resilient outer surface.

9. As an article of manufacture, a tubular woven-wire scraper member composed of helical wires extending longitudinally of the tube, and having their convolutions interlocked at their ends to form selvages, and at intermediate points to form helical scraping-ribs and open communications between said ribs, said tube being adapted to be made resilient by longitudinal compression.

10. A flue-scraper having helical scraping edges, each composed of a series of wire members assembled and interlocked to form a corrugated scraping edge, and adapted to be made resilient.

11. A flue-scraper having helical scraping edges, each adapted to be made resilient and composed of a series of interlocked wire members each bearing against and supported by the adjacent member.

710,845. WAGON-BRAKE. THOMAS J. SWINEHE, VICTOR A. A. BUSSEE, and EDWARD BUSSEE, Kokomo, Ind. Filed June 30, 1902. Serial No. 113,534. (No model.)

Claim.—1. In a device of the class described, the combination with a running-gear having a sliding tongue, of a transverse rock-shaft mounted on the rear portion of the running-gear and designed to be connected with a brake bar or beam, and an adjustable connection extending from the rock-shaft to the tongue and composed of telescoping sections, one of the sections being tubular and the other consisting of a rod, and a clamp composed of adjustable members having grooved inner faces, the grooves being of different diameters and receiving and engaging the rod and the tubular section of the connection, substantially as described.

2. In a device of the class described, the combination with a running-gear having a sliding tongue, of an adjustable connection extending rearward from the tongue and composed of a rod, and a tube receiving the rod, a clamp composed of two sections or members provided at their inner faces with grooves of different diameters receiving the rod and the tube and engaging the same, and means for connecting the tube with brake-shoes, substantially as described.

3. In a device of the class described, the combination with a running-gear having a sliding tongue, of a brake-beam having brake-shoes, a rock-shaft journaled on the rear portion of the running-gear and provided at its ends with arms connected with the brake-beam, said rock-shaft being also provided with a central loop, a tube or pipe secured to the loop, a rod telescoping in the tube or pipe, a clamp composed of sections or members having grooves of different diameters to receive the rod and the pipe or tube, a rod or bolt depending from the tongue and receiving the front end of the rod, a brace supporting the depending rod or bolt, and means carried by the tongue for engaging the front bounds to lock the brake out of operation, substantially as described.

710,846. ELECTROMETALLURGIC TREATMENT OF ORES OF COPPER OR OTHER METALS. OSSIAKEITH J. TOMMASI, Paris, France. Filed Aug. 6, 1901. Serial No. 71,104. (No specimens.)

Claim.—1. The process of treating electrolytically the impure and ferruginous solutions of sulfate of copper obtainable by the solution of copper ores in sulfuric acid, in order to recover the copper electrolytically without special preparation, by proceeding with the electrolytic treatment at a voltage between about two-tenths and eight-tenths of a volt with insoluble anodes maintained in contact with sulfurous acid, substantially as described.

2. In the electrolytic decomposition of the impure solutions obtained by roasting sulfid ores and dissolving the products of such roasting, the process of recovering a metal from said solution without preliminary treatment to remove another metal or other metals present therein, consisting in introducing sulfurous acid from the said roasting operation into the electrolytic bath, while at the same time adjusting the voltage in such manner as to effect the decomposition of the salts of the metal to be recovered and not of the other metals present in said solution, substantially as described.

710,847. CLOSURE FOR JARS OR BOTTLES. FRANK TYRE, Philadelphia, Pa., assignor to John A. Higgins, Newark, N. J. Filed Apr. 21, 1902. Serial No. 103,263. (No model.)

Claim.—1. A jar or bottle closure consisting of a disk having one or more slits extending inwardly from the edge of the disk at one side of the same, and a compressible cord passing through the slitted portion of the disk and having its bearing on the under side of the same at the inner end of the slit or slits and adjacent to the edge of the disk, substantially as specified.

2. A jar or bottle closure consisting of a disk having two slits extending inwardly from the edge of the disk at one side of the same, and a compressible looped cord passing through said slits, the bight of the cord bearing on the under side of the disk at the inner end of the tongue formed by the slits and adjacent to the edge of the disk, substantially as specified.

3. A jar or bottle closure consisting of a disk having two slits extending inwardly from the edge of the disk at one side of the same and converging from the edge of the disk so as to form a tongue narrowing toward its base, and a looped cord passing through said slits, the bight of the cord bearing on the under side of the disk at the inner end of the tongue formed by the slits and adjacent to the edge of the disk, substantially as specified.

4. A jar or bottle closure consisting of a disk having one or more slits extending inwardly from the edge of the same, and beveled so that one wall of the slit overlaps the other, and a cord passing through the slit and having on the under side of the disk a bearing upon the underlapping portion of the same, substantially as specified.

710,848. ELECTRICAL SYSTEM OF RECORDING AND CHECKING AS APPLIED TO RAILWAY SIGNALING. WILLIAM H. H. WEAVER, Macon, Ga., assignor of one-half to Robert J. Spatz, Macon, Ga. Filed June 1, 1901. Serial No. 62,703. (No model.)

Claim.—1. An electric train-order apparatus, comprising a despatcher's station, and any number of train-signal-adjusting operators' stations both the despatcher's and operators' stations being provided with check-signal devices connected electrically with and contemporaneously, automatically, and positively actuated by the movement of the semaphore-arm or train-signal at the operator's station said signal being differentiated in kind to show whether it be for danger or safety substantially as described.

2. An electric train-order apparatus, comprising a despatcher's station, and any number of train-signal-adjusting operators' stations, both the despatcher's and operators' stations being provided with a time-recorder connected electrically with and contemporaneously, automatically, and positively actuated by the movement of the semaphore-arm or train-signal at the operator's station said time-recorder being constructed and arranged as described to record permanently the kind of signal set, as to danger or safety substantially as described.

3. An electric train-order apparatus, comprising a despatcher's station, and any number of train-signal-adjusting operators' stations, both the despatcher's and operators' stations being provided with a differentiating time recorder for recording the time of setting a train-signal and also the kind of signal set that is to say, whether a danger-signal, or a line-free signal, said differentiating recorders at both places being electrically connected with and contemporaneously, automatically, and positively actuated by the movement of the semaphore-arm or train-signal at the operator's station substantially as described.

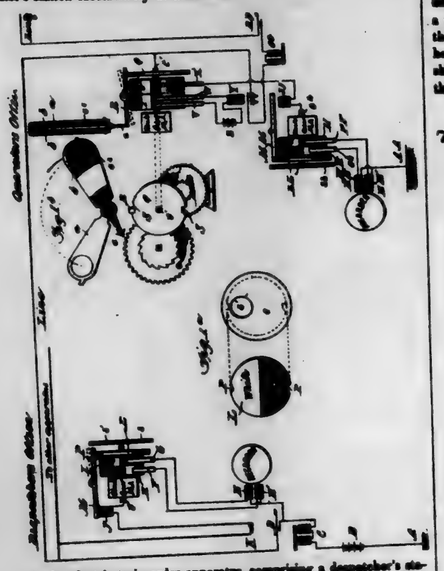

4. An electric train-order apparatus, comprising a despatcher's station, and any number of train-signal-adjusting operators' stations, both the despatcher's and operators' stations having check-signal devices connected electrically with, and contemporaneously, automatically, and positively actuated by the movement of the semaphore-arm or train-signal at the operator's station, said signal devices being constructed and arranged to report the kind of signal, as to danger or safety, an automatic cut-out device at the operator's station for breaking the continuity of the main line and grounding the same, and a push-button or circuit-closer at the despatcher's office for grounding that end of the line around the open Morse key and through the automatic signal-receiving devices substantially as described.

5. In an apparatus of the kind described, an electrical time-recorder having duplicated and differentiating record-markings for indicating the kind of the signal as well as its time of receipt, separate electromagnets controlling separate marking devices for the differentiated record, and commutator devices with actuating mechanism for completing the circuit through one or the other of said electromagnets according to the character of signal to be recorded substantially as described.

710,849. HAT-PIN. JOHN WEBER, Braddock, Pa. Filed June 13, 1902. Serial No. 111,262. (No model.)

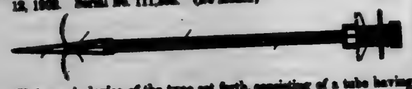

Claim.—A device of the type set forth, consisting of a tube having a hollow conical-shaped portion threaded to its lower end with oppositely-arranged elongated slots arranged therein, a rod having arc-shaped forks pivoted to its ends, said forks having their ends engaging the end walls formed by the said slots, the opposite end of said tube being flared, a head member threaded within said flared end and having oppositely-arranged slots therein, a head on the rod engaging in said head member of the tube, oppositely-disposed guides carried by said head of the rod extending through said last-named slots, a cap threaded onto said head member of the tube, and a spring on the interior of the head member of the tube bearing against said cap and the said head of the rod, substantially as described.

710,850. VENTILATOR. JAMES R. WILD, Cambridge, Mass. Filed Apr. 12, 1902. Serial No. 102,855. (No model.)

Claim.—A ventilating device, comprising a main pipe, oppositely-disposed hemispherical shells secured to the upper end of the pipe with a vertical space between them, a short air-pipe of greater diameter than the main pipe and having its upper end secured to the lower side of the hemispherical shells and opening into the space between them, and a shield standing free from and surrounding the hemispherical shells over the space between them.

710,851. APPLE-PARER. MYRON B. BROOKS, Nashville, Mich., assignor to Goodell Company, Antrim, N. H. Filed May 22, 1902. Serial No. 108,510. (No model.)

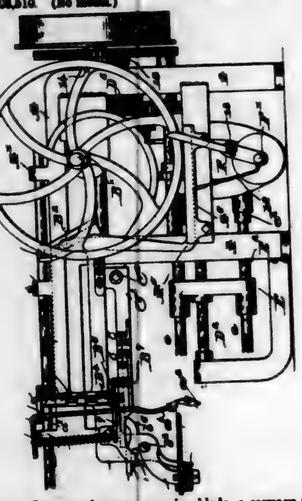

Claim.—1. In an apple-parer, a paring-blade, a carriage to sustain said blade, means to move said carriage, a plurality of fork-spindles each provided with a core-discharger, a stop-plate having an open space, said plate arresting the core-dischargers in the position where left by the application of an apple to a fork, a lever, and means to move said lever that its free end may pass through said space and meet and move forward each core-discharger independently to thereby discharge the cores from each fork in succession.

2. In an apple-parer, a shaft, bearings for each end of said shaft, a plurality of spiders adjustably secured to said shaft at a distance apart between said shaft-bearings, each spider having a plurality of bearings, a plurality of fork-carrying spindles contained in the bearings of said spiders, means to rotate the spider-carrying shaft intermittingly at a varying speed, said means comprising a continuously-rotatable pinion, a gear having a cam-surface and a star-wheel having curved faces, and means to rotate said fork-spindles one after the other while said shaft is at rest and while the paring mechanism is acting to pare an apple.

3. In an apple-parer, a shaft having a connected notched wheel provided with a plurality of projections, each notch having an acting surface, combined with a continuously-rotating wheel having an outwardly-projecting flange, a slot at the end of said flange, and a convexed working surface at a distance from said slot, said working surface in the rotation of the wheel acting first upon one or the other of the faces of the notched wheel starting the shaft slowly, the slot finally embracing a projection of said wheel and completing the movement of the shaft, the projection thereafter being acted upon by the faces of the flange whereby the shaft carrying the fork-spindles may be rotated intermittingly and started slowly to thus avoid shock and strain of the machine.

710,852. CURTAIN-POLE AND SHADE-FIXTURE. ELIAS H. GALLEN, Lynchburg, Pa. Filed Feb. 11, 1902. Serial No. 93,551. (No model.)

Claim.—In a combined curtain-pole and shade-fixture comprising a pole 3 having mounted thereon adjustable shade-brackets, an arm carrying a rod secured to one end of the pole, and a bracket carrying a rack secured to the other end of the pole, the latter being adapted to receive the end of said rod, all parts being arranged substantially as shown and described.

710,853. BANANA-CRATE. CHARLES A. DOUD and CHARLES B. BROWN, La Crosse, Wis., assignors to Western Banana Crate Manufacturing Company, La Crosse, Wis. Filed May 28, 1902. Serial No. 108,662. (No model.)

Claim.—1. In a fruit-crate, the upper and lower hoops, and the flexible lining secured to said hoops at its upper and lower portions, tightly stretched and tapering from above and below toward the center, substantially as specified.

2. In a fruit-crate, the innerment and the double tapering lining secured at top and bottom to said innerment, and tightly stretched to escape the sides of the innerment, substantially as specified.

3. In a fruit-crate, the circular-hoop innerment, having the upper and lower interior hoops, a flexible exteriorly-concave lining secured at its upper and lower portions to said hoops, and stretched tightly therebetween to escape the sides of the innerment, substantially as specified.

4. In a fruit-crate, the innerment having upper and lower hoops, and the flexible lining having upper and lower portions wrapped around said hoops, and extending beyond the same to form a cover and bottom of one piece of material with the lining proper, substantially as specified.

5. In a fruit-crate, the innerment having upper and lower hoops, and the flexible lining having upper and lower portions wrapped around said hoops, and extending beyond the same to form an open cover adapted in closing to be gathered and tied, and an open bottom adapted in closing to be gathered exteriorly of the lining and tied, substantially as specified.

710,854. WIRELESS-TELEGRAPH SYSTEM. CORNELIUS D. ELLERY, Washington, D. C., assignor, by direct and mesne assignments to American Wireless Telephone and Telegraph Company, a Corporation of Arizona Territory, and the Consolidated Wireless Telegraph and Telephone Company, a Corporation of Arizona Territory. Filed Dec. 3, 1901. Serial No. 84,514. (No model.)

Claim.—1. The method of transmitting intelligence, which consists in producing electrical waves; modifying such waves in accordance with the signal sent; receiving such waves upon an aerial circuit resonant with the transmitted waves; and subjecting a wave-responsive device to the excessive potential difference at the terminals of a frequency-determining element of said resonant circuit.

2. The method of transmitting intelligence, which consists in producing electrical waves; modifying such waves in accordance with the signal sent; receiving such waves upon an aerial circuit resonant with the transmitted waves; subjecting a wave-responsive device to the excessive potential difference at the terminals of the inductance of said resonant circuit; and controlling a translating device by change of condition of said wave-responsive device.

3. The method of transmitting intelligence, which consists in producing electrical waves; modifying such waves in accordance with the signal sent; receiving such waves upon an aerial circuit resonant with the transmitted waves; subjecting a wave-responsive device to the excessive potential difference at the terminals of the inductance of said resonant circuit; and utilizing the change of condition of said wave-responsive device to produce the signal.

4. The method of receiving intelligence transmitted as electroradiant energy through the natural media, which consists in transforming the received electroradiant energy into the energy of electric currents in an aerial circuit resonant with the transmitted energy, and subjecting a wave-responsive device to the potential difference at the terminals of a frequency-determining element of the resonant aerial circuit.

5. The method of receiving intelligence transmitted as electroradiant energy through the natural media, which consists in transforming the received electroradiant energy into the energy of electric currents in an aerial circuit resonant with the transmitted energy, and subjecting a wave-responsive device through a condenser to the potential difference at the terminals of a frequency-determining element of the resonant aerial circuit.

6. The method of receiving intelligence transmitted as electroradiant energy through the natural media, which consists in transforming the received electroradiant energy into the energy of electric currents in an aerial circuit resonant with the transmitted energy, and subjecting a wave-responsive device to the excessive potential difference existing at the terminals of the inductance of the resonant aerial circuit.

7. The method of receiving a plurality of messages, simultaneously or independently, transmitted as electroradiant energies of different frequencies, which consists in transforming said energies into the energies of electric currents of different frequencies in a plurality of aerial circuits, each resonant with a transmitted energy and having a common frequency-determining element, and subjecting a wave-responsive device to the potential difference at the terminals of a frequency-determining element of each resonant aerial circuit.

710,855. WIRELESS-TELEGRAPH SYSTEM. CORNELIUS D. ELLERY, Rosemont, Pa., assignor to Consolidated Wireless Telegraph and Telephone Company, a Corporation of Arizona Territory. Original application filed Dec. 3, 1901, Serial No. 84,514. Divided and this application filed May 20, 1902. Serial No. 108,494. (No model.)

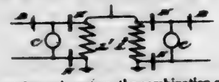

Claim.—1. In a telegraph system, the combination of means for generating electrical waves; means for modifying such waves in accordance with the signal sent; an aerial receiving-circuit resonant with the transmitted waves; and a wave-responsive device connected to the terminals of an element of the resonant aerial circuit.

2. In a telegraph system, the combination of means for generating electrical waves; means for modifying such waves in accordance with the signal sent; an aerial receiving-circuit resonant with the transmitted waves; and a wave-responsive device connected to the terminals of the inductance of the resonant aerial circuit.

3. In a telegraph system, the combination of an aerial circuit resonant with the transmitted waves; means influenced by the resonant rise of potential across the terminals of the inductance of said resonant circuit; and recording means controlled by said aforementioned means.

4. In a signaling system, the combination of a receiving-conductor, an inductance in series with said conductor and an earth connection, and forming a circuit resonant with the transmitted energy, and a wave-responsive device subjected to the excessive potential at the terminals of said inductance.

5. In a signaling system, the combination of a receiving-circuit resonant with the transmitted energy, a wave-responsive device subjected to the excessive potential difference existing at the terminals of the inductance element of the resonant circuit, and a condenser between the wave-responsive device and said element.

6. In a signaling system, the combination of an aerial receiving-circuit resonant with the transmitted energy, a wave-responsive device subjected to the excessive potential difference at the terminals of the inductance element of the resonant circuit, and a condenser between the wave-responsive device and said element.

7. In a signaling system, a receiving-circuit resonant with the transmitted energy, a wave-responsive device in shunt to the inductance element of said circuit, and condensers between the terminals of said wave-responsive device and the terminals of the inductance element of said resonant circuit.

8. In a signaling system, a plurality of receiving-circuits, each selective of energy of a predetermined frequency, a frequency-determining element common to all the circuits, and a wave-responding device in shunt to each of the remaining elements of the selective circuits.

9. In a signaling system, a plurality of resonant receiving-circuits, an aerial conductor common to all said circuits, and a wave-responsive device in shunt to the inductance element in each resonant circuit.

10. In a signaling system, a plurality of receiving-circuits, each selective of a transmitted energy, a frequency-determining element common to all the circuits, and a wave-responsive device in shunt to a frequency-determining element in each selective circuit, whereby a plurality of independent messages represented by energies of different frequencies may be simultaneously or independently recorded.

710,356. CIRCUIT-BREAKER FOR ELECTRIC-LAMP GLOWERS. FREDERICK M. GODDARD, Pittsburg, Pa., assignor to George Westinghouse, Pittsburg, Pa. Filed July 20, 1899. Serial No. 724,453. (No model.)

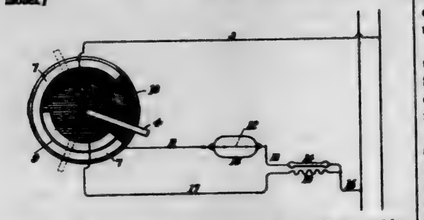

Claim.—1. In an electric-lighting system, the combination with a supply-circuit, a series-connected glower and ballast device and a heater connected to one side of said supply-circuit, of a controlling-switch having a member connected to the other side of the supply-circuit and a relatively movable member comprising a short contact-terminal connected to the heater and a long contact-terminal connected to the ballast device, whereby the movement of one of said members relatively to the other serves to connect the glower, ballast device and heater in circuit simultaneously and to maintain the glower and ballast device in circuit after the heater is cut out.

2. The combination with a glower of the type described, a ballast device in series therewith, and an electric heater in a shunt to the said glower and ballast device, of a hand-operated switch-arm permanently connected to one of the main conductors, two contact-plates in the path of the said switch-arm, connected respectively to the opposite mains through the glower and the heater circuits, the said contact-plate for the heater-circuit being shorter than the contact-plate for the glower-circuit.

710,357. MANUFACTURE OF WINDOW AND PLATE GLASS. WILLIAM H. HEAL, Marion, Ind., assignor of one-half to John H. Forrest, Marion, Ind. Filed Jan. 25, 1902. Serial No. 91,192. (No specimens.)

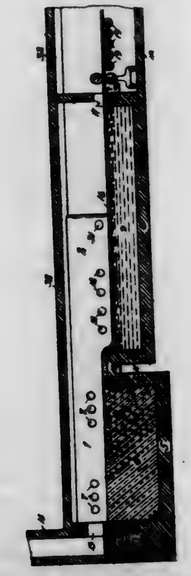

Claim.—1. The method of forming glass into sheets, or plates, by melting the glass and flowing and floating it, in its melted state, over the surface of melted metal, substantially as described.

2. The method of forming glass into sheets, or plates, consisting in melting the glass and flowing and floating it over the surface of melted metal, substantially as described.

3. The method of forming glass into sheets and plates, consisting in melting the glass and flowing and floating it over the surface of melted metal, and removing the sheet or plate, as formed, from said surface, substantially as described.

4. The method of forming glass into continuous sheets, by melting the glass and producing a regular flow of the melted glass into a sheet over the surface of melted metal, and, with corresponding regularity, removing the sheet, as formed, from said surface, substantially as described.

5. The method of forming glass into continuous sheets, consisting in melting the glass, and producing, by the application of heat, a regular flow of the glass into a sheet over the surface of melted metal, and, with corresponding regularity, removing the sheet, as formed, from said surface, substantially as described.

6. The herein-described process of manufacturing sheet-glass, consisting in melting glass in a suitable tank, and flowing the melted glass from such tank to and over the surface of melted metal contained in a suitable tank, and floating the melted glass on said surface until the same forms, by gravitation, into a sheet of uniform thickness, and then removing the sheet from said surface, as and for the purposes specified.

7. The method of manufacturing glass into continuous sheets, by the use of a pair of tanks, consisting in melting the glass in one of said tanks and maintaining in the other a supply of melted metal, and gradually flowing the melted glass from the tank wherein melted to and over the surface of the melted contents of the other tank, and flowing and floating the melted glass into a sheet upon said surface, and gradually removing said sheet as formed from said surface, substantially as described, and as and for the purposes specified.

8. The method herein described, of manufacturing glass into sheet form, consisting in melting the glass in a suitable tank and flowing the melted glass from such tank to and over the surface of the melted contents of a corresponding tank adapted to receive such flow of glass, and support and float the same, and permit it to spread into a sheet over said surface; and when said sheet is so formed, removing the same, as and for the purposes specified.

9. The method of manufacturing glass into sheets and plates, consisting in melting the glass in a suitable tank, and flowing the melted glass therefrom to and over the surface of melted metal contained in a suitable receptacle, and floating the melted glass on said surface until the same forms, by gravitation and the application of heat, into a sheet of uniform thickness, and then removing the sheet from said surface, substantially as described.

10. The method of manufacturing glass in continuous sheets, consisting in melting the glass in a suitable tank, and flowing the melted glass gradually to and over the surface of the melted contents of a corresponding tank, and floating and spreading said melted glass into a sheet over said surface, and removing the sheet gradually, as formed from said surface, substantially as described, and as and for the purposes specified.

11. The method herein described of forming glass into sheets and plates, consisting in melting the glass in a suitable tank and flowing the melted glass therefrom to and over the melted contents of a corresponding tank, said melted contents being of greater specific gravity than glass, and floating and spreading said melted glass, by the combined action of gravitation and heat, into a sheet over and upon the surface of said melted contents, and removing the sheet thus formed, as and for the purposes specified.

12. The method of manufacturing sheet-glass by one continuous operation, consisting in melting the glass in a suitable tank and flowing the melted glass, under continuous heat, from said tank into a corresponding tank and over the surface of melted metal therein contained, flowing and floating the glass into a sheet over said surface, drawing and forming the sheet of glass, and cooling the sheet in said drawing and forming operation, substantially as described, and for the purposes specified.

13. The herein-described method of manufacturing annealed sheet-glass by one continuous operation, consisting in melting the glass in a suitable tank, flowing the melted glass therefrom to and over the surface of melted metal contained in a suitable receptacle, floating the melted glass and spreading it into a sheet on said surface, and subjecting it to continuous heat for regulating the softness of the glass, and keeping said metal melted, drawing and forming the sheet of glass, cooling the glass in said drawing and forming operation, and annealing the sheet of glass, as and for the purposes specified.

14. The method of manufacturing glass into a continuous sheet, consisting in feeding the glass into a suitable melting-tank, melting the glass therein, flowing the melted glass therefrom into a suitable receptacle containing melted metal, floating and spreading the glass in a sheet over the surface of said metal by the simultaneous action of heat and gravitation, forming and drawing the sheet of glass, and cooling the sheet in the forming and drawing operation, substantially as described, and as and for the purposes specified.

15. The method of manufacturing annealed glass in a continuous sheet, consisting in melting the glass in a suitable tank, flowing the glass as melted into a suitable receptacle containing melted metal, floating and spreading the melted glass over the surface of the melted contents of said receptacle by the simultaneous action of heat and gravitation, drawing and forming the sheet of glass, cooling the sheet in the forming and drawing operation, and annealing the sheet of glass substantially as described, and as and for the purposes specified.

16. The method of manufacturing glass in a continuous sheet, which consists in melting the glass in a suitable tank, flowing the melted glass therefrom into a suitable receptacle containing melted metal of greater specific gravity than glass, spreading and floating the melted glass, by the combined action of heat and gravitation, over the surface of said melted metal, cooling the glass to a proper consistency and tenacity for drawing, and applying tractive force thereto to form and draw the sheet from said surface, cooling the sheet in said drawing and forming operation, substantially as described, and as and for the purposes specified.

710,358. POWER-HAMMER. THEBE HOLMSTROM, Starbuck, Minn., assignor of one-half to Louis Thorstenson, Starbuck, Minn. Filed June 3, 1902. Serial No. 110,017. (No model.)

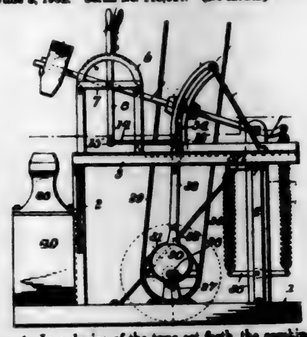

Claim.—1. In a device of the type set forth, the combination with the base and the standard carried thereby, of a table carried by the base, a carriage slidingly mounted on the table, an arm pivoted to the standard, and carrying a hammer on its forward end, a sleeve on said arm, a segmental plate carried by the carriage, with means carried by the sleeve operating through said segmental plate, means for actuating the arm in a vertical plane, means secured to the rear end of the arm for returning the same to its normal position, and means for moving the carriage in a horizontal plane.

2. A device of the type set forth, comprising a pivoted arm carrying a hammer on its one end, and means on its other end for returning the arm to its normal position, a movable carriage with a guide-plate thereon, means freely movable on the arm and movably connected to the guide-plate, and means connected to said last-named means for actuating the arm.

3. In a device of the type set forth the combination with the base and the table, of a carriage movably mounted on the table, an arm pivotally carried by the base, with a hammer on the arm, a means for actuating the arm, a slotted segmental plate carried by the carriage, with a sleeve freely movable on the arm carrying a bolt engaging through said slotted plate, a means on the table for moving the carriage in a horizontal plane, and means carried by the carriage and engaging said last-named means, for forming a connection between the carriage and the last-named means.

710,359. TOY AIR-GUN. PETER D. HOEVEN, Newark, N. Y., assignor of two-thirds to John M. Bannenheid, Newark, N. Y. Filed Jan. 29, 1902. Serial No. 91,767. (No model.)

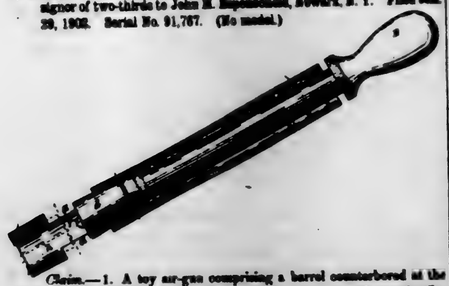

Claim.—1. A toy air-gun comprising a barrel counterbored at the forward end, and having enlarged chamber at the other end, a projectile-stopper to close the end of the barrel back of the counterbore, a cap for the forward end of the barrel, and a piston for the barrel, substantially as set forth.

2. A toy air-gun comprising a hollow barrel having a chamber at either end, that at its rear end being enlarged, a stopper for the barrel in one chamber, a perforated cap for the barrel over the stopper, and a piston for the barrel, substantially as shown and described.

710,360. CHECK-SEVERING DEVICE. FOSTER J. HILL, Brooklyn, N. Y., assignor, by mesne assignments, to American Mechanical Cashier Company, a Corporation of New Jersey. Filed Sept. 20, 1901. Serial No. 76,007. (No model.)

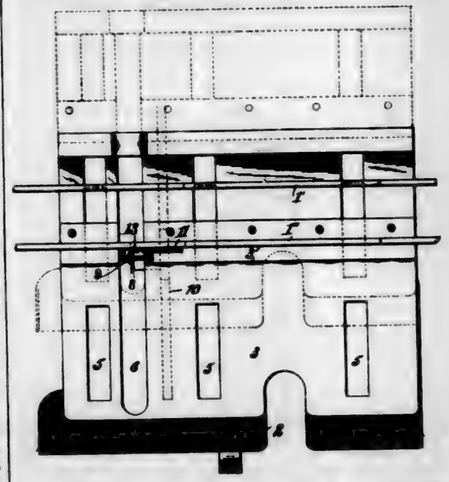

Claim.—1. The combination with a movable slip-carrier, of a slip-severing device connected to and operated by the movement of said carrier.

2. In a machine of the character described, the combination with a movable carrier for supporting a removable slip and inserting it within the machine, of a severing device operated by the movement of the carrier to sever the slip.

3. In a machine of the character described, the combination of a sliding support movable and guided in said machine and adapted to receive a slip and insert same in the machine, of a severing device located in fixed relation to the machine and having operating connections with the carrier whereby movement of the carrier operates the severing device to sever the slip.

4. The combination with a slip-carrier and a severing device consisting of engaging rotary knives, one of which is operatively connected with said carrier.

5. The combination with a slip-carrier and a severing device consisting of engaging rotary knives, both of which are operatively connected with said carrier.

6. The severing device comprising two rotary knives engaging by the peripheral portions of their sides, and means for yieldingly drawing one of said knives into engagement with the other.

7. The combination with the movable slip-carrier of the two rotary slip-severing knives, a gear connected to one of said knives, and a rack connected to the slip-carrier and operating said gear to turn the knives.

710,361. SLACK-ADJUSTER. WILLIAM J. KEVILLE and JAMES P. CAREY, Denver, Colo. Filed Apr. 7, 1902. Serial No. 101,867. (No model.)

Claim.—1. In a slack-adjuster, the combination with suitable air-brake mechanism, of a divided brake-rod so located as to take up slack when shortened, the adjacent rod extremities being threaded, an interiorly-threaded gear mounted on the threaded extremity of each rod, a third gear meshing with the two gears of the rod, a shaft upon which the third gear is mounted and made fast, a ratchet also fast on the shaft, a support for holding the gears in operative relation, a lever-arm loose on the shaft, a spring-held dog connected with the lever-arm and engaging the ratchet, an air-cylinder, a spring-held piston located therein, a rod connecting the piston-stem with the said lever-arm, and a conduit leading

from the brake-cylinder to the air-cylinder, substantially as shown and described.

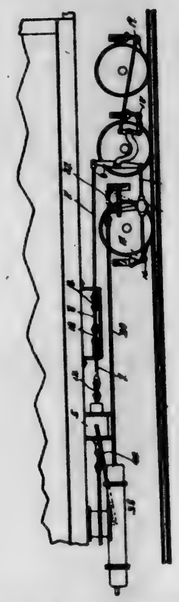

2. In a slack-adjuster, the combination with air-brake mechanism, of a divided brake-rod located to take up slack when shortened, the adjacent extremities of said rod being threaded, an interiorly-threaded gear mounted on the threaded portion of each rod, a third gear meshing with the rod-gears, a shaft upon which the third gear is made fast, a housing inclosing the gears and in which the shaft is journaled, a ratchet-wheel also fast on the shaft, a lever-arm loose on the shaft, a spring-held dog connected with the lever-arm and engaging the ratchet, an air-cylinder, a piston therein, an operative connection between the piston-stem and the said lever, a coil-spring located between the piston and the cylinder-head, and means for introducing air from the brake-cylinder to the air-cylinder, the arrangement being such that the air-cylinder piston is actuated to compress the spring, when the brake-cylinder has traveled beyond its normal limit, substantially as described.

3. The combination with fluid-actuated brake mechanism, of a fluid-cylinder two pistons therein, a spring located between each piston and the head of the cylinder, means for introducing air from the brake-cylinder to the air-cylinder between the pistons when the brake-cylinder has traveled beyond a predetermined limit, means for taking up slack, and a suitable operative connection between said means and the pistons of the air-cylinder, substantially as described.

4. The combination with fluid-actuated brake mechanism, of a fluid-cylinder, two pistons therein, a coil-spring located between each piston and the head of the cylinder, and surrounding the piston-stem, means to limit the inward travel of the pistons, whereby a space is left between them for the introduction of fluid, means for introducing fluid from the brake-cylinder to the air-cylinder between the pistons, when the brake-cylinder pistons has traveled beyond its normal limit, means for taking up slack, suitably located in the brake-rigging, and a suitable operative connection between said means and the pistons of the air-cylinder, substantially as described.

5. The combination with fluid-brake mechanism, of a divided brake-rod suitably located in the brake-rigging to take up slack as described, the adjacent extremities of the rod being threaded, an interiorly-threaded gear mounted on the threaded portion of each rod, a third gear interposed between the two first-named gears and meshing with both, a support for holding the three gears in operative relation, a shaft on which the third gear is made fast, a ratchet-wheel also fast on said shaft, a lever-arm loose on the shaft, a dog carried by the lever-arm and engaging the ratchet whereby the lever may be moved in one direction without turning the shaft, and suitable means connected with said lever and operated by fluid from the brake-cylinder, for actuating the lever to take up slack, substantially as described.

6. The combination with fluid-brake mechanism, of an air-cylinder, two pistons located therein, means to limit the normal travel of the pistons whereby a central space is left between them, the heads of the cylinder being provided with inward projections having an annular space between them and the outer walls of the cylinder-heads, said projections forming stops to limit the outward movement of the pistons, springs located between the pistons and the cylinder-head extremities, means for introducing fluid from the brake-cylinder, to the central space of the air-cylinder when the brake-cylinder has traveled beyond a predetermined limit, slack-adjusting devices, and means for connecting the pistons of the air-cylinder in operative position with said devices, substantially as described.

710,862. RAILROAD-TORPEDO. EMANUEL S. LAFFERTY, Galesburg, Ill., assignor to Julius G. Dahl, Peoria, Ill. Filed May 5, 1902. Serial No. 106,054. (No model.)

Claim.—1. A railroad-torpedo having its bottom provided with orifices, in combination with a clip having tongues to project through the orifices and to be bent against the bottom.

2. A railroad-torpedo having its bottom provided with orifices, in combination with a clip provided with tongues to project through the orifices and to be bent against the bottom and with flanges projecting beyond the bottom, and a clasp associated with the bottom by the flanges.

3. A railroad-torpedo having its bottom provided with downward-projecting ears, in combination with a clasp-engaging clip having tongues to project through the bottom, the ears being adapted to be bent around the clip.

4. A railroad-torpedo having its bottom provided with orifices, in combination with a clip provided with tongues to project through the orifices and to be bent against the bottom and with depending flanges, and a resilient clasp associated with the bottom by the flanges and being of a form closely to embrace the tread of the rail

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710,868. METHOD OF STARTING ROTARY CONVERTERS. BENJAMIN G. LAMME, Pittsburg, Pa. Original application filed Oct. 14, 1901, Serial No. 78,568. Divided and this application filed Feb. 1, 1902. Serial No. 92,310. (No model.)

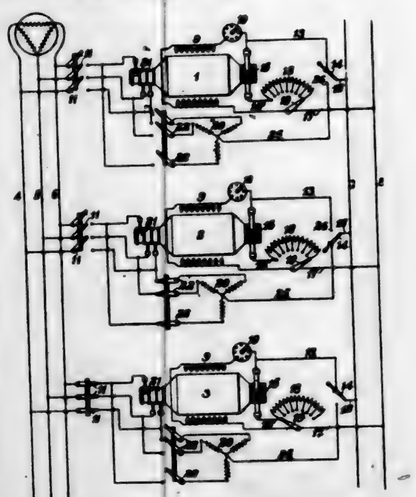

Claim.—1. The method of starting rotary converters which consists in first supplying a direct-current electromotive force of more than half but less than the full, normal, rotary converter voltage to the armature-winding through a resistance and then supplying such voltage to the armature-winding through said resistance and a balancing device.

2. The method of starting rotary converters employed for converting alternating-current energy into direct-current energy which consists in first supplying direct-current voltage of more than half but less than the full normal voltage of the rotary converter to its armature-winding through a resistance, then supplying said electromotive force to the armature-winding through said resistance and "star-connected" balancing-coils and then gradually cutting out the resistance to bring the converter to synchronous speed and voltage.

3. The method of starting rotary converters which consists in supplying direct-current electromotive force of more than half but less than the full normal electromotive force of the rotary converter to its armature-winding through a resistance, then supplying said electromotive force to the armature-winding through said resistance and "star-connected" balancing-coils, then progressively cutting out the resistance until the rotary converter reaches synchronous speed and voltage and finally cutting out the balancing-coils and connecting the rotary converter to the alternating-current-supply circuit.

710,864. LETTER-FILE. WILLIAM F. MALONEY, Chicago, Ill. Filed Dec. 7, 1900. Serial No. 39,691. (No model.)

Claim.—1. In a file for holding loose sheets, the combination of a solid back having a flat inner face, sides hinged to the side edges of said back and adapted to swing outward into the horizontal plane of the back, prongs carried by said sides to receive and hold the sheets, and a locking device carried by the back and comprising laterally-extending jaws arranged to engage and lock the sides in position at right angles to the back.

2. In a file for holding loose sheets, the combination of a back and sides hinged thereto, and a locking device located between the sides and above the back comprising spring-pressed jaws arranged to enter openings in the sides to engage therewith and to lock the sides in position at right angles to the back.

3. In a file for holding loose sheets, the combination of a back, sides hinged thereto, and a locking device comprising a pair of spring-pressed plates arranged side by side, jaws carried by said plates and adapted to enter openings in the sides to engage therewith and lock the sides in position at right angles to the back, and thumb-pieces on said plates.

710,865. THILL-COUPLING. ALBERT HEPPENSTALL, Oskaloosa, Iowa, assignor of one-half to Byron V. Beevers, Oskaloosa, Iowa. Filed Feb. 7, 1902. Serial No. 93,003. (No model.)

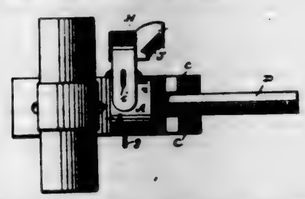

Claim.—1. In a thill-coupling, a base-piece, adapted to be fixed to the axle of a vehicle, turned upward at its front end to engage a thill-iron and provided with a vertical projection to engage a hinged block and a laterally-projecting striker to engage a spring-latch, a block fitted on top of the base and a spring-latch fixed to the block and hinged to the base and its free end adapted to engage the fixed striker, arranged and combined to operate in the manner set forth for the purposes stated.

2. A thill-coupling comprising a base-piece adapted to be fixed to the axle of a vehicle and hook-shaped at its front end, a vertical projection at the rear end of the enlarged portion and a fixed striker for a latch at one of its edges, a block fitted on top of said base, a cushion fitted in the block to engage the thill-iron, a spring-latch fixed to the block and hinged to the base and its free end adapted to engage said striker and a thill-iron pivotally connected with the hook-shaped end of the base, all arranged and combined to operate in the manner set forth for the purposes stated.

710,866. PEA-THRESHER. JAMES A. PAIRE, EDGAR R. STEELMAN, and JOSEPH L. HAVERFIELD, Cedar, Tenn., assignors of one-half to Mayfield Manufacturing Company, Mayfield, Ky. Filed May 10, 1902. Serial No. 106,977. (No model.)

Claim.—In a machine for threshing peas, the combination of a frame, a vibrating shoe suspended therefrom and adapted to catch the threshed peas as the same fall, said shoe having a riddle in the bottom thereof, a series of shaking and ejecting screen-rakes pivoted in the shoe above the riddle and disposed in successively lower planes, said rakes being adapted to strike one upon another and to overlap when in horizontal position, rock-arms attached to the rakes and connections between the rock-arms and the frame, a threshing-cylinder and a vertically-movable concave, the latter being arranged in a higher plane than the uppermost shaking screen-rake, and a shoulder between the concave and shaker comprising a relatively fixed pivoted delivery-plate disposed in rear of the concave and inclining downward and having its free end bearing on the uppermost of a series of screen-rakes, the latter sliding back and forth under the delivery-plate whereby the latter is effective in feeding the bales rearward on the series of screen-rakes, and an upwardly-inclined bridge-plate pivoted to the rear of the concave and at its free end bearing on and projecting over the pivoted edge of the delivery-plate, whereby the shoulder intercepts the back movement of the bales, substantially as described.

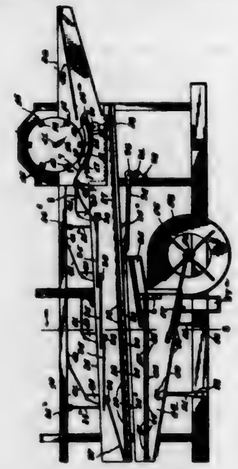

710,867. CIRCUIT-BREAKER. CHARLES J. REED, Philadelphia, Pa. Filed Feb. 17, 1899. Serial No. 705,843. (No model.)

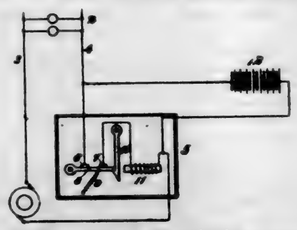

Claim.—1. The combination with an electric generator and a main circuit therefor, of a normally locked device for opening said circuit which is released by the action of an excessive current to automatically open the circuit and a neutral electrolytic cell or a series of such cells connected in shunt to said circuit-opening device, said cell or cells being short-circuited when the device is closed and being connected in the main circuit, in series with the generator, when the device is open.

2. The combination with an electric generator and main circuit therefor, of a device for opening both sides of said main circuit, which is normally locked in closed position and is automatically released by an excessive current in the circuit, and a neutral electrolytic cell or a series of such cells connected around each break in the circuit, said cells being short-circuited when the breaks are closed and connected in series with the generator when the breaks are open.

3. In a direct-current electric circuit, the combination with separable terminals and means for effecting the separation of said terminals upon the occurrence of an excessive current in the circuit, of a neutral electro-

lytic cell or series of cells permanently connected in shunt to said terminals, whereby said cell or series of cells receives the entire current of the circuit when the terminals are separated.

710,868. MANUFACTURE OF PLAYING-BALLS. FRANCIS H. RICHARDS, Hartford, Conn., assignor to The Kempshall Manufacturing Company, a Corporation of New Jersey. Filed June 20, 1902. Serial No. 113,073. (No model.)

Claim.—1. A process in producing a playing-ball, consisting in inclosing a center piece of hard material within a sphere or layer of soft, resilient material in which pockets or crevices are provided; surrounding said soft sphere by softened plastic material; subjecting the whole to compression to an extent to at least partially close said pockets or crevices and reduce the bulk or diameter of said soft sphere; and maintaining the compression while the plastic material hardens.

2. A process in producing a playing-ball, consisting in inclosing a center piece of hard material within a sphere or layer of soft rubber in which pockets or crevices are provided; surrounding said soft rubber by heated plastic material; subjecting the whole to compression to an extent to at least partially close said pockets or crevices and reduce the bulk or diameter of said soft-rubber sphere; and maintaining the compression until said plastic material hardens, so that it may hold said soft-rubber sphere permanently reduced in bulk or diameter.

3. A process in producing a playing-ball, consisting in inclosing a center piece of hard material within a sphere or layer of soft, resilient material in which pockets or crevices are provided; surrounding said soft sphere by heated gutta-percha; and subjecting the whole to compression to an extent to close said pockets or crevices and solidify said soft sphere.

4. A process in producing a playing-ball, consisting in forming a hard center piece, applying thereto collapsible spherical segments of soft rubber, inclosing said soft rubber in softened plastic material, subjecting the whole to compression to an extent to cause said soft-rubber sphere to collapse, and maintaining the compression while the plastic material hardens.

5. A process in producing a playing-ball, consisting in forming a hard center piece, applying thereto segments of soft rubber each provided at its inner surface with pockets, inclosing said soft rubber between heated segments of gutta-percha, applying compression to said segments so as to at least partially close said pockets and reduce said rubber sphere in bulk and also cause the segments to weld; and maintaining the compression while the gutta-percha cools and hardens.

6. A process in producing a playing-ball, consisting in inclosing a hard center piece in a sphere or layer of solid soft rubber; providing one of said center-piece and sphere elements with openings; compressing upon said sphere a shell of softened plastic material; the compression being carried to an extent to at least partially close said openings; and maintaining the compression while the shell hardens, so that said soft-rubber sphere is held permanently reduced in diameter by the shell.

710,869. ELECTRIC-LAMP GLOWER AND METHOD OF ATTACHING TERMINAL WIRES THERETO. ELIJAH R. ROBERTS, Bellevue, Pa. Filed Apr. 10, 1902. Serial No. 102,313. (No model.)

Claim.—1. The method of attaching terminal wires to a tubular glower-blank, which consists in inserting the ends of the wires into the ends of the glower-blank and fastening the same in position by means of paste and then applying a body of cement to each end of the glower and the contiguous portion of the terminal wire.

2. The method of attaching terminal wires to a tubular glower-blank, which consists in inserting the ends of the wires into the ends of the glower-blank and fastening the same in position by means of paste and then applying a globular body of cement to each end of the glower and the contiguous portion of the wire.

3. A tubular glower for electric lamps having terminal wires cemented into the ends thereof and having bodies of cement surrounding the contiguous portions of the glower-body and wires.

4. A tubular glower having terminal wires inserted and cemented into the ends thereof and globular bodies of cement surrounding the contiguous ends of the glower-body and the wires.

710,870. METHOD OF PRODUCING DRAFT. CHARLES SCOTT-SKELL, Saltash, England. Filed Oct. 26, 1901. Serial No. 80,265. (No model.)

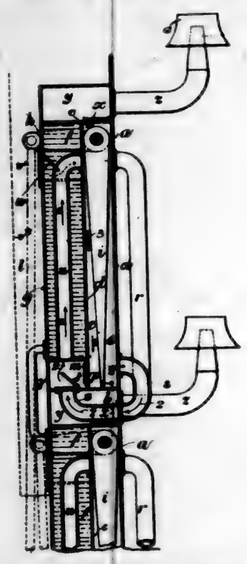

Claim.—1. Process for producing draft in boilers and the like, consisting in heating an inclosed volume of elastic fluid, thereby raising its pressure so that a quantity of the elastic fluid is expelled, then producing a blast, then cooling the remaining hot elastic fluid, so that a reduction in its pressure takes place whereby a fresh supply of elastic fluid is drawn in to make up the original volume, substantially as set forth.

2. Process for producing draft in boilers and the like consisting in displacing an inclosed volume of air from contact with a cooled surface into contact with a heated surface thereby raising its pressure and discharging a quantity of this compressed air as an air-blast, the residue of heated air being then brought into contact with the cooled surface whereby its pressure is diminished causing fresh air to be drawn in to make up the original volume of air, substantially as set forth.

3. Process for producing draft in boilers and the like, consisting in displacing an inclosed volume of air from contact with a water-cooled surface into contact with a surface heated by the waste gases from the boiler-furnace whereby the pressure of the air is raised and the quantity of air discharged into the boiler-uptake thus producing a draft, then displacing the residue of heated air into contact again with the water-cooled surface to diminish its volume and form a partial vacuum, whereby a portion of fresh air occurs to make up the original volume of air, substantially as set forth.

710,871. RAIL-FASTENER FOR METALLIC TIES. CHARLES S. SHALLENBERGER, Milwaukee, Wis., assignor of one-half to Edward S. Marshall, St. Louis, Mo. Original application filed Aug. 19, 1901, Serial No. 72,537. Divided and this application filed Feb. 13, 1902. Serial No. 94,056. (No model.)

Claim.—1. The improved rail-fastener 8, provided with a bolt-opening 9, and an integral central tongue 10 formed at one end by bending downwardly the central portion of the metal and thereby having two fingers 11 one at each side of said tongue aligned with the body of the fastener, substantially as specified.

2. The combination with the sheet-metal tie 1, having the two tongues 2 near each end, and having bolt-holes 3 adjacent to said tongues, and having slots 4 leading from said bolt-holes, and having the lugs 5 produced by bending the metal downwardly adjacent the slots 4 to lock the bolt-heads against turning, and having the wooden rail-seats 7 upon the tongues 2; of metallic fasteners 8 provided with the bolt-openings 9, and having the integral tongues 10 formed by bending the central portions downwardly, thereby leaving the fingers 11 to engage the flanges of the rail, said tongues 10 being inserted into the openings formed by bending down the lugs 5; bolts inserted through said bolt-holes 3 in the tie, and slid into the slots 4, and inserted through the bolt-openings 9 in the fasteners; and nuts upon said bolts; substantially as specified.

710,872. DECOHERER. HARRY SHOEMAKER, Philadelphia, Pa., assignor to Marie V. Oehring and the Consolidated Wireless Telegraph and Telephone Company, Philadelphia, Pa. Original application filed Jan. 11, 1902, Serial No. 89,962. Divided and this application filed June 12, 1902. Serial No. 111,303. (No model.)

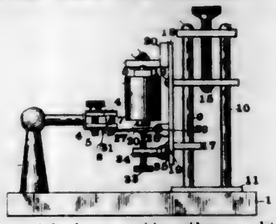

Claim.—1. A decoherer comprising guideways, a plate movable parallel to said guideways, an electromagnet mounted on said plate, a hammer pivoted to said plate and in operative relation with said magnet.

2. A decoherer comprising guide-rods, a plurality of members embracing said guide-rods and supporting a plate, an electromagnet secured to and insulated from said plate, an armature and hammer pivoted to said plate and in operative relation with said magnet.

3. The combination of a member, clamping-jaws supported thereby, linings for said jaws, and a non-self-restoring wave-responsive device held by said jaws between said linings.

4. A decoherer comprising a member, jaws supported by said member, a wave-responsive device clamped between said jaws, and a tapper mechanism adjustable with respect to said wave-responsive device.

5. A wave-responsive device, means for clamping the same in fixed position, a hammer for delivering a blow to said wave-responsive device, means for operating said hammer, and an adjustable support for said hammer and its operating means.

6. A decoherer which comprises vertical guideways, a plate movable parallel to said guideways, an electromagnet mounted on said plate, and an armature and hammer pivoted to said plate and in operative relation with said magnet.

7. A decoherer which comprises vertical guide-rods, a plurality of members embracing said rods and supporting a plate, an electromagnet secured to and insulated from said plate, and an armature and hammer pivoted to said plate in operative relation with said magnet.

8. In a wireless telegraph-receiver, a vertical standard, a bracket extending horizontally from said standard, linings for said bracket, a wave-responsive device between said linings, an armature and hammer adjustably secured with respect to said wave-response device, an electromagnet coöperating with said armature, a vertical plate carrying said magnet and armature, and a plurality of members secured to said plate and movable over vertical guideways.

9. In a wireless telegraph-receiver, a wave-responsive device carried by a support, an electromagnetic tapper mounted on guides, and means for adjusting said tapper along said guides and with respect to said wave-responsive device.

710,873. INTERRUPTER FOR ELECTRIC APPARATUS. HARRY SHOEMAKER, Philadelphia, Pa., assignor to Marie V. Oehring and the Consolidated Wireless Telegraph and Telephone Company, Philadelphia, Pa. Original application filed Jan. 11, 1902, Serial No. 89,963. Divided and this application filed June 12, 1902. Serial No. 111,448. (No model.)

Claim.—1. An interrupter comprising an eccentric, a reciprocating member engaged by said eccentric, a terminal of the interrupter on said reciprocating member, a pivoted member, a leaf-spring secured to said member, and supporting the second contact of the interrupter, and means for rotating the eccentric.

2. An interrupter comprising an eccentric, a reciprocating member engaged by said eccentric, a terminal of the interrupter on said reciprocating member, a pivoted member, a leaf-spring secured to said member and supporting the second contact of the interrupter, means for rotating the eccentric and means for bringing the second contact into the path of travel of the reciprocating member.

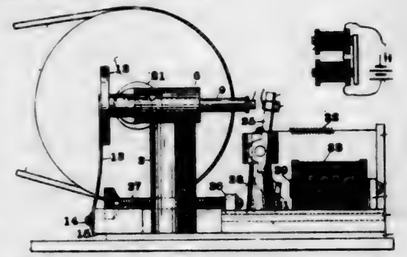

3. An interrupter comprising a continuously-reciprocating rod carrying a contact, and means for bringing the second contact of the interrupter into the path of travel of the reciprocating contact at predetermined intervals.

4. An interrupter comprising a reciprocating contact and means for bringing the second contact of the interrupter into the path of travel of the reciprocating contact.

5. An interrupter comprising a reciprocating and rotating contact, a second contact, and means for bringing said second contact into the path of travel of the reciprocating and rotating contact.

6. An interrupter comprising an eccentric, a contact reciprocated and rotated by said eccentric, a second contact, and means for bringing said contact into the path of travel of the reciprocating and rotating contact.

7. In an interrupter, a spring, a contact mounted on said spring, said spring mounted on a rock-shaft and means for rocking said shaft at desired intervals.

8. In an interrupter a leaf-spring, a contact mounted thereon, a rock-shaft, said spring mounted on said shaft, and electromagnetic means for rocking said shaft.

9. In an interrupter a leaf-spring, a contact mounted thereon, a rock-shaft carrying said leaf-spring, an armature secured to said rock-shaft, and an electromagnet coöperating with said armature.

10. An interrupter comprising a reciprocating and rotating contact, a second contact, and means for moving said contact into the path of travel of the reciprocating and rotating contact, said second contact mounted upon a member, and means for adjusting the position of said member.

710,874. ELECTRIC-ARC LAMP. ALBERT F. SHORE, New York, N. Y., assignor of two-thirds to Daniel M. Hurlburt, New York, N. Y. Filed Nov. 9, 1899. Renewed Feb. 15, 1902. Serial No. 94,217. (No model.)

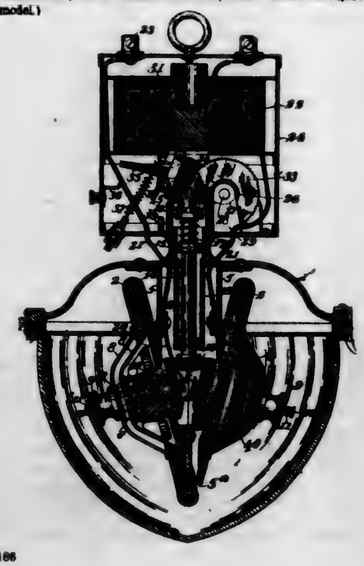

Claim.—1. In an arc-striking mechanism for arc-lamps, the combination of a shaft movable longitudinally in its bearings, a rack on said shaft meshing with gearing regulating the movement of the arc-carbons, a lever turning freely on said shaft, and controlled by the current flowing in the circuit, and means on said shaft and its bearings for producing a longitudinally-directed motion of the shaft, substantially as set forth.

2. In an arc-feeding mechanism, the combination of a solenoid, a plunger-core, a lever attached to said core, and provided with a cam, a shaft, longitudinally movable in its bearings, a fixed cam adapted to engage with the lever-cam, and means for transforming the longitudinal movement of the lever-shaft into a rotary motion of the arc-carbons, substantially as described.

3. In an arc-feeding mechanism, the combination of a solenoid, a plunger-core, a lever attached to and moving with said plunger, a longitudinally-movable shaft attached to said lever, a toothed wheel attached to the shaft, a second lever adapted to be engaged by the lever attached to the plunger, and provided with a pawl engaging with the toothed wheel for controlling the feeding mechanism, a retractile spring and stop for limiting the movement of the second lever, and means for transmitting the motion of the feeding mechanism to the light-giving carbons, substantially as described.

4. In an arc-lamp, the combination of a pair of carbon rings set at an angle to each other, frames for holding said carbons rotatably mounted on shafts arranged to transmit the current to the carbons, bevel-wheels on said carbon-supporting shafts, a main rotating shaft having a bevel-wheel for engaging with and transmitting motion to the bevels on the carbon-supporting shafts, means for maintaining firm and constant contact between the bevel-wheel on the main shaft and the bevels on the carbon-supporting shafts, and means for causing the said main shaft to rotate in order to compensate varying lengths of the arc, substantially as set forth.

5. In an arc-lamp, the combination of a pair of carbon disks or rings, forming an angle with each other and rotatably mounted on axes supported by the body of the lamp, means for transmitting the current to the rotary carbons; bevel-wheels on the carbon-supporting axes engaging with a bevel-wheel attached to the main rotating shaft, means for maintaining the frictional contact between the bevels on the carbon-supporting axes and the bevel on the main shaft, a toothed wheel mounted on the top of the main shaft, a worm engaging with said toothed wheel and mounted on an axis capable of rotary and longitudinal motion, a notched wheel attached to said axis and actuated by a pawl attached to a lever whose movements are controlled by a retractile spring and by a lever attached to the worm-shaft, a plunger connected with this latter lever, and a solenoid, all cooperating to bring about the feeding action of the lamp, substantially as set forth.

6. In arc-feeding mechanism, the combination of a pair of circular carbon-holders, a main rotating shaft, cooperating bevel-wheels on the carbon-holders and on the main shaft, and a spring controlling the pressure between the bevel-wheels on the carbon-holders and on the main shaft, substantially as set forth.

7. In arc-feeding mechanism, the combination of a pair of circular carbon-holders, a main rotating shaft, cooperating bevel-wheels on the carbon-holders and on the main shaft, and means for maintaining constant and firm contact between the bevel-wheels on the carbon-holders and on the main shaft, substantially as described.

8. In arc-feeding mechanism, the combination of a pair of bevel-wheels for revolving the carbons, a bevel-wheel on the main shaft, a fixed collar attached to the main shaft, a collar movable along said shaft, bearings for said movable collar, and a spring for maintaining a firm pressure between the bevel-wheel on the main shaft and the carbon-revolving bevel-wheels, substantially as set forth.

9. In arc-feeding mechanism, the combination of a carbon-holding frame, a hollow shaft for said frame, a conducting-pin insulated from and revolving with said hollow shaft adapted for conducting the current to the carbon-holding frame, substantially as described.

710,875. WHEEL. EDWARD S. SCHUYLER, Harrisburg, Pa. Filed Aug. 5, 1902. Serial No. 118,893. (No model.)

Claim.—1. A wheel comprising a pair of disks connected together at or near their peripheries, a hub centrally arranged between said disks, said hub having spokes projecting therefrom between the disks and cross-arms upon said spokes, and means for attaching the disks to the ends of said arms.

2. A wheel comprising a pair of disks connected together at or near their peripheries, a hub centrally arranged between said disks, said hub having spokes projecting therefrom between the disks and cross-arms upon said spokes, said arms having enlarged ends, and means for attaching the disks to the ends of said arms.

3. A wheel comprising a pair of disks connected together at or near their peripheries, a hub centrally arranged between said disks, said hub having spokes projecting therefrom between the disks and tubular cross-arms or thimbles transversely arranged upon said spokes, and bolts passing through said disks and cross-arms and securing the disks to the cross-arms.

4. A wheel comprising a pair of disks connected together at or near their peripheries, a hub centrally arranged between said disks, said hub having spokes projecting therefrom between the disks and tubular cross-arms or thimbles transversely arranged upon said spokes and having enlarged ends, and bolts passing through said disks and cross-arms and securing the disks to the cross-arms.

5. A wheel comprising a hub having exteriorly-threaded ends, flanges near said ends, spokes radiating from the hub and cross-arms upon said spokes, in combination with a pair of disks connected together at or near their peripheries and having central openings fitting over the ends of the hubs, devices upon the threaded ends of the hub for clamping the disks against the flanges, and means for clamping the disks against the ends of the cross-arms.

6. A wheel comprising a hub having exteriorly-threaded ends, flanges near said ends, spokes radiating from the hub and cross-arms upon said spokes, in combination with a pair of disks connected together at or near their peripheries and having central openings fitting over the ends of the hub, threaded washers upon the ends of the hub for clamping the disks against the flanges, bolts passing through said washers, disks and flanges, and means for clamping the disks against the ends of the cross-arms.

7. A wheel comprising a pair of disks connected together at or near their peripheries, a hub centrally arranged between said disks, said hub having spokes projecting therefrom between the disks and cross-arms upon said spokes, clamping-rings upon the outer sides of the disks and means for securing said rings to the cross-arms.

710,876. EXTENSION-TABLE. CHRIS H. SMITH, Elgin, Ill. Filed Oct. 15, 1901. Serial No. 78,712. (No model.)

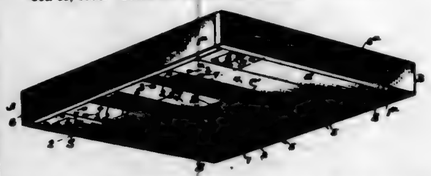

Claim.—1. An extension-table, comprising a solid square top section, having pendent sides, fixedly-held cross-bars, disposed in a plane with the lower edges of the sides, guide-bars extended longitudinally of the table, and disposed between the outer ends of the top section and the cross-bars, an extensible section at each end having pendent and cross-bars, adapted to form continuations of the pendent sides aforesaid, said extensible sections having slide-bars to engage the guide-bars, and leaf top sections, adapted to be detachably held lengthwise under the top and on the cross-bars, said sections filling the space between the guide-bars, the top and cross-bars, when folded thereon, substantially as shown and for the purposes described.

2. In an extension-table, the combination with the central fixedly-held top section having pendent sides 1^c, permanent cross-bars 4, the latter being in a plane with the lower edges of the sides 1^c, and the guide-rails 2, attached to the fixedly-held top one near each side; of the extensible sections A and B, each comprising end portions 6, of a depth equal that of the sides 1^c, an inwardly-extending cleat on the lower edge, in a plane with the cross-bars 4, and slide-rails, the rail-section being spaced to enter between the guides 2 and the sides 1^c, and the rail of section B spaced to engage the inner faces of the said guides 2, and detachable leaf-sections adapted to fit lengthwise under the fixed table-top, and with their outer edges abutting the inner sides of the slide-rails of the section B, and to rest upon the cross-bars 4, 4 and the cleats *d*, and having a length equal the length of the fixed table-top, all being arranged substantially as shown and described.

710,877. WINDOW-CURTAIN FIXTURE. LEVI SPRINKLE and CHARLES H. FOX, Richmond, Ind. Filed Feb. 7, 1902. Serial No. 93,962. (No model.)

Claim.—1. In a window-curtain fixture in combination with a pair of rods slidably attached together and adapted to move endwise parallel with each other and a mechanism for locking said rods against an outward movement, of a clamping member, formed of one piece of material, attached securely to the outer end of each rod, said clamping member consisting of a flat portion at right angles to the rods, with a hole through the center thereof, a front portion bent at right angles to said flat portion and adapted to nearly surround and tightly grip the ends of the rods, and, a rear portion extending in at right angles to said flat portion and provided with teeth for engaging the window-casing, all substantially as shown and described.

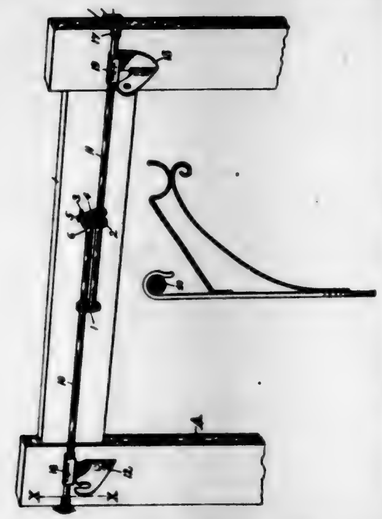

2. In a window-curtain fixture in combination with a pair of rods 10 and 11 with clamping members attached to the outer ends of each and means for locking together their inner ends of a pair of window-shade brackets and a pair of curtain-pole brackets provided with inwardly-projecting hooks on their upper portions adapted to hook over the rods 10 and 11 at any points along their lengths, all substantially as shown and described and for the purposes set forth.

710,878. FURROW OPENING AND COVERING ATTACHMENT FOR SEED-DRILLS. LAFAYETTE C. SWIRE, Lenard, Ill. Filed Mar. 15, 1902. Serial No. 98,413. (No model.)

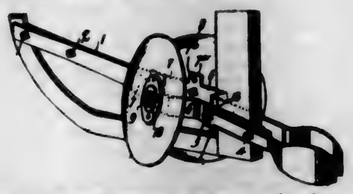

Claim.—1. In combination with the runner and seed-tube of a planter, bars having means to clamp their front and rear ends to the runner and seed-tube respectively, disks carried by said bars and means to vertically adjust the disks thereon, substantially as described.

2. In combination with the runner and seed-tube of a planter, bars having means to clamp their front and rear ends to the runner and seed-tube, respectively, and disks carried by said bars, substantially as described.

3. In combination with the runner and seed-tube of a planter, bars having means to clamp their front and rear ends to the runner and seed-tube, respectively, and disks and coverers carried by said bars, and disposed respectively in advance and rear of the seed-tube, substantially as described.

4. In combination with the runner and seed-tube of a planter, bars having means to clamp their front and rear ends to the runner and seed-tube respectively, disks carried by said bars in advance of the seed-tube and coverers disposed in rear of the seed-tube and having forwardly-extending arms attached to the bars, substantially as described.

5. In combination with the runner and seed-tube of a planter, bars having means to clamp their front and rear ends to the runner and seed-tube respectively, disks carried by said bars in advance of the seed-tube and coverers disposed in rear of the seed-tube and having forwardly-extending arms pivotally connected to the bars so that the coverers may be vertically adjusted, and means to clamp said arms to said bars to secure the coverers when adjusted, substantially as described.

710,879. WEFT-REPLENISHING MECHANISM FOR LOOMS. RICHARD TALBOT and WILLIAM ROBERTS, Blackburn, England, assignors to Blackburn Loom and Weaving Machinery Making Company, Limited, Blackburn, England. Filed Jan. 7, 1902. Serial No. 88,773. (No model.)

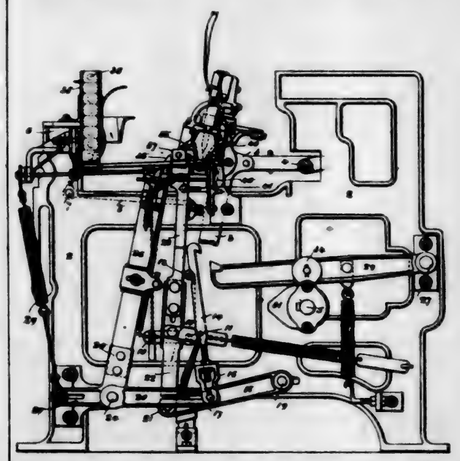

Claim.—1. In combination, a shuttle-receptacle, the lathe, a shuttle-box thereon, a reciprocating shuttle-carrier, a forked rod for raising the shuttle from the shuttle-carrier to the shuttle-box, a hooked arm for operating the said forked rod, a second hooked arm connected with the reciprocating shuttle-carrier for operating the same, a pair of oscillating levers for operating the hooked arms, the tappet-shaft, cams thereon for operating the oscillating levers and means for throwing the hooked arms into the path of the oscillating levers, substantially as described.

2. In combination, a shuttle-receptacle, the lathe, a shuttle-box thereon, a carrier for the shuttle comprising an arm 26, means for raising the shuttle from the carrier into the shuttle-box comprising the arm 22 carrying a fork, levers 18 and 20 connected respectively with the arms 22 and 26, hooked arms 13 and 14 connected respectively with the levers 18 and 20, oscillating levers 28 and 29, means for operating the same, and means for throwing the hooked arms into the path of the said oscillating levers, substantially as described.

710,880. NUMBERING-MACHINE. FREDERICK M. TODD, New York, N. Y., assignor of one-half to Tracy Manufacturing Company, New York, N. Y., a Corporation of New York. Filed Aug. 21, 1901. Serial No. 73,288. (No model.)

Claim.—1. In a numbering-machine, a rotary wheel having a plurality of peripheral sections forming bases or plates located further from the axis of the wheel than are the intervening edges, in combination with a printing-belt wheel type or dies are seated on the aforesaid plates during the printing operation to bring non-adjacent types into printing position.

2. In a numbering-machine, a non-circular wheel having equidistant tangential plates, between which are intervening peripheral sections of less radius than the plates, in combination with an endless printing-belt consisting of interhinged type-carrying links that are seated on the plates to bring the non-adjacent type into printing position, and guides on the sides of the wheel to keep the belt in place on the wheel periphery.

3. In a numbering-machine, a plural-sided wheel some of whose sides are of greater radius than the remainder, said sides of greater radius being equidistant from each other, in combination with an endless printing-belt consisting of type-carrying links that are seated on sides of greater radius to bring non-adjacent types into printing position.

4. In a numbering-machine, a non-circular wheel having equidistant

tangential platens between which are sections of less radius than the platens, in combination with a printing-belt consisting of type-carrying links adapted to be seated on the platens when in printing position, guides on the sides of the wheel to keep the belt in place thereon, and printing devices carried on one of the said guides at points near the said platens to permit printing therefrom in line with the printing done by the belt.

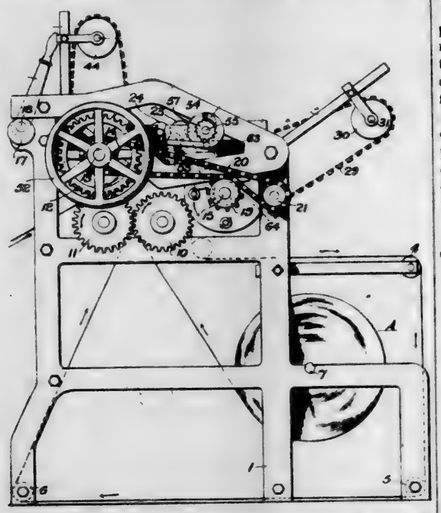

5. In a numbering-machine, a non-circular wheel having equidistant tangential platens between which are sections of less radius than the platens, in combination with a printing-belt consisting of type-carrying links adapted to be seated on platens when in printing position, a type-carrying disk on one side of the wheel whose type are carried at points near the platens so as to permit printing therefrom in line with the printing done by the belt, and typographic numbering devices likewise carried by the wheel and actuated from the belt when the numbers on said devices are to be changed.

6. In a printing-machine for printing both sides of a web, means for leading the web through a printing-couple to print one side, then around the roll of paper and through a second printing-couple to receive an impression on the other side, in combination with a single inking device located so as to ink the printing members of both printing-couples, substantially as described.

7. In a printing-machine containing two printing-couples arranged to print the opposite sides of a web, means consisting of guide-rollers for leading the web through the first printing-couple to print one side, then around the roll of paper and through the second printing-couple to receive the impression on the other side, in combination with an inking device arranged to ink the printing members of both printing-couples.

8. In a printing-machine containing two printing-couples arranged to print both sides of a web, said printing-couples consisting each of an impression-cylinder and a plural arrangement of non-circular wheels and endless type-carrying belts that print from non-adjacent types, means consisting of suitable guide-rollers for leading the web through the first printing-couple to print one side, then around the roll of paper and through the second printing-couple to print the other side.

9. In a numbering-machine, the combination with two printing-couples, each comprising an impression-cylinder and a plural arrangement of non-circular wheels and endless type-carrying belts, of a single ink-fountain and its rollers serving both printing-couples, and means for conveying the web through the couples to cause printing on both sides.

10. In a numbering-machine containing two printing-couples arranged to print both sides of a web, the combination with the main frame and the impression members of the printing-couples journaled therein, of a swinging frame pivotally supported on the main frame and the printing members of the printing-couples suitably supported in said swinging frame, said printing members consisting each of a plurality of non-circular wheels and endless type-carrying belts running thereon and printing from non-adjacent types, together with means whereby the adjustment of the frame enables the printing members to receive motion from the impression members, substantially as set forth.

11. In a numbering-machine containing two printing-couples arranged to print upon the opposite sides of a web, the combination with the main frame and the impression members of the printing-couples journaled therein, of a swinging frame pivotally supported on the main frame, and the printing members of the printing-couples supported in said swinging frame, said printing members consisting each of a series of non-circular wheels and endless belts that print from non-adjacent types, and means for adjusting the swinging frame consisting of cams or eccentrics.

12. In a numbering-machine, a printing-couple consisting of an impression member and a printing member having a series of one or more rotary non-circular wheels with an endless type-carrying belt running thereover that prints from non-adjacent types, together with a disk and spring-pawl devices on the shaft of the non-circular wheel, with means for rotating said shaft in order to reset the type in printing position.

13. In a numbering-machine the combination with a shaft, a series of non-circular wheels arranged thereon, a series of printing-belts that print from non-adjacent types and are carried on the aforesaid wheels, a disk to which is pivoted a pawl provided with a spring to hold it in an elevated or depressed position, said disk being arranged in connection with the shaft, and means for driving said shaft in the operation of the machine.

710,881. BALANCING DEVICE FOR TURBINE-GATES. WILLIAM W. TYLER, York, Pa. Filed June 15, 1901. Serial No. 64,692. (No model.)

Claim.—1. A turbine water-wheel having a cylinder-gate provided with wings, a cylinder and a piston therein connected with the gate, the under side of the piston being exposed to the pressure of the whole fall of water, and the pressure on the top of the piston being that of the pressure of the water below the wings inside of the gate, as set forth.

2. A turbine water-wheel having a cylinder-gate provided with wings, a cylinder, and a piston therein connected with the said gate, the area of the piston being substantially one-half of the area of the gate-wings upon which the pressure is exerted, the said cylinder being opened at the bottom, and a pipe connecting the closed top of the cylinder with a water-chamber inside of the gate, as set forth.

3. A turbine water-wheel having main chutes, a runner against which the water is directed by the main chutes, a cylinder-gate having wings extending between the bars forming the main chutes, a cylinder connected at its closed top with the main chutes between adjacent bars at the top thereof, and a piston in the cylinder and carrying the said gate, as set forth.

4. A turbine water-wheel having main chutes, a runner against which the water is directed by the main chutes, a cylinder-gate having wings extending between the bars forming the main chutes, a cylinder connected at its closed top with the main chutes between adjacent bars at the top thereof, and a piston in the cylinder and carrying the said gate, and means for raising or lowering the said gate independently of the said cylinder and piston, as set forth.

710,882. ADJUSTABLE NUT-WRENCH. JOSEPH T. VILES, Indianapolis, Ind., assignor of one-half to Oscar Bryan, Indianapolis, Ind. Filed Mar. 14, 1902. Serial No. 98,188. (No model.)

Claim.—1. In a wrench, a body portion comprising a handle, a head flat on each side integral therewith said head having a straight edge and a stationary jaw at one end of said straight edge and lateral lugs on said head, an opening through the head between the lugs and the handle said lugs being toothed, a slotted jaw working on said head and having teeth to engage the teeth of the lugs.

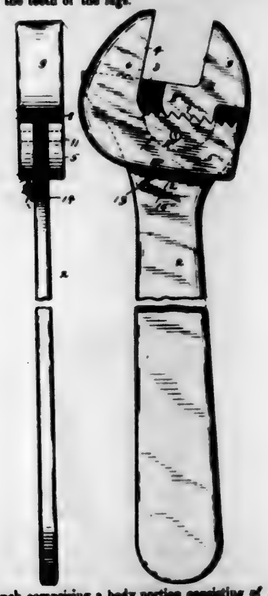

2. A wrench comprising a body portion consisting of a handle expanded at one end to form a flat head, said head having a straight edge opposite the handle, an integral jaw at one end of the straight edge, lugs with inner serrated edges, adjacent to said straight edge, a slot or perforation through the head adjacent to the lugs, an adjustable jaw slotted to receive the flat head and adjustable along the straight edge of said head, said head having a right-angled inner portion taking under said lugs and having serrations to engage those of the lugs, a pin passing through the adjustable jaw and through the opening in the head and resilient means for holding the serrated jaw against the serrated lugs.

3. A wrench comprising a handle, an expanded end forming a flat head, said head having a straight edge opposite the handle and an integral jaw, lugs with inner serrated edges adjacent to the straight edge, a perforation between the lugs and the handle, an L-shaped jaw slotted to receive the flat head and adjustable along the straight edge, serrations of the jaw to engage those of the lugs, a pin connecting the slotted members of the jaw and passing through the perforation of the head and a spring carried by the body and pressing the adjustable jaw against the shoulder.

710,888. DANGER-SIGNAL FOR RAILWAYS. WILLIAM WARNA, New York, N. Y. Filed Mar. 10, 1902. Serial No. 97,884. (No model.)

Claim.—1. A railway-signal embracing a track element, means by which the same may be raised and lowered, a fluid-cylinder carried by the engine or train, an alarm to be operated by fluid therefrom, a longitudinally-movable rod, a piston within said cylinder and a device to engage said track element and be moved bodily thereby to adjust said rod and piston longitudinally, said piston and device being secured to opposite ends of said rod.

2. A railway-signal embracing a track element having means by which it may be raised and lowered, and a train element embracing a fluid cylinder carried by the engine or train, an alarm to be operated by fluid therefrom, a piston in said cylinder, a longitudinally-movable rod depending from said piston, and a roller carried by the lower end of said rod to engage said track element.

3. A train element of a railway signaling system, embracing, in combination with a signaling device proper, actuating and controlling means therefor including a fluid-cylinder, a piston in said cylinder, a locking means for the signaling device proper controlled in one direction of its movement by the action of said piston, and means for controlling the action of the fluid to thereby operate said piston.

4. A train element of a railway signaling system, embracing, in combination, a signaling device proper, means for operating the same in one direction, means for locking the same against the action of said operating means, and means for releasing the same from its said locking means, including a fluid-cylinder, a piston in said cylinder having its rod engaged with said locking means, and means for controlling the action of the fluid to thereby operate said piston and disconnect the locking means from the signaling device proper.

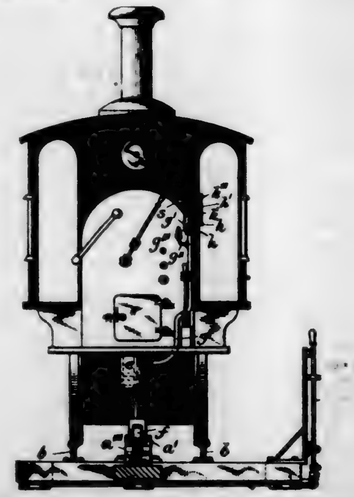

5. A train element of a railway signaling system, embracing, in combination, a pivoted signaling device proper, having a signal at one end and means at its other end for turning it pivotally to expose the signal, means for locking said signal against the action of said turning means, and devices for disengaging the locking means from said signaling device proper, including a fluid-cylinder, a piston in said cylinder and means for controlling the action of the fluid to thereby operate said piston.

6. A train element of a railway signaling system, embracing, in combination, a visual signal, means for normally locking the same, means for adjusting it into danger position when released from said locking means, a fluid-cylinder, a piston in said cylinder operative to disengage said locking means from said signal, an audible signal, and means for actuating said piston and audible signal.

7. A railway signaling system embracing a track element and a train element, said train element having a fluid-cylinder, a piston therein, a signaling device proper, a locking means for the latter controlled in one direction of its movement by operation of said piston, and means controlled by obstruction imposed by the track element of the system to control the operation of said piston.

8. A railway signaling system, embracing a track element and a train element, said train element having a fluid-cylinder, a piston therein, a pivoted arm having a visual signal, means for actuating said arm automatically in one direction, a device for locking said arm against the action of said actuating means, means between said locking device and piston by which the locking device will be controlled on one direction of its movement by operation of said piston, and means controlled by obstruction imposed by the track element of the system to control the operation of said piston.

9. A railway signaling system, embracing a track element and a train element, said train element having a fluid-cylinder, a piston therein, a piston-rod, a pivoted arm having a visual signal at one end, means connected with the other end of said arm to elevate said signal, a pivoted means for locking said arm against the action of said elevating means, said locking means projecting into the path of said piston-rod and actuated thereby to release said arm, and means controlled by obstruction imposed by the track element of the system to control the operation of said piston and piston-rod.

10. A railway signaling system embracing a striking-plate arranged near the track and having means for adjusting it, a fluid-cylinder carried by the train and containing a reciprocating piston provided with a rod adapted to be brought into rolling contact with the striking-plate when raised, a signal, and a locking means for said signal released therefrom by operation of said rod and piston.

11. A railway signaling system embracing a striking-plate arranged near the track and having means for adjusting it, a fluid-cylinder carried by the train and containing a reciprocating piston provided with a rod having a rolling contact device at its lower end to engage the striking-plate when the latter is raised, a second fluid-cylinder having communication with the first one and provided with a piston, an audible signal having communication with said first cylinder, a piston in said second cylinder and a visual signal controlled by operation of the piston in said second cylinder.

12. A railway signaling system, embracing a striking-plate arranged near the track and having means for adjusting it, a fluid-cylinder carried by the train and containing a reciprocating piston provided with a rod adapted to be brought into rolling contact with the striking-plate when the latter is raised, a second fluid-cylinder having communication with the first one and provided with a piston, an audible signal between said cylinders, a visual signal, a locking means for the visual signal, and means actuated by movement of the piston in said second cylinder to release said visual signal.

13. A railway signaling system embracing a track element having means for adjusting it; and a train element comprising a vertical fluid-cylinder having a piston which depends from it and is provided at its lower end with a contact device to engage the track element, a second fluid-cylinder having communication with the first one, an audible signal having communication with said first cylinder, and a visual signal controlled by the second cylinder.

14. A railway signaling system embracing a track element having means for adjusting it; and a train element comprising a fluid-cylinder having a piston which depends from it and is raised by said track element, a second fluid-cylinder having communication with the first one, an audible signal having communication with said first cylinder, a visual signal having a means for locking it, means controlled by the fluid from said second cylinder for releasing said visual signal, and means connected with said visual signal for throwing the same into exposed position.

15. A railway signaling system, embracing a track element having means for adjusting it; and a train element comprising a fluid-cylinder having a piston which depends from it and is raised by said track element when the latter is elevated, a second fluid-cylinder having communication with the first one, an audible signal having communication with said first cylinder and caused to sound by the fluid therefrom, a visual signal having a locking means, means controlled by the fluid from said second cylinder for actuating the locking means to permit exposure of said visual signal, and means operated to expose said visual signal when the locking means is disengaged.

16. A railway-signal embracing a striking-plate near the tracks, means for raising and lowering the same, an air-cylinder carried by the train and provided with a vertically-reciprocating piston having a dependent piston-rod provided with a roller to engage said striking-plate when the latter is elevated, a signal normally invisible to the engineer and means for turning the signal into a visible position set into operation by the upward motion of the piston within the air-cylinder.

17. A railway-signal consisting of a striking-plate near the tracks, means for raising and lowering the same, an air-cylinder carried by the train and provided with a vertically-reciprocating piston having a dependent piston-rod provided with a roller to engage said striking-plate when the latter is elevated, and a whistle adapted to be blown by the compression of the air in the cylinder when the piston is moved upward by the travel of said roller along said striking-plate, and a visual signal adjusted into danger position by the same compression of air in the cylinder.

18. A railway-signal consisting of a striking-plate near the tracks, means for raising and lowering the same, an air-cylinder carried by the train and provided with a vertically-reciprocating piston having a dependent piston-rod provided with a roller to engage said striking-plate, a whistle adapted to be blown by the compression of the air in the cylinder when the piston is moved upward by the travel of said roller in said plate and a signal normally invisible to the engineer and brought into view through means actuated by the same compression of the air in the cylinder.

19. A railway signaling system consisting of a track element having means for adjusting it, and a train element embracing an air-cylinder provided with a piston having its rod adapted to be brought into rolling contact with the track element when the latter is elevated, and thereby move said piston, a whistle adapted to be blown by the compression of the air in the cylinder when the piston is moved by the travel of said contact on said track element, and a signal in the engineer's cab, normally invisible to the engineer and brought into his view through means actuated by the same compression of the air in said cylinder.

20. A train element of a railway signaling system, embracing, in combination, a fluid-cylinder, a piston therein, a signal, a locking means for said signal, and means interposed between said piston and locking means and operated by the former to disengage the latter from said signal.

21. A train element of a railway signaling system, embracing, in combination, a fluid-cylinder, a piston therein provided with a rod designed to be operated by the track element of the system, a signal, a locking means for said signal, means connecting said locking means with said piston and operated by the latter to disengage the former from the signal, and means for adjusting said signal when the same is released.

22. A train element of a railway signaling system, embracing, in combination, a visual signal, means for normally locking the same, means adjusting it into danger position when released from said locking means, a fluid-cylinder, a piston therein, means between said piston and locking means for disconnecting the latter from the signal when the piston is actuated, an audible signal, and means for actuating said piston and sounding said audible signal, including a second fluid-cylinder having communication with the one first mentioned and a piston in said second cylinder.

710,884. COW-MILKER. PERRY A. WEST, Browning, Wis. Filed Oct. 17, 1901. Serial No. 79,006. (No model.)

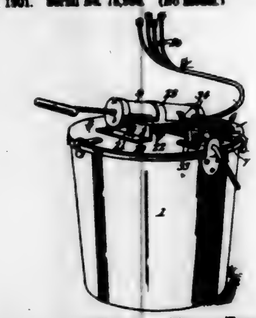

Claim.—1. A cow-milker, comprising a milk-receptacle having a suitable top or lid, spring retaining-clamps for said lid, a pump-stand mounted upon the said top or lid comprising two substantially L-shaped sides and a connecting bar or top, substantially semicircular cut-out portions in the sides of said pump-stand, an opening in the top of the stand which extends its whole length and communicates with the cut-out portions in the sides, a pump adapted to lie in said stand, and an arched bent mounted on either side of the cut-out portion in the top of the stand to secure the pump in position.

2. A teat-clamp comprising a body portion bent to cylindrical contour and having one of its edges formed with openings, arms on the opposite edge adapted to be inserted through the said openings and then bent upon themselves whereby the clamp is secured on the end of a tube, upwardly-extending spring-arms formed integral with the said body portion to embrace a teat, and a central tube with which the foregoing devices engage.

710,885. GAS-ENGINE. GEORGE WESTINGHOUSE, Pittsburg, Pa. Filed Jan. 31, 1896. Serial No. 577,550. (No model.)

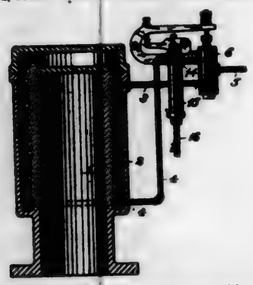

Claim.—1. In a gas-engine, the combination with a cylinder having a cooling-jacket provided with an inlet-port at one end and an outlet-port at the other end, of a cooling-fluid-inlet pipe provided with a controlling-valve, a cooling-fluid-outlet pipe containing a thermostatic device and a pair of counting levers interposed between the thermostatic device and the inlet-controlling valve, whereby the inflow of the cooling fluid is controlled by the temperature of the fluid as it is discharged from the jacket.

2. The combination with a gas-engine cylinder provided with a cooling-jacket, of a cooling-fluid-inlet pipe provided with a differential valve a cooling-fluid-outlet pipe containing a thermostatic device and valve-adjusting levers interposed between the thermostatic device and the inlet-controlling valve, whereby the inflow of the cooling fluid is controlled by the temperature of the cooling fluid as it is discharged from the jacket.

3. The combination with a gas-engine cylinder having a cooling-jacket, of a cooling-fluid-inlet pipe, a differential controlling-valve therein, a spring acting in conjunction with the fluid-pressure to open the valve, a cooling-fluid-outlet pipe, a thermostatic device therein and valve-adjusting connections between said device and the controlling-valve, whereby the inflow of cooling fluid is controlled by the temperature of the cooling fluid as it is discharged from the jacket.

4. The combination with a gas-engine cylinder having a cooling-jacket, of a cooling-fluid-inlet passage, a differential controlling-valve therein, two springs acting upon said valve, one in conjunction with and the other in opposition to the pressure of the cooling fluid, a cooling-fluid-outlet passage, a thermostatic device in said passage and valve-adjusting connections between said device and the controlling-valve.

5. In a gas-engine, the combination with a cylinder having a cooling-jacket, of a cooling-fluid-inlet passage provided with a valve, a cooling-fluid-outlet passage provided with a thermostatic device and a pair of reversely-pivoted levers interposed between the thermostatic device and the inlet-valve, substantially as set forth.

710,886. MACHINE FOR MAKING PAPER TUBES. JOHN H. WHITE and EDWARD L. WHITE, Englewood, N. J. Filed Oct. 23, 1901. Serial No. 79,713. (No model.)

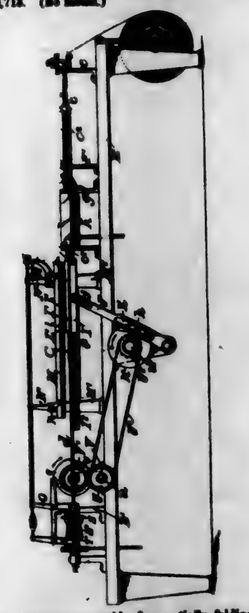

Claim.—1. A former or guide for partially folding a paper strip comprising a support, a block capable of having thereon, having a folding-guide thereon, and an axial perforation therethrough, a mandrel reciprocating through said perforation, and devices for adjusting the block around the mandrel in its support.

2. The combination, substantially as hereinbefore set forth, of a folding-guide, a reciprocating mandrel adapted to carry a partially-folded paper strip therethrough, and a supporting-bar on which the mandrel traverses.

3. The combination, substantially as hereinbefore set forth, of a reciprocating mandrel and a paper-strip guide attached directly thereto.

4. The combination, substantially as hereinbefore set forth, of a fixed folding-guide, a reciprocating mandrel adapted to carry a partially-folded paper strip therethrough, and a paper-strip guide carried by the mandrel.

5. The combination, substantially as hereinbefore set forth, of a supporting-rod, a mandrel reciprocating thereon, a paper-strip guide carried by the mandrel, and a folding-guide traversed by the mandrel.

6. The combination, substantially as hereinbefore set forth of a reciprocating mandrel, a guide attached directly thereto, a fixed former or partial-folding guide and a finishing-folding guide, through which the mandrel carries the paper strip.

7. The combination, substantially as hereinbefore set forth, of a reciprocating mandrel, a paper-strip guide attached directly thereto and two folding-guides through which the mandrel carries the paper strip to complete the formation of the tube.

8. The combination, substantially as hereinbefore set forth, of pasting mechanism, a supporting-rod, a mandrel reciprocating thereon, and a folding-guide through which the pasted strip is carried by the mandrel.

9. The combination, substantially as hereinbefore set forth, of folding-guides, a mandrel, a heater encircling the mandrel and which softens the paper and sets it in permanent form after the guides have formed it into a tube, a supporting-rod passing through the guides, mandrel and heater and on which the mandrel slides and means for drawing the mandrel and paper simultaneously and coincidentally through the heater.

10. The combination, substantially as hereinbefore set forth, of a supporting-rod, a mandrel reciprocating thereon, and reciprocating feed-clamps which carry forward the paper tube and mandrel on the rod.

11. The combination, substantially as set forth of a reciprocating mandrel, fixed folding-guides which complete the formation of the tube, and reciprocating feed-clamps separate from the folding-guides, which clamps carry forward the finished tube and mandrel.

12. The combination, substantially as hereinbefore set forth, of a supporting-rod, a mandrel reciprocating thereon, folding-guides, and feed-clamps which carry forward the paper tube on the mandrel.

13. The combination, substantially as hereinbefore set forth, of pasting mechanism, a reciprocating mandrel, folding-guides, and feed-clamps separate from the folding-guides, which clamps carry forward the pasted tube on the mandrel.

14. The combination, substantially as hereinbefore set forth, of pasting mechanism, a supporting-rod, a mandrel reciprocating thereon, folding-guides, and reciprocating feed-clamps which carry forward the pasted tube on the mandrel.

15. Feed-clamps, substantially such as hereinbefore set forth, comprising a lower member reciprocating in a fixed path, an upper member reciprocating therewith and movable laterally relatively thereto, a laterally-movable pressure-bar connected with the upper member, and means for raising and lowering the pressure-bar and upper member positively to open and close the clamp.

16. The combination, substantially as hereinbefore set forth, of the upper member of the feed-clamp, a longitudinally-grooved pressure-bar, lugs connected with the upper member traversing these grooves, rocking levers carrying the pressure-bar, a link-rod connecting these levers with actuating mechanism which releases the clamp, a spring which normally closes the clamp, and an adjusting-stop regulating the pressure of the clamp.

17. The combination, substantially as hereinbefore set forth, of the lower feed-clamp reciprocating in a fixed path, the upper clamp reciprocating therewith and movable laterally relatively thereto, a supporting-rod, and a mandrel movable thereon by the clamps and carrying the finished tube.

18. The combination, substantially as hereinbefore set forth, of a supporting-rod, a reciprocating mandrel, means for forming a paper tube around the mandrel, and a cutter revolving around the supporting-rod and adapted to sever the tube delivered thereto by the mandrel.

19. The combination, substantially as hereinbefore set forth, of a supporting-rod over which the finished paper tube passes, a cutter revolving around the rod, means for approximating the cutter and rod to sever the tube between them, and devices for adjusting the position of the cutter relatively to the axis of the supporting-rod, so that the tube may be severed without cutting into the rod.

20. The combination, substantially as hereinbefore set forth, of a reciprocating mandrel, its supporting-rod having an enlarged rear portion, means for forming a tube around the mandrel, devices feeding the mandrel and tube to the enlarged portion of the supporting-rod, and a cutter severing the tube into proper lengths.

710,887. SPIRAL CONVEYER. CASEY S. WILLIAMS, Dalton, Iowa. Filed Mar. 26, 1902. Serial No. 100,048. (No model.)

Claim.—1. A spiral conveyer, having a blade-shaft made in sections, the ends of adjacent sections having projecting tongues made U shape in cross-section, a coupling-plug having a middle journal portion and projecting ends made square in cross-section for engaging the said tongues, and clips for clipping the said tongues and the ends of the plug together, as set forth.

2. A spiral conveyer, having a blade-shaft made in sections, the ends of adjacent sections having projecting tongues made U shape in cross-section, a coupling-plug having a middle journal portion and projecting ends made square in cross-section for engaging the said tongues, and clips for clipping the said tongues and the ends of the plug together, the clips engaging registering recesses in the said tongues and ends of the coupling member, to hold the said plug and tongues from longitudinal movement one on the other, as set forth.

3. A spiral conveyer having a blade-shaft made in tubular sections, the ends of adjacent sections having projecting portions U-shaped in cross-section, a coupling-plug having a journaled portion, and projecting ends engaging said U-shaped portions of the shaft-sections, the ends of the coupling-plug being provided with transverse recesses registering with recesses in the side members of the U-shaped portions of the shaft-sections, and clips engaging said registering recesses, as set forth.

710,888. SPIRIT-LEVEL AND PLUMB. SEVERS WIEBERG, Galesburg, Ill. Filed Mar. 27, 1902. Serial No. 100,349. (No model.)

Claim.—1. In a spirit-level, and in combination, a stock, a cylinder containing a level-tube, an adjustable plate in which one end of said cylinder is journaled, the other end of which cylinder is journaled in a bearing in a frame, and an adjusting-screw for raising and lowering said plate and thereby one end of the level-tube, substantially as described and shown.

2. In a spirit-level, and in combination, a cylinder containing a level-tube, an adjustable plate in which one end of said cylinder is journaled, the other end of which cylinder is journaled in a bearing in a frame inclosing said parts, and said frame inclosed in a level-stock, and means for raising and lowering said plate and thereby the adjacent end of the cylinder, substantially as shown and described.

3. In combination in a spirit-level, the level-stock A, the frame B, the cylinder K, the sliding adjustable plate C and the screw E, all substantially as shown and for the purpose described.

710,889. D-HANDLE. THOMAS W. WEBSTER, Anderson, Ind. Filed Nov. 11, 1901. Serial No. 81,893. (No model.)

Claim.—A D-handle formed in two pieces, the D proper being provided in its lower portion with a longitudinal opening and two smaller openings extending inwardly from the longitudinal opening, the smaller openings being inclined and extending at opposite angles from the longitudinal opening, and a stem provided with a reduced portion forming a tenon adjacent to its upper end and of a size to snugly fit the longitudinal opening when inserted therein, the tenon forming a shoulder on the stem, the lower edge of the D surrounding the tenon, and the shoulder bearing against the bottom of the D and two further-reduced portions forming dowels extending from the tenon forming the upper end of the stem, each dowel having a smaller diameter than the tenon and being of a size to snugly fit the inclined openings when inserted therein.

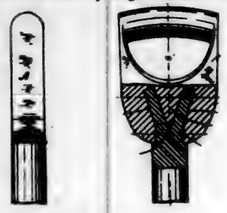

710,890. PEELING APPARATUS FOR FRUIT-PARERS. LUCIUS I. YEOMANS, Walworth, New York, assignor to Goodell Company, Antrim, N. H. Filed Dec. 28, 1901. Serial No. 87,529. (No model.)

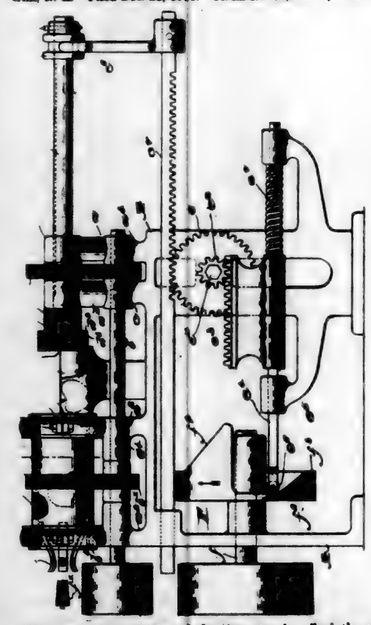

Claim.—1. In a machine of the character described, the combination of devices for holding the fruit in position to be pared, means for whirling the fruit, and means for causing the fruit to be engaged with the holding devices.

2. In a machine of the character described, the combination of devices for holding fruit in position to be pared, a rotatable body to contact with and whirl the fruit to cause the greatest diameter of the fruit to assume a position substantially perpendicular to the axis of rotation of said rotatable body, and means for urging the fruit into engagement with the holding devices.

3. In a machine of the character described, the combination of a fork for holding the fruit in position to be pared, means for whirling the fruit, and means for forcing the whirling fruit upon the said holding devices.

4. In a machine of the character described, the combination of devices, for holding fruit in position to be pared, means for whirling the fruit to cause the greatest diameter of the fruit to assume a position substantially perpendicular to the axis of the said means, yielding fingers, and means to urge the fruit between said fingers and onto the holding devices.

5. An apparatus for feeding fruit to a paring-machine, comprising a cylinder, means to rotate it, a pusher, means to slide and rotate the same, and a receptacle for the fruit to be transferred by said pusher into said cylinder.

6. In an apparatus of the class described, a cylinder, a yielding pusher, means to rotate said cylinder and pusher and to slide the pusher that it, while in rotation, may push the fruit within said cylinder to be whirled thereby.

7. In an apparatus of the class described, a cylinder, a yielding pusher, means to rotate said cylinder and pusher and to slide the pusher that it, while in rotation, may push the fruit within said cylinder to be whirled thereby, and yielding fingers rotatable with said cylinder to receive the fruit as it leaves the cylinder.

8. The combination of a hollow cylinder, means to push fruit into said cylinder, and means for imparting rotation to the cylinder to cause the fruit contained therein to rotate and position the core thereof substantially parallel with the longitudinal axis of the cylinder.

9. The combination of a hollow cylinder, a yielding pusher for pushing fruit into said cylinder and means for imparting rotation to said cylinder to cause the fruit therein to rotate and be positioned with the core thereof substantially parallel with the longitudinal axis of the cylinder.

10. The combination of a hollow cylinder having a lining of yielding material, means to push fruit into said cylinder, and means for imparting rotation to the cylinder to cause the fruit contained therein to rotate and position the core thereof substantially parallel with the longitudinal axis of the cylinder.

11. In a machine of the character described, the combination of a cylinder having yielding fingers at one end, means to push fruit into the opposite end of said cylinder, and means for imparting rotation to said cylinder that the latter may whirl the fruit contained therein and cause the core thereof to assume a position substantially parallel with the longitudinal axis of the cylinder.

710,891. MOLD FOR FORMING CONCRETE TROUGHS OR OTHER ARTICLES. ISAAC HAWS, Hannibal, N. Y. Filed Sept. 12, 1901. Serial No. 75,231. (No model.)

Claim.—As a new article of manufacture, a mold for forming concrete troughs or bins consisting of an outer case having a bottom with sides and ends hinged thereto to open outward, and an inner case having a bottom with sides hinged thereto to open inward, detached extensions to the bottom covering the thickness of the sides, and ends that may be slid out vertically, substantially as and for the purpose set forth.

710,892. BOX-COVER FASTENER. WILLIAM J. FITZGERALD and MOSES RIES, Milwaukee, Wis. Filed Mar. 31, 1902. Serial No. 100,694. (No model.)

Claim.—1. In a box-cover fastener, the combination with a box provided with the usual side pieces and a cover therefor, the latter provided with depending flexible side pieces or flanges adapted to fit the upper portion of the side pieces of the box, and one of the side pieces of one of said parts provided with a slot, of a fastening device consisting of a main member provided with means for securing it to one of the side pieces of one of said parts, and having a member projecting at an angle therefrom and bent into a single loop, the portion of the loop nearest the main member being narrowed to form a contracted neck, and said loop being gradually widened toward and to its free end to form an enlarged extremity, the loop adapted to be forced through and into engagement with the slot of the other part when pressure is exerted on the side piece to which the fastening device is connected, the said loop when so engaged having its narrow neck portion fitting in the slot and its widened or enlarged extremity extending beyond the slot, whereby the two parts are releasably locked together, the enlarged extremity of the loop preventing accidental disengagement of said parts.

2. In a box-cover fastener, the combination with a box provided with the usual side pieces and a cover therefor, the latter provided with depending flexible side pieces or flanges adapted to fit the upper portion of the side pieces of the box, and one of the side pieces of one of said parts provided with a slot, of a fastening device having means for securing it to one of the side pieces of one of said parts, and having one end bent around and thence upwardly for a short distance to form a recess in which the edge of the side piece to which the fastening device is secured is received and clamped, the said fastening device being thence bent from the upwardly-extending portion at an angle and into a single loop.

3. In a box-cover fastener, the combination with a box provided with the usual side pieces and a cover therefor, the latter provided with depending flexible side pieces or flanges adapted to fit the upper portion of the side pieces of the box, and one of the side pieces of one of said parts provided with a slot, of a fastening device having means for securing it to one of the side pieces of one of said parts, and having one end bent around and thence upwardly for a short distance to form a recess in which the edge of the side piece to which the fastening device is secured is received and clamped, the said fastening device being thence bent from the upwardly-extending portion at an angle and into a single loop, the portion of the loop nearest the main member being narrowed to form a contracted neck, and said loop being gradually widened toward and to its free end to form an enlarged extremity, the loop adapted to be forced through and into engagement with the slot of the other part when pressure is exerted on the side piece to which the fastening device is connected, the said loop when so engaged having its inner neck portion fitting in the slot and its widened or enlarged extremity extending beyond the slot, whereby the two parts are releasably locked together, the enlarged extremity of the loop preventing accidental disengagement of said parts.

5. A box-cover fastener, consisting of a main member provided with means for securing it to the part to which it is to be attached, and having a member projecting at an angle therefrom and bent into a single loop, the portion of the loop nearest the main member being narrowed to form a contracted neck, and said loop being gradually widened toward and to its free end to form an enlarged extremity.

6. A box-cover fastener consisting of a main member provided with means for securing it to the part to which it is to be attached, and having one end bent around and thence upwardly for a short distance to form a recess in which the edge of the part to which the fastening device is attached is received and clamped, the said fastening device being thence bent from the upwardly-extending portion at an angle and into a single loop.

7. A box-cover fastener, consisting of a main member provided at one end with a projecting prong, and having its opposite end bent around and thence upwardly for a short distance to form a recess, the said fastening device being thence bent from the upwardly-extending portion at an angle and into a single loop.

8. A box-cover fastener consisting of a main member provided at one end with a projecting prong, and having its opposite end bent around and thence upwardly for a short distance to form a recess, the said fastening device being thence bent from the upwardly-extending portion at an angle and into a single loop, the portion of the loop nearest the main member being narrowed to form a contracted neck, and said loop being gradually widened toward and to its free end to form an enlarged extremity.

710,893. CARRIAGE MECHANISM FOR TYPE-WRITERS. CHARLES SEARS, Cleveland, Ohio. Filed Sept. 20, 1898. Serial No. 731,051. (No model.)

Claim.—1. In a type-writing machine, in combination, a movable carriage, a rack thereon, a spring-drum having teeth meshed with said rack, a fixed frame, a rotatable shaft mounted therein and passing axially through said drum, a spring having its ends fixed to said drum and shaft, means for locking said shaft against rotation by said spring, and a treadle adapted to rotate said drum, substantially as described.

2. In a type-writing machine, in combination, a movable carriage having a rack, a spring-drum having teeth meshing in said rack, a frame, a shaft rotatably mounted through said drum and frame, a ratchet-wheel rigid with said shaft, a pawl, pivoted to said frame cooperating with said ratchet, a treadle and a strap adapted to rotate said drum, said shaft be-

ing adapted to receive a key for winding up said spring, substantially as described.

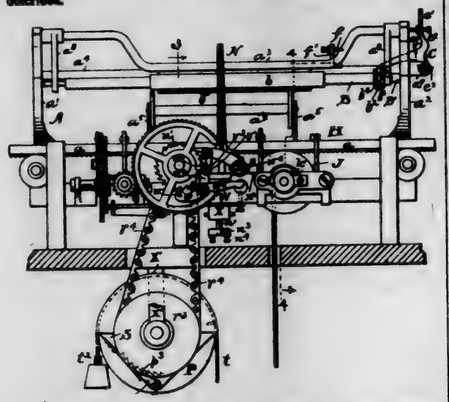

3. In a type-writing machine, the combination of a transversely-movable carriage, feed-rolls mounted thereon, a ratchet secured to said feed-rolls, and a pawl-plate loosely mounted on the same axis and having a notch in its edge, a pawl on said plate engaging with the ratchet, with a lever pivoted to the carriage having on one arm a finger which enters said notch, a set-screw in another arm and adapted to engage with one part of the carriage, a spring to move the lever in one direction to cause such engagement with the carriage, and an adjustable stop on the frame of the machine for engagement with the lever when the carriage is returned to its starting-point, substantially as specified.

4. In a type-writing machine, the combination of a transversely-movable carriage, feed-rolls mounted thereon, a ratchet secured to one of the feed-rolls, a pawl-plate pivoted to the carriage on the same axis with respect to said feed-roll, a pawl on said plate, said plate having a notch in its edge with a lever pivoted to the carriage on an axis substantially at right angles to the axis of the feed-rolls, said lever having at one end an arm which engages with said notch, a set-screw passing through another arm of said lever and adapted to engage with a part of the carriage, a spring for rocking the lever to cause such engagement, a set-screw adjustable on the machine-frame and adapted to engage with said lever when the carriage is returned to its starting-point, and a stop with which said carriage engages to determine its starting-point, substantially as specified.

5. In a type-writing machine, the combination of an impression-hammer, and a spring for moving it forward, with a spring of greater force, connections between the said stronger spring and hammer whereby the latter is retracted, means for disconnecting said stronger spring and hammer, and means adapted to put said stronger spring under tension, substantially as described.

6. In a type-writing machine, the combination of the impression-hammer, a spring for moving it in the impression direction, a shaft having a sprocket-wheel, and mechanism operated by said shaft for drawing the hammer backward, means for releasing the connections between said hammer and the shaft whereby the hammer may be moved by its spring, with a rotatable shaft, a spring connected thereto, a sprocket-wheel secured thereon, and a sprocket-chain connecting the two sprocket-wheels, substantially as specified.

7. In a type-writing machine, the combination of a pivoted impression-hammer, and a spring for moving it in the impression direction, with a rotatable shaft, a ratchet, and a sprocket-wheel also secured thereto, a frame mounted concentrically with said shaft, connections between the frame and hammer, a pawl mounted on the frame and engaging with the ratchet, mechanism for releasing the pawl from engagement with the ratchet and for preventing the ratchet from turning, a spring-actuated shaft, a sprocket-wheel secured thereto, a sprocket-chain passing over the two sprocket-wheels referred to, and means for winding up said spring-motor, substantially as specified.

8. In a type-writing machine, the combination of the impression-hammer, a spring for moving it in the impression direction, a shaft having a sprocket-wheel, and mechanism operated by said shaft for drawing said hammer backward, means for releasing the connections between said hammer and shaft whereby the hammer may be moved by its spring, with a rotatable shaft, a sprocket-wheel secured thereon, and a sprocket-chain connecting the two sprocket-wheels, a spring-barrel loosely mounted on said shaft, two ratchet-wheels secured thereon, a pawl pivoted to the fixed support, and engaging with one ratchet-wheel, a plate mounted axially with respect to the spring-barrel, a pawl pivoted thereto engaging with the other ratchet-wheel, and a strap secured to and passing around said segment, a lever to which one end of said strap is fastened, and a weight fastened to the other end of said strap, substantially as specified.

9. In a type-writing machine, in combination, a carriage having a rack, a pinion engaging said rack, a spring impelling said pinion to feed said carriage, a foot-lever, and means connecting it with said pinion to wind said spring and return said carriage simultaneously, substantially as described.

710,894. STOVE-TRUCK. JAMES H. SMITH, Big Rapids, Mich. Filed Jan. 2, 1902. Serial No. 88,349. (No model.)

Claim.—1. In combination with the side bars of a stove-truck, supporting-plates secured thereon, axle-arms pivoted thereto, longitudinally-adjustable axletree-bearings secured to said arms, an axle and wheels supported in said bearings, and a connecting-rod and lever connected therewith, substantially as and for the purpose set forth.

2. In combination with a truck-frame, plates secured to the ends thereof, axle-arms pivoted thereto and having offsets to form auxiliary bearings therewith, longitudinally-adjustable axle-bearings bolted thereto, an axle and wheels, a lever pivoted to the truck-frame, a connecting-rod connecting the lever with the axle, with a frame pivoted to the back of said truck-frame, centers on said frame, and an adjustable elbowed link-brace pivoted to said frame and the truck-frame, substantially as and for the purpose set forth.

3. In combination with a truck-frame, supporting-plates secured thereto, projections from the side of said plates for supporting the axle-tree-arms, when extended, a pivotal center and convex auxiliary bearings thereon, an axle-arm pivoted thereto and provided with a concave bearing-surface corresponding with the convex surface on the plates, and a longitudinally-adjustable axle-bearing bolted thereto, together with an axle, wheels, connecting-rod and lever for manipulating the same, substantially as specified.

710,895. COLTER. STEPHEN A. INGERSOLL, Sandoval, Ill. Filed June 26, 1901. Serial No. 66,176. (No model.)

Claim.—1. In a colter, a standard; a fork extending downwardly from the standard; and a bolt mounted in the lower ends of said fork, a bearing-disk mounted on each end of the bolt; a sleeve integral with one of said disks; a tubular bushing mounted on said sleeve; a nut secured upon the said bushing, which nut fits into an aperture in the colter-disk; and a flanged disk mounted upon the square nut on each side of the colter-disk, substantially as specified.

2. In a colter, a standard; a fork extending downwardly from the standard; a cutting-disk carried by said fork; a clamp comprising an apertured ring; a beveled base portion fitting in said ring, an apertured clamping-jaw for receiving the standard; integral with said base portion; a key for locking the said standard in position and for holding the base portion rigidly in the ring, substantially as specified.

710,896. APPARATUS FOR CONTINUOUS BEER PRODUCTION. CORNELIUS SCHEIER, Gothenburg, Germany. Filed Apr. 24, 1901. Serial No. 57,212. (No model.)

Claim.—The combination, in an apparatus for making beer, of a mash-tun, a drainage-vat located on a lower level than the same, valved discharge-pipes connecting the mash-tun and drainage-vat, a brewing-copper located on a lower level than the drainage-vat, a valved discharge-pipe connecting the mash-tun and brewing-copper, an open cooler located on a level between the drainage-vat and brewing-copper, inclined valved discharge-pipes connecting the drainage-vat with the cooler, an inclined valved discharge-pipe connecting said open cooler with the brewing-copper, a pump, valved pipes connecting the pump with the cooler and with the mash-tun and drainage-vat, two connected infusion-vat vessels, a valved discharge-pipe connecting one of said vessels with the mash-tun, a discharge-pipe connecting the other of said vessels with the brewing-copper, and a discharge-pipe connecting said second vessel with the mash-tun, substantially as set forth.

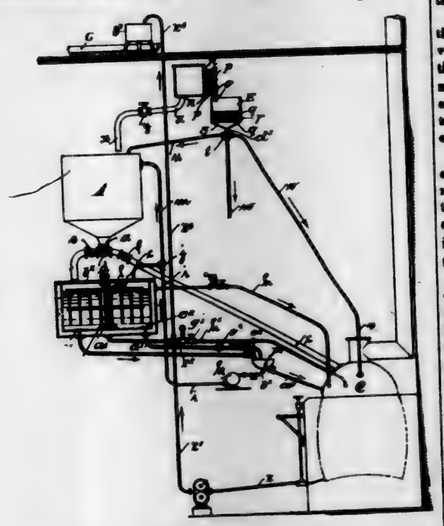

710,897. FLUID-OPERATED SIGNAL. CHESTER I. HALL and JAMES HALSTEAD, El Paso, Tex. Filed July 26, 1901. Serial No. 70,153. (No model.)

Claim.—1. In a fluid-operated signal, the combination with a conveyer for the fluid, having an exhaust, of means for opening and closing the exhaust, a fluid-operated receiving-indicator connected with the conveyer, means for supplying the fluid to the conveyer, and a fluid-operated transmitting-indicator connected with the conveyer and located contiguous to the fluid-supplying means.

2. In a fluid-operated signal, the combination with a conveyer for the fluid having an exhaust, of a fluid-operated receiving-indicator connected with the conveyer, a fluid-reservoir having communication with the conveyer, a valve for simultaneously controlling said communication and the exhaust, operating means for the valve, and a fluid-operated transmitting-indicator connected with the conveyer and located contiguous to the valve-operating mechanism.

3. In a fluid-operated signal, the combination with a conveyer for the fluid, of a fluid-operating receiving-indicator connected with the conveyer, a fluid-reservoir having a supply passage-way communicating with the conveyer, said conveyer being provided with an exhaust passage-way, mechanism for alternately opening and closing the supply and exhaust, operating means for the controlling mechanism, and a fluid-operating transmitting-indicator connected with the conveyer and located contiguous to the valve-operating mechanism.

4. In a fluid-operated signal, the combination with a conveyer-tube, of a fluid-operated receiving-indicator connected with the tube, a fluid-reservoir, a valve-casing, supply-tubes extending from the reservoir and the conveyer-tube to the casing, said conveyer-tube being provided with an exhaust that communicates with the casing, and a rotary valve located in the casing for controlling the exhaust and the inlet to the conveyer-tube.

5. In a fluid-operated signal, the combination with a conveyer-tube, of a fluid-operated receiving-indicator connected with the tube, a fluid-reservoir, a valve-casing, supply-tubes extending from the reservoir and the conveyer-tube to the casing, said conveyer-tube being provided with an exhaust that communicates with the casing, a valve located in the casing and controlling the exhaust and the supply pipe from the reservoir, an operating-handle for the valve, and a fluid-operated transmitting-indicator having communication with the conveyer-tube and located adjacent to the handle.

6. In a fluid-operated signal, the combination with a conveyer for the fluid, of means for supplying fluid to the conveyer, a fluid-operated receiving-indicator connected to the conveyer, and a fluid-operated alarm also connected to the conveyer, said indicator and alarm being operable simultaneously by the introduction of fluid to the conveyer.

7. In a fluid-operated signal, the combination with a conveyer for the fluid, of means for supplying fluid to the conveyer, a fluid-operated receiving-indicator connected to the conveyer, and a fluid-operated alarm also connected to the conveyer independently of the indicator, whereby said indicator and alarm can be operated simultaneously by the introduction of fluid to the conveyer.

8. In a fluid-operated signal, the combination with a conveyer for the fluid, of means for supplying fluid to the conveyer, a fluid-operated receiving-indicator connected to the conveyer, a fluid-operated alarm also connected to the conveyer independently of the indicator, whereby said indicator and alarm are operable simultaneously upon the introduction of fluid to the conveyer, and means for controlling the supply of fluid to the conveyer.

9. In a fluid-operated signal, the combination with a conveyer-tube having an exhaust, of a plurality of fluid-operated indicators, each indicator comprising a plunger-barrel connected with the conveyer-tube, a plunger slidably mounted in the tube and freely movable toward the ends thereof, a dial, and a pointer arranged upon the dial and freely rotatable thereon in either direction, a connection between the pointer and the plunger to rotate the pointer in either direction upon the movement of the plunger one way or the other, separate fluid-reservoirs, each having a communication with the conveyer-tube, independent valves controlling the several communications, and operating devices for said valves, said devices being located adjacent to the indicators.

10. In a fluid-operated signal, the combination with a conveyer for the fluid, of means for supplying fluid to the conveyer, a plunger-barrel connected to the conveyer, a plunger slidably mounted in the barrel and freely movable toward either end thereof, a dial, a rotary pointer mounted on the dial and freely movable in either direction and a connection between the plunger and pointer, whereby they will move simultaneously in either direction.

11. In a fluid-operated signal, the combination with a conveyer for the fluid, of means for supplying fluid to the conveyer, a plunger-barrel connected to the conveyer, a plunger slidably mounted in the barrel and provided with a stem having a rack, a dial, a rotary pointer mounted on the dial and having a pinion engaging the rack of the plunger, and a coiled return-spring engaging the pointer.

12. In a fluid-operated signal, the combination with a conveyer for the fluid, of means for supplying fluid to the conveyer, a plunger-barrel having communication with the conveyer, a valve controlling the communication between the barrel and the conveyer, a plunger slidably mounted in the barrel, a dial, and a rotary pointer mounted on the dial and having a connection with the plunger, said dial and plunger being freely and simultaneously movable in either direction.

13. In apparatus of the class described, the combination with a conveyer, of a fluid-operated indicator connected with the conveyer, a fluid

reservoir, a pipe leading from the reservoir and having a valve-casing secured thereto, said casing being connected with the conveyor and having an oil-aperture in one end, a valve rotatably mounted within the casing and having an oil-groove in one face that alines with the oil-aperture of the casing when the valve is moved to a predetermined position, said valve being also provided with an opening extending through the same, one end of the opening being arranged to aline with the aperture in the valve-casing upon the movement of the valve to a certain position, said casing being provided with oil-conducting grooves that aline with the opening in the valve.

14. In a fluid-operated signal, the combination with a conveyor for the fluid, of means for supplying fluid to the conveyor, a plunger-barrel connected to the conveyor, a plunger slidably mounted in the barrel and provided with a stem having a rack, a dial, a rotary pointer mounted on the dial and having a pinion engaging the rack of the plunger, and automatic means for returning the pointer after its movement by the plunger.

REISSUES.

12,086. MOVING STAIRWAY. JAMES M. DODGE, Philadelphia, Pa., assignor to the Stair Lift Company, Camden, N. J., and Philadelphia, Pa. Filed July 24, 1902. Serial No. 116,836. Original No. 500,772, dated Feb. 6, 1894.

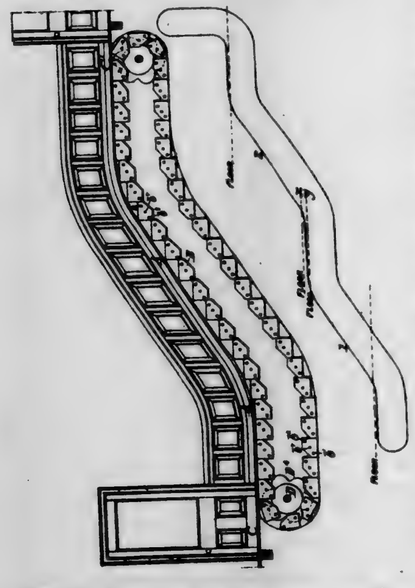

Claim.—1. In a moving stairway, step-sections free to slide upon each other, substantially as described.

2. The combination in a stairway, of a series of moving step-sections abutting one against another throughout the length of the stairway, guides for the sections, and means for moving the sections, substantially as described.

3. The combination in a stairway, of a series of moving step-sections abutting one against another and fitting against the side walls of a guideway, guides for the sections, and means for pushing the sections, substantially as described.

4. The combination in a stairway, of a series of independent moving steps, guides for the said steps, and means for pushing the series of steps from a fixed point, substantially as described.

5. The combination in a moving stairway, of moving step-sections, guideways at each side of the stairway, wheels on the step-sections adapted to travel on said guideways, and mechanism situated at one end of the stairway and operating to push the step-sections, substantially as described.

6. The combination in a moving stairway, of independent step-sections, two guideways therefor, and projections on each step-section, one adapted to one guideway and the other adapted to the other guideway, said guideways being so arranged in respect to each other and of such a curve that the step-sections will gradually increase in height as they move away from one platform and will gradually diminish in height as they approach the other platform, substantially as described.

7. The combination in a moving stairway, of sections independently movable to form steps or platforms, guides therefor, each step-section having projections adapted to the guides, a driving-shaft, and wheels on the driving-shaft adapted to engage the step-sections, substantially as described.

8. The combination in a stairway, of moving step-sections, with a platform situated on a level slightly below the tread of the step-sections at delivery-point, substantially as set forth.

9. The combination in a stairway, of moving step-sections, a platform situated on a level slightly above the tread of the step-sections at receiving-point, and a platform situated on a level slightly below the tread of the step-sections at the delivery-point, substantially as described.

10. The combination in a moving stairway, of traveling step-sections, and a floor or platform at the delivery end thereof, the travel of the step-sections being continued above said floor or platform so as to form an abutment, substantially as described.

11. The combination in a moving stairway, of traveling step-sections, with guides for said sections, guides extending upward beyond a floor or platform at the delivery end of said stairway, so that the step-sections will be carried to a point above said platform and act as an abutment, substantially as described.

12. The combination in a moving stairway, of a floor or platform at each end of the stairway, independent step-sections, means for moving the said sections, and guides for the said sections, said guides being so formed that the steps will gradually increase in height as they move away from one platform and will gradually decrease in height as they approach the other platform, the platform at the receiving end being above the level of the step-sections and the platform at the delivery end being below the level of the step-sections, and the guides for the step-sections extending considerably above the platform at the delivery end so that the step-sections will pass upward and form an abutment, all substantially as described.

13. In a moving stairway, the combination of separate step-sections, guides therefor, and means for pushing the step-sections forward, substantially as described.

14. In a moving stairway, the combination of a series of disconnected step-sections, and guides therefor, with means for engaging and moving said step-sections successively and thereby imparting motion to the series, substantially as described.

15. The combination in a moving stairway, of step-sections free to slide upon each other, guides therefor, the guides at one end being adjustable for the purpose of taking up lost motion, substantially as described.

16. A moving platform or stairway consisting of sections, inclined guides therefor, and means for positively moving the sections forwardly along the inclined guides at a given speed by causing them to push one upon another.

17. A moving carrier guided so as to form a platform, the direction of travel of the said carrier being abruptly changed at said platform so as to serve as an abutment, substantially as described.

18. A moving carrier guided so as to form a platform, the direction of travel of said carrier being abruptly changed at said platform so as to serve as an abutment above the platform, in combination with one or more fixed platforms adjoining that of the moving carrier, substantially as described.

19. A moving carrier consisting of a series of sections guided so as to form a platform, the direction of travel of the said sections being abruptly changed at said platform so as to form an abutment, substantially as described.

12,087. KINETOSCOPE. THOMAS A. EDISON, Llewellyn Park, N. J. Filed June 10, 1902. Serial No. 110,967. Original No. 589,168, dated Aug. 31, 1897. (Division A.)

Claim.—1. An apparatus for taking photographs suitable for the exhibition of objects in motion, having in combination a camera having a single stationary lens; a single sensitized tape-film supported on opposite sides of, and longitudinally movable with respect to, the lens, and having an intermediate section crossing the lens; feeding devices engaging such intermediate section of the film and moving the same across the lens of the camera at a high rate of speed and with an intermittent motion; and a shutter exposing successive portions of the film during the periods of rest, substantially as set forth.

2. An apparatus for taking photographs suitable for the exhibition of objects in motion, having in combination a camera having a single stationary lens; a single sensitized tape-film supported on opposite sides of, and longitudinally movable with respect to, the lens, and having an intermediate section crossing the lens; a continuously-rotating driving-shaft; feeding devices operated by said shaft engaging such intermediate section of the film and moving the same across the lens of the camera at a high rate of speed and with an intermittent motion; and a continuously-rotating shutter operated by said shaft for exposing successive portions of the film during the periods of rest, substantially as set forth.

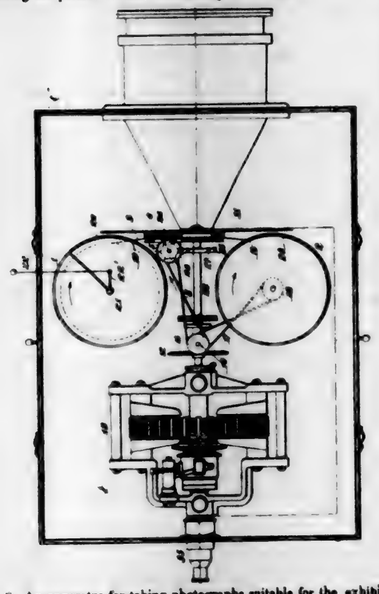

3. An apparatus for taking photographs suitable for the exhibition of objects in motion, having in combination a camera having a single stationary lens; a single sensitized tape-film supported on opposite sides of, and longitudinally movable with respect to, the lens, and having an intermediate section crossing the lens; a continuously-rotating driving-shaft; feeding devices operated by said shaft engaging such intermediate section of the film and moving the same across the lens of the camera at a high rate of speed and with an intermittent motion; a shutter exposing successive portions of the film during the periods of rest; and a reel revolved by said shaft with variable speed for winding the film thereon after exposure, substantially as set forth.

4. An apparatus for taking photographs suitable for the exhibition of objects in motion, having in combination a single camera, and means for passing a sensitized tape-film across the lens at a high rate of speed and with an intermittent motion, and for exposing successive portions of the film during the periods of rest, the periods of rest being greater than the periods of motion, substantially as set forth.

12,088. KINETOSCOPIC FILM. THOMAS A. EDISON, Llewellyn Park, N. J. Filed July 18, 1902. Serial No. 116,422. Original No. 589,168, dated Aug. 31, 1897. (Division B.)

Claim.—1. An unbroken transparent or translucent tape-like photographic film having thereon uniform sharply-defined photographs of successive positions of an object in motion as observed from a single point of view at rapidly-recurring intervals of time, such photographs being arranged in a continuous straight-line sequence, unlimited in number save by the length of the film, and sufficient in number to represent the movements of the object throughout an extended period of time, substantially as described.

2. An unbroken transparent or translucent tape-like photographic film provided with perforated edges and having thereon uniform sharply-defined photographs of successive positions of an object in motion as observed from a single point of view at rapidly-recurring intervals of time, such photographs being arranged in a continuous straight-line sequence, unlimited in number save by the length of the film, and sufficient in number to represent the movements of the object throughout an extended period of time, substantially as described.

12,039. GATE. ISRAEL L. LANDIS, Chicago, Ill. Filed June 23, 1902. Serial No. 112,944. Original No. 680,417, dated June 13, 1901.

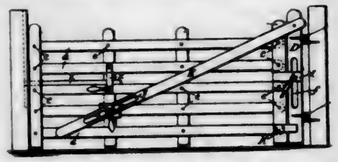

Claim.—1. In a gate, the combination with the frame of a transversely-slotted subpost suitably hinged to the main supporting-post and carrying said frame, a pair of straps attached to the supporting-battens of said frame and projecting over and slidable against the lateral faces of said subpost, and a rod connecting said straps, extending through said slot and slidable therein, and provided with means for clamping said straps against said subpost.

2. In a gate, the combination with an adjustable frame of a transversely-slotted subpost to carry said frame, a pair of guide and clamping plates attached to the supporting-battens of said frame and projecting over the lateral faces of said subpost, and a rod extending through said slot, connecting said plates and provided with means for clamping said plates against said subpost.

3. In a gate, the combination with a frame the members of which are pivotally connected with each other to permit of an oblique as well as a rectangular configuration of said frame, of a transversely-slotted subpost to carry said frame, a pair of straps attached to the supporting-battens of said frame and projecting over and slidable against the lateral faces of said subpost, and a rod extending through said slot, slidable therein and provided with means for clamping said straps against said subpost.

4. In a gate, the combination with a frame the members of which are pivotally connected with each other of a transversely-slotted subpost to carry said frame, clamping-plates attached to said frame and projecting over the lateral faces of said subpost, a rod extending through said slot, connecting said plates and provided with means for clamping said plates against said subpost, a diagonal brace pivotally attached at one end to the top of said subpost and slotted at its other end, and a guide-pin upon said frame extending through said slot and provided with means for clamping said brace and frame.

5. In a gate, the combination with the transversely-slotted subpost of the adjustable frame, clamping-plates attached to said frame and slidable against the lateral faces of said subpost, means operable through the slot to clamp said plates against the subpost, the diagonal bracing-arm pivotally attached to the top of said subpost, means for clamping said arm and frame to give rigidity to said frame, the sliding latch-bolt, and means for clamping said latch-bolt and frame.

12,040. AUTOMATIC BRAKE. ALBON E. NORRIS, Cambridge, Mass. Filed May 29, 1902. Serial No. 109,573. Original No. 638,185, dated Nov. 28, 1899.

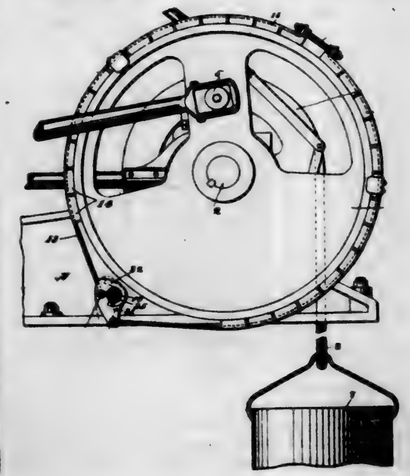

Claim.—1. A brake mechanism comprising a wheel, a band-brake surrounding said wheel, an oscillatory actuator, the ends of the band-brake being connected to said actuator at points located at different distances from its axis of oscillation, and the actuator being operated through the brake-band on the reverse or backward rotation of said wheel, thereby to set the brake, and automatically-operative means acting against said actuator to maintain the said brake-band in contact with said wheel.

2. The combination with a motor-shaft of a motor-shaft-controlled brake, comprising a wheel rotatable by said shaft, a brake-band surrounding said wheel, an oscillatory actuator to which the ends of said brake are connected at different effective distances from the axis of oscillation, and automatically-operative means tending constantly to wrap said brake-band about and in frictional contact with said wheel, whereby positive rotation of said motor-shaft in one direction acts through said frictional contact upon and to move said band and actuator in one direction to relieve the braking effect, and rotation of said motor-shaft in a reverse direction similarly acts to move said band and actuator in an opposite direction to increase the braking effect.

3. A brake mechanism comprising a wheel, a band surrounding said wheel, a fixed shaft, an actuator loosely mounted upon said shaft, a collar fixed to the shaft, and a coiled spring surrounding one end of the shaft and secured respectively to said collar and actuator.

4. A brake mechanism comprising a wheel, an actuator mounted for oscillation and consisting of two parts, a brake-band surrounding said wheel and secured between the two parts of the actuator at points located at different distances from the axis of said actuator, and a web uniting the two parts of the actuator and adapted to engage the brake-band, thereby to limit the movement of the actuator in one direction.

5. The combination with the motor-shaft of a hoisting apparatus and a hoisting-drum capable of being clutched thereto, of a motor-shaft-controlled brake comprising a wheel rotatable by said shaft, a brake-band surrounding said wheel, an oscillatory actuator to which the ends of said brake-band are connected at different effective distances from the axis of oscillation and automatically-operative means tending constantly to rotate said actuator in a direction to wrap said brake-band about and in frictional contact with said wheel, whereby positive rotation of said motor-shaft in one direction acts through said frictional contact upon and to move said band and actuator in one direction to relieve the braking effect, and rotation of said motor-shaft in a reverse direction similarly acts to move said band and actuator in an opposite direction to increase the braking effect.

12,041. ACETYLENE-GAS GENERATOR. GIORGIO G. SMITH, Florence, Italy. Filed Jan. 27, 1902. Serial No. 91,536. Original No. 680,169, dated Oct. 23, 1900.

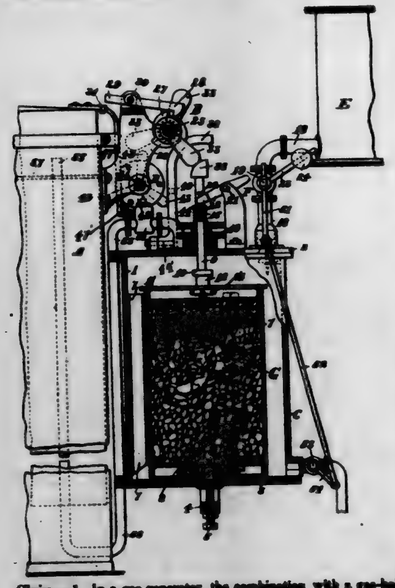

Claim.—1. In a gas-generator, the combination with a gas-holder having a part movable upon change of volume of gas therein, of a closed receptacle independent from said gas-holder, and adapted to contain both water and a case of gas-producing agent; a conduit between said gas-holder and receptacle; means for opening the case; means for supplying the receptacle with water; and devices controlled by the movable part of the gas-holder for operating the means for opening the case and for supplying water to the receptacle.

2. In a gas-generator, the combination with a gas-holder having a part movable upon change of volume of gas therein, of a closed receptacle; a conduit between the gas-holder and receptacle; means for supplying the receptacle with water; means for mounting or supporting a case of gas-producing agent within the receptacle; devices for puncturing the case at remote points; a device controlled by the movable part of the gas-holder for operating the puncturing devices and means also controlled by said movable part for causing the supply of water to enter the receptacle.

3. In an acetylene-gas generator, the combination with a gas-holder having a bell, of a closed receptacle for holding a case of carbid; means controlled by the bell for puncturing the carbid-case, and means also controlled by the bell as it closes, for supplying said receptacle with water.

4. In an acetylene-gas generator, the combination with a gas-holder, of a closed receptacle, capable of containing a case of carbid; a water-tank in communication with the receptacle; means for causing the water from the tank to pass into the receptacle; a tool for puncturing the carbid-case; and means operating automatically upon the reduction of the volume of gas in the gas-holder, for operating the tool.

5. In a gas-generator, the combination with a gas-holder, of a series of closed receptacles, each capable of containing or supporting one or more cases of gas-producing agent; devices for forming openings of dissimilar hydrostatic functions in each of the cases; and mechanism for actuating the opening devices of the receptacles successively.

6. In an acetylene-gas generator, the combination with a gas-holder having a bell, of a closed receptacle independent of the gas-holder, and capable of containing a carbid-case; a tool working through a wall of the receptacle and serving to perforate the carbid-case; and means for actuating said tool.

7. In an acetylene-gas generator, the combination with a gas-holder of a closed receptacle independent of the gas-holder, and capable of containing a carbid-case; a tool within the receptacle, and a tool working through a wall of the receptacle, said tools serving to perforate the carbid-case at separated points; and means for actuating said tools.

8. In a gas-generator, the combination with a receptacle, capable of containing a case of gas-producing agent; a punch operating through a wall of the receptacle and serving to perforate the case; a device for actuating the punch; a gas-holder; and a conduit for conveying the gas generated in the receptacle to said gas-holder.

9. In a gas-generator, the combination with a receptacle capable of receiving a case containing gas-producing agent; a punch for perforating the case; a shaft carrying means for operating said punch and normally locked against rotation; a gas-holder having a bell; a device connected to said bell for releasing the shaft; and means for actuating the shaft when released.

10. In a gas-generator, the combination with a punch for opening a case of gas-producing agent; a protector for preventing the punch from being operated except at the proper time; means for actuating the protector; and means for actuating the punch.

11. In a gas-generator, the combination with a receptacle, adapted to receive a case containing a gas-producing agent; a punch; means for actuating the punch; a protecting-cap for the punch; and means for withdrawing the cap prior to the operation of the punch.

12. In a gas-generator, the combination of a receptacle adapted to contain a case of gas-producing agent; a punch; a swinging protector; means for withdrawing the protector; and means for actuating the punch.

13. In a gas-generator, the combination of a receptacle, adapted to contain a case of gas-producing agent; a tool working through a wall of the receptacle and adapted to perforate the case; means for actuating the tool; and a movable protector for preventing the operation of the tool except at the proper time.

14. In a gas-generator, the combination of a receptacle carrying a punch and capable of containing a carbid-case; means normally sustaining the case above the punch; and means for forcing the case down upon the punch.

15. In a gas-generator, the combination of a receptacle carrying a punch and capable of containing a case; means normally sustaining the case above the punch; and means embodying a second punch for perforating the case and also forcing the same upon the first punch.

16. In a gas-generator, the combination with a receptacle, capable of holding a case containing a gas-producing agent, of a punch therein; means for normally holding the case out of contact with the punch; a punch working through a wall of the receptacle; and means in connection with the working punch for forcing the case upon the first punch.

17. In a gas-generator, the combination with a receptacle adapted to contain a case of carbid, of a punch in said receptacle; means for forcing the case against the punch; means for forcing the case away from the punch; and means for introducing water into the receptacle.

18. In a gas-generator, the combination with a receptacle adapted to contain a case of gas-producing agent, of a stationary punch therein; a movable punch working through a wall of the receptacle; means for forcing the case against the stationary punch; and means for actuating the movable punch.

19. In a gas-generator, the combination with a receptacle, adapted to contain a case of gas-producing agent; a device for perforating said case; a water-supply; means for controlling the supply of water to the receptacle; and a device actuated by the receptacle-perforating device for operating the means for controlling the supply of water.

20. The combination with a gas-holder, of a receptacle independent of the holder, capable of receiving a case of gas-producing agent; a conduit connecting the holder and receptacle; means for simultaneously perforating the case at different points; and means for supplying water to the receptacle at the time the case is perforated.

21. The combination with a gas-holder, of a closed receptacle capable of containing a case of carbid; a conduit between the receptacle and gas-holder; a stationary punch within the receptacle; a reciprocatory punch working through a wall of the receptacle; and means for introducing water to the receptacle.

22. The combination with a gas-holder, of a receptacle for receiving a case containing carbid; means for perforating said case; means for introducing water into the receptacle; a valve in the water-supply means and controlled by the means for perforating the case; and a conduit for conveying the generated gas to the gas-holder.

23. The combination with a gas-holder, of a receptacle; a conduit between the gas-holder and receptacle; means for supporting a carbid-case within the receptacle; means for supplying water to the receptacle; means for perforating the case at its top and at its bottom; and means for causing water to be supplied simultaneously with the perforating operation.

24. In a gas-generator, the combination of a closed receptacle for receiving a case containing carbid; a punch working through one end of the receptacle; means for actuating the punch; a lever moving with the punch; a water-supply pipe leading to the receptacle; and a valve in the water-supply pipe actuated by the lever.

25. In a gas-generator, the combination with a receptacle for receiving a carbid-case, of a water-supply pipe communicating therewith; a punch for perforating the case; and means for actuating the punch and controlling the water-supply.

26. In a gas-generator, the combination with a receptacle adapted to contain a carbid-case; a punch for perforating the case; a pivoted lever moving with the punch; a water-supply pipe communicating with the receptacle; a valve in the pipe actuated by the pivoted lever; and a weight for the valve.

27. The combination with the bell of a gas-holder, of a receptacle communicating with said holder and adapted to receive a case containing a charge of carbid, the gas from which will enter the gas-holder; a punch for perforating the carbid-case; means for actuating the punch; a water-supply conduit leading to the receptacle; and means carried by the bell for controlling the movement of the punch-actuating means.

28. The combination with a gas-holder, of a series of receptacles, each adapted to receive a carbid-case, in communication with the gas-holder; a series of punches; mechanism for actuating the punches; and means for enabling the bell to control said actuating mechanism for setting in operation punches for successively perforating the cases in the receptacles.

29. The combination with a gas-holder, of a series of receptacles, each independently in communication with the gas-holder, and each adapted to contain a carbid-case; a series of punches; a shaft; and a series of wipers disposed on the shaft at different angles, for successively actuating the punches to perforate the carbid-cases.

30. In a gas-generator, the combination with a rotary shaft carrying a wiper, of means normally tending to rotate said shaft; a step for restraining the movement of the shaft; means for withdrawing the step; a punch actuated by the wiper; and a receptacle adapted to contain a case to be perforated by the punch.

31. In a gas-generator the combination with a rotary shaft carrying a wiper, of means the tendency of which is normally to rotate said shaft; a ratchet carried by the shaft; a pawl engaging the ratchet; means for releasing the pawl; a punch actuated by the wiper when the shaft is released; and a receptacle adapted to contain a case to be perforated by the punch.

32. In a gas-generator, the combination, with a rotary shaft carrying a wiper, of a drum secured to the shaft; a rope carrying a weight, coiled on the drum; a ratchet secured to the shaft; a pawl in engagement with the ratchet; means for releasing the pawl; a punch operated by the wiper; a spring for returning the punch to its normal position; and a receptacle capable of holding a case containing a gas-producing agent, and through a wall of which receptacle the punch operates.

33. The combination with a punch, of means for actuating said punch; a hinged protector normally located over the punch; and a shaft carrying a wiper for withdrawing said protector.

34. In an acetylene gas-generator, the combination with the bell of a gas-holder, of a gas-tight receptacle adapted to receive a sealed carbid-containing case; a tank to supply the same with water; means within the receptacle and outside the gas-holder for puncturing the case when the contents of the latter is to be developed; and means released by the fall of the bell for operating the puncturing device in the receptacle and for establishing communication between the water-tank and the receptacle as the bell sinks below a certain level.

35. In an acetylene-gas generator, the combination with a gas-holder embodying a bell, of a series of receptacles each adapted to contain a case of carbid; and means in connection with each receptacle and controlled by the bell of the gas-holder for consecutively puncturing the carbid-case therein and feeding water to the receptacles.

36. In an acetylene-gas generator, the combination with a gas-holder and bell, of a series of separate receptacles to contain hermetically-sealed carbid-cases; means for puncturing the carbid-cases; a separate water-tank for each receptacle to contain the proper quantity of water to develop the carbid therein; and means actuated by each fall of the bell of the gas-holder below a certain point to puncture the carbid-case in and supply water to the receptacles consecutively.

37. In an acetylene-gas generator, the combination with a gas-holder and bell, of separate receptacles adapted to contain sufficient hermetically-sealed carbid to fill the bell with gas when the carbid is developed; a removable bottom plate for each of said receptacles having a punch; a spring adapted normally to hold a carbid-case above the punch; a movable punch; a stuffing-box to guide the same through the cover of the receptacle; a flange supported on the movable punch above the carbid-case; means for supplying water to each receptacle; and means operated at each fall of the bell below a certain level and serving to actuate the movable punch and to turn on the water-supply to said receptacle.

38. In an acetylene-gas generator, the combination, with a gas-holder and bell, of a series of complete receptacles mounted in proximity thereto; and each capable of containing a carbid-case; a rotary shaft mounted adjacent to the receptacles; a puncturing device for each receptacle; a series of striker-arms radially equidistant from each other on the shaft; means for rotating the shaft a part of a turn at each descent of the bell and thereby imparting a blow to the puncturing devices consecutively; means for supplying water to the receptacles; and means operating in connection with the puncturing devices for opening the water-supply to said receptacles.

39. The combination, with a gas-holder and bell, of a series of separate receptacles capable of containing sealed carbid-cases; means actuated by the bell for puncturing the cases consecutively; protecting-caps to cover the puncturing device; and means for consecutively withdrawing the caps before the puncturing mechanism is operated.

40. In an acetylene-gas generator, the combination with a gas-holder having a bell, of a series of receptacles for containing sealed carbid-cases; a puncturing device for each receptacle; a separate water-tank for each receptacle; means for consecutively operating one of the puncturing devices at each fall of the bell beyond a certain point.

41. In an acetylene-gas generator, the combination with a gas-holder having a bell, of a series of receptacles for containing sealed carbid-cases; a puncturing device for each receptacle; a separate water-tank for each receptacle; means for consecutively operating one of the puncturing devices at each fall of the bell beyond a certain point; a petcock at the bottom of each receptacle; and means controlled by the puncturing device for closing the petcock as soon as the puncturing device is operated.

42. In a generator, the combination with a receptacle capable of receiving, and retaining when closed, a sealed case containing a charge of gas-producing agent, of a closure for closing the receptacle; means for establishing communication to and from the charge at different vertical planes; and means acting independently of the action of the closure for actuating the communication-establishing means.

43. In a gas-generator, the combination with a receptacle capable of receiving a case, of means for perforating the case at both its upper and lower portions.

44. In a gas-generator, the combination with the bell of a gas-holder, of a gas-tight receptacle for holding a sealed case containing a gas-producing agent; a tank to supply the receptacle with a coöperative gas-producing agent; means within the receptacle for opening communication between the receptacle and the case at a place where the coöperative agent may freely enter and also at a place where the generated gas may freely escape; and means set in motion when the bell sinks below a pre-

determined level, for actuating the opening device and establishing communication between the tank and receptacle.

45. In a gas-generator, the combination with a receptacle adapted to contain both a case of gas-producing agent and also a coöperative agent, of means for establishing communication between the interior of the receptacle and the interior of the case at a plane where the coöperative agent may freely enter the case and also at a plane where the generated gas may freely escape from the case.

46. In a gas-generator, the combination with means for holding a case of gas-producing agent, of means for supplying a fluid coöperative agent; means for producing an entry for the coöperative agent into the case; and means for producing an exit for the gas from the case separate from the entry thereto.

DESIGNS.

36,083. FINGER-RING. MAURICE L. POWERS, New York, N. Y. Filed Aug. 19, 1902. Serial No. 120,206. Term of patent 3½ years.

Claim.—The ornamental design for a finger-ring as herein shown and described.

36,084. CLOCK-CASE. LOUIS V. ARONSON, Newark, N. J., assignor to the Art Metal Works, Newark, N. J. Filed Apr. 26, 1902. Serial No. 104,883. Term of patent 3½ years.

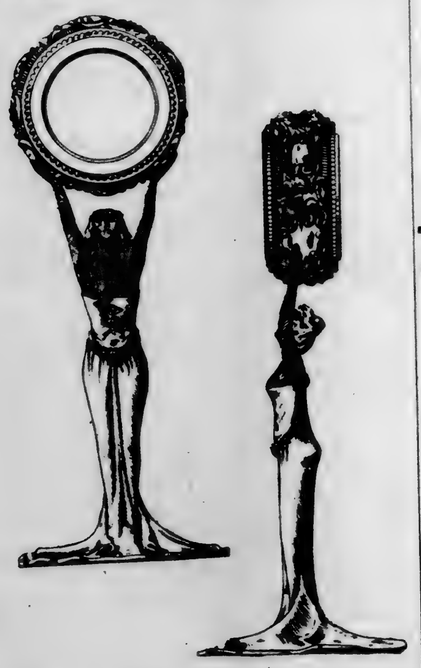

Claim.—The ornamental design for a clock-case as herein shown and described.

36,085. LAMP-BODY. ALBERT L. BARON, Brooklyn, N. Y., assignor to Central Lighting Company, New York, N. Y., a Corporation of New Jersey. Filed May 7, 1902. Serial No. 106,373. Term of patent 14 years.

Claim.—The ornamental design for a lamp-body substantially as shown and described.

36,086. JARDINIÈRE-STAND. FREDERICK W. OLSEN, Mount Pleasant, Wis. Filed Aug. 18, 1902. Serial No. 120,162. Term of patent 7 years.

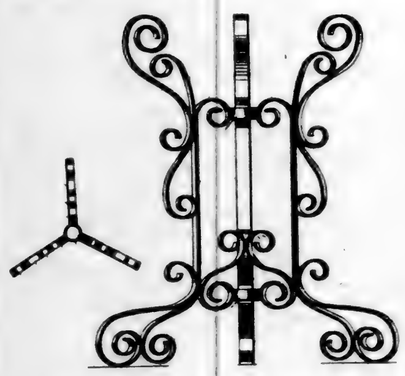

Claim.—The ornamental design for a jardinière-stand, as herein shown and described.

36,087. CASE FOR COIN-CONTROLLED MECHANISM. MICHAEL BENEDICT, New York, N. Y. Filed Mar. 5, 1902. Serial No. 96,854. Term of patent 3½ years.

36,087.

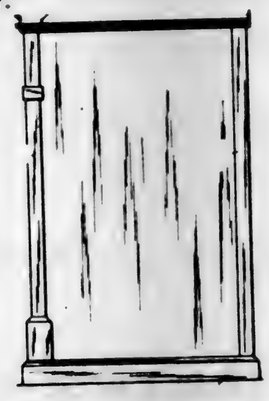

Claim.—The ornamental design for a case for a coin-controlled mechanism as herein shown and described.

36,088. WITHDRAWN.

36,089. TILE. ALFRED PLANT, Keyport, N. J. Filed Aug. 11, 1902. Serial No. 119,397. Term of patent 7 years.

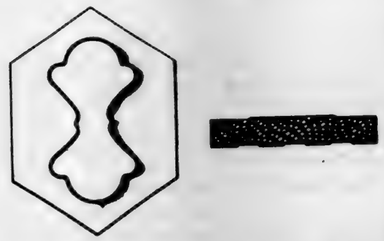

Claim.—The ornamental design for a tile, substantially as herein shown and described.

36,090. STOVE. CHARLES PUSHMORE, Detroit, Mich., assignor to Prince Manufacturing Company, Detroit, Mich., a Corporation of Michigan. Filed Aug. 16, 1902. Serial No. 119,894. Term of patent 7 years.

Claim.—The ornamental design for a stove substantially as herein shown and described.

36,091. BICYCLE-RACK. MONTGOMERY G. MERRITT, Rome, N. Y. Filed Aug. 4, 1902. Serial No. 118,414. Term of patent 7 years.

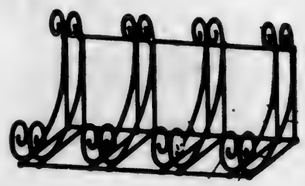

Claim.—The ornamental design for a bicycle-rack, substantially as herein shown and described.

36,092. UMBRELLA-COVER. ROSA L. SMITH, Rome, Ohio. Filed Aug. 13, 1902. Serial No. 119,502. Term of patent 3½ years.

Claim.—The ornamental design for an umbrella-cover, as herein shown and described.

36,093. SHADE-CLOTH. JOSEPH H. WEISSER, New York, N. Y. Filed Aug. 16, 1902. Serial No. 119,974. Term of patent 3½ years.

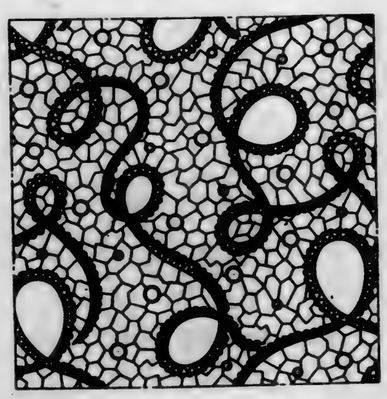

Claim.—The ornamental design for shade-cloth herein shown and described.

TRADE-MARKS

REGISTERED SEPTEMBER 30, 1902.

38,942. SHEETINGS. Bolton Mills, Bolton, S. C. Filed Aug. 30, 1902.

The representation of two cats in the attitude of flight and a dog in pursuit. Used since May 1, 1902.

38,943. BILLIARD-CLOTH. Benjamin Abbott Stevens, Toledo, Ohio. Filed July 10, 1902.

Lavrell

The word "Lavrell." Used since 1899.

38,944. COTTON THREADS. New England Cotton Yarn Company, Jersey City, N. J., and New Bedford Mass. Filed July 24, 1902.

The word "Echo" and a circle inclosing the same. Used since July 24, 1902.

38,945. CAP-VISORS. H. Mayer & Son, New York, N. Y. Filed Aug. 18, 1902.

NEALEATHER

The word "Nealeather." Used since September 9, 1899.

38,946. SAFETY SWIMMING-SLEEVES. Frank B. Wilson, New York, N. Y. Filed May 22, 1902.

S.S.S.

The letters "S. S. S." Used since April 15, 1902.

38,947. CERTAIN NAMED COVERING AND PROTECTIVE MATERIALS. The Standard Paint Company, New York, N. Y. Filed July 2, 1902.

The representation of a peacock with his tail spread out within a circle, in which also appear the letters "S P C." This is surrounded by a blank ring, on which appears at the top the word "Peacock." Used since June 26, 1902.

38,948. PLASTIC METALLIC PACKINGS. The Hilliman-James Co., Pittsburg, Pa. Filed July 31, 1902.

38,948.

A stuffing-box, shown in longitudinal section and having therein a packing-ring, in which are embedded metallic pellets indicated by small circles and dots on the surface of the packing. Used since July 7, 1902.

38,949. PLASTIC METALLIC PACKINGS. The Hilliman-James Co., Pittsburg, Pa. Filed July 31, 1902.

A keg or barrel lying on its side, with its open end toward the front and showing therein and in front thereof pellets as they would appear if a barrel filled with cases had been packed over on its side—that is, the top surface of the pellets is inclined downwardly from the rear end of the barrel to the front and the pellets extend from the front of the barrel into a broad low pile. A scoop is shown in the barrel, partly embedded in the pellets. Shading appears at each side of the barrel. Used since July 7, 1902.

38,950. FILMS, PLATES, AND PHOTOGRAPHIC PAPERS. Actien-Gesellschaft für Anilin-Fabrikation, Berlin, Germany. Filed Aug. 13, 1902.

Agfa.

The word "Agfa." Used since February, 1897.

38,951. COAL-TAR DYESTUFFS. Actien-Gesellschaft für Anilin-Fabrikation, Berlin, Germany. Filed Aug. 13, 1902.

Agfa.

The word "Agfa." Used since February, 1897.

38,952. ILLUMINATING-OILS. The Philadelphia Chemical Co., Philadelphia, Pa. Filed July 30, 1902.

ASTROLEUM.

The word "Astroleum." Used since June 26, 1902.

38,953. MANUFACTURED POWDER FOR POLISHING, CLEANING, AND PRESERVING CERTAIN NAMED SURFACES. Silver Salt Company, St. Paul, Minn. Filed July 7, 1902.

The words "Silver Salt" and the representation of a female figure holding a pan in her hands above a table, which pan contains a mixture of water and the powder, with articles in process of treatment. Used since April 1, 1902.

38,954. HAIR REMEDY. Alexander P. Ryan, Montreal, Canada. Filed July 17, 1902.

Chevlurine

The word "Chevlurine." Used since July 10, 1901.

38,955. REMEDY FOR LA GRIPPE, CATARRH, COLDS, AND HEADACHES. Frank W. Dubois, Springfield, Mo. Filed Oct. 19, 1901.

The pictorial representation of a grip or traveling-bag and the compound word "Anti-Gripine" thereon. Used since September 1, 1901.

38,956. REMEDY FOR THE BLOOD. Augustus B. Scott, New Philadelphia, Ohio. Filed June 24, 1902.

PLANT.

The words "Life Plant" and the representation of a flying eagle with a sprig in its beak. Used since January 1, 1900.

88,957. CHILL AND FEVER TONIC. TRAPP & RAMSDEN, Montevallo, Ala. Filed Jan. 15, 1902.

666

The three figures "6 6 6." Used since September 1, 1901.

88,958. CERTAIN NAMED MEDICINAL SUBSTANCES. JAMES W. GERNEY, New York, N. Y. Filed June 6, 1902.

CASCOIDS

The word "CASCOIDS" partly inclosed within a border. Used since January, 1899.

88,959. DRIED FRUITS. ANDREWS & Co., New York, N. Y. Filed June 7, 1901.

AURORA

The word "AURORA." Used since March, 1901.

88,960. FLOUR. HIGGS STORY & Co., Bozeman, Mont. Filed Sept. 2, 1902.

PRIDE OF MONTANA

The words "PRIDE OF MONTANA." Used since January 18, 1902.

88,961. FLOUR. HIGGS STORY & Co., Bozeman, Mont. Filed Sept. 2, 1902.

MONTANA BELLE

The words "MONTANA BELLE." Used since October 21, 1896.

88,962. FLOUR MADE FROM WHEAT. H. H. KING & Co., Minneapolis, Minn. Filed Jan. 20, 1902.

BONNIE BELLE

The words "BONNIE BELLE." Used since January 1, 1897.

88,963. BARLEY GRITS. SOUTHERN CEREAL Co., Marseilles, Ill. Filed May 14, 1902.

CREAM OF BARLEY.

The words "CREAM OF BARLEY." Used since January 4, 1902.

88,964. REFINED SUGAR. THE FEDERAL REFINING COMPANY, Jersey City, N. J. Filed Aug. 30, 1902.

FEDERAL

A shield, with a star appearing at the apex of the shield immediately above the letter "E" in the word "FEDERAL," which word is shown

on the face of said shield, and immediately below said word appears a heavy line or bar. Paralleling this first bar there appear on the surface or body of the shield two separate lines or bars at a uniform distance apart, all three parallel lines or bars appearing in relief against a white background or surface, the lower point of the shield being deeply shaded and tapering down to the point. Used since June 26, 1902.

88,965. MILK AND MILK PRODUCTS. THE BERNESE ALPS MILK Co., Stalden, Switzerland. Filed May 28, 1902.

The representation of a bear, in a sitting position, with its young in its lap being fed from a bottle. Used since 1892.

88,966. COFFEES. SOUTHERN COFFEE COMPANY, Galveston, Tex. Filed July 14, 1902.

SEA WALL

A pictorial illustration of a coast scene representing a sea-wall, a driveway and a village to the left of the sea-wall, a part of the shore and sea at the right of the sea-wall, and a breakwater, fort, lighthouse, and ships beyond the breakwater, an elliptical border around the coast scene, and the words "SEA WALL" above the latter. Used since July 7, 1902.

88,967. SPIRIT-VINEGAR. CHAS. E. MEYER & Co., Prospect, Ill. Filed Aug. 8, 1902.

CEREO

The word "CEREO." Used since May 1, 1902.

88,968. BEER AND MALT EXTRACT. BOHEMIAN BREWING Co., Chicago, Ill. Filed May 24, 1902.

The monogrammic representation of three "B's" arranged to form a triangle, in which the abbreviation "Co." appears, this monogrammic representation appearing in a circular colored background of darker shade than the body of the letters, while the triangular space in the middle of the letters is darker than said circular background. Used since October, 1891.

88,969. CERTAIN NAMED CARBONATED BEVERAGES. STATIC CARBONATING COMPANY, New York, N. Y. Filed June 23, 1902.

Static

The word "STATIC." Used since April 21, 1896.

88,970. CARBONATING APPARATUS AND APPLIANCES. STATIC CARBONATING COMPANY, New York, N. Y. Filed July 30, 1902.

Static

The word "STATIC." Used since April 21, 1896.

88,971. CYLINDRICAL FOOD-CHOPPERS. LANDERS, FRARY AND CLARK, New Britain, Conn. Filed June 27, 1902.

CLIMAX

The word "CLIMAX." Used since April, 1902.

88,979. CHEMICAL FIRE-EXTINGUISHERS. THE TEA TRAY COMPANY OF NEWARK, N. J., Newark, N. J. Filed July 1, 1902.

MATCHLESS GIANT

The words "MATCHLESS GIANT." Used since June 3, 1902.

88,978. CYCLES, MOTOR-VEHICLES, AND THEIR PARTS. FABRIQUE DE MOTEURS & DE MACHINES, (ARCHIBALD HARRY HEMMING, LOCH & CIE.) St. Aubin, Switzerland. Filed June 30, 1902.

ZEDEL

The word "ZEDEL." Used since May 1, 1902.

THE NORRIS PETERS CO. PHOTO-LITH. WASH. D. C.

LABELS

REGISTERED SEPTEMBER 30, 1902.

9,450.—*Title:* "DIVER BRAND SPONGES." (For Sponges.) A. ISAACS & Co., New York, N. Y. Filed September 5, 1902.

9,451.—*Title:* "AIRINIT." (For Footwear.) FRANK WILLIAM SLATER, Montreal, Canada. Filed September 2, 1902.

9,452.—*Title:* "BAUME DE PRINCESSE." (For Facial Massage Preparation.) ALLERHOUSE PHARMACAL CO., Council Bluffs, Iowa. Filed July 16, 1902.

9,453.—*Title:* "C. BOHLEY'S COUGH MEDICINE." (For Cough Medicine.) CONRAD BOHLEY, Paterson, N. J. Filed July 25, 1902.

9,454.—*Title:* "MOTHER'S OWN OINTMENT." (For Ointment.) MOTHERS OWN COMPANY, Altoona, Pa. Filed August 9, 1902.

9,455.—*Title:* "ST. ANTHONY'S OIL." (For Medicinal Oil.) PASADENA MEDICAL COMPANY, Philadelphia, Pa. Filed September 6, 1902.

9,456.—*Title:* "DR. BAZEMORE'S SYRUP CASTOR OIL." (For Castor-Oil.) W. J. BAZEMORE & SON, Ringgold, Ga. Filed February 21, 1902.

9,457.—*Title:* "MARVELOUS WATERPROOF SHOE POLISH." (For Waterproof Oil Polish.) JOHN FLOYD SMITH, New York, N. Y. Filed July 9, 1902.

9,458.—*Title:* "$\frac{3}{4}$ LABOR SAVING." (For Soldering Fluid.) A. LEVYTANSKY, Victoria, Tex. Filed June 28, 1902.

9,459.—*Title:* "SPRING BANK LITHIA CHERRY PHOSPHATE." (For Chery Phosphate.) WHALLEN BROS., Louisville, Ky. Filed September 5, 1902.

9,460.—*Title:* "CAPITOL MARYLAND RYE." (For Whisky.) J. ANTON BOKEL, Baltimore, Md. Filed September 2, 1902.

9,461.—*Title:* "UPPER TEN COCKTAILS." (For Cocktails.) W. R. LUNDY & Co., Detroit, Mich. Filed September 3, 1902.

9,462.—*Title:* "P-A-Y-M-E CONCENTRATED EXTRACT OF VANILLA." (For Extract of Vanilla.) LILLIAN E. ROY, New York, N. Y. Filed July 30, 1902.

9,463.—*Title:* "THE PEPPER CO. PURE CONFECTIONERY. PEABODY, MASS." (For Confectionery.) THE PEPPER COMPANY, Peabody, Mass. Filed August 30, 1902.

9,464.—*Title:* "MAGNOLIA." (For Chewing-Gum.) THE LIDWELL GUM CO., Kansas City, Mo. Filed August 12, 1902.

9,465.—*Title:* "CHEEKAWGO." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed September 4, 1902.

9,466.—*Title:* "MISS BUTTE." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed September 4, 1902.

9,467.—*Title:* "INDA PLANTA." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed September 6, 1902.

9,468.—*Title:* "JEAN BART." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed September 6, 1902.

9,469.—*Title:* "SELECT COMBINATION." (For Cigars.) AMERICAN LITHOGRAPHIC COMPANY, New York, N. Y. Filed Septembr 6, 1902.

9,470.—*Title:* "DON CARLITO." (For Cigars.) HOFFHEIMER CIGAR CO., Chicago, Ill. Filed August 30, 1902.

9,471.—*Title:* "CORN HUSKER." (For Cigars.) SCHMIDT & CO., New York, N. Y. Filed September 4, 1902.

9,472.—*Title:* "GOLDEN PHEASANT." (For Tea.) MILLIKEN, TOMLINSON CO., Portland, Me. Filed August 8, 1902.

9,473.—*Title:* "ELFIN BRAND." (For Sugar-Corn.) S. S. PIERCE COMPANY, Boston, Mass. Filed August 14, 1902.

PRINTS

REGISTERED SEPTEMBER 30, 1902.

557.—*Title:* "WRIGHT'S HEALTH UNDERWEAR." (For Underwear.) SEITER & KAPPES, New York, N. Y. Filed July 25, 1902.

558.—*Title:* "CLARK'S INSTANT FOOT COMFORT." (For Foot Remedy.) GLOBE CHEMICAL WORKS, INC., Baltimore, Md. Filed June 27, 1902.

DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS IN PATENT CASES.

COMMISSIONER'S DECISIONS.

BRODERICK AND BASCOM ROPE COMPANY v. LESCHEN AND SONS ROPE COMPANY.

Decided September 19, 1902.

1. TRADE-MARK—INTERFERENCE—DATE OF ADOPTION AND USE SET UP IN STATEMENT—WEIGHT GIVEN TO TESTIMONY SHOWING EARLIER USE.

Where a certain date of adoption and use of a trade-mark is set up in the statement and declaration filed with an application for registration and the testimony offered in the interference proceeding shows an earlier date, *Held* that such testimony may be considered and such weight given to it as may be proper under the circumstances of the case.

2. SAME—SAME—AMENDMENT TO STATEMENT AFTER DETERMINATION OF INTERFERENCE.

A motion during the progress of a trade-mark interference to amend the statement in the application as to the date of adoption and use is unnecessary and will be denied. Amendment may be made after the conclusion of the interference.

APPEAL on motion.

TRADE-MARK FOR WIRE ROPE.

Application of Broderick and Bascom Rope Company filed October 31, 1900, No. 62,034. Registered trade-mark of A. Leschen and Sons Rope Company, dated December 4, 1900, No. 35,552.

Messrs. Higdon & Longan and *Mr. Robert P. Haines* for Broderick and Bascom Rope Company.

Messrs. Knight Bros. for A. Leschen and Sons Rope Company.

ALLEN, *Commissioner:*

This is an appeal by the Broderick and Bascom Rope Company from the decision of the Examiner of Interferences denying its motion to file a substitute statement and declaration and granting the motion of A. Leschen and Sons Rope Company to take surrebuttal testimony.

Prior to the decision of *Sherwood* v. *Horton, Cato and Company*, (84 O. G., 2018,) rendered by Mr. Commissioner Duell on May 28, 1898, Rule 13 of the rules adopted by this Office for the registration of trade-marks contained the following provision:

* * * Each applicant and registrant will be held to the date of adoption alleged in the statement filed with his application.

The rules have since been revised, and those now in force do not contain this provision.

In the decision of *Sherwood* v. *Horton, Cato and Company* (84 O. G., 2018) it was held that testimony offered to show an earlier date of use than that alleged in the statement filed with the application—

may be considered and such weight given to it as may be proper under the circumstances of the case.

This practice is approved. If it was warranted in view of the rules in force at the time the decision was rendered, it is warranted now.

No good reason appears why the interference should be transmitted at this time for the purpose of permitting an amendment to be filed. Such a course would only result in further delay. An amendment can be filed after the determination of the question of priority should priority be awarded to the Broderick and Bascom Rope Company.

In considering the motion made by A. Leschen and Sons Rope Company for permission to take surrebuttal testimony the Examiner of Interferences very properly said:

Inasmuch as the full consideration both of the testimony objected to and of any surrebuttal testimony which may be taken will naturally be deferred until the final hearing, it is believed that it would be but equitable to allow the taking of surrebuttal testimony by the senior party, "the propriety of the evidence presented" being considered at the final hearing. (*Talbot* v. *Monell*, 74 MS. C. D., p. 1.)

The decision of the Examiner of Interferences is affirmed.

JEAN AND GOODE v. HITCHCOCK.

Decided September 30, 1902.

INTERFERENCE—MOTION AFTER LIMIT OF APPEAL EXPIRED—JURISDICTION RESTORED.

Where a motion was filed within the limit of appeal and to accommodate counsel was noticed for hearing two days after the limit had expired, *Held* that the jurisdiction of the Examiner of Interferences will be restored to consider the motion.

ON petition.

COPYING-BATH.

Application of Charles W. Jean and Clarence R. Goode filed September 28, 1901, No. 76,960½. Application of Ralph Hitchcock filed May 22, 1900, No. 17,574.

Mr. James T. Law and *Mr. William G. Henderson* for Jean and Goode.

Mr. A. M. Austin and *Messrs. Sturtevant & Greeley* for Hitchcock.

ALLEN, *Commissioner:*

This is a petition that the jurisdiction of the Examiner of Interferences be restored to consider a motion to extend the limit of appeal in the above-entitled case.

A decision upon priority was rendered in favor of Hitchcock on the record on July 30, 1902, and August 30 was fixed as the limit of appeal. On Au-

gust 20 Jean and Goode filed a motion to extend the limit of appeal fifteen days and fixed that motion for hearing by the Examiner of Interferences on August 22, after the limit of appeal had expired. The motion was dismissed for lack of jurisdiction on the authority of *Meyrose* v. *Jahn*, (56 O. G., 1447.) This petition was then filed, and on September 10 Jean and Goode filed a motion to dissolve the interference. This motion for dissolution was filed after the expiration of the fifteen days' extension which had been requested, and therefore no useful purpose would be served by permitting the Examiner of Interferences to consider that motion for extension unless it is considered as asking for a sufficient extension to include September 10, when the motion to dissolve was filed.

In support of this petition it is alleged that the attorney for Jean and Goode ordered a copy of the Hitchcock application on August 13, and, not having received that copy, on August 19 directed his associate to obtain an extension of the limit of appeal. The associate then filed the motion on August 20, and in order to give opposing counsel reasonable notice thereof he did not set it for hearing on that day, but at their request fixed August 22 as the day of hearing. The motion was filed within the limit and was fixed for hearing only two days thereafter.

Under all of the circumstances it is believed that Jean and Goode should be given a hearing upon their motion to extend the limit of appeal to include September 10.

The petition is granted and the jurisdiction of the Examiner of Interferences is restored to consider the motion to extend the limit of appeal.

EX PARTE PARKHURST.

Decided September 30, 1902.

1. PETITION—APPEAL—QUESTION OF MERITS.

The actions of the Examiner in citing a certain patent in rejecting the claims and in holding that the invention is abandoned will not be reviewed upon petition, since they relate to the merits and are appealable to the Examiners-in-Chief.

2. SAME—SAME—RIGHT TO MAKE CLAIM.

The ruling by the Examiner that certain descriptive matter in the claim does not properly apply to the device disclosed is a ruling that the applicant is not entitled to make the claim and relates to the merits.

ON petition.

CARTRIDGE-PACKETS.

Application of Edward G. Parkhurst filed February 8, 1896, No. 578,551.

Messrs. Blodgett & Peck for the applicant.

ALLEN, *Commissioner:*

This is a petition for relief from the action of the Primary Examiner in the following matters:

1. Citing a certain patent to Russell in rejecting the claims.

2. Ruling that the invention covered by certain claims has been abandoned.

3. Construing certain decisions as warranting the conclusion that the invention is abandoned.

4. Considering certain affidavits of the applicant as showing that he has abandoned the invention, and

5. Ruling that the statement in certain claims that "the locker extends the length of the clip-body" is incorrect.

Referring to the first point, it is clear that the question whether or not the patent to Russell can properly be cited in rejecting the claims relates to the merits and is appealable to the Examiners-in-Chief. If the Examiner regards it as a valid reference, it is his duty to cite it, and his discretion will not be controlled upon direct petition. The applicant has his remedy by appeal.

As to the second, third, and fourth points it appears that they relate to the question of abandonment of the invention, and Rule 133 specifically gives the right of appeal to the Examiners-in-Chief in such case. If the applicant is of the opinion that the facts and authorities relied upon do not warrant the conclusion of abandonment, his remedy is by appeal.

As to the fifth point it would seem that if the locker disclosed does not in fact extend the length of the clip the applicant is not entitled to make the claims to such a locker. This point also relates to the merits and is appealable to the Examiners-in-Chief.

The petition is dismissed.

SHAFFER v. DOLAN.

Decided September 30, 1902.

1. INTERFERENCE—REOPENING—ADDITIONAL TESTIMONY.

After an interference has been decided by the Examiner of Interferences it will not be reopened for the purpose of permitting one of the parties to take additional testimony when it appears that said testimony is unimportant and, further, that the facts could have been discovered with reasonable diligence before the testimony was originally taken.

2. SAME—SAME—EVIDENCE ACCESSIBLE.

Where a witness testifies as to an exhibit which is said to be a copy of the original and says that he believes that the original is in his safe in his office and after a decision by the Examiner of Interferences the party wishes to reopen the interference to show that the original could not have been produced, *Held* that he could and should have produced the evidence originally.

APPEAL on motion.

TIP FOR GAS-BURNERS.

Patent granted Henry E. Shaffer January 17, 1899, No. 617,942. Application of Edward J. Dolan filed December 17, 1897, No. 662,267.

Messrs. Church & Church and *Mr. Frederick F. Church* for Shaffer.

Messrs. Dickerson, Brown, Raegener & Binney for Dolan.

ALLEN, *Commissioner:*

This is an appeal by Dolan from a decision of the Examiner of Interferences refusing to grant his motion to reopen the above-entitled interference for the purpose of taking further testimony on behalf of Dolan.

The records show that a decision was rendered May 3, 1902, by the Examiner of Interferences awarding priority of invention to Shaffer.

An appeal was taken to the Examiners-in-Chief

and was subsequently withdrawn for the purpose of bringing this motion before the Examiner of Interferences.

The additional testimony is desired for the purpose of again calling witness Dickerson, who testified in behalf of Dolan, in order that he may account for the non-production in evidence of a certain original burner-tip referred to by him in his testimony.

Counsel for Dolan are of the opinion that the failure to account for the non-production of this original tip was the principal reason which influenced the Examiner of Interferences in rendering a decision of priority adverse to Dolan. The Examiner of Interferences is of the contrary opinion, for he says that—

> * * * this was not the sole ground of the decision, and the Examiner finds therein other reasons which would still obtain if testimony as to the loss of the tip were made a part of the record. In his opinion, therefore, the result would not have been different had said testimony been originally included in the case.

The testimony of witness Dickerson was taken in California, and a certain tip was introduced in evidence which was said by Dickerson to be a copy of the original tip. Objection was made to this tip by the counsel for Shaffer on the ground that the original tip was not accounted for. Subsequently Dickerson testified that he was of the opinion that the original burner-tip was in his private safe in New York, but he could not be positive without looking the matter up.

Counsel for Dolan state that one of the reasons for not bringing this motion earlier was that in the absence of further objection on the part of Shaffer they were of the opinion that witness Dickerson had satisfactorily explained why the original tip could not at that time be introduced in evidence.

It is stated that Mr. Dickerson has now returned to New York and that he has searched his safe and is unable to find the original burner-tip in question. It is now desired to recall Mr. Dickerson in order that he may testify to this fact.

The facts do not warrant the conclusion that the evidence which it is now sought to introduce is newly discovered or that it could not have been discovered with reasonable diligence before the testimony of Dickerson was originally taken.

The decision of the Examiner of Interferences is affirmed.

SHALLENBERGER v. ANDREWS.

Decided September 30, 1902.

INTERFERENCE—MOTION FOR DISSOLUTION—FACTS SHOWN BY THE TESTIMONY.

A motion for dissolution should not be brought on grounds arising from the testimony. Facts which are alleged to be established by the testimony are to be determined on final hearing and not on motions for dissolution.

APPEAL on motion.

BOLSTER.

Application of Charles S. Shallenberger filed November 14, 1901, No. 82,314. Application of James S. Andrews filed September 23, 1901, No. 76,246.

Messrs. Higdon & Longan and *Mr. John S. Barker* for Shallenberger.

Messrs. Knight Bros. for Andrews.

ALLEN, *Commissioner:*

This is an appeal by Shallenberger from a decision of the Examiner of Interferences denying his motion to transmit this interference to the Primary Examiner to hear and determine a motion for dissolution.

The motion to dissolve was brought on the ground that Andrews has no right to make the claims which form the issue of this interference, for the reason that the invention was not made by said Andrews, but by one Charles T. Westlake. It is alleged that this fact is brought out in the testimony.

A motion for dissolution should not be brought on grounds arising from the testimony.

Facts which are alleged to be established by the testimony are to be determined on final hearing and not on motions for dissolution. (*Thomson and Unbehend* v. *Hisley*, 66 O. G., 1596; *Latham* v. *Force and Parenteau*, 82 O. G., 185; *Shiels* v. *Lawrence et al.*, 87 O. G., 180; *Paget* v *Bugg*, 89 O. G., 1342; *Sullivan* v. *Thomson*, 94 O. G., 585; *Frederick* v. *Frederick and Frederick*, 99 O. G., 1865.)

The decision of the Examiner of Interferences is affirmed.

EX PARTE HARRISON.

Decided September 23, 1902.

REOPENING AN APPLICATION AFTER APPEAL TO THE COMMISSIONER—RULE 142.

Where on appeal the Commissioner has affirmed the decision of the Examiners-in-Chief affirming the rejection by the Examiner of the claims in an application for a patent, *Held* that the application will not be reopened for further consideration by the Examiner in the absence of any showing to excuse the delay in bringing the petition to reopen, and where no showing is made of great hardship or irreparable injury to the applicant in case this application is not reopened.

ON petition.

OIL-RESERVOIR FOR CAR-JOURNALS.

Reissue application filed by Charles E. Harrison August 2, 1899, No. 725,927.

Mr. George E. Waldo for the applicant.

ALLEN, *Commissioner:*

This is a petition to reopen the above-entitled application and restore jurisdiction to the Examiner under the provision of Rule 142 in order that a new set of claims may be entered and considered by him.

The record shows that the application has been considered on appeal by the Examiners-in-Chief and by the Commissioner.

The Examiner rejected the reissue application on the ground that the invention described and shown therein differed from that described and shown in the original patent. The claims were also rejected on the ground of anticipation.

The Examiners-in-Chief affirmed the rejection of the Examiner. One of the Examiners-in-Chief filed an opinion dissenting in part to the decision, being of the opinion that the invention did not differ from that originally shown and described and that the application for a reissue was properly made. He, however, took the view of his associates as to the question of anticipation.

The Assistant Commissioner on appeal expressed

the opinion that the reissue application did not contain new matter, but affirmed the decision of the Examiners-in-Chief on the ground that the claims were anticipated by the references. This decision was rendered July 18, 1901.

On August 26, 1901, a petition for rehearing was filed, which petition was denied on August 27, 1901.

On January 22, 1902, an amendment was filed canceling the claims and substituting four new claims in lieu of those canceled.

This amendment was refused entry by the Examiner on the ground that he had no jurisdiction over this application. Nearly six months thereafter, on July 15, 1902, this petition was brought to restore jurisdiction to the Examiner in order that the amendment filed January 22, 1902, might be entered and considered by him. No reason is set forth to explain the delay in bringing this petition. Nearly a year has elapsed since the date of the Assistant Commissioner's decision. This petition should have been promptly brought after this decision was rendered.

Rule 142 provides that cases will be reopened—

only for consideration of matter not already adjudicated upon, sufficient cause being shown.

In *ex parte Goldsmith* (58 O. G., 1092) it was said:

The last four words of the rule—"sufficient cause being shown"—are to be particularly noted—

and in that case the petition was denied for the lack of a good and sufficient reason showing why the amendment was not earlier presented.

The record in this case fails to show any cause whatever for the delay in prosecuting the claims which are now presented or for failure to bring this petition promptly.

No showing is made of great hardship or irreparable injury to the applicant in case this application is not reopened for further consideration by the Examiner.

The petition is denied.

SHAW *v.* GALLY.

Decided September 24, 1902.

PRELIMINARY STATEMENT—MOTION TO STRIKE OUT.

Where a preliminary statement is held by the Office to be informal in that it does not sufficiently state the facts and the party is called upon for a new statement, *Held* that the new statement will not be stricken out on motion merely because it states additional facts besides those called for by the Office.

APPEAL on motion.

MUSIC-SPOOL.

Application of Charles H. Shaw filed November 27, 1901, No. 83,891. Patent granted Robert A. Gally March 5, 1901, No. 669,342.

Messrs. Chapin, Haywood & Marble for Shaw.

Mr. R. A. Gally pro se.

ALLEN, *Commissioner:*

This is an appeal by Gally from the decision of the Examiner of Interferences denying his motion to strike out a part of Shaw's preliminary statement.

The Examiner properly treated the motion as one to strike out the entire statement, since otherwise the motion must have been dismissed as irregular. The Office cannot strike out part of a statement, but may strike out the entire statement, because a part of it is improper, and may then require a statement omitting the improper part.

The record shows that Shaw filed a statement on April 8, 1902, alleging, among other things, that he completed a device embodying his invention at a certain time. He was notified that the statement was informal and incomplete in certain respects and he was required to file a new one. He filed a second statement on April 22, 1902, attempting to cure the defects referred to, and this statement was not in all respects the same in substance as the first, since it included additional facts. It alleged that no model was made and that the machine which was completed was full-sized and was operated. This statement was objected to by Gally as informal, and a new statement was required and was furnished on June 28, 1902.

Gally now objects to the allegation in Shaw's last statement that no model was made and that the device originally referred to was full-sized and was operated and argues that the statement should not set forth any facts except those alleged originally.

Shaw's amended statement is not inconsistent with the one first filed, but merely alleges additional facts. It is a more complete statement of the facts, and since Shaw had the right to and, in fact, was required to make his statement more complete and was allowed a certain time within which to do it the amended statement must be accepted as proper. The objection by Gally has not the force which it might have had if Shaw had attempted to change material dates instead of merely making his statement more full.

The decision of the Examiner of Interferences is affirmed.

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AND OF

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PATENTS, TRADE-MARKS, ETC.

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DIGEST OF DECISIONS

OF THE

COMMISSIONER OF PATENTS

AND OF

UNITED STATES COURTS

IN THE MATTER OF

PATENTS, TRADE-MARKS, ETC.

OFFICIAL GAZETTE—JULY-SEPTEMBER, 1902.

DIGEST OF DECISIONS.

[Decisions of the United States courts are indicated by an asterisk (*).]

ABANDONED EXPERIMENTS.

(See Interference, 24.)

ABANDONMENT.

(See Appeal to the Examiners-in-Chief, 5.)

RESPONSIVE ACTION.

Where within the time required by law an applicant takes an action which is completely responsive to the Examiner's action, *Held* that the case cannot properly be held to be abandoned. [*Ex parte* Scott, 681.

ALLOWED APPLICATIONS.

(See Withdrawal of Allowed Applications.)

1. REGULARITY AND IMPROPRIETY DISTINCT QUESTIONS.

Where the Examiner allows an application and the notice of allowance is properly sent, *Held* that the allowance cannot be set aside after a forfeiture of the case for failure to pay the final fee upon the allegation that it was an error for the Examiner to have allowed it. [*Ex parte* Bryant, 2778.

2. NOTICE REGULAR—FORFEITED CASE.

Where a notice of allowance is sent to the attorney who has been prosecuting the case and he afterward raises the question as to his right to prosecute the case and the final decision is in favor of his right, *Held* that the case was regularly allowed and that the final fee not having been paid within six months it is forfeited. [Id.

AMENDMENTS.

(See Abandonment; Rejection of Cases; Trade-Marks, 31.)

1. NEW MATTER—NEW SPECIES OF INVENTION.

Where an application as filed discloses several specific forms of the same generic invention, *Held* that an amendment cannot properly be made disclosing another specific form although it embodies the generic invention. [*Ex parte* Hoegh, 458.

2. SAME—DISCLOSURE OF BEST FORM OF INVENTION.

The requirement of the statute that an applicant disclose the best mode of applying his invention does not warrant an amendment to an application disclosing a different form of the invention from that contained in the application as originally filed. [Id.

3. CLAIMS—MULTIPLICATION OF.

While all reasonable latitude should be allowed an applicant in presenting claims in order that the patent when issued may afford him full protection, an unreasonable and unnecessary multiplication of the claims will not be permitted. [Id.

4. EXAMINATION—PRACTICE—NOT ENTERED.

Where the Examiner rejects the claims and in reply the applicant requests reconsideration and presents an argument responsive to the Examiner's action and at the same time presents as an amendment a new claim drawn to a different invention, *Held* that the amendment should not be entered, but that the Examiner should act upon the claims already in the case in view of the argument presented. [*Ex parte* Scott, 681.

5. ACTIONS BY APPLICANT—SUFFICIENCY—PRACTICE.

An applicant may accept the ruling of the Office as to some of its requirements and at the same time controvert the ruling as to others, and when he does so, treating all requirements, his action cannot be objected to as insufficient. [*Ex parte* Naef, 2901.

6. AFTER FINAL REJECTION—REASONS FOR DELAY.

Where after a final rejection, which is regularly and properly given, the applicant wishes to amend and alleges that he did not before properly understand the invention, *Held* that he has not shown good and sufficient reasons why the amendment was not sooner presented and that it should be refused admission. [*Ex parte* Schmidt, 2902.

7. NEW MATTER—PRACTICE.

Where the Examiner is of the opinion that certain descriptive matter inserted by amendment and included in a claim is not warranted by the original disclosure, *Held* that he should reject the claim. [*Ex parte* Howlett, 2775.

AMENDMENTS TO PRELIMINARY STATEMENTS.

(See Preliminary Statements, 1, 2, 3, 5, 6, 7.)

ANTICIPATION.

(See Invention, 3.)

APPEAL TO THE COMMISSIONER.

(See Appeal to the Examiners-in-Chief, 1, 2; Interference, 4, 5; Jurisdiction of the Court of Appeals of the District of Columbia, 2; Reopening of Appealed Cases.)

APPEAL TO THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

(See Jurisdiction of the Court of Appeals of the District of Columbia.)

1. JURISDICTION—DIVISION OF APPLICATION.

An appeal from the decision of the Commissioner of Patents requiring division between process and apparatus dismissed for want of jurisdiction. [**In re* Frasch, 1977.

2. DIVISION—INTERLOCUTORY ORDER.

The requirement for division is not a refusal of a patent, but is a mere interlocutory order from which there can be no appeal. [*Id.

3. REFUSAL OF PATENT—FINAL ORDER NECESSARY.

The right to appeal to the Court of Appeals of the District of Columbia from a decision of the Commissioner of Patents is limited to two classes of cases: first, where an application for patent has been finally denied, and, second, where in an interference proceeding there has been a final determination of the question of priority of invention between adverse claimants. [*Id.

4. INTERFERENCE—APPEAL TO COURT—ISSUE UNPATENTABLE—MOOT QUESTION.

The court should not be called upon to decide priority between rival claimants to an invention where the Patent Office expressly reserves for future consideration the question of patentability of the invention. It is not the province of the court to decide moot causes. [*Oliver *v.* Felbel, 2284.

APPEAL TO THE EXAMINERS-IN-CHIEF.

1. MISTAKE—REQUEST TO TRANSFER THE APPEAL TO COMMISSIONER AFTER EXPIRATION OF LIMIT OF APPEAL REFUSED.

Where an appeal has been taken to the Examiners-in-Chief from the decision of the Examiner refusing to dissolve an interference and it appears that the appeal was taken by mistake, *Held* that said appeal cannot be transferred to the Commissioner's docket after the limit of appeal has expired, for such a proceeding would have the effect of permitting an appeal to the Commissioner after the limit of appeal has expired. [Beck *v.* Long, 451.

2. SAME—PRACTICE.

In the event that an appeal in an interference proceeding is taken by mistake to the Examiners-in-Chief and the mistake is not discovered until after the limit of appeal has expired, *Held* that the proper practice to pursue is to withdraw the appeal to the Examiners-in-Chief and to file an appeal to the Commissioner, at the same time requesting an extension of the limit of appeal to include the date of filing. The reasons should be set forth why the appeal was not taken to the Commissioner sooner, and a copy of the paper should be served upon the opponent. [Id.

3. PETITION—REJECTION OF CLAIMS.

Where the Examiner has finally rejected the claims on the ground that they are not patentable, *Held* that his action will not be reviewed upon petition, but only upon appeal to the Examiners-in-Chief. [*Ex parte* Eickelberg, 2778.

4. REJECTION AFTER INTERFERENCE—RULE 133.

Where a final decision on priority has been rendered against a party in an interference and his claims involved have been finally rejected under Rule 133, *Held* that he has the right of appeal to the Examiners-in-Chief from the rejection. [*Ex parte* Schupphaus, 2778.

5. QUESTION OF MERITS.
The actions of the Examiner in citing a certain patent in rejecting the claims and in holding that the invention is abandoned will not be reviewed upon petition, since they relate to the merits and are appealable to the Examiners-in-Chief. [*Ex parte* Parkhurst, 3012.

6. RIGHT TO MAKE CLAIM.
The ruling by the Examiner that certain descriptive matter in the claim does not properly apply to the device disclosed is a ruling that the applicant is not entitled to make the claim and relates to the merits. [Id.

APPLICATIONS.

(See Copies of Pending Applications; Date of Filing Application; Division of Application; Drawings, 4; Examination of Applications; Interference, 28; Withdrawal of Allowed Applications.)

ASSIGNEES.

(See Attorneys, 1; Interference, 11.)

ASSIGNEE OF PART INTEREST—RIGHT TO PROSECUTE CASE—NOTICE TO OTHER PARTIES.
A petition asking that one of two joint owners be permitted to prosecute the application without the consent of the other will not be granted without serving a copy of the petition upon that other owner and giving him an opportunity to oppose it. [*Ex parte* Badgley, 2604.

ASSIGNMENTS.

(See Attorneys.)

DUTY OF OFFICE MINISTERIAL.
The Office cannot undertake to adjudicate the rights of parties on disputed questions of fact relating to assignments, since it acts in a ministerial capacity in such matters. [*Ex parte* Turner, 2608.

ATTORNEYS.

(See Allowed Applications, 2.)

1. PROTEST AGAINST REVOCATION OF POWER.
Where the attorneys appointed by the inventor protest against the revocation of their power by him on the ground that they represent an assignee and the only evidence presented that there has been an assignment consists of *ex parte* affidavits, *Held* that the protest will be dismissed. [*Ex parte* Collins, 2601.

2. REVOCATION OF POWER BY APPLICANT—ASSIGNMENT.
Where the applicant appoints attorneys in the case, *Held* that he may revoke their power even after an assignment of the invention. [Id.

BURDEN OF PROOF.

(See Interference, 9, 12, 13, 17.)

CLAIMS.

(See Amendments, 3; Combination; Division of Applications; Drawings, 1, 2, 3; Interference, 1, 2, 3, 4, 5, 27; Rejection of Cases.)

COMBINATION.

(See Division of Application, 14, 17, 22; Invention, 1, 4.)

CLAIM—INTANGIBLE ELEMENT SHOULD NOT BE INCLUDED.
An "opening" should not be made a positive or direct element in combination claims, for the reason that an opening is not a tangible thing. It can exist only in connection with some other element. If it is desired to describe this element as provided with an opening, there is no objection to such a course. [*Ex parte* Davin, 452.

COMMISSIONER OF PATENTS.

(See Withdrawal of Allowed Applications.)

CONCEPTION OF INVENTION.

(See Preliminary Statement, 8; Testimony, 2.)

CONSTRUCTION OF RULES.

(See Appeal to the Examiners-in-Chief, 4; Division of Applications, 20; Drawings, 1, 2, 3; Interference, 2; Rejection of Cases, 5; Reopening of Appealed Cases.)

CONSTRUCTION OF SPECIFICATIONS AND PATENTS.

(See Description.)

COPIES OF PENDING APPLICATIONS.

REQUEST FOR COPY OF APPLICATION—IDENTIFICATION OF CASE.
Where a party asks for a copy of an application for use in court and as authority for the request alleges that the applicant testified in the case that such an application was on file, *Held* that the request should identify the application. [*In re* Macwilliam, 2774.

COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

(See Appeal to the Court of Appeals of the District of Columbia; Jurisdiction of the Court of Appeals of the District of Columbia.)

DATE OF FILING APPLICATION.

COMPLETE PROCESS—NO DRAWING.
Where an application for a process was filed December 11, 1901, complete as to all of its parts except the drawing and it appeared that a drawing was not necessary for a full disclosure of the invention, *Held* that the application should be given a filing date as of December 11, 1901. [*Ex parte* Ludington, 236.

DECISIONS OF PATENT OFFICE AFFIRMED.

(See Interference, 8; Invention, 3.)

PRIORITY.
The decision of the Assistant Commissioner (100 O. G., 961) awarding priority of invention to Pupin affirmed. [*Stone *v.* Pupin, 1113.

DELAY.

(See Amendments, 6; Interference, 16, 24.)

DEPOSITIONS.

(See Interference, 20.)

DESCRIPTION.

(See Testimony, 2.)

SUFFICIENCY—LIBERAL CONSTRUCTION.
The fact that the invention oversteps the boundary of preexisting knowledge both as to structure and scientific principles warrants a liberal view of the scope of the descriptive specifications rather than a narrow and restrictive one. [*Stone *v.* Pupin, 1113.

DESIGNS.

(See Division of Applications, 3, 6, 7.)

1. SUBJECT-MATTER.
The subject-matter of a design application relates to the appearance of the article and not to its mechanical function. It is immaterial in what manner the invention is described in such an application or what the showing is, the subject-matter still relates to a design. [*Ex parte* Waterman, 253.

2. MISTAKE IN DESCRIPTION AND CLAIM.
If through ignorance or mistake an applicant claims in a design application subject-matter for which a design patent cannot under the statutes be granted, the claims must be rejected. (*Ex parte Proudfit*, 10 O. G., 585.) [Id.

DILIGENCE.

(See Interference, 6, 12, 13, 16, 22, 25.)

DISCLAIMER OF INVENTION.

(See Interference, 23.)

DISCLOSURE OF INVENTION.

(See Amendments, 1, 2; Division of Applications, 4, 5; Foreign Publication; Interference, 7, 8, 10, 23; Preliminary Statements, 8.)

DISSOLUTION OF INTERFERENCE.

(See Interference, 1, 4, 5; Motion to Dissolve Interference.)

DIVISION OF APPLICATIONS.

(See Appeal to the Court of Appeals of the District of Columbia, 1, 2.)

1. ARTICLE—PROCESS.
Division was properly required between claims covering a golf-ball and claims covering the process of making the same where it appears that the golf-balls are not necessarily the product of the method and that they could be made by other methods than that claimed. [*Ex parte* Foulis, 232.

2. INSULATING COMPOUND AND INSULATED CONDUCTOR.
Division properly required between claims for an insulating compound and process of making it and claims for an insulated conductor and process of making the same.
[*Ex parte* Lee, 233.

3. DESIGN APPLICATION—MECHANICAL APPLICATION.
A mechanical application cannot be considered a division of a design application. [*Ex parte* Waterman, 233.

4. SUBJECT-MATTER.
It is fundamental that "a proper divisional application does and can contain only matter carved out of the original case." (*Ex parte Henry*, 64 O. G., 899.) The subject-matter of the divisional application need not have been claimed or reached by any statement of invention in the original case. It is sufficient if the matter has been fully disclosed in the original application. [Id.

5. SAME—DISCLOSURE.
This disclosure, however, must be in an application in which the applicant would be permitted to present and prosecute a claim for the matter so disclosed. In other words, an applicant will be permitted to claim in a divisional application such segregable matter as might have, had he so elected, been claimed in the original application. [Id.

6. DESIGN AND MECHANICAL PATENTS.
Design patents and mechanical patents cover different monopolies. They are granted under different sections of the statute for different terms. [Id.

7. REQUIREMENT FOR DIVISION UNWARRANTED.
There is no warrant for a requirement for division in such a case. Since claims for mechanical functions cannot be made in a design application, it follows that such claims cannot be divided out of such an application. [Id.

8. REQUIREMENT OF—ACTION ON MERITS—PRACTICE.
Where the independence of the inventions is clear, it is the usual practice not to act on the merits of the case when the requirement of division is made in the first action. The most that is usually done is to cite patents after a cursory examination in order to show that the requirement of division has been correctly made. [*Ex parte* Goldman, 234.

9. SAME—SAME—SAME.
If the Examiner desires to make a complete action on the merits of the case in the same letter in which division has been required, there is no objection to his doing so; but it should be made clear in said action that the whole case has been considered on its merits and that not only those claims which are specifically rejected have been considered, but all of the others as well. [Id.

10. FINAL REJECTION PREMATURE—RIGHT TO AMEND.
Where in requiring division the Examiner rejects some of the claims upon references, but does not make it plain that he has given a full action upon the merits, *Held* that a final rejection given in the next letter is premature and that the applicant is thereafter entitled to amend. [Id.

11. STEAM-BOILER—FURNACE.
Division was properly required between claims covering a boiler construction and claims covering a furnace construction, as they are recognized by inventors and manufacturers as separate and independent inventions and are capable of separate use irrespective of their particular construction.
[*Ex parte* Downie and Messner, 235.

12. STAND FOR BILLIARD-TABLES—ADJUSTING DEVICE FOR LEVELING THE TOP OF THE TABLE.
Division should not be required between a claim for a stand for a billiard-table and a claim covering the stand in combination with the table-adjusting device.
[*Ex parte* Burrowes, 452.

13. LAWN-MOWER—CLUTCH.
Division was properly required between claims for a lawn-mower mechanism one of the elements of which is a clutch and the claims for the specific clutch construction. A clutch is a distinct and independent invention from the mechanism in which it is used as an element. [*Ex parte* Adams, 453.

14. PUMP AND MOTOR-GOVERNOR—COMBINATION CLAIMS.
Held that division should not be required between claims for the combination of a specific form of pump for pumping water and air with a closed receptacle and claims for the same combination with the addition thereto of a specific form of motor-governor where the combinations have not acquired a distinct status in the art. [*Ex parte* Cushing, 661.

15. PROCESS AND PRODUCT.
Held that division should not be required between claims to a process of depositing zinc on metallic surfaces and claims to the article produced where there is doubt as to the possibility of producing the article by any other process and the process will not produce any other article.
[*Ex parte* Cowper-Coles, 661.

16. GAS-ENGINE.
Held that division was properly required between claims to a sparking igniter, claims to a governor-valve, claims to a relief-valve, and claims to the general structure of a gas-engine. They cover separate and independent inventions.
[*Ex parte* Tyler, 666.

17. SAME—PARTS SPECIALLY ADAPTED FOR USE TOGETHER.
Held that division should not be insisted upon between claims to the engine bed or frame and to the valve-gear and claims to the general engine structure where the combinations are specially adapted for use in the general engine structure. [Id.

18. VESSEL—HULL AND RUDDER.
Held that division was properly required between claims to the external configuration of the hull of a vessel and claims to the means for mounting the rudder, since they are recognized as independent subjects of invention and are separately classified in this Office. [*Ex parte* Bustin, 1111.

19. SAME—MEANS FOR PROPELLING VESSELS—INDEPENDENT INVENTION.
Held that claims covering the means for propelling the ship should be claimed in a separate application from claims to the shape of the hull and to the means for mounting the rudder.
[Id.

20. WHEN REQUIREMENT SHOULD BE MADE—RULE 42.
Held that when the independence of the inventions is clear the requirement for division will be made before any action upon the merits, and when the independence of the inventions is not clear the requirement may be made at any time before the final action. [*Ex parte* Alminana, 1331.

21. UMBILICAL-TRUSS STRUCTURE—BELT.
Where certain claims are drawn to an umbilical-truss structure and other claims are not so limited, but nevertheless cover the unitary structure of the invention, *Held* that the device covered by all the claims is a single invention and divison between the broad and narrow claims should not be required.
[Id.

22. SPRING-MOTOR AND COMBINATION OF MOTOR WITH A FAN.
Held that division was properly required between claims to a spring-motor and claims to that motor in combination with a fan. [*Ex parte* Hoyt, 2177.

23. GAS-ENGINE—SPECIFIC DEVICE—CAPABLE OF GENERAL USE.
Held that division should be required between claims to the general gas-engine structure and specific claims covering, respectively, a self-lubricating journal-box, a lubricator for a crank-pin, a crank-pin, a speed-regulating device, a valve capable of use in any engine structure.
[*Ex parte* Tyler, 2177.

24. SAME.
Held that claims for a valve mechanism which covers a structure which is peculiarly adapted for use in the general gas-engine structure disclosed and claimed should not be divided from the claims covering the general gas-engine structure.
[Id.

25. ABANDONMENT OF APPLICATION—ACTION SUFFICIENT TO SAVE CASE.
Where the Examiner requires division between process and apparatus claims and between claims to different species of the apparatus without mentioning the particular claims by number, and the applicant amends by canceling the process claims and asks for reconsideration and a specific statement as to the apparatus claims, *Held* that his action is proper and saves the case from abandonment. [*Ex parte* Naef, 2601.

26. PROCESS AND PRODUCT.
Held that division was properly required between a claim for the process of making a box and a claim for the box where the box is not necessarily made by the process.
[*Ex parte* Schmidt, 2602.

DOUBLE USE.

(See Invention, 4.)

DRAWINGS.

(See Combination; Date of Filing Application.)

1. RULE 50 DEFINED.
Where the specification describes the grain of wood as running lengthwise and this feature is included in the claims, the drawing should show the same, since the rules require that the drawing must show every feature of the invention covered by the claims. (Rule 50.) [*Ex parte* Davin, 452.

2. RULE 50 DISTINGUISHED FROM RULE 51.
Where the grain of wood is an essential feature of the invention, the requirement that the drawing should show the same is not inconsistent with the requirement of the fourth section of Rule 51, which states that imitations of wood in surface-graining should not be attempted. [Id.

3. RULE 50—SECTIONAL VIEW OF ELEMENT.
Where an element is described and claimed, *Held* that said element should also be clearly shown in the drawing and that an illustration of said element by means of a sectional view where it does not completely illustrate the structure is not sufficient. [*Ex parte* Alminana, 1331.

4. CLEAR DISCLOSURE NECESSARY.
The requirement for additional illustration is proper when the drawing does not disclose with certainty what the invention is. [*Ex parte* Seitzinger, 2773.

EVIDENCE.

(See Testimony.)

EXAMINATION OF APPLICATIONS.

(See Amendments, 4.)

MAKING CASES SPECIAL.
Applications must be examined in regular order, and the Office cannot give one case precedence over others because of the applicant's business arrangements which are dependent upon a speedy allowance of the patent.
[*Ex parte* Bischoff, 2008.

EXAMINERS.

(See Allowed Applications.)

EXHIBITS.

(See Interference, 31.)

FINAL FEES.

(See Allowed Applications.)

FIRST AND ORIGINAL INVENTOR.

(See Interference, 9, 17.)

FOREIGN PUBLICATION.

DISCLOSURE—WHAT NECESSARY.
A description of an invention in a foreign publication in order to defeat a patent in this country must be so clear as to enable persons "skilled in the art" to make the invention.
[Pupin *v.* Hutin and Leblanc *v.* Stone, 931.

FORFEITED CASES.

(See Allowed Applications.)

RENEWAL—ALLEGED ASSIGNEE.
Where an alleged assignee asks to be allowed to renew a forfeited application and files a copy of the alleged assignment saying that the original is lost and the inventor protests saying that no valid assignment has been made, *Held* that the request must be denied. [*Ex parte* Turner, 2008.

INOPERATIVENESS.

(See Interference, 8.)

INTERFERENCE.

(See Appeal to the Court of Appeals of the District of Columbia, 3; Appeal to the Examiners-in-Chief, 4; Jurisdiction of the Court of Appeals of the District of Columbia; Motion to Dissolve Interference; Motion to Reopen Interference; Preliminary Statement; Rejected Claims; Testimony; Trademarks, 30, 31.)

1. IRREGULARITY—ALLOWANCE OF CLAIMS.
Where the Examiner has not notified the parties that the claims in issue are patentable, *Held* that this does not constitute such irregularity as will preclude a proper decision of the question of priority of invention and does not warrant a dissolution of the interference. [Luger *v.* Browning, 231.

2. INTERLOCUTORY QUESTIONS—FINAL HEARING.
Held that questions as to the patentability of the claims and irregularity in the declaration should be raised by motion under Rule 122 and that they will not be considered upon an appeal relating to priority of invention. [Id.

3. PATENT AND APPLICATION—REISSUE APPLICATION—CLAIMS REJECTED AND CANCELED.
Where one interference is declared between a pending application of S. and a patent to R. and another interference is declared between the said pending application of S. and an application for a reissue of the patent to R., *Held* that on a consolidation of the two interferences the same will continue as to counts corresponding to claims in the patent, even though these claims were originally presented in the reissue application and subsequently canceled therefrom on reference to an English patent to S. [Read *v.* Scott, 449.

4. DISSOLUTION—RIGHT TO MAKE CLAIMS—APPEAL TO COMMISSIONER DIRECT DISMISSED.
Where the Examiner dissolves an interference on the ground that the respective parties thereto have no right to make the claims, no appeal from such a decision can be taken directly to the Commissioner, and such an appeal will be dismissed.
[Story *v.* Criswell, 688.

5. SAME—APPEAL—MOOT QUESTION.
Where the Examiner dissolves an interference because the parties thereto have no right to make the claims on the ground of inoperativeness and the limit of appeal from said decision having expired, *Held* that the question of interference in fact necessarily becomes a moot question, and an appeal from a decision involving the same will be dismissed. [Id.

6. MOTION TO REOPEN—DILIGENCE IN FINDING NEW FACTS—WHAT CONSTITUTES.
Where a motion is brought to reopen an interference proceeding and take additional testimony and the facts in support of said motion are that a certain letter which is thought to be material to the case is subsequently found in an envelop placed among other papers, which papers were searched prior to and during the taking of the testimony, and the only reason for not primarily finding the said letter was that because of an indorsement on the envelop containing the same the contents of the envelop were not looked into, *Held* not to constitute sufficient ground for granting the motion.
[Robinson *v.* Townsend *v.* Copeland, 688.

7. DISCLOSURE OF INVENTION.
A disclosure of the invention to a party skilled in the art to which the invention belongs is sufficient to be regarded as a disclosure in the sense of the patent law.
[Pupin *v.* Hutin and Leblanc *v.* Stone, 931.

8. PRIORITY—SUFFICIENCY OF DISCLOSURE IN APPLICATION—DECISION OF PATENT OFFICE CONCLUSIVE.
The decisions of the expert tribunals of the Patent Office as to the sufficiency of the disclosure in the original application to support the invention defined in the counts of the issue will be accepted as conclusive by the court in considering questions of priority of invention. [*Stone *v.* Pupin, 1113.

9. ORIGINALITY—BURDEN OF PROOF.
Where it is shown that H. independently built and operated a machine and filed an application for a patent on the same, H. must be presumed to be an original inventor, and it is incumbent upon F., who alleges prior disclosure to H., to establish his allegation by clear proof.
[Funk *v.* Matteson *v.* Haines, 1563.

10. ORIGINALITY—PROOF OF DISCLOSURE.
When H. is the only party to establish an actual reduction to practice and when the testimony in behalf of F. not only does not support the allegation of F. that the invention was disclosed through his agent to H., but is quite persuasive that the invention disclosed to H. related to another structure, *Held* that priority of invention should be awarded to H. [Id.

11. PRELIMINARY STATEMENT BY ASSIGNEE.
Where an inventor refuses to file a preliminary statement and the records show that the assignee was diligent in endeavoring to obtain a statement from the inventor, *Held* that a statement made by the assignee should be accepted even though filed shortly after the expiration of the time for filing preliminary statements. [Reynolds *v.* Bean, 1765.

12. SENIOR APPLICANT—JUNIOR APPLICANT—BURDEN OF PROOF—PRIORITY OF INVENTION.
H. being the senior party, the first to apply to the Patent Office, has *prima facie* the priority of right, and the *onus* of proof is upon any junior applicant to show not only priority of invention, but he must also show that he has used reasonable diligence in adopting and perfecting his invention, for in such a case the mere conception without actual reduction to practice within a reasonable time does not avail a junior party making the claim. [*Funk *v.* Matteson *v.* Haines, 1764.

13. SAME—SAME—SAME.
Whoever first perfects a machine is entitled to the patent therefor and is the real inventor, although others may have previously had the idea and made some experiments toward putting it in practice, subject, however, to this qualification, that if the party who conceives the invention was at the time of a second invention by another party using reasonable diligence in perfecting the same he is entitled to be recognized as the first inventor, although the second to conceive may have been the first to reduce to practice, either actual or constructive. (*Agawam Co. *v.* Jordan*, 7 Wall., 583.) [*Id.

14. PRIORITY—REDUCTION TO PRACTICE—WHAT IS NECESSARY.
In order to constitute a patentable invention, there must be more than mere progress to an end, however near that progress may have approximated to the end in view. The law requires not conjecture, but certainty, and where the question relates to a machine the conception must have been clothed in substantial form, which demonstrated at once its practical efficiency and utility. (*Coffin *v.* Ogden*, 5 O. G., 270; 18 Wall., 120.) [*Id.

15. SAME—PROOFS—ALLEGATION IN PRELIMINARY STATEMENTS.
In the production of proof in matters of interference the parties must be held strictly to the dates set forth in their preliminary statements. [*Id.

16. SAME—CONCEPTION—DELAY IN REDUCTION TO PRACTICE—EFFECTS OF.
Assuming the truth of the statement contained in the preliminary statement of F. or even that contained in his testimony as to the time of conception of the invention, the great delay in attempting to complete and reduce the invention to practical operation is entirely without explanation and must consequently give rise to a strong presumption against his pretensions. [*Id.

17. SAME—BURDEN OF PROOF.
H. being the first to reduce to practice and the first to apply to the Office must be presumed to be an original inventor of the machine which it is conceded he built and operated and for which he was the first to make an application for a patent. F. controverts this right of H., and it is incumbent upon him to show by clear and indubitable proof that the presumption in favor of H. is not well founded and that the right is in himself. Such proof F. has failed to produce, and priority of invention is therefore awarded to H. [*Id.

18. PRIORITY—DECISION AFFIRMED.
As the parties to this interference are also parties to the pending interference, No. 20,436, and as this case depends in all respects upon the same facts and the evidence is the same, *Held* that for the reasons in that case assigned H. is the prior inventor. [*Funk *v.* Haines, 1766.

19. SUPPRESSION OF TESTIMONY—PRINTED RECORD.
Where certain testimony taken is ordered suppressed, *Held* that it should not be embodied in the printed record, since that record should contain only matter properly in the case.
[Feibel *v.* Oliver, 1975.

20. SAME—REMOVING SUPPRESSED DEPOSITION FROM PRINTED RECORD.
Where a party prints in his record depositions which have been suppressed, *Held* that a motion to expunge, cancel, and remove entirely from the printed record will be granted.
[Id.

21. PRIORITY OF INVENTION—CONCEALMENT OF INVENTION.
Where F. reduced the invention to practice and for one year and five months thereafter made no other machines and made no substantial advance toward placing the invention on the market, during which time O. made the invention and put it into use, *Held* that F. is the first inventor in the absence of a showing that he intentionally concealed the invention from the public or abandoned the idea of obtaining a patent and using the invention. [Feibel *v.* Oliver, 2175.

22. REDUCTION TO PRACTICE—DILIGENCE IN USING INVENTION.
By a reduction to practice a party's rights are protected, and it is not necessary thereafter to use the same amount of diligence in putting the invention upon the market as is necessary in a reduction to practice by one first to conceive but the last to reduce to practice. [Id.

23. PRIORITY—DISCLAIMER OF INVENTION.
Where O. deliberately states in answer to a question propounded by his own counsel that he does not claim to be the inventor of the matter in controversy, *Held* that priority of invention cannot be awarded to him.
[*Oliver *v.* Feibel, 2384.

24. DELAY—PRESUMPTIVE EVIDENCE.
Long and unexplained delay yielding to activity only when the knowledge comes of the entrance of a rival on the field is always presumptive evidence that what is claimed to have been a reduction to practice was no more than an unsatisfactory or abandoned experiment. [*Id.

25. DILIGENCE.
The diligence required of an inventor is diligence rather in the reduction of his invention to practice than in application to the Patent Office or in manufacturing his device for public use. [*Id.

26. REDUCTION TO PRACTICE—CONCEALMENT OF INVENTION.
When reduction to practice by the first inventor is shown, his right to a patent is not barred by delay thereafter unless there be some circumstance of concealment, suppression, or abandonment of the invention. [*Id.

27. DECISION—RIGHT TO A PATENT.
Held that a final decision on priority in an interference is not a decision that the defeated party is not entitled to a patent upon the claims, although it may furnish a basis for such a decision. [*Ex parte* Schüpphaus, 2775.

28. SUBSTITUTE APPLICATION—REFUSAL TO CONSIDER—RIGHTS OF APPLICANT.
Where after a decision against him in an interference a party files a new application as a substitute for the one involved, *Held* that he is entitled to take any action in the new case which he could have taken in the old and that the Office cannot refuse to consider the new case. [Id.

29. MOTION AFTER LIMIT OF APPEAL EXPIRED—JURISDICTION RESTORED.
Where a motion was filed within the limit of appeal and to accommodate counsel was noticed for hearing two days after the limit had expired, *Held* that the jurisdiction of the Examiner of Interferences will be restored to consider the motion. [Jean and Goode *v.* Hitchcock, 3011.

30. REOPENING—ADDITIONAL TESTIMONY.
After an interference has been decided by the Examiner of Interferences it will not be reopened for the purpose of permitting one of the parties to take additional testimony when it appears that said testimony is unimportant and, further, that the facts could have been discovered with reasonable diligence before the testimony was originally taken.
[Shaffer *v.* Dolan, 3012.

31. SAME—EVIDENCE ACCESSIBLE.
Where a witness testifies as to an exhibit which is said to be a copy of the original and says that he believes that the original is in his safe in his office and after a decision by the Examiner of Interferences the party wishes to reopen the interference to show that the original could not have been produced, *Held* that he could and should have produced the evidence originally. [Id.

INVENTION.

1. PATENTABILITY—NEW ELEMENT OF OLD COMBINATION.
The combination of a trimmer with one type of stitch-forming mechanism being old, *Held* that it is not invention to combine that trimmer with another stitch-forming mechanism, whether the second stitch-forming mechanism be new or old, when no new result is accomplished which differs in kind from the result accomplished by the first combination and when each element acts in its own way and is not affected by the other and performs its function in the combination irrespective of the other. [*Ex parte* McNeil, 1976.

2. SAME—SAME.
Held, further, that the invention, if any, is in the stitch-forming mechanism and that the applicant should claim it separately if he regards himself as the inventor of it. [Id.

3. PATENTABILITY—MCNEIL—SEWING-MACHINE—CLAIMS NOT PATENTABLE.
The claims in the application of Chester McNeil for a sewing-machine, Serial No. 665,198, filed December 31, 1897, examined and *Held* to be not patentable in view of the prior art. (Decision of Assistant Commissioner, 100 O. G., 1976, affirmed.)
[*In re* McNeil, 2178.

4. COMBINATION UNPATENTABLE—ELEMENT NEW—DOUBLE USE.
Where the combination in a sewing-machine of a trimmer in advance of one form of stitch-forming mechanism is old, *Held* that the combination of that trimmer with another stitch-forming mechanism is not patentable, whether that stitch-forming mechanism is new or old. [*Id.

JURISDICTION OF THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA.

(See Appeal to the Court of Appeals of the District of Columbia; Patentability.)

1. PATENTABILITY A PREREQUISITE TO INTERFERENCE.
Patentability of the invention is a necessary prerequisite to the declaration of an interference, and the court is without jurisdiction in a case where there is not a final favorable decision on that question by the Patent Office.
[*Oliver *v.* Feibel, 2384.

2. PATENTABILITY DOUBTFUL—PRACTICE.
Where a question as to the patentability of the invention is raised by some tribunal of the Patent Office after the declaration of an interference, *Held* that it should be finally settled before a decision on priority is rendered which entitles the defeated party to appeal to the court. [*Id.

JURISDICTION OF EXAMINER.

(See Withdrawal of Allowed Applications.)

JURISDICTION OF THE EXAMINER OF INTERFERENCES.

(See Interference, 29.)

LABELS.

(See Prints, 2.)

1. COMMISSIONER OF PATENTS DETERMINES LAWFULNESS.
The Commissioner of Patents is authorized and required to determine whether the thing presented for registration is a label and complies with the requirements of the law. He is not required to register everything which is presented and called a label.
[*Ex parte* Regina Music Box Company, 1112.

2. MUST BE DESCRIPTIVE AS WELL AS ARTISTIC.
A label to be registrable in the Patent Office must not only possess artistic merit, but must be descriptive of the article for which it is used. [Id

3. For Article of Manufacture—Descriptive.
A mere statement by the applicant for registration that he intends to use the design presented upon a particular article of manufacture does not make it *for* that article within the meaning of the law. The indication of the article must be in the label itself. [Id.

4. Registrability Determined by Intrinsic Qualities.
The registrability of a label must be determined by its intrinsic qualities and not by some possible or contemplated use of it. [Id.

LIMIT OF APPEAL.

(See Appeal to the Examiners-in-Chief, 1, 2; Interference, 5, 29.)

MECHANICAL PATENT.

(See Division of Applications, 3, 6, 7.)

MERITS OF THE CASE.

(See Appeal to the Examiners-in-Chief, 5, 6; Division of Applications, 8, 9, 10.)

MISTAKE.

(See Appeal to the Examiners-in-Chief, 1, 2.)

MODEL.

(See Preliminary Statement, 5, 7.)

MOTION TO DISSOLVE INTERFERENCE.

(See Appeal to the Examiners-in-Chief, 1, 2; Interference, 2.)

Facts Shown by the Testimony.
A motion for dissolution should not be brought on grounds arising from the testimony. Facts which are alleged to be established by the testimony are to be determined on final hearing and not on motions for dissolution.
[Shallenberger v. Andrews, 3013.

MOTION TO REOPEN INTERFERENCE.

(See Interference, 6.)

Requisites.
Where a motion to reopen an interference to take further testimony does not set forth the facts to which the proposed witnesses will testify, *Held* that the motion will not be granted.
[Robinson v. Townsend v. Copeland, 668.

NEW ELEMENTS.

(See Invention, 1, 4.)

NEW MATTER.

(See Amendments, 1, 2, 3, 7; Appeal to the Examiners-in-Chief, 6.)

NEWLY-DISCOVERED EVIDENCE.

(See Interference, 6.)

NOTICE OF ALLOWANCE.

(See Allowed Applications; Withdrawal of Allowed Applications.)

PATENTABILITY.

(See Interference, 3; Invention, 1, 3, 4; Jurisdiction of the Court of Appeals of the District of Columbia.)

Invention—Jurisdiction to Vacate Favorable Decision.
Until the patent is actually issued it is always competent for the Patent Office, with due regard to the rules of law, to vacate its favorable adjudication upon the question of patentability for good and sufficient cause. [*Oliver v. Felbel, 2384.

PATENTS AND APPLICATIONS.

(See Interference, 3.)

PENDING APPLICATIONS.

(See Copies of Pending Applications.)

PETITION TO THE COMMISSIONER OF PATENTS.

(See Appeal to the Examiners-in-Chief, 1, 2, 4, 5.)

PETITION TO THE COURT.

Practice—Statement of Points.
A petition to the Commissioner should state the point or points to be reviewed and should not be taken until the questions have been twice acted upon by the Examiner.
[*Ex parte* Organ, 231.

PRELIMINARY STATEMENTS.

(See Interference, 11, 15, 16.)

1. Amendment.
Where it appears that an amendment to a preliminary statement will not carry the date of reduction to practice back of that of the opposing party and a reasonable excuse is offered for the delay in presenting the amendment and, further, that no testimony has been taken, *Held* that the amendment should be permitted. [Gales v. Berrigan, 232.

2. Amendment.
Where testimony has been taken by both parties, a motion for leave to amend a preliminary statement by changing the date of reduction to practice will not be granted where there is no showing that the utmost diligence in preparing the original statement had been used and when it does not appear that a mistake has been made in alleging the date of reduction to practice. (*McDermott v. Hildreth*, 98 O. G., 1282.)
[Lockwood v. Schmidt, 453.

3. Interference—Partial Dissolution—New Statements Not Permitted.
Where preliminary statements have been filed in an interference proceeding and on motion the interference is subsequently dissolved as to one of the counts and continued as to others, this fact of itself does not warrant new times for filing preliminary statements being set, as such a proceeding would have the effect of permitting the amendment of the original statement. [Seaman v. Brooks, 685.

4. Same—Same—Motion to File New Statement—Showing Required.
Where the showing which accompanies a motion to file a new preliminary statement, which is in effect a motion to amend the original statement, merely states that additional facts have been discovered, without specifying said facts, and that the utmost diligence was exercised in making the discovery of the new facts, without stating what means were employed and the reasons why the same means could not have been earlier employed, *Held* not sufficient to warrant the grant of the motion. (*McDermott v. Hildreth*, 98 O. G., 1282.)
[Id.

5. Interference—Amendment.
Where a preliminary statement contains the allegation that no model was made and it is desired to amend it by adding the allegation that an experimental device was made and it appears that said device was in fact a model, *Held* that the amendment should not be permitted, since it would make the statement contradictory. [Williams v. Liberman, 1351.

6. Same—Same—Same.
Where there is no attempt to change the date of conception, disclosure, or reduction to practice, the reason for the strict rule against amendment does not apply. [Id.

7. Same—Amendment—Model.
Where it appears from the testimony that a model was in fact made which had been forgotten and motion to amend the preliminary statement to allege that fact is made before the opposing party's time for taking testimony is closed, *Held* that the amendment will be permitted. [Id.

8. Same—Testimony at Variance with Preliminary Statement is Inadmissible.
A party is confined in his proofs to the dates set up in his preliminary statement as to conception and disclosure, and evidence tending to establish an earlier date is inadmissible. (*Cross v. Phillips*, 87 O. G., 1899.)
[Funk v. Matteson v. Haines, 1563.

9. Motion to Strike Out.
Where a preliminary statement is held by the Office to be informal in that it does not sufficiently state the facts and the party is called upon for a new statement, *Held* that the new statement will not be stricken out on motion merely because it states additional facts besides those called for by the Office.
[Shaw v. Gally, 2014.

PRINTED RECORD.

(See Interference, 20.)

PRINTS.

1. Must be Descriptive.
A print in order to be registrable must be descriptive of the article which it is intended to advertise.
[*Ex parte* Royal Medicine Company, 2775.

2. Prints and Labels—Descriptive.
Prints and labels are made registrable by the same section of the copyright law, and the requirement that they indicate the article to which they refer applies to both. [Id.

PRIORITY OF INVENTION.

(See Appeal to the Court of Appeals of the District of Columbia, 3, 4; Appeal to the Examiners-in-Chief, 4; Decision of the Patent Office Affirmed; Interference, 2, 8, 10, 12, 13, 14, 17, 21, 22, 23, 27.)

PROCESS.

(See Date of Filing Application.)

PROCESS AND PRODUCT.

(See Division of Applications, 1, 2, 15.)

REDUCTION TO PRACTICE.

(See Interference, 10, 13, 14, 16, 23, 24, 25, 26; Testimony, 1.)

REFUSAL OF PATENT BY COMMISSIONER.

(See Appeal to the Court of Appeals of the District of Columbia, 3.)

REISSUE APPLICATIONS.

(See Interference, 3.)

Rejection of Claims Corresponding to Those in Original Patent—Effect on Validity of Original Patent.
The cancellation of claims in a reissue application which correspond to the claims of the patent which it is sought to reissue has no effect upon the claims in the patent while the reissue application is still pending in the Patent Office. (*The McCormick Harvesting Machine Co. v. Aultman & Co.*, 88 O. G., 1988.) [Read v. Scott, 449.

REJECTED CASES.

(See Appeal to the Examiners-in-Chief, 4; Reopening of Appealed Cases.)

REJECTED CLAIMS.

Allowance of Claims—Notice—Interference.
Where the Examiner has rejected certain claims, but subsequently declares an interference as to them, *Held* that this amounts to an allowance of them, although no formal notice to that effect was sent. [Luger v. Browning, 231.

REJECTION OF CASES.

(See Amendments, 4, 7; Appeal to the Examiners-in-Chief, 4; Division of Applications, 9, 10; Interference, 27.)

1. Final—Amendment Not Affecting Substance of Claims.
Where after the rejection of claims the applicant presented an amendment correcting the spelling of words positively including elements which were inferentially included before and transposing a descriptive phrase from one place to another, *Held* that the amendment is merely formal in character and does not prevent a final rejection. [*Ex parte* Casler, 1380.

2. Final—Amendment—Claims Not the Same in Substance.
Where a claim including a "tub" as an element is rejected and the applicant presents an amendment including an "oscillating tub," *Held* that the claim is not the same in substance and that a final rejection is not in order. [Id.

3. Final—Formal Amendments.
Where an applicant makes merely formal amendments to the claims and requests reconsideration, *Held* that a final rejection is in order. [*Ex parte* Downing, 2176.

4. Amendment After Final Rejection—Additional Claim—Formal Amendment.
A party cannot demand the admission of an additional claim after final rejection as placing the case in better form for appeal, since if it differs from other claims it affects the merits. [Id.

5. Same—Duplication of Claims.
Where after final rejection the applicant presents by amendment an additional claim which is substantially the same as one of those rejected, *Held* that the amendment should not be entered, either with or without the showing referred to in Rule 68, since duplicate claims are not permissible. [Id.

REJECTION OF CLAIMS.

(See Reissue Applications.)

REOPENING OF APPEALED CASES.

Reopening In Application After Appeal to the Commissioner—Rule 142.
Where on appeal the Commissioner has affirmed the decision of the Examiners-in-Chief affirming the rejection by the Examiner of the claims in an application for a patent, *Held* that the application will not be reopened for further consideration by the Examiner in the absence of any showing to excuse the delay in bringing the petition to reopen, and where no showing is made of great hardship or irreparable injury to the applicant in case this application is not reopened.
[*Ex parte* Harrison, 2018.

REOPENING OF INTERFERENCE.

(See Interference, 30, 31.)

RESULTS.

(See Invention, 1.)

SPECIFICATIONS.

(See Description.)

1. Private Identifying-Marks—"Case No. 2332."
An applicant will not be permitted to include in the specification private identifying-marks which have no meaning to any one else, such as "Case No. 2332."
[*Ex parte* Ball, 2002.

2. Irrelevant Matter.
The object of the specification is to describe the invention, and it should not include matter which does not assist in accomplishing that result and which, if considered at all, may lead to confusion. [Id.

SUBSTITUTE APPLICATIONS.

(See Interference, 28.)

TECHNICAL TERMS.

Interference.
The words "skilled in the art" include *careful workmen* who are skilful in the particular line of business in which they are engaged. The law does not warrant a construction of these words which includes only persons of high scientific attainments. [Pupin v. Hutin and Leblanc v. Stone, 961.

TESTIMONY.

(See Interference, 6, 19, 20, 30; Trade-Marks, 30.)

1. Interference.
When the testimony of the principal is worthy of belief and his testimony is corroborated by one credible witness, *Held* sufficient to establish a conception and a reduction to practice of the invention.
[Pupin v. Hutin and Leblanc v. Stone, 961.

2. Same.
Where the contents of a written report made by an inventor stands without sufficient corroboration as to time, this report cannot be considered as sufficient to establish a date of conception of the invention, even though it did in fact describe the invention. [Id.

3. Suppression—Reopening Interference.
Where testimony is suppressed because of irregularities in the taking thereof and it appears that the irregularities were due entirely to inadvertence and not to an intention to delay the proceedings, *Held* that the party should be given an opportunity to retake the testimony.
[Blackman v. Alexander, 2268.

TRADE-MARKS.

1. Patented Article—"Holophane"—Not Registrable.
The word "Holophane" alone is not registrable as a trade-mark for prismatic glass, for the reason that it is the name of the patented article in connection with which the mark is used and for the further reason that the word is shown to have been used as the name of the article long prior to any date of use which is set up by the present applicant.
[*Ex parte* Holophane Glass Company, 450.

2. NAME AND ARBITRARY SYMBOL—SAME.
Where it appears that the word "Holophane" alone is not registrable, it cannot be made registrable by association with an arbitrary symbol. (*Ex parte Farnum and Company*, 18 O. G., 412.) [Id.

3. GOODS OF THE SAME CLASS—LAMPS AND BICYCLE-LAMPS.
A trade-mark for gas or vaporizing lamps, except bicycle-lamps, refused registration in view of substantially the same mark registered for bicycle-lamps, since the goods are of the same class and the use of the same mark by different owners will mislead the purchasing public.
[*Ex parte* Aladdin Gas Light Company, 450.

4. ANTICIPATION—"DERMAKOLA" AND "DERMACURA."
The word "Dermakola" should not be refused registration upon the registered word "Dermacura" in view of the difference in the sound of the words and in view of the difference in appearance due to the style in which they are printed.
[*Ex parte* Laxakola Company, 451.

5. "GALENA"—REGISTRABLE.
The word "Galena" as a trade-mark for manufactured metals *Held* to be registrable on the ground that while it has a limited geographical significance and is also descriptive of lead sulfid its arbitrary significance when used in connection with antifriction metals is so far predominating that it will be so understood by the public.
[*Ex parte* Magnus Metal Company, 451.

6. THE WORD "BESTOFALL" NOT REGISTRABLE.
The word "Bestofall" not registrable as a trade-mark, as it indicates the quality of the goods in that they are the best of all in that class. [*Ex parte* West, 682.

7. THE SINGLE WORD "BESTOFALL" NOT DIFFERENT FROM THE THREE WORDS "BEST OF ALL."
The single word "Bestofall" conveys the same idea as the three words "best of all." It cannot, therefore, in any true sense be said to be a coined word. [Id.

8. A "RED STAR REPRESENTED BY A WORD OR SYMBOL" NOT REGISTRABLE OVER A "STAR INCLOSING THE LETTER 'G.'"
A trade-mark consisting of a "red star represented by a word or symbol" *Held* not to be registrable in view of the registered mark which consists of a "star inclosing the letter 'G'" on the ground that there is such a resemblance between the two marks that the purchasing public would be deceived.
[*Ex parte* Swan and Finch Company, 682.

9. THE WORD "NAPTHOL-METHANE" REGISTRABLE FOR CARBON-BLACK.
The compound word "Napthol-Methane" *Held* to be registrable as a trade-mark for carbon-black, for the reason that it is well known that this substance contains nothing but carbon. If these words are descriptive at all, they are not descriptive of this substance; neither are they deceptive, as they would never be understood as describing carbon-black.
[*Ex parte* Castle Brook Carbon Black Company, 683.

10. THE WORD "AURORA" REGISTRABLE.
The word "Aurora" *Held* to be registrable as a trade-mark, as its fanciful or arbitrary meaning so predominates over its purely geographical significance that it would be understood by the purchasing public as an arbitrary word designating origin or ownership.
[*Ex parte* Aspegren and Company, 684.

11. ARBITRARY WORDS—NAME OF LOCALITY.
Where a word having an arbitrary or fanciful meaning has been adopted as a name of locality, *Held* that the question whether or not it is registrable as a trade-mark depends upon the question whether or not its arbitrary meaning so far predominates over its geographical meaning that it will be so understood by the purchasing public. [Id.

12. REGISTRABLE MARKS—INDICATION OF ORIGIN OR OWNERSHIP.
Whether or not a word is registrable as a trade-mark depends upon the meaning which will be given to it by the purchasing public. If it will be understood as indicating origin or ownership, it is registrable. [Id.

13. "WAUKWELL" FOR SHOES—NOT DESCRIPTIVE.
The word "Waukwell" as a trade-mark for shoes *Held* registrable, since it is not descriptive of the shoes.
[*Ex parte* Parker, Holmes & Company, 1111.

14. ANTICIPATION—"WAUKWELL"—"WALKEASY."
Held that the trade-mark "Waukwell" is not anticipated by the prior marks "Walkeasy" and "Walk-a-way" for the same class of goods, since purchasers exercising ordinary care would not confuse the marks and be misled. [Id.

15. "GRECIAN"—GEOGRAPHICAL OR DESCRIPTIVE.
Held that the word "Grecian" should not be registered as a trade-mark, since it either conveys the idea that the articles to which it is applied came from Greece and is therefore geographical or that they are made in the Grecian style and is therefore descriptive.
[*Ex parte* Classic Corset Company, 1329.

16. "SUCCESS"—ARBITRARY AND FANCIFUL WORD.
Held that the word "Success" as a trade-mark for stoves and ranges is registrable, since it does not describe any quality or characteristic of the articles and would be understood by purchasers as arbitrary and fanciful.
[*Ex parte* Huenefeld, 1329.

17. DEFINITION OF DESCRIPTIVE WORDS.
The prohibition against the registration of descriptive words as trade-marks applies only to those words which state or define some quality or characteristic of the article or designate its class, grade, style, or quality or the ingredients of which it is composed. [Id.

18. "TELEGRAPHONE" REFUSED REGISTRATION ON "TELEGRAPHOPHONE."
The word "Telegraphone" refused registration as a trade-mark for apparatus for recording and reproducing sounds in view of the descriptive word "Telegraphophone," which has long been in use to describe such apparatus.
[*Ex parte* Hutchins, 1330.

19. "MINUTE" FOR COFFEE—DESCRIPTIVE.
The word "Minute" should not be registered as a trade-mark for malted cereal coffee, since it is descriptive of a quality or characteristic of the coffee, meaning that it is of such a character as to be prepared for use in a minute.
[*Ex parte* Whitman Grocery Company, 1763.

20. DESCRIPTIVE—"FULLCUT."
"Fullcut" as a trade-mark for clothing refused registration on the ground that it is descriptive, since it would convey to the purchasing public a definite idea of the style of the clothing.
[*Ex parte* Miami Clothing Manufacturing Company, 1975.

21. SAME—PRINTING IN SCRIPT.
Merely printing a mark otherwise not registrable in script with a flourish beneath it does not render it registrable. [Id.

22. DESCRIPTIVE—"NEVERS-TICK."
"Nevers-Tick" as a trade-mark for lubricants refused registration upon the ground that it is descriptive.
[*Ex parte* Woolworth, 1976.

23. "MALT MYRRH" FOR MALT LIQUORS—DESCRIPTIVE.
Held that "Malt Myrrh" as a trade-mark for malt liquors is not registrable, since the word "Malt" is clearly descriptive and "Myrrh" is either descriptive or deceptive.
[*Ex parte* Barrett & Barrett, 1976.

24. ANTICIPATION—"FLORODORA" AND "FLORIDENA."
The word "Florodora" refused registration in view of the prior registered mark "Floridena."
[*Ex parte* Grossmith, 2175.

25. DESCRIPTIVE—"DR. HOFFMANN'S DROPS."
"Dr. Hoffmann's Drops" refused registration as a trade-mark for medicine, since "Hoffmann" is an ordinary surname and "Drops" is descriptive. [*Ex parte* Traudt, 2383.

26. "CATARRHAL JELLY"—NOT REGISTRABLE.
The words "Catarrhal Jelly" as a trade-mark for a jelly-like remedy for catarrh *Held* descriptive and not registrable.
[*Ex parte* Kenyon, 2388.

27. FACSIMILE—DESCRIPTIVE WORDS.
Where the facsimile of a trade-mark includes certain arbitrary symbols and the representation of the sea having printed thereon the word "Lotion," *Held* that the word "Lotion" being descriptive forms no part of the mark and should be removed. [*Ex parte* Star Lotion Remedy Company, 2603.

28. DRAWINGS—DESCRIPTIVE WORDS NOT INCLUDED.
A descriptive word cannot be made a part of a trade-mark by association with arbitrary symbols in the ordinary way, and therefore the drawing of the application should disclose only the arbitrary symbols. [Id.

29. SAME—PARTS INSEPARABLE.
A descriptive word should not be retained in the drawing of a trade-mark application unless its parts are so interwoven with the arbitrary parts of the mark as to become an inseparable part thereof. [Id.

30. INTERFERENCE—DATE OF ADOPTION AND USE SET UP IN STATEMENT—WEIGHT GIVEN TO TESTIMONY SHOWING EARLIER USE.
Where a certain date of adoption and use of a trade-mark is set up in the statement and declaration filed with an application for registration and the testimony offered in the interference proceeding shows an earlier date. *Held* that such testimony may be considered and such weight given to it as may be proper under the circumstances of the case.
[Broderick and Bascom Rope Company *v.* Leschen and Sons Rope Company, 3011.

31. SAME—AMENDMENT TO STATEMENT AFTER DETERMINATION OF INTERFERENCE.
A motion during the progress of a trade-mark interference to amend the statement in the application as to the date of adoption and use is unnecessary and will be denied. Amendment may be made after the conclusion of the interference.
[Id.

WITHDRAWAL OF ALLOWED APPLICATIONS.

ALLOWANCE OF APPLICATION.
After an application has been allowed and the notice of allowance sent to the applicant or his agent the act of allowance is complete and the application can be returned to the jurisdiction of the Examiner only by a formal withdrawal from the issue files by the Commissioner.
[*Ex parte* Bryant, 2773.

WITNESSES.

(See Interference, 31; Testimony, 1.)

ALPHABETICAL LIST OF PATENTEES

FOR

THE QUARTER ENDING SEPTEMBER 30, 1902.

[Claims and drawings of Designs do not appear in the Monthly Volumes. Separate indexes for Designs, Trade-Marks, Labels, Prints, and Disclaimers follow this.]

Name, residence, and invention.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Volume.	Official Gazette. Page.
A. G. Spalding & Bros. (See McMaster, John, assignor.)						
A. Geisel Manufacturing Company. (See Dahman, William H., assignor.)						
A. J. Rost Manufacturing Company. (See Fenn, William B., assignor.)						
Abbee, Leslie H., Denver, Colo. Safety hitching device	705,629	July 29	4488	972	100	967
Abbott, Frank E., Pittsburg, Pa. Combination door-bell and burglar-alarm	709,252	Sept. 16	2397	542	100	2505
Abbott, Frank E., and B. H. Randel, Pittsburg, Pa. Miter-box	709,251	Sept. 16	2396	542	100	2505
Abbott, Herbert, Balmain, near Sydney, New South Wales, Australia. Air-feeding apparatus for furnaces	708,851	Sept. 9	1583	360 361	100	2318
Abbott, Nathaniel B., assignor to Imperial Bottle Cap & Machine Company, Baltimore, Md. Sheet-metal sealing-cap for bottles	704,167	July 8	1505	322	100	816
Abbott, Thomas B., Sale, Victoria, Australia. Lamp-burner	707,811	Aug. 26	3531	798	100	1802
Abbott, Virgil H., Carrollton, Ky. Fence-post and fence-stay	710,081	Sept. 30	3948	990	100	2858
Aber, Edgar, Jacksonville, Tex. Veneer-bending machine	710,281	Sept. 30	4344	976 977	100	2938
Ablett, Joseph H., Glennie, Mich. Dinner pail and heater	704,492	July 15	2111	457	100	457
Abrahams, Mary E., St. Louis, Mo., assignor to M. Bell, Portland, Oreg. Egg-separator	708,791	Sept. 9	1449	331	100	2291
Abrams, George H., Brooklyn, N. Y. Air-compressor	706,871	Aug. 12	1689	378	100	1479
Abrams, John A., Akron, Ohio. Gas-burning grate-bar	709,951	Sept. 30	3793	858	100	2820
Abrams, Marie, New York, N. Y. Fire-escape	705,891	July 29	4953	1078	100	1092
Acetyvone Manufacturing Company. (See Montel, Leo, assignor.)						
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Alkoxy-caffein and making same	707,812	Aug. 26	3531	.....	100	1803
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Waldhof, near Mannheim, Germany. Triphenyl-methane dye and making same	707,813	Aug. 26	3535	.....	100	1803
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Baden, Germany. Paramethyl-amidophenyl-glyoxylic acid and making same	708,511	Sept. 9	925	.....	100	2181
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Baden, Germany. Diacetyl-diamin and making same	708,512	Sept. 9	927	.....	100	2181
Ach, Fritz, Mannheim, assignor to C. F. Boehringer & Soehne, Mannheim-Waldhof, Baden, Germany. Thioxanthin and making same	708,513	Sept. 9	929	.....	100	2181
Ach, Narziss, Göttingen, Germany. Means for keeping moving objects in horizontal positions	705,731	July 29	4674	1012	100	1004
Ackerman, Frank, New York, N. Y. Self-adjusting dumb-waiter grip and friction-roller	705,010	July 22	3153	681	100	699
Ackerman, Harmon F., Cleveland, Ohio. Mopping device	704,671	July 15	2424	524	100	532
Acklin, Alfred M., Pittsburg, Pa. Apparatus for removing material from boats, &c.	707,371	Aug. 19	2512	590	100	1668
Acklin, Alfred M., Pittsburg, Pa. Apparatus for removing materials from boats, &c.	707,491	Aug. 19	2936	640	100	1733
Acklin, Alfred M., Pittsburg, Pa. Apparatus for removing materials from boats, &c.	707,492	Aug. 19	2939	640	100	1734
Acklin, Alfred M., Pittsburg, Pa. Car-haul	709,691	Sept. 23	3296	732	100	3699
Acklin, Alfred M., Pittsburg, Pa. Overhead tramway	709,692	Sept. 23	3268	732	100	3700
Acme Harvester Company. (See Green, Henry, assignor.)						
Actien Gesellschaft für Anilin Fabrikation. (See Herzberg and Siebert, assignors.)						
Actiengesellschaft, vormals F. Martini & Co. (See Kugler, Friedrich, assignor.)						
Adams, Charles W. (See Hoffman, Edward J., assignor.)						
Adams, Cushing, Bellows Falls, Vt. Oleaginous compound	709,291	Sept. 16	2473	.....	100	2521
Adams, Fred L., Prophetstown, Ill. Lawn-mower	710,131	Sept. 30	4156	986	100	2897
Adams, George E., Glens Falls, N. Y., assignor to W. D. Earl, Lowell, Mass. Music-leaf turner	707,671	Aug. 26	3211	730	100	1829
Adams, George J., Brooklyn, N. Y. Measuring-faucet and automatic graduate	707,532	Aug. 26	2924	661 662	100	1709
Adams, George J., Brooklyn, assignor to Colgate & Company, New York, N. Y. Bottle-closure	709,292	Sept. 16	2474	537	100	2521
Adams, James H., Fullerton, Cal. Drill-rod grab	706,872	Aug. 12	1691	378 379	100	1480
Adams, John Q., and S. Hough, Atco, N. J. Mower	703,518	July 1	250	58	100	50
Adams, Marcellin C. (See Adams, Stephen J., assignor.)						
Adams, Moses J., Leeds, England. Apparatus for molding the exterior of articles in clay or other plastic material	709,131	Sept. 16	2153	494	100	2454
Adams, Stephen J., assignor to M. C. Adams, Pittsburg, Pa. Apparatus for forming sand molds	704,961	July 15	3013	647 648 649	100	646
Adams, Stephen J., assignor to M. C. Adams, Pittsburg, Pa. Forming sand molds	704,962	July 15	3022	649	100	648

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Adams, Theodore F. (See Burden, Oscar H., assignor.)						
Adams, Walter S., assignor to J. A. Brill, Philadelphia, Pa. Adjustable truck-bearing	708,980	Sept. 16	1841	424	100	2389
Adams, Walter S., assignor to J. A. Brill, Philadelphia, Pa. Car-truck	709,071	Sept. 16	2081	463 / 464	100	2427
Adams, Walter S., assignor to J. A. Brill, Philadelphia, Pa. Car-truck construction	709,072	Sept. 16	2083	464	100	2428
Adams & Westlake Company. (See Bartholomew, William S., assignor.)						
Adams & Westlake Company. (See Hamm and Mosher, assignors.)						
Adams & Westlake Company. (See Mosher, John A., assignor.)						
Adams & Westlake Company. (See Wishart and Seidel, assignors.)						
Adams, William P. C., assignor of one-half to R. J. Prickman, Olympia, Wash. Garment	708,751	July 1	695	154	100	139
Adams, William R. (See Tucker, William A., assignor.)						
Adamson, Andrew J., assignor to Adamson Manufacturing Company, Chicago, Ill. Apparatus for separating the pith or core from the rind portion of fibrous material	707,531	Aug. 26	2921	661	100	1709
Adamson, Corson. (See Adamson, William L., assignor.)						
Adamson Manufacturing Company. (See Adamson, Andrew J., assignor.)						
Adamson, William L., assignor of one-half to C. Adamson, Weston, Tex. Stalk-chopper	710,232	Sept. 30	4347	977	100	2039
Adelsberger, Johann, and H. Friedmann, assignors to S. Wechsler, Vienna, Austria-Hungary. Printing color for lithographic or metallographic printing	710,233	Sept. 30	4349	------	100	2039
Adkins, Cyrus W. (See Kelley and Adkins.)						
Adlam, Samuel, New York, N. Y. Vacuum fruit-jar-sealing device	708,191	Sept. 2	362	86	100	2055
Aeolian Company. (See Shaw, Charles H., assignor.)						
Aeolian Company. (See Votey, Edwin S., assignor.)						
Agatine Shoe Hook & Eyelet Company. (See Pupke, Eberhard L., assignor.)						
Agust, Josph. (See Politsky and Agust.)						
Aheru, James, Washington, D. C. Music-leaf turner	709,625	Sept. 23	3148	702	100	2674
Ahrendt, Johannes, Hamburg, Germany. Collar for horses or the like	707,814	Aug. 26	3537	798	100	1893
Aicardi, Onorato A., San Francisco, Cal. Needle-threader	707,191	Aug. 19	2283	511	100	1620
Aigner, Francis X., Jersey City, N. J. Stretcher	706,871	Aug. 5	782	159	100	1264
Aiken, Joseph D., Taftville, Conn. Trousers-supporter	707,192	Aug. 19	2285	511	100	1621
Ainsworth, Guy R. (See Edmiston, George F., assignor.)						
Akerman, John S., San Diego, Cal. Game apparatus	706,873	Aug. 12	1692	379	100	1480
Akins, Stephen A., Merwin, Mo. Game apparatus	707,201	Aug. 19	2470	554	100	1658
Aktiebolaget Bleckvarufabriken I. Lund. (See Carljude, Wilhelm, assignor.)						
Aktiengesellshaft, vormals Seidel & Naumann. (See Döring, Albert, assignor.)						
Albee, Thomas, Halstead, Pa. Check-book keeper	707,583	Aug. 26	2926	662	100	1770
Albright, Joseph, Watsonville, Cal. Beet-topping machine	706,145	Aug. 5	281	58, 59	100	1175
Alcan, Felix, assignor to American Encaustic Tiling Company, Limited, New York, N. Y. Means for setting mosaics	706,874	Aug. 12	1698	379	100	1480
Alden Type Machine Company. (See Johnson, Louis K., assignor.)						
Alden Type Machine Company. (See Johnson and Low, assignors.)						
Alden Type Machine Company. (See Low, Abbot A., assignor.)						
Aldrich, Jonas H., Butler, Ind. Road-grader	708,977	July 8	1125	244	100	239
Aldridge, John W., Kincaid, Kans. Machine-wrench	706,689	Aug. 12	1217	270	100	1378
Alexander, Arthur S., and A. Vischer, New York, N. Y. Attachment for mouth-harmonicas	708,752	July 1	697	154	100	139
Alexander, George J., Philadelphia, Pa. Combined badge and bouquet-holding button	705,190	July 22	3516	768	100	768
Alexander, Gideon. (See Alexander, Tony, assignor.)						
Alexander, Hamill M., Marietta, Pa. Vaccine-container	710,234	Sept. 30	4350	977	100	2039
Alexander, James G., Fairfield, Iowa. Brake	704,229	July 8	1614	349	100	337
Alexander, Jesse, assignor of one-half to M. S. Skidmore, Brooklyn, N. Y. Register	707,751	Aug. 26	3405	768	100	1767
Alexander, John L. and W. E., Hazelrigg, assignors of one-half to E. T. Kenney, Indianapolis, Ind. Corn-husking and fodder-shredding machine	705,311	July 22	3791	822 / 828	100	817
Alexander, John S., New York, N. Y. Means for certifying checks or other instruments	707,891	Aug. 26	3693	830	100	1923
Alexander-Katz, Richard, Berlin, Germany. Separator for electric accumulator-plates	705,630	July 29	4484	973	100	907
Alexander, Tony, Bismarck, Miss., assignor of one-half to G. Alexander, New Orleans, La. Log or freight dumping apparatus	707,951	Aug. 26	3798	852	100	1944
Alexander, William E. (See Alexander, John L. and W. E.)						
Alger, Charles M., Hannibal, Mo. Machine for wiring wood slats	708,111	Sept. 2	199	47, 48	100	2022
Allen, Alonzo W. (See Schlachter and Allen.)						
Allen, Arthur S., Boston, Mass. Tympan-surface for printing-presses	705,011	July 22	3154	681	100	689
Allen, Arthur S., Boston, Mass. Bed for tympan-surfaces	705,012	July 22	3156	681	100	689
Allen, Boyd W., Boston, Mass. Wall-plate or shield for electric wires	704,433	July 8	1962	426	100	413
Allen, Boyd W., Boston, Mass. Junction-box for electric wires in buildings	704,434	July 8	1963	427	100	413
Allen, Boyd W., Boston, Mass. Junction-box for electric wires in buildings	704,435	July 8	1964	427	100	413
Allen, Charles C., Kansas City, Mo. Polishing-strip	708,000	Sept. 2	1	1	100	1981
Allen, David H. (See Gamble, William H., assignor.)						
Allen, Edward B., Elizabeth, N. J., assignor to Singer Manufacturing Company. Thread-controlling device for sewing-machines	709,456	Sept. 23	2823	634	100	2607
Allen, Edward I., Beaumont, Tex. Non-refillable bottle	707,068	Aug. 19	2047	457	100	1569
Allen, Everett P., assignor to R. M. Wilbur, Chicago, Ill. Air and vacuum valve	703,886	July 1	987	205	100	188
Allen, Frederick E., Boston, and R. H. Danforth, Salem, assignors to Improvements Manufacturing Company, Boston, Mass. Steering mechanism	705,992	July 29	4953	1078	100	1033
Allen, George G., Malden, Mass., assignor to Stenotype Company, Portland, Me. Keyboard	706,002	Aug. 5	1	1	100	1117
Allen, Herbert B., assignor to J. D. Spreckels, San Francisco, Cal. Printing-press	706,709	Aug. 12	1300	303 / 304	100	1410
Allen, Herbert F. L., assignor to American Military Equipment Co., Washington, D. C. Combined ammunition and water carrier and litter	704,426	July 8	1965	427 / 428	100	413
Allen, Herbert F. L., assignor to American Military Equipment Co., Washington, D. C. Portable ammunition and water carrier and litter	704,427	July 8	1966	428	100	414
Allen, Herbert H., Chicago, Ill. Attachment for plows or the like	706,875	Aug. 12	1695	379 / 380	100	1480
Allen, James B., Detroit, Mich., assignor to J. H. Bevington, Cleveland, Ohio. Magazine torpedo-cane	709,457	Sept. 23	2824	634	100	2607
Allen, James G., assignor of one-half to J. C. Zulauf, Ubly, Mich. Mirror-hanging	710,295	Sept. 30	4351	978	100	2040
Allen, John C., Gloversville, N. Y. Glove	707,069	Aug. 19	2048	457	100	1569
Allen, John D., Atlanta, Ga. File	706,630	Aug. 12	1219	270	100	1378
Allen, John F., assignor of one-half to F. B. Finney, Portsmouth, Ohio. Lock	708,514	July 1	252	58	100	51
Allen, John S., Los Angeles, Cal. Insulating support for metallic circuits	705,811	July 29	4812	1044	100	1033
Allen, Joseph C., Plainfield, assignor to Consolidated Fruit Jar Company, New Brunswick, N. J. Receptacle for tooth-powder or other material	706,710	Aug. 12	1362	304	100	1410
Allen, Le Roy B., Norwalk, Ohio. Harness track-saddle	708,514	Sept. 9	931	211	100	2122
Allen, William D. (See Curlett, Lewis K., assignor.)						
Allen, William Y., Newton, Mass. Device for grinding tapers	704,498	July 8	1960	426	100	414
Allenou, Charles, Sevres, France. Apparatus for discharging inflammable or other liquids from storage-tanks at the outbreak of fire	710,091	Sept. 30	4067	917 / 918	100	2878

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Allerton, Francis M. (See Cribbs and Allerton.)						
Allis-Chalmers Company. (See Gates, Albert J., assignor.)						
Allis-Chalmers Company. (See Luck, Gustave J., assignor.)						
Allis-Chalmers Company. (See Mather, Allan G., assignor.)						
Allis-Chalmers Company. (See Walton, John, assignor.)						
Allis, Thomas V., Bridgeport, Conn., assignor, by mesne assignments, to International Tin Plate Corporation. Compound for use in reducing metal sheets in packs	704,285	July 8	1718	------	100	361
Allis, Thomas V., Bridgeport, Conn., assignor, by mesne assignments, to International Tin Plate Corporation. Furnace for progressive metal-heating	704,286	July 8	1719	375	100	361
Allis, Thomas V., Bridgeport, Conn., assignor, by mesne assignments, to International Tin Plate Corporation. Producing metal sheets	704,287	July 8	1722	375	100	362
Allison, Benjamin A., McPherson, Kans. Invoice and balance sheet	708,291	Sept. 2	548	124	100	2008
Allison, Fletcher D., Chicago, Ill. Combined ladder and settee	703,533	July 1	465	106	100	91
Allison, James J., Rockfalls, Ill. Bottle-stopper	707,193	Aug. 19	2285	512	100	1621
Allison, Norris, Hendersonville, N. C. Tobacco-pipe	708,852	Sept. 9	1584	351	100	2318
Allston Foundry Company. (See Ansley, John D., assignor.)						
Alsop, William, Newcastle, near Sydney, New South Wales, Australia. Rotary engine	706,373	Aug. 5	733	160	100	1264
Altmann, Charles P., Lyons-Vaise, France. Steam-boiler	703,362	July 1	1	1	100	8
Alton, Lee T., Brooklyn, N. Y. Incandescent gas-lamp	708,978	July 8	1127	244	100	239
Aluminum-Cork Seal Company. (See Gay, Herman T., assignor.)						
Alves, John, London, England. Smoke-consuming appliance for furnaces	707,534	Aug. 26	2926	662	100	1770
Alvisi, Ugo, Rome, Italy. Detonating compound	707,493	Aug. 19	2853	------	100	1734
American Amalgamating Company. (See Knappe, Paul A., assignor.)						
American Automatic Change Maker Company. (See Butcher and Hartwig, assignors.)						
American Automatic Photograph Company. (See Pifer, George N., assignor.)						
American Bell Telephone Company. (See Bullard, Albert M., assignor.)						
American Bell Telephone Company. (See Bullard and Rorty, assignors.)						
American Can Company. (See Hodgson, John G., assignor.)						
American Can Company. (See Hodgson and Norton, assignors.)						
American Can Company. (See Hodgson and Taliaferro, assignors.)						
American Can Company. (See Larkin, Bernard H., assignor.)						
American Can Company. (See Lee, John, assignor.)						
American Can Company. (See Norton, Horatio N., assignor.)						
American Clay-Working Machinery Company. (See Cunningham, William R., assignor.)						
American Concrete-Steel Company. (See Simpson and Shoemaker, assignors.)						
American Construction Company. (See Green, Edward A., assignor.)						
American Cotton Oil Company. (See Phillips, Cecil O., assignor.)						
American Electric Company. (See Miller, Albert W. W., assignor.)						
American Electric Telephone Company. (See Clausen, Henry P., assignor.)						
American Encaustic Tiling Company. (See Alcan, Felix, assignor.)						
American Folding Box Company. (See Klein, Moses, assignor.)						
American Hat-Sweat Sewing Machine Company. (See O'Donnell, Edmond G., assignor.)						
American Key Can Company. (See McColl, Francis P., assignor.)						
American Match Machine Company. (See Calkins, Almon H., assignor.)						
American Mechanical Cashier Company. (See Dement and Hull, assignors.)						
American Mechanical Cashier Company. (See Hull, Foster J., assignor.)						
American Military Equipment Co. (See Allen, Herbert F. L., assignor.)						
American Mining and Metal Extraction Company. (See Dolbear, Clinton E., assignor.)						
American Nut and Bolt Fastener Company. (See Bartley, Milton, assignor.) (Reissue.)						
American Otophone Company. (See Mellett, Lemuel, assignor.)						
American Patent Kid Company. (See McKay, Harry C., assignor.)						
American Pneumatic Service Company. (See Cowley, James T., assignor.)						
American Pulley Company. (See Brinley, Charles A., assignor.)						
American Road Machine Co. (See Philips, Edwin S., assignor.)						
American Soda Fountain Company. (See Fleeche, Hall, and Doherty, assignors.)						
American Soda Fountain Company. (See Lippincott, Fisher H., assignor.)						
American Steel-Body Double-Bolster Co. (See Floyd, George G., assignor.)						
American Steel-Body Double-Bolster Co. (See McAdam, John V., assignor.)						
American Telephone and Telegraph Company. (See Fell, John M., assignor.)						
American Telephone and Telegraph Company. (See Lee and Colpitts, assignors.)						
American Telephone and Telegraph Company. (See Lyons, Joseph, assignor.)						
American Tin Plate Company. (See Phillips, James R., assignor.)						
American Tobacco Company. (See Tyberg, Olof, assignor.)						
American Tobacco Company. (See Williams, George M., assignor.)						
American Tool Works Company. (See Mill, Anton, assignor.)						
American Wireless Telephone & Telegraph Company. (See Shoemaker, Harry, assignor.)						
American Wireless Telephone and Telegraph Company. (See Shoemaker and Pickard, assignors.)						
American Wireless Telephone and Telegraph Company *et al.* (See Ehret, Cornelius D., assignor.)						
Ames, John F., Portland, Oreg. Bag-making machine	709,451	Sept. 16	2704	629 / 630	100	2589
Ampere Electro-Chemical Company. (See Jacobs, Charles B., assignor.)						
Amwake, Harry S., Camden, N. J., assignor to C. H. Graham and G. D. Bouton, Philadelphia, Pa. Electrochemical generator. (Reissue)	12,019	Aug. 12	2043	456	100	1551
Amwake, Harry S., Camden, N. J., assignor to C. H. Graham and G. D. Bouton, Philadelphia, Pa. Electrochemical generator	707,372	Aug. 19	2514	590	100	1689
Anderegg, Christian, Indianapolis, Ind. Wheel-hub	706,008	Aug. 5	3	1	100	1117
Anderegg, David. (See Pillmore and Anderegg.)						
Anderson, Albert, Brooklyn, N. Y., assignor to R. H. McClelland and L. E. Sawrie, Nashville, Tenn. Coin-holder	704,731	July 15	2529	547	100	844
Anderson, Alexander P., New York, N. Y. Treating starch material	707,892	Aug. 26	3695	830	100	1924
Anderson, Anders G., assignor to E. Converse, Worcester, Mass. Bicycle	704,288	July 8	1723	376	100	362
Anderson, Andreas, and M. B. S. B. Packness, Denver, Colo. Vaginal injector	705,871	July 22	3939	853	100	846
Anderson, Andrew, Medo, Minn. Draft-equalizer	707,893	Aug. 26	3698	830	100	1924
Anderson, Andrew P., assignor of one-half to J. Dahlgren, New York, N. Y. Electric switch	708,515	July 1	254	59	100	51
Anderson, Arthur L., Grundy Center, Iowa. Gripper for platen printing-presses	706,876	Aug. 12	1696	380	100	1481
Anderson-Barngrover Mfg. Co. (See Anderson, William C., assignor.)						
Anderson, Beaver B., Cleveland, Ohio. Coin-case	709,656	Sept. 23	3198	714	100	2685
Anderson, David W., Richmond, Va. Combined brick and tile for walls, &c	707,815	Aug. 26	3539	799	100	1893
Anderson, Edward L., assignor to J. A. Gilliam, trustee, St. Louis, Mo. Chemical generator of electricity	706,631	Aug. 12	1219	270	100	1378
Anderson, Frank E., New York, N. Y. Means for cashing sales accounts	704,168	July 8	1508	329 / 328	100	317
Anderson, Gustaf B., Chicago, Ill. Pneumatic motor	706,004	Aug. 5	3	1, 2	100	1117

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Anderson, Hugh, assignor of one-half to C. C. Lawson, Wellsville, Ohio. Nut-lock	705,812	July 29	4812	1044	100	1084
Anderson, Jacob S., Brooklyn, N. Y. Station-indicator	709,293	Sept. 16	9475	557 / 558	100	2589
Anderson, John C. (See Sacket, Edward A., assignor.)						
Anderson, John E., assignor of one-half to U. J. Beumee, Muskegon, Mich. Type-writer cabinet	705,509	July 22	4190	911	100	805
Anderson, Louis F., Quincy, Ill. Trousers-former	704,811	July 15	2708	584 / 585	100	578
Anderson, O. E., *et al.* (See Dahlén, Andrew, assignor.)	706,791	Aug. 12	1539	845	100	1447
Anderson, William C., Detroit, Mich. Seat for water-closets	708,887	July 1	941	205 / 206	100	189
Anderson, William C., assignor, by mesne assignments, to Anderson-Barngrover Mfg. Co., San José, Cal. Fruit-grader	709,857	Sept. 30	3585	808	100	2779
Anderson, William G., assignor of one-half to P. Bigelow, Boston, Mass. Saw	708,112	Sept. 2	205	49	100	2024
Andersson, Hjalmar E., Stockholm, Sweden. Electric clock	706,711	Aug. 12	1363	804 / 805	100	1411
Andres, George S., assignor to Octomobile Company, San Francisco, Cal. Multiple-cylinder explosive-engine	705,191	July 22	3516	783	100	763
Andrew, Alexander G., Calumet, Mich. Furnace-grate						
Andrews, Curt C. (See Fisher, Charles A., assignor.)	704,169	July 8	1510	823 / 824	100	317
Andrews, Frank O., Christchurch, New Zealand. Potato-digging machine	707,894	Aug. 26	3700	831	100	1924
Andrews, George E., Providence, R. I. Automatic cut-out	705,372	July 22	3941	854	100	846
Androvette, George E., Brooklyn, N. Y. Prism-glass for skylights	704,469	July 8	2069	446	100	433
Angell, John, St. Louis, Mo. Purge-feeding apparatus for steam plants						
Angers, Joseph N. (See Walsh and Angers.)						
Annable, Warren W., assignor to Appliance Company, Limited, Grand Rapids, Mich. Trolley-wheel	708,451	Sept. 2	810	185	100	2146
Ansley, John D., Everett, Mass., assignor, by mesne assignments, to Alliston Foundry Company. Sash-weight	705,902	July 29	5131	1119	100	1099
Anthony, Mark, New York, N. Y., assignor, by mesne assignments, to Diamond Match Company. Printing-press	705,631	July 29	4485	973 / 974	100	908
Anthony & Scovill Company. (See Mathein, Josef, assignor.)						
Anton, Paul R., Topeka, Kans., assignor to Topeka Tent and Awning Company. Foldable stool	705,883	July 29	4955	1078	100	1068
Apelt, Rudolph H., Boston, Mass. Trolley-wheel	706,211	Aug. 5	400	85	100	1198
Appel, Daniel, Cleveland, Ohio, assignor to Union Paper Bag Machine Company, Philadelphia, Pa. Making paper bags	708,001	Sept. 2	1	1	100	1981
Appert Glass Company. (See Appert, Leon, assignor.)						
Appert, Leon, Paris, France, assignor to Appert Glass Company. Machine for making glass plates	710,032	Sept. 30	3949	891	100	2853
Appleby, James P., Hopkins, Minn. Molding-machine	707,535	Aug. 26	2927	662 / 663	100	1770
Appleby, John F., Chicago, Ill. Automatic grain-binder	708,002	Sept. 2	8	1, 2	100	1981
Appliance Company. (See Annable, Warren W., assignor.)	708,192	Sept. 2	363	86	100	2055
Arbenz, Frederick A., Hoboken, N. J. Necktie	708,751	Sept. 9	1362	810	100	2271
Archer, Capelle H., assignor of one-half to H. S. Winston, Richmond, Va. Dado-cutter	706,373	Aug. 5	737	160	100	1205
Archer, George E., Nutley, N. J. Time damper mechanism	709,132	Sept. 16	2155	494	100	2454
Ardizone, Thomas, assignor to J. Murphy, Brooklyn, N. Y. Prepared sealing-wax	709,952	Sept. 30	3795	856	100	2821
Arendell, Andrew J., Sparta, Tenn. Envelop	708,853	Sept. 9	1596	361 / 362	100	2318
Argles, Augustus C., Wimbledon, England. Exhibiting device						
Armour & Company. (See Kirby, Thomas B., assignor.)						
Armour & Company. (See Sharp, William E., assignor.)						
Armstrong, Albert H., Schenectady, N. Y., assignor to General Electric Company. Armature-winding for induction-motors	706,208	Aug. 12	1007	221	100	1335
Armstrong, Albert H., Schenectady, N. Y., assignor to General Electric Company. Armature-winding for induction-motors	706,632	Aug. 12	1290	271	100	1379
Armstrong Bros. Tool Co. (See Welter and Armstrong, assignors.)						
Armstrong, Charles C., Columbus, Ohio. Sealing attachment	704,498	July 15	2112	457	100	457
Armstrong, Ernest P., Colorado Springs, Colo. Sash-lock	708,611	Sept. 9	1097	246	100	2214
Armstrong, John. (See Welter and Armstrong.)						
Armstrong, John, London, England. Furnace or forge	705,312	July 22	3797	828	100	818
Armstrong, William B., San Francisco, Cal. Electric log-register	704,691	July 1	593	131 / 132	100	117
Arndt, Max, Aix-la-Chapelle, Germany. Instrument for indicating the pressure of gas	708,758	July 1	698	154	100	139
Arnn, McKenzie, Bristol, Va. Mineral compound	708,516	July 1	255		100	51
Arnold, David B., Terra Haute, Ind. Drive-gear for traction-engines	705,894	July 29	4957	1078 / 1079	100	1069
Arnold, James A., Allegheny, Pa. Apparatus for forming glass articles	705,813	July 29	4813	1045 / 1046	100	1034
Arnold, George W., and W. M. Cranston, assignors of one-third to J. E. Lutz, Philadelphia, Pa. Cigar-bunch-rolling machine	707,536	Aug. 26	2929	663	100	1770
Arnold, Wilber E., Madisonville, Ohio. Safe	705,877	Aug. 12	1599	380	100	1481
Arnold, William H., Oakland, Cal. Actuating mechanism for awnings	705,005	Aug. 5	5	2	100	1117
Arnot, Cephas W., Yysilanti, Mich. Dish-washing machine	704,494	July 15	2114	457 / 458	100	457
Arnott, Alfred A., assignor to Arnott Light and Burner Company, New Haven, Conn. Hydrocarbon-burner	706,486	Aug. 5	908	212	100	1312
Arnott Light and Burner Company. (See Arnott, Alfred A., assignor.)						
Arper, George W., Oakland, Cal. Oil-burner	708,691	Sept. 9	1246	286	100	2245
Arter, Arthur M., Hammersmith, England. Electric-arc lamp	704,495	July 15	2117	458	100	459
Arthur, Nicol S., Glasgow, and J. S. Binnie, Kilmalcolm, Scotland. Mechanical stoker	710,171	Sept. 30	4231	954 / 955	100	2012
Arthurs, Biddle, Pittsburg, Pa. Measuring and emptying device for bottles	709,858	Sept. 30	3586	808	100	2779
Asbell, Sylvester J., Paterson, N. J. Tank-valve	704,230	July 8	1615	349	100	347
Ashcroft, Robert H., Dunedin, New Zealand. Filling or refilling fountain-pens	709,731	Sept. 23	3329	749	100	2718
Ashley, Frank M., Brooklyn, N. Y. Water-gage	705,192	July 22	3518	763	100	763
Ashton, George T., and J. F. Bainter, Pittsburg, Pa. Adjustable window-shade and curtain-pole holder	705,548	July 29	4341	989	100	999
Ashton, Orrell, Lawrence, Mass. Coin-controlled vending apparatus	706,193	Sept. 2	363	86, 87	100	2056
Aspinwall, Lewis A., assignor to Aspinwall Manufacturing Company, Jackson, Mich. Pea-sheller	709,657	Sept. 23	3300	714 / 715	100	2685
Aspinwall, Lewis A., assignor to Aspinwall Manufacturing Company, Jackson, Mich. Potato-sorter	709,658	Sept. 23	3300	715 / 716	100	2686
Aspinwall, Lewis A., assignor to Aspinwall Manufacturing Company, Jackson, Mich. Potato-digger	709,659	Sept. 23	3300	716	100	2687

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Aspinwall, Lewis A., assignor to Aspinwall Manufacturing Company, Jackson, Mich. Potato-planter	709,660	Sept. 23	3210	716	100	2688
Aspinwall Manufacturing Company. (See Aspinwall, Lewis A., assignor.)						
Assau, William F., *et al.* (See Scheele, Walter T., assignor.)	709,661	Sept. 23	3212	717	100	2688
Assorati, Antenor, New York, N. Y. Game-board	705,532	July 29	4487	974	100	988
Astarita, Raffaello, New York, N. Y. Toy game	706,878	Aug. 12	1700	380	100	1482
Athens Foundry & Machine Co. (See Jennings, Ebenezer S., assignor.)						
Atkinson, Henry C., Louisville, Ky. Door signal or alarm	706,146	Aug. 5	282	59	100	1175
Atkinson, Llewelyn B., London, England. Mechanism for recording or registering the maximum movement of any mechanism						
Atkinson & Mentzer. (See Mentzer, John P., assignor.)						
Atlantic Gulf and Pacific Company. (See Perry, Raymond A., assignor.)						
Atlas Match Company. (See Hutchinson, William F., assignor.)						
Atmospheric Products Company. (See Bradley and Lovejoy, assignors.)						
Atwater, S. L., trustee. (See Harris, Charles B., assignor.)						
Atwater, William C. (See Taylor and Atwater.)	708,292	Sept. 2	550	125	100	2008
Atwood, Leonard, Philadelphia, Pa. Locomotive	710,296	Sept. 30	4351	978	100	2940
Audley, Francis H., New York, N. Y. Holder for policemen's clubs						
Auerbach, Louis. (See Oppenheimer, David, assignor.)	704,289	July 8	1734	376	100	302
Augir, Wayland B., Deerharbor, Wash. Bell	706,792	Aug. 12	1540	345	100	1447
August, Edward A., Chicago, Ill. Attachment for beer-pumps						
Auld, Hugh R., Boston, assignor, by mesne assignments, of one-half to J. J. McGlinchy, Chelsea, Mass. Rubber-tire setter	704,953	July 15	3025	649	100	648
Aultman Company. (See Wright, Edgar A., assignor.)						
Ausfuehrungen fuer Eisenbahn Oberbau, Abth. Stossfangschiene, Siegm. Eppenstein. (See Barschall, Max, assignor.)						
Austin Cartridge Company. (See Morris, William L., assignor.)						
Austin and Craw. (See Craw, Frank C., assignor.)						
Austin, Frederick C. (See Judd, William J., assignor.)						
Austin, Frederick C. (See Morenus, William H., assignor.)						
Austin, Permillia J. (See Austin, William J., assignor.)						
Austin, William J., Milwaukee, Wis., assignor to P. J. Austin. Railway-rail joint	708,979	July 8	1129	244	100	230
Austrian, Joseph E. (See Harris, Charles R., assignor.)						
Austwick, Henry L., Chicago, Ill. Tobacco-pipe	705,193	July 22	3519	763	100	763
Automatic Boiler Feed-Water Regulator Co. (See Cummings, Charles, assignor.)						
Automatic Railway Mail Pouch Delivery Company. (See Slagle, Robert L., assignor.)						
Automatic Scale Company. (See Sherwood, Harry B., assignor.)						
Automatic Street Indicator Company. (See Morgan, Charles E., assignor.)						
Automatic Target Machine Company. (See McCullough, John L., assignor.)						
Automatic Vacuum Canning Company. (See Hodgson, John G., assignor.)						
Avery Drill Company. (See Avery, Russell, assignor.)						
Avery, Edward R., assignor of one-half to C. E. Morris and P. H. Gohn, Pony, Mont. Rail-joint for railways	707,494	Aug. 19	2933	640	100	1734
Avery, Frank, Orin, Wyo. Check-perforating machine	709,458	Sept. 23	3226	694	100	2607
Avery, Henry W., Cleveland, Ohio. Non-refillable receptacle	706,712	Aug. 12	1367	305	100	1411
Avery, Henry W., assignor to Avery Stamping Company, Cleveland, Ohio. Metallic railway-tie	710,172	Sept. 30	4234	955	100	2913
Avery Manufacturing Company. (See Bartholomew, John B., assignor.)						
Avery, Mary L., assignor to M. Crowell, Oakland, Cal. Dress-chart	705,194	July 22	3520	764	100	763
Avery, Russell, Sausalito, assignor to Avery Drill Company, San Francisco, Cal. Rock-drill	709,191	Sept. 16	2275	517	100	2478
Avery Stamping Company. (See Avery, Henry W., assignor.)						
Avery Wall Paper Machine Company. (See Sproot, Jacob P., assignor.)						
Avril, Paul V., assignor to himself and La Société Marinier, Navoit et Jeanson, Paris, France. Electromagnetic device for controlling the rotation of shafts	710,311	Sept. 30	4476	1010	100	2905
Aydelotte, William E. (See Hammond, John E., assignor.)						
Ayer, Walter R., Raccourci, La. Whiffletree-clip	706,879	Aug. 12	1701	381	100	1482
Aylmer, Henry, Sherbrooke, Canada. Refrigerator	710,179	Sept. 30	4235	955	100	2913
Aylworth, Daniel W., South Haven, Mich. Wire-tie	708,612	Sept. 9	1098	247	100	2214
Ayvad, Hachig A., Hoboken, N. J. Blank for life-preservers	708,363	July 1	2	1	100	3
B. F. Avery & Sons. (See Holsclaw, Wilford H., assignor.)						
Babcock, Henry C., Jr., *et al.* (See Lurch, Edward, assignor.) (Reissue.)						
Babcock & Wilcox Company. (See Rosenthal, James H., assignor.)						
Bachmann, John F., Greensburg, Pa. Tool-holder	709,953	Sept. 30	3796	856	100	2821
Bachrach, Isaac, *et al.* (See Howe, John C., assignor.)						
Back, John R., assignor to F. E. Reed Company, Worcester, Mass. Tool-post	709,693	Sept. 23	3271	732	100	2700
Bacon Air Lift Company. (See Young and Shaw, assignors.)						
Bacon, Byron R. (See Duncan, Max E., assignor.)						
Bacon, Byron R., South Orange, N. J. Key-guard	706,005	Aug. 5	7	2	100	1118
Bacon, Henry S., Worcester, Mass. Location-tracer	706,713	Aug. 12	1369	305	100	1412
Badendieck, John A., *et al.* (See Kolf, Max, assignor.)						
Badger, Arthur C., Boston, Mass. Mail-chute	708,950	Sept. 9	1768	406	100	2355
Badische Anilin & Soda Fabrik. (See Bally, Oscar, assignor.)						
Badische Anilin and Soda Fabrik. (See Julius, Paul, assignor.)						
Baechler, Carl, Zurich, Switzerland. Filtering apparatus	707,537	Aug. 26	2930	668	100	1771
Baer, Abraham L., Milwaukee, Wis. Fountain-holder for pens	704,691	July 15	2455	580	100	598
Baeuerle, Jerome A., Kalamazoo, Mich. Oil-can	705,018	July 22	3157	681	100	689
Bahr, Ewald E. (See Hodge, John W. K., assignor.)						
Bahr, Jacob G., Brooklyn, N. Y. Covering for demijohns	705,895	July 29	4959	1079	100	1063
Bahrs, George H. (See Goodrich, Alfred K., assignor.)						
Bailer, Otto A., Philadelphia, Pa. Producing a composition of matter to be used as a substitute for rubber	708,008	Sept. 2	7	------	100	1982
Bailey, Charles C. (See Hurd, Frederick A., assignor.)						
Bailey, Charles O., Ogdensburg, N. Y. Eyeglasses or spectacles	707,046	Aug. 12	1969	446	100	1540
Bailey, David M., Caldwell, Kans. Wireworking-tool	708,618	Sept. 9	1099	247	100	2215
Bailey, Edwin W. M., Amesbury, Mass. Mounting for whiffletrees	708,004	Sept. 2	8	2	100	1982
Bailey, Frederick O., Portland, Me. Adjustable hub-runner	704,290	July 8	1725	376	100	368
Bailey, Henry F., assignor of one-half to L. E. Steele and H. E. Sims, Denver, Colo. Non-refillable bottle	708,981	Sept. 16	1942	494	100	2289
Bailey, Howard S., and W. E. Wild, Denver, Colo. Ore-concentrator	706,708	Aug. 12	1542	345 / 346	100	1447
Bailey, John R., assignor to M. Lauphsimer, Baltimore, Md. Steam-boiler furnace	707,495	Aug. 19	2885	640 / 641	100	1735
Bailey, John R., assignor to M. Lauphsimer, Baltimore, Md. Steam-boiler furnace	707,496	Aug. 19	2886	641	100	1735
Bailey, John W., Jersey City, N. J. Apparatus for the combustion of finely-divided solid fuel	710,033	Sept. 30	3950	891	100	2854

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Bailey, John W., Jersey City, N. J., assignor to General Lead Company. Apparatus for producing white lead	709,954	Sept. 30	3797	857	100	2821
Bailey, John W., Jersey City, N. J., assignor to Union Lead and Oil Company. Producing lead carbonate	709,955	Sept. 30	3803	857 858	100	2823
Bailey, John W., Jersey City, N. J., assignor to Union Lead and Oil Company. Apparatus for producing white lead	709,956	Sept. 30	3810	858	100	2824
Bailey, John W., Jersey City, N. J., assignor to Union Lead and Oil Company. Producing white lead	709,957	Sept. 30	3814	859	100	2825
Bailey, Samuel R., Amesbury, Mass. Shaft-shackle for vehicles	708,864	July 1	3	1	100	3
Bailey, Samuel R., Amesbury, Mass. Shaft-shackle for vehicles	708,865	July 1	4	2	100	3
Bailey, Thomas, New York, N. Y. Fireproof building	704,771	July 15	2907	564	100	559
Bailey, William, *et al.* (See Brooker, Albert, assignor.)						
Baillargeon, Octav, Cohoes, N. Y. Nut-lock	706,218	Aug. 5	401	66	100	1198
Bainter, Jesse F. (See Ashton and Bainter.)						
Baird, Hugh, Glasgow, Scotland. Apparatus for cleaning windows	708,854	Sept. 9	1867	362	100	2319
Baker, Albert E., *et al.* (See Henry, Curtis B., assignor.)						
Baker, Franklin, Jr., and E. J. Fritsch, Philadelphia, Pa.; said Fritsch assignor to said Baker. Machine for cutting cocoanuts	709,811	Sept. 23	3511	791 792	100	2749
Baker, Fred L. (See Carpenter and Baker.)						
Baker, George S., London, England. Wheel-gear	707,672	Aug. 26	3814	721	100	1899
Baker, Howard A., Clarksville, Tex. Sash-lock	708,624	July 1	467	106	100	92
Baker, James, Carroll, Nebr. Shovel-support	709,198	Sept. 16	2279	518	100	2479
Baker, John, Meacham, Ill. Rim and felly for rubber vehicle-tires	707,586	Aug. 26	2981	663 664	100	1771
Baker, Riley. (See Daily and Baker.)						
Baker, Robert L., Somerville, Mass. Cover-lifting device for pails, &c	708,288	Sept. 2	551	125	100	2098
Baker, Thomas K., Minneapolis, Minn. Coffee-maker	710,133	Sept. 30	4157	936	100	2807
Baker, Thomas K., Minneapolis, Minn. Coffee-maker	710,135	Sept. 30	4158	937	100	2807
Baker, Walter C., Cleveland, Ohio. Motor-vehicle	709,859	Sept. 30	3586	808	100	2779
Baker, Willard D., Rogers, Ark., assignor to E. B. Harrington, trustee, Kansas City, Mo. Preserving food products	709,631	Sept. 16	2750	619	100	2580
Baker, Willard D., Rogers, Ark., assignor to E. B. Harrington, trustee, Kansas City, Mo. Preserving food products	709,632	Sept. 16	275	619	100	2580
Baldwin, Charles B., Brooklyn, N. Y. Box-covering machine	708,515	Sept. 9	932	211 212	100	2182
Baldwin, Charles L., and O. A. Green; said Baldwin assignor to M. E. Baldwin, New York, N. Y. Elevator	709,732	Sept. 23	3329	749 780	100	2713
Baldwin, Eugene N., and I. M. Schellinger, Royersford, Pa. Glass-ladle	708,113	Sept. 2	209	80	100	2025
Baldwin, Frank S., Newark, N. J. Calculating-machine	706,375	Aug. 5	740	161 163	100	1266
Baldwin, Henry F. (See Mansfield, George L., assignor.)						
Baldwin, Horace O., deceased, New Brighton, Pa.; M. E. Baldwin, administratrix. Railjoint	706,374	Aug. 5	738	161	100	1266
Baldwin, Mary E., administratrix. (See Baldwin, Horace O.)						
Baldwin, Maud E. (See Baldwin and Green, assignors.)						
Baldwin, Miles C., assignor of one-half to T. R. Stevenson, Elmira, N. Y. Artificial leg	708,005	Sept. 2	10	2	100	1983
Baldwin, Richard D., assignor of one-half to H. H. Wright, Chicago, Ill. Brake-shoe-lubricating filler	706,147	Aug. 5	284	59	100	1175
Baldwin, Stephen G., Marion, Ind. Ink-well	709,133	Sept. 16	2156	494	100	2476
Baldwin, William F., Boston, Mass. Safety-pin	709,860	Sept. 30	3589	808	100	2779
Baldwin, William I., and E. A. Kline, Chagrin Falls, Ohio. Paper-bag machine	708,635	July 1	468	107	100	92
Ball, Farlen F., Sonora, Cal. Cuspidor-rack	708,234	Sept. 2	558	125	100	2094
Ball, Henry P. (See Leonard and Ball.)						
Ball, Henry P., Brooklyn, assignor, by mesne assignments, to H. W. Leonard, Bronxville, N. Y. Electric rheostat or heater	707,194	Aug. 19	2286	512	100	1621
Ball, Henry P., New York, N. Y., assignor to General Incandescent Arc Light Company. Electric switch	708,006	Sept. 2	11	3	100	1983
Ball, Henry P., New York, N. Y., assignor to General Incandescent Arc Light Company. Time limit device for circuit-breakers	708,007	Sept. 2	13	3	100	1983
Ball, Henry P., New York, N. Y., assignor to General Incandescent Arc Light Company. Reverse-current device for circuit-breakers	708,008	Sept. 2	15	4	100	1984
Ballantyne, Brigham, Sumpter, Oreg. Automatic circuit-breaker	704,496	July 15	2120	458	100	459
Ballard, Milton H., assignor to G. W. Emerson & Co., Lynn, Mass. Polishing-machine	705,550	July 29	4343	939	100	989
Ballbach, Louis, Detroit, Mich. Lacing-eye for shoes, &c	705,918	Aug. 5	402	86	100	1198
Balliet, Herbert S., Bethlehem, Pa. Signal device	705,549	July 29	4341	939	100	989
Ballou, Eugene H., Pawtucket, R. I. Leno-loom	708,951	Sept. 9	1764	407 408	100	2255
Bally, Oscar, Mannheim, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen, Germany. Anthracene dye and making same	707,673	Aug. 19	2516	.....	100	1680
Bally, Oscar, Mannheim, assignor to Badische Anilin & Soda Fabrik, Ludwigshafen, Germany. Anthracene dye and making same	707,674	Aug. 19	2518	.....	100	1680
Bamford, Charles F., Bedford, England. Wind-motor	705,195	July 22	3321	764	100	764
Bancroft, C. C. (See Myers, Ephraim, assignor.)						
Bane, James O., Waseca, Minn. Pump-spring connection	706,149	Aug. 5	287	60	100	1175
Bangley, Joseph L., assignor of one-half to T. J. Eley and H. W. Campbell, Suffolk, Va. Heating-stove	704,470	July 8	2061	447	100	433
Bangs, Edwin D., assignor of two-thirds to A. L. Rodee and E. Q. Bangs, Milwaukee, Wis. Horseshoe	708,982	Sept. 16	1844	494	100	2280
Bangs, Edwin Q., *et al.* (See Bangs, Edwin D., assignor.)						
Banish, William J., Sheldon, N. D. Windmill-controller	706,714	Aug. 12	1370	305	100	1412
Banks, Adam J., Norfolk, Va. Mirror-adjuster	704,497	July 15	2121	459	100	459
Banks, Charles J., Washington, England. Micrometer	706,148	Aug. 5	285	60	100	1175
Banks, Oscar H., *et al.* (See Punsett, Edward E., assignor.)						
Banta, Thomas W., New Richmond, Ind. Draft-equalizer	707,539	Aug. 26	2983	664	100	1771
Bany, Jacob, Sr., St. Henry, Ohio. Swing	706,014	July 22	3158	682	100	990
Baptiste, Louis. (See Laporte and Baptiste.)						
Barbee, James, Columbus, Ga. Extension stove-leg	706,377	Aug. 5	750	164	100	1267
Barber, Arthur J., Rochester, N. Y. Sleeve-holder	703,366	July 1	6	2	100	4
Barber, Charles W. L., Colorado Springs, Colo. Skirt-elevator	709,459	Sept. 23	3328	684	100	2668
Barber, George T. (See Pilling and Barber.)						
Barber, John C., St. Paul, Minn., assignor to Standard Car Truck Company, Chicago, Ill. Car-truck	708,865	Sept. 9	1588	308 309 310 311	100	2319
Barbier, Alexandre, Lyons, France. Apparatus for operating guided shuttles in looms	708,752	Sept. 9	1262	311	100	2279
Barclay, James, assignor to Deere and Mansur Company, Moline, Ill. Corn-planter	709,294	Sept. 16	2478	558	100	2722

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bard, James F., Wayne, Pa. Attachment for automatic circular-knitting machines	705,509	Aug. 12	1008	221 222	100	1335
Bardsley, Henry, Providence, R. I., assignor to Crompton & Knowles Loom Works, Worcester, Mass. Loom-shuttle	705,898	July 29	4965	1081	100	1065
Bargar, Byron L., Columbus, Ohio. Garment-supporter	707,070	Aug. 19	2049	457	100	1569
Barker, Ruben F., *et al.* (See Prescott, De Witt C., assignor.)						
Barker, Thomas. (See Hoyle and Barker.)						
Barker, William, *et al.* (See Tittle, Horatio S., assignor.)						
Bariet, Frédéric, St. Etienne, France, assignor to W. T. P. Hollingsworth, Paterson, N. J. Loom	706,376	Aug. 5	746	163 164	100	1267
Barley, Joseph C., York, Pa. Lifting-jack	706,880	Aug. 12	1702	381	100	1488
Barlow, Howard E., Providence, R. I., assignor of one-half to L. H. Schneider, Boston, Mass. Igniter for explosive-engines	710,312	Sept. 30	4479	1011	100	2966
Barmer Bank-Verein, Hinsberg, Fischer & Comp. (See Szczepanik, Jan, assignor.)						
Barnard, Charles A. (See Ewart, Philo C., assignor.)						
Barnard, Fayette B., Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J. Cash-register	707,195	Aug. 19	2290	512 513	100	1621
Barnard and Leas Manufacturing Company. (See Cornwall, John B., assignor.)						
Barnard, Percy A., *et al.* (See Bryant, John M., assignor.)						
Barnard, Thomas K., Hammersmith, London, England. Photochromoscopic apparatus	710,237	Sept. 30	4354	978 979	100	2940
Barnes, Clarence J., Liverpool, N. Y. Wrench	707,895	Aug. 26	3701	831	100	1925
Barnes, James W., Beaverton, Oreg. Feed-trough	705,896	July 29	4961	1079	100	1064
Barnes, John I., Blooming Grove, Tex. Animal-poke	708,367	July 1	7	2	100	4
Barnes, John W. (See Croker, Samuel H., assignor.)						
Barnes, Jonathan, R. W. and W. H. Kenyon, Accrington, England. Carpet-sweeper	708,614	Sept. 9	1101	247	100	2215
Barnett, Henry E., assignor to Nashawannuck Mfg. Co., East Hampton, Mass. Loop for suspender-ends	710,092	Sept. 30	4072	918	100	2878
Barnett, Mildred T., San Francisco, Cal. Abdominal supporting-bandage	706,715	Aug. 12	1371	306	100	1412
Barnhart, Robert L., Charleroi, Pa. Motor	705,897	July 29	4962	1080	100	1064
Barr, Frederick, New York, N. Y. Vegetable or meat cutter	706,881	Aug. 12	1705	381	100	1483
Barr, Henry M., Wadsworth, Nev. Tube-expander	707,292	Aug. 19	2472	554	100	1659
Barr, Mark, Broadheath, assignor to Linotype Company, Ltd., London, England. Pantograph engraving-machine	706,007	Aug. 5	8	2	100	1118
Barrath, Edward, assignor of two-thirds to J. J. Keller and A. Beitney, Philadelphia, Pa. Manufacturing artificial ice	704,772	July 15	2809	595	100	560
Barrath, Edward, assignor of two-thirds to J. J. Keller and A. Beitney, Philadelphia, Pa. Congealing body or plate for ice-making machines	705,015	July 22	3159	682	100	990
Barrath, Edward, assignor of two-thirds to A. Beitney and J. J. Keller, Philadelphia, Pa. Manufacturing plate-ice	706,510	Aug. 19	1011	222	100	1335
Barrath, Edward, assignor of two-thirds to A. Beitney and J. J. Keller, Philadelphia, Pa. Apparatus for manufacturing plate-ice	706,511	Aug. 12	1012	223 224	100	1336
Barrett, Albert, Kansas City, Mo. Coin alarm and registering apparatus	704,954	July 15	3026	650	100	648
Barrett, Charles R. (See Phillips, Elwood C., assignor.)						
Barrett, Glenn J. (See Fox and Barrett.)						
Barrick, Christopher C. (See Harris and Barrick.)						
Barron, Walter J., Brooklyn, assignor to Densmore Typewriter Company, Syracuse, N. Y. Type-writing machine	708,792	Sept. 9	1450	331 332	100	2291
Barrow, Jacob, Windfall, Ind. Sash-balance	706,008	Aug. 5	19	3	100	1118
Barry, Andrew L. (See Barry, Mack C., assignor.)						
Barry, Charles E., Schenectady, N. Y., assignor to General Electric Company. Train-control system	705,016	July 22	3161	682	100	990
Barry, Henry, San Francisco, Cal. Folding railway-velocipede	704,672	July 15	2426	534	100	522
Barry, Herbert A. L., Westminster, England. Means for raising or lowering materials	707,542	Aug. 26	2987	665	100	1772
Barry, Mack C., assignor of one-half to A. L. Barry, Atlanta, Ga. Crossing-gate	708,754	July 1	699	155	100	140
Barschall, Max, New York, N. Y., assignor to Ausfuehrungen fuer Eisenbahn Oberbau, Abth. Stossfangschiene, Siegm. Eppenstein, Berlin, Germany. Rail-joint	708,009	Sept. 2	17	4	100	1984
Barson, Fred, Sheffield, England. Door for railway-wagons or the like	709,198	Sept. 16	2281	518	100	2479
Bartcavitz, Victor, Chicago, Ill. Bottle	710,314	Sept. 30	4481	1011	100	2967
Bartel, William P., Waltham, Mass. Lacing-book	704,509	July 15	2384	504	100	501
Bartell, Reinhold, Philadelphia, Pa. Pocket	709,460	Sept. 23	2888	635 636	100	2608
Barth, Henry, Cincinnati, Ohio. Type-casting	708,010	Sept. 2	18	4	100	1985
Barthels, Philipp. (See Mehlfeld, Wilhelmine, assignor.)						
Bartholomew, J. B. (See Motsinger, Homer N., assignor.)						
Bartholomew, John B., assignor, by mesne assignments, to Avery Manufacturing Company, Peoria, Ill. Straw-stacker	706,214	Aug. 5	403	86	100	1199
Bartholomew, William S., Wyncote, Pa., assignor to Adams & Westlake Company, of Illinois. Knob attachment	707,375	Aug. 19	2619	590	100	1689
Bartlett, John, Brooklyn, N. Y. Overshoe for horses	708,988	Sept. 16	1845	494	100	2280
Bartley, Milton, Polk, assignor to American Nut and Bolt Fastener Company, Pittsburg, Pa. Nut-lock. (Reissue)	12,006	July 1	1120	242	100	222
Bartliff, Charles A., St. Louis, Mo. Treating air for forcing malt liquors from kegs	708,984	Sept. 16	1846	495	100	2280
Barto, Frank, Islip, N. Y. Automatic weighing-machine	704,429	July 8	1970	429 430	100	415
Barton, Delbert E., Racine, Wis. Self-locking springless hook	708,368	July 1	8	2, 3	100	4
Barton, Henry J., and A. C. La Bud, Oakbar, Cal. Mining-dredge	709,733	Sept. 23	3332	750 751	100	2713
Barton, Robert J., Philadelphia, Pa. Steam-generator	710,313	Sept. 30	4480	1011	100	2966
Bartusch, Oswald G., Brooklyn, assignor to New York Stencil Works, New York, N. Y. Consecutive-numbering apparatus	708,995	Sept. 2	554	126	100	2094
Baruch, Alphons, Hamburg, Germany. Printing-press	707,540	Aug. 26	2984	664	100	1771
Baruch, Alphons, Hamburg, Germany. Producing printed matter	707,541	Aug. 26	2986	665	100	1772
Barwis, Thomas S., Vancouver, Canada. Water-wheel	706,150	Aug. 5	288	60	100	1176
Baseman, Ernest. (See Heath and Baseman.)						
Bassett, George B., Buffalo, N. Y. Water-meter	708,996	Sept. 2	555	126	100	2094
Bassett, Norman C., Boston, Mass., assignor to General Electric Company. Belt-tightener	706,009	Aug. 5	11	3	100	1118
Bassitt, Melvin O., *et al.* (See Jewell, Danford W., assignor.)						
Bassoff, Morris, Brooklyn, N. Y. Stem-winding watch	708,985	Sept. 16	1847	495	100	2280
Bassoff, Morris, Brooklyn, N. Y. Stop-watch	708,986	Sept. 16	1849	495	100	2280
Bastle, John A., and H. H. Weber, Chicago, Ill. Egg-case	708,011	Sept. 2	19	4	100	1985
Batault, Emile, Geneva, Switzerland. Folding opera-glass	706,512	Aug. 12	1015	224	100	1336
Batcheller, Birney C., Philadelphia, Pa. System and apparatus for transmitting carriers in pneumatic-despatch tubes	706,991	Aug. 5	582	126 127	100	1223
Batcheller, Birney C., Philadelphia, Pa. Pneumatic time-lock for pneumatic-tube systems	707,071	Aug. 19	2030	457 458	100	1569

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Batcheller, Walter B., Chicago, Ill., assignor to G. G. Hunter, Des Moines, Iowa. Electric instrument for cautery	708,369	July 1	10	3	100	4
Batchelor, John A., and F. E. Hall, London, England. Feed mechanism for sewing-machines	705,633	July 29	4488	974	100	968
Bates, A. J. (See Estey, Walter S., assignor.)	707,544	Aug. 26	2942	666 667	100	1773
Bates, Adelmer M., Chicago, Ill. Machine for filling bags	704,498	July 15	2123	459	100	459
Bates, Alonza M., assignor of one-half to E. A. Bates, Chicago, Ill. Foot-rest and pedal extension for pianos						
Bates, E. A. (See Bates, Alonza M., assignor.)	707,196	Aug. 19	2293	513	100	1622
Bates, Francis C., assignor to Bates-Hawley Postal Box Signals Company, San Jose, Cal. Postal box and signal	704,430	July 8	1974	430	100	415
Bates, Frank H., assignor, by mesne assignments, to W. W. Bates, Philadelphia, Pa. Speed regulating and reversing device for power-transmitting mechanism	708,513	Aug. 12	1016	224	100	1336
Bates, Franklin P., assignor to Indianapolis Drop Forging Company, Indianapolis, Ind. Machine for making tubular tool-shanks	708,231	July 8	1616	350	100	338
Bates-Hawley Postal Box Signals Company. (See Bates, Francis C., assignor.)	707,293	Aug. 19	2473	535	100	1659
Bates, Lindon W., Chicago, Ill. Hydraulic dredge	709,861	Sept. 30	3529	800	100	2779
Bates, Lindon W., Chicago, Ill. Hydraulic dredge	708,892	Aug. 12	1707	382	100	1483
Bates, Lindon W., Chicago, Ill. Cutter-head for hydraulic dredgers	705,534	July 29	4490	974	100	969
Bates, Madison F., Lansing, Mich. Automobile						
Bates, Samuel, North Liberty, Ind. Wire-stretcher						
Bates, William W. (See Bates, Frank H., assignor.)	707,543	Aug. 26	2938	665 666	100	1772
Bath, John, Waltham, Mass. Grinding-machine	704,170	July 8	1512	324	100	218
Batte, Peter P., Petersburg, Va. Sawing-machine	706,487	Aug. 5	970	213	100	1312
Battenfeld, John N., Cleveland, Ohio, assignor to Cleveland Automatic Moulding Machine Company. Machine for molding						
Bauer & Black. (See Müller, Walter J., assignor.)	703,370	July 1	11	3	100	5
Bauer, Charles L., assignor to Warder, Bushnell & Glessner Co., Springfield, Ohio. Painting apparatus	705,814	July 29	4819	1046	100	1035
Bauer, John, New York, N. Y. Fender or guard for tramway-cars	706,151	Aug. 5	289	60, 61	100	1176
Bauermeister, William, assignor to Hayden-Corbett Chain Company, Columbus, Ohio. Power-hammer	705,551	July 29	4345	939	100	940
Bauers, Richard, Johnstown, Pa. Ice-cream can	709,862	Sept. 30	3591	810	100	2780
Baughman, Charles W., Baltimore, Md. Skirt-holder	708,987	Sept. 16	1851	425 426	100	2101
Baughman, Edson C., Topeka, Kans. Ice-cream dipper						
Baughman, Elia M. (See Baughman, Henry C., assignor.)	708,516	Sept. 9	941	213	100	2184
Baughman, Henry C., assignor to E. M. Baughman, Baltimore, Md. Drying apparatus	708,297	Sept. 2	558	126 127	100	2005
Baughman, Ves, Marysville, Ohio. Combination sheep-feeding rack and shearing-table	709,433	Sept. 16	2753	619	100	2581
Baughn, Samuel C., Jr., Comer, assignor to T. W. Cooper, Beechgrove, Ky. Nut-lock						
Baum, William C., *et al.* (See Garson, Julius H., assignor.)	703,517	July 1	256	59	100	51
Baumgarten, Albert, Freeport, Ill. Lemon-squeezer	703,518	July 1	258	59	100	52
Baumgarten, Albert, Freeport, Ill. Squeezer	705,017	July 22	3164	683 684	100	691
Baumgarten, Albert, Freeport, Ill. Coin-controlled apparatus	705,635	July 29	4491	975	100	969
Baumgartner, Ernest, Fairview, Pa. Device for promoting and controlling combustion	708,298	Sept. 2	558	127	100	2005
Bausch, Edward, assignor to Bausch & Lomb Optical Company, Rochester, N. Y. Knife for microtomes	709,353	Sept. 16	2398	542 543	100	2305
Bausch & Lomb Optical Company. (See Bausch, Edward, assignor.)						
Baush, William H., Springfield, Mass. Machine-tool construction						
Bazzell, Samuel K. S. (See Penn, John D., assignor.)						
Beach, Edward. (See Hartley, Rivers, and Beach.)						
Beach, Harry E., Newark, assignor, by mesne assignments, to G. H. Davis, Llewellyn Park, West Orange, N. J. Electrical self-playing musical instrument	709,295	Sept. 16	2483	559	100	2323
Beach, Harry E., Newark, assignor, by mesne assignments, to G. H. Davis, Llewellyn Park, West Orange, N. J. End-fastener for perforated music-sheets	709,296	Sept. 16	2484	559	100	2324
Beach, Milo D., Litchfield, Conn., assignor to Sharples Company, Chicago, Ill. Acid-mixer for facilitating the testing of milk and cream	709,461	Sept. 23	2831	636	100	2608
Beadle, George M., Shickshinny, Pa. Spinning-band	708,988	Sept. 16	1853	425	100	2391
Beal, Francis R., Northville, Mich. Refrigerator	705,510	July 22	4192	912	100	795
Beall, Thomas H. C., Cicero, Ind. Washing-machine	707,072	Aug. 19	2053	458 459	100	1570
Beam, Aron M., Denver, Colo. Ore-roasting apparatus	708,615	Sept. 9	1102	247	100	2215
Beam, William D., assignor to W. D. Elger, New York, N. Y. Overseaming and blind-stitching attachment for sewing-machines	704,291	July 8	1726	376	100	863
Beamond, Frank L., Sutton-Coldfield, England. Pneumatic tread or tire	706,293	Aug. 5	587	127	100	1234
Bearman, Thomas, Windsor, Canada. Ditching-machine	708,616	Sept. 9	1104	248	100	2216
Beaton, Allan J., Southington, Conn. Pipe-hanger	706,592	Aug. 5	595	127	100	1233
Beaton and Corbin Manufacturing Company. (See Muus, Arthur H., assignor.)	704,499	July 15	2134	459 460	100	459
Beattie, Peter, Leete Island, Conn. Torpedo-setting device						
Beatty, Albert H. C. (See Oblinger and Beatty.)	710,288	Sept. 30	4356	979	100	2941
Beatty, John D., Klondike, N. C. Indicator for sawmill-knees						
Beaudette, Wilfred A. (See Daigneault, Joseph C., assignor.)						
Beaudry, Joseph A. U. (See Ferguson and Beaudry.)						
Beauregard, Victor, assignor of one-half to C. S. Gooding, Boston, Mass. Door check and spring	703,371	July 1	13	4	100	5
Bechman, Henry F., assignor to Duplex Printing Press Company, Battlecreek, Mich. Multicolor-printing	708,012	Sept. 2	20	5	100	1995
Bechman, Henry F., assignor to Duplex Printing Press Company, Battlecreek, Mich. Machine for multicolor-printing	708,013	Sept. 2	22	5	100	1995
Becht, Albert L., Paris, France. Rotary motor	709,254	Sept. 16	2400	544	100	2506
Bechtold, August C., Brooklyn, N. Y. Dropping attachment for medicine-bottles	705,018	July 22	3167	684	100	692
Bechtold, William S., Newark, N. J. Hair-pin	709,255	Sept. 16	2402	544	100	2506
Beck, Ambrose J., Williamsport, Pa. Saw-filing device	705,899	July 29	4967	1081	100	1055
Beck, Arthur E., Earlswood, assignor to Perrins, Limited, Warrington, England. Rolling metal tubes or other hollow or solid bodies	709,958	Sept. 30	3618	859	100	2895
Beck, Fritz, New York, N. Y. Conveyer	708,294	Aug. 5	588	128	100	1234
Becker, Arnold, Seattle, Wash. Racket	708,519	July 1	250	59	100	52
Beckwith, Giles A., Waterford, and C. L. Lamphere, Norwich, Conn. Sash-weight	707,197	Aug. 19	2295	513	100	1622

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Beckwith, Harry H., Quincy, Mass. Box-toe	710,289	Sept. 30	4357	979	100	2941
Beddow, William C. (See Torrey, Earl G., assignor.)						
Bedworth, Arthur H. and J. A., Boston, Mass., assignors of one-third to F. S. Webster Company, Boston, Mass.; New York, N. Y.; Chicago, Ill., and London, England. Tool-holder	710,174	Sept. 30	4297	956	100	2913
Bedworth, John A. (See Bedworth, Arthur H. and J. A.)	708,856	Sept. 9	1591	364	100	2280
Bee, William E., assignor to Stephens, Adamson & Co., Aurora, Ill. Belt-tightener	706,893	Aug. 12	1708	382	100	1483
Beebe, Charles S., Racine, Wis. Wire fence	704,392	July 8	1728	377	100	368
Beebe, Dillon, Newark, N. J. Racking apparatus	706,894	Aug. 12	1711	382 383	100	1483
Beebe, Dillon, Newark, N. J. Valved bung and connection for beer-barrels	707,816	Aug. 26	3540	798	100	1894
Beebe, Walter H., New York, N. Y. Equalizer for cable-ropes	706,152	Aug. 5	290	61 62	100	1176
Beebe, William, assignor of twenty-one thirtieths to J. M. Doremus, Brooklyn, N. Y.) Permutation-lock	704,851	July 15	2765	597	100	592
Beecher, Henry W., Jr., Port Townsend, Wash. Electric lamp	705,815	July 29	4820	1046	100	1035
Beeching, George N., Summit, N. J. Barrel hook or handle	709,134	Sept. 16	2157	495	100	2455
Beeghly, Uriah F., Dayton, Ohio. Switch-throwing device	708,299	Sept. 2	560	127	100	2005
Beeler, Esten B., Chicago, Ill. Window-cleaner	707,073	Aug. 19	2055	459 460	100	1570
Beers, Alexander W., Bayonne, N. J. Folding box	703,886	July 1	944	206	100	190
Béha, Joseph, Thann, Germany. Water-purifying apparatus for steam-boilers	704,782	July 15	2531	547	100	544
Behm, Joseph, San Francisco, Cal. Oil and air mixing and gas-generating apparatus	707,376	Aug. 19	2021	590 591	100	1690
Behnke, Otto, assignor to F. Krupp, Essen, Germany. Gun-carriage	704,778	July 15	2610	565	100	560
Behrens, Albert J., San Francisco, Cal. Tank-hoop lug	705,019	July 22	3169	684	100	692
Behrens, Edward C. H., Charleston, S. C. Plant-protector	705,378	July 22	3942	854	100	846
Behreus, Walter, and J. P. Tihon, Paris, France. Electric railway	704,692	July 15	2456	530	100	529
Beider, Peter, Paterson, N. J. Lifting device						
Beil, August C. (See Down, Earnest U., assignor.)						
Beisel, Peter J., assignor of one-half to H. F. Smith, Allentown, Pa. Door-operating device	703,372	July 1	15	4	100	5
Beist, Ernst, Magdeburg, Germany. Dilator	708,452	Sept. 2	811	185	100	2146
Beitney, Augustus, *et al.* (See Barrath, Edward, assignor.)						
Beier, Adolf, assignor of two-fifths to F. Hartley, Pittsburg, and C. H. Parsons, Sharon, Pa. Fluid-pressure-regulated gas-valve	706,153	Aug. 5	298	63, 64	100	1177
Beier, Adolf, assignor of two-fifths to F. Hartley, Pittsburg, and C. H. Parsons, Sharon, Pa. Gas-burner	706,633	Aug. 12	1221	271	100	1379
Beifeld, A. Miller, *et al.* (See Davis, Charles L., assignor.)						
Beifeld, Gamaliel. (See Beifeld, Shearer, Findlay, and Beifeld.)						
Beifeld, William, R. Shearer, J. Findlay, and G. Beifeld, assignors of one-fifth to G. Gleason, Minooka, Ill. Lock-nut for vehicle-axles	710,240	Sept. 30	4339	980	100	2941
Beifry, Alfred W. (See Smith, James M., assignor.)	710,034	Sept. 30	3953	891	100	2854
Beiknap, Willis H., Summit, N. J. Paper-roll holder	710,397	Sept. 30	4629	1044	100	2997
Bell, Chester L., and J. Halstead, El Paso, Tex. Fluid-operated signal						
Bell, George H. (See Lemaire, Timothy, assignor.)						
Bell, Henry, *et al.* (See Prescott, Thomas D., J. C., and H. A., assignors.)						
Bell, Martha. (See Abrahams, Mary E., assignor.)						
Bell, Robert A., assignor to C. A. Rutter, Philadelphia, Pa. Machine for making blue-prints	704,232	July 8	1617	350	100	338
Bell, Robert A., assignor to C. A. Rutter, Philadelphia, Pa. Machine for making prints	708,989	Sept. 16	1853	426	100	2391
Bell, Walter H., Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J. Cash-register	705,552	July 29	4346	940	100	940
Bell, Watson H., Brooklyn, N. Y. Sand-distributer for railways	710,184	Sept. 30	4159	937	100	2698
Bell, William D., Slayton, Minn. Weight-motor and governor mechanism	707,377	Aug. 19	2038	591	100	1690
Bell, William J., Baraboo, Wis. Combined switch and lightning-arrester	708,980	July 8	1131	245	100	240
Bellangé, Gaston, Arcachon, France. Safety contact-interrupter for electric wires	705,020	July 22	3170	684	100	692
Belledin-Grau, Edouard, and F. S. de Mondran, Paris, France. Tire for vehicle-wheels which cannot be readily punctured	707,378	Aug. 19	2036	592	100	1690
Bellis, David C., Elizabeth, N. J., assignor to R. W. Scott, Philadelphia, and L. N. D. Williams, Ashbourne, Pa. Knitted fabric	707,752	Aug. 26	3408		100	1807
Bellows, Arthur B., Pittsburg, Pa. Gondola car	709,734	Sept. 23	3334	751 752	100	2714
Bellows, Arthur B., Pittsburg, Pa. Gondola car	710,175	Sept. 30	4239	956	100	2914
Bellows, Arthur B., Pittsburg, Pa. Steel gondola car	710,176	Sept. 30	4240	956	100	2914
Belt, J. M. (See Mervin, Charles R., assignor.)	710,177	Sept. 30	4241	956	100	2914
Bender, Andrew, Washington, D. C. Spring-motor	708,373	July 1	17	4	100	6
Bender, George L., assignor of one-half to W. A. Bender, San Francisco, Cal. Tie-plating machine	708,755	July 1	701	155 156	100	140
Bender I. Firm Carl. (See Bender, Philipp, assignor.)						
Bender, Jacob S., Kansas City, Mo. Combined grain-door and loading and unloading platform for box-cars	708,900	Sept. 2	561	127	100	2006
Bender, Philipp, assignor to Firm C. Bender I, Dotzheim, near Wiesbaden, Germany. File-handle	706,378	Aug. 5	751	164	100	1207
Bender, W. A. (See Bender, George L., assignor.)						
Bender, Wilhelm, assignor to Zellstoffabrik Düren Hermann Maria Schoeller & Co., Düren, Germany. Evaporator	709,297	Sept. 16	2487	550	100	2324
Benedict, Charles W. (See Johnson and Benedict.)						
Benedict, Lewis. (See Leiger, George F., assignor.)						
Benefield, Chauncey R., Alpika, Miss. Cotton elevator and separator	705,374	July 22	3944	854	100	847
Benitz, Leo C., Philadelphia, Pa. Lead-pencil	705,900	July 29	4968	1081	100	1065
Bennett, Delbert F., Redding, Cal. Receptacle for papers and letters	708,617	Sept. 9	1106	248	100	2216
Bennett, Emmet M., Boston, Mass., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y. Type-writing machine	707,817	Aug. 26	3541	799	100	1894
Bennett, Emmett G., Atlanta, Ga. Hame-fastener	707,497	Aug. 19	2398	641 642	100	1785
Bennett, Frederick D. (See Sanford, William W., assignor.)						
Bennett, George H., New York, N. Y. Tiling	708,194	Sept. 2	368	87	100	2056
Bennett, George M., assignor of one-half to T. Forgham, Kenosha, Wis. Friction-clutch	709,194	Sept. 16	2289	518	100	2480
Bennett, George S., and J. W. Thatcher; said Bennett assignor to said Thatcher and A. Meyenborg, San Francisco, Cal. Dental mouth-mirror	709,812	Sept. 23	3513	702	100	2780
Bennett, James E., Momence, Ill. Running-gear for wagons	707,896	Aug. 26	3704	831	100	1995
Bennett, James F., and H. S. Moorwood, Sheffield, England. Carburetor	705,081	July 22	3170	685	100	693
Bennett, Lydia A., Cleveland, Ohio. Envelop	707,074	Aug. 19	2057	460	100	1570
Bennett, Thomas G. (See Burns and Bennett.)						
Bennett, Thomas S., Providence, R. I. Band for bracelets, &c., and manufacturing same	709,195	Sept. 16	2288	518 519	100	2480

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Bennett, Thomas S., assignor to D. F. Briggs Company, Attleboro, Mass. Tubular-rivet-setting machine	709,190	Sept. 15	2286	519	100	2481
Bennett, Wilbur, Waynesboro, Va. Sash-lock	709,591	Sept. 22	3068	699	100	2664
Bennett, William S., New York, N. Y. Railway-signal	705,313	July 22	3799	823 824	100	818
Benninghofen, Ernest A., Hamilton, Ohio. Trowel	706,514	Aug. 12	1018	225	100	1357
Benoit, Elie, Worcester, Mass. Multiplying-gearing	706,794	Aug. 12	1548	347	100	1449
Benson, William W., Philadelphia, Pa. Pipe-bending apparatus	706,010	Aug. 5	13	3, 4	100	1119
Benster, Menzo M., Gettysburg, S. D. Fence-wire fastener	708,756	July 1	704	156	100	141
Bentley, Harry, Whitehaven, England. Machinery for breaking pig-iron	708,301	Sept. 2	563	128	100	2696
Benton, Charles H., Cleveland, Ohio. Engine. (Reissue)	12,009	July 15	3136	678	100	669
Bentson, Hans J., Chicago, Ill., assignor to F. Howard. Excavating-machine. (Reissue)	12,010	July 15	3140	678 679	100	670
Bentz, John J., Brooklyn, N. Y. Non-refillable bottle	708,308	Sept. 2	565	128	100	2696
Benzinger, Frederick, Union Hill, N. J., assignor to General Incandescent Arc Light Company. Circuit-breaker	707,952	Aug. 26	3796	853	100	1945
Berford, Victor, Tara, Canada. Sod-line-cutter mechanism for railway-track appliances	706,516	Aug. 12	1019	225	100	1357
Berg, Bernard, San Francisco, Cal. Pneumatic malting-kiln	706,716	Aug. 12	1372	306	100	1412
Berg, Henry. (See Mellen, Edward J., assignor.)	706,895	Aug. 12	1714	383	100	1484
Berg, Rudolf, assignor of one-half to F. Wenig, Pittsburg, Pa. Valve mechanism						
Berger Manufacturing Company. (See Schlafly, Julius H., assignor.)						
Bergeron, Henry J. (See Moreal and Bergeron.)	708,374	July 1	19	4, 5	100	7
Bergin, Daniel S., Chicago, Ill. Mechanism for electric propulsion of road-vehicles	707,075	Aug. 19	2058	460	100	1571
Bergin, Daniel S., Chicago, Ill. Combined overhead and underground electric railway	706,580	July 1	200	60	100	52
Bergman, Erick P., and A. E. Renard, Concordia, Kans. Magazine-firearm	705,196	July 22	3523	764	100	764
Bergmann, Nora E. P., New York, N. Y. Handkerchief-holder	710,085	Sept. 30	3954	892	100	2955
Bergstrom, Carl A., Tacoma, Wash. Adjustable rocking-chair	706,986	Aug. 12	1716	383	100	1485
Bernardi, Joseph A., Salem, Oreg. Domestic boiler						
Bernasconi, Charles. (See Grobet and Bernasconi.)	705,022	July 22	3171	695	100	698
Bernhardt, Wilhelm, Vienna, Austria-Hungary. Explosive-engine						
Bernier, Peter. (See Sebastian, Daniel S., assignor.)						
Bernstein Electric Manufacturing Company. (See Gardner, Edgar S., assignor.)	708,899	July 1	946	207	100	190
Berry, Benjamin D., assignor of one-half to W. H. Berry, Chester, Pa. Sash-holder						
Berry, Charles L., *et al.* (See Quist, John and C., assignors.)						
Berry, William H. (See Berry, Benjamin D., assignor.)						
Berthold, George H. E. (See Waterman and Berthold.)	707,945	Aug. 26	3787	849 850	100	1943
Bertier de Sauvigny, Léon de, Paris, France. Machine for coal-breaking	705,023	July 22	3173	695	100	698
Bertogliatti, Charles E., New York, N. Y. Music-sheet turner	707,879	Aug. 19	2696	592 593	100	1690
Bertrand, Léon, Paris, France. Apparatus for quenching or cooling coke						
Berwald, Bennet J. (See Hall and Berwald.)	709,892	Sept. 23	3095	689	100	2964
Best, Daniel, San Leandro, Cal. Traction-engine						
Best, Ezra, *et al.* (See Best, William N., assignor.)						
Best, John H., *et al.* (See Best, William N., assignor.)						
Best, William N., assignor of one-half to W. A. Cooper, Los Angeles, Cal. Hydrocarbon-burner	708,458	Sept. 2	813	185	100	2146
Best, William N., Los Angeles, Cal., assignor of two-thirds to J. H. and E. Best, Quincy, Ill. Perfect-combustion furnace	709,571	Sept. 23	3061	682	100	2657
Bethea, Clarence and R. L., Littlerock, S. C. Washer for vehicle-axles	706,215	Aug. 5	406	87	100	1199
Bethea, Robert L. (See Bethea, Clarence and R. L.)	704,733	July 15	2533	547 548	100	545
Bethel, Walter C., Seattle, Wash. Electric alarm-clock						
Bethlehem Steel Company. (See Meigs and Hammar, assignors.)						
Bettendorf Metal Wheel Company. (See Einfeldt, Emil, assignor.)	706,705	Aug. 12	1550	347	100	1450
Betteridge, Albert J., assignor to International Silver Co., Meriden, Conn. Tilting vessel						
Bets, Ernest, assignor to Columbian Hydro-Carbon Burner Company, Washington, D. C. Hydrocarbon-burner	709,387	Sept. 16	2774	600	100	2264
Betzel, William F., Portsmouth, assignor of one-half to R. T. Thorp, Norfolk, Va. Carbureter	707,697	Aug. 26	3706	831 832	100	1998
Beumee, Ullrich J. (See Anderson, John E., assignor.)	709,375	July 1	21	5	100	7
Bevans, William H., Washington, D. C. Semi-automatic breech-loading ordnance						
Beverly, James A. (See Smith, Jonas P., assignor.)						
Bevington, James H. (See Allen, James B., assignor.)	709,197	Sept. 16	2288	519	100	2481
Bevington, James H., Cleveland, Ohio. Detonating device						
Bevington, Thomas. (See Masecar and Bevington.)						
Beyer, Herman E. L. (See Starmer, Harry G., assignor.)	706,808	Sept. 2	566	129	100	2097
Bianchi, Joseph, Philadelphia, Pa. Apparatus for animated pictures						
Bickelmann, Conrad O. (See Crum, Fred H., assignor.)						
Bickford, Frank H., Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J. Cash-register	707,880	Aug. 19	2687	598	100	1691
Bickford and Huffman Company. (See Colley, Frederick G., assignor.)						
Bickford and Huffman Company. (See Heath and Baseman, assignors.)	708,951	July 1	1056	230	100	210
Bickford, John E., Whitman, Mass. Peg-cutter for horns of pegging-machines	707,498	Aug. 19	2859	642	100	1726
Bickford, John E., Whitman, Mass. Pegging-machine	708,195	Sept. 2	370	87, 88	100	1067
Bickford, John H., Salem, Mass. Controlling device for electric generating systems	708,990	Sept. 16	1555	426 427	100	2201
Bickford, John H., Salem, Mass. Valve	708,757	July 1	705	156	100	141
Bickford, John S. V., Camborne, England. Automatic feed-regulator for steam-boilers	707,076	Aug. 19	2060	461	100	1571
Bicknell, John O., Weymouth, Mass. Welts for boots or shoes						
Bidle, William S. (See Costello and Bidle.)	706,879	Aug. 5	751	165	100	1267
Bieber, Robert S., Brooklyn, N. Y. Gem-setting	707,198	Aug. 19	2296	513	100	1625
Biencstok, Edgar A., St. Louis, Mo. Stamp-affixer						
Bierley, Henry A., assignor to Household Manufacturing Company, Indianapolis, Ind. Insect-trap	704,298	July 8	1780	377	100	903
Biersach, Louis, assignor of one-half to K. Mueller, Milwaukee, Wis. Letter-press-copying cloth and frame	707,758	Aug. 26	3409	768	100	1867
Bietenholz, Alfred, Blumenthal, Germany. Draw-off or stretching rollers for textile machinery	709,694	Sept. 23	3272	732	100	2701
Bigelow, Julian F. (See Crannell, Orlo G., assignor.)						
Bigelow, Prescott. (See Anderson, William G., assignor.)	705,094	July 22	3174	696	100	698
Bigsby, Myron H., Kirksville, Mo. Support for limbs						
Bill, Louis H., San Francisco, Cal., assignor to Duck Brake Company of New York, New York, N. Y. Roller-brake	708,114	Sept. 2	211	50	100	2025
Billings, Swan. (See Stille and Billings.)						
Bincette, Joseph, St. Constant, Canada. Breech-loading firearm	708,304	Sept. 2	569	129	100	2097

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Bingham, Charles D., Watertown, assignor to Prentiss Vise Company, New York, N. Y. Vise	708,376	July 1	24	5	100	6
Binnie, John S. (See Arthur and Binnie.)	704,171	July 8	1514	325	100	818
Binns, Pickles, Shipley, England. Bottle filling and stoppering machine						
Binz, Charles A. (See Landerman and Binz.)						
Birch, Frank. (See Perks and Birch.)						
Birchall, George W., *et al.* (See Justen, Joseph M., assignor.)						
Bird, Burney B. (See Wagner and Bird.)						
Bird, Charles S., and J. B. Hanscom, assignors to F. W. Bird and Son, East Walpole, Mass. Waterproofing paper	708,454	Sept. 2	816	186	100	2147
Bird, Joseph M., Washington, D. C. Hat-box	704,431	July 8	1976	430	100	416
Bird and Son, F. W. (See Bird and Hanscom, assignors.)						
Birdsey and Somers. (See Doolittle, James E., assignor.)	708,758	July 1	706	156 157	100	141
Birkenstock, John W. and R. W. Funk, assignors to Empire Pneumatic Tool Company, New York, N. Y. Pneumatic riveting-tool	708,521	July 1	266	60, 61	100	54
Birkery, Cornelius, Hartford, Conn. Ball-cock	707,499	Aug. 19	2840	642	100	1726
Birmingham, John P., assignor to D. C. Humphreys, trustee, Lexington, Va. Nut-lock						
Birnbaum, Theodore, Berlin, Germany. Driving mechanism for rotary gramophone turn or supporting plates	705,636	July 29	4492	975	100	969
Bishop, Albert T., Southington, Conn. Lantern	705,816	July 29	4821	1047	100	1036
Bishop, Charles B., assignor to P. & F. Corbin, New Britain, Conn. Engraving-machine	709,863	Sept. 30	3592	810 811 812 813	100	2780
Bishop, David W., Lenox, Mass. Acetylene-gas generator	707,077	Aug. 19	2060	461	100	1571
Bishop, David W., Lenox, Mass. Acetylene-gas generator	707,078	Aug. 19	2064	461	100	1572
Bishop, William, *et al.* (See Cahill, Thomas H., assignor.)						
Bissell Carpet Sweeper Company. (See Mason, Francis C., assignor.)	707,047	Aug. 12	1990	447	100	1540
Bitner, Harry, Berwyn, Ill. Banana-shipping case	710,036	Sept. 30	3955	892	100	2955
Bitner, Harry, Berwyn, assignor to F. Schmitz, Chicago, Ill. Banana-shipping case						
Bittner, Frederick J. (See Hewes and Bittner.)	708,377	July 1	25	6	100	8
Bivins, Abraham, Denver, Colo. Wrench	704,294	July 8	1732	377	100	864
Bjortkander, Gustaf O., Eau Claire, Wis. Leather-lace cutter	704,610	July 15	2325	505	100	501
Black, Amos R., Lamar, Colo. Treating beet-seed						
Black, John A. (See Crapper, Ebenezer, Jr., assignor.)						
Blackburn Loom and Weaving Machinery Making Company. (See Talbot and Rossetter, assignors.)	707,294	Aug. 19	2474	535	100	1059
Blackhall, Charles D., Buffalo, N. Y. Paper-cutting machine	704,774	July 15	2611	565	100	560
Blackledge, John W., Chicago, Ill. Combined cradle and baby-jumper	705,554	July 29	4548	940	100	941
Bladen, Thomas G., Vandergrift, Pa. Tack-puller	708,014	Sept. 2	84	6	100	1995
Blagden, Silliman, Boston, Mass. Oyster-opening tool	708,115	Sept. 2	212	50	100	2025
Blaine, George E., Coshocton, Ohio. Seat-spring for vehicles	709,695	Sept. 23	3273	733	100	2701
Blake, Byron S., Rochester, N. Y. Metal fastening for cross-wires	708,455	Sept. 2	818	186 187	100	2147
Blake, Charles W., Port Republic, N. J. Ship's windlass	705,314	July 22	3801	824	100	819
Blake, Francis C., London, England. Carbureter	706,154	Aug. 5	301	64	100	1178
Blake, George E., Greencastle, Ind. Pressure-generator						
Blake, John C., Toledo, Ohio, assignor to Indiana Rubber and Insulated Wire Company, Jonesboro, Ind. Rubber-tire-setting machine	710,135	Sept. 30	4161	937	100	2893
Blake, Joseph S., assignor to Flexible Door and Shutter Company, Worcester, Mass. Flexible door	705,553	July 29	4347	940	100	940
Blakey, George G. and R. O., Pittsburg, Pa. Skelp-bending machine	708,015	Sept. 2	25	6	100	1986
Blakey, Robert O. (See Blakey, George G. and R. O.)	708,305	Sept. 2	573	130	100	2098
Blanck, Henry C., Philadelphia, Pa. Bung						
Bland, Andrew J. (See Cummins and Bland.)	705,637	July 29	4493	975	100	969
Blandy, Richard R., Kensington, England. Means applicable for use in transporting fruit						
Blatt, Samuel. (See Hawkes, John F., assignor.)						
Blatter, Ulric. (See Durkee, Frederick M., assignor.)	708,378	July 1	27	6	100	8
Blaustein, Solomon, Baltimore, Md. Window-shade hanger	704,775	July 15	2612	565	100	560
Blechmann, Ewald, Beyenburg, Germany. Sad-iron	709,735	Sept. 23	3336	752	100	2714
Blee, Charles O., and J. H. Redding, Roanoke, Ind. Fence-post	706,887	Aug. 12	1717	384	100	1485
Bleakhorn, Harriet, Minneapolis, Minn. Clothes-drainer	707,079	Aug. 19	2067	461	100	1573
Blevney, John C., Newark, N. J. Feed-pump and connection for horseless carriages	707,673	Aug. 26	3217	722	100	1830
Blevney, John C., Newark, N. J. Shaft or axle bearing	709,581	Sept. 23	2997	668	100	2644
Blezinger, Richard, Crailsheim, Germany. Cork-fastener	707,953	Aug. 26	3797	.....	100	1945
Blinn, Horace S., Omaha, Nebr. Depilating compound						
Blinn, Horace S., Omaha, Nebr., assignor to International Chemical Company, Iowa City, Iowa. Depilating process	707,954	Aug. 26	3798	.....	100	1945
Blinn, Horace S., Omaha, Nebr., assignor to International Chemical Company, Iowa City, Iowa. Depilating compound	707,955	Aug. 26	3799	.....	100	1945
Bliss Electric Car Lighting Company. (See Bliss, William L., assignor.)						
Bliss, William L., Brooklyn, assignor to Bliss Electric Car Lighting Company, New York, N. Y. Brush mechanism for dynamos	707,754	Aug. 26	3410	769	100	1866
Block, Henry. (See Boley, Daniel C., assignor.)						
Block, Ike, *et al.* (See Pickles, Charles K., assignor.)						
Block, Wesley S. (See Carter and Block.)						
Blocker, Samuel D., assignor of one-half to W. J. Greene, Columbus, Ohio. Non-refillable bottle	707,199	Aug. 19	2298	514	100	1628
Blodgett, John W., Chicago, Ill. Hub	710,241	Sept. 30	4360	980	100	2941
Blodgett, John W., assignor to N. Tire Company, Chicago, Ill. Pneumatic tire and manufacturing same	708,952	Sept. 9	1767	408 409	100	2355
Blodgett, John W., assignor to N. Tire Company, Chicago, Ill. Pneumatic tire and manufacturing same	708,953	Sept. 9	1770	409	100	2356
Blodgett, John W., assignor to N. Tire Company, Chicago, Ill. Tire and manufacturing same	708,954	Sept. 9	1772	409	100	2356
Blodgett, Stephen H., Lincoln, Mass. Safety attachment for gas-burners	705,315	July 22	3803	825	100	819
Blood, Charles W. H. (See Osteman and Blood.)						
Blood, Charles W. H., assignor to S. A. Woods Machine Company, Boston, Mass. Box-setting-up machine	705,197	July 22	3524	764 765	100	764
Blood, John B., Newburyport, Mass. Starting mechanism for trains	706,295	Aug. 5	590	128 129	100	1284
Blood, Lewis P., Runnells, Iowa. Riding-harrow	704,500	July 15	2128	460 461	100	461
Bloomberg, Casper, New York, N. Y. Suspenders	708,981	July 8	1132	245	100	940
Blum, Ferdinand, Frankfort-on-the-Main, assignor to Firm of E. Merck, Darmstadt, Hessen, Germany. Glycosuria antidote and producing same	705,638	July 29	4494	.....	100	969

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Blume, Gustave A. (See Hodges and Blume.)						
Blumer, Arthur, La Varenne, France. Stopper for bottles	706,634	Aug. 12	1223	271	100	1379
Blun, Ferdinand S. M. (See Gaisman and Rosa, assignors.)						
Blyth, Herbert K., assignor of one-half to R. L. Nelson, Chicago, Ill. Elbow and pipe	706,898	Aug. 12	1719	384	100	1495
Boas, Feodor, St. Hyacinthe, Canada. Artificial stone	707,898	Aug. 26	3708	.....	100	1926
Boatright, Robert F., Ka, Va. Wire-stretcher	705,555	July 29	4349	941	100	941
Bodmer, Christian, assignor of one-half to J. A. Traut, New Britain, Conn. Bevel	710,178	Sept. 30	4242	957	100	2915
Bodwell, Charles A., Jr., Lakeville, Cal. Telescoping valise	710,057	Sept. 30	3956	892	100	2855
Boehm, Conrad R., Charlottenburg, near Berlin, Germany. Manufacture of carbons for arc-lamps	708,602	July 1	595	.....	100	118
Boehringer & Soehne, C. F. (See Ach. Fritz, assignor.)						
Boeklen, Reinhold. (See Purper, Moser, and Boeklen.)						
Boenning, William M., Port Washington, Wis. Apparatus for edge-uniting veneers	709,864	Sept. 30	3602	813, 814, 815	100	2782
Boesch, Basil W., Boston, Mass. Making cellulose acetate	708,456	Sept. 2	823	.....	100	2148
Boesch, Basil W., Boston, Mass. Purifying cellulose esters	708,457	Sept. 2	824	.....	100	2148
Boettcher, Frederick W. G., Detroit, Mich. Sash adjuster and lock	708,517	Sept. 9	942	213	100	2184
Bogardus, Washington A. H., L. Collis, and G. G. Powell, New York, N. Y. Tubular despatch apparatus	709,434	Sept. 16	2754	619, 620	100	2581
Bogart, Walter, *et al.* (See Le Mond, George E., assignor.)						
Bogia, Louis F., Jr., Philadelphia, Pa. Regulating-socket	708,016	Sept. 2	26	6	100	1986
Bohl, Julius G. (See Lafferty, Erastus S., assignor.)						
Boise, Frank C. (See Warner, Isaac M., assignor.)						
Bole, William A., Pittsburg, Pa., assignor to Westinghouse Machine Company. Engine	710,136	Sept. 30	4162	938	100	2898
Boley, Daniel C., Chicago, assignor to H. Block, Pekin, Ill. Apparatus for treating pulverized ores of gold or silver	709,508	Sept. 23	3097	690	100	2555
Bolinger, Frank J., *et al.* (See Hart, Frank, assignor.)						
Bolinger, George H., *et al.* (See Hart, Frank, assignor.)						
Boller, Peter, Chicago, Ill. Button-holder for upholstering-machines	704,501	July 15	2131	461	100	461
Bollinger, Edmond, Fostoria, Ohio. Merry-go-round	709,462	Sept. 23	2883	636, 637	100	2609
Bollinger, Sidney W., Pittsburg, Pa. Car-haul	707,200	Aug. 19	2209	514	100	1628
Bolton, Andrew J., Pleasant Site, Ala. Wind-wheel	705,589	July 29	4495	975	100	970
Boltze, George F., Fort Madison, Iowa. Grappling device	704,858	July 15	2767	597, 598	100	598
Bomgren, Johan A., Stockholm, Sweden. Support for steam-turbine wheels	705,025	July 22	3176	686	100	698
Bommarius, Frederick, New Orleans, La. Filter	707,899	Aug. 26	3709	882	100	1926
Bon Durant, Thomas N., Moundridge, Kans. Grain-door for cars	708,017	Sept. 2	28	7	100	1986
Bonar, James, Pittsburg, Pa. Steam-trap	707,295	Aug. 19	2476	555, 556	100	1659
Bond, Frank. (See Carlisle, Charles C., assignor.)						
Bone, Frank A., Lebanon, Ohio. Retaining-wall	705,792	July 29	4675	1012	100	1005
Bonneau, Paschal. (See Gagné, Edouard, assignor.)						
Bonner, Oliver R. (See Wride, John F., assignor.)						
Bonnett, Ernest W., *et al.* (See Harrington, Louder, assignor.)						
Bonsor, Hewson, Birmingham, England. Gas-stove	708,982	July 8	1134	245	100	240
Bontempi, Augusto, assignor to M. B. Scott-Uda, Naples, Italy. Sculpturing-machine	709,388	Sept. 16	2676	600, 601	100	2564
Boone, Charles H., *et al.* (See Hoerichs, Edward, assignor.)						
Boos, Joseph B., Muscatine, Iowa. Screw-door safe	708,991	Sept. 16	1859	427	100	2592
Booser, Eli A., Altoona, Pa. Car-fender	704,776	July 15	2613	536	100	561
Booth, Edward L. (See Comstock, Andrew J., assignor.)						
Booth, Frederick, Tefft, Ind. Chainless bicycle	709,463	Sept. 23	2885	637	100	2609
Booth, Jacob, Reynoldsville, Pa. Cuspidor	705,375	July 22	3945	855	100	847
Booth, James C., Monessen, Pa. Railway-switch-operating device	709,865	Sept. 30	3608	815	100	2788
Booth, John, Central Falls, R. I. Yarn-spinning apparatus	705,783	July 29	4678	1012	100	1005
Booth, Kraft. (See Gillinder and Booth.)						
Booth, Ralph W., New Brunswick, N. J. Faucet	709,389	Sept. 16	2681	601	100	2566
Booth, Ralph W., New Brunswick, N. J. Jar-cover	709,390	Sept. 16	2682	601	100	2566
Booth, Thomas C., New Brunswick, N. J. Can and attaching a label thereto	706,635	Aug. 12	1225	272	100	1380
Boozer, Arthur G., Tocapau, S. C. Shell-rolls for spinning-machines	709,298	Sept. 16	2487	559	100	2584
Boozer, George W., San Antonio, Tex. Wrench	708,696	July 1	469	107	100	92
Borbein, Henry F., assignor to Gus V. Brecht Butchers Supply Company, St. Louis, Mo. Motor-vehicle	708,703	Sept. 9	1454	332	100	2291
Borie, Louis J., San Francisco, Cal. Electromagnetic capping-machine	708,952	July 1	1057	230	100	210
Born, George W., Graysflat, W. Va. Water-cooler	705,876	July 22	3946	855	100	847
Bornand, William H. (See Gattolliat, Paul S., assignor.)						
Borner, John, Rahway, N. J. Apparatus for impregnating wood	708,522	July 1	268	61	100	54
Bos, Floris H., Hoogland, Netherlands. Keyhole-guard	707,381	Aug. 19	2630	593, 594	100	1691
Bosch, Robert. (See Simms and Bosch.)						
Bosmann, Nicolas, assignor of one-half to E. S. Slocum, Chicago, Ill. Refrigerator	708,992	Sept. 16	1861	428	100	2592
Boss, Martin P., San Francisco, Cal., assignor to Hydro-Carbon Smelting Co., New York, N. Y. Iron blast-furnace	708,116	Sept. 2	213	51	100	2025
Bossart-Bächli, Johann, Suhr, Switzerland. Needle-compasses	710,242	Sept. 30	4363	980	100	2941
Bossert Electric Construction Company. (See Bossert, William F., assignor.)						
Bossert, Otto H., Denver, Colo. Drill-holding chuck-bolt for rock-drills	704,502	July 15	2188	461	100	462
Bossert, William F., assignor to Bossert Electric Construction Company, Utica, N. Y. Interior-conduit outlet-box	705,026	July 22	3176	686	100	694
Bossert, William F., assignor to Bossert Electric Construction Company, Utica, N. Y. Junction-box	708,602	Sept. 9	1247	286	100	2245
Bossett, Albert T., Kansas City, Mo. Explosive-engine	708,518	Sept. 9	944	213, 214	100	2184
Bostian, Merrill H. (See Doll and Bostian.)						
Boston Electric Heating and Power Company. (See Hawkins and Flint, assignors.)						
Boston Gas Iron Mfg. Co. (See Burns, William G., assignor.)						
Bostwick, Henry A., Spokane, Wash., assignor of one-half to George Lawrence Company, Portland, Oreg. Hopple or pastern-halter	705,556	July 29	4350	941	100	941
Bothwell, William. (See Fleming, John M., assignor.)						
Botsford, W. F. (See Lotspeich, Rhoten F., assignor.)						
Bottlewalla, Hormusji E., Bombay, India. Oil-lamp	706,717	Aug. 12	1375	306	100	1413
Botts, R. Linneus, St. Paul, Minn. Drafting-plotter	709,786	Sept. 23	3337	752	100	2714
Bouchaud-Praceiq, Edouard, Angoulême, France. Carbureter	709,866	Sept. 30	3610	816	100	2784
Boudry, Pierre, Weaverville, Cal. Safety attachment for hydraulic nozzles	708,602	Sept. 9	1249	286	100	2245
Boullly, August, Chicago, Ill. Head-covering	707,956	Aug. 26	3799	853	100	1945

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bourne, Frank, Mount Vernon, N. Y., assignor to McElroy-Grunow Electric Railway System, Bridgeport, Conn. Controlling electrical switches operated by electromagnets	706,011	Aug. 5	14	4	100	1119
Bourne, Frank, Mount Vernon, N. Y., assignor to McElroy-Grunow Electric Railway System, Bridgeport, Conn. Electromagnetic switch	706,012	Aug. 5	15	4	100	1119
Bousfield, Robert E., Bay City, Mich. Exhaust-muffler	706,686	Aug. 12	1296	272	100	1380
Bouton, George D., *et al.* (See Amwake, Harry S., assignor.)						
Bouton, George D., *et al.* (See Amwake, Harry S., assignor.) (Reissue.)						
Bouvier, Emmanuel J. (See Grandjean and Bouvier.)						
Bovill, John, Chicago, Ill. Fountain-pen	705,316	July 22	3805	825	100	819
Bowen, George W., Louisville, Ohio. Ventilating-damper for stovepipes	705,199	July 22	3532	766	100	766
Bowers, William F., San Francisco, Cal. Retainer for hose-couplings	708,117	Sept. 2	215	51	100	2025
Bowling Ball Company. (See Lahr, Henry B., assignor.)						
Bowman, Charles M., Lebanon, Pa., assignor to Diamond Match Company, New York, N. Y. Match	707,060	Aug. 19	2069	.....	100	1573
Bowman, John, Wessington, S. D. Railway-gate	706,516	Aug. 12	1021	225	100	1337
Bowman, Oliver S., Chicago, Ill. Sheet-aliner for printing-presses	705,198	July 22	3531	765	100	766
Bowser, Wesley S., St. Louis, Mo. Means for operating awnings	708,693	July 1	596	132	100	118
Boyce, Markland H., assignor of one-half to R. McClintock, Baltimore, Md. Shade-hanger	707,900	Aug. 26	3713	882	100	1927
Boyce, Thomas J., Chicago, Ill. Rotary scraper for finishing artificial dentures	706,013	Aug. 5	17	4	100	1120
Boyd, Peter, assignor to National Tube Company, Pittsburg, Pa. Apparatus for welding and tapering sockets	706,517	Aug. 12	1022	225, 226	100	1337
Boyd, Peter, assignor to National Tube Company, Pittsburg, Pa. Apparatus for welding and tapering sockets	706,518	Aug. 12	1025	226, 227	100	1338
Boyd, Peter, assignor to National Tube Company, Pittsburg, Pa. Welding and tapering sockets	706,519	Aug. 12	1027	226, 227	100	1338
Boyd, Peter, assignor to National Tube Company, Pittsburg, Pa. Apparatus for welding and tapering sockets	706,520	Aug. 12	1030	227	100	1338
Boyer, Oliver, assignor of one-half to W. H. Orr, Lima, Ohio. Separating mechanism for corn-husking machines	710,187	Sept. 30	4164	988, 989	100	2899
Boyet, John T., Lewisburg, Tenn. Cotton-chopper	706,889	Aug. 12	1720	384, 385	100	1486
Braam, Jacques P. de, Paris, France. Recorder for signals and engine-drivers	708,998	Sept. 16	1864	428	100	2393
Braby, Henry, Ayr, Queensland, Australia. Fire-lighter	710,315	Sept. 30	4483	1012	100	2967
Bracey, Frank, Jefferson City, Mo. Combined mop and wringer	708,857	Sept. 9	1592	365	100	2330
Brachvogel, R. Adam, *et al.* (See Eberstein, John G., assignor.)						
Brackett, Frederick, Baltimore, Md. Apparatus for mixing and kneading dough	706,990	Aug. 12	1722	385	100	1486
Bradbury, Samuel W., Cape Town, Cape Colony. Wire-tightener	708,196	Sept. 2	381	88	100	2050
Bradbury, Walter S., Willimantic, Conn. Bicycle-stand	706,718	Aug. 12	1376	307	100	1413
Bradet, George H., assignor of one-half to G. Goblisch, St. Paul, Minn. Signal-lantern	707,545	Aug. 26	2950	667	100	1775
Bradfield, Emma N. (See Bradfield, Mason, assignor.)						
Bradfield, Mason, assignor to E. N. Bradfield, Los Angeles, Cal. Conveyer	709,737	Sept. 23	3838	758	100	2714
Bradford, Chester. (See Hilleary and Bradford.)						
Bradford, Chester, Indianapolis, Ind. Boot or housing for pneumatic elevators	708,983	July 8	1134	245	100	240
Bradford, Edward T., deceased; M. C. C. Bradford, administratrix, assignor to Standard Smelter Company, Denver, Colo. Hot-blast furnace	705,640	July 29	4495	976	100	970
Bradford, John A., Victor, Colo. Lubricator for car-trucks	708,806	Sept. 2	575	130	100	2098
Bradford, Leonard F., *et al.* (See Sprague, Lewis G., assignor.)						
Bradford, Mary C. C., administratrix. (See Bradford, Edward T.)						
Bradley, Charles S., and D. R. Lovejoy, New York, assignors, by mesne assignments, to Atmospheric Products Company, Niagara Falls, N. Y. Manufacturing nitrogen compounds from atmospheric nitrogen	709,867	Sept. 30	3611	816, 817	100	2784
Bradley, Charles S., New York, and D. R. Lovejoy, assignors, by mesne assignments, to Atmospheric Products Company, Niagara Falls, N. Y. Apparatus for subjecting gases to high-tension discharges	709,868	Sept. 30	3614	817	100	2784
Bradley, Christopher C., Syracuse, N. Y. Thill-coupling. (Reissue)	12,034	Sept. 23	3581	807	100	2765
Bradley, Christopher C., Syracuse, N. Y. Thill-coupling. (Reissue)	12,035	Sept. 23	3582	807	100	2765
Bradley, Emory O. and M. L., Tacoma, Wash. Car-standard	705,200	July 22	3533	766	100	766
Bradley, Franklin F. (See Osgood and Bradley.)						
Bradley, James N., Washington, D. C. Metal can	706,290	Aug. 5	593	129	100	1235
Bradley, Melvin L. (See Bradley, Emory O. and M. L.)						
Bradley, Richard, Branford, Conn. Ice-carrier	707,818	Aug. 26	3544	790	100	1895
Bradley, William, *et al.* (See Foore, Margaretta E., assignor.)						
Bradley, William O. R., *et al.* (See Strong, Robert H., assignor.)						
Bradley, William S. (See Dempster and Bradley.)						
Bradley, William S., Philadelphia, Pa. Guard-rail for street-cars	704,432	July 8	1979	431	100	416
Bradley, William S., Philadelphia, Pa. Quoit	709,532	Sept. 23	2998	668	100	2645
Bradshaw, Charles E., Cleveland, Ohio. Window appliance	708,519	Sept. 9	946	214	100	2184
Bradshaw, Charles T., Philadelphia, Pa. Quoit	706,892	Aug. 12	1731	386, 387	100	1488
Brady, James C., Pittsburg, Pa. Carpet-cleaning machine	708,687	July 1	470	107	100	93
Brady, Joseph H., Kansas City, Mo. Pneumatic signaling apparatus	706,891	Aug. 12	1729	386	100	1487
Bramhall, Charles F., Kingman, Kans. Portable revolving theater	709,198	Sept. 16	2289	519	100	2481
Bramson, Max, Warsaw, Russia, assignor to H. F. Vogel, St. Louis, Mo. Petroleum incandescent-light burner	710,008	Sept. 30	4072	918	100	2879
Bramwell, James C. (See Holritz, Edward A., assignor.)						
Brand, William, Oshkosh, Wis. Display-tray	709,798	Sept. 23	3340	753	100	2715
Brandell, Claus, Chicago, Ill. Compasses	706,014	Aug. 5	19	5	100	1120
Brandenburg, Anthony A., and W. C. Knobelock, St. Louis, Mo. Cooking vessel	709,869	Sept. 30	3615	817	100	2786
Brandner, Paul, Brooklyn, N. Y. Chimney or other curved fireproof structure	709,813	Sept. 23	3314	792	100	2750
Brandt, Andrew G., Scranton, and D. L. Griffiths, Olyphant, Pa.; said Brandt assignor to said Griffiths. Washing-machine	707,061	Aug. 19	2070	462	100	1573
Brandt, Frederic R., Dayton, Ohio. Atmospheric steam-condensing apparatus	708,197	Sept. 2	382	89	100	2050
Brankowitch, Wladimir, assignor to A. Matifat and Co., Paris, France. Brake for cycles	704,955	July 15	3029	650	100	649
Brank-ston, Ralph T., assignor to W. G. Armstrong, Whitworth & Company, Limited, Newcaste-upon-Tyne, England. Apparatus for loading ordnance	705,027	July 22	3178	687	100	694
Brantingham, Allen C., Toledo, Ohio, assignor to Nordyke & Marmon Company, Indianapolis, Ind. Self-cleaning sieve	704,433	July 8	1980	431	100	417
Brauer, Adolph, Seattle, Wash. Sash-fastener	710,138	Sept. 30	4169	939	100	2900
Braun, Frederick W. (See Calkins, Albert C., assignor.)						
Braüninger, John, Lorain, Ohio. Cup	709,891	Sept. 16	2683	602	100	2566
Brawner, Harry O., Baltimore, Md. Bottle stopper and sprinkler	708,118	Sept. 2	215	51	100	2026
Braxton, Elias L., Pactolus, N. C. Fertilizer-distributer						
Bray, Mellen. (See Davis, Wilbur G., assignor.)						
Bray, Mellen N. (See Lisotte, Joseph, assignor.)						
Brayton, James T., Chicago, Ill. Sight for firearms	708,119	Sept. 2	217	52	100	2026

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Brazill, James M., Rochester, N. Y. Fire-escape	708,120	Sept. 2	219	52,53	100	2027
Brebner, Alan, London, England. Eclipsing-screen for revolving group-flashing light-house-lights, &c.	710,343	Sept. 30	4564	980	100	2942
	710,344	Sept. 30	4568	981	100	2942
Brebner, Alan, London, England. Revolving group-flashing apparatus				982		
Brecker, Joseph C. (See Scott and Brecker.)						
Breda, Andrew J., Chicago, Ill., assignor to Standard Varnish Works, New York, N. Y.	704,508	July 15	2135	462	100	462
Mitten	704,508	July 15	2136	463	100	462
Bredel, Frederick, Milwaukee, Wis. Retort gas-furnace	706,015	Aug. 5	30	5	100	1120
Breed, William A. (See Gould, Augustus, assignor.)						
Breen, James F., Dayton, Ohio. Inhaler	706,803	Aug. 12	1783	387	100	1488
Breeze, Frank A., Forest Mills, assignor of one-half to J. Wilson, Richmond, Province of Ontario, Canada. Spinning-head	708,458	Sept. 2	824	187	100	2148
Breeze, Frank A., Forrest Mills, assignor of one-half to J. Wilson, Richmond Township, Ontario, Canada. Spinning-head	709,533	Sept. 23	3000	668	100	2645
Breitwieser, Herman G., Brooklyn, N. Y. Adjustable electric-lamp hanger	708,490	July 1	949	207	100	191
Brejcha, Josef, Strasburg, and F. Schulte, Dusseldorf, Germany. Rock-boring machine.						
Brenner, Joachim von. (See Pfister, Josef, assignor.)						
Bresnahan, Maurice V. (See Heys, John J., assignor.)	704,853	July 15	2760	598	100	598
				599		
Bretherton, Sidney E., Denver, Colo. Ore-sampler	707,957	Aug. 26	3800	853	100	1945
				854		
Brett, Robert D., assignor of one-half to T. P. Wood, London, England. Smoke-consuming apparatus for steam-boiler or like furnaces	706,390	Aug. 5	752	165	100	1267
				166		
Breuchaud, Jules, Yonkers, N. Y. Constructing tunnels	710,139	Sept. 30	4170	989	100	2900
Breunig, Herman, and H. J. Waldeyer, New York, N. Y. Non-refillable bottle	706,016	Aug. 5	21	5	100	1120
Brewer, Frank A., Jr., and G. W. Harvey, Watsonville, Cal. Dental flask	703,323	July 1	273	62	100	55
Brewington, Henry S., Baltimore, Md. Bottle-stopper	703,325	July 1	274	62	100	56
Brewington, Henry S., Baltimore, Md. Bottle-stopper	703,326	July 1	275	62	100	56
Brewington, Henry S., Baltimore, Md. Garment-clasp	703,327	July 1	276	63	100	56
Brewington, Henry S., Baltimore, Md. Bottle-stopper	703,328	July 1	277	63	100	56
Brewington, Henry S., Baltimore, Md. Bottle-stopper	703,324	July 1	274	62	100	55
Brewington, Henry S., assignor of one-half to W. Seim, Baltimore, Md. Bottle-stopper	703,984	July 8	1136	246	100	341
Brewster, William F., New York, N. Y. Supporting device for electric lamps	707,296	Aug. 19	2477	556	100	1660
Breymann, George H., Toledo, Ohio. Amalgamator						
Bridgeport Hardware Manufacturing Company. (See Sperry, Ellie N., assignor.)	704,777	July 15	2616	566	100	561
Briggs, Edward L., St. Louis, Mo. Disinfecting device	708,618	Sept. 9	1107	248	100	2216
				249		
Briggs, Warren R., Stratford, Conn. Window-blind	708,619	Sept. 9	1108	249	100	2217
Briggs, Warren R., Stratford, Conn. Shutter-fastener	703,985	July 8	1137	246	100	341
				247		
Brill, George M., Philadelphia, Pa. Electric locomotive-crane						
Brill, John A. (See Adams, Walter S., assignor.)	708,994	Sept. 16	1867	429	100	2898
Brill, John A. (See Bucknam, Ezra S., assignor.)				464		
Brill, John A., Philadelphia, Pa. Car-truck	709,073	Sept. 16	2065	465	100	2928
Brill, John A., and E. S. Bucknam, Philadelphia, Pa.; said Bucknam assignor to said Brill. Convertible railway-car						
Brillard, Simon. (See Grondin, Brillard, and Labranche.)	709,959	Sept. 30	3819	859	100	2826
Brining, Frank P., Westgrove, Pa. Vehicle-tire	707,297	Aug. 19	2479	557	100	1660
Brink, Frank W., Tacoma, Wash. Chute for loading wheat or flour on ships	707,301	Aug. 19	2501	514	100	1694
Brinkman, Sebastian G., New York, N. Y. Fireproof ceiling and floor	706,894	Aug. 12	1737	387	100	1480
Brinley, Charles A., Philadelphia, Pa., assignor to American Pulley Company. Sheet-metal pulley	705,641	July 29	4497	976	100	970
British Cyanides Company. (See Smith, Gidden, and Salamon, assignors.)						
Britnell, James. High Wycombe, England. Corset-fastener	707,755	Aug. 26	3413	769	100	1868
Britton, Edward. (See Ketler and Britton.)						
Britton, James A., Bethlehem, Pa. Luggage-carrier	706,895	Aug. 12	1739	388	100	1480
Britton, Louis H., and H. W. Morrow, assignors to Union Manufacturing Company, Lisbon, Ohio. Machine for making suckers or drinking-tubes						
Britz, Nicholas. (See Goodrich, Ernest C., assignor.)						
Broach, John, and G. W. Goodrich, assignors to Independent Pattern Company, New York, N. Y. Dress-pattern seal	709,464	Sept. 23	2887	687	100	2809
Broadbent, John C. (See McRae, James, assignor.)						
Brock, Holden, St. Paul, Minn. Cement roofing	708,307	Sept. 2	576	180	100	2098
Brockelt, Hermann, Berlin, Germany. Device for overcoming alternating currents in direct-current circuits	708,121	Sept. 2	221	53	100	2027
Brocklebank, John C. (See Holmes, Enoch T., assignor.)						
Broichgans, Stephan, assignor to Perfect Gas Machine Company, Milwaukee, Wis. Gas and air mixer	708,308	Sept. 2	577	180	100	2098
	703,529	July 1	278	63	100	55
Brokaw, Joseph M., Battlecreek, Mich. Corn-crib	705,088	July 22	3179	667	100	694
Broluska, Amel, Detroit, Mich. Car-brake	704,505	July 15	2137	462	100	462
				463		
Bromberek, John, Long Island City, N. Y. Harness-saddle	708,020	Sept. 9	1109	249	100	2217
Bromley, Emmet A., Brighton, Colo. Automatic regulator for windmills						
Bronn, Jegor, assignor to Gesellschaft zur Verwertung der Patente für Glaserzeugung auf Electrischem Wege Becker & Co., M. B. H., Cologne, Germany. Manufacture of glass by means of electricity	708,309	Sept. 2	580	181	100	2099
Bronner, Edmund D., *et al.* (See Chubb, James A., assignor.)	706,361	Aug. 5	750	166	100	1268
Bronson, Howard M., Brandon, Vt. Banjo attachment	704,854	July 15	2770	599	100	598
				600		
Brook, Frank, Lindley, Huddersfield, assignor to P. MacMaster, Hempstead, county of Middlesex, England. Time-recorder for workmen or servants or like apparatus	707,546	Aug. 26	2952	668	100	1776
	707,547	Aug. 26	2953	668	100	1776
Brooke, Charles D., Coshocton, Ohio. Door-plate	706,896	Aug. 12	1742	388	100	1490
				389		
Brooke, Finley S., Cincinnati, Ohio. Hinge-joint for seating	705,734	July 29	4679	1013	100	1005
Brooker, Albert, assignor of one-half to D. Fagioli and W. Bailey, Eastleigh, England. Controlling device for couplings of railway-wagons	704,678	July 15	2428	524	100	525
Brooks, Arthur A., and G. A. Watson, Liverpool, England. Magazine plate-holder	709,626	Sept. 23	3150	702	100	2675
Brooks, Edward J., East Orange, N. J. Cording-seal	705,818	July 29	4934	1047	100	1086
Brooks, Edward J., East Orange, N. J. Seal						
Brooks, Frank M., Brooklyn, N. Y. Incandescent gas-lamp	708,530	July 1	278	63	100	56
Brooks, George G., *et al.*, trustees. (See McClave, William, assignor.)	708,198	Sept. 2	368	80	100	2060
Brooks, Gus A., Covington, Ky. Sealing device for bottles	705,891	July 1	950	208	100	191
Brooks, James W., Indianapolis, Ind. Trolley						
Brooks, John B., and J. Holt, Birmingham, England. Cycle-saddle attachment	704,995	July 8	1733	378	100	364
Brooks, John C., assignor of one-half to R. H. Sterrett, Paterson, N. J. Narrow-ware loom	710,345	Sept. 30	4570	982	100	2943
Brooks, John H. (See Florey, Clarence M., assignor.)						
Brooks, Karmell, New York, N. Y. Driving mechanism for bicycles						

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Brooks, Myron B., Nashville, Mich., assignor to Goodell Company, Antrim, N. H. Apple-parer	710,351	Sept. 30	4546	1025	100	2980
				1026		
Brooks, Theodore L., assignor to himself, L. H. King, F. S. Root, B. C. Smith, C. E. Wethey, J. G. Kick, S. Peterson, A. Tuller, and J. M. Ryan, Port Byron, N. Y. Parcel receiving and delivering device	708,859	Sept. 9	1595	365	100	2221
				366		
Broomhead, William H. (See Tubby and Broomhead.)						
Brophy, John P., assignor to Cleveland Machine Screw Company, Cleveland, Ohio. Machine for cutting worm-threads	708,986	July 8	1143	248	100	243
	709,299	Sept. 16	2488	560	100	2594
Brosi, Fred T., Quincy, Ill. Bucket-car						
Broun, Frederick M., assignor of one-half to E. H. Matteson, Warren, R. I. Reversing mechanism	706,719	Aug. 12	1377	307	100	1414
	706,201	July 22	3534	766	100	767
Brown, Alexander T., Syracuse, N. Y. Gas-engine	703,750	July 1	708	157	100	142
Brown, Alfred C., London, England. Electrical sparking device	707,388	Aug. 19	2502	504	100	1699
Brown, Andrew B., Edinburgh, Scotland. Steering machinery	707,088	Aug. 19	2073	462	100	1574
Brown, Charles F., Greeneville, Tenn. Sharpener	708,580	Sept. 9	947	214	100	2185
Brown, Collins A., and R. C. Kerr, Reading, Mich. Measuring instrument						
Brown and Company, John. (See Graham, Samuel A., assignor.)	704,778	July 15	2617	566	100	561
Brown, Daniel V., Philadelphia, Pa. Optical wire	709,074	Sept. 16	2040	465	100	2430
Brown, David. (See Masecar and Bevington, assignors.)	705,029	July 22	3180	687	100	694
Brown, Edwin F., Chicago, Ill. Collar	704,506	July 15	2138	463	100	463
Brown, Elijah E., and T. B. McCall, Cripplecreek, Colo. Ratchet-tool						
Brown, Frank O., and E. T. Moore, Dallas, Tex. Car-brake						
Brown, George T. (See Wilmot, Maley, and Brown.)						
Brown, George W. (See Jordan, Alberto T., assignor.)	709,199	Sept. 16	2291	520	100	2482
				521		
Brown, Glenn C., Birmingham, Ala. Portable mechanical loader and digger	704,233	July 8	1619	350	100	338
Brown, Harold P., Montclair, N. J. Musical toy	703,716	July 1	628	140	100	124
Brown, Harry F., Chicago, Ill. Water-meter	709,393	Sept. 16	2064	502	100	2595
Brown, Haydn, Surbiton Hill, England. Suture-clamp	703,531	July 1	290	64	100	57
Brown, Henry W., assignor to Strobel & Brown, Baltimore, Md. Eye-guard	709,185	Sept. 16	2160	495	100	2456
Brown, James, Tonopah, Nev. Ore-leaching apparatus						
Brown, James A., assignor of one-half to G. M. Tombling, Pictou, Colo. Match-safe attachment for miners' lamp-holders	709,452	Sept. 16	2800	630	100	2591
	703,717	July 1	630	140	100	124
Brown, Jesse C. M., Philadelphia, Pa. Incandescent electric lamp and socket	704,674	July 15	2429	525	100	525
Brown, John F., Knoxville, Pa. Spring bed-bottom	708,858	Sept. 9	1568	365	100	2220
Brown, John W., Jr., Philadelphia, Pa. Polishing-machine	707,819	Aug. 26	3545	799	100	1895
Brown, John W., Jr., and H. W. Yeager, assignors to Enterprise Manufacturing Company of Pennsylvania, Philadelphia, Pa. Polishing-machine				800		
	703,760	July 1	709	157	100	142
Brown, Lewis A., St. Louis, Mo. Brick or block	705,817	July 29	4823	1047	100	1086
Brown, Milton S., Washington, D. C. Shoe-fastener	705,901	July 29	4969	1061	100	1096
Brown, Morgan, Liffey, Ga. Buggy-stop raiser						
Brown, Neil. (See Solomon, David W., assignor.)						
Brown, Norman E., assignor to St. Joseph Iron Works, St. Joseph, Mich. Basket forming and stapling machine	708,955	Sept. 9	1773	410	100	2356
Brown, Pierre S. (See Sampson, William P., assignor.)						
Brown, Richard, Southampton, England. Utilising waste heat in connection with smelting-furnaces	708,018	Sept. 2	80	7	100	1987
	704,471	July 8	2064	447	100	434
Brown, Schuyler C., Saratoga Springs, N. Y. Ventilator attachment for water-closets	703,892	July 1	951	208	100	191
				209		
				210		
Brown, Sidney G., London, England. Electric telegraphy	704,611	July 15	2226	505	100	501
Brown, Thomas E., New York, N. Y. Leveling device	707,756	Aug. 26	3414	769	100	1869
Brown, Thomas S., Poughkeepsie, N. Y. Spring key or cotter						
Brown, William F., assignor to Dowagiac Manufacturing Company, Dowagiac, Mich. Shoe for grain-drills	705,080	July 22	3181	667	100	695
Browne, David H., Cleveland, Ohio, and J. M. Neil, Toronto, Canada. Recovering metallic tin	704,675	July 15	2431	525	100	524
Browne, Frank L., *et al.* (See Dudley, Charles T., assignor.)						
Browne, William G., Kingston, N. Y., assignor to W. G. Browne Manufacturing Company. Egg-beater. (Reissue)	12,026	Aug. 26	3808	876	100	1905
	705,317	July 22	3807	885	100	890
Browning, Earl H., Cleveland, Ohio. Excavating and hoisting apparatus	708,310	Sept. 2	581	131	100	2099
Browning, James C., Salt Point, N. Y. Manifold-copy book	706,216	Aug. 5	407	87	100	1190
Browning, John G., Fairfield, Iowa. Roll-holding camera	708,794	Sept. 9	1453	338	100	2292
				339		
Browning, John M., Ogden, Utah. Automatic firearm	710,094	Sept. 30	4074	919	100	2879
Browning, John M., Ogden, Utah. Magazine-gun	706,155	Aug. 5	908	64, 65	100	1179
Browning, Victor R., Cleveland, Ohio. Rivet heating and distributing system	708,811	Sept. 2	582	180	100	2100
Bruce, Lucien F., Springfield, Mass. Magazine for firearms	705,521	Aug. 12	1092	227	100	1339
Bruce, Reuben A., Columbia, Va. Suspended carrier						
Brück, Friedrich, Ruhla, Germany. Automatic shutter-operating device for photographic cameras	708,803	July 1	965	210	100	198
	705,557	July 29	4351	941	100	941
Brucker, Ernst, Rochester, N. Y. Rotary wheel-harrow	705,642	July 29	4498	976	100	970
Bruckmann, Salomon, Crefeld, Germany. Milk-pail	709,606	Sept. 23	3274	733	100	2701
Brueck, George, New York, N. Y. Radiant-heat bath	704,734	July 15	2537	548	100	546
Brugerolles, Elie, Brassac-les-Mines, France. Paper-holder	704,507	July 15	2141	463	100	463
Bruneau, Raphael, Oran, France. Windmill	704,594	July 8	1620	351	100	339
Brunnemer, William T. M., Bradley, Ill. Wheel	707,088	Aug. 19	2074	468	100	1574
Brunner, John M., Merriam Park, Minn. Car-seal	705,795	July 29	4695	1014	100	1007
Bruns, Henry, St. Louis, Mo. Uncoupling device	708,199	Sept. 2	384	80	100	2060
Brust, Edward, Davisville, Cal. Portable hay-loading derrick						
Bruyn, Jacobus de, (Martinus Gerardus Zoon,) Lausanne, Switzerland. Apparatus for comparing handwritings or other objects	706,297	Aug. 5	595	129	100	1235
	709,668	Sept. 23	3213	717	100	2688
Bruzek, Albert, Chicago, Ill. Automatic siphon-pump						
Bry, Louis, *et al.* (See Pickles, Charles K., assignor.)	708,312	Sept. 2	582	182	100	2100
Bryan, Henry, Modesto, Cal. Plow	706,790	Aug. 12	1380	307	100	1414
Bryan, Joseph P., assignor to J. H. Radcliffe, St. Michaels, Md. Addressing attachment for printing-presses				308		
Bryan-Marsh Company. (See Doane, Samuel E., assignor.)						
Bryan, Oscar. (See Viles, Joseph T., assignor.)						
Bryan, Thomas A., *et al.* (See Hoerichs, Edward, assignor.)						
Bryant, Charles A., Wakefield, Mass., assignor to Consolidated Safety Pin Company, Bloomfield, N. J. Clasp	706,592	Aug. 12	1084	298	100	1339
Bryant, Edward W., assignor of one-half to J. J. Corell, New York, N. Y. Box-wrapping machine	708,459	Sept. 9	827	187	100	2149
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Bryant, John M., Minneapolis, Minn., assignor of three-fourths to E. J. Newell, P. A. Barnard, Detroit, Mich., and J. L. Henry, Chicago, Ill. Thill-coupling	710,816	Sept. 30	4488	1012	100	2967
Bryant, Reuben, *et al.* (See Tuttle, William C., assignor.)						
Bryant, William C. (See Schwarz and Bryant.)						
Bryce Brothers Company. (See Schaub, Henry, assignor.)						
Bryda, Henry, Woonsocket, R. I. Lock	707,757	Aug. 26	3416	709	100	1869
Brynildsen, H. L., *et al.* (See Dahlén, Andrew, assignor.)						
Buchanan, George W., Chicago, Ill. Button. (Reissue)	12,020	Aug. 19	2905	658	100	1749
Buchanan, James, New York, N. Y., assignor of one-half to J. B. Conover, Freehold, N. J. Incandescent gas-burner	708,860	Sept. 9	1600	366	100	2322
Buchanan, James, New York, N. Y., assignor of one-half to J. B. Conover, Freehold, N. J. Incandescent gas-burner	708,861	Sept. 9	1601	366	100	2322
Buchanan, Joseph W. (See Randall, James D., assignor.)						
Buchanan, Judson, Chattanooga, Tenn., assignor to Chattanooga Plow Co. Plow	708,122	Sept. 2	222	53	100	2027
Buchanan, William J., Huntington, Ind. Die or stamp holder	705,377	July 22	3947	855	100	847
Buchholz, George J. (See Lingle, George W., assignor.)						
Buchtel, Joseph, Portland, Oreg. Fence-post	709,300	Sept. 16	2489	560	100	2525
Buchtel, Joseph, Portland, Oreg. Telegraph fire-hose	710,246	Sept. 30	4371	982	100	2943
Buchtela, Wesley R., Marion, Iowa. Check-row corn-planter	708,582	July 1	280	64	100	57
Buck, Frank R., San Francisco, Cal. Combined dumb-bell, Indian club, and pulling or swinging bar	708,313	Sept. 2	585	132	100	2100
Buck, Niels. (See Olson, Charles J., assignor.)						
Buckelew, Charles H., Plainfield, N. J. Pressure-reducing valve	706,721	Aug. 12	1382	308	100	1415
Buckeye Malleable Iron and Coupler Co. (See Bush, Samuel P., assignor.)						
Buckham, George T. (See Dawson and Buckham.)						
Buckley, Louis H. (See Cather and Buckley.)						
Buckley, Minnie E., St. Louis, Mo. Combination nether garment	709,200	Sept. 16	2295	591	100	2483
Buckman, John, St. Cloud, Minn. Hot-air register	705,902	July 22	3538	767	100	767
Bucknam, Ezra S. (See Brill and Bucknam.)						
Bucknam, Ezra S., assignor to J. A. Brill, Philadelphia, Pa. Convertible railway-car	709,075	Sept. 16	2041	466	100	2430
Bucknam, Ezra S., assignor to J. A. Brill, Philadelphia, Pa. Convertible railway-car	709,076	Sept. 16	2043	466, 467	100	2430
Buckstaff Edwards Co. (See Koeser, Carl D., assignor.)						
Budd, William H., Jr. (See Prouty and Budd.)						
Budweiser, Bernhard, Chicago, Ill. Display-box	709,663	Sept. 23	3214	717	100	2688
Buerkle, August, Allegheny, Pa. Valve mechanism for water-heaters	707,758	Aug. 26	3418	770	100	1869
Buffalo Manufacturing Company. (See Mast, William J. D., assignor.)						
Buffalo Pitts Company. (See Todd, Marquis J., assignor.)						
Buffum, Evelyn, Chicago, Ill. Spool-stand	710,096	Sept. 30	4076	919, 920	100	2879
Bugbee, A., *et al.* (See Hughes, Thomas W., assignor.)						
Bugg, Herbert L., Walnutridge, Ark. Acetylene-gas generator	705,902	July 29	4970	1082	100	1066
Buhl, William H. (See Modlin and Buhl.)						
Buhoup, Harry C., Chicago, Ill. Car-bolster	706,370	July 1	29	6	100	8
Bullard, Albert M., Somerville, Mass., assignor to American Bell Telephone Company. Automatic telephone-exchange	709,739	Sept. 23	3341	753, 754	100	2715
Bullard, Albert M., Somerville, and M. C. Rorty, Dedham, assignors to American Bell Telephone Company, Boston, Mass. Automatic telephone-exchange system and apparatus	709,740	Sept. 23	3351	754, 755	100	2716
Bullard, James H., Springfield, assignor to Overman Automobile Company, Chicopee, Mass. Flue construction for steam-carriages	708,460	Sept. 2	832	190	100	2150
Bullard, Royal M., Chicago, Ill., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y. Type-writing machine	703,967	July 8	1145	249	100	243
Bullard, William L. (See Penty and Bullard.)						
Bulloch, Joseph G., Cherokee, N. C. Lemon-squeezer	703,988	July 8	1151	250	100	244
Bullock, George H., Wakefield, R. I. Table	705,203	July 29	4972	1092	100	1066
Bullock, William A. (See Macbeth, Frank D., assignor.)						
Bulmer, George D., Duquesne, Pa. Merry-go-round	703,761	July 1	711	157, 158	100	142
Bunce, Earl M., Collingwood, Ohio. Railway-tie	708,321	Sept. 9	948	215	100	2185
Bunce, Earl M., Collingwood, Ohio. Railway-tie	708,322	Sept. 9	949	215	100	2185
Bundy, Clifton L., Philadelphia, Pa., assignor to Philadelphia Electrical and Manufacturing Company. Electric-arc lamp	707,283	Aug. 19	2934	595	100	1692
Bunnell, Morton G., assignor to F. C. Austin Manufacturing Company, Chicago, Ill. Street-sprinkler valve	709,900	Sept. 30	3820	900	100	2826
Bunzl, Ernest, *et al.* (See Kuhn, Edmond, assignor.)						
Bunzl, Gustav, *et al.* (See Kuhn, Edmond, assignor.)						
Buoker, Daniel A., West Peabody, Mass. Knitting-machine	706,206	July 22	3540	767	100	769
Burbank, Louis S., Worcester, Mass. Rythmical rattle	705,819	July 29	4825	1048	100	1086
Burch, Charles J., assignor of one-half to F. R. Lancaster and J. H. Knauer, Lena, Ind. Singletree-clip	706,897	Aug. 12	1745	389	100	1491
Burchinal, Charles H. (See Wilkinson and Burchinal.)						
Burden, Oscar H., assignor of one-half to T. F. Adams, Kaslo, British Columbia, Canada. Latch	708,362	Sept. 9	1004	896	100	2328
Burdett, Everett W., *et al.*, administrators. (See Gilbert, Frederick A.)						
Burdict, Orrin C., and B. C. Candee, Buffalo, N. Y.; said Candee assignor to said Burdict. Mechanical movement for nut-making or other machinery	707,302	Aug. 19	2302	515	100	1654
Burfeind, Joachim H. (See Officer, Neill, and Burfeind.)						
Burgart, Philip H., Payne, Ohio. Safety-elevator	710,032	Sept. 30	3957	892	100	2855
Burger, Edward. (See Swisher and Burger.)						
Burger, Franz. (See Williams, Henry M., assignor.)						
Burger, Franz, assignor of three-fourths to H. M. Williams, Fort Wayne, Ind. Swivel-truck for vehicles	706,523	Sept. 9	950	215	100	2183
Burger, Franz, and H. M. Williams, Fort Wayne, Ind.; said Burger assignor of one-half to said Williams. Heating apparatus	706,796	Aug. 12	1551	347	100	1450
Burger, Victor A. A. (See Swisher and Burger.)						
Burgers, Franz, Bulmke, Germany. Profile-tool for making pipe-molds	706,378	July 22	3948	855, 856	100	848
Burgess, Charles. (See Schofield, Robert, assignor.)						
Burgess, George E., Buffalo, N. Y. Car-brake mechanism	704,506	July 15	2142	464	100	464
Burgett, John W., Guttenberg, N. J. Suspenders	705,205	July 22	3546	768	100	769
Burk, Ambros, Columbia City, Ind. Neck-yoke	708,019	Sept. 2	31	7	100	1997
Burk, Edward. (See Swift and Burk.)						
Burke, Alfred, *et al.* (See Neubauer, Carl E., assignor.)						
Burke, James, Berlin, Germany. Dynamo-electric machine	706,017	Aug. 5	22	5	100	1121
Burke, John T. (See Patterson and Burke.)						
Burke, Robert E., Anderson, Ind., assignor to M. B. Wilson, Chicago, Ill. Road-grading machine	706,393	Aug. 5	760	166, 167	100	1268

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Burland, Edward G., Watsonville, Cal. Canopy	706,722	Aug. 12	1385	308	100	1415
Burner, William L., assignor to Case Manufacturing Company, Columbus, Ohio. Hominy, meal, and grits drier	707,384	Aug. 19	2537	596	100	1698
Burnett, Alfred E., Jr. (See Merrie and Burnett.)						
Burnett, William S., and W. H. Goodall, Milwaukee, Wis. Multiplex telesig	705,511	July 22	4194	912 918	100	896
Burnham, Williams and Company. (See Collins, Thomas E., assignor.)						
Burns, Alexander B. (See Burns, David M. and A. B.)						
Burns, David M. and A. B., Greenbay, Wis. Boiler or water-heater	707,203	Aug. 19	2304	515	100	1644
Burns, Edward, Zearing, Iowa. Non-refillable bottle	707,759	Aug. 26	3419	770	100	1970
Burns, George A. (See English and Burns.)						
Burns, Henry H., *et al.* (See Dempster, Robert, assignor.)						
Burns, Henry S., and T. G. Bennett, assignors to Winchester Repeating Arms Co., New Haven, Conn. Cellular primer-tray	705,318	July 22	3809	826	100	820
Burns, John E., Northport, N. Y. Cross-tie	706,523	Aug. 12	1036	228	100	1340
Burns, William G., assignor to Boston Gas Iron Mfg Co., Boston, Mass. Self-heating sad-iron	705,204	July 22	3543	708	100	768
Burr, Franklin H., Atlantic, assignor to Fast Mail Delivery Company, Council Bluffs, Iowa. Mail receiving and delivering mechanism for railways	707,507	Aug. 19	2841	643	100	1736
Burr, Jesse T., Cleveland, Ohio. Wrench	710,179	Sept. 30	4245	957	100	2916
Burrell, Edmund R. (See Strange and Graham, assignors.)						
Burridge, Lee S., New York, N. Y., and S. T. Smith, Stamford, Conn., assignors to Wagner Typewriter Company, New York, N. Y. Card-holder for type-writers	706,524	Aug. 12	1067	228	100	1340
Burrill, Frank C. (See Eaton and Burrill.)						
Burrill, George H., Adaville, Iowa. Grain-drill	709,741	Sept. 23	3370	756	100	2719
Burritt, Chester C., Bayonne, N. J. Door-stop	704,855	July 15	2773	600	100	594
Burrow, Edgar A., Hico, Tex. Oil heater, strainer, and separator	707,760	Aug. 26	3421	770	100	1870
Burrowes, Edward T., Portland, Me., assignor to Curtain Supply Company, Chicago, Ill. Device for spring-actuated shades	705,051	July 22	3182	688	100	695
Burruss, William C., Norfolk, Va. Lamp-chimney protector	709,398	Sept. 16	2686	602	100	2566
Burry, John, Fort Lee, N. J. Means for controlling the charging of secondary batteries	709,465	Sept. 23	2839	637 638	100	2610
Burry, John, assignor to M. Wyler, Fort Lee, N. J., and M. Burry, Brooklyn, N. Y. Magneto-therapeutic apparatus	708,999	July 8	1152	250	100	244
Burry, Marie, *et al.* (See Burry, John, assignor.)						
Burton, Charles S., trustee. (See Crook, Charles M., assignor.)						
Burton, Gale W., Muncie, Ind. Baggage-truck	708,900	July 8	1154	250	100	244
Burton, George W., Morehead, Ky. Brake for vehicles	706,898	Aug. 12	1746	390	100	1491
Burton, John L., assignor to Draper Company, Hopedale, Mass. Filling-carrier receptacle for weft-replenishing looms	708,594	Sept. 9	951	216	100	2186
Burton, Orville C. (See Stiker and Burton.)						
Busby, Charles, Fossil, Oreg. Wrench	709,742	Sept. 23	3371	756	100	2719
Busch, John G., Alma, Wis. Window-shutter	706,217	Aug. 5	409	87, 88	100	1290
Bush, Hiram T., Detroit, Mich. Water-closet bowl	705,319	July 22	3810	826	100	820
Bush, Samuel P. (See Groobey and Bush.)						
Bush, Samuel P., assignor to Buckeye Malleable Iron and Coupler Co., Columbus, Ohio. Friction draw-gear and buffing apparatus for railway-cars	707,820	Aug. 26	3548	800 801	100	1896
Bush, Thomas J., Lexington, Ky. Rotary engine	709,961	Sept. 30	3823	860	100	2827
Bushnell, Glenn C., Hartford, Ohio. Dashboard	704,812	July 15	2704	585	100	578
Bushnell, John S., Brooklyn, N. Y. Tube-cleaning device	708,200	Sept. 2	366	89	100	2060
Buskirk, George W., New York, N. Y. Blotter or desk-pad	708,525	Sept. 9	953	216	100	2186
Buss, Otto, Rüschlikon, Switzerland. Casein photographic film and making same	705,643	July 29	4499	.....	100	971
Bussinger, William J., assignor to T. Devlin & Company, Philadelphia, Pa. Quick return for feeding devices	708,863	Sept. 9	1606	367	100	2128
Butcher, James M., and W. G. Hartwig, Chicago, Ill., assignors to American Automatic Change Maker Company, Little Rock, Ark. Coin-delivery device	707,065	Aug. 12	2080	453 454	100	1549
Butcher, Joseph, New York, N. Y. Pendulum-regulator for clocks	709,594	Sept. 23	3100	691	100	2366
Butcher, Joseph, New York, N. Y., assignor to S. N. Putnam, Jersey City, N. J. Electric clock	705,558	July 29	4358	942 943	100	941
Butler, Bert, Kensett, Iowa. Hand-cart	704,612	July 15	2828	505 506	100	502
Butler, Edwin T., Chambuslang, near Glasgow, Scotland. Photographic camera for producing and viewing images in natural colors	708,795	Sept. 9	1458	333	100	2299
Butler, Henry G., Danville, Ill. Dredging-scoop	708,753	Sept. 9	1365	311 312	100	2272
Butler, James, St. Louis, Mo. Nut-lock	708,390	July 1	31	7	100	9
Butler, John F. (See Mallin, Isaac H., assignor.)						
Butler, Paul, Lowell, Mass. Cartridge-shell-gaging machine	708,128	Sept. 2	224	53, 54	100	2028
Butler, Thomas S., Vandergrift, Pa. Track-brake	709,743	Sept. 23	3372	756	100	2719
Butler, William A., and A. Kunze, San Francisco, Cal. Continuous kiln	705,585	July 1	282	64	100	57
Butler, William E., Bedford, Ind. Drilling-machine	708,995	Sept. 16	1870	430 431	100	2394
Butt, William D., Kansas City, Mo. Advertising device	706,595	Aug. 12	1068	228	100	1340
Butt, William D., Kansas City, Mo. Advertising device	707,205	Aug. 19	2307	516	100	1635
Butt, William D., Kansas City, Mo. Advertising device	709,466	Sept. 23	2841	638	100	2510
Butt, William D., Kansas City, Mo. Hydrostatic press	710,059	Sept. 30	3956	898	100	2856
Butterworth, Hubert V., Newark, N. J. Recorder for phonographs, &c	707,904	Aug. 19	2305	516	100	1635
Buttling, Avery H. (See O'Brien, Joseph, assignor.)						
Buttner, Henry F., Idaho Falls, Idaho. Non-refillable bottle	704,613	July 15	2330	506	100	502
Butts, Edmund R., Oberon, N. D. Harrow	709,256	Sept. 16	2403	544	100	2306
Butz, Albert M., Oakpark, Ill. Thermostatic circuit-closer	705,379	July 22	3949	856	100	848
Buyse, Edward, South Bend, Ind. Timing device for carrier-pigeons	708,581	July 1	82	7	100	9
Buzzell, John G., Lynn, Mass. Machine for abrading fronts of shoe-heels	708,991	July 8	1155	251	100	245
Bycraft, William J., Newton, Ind. Ter. Bottle-closure	709,201	Sept. 16	2296	521	100	2483
Byerly, William A., Bridgewater, Va. Gate	708,382	July 1	33	7	100	9
Byers, Joseph A., Milwaukee, Wis. Making hats	708,388	July 1	37	7	100	10
Bylngton, John F., Battlecreek, Mich., assignor to F. A. Hardy & Co., Chicago, Ill. Machine for grinding lenses	710,180	Sept. 30	4248	957	100	2916
Byrnes, Clarence P., Pittsburg, Pa. Spring-cushioning device	704,818	July 15	2705	585	100	578
Bystrom, John, Chicago, Ill. Hydrocarbon-lamp	708,384	July 1	28	8	100	10
C. B. Cottrell & Sons Company. (See Seymour, Ralph C., assignor.)						
C-K Manufacturing Company. (See Klein, Charles J., assignor.)						
Cabot, John W., Johnstown, Pa., and S. W. Vaughen, Lorain, Ohio. Blast-regulator for furnaces	710,247	Sept. 30	4378	983	100	2943
Cade, Enos B., Skaguay, Alaska Ter. Tidal motor	708,461	Sept. 2	834	190	100	2130

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Cadman, Isaac P., Beloit, Wis. Automatically-inflated polishing-wheel	704,509	July 15	2145	464	100	464
Cady, Ira D., Minneapolis, Minn. Vehicle-shaft support	708,080	Sept. 2	31	7	100	1087
Cahill, Arthur T., *et al.*, trustees. (See Cahill, Thaddeus, assignor.)						
Cahill, George F., *et al.*, trustees. (See Cahill, Thaddeus, assignor.)						
Cahill & Hall Elevator Company. (See Clennam, Milton A., assignor.)						
Cahill, Thaddeus, New York, N. Y., assignor to J. B. Lambie, E. H. Jackson, G. F. and A. T. Cahill, trustees. Type-writing machine	705,559	July 29	4355	943 944	100	942
Cahill, Thomas H., assignor of one-half to W. F. Dailey, W. Bishop, and C. A. Miller, Terra Alta, W. Va. Wrench	710,040	Sept. 30	3068	693	100	2856
Cahoon, William F., Skinnersville, N. C. Cultivator	706,393	Aug. 5	765	167	100	1269
Cain, William M., Carlton, Minn. Load-retaining means for vehicles	708,797	Aug. 12	1552	348	100	1450
Cain, William M., Carlton, Minn. Load-retaining apparatus for vehicles	708,596	Sept. 9	954	216	100	2186
Cairns, Irving, Montclair, N. J. Fireman's hat	705,089	July 22	3185	698	100	695
Calder, Alexander C., Richmond, Va. Combined gage-cock and safety-valve	708,527	Sept. 9	956	216	100	2187
Caldwell, Charles C. (See Karrmann, Julius, assignor.)						
Caldwell, Charles W., Waterloo, Iowa, assignor to Railroad Gas Lighting Company, Chicago, Ill. Acetylene-gas generator	708,021	Sept. 2	33	8	100	1087
Caldwell, George L. (See Ebeling, Philip, assignor.)						
Caldwell, John, assignor to W. S. Nott Company, Minneapolis, Minn. Leather-stretching device	704,510	July 15	2147	465	100	465
Caldwell, Samuel B., *et al.* (See Shriver, Augustus F., assignor.)						
Calkins, Albert C., assignor to F. W. Braun, Los Angeles, Cal. Ore-breaker	707,885	Aug. 19	2640	596	100	1694
Calkins, Almon B., Franklin, N. J., assignor to American Match Machine Company, New York, N. Y. Splint-boxing machinery	704,511	July 15	2148	465 466 467	100	466
Callen, Elmo H., Leechburg, Pa. Curtain-pole and shade-fixture	710,353	Sept. 30	4548	1026	100	2980
Calleson, Amos. (See Calleson, Christian A., assignor.)						
Calleson, Christian A., New York, assignor to A. Calleson, Brooklyn, N. Y. Metal cap for bottles or jars	708,538	Sept. 9	957	217	100	2187
Callsen, Jürgen. (See Dresser and Callsen.)						
Callsen, Jürgen. (See Hofmann and Callsen.)						
Callsen, Jürgen, Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y. Alkyloxymethyl ester of salicylic acid and making same	706,018	Aug. 5	24	.....	100	1121
Callum Fire Signal Company. (See Callum, Robert G., assignor.)						
Callum, Robert G., Washington, D. C. Electric signaling system and apparatus used therein	706,218	Aug. 5	412	88.89	100	1200
Callum, Robert G., assignor to Callum Fire Signal Company, Washington, D. C. Fire-alarm-telegraph system	706,384	Aug. 5	767	167 168	100	1269
Calvin, James E., assignor of one-half to E. C. Cochran, Camptonville, Cal. Insulator	704,178	July 8	1516	325	100	318
Cambridge, Alonzo C., assignor of one-half to W. D. Crum, Charleston, S. C. Cigar-maker's board	704,235	July 8	1622	351	100	399
Camentz, Fritz, Jr., Chicago, Ill. Water-trap	708,529	Sept. 9	959	217	100	2187
Cameron, Alexander N., Perth, Canada. Apparatus for forging car-wheels	703,534	July 1	263	65	100	57
Cameron, Daniel, Kansas City, Mo., assignor to Cudahy Packing Company, Chicago, Ill. Rendering apparatus	705,033	July 22	3186	698	100	695
Cameron, Daniel, Kansas City, Mo., assignor to Cudahy Packing Company, Chicago, Ill. Extracting grease	705,034	July 22	3188	698	100	696
Camfield, James D., Skilesville, Ky. Invalid-bedstead	703,535	July 1	285	65	100	58
Cammann, Frederick A., St. Louis, Mo. Placket-fastener	703,718	July 1	631	141	100	125
Campany, Milton E., Hamilton, assignor of one-half to H. B. Peck, Kalamazoo, Mich. Hook and eye	704,512	July 15	2158	467	100	468
Campbell, Alexander. (See Sheedy and Campbell.)						
Campbell, Charles R., New York, N. Y. Electric railway	706,156	Aug. 5	307	65	100	1179
Campbell, Charles R., New York, N. Y. Operating electric railways	706,219	Aug. 5	418	90	100	1201
Campbell, Ephraim, Redlands, Cal. Flume-gate	704,971	July 15	3064	658	100	654
Campbell, Henry W., *et al.* (See Bangley, Joseph L., assignor.)						
Campbell, James, Port Blakely, Wash. Steam-trap	708,906	Sept. 16	1873	431	100	2295
Campbell, John D., and J. K. Gunn, Newton, N. J. Screw-driver	703,028	July 1	473	108	100	98
Campbell, Joseph D., Delaware, and R. C. Kyle, Columbus, Ohio. Wire-grip	708,814	Sept. 2	586	132	100	2101
Campbell, Leon W., Woonsocket, R. I., assignor of one-half to M. Campbell, Boston, Mass. Loom-shuttle	703,992	July 8	1157	251	100	245
Campbell, Malcolm. (See Campbell, Leon W., assignor.)						
Campbell, Stewart L., Kalamazoo, Mich. Display device	704,513	July 15	2159	468	100	468
Campbell, Walter H., Kiev, Russia. Type-writer	707,548	Aug. 26	2956	698 699	100	1776
Candee, Bertram C. (See Burdict and Candee.)						
Canet, Jean B. G. A. (See Schneider and Canet.)						
Canfield, Frank, assignor to Western Wire Fence Company, Denver, Colo. Wire-fence fastening-clip	706,220	Aug. 5	490	90	100	1202
Canfield, Frank, assignor to Western Wire Fence Company, Denver, Colo. Wire-fence clip	706,285	Aug. 5	771	168	100	1270
Cannan, John J., assignor to Henry Likly & Company, Rochester, N. Y. Wardrobe-trunk	705,500	July 29	4358	944 945	100	943
Cannon, Edward A., assignor to Cannon Toy Company, Casco, Wis. Toy blocks	709,467	Sept. 23	2842	638 639	100	2610
Cannon, Edwin F., Chicago, Ill. Street-car fender	708,536	July 1	287	66	100	58
Cannon, Joseph P., Elmo, Iowa. Wall-paper hanger	708,124	Sept. 2	262	54	100	2029
Cannon Toy Company. (See Cannon, Edward A., assignor.)						
Cappeller, William S., Mansfield, Ohio, and C. S. Patteson, New York, N. Y. Coupon collection and receipt book	704,856	July 15	2775	600	100	594
Capper, Arthur S., Detroit, Mich. Beet-culture implement	704,814	July 15	2681	506	100	502
Capps, Edwin M., San Diego, Cal. Machine-gun	709,801	Sept. 16	2490	560 561 562	100	2585
Caracisti, Virginius Z., Granite, Va. Engine attachment	708,021	Sept. 2	87	9	100	1998
Carborundum Company. (See Tone, Frank J., assignor.)						
Carey, Abner, Cairo, Ill. Drying-kiln	704,814	July 15	2709	585 586	100	580
Carey, James P. (See Keville and Carey.)						
Carichoff, Eugene R., assignor to Otis Elevator Company, East Orange, N. J. Electric switch	706,527	Aug. 12	1040	229	100	1340
Carichoff, Eugene R., East Orange, N. J., assignor to Sprague Electric Company. Control of dynamo-electric machinery	706,723	Aug. 19	1396	309	100	1416
Carl, John H., assignor of one-half to T. Harris, Gilroy, Cal. Rifle	705,736	July 29	4638	1014	100	1008
Carlisle, Charles C., near Kamiah, Idaho, assignor of one-half to F. Bond, Cheyenne, Wyo. Self-adjusting weir	706,536	Aug. 12	1040	229	100	1340

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Carljude, Wilhelm, assignor to Aktiebolaget Bleckvarufabriken I. Lund, Lund, Sweden. Machine for fastening the bottoms in angular vessels of sheet metal	704,735	July 15	2588	548 549	100	546
Carlson, Edward, and J. Perrie, Chicago, Ill. Bolster	703,993	July 8	1158	252	100	245
Carlson, Enoch. (See Halsden, John A., assignor.)						
Carlson, Frank O., and B. J. Haaland, Valley City, N. D. Cloth-cleaning device	704,615	July 15	2331	506	100	502
Carlson, Frank W., Chicago, Ill. Sewer-pipe connection	705,998	Aug. 5	596	130	100	1235
Carlson, Gabriel, assignor to Confectioners' Machinery and Manufacturing Company, Springfield, Mass. Coating-machine	708,125	Sept. 2	234	54.55	100	2030
Carlson, Sven, Stockholm, Sweden. Cleaner for burner-tips	709,077	Sept. 16	2047	467	100	2431
Carlstedt, John A., Brooklyn, N. Y., assignor to G. F. Spencer, Newark, N. J. Combined reflector or lamp-shade and collar	704,711	July 15	2491	539	100	537
Carman, Charles W., Chicago, Ill. Hoisting mechanism	706,019	Aug. 5	25	6	100	1121
Carman, Charles W., Chicago, Ill. Image-projecting apparatus	707,084	Aug. 19	2976	653	100	1574
Carman, Clarence A., Bayshore, assignor of one-third to B. P. Field, Babylon, N. Y. Roller-bearing	709,136	Sept. 16	2162	495	100	2456
Carmical, Oliver L., Monk, Ga. Plow	706,386	Aug. 5	772	168 169	100	1270
Carmichael, Archibald D., Broken Hill, New South Wales, Australia. Desulfurizing of sulfid ores preparatory to smelting	705,904	July 29	4974	.....	100	1067
Carmichael, Henry W. (See Howe, Henry R., assignor.)						
Carmont, William E., Kingston-upon-Thames, England. Resilient tire for vehicle-wheels	708,864	Sept. 9	1608	367 368	100	2324
Carolus, William B., Sterling, Ill. Bolt and nut cutter	710,181	Sept. 30	4249	958	100	2916
Carolus, William B., Sterling, Ill. Bolt and nut cutter	710,182	Sept 30	4251	958	100	2917
Carpenter, Edwin F. (See Proctor and Carpenter.)						
Carpenter, John, *et al.* (See Sprague, Lewis G., assignor.)						
Carpenter, Theodore M., and F. L. Baker, Los Angeles, Cal. Ventilator	703,762	July 1	712	158	100	142
Carpet Yarn Printing Company. (See Forsander, Alfred, assignor.)						
Carr, George, Carrville, Iowa. Frame for doors or windows	706,157	Aug. 5	309	65	100	1180
Carr, Julian S. (See Egan, Charles E., assignor.)						
Carrell, Wilber A., West Homestead, assignor of one-half to J. O. Horning, Pittsburg, Pa. Electric controller	710,096	Sept. 30	4078	920	100	2880
Carrier, Lyman, Joliet, Ill. Detector-bar for railway-switches	703,537	July 1	289	66	100	58
Carrier, Roy J., and J. W. Low, assignors to Howe and Davidson Company, Chicago, Ill. Box folding and pasting machine	705,206	July 22	3547	768 769 770 771	100	769
Carrington, Jackson D., deceased, Newcastle, Pa.; J. S. Whitla, administrator. Automobile	704,296	July 8	1734	378	100	364
Carroll, George P. (See Cooper, George L., assignor.)						
Carroll, Michael J., *et al.* (See Clinton, John, assignor.)						
Carroll, Thomas, Dayton, Ohio, assignor to National Cash Register Company, Jersey City, N. J. Cash-register	703,690	July 1	475	108 109 110	100	98
Carroll, Wilson J., Cripplecreek, Colo. Combination-lock	709,078	Sept. 16	2047	468	100	2431
Carryl, Henry D., New York, N. Y., assignor to J. R. Hay, Nutley, N. J. Painting apparatus	703,385	July 1	40	8	100	10
Carson, Alvah J. (See Travis, William, assignor.)						
Carson, James G. (See Clark, Chauncey C., assignor.)						
Carson, Robert N., San Francisco, Cal. Glove	706,734	Aug. 12	1389	309	100	1416
Carson, Robert N., San Francisco, Cal. Glove	709,505	Sept. 23	3102	691	100	2666
Carson, Robert N., San Francisco, Cal. Glove	709,468	Sept. 23	2847	639 640	100	2611
Carter, Albert B., Hazlehurst, Miss. Car-coupling						
Carter, Alfred G. (See Carter, John, assignor.)						
Carter, Byron B. (See Wende and Carter.)						
Carter, George M., assignor to himself and W. Ferguson, Poplarbluff, Mo. Machine for finishing barrels	708,994	July 8	1159	271 272	100	246
Carter, John, assignor of one-half to A. G. Carter, Malden, Mass. Eyeglasses	706,999	Aug. 12	1747	390	100	1491
Carter, John R., Augusta, Ky., assignor to E. H. Huenefeld, Cincinnati, Ohio. Coupling for pitmen	707,386	Aug. 19	2641	596 597	100	1604
Carter, John R., Augusta, Ky., and J. K. Haunfeld, assignors to E. H. Huenefeld, Cincinnati, Ohio. Coupling	707,674	Aug. 26	3218	722	100	1820
Carter, John R., Augusta, Ky., and J. K. Haunfeld, assignors to E. H. Huenefeld, Cincinnati, Ohio. Gearing	708,815	Sept. 2	587	133	100	2101
Carter, John W., Rutherford, N. J., assignor to W. S. Block, Brooklyn, N. Y. Gas-heater	710,248	Sept. 30	4374	983	100	2944
Carter, Leonard, *et al.* (See McLaughlin, James A., assignor.)						
Carter, Lincoln J., Chicago, Ill. Theatrical scenery	703,768	July 1	714	158 159	100	143
Carter, Mansion C., Hearne, Tex. Tire for vehicle-wheels	706,997	Sept. 16	1873	421	100	2295
Cartledge, Wright R. (See Ware and Cartledge.)						
Cartlidge, Frank, assignor to Morgan-Gardner Electric Company, Chicago, Ill. Lubricator	708,022	Sept. 2	86	8.9	100	1988
Cartwright, Eugene O., Augusta, Ark. Device for cutting circles	703,538	July 1	290	66	100	58
Cary, Julian E., San Francisco, Cal. Rotary engine	705,544	July 29	4501	977	100	971
Cascaden Manufacturing Company. (See Cascaden, Thomas, Jr., assignor.)						
Cascaden, Thomas, Jr., assignor to Cascaden Manufacturing Company, Waterloo, Iowa. Hay-stacker	706,299	Aug. 5	597	130	100	1236
Case, Adelbert B., Springfield, Mass. Ball-bearing for lawn-mowers	707,298	Aug. 19	2481	557	100	1661
Case, Edward D., Flint, Mich. Pipe-cleaning apparatus	709,802	Sept. 16	2493	562	100	2295
Case, Frank B., assignor to Riggs-Spencer Company, Rochester, N. Y. Driving, braking, and coasting mechanism	708,201	Sept. 2	386	90	100	2060
Case, Frank B., assignor to Riggs-Spencer Company, Rochester, N. Y. Cushion-frame for bicycles	708,202	Sept. 2	389	90	100	2061
Case, Frank E., Schenectady, N. Y., assignor to General Electric Company. Train-control system	706,020	Aug. 5	30	6	100	1122
Case, Frank E., Schenectady, N. Y., assignor to General Electric Company. Coupling for electric motors	708,084	Sept. 2	40	10	100	1989
Case, Henry M. (See Hankins, Lewis T., assignor.)						
Case, John W. (See Schwemle and Case.)						
Case Manufacturing Company. (See Burner, William L., assignor.)						
Case, Theodore N., Mount Vernon, N. Y. Air-pump	707,821	Aug. 26	3550	801 802 803	100	1896
Case, Wilmer S., Haywards, assignor of one-half to J. H. Hunt, Oakland, Cal. Can-body-forming machine	704,173	July 8	1517	395 396	100	819
Casgrain, Louis A., Winchester, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Jack for slugging and nailing machines	705,512	July 22	4100	913	100	908

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Cass, William J., Hartland, Canada. Slip-link for trace-chains	705,035	July 22	3190	689	100	696
Cassady, George, Vancouver, Canada. Rotary engine	705,380	July 22	3951	356	100	848
Cassella & Co., Leopold. (See Herz, Richard, assignor.)						
Cassella & Co., Leopold. (See Weinberg, Arthur, assignor.)						
Cassella & Co., Leopold. (See Weinberg and Klingemann, assignors.)						
Casser, Constantine. (See Krebs, John F., assignor.)						
Castelin, André, assignor to Société Anonyme d'Etudes et d'Exploitation des Brevets A. Castelin pour Machines Agricoles Automobiles, Paris, France. Rotary apparatus or plow for treatment of ground	704,857	July 15	2776	600 601	100	595
Castelin, André, assignor to Société Anonyme d'Etudes et d'Exploitation des Brevets A. Castelin pour Machines Agricoles Automobiles, Paris, France. Knotting device for harvesting-machines	706,816	Sept. 2	588	133 134	100	2101
Casterlin, Warren S., Pittston, Pa. Hoof-trimmer	707,822	Aug. 26	3554	808	100	1807
Castle Brook Carbon Black Company. (See Mann, John H., assignor.)						
Castle Brook Carbon Black Company. (See Mann, John L., assignor.)						
Castlen, George W., Owensboro, Ky. Mechanical money-changer	709,744	Sept. 23	3373	757	100	2729
Caswell, Myron J., assignor to Latham & Company, Sandusky, Ohio. Spraying apparatus	705,645 706,086	July 29 July 22	4504 3191	977 689	100 100	972 696
Cather, Charles E., and L. H. Buckley, Worcester, Mass. Envelop	707,887	Aug. 19	3543	807	100	1694
Cathrein, Josef, Munich, Germany, assignor to I. Friedinger, Oberthal, near Linz, Austria-Hungary. Skirt-protector						
Caton, Fred E. (See Woodruff and Caton.)						
Caton, Fred E., and F. B. Warring, assignors to Caton's Foundry and Machine Company, San Jose, Cal. Gas-generator	703,995	July 8	1161	252	100	246
Caton's Foundry and Machine Company. (See Caton and Warring, assignors.)						
Caton's Foundry and Machine Company. (See Warring, Franklin B., assignor.)						
Cattley, Eardley C. (See Cattley, Edward C. and E. M., assignors.)						
Cattley, Edward C. and E. M., assignors of one-third to E. C. Cattley, Brooklyn, N. Y. Line-guide for fishing-rods	703,990	July 8	1164	253	100	247
Cattley, Ernest M. (See Cattley, Edward C. and E. M.)						
Catzen, Lillie H., Baltimore, Md. Shield for personal wear	708,317	Sept. 2	591	134	100	2101
Cavanagh, Joseph R., J. B. Hannan, and J. D. Clarke, Indianapolis, Ind. Car-record device	709,304	Sept. 16	2587	608	100	2505
Cawley, George, Westminster, England. Vehicle to be used in electric traction on railways	708,462	Sept. 2	896	190	100	2150
Cederquist, Adolf F. (See Eek and Cederquist.)						
Centner, Albert H., Chicago, Ill. Elevating roller attachment	705,905	July 29	4975	1092 1088	100	1057
Central Cyclone Company. (See Warner, George M., assignor.)						
Century Camera Company. (See Locke, Harvey W., assignor.)						
Chadwick, Everett D. (See Fiske, Henry A., assignor.)	708,530	Sept. 9	960	217	100	2188
Chaffer, William J., Manharpur, India. Door holder or bolt	707,398	Aug. 19	3544	597	100	1695
Chaffin, John M., Redcloud, Nebr. Elastic connection for checkreins	709,137	Sept. 16	2164	496	100	2457
Chalfant, Walter B., Braznell, Pa. Centrifugal churn	704,174	July 8	1580	325	100	329
Chaloner, Thomas T., New York, N. Y. Automatic stop-signal for railways	709,469	Sept. 23	2849	640	100	2612
Chaloupka, August. (See Sears, Frank M., assignor.)						
Chamberlin, Fred G., Minneapolis, Minn. Danger-signal device for railways	709,697	Sept. 23	3276	733	100	2701
Chambers Brothers Company. (See King, Howard K., assignor.)						
Chambers, Henry C., assignor to Cincinnati Butchers Supply Co., Cincinnati, Ohio. Meat-reducing device	706,300	Aug. 5	599	131	100	1236
Chambers, John S., Wilmington, N. C. Throttle-valve	706,387	Aug. 5	774	169 170	100	1271
Chambliss, John A., New York, N. Y. Stamp detaching and affixing machine	707,761	Aug. 26	3492	771	100	1870
Champion Sanitary Enamel-Ware Co. (See McGuire, Peter J., assignor.)						
Chance, Albert B., Centralia, Mo. Circuit-closing device	707,549	Aug. 26	2958	669	100	1777
Chandler, Clarence A., Worcester, Mass. Machine for grinding twist-drills	708,754	Sept. 9	1367	312	100	2272
Chandler, Helen S., Dover, N. H. Adjustable chart	708,203	Sept. 2	891	90	100	2061
Chandler, Thomas P., Rochester, Pa. Copy-holder	703,539	July 1	291	66	100	59
Chapman, John S., Albany, N. Y. Forced-draft apparatus	703,784	July 1	717	159	100	144
Chapman, Louis H., Littlefalls, N. Y. Graphophone attachment	706,708	Aug. 12	1554	348	100	1451
Chapman, Penrose E., St. Louis, Mo. Electric testing apparatus	705,906	July 29	4977	1088	100	1057
Chapman, William B., Boyne City, Mich. Retort for wood distillation	705,907	July 29	4979	1084	100	1058
Chapman, William B., Boyne City, Mich. Furnace for retorts	705,561	July 29	4361	945	100	944
Chapman, William H., Portland, Me. Rheostat	707,300	Aug. 19	3484	558	100	1661
Chapman, William H., Portland, Me. Controller for electric motors						
Chapman, William S., assignor of one-half to A. J. Erickson and A. H. Peterson, Kippen, Idaho. Coupling for wagons	704,858	July 15	2777	601	100	595
Chappell, George P., New York, N. Y. Making artificial stone and forming articles therefrom	703,640	July 1	485		100	96
Chaquette, Ephraïm, New Rochelle, N. Y. Wave-motion pump	703,997	July 8	1165	253	100	247
Chaquette, Ephraïm, New Rochelle, N. Y. Wave-motor	703,998	July 8	1166	254	100	247
Chaquette, Ephraïm, New Rochelle, N. Y. Sewer-dredge	705,646	July 29	4507	978	100	973
Chaquette, Ephraïm, New Rochelle, N. Y. Clam for dredges	706,221	Aug. 5	421	90	100	1202
Charbeneau, John C., Mount Clemens, Mich. Acetylene-gas generator	709,470	Sept. 23	2851	640 641	100	2612
Charlebois, Edwin G., Watertown, N. Y. Sheet-metal siding	705,207	July 22	3565	771	100	772
Charles, Albion P., Iola, Kans. Rotary engine	706,158	Aug. 5	310	65, 66	100	1189
Charles, Herman, Kofa, Ariz. Ter. Safety device for motor-vehicles	701,616	July 15	2332	507	100	502
Charles J. Downing & Co. (See Rice, Vietts L., assignor.)						
Charon, Antoine, assignor to A. Duclos, Montreal, Canada. Preparing bog-peat for fuel purposes	709,664	Sept. 23	3317		100	2589
Charon, Jules E., Paris, France. Filter	704,815	July 15	2711	586	100	580
Charron, Ferdinand, and L. Girardot, Paris, France. Metallic chest for motor-vehicles	704,676	July 15	2422	525	100	524
Charron, Ferdinand, and L. Girardot, Paris, France. Body for motor-vehicles	707,906	Aug. 19	2310	516 517	100	1625
Charters, Samuel B., *et al.* (See Kent, Thomas J., assignor.)						
Chase, Arthur W., Avoca, Iowa. Treating ores and by-products containing sulfur and iron	709,745	Sept. 23	3377	758	100	2730
Chase, Charles A., Chicago, Ill. Machine for molding incandescent-lamp sockets	707,299	Aug. 19	2482	557	100	1661
Chase, George S., Springfield, Mass. Heat-generator	703,540	July 1	292	67	100	59
Chase, John F., St. Petersburg, Fla. Portable irrigator	708,126	Sept. 2	893	66	100	2030
Chase, Joseph H., Buffalo, N. Y. Valve for piano-players	710,007	Sept. 30	4079	920 921	100	2380
Chattanooga Plow Co. (See Buchanan, Judson, assignor.)						
Chattaway, John J., Brooklyn, N. Y. Numbering-machine	710,140	Sept. 30	4171	940	100	2900
Chauvet, Joseph J. M., and J. W. Coulter, New York, N. Y. Sewing-machine take-up	704,997	July 8	1735	378	100	334

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Checkley, Edwin J., trustee, *et al.* (See Merrifield, Leonard L., assignor.)						
Cheever, William H. (See Fassett and Warren, assignors.)						
Chein, Julius, New York, N. Y. Savings-bank	706,388	Aug. 5	781	170	100	1272
Chemical Products Company. (See Mork, Little, and Walker, assignors.)						
Chemische Fabrik auf Actien, vorm. E. Schering. (See Stephan, Karl, assignor.)						
Cheney, George M., Indianapolis, Ind. Bridge construction	708,463	Sept. 2	887	191	100	2151
Cheney, Owen L., Bloomington, Ill. Stock for tools	707,901	Aug. 26	3714	823	100	1927
Chenhalls, John S., Plymouth, England. Oil-burner	705,880	July 29	4827	1048	100	1057
Cherpaw, Joseph, and F. McGuire, Uxbridge, Canada. Sheep-trail	708,999	July 8	1168	254	100	245
Chervenka, Frank A., Milwaukee, Wis. Watch-protector	704,236	July 8	1624	351	100	339
Chester & Company, Edward. (See Chester, Edward D., assignor.)						
Chester, Edward D., assignor to E. Chester & Company, Limited, London, England. Construction of tanks	709,308	Sept. 16	2490	562 563	100	2329
Chesterman, Dana L. (See Chesterman, John H. and D. L.)						
Chesterman, John H. and D. L., Philadelphia, Pa., assignors to Chesterman & Streeter. Hernial truss	705,821	July 29	4828	1048	100	1057
Chesterman & Streeter. (See Chesterman, John H. and D. L., assignors.)						
Chesterman, William, Sheffield, England. Engineer's square	707,801	Aug. 12	2487	558	100	1669
Cheval, Victor, and J. Lindeman, Brussels, Belgium. Electric accumulator-electrode	704,859	July [illegible]	2578	601	100	595
Chevalier, Joseph, Holyoke, N. and E. Lajoie, Chicopee, Mass. Paper-coating machine	704,434	July 8	1922	431	100	417
Chew, William D. (See Harris and Chew.)						
Chicago Handle Bar Co. (See Maldaner, Charles, assignor.)						
Chicago Pneumatic Tool Company. (See Kimman, Henry J., assignor.)						
Chicago Pneumatic Tool Company. (See Pickles, Charles K., assignor.)						
Chicago Railway Equipment Company. (See Huntoon, Charles F., assignor.)						
Chicago Solar Light Company. (See Hawks, William, assignor.)						
Chicago Writing Machine Company. (See Ryden, Axel, assignor.)						
Chicago Writing Machine Company. (See Seifried, Samuel J., assignor.)						
Chickering, Kenton, Oil City, Pa. Spool for mud-reels, &c	704,435	July 8	1984	431 432	100	417
Childress, Henderson P., Memphis, Tenn. Type-writer cover	704,227	July 8	1625	351 352	100	339
Chinnock, George H., Brooklyn, assignor to J. J. Nichols, H. H. Jandorf, New York, N. Y., and S. S. Ryckman, Grimsby, Ontario, Canada. Self-healing material	707,550	Aug. 26	2900	670	100	1777
Chipley, Gardiner W., Chicago, Ill. Lacing-hook	705,562	July 29	4362	945	100	944
Chipley, Gardiner W., Chicago, Ill. Radiator attachment	706,159	Aug. 5	512	66	100	1180
Chipley, Gardiner W., Chicago, Ill. Railway-car	707,302	Aug. 19	2498	558 559	100	1662
Chipman, Horace D., Cincinnati, Ohio. Rapid-acting vise	703,765	July 1	718	159	100	144
Chisholm, Charles W. (See De Laval and Chisholm.)						
Chisholm, James, Fort Liscum, Alaska Ter. Can-opener	707,207	Aug. 19	2311	517	100	1626
Chisholm, William O., Glasgow, Scotland. Waterproof scarf	709,138	Sept. 16	2166	496	100	2457
Chittenden, William R. (See Dallas, George M., assignor.)						
Chittum, Charles H., Lexington, Va. Nut-lock	708,895	Sept. 9	1509	368	100	2334
Choquette, Michel, Kankakee, Ill. Shingling-bracket	708,594	July 1	907	211	100	193
Christ, Charles F., Detroit, Mich. Machine for boxing matches	705,087	July 22	3198	689	100	697
Christensen, Christian, Escanaba, Mich. Measuring device	708,389	Aug. 5	783	170	100	1272
Christensen, Niels A. (See Richards, Walter J., assignor.)						
Christensen, Paul B., Spreckels, Cal. Sulky-harrow	707,902	Aug. 26	3715	833	100	1927
Christensen, Robert, assignor of one-half to C. Nelson, Racine, Wis. Boot or shoe protector	706,900	Aug. 12	1748	390	100	1491
Christian, Charles A., East Orange, N. J. Indicating device	706,528	Aug. 12	1044	229	100	1541
Christian, George H., Cleveland, assignor of one-half to C. H. Taylor, East Cleveland, Ohio. Manufacturing secondary-battery plates	708,694	Sept. 9	1250		100	2345
Christian, George H., Cleveland, assignor of one-half to C. H. Taylor, East Cleveland, Ohio. Manufacturing plates for secondary batteries	708,695	Sept. 9	1252		100	2345
Christianson, Martin, Bode, Iowa. Plant-guard attachment for cultivators	705,160	Aug. 5	312	66	100	1180
Christiansson, Pehr, Scriven, Minn. Road-vehicle	710,249	Sept. 30	4376	983 984	100	2944
Christy, James, Jr., Washington, D. C. Vehicle-tire	705,038	July 22	3195	690	100	697
Chubb, James A., assignor of two-thirds to D. C. Ross and E. D. Bronner, Detroit, Mich. Uncoupling mechanism for cars	707,048	Aug. 12	1991	447	100	1540
Church, Charles F., Holyoke, Mass. Grinding, polishing, or buffing machine	708,127	Sept. 2	237	56	100	2081
Church, Hiram L., Chicago, Ill. Cattle-guard for railway-tracks	708,904	Sept. 16	1876	431	100	2395
Churchill, Edwin, Jr., and H. A. Hall, Lawrence, Mass. Refining-engine	704,693	July 15	2457	530 531	100	529
Churchward, Alexander, Fort Wayne, Ind. Synchronous alternating current motor	707,389	Aug. 19	2644	598	100	1695
Churchward, Alexander, Fort Wayne, Ind. Synchronous alternating-current motor	707,390	Aug. 19	2647	598	100	1695
Churchward, Alexander, Chicago, Ill. Rotary transformer	708,025	Sept. 2	42	10	100	1989
Cincinnati Butchers Supply Co. (See Chambers, Henry C., assignor.)						
Claesgens, Frederick W., and J. G. Magin, assignors of one-third to G. A. Claesgens, Rochester, N. Y. Device for inflating pneumatic tires	706,021	Aug. 5	32	7	100	1128
Claesgens, George A. (See Claesgens and Magin, assignors.)						
Clamer, Guilliam H., Philadelphia, Pa. Eliminating metals from mixtures of metals	707,551	Aug. 26	2961		100	1777
Clapp, Charles R., *et al.* (See Justen, Joseph M., assignor.)						
Clark, Absolam F., assignor to J. H. Harding, Philadelphia, Pa. Separator-plate for secondary batteries	708,895	July 1	968	211	100	194
Clark, Anthony L., *et al.* (See Hayden, Samuel R., assignor.)						
Clark, Benjamin F., and W. Smith, assignors to National Drill Company, Cambridge City, Ind. Weeder	704,514	July 15	2162	468	100	469
Clark, Benjamin F., and W. Smith, assignors to National Drill Company, Cambridge City, Ind. Seat for cultivators	704,515	July 15	2164	468	100	469
Clark, Byron G., Brookline, assignor to Clark Manufacturing Company, Boston, Mass. Garment-clasp	706,799	Aug. 12	1557	348	100	1451
Clark, Chauncey C., assignor of one-half to J. G. Carson, Philadelphia, Pa. Water-purifier	703,541	July 1	294	67	100	59
Clark, Chauncey C., assignor of one-half to J. G. Carson, Philadelphia, Pa. Electrochemical apparatus	706,329	Aug. 12	1045	230	100	1342
Clark, Chauncey C., assignor of one-half to J. G. Carson, Philadelphia, Pa. Bleaching apparatus	708,796	Sept. 9	1459	334	100	2292
Clark, Cornelius S., and J. T. Jones, Norfolk, Va.; said Clark assignor to said Jones. Till	709,870	Sept. 30	3616	817 818	100	2785
Clark, Edgar O., New York, N. Y., assignor to Colgate & Company, Jersey City, N. J., and New York, N. Y. Box	704,998	July 8	1736	378	100	334
Clark, Eugene B., 2nd, Chicago, Ill. Device for lifting metal plates	710,041	Sept. 30	3963	894	100	2957

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Clark, Frank H. (See Knudson and Clark.)						
Clark, Frank M., Tilton, N. H., assignor to G. L. Clark, Worcester, Mass. Conical pendulum	705,647	July 29	4508	979	100	973
Clark, Frank R. (See Moore and Clark.)						
Clark, George D., Plainville, Conn. Caster	708,294	Sept. 2	391	91	100	2061
Clark, George L. (See Clark, Frank M., assignor.)						
Clark, George P., and G. H. Davis, New York, N. Y. Foot-power device	709,435	Sept. 16	2760	621	100	2782
Clark, Henry A. (See Guinn, James E., assignor.)						
Clark, John C., Atlanta, Ga. Pulverizer	703,542	July 1	296	67, 68	100	99
Clark, John E., assignor to N. M. Clark, New York, N. Y. Box for cigarettes, matches, or the like	705,518	July 22	4302	913	100	908
Clark, Joseph H. (See Peterson and Clark.)						
Clark, Joseph L., Lebanon, Tex. Stalk-rake	704,516	July 15	2165	469	100	470
Clark, Lucas C., Southington, Conn. Plane	708,316	Sept. 2	592	134	100	2102
Clark Manufacturing Company. (See Clark, Byron G., assignor.)						
Clark, Melville, Chicago, Ill. Automatic player for keyed instruments	709,902	Sept. 30	3925	861, 862, 863	100	2828
Clark, Melville, Chicago, Ill. Transposing device for musical instruments	709,903	Sept. 30	3933	864	100	2829
Clark, Nehemiah H., San Francisco, Cal. Lacing-hook for women's shoes or the like	709,538	Sept. 23	3002	699	100	2645
Clark, Nelly M. (See Clark, John E., assignor.)						
Clark, Spencer, assignor to A. Morris and C. Walters, Northville, Mich. Wood-bending	709,204	Sept. 16	2362	523	100	2485
Clark, Thomas E., Visalia, Cal. Automatic stop and lock for oil-well-casing perforators	707,552	Aug. 26	2962	670	100	1777
Clark-Weaver Manufacturing Company. (See Weaver, Charles D., assignor.)						
Clarke Chapman & Company. (See Cookson, William D., assignor.)						
Clarke, Eben B., Pittsburg, Pa., assignor to Firth Sterling Steel Company. Manufacture of crucible-steel	703,543	July 1	298	856, 857	100	60
Clarke, John S., assignor of one-half to M. J. Clarke, St. Clair, Mich. Salt-making apparatus	705,321	July 22	3953	857	100	849
Clarke, Joseph D. (See Cavanagh, Hannan, and Clarke.)						
Clarke, Maria J. (See Clarke, John S., assignor.)						
Clarke, Peete B., New York, N. Y. Rotary weighing-machine	709,544	July 1	200	68, 69	100	61
Clarke, Peete B., New York, N. Y. Safety-stop for conveyers	709,208	Sept. 16	2297	521, 522	100	2483
Clarke, Peete B., New York, N. Y. Bucket for endless conveyers	709,209	Sept. 16	2299	522, 523	100	2484
Clarke, Richard T., Columbus, Ohio. Suspenders and trousers connection	703,386	July 1	43	9	100	11
Clarke, Richard T., Columbus, Ohio. Suspenders and trousers connection	705,648	July 29	4509	979	100	973
Clarke, William H., New York, N. Y. Electric controller	708,695	Sept. 2	43	10	100	1990
Clausen, Alexander, Aachen, Germany. Converting wood into sugar	707,908	Aug. 26	3717		100	1928
Clausen, Henry P., Chicago, Ill., assignor to American Electric Telephone Company. Electric condenser and making same	709,205	Sept. 16	2308	523, 524	100	2485
Clausen, Jacob, Council Bluffs, Iowa. Two-row cultivator	710,186	Sept. 30	4252	958, 959	100	2917
Clay, Peter, Sheboygan, Wis. Folding bed	708,545	July 1	307	69	100	62
Clayton, Fred, Pudsey, England. Recessing or grooving plane	707,085	Aug. 19	2978	464	100	1575
Clayton, L. N., *et al.* (See Hughes, Thomas W., assignor.)						
Cleare, Frederick J., Montreal, Canada. Lamp	704,299	July 8	1787	379	100	265
Cleary, John F., Hoytdale, Pa. Metallic tie and rail-joint	705,563	July 29	4364	945	100	945
Cleland, Findley E., and E. B. Murray, assignors of one-third to J. Gass, Des Moines, Iowa. Insulating-joint for pipes	707,308	Aug. 19	2990	550	100	1663
Clemens, Ferdinand, Jr., Delta, Iowa. Power mechanism	709,804	Sept. 16	2459	563	100	2527
Clement, Henry E., Thomasville, N. C. Knockdown crate	705,022	Aug. 5	34	7	100	1132
Clements, Charles F., Peoria, Ill. Lubricator and liquid-dispenser	710,184	Sept. 30	4254	959	100	2918
Clements, James, East Chicago, Ind. Warm-air radiator	706,161	Aug. 5	814	66, 67	100	1161
Clements, Luther H. (See Johnson and Clements.)						
Clenn[illegible]ilton A., assignor to Cahill & Hall Elevator Company, San Francisco, Cal.	708,755	Sept. 9	1867	312, 313, 314	100	2073
[illegible] Automatic Moulding Machine Company. (See Battenfeld, John N., assignor.)						
[illegible]land Machine Screw Company. (See Brophy, John P., assignor.)						
[illegible]veland Toy and Manufacturing Company. (See Short, Robert L., assignor.)						
Clicquennoi, Jacob. (See Dahlberg, Clicquennoi, and Uhlin.) (Reissue.)						
Cliff, Edward, Newark, N. J., assignor to Vose and Cliff Manufacturing Company, New York, N. Y. Side and center bearing for car-trucks	707,208	Aug. 19	2312	517	100	1696
Clift, Joseph F., Syracuse, N. Y. Door-hanger	708,305	Sept. 2	392	91	100	2068
Climax Nut Lock & Manufacturing Company. (See Johnson, Charles J., assignor.)						
Climax Road Machine Company. (See McAlpine, Lemuel B., assignor.)						
Cline, Fred N., assignor of one-half to A. G. Thompson, Chicago, Ill. Horseshoe	704,175	July 8	1322	326, 327	100	230
Cline Stock Car Company. (See Cline, William, assignor.)						
Cline, William, Lancaster, assignor to Cline Stock Car Company, Philadelphia, Pa. Stock-car	709,506	Sept. 23	3102	691, 692	100	2666
Clinton, James A., Brooklyn, N. Y. Necktie-fastener	705,382	July 22	3955	857	100	849
Clinton, John, Livingston, Mont., assignor to T. D. and J. D. Millee and M. J. Carroll, Springfield, Mass. Gate	710,250	Sept. 30	4377	984	100	2944
Clopton, William D., Lewisburg, W. Va. Train signaling apparatus	709,746	Sept. 23	3380	758	100	2721
Close, Adrian, Whitehall, Ill. Churn	706,023	Aug. 5	35	7	100	1123
Closson, James H., *et al.* (See Prescott, Thomas D., J. C., and H. A., assignors.)						
Clough, Lee E. (See Miller and Clough.)						
Clough, Victor W., Geneseo, Ill. Reversing-gear for engines	706,637	Aug. 12	1227	272	100	1380
Clough, Victor W., Geneseo, Ill. Reversing-gear for engines	706,638	Aug. 12	1228	272	100	1380
Clowse, William, and O. M. Stevens, Hardwick, Vt.; said Stevens assignor to said Clowse. Shade-roller bracket	709,964	Sept. 30	3937	863	100	2830
Cluett, Peabody & Co. (See Cluett, Robert, assignor.)						
Cluett, Robert, assignor to Cluett, Peabody & Co., Troy, N. Y. Drying collars	707,823	Aug. 26	3555	803	100	1897
Cluff, George A., assignor of two-fifths to J. J. Powers, Paterson, N. J. Means for stopping looms at intervals	704,436	July 8	1986	432	100	416
Clukies, Bertha, *et al.* (See Clukies, James A., assignor.)						
Clukies, James A., assignor to L. Steitz and B. Clukies, St. Louis, Mo. Trap	709,871	Sept. 30	3922	818	100	2786
Clukies, James A., assignor to L. Steitz and B. Clukies, St. Louis, Mo. Means for attaching bowls to the slabs of washstands	709,872	Sept. 30	3923	818	100	2786
Coates, George H., Worcester, Mass. Hair-clipper	708,464	Sept. 2	838	191	100	2151
Coates, John E., *et al.* (See Laux, Mathias, assignor.)						
Coates, Phillip J., Macon, Ga. Cushioned horseshoe	705,908	July 29	4982	1084	100	1068

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Coats, Ernest S. (See Watson, Thomas, assignor.)						
Coats, Samuel, Bridgeport, Pa. Damper-regulator	708,319	Sept. 2	593	135	100	2102
Cobb, Alphonso H., Asheville, N. C. Clothes-hook	707,884	Aug. 26	3557	804	100	1898
Cobb, Elmer M., and E. A. Spaulding, Portland, Me. Machinist's V-block	709,973	Sept. 30	3934	819	100	2786
Cobb, Leander B., Malden, and C. M. Jenkins, Somerville, assignors to William G. Bell Company, Boston, Mass. Meat-chopper	706,800	Aug. 12	1558	349	100	1452
Cobb, Samuel C., assignor to Janesville Machine Company, Janesville, Wis. Cultivator	705,308	July 22	3566	772	100	772
Coburn, Azro A. (See Sumner, William J., assignor.)						
Coburn, Azro A., Holyoke, assignor to Coburn Trolley Track Manufacturing Company, Willimansett, Mass. Store-service ladder	708,162	Aug. 5	315	67	100	1181
Coburn Trolley Track Manufacturing Company. (See Coburn, Azro A., assignor.)						
Coburn Trolley Track Manufacturing Company. (See Werner, Paul F., assignor.)						
Cochran, Enos C. (See Calvin, James E., assignor.)						
Cochran, James M., Gober, Tex. Wind-motor	703,706	July 1	720	159, 160	100	144
Cochran, Maria, New York, N. Y. Belt fastener, clasp, or buckle	704,437	July 8	1988	432	100	418
Cochrane, James P., Edinburgh, Scotland. Manufacture of golf-balls	708,896	July 1	970		100	194
Cochrane, Seabird H. B., Canal Winchester, Ohio. Dental forceps	705,890	July 22	3811	825	100	820
Coerver, Michael. (See Sutton, Steele, and Coerver.)						
Coes Wrench Company. (See Searle, Harry, assignor.)						
Coffin, Charles E. (See Coffin, Ellery F., assignor.)						
Coffin, David N. B., Newton, assignor to Coffin Valve Company, Boston, Mass. Water-gate	707,825	Aug. 26	3558	804	100	1808
Coffin, Ellery F., assignor of one-fourth to C. E. Coffin, Muirkirk, Md. Blast or other furnace	705,822	July 29	4829	1049	100	1037
Coffin, Thaddeus S., Revere, Mass. Landing-net	708,797	Sept. 9	1461	334	100	2203
Coffin Valve Company. (See Coffin, David N. B., assignor.)						
Coffin, Walter E., assignor to National Malleable Castings Company, Cleveland, Ohio. Draft-rigging	707,501	Aug. 19	2843	643, 644	100	1736
Coffman, Ralph B., Chattanooga, Tenn. Baby-buggy	708,021	Sept. 9	1111	249	100	2218
Cofman, Judson G., Comptche, Cal. Carrier	705,393	July 22	3956	857	100	849
Cogswell, Harley, Lakeview, Mich. Ball-bearing	709,206	Sept. 16	2306	524	100	2485
Cohen, Moses H., Marseilles, Ill. Spectacles	709,874	Sept. 30	3924	819	100	2786
Coin, Ina C. (See Kearns and Coin.)						
Colburn, Augustus W. (See Southard, Abraham M., assignor.)						
Colburn, Eliza A., *et al.*, executors. (See Colburn, Henry J.)						
Colburn, Henry J., deceased; E. A. and I. W. Colburn, executors, Toledo, Ohio. Circular sawing machine	707,075	Aug. 26	3219	722, 723	100	1830
Colburn, Irving W., *et al.*, executors. (See Colburn, Henry J.)						
Colby, Harry W., and E. O. Heinsdorf, Chicago, Ill. Bottle-rinser	709,608	Sept. 23	3277	734	100	2701
Coldwell, George L. (See Ebeling, Philip, assignor.)						
Coldwell, Thomas and W. H., Newburgh, N. Y. Motor lawn-mower	707,804	Aug. 19	2492	559, 560	100	1668
Coldwell, William H. (See Coldwell, Thomas and W. H.)						
Cole, Alfred R., and P. J. Donnelly, Spencer, Mass. Apparatus for the continuous manufacture of spiral springs or coils	708,128	Sept. 2	240	57	100	2031
Cole, Clifford E. (See Lombard and Cole.)						
Cole, David L., Cedargrove, Mo. Sawmill-dog	705,039	July 22	3196	690	100	697
Cole, Dwight S., assignor to New York State Saw Filers Association, Brooklyn, N. Y. Butcher's saw-frame	704,517	July 15	2167	469	100	470
Cole, Fredrick A. (See Stratton and Cole.)						
Cole, George W., Asbury Park, N. J., assignor to G. W. Cole Company. Toe-clip for bicycles	707,209	Aug. 19	2314	517	100	1696
Coleman, Clarence W. (See Coleman, Clyde J., assignor.)						
Coleman, Clyde J., Chicago, Ill., assignor, by mesne assignments, to C. W. Coleman. Refrigerating apparatus	709,814	Sept. 23	3516	799	100	2750
Coleman, George, Streator, Ill. Nut-lock	704,617	July 15	2833	507	100	508
Coleman, James V., San Francisco, Cal. Amalgamator	708,694	July 1	597	182, 183	100	118
Coleman Manufacturing Company. (See Coleman, Walter E., assignor.)						
Coleman, Spalding. (See Schuman, Alexander C., assignor.)						
Coleman, Walter E., Newdorp, N. Y., assignor to Coleman Manufacturing Company. Automatic fan	708,022	Sept. 9	1118	250	100	2218
Coleman, Walter E., Newdorp, N. Y., assignor to Coleman Manufacturing Company. Fan	708,023	Sept. 9	1114	250	100	2218
Coleman, Walter E., Newdorp, N. Y., assignor to Coleman Manufacturing Company. Fan	708,024	Sept. 9	1115	251	100	2218
Colgate & Company. (See Adams, George J., assignor.)						
Colgate & Company. (See Clark, Edgar O., assignor.)						
Colket, George H. (See Tyson, Frank, assignor.)						
Coll, Bernard, Baltimore, Md. Can-soldering-machine	708,798	Sept. 9	1462	334, 335	100	2203
Colley, Frederick G., assignor to Bickford and Huffman Company, Macedon, N. Y. Seeding-machine	710,251	Sept. 30	4379	985	100	2945
Collings, Richard. (See Griscom, Alfred C., assignor.)						
Collins, Arthur P., U. S. Army. Range-finder attachment for guns	706,390	Aug. 5	785	170, 171	100	1273
Collins, B. F. (See French, Alexander, assignor.)						
Collins Co. (See Sears, Edward H., assignor.)						
Collins, Harry S., assignor to Collins Manufacturing Company, Pittsburg, Pa. Pipe-hanger	709,815	Sept. 23	3518	798	100	2751
Collins, Harry S., assignor to Collins Manufacturing Company, Pittsburg, Pa. Beam-clamp	709,816	Sept. 23	3519	798	100	2751
Collins, John. (See Foglesong, Washington, assignor.)						
Collins Manufacturing Company. (See Collins, Harry S., assignor.)						
Collins, Norman, assignor to Empire Cash Register, Limited, London, England. Time-stamp	705,909	July 29	4983	1085	100	1068
Collins, Thomas E., assignor to Burnham, Williams and Company, Philadelphia, Pa. Pedestal for locomotives	707,508	Aug. 19	2844	644	100	1737
Collis, Lloyd. (See Bogardus, Collis, and Powell.)						
Collon, Eugène, Cannes, France. Folding-machine	708,531	Sept. 9	999	217	100	2188
Colloton, William, Mukwonsego Township, Wis. Rail-joint	709,139	Sept. 16	2167	497	100	2458
Collum, George S., Hartford, Conn. Candy-cooler	704,518	July 15	2169	469	100	470
Collver, Fred A., Vittoria, Canada. Hand corn-planter	707,826	Aug. 26	3560	804, 805	100	1898
Colman, Howard D., Rockford, Ill. Knot-tying implement						

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cöln-Müsener Bergwerks Actien Verein. (See Menne, Hermann A. E., assignor.)						
Colpitts, Edwin H. (See Lee and Colpitts.)						
Coltrin, Robert B., Jackson, Mich. Mold for making cement stone	706,533	Sept. 9	961	218	100	2188
Columbia Shade Cloth Company. (See Gard, William E., assignor.)						
Columbian Hardware Company. (See Valentine, Harry J., assignor.)						
Columbian Hydro-Carbon Burner Company. (See Betz, Ernest, assignor.)						
Colwell, Edward S., administrator. (See Colwell, Thomas M.)						
Colwell, Thomas M., deceased, Chicago, Ill.; E. S. Colwell, administrator. Condensing steam or cooling fluids	705,321	July 22	3812	827	100	821
Combanaire, Adolphe, and J. De la Fresnaye, Paris, France. Purifying gutta-percha	704,677	July 15	3433	525	100	524
Combs, Daniel W., Needmore, W. Va. Attachment for traction-engines	704,586	July 15	3540	549	100	546
Commichau, Rudolf, Magdeburg-Sudenberg, Germany. Heating or cooling pipe	709,875	Sept. 30	3636	819	100	2787
Commonwealth Steel Company. (See Westlake, Charles T., assignor.)						
Compagnie Générale Aérohydraulique. (See Desmaroux, Joseph, assignor.)						
Company l'Industrie Verrières et ses Derivés. (See Voelker, August, assignor.)						
Company Oxon Maatschappy Systeem A. Vosmaer. (See Vosmaer, Alexander, assignor.)						
Composite Board Company. (See Huntington, William S., assignor.)						
Compton, George W., assignor to Fuller Manufacturing Company, East Moline, Ill. Grain-drill	707,958	Aug. 26	3802	854	100	1946
Computing Scale Company. (See Orias, Orange O., assignor.)						
Comrie, Jennings, Milwaukee, Wis. Glove	706,735	Aug. 12	1391	309 / 310	100	1417
Comstock, Andrew J., assignor of one-half to E. L. Booth, Tyler, Tex. Cultivator	706,736	Aug. 12	1392	310	100	1417
Comstock, Levi M., Highland Park, Ill. Kindergarten-loom	709,535	Sept. 23	3008	669	100	2545
Comstock, Myron A., Newark, N. Y. Cream-separator	708,865	Sept. 9	1610	369	100	2324
Conant, Samuel S., Edgerton, Ohio. Automobile	704,860	July 15	2779	601 / 602	100	595
Condict, Nathan W., Jersey City, N. J. Still for absorption refrigerating apparatus	706,901	Aug. 12	1749	390 / 391	100	1492
Condict, Nathan W., Jersey City, N. J. Absorption refrigerating apparatus	706,902	Aug. 12	1750	391	100	1492
Condit, Sears B., Jr. (See Elden, Leonard L., assignor.)						
Cone, Ceasar. (See Sullivan, David M., assignor.)						
Confectioners' Machinery and Manufacturing Company (See Carlson, Gabriel, assignor.)						
Conklin, Drake F., and T. G. Singer, Hoboken, N. J. Loom	705,649	July 29	4510	979 / 980	100	973
Conley, George B., Cleveland, Ohio. Life-preserver	704,090	July 8	1169	254 / 255	100	248
Conlin, Thomas, Mount Savage, Md. Engine	707,904	Aug. 26	3718	834	100	1928
Conner, George F. (See Watson, Leslie J., assignor.)						
Conover, Charles F., New York, N. Y. Cooler	707,905	Aug. 26	3721	834	100	1928
Conover, John B. (See Buchanan, James, assignor.)						
Conrad, Jacob, Chicago, Ill. Knockdown banana-shipping crate	710,252	Sept. 30	4380	985	100	2945
Consolidated Fastener Company. (See Dowse, William B. H., assignor.)						
Consolidated Fruit Jar Company. (See Allen, Joseph C., assignor.)						
Consolidated Rubber Tire Co. (See Grant, Arthur W., assignor.)						
Consolidated Safety Pin Company. (See Bryant, Charles A., assignor.)						
Consolidated Wireless Telegraph and Telephone Company. (See Pickard, Greenleaf W., assignor.)						
Consolidated Wireless Telegraph and Telephone Company. (See Shoemaker, Harry, assignor.)						
Consolidated Wireless Telegraph and Telephone Company *et al.* (See Ehret, Cornelius D., assignor.)						
Consolidated Wireless Telegraph and Telephone Company *et al.* (See Shoemaker, Harry, assignor.)						
Contardo, Ramon C., Sèvres, France. Reduction of metals from their ores, &c., in electrically-heated furnaces	705,651	July 29	4515	980 / 981	100	974
Conti, Napoleon, Paris, France. Panoramic hand-camera	704,438	July 8	1990	433	100	419
Conti, Valentin, G. de Geofroy, and G. le Gall du Tertre, Paris, France. Artificial stone	705,650	July 29	4514	.....	100	974
Continentale Gesellschaft für Elektrische Unternehmungen. (See Schmitz, Wilhelm, assignor.)						
Converse, Edmund. (See Anderson, Anders G., assignor.)						
Convertible Car Company. (See Romünder, Hermann, assignor.)						
Cook, Ben C., Deadwood, S. D. Ore-separating apparatus	706,163	Aug. 5	316	67	100	1181
Cook, David S., Sellersburg, Ind. Weighing-machine	703,547	July 1	311	70	100	63
Cook, Edgar H., Brooklyn, N. Y. Weighing-machine	708,799	Sept. 9	1466	335	100	2294
Cook, Edmond R., Sacramento, Cal., assignor of one-half to G. F. Heusner, Portland, Oreg. Apparatus for generating acetylene gas	708,956	Sept. 9	1779	411	100	2357
Cook, Frank B., Chicago, Ill. Thermal protector for electric circuits	704,499	July 8	1993	433	100	419
Cook, Frank B., Chicago, Ill. Terminal box for protected electrical circuits	707,049	Aug. 12	1902	447	100	1540
Cook, Frank B., Chicago, Ill. Electrical protector set	707,050	Aug. 12	1906	448	100	1542
Cook, Frank B., Chicago, Ill. System of strong-current protection	707,051	Aug. 12	1909	448	100	1542
Cook, Geraldine O., Boston, Mass. Union garment	705,652	July 29	4517	981	100	974
Cook, John J., Columbus City, Iowa. Take-up device for axle-spindles	709,747	Sept. 23	3382	759	100	2721
Cook, John W., Sr., Nevada, Iowa. Drain-tile protector	709,395	Sept. 16	2688	603	100	2506
Cooke, Alexander. (See Taylor, Cooke, and Montgomery.)						
Cooke, Charles E., Kansas City, Kans. Summer cook-stove	709,876	Sept. 30	3627	820	100	2787
Cooke, Charles F. (See Elkan, Walter, assignor.)						
Cooksey, Arthur W., London, England. Fitting for laboratories or the like	703,897	July 1	970	211	100	194
Cooksey, Arthur W., London, England. Pipe or conduit	704,238	July 8	1628	352	100	340
Cookson, William D., assignor to Clarke Chapman & Company, Limited, Gateshead, England. Clutch	706,301	Aug. 5	787	171	100	1278
Cooley, Fred W., assignor of two-thirds to G. T. Honstain, Minneapolis, Minn. Fireproof building	707,090	Aug. 19	2079	464 / 465	100	1575
Cooley, Fred W., assignor of two thirds to G. T. Honstain, Minneapolis, Minn. Fireproof building	707,210	Aug. 19	2315	518 / 519	100	1626
Cooley, Harry W., assignor of one-half to H. Halstead, Lost Valley, Oreg. Brake mechanism	710,233	Sept. 30	4382	985 / 986	100	2945
Coombs, James F., assignor of one-fourth to F. K. Lawrence, Chicago, Ill. Eyeglass-guard	707,827	Aug. 26	3565	806	100	1899
Cooper, Alexander R., Milam, Tex. Bed-slat-holding means	705,384	July 22	3957	857	100	850
Cooper, George L., assignor to G. P. Carroll, Bridgeport, Conn. Switch-operating mechanism	706,024	Aug. 5	36	8	100	1123
Cooper, John H., Madera, assignor of one-half to L. Wilson, Merced, Cal. Vehicle-axle	710,254	Sept. 30	4384	986	100	2946
Cooper, T. W. (See Baughn, Samuel C., Jr., assignor.)						
Cooper, William A. (See Best, William N., assignor.)						
Coover, Gideon S., Bourneville, Ohio. End-gate for wagons	705,385	July 22	3950	856	100	850

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cope, Caleb F., Philadelphia, Pa. Starting device for explosive-engines	704,618	July 15	2334	507 / 508	100	508
Cope, Robert S., New York, N. Y. Shift-key-actuating device	709,748	Sept. 23	3384	759	100	2731
Copenhaver, Samuel T., Losantville, Ind. Dust-cap for hubs	706,530	Aug. 12	1047	230	100	1342
Copland, Alexander W., Cambridge, Mass. Cracker-machine	705,040	July 22	3197	690 / 691	100	698
Copland, Alexander W., Cambridge, Mass. Cracker-machine	705,041	July 22	3202	691 / 692	100	698
Cordes, John F., Chicago, Ill. Transfer-frame for letter-files and binders	703,767	July 1	721	160	100	145
Corell, John J. (See Bryant, Edward W., assignor.)						
Corliss, Joseph, New York, N. Y. Hand dowelling-gage	706,392	Aug. 5	788	171	100	1274
Cormack, Robert Y., Jamaica, N. Y. Pencil and sharpener therefor	710,256	Sept. 30	4385	986	100	2946
Cornell, Charles H. (See Ogden, James A., assignor.)						
Corner, George S., *et al.* (See Wade, Eli G. D., assignor.)						
Cornett, Lorenz N., Natividad, Cal. Animal-exterminator	709,907	Sept. 16	2377	524	100	2486
Cornfield, Noah, assignor to A. Harris, trustee, Chicago, Ill. Emery grinder	710,068	Sept. 30	4083	921	100	2881
Cornuault, Joseph P., Chantilly, France. Starting-gate for races	707,762	Aug. 26	3424	771	100	1870
Cornwall, John B., assignor to Barnard and Leas Manufacturing Company, Moline, Ill. Rice-hulling machine	707,211	Aug. 19	2318	519	100	1627
Correll, William E., Holyoke, Colo. Dust-pan	704,861	July 15	2782	602	100	596
Corrigan, Philip, Wakefield, N. Y. Furnace	703,768	July 1	722	160	100	145
Corrigan, Severinus J., St. Paul, Minn. Aero-steam engine	708,027	Sept. 2	46	11 / 12 / 13	100	1990
Corron, Cécar, Lyons, France. Apparatus for dyeing, &c	706,801	Aug. 12	1559	349	100	1452
Corry, Michael, *et al.* (See Prescott, De Witt C., assignor.)						
Corssen, Ferdinand, Rittergut Saarmund, near Potsdam, Germany, assignor of one-half to E. F. Wilkens, Haymarket, Va. Spring suspension for vehicle-bodies	709,896	Sept. 16	2389	603	100	2567
Cort, Thomas, South Orange, N. J. Foot-measuring device for shoemakers	709,665	Sept. 23	3217	718	100	2689
Cortis, Dwight T. (See Cortis, Frank A., assignor.)						
Cortis, Frank A., Meriden, Conn. Pencil-sharpener	705,322	July 22	3815	827	100	821
Cortis, Frank A., Meriden, Conn., assignor to D. T. Cortis, Boston, Mass. Lamp	708,967	Sept. 9	1783	411	100	2358
Corwin, Charlton B., Jefferson City, Mo. Shoe-lining trimmer	707,906	Aug. 26	3722	834	100	1928
Cosseboom, Robert J., assignor of one-half to L. M. Smith, Leadville, Colo. Wrench	707,891	Aug. 19	2650	599	100	1695
Costello, Joseph A., and W. S. Bidle, Cleveland, Ohio. Pressure-exerting machine	707,558	Aug. 26	3048	670	100	1777
Coster, Thomas J. (See Smith, Malcos O., assignor.)						
Côté, Henry, Woonsocket, R. I., assignor to Draper Company, Hopedale, Mass. Stopping mechanism for looms	706,164	Aug. 5	318	67, 68	100	1182
Cotsworth, Alfred G., London, England, assignor to Mergenthaler Linotype Company, New York, N. Y. Aligning mechanism for linotype-machines	705,336	July 22	3069	656	100	850
Cottier, William T., Chicago, Ill. Ventilator	709,699	Sept. 23	3279	734	100	2702
Cotton, Walter R., assignor of seventeen-twentieths to H. L. Peck, P. Hickley, and W. P. Owens, Chicago, Ill. Electric generator	704,956	July 15	3090	650 / 651	100	649
Cottrell, Charles E. (See Iverson, John G., assignor.)						
Cottrell, Charles E., Minneapolis, Minn. Construction of buildings	709,257	Sept. 16	2404	545	100	2306
Cottrell, Herbert, assignor to L. A. Sayre & Co., Newark, N. J. Ticket-punch	708,465	Sept. 2	830	191	100	2151
Couch, Buel. (See Kneedler, John D., assignor.)						
Couch, Everett G., and N. D. Wells, Southern Pines, N. C. Work-holder	705,581	Aug. 12	1048	230	100	1342
Coughlen, David R., Concordia, Kans. Permutation-padlock	707,676	Aug. 26	3622	725	100	1831
Coulter, James L., Bovina Center, N. Y. Lock	704,862	July 15	2783	602	100	596
Coulter, John W. (See Chauvet an1 Coulter.)						
Country Home Telephone Manufacturing Company. (See Farwell, Hart F., assignor.)						
Coursen, Jacob E., Wilmington, Del. Letter-box	707,554	Aug. 26	2966	670	100	1776
Covert, James C., Watervliet, N. Y. Soldering-iron	707,212	Aug. 19	2320	519	100	1627
Cowan, Alexander, Penicuick, assignor to A. Cowan & Sons, Limited, Penicuick, Midlothian, Scotland. Sheet-delivering apparatus	708,958	Sept. 9	1784	411 / 412	100	2358
Cowan, John A., Calgary, Canada. Automatic feeder for straw-burning furnaces	706,532	Aug. 12	1049	231	100	1343
Cowan, John A., Calgary, Canada. Harvester-binder	708,890	Sept. 2	595	135	100	2102
Cowan, Samuel, Jardine, Mont. Hoisting-hook	709,572	Sept. 23	3053	682	100	2657
Cowan & Sons, Alex. (See Cowan, Alexander, assignor.)						
Cowan, William G., and A. Jewett, Saginaw, and J. G. Wardell, East Tawas, Mich. Engine	707,828	Aug. 26	3567	805	100	1899
Cowles, Emma M., Milwaukee, Wis. Dress-shield	706,802	Aug. 12	1561	349	100	1452
Cowles, John T., Chicago, Ill. Fire-escape	705,042	July 22	3805	692	100	699
Cowley, James T., Lowell, Mass., assignor to American Pneumatic Service Company, Dover, Del. Pneumatic-despatch apparatus	706,689	Aug. 12	1290	273	100	1281
Cowperthwait, Allan, assignor to W. L. Tyler, Brooklyn, and A. B. See, New York, N. Y. Safety-stop for elevators	708,548	July 1	313	71	100	63
Cox, James B., Canton, N. Y. Combined lock and latch	705,887	July 22	3961	858	100	850
Cox, Solomon, and G. W. Warden, Granger, Iowa. Automatic car-coupling	708,906	Sept. 2	394	91	100	2069
Cox, William H. (See Waite, Henry W., assignor.)						
Coyne, Anthony, Hartranft, Tenn. Alarm-lock	705,311	July 22	3578	773	100	774
Crabb, William, San Francisco, Cal. Fence	706,641	Aug. 12	1243	274	100	1285
Craft, Mark A., assignor of one-half to N. M. Jones, Lincoln, Me. Apparatus for removing rolls of material from paper-machines	705,388	July 22	3963	858	100	851
Craig, Albert W., assignor to Craig Keyless Lock Company, Chicago, Ill. Keyless lock	703,867	July 1	44	9	100	11
Craig, Alexander M., Westport, Canada. Tug and trace coupling	709,471	Sept. 23	2858	641	100	2612
Craig, Joseph A., Roscoe, Pa. Mine-car rail	707,990	Aug. 26	3894	875	100	1964
Craig Keyless Lock Company. (See Craig, Albert W., assignor.)						
Craig, William R. (See Holmstrom, Patrick, assignor.)						
Craighead, Horace. (See Jayne, Benaiah G., assignor.)						
Cram, Edwin B., Brooklyn, assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y. Type-writing machine	706,025	Aug. 5	37	8, 9	100	1124
Cram, Edwin B., Brooklyn, assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y. Type-writing machine	706,640	Aug. 12	1234	274	100	1282
Cramer, George W., Trivoli, Ill. Door-fastener	704,619	July 15	2337	508	100	508
Crandal, Frederick E., Chicago, assignor of three-fifths to W. B. Ewing and J. A. Murphy, Lagrange, Ill. Car-wheel	709,908	Sept. 16	2393	524	100	2486
Crane, James L., Cleveland, Ohio. Show-case or show-front	710,141	Sept. 30	4174	940	100	2900
Craue, Newton, Boston, Mass. Clasp or fastener	705,882	July 29	4881	1049	100	1088
Crane, Newton, Boston, Mass. Clasp or fastener	709,536	Sept. 23	3004	669	100	2646
Crane, Walter E., Denver, Colo. Variable-speed device	705,909	July 22	3567	778	100	778
Crane, Walter E., El Paso, Tex., assignor to Pollard-Alling Manufacturing Company, New York, N. Y. Engraving-machine	708,719	July 1	632	141 / 142	100	125
Crannell, Orlo G., assignor of one-half to J. F. Bigelow, Worcester, Mass. Toy bank	704,239	July 8	1959	352	100	340
Cranston, William M. (See Arnold and Cranston.)						
Crapp, Thomas S., Waynetown, Ind. Antifriction-collar for wood-shapers	706,488	Aug. 5	972	213	100	1313

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Crapper, Ebenezer, Jr., assignor of one-half to J. A. Black, Akron, Ohio. Railway-switch-operating mechanism	708,800	Sept. 9	1469	335	100	2204
Crase, Fredrick H., Murfreesboro, Tenn. Paint	707,677	Aug. 26	3223	326	100	1831
Craw, Frank C., assignor of one-half to Austin and Craw, South Norwalk, Conn. Machine for trimming curled hat-brims	707,322	Aug. 19	2652	599	100	1696
Craw, Joseph T., Jersey City, N. J., and F. Schley, Brooklyn, N. Y. Furniture for forming paper-box blanks	708,389	July 22	3065	859	100	851
Crawford, Frances F., Dunnville, Canada. Garment-stretcher	706,695	Aug. 5	46	9	100	1127
Crawford, Frank H. (See Hamilton and Crawford.)	706,808	Aug. 12	1751	391	100	1492
Crawford, James, Boston, Mass. Pipe-hanger	704,779	July 15	2617	567	100	561
Crawford, Pearl C., Salem, Ohio. Moistening-machine	708,088	Sept. 2	55	13	100	1992
Crawley, James E., Milwaukee, Wis. Feed-water heater and purifier	705,514	July 22	4208	913 914	100	898
Craytor, V. J. (See Gray, Hiram B., assignor.)						
Credlebaugh, Henry S., New Carlisle, Ohio. Speed-gage	707,229	Aug. 26	3508	806 807	100	1900
Creecy, David R., Jr. (See Johnson, Clarence B., assignor.)	707,830	Aug. 26	3576	838	100	1901
Crehore, Albert C., Tarrytown, N. Y. Telegraphy	707,959	Aug. 26	3803	854 855	100	1945
Crehore, Albert C., Tarrytown, N. Y. Telegraphy						
Crellin, Edwin W. (See Lake and Crellin.)	704,001	July 8	1171	255	100	948
Crellin, John W., *et al.* (See Lake and Crellin, assignors.)						
Creplin, Bernhard, Goodland, Ind. Ter. Draft-equalizer	705,323	July 22	3815	827 828	100	821
Creswell & Waters Co. (See Myrick, Gilbert S., assignor.)						
Creuzbaur, Robert, Brooklyn, N. Y. Pulverizer	704,694	July 15	2469	531 532	100	580
Creveling, John L., New York, N. Y. System of distribution	704,696	July 15	2464	532	100	581
Creveling, John L., New York, N. Y. Means for regulating the output of dynamo-electric machines	704,863	July 15	2784	602	100	596
Creveling, John L., New York, N. Y. System of electrical distribution	704,864	July 15	2788	603	100	597
Creveling, John L., New York, N. Y. System of electrical distribution	704,895	July 15	2791	603	100	597
Creveling, John L., New York, N. Y. System of electrical distribution for car-lighting purposes	705,165	Aug. 5	321	64	100	1182
Creveling, John L., New York, N. Y. Regulation of electric-lighting systems	707,052	Aug. 12	2003	448 449	100	1543
Creveling, John L., New York, N. Y. Means for driving generators by power taken from car-axles	709,847	Sept. 23	3565	804	100	2761
Creveling, John L., New York, N. Y. Combined dynamo and driving-gear	709,848	Sept. 23	3567	804	100	2762
Creveling, John L., New York, N. Y., assignor to Safety Car Heating & Lighting Company. Combined electric and gas car-lighting system	704,695	July 15	2463	532	100	580
Creveling, John L., New York, N. Y., assignor to Safety Car Heating & Lighting Company. Electromagnetic switch	707,783	Aug. 26	3425	771	100	1871
Crewe, Frederick, assignor to Mardon, Son & Hall, Limited, Bristol, England. Guard for platen-presses	708,867	Sept. 9	1612	369	100	2295
Cribbs, Clinton G., and F. M. Allerton, Benton Harbor, Mich. Wind-actuated advertising device	704,002	July 8	1172	255	100	949
Crichton, William E. (See Van Valkenburg, Randall T., assignor.)						
Crippen, Henry D. (See Maxwell, George S., assignor.)	705,324	July 22	3823	828 829	100	823
Crismore, Joseph A., Chicago, Ill. Wood-cutting machine	704,006	July 8	1172	255	100	949
Crist, Alfred D., Ada, Ohio. Music-holder	708,549	July 1	315	71	100	64
Crocker, Samuel H., London, England. Pen	703,641	July 1	487	110	100	96
Crocker, Samuel H., London, England. Penholder						
Crockett, Fred P. (See Johnson and Crockett.)						
Croft, John B., assignor to Valves, Limited, London, England. Hermetic sealing of tins or like receptacles	708,868	Sept. 9	1614	369	100	2295
Croker, Samuel H., assignor of one-half to J. W. Barnes, Liverpool, England. Lathe auxiliary appliance	704,440	July 8	1996	434	100	620
	707,087	Aug. 19	2080	465	100	1575
Crome, Herman E., Jersey City, N. J. Drip-pan for painting metal furniture						
Crompton & Knowles Loom Works. (See Bardsley, Henry, assignor.)						
Cronk and Carrier Manufacturing Company. (See Rhodes, James B., assignor.)						
Crook, Charles M., Bristol, Conn., assignor to National Self-Winding Clock Company, Elgin, Ill. Self-winding electric clock	703,953	July 1	1058	220 231	100	211
Crook, Charles M., Bristol, Conn., assignor to C. S. Burton, trustee. Self-winding electric clock	704,630	July 15	2238	508	100	594
Croom, Wiley G., assignor of one-half to W. F. Kean, Memphis, Tenn. Bracket for subsidiary shelving	704,957	July 15	3033	651	100	649
Cropley, Charles B. (See Morgal, Lewis E., assignor.)						
Cropsey, George H. (See Wright, Harry L., assignor.)	706,301	Aug. 5	601	131	100	1236
Crosby, John B., Buffalo, N. Y. Bottle-stopper	706,027	Aug. 5	47	9, 10	100	1127
Crosby, Oliver, St. Paul, Minn. Reversing mechanism	704,240	July 8	1620	353	100	841
Cross, Bradford, assignor to Parlin & Orendorff Company, Canton, Ill. Wheel-plow	704,004	July 8	1173	256	100	949
Cross, George W., Carbondale, Pa. Screen	705,737	July 29	4090	1014 1015	100	1008
Crosse, Walter T., County of Middlesex, England. Wooden panel, lining, ceiling, and floor for buildings, &c., and paving for streets	706,803	Aug. 12	1562	349	100	1453
Crouch, William S., Jr., Tacoma, Wash. Buoy	706,804	Aug. 12	1564	350	100	1453
Crouch, William S., Jr., Tacoma, Wash. Buoy	708,550	July 1	316	71	100	64
Crow, Charles S., Irondale, Iowa. Lock for wagon end-gates	703,551	July 1	317	72	100	64
Crow, Charles S., Irondale, Iowa. Bottom for milk-pails	707,393	Aug. 19	2657	599 600	100	1697
Crow, William N., Cromwell, Ind. Band-cutter and feeder	708,552	July 1	317	72	100	64
	708,553	July 1	319	72	100	64
Crowdus, Walter A., Chicago, Ill. Steering-gear						
Crowdus, Walter A., Chicago, Ill. Brake						
Crowe, Edgar P., *et al.* (See Sibley, William H., assignor.)						
Crowe, Harry J., *et al.* (See Sibley, William H., assignor.)						
Crowell, Mabel. (See Avery, Mary L., assignor.)	705,043	July 22	3206	692 698	100	680
Crowley, Charles W., St. Louis, Mo. Race-starting machine	704,441	July 8	1998	433	100	620
Crowther, John, Invercargill, New Zealand. Means for preventing dust, draft, and rain from entering under doors. (Reissue)	12,027	Sept. 2	928	210	100	2169
Croxton, David T., Canal Dover, Ohio. Casting apparatus. (Reissue)						
Croxton, David T., Canal Dover, and S. W. Croxton, Cleveland, Ohio. Casting apparatus. (Reissue)	12,028	Sept. 9	1631	422	100	2363

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Croxton Samuel W. (See Croxton, David T. and S. W.) (Reissue.)						
Crozier, Alfred O. (See Jaques, William E., assignor.)	707,894	Aug. 19	2660	600	100	1697
Crum, Eli H., Cloverbend, Ark. Back-band buckle	708,554	July 1	321	72	100	65
Crum, Fred H., Tannersville, assignor of one-half to C. O. Bickelmann, Brooklyn, N. Y. Christmas-tree holder						
Crum, W. D. (See Cambridge, Alonzo C., assignor.)						
Cruse, S. D. (See Franke, Ferdinand, assignor.)						
Cruse, S. D. (See Franke, Frederick, assignor.)	708,207	Sept. 2	396	91, 92	100	2062
Cryderman, James E., Edmonton, Canada. Vehicle-body raiser	710,042	Sept. 30	3965	894	100	2857
Cuber, John, and A. Hackenbroch, Chicago, Ill., assignors to F. Patzack Manufacturing Company. Sewing-machine table or cabinet head						
Cudahy Packing Company. (See Cameron, Daniel, assignor.)	704,519	July 15	2171	470	100	470
Culbertson, Dayton T., Milo, Iowa. Potato-harvester	709,877	Sept. 30	3928	880	100	2757
Cullen, Charles J., Jersey City, N. J. Motor	709,749	Sept. 23	3885	759	100	2732
Cullen, Edwin C., Colorado, Tex. Combination-tool for manipulating wire	706,028	Aug. 5	48	10	100	1127
Cullen, Francis N., Toronto, Canada. Pedal for bicycles	708,583	Sept. 9	964	218	100	2189
Cullmann, Albert C., La Crosse, Wis. Bevel and square						
Culouwell, Harry E. (See Fratcher, David W., assignor.)	706,029	Aug. 5	50	10	100	1128
Culver, Harmon P., and M. Leichtentritt, New York, N. Y. Window-guard						
Cummings, Charles, assignor to Automatic Boiler Feed-Water Regulator Co., San Francisco, Cal. Automatic boiler-feeder	710,317	Sept. 30	4084	1012	100	2997
Cummins, Archer S., and A. J. Bland, Crewe, Va. Train-pipe hose-coupling	708,210	July 22	3571	773	100	774
Cunin, George, Montreal, Canada. Metal-crimping machine	706,030	Aug. 5	51	11, 12	100	1128
Cunning, Florence, East Liverpool, Ohio. Folding box	709,905	Sept. 30	3888	864	100	2820
Cunningham, Thomas W., *et al.* (See Graves, George A., assignor.)	708,321	Sept. 2	598	136	100	2108
Cunningham, William J., Philadelphia, Pa. Bottle-washing machine	707,881	Aug. 26	3561	808 809	100	1901
Cunningham, William R., assignor to American Clay-Working Machinery Company, Bucyrus, Ohio. Combined tile-machine and pug-mill	704,816	July 15	2712	586	100	580
Cureau, Emile L. A., East Orange, N. J. Shade-fixture						
Curled Fibre Manufacturing Company. (See Wessel, Karl, assignor.)						
Curlett, Lewis K., assignor of one-half to W. D. Allen, Chicago, Ill. Electric signal for elevators	707,805	Aug. 19	2495	560	100	1064
Curran, Philip B., Philadelphia, Pa., assignor to Kitson Hydrocarbon Heating and Incandescent Lighting Company. Hydrocarbon incandescent lamp	705,044	July 22	3807	693	100	699
Curtain Supply Company. (See Burrowes, Edward T., assignor.)						
Curtain Supply Company. (See Milans, Joseph H., assignor.)						
Curtis, Nelson, assignor to Sumner & Goodwin Company, Boston, Mass. Automatic valve	707,895	Aug. 19	2661	600	100	1698
Curtiss, George W., Peoria, Ill., assignor to Morrow Protective Process Company. Carbonizing apparatus	709,966	Sept. 30	3839	864	100	2820
Curtiss, George W., Peoria, Ill., assignor to Morrow Protective Process Company. Carbonizing apparatus	709,967	Sept. 30	3843	864 865	100	2821
Curtright, Walter W., Atlanta, Ga. Merry-go-round, seesaw, and jogger-board attachment	707,553	Aug. 26	2968	671	100	1779
Cushman and Denison. (See Shedlock, Alfred, assignor.)	708,605	July 1	599	120	100	119
Cushman, Everett B. and L. S., Lincoln, Nebr. Gas-engine	706,801	Sept. 9	1471	336	100	2305
Cushman, Leslie S. (See Cushman, Everett B. and L. S.)	704,941	July 8	1632	353	100	941
Custer, Clemm T., Great Cacapon, W. Va. Can-opener					100	704
Cutler, Fred, Bradfordton, Ill. Separator	704,621	July 15	2541		100	704
Cutter Electrical & Manufacturing Company. (See Scott, William M., assignor.)	703,642	July 1	487	110	100	96
Czermak, Johann, Dusseldorf, Germany. Manufacturing artificial marble						
Czermak, John W., and J. Tischler, Port Chester, N. Y. Latch						
Czerniewski, Stanislaw A. (See Krygoski and Lowrie, assignors.)						
D. C. & U. Gas Engine Company. (See Dahlberg, Clicquennoi, and Uhlin, assignors.) (Reissue.)						
D. F. Briggs Company. (See Bennett, Thomas S., assignor.)						
D. H. Burrell & Company. (See Feldmeier, Harvey, assignor.)						
D. & W. Manufacturing Company. (See Wende and Carter, assignors.)						
Daggett, Daniel, Lexington, Nebr. Calf-weaner	709,140	Sept. 16	2168	497	100	2456
Dahl, Axel, North Tarrytown, N. Y. Wrench	708,210	Sept. 2	400	98	100	2063
Dahlberg, Frank J., *et al.* (See Neubauer, Carl E., assignor.)						
Dahlberg, Gustave, McDonald, J. Clicquennoi, Taylorstown, and E. Uhlin, McDonald, assignors to D. C. & U. Gas Engine Company, Washington County, Pa. Gas and steam convertible engine. (Reissue)	12,021	Aug. 19	2906	658	100	1749
Dahlberg, Gustave, McDonald, J. Clicquennoi, Taylorstown, and E. Uhlin, McDonald, assignors to D. C. & U. Gas Engine Company, Washington County, Pa. Gas and steam convertible engine. (Reissue)	12,094	Aug. 26	3894	875 876	100	1954
Dahlén, Andrew, assignor of one-half to H. L. Brynildsen and O. E. Anderson, Vasa, Minn. Rotary engine	708,129	Sept. 2	243	57, 58	100	2032
Dahlgren, John. (See Anderson, Andrew P., assignor.)	704,900	July 8	1788	379 380	100	805
Dahman, William H., assignor to A. Geisel Manufacturing Company, St. Louis, Mo. Knockdown oven	708,805	Aug. 12	1566	350 351	100	1454
Daigneault, Joseph C., assignor of one-half to W. A. Beaudette, Worcester, Mass. Floor-laying and nailing machine	705,390	July 22	3967	859	100	852
Dailey, William D., Parkersburg, W. Va. Frictional gearing	709,750	Sept. 23	3886	759	100	2722
Dailey, William F., *et al.* (See Cahill, Thomas H., assignor.)						
Daily, Arthur, and R. Baker, Otisco, Ind. Grapple						
Daimler Manufacturing Company. (See Maybach, Wilhelm A., assignor.)						
Daley, Thomas F., *et al.* (See McNerney, Thomas H., assignor.)	705,212	July 22	3574	778	100	774
Daigety, Herbert, New York, N. Y. Interlocking collar-fastener	709,533	Aug. 12	1052		100	1343
Dallas, George M., assignor of one-half to W. R. Chittenden, Chicago, Ill. Artificial fuel	707,806	Aug. 19	2495	560	100	1651
Daly, John A., Washington, D. C. Electrodepositing metal on lace						
Damascus Brake Beam Company. (See Handigee, Philip T., assignor.)	709,805	Sept. 16	2500	562 564	100	2527
Damon, Lyman R., Dexter, Me. Sanitary commode	708,756	Sept. 9	1375	314	100	2274
Dancyger, Simon, Dayton, Ohio. String-ticket fastener	707,556	Aug. 26	2969	671	100	1779
Dane, George M., Worcester, Mass. Trousers						
Danforth, Raymond H. (See Allen and Danforth.)	706,904	Aug. 12	1751	391 392	100	1492
Daniel, Jacob, Los Angeles, Cal. Combined door stop and catch						
Daniels, Charles L. (See Loveless, Fred H., assignor.)	708,555	July 1	322	73	100	65
Daniels, Fred H., Worcester, Mass. Making bale-ties	706,081	Aug. 5	54	12	100	1129
Daniels, Fred H., Worcester, Mass. Furnace for annealing wire	706,082	Aug. 5	55	12	100	1129
Daniels, Fred H., Worcester, Mass. Heating-furnace	709,878	Sept. 30	3830	861	100	2788
Daniels, Fred H., and H. W. Wyman, Worcester, Mass. Manufacture of rail-bonds	708,556	July 1	325	73	100	65
Daniels, John J., New London, Minn. Trap for pocket-gophers						

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Danielsen, Wilhelm G., Logan, Utah. Hay derrick or stacker	709,625	Sept. 9	1116	251	100	2219
Dann, Horace E., *et al.* (See Punzelt, Edward E., assignor.)						
Dannhardt, Ferdinand H., South Yarra, assignor of two-thirds to M. Maller, North Carlton, near Melbourne, Victoria, Australia. Earth or rock drill	705,910	July 29	4988	1086	100	1069
Darling, Joseph, Chicora, and C. C. Ellenberger, Jr., Peachville, Pa. Reversing-pulley mechanism	707,396	Aug. 19	2665	601	100	1599
Darling, Levi B., Providence, R. I. Means for extracting precious metals from ores	706,302	Aug. 5	603	131	100	1227
Darling, Levi B., Providence, R. I. Extracting precious metals from ores	706,303	Aug. 5	789	172	100	1274
Darling, Thaddeus, Marietta, Ohio. Coupling for cables, ropes, &c.	704,942	July 8	1632	353 354	100	341
Darrow, Noble C., Minneapolis, Minn. Type-writing machine						
Dascomb, Charles H. (See Palmer, William, Jr., assignor.)						
Daube, Oscar, New York, N. Y. Carbonizing organic materials	705,213	July 22	3576	773 774	100	775
Daughenbaugh, William H., *et al* (See Kent, Thomas J., assignor.)						
Daus, Louis A., Evansville, Ind. Support for awning-rollers	705,214	July 22	3579	774	100	775
Davey, Edward, New Rochelle, N. Y. Window frame and sash	709,656	Sept. 23	3219	718 719	100	2990
Davidoff, Joseph, Brooklyn, N. Y. Folding cot	708,809	Sept. 9	1616	370	100	2335
Davids, Max. (See Jenkins and Rohlmann, assignors.)						
Davidson, Alexander, Joliet, Ill. Land, marine, or submarine merry-go-round	710,043	Sept. 30	3967	895	100	2857
Davidson, Alexander, Joliet, Ill. System of submarine transportation	710,044	Sept. 30	3969	895	100	2857
Davidson, Charles E., Greenville, Ill. Hub-attaching device	705,645	July 1	489	110	100	96
Davidson, Charles W., Tontl, Ill. Heating-drum	705,817	July 22	3586	775	100	776
Davidson, George M., Big Rapids, Mich. Hamper	705,045	July 22	3209	698	100	700
Davidson, George R., Lenox, Mich. Bean-cleaning machine	710,142	Sept. 30	4175	940 941	100	2901
Davidson, Marshall T. (See Groshon, John A., assignor.)						
Davidson, Marshall T., and W. A. Drewett, Brooklyn, N. Y. Ejector apparatus	708,757	Sept. 9	1376	314 315	100	2274
Davidson, Samuel C., Belfast, Ireland. Rotary propeller-fan and propeller for ships	705,046	July 22	3210	693 694 695	100	700
Davies, Edward, Reading, Mich. Making cement fence-posts	703,644	July 1	490	111	100	96
Davies, John R., Waukegan, Ill. Sand-molding machine	705,215	July 22	3582	774 775	100	775
Davis, Abraham R., Topeka, Kans. Machine for truing piston-ring bushings	705,738	July 29	4091	1015	100	1008
Davis, Augustine, Chicago, Ill., and P. L. Davis, Marquette, Mich. Acetylene-gas generator	705,789	July 29	4093	1015 1016	100	1009
Davis, Calvin R., assignor to Oliver Chilled Plow Works, South Bend, Ind. Pattern-plate	707,397	Aug. 19	2668	601 602	100	1599
Davis, Charles H., New York, N. Y. Roll mechanism	708,999	Sept. 16	1878	482	100	2396
Davis, Charles L., assignor to E. and W. H. Heuer and A. M. Beifeld, Chicago, Ill. Joint for use in pneumatic apparatus	705,515	July 22	4205	914	100	899
Davis, Charles M., Chicago, Ill. Telegraphic apparatus	707,557	Aug. 26	2972	671	100	1779
Davis, David I., Kansas City, Kans., assignor to Swift and Company, Chicago, Ill. Apparatus for washing fat	706,083	Aug. 5	58	13	100	1129
Davis, David J., Ventland, Pa. Car-coupling	710,956	Sept. 30	4387	986 987	100	2946
Davis, David O., Atlanta, Ga. Window-ventilator	706,905	Aug. 12	1753	302	100	1493
Davis, David W., assignor to S. R. Dixon, trustee, Detroit, Mich. Preserving frozen food products	709,751	Sept. 23	3387	760	100	2722
Davis, Earl G. (See Rundell, Albert L., assignor.)						
Davis, Edward H., Mesa Grande, assignor to Nalleas Ltd Box Company, San Francisco, Cal. Package	708,696	Sept. 9	1254	286	100	2246
Davis, Edward P., assignor to Whiting & Davis, Wrentham, Mass. Bracelet or the like	704,243	July 8	1634	354	100	341
Davis, Frank. (See Gordon and Davis.)						
Davis, Frank E., La Crosse, Wis. Seeding-machine	709,472	Sept. 23	2854	641 642	100	2613
Davis, G. Howlett. (See Beach, Harry E., assignor.)						
Davis, George. (See Randall and Davis.)						
Davis, George H. (See Clark and Davis.)						
Davis, George H., Brooklyn, N. Y. Stencil-printing machine	708,898	July 1	46	9	100	12
Davis, George H., Brooklyn, N. Y. Machine for forming stencils from which music-sheets are printed	708,899	July 1	48	10	100	12
Davis, Harry P., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Co. Resistance-coil and support therefor	710,143	Sept. 30	4177	941	100	2901
Davis, Huber R., Cardington, Ohio. Cable-clip	705,891	July 22	3969	859	100	852
Davis, Irving S., Scranton, Pa. Steam-motor	708,758	Sept. 9	1378	315 316	100	2275
Davis, John, Pittsburg, Pa. Apparatus for purifying water	704,944	July 8	1635	354	100	342
Davis, John B., Dayton, assignor of one-half to W. J. and N. B. Peters, Troy, Ohio. Bicycle attachment	704,871	July 15	2801	606	100	599
Davis, John F., *et al.* (See Wade, Eli G. D., assignor.)						
Davis, John T., San Francisco, Cal. Artificial fuel	705,216	July 22	3584		100	776
Davis, Jonathan, Phœnixville, Pa. Guide for sewing edgings	708,166	Aug. 5	323	68	100	1152
Davis, Jonathan, Phœnixville, Pa. Machine for threading tape into edgings	708,180	Sept. 2	345	58	100	2032
Davis, Lewis K., Indianapolis, Ind. Protecting exposed filters or other confined liquid bodies from freezing	705,740	July 29	4097	1016	100	1010
Davis, Mack H. (See Rosenberry, Alvin M., assignor.)	706,906	Aug. 12	1754	302	100	1493
Davis, Madison T., Jr., Charleston, W. Va. Car-wheel						
Davis, Paris L. (See Davis, Augustine and P. L.)						
Davis, Robert L. (See Little, William G., assignor.)						
Davis & Roesch Temperature Controlling Company. (See Roesch, Alfred, assignor.)						
Davis, Samuel T., Jr., Ardsley-on-Hudson, assignor to "Locomobile" Company of America, New York, N. Y. Automobile	705,824	July 29	4832	1049	100	1086
Davis, Walter A. E., Toledo, Ohio, assignor to W. H. Lidell, Brooklyn, N. Y. Trolley head and wheel	705,825	July 29	4834	1050	100	1086
Davis, Wilbur G., Newton Center, assignor to M. Bray, Newton, Mass. Leg or standard for furniture, &c.	705,653	July 29	4320	991 992	100	975
Davis, William H. (See Hamilton, Clayton M., assignor.)						
Davis, William H., Beaver Meadow, Ala. Axle	708,466	Sept. 2	340	102	100	2151
Davison, John C., assignor of one-half to E. C. W. Ryland, Friendsville, Md. Wrench	708,898	July 1	971	213	100	194
Daw, James G., Llanelly, England. Metalliferous stamping mill or machine	707,678	Aug. 26	2934	733 734	100	1831
Daw, Zacharias W., London, England. Percussive rock-drill	706,904	Aug. 5	791	172	100	1274

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Dawson, Arthur T., and G. T. Buckham, assignors to Vickers Sons & Maxim, Limited, Westminster, London, England. Gun-carriage	707,398	Aug. 19	2669	602 603	100	1599
Dawson, Arthur T., and G. T. Buckham, assignors to Vickers Sons & Maxim, Limited, Westminster, London, England. Gun-carriage	707,399	Aug. 19	2671	602 604 370	100	1700
Dawson, Arthur T., London, and J. Horne, Barrow-in-Furness, assignors to Vickers Sons & Maxim, Limited, Westminster, London, England. Ramming apparatus for ordnance	708,870	Sept. 9	1618	371 372	100	2286
Dawson, Arthur T., and G. T. Buckham, assignors to Vickers Sons & Maxim, Limited, Westminster, London, England. Cartridge-extractor for guns	708,871	Sept. 9	1623	372	100	2287
Dawson, Arthur T., Westminster, London, and J. Horne, Barrow-in-Furness, assignors to Vickers Sons & Maxim, Limited, London, England. Ammunition-hoist for ordnance	709,436	Sept. 16	2702	621 622	100	2562
Dawson, James, Rochester, N. Y. Vehicle-frame	706,534	Aug. 12	1053	221	100	1343
Dawson, James B. (See Greenwalt and Dawson.)						
Day, Charles D., Baltimore, Md. Apparatus for unloading coal	706,222	Aug. 5	423	90, 91	100	1202
Day, Charles M., assignor of one-half to M. W. Walker, Maltabend, Mo. Air-pump	709,908	Sept. 30	3847	895 896	100	2832
Day, Maxwell W., Schenectady, N. Y., assignor to General Electric Company. Electrical steering-gear	710,045	Sept. 30	3970	895 896	100	2858
De Camp Engine Company. (See De Camp and Haas, assignors.)						
De Camp, George, and C. A. Haas, assignors to De Camp Engine Company, St. Louis, Mo. Engine	703,557	July 1	326	74	100	60
De Ford, Paul F., Pasadena, Cal. Puzzle device	703,558	July 1	329	75	100	66
De Forest, Louis S., New Haven, Conn. Bottle attachment	706,806	Aug. 12	1570	352	100	1454
De Huff, Henry. (See Young and Ueberroth, assignors.)						
De Jong, Peter M., Norton County, Kans. Endless-belt conveyer	706,395	Aug. 5	794	173	100	1275
De Knight, Victor P., assignor to Victor P. De Knight Gun Company, Washington, D. C. Automatic rapid-fire gun	709,880	Sept. 30	3833	821 822 823	100	2788
De Knight, Victor P., assignor to Victor P. De Knight Gun Company, Washington, D. C. Automatic rapid-fire gun	709,881	Sept. 30	3846	823 824 825	100	2790
De Knight, Victor P., assignor to Victor P. De Knight Gun Company, Washington, D. C. Rapid-fire gun	709,882	Sept. 30	3850	826 827	100	2792
De Knight, Victor P., assignor to Victor P. De Knight Gun Company, Washington, D. C. Automatic rapid-fire gun	709,883	Sept. 30	3868	827 828	100	2794
De la Fresnaye, Jean. (See Combansire and De la Fresnaye.)						
De la Harpe, Charles, assignor to Dye Works, formerly L. Durand Huguenin & Co., Basle, Switzerland. Leucogallocyanin and making same	704,301	July 8	1741	.....	100	366
De la Harpe, Charles, assignor to Dye Works, formerly L. Durand, Huguenin & Co., Basle, Switzerland. Blue dye and making same	707,832	Aug. 26	3584	.....	100	1902
De la Harpe, Charles, assignor to Dye Works, formerly L. Durand, Huguenin & Co., Basle, Switzerland. Blue dye and making same	707,833 708,534	Aug. 26 Sept. 9	3584 965	 218	100 100	1902 2189
De Lancey, Charles E., Newport, Pa. Garment-fastening	703,600	July 1	524	118	100	108
De Laval, George, Cambridge, and C. W. Chisholm, Somerville, Mass., assignors to George F. Blake Manufacturing Company, New York, N. Y. Boring-machine						
De Laval Steam Turbine Company. (See Lindmark, Tore G. E., assignor.)						
De Laval Steam Turbine Company. (See Olsson, Georg O. M., assignor.)						
De Leeuw, Adolph L., Hamilton, Ohio. Magnetic drilling-jig	710,257	Sept. 30	4388	987	100	2947
De Long, George E., New York, assignor to Industrial Machine Company, Phœnix, N. Y. Motor-vehicle	703,769	July 1	725	160	100	145
De Man, Alphonse, New York, N. Y. Building-wall	705,048	July 22	3216	695	100	701
De Man, Alphonse, New York, N. Y. Vault-light	709,949	Sept. 23	3509	805	100	2762
De May, John H., and F. Hoyland, Jr., Jackson, Mich. Car-brake	709,884	Sept. 30	3878	894	100	2793
De Meulemeester, Emile, Brussels, Belgium. Ear-trumpet	705,218	July 22	3586	775	100	776
De Meulemeester, Emile, Brussels, Belgium, assignor to B. Müller-Rau, Frankfort-on-the-Main, Germany. Filtering apparatus	703,559	July 1	331	75	100	67
De Silva, Frank, Boston, Mass. Vestibule-directory	703,560	July 1	333	76	100	67
De Sollar, Herbert S., Denver, Colo. Combined shade-roller and curtain-pole holder	705,728	Aug. 12	1395	311	100	1418
De Vilbiss, Allen, Toledo, Ohio. Atomizer	704,780	July 15	2618	567	100	592
De Vilbiss, Allen, Jr., Toledo, Ohio, assignor, by mesne assignments, to Toledo Scale and Cash Register Company, Newark, N. J. Scale. (Reissue)	12,089	Sept. 9	1632	422	100	2369
De Wallace, Harry, St. Paul, Minn. Operating device for dating or other stamps	710,144	Sept. 30	4178	941	100	2901
De Waltoff, Dayre B., Brooklyn, N. Y. Pessary	705,382	July 22	3970	860	100	852
De Worth, William T., Bordentown, N. J. Clamp	707,680	Aug. 26	2927	734	100	1832
De Wright, Richard, Saugatuck, Mich. Crate	706,908	Aug. 12	1756	302	100	1493
Deakin, Charles H. (See Deakin, Thomas, assignor.)						
Deakin, Thomas, Eccles, assignor to himself and C. H. Deakin, Monton, Eccles, England. Engine	708,697	Sept. 9	1256	287 288	100	2247
Dean, Cyrus S., Fort Erie, Canada. Pneumatic railway-signal	709,256	Sept. 16	2405	545	100	2507
Dean, James S., and W. H. Thomas, assignors of one-half to M. Mullen, Cincinnati, Ohio. Parcel-tying device	706,034	Aug. 5	60	13	100	1130
Dean, John F., *et al.* (See Eberstein, John G., assignor.)						
Dean, Maurice S., *et al.* (See James, Ulysses S., assignor.)						
Dean, William W., assignor to Kellogg Switchboard and Supply Company, Chicago, Ill. Telephone hook-switch	704,697	July 15	2466	532 533	100	531
Dean, William W., assignor to Western Electric Company, Chicago, Ill. Toll apparatus for telephone-exchanges	710,318	Sept. 30	4488	1019	100	2998
Dear, William Y., Jersey City, N. J. Machine for cutting and collating paper	704,472	July 8	2066	447 448	100	434
Dearborn, Charles A., New York, N. Y., assignor, by mesne assignments, to F. W. Lorch. Blind-stitch sewing machine	703,325	July 22	3885	859	100	823
Dearborn, Charles A., New York, N. Y., assignor, by mesne assignments, to F. W. Lorch. Feeding mechanism for sewing-machines	705,326	July 22	3889	860 861	100	824
Deardorff, Calvin A., Washington, D. C. Garment-supporter	709,870	Sept. 30	3832	821	100	2788
Debes, Eduard. Blankenese, near Hamburg, assignor to H. Eckert, Munich, Germany. Ball-and-socket joint for dolls or the like	708,899	July 1	972	212	100	195
Debord, Austin H., Canon City, Colo. Hitching device	709,473	Sept. 23	2857	642	100	2613
Decuir, Joseph A., New Orleans, La. Bicycle-pedal	709,396	Sept. 16	2503	504	100	2398
Deere and Mansur Company. (See Barclay, James, assignor.)						
Deering Harvester Company. (See Packer, George W., assignor.)						
Deering, Uriah H., assignor of one-half to J. D. Oliger, Cleburne, Tex. Grave-filler	707,508	Aug. 19	2845	644	100	1737
Deffenbaugh, Grant G., Madisonburg, Ohio. Sliding-door latch	703,890	July 1	51	10	100	18
Delhi, Sylvester H., Altoona, Pa. Railway-joint	704,817	July 15	2718	587	100	581
Deinlein, Karl, assignor to Skodawerke Actiengesellschaft in Pilsen, Pilsen, Austria-Hungary. Gun-carriage	708,900	July 1	973	212	100	195
Deinlein, Karl, assignor to Skodawerke Actiengesellschaft in Pilsen, Pilsen, Austria-Hungary. Firing-gear for ordnance	704,866	July 15	2798	603 604	100	598

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Deis, Philip H., Washington, D. C. Pump	705,047	July 22	3213	695	100	701
Delter, Frank B., Coudersport, Pa. Display-case	704,005	July 8	1175	256	100	249
Del Mar, Eugene. (See Del Mar, Harry, assignor.)						
Del Mar, Harry, assignor of one-half to E. Del Mar, New York, N. Y. Tube clamping, cutting, and expanding machine	704,520	July 15	2173	470 471	100	471
Delahunty, William T., *et al.* (See Field, William C., assignor.)						
Delany, Patrick B., South Orange, N. J. Means for handling telegraphic receiving-tapes for translation	709,752	Sept. 23	3388	760	100	2722
Delion, Albert L., Paris, France. Hat	708,872	Sept. 9	1624	273	100	2327
Dembowski, Rudolf. (See Dudek and Dembowski.)						
Dement, Isaac S., East Orange, N. J., and F. J. Hull, Brooklyn, N. Y., assignors, by mesne assignments, to American Mechanical Cashier Company. Keyboard mechanism for cash-registers	710,258	Sept. 30	4390	987 988	100	2047
Deming Company. (See Deming, William L., assignor.)						
Deming, Ferdinand, Waterbury, Conn. Tube-machine	710,046	Sept. 30	3974	996 997	100	2858
Deming, William L., assignor to Deming Company, Salem, Ohio. Hydraulic ram	708,727	Aug. 12	1394	310 311	100	1418
Dempsey, James, Keating Summit, Pa. Hammer	704,006	July 8	1176	256	100	249
Dempsey, James E., Chicago, Ill. Telegraphic code	708,891	July 1	52	10	100	13
Dempster, John, and W. S. Bradley, Knoxville, Tenn. Churn	705,219	July 22	3587	776	100	776
Dempster, Mary, *et al.* (See Dempster, Robert, assignor.)						
Dempster, Robert, assignor to M. Dempster, H. H. Burns, and N. Morrow, Marietta, Ohio. Apparatus for making oil-gas	708,901	July 1	975	212 213	100	195
Dempster, William E., assignor of one-half to C. P. Goodyear, Sr. and Jr., Brunswick, Ga. Paint-oil	705,907	Aug. 12	1755	.....	100	1498
Denegre, Edward, assignor to McCord & Company, Chicago, Ill. Spring-cushion	709,909	Sept. 30	3948	866	100	2832
Denison, Hugh W., Glade, Pa., assignor of one-half to J. S. Hershberger, Grantsville, Md. Automatic check-lock	709,141	Sept. 16	2170	497	100	2458
Denlinger, Benjamin E. (See Denlinger, John B., assignor.)						
Denlinger, John B., assignor of one-half to B. E. Denlinger, Union City, Ind. Band-cutter and feeder	705,516	July 22	4207	914 915	100	899
Denmead, John W. (See Palmer and Denmead.)						
Dennis, Thomas. (See Hammond and Dennis.)						
Dennison, Thomas F., Brooklyn, N. Y. Hemming attachment for sewing-machines	706,225	Aug. 5	436	91	100	1208
Densmore Typewriter Company. (See Barron, Walter J., assignor.)						
Densmore Typewriter Company. (See Weir, Max W., assignor.)						
Denton, John L., assignor of one-half to McMillin & Lively, Whitewright, Tex. Cotton-compress	707,679	Aug. 26	3225	724	100	1881
Denver, Matthew R., *et al.* (See Mann, George R., assignor.)	707,907	Aug. 26	3794	.....	100	1929
Depetro, Eugène, Paris, France. Retting ramie or similar fiber	704,473	July 8	2069	448	100	435
Deplanty, Charles F., assignor to E. W. Roesky, Coffeyville, Kans. Desk	704,474	July 8	2071	448	100	436
Dernell, Frederick P. (See Eichhorn and Dernell.)						
Deskin, Enoch C., Moberly, Mo. Car-wheel-holding device	704,818	July 15	2714	587 588	100	581
Desmaroux, Joseph, assignor to Compagnie Générale Aérohydraulique, Paris, France. Temperature-exchanging apparatus	708,823	Sept. 2	608	137	100	2104
Desmond, John, assignor to William Powell Company, Cincinnati, Ohio. Steam-injector	706,729	Aug. 12	1397	311 312	100	1418
Deterding, Henry F., Commerce, Mo. Pulverizing-shoe						
Detroit Electric Signal Company. (See Fessenden, Howard A., assignor.)						
Deübner, John W. (See Jaynes and Deübner.)						
Devine, Charles E., Toledo, Ohio, assignor of one-fourth to P. H. Goodall, Indianapolis, Ind. Hook and eye	706,804	Aug. 5	608	132	100	1238
Devine, John D. (See Dixon and Devine.)						
Devlin & Company, Thomas. (See Bussinger, William J., assignor.)						
Dewey, William R., trustee. (See Smith, John Y., assignor.)	704,867	July 15	2796	604	100	598
Dews, Julius N., Portsmouth, Va. Pill-making machine	708,695	Sept. 9	1119	251 252	100	2219
Dexter, Leonard W., San Jose, Cal. Elevator	705,220	July 22	3589	776 777	100	777
Dexter, Talbot C., Pearl River, N. Y. Automatic protector for printing-presses, &c	706,305	Aug. 5	609	132 133	100	1238
Dey, Frank C., Newark, N. J. Hod elevator or hoist	704,781	July 15	2619	567 568	100	562
Dey, Gilbert S., assignor to Gundlach Optical Company, Rochester, N. Y. Photographic shutter	704,622	July 15	2841	508 509	100	504
Di Puglia, Matteo. (See Howell, Israel G., assignor.)						
Dial, Robert E., and M. E. Garwood, Fontanet, Ind.; said Garwood assignor to said Dial. Corn-planter						
Diamond Match Company. (See Anthony, Mark, assignor.)						
Diamond Match Company. (See Bowman, Charles M., assignor.)						
Diamond Match Company. (See Palmer and Denmead, assignors.)						
Diamond Match Company. (See Wright, Jacob P., assignor.)	709,142	Sept. 16	2172	497	100	2459
Dicaire, Joseph, Alpena, Mich. Spring-wheel	709,895	Sept. 30	3974	928 929	100	2795
Dick, Albert B., Chicago, Ill. Stencil-printing machine	709,209	Sept. 16	2300	535	100	2485
Dick, Joseph C. F., Belvidere, Ill. Cigar-cutter	12,011	July 15	3145	679	100	671
Dickelman-Bowers Manufacturing Company. (See Smith, Edward H., assignor.)						
Dickenson, Richardson W. (Sioux Falls, S. D. Index-cabinet. (Reissue)						
Dickerson, George H., and J. M. Gordon, Columbus, Ind. Molding spoke wheels and the product thereof	707,213	Aug. 19	2321	520	100	1638
Dickey, James M. (See Smith, Luella, assignor.)						
Dickie, James E., Gillespie, Ill. Ratchet-wrench	710,185	Sept. 30	4256	959	100	2915
Dickie, Robert B., Kenosha, Wis. Fountain-pen	709,307	Sept. 16	2704	564	100	2598
Dickinson, H. L., *et al.* (See Williams, Joseph H., assignor.)						
Dickinson, Herbert. (See Macculloch and Dickinson.)	708,535	Sept. 9	995	219	100	2189
Dickinson, Howell P., Hurtsboro, Ala. Tire-tightener	704,792	July 15	2636	568	100	564
Dickinson, Joseph H., Detroit, Mich. Air-pressure regulator						
Dickson, Edward S. (See Weierbach and Dickson.)	710,289	Sept. 30	4308	969	100	2948
Dickson, James D., New Brighton, N. Y. Ink-well	708,208	Sept. 2	897	92	100	2062
Dickson, William D., Peoria, Ill. Grain-spout	709,397	Sept. 16	2691	604	100	2607
Diebold, Theodore A., Stuart, Iowa. Automatic bicycle-pump						
Diehl, George W. (See Holton, George J., assignor.)						
Diehl, J. Herbert. (See Hanson, Richard B., assignor.)						
Diehl Manufacturing Company. (See Miller and Marx, assignors.)						
Diehl, Philip, Elizabeth, N. J. Sewing-machine ruffler	705,517	July 22	4211	915	100	900

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Diehl, Philip, Elizabeth, N. J., assignor to Singer Manufacturing Company. Take-up device for sewing-machines	705,226	July 22	3841	831 832	100	886
Diehl, Philip, and M. Hemleb, Elizabeth, N. J., assignors to Singer Manufacturing Company. Rotary take-up device for sewing-machines	705,221	July 22	3502	777 778	100	777
Diehl, Philip, and M. Hemleb, Elizabeth, N. J., assignors to Singer Manufacturing Company. Rotary take-up for sewing-machines	705,227	July 22	3838	831	100	886
Dienst, Emil J., *et al.* (See Kolf, Max, assignor.)						
Dierickx, Albert C. (See Rankin and Dierickx.)						
Diesel Motor Company of America. (See Diesel, Rudolf, assignor.)						
Diesel, Rudolf, Munich, Germany, assignor to Diesel Motor Company of America, New York, N. Y. Internal-combustion engine	708,029	Sept. 2	56	13 651	100	1902
Dieterich, Fred G., Washington, D. C. Round-bale compress	704,958	July 15	3083	652 653	100	650
Dieterle, John M., St. Louis, Mo. Beer-cooler	710,145	Sept. 30	4180	941	100	2902
Dietrich, Harry A. R., South Bethlehem, Pa. Steam-heating system	704,623	July 15	2344	509	100	505
Diggins, William T. S., assignor of one-half to A. F. Holden, Centralia, W. Va. Sawmill log-reflector	709,627	Sept. 23	3152	702 703	100	2675
Diggle, John H., Lasalle, Ill. Protecting device for induction-motors	705,902	July 1	177	213	100	196
Dimond, George H., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Stitched seam	708,467	Sept. 2	841	193	100	2152
Dinger, Isaac, McKees Rocks, Pa. Fruit-picking device	708,710	July 1	727	161	100	146
Dings, Alvin, Milwaukee, Wis. Magnetic separator	707,088	Aug. 19	1782	405	100	1576
Dinsmoor, Winfield L., Portland, Oreg. Garment fastener and supporter	706,909	Aug. 19	1757	393	100	1498
Ditchburn, Henry, Gravenhurst, Canada. Car-lock guard	709,667	Sept. 23	3228	719	100	2690
Ditchfield, Frank Avalon, assignor to Pressed Steel Car Company, Pittsburg, Pa. Metal-bending machine	709,753	Sept. 23	3389	760 761	100	2723
Ditchfield, Frank, Avalon, assignor to Pressed Steel Car Company, Pittsburg, Pa. Metal-bending machine	709,754	Sept. 23	3390	761	100	2723
Ditchfield, Frank, Avalon, assignor to Pressed Steel Car Company, Pittsburg, Pa. Center-bearing for railway-cars	709,755	Sept. 23	3391	761	100	2723
Dittmar, Frank F. (See Guenzel, Ernst J., assignor.)	706,807	Aug. 12	1570	352	100	1455
Dixon, Charles E. and J. E., Pittsburg, Pa. Ditching-jack	707,834	Aug. 26	3585	800	100	1902
Dixon, Henry L., Pittsburg, Pa. Plate-glass-annealing apparatus						
Dixon, John E. (See Dixon, Charles E. and J. E.)	705,827	July 29	4336	1050	100	1039
Dixon, Joseph W., and J. D. Devine, Versailles, Pa. Rail-joint						
Dixon, Sidney R., trustee. (See Davis, David W., assignor.)	705,634	July 29	4321	9 2	100	975
Djup, Bertha, Stambaugh, Mich. Rolling pin	710,009	Sept. 30	4095	922	100	2881
Doane, Samuel E., Marlboro, Mass., assignor to Bryan-Marsh Company, New York, N. Y. Exhausting incandescent electric lamps of relatively low voltage	710,186	Sept. 30	4257	939	100	2918
Doane, Samuel E., Marlboro, Mass., assignor to Bryan-Marsh Company, New York, N. Y. Exhausting incandescent electric lamps						
Dobbs, Archibald E. (See Johnston, John, assignor.)						
Doble, William H., Quincy, Mass., assignor to Pneumatic Scale Corporation, Portland, Me. Feed apparatus for weighing or packaging machines	705,229	July 22	3594	778	100	778
Doble, William H., Quincy, Mass., assignor to Pneumatic Scale Corporation, Portland, Me. Packaging-machine	708,627	Sept. 9	1122	252 253	100	2220
Dobson, Alexander, Beaverton, assignor to Peat Machinery Supply Company, Limited, Toronto, Canada. Apparatus for harvesting peat	706,585	Aug. 12	1055	232	100	1344
Dockter, John A., *et al.* (See Triance, John C., assignor.)	705,655	July 29	4322	982	100	975
Docter, Cancel T., Vanwinkle, Ga. Grain-door attachment	704,788	July 15	2938	568	100	564
Dodd, William S., Washington, Pa. Metallic railway-tie and fastener	703,903	July 1	979	213	100	196
Dodge, James M., assignor to Link Belt Engineering Company, Philadelphia, Pa. Discharge device for conveyers	705,393	July 22	3971	880	100	852
Dodge, James M., assignor to Link Belt Engineering Company, Philadelphia, Pa. Caneseling	708,608	Sept. 9	1259	289	100	2247
Dodge, James M., assignor to Link Belt Engineering Company, Philadelphia, Pa. Horizontal conveyer	708,759	Sept. 9	1382	316 317	100	2275
Dodge, James M., assignor to Link Belt Engineering Company, Philadelphia, Pa. Endless conveyer	12,030	Sept. 30	4032	1044 1045 1046 1047	100	2998
Dodge, James M., Philadelphia, Pa., assignor to Stair Lift Company, Camden, N. J., and Philadelphia, Pa. Moving stairway. (Reissue)	706,642	Aug. 12	1243	275	100	1395
Dods, John C., assignor to J. Green, St. Louis, Mo. Clamp for retort-mouthpieces	704,442	July 8	1999	435	100	421
Doellinger, Louis F., Davenport, Iowa. Filling-indicator	708,898	July 1	55	10	100	14
Doering, August, Burt, assignor of three-fourths to W. K. Ferguson, E. J. Murtaugh, and W. P. Jones, Algona, Iowa. Platform-scale	705,228	July 22	3596	778	100	778
Doering, Ernst, Berlin, Germany. Box or case						
Doersch, Conrad, trustee. (See Young, James A., assignor.)						
Doggett, Reginald L. S., East Orange, N. J., assignor to Standard Varnish Works, New York, N. Y. Expansible stopper	707,784	Aug. 26	3427	772	100	1872
Doherty, John. (See Flesche, Hall, and Doherty.)						
Doherty, Michael J., *et al.* (See Reynolds, Willie H., assignor.)	708,167	Aug. 5	324	68, 69	100	1188
Doherty, Thomas, Sarnia, Canada. Gas-engine	704,521	July 15	2175	471	100	472
Dolan, James J., and E. Estep, Sandwich, Ill. Metal-bending tool	704,784	July 15	2939	568	100	564
Dolan, John J., Jr., Baltimore, Md. Track-sanding apparatus						
Dolbear, Clinton E., assignor to American Mining and Metal Extraction Company, Boston, Mass. Electrolytically treating ores	709,817	Sept. 23	3519	.....	100	2751
Doll, Horace H., and M. H. Bostian, Camden, N. J. Automatic switch	705,561	July 1	334	76	100	67
Donaldson, Edwin, Brooklyn, assignor to International Blind Stitch Company, New York, N. Y. Sewing-machine attachment for overedge or blind stitching	709,308	Sept. 16	2506	564 565	100	2586
Donaldson, James H., Chicago, Ill. Window-shade holder	708,468	Sept. 2	841	192	100	2152
Doner, Martin J., assignor of one-half to J. J. Dunnavant, St. Louis, Mo. Roundabout	708,873	Sept. 9	1625	373	100	2327
Dones, Ella B., assignor of one-half to F. W. Heandler, Cincinnati, Ohio. Invalid-bed	708,592	Sept. 9	600	136	100	2104
Doney, Edward D., Ovando, Mont. Hay rake and loader	709,756	Sept. 23	3389	760	100	2722
Dönits, Emil, assignor to Firm of C. Zeiss, Jena, Germany. Photographic shutter	709,079	Sept. 16	2053	468 469	100	2432
Donnelly, Edward P., Boston, Mass. Air-brake apparatus	704,737	July 15	2543	550	100	547
Donnelly, James H., assignor of one-half to W. W. Ruley, Philadelphia, Pa. Side guard for cars	708,209	Sept. 2	398	92	100	2062
Donnelly, Patrick J. (See Cole and Donnelly.)						
Doolittle, James E., Bridgeport, Conn., assignor to Birdsey and Somers, Bridgeport, Conn., and New York, N. Y. Corset	704,007	July 8	1177	258	100	250
Doore, Allen J. (See Doore, George W. and A. J.)						
Doore, George W., Dover, Me., and A. J. Doore, Greene, Iowa; said A. J. Doore assignor to said George W. Doore. Paint	704,969	July 15	3041	.....	100	630

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Doppelmayr, Louis, Valverde, and M. Weber, Denver, Colo. Celery-bunching device	706,643	Aug. 12	1944	275	100	1395
Dorsa, Harry G., Brooklyn, N. Y. Combined crib and table	704,443	July 8	2000	435	100	421
Doremus, James M. (See Beebe, William, assignor.)						
Dorer, Charles H., *et al.* (See Penty and Bullard, assignors.)						
Döring, Albert, assignor to Aktiengesellschaft, vormals Seidel & Naumann, Dresden, Saxony, Germany. Bobbin holder-case for sewing-machines	709,886	Sept. 30	3679	829	100	2795
Dorman, William S., New York, N. Y. Machine for sealing bottles	705,564	July 29	4365	945	100	945
Dormandy, Garry J., Lansingburg, assignor to United Shirt and Collar Company, Troy, N. Y. Machine for folding collar-blanks, &c	708,030	Sept. 2	58	14, 15	100	1093
Dorn, Edward H. (See Hopkins and Dorn.)						
Dornblaser, Arthur S. (See Segner, Harry H. and C. B., assignors.)						
Dorner, Henry A., assignor to Dorner Truck & Foundry Co., Logansport, Ind. Car-truck	705,049	July 22	3217	695 696	100	701
Dorner Truck & Foundry Co. (See Dorner, Henry A., assignor.)						
Dorough, Walter P., *et al.* (See McLaughlin, James A., assignor.)	707,401	Aug. 19	3675	------	100	1701
Dörr, Carl T., Ohligs, assignor to F. Krupp, Essen, Germany. Ordnance powder-bag	705,031	July 1	601	------	100	119
Dörr, Clemens, Cologne, Germany. Utilizing carboniferous colliery waste	707,400	Aug. 19	3673	004	100	1700
Dorrestein, C. A., administrator, *et al.* (See Morrell, James A., assignor.)						
Dorris, George P., St. Louis, Mo. Transmission-gear for automobiles	709,757	Sept. 23	3395	763	100	2724
Dorticus, Clatonia J., Newton, N. J., assignor to Dorticus Manufacturing Co. Photograph-burnisher	709,060	Sept. 16	1880	432	100	2396
Dorticus Manufacturing Co. (See Dorticus, Clatonia J., assignor.)	709,587	Sept. 30	3680	880	100	2796
Dosch, Peter, Yonkers, N. Y. Sash-cord pulley	710,258	Sept. 30	4546	1035 1037	100	2981
Dossey, William J., Rhome, Tex. Apparatus for cooling water	706,526	Aug. 12	1057	252 253	100	1344
Doud, Charles A., and C. B. Shouse, assignors to Western Banana Crate Manufacturing Company, La Crosse, Wis. Banana-crate						
Dougan, David W., and F. C. Watson, Philadelphia, Pa. Stuffing-box for piston-rods	709,970	Sept. 30	3850	895	100	2833
Douglas, Heman F. (See Slyder, William J., assignor.)	707,058	Aug. 12	2007	449	100	1544
Douglas, Nathan, Cambridge, Mass. Garment-holder	704,322	July 15	2177	471	100	472
Douglas, William D., Chicago, Ill. Air-feeding device	707,900	Aug. 26	3811	856	100	1947
Douglas, William H., Washington, D. C. Cock or faucet	706,108	Aug. 5	325	69	100	1168
Douillet, Edouard, La Garenne-Colombes, France. Apparatus for refining oils	707,835	Aug. 26	3586	809	100	1902
Dover, George W., Cranston, R. I., assignor to George W. Dover Company. Pin	704,528	July 15	2179	472	100	472
Dovey, George J. (See Head and Dovey.)						
Dow, Herbert H., Midland, Mich. Means for generating counter electromotive force	709,886	Sept. 30	3679	829	100	2795
Dowagiac Manufacturing Company. (See Brown, William F., assignor.)	705,284	July 22	2597	779	100	778
Dowden, Ashford T., assignor to Dowden Manufacturing Company, Prarie City, Iowa. Portable chair-swing	706,537	Aug. 12	1059	283	100	1345
Dowden Manufacturing Company. (See Dowden, Ashford T., assignor.)	710,187	Sept. 30	4259	960	100	2918
Down, Earnest U., Haskins, assignor of one-fourth to A. C. Beil, Waterville, Ohio. Valve for engines	708,211	Sept. 2	401	93	100	2063
Downard, Byron B., Milwaukee, Wis. Key-fastener	709,001	Sept. 16	1881	432	100	2396
Downer, John H., Allenport, Pa. Adjustable ice-creeper						
Downes, Louis W., Providence, R. I. Electric snap-switch	709,474	Sept. 23	2858	642	100	2613
Downes, Louis W., Providence, R. I. Manufacturing electrical conductors	708,699	Sept. 9	1951	289	100	2248
Downing & Co., C. J. (See Rice, Wietts L., assignor.)	707,214	Aug. 19	2324	------	100	1626
Downing, Horatio E., Reading, Okla. Ter. Animal-poke	707,054	Aug. 12	2010	450	100	1544
Downs, William, Orange, N. J. Fuel-economizer feed-water heater	707,504	Aug. 19	2848	645	100	1738
Downs, William F., Jersey City, N. J. Treating rebellious ores of the precious metals	708,808	Aug. 12	1572	352	100	1455
Dowse, William B. H., Newton, Mass. Fastener	707,307	Aug. 19	2497	561	100	1654
Dowse, William B. H., Newton, Mass., assignor to Consolidated Fastener Company, Portland, Me. Fastener						
Doyle, John, Grand Rapids, and G. H. Kimball, Detroit, assignors of one-third to W. J. McWain, Saginaw, Mich. Railway-tie	704,911	July 29	4901	1096	100	1070
Doyle, Michael F., Scranton, Pa. Carpenter's tool	708,536	Sept. 9	908	219	100	2189
Dr. Paul Meyer Actiengesellschaft. (See Jahnz, Erwin H., assignor.)						
Draper, Clare H., assignor to Draper Company, Hopedale, Mass. Shuttle-checking mechanism for looms						
Draper, Clare H., assignor to Draper Company, Hopedale, Mass. Warp stop-motion for looms						
Draper Company. (See Burton, John L., assignor.)						
Draper Company. (See Côté, Henry, assignor.)						
Draper Company. (See Draper, Clare H., assignor.)						
Draper Company. (See Draper, George O., assignor.)						
Draper Company. (See Emery, Abram D., assignor.)						
Draper Company. (See Rhoades, Alonzo E., assignor.)						
Draper Company. (See Roper, Charles F., assignor.)						
Draper Company. (See Stafford, Alfred E., assignor.)						
Draper Company. (See Stimpson, Edward S., assignor.)						
Draper Company. (See Tubby and Broomhead, assignors.)						
Draper, Egbert, assignor to Judson L. Thomson Manufacturing Company, Waltham, Mass. Guide-pocket for rivet-setting machines	709,002	Sept. 16	1883	433	100	2397
Draper, George O., Hopedale, Mass., assignor to Draper Company, Portland, Me., and Hopedale, Mass. Yarn-spinning apparatus	707,215	Aug. 19	2336	520	100	1629
Drengwitz, William, Pittsburg, Pa. Heating-stove	705,828	July 29	4887	1050	100	1039
Dresser, Heinrich, and J. Callsen, Elberfeld, Germany, assignors to Farbenfabriken of Elberfeld Co., New York, N. Y. Atropinium alkyl nitrate	707,402	Aug. 19	2676	------	100	1701
Drew, Warren F., assignor of one-half to F. O. Snook, Sacramento, Cal. Adjustable crutch	705,741	July 29	4698	1017	100	1010
Drewett, William A. (See Davidson and Drewett.)	704,785	July 15	2531	569	100	564
Driver, Charles H., Racine, Wis. Sandpapering-machine	704,176	July 8	1524	327	100	321
Drohen, James L., Dunkirk, N. Y. Bag-filling machine	705,656	July 29	4533	982	100	975
Drory, Edward, Berlin, Germany. Means for charging gas-retorts	706,910	Aug. 12	1760	398	100	1494
Droste, Henry L. (See Minck and Droste.)	709,700	Sept. 23	3881	785	100	2702
Droutlege, Henry, Auckland, New Zealand. Ballot-box						
Drown, Charles W., Brattleboro, Vt. Bridle-bit	704,008	July 8	1178	257	100	250
Drummond, Dugald, Surbiton, England. Spark-preventer for locomotive or other engines	704,786	July 15	2534	569 570	100	565
Drummond, George W. (See Drummond, Walter and G. W.)	708,081	Sept. 2	65	15, 16	100	1995
Drummond, Walter and G. W., Govan, Scotland. Tablet picking up and depositing apparatus for use on single lines of railways	704,475	July 8	2072	449	100	496
Drzewiecki, Stephan J. J., Paris, France. Torpedo-launching apparatus	706,085	Aug. 5	63	13, 14	100	1131
Du Bois, Charles F., Denver, Colo. Combined journal-bearing and air-compressor	704,788	July 15	2536	570	100	566
Du Bois, James F., Bellaire, Ohio. Continuous brick kiln and drier	708,874	Sept. 9	1026	374	100	2227
Du Perow, Silas, Cleveland, Ohio. Cable-hanger						
Dubois, Alexander N., Philadelphia, Pa. Oxidizing apparatus						

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Duc, Henry A., Jr., Charleston, S. C. Steam-boiler	707,216	Aug. 19	3337	580	100	1699
Duchaneis, Joseph E., Cottonwood Falls, Kans. Gang-saw attachment	704,787	July 15	2535	570	100	565
Duck Brake Company of New York. (See Bill, Louis H., assignor.)						
Ducker Automatic Gas Cut-Off Company. (See Ducker, Louis F., assignor.)						
Ducker, Louis F., assignor to Ducker Automatic Gas Cut-Off Company, Boston, Mass. Automatic cut-off for gas-burners	705,329	July 22	2843	632	100	827
Duckworth, Ira, Fort Smith, Ark. Corn-pad	707,099	Aug. 19	2084	465	100	1576
Duclos, Alexandre. (See Charon, Antoine, assignor.)						
Ducousso, Théophile, Paris, France. Electrical apparatus for operating railway switches and signals	704,177	July 8	1527	328 329	100	321
Dudek, Franz, Biala, and R. Dembowski, assignors of one-half to Firm of G. Josephy's Erben, Bielitz, Austria-Hungary. Woodworking-machine	704,476	July 8	2074	449 450	100	496
Dudgeon, William M., executor. (See Pitcher, Lewis S., assignor.)						
Dudley, Charles T., Golden, Colo., assignor of one-fourth to W. W. Dudley, F. L. Browne, and W. T. Norton, Washington, D. C. Treatment of steel ingots for forging	705,330	July 22	2845	------	100	827
Dudley, William W., *et al.* (See Dudley, Charles T., assignor.)	707,559	Aug. 26	2978	672	100	1780
Duff, Hugh Y. B., Cheswick, Pa. Hide-securing apparatus	707,558	Aug. 26	2977	672	100	1780
Dufour, Corinne, Savannah, Ga. Combined undervest and corset-cover	704,444	July 8	2002	436	100	421
Dummer, Edward, Newton, Mass. Paper-feeder	706,086	Aug. 5	66	14	100	1131
Dun Lany, William P., Cleveland, Ohio. Hair-fastener						
Dunahoo, James M., Hood River, assignor of one-half to R. J. Ginn, Moro, Oreg. End-less-chain reel	704,445	July 8	2007	436	100	422
Dunbar, Francis W., assignor to Kellogg Switchboard and Supply Company, Chicago, Ill. Telephone system. (Reissue)	12,031	Sept. 16	2811	632	100	2593
Duncan, Arthur T., Clinton, Mo. Shell-base for cartridges	707,681	Aug. 26	3228	725	100	1882
Duncan, Frederick B. assignor to Northern Electrical Manufacturing Company, Madison, Wis. Lubricating device	708,824	Sept. 2	604	137	100	2104
Duncan, James. (See Duncan, William M., assignor.)	703,771	July 1	728	161	100	146
Duncan, Lewis S., New York, N. Y. Moistener						
Duncan, Max E., New York, N. Y., assignor to B. R. Bacon, South Orange, N. J. Can-opener	707,560	Aug. 26	2979	672	100	1781
Duncan, Max E., New York, N. Y., assignor to B. R. Bacon, South Orange, N. J. Can-opener	707,561	Aug. 26	2980	673	100	1781
Duncan, Signora H., Nashville, Tenn. Cuspidor	706,538	Aug. 12	1060	283	100	1345
Duncan, William M., assignor of one-half to J. Duncan, Alton, Ill. Molding-machine	704,712	July 15	2493	539 540	100	537
Duncombe, George H. (See Faulkner, Alonzo D., assignor.)	705,742	July 29	4709	1017	100	1010
Dunham, Charles L., Centerview, Ohio. Pipe-wrench	705,743	July 29	4709	1017	100	1010
Dunham, Charles L., Centerview, Ohio. Nut-lock	707,908	Aug. 26	3725	895	100	1929
Dunham, George W., and J. W. Fox, East Cleveland, Ohio. Foot-warmer for vehicles	709,008	Sept. 16	1886	------	100	2397
Dunham, H. G., *et al*, trustees (See McClave, William, assignor.)	707,090	Aug. 19	2085	466	100	1576
Dunham, Henry V., New York, N. Y. Producing soluble milk-albumen	706,911	Aug. 12	1762	393	100	1494
Dunham, Willard A., Weymouth, Mass. Lacing-hook	708,895	Sept. 2	605	137	100	2105
Dunham, William L., assignor to W. B. Matthews and F. H. Hough, Washington, D. C. Tool for removing caps from bottles	707,308	Aug. 19	2498	561	100	1654
Dünkelsbühler, Moritz. (See Wachwitz, Heinrich, assignor.)	708,720	July 1	641	142	100	128
Dunlap, William J., Etna, Pa. Tool for oil-wells, &c	707,502	Aug. 26	2982	673	100	1781
Dunn, Charles A., West Homestead, Pa. Envelop	709,090	Sept. 16	2055	469	100	2438
Dunn, James E., Chicago, Ill. Artificial denture	709,091	Sept. 16	2056	470 471	100	2438
Dunn, Thomas J., Jersey City, N. J. Electrotherapeutic battery	709,092	Sept. 16	2058	471	100	2438
Dunn, William A., Smithville, assignor of one-half to A. M. Miller, Duluth, Minn. Shaping metal I-beams, channel-beams, &c	709,093	Sept. 16	2059	471 472	100	2434
Dunn, William A., Smithville, assignor of one-half to A. M. Miller, Duluth, Minn. Machine for shaping metal I-beams, channel-beams, &c	709,094	Sept. 16	2062	473	100	2434
Dunn, William A., Smithville, assignor of one-half to A. M. Miller, Duluth, Minn. Roller-mill	709,095	Sept. 16	2063	473 474	100	2434
Dunn, William A., Smithville, assignor of one-half to A. M. Miller, Duluth, Minn. Roller-mill and cutter						
Dunn, William A., Smithville, assignor of one-half to A. M. Miller, Duluth, Minn. Machine for rolling metal I-beams, channel-beams, &c						
Dunnavant, John J. (See Doner, Martin J., assignor.)	704,345	July 8	1636	354	100	342
Dunne, Patrick W., River Forrest, Ill. Means for transmitting rotary motion	704,346	July 8	1637	355	100	342
Dunne, Patrick W., River Forrest, Ill. Burglar-alarm						
Dunster, Henry, Jr., *et al.* (See Sibley, Edward W., assignor.)						
Duplex Printing Press Company. (See Bechman, Henry F., assignor.)	706,780	Aug. 12	1360	313	100	1418
Dupont, Paul A., Rouen, France. Two-cycle rotary motor	709,668	Sept. 23	3825	719	100	2691
Durand, Henry S., Rochester, N. Y. Mechanical motor						
Durand and Ivey. (See Durand, John, assignor.)	704,808	July 8	1742	390	100	366
Durand, John, Durham, N. C., assignor to Durand and Ivey, Union Point, Ga. Hand-stamp	707,909	Aug. 26	3726	895	100	1929
Durand, Nelson C., assignor to International Text Book Company, Scranton, Pa. Bound-modifier	707,563	Aug. 26	2983	673	100	1781
Durgin, Alfred B., Medford, Mass. Comb	707,564	Aug. 26	2984	673	100	1781
Durgin, Alfred B., Medford, Mass. Comb						
Durkee, Frederick M., Newton, assignor of one-half to U. Blatter, Jamaica Plain, Boston, Mass. Watch-dial illuminator	704,446	July 8	2009	437	100	423
Durner, Augustus E., Evansville, Wis. Harrow-disk sharpener	708,902	Sept. 9	1472	336	100	2295
Dusek, Anton E., assignor of one-half to J. W. Dusek, Crowlake, S. D. Soap-holder	709,143	Sept. 16	2172	499	100	2459
Dusek, Joseph W. (See Dusek, Anton E., assignor.)						
Dutchess Tool Company. (See Van Houten, Frank H., assignor.)	707,091	Aug. 19	2086	466	100	1576
Dutton, Thomas A., Egypt, Ga. Sugar-cane stripper	703,772	July 1	729	161	100	146
Duvall, Stephen A., Penrith, W. Va. Railway-switch						
Dye, William H., assignor of one-half to J. M. Wharton, Indianapolis, Ind. Oil-fuel generator	705,565	July 29	4367	946	100	945
Dye Works, formerly L. Durand Huguenin & Co. (See De la Harpe, Charles, assignor.)	708,700	Sept. 9	1262	290	100	2246
Dyer, Charles V., and W. S. Willette, Conroe, Tex. Insect-destroying machine						
Dyer, Frank M. (See Newton, William J., assignor.)	705,898	July 29	4885	1050	100	1039
Dziech, John, assignor of one-half to C. Frankenstein, Cincinnati, Ohio. Tailor's pressing-machine						
E. & H. T. Anthony & Co. (See Latham, Woodville, assignor.)						
E. Ingraham Company. (See Throop and Ingraham, assignors.)						
E. Van Noorden Company. (See Steffey, Josiah H., assignor.)						
E. W. Bliss Company. (See Klocke, William, assignor.)						
E. W. Bliss Company. (See Leavitt, Frank M., assignor.)						
Eagen, John J., Oakland, Cal. Dumping-wagon	709,210	Sept. 16	2819	585	100	2487

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Eagle Pencil Company. (See Holzworth, Louis, assignor.)						
Eames, George M., assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Treadle-power stand for sewing-machines	704,536	July 15	2181	472	100	473
Earhart, Sylvester F. (See Kiler, Charles M., assignor.)						
Earl, Charles M., assignor of two-thirds to W. J. Stapleton and E. McBride, Detroit, Mich. Cable-sleeve	707,056	Aug. 12	2011	450	100	1344
Earl, William D. (See Adams, George E., assignor.)						
East, James W., Tate Springs, Tenn. Tool	704,819	July 15	2716	566	100	561
Easterling, James R., *et al.* (See Harrison, Julian R., assignor.)						
Easterling, John M., *et al.* (See Harrison, Julian R., assignor.)						
Eastman, Ernest A. (See Specht, Eugene T., assignor.)						
Eastman Kodak Company. (See McCurdy, Arthur W., assignor.)						
Easton & Burnham Machine Company. (See Fay, Rimmon C., assignor.)						
Easton & Burnham Machine Company. (See Fay, Rimmon C. and F. L., assignors.)						
Eastwood, Arthur C., assignor to Electric Controller & Supply Company, Cleveland, Ohio. Protective operating device for electric motors	704,447	July 8	2010	437	100	493
Eastwood, Arthur C., assignor to Electric Controller and Supply Company, Cleveland, Ohio. Rheostat	704,448	July 8	2014	437	100	494
Eastwood Wire Manufacturing Company. (See Joule, Joseph, assignor.)						
Eaton-Huribut Paper Company. (See Pike, William A., assignor.)						
Eaton, Matthias B., Boston, Mass. Flanger	704,525	July 15	2183	473	100	473
Eaton, Oscar E., Boston, and F. C. Burrill, Hull, Mass. Compass-light	705,080	July 22	2218	496	100	702
Ebeling, Phillip, Moundsville, assignor of one-half to G. L. Caldwell, Wellsburg, W. Va. Glass-press	708,396	Sept. 2	006	137 138	100	2105
Ebeling, Phillip, Moundsville, assignor of one-half to G. L. Caldwell, Wellsburg, W. Va. Stroke-regulating mechanism for glass-presses, &c.	708,489	Sept. 2	848	192 198	100	2152
Eberhardt, Fred L., and H. F. Emme, assignors to Gould & Eberhardt, Newark, N. J. Oil-hole protector	705,919 704,009	Aug. 12 July 8	1573 1178	362 257	100 100	1455 950
Ebersole, John, Chambersburg, Pa. Hot-water heating system	708,337	Sept. 2	009	138	100	2105
Eberstein, John G., assignor to J. J. Hovey, J. F. Dean, and R. A. Brachvogel, Chicago, Ill. Door or window alarm	708,773	July 1	781	162	100	147
Eckert, Heinrich. (See Debes, Eduard, assignor.)						
Eckert, Joseph, New York, N. Y. Window shade and fixture						
Economical Gas Apparatus Construction Company *et al.* (See Merrifield, Leonard L., assignor.)						
Economy Locomotive Sander Company. (See Hooper, John C., assignor.)						
Edgely, Henry H., Altoona, Pa. Ringless curtain-pole	706,339 709,144	Aug. 12 Sept. 16	1061 2174	234 498	100 100	1345 2459
Edgerly, Clarence E., Biddeford, Me. Game apparatus						
Edgerton, Joseph W. (See Sjoberg, Albert, assignor.)						
Edgerton, Nathan H., Philadelphia, Pa. Dynamo and magneto-electric machine	708,803	Sept. 9	1474	336 337	100	2295
Edgerton, Nathan H., Philadelphia, Pa. Dynamo and magneto-electric machine	708,875	Sept. 9	1628	374	100	2328
Edison Phonograph Works. (See Waterman and Berthold, assignors.)						
Edison, Simeon O., East Orange, N. J. Treating fibers of annual growth for industrial purposes	704,698	July 15	2469	583	100	582
Edison Storage Battery Company. (See Edison, Thomas A., assignor.)						
Edison, Thomas A., Llewellyn Park, N. J. Apparatus for bricking pulverized material	708,562	July 1	286	76	100	67
Edison, Thomas A., Llewellyn Park, N. J. Reproducer for phonographs	708,774	July 1	783	168 168	100	147
Edison, Thomas A., Llewellyn Park, N. J. Apparatus for concentrating magnetic iron ores	704,010	July 8	1180	257	100	350
Edison, Thomas A., Llewellyn Park, N. J. Reproducer for sound-records	705,889	July 29	2329	1051	100	1089
Edison, Thomas A., Llewellyn Park, N. J. Kinetoscope. (Reissue)	12,037	Sept. 30	4636	1047	100	2998
Edison, Thomas A., Llewellyn Park, N. J. Kinetoscopic film. (Reissue)	12,038	Sept. 30	4639	1048	100	2999
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Storage Battery Company. Reversible galvanic battery	704,302	July 8	1743	381	100	366
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Storage Battery Company. Reversible galvanic battery	704,304	July 8	1744	.....	100	366
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Storage Battery Company. Electrode for batteries	704,305	July 8	1746	381	100	367
Edison, Thomas A., Llewellyn Park, N. J., assignor to Edison Storage Battery Company. Reversible galvanic battery	704,306	July 8	1748	381	100	367
Edler, Lewis J., *et al.* (See MacMillan, Clyde, assignor.)						
Edmiston, George F., Chicago, assignor of one-half to G. R. Ainsworth, Wilmette, Ill. Steam cooking utensil	707,217	Aug. 19	2229	321	100	1089
Edser, Edwin, and M. Wildermann, London, England. Electrolytic decomposition of alkaline salts	709,971	Sept. 30	3852	866 867	100	2833
Edson, Eugene R., Cleveland, Ohio. Drying oil-yieldable or oil-containing material	708,868	July 1	57	11	100	14
Edson, Eugene R., Cleveland, Ohio. Apparatus for separating naphtha from oil	704,011	July 8	1184	258	100	351
Edson, Eugene R., Cleveland, Ohio. Rendering apparatus	707,565	Aug. 26	2985	674	100	1781
Edson, Eugene R., Cleveland, Ohio. Reducing or rendering fish or other material	707,566	Aug. 26	2991	674	100	1782
Edson, Eugene R., Cleveland, Ohio. Rendering apparatus	707,567	Aug. 26	2995	674	100	1782
Edwards, Arthur H., London, England. Apparatus for the transmission of power in varying directions	708,904	July 1	980	213 214	100	195
Edwards, Arthur H., London, England. Mechanism for releasing or operating photographic shutters	708,876	Sept. 9	1630	374 375	100	2328
Edwards, Charles R., Pittsburg, Pa. Rail-joint	705,566	July 29	4369	946	100	945
Edwards, Edgar A., Cincinnati, Ohio. Electric-arc lamp	708,022	Sept. 2	70	16, 17	100	1995
Edwards, Elbert C., Emporia, Kans. Elevator-stop	706,644	Aug. 12	1946	375	100	1395
Edwards, Ellsworth J., Aspen, Colo. Wheel	705,567	July 29	4370	947	100	946
Edwards, Frank W., Logansport, Ind. Lubricator	706,284	Aug. 5	429	91	100	1214
Edwards, James N., Macon, Mo. Rotary engine	706,731	Aug. 12	1401	312 313	100	1419
Edwards, John W., Cleveland, Ohio. Non-refillable bottle	710,219	Sept. 30	4498	1013	100	2069
Edwards, Oliver M., Syracuse, N. Y. Shade-roller	704,736	July 15	2547	550	100	547
Edwards, Oliver M., Syracuse, N. Y. Shade-roller	708,701	Sept. 9	1364	290	100	2048
Edwards, Roland H., London, England. Projecting apparatus	704,449	July 8	2015	438	100	494
Edwards, Thomas, Sebastopol, Ballarat, Victoria, Australia. Generator for chlorin gas	709,004	Sept. 16	1897	433	100	2328
Edwards, Victor E., Worcester, Mass. Rolling-mill	709,973	Sept. 30	3853	867 868	100	2833
Edwards, William J., and W. M. Wauters, Bayonne, N. J. Doweling-machine	705,657	July 29	4584	983 984	100	976
Edwards, William J., and W. M. Wauters, Bayonne, N. J. Machine for drilling edges of boards	705,658	July 29	4581	984	100	976
Eek, Albin C., and A. F. Cedergquist, St. Louis, Mo. Rotary engine	708,386	Sept. 2	611	128 129	100	2106
Egan, Charles E., assignor to J. S. Carr, Durham, N. C. Lightning-arrester	708,389	Sept. 2	613	129	100	2106

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Egbers, George H., Cincinnati, Ohio. Device for raising or lowering awnings	705,744	July 29	4701	1017	100	1010
Egedal, Hans P., Thor, Iowa. Gate	707,218	Aug. 19	2231	581	100	1689
Eggener, Joseph B. (See Thompson, William H., assignor.)						
Eggers, Anton C., trustee. (See Phillipson, Emil, assignor.)						
Ehrenfeld, Charles, Pasadena, Cal. Dredge and well-borer	706,360	Aug. 5	796	173	100	1275
Ehret, Cornelius D., Philadelphia, Pa., assignor to American Wireless Telephone and Telegraph Company and Consolidated Wireless Telegraph and Telephone Company. Automatic selective system	707,056	Aug. 12	2012	450	100	1545
Ehret, Cornelius D., Washington, D. C., assignor to American Wireless Telephone and Telegraph Company and Consolidated Wireless Telegraph and Telephone Company. Wireless-telegraph system	710,854	Sept. 30	4540	1027	100	2981
Ehret, Cornelius D., Rosemont, Pa., assignor to Consolidated Wireless Telegraph and Telephone Company. Wireless-telegraph system	710,855	Sept. 30	4562	1027	100	2981
Ehrhardt, Gustav, Eisenach, Germany. Firing-pin arrangement for breech-loading ordnance	709,701	Sept. 23	3293	735	100	2702
Ehrhardt, John A., *et al.* (See Zander, William A. H., assignor.)						
Ehrhart, George, Fulton, N. Y. Paper-making machine	703,775	July 1	735	163	100	148
Ehrle, Oscar F. (See Oehmen, Gustave N., assignor.)						
Ehrman, Clarence P. (See Gibbs, James E., assignor.)						
Eichelbaum, Georg, Berlin, Germany. Obtaining food extracts	708,880	Sept. 2	615	.....	100	2107
Eichelberger, William, Windber, Pa. Soot-cleaner for steam-boilers	705,912	July 29	4903	1086, 1087	100	1070
Eichenberger, Otto, assignor to P. Galopin, Geneva, Switzerland. Perspectograph	704,307	July 8	1751	382	100	368
Eichengrün, Arthur, Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y. Photographic developer	707,408	Aug. 19	2677	.....	100	1701
Eichengrün, Arthur, Elberfeld, Germany, assignor to Farbenfabriken of Elberfeld Co., New York, N. Y. Pyrotechnic compound	710,047	Sept. 30	3976	.....	100	2850
Eicher, Harry W., Meyersdale, Pa. Lock	709,209	Sept. 16	2508	565	100	2529
Eichhorn, Augustus, Orange, N. J. Radiator	709,758	Sept. 23	3400	763	100	2725
Eichhorn, Charles H. (See Eichhorn and Dernell.)						
Eichhorn, Frederick H. and C. H., and F. P. Dernell, Athens, N. Y. Ice-runway	704,450	July 8	2020	439	100	425
Eidmann, Edward C. (See Wood, Augustus L., assignor.)						
Eikel, Louise. (See Seifert, John W., assignor.)						
Eilenberger, Peter E., Belvidere, N. J. Try-square	709,759	Sept. 23	3402	763	100	2725
Eilerman, Benjamin F. (See Grimes, Sunderland, and Eilerman.)						
Eilertsen, Lucien, Paris, France. Dental apparatus	709,978	Sept. 30	3856	868	100	2884
Einfeldt, Emil, Davenport, Iowa, assignor to Bettendorf Metal Wheel Company. Metal wheel	703,697	July 1	602	128	100	119
Einfeldt, Emil, Davenport, Iowa, assignor to Bettendorf Metal Wheel Company. Machine for forming wheel-hubs from tubular blanks	705,518	July 22	4213	915, 916	100	900
Einstein, Alfred C., St. Louis, Mo. Acetylene-gas generator	706,810	Aug. 12	1575	358	100	1455
Eiseman, Moses H., Chicago, Ill., assignor of one-half to L. Roser, Jr. Hose-supporter	705,519	July 22	4215	916	100	901
Eisenmann, Jacob, Frankfort-on-the-Main, Germany. Guard device for coupled cars	709,145	Sept. 16	2176	498	100	2460
Ek, Arvid, Portland, Me. Net-support for ping-pong tables	709,699	Sept. 23	3327	790	100	2991
Ekelund, John A., Minneapolis, assignor of one-fourth to N. A. Johnson, Murdock, Minn. Combined cane and fishpole	706,225	Aug. 5	429	98	100	1304
Eklund, Alexander, Attleboro, Mass. Bottle-stopper	704,820	July 15	2717	588	100	581
Elam, William E., Atlanta, Ga. Reversibly-suspended flexible sheet	703,394	July 1	58	11	100	14
Elbers, Alexander D., Hoboken, N. J. Treating fine iron ores for blast-furnaces	708,881	Sept. 9	616	.....	100	2107
Elden, Leonard L., Boston, assignor of one-half to S. B. Condit, Jr., Somerville, Mass. Electrical switch	707,505	Aug. 19	2849	645	100	1738
Electric Boat Company. (See Holland, John P., assignor.)						
Electric Controller & Supply Company. (See Eastwood, Arthur C., assignor.)						
Electric Railway Signalling Syndicate. (See Spagnoletti, James E., assignor.)						
Electric Storage Battery Company. (See Entz, Justus B., assignor.)						
Electric Storage Battery Company. (See Lesley, Hugh, assignor.)						
Electric Storage Battery Company. (See Martin, Harold M., assignor.)						
Electric Storage Battery Company. (See Rodman, Hugh, assignor.)						
Electric Storage Battery Company. (See Steinmetz, Edward G., assignor.)						
Electrite Company. (See Sundh, August, assignor.)						
Electro Dental Manufacturing Company. (See Schramm, Adolph W., assignor.)						
Eley, David, Lakefork, Ohio. Corn-planter	705,051	July 22	3219	696, 697	100	702
Eley, David, Lakefork, Ohio. Corn-planter	705,052	July 22	3224	697, 698	100	703
Eley, David, Lakefork, Ohio. Corn-planter	705,053	July 22	3226	698, 699	100	703
Eley, Thomas J., *et al.* (See Bangley, Joseph L., assignor.)						
Elger, William D. (See Beam, William D., assignor.)						
Elias, Friedrich, Berlin, Germany. Making peroxid of magnesium	709,086	Sept. 16	2065	.....	100	2484
Elias, Leopold, Breslau, Germany. Asbestos stereotype	709,398	Sept. 16	2692	.....	100	2567
Elkan, Walter, assignor to C. F. Cooke, Chicago, Ill. Liquid-receptacle	709,211	Sept. 16	2313	525	100	2487
Ellenberger, Charles C., Jr. (See Darling and Ellenberger.)						
Ellington, Allen W., Los Angeles, Cal. Applicator	706,732	Aug. 12	1402	313	100	1419
Ellinwood, Augustus E., Akron, Ohio. Machine for boxing matches	707,508	Aug. 26	3000	674, 675, 676	100	1784
Elliot, Dayton W., Minneapolis, Minn. Drier	707,765	Aug. 26	3423	772	100	1872
Elliott, Alvin D. (See Mayo and Elliott.)						
Elliott, Alvin D., Lawrence, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Nail-assorting apparatus	707,140	Aug. 19	2178	489	100	1586
Elliott, Anah S., Mechanicsville, Iowa. Rake	706,897	Aug. 5	798	174	100	1276
Elliott Company. (See Elliott, Sterling, assignor.)						
Elliott, David C. (See Larimer and Elliott.)						
Elliott & Hatch Book Typewriter Company. (See Kylar, Matthew S., assignor.)						
Elliott & Hatch Book Typewriter Company. (See Hopkins, Clarence F., assignor.)						
Elliott, Homer P. (See Seagrave and Elliott.)						
Elliott, Ralph W., Oakley, Cal. Pneumatic pump	709,212	Sept. 16	2314	526	100	2487
Elliott, Sterling, Boston, Mass. Guard for third-rail systems	703,568	July 1	338	76	100	68
Elliott, Sterling, assignor to Elliott Company, Boston, Mass. Sorting and addressing machine	707,961	Aug. 26	3312	856, 857, 858	100	1947
Elliott, Sterling, assignor to Elliott Company, Boston, Mass. Stencil-frame	708,698	Sept. 9	1195	253	100	2221
Ellis, Arthur W., Sumpter, Oreg. Adjustable window-shade carrier	708,699	Sept. 9	1196	253	100	2221
Ellis, George H., *et al.* (See Henry, Curtis B., assignor.)						
Ellis, Malcolm, and N. W. Perkins, Jr., assignors to C. H. Filley, St. Louis, Mo. Adding-machine	707,809	Aug. 19	2499	561, 562, 563	100	1665

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ellis, Marshall D., Congress Heights, D. C., assignor of one-half to G. M. Field, Highpoint, N. C. Apparatus for preserving foods	706,506	Aug. 5	999	220	100	1319
Ellis, Samuel J., and C. Neilsen, Memphis, Tenn. Seed-cake trimmer	709,700	Sept. 23	3402	764	100	2725
Ellis, Seele H., Brooklyn, assignor to H. L. Fox, New York, N. Y. Railway-car	710,048	Sept. 30	3977	897	100	2959
Ellis, Seele H., Brooklyn, assignor to H. L. Fox, New York, N. Y. Clamp	710,049	Sept. 30	3980	898	100	2960
Ellis, Warren E., Haverhill, Mass. Fastener for shoe-uppers	704,451	July 8	2021	439	100	426
Ellison, James A., Wilmington, Del. Stop-valve	708,564	July 1	339	77	100	68
Ellison, Oscar E., Austin, Pa. Wood-splitting machine	705,659	July 29	4582	984 985	100	978
Elmore, Alexander S., London, England. Apparatus for the separation of minerals by the selective action of oils, &c	703,205	July 1	982	214	100	196
Elson, Benjamin F., Brooklyn, N. Y. Polishing-wheel and manufacturing same	704,789	July 15	2636	570	100	566
Elward, John H., Pretty Prairie, Kans. Mixing-machine	707,404	Aug. 19	3677	604	100	1701
Elward, John H., Pretty Prairie, Kans., assignor to Indiana Manufacturing Company, Indianapolis, Ind. Pneumatic stacker	706,037	Aug. 5	67	15	100	1131
Elward, John H., Hutchinson, Kans., assignor to Indiana Manufacturing Company, Indianapolis, Ind. Pneumatic stacker. (Reissue)	12,022	Aug. 19	2909	658 659	100	1749
Elzea, John W., Rantoul, Kans. Rail-joint	709,473	Sept. 23	2980	642	100	2614
Emerick, William H., Chicago, Ill. Draft-rigging	705,590	July 22	4217	916 917	100	901
Emerson, Albert, and A. S. Hovander, Williamsport, Pa. Automatic railway-signal	707,405	Aug. 19	3680	605	100	1701
Emerson & Co., George W. (See Ballard, Milton H., assignor.)						
Emerson Manufacturing Company. (See Waterman, Lewis E., assignor.)						
Emerson, William R., Washington, D. C. Strainer for suction-pipes of pumps	704,012	July 8	1186	258	100	251
Emery, Abram D., Taunton, Mass., assignor to Draper Company, Portland, Me., and Hopedale, Mass. Automatic stopping mechanism for looms	705,913	July 29	4095	1087 1088	100	1071
Emery, Wilber, Ashland, Ky. Wire twisting and reeling machine	705,331	July 22	3846	838	100	827
Emery, Wilber, Ashland, Ky. Barbed-wire machine	705,394	July 22	3972	860 861	100	852
Emery, William H., assignor to P. T. Sykes, Auburn, Me. Puzzle	709,888	Sept. 30	3661	830	100	2796
Emig, John A., and J. G. Krout, York, Pa. Insecticide and fertilizer	704,013	July 8	1188	.....	100	252
Emme, Henry F. (See Eberhardt and Emme.)						
Emmert, Joseph F., assignor to Emmert Manufacturing Company, Waynesboro, Pa. Vise	709,399	Sept. 16	2603	604	100	2567
Emmert Manufacturing Company. (See Emmert, Joseph F., assignor.)						
Emmes, William T., Cincinnati, Ohio. Quick-feed arrangement for gears	707,560	Aug. 26	3006	676 677	100	1786
Emmet, William L. R. (See Steinmetz and Emmet.)						
Emmet, William L. R., Schenectady, N. Y., assignor to General Electric Company. Electrically-controlled switch	706,540	Aug. 12	1062	234	100	1345
Emmons, Grosvenor B. (See Mills, Francis A., assignor.)						
Empire Cash Register. (See Collins, Norman, assignor.)						
Empire Pneumatic Tool Company. (See Birkenstock and Funk, assignors.)						
Enderton, William H., assignor of one-half to T. Minto, Cambridge, Ohio. Pipe-wrench	705,054	July 22	3229	699	100	704
England, Frank A. (See Miller and England.)						
Engle, William G., Enderlin, N. D. Support for spring structures	710,260	Sept. 30	4294	989	100	2948
Engleking, Henry F., Chicago, Ill. File	709,889	Sept 30	3682	830	100	2797
English, Clifton B., Easton, Pa., and J. W. Thompson, Bloomsbury, N. J. Grit-mill	706,645	Aug. 12	1247	276	100	1286
English, James J. (See Lally and English.)						
English, William F., Philadelphia, Pa. Manifolding note-book	709,259	Sept. 16	2408	545	100	2507
English, William M., and G. A. Burns, San Francisco, Cal. Antiseptic telephone-mouthpiece	706,169	Aug. 5	326	69	100	1183
Ennes, Charles E., assignor of one-half to J. Rice, Chicago, Ill. Elevator	709,974	Sept. 30	3857	868	100	2834
Enness, John R. (See Hillery, John, assignor.)						
Ennor, Pellew L., San Francisco, Cal. Steering apparatus for vessels	708,322	Sept. 2	618	139	100	2107
Enterprise Manufacturing Company of Pennsylvania. (See Brown and Yeager, assignors.)						
Entwisle, Edward B., Johnstown, Pa., assignor to Lorain Steel Company. Railway-track structure	709,975	Sept. 30	3858	860	100	2834
Entz, Justus B., assignor to Electric Storage Battery Company, Philadelphia, Pa. Secondary battery	704,730	July 15	2553	550	100	548
Epperson, Willis F., Ladoga, Ind. Gluing-machine	707,219	Aug. 19	2332	521	100	1630
Eppler, Andrew, Jr., Boston, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Shoe-turning machine	706,088	Aug. 5	70	15, 16	100	1182
Erb, Samuel, Chemainus, assignor of one-half to William Hamilton Manufacturing Co., L't'd, Peterborough, Ontario, Canada. Log-carriage offset for saws	709,800	Sept. 30	3694	830 831	100	2797
Erbe, Henry C., Bowdle, S. D. Grain or hay deliverer	708,804	Sept. 9	1476	337 338	100	2296
Erben, Hermann F. T., Schenectady, N. Y., assignor to General Electric Company. Brush-holder	705,055	July 22	3230	699	100	704
Erdelbrock, Dietrich, Ottweiler, Germany. Safety-outlet in longitudinal walls of railway-carriages	709,573	Sept. 23	3064	682	100	2557
Erdman, Edward M., assignor of one-half to W. J. Matz, Pottsville, Pa. Straightway valve	709,146	Sept. 16	2177	498	100	2400
Erickson, Andrew J., *et al.* (See Chapman, William S., assignor.)						
Erickson, Nels P., Red Wing, Minn. Hame-fastener	706,912	Aug. 12	1763	394	100	1494
Erikson, Gustaf, assignor to Vagnfabriks Aktiebolaget I Södertelje, Södertelje, Sweden. Four-cycle explosive-vapor engine	706,738	Aug. 12	1404	313 314	100	1419
Erlwein, Georg, and A. Frank, Berlin, Germany. Cyanid compound and making same	708,883	Sept. 2	619	.....	100	2107
Ernst, Joseph, Cincinnati, Ohio. Adjustable couch-casket	706,398	Aug. 5	300	174	100	1276
Ertz & Joseph. (See Platko, John, assignor.)						
Ervin, George M., Johnstown, Pa., assignor to Lorain Steel Company. Tongue-switch	705,056	July 22	3228	699	100	704
Ervin, George M., Johnstown, Pa., assignor to Lorain Steel Company. Railway-track structure	705,057	July 22	3234	700	100	705
Esch, William G., Manitowoc, Wis. Nozzle-grip	708,587	Sept. 9	969	219	100	2189
Esch, William G., Manitowoc, Wis. Nozzle-grip	708,588	Sept. 9	970	219	100	2189
Eshleman, John W., Mount Joy, Pa. Slot-guard for toy banks	706,918	Aug. 12	1764	394	100	1495
Eson, Joseph A., Rawlins, Wyo. Forced-draft appliance for locomotives	705,225	July 22	3599	779	100	779
Espenscheid, John M. (See Horton, Peter D., assignor.)						
Espey, Eli C. (See Jones and Espey.)						
Espey Manufacturing Company, Herrell. (See Wilson, David J., assignor.)						
Espitallier, John A., Chicago, assignor of one-half to A. Wohlhuter, Oakpark, Ill. Sash-lock	704,014	July 8	1189	258	100	252
Essick, Walter S., Reading, Pa. Spectacles or eyeglasses	709,801	Sept. 30	3695	831	100	2797
Essick, William W., Reading, Pa. Eyeglasses	709,802	Sept. 30	3696	831	100	2798
Estcourt, Ernest, South Hampstead, London, England. Water cooling and circulating apparatus for explosion-engines	707,570	Aug. 26	3010	677	100	1786

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Estep, Ezra. (See Dolan and Estep.)						
Estey, Walter S., assignor of one-half to A. J. Bates, Webster, Mass. Detachable cushion-heel	708,083	Sept. 2	74	17	100	1997
Etcheson, William H., and L. R. Witherell, Knoxville, Ill. Attachment for stovepipes	706,734	Aug. 12	1405	314	100	1420
Etheridge, Harry, McKeesport, Pa. Electric-arc lamp	704,526	July 15	2184	478	100	478
Ettinger, Joel, assignor to Ettinger Machine Company, Limited, Chester, Pa. Rotary cutter	704,960	July 15	2042	658	100	650
Ettinger, Joel, assignor to Ettinger Machine Company, Limited, Chester, Pa. Grinding-machine	705,226	July 22	3601	779 780	100	779
Ettinger Machine Company. (See Ettinger, Joel, assignor.)						
Eurich, Harry E. (See McPherson and Eurich.)						
Eustis, John P., Newtonville, Mass. Soap-holder	708,877	Sept. 9	1633	375	100	2338
Evans, Clarence A., Upland, Pa. Pneumatic motor for car fans and ventilators	705,830	July 29	4840	1051	100	1040
Evans, Elias W. (See Walton and Harner, assignors.)						
Evans, John A. T., *et al.* (See Ricker, James H., assignor.)						
Evans, John E. (See Gundlach, Louis F. H., assignor.)						
Evans, Samuel W., Jr. (See Gaskill, William H., assignor.)						
Evans, William. (See Morton and Evans.)						
Evans, William, Manchester, assignor of two-thirds to W. T. Hill, Withington, county of Lancaster, and R. Gale, Woking, county of Surrey, England. Motor	706,489	Aug. 5	972	214	100	1313
Evans, William C. L., Brooklyn, N. Y. Pedal device for bass-drums and cymbals	704,308	July 8	1753	382 383	100	368
Evans, William F., Chicago, Ill. Rotary engine	710,261	Sept. 30	4395	989	100	2949
Evans, William H. (See Morton and Evans.)						
Evans, William J. (See Waddell and Evans.)						
Evans, William J., and F. Klepetko, Greatfalls, Mont. Gas-producer	704,527	July 15	2186	473 474	100	474
Everest, Augustine R., Lynn, Mass., assignor to General Electric Company. Electric regulator	706,089	Aug. 5	73	16	100	1132
Everest, Augustine R., Lynn, Mass., assignor to General Electric Company. Constant-current transformer	710,050	Sept. 30	3961	808	100	2860
Evers, Ferdinand R., Bigstone, S. D. Corn-harvester	703,305	July 1	60	11	100	14
Everson, George H., Pittsburg, Pa. Metallic-hub-drilling machine	704,178	July 8	1534	329	100	322
Everson, George H., Pittsburg, Pa. Machine for drilling rivet-holes in wheel-hubs	706,811	Aug. 12	1576	353	100	1456
Eves, Joshua V., Belfast, Ireland. Needle-controlling mechanism for sewing-machines	709,310	Sept. 16	2309	565 566	100	2529
Eves, Joshua V., Belfast, Ireland. Feeding mechanism for sewing-machines	709,311	Sept. 16	2311	566	100	2529
Ewald, Julius, Philadelphia, Pa. Non-refillable bottle	706,914	Aug. 12	1765	394	100	1495
Ewart, Myra V., executrix. (See Ewart, Philo C.)						
Ewart, Philo C., deceased; M. V. Ewart, executrix, assignor of one-half to C. A. Barnard, Cincinnati, Ohio. Means for automatically regulating the resistance of resilient devices	706,306	Aug. 5	612	133	100	1239
Ewell, John, Jr. (See Minges and Ewell.)						
Ewing, William B., *et al.* (See Crandal, Frederick E., assignor.)						
Ewles, Frank E., Medina, N. Y. Spring-support for furniture	703,776	July 1	736	163	100	148
Exline, Frank, assignor to Vertical Propeller Company, Geddes, S. D. Paddle-wheel	704,477	July 8	2076	450	100	437
Exline, Frank, assignor to Vertical Propeller Company, Geddes, S. D. Paddle-wheel	704,478	July 8	2079	451	100	437
Eylar, Matthew S., New York, N. Y., assignor to Elliott & Hatch Book Typewriter Company. Feeding attachment for type-writing machines	707,220	Aug. 19	2333	521 522	100	1680
Eylar, Matthew S., New York, N. Y., assignor to Elliott & Hatch Book Typewriter Company. Type-writing machine	709,898	Sept. 30	3699	881	100	2798
F. A. Hardy & Co. (See Byington, John F., assignor.)						
F. B. Fargo and Company. (See Penn, William E., assignor.)						
F. C. Austin Manufacturing Company. (See Bunnell, Morton G., assignor.)						
F. E. Reed Company. (See Back, John R., assignor.)						
F. Patzack Manufacturing Company. (See Cuber and Hackenbroch, assignors.)						
F. S. Webster Company. (See Bedworth, Arthur H. and J. A., assignors.)						
F. S. Webster Company. (See Quarts, James, Jr., assignor.)						
Faber, Charles, Fall River, Mass. Picker-stick strap	707,406	Aug. 19	2681	605	100	1702
Faber, Lothar W., New York, N. Y. Pencil-tip	703,721	July 1	642	142	100	128
Fabisch, Philip, Baltimore, Md. Automatic stop mechanism for buttonhole-machines	706,646	Aug. 12	1248	276	100	1336
Fages, Emile, Paris, France. Door-bolt	704,179	July 8	1536	329 330	100	322
Fagioli, Dominic, *et al.* (See Brooker, Albert, assignor.)						
Fahey, James L., Boston, Mass. Leather belt	708,212	Sept. 2	402	98	100	2004
Fähndrich, Wilhelm H. W., Hamburg, Germany. By-pass stop-cock for multiple-light gaseliers	704,678	July 15	2434	526	100	594
Fair, Jacob C., West Monterey, Pa. Railway-rail joint	705,568	July 29	4371	947	100	946
Fairbrother, Frederic A., Jr., Providence, R. I. Fastening device	707,692	Aug. 26	3229	725	100	1832
Fairchild, Charles B., New York, N. Y. Tag	703,698	July 1	603	134	100	119
Fairchild, Charles B., New York, N. Y. Vehicle-brake	704,452	July 8	2022	439 440	100	496
Fairfax, William M., Brooklyn, N. Y. Means for changing the tension of currents	704,458	July 8	2027	440	100	427
Falardeau, Dennis L., Albany, N. Y. Device for making impressions	705,881	July 29	4841	1051	100	1040
Falk, Charles H., Kinsley, Kans. Draft attachment	707,092	Aug. 19	2087	466	100	1576
Fannin, Spencer, Ezel, Ky. Plow	706,915	Aug. 12	1766	394	100	1495
Fanta, Theodore, Chicago, Ill. Woven fabric	708,680	Sept. 9	1127	253	100	2221
Farbenfabriken of Elberfeld Co. (See Callsen, Jürgen, assignor.)						
Farbenfabriken of Elberfeld Co. (See Dresser and Callsen, assignors.)						
Farbenfabriken of Elberfeld Co. (See Eichengrün, Arthur, assignor.)						
Farbenfabriken of Elberfeld Co. (See Hofmann and Callsen, assignors.)						
Farbwerke, vorm. Meister, Lucius & Brüning. (See Gallois, Moriz von, assignor.)						
Farbwerke, vorm. Meister, Lucius & Brüning. (See Hartmann, Christoph, assignor.)						
Farbwerke, vorm. Meister, Lucius & Brüning. (See Homolka and Liebknecht, assignors.)						
Farcy, Eugène, assignor to Ste. des Etablissements Farcy et Oppenheim, Paris, France. Corset	706,307	Aug. 5	613	134	100	1239
Farnham, Ed. W. (See Watkins, Louis E., assignor.)						
Farnham, Frank G., Honesdale, Pa. Polishing-wheel	709,312	Sept. 16	2512	566	100	2530
Farnham, Isaiah H., deceased; M. J. Farnham, Wellesley, Mass., administratrix, assignor to New England Telephone & Telegraph Company. Telephone-circuit	706,308	Aug. 5	614	134	100	1239
Farnham, Marcia J., administratrix. (See Farnham, Isaiah H.)						
Farquharson, Franklin C. (See Turner and Farquharson.)						
Farrand & Votey Organ Company. (See Whitehead, Aura E., assignor.)						
Farrell, George B., Wilkesbarre, Pa. Car-wheel	706,565	July 1	840	77	100	68
Farrell, Patrick J., Joliet, Ill. Mail-car	709,504	Sept. 30	3950	889	100	2798
Farrell, William H., Donora, Pa. Wire-barbing machine	704,878	July 15	2208	506	100	600
Farren, William D., Danville, Cal. Railway-semaphore, &c.	704,015	July 8	1190	258	100	259

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Farwell, Hart F., Astoria, assignor to Country Home Telephone Manufacturing Company, Chicago, Ill. Anchoring-post	707,683	Aug. 26	3230	725	100	1832
Faschian, Herman, assignor of one-half to G. Zimmerman, San Francisco, Cal. Cooking-cabinet	709,476	Sept. 23	2961	643	100	2614
Fassett, James H., Nashua, and J. E. Warren, Greenfield, assignors of one-half to W. H. Cheever, Nashua, N. H. Attachment for car-steps	708,181	Sept. 2	247	58	100	2030
Fast Mail Delivery Company. (See Burr, Franklin H., assignor.)						
Faulkner, Alonzo D., assignor to G. H. Duncombe, Meyersdale, Pa. Railway-car chock	708,906	July 1	988	214	100	196
Faulkner, James E., Whatcom, Wash. Stovepipe holder or collar	709,087	Sept. 16	2096	474	100	2455
Faure, Henry T., Spencer, Mass. Sulky attachment for harrows	706,040	Aug. 5	76	16	100	1132
Fauvre, Frank M., *et al.* (See Gaynor, John J., assignor.)						
Fay, Frederick L. (See Fay, Rimmon C. and F. L.)						
Fay, Louis P., Denison, Tex. Cotton-chopper	709,147	Sept. 16	2178	499	100	2460
Fay, Rimmon C., assignor to Easton & Burnham Machine Company, Pawtucket, R. I. Adjustable or separable pulley	707,685	Aug. 26	3232	726	100	1833
Fay, Rimmon C., Pawtucket, R. I., and F. L. Fay, East Brookfield, Mass., assignors to Easton & Burnham Machine Company, Pawtucket, R. I. Winding-machine	707,694	Aug. 26	3233	725, 726	100	1832
Fefel, Henry H., assignor, by mesne assignments, to New-York-Pittsburgh Manufacturing Company, New York, N. Y. Mechanical movement	703,898	July 1	61	11, 12	100	15
Fefel, Henry H., assignor, by mesne assignments, to New-York-Pittsburgh Manufacturing Company, New York, N. Y. Stitch-forming mechanism for sewing-machines	705,569	July 29	4372	948	100	946
Fehler, William, Mountainville, Pa. Safety-stop for elevators	707,407	Aug. 19	2992	605	100	1702
Feil, Otto, Atlanta, Ga. Collapsible box	707,962	Aug. 26	3218	858	100	1948
Feinmaschinenbau G. Calberla, G. M. B. H. (See Paul, Josef, assignor.)						
Felbel, Jacob, New York, N. Y. Type-writing machine	709,088	Sept. 16	2067	474, 475, 476	100	2455
Feldkamp, Fritz A., Newark, N. J. Apparatus for generating carbonic-acid gas	705,570	July 29	4374	948, 949	100	947
Feldmeier, Harvey, assignor to D. H. Burrell & Company, Littlefalls, N. Y. Apparatus for heating or cooling liquids	706,170	Aug. 5	227	69, 70	100	1184
Felker, Melancthon O., Chicora, Pa. Whip	708,397	July 1	63	12	100	15
Felkin, A. C. and M. L. (See Scott, Charles C., assignor.)						
Fell, John M., Arlington, N. J., assignor to American Telephone and Telegraph Company. Vibratory-current relay	708,539	Sept. 9	971	220	100	2190
Fell, John M., Arlington, N. J., assignor to American Telephone and Telegraph Company. Apparatus for composite systems of simultaneous telegraphy and telephony	709,437	Sept. 16	2763	628	100	2562
Fellows, Augustus, Washington, D. C. Bicycle-lamp lock	708,907	July 1	984	214	100	197
Fellows, Byron W., Beverly, Mass. Rotary engine	709,702	Sept. 23	3223	735, 736	100	2702
Felt, Charles E., and D. A. Kimbark, Chicago, Ill. Electric train-connector	706,226	Aug. 5	433	92	100	1105
Felton, Norborn F., Grand Forks, N. D. Roundabout	708,540	Sept. 9	975	220	100	2190
Fenn, George M., Charlotte, Mich. Machine for bending scythe-snaths	707,231	Aug. 19	2335	522, 523	100	1531
Fenn, William B., Wilkesbarre, assignor to A. J. Rost Manufacturing Company, Kingston, Pa. Handle for sad-irons	706,812	Aug. 12	1577	353, 354	100	1456
Fenn, William B., Wilkesbarre, assignor to A. J. Rost Manufacturing Company, Kingston, Pa. Handle for sad-irons	706,813	Aug. 12	1578	354	100	1456
Fenner, George P., New London, Conn. Sheet-delivery apparatus for printing-presses	704,868	July 15	2707	604, 605	100	599
Fenner, George P., New London, Conn. Sheet-delivery for printing-presses	708,878	Sept. 9	1034	376	100	2328
Fenner, Jess B., assignor to J. W. Ruger Manufacturing Company, Buffalo, N. Y. Operating mechanism for gas-engine valves, &c	706,038	July 22	2336	700, 701	100	705
Fenner, Jess B., assignor to J. W. Ruger Manufacturing Company, Buffalo, N. Y. Fuel-valve for gas-engines	706,916	Aug. 12	1767	395	100	1495
Fentzel, Mathew J., *et al.* (See Triance, John C., assignor.)						
Ferguson, Albert M., Ste. Cunégonde, and J. A. U. Beaudry, Montreal, Canada. Carfender	706,041	Aug. 5	78	17	100	1133
Ferguson, David, assignor of one-half to J. F. Wood, Pittsburg, Pa. Locking device for bolts	705,571	July 29	4378	949	100	947
Ferguson, David, Pittsburg, Pa., assignor of one-half to O. G. Ferguson. Coke-drawer	707,686	Aug. 26	3229	726, 727	100	1832
Ferguson, Frank A., Blanchard, Iowa. Self-propelling truck and motor for threshing-machines and grain-separators	704,528	July 15	2188	474, 475	100	474
Ferguson, Oliver G. (See Ferguson, David, assignor.)						
Ferguson, Thomas T. H., Soochow, near Shanghai, China. Surveying instrument	709,313	Sept. 16	2514	567	100	2530
Ferguson, William. (See Carter, George M., assignor.)						
Ferguson, William. (See Klein, Joseph, assignor.)						
Ferguson, Wm. K., *et al.* (See Doering, August, assignor.)						
Fergusson, Alan R., New York, N. Y. Lock	704,180	July 8	1537	320	100	323
Fergusson, Alan R., New York, N. Y. Lock	705,660	July 29	4535	986	100	970
Fergusson, David, assignor to George N. Pierce Company, Buffalo, N. Y. Transmission-gear	704,699	July 15	2471	533	100	532
Fergusson, Henry A., Williamsport, Pa. Feed-water heater and condenser	704,454	July 8	2090	440	100	428
Fernstrom, Charles, Chicago, Ill. Lawn-trimming implement	709,976	Sept. 30	3859	869	100	2854
Ferrari, Guido, Philadelphia, Pa. Cigarette-machine	707,766	Aug. 26	3431	773, 774, 775	100	1872
Ferrari, Guido, Philadelphia, Pa. Tobacco-measuring mechanism for cigarette-machines	707,767	Aug. 26	3441	775	100	1874
Ferrari, Guido, Philadelphia, Pa. Automatic stop mechanism for cigarette-machines	707,768	Aug. 26	3443	775, 776	100	1875
Ferrari, Guido, Philadelphia, Pa. Clutch mechanism	707,769	Aug. 26	3445	776	100	1875
Ferraris, Erminio, Monteponi, Italy. Treating mixed sulfid ores	707,506	Aug. 19	2852	.....	100	1738
Ferris, Abraham H., Brooklyn, and C. A. Kenworthy, New York, N. Y. Duplicator	707,571	Aug. 26	3012	677	100	1787
Ferris, Henry L., assignor to Hunt, Helm, Ferris & Company, Harvard, Ill. Track for door-hangers	709,314	Sept. 16	2517	567	100	2531
Fessenden, Howard A., assignor to Detroit Electric Signal Company, Detroit, Mich. Signaling apparatus	710,330	Sept. 30	4498	1013	100	2969
Fessenden, Reginald A., Allegheny, Pa. Wireless telegraphy	706,735	Aug. 12	1406	314, 315	100	1420
Fessenden, Reginald A., Allegheny, Pa. Apparatus for wireless telegraphy	706,736	Aug. 12	1410	315	100	1421
Fessenden, Reginald A., Allegheny, Pa. Wireless telegraphy	706,737	Aug. 12	1415	316	100	1422
Fessenden, Reginald A., Allegheny, Pa. Wireless telegraphy	706,738	Aug. 12	1421	316	100	1423
Fessenden, Reginald A., Allegheny, Pa. Conductor for wireless telegraphy	706,739	Aug. 12	1424	316	100	1423
Fessenden, Reginald A., Manteo, N. C. Wireless signaling	706,740	Aug. 12	1428	316	100	1424
Fessenden, Reginald A., Manteo, N. C. Apparatus for wireless telegraphy	706,741	Aug. 12	1430	317	100	1424

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Fessenden, Reginald A., Manteo, N. C. Wireless signaling	706,742	Aug. 12	1433	317, 318	100	1425
Fessenden, Reginald A., Manteo, N. C. Wireless signaling	706,743	Aug. 12	1440	318	100	1426
Fessenden, Reginald A., Manteo, N. C. Current-actuated wave-responsive device	706,744	Aug. 12	1441	318	100	1426
Fessenden, Reginald A., Manteo, N. C. Signaling by electromagnetic waves	706,745	Aug. 12	1443	319	100	1426
Fessenden, Reginald A., Manteo, N. C. Signaling by electromagnetic waves	706,746	Aug. 12	1448	319	100	1427
Fessenden, Reginald A., Manteo, N. C. Apparatus for signaling by electromagnetic waves	706,747	Aug. 12	1450	319	100	1428
Feval, Leon, assignor, by mesne assignments, to Transparent Cellulose Products Company, New Brunswick, N. J. Making collapsible tubes, &c	706,541	Aug. 12	1064	234	100	1345
Fewings, Frederick J., Duluth, Minn. Car or engine replacer	706,542	Aug. 12	1065	234, 235	100	1346
Fichter, Eugene, Paterson, N. J. Non-refillable bottle	703,398	July 1	64	12	100	15
Field, Benjamin P. (See Carman, Clarence A., assignor.)						
Field, Charles C. (See Pullman and Field.)						
Field, Guy M. (See Ellis, Marshall D., assignor.)						
Field, Robert, and A. Hanson, Huddersfield, England. Mouth-organ	708,805	Sept. 9	1480	339	100	2296
Field, William C., assignor of three-fifths to W. T. Delahunty and W. A. Shorb, Decatur, Ill. Safety-valve	705,572	July 29	4379	949	100	947
Fielding, Arthur, Salford, England. Manufacture of viscose	708,760	Sept. 9	1384	.....	100	2276
Fielding, Arthur, Salford, England. Fixing viscose on textiles, &c	708,761	Sept. 9	1385	.....	100	2276
Fields, Charles C., Morristown, Tenn. Wrench	706,042	Aug. 5	79	17	100	1133
Fields, Oliver E., Duncannon, Pa. Lifting-jack	706,043	Aug. 5	80	17	100	1133
Fifer, Archie G., Quincy, Ill. Toy cannon	706,399	Aug. 5	802	173	100	1276
Fike, William W., Garrett County, Md. Metallic tie	709,850	Sept. 23	3572	805	100	2768
Filley, Charles H. (See Ellis and Perkins, assignors.)						
Fillingham, Joseph P., assignor of nine-tenths to R. R. Hicks and E. L. Markey, Battle-creek, Mich. Automatic governor for fluid-compressors	707,667	Aug. 26	3941	727	100	1834
Fillmore, George M., Washington, D. C., assignor of two-thirds to J. H. Ralston, Hyattsville, Md., M. H. Ramage and A. Schultels, Washington, D. C. Feed-box for live stock	709,488	Sept. 16	2766	623	100	2588
Filson, Frank L., Point Pleasant, W. Va. Sheet-metal pipe	710,202	Sept. 30	4396	990	100	2949
Finch, Hosea W., Tacoma, Wash. Split pulley	706,917	Aug. 12	1769	395	100	1496
Finch, Robert B., assignor of one-half to E. T. Jones, Denver, Colo. Eyeglasses	709,574	Sept. 23	3066	682	100	2658
Findlay, John. (See Belfield, Shearer, Findlay, and Belfield.)						
Fink, Karl. (See Wieser, Joseph, assignor.)						
Finley, Homer P., Ann Arbor, Mich. Grain-harvester	707,896	Aug. 26	3587	810	100	1903
Finn, George, Newark, N. J. Sad-iron	705,578	July 29	4380	950	100	948
Finney, Frank B. (See Allen, John F., assignor.)						
Finney, John H., assignor of one-half to D. G. Gilmore, Chicago, Ill. Pneumatic cushion	709,977	Sept. 30	3860	860	100	2885
Firm, Joseph L., assignor to Goss Printing Press Company, Chicago, Ill. Printing-press	704,624	July 15	2347	510	100	505
Firth Sterling Steel Company. (See Clarke, Eben B., assignor.)						
Fischer, Albert, Oberhausen, Germany. Reversing-valve for regenerative or similar furnaces	707,573	Aug. 26	3014	678	100	1787
Fischer, Alexander, Berlin, Germany. Electric accumulator-plate	708,334	Sept. 2	690	139, 140	100	2107
Fischer, Arthur, Augsburg, Germany. Sliding door for railway goods-vans	703,908	July 1	986	215	100	197
Fischer, Ferdinand, and L. Kiefer, Carlsruhe, Germany. Right and left opening door	707,910	Aug. 26	3727	835, 836	100	1929
Fischer, Jacob, and H. Schneider, Solothurn, Switzerland. Coupling for wires, conductors, or the like	704,869	July 15	2799	605	100	599
Fish, John C., Shelby, Ohio. Bed-guard	706,748	Aug. 12	1453	320	100	1429
Fisher Book Typewriter Company. (See Fisher, Robert J., assignor.)						
Fisher Book Typewriter Company. (See Fisher and Stackpole, assignors.)						
Fisher Book Typewriter Company. (See Halle, Hiram J., assignor.)						
Fisher Book Typewriter Company. (See Laganke, Charles F., assignor.)						
Fisher, Charles A., Thorold, Canada, assignor of one-tenth to C. C. Andrews, North Tonawanda, N. Y. Friction-clutch	706,400	Aug. 5	803	175	100	1276
Fisher, Francis E., Glen Arbor, Mich., assignor of one-half to T. C. H. Wegeforth, Chicago, Ill. Vehicle-axle	709,218	Sept. 16	2316	526	100	2488
Fisher, Henry W., Pittsburg, Pa. Cable-testing apparatus	703,777	July 1	737	163	100	148
Fisher, John V. (See Shives, Peter P., assignor.)						
Fisher, John W., Akron, Ohio, assignor of one-half to F. Reifsnyder, Chicago, Ill. Horse-shoe	706,543	Aug. 12	1067	235	100	1346
Fisher, Joyce C., Mussoorie, India. Bicycle-lock	707,310	Aug. 19	2507	563	100	1605
Fisher, Robert J., Athens, Tenn., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Line-spacing-lock mechanism for type-writing machines	708,954	July 1	1065	231	100	212
Fisher, Robert J., Athens, Tenn., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Platen for type-writing machines	705,521	July 22	4220	917	100	902
Fisher, Robert J., Athens, Tenn., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Tally-sheet attachment for billing-platens	705,522	July 22	4223	918	100	903
Fisher, Robert J., Athens, Tenn., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Ribbon-feeding mechanism for type-writing machines	705,523	July 22	4234	919	100	905
Fisher, Robert J., Athens, Tenn., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Type-writing machine	708,213	Sept. 2	403	93, 94	100	2064
Fisher, Robert J., Athens, Tenn., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Card or sheet platen for type-writing machines	709,005	Sept. 16	1889	433, 434	100	2398
Fisher, Robert J., Athens, Tenn., and R. D. Stackpole, Chicago, Ill., assignors to Fisher Book Typewriter Company, Cleveland, Ohio. Carbon-roll billing-platen for type-writing machines	705,524	July 22	4240	919, 920	100	906
Fisher Typewriter Company. (See Laganke, Charles F., assignor.)						
Fisk, Charles H. (See Strickler and Fisk.)						
Fiske, Henry A., Newton, assignor, by mesne assignments, to E. D. Chadwick, Brookline, Mass. Flow-arresting device	708,335	Sept. 2	621	140	100	2106
Fitch, Eugene, Astoria, N. Y., assignor to Union Typewriter Company, Jersey City, N. J. Adding-machine	709,477	Sept. 23	2602	643, 644	100	2614
Fitz, Amos G., Auburn, Me. Last	705,574	July 29	4382	950	100	948
Fitzgerald, John E., Boston, Mass. Envelop	707,963	Aug. 26	3819	859	100	1948
Fitzpatrick, James A., Bakersfield, Cal. Rod-coupling	709,400	Sept. 16	2695	605	100	2508
Fitzpatrick, John J., Washington, Pa. Toy	706,918	Aug. 12	1770	395	100	1496
Flannery, Joseph M., *et al.* (See McWatters, Thomas, assignor.)						
Fleckenstein, Leonard S., Easton, Md. Combined corn cooking and canning machine	706,401	Aug. 5	804	175, 176	100	1277
Fleckenstein, Valentine, assignor to Northwestern Grass Twine Company, St. Paul, Minn. Machine for making mats for bottle-covers, &c	705,332	July 22	3849	833, 834	100	898
Fleckenstein, Valentine, assignor to Northwestern Grass Twine Company, St. Paul, Minn. Machine for making mats for bottle-covers, &c	705,333	July 22	3856	835, 836	100	899
Fleetwing Die Press. (See Sproule, Robert F., assignor.)						
Fleischer, William, New York, N. Y. Hook and eye	708,084	Sept. 2	75	17	100	1997

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Fleming, Andrew, Brooklyn, N. Y. Adjustable support	706,228	Aug. 5	439	92	100	1306
Fleming, John C., New York, N. Y. Drying apparatus	705,914	July 29	4999	1088	100	1071
Fleming, John M., assignor of one-half to W. Bothwell, Ottawa, Canada. Centering attachment for lathes	707,573	Aug. 26	3016	678	100	1787
Fleming, Joseph W., assignor of one-half to H. Horter, Jr., Philadelphia, Pa. Safety device for elevators	707,311	Aug. 19	2508	564	100	1665
Fleming, Richard, Lynn, Mass., assignor to General Electric Company. System of electrical distribution	706,544	Aug. 12	1069	235	100	1347
Fleming, Richard, Swampscott, Mass., assignor to General Electric Company. Electric-arc lamp	706,545	Aug. 12	1071	236	100	1347
Fleming, Richard, Swampscott, Mass., assignor to General Electric Company. Electric-arc lamp	708,132	Sept. 2	248	59	100	2033
	707,574	Aug. 26	3017	678	100	1788
Flemming, Carl E., Schönheide, Germany. Combination brush and comb						
Flesche, Gustav A., Brooklyn, H. A. Hall, New York, N. Y., and J. Doherty, Ashbrook, N. J., assignors to American Soda Fountain Company, Boston, Mass. Carbonator	705,061	July 29	4540	966	100	980
Fletcher, Edward, assignor to Nailless Lid Box Company, San Francisco, Cal. Box-fastening	708,702	Sept. 9	1260	291	100	2249
Fletcher, Eliza J., administratrix. (See Ricketts, John L., assignor.)						
Fletcher, Henry G. M. (See Perks and Fletcher.)						
Fletcher, James R., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Door-knob	708,336	Sept. 2	634	140	100	2108
Fletcher, John R., Dayton, Ohio. Suspension-clamp	706,327	Aug. 5	437	92	100	1305
Fletcher, William H., Paterson, N. J. Dyeing-machine	706,171	Aug. 5	381	70, 71	100	1185
Flexible Door and Shutter Company. (See Blake, Joseph S., assignor.)						
Flicek, Edward, Milwaukee, Wis. Curtain-fixture	708,955	July 1	1072	231	100	212
Fliegel, Josef, Mallmitz, Germany. Apparatus for heating liquids	705,745	July 29	4702	1018	100	1010
Flint, Herbert L. (See Hawkins and Flint.)						
Flood, Alfred L., assignor of one-half to W. L. Weber, Chicago, Ill. Tile	708,470	Sept. 2	846	193	100	2158
Flood, Alfred L., assignor of one-half to W. L. Weber, Chicago, Ill. Tile	708,471	Sept. 2	847	193	100	2158
Flood, Alfred L., assignor of one-half to W. L. Weber, Chicago, Ill. Tile	708,472	Sept. 2	848	193	100	2158
Florack, Gottfried, Dusseldorf, Germany. Feed-water heater	707,575	Aug. 26	3018	679	100	1788
Florey, Clarence M., assignor of one-fourth to J. H. Brooks, Scranton, Pa. Axle-box for carriages or wagons	706,402	Aug. 5	807	176	100	1277
Flory, Llewellyn H., Ashley, Pa. Skirt-supporter	706,172	Aug. 5	383	71	100	1185
Floss, William, Meadow Lands, Pa. Rail-joint	705,575	July 29	4884	960	100	948
Flowers, Elmer, Harrisburg, Pa. String-fastening device	704,016	July 8	1191	259	100	252
Floyd, Frank H., Quincy, Mass. Machine or apparatus for raising or lowering the temperature of liquids	708,708	Sept. 9	1271	291	100	2250
Floyd, George G., assignor to American Steel-Body Double-Bolster Co., St. Louis, Mo. Car body-bolster	706,647	Aug. 12	1251	276	100	1387
Floyd, George R., Cincinnati, Ohio. Automatic line-catch for trolley-wires	707,222	Aug. 19	2341	583	100	1659
Flynn, Joseph, Boston, Mass. Plumber's testing-plug	705,059	July 22	3240	701	100	706
Fogler, John W. (See Kenney and Fogler.)						
Foglesong, Washington, assignor of one-half to J. Collins, Dayton, Ohio. Excavating and loading apparatus	704,740	July 15	2554	550, 551	100	548
Foley, Bartholomew J., Pittsburg, Pa. Electric switch	710,188	Sept. 30	4260	960	100	2919
Follett, Joseph L., assignor to Follett Machine Company, New York, N. Y. Universal joint for shafting	706,403	Aug. 5	808	176	100	1277
Follett Machine Company. (See Follett, Joseph L., assignor.)						
Folmer, William F., New York, N. Y. Photographic shutter	706,507	Aug. 5	1000	220	100	1319
Folsom, John E., Mitchell, Ill. Automatic circuit-closer for telegraph-keys	707,312	Aug. 19	2510	564	100	1666
Foote, Arthur D., Grass Valley, Cal. Building dams	704,181	July 8	1539	330, 331	100	333
Foote, Theodore M., Brooklyn, N. Y., assignor to Western Telegraph Typewriting Machine Company. Printing-telegraph	705,237	July 22	3006	781, 782, 783, 784	100	780
Forbes, Duncan, Newark, N. J. Sash-lock	710,189	Sept. 30	4261	960, 961	100	2919
Forbes, Peter, Oakley, Mich. Scythe-snath-fastening device	706,814	Aug. 12	1580	354	100	1456
Force, William A., New York, N. Y. Printing-die	705,228	July 22	3019	784	100	783
Ford, James T., San Francisco, Cal. Pipe-wrench	705,060	July 22	3241	701	100	706
Ford, James T., Cartagena, Colombia. Building subaqueous foundations	707,098	Aug. 19	2068	466	100	1577
Forde, Thomas J., Geneva, Ohio. Vapor-generating apparatus for hydrocarbon-burners	707,680	Aug. 26	3247	728	100	1835
Forde, Thomas J., Geneva, Ohio. Carbureter	709,706	Sept. 23	3285	736	100	2708
Fore River Ship and Engine Company. (See Wellington, Frank O., assignor.)						
Foreman, David H., *et al.* (See Garson, Julius H., assignor.)						
Foreman, David H., assignor of one-fourth to A. T. Hurr, Denver, Colo. Upright automatic switch-stand	707,066	Aug. 12	2065	454, 455	100	1550
Foreman, John W., Healdsburg, Cal. Conveying apparatus	707,668	Aug. 26	3245	727	100	1835
Foreman, Samuel E., Paducah, Ky. Trace-fastener	704,741	July 15	2557	551	100	549
Forgham, Thomas. (See Bennett, George M., assignor.)						
Forister, John H., Evelyn, Tex., assignor of one-half to J. N. McAda. Cotton-chopper	705,746	July 29	4705	1018	100	1011
Forker, William H., Meadville, Pa. Oval-cutting machine	705,576	July 29	4885	950, 951	100	948
Fornander, Alfred, New York, N. Y., assignor to Carpet Yarn Printing Company. Apparatus for coloring yarns	705,334	July 22	3269	687	100	932
Forrer, Joseph D. (See Merrick and Forrer.)						
Forrest, John H. (See Heal, William E., assignor.)						
Förster, Carl, Gablonz, Austria-Hungary. Feeder for sewing-machines	708,631	Sept. 9	1128	254	100	2261
Forster, John C., Pittsburg, Pa. Gas-stove	706,309	Aug. 5	616	134	100	1240
Forster, John J., and R. L. Murdock, Avalon, Pa. Soap-press	708,919	Aug. 12	1771	396, 397	100	1496
Fortney, Samuel N., Jefferson Township, Montgomery county, Ohio. Shears	709,478	Sept. 23	2868	644	100	2622
Fortunesco, Nicolas J., and A. Georges, assignors of one-third to J. Georges, Liege, Belgium. Rotary engine or motor	708,879	Sept. 9	1687	377	100	2389
Foskett, Frederick, San Antonio, Tex. Safety device for steam-boilers	704,589	July 15	2190	475	100	476
Fossel, Joseph, Boston, Mass. Mechanism for grinding flats in carding-engines	705,645	July 1	491	111	100	97
Foster, Abraham G. W., Sr., Powellville, Ga. Combined seed-planter and fertilizer-distributer	705,404	Aug. 5	809	176, 177	100	1277
Foster, Charles, West Warren, Mass. Loom-fixer's knife	707,680	Aug. 26	3257	728	100	1838
Foster, Charles H., Omaha, Nebr. Hinge	708,214	Sept. 2	407	94	100	2055
Foster, Charles H., Omaha, Nebr. Hot-air furnace	708,215	Sept. 2	409	94	100	2055
Foster, Charles H., New York, N. Y., assignor to Union Special Sewing Machine Company, Chicago, Ill. Feeding mechanism for sewing-machines	705,577	July 29	4886	951	100	948
Foster, Edward, Cleveland, N. Y. Car-coupling	705,405	Aug. 5	811	177	100	1278

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Foster, Frank W., Melrose, Mass. Square shaking-grate	706,546	Aug. 12	1072	286, 287	100	1347
Foster, Joseph Brooklyn, N. Y. Water-heater	705,335	July 22	3872	887	100	882
Foster, Manning R., Jr., Orange, N. J. Hatter's hair-strainer	709,070	Sept. 23	3228	720	100	3691
Foster, Rolon E. (See Pratt and Foster.)						
Foster, Sidney A., Detroit, Mich. Wire button	709,587	Sept. 23	3005	669	100	3546
Fouts, George H., Dayton, Ohio. Hot-air furnace	704,309	July 8	1754	383	100	269
Fowler, Alfred B., Boston, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Lock-stitch shoe-sewing machine	707,094	Aug. 19	2089	467	100	1577
Fowler, Alfred B., Central Falls, R. I., assignor, by mesne assignments, to United Shoe Machinery Company, Paterson, N. J. Channeling-machine	707,576	Aug. 26	3019	679	100	1789
Fowler, Charles S., *et al.* (See Holmes, Daniel M., assignor.)						
Fowler, George L., London, England. Respirator	704,017	July 8	1192	259	100	258
Fowler, Jonathan O., Jr., assignor to J. W. Gibbs, New York, N. Y. Electromedical appliance	708,216	Sept. 2	410	93	100	2065
Fowler, Joseph C., and Joseph C., Jr., Baltimore, Md., assignors to Typographic Development Company, Chicago, Ill. Type casting and setting machine	705,595	July 22	4949	921, 922	100	905
Fox, Adam H., Wissahickon, Pa. Oil-burner	708,566	July 1	340	77	100	68
Fox, Charles D., Appleton, Wis. Car-mover	704,870	July 15	2799	605	100	599
Fox, Charles H., East Orange, and W. H. Randolph, Jr., Rahway, N. J. Toy	707,577	Aug. 26	3023	680	100	1789
Fox, George H., Bangor, Me. Means for closing jars	704,873	July 15	2805	607	100	600
Fox, Hugh L. (See Ellis, Seele H., assignor.)						
Fox, John C., assignor of two-thirds to E. J. Ulbrich and C. F. Paige, Colorado Springs, Colo. Refrigerating apparatus	708,646	July 1	494	111, 112	100	97
Fox, John H., Fostoria, Ohio. Magazine torpedo-cane	704,810	July 8	1735	383	100	269
Fox, John W. (See Dunham and Fox.)						
Fox Machine Company. (See Fox, William R., assignor.)						
Fox Machine Company. (See Fox and Lund, assignors.)						
Fox, William H., assignor to H. L. Piper, Toronto, Canada. Hospital-bed	704,625	July 15	2349	510	100	506
Fox, William R., assignor to Fox Machine Company, Grand Rapids, Mich. Copy-holder	704,018	July 8	1193	259	100	258
Fox, William R., and G. J. Barrett, Grand Rapids, Mich. Type-writing machine	706,749	Aug. 12	1454	320, 321	100	1429
Fox, William R., and M. Lund, assignors to Fox Machine Company, Grand Rapids, Mich. Feed mechanism for milling-machines	707,095	Aug. 19	2092	467	100	1577
Foxon, Frank. (See Peart, George R., assignor.)						
France, Frank, Fargo, N. D. Branding-iron	703,567	July 1	342	77	100	69
Francis, Charles A., South Bend, Ind. Wagon-brake	705,061	July 22	3243	701, 702	100	705
Francis, William H., Philadelphia, Pa. Disinfecting apparatus	704,182	July 8	1541	331, 332	100	323
Francisco, Charles W., Brantford, Canada. Fuel-saver and smoke-consumer	706,229	Aug. 5	440	93	100	1205
Frank, Albert. (See Erlwein and Frank.)						
Frank, George, Fremont, Ohio. Tobacco-pouch	706,648	Aug. 12	1222	277	100	1287
Frank & Gutmann. (See Negraval, Louis A., assignor.)						
Frank, Julius, Jr., *et al.* (See Furlong, William, assignor.)						
Frank, Samuel M., San Antonio, Tex. Rotary force-pump	709,597	Sept. 23	3105	692	100	2667
Franke, Ferdinand, assignor to S. D. Cruse, Louisville, Ky. Feather-quiller	703,723	July 1	544	143	100	128
Franke, Frederick, assignor to S. D. Cruse, Louisville, Ky. Pillow-brusher	703,722	July 1	543	142	100	128
Franke, Frederick, assignor to S. D. Cruse, Louisville, Ky. Machine for crushing feathers and pulverizing	708,133	Sept. 2	249	59	100	2033
Frankenstein, Clara. (See Dziech, John, assignor.)						
Franklin, Benjamin A., Philadelphia, Pa. Molding-machine	706,647	July 1	496	112	100	97
Franklin, Joshua, Moseley, Ala. Cultivator	710,263	Sept. 30	4397	990	100	2949
Fraser, George, Jr., Auckland, and S. E. Fraser, Waikino, New Zealand. Revolving vacuum-filter for recovering the liquid from slimes, sands, pulp, or such like in connection with cyanid or other chemical applications	706,980	Aug. 12	1774	397	100	1497
Fraser, Hugh A., Sarnia, Canada. Water-heating furnace	708,217	Sept. 2	413	95	100	2066
Fraser, Joseph R., Dayton, Ohio. Combustion apparatus for steam-boilers	707,911	Aug. 26	3729	896	100	1930
Fraser, Russell M., Norfolk, Nebr. Sugar-beet harvester	705,747	July 29	4707	1018, 1019	100	1011
Fraser, Samuel E. (See Fraser, George, Jr., and S. E.)						
Fraser, Sopronia D. (See Fraser, Spencer L., assignor.)						
Fraser, Spencer L., assignor of one-tenth to S. D. Fraser, Chicago, Ill. Stock-food and making same	704,580	July 15	2191	475	100	475
Fratcher, David W., assignor of one-third to H. E. Culonwell, Detroit, Mich. Attachment to keyboards of composing-machines	704,182	July 8	1543	332	100	323
Frazier, George H., J. W. Wagner, and H. G. Isenberg, Dennison, Ohio. Hose-bridge	706,815	Aug. 12	1561	355	100	1457
Fred. J. Meyers Manufacturing Company. (See Lutter, John H., assignor.)						
Fred, Mason K., Bandera, Tex. Automatic fire-alarm	708,909	July 1	987	215	100	197
Frederick, Edward P., St. Louis, Mo. Wire-rope machine	708,778	July 1	739	164	100	148
Frederick, Edward P., assignor of one-half to J. D. Houseman, St. Louis, Mo. Electric-railway rail-bond	708,779	July 1	741	164	100	149
Frederick, John B., New Kensington, Pa. Match-box	705,578	July 29	4398	952	100	949
Fredericks, Charles, *et al.* (See Mitchell, James E., assignor.)						
Freed, Henry F., assignor of nine-tenths to I. Freed, Harrisburg, Pa., and S. O. Spring, Peoria, Ill. Electrical transportation system	704,019	July 8	1194	260	100	258
Freed, Isaac, *et al.* (See Freed, Henry F., assignor.)						
Freedman, Charles I. (See Freedman, Louis A. and C. I.)						
Freedman, Louis A. and C. I., New York, N. Y. System of train manipulation	704,020	July 8	1199	261, 262	100	254
Fre-man, Albert A., assignor to Standard Automatic Lubricator Company, Philadelphia, Pa. Automatic lubricator	704,021	July 8	1201	262	100	254
Freeman, Charles A. (See Jones, Lyman R., assignor.)						
Freeman, Chester M., Baltimore, Md. Fountain-spittoon	707,912	Aug. 26	3730	836	100	1930
Freeman, John. (See Schindler and Freeman.)						
Freitag, Charles, Brooklyn, N. Y. Razor	707,226	Aug. 19	2542	523	100	1622
Fremery, Max, and J. Urban, Oberbruch, near Aachen, Germany. Manufacture of cellulose products	705,748	July 29	4709	.....	100	1011
French, Alexander, assignor of one-half to B. F. Collins, Elizabethtown, Ky. Road-gate	709,214	Sept. 16	3217	686	100	2429
French, Alfred W., Piqua, Ohio. Apparatus for packing oil-cakes	708,218	Sept. 2	414	95	100	2066
French, Zachary T., and W. C. Meyer, Boston, Mass. Feeding mechanism for shoe-sewing machines	705,062	July 22	3943	708	100	705
French, Zachary T., and W. C. Meyer, Boston, Mass. Shoe-sewing machine	705,063	July 22	3945	708	100	705
Fretz, Samuel S., Philadelphia, Pa. Umbrella-frame	708,910	July 1	988	215	100	197
Freund, Arthur. (See Kann, Desiderius S., assignor.)						
Frey, William, Canton, Ohio. Brick-edge-smoothing blade	705,064	July 22	3952	708	100	705

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Name, residence, and invention.	No.	Date.	Monthly volume.		Official Gazette.	
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Fridericia, William M., Copenhagen, Denmark. Tie-plug or dowel	703,790	July 1	742	165	100	149
Friedenwald, B. B., *et al.* (See Painter, Orrin C., assignor.)						
Friedinger, Ignaz. (See Cathrein, Josef, assignor.)						
Friedinger, Ignaz. (See Hofmann, Adam, assignor.)						
Friedmann, Hugo. (See Adelsberger and Friedmann.)						
Friedrich, John C., Bordentown, N. J. Apparel	705,085	July 22	3253	704	100	708
Fries Bros. (See Trillat, Jean J. A., assignor.)						
Friesdorf, Eduard, Bietigheim, Germany. Steam and oil separator	704,022	July 8	1202	202	100	255
Friesleben, Carl, Halle, Germany. Centrifugal separator	705,066	July 22	3254	704	100	708
Friestedt, Luther P., Chicago, Ill. Sheet-piling	707,887	Aug. 26	3589	810 811	100	1908
Fringu, Maurice, Paris, France. Mercerizing-machine	704,531	July 15	2194	475 476	100	475
Frisbie, Charles E., Oakland, Cal. Manifolding sales device	703,781	July 1	744	165	100	149
Fritsch, Edward J. (See Baker and Fritsch.)						
Fritts, Charles E., New York, N. Y. Telegraph	704,023	July 8	1203	202	100	255
Fritz, Adolph W., Burlington, Iowa. Adjustable and throw-off roller-track for printing-presses	707,313	Aug. 19	2511	564	100	1606
Frost, George E. (See Wilkinson, John A., assignor.)						
Frost, Joseph W., Washington, D. C. Electric signal for railway-cabs	705,682	July 29	4542	987	100	980
Fruehauf, Charles, Chicago, Ill. Burglar-alarm	704,247	July 8	1639	355	100	343
Frühling, Otto, Brunswick, Germany. Hydraulic device for emptying dredging-scows	708,541	Sept. 9	976	220 221	100	2190
Fruit Stoning and Preserving Syndicate. (See Harris, William P., assignor.)						
Fryers, Austin, Sydenham, England. Pivotal stage or turn-table	704,626	July 15	2351	511	100	506
Frymire, Louis N. (See Moritz, Frymire, and Koons.)						
Fugate, Lake E., Seattle, Wash. Register and alarm	708,682	Sept. 9	1129	254	100	2222
Fugman, Godfrey. (See Stephan, Jacob, assignor.)						
Fulford, Elijah D., Utica, N. Y., assignor of one-half to J. H. Webster and P. North, Cleveland, Ohio. Single-trigger mechanism for firearms	704,024	July 8	1213	203	100	257
Fulford, Elijah D., Utica, N. Y., assignor of one-half to J. H. Webster and P. North, Cleveland, Ohio. Single trigger for firearms	704,025	July 8	1215	203	100	257
Fullam, Patrick, Churubusco, Ind. Gate-hinge	710,051	Sept. 30	3068	808	100	2860
Fuller, Arthur J. (See Lacey and Fuller.)						
Fuller, Charles W., Medway, Mass. Triangle	706,230	Aug. 5	442	98	100	1206
Fuller, James T., Calvert, Tex. Cotton-gin	707,026	Aug. 19	2096	468	100	1578
Fuller Manufacturing Company. (See Compton, George W., assignor.)						
Fuller, William, Newville, Ind. Gate	705,295	July 22	3977	961	100	854
Funk, Henry, Pana, Ill. Grain-drill shoe	707,578	Aug. 26	3023	680	100	1780
Funk, Richard W. (See Birkenstock and Funk.)						
Furber, Frederick M., Haverhill, Mass. Dispensing-can	705,336	July 22	3874	888	100	888
Furlong, William, assignor of two-thirds to W. E. Parker and J. Frank, Jr., Monroe County, Miss. Cotton-planter	709,295	Sept. 30	3691	832	100	2798
Fuyat, Toussaint J., Hudson, Mass. Heddle-frame	704,455	July 8	2081	440	100	428
G. W. Cole Company. (See Cole, George W., assignor.)						
Gabriel, Charles, Chicago, Ill. Machine for bending angle-irons, channel-irons, &c	706,310	Aug. 5	617	135	100	1240
Gabrielsky, Richard. (See Klinker and Gabrielsky.)						
Gabrielsky, Richard, Jersey City, N. J. Mechanical stringed musical instrument	708,337	Sept. 2	625	141	100	2108
Gaertner, Frederick W., Saginaw, Mich. Extracting vegetable albumen	710,190	Sept. 30	4262	951	100	2919
Gaff, Thomas T., Barnstable, Mass., and J. F. Gent, Indianapolis, Ind.; said Gent assignor of one-third to said Gaff. Apparatus for the degermination and decortication of Indian corn	707,057	Aug. 12	2015	450 451	100	1546
Gaff, Thomas T., Barnstable, Mass., and J. F. Gent, Indianapolis, Ind.; said Gent assignor of one-third to said Gaff. Degerming maize or Indian corn	707,058	Aug. 12	2018	451	100	1546
Gaff, Thomas T., Barnstable, Mass., and J. F. Gent, Indianapolis, Ind.; said Gent assignor of one-third to said Gaff. Treatment of maize for the production of grits, flakes, &c	707,059	Aug. 12	2020	.....	100	1546
Gage, Joseph J., Mansfield, Ohio. Locomotive-boiler	706,490	Aug. 5	974	214	100	1313
Gagné, Edouard, Point St. Charles, assignor of one-half to P. Bonneau, Willow Bunch, Canada. Trolley-guard	709,089	Sept. 16	2060	477	100	2438
Gahan, Thomas, *et al.* (See Reynolds, Willie H., assignor.)						
Gaisman, Henry J., and J. Ross; said Ross assignor to said Gaisman and F. S. M. Blun, New York, N. Y. Waist-belt	703,568	July 1	342	78	100	69
Galbraith, Robert, Troy, N. Y., assignor to Great Western Stove Company, Leavenworth, Kans. Cooking-stove	706,750	Aug. 12	1460	321	100	1431
Gale, James, San Francisco, Cal. Window curtain and shade support	704,532	July 15	2108	476	100	476
Gale, Ronald, *et al.* (See Evans, William, assignor.)						
Gale, William L., assignor of one-fourth to I. F. Whiteside, Louisville, Ky. Smoke-conveyer	708,035	Sept. 2	75	17	100	1997
Galer, Herbert. (See Swaney, Fletcher D., assignor.)						
Gallagher, George B., and C. J. Macomber, St. Marys, Ohio. Fluid-pressure apparatus for well-drilling tools	706,173	Aug. 5	234	71	100	1185
Gallagher, Joseph D., Glenridge, N. J. Brake-shoe	708,704	Sept. 9	1274	291	100	2250
Gallagher, Sarah E., *et al.*, administrators. (See Wilkes, Moses.)						
Galley, Maximilian, Hanover, Germany. Face-protector	704,311	July 8	1757	384	100	369
Gallois, Moriz von., assignor to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Making bromindigo	706,921	Aug. 12	1776	.....	100	1497
Gally, Merritt, Brooklyn, N. Y. Printing-press	707,770	Aug. 26	3445	776 777	100	1675
Galopin, Paul. (See Eichenberger, Otto, assignor.)						
Galway, John J., Duluth, Minn. Device for securing or releasing trap-floors for ore-cars	706,312	Aug. 5	622	136	100	1241
Galway, John J., assignor of one-half to K. McDonald, Duluth, Minn. Offset mechanism for sawmill-carriages	706,311	Aug. 5	620	136	100	1241
Gamalielson, Johan E., Kaumana, Hawaii. Cable-support	707,314	Aug. 19	2513	565	100	1606
Gamble, John, assignor to G. A. Reach, Philadelphia, Pa. Boxing-glove	705,915	July 29	5001	1088	100	1072
Gamble, William H., assignor of one-half to D. H. Allen, Miamisburg, Ohio. Folding or collapsible bath-tub	707,060	Aug. 12	2022	452	100	1547
Gano, Frank I., Anaconda, Mont. Auriphone	708,978	Sept. 30	3861	869	100	2835
Gans, Ludwig W. (See Lubberger, Hans, assignor.)						
Gantt, Henry L., Fountain Hill, Pa. Furnace for heating and melting iron, &c	708,705	Sept. 9	1275	292	100	2251
Ganzenmuller, August. (See Korth and Ganzenmuller.)						
Garber, Christian, Findlay, Ohio. Latch	709,538	Sept. 23	3006	670	100	2646
Gard, William E., assignor to Columbia Shade Cloth Company, New York, N. Y. Apparatus for decorating surfaces	704,627	July 15	2351	511	100	506
Garda, Giovanni, Turin, Italy. Knife and fork	708,806	Sept. 9	1482	339	100	2397
Gardanier, Ada F., Chicago, Ill. Egg-opener	708,649	Aug. 12	1253	277	100	1397

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Gardiner, C. C. (See Seaman, Claude D., assignor.)						
Gardner, Edgar S., Boston, Mass., assignor to Bernstein Electric Manufacturing Company, Portland, Me. Incandescent electric lamp	707,009	Aug. 19	2102	469	100	1580
Gardner, Frederick N., Beloit, Wis. Drilling-machine	707,507	Aug. 19	2363	645 646	100	1736
Gardner, Henry K., Providence, R. I. Automatic electric time-switch	710,146	Sept. 30	4182	942	100	2902
Gardner, Jefferson M., New London, Conn. Condenser for cotton fibers	709,090	Sept. 16	3083	477	100	2430
Gardner, Michael M., Edgewood, R. I. Cigar-bunching machine	704,742	July 15	2338	551 552	100	549
Gardner, William C., Altoona, Pa. Track-sander	708,478	Sept. 2	849	194	100	2158
Garis, Noah D., Garisville, Pa. Hook and eye	708,542	Sept. 9	977	221	100	2190
Garner, John T., Grayrock, Tex. Canning apparatus	704,679	July 15	2435	526	100	525
Garrett, Paul, Weldon, N. C. Preparing sparkling wines	704,583	July 15	2300	476	100	476
Garrison, Frank O., Portland, Oreg. Ribbon-fastener for type-writing machines	707,098	Aug. 19	2101	469	100	1580
Garrison, George H., Bucoda, Wash. Gun-cleaner	705,396	July 22	3979	862	100	854
Garrison, George H., Bucoda, Wash. Gun-cleaner	707,913	Aug. 26	3734	837	100	1981
Garrison, William F., assignor to Guild & Garrison, Brooklyn, N. Y. Pump	703,648	July 1	498	113	100	98
Garson, Julius H., assignor of one-half to D. H. Foreman and W. C. Baum, Denver, Colo. Fuse-igniting tape	709,979	Sept. 30	3963	870	100	2635
Garton, Frederic C., Schoolhouse, W. Va. Wire-stretcher	708,474	Sept. 2	850	194	100	2154
Garwood, Myles E. (See Dial and Garwood.)						
Gary, Walter, assignor of one-half to B. Ostrom, Saginaw, Mich. Beet-harvester	707,097	Aug. 19	2100	469	100	1579
Gaskill, William H., assignor to S. W. Evans, Jr., Philadelphia, Pa. Umbrella-runner	707,838	Aug. 26	3591	811	100	1908
Gass, Joseph. (See Cleland and Murray, assignors.)						
Gates, Albert J., Chicago, Ill., assignor to Allis-Chalmers Company, Jersey City, N. J. Cornish roll	706,749	July 29	4710	1019	100	1012
Gates William T., Simpson, W. Va. Coke-oven	707,914	Aug. 26	3735	837	100	1931
Gathmann, Emil, Washington, D. C., assignor to G. W. McMullen, Picton, Canada. Separating solvents from nitro compounds	704,628	July 15	2353	511	100	507
Gatling, Richard J., St. Louis, Mo. Motor-plow	705,837	July 22	3876	838	100	838
Gattolliat, Paul S., assignor of two-fifths to W. H. Bornand, Jersey City, N. J. Coin-actuated machine	704,812	July 8	1758	384 385	100	370
Gauerman, Henry, and D. Pryde, Braddock, Pa. Barb-wire machine	707,815	Aug. 19	2514	565 566	100	1066
Gauss, Philip, New York, N. Y. Bottle-nipple	706,916	July 29	5002	1089	100	1072
Gavitt, Harry E., Topeka, Kans. Envelop-sealing machine	709,761	Sept. 23	3404	764	100	2726
Gay, Elmer B., Woonsocket, R. I. Clothes-wringer	709,628	Sept. 23	3154	703	100	2576
Gay, George E., Augusta, Me. Screw-driver	705,917	July 29	5003	1089	100	1072
Gay, Herman T., Baltimore, Md., assignor, by mesne assignments, to Aluminum-Cork Seal Company, Camden, N. J. Bottle-sealing machine	707,316	Aug. 19	2516	566	100	1067
Gaynor, John J., assignor of five-sixths to F. M. Fauvre and A. Harmon, Indianapolis, Ind. Labeling-machine	706,882	July 29	4843	1051 1052	100	1040
Gaynor, Timothy, Jr., assignor of four-fifths to R. G. Harseim and S. M. Gusdorf, Indianapolis, Ind. Soap cutting and spreading machine	705,067	July 22	3855	704 705	100	709
Gebler, Eugen J. (See Schmidt and Gebler.)						
Gedge, Burton H., Anderson, Ind. Rod-reel	707,317	Aug. 19	2518	567	100	1067
Gee, Pattie W., New York, N. Y. Genealogical chain record	706,883	July 29	4848	1053	100	1041
Geele, Kasberg C., Finley, N. D. Valve-gear	708,569	July 1	343	78	100	99
Geen, James, Hoboken, N. J. Prepayment gas-meter	706,922	Aug. 12	1776	398	100	1497
Gehring, Gustave P. (See Shoemaker, Harry, assignor.)						
Gehring, Gustave P., *et al.* (See Shoemaker, Harry, assignor.)						
Gehring, Marie V. (See Shoemaker, Harry, assignor.)						
Gehring, Marie V., *et al.* (See Shoemaker, Harry, assignor.)						
Geis, William V. (See Schmelz, Richard W., assignor.)						
Gendron, Paul H., Sherbrooke, Canada. Washing-machine	708,338	Sept. 2	667	141	100	2109
General Electric Company. (See Armstrong, Albert H., assignor.)						
General Electric Company. (See Barry, Charles E., assignor.)						
General Electric Company. (See Bassett, Norman C., assignor.)						
General Electric Company. (See Case, Frank E., assignor.)						
General Electric Company. (See Day, Maxwell W., assignor.)						
General Electric Company. (See Emmet, William L. R., assignor.)						
General Electric Company. (See Erben, Hermann F. T., assignor.)						
General Electric Company. (See Everest, Augustine R., assignor.)						
General Electric Company. (See Fleming, Richard, assignor.)						
General Electric Company. (See Gilbert and Lundin, assignors.)						
General Electric Company. (See Hall, John L., assignor.)						
General Electric Company. (See Harthan, Charles E., assignor.)						
General Electric Company. (See Haskins, Caryl D., assignor.)						
General Electric Company. (See Hewlett, Edward M., assignor.)						
General Electric Company. (See Hild and Stewart, assignors.)						
General Electric Company. (See Hobart, Henry M., assignor.)						
General Electric Company. (See Linn, John B., assignor.)						
General Electric Company. (See Lunt, Alexander D., assignor.)						
General Electric Company. (See Mackintosh, Frederick, assignor.)						
General Electric Company. (See Moody, Walter S., assignor.)						
General Electric Company. (See Nowotny, John S., assignor.)						
General Electric Company. (See Oxley, Eustace, assignor.)						
General Electric Company. (See Parshall, Horace F., assignor.)						
General Electric Company. (See Potter, William B., assignor.)						
General Electric Company. (See Reist, Henry G., assignor.)						
General Electric Company. (See Rice, Edwin W., Jr., assignor.)						
General Electric Company. (See Steinmetz, Charles P., assignor.)						
General Electric Company. (See Steinmetz and Emmet, assignors.)						
General Electric Company. (See Stern, George, assignor.)						
General Electric Company. (See Thomson, Elihu, assignor.)						
General Electric Company. (See Tirrill, Leonard A., assignor.)						
General Electric Company. (See Walker, Milo S., assignor.)						
General Fire Extinguisher Company. (See Meloon, Jonathan C., assignor.)						
General Incandescent Arc Light Company. (See Ball, Henry P., assignor.)						
General Incandescent Arc Light Company. (See Benzinger, Frederick, assignor.)						
General Incandescent Arc Light Company. (See Wellman, Harold R., assignor.)						
General Lead Company. (See Bailey, John W., assignor.)						
General Manifold Company. (See Lewis, Edward Z., assignor.)						
Geneva Optical Company. (See Hardinge, Franklin, assignor.)						
Genin, Jean B., New York, N. Y. Car-coupling	706,890	July 1	66	13	100	15
Gent, Joseph F. (See Gaff and Gent.)						
Gentis, Ernest L., Newport News, Va. Trolley-fork	708,782	July 1	746	165	100	150

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Gentslinger, George, Wapakoneta, Ohio. Fence	709,215	Sept. 16	2319	526	100	2489
Geo. W. Stafford Company. (See Stafford, George W., assignor.)						
Geofroy, George de. (See Conti, Geofroy, and Le Gall du Tertre.)						
George F. Blake Manufacturing Company. (See De Laval and Chisholm, assignors.)						
George Lawrence Company. (See Bostwick, Henry A., assignor.)						
George M. Stevens Co. (See Stevens, George M., assignor.)						
George N. Pierce Company. (See Fergusson, David, assignor.)						
George W. Dover Company. (See Dover, George W., assignor.)						
Georges, Alfred. (See Fortunesco and Georges.)						
Georges, Joseph. (See Fortunesco and Georges, assignors.)						
Gerardin, Benjamin M., Jersey City, N. J. Rule	704,313	July 8	1765	385	100	371
Gerdes, Adolf, Berlin, Germany. Cash-register	708,570	July 1	344	78	100	69
Gerfin, Frederick C., assignor of one-half to F. W. Kort, Columbia, Pa. Take-up for looms	704,314	July 8	1765	385	100	371
Gerlach, Frank W., and F. W. Moore, Kenton, Ohio. Guide for sewing-machines	705,668	July 29	4544	987	100	980
Gerlach, John. (See Schmiedeke, Louis, assignor.)						
Gerrard, Edward, assignor to National Dry Kiln Company, Indianapolis, Ind. Heating apparatus	707,691	Aug. 26	3258	729	100	1888
Gervais, Charles E., assignor to Gervais Manufacturing Company, New York, N. Y. Lamp	706,923	Aug. 12	1779	398	100	1498
Gervais, Charles E., assignor to Gervais Manufacturing Company, New York, N. Y. Lamp	706,924	Aug. 12	1782	399	100	1498
Gervais Manufacturing Company. (See Gervais, Charles E., assignor.)						
Gesellschaft zur Verwertung der Patente für Glaserzeugung auf Electrischem Wege Becker & Co., M. B. H. (See Bronn, Jegor, assignor.)						
Gessner, David. (See Sarfert, Alexander T., assignor.)						
Gestetner, David, London, England. Stencil-printing apparatus	707,579	Aug. 26	3024	680 681	100	1789
Getzmann, Filip H. (See Hultgren, Johan P., assignor.)						
Geurink, Bernard A., Cleveland, Ohio. Steam-generator or water-heater	709,006	Sept. 16	1895	434	100	2399
Geyer, John L., and R. A. Prime, Cincinnati, Ohio. Pressure-reducer for gas or other pipes	707,818	Aug. 19	2530	567	100	1698
Gibb, William, Boston, Mass. Game apparatus	709,007	Sept. 16	1897	434	100	2400
Gibbons, Robert J., Chicago, Ill. Water-heater	709,091	Sept. 16	2085	478	100	2439
Gibbons, Wallace A. (See Kidd and Gibbons.)						
Gibbs, Charles, New York, N. Y. Electrical type-writer	710,364	Sept. 30	4399	990 991	100	2949
Gibbs, George. (See Howard and Gibbs.)						
Gibbs, George, assignor to S. H. and S. V. St. John, Canon City, Colo. Explosive-engine	708,734	July 1	645	143	100	129
Gibbs, Glenn D., Pittsburg, Pa. Stop-cock for gas-burners	704,315	July 8	1766	385	100	371
Gibbs, Howard W., assignor to W. Hall & Co., Boston, Mass. Brake-handle	707,692	Aug. 26	3250	729	100	1888
Gibbs, James E., assignor of one-half to C. P. Ehrman, Staunton, Va. Sash-fastener	709,148	Sept. 16	2179	499	100	2460
Gibbs, James G., Nemaha, Iowa. Washing-machine	707,693	Aug. 26	3261	729	100	1888
Gibbs, John W. (See Fowler, Jonathan O., Jr., assignor.)						
Gibbs, John W., New York, N. Y. Electric roller for massage and therapeutical purposes	707,506	Aug. 19	2356	647	100	1789
Gibbs, Loren C., Leslie, Mich. Holder for train-orders	710,265	Sept. 30	4401	991	100	2950
Giblin, Charles, Cleveland, Ohio. Car-fender	705,918	July 29	5004	1089	100	1072
Gibon, Theodore, Clarksville, Tenn. Aeroplane	710,260	Sept. 30	4402	991 992	100	2950
Gibson, Frank W., St. Louis, Mo. Toy bowling-alley	706,925	Aug. 12	1784	899	100	1498
Gibson, Josiah, Parkridge, Ill. Educational card	705,579	July 29	4886	952	100	949
Gibson, Randall L. (See Osenbaugh and Gibson.)						
Gidden, William T. (See Smith, Gidden, and Salamon.)						
Gieshoidt, Josef, Dusseldorf, Germany. Machine for drawing tubes	704,316	July 8	1767	386	100	371
Giesler, Arthur, assignor to Stilwell-Bierce & Smith-Vaile Co., Dayton, Ohio. Horizontal-water-wheel system	705,998	July 29	5133	1119	100	1099
Giesler, Arthur, assignor to Stilwell-Bierce & Smith-Vaile Co., Dayton, Ohio. Turbine-water-wheel system	705,999	July 29	5134	1119	100	1099
Gilardoni, Xavier P., assignor to Se Dite Gilardoni Fils, A. Brault et Cie., Choisy-le-Roi, France. Tile-press	706,925	Aug. 12	1785	399	100	1499
Gilbert, Frederick A., Brookline, and E. O. Lundin, Beachmont, Mass., assignors to General Electric Company. Electric-arc lamp	706,547	Aug. 12	1074	237	100	1348
Gilbert, Frederick A., Brookline, and E. O. Lundin, Beachmont, Mass., assignors to General Electric Company. Apparatus for maintaining uniform resistance in electric circuits	710,052	Sept. 30	3966	899	100	2961
Gilbert, Frederick A., deceased; E. O. Lundin, Boston, Mass., W. A. Paine, and E. W. Burdett, administrators. Maintaining uniform resistance in arc-lamp circuits	710,053	Sept. 30	4011	955	100	2967
Gilbert, Theodore M. (See Gilbert and Nash.)						
Gilbert, William M. and T. M., and W. C. Nash, Neenah, Wis. Suction-box cover for paper-making machines	708,219	Sept. 2	417	96	100	2066
Giles, Azro M., Dickinson Center, N. Y. Saw-set	708,702	Sept. 9	1385	317	100	2276
Gill, Charles C. (See Tucker, Benjamin W., assignor.)						
Gill, Edwin R., Englewood, N. J. Self-propelled vehicle	708,649	July 1	500	118	100	98
Gill, Edwin R., New York, N. Y. Electric battery	705,919	July 29	5006	1090	100	1073
Gill, Edwin R., New York, N. Y., assignor, by mesne assignments, to Otis Elevator Company. Elevator	705,838	July 22	3870	839 840	100	884
Gill, Edwin R., New York, N. Y., assignor to Invention Developing Company. Elevator	707,899	Aug. 26	3698	812	100	1908
Gill, Edwin R., New York, N. Y., assignor to Invention Developing Company. Means for winding converters or like articles	708,220	Sept. 2	419	96	100	2067
Gill, Ernest A., Gloucester, Mass. Fog-horn	708,460	July 1	66	18	100	16
Gill, James B., San Francisco, Cal. Toll-collecting and call-recording device for telephone systems. (Reissue)	12,015	July 22	4328	985 986	100	932
Gillaspy, Leonard, assignor of one-half to D. A. Mayer, Sturgeon, Mo. Vehicle-top	706,816	Aug. 12	1598	365	100	1457
Gillespie, Charles W., Tascosa, Tex. Stirrup	704,184	July 8	1544	353	100	324
Gillespie, Robert T., Rochester, Pa. Fountain-pen	708,281	Sept. 2	420	96	100	2067
Gillespie, Robert T., Rochester, Pa. Reservoir-pen	709,230	Sept. 16	2409	546	100	2507
Gillet, Martin, Arlington, Mass., assignor to J. G. Jordan, trustee, Merchantville, N. J. Machine-belting	705,044	Aug. 5	61	17	100	1152
Gillette, Harleigh, Highland Park, Ill. Electric clock	706,817	Aug. 12	1583	355 356	100	1457
Gilliam, John A., trustee. (See Anderson, Edward L., assignor.)						
Gilliland, Andrew W., St. Louis, Mo. Fume-arrester	709,856	Sept. 30	3993	833	100	2709
Gillinder, Frederick R., and K. Booth, Philadelphia, Pa., assignors to Gillinder & Sons, Incorporated. Snap for finishing glassware	704,790	July 15	2639	571	100	566
Gillinder & Sons. (See Gillinder and Booth, assignors.)						
Gillis, Harry B., assignor of one-half to M. Lang, Mishawaka, Ind. Bicycle	704,317	July 8	1768	386	100	372

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gilljam, Hubert, Laurenaburg, Germany. Carding-machine	709,980	Sept. 30	2665	870	100	2385
Gillmor, John E., Jersey City, N. J., assignor to Union Switch and Signal Company, Swissvale, Pa. Automatic switch-lock	709,629	Sept. 23	2155	703 704	100	2376
Gilmer, John T., Mobile, Ala. Turpentine-still	709,315	Sept. 16	2518	567 568	100	2531
Gilmore, David G. (See Finney, John H., assignor.)						
Gilmore, Howard, Boston, Mass. Incandescent electric lamp	706,313	Aug. 5	694	136	100	1342
Gilmore, Howard, Boston, Mass. Compound incandescent electric lamp	706,314	Aug. 5	696	137	100	1342
Giltz, Conrod, Lafargeville, N. Y. Veterinary obstetric instrument	704,629	July 15	2255	512	100	507
Gimson, Arthur J. (See Gimson, Josiah M., J., A. J., and S. A.)						
Gimson, Josiah. (See Gimson, Josiah M., J., A. J., and S. A.)						
Gimson, Josiah M., J., A. J., and S. A., Leicester, England. Knife, cutter, or dicing-out instrument	709,008	Sept. 16	1899	485	100	2400
Gimson, Sydney A. (See Gimson, Josiah M., J., A. J., and S. A.)						
Ginn, Robert J. (See Dunaboo, James M., assignor.)						
Ginther, Otto. (See Kantner, Ralph, assignor.)						
Giorgio, Francis A., assignor of one-half to C. E. Houghton, Baltimore, Md. Roller-bracket for window shades and curtains	705,339	July 22	2262	840	100	884
Girardot, Léonce. (See Charron and Girardot.)						
Girdwood, John, Edinburgh, Scotland. Bat or racket for game known as ping-pong or table-tennis	708,911	July 1	989	215	100	198
Girin, Pierre, assignor to Ste. Ame. de Commentry-Fourchambault et Decazéville, Paris, France. Rolling-mill	706,548	Aug. 12	1076	237 238	100	1348
Giriot, Joseph, Jette St. Pierre, assignor to Société Générale du Laminage Annulaire pour la Fabrication de Chaines Sans Soudure, Brussels, Belgium. Apparatus for making chains	704,185	July 8	1545	833	100	524
	704,743	July 15	2564	553	100	550
	707,224	Aug. 19	2343	524	100	1632
Giussani, Tomaso, Milan, Italy. Preserving wood						
Given, Chester, *et al.* (See Le Mond, George E., assignor.)						
Glafke, Charles E., Los Angeles, Cal. Baker's oven	708,975	Sept. 9	1824	420	100	2366
Glasgow, Bruce M., assignor, by mesne assignments, to E. Risser, New York, N. Y. Machine for filling bottles	705,229	July 22	3020	784 785	100	783
Glauber, Isaac N. and J. H., Cleveland, Ohio. Plug and coupling for water or steam pipes	704,921	July 15	2719	588	100	592
Glauber, Joseph H. (See Glauber, Isaac N. and J. H.)						
Gleason, Byron H., assignor of one-half to A. T. Van Valkenburgh, Canastota, N. Y. Dump-wagon	704,318	July 8	1769	386	100	372
	704,319	July 8	1772	387	100	372
Gleason, Edward M., Neenah, Wis. Stove-damper	704,186	July 8	1546	333	100	324
Gleason, Frank J., Vanwert, Ohio. Boat propelling device						
Gleason, George. (See Belfield, Shearer, Findlay, and Belfield, assignors.)						
Gleason, William J., assignor of one-half to J. Megonigal, Philadelphia, Pa. Lawn-mower attachment	706,650	July 1	503	113 114	100	99
Gleeson, Margaret M. (See Henneberry and Gleeson.)						
Glen Rock Stamping Company. (See McCauley, Charles H., assignor.)						
Glendy, John W., Dublin, Va. Reversible plow	709,439	Sept. 16	2767	628	100	2383
Glenn, Robert J., Verona, Ill. Dumping-wagon	708,134	Sept. 2	251	60	100	2084
Glessner, William B., Crystalsprings, Kans. Carriage top and curtain	707,915	Aug. 26	3736	837	100	1992
Glosser, William H., Forsyth, assignor of one-half to G. L. Jones, Emery, Ill. Marker-bar for planters	704,791	July 15	2640	571	100	566
Glover, Charles, New Britain, Conn., assignor to P. & F. Corbin. Coaster-brake	706,549	Aug. 12	1077	238	100	1349
Glover, Charles, New Britain, Conn., assignor to P. & F. Corbin. Coaster-brake	709,479	Sept. 23	2888	645	100	2022
Glover, William J., St. Helens, England. System of erecting and adjusting bridge suspension-cables	709,316	Sept. 16	2521	568	100	2382
	705,834	July 29	4849	1053	100	1041
Glowacki, Erazm, Mielnica, Austria-Hungary. Air-motor						
Glynn, Cyrus L. (See Wyman, Albert O., assignor.)						
Glynn, Patrick F., Adrian, Minn. Clothes-pounder	704,080	July 15	2256	512	100	507
Glynn, Thomas E., *et al.* (See Laux, Mathias, assignor.)						
Gnesda, Anton, and F. Häcker, Agram, Austria-Hungary. Support for casement-windows	708,401	July 1	68	13	100	16
Goblisch, George. (See Bradet, George H., assignor.)						
Goddard, Frank C., Akron, Ohio. Motor-vehicle	709,897	Sept. 30	3005	883	100	2399
Goddard, Frederick M., assignor to G. Westinghouse, Pittsburg, Pa. Circuit-breaker for electric-lamp glowers	710,356	Sept. 30	4554	1027	100	2992
Godfrey, Alexander, Haverhill, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Take-up and tension for sewing-machines	706,045	Aug. 5	82	16	100	1133
Godfrey, Horace S., Chicago, Ill. Freight-car	709,009	Sept. 16	1900	435 436	100	2400
Godshalk, Edward H. (See Martin and Palmer, assignors.)						
Goerz, Carl P., Friedenau, near Berlin, Germany. Folding camera with roll-film magazine	704,220	July 8	1774	387	100	373
Goerz, Carl P., Friedenau, near Berlin, Germany. Astigmatically-corrected wide-angle objective	706,650	Aug. 12	1254	277	100	1337
Goerz, Carl P., Friedenau, near Berlin, Germany. Magazine plate-holder	706,651	Aug. 12	1255	277 278	100	1338
Goerz, Carl P., Friedenau, near Berlin, Germany. Folding stereoscopic camera	709,480	Sept. 23	2891	645 646	100	2022
Goerz, Carl P., Friedenau, near Berlin, Germany. Binocular prism-telescope	709,898	Sept. 30	3098	888	100	2800
Gogel, Jacob, Toledo, Ohio. Tire-heater	705,340	July 22	3084	840	100	835
Gohn, Philip H., *et al.* (See Avery, Edward R., assignor.)						
Golbert & Company, R. L. (See Taylor, Arthur B., assignor.)						
Gold, Edward E., New York, N. Y. Hose-coupling	704,792	July 15	2642	571	100	567
Gold, Edward E., New York, N. Y. Mounting for electric heaters	708,086	Sept. 2	78	18	100	1997
Gold, Edward E., New York, N. Y. Means for operating gates for railway-cars	709,961	Sept. 16	2410	546	100	2508
Gold, Egbert H., Chicago, Ill. Car-heating system	707,964	Aug. 26	3820	859	100	1948
Gold, Egbert H., Chicago, Ill. One-way valve	709,962	Sept. 16	2413	547	100	2508
Goldfoot, John G., Albany, N. Y. Computing-scale for railway mileage-books	706,046	Aug. 5	85	18, 19	100	1134
Goldie, William, Wilkinsburg, Pa. Ballasting railway-tracks	707,840	Aug. 26	3595	812	100	1904
Golding, William, New York, N. Y. Corset-cover	707,916	Aug. 26	3787	838	100	1989
Goldman, Cecelia H., St. Louis, Mo. Show-top	708,912	July 1	990	216	100	198
Goldman, David, Milwaukee, Wis. Box or receptacle	706,231	Aug. 5	443	98	100	1207
Goldsby, Andrew J., Pronax, Mo. Wire-stretcher	708,706	Sept. 9	1278	288	100	2251
Goldschmidt, Ferdinand, Chicago, Ill. Candy-dipping machine	704,248	July 8	1640	356	100	343
Goldthwait, Abel G. (See Tolhurst and Goldthwait.)						
Gollings, Henry, Oak Station, Pa. Glass-making machine	706,550	Aug. 12	1078	238	100	1349
Golob, John, Joliet, Ill. Accordion	709,071	Sept. 23	2229	720 721 722	100	2091
Gonce, John W., Kinderhook, Ala. Locking device	709,010	Sept. 16	1908	437	100	2400

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Gooch, Frank, Shelburn, Oreg. Bicycle attachment	705,664	July 29	4546	987	100	961
Goodale, George S., Houghton, Mich. Target	704,681	July 15	2357	513	100	508
Goodale, George S., Houghton, Mich. Extension-fitting for leveling-rods	707,225	Aug. 19	2344	524 525	100	1633
Goodall, P. H. (See Devine, Charles E., assignor.)						
Goodall, William H. (See Burnett and Goodall.)						
Goodbrand, Walter, Manchester, England. Two-speed driving-gear for bicycles	704,680	July 15	2436	526	100	525
Goodchild, John, guardian. (See O'Connor, John, assignor.)						
Goodell Company. (See Brooks, Myron B., assignor.)						
Goodell Company. (See Prentiss, Charles W., assignor.)						
Goodell Company. (See Yeomans, Lucien I., assignor.)						
Goodell, Zina. (See Hall, Benjamin F., assignor.)						
Gooding, Charles S. (See Beauregard, Victor, assignor.)						
Goodman, Joseph, Pittsburg, Pa. Adjustable sheave-arm for leers	708,543	Sept. 9	978	221	100	2191
Goodrich, Alfred K., assignor to G. H. Bahrs, San Francisco, Cal. Plow	708,571	July 1	345	78	100	69
Goodrich, Ernest C., assignor to himself and N. Britz, Houghton, Mich. Electrical floor-key	706,927	Aug. 12	1787	400	100	1490
Goodrich, George W. (See Broach and Goodrich.)						
Goodson, George A., Minneapolis, Minn. Type casting and setting machine	705,341	July 22	3995	840 841	100	835
Goodson Graphotype Company. (See Reynolds, John R., assignor.)						
Goodwin, Manson C., Portland, Me. Electric hose-coupling	709,216	Sept. 16	2290	596	100	2489
Goodwin, William B., San Francisco, Cal. Rowing appliance	710,147	Sept. 30	4185	942	100	2908
Goodwyn, Thadeus A., Madill, Ind. Ter., and P. E. Stovall, Waxahachie, Tex. Baling-press	707,917	Aug. 26	3738	838	100	1982
Goodyear, C. P., Sr., *et al.* (See Dempster, William E., assignor.)						
Goodyear, F. H. & C. W. (See Kidder, Wellington P., assignor.)						
Goodyear Shoe Machinery Company. (See Webster, Harold A., assignor.)						
Goodyear Tire and Rubber Company. (See State, Will C., assignor.)						
Goodyear's India Rubber Glove Manufacturing Company *et al.* (See Traver, Jay E., assignor.)						
Goodyear's Metallic Rubber Shoe Company *et al.* (See Traver, Jay E., assignor.)						
Gooing, Martin B., Vicksburg, Miss. Cotton-chopper and clod-crusher	704,823	July 15	2720	589	100	582
Gooing, Martin B., Vicksburg, Miss. Combined road-cart and insect-catcher	707,965	Aug. 26	3822	859	100	1949
Goossen, John, Marion, N. Y. Device for quartering fruit	706,174	Aug. 5	336	72	100	1185
Goozey, Charles A., Woonsocket, R. I. Lock-buckle	708,339	Sept. 2	629	141	100	2109
Gordan, Herbert. (See Riggins and Gordan.)						
Gordon, Charles W., St. Paul, Minn. Apparel-cap	705,066	July 22	3258	705	100	709
Gordon, Frederick W. (See Hanson and Gordon.)						
Gordon, George, Luther, Mich., assignor of one-fourth to T. P. Magrane, Chicago, Ill. Rail-joint	707,966	Aug. 26	3823	859 860	100	1949
Gordon, James P., Florence, Colo. Washing-machine	703,913	July 1	991	216	100	195
Gordon, John M. (See Dickerson and Gordon.)						
Gordon, Joseph P., Rockford, Ill. Fracture apparatus	708,340	Sept. 2	630	142	100	2109
Gordon, Minthorne T., and F. Davis, Stapleton, N. Y. Clothes-line support	704,029	July 8	1218	263	100	258
Gordon, Thomas, Philadelphia, Pa. Incandescent gas-burner	708,223	Sept. 2	433	96	100	2067
Gordon, Walter T., Juniper, Oreg. Draper, &c.	704,823	July 15	2721	589	100	582
Gordon, William, and G. E. Warren, Boston, Mass., assignors to Metallic Heel and Counter Company, Kittery, Me. Boot or shoe	706,551	Aug. 12	1080	239	100	1349
Gordon, William H. (See O'Neill and Gordon.)						
Gore, James H. (See Greer and Gore.)						
Gorter, Henry H., assignor to M. E. Gorter, San Francisco, Cal. Portable water-tower	708,136	Sept. 2	252	60, 61	100	2084
Gorter, Mary E. (See Gorter, Henry H., assignor.)						
Goss Printing Press Company. (See Firm, Joseph L., assignor.)						
Goss Printing Press Company. (See Goss, Samuel G., assignor.)						
Goss, Samuel G., assignor to Goss Printing Press Company, Chicago, Ill. Printing machinery	707,100	Aug. 19	2108	469 470	100	1580
Goss, Samuel G., assignor to Goss Printing Press Company, Chicago, Ill. Printing-press	707,101	Aug. 19	2107	470 471	100	1581
Gottbreht, John, Formosa, Kans. Antifriction-bearing	703,402	July 1	69	14	100	16
Gottbreht, John, Montrose, Kans. Lubricator	703,403	July 1	72	14	100	17
Gottschalk, Marie, Berlin, Germany. Straightening-case for the finger	705,980	July 29	5008	1090	100	1073
Gould, Augustus, assignor to W. A. Breed, Norwich, Conn. Stop-motion for cutlery-grinding machines	708,135	Sept. 2	255	61	100	2085
Gould, Charles A. (See Madden, Albert F., assignor.)						
Gould, Charles M. (See Richards, Willard F., assignor.)						
Gould, Charles M. (See Turbayne, William A., assignor.)						
Gould & Eberhardt. (See Eberhardt and Emme, assignors.)						
Gould, Elijah G. (See Lamb and Gould.)						
Gouldsbarry, John. (See Nevlon and Gouldsbarry.)						
Gourley, Thomas L. (See Schrag, John J., assignor.)						
Gouthiere, Henri, Paris, France, assignor to G. E. Junius, London, England. Purifying sugar-juices	704,087	July 8	1221	.....	100	258
Gowan, Richard H., Corsicana, Tex. Axle-lubricator	704,088	July 8	1222	262	100	258
Gowing, Earle H. (See Nagle, Augustus F., assignor.)						
Gowlland, George L., Peterborough, Canada. Prepayment electric meter	706,047	Aug. 5	87	19	100	1134
Gowlland, George L., Peterborough, Canada. Current-meter	706,406	Aug. 5	813	177 178	100	1278
Graaff, Peter D., Fresno, Cal. Portable wardrobe	708,341	Sept. 2	631	142	100	2109
Graf, Alois, Stuttgart, Germany. Apparatus for training horses	710,297	Sept. 30	4403	992	100	2951
Graf, John J., assignor to Union Light & Heat Company, Cincinnati, Ohio. Acetylene-gas burner	703,404	July 1	73	14	100	17
Graff, Friedrich, Witten, Germany. Machine for cutting meat, &c.	709,589	Sept. 23	3008	670	100	2646
Graff, Henry, Philadelphia, Pa. Adjustable eccentric	708,223	Sept. 2	434	97	100	2068
Graham, Abner B. (See White, Charles T., assignor.)						
Graham, Charles H., *et al.* (See Amwake, Harry S., assignor.)						
Graham, Charles H., *et al.* (See Amwake, Harry S., assignor.) (Reissue.)						
Graham, Edward. (See Strange and Graham.)						
Graham, Edwin R., Bakersfield, Cal. Machine for perforating pipes	708,763	Sept. 9	1357	317	100	2276
Graham, Euphemia, Carroll, Iowa. Heating-drum	705,921	July 29	5009	1090	100	1073
Graham, J. A. (See McDermott, David L., assignor.)						
Graham, John J., Imperial, Pa. Paddle-wheel	705,897	July 22	3980	838	100	584
Graham, Levi P., Decatur, Ill. Corn-planter	707,771	Aug. 26	3847	777	100	1876
Graham, Levi P., Decatur, Ill. Check-row planter	707,918	Aug. 26	3740	839	100	1982
Graham, Levi P., Decatur, Ill. Corn-planter	708,137	Sept. 2	257	62	100	2085
Graham, Lonelle F., San Jose, Cal. Machine for facing fruit for packing	705,971	July 22	3998	705	100	710

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Graham, Michael J., assignor to W. G. King, Chicago, Ill. Valve for gas-fixtures	706,928	Aug. 12	1787	400	100	1499
Graham, Samuel A., assignor of one-half to J. Brown and Company, Limited, Sheffield, England. Boiler and its furnace	707,509	Aug. 19	2358	647, 648, 649	100	1789
Graham, Thomas W., Dubuque, Iowa. Counting-machine	706,048	Aug. 5	90	19	100	1135
Graham, William, Dekoven, Ky. Nut-lock	707,108	Aug. 19	2112	471	100	1582
Graham, William A., St. Joseph, Mo. Union garment	705,070	July 22	3251	706	100	710
Graham, William S., assignor to Parlin & Orendorff Company, Canton, Ill. Lister-cultivator	708,500	Sept. 2	920	909	100	2168
Grall, Joseph G., Detroit, Mich., assignor, by mesne assignments, to Robert Mitchell Machinery Company. Vamp-snipper	705,069	July 22	3250	705	100	710
Gramophone and Typewriter. (See Royal, Belford G., assignor.)						
Gran, Albert, Chicago, Ill. Wind-motor	705,922	July 29	5009	1090	100	1078
Grand Detour Plow Company. (See Ruef and Tomlinson, assignors.)						
Grand Rapids Brass Company. (See Tower, Daniel W., assignor.)						
Grandjean, Adolphe H., and E. J. Bouvier, Paris, France. Driving-chain	709,149	Sept. 16	2180	490	100	2460
Grant, Arthur W., Springfield, Ohio, assignor to Consolidated Rubber Tire Co., New York, N. Y. Rubber tire	705,072	July 22	3264	707	100	711
Grant, Horace E., Pittsburg, Pa. Brazing	709,899	Sept. 30	3699	834	100	2800
Grant, Isaac G., Bozeman, Mont. Apparatus for mounting photographs	708,342	Sept. 2	631	142, 143	100	2109
Grant, William W. (See Vanata, Thomas D., assignor.)						
Grant, Willis C., Ashtabula, Ohio. Machine for making veneer barrels	708,688	Sept. 9	1130	255	100	2222
Graves, George A., assignor of two-thirds to T. W. Cunningham and A. Reynolds, Joplin, Mo. Carbureter for explosive-engines	705,995	July 29	5136	1120	100	1100
Graves, George A., assignor of two-thirds to A. Reynolds and T. W. Cunningham, Joplin, Mo. Sparker for explosive-engines	705,966	July 29	5137	1120	100	1100
Gray, George F. and H. N., and R. South, San Francisco, Cal. Kiln-burning apparatus	708,707	Sept. 9	1281	293	100	2252
Gray, Harry N. (See Gray and South.)						
Gray, Hiram B., assignor of one-half to V. J. Craytor, Conneaut, Ohio. Safety hoisting-hook for ore-buckets, &c.	705,596	July 22	4263	992	100	911
Gray, Howard A., Plainfield, Ill. Electric igniter for explosive-engines	709,598	Sept. 23	3106	692	100	2667
Gray, Thomas. (See Vogelbach and Gray.)						
Gray, Thomas U., London, England. Rotary motor	704,456	July 8	3282	441	100	429
Great Western Stove Company. (See Galbraith, Robert, assignor.)						
Greaves, John F., St. Louis, Mo. Coupling for conduit-rods	709,702	Sept. 23	3408	705	100	2727
Green, Annie G., Brooklyn, N. Y. Folding baby-carriage	707,772	Aug. 26	3445	777	100	1876
Green, Edward A., Battlecreek, Mich., assignor to American Construction Company. Monorailway	709,203	Sept. 16	2415	547	100	2509
Green, George D. (See Sager and Green.)						
Green, George S., Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J. Cash-register	707,408	Aug. 19	2063	606	100	1702
Green, Henry, assignor to Acme Harvester Company, Pekin, Ill. Mechanism for changing the elevation of header-platforms	704,682	July 15	2358	512, 518	100	508
Green, Henry, assignor to Acme Harvester Company, Pekin, Ill. Push-rake	709,264	Sept. 16	2417	547, 548	100	2509
Green, James. (See Dods, John C., assignor.)						
Green, James E. (See Robinson and Green.)						
Green, Olhe A. (See Baldwin and Green.)						
Green, Richard T., Everett, Mass. Construction of ships	705,342	July 22	3260	842	100	695
Greene, George A., Rogers, Tex. Hydrocarbon-burner for stoves or furnaces	705,548	Sept. 2	634	143	100	2110
Greene, James G., Elizabeth, N. J., assignor to Singer Manufacturing Company. Purling device for overedge sewing-machines	705,230	July 22	3234	795	100	788
Greene, Samuel G., Baltimore, Md. Curtain pole and hanger	706,315	Aug. 5	627	137	100	1243
Greene, Samuel P., *et al.* (See Ricker, James H., assignor.)						
Greene, Thomas D., Syracuse, N. Y. Time-recorder	707,583	Aug. 26	3030	692	100	1790
Greene, William J. (See Blocker, Samuel D., assignor.)						
Greenleaf, Abner, *et al.*, executors. (See Mergenthaler and Hoofnagle.)						
Greensfelder, Joseph S., *et al.* (See Painter, Orrin C., assignor.)						
Greensfelder, Lew S., *et al.* (See Painter, Orrin C., assignor.)						
Greenwalt, Dan, and J. B. Dawson, Breckenridge, Colo. Drill-shaper	707,584	Aug. 26	3034	682, 683	100	1790
Greenwood, George W., Cleveland, Ohio. Knee-joint or hinge connection	704,321	July 8	1776	387	100	373
Greenwood, George W., Cleveland, Ohio. Brake mechanism	704,584	July 15	2203	477	100	477
Greenwood, Harry, Barnesboro, Pa. Flat-iron-handle attachment	703,699	July 1	604	134	100	119
Greer Lever Fish Hook Company. (See Greer, Moses, assignor.)						
Greer, Moses, assignor to Greer Lever Fish Hook Company, Atlanta, Ga. Fish-trap hook	705,750	July 29	4712	1019	100	1012
Greer, Sherman, and J. H. Gore, Lincoln, Nebr. Folding crate	707,919	Aug. 26	3743	839	100	1933
Gregg, William C., Minneapolis, Minn. Cane-unloading machine	708,684	Sept. 9	1162	255, 256	100	2223
Gregg, William C., Minneapolis, Minn., assignor to Wm. C. Gregg & Co. Railway-tie. (Reissue)	12,023	Aug. 26	3697	870	100	1964
Gregory, Daniel L., Chicago, Ill. Ellipsograph	707,580	Aug. 26	3026	681	100	1789
Gregory, George, Oelwein, Iowa. Brake-valve	707,581	Aug. 26	3027	681	100	1789
Gregory, John B. (See Horsley, James, assignor.)						
Gregory, Robert G. (See Prentice and Gregory.)						
Gregory, Walter L., Springfield, Mass. Vehicle-tire	707,582	Aug. 26	3029	682	100	1790
Greif, John H., *et al.* (See Hochspeier, William F., assignor.)						
Greif, Louis H., *et al.* (See Hochspeier, William F., assignor.)						
Grenfell, Hubert H., London, England. Escapement for electromagnetically-controlled clocks	704,874	July 15	2206	607	100	600
Grever, Albert B. (See Stone, Clarence, assignor.)						
Grey, Sylvester P., assignor of one-half to F. Howenstein, Fort Wayne, Ind. Coin-controlled telephone	708,138	Sept. 2	260	62	100	2085
Gridley, Charles C., Columbus, Ohio. Collar turning and ironing machine	705,666	July 29	4548	998	100	981
Grieb, James L., Philadelphia, Pa. Railway-tie	709,461	Sept. 23	2893	646	100	2622
Grienauer, Karl, New York, N. Y. Stringed musical instrument	708,572	July 1	346	79	100	70
Griffen, John D., New York, N. Y. Type-writer	704,535	July 15	2205	477, 478	100	477
Griffin, William G., Washington, D. C. Roller-bearing	703,405	July 1	76	15	100	18
Griffith, Frederick T., Los Angeles, Cal. Temperature-preserving bottle-cover	704,972	July 15	3065	699	100	654
Griffith, Harry B. (See Way, Henry E., assignor.)						
Griffith, Thomas L., Cincinnati, Ohio. Core-oven	705,665	July 29	4547	987	100	981
Griffith, William, Pittsburg, Pa. Plating metal	704,798	July 15	2645	572	100	567
Griffiths, David L. (See Brandt and Griffiths.)						
Griffiths, Oliver W., Brooklyn, N. Y. Bicycle	704,089	July 8	1223	264	100	258

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Griffiths, Spencer M., Philadelphia, assignor of one-half to C. Pierson, Bala, Pa. Glove	704,961	July 15	3046	553, 554	100	651
Griffiths, William U., Philadelphia, Pa. Spray-nozzle for urinals	708,661	July 1	505	114	100	99
Griffiths, William U., Philadelphia, Pa. Expansion-bolt	708,662	July 1	507	114	100	99
Griggs, George M., Scottdale, Pa. Car-brake	709,981	Sept. 30	3867	870, 871	100	2886
Grill, Levi, Cleveland, Ohio. Rotary drier	709,704	Sept. 23	3287	787	100	2708
Grimes, Charles D., W. W. Sunderland, and B. F. Eilerman, Dayton, Ohio. Counting and registering machine	706,662	Aug. 12	1256	278, 279	100	1388
Grimes, William F., Carnegie, Pa. Combined door-check and burglar-alarm	708,344	Sept. 2	686	144	100	2110
Grimm, Gerhardt E., Camden, N. J., assignor to S. Mason. Machine for making spiral tubing	706,818	Aug. 12	1587	356, 357	100	1458
Grimshaw, Benjamin N., Pittsfield, Ill. Display-rack	706,989	Aug. 12	1788	400	100	1499
Grimshaw, Benjamin N., Pittsfield, Ill. Display-rack	706,990	Aug. 12	1790	401	100	1500
Griscom, Alfred C., assignor of one-half to R. Collings, New York, N. Y. Automatic switch for electric pumps	707,997	Aug. 26	3824	860	100	1949
Grise, Edward S., Ottawa, Ohio. Nut-lock	708,695	Sept. 9	1184	256	100	2223
Griste, Laura H., New York, N. Y. Culinary device	708,783	July 1	748	165	100	150
Griswold, Matthew, Jr., Erie, Pa. Gas-stove	710,058	Sept. 30	3987	899	100	2861
Griswold, Norman W., Honolulu, Hawaii. Watering trough, bowl, or basin	708,845	Sept. 2	687	144	100	2111
Grobet, Georges, and C. Bernasconi, Vallorbe, Switzerland. Damper-operating apparatus	708,807	Sept. 9	1483	340	100	2297
Grondin, George H., S. Brillard, and J. L. Labranche, Waterville, Me. Truck	708,846	Sept. 9	639	144	100	2111
Groobey, George, Chicago, Ill. Uncoupling mechanism for railway-cars	709,706	Sept. 23	3290	738	100	2704
Groobey, George, Chicago, Ill. Means for uncoupling cars	709,707	Sept. 23	3292	738	100	2704
Groobey, George, Chicago, Ill., and S. P. Bush, Columbus, Ohio. Uncoupling mechanism for railway-cars	709,708	Sept. 23	3293	739	100	2705
Groppler, Robert, Berlin, Germany. Solidifying formaldehyde	705,867	July 29	4550	.....	100	981
Grosheim, Harry H. (See Grosheim, John G. and H. H.)						
Grosheim, John G. and H. H., Cincinnati, Ohio. Cloth-cutting machine	708,784	July 1	749	166	100	150
Groshon, John A., New York, assignor of one-half to M. T. Davidson, Brooklyn, N. Y. Governor-controlled valve-gear	704,536	July 15	2210	478	100	478
Grosjean, Wallace D., assignor to C. A. Lee, Canastota, N. Y. Foot-rest for chairs	710,321	Sept. 30	4495	1013	100	2970
Grosvenor, Wallace, and W. Milner, Casselton, N. D. Metallic wagon-box	709,705	Sept. 23	3286	737, 738	100	2704
Grotta, David, Newark, N. J., assignor to Weingarten Bros., New York, N. Y. Machine for threading tape into edgings	707,585	Aug. 26	3085	668	100	1791
Grove, David, Berlin, Germany. Apparatus for sterilizing water, &c	706,751	July 29	4713	1020	100	1012
Grove, Frank G., Luray, Va. Rotary engine	706,835	July 29	4851	1053	100	1042
Grove, Ray W., Lewistown, Mont. Fastening device	706,836	July 29	4853	1054	100	1042
Grover, Mason, Bidwell, Ohio. Device for preventing humming of telephone-wires	705,073	July 22	3265	707	100	711
Groves, William, and G. D. O'Day, Mount Sterling, Ohio. Machine for weaving cross-wires in fences	709,540	Sept. 23	3009	670	100	2647
Grow, Daniel F. (See Lewis and Grow.)						
Gruenwald, August, Columbia, S. D. Chair-brace	704,187	July 8	1547	333	100	324
Grumbacher, Friedrich, Charlottenburg, near Berlin, Germany. Apparatus for cooling and filtering compressed air	709,768	Sept. 23	3409	766	100	2727
Grumme, August, St. Louis, Mo. Nut-lock	704,633	July 15	2361	513	100	509
Guenzel, Ernst J., assignor of one-half to F. F. Dittmar, Milwaukee, Wis. Strainer for coffee-pots	708,544	Sept. 9	979	221	100	2191
Guernsey, Charles C., assignor of one-half to N. B. Shyer, Nashville, Tenn. Non-refillable bottle	708,545	Sept. 9	981	222	100	2191
Guidez, Hermine, New York, N. Y. Pattern for dress-skirts	704,794	July 15	2646	572	100	567
Guild & Garrison. (See Garrison, William F., assignor.)						
Guild, George M., assignor to L. A. Guild, Cambridge, Mass. Pianoforte-action	709,630	Sept. 23	3158	705	100	2676
Guild, Louise A. (See Guild, George M., assignor.)						
Guillette, Frederick A., W. J. Lynch, and H. A. Guillette, Taunton, Mass. Shuttle-binder for looms	709,317	Sept. 16	2562	568	100	2532
Guillette, Henry A. (See Guillette, Lynch, and Guillette.)						
Guinn, James E., assignor of one-half to H. A. Clark, Thayer, Mo. Draft-rigging	708,956	July 1	1078	232	100	213
Guitar, Odon, Columbia, Mo. Washing-machine	707,409	Aug. 19	2687	606	100	1704
Gulliver, Harry, South Yarrow, near Melbourne, assignor of one-half to H. G. Robinson, Melbourne, Victoria, Australia. Semaphore-indicator for electric signaling	708,957	July 1	1076	232	100	214
Gumaer, Marie L., Guymard, N. Y. Powder-puff	705,837	July 29	4854	1054	100	1042
Gundlach, Frank C., and W. R. Ludewig, Pittsburg, Pa. Syringe	708,294	Sept. 2	425	97	100	2028
Gundlach, Louis F. H., Mariner Harbor, assignor of one-half to J. E. Evans, New York, N. Y. Ventilated clothes-drier	708,653	July 1	509	114	100	109
Gundlach Optical Company. (See Dey, Gilbert S., assignor.)						
Gundlack, Albert F. (See Paul and Gundlack.)						
Gunn, Judson K. (See Campbell and Gunn.)						
Guntz, George, Brooklyn, N. Y. Soldering-iron	705,752	July 29	4714	1020	100	1012
Gunzendorfer, Adolph, *et al.* (See Tittle, Horatio S., assignor.)						
Gurney, William H., and S. L. Taylor, Falmouth, England. Free-wheel or like clutch	709,930	Sept. 30	3700	884	100	2800
Gus V. Brecht Butchers Supply Company. (See Borbein, Henry F., assignor.)						
Gusdorf, Solomon M., *et al.* (See Gaynor, Timothy, Jr., assignor.)						
Gustine, Franklin J., New Orleans, La. Toy horn	705,396	July 22	3981	862	100	855
Gutensohn, Adolph, assignor to Sulphur Elimination Syndicate, Limited, London, England. Eliminating the sulfur from sulfid ores	709,468	Sept. 23	3294	646	100	2623
Guthrie, Robert H., South Dumfries, Canada. Post for fencing or other purposes	709,217	Sept. 16	2322	527	100	2489
Gwyn, Peter R., Delmont, Pa. Sleigh	708,914	July 1	994	216	100	198
Haack, Paul. (See Hamann, Christian, assignor.)						
Haaland, Bright J. (See Carlson and Haaland.)						
Haas, Cyrus A. (See De Camp and Haas.)						
Haas, Harry L., assignor to Zucker & Levett & Loeb Company, New York, N. Y. Melting nickel	709,218	Sept. 16	2323	.....	100	2490
Haas, John F. (See Root, Elam E., assignor.)						
Haas, Martin, Kalamazoo, Mich. Railway-bed	706,347	Sept. 2	640	145	100	2111
Haberacker, Eugene O. M., Altoona, Pa. Fan attachment for rocking-chairs	705,899	July 22	3988	862, 863	100	855
Hacherelle, Louis E., New York, N. Y. Skirt-supporter	706,232	Aug. 5	444	98	100	1207
Hackenbroch, Anton. (See Cuber and Hackenbroch.)						
Häcker, Friedrich. (See Gnezda and Häcker.)						
Hackett & Dailey Creamery Supply Company. (See Marsh, Wilbur W., assignor.)						
Hadaway, John B., Brockton, Mass. Stitch-separating machine	708,573	July 1	847	79, 80	100	70
Hadaway, John B., Brockton, Mass. Stitch-separating machine	708,574	July 1	851	80, 81	100	70
Hadaway, John B., Brockton, Mass. Stitch-separating machine	708,575	July 1	856	81, 82	100	71

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Hadaway, John B., Brockton, Mass. Shoe-sewing and welt-beveling machine	704,457	July 8	2033	441	100	429
Hadaway, John B., Brockton, Mass. Shoe-sewing and welt-beveling machine	704,458	July 8	2039	442	100	429
Hadaway, John B., Brockton, Mass. Boot or shoe	705,231	July 29	3626	786	100	784
Hadaway, William S., Jr., New York, N. Y. Electric heater	705,668	July 29	4551	988	100	981
Hadfield, Robert A., Sheffield, England. Hardening projectiles	709,681	Sept. 23	3161	705	100	2577
Hadley, Artemus N., Indianapolis, Ind. Cutter for corn-harvesters	705,988	July 29	5010	1091	100	1074
Haeseler, Charles H., Philadelphia, Pa. Pneumatic hammer	707,980	Aug. 26	3744	840	100	1963
Hagen, Ferdinand J., New York, N. Y. Marking-machine	709,011	Sept. 16	1905	487, 488	100	2401
Hager, Godfrey, Brooklyn, N. Y. Bookbinding-sheet	709,509	Sept. 23	3109	693	100	2068
Hagerman, Charles C., assignor to Hagerman & Williams, Marion, Iowa. Metal fence-post	707,586	Aug. 26	3040	683	100	1793
Hagerman & Williams. (See Hagerman, Charles C., assignor.)						
Haggstrom, Charles J., Warren, Pa. Fire-escape	708,546	Sept. 9	982	222	100	2191
Haglin, Charles F., Minneapolis, Minn. Fireproof flooring	708,764	Sept. 9	1389	317, 318	100	2277
Hagman, William J., Philadelphia, Pa., assignor to Niles-Bement-Pond Company, Jersey City, N. J. Flanging-press	708,406	July 1	78	15	100	18
Hagström, Nils F., Brooklyn, N. Y. Sectional shoe-last	708,958	July 1	1077	232	100	214
Hahn, Joseph J. (See Van Nostran, Joseph E., assignor.)						
Haight, Levi A., Kansas City, Mo. Windmill	704,090	July 8	1225	264	100	258
Hailles, Polydore. (See Mahy and Hailles.)						
Haines, Chester, *et al.* (See Haines, Jacques C., assignor.)						
Haines, Jacques C., assignor of two-thirds W. E. Huber and C. Haines, Chicago, Ill. Tire and fastener for vehicle-wheels	709,483	Sept. 23	2896	647	100	2023
Hainsworth, Robinson, Hull, England. Safety suspending apparatus for elevators or the like	707,410	Aug. 19	2668	607	100	1704
Hakes, George G., Ilion, N. Y. Card-index	705,343	July 22	3893	842	100	836
Halapleus, James G., Toledo, Ohio. Cigarette-roller	708,915	July 1	995	217	100	198
Halapleus, James G., Toledo, Ohio. Atomizer	705,074	July 22	3265	707	100	711
Hale, Asa D., Eagleville, Mo. Animal-poke	708,407	July 1	79	15	100	18
Hale, Henry S., Philadelphia, Pa. Car-seat	705,075	July 22	3267	707	100	711
Hales, Henry W., Ridgewood, N. J. Photographic camera	707,819	Aug. 19	2522	567, 568	100	1668
Haley, James T., Alhambra, Cal. Orange or lemon cleaner	708,916	July 1	996	217	100	199
Hall, Almon, Toledo, Ohio. Canteen	708,654	July 1	511	115	100	100
Hall, Benjamin F., assignor of one-half to Z. Goodell, Salem, Mass. Punching-machine	706,532	Aug. 12	1081	239	100	1349
Hall, Charles F., Chicago, Ill. Bascule-bridge	708,348	Sept. 2	641	145	100	2111
Hall, Charles M., Niagara Falls, N. Y. Manufacture of carbon electrodes	705,076	July 22	3269	708	100	712
Hall, Charles M., Niagara Falls, N. Y. Manufacturing alumina	706,553	Aug. 12	1092	240	100	1350
Hall, Charles W., Jr., and B. J. Berwald, Bradford, Pa. Automatic valve	705,344	July 22	3893	842	100	836
Hall & Co., William. (See Gibbs, Howard W., assignor.)						
Hall, Francis E. (See Batchelor and Hall.)						
Hall, Frank E., Quincy, Mass. Elastic tire and manufacturing same	708,235	Sept. 2	426	97	100	2068
Hall, Fred J., and P. S. Stauffer, Springfield, Mass. Coin-controlled machine	707,773	Aug. 26	3451	778	100	1877
Hall, George B., London, England. Machinery for making slabs with plain or ornamental surfaces of plastic cement or composition	707,921	Aug. 26	3750	840, 841	100	1926
Hall, George L., Brooklyn, N. Y. Rail-joint	705,345	July 22	3895	843	100	837
Hall, George L., Brooklyn, N. Y. Insulated rail-joint	708,349	Sept. 2	544	145, 146	100	2112
Hall, George L., Brooklyn, N. Y. Insulated rail-joint	708,350	Sept. 2	645	146	100	2112
Hall, Henry A. (See Fleeche, Hall, and Doherty.)						
Hall, Henry J. S., New York, N. Y. Screw-cap closure	707,280	Aug. 19	2525	568	100	1669
Hall, Hugh A. (See Churchill and Hall.)						
Hall, James B., Cleveland, Ohio. Bait-bucket	706,407	Aug. 5	816	178	100	1279
Hall, John L., Schenectady, N. Y., assignor to General Electric Company. Speed-indicating system	706,554	Aug. 12	1085	240	100	1350
Hall, Sylvester T., Riverside, Cal. Tree-limb support	704,081	July 8	1226	264	100	259
Hall, Willard L., Philadelphia, Pa. Illusion apparatus	709,764	Sept. 23	3411	766, 767	100	2727
Hall, William F., Boston, Mass. Trolley-wheel	708,700	July 1	605	134	100	190
Hall, William F., Boston, Mass. Trolley-wheel	708,701	July 1	607	134	100	190
Hallden, John A., Rockford, assignor of one-third to E. Carlson, Chicago, Ill. Sandpapering-machine	705,332	July 22	3627	786	100	784
Halle, Hiram J., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Work-gage attachment for type-writing machines	705,527	July 22	4255	922, 923	100	911
Hallenscheid, Gustav, Ronsdorf, Germany. Twisted auger	703,576	July 1	361	83	100	71
Halley, Robert, assignor of one-fourth to Piano Manufacturing Company, Chicago, Ill. Furnace	707,108	Aug. 19	2113	471, 472	100	1582
Halley, Robert, assignor of one-fourth to Piano Manufacturing Company, Chicago, Ill. Adjustable furnace	707,104	Aug. 19	2115	473, 473	100	1582
Halley, Robert, assignor of one-fourth to Piano Manufacturing Company, Chicago, Ill. Liquid-fuel burner	707,510	Aug. 19	2859	649	100	1740
Hallock, Otto P., Mattituck, N. Y. Barrel	705,400	July 22	3996	863	100	856
Halloran, Martin H., Pittsburg, Pa. Lubricator for elevator-ropes or the like	709,318	Sept. 16	2525	568	100	2532
Hallowell, Howard T., Philadelphia, Pa. Pressed-metal belt-shifter arm	706,519	Aug. 12	1598	357	100	1455
Hallowell, Howard T., Davisgrove, Pa. Hanger	710,191	Sept. 30	4254	961, 962	100	2919
Halls, John T., Dumfries, Va. Extensible pan	709,150	Sept. 16	2181	499, 500	100	2461
Hallwood Cash Register Company. (See Hallwood, Henry S., assignor.)						
Hallwood, Henry S., assignor, by mesne assignments, to Hallwood Cash Register Company, Columbus, Ohio. Cash register and indicator	704,795	July 15	2646	572, 573, 574	100	868
Hallwood, Henry S., assignor, by mesne assignments, to Hallwood Cash Register Company, Columbus, Ohio. Cash-register	704,796	July 15	2658	574, 575, 576	100	870
Halpain, William M., Hamilton, Tex. Wire-stretcher	704,875	July 15	2927	607	100	901
Halstead, Charles C., Blodgett, Mo. Stovepipe	708,709	July 1	608	135	100	190
Halstead, Herbert. (See Cooley, Harry W., assignor.)						
Halstead, James. (See Bell and Halstead.)						
Halverson, Christine M., Los Angeles, Cal. Mechanical music-chart	708,189	Sept. 2	263	63	100	2086
Hamann, Christel, Friedenau-Berlin, assignor to E. Schuster, Berlin, Germany. Calculating-machine	705,888	July 29	4865	1054	100	1048
Hamann, Christian, assignor to P. Haack, Berlin, Germany. Calculating-machine	708,785	July 1	752	166, 167	100	151

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Hambay, James T., New York, N. Y. Electric block system for railway-trains	707,226	Aug. 19	2345	585	100	1678
Hamer, Frank G., Cincinnati, Ohio. Gas-furnace	705,077	July 22	2271	586 709	100	712
Hamilton, Carl B. (See Woodford, Samuel B., assignor.)						
Hamilton, Clarence J., assignor to C. J. Hamilton & Son, Plymouth, Mich. Gun-barrel.	704,968	July 15	2047	654	100	651
Hamilton, Clayton M., assignor to W. H. Davis, Boston, Mass. Folding bed	710,268	Sept. 30	4405	992 998	100	2951
Hamilton, George F., Council Bluffs, Iowa. Door-securer	704,634	July 15	2302	518	100	809
Hamilton, Henry A., and F. H. Crawford, Emlenton, Pa. Overshoe	708,547	Sept. 9	988	223	100	1192
Hamilton, James, Glasgow, Scotland. Means for housing propellers of ships	707,411	Aug. 19	2690	607 608	100	1704
Hamilton, Jonathan R., Sioux Falls, S. D. Dilator	705,348	July 22	2037	843	100	857
Hamilton & Son, C. J. (See Hamilton, Clarence J., assignor.)						
Hamilton, Supplina, Endicott, Wash. Swinging gate	705,401	July 22	2037	863	100	856
Hamm, William S., and J. A. Mosher, Chicago, Ill., assignors to Adams & Westlake Company. Acetylene-gas generator	705,078	July 22	2073	709	100	712
Hammar, Sigard A. S. (See Meigs and Hammar.)	705,580	July 29	4390	932	100	949
Hammerly, Richard, New York, N. Y. Fire-escape	706,402	Aug. 5	819	179	100	1279
Hammond, George B., and T. Dennis, Neath, England; said Dennis assignor to said Hammond. Apparatus for coating metal plates	706,901	Aug. 12	1791	401	100	1500
Hammond, George S., Chicago, Ill. Cigarette-former	706,706	July 1	761	167	100	152
Hammond, George W., assignor of one-half to S. S. Wiener, Philadelphia, Pa. Apparatus for preventing trolley-wheels from leaving the feed-wire	710,054	Sept. 30	3966	899 900	100	2961
Hammond, Isaac B., Portland, Oreg. Dredger and excavator	708,351	Sept. 2	646	146	100	2112
Hammond, John E., assignor of one-half to W. E. Aydelotte, Sullivan, Ind. Rail-joint	704,249	July 8	1642	356	100	343
Hammond, Myron B., Bridgeport, Conn. Hose-supporter hook	704,587	July 15	2212	479	100	478
Hammond, Myron B., Bridgeport, Conn. Garment-clasp	708,087	Sept. 2	80	18	100	1996
Hammond, Myron B., Bridgeport, Conn. Hose-supporter	707,287	Aug. 19	2348	526 527	100	1633
Hancock, Henry J., assignor of one-half to W. S. Jessup, New York, N. Y. Chain-stitch sewing-machine	708,352	Sept. 2	647	146	100	2113
Handiges, Philip T., assignor of one-half to Damascus Brake Beam Company, St. Louis, Mo. Brake-beam fulcrum	704,459	July 8	2044	442 443	100	430
Hanger, James E., Washington, D. C. Adjustable reclining-chair	709,201	Sept. 30	3702	895	100	2801
Hankins, Elias, Purdon, Tex. Plow	709,519	Sept. 16	2526	569	100	2563
Hankins, Lewis T., Troy, assignor of one-half to H. M. Case, Toledo, Ohio. Combined curd-knife and whey-strainer	706,175	Aug. 5	337	72, 73	100	1186
Hannan, Joni B. (See Cavanagh, Hannan, and Clarke.)	709,632	Sept. 23	3164	708	100	2677
Hanneborg Odilon B. H., Christiania, Norway. Excavator	709,320	Sept. 16	2527	569	100	2533
Hannum, Henry A., Cazenovia, N. Y. Game apparatus	706,316	Aug. 5	699	137	100	1265
Hano, Philip New York, N. Y. Manifolding sales or copying book	706,320	Aug. 12	1590	358	100	1459
Hanscom, John B. (See Bird and Hanscom.)	706,233	Aug. 5	445	94	100	1207
Hansell, Robert B., Baltimore, Md. Display-bench for dog-shows	706,234	Aug. 5	447	94	100	1207
Hansen, Charles H., Racine, Wis. Awning-protector	706,602	Aug. 12	1794	401	100	1503
Hansen, John M., Pittsburg, Pa. Truck-frame for railway-cars	708,236	Sept. 2	497	97	100	2068
Hansen, John M., Pittsburg, Pa. Truck-frame for railway-cars	703,577	July 1	361	88	100	72
Hansen, Lars. (See Wile, Louis, assignor.)	703,578	July 1	363	88	100	72
Hansen, Rasmus P., Erindslev Sogn, Denmark. Valve mechanism for explosive-engines	706,049	Aug. 5	98	19, 20	100	1135
Hanson, Albert. (See Field and Hanson.)	708,308	Sept. 9	1496	340 341	100	2298
Hanson, August, New Haven, Conn. Adjustable shade-bracket	706,491	Aug. 5	975	214	100	1318
Hanson, Bengt M. W., assignor to Pratt & Whitney Company, Hartford, Conn. Milling-cutter	703,655	July 1	513	115	100	101
Hanson, Bengt M. W., and F. W. Gordon, assignors to Pratt & Whitney Company, Hartford, Conn. Gear-tumbler	704,822	July 8	1778	388	100	373
Hanson, Bengt M. W., and F. W. Gordon, assignors to Pratt & Whitney Company, Hartford, Conn. Variable-speed device	709,902	Sept. 30	3705	895	100	2902
Hanson, Charles M., Peacedale, R. I. Apparatus for dyeing slivers	710,322	Sept. 30	4497	1014	100	3070
Hanson, Richard B., assignor to J. H. Diehl, Buffalo, N. Y. Bow-facing car	705,796	July 29	4788	1060	100	1062
Hansson, Per. (See Rosengrén, Anders A., assignor.)	707,228	Aug. 19	2350	527	100	1633
Happold, Henry C., New York, N. Y. Focusing-hood for photographic cameras	707,321	Aug. 19	2526	568	100	1669
Harbison & Walker Company. (See Reif, Otto M., assignor.)						
Harcourt, Edgar G., Birmingham, England, and M. B. Lloyd, Minneapolis, Minn. Electrical push and switch	703,725	July 1	649	144	100	130
Hard, John R New York, N. Y. Hook and eye	704,250	July 8	1642	356 357	100	343
Hardeman, William E., Carlton, Victoria, Australia. Sliding window						
Hardenberg, William L. von, Brooklyn, N. Y. Trolley	708,997	July 29	5138	1120	100	1100
Harding, Henry M., New York, N. Y. Support for suspended-cable-track roads	708,579	July 1	804	94	100	72
Harding, Hiram B., Los Angeles, Cal. Tug sheave-clutch	706,050	Aug. 5	94	20	100	1135
Harding, J Horace. (See Clark, Absolam F., assignor.)	705,726	July 1	653	144	100	131
Hardinge, Franklin, assignor to Geneva Optical Company, Chicago, Ill. Lens-measuring instrument	704,588	July 15	2213	479	100	479
Hardison, Edwin A., assignor of one-half to J. L. Oliva, Santa Paula, Cal. Well-rig	704,589	July 15	2214	479	100	479
Hardman Rubber Company. (See Schwerin, Silas, assignor.)						
Hardsocg, Lester C. (See Hardsocg Martin, assignor.)	708,088	Sept. 2	81	19	100	1998
Hardsocg, Martin, assignor of one-half to L. C. Hardsocg, Ottumwa, Iowa. Combination miner's tool	705,581	July 29	4391	958 959	100	949
Hardy, James H., Waco, Tex. Trousers-guard	704,222	July 8	1778	388	100	374
Hardy Motor Works. (See Hardy, Roy E., assignor.)	709,908	Sept. 30	3706	895	100	2902
Hardy, Roy E., Detroit, assignor, by mesne assignments, to Hardy Motor Works, Limited, Port Huron, Mich. Mixing-valve for gas or gasolene engines						
Haren, Edward. (See Olsted, Christian, assignor.)						
Harker, Oliver A., Jr., Carbondale, Ill. Metallic fence-post						
Harmon, Alonzo, Tecumseh, Nebr. Cultivator						
Harmon, Anthony, *et al.* (See Gaynor, John J., assignor.)						
Harmon, Edward N., Belvedere, Cal. Tank						
Harmon, Edwin C., trustee. (See Wood, James E., assignor.)						
Harner, Daniel W. (See Walton and Harner.)						
Harper, Charles R., Marshalltown, Iowa. Vise and bracket						
Harper, Frank, Beverly, Ohio. Gas-burner						
Harper, James N., Kansas City, Mo. Automatic electric semaphore-signal						
Harper, Smith, Abington Township, Montgomery county, Pa., assignor to S. Harper & Sons. Asphalt-hoe						

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Harper & Sons, Smith. (See Harper, Smith, assignor.)						
Harper, Walter L., Mena, Ark. Automatic railway-signal	704,877	July 15	2812	609	100	609
Harriman, Henry L., New York, N. Y. Weft-replenishing loom	709,440	Sept. 16	2769	624	100	2584
Harrington, Charles F., Lyndhurst, N. J. Voting-machine	708,787	July 1	782	168	100	152
Harrington, E. B., trustee. (See Baker, Willard D., assignor.)						
Harrington, Harry C., and W. M. Towers, Rome, Ga. Car-mover	709,765	Sept. 23	3415	767	100	2729
Harrington, Louder, Chester, Pa., assignor to J. F. Wells and E. W. Bonnett, Aberdeen, Md. Can-dipping machine	707,969	Aug. 26	3331	861	100	1950
Harrington, Samuel H., New York, N. Y. Railway heater system	704,797	July 15	2667	577	100	870
Harris, Abraham, trustee. (See Cornfield, Noah, assignor.)						
Harris, Barnett W., Waveland, Ind. Gas-filter	707,774	Aug. 26	3455	778	100	1878
Harris, Charles B., assignor to S. I. Atwater, trustee, New York, N. Y. Artificial fuel	709,851	Sept. 23	3573	.....	100	2765
Harris, Charles R., Williamsport, Pa., assignor to Harris Safety Company, New York, N. Y. Fire-alarm	704,681	July 15	2438	527	100	895
Harris, Charles R., Williamsport, Pa., assignor to Harris Safety Company, New York, N. Y. Nozzle	705,754	July 29	4716	1020	100	1013
Harris, Charles R., Williamsport, Pa., assignor of one-half to J. E. Austrian, New York, N. Y. Attachment for suspenders	706,933	Aug. 12	1796	402	100	1501
Harris, Charles R., and C. C. Barrick, Los Angeles, Cal. Composition of fireproof wall-plaster	708,353	Sept. 2	648	.....	100	2113
Harris, Charles R., and C. C. Barrick, Los Angeles, Cal. Fireproof wall-plaster	708,354	Sept. 2	649	.....	100	2113
Harris, David W., Alamo, Tenn. Plow-brace	706,935	Aug. 12	1796	402	100	1501
Harris, Elmo G., Rolla, Mo. Centrifugal pump	705,847	July 22	3397	843	100	937
Harris, Frank H., Toledo, Ohio. Toy cart	706,934	Aug. 12	1797	402	100	1501
Harris, H. Gordon. (See Howard, James H., assignor.)						
Harris, Hugh, and S. M. Reese, Galion, Ohio. Wagon-rack	705,755	July 29	4718	1021	100	1013
Harris, Isaac L., assignor of one-half to H. Partridge, Jacksonville, Fla. Acetylene-gas generator	704,032	July 8	1227	264 / 265	100	259
Harris, Isaiah, Van Wert, Ohio. Ironing-machine	707,968	Aug. 26	3327	860 / 861	100	1950
Harris, John, Cleveland, Ohio. Gas-burner	704,635	July 15	2363	515	100	509
Harris Safety Company. (See Harris, Charles R., assignor.)						
Harris, Samuel J., Lake City, Fla. Switch	708,917	July 1	999	217	100	199
Harris, Samuel J., Lake City, Fla. Safety appliance for switches	708,918	July 1	1000	218	100	199
Harris, Thomas. (See Carl, John H., assignor.)						
Harris, William P., assignor to Fruit Stoning and Preserving Syndicate, Limited, London, England. Machine for removing stones from cherries or other single-stoned fruit	704,876	July 15	2809	608	100	601
Harris, William R., Akron, Ohio. Rubber tire	708,408	July 1	80	16	100	19
Harris, William W., assignor to Max Huncke Chemical Company, New York, N. Y. Embalming-catheter	707,775	Aug. 26	3457	778	100	1878
Harris, William W., and W. D. Chew, Eldorado, Ark. Street-car and railway indicator	705,285	July 22	3036	787 / 788	100	785
Harrison, Anna M. (See Harrison, Benjamin J., assignor.)						
Harrison, Arthur W., assignor of two-thirds to F. A. Marcher, Los Angeles, Cal. Electrode-separator for batteries	708,708	Sept. 9	1282	298	100	2252
Harrison, Benjamin J., assignor to A. M. Harrison, Whiteplains, N. Y. Portable folding chair	707,841	Aug. 26	3596	812	100	1904
Harrison, Frank A., Keokuk, Iowa. Tea or coffee pot	708,919	July 1	1002	216	100	200
Harrison, Frank B. (See Tunks, Nelson H., assignor.)						
Harrison, Joseph H., *et al.* (See Quayle, William, assignor.)						
Harrison, Julian R., assignor of one-half to J. M. and J. R. Easterling, Barnwell, S. C. Fountain-comb	710,269	Sept. 30	4406	998	100	2961
Harrison, Meyer, *et al.* (See Quayle, William, assignor.)						
Harrison, Newton, assignor of one-half to W. H. Laird, New York, N. Y. Hair-pin	708,959	Sept. 9	1785	412	100	2359
Harrison, Newton, assignor of one-half to W. H. Laird, New York, N. Y. Electric clock	709,818	Sept. 23	3520	798	100	2751
Harrod, Orrian L., assignor to Medicated Poultry Perch Company, Belle Center, Ohio. Poultry-perch	704,968	July 15	3048	654	100	651
Harrop, John T., Garfield, N. J. Mold for cement or concrete curbs	706,410	Aug. 5	823	180	100	1280
Harselm, Robert G., *et al.* (See Gaynor, Timothy, Jr., assignor.)						
Hart & Cooley Company. (See Hart, Howard S., assignor.)						
Hart, Frank, assignor of two-thirds to F. J. and G. H. Bolinger, J. O. Sutherland, and J. C. Perkins, Newcastle, Pa. Nut-lock	706,409	Aug. 5	822	179	100	1280
Hart, Henry, New York, N. Y. Plant pot or holder	706,821	Aug. 12	1592	358	100	1459
Hart, Howard S., assignor to Hart & Cooley Company, New Britain, Conn. Register, ventilator, or the like	703,409	July 1	82	16	100	19
Hart, Thomas J., assignor to Sherwood Manufacturing Company, Buffalo, N. Y. Flue-cleaner	705,758	July 29	4715	1020	100	1013
Hartell, Etta M., Brooklyn, N. Y. Garden implement	705,233	July 22	3033	787	100	786
Hartgrove, H. H. (See O'Neal, Isaac N., assignor.)						
Harthan, Charles E., Lynn, Mass., assignor to General Electric Company. Electric-arc lamp	710,055	Sept. 30	3991	900	100	2668
Hartley, Charles P., Washington, D. C. Combined pocket rule, square, compasses, and comb	708,355	Sept. 9	650	147	100	2113
Hartley, Frederic, *et al.* (See Beier, Adolf, assignor.)						
Hartley, Wilfred, Utica, E. D. Rivers and E. Beach, assignors to Remington Arms Company, Ilion, N. Y. Firearm	705,234	July 22	3035	787	100	786
Hartley, William G., Lowell, Mass. Loom for weaving velvets	708,580	July 1	965	84	100	72
Hartman, John M., Philadelphia, Pa. Mold-coating for apparatus for casting pig metal	709,672	Sept. 23	3231	722	100	2593
Hartmann, Christoph, assignor to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Blue anthraquinone dye and making same	704,796	July 15	2666	.....	100	571
Hartness, James, Springfield, Vt. Fluid-regulating device	708,410	July 1	83	16	100	19
Hartness, James, Springfield, Vt. Back gearing for lathes	708,411	July 1	85	16 / 17 / 18	100	20
Hartwig, William G. (See Butcher and Hartwig.)						
Harvey, George W. (See Brewer and Harvey.)						
Harvie, William C. (See Potter and Harvie.)						
Haskell, Broderick, Saginaw, Mich. Car-truck	704,168	July 8	1549	333 / 334	100	235
Haskell, Broderick, Saginaw, Mich. Brake-beam	707,105	Aug. 19	2117	473	100	1553
Haskell, Charles S. (See Haskell, William E. and C. S.)						
Haskell, Henry L., Ludington, Mich. Dice-cup	709,633	Sept. 23	3165	706	100	2578
Haskell, Henry L., Ludington, Mich. Game-board	709,634	Sept. 23	3166	706	100	2578
Haskell, Henry L., Ludington, Mich. Game-board	709,635	Sept. 23	3168	707	100	2578
Haskell, William E. and C. S., Philadelphia, Pa. Organ	708,705	Sept. 9	1391	318	100	2377

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Haskins, Caryl D., Schenectady, N. Y., assignor to General Electric Company. Electric meter	706,555	Aug. 12	1086	240	100	1350
Haskins, Caryl D., Schenectady, N. Y., assignor to General Electric Company. Automatic circuit-breaker	710,056	Sept. 30	3994	901	100	2963
Haskins, Elbert O., Rutherford, N. J. Sectional heating-boiler	707,229	Aug. 19	2350	527	100	1634
Haskins, James H., assignor of one-half to McCormick Harvesting Machine Company, Chicago, Ill. Feed mechanism for blank-threading machines	708,140	Sept. 2	284	63, 64	100	2036
Haskins, Robert B., Cincinnati, Ohio. Apparatus for the manufacture of molders' chaplets	709,541	Sept. 23	3011	671	100	2647
Hasselius, Peter, Chicago, Ill. Potato-digger	703,787	July 1	653	145	100	181
Hassett, Frank C., Kelsoe, Wash. Horn-stand	706,176	Aug. 5	340	73	100	1186
Hassum, Nils O., Jersey City, N. J. Hair-pin	703,412	July 1	86	18	100	20
Hastings, Clarence B. (See Hastings, John R. and C. B.)						
Hastings, John R. and C. B., Lampasas, Tex. Saddle	709,904	Sept. 30	3707	835	100	2902
Hastings, Samuel M., trustee. (See Hughes, Will J., assignor.)						
Hastings, Seth P., Wellington, assignor to G. D. Henderson, Cleveland, Ohio. Grinding device	704,324	July 8	1780	389	100	374
Hatch, Albert T., South Elgin, Ill. Table-server	705,237	July 22	3640	788	100	787
Hatch, Edward P., *et al.* (See Powell, Myron H., assignor.)						
Hatch, Edward P., Lagrange, assignor, by mesne assignments, to himself, Union Special Sewing Machine Company, Chicago, Ill., and M. H. Powell, Muskegon, Mich. Machine for inserting tape into edging	707,061	Aug. 12	2023	452	100	1547
Hatch, Tracy B., assignor to Submerged Electric Motor Company, Menomonie, Wis. Electrical machine	705,398	July 22	3642	788 789	100	787
Hatfield, Benjamin F., Dublin, Ind. Seed-cleaner and grain-separator	709,786	Sept. 23	3417	768	100	2729
Hatfield, Joseph M., Corning, Ohio. Torpedo-shell protector	710,333	Sept. 30	4500	1014	100	2971
Hatfield, William H., Wade, Ill. Hoisting and transporting device	709,905	Sept. 30	4705	886	100	2902
Hatfill, Andrew T., and G. B. Lee, Decorah, Idaho. Door-lock attachment	705,286	July 22	3639	788	100	787
Hathaway, Harlow D. (See Hayden and Hathaway.)						
Hathaway, William A. (See Rathbun, John O., assignor.)						
Hatton, Joseph E., Santo Domingo, Santo Domingo. Apparatus for defecating liquids	706,994	July 29	5011	1091	100	1074
Hauberg, Sophus C., Copenhagen, Denmark. Liquid-separator	705,669	July 29	4553	988	100	982
Haulbrook, Robert W., Maysville, Ga. Cultivator plow attachment	703,856	July 1	514	115	100	101
Hausfeld, Joseph E. (See Carter and Hausfeld.)						
Hauss, Augustus P., New Albany, Ind. Receiving and delivering apparatus for mail-bags	707,412	Aug. 19	2691	608	100	1704
Haussmann, Paul, Burg, near Magdeburg, Germany. Pulsometer	703,788	July 1	709	169	100	154
Havens, Joseph D. (See Irving, Junius B., assignor.)						
Haverfield, Joseph L. (See Paris, Steelman, and Haverfield.)						
Hawes, William W. (See Unser, John, assignor.)						
Hawkes, Albert K., Atlanta, Ga. Eyeglasses	708,141	Sept. 2	266	64	100	2007
Hawkes, John F., assignor of one-half to S. Blatt, Jersey City, N. J. Shoe-fastener	707,694	Aug. 26	3202	729	100	1839
Hawkins, Augustus L., assignor of one-half to J. M. Page, Georgetown, Tex. Harness	703,789	July 1	770	168	100	154
Hawkins, Gardner C., Boston, and H. L. Flint, Cambridge, Mass., assignors to Boston Electric Heating and Power Company, Portland, Me., and Boston, Mass. Electric fan	707,842	Aug 26	3600	813	100	1904
Hawks, Moses L., New York, N. Y. Can-opener	706,323	Aug. 12	1595	359	100	1460
Hawks, William, assignor to Chicago Solar Light Company, Chicago, Ill. Hydrocarbon-lamp	705,582	July 29	4394	953	100	950
Hawley Down Draft Furnace Company. (See Schwartz, Edward H., assignor.)						
Haworth, Lysander L., Decatur, Ill. Bump-board for wagon-boxes	706,822	Aug. 12	1594	358	100	1460
Haws, Isaac, Hannibal, N. Y. Mold for forming concrete troughs or other articles	710,391	Sept. 30	4618	1042	100	2995
Hawthorne, Thomas, London, Canada. Combined perforating, ring forming, and inserting machine	708,636	Sept. 9	1134	256 257 258	100	2223
Hay, James R. (See Carryl, Henry D., assignor.)						
Hay, Julia B., executrix. (See Hay, Robert.)						
Hay, Robert, deceased, Summit, N. J.; J. B. Hay, executrix. Bottle-neck	706,556	Aug. 12	1087	241	100	1351
Hay, William G. (See Musker and Hay.)						
Hay, William J., Oshkosh, Wis. Skirt facing and binding	704,068	July 8	1230	265	100	259
Haycox, Arthur J., Mansfield, Ohio. Electric signal	705,583	July 29	4395	953	100	950
Hayden-Corbett Chain Company. (See Bauermeister, William, assignor.)						
Hayden, Henry F., assignor of one-third to J. H. Jennings, Washington, D. C. Smoke-preventing furnace	704,325	July 8	1782	389	100	374
Hayden, Henry F., assignor of one-third to J. H. Jennings, Washington, D. C. Smoke-preventing furnace	704,326	July 8	1785	390	100	375
Hayden, Jefferson B., Abilene, Tex. Draft-equalizer	709,092	Sept. 16	2986	478	100	2440
Hayden, Samuel H., and H. D. Hathaway, Flint, Mich. Cross-bar for vehicle-shafts	704,460	July 8	2045	443	100	430
Hayden, Samuel R., assignor of two-thirds to A. L. Clark and C. W. Lake, Kansas City, Mo. Inserting-machine for newspapers	707,587	Aug. 26	3041	664	100	1793
Hayes, Christopher, Junee, New South Wales, Australia. Oscillating propeller	705,348	July 22	3600	844	100	888
Hayes, Edward, Wolverton, England. Construction of composite vessels	703,413	July 1	89	18	100	20
Hayes, Walter H., London, England. Velocipede or the like	708,809	Sept. 9	1459	341	100	2298
Hayes, William H., Flushing, N. Y. Forming and pressing machine	705,756	July 29	4718	1021	100	1013
Hays, James T., and J. W. Wilson, Garland, Tex. Rotary steam-engine	705,079	July 22	3676	710	100	713
Haysler, G. C. (See Kellogg, Albert A., assignor.)						
Hayward, Eugene, assignor of two-thirds to J. T. Lueder and J. B. Morris, Chicago, Ill. Means for utilizing compressed air	706,653	Aug. 12	1266	279	100	1389
Hayward, Walter, Palmerston, Canada. Bag-holder	704,251	July 8	1644	357	100	344
Hazard, Charles B., Xenia, Ohio. Straw-stacker	703,414	July 1	90	19	100	21
Hazledine, John, Philadelphia, Pa. Apparatus for extinguishing fire in oil-tanks or the like	705,925	July 29	5013	1091 1092	100	1074
Hazlehurst, Edward, Chicago, Ill. Spinning-top	708,706	Sept. 9	1393	319	100	2278
Head, William S., and G. J. Dovey, Latrobe, Pa. Carbureter	704,084	July 8	1231	265	100	260
Headley, Frederick H., St. Austell, England. Electric switch	710,270	Sept. 30	4408	993	100	2951
Heal, John G., Detroit, Mich. Automobile air-pump	706,051	Aug. 5	96	20, 21	100	1135
Heal, William E., assignor of one-half to J. H. Forrest, Marion, Ind. Manufacture of window and plate glass	710,357	Sept. 30	4555	1023	100	2963
Healy, William W. (See Stone and Healy.)						
Heany, John A., Philadelphia, Pa., assignor to Teter-Heany Developing Company, Charleston, W. Va., and Philadelphia, Pa. Electric switch or cut-out	707,843	Aug. 26	3603	813	100	1905
Heaphy, Thomas M., London, England. Means for testing thermostats	706,177	Aug. 5	341	73, 74	100	1185
Heath, James S. and L., and E. Baseman, assignors to Bickford and Huffman Company, Macedon, N. Y. Speed mechanism	710,271	Sept. 30	4409	994	100	2962
Heath, James S., and E. Baseman, assignors to Bickford and Huffman Company, Macedon, N. Y. Seeding-machine	710,272	Sept. 30	4411	994	100	2962
Heath, Lawrence. (See Heath and Baseman.)						
Heathfield, Richard, London, England. Galvanizing-machine	707,898	Aug. 19	2598	560	100	1069

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hebberd, Charles E., Brooklyn, N. Y. Construction of metallic-frame buildings	708,548	Sept. 9	984	222	100	2192
Heberle, Josef W. R. T., Sala, Sweden. Apparatus for separating magnetic and non-magnetic materials from one another	709,982	Sept. 30	3866	871	100	2636
Heck, Gustav, assignor of one-half to R. Mardian, Detroit, Mich. Vehicle-axle	704,827	July 8	1787	390	100	875
Heckel, Wilhelm, Biebrich, Germany. Clarinet	706,557	Aug. 12	1089	241	100	1351
Heckert, William, Findlay, assignor of one-half to H. W. Seney, Toledo, Ohio. Combined gas and steam engine	708,687	Sept. 9	1147	259 260	100	2225
Hedden, Hiram J., Whiteplains, assignor to A. B. Levy, New York, N. Y. Fluid-pressure brake system	705,259	July 22	3643	789	100	786
Hedley, Edward M., Depew, N. Y. Pneumatic track-sander	705,757	July 29	4719	1021	100	1014
Hedstrom, Carl O., Portland, Conn., assignor to G. M. Hendee, Springfield, Mass. Fuel or other reservoir for internal-combustion engines	707,922	Aug. 26	3753	841	100	1226
Hedstrom, Carl O., Portland, Conn., assignor to G. M. Hendee, Springfield, Mass. Chain-adjusting device for motor-vehicles	707,923	Aug. 26	3754	841 843	100	1226
Heffington, Calvin F. (See Reames and Heffington.)						
Heffley, William, Jackson Township, Lebanon county, assignor of one-half to H. B. Miller, Robesonia, Pa. Gage and butt-cutter for cigars	706,986	Aug. 12	1799	402	100	1501
Hehr, John G., Pittsburg, Pa., assignor of two-thirds to E. J. Vilsack and J. J. O'Reilly. Bottle-washing machine	703,415	July 1	92	19, 20	100	21
Heideger, Frank J., West Bridgewater, Pa. Sand-blast machine	708,880	Sept. 9	1638	377	100	2329
Heiliger, Fritz, Andernach, Germany. Thermophore	708,549	Sept. 9	986	223	100	2192
Heimann, Albert. (See Hollweg, Carl, assignor.)						
Heineke, Martin, assignor to Sattley Manufacturing Company, Springfield, Ill. Raddle for straw-carriers	705,528	July 22	4270	923	100	911
Heineman, Solomon E., assignor to Mers Capsule Company, Detroit, Mich. Counting-machine	707,062	Aug. 12	2026	453	100	1548
Heinemann, Adolf, Eberswalde, Germany. Extracting ellagic acid	706,411	Aug. 5	825	.....	100	1281
Heinicke, Hermann, Schoeneberg, near Berlin, Germany. Electric accumulator	704,744	July 15	2566	558	100	551
Heinsdorf, Ernst O. (See Colby and Heinsdorf.)						
Heinze, John O., Jr., Revere, Mass. Magnetic wheel	709,484	Sept. 23	2898	647	100	2634
Heinze, John O., Jr., Revere, Mass. Induction-coil	709,485	Sept. 23	2901	648	100	2635
Heissenberger, John, New York, N. Y. Punching-machine	708,959	July 1	1078	233	100	215
Helios Electricitaets-Aktiengesellschaft. (See Schwartz, Alfred, assignor.)						
Hellen, Samuel H. (See Moran, Stephen W., assignor.)						
Hellenkamp, Albert B., Cleveland, Ohio. Drum-stand	706,937	Aug. 12	1801	408	100	1502
Heller, Charles W., and E. A. Jones, Cass City, Mich. Folding crate	709,542	Sept. 23	3013	671	100	2647
Hellweg, Henry, Milwaukee, Wis. Metallic shoe-heel	708,581	July 1	386	84	100	72
Hellwig, Bernhard, Cincinnati, Ohio. Pop safety-valve	708,089	Sept. 2	83	19	100	1908
Helm, James A., assignor of one-half to A. C. Wagner, Newark, Ohio. Angle-cock	704,964	July 15	3049	655	100	651
Helmers, Ludwig O., assignor to Ichthyol-Gesellschaft Cordes, Hermanni & Co., Hamburg, Germany. Separating sulfonic acids	709,331	Sept. 16	2528	.....	100	2533
Heltner, Ole M. (See Tepfer and Heltner.)						
Hemingway, Joseph, Chicago, Ill., assignor of three-fourths to C. J. Rothermel, Spring-valley, Minn., and W. E. Rothermel, Chicago, Ill. Continuous process of coking coal	705,986	July 29	5017	1092 1093	100	1075
Hemleb, Martin. (See Diehl and Hemleb.)						
Hemleb, Martin, Elizabeth, N. J., assignor to Singer Manufacturing Company. Rotary take-up for sewing-machines	705,240	July 22	3645	789	100	786
Hemp, Lewis W., St. Louis, Mo. Heating-stove	709,673	Sept. 23	3033	723	100	2602
Hemp, Lewis W., St. Louis, Mo. Heating-stove	709,674	Sept. 23	3034	723	100	2602
Hemry, Sarah A., St. Joseph, Mo. Oven	704,328	July 8	1788	391	100	875
Hendee, George M. (See Hedstrom, Carl O., assignor.)						
Hendershott, Leroy J., Spokane, Wash. Hand-stamp	704,189	July 8	1550	334	100	825
Henderson, Albert E., Toronto, Canada. Thrust-bearing	705,839	July 29	4957	1054	100	1043
Henderson, Albert E., Toronto, Canada. Roller-bearing	708,475	Sept. 2	861	194	100	2154
Henderson, Albert E., assignor to Toronto Roller Bearing Company, Limited, Toronto, Canada. Roller-bearing	709,322	Sept. 16	2530	569	100	2531
Henderson, Albert E., assignor to Toronto Roller Bearing Company, Limited, Toronto, Canada. Roller-bearing	709,441	Sept. 16	2772	624	100	2584
Henderson, George D. (See Hastings, Seth P., assignor.)						
Henderson, George W. (See Zaepfel, George, assignor.)						
Henderson, Gustav, Woodside, N. Y. Painter's tool	705,349	July 22	3002	844	100	886
Henderson, Thomas M., Portsmouth, Va., assignor of two-thirds to C. P. Storrs, Wilmington, Del., and R. R. Hicks, Norfolk, Va. Train-pipe coupling	709,401	Sept. 16	2696	605	100	2585
Hendley, Frank W. (See Dones, Ella B., assignor.)						
Hendrick, Eli E., Carbondale, Pa. Bearing	706,988	Aug. 12	1804	408	100	1502
Hendryx, Andrew B., New Haven, Conn. Fishing-reel	705,758	July 29	4728	1022	100	1014
Henneberry, Ella T., and M. M. Gleeson, Deerlodge, Mont. Puttying-tool	708,709	Sept. 9	1283	293	100	2268
Hennebique, François, Paris, France. Ceiling structure composed of beton and iron	707,994	Aug. 26	3755	842	100	1987
Hennegin, Herbert H., assignor to International Motor Company, St. Louis, Mo. Combined driving-gear and brake for motor-vehicles	708,856	Sept. 2	651	147	100	2113
Hennessey, John J., Milwaukee, Wis. Door-hanger	705,080	July 22	3278	710 711	100	713
Hennessey, John J., Milwaukee, Wis. Bracket for sliding doors	705,081	July 22	3280	711	100	713
Hennessey, John J., Milwaukee, Wis. Friction draft-rigging for railway-cars	708,550	Sept. 9	987	228	100	2192
Henniger, Hugo, Frankfort-on-the-Main, Germany. Muffle-furnace for irons	704,694	July 15	2722	580	100	563
Henningsen, Jacob J., New York, N. Y. Means for closing casks	704,329	July 8	1790	391	100	876
Henry, Albert, Nebraska City, Nebr. Fence-post	704,695	July 8	1822	396	100	900
Henry, Alfred W., St. Louis, Mo. Truss-rod beam	706,654	Aug. 12	1967	280	100	1550
Henry, Curtis B., Akron, Ohio, assignor of one-half to G. H. Ellis and A. E. Baker. Checkrein	704,636	July 15	2364	514	100	509
Henry, Edward G., Powellville, assignor of one-half to B. J. Merrill, Carrollton, Ga. Combined seed-planter and fertilizer-distributer	709,575	Sept. 23	3068	683	100	2653
Henry, John C., deceased, Denver, Colo.; S. A. Henry, executrix, assignor to Stanley Electric Manufacturing Company. Electric controller	705,241	July 22	3647	790	100	788
Henry, John C., deceased, Denver, Colo.; S. A. Henry, executrix, assignor to Stanley Electric Manufacturing Company. Automobile	707,280	Aug. 19	2351	527	100	1684
Henry, John C., deceased, Denver, Colo.; S. A. Henry, executrix, assignor to Stanley Electric Manufacturing Company. Electric-railway system	707,844	Aug. 26	3604	813	100	1905
Henry, John C., deceased, Denver, Colo.; S. A. Henry, executrix, assignor to Stanley Electric Manufacturing Company. Controlling electric motors	708,960	Sept. 9	1786	412	100	2260
Henry, John C., deceased, Denver, Colo.; S. A. Henry, executrix, assignor to Stanley Electric Manufacturing Company. Controlling electric motors	708,961	Sept. 9	1790	412 413	100	2259
Henry, John C., deceased; S. A. Henry, Denver, Colo., executrix, assignor to Stanley Electric Manufacturing Company. Electric vehicle	708,962	Sept. 9	1792	413	100	2260
Henry, Joseph L., *et al.* (See Bryant, John M., assignor.)						
Henry Likly & Company. (See Cannan, John J., assignor.)						
Henry, Samuel R., Washington, D. C. Fire-ladder	708,040	Sept. 2	84	19	100	1998

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Henry, Susie A., executrix. (See Henry, John C.)						
Henry, William P., Central City, Ky. Tobacco-hoister	706,059	Aug. 5	98	21	100	1137
Hensel, Colladay Company. (See Kirberg, Jakob E., assignor.)						
Henson, Henry T., Attica, Kans. Pump	705,670	July 29	4554	969	100	982
Hepburn, William S., and A. G. Morrison, St. Louis, Mo. Adjustable chain-heading for chain or rope curtains or valances	704,799	July 15	2660	577	100	571
Herbert, Frederick J. (See Shinn, Martin E., assignor.)						
Herbert, Frederick J. (See Shinn and Herbert.)						
Herbrand, Nicholaus, assignor of one-half to F. Paul, Coldspring, Minn. Attachment for harness	707,566	Aug. 26	3043	684	100	1794
Herbst, Carl W. (See Ortmann and Herbst.)						
Herd, Charles E., Middlesboro, Ky. Indicator for mail-boxes	708,990	July 1	1004	219	100	200
Herd, Frederick, Brooklyn, N. Y. Wire puzzle	705,759	July 29	4728	1062	100	1014
Hergenhan, John C., and C. C. Von der Abe, New York, N. Y. Device for utilizing wave-power	706,558	Aug. 12	1090	241	100	1351
Herman, Charles, Allegheny, Pa. Molding-machine	706,751	Aug. 12	1461	322	100	1431
Herman, John, Canon City, Col. Treating ores	707,107	Aug. 19	2123	.....	100	1585
Herman, Ludwig, Cleveland, Ohio. Crushing and pulverizing machine	706,655	Aug. 12	1959	280	100	1390
Herman, Reinhold, Crafton, Pa. Signal	704,800	July 15	2670	577 578	100	871
Herman, Reinhold, Crafton, Pa. Signal mechanism	705,584	July 29	4896	953 954	100	961
Hermann, Clara L., New York, N. Y. Lady's underskirt	706,285	Aug. 5	449	95	100	1208
Hermanson, Gustaf A., Chicago, assignor to J. Munton, Maywood, Ill. Automatic car-coupling	706,356	Aug. 5	449	95	100	1208
Hern, John, *et al.* (See Hern, Marshall B., assignor.)						
Hern, Maria, *et al.* (See Hern, Marshall B., assignor.)						
Hern, Marshall B., Birmingham, assignor to J. and M. Hern, Manchester, England. Tobacco-pipe	708,142	Sept. 2	969	64	100	2067
Herndon, Edward A., Lagrange, Ga. Extension-ladder and truck therefor	709,402	Sept. 16	2598	605	100	2568
Herndon, Jesse F., assignor of one-half to F. R. Hunter, Sebastian, Fla. Safety attachment for firearms	707,925	Aug. 26	3757	843	100	1987
Hérouit, Paul L. T., La Praz, assignor to Société Electro Metallurgique Francaise, Froges, Isère, France. Oscillating electric furnace	707,776	Aug. 26	3458	779	100	1878
Héroux, Edmond, Yamachiche, Canada. Window-sash	707,106	Aug. 19	2113	473	100	1584
Herr, Edwin M., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Brake-shoe adjuster	705,927	July 29	5080	1098	100	1075
Herrick, James A., Jenkintown, Pa. Gas-producer	705,840	July 29	4958	1055	100	1043
Herrick, James A., Philadelphia, Pa. Gas-producer	706,412	Aug. 5	827	180	100	1261
Herrick, James A., Philadelphia, Pa. Gas-producer	706,989	Aug. 12	1805	408	100	1502
Herring, Walter R., Edinburgh, Scotland. Mechanism for measuring coal to gas-retorts	706,940	Aug. 12	1807	404 405	100	1503
Herrmann, Charles P. (See Schmidt and Mueller, assignors.)						
Herschmann, Arthur, New York, N. Y. Differential gear for self-propelling vehicles	705,671	July 29	4586	969	100	982
Hershberger, Jonas S. (See Denison, Hugh W., assignor.)						
Herskovitz, Abraham L., *et al.* (See Walker, Milo S., assignor.)						
Herskovitz, Max, *et al.* (See Walker, Milo S., assignor.)						
Herskovitz, Max, Chicago, Ill. Support for incandescent mantles	705,249	July 22	3540	790	100	779
Hervey, Benjamin E., Ritzville, Wash. Boring and drilling machine	708,881	Sept. 9	1640	377	100	2329
Herz, Richard, assignor to L. Cassella & Co., Frankfort-on-the-Main, Germany. Blue sulfur dye and making same	709,151	Sept. 16	2182	.....	100	2461
Herzberg, Wilhelm, and O. Siebert, assignors to Actien Gesellschaft für Anilin Fabrikation, Berlin, Germany. Red azo dye	704,825	July 15	2723	.....	100	588
Herzberg, Wilhelm, and O. Siebert, assignors to Actien Gesellschaft für Anilin Fabrikation, Berlin, Germany. Red azo dye	704,826	July 15	2725	.....	100	588
Herzig, Eduard, Union Hill, N. J. Loose-reed motion for looms	710,128	Sept. 30	4265	968	100	2090
Herzog, Philip W. (See Schuldt, Henry J., assignor.)						
Hess, George H., Jr., Chicago, Ill. Apparatus for drying, cooling, or otherwise treating grain, &c	707,282	Aug. 19	2089	569 570	100	1670
Hess, Henry K., Philadelphia, Pa. Making plates for storage batteries and product thereof	704,252	July 8	1646	258	100	344
Hess, Henry K., Philadelphia, Pa. Steam-propelled vehicle	704,253	July 8	1647	258	100	345
Hess, Henry K., Philadelphia, Pa. Steam-propelled vehicle	704,254	July 8	1650	259	100	345
Hestand, Hardy, and A. R. Matthews, Dundee, Tex. Vehicle-axle	707,845	Aug. 26	3607	813	100	1906
Hesterhagen, August H., Jersey City, N. J. Hinge	708,767	Sept. 9	1296	319	100	2276
Hetherington, Sam, Reagan, Tex. Animal-trap	708,698	Sept. 9	1152	290	100	2236
Heuer, Engelina, *et al.* (See Davis, Charles L., assignor.)						
Heuer, William H., *et al.* (See Davis, Charles L., assignor.)						
Heuermann, William, Sedalia, Mo. Stove	705,998	July 29	5081	1094	100	1076
Heuring, Philip K. (See Tislow, Hovey H., assignor.)						
Heusner, George F. (See Cook, Edmond R., assignor.)						
Hewes, Fremont D., and F. J. Bittner, New York, N. Y. Adjustable window-shade holder	707,413	Aug. 19	2096	609	100	1705
Hewett, Ashley M., Chicago, Ill. Gas-burner	704,745	July 15	2566	552	100	551
Hewitt, Herbert H., Buffalo, N. Y. Journal-bearing	705,760	July 29	4795	1032 1033	100	1015
Hewlett, Edward M., Schenectady, N. Y., assignor to General Electric Company. Surface-contact electric railway	705,082	July 22	3281	711	100	718
Hewlett, Edward M., Schenectady, N. Y., assignor to General Electric Company. Electric transmission of power	706,539	Aug. 12	1091	243	100	1259
Hewlett, Edward M., Schenectady, assignor, by mesne assignments, to H. W. Leonard, Bronxville, N. Y. Circuit-breaker	708,710	Sept. 9	1284	286	100	2259
Hewson, Robert B., San Francisco, Cal. Steam-turbine	708,227	Sept. 2	629	98	100	2069
Heydrick, William H. H., Philadelphia, Pa. Lawn-mower	707,394	Aug. 19	2526	570	100	1671
Heyenga, Martin W., near Emden, Ill. Grain-elevating machine	709,012	Sept. 16	1900	428 429	100	2402
Heyl, Edwin A., Philadelphia, Pa. Horn for talking-machines	708,810	Sept. 9	1491	341	100	2299
Heylman, Edward M., assignor to Janesville Machine Company, Janesville, Wis. Seeding-machine	707,846	Aug. 26	3607	814	100	1905
Heylman, Edward M., assignor to Janesville Machine Company, Janesville, Wis. Corn-planter	708,979	Sept. 9	1520	491	100	2368
Heys, John J., assignor of one-half to M. V. Brennahan, Lynn, Mass. Leveling-machine	707,414	Aug. 19	2097	609 610	100	1705
Heysinger, Isaac W., Philadelphia, Pa. Means and appliances for the manufacture of covered strips of soft metal for electrical or other purposes	706,053	Aug. 5	99	21, 22	100	1137
Heysinger, Isaac W., Philadelphia, Pa. Tool for electricians	708,689	Sept. 9	1155	260	100	2220

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Hiatt, Bert L. (See Schooley, Frank W., assignor.)						
Hiatt, Edwin J., *et al.* (See Mann, George R., assignor.)						
Hibbard, Henry D., Plainfield, N. J., assignor to Hibbard-Rodman-Ely Safe Company, New York, N. Y. Safe or vault door	708,041	Sept. 2	86	20	100	1999
Hibbard-Rodman-Ely Safe Company. (See Hibbard, Henry D., assignor.)						
Hickey, John P., Washington, D. C. Beer-cooling apparatus	705,243	July 22	3650	790	100	799
Hickley, Phillip, *et al.* (See Cotton, Walter H., assignor.)						
Hickman, John D., Anderson, Ind. Trolley-pole	703,921	July 1	1004	218	100	200
Hickok, L. E. (See Wilcox, Frank E., assignor.)						
Hicks, George C., Jr., assignor to P. H. & F. M. Roots Company, Connersville, Ind. Flexible shaft-coupling	708,582	July 1	867	85	100	72
Hicks, George J., New York, N. Y. Chocolate coating or dipping machine	707,777	Aug. 26	3459	779, 780, 781	100	1878
Hicks, John B., Detroit, Mich. Sparking igniter for explosive-engines	708,042	Sept. 2	88	20	100	1999
Hicks, John T., Boston, Mass. Sliding-door fastener	705,529	July 22	4271	994	100	913
Hicks, John T., Boston, Mass. Compartment-box for checks or the like	707,825	Aug. 19	2537	570	100	1678
Hicks, John T., Boston, Mass. Bottle-stopper	709,819	Sept. 23	3521	794	100	2762
Hicks, John T., Boston, Mass. Shipping-box	710,100	Sept. 30	4067	922	100	2881
Hicks, John T., Boston, Mass., assignor to Hotel Security Checking Company, Portland, Me.; Boston, Mass., and New York, N. Y. Combination-sideboard	708,043	Sept. 2	90	20	100	2000
Hicks, Richard R., *et al.* (See Fillingham, Joseph P., assignor.)						
Hicks, Robert R., *et al.* (See Henderson, Thomas M., assignor.)						
Hien, Phillip, Chicago, Ill. Car-coupling	707,108	Aug. 19	2125	474	100	1585
Higbe, James M., Manson, Iowa. Seed-planter	709,442	Sept. 16	2774	624	100	2585
Higbee, Edwin W., Northampton, Mass. Apparatus for heating water	704,280	July 8	1791	391	100	876
Higginbotham, Charles T., assignor to Illinois Watch Company, Springfield, Ill. Stem-winding watch	705,656	Aug. 12	1972	281	100	1300
Higgins, Clara J., Wanatah, Ind. Bandage	709,767	Sept. 23	3420	766	100	2729
Higgins, Eugene W., Cortland, N. Y. Hat-hook	704,587	July 15	3797	589	100	583
Higgins, James F., Corsicana, Tex. Hydrocarbon-burner	705,580	July 22	4272	994	100	913
Higgins, William H., Boston, Mass. Fender for boats	708,476	Sept. 2	858	195	100	2154
Higgons, John A. (See Tyson, Frank, assignor.)						
Higham, Howard H., Philadelphia, Pa. Cellular packing structure	707,415	Aug. 19	2701	611	100	1706
Hilbert, Charles, Cincinnati, Ohio. Ice-breaker	704,801	July 15	3676	578	100	572
Hild, Frederic W., and S. B. Stewart, Jr., Schenectady, N. Y., assignors to General Electric Company. Electric railway	705,083	July 22	3983	712	100	714
Hildebrand, Albert, Hutchins, Iowa. Traction-engine tender	706,560	Aug. 12	1095	242	100	1358
Hildebrandt, John J., Logansport, Ind. Trolling-bait	706,941	Aug. 12	1808	405	100	1508
Hilder, Jacob, New York, N. Y. Button	708,711	Sept. 9	1288	294	100	2254
Hilker, Charles F. (See Isler, Herman R., assignor.)						
Hill, Albert J., Twickenham, England. Manufacturing improved cellulose fabrics	705,944	July 22	3651	.....	100	789
Hill, Christian C., Chicago, Ill. Condensing or cooling apparatus	708,712	Sept. 9	1290	294	100	2254
Hill, Edgar, Philadelphia, Pa. Measuring device	709,600	Sept. 23	3111	698	100	2668
Hill, George S., Haverhill, Mass., assignor, by mesne assignments, to Singer Manufacturing Company. Cutting attachment for sewing-machines	708,960	July 1	1080	233, 234	100	315
Hill, Robert S., Detroit, Mich. Conveyer	704,540	July 15	2215	479	100	479
Hill, Terelius A., Maryville, Tenn. Gate	709,543	Sept. 23	3014	671	100	2647
Hill, Terelius A., Maryville, Tenn., assignor of one-half to V. B. McClung. Gate	706,413	Aug. 5	828	180, 181	100	1281
Hill, William T., *et al.* (See Evans, William, assignor.)						
Hill, W. I. (See Miller, Martin L., assignor.)						
Hill, Wesley W. C., Martinsville, Ill. Fence-builder and hay-derrick	708,551	Sept. 9	989	223, 224	100	2198
Hilleary, Ridgely B., and C. Bradford, Indianapolis, Ind. Pneumatic elevator and weigher	706,054	Aug. 5	108	22	100	1126
Hillery, John, assignor of one-third to J. R. Enness, Colchester, Ill. Check-row corn-planter	709,408	Sept. 16	2700	606	100	2569
Hillstrom, Jacob E., Michigan City, Ind. Saw-setting machine	709,013	Sept. 16	1916	440	100	2408
Hilsinger, Adin W. (See Hilsinger, Alburtis C. and A. W.)						
Hilsinger, Alburtis C., New York, N. Y., and A. W. Hilsinger, Orange, N. J., assignors to C. A. Stevens, New York, N. Y. Pulverizer	708,640	Sept. 9	1156	260, 261, 262, 263	100	2227
Hilt, Wilmer, Coles, Cal., and C. E. Lane, Ashland, Oreg. Extracting precious metals	707,926	Aug. 26	3757	843	100	1987
Himmel, Solomon, Baltimore, Md. Show-case	709,700	Sept. 23	3395	789	100	2705
Himoff, Max, New York, N. Y. Tobacco-cutting machine	707,778	Aug. 26	3465	781	100	1879
Hindley, Edward, S. Walker, and M. Rose, Stockport, England. Apparatus for dyeing, &c.	706,657	Aug. 12	1276	281	100	1301
Hine, Henry C., New Britain, Conn. Suspenders or other garment-supporter	708,888	Sept. 9	1641	378	100	2330
Hine, Henry C., New Britain, Conn. Garment-supporter	708,968	Sept. 9	1796	413	100	2360
Hinman, Charles E., assignor of one-half to W. C. McPherson, Council Bluffs, Iowa. Milk pasteurizer and sterilizer	705,245	July 22	3653	790	100	789
Hinman, Edward P., North Andover, Mass. Rolling-hoop	708,143	Sept. 2	270	64	100	2087
Hinson, James A., Chicago, Ill. Draft-rigging for cars	704,802	July 15	3678	578, 579	100	572
Hinson, James A., Chicago, Ill. Draft-rigging for railway-car couplings	709,404	Sept. 16	2704	607	100	2569
Hipolito, Espiridion, Los Angeles, Cal. Window-screen	709,405	Sept. 16	2709	607	100	2570
Hiram Maxim Lamp Company. (See Livet, Ernest A., assignor.)						
Hirsch, John G., Milwaukee, Wis. Shadowgraph	708,416	July 1	98	20	100	21
Hirst, Franklin G., Philadelphia, Pa. Temple-attaching device	707,109	Aug. 19	2127	474	100	1586
Hirt, Ludwig, assignor to Maschinenfabrik Grevenbroich, vormals Langen & Hundhausen, Grevenbroich, Germany. Device for packing sliding gate-valves	708,568	July 1	208	85	100	72
Hitchcock, William F., Rochester, N. Y. Brake for vehicles	706,894	Aug. 12	1596	359	100	1460
Hitchon, Alfred, Accrington, England. Ring spinning and twisting frame	706,414	Aug. 5	828	161, 162	100	1280
Hitchon, Alfred, Clayton-le-Dale, England. Driving-gear for automobiles	706,415	Aug. 5	835	162, 163	100	1280
Hitt, Addison W., assignor of one-half to C. E. Naylor, San Francisco, Cal. Ship's berth	704,878	July 15	3815	609	100	608
Hoadley, Joseph H., assignor to Pneumatic Carriage Company, New York, N. Y. Motor-vehicle	707,695	Aug. 26	3263	730	100	1889
Hoag, C. E., *et al.* (See Smith, Thomas, assignor.)						
Hoag, Frank G., Battlecreek, Mich. Cultivator	706,262	Aug. 12	1810	405	100	1508
Hoard, Benjamin F., New York, N. Y. Manifolding-tablet	707,511	Aug. 19	2350	649	100	1740
Hobart, Caleb E. P., Meriden, Iowa. Mail-catcher	707,690	Aug. 26	3264	730	100	1889
Hobart, Henry M., Berlin, Germany, assignor to General Electric Company. Time-limit circuit-breaker	706,065	Aug. 5	104	22	100	1128

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Hobbs, Clarence W., Worcester, Mass. Adjustable receiving-table for scoring-machines.	705,098	July 29	5139	1121	100	1101
Hochspeier, William F., assignor of one-half to J. H. and L. H. Greif, Jersey City, N. J. Drafting device	709,219	Sept. 16	2895	597	100	2490
Hock, William R., assignor of one-half to A. Hohl, Catasauqua, Pa. Game apparatus	706,658	Aug. 12	1277	281	100	1291
Hodge, Charles S., Chinook, Mont. Harvester-frame	708,708	July 1	608	135	100	120
Hodge, John W. K., assignor of one-fourth to E. E. Bahr, Blair Station, Pa. Rotary steam-engine	709,223	Sept. 16	2582	569 570	100	2534
Hodge, Leonard M., *et al.* (See Stewart, Washington H., assignor.)						
Hodge, Mary A., administratrix. (See Stewart, Washington H.)						
Hodgens, David E., San Francisco, Cal. Gas-governor	708,883	Sept. 9	1645	878	100	2331
Hodges, Addison S., Everett, Mass. Flask for making seamless sash-weights	709,768	Sept. 23	3431	769	100	2730
Hodges, Frederick F., Battlecreek, Mich. Adjustable clamp-buckle and combination	706,584	July 1	369	85	100	73
Hodges, Henry C., and G. A. Blume, Detroit, Mich.; said Blume assignor to said Hodges. Car construction	704,965	July 15	3051	655 656	100	653
Hodgetts, Harold W., New Haven, assignor of one-half to W. J. Hodgetts, Wallingford, Conn. Pneumatic-tire valve	706,944	Aug. 12	1813	405	100	1504
Hodgetts, William J. (See Hodgetts, Harold W., assignor.)	704,461	July 8	2046	443	100	490
Hodgins, John T., St. Louis, Mo. Car-fender	710,148	Sept. 30	4186	942	100	2908
Hodgkinson, Francis, Wilkinsburg, Pa., assignor to Westinghouse Machine Company. Balancing-machine	706,943	Aug. 12	1812	406	100	1504
Hodgson, Alvin, South Ottumwa, Iowa. Derrick	704,637	July 15	2865	514	100	509
Hodgson, Herbert E., assignor of one-half to W. W. Old, Norfolk, Va., executor of H. D. Van Wyck, deceased. Rotary engine	704,638	July 15	2869	514	100	510
Hodgson, Herbert E., assignor of one-half to W. W. Old, Norfolk, Va., executor of H. D. Van Wyck, deceased. Rotary engine	704,258	July 8	1668	363	100	350
Hodgson, John G., Maywood, assignor to Automatic Vacuum Canning Company, Chicago, Ill. Canning food products	704,700	July 15	2473	534	100	533
Hodgson, John G., Maywood, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J. Can-body-forming machine	704,253	July 8	1653	359 360	100	346
Hodgson, John G., and H. N. Norton, Maywood, Ill., assignors, by mesne assignments, to American Can Company, Jersey City, N. J. Can ending or heading machine	704,255	July 8	1658	360 361 362	100	347
Hodgson, John G., Maywood, Ill., and J. C. Taliaferro, Baltimore, Md., assignors, by mesne assignments, to American Can Company, Jersey City, N. J. Automatic side-seam-soldering machine for sheet-metal cans	704,257	July 8	1665	362 363	100	349
Hodgson, John G., Maywood, Ill., and J. C. Taliaferro, Baltimore, Md., assignors, by mesne assignments, to American Can Company, Jersey City, N. J. Can-soldering machine						
Hoe and Company, R. (See North, Thomas M., assignor.)						
Hoe and Company, R. (See Spalckhaver, William, assignor.)						
Hoe & Company, R. (See Tucker, Edwin D., assignor.)						
Hoe, Robert. (See Read, George F., assignor.)						
Hoe, Robert. (See Spalckhaver, William, assignor.)						
Hoe, Robert. (See White, Joseph, assignor.)						
Hoefli, Henry, St. Louis, Mo. Stove	710,103	Sept. 30	4066	903	100	2990
Hoepfner, Carl, deceased, Frankfort-on-the-Main, Germany; H. Orth, Jr., administrator. Separating alkali-metal sulfates from mixed solutions	704,096	July 8	1334	.....	100	260
Hoepfner, Carl, deceased, Frankfort-on-the-Main, Germany; H. Orth, Jr., administrator. Leaching and extraction of metals from their ores	704,639	July 15	2373	.....	100	511
Hoepfner, Carl, deceased, Frankfort-on-the-Main, Germany; H. Orth, Jr., administrator. Extracting copper and nickel from sulfid compounds	704,640	July 15	2374	.....	100	511
Hoepfner, Carl, deceased, Frankfort-on-the-Main, Germany; H. Orth, Jr., administrator. Extracting zinc or other metals from their ores	704,641 709,769	July 15 Sept. 23	2376 3424	 769	100 100	512 2730
Hoepner, Albert O., Sandwich, Ill. Harrow draw-bar	707,512	Aug. 19	2362	649	100	1740
Hoerichs, Edward, assignor of two-thirds to T. A. Bryan and C. H. Boone, Baltimore, Md. Non-refillable bottle	704,388	July 15	2727	590	100	588
Hoerning, Robert, Brooklyn, N. Y. Bottle-washing brush	709,636	Sept. 23	2902	648	100	2085
Hoerr, Louis A., St. Louis, Mo. Grain-door for cars	706,178	Aug. 5	344	74	100	1157
Hoey, John, San Francisco, Cal. Extension bed-couch	708,885	July 1	371	86	100	73
Hofe, Julius vom, Brooklyn, N. Y. Fishing-reel	707,231	Aug. 19	2352	.....	100	1684
Hoffman Edward J., assignor of one-half to C. W. Adams, Chicago, Ill. Manufacturing artificial fuel	707,127	Aug. 26	3758	843	100	1987
Hoffman, George. Fontanet, Ind. Loading device for locomotives	708,228	Sept. 2	430	96	100	2069
Hoffman, Louis E. (See Raymond, Charles M., assignor.)	708,922	July 1	1005	219	100	800
Hoffmann, Ernst G., Chelmsford, England. Back-pedaling brake	704,842	July 15	2378	515	100	512
Hoffmann, Hermann H., Chicago, Ill. Loose-leaf-ledger binder	704,938	July 15	2439	527	100	585
Hoffmann, Oswald, Neugersdorf, Germany. Shaking-strap for looms						
Hoffmann, Otto, Withington, England. Automatic fire-extinguisher						
Hofmann, Adam, Munich, Germany, assignor to I. Friedinger, Oberthal, near Lintz, Austria-Hungary. Wall-nail	708,704	July 1	600	135	100	120
Hofmann, Fritz, and J. Callsen, Elberfeld, Germany, assignors to Farbenfabriken of Elberfeld Co., New York, N. Y. Glycolic menthyl ester	707,110	Aug. 19	2129	.....	100	1586
Hogan, James T., Jersey City, N. J., assignor to National Machine Company. Button-hole-sewing machine	710,149	Sept. 30	4188	943 944	100	2908
Hogan, James T., Jersey City, N. J., assignor to National Machine Company, New York, N. Y. Sewing-machine	710,150	Sept. 30	4198	944 945	100	2904
Högfeldt, Richard. (See Jagenberg and Högfeldt.)	704,303	July 15	2381	579	100	573
Hogrebe, Arthur E., Philadelphia, Pa. Electric controller						
Hohl, August (See Hock, William R., assignor.)						
Holbert, Nathan. (See Quasebarth, Gustav C., assignor.)						
Holden, Artemis F. (See Diggins, William T. S., assignor.)						
Holden, Edward, *et al.* (See Lones, Joseph, assignor.)	708,307	Sept. 9	658	147	100	2113
Holden, Elbridge G., Philadelphia, Pa. Window-screen						
Holden, John F. (See Thurston and Holden.)						
Holden, Jonas H. (See Warren and Holden.)						
Holdsombeck, Enoch W., Lawley, Ala. Cane-stripper	708,417	July 1	96	20	100	22
Holland, Adolf, Magdeburg, Germany. Centrifugal machine	708,738	July 1	685	145	100	131
Holland, John, Cincinnati, Ohio. Fountain-pen	708,418	July 1	96	21	100	98
Holland, John P., Newark, N. J. Submarine boat	708,561	Aug. 12	1094	242	100	1292
Holland, John P., Newark, N. J. Submarine boat	708,558	Sept. 9	994	224 225	100	2194
Holland, John P., Newark, N. J., assignor to Electric Boat Company. Submarine or other gun	708,559	Sept. 9	999	224	100	2195
Holland, Thomas. (See Pratt, Cyrus C., assignor.)	706,056	Aug. 5	105	22	100	1155
Holland, Willie W., Bremond, Tex. Bottle	706,057	Aug. 5	105	22	100	1156
Hollem, John A., Sioux City, Iowa. Folding box or case	708,782	Aug. 12	1405	323	100	1492
Holliday, Thomas, Chicago, Ill. Reversing-gear	708,811	Sept. 9	1402	342	100	2209
Hollingsworth, Merrill W., Philadelphia, Pa. Machine for forcibly casting dental bridges						

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Hollingsworth, William T. P. (See Barlet, Frédéric, assignor.)						
Hollopeter, Russell, Fostoria, Ohio. Elevating and dumping apparatus	706,144	Sept. 2	271	65	100	2037
Holloway, William C., Westminster, England. Motor-car	705,402	July 22	3089	864	100	856
Hollweg, Carl, Magdeburg-Sudenburg, assignor to A. Heimann, Berlin, Germany. Pessary	709,675	Sept. 23	3855	728	100	2098
Holmes, Daniel M., Arlington, N. J., assignor to C. S. Fowler and L. A. Rockwell, New York, N. Y. Starch-printer	707,589	Aug. 26	3044	695	100	1794
Holmes, Daniel M., Arlington, N. J., assignor to C. S. Fowler and L. A. Rockwell, New York, N. Y. Double-stroke depositor	707,590	Aug. 26	3045	695	100	1794
Holmes, Enoch T., assignor of one-third to J. C. Brocklebank, Chicago, Ill. Treating fibrous substances	704,259	July 8	1670	363	100	850
Holmes, Horace W., Kingsland, Ark. Well-bucket	706,923	July 1	1008	219	100	901
Holmes, John A., Salt Lake City, Utah, and J. F. Wood, Denver, Colo. Concentrator	709,770	Sept. 23	3495	769, 770, 771	100	2780
Holmes, William, Parkersburg, W. Va. Pipe-wrench	706,758	Aug. 12	1467	823	100	1432
Holmes, Willis P., *et al.* (See Stewart, Washington H., assignor.)						
Holmström, Carl, Glasgow, Scotland. Breech block and chamber for ordnance	705,841	July 29	4990	1055	100	1043
Holmström, Carl, Glasgow, Scotland. Breech mechanism for ordnance	708,894	Sept. 9	1647	878, 879	100	2331
Holmstrom, Patrick, Hancock, assignor of one-half to W. R. Craig, St. Paul, Minn. Wagon-pole cap	706,754	Aug. 12	1467	823	100	1432
Holmstrom, Thure, assignor of one-half to L. Thorstenson, Starbuck, Minn. Power-hammer	710,358	Sept. 30	4559	1035	100	2988
Holritz, Edward A., assignor of one-half to J. C. Bramwell, St. Paul, Minn. Copy-holder for type-writers	706,554	Sept. 9	995	225	100	2194
Hölscher, Hermann, Lengerich, Germany. Printing apparatus for use with machines for making paper bags	706,237	Aug. 5	452	95, 96, 97	100	1309
Holsclaw, Wilford H., Louisville, Ky., assignor to B. F. Avery & Sons. Attachment for plows	706,525	Aug. 12	1598	859, 860	100	1461
Holson, Albert B., Chicago, Ill. Electric motor	706,317	Aug. 5	630	138	100	1243
Holt, John. (See Brooks and Holt.)						
Holt, Oliver D., Braman, Okla. Ter. Link-motion block	706,984	July 1	1009	219	100	901
Holton, George J., assignor of one-half to G. W. Diehl, Ponca, Okla. Ter. Baby-jumper	708,641	Sept. 9	1158	263	100	2227
Holy, John, Canton, Ohio. Window-sash hinge	704,541	July 15	2216	480	100	479
Holzhauer, Frederick E., Detroit, Mich. Garbage-receptacle	709,968	Sept. 30	3969	871	100	2986
Holzhausen, George. (See Wetherman and Holzhausen.)						
Holzworth, Louis, Brooklyn, assignor to Eagle Pencil Company, New York, N. Y. Pencil and making same	705,984	Sept. 9	1798	413	100	2961
Homolka, Benno, and O. Liebknecht, Frankfort-on-the-Main, assignors to Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Making indoxyl, &c.	704,804	July 15	2661	.....	100	573
Hone, George J. (See Smith and Hone.)						
Honrath, Alexander, Reynolds, Ind. Ter. Mechanical toy	708,358	Sept. 2	655	147	100	2114
Honrath, Alexander, Kiowa, Ind. Ter. Puncture-proof inflatable wheel	709,394	Sept. 16	2534	570, 571	100	2534
Honstain, George T. (See Cooley, Fred W., assignor.)						
Hoods, Henry A. (See Paige and Hoods.)						
Hoofnagle, William T. (See Mergenthaler and Hoofnagle.)						
Hook, Alonso L., assignor of two-thirds to J. R. Hutton, R. K. Long, and R. L. Plunkett, Coffeyville, Kans. Grain-car door	709,235	Sept. 16	2537	571	100	2535
Hooker, Charles L. F. and M. C., Boca, Cal. Separable square	705,408	July 22	3090	864	100	857
Hooker, Martin C. (See Hooker, Charles L. F. and M. C.)						
Hooper, Beekman D., Jamaica, N. Y. Aerating-agitator	708,239	Sept. 2	433	90	100	2070
Hooper, Frank B. (See Taylor, Isaiah H., assignor.)						
Hooper, John C., assignor to Economy Locomotive Sander Company, Baltimore, Md. Locomotive sanding device	704,057	July 8	1235	266	100	280
Hooton, James E., *et al.* (See Patrick, William P., assignor.)						
Hoover, Claude V., Chattanooga, Tenn. Whiffletree-hook	707,779	Aug. 26	3466	781	100	1879
Hoover & Gamble Company. (See Myers, Richard A., assignor.)						
Hoover, Horace M., Perrysburg, Ohio. Machine for producing wood fiber	709,576	Sept. 23	3070	663	100	2059
Hoover, Joseph J. (See Murray and Hoover.)						
Hoover, Leonard C., Clearrun, Ky. Wire fence	706,562	Aug. 12	1095	243	100	1353
Hope, John T., Kansas City, Mo. Fan-case for blast-fans	704,038	July 8	1237	266	100	261
Hope, John T., Kansas City, Mo. Pneumatic dust-collector and sweeper	705,585	July 29	4398	954	100	951
Hopkins, Charles M., Union City, and E. H. Dorn, Spartansburg, Pa. Milk-can	705,404	July 22	3091	864	100	857
Hopkins, Clarence F., New York, N. Y., assignor to Elliott & Hatch Book Typewriter Company. Type-writing machine	709,906	Sept. 30	3709	826, 827	100	2802
Hopkins, Evan H., South Kensington, England. Obtaining zinc	708,044	Sept. 2	92	21	100	2000
Hopkins, George W., Cleveland, assignor to Terry Heater Company, Cincinnati, Ohio. Compressed-air-heating apparatus	707,111	Aug. 19	2180	474	100	1586
Hopkins, John H., Punxsutawney, Pa. Pile-driver	705,586	July 29	4402	954	100	952
Hopkins, William W., St. Louis, assignor of one-half to W. P. H. Turner, Normandy, Mo. Emergency-brake	708,477	Sept. 2	854	195	100	2154
Hopkins, William W., St. Louis, assignor of one-half to W. P. H. Turner, Normandy, Mo. Emergency-brake	708,826	Sept. 9	1649	879	100	2331
Hoppe, Paul, Berlin, assignor to Norddeutscher Lloyd, Bremen, Germany. Means for operating bulkhead-doors	706,471	Aug. 5	944	206	100	1306
Hoppes, John J., Springfield, Ohio. Steam-boiler	706,563	Aug. 12	1096	243	100	1353
Horack, Charles L., assignor to R. M. Williams, New York, N. Y. Cycle	706,068	Aug. 5	107	23, 24	100	1139
Hordish, Katie, Danville, Va. Nut-cracker	706,179	Aug. 5	847	74	100	1187
Horizontal Swing Co. (See Olson, Olof E., assignor.)						
Hormby, John, Woonsocket, R. I. Stenciling-machine for buttons	705,084	July 22	3288	713, 714	100	715
Hormby, John, Woonsocket, R. I. Stencil-carrier for button-stenciling machines	705,085	July 22	3288	714, 715	100	716
Hormby, John, Woonsocket, R. I. Pigment-spraying mechanism for button-stenciling machines	705,086	July 22	3295	716, 717	100	716
Hormby, John, Woonsocket, R. I. Grip-carrier for button-making machines	707,286	Aug. 19	2539	571	100	1573
Hormby, John, Woonsocket, R. I. Locking device for work-carriers	707,287	Aug. 19	2541	571	100	1573
Hormby, John, Woonsocket, R. I. Segmental gear for button-making machines	707,288	Aug. 19	2543	572, 573	100	1573
Hormby, John, Woonsocket, R. I. Button-feeding mechanism	707,289	Aug. 19	2544	573	100	1573
Hormby, John, Woonsocket, R. I. Spindle adjustment for button-making machines	707,290	Aug. 19	2546	573, 574	100	1573
Hormby, John, Woonsocket, R. I. Button-polishing machine	706,765	Sept. 9	1595	819, 820	100	2278

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Horn, Ferdinand, Coshocton, Ohio. Coal-pick	704,039	July 8	1239	266	100	251
Horn, Joseph, Philadelphia, Pa. Attachment for plumbers' pumps	703,657	July 1	515	115 116	100	101
Hornbrook, Raymond H., Canton, Ohio. Feed-water heater	704,679	July 15	2818	609	100	608
Hornbrook, Raymond H., Philadelphia, Pa., and W. H. Woodcock, Canton, Ohio. Metallic railway-car	707,416	Aug. 19	2702	611 612	100	1705
Hornbrook, Raymond H., and W. H. Woodcock, Canton, Ohio. Street-car truck	709,606	Sept. 16	2710	607	100	2571
Horne, James. (See Dawson and Horne.)						
Horne, Thomas F., Denver, Colo. Locking-brace for buggy-tops	710,278	Sept. 30	4413	994 995	100	2953
Horner, Albert. Paauilo, Hawaii. Cultivating-plow	709,901	Sept. 23	3113	608	100	2058
Horning, John O. (See Carrell, Wilber A., assignor.)						
Horr, George E., Norway Lake, Me. Cattle-stall	704,843	July 15	2378	515	100	512
Horrocks, James, Manchester, England. Mechanism for converting motion	707,112	Aug. 19	2181	475	100	1586
Horsfield, John, Chicago, Ill. Window-opener	705,605	July 22	3998	865	100	857
Horsfield, John, Chicago, Ill. Window	705,999	July 29	5141	1121	100	1101
Horsley, James, assignor of one-half to J. B. Gregory, Glade Mills, Pa. Coupling for connecting-rods	703,925	July 1	1010	220	100	201
Horter, Hiram, Jr. (See Fleming, Joseph W., assignor.)						
Horton, Everett, Bristol, Conn. Tire for wheels	710,974	Sept. 30	4414	996	100	2951
Horton, Peter D., assignor of two-thirds to J. M. Espencheid, Newark, N. Y. Toy air-gun	710,859	Sept. 30	4560	1028	100	2953
Horton, Robert O., *et al.* (See Hughes, Robert D., assignor.)						
Hosken, William F. (See House and Hosken.)						
Hotchkiss, Hiram G., Lyons, N. Y. Beet-harvester	706,416	Aug. 5	838	188	100	1283
Hotel Security Checking Company. (See Hicks, John T., assignor.)						
Houder, Martin L., Fort Wayne, Ind. Angle-cock for air-brake mechanism	706,059	Aug. 5	117	24	100	1141
Houdyshell, Aaron C., Tama Township, Iowa. Shock-loader	708,045	Sept. 2	93	21	100	2000
Hough, Franklin H., *et al.* (See Dunham, William L., assignor.)						
Hough, Samuel. (See Adams and Hough.)						
Houghtaling, Paul A., Riverton, N. J. Clutch. (Reissue)	12,030	Sept. 9	1887	423	100	2370
Houghtaling, Paul A., Riverton, N. J. Clutch	709,771	Sept. 23	3429	771 772	100	2721
Houghton, Charles E. (See Giorgio, Francis A., assignor.)						
Houlihan, John J., Chicago, Ill. Metal plinth-block	709,290	Sept. 16	2286	587	100	2490
Hour, Charles, Paris, France. Self-winding clock	708,886	Sept. 9	1651	379 380	100	2023
House, Henry A., Jr., Hampstead, England. Friction-brake	707,282	Aug. 19	2355	598	100	1685
House, Will A., and W. F. Hosken, Covington, Ky. Wheelbarrow	705,406	July 22	3994	865	100	858
House, William, Syracuse, N. Y. Car-brake	707,331	Aug. 19	2547	574	100	1674
Household Manufacturing Company. (See Bierley, Henry A., assignor.)						
Houseman, James D. (See Frederick, Edward P., assignor.)						
Houston, John, Sunderland, England. Means for driving shuttles of looms	703,419	July 1	97	21	100	22
Houtz, John W., Republic, Mo. Water-wheel	705,087	July 22	3999	717	100	717
Houze, Luc, Hartford City, Ind. Glass-tank	704,040	July 8	1240	267	100	201
Hovander, August S. (See Emerson and Hovander.)						
Hove, Ole, Elpaso, Wis. Engine valve-gear	705,088	July 22	3300	717 718	100	717
Hovey, John J., *et al.* (See Eberstein, John G., assignor.)						
How, William S., assignor of one-half to G. L. Johnson, London, England. Resonator or amplifier for phonographs	709,964	Sept. 30	3870	872	100	2826
Howard, Frank B., assignor to Lafin & Rand Powder Company, New York, N. Y. Apparatus for manufacturing closed vessels of pulp	708,642	Sept. 9	1160	263	100	2288
Howard, Frank B., assignor to Lafien & Rand Powder Company, New York, N. Y. Apparatus for the manufacture of closed vessels from pulp	710,101	Sept. 30	4089	923	100	2962
Howard, Frederick. (See Bentson, Hans J., assignor.) (Reissue.)						
Howard, Geoffrey, and G. Gibbs, Bedford, England. Mechanical stoker	704,880	July 15	2220	510	100	606
Howard, George E., Washington, D. C. Label-affixing device	707,780	Aug. 26	3467	781	100	1880
Howard, George E., Washington, D. C. Label-affixer	707,781	Aug. 26	3468	782	100	1880
Howard, George E., Washington, D. C. Label-holder	707,782	Aug. 26	3470	782	100	1880
Howard, George E., Washington, D. C. Label	709,396	Sept. 16	2589	571	100	2535
Howard, Henry G. M., Kalamazoo, Mich. Elastic steel spoke for vehicle-wheels	706,659	Aug. 12	1278	288	100	1702
Howard, James H., assignor of one-third to H. G. Harris, Kansas City, Kans. Burglar-alarm	707,513	Aug. 19	2264	650	100	1741
Howard, Leonard D., St. Johnsbury, Vt. Drop-hammer	709,577	Sept. 23	3070	684	100	2560
Howard, Lincoln, Savannah, Mo. Heating-stove	704,381	July 8	1798	393	100	376
Howard, William H., Pueblo, Colo. Furnace-feeding apparatus	705,946	July 29	3954	791	100	790
Howarth, Fred A., Johnstown, assignor of one-half to H. L. Shaver, Cohoes, N. Y. Underground-trolley system	707,591	Aug. 26	3047	695 696	100	1794
Howe and Davidson Company. (See Carrier and Low, assignors.)						
Howe, Harry, *et al.* (See Kuehn, Paul, assignor.)						
Howe, Henry R., assignor of one-half to H. W. Carmichael, Rockford, Ill. Milk or cream deodorizer	709,093	Sept. 16	2267	478	100	2440
Howe, Henry R., assignor of one-half to H. W. Carmichael, Rockford, Ill. Deodorizing milk or cream	709,094	Sept. 16	2269	479	100	2441
Howe, James H., Buffalo, N. Y. Trousers-hanger	706,060	Aug. 5	119	24	100	1141
Howe, John B., Windber, Pa. Envelop	706,417	Aug. 5	841	417	100	1283
Howe, John C., assignor of eleven-twentieths to D. M. Moroney, J. Wohlfeld, J. M. Kaminsky, and I. Bachrach, Indianapolis, Ind. Machine for assembling links in making chain belts	705,842	July 29	4252	1056	100	1044
Howel, William R. (See White, Frank L., assignor.)						
Howell, Charles W., Jr., Newark, N. J. Type-writing machine	705,567	July 29	4408	955	100	952
Howell, Israel G., assignor of one-half to M. Di Puglia, Hopewell, N. J. Ice-sandal for flat horseshoes	707,417	Aug. 19	2704	612	100	1707
Howell, John, Schaller, Iowa. Manure-distributer	705,929	July 29	5023	1094	100	1076
Howell, Martin H., Melrose, Mass., assignor to New England Telephone and Telegraph Company. Composite electric circuit	706,316	Aug. 5	624	138	100	1244
Howell, Martin H., Melrose, Mass., assignor to New England Telephone and Telegraph Company. Telephone-circuit	706,319	Aug. 5	625	139	100	1244
Howenstein, Franklin. (See Grey, Sylvester P., assignor.)						
Howland, Matthew M., Providence, R. I. Pliers	707,418	Aug. 19	2705	612	100	1707
Hoy, Ermia L., assignor of one-half to C. Ridgway, Leroy, Iowa. Combined velocipede and wagon	704,041	July 8	1242	267	100	261
Hoyland, Fredrick, Jr. (See De May and Hoyland.)						
Hoyle, William H., and T. Barker, Bolton, England. Carding-machine	708,046	Sept. 2	95	22	100	2001
Hoyt, Arthur S., Brooklyn, N. Y. Adhesive	709,544	Sept. 23	3019	.....	100	2548
Hoyt, John C., Richmond, Mo. Stovepipe attachment	709,545	Sept. 23	3019	672	100	2548

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Hoyt, Will F., Dowagiac, Mich. Grain-drill	709,636	Sept. 23	3169	707	100	2679
Hoyt, Will F., and D. B. Saltsman, Dowagiac, Mich. Grain-drill	709,637	Sept. 23	3170	707	100	2679
Huard, Edward F., Springfield, Mo. Means for automatically closing swinging doors	706,945	Aug. 12	1815	406	100	1504
Hub Two Speed Gear Company. (See Pellant, Alfred, assignor.)						
Hubbard, Albert S., Greenwich, Conn. Electrical position-indicator	708,478	Sept. 2	856	195	100	2155
Hubbard, William W., Manchester, N. H. Elevator-operating mechanism	706,826	Aug. 12	1603	360	100	1462
Huber, Edward, Marion, Ohio. Compensating gearing	705,585	July 29	4409	955 956	100	953
Huber, Edward, Marion, Ohio. Riddle	706,061	Aug. 5	120	25	100	1142
Huber, Edward, Marion, Ohio. Friction-clutch	706,660	Aug. 12	1279	282	100	1362
Huber, Edward, Marion, and A. Milmine, Toledo, Ohio. Metal framework for buildings	704,829	July 15	2729	590	100	584
Huber, Edward, and J. W. Miller, Marion, Ohio. Pneumatic stacker	705,407	July 22	3995	865	100	858
Huber, John F., Rochester, assignor to L. T. Huber, Lockport, N. Y. Book for holding and filing sales-slips, &c	708,230	Sept. 2	435	99	100	2070
Huber, Lewis T. (See Huber, John F., assignor.)						
Huber, William E., *et al.* (See Haines, Jacques C., assignor.)						
Huberdeau, Thomas, Larimore, N. D. Rail-joint	704,190	July 8	1551	334	100	225
Hubert, Philip G., New York, N. Y. Solar heater	705,850	July 22	3903	845	100	889
Hucks, William, Jr., Camden Town, London, England. Apparatus for use in dispensing aerated liquids	709,407	Sept. 16	2711	606	100	2571
Huebner, Paul, Milwaukee, Wis. Sprinkler-head	709,907	Sept. 30	3711	837	100	2806
Huenefeld, Ernst H. (See Carter, John R., assignor.)						
Huenefeld, Ernst H. (See Carter and Hausfeld, assignors.)						
Huenefeld, Ernst H. (See Proes and Tucker, assignors.)						
Huff, Wilson S. (See Webb and Huff.)						
Huffman, Mary C., Boston, Mass. Skirt-retainer	704,042	July 8	1243	305	100	261
Huffmaster, Charles A., San Leandro, Cal. Variable-speed governor	707,697	Aug. 26	3266	780	100	1840
Hufft, B. (See Word, David C., assignor.)						
Hughes, Daniel E., Espy, Pa. Bevel	709,487	Sept. 23	2903	648	100	2635
Hughes, Frederic G. (See Hylard, John, assignor.)						
Hughes, George H., London, England. Cattle-food	707,113	Aug. 19	2132	.....	100	1567
Hughes, Harry N., Duquesne, Pa. Device for unloading coal-flats or the like	710,194	Sept. 30	4207	962	100	2920
Hughes, Robert D., Vermillion, assignor of two-thirds to R. O. Horton and C. P. Patteson, Lynchburg, Va. Nut-lock	704,332	July 8	1794	392	100	377
Hughes, Thomas W., assignor of two-thirds to L. N. Clayton and A. Bugbee, Trenton, N. J. Ash or garbage receptacle	705,672	July 29	4557	990	100	983
Hughes, Will J., St. Louis, Mo. Pump	705,351	July 22	3904	845	100	889
Hughes, Will J., St. Louis, Mo., assignor to S. M. Hastings, trustee, Chicago, Ill. Refrigerator-car	706,661	Aug. 12	1281	283	100	1892
Hughes, William S., Philadelphia, Pa., assignor to E. A. Willard, New York, N. Y. Smoke and spark preventing device	707,388	Aug. 19	2548	574	100	1674
Hughes, William W., Urbana, Ohio. Antifriction-cover for bicycle-saddles	707,592	Aug. 26	3049	686	100	1795
Hulett, George H., Cleveland, Ohio. Ore-bin	705,761	July 29	4727	1028	100	1015
Hull, Foster J. (See Dement and Hull.)						
Hull, Foster J., Brooklyn, N. Y., assignor, by mesne assignments, to American Mechanical Cashier Company. Check-covering device	710,860	Sept. 30	4561	1029	100	2983
Hull, James S. (See Smith and Hull.)						
Hulse, Edgar J., Washington, D. C. Skylight	707,419	Aug. 19	2707	611	100	1707
Hult, Carl A. and O. W., Stockholm, Sweden. Rotary motor	706,181	Aug. 5	351	75, 76	100	1188
Hult, Oscar W. (See Hult, Carl A. and O. W.)						
Hultgren, Johan P., assignor of one-half to F. H. Getzmann, Stockholm, Sweden. Centrifugal separator	708,643	Sept. 9	1161	264	100	2228
Hultman, Ivar, assignor of one-half to A. M. Johanson, Stockholm, Sweden. Calculating-machine	706,180	Aug. 5	347	75	100	1187
Hultquist, Carl E., Rockford, Ill. Cuff-holder	704,644	July 15	2379	515	100	513
Humiston, Dawson M., Tonica, Ill. Glazier's hammer	708,790	July 1	771	169	100	154
Humphrey, Alfred H., Kalamazoo, Mich. Igniter	705,678	July 29	4559	990	100	988
Humphrey, Alfred H., assignor to H. S. Humphrey, Kalamazoo, Mich. Heater	704,043	July 8	1244	268	100	902
Humphrey, Herbert A., Westminster, London, England. Apparatus for purifying gas	709,772	Sept. 23	3431	779	100	2731
Humphrey, Herbert S. (See Humphrey, Alfred H., assignor.)						
Humphreys, David C., trustee. (See Birmingham, John P., assignor.)						
Hungerford, Churchill, Philadelphia, Pa. Filter	707,388	Aug. 19	2551	575	100	1674
Hunkins, William S., Merriam Park, Minn. Garment-supporter	708,226	July 1	1011	220	100	908
Hunsaker, Oscar W., St. Louis, Mo. Cash-register	705,353	July 22	3908	846 847	100	840
Hunt, Charles, Belfast, Ireland. Life-preserver	710,275	Sept. 30	4416	995	100	2963
Hunt, Charles J., *et al.* (See Johnston, George W., assignor.)						
Hunt, Charles W., West New Brighton, N. Y. Vehicle	708,231	Sept. 2	437	99	100	2070
Hunt, Charles W., West New Brighton, N. Y. Hoisting apparatus	708,713	Sept. 9	1293	294	100	2255
Hunt, Charles W., West New Brighton, N. Y. Transmitting mechanism	709,265	Sept. 16	2490	548	100	2510
Hunt, Harry L., and W. E. Moon, Traverse City, Mich. Magazine fuse-box	706,022	Aug. 5	120	25	100	1142
Hunt, Helm, Ferris & Company. (See Ferris, Henry L., assignor.)						
Hunt, Joseph H. (See Case, Wilmer S., assignor.)						
Hunt, Tilman H., Albany, Mo. Dust-applicator	705,089	July 22	3903	718	100	717
Hunt, Wilfred, Bothwell, Scotland. Type-writer	709,152	Sept. 16	2151	500	100	2461
Hunter, Daniel J. (See McRorie and Hunter.)						
Hunter, David E., Cambridge, assignor to Library Bureau, Boston, Mass. Roller copying-press	705,352	July 22	3905	845 846	100	839
Hunter, David E., Cambridge, assignor to Library Bureau, Boston, Mass. Folio-holder	709,221	Sept. 16	2288	527 528	100	2490
Hunter, Frank R. (See Herndon, Jesse F., assignor.)						
Hunter, George G. (See Batcheller, Walter B., assignor.)						
Hunter, Hamilton, assignor of one-half to S. D. Rouse, Covington, Ky. Show-window construction	709,985	Sept. 30	3871	872	100	2837
Hunter, Robert L., Cleveland, Ohio. Cross-index	708,479	Sept. 2	858	196	100	2155
Hunter, Rudolph M., Philadelphia, Pa. Making electric accumulator-plates	708,490	July 1	98	21	100	92
Huntington, Charles S., Los Angeles, Cal. Lock	708,987	July 1	1015	230	100	908
Huntington, William S., New York, N. Y., assignor to Composite Board Company. Making artificial lumber	709,488	Sept. 23	2905	649	100	2905
Huntoon, Charles F., assignor to Chicago Railway Equipment Company, Chicago, Ill. Side bearing for railway-cars	704,044	July 8	1246	288 289	100	902
Hupfeld, Ludwig, Leipsic, Germany. Mechanism for effecting varying touch of key or musical instruments	706,946	Aug. 12	1817	406 407	100	1504
Hüppi, Johann, Rümlang, near Zurich, Switzerland. Lifting-jack	704,688	July 15	2440	527	100	586
Hurd, Frederick A., assignor to C. C. Bailey, Cookshire, Canada. Manufacture of cheese	707,698	Aug. 26	3268	.....	100	1840

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Name, residence, and invention	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hurlburt, Daniel N. (See Shore, Albert F., assignor.)						
Hurr, Arthur T. (See Foreman, David H., assignor.)						
Hurst, Charles, Philadelphia, Pa. Self-winding clock	704,333	July 8	1795	392	100	377
Hurst, Charles B., Chillecothe, Ohio. Stock-rack for platform-scales	708,586	July 1	372	86	100	74
Hurst, George E., Omaha, Nebr. Safety envelop-filler	709,564	Sept. 9	998	225	100	2195
Hussey Mower and Implement Company. (See Hussey, Ray W., assignor.)						
Hussey, Ray W., Pendleton, Ind. Grass or grain cutting machine	708,556	Sept. 9	997	226	100	2195
Hussey, Ray W., assignor to Hussey Mower and Implement Company, Dublin, Ind. Harvester	708,557	Sept. 9	999	226	100	2195
Hutchings, Charles E. (See Robertson and Hutchings.)						
Hutchings, Charles E., assignor to Rochester Optical and Camera Company, Rochester, N. Y. Camera	704,334	July 8	1797	392 393	100	377
Hutchings, Charles E., assignor to Rochester Optical and Camera Company, Rochester, N. Y. Photographic camera	704,335	July 8	1800	393	100	378
Hutchings, Charles E., J. A. Robertson, and A. Mutschler, assignors to Rochester Optical and Camera Company, Rochester, N. Y. Magazine-camera	705,402	July 22	3906	865 866	100	858
Hutchinson, Elias S., assignor of one-half to S. Ross, Washington, D. C. Laying tiles	703,988	July 1	1018	221	100	208
Hutchinson, William F., Boundbrook, N. J., assignor to Atlas Match Company, Mellenville, N. Y. Match-machine	709,226	Sept. 16	2422	549	100	2510
Hutchinson, William F., Boundbrook, N. J., assignor to Atlas Match Company, Mellenville, N. Y. Machine for boxing matches	709,267	Sept. 16	2425	549 550	100	2511
Hutchison Acoustic Company. (See Hutchison, Miller R., assignor.)						
Hutchison, Miller R., New York, N. Y., assignor, by mesne assignments, to Hutchison Acoustic Company. Charging-switch	707,599	Aug. 26	3269	730	100	1640
Huttou, James R., *et al.* (See Hook, Alonzo L., assignor.)						
Hutton, Noah M., Chicago, Ill. Sash-lock	706,947	Aug. 12	1818	407	100	1505
Hyatt, Frederick G., St. James, Minn. Washing-machine	708,588	Sept. 9	1000	227	100	2195
Hyatt, John W., Newark, N. J. Fabric-sewing machine	708,480	Sept. 2	859	196 197	100	2156
Hyde, Elwin R., Bridgeport, Conn. Apparatus for wetting emery-wheels	707,420	Aug. 19	2709	614	100	1708
Hyde, Hooper, Nashville, Tenn. Wire-stretching machine	705,843	July 29	4964	1057	100	1044
Hydén, Sven, and K. A. Simonsson, Stockholm, Sweden. Apparatus for cleaning the interior of hose or like pipes	704,045	July 8	1247	269	100	262
Hydraulic Car-Brake Company. (See Montague, John R., assignor.)						
Hydro-Carbon Smelting Co. (See Boss, Martin P., assignor.)						
Hylard, John, St. Kilda, assignor to F. G. Hughes, Melbourne, Victoria, Australia. Bandoleer or cartridge-belt	710,384	Sept. 30	4501	1014	100	2971
Hynding, Jesse J., Ferndale, Cal. Gate	709,168	Sept. 16	2188	501	100	2402
Ichthyol-Gesellschaft Cordes, Hermanni & Co. (See Helmers, Ludwig O., assignor.)						
Ideal Cash Register Company. (See Smith and Susstrong, assignors.)						
Ideal Manufacturing Company. (See Van Wie, Peter G., assignor.)						
Ievers, Eyre F. (See Pearse and Ievers.)						
Ihlder, John D., Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J. Reversing-switch motor	704,296	July 8	1801	393	100	378
Ihlder, John D., Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J. Controlling system for electric elevators	704,297	July 8	1804	394	100	378
Ihlder, John D., Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J. Controlling system for electric elevators	704,308	July 8	1813	394	100	381
Illingworth, Rochester, J. T. Mazey, and G. Naylor, Coventry, England. Apparatus for dyeing	704,191	July 8	1552	334 335	100	325
Illinois Watch Company. (See Higginbotham, Charles T., assignor.)						
Imbler, John, Clay Township, Hamilton county, Ind. Stay-wire tie	706,948	Aug. 12	1820	407	100	1505
Imperial Bottle Cap & Machine Company. (See Abbott, Nathaniel B., assignor.)						
Implement Manufacturing Company. (See Tinsman, Samuel H., assignor.)						
Improvements Manufacturing Company. (See Allen and Danforth, assignors.)						
Inden, Francis W., St. Paul, Minn. Clock striking mechanism	708,709	Sept. 9	1898	320 321	100	2279
Independent Pattern Company. (See Broach and Goodrich, assignors.)						
India Rubber Company. (See Wheeler and Kremer, assignors.)						
Indiana Manufacturing Company. (See Elward, John H., assignor.)						
Indiana Rubber and Insulated Wire Company. (See Blake, John C., assignor.)						
Indianapolis Drop Forging Company. (See Bates, Franklin P., assignor.)						
Industrial Machine Company. (See De Long, George E., assignor.)						
Ingalls, Emerson. (See Schmid, Sophie, assignor.)						
Ingersoll, John L., Mayville, Mich. Potato-digger	704,046	July 8	1248	269	100	262
Ingersoll Milling Machine Company. (See Smith and Lees, assignors.)						
Ingersoll, Stephen A., Sandoval, Ill. Colter	710,395	Sept. 30	4635	1043	100	2996
Ingham, Lucy B., Wilkesbarre, Pa. Corset attachment and stocking-supporter	708,387	Sept. 9	1654	360	100	2338
Ingoldsby, Frank S., St. Louis, Mo. Dump-car	706,602	Aug. 12	1282	263	100	1292
Ingoldsby, Frank S., St. Louis, Mo. Dump-car	706,603	Aug. 12	1284	263	100	1293
Ingraham, Mattie. (See Mitchell, Eugene E., assignor.)						
Ingraham, William S. (See Throop and Ingraham.)						
Ingram, Oscar L., Walla Walla, Wash. Accounting attachment for type-writing machines	705,409	July 22	4004	867	100	860
International Blind Stitch Company. (See Donaldson, Edwin, assignor.)						
International Chemical Company. (See Blinn, Horace S., assignor.)						
International Machine Co. (See Smith, Myron A., assignor.)						
International Manufacturing Company. (See Lydon, John F., assignor.)						
International Motor Company. (See Hennegin, Herbert H., assignor.)						
International Phonograph and Indestructible Record Company. (See Petit, Ademor N., assignor.)						
International Silver Co. (See Betteridge, Albert J., assignor.)						
International Text Book Company. (See Durand, Nelson C., assignor.)						
International Time Recording Company. (See Jaynes, Alfonso L., assignor.)						
International Time Recording Company. (See Jaynes and Deübner, assignors.)						
International Tin Plate Corporation. (See Allis, Thomas V., assignor.)						
Invention Developing Company. (See Gill, Edwin R., assignor.)						
Ireland, Olivia D. (See Ketteringham, John P., assignor.)						
Irish, Hiram E., Morille, Iowa. Animal-poke	706,063	Aug. 5	193	25	100	1142
Iron Clad Manufacturing Company. (See Seaman, Elizabeth C., assignor.)						
Irving, John. (See Robinson, Ralph C., assignor.)						
Irving, Junius B., assignor of one-half to J. D. Havens, Kansas City, Mo. Loose-sheet binder	706,949	Aug. 12	1820	407	100	1505
Irwin, Elijah D., Furches, N. C. Horse-detacher	706,567	July 1	874	86	100	74
Irwin, Herbert E., Galesburg, Ill. Alarm device for binders	704,684	July 15	2441	527 528	100	586

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Isbell, Charles W., New York, N. Y. Gas-retort	706,238	Aug. 5	455	97	100	1500
Isbell, Charles W., New York, N. Y. Manufacturing illuminating-gas	707,758	Aug. 26	1472	782	100	1681
Isbill, Isaac. (See Rose and Isbill.)						
Isenberg, Harry G. (See Frazier, Wagner, and Isenberg.)						
Isler, Herman R., assignor to C. F. Hilker, Hamilton, Ohio. Differential-speed mechanism	704,645	July 15	2380	515, 516	100	515
Israel, Alexander C., Laporte, Tex. Washing-machine	706,418	Aug. 5	841	184	100	1282
Ivens, Edmund M., deceased, New Orleans, La.; H. K. Ivens, administrator. Pump mechanism	705,844	July 29	4965	1057	100	1045
Ivens, Harry K., administrator. (See Ivens, Edmund M.)						
Iverson, John G., assignor to C. E. Cottrell, Minneapolis, Minn. Wire-straightener	710,151	Sept. 30	4195	945	100	2901
Ives, Frederic E., Philadelphia, Pa. Photochromoscopic and trichromatic apparatus	705,929	July 1	1019	231	100	203
Ives, Frederic E., Philadelphia, Pa. Producing trichromatic half-tone-process negatives	707,421	Aug. 19	2710	614	100	1708
Ives, Frederic E., Philadelphia, Pa. Photographic attachment for optical instruments	707,422	Aug. 19	2712	614, 615	100	1708
Ives, Harry C., assignor to Ives Manufacturing Corporation, Bridgeport, Conn. Joint for toy railway-tracks	705,886	Sept. 9	1655	380	100	2382
Ives Manufacturing Corporation. (See Ives, Harry C., assignor.)						
Ivey, Curtis. (See Ivey, Joel C., Sr., assignor.)						
Ivey, Joel C., Sr., assignor of one-third to C. Ivey, Augusta, Ga. Vegetable-cutter	708,588	July 1	875	86	100	74
Ivor, Barry, and J. S. Ward, Chicago, Ill. Pump	706,564	Aug. 12	1097	245	100	1353
Ivor, Barry, assignor to C. M. Rogers and L. C. Rollo, Chicago, Ill. Apparatus for operating lubricating-pumps	709,996	Sept. 30	3874	872, 873	100	2387
Ivor, Barry, and J. S. Ward, Chicago, Ill. Valve	708,145	Sept. 2	272	65	100	2087
J. A. Fay & Egan Company. (See Thomas, John R., assignor.)						
J. C. Rhodes & Co. (See Rhodes, John C., assignor.) (Reissue.)						
J. S. Thorne Company. (See Rupp, Charles, assignor.)						
J. T. Slocomb Company. (See Slocomb, John T., assignor.)						
J. W. Paxson Company. (See Warren, Ambrose G., assignor.)						
J. W. Ruger Manufacturing Company. (See Fenner, Jess B., assignor.)						
Jablonowsky, Paul, Hamburg, Germany. Hoisting device	709,222	Sept. 16	2229	588	100	2490
Jackling, Daniel C., Republic, Wash. Rabble-carriage	706,755	Aug. 12	1466	323, 324	100	1433
Jackling, Daniel C., Republic, Wash. Ore-roasting furnace	706,756	Aug. 12	1471	324, 325, 326, 327	100	1433
Jackling, Daniel C., Republic, Wash. Sprocket-wheel	708,232	Sept. 2	438	100	100	2071
Jackman, William J., Cleveland, Ohio. Cable mechanism for hauling loads up inclined surfaces	704,550	July 15	2730	590, 591	100	584
Jackson, Charles J., Erie, Pa., assignor, by mesne assignments, to R. G. Wright, Westfield, N. Y. Screw-cutting die	707,238	Aug. 19	2356	598	100	1685
Jackson, David, Tickhill, England. Potato-plow	707,114	Aug. 19	2133	475, 476	100	1587
Jackson, E. Hilton, *et al.*, trustees. (See Cahill, Thaddeus, assignor.)						
Jackson, George A., *et al.* (See Ridlon, Charles A., assignor.)						
Jackson, George M., Catharine, N. Y. Separator	707,701	Aug. 26	3373	781	100	1841
Jackson, James. (See Long and Jackson.)						
Jackson, James H., Denver, Colo., assignor of one-fourth to F. Schoff, Philadelphia, Pa. Power-hammer	709,880	Sept. 23	3533	794	100	2732
Jackson, James L., Williamsport, Pa. Camera attachment	708,421	July 1	101	22	100	23
Jackson, John, Alnwick, England. Toy	708,422	July 1	102	23	100	23
Jackson, John P., Liverpool, England. Apparatus for serving aerated waters on draft	708,714	Sept. 9	1295	295	100	2955
Jackson, Peter H., San Francisco, Cal. Automatic locking mechanism for sidewalk or other elevator doors	704,746	July 15	2567	553	100	551
Jackson, Samuel, Fayetteville, N. Y. Differential-speed power-transmitting mechanism	706,664	Aug. 12	1286	283, 284	100	1393
Jackson, Willis K., *et al.* (See Ridlon, Charles A., assignor.)						
Jackson, Zerembe E., Atchison, Kans. Telephone-call annunciator	709,227	Sept. 16	2540	571	100	2535
Jacob, Frederick, Jr., Newark, N. J. Attachment-holder for sewing-machines	705,854	July 22	3913	848	100	840
Jacob, Henry W. (See Wessel and Jacob.)						
Jacobs, Albert C., Birmingham, Ala. Swing	704,198	July 8	1553	335	100	395
Jacobs, Arthur I., Hartford, Conn. Drill-chuck	709,014	Sept. 16	1919	440	100	2404
Jacobs, Charles B., East Orange, assignor to Ampere Electro-Chemical Company, Jersey City, N. J. Manufacturing sulfuric acid from sulfur dioxid in aqueous solution by electrolysis	704,881	July 15	2733	591	100	585
Jacobs, Henry J., Buffalo, N. Y. Clip for upholstering purposes	704,542	July 15	2217	480	100	479
Jacobs, Jehu, Henley, Cal. Apple-parer	707,700	Aug. 26	3370	731	100	1841
Jacobs, Olaus B., Roland, Iowa. Gate	708,495	July 1	103	22	100	23
Jacobs, William S., Malden, Mass. Tag-holder	705,702	July 29	4729	1023	100	1015
Jacobson, Edward B., Pittsfield, assignor to T. H. Neilsen, Boston, Mass. Electrical measuring instrument	704,543	July 15	2218	480	100	479
Jacoby, Charles B., West Nanticoke, Pa. Combined curtain-fixture and curtain-support	709,578	Sept. 23	3077	664	100	2560
Jaeger, August J., Phillips, Wis. Saw-clamp	705,980	July 29	5025	1093	100	1077
Jaeger, Herman J., New York, N. Y. Incandescent lamp	708,791	July 1	778	169	100	155
Jagenberg, Ferd E., and R. Högfeldt, Dusseldorf, Germany. Machine for coating labels with adhesives	706,757	Aug. 12	1476	327, 328	100	1434
Jahns, Erwin H., Westend, assignor to Dr. Paul Meyer Actiengesellschaft, Berlin, Germany. Device for cutting off pieces of belts, &c	709,408	Sept. 16	2714	609	100	2572
James, Alfred, London, England. Apparatus for precipitating gold and silver from their solutions	705,569	July 29	4410	956	100	953
James, Charles W., Philadelphia, Pa. Weaving wire	704,339	July 8	1819	394	100	393
James, Charles W., Philadelphia, Pa. Reversing mechanism	706,527	Aug. 12	1604	350	100	1469
James, Daniel P., Eureka, Ill. Alloy	709,959	Sept. 16	2429	.....	100	2511
James, John F., and R. M. Kippen, Melbourne, Canada. Catamenial bandage	709,223	Sept. 16	2230	506	100	2491
James Rees Sons' Company. (See McCall, Harry M., assignor.)						
James, Ulysses S., assignor of two-thirds to C. M. Smith and M. S. Dean, Anaconda, Mont. Automatic weighing-machine	706,565	Aug. 12	1099	243, 244	100	1353
Jamieson, James A., Montreal, Canada. Elevator-bin	704,805	July 15	2683	579	100	573
Jamieson, James A., Montreal, Canada. Bin	704,806	July 15	2685	580	100	574
Jamieson, John. (See Jamieson, Walter, assignor.)						
Jamieson, Walter, assignor to J. Jamieson, Brooklyn, N. Y. Rotary engine	709,908	Sept. 30	3711	807	100	2808
Jandorf, H. H., *et al.* (See Chinnock, George H., assignor.)						
Janes, George E., Cleveland, Ohio. Automatic railway-switch	709,015	Sept. 16	1920	440, 441	100	2404

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Janes, Heman D., Saginaw, Mich. Urinal	706,366	Aug. 12	1102	244	100	1354
Janesville Machine Company. (See Cobb, Samuel C., assignor.)						
Janesville Machine Company. (See Heylman, Edward M., assignor.)						
Jannuzzi, Raphael, Allegheny, Pa. Box	704,701	July 15	9475	534	100	533
Jansen, Bruno, Meiningen, Germany. Manufacturing rotary cutters	708,980	July 1	1021	.....	100	203
Jansen, Emily J., executrix. (See Jansen, Sylvester H.)						
Jansen, Sylvester H., deceased, Buffalo, N. Y.; E. J. Jansen, executrix. Car-rigging or draft appliance for railway-cars	706,481	Sept. 2	865	197	100	2157
Jansen, Thomas. (See Khotinsky, Achilles de, assignor.)						
Janssen, Henry, assignor to Textile Machine Works, Incorporated, Reading, Pa. Knitting-machine	709,154	Sept. 16	2189	501	100	2462
Jaques, William E., assignor to A. O. Crozier, Grand Rapids, Mich. Rail-support	710,153	Sept. 30	4197	945	100	2905
Jaques, William E., assignor to A. O. Crozier, Grand Rapids, Mich. Rail-support	710,153	Sept. 30	4198	945	100	2905
Jaques, William E., assignor to A. O. Crozier, Grand Rapids, Mich. Rail-support	710,154	Sept. 30	4200	946	100	2905
Jaubert, George F., Paris, France. Manufacture of alloys of the alkali metals	709,489	Sept. 23	2907	.....	100	2626
Jaubert, George F., Paris, France. Compressing peroxid of sodium	709,490	Sept. 23	2908	.....	100	2626
Jay, Christian R., Leipsic, Germany. Spindle-bearing for engraving-machines	705,674	July 29	4560	990	100	983
Jay, Rudolf, Leipsic, Germany. Engraving machine	704,198	July 8	1555	335	100	326
Jayne, Benaiah G., New York, assignor to H. Craighead, Flushing, N. Y. Croze-cutting machine	706,419	Aug. 5	843	184	100	1283
Jaynes, Alfonso L., Buffalo, N. Y., assignor, by mesne assignments, to International Time Recording Company. Workman's time-recorder	704,194	July 8	1556	335 336	100	326
Jaynes, George M., Detroit, Mich., and J. W. Deübner, Chicago, Ill., assignors, by mesne assignments, to International Time Recording Company. Workman's time-recorder	704,544	July 15	2219	480 481	100	480
Jeavons, William R., Cleveland, Ohio. Hydrocarbon-burner	705,054	Aug. 5	194	26	100	1142
Jecklin, John R., Newburgh, N. Y. Combined curb and gutter block	707,115	Aug. 19	2121	476	100	1587
Jeffery, Thomas B., Kenosha, Wis. Pneumatic tire	706,482	Sept. 2	867	197	100	2157
Jeffreys, Edward A., Moseley, near Birmingham, England. Walking toy	709,997	Sept. 30	3875	873 874	100	3837
Jenkins, Charles M. (See Cobb and Jenkins.)						
Jenkins, Harry L., and O. F. F. Rohlmann, assignors of one-third to M. Davids, Indianapolis, Ind. Electric brander	709,602	Sept. 23	3115	694	100	2669
Jenkins, Joel, Montclair, N. J. Garment fastener or supporter	709,909	Sept. 30	3714	838	100	2804
Jenks, Oren J., Wausau, Wis. Window brace and fastener	706,065	Aug. 5	125	26	100	1143
Jenney, Charles D., Indianapolis, Ind. Trolley-pole	708,529	Sept. 9	1002	227	100	2196
Jenney, James A., Providence, R. I. Steam-engine	706,330	Aug. 5	689	139	100	1944
Jennings, Ebenezer S., assignor to Athens Foundry & Machine Co., Athens, Ohio Car-wheel	708,047	Sept. 2	96	22	100	2001
Jennings, James H. (See Hayden, Henry F., assignor.)						
Jensen, Hans P. (See Todd, George W., assignor.)						
Jensen, Jens H., Minden, Nebr. Thresher-screen	707,067	Aug. 12	2040	455	100	1551
Jensen, Thomas, Arendal, Norway. Sailing-boat	704,685	July 15	2445	528	100	527
Jenson, Hattie, Sturgeon Bay, Wis. Toy	708,981	July 1	1022	221	100	204
Jessup, William S. (See Hancock, Henry J., assignor.)						
Jewell, Danford W., assignor of two-thirds to W. H. Ralston and M. O. Bassitt, Kalamazoo, Mich. Automatic air-brake order system	706,898	Aug. 12	1606	361	100	1463
Jewett, Alonzo. (See Cowan, Jewett, and Wardell.)						
Jewett, Clarence F., trustee. (See Porter, Major D., assignor.)						
Joder, Levi J., Meyersdale, Pa. Check-lock for mine-cars	704,882	July 15	2735	591	100	585
Johansen, Clement W., Everett, Pa. Mattress-stuffing machine	708,058	July 1	516	116	100	101
Johanson, Adolf M. (See Hultman, Ivar, assignor.)						
John R. Williams Company. (See Williams, John R., assignor.)						
Johns, Ralph, Allegheny, Pa. Wrench	709,711	Sept. 23	3099	741	100	2705
Johnson, Abraham C., Winona, Minn. Semaphore	708,202	July 1	1023	221	100	204
Johnson, Alfred E., Colorado Springs, Colo. Filter-bed for chlorination-barrels	706,472	Aug. 5	946	206	100	1307
Johnson, Arthur D., Clare, Mich. Bag-holder	704,893	July 15	2736	591	100	585
Johnson, Carl F., Milwaukee, Wis. Time-stamp	708,389	Sept. 9	1657	380 381	100	2333
Johnson, Carroll H., and L. H. Clements, Lake City, Mo. Harness-buckle	708,350	Sept. 9	656	148	100	2114
Johnson, Charles, assignor of one-half to A. R. Rogers, Minneapolis, Minn. Machine for securing together boards by means of cleats	707,116	Aug. 19	2134	476 477	100	1587
Johnson, Charles, assignor of one-half to A. R. Rogers, Minneapolis, Minn. Machine for forming blanks from matched boards	709,710	Sept. 23	3206	739 740	100	2705
Johnson, Charles, and O. C. Rawley, Newark Valley, N. Y. Fertilizer-distributer	704,747	July 15	2569	554	100	551
Johnson, Charles B., Columbus, Ohio. Device for hitching horses to shafts	708,560	Sept. 9	1002	227	100	2196
Johnson, Charles E., Malden, Mass. Advertising device	705,090	July 22	3305	719	100	718
Johnson, Charles J., assignor to Climax Nut Lock & Manufacturing Company, St. Louis, Mo. Gasolene-regulator	709,588	Sept. 23	3172	707	100	2670
Johnson, Charles J., and C. W. Benedict, St. Louis, Mo. Trolley for electric cars	703,589	July 1	376	87	100	74
Johnson, Charles L., Woodburn, Oreg. Sweat-band for hats	707,784	Aug. 26	3473	792	100	1881
Johnson, Clarence B., assignor of one-half to D. R. Creecy, Jr., Norfolk, Va. Beer-pipe cleaner	708,247	July 23	3665	791	100	790
Johnson, Cyrus C. (See Upton, Alva T., assignor.)						
Johnson, Edward F., Jersey City, N. J. Means for operating and locking scuttle-covers	706,829	Aug. 12	1611	362	100	1464
Johnson, Eldridge R., Philadelphia, Pa. Sound recording and reproducing device	704,047	July 8	1250	270	100	268
Johnson, Eugene M. (See Samuelson and Johnson.)						
Johnson, George L. (See How, William S., assignor.)						
Johnson, Greenleaf, Jr., Baltimore, Md. Stacking of boards	704,960	July 8	1671	364	100	350
Johnson, Hans G., assignor of one-half to T. Shulte, Waukon, Iowa. Grinding-mill	704,195	July 8	1561	326 327	100	328
Johnson, Jeremiah P., Detroit, Mich. Folding rod	708,976	Sept. 9	1598	420	100	3367
Johnson, John W., Trenton, Mo. Smoke-consumer	708,644	Sept. 9	1169	264	100	2238
Johnson, Joseph E., Meriden, Conn. Speed-regulator	706,321	Aug. 5	641	140	100	1945
Johnson, Joseph S., New York, N. Y. Automatic door opening or closing apparatus	706,355	July 23	3915	848	100	941
Johnson, Lenson, Chicago, Ill. Knife and pencil sharpener	707,118	Aug. 19	2137	478	100	1588
Johnson, Leonard T., Brooklyn, N. Y. Price-scale	706,220	Aug. 5	456	97	100	1200
Johnson, Louis K., Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Compositor's type-stick	708,648	Sept. 9	1165	265	100	2250
Johnson, Louis K., and A. A. Low, Brooklyn, assignors to Alden Type Machine Company, New York, N. Y. Type-containing channel	708,645	Sept. 9	1164	264 265	100	2238
Johnson, Louis K., and A. A. Low, Brooklyn, assignors to Alden Type Machine Company, New York, N. Y. Type-line-detaching mechanism	710,057	Sept. 30	3995	901	100	2933
Johnson, Major, Coleman, Tex. Attachment for planters	707,998	Aug. 26	3759	844	100	1998
Johnson, Millard F., Plum River, Ill. Loading or unloading device	708,300	Sept. 2	697	148	100	2114
Johnson, Morris E., Laurel, Nebr. Harrow	708,951	Aug. 12	1093	408 409	100	1506

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Johnson, Nels A. (See Ekelund, John A., assignor.)						
Johnson, Osro P., and F. P. Crockett, assignors to Star Brass Works, Kalamazoo, Mich. Trolley harp or fork	708,048	Sept. 2	98	23	100	2001
Johnson, Otto, Brooklyn, N. Y. Extensible piston-ring	708,590	July 1	377	87	100	75
Johnson, Robert N., Bremerton, Wash. Heat-regulator for fireplaces	706,189	Aug. 5	352	76	100	1188
Johnson, Samuel A., *et al.* (See McGill, John J., assignor.)						
Johnson, Sinclair J., Nutley, N. J. Car-door	709,269	Sept. 16	2429	550, 551	100	2511
Johnson, Sinclair J., Montclair, N. J. Car-door	709,270	Sept. 16	2433	551	100	2512
Johnson, Stephen S., South Orange, N. J. Photographic-printing frame	708,770	Sept. 9	1400	321	100	2279
Johnson, Victor, St. Louis, Mo. Ammonia-separator	705,845	July 29	4866	1057	100	1045
Johnson, William R., Vanwert, Ohio. Fence-post	709,224	Sept. 16	2331	528	100	2491
Johnson, William T., Sylvan, Tex. Bale-tie	704,048	July 8	1252	270	100	263
Johnson, William T. S., Cincinnati, Ohio. Engine-lathe	706,665	Aug. 12	1289	284	100	1894
Johnston, Allen, Ottumwa, Iowa. Machine for reducing and finishing hollow balls	709,409	Sept. 16	2715	609	100	2572
Johnston, Charles, Memphis, Tenn. Railway-switch	706,950	Aug. 12	1822	408	100	1505
Johnston, David, Watseka, Ill. Hearse	704,340	July 8	1820	394	100	898
Johnston, David J., *et al.* (See McIntosh, John A. and W., assignors.)						
Johnston, David S. (See Parker, Major M., assignor.)						
Johnston, Edward A., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Cutting apparatus for mowers, reapers, or the like	708,146	Sept. 2	274	65	100	2088
Johnston, Edward A., assignor to McCormick Harvesting Machine Company, Chicago, Ill. Cutting apparatus for mowers, reapers, or the like	708,147	Sept. 2	275	65	100	2088
Johnston, Frederick C., and G. N. Merrill, Brooklyn, N. Y., assignors to National Biscuit Company, Chicago, Ill. Collapsible display rack or stand	704,341	July 8	1821	335	100	884
Johnston, George W., assignor of twenty-seven one-hundred-and-fortieths to H. F. Whiteford, St. Joseph, Mo., and C. J. Hunt, Deloit, Iowa. Water-wheel	708,715	Sept. 9	1297	295	100	2255
Johnston, James W., Chicago, Ill. Adjustable seat and desk	708,792	July 1	774	169	100	155
Johnston, John, assignor to A. E. Dobbs, London, England. Hydrocarbon-vapor burner	708,591	July 1	379	87, 88	100	75
Johnston, John, assignor to A. E. Dobbs, London, England. Feed-water, burner, or like regulator	704,342	July 8	1824	395	100	884
Johnston, John E., Trimble, Ohio. Game-board	709,155	Sept. 16	2191	501	100	2463
Johnston, Mary J., Milwaukee, Wis. Portable fire-escape	706,666	Aug. 12	1291	284	100	1994
Jolles, Adolf, Vienna, Austria-Hungary. Obtaining albuminous substances	707,423	Aug. 19	2717	.....	100	1710
Jones, Albert, Red Wing, Minn. Adjustable pitch-board	710,058	Sept. 30	3996	902	100	2803
Jones, Albert F., Salem, Mass. Operating-roll for leather-working machines	710,102	Sept. 30	4000	923	100	2892
Jones, Alfred H., Brooklyn, N. Y. Clothes-line holder	707,847	Aug. 26	3009	814, 815	100	1907
Jones, Annie M., Boston, Mass. Wrist-supporting attachment for pianofortes	704,343	July 8	1825	396	100	885
Jones, Benjamin H., assignor of one-half to Smith & Davis Manufacturing Company, St. Louis, Mo. Bedstead-fastening	704,702	July 15	2475	536	100	533
Jones, Dora, Chicago, Ill. Advertising display device	710,195	Sept. 30	4268	963	100	2920
Jones, Edward E., Malvern, Ill. Snapping-rolls for shredders	708,592	July 1	380	88	100	75
Jones, Edwin T. (See Finch, Robert B., assignor.)						
Jones, Erastus H., and E. C. Espey, Pleasanton, Kans. Sewing-awl	706,188	Aug. 5	353	76	100	1188
Jones, Everly A. (See Heller and Jones.)						
Jones, Frank A., assignor of one-half to E. M. Wilcox, Omaha, Nebr. Envelop moistener and sealer	705,531	July 22	4274	994	100	913
Jones, Frank S., Export, Pa. Switch-operating device	707,929	Aug. 26	3761	844	100	1988
Jones, Frederick W., London, England. Clutch	707,598	Aug. 26	3049	686	100	1795
Jones, George L. (See Glosser, William H., assignor.)						
Jones, George W. and J. C., Scotland, Ark. Fire-escape	704,884	July 15	2737	592	100	586
Jones, Harvey P., Chicago, Ill. Holder	707,234	Aug. 19	2856	528	100	1635
Jones, Henry, Watertown, N. Y. Engine-stop	706,992	Aug. 12	1895	409	100	1506
Jones, Horace K., Hartford, assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Liquid door-check	706,240	Aug. 5	459	96	100	1209
Jones, James C. (See Jones, George W. and J. C.)						
Jones, Joe, Summit, Miss. Smoothing-iron	705,248	July 22	3657	791	100	790
Jones, John A., New York, N. Y. Stopper-fastener	705,675	July 29	4561	991	100	988
Jones, John H. (See Seeberger, John, assignor.)						
Jones, John L., Jr., Dallas, Tex. Burner	710,276	Sept. 30	4417	996	100	2954
Jones, Josiah T. (See Clark and Jones.)						
Jones, Lewis, Jr., Philadelphia, Pa. Gearing	708,598	July 1	381	88, 89	100	76
Jones, Lyman R., Cocob, assignor to C. A. Freeman, South Norwalk, Conn. Reversing-gear	706,667	Aug. 12	1292	285	100	1895
Jones, Nathaniel M. (See Craft, Mark A., assignor.)						
Jones, Oliver C., Philadelphia, Pa. Rotary engine	709,773	Sept. 23	3482	772, 773	100	2782
Jones, Thomas J. (See White and Jones.)						
Jones, Thomas P., Olyphant, Pa. Telephone-cable connection	705,567	Aug. 12	1103	244	100	1854
Jones, Walter P., Glencarlyn, Va. Brooder	706,953	Aug. 12	1886	409, 410	100	1506
Jones, Wilfrid P., *et al.* (See Doering, August, assignor.)						
Jordan, Alberto T., Portland, assignor of one-half to G. W. Brown, Cape Elizabeth, Me. Shoe-fastener	705,556	July 22	3916	848	100	841
Jordan, David C., David City, Nebr. Table-spread support	708,049	Sept. 2	99	23	100	2002
Jordan, Julia G., trustee. (See Gillet, Martin, assignor.)						
Jordan, William, Winona, Minn. Box-fastener	707,424	Aug. 19	2718	615	100	1710
Jordan, William H., Brooklyn, N. Y. Paper-ruling machine	709,225	Sept. 16	2333	529, 530	100	2491
Jorgensen, Charles J., Milwaukee, Wis. Color-scale	709,338	Sept. 16	2541	572	100	2535
Jorgensen, Jorgen, Omaha, Nebr. Bur for mills	705,410	July 22	4008	867	100	861
Joseph, Waitman, *et al.* (See Stearns, Edmond B., assignor.)						
Josephy's Erben, Firm of G. (See Dudek and Dembowski, assignors.)						
Joslin, Herbert A. (See Paul and Joslin.)						
Joslin, Omar T. (See Schmidt and Joslin.)						
Joss, Christian, Berne, Switzerland. Ratchet mechanism	705,961	July 29	5096	1095	100	1077
Josse, Emil, Wilmersdorf, Germany. Condenser	708,798	July 1	775	169, 170	100	155
Josse, Emil, Wilmersdorf, Germany. Vaporizer for cold vapors or the like	708,647	Sept. 9	1166	265	100	2239
Joule, Joseph, assignor to Eastwood Wire Manufacturing Company, Belleville, N. J. Valve for wood-pulp digesters	705,091	July 22	3307	719	100	718
Joy, Byron H., Chicago, Ill. Ruling device	706,066	Aug. 5	196	26	100	1143
Joy, George A., Bar Harbor, Me. Blacking-box holder	709,226	Sept. 16	2337	530	100	2492
Joy, Obed H. (See Lambert and Joy.)						
Joyce, James A., Cleveland, Ohio. Electric-railway switch	709,156	Sept. 16	2192	502	100	2463

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Joyce, William, administrator. (See Joyce, William G., Jr.)						
Joyce, William G., Jr., deceased, New York, N. Y.; W. Joyce, administrator. Bookbinding-machine	708,333	July 1	1084	222	100	204
Judd, William J., New York, N. Y., assignor to F. C. Austin, Chicago, Ill. Rotary mixer for concrete, &c.	708,434	July 1	104	22 23 24	100	23
Judd, William J., New York, N. Y., assignor to F. C. Austin, Chicago, Ill. Machine for mixing concrete or the like	705,676	July 29	4564	991 992 993	100	984
Judsen, Carl A., Chicago, Ill. Horseshoe	707,594	Aug. 26	3050	687	100	1795
Judson L. Thomson Manufacturing Company. (See Draper, Egbert, assignor.)						
Judy, John S., Middletown, Pa. Cane	709,095	Sept. 16	2090	479	100	2441
Julius, Paul, assignor to Badische Anilin and Soda Fabrik, Ludwigshafen, Germany. Brown-violet azo dye	710,059	Sept. 30	3998	.....	100	2864
Junius, Gustav E. (See Gouthiere, Henri, assignor.)						
Jura, Peter C., Jr., San Francisco, Cal. Hoop-lug	708,338	Sept. 2	439	100	100	2071
Jury, Edward D., Clearfield, Pa. Neck-yoke	705,411	July 22	4008	868	100	861
Jury, Frederick H., New York, N. Y. Cane-gun	704,646	July 15	2282	516	100	513
Justen, Joseph M., assignor of two-fifths to G. W. Birchall and C. R. Clapp, Toledo, Ohio. Closet-flushing device	708,800	Sept. 9	1062	381 382	100	2533
Justl, Henry D., Philadelphia, Pa. Mount for artificial teeth	705,532	July 22	4277	924	100	914
Kagey, Henry H., Ashland, Ohio. Milking-shield	708,774	Sept. 23	3438	772	100	2733
Kahler, George, assignor of one-half to F. J. Uplinger, Wymore, Nebr. Ironing-board	704,835	July 15	2737	592	100	586
Kaiser, Joseph, Columbus, Ohio. Wind-turbine	710,277	Sept. 30	4418	996	100	2954
Kaisling, William, assignor to Kellogg Switchboard and Supply Company, Chicago, Ill. Supervisory relay	708,092	July 22	3308	719	100	718
Kaltajian, Lazarus S., Boston, Mass. Handle-bar support	707,514	Aug. 19	2866	650	100	1741
Kallgren, John, New Haven, Conn. Heating and ventilating apparatus	708,954	Aug. 12	1882	410	100	1508
Kaminsky, Julius M., *et al.* (See Howe, John C., assignor.)						
Kamm, Leonard U., London, England. Apparatus for photographing and exhibiting kinematographic pictures	708,148	Sept. 2	276	66	100	2038
Kammerer, Frank G. (See Sweeney, Henry G., assignor.)						
Kamper, Paul J., Sioux City, Iowa. Hand-motor	708,594	July 1	383	89	100	76
Kamphues, Joseph. (See Manson and Kamphues.)						
Kanage, Albert F. (See Smedley, Daniel W., assignor.)						
Kanel, John von, Akron, Ohio. Mop-wringer	707,235	Aug. 19	2358	559	100	1685
Kánn, Desiderius S., Weinberge, assignor to A. Freund, Prague, Austria-Hungary. Capsule for medicines	710,060	Sept. 30	3999	902	100	2864
Kanouse, John G., Madison, Wis. Coupling device	704,545	July 15	2223	481	100	490
Kansas City Hay Press Company. (See Korsmeyer, Ernest H., assignor.)						
Kantner, Ralph, assignor of one-half to O. Ginther, Pottsville, Pa. Nut-lock	705,955	Aug. 12	1836	411	100	1508
Kappel, Wilhelm, Berlin, Germany. Bunsen burner	705,880	Aug. 12	1612	362	100	1464
Karg, Anton, Paterson, N. J. Acetylene-gas generator	705,067	Aug. 5	129	26	100	1143
Karl, Joseph, *et al.* (See Neubauer, Carl E., assignor.)						
Karlik, Jaroslav, Gottesberg, and M. Witte, Waldenburg, Germany. Safety appliance for engines	710,155	Sept. 30	4301	946 947	100	2906
Karrmann, Julius, assignor of one-half to C. C. Caldwell, Indianapolis, Ind. Jar-cover and fastening therefor	708,648	Sept. 9	1167	236	100	2229
Kasselman, Conrad E., Detroit, Mich. Garment-fastener	706,956	Aug. 12	1838	411	100	1509
Katz, Samuel, Des Moines, Iowa. Garment-clasp	704,973	July 15	2066	559	100	655
Kauffman, Theodore, Osborn, Ohio. Lifting-crane	704,896	July 15	2739	592	100	586
Kaufmann, Otto, Elmhurst, assignor of one-half to D. Ottensoser, New York, N. Y. Mantle for incandescent gas-lamps	708,812	Sept. 9	1495	342	100	2300
Kayser, Adolf, Buffalo, N. Y. Separating alumina from silica	708,561	Sept. 9	1003	.....	100	2196
Kean, William F. (See Croom, Wiley G., assignor.)						
Keane, Maxwell, New York, N. Y., assignor to E. E. Mendels, Newark, N. J. Check-perforator	709,775	Sept. 23	3439	774	100	2734
Kearns, Thomas, and I. C. Coin, Salt Lake City, Utah. Army-canteen	704,686	July 15	2446	528	100	527
Keating, Robert M., assignor to R. M. Keating Motor Company, Middletown, Conn. Combined muffle and mud-guard for motor-vehicles	705,357	July 22	3917	848	100	841
Keefe, John, San Francisco, Cal. Wool-washing machine	709,227	Sept. 16	2340	530	100	2498
Keen, Elias, Mulberry, Fla. Vehicle-hub	706,957	Aug. 12	1839	411	100	1509
Keenan, Thomas P., assignor of one-half to F. W. Sparks, Brooklyn, N. Y. Heater, radiator, or stove	707,970	Aug. 26	3838	861 862	100	1951
Keis, Francis J., Watervliet, N. Y. Milk-dipper	708,050	Sept. 2	100	23	100	2002
Keith, James, and W. W. Wardle, London, England. Apparatus for carrying goods through drying-chambers	709,639	Sept. 23	3173	708	100	2580
Keith, Lorin A., Mansfield, Ohio. Fastening device for account or sales books	705,412	July 22	4009	868	100	861
Keithley, Herbert R., Buffalo, N. Y. Freight-car	703,659	July 1	520	117 118	100	102
Keithley, Herbert R., Buffalo, N. Y. Truck-bolster	705,358	July 22	3918	849	100	842
Keithley, Herbert R., Buffalo, N. Y. Railway-car truck	705,763	July 29	4730	1024	100	1016
Keithley, Herbert R., Buffalo, N. Y. Underframe for railway-cars	707,709	Aug. 26	3274	732	100	1842
Keller, John J., *et al.* (See Barrath, Edward, assignor.)						
Keller, Julius, Philadelphia, Pa., assignor to Philadelphia Pneumatic Tool Company. Pneumatic tool	710,196	Sept. 30	4270	963	100	2921
Keller, Julius, Philadelphia, Pa., assignor to Philadelphia Pneumatic Tool Company. Pneumatic riveter	710,197	Sept. 30	4276	963	100	2923
Keller, Thomas H. (See Snavely and Keller.)						
Keller, Volney P., Waynesville, N. C. Wheel-making machine	705,677	July 29	4573	998	100	995
Kelley, John W., and C. W. Adkins, Hastings, Iowa. Stock-waterer	708,361	Sept. 2	659	149	100	2114
Kelley, Mary C., Wilmington, Del. Drafting-rule	709,776	Sept. 23	3440	774	100	2734
Kelley, Michael F., Brockton, Mass., assignor to United Shoe Machinery Company, Paterson, N. J., and Boston, Mass. Lasting-machine. (Reissue)	12,013	July 15	3146	680	100	672
Kelley, Thomas F., Ligonier, Ind. Set-screw protector	705,098	July 22	3311	719	100	720
Kellner, Charles F., Philadelphia, Pa. Paper-bag-making machine	704,907	July 15	2080	580 581 582	100	575
Kellogg, Albert A., assignor of one-third to G. C. Hayaler, Clinton, Mo. Vehicle	706,959	Aug. 12	1841	412	100	1509
Kellogg, Clement A., East Carmel, Ohio. Separable ring	706,322	Aug. 5	644	140	100	1245
Kellogg, Miles M., Boulder, Colo. Shingle-gage for hatchets	704,837	July 15	2740	598	100	587
Kellogg Switchboard and Supply Company. (See Dean, William W., assignor.)						
Kellogg Switchboard and Supply Company. (See Dunbar, Francis W., assignor.) (Reissue.)						
Kellogg Switchboard and Supply Company. (See Kaisling, William, assignor.)						
Kelly, Eugene H., Buffalo, N. Y. Regenerative gas-burner	706,881	Aug. 12	1613	362	100	1464

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Kelly, John F., Pittsfield, Mass. System of distribution	707,334	Aug. 19	2552	575	100	1674
Kelly, John L., St. Paul, Minn. Dental bridgework	709,410	Sept. 16	2717	609	100	2572
Kelly, Joseph P., assignor of one-half to O. E. Overpeck, St. Louis, Mo. Smoke-consumer	708,362	Sept. 2	600	148 149	100	2115
Kelly, Mary E., Jackson, Ohio. Washing-machine	709,016	Sept. 16	1921	441	100	2404
Kelly, Michael J., Troy, N. Y. Horseshoe-machine	704,049	July 8	1253	270 271	100	968
Kelly, Thomas, and F. C. Sarazin, West Superior, Wis. Artificial-stone facing for buildings	705,846	July 29	4869	1058	100	1046
Kelly, Thomas F., Adair, Iowa. Indicating mechanism for post-office boxes	707,236	Aug. 19	2359	599	100	1685
Kelly, William A., Mount Hope, Kans. Lacing-hook for flat laces. (Reissue)	12,013	July 15	3149	680	100	672
Kelsey Furnace Company. (See Rickard, Elziver O., assignor.)						
Kempshall, Eleazer, Boston, Mass. Manufacture of golf-balls	704,462	July 8	2047	444	100	431
Kempshall, Eleazer, Boston, Mass. Making playing-balls	704,463	July 8	2048	444	100	431
Kempshall, Eleazer, Boston, Mass. Manufacturing playing-balls	704,464	July 8	2049	444	100	431
Kempshall, Eleazer, Boston, Mass. Playing-ball	704,748	July 15	2571	554	100	532
Kempshall, Eleazer, Boston, Mass. Playing-ball	704,838	July 15	2741	593	100	587
Kempshall, Eleazer, Boston, Mass. Playing-ball	704,882	July 15	2824	610	100	604
Kempshall, Eleazer, Boston, Mass. Playing-ball	705,249	July 22	3859	791	100	790
Kempshall, Eleazer, Boston, Mass. Playing-ball	705,359	July 22	3919	849	100	842
Kempshall, Eleazer, Boston, Mass. Playing-ball	705,764	July 29	4732	1024	100	1016
Kempshall, Eleazer, Boston, Mass. Playing-ball	705,765	July 29	4733	1024	100	1017
Kempshall, Eleazer, Boston, Mass. Golf-ball	706,758	Aug. 12	1477	328	100	1435
Kempshall, Eleazer, Boston, Mass. Manufacture of playing-balls	707,495	Aug. 19	2730	615	100	1710
Kempshall, Eleazer, Boston, Mass. Manufacture of playing-balls	707,582	Aug. 26	3051	687	100	1795
Kempshall, Eleazer, Boston, Mass. Playing-ball	708,483	Sept. 2	869	198	100	2157
Kempshall, Eleazer, Boston, Mass. Playing-ball	708,484	Sept. 2	871	198	100	2158
Kempshall, Eleazer, Boston, Mass. Playing-ball	709,411	Sept. 16	2718	610	100	2573
Kempshall, Eleazer, Boston, Mass. Playing-ball	709,412	Sept. 16	2720	610	100	2573
Kempshall, Eleazer, Boston, Mass. Manufacture of playing-balls	710,198	Sept. 30	4281	964	100	2925
Kempshall, Eleazer, Boston, Mass., assignor to Kempshall Manufacturing Company. Playing-ball	704,881	July 15	2823	610	100	604
Kempshall, Eleazer, Boston, Mass., assignor to Kempshall Manufacturing Company. Golf-ball	705,766	July 29	4735	1025	100	1017
Kempshall Manufacturing Company. (See Kempshall, Eleazer, assignor.)						
Kempshall Manufacturing Company. (See Richards, Francis H., assignor.)						
Kendrick & Davis. (See Williams, Lester J., assignor.)						
Kenneally, William, New York, N. Y. Pipe-joint	708,595	July 1	385	89	100	76
Kennedy, Charles W., Rutledge, Pa. Electrode for storage batteries	706,568	Aug. 12	1104	245	100	1354
Kennedy, Daniel, Brooklyn, N. Y. Straightway valve	709,491	Sept. 23	2909	649	100	2626
Kennedy, Erastus L., Highpoint, assignor of one-half to J. E. Meridith, Davidson County, N. C. Combined vise, drill, and bolt-holder	705,932	July 29	5027	1095 1096	100	1077
Kennedy, Patrick, Brooklyn, N. Y. Electrical switch or cut-off	706,759	Aug. 12	1480	328	100	1435
Kennedy, Patrick, Brooklyn, N. Y. Jar for storage batteries	709,157	Sept. 16	2194	502	100	2463
Kennedy, Walter, Pittsburg, Pa. Blowing-engine	708,716	Sept. 9	1250	296	100	2256
Kenney, Edward T. (See Alexander, John L. and W. E., assignors.)						
Kenney, William W., and J. W. Fogler, New London, Conn. Umbrella-runner	707,237	Aug. 19	2360	529	100	1686
Kennicott, Cass L., Chicago, Ill. Apparatus for purifying water	708,596	July 1	387	89 90 91	100	77
Kennicott, Cass L., assignor to Kennicott Water Softener Company, Chicago, Ill. Water-purifying apparatus	708,717	Sept. 9	1302	297	100	2257
Kennicott Water Softener Company. (See Kennicott, Cass L., assignor.)						
Kent, Richard A. (See Osgood and Bradley, assignors.)						
Kent, Thomas J., assignor of one-half to S. B. Charters and W. H. Daughenbaugh, Pittsburg, Pa. Switch-throwing device	706,608	Aug. 12	1294	285	100	1395
Kenworthy, Charles A. (See Ferris and Kenworthy.)						
Kenyon, Lowell H., Allegheny, Pa. Locomotive driving-wheel	707,335	Aug. 19	2553	575 576	100	1675
Kenyon, Richard W. (See Barnes and Kenyon.)						
Kenyon, William H. (See Barnes and Kenyon.)						
Keogh, William T., New York, N. Y. Smoke-consumer	706,490	Aug. 5	844	185	100	1284
Keppie, Edward M. (See Seanor and Keppie.)						
Kern, Albert, St. Louis, Mo. Antislipping foot for ladders or the like	707,238	Aug. 19	2361	529	100	1686
Kern, Max, St. Gall, and A. Wiget, Zurich, Switzerland. Apparatus for transporting live aquatic animals	710,335	Sept. 30	4502	1015	100	2971
Kernbaum, Julius P., South Yarra, Victoria, Australia. Seal-lock	709,777	Sept. 23	3440	774	100	2734
Kernochan, William, New York, N. Y. Stair-carpet securer	707,548	Aug. 26	3014	815	100	1907
Kerr, John B., Jr., Toronto, Ohio. Burial-case	709,998	Sept. 30	3877	874	100	2838
Kerr, John F., and A. Lauster, Paterson, N. J. Suspension-hook	710,051	Sept. 30	3999	902	100	2864
Kerr, Mark M., Cincinnati, Ohio. Compress	707,496	Aug. 19	2721	616	100	1711
Kerr, Robert C. (See Brown and Kerr.)						
Kerr, William F., Cleveland, Ohio. Fruit-can wrench	708,149	Sept. 2	279	66	100	2039
Kessler, Fernando, Rosario, Argentina. Continuous diffusion	706,669	Aug. 12	1396	285	100	1396
Kessler, John C., Milwaukee, Wis. Insect-repellent	708,649	Sept. 9	1108	.....	100	2229
Ketcham, George W., Newark, N. J. Enameling metal ware	708,363	Sept. 2	661	.....	100	2115
Ketchin, William M., Tariffville, Conn. Tobacco-hanger	704,196	July 8	1564	337	100	328
Ketler, William W., and E. Britton, North Lawrence, Ohio. Claw-bar	704,863	July 15	2825	611	100	605
Ketteringham, John P., assignor of one-half to O. D. Ireland, Pineridge, Miss. Check-rein-hook	709,778	Sept. 23	3443	774	100	2734
Keville, William J., and J. P. Carey, Denver, Colo. Slack-adjuster	710,361	Sept. 30	4563	1020	100	2983
Kevorkian, Zareh H., Philadelphia, Pa. Electric alarm-clock	708,425	July 1	108	24	100	24
Kewin, William C., Rochester, N. Y. Cuff-holder	707,497	Aug. 19	2722	616	100	1711
Keyler, Charles W., and A. Matz, Cincinnati, Ohio; said Keyler assignor to said Matz. Step for street-cars or other vehicles	708,051	Sept. 2	101	24	100	2002
Keyt, John E., assignor of one-half to J. R. Smith, San Francisco, Cal. Trap-flush	705,933	July 29	5028	1096	100	1077
Keyte, Richard, Whangarei, assignor to C. E. R. Mackesy, The Hill, Whangarei, Auckland, New Zealand. Means for automatically indicating changes in temperature	704,966	July 15	2055	536	100	552
Khotinsky, Achilles de, assignor to T. Jansen, Chicago, Ill. Automatic photographic recording apparatus	708,813	Sept. 9	1496	342 344 345	100	2300
Kibbe, William A., Leavenworth, Kans. Trestle	704,687	July 15	2449	529	100	508
Kick, J. G., *et al.* (See Brooks, Theodore L., assignor.)						
Kidd, Archie M., and W. A. Gibbons, Joplin, Mo.; said Kidd assignor to said Gibbons. Pipe-coupling	709,779	Sept. 23	3444	775	100	2735
Kidder, John F., Winooski, Vt. Combined punch and shears	704,344	July 8	1826	396	100	385

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Kidder, Josiah H., Pueblo, Colo. Hydrant-cock	707,119	Aug. 19	2138	478	100	1588
Kidder, Wellington P., Boston, Mass., assignor, by mesne assignments, of eleven-twentieths, to himself, and F. H. & C. W. Goodyear, Buffalo, N. Y. Apparatus for removing bark from trees	707,498	Aug. 19	2724	616	100	1711
	709,096	Sept. 16	2091	479	100	2441
Kiefer, Adam S., Cleveland, Ohio. Valve mechanism for fluid-supply pipes	706,670	Aug. 12	1299	286	100	1896
Kiefer, Ludwig. (See Fischer and Kiefer.)						
Kieffer, Joseph L., Montreal, Canada. Pull-off mechanism for sewing-machines	708,364	Sept. 2	668	149	100	2115
Kienzle, Jakob, Schwenningen, Germany. Repeating clock						
Kilbourne and Jacobs Manufacturing Company. (See Kilbourne, James R., assignor.)						
Kilbourne, James R., assignor to Kilbourne and Jacobs Manufacturing Company, Columbus, Ohio. Steel box-car	709,329	Sept. 16	2543	572	100	2536
Kilbourne, James R., assignor to Kilbourne and Jacobs Manufacturing Company, Columbus, Ohio. Box-car	709,330	Sept. 16	2544	572	100	2536
Kilburn, John, Belmont, Mass., assignor to Sawyer Spindle Company, of Maine. Spindle-bearing	705,847	July 29	4870	1058	100	1046
Kilburn, John, Belmont, Mass., assignor to Sawyer Spindle Company, of Maine. Spindle-bearing	709,821	Sept. 23	3525	794	100	2753
	708,226	July 1	109	24	100	24
Kiler, Charles M., assignor of two-thirds to S. F. Earhart, Indianapolis, Ind. Motor	707,120	Aug. 19	2139	478	100	1588
Killian, George, Scranton, Pa. Car-wheel						
Kimball, Frank J. (See Swan and Richardson, assignors.)						
Kimball, George H. (See Doyle and Kimball.)						
Kimbark, Daniel A. (See Felt and Kimbark.)						
Kimman, Henry J., Chicago, Ill., assignor to Chicago Pneumatic Tool Company, Trenton, N. J. Pneumatic hammer	707,515	Aug. 19	2868	650, 651	100	1742
Kimmell, Granger G., Farmer, Ohio. Corn harvester and shocker	704,839	July 15	2743	593, 594	100	587
Kimsey, James C., Philadelphia, Pa. Long-waist former	707,239	Aug. 19	2362	580	100	1696
Kincaid, Fred L., Stockton, assignor to Pacific Acetylene Gas Company, San Francisco, Cal. Acetylene-gas generator	704,967	July 15	3056	656, 657	100	653
Kindig, Benjamin W., Jr., York, Pa. Bridle and bit	710,156	Sept. 30	4203	947	100	2906
Kindsvater, John H., Russell, Kans. Combined rake and stacker	704,845	July 8	1829	396, 397	100	385
King, Charles G. Y., Chicago, Ill. Means for operating valves	705,250	July 22	3650	792	100	791
King, Elmer H. (See King, William P. and E. H.)						
King, George R., New Brighton, N. Y. Fireproof floor construction	705,300	July 22	3921	849	100	842
King, Howard K., assignor to Chambers Brothers Company, Philadelphia, Pa. Lubricant apparatus for the dies of brick-machines	709,097	Sept. 16	2093	480	100	2441
	705,678	July 29	4574	993	100	986
King, John H., Garrity, Ala. Milk-pail						
King, L. H., *et al.* (See Brooks, Theodore L., assignor.)						
King, Theodore F., Nashville, Tenn. Insulator for electric wires	707,429	Aug. 19	2727	616	100	1711
King, William G. (See Graham, Michael J., assignor.)						
King, William P. and E. H., Syracuse, N. Y. Apparatus for administering medicines	705,251	July 22	3923	792	100	791
Kingman, Barton E. (See McLoughlin, Harry, assignor.)						
Kingsbury, Harry T., Keene, N. H. Toy milk-wagon	704,346	July 8	1838	397	100	386
Kingsbury, Harry T., Keene, N. H. Toy	706,421	Aug. 5	845	185	100	1284
Kingsbury, Harry T., Keene, N. H. Toy bank	706,422	Aug. 5	846	185, 186	100	1284
Kinkade, George H., and L. Mager, Hardin, Ill. Kraut-cutter	710,326	Sept. 30	4503	1015	100	2971
Kinnear Manufacturing Company. (See Kinnear, William R., assignor.)						
Kinnear, William R., Columbus, Ohio. Expansible bolt	704,547	July 15	2227	482	100	481
Kinnear, William R., Columbus, Ohio. Spring-roller for fireproof blinds, &c	706,569	Aug. 12	1107	245	100	1355
Kinnear, William R., assignor to Kinnear Manufacturing Company, Columbus, Ohio. Spring-roller for fireproof blinds	704,546	July 15	2225	482	100	481
Kintner, Charles J., New York, N. Y. Electric railway	706,848	July 29	4872	1058, 1059, 1060	100	1046
Kinzy, Warren, Pike, Ark. Show-case	709,331	Sept. 16	2545	572	100	2536
Kipp, Oliver G., Rochelle, Ill. Lubricator	706,570	Aug. 12	1108	245	100	1355
Kippen, Robert M. (See James and Kippen.)						
Kirberg, Jakob E., Philadelphia, Pa., assignor to Hensel, Colladay Company. Machine for making braids and trimmings	707,336	Aug. 19	2356	576, 577	100	1675
Kirby, Thomas B., *et al.* (See Woodman, George A., assignor.)						
Kirby, Thomas B., assignor to Armour & Company, Chicago, Ill. Ice-tank for refrigerator-cars	704,197	July 8	1565	337, 338	100	328
Kirkland, Robert R. (See Vrooman and Kirkland.)						
Kirkpatrick-Picard, Hugh F. (See Sulman and Kirkpatrick-Picard.)						
Kirsanov, Wassily, Moscow, Russia. Blasting-cartridge	708,465	July 8	2051	444, 445	100	431
Kirschning, Hermann, Berlin, Germany. Packing-ring	707,980	Aug. 26	3763	844	100	1938
Kiss, Ernest J., Fort Wayne, Ind. Foundry pattern-clamp	707,596	Aug. 26	3054	687	100	1796
Kiss, Ernest J., Fort Wayne, Ind. Amalgamator	707,597	Aug. 26	3055	687	100	1796
Kistler, Samuel L., Los Angeles, Cal. Comb-cleaner	708,597	July 1	890	91	100	78
Kitsee, Isidor, Philadelphia, Pa. Etching designs	709,052	Sept. 2	104	24	100	2008
Kitson Hydrocarbon Heating and Incandescent Lighting Company. (See Curran, Philip B., assignor.)						
Kitten, Joseph W., assignor to Safety Gaslight Co., Chicago, Ill. Carbureter	708,794	July 1	776	170, 171	100	135
Kitts, Charles A., deceased; H. W. Kitts, administratrix, assignor to Steam Carriage Boiler Company, Oswego, N. Y. Steam-generator	705,583	July 22	4277	925	100	914
Kitts, Harriet W., administratrix. (See Kitts, Charles A.)						
Kitts Semi-Flash Boiler Company. (See Kitts, Willard A., Sr., and Willard A., Jr., assignors.)						
Kitts, Willard A., Sr., and Willard A., Jr., assignors to Kitts Semi-Flash Boiler Company, Oswego, N. Y. Steam-generator	707,901	Aug. 26	3764	844	100	1938
	709,089	Sept. 30	3978	874	100	2838
Klarson, John A., Pittsburg, Pa. Hair-crimper	705,584	July 22	4279	925	100	914
Klauberg, Charles, Hartford, Conn., assignor to Meinecke & Company, New York, N. Y. Brush	707,786	Aug. 26	3474	783	100	1881
Kleber, Peter, Wiesbaden, Germany. Fastening device	704,548	July 15	2228	482	100	481
Klee, Frederick C., assignor to National Hotel Register Company, Dubuque, Iowa. Hotel-register	707,516	Aug. 19	2572	551	100	1743
Klein, Charles J., New York, N. Y., assignor to C-K Manufacturing Company, New York, N. Y., and Jersey City, N. J. Plug-receptacle	705,361	July 22	3923	849	100	848
Klein, Joseph, assignor of one-half to W. Ferguson, Cass City, Mich. Cream-separator and churn	704,713	July 15	2404	540	100	587
Klein, Mathias J., Baltimore, Md. Explosive-engine	704,549	July 15	2230	483	100	482
Klein, Moses, assignor to American Folding Box Company, Chicago, Ill. Safety-box						

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Klein, William M. (See Williams, William C., assignor.)						
Kleinfeldt, Arthur, New York, N. Y. Siphon for dispensing liquids	706,428	Aug. 5	849	186	100	1288
Kleinknecht, Charles. (See Schmidt, Charles F., assignor.)						
Kleinschmidt, Edward E., assignor to F. Kleinschmidt, New York, N. Y. Facsimile-telegraph	709,158	Sept. 16	2195	502, 503, 504, 505	100	2463
Kleinschmidt, Frederick. (See Kleinschmidt, Edward E., assignor.)						
Klemm, Hermann A., New York, N. Y. Presser-foot-locking mechanism for sewing-machines	706,068	Aug. 5	129	26	100	1143
Klepetko, Frank. (See Evans and Klepetko.)						
Klerx, Johann H., assignor to Susquehanna Silk Mills, Sunbury, Pa. Mechanism for controlling looms by the quantity of weft in the shuttles	709,910	Sept. 30	3716	838	100	2804
Klerx, Johann H., assignor to Susquehanna Silk Mills, Sunbury, Pa. Mechanism for controlling looms by the quantity of weft in the shuttles	709,911	Sept. 30	3719	838, 839	100	2805
Kliegl, Anton T. (See Kliegl, John H. and A. T.)						
Kliegl, John H. and A. T., New York, N. Y. Electromedical appliance	708,365	Sept. 2	664	149, 150	100	2115
Kline, Everett A. (See Baldwin and Kline.)						
Kling, Aloys W., Dayton, Ohio. Lithographing or printing-press roller	710,327	Sept. 30	4505	1015	100	2972
Klingemann, Felix. (See Weinberg and Klingemann.)						
Klinger, Alexander, Silverton, Colo. Torpedo and means for propelling same	704,050	July 8	1255	271	100	264
Klink, George B. and J. C., Tacoma, Wash. Mail-bag catcher	706,323	Aug. 5	645	141	100	1245
Klink, John C. (See Klink, George B. and J. C.)						
Klinker, Timke H., Jr., and R. Gabrielsky, Jersey City, N. J. Electric battery	710,278	Sept. 30	4421	907	100	2955
Klocke, William, Brooklyn, assignor to E. W. Bliss Company, New York, N. Y. Clutch for power-presses	710,199	Sept. 30	4282	904	100	2925
Kloeb, Joseph A., Piqua, Ohio. Heating apparatus	705,094	July 22	3313	720	100	720
Klogel, Karl S., New York, N. Y. Lock-stitch sewing-machine	708,771	Sept. 9	1401	321	100	2279
Knapp, Fred H., Chicago, Ill. Shade adjustment	707,240	Aug. 19	2263	530	100	1636
Knapp, Fred H., Chicago, Ill. Cord-holding device	707,241	Aug. 19	2264	530	100	1637
Knapp, Paul S., and J. Steinberg, McKeesport, Pa. Vault-cover	705,679	July 29	4575	994	100	995
Knappe, Paul A., Grantville, Ga., assignor, by mesne assignments, to American Amalgamating Company. Amalgamator	705,095	July 22	3315	720	100	720
Knappe, Paul A., Grantville, Ga., assignor, by mesne assignments, to American Amalgamating Company. Amalgamating metals	705,096	July 22	3318	720	100	721
Knappe, Paul A., Grantville, Ga., assignor, by mesne assignments, to American Amalgamating Company. Amalgamating metals	707,971	Aug. 26	3834	862	100	1951
Knappe, Paul A., Grantville, Ga., assignor, by mesne assignments, to American Amalgamating Company. Amalgamator	707,972	Aug. 26	3837	862	100	1952
Knauer, John H., *et al.* (See Burch, Charles J., assignor.)						
Knaus, James M., Sedalia, Mo. Metallic hood for vestibules of cars	706,424	Aug. 5	851	186, 187	100	1285
Knee, Allison W., assignor of one-third to F. J. Manz, Syracuse, N. Y. Railway signaling system	704,347	July 8	1833	398	100	396
Kneedler, John D., assignor of one-half to B. Couch, Sioux City, Iowa. Coin-controlled device	705,362	July 22	3924	850	100	845
Knickerbocker, Burton D., Chicago, Ill. Folding bath-cabinet	706,069	Aug. 5	130	27	100	1143
Knierlem, Henry. (See Zimmerly, Lancing T., assignor.)						
Knight, John H., Barfield, near Farnham, England. Machine for laying bricks for building purposes	704,647	July 15	2383	516	100	513
Knight, John H., Barfield, near Farnham, England. Machine for laying bricks for building purposes	704,648	July 15	2384	516	100	514
Knöbel, Franz and W., Wiesenbrück, Germany. Dog-cart	708,427	July 1	110	24	100	25
Knöbel, Wilhelm. (See Knöbel, Franz and W.)						
Knobelock, William C. (See Brandenburg and Knobelock.)						
Knoche, John, Cincinnati, Ohio. Washing-machine	708,428	July 1	111	25	100	25
Knochenhauer, Gustav, Schaala, near Rudolstadt, Germany. Forcing-frame or like sash or window	707,982	Aug. 26	3766	845	100	1939
Knollenberg, Hermann, *et al.* (See Scheele, Walter T., assignor.)						
Knox, Frank J., Hartford, Conn. Water-gage attachment	706,959	Aug. 12	1843	412	100	1509
Knox, Luther L., Pittsburg, Pa. Water-cooled reversing-valve	708,718	Sept. 9	1908	297	100	2257
Knox, Luther L., Pittsburg, Pa. Furnace-door	708,719	Sept. 9	1905	298	100	2258
Knox, William R., Newark, N. J. Hydraulic fireproof cement	706,760	Aug. 12	1481	.....	100	1436
Knudson, Adolphus A., and F. H. Clark, Brooklyn, N. Y. Stethoscopic instrument	705,934	July 29	5029	1096	100	1077
Koch, Jerry H., Alpha, W. Va. Tool	706,184	Aug. 5	855	76	100	1186
Koch, John H., Scranton, Pa. Valve	707,587	Aug. 19	2557	577	100	1676
Koch, Millard F., New York, N. Y. Plaiting-machine	707,983	Aug. 26	3767	845, 846	100	1939
Koegel, Julius, Newark, N. J. Burial-casket	706,960	Aug. 12	1844	412, 413	100	1510
Koegle, John G., Columbus, Ohio. Gas-burner	706,761	Aug. 12	1488	328	100	1436
Koelmel, Joseph F., Crookston, Minn. Compound tool	703,598	July 1	891	91	100	78
Koenig, Christian J., Alton, Ill. Glass-blowing machine	703,599	July 1	892	91, 92, 93	100	78
Koeppen, William F., Marion, Ind. Mold opening or closing device	706,814	Sept. 9	1507	345	100	2301
Koeser, Carl D., assignor to Buckstaff Edwards Co., Oshkosh, Wis. Burial-case	703,931	July 1	1029	223	100	205
Koetschet, Joseph, St. Fons, near Lyons, assignor to Société Chimique des Usines du Rhône, anciennement Gilliard, P. Monnet et Cartier, Lyons, France. Ortho-sulfonated toluylic aldehyde and making same	709,159	Sept. 16	2220	.....	100	2467
Koetschet, Joseph, St. Fons, near Lyons, assignor to Société Chimique des Usines du Rhône, anciennement Gilliard, P. Monnet et Cartier, Lyons, France. Green dye and making same	709,160	Sept. 16	2221	.....	100	2467
Köhler, August, Hamburg, Germany. Apparatus for spraying and burning liquid fuel	709,579	Sept. 23	3078	684	100	2560
Kohler, Emil. (See Wentzel, Otto, assignor.)						
Koken, Ernest E., St. Louis, Mo. Copying-press	706,097	July 22	3922	720, 721	100	722
Kohn, Koby, Lincoln, Nebr. Rail-joint	706,941	Aug. 5	400	98	100	1210
Kolf, Max, assignor to E. J. Dienst and J. A. Badendieck, St. Louis, Mo. Window-screen	706,762	Aug. 12	1484	329	100	1436
König, Albert, assignor to Firm C. Zeiss, Jena, Germany. Prismatic sighting-telescope	708,720	Sept. 9	1906	298	100	2258
König, Max, Grosslichterfelde, Germany. Apparatus for drying grain, &c	705,840	July 29	4879	1060, 1061	100	1049
Koonce, Samuel C., *et al.* (See Lindsay, Robert F., assignor.)						
Koons, John H., assignor of one-half to H. Schwartz, Lehighton, Pa. Folding stretcher or cot	709,892	Sept. 16	2546	673	100	2587

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Koons, Sanford. (See Moritz, Frymire, and Koons.)						
Kopp, William, Louisville, Ky. Joint for pilasters, pillars, posts, &c.	708,070	Aug. 5	133	27	100	1144
Kopperud, Anders H., Byron, Cal. Cultivator	708,150	Sept. 2	380	67	100	2089
Kops Brothers. (See Kops, Samuel, assignor.)						
Kops, Samuel, assignor to Kops Brothers, New York, N. Y. Machine for feeding, printing, and cutting strips of material	709,271	Sept. 16	2436	551	100	2513
Korsmeyer, Ernest H., Kansas City, Mo., assignor to Kansas City Hay Press Company. Governing and valve-operating mechanism for gas or vapor engines	708,485	Sept. 2	872	198 199	100	2158
Kort, Ferdinand W. (See Gerlin, Frederick C., assignor.)						
Korth, John C. and A. Ganzenmuller, New York, N. Y. Exercising-machine	708,840	July 15	2749	593	100	568
Koscherak, Ignatz, New York, N. Y. Bottle-stopper	709,161	Sept. 16	2223	505	100	2467
Koscherak, Ignatz, New York, N. Y. Bottle-stopper	709,162	Sept. 16	2224	505	100	2467
Kostálek, Josef, Prague-Vinohrady, assignor to Society Maschinenbau-Actiengesellschaft vormals Breitfeld, Daněk & Co., Akciová Spolecnost Strojirny Drive Breitfeld, Daněk I Spol., Karlin, Bohemia, Austria-Hungary. Filter	709,718	Sept. 23	3300	741	100	2706
Kostlan, Frank, Traer, Iowa. Emergency safety-plug	708,562	Sept. 9	1005	227	100	2190
Kracker, Julius and M., New York, N. Y. Ash-receptacle	707,849	Aug. 26	3615	815	100	1908
Kracker, Max. (See Kracker, Julius and M.)						
Kraft, Edward, Madera, Pa. Window	708,600	July 1	395	98	100	79
Kragen, Louis, San Francisco, Cal. Convertible bed and sofa or chair	709,333	Sept. 16	2548	573	100	2537
Kramer, William M. (See Rockwell, Ludlem H., assignor.)						
Krancher, Edward, Brooklyn, N. Y. Hat-pin retainer	708,795	July 1	778	171	100	156
Krank, Albert, Warkaus Jorois, Russia. Steam-turbine	708,815	Sept. 9	1509	345 346	100	2309
Krantz, Hubert. (See Müller, Ernest W., assignor.)						
Krantz, Hubert, Brooklyn, N. Y. Electrical panel-board	705,850	July 29	4882	1061	100	1048
Kranz, Frederick W., Minneapolis, Minn. Top-spinning device	705,252	July 22	3665	792	100	702
Kraus, Otto, New York, N. Y. Necktie-fastener	707,786	Aug. 26	3476	762	100	1881
Krause, Arthur E., Jersey City, N. J. Removing oil from water	705,253	July 22	3666	.....	100	702
Krause, Ida, *et al.* (See Neubauer, Carl E., assignor.)						
Krauss, Jacob, Lexington, Ky. Vehicle	708,601	July 1	398	98	100	79
Kraut, Charles, Chicago, Ill. Transferring designs	705,590	July 29	4411	956	100	953
Krauter, John F., Toledo, Ohio. Hot-air furnace	708,563	Sept. 9	1006	228	100	2196
Kravik, Gjermund H., Belview, Minn. File	709,640	Sept. 23	3174	706	100	2680
Krebs, Arthur C., assignor to Société Anonyme des Anciens Etablissements Panhard et Levassor, Paris, France. Apparatus for distributing the primary current for electric ignition by coils and igniters in explosive-engines	708,058	Sept. 2	105	24	100	2008
Krebs, Frederick H., Copenhagen, Denmark. Lead fuse for electric circuits	709,334	Sept. 16	2549	574	100	2538
Krebs, John F., assignor of one-half to C. Casser, Colorado Springs, Colo. Paint-oil and making same	706,961	Aug. 12	1846	.....	100	1510
Krehbiel, Charles H., Moundridge, Kans. Power-hammer	709,780	Sept. 23	3445	775	100	2735
Kreidler, Anton, Stuttgart, Germany. Wire-covering machine	704,550	July 15	2231	483	100	482
Kremer, Franklin W. (See Wheeler and Kremer.)						
Krentler-Arnold Hinge Last Company. (See Shainsey, Fred J., assignor.)						
Kress, John, New Rochelle, N. Y. System for ventilating tunnels	704,808	July 15	2696	583	100	576
Kron, Rudolf, Jr., Golzern, Switzerland. Wire-cloth for paper-machines	709,288	Sept. 16	2542	551	100	2493
Krone, Johannes, assignor to F. Krupp, Essen, Germany. Apparatus for transferring ammunition from the ammunition-carriage into the loading-axis of the gun	709,781	Sept. 23	3447	775 776	100	2736
Kronheim, Wolf, Hanover, Germany. Comb	707,598	Aug. 26	3057	688	100	1796
Krotz, Alvaro S., Springfield, Ohio. Automobile	704,809	July 15	2698	583 584	100	577
Krout, John G. (See Emig and Krout.)						
Krumhoff, Ernst, Soutra, Germany. Lead for measuring depths	707,599	Aug. 26	3058	688	100	1796
Krupicka, Frank, Milligan, Nebr. Incubator	704,841	July 15	2751	595	100	589
Krupp, Fried. (See Behnke, Otto, assignor.)						
Krupp, Fried. (See Dörr, Carl T., assignor.)						
Krupp, Fried. (See Krone, Johannes, assignor.)						
Krupp, Fried. (See Kurig, Josef, assignor.)						
Krupp, Fried. (See Lauber, Otto, assignor.)						
Krupp, Fried. (See Lauber and Stock, assignors.)						
Krupp, Fried. (See Wratzke, Alfred, assignor.)						
Krux, Frank, San Francisco, Cal. Coffee-roaster	706,571	Aug. 12	1109	246	100	1355
Krvaysser, Emil. (See Scheiber and Krvaysser.)						
Kryger, Henry H., Minneapolis, Minn. Cylinder rotary snow-plow	707,121	Aug. 19	2140	478 479	100	1588
Krygoski, Gregory, and E. A. Lowrie, St. Louis, Mo., assignors of one-fourth to S. A. Czerniewski. Car-door fitting	708,366	Sept. 2	665	150	100	2116
Krygoski, Gregory, and E. A. Lowrie, St. Louis, Mo., assignors of one-fourth to S. A. Czerniewski. Car-door fitting	708,367	Sept. 2	666	150	100	2116
Kubierschky, Martin T. A., Berlin, Germany. Automatic tension device for chains or other traction means	706,962	Aug. 12	1847	413	100	1510
Kuchenbecker, Awald E. (See Pierce and Kuchenbecker.)						
Kuczkowski, Lucas. (See Rensman, Henry R., assignor.)						
Kuechenmiester, Henry. (See Kuechenmiester, John H., assignor.)						
Kuechenmiester, John H., assignor of one-half to H. Kuechenmiester, St. Louis, Mo. Can	709,017	Sept. 16	1922	441	100	2404
Kuehn, Caroline, *et al.* (See Kuehn, Paul, assignor.)						
Kuehn, Paul, assignor to H. Howe and C. Kuehn, Toledo, Ohio. Bank-deposit-coupon book	705,851	July 29	4883	1061 1062	100	1048
Kuentz, Adam, Colby, Wis. Endless propeller	707,600	Aug. 26	3059	688 689	100	1796
Kuentz, Adam, Colby, Wis. Station-indicator	709,912	Sept. 30	3722	839	100	2906
Kugler, Friedrich, assignor to Actiengesellschaft, vormals F. Martini & Co., Frauenfeld, Switzerland. Book-sewing machine	705,368	July 22	3697	850 851	100	843
Kuhlman, H. V., *et al.* (See Woodman, George A., assignor.)						
Kuhn, Edmond, East Orange, N. J., assignor to G. and E. Bunzl, New York, N. Y. Watch-case	707,430	Aug. 19	2727	617	100	1711
Kuhn, Max, New York, N. Y. Control-sheet	705,254	July 22	3668	792	100	792
Kuhn, Rudolf, Bruch, Germany. Making the interior of coke-ovens or other kilns tight	705,681	July 29	4575	994	100	986
Kuhns, John P., Dayton, Ohio, assignor, by mesne assignments, to National Tag Company, Sanford, Me. Pin-ticket	709,493	Sept. 23	2911	649	100	2220
Kulicke, Paul, Buckow, Germany. Ash-tray	708,650	Sept. 9	1169	266	100	2229
Kundtz, Theodor, Cleveland, Ohio. Machine-bearing cabinet	709,098	Sept. 16	2096	480	100	2442
Kunze, Adolph. (See Butler and Kunze.)						
Kunzelmann, Carl, Säckingen, Germany. Lock	703,429	July 1	112	25, 26	100	25

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Kunzelmann, Carl, Säckingen, Germany. Lock	709,018	Sept. 16	1023	441, 442	100	2405
Kupfer, Julius, Bamberg, Germany. Dental mouth-mirror	708,729	July 1	657	145	100	181
Kuppenheimer & Co., B. (See Wolf, Harry, assignor.)						
Kurig, Josef, assignor to F. Krupp, Essen, Germany. Ordnance	708,151	Sept. 2	282	67, 68	100	2039
Kurtz, Clinton J., Salem, Oreg. Fruit-drier	705,767	July 29	4737	1025	100	1017
Kurtz, Jacob, Greensburg, Pa. Strainer for mine-pumps	705,364	July 22	3981	852	100	844
Kyes, Lewis W., Hammond, Wis. Axle	710,157	Sept. 30	4204	947	100	2906
Kyle, Robert C. (See Campbell and Kyle.)						
Kynaston, John, Liverpool, England. Device for coupling two bicycles	707,122	Aug. 19	2141	479, 480	100	1569
L. S. Starrett Company. (See Simpson, Robert J., assignor.)						
La Barte, Warren, Cairo, W. Va. Sucker-rod grab for oil-wells, &c	709,580	Sept. 23	3079	685	100	2061
La Bauve, Valcoure J., Houston, Tex. Spoke-tightener	706,071	Aug. 5	134	27	100	1144
La Bud, August C. (See Barton and La Bud.)						
La Société Internationale de Meunerie et de Panification Systeme Schweitzer. (See Schweitzer, Joseph, assignor.)						
La Société Marinier, Navoit et Jeanson. (See Avril, Paul V., assignor.)						
Laas, Edward, Elgin, and H. H. Sponenburg, Wadsworth, Ill. Railway-rail stay	705,602	July 1	399	94	100	79
Laban, Julius. (See Laban, Peter F., assignor.)						
Laban, Peter F., Altona, Germany, assignor to J. Laban, Brooklyn, N. Y. Valve-lubricator	706,963	Aug. 12	1848	413	100	1510
Labranche, Joseph L. (See Grondin, Brillard, and Labranche.)						
Lacey, Elmer B., and A. J. Fuller, West Auburn, Pa. Silo	707,123	Aug. 19	2142	480	100	1580
Ladewig, Paul, Essen, Germany. Temporary binder	708,780	July 1	658	146	100	132
Laedlein, Edward F. (See Nice and Laedlein.)						
Lafferty, Erastus S., Galesburg, assignor to J. G. Bohl, Peoria, Ill. Railway-torpedo	710,302	Sept. 30	4565	1030	100	2984
Lafferty, John M., Pittsburg, Pa. Tongs for handling ingots, &c	706,824	Aug. 5	646	141	100	1245
Laflin & Rand Powder Company. (See Howard, Frank B., assignor.)						
Laforest, Aubin A., St. Louis, Mo. Attachment for spectacles	704,714	July 15	2496	540	100	587
Lafrique, Gabriel, assignor to Société Lafrique, Pinton et Cie., Paris, France. Machine for removing hard and stiff hairs from furs or skins	706,964	Aug. 12	1849	414	100	1511
Laganke, Charles F., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Line-spacing mechanism for type-writing machines	708,961	July 1	1086	235	100	216
Laganke, Charles F., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Follower-plate for type-writing-machine plates	704,479	July 8	2081	451, 452	100	637
Laganke, Charles F., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Type-writing machine	705,535	July 22	4280	925, 926	100	914
Laganke, Charles F., assignor to Fisher Book Typewriter Company, Cleveland, Ohio. Work gage and clamp for type-writing machines	705,536	July 22	4284	926	100	915
Laganke, Charles F., Cleveland, Ohio, assignor to Fisher Typewriter Company. Work-gage for type-writing machines	705,537	July 22	4290	927, 928	100	916
Laban, Edward J., Quincy, Ill. Stove	704,051	July 8	1956	271	100	264
Lahodny, William, Akron, Ohio. Machine for grinding glass	709,019	Sept. 16	1927	442, 443	100	2405
Lahodny, William, Akron, Ohio. Glass grinding and polishing machine	709,020	Sept. 16	1930	443, 444	100	2406
Lahr, Henry B., assignor of one-half to Bowling Ball Company, New York, N. Y. Bowling-alley	709,168	Sept. 16	2225	505	100	2467
Laird, David, Forfar, Scotland. Cupellation-furnace	704,198	July 8	1567	338	100	328
Laird, John F., Fallriver, Wis. Automatic alarm	708,816	Sept. 9	1512	346	100	2372
Laird, Nigel, Turniston, Scotland. Paper bag	708,284	Sept. 2	440	100	100	2071
Laird, William H. (See Harrison, Newton, assignor.)						
Lajoie, Edward. (See Chevalier and Lajoie.)						
Lajoie, Napoléon. (See Chevalier and Lajoie.)						
Lake, Charles W., *et al.* (See Hayden, Samuel R., assignor.)						
Lake, David, and E. W. Crellin, Philadelphia, assignors of one-half to A. Markle and J. W. Crellin, Hazleton, Pa. Screw-cutting machine	705,538	July 22	4295	928, 929	100	917
Lake, Judson N. (See Palmer and Lake.)						
Lake, Simon, Bridgeport, Conn. Pneumatic torpedo-firing apparatus	709,835	Sept. 16	2551	574, 575	100	2538
Lakhovsky, Georges, Paris, France. Bolt-retainer	703,796	July 1	770	171	100	156
Lally, John, Waltham, Mass. Scaffold-splicer	704,884	July 15	2926	611	100	605
Lally, John, Waltham, Mass. Staging-clamp	706,185	Aug. 5	356	77	100	1189
Lally, John T., and J. J. English, Wilmington, Del. Hot-air pumping-engine	706,425	Aug. 5	852	187	100	1236
Lalor, Patrick, Denver, Colo., assignor of one-half to W. Y. Lawton, San Francisco, Cal. Window	705,098	July 22	3325	721	100	722
Lamb, Burton T., and E. G. Gould, Portland, Me. Awning	709,913	Sept. 30	3734	830	100	2906
Lambert, Asher, Newark, N. J. Derrick-swinging attachment for hoisting-engines	707,851	Aug. 26	3617	816	100	1908
Lambert Company. (See Messer, William F., assignor.)						
Lambert, Henry M., and O. H. Joy, Portland, Oreg. Combined mud-guard, supplemental seat, and parcel-holder for bicycles	704,866	July 15	2928	611	100	605
Lamble, James B., *et al.*, trustees. (See Cahill, Thaddeus, assignor.)						
Lambrecht, Hermann J. G., and C. Schielke, Maples, Ill. Photograph-holder	707,850	Aug. 26	3616	815	100	1908
Lamme, Benjamin G., Pittsburg, Pa. Starting rotary converters	710,368	Sept. 30	4566	1030	100	2994
Lamme, Benjamin G., Pittsburg, Pa., assignor to Westinghouse Electric & Manufacturing Company. System of electrical distribution	710,156	Sept. 30	4305	948	100	2907
Lamphere, Charles L. (See Beckwith and Lamphere.)						
Lancaster, Fred R., *et al.* (See Burch, Charles J., assignor.)						
Lancaster, Israel, Chicago, Ill. Covering for aeroplanes	706,838	Aug. 12	1614	362, 363	100	1465
Lancaster, John P., assignor to J. N. Vasey, Chicago, Ill. Railway-tie	703,797	July 1	780	171	100	156
Lance, Andrew M., Paris, Pa. Gate	707,481	Aug. 19	2726	617	100	1712
Landenberger, Charles H., Philadelphia, Pa. Loom for weaving tufted pile fabrics	706,072	Aug. 5	135	28, 29	100	1145
Landers, Frary and Clark. (See Smith, Charles F., assignor.)						
Landis, Israel L., Chicago, Ill. Gate. (Reissue)	12,069	Sept. 30	4641	1048	100	2999
Lane, Charles C., Los Angeles, Cal. Ore-crushing machine	709,822	Sept. 23	3528	795	100	2758
Lane, Clarence E. (See Hilt and Lane.)						
Lane, George, Poughkeepsie, N. Y. Igniting device for hydrocarbon-burners	707,852	Aug. 26	3620	816	100	1908
Lane, William H., Ithaca, N. Y. Billiard-cue	710,279	Sept. 30	4422	997	100	2955
Lang, Mathias. (See Gillis, Harry B., assignor.)						
Langan, William B., Hawley, Pa. Bottle filling and corking machine	709,413	Sept. 16	2721	610	100	2573
Langdon, James G., Newton, Mass. Sectional heater	705,099	July 22	3327	722	100	723
Lange, Berthold A., St. Louis, Mo. Box-joint	706,763	Aug. 19	1485	329	100	1436
Lange, Joseph H. (See Reitz and Lange.)						
Langfitt, John W., Adel, Iowa. Electric road-grading machine	706,071	Aug. 12	1302	287	100	1397

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Langham, Herbert W., Barton, Md. Nut-lock	705,325	Aug. 5	648	141	100	1246
Langhorne. Catherine M., Plainfield, N. J. Aseptic sputum-receptacle and holder	709,164	Sept. 16	2226	506	100	2468
Langrill, William, Bay City, Mich. Voting-machine	705,326	Aug. 5	649	141	100	1246
Langston, Thomas J., Johnston, S. C. Folding basket	705,496	Aug. 5	854	187	100	1286
Langville, Louis S. (See Thwing, Charles B., assignor.)						
Lapham, Charles P., Houghton, N. Y. Trolley-pole attachment	708,749	July 15	2578	554	100	552
Lapointe, Frederic, Montreal, Canada. System of bookkeeping	710,108	Sept. 30	4091	923, 924	100	2382
Lapointe, Joseph N., Hydepark, Mass. Grinding-machine	704,348	July 8	1829	898, 899, 400	100	368
Laporte, Frank, and L. Baptiste, St. Louis, Mo. Combined tobacco box and cutter	704,062	July 8	1258	272	100	264
Lapp, Valentin, Lindenau, Germany. Manufacturing non-alcoholic beer	709,713	Sept. 23	3301	741	100	2706
Laprise, Louis. (See Yon and Laprise.)						
Larimer, Daniel W., and D. C. Elliott, Goshen, Ind. Composition fence-post	704,842	July 15	2752	595	100	589
Larkin, Bernard H., River Forrest, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J. Sheet-metal balled can or vessel	704,261	July 8	1672	364	100	350
Larsen, Eduard, Copenhagen, Denmark. Apparatus for drying and distilling wood, sawdust, peat, or the like, and for treating other substances	704,886	July 15	2880	612	100	606
Larsen, Edward, Alta, Iowa. Recording-machine	706,935	July 1	1029	223, 224	100	205
Larsen, Jacob F., Chicago, Ill. Screw-driver	709,603	Sept. 23	3116	694	100	2669
Larsson, Henry W., assignor to Larsson Whip Company, Springfield, Mass. Butt-loading for whips	707,124	Aug. 19	2143	480	100	1580
Larsson Whip Company. (See Larsson, Henry W., assignor.)						
Lassiter, Columbus K., Richmond, Va. Bolt-machine	708,801	Sept. 9	1663	382	100	2384
Latham & Company. (See Caswell, Myron J., assignor.)						
Latham, Woodville, assignor, by mesne assignments, to E. & H. T. Anthony & Co., New York, N. Y. Projecting-kinetoscope	707,984	Aug. 26	3702	846, 847	100	1939
Latshaw, Allen, Philadelphia, Pa. Measuring-rule	706,242	Aug. 5	462	98	100	1210
Lauber, Otto, Essen-Altendorf, assignor to F. Krupp, Essen, Germany. Gun-carriage	708,235	Sept. 2	441	100	100	2071
Lauber, Otto, and F. Stock, assignors to F. Krupp, Essen, Germany. Combined axle-seat and shield for gun-carriages	707,432	Aug. 19	2730	617, 618	100	1712
Lauderdale, Chapin F., Milwaukee, Wis. Dental-gold annealer	708,772	Sept. 9	1403	322	100	2279
Laughlin, Charles, St. Louis, Mo. Smelting-furnace	707,601	Aug. 26	3061	689	100	1797
Laughlin, Charles. St. Louis, Mo. Smelting-furnace	707,602	Aug. 26	3062	689	100	1797
Laundon, Ernest T. (See Reynolds, Harry J., assignor.)						
Laupheimer, Maurice. (See Bailey, John R., assignor.)						
Laurent, Louis C., Denver, Colo. Spark and cinder arrester for locomotive smoke-stacks	707,063	Aug. 12	2027	453	100	1548
Laurick, Carl, Berlin, Germany. Locking device for the operating-cranks of cash-registers	707,608	Aug. 26	3063	690	100	1798
Laursen, Anders P., Centerpoint, S. D. Cream-elevator	710,280	Sept. 30	4434	997	100	2655
Lauster, August. (See Kerr and Lauster.)						
Laux, Mathias, assignor of two-thirds to T. E. Glynn and J. E. Coates, Little Rock, Ark. Cinder-hopper	705,606	July 1	400	94	100	79
Laval, Constant, Pittsburg, Pa. Trough for silvering glass	709,396	Sept. 16	2557	575	100	2540
Lavery, Richard, Boston, Mass. Differential-gear pulley-block	708,152	Sept. 2	285	68, 69	100	2040
Law, Charles, Pittston, Pa. Chute	705,365	July 22	3033	852	100	844
Law, Oliver G., Dayton, Ohio. Book-support and arm-rest	710,104	Sept. 30	4094	924	100	2382
Lawler, James G., St. Charles, Mo. Trap-door for car-platforms	706,833	Aug. 12	1617	363	100	1465
Lawler, James J. Mount Vernon, N. Y. Atmospheric gas-heating burner	709,496	Sept. 23	2912	549	100	2636
Lawless, Patrick H. (See Mills, Henry D., assignor.)						
Lawlor, Simeon C., Duluth, Minn. Window-cleaning apparatus	706,834	Aug. 12	1619	363, 364	100	1465
Lawrance, James P. S., U. S. Navy, assignor of one-half to T. B. Zell, Reading, Pa. Flask for treating wheels	706,817	Sept. 9	1513	346, 347	100	2503
Lawrence, Ambrose, Acme, Tex. Apparatus for calcining plaster	706,965	Aug. 12	1852	415	100	1511
Lawrence, Edward M., Lubec, Me. Fish-flaking machine	706,764	Aug. 12	1467	329	100	1436
Lawrence, Frederick K. (See Coombs, James F., assignor.)						
Lawrence, Frederick R., Brooklyn, N. Y. Tile	707,125	Aug. 19	2145	481	100	1590
Lawrence, James E., assignor of one-half to V. Marchessault, West Shefford, Canada. Tempering-bath	706,966	Aug. 12	1854	415	100	1511
Lawrence, James M., Commerce, Tex. Washing-machine	707,242	Aug. 19	2265	530	100	1637
Lawrence, Jesse E., Chicago, Ill. Cooling and ventilating system	706,397	Aug. 5	551	142	100	1246
Lawrence, Leroy D., Parsons, Kans. Lamp-extinguisher	706,572	Aug. 12	1110	246	100	1356
Lawrence, Wallace G. (See Wood and Lawrence.)						
Lawrence, William G., Oakland, Cal. Non-refillable bottle	709,099	Sept. 16	2090	480	100	2442
Lawson, Charles C. (See Anderson, Hugh, assignor.)						
Lawton, Samuel D., *et al.* (See McNerney, Thomas H., assignor.)						
Lawton, William Y. (See Lalor, Patrick, assignor.)						
Lay, John F., Louisville, Ky. Knockdown shipping-crate	706,651	Sept. 9	1169	266	100	2230
Layng, George H., Havelock, Canada. Nut-lock	704,053	July 8	1259	272	100	264
Le Blond, Richard K., Cincinnati, Ohio. Variable speed mechanism	706,186	Aug. 5	358	77	100	1189
Le Flem, Frank, Philadelphia, Pa. Combined hub and brake for motor-vehicles	705,100	July 22	3329	723	100	723
Le Gall du Tertre. (See Conti, Geofroy, and Le Gall du Tertre.)						
Le Mond, George E., assignor of two-thirds to W. Bogart and C. Given, Detroit, Mich. Swiveled hose-reel	706,968	Aug. 12	1856	415	100	1512
Le Polletier, Edouard, Vienna, Austria-Hungary. Hydrocarbon-vapor burner	705,258	July 22	3693	800	100	796
Leach, Amos W., Indianapolis, Ind. Safety device for elevators	709,494	Sept. 23	2913	650	100	2627
Leader Manufacturing Company. (See Post, John H., assignor.)						
Leahy, Louis K., Los Angeles, Cal. Hydrocarbon-burner	709,782	Sept. 23	3450	776	100	2736
Learned, George A., Detroit, Mich. Combination high chair	706,835	Aug. 12	1621	364	100	1466
Leary, William A., Washington, D. C. Pencil-case	709,387	Sept. 16	2558	575	100	2540
Leary, William J., Buffalo, N. Y. Paving brick or block	710,062	Sept. 30	4000	902	100	2354
Leavitt, Frank M., assignor to E. W. Bliss Company, Brooklyn, N. Y. Condensing pumping-engine	704,054	July 8	1260	272	100	265
Leblanc, Edouard, Grenoble, France. Glove	704,551	July 15	2232	493	100	492
Lebret, Adriaan. (See Vosmaer and Lebret.)						
Leckband, Theodor H. J., Adair, assignor of one-half to Mason City Gas and Fuel Company, Mason City, Iowa. Carbureter	707,973	Aug. 26	3040	662	100	1929
Lecomte, Auguste, Paris, France. Vapor-burner	708,661	July 1	527	119	100	108
Leconte, Eugène, Estaires, and J. Loiselet, Paris, France. Manufacturing rice-starch or other amylaceous substances	704,349	July 8	1847	400	100	300
Leddon, George W. (See Moore and Leddon.)						
Lederer, Sigmund, Providence, R. I. Bracelet	710,105	Sept. 30	4095	924	100	2383

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Ledru, Jérôme, Basècles, Hainaut, Belgium. Acetylene-gas generator	710,159	Sept. 30	4208	948	100	2007
Lee, Charles A. (See Grosjean, Wallace D., assignor.)						
Lee, Charles A. (See McCammon and Lee.)						
Lee, Elmer, New York, N. Y. Reservoir for dispensing liquid soap	708,652	Sept. 9	1171	267	100	2250
Lee, George B. (See Hatfill and Lee.)						
Lee, George S., Hawthorne, N. J. Vehicle-wheel	709,546	Sept. 23	3321	672	100	2548
Lee, John, San Francisco, Cal., assignor to American Can Company, Jersey City, N. J. Machine for applying solder to metal blanks	705,937	July 29	5035	1097, 1098	100	1078
Lee, John C., Brookline, and E. H. Colpitts, Boston, Mass., assignors to American Telephone and Telegraph Company. Magnetic core for inductance-coils	705,985	July 29	5030	1098, 1097	100	1078
Lee, John C., Brookline, and E. H. Colpitts, Boston, Mass., assignors to American Telephone and Telegraph Company. Loaded electric circuit	705,986	July 29	5034	1097	100	1078
Lee, Phillip. (See Wright, Earl E., assignor.)						
Lee, William R., Marion, Ill. Apparatus for recovering minerals carried off in the fumes from smelting-furnaces	704,199	July 8	1568	338	100	388
Lee, William R., St. Clair, Nev. Scoop and scraper	706,886	Aug. 12	1662	364	100	1467
Lee, William T., Altoona, Pa. Mailing-envelop	710,200	Sept. 30	4285	965	100	2026
Lee, Willis C., and M. F. Moore, Chicago, Ill. Rail-clamp	708,490	July 1	115	26	100	25
Leek, Frank C., Surrey, Ind. Shingling carriage and gage	710,281	Sept. 30	4427	998	100	2056
Lees, Ernest J. (See Smith and Lees.)						
Leeser, Emil, Chicago, Ill. Manifold device	704,891	July 15	2898	614	100	608
Leeson, George, Lake City, Minn. Washboiler	707,126	Aug. 19	2146	481	100	1590
Lefever, Edwin, Climax, Ohio. Insulator	710,282	Sept. 30	4429	998	100	2056
Lefferts, Henry D., New Brunswick, N. J. Bicycle-tire	709,021	Sept. 16	1932	444	100	2406
Leftwich, Andrew B., assignor of one-half to E. E. Scantlin, Pueblo, Colo. Reversing valve-gear	703,936	July 1	1033	224	100	206
Lehman, Isador, Cleveland, Ohio. Shaft-coupling	705,366	July 22	3993	852	100	844
Lehman, Robert J. (See Shick, Lehman, and Walker.)						
Lehmann, Frederic, Allegheny, Pa. Lamp-burner	708,368	Sept. 2	668	150	100	2117
Lehmann, Jacob, and H. Maurer, Bockenheim, Germany. Double-working planing-machine	705,852	July 29	4885	1092	100	1049
Lehmann, Max, Berlin, Germany. Polishing-block for laundry purposes	706,967	Aug. 12	1855	415	100	1512
Leichtentritt, Moses. (See Culver and Leichtentritt.)						
Leidecker, Frank W., Marietta, Ohio. Check or clack valve	705,255	July 22	3670	793	100	792
Leiendecker, Charles, Lawrenceburg, Ind. Railway-crossing and switch for same	707,604	Aug. 26	3065	690	100	1798
Leiger, George F., assignor of three-fourths to L. Benedict, Chicago, Ill. Can-testing machine	704,490	July 8	2085	452	100	438
Leilich, Francis T., assignor of one-half to J. G. Simonton, San Francisco, Cal. Bar-stitching machine	705,256	July 22	3671	793, 794, 795, 795, 796, 797, 798, 799, 800	100	793
Leilich, Francis T., assignor of one-half to J. G. Simonton, San Francisco, Cal. Button-hole-sewing machine	705,257	July 22	3679	793, 794, 795, 795, 796, 797, 798, 799, 800	100	793
Leinberger, John T., and J. G. Schmidt, Frankenlust Township, Bay county, Mich. Sugar-beet plow	706,765	Aug. 12	1488	330	100	1487
Leistner, Carl, London, England. Machine for making glass bottles	704,055	July 8	1264	273, 274	100	265
Leland, Frank J., Knoxville, Tenn. Lathe for turning irregular forms	703,798	July 1	783	172	100	157
Lemaire, Timothy, assignor of one-half to G. H. Bell, Troy, N. Y. Clothes-line holder	705,101	July 22	3331	723	100	724
Lemp, Hermann, Lynn, assignor to E. Thomson, Swampscott, Mass. Automobile	710,068	Sept. 30	4001	903	100	2064
Lenk, Carl P., *et al.* (See Nutry, John, assignor.)						
Lenk, Rudolph, *et al.* (See Nutry, John, assignor.)						
Lennard-Foote, William, Brooklyn, N. Y. Paint	705,988	July 29	5038	.....	100	1079
Lennon, Watson S., Tucson, Ariz. Ter. Car-coupling	709,338	Sept. 16	2559	575, 576	100	2540
Lennon, Watson S., Tucson, Ariz. Ter. Car-coupling	710,283	Sept. 30	4430	998	100	2056
Lennox, Alexander, Harrison, N. J., assignor to Singer Manufacturing Company. Sewing-machine guide	704,200	July 8	1569	339	100	339
Lenox, George C. L., London, England. Mooring block or clump	709,914	Sept. 30	3725	839	100	2006
Leonard, Eva C., Thompson, Pa. Portable stove	707,943	Aug. 19	2367	551	100	1637
Leonard, H. Ward. (See Ball, Henry P., assignor.)						
Leonard, H. Ward. (See Hewlett, Edward M., assignor.)						
Leonard, H. Ward. (See Leonard and Ball, assignors.)						
Leonard, H. Ward. (See Westover, Henry J., assignor.)						
Leonard, Harry W., Bronxville, N. Y. Resistance for rheostats, electric heaters, &c.	707,944	Aug. 19	2368	551	100	1637
Leonard, Harry W., Bronxville, N. Y. Control of electric motors	709,915	Sept. 30	3726	840	100	2006
Leonard, Harry W., Bronxville, N. Y. Controlling electric motors	709,916	Sept. 30	3730	840	100	2007
Leonard, Harry W., East Orange, N. J. Controlling the energy delivered to electrical translating devices	709,714	Sept. 23	3302	742	100	2707
Leonard, Harry W., New York, and H. P. Ball, Mount Vernon, assignors, by mesne assignments, to H. W. Leonard, Bronxville, N. Y. Electric-circuit breaker	705,102	July 22	3332	723, 724	100	724
Leonard, William A., Wareham, Mass. Gas-engine	708,236	Sept. 2	442	101	100	2071
Leonhardt, William, Baltimore, Md. Dumping-wagon	709,715	Sept. 23	3307	742	100	2707
Leonhardt, William, Baltimore, Md. Dumping cart or wagon	709,716	Sept. 23	3308	742	100	2708
Lepetit, Roberto, and E. Tagliani, Susa, Italy. Making extract dyes	704,843	July 15	2753	.....	100	589
Lesley, Hugh, assignor to Electric Storage Battery Company, Philadelphia, Pa. Tank for storage batteries	704,750	July 15	2574	555	100	532
Leslie, John S., *et al.* (See Lindsay, Robert F., assignor.)						
Lester, Daniel M., Norwich, Conn. Adjustable platen	709,339	Sept. 16	2561	576	100	2540
Lester, James H., Roanoke, Va. Insect-destroying compound	709,783	Sept. 23	3452	.....	100	2137
Letourneau, Frederick H. (See Wixted, Edward F., assignor.)						
Letts, Jeremiah S., Gladstone, N. D. Fire-extinguishing apparatus	703,002	July 1	528	119, 120	100	104
Leuchter, August, Brooklyn, N. Y. Producing negative plates for bichromated-gelatin processes	710,106	Sept. 30	4096	925	100	2068
Levalley, Christopher W., Milwaukee, Wis. Drive-chain	706,427	Aug. 5	856	188	100	1287
Leven, Adolph, Cologne, Germany. Protection against shot from hand firearms and artillery	700,100	Sept. 16	2100	481	100	2443
Leveque, Nathanael, assignor of one-half to J. Marshall and Brothers, Fall River, Mass. Hat-stiffening machine	706,054	Sept. 2	100	25	100	2008
Lever Brothers. (See Meek, Joseph, assignor.)						
Levi, Edward, Zurich, Switzerland. Molding-box for the manufacture of building-stones	709,495	Sept. 23	3314	650	100	2627

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Levick, Edward A., Duryea, Pa., assignor of two-thirds to Scranton Glass Mfg. Company. Bottle-closure	705,103	July 22	3330	724	100	726
Levin, Judah L., Detroit, Mich. Adding-machine	706,000	July 29	5143	1122	100	1101
Levine, Nathn, Boston, Mass. Folding bed-lounge	704,628	July 15	2450	520	100	528
Levinstein, Ivan, and C. Mensching, Manchester, England. Black sulfur dye and making same	706,960	Aug. 12	1857	.....	100	1512
Levison, Alexander, San Francisco, Cal. Manifold book. (Reissue)	12,005	July 1	1119	242	100	221
Levison, Alexander, San Francisco, Cal. Manifold-book and carbon therefor	710,160	Sept. 30	4210	948	100	2907
Levy, Abraham B. (See Hedden, Hiram J., assignor.)						
Levy, Moritz, New York, N. Y. Shoe-polishing machine	707,703	Aug. 26	3276	732	100	1842
Lewellen, John W., Philadelphia, Pa. Oil-burner	705,413	July 22	4013	868	100	1952
Lewellen, John W., Philadelphia, Pa. Oven or furnace	710,284	Sept. 30	4432	999	100	2957
Lewin, William. (See Vogelsang, August A., assignor.)						
Lewis, Albert H., assignor of three-fourths to A. G. Quimby, J. C. Shields and P. C. Stevenson, Uhrichsville, Ohio. Bolt and fastener therefor	708,486	Sept. 2	879	199	100	2159
Lewis, Edward Z., assignor to General Manifold Company, Franklin, Pa. Manifolding memorandum book or pad	704,844	July 15	2754	595	100	589
Lewis, George W., Portsmouth, assignor of one-half to C. A. Nash, Norfolk, Va. Journal-box	706,243	Aug. 5	463	99	100	1210
Lewis, Isaac N., Washington, D. C. Range-finder	706,766	Aug. 12	1489	330	100	1487
Lewis, Isaac N., Washington, D. C. Automatic range-finding sight for cannon	706,767	Aug. 12	1492	330, 331, 332	100	1487
Lewis, Isaac T., Philadelphia, Pa. Locomotive sand-delivering pipe	709,414	Sept. 16	2723	611	100	2574
Lewis, John S., and D. F. Grow, assignors of three-tenths to L. Wolf, Wabash, Ind. Show-case	704,056	July 8	1270	275	100	267
Lewis, Leopold, New York, N. Y. Graphoscope	709,415	Sept. 16	2725	611	100	2574
Lewis, Phelps, Yocum, Ky. Wagon-brake	708,564	Sept. 9	1008	228, 229	100	2197
Lewis, Willard I., Walpole, Mass. Lapping-machine	710,107	Sept. 30	4099	925	100	2883
Lewis, William H., Huntington, N. Y., assignor to J. H. Smith, Chicago, Ill. Photographic-printing frame	708,869	Sept. 2	668	151	100	2117
Lewis, William H., Huntington, N. Y., assignor to J. H. Smith, Chicago, Ill. Photographic-plate holder	708,870	Sept. 2	669	151	100	2117
Leyner, John G., Denver, Colo. Rock-drilling engine	709,022	Sept. 16	1934	444, 445	100	2406
Libenow, Ferdinand E., New Westminster, Canada, assignor to Wash-Board Pail Company, Incorporated, Spokane, Wash. Washpail	704,481	July 8	2087	453	100	439
Library Bureau. (See Hunter, David E., assignor.)						
Lidell, W. H. (See Davis, Walter A. E., assignor.)						
Lieb, John W., Jr., and J. H. Tyler, New York, N. Y. Street-sign-illuminating device	709,023	Sept. 16	1942	445	100	2408
Lieberthal, Hyman, Chicago, Ill. Wheel-tire	705,768	July 29	4738	1025, 1026	100	1018
Liebknecht, Otto. (See Homolka and Liebknecht.)						
Lienhardt, Charles, Allport, Pa. Wire-stretcher	705,259	July 22	3698	801	100	796
Lieske, Frank, Marquette, Mich. Extension-table	704,552	July 15	2283	483, 484	100	482
Liethegener, Henry, assignor to S. Northrop, St. Louis, Mo. Expansible boring-tool	704,057	July 8	1271	275	100	267
Lilly, Myron W., Leavenworth, Kans. Envelop-feeder for printing-presses	704,058	July 8	1273	275	100	267
Lilly & Roberts Veneer Company. (See Roberts, John N., assignor.)						
Lincoln, John C., assignor to B. B. Quinn, Cleveland, Ohio. Apparatus for curing meat	705,367	July 22	3935	852	100	845
Lincoln, Ora R., Fall River, Mass. Brooder	707,127	Aug. 19	2147	481	100	1590
Lindauer, Julius, Paris, France. Corset	708,773	Sept. 9	1404	322	100	2280
Lindberg, Beatrice E., Faribault, Minn. Kindergarten-loom	703,799	July 1	785	172	100	157
Lindeman, Joseph. (See Cheval and Lindeman.)						
Linder, Mons A., Pullman, Ill. Oar attachment	708,153	Sept. 2	287	69	100	2041
Linderman, Frank M., and C. A. Binz, Chicago, Ill. Belt stud or fastener	708,565	Sept. 9	1009	223	100	2197
Lindley, M. R., *et al.* (See Williams, Joseph H., assignor.)						
Lindmark, Tore G. E., Stockholm, Sweden, assignor, by mesne assignments, to De Laval Steam Turbine Company. Pumping apparatus	706,187	Aug. 5	361	78	100	1190
Lindsay, Alexander, Wellsville, Ohio. Cuspidor	709,165	Sept. 16	2227	506	100	2468
Lindsay, George F., Sherman, Tex. Hame-hook	709,784	Sept. 23	3453	777	100	2787
Lindsay, Robert F., Greenville, S. C., assignor to S. C. Koonce, Clarksville, and J. S. Leslie, Sharon, Pa. Cock or faucet	706,573	Aug. 12	1111	246	100	1356
Lindsay, William E., Baltimore, Md. Fountain-pen	704,262	July 8	1673	364	100	350
Lindstrom, John A., Richmond, Ind. Pedestal-clamp	704,553	July 15	2235	484	100	483
Lindt, Phillip F., St. Joseph, Mich. Machine for making basket-webs	707,005	Aug. 26	3008	690, 691	100	1799
Lingle, George W., assignor of one-half to G. J. Buchholz, Eaglegrove, Iowa. Level, plumb, and inclinometer	709,990	Sept. 30	3879	874, 875	100	2828
Link Belt Engineering Company. (See Dodge, James M., assignor.)						
Link Belt Machinery Company. (See Peck, Staunton B., assignor.)						
Linke, Theodore, New York, N. Y. Filter	710,285	Sept. 30	4433	999	100	2957
Linn, John B., Schenectady, N. Y., assignor to General Electric Company. Electric controller	708,055	Sept. 2	107	25	100	2108
Linotype Company. (See Barr, Mark, assignor.)						
Linotype Company. (See Pinel, Joseph, assignor.)						
Linton, William J., Woodstock, assignor to Taylor Hydraulic Air Compressing Company, Limited, Montreal, Canada. Hydraulic air-compressor	704,059	July 8	1274	276	100	267
Lippincott, Fisher H., Philadelphia, Pa., assignor to American Soda Fountain Company, Jersey City, N. J. Machine for cutting or shaving ice	706,073	Aug. 5	142	30	100	1146
Lippincott, Frank T., Newark, Ohio. Scenery-brace	704,708	July 15	2477	535	100	534
Lipps, Helen C., Boston, Mass. Bed-pan cover	708,871	Sept. 2	670	151	100	2117
Lishman Process Bleaching Company. (See Taylor, Cooke, and Montgomery, assignors.)						
Lister, Frank, Keighley, England. Internal-combustion engine	704,060	July 8	1280	276, 277	100	269
Lister, John G., Sheffield, England. Trolley for use in electric traction	707,606	Aug. 26	3074	691, 692	100	1800
Litle, Thomas J., Jr., assignor to New Process Lighting Company, Cleveland, Ohio. Lamp	710,064	Sept. 30	4004	903, 904	100	2885
Little, Arthur D. (See Mork, Little, and Walker.)						
Little, William G., assignor of one-half to R. L. Davis, Farmville, N. C. Tobacco-truck	709,785	Sept. 23	3454	777	100	2787
Litwin, Stefan. Vienna, Austria-Hungary. Backing-protector for books	704,554	July 15	2236	485	100	483
Livengood, Winfield S., assignor to Smith & Sons Manufacturing Company, Kansas City, Mo. Wheeled scraper	703,800	July 1	786	173	100	157

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Livet, Ernest A., assignor to Hiram Maxim Lamp Company, Limited, London, England. Shade-support	707,433	Aug. 19	2731	618	100	1712
Livingstone, Edward L., New York, assignor to R. W. Nares, trustee, Brooklyn, N. Y. Bottle or jar	704,482	July 8	2088	453	100	479
Livingstone, Edward L., New York, and W. A. Vandercook, Brooklyn, N. Y. Composition of matter	708,774	Sept. 9	1405	.....	100	2390
Lizotte, Joseph, Quincy, assignor of one-half to M. N. Bray, Boston, Mass. Vaporizer for explosive-engines	703,987	July 1	1084	225	100	206
Lizotte, Joseph, Quincy, assignor of one-half to M. N. Bray, Boston, Mass. Sparking igniter for explosive-engines	706,492	Aug. 5	976	214	100	1314
Lloyd, Cyrus S., Sowerby Bridge, England, assignor to M. B. Lloyd, Minneapolis, Minn. Wire mattress	706,970	Aug. 12	1858	416	100	1512
Lloyd, Harvey W., Southwest City, Mo. Fire truck and ladder	707,704	Aug. 26	0277	732, 733, 734	100	1842
Lloyd, Marshall B. (See Harcourt and Lloyd.)						
Lloyd, Marshall B. (See Lloyd, Cyrus S., assignor.)						
Lloyd, Thomas, New York, N. Y. Pyrotechnic device	708,237	Sept. 2	447	102	100	2072
Lloyd, Willmer D., Beaverfalls, Pa. Power-driven saw	709,786	Sept. 23	3455	777	100	2788
Lobnitz, Fred, Renfrew, Scotland. Rock-cutting apparatus	707,128	Aug. 19	2149	482, 483	100	1590
Locke, Bradford H., Denver, Colo. Lubricating device	704,555	July 15	2239	485	100	483
Locke, Bradford H., Denver, Colo. Mechanism for converting rotary into reciprocatory motion	704,810	July 15	2701	584	100	577
Locke, Fred M., Victor, N. Y. Filter-press	707,245	Aug. 19	2371	531	100	1638
Locke, Harvey W., Rochester, N. Y. Camera	708,721	Sept. 9	1307	298, 299	100	2358
Locke, Harvey W., assignor to Century Camera Company, Rochester, N. Y. Camera	704,845	July 15	2755	596	100	589
Locke, Nathaniel C., assignor to Locke Regulator Company, Salem, Mass. Automatic engine-stop	708,372	Sept. 2	671	151	100	2118
Locke Regulator Company. (See Locke, Nathaniel C., assignor.)						
Lockerby, Mitchell M., Grand Forks, N. D. Rotary engine	706,566	Sept. 9	1011	229	100	2197
Locklin, Samuel B., Boston, Mass. Pneumatic piano-player	706,574	Aug. 12	1114	246, 247	100	1356
Lockwood, Edward M., Jr., Darby, Pa. Scuttle, bucket, &c	706,074	Aug. 5	144	80	100	1146
Lockwood, Gorge R., St. Louis, Mo. Summer-house	703,706	July 1	610	135	100	121
Lockwood, Jeannette M. (See Lockwood, Thomas J., assignor.)						
Lockwood, Robert E., Chicago, Ill. Car-brake	706,672	Aug. 12	1304	287, 288	100	1398
Lockwood, Thomas J., assignor to J. M. Lockwood, Muncie, Ind. Mechanical movement	707,705	Aug. 26	2282	734	100	1843
"Locomobile" Company of America. (See Davis, Samuel T., Jr., assignor.)						
Lodor, James C., Wilmington, N. C. Sash-fastener	705,260	July 22	0994	801	100	796
Lodor, James C., Wilmington, N. C. Actuating device for lids or covers	705,261	July 22	3696	801	100	796
Loeffler, Charles, Salt Lake City, Utah. Damper	708,965	Sept. 9	1799	414	100	2261
Loeffler, Edward F., Columbus, Ohio. Artificial limb	708,431	July 1	117	26	100	26
Loeffler, Louis J., New York, N. Y. Self-restoring telephone	710,065	Sept. 30	4006	904	100	2866
Loesche, Charles, *et al.* (See Speice, George, assignor.)						
Loesewitz, Johannes, Witten, Germany. Grapple for lubricating-pads	709,604	Sept. 23	3117	694	100	2069
Loewenthal, Jean, Magdeburg, Germany, assignor to Quarzitol Company, New York, N. Y. Composition for making stones or mortar	707,129	Aug. 19	2151	.....	100	1591
Logan, Abram L., Montclare, Pa. Combined hot-air and water or steam heater	708,373	Sept. 2	573	152	100	2118
Logan, Ferdinand, Phœnixville, Pa. Steam-generating and water-heating boiler	705,682	July 29	4577	994	100	996
Logan, Robert, Sharptown, N. J. Slop-pail	706,971	Aug. 12	1859	416	100	1512
Loiselet, Jérôme. (See Leconte and Loiselet.)						
Lomas, John R., Westhaven, Conn. Key-ring	705,368	July 22	3936	853	100	845
Lombard, Fred, Cripplecreek, Colo. Pan-lifter	703,432	July 1	118	26, 27	100	26
Lombard Governor Company. (See Warren, Henry E., assignor.)						
Lombard, Victor E., and C. E. Cole, Jackson, Miss. Waste-pipe trap	705,769	July 29	4740	1096	100	1018
Lombardo, Michele, Mason City, Iowa. Banana-shipping crate	709,166	Sept. 16	2228	506	100	2468
Lones, Jabez, *et al.* (See Lones, Joseph, assignor.)						
Lones, Joseph, assignor of two-thirds to J. Lones and E. Holden, Smethwick, England. Making pigments	707,434	Aug. 19	2733	.....	100	1713
Loney, James, Detroit, Mich. Electrically-operated railway-switch	709,676	Sept. 23	3236	728	100	2068
Long, Charles E., Brannockstown, Ireland. Sliding bolt	708,892	Sept. 9	1604	382	100	2334
Long, Henry D., and J. Jackson, Philadelphia, Pa. Stamp-affixer	709,272	Sept. 16	2440	552	100	2514
Long, John E., Chillicothe, Ohio. Bolster-roll	705,683	July 29	4579	995	100	997
Long, Lee, assignor of three-fourths to J. C. McIntire, Jr., Buffalo, N. Y. Sounding toy	705,989	July 29	5069	1098	100	1079
Long, Rosco K., *et al.* (See Hook, Alonso L., assignor.)						
Longan, James M., Empire City, Kans., assignor of nine-sixteenths to E. V. Wyssbrod, Joplin, Mo. Ore washer and separator	705,104	July 22	3340	725	100	796
Looft, Charles, Jr., Brooklyn, N. Y. Merry-go-round	706,801	July 1	788	173	100	158
Look, John C., Tudor, Cal. Mop-head	706,244	Aug. 5	464	99	100	1210
Loomis, Leavitt R., Humphreysville, N. Y. Corn-husker	705,770	July 29	4741	1026, 1027	100	1018
Loose, Warren A. B., Provo, Utah. Apparatus for separating metals from their ores	708,567	Sept. 9	1012	229, 230	100	2197
Lopisich, Mateo, Sacramento, Cal. Horse-holding device	704,061	July 8	1283	277, 278	100	270
Lorain Steel Company. (See Entwisle, Edward B., assignor.)						
Lorain Steel Company. (See Ervin, George M., assignor.)						
Lorain Steel Company. (See Merrick and Stull, assignors.)						
Lorain Steel Company. (See Pflieger, John H., assignor.)						
Lorch, Frederick W. (See Dearborn, Charles A., assignor.)						
Lorch, Fritz, Bockenheim, Frankfort-on-the-Main, Germany. Lathe	706,678	Aug. 12	1308	988	100	1399
Lord, George E. (See Spitzli and Lord.)						
Loree, Perry E., Dayton, Ohio. Trolley	707,338	Aug. 19	2550	577	100	1676
Loree, Perry E., Dayton, Ohio. Trolley-lubricator	707,339	Aug. 19	2561	577	100	1676
Lorensen, Asmus F., Detroit, Mich. Apparatus for teaching primary arithmetic	708,568	Sept. 9	1014	230	100	2198
Lorich, John, Jr., Buffalo, N. Y. Sign	709,084	Sept. 16	1945	446	100	2408
Loss, Henrik V., Philadelphia, Pa. Hydraulic forging-press	710,286	Sept. 30	4484	999, 1000	100	2867
Loss, Henrik V., assignor to C. T. Schoen, Philadelphia, Pa. Machine for rolling car-wheels	706,674	Aug. 12	1309	988	100	1399
Lotspeich, Rhoten F., assignor of one-third to W. F. Botsford, Los Angeles, Cal. Extension-pedal for pianos	707,706	Aug. 26	2284	735	100	1843
Lottier, Ernest, West Hoboken, N. J. Production of plastic articles	710,287	Sept. 30	4486	1000	100	2868

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Louden, William, Fairfield, Iowa. Roll-holding camera	706,245	Aug. 5	465	99	100	1210
Louden, William, Fairfield, Iowa. Door-hanger	707,858	Aug. 26	3022	817	100	1909
Lougee, Edwin A., Haverhill, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Means for detaining or releasing top lifts in heel-nailing machines	707,143	Aug. 19	2185	490	100	1597
Love, Robert T., Stewarton, Scotland. Valve-gear	705,414	July 22	4014	869	100	902
Love, Samuel, New York, N. Y., assignor of one-half to M. L. Simon. Combined railway cross-tie and chair	709,787	Sept. 23	3456	779	100	2758
Lovejoy, Charles E., Lowell, Mass., assignor to Sawyer Spindle Company, of Maine. Spinning-spindle	706,374	Sept. 2	674	152	100	2118
Lovejoy, Dimmitt R. (See Bradley and Lovejoy.)						
Loveless, Fred H., Lafayette, Ind., assignor of one-half to C. L. Daniels, Tiffin, Ohio. Brush	710,161	Sept. 30	4211	949	100	2908
Loveridge, Frederick H. (See McBerty and Loveridge.)						
Lovett, James A. B., Blountsville, Ala. Tellurian	704,330	July 8	1848	400	100	391
Low, Abbot A. (See Johnson and Low.)						
Low, Abbot A., Brooklyn, N. Y. Hydrocarbon-heater	710,108	Sept. 30	4102	926	100	2884
Low, Abbot A., Horseshoe, N. Y. Cutting device	710,109	Sept. 30	4104	926	100	2884
Low, Abbot A., Brooklyn, assignor to Alden Type Machine Company, New York, N. Y. Type-distributing apparatus	710,096	Sept. 30	4007	904, 905	100	2866
Low, Frederic F., Boston, Mass. Door	704,887	July 15	2833	612, 618	100	607
Low, Hamilton F., New York, N. Y. Dish-washing machine	706,473	Aug. 5	948	206, 207	100	1307
Low, John W. (See Carrier and Low.)						
Lowder, Lindsey T., Bloomington, Ind. Means for preventing injury in using X-rays	710,391	Sept. 30	4287	965	100	2926
Lowe, John T., Boston, assignor of two-thirds to M. P. McLaughlin, Somerville, and J. N. Smith, Wollaston, Mass. Treating gas-tar residuum	708,510	Sept. 2	921	209	100	2168
Lowe, Theodore W., Stockton, Cal. Windmill	708,275	Sept. 2	675	152, 153	100	2118
Lowell, Maurice E., Beverly, Mass. Ship's steering apparatus	707,607	Aug. 26	3076	693	100	1801
Lowenthal, Jacob, Chicago, Ill. Adjustable standard for mirror-frames, &c	707,707	Aug. 26	3285	735	100	1844
Lowerre, Thomas R., New York, N. Y. Pool or billiard apparatus	704,892	July 15	2839	615	100	608
Lowrie, Edward A. (See Krygoski and Lowrie.)						
Lowry, Edward S. (See Ray, Alexander, assignor.)						
Lucabaugh, Levi H., Barbers Mill, Ind. Device for holding doors	708,288	Sept. 2	449	102	100	2073
Lubberger, Hans, assignor to L. W. Gans, Frankfort-on-the-Main, Germany. Clarifying liquids	706,075	Aug. 5	145	.....	100	1146
Lucas, Nannie P., Washington, D. C. Grater	706,837	Aug. 12	1628	365	100	1467
Luce, Curtis O., Brandon, Vt. Suspenders	708,154	Sept. 2	288	69	100	2041
Lucie, William T., Easton, Pa. Stopping device for looms	707,430	Aug. 19	2152	488	100	1591
Luck, Gustave J., Milwaukee, Wis., assignor of one-half to Allis-Chalmers Company, Chicago, Ill. Measuring instrument	704,963	July 8	1674	384	100	351
Ludewig, William R (See Gundlach and Ludewig.)						
Ludin, Eugene C., New York, N. Y. Bottle-holder	709,002	July 1	790	174	100	158
Ludington, Frank J., Waterbury, Conn. Machine for making individual cigarettes	705,491	July 29	4413	956, 957, 958	100	958
Ludlow, James T., San Francisco, Cal. Ammonia-compressor	704,062	July 8	1284	278	100	270
Ludwig & Company. (See Selyer, Harry M., assignor.)						
Lueder, John T., *et al.* (See Hayward, Eugene, assignor.)						
Luhmann, Eduard, Münster, Germany. Apparatus for the production of pure carbonic-acid gas from carbonates in a continuous manner	706,972	Aug. 12	1880	416	100	1513
Luitink, Peter H., assignor to Luitink and Sons Manufacturing Company, Milwaukee, Wis. Door-hanger	707,131	Aug. 19	2153	488	100	1591
Luitink and Sons Manufacturing Company. (See Luitink, Peter H., assignor.)						
Lukens Iron and Steel Company. (See Vanderslice, John H., assignor.)						
Lumière, Auguste and L., Lyons, France. Projecting apparatus	705,771	July 29	4748	1027	100	1019
Lumière, Auguste and L., Lyon-Monplaisir, France. Panoramic photographic apparatus	708,775	Sept. 9	1406	322	100	2280
Lumière, Louis. (See Lumière, Auguste and L.)						
Lumley, William, Chicago, Ill. Card list or index	706,838	Aug. 12	1625	365	100	1467
Lund, George, Victoria, Canada. Gas-burner	706,978	Aug. 12	1922	416	100	1513
Lund, Matthew. (See Fox and Lund.)						
Lundeberg, August F., Stockholm, Sweden. Extracting oils	707,864	Aug. 26	3024	817	100	1909
Lundgren, Axel L., Pullman, Ill. Square	708,376	Sept. 2	675	153	100	2119
Lundgren, Axel L., Pullman, assignor of one-half to H. W. Wolfe, Chicago, Ill. Plane	706,576	Aug. 12	1120	247	100	1357
Lundgren, Ernst, *et al.* (See Sporrong, Carl A., assignor.)						
Lundholm, Charles G., San Bernardino, Cal. Burner for liquid fuels	708,893	Sept. 9	1665	382, 383	100	2334
Lundin, Emil O. (See Gilbert and Lundin.)						
Lundin, Emil O., *et al.*, administrators. (See Gilbert, Frederick A.)						
Lunt, Alexander D., Schenectady, N. Y., assignor to General Electric Company. Multirate-metering system	706,575	Aug. 12	1119	247	100	1357
Lunt, Alexander D., Schenectady, N. Y., assignor to General Electric Company. System of electrical distribution	710,067	Sept. 30	4009	905	100	2907
Lurch, Edward, assignor of two-thirds to H. C. Babcock, Jr., and J. P. Tupper, New York, N. Y. Swing. (Reissue)	12,018	July 29	5149	1123	100	1102
Luse, David N., Chinook, Mont. Neck-yoke attachment	708,938	July 1	1096	225	100	206
Luther, Charles J., Redbank, N. J. Gas-generator	709,788	Sept. 23	3458	778	100	2735
Lutter, John H., Covington, Ky., assignor to Fred. J. Meyers Manufacturing Company, Hamilton, Ohio. Car-fender	709,991	Sept. 30	3880	875	100	2888
Lutz, George A., Brooklyn, assignor of one-half to T. E. Quinn, New York, N. Y. Flexible conduit or tube	706,076	Aug. 5	146	30	100	1146
Lutz, Joseph E. (See Arnold and Cranston, assignors.)						
Lydon, John F., assignor to International Manufacturing Company, Davenport, Iowa. Lock	708,902	July 1	1095	226	100	217
Lydon, John F., assignor to International Manufacturing Company, Davenport, Iowa. Sliding door	704,846	July 15	2756	596	100	590
Lydon, John F., assignor to International Manufacturing Company, Davenport, Iowa. Door-hanger	708,262	July 22	3698	802	100	797
Lykens, Joseph T., Crumlynne, Pa. Clamp for leather-setting frames	708,105	July 22	3842	795	100	796
Lyle, Robert W., Perth Amboy, N. J. Conduit for electric wires	708,974	Aug. 12	1868	417	100	1518
Lyle, Robert W., Perth Amboy, N. J. Machine for cutting recesses in conduit-sections	709,025	Sept. 16	1945	446	100	2408
Lynch, Albert E., *et al.* (See Penty and Bullard, assignors.)						
Lynch, Charles P., assignor to St. Louis University, St. Louis, Mo. Valve	708,061	July 1	1097	226	100	218
Lynch, John B., South Glens Falls, N. Y. Suction-box for paper-making machines	705,684	July 29	4781	995	100	997

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lynch, Thomas, Puritan, Pa. Nut-lock	709,717	Sept. 23	3309	743	100	2708
Lynch, William J. (See Guillette, Lynch, and Guillette.)						
Lyon, Bernard C., New London, Conn. Folding mirror-support	708,220	Sept. 2	449	102	100	2073
Lyon, Newton W., Brighton, Iowa. Corn-shock carrier	708,377	Sept. 2	680	158	100	2119
Lyons, George L., Bradford, Pa. Curtain-pole and shade-roller bracket	704,351	July 8	1850	400	100	301
Lyons, Joseph, Charmian, Pa., assignor to American Telephone and Telegraph Company. Telephony	705,685	July 29	4582	995	100	957
Lyons, Joseph, Washington, D. C., assignor to American Telephone and Telegraph Company. Telephony	705,686	July 29	4585	995	100	957
Maag, George, assignor to XXth Century Heating and Ventilating Company, Akron, Ohio. Grate	707,855	Aug. 26	3625	817	100	1909
Maass, Gottfried, Duisburg, Germany. Dust ring or disk for axle-boxes	705,281	July 22	3699	802	100	797
MacCormack, John, Bayonne, N. J., assignor to R. C. Peabody, Brooklyn, N. Y. Roller-grate	707,708	Aug. 26	3626	785	100	1844
MacDonald, Thomas A., Boston, Mass. Valve for pumps, &c	709,273	Sept. 16	2441	552	100	2514
MacLaughlin Railway Brake Company. (See MacLaughlin, William G., assignor.)						
MacLaughlin, William G., Windsor, Canada, assignor to MacLaughlin Railway Brake Company, Detroit, Mich. Air-brake system	705,592	July 29	4423	959	100	935
MacLean, Phineas G., Boonton, N. J. Coin-operated vending-machine	704,201	July 8	1571	339	100	329
MacLean, William B., Galetta, Canada. Fence-lock	705,951	July 29	5002	1102	100	1054
MacMaster, Peter. (See Brook, Frank, assignor.)						
MacMillan, Clyde, assignor of two-thirds to L. J. Edler and A. S. Mahaffey, Williamsport, Pa. Umbrella rib and stretcher-joint	710,328	Sept. 30	4306	1015	100	2072
MacMurray, James E., Chicago, Ill. Box-strap holder	708,378	Sept. 2	682	154	100	2120
MacPherson Automobile Company. (See MacPherson, John G., assignor.)						
MacPherson, John G., assignor to MacPherson Automobile Company, Philadelphia, Pa. Steering-gear for automobiles	707,485	Aug. 19	2733	6'8 619	100	1713
MacPherson, Mercer R. (See Wood and MacPherson.)						
Macbeth, Frank D., assignor of one-half to W. A. Bullock, Baltimore, Md. Device for protecting the ear-drum	706,975	Aug. 12	1905	417	100	1514
Maccoun, Andrew E., Braddock, Pa., assignor to Otis Elevator Company, New York, N. Y. Controlling system for electric hoists or elevators	704,264	July 8	1675	365	100	351
Macculloch, Andrew G., and H. Dickinson, London, England. Cash register and till	706,894	Sept. 9	1626	383 384	100	2235
Macdonald, Donald, Orroroo, South Australia, Australia. Gearing for bicycles	705,106	July 22	3344	725 726	100	726
Mace, Garwin A., Menominee Falls, Wis. Apparatus for burning lime	708,240	Sept. 2	451	108	100	2073
Macey, Frank, Grand Rapids, Mich. Means for operating doors	703,433	July 1	119	27	100	26
Macindoe, Alfred E., Auckland, New Zealand. Packing-holder for piston-rods	706,976	Aug. 12	1866	417	100	1514
Mack, Fritz, Nuremberg, Germany. Collapsible support or frame for tables, chairs, &c.	706,675	Aug. 12	1311	289 290	100	1400
Mack, Josiah D., Salem, N. Y. Wagon-jack	705,838	July 29	4587	1062	100	1069
Macke, Frederick W., and M. Miller, Kokomo, Ind. Tension device for barbed-wire machines	705,688	July 29	4588	996	100	988
Mackensen, Albert, Dusseldorf, Germany. Producing vegetable parchment free from germs	705,687	July 29	4587	.....	100	988
Mackesy, Charles E. R. (See Keyte, Richard, assignor.)						
Mackintosh, Frederick, Schenectady, N. Y., assignor to General Electric Company. Electric switch for flashing lighthouse-lanterns	706,577	Aug. 19	1123	247	100	1858
Mackley, James H., Pocatello, Idaho. Wall water-heater	709,340	Sept. 16	2563	576 577	100	2541
Macklin, Athol B., Brooklyn, N. Y. Hydrocarbon-vapor-burning apparatus	707,517	Aug. 19	2675	682	100	1743
Macomber, Charles J. (See Gallagher and Macomber.)						
Macphail, James, Blue Island, assignor to McCormick Harvesting Machine Company, Chicago, Ill. Divider for harvesters	704,063	July 8	1885	379	100	270
Macpherson, Alexander C. (See Osborn, Frank D., assignor.)						
Macrorie, Rutherford B. H. (See Thibodo and Peckinpaugh, assignors.)						
Mactear, James, Westminster, England. Electrolytic apparatus for the production of chlorin and alkali	705,264	July 22	3700	802	100	797
Madden, Albert F., Newark, N. J., assignor to C. A. Gould, New York, N. Y. Generating apparatus for car-lighting	705,854	July 29	4668	1003	100	1049
Madden, Oscar E. (See Rankin, Alexander M., assignor.)						
Maddox, John A., assignor to H. J. Thompson, West Union, Ohio. Churn-power	704,064	July 8	1287	279	100	271
Mader, Nicholas P., Sun Prairie, Wis. Vehicle	708,056	Sept. 2	109	26	100	2004
Madison, George, Sandusky, Ohio. Device for supporting phonograph-records	703,959	July 1	1087	225	100	207
Magarvy, John W., assignor of one-half to L. G. Tidwell, Newbern, Tenn. Singletree attachment	707,985	Aug. 26	3774	847	100	1940
Magee, James, 2d. (See McCollum, Alfred F., assignor.)						
Magee, William V., assignor of one-half to R. J. Pratt, Harvey, N. D. Adjustable handle for garden-tools	705,699	July 29	4589	996	100	988
Mager, Louis. (See Kinkade and Mager.)						
Magin, John G. (See Claesgens and Magin.)						
Magly, Milton P., Cincinnati, Ohio. Shirt	703,731	July 1	639	146	100	182
Magney, Joseph P., assignor of one-half to T. S. Updyke, Allegan, Mich. Apple corer and parer	706,488	Aug. 5	868	198	100	1286
Magrane, Thomas P. (See Gordon, George, assignor.)						
Mahaffey, A. S., *et al.* (See MacMillan, Clyde, assignor.)						
Mahy, Eugene, Cincinnati, Ohio. Diamond-cutting tool	709,229	Sept. 16	2343	531	100	2402
Mahy, Léon, and P. Hailles, Ghent, Belgium. Boiler	706,188	Aug. 5	362	78	100	1190
Malhak, Hugo A. C. A. W., Hamburg, Germany. Engine-indicator	703,434	July 1	121	27	100	27
Mailer, Melrose. (See Dannhardt, Ferdinand H., assignor.)						
Maldaner, Charles, Chicago, Ill., assignor to Chicago Handle Bar Co. Grinding and polishing machine	705,558	July 29	4426	969	100	956
Maley, Nixon. (See Wilmot, Maley, and Brown.)						
Mallin, Isaac H., assignor of one-half to J. F. Butler, Chicago, Ill. Type-holder for typewriters	709,341	Sept. 16	2565	577	100	2541
Malloy, Michael C., *et al.* (See Norton, James A., assignor.)						
Malmstrom, Peter E., New York, N. Y. Carbonating liquids	710,110	Sept. 30	4105	936 947	100	2085
Maloney, William F., Chicago, Ill. Letter-file	710,364	Sept. 30	4566	1030	100	2085
Maltby, Anson, New York, N. Y. Knockdown barrel, cask, &c	705,265	July 22	3701	802	100	797
Manlove, George W., Cleveland, Ohio. Silo	706,189	Aug. 5	366	79	100	1191
Manahan, Frank E., East St. Louis, Ill. Ball-bearing journal-box	703,435	July 1	123	27.28	100	27
Manes, John, San Francisco, Cal. Weighing apparatus	704,065	July 8	1289	279	100	271
Mangold, John A., Moundsville, W. Va. Toy or advertising device	705,255	July 29	4290	1053	100	1050
Manhattan Brass Company. (See Waibel, Frederick B., assignor.)						
Manker, Carey A., Pearl, Ill. Propeller	710,111	Sept. 30	4109	937	100	2085

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Manley, Edward, Chicago, Ill. Indicator for ball games	708,569	Sept. 9	1017	250	100	2198
Manley, Frederick J., Allegheny, Pa. Safety device for steam-boilers	705,369	July 22	3937	853	100	845
Manley, Liston B., Duluth, Minn. Computing-chart	710,288	Sept. 30	4437	1001	100	2958
Mann, George R., Columbus, assignor of two-thirds to E. J. Hiatt and M. R. Denver, Wilmington, Ohio. Top-spinning toy	706,076	Aug. 12	1312	290	100	1400
Mann, Hugh, Winnipeg, Canada. Railway-track-laying machine	709,641	Sept. 23	3176	709	100	2080
Mann, John H., Meadville, assignor to Castle Brook Carbon Black Company, Williamsport, Pa. Apparatus for making carbon-black	706,430	Aug. 5	867	189	100	1290
Mann, John H., Meadville, assignor to Castle Brook Carbon Black Company, Williamsport, Pa. Apparatus for making lampblack	706,431	Aug. 5	873	190	100	1292
Mann, John L., Smithton, W. Va., assignor to Castle Brook Carbon Black Company, Williamsport, Pa. Lampblack apparatus	706,429	Aug. 5	861	189	100	1288
Mansfield, George L., assignor of one-half to H. F. Baldwin, Chicago, Ill. Derailer	709,101	Sept. 16	2101	481	100	2443
Mansfield, William, assignor of one-half to C. S. Meriwether, Scranton, Miss. Broomhead	704,483	July 8	2090	458	100	439
Manson, Henri L., and J. Kamphues, Amsterdam, Netherlands. Stock and die	706,977	Aug. 12	1867	417	100	1514
Manson, Thomas C., assignor of two-thirds to C. Smith and A. P. Sale, Lake Charles, La. Air-brake attachment	705,415	July 22	4016	880	100	883
Manton, Frank S., Providence, R. I. Windlass	708,818	Sept. 9	1514	347 348	100	2208
Manz, Frank J. (See Knee, Allison W., assignor.)						
Mapes, Andrew J., Paris, Ill. Horse-canopy	705,370	July 22	3939	853	100	845
Marburg, Gustav, Vienna, Austria-Hungary. Submerged water-wheel	707,857	Aug. 26	3628	818	100	1910
March, Thomas J., Pottstown, Pa. Hot-air furnace	707,437	Aug. 19	2738	620	100	1713
Marcher, F. A. (See Harrison, Arthur W., assignor.)						
Marchessault, Victor. (See Lawrence, James E., assignor.)						
Marcley, Burton P., Brooklyn, N. Y. Soft-tread horseshoe	706,768	Aug. 12	1496	332	100	1438
Marcus, Martin H., New York, N. Y. Stair-pad	707,608	Aug. 26	3077	693	100	1601
Mardian, Rudolph. (See Heck, Gustav, assignor.)						
Mardon, Son & Hall. (See Crewe, Frederick, assignor.)						
Margetts, Frederick W., East Dulwich, England. Stoppering bottles, jars, or other vessels	706,247	Aug. 5	408	100	100	1211
Marindin, Arthur H., Droitwich, England. Range-finder	707,866	Aug. 26	3626	817	100	1909
Marion, David W., Baltimore, Md. Odds-indicator	708,879	Sept. 2	683	154	100	2120
Markey, Eugene L., *et al.* (See Fillingham, Joseph P., assignor.)						
Markey, William A., Rosbysrock, W. Va. Lock	705,942	July 29	5044	1099	100	1080
Markle, Alvan, *et al.* (See Lake and Crellin, assignors.)						
Marks, Harry J., New York, N. Y. Motor-vehicle	706,978	Aug. 12	1868	418	100	1514
Marks, Roy C., San Diego, Cal. Explosive-engine for motor-vehicles	710,329	Sept. 30	4508	1016	100	2972
Marks, Roy C., San Francisco, Cal. Carbureter for explosive-engines	710,330	Sept. 30	4510	1016	100	2973
Marles, Henry, Manor Park, England. Feed mechanism	705,940	July 29	5040	1096	100	1079
Marr, Edgar F., Clinton, Me. Releasing-hook for handling logs, &c	706,246	Aug. 5	467	99	100	1211
Marresford, William F., New York, N. Y. Machine for affixing labels	707,787	Aug. 26	3479	783 784 785	100	1882
Marsden, Mark W., Philadelphia, Pa. Building material	704,066	July 8	1200	280	100	271
Marsh, Wilbur W., assignor to Hackett & Dailey Creamery Supply Company, Waterloo, Iowa. Centrifugal liquid-separator	707,139	Aug. 19	2154	484	100	1591
Marsh, William S., Intervale, Me. Jar-opener	705,941	July 29	5043	1099	100	1080
Marshall and Brothers, James. (See Leveque, Nathanael, assignor.)						
Marshall, Edward S. (See Shallenberger, Charles S., assignor.)						
Marshall, Frank L., Boston, Mass. Stitch-ripper	709,917	Sept. 30	3733	840	100	2806
Marshall, George G., Wallingford, Vt. Medical electrode	707,438	Aug. 19	2789	620	100	1714
Marshall, Henry H., Lincoln, Nebr. Car-coupling	704,893	July 15	2834	613	100	607
Marshall, James, Dunfermline, Scotland. Steam and air feeding apparatus for boiler-furnaces	703,732	July 1	661	146	100	132
Marshall, James, Fall River, Mass. Machine for circulating and separating waste fibrous materials	707,138	Aug. 19	2156	484	100	1592
Marshall, John, Fall River, Mass. Hat-forming machine	705,107	July 22	3946	726	100	727
Marshall, Thomas, Jr. (See Roy and Marshall.)						
Martens, William, Ackley, Iowa. Automatic bundle-carrier for harvesters	708,776	Sept. 9	1408	323	100	2280
Marth, Oscar, Also Lieszko, Austria-Hungary. Speed-changing friction-gearing	705,108	July 22	3947	726	100	727
Martin, Alexander W. M., assignor to L. L. May, St. Paul, Minn. Display cabinet for packets	708,067	Sept. 2	110	26	100	2004
Martin, Bernard S. D. S., McPherson, Kans. Storm-curtain for buggies	709,036	Sept. 16	1947	446 447	100	2409
Martin, Charles, Nottingham, England. Lace-machine	707,436	Aug. 19	2735	619	100	1713
Martin, Florian J., Milwaukee, Wis. Printing-machine	708,570	Sept. 9	1018	231	100	2198
Martin, George E., assignor to Pedrick and Ayer Company, Philadelphia, Pa. Compound air-compressor	706,979	Aug. 12	1871	418 419	100	1515
Martin, George E., assignor to Pedrick and Ayer Company, Philadelphia, Pa. Riveting-machine	709,167	Sept. 16	2229	506	100	2468
Martin, George L., New York, N. Y. Marine electric-light fixture	706,578	Aug. 12	1824	248	100	1358
Martin, George P. (See Martin, Julius H. and G. P.)						
Martin, George W., and J. Palmer, assignors to E. H. Godshalk, Philadelphia, Pa. Automatic stop-motion for knitting-machines	706,839	Aug. 12	1827	365	100	1467
Martin, George W., and J. Palmer, assignors to E. H. Godshalk, Philadelphia, Pa. Automatic stop-motion for knitting-machines	706,840	Aug. 12	1828	365	100	1468
Martin, Harold M., assignor to Electric Storage Battery Company, Philadelphia, Pa. Manufacture of secondary-battery plates of the Planté type	704,731	July 15	2575	555	100	532
Martin, Harry C., Cincinnati, Ohio. Hydrocarbon-burner	704,895	July 15	2846	616	100	610
Martin, Joseph H., and D. Ormand, Riverside, Cal. Water-gate	709,102	Sept. 16	2102	481	100	2443
Martin, Julius H. and G. P., David City, Nebr. Brick-handler	705,416	July 22	4017	870	100	868
Martin, Peter W., Thumb Lake, Mich. Snow-plow	706,980	Aug. 12	1872	419	100	1515
Martin, Robert E., Newark, N. J. Saw	704,893	July 15	2841	615	100	609
Martin, Will K., Washington, D. C. Window-shade support	704,894	July 15	2843	615 616	100	609
Martin, William J., Catawissa, Pa. Furniture-caster	708,895	Sept. 9	1671	384	100	2288
Marting, Edward H. H. (See Mosher, Scheel, and Marting.)						
Martinson, Herman M., Rumford Falls, Me. Agitator	708,058	Sept. 2	111	26	100	2004
Marx, George B., New York, N. Y. Lifting device for coal-wagons, &c	708,419	Sept. 9	1518	348	100	2308
Marx, Gustave C. (See Miller and Marx.)						
Maschinenfabrik Grevenbroich, vormals Langen & Hundhausen. (See Hirt, Ludwig, assignor.)						
Masecar, John R., and T. Bevington, Toronto Junction, Canada, assignors of one-half to D. Brown, Donaghmore, Ireland. Feeding mechanism for presses for plastic material	708,059	Sept. 2	113	27	100	2005

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Maskrey, Arthur J., Martins Ferry, Ohio. Combined gas-producer and recuperative furnace	706,579	Aug. 12	1126	248, 249	100	1350
Mason, Charles E., San Francisco, Cal. Massaging device	709,108	Sept. 16	2103	482	100	9444
Mason City Gas and Fuel Company. (See Leckband, Theodor H. J., assignor.)						
Mason, Francis C., assignor to Bissell Carpet Sweeper Company, Grand Rapids, Mich. Roller-bearing for carpet-sweepers	709,444	Sept. 16	2779	625	100	9585
Mason, Frederic H., Spokane, Wash. Self-closing valve	706,432	Aug. 5	878	190	100	1292
Mason, Harry R., Chicago, Ill., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Engineer's brake-valve	709,027	Sept. 16	1949	447	100	2409
Mason Machine Works. (See Meats and McGowan, assignors.)						
Mason, Sidney. (See Grimm, Gerhardt E., assignor.)						
Mason, Volney W., Jr., New York, N. Y. Grinding or crushing head or roll	709,642	Sept. 23	3177	709	100	9580
Mason, William J., assignor of one-third to C. H. Wyman, Chicago, Ill. Rotary engine	706,077	Aug. 5	147	31	100	1147
Massey, Edward, Holmes Chapel, England. Apparatus for harvesting potatoes	706,981	Aug. 12	1973	419, 420	100	1516
Massey, Harold F., Withington, England. Pneumatic power-hammer	707,246	Aug. 19	2373	531, 532, 533	100	1638
Mast, William J. D., assignor to Buffalo Manufacturing Company, Buffalo, N. Y. Spirit-lamp	708,604	July 1	408	94	100	80
Masterson, Patrick, Newington, Canada. Carriage-pole attachment	707,480	Aug. 19	2740	630	100	1714
Mathein, Josef, Bolton, Conn., assignor to Anthony & Scovill Company, New York, N. Y. Revolving trimmer for photographic prints	704,352	July 8	1851	401	100	391
Mather, Allan G., Milwaukee, Wis., assignor of one-half to Allis-Chalmers Company, Chicago, Ill. Universal coupling	709,992	Sept. 30	3993	875, 876	100	2339
Mather, Henry W., Roseville, N. J. Paper-cutting machine	708,722	Sept. 9	1311	299	100	2259
Mathers, George C., assignor of one-third to F. R. Wolf, Indianapolis, Ind. Shade-roller and fixture	705,594	July 29	4428	950	100	956
Mathewson, Jeremiah E., Broad Heath, near Manchester, England, assignor, by mesne assignments, to B. C. & R. A. Tilghman, Philadelphia, Pa. Apparatus for cleaning air from sand-blast apparatus	707,134	Aug. 19	2157	495	100	1508
Mathis, August. (See Mathis, Julien W., assignor.)						
Mathis, Elmer, Miles, Oreg. Spring-hinge	708,896	Sept. 9	1672	385	100	2336
Mathis, Julien W., *et al.* (See Rogers, Charles W., assignor.)						
Mathis, Julien W., assignor of one-half to A. Mathis, Chicago, Ill. Sheet-metal seam or joint	708,723	Sept. 9	1313	299	100	2260
Mathisen, Jens. (See Newlin and Mathisen.)						
Matifat and Co., Albert. (See Brankowitch, Wladimir, assignor.)						
Matitsch, August, Vienna, Austria-Hungary. Lace-making machine	705,589	July 22	4298	929, 930, 931, 932	100	918
Matlack, Annie L., Chestnut Hill, Pa. Garment-supporter and waist-adjuster	705,690	July 29	4590	996	100	998
Mattei, Diego, Genoa, Italy. Apparatus for dyeing, &c	705,856	July 29	4992	1063, 1064	100	1050
Matteson, Edmund H. (See Broun, Frederick M., assignor.)						
Matthews, Arthur R. (See Hestand and Matthews.)						
Matthews, Charles, Columbia, Mo. Heating-stove	704,899	July 15	2835	613	100	607
Matthews, William B., *et al.* (See Dunham, William L., assignor.)						
Matthey-Meier, Constant, Basle, Switzerland. Apparatus for destroying bugs or other insects infesting dwellings or like places	704,847	July 15	2761	596	100	591
Mattimore, John. (See O'Brien and Mattimore.)						
Mattsson, David G., Altona, Germany. Gymnastic apparatus	705,266	July 22	3703	803	100	796
Matz, Adam. (See Keyler and Matz.)						
Matz, William J. (See Erdman, Edward M., assignor.)						
Maurer, Adolf, Ehrenfeld, near Cologne, Germany. Tramway-car	704,067	July 8	1292	280	100	272
Maurer, Hermann. (See Lehmann and Maurer.)						
Maury, Dabney H., Peoria, Ill. Well-inlet	704,806	July 15	2847	616	100	610
Maus, James W., Pacific Junction, Iowa. Ventilator	709,230	Sept. 16	2344	581	100	2494
Mauser, John, New York, N. Y. Barrel-register	708,788	July 1	662	147	100	132
Max Huncke Chemical Company. (See Harris, William W., assignor.)						
Maxim, Hudson, Brooklyn, N. Y. Electrical furnace for treating highly-refractory substances	704,649	July 15	2385	517	100	514
Maxim, Hudson, New York, N. Y. Device for the prevention of erosion in ordnance	707,135	Aug. 19	2156	485	100	1502
Maxwell, George S., Madison, N. J., assignor of one-half to H. D. Crippen, New York, N. Y. Pulverizing-mill	704,650	July 15	2388	517	100	515
Maxwell, George S., Madison, N. J., assignor of one-half to H. D. Crippen, New York, N. Y. Supporting device for punching-bags	710,112	Sept. 30	4111	927	100	2386
Maxwell, George S., Jersey City, N. J., assignor of one-half to H. D. Crippen, New York, N. Y. Punching-bag support	710,118	Sept. 30	4112	928	100	2386
Maxwell, William, Pittsburg, Pa. Toy biograph	709,342	Sept. 16	2567	577, 578	100	2542
May, Edgar F., Waukomis, Okla. Ter. Harrow	704,897	July 15	2849	617	100	610
May, Frank, Knoxville, Tenn. Cheese-cutter	706,898	Aug. 5	653	142	100	1247
May, John J. (See Morley, Charles O., assignor.)						
May, Lewis L. (See Martin, Alexander W. M., assignor.)						
May, William R., Newton, Mass. Governor for propeller-shafts	705,417	July 22	4019	870, 871	100	868
Maybach, Wilhelm, Cannstadt, Germany. Motor-vehicle	708,436	July 1	124	28	100	27
Maybach, Wilhelm A., Cannstadt, Germany, assignor to Daimler Manufacturing Company, New York, N. Y. Cooling and condensing apparatus	709,416	Sept. 16	2796	612	100	9575
Mayer, August, Stuttgart, Germany. Mower	710,289	Sept. 30	4436	1001	100	2468
Mayer, Cornelius, Trenton, N. J. Drawer for furniture, &c	708,680	Sept. 9	1580	348	100	2304
Mayer, David A. (See Gillaspy, Leonard, assignor.)						
Mayer, Otto L. (See Saldin, Max, assignor.)						
Mayer, Sigmund, Chicago, Ill. Automatic vending-machine	704,752	July 15	2576	535	100	555
Mayfield Manufacturing Company. (See Paris, Steelman, and Haverfield, assignors.)						
Maybew, Alfred H., Balham, England. Suspension-railway	709,343	Sept. 16	2568	578, 579	100	2542
Maybew, Frank J. (See Taylor, Horace H., assignor.)						
Maynard, Arthur B. (See Spitzli and Lord, assignors.)						
Maynard, Hormisdas, Montreal, Canada. Cinder-sifter	709,852	Sept. 23	3574	805	100	2762
Mayo, Benjamin F., Salem, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Nail-assorting mechanism	707,136	Aug. 19	2160	435	100	1503
Mayo, Benjamin F., Salem, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Nail-assorting apparatus	707,137	Aug. 19	2163	485, 486	100	1503
Mayo, Benjamin F., Salem, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Nail-assorting mechanism	707,139	Aug. 19	2175	488, 489	100	1505

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Mayo, Benjamin F., Salem, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Raceway for nail-assorting machines	707,142	Aug. 19	2184	489	100	1597
Mayo, Benjamin F., Salem, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Heel-nailing machine	707,144	Aug. 19	2187	490	100	1598
Mayo, Benjamin F., Salem, and A. D. Elliott, Winchester, Mass., assignors to United Shoe Machinery Company, Paterson, N. J., and Boston, Mass. Nail-assorting mechanism	707,138	Aug. 19	2168	486 / 487 / 488	100	1595
Mayo, Robert D., Frankfort, Mich. Life-boat	709,417	Sept. 16	2758	612	100	2075
Mayr, Walter A., Chicago, Ill. Curtain-stretcher	705,857	July 29	4804	1064	100	1051
Mazey, John T. (See Illingworth, Mazey, and Naylor.)						
McAda, James N. (See Forister, John H., assignor.)						
McAdam, John V., assignor to American Steel-Body Double-Bolster Co., St. Louis, Mo. Car body-bolster	706,630	Aug. 12	1817	291	100	1401
McAlpine, Lemuel B., assignor to Climax Road Machine Company, Marathon, N. Y. Road-roller	710,185	Sept. 30	4221	952	100	2010
McAtee, James A., Mahanoy Plane, Pa. Automatic draft-regulating device	707,769	Aug. 26	3480	786	100	1868
McAuliffe, John W., Providence, R. I. Waste-trap	705,777	July 29	4753	1030	100	1021
McBee, Randolp, Washington, D. C. Stop-box	704,696	July 15	2400	519	100	517
McBee, Vardry E., Norfolk, Va. Railway-tie plate	709,348	Sept. 16	2576	581	100	2343
McBerty, Frank R., Evanston, assignor to Western Electric Company, Chicago, Ill. Selective calling appliance for telephone-lines	710,333	Sept. 30	4514	1017	100	2074
McBerty, Frank R., and F. H. Loveridge, Evanston, assignors to Western Electric Company, Chicago, Ill. Signal-lamp for telephone-switchboards	709,906	Sept. 30	3898	877	100	2340
McBride, Edward, *et al.* (See Earl, Charles M., assignor.)						
McBride, Vincent R., Stillwater, Okla. Ter. Sash-lock	706,845	Aug. 12	1643	367	100	1471
McBride, William C., Hillsboro, Tex. Ventilator and mirror-protector	704,076	July 8	1318	287	100	276
McCabe, Thomas W. R., Winsted, Conn. Winding-key head	708,243	Sept. 2	456	103	100	2074
McCabe, William L., Seattle, Wash. Portable conveyer	705,378	July 29	4754	1030	100	1021
McCabe, William L., Seattle, Wash. Endless conveyer	707,613	Aug. 26	3096	695	100	1802
McCabe, William L., Tacoma, Wash. Driving mechanism for portable electric conveyers	707,614	Aug. 26	3087	695 / 696	100	1803
McCaffery, John P., *et al.* (See Strong, Robert H., assignor.)						
McCahon, Alexander, St. Joseph, Mo. Combination air and vapor motor	709,090	Sept. 16	1955	448	100	2010
McCain, John A., Atlanta, Ga. Cotton-planter	705,598	July 29	4453	960	100	958
McCall, Harry M., assignor of five-eighths to James Rees Sons' Company, Pittsburg, Pa. Motor-vehicle	706,439	Aug. 5	862	193	100	1295
McCall, James O. (See Williams and McCall.)						
McCall, Lyman H. (See Moore, Andrew R., assignor.)						
McCall, Thomas B. (See Brown and McCall.)						
McCammon, William M., and C. A. Lee, Formoso, Kans. Grain-elevator	708,576	Sept. 9	1662	233	100	2201
McCandless, George A. (See Smith, William M., assignor.)						
McCanna, Edward W., Anaconda, Mont. Steam-boiler	705,779	July 29	4756	1030	100	1022
McCarthy, Louis, Boston, Mass. Insulator	706,194	Aug. 5	373	80	100	1193
McCarty, Eugene J. (See Swinscoe and McCarty.)						
McCarty, Harry C., Williamsport, Pa. Journal-box lid	703,736	July 1	667	148	100	134
McCaughtry, Samuel, Washington, Pa. Measuring device for Artesian wells	706,438	Aug. 5	860	192	100	1295
McCauley, Charles H., Baltimore, Md., assignor to Glen Rock Stamping Company, Glenrock, Pa. Hinge	704,077	July 8	1319	288	100	276
McCay, Spencer, Topeka, Kans. Bale-tie	706,193	Aug. 5	371	80	100	1193
McCay, Spencer, Topeka, Kans. Cuff-holder	707,615	Aug. 26	3089	695	100	1803
McCay, Spencer, Topeka, Kans. Sharpener for mower or reaper knives	707,616	Aug. 26	3091	696	100	1804
McCay, Spencer, Topeka, Kans., assignor to F. L. Woodbridge, Newark, Ohio. Washboard	706,192	Aug. 5	370	79	100	1192
McClain, Sallie G., Philadelphia, Pa. Corset	709,238	Sept. 16	2368	537	100	2198
McClary, Allan W., St. Paul, Minn. Annealing receptacle for castings	708,384	Sept. 2	660	155	100	2121
McClave-Brooks Company. (See McClave, William, assignor.)						
McClave, William, assignor to McClave-Brooks Company, Scranton, Pa. Stoking mechanism for furnaces	705,590	July 29	4434	961	100	958
McClave, William, Scranton, Pa., assignor, by mesne assignments, to H. G. Dunham and G. G. Brooks, trustees. Grate and grate-bar	707,790	Aug. 26	3490	786 / 787	100	1864
McClay, David W., Newark, N. J., assignor to Tea Tray Company of Newark, N. J. Catch	709,903	Sept. 9	1685	388	100	2340
McClean, James, and L. E. Phipps, Kansas City, Kans. Hog-belly-rolling machine	709,997	Sept. 30	3890	877 / 878	100	2341
McClellan, Herman, Cincinnati, Ohio. Bearing for piano-strings	703,708	July 1	613	136	100	121
McClellan, Lewis K., Cedar Rapids, Nebr. Farm-gate	709,244	Sept. 2	457	104	100	2074
McClellan, Stephen, Brooklyn, N. Y. Joist-boring tool	704,657	July 15	2401	519	100	518
McClelland, John J., London, England. Sand-molding machine	708,078	July 8	1320	288	100	277
McClelland, Robert H., *et al.* (See Anderson, Albert, assignor.)						
McClintock, Robert. (See Boyce, Markland H., assignor.)						
McClintock, William, New York, N. Y. Clamp for marble wash bowls or basins	707,153	Aug. 19	2206	494	100	1601
McCluer, Charles R., assignor of one-half to C. F. Quincy, Chicago, Ill. Combined deflector and screen	706,440	Aug. 5	863	193	100	1296
McClung, James S., Pueblo, Colo. Pen or pencil holder	710,298	Sept. 30	4446	1002	100	2259
McClung, Vernendo B. (See Hill, Terelius A., assignor.)						
McClure, John W., Richmond, Ind. Bush-chisel	703,950	July 1	1056	229	100	210
McClure, Napoleon. (See Turcotte, Alexander G., assignor.)						
McColl, Francis P., assignor to American Key Can Company, Chicago, Ill. Metal can	703,445	July 1	138	31	100	80
McCollum, Alfred F., Espy, assignor of three-fifths to J. Magee, 2d, Bloomsburg, Pa. Loom for weaving pile fabrics	709,447	Sept. 16	2782	626 / 627	100	2286
McCollum, Thomas E., Toronto, Canada. Momentum car-brake	709,923	Sept. 30	3744	843	100	2310
McConnell, Edward, Richmond, Va. Safety-pin	703,955	July 1	1099	237	100	218
McConnell, James H., Evanston, Ill. Apparatus for increasing combustion in furnaces	707,249	Aug. 19	2263	514	100	1640
McConnell, Leslie, Brewton, Ala. Nut-lock	708,395	Sept. 2	662	156	100	2121
McConney, Robert B. (See Ray and McConney.)						
McCord, Alvin C., assignor to McCord & Company, Chicago, Ill. Spring-cushion	709,998	Sept. 30	3892	878	100	2341
McCord, Alvin C., assignor to McCord & Company, Chicago, Ill. Spring-cushion	709,999	Sept. 30	3895	878	100	2342
McCord & Company. (See Denegre, Edward, assignor.)						
McCord & Company. (See McCord, Alvin C., assignor.)						
McCord, James R., Jr., St. Louis, Mo. Balance-book	704,705	July 15	2482	536	100	535
McCord, Ralph, St. Louis, Mo. Non-refillable bottle	709,081	Sept. 16	1957	448	100	2011
McCormack, George E., assignor to Precision Eyelet Company, East Bridgewater, Mass. Eyelet	708,577	Sept. 9	1684	394	100	2302
McCormick Harvesting Machine Company. (See Haskins, James H., assignor.)						
McCormick Harvesting Machine Company. (See Johnston, Edward A., assignor.)						
McCormick Harvesting Machine Company. (See Macphail, James, assignor.)						
McCornack, Herbert, Westchester, Pa. Centrifugal separator	706,087	Aug. 5	163	33, 34	100	1150
McCornack, Herbert, Westchester, Pa. Shaft-mounting	706,088	Aug. 5	164	34	100	1150

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McCown, Sylvester, Athalia, assignor to Weil, Brockman & Company, Cincinnati, Ohio. Press for packing barrels or other packages	706,681	Aug. 12	1319	292	100	1401
McCrosky, William B., Eureka Springs, Ark. Jar-closure	706,771	Aug. 12	1501	333	100	1459
McCulloch, John H., Newville, Pa. Inhaler	707,445	Aug. 19	2749	622	100	1716
McCullough, James, Rosebank, N. Y., assignor to Schmidt-Perrin Manufacturing Company, Jersey City, N. J. Bilge-block	704,358	July 8	1865	404	100	294
McCullough, John L., Brooklyn, N. Y. Target	707,617	Aug. 26	3093	697	100	1804
McCullough, John L., Brooklyn, N. Y., assignor to Automatic Target Machine Company. Target apparatus	708,245	Sept. 2	459	104 / 105	100	2075
McCullough, Thomas F., Memphis, Tenn. Indicator	710,294	Sept. 30	4447	1002 / 1005	100	2260
McCurdy, Arthur W., Washington, D. C., assignor to Eastman Kodak Company, Rochester, N. Y. Apparatus for developing photographic films	707,791	Aug. 26	3493	787 / 788 / 789	100	1864
McCutcheon, Alexander, Emporia, Kans. Fire-escape	708,777	Sept. 9	1410	323 / 324	100	2281
McDaniel, Sanford A., *et al.* (See Tuttle, William C., assignor.)						
McDermott, David L., assignor of one-half to J. A. Graham, Carlisle, Pa. Combined plumb-bob, level, &c	707,518	Aug. 19	2880	653	100	1744
McDermott, Joseph J., New Brighton, Pa. Rail-joint	710,000	Sept. 30	3896	878	100	2342
McDevitt, William J., Philadelphia, Pa. Cabinet for graphophones, graphophone-records, or the like	705,009	July 15	2135	477 / 478	100	668
McDonald, Donald S., Mabou, Canada. Furnace	709,107	Sept. 16	2108	483 / 484	100	2445
McDonald, George W., assignor of one-half to H. McDonald, Jersey City, N. J. Clothes-line holder	710,205	Sept. 30	4301	967	100	2260
McDonald, Henry. (See McDonald, George W., assignor.)						
McDonald, Joseph W., Larimore, N. D. Mechanical telegraph-transmitter	706,251	Aug. 5	475	101	100	1212
McDonald, Kenneth. (See Galway, John J., assignor.)						
McDonald, Michael B. (See Ware, Erastus A., assignor.)						
McDonald, Samuel, Youngstown, Ohio. Manufacturing basic Bessemer steel	706,089	Aug. 5	167	.....	100	1151
McDougall, Alexander, Duluth, Minn. Artificial-stone board	709,791	Sept. 23	3468	780	100	2739
McDougall, Barnett, San Francisco, Cal. Roof, ceiling, and floor construction	707,250	Aug. 19	2384	534	100	1640
McDonough, Dennison, Eau Claire, Wis. Stilt	704,658	July 15	2404	520	100	518
McDowell, John G., Pittsburg, Pa. Brick-carrier	705,277	July 22	3721	807	100	801
McElroy-Grunow Electric Railway System. (See Bourne, Frank, assignor.)						
McEvoy, Frank E., Wheelwright, Mass. Couch-roll attachment for paper-machines	704,079	July 8	1322	288	100	277
McFadden, Benjamin B., Binghamton, N. Y. Folding box	704,080	July 8	1324	288 / 289	100	277
McFadden, Hugh, assignor of one-half to M. McLeod, Rumford Falls, Me. Means for chaining logs	704,908	July 15	2636	619	100	612
McFarren, Bert, Navarre, Ohio. Electric-wire pole	709,554	Sept. 23	3003	676	100	2651
McFatrich, George W., Chicago, Ill. Educational optical instrument	709,792	Sept. 23	3465	780 / 781	100	2740
McGill, John J., assignor of two-thirds to E. W. Richey and S. A. Johnson, Chicago, Ill. Automatic electromechanical semaphore-signal	706,586	Aug. 12	1137	251 / 252	100	1361
McGinnis, Ella. (See Noble, William J., assignor.)						
McGinnity, John, South Omaha, Nebr. Measuring and discharging apparatus for filling cans	709,793	Sept. 23	3466	781	100	2740
McGlinchey, Charles E. (See Stokes and McGlinchey.)						
McGlinchy, John J. (See Auld, Hugh R., assignor.)						
McGowan, Charles R. (See Meats and McGowan.)						
McGowan, Henry L., St. John, Canada. Signaling-machine	708,904	Sept. 9	1686	388	100	2340
McGowan, William L., Philadelphia, Pa. Conduit	708,446	July 1	139	32	100	80
McGowan, William L., Philadelphia, Pa. Conduit	708,447	July 1	142	32	100	81
McGowan, William L., Philadelphia, Pa. Conduit	709,504	Sept. 23	2944	657	100	2638
McGuire, Frederick. (See Cherpaw and McGuire.)						
McGuire, George H., Dahlonega, Ga. Wing attachment for plows	709,505	Sept. 23	2946	657	100	2638
McGuire, Peter J., Blairsville, Pa., assignor to Champion Sanitary Enamel-Ware Co. Water-closet bowl	706,990	Aug. 12	1690	423	100	1519
McGurrin, Frank E., Salt Lake City, Utah. Domestic garbage-burner	704,359	July 8	1867	404	100	294
McHale, Martin, Phoenix, and J. Trainner, Eholt, Canada. Rock-drill chuck	704,081	July 8	1326	289	100	278
McHenry, Francis J. (See Phillips and McHenry.)						
McIlyar, Corwin C., Cambridge, Ohio. Mail-bag catcher	704,904	July 15	2857	620	100	612
McIntire, John C., Jr. (See Long, Lee, assignor.)						
McIntosh, John A. and W., assignors to P. Ryan, J. Ruse, and D. J. Johnston, Toronto, Canada. Compensating organ-pipe	709,349	Sept. 16	2577	581	100	2343
McIntosh, John E., and J. A. Seymour, Auburn, N. Y. Adjuster for centrifugal governors	707,792	Aug. 26	3499	789	100	1866
McIntosh, William. (See McIntosh, John A. and W.)						
McIntosh, William, Clinton, Mass. Dumping-wagon	707,618	Aug. 26	3095	697 / 698	100	1805
McKague, Joseph H., Columbia Heights, Minn. Hernial truss	707,619	Aug. 26	3098	698	100	1805
McKaig, Eddy T., Chicago, Ill. Gasolene-engine	707,788	Aug. 26	3502	790	100	1866
McKaig, Eddy T., Chicago, Ill. Lubricating apparatus for engines	707,794	Aug. 26	3507	791	100	1867
McKay, Gordon, Newport, R. I. Dredge	706,195	Aug. 5	374	80	100	1193
McKay, Harry C., Essington, Pa., assignor, by mesne assignments, to American Patent Kid Company. Varnish for making enamel or patent leathers	704,092	July 8	1327	.....	100	278
McKee, Thomas M., and S. B. Saffell, Indianapolis, assignors to National Adjustable Chair Company, Greenfield, Ind. Automatic adjustable chair	706,991	Aug. 12	1691	424	100	1519
McKeel, George A., Jackson, Mich. Ferrule for fork-handles	709,108	Sept. 16	2110	484	100	2445
McKeever, Jacob S., Philadelphia, Pa. Fan attachment for rocking-chairs	708,905	Sept. 9	1688	389	100	2340
McKeever, John P., Wardensville, W. Va. Window-screen	705,278	July 22	3722	807	100	801
McKelvey, Frank A., Knoxville, Pa. Air-brake	706,252	Aug. 5	478	101 / 102	100	1213
McKenna, Edward W., Chicago, Ill. Transfer system	705,119	July 22	3364	739 / 740	100	731
McKenzie, Joel B. L., Rahway, N. J. Water-gage connection	709,239	Sept. 16	2369	537	100	2198
McKeown, Joseph B., Union Hill, N. J. Machine for applying coatings	707,620	Aug. 26	3099	698	100	1805
McKim, A., Sr., *et al.* (See McWatters, Thomas, assignor.)						
McKim, Andrew H., *et al.* (See McWatters, Thomas, assignor.)						
McKim, James T. (See Miller, Lewis, assignor.)						
McKim, James T., assignor of one-half to L. Miller, Thorntown, Ind. Cement	704,849	July 15	2764	.....	100	592
McKim, James T., and L. Miller, Thorntown, Ind. Burial-vault	704,850	July 15	2764	597	100	592
McKinley, Andrew, New York, N. Y. Nut-lock	703,448	July 1	143	32	100	81
McKinley, Robert W., Ripley, Ohio. Whiffletree	707,795	Aug. 26	3507	791	100	1868
McKinney, Henry D., Janesville, Wis. Checking device for harness	708,906	Sept. 9	1690	389	100	2340

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McKinnon, John A., Elcajon, Cal. Cultivator	708,054	Sept. 2	120	28	100	2006
McLane, Jared B., North Reading, Mass. Power-hammer	708,787	July 1	668	148	100	134
McLaughlin, James A., Statesboro, assignor of two-thirds to L. Carter and W. P. Dorough, Voldosta, Ga. Vehicle-axle	705,600	July 29	4437	961	100	958
McLaughlin, Jeremiah K., Ausable Forks, N. Y. Pulp-separator	706,441	Aug. 5	895	193, 194	100	1296
McLaughlin, Milton P., *et al.* (See Lowe, John T., assignor.)						
McLaughlin, Neil J., Boston, Mass. Apparatus for repairing vessels at sea	704,905	July 15	2860	620	100	613
McLaughlin, Robert, Oshawa, Canada. Axle-bearing	709,677	Sept. 23	3238	724	100	2693
McLaughlin, Willson L., Clearlake, Iowa, and J. E. Swenson, Lake Crystal, Minn. Automatic car and elevating track	708,886	Sept. 2	602	156	100	2122
McLay, Kenneth D., Dauphin, Canada. Clothes-pounder	709,109	Sept. 16	2112	484	100	2446
McLean, Andrew, Passaic, N. J. Stiff-finished woven fabric	708,907	Sept. 9	1690	389	100	2340
McLean, Donald M., Boston, Mass. Buckle	708,887	Sept. 2	695	156	100	2122
McLean, Henry H., assignor to Whitin Machine Works, Incorporated, Whitinsville, Mass. Beam-lock for looms	708,246	Sept. 2	463	105	100	2076
McLellan, Robert K., Rochester, N. Y. Mechanical motor	709,644	Sept. 23	3179	710	100	2681
McLeod, Angus and J. H., Marietta, Kans. Automatic grain-weigher	706,442	Aug. 5	896	194, 195	100	1297
McLeod, John H. (See McLeod, Angus and J. H.)						
McLeod, Matthew. (See McFadden, Hugh, assignor.)						
McLery, Robert A., J. W. Wilbur, and A. S. Wooster, Palmyra, Wis. Folding stall for cattle	706,772	Aug. 12	1503	334	100	1439
McLin, Thomas C., Seattle, Wash. Railway-track joint	708,908	Sept. 9	1692	389	100	2341
McLoon, Albert C., Rockland, Me. Package for lobsters or the like	704,563	July 15	2253	488	100	486
McLoughlin, Harry, Stapleton, assignor to B. E. Kingman, New York, N. Y. Tubular pole or shaft for vehicles	706,427	July 22	4034	874	100	966
McLoughlin, John E., Utica, N. Y. Cap	706,606	July 1	407	95	100	81
McMaster, John, Cambridge, Mass., assignor to A. G. Spalding & Bros., Jersey City, N. J., and New York, N. Y. Training apparatus	704,265	July 8	1677	365	100	351
McMasters, Robert B., Plymouth, N. Y. Mitten	709,350	Sept. 16	2579	582	100	2544
McMechen, Benson G., *et al.* (See Wharfield, Marion A., assignor.)						
McMillan, Frank. (See Roebuck and McMillan.)						
McMillan, John L., Ilion, N. Y. Bookbinding	708,065	Sept. 2	120	29	100	2006
McMillin & Lively. (See Denton, John L., assignor.)						
McMullen, George W. (See Gathmann, Emil, assignor.)						
McNalley, Micheal, St. Louis, Mo. Vehicle-fastening for harness	708,808	July 1	798	175	100	160
McNamara, William, Boston, Mass. Fan	710,295	Sept. 30	4448	1003	100	2960
McNeal, Luther C., Rochester, N. Y. File	708,388	Sept. 2	696	157	100	2122
McNeely, George W. and H., Marshalltown, Iowa. Flexible metal floor-mat	705,601	July 29	4488	962	100	969
McNeely, Henry. (See McNeely, George W. and H.)						
McNeil, Chester, assignor to Union Special Sewing Machine Company, Chicago, Ill. Covered seam for sewed articles	703,966	July 1	1100	237	100	218
McNerney, Thomas H., assignor of two-thirds to S. D. Lawton and T. F. Daley, Fall River, Mass. Harness-controlling mechanism for looms	706,335	Aug. 5	665	144, 145	100	1240
McPherson, Columbus B., Birmingham, Ill. Telephone-switch	709,351	Sept. 16	2580	582	100	2544
McPherson, William C. (See Hinman, Charles E., assignor.)						
McPherson, William R., and H. E. Eurich, Tarentum, Pa. Washboard	707,861	Aug. 26	3632	819	100	1911
McQuiston, James, Pittsburg, Pa. Supporting device for lengths of hoop-iron	708,449	July 1	145	32	100	31
McRae, James, London, assignor of one-half to J. C. Broadbent, Huddersfield, Yorkshire, England. Apparatus for use in refrigerating, heating, drying, impregnating, or otherwise treating goods	706,279	July 22	3723	807, 808, 809	100	802
McRorie, Colin, and D. J. Hunter, County of Surrey, England. Tool for cutting metal	706,605	July 29	4906	990	100	992
McTammany, John, Spencer, Mass. Mechanical musical instrument	705,952	July 29	5063	1102, 1103, 1090	100	1084
McTear, Balfour F., Rainhill, England. Metal-piercing machinery for making hollow bodies	705,780	July 29	4757	1031, 1052	100	1022
McVey, John, Longue Pointe, Canada. Nut-lock	705,120	July 22	3867	730	100	731
McVicar, Philip H., Livermore, Cal. Door-closer for hay-presses	710,166	Sept. 30	4925	952, 953	100	2910
McWain, W. J. (See Doyle and Kimball, assignors.)						
McWatters, Thomas, Swissvale, assignor of two-thirds to J. M. Flannery, Braddock, A. H. and A. McKim, Sr., Swissvale, Pa. Signal-lamp	705,280	July 22	3725	809	100	802
McWhorter, Allen, Norfolk, Va., assignor to McWhorter Manufacturing Company. Fertilizer-distributer	705,858	July 29	4896	1065	100	1051
McWhorter Manufacturing Company. (See McWhorter, Allen, assignor.)						
McWilliams, William H., Watonga, Okla. Ter. Wind-stacker	704,906	July 15	2861	620	100	613
Mead, Egbert S., Winona, Minn. Hay-baling press	707,709	Aug. 26	3227	735	100	1844
Mead, James R., assignor of one-half to W. E. Veasey, Lewes, Del. Signaling apparatus	708,487	Sept. 2	880	199	100	2159
Meade, Henry R., assignor of one-half to J. L. Wood, Greeneville, Tenn. Measuring-machine for rolled goods	709,231	Sept. 16	2345	531, 532	100	2494
Meals, Samuel W., Waynesburg, Pa. Oil-well pump	708,897	Sept. 9	1674	385	100	2336
Mease, Frank R., Freeport, Ill. Window-shade support	705,595	July 29	4489	960	100	957
Meats, John T., and C. R. McGowan, assignors to Mason Machine Works, Taunton, Mass. Stop-motion for drawing-machines	704,704	July 15	2478	535	100	534
Mechlin, Francis O., Washington Court-House, Ohio. Cutter-head	706,078	Aug. 5	149	31	100	1147
Mechlin, Francis O., Washington Court-House, Ohio. Means for cutting saddle-seat bottoms for chairs	706,079	Aug. 5	150	31	100	1147
Mecklan Wagon Company. (See Mecklan, Walter N., assignor.)						
Mecklan, Walter N., Olean, assignor to Mecklan Wagon Company, New York, N. Y. Running-gear for vehicles	708,486	Sept. 2	888	200	100	2160
Medicated Poultry Perch Company. (See Harrod, Orrian L., assignor.)						
Medina, Albert A., East San Jose, Cal. Running-gear for automobiles	707,340	Aug. 19	2562	578	100	1677
Meech, Harrison B., New York, N. Y. Steam-boiler furnace	704,353	July 8	1852	401	100	852
Meehan, Patrick, Lowellville, Ohio. Furnace-top down-comer and explosion-pipe	704,556	July 15	2240	485	100	484
Meehan, Patrick, Lowellville, Ohio. Casting apparatus	706,841	Aug. 12	1629	366	100	1468
Meek, Joseph, Toronto, Canada, assignor to Lever Brothers, Limited, Port Sunlight, England. Mechanism for removing selvage from box or carton blanks	709,789	Sept. 23	3460	779	100	2739
Meeker, William P., Newark, N. J. Tile-press	708,241	Sept. 2	453	103	100	2074
Megill, Edward L., Brooklyn, N. Y. Feed-gage for printing-presses	703,734	July 1	665	147	100	153
Mekonigal, James. (See Gleason, William J., assignor.)						
Mehlfeld, Wilhelmine, assignor to P. Barthels, Barmen, Germany. Skirt-holder or skirt-suspender	709,823	Sept. 23	3529	795	100	2758
Mehlhorn, Alfred, Dietrichsdorf, Germany. Water-tube steam-boiler	707,440	Aug. 19	2742	630, 631	100	1714

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Meier, Frank J., Weigand, Nebr. Warmer	705,267	July 22	3708	803	100	798
Meier, Hugh D., Brooklyn, N. Y. Variable-movement-controlling mechanism	710,302	Sept. 30	4389	966	100	2027
Meigs, John F., South Bethlehem, and S. A. S Hammar, Bethlehem, assignors to Bethlehem Steel Company, South Bethlehem, Pa. Breech mechanism	704,898	July 15	2860	617, 618	100	611
Meinecke, Christian W., Jersey City, N. J., assignor to Meinecke and Company, New York, N. Y. Bottle-stopper	709,418	Sept. 16	2730	613	100	2576
Meinecke & Company. (See Klauberg, Charles, assignor.)						
Meinecke and Company. (See Meinecke, Christian W., assignor.)						
Meischke-Smith, Georgius F. (See Meischke-Smith, William and G. F.)						
Meischke-Smith, William and G. F., Dresden, Germany. Driving-gear for varying speed and reversing	706,580	Aug. 12	1128	249	100	1359
Meister, Albert R., Sacramento, Cal. Rotary grooving-tool	705,209	July 22	3705	803	100	798
Melanson, Thomas F., Upper Charlo, Canada. Car-coupling	708,571	Sept. 9	1094	231	100	2300
Mellen, Edward J., Newark, assignor to H. Berg, Orange Valley, N. J. Hat-brim stretcher	709,643	Sept. 23	3179	709, 710	100	2021
Mellett, Lemuel, Somerville, assignor to American Otophone Company, Boston, Mass. Telephone-receiver	707,441	Aug. 19	2743	621	100	1715
Meloon, Jonathan C., Providence, R. I., assignor to General Fire Extinguisher Company, New York, N. Y. Electric attachment	708,155	Sept. 2	290	69	100	2041
Melvin, David N., Linoleumville, N. Y. Machine for the manufacture of inlaid linoleum	704,068	July 8	1298	280, 281, 282	100	272
Melvin, David N., Linoleumville, N. Y. Machine for the manufacture of inlaid linoleum	704,069	July 8	1303	283, 284	100	274
Melvin, David N., Linoleumville, N. Y. Machine for the manufacture of inlaid linoleum	704,070	July 8	1309	284, 285, 286	100	275
Mendels, Eugene E. (See Keane, Maxwell, assignor.)						
Mendenhall, Aaron E., Anderson, Ind. Door-fastener	707,858	Aug. 26	3029	818	100	1910
Mendenhall, Albert, assignor of one-half to B. V. Seevers, Oskaloosa, Iowa. Thill-coupling	710,305	Sept. 30	4570	1030	100	2983
Menefee, George W., Berkeley, Cal. Hoister and conveyer	709,547	Sept. 23	3022	672	100	2649
Menges, Charles L. R. E., The Hague, Netherlands. Galvanometer	706,982	Aug. 12	1875	420	100	1516
Menges, Edward E., assignor to Seamless Rubber Co., New Haven, Conn. Package for water-bottles, water-bags, &c.	706,330	Aug. 5	656	143	100	1247
Menges, Edward E., assignor to Seamless Rubber Co., New Haven, Conn. Nipple	710,114	Sept. 30	4113	928	100	2986
Menne, Hermann A. E., assignor to Cöln-Müsener Bergwerks Actien Verein, Creuzthal, Westphalia, Germany. Fusion of metals	703,940	July 1	1039	225	100	207
Menne, Hermann A. E., Creuzthal, assignor to Cöln-Müsener Bergwerks Actien Verein, Creuzthal, Westphalia, Germany. Burner for the removal of hardened masses in furnaces or the like	705,418	July 22	4021	871	100	864
Menns, Albert W., Revere, and A. T. Van Horn, Malden, Mass., assignors to Menns-Van Horn Motor Company, Portland, Me., and Boston, Mass. Engine-support	709,445	Sept. 16	2779	625, 626	100	2586
Menns-Van Horn Motor Company. (See Menns and Van Horn, assignors.)						
Mensching, Carl. (See Levinstein and Mensching.)						
Mentwig, Otto, Neustadt, Germany. Box of building material	707,446	Aug. 19	2780	622, 623	100	1716
Mentzer, John P., assignor to Atkinson & Mentzer, Chicago, Ill. Ink-well	706,329	Aug. 5	655	142	100	1247
Merches, Nicholas, Oldham, S. D. Draft attachment	706,948	Aug. 5	470	100	100	1211
Merck, Firm of E. (See Blum, Ferdinand, assignor.)						
Merck, Firm of E. (See Smith, Watson, assignor.)						
Mergenthaler Linotype Company. (See Cotsworth, Alfred G., assignor.)						
Mergenthaler, Ottmar, deceased, (Safe Deposit and Trust Company of Baltimore City and A. Greenleaf, executors,) and W. T. Hoofnagle; said Hoofnagle assignor to Ott. Mergenthaler Company, Baltimore, Md. Linotype-machine	707,645	Aug. 26	3154	709	100	1816
Meridith, J. E. (See Kennedy, Erastus L., assignor.)						
Meriwether, Charles S. (See Mansfield, William, assignor.)						
Merkel, James B., Hattiesburg, Miss. Window-shade hanger	708,156	Sept. 2	291	70	100	2041
Merle, George, Brooklyn, N. Y. Fish-trap	708,380	Sept. 2	685	154	100	2120
Merley, Nicholas, Canton, Ohio. Building-block die	708,795	Sept. 9	1316	300	100	2260
Merlin, Sidney L. W., Paris, France. Type-writing machine	708,821	Sept. 9	1321	348	100	2304
Merralls, William A., San Francisco, Cal. Stamp-mill mortar	709,104	Sept. 16	2104	482	100	2444
Merrick, Frank A., Johnstown, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Electric switch	706,581	Aug. 12	1129	249	100	1360
Merrick, Frank A., Johnstown, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Trolley	709,168	Sept. 16	2230	507	100	2469
Merrick, Frank A., Johnstown, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Circuit-breaker	709,292	Sept. 16	2348	532	100	2494
Merrick, Frank A., and E. W. Stull, Johnstown, Pa., assignors to Lorain Steel Company. Controller for electric motors	708,157	Sept. 2	292	70	100	2042
Merrick, Frank A., and E. W. Stull, Johnstown, assignors, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Controller for electric motors	708,158	Sept. 2	295	71	100	2043
Merrick, Frank A., and J. D. Forrer, Johnstown, assignors, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Operating mechanism for motor-controllers	708,794	Sept. 9	1314	300	100	2260
Merrick, Frank W., Boston, Mass. Sewing-machine needle	708,941	July 1	1041	226	100	207
Merrick, Frank W., Boston, Mass. Take-up for sewing-machines	707,145	Aug. 19	2180	490, 491	100	1506
Merrie, Hugh, and A. E. Burnett, Jr., Cincinnati, Ohio. Overflow attachment for bath-tubs or the like	706,968	Aug. 12	1878	420	100	1517
Merrifield, Leonard L., assignor to E. J. Checkley, trustee, and Economical Gas Apparatus Construction Company, Limited, Toronto, Canada. Gas-producer	707,146	Aug. 19	2193	491, 492	100	1599
Merrill, Alva M., Brooklyn, N. Y. Safety attachment for gas-cocks	705,419	July 22	4023	872	100	864
Merrill, Bela G., Oakpark, Ill. Manifolding sales or order book	706,709	Aug. 12	1497	332	100	1488
Merrill, Benjamin J. (See Henry, Edward G., assignor.)						
Merrill, George N. (See Johnston and Merrill.)						
Merriman, Leonard J., Ivanhoe, N. C. Plant-protector	707,947	Aug. 19	2380	533	100	1689
Merritt, Arthur A. (See Onderdonk and Merritt.)						
Merritt, James S., Philadelphia, Pa. Slide-scale	703,437	July 1	125	28	100	97
Merritt, Louis G., Lockport, N. Y. Veneer-cutting machine	706,331	Aug. 5	657	148	100	1248
Mervin, Charles R., assignor of one-half to J. M. Bolt, Mankato, Kans. Door-catch	704,651	July 15	2292	517	100	516
Merz Capsule Company. (See Heineman, Solomon E., assignor.)						
Messer, William F., assignor to Lambert Company, Chicago, Ill. Apparatus for reproducing phonograms	705,772	July 29	4744	1067	100	1019

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Messiter, Edwin H., San Luis Potosi, Mexico. Furnace-twyer	706,822	Aug. 5	659	143	100	1218
Metal Dust Guard Company of Baltimore City. (See Patten, James S., assignor.)						
Metal Stamping Company. (See Worrest, Alfred H., assignor.)						
Metallic Heel and Counter Company. (See Gordon and Warren, assignors.)						
Metallic Heel and Counter Company. (See Warren, George E., assignor.)						
Metcalf, Charles R. (See Radcliffe, Thomas D., assignor.)						
Metcalf, Charles W., Tucson, Ariz. Ter. Acetylene-gas generator	709,344	Sept. 16	2569	579	100	2542
Metzger, Isbon, Winfield, Iowa. Journal-bearing	707,147	Aug. 19	2196	492	100	1569
Meuser, William L., Anson, Kans. Eaves-trough protector	706,833	Aug. 5	662	144	100	1249
Mevis, George B., *et al.* (See Mitchell, James E., assignor.)						
Meyenborg, August. (See Bennett and Thatcher, assignors.)						
Meyer, Elizabeth, Springfield, Vt. Puzzle or game apparatus	705,269	July 22	3706	804	100	798
Meyer, Francis T., Montclair, N. J., assignor to Meyer-Sniffen Company, Limited, New York, N. Y. Waste-fixture for bath-tubs or the like	704,705	July 15	2481	535	100	535
Meyer, George G., Milwaukee, Wis. Door-hanger	708,060	Sept. 2	115	27	100	2005
Meyer, Henry, St. Louis, Mo. Swinging door	708,966	Sept. 9	1801	414	100	2382
Meyer, John, Yuton, Ill. Gate	709,548	Sept. 23	3024	672	100	2549
Meyer, John A., San Francisco, Cal. Crude-oil burner	703,706	July 1	611	136	100	121
Meyer, John E., New York, N. Y. Wine-cooler	706,270	July 22	3707	804	100	799
Meyer-Sniffen Company. (See Meyer, Francis T., assignor.)						
Meyer, Svend M., Brooklyn, N. Y. Device for lighting lamps by electricity	705,773	July 29	4747	1028	100	1020
Meyer, William C. (See French and Meyer.)						
Meyers, Henry E., Butte, Mont. Incandescent lamp	708,159	Sept. 2	297	71	100	2043
Meyrick-Jones, Leonard M., East Dereham, England. Motor attachment for cycles	709,549	Sept. 23	3026	673	100	2549
Meyrick-Jones, Leonard M., East Dereham, England. Motor attachment for cycles	709,550	Sept. 23	3026	673, 674	100	2549
Meyrowitz, Emil B., New York, N. Y., assignor to Meyrowitz Manufacturing Company. Ophthalmoscope	709,790	Sept. 23	3462	780	100	2739
Meyrowitz Manufacturing Company. (See Meyrowitz, Emil B., assignor.)						
Michalka, Joseph, Cameron, Tex. Plow	703,808	July 1	790	174	100	159
Michalke, Carl, Charlottenburg, Germany, assignor to Siemens & Halske Electric Company of America, Chicago, Ill. Switching apparatus	708,202	July 8	1573	380	100	329
Michalke, Carl J. A., Charlottenburg, Germany, assignor to Siemens & Halske Electric Company of America, Chicago, Ill. System of electric distribution	704,484	July 8	2092	458	100	429
Michaux, Henry, New York, N. Y. Knife-cleaning machine	706,677	Aug. 12	1313	290, 291	100	1400
Michener, William R., Oakland, Cal. Check-valve	704,557	July 15	2248	486	100	484
Miehle, Robert, Chicago, Ill. Printing-press	703,436	July 1	128	29	100	28
Miehle, Robert, Chicago, Ill. Gripper mechanism for printing-presses	703,605	July 1	406	95	100	80
Mietz, August. (See Weiss, Carl W., assignor.)						
Milans, Joseph H., Washington, D. C., assignor to Curtain Supply Company, Jersey City, N. J., and Chicago, Ill. Device for holding spring-actuated curtains	707,609	Aug. 26	3079	698	100	1801
Miles, Eustace H., Cambridge, England. Captive-ball apparatus	708,573	Sept. 9	1029	232	100	2201
Miles, George, Boston, Mass. Drop	708,720	Sept. 9	1317	300	100	2360
Mill, Anton, assignor to American Tool Works Company, Cincinnati, Ohio. Friction clutch	709,918	Sept. 30	3734	840	100	2808
Millea, John D., *et al.* (See Clinton, John, assignor.)						
Millea, Thomas D., *et al.* (See Clinton, John, assignor.)						
Miller, Albert W. W., South Orange, N. J., assignor to American Electric Company. Incandescent electric lamp	708,658	Sept. 9	1172	267	100	2280
Miller, Alexander C. (See Price and Miller.)						
Miller, Alexander H., and F. A. England, Philadelphia, Pa. Grocer's bin	708,822	Sept. 9	1523	349	100	2304
Miller, Alma C., McKeesport, Pa. Window-curtain bracket	708,381	Sept. 2	686	154	100	2120
Miller, Anderson, Shelbyville, Ind. Lifting-gate	706,984	Aug. 12	1880	421	100	1517
Miller, Arthur K., New York, N. Y. Acetylene-gas lamp	710,203	Sept. 30	4295	966	100	2528
Miller, Arthur K., Waterbury, Conn. Acetylene-gas lamp	710,204	Sept. 30	4299	967	100	2529
Miller, Athol M. (See Dunn, William A., assignor.)						
Miller, Carl F., Janesville, Wis. Fountain-pen	708,572	Sept. 9	1028	232	100	2201
Miller, Charles A., *et al.* (See Cahill, Thomas H., assignor.)						
Miller, Conrad, Leadville, Colo. Sled	705,943	July 29	5045	1099	100	1080
Miller, Daniel W. (See Pugh, Jesse H., assignor.)						
Miller, David N. (See Wheeler, Samuel D., assignor.)						
Miller, Edward F., Lanark, Ill. Washing-machine	704,071	July 8	1313	286	100	275
Miller, Edwin L., Williamsport Pa. Folding money holder or envelop	709,496	Sept. 23	3016	650	100	2527
Miller, Frank P., Downingtown, Pa. Beating-engine	706,985	Aug. 12	1881	421	100	1517
Miller, Gideon D., Tub, Pa. Traction-engine	704,652	July 15	2302	517, 518	100	516
Miller, Gideon D., Tub, Pa. Steam-boiler	704,783	July 15	2577	556	100	553
Miller, Harry S., Westfield, Mass. Paper box	709,345	Sept. 16	2572	580	100	2542
Miller, Henry R. (See Heffley, William, assignor.)						
Miller, Herbert S., and G. C. Marx, Elizabeth, N. J., assignors to Diehl Manufacturing Company. Electric-motor power-transmitting device	703,942	July 1	1043	226, 227	100	307
Miller, Jacob W. (See Huber and Miller.)						
Miller, James A., New Haven, Conn. Mechanism for covering bicycle-grips, &c	706,349	Aug. 5	471	100	100	1212
Miller, James T., Rochester, N. Y. Package for carbon or other thin paper	704,536	July 15	2344	486	100	485
Miller, John D., and R. Yates, Coatbridge, Scotland. Apparatus for controlling railway-wagons in loading or unloading	704,854	July 8	1856	401	100	392
Miller, John H., Jr., Irwin, Pa. Gas-producing apparatus	703,943	July 1	1046	227	100	308
Miller, Lewis. (See McKim, James T., assignor.)						
Miller, Lewis. (See McKim and Miller.)						
Miller, Lewis, assignor of one-half to J. T. McKim, Thorntown, Ind. Burial-vault and constructing same	704,809	July 15	2851	618	100	611
Miller, Lucian O., Cincinnati, Ohio. Trousers-supporter	706,498	Aug. 5	978	215	100	1314
Miller, Lula S., Elizabeth, Colo. Package-wrapper	710,332	Sept. 30	4513	1017	100	2972
Miller, Martin L., assignor of one-third to W. I. Hill, Sealy, Tex. Cattle-guard	709,105	Sept. 16	2105	483	100	2444
Miller, Matthew. (See Macke and Miller.)						
Miller, Robert R., Toledo, Ohio. Boring-machine	706,582	Aug. 12	1131	250	100	1360
Miller, Robert W. (See Miller, William H. and R. W.)						
Miller, Sidney W., Chicago, Ill. Liquid distributing or dosing tank and mechanism	709,253	Sept. 16	2350	532, 533	100	2495
Miller Signal Company. (See Price, Jonathan D., assignor.)						
Miller, Stephen S., and L. E. Clough, Akron, Ohio. Machine for smoothing rubber vehicle-tires	708,967	Sept. 9	1806	414, 415	100	2368
Miller, William, Falkirk, Scotland. Circular sawing machine	706,770	Aug. 12	1900	383, 388	100	1489
Miller, William H. and R. W., Henry Clay, Del. Burner-cap	704,658	July 15	2294	518	100	516

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Mills, Francis A., assignor of one-half to G. B. Emmons, Methuen, Mass. Shuttle-lock for looms	706,190	Aug. 5	367	79	100	1199
Mills, Henry D., Fisha Eddy, assignor of one-half to P. H. Lawless, Eastbranch, N. Y. Window-screen	709,346	Sept. 16	2573	580	100	2543
Mills, James, Wilmington, Del. Molding-flask	710,831	Sept. 30	4512	1016, 1017	100	2978
Mills, Roland A., Osceola, Nebr. Hand tenoning-machine	707,959	Aug. 26	3630	818	100	1910
Milmine, Alfred. (See Huber and Milmine.)						
Milne, William A., Brown's Corners, Canada. Peat-press	708,574	Sept. 9	1030	232	100	2201
Milner, William. (See Grosvenor and Milner.)						
Milward, George H., Nottingham, England. Machinery for spinning and doubling fibrous substances	705,774	July 29	4749	1028, 1029	100	1029
Mims, Giles D. (See Pope and Mims.)						
Minck, Harry, and H. L. Droste, Richmond, Ind. Rail-joint	710,290	Sept. 30	4439	1001	100	2958
Minder, Johann, assignor to Oxylin-Werke Actien-Gesellschaft, Piesteritz, Germany. Preparing and treating rubber-coated materials	708,823	Sept. 9	1524	.....	100	2305
Miner, Benjamin F., Montague, Mass. Combination stopper and brush for bottles	705,271	July 22	3709	804	100	799
Minges, Richard, and J. Ewell, Jr., Denver, Colo. Nut-lock	705,490	July 22	4023	872	100	864
Minogue, Martin T., Springfield, Ohio, assignor of one-half to S. F. Pierce, St. Paul, Minn. Motive-power engine	706,494	Aug. 5	979	215	100	1314
Minto, Thomas. (See Enderton, William H., assignor.)						
Minton, Charles. (See Minton, Francis, assignor.)						
Minton, Daniel J. (See Searles and Minton.)						
Minton, Francis, assignor to C. Minton, London, England. Device for gathering balls	704,848	July 15	2763	597	100	502
Mishler, Phares M., Hagerstown, Md. Wire-fence machine	703,804	July 1	792	174	100	159
Mitchell, Alexander, Oxbow, Canada. Churn	709,497	Sept. 23	2917	650, 651	100	2627
Mitchell, Charles F., Baltimore, Md. Non-refillable bottle	703,944	July 1	1047	227	100	308
Mitchell, Charles W., Brooklyn, N. Y., assignor to Twisted Wire Box Strap Company of New York. Pail-hook	709,919	Sept. 30	3735	841	100	2800
Mitchell, Dean C. (See Salmon and Mitchell.)						
Mitchell, Eugene E., Washington, D. C., assignor to M. Ingraham, Wabasha County, Minn. Toy boat	707,148	Aug. 19	2198	492	100	1600
Mitchell, Ferris A., New York, N. Y. Metallic lathing	704,072	July 8	1314	286	100	275
Mitchell, Frank A., Washington, D. C. Roofing compound	707,710	Aug. 26	3284	.....	100	1844
Mitchell, Frank W., Leaf River, Ill. Tire-setter	706,563	Aug. 12	1132	250	100	1360
Mitchell Gas Generator and Burner Company. (See Mitchell, Willis, assignor.)						
Mitchell, George, Naco, Ariz. Ter. Reducing copper matte to refined copper	705,109	July 22	3348	.....	100	727
Mitchell, Harry S. (See Porterfield, John C., assignor.)						
Mitchell, James E., assignor of three-fourths to G. B. Mevis, G. F. Stiles, and C. Fredericks, Lowell, Mass. Buckle	706,090	Aug. 5	152	32	100	1147
Mitchell, John E., St. Louis, Mo. Dust-collector	704,900	July 15	2832	618, 619	100	611
Mitchell, John E., St. Louis, Mo. Dust-collector	705,944	July 29	5050	1100	100	1098
Mitchell, Willis, Malden, assignor to Mitchell Gas Generator and Burner Company, Boston, Mass. Vapor-burning torch	706,842	Aug. 12	1635	366	100	1469
Moberg, Carl J., Jersey City, N. J., assignor to A. E. Schatz, Mount Vernon, N. Y. Electric clock	709,234	Sept. 16	2354	533, 534	100	2496
Mock, George, assignor of one-half to C. T. Stewart, Bardstown, Ky. Wagon-standard	708,968	Sept. 9	1805	415	100	2363
Mock, Severin, Pawtucket, and C. D. Robinson, Crompton, R. I.; said Robinson assignor to said Mock. Cleaner for spinning-machines	708,061	Sept. 2	116	28	100	2005
Modern Telescopic Company. (See Phillips and McHenry, assignors.)						
Moderson, Paul, Fruitvale, Cal. Lawn-sprinkler	706,986	Aug. 12	1682	421	100	1518
Modlin, Thomas B., and W. H. Buhl, Hurdland, Mo. Railway-tie plate	709,169	Sept. 16	2251	507	100	2469
Modrell, John H. (See Wilcox, Reuben O., assignor.)						
Moeller, Julius, Moscow, Russia. Carrying device	707,610	Aug. 26	3081	693	100	1802
Moesinger, Traugott, Brooklyn, N. Y. Feeder for cigarette-machines	709,930	Sept. 30	3737	841, 842	100	2809
Moffett, George E. (See Schermerhorn and Moffett.)						
Moffitt, Samuel B., and C. O. Weisenburger, Sharon, Pa. Valve	704,654	July 15	2398	518	100	517
Mohr, William T., Gladerun, Pa. Bone-black kiln	708,808	Sept. 9	1676	385, 386	100	2337
Mohs, Julius, Brandenburg, Germany. Machine for molding bricks	704,754	July 15	2578	556, 557	100	553
Mole, John G., Batavia, Ill. Clothes-line prop-head	704,078	July 8	1316	227	100	276
Molet, Alfred, Buenos Ayres, Argentina. Apparatus for mixing gas	709,498	Sept. 23	2919	651	100	2628
Molinari, Anton, Woodridge, N. J. Stopper for bottles	703,735	July 1	666	147	100	133
Molitor, Charles, Chicago, Ill. Lighting implement	704,559	July 15	2245	486	100	485
Mollitor, Joseph A., Chicago, Ill. Metal bedstead	709,551	Sept. 23	3028	674	100	2650
Monahan, Robert F., Buffalo, N. Y. Bicycle-frame	709,716	Sept. 23	3310	743	100	2708
Monck, Leopold F., New York, N. Y. Buttonhole-cutter	705,945	July 29	5052	1100	100	1098
Mondran, Frederick S. de. (See Belledin-Gras and Mondran.)						
Monjeau, Cleophas, Middletown, Ohio. Sand-screen for well-tubes	707,611	Aug. 26	3069	694	100	1802
Monneret, Léon F. A., Paris, France. Machine for cutting helicoidal gear-teeth	709,225	Sept. 16	2358	534, 535, 536	100	2497
Montague, John R., assignor to Hydraulic Car-Brake Company, Syracuse, N. Y. Car-brake	705,946	July 29	5054	1100, 1101	100	1099
Montel, Leo, New York, N. Y., assignor to Acetyvone Manufacturing Company, New York, N. Y., and Jersey City, N. J. Acetylene-gas generator	705,272	July 22	3711	804, 805	100	799
Montgomery, Boughey W. D. (See Taylor, Cooke, and Montgomery.)						
Montgomery, Walter R., assignor of one-half to J. H. Shepherd, Shreveport, La. Banana-crate	708,654	Sept. 9	1174	268	100	2331
Moody, George W., Newmire, Colo. Calf-weaner	708,945	July 1	1048	228	100	209
Moody, Robert A., Selma, Ind. Axle-nut wrench	707,248	Aug. 19	2382	533	100	1640
Moody, Walter S., Schenectady, N. Y., assignor to General Electric Company. System of electrical distribution	707,150	Aug. 19	2200	496	100	1600
Mooers, Louis P., assignor to Peerless Manufacturing Company, Cleveland, Ohio. Friction-clutch	706,081	Aug. 5	153	32	100	1148
Moomy, Joseph G., Erie, Pa. Article of manufacture having an elastic portion and a securing portion	709,993	Sept. 30	3884	876	100	2939
Moomy, Joseph G., Erie, Pa. Tip for ends of pneumatic-tire tubes	709,994	Sept. 30	3885	876	100	2940
Moon, Edward W., St. Louis, Mo. Brake for motor-shafts of elevators	707,442	Aug. 19	2744	621	100	1715
Moon, George R., Columbus, Ohio. Gas heating-stove	710,162	Sept. 30	4219	942	100	2908
Moon, Herman, Grove City, Pa. Clutch	705,278	July 22	3714	805	100	800
Moon, Joseph S., Nevada, Mo. Animal-trap	704,355	July 8	1057	402	100	398

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Moon, William E. (See Hunt and Moon.)						
Moore, Andrew J., Lebanon, Pa. Incubator	704,560	July 15	2246	486 / 487	100	485
Moore, Andrew R., assignor of one-half to L. H. McCall, Charlotte, Mich. Brake	707,149	Aug. 19	2199	498	100	1600
Moore, Andrew R., assignor of one-half to L. H. McCall, Charlotte, Mich. Friction-power	708,655	Sept. 9	1176	268	100	2221
Moore, Charles A. (See Moore, Frederick W., assignor.)						
Moore, Edward T. (See Brown and Moore.)						
Moore, Fernando C., San Bernardino, Cal. Bicycle	704,901	July 15	2354	619	100	612
Moore, Frank W. (See Gerlach and Moore.)						
Moore, Frederick W., Lynn, Mass., assignor to C. A. Moore, New York, N. Y. Splitting skins	708,868	Sept. 2	687	.....	100	2121
Moore, George, Salt Lake City, Utah. Apparatus for leaching ores, &c	706,334	Aug. 5	663	144	100	1949
Moore, Gilbert C., Guntown, Miss. Cut-off device for train-lines	706,433	Aug. 5	895	191	100	1294
Moore, Herman, Moundsville, W. Va. Water-level-testing device for boilers	703,421	July 22	4025	872	100	864
Moore, Isaac, *et al.* (See Williams, Joseph H., assignor.)						
Moore, Jehu C., Brooklyn, N. Y. Overseaming attachment for sewing-machines	708,824	Sept. 9	1525	349	100	2305
Moore, Jennie. (See Wimmer, Charles L., assignor.)						
Moore, Joseph D. (See Sleight, Milton W., assignor.)						
Moore, Kingman C., Macon, Ga. Clothes-drier	704,561	July 15	2249	487	100	496
Moore, Miles F. (See Lee and Moore.)						
Moore, Moses B., Pennington, N. J., and G. W. Leddon, Philadelphia, Pa., assignors to Pennington Foundry and Heater Company, Pennington, N. J. Hot-air heater	705,422	July 22	4027	873	100	865
Moore, Walter T. (See Simmons and Moore.)						
Moore, William E., and F. R. Clark, Augusta, Ga. Weft-replenishing loom	704,485	July 8	2094	454 / 455	100	440
Moore, William L., Lacie, Ky. Tobacco-fork	705,775	July 29	4751	1029	100	1080
Moore, William N., Joliet, Ill. Mail-box	706,848	Aug. 12	1639	367	100	1470
Moore, William N., Joliet, Ill. Cooking-stove	708,082	Sept. 2	117	28	100	2006
Moore, William R., Eden, N. Y. Combined advertising match-box and cigar-tip cutter	705,987	Aug. 12	1885	421	100	1518
Moore, Willis L., Washington, D. C. Air cooling, drying, and purifying apparatus	705,947	July 29	5056	1101	100	1088
Moorhouse, Joseph, Ashton-under-Lyne, England. Pulley-and-band power-transmitting appliance	704,208	July 8	1575	340	100	330
Moorman, Eli H., deceased, Winterset, Iowa; S. M. Moorman, administratrix. Duplex hook for hitching-straps, &c	706,678	Aug. 12	1314	291	100	1400
Moorman, Sarah M., administratrix. (See Moorman, Eli H.)						
Moorwood, Hedley S. (See Bennett and Moorwood.)						
Moran, John, Bradley, Ill. Potato-digger	709,707	July 1	612	126	100	121
Moran, Stephen W., Boston, assignor of one-half to S. H. Hellen, Wakefield, Mass. Dispensing apparatus for liquids	710,291	Sept. 30	4440	1001 / 1002	100	2598
Morehead, John, Detroit, Mich. Steam-trap	709,347	Sept. 16	2574	580 / 581	100	2343
Morenus, William H., Lakeview, Iowa, assignor to F. C. Austin, Chicago, Ill. Grading and excavating machine	709,921	Sept. 30	3738	842 / 843	100	2809
Moresi, Agricole P., and H. J. Bergeron, Jeanerette, La. Steam-engine	709,719	Sept. 23	3312	743 / 744	100	2708
Moreton, James A. M., *et al.* (See Rock, Frederick W., assignor.)						
Morgal, Lewis E., assignor of one-half to C. B. Cropley, Washington, D. C. Smoke-consumer	707,341	Aug. 19	2564	578	100	1677
Morgan, Charles E., Portland, Oreg., assignor to Automatic Street Indicator Company. Street-indicator for railway-cars	709,236	Sept. 16	2363	536	100	2497
Morgan, Charles O., Redwood Falls, Minn. Metal-sawing apparatus	708,946	July 1	1050	228	100	909
Morgan, Daniel F., Toledo, Ohio. Glove	708,160	Sept. 2	298	71	100	2043
Morgan, David E., Phœnix, Ala. Foot and head supporter	707,860	Aug. 26	2631	618	100	1911
Morgan-Gardner Electric Company. (See Cartlidge, Frank, assignor.)						
Morgan, Henry W., Lestershire, N. Y. Bicycle-lock	704,655	July 15	2309	519	100	517
Morgan, John W., Jr., McKeesport, Pa. Manufacture of car-wheels	709,446	Sept. 16	2761	626	100	2598
Morgan, Marshal W., Mount Vernon, Ind. Hydrocarbon-burner	705,948	July 29	5059	1101	100	1064
Morith, Joseph G., Buffalo, N. Y. Pipe-wrench	705,596	July 29	4430	960	100	957
Moritz, Emil L. N. Frymire, and S. Koons, Watsontown, Pa. Radiator	705,110	July 22	3851	796	100	727
Mork, Harry S., Boston, A. D. Little, Brookline, and W. H. Walker, Newton, assignors, by mesne assignments, to Chemical Products Company, Boston, Mass. Making cellulose esters	709,922	Sept. 30	3742	.....	100	2810
Morley, Charles O., assignor of one-half to J. J. May, Brooklyn, N. Y. Rotary engine	705,574	July 22	3716	805 / 806	100	800
Morley, Joseph D., Lake Pleasant, N. Y. Dish-washing apparatus	707,443	Aug. 19	2746	621	100	1715
Moroney, Daniel M., *et al.* (See Howe, John C., assignor.)						
Morrell, Edward J., Quincy, Mass. Carpenter's folding square	704,074	July 8	1316	287	100	276
Morrell, James A., Lansdale, Pa., assignor of two-thirds to H. C. Stuart, Denver, Colo., and S. B. Allison, deceased, New Orleans, La; C. A. Dorrestein, administrator. Apparatus for the manufacture of sugar	703,430	July 1	129	29, 30	100	28
Morrill, Charles, deceased; S. C. Morrill, New York, N. Y., executrix. Saw-set	703,440	July 1	131	30	100	29
Morrill, Frank E., San Francisco, Cal. Game-board	705,776	July 29	4758	1039	100	1051
Morrill, Sarah C., executrix. (See Morrill, Charles.)						
Morris, Archie, *et al.* (See Clark, Spencer, assignor.)						
Morris, Calvin S., St. Louis, Mo. Folding sample-case	708,489	Sept. 2	895	200	100	2161
Morris, Calvin S., St. Louis, Mo. Folding display box or tray	708,490	Sept. 2	896	200	100	2161
Morris, Charles E., *et al.* (See Avery, Edward R., assignor.)						
Morris, John B., *et al.* (See Hayward, Eugene, assignor.)						
Morris, William L., Cleveland, Ohio. Pot for containing shellac, &c	704,204	July 8	1576	340	100	330
Morris, William L., assignor to Austin Cartridge Company, Cleveland, Ohio. Printing device	709,532	Sept. 23	3028	674 / 675	100	2650
Morrison, Alexander G. (See Hepburn and Morrison.)						
Morrison, Fred C., Chicago, Ill. Can-labeling machine	709,499	Sept. 23	2921	651 / 652 / 653 / 654	100	2628
Morrison, Thomas, Braddock, Pa. Feed-table mechanism	704,890	July 15	2626	614	100	607
Morrison, William O. N., Belvidere, Ill. Bread-cutter	709,553	Sept. 23	3032	676	100	2651
Morrison, William W., Ellsworth, Me., assignor to Wagner Typewriter Company, New York, N. Y. Type-writing machine	705,423	July 22	4029	873	100	865
Morrissey, Thomas F., West Orange, N. J., assignor of two-thirds to J. M. and D. D. Schwartz, New York, N. Y. Button-machine	704,856	July 8	1650	402 / 403	100	393
Morrissey, William L., Summit, N. J. Horse-hoppie	708,088	Sept. 2	118	28	100	2006
Morrow, Henry W. (See Britton and Morrow.)						
Morrow, Norman, *et al.* (See Dempster, Robert, assignor.)						
Morrow Protective Process Company. (See Curtiss, George W., assignor.)						
Morse, Clyde S., Shabbona, Ill. End-board for farm-wagons	706,434	Aug. 5	665	191	100	1294

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Morse, Edward H., New Orleans, La. Folding magazine hand-camera	709,986	Sept. 30	3865	876 / 877	100	2840
Morten, Alexander, New York, N. Y. Moisture-proof cigar-box	704,908	July 15	2355	619	100	618
Morton Manufacturing Company. (See Morton and Evans, assignors.)						
Morton, Robert L. (See Morton and Evans.)						
Morton, Samuel S., W. S., and R. L., W and W. H. Evans, York, Pa., assignors, by mesne assignments, to Morton Manufacturing Company. Traction-engine	706,191	Aug. 5	668	79	100	1192
Morton Trust Company, trustee. (See Riker, Andrew L., assignor.)						
Morton, Walter S. (See Morton and Evans.)						
Morton, William J., New York, N. Y. Dispersing fluids	705,691	July 29	4591	996	100	980
Mosbaugher, Henry, Wilkinsburg, Pa. Palm-rest for firearms	708,964	July 1	1098	236	100	218
Moseley, William M., Elgin, Ill. Exercising device	708,942	Sept. 9	455	108	100	2074
Moser, Jakob. (See Purper, Moser, and Roeklen.)						
Moses, Alfred H., assignor to J. N. Moses & Co., St. Louis, Mo. Masonry wall and bricks for same	707,444	Aug. 19	2747	622	100	1716
Moses & Co., J. N. (See Moses, Alfred H., assignor.)						
Mosher, Frank B. M. J. Scheel, and E. H. H. Marting, Cleveland, Ohio. Changeable directory-board	705,275	July 22	3718	806	100	801
Mosher, John A. (See Hamm and Mosher.)						
Mosher, John A., Chicago, Ill. Rheostat	705,112	July 22	3354	727	100	728
Mosher, John A., Chicago, Ill., assignor to Adams & Westlake Company. Electric gas-igniting device	705,111	July 22	3352	727	100	728
Mosher, John A., Chicago, Ill., assignor to Adams & Westlake Company. Safety device for water-gages	705,113	July 22	3355	727	100	728
Mosher, John A., Chicago, Ill., assignor to Adams & Westlake Company. Gas-storage tank	705,114	July 22	3357	727	100	729
Mosher, John A., Chicago, Ill., assignor to Adams & Westlake Company. Acetylene-gas generator	705,115	July 22	3358	728	100	729
Moskowitz, Morris, Brooklyn, assignor to J. H. Young, trustee, New York, N. Y. Automatic pole-reverser	706,082	Aug. 5	155	32	100	1148
Moskowitz, Morris, Brooklyn, assignor to J. H. Young, trustee, New York, N. Y. Automatic switch	706,083	Aug. 5	157	32	100	1148
Moskowitz, Morris, Brooklyn, assignor to J. H. Young, trustee, New York, N. Y. Automatic switch	706,084	Aug. 5	158	33	100	1148
Moskowitz, Morris, Brooklyn, assignor to J. H. Young, trustee, New York, N. Y. Electrical system for lighting and power	706,085	Aug. 5	159	33	100	1149
Moss, Myer H., Chicago, Ill. Adjustable mirror	707,151	Aug. 19	2302	498	100	1601
Motsinger, Homer N., Pendleton, Ind., assignor of one-half to J. B. Bartholomew, Peoria, Ill. Muffler	706,844	Aug. 12	1641	367	100	1471
Motter, William H., Denver, Colo. Combined ore-roasting and fume-saving apparatus	708,977	Sept. 9	1827	420 / 421	100	2267
Moulton, Edward C., San Jose, Cal. Car-fender	708,809	Sept. 9	1679	386	100	2238
Mountford, Sidney, assignor to Whitehead & Hoag Co., Newark, N. J. Cigar-perforator	706,679	Aug. 12	1315	291	100	1401
Moyer, James C., Burlington, Iowa. Combined fire poker and tongs	708,047	July 1	1058	228	100	909
Moyer, Wilson E., Richland Station, Pa. Tin sealing-wax can	704,075	July 8	1317	287	100	276
Muchnic, Charles M., Philadelphia, Pa. Compound locomotive-engine	705,698	July 29	4594	997	100	989
Mudd, Almira A., St. Louis, Mo. Garment-supporter	710,398	Sept. 30	4445	1002	100	2969
Mudd, George W., Moberly, Mo. Rotary shears	709,106	Sept. 16	2107	483	100	2444
Mudd, William R., Cincinnati, Ohio. Metal window and window-frame	709,237	Sept. 16	2366	537	100	2498
Muddiman, Henry C. (See Ranadell and Muddiman.)						
Mueller, Karl. (See Biersach, Louis, assignor.)						
Mueller, William P. (See Schmidt and Mueller.)						
Muir, Alexander, Joliet, Ill. Boiler-furnace	709,605	Sept. 23	3117	694	100	2669
Miles, William, Penarth, England. Golf-club	708,575	Sept. 9	1052	233	100	2201
Mulkey, David F., Soddy, Tenn. Circuit-closer	706,435	Aug. 5	886	191	100	1294
Mullany, Patrick W., Amberg, Wis. Tool for banding boxes	708,161	Sept. 2	300	71	100	2043
Mullen, Clarence R. (See String, Benjamin T., assignor.)						
Mullen, Michael. (See Dean and Thomas, assignors.)						
Müllendorff, Eugen, Berlin, Germany. Mechanism for justifying lines composed of types or matrices	705,698	July 29	4597	998 / 999	100	990
Muller, Charles A., New York, N. Y. Photographic-shutter mechanism	709,500	Sept. 23	2980	654	100	2630
Müller, Ejnar J., Pittsburg, Pa., assignor to Pressed Steel Car Company, Jersey City, N. J. Car-door mechanism	707,348	Aug. 19	2565	578	100	1677
Müller, Ernest W., assignor to H. Krantz, Brooklyn, N. Y. Electrical-panel-board attachment	705,424	July 22	4031	874	100	866
Müller, Gustav, Dusseldorf, assignor to Firm Rheinische Metallwaaren-und Maschinenfabrik, Dusseldorf-Derendorf, Prussia, Germany. Cartridge	705,949	July 29	5060	1102	100	1054
Muller, Paul, Newark, N. J., assignor to Sprague Electric Company, New York, N. Y. Brake-controller	706,086	Aug. 5	162	33	100	1150
Müller-Rau, Bernhard. (See De Meulemeester, Emile, assignor.)						
Müller, Walter J., Aurora, assignor to Bauer & Black, Chicago, Ill. Adhesive shield	706,950	Aug. 5	474	101	100	1212
Mulrony, John P., Plaza, Wash. Plow	709,088	Sept. 16	1901	447	100	2410
Mumford, Frank T., Kalgoorlie, Western Australia, Australia. Apparatus for the electrolytical treatment of ores or slimes	706,436	Aug. 5	897	191	100	1294
Mumma, Abraham L., Mechanicsburg, Ohio. Mail-carrier	708,441	July 1	133	30	100	99
Mund, Mamie E. (See Mund, Samuel, assignor.)						
Mund, Samuel, St. Joseph, Mo., assignor to M. E. Mund. Combination hat conformator, stretcher, &c	708,442	July 1	135	31	100	99
Munday, James F., *et al.* (See Norton, James A., assignor.)						
Munro, James H., Newark, N. J. Setting tiles	706,474	Aug. 5	980	207	100	1308
Munson, Harvey S., New Haven, Conn. Machine for refolding paper tubes	709,501	Sept. 23	2984	654 / 655	100	2631
Munson, Harvey S., New Haven, Conn. Machine for refolding paper tubes	709,502	Sept. 23	2988	655	100	2632
Munson, Harvey S., New Haven, Conn. Machine for refolding paper tubes	709,503	Sept. 23	2941	656	100	2632
Munton, James. (See Hermanson, Gustaf A., assignor.)						
Munts, Louis M. A., Winona, Minn. Respirator	708,948	July 1	1053	229	100	200
Murch, William W., assignor of one-half to J. R. Parker, Brooklyn, N. Y. Emergency-gear for locomotives	706,988	Aug. 12	1885	422	100	1518
Murdock, Horace B., Detroit, Mich. Casket-lowering device	708,949	July 1	1054	229	100	210
Murdock, Robert L. (See Forster and Murdock.)						
Murgatroyd, Frank, Cleveland, Ohio. Revolving steam connection	708,900	Sept. 9	1681	387	100	2389
Murinick, Alexandre, St. Petersburg, Russia. Incandescent gas-burner	705,950	July 29	5061	1103	100	1054
Murphy, John. (See Ardizone, Thomas, assignor.)						
Murphy, John, Columbus, Ohio. Composition of matter	707,788	Aug. 26	3498	.....	100	1852
Murphy, John A., *et al.* (See Crandal, Frederick E., assignor.)						
Murphy, Nicholas F., Bakersfield, Cal. Spike-puller	708,443	July 1	136	31	100	99

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Murphy, Robert, Canisteo, N. Y. Planter	707,152	Aug. 19	2903	408 494	100	1601
Murphy, Thomas, Detroit, Mich. Furnace	705,276	July 22	2719	806	100	801
Murphy, William B., Lynn, Mass. Washboard	705,116	July 22	3360	728	100	790
Murphy, William F., Iowa City, Iowa. Loading device	703,444	July 1	136	31	100	30
Murray, Alexander W., Chicago, Ill. Ball-cock	708,805	July 1	793	175	100	159
Murray, Benjamin V., Maud, Pa. Fire-escape	708,823	Sept. 9	1327	349 850	100	2305
Murray, Donald, New York, N. Y. Keyboard-perforator	710,161	Sept. 30	4213	949 950 951	100	2908
Murray, Edward B. (See Cleland and Murray.)						
Murray, George C., Chicago, Ill. Car-truck	705,584	Aug. 12	1133	250	100	1360
Murray, George C., Chicago, Ill. Car-truck	705,585	Aug. 12	1135	251	100	1361
Murray, John E., and I. J. Hoover, Washington, Pa. Mantle-support	708,383	Sept. 2	668	155	100	2121
Murray, Maurice M., Baxter, Cal. Wrench	710,164	Sept. 30	4220	951	100	2910
Murray, Thomas E., New York, N. Y. Electric sign	705,597	July 29	4462	960	100	957
Murray, Thomas E., and J. Van Vleck, New York, N. Y. Electric railway	708,656	Sept. 9	1177	268 269	100	2231
Murray, Thomas E., and J. Van Vleck, New York, N. Y. Electric railway	708,969	Sept. 9	1806	416 417	100	2363
Murray, William A., Cincinnati, Ohio. Framework for spring beds or seats	705,694	July 29	4605	999	100	991
Murtaugh, E. J., *et al.* (See Doering, August, assignor.)						
Musgrave, Frank E., Bolton, England. Tramway-rail	708,901	Sept. 9	1693	387	100	2339
Musgrave, Robert B., New York, N. Y. Pad for treating shoe-boils on horses	708,902	Sept. 9	1694	387 388	100	2339
Musker, Arthur. (See Musker and Hay.)						
Musker, Charles and A., and W. G. Hay, Liverpool, England. Steam-generator	704,689	July 15	2452	529	100	528
Musser, Benjamin, New Whatcom, Wash. Pump-actuating mechanism	705,425	July 22	4032	874	100	805
Musso, Giuseppe, S. Angelo dei Lombardi, Italy. Page-printing telegraph	707,612	Aug. 26	3083	694	100	1802
Mutschler, Albert. (See Hutchings, Robertson, and Mutschler.)						
Mutton, John W., Boston, Mass. Device for untying hard knots	708,357	July 8	1863	403	100	304
Muus, Arthur H., assignor to Beaton and Corbin Manufacturing Company, Southington, Conn. Ceiling-plate attachment	704,562	July 15	2252	488	100	486
Myers and Bro., F. E. (See Myers, Philip A., assignor.)						
Myers, Cornelius H., South Bend, Ind. Inhaler	705,117	July 22	3361	728	100	790
Myers, Ephraim Murray, assignor of one-half to C. C. Bancroft, Barney, Iowa. Swinging animal-chute	705,118	July 22	3363	729	100	790
Myers, George E. and J. S., St. Joseph, Mo. Machine for handling vehicles	705,497	Aug. 5	889	192	100	1295
Myers, Jesse S. (See Myers, George E. and J. S.)						
Myers, John T., Culmersville, Pa. Cutter-bar for mowing-machines	708,806	July 1	795	175	100	160
Myers, Morris B., *et al.* (See Zander, William A. H., assignor.)						
Myers, Philip A., assignor to F. E. Myers and Bro., Ashland, Ohio. Track for door-hangers	709,029	Sept. 16	1955	447	100	2410
Myers, Richard A., Dayton, assignor to Hoover & Gamble Company, Miamisburg, Ohio. Twine-spinning machine	706,989	Aug. 12	1888	423	100	1519
Myers, Samuel C., Mifflintown, Pa. Plow-point	708,807	July 1	796	175	100	160
Myers, W. E. (See Williamson, William B., assignor.)						
Mygatt, Otis A., New York, N. Y. Display-light	705,426	July 22	4033	874	100	806
Myrick, Gilbert S., Philadelphia, Pa., assignor to Creswell & Waters Co. Adjustable planer-bed	705,540	July 22	4311	933	100	919
N. Tire Company. (See Blodgett, John W., assignor.)						
Nadeau, Theodore. (See Phelps, Edward W., assignor.)						
Naef, Paul, New Brighton, N. Y. Making coke	706,443	Aug. 5	903	195	100	1298
Nagengast, Henry S., Gardenville, Md. Shield and drip-catcher for candles	708,809	July 1	798	176	100	160
Nagle, Augustus F., Montclair, N. J., assignor to E. H. Gowing, Reading, Mass. Mechanical stoker	708,450	July 1	147	33	100	32
Nailless Lid Box Company. (See Davis, Edward H., assignor.)						
Nailless Lid Box Company. (See Fletcher, Edward, assignor.)						
Nakashjian, Stephen T., Worcester, Mass. Curtain-fixture	704,205	July 8	1577	340	100	330
Napier, Edward, Westernport, Md. Wheel-clamp	707,711	Aug. 26	3288	736	100	1844
Nares, Ralph W., trustee. (See Livingstone, Edward L., assignor.)						
Nash, Camillus A. (See Lewis, George W., assignor.)						
Nash, John M., Milwaukee, Wis. Abrading mechanism	707,621	Aug. 26	3101	699	100	1806
Nash, William C. (See Gilbert and Nash.)						
Nashawannuck Mfg. Co. (See Barnett, Henry E., assignor.)						
Nason, Frank A., and B. Smith, Clearfield, Pa. Neck-yoke	705,428	July 22	4036	875	100	807
Nither, Oswald, assignor, by mesne assignments, to Firm C. Zeiss, Jena, Germany. Curtain-shutter	708,797	Sept. 9	1820	300 301	100	2361
National Adjustable Chair Company. (See McKee and Saffell, assignors.)						
National Battery Company. (See Sperry, Elmer A., assignor.)						
National Biscuit Company. (See Johnston and Merrill, assignors.)						
National Cash Register Company. (See Barnard, Fayette B., assignor.)						
National Cash Register Company. (See Bell, Walter H., assignor.)						
National Cash Register Company. (See Bickford, Frank H., assignor.)						
National Cash Register Company. (See Carroll, Thomas, assignor.)						
National Cash Register Company. (See Green, George S., assignor.)						
National Cash Register Company. (See Yoe, Philip, assignor.)						
National Drill Company. (See Clark and Smith, assignors.)						
National Dry Kiln Company. (See Gerrard, Edward, assignor.)						
National Enameling & Stamping Co. (See Wagandt, Charles L., assignor.)						
National Hotel Register Company. (See Klee, Frederick C., assignor.)						
National Knitting Co. (See Stoll, Heinrich, assignor.)						
National Machine Company. (See Hogan, James T., assignor.)						
National Malleable Castings Company. (See Coffin, Walter E., assignor.)						
National Malleable Castings Company. (See Stephenson, John W., assignor.)						
National Malleable Castings Company. (See Tower, Clinton A., assignor.)						
National Malleable Castings Company. (See Willison, John, assignor.)						
National Newspaper Distributing Company. (See Overpeck, Lucien C., assignor.)						
National Self Winding Clock Company. (See Crook, Charles M., assignor.)						
National Tag Company. (See Kuhns, John P., assignor.)						
National Tube Company. (See Boyd, Peter, assignor.)						
Natural Body Brace Company. (See Rash, Howard C. and L. C., assignors.)						
Natural Power Co. (See Neumann, Christian, assignor.)						
Naylor, Arthur. (See Naylor, Thomas F. and A.)						
Naylor, Charles, Mexico, Mexico. Picture or design and making same	704,564	July 15	2254	488	100	497

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Naylor, Charles E. (See Hitt, Addison W., assignor.)						
Naylor, George. (See Illingworth, Mazey, and Naylor.)						
Naylor, Thomas F. and A., Kidderminster, England. Woven chenille	704,083	July 8	1328	289	100	278
Naysmith, Robert, and B. F. Reese, Kittanning, Pa. Leer	707,343	Aug. 19	2566	579 580	100	1678
Nesbr, Jacob E., Buffalo, assignor to Wagner Typewriter Company, New York, N. Y. Type-writing machine	705,281	July 22	3726	809 810	100	802
Nesbr, Jacob E., Buffalo, assignor to Wagner Typewriter Company, New York, N. Y. Type-writer	709,678	Sept. 23	3240	724	100	2594
Neale, David, Fort Calhoun, Nebr. Burglar-proof safe	707,344	Aug. 19	2568	580	100	1678
Neale, David, Fort Calhoun, Nebr. Combination brake, fender, and step	707,345	Aug. 19	2569	580 581	100	1678
Neale, David, Fort Calhoun, Nebr. Fire-escape	707,346	Aug. 19	2570	581	100	1679
Neamann, Robert H., New York, N. Y. Pendent soap-holder	706,992	Aug. 12	1893	424	100	1520
Nedo Company. (See Price, Corwin T., assignor.)						
Negraval, Louis A., Jersey City, N. J., assignor to Frank & Gutmann, New York, N. Y. Lady's hose-supporter	709,606	Sept. 23	3119	695	100	2009
Neihysel, Jacob E., New Orleans, La. Knockdown box	705,959	July 29	5066	1104	100	1085
Neil, James M. (See Browne and Neil.)						
Neill, James W. (See Officer, Neill, and Burfeind.)						
Neilsen, Christen. (See Ellis and Neilsen.)						
Neilsen, Thor H. (See Jacobson, Edward B., assignor.)						
Neilson, Henry, assignor to Osborn Manufacturing Company, Cleveland, Ohio. Broom	705,602	July 29	4439	902	100	959
Neilson, Walter, Bridgeport, Conn. Wrench	704,659	July 15	2405	520	100	519
Nelson, Andrew M., Littleyork, Ill. Fly-screen attachment	704,084	July 8	1329	289	100	278
Nelson, Christ. (See Christensen, Robert, assignor.)						
Nelson, Edgar, Lima, Ohio. Treating animal tendons	709,852	Sept. 16	2581		100	2544
Nelson, John P., San Antonio, Tex. Scraper for asphalt-cooking drums	705,954	July 29	5068	1104	100	1085
Nelson, John P., Waltham, Mass. Tent	707,347	Aug. 19	2571	581	100	1679
Nelson, Martin, Emerson, Iowa. Jointed pole	709,924	Sept. 30	3745	844	100	2810
Nelson, Neise D., Ann Arbor, Mich. Receptacle-filling device	704,565	July 15	2256	488	100	487
Nelson, Robert L. (See Blyth, Herbert K., assignor.)						
Nelson, William H., Hazleton, Iowa. Sash-fastener	705,282	July 22	3728	810	100	808
Nesmith, John J., assignor of one-half to J. J. Taylor, 2nd, Warren, Pa. Prescription-cabinet	710,001	Sept. 30	3897	879	100	2842
Nestor, John, Tacoma, Wash. Portable bake-oven	704,660	July 15	2406	520	100	519
Netherland, William H., Louisville, Ky. Standard for measuring horses	707,892	Aug. 26	3633	819	100	1911
Nethery Hydraulic Valve Company. (See Nethery, Joseph W., assignor.)						
Nethery, Joseph W., Indianapolis, Ind., assignor to Nethery Hydraulic Valve Company, Indianapolis, Ind.; New York, N. Y., and Jersey City, N. J. Flow-reducing device	707,712	Aug. 26	3289	736	100	1844
Neubauer, Carl E., assignor of one-half to A. Burke, I. Krause, J. Karl, Virginia, and F. J. Dahlberg, Buhl, Minn. Rail-support	705,955	July 29	5069	1104	100	1085
Neubauer, Edward A., Iron Mountain, Mich. Recorder	706,692	Aug. 12	1890	392	100	1402
Neubecker, Jean, Offenbach-on-the-Main, Germany. Apparatus for cooling or heating liquids	707,863	Aug. 26	3635	819	100	1911
Neuendorffer, Carl, New York, and B. Witsch, Brooklyn, N. Y. Book-cover	705,859	July 29	4897	1065	100	1051
Neuhs, Werner, Cleveland, Ohio. Flat-iron	705,283	July 22	3729	810 811	100	808
Neuman, Herman, Painesdale, Mich. Crib	710,115	Sept. 30	4118	928	100	2886
Neumann, Christian, assignor to Natural Power Co., St. Louis, Mo. Blower and compressor	704,360	July 8	1868	404	100	894
Neumann, Frank G., Paterson, N. J. Article-lifting device	704,661	July 15	2408	521	100	519
Neumann, John W., Louisville, Ky. Hydrocarbon-burner	708,889	Sept. 2	699	157	100	2123
Neumueller, John, Janesville, Wis. Table-fastener	709,581	Sept. 23	3080	685	100	2661
Neville, Joseph F., Woodruff, Utah. Load-binder	706,000	Aug. 5	168	34	100	1151
New England Automatic Weighing Machine Company. (See Nickerson, William E., assignor.)						
New England Electric Manufacturing Company. (See Proctor, Guy H., assignor.)						
New England Telephone & Telegraph Company. (See Farnham, Isaiah H., assignor.)						
New England Telephone and Telegraph Company. (See Howell, Martin H., assignor.)						
New Haven Clock Company. (See Porter, Wilson E., assignor.)						
New Process Lighting Company. (See Litle, Thomas J., Jr., assignor.)						
New Process Manufacturing Company. (See Ray, Samuel W., assignor.)						
New York-Pittsburgh Manufacturing Company. (See Fefel, Henry H., assignor.)						
New York State Saw Filers Association. (See Cole, Dwight S., assignor.)						
New York Stencil Works. (See Bartusch, Oswald G., assignor.)						
New York Stone, Brick & Terra-Cotta Renovating Company. (See Saum, David F., assignor.)						
New York Supply Company. (See Whittington, Joseph H., assignor.)						
Newbold, Sidney. (See Taylor and Newbold.)	708,451	July 1	148	33	100	32
Newburg, John L., Vicksburg, Miss. Hydraulic motor	706,587	Aug. 12	1141	258	100	1360
Newburg, John L., Vicksburg, Miss. Metallic sleeper or tie	704,908	July 15	2890	622 623	100	622
Newcomb, Edward C., Jamaica Plain, Mass. Generating steam or vapor	704,907	July 15	2862	621 622	100	618
Newcomb, Edward C., Jamaica Plain, Mass., assignor of three-fifths to P. Van Volkenburgh, New York, N. Y. Apparatus for generating steam or vapor						
Newell, Ebenezer J., *et al.* (See Bryant, John M., assignor.)						
Newell, Frank, Leonia, N. J., assignor of three-fourths to G. S. and F. E. Stanton, New York, N. Y. Apparatus for producing fabric having bias weave	704,566	July 15	2258	489	100	487
Newell, Ralph O., Venus, Nebr. Well-auger	708,947	Sept. 2	464	106	100	2076
Newhall, Henry B. (See Tripp, Jacob W., assignor.)						
Newhouse, Oscar, San Francisco, Cal. Car-axle box	704,085	July 8	1330	290	100	278
Newlin, Harvey, Brooklyn, N. Y. Bib	704,206	July 8	1578	341	100	331
Newlin, Stranda L., and J. Mathisen, Kingriver, Cal.; said Newlin assignor to said Mathisen. Acetylene-gas generator	707,796	Aug. 26	3508	791	100	1888
Newsom, George W., Sachse, Tex. Washboard	705,284	July 22	3730	811	100	808
Newsom, Joseph N., St. Louis, Mo. Telegraphically-operated signal system	708,810	July 1	799	176 177 178	100	161
Newton, Nelson A., Kalamazoo, Mich. Vehicle-wheel	705,121	July 22	3369	730	100	731
Newton, Robert W., Providence, R. I. Automatic fire-extinguisher	708,663	July 1	582	130	100	104
Newton, William J., assignor to F. M. Dyer, New York, N. Y. Snap push-button switch	707,622	Aug. 26	3108	699	100	1806
Neylon, William A., Allegheny, and J. Gouldsbarry, McKees Rocks, Pa. Boring-bar	709,275	Sept. 16	2442	552	100	2514
Nice, George P., and E. F. Laedlein, Williamsport, Pa. Fire-escape	704,086	July 8	1333	290	100	279
Nichols, Charles H., St. Louis, Mo. Flash-light apparatus	708,909	Sept. 9	1692	390	100	2341
Nichols, Frank H., Lynn, Mass. Ice-crusher for refrigerators	705,778	Aug. 12	1504	384	100	1440

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Nichols, J. J., *et al.* (See Chinnock, George H., assignor.)						
Nickel, David, assignor to Nickel Manufacturing Company, Morris, Ill. Caster	706,836	Aug. 5	666	145	100	1250
Nickel, David, and P. B. Peterson, assignors to Nickel Manufacturing Company, Morris, Ill. Caster	706,837	Aug. 5	668	145	100	1250
Nickel Manufacturing Company. (See Nickel, David, assignor.)						
Nickel Manufacturing Company. (See Nickel and Peterson, assignors.)						
Nickerson, Walter A., Houlton, Me. Fire-extinguishing and life-saving apparatus	710,069	Sept. 30	4013	906	100	2957
Nickerson, William E., Cambridge, Mass., assignor to New England Automatic Weighing Machine Company, Portland, Me. Apparatus for feeding weighing-machines	706,598	Aug. 12	1144	253 254	100	1268
Nicolet, John, Canton, Ohio. Shoe-blacking machine	706,091	Aug. 5	170	84	100	1151
Niedermaier, Georgs. (See Spaulding, George H., assignor.)						
Nielsen, Frederik V., San Francisco, Cal. Boom-rigging	710,334	Sept. 30	4517	1018	100	2974
Nielsen, Stefanus, Brooklyn, N. Y. Reversing mechanism	705,808	July 29	4440	982	100	959
Nieriker, Hermann, Zurich, Switzerland. Elastic anesthetic apparatus	707,622	Aug. 26	3107	699	100	1807
Niesen, Joseph M., Elkhorn, Wis. Sign-board	705,781	July 29	4761	1022	100	1023
Nieters, Joseph J., St. Louis, Mo. Brick-press	708,778	Sept. 9	1411	294	100	2281
Nighman, Charles A., Jersey City, N. J. Rod-rolling mill	706,903	Aug. 12	1804	424 425	100	1520
Nighman, Charles A., Jersey City, N. J. Rolling rods	706,904	Aug. 12	1808	425	100	1521
Niles-Bement-Pond Company. (See Hagman, William J., assignor.)						
Niles, Clevland P., Chinook, Mont. Field-gate	706,683	Aug. 12	1822	292	100	1402
Niles, George A., assignor to Standard Harrow Company, Utica, N. Y. Tooth-fastener for weeders	707,624	Aug. 26	3108	700	100	1807
Nilson, Nils, San Francisco, Cal. Ink-fountain for printing-presses	707,625	Aug. 26	3109	700	100	1807
Nilson, Swen, Boston, Mass. Boat-lashing device	703,664	July 1	534	120	100	105
Nippert, John W., Forsyth, Mont. Fastening means for doors or windows	706,995	Aug. 12	1900	425	100	1521
Noack, Adolph G., Cleveland, Ohio. Water-filter	705,696	July 29	4607	999 1000	100	992
Noble, Daniel H., Sheridan, Mont. Rail-joint	707,447	Aug. 19	2752	623	100	1717
Noble, Donald, Finsbury, London, England, assignor to Wheeler & Wilson Manufacturing Company, Bridgeport, Conn. Eyelet-sewing machine	706,253	Aug. 5	479	102 103	100	1218
Noble, Edward T., Chicago, Ill. Box	708,578	Sept. 9	1085	234	100	2282
Noble, John O., Trenton, N. J. Basin-clamp	709,170	Sept. 16	2283	507	100	2469
Noble, William J., Philadelphia, Pa., assignor of one-half to E. McGinnis, Princeton, N. J. Mail delivering and catching device	708,300	Sept. 2	700	157 158	100	2123
Noiseless and Draughtless Door and Window Cushion Company. (See Tachleky, Oscar, assignor.) (Reissue.)						
Nolan, Edward, Wolf Summit, W. Va. Wheel-hub	710,002	Sept. 30	3999	879	100	2843
Nolan, Louis C., St. Paul, Minn. Trolley-wire finder	706,338	Aug. 5	670	146	100	1250
Norddeutscher Lloyd. (See Hoppe, Paul, assignor.)						
Norden-Bittner Electric Company. (See Norden, Mortimer, assignor.)						
Norden, Mortimer, assignor to Norden-Bittner Electric Company, New York, N. Y. Electric-light sign	706,429	July 22	4038	875	100	867
Nordyke & Marmon Company. (See Brantingham, Allen C., assignor.)						
Norman, William C., Smithton, Ark. Calendar	709,353	Sept. 16	2582	582	100	2544
Norres, Wilhelm, Schalke, Germany. Electric mine-exploder	707,626	Aug. 26	3110	700	100	1808
Norrington, Henry H., West Bay City, Mich. Manifold duplicating device	709,858	Sept. 23	3373	805	100	2764
Norrington, Nova Z., Hammond, Ind. Valve	704,067	July 8	1334	291	100	279
Norris, Almon E., Cambridge, Mass. Automatic brake. (Reissue)	12,040	Sept. 30	4542	1049	100	2999
Norris, William, Blackpool, and H. Spurrier, St. Annes-on-the-Sea, England. Steam-generator	708,066	Sept. 2	124	29	100	2007
North American Leather Company. (See Pianko, Mendel, assignor.)						
North, James A., Lowry City, Mo. Fruit-stemmer	707,154	Aug. 19	2307	494 495	100	1601
North, Paul, *et al.* (See Fulford, Elijah D., assignor.)						
North, Thomas M., Brooklyn, N. Y., assignor to R. Hoe and Company. Printing-press	708,665	July 1	533	121	100	105
Northern Electrical Manufacturing Company. (See Duncan, Frederick B., assignor.)						
Northrop, Hamilton F., New York, N. Y. Variable-speed gear	707,986	Aug. 26	3775	847	100	1940
Northrop, Sandford. (See Liethegener, Henry, assignor.)						
Northrop, Sandford. (See Steinbrenner, Andrew G., assignor.)						
Northrop, Sandford, and A. G. Steinbrenner, St. Louis, Mo. Side bearing for railway-cars	704,088	July 8	1335	291	100	279
Northwestern Grass Twine Company. (See Fleckenstein, Valentine, assignor.)						
Norton, Gerrit, assignor to M. M. Norton, New York, N. Y. Machine for capping bottles	710,296	Sept. 30	4449	1003 1004	100	2960
Norton, Horatio N. (See Hodgson and Norton.)						
Norton, Horatio N., Maywood, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J. Can-head-delivering apparatus	704,266	July 8	1678	365 366	100	352
Norton, Horatio, N., Maywood, Ill., assignor, by mesne assignments, to American Can Company, Jersey City, N. J. Can-testing machine	704,267	July 8	1679	366	100	352
Norton, James A., assignor of one-half to M. C. Malloy and J. F. Munday, Wilkesbarre, Pa. Trolley-pole catch	706,092	Aug. 5	172	85	100	1152
Norton, Martha M. (See Norton, Gerrit, assignor.)						
Norton, Reuben H. (See Tucker, Holling G., assignor.)						
Norton, William T., *et al.* (See Dudley, Charles T., assignor.)						
Nowlin, Thomas B., Saxton, Pa. Shade-holder	706,093	Aug. 5	174	85	100	1152
Nowotny, John S., Madisonville, Ohio, assignor to General Electric Company. Electric-arc lamp	705,122	July 22	3871	730 731	100	732
Nowotny, John S., Madisonville, Ohio, assignor to General Electric Company. Electric-arc lamp	705,541	July 22	4313	968	100	920
Noyes, Arthur H., Boston, Mass. Safety locking-hook	708,910	Sept. 9	1594	300	100	2341
Null, William H., Philoah, W. Va. Stove	706,589	Aug. 12	1147	254	100	1268
Nussbaumer, William O., Sheboygan, Wis. Folding table	709,171	Sept. 16	2283	507	100	2469
Nutrisio, Henry, Henderson, N. C. Coffee-pot	707,987	Aug. 26	3776	847	100	1940
Nutry, John, Midlandpark, N. J., assignor of two-thirds to C. P. and R. Lenk, New York, N. Y. Driving-gear	708,579	Sept. 9	1086	234 235	100	2282
Nycum, Joseph W. S., Pittsburg, Pa. Pipe-coupling	704,909	July 15	2908	634	100	696
O'Bern, Joshua H., New Brighton, Pa. Puzzle	704,089	July 8	1336	291	100	279
O'Brien, James, and J. Mattimore, Staten Island, N. Y. Apparatus for transposing electric-circuit wires so as to equalize induction	710,206	Sept. 30	4308	967	100	2980
O'Brien, Joseph, Brooklyn, assignor of one-half to A. H. Buttling, New York, N. Y. Wrench	705,860	July 29	4399	1065	100	1032
O'Brien, Patrick J., Buffalo, N. Y. Revolving bar or counter	706,094	Aug. 5	174	85, 86	100	1152
O'Brien, Thomas E., Narrabri West, New South Wales, Australia. Drilling-machine	704,567	July 15	2260	489	100	488
O'Brien, Thomas J., Buffalo, N. Y. Street-receiver	705,927	July 29	4610	1000	100	992
O'Byrne, William, assignor of one-half to W. Winters, New York, N. Y. Pencil-sharpener	708,977	July 1	1101	237	100	218

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O'Connell, Joseph J., assignor to Western Electric Company, Chicago, Ill. Coin-collector for telephone toll-lines	704,208	July 8	1661	366	100	352
O'Connor, James, East Cambridge, Mass. Chair	708,911	Sept. 9	1695	390	100	2341
O'Connor, John, assignor of one-half to J. Goodchild, guardian, New York, N. Y. Bottle	709,419	Sept. 16	2731	613	100	2576
O'Connor, Timothy F., Sauk Center, Minn. Safety ash-pan	708,102	Sept. 2	301	72	100	2044
O'Day, Granville D. (See Groves and O'Day.)						
O'Donnell, Edmond G., assignor to American Hat Sweat Sewing Machine Company, Fall River, Mass. Combined presser-foot and needle-bar lifting mechanism for sewing-machines	709,354	Sept. 16	2584	582 583	100	2545
O'Dowd, Henry W., New York, N. Y. Water-heater	708,738	July 1	669	148	100	134
O'Hean, Charlotte A., Detroit, Mich. Corset	706,096	Aug. 5	177	86	100	1153
O'Neal, Isaac N., assignor of one-half to H. H. Hartgrove, Kokomo, Ind. Wire fence	708,391	Sept. 2	708	158	100	2124
O'Neill, Wesley, and W. H. Gordon, Russellville, Pa. Water distribution	707,448	Aug. 19	2753	623 624	100	1717
O'Reilly, John J., *et al.* (See Hehr, John G., assignor.)						
O'Rourke, John F., New York, N. Y. Subaqueous tunnel construction	708,949	Sept. 2	466	106 107	100	2076
Oastler, William C., New York, N. Y. Scraper or cleaner for wheels	705,123	July 22	3876	731	100	733
Oberwalder, William C., New York, N. Y. Composition for cleaning and preserving metals	705,956	July 29	5071		100	1096
Oblinger, Barrett C., and A. H. C. Beatty, Independence, Mo. Heat-reflector for stoves	706,996	Aug. 12	1901	426	100	1521
Oblinger, Barrett C., and A. H. C. Beatty, Independence, Mo. Stovepipe-cleaner	707,713	Aug. 26	3290	730	100	1845
Ochs, Milton T. J., Allentown, Pa. Plaster composition	705,549	July 22	4319		100	961
Ochs, Peter. (See Weaver, Albert S., assignor.)						
Octomobile Company. (See Andrea, George S., assignor.)						
Ocumpaugh, Charles H., Rochester, N. Y. Bicycle	709,679	Sept. 23	3343	725	100	2604
Oddie, Philip F., Wimbledon, England. Steam-pump	703,968	July 1	1102	237	100	218
Oddie, Philip F., Oschersleben, Germany. Equalizing device for steam-pumps	708,912	Sept. 9	1606	391	100	2342
Oehmen, Gustave N., Brooklyn, assignor of one-half to O. F. Ehrle, New York, N. Y. Electric cut-out	704,361	July 8	1870	405	100	395
Oehrle, Emanuel, Omaha, Nebr. Combination square and protractor	706,095	Aug. 5	175	86	100	1152
Ofeldt, August W., Newark, N. J., assignor to Salamandrine Boiler Company, New York, N. Y. Boiler	707,519	Aug. 19	2981	653	100	1744
Officer, Frank H. (See Officer, Neill, and Burfeind.)						
Officer, Robert H., J. W. Neill, J. H. Burfeind, and F. H. Officer, Salt Lake City, Utah. Cyanid process of working gold, silver, or other ores	705,698	July 29	4611	1000	100	993
Officer, Thomas, Claremont, N. H., assignor to Sullivan Machinery Co., Chicago, Ill. Packing-ring	704,568	July 15	2261	489	100	488
Offutt, Winfield, Washington, D. C. Compound tool	706,196	Aug. 5	377	81	100	1194
Ogborn, Ernest F., Converse, Ind. Razor-cleaner	706,997	Aug. 12	1902	426	100	1521
Ogden, James A., Philadelphia, Pa., assignor of one-third to C. H. Cornell, Valentine, Nebr. Roaster	708,728	Sept. 9	1321	301	100	2261
Ogilvy, David J., Cincinnati, Ohio. Producing lampblack	706,001	July 29	5146	1122 1123	100	1109
Ohio Ray Press Company. (See Trabue, Luther, assignor.)						
Ohler, Cameron F., Emmittsburg, Md. Governor for windmills	705,782	July 29	4761	1032 1033	100	1023
Ohno, Tadashi, Takagi, Japan. Automatic fire-protecting shutter	705,699	July 29	4615	1000 1001	100	993
Ohse, Wilhelm, Berlin, Germany. Producing photographs in relief	706,774	Aug. 12	1506	334	100	1440
Olaffsen, Peter, Tacoma, Wash. Rat-trap	704,910	July 15	2909	624	100	626
Old, Wm. W., executor. (See Hodgson, Herbert E. assignor.)						
Oldham, Joseph R., Cleveland, Ohio. Bulk-cargo vessel	704,362	July 8	1870	405	100	395
Oldham, Samuel, Philadelphia, Pa. Pneumatic impact-tool	704,912	July 15	2913	625	100	627
Olds, Ransom E., Detroit, Mich. Friction-clutch	704,911	July 15	2911	624	100	627
Oliger, Jacob D. (See Deering, Uriah H., assignor.)						
Oliva, Joseph L. (See Hardison, Edwin A., assignor.)						
Oliver Chilled Plow Works. (See Davis, Calvin R., assignor.)						
Olmstead, Clarence L., New Haven, Conn. Adjustable hanger	708,709	July 1	615	137	100	122
Olsen, Ole, St. Louis, Mo. Street-car fender	705,788	July 29	4763	1033	100	1023
Olsen, Torbjorn, Manistee, Mich. Saw-tooth tool	709,355	Sept. 16	2567	583	100	2546
Olson, Alfred, San Diego, Cal. Hat attachment	708,918	Sept. 9	1599	392	100	2342
Olson, Charles, Grand Rapids, Mich. Steam-boiler	709,082	Sept. 16	1959	448	100	2411
Olson, Charles J., assignor of one-half to N. Buck, Chicago, Ill. Bowling-alley	708,779	Sept. 9	1413	324 325	100	2282
Olson, Olof R., assignor to Horisontal Swing Co., Kansas City, Mo. Lawn or house swing	709,110	Sept. 16	2114	484 485	100	2446
Olsson, Georg O. M., Stockholm, Sweden, assignor to De Laval Steam Turbine Company. Apparatus for controlling the speed of steam-turbines	705,194	July 22	3878	731 732	100	733
Olsted, Christian, Wyandotte County, assignor to E. Haren, Kansas City, Kans. Apparatus for combustion of fuel	707,027	Aug. 26	3111	700 701	100	1805
Onderdonk, Lansing, Boston, Mass., assignor to Union Special Sewing Machine Company, Chicago, Ill. Feeding mechanism for sewing-machines	703,811	July 1	810	178	100	168
Onderdonk, Lansing, Boston, Mass., assignor to Union Special Sewing Machine Company. Stitch-forming mechanism for sewing-machines	703,812	July 1	812	179	100	168
Onderdonk, Lansing, Boston, Mass., assignor to Union Special Sewing Machine Company, Chicago, Ill. Stitch-forming mechanism for sewing-machines	703,813	July 1	815	180	100	168
Onderdonk, Lansing, New York, N. Y., assignor to Union Special Sewing Machine Company, Chicago, Ill. Feeding mechanism for sewing-machines	705,605	July 29	4444	962 964	100	960
Onderdonk, Lansing, and A. A. Merritt, New York, N. Y., assignors to Union Special Sewing Machine Company, Chicago, Ill. Feeding mechanism for sewing-machines	705,604	July 29	4442	962 963	100	959
Oney, Hugh R., Jackson, Ohio. Heating-stove	706,097	Aug. 5	178	86	100	1153
Ong, Harlon F., Wendling, Oreg. Switch-stand attachment	704,363	July 8	1871	405	100	395
Oppenheimer, David, assignor to L. Auerbach, New York, N. Y. Necktie	704,569	July 15	2262	490	100	488
Oppermann, Carl T. J., London, England. Composition for use in secondary batteries	706,444	Aug. 5	908		100	1299
Oppermann, Heinrich, Berlin, Germany. Producing oxidized milk-albumen	704,662	July 15	2409		100	520
Ordody, Ludwig v., Budapest, Austria-Hungary. Producing long and short fibers from reeds, rushes, or similar plants	703,814	July 1	816		100	168
Ordway, Charles, Brooklyn, N. Y. Vacuum evaporating apparatus	709,172	Sept. 16	2285	508	100	2470
Orlikowski, Frank, Cleveland, Ohio. Molding artificial stone	708,248	Sept. 2	465	108	100	2076
Ormand, David. (See Martin and Ormand.)						
Ormsby, Henry J., Eureka, Kans. Tug-fastener	704,570	July 15	2263	490	100	488
Orr, Alexander, Gloversville, N. Y. Electrically-operated valve-gate	707,988	Aug. 26	3777	848	100	1941
Orr, Charles A. (See Pugh, Edwin A., assignor.)						
Orr, William H. (See Boyer, Oliver, assignor.)						
Ortaig, Jean, Tempe, Ariz. Ter. Vehicle-brake	705,431	July 22	4040	876	100	868

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Orth, Georg, assignor to Firm C. Zeiss, Jena, Germany. Automatic shutter-setting mechanism	704,755	July 15	2580	557	100	558
Orth, Henry, Jr., administrator. (See Hoepfner, Carl.)						
Ortmann, John H. W., and C. W. Herbst, Hamburg, Germany. Bottle-washing machine	705,430	July 22	4089	875	100	867
Orvis, Orel D., New York, N. Y. Steam-generator	704,571	July 15	2264	490, 491	100	488
Orvis, Orel D., New York, N. Y. Steam-boiler furnace	709,173	Sept. 16	2237	508	100	2470
Orvis, Orel D., New York, N. Y. Combination draft-furnace	709,174	Sept. 16	2239	509	100	2471
Osborn, Alexander C., Clarksburg, W. Va. Sawmill-feed	706,339	Aug. 5	671	146	100	1251
Osborn, Francis C., Detroit, Mich. Platform-support for scales	710,003	Sept. 30	3900	879, 880	100	2843
Osborn, Frank D., Birmingham, Ala., assignor of one-half to A. C. Macpherson, Brooklyn, N. Y. Street letter-box	705,957	July 29	5072	1105	100	1086
Osborn Manufacturing Company. (See Neilson, Henry, assignor.)						
Osborne, Latham M., Apollo, Pa. Gas-service safety-valve	705,125	July 22	3980	732	100	734
Osel, Kistel, St. Paul, Minn. Flush car-door	708,914	Sept. 9	1700	392	100	2342
Osenbaugh, Charles C., and R. L. Gibson, Remington, Pa. Rail-joint	706,445	Aug. 5	907	196	100	1299
Osgood, Fred E., and F. F. Bradley, assignors of one-third to R. A. Kent, Chicago, Ill. Vehicle-tire	706,590	Aug. 12	1149	254	100	1364
Osgood, Frederick M., Manchester, N. H. Aerial toy	704,090	July 8	1337	291, 292	100	279
Osgood, James M., Boston, Mass. Passenger-car	705,482	July 22	4044	856	100	869
Osgood, John L., Buffalo, N. Y. Lathe	707,155	Aug. 19	2209	495	100	1602
Osgood, Leonard S., deceased; R. L. Osgood, Tooele, Utah, administratrix. Pipe-coupling	710,004	Sept. 30	3901	880	100	2843
Osgood, Ralph R., Upper Troy, N. Y. Dredge	708,657	Sept. 9	1180	269, 270	100	2232
Osgood, Ralph R., Upper Troy, N. Y. Dredge	708,658	Sept. 9	1183	270, 271	100	2232
Osgood, Ruma L., administratrix. (See Osgood, Leonard S.)						
Osius, George. (See Stroh, George, assignor.)						
Osteman, Carl G., and C. W. H. Blood, Boston, Mass.; said Osteman assignor to said Blood. Tapping and stud-setting device	710,116	Sept. 30	4114	928, 929	100	2887
Osten, George, and W. P. Spalding, Denver, Colo. Horn for sound recording and reproducing apparatus	705,126	July 22	3982	732	100	734
Osterud, Laurits H., Springvalley, Minn. Apparatus for equalizing, controlling, and storing power	705,700	July 29	4617	1001	100	993
Ostrom, Burton. (See Gary, Walter, assignor.)						
Otis Elevator Company. (See Carichoff, Eugene R., assignor.)						
Otis Elevator Company. (See Gill, Edwin R., assignor.)						
Otis Elevator Company. (See Ihlder, John D., assignor.)						
Otis Elevator Company. (See Maccoun, Andrew E., assignor.)						
Otis Elevator Company. (See Reynolds, George H., assignor.)						
Otis Elevator Company. (See Sundh, August, assignor.)						
Ott. Mergenthaler Company. (See Mergenthaler and Hoofnagle, assignors.)						
Ott, William D., and F. L. Prebyl, Riverside, Iowa. Gate	708,915	Sept. 9	1702	392, 393	100	2343
Ottehsoser, David. (See Kaufmann, Otto, assignor.)						
Otto, Christian, Hastings, Pa. Grain-separator	707,251	Aug. 19	2386	534	100	1641
Otto, Marius, Neuilly, France. Rotary apparatus for the production of diffused electric discharges	707,797	Aug. 26	3510	792	100	1888
Otto, Theodore W., Stamford, Conn. Keyboard-machine	707,714	Aug. 26	3291	786, 787, 788	100	1845
Ouellette, Ovide, Lowell, Mass. Window-screen	707,449	Aug. 19	2754	624	100	1717
Outerson, Andrew, Windsor Locks, Conn. Paper-making	704,572	July 15	2266	491	100	489
Overman Automobile Company. (See Bullard, James H., assignor.)						
Overpeck, Lucien C., Hamilton, assignor to National Newspaper Distributing Company, Cincinnati, Ohio. Vending apparatus for newspapers	704,466	July 8	2052	445	100	432
Overpeck, Ora E. (See Kelley, Joseph P., assignor.)						
Overton, Benjamin F., Omen, Tex. Pessary	705,295	July 22	3732	811	100	804
Owen, Charles N., Mechanicsburg, Pa. Stone-handling apparatus	706,197	Aug. 5	378	81	100	1194
Owen, David T., Cleveland, Ohio. Combined couch and folding bed	707,628	Aug. 26	3114	701	100	1809
Owen, Henry A., Whitinsville, Mass. Warp stop-motion for looms	703,686	July 1	538	121, 122	100	106
Owen, Henry A., assignor to Whitin Machine Works, Incorporated, Whitinsville, Mass. Carding-machine	708,260	Sept. 2	468	107	100	2077
Owen, Oscar L., Whitinsville, Mass. Beam-lock for looms	703,667	July 1	540	122	100	106
Owen, Oscar L., assignor to Whitin Machine Works, Incorporated, Whitinsville, Mass. Loom	708,251	Sept. 2	469	107	100	2077
Owens, William P., *et al.* (See Cotton, Walter H., assignor.)						
Oxley, Eustace, Lynn, Mass., assignor to General Electric Company. Apparatus for multirate metering	710,070	Sept. 30	4016	907	100	2868
Oxylin-Werke Actien-Gesellschaft. (See Minder, Johann, assignor.)						
Ozias, Orange O., assignor to Computing Scale Company, Dayton, Ohio. Spring-balance scale	708,302	Sept. 2	704	158	100	2124
Ozias, Orange O., Dayton, Ohio, assignor to Computing Scale Company. Weighing and price spring-balance scale	708,303	Sept. 2	707	159	100	2125
Ozon Maatschappy Systeem A. Vosmaer. (See Vosmaer and Lebret, assignors.)						
P. & F. Corbin. (See Bishop, Charles B., assignor.)						
P. & F. Corbin. (See Glover, Charles, assignor.)						
P. H. & F. M. Roots Company. (See Hicks, George C., Jr., assignor.)						
P. H. & F. M. Roots Company. (See Wainwright, William W., assignor.)						
Pacific Acetylene Gas Company. (See Kincaid, Fred L., assignor.)						
Packer, Alonzo C., assignor of two-thirds to J. A. Young and W. R. Patterson, Pittsburg, Pa. Bottle-stopper	707,348	Aug. 19	2572	581	100	1679
Packer, Charles L., Wilton Junction, Iowa. Fodder-loader	709,506	Sept. 23	2947	657, 658	100	2833
Packer, George W., assignor to Deering Harvester Company, Chicago, Ill. Staple forming and driving machine	705,433	July 22	4047	877	100	869
Packer, George W., assignor to Deering Harvester Company, Chicago, Ill. Slat-forming machine	705,434	July 22	4049	877, 878	100	870
Packness, Martin B. S. B. (See Anderson and Packness.)						
Page Company. (See Page, William H., assignor.)						
Page, Joseph M. (See Hawkins, Augustus L., assignor.)						
Page, Ralph H., Detroit, Mich. Making organic peroxids	710,005	Sept. 30	3902	881	100	2843

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Page, William H., Norwich, assignor to Page Company, Plainfield, Conn. Steam-generator or hot-water heater	706,846	Aug. 12	1644	368	100	1471
Paige, Charles F., *et al.* (See Fox, John C., assignor.)						
Paige, William R., and H. A. Hoods, Chicago, Ill. Lock	710,071	Sept. 30	4030	907, 908	100	2868
Paine, Ridley C., Bethel, N. Y. Fountain-pen	705,958	July 29	5074	1105	100	1086
Paine, William A., *et al.*, administrators. (See Gilbert, Frederick A.)						
Painter, Jonathan E., Minneapolis, Minn. Kindergarten-loom	708,815	July 1	817	180	100	103
Painter, Orrin C., assignor of one-half to L. S. and J. S. Greensfelder and B. B. Friedenwald, Baltimore, Md. Label for bottles, &c.	708,916	Sept. 9	1704	393	100	2343
Palfrey, Frederick, Macon, Mo. Boiler-tube expander	709,276	Sept. 16	2444	553	100	2515
Pallé, Frederic A., New York, N. Y. Rotary engine	704,918	July 15	2017	625	100	628
Palmaer, Wilhelm. (See Wiborgh and Palmaer.)						
Palmer, Charles H., and J. W. Denmead, Akron, Ohio, assignors to Diamond Match Company, New York, N. Y. Paper-blank feeding and scoring machine	706,098	Aug. 5	179	37	100	1153
Palmer, Charles H., and J. W. Denmead, Akron, Ohio, assignors to Diamond Match Company, Chicago, Ill. Box-sanding machine	709,033	Sept. 16	1960	448, 449	100	2411
Palmer, Frank A., and F. Sharpe, Erie, Pa. Pipe-wrench	708,252	Sept. 2	471	107	100	2077
Palmer, George E., and J. N. Lake, Elmira, N. Y. Egg-crate	705,286	July 22	3733	811, 812	100	804
Palmer, John. (See Martin and Palmer.)						
Palmer, Merritt W., Hamilton, Mich. Beet-topper	709,720	Sept. 23	3313	744	100	2709
Palmer, Noyes F., Brooklyn, N. Y. Machine for molding artificial stone	708,452	July 1	149	34	100	32
Palmer, William, Jr., Rincon, N. Mex. Ter., assignor of one-half to C. H. Dascomb, El Paso, Tex. Selective call for telegraph or telephone lines	710,335	Sept. 30	4518	1018	100	2974
Palmetto Fibre Company. (See Young, McClintock, assignor.)						
Panikoff, William L., New Haven, Conn. Battery	706,340	Aug. 5	673	146, 147	100	1251
Panoulias, Panayiotis, New York, N. Y. Candy-coating device	707,864	Aug. 26	3636	820	100	1911
Papst, Hilman M., San Francisco, Cal. Apparatus for manufacturing gas	710,336	Sept. 30	4520	1018, 1019	100	2975
Pardridge, Willard E. (See Sloane, John B., assignor.)						
Paridon, Michael, Barberton, Ohio. Machine for boxing matches	708,608	July 1	541	122	100	106
Paris, James A., E. B. Steelman, and J. L. Haverfield, Cedar, Tenn., assignors of one-half to Mayfield Manufacturing Company, Mayfield, Ky. Pea-thresher	710,366	Sept. 30	4570	1031	100	2985
Park, James E., and J. L. Pickens, Mooresville, Tenn. Combined plow and planter	706,446	Aug. 5	907	196	100	1299
Parker, Arthur, Chorley, England. Electric furnace	706,099	Aug. 5	181	37, 38	100	1154
Parker, Harry L., El Paso, Tex. Metal-foil fabric	706,100	Aug. 5	182	38	100	1154
Parker, Herschel C. (See Tufts, Frank L., assignor.)						
Parker, Howard, Bellows Falls, Vt. Paper-making wire for paper-making machines	709,084	Sept. 16	1962	449	100	2412
Parker, John R. (See Murch, William W., assignor.)						
Parker, Laura B., Ogden, Utah. Washing-machine	706,592	Aug. 12	1153	255	100	1364
Parker, Major M., assignor to D. S. Johnston, Cohoes, N. Y. Machine for rolling sheet-metal cylinders	710,117	Sept. 30	4117	929, 930	100	2888
Parker Match Company. (See Parker, William H., assignor.)						
Parker, Simon B., Springfield, Mass. Fire-escape	707,715	Aug. 26	3296	738	100	1846
Parker, W. E., *et al.* (See Furlong, William, assignor.)						
Parker, William H., Mellenville, N. Y., assignor, by mesne assignments, to Parker Match Company. Making matches	708,453	July 1	150	34	100	32
Parker, William H., Mellenville, N. Y., assignor, by mesne assignments, to Parker Match Company. Making matches	704,001	July 8	1839	292	100	280
Parkhurst, Frederic A. (See Perkins and Parkhurst.)						
Parks, Clarence W., Lowell, Mich. Cream-separator	709,095	Sept. 16	1902	450	100	2412
Parks, Leonard D., assignor of one-half to J. T. Post, Gatesville, Tex. Window-fastener	708,057	Sept. 2	125	30	100	2007
Parlin & Orendorff Company. (See Cross, Bradford, assignor.)						
Parlin & Orendorff Company. (See Graham, William S., assignor.)						
Parmenter, Orville L., Racine, Wis. Paper cigar-pocket	706,998	Aug. 12	1908	426	100	1521
Parmley, Walter C., Cleveland, Ohio. Concrete arch construction	709,794	Sept. 23	3469	781, 782	100	2741
Parrish, Charles T., Portsmouth, Va. Insect-destroyer	707,629	Aug. 26	3115	701	100	1809
Parshall, Horace F., London, England, assignor to General Electric Company. System of electric distribution	706,591	Aug. 12	1151	255	100	1364
Parsons, Charles A., Newcastle-upon-Tyne, England. Steam-turbine	708,780	Sept. 9	1415	325, 326	100	2282
Parsons, Charles H., *et al.* (See Beler, Adolf, assignor.)						
Parsons, Francis F., assignor of one-half to A. and H. Schiffer, Paterson, N. J. Removable pipe-bracket	708,454	July 1	151	34	100	32
Parsons, Frederick W., Elmira, assignor to Rand Drill Company, New York, N. Y. Compressor	704,914	July 15	2019	625, 626	100	628
Partridge, Hugh. (See Harris, Isaac L., assignor.)						
Partridge, Thomas, Jr., Hamilton, Canada. Stove-grate	708,455	July 1	152	35	100	32
Paschke, Charles H., Buffalo, N. Y. Armor for vehicle-tires	707,939	Aug. 26	3779	848	100	1941
Pasfield, Stephen E., Plumstead, England. Apparatus for applying the preparation to striking-surfaces of match-boxes, &c.	709,645	Sept. 23	3181	710, 711	100	2681
Patch, Theodore B., North Cambridge, Mass. Contact system for electric railways	704,092	July 8	1941	292	100	280
Patch, Theodore B., North Cambridge, Mass. Contact system for electric railways	704,093	July 8	1944	293	100	281
Patchel, George G. (See Patchel, Thomas T., assignor.)						
Patchel, Thomas T., Westchester, assignor, by mesne assignments, of one-half to G. G. Patchel, Media, Pa. Portable and separable photographic developing-case or dark cabinet	706,101	Aug. 5	183	38	100	1154
Patrick, William P., assignor of two-thirds to A. C. Scroggins, Jr., and J. E. Hooton, Moundsville, W. Va. Rail-fastening	706,909	Aug. 12	1905	427	100	1522
Patten, James S., Baltimore, Md., assignor to Metal Dust Guard Company of Baltimore City. Dust-guard	705,435	July 22	4062	879	100	870
Patten, James S., Baltimore, Md., assignor to Metal Dust Guard Company of Baltimore City. Dust-guard	708,491	Sept. 2	887	201	100	2161
Patten, James S., Baltimore, Md., assignor to Metal Dust Guard Company of Baltimore City. Dust-guard	708,492	Sept. 2	889	201	100	2162
Patten, John, New York, N. Y. Compound steam-engine	707,716	Aug. 26	3297	738, 739	100	1846
Patterson, Edward H., *et al.* (See Rock, Frederick W., assignor.)						
Patterson, Eugene A., Dunbar, Nebr. Sash-lock	707,940	Aug. 26	3781	848	100	1941
Patterson, Hermon H., Norfolk, and J. T. Burke, Omaha, Nebr. Steam-boiler furnace	707,865	Aug. 26	3639	820	100	1912
Patterson, Ralph J., Waterville, Me. Steam-engine governor	704,496	July 8	2098	455	100	441
Patterson, Ralph J., Woburn, Mass. Steam-engine governor	709,795	Sept. 23	3473	782, 783	100	2741

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Patterson, William R., *et al.* (See Packer, Alonzo C., assignor.)						
Patteson, Charles P., *et al.* (See Hughes, Robert D., assignor.)						
Patteson, Charles S. (See Cappeller and Patteson.)						
Paul, Andrew G., and H. A. Joslin, Boston, Mass.; said Joslin assignor to said Paul. Paper-drying machine	705,606	July 29	4446	964	100	961
Paul, Francis, Jr., and A. F. Gundlach, Sorel, assignors of one-half to W. T. Ross, Montreal, Canada. Carbureter	708,826	Sept. 9	1529	350	100	2306
Paul, Frank. (See Herbrand, Nicholaus, assignor.)						
Paul, George W., Pittsburg, Pa. Parer and slicer	707,798	Aug. 26	3512	792	100	1899
Paul, Josef, Dresden-Striesen, assignor to Feinmaschinenbau G. Calberla, G. M. B. H., Dresden, Saxony, Germany. Device for feeding tobacco in cigarette-machines	709,507	Sept. 23	2950	656	100	2234
Paulinetti, Philip H. T., Philadelphia, Pa. Surgical appliance	708,068	Sept. 2	126	30	100	2007
Paulus, Charles F. (See Troxler, Gustavus, Jr., assignor.)						
Paulus, Charles F., Newark, N. J. Toy pistol	707,252	Aug. 19	2387	585	100	1641
Paxson, John L., Mobile, Ala. Adjustable-socket wrench	703,816	July 1	819	181	100	164
Paxton, Richard M., Washington, Pa. Plant for the manufacture of glassware	708,917	Sept. 9	1705	393 394	100	2343
Pay, Charles, Providence, R. I. Dredging-bucket	709,420	Sept. 16	2732	613	100	2576
Payne, Frederick R., Powers, Mich. Bag-holding device	703,456	July 1	153	85	100	33
Payne, Theodore P., Irvington, N. J., assignor of one-half to S. N. Robinson, New Rochelle, N. Y. Building-slab and means for supporting same	705,127	July 22	3383	732 733	100	734
Peabody, Anna A. (See Smith, Samuel, assignor.)						
Peabody, Royal C. (See MacCormack, John, assignor.)						
Peak, Charles O., Jacksonville, Ill. Fence-post	704,915	July 15	2922	626	100	[9]629
Peano, Felix, Oakland, Cal. Forming statuary or other ornamental structures	706,775	Aug. 12	1508	334	100	1440
Pearce, William H., Chicago, Ill. Heat-distributing system	705,287	July 22	3736	812	100	805
Pearse, Harry, and E. P. Ievers, Buenos Ayres, Argentina. Antifriction metal alloy	708,580	Sept. 9	1040	.....	100	2203
Pearson, O. P., *et al.* (See Quist, John and C., assignors.)						
Pearson, Sally C., Montgomery, Ala. Garment-supporter	707,717	Aug. 26	3300	739	100	1847
Peart, George R., assignor of one-half to F. Foxon, Sheffield, England. Double-acting saw	706,447	Aug. 5	908	196	100	1299
Pease, Harrison, Giles, Nebr. Pipe-wrench	705,128	July 22	3385	733	100	734
Pease, William H., Joliet, Ill. Spring-gun	707,000	Aug. 12	1906	427	100	1522
Peat Machinery Supply Company. (See Dobson, Alexander, assignor.)				626 627 628 629		
Peatfield, John I., Arlington, Mass. Calendar-clock	704,916	July 15	2923		100	629
Péchenart, Paul, Braux, France. Tension apparatus for strings of stringed musical instruments	705,286	July 22	3740	812	100	805
Peck, Arthur E., Syracuse, N. Y. Candle-making machine	705,289	July 22	3741	813	100	806
Peck, Harry L., *et al.* (See Cotton, Walter H., assignor.)						
Peck, Horace B. (See Campany, Milton E., assignor.)						
Peck, John, Haverstraw, N. Y. Burning brick	708,396	Sept. 2	712	.....	100	2126
Peck, Staunton B., assignor to Link Belt Machinery Company, Chicago, Ill. Elevator	705,290	July 22	3743	813	100	806
Peck, Walter, Dunedin, New Zealand. Centrifugal tailings-elevator	709,721	Sept. 23	3315	745	100	2709
Peckinpaugh, Sebastian S. (See Thibodo and Peckinpaugh.)						
Peckman, Herman, Argentine, Kans. Combined cornstalk harvester and shocker	706,503	Aug. 12	1154	255 256	100	1365
Pecoraro, Nino, Spezia, Italy. Air-tool	705,436	July 22	4053	879	100	871
Pedersen, Niels, assignor to himself and F. C. Wilcox, Joliet, Ill. Chicken-brooder	709,508	Sept. 23	2950	658 659	100	2634
Pedrick and Ayer Company. (See Martin, George E., assignor.)						
Peerless Manufacturing Company. (See Mooers, Louis P., assignor.)						
Peerless Pouch Company. (See Siegel, Charles R., assignor.)						
Peffer, Harry C., New Kensington, Pa. Soap	704,364	July 8	1872	.....	100	395
Peirce, Ralph S., Chicago, Ill. Insulator	710,297	Sept. 30	4451	1004	100	2961
Peisker, Wilhelm, Berlin, Germany. Phonograph	708,581	Sept. 9	1040	235	100	2208
Peslant, Alfred, London, assignor to Hub Two Speed Gear Company, Limited, Salford, England. Two-speed driving-gear for cycles	704,663	July 15	2409	521	100	580
Pelton, Charles H., Springfield, Ohio. Gearing	704,084	July 8	1847	298	100	281
Pence, Josiah, Nicholasville, Ky. Seed-gatherer	709,036	Sept. 16	1905	450	100	2413
Pender, James C., Crowley, La. Combined baby carriage and rocker	705,448	Aug. 5	909	197	100	1299
Pendleton, John H., Jamesburg, N. J., assignor to Pendleton-Tapscott Company, New York, N. Y. Centrifugal grinding-mill	706,102	Aug. 5	184	39	100	1154
Pendleton-Tapscott Company. (See Pendleton, John H., assignor.)						
Penman, William, Glasgow, Scotland. Vertical steam-boiler	708,729	Sept. 9	1322	301	100	2202
Penn, John D., Paragould, assignor to S. K. S. Bazzell, Bard, Ark. Flood-gate	706,776	Aug. 12	1510	335	100	1441
Penn, William E., assignor to F. B. Fargo and Company, Lakemills, Wis. Pulley	705,129	July 22	3386	733	100	735
Penniman, Thomas D., and H. H. Wiegand, assignors to Rowland Telegraphic Company, Baltimore, Md. Transmitting apparatus for electric telegraphs	704,917	July 15	2929	629	100	630
Pennington Foundry and Heater Company. (See Moore and Leddon, assignors.)						
Pennsylvania Tube Company. (See Seymour, William S., assignor.)						
Pennypacker, Harry W., Allegheny, Pa. Mattress-stuffing machine	708,929	July 1	1104	228 229	100	219
Penty, Thomas H., and W. L. Bullard; said Penty assignor of one-half to A. E. Lynch and C. H. Dorer, Cleveland, Ohio. Spring butt-hinge	704,487	July 8	2100	455	100	441
Peoples, Ulysses S. G., and C. F. Walther, Baltimore, Md. Galley-lock	704,918	July 15	2931	629	100	631
Pepper, Charles F. (See Pepper, Charles T., assignor.)						
Pepper, Charles T., assignor to C. F. Pepper, Los Angeles, Cal. Hydrocarbon-burner	707,001	Aug. 12	1908	427	100	1522
Peppers, Edward D., Mobile, Ala. Car-door	706,449	Aug. 5	910	197	100	1300
Perdelwitz, Carl, Berlin, Germany. Ferrule	708,457	July 1	155	36	100	33
Perfect Gas Machine Company. (See Broichgans, Stephan, assignor.)						
Perfection Bush Company. (See Ricke, George H., assignor.)						
Perkins, Alfred P., New York, N. Y. Collapsible baby-jumper	703,458	July 1	156	36	100	33
Perkins, Benjamin W., South Bend, Ind. Billing-machine	707,690	Aug. 26	3116	702	100	1809
Perkins, Franklin J., Woburn, assignor to Vaughn Machine Company, Boston, Mass. Staking-machine	704,096	July 8	1852	294	100	288
Perkins, Franklin J., Woburn, and F. A. Parkhurst, Peabody, assignors to Vaughn Machine Company, Boston, Mass. Machine for treating hides or skins	704,095	July 8	1349	293 294	100	282
Perkins, Fred H., assignor of one-third to H. K. Perkins, Bridgewater, Mass. Clothes-wringer	707,974	Aug. 26	3041	863	100	1953
Perkins, Harry K. (See Perkins, Fred H., assignor.)						
Perkins, John L., Holyoke, Mass. Dissectible fan	710,998	Sept. 30	4452	1004 1005	100	2961
Perkins, Joseph C., *et al.* (See Hart, Frank, assignor.)						
Perkins, Nathan W., Jr. (See Ellis and Perkins.)						
Perkins, Paul B., Los Angeles, Cal. Acetylene-gas generator	704,664	July 15	2410	521	100	580

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Perks, Edwin, and F. Birch, Coventry, England. Motor mechanism for road-vehicles	708,827	Sept. 9	1533	35 351	100	2307
Perks, Walter G., and H. G. M. Fletcher, Hayle, England. Magazine-camera	707,156	Aug. 19	2210	495	100	1602
Perotti, Louis, Newark, N. J. Wine-press	706,437	July 22	4056	879	100	871
Perrie, James. (See Carlson and Perrie.)						
Perrin, Henri, Sérézin du Rhône, France. Producing enameled polychrome photographs, &c	708,918	Sept. 9	1707	.....	100	2344
Perrins, Limited. (See Beck, Arthur E., assignor.)						
Perron, Camillo, Rome, Italy. Treatment of nickel and copper-nickel ores	709,277	Sept. 16	2445	.....	100	2515
Perry, John C., Clinton, Mass. Hoop-making machine	705,180	July 22	3388	734 735 736 737	100	735
Perry, Raymond A., San Francisco, Cal., assignor of one-half to Atlantic Gulf and Pacific Company, New York, N. Y., and San Francisco, Cal. Dredger	708,817	July 1	821	181	100	164
Perry, Raymond A., Oakland, Cal., assignor of one-half to Atlantic Gulf & Pacific Co., New York, N. Y., and San Francisco, Cal. Hydraulic-dredger cutter	705,784	July 29	4764	1033	100	1024
Peteler, Francis, Minneapolis, Minn. Dumping-car	706,254	Aug. 5	485	103 104	100	1215
Peter, Francis A., Washington Township, Lehigh county, Pa. Snow guard or fender	706,684	Aug. 12	1324	292	100	1402
Peterman, John F., Indianapolis, Ind. Automobile attachment for vehicles	708,459	July 1	158	36	100	33
Peters, N. B., *et al.* (See Davis, John B., assignor.)						
Peters, W. J., *et al.* (See Davis, John B., assignor.)						
Petersen, Henry A. F., New York, N. Y. Hose or pipe coupling	706,847	Aug. 12	1646	368	100	1471
Peterson, Albert H., *et al.* (See Chapman, William S., assignor.)						
Peterson, Andrew P., Racine, Wis. Crayon-sharpener	704,365	July 8	1873	406	100	395
Peterson, Edwin O., Elgin, Nebr. Collection-calendar	705,697	July 29	4449	965	100	961
Peterson, Oscar, and J. H. Clark, Chicago, Ill. Device for digging ditches	708,395	Sept. 2	713	159 160	100	2126
Peterson, Peter B. (See Nickel and Peterson.)						
Peterson, S., *et al.* (See Brooks, Theodore L., assignor.)						
Pethick, John T., Carbondale, Pa. Sash-lock	708,919	Sept. 9	1708	394	100	2344
Pethybridge, Walter, London, England. Treatment of telluride gold ores	709,087	Sept. 16	1957	.....	100	2418
Pethybridge, Walter, London, England. Treating telluride gold ores	709,088	Sept. 16	1958	.....	100	2418
Petigor, Morris H., New York, N. Y. Soda-water-dispensing fountain	708,659	Sept. 9	1187	271	100	2238
Petit, Ademor N., Newark, N. J., assignor to International Phonograph and Indestructible Record Company, Limited, Liverpool, England. Sound-record of celluloid	708,828	Sept. 9	1537	351	100	2308
Petit, Ademor N., Newark, N. J., assignor to International Phonograph and Indestructible Record Company, Limited, Liverpool, England. Producing sound-records in celluloid	710,299	Sept. 30	4455	.....	100	2962
Petranyi, Emerich, Elizabeth, N. J. Pellet or tablet making apparatus	705,777	Aug. 12	1510	335 336	100	1441
Petre, Lewis D., Chicago, Ill. Seat-hinge	708,163	Sept. 2	802	72	100	2044
Petsche, Gustav B., assignor to Southwark Foundry & Machine Company, Philadelphia, Pa. Cam mechanism	705,701	July 29	4721	1002	100	994
Pettee, William E., Newton, Mass. Bottle-labeling machine	707,631	Aug. 26	3118	702 703	100	1809
Pettengill, John, Jefferson, Me. Dish-washer	703,460	July 1	159	37	100	34
Petter, Adolph J., San Francisco, Cal. Ore crusher and pulverizer	703,461	July 1	160	37	100	34
Pettes, James A., Grand Manan, Canada. Anchor	710,167	Sept. 30	4226	953	100	2911
Pfälzische Nähmaschinen & Fährrader Fabrik, vormals Gebrüder Kayser. (See Regenstein, Hermann, assignor.)						
Pfaudler, John M., Rochester, N. Y. Lubricator	708,608	July 29	4450	965	100	961
Pfeiffer, Louis A., and L. D. Staples, San Francisco, Cal. Oil-burner	706,341	Aug. 5	676	147	100	1252
Pfister, Josef, Vienna, assignor to J. von Brenner, Schloss Gaidford, Austria-Hungary. Staining woods	708,069	Sept. 2	126	31	100	2008
Pflieger, John H., Johnstown, Pa., assignor to Lorain Steel Company. Railway-track structure	705,131	July 22	3396	737	100	736
Pflueger, William F., Altona, Nebr. Coupling mechanism for windmills and pumps	707,718	Aug. 26	3302	739 740	100	1847
Pflugradt, William J., and M. Ries, Milwaukee, Wis. Box-cover fastener	710,392	Sept. 30	4619	1042	100	2995
Pfremmer, Joseph S., Fountain, Minn. Traction-engine	706,685	Aug. 12	1525	208	100	1402
Phares, William W., New York, N. Y. Vibrating propeller	706,198	Aug. 5	381	81	100	1194
Phelan, John M. J., Victoria, Canada. Mitering and tool-guiding device	704,919	July 15	2932	629 630	100	631
Phelps, Charles, Oskaloosa, Iowa. Tilting-flask support	709,925	Sept. 30	3746	844	100	2811
Phelps, Edward W., assignor of one-half to T. Nadeau, Montreal, Canada. Incandescent gas-burner	706,686	Aug. 12	1526	208	100	1403
Phelps, Edwin S., New York, N. Y. Gage for measuring keys for pin-tumbler locks	709,240	Sept. 16	2370	537 538	100	2496
Pherson, Anthony, Rochester, N. Y. Bicycle-pedal	706,594	Aug. 12	1156	256	100	1365
Philadelphia Electrical and Manufacturing Company. (See Bundy, Clifton L., assignor.)						
Philadelphia Pneumatic Tool Company. (See Keller, Julius, assignor.)						
Philippi, Wilhelm H., Bürgel-Offenbach, Germany. Tanning	708,396	Sept. 2	716	.....	100	2126
Philips, Edwin S., assignor to American Road Machine Co., Kennett Square, Pa. Conveyer-belt-supporting mechanism	706,848	Aug. 12	1648	368	100	1472
Phillips, Cecil O., assignor to American Cotton Oil Company, New York, N. Y. Producing cotton-seed oil	705,785	July 29	4705	1033	100	1024
Phillips, Charles B., Blissfield, Mich. Cream-separator	708,730	Sept. 9	1323	302	100	2202
Phillips, Charles W. (See Wieder, Henry G. A. I., assignor.)						
Phillips, Columbus, Meridian, Miss. Furnace	704,097	July 8	1354	295	100	283
Phillips, Edwin U., and F. J. McHenry, assignors to Modern Telescopic Company, Portland, Oreg. Telescopic traveling-bag	705,488	July 22	4057	880	100	872
Phillips, Elwood C., assignor of three-fourths to C. R. Barrett, Chicago, Ill. Wrought-metal barrel	704,366	July 8	1874	406	100	396
Phillips, Elwood C., assignor of one-fourth to O. A. Scheibe, Chicago, Ill. Barrel bung and bushing	706,103	Aug. 5	186	39	100	1155
Phillips, Elwood C., assignor of three-fourths to C. R. Barrett, Chicago, Ill. Bowling-alley pin	707,632	Aug. 26	3122	703	100	1810
Phillips, Emmett B., Richmond, Va. Vehicle-hub	709,241	Sept. 16	2373	538	100	2490
Phillips, George A., Marion, Ind. Paper-file	705,132	July 22	3396	738	100	737
Phillips, George W. (See Reed, Henry P. G., assignor.)						
Phillips, James R., assignor to American Tin Plate Company, Pittsburg, Pa. Pickling and swilling apparatus	708,660	Sept. 9	1190	271 272	100	2234
Phillips, James R., assignor to American Tin Plate Company, Pittsburg, Pa. Apparatus for treating and tinning plates	708,970	Sept. 9	1813	418	100	2364

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Phillips, John H. (See Phillips, Morris R., assignor.)						
Phillips, Morris R., assignor of one-half to J. H. Phillips, East Quogue, N. Y. Butter-cutter	705,548	July 22	4320	934	100	921
	707,349	Aug. 19	2573	582	100	1679
Phillips, Thomas L., Aurora, Ill. Water-heater						
Phillipson, Emil, assignor to A. C. Eggers, trustee, Brooklyn, N. Y. Stopper for water-bottles	710,207	Sept. 30	4904	968	100	2080
Phillipson, Emil, assignor to A. C. Eggers, trustee, Brooklyn, N. Y. Stopper for water-bottles	710,208	Sept. 30	4905	968	100	2080
Philo Burt Manufacturing Company. (See Sheldon, Philo B., assignor.)						
Phipps, Leslie E. (See McClean and Phipps.)						
Pianko, Mendel, Woodhaven, N. Y., assignor to North American Leather Company. Leather	704,707	July 15	2484	536	100	535
Pickard, Frank H., deceased, (T. W. Stanfield, administrator,) assignor of one-half to P. W. Trewhitt, Hill City, Tenn. Running-gear for wagons	707,520	Aug. 19	2883	653	100	1745
Pickard, Greenleaf W. (See Shoemaker and Pickard.)						
Pickard, Greenleaf W., Boston, Mass., assignor, by mesne assignments, to Consolidated Wireless Telegraph and Telephone Company. Coherer	708,070	Sept. 2	129	31	100	2008
Pickard, Greenleaf W., Boston, Mass., assignor, by mesne assignments, to Consolidated Wireless Telegraph and Telephone Company. Wireless telegraph system	708,071	Sept. 2	130	31	100	2008
Pickard, Greenleaf W., Boston, Mass., assignor, by mesne assignments, to Consolidated Wireless Telegraph and Telephone Company. Wireless telegraphy	708,072	Sept. 2	132	31, 32	100	2008
Pickens, James L. (See Park and Pickens.)						
Pickett, Fred C., Kansas City, Mo. Combined electric and gas lighting system	709,039	Sept. 16	1969	450	100	2413
Pickles, Charles K., assignor to himself, L. Bry, St. Louis, Mo., and I. Block, Memphis, Tenn. Pneumatic lasting-machine	704,098	July 8	1857	295, 296	100	284
Pickles, Charles K., St. Louis, Mo., assignor, by mesne assignments, to Chicago Pneumatic Tool Company. Pneumatic hammer	707,350	Aug. 19	2574	582	100	1680
Pieper, Alphonse F. (See Pieper, Oscar H. and A. F.)						
Pieper, Nicolas, Liege, Belgium. Lock and extractor mechanism for firearms	706,190	Aug. 5	382	82	100	1195
Pieper, Oscar H. and A. F., Rochester, N. Y. Electric-motor regulation	704,098	July 8	1875	297	100	289
Pierce, Fred T., and A. E. Kuchenbecker, Geneva, Minn. Can-washer	705,133	July 22	3398	788	100	737
Pierce, Jesse W., Belton, Tex. Can-opener	707,273	Aug. 19	2589	535	100	1641
Pierce, La Fayette, Moundsville, Mo. Automatic railway-switch-operating mechanism	709,141	Sept. 16	2116	485	100	2447
Pierce, Simeon F. (See Minogue, Martin T., assignor.)						
Pierson, Charles. (See Griffiths, Spencer M., assignor.)						
Pifer, George N., assignor to American Automatic Photograph Company, Cleveland, Ohio. Means for loading automatic photographic apparatus	708,164	Sept. 2	304	72	100	2044
Pifer, George N., assignor to American Automatic Photograph Company, Cleveland, Ohio. Photographic plate	708,165	Sept. 2	306	73	100	2045
Pifer, George N., assignor to American Automatic Photograph Company, Cleveland, Ohio. Automatic photographic apparatus	708,166	Sept. 2	307	73, 74, 75	100	2045
Pifer, George N., assignor to American Automatic Photograph Company, Cleveland, Ohio. Coin-controlled automatic photographic apparatus	708,167	Sept. 2	315	75	100	2046
Pifer, George N., assignor to American Automatic Photograph Company, Cleveland, Ohio. Shutter for automatic photographic apparatus	708,168	Sept. 2	318	76	100	2046
Pifer, George N., assignor to American Automatic Photograph Company, Cleveland, Ohio. Magazine plate-feeding apparatus	708,493	Sept. 2	800	201	100	2162
Piggott, Edward J., Chicago, Ill. Cheese-hoop	706,104	Aug. 5	187	39	100	1155
Pike, Charles B., Whitehall, N. Y. Receptacle for coins or small articles of merchandise	708,731	Sept. 9	1325	302	100	2262
Pike, William A., Pittsfield, Mass., assignor to Eaton-Hurlbut Paper Company, Portland, Me., and Pittsfield, Mass. Packing and display box for stationery	704,708	July 15	2485	536	100	535
Pilling, Charles J., and G. T. Barber, assignors to G. P. Pilling & Son, Philadelphia, Pa. Hinge for surgical instruments	704,207	July 8	1579	341	100	331
Pilling & Son, George P. (See Pilling and Barber, assignors.)						
Pillmore, William F., and D. Anderegg, Westernville, N. Y. Driving mechanism for hoisting and conveying apparatus	706,105	Aug. 5	189	40	100	1155
Pillmore, William F., and D. Anderegg, Westernville, N. Y. Bean-separator	709,646	Sept. 23	3184	711	100	2682
Pinel, Joseph, Altringham, assignor to Linotype Company, Limited, London, England. Device for forming accents on linotypes	708,651	Sept. 9	1191	272	100	2234
	704,259	July 8	1683	367	100	358
Pinson, Frederick W., Willenhall, England. Padlock	704,573	July 15	2267	491	100	489
Pintsch, Richard, Berlin, Germany. Device for generating electricity on running cars	704,574	July 15	2268	491, 492	100	490
Pintsch, Richard, Berlin, Germany. Power-transmission regulator for electromagnetic couplings	704,575	July 15	2270	492	100	490
Pintsch, Richard, Berlin, Germany. Centrifugal coupling						
Piper, Harry L. (See Fox, William H., assignor.)						
Piper, James W., Waltham, Mass. Gas-burner	709,356	Sept. 16	2587	583	100	2546
Pirie, John T., Jr., Chicago, Ill. Combined bill-sheet and journal-leaf	706,849	Aug. 12	1650	369	100	1472
Pirosh, Berthold, Chicago, Ill. Perpetual-reminder system	704,100	July 8	1877	297	100	290
Pirrung, Felix, Ravenswood, Ill. Sprinkling scrub-brush	706,861	July 29	4900	1065	100	1052
Pitcher, Lewis S., Albany, N. Y., assignor to W. M. Dudgeon, executor of R. Dudgeon, deceased. Hydraulic jack	706,650	Aug. 12	1651	369	100	1473
	709,357	Sept. 16	2589	584	100	2546
Pittman, George L., Bethesda, Ohio. Nut-lock	708,732	Sept. 9	1327	302	100	2263
Pitts, Mary, Chicago, Ill. Stopper for bottles						
Pittsburgh Blue Print Company. (See Whinery, Samuel B., assignor.)						
Pittsburgh Cigar Machine Company. (See Weierbach and Dickson, assignors.)						
Place, James F., Glenridge, N. J. Liquefying air or other gases and cooling by means thereof	707,633	Aug. 26	3123	703	100	1810
Place, James F., Glenridge, N. J. Vessel for holding and shipping liquid air or other liquid gases	707,634	Aug. 26	3125	704	100	1811
Plano Manufacturing Company. (See Hailey, Robert, assignor.)						
Plant, Oliver W., Providence, R. I. Cutter for gear-teeth	707,719	Aug. 26	3304	740	100	1847
Platko, John, Newton, assignor of one-fourth to Ertz & Joseph, Bradford, Pa. Steam-boiler	707,002	Aug. 12	1909	428	100	1523
	708,818	July 1	824	181, 182	100	165
Plattenburg, Joseph, McKeesport, Pa. Car-brake						
Pless Pol, Stanislas de, Laeken-Brussels, Belgium. Device for carrying packages	705,439	July 22	4058	880	100	872
Plews, Arthur S., London, England. Making white antimony oxid	704,367	July 8	1875	406	100	306
Plotnik, Paul, Delano, Minn. Hay-rack	708,462	July 1	162	87	100	34
Plowman, Harry, London, England. Steam-generator of the locomotive type	709,421	Sept. 16	2734	614	100	2577
Plunkett, Robert L., *et al.* (See Hook, Alonzo L., assignor.)						
Pneumatic Carriage Company. (See Hoadley, Joseph H., assignor.)						
Pneumatic Scale Corporation. (See Doble, William H., assignor.)						
Podlesák, Henry J., Lincoln, Nebr. Electrical releaser for fire-doors, &c.	709,997	Sept. 23	3120	695	100	2669
Pohl, Eduard, Weisswasser, Germany. Producing metals in a finely-divided state	706,475	Aug. 5	951	207	100	1308

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Pohlmann, Adele. (See Ruckstuhl and Pohlmann.)						
Poillevillain, Auguste F., (dit Paul Villain,) Paris, France. Apparatus for indicating when certain predetermined speeds are exceeded by vehicles	707,254	Aug. 19	2390	535, 536	100	1641
Poirier, Octave A., Minneapolis, Minn. Grain-drill	707,700	Aug. 26	3513	782, 793	100	1889
Poirrier, Alcide F., assignor to Ste. Ame des Matières Colorantes et Produits Chimiques de St. Denis, Paris, France. Blue sulfur dye and making same	708,602	Sept. 9	1195	.....	100	2234
	705,892	July 29	4901	1066	100	1052
Politsky, Simon A., and J. Agust, Boston, Mass. Gas-burner	709,358	Sept. 16	2589	.....	100	2546
Poliacsek, Emil, Budapest, Austria-Hungary. Desulfurizing furnace-gases	708,074	Sept. 2	141	34, 35	100	2010
Pollard-Ailing Manufacturing Company. (See Crane, Walter E., assignor.)						
Pollard, Edwin, Sissden, England. Machine for grooving lumber	708,073	Sept. 2	134	32, 33	100	2009
Pollard, Edwin, Silsden, England, and J. R. Thomas, Cincinnati, Ohio, assignors to Pollard & Metcalfe, Limited, Silsden, England. Fire-lighter machine	707,003	Aug. 12	1911	428	100	1523
Pollard, James P., Silverlake, Wash. Rotary engine	709,509	Sept. 23	2954	659	100	2634
Pollard, John H., Centralia, Ill. Boiler-tube cutter						
Pollard & Metcalfe. (See Pollard and Thomas, assignors.)						
Pollard & Metcalfe. (See Thomas, John R., assignor.)						
Pond, Edmund M., Rutland, Vt. Medicated tampon	706,778	Aug. 12	1515	336	100	1442
Pond, Orlando M., Independence, Iowa. Package-carrier	704,368	July 8	1876	406	100	306
Ponthus, Prosper, and L. Therrode, Paris, France. Collimator-gyroscope for obtaining artificial horizons	705,702	July 29	4623	1002, 108	100	995
Poole, Arthur F., Wheeling, W. Va. Electric clock	708,253	Sept. 2	472	109, 110	100	2077
Poole, John W., Lynn, Mass., assignor to Poole Skiving Company, Kittery, Me. Leather skiving machine	707,351	Aug. 19	2578	582, 583	100	1681
Poole, Samuel E., Randolph, Ohio. Starting means for explosive-engines	708,463	July 1	163	37	100	35
Poole Skiving Company. (See Poole, John W., assignor.)						
Poore, Margaretta E., assignor to R. Poore, Herne Hill, London, and W. Bradley, Wood Green, Middlesex, England. Combined shirt-front and braces	708,397	Sept. 2	717	160, 161	100	2126
Poore, Richard, *et al.* (See Poore, Margaretta E., assignor.)						
Pope, Frederick B., Augusta, Ga., and G. D. Mims, Parksville, S. C.; said Mims assignor to said Pope. Forming elastic and yieldable material in bales of cubic or square shape	705,134	July 22	3400	738, 739	100	737
Pope, Frederick B., Augusta, Ga., and G. D. Mims, Parksville, S. C.; said Mims assignor to said Pope. Apparatus for making cubic or square bales, &c.	705,135	July 22	3402	739, 740, 741	100	737
Pope, Howard, Hollidaysburg, Pa. Eaves-trough hanger	707,941	Aug. 26	3783	848	100	1942
Pope, John C. and W. J., Piano, Ill. Forming joints for intersecting wires or rods	707,352	Aug. 19	2581	583	100	1681
Pope, Willie J. (See Pope, John C. and W. J.)						
Poppenhusen, Herman A., Evanston, Ill. Automatic switch	705,786	July 29	4766	1034	100	1024
Poppert, Jesse G., Milwaukee, Wis. Electrical gas-lighter	708,398	Sept. 2	718	161	100	2127
Popplewell, Felix K., Bronte, Tex. Nut-lock	704,101	July 8	1878	297	100	290
Porritt, Josiah, San Francisco, Cal. Thrust-bearing	706,779	Aug. 12	1516	336, 337	100	1442
Porter, Henry H., Dowagiac, Mich. Bearing	705,803	July 29	4902	1066	100	1052
Porter, Henry H., Dowagiac, Mich. Vehicle-axle and axle-box	705,804	July 29	4903	1066	100	1053
Porter, Major D., assignor to C. F. Jewett, trustee, New York, N. Y. Steering and controlling device for road-vehicles	704,102	July 8	1879	297	100	290
	708,464	July 1	164	38	100	35
Porter, Robert, Ottumwa, Iowa. Buckle	704,920	July 15	2988	630	100	632
Porter, Robert L., Philadelphia, Pa. Croquette-mold						
Porter, Wilson E., assignor to New Haven Clock Company, New Haven, Conn. Stem-winding watch	705,703	July 29	4927	1002	100	995
	706,342	Aug. 5	678	147	100	1158
Porterfield, John C., Columbus, assignor to H. S. Mitchell, London, Ohio. Hand-trap	709,926	Sept. 30	3748	844, 845, 846	100	2811
Porto-Riche, Edgard de, Paris, France. Steam-generator	709,510	Sept. 23	2954	659	100	2695
Post, Charles B., New London, Ohio. Gib-and-key device	704,208	July 8	1580	341	100	331
Post, Claude L., Chicago, Ill. Calendar	708,075	Sept. 2	143	35	100	2010
Post, Elisha A., Allegan, Mich. Mold for making paper-board burial-caskets	707,942	Aug. 26	3784	849	100	1942
Post, Friedrich G. J., Hamburg, Germany. Writing or copying pad	707,353	Aug. 19	2582	583	100	1681
Post, John H., assignor, by mesne assignments, to Leader Manufacturing Company, Hartford, Conn. Embroidery frame and holder						
Post, John T. (See Parks, Leonard D., assignor.)						
Postley, Arthur, New York, N. Y. Device for stopping or closing gas-mains	708,076	Sept. 2	144	35	100	2011
Pothe, George S., Dallas Center, Iowa. Apparatus for carrying mail-matter	705,440	July 22	4059	880	100	872
Potter, Edson, Greensburg, Ind. Fly-trap	705,459	July 29	5075	1106	100	1087
Potter, Henry N., assignor to G. Westinghouse, Pittsburg, Pa. Mercury-vapor lamp	707,975	Aug. 26	3841	863	100	1953
Potter, Henry N., assignor to G. Westinghouse, Pittsburg, Pa. Mercury-vapor lamp	707,976	Aug. 26	3843	863	100	1953
Potter, John A., Philadelphia, Pa. Slag-heating apparatus	709,112	Sept. 16	2118	486	100	2447
Potter, John A., and W. C. Harvie, Monterey, Mexico. Treating mattes	710,300	Sept. 30	4456	1005	100	2062
Potter, Millard F., St. Paul, Minn. Milk-pail attachment	708,582	Sept. 9	1041	235	100	2203
Potter, William B., Schenectady, N. Y., assignor to General Electric Company. Electromagnetic switch for surface-contact electric-railway systems	705,136	July 22	3410	741	100	739
Potter, William B., Schenectady, N. Y., assignor to General Electric Company. Electric switch	705,137	July 22	3414	742	100	740
Potter, William B., Schenectady, N. Y., assignor to General Electric Company. Blow-out magnet	705,138	July 22	3418	742	100	741
Potter, William B., Schenectady, N. Y., assignor to General Electric Company. Electric railway	706,106	Aug. 5	192	40	100	1156
Potter, William B., Schenectady, N. Y., assignor to General Electric Company. Electric-railway system	710,072	Sept. 30	4025	908	100	2869
Potter, William W., Pawtucket, R. I. Window-fastener	706,595	Aug. 12	1158	257	100	1365
Potvliet, Michiel, Amsterdam, Netherlands. Water-sealed air-pump	705,704	July 29	4927	1002	100	995
Pouleur and Wells. (See Wells, Charles G., assignor.)						
Poulson, Niels, Brooklyn, N. Y. Slab or tile for building purposes	707,635	Aug. 26	3131	704	100	1812
Powell, George G. (See Bogardus, Collis, and Powell.)						
Powell, George G., New York, N. Y. Dredging apparatus	708,583	Sept. 9	1042	236, 237	100	2203
Powell, Joseph M., Orestes, Ind. Gas, oil, and water separator	708,819	July 1	826	182	100	165
Powell, Myron H., *et al.* (See Hatch, Edward P., assignor.)						
Powell, Myron H., assignor, by mesne assignments, to himself, Union Special Sewing Machine Company, Chicago, and E. P. Hatch, Lagrange, Ill. Tape inserting and stitching mechanism	707,004	Aug. 12	1913	429	100	1523
Powell, Myron H., assignor, by mesne assignments, to himself, Union Special Sewing Machine Company, Chicago, and E. P. Hatch, Lagrange, Ill. Machine for inserting tape into edging	707,005	Aug. 12	1914	429	100	1524

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Powell, William R., assignor of one-half to C. Wood, Wheeling, W. Va. Filter	704,921	July 15	2940	630, 631	100	632
Powers, John J. (See Cluff, George A., assignor.)						
Powers, John L., Peoria, Ill. Washboiler	709,555	Sept. 23	3034	676	100	2651
Powers, William P., Chicago, Ill. Means for regulating the temperature of heating systems	710,301	Sept. 30	4458	1005, 1006	100	2962
Poyner, Claud, Martin, Tenn. Fire-screen	706,596	Aug. 12	1160	257	100	1366
Prahar, Louis B., Brooklyn, N. Y. Chatelaine-hook	703,820	July 1	827	182	100	166
Prahar, Louis B., Brooklyn, N. Y. Chatelaine-hook	703,821	July 1	829	182	100	166
Prahar, Louis B., New York, N. Y. Chatelaine-hook	703,822	July 1	831	183	100	166
Pratt, Albert B., Boston, Mass. Rod-packing	710,337	Sept. 30	4521	1019	100	2975
Pratt, Cyrus C., assignor of one-half to T. Holland, Portland, Oreg. Vanner	706,667	Aug. 12	1328	293, 294	100	1403
Pratt, Daniel S. (See Pratt and Foster, assignors.)						
Pratt, Frank. (See Seyer and Pratt.)						
Pratt, Frank M., Decatur, Ill. Deodorizing	705,787	July 29	4770	1034	100	1025
Pratt, Frank M., Decatur, Ill. Deodorizing	707,354	Aug. 19	2583	568	100	1682
Pratt, Harry, Kenilworth, Ill. Railway signaling device	708,399	Sept. 2	719	161, 162	100	2127
Pratt, Joseph, McKeesport, Pa. Sewer-trap	710,309	Sept. 30	4306	968	100	2939
Pratt, Louis L. (See Wheeler and Pratt.)						
Pratt, Philip W., Boston, Mass. Crutch, cane, &c	710,074	Sept. 30	4028	908	100	2870
Pratt, Philip W., Boston, and R. E. Foster, Revere, assignors to D. S. Pratt, Brookline, Mass. Elastic tip	710,073	Sept. 30	4026	908	100	2870
Pratt, Robert J. (See Magee, William V., assignor.)						
Pratt & Whitney Company. (See Hanson, Bengt M. W., assignor.)						
Pratt & Whitney Company. (See Hanson and Gordon, assignors.)						
Prawatke, August, Dresden, Germany. Apparatus for drying vegetables, fruits, &c	708,781	Sept. 9	1417	326, 327	100	2282
Pray, Philander W., San Francisco, Cal. Umbrella drip-cup	708,823	July 1	832	183	100	166
Prebyl, Frank L. (See Ott and Prebyl.)						
Precision Eyelet Company. (See McCormack, George E., assignor.)						
Prentice, Frederick, Deercreek, Minn. Butter-packer	710,328	Sept. 30	4522	1019, 1020	100	2975
Prentice, John P., and R. G. Gregory, Barberton, Ohio, assignors to Stirling Company, Chicago, Ill. Turbine flue-cleaner	708,254	Sept. 2	480	110	100	2078
Prentiss, Charles W., assignor to Goodell Company, Antrim, N. H. Fruit-knife	706,107	Aug. 5	195	40	100	1157
Prentiss Vise Company. (See Bingham, Charles D., assignor.)						
Prescott, De Witt C., Chicago, Ill., assignor to R. F. Barker and M. Corry, Marinette, Wis. Steam set-works for sawmills	708,829	Sept. 9	1587	352	100	2308
Prescott, Henry A. (See Prescott, Thomas D., J. C., and H. A.)						
Prescott, James C. (See Prescott, Thomas D., J. C., and H. A.)						
Prescott, Thomas D., Philadelphia; J. C. and H. A. Prescott, Minersville, assignors of two-fifths to J. H. Closson and H. Bell, Philadelphia, Pa. Rotary engine	709,242	Sept. 16	2375	538, 539	100	2499
Pressed Steel Car Company. (See Ditchfield, Frank, assignor.)						
Pressed Steel Car Company. (See Müller, Ejnar J., assignor.)						
Pressler, Susie E., Toledo, Ohio. Safety attachment for trolley-car vestibules	705,705	July 29	4638	1008	100	996
Prestwich, John A., Tottenham, England. Internal-combustion engine	710,302	Sept. 30	4461	1006	100	2963
Price, Corwin T., Washington, D. C., assignor to Nedo Company. Tooth brush and powder cabinet	709,927	Sept. 30	3750	846	100	2811
Price, Jonathan D., Aurora, assignor to Miller Signal Company, Chicago, Ill. Railway-signal	709,040	Sept. 16	1971	451	100	2414
Price, Jonathan D., Aurora, assignor to Miller Signal Company, Chicago, Ill. Railway-signal	709,243	Sept. 16	2376	539	100	2500
Price, Jonathan D., and A. C. Miller, Aurora, Ill. Train-controlling apparatus	705,391	July 22	3747	814	100	909
Price, Richard H., Booneville, Miss. Sash lock and lift	703,465	July 1	165	38	100	35
Prickman, Robert J. (See Adams, William P. C., assignor.)						
Priebe, Herman C., Bradford, assignor of one-half to F. J. Reichmann, Chicago, Ill. Draft-rigging	708,607	July 1	409	95, 96	100	81
Priestman, Frederick, Burlington, Iowa. Composition for removing paint or varnish	705,139	July 22	3420	.....	100	742
Prieto, Manuel, Mexico, Mexico. Machine for disintegrating fibrous plants	705,140	July 22	3420	742, 743	100	742
Prime, Robert A. (See Geyer and Prime.)						
Prince, John A., New York, N. Y. Bronze-mill	708,466	July 1	166	38, 39	100	35
Prindle, Corydon L., Evanston, Ill. Periodical-file	708,169	Sept. 2	322	77	100	2047
Prior, John T., Priors, Ga. Rat-killer	704,576	July 15	2472	492	100	490
Prior, Matthew, Watertown, Mass. Window-operating mechanism for greenhouses	708,669	July 1	543	128	100	107
Pritchard, Theodore J., Sunshine, La. Hollow grate-bar	708,400	Sept. 2	723	162	100	2128
Pritt, Romey W., Julia, W. Va. Combined level and plumb	704,869	July 8	1877	407	100	396
Proctor, Charles B., Indianola, Iowa. Berry-box	707,866	Aug. 26	3541	820	100	1912
Proctor, George A., and E. F. Carpenter, Janesville, Wis. Sliding door	707,637	Aug. 26	3183	705	100	1813
Proctor, Guy H., Somerville, assignor to New England Electric Manufacturing Company, Boston, Mass. Electric-incandescent-lamp socket	708,467	July 1	167	39	100	35
Proskey, Winfield S., Ocala, Fla. Oil-spraying apparatus	707,636	Aug. 26	3181	705	100	1812
Pross, George F., and A. P. Tucker, assignors to E. H. Huenefeld, Cincinnati, Ohio. Wire-bending machine	707,006	Aug. 12	1916	429, 430	100	1524
Prött, Carl H., Rheydt, Germany. Apparatus for dispersing liquids or making spray	709,556	Sept. 23	3035	676	100	2651
Prouse, Alvin S. (See Richard, William, assignor.)						
Prouse, Ollie M., Tunis Mills, Md. Car-fender	706,851	Aug. 12	1658	370	100	1473
Prouty, Burt, and W. H. Budd, Jr., Columbus, Ohio. Cracker-stacking machine	708,255	Sept. 2	482	110, 111	100	2079
Prud'homme, Hector, Manchester, N. H. Door-securer	710,118	Sept. 30	4122	930	100	2888
Pryde, David. (See Gauerman and Pryde.)						
Pückler, Heinrich v., Schloss Friedland, Silesia, Germany. Air-purifier	705,865	July 29	4905	1056	100	1053
Puff, Carl, Spandau, Germany. Explosive projectile or shell for ordnance	709,854	Sept. 23	3576	806	100	2764
Puff, Edward, Montgomery, N. Y. Buttonhole-moistener	704,577	July 15	2273	493	100	490
Pugh, Edwin A., assignor of one-half to C. A. Orr, Springfield, Ill. Cleaner for guns	709,557	Sept. 23	3036	677	100	2652
Pugh, Jesse H., assignor of one-third to D. W. Miller, Toledo, Ohio. Hot-air wall-register	705,603	July 29	4454	965	100	962
Pullman, William, and C. C. Field, Sodus, N. Y. Trolley-pole	709,118	Sept. 16	2119	456	100	2447
Pulwitt, Fredrick, Springfield, Ill. Elevator	708,830	Sept. 9	1589	352	100	2308
Punzelt, Edward E., assignor to H. E. Dann and O. H. Banks, Norwalk, Conn. Adjustable screw-propeller	705,866	July 29	4907	1057	100	1053
Pupin, Michael I., New York, N. Y. Multiple telegraphy	707,007	Aug. 12	1918	430	100	1525
Pupin, Michael I., Yonkers, N. Y. Multiple telegraphy	707,008	Aug. 12	1921	430	100	1525
Pupke, Eberhard L., East Orange, assignor to Agatine Shoe Hook & Eyelet Company, Newark, N. J. Lacing-hook	710,210	Sept. 30	4806	968	100	2931

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Pure Food Company. (See Taylor, Percy B., assignor.)						
Purinton, David L., Boston, Mass. Last	708,077	Sept. 2	145	35	100	2011
Purper, Gustav, J. Moser, and R. Boeklen, New York, N. Y. Gem-cutting machine	706,597	Aug. 12	1161	257, 258	100	1306
Purser, Henry F., London, England. Photographic camera	704,370	July 8	1878	407	100	396
Pusey, Thomas M., Kennett Square, Pa. Voltage-regulator	704,371	July 8	1879	407, 408	100	397
Putnam, Charles F., Fitchburg, Mass. Vehicle-body	704,209	July 8	1581	341	100	331
Putnam, John P., Boston, Mass. Apparatus for protecting seals of sewer-gas traps	706,255	Aug. 5	488	104	100	1215
Putnam, Simeon N. (See Butcher, Joseph, assignor.)						
Putney, Newton E., Southbridge, Mass. Knife	705,441	July 22	4061	880	100	872
Pyott, Louis T., assignor to J. E. Reyburn, Philadelphia, Pa. Hoisting-machine	706,256	Aug. 5	491	105	100	1216
Quain, John R., County of Middlesex, England. Electrical heating apparatus	703,970	July 1	1107	239	100	219
Quartz, James, Jr., Boston, Mass., assignor to F. S. Webster Company, Boston, Mass.; New York, N. Y.; Chicago, Ill., and London, England. Ink-pad box	705,610	July 29	4455	966	100	962
Quarzitol Company. (See Loewenthal, Jean, assignor.)						
Quasebarth, Gustav C., assignor of one-half to N. Holbert, St. Louis, Mo. Boiler-tube cleaner	706,200	Aug. 5	383	82	100	1195
Quayle, William, assignor to J. H. and M. Harrison, Denver, Colo. Protractor	703,608	July 1	411	96	100	81
Quest, Francis E., Knoxville, Pa. Switch-operating device	708,971	Sept. 9	1815	418, 419	100	2364
Quimby, Albert G., *et al.* (See Lewis, Albert H., assignor.)						
Quimby, William E., New York, N. Y. Brake for administering prescribed resistance to the starting movements of hand-operated controllers	703,468	July 1	168	39	100	36
Quin, John, Toronto, Canada. Sander for railways	704,210	July 8	1582	342	100	332
Quincy, Charles F. (See McCluer, Charles R., assignor.)						
Quinn, B. B. (See Lincoln, John C., assignor.)						
Quinn, Charles J., Scranton, Iowa. Chimney-top	706,450	Aug. 5	912	198	100	1300
Quinn, John C., Port Costa, Cal. Water-pressure safety oil-feeder	703,824	July 1	833	183	100	166
Quinn, Thomas E. (See Lutz, George A., assignor.)						
Quist, Charles. (See Quist, John and C.)						
Quist, John and C., assignors of one-half to O. P. Pearson and C. L. Berry, Mystic, Iowa. Mechanical movement	703,825	July 1	834	183	100	167
Qvarnström, Pontus M., Stockholm, Sweden. Timber-drag for sawing crooked timber	705,442	July 22	4062	881	100	873
R. M. Keating Motor Company. (See Keating, Robert M., assignor.)						
Raasloff, Harald de, New York, N. Y. Centrifugal machine	707,521	Aug. 19	2884	653	100	1745
Raber, Franklin C., Akron, Ohio. Blackboard-eraser	709,722	Sept. 23	3816	745	100	2709
Rabinowitz, Sundel, New York, N. Y. Window-cleaning chair	705,292	July 22	3749	814	100	869
Radcliffe, Joseph H. (See Bryan, Joseph P., assignor.)						
Radcliffe, Thomas D., assignor of one-third to C. R. Metcalf, Lawrence, Kans. Wheeled scraper	706,343	Aug. 5	680	147, 148	100	1258
Radcliffe, Thomas D., assignor of one-third to C. R. Metcalf, Lawrence, Kans. Wheeled scraper or scoop	707,977	Aug. 26	3846	864	100	1958
Railroad Gas Lighting Company. (See Caldwell, Charles W., assignor.)						
Rait, George B., Sheldon, Iowa. Draft device and spark-arrester	704,922	July 15	2942	631	100	638
Ralston, Isaac, assignor of one-half to T. Spillane, New Bethlehem, Pa. Sucker-rod stub	705,443	July 22	4063	881	100	873
Ralston, Jackson H., *et al.* (See Fillmore, George M., assignor.)						
Ralston, Willis H., *et al.* (See Jewell, Danford W., assignor.)						
Ramage, Alexander S., Cleveland, Ohio. Pigment	708,584	Sept. 9	1045	.....	100	2204
Ramage, Alexander S., Cleveland, Ohio. Treating ferrous liquors	708,585	Sept. 9	1046	238	100	2204
Ramage, M. H., *et al.* (See Fillmore, George M., assignor.)						
Rambeaud, René F. C., Parthenay, France. Coupling for railway-wagons, &c	703,670	July 1	545	123	100	107
Ramos, Charles, Vancouver, Canada. Gold-saving machine	704,372	July 8	1883	408	100	397
Rand Drill Company. (See Parsons, Frederick W., assignor.)						
Randall, Fred. (See Trivett and Randall.)						
Randall, James D., deceased, (J. E. Randall, administratrix,) assignor of one-half to J. W. Buchanan, Memphis, Tenn. Electric bath apparatus	703,826	July 1	835	184	100	167
Randall, Jesse O., Silversprings, N. Y. Heating and ventilating system	703,827	July 1	836	184	100	167
Randall, John, Deadwood, S. D. Apparatus for extracting metals from ores	708,494	Sept. 2	892	202	100	2162
Randall, Josephine E., administratrix. (See Randall, James D.)						
Randall, Oscar F., Davis, Ill. Brake mechanism	704,108	July 8	1380	208	100	290
Randall, Percy, and G. Davis, Northampton, England. Boot-stitching machine	709,041	Sept. 16	1975	451	100	2415
Randel, Blemus H. (See Abbott and Randel.)						
Randle, William E., Yorkana, Pa. Rail-joint	707,720	Aug. 26	3805	740	100	1848
Randolph, William H., Jr. (See Fox and Randolph.)						
Rankin, Alexander M., assignor to O. E. Madden, New York, N. Y. Boiler-furnace	705,960	July 29	5076	1106, 1107	100	1087
Rankin, Archibald P., Lakewood, and A. C. Dierickx, Cleveland, Ohio. Hatch-fastener	709,928	Sept. 30	3752	847	100	2811
Ransdell, French E., and H. C. Muddiman, Manassas, Va. Door catch and buffer	708,401	Sept. 2	724	163	100	2128
Rash, Howard C. and L. C., assignors to Natural Body Brace Company, Salina, Kans. Abdominal and back supporter	708,402	Sept. 2	725	163	100	2128
Rash, Leon C. (See Rash, Howard C. and L. C.)						
Rathbun, John O., Providence, assignor of one-half to W. A. Hathaway, Edgewood, R. I. Flushing-valve	704,211	July 8	1584	342	100	332
Raton Air Brake Improvement Company. (See Turner and Farquharson, assignors.)						
Rauch, William H., Wichita, Kans. Fruit-picker	705,141	July 22	3823	743	100	742
Raus, Emanuel, Prague, Austria-Hungary. Safety-ball for tram protecting-rollers	707,255	Aug. 19	2392	536	100	1642
Raven, August, Jemeppe, Belgium. Blowing-engine	709,929	Sept. 30	3754	847, 848	100	2812, 201
Rawley, Oren C. (See Johnson and Rawley.)						
Rawlins, John, St. Louis, Mo. Sheet-music retainer	704,104	July 8	1382	208	100	
Rawson, Edward, Moscow, Idaho. Wood-fluting machine	704,373	July 8	1885	408, 409	100	398
Ray, Alexander, assignor to E. S. Lowry, Philadelphia, Pa. Chute-wagon	709,723	Sept. 23	3316	745	100	2710
Ray, Edgar M., and R. B. McConney, Denver, Colo.; said McConney assignor of one-half to said Ray. Dump-car	704,578	July 15	2273	493, 494	100	490
Ray, Frederick, assignor of one-half to J. Spiers, Jr., San Francisco, Cal. Centrifugal-pump runner	704,756	July 15	2581	557	100	554
Ray, Samuel W., assignor to New Process Manufacturing Company, Dallas, Tex. Acetylene-gas generator	705,798	July 29	4771	1064	100	1025
Ray, Stanley, Cambridge, Mass. Coin-holder	708,733	Sept. 9	1328	308	100	2363
Raymond, Charles M., assignor of one-half to L. E. Hoffman, Cleveland, Ohio. Steam-generator or water-heater	709,042	Sept. 16	1976	451	100	2415
Raymond, Emmet B., St. Louis, Mo. Oil-burner	704,374	July 8	1886	409	100	398

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Reach, George A. (See Gamble, John, assignor.)						
Read, Ellis D., Pittsburg, Pa. Bottle or flask	704,105	July 8	1383	298	100	291
Read, Frederick H., Providence, R. I. Ankle-support	703,828	July 1	838	184	100	168
Read, George F., assignor to R. Hoe, New York, N. Y. Web-printing machine	705,142	July 22	3494	743	100	743
Read, George F., assignor to R. Hoe, New York, N. Y. Sheet-transferring mechanism	707,721	Aug. 26	3806	740 741	100	1848
Reagan, James, Philadelphia, Pa. Furnace	707,157	Aug. 19	2212	495 496	100	1603
Reagan, James, Philadelphia, Pa. Furnace	707,158	Aug. 19	2214	496	100	1603
Real, Carl, Schwyz, Switzerland. Emergency-brake for tramway-cars	708,784	Sept. 9	1329	306	100	2263
Reames, John W., and C. F. Heffington, Corley, Ark. Swinging gate	707,256	Aug. 19	2392	536	100	1642
Rech, Jacob E., Philadelphia, Pa. Anchor	708,739	July 1	670	149	100	134
Recht, Frederick, Brooklyn, assignor to Rex Cap and Cork Company, New York, N. Y. Cap for bottles	707,978	Aug. 26	3848	864	100	1954
Reck, Rollend R., Marienville, Pa. Reversing mechanism	705,961	July 29	5078	1107	100	1087
Recklinghausen, Max von. (See Vogt and Recklinghausen.)						
Rector, John R., Lipan, Tex. Storage system	706,451	Aug. 5	914	198	100	1300
Redding, James H. (See Blee and Redding.)						
Redford, Percy, Manchester, England. Packing for stuffing-boxes	709,511	Sept. 23	2955	660	100	2635
Reed, Arthur W., Orvisburg, Miss. Automatic car-brake	706,452	Aug. 5	915	198	100	1300
Reed, Calvin M., Sumneytown, Pa. Rail-fastener	707,257	Aug. 19	2394	537	100	1642
Reed, Charles J., Philadelphia, Pa. Circuit-breaker	710,367	Sept. 30	4574	1031	100	2982
Reed, Charles K. and C. A., Worcester, Mass. Temporary binder	706,257	Aug. 5	492	105	100	1216
Reed, Chester A. (See Reed, Charles K. and C. A.)						
Reed, Franklin M., assignor of one-third to H. W. Roll, Indianapolis, Ind. Pulverized-fuel burner	706,495	Aug. 5	982	215 216	100	1315
Reed, Henry P. G., Chicago, Ill., assignor to G. W. Phillips, Camden, N. J. Clamp for pipes	706,780	Aug. 12	1518	337	100	1443
Reed, John C., Allegheny, Pa. Apparatus for molding	703,740	July 1	672	149 150	100	135
Reed, John W., Greensburg, Pa. Device for washing diapers	708,980	Sept. 9	1710	394	100	2344
Reed, Lemon M., Cleveland, Ohio. Measuring-scoop	704,931	July 15	2978	637	100	629
Reedy, William H., *et al.* (See Rice, Joseph, assignor.)						
Reedy, William I., *et al.* (See Rice, Joseph, assignor.)						
Reely, William M., Spokane, Wash. Sash-holder	703,829	July 1	859	185	100	168
Reese, Benjamin F. (See Naysmith and Reese.)						
Reese, Samuel M. (See Harris and Reese.)						
Reeves, Oscar F., Saginaw, Mich. Bicycle saddle-post	708,408	Sept. 2	727	163	100	2129
Reeves, William W., Braddock, Pa. Mold for hollow concrete articles	705,789	July 29	4772	1035	100	1036
Regenstein, Hermann, assignor to Pfälzische Nähmaschinen & Fahrräder Fabrik, vormals Gebrüder Kayser, Kaiserslautern, Bavaria, Germany. Ring-shuttle for sewing-machines	704,923	July 15	2944	631	100	633
Reich, Fred W., Tipton, Kans. Feed-water heater	705,998	July 22	3751	814	100	809
Reichardt, Ferdinand A., Elizabeth, and H. Wilcox, Newark, N. J.; said Wilcox assignor to said Reichardt. Sharpening-machine	704,106	July 8	1384	298 299	100	291
Reichenbach, Henry M., Dobbs Ferry, N. Y. Apparatus for animated photography	710,339	Sept. 30	4524	1020 1021	100	2976
Reichert, Max, London, England. Apparatus for developing and fixing cartridge photographic films	706,852	Aug. 12	1654	370	100	1473
Reichlin, Xaver, Horgen, Switzerland, assignor to A. Schorno, Irvington, N. J. Door check and closer	708,586	Sept. 9	1048	238	100	2304
Reichmann, Frank J. (See Priebe, Herman C., assignor.)						
Reid, Charles H., Danbury, Conn. Chuck	708,735	Sept. 9	1330	306	100	2264
Reid, Philip S., Rosedale, N. J. Guard for optical instruments	708,831	Sept. 9	1541	352	100	2308
Reif, Otto M., Allegheny, assignor to Harbison & Walker Company, Pittsburg, Pa. Brick-mold	708,256	Sept. 2	485	111	100	2079
Reifsnyder, Frank. (See Fisher, John W., assignor.)						
Reinhardt, Carl, Kaiserslautern, Germany. Testing eggs	707,009	Aug. 12	1924	431	100	1595
Reinhold, Wilhelm, Berlin, Germany. Packing for stuffing-boxes	703,469	July 1	169	39	100	96
Reisner, Nicholas, Hawkeye, Iowa. Whiffletree attachment	706,109	Aug. 5	198	41	100	1157
Reist, Henry G., Schenectady, N. Y., assignor to General Electric Company. Dynamo-electric machine	706,108	Aug. 5	196	41	100	1157
Reist, Henry G., Schenectady, N. Y., assignor to General Electric Company. Lubricating device	708,170	Sept. 2	328	77	100	2047
Reitz, Albert J., Portsmouth, Ohio, and J. H. Lange, Allegheny, Pa. Metal railway-tie	704,922	July 15	2979	638	100	629
Rembert, Henry, Houston, Tex. Making cotton-bales	703,470	July 1	170	40	100	97
Remington Arms Company. (See Hartley, Rivers, and Beach, assignors.)						
Remington Automobile & Motor Company. (See Rose, Harry, assignor.)						
Remington, Charles H., Roswell, N. Mex. Ter. Automatic railway-switch danger-signal	707,010	Aug. 12	1925	431	100	1595
Remore, Charles P., Tully, N. Y. Smoking-pipe	708,404	Sept. 2	728	164	100	2129
Renard, Arthur E. (See Bergman and Renard.)						
Rendle, William S., East Boston, Mass. Spur-shore screw	703,830	July 1	840	185	100	168
Renner, John, Burlington, Iowa. Roller-bearing support for shade-rollers	708,786	Sept. 9	1332	304	100	2264
Reno, Jesse W., New York, N. Y. Inclined elevator	708,663	Sept. 9	1196	273	100	2235
Renshaw, Frederick W., *et al.* (See Woodman, George A., assignor.)						
Rensman, Henry R., assignor of one-half to L. Kuczkowski, Chicago, Ill. Pneumatic saddle-pad	709,980	Sept. 30	3757	849	100	2812
Rentsch, Henry, Bacon, Mo. Disk cutter attachment for corn-planters	710,211	Sept. 30	4309	969	100	2931
Rentsch, Henry, Bacon, Mo. Corn-planter	710,303	Sept. 30	4463	1007	100	2968
Rentzel, John B., Manchester, Pa. Washing-machine	705,962	July 29	5080	1107 1108	100	1088
Rettich, Frank D., Cincinnati, Ohio. Toy	706,110	Aug. 5	199	41	100	1157
Reubelt, Horace B., Franklin, Tenn. Non-refillable bottle	708,171	Sept. 2	324	77	100	2047
Rex Cap and Cork Company. (See Recht, Frederick, assignor.)						
Reyburn, John E. (See Pyott, Louis T., assignor.)						
Reynard, Charles M. (See Taliaferro and Reynard.)						
Reynders, John V. W., and W. T. Sears, Harrisburg, Pa. Fluid-pressure-operated tool	706,688	Aug. 12	1330	294	100	1404
Reynolds, Alfred, *et al.* (See Graves, George A., assignor.)						
Reynolds, Charles, Jersey City, N. J. Necktie	709,680	Sept. 23	3244	725	100	2695
Reynolds, Charles J., Boston, Mass. Seal-lock	704,107	July 8	1387	299	100	292
Reynolds, Dexter, Albany, N. Y. Producing steel direct from oxid-of-iron ore	707,698	Aug. 26	3134	705	100	1813
Reynolds, Edwin, Milwaukee, Wis. Controlling mechanism for steam-engine regulators	704,270	July 8	1685	367	100	358
Reynolds, George H., Chicago, Ill., assignor to Otis Elevator Company, East Orange, N. J. Control device for hoisting-machines	704,271	July 8	1687	368 369	100	354
Reynolds, Harry J., assignor of one-half to E. T. Laundon, Cleveland, Ohio. Feed-water heater and purifier	706,782	Aug. 12	1523	338	100	1444

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Reynolds, Henry S., Brooklyn, assignor to E. C. Seaman, New York, N. Y. Milk-can	707,011	Aug. 12	1928	431	100	1526
Reynolds, James J., Huntington, W. Va. Artificial tooth	705,143	July 22	3426	744	100	743
Reynolds, James W., Jacksonville, Fla. Device for delivering mail-pouches to railway-cars	704,757	July 15	2582	558	100	554
Reynolds, John R., Hartford, Conn., assignor, by mesne assignments, to Goodson Graphotype Company. Type-chase for making matrix-plates	707,522	Aug. 19	2887	654	100	1745
Reynolds, John R., Hartford, Conn., assignor, by mesne assignments, to Goodson Graphotype Company. Master type-bar for matrix-plates	707,523	Aug. 19	2890	654	100	1746
Reynolds, Peter T., Butte, Mont. Mine-ventilator	708,831	July 1	841	185	100	169
Reynolds, William H., Houston, Tex. Steam-trap	706,781	Aug. 12	1520	338	100	1443
Reynolds, Willie H., assignor to M. J. Doherty and T. Gahan, Chicago, Ill. Fluid-meter	710,212	Sept. 30	4310	969	100	2931
Rhea, Robert L., Peoria, Ill. Seeding-machine	710,119	Sept. 30	4123	930	100	2888
Rheinische Metallwaaren-und Maschinenfabrik, Firm. (See Müller, Gustav, assignor.)						
Rhoades, Alonzo E., Hopedale, Mass., assignor to Draper Company, Hopedale, Mass., and Portland, Me. Warper stop-motion mechanism	703,471	July 1	175	40	100	97
Rhoades, Cicero, assignor of one-third to W. T. Stroud, Fredonia, Kans. Railway-rail joint	705,963	July 29	5081	1108	100	1088
Rhodes, James B., Grand Rapids, Mich., assignor to Cronk and Carrier Manufacturing Company, Elmira, N. Y. Shears for cutting grass	708,737	Sept. 9	1333	304	100	2264
Rhodes, John C., New Bedford, Mass., assignor, by mesne assignments, to J. C. Rhodes & Co., Incorporated. Eyelet. (Reissue)	12,008	July 8	2108	456	100	442
Rhodes, Joseph E., Boston, Mass. Blanket for use in printing	705,894	July 22	3752	814	100	809
Rhodes, Joseph S., East Las Vegas, N. Mex. Ter. Stovepipe-holder	705,964	July 29	5083	1108	100	1088
Rhodes, Seth A., Chicago, Ill. Optical instrument	709,359	Sept. 16	2590	584 585	100	2546
Rhonemus, Harry A., assignor to S. F. Rhonemus, Springfield, Ohio. Leg-improver	707,258	Aug. 19	2396	537	100	1642
Rhonemus, S. F. (See Rhonemus, Harry A., assignor.)						
Rice, Edwin W., Jr., Schenectady, N. Y., assignor to General Electric Company. Rotary transforming apparatus	706,598	Aug. 12	1163	258	100	1367
Rice, Hamilton, Mystic, Conn. Embossing-machine	706,297	July 22	3756	815	100	810
Rice, Joel T., Hot Springs, Ark. Flying-machine	704,375	July 8	1887	409	100	898
Rice, John, Fort Collins, Colo. Horseshoe	705,144	July 22	3428	744	100	743
Rice, Joseph. (See Ennes, Charles E., assignor.)						
Rice, Joseph, assignor of two-thirds to W. H. and W. I. Reedy, Chicago, Ill. Elevator	710,007	Sept. 30	3905	881	100	2844
Rice, Otis D., Winthrop, Mass. Program-clock	704,108	July 8	1389	299	100	292
Rice, Vietts L., New York, N. Y., assignor, by mesne assignments, to C. J. Downing & Co., Inc. Engine	705,145	July 22	3428	744 745	100	744
Rice, William P., Chicago, Ill. Apparatus for conveying grain in malt-houses	709,558	Sept. 23	3038	677	100	2652
Rich, Francis A., Karangahake, New Zealand. Velocipede driving-gear	707,012	Aug. 12	1929	432	100	1527
Richard, Frank, Sunfield, Mich. Axletree repair implement	705,898	July 29	4909	1087	100	1053
Richard, William, assignor of one-half to A. S. Prouse, Bloomville, Ohio. Shears	705,444	July 22	4063	881	100	873
Richards, Arthur M., Chicago, Ill. Attachment for chairs	704,109	July 8	1392	300	100	293
Richards, Arthur W., Indianola, Iowa. Corn-husker	707,013	Aug. 12	1931	432	100	1527
Richards, Francis H., Hartford, Conn. Cigar-marking machine	709,360	Sept. 16	2597	585 586	100	2548
Richards, Francis H., Hartford, Conn., assignor to Kempshall Manufacturing Company. Manufacture of playing-balls	710,368	Sept. 30	4575	1032	100	2986
Richards, James F., Luke, Md. Paper-making machine	707,014	Aug. 12	1933	432 433	100	1527
Richards, Thomas C., Winsted, Conn. Curtain-pole	705,296	July 22	3755	815	100	810
Richards, Walter J., Milwaukee, Wis. Commutator-brush holder	708,664	Sept. 9	1197	273	100	2235
Richards, Walter J., assignor to N. A. Christensen, Milwaukee, Wis. Controlling apparatus for electric motors	704,665	July 15	2418	532	100	530
Richards, Willard F., Buffalo, assignor to C. M. Goulid, New York, N. Y. Lubricator	706,201	Aug. 5	385	82	100	1195
Richardson, Alfred, *et al.* (See Sporrong, Carl A., assignor.)						
Richardson, Earl H. (See Swan and Richardson.)						
Richardson, Harry H., Beaverfalls, Pa. Combination square and level	705,867	July 29	4908	1087	100	1053
Richardson, John F., Pittsburg, Pa. Street-indicator for street-cars	708,882	Sept. 9	1541	353	100	2308
Richardson, Samuel L., New York, N. Y. Clothes-drying attachment for range-boilers	705,295	July 22	3754	815	100	810
Richey, Eugene W., *et al.* (See McGill, John J., assignor.)						
Richie, Silas A., North Middletown, Ky. Animal-poke	704,924	July 15	2945	632	100	625
Richmond, Henry E., Westwood, N. J. Stereoscope	705,706	July 29	4629	1003	100	996
Richter, Friedrich A. (See Schütze, August, assignor.)						
Richter, Friedrich A., Rudolstadt, Germany. Toy	706,689	Aug. 12	1333	295	100	1404
Richter, Herman, Cullman, Ala. Bullet-mold	705,146	July 22	3480	745	100	744
Rickard, Elziver O., assignor to Kelsey Furnace Company, Syracuse, N. Y. Furnace	705,965	July 29	5084	1109	100	1088
Rickard, Elziver O., assignor to Kelsey Furnace Company, Syracuse, N. Y. Furnace	706,496	Aug. 5	984	216 217	100	1315
Ricke, George H., Cincinnati, Ohio, assignor to Perfection Bush Company, Covington, Ky. Bung-bushing	710,006	Sept. 30	3904	881	100	2844
Ricker, James H., assignor of two-thirds to S. P. Greene and J. A. T. Evans, Fort Worth, Tex. Fuel compound	707,722	Aug. 26	3310		100	1849
Ricketts, John L., assignor to L. R. Fletcher, deceased, Philadelphia, Pa.; E. J. Fletcher, administratrix. Electrical safety alarm and signal mechanism for railways	707,689	Aug. 26	3136	705 706	100	1813
Riddle, James D., Chatham, Va. Cultivator	704,876	July 8	1889	410	100	899
Rider, Ebenezer W., Detroit, Mich. Electric low-water alarm	708,472	July 1	176	41	100	97
Ridgely and Johnson Tool Company. (See Vaughan, Henry H., assignor.)						
Ridgway, Charles. (See Hoy, Ermia L., assignor.)						
Ridgway, Ellis B., Coatesville, Pa. Fluid-pressure-actuated hoist, &c	707,015	Aug. 12	1934	433	100	1528
Ridgway, John J., Rosebank, N. Y. Conveying-belt	707,355	Aug. 19	2585	584	100	1682
Ridlon, Charles A., Alba, Mich., assignor of two-thirds to W. K. and G. A. Jackson, Buffalo, N. Y. Polishing and drying broom-handles	707,159	Aug. 19	2216	497	100	1608
Rieber, Andreas, Flensburg, Germany. Means for propelling vehicles	704,877	July 8	1893	410	100	400
Riecker, Charles E., and H. S. Walter, assignors to Stanley Rule and Level Company, New Britain, Conn. Plane-lift	707,356	Aug. 19	2586	584	100	1682
Ries, Elias E., New York, N. Y. Automatic cycle or bicycle skate	706,783	Aug. 12	1524	338	100	1444
Ries, Moses. (See Pflugradt and Ries.)						
Riesberg, Van Vechten W., Philadelphia, Pa. Apparatus for making carbonic-acid or other gas	704,272	July 8	1691	369	100	354
Riesberg, Van Vechten W., Philadelphia, Pa. Making carbonic-acid gas	705,111	Aug. 5	201	42	100	1158
Rieser, Emile. (See Glasgow, Bruce M., assignor.)						
Rietzschel, Alexander H., Munich, Germany. Camera	705,445	July 22	4054	882	100	873
Rigby, Clark F., New Martinsville, W. Va. Casing-head	703,832	July 1	842	185	100	169
Riggins, Julian B., and H. Gordan, Clarksville, Va. Churn	708,665	Sept. 9	1199	273	100	2235
Riggs-Spencer Company. (See Case, Frank B., assignor.)						
Rignall, William B., Edinburgh, Scotland. Convertible bicycle-rest	706,453	Aug. 5	916	198	100	1301

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Riker, Andrew L., New York, N. Y., assignor, by mesne assignments, to Morton Trust Company, trustee. Safety device for motor-vehicles	709,681	Sept. 23	3245	725	100	2695
Riley, James W., assignor of one-half to D. C. Wilbur, Marshalltown, Iowa. Bath-cabinet	706,476	Aug. 5	952	207 / 208	100	1308
Riley, William C., San Francisco, Cal. Sterilizing and preserving cocaine	704,258	July 15	2584	558	100	535
Riley, William M., Chicago, Ill. Building construction	704,383	July 15	2980	638	100	639
Rimailho, Emile, Paris, France. Photographic developing apparatus	707,450	Aug. 19	2756	625	100	1717
Rinker, Benjamin F., Mooresville, Ind. Harvesting-machine	705,998	July 22	3759	816	100	810
Rinsche, Frank C., assignor to Universal Accountant Machine Company, St. Louis, Mo. Calculating-machine	709,244	Sept. 16	2381	539	100	2501
Riordon, Robert R., assignor to W. E. Stockett & Co., Washington, D. C. Spelling-manual	707,999	Aug. 26	3514	798	100	1889
Ripley, Daniel C., Pittsburg, Pa. Glass-shaping apparatus	709,724	Sept. 23	3319	746	100	2710
Ripley, Daniel C., assignor to United States Glass Company, Pittsburg, Pa. Making hollow glass articles	709,796	Sept. 23	3477	783	100	2742
Ripley, Daniel C., assignor to United States Glass Company, Pittsburg, Pa. Apparatus for the manufacture of glassware	709,797	Sept. 23	3478	783 / 784	100	2742
Rischmuller, George, San Francisco, Cal. Door-opener	705,147	July 22	3431	745	100	744
Ritter, Gilbert P., Chicago, Ill. Car-bolster	708,609	July 1	412	96,97	100	82
Ritter, Gilbert P., Chicago, Ill. Friction draft-gear	704,110	July 8	1394	300	100	293
Ritter, Gilbert P., Chicago, Ill. Adjustable brake-head	705,299	July 22	3760	816	100	811
Ritter, Gilbert P., Chicago, Ill. Adjustable brake-head	705,611	July 29	4456	966	100	963
Ritter, Jacob, New York, N. Y. Clasp for chatelaines	704,212	July 8	1585	342	100	382
Rivers, Eugene D. (See Hartley, Rivers, and Beach.)						
Rivers, William E., Tracy, Iowa. Draft-equalizer	706,202	Aug. 5	388	83	100	1196
Roach, Christopher J., Hartford, Conn. Recorder	704,525	July 15	2946	632	100	634
Roach, John R., Cale, Ind. Hand-car	709,175	Sept. 16	2241	509	100	2471
Robbins, Alfred L., Chicago, Ill. Barometer	706,112	Aug. 5	202	42	100	1158
Robbins, Frank A., Worcester, Mass. Combination-tool	707,723	Aug. 26	3310	741	100	1849
Robbins, John C., Waltham, Mass. Two-speed and differential gear for motor-vehicles	705,790	July 29	4773	1035	100	1029
Robbins, Lemuel A., Constantine, Mich. Washbench	706,785	Aug. 12	1529	339	100	1445
Robert Mitchell Machinery Company. (See Grail, Joseph G., assignor.)						
Roberts, Charles A., Rensselaer, Ind. Top-box fastener for wagon-bodies	704,926	July 15	2948	632	100	634
Roberts, Charles C., Ansonia, Conn. Metal-boring machine	707,016	Aug. 12	1936	433	100	1528
Roberts, Elijah R., Bellevue, Pa. Electric-lamp glower and attaching terminal wires thereto	710,369	Sept. 30	4577	1032	100	2986
Roberts, Felix J., Tesla, W. Va. Cuff-holder	704,111	July 8	1397	300	100	294
Roberts, George H., Sr., New York, N. Y. Nut-lock	709,043	Sept. 16	1978	452	100	2416
Roberts, George H., Sr., assignor to himself and C. Wodle, New York, N. Y. Ticket-holder for car-seats	709,608	Sept. 23	3122	695	100	2670
Roberts, George I., New Rochelle, N. Y. Trap or separator	703,610	July 1	414	97	100	82
Roberts, Isaiah L., New York, N. Y. Manufacturing calcium carbid	708,921	Sept. 9	1711	.....	100	2345
Roberts, James L., Pontiac, Ill. Car-loader	703,473	July 1	177	41	100	37
Roberts, John N., assignor to Lilly & Roberts Veneer Company, Indianapolis, Ind. Veneer-slicer	704,213	July 8	1586	343	100	382
Robertson, Andrew. (See Robertson, William and A.)						
Robertson, James D., assignor, by mesne assignments, to Thames Arms Company, Norwich, Conn. Revolver	708,078	Sept. 2	146	36	100	2011
Robertson, James D., assignor, by mesne assignments, to Thames Arms Company, Norwich, Conn. Ejector mechanism for revolvers	710,008	Sept. 30	3907	882	100	2844
Robertson, John, Cincinnati, Ohio. Atomizing apparatus	703,641	July 1	416	97, 98	100	82
Robertson, John A. (See Hutchings, Robertson, and Mutschler.)						
Robertson, John A., and C. E. Hutchings, assignors to Rochester Optical and Camera Company, Rochester, N. Y. Photographic-camera attachment	708,378	July 8	1894	410	100	400
Robertson, John A., and C. E. Hutchings, assignors to Rochester Optical and Camera Company, Rochester, N. Y. Photographic view-finder	704,379	July 8	1896	410	100	400
Robertson, Lennox, Penarth, England. Wardrobe	710,009	Sept. 30	3908	882 / 883	100	2844
Robertson, William and A., Glasgow, Scotland. Combined cutting and collating machine	710,010	Sept. 30	3911	883 / 884	100	2845
Robin, Joseph T., New York, N. Y. Machine for trimming mantles	709,044	Sept. 16	1960	452	100	2416
Robin-Langlois, Joseph, Paris, France. Sugar-refining apparatus	705,899	July 29	4911	1067	100	1054
Robinson, Arthur B., Dickinson, N. D. Tramway-switch	707,640	Aug. 26	3141	707	100	1814
Robinson, Arthur W., Montreal, Canada. Dredge-bucket	708,587	Sept. 9	1050	238	100	2295
Robinson, Arthur W., Montreal, Canada. Boom for dredges, excavators, &c	708,588	Sept. 9	1051	239	100	2295
Robinson, Arthur W., Montreal, Canada. Hoisting-gear for dipper-buckets for use upon dredges, steam-shovels, &c	708,589	Sept. 9	1053	239	100	2295
Robinson, Arthur W., Montreal, Canada. Steam-shovel, &c	708,590	Sept. 9	1054	239 / 240	100	2295
Robinson, Charles D. (See Mock and Robinson.)						
Robinson, Charles W., Sharpsville, Pa. Nut-lock for rail-joints	705,612	July 29	4457	966	100	963
Robinson, Clark, Hartley, Iowa. Carbureter	706,451	Aug. 5	217	199	100	1301
Robinson, Daniel C., Monessen, Pa. Stone or ore crusher	708,495	Sept. 2	894	202	100	2168
Robinson, Dixon A. (See Stone, Enoch G., assignor.)						
Robinson, Freeman C., and J. E. Green, Council Bluffs, Iowa. Burglar-alarm	708,496	Sept. 2	895	202	100	2168
Robinson, Henry G. (See Gulliver, Harry, assignor.)						
Robinson, James F., Waco, Tex. Nut-lock	703,612	July 1	420	98	100	83
Robinson, John M., Goldthwaite, Tex. Weed-cutting attachment for plows	707,801	Aug. 26	3516	793	100	1889
Robinson, Martin W., Medford, Mass. Electric battery	705,148	July 22	3433	746	100	744
Robinson, Ralph C., Boston, assignor to J. Irving, Newton, Mass. Chemical apparatus	706,784	Aug. 12	1528	339	100	1445
Robinson, Seymour N. (See Payne, Theodore P., assignor.)						
Robinson, Theodore D., Albany, N. Y. Type-writing machine	704,112	July 8	1398	301	100	294
Robinson, Thomas C., Boston, assignor of one-half to E. B. and H. A. Welch, Cambridge, Mass. Bicycle driving mechanism	703,613	July 1	421	98	100	83
Robinson, William W., Des Moines, Iowa. Sulky-plow	708,405	Sept. 2	730	164	100	2129
Robison, Charles W., McKees Rocks, Pa. Sash lock and lift	708,406	Sept. 2	733	165	100	2130
Robson, George, London, England. Means for longitudinally compressing wired-on cushion-tires before fitting them into their rims	704,214	July 8	1590	344	100	383
Roche, William, Jersey City, N. J. Circuit-closer for portable electrical apparatus	704,113	July 8	1399	301	100	294
Rochester Optical and Camera Company. (See Hutchings, Charles E., assignor.)						
Rochester Optical and Camera Company. (See Hutchings, Robertson, and Mutschler, assignors.)						
Rochester Optical and Camera Company. (See Robertson and Hutchings, assignors.)						
Rock, Frederick W., assignor of three-fourths to R. C. Sprague, E. H. Patterson, and J. A. M. Moreton, Detroit, Mich. Car-brake	703,614	July 1	422	98	100	84
Rockwell, David W., Brockton, Mass. Water-gage for steam-boilers	707,943	Aug. 26	3784	849	100	1942

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Rockwell, Frederick C., West Hartford, Conn. Handwriting-developer	709,114	Sept. 16	2121	486	100	2448
Rockwell, Lucius A., *et al.* (See Holmes, Daniel M., assignor.)						
Rockwell, Ludlem H., assignor of one-half to W. M. Kramer, Mount Carmel, Pa. Toy bubble-blower	705,966	July 29	5088	1109	100	1090
Rodee, Archie L., *et al.* (See Bangs, Edwin L., assignor.)						
Rodman, Hugh, assignor to Electric Storage Battery Company, Philadelphia, Pa. Storage-battery separator	704,759	July 15	2586	558 / 559	100	535
Rodriguez, Joseph, New York, N. Y. Hat-hook	708,066	Sept. 9	1200	274	100	2236
Roebuck, Alvah C., and F. McMillan, Chicago, Ill. Kinetographic apparatus	706,113	Aug. 5	204	42, 43	100	1158
Roedel, Louis, Passaic, N. J. Rotary slide-valve for pumps, compressors, or motors	709,682	Sept. 23	3246	725 / 726 / 727	100	2695
Roedel, Louis, Passaic, N. J. Rotary slide-valve for pumps, compressors, or motors	709,683	Sept. 23	3252	728	100	2696
Roeh, John, Oroville, Wash. Automatic current-motor	705,967	July 29	5089	1109 / 1110	100	1090
Roehm, Charles M. (See Vliet, Joshua B., assignor.)						
Roenius, Edmund, Grand Rapids, Wis. Computing-machine	704,114	July 8	1401	301	100	295
Roesch, Alfred, Bridgeport, Conn., assignor to Davis & Roesch Temperature Controlling Company, New York, N. Y. Thermostat	704,115	July 8	1403	302	100	295
Roesch, Alfred, Bridgeport, Conn., assignor to Davis & Roesch Temperature Controlling Company, New York, N. Y. Temperature-regulator	705,613	July 29	4458	966 / 967	100	963
Roesky, Emil W. (See Deplanty, Charles F., assignor.)						
Roessler, Fritz, Frankfort-on-the-Main, Germany, assignor to Roessler & Hasslacher Chemical Company, New York, N. Y. Making sodium cyanid	708,079	Sept. 2	147	.....	100	2011
Roessler & Hasslacher Chemical Company. (See Roessler, Fritz, assignor.)						
Rogers, Arthur R. (See Johnson, Charles, assignor.)						
Rogers, Charles M., *et al.* (See Ivor Barry, assignor.)						
Rogers, Charles W., assignor of twelve twenty-fifths to J. W. Mathis and E. Worthing, Chicago, Ill. Radiator	705,614	July 29	4460	967	100	963
Rogers, Joseph W., Montgomery, Pa. Combined washing and wringing machine	704,984	July 15	2982	639	100	639
Rogers, Thomas B., Brooklyn, N. Y. Tank or ice-chest	706,455	Aug. 5	919	199	100	1301
Rogers, William H., New York, N. Y. Box or crate	710,213	Sept. 30	4312	969	100	2931
Rohlmann, Oscar F. F. (See Jenkins and Rohlmann.)						
Rohmer, William B., Bay St. Louis, Miss. Mail-bag catching and delivering mechanism	707,017	Aug. 12	1939	433 / 434	100	1529
Rohmer, William B., Bay St. Louis, Miss. Combined fertilizer-distributer and seed-planter	710,011	Sept. 30	3914	884	100	2846
Rojat, David, Nimes, France. Filtering apparatus	708,833	July 1	844	186	100	169
Roll, Harry W. (See Reed, Franklin M., assignor.)						
Rollason, Minnie E., Brooklyn, N. Y. Glove	704,579	July 15	2277	494	100	491
Rollman, Elmer A., West Manchester, Ohio. Machine for sorting tobacco-leaves	705,800	July 22	3762	816	100	811
Rollo, Louie C., *et al.* (See Ivor, Barry, assignor.)						
Romünder, Hermann, Newark, assignor to Convertible Car Company, Bloomsbury, N. J., Convertible car	707,018	Aug. 12	1942	434 / 435	100	1530
Ronaldson, Adam L., London, England. Boring apparatus	710,012	Sept. 30	3918	885	100	2847
Ronan, Anson G., Toronto, Canada. Revolving electric igniter	708,080	Sept. 2	149	36	100	2011
Rookus, John J., Zeeland, Mich. Beet-harvester	710,075	Sept. 30	4030	909	100	2870
Rooney, Patrick B., New York, N. Y. Bed-bottom	704,215	July 8	1592	344 / 345	100	383
Root, Elam E., assignor to J. F. Haas, Lancaster, Pa. Vehicle-wheel spindle	705,968	July 29	5091	1110	100	1091
Root, Ellis J., San Francisco, Cal. Latch	705,301	July 22	3764	817	100	811
Root, F. S., *et al.* (See Brooks, Theodore L., assignor.)						
Roper, Charles F., assignor to Draper Company, Hopedale, Mass. Mechanism for truing spinning-rings	709,512	Sept. 23	2955	660	100	2635
Rorty, Malcolm C. (See Bullard and Rorty.)						
Rosati, Tito, Florence, Italy. Electric cable	706,599	Aug. 12	1165	258	100	1307
Rosback, Frederick P., Chicago, Ill. Wire-stitching machine	706,690	Aug. 12	1333	295 / 296	100	1404
Rose, Edward, and I. Isbill, Chattanooga, Tenn. Bed-bottom	710,304	Sept. 30	4465	1007	100	2903
Rose, Harry, assignor to Remington Automobile & Motor Company, Utica, N. Y. Controlling mechanism	705,302	July 22	3765	817	100	812
Rose, Marshall. (See Hindley, Walker, and Rose.)						
Rosen, Nathan, New York, N. Y. Finger-ring	704,278	July 8	1608	369	100	355
Rosenberg, Charles K., San Francisco, Cal. Account-book	704,216	July 8	1593	345	100	333
Rosenberry, Alvin M., assignor of one-half to M. H. Davis, Shelby, Ohio. Carbureter	709,647	Sept. 23	3185	711	100	2692
Rosenfeld, Louis, New York, N. Y. Adjustable loading-chute	709,600	Sept. 23	3123	696	100	2670
Rosengrén, Anders A., Malmö, assignor of one-half to P. Hansson, Dalköpings, Trelleborg, Sweden. Automatic coupling for railway-cars	707,724	Aug. 26	3313	741	100	1849
Rosenthal, James H., London, England, assignor to Babcock & Wilcox Company, New York, N. Y. Header for sectional steam-generators	704,968	July 15	3058	657	100	653
Rosenthal, Sigmund A., London, England. Generation of motive power	709,115	Sept. 16	2122	486	100	2448
Roser, Louis, Jr. (See Eiseman, Moses H., assignor.)						
Roser, Louis, Jr., Chicago, Ill. Garment-supporting device	708,497	Sept. 2	897	203	100	2168
Rosett, Dora T., New York, N. Y. Hospital-mattress	710,076	Sept. 30	4032	909	100	2871
Ross, Delmar C., *et al.* (See Chubb, James A., assignor.)						
Ross, Joseph. (See Gaisman and Ross.)						
Ross, Joseph W., Alma, Ill. Plant-protector	704,116	July 8	1405	302	100	295
Ross, Samuel. (See Hutchinson, Elias S., assignor.)						
Ross, Walter T. (See Paul and Gundlack, assignors.)						
Ross, William L., Omaha, Nebr. Furnace	703,474	July 1	178	41, 42	100	38
Rossetter, William. (See Talbot and Rossetter.)						
Rossler, Konrad, Fort Worth, Tex. Shears-sharpener	709,648	Sept. 23	3188	712	100	2693
Rossman, James G., Boston, Mass. Adjustable brace or support for movable structures	705,707	July 29	4631	1003	100	996
Rossow, Martin, Dessau, Germany. Veneer-drying machine	705,708	July 29	4631	1003 / 1004	100	996
Rost, Ernst, Dresden, Germany. Cushioning device for valves	707,160	Aug. 19	2218	497	100	1603
Rostochil, John, Chicago, Ill. Edging device	707,641	Aug. 26	3142	707	100	1814
Roth, Ludwig, St. Louis, Mo. Rail-joint	709,045	Sept. 16	1981	452	100	2416
Rothberg, Mathew E., Lebanon, Pa. Coke-oven	705,446	July 22	4065	882 / 883	100	873
Rothenbucher, George E. R., Brooklyn, N. Y. Combination-wrench	708,741	July 1	675	150	100	135
Rothenbusch, Philipp, assignor to F. Ruth, New York, N. Y. Combination table and ironing-board	709,176	Sept. 16	2242	510	100	2471
Rothermel, Curtis J., *et al.* (See Hemingway, Joseph, assignor.)						
Rothermel, William E., *et al.* (See Hemingway, Joseph, assignor.)						
Rothschild, Jacob. (See Winn, Jasper C., assignor.)						
Rounds, Albert C., assignor of one-half to U. V. Schauroth, Buffalo, N. Y. Insole	707,642	Aug. 26	3144	707	100	1815

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Rourke, James, Parkersburg, W. Va. Portable drilling-machine	705,791	July 29	4775	{1036 1037}	100	1026
Rouse, Shelley D. (See Hunter, Hamilton, assignor.)						
Roussanoff, Wassily, Moscow, Russia. Steam-generator	708,834	July 1	845	{186 187 784}	100	169
Rowe, Edward, Indiana, Pa. Railway signaling apparatus	709,798	Sept. 23	3481	{785 786}	100	2743
Rowe, John J., New Kensington, Pa. Wheel	706,477	Aug. 5	954	208	100	1308
Rowland, Henrietta H., administratrix. (See Rowland, Henry A.)						
Rowland, Henry A., deceased; H. H. Rowland, administratrix, assignor to Rowland Telegraphic Company, Baltimore, Md. Keyboard for use in telegraphy	704,927	July 15	2950	{633 634}	100	635
Rowland, Henry A., deceased; H. H. Rowland, administratrix, assignor to Rowland Telegraphic Company, Baltimore, Md. Telegraphic distribution	704,928	July 15	2954	{634 635 636}	100	636
Rowland, Henry A., deceased; H. H. Rowland, administratrix, assignor to Rowland Telegraphic Company, Baltimore, Md. Means for producing and maintaining synchronous motion	704,929	July 15	2970	637	100	637
Rowland, Henry A., deceased; H. H. Rowland, administratrix, assignor to Rowland Telegraphic Company, Baltimore, Md. Means for impressing periodically-varying electric currents upon telegraph or other circuits	704,930	July 15	2976	637	100	638
Rowland Telegraphic Company. (See Penniman and Wiegand, assignors.)						
Rowland Telegraphic Company. (See Rowland, Henry A., assignor.)						
Roy, Thomas L., and T. Marshall, Jr., Chicago, Ill. Burner attachment	709,278	Sept. 16	2446	553	100	2515
Royal, Belford G., assignor to Gramophone and Typewriter, Limited, London, England. Coin-operated talking-machine	706,203	Aug. 5	389	83	100	1197
Royle, Vernon, Paterson, N. J. Brake	703,835	July 1	818	187	100	170
Roys, Margaret T. (See Roys, Willis E., assignor.)						
Roys, Willis E., Richmond Hill, assignor to M. T. Roys, New York, N. Y. Steam-heating system	705,969	July 29	5068	1110	100	1091
Rubber and Celluloid Harness Trimming Co. (See Schreiner, Joseph, assignor.)						
Ruckstuhl, Frederick W., and A. Pohlmann, New York, N. Y. Potato-creamer	707,019	Aug. 12	1944	435	100	1530
Rudd, Ole, West Duluth, Minn. Die for making cant-hook clasps	706,691	Aug. 12	1536	297	100	1495
Rudd, Ole, West Duluth, Minn. Power-shaft coupling	707,857	Aug. 19	2587	584	100	1682
Ruddick, John J., Newton, assignor to United States Electric Signal Company, Watertown, Mass. Signaling system	704,117	July 8	1406	302	100	296
Rudge, Arthur E. (See Rudge, Charles H., assignor.)						
Rudge, Charles H., assignor of one-half to A. E. Rudge, Newark, N. J. Crupper-dock-forming machine	704,969	July 15	3069	{657 658}	100	653
Rudolph, Johannes P., Görlitz, Germany. Ornamenting surfaces	708,408	Sept. 2	898	203	100	2164
Ruedy, Albert, Toledo, Ohio. Ball thrust-bearing	706,114	Aug. 5	207	43	100	1159
Ruef, Charles S., and C. L. Tomlinson, assignors to Grand Detour Plow Company, Dixon, Ill. Riding-plow	704,274	July 8	1694	{369 370}	100	355
Rueger, Charles C., Butte, Mont. Stamp-tappet	707,259	Aug. 19	2397	537	100	1643
Rueger, Charles C., Butte, Mont. Pocket-compass	709,046	Sept. 16	1982	{458 459}	100	2416
Rueger, Charles C., Butte, Mont. Pipe-wrench	710,077	Sept. 30	4033	909	100	2871
Ruegg, Werner, Sömmerda, Germany. Safety device for shell-fuses	708,833	Sept. 9	1542	353	100	2300
Ruggles, Nelson J., Columbus, Ohio. Wall-plaster	708,591	Sept. 9	1057	------	100	2306
Ruley, William W. (See Donnelly, James H., assignor.)						
Rulf, Ari, Brussels, Belgium. Apparatus for carbonating liquids	705,115	Aug. 5	208	43	100	1159
Rumney, Fred A., East Somerville, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Machine for setting eyelets	707,643	Aug. 26	3146	708	100	1815
Rumney, Fred A., East Somerville, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Machine for setting eyelets	707,644	Aug. 26	3150	{708 709}	100	1816
Rundell, Albert L., Providence, R. I., assignor of one-half to E. G. Davis, Plainfield, Conn. Ash-sifter	708,257	Sept. 2	486	111	100	2079
Rundell, William, Plymouth, England. Sash-fastener	704,580	July 15	2278	494	100	492
Runnalls, Richard, Westerly, R. I. Corkscrew	708,667	Sept. 9	1201	274	100	2236
Rüping, Max, Charlottenburg, Germany. Impregnating wood	709,799	Sept. 23	3486	------	100	2743
Rupp, Charles, assignor to J. S. Thorne Company, Philadelphia, Pa. Automatic releasing device for window-sashes	709,800	Sept. 23	3487	785	100	2743
Rupp, Peter. (See Studer and Rupp.)						
Runtz, Henry, Chicago, Ill. Display-holder for neckties	705,149	July 22	3434	746	100	745
Ruse, Joseph, *et al.* (See McIntosh, John A. and W., assignors.)						
Rush, John, Waterloo, Iowa. Carbureter	706,600	Aug. 12	1165	258	100	1367
Rusk, Elam J., Kleinwood, La. Turtle-trap	708,475	July 1	181	43	100	39
Russell, Charles H., Manistee, Mich. Collapsible carton	704,980	July 8	1898	411	100	401
Russell & Erwin Manufacturing Company. (See Jones, Horace K., assignor.)						
Russell & Erwin Manufacturing Company. (See Voight, Henry G., assignor.)						
Russell, Frank K., Dallas, Tex. Embossing-machine	709,422	Sept. 16	2736	614	100	2577
Russell, George E. (See Russell, William H. and G. E.)						
Russell, George H., Pittsfield, Mass. Overhead trolley	703,476	July 1	181	43	100	38
Russell, Herbert S., London, England. Apparatus for lining casks, barrels, or like vessels	707,200	Aug. 19	2398	{537 538}	100	1643
Russell, James H., Philadelphia, Pa. Machine for treating tubes	704,581	July 15	2279	{494 495}	100	492
Russell, John A., Rangeley, Me. Window-ventilator	705,308	July 22	3767	817	100	812
Russell, Leon L., Greene, Iowa. Lacing-stud	704,118	July 8	1413	303	100	297
Russell, Manning W., Joaquin, Tex. Body-brace	708,477	July 1	183	43	100	39
Russell, William H. and G. E., Jersey City, N. J. Apparatus for burning liquid hydrocarbons	708,258	Sept. 2	487	111	100	2080
Russell, William H. and G. E., Jersey City, N. J. Bunsen burner	708,259	Sept. 2	488	112	100	2080
Rust, Edwin G., Pueblo, Colo. Water-tube boiler	710,340	Sept. 30	4526	{1021 1022}	100	2977
Ruth, Frederick. (See Rothenbusch, Philipp, assignor.)						
Rutter, Charles A. (See Bell, Robert A., assignor.)						
Ruttkamp, Charles. (See Ruttkamp, Ernest, assignor.)						
Ruttkamp, Ernest, assignor of one-half to C. Ruttkamp, Allegheny, Pa. Mixing-machine	707,361	Aug. 19	2400	539	100	1643
Rutz, Frank A. C., Rochester, N. Y. Device for holding chalk or other material	708,478	July 1	184	43	100	39
Ryan, J. M., *et al.* (See Brooks, Theodore L., assignor.)						
Ryan, Peter, *et al.* (See McIntosh, John A. and W., assignors.)						
Ryan, Thomas, Germantown, Pa. Yielding hoof-pad	705,615	July 29	4462	967	100	964
Ryckman, S. S., *et al.* (See Chinnock, George H., assignor.)						
Ryden, Axel, assignor to Chicago Writing Machine Company, Chicago, Ill. Copy-holder for type-writers' use	704,119	July 8	1415	303	100	298
Ryland, E. C. W. (See Davison, John C., assignor.)						
Rymer, William H., Liverpool, England. Bucket or manger	710,341	Sept. 30	4530	1022	100	2977

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S. A. Woods Machine Company. (See Blood, Charles W. H., assignor.)						
S. Twitchell Company. (See Weed, Jacob K., assignor.)						
Sacket, Edward A., Denver, assignor of one-half to J. C. Anderson, Telluride, Colo. Combined sash-fastener and shade-support	706,456	Aug. 5	920	199	100	1302
Sackett, Frank L., Fredonia, N. Y. Chute	708,081	Sept. 2	151	36	100	2012
Sackett, Frank L., Fredonia, N. Y. Chute	708,082	Sept. 2	153	36, 37	100	2012
Sackett, Hiram B., Chicago, Ill. Coal-bagger	707,358	Aug. 19	2589	585	100	1683
Saco & Pettee Machine Shops. (See Threlfall, William V., assignor.)						
Safe Deposit and Trust Company of Baltimore City *et al.*, executors. (See Mergenthaler and Hoofnagle.)						
Safety Car Heating & Lighting Company. (See Creveling, John L., assignor.)						
Safety Gaslight Co. (See Kitten, Joseph W., assignor.)						
Saffell, Silas B. (See McKee and Saffell.)						
Sager, James H., and G. D. Green, Rochester, N. Y. Cushion-frame for bicycles or like vehicles	707,262	Aug. 19	2402	539	100	1644
Saillet, Jules L., Paris, France. Automatic thread-feeder for sewing-machines	704,690	July 15	2454	580	100	528
Sala, Joseph C., *et al.* (See Stabile, Giocacchino, assignor.)						
Sala, Joseph C., San Francisco, Cal. Surveying and reconnaissance instrument	707,161	Aug. 19	2219	498	100	1604
Salamandrine Boiler Company. (See Ofeldt, August W., assignor.)						
Salamon, Alfred G. (See Smith, Gidden, and Salamon.)						
Saldin, Max, assignor to O. L. Mayer, New York, N. Y. Knitting-machine	709,047	Sept. 16	1987	{453 454}	100	2418
Sale, Archie P., *et al.* (See Manson, Thomas C., assignor.)						
Salmon, Delbert B., and D. C. Mitchell, Potsdam, N. Y. Suit-hanger	706,497	Aug. 5	987	217	100	1316
Salomon, Jacob, San Francisco, Cal. Egg-stand	710,078	Sept. 30	4035	909	100	2871
Salmond, Colin, San Francisco, Cal. Clothes-hook	706,742	July 1	677	150	100	135
Saltsman, David B. (See Hoyt and Saltsman.)						
Salvesen, Nils, Grimstad, Norway. Oil-distributing apparatus for calming waves	710,013	Sept. 30	3920	885	100	2847
Salyer, Harry M., assignor to Ludwig & Company, New York, N. Y. Playing attachment for key musical instruments	703,743	July 1	679	151	100	135
Samen, Edward W., Lasalle, Ill. Draft-spring rigging for railway-cars	709,861	Sept. 16	2605	586	100	2580
Sampson, William P., assignor of one-half to P. S. Brown, Kansas City, Mo. Rein-holder	709,855	Sept. 23	3578	806	100	2764
Samstag, Henry N. (See Verret and Samstag.)						
Samuelson, Charles J., and E. M. Johnson, Calders Station, Utah. Attachment for disintegrators	708,972	Sept. 9	1880	419	100	2365
Sanders, Bertha D., New York, N. Y. Flower support or holder	706,258	Aug. 5	498	{105 106}	100	1216
Sanders, Francis L., Nottingham, England. Two-speed driving mechanism	707,944	Aug. 26	3765	849	100	1942
Sanders, John F., Boise, Idaho. Crushing and pulverizing mill	705,870	July 29	4912	1068	100	1054
Sanderson, Herbert H., Walpole, Mass. Stair-pad	708,260	Sept. 2	489	112	100	2080
Sandle, Babe, Thompson, Miss. Weeding implement	704,190	July 8	1416	303	100	298
Sandstedt, Edmund W., Hankow, China. Paper-file	704,985	July 15	2984	639	100	640
Sandy, Edward M., Eaton, Colo. Dumping-wagon	710,214	Sept. 30	4313	970	100	2981
Sanford, William W., Newark, assignor of one-half to F. D. Bennett, Freehold, N. J. Fountain-pen	703,479	July 1	185	44	100	39
Sangster, Charles T. B., Birmingham, England. Motor-vehicle	705,304	July 22	3759	{818 819}	100	812
Sanker, Leonard J., and J. H. Sullivan, Cleveland, Ohio. Tube for grain-drills	709,649	Sept. 23	3189	712	100	2688
Sarazin, Frank C. (See Kelly and Sarazin.)						
Sarfert, Alexander T., Chemnitz, Germany, assignor to D. Gessner, Worcester, Mass., Cloth-steaming machine	707,725	Aug. 26	3815	{742 743}	100	1850
Sargent, William H., Cambridge, Mass. Filter	705,447	July 22	4066	883	100	874
Sarr, Leon, Ceylon, Ohio. Jar-cover-repairing tool	704,217	July 8	1394	345	100	334
Sattelberg, William H., Washington, assignor of one-half to A. J. Smith, Pittsburg, Pa. Adjustable window-shade bracket	710,215	Sept. 30	4317	970	100	2982
Sattley Manufacturing Company. (See Heineke, Martin, assignor.)						
Saum, David F., New York, N. Y., assignor to New York Stone, Brick & Terra-Cotta Renovating Company, of New York. Building renovating apparatus	708,922	Sept. 9	1711	395	100	2345
Saunders, Addison T., assignor of one-half to F. A. Seiberling, Akron, Ohio. Golf-ball	707,268	Aug. 19	2403	539	100	1644
Saunders, Lewis H., Colby, Kans. Calf-weaner	707,020	Aug. 12	1945	435	100	1530
Sauntry, William, Stillwater, Minn. Lumber loading or unloading device	707,162	Aug. 19	2223	498	100	1604
Sausser, Jacob M. (See Sausser, William M. and J. M.)						
Sausser, William M. and J. M., Schuylkill Haven, Pa. Victual-protector	709,048	Sept. 16	1990	454	100	2418
Sauvage Duplex Air Brake Company. (See Sauvage, William H., assignor.)						
Sauvage, William H., Denver, Colo., assignor to C. A. Tripp, Salt Lake City, Utah. Slack-adjuster	704,970	July 15	3061	658	100	654
Sauvage, William H., assignor to Sauvage Duplex Air Brake Company, Denver, Colo. Air-brake mechanism	708,480	July 1	186	44	100	39
Savage, Ernest L., Lancaster, N. H. Beating-engine	710,014	Sept. 30	3921	885	100	2847
Savell, William B., Newark, N. J. Type-writer or analogous key cap	705,709	July 29	4633	1004	100	997
Savery, Thomas H., Wilmington, Del. Air-exhaust for revolving steam drying or heating cylinders	705,305	July 22	3775	819	100	813
Savoye, Emile, Paris, France. Lacing device	704,881	July 8	1900	411	100	401
Sawrie, Lee E., *et al.* (See Anderson, Albert, assignor.)						
Sawyer, George M., Schroon Lake, N. Y. Watch-winding device	706,904	Aug. 5	992	88	100	1197
Sawyer, George W. Marietta, Ind. Ter. Hot-air apparatus for the human body	709,981	Sept. 30	3758	849	100	2812
Sawyer, Gernard W., El Reno, Okla. Ter. Book-support or copy-holder	707,979	Aug. 26	3849	864	100	1954
Sawyer Spindle Company. (See Kilburn, John, assignor.)						
Sawyer Spindle Company. (See Lovejoy, Charles E., assignor.)						
Sayre & Co., L. A. (See Cottrell, Herbert, assignor.)						
Sayer, Robert C., Bristol, England. Rotary motor	706,116	Aug. 5	209	43, 44	100	1159
Sayre, James W., Seneca, Mo. Four-horse evener	707,946	Aug. 26	3789	851	100	1943
Scafe, Charles, Burns, Wis. Hay and stock rack	705,448	July 22	4067	883	100	874
Scamman, Charles F., deceased, Portland, Me.; T. L. Scamman, administratrix. Machine for forming and drying toothpicks	709,049	Sept. 16	1991	454	100	2418
Scamman, Charles F., deceased, Portland, Me.; T. L. Scamman, administratrix. Machine for drying toothpicks	709,050	Sept. 16	1992	455	100	2419
Scamman, Thalia L., administratrix. (See Scamman, Charles F.)						
Scanlin, Patrick, Boone, Iowa. Railway bumping-post	704,275	July 8	1699	{370 371}	100	357
Scannell, Joseph C., assignor, by mesne assigments, to S. Scannell, Boston, Mass. Sinew-extractor	706,853	Aug. 12	1657	370	100	1473
Scannell, Sadie. (See Scannell, Joseph C., assignor.)						
Scantlin, Emmett E. (See Leftwich, Andrew B., assignor.)						
Scattergood, Henry W. (See Taluau, Julius, assignor.)						
Scattergood, Henry W. (See Taluau and Scattergood.)						
Scattergood, Henry W., Philadelphia, Pa. Framing glass or other materials	709,513	Sept. 23	2992	661	100	2687

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sceets, George N., assignor of one-half to G. A. Woodman, Chicago, Ill. Journal-bearing	705,871	July 29	4916	1068	100	1055
Schaefer, Adam and F., Williamsport, Pa. Folding umbrella	707,451	Aug. 19	2757	625	100	1718
Schaefer, Edward. (See Yearwood, Bird O., assignor.)						
Schaefer, Frederick. (See Schaefer, Adam and F.)						
Schaller, Wilhelm, New York, N. Y. Ash-cart	707,168	Aug. 19	2224	490	100	1604
Schambers, Charles H., Warren, Pa. Extension-ladder	703,896	July 1	849	187	100	170
Scharbach, Peter J., Pe Ell, Wash. Changeable gear for bicycles	707,359	Aug. 19	2590	595	100	1683
Scharffe, Adolf, Tientsin, China. Vapor generation	705,806	July 22	3779	820	100	814
Schatz, Adam E. (See Moberg, Carl J., assignor.)						
Schaub, Adolf, Paterson, N. J., assignor to Schaum and Uhlinger. Loom-shuttle	708,592	Sept. 9	1058	240	100	2206
Schaub, George, Lake Beulah, Wis. Wrench	704,592	July 15	2281	495	100	492
Schaub, Henry, assignor to Bryce Brothers Company, Mount Pleasant, Pa. Manufacture of glassware	704,760	July 15	2587	559	100	535
Schaub, Henry, assignor to Bryce Brothers Company, Mount Pleasant, Pa. Apparatus for the manufacture of glassware	704,761	July 15	2588	559	100	535
Schaum and Uhlinger. (See Schaub, Adolf, assignor.)						
Schauroth, Udo V. (See Rounds, Albert C., assignor.)						
Scheck, Bertha. (See Torley, Heinrich, assignor.)						
Scheel, Michael J. (See Mosher, Scheel, and Marting.)						
Scheele, Walter T., Catonsville, assignor of two-thirds to H. Knollenberg and W. F. Assau, Baltimore, Md. Soup material and making same	707,646	Aug. 26	3155	.....	100	1817
Scheibe, Oscar A. (See Phillips, Elwood C., assignor.)						
Scheiber, Eugen, and E. Krvayaser, Vienna, Austria-Hungary. Siphon-bottle	710,305	Sept. 30	4467	1007	100	2964
Scheideman, John, Washington, D. C. Ammonia-purifier for refrigerating plants	704,382	July 8	1901	411	100	401
Scheideman, John, Washington, D. C. Purifying refrigerants in circulation in refrigerating plants	704,383	July 8	1902	411	100	402
Schell, James D., Evanston, Ill. Bottle-capping machine	708,083	Sept. 2	154	37	100	2013
Schell, Otto, New Ulm, Minn. Attachment for beer-coolers	703,481	July 1	139	45	100	40
Schellinger, Isaac M. (See Baldwin and Schellinger.)						
Scheltenbach, Theodore, assignor of one-half to S. Setzer, Paterson, N. J. Shuttle-check	708,923	Sept. 9	1713	395	100	2345
Schemmel, Robert C., Union City, Ind. Backstay for carriage-tops	704,384	July 8	1903	412	100	402
Scherer, Albert G., Chicago, Ill. Adjustable pipe-elbow and fastening means therefor	704,936	July 15	2285	539	100	540
Schermerhorn, Francklyne B., and G. E. Moffett, Jarilla, N. Mex. Ter. Rotary fan-blower	705,907	July 22	3781	820	100	814
Schertiger, William, Aalborg, Denmark. Spinning-machine for chewing-tobacco	708,172	Sept. 2	325	77,78	100	2047
Schick, Frank, St. Louis, Mo. Spectacle-frame	710,015	Sept. 30	3922	885	100	2847
Schielke, Carl. (See Lambrecht and Schielke.)						
Schiffer, Alfred, *et al.* (See Parsons, Francis F., assignor.)						
Schiffer, Herman, *et al.* (See Parsons, Francis F., assignor.)						
Schild, Edward H., Baltimore, Md. Eyeglasses	709,234	Sept. 23	3529	795	100	2758
Schilling, Charles B., Chicago, Ill. Sheet-metal window frame and sash	709,514	Sept. 23	3965	661	100	2637
Schindler, Charles W., and J. Freeman, New Albany, Ind. Hydraulic motor	704,588	July 15	2282	496	100	492
Schinkel, Max, Philadelphia, Pa. Game-board	705,873	July 29	4920	1071	100	1056
Schirmer, Baldwin F., Indianapolis, Ind. Pasteurizing apparatus	708,739	Sept. 9	1334	304	100	2264
Schlachter, Philipp, Sr., and A. W. Allen, assignors of one-third to P. Schlachter, Jr., Streator, Ill. Drawing board and appliances	707,165	Aug. 19	2226	500	100	1605
Schlachter, Phillip, Jr. (See Schlachter and Allen, assignors.)						
Schlafly, Julius H., assignor to Berger Manufacturing Company, Canton, Ohio. Machine for tapering the ends of corrugated pipes	707,848	Aug. 26	3163	711	100	1818
Schlacks, Joseph T., Helper, Utah. Key connection	706,792	July 29	4777	1087	100	1027
Schlehr, Joseph A., Frazee, Minn. Steam-boiler	708,407	Sept. 2	735	165	100	2130
Schley, Frederick. (See Craw and Schley.)						
Schlumberger, Gustav R., Allegheny, Pa. Steering device for automobiles	709,684	Sept. 23	3953	799	100	2696
Schmelz, Richard W., Brooklyn, assignor of one-half to W. V. Geis, New York, N. Y. Garter	706,855	Aug. 12	1659	371	100	1474
Schmelz, Richard W., Brooklyn, assignor of one-half to W. V. Geis, New York, N. Y. Shade-holder for incandescent electric lamps	706,856	Aug. 12	1660	371	100	1474
Schmelz, Richard W., Brooklyn, assignor of one-half to W. V. Geis, New York, N. Y. Shade-holder for incandescent electric lamps	708,739	Sept. 9	1336	305	100	2265
Schmid, Sophie, Chicago, assignor of one-half to E. Ingalls, Oakpark, Ill. Game-board	703,971	July 1	1109	239 240	100	220
Schmidmer, Georg E., Nuremberg, Germany. File for papers and documents	709,550	Sept. 23	3041	677	100	2652
Schmidt, Charles F., assignor of one-half to C. Kleinknecht, Philadelphia, Pa. Washing-machine	707,867	Aug. 26	3642	821	100	1913
Schmidt, Georg, Charlottenburg, Germany. Hydraulic boring apparatus	704,385	July 8	1904	412	100	402
Schmidt, Godfrey P., Brooklyn, N. Y. Automatic feeding mechanism for stamping-presses or the like	705,908	July 22	3783	820 821	100	815
Schmidt, Gustav, Sr., Colmar, Germany. Take-up mechanism for looms	709,582	Sept. 23	3081	685 686	100	2661
Schmidt, Herman, Jr., Swanton, Nebr. Apparatus for setting or removing tiles	707,264	Aug. 19	2406	539	100	1644
Schmidt, Herman B., Cincinnati, Ohio, and O. T. Joslin, New York, N. Y. Apparatus for refining glycerin	705,712	July 29	4642	1005	100	998
Schmidt, Hermann, Hamburg, Germany. Pneumatically-operated lubricator	708,973	Sept. 9	1822	419	100	2366
Schmidt, John G. (See Leinberger and Schmidt.)						
Schmidt, John M., Elkhorn, W. Va. Insulating-hanger	710,216	Sept. 30	4518	971	100	2962
Schmidt, Joseph G., and W. P. Mueller, assignors of one-third to C. P. Herrmann, Milwaukee, Wis. Combined lifting-jack and air-pump	708,406	Sept. 2	736	165	100	2130
Schmidt, Julius H., Bayonne, N. J., assignor to W. E. Sharps, trustee, Philadelphia, Pa. Cigar-bunching machine	708,449	July 22	4009	894 895 896 897	100	874
Schmidt, Max, and E. J. Gebler, Dresden, Germany. Gripping mechanism for printing-presses	708,409	Sept. 2	737	166	100	2131
Schmidt, Nicolaus, Milwaukee, Wis. Water-motor	708,279	Sept. 16	2448	553	100	2516
Schmidt, Otto, Leutenberg, Germany. Shield for bicycle-handles	708,346	Aug. 5	686	150	100	1255
Schmidt-Perrin Manufacturing Company. (See McCullough, James, assignor.)						
Schmidt, Rudolph, Kansas City, Mo. Adjustable bottle-rest	708,178	Sept. 2	327	78	100	2048
Schmidt Steam Power Parent Co. (See Schmidt and Thomsen, assignors.)						
Schmidt, Wilhelm, and P. Thomsen, Wilhelmshöhe, near Cassel, Germany, assignors to Schmidt Steam Power Parent Co., Ltd., London, England. Superheating device in tubular steam-boilers	703,482	July 1	190	45	100	40
Schmiedeke, Louis, assignor of one-half to J. Gerlach, Theresa, Wis. Postal-car and station appliance	708,174	Sept. 2	326	78, 79	100	2048
Schmitt, Edward D., Baltimore, Md., assignor, by mesne assignments, to Universal Seal and Stopper Company, Baltimore, Md., and Camden, N. J. Tool for forming bottle-necks	705,344	Aug. 5	682	148	100	1254

Alphabetical list of patentees, July to September, inclusive—Continued.

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Schmitt, Edward D., Baltimore, Md., assignor, by mesne assignments, to Universal Seal and Stopper Company, Camden, N. J. Bottle-seal. (Reissue)	12,032	Sept. 16	2819	632	100	2506
Schmitt, Edward D., Baltimore, Md., assignor, by mesne assignments, to Universal Seal and Stopper Company, Camden, N. J. Bottle-seal. (Reissue)	12,033	Sept. 16	2821	633	100	2506
Schmitt, Johann R., Oberrad, Germany. Tobacco-conveying device for cigar-bunching machines	710,018	Sept. 30	3925	885, 887	100	2848
Schmitz, Cornelius, Godesberg, Germany. Apparatus for continuous beer production	710,396	Sept. 30	4026	1043, 1044	100	2906
Schmitz, Frank. (See Bitner, Harry, assignor.)						
Schmitz, Frank, Chicago, Ill. Banana-shipping case	710,016	Sept. 30	3923	896	100	2848
Schmitz, Frank, Chicago, Ill. Banana-shipping case	710,017	Sept. 30	3924	896	100	2848
Schmitz, Wilhelm, Elberfeld, assignor to Continentale Gesellschaft für Elektrische Unternehmungen, Nuremberg, Germany. Suspended railway-vehicle	708,175	Sept. 2	330	79	100	2048
Schneck, Fredrick. (See Straeten and Schneck.)						
Schneekloth, Hans A., New York, N. Y. Cigar-machine	705,872	July 29	4917	1069, 1070	100	1055
Schneider, Charles P. E., and J. B. G. A. Canet, La Creuzot, France. Apparatus for sighting guns with independent line of sight	706,345	Aug. 5	685	148, 149	100	1254
Schneider, Frederick, New York, N. Y. Overshoe for horses	708,608	Sept. 9	1202	274	100	2236
Schneider, George, Newport, Ky. Tongueless buckle	706,857	Aug. 12	1661	372	100	1474
Schneider, George, Newport, Ky. Crupper	707,808	Aug. 26	3044	821	100	1918
Schneider, Henry C., North Milwaukee, Wis. Extension-table	705,711	July 29	4640	1005	100	998
Schneider, Hermann. (See Fischer and Schneider.)						
Schneider, John, Newark, N. J. Leather-stretching clamp	707,809	Aug. 26	3045	821	100	1918
Schneider, Louis H. (See Barlow, Howard E., assignor.)						
Schneider, William, Chicago, Ill., assignor to Whitfield Company, Memphis, Tenn. Telescopic compound engine	707,647	Aug. 26	3156	710	100	1817
Schneider, William J. (See Williams, Michael, assignor.)						
Schneller, John P., Catasauqua, Pa. Heat-radiator for smoke-pipes	709,051	Sept. 16	1998	455	100	2419
Schoeler, Felix, Berlin, Germany. Instrument for measuring the degree of exposure to light	707,164	Aug. 19	2225	499	100	1605
Schoen, Charles T. (See Loss, Henrik V., assignor.)						
Schoenmehl, Charles B., Waterbury, Conn. Galvanic battery	705,616	July 29	4463	968	100	904
Schoff, Frederic. (See Jackson, James H., assignor.)						
Schofield, Arthur F., Westford, Conn. Calk-equipped horseshoe	706,305	Aug. 5	393	84	100	1197
Schofield, Ernest, Leeds, England. Excavator for trenches, cuttings, or the like	708,972	July 1	1110	240	100	220
Schofield, George W., Brooklyn, N. Y. Amusement or roundabout apparatus	708,884	Sept. 9	1546	353, 854	100	2310
Schofield, George W., Brooklyn, N. Y. Merry-go-round	708,885	Sept. 9	1549	354	100	2310
Schofield, Robert, assignor of two-thirds to C. Burgess, New Bedford, Mass. Skewer for bobbins	704,584	July 15	2284	496	100	492
Schofield, Silas C., Freeport, Ill. Tool-guide for grindstones	709,177	Sept. 16	2945	510	100	2472
Schofield, Silas C., Freeport, Ill. Tool holder and guide for grindstones	709,178	Sept. 16	2946	510, 511	100	2472
Scholer, August, Pittsburg, Pa. Metallic tie and rail-fastener	705,617	July 29	4465	968	100	904
Scholl, Albert, Mannheim, Germany. Apparatus for raising liquids by means of steam or compressed air	708,699	Sept. 9	1203	274, 275	100	2236
Schön, Frank, New York, N. Y. Mandrel for paper-rolls	708,740	Sept. 9	1337	305	100	2265
Schöning, William, Christiania, Norway. Preserving eggs	709,583	Sept. 23	3062	.....	100	2662
Schooley, Frank W., assignor of one-half to B. L. Hiatt, Dublin, Ind. Wire-reel truck	709,992	Sept. 30	3760	849, 850	100	2818
Schorno, Antony. (See Reichlin, Xaver, assignor.)						
Schott, George. (See Watts, Louis A., assignor.)						
Schott, John B., Quincy, Ill. Overdraw-check for bridles	708,410	Sept. 2	779	166	100	2131
Schrag, John J., assignor of one-half to T. L. Gourley, Toledo, Ohio. Switch-stand	707,360	Aug. 19	2592	595	100	1683
Schramm, Adolph W., Philadelphia, Pa., assignor to Electro Dental Manufacturing Company, Camden, N. J. Dental engine	704,937	July 15	2986	640	100	640
Schreck, Conrad J., Gallipolis, Ohio. Safety-harness for children	708,463	July 1	191	46	100	40
Schreiner, Joseph, Irvington, N. J., assignor to Rubber and Celluloid Harness Trimming Co. Brush	709,610	Sept. 23	3124	696	100	2670
Schrock, Harvey J., Goshen, Ind. Folding crate	706,692	Aug. 12	1837	397	100	1405
Schroedter, August, Berlin, Germany. Apparatus for filling bottles or jugs with beer	704,886	July 8	1906	412, 413	100	402
Schuldt, Henry J., assignor to P. W. Herzog, St. Paul, Minn. Street-car fender	705,150	July 22	3435	746, 747	100	745
Schulte, Eduard. (See Brejcha and Schulte.)						
Schulteis, Albert, *et al.* (See Fillmore, George M., assignor.)						
Schulz, Adolph, Chicago, Ill. Plow	707,726	Aug. 26	3222	743	100	1851
Schulz, Arthur, Friedenau, Germany. Means for moving heavy loads	704,887	July 8	1908	413	100	403
Schulz, Henry, New York, N. Y. Machine for winding drum-armatures	709,179	Sept. 16	2947	511, 512, 513	100	2473
Schulz, Richard, Berlin, Germany. Combined superheater and steam-generator	707,021	Aug. 12	1946	435, 436, 437	100	1580
Schulz, Richard, Berlin, Germany. Steam-turbine	707,727	Aug. 26	3224	743, 744	100	1852
Schulz, Richard, Berlin, Germany. Oil-separator	707,728	Aug. 26	3226	745	100	1852
Schulze, Carl W. R., Leipsic, Germany. Perambulator	706,864	Aug. 12	1658	371	100	1474
Schuman, Alexander C., assignor to S. Coleman, Louisville, Ky. Adding-machine	704,998	July 15	2988	640, 641	100	641
Schuman, Alexander C., assignor to S. Coleman, Louisville, Ky. Calculating-machine	709,368	Sept. 16	3007	587, 588	100	2551
Schuman, Alexander C., assignor to S. Coleman, Louisville, Ky. Computing-machine	709,368	Sept. 16	3019	589, 590	100	2553
Schuman, Alexander C., assignor to S. Coleman, Louisville, Ky. Dating attachment for calculating-machines	709,364	Sept. 16	3035	590, 591	100	2556
Schuman, Alexander C., assignor to S. Coleman, Louisville, Ky. Calculating-machine	709,365	Sept. 16	3035	591	100	2556
Schureman, David S., Rockford, Ill. Water-closet	710,342	Sept. 30	4380	1021, 1022	100	2978
Schureman, Jacob L., Chicago, Ill. Pressure-regulator	706,200	Aug. 5	496	105	100	1217
Schürmann, Carl, Dusseldorf, Germany. Manufacture of braided cords or cables for electric lighting or like purposes	708,687	July 1	882	187	100	171
Schuster, Ernst. (See Hamann, Christel, assignor.)						
Schutte, Louis, Philadelphia, Pa. Induction-condenser	704,585	July 15	2987	497	100	408

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Schütze, August, Rudolstadt, assignor to F. A. Richter, Rudolstadt, Schwarzburg-Rudolstadt, Germany. Toy railway	709,685	Sept. 23	3254	720	100	2696
Schwanengel, John C., Dayton, Ohio. Ball-bat and explosive	708,261	Sept. 2	490	112	100	2060
Schwartz, Alfred, Munich, assignor to Helios Electricitaets-Aktiengesellschaft, Cologne-Ehrenfeld, Germany. Clutch for induction-motors	708,117	Aug. 5	212	44	100	1160
Schwartz, David D., *et al.* (See Morrissey, Thomas F., assignor.)						
Schwartz, Edward H., assignor of two-thirds to Hawley Down Draft Furnace Company, Chicago, Ill. Melting-furnace	708,782	Sept. 9	1418	327	100	2283
Schwartz, Edward H., assignor to Hawley Down Draft Furnace Company, Chicago, Ill. Melting and treating metals	708,783	Sept. 9	1422	327	100	2284
Schwartz, Henry. (See Koons, John H., assignor.)						
Schwartz, James M., *et al.* (See Morrissey, Thomas F., assignor.)						
Schwartz, Nicolaus C. E., New York, N. Y. Vaginal syringe	708,615	July 1	494	99	100	84
Schwartz, Nicolaus C. E., New York, N. Y. Vaginal syringe	708,616	July 1	426	99	100	84
Schwartz, York, Hanover, Germany. Photographic emulsion	710,019	Sept. 30	3036		100	2849
Schwarz, Arthur, Berlin-Schöneberg, Germany. Apparatus for toning photographs	708,671	July 1	546	124	100	168
Schwarz, Carl, Quincy Township, and W. C. Bryant, Franklin Township, Houghton county, Mich. Combined fire-escape and water-tower	705,710	July 29	4635	{1004 {1005	100	997
Schwarz, Emerich, Chicago, Ill. Nail-machine	705,450	July 22	4082	887	100	876
Schwegel, Peter, Dayton, Ohio. Self-closing cock	704,121	July 8	1417	304	100	298
Schweitzer, Henry, Altoona, Pa. Razor-cleaner	708,902	Sept. 2	491	113	100	2060
Schweitzer, Joseph, Paris, France, assignor to La Société Internationale de Meunerie et de Panification Systeme Schweitzer, Brussels, Belgium. Grooving millstones	706,259	Aug. 5	494	106	100	1216
Schwemle, Philipp F., and J. W. Case, Jackson, Mich. Lighting and heating device for vehicles	708,593	Sept. 9	1059	240	100	2206
Schwend, George M., Birmingham, Ala. Valve-motion	707,456	Aug. 19	2779	625	100	1718
Schwerin, Silas, assignor to Hardman Rubber Company, Belleville, N. J. Bottle-stopper	705,698	Aug. 12	1338	297	100	1405
Schwingel, George A., Akron, Ohio. Belt-tightener	704,368	July 8	1909	413	100	408
Scobee, Claude S., Winchester, Ky. Lubricator for loose pulleys	708,859	July 1	853	188	100	171
Scott, Alexander A., Knoxville, Tenn. Elevating-truck	708,744	July 1	695	151	100	135
Scott, Alexander A., Knoxville, Tenn. Elevating-truck	709,945	Sept. 16	2383	539	100	2502
Scott, Charles C., assignor to A. C. and M. L. Felkin, Boston, Mass. Illuminated display-sign	704,128	July 8	1418	304	100	298
Scott, Edna L., Portland, Me. Suspending device for catamenial bandages	705,457	Aug. 5	922	200	100	1312
Scott, Henry R., Kansas City, Mo. Boiler-furnace	708,710	July 1	616	{127 {128	100	122
Scott, Jacob R., Boston, Mass., assignor to United Shoe Machinery Company, Paterson, N. J. Counter-skiving machine	708,617	July 1	428	{99 {100	100	85
Scott, James W., Warren, Me. Combined stop and alarm mechanism for carding-machines	706,961	Aug. 5	498	{106 {107	100	1217
Scott, John E., Philadelphia, Pa. Punching-machine	706,601	Aug. 12	1167	259	100	1367
Scott, John G., and J. C. Brecker, Girardville, Pa. Conveyer-chain	708,984	Sept. 9	1714	396	100	2345
Scott, Oliver P., Chicago, Ill. Incubator	709,630	Sept. 23	3191	712	100	2683
Scott, Richard C., Liverpool, England. Aging or treating spirits	704,382	July 8	1910	414	100	408
Scott, Robert L., Arlington, Cal. Ladder	704,128	July 8	1419	304	100	299
Scott, Robert W. (See Williams, Louis N. D., assignor.)						
Scott, Robert W., *et al.* (See Bellis, David C., assignor.)						
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Cartridge	708,839	July 1	854	188	100	171
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Gun-cartridge	708,840	July 1	857	188	100	171
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Shaft-coupling	707,453	Aug. 19	2762	626	100	1719
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Knitting-machine needle	707,990	Aug. 26	3851	865	100	1954
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Knitted fabric	709,825	Sept. 23	3581	795	100	2754
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Ribbed knitted fabric	709,826	Sept. 23	3582	796	100	2754
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Knitted fabric	709,827	Sept. 23	3583	796	100	2754
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Ribbed knitted fabric	709,828	Sept. 23	3584	796	100	2754
Scott, Robert W., Philadelphia, assignor of one-half to L. N. D. Williams, Ashbourne, Pa. Rib-knitting machine	709,829	Sept. 23	3586	797	100	2755
Scott-Snell, Charles, Saltash, England. Producing draft	710,370	Sept. 30	4578	{1062 {1063	100	2986
Scott-Uda, Mary B. (See Bontempi, Augusto, assignor.)						
Scott, Walter, Plainfield, N. J. Printing-press	704,134	July 8	1421	{304 {305	100	299
Scott, Walter, Plainfield, N. J. Sheet-delivery mechanism	708,741	Sept. 9	1337	{305 {306	100	2265
Scott, Walter, Plainfield, N. J. Delivery mechanism	708,636	Sept. 9	1551	{354 {355	100	2310
Scott, Walter, Plainfield, N. J. Delivery mechanism	709,180	Sept 16	2254	512	100	2474
Scott, Walter, Plainfield, N. J. Printing-machine	709,515	Sept. 23	2967	{661 {662	100	2638
Scott, William M., Philadelphia, Pa., assignor to Cutter Electrical & Manufacturing Company. Automatic magnetic circuit-breaker	704,974	July 15	2068	459	100	654
Scott, William R., Fort Worth, Tex. Ballast-spreading car	707,649	Aug. 26	3154	{711 {712 {713	100	1819
Scovill Manufacturing Company. (See Stanley, Frederick E., assignor.)						
Scranton Glass Mfg. Company. (See Levick, Edward A., assignor.)						
Scribner, Charles E., assignor to Western Electric Company, Chicago, Ill. Supervisory signal for telephone-switchboards. (Reissue)	12,007	July 1	1121	243	100	922
Scrivener, John. (See Stearn, Thomas M., assignor.)						
Scroggins, Allen C., Jr., *et al.* (See Patrick, William P., assignor.)						
Scurl, Alessandro G. B., Liege, Belgium. Hair-curler	704,390	July 8	1911	414	100	408
Se Dite Gilardoni Fils, A. Brault et Cie. (See Gilardoni, Xavier P., assignor.)						
Seagrave, Frederic S., and H. P. Elliott, Columbus, Ohio; said Elliott assignor to said Seagrave. Antifrictional bearing	707,550	Aug. 26	3170	713	100	1820
Seagren, Fred E., Curlew, Iowa. Calk-cutting machine	708,995	Sept. 9	1715	393	100	2346
Seaman, Albert R., Connellsville Township, Pa. Automatic fire-lighter	708,841	July 1	859	188	100	172
Seaman, Claude D., assignor of one-half to C. C. Gardiner, Topeka, Kans. Electric railway-signal	709,062	Sept. 16	1904	455	100	2419

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Seaman, Elizabeth C. (See Reynolds, Henry S., assignor.)						
Seaman, Elizabeth C., New York, N. Y. Garbage or refuse can	708,745	July 1	696	152	100	137
Seaman, Elizabeth C., assignor to Iron Clad Manufacturing Company, New York, N. Y. Garbage or refuse can	708,711	July 1	619	138	100	122
Seaman, John W., Bay City, Mich. Device for stringing electric wires	706,786	Aug. 12	1530	{339 {340 {341	100	1445
Seamless Rubber Co. (See Menges, Edward E., assignor.)						
Seanor, William T., and E. M. Kepple, Goff, Pa. Car-coupling	709,686	Sept. 23	3256	730	100	2696
Seaquest, Charles J., Silverlake, Wash. Mortising-machine	708,458	Aug. 5	922	200	100	1302
Searight, Frank A., and G. J. Stevens, Union City, Mich. Building-block	708,499	Sept. 2	898	203	100	2164
Searle, Harry, assignor to Coes Wrench Company, Worcester, Mass. Construction of wrenches	705,874	July 29	4984	1071	100	1066
Searle, Harry, assignor to Coes Wrench Company, Worcester, Mass. Construction of wrenches	705,875	July 29	4985	1071	100	1067
Searle, John Q. C., deceased, Chicago, Ill.; J. E. Searle, executrix. Railway-car-heating apparatus	707,361	Aug. 19	2566	595	100	1694
Searle, Julia E., executrix. (See Searle, John Q. C.)						
Searles, Charles P., and D. J. Minton, Columbus, Ohio. Non-refillable bottle	705,309	July 22	3795	821	100	815
Searles, Charles, Cleveland, Ohio. Type-writer	706,858	Aug. 12	1661	372	100	1474
Sears, Charles, Cleveland, Ohio. Carriage mechanism for type-writers	710,398	Sept. 30	4621	1042	100	2995
Sears, Charles, Cleveland, Ohio. Carriage mechanism for type-writers	705,451	July 22	4068	888	100	876
Sears, Edward H., assignor to Collins Co., Collinsville, Conn. Wrench-handle	707,524	Aug. 19	2892	{654 {655	100	1746
Sears, Frank M., assignor of one-half to A. Chaloupka, Charlevoix, Mich. Coin-actuated vending-machine						
Sears, Willard T. (See Reynders and Sears.)						
Seaver, John W., assignor to Wellman-Seaver-Morgan Engineering Company, Cleveland, Ohio. Manufacturing coke	707,525	Aug. 19	2896	655	100	1747
Sebastian, Daniel S., assignor of one-half to P. Bernier, Wallace, Idaho. Brake mechanism	708,887	Sept. 9	1555	353	100	2311
Sébillot, Amédée M. G., Paris, France. Furnace for separating zinc from ores	710,217	Sept. 30	4320	971	100	2993
Sebree, Robert M., Kansas City, Kans. Horse-protector	707,166	Aug. 19	2228	500	100	1605
Seddon, William T., Minersville, Pa. Battery	704,125	July 8	1429	305	100	301
See, Alonzo B., *et al.* (See Cowperthwait, Allan, assignor.)						
See, Charles E., Charlevoix, Mich. Ladder	708,670	Sept. 9	1205	275	100	2237
Seeberger, John, assignor to J. H. Jones, Watervliet, N. Y. End panel and seat-post for open cars	709,516	Sept. 23	2972	662	100	2639
Seeberger, John, assignor to J. H. Jones, Watervliet, N. Y. End panel for open-car seats and the seat-post with which it connects	709,517	Sept. 23	2973	663	100	2639
Seeley, James E., assignor to W. W. Sweeney Co., Los Angeles, Cal. Strong light body and producing same	706,498	Aug. 5	988	218	100	1316
Seelye, Nelson H., Winchester, Mass. Bearing for shafts of machines	707,167	Aug. 19	2228	{500 {501	100	1605
Seelye, Nelson H., Winchester, Mass. Reciprocating-beam machine	707,168	Aug. 19	2229	{108 {109	100	1217
Seessle, Charles, Irvington, N. J., assignor of one-half to G. Seessle, New York, N. Y. Fire-escape	704,126	July 8	1430	306	100	301
Seessle, Gustav. (See Seessle, Charles, assignor.)						
Seevers, Byron V. (See Mendenhall, Albert, assignor.)						
Segner, Charles B. (See Segner, Harry H. and C. B.)						
Segner, Harry H. and C. B., assignors of one-third to A. S. Dornblaser, Hagerstown, Md. Sparker for explosive-engines	706,859	Aug. 12	1664	372	100	1475
Seiberling, Frank A. (See Saunders, Addison T., assignor.)						
Seidel, Bruno. (See Wishart and Seidel.)						
Seifert, John W., assignor of one-half to L. Eikel, Waco, Tex. Pneumatic conveyer	705,310	July 22	3787	{821 {822	100	815
Seifried, Samuel J., assignor to Chicago Writing Machine Company, Chicago, Ill. Type-writer hammer mechanism	704,218	July 8	1595	{345 {346	100	334
Seim, William. (See Brewington, Henry S., assignor.)						
Seither, Jacob, Keokuk, Iowa. Flue-stop	707,082	Aug. 12	1950	437	100	1531
Seither, Jacob, Keokuk, Iowa. Cream-separator	707,083	Aug. 12	1952	438	100	1531
Selden, Charles, Baltimore, Md. Combined district telegraph and telephone signal	704,187	July 8	1432	305	100	301
Selke, Willy A. C., Berlin, Germany. Apparatus for copying models	706,459	Aug. 5	994	220	100	1302
Selke, Willy A. C., Berlin, Germany. Photosculpture apparatus	706,860	Aug. 12	1665	{373 {374	100	1475
Selkirk, David, Brooklyn, N. Y. Propeller	709,801	Sept. 23	3488	786	100	2744
Sella, Carlo, Biella, Italy. Composition for oiling fiber and making same	704,989	July 15	2995		100	642
Selleck, William J., Riverside, Conn. Conveyer-belt	705,876	July 29	4987	1071	100	1067
Seltz, Claus, Seattle, Wash. Bookkeeping	709,726	Sept. 23	3321	{746 {747	100	2711
Seltzer, Cyrus J., Philadelphia, Pa. Apparatus for drying	708,746	July 1	698	152	100	137
Semple, John B., Sewickley, Pa. Projectile	707,094	Aug. 12	1953	438	100	1532
Semple, John B., Sewickley, Pa. Projectile	708,411	Sept. 2	740	166	100	2121
Seney, Henry W. (See Heckert, William, assignor.)						
Seng, Joseph, Allegheny, Pa. Carriage-pole	708,784	Sept. 9	1494	327	100	2285
Seng, Joseph, Allegheny, Pa. Hobby-horse	710,218	Sept. 30	4321	971	100	2993
Serafinski, Anthony, Jersey City, N. J. Means for sustaining and adjusting window-shades	710,079	Sept. 30	4096	910	100	2872
Sessions, Frank L., Oakpark, assignor to Siemens & Halske Electric Company of America, Chicago, Ill. Armature	704,975	July 15	2070	460	100	656
Sette, Edward, Ironridge, Wis. Fluid-compressor	706,861	Aug. 12	1667	374	100	1475
Setzer, Samuel. (See Scheltenbach, Theodore, assignor.)						
Sexton, Ernest H., Sandyhill, N. Y. Split collar	709,366	Sept. 16	2087	501	100	2557
Sexton, Michael H., Utica, N. Y. Coffee-pot	704,586	July 15	2288	497	100	494
Seyer, Robert W., and F. Pratt, Indianapolis, Ind. Fluid-pressure regulator	707,651	Aug. 26	3172	714	100	1821
Seyffarth, Gustav, Brooklyn, N. Y. Gravity-level	704,219	July 8	1596	346	100	334
Seymour, James A. (See McIntosh and Seymour.)						
Seymour, John, Toronto, Canada. Gas and air mixer	704,762	July 15	2590	{559 {560	100	655
Seymour, John, Toronto, Canada. Machine for mixing gas and air	704,763	July 15	2593	561	100	656
Seymour, John, Toronto, Canada. Air and gas mixer	704,764	July 15	2595	562	100	657
Seymour, Ralph C., South Orange, N. J., assignor to C. B. Cottrell & Sons Company, New York, N. Y. Machinery for folding, packing, and stacking sheets of paper, &c.	706,962	Aug. 5	508	{107 {108 {109	100	1217
Seymour, Ralph C., New York, N. Y., assignor to C. B. Cottrell & Sons Co., Jersey City, N. J., and Stonington, Conn. Web-folding machine	706,862	Aug. 12	1668	{874 {875	100	1476
Seymour, Ralph C., South Orange, N. J., assignor to C. B. Cottrell & Sons Company, New York, N. Y., and Stonington, Conn. Machinery for cutting and folding paper or other fabrics	710,080	Sept. 30	4098	{910 {911	100	2872

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Seymour, William S., Philadelphia, Pa., assignor to Pennsylvania Tube Company, Philadelphia, Pa., and Camden, N. J. Umbrella-runner retainer	704,128	July 8	1434	307	100	302
Sferlozza, Alfonzo, New York, N. Y. Fire-escape	706,838	Sept. 9	1557	356	100	2311
Shabley, Charles, Wessington Springs, S. D. Harrow	704,587	July 15	2290	497	100	494
Shackleford, Gibbon C., Allegheny, Pa. Blast-furnace	710,120	Sept. 30	4125	930 / 931	100	2989
Shafer, Charles T., assignor to Western Manufacturing Company, Springfield, Ohio. Tool-holder	708,176	Sept. 2	831	79	100	2049
Shafer, Ira, Afton, Iowa. Twine-cutter	708,484	July 1	192	46	100	40
Shaffer, Ira E., Mount Vernon, N. Y. Therapeutic electrical apparatus	706,602	Aug. 12	1172	260	100	1369
Shaffer, John Q., Pittsburg, Pa. Manufacturing glass tombstones, &c	706,863	Aug. 12	1675	375	100	1476
Shainsey, Fred J., Dayton, Ohio, assignor to Krentler-Arnold Hinge Last Company, Detroit, Mich. Last	706,490	Aug. 5	989	218	100	1317
Shallenberger, Charles S., Milwaukee, Wis., assignor of one-half to E. S. Marshall, St. Louis, Mo. Tie-plate	707,362	Aug. 19	2596	586	100	1684
Shallenberger, Charles S., Milwaukee, Wis., assignor of one-half to E. S. Marshall, St. Louis, Mo. Rail-fastener for metallic ties	710,371	Sept. 30	4580	1033	100	2995
Sharp, Bird H., Victoria, Tex. Game-cards	706,608	Aug. 12	1173	260	100	1369
Sharp & Smith. (See Weder, Paul J., assignor.)						
Sharp, William E., assignor to Armour & Company, Chicago, Ill. Double-deck car	704,709	July 15	2486	536 / 537	100	536
Sharpe, Fred. (See Palmer and Sharpe.)						
Sharples Company. (See Beach, Milo D., assignor.)						
Sharples, Philip M., Westchester, Pa. Combined tempering-vat, churn, and butter-worker	706,118	Aug. 5	213	45	100	1160
Sharps, William E., trustee. (See Schmidt, Julius H., assignor.)						
Sharum, Stephen A., Bob, Ind. Ter. Metallic railway-tie	705,452	July 22	4084	888	100	877
Shattuc, Clark E. (See Shattuc, Cranmer S. and C. E.)						
Shattuc, Cranmer S. and C. E., Chicago, Ill. Vapor-burner	708,926	Sept. 9	1718	397	100	2346
Shattuck, Orville F., Denver, Colo. Solar attachment for transit instruments	705,970	July 29	5095	1110 / 1111	100	1091
Shaver, Henry L. (See Howarth, Fred A., assignor.)						
Shaver, Joseph, Milwaukee, Wis. Sand-blast-controlling apparatus	709,448	Sept. 16	2788	627	100	2588
Shaw, Al B., West Medford, Mass. Automatic gas-lighting mechanism	704,391	July 8	1913	415	100	403
Shaw, Campbell B., Kirkwood, assignor to Shaw Manufacturing Company, St. Louis, Mo. Automatic alarm-valve for fire-extinguishing apparatus	705,544	July 22	4323	935	100	921
Shaw, Charles H., Brooklyn, N. Y. Photographic film	709,038	Sept. 16	2000	456	100	2420
Shaw, Charles H., Brooklyn, assignor to Aeolian Company, New York, N. Y. Perforated music-sheet for automatic musical instruments	709,054	Sept. 16	2002	456	100	2420
Shaw, Clifford. (See Young and Shaw.)						
Shaw & Cocker Machine Company. (See Shaw, James, assignor.)						
Shaw, James, assignor to Shaw & Cocker Machine Company, Paterson, N. J. Reel	708,263	Sept. 2	492	113	100	2081
Shaw, James C., W. J., and R. E., Bessemer, Ala. Paint	706,119	Aug. 5	215	.....	100	1160
Shaw, John P., Aberdeen, Miss. Baling-press	707,802	Aug. 26	3516	794	100	1889
Shaw Manufacturing Company. (See Shaw, Campbell B., assignor.)						
Shaw, Robert E. (See Shaw, James C., W. J., and R. E.)						
Shaw-Walker Company. (See Wigle, Eli, assignor.)						
Shaw, Willie J. (See Shaw, James C., W. J., and R. E.)						
Shawver, Charles I., Springfield, Ohio. Machine for cutting picture-mats	709,116	Sept. 16	2123	487	100	2448
Shay, Ephraim, Harbor Springs, Mich. Locomotive-truck	706,604	Aug. 12	1175	260	100	1369
Shea, Michael P., New London, Conn. Bottle-washing machine	705,877	July 29	4928	1072	100	1067
Shearer, Robert. (See Belfield, Shearer, Findlay, and Belfield.)						
Shearman, Henry C., Providence, R. I. Spring-tire for vehicle-wheels	707,169	Aug. 19	2230	501	100	1606
Shears, Edward C., Lakota, N. D. Barrel-head fastening	708,412	Sept. 2	741	166	100	2131
Sheckells, George W., Baltimore, Md. Shirt-vest	704,392	July 8	1917	415	100	404
Shedlock, Alfred, Jersey City, N. J., assignor to Cushman and Denison, New York, N. Y. Paper clip or fastener	709,485	July 1	194	46	100	41
Sheedy, Patrick, and A. Campbell, Los Angeles, Cal. Liquid-delivery apparatus	704,129	July 8	1435	307	100	302
Sheedy, Patrick, and A. Campbell, Los Angeles, Cal. Circulator for locomotive-cylinders	704,130	July 8	1438	308	100	303
Sheeley, Fred, Fleischmanns, N. Y. Horseshoe	707,454	Aug. 19	2763	626	100	1719
Sheldon, Philo B., Erie, Pa., assignor to Philo Burt Manufacturing Company, Jamestown, N. Y. Body-brace	709,055	Sept. 16	2008	456	100	2421
Shellaberger, Edward F., Dekalb, Ill. Barbed-wire machine	704,710	July 15	2489	537 / 538 / 539	100	536
Shellaberger, George H., Bartow, Fla. Saw-tooth wrench	705,454	July 22	4085	886 / 889	100	877
Shelly, William F., Newcastle, Ind. Door for mail-wagons	706,694	Aug. 12	1840	298	100	1406
Shelton, George W., Morrill, Kans. Trousers clamp and hanger	704,940	July 15	2996	641	100	642
Shepherd, John H. (See Montgomery, Walter R., assignor.)						
Shepler, Pius L., Toledo, Ohio. Mowing-machine	707,981	Aug. 26	3852	865	100	1964
Sheppard, Franklin L., Philadelphia, Pa. Stove-door hinge	707,025	Aug. 12	1955	438	100	1532
Sherman, John H., Beaverdam, Wis. Hernial truss	705,453	July 22	4084	888	100	877
Sherman, William H., New York, N. Y. Bottle-stopper	708,264	Sept. 2	492	113	100	2081
Sherman, Willis S., Milwaukee, Wis. Boring-machine	708,177	Sept. 2	333	80	100	2049
Sherwood, Harry B., Ashbourne, Pa., assignor to Automatic Scale Company, Washington, D. C. Price-scale	706,460	Aug. 5	924	201	100	1303
Sherwood Manufacturing Company. (See Hart, Thomas J., assignor.)						
Shick, William F., R. J. Lehman, and I. J. Walker, Duquesne, Pa. Valve for heating-furnaces	705,618	July 29	4466	998	100	964
Shields, James C., *et al.* (See Lewis, Albert H., assignor.)						
Shimer, Milton J., Freemansburg, Pa. Holder for blank cartridges	707,096	Aug. 12	1956	438	100	1532
Shinn, Joseph A., Pittsburg, Pa. Artificial sand and producing same	707,170	Aug. 19	2241	501	100	1610
Shinn, Martin E., assignor to F. J. Herbert, Chicago, Ill. Carpet-stretcher	708,974	Sept. 9	1823	420	100	2366
Shinn, Martin E., and F. J. Herbert, Chicago, Ill.; said Shinn assignor to said Herbert. Wire-stretcher	707,896	Aug. 19	2898	655	100	1747
Shipham, Henry J., Brooklyn, N. Y. Bowling-alley	709,802	Sept. 23	3489	787	100	2744
Shipman, Madison D., Dekalb, Ill. Wire fencing	707,455	Aug. 19	2764	626	100	1719
Shipman, Madison D., Dekalb, Ill. Button and making same	707,456	Aug. 19	2764	626	100	1719
Shipman, Madison D., Dekalb, Ill. Wire fence	707,457	Aug. 19	2765	627	100	1719
Shives, Peter P., Dickeys Mountain, Pa., assignor of one-half to J. V. Fisher, Baltimore, Md. Messare-delivering device for trains	709,518	Sept. 23	2974	663	100	2639
Shoemaker, Harry, assignor to M. V. Gehring, Philadelphia, Pa. Wireless telegraphy	708,712	July 1	621	138	100	122
Shoemaker, Harry, assignor to M. V. Gehring, Philadelphia, Pa. Wireless telegraphy	708,842	July 1	860	189	100	179
Shoemaker, Harry, assignor of one-half to G. P. Gehring, Philadelphia, Pa. Wireless telegraphy	707,064	Aug. 12	2029	453	100	1548

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Shoemaker, Harry, assignor to M. V. Gehring and Consolidated Wireless Telegraph and Telephone Company, Philadelphia, Pa. Wireless telegraphy	706,500	Aug. 5	990	218	100	1317
Shoemaker, Harry, assignor to M. V. Gehring and Consolidated Wireless Telegraph and Telephone Company, Philadelphia, Pa. Decoherer	710,372	Sept. 30	4581	1034	100	2987
Shoemaker, Harry, assignor to M. V. Gehring and Consolidated Wireless Telegraph and Telephone Company. Interrupter for electric apparatus	710,373	Sept. 30	4583	1034	100	2987
Shoemaker, Harry, assignor to G. P. Gehring, Philadelphia, Pa., and American Wireless Telephone & Telegraph Company. Wireless-telegraph system	710,121	Sept. 30	4127	931	100	2990
Shoemaker, Harry, assignor to M. V. Gehring, Philadelphia, Pa., and American Wireless Telephone & Telegraph Company. Wireless-telegraph system	710,122	Sept. 30	4130	931 / 932	100	2990
Shoemaker, Harry, and G. W. Pickard, Philadelphia, Pa., assignors to American Wireless Telephone and Telegraph Company. Wave-detecting device	707,286	Aug. 19	2408	540	100	1645
Shoemaker, Marshall N. (See Simpson and Shoemaker.)						
Shorb, William A., *et al.* (See Field, William C., assignor.)						
Shore, Albert F., assignor of two-thirds to D. N. Hurlburt, New York, N. Y. Electric-arc lamp	710,374	Sept. 30	4584	1034 / 1035	100	2987
Shorey, George E., Fairfield, Me. Folding table	707,171	Aug. 19	2242	502	100	1610
Short, Benjamin F., Brantley, Ga. Rat-trap	710,020	Sept. 30	3929	887	100	2849
Short, Robert L., assignor to Cleveland Toy and Manufacturing Company, Cleveland, Ohio. Toy-cartridge exploder	708,084	Sept. 2	155	37	100	2013
Short, Sidney H., London, England. Engine	706,120	Aug. 5	216	45	100	1161
Shortell, Thomas E., Pittsburg, Pa. Non-refillable bottle	707,265	Aug. 19	2407	540	100	1645
Shottenberg, Theodor H., Hubbard, Ohio. Book or parcel carrier or holder	705,878	July 29	4932	1079	100	1058
Shotwell, Melancthon S., Harrisburg, Pa. Wheel	710,375	Sept. 30	4587	1035	100	2988
Shoup, Henrietta P. (See Shoup, James C., assignor.)						
Shoup, James C., assignor to H. P. Shoup, New York, N. Y. Autographic register	707,456	Aug. 19	2766	627	100	1719
Shouse, Charles B. (See Doud and Shouse.)						
Showalter, Erasmus W., Claypool, Ind. Grinding attachment for power-machines	708,486	July 1	193	47	100	41
Shriver, Augustus F., deceased; H. Shriver, Arbuckle, administratrix, assignor to M. Zoberbier and S. B. Caldwell, San Francisco, Cal. Message-box	708,594	Sept. 9	1000	240	100	2207
Shriver, Henrietta, administratrix. (See Shriver, Augustus F.)						
Shulte, Theodore. (See Johnson, Hans G., assignor.)						
Shuping, Charles L. (See Shuping, Jacob A., and C. L.)						
Shuping, Jacob A. and C. L., Morganton, N. C. Plow	708,265	Sept. 2	494	113	100	2081
Shyer, N. B. (See Guernsey, Charles C., assignor.)						
Sibley, Edward W., assignor of two-thirds H. Dunster, Jr., and H. Thurston, Providence, R. I. Calculator	707,652	Aug. 26	3174	714 / 715 / 716	100	1821
Sibley, William H., Wittenberg, assignor to himself, H. J. Crowe, Bridgetown, and E. P. Crowe, Lower Stewiacke, Nova Scotia, Canada. Extension-ladder	708,413	Sept. 2	742	167	100	2131
Sieber & Trussell Manufacturing Company. (See Trussell, Emory A., assignor.)						
Siebert, Otto. (See Herzberg and Siebert.)						
Siegel, Charles R., St. Louis, Mo., assignor to Peerless Pouch Company. Closure and feeder for bags	705,455	July 22	4088	889	100	877
Siegfried, Wilhelm, Chemnitz, Germany. Label with metal fastening-clamp	706,695	Aug. 12	1841	298	100	1406
Siemens, Alexander, Westover, Milford-on-Sea, assignor to Siemens Brothers & Co., Limited, Westminster, London, England. Device for connecting the electrical gear of electric cars	708,927	Sept. 9	1720	397	100	2346
Siemens Brothers & Co. (See Siemens, Alexander, assignor.)						
Siemens & Halske Electric Company of America. (See Michalke, Carl, assignor.)						
Siemens & Halske Electric Company of America. (See Michalke, Carl J. A., assignor.)						
Siemens & Halske Electric Company of America. (See Sessions, Frank L., assignor.)						
Siemsen, Jacob. (See Siemsen, Jurgen, assignor.)						
Siemsen, Jurgen, assignor of one-half to J. Siemsen, Valparaiso, Nebr. Hay-rack	708,928	Sept. 9	1721	397 / 898	100	2347
Sieverkropp, Henry R., Racine, Wis. Separable button	705,703	July 29	4781	1037	100	1028
Sievert, Paul T., Dresden, Germany. Producing hollow glass bodies	703,618	July 1	483	100 / 101	100	85
Sievert, Paul T., Dresden, Germany. Apparatus for the manufacture of molded hollow glass articles	704,488	July 8	2102	455	100	441
Sill, Edward L., Woodward, Okla. Ter. Rotary engine	708,414	Sept. 2	744	167	100	2132
Sill, Edward L., Gage, Okla. Ter. Rotary engine	708,415	Sept. 2	745	167 / 168	100	2132
Silvey, William L., Dayton, Ohio. Secondary battery	709,611	Sept. 23	3126	696 / 697	100	2670
Silvia, Harry J., *et al.* (See White and Taylor, assignors.)						
Silvia, Zachariah T., *et al.* (See White and Taylor, assignors.)						
Simard, Charles. (See Tillman, Oliver, assignor.)						
Simmons, James W., Bloomington, Ind. Storm-curtain	706,461	Aug. 5	927	201 / 202	100	1303
Simmons, James W., Bloomington, Ind. Buggy-boot	709,560	Sept. 23	3041	677	100	2932
Simmons, John P., San Francisco, Cal. Steam-boiler	704,588	July 15	2291	497 / 498	100	494
Simmons, Samuel T., and W. T. Moore, Columbus, Ohio. Sander	708,929	Sept. 9	1722	398	100	2347
Simms, Frederick R., Bermondsey, England, and R. Bosch, Stuttgart, Germany. Ignition-gear for internal-combustion engines	706,121	Aug. 5	217	45	100	1161
Simon-Albert, Bordeaux, France. Manufacture of iron, manganese, and alloys of these metals by aid of electricity	704,393	July 8	1918	416	100	404
Simon, Monroe L. (See Love, Samuel, assignor.)						
Simons, George W., Thurston, N. Y. Gate	708,263	Aug. 5	510	109	100	1219
Simonsen, Jens P., Oakland, Cal. Oil-burner	709,803	Sept. 23	3491	787	100	2744
Simonson, Flavel, Sterling, Ill. Carbid-holder	707,027	Aug. 12	1957	439	100	1532
Simonsson, Knut A. (See Hydén and Simonsson.)						
Simonton, Jackson, Altoona, Pa. Operating device for car-doors	707,459	Aug. 19	2768	627 / 628	100	1720
Simonton, James G. (See Leilich, Francis T., assignor.)						
Simpson, Henry, Liverpool, England. Marine brake	708,487	July 1	195	47	100	41
Simpson, Henry D., Coxsackie, N. Y. Ice-run	709,804	Sept. 23	3492	787	100	2744
Simpson, Henry W., Ithaca, N. Y. Lock	707,028	Aug. 12	1959	439	100	1532
Simpson, John T., and M. N. Shoemaker, Jersey City, assignors to American Concrete-Steel Company, Newark, N. J. Fireproof floor construction	706,347	Aug. 5	687	150	100	1255
Simpson, John T., and M. N. Shoemaker, Jersey City, assignors to American Concrete-Steel Company, Newark, N. J. Fireproof partition structure	706,348	Aug. 5	690	150	100	1256
Simpson, Robert J., assignor to L. S. Starrett Company, Athol, Mass. Micrometer-gage	706,696	Aug. 12	1842	298	100	1406
Simpson, Richard H., Turnersville, Tex. Surgical instrument	709,367	Sept. 16	2638	580	100	2657
Simpson, William H., Chicago, Ill. Banana-crate	706,207	Aug. 5	894	84	100	1197
Simpson, William P., Overbrook, Pa. Moter-propelled lawn cutter and roller	706,864	Aug. 12	1676	375 / 376	100	1477
Sims, Harry E., *et al.* (See Bailey, Henry F., assignor.)						
Sims, Heath H., Oceanpark, Cal. Article-attacher	706,697	Aug. 12	1843	299	100	1406

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Sinclair, Duncan, Coalbrookdale, England. Iridescent coating of copper, bronze, or like surfaces	705,456	July 22	4090	.....	100	877
Singer Manufacturing Company. (See Allen, Edward B., assignor.)						
Singer Manufacturing Company. (See Diehl, Philip, assignor.)						
Singer Manufacturing Company. (See Diehl and Hemleb, assignors.)						
Singer Manufacturing Company. (See Greene, James G., assignor.)						
Singer Manufacturing Company. (See Hemleb, Martin, assignor.)						
Singer Manufacturing Company. (See Hill, George S., assignor.)						
Singer Manufacturing Company. (See Lennox, Alexander, assignor.)						
Singer Manufacturing Company. (See Steward, Hiram P., assignor.)						
Singer, Theophil G. (See Conklin and Singer.)						
Singley, Christian G., Manheim, Pa. Cigar-shaper	708,085	Sept. 2	157	37	100	2013
Sinnott, John H., Brooklyn, N. Y. Carrying and transferring device	708,595	Sept. 9	1061	241	100	2207
Sippel, Theodore A., Newark, N. J. Sand-blast apparatus	709,181	Sept. 16	2258	513	100	2474
Sjoberg, Albert, Lincoln, assignor of one-half to J. W. Edgerton, Grand Island, Nebr. Cane	706,501	Aug. 5	992	218	100	1317
Skahen, Patrick D., Syracuse, N. Y. Rough box for burial-caskets	709,423	Sept. 16	2737	615	100	2577
Skidmore, Marsden S. (See Alexander, Jesse, assignor.)						
Skodawerke Actiengesellschaft in Pilsen. (See Deinlein, Karl, assignor.)						
Skowen, Carl J., Nelsonville, Wis. Rotary motor	705,457	July 22	4091	889, 890	100	878
Slagle, Robert L., assignor to Automatic Railway Mail Pouch Delivery Company, Washington, D. C. Mail-bag catcher	708,990	Sept. 9	1728	398	100	2347
Slater, Andrew L., Butte, Mont. Wrench	706,208	Aug. 5	396	85	100	1197
Slater, Ebenezer H., Auckland, New Zealand. Cutting-tool for planing-machines	706,264	Aug. 5	511	109	100	1219
Slauson, William G., Olean, N. Y. Printer's furniture	708,096	Sept. 2	158	38	100	2014
Sleeman, James, Somerset, England. Apparatus for malting, drying, or otherwise treating grain	706,462	Aug. 5	929	202, 203	100	1303
Sleeter, Charles W., Decatur, Ill. Cultivator	704,181	July 8	1441	308	100	303
Sleight, Milton W., Denton, assignor of one-half to J. D. Moore, Matagorda County, Tex. Draft-evener	705,458	July 22	4094	890	100	878
Slick, Edwin E., Pittsburg, Pa. Traveling cutter mechanism	704,941	July 15	2997	641, 642	100	642
Sloane, John B., assignor of one-half to W. E. Pardridge, Detroit, Mich. Toy	709,117	Sept. 16	2125	487	100	2448
Slocomb, John T., Providence, R. I., assignor to J. T. Slocomb Company. Micrometer-calipers	708,931	Sept. 9	1725	398	100	2347
Slocum, Eason L., Pawtucket, R. I. Galvanic battery	707,363	Aug. 19	2597	587	100	1684
Slocum, Edward S. (See Bosmann, Nicolas, assignor.)						
Slough, John T., Woodstock, Canada. Adhesive cement	709,651	Sept. 23	3192	.....	100	2688
Slyder, William J., assignor of one-half to H. F. Douglas, Troy, Ohio. Folding canopy for vehicles	706,605	Aug. 12	1177	261	100	1369
Small, Chester C., Newton, Mass., assignor, by mesne assignments, to United Shoe Machinery Company. Nail-assorting mechanism	707,141	Aug. 19	2181	489	100	1596
Smalley, Clarence C., Manitowoc, Wis. Means for securing wheels on shafts	706,265	Aug. 5	511	110	100	1219
Smart, Charles W., Carbondale, Ill. Pipe-hanger	705,971	July 29	5098	1111	100	1092
Smart, Walter J., Orange, N. J. Vapor-burner	705,489	July 22	4095	890	100	878
Smead, Isaac D., Cincinnati, Ohio. Heating apparatus	707,364	Aug. 19	2598	587	100	1684
Smedley, Daniel W., assignor of one-half to A. F. Kanage, Wilmot, Ohio. Vehicle-axle lubricator	703,498	July 1	198	47	100	42
Smith, Andrew, Chicago, Ill. Wood-plate-cutting machine	706,349	Aug. 5	692	151	100	1256
Smith, Andrew J. (See Sattelberg, William H., assignor.)						
Smith, Arthur W., New York, N. Y. Mop holder and wringer	704,122	July 8	1443	308	100	303
Smith, Arthur W., New York, N. Y. Mop holder and wringer	704,123	July 8	1444	308	100	304
Smith, Asa D., Worcester, Mass. Attachment for linotype-machines	708,416	Sept. 2	749	109	100	2133
Smith, B. C., *et al.* (See Brooks, Theodore L., assignor.)						
Smith, Benjamin H., Shippensburg, Pa. Railway-tie	704,394	July 8	1919	416	100	404
Smith, Berton. (See Nason and Smith.)						
Smith, Charles, *et al.* (See Manson, Thomas C., assignor.)						
Smith, Charles, South Croydon, and G. J. Hone, Romford, England. Safety releasing device for the sheets of boats, tow-lines, &c	708,713	July 1	622	139	100	123
Smith, Charles A., Pinckney, Mich. Thill-coupling	705,151	July 22	3436	747	100	745
Smith, Charles F., Pittsburg, Pa. Furnace	707,870	Aug. 26	3646	821	100	1913
Smith, Charles F., assignor to Landers, Frary and Clark, New Britain, Conn. Oil or molasses faucet	704,942	July 15	2998	642	100	643
Smith, Charles M., *et al.* (See James, Ulysses S., assignor.)						
Smith, Charles M. W., Cambridge, Mass. Automatic regulator for hydraulic air-compressors	705,460	July 22	4097	891	100	879
Smith, Chris N., Elgin, Ill. Extension-table	710,376	Sept. 30	4588	1085	100	2988
Smith, Clayton B., Forestville, Conn. Ladder	709,118	Sept. 16	2126	487	100	2449
Smith, Daniel, Griffin Corners, N. Y. Game apparatus	708,329	Sept. 9	1558	356	100	2312
Smith, Daniel F., New York, N. Y. Rotary motor	704,943	July 15	2999	642, 643	100	643
Smith & Davis Manufacturing Company. (See Jones, Benjamin H., assignor.)						
Smith, Edward, Bradford, England. Machine for producing water-marks on fabrics	709,268	Sept. 16	2540	592	100	2557
Smith, Edward A., Middletown, Conn. Hook for type-writer covers	706,250	Aug. 5	694	151	100	1256
Smith, Edward H., Mount Vernon, assignor to Dickelman-Bowers Manufacturing Company, Forest, Ohio. Manufacturing sheet-metal pipe-elbows	708,932	Sept. 9	1726	399	100	2348
Smith, Edward H., Mount Vernon, assignor to Dickelman-Bowers Manufacturing Company, Forest, Ohio. Blank for pipe-elbows	709,119	Sept. 16	2127	488	100	2446
Smith, Edward J., High Springs, Fla. Spark arresting and discharging device	705,461	July 22	4099	891	100	879
Smith, Elmer S., Boundbrook, and C. A. Susstrong, South Boundbrook, assignors to Ideal Cash Register Company, New Boundbrook, N. J. Cash-register	705,619	July 29	4467	968, 969	100	964
Smith, George F., Baltimore, Md. Baker's oven	706,851	Aug. 5	695	152	100	1256
Smith, George G., Florence, Italy. Lock	709,056	Sept. 16	2004	457	100	2421
Smith, George G., Florence, Italy. Door-catch	709,057	Sept. 16	2005	457	100	2422
Smith, George G., Florence, Italy. Acetylene-gas generator. (Reissue)	12,041	Sept. 30	4645	1049, 1050	100	3000
Smith, George H., New York, N. Y. Fertilizer and making same	705,468	July 22	4100	.....	100	880
Smith, George H., Boston, Mass. Switch	706,266	Aug. 5	512	110	100	1219
Smith, George L., Mayview, Kans. Magazine nailing-hammer	704,467	July 8	2055	446	100	432
Smith, George W., assignor to Smith Railway Mail Service Company, Rochester, N. Y. Mail-bag catcher	707,997	Aug. 19	2410	540	100	1645
Smith, George W., Rockford, Ill., and E. J. Lees, Franklin, Pa., assignors to Ingersoll Milling Machine Company. Milling-machine	704,134	July 8	1445	309, 310, 311, 312	100	304
Smith, Hanson C., Ithaca, N. Y. Drawers-supporter	705,879	July 29	4468	1073	100	1036

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Smith, Harry F. (See Beisel, Peter J., assignor.)						
Smith, Harry T., and A. J. Tarrant, Christchurch, New Zealand. Station-indicator	704,135	July 8	1456	812	100	306
Smith, Harry W., Sutton Coldfield, W. T. Gidden, Langley Green, near Birmingham, and A. G. Salamon, London, assignors to British Cyanides Company, Limited, Oldbury, England. Making sulfocyanids from coal-gas	705,152	July 22	3437	747	100	745
Smith, Henry, Kew, Victoria, Australia. Decoration of woodwork	708,266	Sept. 2	497	114	100	2082
Smith, Henry C., and M. H. Woolsey, San Francisco, Cal. Antiseptic attachment for telephone-mouthpieces	708,671	Sept. 9	1206	275	100	2287
Smith, Irving T., Brooklyn, N. Y. Magazine toy gun	708,417	Sept. 2	730	169	100	2133
Smith, J. Raymond. (See Keyt, John E., assignor.)						
Smith, James H. (See Lewis, William H., assignor.)						
Smith, James H., Chicago, Ill. Adjustable camera-stand	709,612	Sept. 23	3128	697	100	2571
Smith, James H., Big Rapids, Mich. Stove-truck	710,394	Sept. 30	4624	1043	100	2998
Smith, James M., assignor of one-half to A. W. Belfry, Montreal, Canada. Printing-frame	708,672	July 1	549	134	100	108
Smith, James W., Menlo, Ga. Fire-escape	709,519	Sept. 23	2977	663 664	100	2540
Smith, John A., Dayton, Ohio. Clamp	707,808	Aug. 26	3517	794	100	1890
Smith, John F., and J. S. Hull, New York, N. Y.; said Smith assignor to said Hull. Cuff-holder	704,765	July 15	2598	582	100	557
Smith, John K., Hartford City, Ind. Corn-husking machine	708,500	Sept. 2	809	203 204	100	2164
Smith, John W., Ottawa, Canada. Car-coupling	708,489	July 1	199	48	100	42
Smith, John Y., Doylestown, Pa., assignor to W. R. Dewey, trustee, Newton, Mass. Exhaust apparatus	705,713	July 29	4545	1006	100	999
Smith, Jonas P., Peru, Ind., assignor of one-half to J. A. Beverly, Omaha, Nebr. Expanding reamer for oil or Artesian wells	704,136	July 8	1457	312	100	306
Smith, Joseph N., *et al.* (See Lowe, John T., assignor.)						
Smith, Joseph R., assignor to Waterbury Button Company, Waterbury, Conn. Placket-fastener	705,463	July 22	4101	891	100	880
Smith, Leonard M. (See Cosseboom, Robert J., assignor.)						
Smith, Luella, Alliance, Nebr., assignor of one-half to J. M. Dickey, Monon, Ind. Braiding attachment for sewing-machines	708,418	Sept. 2	752	169	100	2133
Smith, Malcon O., assignor of one-half to T. J. Coster, Depew, N. Y. Storage battery	708,490	July 1	201	48	100	42
Smith, Myron A., assignor to International Machine Co., New York, N. Y. Filter and hydraulic press member	707,029	Aug. 12	1963	439 440	100	1534
Smith, Myron A., assignor to International Machine Co., New York, N. Y. Coating-machine	708,267	Sept. 2	499	114	100	2082
Smith Railway Mail Service Company. (See Smith, George W., assignor.)						
Smith, Richard, Fort William, Canada. Animal-stall	707,947	Aug. 26	3789	851	100	1943
Smith, Samuel, assignor of one-half to A. A. Peabody, Lawrence, Mass. Drag device for bobbins of drawing and spinning frames	705,158	July 22	3438	747	100	746
Smith, Samuel S., Lewis Township, Northumberland county, Pa. Paper-bag fastener	707,080	Aug. 12	1965	440	100	1534
Smith, Seth H., Hillsdale, Mich. Compound lumber	704,944	July 15	3001	643	100	643
Smith & Sons Manufacturing Company. (See Livengood, Winfield S., assignor.)						
Smith, Stephen, Edinburgh, Scotland. Temporary coupling for chains, &c	708,843	July 1	863	199	100	178
Smith, Stephen T. (See Burridge and Smith.)						
Smith, Theodore, Chicago, Ill. Bracket	706,122	Aug. 5	218	46	100	1161
Smith, Thomas, assignor of two-thirds to C. E. Hoag and R. M. Thomas, San Luis Potosi, Mexico. Metallic packing	708,208	Sept. 2	501	115	100	2088
Smith, Thomas H., Lansford, Pa. Umbrella-stick	706,352	Aug. 5	696	152	100	1257
Smith, Thomas J., Shelton, Stoke-upon-Trent, England. Roller printing-machine	709,988	Sept. 30	3702	850	100	2813
Smith, Watson, London, England, assignor to Firm of E. Merck, Darmstadt, Germany. Cineol arsenate and making same	705,545	July 22	4394	.....	100	922
Smith, William A., Cleveland, Ohio. Producing varnish-oils	708,178	Sept. 2	337	.....	100	2050
Smith, William L., Boston, Mass. Educational apparatus	706,463	Aug. 5	982	204	100	1304
Smith, William M., New Cumberland, W. Va., assignor of one-half to G. A. McCandless, Oakdale, Pa. Braced fence-post	708,087	Sept. 2	159	38	100	2014
Smith, William T., Philadelphia, Pa. Woven fabric	705,464	July 22	4102	892	100	880
Smith, William T., Philadelphia, Pa. Woven fabric	707,871	Aug. 26	3646	822	100	1914
Smith, Wilson. (See Clark and Smith.)						
Smith, Zachary D., Springfield, Ill. Reel for barbed wire	708,596	Sept. 9	1006	241	100	2207
Smithline, John A., and A. F. Zaiser, Los Angeles, Cal. Pouch	709,561	Sept. 23	3043	679	100	2658
Smoke Preventer Company. (See Stones, William G., assignor.) (Reissue.)						
Smyth, David M., Pasadena, Cal., assignor, by mesne assignments, to Smyth Machine Company, Hartford, Conn. Feeding mechanism for sewing-machines	704,137	July 8	1459	312 318	100	307
Smyth Machine Company. (See Smyth, David M., assignor.)						
Snavely, Benjamin H., Brunnersville, and T. H. Keller, Lititz, Pa. Automatic cigar-making machine	706,267	Aug. 5	518	110 111 112 113 114 115	100	1220
Snediker, William E., Camden, N. J. Vise	709,120	Sept. 16	2128	488	100	2449
Snell, Daniel, Harmony, Ind. Window-fastening device	709,736	Sept. 23	3393	747	100	2711
Snell, Fred A., Providence, R. I. Form for tack-machines	705,966	Aug. 5	535	116	100	1294
Snider, Harrison, Indianapolis, Ind. Winding staircase	705,794	July 29	4782	1087 1088	100	1028
Snook, Frank G. (See Drew, Warren F., assignor.)						
Snow, Arthur E., Syracuse, N. Y. Bottle-stopper	710,219	Sept. 30	4392	972	100	2998
Snow Dental Company. (See Snow, George B., assignor.)						
Snow, George B., assignor to Snow Dental Company, Buffalo, N. Y. Gas-blowpipe	709,580	Sept. 23	3587	797	100	2755
Société Anonyme d'Etudes et d'Exploitation des Brevets A. Castelin pour Machines Agricoles Automobiles. (See Castelin, André, assignor.)						
Société Anonyme des Anciens Etablissements Panhard et Levassor. (See Krebs, Arthur C., assignor.)						
Société Anonyme le Carbone. (See Street, Ernest A. G., assignor.)						
Société Chimique des Usines du Rhône, anciennement Gilliard, P. Monnet et Cartier. (See Koetschet, Joseph, assignor.)						
Société des Inventions Jan Szczepanik & Cie. (See Szczepanik, Jan, assignor.)						
Société Electro Metallurgique Francaise. (See Heroult, Paul L. T., assignor.)						
Société Générale du Laminage Annulaire pour la Fabrication de Chaines Sans Soudure. (See Giriot, Joseph, assignor.)						
Société Lafrique, Pinton et Cie. (See Lafrique, Gabriel, assignor.)						
Society Maschinenbau-Actiengesellschaft vormals Breitfeld, Danĕk & Co., Akciová Spolecnost Strojirny Drive Breitfeld, Danĕk i Spol. (See Kostálek, Josef, assignor.)	704,945	July 15	3002	643 644	100	644
Söderberg, Carl W., Nordstrand, near Christiania, Norway. Acetylene-gas generator	709,584	Sept. 23	3062	668	100	2062
Soetebier, Herman, Union, Mo. Wagon-body lifter						

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Sohn, Louis H., St. Cloud, Wis. Combination vehicle and stationary scale	704,946	July 15	3004	644	100	644
Solenberger, Levi G., Chambersburg, Pa. Watch-movement fastener	709,121	Sept. 16	2129	488	100	2449
Solomon, David W., assignor of one-half to N. Brown, Arlington, Wash. Saw-set	706,865	Aug. 12	1678	376	100	1477
Solveson, Henry M., Chicago, Ill. Detachable water-closet seat	710,021	Sept. 30	3030	888	100	2849
Sommer, Adolph, Cambridge, Mass. Electrolytic cell	707,804	Aug. 26	3519	794	100	1890
Sommerfeld, Heinrich, Canton, Kans. Grain-cleaner	705,154	July 22	3440	748	100	746
Sondheim, Lewis H., New York, N. Y. Producing mouthpieces on cigarettes	709,369	Sept. 16	2642	592	100	2557
Songer, Wesley E., *et al.* (See Stearns, Edmond B., assignor.)						
Sörensen, Christen P., Copenhagen, Denmark. Rendering aluminium capable of being welded or soldered	708,840	Sept. 9	1560	.....	100	2312
Sorensen, Heinrich A., Hinckley, Ill. Buggy boot or apron	704,276	July 8	1701	371	100	357
Sorge, Adolph, Jr., Chicago, Ill. System of feed-water purification	708,068	Sept. 2	160	38	100	2014
South, Richard. (See Gray and South.)						
South Western Rubber Company. (See Thame, James, assignor.)						
Southard, Abraham M., assignor of one-fourth to A. W. Colburn, Denver, Colo. Sash-lock	703,976	July 1	1117	242	100	221
Southern Rice Polishing Machine Company. (See Welch, Rosia W., assignor.)						
Southwark Foundry & Machine Company. (See Petsche, Gustav B., assignor.)						
Sowden, Charles R., Basin, Mont. Automatic threshold	704,395	July 8	1921	416	100	404
Sowords, John, Denver, Mo. Grading-plow	705,135	July 22	3442	748	100	746
Spagnoletti, James E., assignor to Electric Railway Signalling Syndicate, Limited, London, England. Automatic electrical signaling apparatus for railways	704,948	July 15	3007	645 646	100	645
Spaht, Albert W. (See Spaht, Henry R., A. W., and G.)						
Spaht, Gustave. (See Spaht, Henry R., A. W., and G.)						
Spaht, Henry R. and A. W., Pattonsburg, and G. Spaht, King City, Mo. Corn-harvester	704,947	July 15	3005	644 645	100	644
Spalckhaver, William, assignor to R. Hoe, New York, N. Y. Cylinder-machine for printing on sheets	703,491	July 1	203	48, 49	100	43
Spalckhaver, William, Brooklyn, assignor to R. Hoe and Company, New York, N. Y. Web-printing press	706,269	Aug. 5	536	116	100	1224
Sparkman, William, Orangeville, Tex. Washing-machine	706,353	Aug. 5	700	152	100	1258
Sparks, Frederick W. (See Keenan, Thomas P., assignor.)						
Spalding, William P. (See Osten and Spalding.)						
Spaulding, Alfred F., Northfield, Vt. Driving mechanism	704,220	July 8	1598	346	100	334
Spaulding, Charles W., Carroll, Iowa. Curette	707,031	Aug. 12	1965	441	100	1534
Spaulding, Eugene A. (See Cobb and Spaulding.)						
Spaulding, George H., deceased, (L. L. Spaulding, administratrix,) assignor of one-half to G. Niedermaier, Chicago, Ill. Bicycle driving mechanism	707,822	Aug. 26	3049	822	100	1914
Spaulding, James M., Syracuse, N. Y. Rail-fastener	704,221	July 8	1599	347	100	335
Spaulding, Lois L., administratrix. (See Spaulding, George H.)						
Spaulding, Mattie M., Chattanooga, Tenn. Catamenial sack	708,988	Sept. 9	1727	400	100	2348
Speakman, Fred. (See Sutcliffe, Edgar R., assignor.)						
Spears, Ralph R., Wheeling, W. Va. Plate-handling machine	707,172	Aug. 19	2243	502 503	100	1610
Specht, Eugene T., assignor of one-half to E. A. Eastman, Chicago, Ill. Buckle	705,620	July 29	4469	969	100	965
Specht, Eugene T., assignor of one-half to E. A. Eastman, Chicago, Ill. Cast-off connection for suspenders	705,621	July 29	4471	969	100	965
Specht, Eugene T., assignor of one-half to E. A. Eastman, Chicago, Ill. Cast-off	705,622	July 29	4472	970	100	965
Speice, George, assignor of one-half to C. Loesche and H. E. Steinheimer, Paragould, Ark. Rotary engine	708,742	Sept. 9	1343	306	100	2267
Speir, Robert J. (See Weaver, William H. M., assignor.)						
Speirs, Albert S., Chicago, Ill. Smoking-pipe	707,268	Aug. 19	2414	541	100	1646
Spence, Gideon, Newport, R. I. Bicycle sprocket and crank	709,934	Sept. 30	3764	850	100	2814
Spencer, Ernest W., Portland, Oreg. Log-releasing device for scows	705,465	July 22	4108	892	100	880
Spencer, George F. (See Carlstedt, John A., assignor.)						
Spencer, George M., Washington, D. C. Canteen	707,873	Aug. 26	3651	822	100	1914
Spencer, Julius A., Dwight, Ill. Baling-press	708,209	Sept. 2	503	115 116	100	2083
Spencer, William B., Chicago, Ill. Shaft-bearing	703,492	July 1	205	49	100	44
Spencer, William B., Chicago, Ill. Crank-hanger	704,188	July 8	1462	313	100	307
Sperry, Ellie N., assignor, by mesne assignments, to Bridgeport Hardware Manufacturing Company, Bridgeport, Conn. Nail-extractor	708,841	Sept. 9	1561	356	100	2312
Sperry, Elmer A., Cleveland, Ohio, assignor, by mesne assignments, to National Battery Company. Electric battery and mounting same	703,673	July 1	550	125	100	109
Sperry, Elmer A., Cleveland, Ohio, assignor, by mesne assignments, to National Battery Company. Connection for batteries	703,674	July 1	552	125	100	109
Spiering, Ferdinand, Arlington, Minn. Garment-supporter	707,032	Aug. 12	1967	441	100	1535
Spiers, James, Jr. (See Ray, Frederick, assignor.)						
Spillane, Thomas. (See Rallston, Isaac, assignor.)						
Spillane, William T., Red Lake Falls, Minn. Shovel attachment	707,948	Aug. 26	3720	851	100	1943
Spillern-Spitzer, Otto, Brunnersdorf, near Kaaden, Austria-Hungary. Street-car fender	705,466	July 22	4105	892	100	881
Spindler, Charles, Jersey City, N. J. Apparatus for cleaning cellular tissues used in clarifying beer	709,652	Sept. 23	3198	718	100	2683
Spiro, Charles, New York, N. Y. Type-writer type-bar and support	708,270	Sept. 2	513	116	100	2085
Spitzli, George H., and G. E. Lord; said Lord assignor to A. B. Maynard, Utica, N. Y. Thill-coupling	705,795	July 29	4784	1038	100	1028
Splitdorf, Charles F., New York, N. Y. Sparking-coil casing	704,589	July 15	2292	498	100	494
Sponenburg, Hiram H. (See Laas and Sponenburg.)						
Sporrong, Carl A., Stockholm, Sweden, assignor, by mesne assignments, to E. Lundgren, A. Richardson, Brooklyn, and J. Whiteside, New York, N. Y. Apparatus for teaching gun practice	707,729	Aug. 26	3827	745	100	1852
Sprague Electric Company. (See Carlhoff, Eugene R., assignor.)						
Sprague Electric Company. (See Muller, Paul, assignor.)						
Sprague Electric Company. (See Watlington, Edgar H., assignor.)						
Sprague, Leroy, Milan Township, Allen county, Ind. Current-motor	706,698	Aug. 12	1344	299	100	1407
Sprague, Lewis G., Henderson, assignor of one-third to L. F. Bradford, Syracuse, and J. Carpenter, Henderson, N. Y. Thill-coupling	703,675	July 1	554	125	100	110
Sprague, Rollin C., *et al.* (See Rock, Frederick W., assignor.)						
Spreckels, John D. (See Allen, Herbert B., assignor.)						
Spriggs, Thomas, Little River, Kans. Wire-tightener	706,606	Aug. 12	1178	261	100	1370
Spring, Sylvester O., *et al.* (See Freed, Henry F., assignor.)						
Springer, Alfred, Cincinnati, Ohio. Treating trolley-wires	706,699	Aug. 12	1346	299	100	1407
Sproot, Jacob P., assignor to Avery Wall Paper Machine Company, St. Louis, Mo. Wall-paper trimming and pasting machine	708,419	Sept. 2	753	169 170	100	2133
Sproule, Robert F., assignor to Fleetwing Die Press, Limited, London, England. Relief-color-stamping press	708,420	Sept. 2	756	170	100	2134
Spurgin, Celia A., Des Moines, Iowa. Garment-supporting webbing	705,464	Aug. 5	955	204	100	1804

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Spurrier, Henry. (See Norris and Spurrier.)						
St. Andrews, Adolph, Manville, R. I. Picker-check for looms	706,270	Aug. 5	540	117	100	1225
St. Croix, Edward J., Madrone, Wash. Air-compressing apparatus	709,520	Sept. 23	2978	664	100	2640
St. Jacques, Camille, Cranbrook, Canada. Combination match-box	707,277	Aug. 19	2447	549	100	1654
St. James, Henry L., Marshall, Tex. Conveyer	705,474	July 22	4116	894 895	100	883
St. John, S. Vernon, *et al.* (See Gibbs, George, assignor.)						
St. John, Spencer H., *et al.* (See Gibbs, George, assignor.)						
St. John, Volney B., Erie, Pa. Step-ladder	705,475	July 22	4118	895	100	883
St. Joseph Iron Works. (See Brown, Norman E., assignor.)						
St. Legier, John de, Hicksville, N. Y. Funnel	706,465	Aug. 5	936	204	100	1305
St. Louis Car Company. (See Vogel and Weber, assignors.)						
St. Louis Car Company. (See Witte, Hubert, assignor.)						
St. Louis University. (See Lynch, Charles P., assignor.)						
Staaf, Werner I., Pittsburg, Pa. Gage-cock	706,785	Sept. 9	1425	328	100	2285
Stabile, Gioacchino, assignor of two-thirds to J. C. Sala and A. M. Vivier, San Francisco, Cal. Bicycle-brake	708,089	Sept. 2	162	38	100	2015
Stackpole, Ralph D. (See Fisher and Stackpole.)						
Stadelman, Alita M., New Rochelle, N. Y. Food-guard	704,189	July 8	1464	313	100	307
Staege, Stephen A., Hutchins, near Mattoon, Wis. Track-indicator	705,467	July 22	4106	892	100	881
Stafford, Alfred E., assignor to Draper Company, Hopedale, Mass. Shuttle-guide for weft-replenishing looms	708,672	Sept. 9	1207	275	100	2237
Stafford, Frank R., Providence, R. I., assignor to Stafford & Russell Manufacturing Company, Saco, Me. Ring	703,493	July 1	207	49	100	44
Stafford, George W., Warwick, R. I., assignor to Geo. W. Stafford Company, Readville, Mass. Shedding mechanism for looms	709,453	Sept. 16	2801	630 631	100	2591
Stafford, George W., Warwick, R. I., assignor to Geo. W. Stafford Company, Readville, Mass. Shedding mechanism for looms	709,454	Sept. 16	2806	631	100	2592
Stafford, George W., Warwick, R. I., assignor to Geo. W. Stafford Company, Readville, Mass. Shedding mechanism for looms	709,455	Sept. 16	2809	632	100	2593
Stafford & Russell Manufacturing Company. (See Stafford, Frank R., assignor.)						
Stager, Henry E., Chicago, Ill. Automatic valve	708,179	Sept. 2	398	80	100	2050
Stair Lift Company. (See Dodge, James M., assignor.) (Reissue.)						
Stalker, Neil, West Hartford, Conn. Veterinary appliance	708,271	Sept. 2	514	117	100	2085
Stallings, Francis J., Effingham, Ill. Running-gear for motor-vehicles	703,844	July 1	863	189 190	100	178
Standard Automatic Lubricator Company. (See Freeman, Albert A., assignor.)						
Standard Car Truck Company. (See Barber, John C., assignor.)						
Standard Harrow Company. (See Niles, George A., assignor.)						
Standard Smelter Company. (See Bradford, Edward T., assignor.)						
Standard Varnish Works. (See Breda, Andrew J., assignor.)						
Standard Varnish Works. (See Doggett, Reginald L. S., assignor.)						
Standard Vending Company. (See Wilcox, Elmer A., assignor.)						
Standish, Miles H., Middleboro, Mass. Safety-razor	703,845	July 1	865	190	100	179
Stanfield, Jasper H., Muskegon, Mich. Gearing for washing-machines	707,949	Aug. 26	3791	852	100	1944
Stanfield, T. W., administrator. (See Pickard, Frank H.)						
Stangel, Martin, Hales Corners, Wis. Wagon-seat support	703,494	July 1	209	49	100	44
Stanlewicz, Louis J. A., Chatham, Canada. Bookbinder's clamp	703,495	July 1	210	50	100	44
Stanley, Alix W., assignor to Stanley Rule & Level Company, New Britain, Conn. Plane	707,365	Aug. 19	2600	588	100	1656
Stanley Electric Manufacturing Company. (See Henry, John C., assignor.)						
Stanley, Frederick E., assignor to Scovill Manufacturing Company, Waterbury, Conn. Button	708,678	Sept. 9	1209	276	100	2286
Stanley, George E., *et al.* (See Stanley, John M., assignor.)						
Stanley, John C. W., London, England. Apparatus for separating stones, &c	707,178	Aug. 19	2251	508	100	1612
Stanley, John M., assignor of one-half to G. E. Stanley and J. G. Watson, Wakenda, Mo. Automatic car-coupling	707,269	Aug. 19	2416	541	100	1647
Stanley Rule and Level Company. (See Riecker and Walter, assignors.)						
Stanley Rule & Level Company. (See Stanley, Alix W., assignor.)						
Stanley Rule and Level Company. (See Traut and Walter, assignors.)						
Stanley, Simon S., Tyrone, Pa. Vehicle-drag	704,976	July 15	3071	660	100	656
Stanley, William F., South Norwood, England. Rotary engine	707,174	Aug. 19	2253	503 504	100	1612
Stanton, Frederick E., *et al.* (See Newell, Frank, assignor.)						
Stanton, Gilman S., *et al.* (See Newell, Frank, assignor.)						
Stanton, Thomas K., Talala, Ind. Ter. Soot or ash pan	705,468	July 22	4107	893	100	881
Staples, Lyman D. (See Pfeiffer and Staples.)						
Stapleton, William J., *et al.* (See Earl, Charles M., assignor.)						
Star Brass Works. (See Johnson and Crockett, assignors.)						
Stark, Alva T., Geneva, N. Y. Grain-door	704,949	July 15	3009	646	100	645
Starkweather, Robert B., Hartford, Conn. Duplicate-whist tray	705,469	July 22	4109	893	100	882
Starmer, Harry G., assignor of one-half to H. E. L. Beyer, Newark, N. J. Means for detecting tampering with sealed envelops	705,470	July 22	4111	893	100	882
State, Will C., assignor to Goodyear Tire and Rubber Company, Akron, Ohio. Tile	704,706	July 15	2600	563	100	558
Staub, Alexander, Fort Wayne, Ind. Stovepipe-thimble	710,166	Sept. 30	4237	953	100	2911
Stauffer, Peter S. (See Hall and Stauffer.)						
Ste. Ame. de Commentry-Fourchambault et Decazéville. (See Girin, Pierre, assignor.)						
Ste. Ame des Matières Colorantes et Produits Chimiques de St. Denis. (See Poirrier, Alcide F., assignor.)						
Ste. des Etablissements Farcy et Oppenheim. (See Farcy, Eugène, assignor.)						
Stead, Clarence M., Leeds, England. Electric-lamp support	707,658	Aug. 26	3191	716	100	1825
Steam Carriage Boiler Company. (See Kitts, Charles A., assignor.)						
Stearn, Thomas M., assignor of one-third to J. Scrivener, Washington, D. C. Placket-fastener	710,123	Sept. 30	4186	982	100	2892
Stearns, Edmond B., Eldorado, assignor of three-fourths to W. E. Songer, G. H. Wise, and W. Joseph, Potwin, Kans. Vehicle-hub	708,421	Sept. 2	757	170	100	2134
Stearns, Frank R., and C. R. Weber, Greeley, Colo.; said Weber assignor to said Stearns. Envelop	709,805	Sept. 23	3493	788	100	2745
Stebler, Fred, Riverside, Cal. Fruit-grader	709,618	Sept. 23	3130	697	100	2671
Stedman, Charles R., Cleveland, Ohio. Combined bevel and miter	707,461	Aug. 19	2771	628	100	1721
Stedman, Pascal H., Newport, R. I. Change-making machine	709,591	Sept. 23	2990	664	100	2641
Steele, Lonzo E., *et al.* (See Bailey, Henry F., assignor.)						
Steele, Thomas, Redbank, N. J. Artificial tooth	705,546	July 22	4526	935	100	922
Steele, Thomas, Redbank, N. J. Mold for artificial teeth	705,972	July 29	5099	1111	100	1052

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Steele, Walter L. (See Sutton, Steele, and Coerver.)						
Steelman, Edgar B. (See Paris, Steelman, and Haverfield.)						
Steer, George H., Cincinnati, Ohio. Truck	707,960	Aug. 26	3792	852	100	1944
Steffen, Carl, Vienna, Austria-Hungary. Sugar-boiling	708,496	July 1	212	50	100	45
Steffey, Josiah H., assignor to E. Van Noorden Company, Boston, Mass. Glazed structure	707,175	Aug. 19	2254	504	100	1613
Steinberg, Jacob. (See Knapp and Steinberg.)						
Steinbrenner, Andrew G. (See Northrop and Steinbrenner.)						
Steinbrenner, Andrew G., assignor of forty-nine one-hundredths to S. Northrop, St. Louis, Mo. Journal-box	707,053	Aug. 12	1906	441	100	1335
Steiner, Jakob, Toledo, Ohio. Portable fence	704,277	July 8	1702	371	100	358
Steiner, Martin, Erie, Pa. Bearing	707,176	Aug. 19	2255	504	100	1613
Steiner, Ottomar, Frankenberg, Germany. Filling metal tubes with wooden cores	708,501	Sept. 2	902	204	100	2164
Steinheimer, Hermann E., *et al.* (See Speice, George, assignor.)						
Steinmetz, Charles P., Schenectady, N. Y., assignor to General Electric Company. System of electrical distribution	706,123	Aug. 5	220	46	100	1162
Steinmetz, Charles P., Schenectady, N. Y., assignor to General Electric Company. System of electrical distribution	706,607	Aug. 12	1179	261	100	1370
Steinmetz, Charles P., Schenectady, N. Y., assignor to General Electric Company. System of electrical distribution	706,608	Aug. 12	1181	262	100	1370
Steinmetz, Charles P., Schenectady, N. Y., assignor to General Electric Company. System of electrical distribution	706,609	Aug. 12	1183	263	100	1371
Steinmetz, Charles P., and W. L. R. Emmet, Schenectady, N. Y., assignors to General Electric Company. System of electrical distribution	710,081	Sept. 30	4043	911	100	2873
Steinmetz, Charles P., and W. L. R. Emmet, Schenectady, N. Y., assignors to General Electric Company. System of electrical distribution	710,082	Sept. 30	4047	911	100	2874
Steinmetz, Edward G., assignor to Electric Storage Battery Company, Philadelphia, Pa. Secondary battery	704,767	July 15	2601	563	100	558
Steitz, Louis, *et al.* (See Clukies, James A., assignor.)						
Stenotype Company. (See Allen, George G., assignor.)						
Stenotype Company. (See Williams, George H., assignor.)						
Stent, Walter J., Sydney, New South Wales, Australia. Drawing-down device for banjo-vellums	708,934	Sept. 9	1728	400	100	2348
Stentz, Earl H., Cleveland, Ohio. Device for cleaning carpets	709,122	Sept. 16	2130	488	100	2450
Stephan, Jacob, assignor of one-half to G. Fugman, Cleveland, Ohio. Composition suitable for use in making toy building-blocks or the like	708,422	Sept. 2	758	.....	100	2134
Stephan, Karl, assignor to Chemische Fabrik auf Actien, vorm. E. Schering, Berlin, Germany. Making camphene	707,270	Aug. 19	2419	.....	100	1647
Stephan, Karl, assignor to Chemische Fabrik auf Actien, vorm. E. Schering, Berlin, Germany. Making camphene	707,271	Aug. 19	2420	.....	100	1648
Stephens, Adamson & Co. (See Bee, William E., assignor.)						
Stephens, John R., Portland, Oreg. Camera-support	704,666	July 15	2419	522	100	521
Stephenson, John W., Toledo, assignor to National Malleable Castings Company, Cleveland, Ohio. Journal-box lid	706,700	Aug. 12	1347	259, 300	100	1407
Sterling Electrical Manufacturing Company. (See Webster, Glenn C., assignor.)						
Sterling, William L., Brooklyn, Pa. Securing attachment for wagon end-boards	709,123	Sept. 16	2132	489	100	2450
Stern, George, Charlottenburg, Germany, assignor to General Electric Company. Electric meter	710,083	Sept. 30	4049	912	100	2874
Stern, Ida, Chicago, Ill. Cleaning and polishing composition	708,743	Sept. 9	1844	.....	100	2267
Sternfeld, Julius, New York, N. Y. Parallel-ruler	705,478	July 22	4115	894	100	883
Sterrett, Robert H. (See Brooks, John C., assignor.)						
Stevens, Charles W., North Harvey, Ill. Artificial-stone facing	705,156	July 22	3444	749	100	747
Stevens, Frederick, assignor to T. Wolstenholme, Sons & Company, Philadelphia, Pa. Roving-guide	707,874	Aug. 26	3652	825	100	1915
Stevens, George W., Boston, Mass. Brake	705,623	July 29	4474	970	100	966
Stevens Air Brake Company. (See Stevens, Willie J., assignor.)						
Stevens, Benjamin A., Toledo, Ohio. Billiard-cushion	708,744	Sept. 9	1845	307	100	2267
Stevens, Calvin A. (See Hilsinger, Alburtis C. and A. W., assignors.)						
Stevens, George J. (See Searight and Stevens.)						
Stevens, George M., Cambridge, Mass., assignor to George M. Stevens Co., Kittery, Me. Clock-chime	710,084	Sept. 30	4051	912	100	2874
Stevens, John W., Lonegum, Va. Corn-planter and fertilizer-distributer	708,674	Sept. 9	1210	276	100	2238
Stevens, Lawrence L., Los Angeles, Cal. Potato slicer and cutter	710,085	Sept. 30	4052	912, 913	100	2874
Stevens, Milton H., Waltham, Mass. Brace for screens, blinds, &c	710,022	Sept. 30	3981	895	100	2849
Stevens, Otis M. (See Clowse and Stevens.)						
Stevens and Sons, M. T. (See Stone, George, assignor.)						
Stevens, Willie J., assignor to Stevens Air Brake Company, Skowhegan, Me. Air-compressor	709,832	Sept. 23	3540	798	100	2756
Stevenson, Alexander T., Bay City, Mich. Dress-shield	709,965	Sept. 30	3766	851	100	2814
Stevenson, Augustus. (See Stimson and Stevenson.)						
Stevenson, Elmer, Redfield, S. D. Mail-bag fastener and lock	705,271	Aug. 5	541	117	100	1225
Stevenson, John, Detroit, Mich. Wire-stretcher	705,547	July 22	4327	935	100	922
Stevenson, Peter C., *et al.* (See Lewis, Albert H., assignor.)						
Stevenson, Thomas R. (See Baldwin, Miles C., assignor.)						
Stevenson, William H. H., Baltimore, Md. Can-testing machine	704,378	July 8	1703	371, 372	100	358
Steward, Hiram P., Elizabeth, N. J., assignor to Singer Manufacturing Company. Tuck-creaser for sewing-machines	705,471	July 22	4113	894	100	882
Steward, Hiram P., Elizabeth, N. J., assignor to Singer Manufacturing Company. Attachment-holder for sewing-machines	705,472	July 22	4114	894	100	882
Steward, John F., Chicago, Ill. Grain-divider for harvesters	708,497	July 1	214	50	100	45
Steward, John F., Chicago, Ill. Finger-bar for harvesting-machines	707,460	Aug. 19	2271	628	100	1790
Stewart, Burton A., assignor of one-half to I. A. Tompkins, Troy, N. Y. Bur-wheel support for knitting-machines	709,831	Sept. 23	3539	797	100	2756
Stewart, Charles T. (See Mock, George, assignor.)						
Stewart, Duncan, Glasgow, Scotland. Apparatus for separating liquids from solids	708,846	July 1	867	190, 191	100	174
Stewart, Edgar J., Chicago, Ill. Package-carrier	709,936	Sept. 30	3767	831	100	2814
Stewart, Elmore, Los Angeles, Cal. Oil-burner	709,370	Sept. 16	2543	598	100	2558
Stewart, Elza E., New Rumley, Ohio. Fence-making machine	704,396	July 8	1923	416	100	405
Stewart, John K., Chicago, Ill. Shearing tool or clipper	709,522	Sept. 23	2983	665	100	2642
Stewart, Lorenzo A., Waukegan, Ill. Hernial truss	708,847	July 1	868	191	100	174
Stewart, Samuel B., Jr. (See Hild and Stewart.)						
Stewart, Washington H., deceased; M. A. Hodge, administratrix, assignor of three-fourths to W. P. Holmes and L. M. Hodge, San Jose, Cal. Hydrocarbon-burner	709,443	Sept. 16	2775	625	100	2585

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Stierle, John E., Eau Claire, Wis. Device for the cure of strabismus	709,058	Sept. 16	9007	457	100	2422
Stiker, Flavius P., Buffalo, and O. C. Burton, North Tonawanda, N. Y. Metal-dressing machine	707,272	Aug. 19	2420	541 542 543 544 545	100	1648
Stiker, Flavius P., Buffalo, and O. C. Burton, North Tonawanda, N. Y. Slide for metal-dressing machines	707,273	Aug. 19	2435	546	100	1652
Stiles, George F., *et al.* (See Mitchell, James E., assignor.)						
Still, William J., Wimbledon, England. Hydrocarbon-motor	706,502	Sept. 2	908	204 205 206	100	2165
Stille, Carl A., and S. Billings, Chicago, Ill. Wood carpet	708,842	Sept. 9	1562	357	100	2313
Stillman, George R., Philadelphia, Pa. Hydrocarbon-lamp	707,177	Aug. 19	2356	504	100	1613
Stillman, Philip T., Elizabeth, N. J. Valve for fluid-pressure engines	709,946	Sept. 16	2385	540	100	2508
Stillwell, Wendell H., Davenport, Iowa. Car-coupling	706,273	Aug. 5	545	117	100	1225
Stilwell-Bierce & Smith-Vaile Co. (See Giesler, Arthur, assignor.)						
Stilwell, Charles B., Philadelphia, Pa. Savings-bank	707,875	Aug. 26	3653	823	100	1915
Stimpson, Charles, Plainfield N. J. Sash-lock	704,279	July 8	1705	372	100	358
Stimpson, Edward S., assignor to Draper Company, Hopedale, Mass. Shuttle-binder for looms	703,498	July 1	215	51	100	45
Stimpson, Edward S., assignor to Draper Company, Hopedale, Mass. Thread-parter for looms	704,715	July 15	2497	540	100	538
Stimpson, Edward S., assignor to Draper Company, Hopedale, Mass. Filling-replenishing loom	710,023	Sept. 30	3932	898	100	2849
Stimpson, Edward S., assignor to Draper Company, Hopedale, Mass. Let-off-arresting mechanism for looms	710,024	Sept. 30	3935	868	100	2850
Stimpson, Edwin B., Brooklyn, N. Y. Locking device for use in punching-machines or the like	703,747	July 1	699	152	100	137
Stimpson, Edwin B., Brooklyn, N. Y. Tab-cutting machine	703,748	July 1	691	153	100	138
Stimpson, Edwin B., Brooklyn, N. Y. Adjustable guide	703,749	July 1	693	153	100	138
Stimpson, Edwin B., Brooklyn, N. Y. Machine for setting buttons	707,274	Aug. 19	2437	546 547	100	1652
Stimpson, Walter F., Milan, Mich. Brick-machine	707,275	Aug. 19	2441	548	100	1653
Stimpson, Walter F., Detroit, Mich. Brick-machine	707,276	Aug. 19	2444	549	100	1654
Stimson, Alfred T., Eureka, Cal. Rotary engine	704,280	July 8	1706	372 373	100	359
Stimson, Charles W., New York, N. Y. Clasp	706,272	Aug. 5	543	117	100	1225
Stimson, Charles W., New York, N. Y. Corset	710,220	Sept. 30	4323	972	100	2933
Stimson, David S., and A. Stevenson, Kittery, Me. Pinless hinge	704,590	July 15	2293	498	100	494
Stinebring, George W., Shreve, Ohio. Frictional gearing	705,714	July 29	4647	1006 1007	100	1000
Stipp, Edwin M., Leakey, Tex. Stack former and protector	706,610	Aug. 12	1184	262 263	100	1371
Stirling Company. (See Prentice and Gregory, assignors.)						
Stirrett, George, Brandon, Canada. Grain-car door	709,247	Sept. 16	2387	540	100	2503
Stobbs, Matthew, and J. S. Thompson, Sydney, New South Wales, Australia. Combined road-cleaner, elevator, and dirt-cart	705,478	July 22	4122	896	100	884
Stock, Friedrich. (See Lauber and Stock.)						
Stockett & Co., William E. (See Riordon, Robert R., assignor.)						
Stockett, John W., Washington, D. C. Breech-loading ordnance	705,157	July 22	8445	749	100	747
Stocks, Lucy H., Leeds, England. Means or apparatus for cooking eggs	704,140	July 8	1465	313	100	308
Stoelting, Charles T., St. Louis, Mo. Street-car fender	704,141	July 8	1467	314	100	308
Stokes, Charles F., Chicago, Ill., and C. E. McGlinchey, Highlandville, Mass.; said McGlinchey assignor to said Stokes. Motion-transmitting device	705,624	July 29	4474	970 971	100	966
Stoll, Heinrich, Reutlingen, Germany, assignor to National Knitting Co., Milwaukee, Wis. Knitting-machine	708,786	Sept. 9	1427	328	100	2283
Stoltz, Peter, Berlin, Germany. Steam-generator	709,871	Sept. 16	2644	593	100	2558
Stone, Clarence, assignor of one-half to A. R. Grever, Philadelphia, Pa. Variable-speed gearing	706,611	Aug. 12	1185	263	100	1371
Stone, David K., and W. W. Healy, Bloomingdale, Mich. Coin-controlled vending-machine	705,477	July 22	4120	896	100	884
Stone, Enoch G., assignor of one-half to D. A. Robinson, Bloomington, Tenn. Automatic vehicle-brake	704,281	July 8	1710	373	100	360
Stone, George, assignor to M. T. Stevens and Sons, North Andover, Mass. Yarn-drying apparatus	705,158	July 22	8448	749 750 751	100	747
Stone, Marie L., Toronto, Canada. Cooking or heating oil-stove	708,508	Sept. 2	909	206	100	2166
Stonebraker, Jeremiah, Barnesville, Ohio. Shade-roller hanging apparatus	708,090	Sept. 2	103	39	100	2015
Stones, William G., assignor to Smoke Preventer Company, Limited, Blackburn, England. Fuel-feeding apparatus. (Reissue)	12,023	Aug. 19	2916	659 660	100	1751
Storm, Edwin R., New York, N. Y. Printing-plate holder	708,676	July 1	556	125	100	110
Storrs, Charles P., *et al.* (See Henderson, Thomas M., assignor.)						
Storrs, Charles P., Wilmington, Del. Screw-jack	707,730	Aug. 26	3329	745	100	1953
Storrs, Eugene R., Cripplecreek, Colo. Sweep-operated hoisting-windlass	705,880	July 29	4984	1078	100	1058
Stout, William H., Dayton, Ohio. Machine for making veneer boxes	706,274	Aug. 5	546	118 119 120	100	1226
Stovall, Phillip E. (See Goodwyn and Stovall.)						
Stover, James R., Coraopolis, Pa. Stove-damper attachment	707,866	Aug. 19	3602	588	100	1695
Stowe, Benjamin L., Jersey City, N. J. Hydraulic or fire hose	706,466	Aug. 5	938	205	100	1305
Stowell, Ellery, Denver, Colo. Hoisting device	704,222	July 8	1602	347	100	335
Stowell, Henry F., Rochester, N. Y. Separable garment-supporting button attachment	705,476	July 22	4119	895	100	893
Strache, Hugo, Vienna, Austria-Hungary. Apparatus for generating water-gas	704,619	July 1	435	101	100	86
Straeten, Hubert, and F. Schneck, Chicago, Ill. Grate for boilers	706,275	Aug. 5	552	120	100	1227
Straight, Bennett D., Chicago, Ill. Rotary hand-fan	708,091	Sept. 2	165	39	100	2015
Strand, John, Mankato, Kans. Corn-harvester	709,424	Sept. 16	2738	615 616	100	2377
Strang, Henrik C., Chicago, Ill. Engine-governor	709,059	Sept. 16	2008	457 458	100	2422
Strang, Henrik C., Chicago, Ill. Four-cycle explosive-engine	709,060	Sept. 16	2011	458 459	100	2423
Strange, Edward H., London, and E. Graham, Tilehurst, assignors of one-half to E. R. Burrell, Milwall, London, England. Manufacture of varnishes	708,935	Sept. 9	1729	400	100	2343
Strattan, Samuel R., Washington, D. C. Paper-clip	709,523	Sept. 23	2085	665	100	2542
Strattner, Frederick, Salisbury, Md. Air-brake valve	708,092	Sept. 2	166	39	100	2015
Stratton, Eugene, and F. A. Cole, New York, N. Y. Guard for heel-trimming and edge-trimming machines	710,343	Sept. 30	4532	1023	100	2978

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Straub, Jacob, Campbellsport, Wis. Loading apparatus	704,142	July 8	1468	314	100	308
Straus, Max, Denver, Colo. Hand-strap for street-railway cars	704,143	July 8	1470	315	100	308
Streat, Herbert G., New York, N. Y. Necktie	704,591	July 15	2295	498	100	495
Street, Ernest A. G., Paris, assignor to Société Anonyme le Carbone, Levallois-Perret, near Paris, France. Electric battery	707,781	Aug. 26	3331	746	100	1853
Strickler, Levi, and C. H. Fisk, Richmond, Ind. Window-curtain fixture	710,377	Sept. 30	4590	1035	100	2988
String, Benjamin T., assignor to C. R. Mullen, Philadelphia, Pa. Button-sewing machine	706,124	Aug. 5	222	47	100	1162
Strobel & Brown. (See Brown, Henry W., assignor.)						
Stroh, George, assignor of one-half to G. Osius, Detroit, Mich. Ammonia-still	710,231	Sept. 30	4325	972 973	100	2984
Strohm Elevator Safety Device Company. (See Strohm, Samuel D., assignor.)						
Strohm, Samuel D., assignor to Strohm Elevator Safety Device Company, Philadelphia, Pa. Safety device for elevators	706,479	July 22	4123	897 898	100	884
Strohm, Samuel D., assignor to Strohm Elevator Safety Device Company, Philadelphia, Pa. Safety device for elevators	706,480	July 22	4128	898	100	885
Strom, Axel A., assignor to Strom Manufacturing Company, Chicago, Ill. Structural-metal beam	708,936	Sept. 9	1731	400	100	2349
Strom, Axel A., assignor to Strom Manufacturing Company, Chicago, Ill. Switch-stand	709,614	Sept. 23	3131	697 698	100	2671
Strom Manufacturing Company. (See Strom, Axel A., assignor.)						
Stromborg, Fritz O., Braddock, Pa. Apparatus for rolling sheet metal	703,620	July 1	437	101	100	86
Strong, Robert H., assignor of two-thirds to W. O. R. Bradley and J. P. McCaffery, Galesburg, Ill. Machine for affixing postage-stamps or labels upon envelops, cards, &c.	708,423	Sept. 2	760	171	100	2135
Strong, Robert H., assignor of two-thirds to W. O. R. Bradley and J. P. McCaffery, Galesburg, Ill. Stamp-affixing machine	708,424	Sept. 2	762	171	100	2135
Strong, William J., Brooklyn, N. Y. Valve mechanism for coin-controlled gas-vending machines	704,950	July 15	3011	646 647	100	646
Stroud, William T. (See Rhoades, Cicero, assignor.)						
Stuart, Charles, Paterson, N. J. Intensifying the luster of silk fiber	705,715	July 29	4649	1007	100	1000
Stuart, Charles, Paterson, N. J. Machine for lustering silk	705,716	July 29	4650	1007 1008	100	1000
Stuart, Charles, Paterson, N. J. Intensifying the luster of silk	709,524	Sept. 23	2987	665	100	2643
Stuart, Henry C., *et al.* (See Morrell, James A., assignor.)						
Studer, Peter, and P. Rupp, Whitehouse, Ohio. Rotary engine	708,937	Sept. 9	1732	401	100	2349
Studnicka, Albert J., Minneapolis, Minn. Drill-chuck	709,061	Sept. 16	2013	459	100	2423
Stukes, John M., San Antonio, Tex. Preserving and storing building	706,125	Aug. 5	225	47, 48	100	1163
Stull, Emmett W. (See Merrick and Stull.)						
Stull, Emmett W., Johnstown, assignor, by mesne assignments, to Westinghouse Electric and Manufacturing Company, Pittsburg, Pa. Controller for electric motors	709,182	Sept. 16	2259	514	100	2475
Stumpf, John, Berlin, Germany. Compressor	706,276	Aug. 5	554	129	100	1227
Stupar, Frederick. (See Stupar, Joseph and F.)						
Stupar, Joseph and F., Chicago, Ill. Switch-operating device	709,183	Sept. 16	2264	514 515	100	2476
Stuparich, Paul J., San Francisco, Cal. Device for the manufacture of photographic card-mounts	708,675	Sept. 9	1212	276	100	2238
Sturges, James D., Buffalo, Minn. Cow-tail holder	709,937	Sept. 30	3768	851	100	2814
Sturgiss, Wilbur R., Conway, Ark. Clamp-buckle or fastener for bale-ties or the like	707,034	Aug. 12	1969	441	100	1585
Sturmey, John J. H., Coventry, England. Hinge-joint	703,499	July 1	216	51	100	45
Submerged Electric Motor Company. (See Hatch, Tracy B., assignor.)						
Sullivan, Daniel F., Lowell, assignor of one-half to M. J. Sullivan, Randolph, Mass. Knitting-machine	703,973	July 1	1112	240 241	100	220
Sullivan, David M., assignor of one-half to C. Cone, Greensboro, N. C. Creel for selvage-spools on slashers	709,833	Sept. 23	3512	798	100	2756
Sullivan, James, New York, N. Y. Antirattler for awning-fixtures	704,227	July 8	1924	417	100	405
Sullivan, Joseph H. (See Sanker and Sullivan.)						
Sullivan Machinery Co. (See Officer, Thomas, assignor.)						
Sullivan, Michael J. (See Sullivan, Daniel F., assignor.)						
Sullivan, Michael J., Springfield, Ohio. Gas-engine ignition-regulator	705,881	July 29	4936	1073 1074	100	1039
Sullivan, William T., Cincinnati, Ohio. Artist's sketch-book	708,500	July 1	218	51	100	45
Sulman, Henry L., and H. F. Kirkpatrick-Picard, London, England. Treatment of ore-slimes	708,504	Sept. 2	910	206	100	2166
Sulphur Elimination Syndicate. (See Gutensohn, Adolph, assignor.)						
Sulzbach & Co., H. (See Wieser, Daniel, assignor.)						
Sulzbacher, Jerome, New York, N. Y. Garment-supporter	707,876	Aug. 26	3655	823	100	1915
Sulzbacher, Jerome, New York, N. Y. Clasp or buckle	707,877	Aug. 26	3658	823	100	1916
Sulzer, Gebrüder. (See Sulzer, Heinrich, assignor.)						
Sulzer, Heinrich, assignor to Gebrüder Sulzer, Winterthur, Switzerland. Centrifugal pump	704,144	July 8	1471	315	100	309
Sumrall, Jessie D. (See Wells and Sumrall.)						
Summers, Samuel L., Philadelphia, Pa. Methylene disalicylic acid and making same	706,354	Aug. 5	701	.....	100	1258
Summers, Samuel L., Philadelphia, Pa. Acet salicyl phenetidin and making same	706,355	Aug. 5	702	.....	100	1258
Summers, Samuel L., Philadelphia, Pa. Acet salicyl phenetidin and making same	706,356	Aug. 5	703	.....	100	1258
Summers, Samuel L., Philadelphia, Pa. Methylene di-aceto di-salicylic acid and making same	707,178	Aug. 19	2257	.....	100	1618
Summers, Samuel L., Philadelphia, Pa. Camphoric-acid ester of methylene diguaiacol and making same	707,278	Aug. 19	2449	.....	100	1654
Summerton, Thomas, Christchurch, New Zealand. Apparatus for operating Venetian blinds	708,425	Sept. 2	765	172	100	2136
Sumner & Goodwin Company. (See Curtis, Nelson, assignor.)						
Sumner, William J., assignor of one-half to A. A. Coburn, Holyoke, Mass. Caster	706,209	Aug. 5	397	85	100	1198
Sundean, John M., Lincoln, Nebr. Suspenders	706,357	Aug. 5	704	153	100	1258
Sunderland, Wilfred W. (See Grimes, Sunderland, and Ellerman.)						
Sundh, August, Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J. Safety device	704,398	July 8	1925	417	100	405
Sundh, August, Yonkers, N. Y., assignor to Otis Elevator Company, East Orange, N. J. Electric controlling apparatus for elevators	706,136	Aug. 5	226	48	100	1163
Sundh, August, Yonkers, assignor to Electrite Company, New York, N. Y. Fluid-pressure electric-switch-controlling apparatus	706,478	Aug. 5	954	208	100	1308
Surbaugh, Joseph T., Arbuckle, Cal. Harness attachment	708,676	Sept. 9	1213	277	100	2238
Susemihl, Francis G., Detroit, Mich. Car-door	708,843	Sept. 9	1564	357	100	2313
Susquehanna Silk Mills. (See Klerx, Johann H., assignor.)						
Süsskind, Gottfried von, St. Georgen, Switzerland. Hydraulic press for thick fluid substances	708,180	Sept. 2	340	80, 81	100	2061
Susstrong, Carl A. (See Smith and Susstrong.)						
Sutcliffe, Edgar R., Leeds, assignor of one-half to F. Speakman, Leigh, England. Disintegrator	705,796	July 29	4785	1088 1089	100	1089
Sutherland, James L., Mayfield, Ky. Car-coupling	706,210	Aug. 5	398	85	100	1198
Sutherland, James O., *et al.* (See Hart, Frank, assignor.)						
Sutherland, Lucy A., Chicago, Ill. Hook and eye	705,159	July 22	3451	731	100	748

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Sutherland, Thomas, Hutchinson, Minn. Wire-fabric machine	708,679	Sept. 9	1213	277, 278, 279, 280	100	2238
Suttle, Willis A., Austin, Tex. Coupling for connecting handles to tools	705,973	July 29	5100	1111	100	1092
Sutton, Henry M., W. L. Steele, and M. Coerver, Dallas, Texas. Electrically-protected structure	708,093	Sept. 2	109	89	100	2016
Sutton, Thomas W., Pittsburg, Pa. Trolley	705,882	July 29	4940	1074	100	1069
Swan, James, Topeka, Kans. Journal-bearing	708,974	July 1	1114	241	100	221
Swan, Morton G., and E. H. Richardson, North Ontario; said Swan assignor to F. J. Kimball, Los Angeles, Cal. Machine for brushing and cleaning fruit, part of which is applicable to fruit-graders	709,562	Sept. 23	3044	678	100	2653
Swan, William G., Detroit, Mich. Draft-rigging for cars	704,716	July 15	2500	541	100	588
Swaney, Fletcher D., assignor of one-half to H. Galer, Kansas City, Kans. Ice-can	705,883	July 29	4942	1074	100	1069
Swannell, Joseph, Redbank, N. J. Strip for securing glass panes	710,025	Sept. 30	3939	890	100	2851
Swanson, John, Wadena, Minn. Grass-cutting machine	710,282	Sept. 30	4325	973	100	2834
Swanson, John A., Auburn, Kans. Oil-can spout	705,160	July 22	3452	751	100	748
Swarm, Emery E., Calamus, assignor to Swarm Fence Builder Tool Company, Davenport, Iowa. Wire-stretcher	707,782	Aug. 26	3331	746	100	1853
Swarm Fence Builder Tool Company. (See Swarm, Emery E., assignor.)						
Sweder, August M., Marquette, Mich. Reversing friction-clutch	706,277	Aug. 5	536	121	100	1228
Sweder, August M., Marquette, Mich. Reversing-clutch	706,479	Aug. 5	957	209	100	1309
Sweeney, Henry G., assignor to F. G. Kammerer, Chicago, Ill. Coin-controlled device	708,621	July 1	440	102	100	86
Sweeney, Henry G., assignor to F. G. Kammerer, Chicago, Ill. Glass-rinsing device	708,844	Sept. 9	1567	358	100	2314
Sweeney, James P. and T. W., assignors of one-third to W. N. Wylie, Tarentum, Pa. Window-shade and curtain-pole bracket	708,505	Sept. 2	912	207	100	2166
Sweeney, Samuel, San Francisco, Cal. Refrigerator, freezer, and churn	704,768	July 15	2602	563	100	558
Sweeney, Thomas W. (See Sweeney, James P. and T. W.)						
Sweet, John E., Syracuse, N. Y. Ingot-mold	707,279	Aug. 19	2450	550	100	1654
Sweet, Larntine C., Loami, Ill. Furrow opening and covering attachment for seed-drills	710,378	Sept. 30	4502	1036	100	2989
Swenson, James E. (See McLaughlin and Swenson.)						
Swift and Company. (See Davis, David I., assignor.)						
Swift, Frank E., Washington, Iowa. Continuous kiln	708,848	July 1	870	191, 192	100	174
Swift, Wilbur L., and E. Burk, New York, N. Y., assignors to Union Special Sewing Machine Company, Chicago, Ill. Folder for sewing-machines	706,278	Aug. 5	559	121	100	1228
Swindell, William E., Moberly, Mo. Attachment for cutting follies or the like	707,179	Aug. 19	2258	545	100	1618
Swinscoe, Henry K., and E. J. McCarty, Clinton, Mass. Flue-scraper	710,344	Sept. 30	4533	1023, 1024	100	2978
Swisher, Thomas J., V. A. A. and E. Burger, Kokomo, Ind. Wagon-brake	710,345	Sept. 30	4535	.....	100	2979
Sykes, Payson T. (See Emery, William H., assignor.)						
Synnestvedt, Paul, Glenview, Ill., assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Engineer's brake-valve	708,677	July 1	550	126	100	111
Szczepanik, Jan, Vienna, Austria-Hungary, assignor to Barmer Bank-Verein, Hinsberg, Fischer & Comp., Barmen, Rhenish Prussia, Germany. Producing weaving-diagrams	708,849	July 1	872	192, 193	100	174
Szczepanik, Jan, assignor to Société des Inventions Jan Szczepanik & Cie., Vienna, Austria-Hungary. Producing weaving-diagrams	708,850	July 1	875	193	100	175
Szczepanik, Jan, assignor to Société des Inventions Jan Szczepanik & Cie., Vienna, Austria-Hungary. Producing weaving-diagrams	708,851	July 1	879	194	100	176
Szentjanossy, Sigmond, New York, N. Y. Cooking apparatus	706,906	Aug. 5	393	84	100	1197
T. B. Laycock Manufacturing Company. (See Tucker, William, assignor.)						
Taber, Arthur L., Corona, Cal. Hanger for window-screens	704,667	July 15	2419	523	100	521
Tabouret, Emile E., Brussels, Belgium. Making decorative tiles	708,680	Sept. 9	1220	280	100	2240
Taft, Frank E., Jamestown, N. Y. Stovepipe-ventilator	709,525	Sept. 23	2989	666	100	2643
Tagliani, Ernesto. (See Lepetit and Tagliani.)						
Taisey, Fred R., assignor to Taisey Pneumatic Service Company, Indianapolis, Ind. Inlet for pneumatic-despatch tubes	705,884	July 29	4944	1075	100	1060
Taisey Pneumatic Service Company. (See Taisey, Fred R., assignor.)						
Tait, John B., Highbridge, N. J. Sulky	708,496	Sept. 2	706	172	100	2135
Talbert, William F., Funkstown, Md. Corn-planter	707,733	Aug. 26	3332	746	100	1853
Talbot, Richard, and W. Rossetter, assignors to Blackburn Loom and Weaving Machinery Making Company, Limited, Blackburn, England. Weft-replenishing mechanism for looms	710,379	Sept. 30	4506	1026	100	2989
Taliaferro, James M., Lynchburg, Va. Tobacco-ordering chamber	709,988	Sept. 30	3769	851, 852	100	2815
Taliaferro, John C. (See Hodgson and Taliaferro.)						
Taliaferro, John C., and C. M. Reynard, Baltimore, Md. Tin-plate-cleaning machine	709,184	Sept. 16	2266	515, 516	100	2476
Talley, Felix W., New York, N. Y. Attachment for bicycles	704,145	July 8	1472	315	100	809
Taluau, Julius, assignor of one-half to H. W. Scattergood, Philadelphia, Pa. Stained-glass window or similar object and making same	704,399	July 8	1927	417	100	406
Taluau, Julius, assignor of one-half to H. W. Scattergood, Philadelphia, Pa. Framing glass	704,401	July 8	1931	418	100	407
Taluau, Julius, and H. W. Scattergood, Philadelphia, Pa. Framing glass	704,400	July 8	1928	417	100	406
Tamboer, John, Paterson, N. J. Non-refillable bottle	705,481	July 22	4130	898	100	885
Taplin, Homer E., Lawrence, Mass. Connector for sweep-sticks and picker-sticks of looms	708,745	Sept. 9	1546	307	100	2267
Taroli, Peter, Delray, Mich. Wrench	706,127	Aug. 5	231	48	100	1164
Tarrant, Arthur J. (See Smith and Tarrant.)						
Tasker, Vernon C., Bridgeport, Conn. Firing mechanism for guns	710,134	Sept. 30	4187	933, 934	100	2862
Tatham, James, Philadelphia, Pa. Combustion process	709,372	Sept. 16	2046	593, 594	100	2558
Tatterson, Arthur P., Stockton, Cal. Forking, elevating, and conveying machine	709,848	Sept. 16	2388	540, 541	100	2508
Tautphaeus, Jonas A., Sappington, Mo. Vehicle-brake	708,272	Sept. 2	515	117	100	2086
Taylor, Arthur B., assignor to R. L. Golbert & Company, Worcester, Mass. Last	709,425	Sept. 16	2742	616	100	2578
Taylor, Charles H. (See Christian, George H., assignor.)						
Taylor, Edward R., Penn Yan, N. Y. Electric furnace	706,128	Aug. 5	232	49	100	1165
Taylor, Frank, Doagh, A. Cooke and B. W. D. Montgomery, Belfast, Ireland, assignors to Lishman Process Bleaching Company, Limited, Cornholme, England. Bleaching-vat	704,402	July 8	1932	418	100	407
Taylor, Frederick W., South Bethlehem, and S. Newbold, Bethlehem, Pa. Metal-cutting-tool holder	709,596	Sept. 23	2990	666	100	2643
Taylor, Henry H., Bridgeport, Conn. Stiffening-band	703,622	July 1	445	102	100	87
Taylor, Henry H., Bridgeport, Conn. Bustle	704,146	July 8	1472	316	100	809
Taylor, Horace H., San Jose, assignor of one-half to F. J. Mayhew, San Francisco, Cal. Head or search light	707,982	Aug. 26	3858	865, 866	100	1955
Taylor Hydraulic Air Compressing Company. (See Linton, William J., assignor.)						
Taylor, Isaiah H., assignor of one-half to F. B. Hooper, Baltimore, Md. Ash-sifter	706,129	Aug. 5	236	49	100	1165

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Taylor, John D., assignor to Taylor Signal Company, Buffalo, N. Y. Selector for railway signaling apparatus	707,180	Aug. 19	2260	505	100	1614
Taylor, John D., assignor to Taylor Signal Company, Buffalo, N. Y. Railway switching and signal interlocking apparatus	707,181	Aug. 19	2262	506 507	100	1614
Taylor, John D., assignor to Taylor Signal Company, Buffalo, N. Y. Railway signaling apparatus	707,182	Aug. 19	2266	507	100	1616
Taylor, John J., 2nd. (See Nesmith, John J., assignor.)						
Taylor, John W., Summerville, S. C. Grate for kilns or furnaces	708,228	Sept. 9	1735	408	100	2349
Taylor, Nelson R., and W. C. Atwater, Chicago, Ill. Placket-fastener	704,250	July 1	694	154	100	188
Taylor, Percy B., Newark, N. J., assignor to Pure Food Company. Coating-tray	704,298	July 15	2295	499	100	495
Taylor, Percy B., Newark, N. J., assignor to Pure Food Company. Apparatus for desiccating eggs	704,977	July 15	3072	660 661	100	656
Taylor, Samuel L. (See Gurney and Taylor.)						
Taylor Signal Company. (See Taylor, John D., assignor.)						
Taylor, Theodore F., Camden, N. J. Electroplating apparatus	708,623	July 1	446	108	100	87
Taylor, Warren H., assignor to Yale & Towne Manufacturing Company, Stamford, Conn. Metallic shelving	707,963	Aug. 26	3856	866	100	1965
Taylor, William, Sandiacre, England. Shunting-lever	704,978	July 15	3075	661	100	657
Taylor, William, Sandiacre, England. Shunting-lever	705,974	July 29	5101	1112	100	1092
Taylor, William G. (See White and Taylor.)						
Taylor, William H., Kewanee, Ill. Coal-chute	709,873	Sept. 16	2649	594	100	2559
Taylor, William H., Kewanee, Ill. Fire-escape	709,874	Sept. 16	2651	594	100	2559
Taylor, William S., Jr., Lima, Ohio, assignor of two-thirds to C. and L. Zimmerman, Oelwein, Iowa. Driving mechanism for road-vehicles	707,984	Aug. 26	3857	866 867	100	1966
Tea, Mary J., administratrix. (See Tea, William A.)						
Tea Tray Company of Newark, N. J. (See McClay, David W., assignor.)						
Tea, William A., deceased, Bellevue, Ohio; M. J. Tea, administratrix. Corn-shock loader for vehicles	707,220	Aug. 19	2451	550	100	1655
Teichmann, Albert, Fürstenwalde, Germany. Sieve	705,717	July 29	4651	1008	100	1001
Temple, Henry S., Milwaukee, Wis. Punch	706,279	Aug. 5	560	121	100	1229
Temple, Nettie, Stockton, Cal. Corset	708,858	July 1	881	194	100	176
Ten Winkel, August, Denver, Colo. Centrifugal separator	708,630	July 1	459	105	100	90
Tennant, Irvin, Springfield, Ohio. Pneumatic tire	709,220	Sept. 16	2449	554	100	2515
Tepfer, Andrew, and O. M. Heltner, Earlville, Ill.; said Heltner assignor to said Tepfer. Currycomb	708,597	Sept. 9	1665	341	100	2306
Terne, Bruno, Philadelphia, Pa. Making fertilizers	709,185	Sept. 16	2269	516	100	2477
Terrazas, José J., Mexico, Mexico. Device for teaching arithmetic	704,979	July 15	3077	662 663 664	100	657
Terry Heater Company. (See Hopkins, George W., assignor.)						
Terry, Le Grand, Waverly, N. Y. Rake	708,289	Sept. 9	1737	402	100	2350
Teter, Charles K., Upper Sandusky, Ohio. Apparatus for administering anesthetics	706,358	Aug. 5	705	158	100	1250
Teter-Heany Developing Company. (See Heany, John A., assignor.)						
Textile Machine Works. (See Janssen, Henry, assignor.)						
Thame, James, assignor to South Western Rubber Company, Limited, London, England. Treatment of crude rubber	707,654	Aug. 26	3198	.....	100	1623
Thames Arms Company. (See Robertson, James D., assignor.)						
Thatcher, Joseph W. (See Bennett and Thatcher.)						
Thayer, C. E. (See Zeleny, Anthony, assignor.)						
Thayer, Clark F., Erie, Pa., assignor to Wilcox Brothers, Joliet, Ill. Couch	709,220	Sept. 30	3773	852	100	2816
Thayer, Horace N., Erie, Pa. Wheel-hub	709,375	Sept. 16	2652	595	100	2560
Theisen, Edward, Baden, Germany. Apparatus for washing gases	704,598	July 15	2299	500	100	496
Theisen, Edward, Baden, Germany. Treating gases	709,527	Sept. 23	2993	667	100	2644
Theobald, Conrad, Bruning, Nebr. Presser-foot-lifting mechanism for sewing-machines	708,940	Sept. 9	1738	402	100	2350
Therrode, Léon. (See Ponthus and Therrode.)						
Théry, Joseph, Joliet, Ill. Machine for cleaning streets	707,367	Aug. 19	2002	588	100	1685
Thew Automatic Shovel Company. (See Thew, Richard, assignor.)						
Thew, Richard, assignor to Thew Automatic Shovel Company, Lorain, Ohio. Power-shovel	710,223	Sept. 30	4330	973 974	100	2285
Thibodo, Francis H., and S. S. Peckinpaugh; said Peckinpaugh assignor to R. B. H. Macrorie, Greenbay, Wis. Preparing surfaces for etching and in etching such surfaces	705,280	Aug. 5	563	.....	100	1229
Thiebaut, Camille, St. Germain-en-Laye, France. Packing case or box	707,183	Aug. 19	2269	507	100	1616
Thiel, Otto, Kaiserslautern, Germany. Producing iron	709,563	Sept. 23	3047	679	100	2653
Thiele, Josephine, St. Louis, Mo. Garbage receptacle and means for handling same	705,718	July 29	4652	1008	100	1001
Thierkoff, Anthony W., Redding, Cal. Mechanical bill-carrying apparatus	708,853	July 1	883	194	100	177
Thiermann, Wilhelm A., Hanover, Germany. System of and apparatus for transmitting movements and indicating the position of indicators or the like	705,492	July 22	4131	898 899	100	885
Thiermann, Wilhelm A., Hanover, Germany. Means for transmitting movements and indicating positions electrically	706,231	Aug. 5	564	122	100	1229
Thill, Peter, Ohligs, Germany. Adjustable support for photographic or similar apparatus	704,403	July 8	1984	419	100	407
Thirion, Auguste, Paris, France. Mill	707,805	Aug. 26	3529	794 795	100	1800
Thistlewood, Theodore, Harrington, Del. Self-lubricating hub-bearing	708,501	July 1	219	52	100	46
Thomas, Abraham Z., Wooster, Ohio. Wagon-rack for hay-loaders	704,594	July 15	2300	500	100	496
Thomas, Bertrand M., San Francisco, Cal. Artificial fuel and preparing same	704,717	July 15	2303	.....	100	539
Thomas, Edwin E., St. Paul, assignor of one-half to Union Iron Works, Minneapolis, Minn. Twin-saw slabbing-machine	707,184	Aug. 19	2269	507 508 509	100	1616
Thomas, Edwin E., St. Paul, assignor to Union Iron Works, Minneapolis, Minn. Lumber-conveyer	707,806	Aug. 26	3528	795 796	100	1891
Thomas, Edwin E., St. Paul, assignor of one-half to Union Iron Works, Minneapolis, Minn. Steam-feed for sawmill-carriages	708,508	Sept. 9	1666	343	100	2306
Thomas, Franklin S. and L., East Stroudsburg, Pa. Demijohn-covering	708,427	Sept. 2	767	172	100	2126
Thomas, George, Gothenburg, Nebr. Washing-machine	705,976	July 29	5104	1113	100	1092
Thomas, James B., St. Louis, Mo. Car-coupling	704,223	July 8	1604	347	100	295
Thomas, James B., St. Louis, Mo. Car-coupling	704,499	July 8	2102	456	100	442
Thomas, John R. (See Pollard and Thomas.)						
Thomas, John R., assignor to J. A. Fay & Egan Company, Cincinnati, Ohio. Pressure device for woodworking-machines	704,147	July 8	1473	316	100	309
Thomas, John R., assignor to J. A. Fay & Egan Company, Cincinnati, Ohio. Molding-machine	706,130	Aug. 5	528	49, 50	100	1167
Thomas, John R., Cincinnati, Ohio, assignor to Pollard & Metcalfe Limited, Silsden, England. Machine for making fire-lighter blocks	708,094	Sept. 2	171	40	100	2016
Thomas, John W., Jr., Nashville, Tenn. Stand-pipe for railway uses	709,376	Sept. 16	2658	595	100	2560
Thomas, Leopold. (See Thomas, Franklin S. and L.)						
Thomas, Philip, Brooklyn, N. Y., assignor to H. R. Worthington. Valve-lever spool	709,940	Sept. 30	3774	852	100	2816

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Thomas, R. M., *et al.* (See Smith, Thomas, assignor.)						
Thomas, William B., Towns, Ga. Burglar-alarm	704,981	July 15	3083	664	100	658
Thomas, William H. (See Dean and Thomas.)						
Thompson, A. G. (See Cline, Fred N., assignor.)						
Thompson, Channing M., Newark, Ohio. Pivoted rocker-bearing center-plate for railway-cars	709,564	Sept. 28	3048	679	100	2654
Thompson, Harvey J. (See Maddox, John A., assignor.)						
Thompson, James W. (See English and Thompson.)						
Thompson, John J., Lewistown, Mont. Sulky hay-rake	708,694	July 1	447	108	100	88
Thompson, John R., Brooklyn, N. Y. Lace-paper machine	709,615	Sept. 28	3183	698	100	2672
Thompson, John S. (See Stobbs and Thompson.)						
Thompson, John T., St. Paul, Minn. Shoestring	704,980	July 15	3083	664	100	658
Thompson, Thomas L., Lewisburg, Tenn. Rein-holder	709,585	Sept. 28	3054	698	100	2662
Thompson, Rollin, Thomaston, Conn. Foot-rest for carriages	706,359	Aug. 5	706	153	100	1259
Thompson, William A., La Crosse, Wis. Clam or oyster dredge	705,975	July 29	5108	1112	100	1098
Thompson, William H., assignor of one-half to J. B. Eggener, Marinette, Wis. Trace-fastener	705,719	July 29	4058	1009	100	1001
Thomsen, Peter. (See Schmidt and Thomsen.)						
Thomson, Arthur T. M., East Dulwich, England. Connecting-plug for electrical switch-boards	705,161	July 22	3458	752	100	748
Thomson, Elihu. (See Lemp, Hermann, assignor.)						
Thomson, Elihu, Swampscott, Mass., assignor to General Electric Company. Electric meter	706,612	Aug. 12	1186	263, 264	100	1372
	709,586	Sept. 28	3084	697	100	2662
Thomson, John C., Rock Island, Ill. Mop-wringer	706,361	Aug. 5	708	154	100	1259
Thomson, William, Glasgow, Scotland. Instrument for measuring electric currents						
Thornburgh Coupler Attachments Company. (See Thornburgh, William, assignor.)						
Thornburgh, William, assignor to Thornburgh Coupler Attachments Company, Limited, Detroit, Mich. Spring-protecting device for railway-car-coupling attachments	706,360	Aug. 5	707	154	100	1259
Thorne, John R., Rantoul, Ill. Fastener for label-holders	704,404	July 8	1985	419	100	406
Thorne, Rougier, Greenwich, Conn. Apparatus for the treatment of garbage or similar material	709,616	Sept. 28	3134	696	100	2672
Thornton, Charles A., and C. W. Whittemore, North Attleboro, Mass. Safety device for stamps, drop-hammers, or the like	708,095	Sept. 2	173	40, 41	100	2017
Thorp, Robert T. (See Betzel, William F., assignor.)						
Thorp, William H., Beaverdam, Wis. Hinge	704,992	July 15	3087	665	100	658
Thorstenson, Louis. (See Holmstrom, Thure, assignor.)						
Threlfall, William V., Biddeford, Me., assignor to Saco & Pettee Machine Shops, Newton, Mass. Spinning or roving machine	707,462	Aug. 19	2778	628, 629	100	1721
Throop, William E., and W. S. Ingraham, assignors to E. Ingraham Company, Bristol, Conn. Electric alarm-clock	703,854	July 1	884	195	100	177
	704,405	July 8	1987	419	100	406
Thurman, Sanford M., Yuma, Ariz. Ter. Water-wheel	706,302	Aug. 5	710	154	100	1260
Thurston, Daniel H., and J. F. Holden, Plymouth, Iowa. Grain-packer for harvesting-binders						
Thurston, Horace, *et al.* (See Sibley, Edward W., assignor.)						
Thurston, Samuel H., Longbranch, N. J. Impacting one metal upon another	706,701	Aug. 12	1348	300	100	1407
Thurston, Samuel H., Longbranch, N. J. Coating one metal with another metal	706,702	Aug. 12	1349	.....	100	1408
Thwing, Charles B., Galesburg, Ill., assignor to L. S. Langville, New York, N. Y. Thermo-electric element	704,595	July 15	2302	.....	100	490
Thwing, Charles B., Syracuse, assignor to L. S. Langville, New York, N. Y. Thermo-electric generator	704,596	July 15	2303	500	100	496
Tibbits, Arthur L., Chicago, Ill. Air-brake attachment	706,368	Aug. 5	711	155	100	1260
Tidey, Lillie V., *et al.*, executrices. (See Tidey, Marcus B.)						
Tidey, Marcus B., deceased, Belleville, N. J.; S. E. and L. V. Tidey, executrices. Machine for grooving assembled stock	705,483	July 22	4128	899, 900	100	886
Tidey, Sarah E., *et al.*, executrices. (See Tidey, Marcus B.)						
Tidwell, L. G. (See Magarvy, John W., assignor.)						
Tierce, Tucker R., Downey, Cal. Bur-chuck	706,703	Aug. 12	1349	301	100	1408
Tihon, Jean P. (See Behrens and Tihon.)						
Tilghman, B. C. & R. A. (See Mathewson, Jeremiah E., assignor.)						
Tillman, Oliver, assignor to C. Simard, San Jose, Cal. Burner for oil	708,978	Sept. 9	1829	421	100	2368
Tilly, Charles A., Brooklyn, N. Y. Air-valve attachment for traps	708,856	July 1	885	195	100	177
Tilney, Mary G., Orange, N. J. Darning-last	705,494	July 22	4142	900	100	887
Timme, Otto, New York, N. Y. Producing figured pile fabric	705,977	July 29	5106	1113	100	1098
Tindel, Adam, Philadelphia, assignor to Tindel-Morris Company, Eddystone, Pa. Metal-working tool	707,085	Aug. 12	1970	442	100	1535
Tindel-Morris Company. (See Tindel, Adam, assignor.)						
Tinkham, Francis M., Springfield, Mass. Couch-bed	707,807	Aug. 26	3525	796	100	1801
Tinsman, Samuel H., assignor to Implement Manufacturing Company, Davenport, Iowa. Plow	707,878	Aug. 26	3550	824, 825	100	1916
Tinsman, Samuel H., assignor to Implement Manufacturing Company, Davenport, Iowa. Sulky-plow	707,879	Aug. 26	3666	825, 826	100	1918
Tipton, Cornelius T., Elizabethton, Tenn. Computing-scale	704,668	July 15	2420	593	100	522
Tirrill, Leonard A., Lynn, Mass., assignor to General Electric Company. Controller for electric motors	708,096	Sept. 2	175	41, 42	100	2017
Tischler, John. (See Czermak and Tischler.)						
Tislow, Hovey H., assignor of one-half to P. K. Heuring, Petersburg, Ind. Safe-door lock	707,655	Aug. 26	3193	716	100	1685
Tittle, Horatio S., assignor of five-sixths to F. F. Wear, A. Gunzendorfer, and W. Barker, Los Angeles, Cal. Electrical indicator	709,806	Sept. 28	3494	798	100	2745
	706,282	Aug. 5	566	128	100	1260
Tobey, Harry C., Salina, Kans. Paper-feeding machine for type-writers						
Todd, George W., Elmwood, assignor of one-third to H. P. Jensen, Omaha, Nebr. Rubber-dam holder	710,306	Sept. 30	4486	1006	100	2964
	704,968	July 15	3089	665	100	659
Todd, James W., Osnaburg, Ohio. Fence-post	709,807	Sept. 28	3497	798	100	2746
Todd, Marquis J., assignor to Buffalo Pitts Company, Buffalo, N. Y. Lever mechanism	704,597	July 15	2305	501	100	497
Toepfer, Peter G., Milwaukee, Wis. Malt-kiln						
Toledo Scale and Cash Register Company. (See De Vilbiss, Allen, Jr., assignor.) (Reissue.)						
Tolhurst, Charles H., and A. G. Goldthwait, assignors to W. H. Tolhurst & Son, Troy, N. Y. Making laundry starch	707,985	Aug. 26	3861	867, 868	100	1956
Tolhurst, Charles H., and A. G. Goldthwait, assignors to W. H. Tolhurst & Son, Troy, N. Y. Apparatus for treating starch	707,986	Aug. 26	3863	868	100	1957
Tolhurst & Son, William H (See Tolhurst and Goldthwait, assignors.)						
Tombling, George M. (See Brown, James A., assignor.)						
Tomlinson, Clarence L. (See Ruef and Tomlinson.)						
Tompkins, Ira A. (See Stewart, Burton A., assignor.)						
Tone, Frank J., assignor to Carborundum Company, Niagara Falls, N. Y. Manufacture of iron and steel	708,941	Sept. 9	1741	.....	100	2250

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Tone, Frank J., assignor to Carborundum Company, Niagara Falls, N. Y. Carborundum articles and making same	709,898	Sept. 23	3498	.....	100	2740
Topeka Tent and Awning Company. (See Anton, Paul R., assignor.)						
Topliff, Willis W., Deweys, Mont. Detachable sleigh-runner	703,886	July 1	888	195	100	178
Torchiani, Harry, Brooklyn, N. Y. Apparatus for racking off beer	705,942	Sept. 9	1742	403	100	2360
Torley, Heinrich, assignor to B. Scheck, Ober Kaufungen, near Cassel, Germany. Corset-stiffener	709,585	Sept. 23	3050	679	100	2054
Toronto Roller Bearing Company. (See Henderson, Albert E., assignor.)						
Torrey, Earl G., assignor of one-half to W. C. Beddow, Washington, D. C. Lock-up for printers' forms	707,987	Aug. 26	3365	868	100	1937
Tossizza, Constantin J., Paris, France. Electrometallurgical treatment of zinc ores and especially blende	703,857	July 1	880	.....	100	178
Tossizza, Constantin J., Paris, France. Electrometallurgic treatment of ores of copper or other metals	710,346	Sept. 30	4537	.....	100	2979
Tower, Clinton A., assignor to National Malleable Castings Company, Cleveland, Ohio. Car-coupling	708,681	Sept. 9	1222	280	100	2340
Tower, Daniel W., Grand Rapids, Mich. Latch	708,097	Sept. 2	178	42	100	2018
Tower, Daniel W., assignor to Grand Rapids Brass Company, Grand Rapids, Mich. Combined latch and lock	703,975	July 1	1116	241	100	221
Towers, William M. (See Harrington and Towers.)						
Trabue, Luther, Girard, Ill., assignor to Ohio Hay Press Company, Bellevue, Ohio. Baling-press	704,718	July 15	2502	541	100	539
Tracy, Harriet R., London, England. Shuttle for sewing-machines	704,406	July 8	1938	419	100	408
Tracy Manufacturing Company. (See Turck, Frederick M., assignor.)						
Trainner, Joseph. (See McHale and Trainner.)						
Trainblay, Felix, Chicago, Ill. Cabinet for bookcases, letter-files, &c	710,086	Sept. 30	4054	913	100	2975
Transparent Cellulose Products Company. (See Feval, Leon, assignor.)						
Trapp, Samuel M., San Diego, Cal. Oil-burner	709,941	Sept. 30	3775	852	100	2816
Traut, Justus A. (See Bodmer, Christian, assignor.)						
Traut, Justus A., New Britain, Conn. Spirit-level	703,678	July 1	562	126	100	111
Traut, Justus A., New Britain, Conn. Plane	706,704	Aug. 12	1351	301	100	1408
Traut, Justus A., New Britain, Conn. Grooving-plane	707,281	Aug. 19	2458	530	100	1655
Traut, Justus A., and H. S. Walter, assignors to Stanley Rule and Level Company, New Britain, Conn. Plane-iron cap	707,308	Aug. 19	2004	589	100	1686
Traver, Jay E., assignor to Goodyear's Metallic Rubber Shoe Company and Goodyear's India Rubber Glove Manufacturing Company, Naugatuck, Conn. Fastener	707,309	Aug. 19	2005	589	100	1686
Travis, William Ludington, assignor of two-thirds to A. J. Carson, Kalamazoo, Mich. Machine for repairing saws	705,720	July 29	4655	1009	100	1001
Treat, Francis H., Pittsburg, Pa. Regenerative furnace	705,978	July 29	5106	1113	100	1093
Treat, Francis H., Pittsburg, Pa. Unloading apparatus	710,224	Sept. 30	4334	974, 975	100	2980
Treen, Sidney R., Chicago, Ill. Gas-burner	703,625	July 1	450	103	100	88
Treichel, Gustave W., Philadelphia, Pa. Oven-swab	705,979	July 29	5108	1114	100	1094
Treinis, Samuel, New York, N. Y. Punching-bag platform	706,866	Aug. 12	1679	376	100	1477
Tremblay, Hormidas, Southbridge, Mass. Watchmaker's eyeglass	706,564	Aug. 5	712	155	100	1260
Trenholme, Thomas A. (See Trethewey, William G., assignor.)						
Trescott, Charles B., Portland, Oreg. Curing food products	710,125	Sept. 30	4140	984	100	2606
Tresenreuter, Gustav, Berlin, Germany. Incandescent gas-lamp	707,185	Aug. 19	2273	509	100	1617
Tressel, Lotta M., Canton, Ohio. Skein-holder	710,126	Sept. 30	4143	985	100	2606
Trethewey, William G., Vancouver, assignor of one-half to T. A. Trenholme, Montreal, Canada. Automatic train-pipe coupling	707,968	Aug. 26	3868	869	100	1966
Tretsven, Adolph, Milltown, Wis. Floor clamp or jack	710,109	Sept. 30	4227	953	100	2911
Trewhitt, Paul W. (See Pickard, Frank H., assignor.)						
Triance, John C., Rochester, assignor of two-thirds to M. J. Fentzel and J. A. Dockter, Tarentum, Pa. Glass-melting machine	709,727	Sept. 23	3324	748	100	2711
Trillat, Jean J. A., Paris, France, assignor, by mesne assignments, to Fries Bros., New York, N. Y. Composition for the production of vapors of formic aldehyde	704,490	July 8	2104	.....	100	442
Tripp, Chrestus A. (See Sauvage, William H., assignor.)						
Tripp, Jacob W., New York, N. Y., assignor to H. B. Newhall, Plainfield, N. J. Door-closing apparatus	704,984	July 15	3090	665	100	650
Trivett, Louis O., and F. Randall, Nottingham, England; said Randall assignor to said Trivett. Chenille-spotting machine	709,597	Sept. 23	3085	687, 688	100	2062
Trivick, Sidney, Clapham Common, England. Treatment of gold and silver ores	706,365	Aug. 5	713	.....	100	1261
Trochain, Eugène, Paris, France, assignor to Vickers Sons & Maxim, Limited, London, England. Ammunition-hoist for ordnance	704,985	July 15	3089	665, 666	100	650
Trooien, Cornelius N., Hendricks, Minn. Animal-poke	705,162	July 22	3453	752	100	748
Trooien, Cornelius N., Hendricks, Minn. Draft-equalizer	705,163	July 22	3454	752	100	749
Troschke, Hans U. von, Hanover, Germany. Cycle-rest	709,588	Sept. 23	3089	688	100	2063
Trotz, Johan O. E., Worcester, Mass. Apparatus for casting ingots in continuous long lengths	706,721	July 29	4657	1010	100	1002
Troxler, Gustavus, Jr., assignor to C. F. Paulus, Newark, N. J. Pistol	707,090	Aug. 12	1971	442	100	1536
Truax, Charles, Chicago, Ill. Nebulizer	707,282	Aug. 19	2457	551	100	1655
True, George H., East Oakland, Cal. Ink-well	705,486	July 22	4148	901	100	887
Trumpler, Charles H., Brooklyn, N. Y. Rake	704,719	July 15	2504	541	100	539
Truslow, Louis B., Thomaston, N. Y. Vehicle	706,722	July 29	4659	1010	100	1002
Trussell, Emory A., assignor to Sieber & Trussell Manufacturing Company, St. Louis, Mo. Perforating-machine	709,566	Sept. 23	3051	679, 680	100	2054
Truxall, Victor L., Latrobe, Pa. Rail-joint	705,885	July 29	4945	1075	100	1060
Tschieky, Oscar, New York, N. Y., assignor, by mesne assignments, to Noiseless and Draughtless Door and Window Cushion Company. Door-check. (Reissue)	12,014	July 15	3150	680	100	673
Tubby, Walter W., and W. H. Broomhead, Fall River, assignors to Draper Company, Hopedale, Mass. Shuttle-checking mechanism for looms	706,980	July 29	5106	1114	100	1094
Tuck, William W., Richmond Hill, and A. Wassmann, Astoria, N. Y. Feed-controlling mechanism for hydrocarbon-motors	710,087	Sept. 30	4056	914, 915	100	2976
Tucker, Andrew P. (See Proctor and Tucker.)						
Tucker, Benjamin W., Newark, N. J., assignor, by mesne assignments, to C. C. Gill, New York, N. Y. Blind-stitch overseaming-machine	705,486	July 22	4144	901, 902	100	887
Tucker, Edwin D., assignor to R. Hoe & Company, New York, N. Y. Casting-box	709,942	Sept. 30	3776	858	100	2816
Tucker, Holling G., assignor of one-half to R. H. Norton, Hereford, Tex. Crude-oil burner	703,669	July 15	2482	523	100	598
Tucker, William, assignor to T. B. Laycock Manufacturing Company, Indianapolis, Ind. Bed-rail	703,148	July 8	1475	316	100	310
Tucker, William A., Terre Haute, assignor of one-half to W. R. Adams, Clarkshill, Ind. Moisture-proof coating for brick or stone	705,695	July 29	4479	.....	100	966
Tuckfield, Charles, East Molesey, assignor of two-thirds to D. Weston, London, England. Rotary engine	703,502	July 1	221	58	100	46

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Tuckfield, Charles, East Molesey, assignor of two-thirds to D. Weston, London, England. Rotary engine	708,679	July 1	566	126 127	100	112
Tuckfield, Charles, East Molesey, assignor of two-thirds to D. Weston, London, England. Distributing-valve for steam-engines	708,131	Aug. 5	943	51	100	1167
Tuckfield, George A., Salt Lake City, Utah. Stove or range	707,989	Aug. 26	8871	670	100	1958
Tudor, Frederic, Brookline, Mass. Low-pressure steam-heater	705,981	July 29	5111	1114	100	1095
Tuell, William L., New Albany, Ind. Furniture-clamp	706,705	Aug. 12	1353	301	100	1405
Tufts, Frank L., assignor of one-third to H. C. Parker, New York, N. Y. Telephone-booth	704,996	July 15	3095	667	100	660
Tufts, Frank L., assignor of one-third to H. C Parker, New York, N. Y. Telephone-booth	704,997	July 15	3096	667	100	660
Tuller, Anson, *et al.* (See Brooks, Theodore L., assignor.)						
Tunks, Nelson H., assignor to F. B. Harrison, Toledo, Ohio. Bolster guide-block	708,508	July 1	222	52	100	46
Tupper, John P., *et al.* (See Lurch, Edward, assignor.) (Reissue.)						
Turbayne, William A., Buffalo, assignor to C. M. Gould, New York, N. Y. Automatic dynamo-regulator	705,497	July 22	4147	902	100	888
Turck, Frederick M., assignor of one-half to Tracy Manufacturing Company, New York, N. Y. Numbering-machine	710,280	Sept. 30	4594	1087	100	2069
Turcotte, Alexander G., Holyoke, Mass., assignor to himself, and N. McClure, Hartford, Conn. Railway-switch	705,164	July 22	3456	753	100	749
Turk, James W. B., Poteau, Ind. Ter. Nut-lock	708,504	July 1	223	53	100	46
Turner, Charles, Chicago, Ill. Rendering apparatus	708,845	Sept. 9	1570	358	100	2315
Turner, Walter V., and F. C. Farquharson, assignors to Raton Air Brake Improvement Company, Raton, N. Mex. Ter. Retaining-valve	706,867	Aug. 12	1680	377	100	1478
Turner, William A., Providence, R. I. Cigar-machine	709,943	Sept. 30	3779	853	100	2817
Turner, Wilson P. H. (See Hopkins, William W., assignor.)						
Turney, Edward, Portland, Oreg. Clutch-operating mechanism	709,567	Sept. 23	3053	680	100	2655
Tüschel, Gustav, Odessa, Russia. Varnishing	705,723	July 29	4661	.....	100	1002
Tutterrow, Joseph, Morgantown, Ind. Saw	708,278	Sept. 2	516	117	100	2086
Tuttle, George R., Grass Valley, Cal. Trap for amalgam	708,599	Sept. 9	1069	242	100	2309
Tuttle, William C., assignor of one-half to R. Bryant and S. A. McDaniel, Adrian, Mich. Swing	709,281	Sept. 16	2451	554	100	2516
XXth Century Heating and Ventilating Company. (See Maag, George, assignor.)						
Twiggs, John D., Jr., New York, N. Y. Roller-bearing	707,403	Aug. 19	2776	629	100	1722
Twisted Wire Box Strap Company of New York. (See Mitchell, Charles W., assignor.)						
Tyberg, Oluf, assignor to American Tobacco Company, New York, N. Y. Packing mechanism	708,662	Sept. 9	1223	281	100	2240
Tyberg, Oluf, assignor to American Tobacco Company, New York, N. Y. Packing mechanism	708,787	Sept. 9	1428	328 329	100	2295
Tyden, Emil, Hastings, Mich. Pedestal-extension-table lock	707,188	Aug. 19	2274	509	100	1618
Tyler, Charles C., Pittsburg, Pa., assignor to Westinghouse Electric and Manufacturing Company. Speed-changing device	710,225	Sept. 30	4396	975	100	2285
Tyler, Joseph H. (See Lieb and Tyler.)						
Tyler, Joseph L., Lynn, Mass. Mitering-machine	707,734	Aug. 26	3336	747	100	1854
Tyler, Walter L., *et al.* (See Cowperthwait, Allan, assignor.)						
Tyler, William W., York, Pa. Balancing device for turbine-gates	710,381	Sept. 30	4599	1036	100	2090
Typographic Development Company. (See Fowler, Joseph C. and Joseph C., Jr., assignors.)						
Tyson, Frank, assignor of one-half to G. H. Colket, Philadelphia, Pa. Sheet-metal can	709,426	Sept. 16	2743	616	100	2578
Tyson, Frank, Philadelphia, Pa., assignor to J. A. Higgons, Newark, N. J. Closure for jars or bottles	710,347	Sept. 30	4536	1024	100	2270
Udstad, Sivert, Aurora, Ill. Rod-packing	704,598	July 15	2307	501	100	497
Ueberroth, William W. (See Young and Ueberroth.)						
Uhl, Joseph F. L., Toledo, Ohio. Construction of metal furniture	705,488	July 22	4150	908	100	888
Uhlin, Ernest. (See Dahlberg, Clicquennoi, and Uhlin.) (Reissue.)						
Ulbrich, Edgar J., *et al.* (See Fox, John C., assignor.)						
Ulrich, John, Columbus, Ohio. Motor	705,489	July 22	4151	908	100	889
Union Iron Works. (See Thomas, Edwin E., assignor.)						
Union Lead and Oil Company. (See Bailey, John W., assignor.)						
Union Light & Heat Company. (See Graf, John J., assignor.)						
Union Manufacturing Company. (See Britton and Morrow, assignors.)						
Union Paper Bag Machine Company. (See Appel, Daniel, assignor.)						
Union Special Sewing Machine Company. (See Foster, Charles H., assignor.)						
Union Special Sewing Machine Company. (See McNeil, Chester, assignor.)						
Union Special Sewing Machine Company. (See Onderdonk, Lansing, assignor.)						
Union Special Sewing Machine Company. (See Onderdonk and Merritt, assignors.)						
Union Special Sewing Machine Company. (See Swift and Burk, assignors.)						
Union Special Sewing Machine Company. (See Woodward, Russel G., assignor.)						
Union Special Sewing Machine Company *et al.* (See Hatch, Edward P., assignor.)						
Union Special Sewing Machine Company *et al.* (See Powell, Myron H., assignor.)						
Union Switch and Signal Company. (See Gilmor, John E., assignor.)						
Union Typewriter Company. (See Fitch, Eugene, assignor.)						
Union Voucher Company. (See Wise, Homer, assignor.)						
United Shirt and Collar Company. (See Dormandy, Garry J., assignor.)						
United Shoe Machinery Company. (See Casgrain, Louis A., assignor.)						
United Shoe Machinery Company. (See Elliott, Alvin D., assignor.)						
United Shoe Machinery Company. (See Eppler, Andrew, Jr., assignor.)						
United Shoe Machinery Company. (See Fowler, Alfred B., assignor.)						
United Shoe Machinery Company. (See Godfrey, Alexander, assignor.)						
United Shoe Machinery Company. (See Kelley, Michael F., assignor.) (Reissue.)						
United Shoe Machinery Company. (See Lougee, Edwin A., assignor.)						
United Shoe Machinery Company. (See Mayo, Benjamin F., assignor.)						
United Shoe Machinery Company. (See Mayo and Elliott, assignors.)						
United Shoe Machinery Company. (See Rumney, Fred A., assignor.)						
United Shoe Machinery Company. (See Scott, Jacob R., assignor.)						
United Shoe Machinery Company. (See Small, Chester C., assignor.)						
United States Electric Signal Company. (See Ruddick, John J., assignor.)						
United States Glass Company. (See Ripley, Daniel C., assignor.)						
Universal Accountant Machine Company. (See Rinsche, Frank C., assignor.)						
Universal Seal and Stopper Company. (See Schmitt, Edward D., assignor.)						
Universal Seal and Stopper Company. (See Schmitt, Edward D., assignor.) (Reissue.)						
Universal Talking Machine Manufacturing Company. (See Valiquet, Louis P., assignor.)						
Unser, John, Carthage, assignor of one-half to W. W. Hawes, Clayton, N. Y. Brake mechanism for motor-vehicles	709,124	Sept. 16	2133	489	100	2450
Unser, John, Carthage, assignor of one-half to W. W. Hawes, Clayton, N. Y. Brake mechanism for motor-vehicles	709,125	Sept. 16	2137	489 490	100	2451

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Unterlechner, Karl, Gries, Austria-Hungary. Shutter-fastener	704,899	July 15	2310	501	100	498
Updyke, Theodore S. (See Magney, Joseph P., assignor.)						
Uplinger, Frank J. (See Kahler, George, assignor.)						
Upson, Delevan P., Jacksonville, Fla. Pipe holder or clutch	705,734	July 29	4661	1010	100	1002
Upson, Theron A., Brooklyn, N. Y. Stop for window-blinds	706,686	July 1	451	104	100	88
Upton, Alva T., assignor of one-half to C. C. Johnson, Mount Vernon, Ill. Folding harrow	709,589	Sept. 23	3000	698	100	2668
Urban, Johannes. (See Fremery and Urban.)						
Utermöhlen, Carl F., Amsterdam, Netherlands. Antiseptic bandage	708,627	July 1	452	104	100	89
Utley, Edward L., Fayetteville, N. C. Wrench	704,407	July 8	1959	430	100	408
Utter, John F. (See Utter, Joseph A., assignor.)						
Utter, Joseph A., Crawfordsville, Ind., assignor to J. F. Utter, San Francisco, Cal. Metallic fence-post	709,617	Sept. 23	3138	699	100	2673
Vagnfabriks Aktiebolaget I Södertelje. (See Erikson, Gustaf, assignor.)						
Valentine, Gustaf V., Chicago, Ill. Dress-cutting instrument for drafting garments	708,506	Sept. 9	918	307 / 308	100	2167
Valentine, Harry J., Hempstead, N. Y., assignor to Columbian Hardware Company, Cleveland, Ohio. Hinge-knob	709,618	Sept. 23	3139	699	100	2673
Valiquet, Louis P., assignor to Universal Talking Machine Manufacturing Company, New York, N. Y. Horn-supporting arm for talking-machines	705,165	July 29	3458	758	100	749
Valves, Limited. (See Croft, John E., assignor.)						
Van Alstyne, Edward P., Jr., Kinderhook, N. Y. Folding table	708,868	Aug. 12	1668	377	100	1478
Van Arsdale, George D., Newark, N. J. Envelop	708,098	Sept. 2	181	43	100	2019
Van Assche, Frank, Jersey City, N. J. Greenhouse construction	708,426	Sept. 2	709	172	100	2186
Van Derlip, Willis C., Sr., Corning, N. Y. Railway-signal	704,730	July 15	2505	541 / 542	100	540
Van Demark, Arthur W., Lestershire, N. Y. Clothes-hanger	707,860	Aug. 26	3074	686	100	1920
Van Develde, John, Cleveland, Ohio. Barrel-making machinery	708,746	Sept. 9	1347	307	100	2268
Van Gieson, Eugene T., Newark, N. J. Game-counter	704,149	July 8	1476	316	100	310
Van Horn, Alberto T. (See Means and Van Horn.)						
Van Houten, Frank H., assignor to Dutchess Tool Company, Fishkill-on-the-Hudson, N. Y. Rotary bake-oven	707,187	Aug. 19	2278	510	100	1619
Van Noorden, Ezekiel, Boston, Mass. Glazed roof or structure	705,491	July 22	4155	904	100	899
Van Nostran, Joseph E., assignor of one-half to J. J. Hahn, Canton, Ohio. Dental cuspidor	704,601	July 15	2313	502	100	499
Van Orden, John M., Newark, N. J. Corset-cover	705,725	July 29	4668	1010	100	1003
Van Patton, Herbert, Meadville, Pa. Refracto-ophthalmometer	704,150	July 8	1478	317	100	310
Van Praag, David J., London, England. Acetylene-gas generator	705,166	July 22	3460	753	100	750
Van Valkenburg, Randall T., assignor of one-half to W. E. Crichton, Laporte, Ind. Gate	704,608	July 15	2314	502	100	499
Van Valkenburgh, Abram T. (See Gleason, Byron H., assignor.)						
Van Vleck, John. (See Murray and Van Vleck.)						
Van Volkenburgh, Philip. (See Newcomb, Edward C., assignor.)						
Van Wagoner, Cornelius S., Cleveland, Ohio, assignor to M. L. Van Wagoner, Brooklyn, N. Y. Locking device for vehicle steering mechanism	707,464	Aug. 19	2778	629 / 630	100	1722
Van Wagoner, M. L. (See Van Wagoner, Cornelius S., assignor.)						
Van Wie, Peter G., assignor to Ideal Manufacturing Company, Detroit, Mich. Combined broiler and toaster	706,502	Aug. 5	998	219	100	1318
Van Wie, Peter G., assignor to Ideal Manufacturing Company, Detroit, Mich. Hot-plate	706,503	Aug. 5	999	219	100	1318
Vanata, Thomas D., assignor of one-half to W. W. Grant, Washington, D. C. Animal-trap	705,622	July 1	453	104	100	89
Vanderbilt, Cornelius, New York, N. Y. Truck-bolster	707,656	Aug. 26	3195	717	100	1625
Vanderbilt, Cornelius, New York, N. Y. Locomotive-boiler	707,657	Aug. 26	3195	717	100	1625
Vanderbilt, Cornelius, New York, N. Y. Brake-beam	707,658	Aug. 26	3195	717	100	1626
Vanderborght, Henri, Brussels, Belgium. Apparatus for rapidly heating liquids	704,609	July 15	2311	503	100	498
Vandercook, Robert O., Evanston, Ill. Means for dissipating static electricity	705,490	July 22	4153	903 / 904	100	889
Vandercook, Wilmot A. (See Livingstone and Vandercook.)						
Vanderpool, Clarence R., Grand Rapids, Mich. Dental gage	709,634	Sept. 23	3543	708	100	2757
Vanderslice, John H., assignor to Lukens Iron and Steel Company, Coatesville, Pa. Flanging-machine	707,821	Aug. 26	3074	685 / 687	100	1920
Vandevender, George W., Mingo, W. Va. Nut-lock	708,767	July 29	4787	1039	100	1029
Vanduzen, Benjamin C., Winton Place, Ohio. Vaporizing device for explosive-engines	709,195	Sept. 16	3139	490 / 491	100	2451
Vanstone, Wesley E., New Westminster, Canada. Heater	704,998	July 15	2097	607 / 608	100	660
Vasey, Joseph N. (See Lancaster, John P., assignor.)						
Vaughan, Henry H., Chicago, Ill., assignor to Ridgely and Johnson Tool Company. Fluid-pressure-operated tool	707,795	Aug. 26	3037	747 / 748	100	1855
Vaughen, Samuel W. (See Cabot and Vaughen.)						
Vaughn, John T., Griffin, Ga. Grate	709,377	Sept. 16	2655	595	100	2560
Vaughn Machine Company. (See Perkins, Franklin J., assignor.)						
Vaughn Machine Company. (See Perkins and Parkhurst, assignors.)						
Vaught, Alexander, Paragould, Ark. Folding box	708,943	Sept. 9	1744	403	100	2351
Vaught, James C. H., Phillipsburg, Mont. Tappet for stamp-mills	708,690	July 1	568	127	100	112
Vautier, Auguste, Grandson, Switzerland. Photographic camera	708,856	July 1	590	195	100	178
Veasey, William E. (See Mead, James R., assignor.)						
Venner, George O., Lawrence, Mass. Wheel for motor-vehicles	704,151	July 8	1481	317	100	311
Vérel, Alphonso A., Glasgow, Scotland. Wheel	705,490	Aug. 5	959	209	100	1210
Véricel, Antoine, New York, N. Y. Means for decorating fabrics	708,099	Sept. 2	181	43	100	2019
Vernon, Miles, Brooklyn, N. Y. Cover for memorandum-books	709,637	Sept. 23	3556	720	100	2667
Verret, Nicholas J., and H. Nusamstag, Little Rock, Ark. Steam-engine	709,053	Sept. 16	2914	460	100	2422
Vertical Propeller Company. (See Exline, Frank, assignor.)						
Vettel, Hugo, Newark, N. J. Window	707,608	Aug. 26	3037	796 / 797	100	1892
Vicente, Nemesio, Cartagena, Spain. Water-tube boiler	706,787	Aug. 19	1585	341 / 342 / 343 / 344	100	1446
Vick, Holland E., Alliance, Ohio. Saw-set	708,100	Sept. 2	184	44	100	2019
Vickers, Albert, assignor to Vickers Sons & Maxim, Limited, Westminster, London, England. Feeding mechanism for automatic guns	705,859	July 1	602	196	100	179
Vickers Sons & Maxim. (See Dawson and Buckham, assignors.)						
Vickers Sons & Maxim. (See Dawson and Horne, assignors.)						
Vickers Sons & Maxim. (See Trochain, Eugène, assignor.)						
Vickers Sons & Maxim. (See Vickers, Albert, assignor.)						
Victor P. De Knight Gun Company. (See De Knight, Victor P., assignor.)						
Viel, Paul I., Paris, France. Expansible pulley for motor-vehicles	705,860	July 1	602	196 / 197	100	179

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Viereck, Henry, Grand Island, Nebr. Fire-escape	708,846	Sept. 9	1578	389	100	2315
Viles, Joseph T., assignor of one-half to O. Bryan, Indianapolis, Ind. Adjustable nut-wrench	710,368	Sept. 30	4601	1086	100	2990
Villanova, Marcolino, New Haven, Conn. Motor	707,809	Aug. 26	3089	797	100	1909
Villasck, Edward J., *et al.* (See Hehr, John G., assignor.)						
Vink, Johannes H., Deventer, Netherlands. Type-writing machine	707,822	Aug. 26	3076	687	100	1920
Vinson, George W., Hazlewood, Ky. Vehicle-seat brace	709,875	Sept. 16	2956	596	100	2561
Vischer, Alfred. (See Alexander and Vischer.)						
Vitti, George, Montclair, N. J. Fireplace	710,366	Sept. 30	4598	975	100	2987
Vivier, Armand M., *et al.* (See Stabile, Gioacchino, assignor.)						
Vliet, Joshua B., assignor of one-half to C. M. Roehm, Detroit, Mich. Buggy-top adjuster	708,805	July 1	294	58	100	47
Vlk, Adolph, Chicago, Ill. Drill-press	709,568	Sept. 23	3056	680 / 681	100	2656
Voelkel, George E., Los Angeles, Cal. Fireproof frame building	710,307	Sept. 30	4609	1006	100	2984
Voelker, August, Cologne, Germany, assignor to Company l'Industrie Verrières et ses Dérivés, Brussels, Belgium. Electric glass-furnace	708,268	Aug. 5	967	122 / 123	100	1220
Voelker, George W., Woonsocket, R. I. Brushing-machine for cloth manufacturing	708,132	Aug. 5	944	51	100	1168
Voetter, Ernst, Uerdingen, Germany. Printing with sulfur dyes	708,439	Sept. 2	709		100	2187
Vogel, Carl, Newburgh, N. Y. Emergency-brake	707,465	Aug. 19	2780	630	100	1732
Vogel, Ernest H., Brooklyn, N. Y. Metallic strap	705,686	July 29	4479	971	100	966
Vogel, Fritz, Dusseldorf, Germany. Adjustable folding chair	709,688	Sept. 23	3259	730	100	2697
Vogel, Henry F. (See Bramson, Max, assignor.)						
Vogel, Henry F., and M. Weber, assignors to St. Louis Car Company, St. Louis, Mo. Platform-car	708,349	Sept. 16	2393	541	100	2504
Vogel, William, Hartley, Iowa. Heating-drum	707,990	Aug. 26	3078	670	100	1908
Vogelbach, John B., and T. Gray, Brooklyn, N. Y. Pipe-vise	709,944	Sept. 30	3793	864	100	2818
Vogelsang, August A., Dresden, Germany, assignor, by mesne assignments, to W. Lewin, Nottingham, England. Electrolytic cell and electrode therefor	708,861	July 1	894	197	100	179
Vogt, Adolf, and M. von Recklinghausen, Westminster, London, England. Internal-combustion motor	706,366	Aug. 5	715	155 / 156 / 157	100	1261
Vogue, Franklin S., Keokuk, Iowa. Mail delivery and collection system	705,992	July 29	5114	1114 / 1115	100	1095
Voight, Henry G., assignor to Russell & Erwin Manufacturing Company, New Britain, Conn. Liquid door-check	708,661	July 1	570	127	100	113
Voigt, Gustav, Berlin, Germany. Friction-wheel gearing	704,721	July 15	2508	542	100	540
Voigt, Rudolph, Chemnitz, Germany. Cross-winding machine	709,655	Sept. 23	3194	713	100	2664
Vojta, Thomas, Mound City, S. D. Oil-can	708,868	July 1	896	197	100	180
Volckening, Carl K., Brooklyn, N. Y. Bottle-washing brush	705,983	July 29	5117	1116	100	1096
Völker, Richard, Budapest, Austria-Hungary. Embossed wall-covering	708,858	July 1	897		100	180
Volkert, Ferdinand N., Chicago, Ill. Paper-binder	707,087	Aug. 12	1972	448	100	1586
Volkmann, Martin F., Santa Monica, Cal. Marine-engine governor	707,098	Aug. 12	1975	443 / 444	100	1586
Vollmann, Carl W., Montreal, Canada. Air cooling and purifying apparatus	708,847	Sept. 9	1574	389	100	2316
Vollmer, Wilhelm, Brooklyn, N. Y. Machine for bending angle-iron	709,282	Sept. 16	2453	554	100	2517
Vollmer, Wilhelm, Brooklyn, N. Y. Machine for bending flat iron	709,283	Sept. 16	2455	554	100	2517
Volstorf, August W., Toledo, Ohio. Car-brake mechanism	705,284	Aug. 5	568	128	100	1220
Von der Ahe, Charles C. (See Hergenhan and Von der Ahe.)						
Vorce, La Fayette D., Chicago, Ill. Extracting oil	704,989	July 15	2099	666	100	661
Vorce, La Fayette D., Chicago, Ill. Apparatus for separating solvents from oils	704,990	July 15	2102	666	100	661
Voss and Cliff Manufacturing Company. (See Cliff, Edward, assignor.)						
Vosmaer, Alexander, Haarlem, assignor to Company Ozon Maatschappy Systeem A. Vosmaer, Amsterdam, Netherlands. Ozonizing apparatus	709,427	Sept. 16	2744	617	100	2578
Vosmaer, Alexander, Watergraafsmeer, and A. Lebret, Utrecht, assignors to Ozon Maatschappy Systeem A. Vosmaer, Amsterdam, Netherlands. Apparatus for treating liquids with gases or gases with liquids	709,379	Sept. 16	2656	596	100	2561
Voss, William L., Harvey, Ill. Gearing	705,498	July 29	4157	904	100	889
Votey, Edwin S., Summit, N. J., assignor to Aeolian Company. Operating-sheet for automatic musical instruments	707,383	Aug. 19	2460	551	100	1656
Vredenburgh, John L., Austin, Tex. Separable button or stud	708,181	Sept. 2	341	81	100	2051
Vrooman, Nathaniel L., and R. R. Kirkland, Watertown, N. Y. Paper-pulp strainer	708,662	July 1	571	127 / 128	100	113
Vrooman, Nathaniel L., and R. R. Kirkland, Watertown, N. Y. Screen-plate for pulp-strainers	708,663	July 1	574	128	100	114
W. G. Armstrong, Whitworth & Company. (See Brankston, Ralph T., assignor.)						
W. G. Browne Manufacturing Company. (See Browne, William G., assignor.) (Reissue.)						
W. S. Nott Company. (See Caldwell, John, assignor.)						
W. W. Sweeney Co. (See Seeley, James E., assignor.)						
Wachter, Michael, Trenton, N. J. Fire-escape	709,127	Sept. 16	2141	401	100	2452
Wachwitz, Heinrich, Hersbruck, assignor of one-half to M. Dünkelsbühler, Nuremberg, Bavaria, Germany. Coating metals preparatory to being heated	708,788	Sept. 9	1437		100	2268
Waddell, George F., and W. J. Evans, Anaconda, Mont. Chilian mill	709,689	Sept. 23	3260	730 / 731	100	2697
Wade, Eli G. D., assignor of two-thirds to G. S. Corner and J. F. Davis, Malta, Ohio. Waistcoat	708,684	July 1	576	128	100	114
Wade, George H., Greeley, Nebr. Wagon-body lifter	707,466	Aug. 19	2782	630	100	1732
Wade, James R., St. Louis, Mo. Vacuum steam-heating system	708,101	Sept. 2	185	44	100	2020
Wade, John E., Brooklyn, N. Y. Car-coupling	708,274	Sept. 2	517	117 / 118	100	2086
Wade, John E., Brooklyn, N. Y. Car-coupling	708,275	Sept. 2	519	118	100	2087
Wade, Martin J., Iowa City, Iowa. Back and arm rest for water-closet or other seats	709,945	Sept. 30	3784	864	100	2818
Wadsworth, George A., Montevideo, Minn. Adjustable stand	704,608	July 15	2315	503	100	499
Wadsworth, Joseph, Paterson, N. J. Swivel-loom	708,188	Aug. 5	945	51, 52	100	1168
Wagands, Charles L., Baltimore, Md., assignor to National Enameling & Stamping Co. Spout-brace for sheet-metal vessels	704,406	July 8	1941	420	100	409
Wagener, Louise, Jacksonville, Fla. Window-seat	710,127	Sept. 30	4144	985	100	2894
Wagner, Adam C. (See Helm, James A., assignor.)						
Wagner, Edward H., New York, N. Y. Torch	706,134	Aug. 5	947	53	100	1169
Wagner, Franz X., assignor to Wagner Typewriter Company, New York, N. Y. Type-carrier action and means for mounting same	704,152	July 8	1482	317 / 318	100	311
Wagner, Franz X., assignor to Wagner Typewriter Company, New York, N. Y. Line-spacing mechanism for type-writers	708,600	Sept. 9	1070	248	100	2269
Wagner, George, and E. B. Bird, St. Paul, Minn. Frame for motor-bicycles	709,280	Sept. 16	2026	396	100	2361
Wagner, John, Denver, Colo. Means for shaping and sharpening drill-bits	706,186	Aug. 5	948	53	100	1169

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Wagner, John W. (See Frazier, Wagner, and Isenberg.)						
Wagner Typewriter Company. (See Burridge and Smith, assignors.)						
Wagner Typewriter Company. (See Morrison, William W., assignor.)						
Wagner Typewriter Company. (See Neahr, Jacob E., assignor.)						
Wagner Typewriter Company. (See Wagner, Franz X., assignor.)						
Wagner, Wilhelm, Mansfeld, Germany. Hydraulic pump	707,284	Aug. 19	2461	552	100	1655
Wagoner, Henry V., Bensonhurst, N. Y. Combined letter-sheet and envelop	704,153	July 8	1485	318	100	311
Wahlberg, Andres F., Brooklyn, N. Y. Lock	708,506	July 1	225	53	100	47
Wahle, Adolph, Davenport, Iowa. Mechanical movement	705,493	July 22	4158	904	100	889
Waibel, Frederick B., Brooklyn, assignor to Manhattan Brass Company, New York, N. Y. Combined lamp and lantern	709,654	Sept. 23	3196	713	100	2684
Wainwright, Frank R., Jersey City, N. J. Checking-machine	705,494	July 22	4159	905 906	100	890
Wainwright, William W., assignor to P. H. & F. M. Roots Company, Connersville, Ind. Rotary pump	704,234	July 8	1606	346	100	336
Waite Chair Company. (See Washburn, Theodore W., assignor.)						
Waite, Henry W., assignor of one-half to W. H. Cox, Wollaston, Mass. Steam-valve	706,613	Aug. 12	1190	264	100	1872
Waldbjorn, Jens M. K., Chicago, Ill. Toy	709,728	Sept. 23	3225	748	100	2712
Waldeyer, Henry J. (See Breunig and Waldeyer.)						
Waldo, John A., Jr., Reading, Mass. Device for fastening loose-leaf books	708,102	Sept. 2	187	44	100	2030
Wales, Anna E., Minneapolis, Minn. Shears	708,668	Sept. 9	1229	281	100	2242
Wales, Cornelius M., Guntown, Miss. Combined table-spread and napkin-holder	705,496	July 22	4164	906	100	891
Wales, Nathaniel B., Braintree, Mass. Heater or boiler	705,685	July 1	578	129	100	114
Walker, Frank, Los Angeles, Cal. Combined solar and artificial heat water-heater	705,167	July 22	3462	754	100	750
Walker, Frederick W., Utica, N. Y. Bed-frame	708,431	Sept. 2	771	178	100	2187
Walker, Harry B., Brockton, Mass. Shoe form or last	705,685	July 1	579	129	100	115
Walker, Isaac J. (See Shick, Lehman, and Walker.)						
Walker, James C., Waco, Tex. Steam-generator	704,722	July 15	2508	542 543	100	540
Walker, James G., Moro, Oreg. Attachment for threshing-machines	707,297	Aug. 19	2465	552 553	100	1657
Walker, Joseph, St. Elmo, Va., assignor of one-half to H. P. West, Washington, D. C. Plunger-adjusting mechanism for re-press brick-machines	708,276	Sept. 2	520	118	100	2087
Walker, Milo S., Chicago, Ill., assignor to General Electric Company. Circuit-interrupter	708,182	Sept. 2	343	81, 82	100	2051
Walker, Milo S., assignor of two-thirds to M. and A. L. Herskovitz, Chicago, Ill. Burner	707,285	Aug. 19	2462	552	100	1657
Walker, Milo S., assignor of two-thirds to M. and A. L. Herskovitz, Chicago, Ill. Burner	707,286	Aug. 19	2464	552	100	1657
Walker, Milton W. (See Day, Charles M., assignor.)						
Walker, Reinert R., Indianapolis, Ind. Bracket-shelf	704,154	July 8	1486	318	100	312
Walker, Robert L., New York, N. Y. Garbage-furnace	709,946	Sept. 30	3786	854	100	2818
Walker, Samuel. (See Hindley, Walker, and Rose.)						
Walker, Samuel J., Leesville, La. Force-draft attachment for stoves	707,188	Aug. 19	2280	510	100	1619
Walker, William. (See Wilson, Robert, assignor.)						
Walker, William H. (See Mork, Little, and Walker.)						
Walker, William R., Sabula, Iowa. Napkin-support	708,864	July 1	808	197	100	180
Walkins, Louis E., Springfield, Mass., assignor to E. W. Farnham, Chicago, Ill. Electric-railway system	709,053	Sept. 16	2017	460	100	2494
Wall, Charles F., Philadelphia, Pa. Nose-piece for eyeglasses	707,883	Aug. 26	3677	827	100	1981
Wall, Charles L., Philadelphia, Pa. Window frame and sash	708,490	Sept. 2	770	175	100	2137
Wallace, Allen B., Newcastle, Pa. Lock	705,495	July 22	4163	906	100	890
Wallace, James C., Colorado City, Colo. Filter-bed	705,726	July 29	4653	1011	100	1008
Wallace, John H., Stravithie, Scotland. Rope-grip for snaffling	704,282	July 8	1713	373 374	100	360
Wallis, Edward D., Bluemound, Kans. Corn-harvester	706,614	Aug. 12	1192	264 265	100	1872
Walsh, Michael, and J. N. Augers, Bay City, Mich. Wrench	708,183	Sept. 2	345	82	100	2052
Walter, Gustave, Sandwich, Ill. Combined storm-apron and dust-hood	706,285	Aug. 5	571	123 124	100	1231
Walter, Henry S. (See Riecker and Walter.)						
Walter, Henry S. (See Traut and Walter.)						
Walters, Charles, *et al.* (See Clark, Spencer, assignor.)						
Walters, William M., Liverpool, England. Mooring ships	704,155	July 8	1487	319	100	312
Walther, Charles F. (See Peoples and Walther.)						
Walther, Edward, Washington, Iowa. Carbureter	707,467	Aug. 19	2785	631	100	1724
Walther, Edward, Washington, Iowa. Air-pump	708,944	Sept. 9	1747	403 404	100	2351
Walton, Herbert G., Bates County, Mo. Seeding attachment for grain-drills	705,497	July 22	4165	906	100	891
Walton, Jerrold F., Sturgis, Mich. Adjustable-back chair	705,171	July 22	3472	755	100	752
Walton, John, Erie, Pa., assignor of one-half to Allis-Chalmers Company. Sawmill set-works	707,370	Aug. 19	2806	589	100	1685
Walton, Thomas J., Corsicana, Tex. Grate	708,865	July 1	808	198	100	180
Walton, William G., and D. W. Harner, Philadelphia, assignors of one-third to E. W. Evans, West Philadelphia, Pa. Garment-supporter	707,726	Aug. 26	3340	748	100	1855
Wands, John C., St. Louis, Mo. Roller side bearing	708,601	Sept. 9	1071	242	100	2209
Wangerin, John G., Springfield, Minn. Implement-seat	709,619	Sept. 23	3141	699	100	2673
Wanless, John, Bay City, Mich. Window-locking device	707,089	Aug. 12	1978	444	100	1587
Wansbrough, William D., Lincoln, England. Two-speed gear-wheel	709,381	Sept. 16	2950	666	100	2608
Waples, Margaret E., Ann Arbor, Mich. Hat-fastener	708,507	July 1	229	54	100	47
Ward, John S. (See Ivor and Ward.)						
Ward, Timothy M., Newark, N. J. Coffee-roaster	708,508	July 1	230	54, 55	100	47
Wardell, John G. (See Cowan, Jewett, and Wardell.)						
Warden, George W. (See Cox and Warden.)						
Warder, Bushnell & Glessner Co. (See Bauer, Charles L., assignor.)						
Wardle, William W. (See Keith and Wardle.)						
Ware, Erastus A., assignor of one-half to M. B. McDonald, Noank, Conn. Pipe-wrench	709,064	Sept. 16	2019	461	100	2494
Ware, Thomas F., Colfax, Cal. Thill-coupling	707,741	Aug. 26	3329	756	100	1860
Ware, Walter F., Camden, N. J., and W. R. Cartledge, Philadelphia, Pa. Elastic stocking	707,659	Aug. 26	3198	717	100	1826
Wareham, Fred A., East Providence, R. I. Coupling	707,931	Aug. 26	3673	870	100	1959
Warlick, Noah F., Chattanooga, Tenn. Fan-operating device	707,040	Aug. 19	1979	444	100	1587
Warner, Charles H., Beloit, Wis. Paper-making machine	703,714	July 1	625	139 140	100	123
Warner, Claude B., Avoca, Ill. Window-screen	704,992	July 15	3107	669	100	668
Warner, Eugene L., Waverly, Kans. Woven-wire fence fabric	709,065	Sept. 16	2020	461	100	2494
Warner, George M., Brooklyn, N. Y., assignor, by mesne assignments, to Central Cyclone Company, Ltd., London, England. Apparatus for supplying fuel to furnaces	707,902	Aug. 26	3675	870 871	100	1959
Warner, Henry H., Tacoma, Wash. Coupling mechanism for railway steam or air pipes	708,103	Sept. 2	188	44, 45	100	2030
Warner, Henry H., Tacoma, Wash. Flexible pipe-joint	708,104	Sept. 2	189	45	100	2030

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Warner, Isaac M., assignor to F. C. Boise, Union City, Mich. Wire-fence stretcher	705,498	July 22	4166	907	100	891
Warner, Isaac M., assignor to F. C. Boise, Union City, Mich. Telephone or telegraph pole	708,277	Sept. 2	521	119	100	2087
Warner, Isaac M., assignor to F. C. Boise, Union City, Mich. Fence-post	709,835	Sept. 23	3544	799	100	2757
Warner, Lorin V., Cassopolis, Mich. Spring draft attachment	704,604	July 15	2816	503	100	409
Warner, William L., Chicago, Ill. Heater	709,947	Sept. 30	3787	855	100	2819
Warren, Ambrose G., assignor of one-half to J. W. Paxson Company, Philadelphia, Pa. Sand-blast apparatus	707,597	Aug. 19	2899	656	100	1747
Warren, Bernard J., Dover, Me. Fishing-rod holder	704,991	July 15	3105	669	100	668
Warren, Clinton J., Chicago, Ill. Bottling-machine	707,737	Aug. 26	3341	748 749 750 751 752 753 754	100	1855
Warren, Clinton J., Chicago, Ill. Machine for applying labels to bottles	707,738	Aug. 26	3354	751 752 753	100	1857
Warren, Clinton J., Chicago, Ill. Machine for wiring corks in bottles	707,739	Aug. 26	3358	754 755 756	100	1858
Warren, Clinton J., Chicago, Ill. Bottle-washing machine	707,740	Aug. 26	3362	756 757 758	100	1858
Warren, Clinton J., Chicago, Ill. Machine for corking bottles	707,923	Aug. 26	3878	871 872	100	1960
Warren, Clinton J., Clinton, Ill. Bottle-filling machine	707,904	Aug. 26	3883	872 873	100	1961
Warren, Edward K., and J. H. Holden, Threeoaks, Mich. Woven feather fabric	709,620	Sept. 23	3142	700	100	2674
Warren, Edward K., and J. H. Holden, Threeoaks, Mich. Woven feather fabric	709,621	Sept. 23	3143	700	100	2674
Warren, Edward K., and J. H. Holden, Threeoaks, Mich. Woven feather fabric	709,622	Sept. 23	3144	700	100	2674
Warren, George E. (See Gordon and Warren.)						
Warren, George E., Boston, Mass., assignor to Metallic Heel and Counter Company, Kittery, Me. Machine for making pieced soles	706,615	Aug. 12	1194	265	100	1873
Warren, Henry E., Newton, assignor to Lombard Governor Company, Boston, Mass. Relief-valve for reservoirs containing fluid under pressure	708,687	July 1	581	129	100	115
Warren, John E. (See Fassett and Warren.)						
Warren, John W., Omaha, Nebr. Purifying hydrocarbon oils	705,168	July 22	3467		100	751
Warring, Franklin B. (See Caton and Warring.)						
Warring, Franklin B., assignor to Caton's Foundry and Machine Company, San Jose, Cal. Hydrocarbon-feeder for explosive-engines	709,428	Sept. 16	2745	617	100	2579
Wash-Board Pail Company. (See Libenow, Ferdinand E., assignor.)						
Washa, William, New York, N. Y. Danger-signal for railways	710,383	Sept. 30	4002	1088 1089	100	2991
Washburn, Edwin C., Minneapolis, Minn. Draft-rigging for engines and cars	705,169	July 22	3468	754 755	100	751
Washburn, Theodore W., assignor to Wait Chair Company, Baldwinsville, Mass. Convertible chair	708,278	Sept. 2	522	119	100	2087
Washburn, Warren S., Adams Center, N. Y. Harvester	706,867	Aug. 5	724	158	100	1263
Washington, George, New Brighton, N. Y. Hydrocarbon incandescent lamp	706,504	Aug. 5	996	219	100	1318
Washington, George, New Brighton, N. Y. Gage	706,505	Aug. 5	998	220	100	1319
Wassmann, August. (See Tuck and Wassmann.)						
Waterbury Button Company. (See Smith, Joseph R., assignor.)						
Waterman, Albert P., Orange, and G. H. E. Berthold, Newark, assignors to Edison Phonograph Works, Orange, N. J. Numbering-machine	709,128	Sept. 16	2143	491 492	100	2452
Waterman, Elizabeth H., Binghamton, N. Y. Stocking-supporter	709,066	Sept. 16	2021	461	100	2494
Waterman, Lewis E., assignor to Emerson Manufacturing Company, Rockford, Ill. Disk plow	705,627	July 29	4480	971	100	967
Waterman, Lewis E., assignor to Emerson Manufacturing Company, Rockford, Ill. Wheeled plow	705,628	July 29	4482	972	100	967
Waterman, Sarah, New York, N. Y. Self-igniter	706,279	Sept. 2	523	119	100	2088
Watlington, Edgar H., Ridgewood, N. J., assignor to Sprague Electric Company, New York, N. Y. Hoisting apparatus	707,660	Aug. 26	3199	718	100	1826
Watrous, Earl G., Chicago, Ill. Water-closet valve	710,128	Sept. 30	4147	935	100	2894
Watrous, Earl G., Chicago, Ill. Valve	710,129	Sept. 30	4150	935	100	2895
Watson, Frank C. (See Dougan and Watson.)						
Watson, George A. (See Brooks and Watson.)						
Watson, Joseph G., *et al.* (See Stanley, John M., assignor.)						
Watson, Leslie J., assignor of one-half to G. F. Conner, Port Huron, Mich. Governor-valve	706,616	Aug. 12	1197	266	100	1874
Watson, Merrill, New York, N. Y. Fireproof floor construction	710,308	Sept. 30	4170	1008	100	2964
Watson, Peter B., Philadelphia, Pa. Folding reclining-chair	707,884	Aug. 26	3678	827 828	100	1921
Watson, Thomas, Bridge of Weir, assignor to E. S. Coats, Paisley, Scotland. Flier for spinning and doubling machines	708,945	Sept. 9	1748	404	100	2351
Watts, John, Akron, Ohio. Fifth-wheel	707,189	Aug. 19	2281	511	100	1630
Watts, John T., Crookston, Minn. Mechanical movement for converting motion	705,499	July 22	4168	907	100	891
Watts, Louis A., assignor of one-half to G. Schott, Cincinnati, Ohio. Adjustable curtain-bracket	708,280	Sept. 2	528	119	100	2088
Watts, Louis A., assignor of one-half to G. Schott, Cincinnati, Ohio. Adjustable shade-bracket	708,281	Sept. 2	529	120	100	2088
Watts, Louis A., assignor of one-half to G. Schott, Cincinnati, Ohio. Adjustable curtain-bracket	708,507	Sept. 2	917	208	100	2167
Watts, Thornton L., Muncy Valley, Pa. Railway-joint	707,468	Aug. 19	2786	631	100	1724
Waugh, Daniel S., Chicago, Ill. Valveless hammer	709,067	Sept. 16	2022	461	100	2495
Waugh, James M., Chicago, Ill. Draft-rigging for railway-cars	705,172	July 22	3474	756	100	752
Wauters, William M. (See Edwards and Wauters.)						
Way, Henry E., assignor of one-half to H. E. Griffith, Custer, S. D. Ore-testing tablet	704,409	July 8	1942	420	100	409
Wayman, Albert J., Dubois, Pa. Electrical connector	704,670	July 15	2423	594	100	582
Wayte, William M., Detroit, Mich. Game	707,469	Aug. 19	2788	631	100	1724
Wear, Frank F., *et al.* (See Tittle, Horatio S., assignor.)						
Weaver, Albert L. (See Winans, Daniel M., assignor.)						
Weaver, Albert S., assignor of one-half to P. Ochs, Providence, R. I. Guard for eyeglasses	710,297	Sept. 30	4338	976	100	2987
Weaver, Calvin P., Bloomsburg, Pa. Leaf-holder	704,410	July 8	1944	421	100	409
Weaver, Charles D., McPherson, Kans., assignor to Clark-Weaver Manufacturing Company, Greeley, Colo. Drying-reel	708,184	Sept. 2	346	88	100	2052

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Weaver, Charles D., McPherson, Kans., assignor to Clark-Weaver Manufacturing Company, Greeley, Colo. Shoe-lacing-tip machine	708,269	Sept. 2	526	120 121	100	2088
Weaver, William H. M., assignor of one-half to R. J. Speir, Macon, Ga. Electrical system of recording and checking as applied to railway signaling	710,348	Sept. 30	4539	1084 1085	100	2979
Webb, George B., Westfield, N. J., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y. Type-writing machine	708,866	July 1	900	198	100	180
Webb, Henry, Ashton, Mich. Machine for cutting vegetable-roots	706,368	Aug. 5	796	158	100	1363
Webb, Samuel F., and W. S. Huff, Wichita, Kans. Animal-poke	706,617	Aug. 12	1198	266	100	1874
Webb, Samuel J., Minden, La. Bale-press	706,618	Aug. 12	1200	266	100	1874
Webb, Samuel J., Minden, La. Rotary engine	709,622	Sept. 23	3145	700 701	100	2974
Webber, Mary E., Collierville, Tenn. Mosquito-canopy	709,586	Sept. 23	2995	667	100	2544
Webber, Samuel S., Trenton, N. J. Grip-actuating mechanism	706,369	Aug. 5	797	158	100	1363
Weber, Clyde R. (See Stearns and Weber.)						
Weber, Frederick C., Chicago, Ill. Electric smelting-furnace	704,996	July 15	3108	669 670	100	668
Weber, Frederick C., Chicago, Ill. Treating metallic oxids in the production of metals and alloys	705,727	July 29	4664	1011	100	1008
Weber, George A., Stamford, Conn., assignor to Weber Railway Joint Manufacturing Co., New York, N. Y. Railway-rail joint	705,179	July 22	3471	755	100	752
Weber, Henry H. (See Bastle and Weber.)						
Weber, Martin. (See Doppelmayr and Weber.)						
Weber, Moritz. (See Vogel and Weber.)						
Weber Railway Joint Manufacturing Co. (See Weber, George A., assignor.)						
Weber, William L. (See Flood, Alfred L., assignor.)						
Webster, Glenn C., assignor to Sterling Electrical Manufacturing Company, Warren, Ohio. Incandescent electric lamp	708,422	Sept. 2	773	173	100	2137
Webster, Harold A., Haverhill, Mass., assignor to Goodyear Shoe Machinery Company, Portland, Me. Tension device	704,411	July 8	1945	421	100	409
Webster, Hosea, Montclair, N. J. Superheater for steam-generators	708,435	Sept. 2	774	174	100	2138
Webster, Hosea, Montclair, N. J. Superheating steam	709,695	Sept. 23	3197	714	100	2984
Webster, J. H., *et al.* (See Fulford, Elijah D., assignor.)						
Webster, Joseph C., Philadelphia, Pa. Solder for soldering aluminium	707,470	Aug. 19	2788	.....	100	1725
Wechsler, Simon. (See Adelsberger and Friedmann, assignors.)						
Weddell, Oliver S., McKeesport, Pa. Rail-joint	707,471	Aug. 19	2789	632	100	1725
Wedderburn, George, Dunn Loring, Va. Carbureting-lamp	707,190	Aug. 19	2282	511	100	1020
Weder, Paul J., assignor to Sharp & Smith, Chicago, Ill. Veterinary surgeon's float	708,827	July 1	908	198	100	181
Weder, Paul J., assignor to Sharp & Smith, Chicago, Ill. Veterinary surgeon's float	708,828	July 1	905	198	100	181
Weder, Paul J., assignor to Sharp & Smith, Chicago, Ill. Veterinary surgeon's float	708,829	July 1	907	199	100	182
Weder, Paul J., assignor to Sharp & Smith, Chicago, Ill. Non-refillable bottle	704,994	July 15	3112	670	100	668
Wedgefuth, Louis C., New York, N. Y. Steering and braking device	704,156	July 8	1488	319	100	312
Weeber, Christian F. Jr., Albany, N. Y. Bottle-filling machine	708,870	July 1	906	199 200	100	183
Weed, Jacob E., Philadelphia, Pa., assignor of one-half to S. Twitchell Company, Camden, N. J., and Philadelphia, Pa. Bottle-filling machine	708,283	Sept. 2	532	121	100	2089
Weeks, Charles J., Tarrytown, N. Y. Postman's rack	706,457	Aug. 5	988	205	100	1305
Wegeforth, Theodore C. H. (See Fisher, Francis E., assignor.)						
Wegner, John J., Brooklyn, N. Y. Sack-race structure	705,886	July 29	4946	1075	100	1060
Wehmeyer, John W., St. Louis, Mo. Car-fender	704,615	July 15	3217	508	100	500
Weible, Thomas P., Columbus, Ohio. Non-refillable bottle	704,723	July 15	3217	544	100	542
Weichhart, John, San Francisco, Cal. Belt-carrier	706,236	Aug. 5	572	124	100	1231
Weidaw, Frank T., Syracuse, N. Y. Brush-holder	709,359	Sept. 23	3050	691	100	2855
Weidenbaker, Edmund, Chicago, Ill. Flask	707,742	Aug. 26	3369	758 759	100	1860
Weierbach, William, and E. S. Dickson, assignors to Pittsburgh Cigar Machine Company, Pittsburg, Pa. Cigar-bunching machine	706,137	Aug. 5	956	53	100	1171
Weigel, Joel, San Francisco, Cal. Clamp for tank or like hoops	707,041	Aug. 12	1981	444 445	100	1538
Weigel, Karl, Hanover, Germany. Harp	709,284	Sept. 16	2456	.....	100	2518
Weigl, Johann E., Vienna, Austria-Hungary. Matrix for stereotyping	705,801	July 22	4173	908	100	892
Weil, Brockman & Company. (See McCown, Sylvester, assignor.)						
Weil, Joseph, New York, N. Y. Necktie-fastener	704,996	July 15	3115	671	100	664
Weimer, Charles A., Carrollton, Ill. Detachable plow-point	709,187	Sept. 16	2271	.....	100	2477
Weinberg, Arthur, assignor to L. Cassella & Co., Frankfort-on-the-Main, Germany. Yellow acridin dye and making same	709,186	Sept. 16	2270	.....	100	2477
Weinberg, Arthur, and F. Klingemann, assignors to L. Cassella & Co., Frankfort-on-the-Main, Germany. Blue dye and making same	710,170	Sept. 30	4229	954	100	2912
Weindorf, Don F., Erie, Pa. Marine dock	704,255	July 8	1607	348	100	336
Weingaertner, Albert, St. Louis, Mo. Sash-balance connection						
Weingarten Bros. (See Grotta, David, assignor.)						
Weir, Max W., Newark, N. J., assignor to Densmore Typewriter Company, Syracuse, N. Y. Type-writing machine	708,509	July 1	227	55, 56	100	49
Weir, Max W., Newark, N. J., assignor to Wyckoff, Seamans & Benedict, Ilion, N. Y. Type-writing machine	706,136	Aug. 5	949	53	100	1169
Welsbrod, John F., Allegheny, Pa. Metallic railway-tie	706,788	Aug. 12	1535	344	100	1446
Weise, Paul, Lester Prairie, Minn. Combined milk strainer and ventilator	708,295	Sept. 2	584	121	100	2090
Weisenborn, George P. A., Clarence, Mo. Wire-fence machine	705,500	July 22	4170	907 908	100	893
Weisenburger, Charles O. (See Moffitt and Weisenburger.)						
Weiss, Carl W., New York, N. Y. Explosive-engine	704,995	July 15	3118	670	100	664
Weiss, Carl W., New York, N. Y. Regenerator-burner	710,130	Sept. 30	4154	936	100	2896
Weiss, Carl W., assignor of one-half to A. Mietz, New York, N. Y. Incandescent igniter for explosive-engines	708,284	Sept. 2	533	121	100	2090
Weiss, Carl W., assignor of one-half to A. Mietz, New York, N. Y. Lubricator for explosive-engines	710,086	Sept. 30	3940	869	100	2851
Weiss, Moritz, Vienna, Austria-Hungary. Pneumatic tire	707,661	Aug. 26	3500	718	100	1927
Weiss, Louis T., Flatbush, N. Y. Variable-speed gearing	705,639	July 1	455	105	100	69
Weiss, Robert, Kingersheim, near Mulhouse, Germany. Apparatus for dyeing	704,283	July 8	1715	374	100	360
Weissenthanner, Alfred L., New York, N. Y. Closure for bottles, jars, &c.	705,173	July 22	3473	756	100	753
Weisser, Mathias, Milwaukee, Wis. Telephone-transmitter	710,309	Sept. 30	4472	1036	100	2965
Welch, Abraham T., Baltimore, Md. Drier	708,603	Sept. 9	1074	243	100	2310
Welch, Abraham T., Baltimore, Md. Drier	708,605	Sept. 9	1082	244 245	100	2311
Welch, Abraham T., Baltimore, Md. Drier	708,604	Sept. 9	1087	244	100	2312
Welch, Abraham T., Baltimore, Md. Heating materials for the purpose of drying or treating	708,946	Sept. 9	1750	404	100	2952
Welch, E. Baker, *et al.* (See Robinson, Thomas C., assignor.)						
Welch, Edwin K., Philadelphia, Pa. Mortar composition	708,188	Aug. 5	957	.....	100	1171

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Welch, H. Augusta, *et al.* (See Robinson, Thomas C., assignor.)						
Welch, Rosia W., assignor, by mesne assignments, to Southern Rice Polishing Machine Company, Baltimore, Md. Machine for cleaning rice, &c.	705,985	July 29	5119	1116	100	1096
Wellington, Frank O., Braintree, assignor to Fore River Ship and Engine Company, Quincy, Mass. Conduit-clamp	705,984	July 29	5118	1116	100	1096
Wellman, Arthur W., Madison, Wis. Woven-wire fencing	707,743	Aug. 26	3373	759	100	1861
Wellman, David L., Frasee, Minn. Flax-harvester	706,848	Sept. 9	1576	359 360	100	2816
Wellman, Harold R., New York, N. Y., assignor to General Incandescent Arc Light Company of New York. Case for fan-motors	708,105	Sept. 2	190	45	100	2081
Wellman, Louis P., West New York, N. J. Stirrup-strap	705,469	Aug. 5	941	205	100	1305
Wellman-Seaver-Morgan Engineering Company. (See Seaver, John W., assignor.)						
Wellman, Willard F., Belmont, Me. Roller-bushing for sheaves	710,088	Sept. 30	4060	915	100	2876
Wells, Channing M., Southbridge, Mass. Spectacle or eyeglass case	705,502	July 22	4174	908	100	892
Wells, Charles G., Hartford, assignor to Pouleur and Wells, Windsor, Conn. Machine for stringing tobacco	708,434	Sept. 2	775	174	100	2138
Wells, Frank A., New York, N. Y. Water-closet	708,106	Sept. 2	191	45	100	2081
Wells, James A., and J. D. Sumrall, Knight, Tex. Current-wheel	705,871	July 1	912	200	100	183
Wells, Jesse O., Des Moines, Iowa. Traction-engine	705,872	July 1	913	200 201	100	183
Wells, John F., *et al.* (See Harrington, Louder, assignor.)						
Wells, Luther, Versailles, Ky. Water-elevator	709,809	Sept. 23	3499	789	100	2746
Wells, Nelson D. (See Couch and Wells.)						
Welter, Samuel, and J. Armstrong, Chicago, Ill., assignors to Armstrong Bros. Tool Co. Tool-holder	707,472	Aug. 19	2791	632	100	1725
Welty, Joel, Fort Wayne, Ind. Machine for cutting and bending rules	707,744	Aug. 26	3374	759	100	1861
Wende, Frank J., Chicago, and B. B. Carter, Hinsdale, assignors, by mesne assignments, to D. & W. Manufacturing Company, Chicago, Ill. Printing-machine	709,810	Sept. 23	3500	789 790 791	100	2746
Wenig, Ferdinand. (See Berg, Rudolf, assignor.)						
Wenker, Raymond J., Milwaukee, Wis. Dental form for holding teeth	707,810	Aug. 26	3530	797	100	1892
Wenneis, William, Weehawken, N. J. Folding furniture	707,288	Aug. 19	2466	558	100	1658
Wentzel, James C., Greensburg, Pa. Rail-joint fastener	706,469	Aug. 5	943	205	100	1305
Wentzel, Otto, Jersey City, assignor of one-half to E. Kohler, Newark, N. J. Safety device for pin-tongues	708,715	July 1	227	140	100	134
Weasel, William, Appleton, Wis. Apparatus for making sulfurous acid	704,412	July 8	1947	422	100	409
Weppio, Isaac W., Baudon, Minn. Rotary steam-engine	708,684	Sept. 9	1230	291 292	100	2942
Werlin, Louis, Elsmere, Del. Automatic chemical fire-extinguisher	705,503	July 22	4175	908	100	893
Werner, Frederick W., Hempstead, N. Y. Means for promoting combustion	709,946	Sept. 30	3790	955	100	2819
Werner, Paul F., Willimansett, Mass. Trolley-track switch	709,580	Sept. 23	3091	688 689	100	2664
Werner, Paul F., Willimansett, assignor to Coburn Trolley Track Manufacturing Company, Holyoke, Mass. Switch for overhead tubular trolley-tracks	708,139	Aug. 5	958	54	100	1171
Wessel, Ferdinand, Brooklyn, N. Y. Machine for shaving electrotypes	708,485	Sept. 2	777	175	100	2138
Wessel, Ferdinand, Brooklyn, N. Y. Machine for beveling photo-engravers' plates	708,486	Sept. 2	779	176	100	2139
Wessel, Karl, assignor to Curled Fibre Manufacturing Company, St. Paul, Minn. Mattress-filling machine	707,745	Aug. 26	3376	760	100	1861
Wessel, Karl, assignor to Curled Fibre Manufacturing Company, St. Paul, Minn. Mattress-filling machine	707,746	Aug. 26	3381	761	100	1862
Wessel, William C., and H. W. Jacob, Pittsburg, Pa. Railway-rail joint	708,605	Sept. 9	1080	245	100	2813
Wesselmann, Bruno, Gross Lichterfelde, Germany. Frame for metal-shearing machines	710,310	Sept. 30	4473	1009 1010	100	2965
Wesson, Joseph H., Springfield, Mass. Revolver-lock	708,437	Sept. 2	781	177	100	2139
West, Fred A., Browning, Wis. Cow-milker	710,884	Sept. 30	4605	1039	100	2992
West, Henry P. (See Walker, Joseph, assignor.)						
West, John T., Bowling Green, Ky. Rein-guard	705,988	July 29	5121	1117	100	1096
West, Lawrence B., Cincinnati, Ohio. Beam for railway-track foundations	706,619	Aug. 12	1202	267	100	1375
West, Trueman C., Hattiesburg, Miss. Baling-press	708,688	July 1	583	130	100	115
Western Banana Crate Manufacturing Company. (See Doud and Shouse, assignors.)						
Western Electric Company. (See Dean, William W., assignor.)						
Western Electric Company. (See McBerty, Frank R., assignor.)						
Western Electric Company. (See McBerty and Loveridge, assignors.)						
Western Electric Company. (See O'Connell, Joseph J., assignor.)						
Western Electric Company. (See Scribner, Charles E., assignor.) (Reissue.)						
Western Manufacturing Company. (See Shafer, Charles T., assignor.)						
Western Telegraph Typewriting Machine Company. (See Foote, Theodore M., assignor.)						
Western Wire Fence Company. (See Canfield, Frank, assignor.)						
Westervelt, Herbert E., South Bend, Ind. Paper-bag machine	709,129	Sept. 16	2146	492 493	100	2452
Westinghouse Air Brake Company. (See Herr, Edwin M., assignor.)						
Westinghouse Air Brake Company. (See Mason, Harry R., assignor.)						
Westinghouse Air Brake Company. (See Synnestvedt, Paul, assignor.)						
Westinghouse Air Brake Company. (See Westinghouse, Henry H., assignor.)						
Westinghouse Electric & Manufacturing Co. (See Davis, Harry P., assignor.)						
Westinghouse Electric & Manufacturing Company. (See Lamme, Benjamin G., assignor.)						
Westinghouse Electric and Manufacturing Company. (See Merrick, Frank A., assignor.)						
Westinghouse Electric and Manufacturing Company. (See Merrick and Forrer, assignors.)						
Westinghouse Electric and Manufacturing Company. (See Merrick and Stull, assignors.)						
Westinghouse Electric and Manufacturing Company. (See Stull, Emmett W., assignor.)						
Westinghouse Electric and Manufacturing Company. (See Tyler, Charles C., assignor.)						
Westinghouse, Georga. (See Goddard, Frederick M., assignor.)						
Westinghouse, George. (See Potter, Henry N., assignor.)						
Westinghouse, George, Pittsburg, Pa. Furnace	708,107	Sept. 2	192	46	100	2081
Westinghouse, George, Pittsburg, Pa. Car-coupling	708,747	Sept. 9	1250	308 309	100	2988
Westinghouse, George, Pittsburg, Pa. Gas-engine	710,395	Sept. 30	4607	1039	100	2992
Westinghouse, Henry H., Edgewood Park, assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Fluid-pressure brake	707,473	Aug. 19	2793	632	100	1725
Westinghouse, Henry H., Edgewood Park, assignor to Westinghouse Air Brake Company, Pittsburg, Pa. Fluid-pressure brake	707,474	Aug. 19	2795	633	100	1726
Westinghouse Machine Company. (See Bole, William A., assignor.)						
Westinghouse Machine Company. (See Hodgkinson, Francis, assignor.)						
Westlake, Charles T., Granite City, Ill., assignor to Commonwealth Steel Company, St. Louis, Mo. Swinging spring-seat for car-bolsters	704,997	July 15	3116	671	100	664

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Westlake, Charles T., Granite City, Ill., assignor to Commonwealth Steel Company, St. Louis, Mo. Truck-end casting	706,789	Aug. 12	1587	345	100	1446
Weston, Asa L., Dover, Ohio. Hasp-fastener	704,413	July 8	1949	422	100	410
Weston, Charles B., Brooklyn, N. Y. Wall-paper machine	707,289	Aug. 19	2468	553	100	1658
Weston, Dyson. (See Tuckfield, Charles, assignor.)						
Westover, Henry J., Mount Vernon, assignor to H. W. Leonard, Bronxville, N. Y. Variable-speed and reversing gear	709,690	Sept. 23	3261	731	100	2698
Wetherill, John P., South Bethlehem, Pa. Magnetic separator	708,185	Sept. 2	348	83	100	2052
Wetherill, John P., South Bethlehem, Pa. Magnetic separator	708,186	Sept. 2	350	88, 84	100	2053
Wetherill, John P., South Bethlehem, Pa. Magnetic separator	708,187	Sept. 2	352	84	100	2054
Wetherill, William C., Joplin, Mo. Zinc-furnace	708,438	Sept. 2	782	177, 178	100	2139
Wetherman, Gerald F., and G. Holzhausen, Enfield, England. Stone or plate for photo-mechanical printing and for other purposes, and preparing same	707,747	Aug. 26	3384	.....	100	1864
Wethey, C. E., *et al.* (See Brooks, Theodore L., assignor.)						
Wharfield, Henry C., *et al.* (See Wharfield, Marion A., assignor.)						
Wharfield, Marion A., assignor of eight-fifteenths to B. G. McMechen and H. C. Wharfield, Toledo, Ohio. Link-motion for steam-engines	705,174	July 22	3481	757	100	754
Wharton, Harry, Loughborough, England. Reversing tap-holder	708,748	Sept. 9	1356	309	100	2270
Wharton, John M. (See Dye, William H., assignor.)						
Wharton, William, Jr., assignor to William Wharton, Jr., & Company, Incorporated, Philadelphia, Pa. Railway-switch	704,414	July 8	1950	422	100	410
Wheaton, Charles H., Iola, Kans. Leaf for books	709,529	Sept. 23	2996	667	100	2044
Wheeler, Charles H., and F. W. Kremer; said Wheeler assignor to India Rubber Company, Akron, Ohio. Vehicle-tire	705,175	July 22	3482	757	100	754
Wheeler, Charles H., and F. W. Kremer; said Wheeler assignor to India Rubber Company, Akron, Ohio. Vehicle-wheel	705,176	July 22	3483	757	100	754
Wheeler, Charles H., and F. W. Kremer; said Wheeler assignor to India Rubber Company, Akron, Ohio. Vehicle-wheel	705,177	July 22	3485	757	100	755
Wheeler, Charles H., and F. W. Kremer; said Wheeler assignor to India Rubber Company, Akron, Ohio. Solid-rubber tire	705,178	July 22	3487	758	100	755
Wheeler, Clifton H., and L. L. Pratt, Shorthills, N. J., assignors to Wheeler Condenser and Engineering Company, New York, N. Y. Water-cooling tower	707,042	Aug. 12	1981	445	100	1538
Wheeler Condenser and Engineering Company. (See Wheeler and Pratt, assignors.)						
Wheeler, Samuel D., Fowlstown, assignor of one-half to D. N. Miller, Attapulgus, Ga. Machine for stringing tobacco-leaves	710,027	Sept. 30	3942	869	100	2852
Wheeler, Seth, Albany, N. Y. Machine for perforating paper	707,895	Aug. 26	3680	828	100	1921
Wheeler, Webster B., Fullerton, Nebr. Electrically-controlled optical appliance	709,837	Sept. 23	3548	800	100	2758
Wheeler & Wilson Manufacturing Company. (See Dimond, George H., assignor.)						
Wheeler & Wilson Manufacturing Company. (See Eames, George M., assignor.)						
Wheeler & Wilson Manufacturing Company. (See Noole, Donald, assignor.)						
Wheelwright, Charles S., Bristol, R. I. Apparatus for cooking garbage	709,826	Sept. 23	3545	799	100	2757
Whelan, Joseph A., Rock Springs, Wyo. Weed-puller	707,475	Aug. 19	2798	633	100	1736
Wheler, Harvey, Harrisburg, Pa. Push-pole	705,179	July 22	3489	758	100	755
Whetham, Charles, Ruskin, Canada. Portable tripod	708,873	July 1	917	201	100	184
Whinery, Samuel B., assignor to Pittsburgh Blue Print Company, Pittsburg, Pa. Blue-printing apparatus	704,415	July 8	1950	422, 423	100	410
	705,504	July 22	4177	909	100	903
Whipple, Charles, Ashley, Ohio. Wire-fence tool	710,228	Sept. 30	4839	976	100	2937
White, Booker C., and T. J. Jones, Catlin, Ill.; said Jones assignor to said White. Mowing-machine	704,416	July 8	1951	423	100	410
White, Charles B. and F., Landover, Md. Spring bed-bottom	708,685	Sept. 9	1231	282	100	2242
White, Charles P., Spencer, N. C. Artificial limb						
White, Charles T., assignor of one-half to A. B. Graham, South Bend, Ind. Bottle-filling device	708,874	July 1	921	202	100	185
White, Edward L. (See White, John H. and E. L.)						
White, Frank L., assignor of one-half to W. B. Howel, Pine Bluff, Ark. Cotton-compressor	704,998	July 15	3117	671	100	664
White, Franklin. (See White, Charles B. and F.)						
White, Henry, and W. G. Taylor, Marion, Ohio, assignors of one-third to Z. T. Silvis, Greensburg, Pa., and H. J. Silvis, Mansfield, Ohio. Valve-gear	707,995	Aug. 26	3888	873, 874	100	1902
White, Henry P., Kalamazoo, Mich. Speed-regulator	708,439	Sept. 2	786	178	100	2140
White, John H. and E. L., Englewood, N. J. Machine for making paper tubes	710,286	Sept. 30	4018	1040	100	2933
White, Joseph, assignor to R. Hoe, New York, N. Y. Printing-machine	705,180	July 22	3489	758	100	756
White, Joseph, assignor to R. Hoe, New York, N. Y. Feeding mechanism for printing-machines	705,181	July 22	3495	758, 759	100	757
White, Paul H., assignor to White Steam Wagon Company, Indianapolis, Ind. Steam-generator	707,996	Aug. 26	3891	874	100	1903
White, Paul H., assignor to White Steam Wagon Company, Indianapolis, Ind. Valve-gear	709,949	Sept. 30	3791	855	100	2820
White, Rollin H., assignor to White Sewing Machine Company, Cleveland, Ohio. Valve mechanism for steam-carriage burners	707,478	Aug. 19	2805	634	100	1728
White Sewing Machine Company. (See White, Rollin H., assignor.)						
White Steam Wagon Company. (See White, Paul H., assignor.)						
White, William, Lawrenceburg, Tenn. Display-rack	704,157	July 8	1489	319	100	313
White, William, Philadelphia, Pa. Curbing and paving	701,999	July 15	3118	672	100	665
White, William L., Hedon, near Hull, England. Sweetmeat-machine	709,892	Sept. 16	2602	597, 598	100	2562
Whiteford, Horace F., *et al.* (See Johnston, George W., assignor.)						
Whitehead, Aura E., assignor to Farrand & Votey Organ Company, Detroit, Mich. Piano-player	705,000	July 15	3119	672	100	665
Whitehead, Edwin A., Broken Hill, New South Wales, Australia. Distance-recording apparatus for reciprocating bodies	708,440	Sept. 2	787	178, 179	100	2140
Whitehead, Frederick L., Butte, Mont. Water attachment for power-drills	704,158	July 8	1490	320	100	313
Whitehead & Hoag Company. (See Mountford, Sidney, assignor.)						
Whitehouse, Thomas, Birmingham, England. Apparatus for rolling flat sheet metal	705,887	July 29	4048	1076	100	1061
Whitely, William N., Springfield, Ohio. Bicycle	707,480	Aug. 19	2808	635	100	1729
Whitely, William N. and William N., Jr., Springfield, Ohio. Bicycle handle-bar	704,159	July 8	1491	320	100	313
Whitescarver, James C., Cameron, Mo. Copy-holder	707,662	Aug. 26	3891	718	100	1867
Whiteside, Isaac F. (See Gale, William L., assignor.)						
Whiteside, James, *et al.* (See Sporrong, Carl A., assignor.)						
Whiteside, Madison, Carrier, Okla. Ter. Combined wrench and tire-setter	704,725	July 15	2522	545	100	543
Whitfield Company. (See Schneider, William, assignor.)						
Whitin Machine Works. (See McLean, Henry H., assignor.)						
Whitin Machine Works. (See Owen, Henry A., assignor.)						
Whitin Machine Works. (See Owen, Oscar L., assignor.)						
Whiting, Charles J., Lasalle, Ill. Safety-catch for wheeled earth-scrapers	706,706	Aug. 12	1354	301	100	1409

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Whiting & Davis. (See Davis, Edward P., assignor.)						
Whiting, Paul, East Las Vegas, N. Mex. Ter. Equalizing-valve	707,476	Aug. 19	2799	633, 634	100	1727
Whiting, Paul, East Las Vegas, N. Mex. Ter. Quadruple valve	707,477	Aug. 19	2802	634	100	1727
Whitla, John S., administrator. (See Carrington, Jackson D.)						
Whitney, James E., Leominster, Mass. Antirattler for thill-couplings	704,160	July 8	1494	320	100	314
Whitney, Lemuel R., Milwaukee, Wis. Dust-collector	704,734	July 15	2519	544	100	542
Whitney, Pardon A., Southington, Conn. Animal-trap	706,470	Aug. 5	944	206	100	1806
Whitney, Ruel W., Cleveland, Ohio. Photographic exposure-meter	709,250	Sept. 16	2996	542	100	1905
Whiton, Morris F., Hingham, Mass. Rail-bond	707,663	Aug. 26	3903	718	100	1867
Whittemore, Charles P., Mount Vernon, Iowa. Monkey-wrench	705,799	July 29	4790	1039	100	1080
Whittemore, Charles W. (See Thornton and Whittemore.)						
Whittemore, Mary E., Mount Vernon, Iowa. Tape-needle	705,800	July 29	4791	1040	100	1080
Whittington, Joseph H., assignor to New York Supply Company, Buffalo, N. Y. Ribbon and stock supporter	707,479	Aug. 19	2807	635	100	1728
Whittlesey, Charles F., Albuquerque, N. Mex. Ter. Building block and wall	704,606	July 15	2317	508	100	500
Wiborgh, Johan G., and W. Palmaer, Stockholm, Sweden. Manufacturing manure from apatite or similar mineral phosphate	707,886	Aug. 26	3882	.....	100	1922
Wich, Ferdinand J., Altringham, England. Trimming mechanism for linotype-machines	705,801	July 29	4792	1040, 1041	100	1080
Wicks, Frederick, Esher, England. Metal-pump for type-casting. (Reissue)	12,017	July 22	4337	938	100	924
Wicksteed, Joseph H., Leeds, England. Duplex tool-holder for planers, &c	708,947	Sept. 9	1757	405	100	2358
Wickstrom, August, Beaver, Colo. Nut-cracker	707,997	Aug. 26	3892	874	100	1904
Widner, Ralph, Engle, N. Mex. Ter. Motor	705,001	July 15	3121	673	100	666
Wieder, Henry G. A. I., assignor to C. W. Phillips, London, England. Sound-reproducer	708,849	Sept. 9	1581	360	100	2317
Wiedlumyer, William, Norristown, Pa. Brake for pivotal running-gear of vehicles	707,481	Aug. 19	2809	635	100	1729
Wiegand, Henry H. (See Penniman and Wiegand.)						
Wiener, Samuel S. (See Hammond, George W., assignor.)						
Wiese, Conrad C. A. E., Hamburg, Germany. Night life-buoy	706,707	Aug. 12	1355	302	100	1409
Wiese, Frederick, Milwaukee, Wis. Fruit-jar	705,182	July 22	3502	759	100	760
Wieseckel, George, Allegheny, Pa. Vertical-lift lubricating-valve for steam-chests	708,106	Sept. 2	195	46	100	2022
Wiesen, John, Braddock, Pa. Hat-pin	710,849	Sept. 30	4544	1025	100	2980
Wieser, Daniel, assignor to H. Bulsbach & Co., Zurich, Switzerland. Manufacture of enameled metal plates	709,590	Sept. 23	2997	668	100	2044
Wieser, Joseph, Brooklyn, assignor of one-half to K. Fink, New York, N. Y. Pedal for self-playing attachments for pianos	705,002	July 15	3123	673	100	666
Wiget, Alfred. (See Kern and Wiget.)						
Wigle, Eli, Grand Rapids, assignor to Shaw-Walker Company, Muskegon, Mich. Mechanism for operating doors	710,229	Sept. 30	4841	976	100	2937
Wilbur, D. C. (See Riley, James W., assignor.)						
Wilbur, John W. (See McLery, Wilbur, and Wooster.)						
Wilbur, R. M. (See Allen, Everett P., assignor.)						
Wilcomb, Frank, Norristown, Pa. Circular spring-needle knitting-machine	705,505	July 22	4178	909, 910	100	893
Wilcox, Alva W., Newark, Ohio. Car-roof	705,888	July 29	4949	1077	100	1061
Wilcox Brothers. (See Thayer, Clark F., assignor.)						
Wilcox, Edward M. (See Jones, Frank A., assignor.)						
Wilcox, Elmer A., assignor to Standard Vending Company, Chicago, Ill. Vending-machine	705,005	July 15	3127	675, 676	100	667
Wilcox, Frank E., Mechanicsburg, Pa. Single perch-gear for vehicles	709,449	Sept. 16	2790	628	100	2568
Wilcox, Frank E., assignor of one-half to L. E. Hickok, Mechanicsburg, Pa. Vehicle-gear	709,068	Sept. 16	2027	462	100	2426
Wilcox, Frank E., assignor of one-half to L. E. Hickok, Mechanicsburg, Pa. Vehicle-gear	709,069	Sept. 16	2028	462	100	2426
Wilcox, Frank E., assignor of one-half to L. E. Hickok, Mechanicsburg, Pa. Vehicle-gear	709,070	Sept. 16	2029	463	100	2426
Wilcox, Frederick C. (See Pedersen, Niels, assignor.)						
Wilcox, Henry. (See Reichardt and Wilcox.)						
Wilcox, Reuben O., assignor to J. H. Modrell, Wichita, Kans. Bicycle-support	704,161	July 8	1495	320	100	314
Wild, Frederick W., Jr., Baltimore, Md. Power-transmitting device for hand-driven mechanisms	706,986	Sept. 2	535	122	100	2090
Wild, James R., Cambridge, Mass. Ventilator	710,350	Sept. 30	4545	1025	100	2980
Wild, William E. (See Bailey and Wild.)						
Wildermann, Meyer. (See Edser and Wildermann.)						
Wile, Louis, assignor of one-half to L. Hansen, Morris, Ill. Ear-muff	708,446	Sept. 2	208	182	100	2143
Wilkens, Edward F. (See Corssen, Ferdinand, assignor.)						
Wilkes, Aaron, *et al.*, administrators. (See Wilkes, Moses.)						
Wilkes, Moses, deceased; A. Wilkes and S. E. Gallagher, (also known as Elizabeth G. Wilkes,) Trenton, N. J., administrators. Swinging table for hydraulic presses	709,255	Sept. 16	2460	555	100	2518
Wilkin, Theodore S., Milwaukee, Wis. Band-saw wheel	708,850	Sept. 9	1582	360	100	2317
Wilkinson, Charles A., Worcester, Mass. Igniter	704,417	July 8	1952	423	100	411
Wilkinson, George, Harrogate, England. Cable-terminal box for electricity-supply purposes	705,803	July 29	4795	1041	100	1081
Wilkinson, Jennie, Cleveland, Ohio. Garment-supporter	705,506	July 22	4185	910	100	895
Wilkinson, John A., assignor of one-half to G. E. Frost, New York, N. Y. Rotary and folding chair	709,256	Sept. 16	2461	555	100	2518
Wilkinson, Walter S., Baltimore, Md. Manufacture of bituminous paving	705,725	July 29	4667	.....	100	1004
Wilkinson, Walter S., Baltimore, Md., and C. H. Burchinal, Pittsburg, Pa. Asphaltic paving mixture or composition	705,804	July 29	4797	.....	100	1081
Will, Eddie, Bigstone, S. D. Needle for binders	707,482	Aug. 19	2811	635	100	1729
Willard, Edward A. (See Hughes, William S., assignor.)						
Willcox, Elijah, Yonkers, N. Y. Ash-sifter	709,253	Sept. 16	2954	598	100	2562
Willetze, Will S. (See Dyer and Willetze.)						
William G. Bell Company. (See Cobb and Jenkins, assignors.)						
William Hamilton Manufacturing Co. (See Erb, Samuel, assignor.)						
William Powell Company. (See Desmond, John, assignor.)						
William Wharton, Jr., & Company, Incorporated. (See Wharton, William, Jr., assignor.)						
Williams, Carey G., Dalton, Iowa. Spiral conveyer	710,387	Sept. 30	4612	1040	100	2996
Williams, Ebenezer E., assignor of one-fourth to A. L. Wood, Nevada, Mo. Shipping-crate	707,665	Aug. 26	3905	719	100	1928
Williams, Edmund T. L., London, England. Means for preventing road-vehicles from slipping sidewise	709,838	Sept. 23	3551	800	100	2758
Williams, Edward, Birmingham, England. Machinery for the manufacture of rimmed wheels and disks	705,003	July 15	3124	673, 674	100	666
Williams, Edward A. (See Williams, George C., and E. A.)						
Williams, George A., and J. O. McCall, Dougherty, Ind. Ter. Stock-guard for railways	705,729	July 29	4670	1011	100	1004
Williams, George C. and E. A., Brooklyn, N. Y. Nursery window-guard	708,441	Sept. 2	790	179	100	2141
Williams, George C. and E. A., Brooklyn, N. Y. Bowed nursery window-guard	708,442	Sept. 2	791	179	100	2141

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Williams, George H., assignor to Stenotype Company, Boston, Mass. Type-writing machine	710,089	Sept. 30	4062	915 916	100	2977
Williams, George M., Baltimore, Md., assignor to American Tobacco Company. Machine for boxing little cigars	708,789	Sept. 9	1437	329 330	100	2288
Williams, Henry, Willits, Cal. Wave-motor	706,020	Aug. 12	1205	267	100	1375
Williams, Henry M. (See Burger, Franz, assignor.)						
Williams, Henry M. (See Burger and Williams.)						
Williams, Henry M., assignor of one-fourth to F. Burger, Fort Wayne, Ind. Blanket-guard	708,109	Sept. 2	196	47	100	2022
Williams, Jeff D., Denning, Ark. Automatic fan	708,448	Sept. 2	792	180	100	2141
Williams, John C., Kansas City, Mo. Floating lighthouse	708,227	Sept. 2	587	122	100	2090
Williams, John R., East Orange, N. J., assignor to John R. Williams Company, New York, N. Y. Cigar-bunching machine	707,749	Aug. 26	3386	761 762 763 764 765 766	100	1864
Williams, Joseph H., Upper Alton, assignor of three-fourths to I. Moore, M. R. Lindley, and H. L. Dickinson, Alton, Ill. Locomotive	709,499	Sept. 16	2747	617 618	100	2579
Williams, Joseph H., Upper Alton, assignor of three-fourths to I. Moore, M. R. Lindley, and H. L. Dickinson, Alton, Ill. Locomotive-boiler	709,430	Sept. 16	2750	618	100	2580
Williams, Lester J., assignor to Kendrick & Davis, Lebanon, N. H. Watchmaker's staking-tool	707,897	Aug. 26	3683	820	100	1922
Williams, Louis N. D. (See Scott, Robert W., assignor.)						
Williams, Louis N. D., *et al.* (See Bellis, David C., assignor.)						
Williams, Louis N. D., Ashbourne, assignor of one-half to R. W. Scott, Philadelphia, Pa. Knitted fabric	709,839	Sept. 23	3552	800 801	100	2758
Williams, Louis N. D., assignor of one-half to R. W. Scott, Philadelphia, Pa. Knitted fabric	709,840	Sept. 23	3553	801	100	2759
Williams, Louis N. D., Ashbourne, assignor of one-half to R. W. Scott, Philadelphia, Pa. Knitting-machine	709,841	Sept. 23	3555	801	100	2759
Williams, Mark D., Sidney, Tex. Stalk-cutter	705,183	July 22	3508	760	100	760
Williams, Michael, Madison, assignor of one-third to W. J. Schneider, Middletown, Wis. Well-drilling machine	704,770	July 15	3005	564	100	559
Williams, Owen, Fall River, Mass. Stop-motion for steam-engines	707,898	Aug. 26	3685	829	100	1922
Williams, Rufus M. (See Horack, Charles L., assignor.)						
Williams, Samuel F., San Francisco, Cal. Sink-strainer	706,021	Aug. 12	1204	267	100	1375
Williams, William C., Brooklyn, N. Y., assignor to W. M. Klein, Chicago, Ill. Controlling mechanism for printing-presses	706,022	Aug. 12	1205	267 268	100	1375
Williams, William C., Brooklyn, N. Y., assignor to W. M. Klein, Chicago, Ill. Controlling mechanism for printing-presses	706,023	Aug. 12	1205	268	100	1377
Williams, William N., Welcome, Minn. Sleigh-runner	703,510	July 1	242	56	100	49
Williams, Wm D., Fredericksburg, Va. Rotary engine	705,004	July 15	3126	574	100	866
Williamson, Bert A., Maitland, Mo. Stovepipe	705,507	July 22	4187	910	100	896
Williamson, William B., Malvern, assignor of one-half to W. E. Myers, Powhattan, Kans. Stay for buggy-beds	704,769	July 15	3004	563	100	559
Willis, Henry M., East Williston, N. Y. Tobacco-pipe	705,968	July 29	5126	1117	100	1098
Willison, John, assignor to National Malleable Castings Company, Cleveland, Ohio. Coupling for railway-carriages, &c	708,110	Sept. 2	197	47	100	2022
Willmot, Oliver J., Malvern, England. Ash-tray and advertising device	707,664	Aug. 26	3204	719	100	1828
Willock, David B., Kansas City, Mo. Reversing mechanism for washing-machines	708,444	Sept. 2	794	180 181	100	2142
Wilmot, George W., N. Maley, and G. T. Brown, Freeland, Pa. Oil-retaining box	707,043	Aug. 12	1964	445	100	1538
Wilsey, William H., Sioux City, Iowa. Safety device for elevators	704,468	July 8	2057	446	100	432
Wilson, Arthur W., Moline, Ill. Attachment for buggy-boots	708,686	Sept. 9	1235	283	100	2245
Wilson, David J., assignor to H. Espey Manufacturing Company, Washington, D. C. Toy	710,090	Sept. 30	4066	917	100	2978
Wilson, George E., Stillwater, Minn. Threshing or separating machine	705,987	July 29	5123	1117	100	1097
Wilson, James. (See Breeze, Frank A., assignor.)						
Wilson, James H., Mount Ayr, Iowa. Automatic gate	708,445	Sept. 2	796	181	100	2142
Wilson, James H., Lowell, Mass. Pail-filling and indicating device	710,230	Sept. 30	4542	976	100	2986
Wilson, James O., Canton, Mo. Lightning-rod	708,188	Sept. 2	354	84, 85	100	2054
Wilson, John H. N., Honolulu, Hawaii. Device for cutting sugar-cane, &c	706,481	Aug. 5	960	209 210	100	1310
Wilson, John T., Jersey Shore, Pa. Balanced slide-valve	705,780	July 29	4671	1011	100	1004
Wilson, John W. (See Hays and Wilson.)						
Wilson, Levi. (See Cooper, John H., assignor.)						
Wilson, M. B. (See Burke, Robert E., assignor.)						
Wilson, Margaret C., Chicago, Ill. Bottle-stopper	708,749	Sept. 9	1358	309	100	2270
Wilson, Peter J., Sheffield, England. Lock-nut	704,162	July 8	1496	321	100	314
Wilson, Robert, assignor to W. Walker, Newark, N. J. Cigar or cigarette lighting device	704,163	July 8	1497	321	100	314
Wilson, Stephen E., Frenchlanding, Mich. Treating garbage	708,384	Sept. 16	2065	598 599	100	2583
Wilson, Stephen E., Frenchlanding, Mich. Apparatus for treating garbage	709,450	Sept. 16	2791	628	100	2580
Wilson, Thomas M., Layton, Pa. Brick-kiln	704,418	July 8	1953	434 435	100	411
Wilson, William C., St. Louis, Mo. Intermediate coupling	705,989	July 29	5127	1118	100	1098
Wimmer, Charles I., assignor of one-third to J. Moore, Columbus, Ohio. Window-shade fixture	709,842	Sept. 23	3556	802	100	2759
Winans, Daniel M., Binghamton, assignor to A. L. Weaver, New York, N. Y. Exhibiting and vending machine	708,087	Sept. 9	1236	283	100	2243
Winans, Edwin, New York, N. Y. Power-transmitting machinery	709,856	Sept. 23	3579	806	100	2764
Winants, Frank C., Dallas, Tex. Canopy	707,488	Aug. 19	2812	626	100	1739
Winberg, Severn, Galesburg, Ill. Spirit-level and plumb	710,266	Sept. 30	4513	1041	100	2994
Winch, Allen, Chicago, Ill. Acetylene-gas generator	704,226	July 8	1809	448	100	326
Winchester, James D., Beverly, Mass. Last	707,908	Aug. 26	3693	875	100	1964
Winchester Repeating Arms Co. (See Burns and Bennett, assignors.)						
Windolph, August P., New York, N. Y. Fixture for washstands, bath-tubs, or the like	704,419	July 8	1956	435	100	412
Winkelmann, Heinrich, Bremen, Germany. Phonograph	707,749	Aug. 26	3400	766 767	100	1866
Winn, Jasper C., assignor, by mesne assignments, to J. Rothschild, Chicago, Ill. Door-stop	705,804	July 29	4799	1042	100	1021
Winn, Joseph B., Austin, Tex. Ledger	704,420	July 8	1958	436	100	412
Winn, Philip, Birmingham, England. Apparatus for cutting pipes, rods, &c	708,790	Sept. 9	1448	330	100	2290
Winship, Walter E., San Francisco, Cal. Active material for storage batteries and making same	708,875	July 1	983		100	185
Winslow, Dion I., Boston, Mass. Folding blank paper box	709,238	Sept. 2	588	122	100	2091

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Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Winston, H. S. (See Archer, Capelle H., assignor.)						
Winter, William R., Trenton, N. J. Electric annunciator	705,805	July 29	4800	1042	100	1022
Winters, Myrtle, Atlanta, Ga. Bed-spring	706,694	Aug. 12	1211	268	100	1377
Winters, William. (See O'Byrne, William, assignor.)						
Winton, Henry D., Wellesley Hills, Mass. Binding-envelop or file	705,000	July 15	3131	677	100	668
Wirsching, Louis, New York, N. Y. Thermocauter	706,482	Aug. 5	962	210	100	1310
Wirsing, Andrew, Milwaukee, Wis. Hoisting-bucket carrier	705,806	July 29	4803	1042	100	1022
Wirsing, Andrew, Milwaukee, Wis. Hoisting-bucket mechanism	707,484	Aug. 19	2813	626	100	1730
Wirt, George A., Fugit Township, Ind. Signaling-target	708,180	Sept. 2	355	85	100	2054
Wirt, Paul E., Bloomsburg, Pa. Fountain-pen	706,140	Aug. 5	259	54	100	1171
Wirt, Paul E., Bloomsburg, Pa. Fountain-pen	706,141	Aug. 5	263	54, 55	100	1172
Wirtz, Luis, London, England. Machine for making chain	707,750	Aug. 26	3401	767 768	100	1866
Wise, George H., *et al.* (See Stearns, Edmond B., assignor.)						
Wise, Herbert A., Luxora, Ark. Running-gear for vehicles	706,483	Aug. 5	963	210	100	1310
Wise, Homer, Flushing, N. Y., assignor to Union Voucher Company. Voucher	705,807	July 29	4804	1043	100	1022
Wishart, William, and B. Seidel, Chicago, Ill., assignors to Adams & Westlake Company. Safety-valve	707,485	Aug. 19	2814	626	100	1730
Witham, George S., Millinocket, Me. Paper-making machine	704,007	July 15	2319	503 504	100	500
Witherell, Loren R. (See Etcheson and Witherell.)						
Withers, George B., Marion, Iowa. Hame and trace connector	709,950	Sept. 30	3798	856	100	2990
Witsch, Bertha. (See Neuendorffer and Witsch.)						
Witte, Hubert, assignor to St. Louis Car Company, St. Louis, Mo. Ratchet-brake for cars	704,227	July 8	1612	349	100	337
Witte, Hubert, assignor to St. Louis Car Company, St. Louis, Mo. Guard-gate for railway-cars	704,228	July 8	1613	349	100	337
Witte, Martin. (See Karlick and Witte.)						
Witzel, Andrew C., New York, N. Y. Spindle attachment for lathes or other tools	704,796	July 15	2523	545	100	543
Wixcel, Samuel M., Marcus, Iowa. Rail-joint	708,876	July 1	936	202	100	186
Wixted, Edward F., assignor of one-half to F. H. Letourneau, Chicago, Ill. Ventilating-f	708,006	Sept. 9	1091	245	100	2213
Wm. C. Gregg & Co. (See Gregg, William C., assignor.) (Reissue)	709,188	Sept. 16	2272		100	2477
Wodicka, George W., St. Louis, Mo. Wall-finish and making same						
Wodie, Charles. (See Roberts, George H., Sr., assignor.)						
Wohl, Alfred, Charlottenburg, Germany. Extracting sugar from its solutions	707,889	Aug. 26	3686		100	1922
Wohlfeld, Jocob, *et al.* (See Howe, John C., assignor.)						
Wohlhuter, Albert. (See Espitallier, John A., assignor.)						
Wolbrecht, Julius, Manila, Philippine Islands. Ventilated hat	707,186	Aug. 19	2816	626	100	1730
Wolf, Frank R. (See Mathers, George C., assignor.)						
Wolf, Harry, assignor to B. Kuppenheimer & Co., Chicago, Ill. Coat	705,007	July 15	3132	677	100	668
Wolf, Leo, Kansas City, Mo. Faucet or tap	709,189	Sept. 16	2273	516	100	2477
Wolf, Ludwig. (See Lewis and Grow, assignors.)						
Wolfe, Harry W. (See Lundgren, Axel L., assignor.)						
Wolfinger, Joseph, Dundas, Wis. Cheese-marker	707,598	Aug. 19	2900	656	100	1748
Wolpers, Auguste, Haemelerwald, Germany. Cleaning-paste and making same	706,790	Aug. 12	1538		100	1447
Wolstenholme, Sons & Company, Thomas. (See Stevens, Frederick, assignor.)						
Wolverton, Bruce, Portland, Oreg. Hinged gate	703,877	July 1	927	202	100	186
Wolvin, Augustus B., Duluth, Minn. Ship construction	706,708	Aug. 12	1357	303	100	1409
Wood, Anson L. (See Williams, Ebenezer E., assignor.)						
Wood, Augustus L., assignor of one-half to E. C. Eldmann, Cincinnati, Ohio. Cash-register	708,190	Sept. 2	356	85, 86	100	2055
Wood, Charles. (See Powell, William R., assignor.)						
Wood, Frank W., and M. R. MacPherson, Chelsea, Mass. Horseshoe-pad	708,607	Sept. 9	1092	245	100	2213
Wood, Franz J., Des Moines, Iowa. Tender for traction-engines	710,028	Sept. 30	3943	889 890	100	2952
Wood, George, Newark, N. J. Oil-vapor engine	708,511	July 1	243	56, 57	100	50
Wood, Henry A. W., New York, N. Y. Double multipress. (Reissue)	12,016	July 22	4338	986 987	100	923
Wood, James E., Harvard, assignor to E. C. Harmon, trustee, Chicago, Ill. Corn-harvester	706,142	Aug. 5	266	55 56 57	100	1172
Wood, James J., Fort Wayne, Ind. Means for controlling electric circuits	706,143	Aug. 5	275	58	100	1173
Wood, James J., Fort Wayne, Ind. Hanger for transformers or the like	706,870	Aug. 12	1686	378	100	1479
Wood, Jennie F. (See Ferguson, David, assignor.)						
Wood, Jesse L., Fulton, and W. G. Lawrence, Cordova, Ill. Combination-tool	708,447	Sept. 2	799	182	100	2143
Wood, John F. (See Holmes and Wood.)						
Wood, John W., Terre Haute, Ind. Grain-door for railway box-cars	706,636	Aug. 12	1213	269	100	1377
Wood, Jonathan L. (See Meade, Henry R., assignor.)						
Wood, Stephen W., New York, N. Y. Canal towing mechanism	707,529	Aug. 19	2901	656 657	100	1748
Wood, Thomas P. (See Brett, Robert D., assignor.)						
Wood, William A., Ansonia, Conn. Variable-speed clutch	707,890	Aug. 26	3690	829 830	100	1923
Woodard, George E., Bradford, Pa. Rotary engine	706,485	Aug. 5	967	212	100	1312
Woodbridge, Fred L. (See McCay, Spencer, assignor.)						
Woodbury, George E., Charlotte, Mich. Attachment for fruit can or jar covers	704,421	July 8	1960	436	100	412
Woodcock, Willard J., Brooklyn, N. Y. Refrigerating-machine	706,625	Aug. 12	1212	269	100	1377
Woodcock, William H. (See Hornbrook and Woodcock.)						
Woodford, Samuel B., Imperial, assignor of one-half to C. B. Hamilton, Corsopolis, Pa. Attachment for washboilers	707,667	Aug. 26	3208	719	100	1828
Woodings, Emanuel, Oakmont, Pa. Jack	708,948	Sept. 9	1759	405	100	2353
Woodman, George A. (See Scoets, George N., assignor.)						
Woodman, George A., assignor of three-fourths to T. B. Kirby, F. W. Renshaw, and H. V. Kuhlman, Chicago, Ill. Brake-shoe	704,491	July 8	2106	456	100	442
Woodruff, Edward, Chicago, Ill. Mechanism for temporarily locking water-closet bowls or washbasins	706,869	Aug. 12	1684	377	100	1479
Woodruff, Leslie B., and F. E. Caton, San Jose, Cal. Inking apparatus	705,184	July 22	3505	760	100	760
Woodson, Henry, Winlock, Wash. Music-teaching apparatus	708,698	Sept. 9	1289	284 285	100	2248
Woodward, Frederick, South Yarra, near Melbourne, Victoria, Australia. Means for securing straps to buckles	703,878	July 1	929	202	100	186
Woodward, Henry, London, England. Electrode for storage batteries	707,666	Aug. 26	3207	719	100	1828
Woodward, Russel G., Waukegan, assignor to Union Special Sewing Machine Company, Chicago, Ill. Ruffling and sewing machine	706,484	Aug. 5	965	211	100	1311
Woolman, Robert E., St. Joseph, Mo. Water-wheel	710,029	Sept. 30	3945	890	100	2953

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Woolsey, Mark H. (See Smith and Woolsey.)						
Wooster, Anson S. (See McLery, Wilbur, and Wooster.)						
Word, David C., assignor of one-fourth to B. Hufft, St. Louis, Mo. Pump-valve	706,596	Sept. 9	919	208	100	2158
Worrest, Alfred H., Lancaster, Pa. Hub-attaching device	705,185	July 22	3507	761	100	761
Worrest, Alfred H., Lancaster, Pa., assignor to Metal Stamping Company, New York, N. Y. Thill-coupling	708,699	Sept. 9	1943	285	100	2344
	704,727	July 15	2525	545	100	545
Worth, Charles, Newark, N. J. Tile						
Worthing, Eugene, *et al.* (See Rogers, Charles W., assignor.)						
Worthington, Charles, Pittsburg, Pa. Swing-bridge	707,044	Aug. 12	1993	446	100	1539
Worthington, Charles C., Dunnfield, N. J. Pump	710,080	Sept. 30	3946	590	100	2853
Worthington, Henry R. (See Thomas, Philip, assignor.)						
Worthington, Marcus M., New London, Conn. Attachment for phonographs	706,627	Aug. 12	1215	269	100	1378
Wratzke, Alfred, Rüttenscheid, assignor to F. Krupp, Essen, Germany. Cartridge for ordnance	708,879	July 1	929	208	100	186
	708,289	Sept. 2	540	122 / 123	100	2091
Wrenn, Henry B. P., New York, N. Y. Regulator						
Wride, John F., assignor of one-half to O. R. Bonner, Brooklyn, N. Y. Socket-cover and globe-holder	708,880	July 1	980	208	100	187
Wright, Darwin E., Washington, D. C. Locking mechanism for card-index systems or the like	709,845	Sept. 23	3557	808	100	2759
Wright, Darwin E., Washington, D. C. Locking device for filing-receptacles or the like.	709,844	Sept. 23	3560	808	100	2760
Wright, Darwin E., Washington, D. C. Locking device for filing-receptacles or the like.	709,845	Sept. 23	3562	808	100	2760
Wright, Earl E., assignor of one-half to P. Lee, Rochester, Pa. Driving-gear for motor-vehicles	708,881	July 1	981	208	100	187
Wright, Edgar A., assignor to Aultman Company, Canton, Ohio. Apparatus for elevating or conveying and transferring ice, &c.	707,487	Aug. 19	2816	637	100	1731
Wright, Edgar A., assignor to Aultman Company, Canton, Ohio. Apparatus for elevating or conveying and transferring ice, &c.	707,488	Aug. 19	2819	637 / 638	100	1731
Wright, Edgar A., assignor to Aultman Company, Canton, Ohio. Apparatus for elevating or conveying and transferring ice, &c.	707,489	Aug. 19	2822	638 / 639	100	1732
Wright, Edgar A., assignor to Aultman Company, Canton, Ohio. Motor-vehicle	708,949	Sept. 9	1759	405 / 406	100	2353
Wright, Frederick K., Syracuse, N. Y. Signal-lamp	705,808	July 29	4806	1043	100	1092
Wright, Harry H. (See Baldwin, Richard D., assignor.)						
Wright, Harry L., assignor of one-half to G. H. Cropsey, Chicago, Ill. Gearing	709,297	Sept. 16	2465	556	100	2519
Wright, Jacob P., Akron, Ohio, assignor to Diamond Match Company, New York, N. Y. Dipping-roll for match-machines	709,190	Sept. 16	2274	517	100	2478
Wright, John W., Elk City, Kans. Box-lid holder and label-displayer	705,638	Aug. 12	1916	370	100	1378
Wright, Marie R., New York, N. Y. Game apparatus	704,164	July 8	1500	321	100	315
Wright, Mary E. (See Wright, William, assignor.)						
Wright, Reuben G. (See Jackson, Charles J., assignor.)						
Wright, Selden R., Morton, N. Y. Telegraphic safety device	704,165	July 8	1501	322	100	315
Wright, Thomas, Springfield, Ohio. Steam road-roller	708,858	July 1	963	203 / 204	100	187
	710,399	Sept. 30	4614	1041	100	2994
Wright, Thomas W., Anderson, Ind. D-handle	707,580	Aug. 19	2904	657	100	1748
Wright, Wayne C., Amarillo, Tex. Stock-tank						
Wright, William, assignor, by mesne assignments, to M. E. Wright, Brooklyn, N. Y. Valve for steam-engines	708,750	Sept. 9	1960	310	100	2271
	707,065	Aug. 26	3209	720	100	1898
Wright, William H., Cadiz, Ohio. Gate	708,220	Sept. 2	547	124	100	2092
Writt, John T., Pittsburg, Pa. Combination step-ladder and bench	705,989	July 29	4950	1077	100	1051
Wrobel, Ignatz, Gross Dungen, Germany. Road-breaking machine	704,728	July 15	2527	546	100	545
Wultze, Adolph, Charlottenburg, Germany. Packing powdery substances	704,284	July 8	1717	374 / 375	100	951
Wunner, Karl, Regensburg, Germany. Auxiliary hand-operated driving mechanism for bicycles						
Wyckoff, Seamans & Benedict. (See Bennett, Emmet M., assignor.)						
Wyckoff, Seamans & Benedict. (See Bullard, Royal M., assignor.)						
Wyckoff, Seamans & Benedict. (See Cram, Edwin B., assignor.)						
Wyckoff, Seamans & Benedict. (See Webb, George B., assignor.)						
Wyckoff, Seamans & Benedict. (See Weir, Max W., assignor.)						
Wyler, Max, *et al.* (See Burry, John, assignor.)						
Wylie, William N. (See Sweeney, James P. and T. W., assignors.)						
Wyman, Albert O., Turners Falls, assignor of one-half to C. L. Glynn, Boston, Mass. Oiling device	708,448	Sept. 2	801	188	100	2143
Wyman, Charles H. (See Mason, William J., assignor.)						
Wyman, Horace W. (See Daniels and Wyman.)						
Wysbrod, E. V. (See Longan, James M., assignor.)						
Yahn, Frederick, Paterson, N. J. Shade-bracket	706,257	Aug. 5	574	124	100	1232
Yale, Rodney H., Beatrice, Nebr. Pump	709,268	Sept. 16	2468	556	100	2520
Yale & Towne Manufacturing Company. (See Fletcher, James R., assignor.)						
Yale & Towne Manufacturing Company. (See Taylor, Warren H., assignor.)						
Yates, Harry B., Slater, Mo. Adjustable thread-cutting tool	705,809	July 29	4809	1044	100	1093
Yates, Robert. (See Miller and Yates.)						
Yeager, Herbert W. (See Brown and Yeager.)						
Yeakel, George P., Norristown, Pa. Spoke-setting machine	708,868	July 1	984	204	100	187
Yearwood, Bird O., assignor of one-half to E. Schaefer, Toccoa, Ga. Car-coupling	708,690	Sept. 9	1944	285	100	2344
Yeomans, Lucien L., Walworth, N. Y., assignor to Goodell Company, Antrim, N. H. Feeding apparatus for fruit-parers	710,350	Sept. 30	4616	1041	100	2994
	708,894	July 1	985	204	100	188
Yochum, Raymond A., Pittsburg, Pa. Cuspidor	708,449	Sept. 2	803	183 / 185 / 184	100	2143
Yoe, Philip, Dayton, Ohio, assignor, by mesne assignments, to National Cash Register Company, Jersey City, N. J. Cash-register						
Yon, Philip, and L. Leprise, North Adams, Mass. Alarm for refrigerator-pans	705,990	July 29	5128	1118	100	1096
Yoost, Adolph, Kankakee, Ill. Land-roller	709,739	Sept. 23	3397	749	100	2712
York, Thomas, Portsmouth, Ohio. Boiler-furnace	705,508	July 22	4188	911	100	895
Yost, Frank, Lorain, Ohio. Saw-spacing device	708,450	Sept. 2	809	185	100	2145
Young, Alfred C. (See Young, James H., assignor.)						
Young, Charles, Chicago, Ill. Detachable handle for caskets, boxes, &c	707,669	Aug. 26	3210	720	100	1898
Young, Charles A., Enon, Ohio. Magazine-firearm	709,265	Sept. 16	2268	500	100	2268
Young, Frank S., Norristown, and W. W. Ueberroth, South Bethlehem, assignors of one-fourth to H. De Huff, Philadelphia, Pa. Filter	708,370	Aug. 5	729	155 / 159	100	1233
Young, George R., Ridgewood, N. J., and C. Shaw, New York, N. Y., assignors to Bacon Air Lift Company. Apparatus for raising water	704,608	July 15	2321	504	100	500
	709,845	Sept. 23	3568	808	100	2761
Young, James A., assignor to C. Doersch, trustee, Nyack, N. Y. Ammonia-generator						
Young, James H., trustee. (See Moskowitz, Morris, assignor.)						
Young, James H., Pennsauken, N. J., assignor to A. C. Young, Philadelphia, Pa. Meridian attachment for solar transits	709,269	Sept. 16	2470	557	100	2520

Alphabetical list of patentees, July to September, inclusive—Continued.

Name, residence, and invention.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Young, John A., *et al.* (See Packer, Alonzo C., assignor.)						
Young, McClintock, Frederick, Md., assignor to Palmetto Fibre Company. Broom, &c.	706,144	Aug. 5	280	58	100	1174
Young, Philip K., Omaha, Nebr. Horse-hitcher	705,810	July 29	4810	1044	100	1093
Young, Terry D., Memphis, Tenn. Automatic street-sprinkling device	706,289	Aug. 5	576	125	100	1292
	708,689	July 1	595	130 / 131	100	116
Young, William H., Athens, Ga. Type-writer	708,690	July 1	591	131	100	117
Young, William H., Athens, Ga. Commode-stool	709,396	Sept. 16	2072	600	100	2564
Young, Willis G., Dayton, Ohio. Securing device for boxes, &c	708,895	July 1	986	205	100	188
Younghusband, Samuel S., Darlington, England. Slide-valve gear	706,288	Aug. 5	575	124	100	1292
Youse, Christian J., Jr., J. E., and L. A., Baltimore, Md. Portable toy fence						
Youse, John E. (See Youse, Christian J., Jr., J. E., and L. A.)						
Youse Louis A. (See Youse, Christian J., Jr., J. E., and L. A.)						
Zaepfel, George, assignor of one-half to G. W. Henderson, Croghan, N. Y. Time-switch mechanism	705,991	July 29	5129	1118	100	1098
Zaiser, Adam F. (See Smithline and Zaiser.)						
Zander, William A. H., Hopkins, Minn., assignor of one-half to J. A. Ehrhardt and M. B. Myers, Stanton, Nebr. Gambrel	708,608	Sept. 9	1092	245	100	2213
Zander, William A. H., Hopkins, Minn., assignor of one-half to J. A. Ehrhardt and M. B. Myers, Stanton, Nebr. Combined grab and scraper	708,609	Sept. 9	1093	246	100	2213
Zeek, Earl M., Marion, Ind. Penholder	709,130	Sept. 16	2152	494	100	2454
Zeek, Earl M., Marion, Ind. Umbrella	709,624	Sept. 23	3147	701	100	2674
Zehringer, John W., Boston, Mass. Trap	705,631	July 1	461	105	100	91
Zeiss, Firm Carl. (See König, Albert, assignor.)						
Zeiss, Firm Carl. (See Nither, Oswald, assignor.)						
Zeiss, Firm Carl. (See Orth, Georg, assignor.)						
Zeiss, Firm of Carl. (See Dönitz, Emil, assignor.)						
Zeleny, Anthony, assignor of one-half to C. E. Thayer, Minneapolis, Minn. Galvanometer	705,186	July 22	3509	761	100	761
Zeleny, Anthony, assignor of one-half to C. E. Thayer, Minneapolis, Minn. Multiplex electric thermometer	705,187	July 22	3511	761 / 762	100	762
Zell, Thomas B. (See Lawrance, James P. S., assignor.)						
Zellstofffabrik Düren Hermann Maria Schoeller & Co. (See Bender, Wilhelm, assignor.)						
Zelly, John, Eaton, Ohio. Fastening device for pins	708,610	Sept. 9	1094	246	100	2214
Zerbe, Aaron, Philadelphia, Pa. Device for retarding the speed of vessels	704,729	July 15	2527	546	100	544
Ziegenfuss, Elmer E., Halstead, Kans. Packing-auger	707,290	Aug. 19	2469	554	100	1658
Zierleyn, Antoni, Grand Rapids, Mich. Hitching-weight	704,730	July 15	2528	546	100	544
Zimer, Frederick W., London, England. Anticapsizing device for boats	705,188	July 22	3514	762	100	762
Zimmerly, Lancing T., assignor of one-half to H. Knierlem, Cumberland, Md. Glass-finishing machine	707,045	Aug. 12	1998	446	100	1539
Zimmerman, Casper, Chicago, Ill. Street-car fender	704,166	July 8	1504	322	100	316
Zimmerman, Charles, *et al.* (See Taylor, William S., Jr., assignor.)						
Zimmerman, Gustavus. (See Faschian, Herman, assignor.)						
Zimmerman, Henry H., Harvel, Ill. Lamp-burner	704,422	July 8	1961	426	100	413
Zimmerman, Lou, *et al.* (See Taylor, William S., Jr., assignor.)						
Zimmerman, Norman B., North Tonawanda, N. Y. Cushioned bicycle-frame	708,632	July 1	463	106	100	91
Zinn, George F., Cincinnati, Ohio. Dough-cutter	709,990	Sept. 16	2471	557	100	2521
Zoberbier, Morris, *et al.* (See Shriver, Augustus F., assignor.)						
Zoeller, Frederick. (See Zoeller, Oswald and F.)						
Zoeller, Oswald and F., Oakland, Iowa. Four-horse equaliser	705,189	July 22	3515	762	100	762
Zoelly, Heinrich, Zurich, Switzerland. Steam or gas turbine	705,890	July 29	4951	1077	100	1052
Zsigmondy, Richard, Jena, Germany. Composition for ruby glass	708,512	July 1	949	.....	100	50
Zucker & Levett & Loeb Company. (See Haas, Harry L., assignor.)						
Zuckschwerdt, Sylvester, Stassfurt, Germany. Treatment of refractory bricks	707,670	Aug. 26	3211	.....	100	1899
Zuckschwerdt, Sylvester, Leopoldshall, Germany. Producing cyanate of potassium	709,570	Sept. 23	3080	.....	100	2657
Zulauf, Jacob C. (See Allen, James G., assignor.)						
Zwart, Albert J., Chicago, Ill. Metallic packing	706,290	Aug. 5	579	125 / 126	100	1233
Zwermann, Carl H., Baltimore, Md. Enamel-sifting apparatus	707,490	Aug. 19	2825	639	100	1732
Zwicker, August, Rusk, Tex. Combination rake and fork	705,008	July 15	3133	677	100	668
Zwicker, August, Rusk, Tex. Vehicle-jack	709,730	Sept. 23	3327	749	100	2712

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ALPHABETICAL LIST OF PATENTEES OF DESIGNS.

Name, residence, and design.	No.	Date.	Official Gazette. Volume.	Page.
Abramson, Herbert J., Rockford, Ill. Sewing-machine table	36,003	Aug. 12	100	1554
Adler, Emanuel B., assignor to H. Adler, Pittsburg, Pa. Gas-stove front	36,077	Sept. 16	100	2597
Adler, Henry. (See Adler, Emanuel B., assignor.)				
Aizenman, Raphal, assignor to R. Aizenman, New York, N. Y. Stand for photograph-albums	36,028	Aug. 26	100	1966
Aizenman, Rosa. (See Aizenman, Raphal, assignor.)				
American Type Founders Company. (See Phinney, Joseph W., assignor.)				
Aronson, Louis V., assignor to Art Metal Works, Newark, N. J. Clock-case	36,084	Sept. 30	100	3002
Art Metal Works. (See Aronson, Louis V., assignor.)				
Babbitt, Seth W., Meriden, Conn. Metal ornament for silver or plated ware	35,998	Aug. 12	100	1553
Bailey, Charles A., assignor to J. and E. Stevens Co., Cromwell, Conn. Toy stove	36,081	Sept. 23	100	2765
Bailey, Joseph T., Philadelphia, Pa. Badge	36,042	Sept. 9	100	2371
Barnes, Gustave A. (See Nadall and Barnes.)				
Baron, Albert L., Brooklyn, assignor to Central Lighting Company, New York, N. Y. Lamp-body	36,085	Sept. 30	100	3002
Bartholomew, Lillian A., New York, N. Y. Pedestal-pincushion	35,981	July 22	100	925
Becker, Andreas, Vailsburg, assignor to Bracher, Becker & Barnett, Newark, N. J. Ring	36,009	Aug. 19	100	1732
Bender, Theodore, assignor to Roger Williams Silver Company, Incorporated, Providence, R. I. Handle for spoons, forks, or similar articles	35,982	July 29	100	1108
Benedict, Michael, New York, N. Y. Case for coin-controlled mechanism	36,087	Sept. 30	100	3002
Boekel, Julius. (See Boekel, William and J.)				
Boekel, William and J., Philadelphia, Pa. Nebulizer-support	36,000	Aug. 12	100	1554
Bracher, Becker & Barnett. (See Becker, Andreas, assignor.)				
Briscoe Manufacturing Company. (See Puddefoot, Charles, assignor.)				
Bromley, Joseph H. (See Burgess, Arthur, assignor.)				
Bromley & Sons, John. (See Petsold, Adolph, assignor.)				
Brown, Carl E., Columbus, Ohio. Zither-body	36,015	Aug. 19	100	1733
Burgess, Arthur, assignor to J. H. Bromley, Philadelphia, Pa. Lace curtain	36,020	Aug. 19	100	1754
Burgess, Arthur, assignor to J. H. Bromley, Philadelphia, Pa. Lace curtain	36,021	Aug. 19	100	1754
Central Lighting Company. (See Baron, Albert L., assignor.)				
Clarke, Clara J., Fremont, Ohio. Dresser	35,978	July 15	100	678
Clulee, John, Wallingford, assignor to International Silver Co., Meriden, Conn. Handle for spoons, forks, or similar articles	36,034	Sept. 2	100	2169
Conner, A. Reed, Cynthiana, Ky. Flag	35,985	Aug. 5	100	1320
Court, Charles S. (See Crees and Court.)				
Crary, Charles A., Huntington, W. Va., assignor to Enterprise Soap Works, Nashville, Tenn. Soap	36,078	Sept. 16	100	2597
Crees, Eustace, and C. S. Court, Providence, R. I., assignors to Watson and Newell Company. Handle for spoons or similar articles	35,994	Aug. 12	100	1552
Crees, Eustace, and C. S. Court, Providence, R. I., assignors to Watson and Newell Company. Handle for spoons or similar articles	35,995	Aug. 12	100	1553
Crees, Eustace, and C. S. Court, Providence, R. I., assignors to Watson and Newell Company Handle for spoons or similar articles	35,996	Aug. 12	100	1553
Curtis, Henry H. (See Marshall, William F., assignor.)				
Debacher, Robert E., New York, N. Y. Handle for toilet articles	36,022	Aug. 26	100	1965
Donohue, Michael A., Jr., Chicago, Ill. School-desk casting	36,005	Aug. 12	100	1555
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Andiron	36,046	Sept. 9	100	2371
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Andiron	36,047	Sept. 9	100	2371
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Andiron	36,048	Sept. 9	100	2372
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Andiron	36,049	Sept. 9	100	2372
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Portable basket-grate	36,050	Sept. 9	100	2372
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Basket-grate	36,051	Sept. 9	100	2372
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Basket-grate	36,052	Sept. 9	100	2372
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Basket-grate	36,053	Sept. 9	100	2372
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Basket-grate	36,054	Sept. 9	100	2373
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-lining	36,055	Sept. 9	100	2373
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-lining	36,056	Sept. 9	100	2373
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-lining	36,057	Sept. 9	100	2373
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,058	Sept. 9	100	2373
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,059	Sept. 9	100	2373
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,060	Sept. 9	100	2374
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,061	Sept. 9	100	2374
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,062	Sept. 9	100	2374
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,063	Sept. 9	100	2374

Alphabetical list of patentees of designs, July to September, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,054	Sept. 9	100	2374
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,055	Sept. 9	100	2374
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,056	Sept. 9	100	2375
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,057	Sept. 9	100	2375
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,058	Sept. 9	100	2375
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,069	Sept. 9	100	2375
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,070	Sept. 9	100	2375
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,071	Sept. 9	100	2375
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,072	Sept. 9	100	2376
Dudgeon, Thomas M., Crafton, assignor to Pittsburgh Stove and Range Company, Pittsburg, Pa. Fireplace-front	36,073	Sept. 9	100	2376
E. & T. Fairbanks & Co. (See Sargent, Willis H., assignor.)				
Eastwood and Park. (See Turton, Walter, assignor.)				
Enterprise Soap Works. (See Crary, Charles A., assignor.)				
Ewin, James L., assignor to L. B. Wilson, trustee, Washington, D. C. Badge or similar article	35,979	July 22	100	995
Field, Elizabeth, Scotchplains, N. J. Sofa-pillow	35,972	July 1	100	223
Forest, Henry, East St. Louis, Ill., assignor to Obear-Nester Glass Company. Prescription-bottle	36,001	Aug. 12	100	1554
Foster, Theodore W., Providence, R. I. Handle for button-hooks, paper-cutters, or similar articles	36,010	Aug. 19	100	1752
Foster, Theodore W., Providence, R. I. Back for toilet boxes, mirrors, or similar articles	36,011	Aug. 19	100	1753
Gamer, Charles L., Chicago, Ill. Folding-bed case	36,019	Aug. 19	100	1754
Gates, Gideon W., David City, Nebr. Vending-machine casing	36,031	Aug. 26	100	1967
Goetz, Frank, Manchester, Conn. Box or carton	36,016	Aug. 19	100	1753
Goldsmith, Marcus T. (See Keller, Sidney A., assignor.)				
Gould, Isador M., Philadelphia, Pa. Picture-frame	35,992	Aug. 12	100	1552
Haas, Cyrus A., St. Louis, Mo. Lamp-body	36,039	Aug. 26	100	1968
Hill, Matilda A., South Fallsburg, N. Y. Handle for buttoners	36,074	Sept. 16	100	2597
Hillbom, Henrik, assignor to R. Wallace & Sons Mfg. Co., Wallingford, Conn. Handle for spoons, forks, or similar articles	35,974	July 8	100	443
Hillbom, Henrik, assignor to R. Wallace & Sons Mfg. Co., Wallingford, Conn. Handle for spoons, forks, or similar articles	35,975	July 8	100	443
Hiller, Louis C., Wallingford, assignor to International Silver Co., Meriden, Conn. Candlestick	36,035	Sept. 2	100	2169
Hiller, Louis C., Wallingford, assignor to International Silver Co., Meriden, Conn. Candlestick	36,036	Sept. 2	100	2170
Hiller, Louis C., Wallingford, assignor to International Silver Co., Meriden, Conn. Candlestick	36,037	Sept. 2	100	2170
Hogland, Frank G., assignor to Illinois Sewing Machine Company, Chicago, Ill. Sewing-machine table	36,004	Aug. 12	100	1555
Hogland, Frank G., assignor to Illinois Sewing Machine Company, Chicago, Ill. Sewing-machine table	36,032	Aug. 26	100	1967
Illinois Sewing Machine Company. (See Hogland, Frank G., assignor.)				
International Silver Co. (See Cluiee, John, assignor.)				
International Silver Co. (See Hiller, Louis C., assignor.)				
J. E. Caldwell & Company. (See Van Roden, George C., assignor.)				
J. and E. Stevens Co. (See Bailey, Charles A., assignor.)				
James E. Blake Company. (See Porter, Louis C., assignor.)				
Kane, Michael J., Buffalo, N. Y. Badge	35,986	Aug. 5	100	1320
Keller, Sidney A., New York, N. Y. Back for brushes or similar articles	36,023	Aug. 26	100	1965
Keller, Sidney A., New York, N. Y. Handle for button-hooks or similar articles	36,024	Aug. 26	100	1966
Keller, Sidney A., New York, N. Y. Lid for puff-boxes or similar articles	36,025	Aug. 26	100	1966
Keller, Sidney A., New York, N. Y. Back for brushes or similar articles	36,026	Aug. 26	100	1966
Keller, Sidney A., New York, N. Y. Corner for blotting-pads or similar articles	36,027	Aug. 26	100	1966
Keller, Sidney A., New York, N. Y. Handle for button-hooks or similar articles	36,043	Sept. 9	100	2371
Keller, Sidney A., New York, N. Y. Shield	36,044	Sept. 9	100	2371
Keller, Sidney A., New York, N. Y. Shield	36,045	Sept. 9	100	2371
Keller, Sidney A., assignor to M. T. Goldsmith, New York, N. Y. Bag-frame	36,038	Sept. 2	100	2170
Levaur, Aaron, Philadelphia, Pa. Paper or draping weight	36,069	Sept. 2	100	2170
Linotype Company. (See Nadall, Berne, assignor.)				
Linotype Company. (See Nadall and Barnes, assignors.)				
Lyon, Augustus E., Salt Lake City, Utah. Badge	35,973	July 8	100	443
Magee, Morris, Philadelphia, Pa. Stove	36,062	Sept. 23	100	2766
Marshall, William F., assignor to H. H. Curtis, North Attleboro, Mass. Handle for spoons or similar articles	35,997	Aug. 12	100	1553
McCormick, Willoughby M., Baltimore, Md. Bottle	35,976	July 8	100	443
Merritt, Mortimer G., Rome, N. Y. Bicycle-rack	36,091	Sept. 30	100	3078
Mittendorff, Max, assignor to Sutro Brothers Braid Company, New York, N. Y. Braid	36,079	Sept. 16	100	2597
Myers, Phineas B., Morristown, N. J. Paper box	35,977	July 8	100	443
Nadall, Berne, Chicago, Ill., assignor to Linotype Company, Limited, London, England. Font of upper-case printing-type	36,018	Aug. 19	100	1754
Nadall, Berne, Chicago, Ill., and G. A. Barnes, assignors to Linotype Company, Limited, London, England. Font of lower-case printing-type	36,017	Aug. 19	100	1754
Nutrizio, Henry, New York, N. Y. Coffee or tea pot	36,014	Aug. 19	100	1753
Obear-Nester Glass Company. (See Forest, Henry, assignor.)				
Olsen, Frederick W., Mount Pleasant, Wis. Jardinière-stand	36,086	Sept. 30	100	3078
Perky, Henry D., Niagara Falls, N. Y. Stove	36,007	Aug. 12	100	1555
Petzold, Adolph, assignor to J. Bromley & Sons, Philadelphia, Pa. Rug	36,033	Aug. 26	100	1967
Pfaendler, Adolf, Brooklyn, N. Y. Fabric	36,080	Sept. 16	100	2597
Phinney, Joseph W., Medford, Mass., assignor to American Type Founders Company, New York, N. Y. Font of border-type	35,971	July 1	100	223
Pittsburgh Stove and Range Company. (See Dudgeon, Thomas M., assignor.)	36,089	Sept. 30	100	3078
Plant, Alfred, Keyport, N. J. Tile	36,012	Aug. 19	100	1752
Porter, Louis C., assignor to James E. Blake Company, Attleboro, Mass. Back for hand-mirrors, brushes, or similar articles	36,088	Sept. 30	100	3078
Powers, Maurice L., New York, N. Y. Finger-ring	36,090	Sept. 30	100	3078
Puddefoot, Charles, assignor to Briscoe Manufacturing Company, Detroit, Mich. Stove				
R. Wallace & Sons Mfg. Co. (See Hillbom, Henrik, assignor.)				
Reuter, John C., St. Louis, Mo. Automobile-body	36,040	Sept. 2	100	2170

Alphabetical list of patentees of designs, July to September, inclusive—Continued.

Name, residence, and design.	No.	Date.	Official Gazette. Vol.	Page.
Roger Williams Silver Company. (See Bender, Theodore, assignor.)				
Sargent and Company. (See Sargent, Edward R., assignor.)				
Sargent, Edward R., assignor to Sargent and Company, New Haven, Conn. Metal badge	35,980	July 22	100	995
Sargent, Willis H., assignor to E. & T. Fairbanks & Co., St. Johnsbury, Vt. Scale-beam support	35,969	July 1	100	223
Sargent, Willis H., assignor to E. & T. Fairbanks & Co., St. Johnsbury, Vt. Scale-base and supporting-column	35,970	July 1	100	223
Schneider, William E., Washington, D. C. Autocarette-body	35,984	July 29	100	1106
Smith, Edna L., Heno, Ohio. Umbrella-cover	36,092	Sept. 30	100	3078
Stifel, William F., Wheeling, W. Va. Fabric	36,041	Sept. 2	100	2170
Strasburger, Bertha, New York, N. Y. Lamp or candle shade	36,002	Aug. 12	100	1554
Storrs, Aaron P., Owego, N. Y. Canopy for lamp-chimneys	36,076	Sept. 16	100	2597
Sutro Brothers Braid Company. (See Mittendorff, Max, assignor.)				
Taylor, Clovis M., Columbus, Ohio. Automobile-body	36,006	Aug. 12	100	1555
Turton, Walter, Arlington, assignor to Eastwood and Park, Newark, N. J. Back for mirrors, brushes, or similar articles	35,993	Aug. 12	100	1553
Van Roden, George C., assignor to J. E. Caldwell & Company, Philadelphia, Pa. Pendent pin	35,991	Aug. 12	100	1553
Walker, James F. (See Walker, William H. and J. F.)				
Walker, William H. and J. F., Gate City, Ala. Mantel	35,983	July 29	100	1106
Watson and Newell Company. (See Crees and Court, assignors.)				
Wertheimer, Leon, New York, N. Y. Skirt-holder plate	35,999	Aug. 12	100	1554
West, George R., Wilkinsburg, Pa. Plate	36,090	Aug. 26	100	1967
Westerfield, Richard H., Kenton, Ohio. Range	35,987	Aug. 5	100	1321
Westerfield, Richard H., Kenton, Ohio. Range	35,988	Aug. 5	100	1321
Westerfield, Richard H., Kenton, Ohio. Range	35,989	Aug. 5	100	1321
Westerfield, Richard H., Kenton, Ohio. Range	35,990	Aug. 5	100	1321
Westerfield, Richard H., Kenton, Ohio. Range	36,005	Aug. 12	100	1555
Wilson, Luther B., trustee. (See Ewin, James L., assignor.)				
Wohltman, Louisa, New York, N. Y. Souvenir-plate	36,013	Aug. 19	100	1753
Wolf, Louis, New York, N. Y. Side frame for chatelaine-bags	36,075	Sept. 16	100	2597
Wright, Joseph H., New York, N. Y. Shade-cloth	36,093	Sept. 30	100	3078

ALPHABETICAL LIST OF REGISTRANTS OF TRADE-MARKS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
A. J. Jordan Cutlery Co. St. Louis, Mo. Razor-strops	38,894	Aug. 19	100	1750
A. Spiegel Co., Milwaukee, Wis. Tonic for the bladder and kidneys	38,917	Sept. 23	100	2768
Acme M'f'g Co., Southington, Conn. Certain named hardware	38,607	July 15	100	675
Actien-Gesellschaft für Anilin-Fabrikation, Berlin, Germany. Artificial food derived from albuminoids	38,848	Aug. 26	100	1970
Actien-Gesellschaft für Anilin-Fabrikation, Berlin, Germany. Films, plates, and photographic papers	38,950	Sept. 30	100	3005
Actien-Gesellschaft für Anilin-Fabrikation, Berlin, Germany. Coal-tar dyestuffs	38,951	Sept. 30	100	3005
Adams, James E., Quincy, Ill. Overalls and shirts and jumpers to be worn in connection with overalls	38,905	Sept. 23	100	2767
Adler & Co., Jacob, New York, N. Y. Gloves	38,598	July 1	100	294
Aeolipyle Company, New York, N. Y. Ventilating-dampers, draft-regulators, and smoke-preventing apparatus	38,895	Sept. 9	100	2380
Alaska Packers Association, San Francisco, Cal. Canned salmon	38,954	Sept. 23	100	2770
Albany Perforated Wrapping Paper Co., Albany, N. Y. Wrapping, waxed, and toilet paper	38,655	July 29	100	1104
Altenheim Medical Dispensary, Cincinnati, Ohio. Remedies for treatment of the hair and scalp	38,736	Aug. 5	100	1325
Altenheim Medical Dispensary, Cincinnati, Ohio. Remedy for treatment of the hair and scalp	38,758	Aug. 12	100	1557
Altenheim Medical Dispensary, Cincinnati, Ohio. Remedy for the hair and scalp	38,759	Aug. 12	100	1558
American Cereal Co., Akron, Ohio; Chicago, Ill., and Cedar Rapids, Iowa. Prepared cereal food	38,731	Aug. 5	100	1324
American Cereal Co., Akron, Ohio, and Chicago, Ill. Stock-food	38,794	Aug. 5	100	1324
American Hard Rubber Co., New York, N. Y. Insulating material	38,633	July 15	100	676
American Pottery Supply Company of Baltimore City, Baltimore, Md. Cleaning and polishing compound	38,735	Aug. 5	100	1325
American School Furniture Company, New York, N. Y. Blackboard-crayons	38,868	Sept. 2	100	2172
American Standard Composition Co., Washington, D. C. Compositions for coating wood and metal	38,867	Sept. 2	100	2172
American Stove Company, Jersey City, N. J. Cooking stoves and ranges	38,784	Aug. 12	100	1560
American Stove Company, Jersey City, N. J. Cooking stoves and ranges	38,785	Aug. 12	100	1560
American Tank & Fixture Company, Chicago, Ill. Gas-fixtures	38,741	Aug. 5	100	1326
Amoskeag Manufacturing Company, Manchester, N. H. Tickings	38,716	Aug. 5	100	1323
Anglo-Saxon Shoe Co., Boston, Mass. Leather shoes	38,794	Aug. 19	100	1756
Arment, Joseph A., Portland, Oreg. Cough-drops	38,548	July 1	100	295
Asch & Sons, J. T., New York, N. Y. Hats	38,875	Sept. 9	100	2377
Ashland Brewing Co., Ashland, Wis. Beer	38,651	July 22	100	967
Ashworth, George B., St. Paul, Minn. Ointment for treating rectal and skin diseases	38,755	Aug. 12	100	1557
Aspegren & Co., New York, N. Y. Dried fruits	38,959	Sept. 30	100	3005
Aspinwall, John, Barrytown, N. Y. Insoles	38,899	Aug. 26	100	1969
Athens Knitting Co., Athens, N. Y. Undershirts	38,601	July 15	100	674
B. A. Corbin & Son Co., Webster, Mass. Men's, boys', and youths' shoes	38,918	Sept. 23	100	2768
Bailey, William J., executor. (See Fennings, Alfred.)	38,677	July 29	100	1105
Baker, Edward N., Des Moines, Iowa. Nerve-tonic	38,589	July 1	100	294
Barry & Co., T. D., Brockton and Boston, Mass. Shoes	38,678	July 29	100	1105
Bartels Brewing Company, Syracuse, N. Y. Ales	38,707	Aug. 5	100	1322
Bartlett, Hugh G., Fall River, Mass. Hats	38,898	Sept. 16	100	2588
Baxter & Bro., H. C., Brunswick, Me. Canned vegetables and canned fruits	38,764	Aug. 12	100	1558
Beckers, Wilhelm, New York, N. Y. Dyeing and tanning assistant	38,795	Aug. 19	100	1756
Beggs & Cobb, Boston, Mass. Leather	38,806	Aug. 19	100	1787
Beggs, Frank L., Newark, Ohio. Tonic	38,565	July 8	100	444
Belton Mills, Belton, S. C. Sheetings	38,942	Sept. 30	100	3004
Belton Mills, Belton, S. C. Sheetings	38,965	Sept. 30	100	3007
Bernese Alps Milk Co., Stalden, Switzerland. Milk and milk products	38,849	Aug. 26	100	1970
Bevan & Co., Malaga, Spain. Almonds	38,913	Sept. 23	100	2768
Binghamton Felting Co., Binghamton, N. Y. Felt and certain named felt goods	38,966	Sept. 30	100	3007
Birk Bros. Brewing Co., Chicago, Ill. Beer and malt extract	38,776	Aug. 19	100	1559
Blaskower, Marks, San Francisco, Cal. Cigars, cheroots, and cigarettes	38,763	Aug. 12	100	1558
Bowell & Birchim Manufacturing Company, Rolling Prairie, Ind. Veterinary remedies for cholera	38,771	Aug. 12	100	1559
Bown Bros., Despatch, N. Y. Dried and evaporated fruits and vegetables	38,933	Sept. 23	100	2770
Boyd, Thomas L., Chicago, Ill. Lard	38,639	July 22	100	986
Bradley, Winant V. P., Toledo, Ohio. Record for disk talking-machines	38,656	July 29	100	1104
Bradley, Winant V. P., Toledo, Ohio. Disk talking-machines	38,636	July 15	100	678
Bray & Co., Geo., Leeds, England. Gas-burners	38,826	Aug. 19	100	1760
Bray & Co., Geo., Leeds, England. Gas-burners	38,827	Aug. 19	100	1760
Bray & Co., Geo., Leeds, England. Gas-burners	38,611	July 15	100	675
Brown Manufacturing Co., Greeneville, Tenn. Balms for nasal and catarrhal affections	38,887	Sept. 9	100	2379
Brunswick-Balke-Collender Company, Cincinnati, Ohio, and Chicago, Ill. Certain named cleaning and polishing compounds	38,697	July 29	100	1107
Bryan Marsh Company, New York, N. Y. Incandescent electric lamps	38,698	July 29	100	1107
Bryan Marsh Company, New York, N. Y. Incandescent electric lamps	38,774	Aug. 12	100	1559
Buchanan, James, London, England, and Glasgow, Leith, and Glenlivet, Scotland. Whisky	38,779	Aug. 12	100	1560
Buckeye Electric Co., Cleveland, Ohio. Incandescent electric lamps	38,735	Aug. 5	100	1324
Bunce, Charles W., Fort Wayne, Ind. Medicine for certain named diseases	38,834	Aug. 26	100	1968
Burton Bros. & Co., New York, N. Y. Linings	38,835	Aug. 26	100	1969
Burton Bros. & Co., New York, N. Y. Linings	38,901	Sept 23	100	2767
C. Howard Hunt Pen Co., Camden, N. J. Pens	38,654	July 29	100	1104
Calhoun, Robbins & Company, New York, N. Y. Certain named yarns and thread	38,688	July 29	100	1106
Calvert & Co., F. C., Bradford, Manchester, England. Carbolic acid and preparations containing same	38,599	July 15	100	674
Canfield Rubber Co., Bridgeport, Conn., and New York, N. Y. Dress-shields	38,706	Aug. 5	100	1322
Canfield Rubber Co., Bridgeport, Conn., and New York, N. Y. Rubber dress-shields having a stockinet covering				

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Carey, Henry D., New York, N. Y. Fire, burglar, and water proof safes and vaults	38,560	July 1	100	228
Carroll, John W., Lynchburg, Va. Boots and shoes	38,907	Sept. 23	100	2767
Carroll, John W., Lynchburg, Va. Boots and shoes	38,908	Sept. 23	100	2767
Carter's Ink Co., Boston, Mass., and New York, N. Y. Writing-inks	38,797	Aug. 19	100	1756
Casein Company of America, New York, N. Y. Condensed milk in powdered form	38,622	July 15	100	676
Castle Brook Carbon Black Co., Williamsport, Pa. Carbon-black	38,732	Aug. 5	100	1325
Century Camera Company, Rochester, N. Y. Certain named photographic goods	38,819	Aug. 19	100	1759
Chicago Fire Proof Covering Co., Chicago, Ill. Fireproof paint or coating	38,705	Aug. 12	100	1558
Church & Dwight Co., New York, N. Y. Baking-soda and baking-powder	38,623	July 15	100	677
Clarinda Poultry, Butter & Egg Co., Clarinda, Iowa. Poultry	38,575	July 8	100	445
Clark Cast Steel Cement Co., Huntington, Conn. Certain named cement	38,654	July 29	100	1107
Cleveland Faucet Co., Cleveland, Ohio. Hydraulic air-pumps	38,829	Aug. 19	100	1760
Cluett, Peabody & Co., Troy, N. Y. Collars and cuffs	38,711	Aug. 5	100	1323
Coie, Myron W., St. Paul, Minn. Certain named clocks	38,606	July 15	100	675
Colonial Works, Boonton, N. J. Certain named paints and painters' supplies	38,541	Aug. 26	100	1969
Columbia Incandescent Lamp Co., St. Louis, Mo. Incandescent electric lamps	38,780	Aug. 12	100	1560
Compañia General de Tabacos de Filipinas, Barcelona, Spain. Cotton cloth	38,580	July 1	100	294
Conner & Co., James G., Philadelphia, Pa. Certain named paints	38,553	July 1	100	227
Consumers Park Brewing Company, Brooklyn, N. Y. Lager-beer	38,652	July 22	100	927
Consumer's Rubber Co., Cleveland, Ohio. Rubber belting, rubber hose, and rubber packing	38,745	Aug. 12	100	1556
Consumers Silk Mills and Coupons Exchange Co., Newark, N. J. Silks	38,892	Sept. 2	100	2171
Consumers Silk Mills and Coupons Exchange Co., Newark, N. J. Silks	38,906	Sept. 23	100	2767
Coronation Marmalade Company, Boston, Mass. Marmalade	38,681	July 29	100	1106
Corrizo Extract Company, Albany, N. Y. Concentrated flavoring extract	38,621	July 15	100	676
Coulter, Frank M., Los Angeles, Cal. Soap	38,687	July 29	100	1106
Coulter, Frank M., Los Angeles, Cal. Cake toilet soap	38,746	Aug. 12	100	1556
Cousins, Henry R., Hanford, Cal. Suppositories for local treatment of internal organs	38,617	July 15	100	676
Coyle, John H., Thomasville, Ga. Tooth-powder and tooth-paste	38,645	July 22	100	926
Cross, Elias H., Gadsden, Ala. Syrups, flavorings, tonics, or extracts for non-intoxicating aerated beverages	38,584	July 1	100	295
Dana & Co., Cincinnati, Ohio. Ice-cream freezers	38,788	Aug. 12	100	1560
Dana & Co., Cincinnati, Ohio. Ice-cream freezers	38,889	Sept. 2	100	2170
David B. Crockett Company, Bridgeport, Conn. Wood-fillers and primers	38,892	Sept. 9	100	2279
Davies Textile Co., New York, N. Y. Cotton and silk woven textile fabrics	38,715	Aug. 5	100	1322
Deerfoot, William, St. Louis, Mo. Blood and liver tonic	38,751	Aug. 12	100	1557
Dexter Portland Cement Co., Nazareth, Pa. Portland cement	38,669	July 22	100	926
Dexter Yarn Co., Pawtucket, R. I. Mercerized cotton yarn	38,581	July 1	100	294
Diamond Crystal Salt Company, St. Clair, Mich. Salt	38,626	July 15	100	677
Diamond Crystal Salt Company, St. Clair, Mich. Salt	38,884	Sept. 9	100	2278
Dick and Brothers Quincy Brewery Co., Quincy, Ill. Lager-beer	38,846	Aug. 26	100	1970
Dickinson & Co., Edward E., Essex, Conn. Certain distilled product of witch-hazel	38,546	July 1	100	295
Diemer, Frank W., Springfield, Mo. Remedy for la grippe, catarrh, colds, and headaches	38,955	Sept. 30	100	3005
Ditty & Ordner, Cleveland, Ohio. Flour	38,926	Sept. 23	100	2769
Dobson, Henry, Paterson, N. J. Shirts, collars, and cuffs	38,903	Sept. 23	100	2767
Dorothy Dodd Shoe Co., Montclair, N. J., and Boston, Mass. Certain named boots and shoes	38,836	Aug. 26	100	1969
Dorothy Dodd Shoe Co., Montclair, N. J., and Boston, Mass. Misses' and children's boots and shoes	38,910	Sept. 23	100	2767
Dorothy Dodd Shoe Co., Boston, Mass. Certain named boots and shoes	38,911	Sept. 23	100	2768
Dow & Company, F. H., Boston, Mass. Chocolate candy	38,718	Aug. 5	100	1323
Downs, William F., Jersey City, N. J. Lubricant	38,568	July 8	100	445
Duerr, Eugene E., Buffalo, N. Y. Remedies in capsule, tablet, or salve form for the cure of certain named diseases	38,881	Sept. 9	100	2278
Duncan & Stenz, New York, N. Y. Silk piece goods and silk ribbons	38,594	July 15	100	674
Dupaul, Young Optical Co., Southbridge, Mass. Certain named spectacle and eyeglass frames and mountings	38,821	Aug. 19	100	1759
Dupaul, Young Optical Co., Southbridge, Mass. Certain named spectacle and eyeglass frames and mountings	38,822	Aug. 19	100	1759
Dustin, Smith T., Chicago, Ill. Remedy for dandruff and a hair and scalp tonic	38,676	July 29	100	1105
E. C. Atkins & Company, Indianapolis, Ind.; New York, N. Y.; Memphis, Tenn.; Minneapolis, Minn.; Atlanta, Ga., and Portland, Oreg. Cross-cut-saws	38,870	Sept. 2	100	2173
E. C. Atkins & Company, Indianapolis, Ind.; New York, N. Y.; Memphis, Tenn.; Minneapolis, Minn.; Atlanta, Ga., and Portland, Oreg. Crosscut-saws and handsaws	38,871	Sept. 2	100	2173
E. J. Brooks & Company, New York, N. Y., and Newark, N. J. Certain named seals	38,738	Aug. 5	100	1326
Eagle Paper Co., Richmond, Va. Paper bags and wrapping-paper	38,818	Aug. 19	100	1759
Eagle Pencil Co., New York, N. Y. Pencil-sharpeners	38,902	Sept. 23	100	2767
Earle, Walter H., Los Angeles, Cal. Fruit-juices	38,556	July 1	100	295
Edwards, Joseph S., Kansas City, Mo. Cigars	38,925	Sept. 23	100	2769
Electro Lamp Co., New York, N. Y. Calcium carbid	38,629	July 15	100	677
Electro Lamp Co., New York, N. Y. Lamps for burning acetylene gas	38,907	Sept. 23	100	2770
Enterprise Soap Works, Nashville, Tenn. Toilet soap	38,550	July 1	100	227
Epicure Baking Co., Detroit, Mich. Crackers, bread, cakes, and puddings and pies	38,768	Aug. 12	100	1558
Estes, Webster C., New York, N. Y. Smalt	38,591	July 8	100	446
Estes, Webster C., New York, N. Y. Smalt	38,592	July 8	100	446
Evans, Geo. T., Indianapolis, Ind. Flour	38,847	Aug. 26	100	1970
Fabrique de Moteurs & de Machines, (ancienne maison Zürcher, Lüthi & Cie.,) St. Aubin, Switzerland. Cycles, motor-vehicles, and their parts	38,973	Sept. 30	100	3006
Fair Haven Food Company, Inc., New Haven, Conn. Cereal food product	38,927	Sept. 23	100	2769
Fair Haven Food Company, Inc., New Haven, Conn. Cereal food product	38,928	Sept. 23	100	2769
Farbwerke, vorm. Meister, Lucius & Brüning, Höchst-on-the-Main, Germany. Certain named medical compounds	38,800	Aug. 19	100	1757
Fargo, Frank M., Philadelphia, Pa. Boots and shoes	38,798	Aug. 19	100	1755
Farnsworth, Hoyt & Co., Boston, Mass. Fabrics for boot and shoe linings and trimmings	38,598	July 15	100	674
Faulhaber, John H., Allegheny, Pa. Certain named confectionery	38,719	Aug. 5	100	1323
Federal Refining Company, Jersey City, N. J. Refined sugar	38,954	Sept. 30	100	3005
Fennings, Alfred, deceased; W. J. Bailey, Cowes, England, executor. Medicine for certain named ailments	38,920	Sept. 23	100	2678
Fisk Rubber Company, Chicopee Falls and Springfield, Mass. Pneumatic tires for bicycles, carriages, and automobiles	38,700	July 29	100	1107
Florence Manufacturing Company, Northampton, Mass.; New York, N. Y., and Chicago, Ill. Hair, nail, tooth, and flesh brushes	38,570	July 8	100	444
Florence Manufacturing Company, Northampton, Mass.; New York, N. Y., and Chicago, Ill. Hair, nail, tooth, and flesh brushes	38,571	July 8	100	444
Fostoria Inc. Lamp Co., Cleveland, Ohio. Incandescent electric lamps	38,781	Aug. 12	100	1560
Fred Macey Co., Ltd., Grand Rapids, Mich. Office and library furniture	38,858	Aug. 26	100	1972
Fredk. Walton & Co., Limited, Sunbury Common, England. Certain named wall hangings and coverings	38,569	July 8	100	444

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Freeport Novelty Company, Freeport, Ill. Pepsin chewing-gum	38,578	July 8	100	445
Fyfe & Co., R. H., Detroit, Mich. Certain named leather footwear	38,718	Aug. 5	100	1323
G. & T. Earle, Limited, Hull, England. Cement paint	38,889	Sept. 9	100	2279
Galena-Signal Oil Company, Franklin, Pa. Lubricating-oils	38,589	July 8	100	446
Galena-Signal Oil Company, Franklin, Pa. Lubricating-oils	38,590	July 8	100	446
Galena-Signal Oil Company, Franklin, Pa. Illuminating-oils	38,630	July 15	100	677
Galena-Signal Oil Company, Franklin, Pa. Lubricating-oils	38,631	July 15	100	677
Galena-Signal Oil Company, Franklin, Pa. Lubricating-oils	38,632	July 15	100	677
Gedney, James W., New York, N. Y. Certain named medicinal subetances	38,958	Sept. 30	100	3006
General Manifold Company, Franklin, Pa. Carboned paper	38,596	July 8	100	446
Gerhart, Charles C., Clarksville, Tenn. Certain named washing compounds	38,685	July 29	100	1106
Gill Brothers Company, Steubenville, Ohio. Glass lamp-chimneys, glass lantern-globes, and glass reflectors	38,573	July 8	100	445
Gill Brothers Company, Steubenville, Ohio. Glass lamp-chimneys, glass lantern-globes, and glass reflectors	38,574	July 8	100	445
Glen-Armstrong Co., Chicago, Ill. Fruit-icing chocolate, candies and ice-cream, and egg color	38,769	Aug. 12	100	1559
Goetz, Frank, Manchester, Conn. Ginger-snaps	38,577	July 8	100	445
Goldsmith's Sons, P., Cincinnati, Ohio. Certain named sporting goods	38,587	July 8	100	446
Goodhair Remedy Company, Newark, Ohio. Soap	38,915	Sept. 23	100	2768
Goodyear, Charles P., Sr., Brunswick, Ga. Paint, paint-oil, and varnish	38,891	Sept. 9	100	2279
Goodyear Tire and Rubber Company, Akron, Ohio. Rubber tires	38,573	July 8	100	444
Gottlieb & Beck, New York, N. Y. Shirt-waists and skirts	38,904	Sept. 23	100	2767
Grant & Co., W. T., Louisville, Ky. Leaf-tobacco	38,532	July 1	100	295
Grant & Co., W. T., Louisville, Ky. Leaf-tobacco	38,533	July 1	100	295
Griswold, Oscar H., Winona, Minn. Roasted coffee	38,690	July 29	100	1106
Guthmann Carpenter & Telling, Chicago, Ill. Leather boots and shoes	38,876	Sept. 9	100	2277
Gwaltney-Bunkley Peanut Co., Smithfield, Va. Peanuts	38,657	July 22	100	928
H. H. King & Co., Minneapolis, Minn. Flour made from wheat	38,962	Sept. 30	100	3006
H. Hirschberg Optical Company, St. Louis, Mo. Clinical thermometers	38,856	Aug. 26	100	1971
H. K. Mulford Co., Philadelphia, Pa. Tonics	38,614	July 15	100	676
H. K. Mulford Co., Philadelphia, Pa. Diuretics	38,615	July 15	100	676
H. K. Mulford Co., Philadelphia, Pa. Intestinal astringents	38,616	July 15	100	676
H. N. Strait Mfg. Co., Kansas City, Kans. Weighing-scales	38,702	July 29	100	1108
Halls Chronic Cough Cure Co., Cordele, Ga. Medicines for cure of pulmonary troubles and diseases of the blood	38,921	Sept. 23	100	2769
Hamilton & Co., John F., Maple Lake, Minn. Remedy for dandruff	38,547	July 1	100	226
Hance Bros. & White, Philadelphia, Pa. Soda-water and compounds and extracts for flavoring	38,653	July 22	100	927
same	38,654	July 22	100	927
Hance Bros. & White, Philadelphia, Pa. Soda-water and compounds and extracts for flavoring same	38,772	Aug. 12	100	1559
Hanks, Elizabeth T., Ridgewood, N. J. Certain named cleaning and polishing preparation	38,843	Aug. 26	100	1969
Hanna, Elmer E., Chicago, Ill. Pneumatic tools	38,959	Aug. 26	100	1972
Harrison, Dwight A., Kalamazoo, Mich. Remedy for tuberculosis	38,748	Aug. 12	100	1556
Hart Mfg. Co., Hartford, Conn. Electric switches	38,740	Aug. 5	100	1326
Hartley Co., M., New York, N. Y., and Bridgeport, Conn. Golf-balls	38,670	July 29	100	1105
Hawthorn, Aldus F., Lancaster, Pa. Roof-paint in liquid form	38,555	July 1	100	227
Heinz Co., H. J., Allegheny, Pa. Vinegar	38,813	Aug. 19	100	1758
Heindler, John J., Chicago, Ill. Portable acetylene-gas generators	38,928	Sept. 23	100	2770
Henkes, Jan B., Rotterdam, Netherlands. Gin	38,775	Aug. 12	100	1559
Hausner Baking Company, Chicago, Ill. Bread	38,540	July 1	100	295
Hileman-James Co., Pittsburg, Pa. Plastic metallic packings	38,948	Sept. 30	100	3004
Hileman-James Co., Pittsburg, Pa. Plastic metallic packings	38,949	Sept. 30	100	3005
Hill, Arthur J., Minerva, Ohio. Medical tonic	38,868	Sept. 9	100	2278
Hofmeier, Julius, Vienna, Austria-Hungary. Certain named medicinal compound	38,544	July 1	100	295
Holbrook, A. & C. W., Providence, R. I. Certain named rawhide goods	38,744	Aug. 12	100	1555
Hollywood Paint Company, Buffalo, N. Y. Mixed paints	38,890	Sept. 9	100	2279
Hopkins, Adolphe H., Brooklyn, N. Y. Tonic	38,650	July 22	100	927
Hoshaw, William M., Bisbee, Ariz. Ter. Medicines for treatment of the blood	38,543	July 1	100	295
I. B. Kleinert Rubber Company, New York, N. Y.	38,604	July 15	100	675
Illinois Sewing Machine Company, Chicago, Ill. Sewing-machines	38,899	Sept. 16	100	2528
Illinois Sewing Machine Company, Chicago, Ill. Sewing-machines	38,900	Sept. 16	100	2528
Independent Brewing Association, Chicago, Ill. Tonic	38,807	Aug. 19	100	1757
Independent Brewing Association, Chicago, Ill. Lager-beer	38,808	Aug. 19	100	1758
Independent Brewing Association, Chicago, Ill. Beer	38,809	Aug. 19	100	1758
Ingalls, Allen G., Montreal, Canada. Stoves, furnaces, and attachments therefor	38,558	July 1	100	227
J. D. McCann Company, Hornellsville, N. Y. Medical compounds used for skin diseases	38,752	Aug. 12	100	1557
J. & J. M. Worrall, Limited, Salford, England. Cotton piece goods	38,641	July 22	100	926
Jack Drug Co., New York, N. Y. Remedies for headache, nervous complaints, and general debility	38,647	July 22	100	927
Jaeger, George A., New York, N. Y. Certain named paper	38,581	Aug. 26	100	1968
James McCreery & Co., New York, N. Y. Gloves	38,742	Aug. 12	100	1556
Johnson, Charles W., Minneapolis, Minn. Medicine for the blood, kidneys, and liver	38,648	July 22	100	927
Johnston Harvester Co., Batavia, N. Y. Mowers, reapers, binders, and parts thereof	38,688	July 15	100	678
Jones, William A., West Kirby, England. Throat-pastils	38,747	Aug. 12	100	1556
Jos. Schlitz Brewing Company, Milwaukee, Wis. Lager-beer	38,772	Aug. 12	100	1560
Kakao-Compagnie Theodor Reichardt, Gesellschaft mit Beschränkter Haftung, Wandsbek, Germany. Cocoa and cocoa preparations	38,815	Aug. 19	100	1758
Kansas City Roofing & Corrugating Co., Kansas City, Mo. Fabric roofing	38,737	Aug. 5	100	1325
Kearny, Hamilton R., Minneapolis, Minn. Wheat-flour	38,694	July 15	100	677
Keystone Watch Case Company, Philadelphia, Pa. Watches, watchcases, and watch-movements	38,596	July 1	100	294
Kimball, Charles M., Winthrop, Mass. Polish for metals	38,767	Aug. 12	100	1556
King, George W., Swansboro, Va. Cleansing preparations in tablet form	38,886	Sept. 2	100	2171
Koch, Alfred J., New York, N. Y. Suspender-belts	38,743	Aug. 12	100	1556
Krombs, Walter R., Chicago, Ill. Tonic medicinal compound	38,916	Sept. 23	100	2768
Kridel Sons & Co., J., New York, N. Y. Ribbons, silks, satins, and velvets	38,714	Aug. 5	100	1323
Krueger, Emma M., Round Top, Tex. Veterinary remedy	38,673	July 29	100	1105
L. Martin Company, New York, N. Y. Dry lampblack	38,888	Sept. 9	100	2279
Lamkin & Foster, Boston, Mass. Men's boots and shoes	38,837	Aug. 26	100	1969
Landers, Frary and Clark, New Britain, Conn. Cylindrical food-choppers	38,971	Sept. 30	100	3007
Lazakola Company, New York, N. Y. Ointment for the skin	38,646	July 22	100	926
Leroux, James, Toledo, Ohio. Liquid medicine for blood diseases	38,750	Aug. 12	100	1556
Levi, Philip, New York, N. Y. Liquid furniture-polish	38,736	Aug. 5	100	1325
Libby, McNeill & Libby, Chicago, Ill. Certain named packing-house products	38,587	July 1	100	295
Liberty Silk Co., New York, N. Y. Dress-silks	38,787	Aug. 19	100	1755

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Lindauer, Jules, Paris, France. Corsets, corselets, gorgets, belts, bust-holders, busks, whalebones or steels, and hose-supporters	38,603	July 15	100	674
Listman Mill Company, La Crosse, Wis. Bran, middlings, brown and white, mixed feed, and red dog	38,728	Aug. 5	100	1324
Little Giant Fire Extinguisher Co., New York, N. Y. Chemical fire-extinguishers	38,663	July 22	100	985
Litz, James G., Cincinnati, Ohio. Whisky	38,811	Aug. 19	100	1758
Lochman, Louis, Jr., New York, N. Y. Laundry cream	38,886	Sept. 9	100	2379
Lonergan, John E., Philadelphia, Pa. Gage-glasses	38,872	Sept. 9	100	2377
Long, Margaret J., Lebanon, Pa. Cigars	38,717	Aug. 5	100	1323
M. Hartley Company, Bridgeport, Conn., and New York, N. Y. Caddy-bags	38,671	July 29	100	1105
Magnus Metal Company, Buffalo, N. Y. Antifriction metal	38,661	July 22	100	984
Maibrunn & Knappe, Sharon Springs, N. Y. Certain named remedial agent	38,918	Sept. 23	100	2768
Maltbie, Birt L., New York, N. Y. Pepsin compound	38,726	Aug. 5	100	1324
Manning, John W., Albany, Tex. Foot-powder	38,729	Aug. 5	100	1325
Marschat, Karolina A., New York, N. Y. Remedies for rheumatism and other similar inflammatory diseases	38,753	Aug. 12	100	1557
Masson, Louis E., Montreal, Canada. Soothing-syrup	38,612	July 15	100	675
Mattes & Son, E., New York, N. Y. Cap-visors	38,945	Sept. 30	100	3004
McCurren, Henry M., Hammond, Ind. Ointment for aches and pains	38,618	July 15	100	676
McKinley Tonic Medicine Company, Columbus, Ohio. Tonic medicine	38,752	Aug. 12	100	1557
Meichel, Charles, St. Louis, Mo. Ointment	38,678	July 29	100	1105
Melnecke & Co., New York, N. Y. Certain named hospital and sick-room appliances	38,876	Sept. 9	100	2377
Meyer & Co., Chas. E., Freeport, Ill. Spirit-vinegar	38,967	Sept. 30	100	3007
Michigan Clothing Co., Ionia, Mich. Skirts	38,642	July 22	100	926
Miller, Bryant, Pierce Co., Aurora, Ill. Type-writer ribbons	38,880	Aug. 19	100	1759
Mistrot, Felix E., Galveston, Tex. Corsets	38,643	July 22	100	926
Mohawk Paint and Chemical Co., New York, N. Y. Mineral paints	38,598	July 8	100	446
Mundorff, Theodore, New York, N. Y. Optical lenses	38,874	Sept. 9	100	2377
Murals Company, New Brighton, N. Y. Wall finishing and decorating material	38,969	Sept. 23	100	2770
Murua Medical Company, Winchester, Va. Remedies for nervous diseases and diseases of the stomach, liver, and bowels	38,583	July 8	100	446
N. K. Fairbank Company, Chicago, Ill. Laundry soap	38,851	Aug. 26	100	1971
Naamlooze Vennootschap Nederlandsche Verffabriek "Eclatin," Amsterdam, Netherlands. Paints	38,691	July 29	100	1106
Nash-Smith Tea & Coffee Co., Denver, Colo. Java and Mocha coffee	38,679	July 29	100	1105
National Architectural Improvement and Supply Company, Wilmington, Del., and Baltimore, Md. Certain named cleaning compounds, wood-stain, ship-cement, and antifouling-bottom compound	38,842	Aug. 26	100	1969
National Electric Lamp Co., Cleveland, Ohio. Incandescent electric lamps	38,825	Aug. 19	100	1760
National Haircome Co., Milwaukee, Wis. Medicinal compound for restoring hair	38,549	July 1	100	226
National Supply Co., New York, N. Y. Certain named washing compounds	38,627	July 15	100	677
Neal, James A., Boston, Mass. Wheat-flour, wheat food preparations, and wheat breakfast-foods	38,722	Aug. 5	100	1324
New England Cotton Yarn Company, Jersey City, N. J., and New Bedford, Mass. Cotton thread	38,780	Aug. 19	100	1755
New England Cotton Yarn Company, Jersey City, N. J., and New Bedford, Mass. Cotton thread	38,781	Aug. 19	100	1755
New England Cotton Yarn Company, Jersey City, N. J., and New Bedford, Mass. Cotton threads	38,836	Aug. 26	100	1968
New England Cotton Yarn Company, Jersey City, N. J., and New Bedford, Mass. Cotton threads	38,944	Sep. 30	100	3004
Nungesser Electric Battery Co., Cleveland, Ohio. Dry batteries	38,699	July 29	100	1107
O'Donohue's Sons, Joseph J., New York, N. Y. Sweetened and unsweetened cocoa and chocolate	38,864	Sept. 2	100	2171
Obear Nester Glass Company, St. Louis, Mo. Prescription-bottles	38,730	Aug. 5	100	1325
Obici, Amedeo, Wilkesbarre, Pa. Peanuts	38,883	Sept. 9	100	2378
Parker, Silas O., Littleton, N. H. Horse remedies	38,619	July 15	100	675
Pattison, Charles H., New York, N. Y. Modified milk	38,730	Aug. 5	100	1324
Paxton Company, E., Boston, Mass. Antiseptics for toilet and medicinal purposes	38,545	July 1	100	226
Pearce, Myron A., Chicago, Ill. Hair-tonics and dandruff cures	38,548	July 1	100	226
Pearson Drug Co., Chicago, Ill. Tablets for blood and nervous disorders	38,804	Aug. 19	100	1757
Perfect Scrap Book Co., Albany, N. Y. Scrap-books	38,667	July 29	100	1104
Perkins, Hardy & Co., West Derry, N. H., and Boston, Mass. Boots and shoes	38,566	July 8	100	444
Perkins, Martin D., Jamestown, N. Y. Blood-tonic	38,805	Aug. 19	100	1757
Peters Cartridge Co., Cincinnati, Ohio. Certain named ammunition	38,561	July 1	100	228
Peters Cartridge Co., Cincinnati, Ohio. Certain named ammunition	38,562	July 1	100	228
Peters Cartridge Co., Cincinnati, Ohio. Certain named ammunition	38,801	Aug. 19	100	1757
Phelps Publishing Company, Springfield, Mass. Periodicals	38,817	Aug. 19	100	1759
Philadelphia Chemical Co., Philadelphia, Pa. Illuminating-oils	38,952	Sept. 30	100	3005
Pierce, Butler and Pierce Mfg. Co., Syracuse, N. Y. Certain named heating apparatus	38,701	July 29	100	1109
Pilling & Madeley, Philadelphia, Pa. Hosiery	38,608	July 15	100	674
Plamondon, Adelard J., Lowell, Mass. Pills for blood tonic	38,649	July 22	100	927
Platt, Reginald, Silver City, N. Mex. Ter. Dandruff cure	38,757	Aug. 12	100	1557
Plent, John B., Cleveland, Ohio. Internal remedies for certain named diseases	38,584	July 8	100	446
Plymouth Rubber Co., Stoughton, Mass. Rubber heels for boots and shoes	38,568	July 8	100	444
Portable Electric Power & Light Company, Jersey City, N. J. Primary electric cells	38,695	July 29	100	1107
Price, Theodore H., New York, N. Y. Compound for extracting grease	38,684	July 29	100	1106
Prunetta Pharmacal Co., New York, N. Y. Laxative medicines	38,808	Aug. 19	100	1757
Puroline Chemical Company, Boston, Mass. Antiseptic detergent disinfectant	38,761	Aug. 12	100	1558
Raven Gloss Manufacturing Company, New York, N. Y. Shoe and leather dressing	38,895	Sept. 9	100	2378
Raymond & Co., New York, N. Y. Medicinal plasters	38,737	Aug. 5	100	1324
Reed & Carnrick, Jersey City, N. J. Medicinal preparations having digestive and nutritive properties	38,962	Sept. 23	100	2769
Reid Brothers, St. Paul, Minn. Certain named clothing	38,839	Aug. 26	100	1968
Reedle, Arthur E., New York, N. Y. Skylights	38,941	Sept. 23	100	2770
Richards, Edward T., Chicago, Ill. Certain named medical compounds	38,749	Aug. 12	100	1556
Riverside Chemical Company, Paterson, N. J. Hat-cleansing compounds	38,795	Aug. 19	100	1756
Robert Reis & Co., New York, N. Y. Knit underwear and hosiery	38,665	July 29	100	1104
Roberts, Fred H., Boston, Mass. Chocolate candy	38,620	July 15	100	676
Roberts, Tharp S., Monticello, Fla. Chill and fever tonic	38,957	Sept. 30	100	3006
Robinson, Bernard N., Coaticook, Canada. Remedies in tablet form for certain named diseases	38,919	Sept. 23	100	2768
Roderwald, Otto, Chicago, Ill. Liquid-coolers	38,985	Sept. 23	100	2770
Rosenthal and Goldberg, Trenton, N. J. Trousers	38,600	July 15	100	674
Rosenzweig & Baumann, Cassel, Germany. Certain named chemical compound	38,552	July 1	100	227
Rothenberg Co., San Francisco, Cal. Whisky and whisky preparations	38,844	Aug. 26	100	1970
Rudert, Otto, Rock Island, Ill. Chemical preparation for removing superfluous hair	38,613	July 15	100	675
Russ, Suchard and Company, Neufchâtel, Switzerland. Candies, chocolate, and preparations of chocolate and cocoa	38,770	Aug. 19	100	1559
S. A. White Co., Boston, Mass. Ink for finishing edges and heels of boots and shoes	38,600	July 29	100	1106
S. H. Winstead Medicine Co., Paducah, Ky. Medicinal preparations in liquid and tablet form for cure of certain named diseases	38,609	July 15	100	675

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
S. P. Shotter Company, Savannah, Ga.; Chicago, Ill.; New York, N. Y., and New Orleans, La. Rosin-oil	38,733	Aug. 5	100	1325
Sachse, Ernest C., St. Louis, Mo. Composition fire-kindler	38,893	Sept. 9	100	2379
Samstag & Hilder Bros., New York, N. Y. Belts	38,537	July 1	100	224
San Miguel Bros., Bayamon, Porto Rico. Cigars	38,656	July 22	100	928
Sandeman Sons & Co., Geo. G., London, England. Port and sherry wines	38,924	Sept. 23	100	2769
Sandner & Rinn Sisters, Chicago, Ill. Remedial paste for burns, scalds, wounds, and running sores	38,760	Aug. 12	100	1556
Sanger Bros., Dallas and Waco, Tex. Hats	38,644	July 22	100	926
Sanger Bros., Dallas and Waco, Tex. Hats	38,708	Aug. 5	100	1323
Sanger Bros., Dallas and Waco, Tex. Hats	38,709	Aug. 5	100	1323
Sanger Bros., Dallas and Waco, Tex. Felt hats	38,710	Aug. 5	100	1323
Sanger Bros., Dallas, Tex. Boots and shoes	38,909	Sept. 23	100	2767
Saranac Glove Co., Littleton, N. H. Gloves and mittens	38,712	Aug. 5	100	1323
Schirmer, Gustav, Chicago, Ill. Devices for applying medicaments to wounds or orifices	38,856	Aug. 26	100	1971
Schumacher Cereal Co., Marseilles, Ill. Barley grits	38,963	Sept. 30	100	3005
Schupp & Son, C. F., Albany, N. Y. Bread	38,816	Aug. 19	100	1759
Schwarts, Schiffer & Company, New York, N. Y. Men's gloves	38,890	Sept. 2	100	2171
Schwarzschild & Sulzberger Company, Kansas City, Kans.; Chicago, Ill., and New York, N. Y. Certain named packing-house products	38,929	Sept. 23	100	2769
Schwarzschild & Sulzberger Company, Kansas City, Kans.; Chicago, Ill., and New York, N. Y. Certain named packing-house products	38,930	Sept. 23	100	2770
Schwarzschild & Sulzberger Company, Kansas City, Kans.; Chicago, Ill., and New York, N. Y. Certain named packing-house products	38,931	Sept. 23	100	2770
Schwarzschild & Sulzberger Company, Kansas City, Kans.; Chicago, Ill., and New York, N. Y. Certain named packing-house products	38,932	Sept. 23	100	2770
Scott, William H., Reading, Pa. Fire-extinguisher in powder form	38,766	Aug. 12	100	1558
Scutt, Augustus B., New Philadelphia, Ohio. Remedy for the blood	38,956	Sept. 30	100	3005
Seidler, Alex., Newark, N. J. Certain named medicines and medicinal plasters	38,582	July 8	100	445
Shafto, Rolland E., Hamilton, N. J. Liniments	38,928	Sept. 23	100	2769
Siegel-Cooper Co., New York, N. Y. Wines and brandies	38,812	Aug. 19	100	1758
Siegel-Cooper Co., New York, N. Y. Peptonized extract of malt	38,845	Aug. 26	100	1970
Siegenthaler, Harvey N., Springfield, Ohio. Talcum powder	38,730	Aug. 5	100	1325
Silberstein, Albert L., New York, N. Y. Razors, knives, scissors, and shears	38,823	Aug. 19	100	1759
Silver, Charles A., Boscawen, N. H. Remedies for spavin, ringbones, splints, and curbs	38,762	Aug. 12	100	1558
Silver Salt Company, St. Paul, Minn. Manufactured powder for polishing, cleaning, and preserving certain named surfaces	38,958	Sept. 30	100	3005
Simar, Alexandre P., Montreal, Canada. Hair remedy	38,954	Sept. 30	100	3005
Skinner, George N., Detroit, Mich. Salt	38,659	July 22	100	928
Smith, Robert H., Los Angeles, Cal. Complexion compounds in tablet, soap, and powder form	38,581	July 8	100	445
Smith, William J., New York, N. Y. Collar-buttons	38,703	Aug. 5	100	1322
Southern Coffee Company, Galveston, Tex. Coffees	38,965	Sept. 30	100	3007
Spilker, Henry A., Pittsburg, Pa. Remedy for certain named diseases	38,880	Sept. 9	100	2378
Sprague, Augustus V. M., New York, N. Y. Certain named medical compounds	38,585	July 8	100	446
Sprague, Warner & Company, Chicago, Ill. Certain named groceries	38,539	July 1	100	225
Staedtler, J. S., Nuremburg, Germany. Certain named stationery	38,595	July 1	100	224
Standard Bottling & Extract Co., Boston, Mass. Ginger-ale	38,810	Aug. 19	100	1758
Standard Paint Company, New York, N. Y. Certain named covering and protective materials	38,947	Sept. 30	100	3004
Standard Varnish Works, New York, N. Y. Paints and certain named painters' supplies	38,734	Aug. 5	100	1325
Stark Bro's Nurseries & Orchards Co., Louisiana, Mo. Apples, apple-trees, scions, cuttings, grafts, roots, and stocks	38,556	July 1	100	227
Stark Bro's Nurseries & Orchards Co., Louisiana, Mo. Apples, apple-trees, scions, cuttings, grafts, roots, and stocks	38,635	July 15	100	678
Static Carbonating Company, New York, N. Y. Certain named carbonated beverages	38,969	Sept. 30	100	3007
Static Carbonating Company, New York, N. Y. Carbonating apparatus and appliances	38,970	Sept. 30	100	3007
Steele, Everard, Mill Valley, Cal. Explosives	38,563	July 1	100	228
Steiner, Edmund U., New York, N. Y. Dolls	38,704	Aug. 5	100	1322
Steiner, Edmund U., New York, N. Y. Dolls	38,705	Aug. 5	100	1322
Steinmetz, William F., Philadelphia, Pa. Insect-powders	38,721	Aug. 5	100	1325
Stevens, Benjamin A., Toledo, Ohio. Billiard-cloth	38,943	Sept. 30	100	3004
Steward, Demetrius M., Chattanooga, Tenn., and New York, N. Y. Insulating material	38,554	July 1	100	227
Steward, Demetrius M., Chattanooga, Tenn., and New York, N. Y. Gas-burners	38,828	Aug. 19	100	1760
Stoddard, Volcott C., Denver, Colo. Remedy for piles and other rectal diseases	38,754	Aug. 12	100	1557
Story & Co., Nelson, Boseman, Mont. Flour	38,960	Sept. 30	100	3006
Story & Co., Nelson, Boseman, Mont. Flour	38,961	Sept. 30	100	3006
Strasburger, Myer, Washington, D. C. Powders for the relief of the feet	38,896	Sept. 16	100	2599
Suarez & Co., Garcia, Manzanillo, Cuba. Certain named leather goods, trimmings, and hardware	38,977	Sept. 9	100	2377
Sunbeam Inc. Lamp Co., New York, N. Y. Incandescent electric lamps	38,758	Aug. 12	100	1560
Sun Vapor Street Light Co., Canton, Ohio. Hydrocarbon-vapor lamps	38,857	Aug. 26	100	1971
Superior Manufacturing Company, Chicago, Ill. School-desks, school-seats, and opera-chairs	38,777	Aug. 12	100	1559
Swift and Company, Chicago, Ill. Certain named packing house products	38,556	July 1	100	225
Swift and Company, Chicago, Ill. Eggs	38,576	July 8	100	445
Tarr, Robert C., Providence, R. I. Poison for the extermination of insects and animals	38,854	Aug. 26	100	1971
Tea Tray Company of Newark, N. J., Newark, N. J. Chemical fire-extinguishers	38,972	Sept. 30	100	3008
Tenny, Lewie A., Cleveland, Ohio. Paints and roofing-paints	38,692	July 29	100	1107
Texas Portland Cement & Lime Co., Galveston, Tex. Portland cement	38,634	July 15	100	678
Thompson Iron Works, Philadelphia, Pa. Range-boilers and hot-water generators	38,786	Aug. 12	100	1560
Tomblin, Bryan E., Cordova, Mexico. Green coffee	38,655	July 22	100	927
Towle Syrup Company, St. Paul, Minn. Table syrup and molasses	38,693	July 29	100	1105
Trent, Simeon V., Salt Lake City, Utah. Ore-crushing mills	38,559	July 1	100	227
Trowbridge, William S., Meadville, Pa. Chocolate-covered molasses chips	38,578	July 8	100	445
Tubular Rivet & Stud Co., Boston, Mass. Tubular and pronged rivets	38,557	July 1	100	227
Turn Bull, Florence E., Chelsea, Mich. Certain named medical compounds and preparations	38,610	July 15	100	675
20th Century Mfg. Co., New York, N. Y. Portable electric and oil lamps and lanterns	38,696	July 29	100	1107
Ullman Co., Sigmund, New York, N. Y. Printing-inks	38,689	July 29	100	1106
Ullrich & Co., J., New York, N. Y. Stylographic and fountain pens	38,873	Sept. 9	100	2377
United Shirt Vest Co., Chicago, Ill. Shirt-vests	38,851	Sept. 2	100	2171
United States Gasoline Engine Co., Chicago, Ill. Gas-engines	38,637	July 15	100	678
United States Plantose Company, Limited, Saginaw, Mich. Vegetable albumens in dry or liquid form	38,551	July 1	100	227
United Workingmen's Boot and Shoe Company, San Francisco, Cal. Boots and shoes	38,567	July 8	100	444
Universal Paint-Solvent Company, San Francisco, Cal. Certain named painters' supplies	38,986	Sept. 23	100	2770
Upmann, Carl, New York, N. Y. Little cigars and cigarettes	38,674	July 29	100	1105
Upmann, Carl, New York, N. Y. Little cigars and cigarettes	38,675	July 29	100	1105
Utescher, E., Hamburg, Germany. Conserving compound	38,688	July 29	100	1106
Valvoline Oil Co., New York, N. Y., and Liverpool, England. Boiler fluids for prevention of scale	38,660	July 22	100	928

Alphabetical list of registrants of trade-marks, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Van Raalte, Frances E., London, England. Smoking-tobacco, chewing-tobacco, cigars, cheroots, cigarettes, and snuff	38,580	July 8	100	445
Vereinigte Chemische Werke Aktiengesellschaft, Charlottenburg, Germany. Arsenic compounds	38,679	Sept. 9	100	2873
Victor O. Mills Co., Wilmington, Del., and Chicago, Ill. Hooks and eyes	38,605	July 15	100	675
Vischer & Co., A., New York, N. Y. Mouth-harmonicas	38,540	July 22	100	926
Wagoner, Henry V., New York, N. Y. Writing-paper and envelops	38,606	July 15	100	675
Wall, Frank J. A., Kansas City, Mo. Liquid rheumatic cure	38,803	Aug. 19	100	1757
Walworth Manufacturing Company, Boston, Mass. Certain named steam, water, and gas fittings	38,894	Sept. 9	100	2280
Ward-Mackey Co., Pittsburg, Pa. Prepared flours, bread, crackers, and biscuits	38,897	Sept. 16	100	2598
Warfield Pratt Howell Co., Des Moines, Iowa. Canned fancy sugar-corn	38,605	July 15	100	677
Warren Brothers Company, Boston, Mass. Bituminous composition or cement	38,698	July 29	100	1107
Warvel, Joseph C., Toledo, Ohio. Table-sauce	38,850	Aug. 26	100	1971
Wasmuth, Salta Versand von August, Hamburg, Germany. Checker-board games	38,699	July 29	100	1104
Watson, Della P., London, England. Certain named toilet articles	38,852	Aug. 26	100	1971
Watson Plummer Shoe Co., Chicago, Ill. Children's shoes	38,798	Aug. 19	100	1755
Wedemeyer, John H., St. Louis, Mo. Overalls, coats, and pants	38,883	Aug. 26	100	1968
Welch, Hannah, Philadelphia, Pa. Salves	38,798	Aug. 19	100	1756
Wesson, Frank B., New York, N. Y. Safety swimming-sleeves	38,946	Sept. 30	100	3014
West Indies Company, New York, N. Y. Asphalt and certain named products	38,940	Sept. 30	100	3770
Whitcher & Co., Frank W., Boston, Mass. Elastic or cushion heels and soles for boots and shoes	38,791	Aug. 19	100	1755
White, George R., Boston, Mass. Certain named medical compounds	38,799	Aug. 19	100	1756
Whitehurst Belting Co., Baltimore, Md. Cotton belting	38,914	Sept. 23	100	2768
Whitford & Co., E. O., Washington, D. C. Butter	38,865	Sept. 2	100	2171
Wilder & Company, Chicago, Ill. Leather for making boots and shoes	38,840	Aug. 26	100	1969
Williams & Co., E. G., Bradford, England, and New York, N. Y. Mohair, alpaca, and luster-wool linings	38,788	Aug. 19	100	1755
Wilson, Daniel T., Battlecreek, Mich. Food products made from vegetables and cereals	38,658	July 22	100	998
Wisconsin Land & Lumber Co., Hermansville, Mich. Hard-wood flooring and hard-wood and basswood ceilings, and shingles	38,830	Aug. 19	100	1760
Wiszowaty, Adolf N., Chicago, Ill. Remedy for rheumatism	38,953	Sept. 2	100	2171
Wm. B. Scaife & Sons Co., Camden, N. J., and Pittsburg, Pa. Machinery for purifying and softening water	38,778	Aug. 12	100	1559
Wm. Fulton & Sons, Ltd., Paisley, Scotland. Cloths and stuffs of wool, worsted, or hair	38,564	July 8	100	444
Woolson Spice Company, Toledo, Ohio. Coffees and teas	38,535	July 1	100	225
Woolson Spice Company, Toledo, Ohio. Coffee	38,814	Aug. 19	100	1758
Wright, Eliza, New York, N. Y. Detergent compounds used as auxiliaries to soap	38,698	July 15	100	677
Young, Thomas D., Media, Pa. Remedy for certain named disease of cattle	38,855	Aug. 26	100	1971

ALPHABETICAL LIST OF REGISTRANTS OF LABELS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
A. Gutierres Co., New York, N. Y. "El Dimo." (For Cigars)	9,384	Aug. 19	100	1761
A. Spiegel Co., Milwaukee, Wis. "Meat-ol." (For a Liquid Food or Tonic)	9,289	July 8	100	447
Acme Mineral Water Company, Camilla, Ga. "Acme Mineral Water." (For Mineral Water)	9,280	July 8	100	447
Allcock Manufacturing Co., Boston, Mass. "The Eagle Plaster." (For Plasters)	9,317	July 22	100	929
Allenhouse Pharmacal Co., Council Bluffs, Iowa. "Baume de Princesse." (For Facial Massage Preparation)	9,458	Sept. 30	100	3009
Altine Chemical Co., San Francisco, Cal. "Dr. Murri's Iron-Nerve Pills." (For Medicine)	9,389	Aug. 19	100	1761
American Lithographic Company, New York, N. Y. "First Page." (For Cigars)	9,270	July 1	100	229
American Lithographic Company, New York, N. Y. "Belle Peep." (For Cigars)	9,287	July 8	100	447
American Lithographic Company, New York, N. Y. "Compliments of the Season." (For Cigars)	9,334	July 29	100	1109
American Lithographic Company, New York, N. Y. "La Rosencia." (For Cigars)	9,414	Sept. 2	100	2173
American Lithographic Company, New York, N. Y. "La Gradosa." (For Cigars)	9,415	Sept. 2	100	2173
American Lithographic Company, New York, N. Y. "La Rosa Fuerta." (For Cigars)	9,416	Sept. 2	100	2173
American Lithographic Company, New York, N. Y. "La Rosa Fuerta." (For Cigars)	9,417	Sept. 2	100	2173
American Lithographic Company, New York, N. Y. "Golden Leaf." (For Cigars)	9,418	Sept. 2	100	2173
American Lithographic Company, New York, N. Y. "Cheekawgo." (For Cigars)	9,465	Sept. 30	100	3009
American Lithographic Company, New York, N. Y. "Miss Butte." (For Cigars)	9,466	Sept. 30	100	3009
American Lithographic Company, New York, N. Y. "Inda Planta." (For Cigars)	9,467	Sept. 30	100	3009
American Lithographic Company, New York, N. Y. "Jean Bart." (For Cigars)	9,468	Sept. 30	100	3009
American Lithographic Company, New York, N. Y. "Select Combination." (For Cigars)	9,469	Sept. 30	100	3009
Anderson, Taswell L., Savannah, Ga. "Camthol." (For Medicine)	9,292	July 8	100	447
Apotheker Bros., New York, N. Y. "Capilaux." (For Hair-Tonic)	9,294	July 8	100	447
Arbuckle Bros., New York, N. Y.; Pittsburg, Pa., and Chicago, Ill. "Mexoja Coffee." (For Coffee)	9,446	Sept. 23	100	2771
Aristypho Company, New York, N. Y. "Aristypho." (For Cigarettes)	9,348	Aug. 5	100	1227
Bachman, C. C. (See Messerschmitt & Bachman.)				
Bangor Biscuit Company, Bangor, Me. "Hatch's Biscuit." (For Biscuits)	9,388	Aug. 19	100	1761
Barker & Wheeler Co., Peoria, Ill. "Primus." (For Bottled Beer)	9,335	July 29	100	1109
Barrett Manufacturing Company, Cincinnati, Ohio. "Directions for Applying Barrett's Weatherproof Roofing." (For Roofing Material)	9,388	Aug. 12	100	1561
Bass, Samuel, Baltimore, Md. "Bass Brook." (For Whisky)	9,402	Aug. 26	100	1973
Bassemore & Son, W. J., Ringgold, Ga. "Dr. Bassemore's Syrup Castor Oil." (For Castor-Oil)	9,456	Sept. 30	100	3009
Bell & Son, G. W., Winterset, Iowa. "Bell's Barbwire Liniment." (For Liniment)	9,343	Aug. 5	100	1227
Ben King Cigar Co., St. Joseph, Mich. "Ben King." (For Cigars)	9,430	Sept. 9	100	2981
Bendix, Albert J., and A. L. Eisenstaedt, New York, N. Y. "Tufted Silk." (For Neckwear)	9,277	July 8	100	447
Blanchard, Jerome, and C. H. McIntyre, Denver, Colo. "Colorado Rocky Mountain Cough and Catarrh Root." (For a Medicine)	9,343	Aug. 5	100	1227
Blewett, Edward K., Galena, Ill. "Standard." (For Cigars)	9,419	Sept. 2	100	2173
Bloch, J. H., Scranton, Pa. "The Famous Ripper." (For Cigars)	9,345	Aug. 5	100	1227
Block, Isidor, Dallas, Tex. "Cortez Portuondo." (For Cigars)	9,300	July 15	100	679
Blome & Son Co., Geo., Baltimore, Md. "The Dixie Candy Bin." (For Candy)	9,298	July 15	100	679
Bohack, Henry C., Brooklyn, N. Y. "Paramount Pure Old Rye Whiskey." (For Whisky)	9,285	July 8	100	447
Bohley, Conrad, Paterson, N. J. "C. Bohley's Cough Medicine." (For Cough Medicine)	9,458	Sept. 30	100	3009
Bokel, J. Anton, Baltimore, Md. "Capitol Maryland Rye." (For Whisky)	9,460	Sept. 30	100	3009
Boro-Salicine Co., Shamokin, Pa. "Boro Salicine." (For a Medicine)	9,307	July 15	100	679
Brown, N. K., Burlington, Vt. "N. K. Brown's Dyspepsia and Indigestion Tablets." (For Tablets)	9,422	Sept. 2	100	2173
Brennecke, Herman J., Chicago, Ill. "Eggine Baking Powder." (For Baking-Powder)	9,297	July 15	100	679
Buettner, R. H., Chicago, Ill. "Emeralda." (For Cigars)	9,295	July 8	100	447
Buttfield, Firm of W. J., New York, N. Y. "Knickerbocker Chop." (For Tea)	9,412	Sept. 2	100	2173
Cameo Chemical Co., Baltimore, Md. "Cameo Hair Food." (For Hair-Food)	9,448	Sept. 23	100	2771
Central Cigar Manufacturing Co., New York, N. Y. "Na-Bocklish." (For Cigars)	9,431	Sept. 9	100	2981
Chase & Sanborn, Boston, Mass. "Chase & Sanborn Seal Brand Coffee." (For Coffee)	9,356	Aug. 5	100	1227
Chase & Sanborn, Boston, Mass. "Chase & Sanborn Seal Brand Coffee." (For Coffee)	9,357	Aug. 5	100	1227
Clark Cast Steel Cement Co., Huntington, Conn. "Cast Steel Cement." (For Cement)	9,331	July 29	100	1109
Clavel Wine & Cordial Co., J., New York, N. Y. "E. Pomoelet Frères." (For Creme de Menthe)	9,444	Sept. 23	100	2771
Collins, Wm. R., Marion, Ind. "The New 20th Century Remedy, Thymoll." (For a Medicine)	9,425	Sept. 2	100	2173
Conger, Kahn & Gibbs Co., Ltd., Shreveport, La. "Ivory." (For Paint)	9,392	Aug. 12	100	1561
Consumers Silk Mills and Coupons Exchange Co., Newark, N. J. "From Mill to Consumers." (For Taffeta Silk)	9,393	Aug. 12	100	1561
Cook Brewing Co., F. W., Evansville, Ind. "Cook's Budweiser." (For Bottled Beer)	9,350	Aug. 5	100	1227
Cotzhausen, Alfred von, Milwaukee, Wis. "Bräu." (For Beer)	9,268	July 1	100	229
Cudahy Packing Co., Chicago, Ill., and South Omaha, Nebr. "Rex Pork and Beans." (For Pork and Beans)	9,333	July 29	100	1109
Cummings & Bro., N. C., Portland, Me. "Yankee Cream Corn." (For Canned Corn)	9,259	July 1	100	229
Detor Bros., Canastota, N. Y. "Canastota's Best 5c. Cigar." (For Cigars)	9,449	Sept. 23	100	2771
Detroit Milling Co., Detroit, Mich. "Gloria." (For Flour)	9,359	Aug. 5	100	1227
Detroit Milling Co., Detroit, Mich. "Blue Bell." (For Flour)	9,360	Aug. 5	100	1227
Detroit Milling Co., Detroit, Mich. "Adrian." (For Flour)	9,361	Aug. 5	100	1227
Dinet & Delfosse, Chicago, Ill. "Glycotone Comp. D & D." (For Medicine)	9,291	July 8	100	447
Dunton, Walter L., Boston, Mass. "Dunton's Dental Chewing Gum." (For Dental Chewing-Gum)	9,365	Aug. 12	100	1561
Edelstein, Walter, Boston, Mass. "Olympia Shoe Co." (For Shoes)	9,392	Aug. 19	100	1761
Ehrman, Herman E., Chicago, Ill. "Foxy Grandpa's Tonic." (For a Tonic)	9,306	July 15	100	679
Eisenstaedt, Abraham L. (See Bendix and Eisenstaedt.)				
Electric Dyspeptic Pad Co., Battlecreek, Mich. "Electric Dyspeptic Pad." (For Therapeutic Apparatus)	9,395	Aug. 19	100	1761
Elite Medicine Co., St. Joseph, Mo. "Pre-Vent-O." (For Medicine)	9,363	Aug. 12	100	1561
Engel, Albert W., Chicago, Ill. "Engel's Silver Dust." (For a Cleaning-Powder)	9,425	Sept. 2	100	2173
Fabrikoid Company, Newburgh, N. Y. "Story's Foot Relief." (For a Foot-Powder)	9,330	July 29	100	1109

Alphabetical list of registrants of labels, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Feenie, William, Gracedale, Pa. "United Powder and High Explosive Workers of America." (For Explosives)	9,409	Aug. 26	100	1973
Fernandes, Margaret, Brooklyn, N. Y. "Mi Todo." (For Cigars)	9,442	Sept. 23	100	2771
Fisher, John M., New York, N. Y. "Listereta." (For a Lotion)	9,271	July 1	100	229
Flook, Jacob, Omaha, Nebr. "Hy-Step." (For Medicine)	9,437	Sept. 9	100	2381
Forquignon, Emil, New York, N. Y. "Nail Powder." (For Nail-Powder)	9,312	July 15	100	679
Frazee Stogie Co., Charles F., Pittsburg, Pa. "Country Club Stogies." (For Stogies)	9,441	Sept. 16	100	2569
Fuller, G. Edward, New York, N. Y. "Winecta." (For a Beverage)	9,281	July 8	100	447
G. Heileman Brewing Company, La Crosse, Wis. "One-Eighty." (For Lager-Beer)	9,282	July 8	100	447
Going Chemical Company, Union, S. C. "Dr. Going's Creosote Compound." (For a Medicine)	9,308	July 15	100	679
Gordon and Richardson, St. Mary's, Ohio. "Maize Loaf." (For Cereal Food)	9,309	July 29	100	1109
Grabe, Wm. H., St. Louis, Mo. "Dr. Franz Heidenberg Purifier." (For Medicines)	9,315	July 22	100	929
Grain-Fruit Cereal Co., Chicago, Ill. "Grain-Fruit. The Hygienic Breakfast Cereal." (For Breakfast-Food)	9,407	Aug. 26	100	1973
Grand Rapids Brewing Company, Grand Rapids, Mich. "Alt Nürnberger Bräu." (For Beer)	9,251	Aug. 5	100	1327
Grass, John H., New Orleans, La. "Indian Head Powder." (For a Medicine)	9,309	July 15	100	679
Greenwald & Co., Philadelphia, Pa. "Whiskey Without a Headache." (For Whisky)	9,280	July 1	100	229
Grocers' Specialty Co., Ltd., Battlecreek, Mich. "Eat-a-Biscuit." (For Cereal Food)	9,287	Aug. 19	100	1761
Hartmann & Son, F., Camden, N. J. "Our Congressman." (For Cigars)	9,301	July 15	100	679
Henschel & Co., A. C., Chicago, Ill. "La Cintillo." (For Cigars)	9,995	Aug. 19	100	1761
Henschel & Co., A. C., Chicago, Ill. "Joe Turner." (For Cigars)	9,599	Aug. 26	100	1975
Higgins & Co., Wm. A., New York, N. Y. "Eureka." (For Evaporated Fruits)	9,253	July 1	100	229
Higgins & Co., Wm. A., New York, N. Y. "Blue Bell." (For Evaporated Fruits)	9,254	July 1	100	229
Higgins & Co., Wm. A., New York, N. Y. "Athenian." (For Evaporated Fruits)	9,255	July 1	100	229
Higgins & Co., Wm. A., New York, N. Y. "Holly." (For Evaporated Fruits)	9,256	July 1	100	229
Higgins & Co., Wm. A., New York, N. Y. "Mistletoe." (For Evaporated Fruits)	9,257	July 1	100	229
Higgins & Co., Wm. A., New York, N. Y. "Chariot." (For Evaporated Fruits)	9,258	July 1	100	229
Hille, David J., Castlerock, Wash. "Purity Baking Powder." (For Baking-Powder)	9,278	Aug. 12	100	1561
Hilladale Fire Brick and Clay Company, Hilladale, Ind., and Chicago, Ill. "Dome Fire Clay." (For Fire-Clay)	9,279	July 8	100	447
Hoffheimer Cigar Co., Chicago, Ill. "Don Carlito" (For Cigars)	9,470	Sept. 30	100	3009
Hulley & Co., Charles R., Brooklyn, N. Y. "Golden Lustre Metal Polish." (For Metal-Polish)	9,440	Sept. 9	100	2381
Ideala Co., Canton, Ohio. "Ideala." (For Toilet Cream)	9,272	July 1	100	229
Imperial Brewing Co., Kansas City, Mo. "Mayflower." (For Beer)	9,438	Sept. 9	100	2381
Imperial Brewing Co., Kansas City, Mo. "Mayflower." (For Beer)	9,439	Sept. 9	100	2381
Isaacs & Co., A., New York, N. Y. "Diver Brand Sponges." (For Sponges)	9,450	Sept. 30	100	3009
J. Capps & Sons, Ltd., Jacksonville, Ill. "100% Pure-Wool." (For Cloth)	9,349	July 1	100	229
Jacobsen, Arnold, New York, N. Y. "Good Fellow Cigars." (For Cigars)	9,400	Aug. 26	100	1973
Kelly & Son, Thos., Baltimore, Md. "Ammonia Celery." (For Medicine)	9,327	July 29	100	1109
Kempshall Manufacturing Company, Arlington, N. J. "Kempshall Flyer." (For Golf-Balls)	9,328	July 29	100	1109
Kempshall Manufacturing Company, Arlington, N. J. "Kempshall League." (For Golf-Balls)	9,324	July 29	100	1109
Klenke, Wm. H., Saginaw, Mich. "Red Star Cigars." For Cigars)	9,302	July 15	100	679
Klenke, Wm. H., Saginaw, Mich. "The Elk Cigar." (For Cigars)	9,303	July 15	100	679
Koehler & Hinrichs, St. Paul, Minn. "Bromint." (For Headache Cure)	9,314	July 22	100	929
Kraus & Bro., S., New York, N. Y. "John Latour Cognac 1868." (For Brandy)	9,254	Aug. 5	100	1327
Larned, Samuel B., and L. J. Barker, Syracuse, N. Y. "Ambition Pills." (For Medicine)	9,310	July 15	100	679
Lash, S. F., Los Angeles, Cal. "World's Hair Restorer." (For Hair-Restorer)	9,398	Aug. 26	100	1973
Lehman, Alfred B., Johnstown, N. Y. "Provider Brooms Brushes." (For Brooms and Brushes)	9,329	July 22	100	929
Levytansky, A., Victoria, Tex. "A Labor Saving." (For Soldering Fluid)	9,458	Sept. 30	100	3009
Lidwell Gum Co., Kansas City, Mo. "Magnolia." (For Chewing-Gum)	9,464	Sept. 30	100	3009
Lima & Co., D. A. de, New York, N. Y. "Las Americas." (For Cotton Cloth)	9,322	July 29	100	1109
Lincoln, Seyms & Co., Hartford, Conn. "Puritan Boy." (For Cigars)	9,304	July 15	100	679
Lincoln, Seyms & Co., Hartford, Conn. "Ottoman." (For Cigars)	9,305	July 29	100	1109
Lindsey, N. B., Marblehead, Mass. "The Lindsey." (For Crackers)	9,258	Aug. 5	100	1327
Lloyd, Thomas, New York, N. Y. "Eruption of Mt. Pelee." (For Fireworks)	9,251	July 1	100	229
Lockyer, Frank H., San Francisco, Cal. "Lockyer's Chili-Peka Seasoning." (For Seasoning)	9,280	Aug. 12	100	1561
Luftkin, George E., Bangor, Me. "Pine Tree State Taffy." (For Taffy)	9,404	Aug. 26	100	1973
Lundy & Co., W. R., Detroit, Mich. "Upper Ten Cocktails." (For Cocktails)	9,461	Sept. 30	100	3009
Marshall, T. P., Macon, Ga. "Baby Ease." (For Medicine)	9,290	Aug. 19	100	1761
Masurite Explosive Company, New York, N. Y. "Masurite Safe Explosive." (For an Explosive)	9,262	July 1	100	229
McLaughlin & Co., W. F., Chicago, Ill. "Manor House." (For Coffee)	9,435	Sept. 9	100	2381
Messerschmitt & C. C. Bachman, Drs. F., Rochester, N. Y. "Superior Dental Finishing Strips." (For Dental Finishing-Strips)	9,264	Aug. 12	100	1561
Miebis Tobacco Co., New York, N. Y. "Star of Egypt." (For Cigarettes)	9,299	July 15	100	679
Miebis Tobacco Company, New York, N. Y. "Miebis." (For Cigarettes)	9,261	July 1	100	229
Milliken, Tomlinson Co., Portland, Me. "Golden Pheasant." (For Tea)	9,472	Sept. 30	100	3009
Moore & Sinnott, Philadelphia, Pa. "John Gibson's Son & Co's Rye Whiskey." (For Whisky)	9,251	July 1	100	229
Mothers Own Company, Alcoa, Pa. "Mother's Own Ointment." (For Ointment)	9,454	Sept. 30	100	3009
Mulherin & Sons, William, Philadelphia, Pa. "Winner Whiskey." (For Whisky)	9,252	July 1	100	229
N. Thomas Brewing Co., Dayton, Ohio. "Hop Tea." (For a Non-Intoxicating Beverage)	9,413	Sept. 2	100	2173
National Label Co., Cincinnati, Ohio. "Alderney Baking Powder." (For Baking-Powder)	9,331	July 29	100	1109
Nelson, W. H., Richmond, Va. "Elixir Ovarans." (For a Medicine)	9,344	Aug. 5	100	1327
New Jersey Division of the American Wire Weavers Protective Association, Belleville, N. J. "American Wire Weavers Protective Association." (For Fourdrinier Wire-Cloth)	9,296	July 15	100	679
Newman, E. C., Chicago, Ill. "Sure-Pop Baking Powder." (For Baking-Powder)	9,406	Aug. 26	100	1973
Northern Condensed Milk Co., Philadelphia, Pa. "Banner Brand." (For Condensed Milk)	9,405	Aug. 26	100	1973
Nouveau Manufacturing Company, Newark, N. J. "'Nouveau' Furniture Polish." (For Furniture-Polish)	9,408	Aug. 26	100	1973
Old Dominion Paper Co., Norfolk, Va. "Cow Hide." (For Paper Bags)	9,250	July 1	100	229
Pacella, Michael A., Chicago, Ill. "Franklin Union Number Four Cigars." (For Cigars)	9,401	Aug. 26	100	1973
Pasadena Medical Company, Philadelphia, Pa. "St. Anthony's Oil." (For Medicinal Oil)	9,455	Sept. 30	100	3009
Pepper Company, Peabody, Mass. "The Pepper Co. Pure Confectionery, Peabody, Mass." (For Confectionery)	9,468	Sept. 30	100	3009
Phillips Packing Co., Cambridge, Md. "Maryland Leader." (For Canned Tomatoes)	9,261	Aug. 12	100	1561
Phillips Packing Co., Cambridge, Md. "Maryland Leader." (For Canned Peaches)	9,447	Sept. 23	100	2771
Piso Company, Warren, Pa. "Piso's Tablets for the Cure of Diseases of Women." (For Medicines)	9,316	July 22	100	929
Popel & Giller, Warsaw, Ill. "Pink Rose Wine." (For Wine)	9,253	Aug. 5	100	1327
Benton, H. T., Oakland, Cal. "Benton's Fuga Rheum." (For a Medicinal Oil)	9,311	July 15	100	679
Rief, Frederick J., Boston, Mass. "Champagne-Tablets." (For a Medicine)	9,424	Sept. 2	100	2173
Robinson, Frank W., McLeansboro, Ill. "Sprayine." (For Medicine)	9,326	July 29	100	1109
Roy, Lillian E., New York, N. Y. "P-A-Y-M-E Concentrated Extract of Vanilla." (For Extract of Vanilla)	9,462	Sept. 30	100	3009
S. S. Pierce Company, Boston, Mass. "Elfin Brand." (For Sugar-Corn)	9,475	Sept. 30	100	3009
Sackett, Charles E., Danbury, Conn. "Frederic." (For Hats)	9,275	July 8	100	447
Sackett, Charles E., Danbury, Conn. "Luds." (For Hats)	9,276	July 8	100	447

Alphabetical list of registrants of labels, July to September, inclusive—Continued.

Name, residence, and title.	No.	Date.	Official Gazette. Vol.	Page.
Sackett, Charles E., Danbury, Conn. "Randolf Maker." (For Hats)	9,313	July 22	100	929
Sackett, Charles E., Danbury, Conn. "A Pocket Hat Luer." (For Hat-Luers)	9,393	Aug. 19	100	1761
Sackett, Charles E., Danbury, Conn. "A Pocket Hat Luer." (For Hat-Luers)	9,394	Aug. 19	100	1761
Sackett, Charles E., Danbury, Conn. "Nichol's Hat Co. Hat Makers." (For Hats)	9,396	Aug. 26	100	1973
Sackett, Charles E., Danbury, Conn. "Brooks Co. Makers." (For Hats)	9,397	Aug. 26	100	1973
Sackett, Charles E., Danbury, Conn. "A Pocket Hat Luer." (For Hat-Luers)	9,410	Sept. 2	100	2173
Sanches & Haya Co., Tampa, Fla., and New York, N. Y. "La Romana." (For Cigars)	9,267	July 1	100	229
Sanches & Haya Co., Tampa, Fla., and New York, N. Y. "La Oriental." (For Cigars)	9,268	July 1	100	229
Sanitary My-Food Co., Limited, Battlecreek, Mich. "My Biscuit." (For Biscuit)	9,454	Sept. 9	100	2381
Santa Paula Commercial Co., Santa Paula, Cal. "Mission Brand." (For Apricots)	9,426	Sept. 9	100	2381
Santa Paula Commercial Co., Santa Paula, Cal. "Orchard Brand." (For Apricots)	9,427	Sept. 9	100	2381
Schmidt & Co., New York, N. Y. "The Fast Cigar." (For Cigars)	9,265	July 1	100	229
Schmidt & Co., New York, N. Y. "Old Fireside." (For Cigars)	9,266	July 1	100	229
Schmidt & Co., New York, N. Y. "Elkhorn." (For Cigars)	9,305	July 15	100	679
Schmidt & Co., New York, N. Y. "Western Jewel." (For Cigars)	9,368	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "La Preciada." (For Cigars)	9,369	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "Full Leaf." (For Cigars)	9,370	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "Rose of Kansas City." (For Cigars)	9,371	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "Western Monarch." (For Cigars)	9,372	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "U. S. Baby." (For Cigars)	9,373	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "Baby Ribbon." (For Cigars)	9,374	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "Arctic Maid." (For Cigars)	9,375	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "El Lupus." (For Cigars)	9,376	Aug. 12	100	1561
Schmidt & Co., New York, N. Y. "Flor de Utuado." (For Cigars)	9,420	Sept. 2	100	2173
Schmidt & Co., New York, N. Y. "Sunchita." (For Cigars)	9,421	Sept. 2	100	2173
Schmidt & Co., New York, N. Y. "Gold Bore." (For Cigars)	9,422	Sept. 9	100	2381
Schmidt & Co., New York, N. Y. "Corn Husker." (For Cigars)	9,471	Sept. 30	100	3009
Schmidt & Sons, Britz T., Davenport, Iowa. "Dr. A. L. Schmidt's 'U-Go' Blood Purifier Rheumatic Cure." (For a Medicine)	9,449	Sept. 23	100	2771
Schwartz, Schiffer & Company, New York, N. Y. "Hercules Rip Proof Gloves." (For Gloves)	9,341	Aug. 5	100	1327
Sharp, Eugenia, Kansas City, Mo. "Empress Imperial Toilet Powder." (For Toilet Powder)	9,439	Sept. 9	100	2381
Showalter, Edwin A., Milwaukee, Wis. "Turkish Nerve Builder." (For a Medicine)	9,290	July 8	100	447
Siegel-Cooper Co., New York, N. Y. "Queen Quality." (For Burgundy Wine)	9,352	Aug. 5	100	1327
Slater, Frank W., Montreal, Canada. "Airinit." (For Footwear)	9,451	Sept. 30	100	3009
Smith, John F., New York, N. Y. "Marvelous Waterproof Shoe Polish." (For Waterproof Oil Polish)	9,457	Sept. 30	100	3009
Southern California Chemical Co., Los Angeles, Cal. "Frutonic." (For a Tonic Beverage)	9,349	Aug. 5	100	1327
Southern Coffee Company, Galveston, Tex. "Sea-Wall." (For Coffee)	9,355	Aug. 5	100	1327
Spinner Medicinal Tablet Co., Providence, R. I. "Dr. Spinner's Stomach Aid." (For a Medicine)	9,274	July 1	100	229
Stark, A. L., Boston, Mass. "Boston Light Gelatine." (For Gelatin)	9,411	Sept. 2	100	2173
Static Carbonating Company, Boston, Mass. "Static." (For Packages Containing Carbonated Beverages)	9,408	Aug. 26	100	1973
Stewart Manufacturing Co., Santa Rosa, Cal. "Stewart's Odorless and Tasteless Castor Oil." (For Castor-Oil)	9,292	July 8	100	447
Stuart, Margaret R., Brooklyn, N. Y. "Roycroft Liniment." (For Liniment)	9,291	Aug. 19	100	1761
Stutz, Chas., a Firm, New York, N. Y. "El Intacto." (For Cigars)	9,327	July 29	100	1109
Stutz, Chas., a Firm, New York, N. Y. "Josephine." (For Cigars)	9,338	July 29	100	1109
Stutz, Chas., a Firm, New York, N. Y. "La Magnita." (For Cigars)	9,339	July 29	100	1109
Stutz, Chas., a Firm, New York, N. Y. "Mi Elektra." (For Cigars)	9,340	July 29	100	1109
Stutz, Chas., a Firm, New York, N. Y. "La Carolita." (For Cigars)	9,346	Aug. 5	100	1327
Stutz, Chas., a Firm, New York, N. Y. "Tarquinius." (For Cigars)	9,347	Aug. 5	100	1327
Stutz, Chas., a Firm, New York, N. Y. "Peradena." (For Cigars)	9,357	Aug. 12	100	1561
Swineford's Arsenic-Lithia Water Co., Richmond, Va. "Chesterfield Splits." (For Aperient Water)	9,445	Sept. 23	100	2771
Taylor, George L., Auburn, N. Y. "Cybeline." (For Dandruff Cure)	9,329	July 29	100	1109
Terre Haute Brewing Co., Terre Haute, Ind. "Salvator." (For Beer)	9,377	Aug. 12	100	1561
Terrill, William E., Montpelier, Vt. "The Queen's Cream of Roses." (For a Toilet Preparation)	9,273	July 1	100	229
Tetlow Mfg. Co., Philadelphia, Pa. "Tetlows Violet Boquet Talcum Powder." (For Talcum Powder)	9,278	July 8	100	447
Travis, Edgar, Fetterman, W. Va. "Council Brand." (For Cigars)	9,266	Aug. 12	100	1561
Ulrich & Co., J. E., Winneconne, Wis. "Liquid Glass." (For Cement)	9,319	July 22	100	929
Van Winkle & Co., Edward, Battlecreek, Mich. "Van Winkle's Medicated Soap." (For Medicated Soap)	9,435	Sept. 9	100	2381
Victor Talking Machine Co., Camden, N. J. "Victor Record." (For Sound-Records)	9,295	July 29	100	1109
Victor Talking Machine Co., Camden, N. J. "Monarch Record." (For Sound-Records)	9,296	July 29	100	1109
Vlasto, Demetrius J., New York, N. Y. "Anglo-Egyptian." (For Cigarettes)	9,286	Aug. 19	100	1761
Vonderheide, William J., Washington, D. C. "Bob White." (For Whisky)	9,318	July 22	100	929
Wabash Baking Powder Company, Wabash, Ind. "Fit for a King." (For Baking-Powder)	9,288	July 8	100	447
Weeks & Co., O. J., New York, N. Y. "Perfect Water Ice or Sherbet Powder." (For a Powder)	9,379	Aug. 12	100	1561
Weiss, John, Jr., Saginaw, Mich. "The Win." (For Cigars)	9,433	Sept. 9	100	2381
Whallen Bros., Louisville, Ky. "Spring Bank Lithia High Ball Splits." (For High-Ball Splits)	9,283	July 8	100	447
Whallen Bros., Louisville, Ky. "Spring Bank High Ball Splits." (For High-Ball Splits)	9,284	July 8	100	447
Whallen Bros., Louisville, Ky. "Spring Bank Lithia Cherry Phosphate." (For Cherry Phosphate)	9,459	Sept. 30	100	3009
Williams & Bros., J., Meyersdale, Pa. "J. Williams & Bros. Hand Made Original Meyersdale Seed Stogies for Cigars." (For Cigars)	9,295	July 8	100	447
Wolff & Sons, M., Chicago, Ill. "Fillpin-O-Ketchup." (For Catsup)	9,436	Sept. 9	100	2381
Young, N. F., Redlion, Pa. "Farmer Boy." (For Cigars)	9,269	July 1	100	229

PRINTS.

Name, residence, and title.	No.	Date.	Official Gazette. Volume.	Page.
American Cigar Co., Westfield, Mass. "Temptation." (For Cigars)	534	July 15	100	679
Armour Packing Company, Kansas City, Kans. "Boiled Ham." (For Boiled Ham)	535	July 15	100	679
Armour Packing Company, Kansas City, Kans. "Vienna Sausage." (For Vienna Sausage)	540	Aug. 5	100	1327
Barker, H. W., Elbow Lake, Minn. "H. W. Barker's Cough Catarrh Consumption Remedy." (For Medicine)	547	Aug. 12	100	1561
Both, W. C., Chicago, Ill. "Men's and Boys' Apparel." (For Men's and Boys' Apparel)	555	Sept. 9	100	2881
Both, Wm. C., Chicago, Ill. "Men's Apparel." (For Men's Apparel)	527	July 1	100	229
Both, Wm. C., Chicago, Ill. "Men's Apparel." (For Men's Apparel)	532	July 15	100	679
Consumers Silk Mills and Coupons Exchange Co., Newark, N. J. "Relda' Secret Process." (For Taffeta Silk)	541	Aug. 12	100	1561
Courtney, William P., Oakland, Cal. "Priest's Naps Soda." (For Soda-Water)	554	Sept. 2	100	2173
Frictionless Metal Co., Richmond, Va. "A Cool Bearing." (For Frictionless Bearing Metal)	551	Aug. 19	100	1761
Frictionless Metal Co., Richmond, Va. "Best on Earth." (For Frictionless Metal)	552	Aug. 19	100	1761
Globe Chemical Works, Inc., Baltimore, Md. "Clark's Instant Foot Comfort." (For Foot Remedy)	558	Sept. 30	100	3009
Grasso, Paride, New York, N. Y. "Paride's Miraculous." (For a Medical Compound)	556	Sept. 16	100	2599
Hall & Ruckel, New York, N. Y. "Sozodont." (For Dentifrice)	548	Aug. 12	100	1561
J. C. Schnoter Co., New York, N. Y. "Hygienic Suspensory." (For Suspensory Bandages)	528	July 1	100	229
John Dewar & Sons, Limited, Perth and Edinburgh, Scotland; Bristol, Manchester, and London, England, and New York, N. Y. "Dewar's Scotch Whisky." (For Whisky)	546	Aug. 12	100	1561
Kaufmann & Strauss Co., New York, N. Y. "The Modern Laundress." (For Soap)	549	Aug. 12	100	1561
Kuh, Nathan & Fischer Company, Chicago, Ill. "The Special." (For Overcoats)	542	Aug. 12	100	1561
Kuh, Nathan & Fischer Company, Chicago, Ill. "The Beaucaire." (For Overcoats)	543	Aug. 12	100	1561
Kuh, Nathan & Fischer Company, Chicago, Ill. "The Prince Henry." (For Overcoats)	544	Aug. 12	100	1561
Kuh, Nathan & Fischer Company, Chicago, Ill. "The Dip Sack." (For Sack Suits)	545	Aug. 12	100	1561
Masurite Explosive Company, New York, N. Y. "We Sell Masurite Safe Explosive." (For an Explosive)	539	Aug. 5	100	1327
Mathushek Piano Mfg. Co., Orange, Conn. "At the Top—Mathushek Pianos." (For Pianos)	553	Sept. 2	100	2173
McLoughlin Brothers, New York, N. Y. "A Combination Game." (For Game Apparatus)	536	July 29	100	1109
Nailitza Company, New York, N. Y. "Nailitza." (For a Cleaning Preparation)	529	July 1	100	229
Quinn & Co., K. J., Boston, Mass. "Zapha." (For Shoe-Polish)	538	Aug. 5	100	1327
Rutledge, George, New York, N. Y. "Wine that Maketh Glad the Heart of Man." (For Champagne)	550	Aug. 19	100	1761
Seiter & Kappes, New York, N. Y. "Wright's Health Underwear." (For Underwear)	557	Sept. 30	100	3009
Shaw-Goding Shoe Co., Springvale, Me. "The Vicereine $2.50 Shoe." (For Shoes)	533	July 15	100	679
Trowbridge Chocolate Chip Co., Meadville, Pa. "Trowbridge's Chocolate Chips." (For Chocolate Chips)	531	July 8	100	447
Uncle Sam Shoemakers, Boston, Mass. "The Uncle Sam Shoe." (For Shoes)	530	July 8	100	447
World's Dispensary Medical Association, Buffalo, N. Y. "Dr. Pierce's Favorite Prescription." (For Medicine and Soda)	536	July 22	100	989

DISCLAIMERS.

Name, residence, and invention.	No.	Filed.	Official Gazette. Volume.	Page.
Avery, Henry W., Cleveland, Ohio: disclaimer filed by patentee and assignee. Seat for harvesters or the like	683,675	June 30, 1902	100	238
Rogers, William, Leechburg, Pa.; disclaimer filed by executor and assignees. Manufacturing tin-plate	604,196	June 23, 1902	100	1

ALPHABETICAL LIST OF INVENTIONS.

Invention.	Name.	No.	Date.	Monthly volume. Specification.	Monthly volume. Drawing.	Official Gazette. Volume.	Official Gazette. Page.
Abdominal and back supporter	H. C. and L. C. Rash	708,402	Sept. 2	725	163	100	2126
Abdominal supporting-bandage	M. T. Barnett	705,715	Aug. 12	1871	306	100	1412
Abrading mechanism	J. M. Nash	707,631	Aug. 26	3101	609	100	1806
Accordion	J. Golob	709,671	Sept. 23	3220	720 721 722	100	2391
Acet salicyl phenetidin and making same	S. L. Summers	706,355	Aug. 5	702	.....	100	1326
Acet salicyl phenetidin and making same	S. L. Summers	706,356	Aug. 5	703	.....	100	1326
Acid and making same. Alkyloxymethyl ester of salicylic	J. Callsen	706,018	Aug. 5	94	.....	100	1191
Acid and making same. Methylene di-aceto di-salicylic	S. L. Summers	707,178	Aug. 19	2357	.....	100	1613
Acid and making same. Methylene disalicylic	S. L. Summers	706,354	Aug. 5	701	.....	100	1326
Acid and making same. Paramethyl-amidophenyglyoxylic	F. Ach	708,511	Sept. 9	925	.....	100	2181
Acid. Apparatus for making sulfurous	W. Wensel	704,412	July 8	1947	422	100	409
Acid ester of methylene digualacol and making same. Camphoric	S. L. Summers	707,278	Aug. 19	2449	.....	100	1654
Acid. Extracting ellagic	A. Heinemann	706,411	Aug. 5	895	.....	100	1281
Acid from sulfur dioxid in aqueous solution by electrolysis. Manufacturing sulfuric	C. B. Jacobs	704,881	July 15	2783	591	100	595
Acids. Separating sulfonic	L. O. Helmers	709,821	Sept. 16	2528	.....	100	2583
Adding-machine	A. C. Schuman	704,998	July 15	2986	640 641	100	641
Adding-machine	J. L. Levin	706,000	July 29	5143	1123	100	1101
Adding-machine	H. Ellis and N. W. Perkins, Jr	707,809	Aug. 19	2499	561 562 563	100	1665
Adding-machine	E. Fitch	709,477	Sept. 23	2808	643 644	100	2614
Adhesive	A. S. Hoyt	709,544	Sept. 23	3019	.....	100	2648
Adjustable back chair	J. F. Walton	705,171	July 22	3472	755	100	752
Adjustable brace or support for movable structures	J. G. Roseman	705,707	July 29	4631	1008	100	996
Adjustable chair. Automatic	T. M. McKee and S. B. Saffell	706,991	Aug. 12	1891	494	100	1519
Adjustable furnace	R. Halley	707,104	Aug. 19	2115	472 473	100	1588
Adjustable hanger	C. L. Olmstead	708,709	July 1	615	187	100	192
Adjustable seat and desk	J. W. Johnston	708,792	July 1	774	169	100	155
Adjustable stand	G. A. Wadsworth	704,608	July 15	2815	502	100	499
Advertising device	C. E. Johnson	705,090	July 22	3305	719	100	776
Advertising device	W. D. Butt	706,585	Aug. 12	1088	328	100	1340
Advertising device	W. D. Butt	707,205	Aug. 19	2307	516	100	1625
Advertising device	W. D. Butt	709,465	Sept. 23	2941	638	100	2610
Advertising device	C. G. Cribbs and F. M. Allerton	704,008	July 8	1172	255	100	249
Advertising device. Wind-actuated	D. Jones	710,195	Sept. 30	4268	963	100	2980
Advertising display device	W. R. Moore	706,967	Aug. 12	1885	421	100	1518
Advertising match-box and cigar-tip cutter. Combined	W. Hucks, Jr	709,407	Sept. 16	2711	608	100	2571
Aerated liquids. Apparatus for dispensing	J. P. Jackson	708,714	Sept. 9	1295	295	100	2355
Aerated waters on draft. Apparatus for serving	B. D. Hooper	708,289	Sept. 2	432	99	100	2070
Aerating-agitator	T. Gibon	710,266	Sept. 30	4402	991 992	100	2950
Aeroplane	I. Lancaster	708,889	Aug. 12	1614	362 363	100	1465
Aeroplane-covering	R. C. Scott	704,389	July 8	1910	414	100	408
Aging or treating spirits	H. M. Martinson	708,058	Sept. 2	111	26	100	2004
Agitator	J. Seymour	704,764	July 15	2596	582	100	557
Air and gas mixer	A. McCahon	709,080	Sept. 16	1955	448	100	2410
Air and vapor motor. Combination	F. A. McKelvey	708,358	Aug. 5	478	101 102	100	1313
Air-brake	E. P. Donnelly	704,787	July 15	2543	550	100	547
Air-brake apparatus	T. C. Manson	705,415	July 22	4016	869	100	868
Air-brake attachment	A. L. Tibbits	706,368	Aug. 5	711	155	100	1300
Air-brake attachment	W. H. Sauvage	708,480	July 1	186	44	100	39
Air-brake mechanism	D. W. Jewell	706,686	Aug. 12	1606	351	100	1452
Air-brake order system. Automatic	W. G. MacLaughlin	705,599	July 29	4485	959	100	955
Air-brake system	G. H. Abrams	706,871	Aug. 12	1698	378	100	1479
Air-compressor	E. J. St. Croix	709,580	Sept. 23	2978	664	100	2640
Air-compressing apparatus	W. J. Stevens	709,888	Sept. 23	3240	798	100	2756
Air-compressor	G. E. Martin	706,979	Aug. 12	1871	418 419	100	1515
Air-compressor. Compound	W. J. Linton	704,059	July 8	1274	276	100	267
Air-compressor. Hydraulic	C. M. W. Smith	705,460	July 22	4097	891	100	879
Air-compressors. Automatic regulator for hydraulic	F. Grumbacher	709,763	Sept. 23	3409	706	100	2727
Air cooling and filtering apparatus. Compressed-	C. W. Vollmann	708,847	Sept. 9	1574	350	100	2316
Air cooling and purifying apparatus	W. L. Moore	705,947	July 29	5056	1101	100	1088
Air cooling, drying, and purifying apparatus	W. D. Douglas	707,058	Aug. 12	2007	449	100	1544
Air-feeding device							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Air from sand-blast apparatus. Apparatus for cleaning	J. E. Mathewson	707,134	Aug. 19	2157	485	100	1502
Air-heating apparatus. Compressed-	G. W. Hopkins	707,111	Aug. 19	2130	474	100	1496
Air. Means for utilizing compressed	E. Hayward	706,658	Aug. 12	1266	279	100	1284
Air-motor	E. Glowacki	705,824	July 29	4849	1053	100	1041
Air or other gases and cooling by means thereof. Liquefying	J. F. Place	707,093	Aug. 26	3123	708	100	1810
Air or other liquid gases. Vessel for holding and shipping liquid	J. F. Place	707,094	Aug. 26	3126	704	100	1811
Air-pressure regulator	J. H. Dickinson	704,782	July 15	2986	568	100	564
Air-purifier	H. v. Pückler	705,825	July 29	4905	1096	100	1052
Air-tool	N. Pecoraro	705,435	July 22	4053	879	100	871
Alarm: *See* Automatic alarm. Burglar-alarm. Coin-alarm. Door or window alarm. Fire-alarm. Low-water alarm. Refrigerator-pan alarm.							
Alarm-lock	A. Coyne	705,221	July 22	3573	773	100	774
Albuminous substances. Obtaining	A. Jolles	707,423	Aug. 19	2717	.....	100	1710
Alkali-metal sulfates from mixed solutions. Separating	C. Hoepfner	704,086	July 8	1294	.....	100	960
Alkaline salts. Electrolytic decomposition of	E. Edser and M. Wildermann	709,971	Sept. 30	3852	866 867	100	2935
Alkoxy-caffein and making same	F. Ach	707,812	Aug. 26	3531	.....	100	1898
Alloy	D. P. James	709,208	Sept. 16	2439	.....	100	2511
Alloy. Antifriction metal	H. Pearse and E. F. Ievers	708,520	Sept. 9	1940	.....	100	2208
Alloys of the alkali metals. Manufacture of	G. F. Jaubert	709,429	Sept. 23	3637	.....	100	2622
Alumina from silica. Separating	A. Kayser	708,551	Sept. 9	1038	.....	100	2196
Alumina. Manufacturing	C. M. Hall	706,553	Aug. 12	1088	240	100	1350
Aluminium capable of being welded or soldered. Rendering	C. P. Sörensen	708,860	Sept. 9	1560	.....	100	2312
Amalgam-trap	G. R. Tuttle	708,333	Sept. 9	1069	242	100	2209
Amalgamating metals	P. A. Knappe	705,096	July 22	3318	730	100	721
Amalgamating metals	P. A. Knappe	707,971	Aug. 26	3634	802	100	1951
Amalgamator	J. V. Coleman	708,694	July 1	597	132 133	100	118
Amalgamator	P. A. Knappe	705,095	July 22	3315	720	100	720
Amalgamator	G. H. Breymann	707,396	Aug. 19	2477	556	100	1660
Amalgamator	E. J. Kiss	707,897	Aug. 26	3055	667	100	1796
Amalgamator	P. A. Knappe	707,972	Aug. 26	3637	803	100	1952
Amalgamator	P. A. Knappe	709,846	Sept. 23	3568	803	100	2761
Ammonia-generator	J. A. Young	704,062	July 8	1284	278	100	270
Ammonia-compressor	J. T. Ludlow	705,845	July 29	4908	1067	100	1045
Ammonia-separator	V. Johnson	706,645	July 29	4908	427	100	413
Ammunition and water carrier and litter. Combined	H. F. L. Allen	704,426	July 8	1965	428	100	413
Ammunition and water carrier and litter. Portable	H. F. L. Allen	704,427	July 8	1966	428	100	414
Ammunition from the ammunition-carriage into the loading-axis of the gun. Apparatus for transferring	J. Krone	709,781	Sept. 23	3447	775 776	100	2736
Ammunition-hoist for ordnance	E. Trochain	704,985	July 15	3008	665 666	100	659
Ammunition-hoist for ordnance	A. T. Dawson and J. Horne	709,496	Sept. 16	2702	621 622	100	2582
Amusement or roundabout apparatus	G. W. Schofield	708,834	Sept. 9	1546	353 354	100	2310
Anchor	J. E. Rech	708,739	July 1	570	149	100	154
Anchor	J. A. Pettes	710,167	Sept. 30	4226	958	100	2911
Anchoring-post	H. F. Farwell	707,693	Aug. 26	3230	725	100	1892
Anesthetic apparatus. Elastic	H. Nieriker	707,623	Aug. 26	3107	699	100	1897
Anesthetics. Apparatus for administering	C. K. Teter	706,358	Aug. 5	705	153	100	1259
Animal-exterminator	L. N. Cornett	709,207	Sept. 16	2707	624	100	2544
Animal tendons. Treating	E. Nelson	709,252	Sept. 16	2561	.....	100	89
Animal-trap	T. D. Vanata	708,628	July 1	453	104	100	393
Animal-trap	J. S. Moon	704,355	July 8	1957	402	100	1305
Animal-trap	P. A. Whitney	706,470	Aug. 5	944	206	100	1226
Animal-trap	S. Hetherington	708,698	Sept. 9	1132	260	100	168
Animal-trap	F. H. Read	708,938	July 1	888	184	100	1129
Ankle-support	F. H. Daniels	706,081	Aug. 5	54	12	100	1152
Annealing furnace. Wire-	W. R. Winter	708,805	July 29	4800	1042	100	1052
Annunciator. Electric	A. S. Plews	704,367	July 8	1875	406	100	396
Antimony oxid. Making white	C. F. Utermöhlen	708,627	July 1	452	104	100	89
Antiseptic bandage	J. C. Friedrich	708,065	July 22	3253	704	100	708
Apparel	A. W. Ellington	706,732	Aug. 12	1402	313	100	1419
Applicator	G. Walter	708,285	Aug. 5	571	123 124	100	1231
Apron and dust-hood. Combined storm-	M. Kern and A. Wiget	710,325	Sept. 30	4502	1015	100	2971
Aquatic animals. Apparatus for transporting live	W. C. Parmley	709,794	Sept. 23	3469	781 782	100	2741
Arch construction. Concrete	F. L. Sessions	704,975	July 15	3070	660	100	656
Armature	A. H. Armstrong	705,508	Aug. 12	1007	221	100	1335
Armature-winding for induction-motors	A. H. Armstrong	705,093	Aug. 12	1220	271	100	1379
Armature-winding for induction-motors	H. Schulz	709,179	Sept. 16	2247	511 512 513	100	2473
Article-attacher	H. H. Sims	706,697	Aug. 12	1343	299	100	1406
Ash or garbage receptacle	T. W. Hughes	704,072	July 29	4557	990	100	988
Ash-pan. Safety	T. F. O'Connor	708,162	Sept. 2	801	72	100	2044
Ash-receptacle	J. and M. Kracker	707,849	Aug. 26	3615	815	100	1908
Ash-tray	P. Kulicke	708,660	Sept. 9	1169	266	100	2259
Ash-tray and advertising device	O. J. Willmot	707,054	Aug. 26	3204	719	100	1828
Asphalt-cooking drums. Scraper for	J. P. Nelson	705,954	July 29	5008	1104	100	1085
Astigmatically-corrected wide-angle objective	C. P. Goerz	706,650	Aug. 12	1254	277	100	1287
Atomizer	A. De Vilbiss	704,780	July 15	2818	567	100	562
Atomizer	J. G. Halspieus	705,074	July 22	3265	707	100	711
Atomizing apparatus	J. Robertson	708,611	July 1	416	97, 98	100	98
Atropinium alkyl nitrate	H. Dreser and J. Callsen	707,402	Aug. 19	2676	.....	100	1701

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'gs.	Official Gazette. Vol.	Official Gazette. Page.
Auger. Packing-	E. E. Ziegenfuss	707,290	Aug. 19	2469	554	100	1658
Auger. Twisted	G. Hallenscheid	708,576	July 1	861	83	100	71
Auger. Well-	R. O. Newell	708,947	Sept. 2	464	106	100	2076
Auriphone	F. I. Gano	709,978	Sept. 30	3861	809	100	2935
Autographic register	J. C. Shoup	707,456	Aug. 19	2766	637	100	1719
Automatic alarm	J. F. Laird	708,816	Sept. 9	1512	346	100	2202
Automatic brake	A. E. Norris. (Reissue)	12,040	Sept. 30	4542	1049	100	2900
Automatic gate	J. H. Wilson	708,445	Sept. 2	796	181	100	2142
Automatic lubricator	A. A. Freeman	704,021	July 8	1901	992	100	254
Automatic switch	H. H. Doll and M. H. Bostian	708,561	July 1	884	76	100	67
Automatic switch	H. A. Poppenhusen	705,786	July 29	4766	1084	100	1094
Automatic switch	M. Moskowitz	706,083	Aug. 5	157	32	100	1148
Automatic switch	M. Moskowitz	706,084	Aug. 5	158	33	100	1148
Automobile	J. D. Carrington	704,296	July 8	1734	378	100	264
Automobile	A. S. Krotz	704,809	July 15	2698	583 584	100	577
Automobile	S. S. Conant	704,860	July 15	2779	601 602	100	595
Automobile	S. T. Davis, Jr	705,824	July 29	4832	1049	100	1038
Automobile	M. F. Bates	706,982	Aug. 12	1707	382	100	1488
Automobile	J. C Henry	707,230	Aug. 19	2351	527	100	1634
Automobile	H. Lemp	710,068	Sept. 30	4001	903	100	2964
Automobile	J. G. Heal	706,051	Aug. 5	96	20, 21	100	1136
Automobile air-pump	J. F. Peterman	708,459	July 1	158	36	100	33
Automobile attachment for vehicles	A. Hitchon	706,415	Aug. 5	835	182 183	100	1282
Automobile driving-gear	A. A. Medina	707,840	Aug. 19	2563	578	100	1677
Automobile running-gear	G. R. Schlumberger	709,684	Sept. 23	3253	720	100	2696
Automobile steering device	J. G. MacPherson	707,435	Aug. 19	2733	618 619	100	1718
Automobile steering-gear	G. P. Dorris	707,400	Aug. 19	2673	604	100	1700
Automobiles. Transmission-gear for	E. H. Jones and E. C. Espey	706,183	Aug. 5	353	76	100	1188
Awl. Sewing-	B. T. Lamb and E. G. Gould	709,918	Sept. 30	3724	889	100	2886
Awning	W. H. Arnold	706,005	Aug. 5	5	2	100	1117
Awning-actuating mechanism	J. Sullivan	704,397	July 8	1924	417	100	405
Awning-fixtures. Antirattler for	C. H. Hansen	706,820	Aug. 12	1590	358	100	1439
Awning-protector	L. A. Daus	705,214	July 22	3579	774	100	775
Awning-roller support	G. H. Egbers	705,744	July 29	4701	1017	100	1010
Awnings. Device for raising or lowering	W. S. Bowser	708,693	July 1	596	132	100	118
Awnings. Means for operating	W. H. Davis	708,466	Sept. 2	840	192	100	2151
Axle	L. W. Kyes	710,157	Sept. 30	4204	947	100	2906
Axle	H. H. Porter	705,864	July 29	4903	1066	100	1053
Axle and axle-box. Vehicle-	O. Newhouse	704,095	July 8	1330	290	100	278
Axle box. Car-	C. M. Florey	706,462	Aug. 5	807	176	100	1277
Axle-box for carriages or wagons	G. Maase	705,263	July 22	3699	802	100	797
Axle boxes. Dust ring or disk for	G. J. Holton	704,028	July 8	1222	263	100	258
Axle-lubricator	R. H. Gowan	708,488	July 1	198	47	100	42
Axle lubricator. Vehicle-	D. W. Smedley	709,747	Sept. 23	3382	739	100	2721
Axle-spindle take-up device	J. J. Cook	704,327	July 8	1787	390	100	375
Axle. Vehicle-	G. Heck	705,600	July 29	4437	961	100	958
Axle. Vehicle-	H. Hestand and A. R. Matthews	707,845	Aug. 26	3607	813	100	1906
Axle. Vehicle-	F. E. Fisher	709,218	Sept. 16	2316	526	100	2488
Axle. Vehicle-	J. H. Cooper	710,254	Sept. 30	4384	995	100	2945
Axle. Vehicle-	C. and R. L. Bethea	706,215	Aug. 5	406	87	100	1199
Axle washer. Vehicle-	F. Richard	705,868	July 29	4909	1067	100	1053
Axletree repair implement	G. J. Holton	708,641	Sept. 9	1158	268	100	2227
Baby-jumper	A. P. Perkins	708,458	July 1	156	36	100	33
Baby-jumper. Collapsible	M. J. Wade	709,945	Sept. 30	3784	854	100	2918
Back and arm rest for water-closet or other seats	E. G. Hoffmann	708,228	Sept. 2	490	98	100	2059
Back-pedaling brake							
Bag: *See* Paper bag. Powder-bag. Traveling-bag.							
Bag closure and feeder	C. R. Siegel	705,435	July 22	4098	889	100	877
Bag-filling machine	J. L. Drohen	704,176	July 8	1524	327	100	321
Bag-filling machine	A. M. Bates	707,544	Aug. 26	2942	666 667	100	1773
Bag-holder	W. Hayward	704,251	July 8	1644	357	100	344
Bag-holder	A. D. Johnson	704,883	July 15	2736	591	100	585
Bag-holding device	F. R. Payne	708,456	July 1	153	35	100	33
Bag-making machine	J. F. Ames	709,451	Sept. 16	2794	629 630	100	2589
Bait. Trolling-	J. J. Hildebrandt	706,941	Aug. 12	1808	405	100	1503
Balancing-machine	F. Hodgkinson	710,148	Sept. 30	4186	943	100	2918
Bale compress. Round-	F. G. Dieterich	704,958	July 15	3033	651 652 658	100	650
Bale-press	S. J. Webb	706,618	Aug. 12	1300	266	100	1374
Bale-tie	W. T. Johnson	704,048	July 8	1252	270	100	262
Bale-tie	S. McCay	706,193	Aug. 5	371	80	100	1198
Bale-ties. Making	F. H. Daniels	708,555	July 1	382	73 739	100	65
Bales, &c. Apparatus for making cubic or square	F. B. Pope and G. D. Mims	705,135	July 22	3402	740 741	100	737
Bales. Making cotton-	H. Rembert	708,470	July 1	170	40 738	100	37
Bales of cubic or square shape. Forming elastic and yieldable material in	F. B. Pope and G. D. Mims	705,134	July 22	3400	739	100	737
Baling-press	T. C. West	708,688	July 1	588	130	100	115
Baling-press	L. Trabue	704,718	July 15	2502	741	100	529
Baling-press	J. P. Shaw	707,809	Aug. 26	3516	794	100	1889
Baling-press	T. A. Goodwyn and P. E. Stovall	707,917	Aug. 26	3738	858	100	1932
Baling-press	J. A. Spencer	708,969	Sept. 2	508	115 116	100	2063
Baling press. Hay-	E. S. Mead	707,709	Aug. 26	3387	735	100	1644
Ball: *See* Golf-ball. Playing-ball.							
Ball-and-socket joint for dolls, &c	E. Debes	708,800	July 1	972	212	100	195

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Ball apparatus. Captive	E. H. Miles	708,573	Sept. 9	1029	232	100	2201
Ball-gathering device	F. Minton	704,848	July 15	2763	597	100	592
Balls. Machine for reducing and finishing hollow	A. Johnston	703,499	Sept. 16	2715	609	100	2572
Balls. Making playing	E. Kempshall	704,463	July 8	2048	444	100	431
Balls. Manufacture of playing	E. Kempshall	707,425	Aug. 19	2730	615	100	1710
Balls. Manufacture of playing	E. Kempshall	707,595	Aug. 26	3051	687	100	1795
Balls. Manufacture of playing	E. Kempshall	710,198	Sept. 30	4281	964	100	2925
Balls. Manufacture of playing	E. Kempshall	710,328	Sept. 30	4575	1032	100	2986
Balls. Manufacture of playing	F. H. Richards	704,464	July 8	2049	444	100	431
Balls. Manufacturing playing	E. Kempshall	706,910	Aug. 12	1760	398	100	1494
Ballot-box	H. Droutlege	707,067	Aug. 12	1980	447	100	1540
Banana-shipping case	H. Bitner	710,016	Sept. 30	3923	886	100	2848
Banana-shipping case	F. Schmitz	710,017	Sept. 30	3924	886	100	2848
Banana-shipping case	H. Bitner	710,096	Sept. 30	3955	893	100	2855
Band-cutter and feeder	J. B. Denlinger	705,516	July 22	4307	914 915	100	899
Band-cutter and feeder	W. N. Crow	707,398	Aug. 19	2667	599 600	100	1697
Bandage	C. J. Higgins	709,767	Sept. 23	3420	768	100	2729
Bandoleer or cartridge-belt	J. Hylard	710,324	Sept. 30	4501	1014	100	2971
Banjo attachment	H. M. Bronson	706,941	Aug. 5	759	195	100	1268
Banjo-velluma. Drawing-down device for	W. J. Stent	708,954	Sept. 9	1726	400	100	2348
Bank. Savings	J. Cheim	706,294	Aug. 5	781	170	100	1272
Bank. Savings	C. B. Stilwell	707,675	Aug. 26	3653	823	100	1915
Bar: *See* Revolving bar. Type-bar.							
Bark from trees. Apparatus for removing	W. P. Kidder	707,428	Aug. 19	2724	616	100	1711
Barometer	A. L. Robbins	706,112	Aug. 5	202	42	100	1158
Barrel	O. P. Hallock	705,400	July 22	3986	863	100	856
Barrel, cask, &c. Knockdown	A. Maltby	705,355	July 22	3701	802	100	797
Barrel-finishing machine	G. M. Carter	708,994	July 8	1159	251 252	100	246
Barrel-head fastening	E. C. Shears	708,412	Sept. 2	741	166	100	2131
Barrel hook or handle	G. N. Beeching	705,815	July 29	4680	1046	100	1065
Barrel-making machinery	J. Van Develde	708,746	Sept. 9	1847	407	100	2298
Barrel-register	J. Mauser	708,738	July 1	668	147	100	182
Barrel. Wrought-metal	E. C. Phillips	704,955	July 8	1874	408	100	396
Barrels. Machine for making veneer	W. C. Grant	708,693	Sept. 9	1130	255	100	2222
Basin-clamp	J. O. Noble	709,170	Sept. 16	2823	597	100	2469
Basket. Folding	T. J. Langston	705,486	Aug. 5	854	187	100	1295
Basket forming and stapling machine	N. E. Brown	708,955	Sept. 9	1773	410	100	2356
Basket-webs. Machine for making	P. F. Lindt	707,606	Aug. 26	3068	690 691	100	1799
Bat and explosive. Ball-	J. C. Schwanengel	708,261	Sept. 2	490	112	100	2080
Bat or racket for game known as ping-pong or table-tennis.	J. Girdwood	708,911	July 1	989	215	100	198
Bath: *See* Heat-bath. Tempering-bath.							
Bath apparatus. Electric	J. D. Randall	709,936	July 1	935	184	100	167
Bath-cabinet	J. W. Riley	706,476	Aug. 5	962	207 208	100	1208
Bath-cabinet. Folding	B. D. Knickerbocker	706,069	Aug. 5	130	27	100	1145
Bath-tub. Folding or collapsible	W. H. Gamble	707,060	Aug. 12	2022	452	100	1547
Bath-tubs or the like. Overflow attachment for	H. Merrie and A. E. Burnett, Jr	706,988	Aug. 12	1878	420	100	1517
Bath-tubs, &c. Waste-fixture for	F. T. Meyer	704,705	July 15	2481	535	100	535
Batteries and making same. Active material for storage	W. E. Winship	705,875	July 1	923	.....	100	185
Batteries and product thereof. Making plates for storage	H. K. Hess	704,252	July 8	1646	358	100	344
Batteries. Composition for use in secondary	C. T. J. Oppermann	706,444	Aug. 5	906	.....	100	1299
Batteries. Means for controlling the charging of secondary	J. Burry	708,465	Sept. 23	2899	637 638	100	2610
Battery: *See* Electric battery. Galvanic battery. Electrotherapeutic battery. Secondary battery. Storage battery.							
Battery	W. T. Seddon	704,125	July 8	1429	305	100	301
Battery	W. L. Panikoff	706,340	Aug. 5	873	146 147	100	1251
Battery connection	E. A. Sperry	708,674	July 1	552	125	100	109
Battery jar. Storage	P. Kennedy	709,157	Sept. 16	2794	592	100	2463
Battery plates. Manufacturing secondary	G. H. Christian	708,694	Sept. 9	1250	.....	100	2245
Battery plates. Manufacturing secondary	G. H. Christian	708,695	Sept. 9	1252	.....	100	2246
Battery plates of the Planté type. Manufacture of secondary	H. M. Martin	704,751	July 15	2575	555	100	552
Battery separator-plate. Secondary	A. F. Clark	708,895	July 1	968	211	100	194
Battery separator. Storage	H. Rodman	704,750	July 15	2686	558 559	100	555
Battery tank. Storage	H. Lesley	704,750	July 15	2574	555	100	552
Beam-clamp	H. S. Collins	709,816	Sept. 23	3519	798	100	2751
Beam machine. Reciprocating	N. H. Seeley	707,169	Aug. 19	2220	500 501	100	1605
Beam. Structural-metal	A. A. Strom	708,986	Sept. 9	1781	400	100	2349
Beams, channel-beams, &c. Machine for shaping metal I-	W. A. Dunn	709,081	Sept. 16	2066	470 471	100	2486
Beams, channel-beams, &c. Shaping metal I-	W. A. Dunn	709,090	Sept. 16	2055	469	100	2488
Bean-cleaning machine	G. R. Davidson	710,143	Sept. 30	4175	940 941	100	2901
Bean-separator	W. F. Pillmore and D. Anderegg	709,546	Sept. 23	3184	711	100	2688
Bearing	H. H. Porter	705,893	July 29	4903	1099	100	1092
Bearing	E. E. Hendrick	706,988	Aug. 12	1904	428	100	1503
Bearing	M. Steiner	707,176	Aug. 19	2255	504	100	1613
Bearing	J. Gottbreht	709,403	July 1	69	14	100	16
Bearing. Antifriction	F. S. Seagrave and H. P. Elliott	707,650	Aug. 26	3170	713	100	1880
Bearing. Antifrictional	R. McLaughlin	709,677	Sept. 23	3386	794	100	2693
Bearing. Axle	H. Cogswell	709,205	Sept. 16	2205	494	100	2485
Bearing. Ball	A. Ruedy	706,114	Aug. 5	207	48	100	1159
Bearing. Ball thrust	C. R. Jay	705,674	July 29	4560	990	100	985
Bearing for engraving-machines. Spindle	A. B. Case	707,298	Aug. 19	2481	557	100	1661
Bearing for lawn-mowers. Ball	N. H. Seelye	707,167	Aug. 19	2238	500	100	1605
Bearing for shafts of machines	W. G. Griffin	708,405	July 1	76	15	100	15
Bearing. Roller	J. D. Twiggs, Jr	707,463	Aug. 19	2776	620	100	1729
Bearing. Roller	A. E. Henderson	708,475	Sept. 2	851	194	100	2154
Bearing. Roller	C. A. Carman	709,136	Sept. 16	2162	495	100	2455
Bearing. Roller	A. E. Henderson	709,398	Sept. 16	2580	569	100	2538
Bearing. Roller	A. E. Henderson	709,441	Sept. 16	2772	624	100	2594
Bearing. Roller	J. C. Wands	708,601	Sept. 9	1071	242	100	2309
Bearing. Roller side	T. Thistlewood	708,501	July 1	219	52	100	46
Bearing. Self-lubricating hub	W. B. Spencer	708,492	July 1	206	49	100	44
Bearing. Shaft	J. C. Blevney	707,673	Aug. 26	3217	723	100	1920
Bearing. Shaft or axle	J. Kilburn	705,847	July 29	4870	1058	100	1046
Bearing. Spindle	J. Kilburn	709,821	Sept. 23	3525	794	100	2758
Bearing. Spindle	A. E. Henderson	705,839	July 29	4857	1054	100	1048
Bearing. Thrust	J. Porritt	706,779	Aug. 12	1516	336 337	100	1442
Beating-engine	F. P. Miller	706,985	Aug. 12	1881	421	100	1517
Beating-engine	E. L. Savage	710,014	Sept. 30	3921	895	100	2947
Bed and sofa or chair. Convertible	L. Kragen	709,333	Sept. 16	2548	573	100	2537
Bed-bottom	P. B. Rooney	704,215	July 8	1592	344 345	100	333
Bed-bottom	E. Rose and I. Isbill	710,304	Sept. 30	4465	1007	100	2963
Bed-bottom. Spring	C. B. and F. White	704,416	July 8	1951	433	100	410
Bed-bottom. Spring	J. F. Brown	704,674	July 15	2429	535	100	528
Bed. Couch	F. M. Tinkham	707,807	Aug. 26	3525	796	100	1891
Bed-couch. Extension	J. Hoey	706,178	Aug. 5	344	74	100	1187
Bed. Folding	P. Clay	708,545	July 1	307	69	100	68
Bed. Folding	C. M. Hamilton	710,298	Sept. 30	4405	998 999	100	2951
Bed-frame	F. W. Walker	708,431	Sept. 2	771	173	100	2137
Bed-guard	J. C. Fish	706,748	Aug. 12	1458	320	100	1480
Bed. Hospital	W. H. Fox	704,695	July 15	2349	510	100	505
Bed. Invalid	E. B. Dones	708,332	Sept. 2	600	136	100	2104
Bed-lounge. Folding	N. Levine	704,688	July 15	2450	529	100	528
Bed-pan cover	H. C. Lippa	708,371	Sept. 2	670	151	100	2117
Bed-rail	W. Tucker	704,148	July 8	1475	316	100	310
Bed-slat-holding means	A. R. Cooper	705,384	July 22	3957	857	100	850
Bed-spring	M. Winters	706,694	Aug. 12	1211	268	100	1377
Beds or seats. Framework for spring	W. A. Murray	705,694	July 29	4605	999	100	991
Bedstead-fastening	B. H. Jones	704,702	July 15	2475	535	100	533
Bedstead. Invalid	J. D. Camfield	708,535	July 1	285	65	100	58
Bedstead. Metal	J. A. Mollitor	709,551	Sept. 23	3028	674	100	2650
Beer. Apparatus for cleaning cellular tissues used in clarifying	C. Spindler	709,652	Sept. 23	3198	718	100	2688
Beer-cooler	J. M. Dieterle	710,145	Sept. 30	4180	941	100	2902
Beer-cooler attachment	O. Schell	708,451	July 1	189	45	100	40
Beer-cooling apparatus	J. P. Hickey	705,943	July 22	3650	790	100	789
Beer. Manufacturing non-alcoholic	V. Lapp	709,718	Sept. 23	3301	741	100	2706
Beer-pipe cleaner	C. B. Johnson	705,947	July 22	3655	791	100	790
Beer production. Apparatus for continuous	C. Schmitz	710,396	Sept. 30	4086	1043 1044	100	2995
Beet-topper	M. W. Palmer	709,730	Sept. 23	3313	744	100	2709
Beet-topping machine	J. Albright	706,145	Aug. 5	231	58, 59	100	1175
Beet-culture implement	A. S. Capper	704,614	July 15	2331	505	100	503
Bell	W. B. Augir	704,389	July 8	1734	379	100	363
Bell and burglar-alarm. Combination door	F. E. Abbott	709,268	Sept. 16	2397	543	100	2505
Belt-carrier	J. Weichhart	704,723	July 15	2517	544	100	549
Belt. Conveyer	W. J. Selleck	705,876	July 29	4937	1071	100	1057
Belt. Conveying	J. J. Ridgway	707,255	Aug. 19	2585	584	100	1692
Belt fastener, clasp, or buckle	M. Cochran	704,497	July 8	1988	432	100	418
Belt. Leather	J. L. Fahey	706,213	Sept. 2	408	93	100	2084
Belt-shifter arm. Pressed-metal	H. T. Hallowell	706,819	Aug. 12	1586	357	100	1456
Belt stud or fastener	F. M. Linderman and C. A. Binz	708,565	Sept. 9	1009	229	100	2197
Belt-supporting mechanism. Conveyer	E. S. Phillips	708,846	Aug. 12	1648	368	100	1472
Belt-tightener	G. A. Schwingel	704,388	July 8	1909	413	100	408
Belt-tightener	N. C. Bassett	706,009	Aug. 5	11	3	100	1118
Belt-tightener	W. E. Bee	708,884	Sept. 9	1891	384	100	2320
Belt. Waist	H. J. Gaisman and J. Ross	708,568	July 1	343	78	100	69
Belts, &c. Device for cutting off pieces of	E. H. Jahns	709,408	Sept. 16	2714	609	100	2579
Belting. Machine	M. Gillet	706,044	Aug. 5	81	17	100	1123
Bending angle-irons, channel-irons, &c. Machine for	C. Gabriel	706,310	Aug. 5	617	135	100	1240
Berry-box	C. B. Proctor	707,866	Aug. 26	3041	680	100	1919
Berth. Ship's	A. W. Hitt	704,878	July 15	2815	609	100	608
Bevel	D. E. Hughes	709,467	Sept. 23	2908	646	100	2695
Bevel	C. Bodmer	710,178	Sept. 30	4343	957	100	2915
Bevel and miter. Combined	C. R. Stedman	707,461	Aug. 19	2771	623	100	1721
Bevel and square	A. C. Cullmann	708,538	Sept. 9	964	218	100	2150
Bib	H. Newlin	704,306	July 8	1578	341	100	331
Bicycle	O. W. Griffiths	704,089	July 8	1385	294	100	268
Bicycle	A. G. Anderson	704,398	July 8	1782	378	100	368
Bicycle	H. B. Gillis	704,317	July 8	1766	366	100	372
Bicycle	F. C. Moore	704,901	July 15	2654	619	100	618
Bicycle	W. N. Whitely	707,480	Aug. 19	2808	635	100	1729
Bicycle	C. H. Ocumpaugh	709,679	Sept. 23	3343	735	100	2694
Bicycle	F. W. Talley	704,145	July 8	1478	315	100	309
Bicycle attachment	J. B. Davis	704,871	July 15	2831	600	100	599
Bicycle attachment	F. Gooch	705,564	July 29	4546	967	100	961
Bicycle attachment	G. Stabile	708,089	Sept. 2	1	1	100	2015
Bicycle-brake	F. Booth	709,463	Sept. 23	2895	637	100	2679
Bicycle. Chainless	F. B. Case	708,903	Sept. 9	1369	90	100	2261
Bicycle cushion-frame	T. C. Robinson	708,613	July 1	421	98	100	83
Bicycle driving mechanism	G. H. Spaulding	707,573	Aug. 26	3549	882	100	1914

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bicycle driving mechanism	C. Spindler	708,452	July 1	190	45	100	40
Bicycle driving mechanism	J. Albright	708,453	July 1	191	45	100	40
Bicycle driving mechanism	J. Albright	708,454	July 1	192	45	100	40
Bicycle driving mechanism	J. Albright

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Bicycle driving mechanism	K. Brooks	710,945	Sept. 30	4370	998	100	2943
Bicycle-frame	B. F. Monahan	709,718	Sept. 23	3310	743	100	2708
Bicycle-frame. Cushioned	N. B. Zimmerman	708,582	July 1	468	106	100	91
Bicycle frame. Motor-	G. Wagner and B. B. Bird	709,380	Sept. 16	2658	596	100	2551
Bicycle-gear. Changeable	P. J. Scharbach	707,350	Aug. 19	2590	585	100	1668
Bicycle-gearing	D. Macdonald	705,106	July 22	3344	725 796	100	796
Bicycle-grips, &c. Mechanism for covering	J. A. Miller	706,949	Aug. 5	471	100	100	1212
Bicycle handle-bar	W. N. and W. N. Whitely, Jr.	704,159	July 8	1491	325	100	313
Bicycle-handle shield	O. Schmidt	705,346	Aug. 5	686	150	100	1265
Bicycle-lamp lock	A. Fellows	708,907	July 1	984	214	100	197
Bicycle-lock	H. W. Morgan	704,658	July 15	2899	519	100	517
Bicycle-lock	J. C. Fisher	707,310	Aug. 19	2507	562	100	1665
Bicycle-pedal	F. N. Cullen	706,028	Aug. 5	48	10	100	1127
Bicycle-pedal	A. Pherson	706,594	Aug. 12	1155	256	100	1365
Bicycle-pedal	J. A. Decuir	709,505	Sept. 16	2503	564	100	2549
Bicycle-pedal	T. A. Diebold	709,397	Sept. 16	2691	604	100	2567
Bicycle-pump. Automatic	W. B. Bignall	706,453	Aug. 5	916	199	100	1301
Bicycle-rest. Convertible	O. F. Reeves	708,403	Sept. 2	727	163	100	2129
Bicycle saddle-post	W. W. Hughes	707,582	Aug. 26	3049	686	100	1795
Bicycle-saddles. Antifriction-cover for	G. Spence	709,984	Sept. 30	3764	850	100	2814
Bicycle sprocket and crank	W. S. Bradbury	706,718	Aug. 12	1376	307	100	1413
Bicycle-stand	R. O. Wilcox	704,161	July 8	1495	330	100	314
Bicycle-support	G. W. Cole	707,909	Aug. 19	2314	517	100	1629
Bicycle toe-clip	K. Wunner	704,284	July 8	1717	374 375	100	361
Bicycles. Auxiliary hand-operated driving mechanism for	H. M. Lambert and O. H. Joy	704,895	July 15	2828	611	100	905
Bicycles. Combined mud-guard, supplemental seat, and parcel-holder for	J. Kynaston	707,122	Aug. 19	2141	479 480	100	1589
Bicycles. Device for coupling two	J. H. Sager and G. D. Green	707,282	Aug. 19	2402	539	100	1644
Bicycles or like vehicles. Cushion-frame for	W. Goodbrand	704,680	July 15	2436	526	100	525
Bicycles. Two-speed driving-gear for	J. McCullough	704,358	July 8	1865	404	100	394
Bilge-block	A. W. Thierkoff	708,853	July 1	893	194	100	177
Bill-carrying apparatus. Mechanical	J. T. Pirie, Jr.	706,849	Aug. 12	1650	369	100	1473
Bill-sheet and journal-leaf. Combined	W. H. Lane	710,279	Sept. 30	4432	997	100	2955
Billiard-cue	B. A. Stevens	708,744	Sept. 9	1845	407	100	2357
Billiard-cushion	B. W. Perkins	707,650	Aug. 26	3116	702	100	1809
Billing-machine							
Bin: *See* Elevator-bin. Ore-bin. Grocer's bin.							
Bin	J. A. Jamieson	704,806	July 15	2685	580	100	574
Binder alarm device	H. E. Irwin	704,684	July 15	2441	527 528	100	526
Binder. Loose-leaf-ledger	H. H. Hoffmann	708,922	July 1	1005	219	100	200
Binder. Loose-sheet	J. B. Irving	705,949	Aug. 12	1880	407	100	1505
Binder-needle	E. Will	707,482	Aug. 19	2811	625	100	1729
Binder. Paper-	F. N. Volkert	707,057	Aug. 12	1973	443	100	1586
Binder. Temporary	P. Ladewig	708,730	July 1	658	146	100	132
Binder. Temporary	C. K. and C. A. Reed	706,257	Aug. 5	492	105	100	1216
Binding-envelop or file	H. D. Winton	705,006	July 15	3131	677	100	668
Bit: *See* Bridle-bit.							
Blacking-box holder	G. A. Joy	709,526	Sept. 16	2537	530	100	2498
Blacking machine. Shoe-	J. Nicolet	706,091	Aug. 5	170	34	100	1151
Blank-threading-machine feed mechanism	J. H. Haskins	708,140	Sept. 2	954	63, 64	100	2086
Blanket-guard	H. M. Williams	708,109	Sept. 2	196	47	100	2122
Blast-furnace	G. C. Shakleford	710,120	Sept. 30	4125	980 981	100	2989
Blast-furnace. Iron	M. P. Boss	708,116	Sept. 2	213	51	100	2085
Blast or other furnace	E. F. Coffin	705,922	July 29	4899	1049 444	100	1057
Blasting-cartridge	W. Kirsanov	704,465	July 8	2051	445	100	431
Bleaching apparatus	C. C. Clark	708,796	Sept. 9	1459	334	100	498
Bleaching-vat	F. Taylor, A. Cooke, and B. W. D. Montgomery.	704,402	July 8	1982	418	100	407
Blind stop. Window-	T. A. Upson	705,626	July 1	451	104	100	88
Blind. Window-	W. R. Briggs	706,618	Sept. 9	1106	248 249	100	2216
Blinds. Apparatus for operating Venetian	T. Summerton	705,425	Sept. 2	765	178	100	2136
Block: *See* Bilge-block. Machinist's V-block. Building-block. Mooring-block. Link-motion block.							
Blotter or desk-pad	G. W. Buskirk	708,525	Sept. 9	953	216	100	2186
Blower and compressor	C. Neumann	704,860	July 8	1868	404	100	394
Blower. Rotary fan-	F. B. Schermerhorn and G. E. Moffett.	708,307	July 22	3781	820	100	814
Blowing-engine	W. Kennedy	708,716	Sept. 9	1299	296	100	2256
Blowing-engine	A. Raven	709,909	Sept. 30	3754	847 848	100	2812
Blowpipe. Gas-	G. B. Snow	709,890	Sept. 23	3537	797	100	2755
Board: *See* Directory-board. Panel-board. Drawing-board. Pitch-board. End-board. Sign-board. Game-board. Stone-board. Ironing-board. Washboard. Keyboard.							
Boards by means of cleats. Machine for securing together	C. Johnson	707,116	Aug. 19	2134	476 477	100	1587
Boards. Machine for forming blanks from matched	C. Johnson	709,710	Sept. 23	3296	739 740	100	2705
Boards. Stacking of	G. Johnson, Jr.	704,360	July 8	1671	364	100	350
Boat anticapsizing device	F. W. Zimer	705,188	July 22	3514	762	100	762
Boat-fender	W. H. Higgins	708,476	Sept. 2	853	195	100	2154

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Boat lashing device	S. Nilson	708,664	July 1	834	190	100	105
Boat. Life-	R. D. Mayo	709,417	Sept. 16	2728	612	100	2575
Boat. Sailing-	T. Jensen	704,995	July 15	2445	528	100	527
Boat. Submarine	J. P. Holland	706,561	Aug. 12	1094	242	100	1362
Boat. Submarine	J. P. Holland	708,553	Sept. 9	994	234 235	100	2194
Boats, &c. Apparatus for removing material from	A. M. Acklin	707,371	Aug. 19	2512	560	100	1668
Boats, &c. Apparatus for removing materials from	A. M. Acklin	707,491	Aug. 19	2826	640	100	1733
Boats, &c. Apparatus for removing materials from	A. M. Acklin	707,492	Aug. 19	2829	640	100	1734
Boats, tow-lines, &c. Safety releasing device for the sheets of	C. Smith and G. J. Hone	708,713	July 1	622	139	100	123
Bobbin-skewer	R. Schofield	704,584	July 15	2284	496	100	498
Body-brace	M. W. Russell	703,477	July 1	183	43	100	89
Body-brace	P. B. Sheldon	709,055	Sept. 16	2008	456	100	2491
Boiler: *See* Domestic boiler. Steam-boiler. Heating-boiler. Washboiler. Locomotive-boiler. Water-tube boiler.							
Boiler	L. Mahy and P. Hailiez	706,188	Aug. 5	362	78	100	1190
Boiler	A. W. Ofeldt	707,519	Aug. 19	2891	653 647	100	1744
Boiler and its furnace	S. A. Graham	707,509	Aug. 19	2858	648 649	100	1739
Boiler combustion apparatus. Steam-	J. R. Fraser	707,911	Aug. 26	3729	806	100	1980
Boiler-furnace	H. R. Scott	708,710	July 1	616	137 138	100	122
Boiler-furnace	T. York	705,508	July 22	4188	911	100	895
Boiler-furnace	A. M. Rankin	705,900	July 29	5076	1106 1107	100	1087
Boiler-furnace	A. Muir	709,605	Sept. 23	3117	694	100	2669
Boiler furnace. Steam-	H. B. Meech	704,853	July 8	1832	401	100	392
Boiler furnace. Steam-	J. R. Bailey	707,495	Aug. 19	2835	640 641	100	1735
Boiler furnace. Steam-	J. R. Bailey	707,496	Aug. 19	2836	641	100	1735
Boiler furnace. Steam-	H. H. Patterson and J. T. Burke	707,865	Aug. 26	3689	820	100	1912
Boiler furnace. Steam-	O. D. Orvis	709,178	Sept. 16	2237	508	100	2470
Boiler furnace. Steam-	H. Straeten and F. Schneck	706,275	Aug. 5	552	120	100	1227
Boiler-grate	D. M. and A. B. Burns	707,208	Aug. 19	2304	515	100	1684
Boiler or water-heater	F. Foskett	704,529	July 15	2190	475	100	475
Boiler safety device. Steam-	F. J. Manley	705,369	July 22	3387	853	100	845
Boiler safety device. Steam-	G. C. Quassebarth	706,200	Aug. 5	388	82	100	1195
Boiler-tube cleaner	J. H. Pollard	709,509	Sept. 23	2952	659	100	2634
Boiler-tube cutter	F. Palfrey	709,276	Sept. 16	2444	553	100	2515
Boiler-tube expander	D. W. Rockwell	707,943	Aug. 26	3784	849	100	1942
Boiler water-gage. Steam-	J. Béha	708,888	July 1	944	206	100	190
Boiler water-purifying apparatus. Steam-	W. Eichelberger	705,912	July 29	4993	1086 1087	100	1070
Boilers. Scot-cleaner for steam-	W. Schmidt and P. Thomsen	708,482	July 1	190	45	100	40
Boilers. Superheating device in tubular steam-	H. Moore	705,421	July 22	4025	872	100	864
Boilers. Water-level-testing device for	E. Carlson and J. Perrie	708,998	July 8	1158	251	100	245
Bolster	N. H. Tunks	708,508	July 1	2222	52	100	46
Bolster guide-block	J. E. Long	705,663	July 29	4579	995	100	987
Bolster-roll							
Bolt: *See* Door-bolt. Expansion-bolt. Expansible bolt. Sliding bolt							
Bolt and fastener therefor	A. H. Lewis	708,486	Sept. 2	879	199	100	2150
Bolt and nut cutter	W. B. Carolus	710,181	Sept. 30	4349	958	100	2916
Bolt and nut cutter	W. B. Carolus	710,182	Sept. 30	4351	958	100	2917
Bolt-locking device	D. Ferguson	705,571	July 15	4378	949	100	947
Bolt-machine	C. K. Lassiter	708,891	Sept. 9	1068	269	100	2284
Bolt-retainer	G. Lakhovsky	708,796	July 1	779	171	100	156
Bone-black kiln	W. T. Mohr	708,808	Sept. 9	1676	395 396	100	2287
Book. Account-	C. K. Rosenberg	704,216	July 8	1598	345	100	333
Book and carbon therefor. Manifold-	A. Levison	710,160	Sept. 30	4210	948	100	2907
Book. Artist's sketch-	W. T. Sullivan	708,500	July 1	218	51	100	45
Book-backing protector	S. Litwin	704,554	July 15	2288	493	100	483
Book. Balance-	J. R. McCord, Jr	704,706	July 15	2429	536	100	535
Book. Bank-deposit-coupon	P. Kuehn	705,851	July 29	4883	1061 1062	100	1048
Book. Coupon collection and receipt	W. S. Cappeller and C. S. Patteson	704,856	July 15	2775	600	100	594
Book-cover	C. Neuendorffer and B. Witach	705,869	July 29	4907	1065	100	1051
Book cover. Memorandum-	M. Vernon	709,687	Sept. 23	3258	720	100	2597
Book fastening device. Account or sales	L. A. Keith	705,412	July 22	4009	868	100	861
Book for holding and filing sales-slips, &c	J. F. Huber	708,220	Sept. 2	435	99	100	2070
Book-leaf	C. H. Wheaton	709,529	Sept. 23	2996	667	100	2644
Book. Manifold-	A. Levison. (Reissue)	12,035	July 1	1119	242	100	221
Book. Manifold copy-	J. C. Browning	706,310	Sept. 2	581	131	100	2099
Book. Manifolding note-	W. F. English	709,259	Sept. 16	2408	545	100	2507
Book. Manifolding sales or copying	P. Hano	709,380	Sept. 16	2527	569	100	2533
Book. Manifolding sales or order	B. G. Merrill	705,769	Aug. 12	1497	332	100	1426
Book or pad. Manifolding memorandum	E. Z. Lewis	704,844	July 15	2754	595	100	589
Book or parcel carrier or holder	T. H. Shottenberg	705,878	July 29	4932	1073	100	1058
Book-support and arm-rest	O. G. Law	710,104	Sept. 30	4094	924	100	2882
Book-support or copy-holder	G. W. Sawyer	707,979	Aug. 26	3849	864	100	1954
Books. Device for fastening loose-leaf	J. A. Waldo, Jr.	708,109	Sept. 2	187	44	100	2080
Bookbinder's clamp	L. J. A. Staniewicz	708,495	July 1	210	50	100	44
Bookbinding	J. L. McMillan	708,065	Sept. 2	120	29	100	2006
Bookbinding-machine	W. G. Joyce, Jr	708,988	July 1	1084	262	100	204
Bookbinding-sheet	G. Hager	709,599	Sept. 23	3109	693	100	2668
Bookkeeping	C. Seitz	700,725	Sept. 23	2321	746 747	100	1711
Bookkeeping system	F. Lapointe	710,103	Sept. 30	4091	924	100	2882
Boom-rigging	F. V. Nielsen	710,334	Sept. 30	4517	1018	100	2974

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Boot or shoe	J. B. Hadaway	705,231	July 22	3626	786	100	794
Boot or shoe	W. Gordon and G. E. Warren	706,551	Aug. 12	1090	239	100	1249
Boot or shoe protector	R. Christensen	706,900	Aug. 12	1748	390	100	1491
Boot or shoe welt	J. O. Bicknell	707,076	Aug. 19	2060	451	100	1571
Boot-stitching machine	P. Randall and G. Davis	709,041	Sept. 16	1975	451	100	2415
Boring and drilling machine	B. E. Hervey	708,881	Sept. 9	1640	377	100	2289
Boring apparatus	A. L. Ronaldson	710,012	Sept. 30	3918	885	100	2847
Boring apparatus. Hydraulic	G. Schmidt	704,[illegible]	July 8	1904	412	100	402
Boring-bar	W. A. Neylon and J. Gouldsbarry	709,275	Sept. 16	2442	552	100	2514
Boring-machine	G. de Laval and C. W. Chisholm	705,669	July 1	524	118	100	108
Boring-machine	R. R. Miller	706,582	Aug. 12	1131	250	100	1360
Boring-machine	W. S. Sherman	708,177	Sept. 2	858	80	100	2049
Boring-machine	H. Liethegener	704,057	July 8	1271	275	100	267
Boring-tool. Expansible	S. McClellan	704,657	July 15	2401	519	100	518
Boring tool. Joist-	W. W. Holland	706,054	Aug. 5	105	22	100	1128
Bottle	J. O'Connor	709,419	Sept. 16	2731	613	100	2576
Bottle	V. Bartcavitz	710,314	Sept. 30	4481	1011	100	2997
Bottle	L. S. De Forest	706,804	Aug. 12	1570	352	100	1454
Bottle attachment	F. Recht	707,978	Aug. 26	2648	864	100	1954
Bottle-cap	W. L. Dunham	706,911	Aug. 12	1702	393	100	1494
Bottle-caps. Tool for removing	J. D. Schell	708,068	Sept. 2	154	37	100	2013
Bottle-capping machine	G. Norton	710,296	Sept. 30	4449	1001	100	2960
Bottle-capping machine	E. A. Levick	705,103	July 22	3389	724	100	796
Bottle-closure	W. J. Bycraft	709,201	Sept. 16	2296	521	100	2483
Bottle-closure	G. J. Adams	709,293	Sept. 16	2474	557	100	2521
Bottle-closure	C. J. Warren	707,720	Aug. 26	3358	755	100	1856
Bottle-cork-wiring machine	C. J. Warren	707,923	Aug. 26	3878	871	100	1960
Bottle-corking machine	F. T. Griffith	704,972	July 15	3065	650	100	654
Bottle-cover. Temperature-preserving	V. Fleckenstein	705,332	July 22	3849	834	100	868
Bottle-covers, &c. Machine for making mats for	V. Fleckenstein	705,333	July 22	3856	835	100	880
Bottle-covers, &c. Machine for making mats for	W. B. Langan	709,413	Sept. 16	2751	610	100	2573
Bottle filling and corking machine	P. Binns	704,171	July 8	1514	325	100	318
Bottle filling and stoppering machine	C. T. White	708,874	July 1	921	202	100	195
Bottle-filling device	J. K. Weed	708,870	July 1	908	199	100	188
Bottle-filling machine	B. M. Glasgow	705,289	July 22	3620	784	100	788
Bottle-filling machine	C. J. Warren	707,994	Aug. 26	3883	873	100	1951
Bottle-filling machine	E. C. Ludin	708,602	July 1	790	174	100	156
Bottle-holder	R. Hay	705,356	Aug 12	1087	241	100	1251
Bottle-neck	E. D. Schmitt	705,344	Aug. 5	682	148	100	1254
Bottle-neck-forming tool	E. Fichter	708,398	July 1	64	12	100	15
Bottle. Non-refillable	C. F. Mitchell	708,944	July 1	1047	227	100	208
Bottle. Non-refillable	T. P. Weible	704,605	July 15	2317	503	100	500
Bottle. Non-refillable	H. F. Buttner	704,613	July 15	2330	506	100	502
Bottle. Non-refillable	L. C. Wedgefuth	704,904	July 15	3112	670	100	668
Bottle. Non-refillable	C. P. Searles and D. J. Minton	705,309	July 22	3786	821	100	815
Bottle. Non-refillable	J. Tamboer	705,481	July 22	4130	898	100	885
Bottle. Non-refillable	G. Schmidt	705,914	Aug. 12	1705	384	100	1495
Bottle. Non-refillable	J. Ewald	707,008	Aug. 19	2047	457	100	1569
Bottle. Non-refillable	E. I. Allen	707,190	Aug. 19	2298	514	100	1623
Bottle. Non-refillable	S. D. Blocker	707,265	Aug. 19	2407	540	100	1645
Bottle. Non-refillable	T. E. Shortell	707,512	Aug. 19	2892	649	100	1740
Bottle. Non-refillable	E. Hoerichs	707,709	Aug. 26	3419	770	100	1870
Bottle. Non-refillable	E. Burns	708,171	Sept. 2	824	77	100	2047
Bottle. Non-refillable	H. B. Reubelt	708,306	Sept. 2	566	128	100	2096
Bottle. Non-refillable	J. J. Bents	708,545	Sept. 9	981	222	100	2191
Bottle. Non-refillable	C. C. Guernsey	708,961	Sept. 16	1842	424	100	2289
Bottle. Non-refillable	H. F. Bailey	709,081	Sept. 16	1957	448	100	2411
Bottle. Non-refillable	R. McCord	709,099	Sept. 16	2009	480	100	2442
Bottle. Non-refillable	W. G. Lawrence	710,139	Sept. 30	4170	989	100	2900
Bottle. Non-refillable	H. Breunig and H. J. Waldeyer	710,319	Sept. 30	4492	1013	100	2999
Bottle. Non-refillable	J. W. Edwards	704,103	July 8	1863	396	100	351
Bottle or flask	E. D. Read	704,482	July 8	2088	455	100	459
Bottle or jar	E. L. Livingstone	708,173	Sept. 2	827	76	100	2048
Bottle-rest. Adjustable	R. Schmidt	709,698	Sept. 23	3677	734	100	2701
Bottle-rinser	H. W. Colby and E. O. Heinadorf	710,305	Sept. 30	4467	1007	100	2964
Bottle. Siphon-	E. Scheiber and E. Krvayaser	708,523	July 1	973	68	100	55
Bottle-stopper	H. S. Brewington	708,524	July 1	974	68	100	55
Bottle-stopper	H. S. Brewington	708,525	July 1	974	68	100	55
Bottle-stopper	H. S. Brewington	708,527	July 1	976	68	100	55
Bottle-stopper	H. S. Brewington	708,529	July 1	977	68	100	55
Bottle-stopper	A. Molinari	708,735	July 1	666	147	100	128
Bottle-stopper	A. Eklund	704,920	July 15	2717	588	100	581
Bottle-stopper	J. B. Crosby	708,501	Aug. 5	601	131	100	1126
Bottle-stopper	A. Blumer	708,624	Aug. 12	1288	271	100	1279
Bottle-stopper	S. Schwerin	708,698	Aug. 12	1288	297	100	1405
Bottle-stopper	J. J. Allison	707,126	Aug. 19	2286	512	100	1621
Bottle-stopper	A. C. Packer	707,548	Aug. 19	2572	561	100	1679
Bottle-stopper	W. H. Sherman	708,254	Sept. 2	492	113	100	2051
Bottle-stopper	M. Pitts	708,722	Sept. 9	1327	306	100	2268
Bottle-stopper	M. C. Wilson	708,749	Sept. 9	1356	309	100	2270
Bottle-stopper	I. Koscherak	709,161	Sept. 16	2323	505	100	2467
Bottle-stopper	I. Koscherak	709,162	Sept. 16	2324	505	100	2467
Bottle-stopper	C. W. Meinecke	709,418	Sept. 16	2730	613	100	2576
Bottle-stopper	J. T. Hicks	709,819	Sept. 23	3261	794	100	2732
Bottle-stopper	A. E. Snow	710,319	Sept. 30	4393	972	100	2985
Bottle-stopper	B. F. Miner	705,271	July 22	3709	804	100	799
Bottle-stopper and brush. Combination	H. O. Brawner	709,391	Sept. 16	2268	608	100	2506
Bottle stopper and sprinkler							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bottle stopper. Water-	E. Paillipson	710,207	Sept. 30	4304	968	100	2980
Bottle stopper. Water-	E. Phillipson	710,208	Sept. 30	4305	968	100	2980
Bottle-washing machine	J. G. Hehr	709,415	July 1	98	19.90	100	21
Bottle-washing machine	J. H. W. Ortmann and C. W. Herbst	705,480	July 22	4089	875	100	887
Bottle-washing machine	M. P. Shea	705,877	July 29	4228	1072	100	1057
Bottle-washing machine	C. J. Warren	707,740	Aug. 26	3302	756 757 758	100	1858
Bottle-washing machine	W. J. Cunningham	708,321	Sept. 2	598	136	100	2108
Bottles, jars, &c. Closure for	A. L. Weissenthanner	705,178	July 22	3478	755	100	752
Bottles, jars, or other vessels. Stoppering	F. W. Margette	706,347	Aug. 5	468	100	100	1211
Bottles or jars. Metal cap for	C. A. Calleson	708,598	Sept. 9	957	217	100	2187
Bottles or jugs with beer. Apparatus for filling	A. Schroedter	704,386	July 8	1906	412 413 748 749 750	100	402
Bottling-machine	C. J. Warren	707,737	Aug. 26	3341	751 752 753 754	100	1855
Bowling-alley	C. J. Olson	708,779	Sept. 9	1418	324 325	100	2382
Bowling-alley	H. B. Lahr	709,168	Sept. 16	2225	505	100	2467
Bowling-alley	H. J. Shipham	709,802	Sept. 23	3489	787	100	2744
Bowling-alley	E. C. Phillips	707,632	Aug. 26	3122	703	100	1810
Bowling-alley pin	W. McClintock	707,158	Aug. 19	2206	494	100	1601
Bowls or basins. Clamp for marble wash							
Box: *See* Advertising match-box. Axle-box. Ballot-box. Berry-box. Burial-casket rough box. Casting-box. Cigar-box. Collapsible box. Compartment box. Conduit outlet-box. Display-box. Feed-box. Folding box. Fuse-box. Hat-box. Ink-pad box. Journal-box. Junction-box. Knockdown box. Letter-box. Mail-box. Match-box. Message-box. Miter-box. Oil-retaining box. Paper box. Postal box. Safety-box. Shipping-box. Stop-box. Stuffing-box. Tobacco-box. Wagon-box.							
Box	E. O. Clark	704,398	July 8	1736	378	100	364
Box	R. Jannuzzi	704,701	July 15	2475	534	100	532
Box	E. T. Noble	708,578	Sept. 9	1065	234	100	2208
Box	P. W. Mullany	708,161	Sept. 2	800	71	100	2043
Box-banding tool	W. J. Pflugradt and M. Ries	710,398	Sept. 30	4619	1042	100	2995
Box-cover fastener	C. B. Baldwin	708,515	Sept. 9	932	211 213	100	2182
Box-covering machine	W. Jordan	707,424	Aug. 19	2718	615	100	1710
Box-fastener	E. Fletcher	708,702	Sept. 9	1269	291	100	2249
Box-fastening	R. J. Carrier and J. W. Low	705,206	July 22	3547	768 769 770 771	100	769
Box folding and pasting machine	J. E. Clark	705,513	July 22	4292	918	100	898
Box for cigarettes, matches, or the like	B. A. Lange	706,768	Aug. 12	1485	329	100	1436
Box-joint	J. W. Wright	706,988	Aug. 12	1216	270	100	1276
Box-lid holder and label-displayer	J. Meek	709,789	Sept. 23	3460	779	100	2739
Box or carton blanks. Mechanism for removing selvage from	E. Doering	705,223	July 22	3506	778	100	778
Box or case	W. H. Rogers	710,213	Sept. 30	4312	969	100	2951
Box or crate	D. Goldman	705,231	Aug. 5	443	98	100	1207
Box or receptacle	C. H. Palmer and J. W. Denmead	709,088	Sept. 16	1900	448 449	100	2411
Box-sanding machine	C. W. H. Blood	705,197	July 22	3524	764 765	100	764
Box-setting-up machine	J. E. MacMurray	708,976	Sept. 2	662	154	100	2120
Box-strap holder	E. W. Bryant	708,459	Sept. 2	827	187 188 189 190	100	2149
Box-wrapping machine	W. G. Young	709,886	Sept. 16	2672	600	100	2564
Boxes, &c. Securing device for							
Brace: *See* Adjustable brace. Body-brace. Plow-brace. Scenery-brace. Vehicle-seat brace. Window-brace.							
Bracelet	S. Lederer	710,105	Sept. 30	4095	994	100	2938
Bracelet or the like	E. P. Davis	704,963	July 8	1684	354	100	341
Bracelets, &c., and manufacturing same. Band for	T. S. Bennett	709,195	Sept. 16	2293	518 519	100	2480
Bracket: *See* Curtain-bracket. Door-bracket. Pipe-bracket. Shade-bracket. Shade-roller bracket. Shelving-bracket. Shingling-bracket.							
Bracket	T. Smith	706,122	Aug. 5	218	46	100	1161
Braids and trimmings. Machine for making	J. E. Kirberg	707,336	Aug. 19	2556	576 577	100	1675

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Brake: *See* Air-brake. Automatic brake. Back-pedaling brake. Bicycle-brake. Car-brake. Coaster-brake. Cycle-brake. Emergency-brake. Fluid-pressure brake. Friction-brake. Marine brake. Roller-brake. Track-brake. Vehicle-brake. Wagon-brake.							
Brake	W. A. Crowdus	708,583	July 1	319	72	100	64
Brake	V. Royle	708,695	July 1	848	187	100	170
Brake	J. G. Alexander	704,229	July 8	1614	349	100	337
Brake	G. W. Stevens	705,624	July 29	4474	970	100	966
Brake	A. R. Moore	707,149	Aug. 19	2199	498	100	1600
Brake	B. Haskell	707,105	Aug. 19	2117	473	100	1583
Brake-beam	C. Vanderbilt	707,658	Aug. 26	3196	717	100	1826
Brake-beam	P. T Handiges	706,852	Sept. 2	647	146	100	2113
Brake-beam fulcrum	P. Muller	706,086	Aug. 5	102	33	100	1160
Brake-controller	D. Neale	707,345	Aug. 19	2509	580 / 581	100	1678
Brake, fender, and step. Combination	W. E. Quimby	708,468	July 1	168	39	100	36
Brake for administering prescribed resistance to the starting movements of hand-operated controllers.	H. W. Gibbs	707,698	Aug. 26	3259	729	100	1888
Brake-handle	G. P. Ritter	705,399	July 22	3760	816	100	811
Brake-head. Adjustable	G. P. Ritter	705,671	July 29	4456	966	100	968
Brake-head. Adjustable	O. F. Randall	704,103	July 8	1380	298	100	990
Brake mechanism	G. W. Greenwood	704,334	July 15	2203	477	100	477
Brake mechanism	D. S. Sebastian	708,337	Sept. 9	1555	355	100	2311
Brake mechanism	H. W. Cooley	710,253	Sept. 30	4382	985 / 986	100	2945
Brake-shoe	G. A. Woodman	704,491	July 8	2106	456	100	442
Brake-shoe	J. D. Gallagher	708,704	Sept. 9	1274	291	100	2250
Brake-shoe adjuster	E. M. Herr	705,927	July 29	5030	1095	100	1075
Brake-shoe-lubricating filler	R. D. Baldwin	706,147	Aug. 5	284	59	100	1175
Brander. Electric	H. L. Jenkins and O. F. F. Rohlmann.	709,809	Sept. 23	3115	694	100	2669
Branding-iron	F. France	708,567	July 1	342	77	100	69
Brazing	H. E. Grant	709,599	Sept. 30	3999	894	100	2800
Bread-cutter	W. O. N. Morrison	709,553	Sept. 23	3032	676	100	2651
Breech mechanism	J. F. Meigs and S. A. S. Hammar	704,998	July 15	2650	617	100	611
Brick and tile for walls, &c. Combined	D. W. Anderson	707,515	Aug. 26	3539	798	100	1898
Brick. Burning	J. Peck	708,294	Sept. 2	712	----	100	2126
Brick-carrier	J. G. McDowell	705,377	July 22	3721	807	100	801
Brick-edge-smoothing blade	W. Frey	705,084	July 22	3252	708	100	708
Brick-handler	J. H. and G. P. Martin	705,416	July 22	4017	870	100	863
Brick-kiln	T. M. Wilson	704,418	July 8	1953	424 / 425	100	411
Brick kiln and drier. Continuous	J. F. Du Bois	706,085	Aug. 5	63	13, 14	100	1158
Brick-machine	W. F. Stimpson	707,275	Aug. 19	2441	548	100	1654
Brick-machine	W. F. Stimpson	707,276	Aug. 19	2444	549	100	1654
Brick-machine dies. Lubricant apparatus for	H. K. King	704,097	Sept. 16	2093	480	100	2441
Brick-machines. Plunger-adjusting mechanism for re-press	J. Walker	708,276	Sept. 2	520	118	100	2057
Brick-mold	O. M. Reif	708,256	Sept. 2	485	111	100	2079
Brick-molding machine	J. Mohs	704,754	July 15	2578	556 / 557	100	558
Brick or block	L. A. Brown	708,760	July 1	709	157	100	142
Brick or block. Paving	W. J. Leary	710,032	Sept. 30	4000	908	100	2864
Brick-press	J. J. Nieters	708,778	Sept. 9	1411	324	100	2281
Bricks for building purposes. Machine for laying	J. H. Knight	704,647	July 15	2383	516	100	515
Bricks for building purposes. Machine for laying	J. H. Knight	704,648	July 15	2384	516	100	514
Bricks. Treatment of refractory	J. H. Knight	707,670	Aug. 26	3211	----	100	1829
Bricking pulverized material. Apparatus for	S. Zuckschwerdt	708,562	July 1	326	76	100	67
Bridge. Bascule	T. A. Edison	708,348	Sept. 2	641	145	100	2111
Bridge construction	C. F. Hall	708,468	Sept. 2	837	191	100	2151
Bridge suspension-cables. System for erecting and adjusting	G. M. Cheney	708,468	Sept. 2	837	191	100	2151
Bridge. Swing	W. J. Glover	709,816	Sept. 16	2521	568	100	2592
Bridle and bit	C. Worthington	707,044	Aug. 12	1986	446	100	1539
Bridle-bit	B. W. Kindig, Jr	710,156	Sept. 30	4003	947	100	2905
Bridle overdraw-check	C. W. Drown	708,700	Sept. 23	3231	735	100	2702
Broiler and toaster. Combined	J. B. Schott	708,410	Sept. 2	739	166	100	2131
Bromindigo. Making	P. G. Van Wie	708,502	Aug. 5	993	219	100	1318
Bronze-mill	M. von Gallois	705,921	Aug. 12	1776	----	100	1497
Brooder	J. A. Prince	708,466	July 1	166	38, 39	100	35
Brooder	W. P. Jones	705,953	Aug. 12	1826	409 / 410	100	1506
Brooder. Chicken-	O. R. Lincoln	707,127	Aug. 19	2147	481	100	1590
Broom	N. Pedersen	709,508	Sept. 23	2950	658 / 659	100	2634
Broom, &c	H. Neilson	705,602	July 29	4439	968	100	959
Broom-handles. Polishing and drying	M. Young	706,144	Aug. 5	280	58	100	1174
Broom-head	C. A. Ridlon	707,159	Aug. 19	2216	497	100	1606
Brush	W. Mansfield	704,493	July 8	2090	453	100	439
Brush	C. Klauberg	705,534	July 22	4279	925	100	914
Brush	J. Schreiner	709,610	Sept. 23	3134	696	100	2670
Brush and comb. Combination	F. H. Loveless	710,161	Sept. 30	4011	949	100	2908
Brush. Bottle-washing	C. E. Flemming	707,574	Aug. 26	3017	678	100	1788
Brush. Bottle-washing	R. Hoerning	704,986	July 15	2727	590	100	588
Brush-holder	C. K. Volckening	705,983	July 29	5117	1116	100	1096
Brush-holder	H. F. T. Erben	705,055	July 22	3990	690	100	704
Brush. Sprinkling scrub	F. T. Weidaw	706,286	Aug. 5	572	124	100	1251
Bucket. Bait	F. Pirrung	705,861	July 29	4900	1065	100	1059
Bucket-ear	J. B. Hall	706,407	Aug. 5	816	178	100	1279
	F. T. Brosi	709,999	Sept. 16	2468	560	100	2584

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Bucket or manger	W. H. Rymer	710,341	Sept. 30	4530	1022	100	2977
Bucket. Well	H. W. Holmes	708,923	July 1	1008	219	100	901
Buckle	R. Porter	708,464	July 1	164	38	100	35
Buckle	E. T. Specht	705,630	July 29	4469	969	100	965
Buckle	J. E. Mitchell	706,080	Aug. 5	152	32	100	1147
Buckle	D. M. McLean	708,267	Sept. 2	695	156	100	2122
Buckle	F. F. Hodges	708,584	July 1	369	85	100	73
Buckle and combination. Adjustable clamp	E. H. Crum	707,894	Aug. 19	2660	600	100	1697
Buckle. Back-bend	C. H. Johnson and L. H. Clements	708,359	Sept. 2	656	148	100	2114
Buckle. Harness	C. A. Goozey	708,339	Sept. 2	639	141	100	2109
Buckle. Lock	W. R. Sturgiss	707,084	Aug. 12	1969	441	100	1535
Buckle or fastener for bale-ties or the like. Clamp	G. Schneider	706,857	Aug. 12	1661	379	100	1474
Buckle. Tongueless	F. Woodward	708,878	July 1	989	232	100	186
Buckles. Means for securing straps to	R. B. Coffman	708,681	Sept. 9	1111	249	100	2218
Buggy. Baby	W. B. Williamson	704,789	July 15	2604	568	100	558
Buggy-bed stay	J. W. Simmons	709,580	Sept. 23	3041	677	100	2659
Buggy-boot	A. W. Wilson	708,695	Sept. 9	1226	288	100	2243
Buggy-boot attachment	H. A. Sorensen	704,276	July 8	1701	371	100	857
Buggy boot or apron	B. S. D. S. Martin	709,026	Sept. 16	1947	446 / 447	100	2609
Buggy storm-curtain	J. B. Vliet	708,505	July 1	294	68	100	47
Buggy-top adjuster	T. F. Horne	710,273	Sept. 30	4413	994 / 995	100	2953
Buggy-top locking-brace	M. Brown	705,901	July 29	4969	1061	100	1056
Buggy-top raiser	C. Matthey-Moier	704,847	July 15	2761	596	100	591
Bugs or other insects infesting dwellings, &c. Apparatus for destroying	F. A. Searight and G. J. Stevens	708,499	Sept. 2	898	208	100	2164
Building-block	C. F. Whittlesey	704,805	July 15	2817	608	100	600
Building block and wall	N. Merley	708,725	Sept. 9	1216	300	100	2260
Building-block die	W. M. Riley	704,983	July 15	2980	638	100	639
Building construction	C. E. Cottrell	709,257	Sept. 16	2404	545	100	2506
Building construction	M. W. Marsden	704,066	July 8	1290	280	100	271
Building material	O. Nentwig	707,446	Aug. 19	2750	622 / 623	100	1716
Building material. Box of	D. F. Saum	708,922	Sept. 9	1711	395	100	2345
Building-renovating apparatus	T. P. Payne	705,127	July 22	3888	782 / 783	100	784
Buildings. Construction of metallic frame	C. E. Hebberd	709,548	Sept. 9	984	232	100	2129
Buildings. Metal framework for	E. Huber and A. Milmine	705,829	July 15	2729	590	100	584
Bulkhead-doors. Means for operating	P. Hoppe	706,471	Aug. 5	944	206	100	1305
Bullet-mold	H. Richter	705,146	July 22	3430	745	100	744
Bung	H. C. Blanck	708,305	Sept. 2	573	130	100	2098
Bung and bushing. Barrel	E. C. Phillips	705,108	Aug. 5	186	39	100	1155
Bung and connection for beer-barrels. Valved	D. Beebe	706,984	Aug. 12	1711	382 / 383	100	1498
Bunsen burner	W. Kappel	706,820	Aug. 12	1612	362	100	1464
Bunsen burner	W. H. and G. E. Russell	708,259	Sept. 2	488	112	100	2080
Buoy	W. S. Crouch, Jr	706,808	Aug. 12	1568	349	100	1458
Buoy	W. S. Crouch, Jr	706,804	Aug. 12	1564	350	100	1458
Burglar-alarm	P. W. Dunne	704,946	July 8	1687	385	100	342
Burglar-alarm	C. Fruehauf	704,947	July 8	1689	385	100	343
Burglar-alarm	W. B. Thomas	704,981	July 15	3083	664	100	658
Burglar-alarm	J. H. Howard	707,513	Aug. 19	2864	650	100	1741
Burglar-alarm	F. C. Robinson and J. E. Green	708,496	Sept. 2	895	202	100	2163
Burial-case	C. D. Koeser	708,954	July 1	1029	233	100	205
Burial-case	J. B. Kerr, Jr	709,988	Sept. 30	3877	874	100	2688
Burial-casket	J. Koegel	706,960	Aug. 12	1844	412 / 413	100	1510
Burial-casket rough box	P. D. Skahen	709,428	Sept. 16	2737	615	100	2677
Burner: *See* Bunsen burner. Garbage-burner. Gas-burner. Gas-heating burner. Hydrocarbon-burner. Hydrocarbon-vapor burner. Liquid-fuel burner. Oil-burner. Pulverized-fuel burner. Regenerator-burner. Vapor-burner.							
Burner	M. S. Walker	707,985	Aug. 19	2462	552	100	1657
Burner	M. S. Walker	707,986	Aug. 19	2464	552	100	1657
Burner	J. L. Jones, Jr	710,276	Sept. 30	4417	996	100	2954
Burner attachment	T. L. Roy and T. Marshall, Jr	709,978	Sept. 16	2446	553	100	2515
Burner-cap	W. H. and R. W. Miller	708,658	July 15	2894	518	100	516
Burner-tip cleaner	S. Carlson	709,077	Sept. 16	2047	467	100	2431
Bushing. Bung	G. H. Ricke	710,005	Sept. 30	3904	881	100	2844
Bushing for sheaves. Roller	W. F. Wellman	710,088	Sept. 30	4060	915	100	2876
Bushings. Machine for truing piston-ring	A. R. Davis	705,788	July 29	4091	1015	100	1000
Bustle	H. H. Taylor	704,146	July 8	1472	316	100	300
Butter-cutter	M. R. Phillips	705,543	July 22	4290	934	100	921
Butter-packer	F. Prentice	710,238	Sept. 30	4522	1019 / 1020	100	2975
Button	G. W. Buchanan. (Reissue)	12,080	Aug. 19	2905	658	100	1749
Button	F. E. Stanley	708,673	Sept. 9	1209	276	100	2239
Button	J. Hilder	708,711	Sept. 9	1288	294	100	2254
Button and making same	M. D. Shipman	707,456	Aug. 19	2764	626	100	1719
Button. Combined badge and bouquet holding	G. J. Alexander	705,190	July 22	3516	768	100	762
Button-feeding mechanism	J. Hormby	707,399	Aug. 19	2544	573	100	1672
Button-machine	T. F. Morrissey	704,856	July 8	1859	402 / 403	100	398
Button-making machines. Grip-carrier for	J. Hormby	707,396	Aug. 19	2529	571	100	1672
Button-making machines. Segmental gear for	J. Hormby	707,398	Aug. 19	2543	572 / 573	100	1672
Button-making machines. Spindle adjustment for	J. Hormby	707,390	Aug. 19	2546	573 / 574	100	1673
Button or stud. Separable	J. L. Vredenburgh	708,181	Sept. 2	341	81	100	2051
Button-polishing machine	J. Hormby	708,708	Sept. 9	1256	319 / 320	100	2278

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Button. Separable	H. R. Sieverkropp	705,793	July 29	4781	1097	100	1098
Button-setting machine	E. B. Stimpson	707,274	Aug. 19	2437	546	100	1652
					547		
Button-stenciling machine	J. Hormby	705,084	July 22	3288	713	100	715
					714		
Button-stenciling-machine pigment-spraying mechanism	J. Hormby	705,086	July 22	3295	716	100	716
					717		
Button-stenciling-machine stencil-carrier	J. Hormby	705,085	July 22	3292	714	100	716
					715		
Button. Wire	S. A. Foster	709,537	Sept. 23	3005	669	100	2646
Buttonhole-cutter	L. F. Monck	705,945	July 29	5052	1100	100	1082
Buttonhole-machine. Automatic stop mechanism for	P. Fabisch	706,646	Aug. 12	1248	276	100	1386
Buttonhole-moistener	E. Puff	704,577	July 15	3273	493	100	490
Cabinet for bookcases, letter-files, &c	F. Tramblay	710,096	Sept. 30	4054	913	100	2875
Cabinet. Machine-bearing	T. Kundtz	709,093	Sept. 16	3096	480	100	2442
Cabinet. Prescription	J. J. Nesmith	710,001	Sept. 30	3897	879	100	2842
Cabinet. Tooth brush and powder	C. T. Price	709,927	Sept. 30	3750	846	100	2811
Cable-clip	H. R. Davis	705,891	July 22	3969	859	100	852
Cable-hanger	S. Du Perow	704,788	July 15	2635	570	100	565
Cable mechanism for hauling loads up inclined surfaces	W. J. Jackman	704,890	July 15	2730	590	100	584
					591		
Cable-rope equalizer	W. H. Beebe	707,816	Aug. 26	3540	798	100	1894
Cable-sleeve	C. M. Earl	707,058	Aug. 12	2011	450	100	1544
Cable-support	J. E. Gamalielson	707,814	Aug. 19	2513	565	100	1666
Cable-testing apparatus	H. W. Fisher	703,777	July 1	737	163	100	148
Cable-track roads. Support for suspended	H. M. Harding	707,228	Aug. 19	2350	527	100	1632
Calcining apparatus. Plaster	A. Lawrence	705,968	Aug. 12	1852	415	100	1511
Calcium carbid. Manufacturing	I. L. Roberts	708,921	Sept. 9	1711		100	2345
Calculating-machine	C. Hamann	703,786	July 1	753	166	100	151
					167		
Calculating-machine	C. Hamann	705,839	July 29	4855	1054	100	1048
Calculating-machine	I. Hultman	706,189	Aug. 5	347	75	100	1187
Calculating-machine	F. S. Baldwin	706,375	Aug. 5	740	161	100	1266
					162		
					163		
Calculating-machine	F. C. Rinsche	709,244	Sept. 16	2381	539	100	2501
Calculating-machine	A. C. Schuman	709,362	Sept. 16	2607	587	100	2551
					588		
Calculating-machine	A. C. Schuman	709,365	Sept. 16	2625	591	100	2556
Calculating-machine dating attachment	A. C. Schuman	709,364	Sept. 16	2623	590	100	2556
					591		
Calculator	E. W. Sibley	707,032	Aug. 26	3174	714	100	1821
					715		
					716		
Calendar	C. L. Post	704,208	July 8	1580	341	100	331
Calendar	W. C. Norman	709,338	Sept. 16	2582	582	100	2544
Calendar. Collection	E. O. Peterson	705,607	July 29	4449	965	100	961
Calipers. Micrometer	J. T. Slocomb	708,981	Sept. 9	1725	398	100	2347
Calk-cutting machine	F. E. Seagren	708,925	Sept. 9	1715	396	100	2346
Cam mechanism	G. B. Petsche	705,701	July 22	4021	1002	100	994
Camera	C. E. Hutchings	704,334	July 8	1797	392	100	377
Camera	H. W. Locke	704,845	July 15	2755	596	100	589
Camera	A. H. Rietzschel	705,445	July 22	4064	883	100	673
Camera	H. W. Locke	708,731	Sept. 9	1707	298	100	2256
					299		
Camera attachment	J. L. Jackson	703,461	July 1	101	22	100	28
Camera attachment. Photographic	J. A. Robertson and C. E. Hutchings	704,378	July 8	1894	410	100	400
Camera focusing-hood. Photographic	H. C. Happold	703,655	July 1	513	115	100	101
Camera. Folding magazine hand	E. H. Morse	709,995	Sept. 30	3886	877	100	2840
					876		
Camera. Folding stereoscopic	C. P. Goerz	709,480	Sept. 23	2891	645	100	2622
					646		
Camera for producing and viewing images in natural colors. Photographic	E. T. Butler	708,705	Sept. 9	1468	283	100	2298
Camera. Magazine	C. E. Hutchings, J. A. Robertson, and A. Mutschler	705,406	July 22	3996	865	100	858
					866		
Camera. Magazine	W. G. Perks and H. G. M. Fletcher	707,156	Aug. 19	2310	495	100	1608
Camera. Panoramic hand	N. Conti	704,498	July 8	1990	438	100	419
Camera. Photographic	A. Vautier	704,858	July 1	880	195	100	178
Camera. Photographic	C. E. Hutchings	704,395	July 8	1800	398	100	378
Camera. Photographic	H. F. Purser	704,370	July 8	1878	407	100	396
Camera. Photographic	H. W. Hales	707,219	Aug. 19	2588	567	100	1668
					568		
Camera. Roll-holding	J. G. Browning	706,216	Aug. 5	407	87	100	1190
Camera. Roll-holding	W. Louden	706,345	Aug. 5	465	99	100	1210
Camera-stand. Adjustable	J. H. Smith	709,612	Sept. 23	3128	697	100	2671
Camera-support	J. R. Stephens	704,666	July 15	2418	522	100	521
Cameras with roll-film magazine. Folding	C. P. Goerz	704,330	July 8	1774	387	100	373
Cameras. Automatic shutter-operating device for photographic	F. Brück	708,998	July 1	965	210	100	198
Camphene. Making	K. Stephan	707,370	Aug. 19	2419	------	100	1647
Camphene. Making	K. Stephan	707,371	Aug. 19	2420	------	100	1648
Can:							
See Dispensing-can.							
Garbage or refuse can.							
Ice-can.							
Ice-cream can.							
Metal can.							
Milk-can.							
Oil-can.							
Sheet-metal can.							
Tin sealing-wax can.							
Can	J. H. Kuechenmeister	709,017	Sept. 16	1982	441	100	2404
Can and attaching a label thereto	T. C. Booth	706,585	Aug. 12	1295	272	100	1390
Can-body-forming machine	W. S. Case	704,173	July 8	1517	325	100	319
					326		
Can-body-forming machine	J. G. Hodgson	704,700	July 15	2473	534	100	533

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Can-dipping machine	L. Harrington	707,909	Aug. 26	3831	861	100	1950
Can ending or heading machine	J. G. Hodgson and H. N. Norton	704,255	July 8	1658	359	100	346
					360		
Can-head-delivering apparatus	H. N. Norton	704,266	July 8	1678	365	100	352
					366		
Can-opener	M. L. Hawks	706,628	Aug. 12	1595	350	100	1430
Can-opener	J. Chisholm	707,307	Aug. 19	2311	515	100	1626
Can-opener	J. W. Pierce	707,353	Aug. 19	2389	535	100	1641
Can-opener	M. E. Duncan	707,560	Aug. 26	2979	672	100	1781
Can-opener	M. E. Duncan	707,561	Aug. 26	2980	673	100	1781
Can-opener	C. T. Custer	708,901	Sept. 9	1471	336	100	2295
Can-opener	G. E. Woodbury	704,421	July 8	1960	426	100	412
Can or jar cover attachment. Fruit	J. A. Swanson	705,160	July 22	3452	751	100	748
Can spout. Oil	H. N. Norton	704,267	July 8	1679	366	100	352
Can-testing machine	W. H. H. Stevenson	704,278	July 8	1708	371	100	358
					372		
Can-testing machine	G. F. Leiger	704,480	July 8	2085	453	100	428
Can-washer	F. T. Pierce and A. E. Kuchenbecker	705,133	July 22	3398	738	100	737
Can wrench. Fruit	W. F. Kerr	708,149	Sept. 2	279	66	100	2089
Cans. Measuring and discharging apparatus for filling	J. McGinnity	709,798	Sept. 23	3466	781	100	2740
Canning apparatus	J. T. Garner	704,679	July 15	2435	526	100	525
Canning food products	J. G. Hodgson	704,258	July 8	1968	363	100	350
Candle-making machine	A. R. Peck	705,249	July 22	3741	813	100	806
Candle shield and drip-catcher	H. S. Nagengast	708,809	July 1	798	176	100	160
Candy-coating device	P. Panoulias	707,864	Aug. 26	3636	890	100	1911
Candy-cooler	G. S. Collum	709,199	Sept. 16	2167	497	100	2458
Candy-dipping machine	F. Goldschmidt	704,248	July 8	1640	356	100	343
Cane	A. Sjoberg	706,501	Aug. 5	992	218	100	1317
Cane	J. S. Judy	709,095	Sept. 16	2090	479	100	2441
Cane	J. A. Ekelund	706,225	Aug. 5	432	92	100	1204
Cane and fishpole. Combined	J. H. N. Wilson	706,481	Aug. 5	960	209	100	1310
					210		
Cane, &c. Device for cutting sugar	J. H. Fox	704,310	July 8	1755	383	100	369
Cane. Magazine torpedo	J. B. Allen	709,457	Sept. 23	2824	634	100	2607
Cane. Magazine torpedo	J. M. Dodge	705,393	July 22	3971	860	100	852
Cane-sling	E. W. Holdsombeck	708,417	July 1	95	20	100	22
Cane-stripper	T. A. Dutton	707,091	Aug. 19	2088	466	100	1576
Cane stripper. Sugar	W. C. Gregg	708,634	Sept. 9	1132	255	100	2229
					256		
Cannon. Automatic range-finding sight for	I. N. Lewis	706,767	Aug. 12	1492	330	100	1437
					331		
					332		
Canopy	E. G. Burland	706,722	Aug. 12	1385	308	100	1415
Canopy	F. C. Winants	707,483	Aug. 19	2612	636	100	1729
Canopy for vehicles. Folding	W. J. Slyder	706,605	Aug. 12	1177	261	100	1369
Canopy. Horse	A. J. Mapes	705,370	July 22	3989	853	100	845
Cant-hook clasps. Die for making	O. Rudd	706,691	Aug. 12	1396	297	100	1405
Canteen	A. Hall	703,654	July 1	511	115	100	100
Canteen	G. M. Spencer	707,878	Aug. 26	3651	822	100	1914
Canteen. Army	T. Kearns and I. C. Coin	704,686	July 15	3446	528	100	527
Cap	J. E. McLoughlin	708,606	July 1	407	95	100	81
Cap. Apparel	C. W. Gordon	705,068	July 22	3258	705	100	709
Capping-machine. Electromagnetic	L. J. Borie	708,952	July 1	1057	230	100	210
Car and elevating track. Automatic	W. L. McLaughlin and J. E. Swenson	708,395	Sept. 2	692	156	100	2122
Car and railway indicator. Street	W. W. Harris and W. D. Chew	705,235	July 22	3686	787	100	786
					788		
Car-axles. Means for driving generators by power taken from	J. L. Creveling	709,847	Sept. 23	3565	804	100	2761
Car. Ballast-spreading	W. R. Scott	707,649	Aug. 26	3164	711	100	1819
					712		
					713		
Car body-bolster	G. G. Floyd	706,647	Aug. 12	1351	276	100	1387
Car body-bolster	J. V. McAdam	706,660	Aug. 12	1317	291	100	1401
Car-bolster	H. C. Buhoup	708,379	July 1	29	6	100	8
Car-bolster	G. P. Ritter	708,609	July 1	412	96, 97	100	88
Car-bolsters. Swinging spring-seat for	C. T. Westlake	704,997	July 15	3116	671	100	664
Car. Box	J. R. Kilbourne	709,330	Sept. 16	2544	572	100	2536
Car-brake	F. W. Rock	708,614	July 1	422	98	100	84
Car-brake	J. Plattenburg	708,618	July 1	894	181	100	165
					182		
Car-brake	F. O. Brown and E. T. Moore	704,506	July 15	2138	458	100	463
Car-brake	A. Broluska	705,098	July 22	3179	687	100	694
Car-brake	J. R. Montague	705,946	July 29	5054	1100	100	1092
					1101		
Car-brake	R. E. Lockwood	706,672	Aug. 12	1304	267	100	1398
					268		
Car-brake	W. House	707,231	Aug. 19	2547	574	100	1674
Car-brake	J. H. De May and F. Hoyland, Jr	709,884	Sept. 30	3678	828	100	2795
Car-brake	G. M. Griggs	709,961	Sept. 30	3867	870	100	2836
					871		
Car-brake. Automatic	A. W. Reed	706,459	Aug. 5	915	198	100	1300
Car-brake mechanism	G. E. Burgess	704,508	July 15	2142	464	100	464
Car-brake mechanism	A. W. Vollstorf	706,284	Aug. 5	568	128	100	1230
Car-brake. Momentum	T. E. McCollum	709,923	Sept. 30	3744	843	100	2810
Car-brake. Ratchet	H. Witte	704,227	July 8	1619	349	100	337
Car center-bearing. Railway	F. Ditchfield	709,755	Sept. 23	3391	761	100	2733
Car check-lock. Mine	L. J. Joder	704,882	July 15	2735	591	100	583
Car chock. Railway	A. D. Faulkner	708,906	July 1	963	214	100	196
Car construction	H. C. Hodges and G. A. Blume	704,905	July 15	3051	655	100	652
					656		
Car. Convertible	H. Romünder	707,018	Aug. 12	1942	434	100	1530
					435		

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car. Convertible railway-	J. A. Brill and E. S. Bucknam	709,073	Sept. 16	2025	464	100	2428
					465		
Car. Convertible railway-	E. S. Bucknam	709,075	Sept. 16	2041	466	100	2430
Car. Convertible railway-	E. S. Bucknam	709,076	Sept. 16	2043	466	100	2430
					467		
Car-coupling	J. B. Genin	708,309	July 1	65	13	100	15
Car-coupling	J. W. Smith	708,489	July 1	199	48	100	42
Car-coupling	J. B. Thomas	704,223	July 8	1604	347	100	835
Car-coupling	J. B. Thomas	704,489	July 8	2102	456	100	442
Car-coupling	H. H. Marshall	704,888	July 15	2834	613	100	907
Car-coupling	J. L. Sutherland	706,210	Aug. 5	358	85	100	1198
Car-coupling	W. H. Stillwell	706,273	Aug. 5	545	117	100	1226
Car-coupling	E. Foster	706,405	Aug. 5	811	177	100	1278
Car-coupling	P. Hien	707,106	Aug. 19	2125	474	100	1585
Car-coupling	J. E. Wade	708,274	Sept. 2	517	117	100	2095
					118		
Car-coupling	J. E. Wade	708,275	Sept. 2	519	118	100	2097
Car-coupling	T. F. Melanson	708,571	Sept. 9	1024	231	100	2260
Car-coupling	C. A. Tower	708,598	Sept. 9	1222	280	100	2240
Car-coupling	B. O. Yearwood	708,600	Sept. 9	1244	285	100	2244
Car-coupling	G. Westinghouse	708,747	Sept. 9	1850	308	100	2268
					309		
Car-coupling	W. S. Lennon	709,338	Sept. 16	2559	575	100	2540
					576		
Car-coupling	A. B. Carter	709,468	Sept. 23	2847	639	100	2611
					640		
Car-coupling	W. T. Seanor and E. M. Kepple	709,685	Sept. 23	3256	730	100	2686
Car-coupling	D. J. Davis	710,256	Sept. 30	4387	986	100	2946
					987		
Car-coupling	W. S. Lennon	710,283	Sept. 30	4430	998	100	2956
Car-coupling	W. Thornburgh	706,360	Aug. 5	707	154	100	1259
Car-coupling attachments. Spring-protecting device for railway-	G. A. Hermanson	706,236	Aug. 5	449	95	100	1206
Car-coupling. Automatic	J. M. Stanley	707,209	Aug. 19	2416	541	100	1647
Car-coupling. Automatic	A. A. Rosengrén	707,734	Aug. 26	3313	741	100	1849
Car-coupling. Automatic	S. Cox and G. W. Warden	708,206	Sept. 2	394	91	100	2062
Car-coupling. Automatic	J. A. Hinson	709,404	Sept. 16	2704	607	100	2569
Car-coupling draft-rigging. Railway-	E. D. Peppers	706,449	Aug. 5	910	197	100	1300
Car-door	F. G. Susemihl	708,843	Sept. 9	1564	357	100	2313
Car-door	S. J. Johnson	709,269	Sept. 16	2429	550	100	2511
					551		
Car-door	S. J. Johnson	709,270	Sept. 16	2433	551	100	2512
Car-door	G. Krygoski and E. A. Lowrie	708,366	Sept. 2	665	150	100	2116
Car-door fitting	G. Krygoski and E. A. Lowrie	708,367	Sept. 2	666	150	100	2116
Car-door fitting	K. Osel	708,914	Sept. 9	1700	392	100	2342
Car door. Flush	G. Stirrett	709,267	Sept. 16	2387	540	100	2535
Car door. Grain	A. L. Hook	709,325	Sept. 16	2537	571	100	2535
Car door. Grain	E. J. Müller	707,342	Aug. 19	2565	578	100	1677
Car-door mechanism	J. Simonton	707,450	Aug. 19	2768	627	100	1720
					628		
Car-door-operating device	W. E. Sharp	704,709	July 15	2495	536	100	536
					537		
Car. Double-deck	W. G. Swan	704,716	July 15	2500	541	100	538
Car draft-rigging	J. A. Hinson	704,802	July 15	2678	578	100	573
					579		
Car draft-rigging	J. M. Waugh	705,172	July 22	3474	756	100	753
Car draft-rigging. Railway-	E. W. Samen	709,361	Sept. 16	2605	586	100	2550
Car draft spring-rigging. Railway-	E. M. Ray and R. B. McConney	704,578	July 15	2273	493	100	490
					494		
Car. Dump-	F. S. Ingoldsby	706,662	Aug. 12	1282	283	100	1302
Car. Dump-	F. S. Ingoldsby	706,663	Aug. 12	1284	283	100	1303
Car. Dumping-	F. Peteler	706,254	Aug. 5	485	103	100	1215
					104		
Car end panel and seat-post. Open-	J. Seeberger	709,516	Sept. 23	2972	662	100	2639
Car fans and ventilators. Pneumatic motor for	C. A. Evans	705,830	July 29	4840	1051	100	1040
Car-fender	J. T. Hodgins	704,461	July 8	2046	443	100	430
Car-fender	E. A. Booser	704,776	July 15	2613	566	100	561
Car-fender	J. W. Wehmeyer	705,286	July 29	4946	1075	100	1060
Car-fender	C. Giblin	705,918	July 29	5004	1089	100	1072
Car-fender	A. M. Ferguson and J. A. U. Beaudry	706,041	Aug. 5	78	17	100	1133
Car-fender	O. M. Prouse	706,951	Aug. 12	1653	370	100	1473
Car-fender	E. C. Moulton	708,999	Sept. 9	1679	367	100	2338
Car-fender	J. H. Lutter	709,991	Sept. 30	3980	875	100	2858
Car-fender	J. Bauer	705,814	July 29	4819	1046	100	1035
Car fender or guard. Tramway-	E. F. Cannon	703,536	July 1	227	56	100	58
Car fender. Street-	C. T. Stoelting	704,141	July 8	1467	314	100	308
Car fender. Street-	C. Zimmerman	704,166	July 8	1504	322	100	316
Car fender. Street-	H. J. Schuldt	705,150	July 22	3435	746	100	745
					747		
Car fender. Street-	O. Spillern-Spitzer	705,466	July 22	4105	892	100	891
Car fender. Street-	O. Olsen	705,788	July 29	4763	1033	100	1025
Car. Freight-	H. R. Keithley	703,659	July 1	520	117	100	102
					118		
Car. Freight-	H. S. Godfrey	709,009	Sept. 16	1900	435	100	2400
					436		
Car friction draw-gear and buffing apparatus. Railway-	S. P. Bush	707,820	Aug. 26	3548	800	100	1896
					801		
Car gates. Means for operating railway-	E. E. Gold	709,261	Sept. 16	2410	546	100	2508
Car. Gondola	A. B. Bellows	710,175	Sept. 30	4239	956	100	2914
Car. Gondola	A. B. Bellows	710,176	Sept. 30	4240	956	100	2914
Car grain-door	T. N. Bon Durant	708,017	Sept. 2	28	7	100	1986
Car grain-door	L. A. Hoerr	708,486	Sept. 23	2902	648	100	2625
Car grain-door. Railway-box-	J. W. Wood	708,626	Aug. 12	1213	269	100	1377
Car guard device. Coupled-	J. Eisenmann	709,145	Sept. 16	2176	498	100	2450
Car guard-gate. Railway-	H. Witte	704,298	July 8	1613	349	100	337
Car guard-rail. Street-	W. S. Bradley	704,432	July 8	1979	431	100	416

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Car. Hand-	J. R. Roach	709,175	Sept. 16	2241	509	100	2471
Car-haul	S. W. Bollinger	707,200	Aug. 19	2300	514	100	1633
Car-haul	A. M. Acklin	709,691	Sept. 23	3266	732	100	2699
Car-heating apparatus. Railway-	J. Q. C. Searle	707,361	Aug. 19	2503	586	100	1684
Car-heating system	E. H. Gold	707,964	Aug. 26	3320	859	100	1948
Car-lighting. Generating apparatus for	A. F. Madden	705,854	July 29	4888	1093	100	1049
Car-lighting system. Combined electric and gas	J. L. Creveling	704,695	July 15	2463	532	100	530
Car-loader	J. L. Roberts	708,473	July 1	177	41	100	37
Car. Mail-	P. J. Farrell	709,894	Sept. 30	3690	888	100	2798
Car. Metallic railway-	R. H. Hornbrook and W. H. Woodcock.	707,416	Aug. 19	2702	611	100	1706
					612		
Car. Motor-	W. C. Holloway	705,402	July 22	3089	864	100	856
Car-mover	C. D. Fox	704,870	July 15	2799	606	100	599
Car-mover	H. C. Harrington and W. M. Towers	709,765	Sept. 23	3415	767	100	2729
Car or engine replacer	F. J. Fewings	706,542	Aug. 12	1065	234	100	1346
					235		
Car. Passenger-	J. M. Osgood	705,432	July 22	4044	876	100	869
Car. Platform-	H. F. Vogel and M. Weber	709,249	Sept. 16	2393	541	100	2504
Car-platforms. Trap-door for	J. G. Lawler	706,853	Aug. 12	1617	363	100	1465
Car. Railway-	G. W. Chipley	707,902	Aug. 19	2488	558	100	1692
					559		
Car. Railway-	S. H. Ellis	710,048	Sept. 30	3977	897	100	2859
Car-record device	J. R. Cavanagh, J. B. Hannan, and J. D. Clarke.	709,394	Sept. 16	2667	603	100	2566
Car rigging or draft appliance. Railway	S. H. Jansen	708,491	Sept. 2	865	197	100	2157
Car-roof	A. W. Wilcox	705,898	July 29	4949	1077	100	1061
Car-seat	H. S. Hale	705,075	July 22	3267	707	100	711
Car-seat ticket-holder	G. H. Roberts, Sr.	709,608	Sept. 23	3122	695	100	2670
Car seats and seat-post with which it connects. End panel for open-	J. Seeberger	709,517	Sept. 23	2973	663	100	2639
Car side bearing. Railway-	C. F. Huntoon	704,044	July 8	1246	268	100	202
					269		
Car side bearing. Railway-	S. Northrop and A. G. Steinbrenner	704,088	July 8	1335	291	100	279
Car side-guard	J. H. Donnelly	708,209	Sept. 2	398	92	100	2063
Car-standard	E. O. and M. L. Bradley	705,200	July 22	3533	766	100	766
Car. Steel box-	J. R. Kilbourne	709,329	Sept. 16	2543	572	100	2530
Car. Steel gondola	A. B. Bellows	710,177	Sept. 30	4241	956	100	2914
Car-step attachment	J. H. Fassett and J. E. Warren	708,181	Sept. 2	247	58	100	2033
Car. Stock-	W. Cline	709,506	Sept. 23	3102	691	100	2666
					692		
Car street-indicator. Railway-	C. E. Morgan	709,236	Sept. 16	2368	536	100	2497
Car street-indicator. Street-	J. F. Richardson	708,832	Sept. 9	1541	353	100	2308
Car. Tramway-	A. Maurer	704,067	July 8	1292	280	100	272
Car-uncoupling means	J. Groobey	709,707	Sept. 23	3292	738	100	2704
Car-uncoupling mechanism	J. A. Chubb	707,048	Aug. 12	1991	447	100	1540
Car-uncoupling mechanism. Railway-	G. Groobey	709,706	Sept. 23	3290	738	100	2704
Car-uncoupling mechanism. Railway-	G. Groobey and S. P. Bush	709,708	Sept. 23	3293	739	100	2705
Car underframe. Railway-	H. R. Keithley	707,702	Aug. 26	3274	732	100	1842
Car vestibules. Safety attachment for trolley-	S. E. Pressler	705,705	July 29	4928	1093	100	995
Car-wheel	G. B. Farrell	708,565	July 1	340	77	100	58
Car-wheel	M. T. Davis, Jr	706,906	Aug. 12	1754	392	100	1498
Car-wheel	G. Killian	707,120	Aug. 19	2139	478	100	1599
Car-wheel	E. S. Jennings	708,047	Sept. 2	96	22	100	2001
Car-wheel	F. E. Crandal	709,308	Sept. 16	2308	524	100	2495
Car-wheel-forging apparatus	A. N. Cameron	708,584	July 1	383	85	100	57
Car-wheel-holding device	E. C. Deakin	704,474	July 8	2071	448	100	436
Car-wheels. Manufacture of	J. W. Morgan, Jr	709,446	Sept. 16	2781	626	100	2586
Cars. Combined grain-door and loading and unloading platform for box-	J. S. Bender	708,800	Sept. 2	561	127	100	2096
Cars. Device for connecting the electrical gear of electric	A. Siemens	708,927	Sept. 9	1720	397	100	2346
Cars. Device for securing or releasing trap-floors for ore-	J. J. Galway	706,312	Aug. 5	622	136	100	1241
Cars. Emergency-brake for tramway-	C. Real	708,784	Sept. 9	1329	308	100	2263
Cars. Friction draft-rigging for railway-	J. J. Hennessey	708,550	Sept. 9	987	228	100	2192
Cars. Hand-strap for street-railway-	M. Straus	704,143	July 8	1470	315	100	308
Cars. Metallic hood for vestibules of	J. M. Knaus	706,424	Aug. 5	851	186	100	1265
					187		
Cars. Pivoted rocker-bearing center-plate for railway-	C. M. Thompson	709,564	Sept. 23	3048	679	100	2654
Cars, &c. Step for	C. W. Keyler and A. Matz	708,051	Sept. 2	101	24	100	2008
Carbid-holder	F. Simonson	707,027	Aug. 12	1957	439	100	1592
Carbon-black-making apparatus	J. H. Mann	706,430	Aug. 5	867	189	100	1290
Carbons for arc-lamps. Manufacture of	C. S. Boehm	703,092	July 1	295		100	118
Carbonating apparatus. Liquid-	A. Ruif	705,115	Aug. 5	209	43	100	1159
Carbonating liquids	P. E. Malmstrom	710,110	Sept. 30	4105	926	100	2915
					927		
Carbonator	G. A. Flesche, H. A. Hall, and J. Doherty.	705,661	July 29	4540	986	100	980
Carbonizing apparatus	G. W. Curtiss	709,966	Sept. 30	3839	864	100	2880
Carbonizing apparatus	G. W. Curtiss	709,967	Sept. 30	3843	864	100	2881
					865		
Carbonizing organic materials	O. Daube	705,213	July 22	3576	773	100	775
					774		
Carborundum articles and making same	F. J. Tone	709,808	Sept. 23	3498		100	2746
Carbureter	J. W. Kitten	703,794	July 1	776	170	100	155
					171		
Carbureter	W. S. Head and G. J. Dovey	704,084	July 8	1381	305	100	280
Carbureter	J. F. Bennett and H. S. Moorwood	705,021	July 22	3170	695	100	692
Carbureter	F. C. Blake	705,314	July 22	3501	824	100	819
Carbureter	C. Robinson	706,454	Aug. 5	917	199	100	1301
Carbureter	J. Rush	706,600	Aug. 12	1165	258	100	1367
Carbureter	E. Walther	707,467	Aug. 19	2785	631	100	1734
Carbureter	W. F. Betzel	707,897	Aug. 26	3705	838	100	1926
Carbureter	T. H. J. Leckband	707,978	Aug. 26	3840	862	100	1962

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Carbureter	F. Paul, Jr., and A. F. Gundlach	706,896	Sept. 9	1529	350	100	2205
Carbureter	A. M. Rosenberry	709,647	Sept. 23	3185	711	100	3682
Carbureter	T. J. Forde	709,703	Sept. 23	3285	736	100	3708
Carbureter	E. Bouchaud-Praceiq	709,855	Sept. 30	3510	816	100	3794
Carbureter	G. A. Graves	705,995	July 29	5136	1130	100	1100
Carbureter for explosive-engines	R. C. Marks	710,330	Sept. 30	4510	1016	100	3973
Carbureter for explosive-engines	J. Gibson	706,579	July 29	4289	952	100	949
Card. Educational	W. Lumley	706,894	Aug. 12	1625	365	100	1467
Card list or index	B. H. Sharp	706,808	Aug. 12	1173	260	100	1359
Cards. Game-	J. Fossel	708,645	July 1	491	111	100	97
Carding-engine flats. Mechanism for grinding	W. H. Hoyle and T. Barker	708,046	Sept. 2	95	22	100	2001
Carding-machine	H. A. Owen	708,250	Sept. 2	468	107	100	2077
Carding-machine	H. Gilljam	709,980	Sept. 30	3865	870	100	2885
Carding-machines. Combined stop and alarm mechanism for	J. W. Scott	706,261	Aug. 5	498	105 / 107	100	1217
Carpenter's tool	M. F. Doyle	707,807	Aug. 19	2497	561	100	1664
Carpet-cleaning device	E. C. Stentz	709,125	Sept. 16	2130	468	100	2450
Carpet-cleaning machine	J. C. Brady	706,892	Aug. 12	1731	386 / 387	100	1488
Carpet securer. Stair-	W. Kernochan	707,848	Aug. 26	3614	815	100	1907
Carpet-stretcher	M. E. Shinn	708,974	Sept. 9	1823	420	100	2366
Carpet-sweeper	J. Barnes, R. W. and W. H. Kenyon	708,614	Sept. 9	1101	247	100	2215
Carpet-sweeper roller-bearing	F. C. Mason	709,444	Sept. 16	2778	625	100	2585
Carpet. Wood	C. A. Stille and S. Billings	708,842	Sept. 9	1562	357	100	2313
Carriage and rocker. Combined baby	J. C. Pender	706,445	Aug. 5	909	197	100	1299
Carriage flue construction. Steam-	J. H. Bullard	708,460	Sept. 2	832	190	100	2150
Carriage. Folding baby-	A. G. Green	707,772	Aug. 26	3448	777	100	1876
Carriage foot-rest	R. Thompson	706,859	Aug. 5	706	153	100	1259
Carriage top and curtain	W. B. Glessner	707,915	Aug. 26	3796	857	100	1932
Carriage-top backstay	R. C. Schemmel	704,384	July 8	1903	412	100	402
Carriages. Feed-pump and connection for horseless	J. C. Blevney	707,079	Aug. 19	2667	461	100	1573
Carrier: *See* Book or parcel carrier. Brick-carrier. Hoisting-bucket carrier. Ice-carrier. Luggage-carrier. Mail-carrier. Package-carrier. Shade-carrier. Suspended carrier.							
Carrier	J. G. Cofman	705,988	July 22	3956	857	100	849
Carrying and transferring device	J. H. Sinnott	708,566	Sept. 9	1061	241	100	2207
Carrying device	J. Moeller	707,610	Aug. 26	3081	698	100	1802
Cart and insect-catcher. Combined road-	M. B. Gooing	707,955	Aug. 26	3822	859	100	1949
Cart. Ash-	W. Schaller	707,163	Aug. 19	2254	499	100	1604
Cart. Dog-	F. and W. Knöbel	708,427	July 1	110	24	100	25
Cart. Hand-	B. Butler	704,612	July 15	2328	505 / 506	100	502
Cart or wagon. Dumping	W. Leonhardt	709,716	Sept. 23	3308	742	100	2706
Carton. Collapsible	C. H. Russell	704,380	July 8	1808	411	100	401
Cartridge	R. W. Scott	708,899	July 1	854	188	100	171
Cartridge	G. Müller	705,940	July 29	5080	1102	100	1084
Cartridge. Gun-	R. W. Scott	708,840	July 1	857	188	100	171
Cartridge holder. Blank-	M. J. Shimer	707,026	Aug. 12	1955	438	100	1582
Cartridge. Ordnance-	A. Wratzke	708,879	July 1	929	203	100	186
Cartridge shell-base	A. T. Duncan	707,681	Aug. 26	3228	725	100	1882
Cartridge-shell-gaging machine	P. Butler	708,123	Sept. 2	294	53, 54	100	2088
Case: *See* Banana-shipping case. Coin-case. Display-case. Egg-case. Finger-straightening case. Packing-case. Pencil-case. Photographic developing-case. Sample-case. Show-case. Spectacle or eyeglass case. Watchcase.							
Cash-register	A. Gerdes	708,570	July 1	344	78	100	69
Cash-register	T. Carroll	708,689	July 1	475	108 / 109 / 110	100	98
Cash-register	H. S. Hallwood	704,796	July 15	2658	574 / 575 / 576	100	570
Cash-register	O. W. Hunsaker	705,858	July 22	3906	846 / 847	100	840
Cash-register	W. H. Bell	705,559	July 29	4346	940	100	940
Cash-register	E. S. Smith and C. A. Susstrong	706,619	July 29	4467	966 / 969	100	964
Cash-register	F. B. Barnard	707,195	Aug. 19	2890	512 / 513	100	1681
Cash-register	F. H. Bickford	707,880	Aug. 19	2987	568	100	1691
Cash-register	G. S. Green	707,408	Aug. 19	2683	606	100	1708
Cash-register	A. L. Wood	708,190	Sept. 2	256	65, 66	100	2055
Cash-register	P. Yoe	708,449	Sept. 2	802	182 / 183 / 184	100	2143
Cash register and indicator	H. S. Hallwood	704,795	July 15	2646	572 / 573 / 574	100	568
Cash register and till	A. G. Macculloch and H. Dickinson	705,894	Sept. 9	1666	383 / 384	100	2235
Cash-register keyboard mechanism	I. S. Dement and F. J. Hull	710,258	Sept. 30	4260	957 / 958	100	2947
Cash-registers. Locking device for the operating-cranks of	C. Laurick	707,608	Aug. 26	3068	690	100	1798
Cashing sales accounts. Means for	F. E. Anderson	704,168	July 8	1508	322 / 323	100	317

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Casing-head	C. F. Rigby	703,832	July 1	842	185	100	169
Cask-closing means	J. J. Henningsen	704,329	July 8	1790	391	100	376
Casks, barrels, or like vessels. Apparatus for lining	H. S. Russell	707,260	Aug. 19	2398	587 / 588	100	1643
Casket. Adjustable couch-	J. Ernst	706,398	Aug. 5	800	174	100	1276
Casket-lowering device	H. B. Murdock	708,949	July 1	1054	229	100	210
Cast-off	E. T. Specht	705,622	July 29	4472	970	100	955
Caster	W. J. Sumner	706,299	Aug. 5	597	85	100	1198
Caster	D. Nickel	706,336	Aug. 5	666	145	100	1250
Caster	D. Nickel and P. B. Peterson	706,337	Aug. 5	668	145	100	1250
Caster	W. J. Martin	708,204	Sept. 2	391	91	100	2061
Caster. Furniture-	P. Meehan	708,895	Sept. 9	1671	384	100	2336
Casting apparatus	D. T. Croxton. (Reissue)	706,841	Aug. 12	1629	366	100	1468
Casting apparatus	D. T. and S. W. Croxton. (Reissue)	12,027	Sept. 2	923	210	100	2169
Casting apparatus	E. D. Tucker	12,028	Sept. 9	1831	422	100	2328
Casting-box	J. O. E. Trotz	709,942	Sept. 30	3776	853	100	2816
Casting ingots in continuous long lengths. Apparatus for	J. M. Hartman	705,721	July 29	4657	1010	100	1002
Casting pig metal. Mold-coating for apparatus for	C. T. Westlake	709,672	Sept. 23	3231	722	100	2692
Casting. Truck-end	A. W. McClary	706,789	Aug. 12	1587	345	100	1446
Castings. Annealing-receptacle for	J. F. James and R. M. Kippen	708,384	Sept. 2	689	155	100	2121
Catamenial bandage	E. L. Scott	709,223	Sept. 16	2330	528	100	2491
Catamenial bandages. Suspending device for	M. M. Spaulding	706,457	Aug. 5	922	200	100	1302
Catamenial sack	D. W. McClay	708,963	Sept. 9	1727	400	100	2348
Catch	W. W. Harris	708,903	Sept. 9	1685	388	100	2340
Catheter. Embalming-	M. L. Miller	707,775	Aug. 26	3457	778	100	1878
Cattle-guard	W. B. Batchelier	709,105	Sept. 16	2105	483	100	2444
Cautery. Electric instrument for	A. H. Muus	708,369	July 1	10	3	100	4
Ceiling-plate attachment	F. Hennebique	704,562	July 15	2252	488	100	486
Ceiling structure composed of beton and iron	L. Doppelmayr and M. Weber	707,984	Aug. 26	3755	842	100	1937
Celery-bunching device	B. W. Boesch	706,643	Aug. 12	1244	275	100	1385
Cellulose acetate. Making	H. S. Mork, A. D. Little, and W. H. Walker.	708,456	Sept. 2	823	.....	100	2148
Cellulose esters. Making	B. W. Boesch	709,922	Sept. 30	3742	.....	100	2810
Cellulose esters. Purifying	A. J. Hill	708,457	Sept. 2	824	.....	100	2148
Cellulose fabrics. Manufacturing improved	M. Fremery and J. Urban	705,944	July 22	3951	.....	100	780
Cellulose products. Manufacture of	J. T. McKim	705,748	July 22	4709	.....	100	1011
Cement	J. T. Slough	704,849	July 15	2764	.....	100	592
Cement. Adhesive	E. Davies	709,651	Sept. 23	3192	.....	100	2688
Cement fence-posts. Making	R. Pintsch	708,644	July 1	490	111	100	96
Centrifugal coupling	A. Holland	704,575	July 15	2270	492	100	490
Centrifugal machine	H. de Raasloff	708,738	July 1	655	145	100	181
Centrifugal machine	A. Ten Winkel	707,521	Aug. 19	2984	653	100	1745
Centrifugal separator	C. Friesleben	708,630	July 1	459	105	100	90
Centrifugal separator	H. McCornack	705,066	July 22	3224	704	100	708
Centrifugal separator	J. P. Hultgren	706,087	Aug. 5	163	33, 34	100	1150
Centrifugal separator	J. C. Howe	708,643	Sept. 9	1161	264	100	2298
Chain belts. Machine for assembling links in making	J. G. Scott and J. C. Brecker	705,842	July 29	4962	1056	100	1044
Chain. Conveyer-	C. W. Levalley	708,924	Sept. 9	1714	396	100	2345
Chain. Drive-	A. H. Grandjean and E. J. Bouvier	708,427	Aug. 5	856	188	100	1287
Chain. Driving-	J. Girlot	709,149	Sept. 16	2180	499	100	2460
Chain-making apparatus	L. Wirtz	704,185	July 8	1545	333	100	324
Chain-making machine	M. T. A. Kubierschky	707,750	Aug. 26	3401	767 / 768	100	1866
Chains or other traction means. Automatic tension device for	S. Smith	706,962	Aug. 12	1847	413	100	1510
Chains, &c. Temporary coupling for	J. O'Connor	708,843	July 1	862	189	100	173
Chair: *See* Adjustable chair. Adjustable-back chair. Convertible chair. Folding chair. High chair. Reclining-chair. Rocking-chair. Rotary and folding chair. Window-cleaning chair.							
Chair	A. M. Richards	708,911	Sept. 9	1695	390	100	2341
Chair attachment	A. Gruenwald	704,109	July 8	1292	300	100	298
Chair-brace	E. O. M. Habernacker	704,187	July 8	1547	333	100	324
Chair fan attachment. Rocking-	J. S. McKeever	705,890	July 22	3983	862 / 863	100	856
Chair fan attachment. Rocking-	W. D. Grosjean	708,905	Sept. 9	1688	389	100	2340
Chair foot-rest	F. O. Mechlin	710,321	Sept. 30	4495	1018	100	2970
Chairs. Means for cutting saddle-seat bottoms for	F. A. C. Ruts	705,079	Aug. 5	150	31	100	1147
Chalk, &c. Device for holding	P. H. Stedman	708,478	July 1	184	43	100	30
Change-making machine	A. B. Fowler	709,521	Sept. 23	2980	664	100	2641
Channeling-machine	M. R. Hutchison	707,576	Aug. 26	3019	679	100	1788
Charging-switch	H. S. Chandler	707,699	Aug. 26	3269	730	100	1840
Chart. Adjustable	M. L. Avery	708,754	Sept. 9	1367	312	100	2279
Chart. Dress-	J. Ritter	705,194	July 22	3520	764	100	763
Chatelaine-clasp	L. B. Prahar	704,212	July 8	1595	342	100	332
Chatelaine-hook	L. B. Prahar	708,820	July 1	827	182	100	166
Chatelaine-hook	L. B. Prahar	708,821	July 1	829	182	100	166
Chatelaine-hook	L. B. Prahar	708,822	July 1	831	183	100	166
Check-book keeper	T. Albee	707,583	Aug. 26	2926	662	100	1770
Check-lock. Automatic	H. W. Denison	709,141	Sept. 16	2170	497	100	2458
Check-perforating machine	F. Avery	709,458	Sept. 23	2926	634	100	2607
Check-perforator	M. Keane	709,775	Sept. 23	3439	774	100	2734
Check-severing device	F. J. Hull	710,300	Sept. 30	4561	1029	100	2968
Checks, &c. Means for certifying	J. S. Alexander	707,891	Aug. 26	3033	690	100	1823
Checking-machine	F. R. Wainwright	705,494	July 22	4159	905 / 906	100	690
Checkrein	C. B. Henry	704,636	July 15	2364	514	100	509
Checkrein-hook	J. P Ketteringham	709,778	Sept. 23	3443	774	100	2734
Checkreins. Elastic connection for	J. M. Chaffin	707,388	Aug. 19	2644	597	100	1695
Cheese-cutter	F. May	706,328	Aug. 5	653	143	100	1247
Cheese-hoop	E. J. Piggott	706,104	Aug. 5	187	39	100	1155
Cheese. Manufacture of	F. A. Hurd	707,698	Aug. 26	2988	.....	100	1840

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Cheese-marker	J. Wolfinger	707,528	Aug. 19	2900	656	100	1748
Chemical apparatus	R. C. Robinson	706,794	Aug. 12	1528	329	100	1445
Chenille-spotting machine	L. O. Trivett and F. Randall	709,587	Sept. 23	3085	667 688	100	2602
Chenille. Woven	T. F. and A. Naylor	704,083	July 8	1328	289	100	278
Cherries or other single-stoned fruit. Machine for removing stones from	W. P. Harris	704,876	July 15	2809	609	100	601
Child's safety-harness	C. J. Schreck	708,488	July 1	191	46	100	40
Chilian mill	G. F. Waddell and W. J. Evans	709,689	Sept. 23	3260	730 731	100	2697
Chimney or other curved fireproof structure	P. Brandner	709,889	Sept. 30	3515	817	100	2785
Chimney-top	C. J. Quinn	706,450	Aug. 5	912	198	100	1300
Chisel. Bush-	J. W. McClure	705,980	July 1	1056	229	100	210
Chlorin and alkali. Electrolytic apparatus for the production of	J. Mactear	705,814	July 22	3700	802	100	797
Chocolate coating or dipping machine	G. J. Hicks	707,777	Aug. 26	3459	779 780 781	100	1878
Chopper: *See* Cotton-chopper. Stalk-chopper. Meat-chopper.							
Christmas-tree holder	F. H. Crum	708,554	July 1	321	72	100	65
Chuck	C. H. Reid	708,735	Sept. 9	1330	303	100	2264
Chuck. Bur-	T. R. Tierce	706,703	Aug. 12	1349	301	100	1408
Chuck. Drill-	A. I. Jacobs	709,014	Sept. 16	1919	440	100	2404
Chuck. Drill-	A. J. Studnicka	709,061	Sept. 16	2013	459	100	2423
Chuck. Rock-drill	M. McHale and J. Trainner	704,081	July 8	1326	289	100	278
Churn	J. Dempster and W. S. Bradley	705,219	July 22	3567	776	100	1123
Churn	A. Close	706,023	Aug. 5	35	7	100	1123
Churn	J. B. Riggins and H. Gordan	708,665	Sept. 9	1199	273	100	2235
Churn	A. Mitchell	709,497	Sept. 23	2917	650 651	100	2027
Churn	W. B. Chalfant	709,137	Sept. 16	2164	496	100	2457
Churn. Centrifugal	J. A. Maddox	704,064	July 8	1287	279	100	271
Churn-power	C. Law	705,395	July 22	3698	852	100	844
Chute	F. L. Sackett	708,981	Sept. 2	151	36	100	2012
Chute	F. L. Sackett	708,982	Sept. 2	153	36, 37	100	2012
Chute	L. Rosenfeld	709,609	Sept. 23	3123	696	100	2570
Chute. Adjustable loading-	W. H. Taylor	709,373	Sept. 16	2649	594	100	2559
Chute. Coal-	F. W. Brink	707,297	Aug. 19	2479	557	100	1669
Chute for loading wheat or flour on ships	E. Myers	705,118	July 22	3563	729	100	780
Chute. Swinging animal-	A. Morten	704,902	July 15	2955	619	100	612
Cigar-box. Moisture-proof	G. W. Arnold and W. M. Cranston	707,536	Aug. 26	2929	663	100	1779
Cigar-bunch-rolling machine	M. M. Gardner	704,742	July 15	2558	551 552	100	549
Cigar-bunching machine	J. H. Schmidt	705,449	July 22	4009	864 865 866 867	100	874
Cigar-bunching machine	W. Weierbach and E. S. Dickson	707,742	Aug. 26	3369	758 759 761 762	100	1860
Cigar-bunching machine	J. R. Williams	707,748	Aug. 26	3386	763 764 765 766	100	1864
Cigar-bunching machines. Tobacco-conveying device for	J. R. Schmitt	710,018	Sept. 30	3995	896 897	100	2848
Cigar-cutter	J. C. F. Dick	709,209	Sept. 16	2309	525	100	2486
Cigar gage and butt-cutter	W. Heffley	706,986	Aug. 12	1799	402	100	1501
Cigar-machine	H. A. Schneekloth	705,872	July 29	4017	1069 1070	100	1055
Cigar-machine	W. A. Turner	709,943	Sept. 30	3779	853	100	2817
Cigar-maker's board	A. C. Cambridge	708,235	July 8	1622	351	100	339
Cigar-making machine. Automatic	B. H. Snavely and T. H. Keller	705,267	Aug. 5	513	110 111 112 113 114 115	100	1220
Cigar-marking machine	F. H. Richards	709,300	Sept. 16	2597	585 586	100	2548
Cigar or cigarette lighting device	R. Wilson	704,163	July 8	1497	321	100	314
Cigar-perforator	S. Mountford	706,679	Aug. 12	1815	291	100	1401
Cigar-pocket. Paper	O. L. Parmenter	706,998	Aug. 12	1903	425	100	1521
Cigar-shaper	C. G. Singley	708,085	Sept. 2	157	37	100	2013
Cigars. Machine for boxing little	G. M. Williams	708,789	Sept. 9	1437	329 330	100	2288
Cigarette-former	G. S. Hammond	706,981	Aug. 12	1791	401	100	1500
Cigarette-machine	G. Ferrari	707,706	Aug. 26	3431	773 774 775	100	1872
Cigarette-machine automatic stop mechanism	G. Ferrari	707,708	Aug. 26	3443	775 776	100	1875
Cigarette-machine feeder	T. Moesinger	709,920	Sept. 30	3737	841 842	100	2809
Cigarette-machine tobacco-measuring mechanism	G. Ferrari	707,707	Aug. 26	3441	775	100	1874
Cigarette-machines. Device for feeding tobacco in	J. Paul	709,507	Sept. 23	2950	658	100	2634
Cigarette-making machine. Individual-	F. J. Ludington	705,591	July 29	4413	956 957 958	100	953
Cigarette-mouthpieces. Producing	L. H. Sondheim	709,389	Sept. 16	2642	592	100	2557
Cigarette-roller	J. G. Halapleus	708,915	July 1	905	217	100	198
Cinder-hopper	M. Laux	708,608	July 1	400	94	100	79
Cineol arsenate and making same	W. Smith	705,545	July 22	4324	.....	100	922

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Circle-cutting device	E. O. Cartwright	708,586	July 1	290	66	100	58
Circuit-breaker	F. Benzinger	707,959	Aug. 26	3796	853	100	1945
Circuit-breaker	E. M. Hewlett	708,710	Sept. 9	1294	293	100	2252
Circuit-breaker	F. A. Merrick	709,222	Sept. 16	2348	533	100	2494
Circuit-breaker	C. J. Reed	710,367	Sept. 30	4574	1061	100	2985
Circuit-breaker. Automatic	B. Ballantyne	704,496	July 15	2120	458	100	459
Circuit-breaker. Automatic	C. D. Haskins	710,056	Sept. 30	3994	901	100	2953
Circuit-breaker. Automatic magnetic	W. M. Scott	704,974	July 15	3068	650	100	655
Circuit-breaker reverse-current device	H. P. Ball	708,008	Sept. 2	15	4	100	1984
Circuit-breaker. Time-limit	H. M. Hobart	706,055	Aug. 5	104	22	100	1138
Circuit-breaker time-limit device	H. P. Ball	708,007	Sept. 2	13	3	100	1983
Circuit-closer	D. F. Mulkey	706,435	Aug. 5	886	191	100	1294
Circuit-closer. Thermostatic	A. M. Buts	705,379	July 22	3949	856	100	848
Circuit-closing device	A. B. Chance	707,761	Aug. 26	3432	771	100	1870
Circuit-interrupter	M. S. Walker	708,189	Sept. 2	343	81, 82	100	2051
Circuits. Device for overcoming alternating-currents in direct-current	H. Brockelt	708,121	Sept. 2	221	53	100	2027
Clamp: *See* Basin-clamp. Pedestal-clamp. Beam-clamp. Pipe-clamp. Bookbinder's clamp. Rail-clamp. Conduit-clamp. Saw-clamp. Floor-clamp. Staging-clamp. Foundry pattern-clamp. Suspension-clamp. Furniture-clamp. Suture-clamp. Leather-setting-frame clamp. Trousers-clamp. Leather-stretching clamp. Wheel-clamp.							
Clamp	W. T. De Worth	707,660	Aug. 26	3227	724	100	1882
Clamp	J. A. Smith	707,808	Aug. 26	3517	794	100	1890
Clamp	S. H. Ellis	710,049	Sept. 30	3980	898	100	2960
Clarinet	W. Heckel	706,557	Aug. 12	1089	241	100	1351
Clasp: *See* Chatelaine-clasp. Garment-clasp.							
Clasp	C. W. Stimson	706,272	Aug. 5	543	117	100	1225
Clasp	C. A. Bryant	706,592	Aug. 12	1084	228	100	1359
Clasp	J. Sulzbacher	707,877	Aug. 26	3658	823	100	1916
Clasp or buckle	N. Crane	705,823	July 29	4031	1049	100	1038
Clasp or fastener	N. Crane	709,536	Sept. 23	3004	669	100	2540
Clasp or fastener	W. W. Ketler and E. Britton	704,883	July 15	2825	611	100	605
Claw-bar	M. J. Adams	709,131	Sept. 16	2158	494	100	2454
Clay, &c. Apparatus for molding the exterior of articles in							
Cleaner: *See* Beer-pipe cleaner. Road-cleaner. Boiler-tube cleaner. Seed-cleaner. Comb-cleaner. Spinning-machine cleaner. Flue-cleaner. Stovepipe-cleaner. Grain-cleaner. Turbine flue-cleaner. Gun-cleaner. Type-cleaner. Orange or lemon cleaner. Window-cleaner. Razor-cleaner.							
Cleaning and polishing composition	I. Stern	708,743	Sept. 9	1344	.....	100	2267
Cleaning-paste and making same	A. Wolpers	706,790	Aug. 12	1336	.....	100	1447
Clip: *See* Bicycle toe-clip. Paper-clip. Cable-clip. Single-tree-clip. Fence-fastening clip. Upholstering-clip. Whiffletree-clip.							
Clipper. Hair-	G. H. Coates	708,464	Sept. 2	938	191	100	2151
Clock. Calendar-	J. I. Peatfield	704,916	July 15	2923	626 627 628 629	100	629
Clock-chime	G. M. Stevens	710,084	Sept. 30	4051	912	100	2974
Clock. Electric	J. Butcher	705,558	July 29	4353	942 943	100	941
Clock. Electric	H. Gillette	706,817	Aug. 12	1583	355 356	100	1457
Clock. Electric	H. E. Andersson	708,112	Sept. 2	205	49	100	2024
Clock. Electric	A. F. Poole	708,253	Sept. 2	472	108 109 110	100	2077
Clock. Electric	C. J. Moberg	709,234	Sept. 16	2354	553 554	100	2496
Clock. Electric	N. Harrison	709,818	Sept. 23	3520	793	100	2751
Clock. Electric alarm-	Z. H. Kevorkian	708,425	July 1	108	24	100	24
Clock. Electric alarm-	W. E. Throop and W. S. Ingraham	708,854	July 1	884	195	100	177
Clock. Electric alarm-	W. C. Bethel	704,733	July 15	2533	547 548	100	545
Clock-escapement. Electromagnetically-controlled	A. H. Grenfell	704,874	July 15	2806	607	100	600
Clock pendulum-regulator	J. Butcher	709,594	Sept. 23	3100	691	100	2666
Clock. Program-	O. D. Rice	704,108	July 8	1389	299	100	292
Clock. Repeating	J. Kienzle	708,964	Sept. 2	663	149	100	2115
Clock. Self-winding	C. Hurst	704,333	July 8	1795	398	100	377
Clock. Self-winding	C. Hour	708,886	Sept. 9	1651	379 380	100	2382
Clock. Self-winding electric	C. M. Crook	708,953	July 1	1058	230 231	100	211
Clock. Self-winding electric	C. M. Crook	704,630	July 15	2388	508	100	504
Clock striking mechanism	F. W. Inden	708,769	Sept. 9	1398	320 321	100	2279
Cloth-cleaning device	F. O. Carlson and B. J. Haaland	704,615	July 15	2331	506	100	502
Cloth-cutting machine	J. G. and H. H. Grosheim	708,784	July 1	749	166	100	150
Cloth manufacturing. Brushing-machine for	G. W. Voelker	706,139	Aug. 5	244	51	100	1108

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Cloth-steaming machine	A. T. Sarfert	707,725	Aug. 26	3315	742	100	1850
Clothes-drainer	H. Blenkhorn	706,887	Aug. 12	1717	743	100	1485
Clothes-drier	K. C. Moore	704,561	July 15	2249	384	100	486
Clothes-drier. Ventilated	L. F. H. Gundlach	703,652	July 1	509	487	100	100
Clothes-drying attachment for range-boilers	S. L. Richardson	705,295	July 22	3754	114	100	810
Clothes-hanger	A. W. Van Demark	707,880	Aug. 26	3674	815	100	1980
Clothes-hook	C. Salmond	703,742	July 1	677	150	100	135
Clothes-hook	A. H. Cobb	707,898	Aug. 26	3557	804	100	1998
Clothes-line holder	T. Lemaire	705,101	July 22	3331	723	100	724
Clothes-line holder	A. H. Jones	707,847	Aug. 26	3609	814	100	1907
Clothes-line holder	G. W. McDonald	710,905	Sept. 30	4301	967	100	2929
Clothes-line prop-head	J. G. Mole	704,073	July 8	1316	287	100	276
Clothes-line support	M. T. Gordon and F. Davis	704,025	July 8	1218	263	100	258
Clothes-pounder	P. F. Glynn	704,630	July 15	2356	512	100	507
Clothes-pounder	K. D. McLay	709,109	Sept. 16	2112	484	100	2446
Clothes-wringer	F. H. Perkins	707,974	Aug. 26	3641	803	100	1953
Clothes-wringer	E. B. Gay	709,638	Sept. 23	3154	709	100	2576
Clutch	H. Moon	705,273	July 22	3714	805	100	800
Clutch	W. D. Cookson	706,381	Aug. 5	787	171	100	1273
Clutch	F. W. Jones	707,588	Aug. 26	3049	686	100	1795
Clutch	P. A. Houghtaling. (Reissue)	12,080	Sept. 9	1837	423	100	2370
Clutch	P. A. Houghtaling	709,771	Sept. 23	3429	771	100	2731
Clutch for induction-motors	A. Schwartz	706,117	Aug. 5	212	772	100	1160
Clutch. Free-wheel or like	W. H. Gurney and S. L. Taylor	709,900	Sept. 30	3700	44	100	2900
Clutch. Friction-	R. E. Olds	704,911	July 15	2911	884	100	627
Clutch. Friction-	L. P. Mooers	706,081	Aug. 5	153	32	100	1148
Clutch. Friction-	C. A. Fisher	706,400	Aug. 5	808	175	100	1276
Clutch. Friction-	E. Huber	706,650	Aug. 12	1279	282	100	1392
Clutch. Friction-	G. M. Bennett	709,194	Sept. 16	2282	518	100	2490
Clutch. Friction-	A. Mill	709,918	Sept. 30	3734	840	100	2906
Clutch. Friction-	J. Ferrari	707,709	Aug. 26	3445	776	100	1875
Clutch mechanism	E. Turney	709,557	Sept. 23	3053	680	100	2555
Clutch-operating mechanism	W. Klocke	710,199	Sept. 30	4292	954	100	2985
Clutch. Power-press	A. M. Sweder	706,479	Aug. 5	957	209	100	1209
Clutch. Reversing-	A. M. Sweder	706,277	Aug. 5	556	121	100	1238
Clutch. Reversing friction-	H. B. Harding	707,321	Aug. 19	2526	568	100	1669
Clutch. Variable-speed	W. A. Wood	707,890	Aug. 26	3690	829	100	1928
Coal-bagger	H. B. Sackett	707,358	Aug. 19	2580	595	100	1693
Coal-breaking machine	L. de Bertier de Sauvigny	707,945	Aug. 26	3787	849	100	1943
Coal-flats, &c. Device for unloading	H. N. Hughes	710,194	Sept. 30	4267	962	100	2920
Coal-unloading apparatus	C. D. Day	705,322	Aug. 5	423	90, 91	100	1202
Coaster-brake	C. Glover	705,549	Aug. 12	1077	238	100	1349
Coaster-brake	C. Glover	709,479	Sept. 23	2998	645	100	2622
Coat	H. Wolf	705,007	July 15	3132	677	100	668
Coating for brick or stone. Moisture-proof	W. A. Tucker	705,225	July 29	4479	.....	100	966
Coating-machine	G. Carlson	708,125	Sept. 2	234	54, 55	100	2080
Coating-machine	M. A. Smith	708,277	Sept. 2	499	114	100	2092
Coating metal plates. Apparatus for	G. B. Hammond and T. Dennis	706,408	Aug. 5	819	179	100	1279
Coating metals preparatory to being heated	H. Wachwitz	708,788	Sept. 9	1437	.....	100	2288
Coating of copper, bronze, or like surfaces. Iridescent	D. Sinclair	705,456	July 22	4090	.....	100	877
Coating one metal with another metal	S. H. Thurston	706,702	Aug. 12	1349	.....	100	1408
Coating-tray	P. B. Taylor	704,592	July 15	2295	499	100	495
Coatings. Machine for applying	J. B. McKeown	707,620	Aug. 26	3499	698	100	1805
Cocaine. Sterilizing and preserving	W. C. Riley	704,758	July 15	2584	556	100	2187
Cock and safety-valve. Combined gage	A. C. Calder	708,527	Sept. 9	956	216	100	651
Cock. Angle-	J. A. Helm	704,964	July 15	3049	655	100	651
Cock. Ball-	C. Birkery	703,521	July 1	266	60, 61	100	54
Cock. Ball-	A. W. Murray	708,905	July 1	798	175	100	159
Cock for air-brake mechanism. Angle-	M. L. Houder	708,059	Aug. 5	117	24	100	1141
Cock for gas-burners. Stop-	G. D. Gibbs	704,315	July 8	1766	385	100	371
Cock for multiple-light gaseliers. By-pass stop-	W. H. W. Fähndrich	704,678	July 15	2434	526	100	534
Cock. Gage-	W. I. Staaf	708,785	Sept. 9	1425	298	100	2285
Cock. Hydrant-	J. H. Kidder	707,119	Aug. 19	2138	478	100	1568
Cock or faucet	W. H. Douglas	704,522	July 15	2177	471	100	472
Cock or faucet	R. F. Lindsay	706,573	Aug. 12	1111	246	100	1356
Cock safety attachment. Gas-	A. M. Merrill	705,419	July 22	4022	872	100	864
Cock. Self-closing	P. Schwegel	704,121	July 8	1417	304	100	298
Cocoanut-cutting machine	F. Baker, Jr., and E. J. Fritsch	709,811	Sept. 23	3511	791	100	2749
Coffee-maker	T. K. Baker	710,132	Sept. 30	4157	926	100	2897
Coffee-maker	T. K. Baker	710,133	Sept. 30	4158	927	100	2897
Coffee-pot	M. H. Sexton	704,596	July 15	2268	497	100	494
Coffee-pot	H. Nutrizio	707,957	Aug. 26	3776	847	100	1940
Coffee-roaster	T. M. Ward	708,508	July 1	290	54, 55	100	47
Coffee-roaster	F. Krux	708,571	Aug. 12	1109	246	100	1355
Coherer	G. W. Pickard	708,070	Sept. 2	129	31	100	2008
Coin-actuated machine	P. S. Gattolliat	704,312	July 8	1758	394	100	370
Coin alarm and registering apparatus	A. Barrett	704,954	July 15	3026	650	100	648
Coin-case	B. B. Anderson	709,686	Sept. 23	3198	714	100	2685
Coin-controlled apparatus	A. Baumgarten	705,017	July 22	3164	688	100	691
Coin-controlled device	H. G. Sweeney	703,621	July 1	440	684	100	86
Coin-controlled device	J. D. Kneedler	705,361	July 22	3994	102	100	843
Coin-controlled machine	F. J. Hall and P. S. Stauffer	707,773	Aug. 26	3451	850	100	1877
Coin-delivery device	J. M. Butcher and W. G. Hartwig	707,065	Aug. 12	2080	778	100	1342
Coin-holder	A. Anderson	704,731	July 15	3526	453	100	1549
Coin-holder	S. Ray	708,733	Sept. 9	1398	547	100	544
Coins, &c. Receptacle for	C. B. Pike	708,731	Sept. 9	1325	306	100	2263

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Coke-drawer	D. Ferguson	707,686	Aug. 26	3239	726	100	1883
Coke. Making	P. Naef	706,443	Aug. 5	903	195	100	1206
Coke. Manufacturing	J. W. Seaver	707,525	Aug. 19	2696	655	100	1747
Coke-oven	M. E. Rothberg	705,446	July 22	4065	883	100	873
Coke-oven	W. T. Gates	707,914	Aug. 26	3735	837	100	1931
Coke-ovens or other kilns tight. Making the interior of	R. Kuhn	705,681	July 29	4576	994	100	986
Coke quenching or cooling apparatus	L. Bertrand	707,379	Aug. 19	2626	592	100	1690
Coking coal. Continuous process of	J. Hemingway	705,926	July 29	5017	1093	100	1075
Collapsible box	O. Feil	707,962	Aug. 26	3818	859	100	1946
Collar	E. F. Brown	709,074	Sept. 16	2040	465	100	2430
Collar-blanks, &c. Machine for folding	G. J. Dormandy	708,080	Sept. 2	58	14, 15	100	1998
Collar-fastener. Interlocking	H. Dalgety	705,212	July 22	3574	773	100	774
Collar for horses or the like	J. Ahrendt	707,814	Aug. 26	3587	798	100	1893
Collar. Split	E. H. Sexton	709,366	Sept. 16	2637	591	100	2557
Collar turning and ironing machine	C. C. Gridley	705,666	July 29	4548	988	100	981
Collars. Drying	R. Cluett	707,823	Aug. 26	3555	803	100	1897
Colliery waste. Utilizing carboniferous	C. Dörr	708,696	July 1	601	.....	100	119
Coloring apparatus. Yarn-	A. Fornander	705,334	July 22	3869	837	100	832
Colter	S. A. Ingersoll	710,895	Sept. 30	4625	1043	100	2996
Comb: *See* Currycomb. Fountain-comb.	A. B. Durgin	707,563	Aug. 26	3983	873	100	1781
Comb	A. B. Durgin	707,564	Aug. 26	3984	873	100	1781
Comb	W. Kronheim	707,598	Aug. 26	3957	868	100	1796
Comb	S. L. Kistler	703,527	July 1	390	91	100	78
Comb-cleaner	O. D. Orvis	709,174	Sept. 16	2239	509	100	2471
Combination draft-furnace	W. J. Carroll	709,078	Sept. 16	2047	468	100	2431
Combination-lock	G. E. R. Rothenbucher	708,741	July 1	675	150	100	135
Combination-wrench	F. W. Werner	709,948	Sept. 30	3790	855	100	2919
Combustion. Means for promoting	J. Tatham	709,872	Sept. 16	2546	598	100	2558
Combustion process	E. Baumgartner	705,635	July 29	4491	594	100	969
Combustion promoting and controlling device	L. R. Damon	709,305	Sept. 16	2500	975	100	2527
Commode. Sanitary	W. H. Young	708,690	July 1	591	564	100	117
Commode-stool	W. J. Richards	708,854	Sept. 9	1197	131	100	2235
Commutator-brush holder	J. de Bruyn, (Martinus G. Zoon)	705,297	Aug. 5	595	278	100	1235
Comparing handwritings or other objects. Apparatus for	J. T. Hicks	707,325	Aug. 19	2537	120	100	1672
Compartment-box for checks or the like	O. E. Eaton and F. C. Burrill	705,050	July 22	3218	570	100	702
Compass-light	C. C. Bueger	709,046	Sept. 16	1992	452	100	2416
Compass. Pocket-	C. Brandell	709,738	Sept. 23	3340	458	100	2715
Compasses	J. Bossart-Bächli	710,942	Sept. 30	4363	758	100	2941
Compasses. Needle-	D. W. Fratcher	704,188	July 8	1543	980	100	323
Composing-machine keyboard attachment	J. Murphy	707,788	Aug. 26	3488	332	100	1868
Composition of matter	E. L. Livingstone and W. A. Vandercook	708,774	Sept. 9	1405	.....	100	2290
Composition of matter	M. M. Kerr	707,426	Aug. 19	2721	616	100	1711
Compress	F. W. Parsons	704,914	July 15	2919	625	100	628
Compressor	J. Stumpf	708,276	Aug. 5	554	120	100	1227
Compressor	L. B. Manley	710,269	Sept. 30	4437	1001	100	2958
Computing-chart	E. Roenius	704,114	July 8	1401	301	100	295
Computing-machine	A. C. Schuman	709,363	Sept. 16	2618	588	100	2563
Concentrator	J. A. Holmes and J. F. Wood	709,770	Sept. 23	3425	770	100	2730
Concrete or the like. Machine for mixing	W. J. Judd	705,676	July 29	4564	991	100	984
Concrete troughs or other articles. Mold for forming	I. Haws	710,391	Sept. 30	4618	1042	100	2995
Condenser	E. Josse	703,793	July 1	775	169	100	155
Condenser. Induction-	L. Schutte	704,585	July 15	2267	497	100	493
Condensing apparatus. Atmospheric steam-	F. R. Brandt	707,081	Aug. 19	2070	462	100	1573
Condensing or cooling apparatus	C. C. Hill	708,712	Sept. 9	1290	294	100	2254
Condensing steam or cooling fluids	T. M. Colwell	705,251	July 22	3812	827	100	821
Conduit	W. L. McGowan	703,445	July 1	139	32	100	30
Conduit	W. L. McGowan	703,447	July 1	142	33	100	31
Conduit	W. L. McGowan	709,504	Sept. 23	2944	657	100	2633
Conduit	F. O. Wellington	705,984	July 29	5118	1116	100	1096
Conduit-clamp	G. A. Lutz	706,076	Aug. 5	146	30	100	1146
Conduit or tube. Flexible	W. F. Bossert	705,026	July 22	3176	686	100	694
Conduit outlet-box. Interior-	J. F. Greaves	709,762	Sept. 23	3408	765	100	2727
Conduit-rod coupling	R. W. Lyle	709,025	Sept. 16	1945	446	100	2405
Conduit-sections. Machine for cutting recesses in	W. A. Butler and A. Kunze	708,533	July 1	282	64	100	57
Continuous kiln	F. E. Swift	703,848	July 1	870	191	100	174
Control-sheet	M. Kuhn	705,254	July 22	3668	792	100	792
Controlling mechanism	H. Rose	705,302	July 22	3765	817	100	812
Converters, &c. Means for winding	E. R. Gill	708,220	Sept. 2	419	96	100	2067
Converters. Starting rotary	B. G. Lamme	710,362	Sept. 30	4566	1020	100	2964
Convertible chair	T. W. Washburn	708,278	Sept. 2	522	119	100	2067
Conveyer	R. S. Hill	704,540	July 15	2215	479	100	479
Conveyer	H. L. St. James	705,474	July 22	4116	894	100	883
Conveyer	F. Beck	706,294	Aug. 5	586	128	100	1234

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Drg.	Official Gazette. Vol	Page.
Conveyer	M. Bradfield	709,737	Sept. 23	3388	758	100	2714
Conveyer bucket. Endless-	P. B. Clarke	709,208	Sept. 16	2299	522 / 523	100	2484
Conveyer discharge device	J. M. Dodge	708,908	July 1	979	213	100	196
Conveyer. Endless	W. L. McCabe	707,618	Aug. 26	3086	695	100	1802
Conveyer. Endless	J. M. Dodge	709,759	Sept. 9	1382	316 / 317	100	2275
Conveyer. Endless-belt	P. M. De Jong	706,395	Aug. 5	794	173	100	1275
Conveyer. Horizontal	J. M. Dodge	708,698	Sept. 9	1359	299	100	2247
Conveyer. Pneumatic	J. W. Seifert	705,310	July 22	3787	821 / 822	100	815
Conveyer. Portable	W. L. McCabe	705,778	July 29	4754	1080	100	1021
Conveyer safety-stop	P. B. Clarke	709,202	Sept. 16	2297	521 / 522	100	2483
Conveyer. Spiral	C. G. Williams	710,337	Sept. 30	4612	1040	100	2998
Conveyers. Driving mechanism for portable electric	W. L. McCabe	707,614	Aug. 26	3087	695 / 696	100	1803
Conveying apparatus	J. W. Foreman	707,698	Aug. 26	3345	727	100	1885
Cooking and canning machine. Combined corn	L. S. Fleckenstein	706,401	Aug. 5	804	175 / 176	100	1277
Cooking apparatus	S. Szentjanossy	706,206	Aug. 5	398	84	100	1197
Cooking-cabinet	H. Faschian	709,476	Sept. 23	2951	643	100	2514
Cooking eggs. Means or apparatus for	L. H. Stocks	704,140	July 8	1465	313	100	308
Cooking utensil. Steam	G. F. Edmiston	707,217	Aug. 19	2329	521	100	1629
Cooking vessel	A. A. Brandenburg and W. C. Knobelock.	706,014	Aug. 5	19	5	100	1120
Cooler: *See* Beer-cooler. Candy-cooler. Water-cooler. Wine-cooler.							
Cooler	C. F. Conover	707,905	Aug. 26	3721	834	100	1998
Cooling and condensing apparatus	W. A. Maybach	709,416	Sept. 16	2726	612	100	2575
Cooling and ventilating system	J. E. Lawrence	706,327	Aug. 5	651	142	100	1246
Copper and nickel from sulfid compounds. Extracting	C. Hoepfner	704,660	July 15	2374	.....	100	511
Copper, &c. Electrometallurgic treatment of ores of	C. J. Tossizza	710,346	Sept. 30	4537	.....	100	2979
Copper matte to refined copper. Reducing	G. Mitchell	705,109	July 22	3348	.....	100	727
Copy-holder	W. R. Fox	704,018	July 8	1192	259	100	253
Copy-holder	J. C. Whitescarver	707,882	Aug. 26	3901	718	100	1827
Copy-holder	T. P. Chandler	708,203	Sept. 2	891	90	100	2061
Copying cloth and frame. Letter-press	L. Biersach	707,753	Aug. 26	3409	768	100	1867
Copying models. Apparatus for	W. A. C. Selke	706,459	Aug. 5	984	200	100	1309
Copying-press	E. E. Koken	705,097	July 22	3322	720 / 721	100	722
Copying-press. Roller	D. E. Hunter	705,352	July 22	3905	845 / 846	100	889
Cord-holding device	F. H. Knapp	707,341	Aug. 19	2364	530	100	1637
Core-oven	T. L. Grimth	705,665	July 29	4547	987	100	981
Corer and parer. Apple	J. P. Magney	706,428	Aug. 5	858	186	100	1288
Cork-fastener	L. Biersach	709,531	Sept. 23	2997	668	100	2644
Corkscrew	R. Runnalls	708,067	Sept. 9	1201	274	100	2236
Corn. Apparatus for the degermination and decortication of Indian	T. T. Gaff and J. F. Gent	707,057	Aug. 12	2015	450 / 451	100	1546
Corn-crib	J. M. Brokaw	709,220	July 1	978	63	100	56
Corn-husker	L. R. Loomis	705,770	July 29	4741	1026	100	1018
Corn-husker	A. W. Richards	707,013	Aug. 12	1981	432	100	1527
Corn-husking and fodder-shredding machine	J. L. and W. E. Alexander	706,511	July 22	3791	822 / 823	100	817
Corn-husking machine	J. K. Smith	708,500	Sept. 2	899	202 / 204	100	2164
Corn-husking-machine separating mechanism	O. Boyer	710,137	Sept. 30	4164	938 / 939	100	2809
Corn-pad	I. Duckworth	707,089	Aug. 19	2084	465	100	1576
Corn-shock carrier	N. W. Lyon	708,377	Sept. 2	680	158	100	2119
Corn-shock loader for vehicles	W. A. Tea	707,240	Aug. 19	2451	550	100	1655
Cornish roll	A. J. Gates	705,749	July 29	4710	1017	100	1012
Corset	N. Temple	708,852	July 1	881	194	100	176
Corset	J. E. Doolittle	704,007	July 8	1177	256	100	250
Corset	C. A. O'Loan	706,096	Aug. 5	177	36	100	1153
Corset	E. Farcy	706,307	Aug. 5	613	134	100	1239
Corset	J. Lindauer	708,773	Sept. 9	1404	322	100	2280
Corset	S. G. McClain	709,238	Sept. 16	2368	537	100	2498
Corset	C. W. Stimson	710,220	Sept. 30	4323	972	100	2993
Corset	L. B. Ingham	708,887	Sept. 9	1654	380	100	2332
Corset attachment and stocking-supporter	J. M. Van Orden	705,725	July 29	4662	1010	100	1003
Corset-cover	W. Golding	707,916	Aug. 26	3737	838	100	1932
Corset-cover	J. Britnell	705,641	July 29	4497	976	100	970
Corset-fastener	H. Torley	709,565	Sept. 23	3050	679	100	2654
Corset-stiffener	J. Davidoff	708,869	Sept. 9	1616	370	100	2325
Cot. Folding	J. H. Forister	705,746	July 29	4705	1018	100	1011
Cotton-chopper	J. T. Boyet	706,889	Aug. 12	1790	384 / 385	100	1486
Cotton-chopper	L. P. Fay	709,147	Sept. 16	2178	499	100	2460
Cotton-chopper and clod-crusher	M. B. Gooing	704,822	July 15	2720	589	100	582
Cotton-compress	J. L. Denton	707,679	Aug. 26	3925	794	100	1831
Cotton-compressor	F. L. White	704,998	July 15	3117	671	100	664
Cotton elevator and separator	C. R. Benefield	705,374	July 22	3044	864	100	847
Cotton-fiber condenser	J. M. Gardner	709,090	Sept. 16	2083	477	100	2439
Cotton-gin	J. T. Fuller	707,096	Aug. 19	2096	468	100	1578
Couch	C. F. Thayer	709,989	Sept. 30	3773	852	100	2816
Couch and folding bed. Combined	D. T. Owen	707,628	Aug. 26	3114	701	100	1809
Counter-shiving machine	J. R. Scott	703,617	July 1	428	99 / 100	100	85
Counting and registering machine	C. D. Grimes, W. W. Sunderland, and B. F. Ellerman.	706,652	Aug. 12	1256	278 / 279	100	1388
Counting-machine	T. W. Graham	706,048	Aug. 5	90	19	100	1135

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Drg.	Official Gazette. Vol.	Page.
Counting-machine	S. E. Heineman	707,068	Aug. 12	2026	453	100	1548
Coupling: *See* Car-coupling. Centrifugal coupling. Conduit-rod coupling. Electric-motor coupling. Hose-coupling. Hose or pipe coupling. Intermediate coupling. Pipe-coupling. Pitman-coupling. Rod-coupling. Shaft-coupling. Thill-coupling. Universal coupling. Wagon-coupling.							
Coupling	J. R. Carter and J. E. Hausfeld	707,674	Aug. 26	3818	722	100	1580
Coupling	F. A. Wareham	707,991	Aug. 26	3873	870	100	1959
Coupling device	J. G. Kanouse	704,545	July 15	2333	481	100	480
Coupling for cables, ropes, &c	T. Darling	706,393	Aug. 5	780	174	100	1274
Cover-lifting device for pails, &c	R. L. Baker	708,393	Sept. 2	551	125	100	2098
Cow-tail holder	J. D. Sturges	709,937	Sept. 30	3768	851	100	2814
Cracker-machine	A. W. Copland	705,040	July 22	3197	690 / 691	100	689
Cracker-machine	A. W. Copland	705,041	July 22	3202	691 / 692	100	698
Cracker-stacking machine	B. Prouty and W. H. Budd, Jr	708,255	Sept. 2	482	110 / 111	100	2079
Cradle and baby-jumper. Combined	J. W. Blackledge	704,774	July 15	2611	595	100	560
Crane. Electric locomotive	G. M. Brill	708,965	July 8	1137	246 / 247	100	341
Crane. Lifting	T. Kauffman	704,836	July 15	2739	592	100	586
Crank-hanger	W. B. Spencer	704,138	July 8	1462	313	100	307
Crate	R. De Wright	706,909	Aug. 12	1756	398	100	1493
Crate. Banana	W. H. Simpson	706,207	Aug. 5	394	84	100	1197
Crate. Banana	W. R. Montgomery	706,654	Sept. 9	1174	268	100	2251
Crate. Banana	C. A. Doud and C. B. Shouse	710,353	Sept. 30	4548	1026 / 1027	100	2981
Crate. Banana-shipping	M. Lombardo	709,166	Sept. 16	2228	506	100	2468
Crate. Egg	G. E. Palmer and J. N. Lake	705,286	July 22	3733	811 / 812	100	804
Crate. Folding	H. J. Schrock	706,692	Aug. 12	1337	297	100	1405
Crate. Folding	S. Greer and J. H. Gore	707,919	Aug. 26	3743	839	100	1933
Crate. Folding	C. W. Heller and E. A. Jones	709,542	Sept. 23	3013	671	100	2647
Crate. Folding	H. E. Clement	706,023	Aug. 5	54	7	100	1123
Crate. Knockdown	J. Conrad	710,268	Sept. 30	4380	985	100	2945
Crate. Knockdown banana-shipping	J. F. Lay	708,651	Sept. 9	1169	266	100	2250
Crate. Knockdown shipping	E. E. Williams	707,665	Aug. 26	3805	719	100	1828
Crate. Shipping	A. P. Peterson	704,865	July 8	1873	406	100	395
Crayon-sharpener	A. P. Laursen	710,280	Sept. 30	4434	997	100	2955
Cream-elevator	J. Seither	707,023	Aug. 12	1962	438	100	1531
Cream-separator	C. B. Phillips	708,780	Sept. 9	1323	302	100	2262
Cream-separator	M. A. Comstock	708,866	Sept. 9	1610	369	100	2324
Cream-separator	C. W. Parks	709,085	Sept. 16	1902	450	100	2412
Cream-separator	J. Klein	705,861	July 22	3923	849	100	843
Cream-separator and churn	D. M. Sullivan	709,853	Sept. 23	3542	798	100	2750
Creel for selvage-spools on slashers	H. Neuman	710,115	Sept. 30	4113	928	100	2895
Crib	H. G. Doran	704,443	July 8	2000	435	100	421
Crib and table. Combined	R. L. Porter	704,920	July 15	2988	630	100	632
Croquette-mold	J. E. Burns	706,523	Aug. 12	1096	238	100	1340
Cross-tie	M. C. Barry	705,754	July 1	699	155	100	140
Crossing-gate	B. G. Jayne	706,419	Aug. 5	843	184	100	1283
Craze-cutting machine	G. Schneider	707,868	Aug. 26	3844	821	100	1913
Crupper	C. H. Rudge	704,960	July 15	3039	657 / 658	100	658
Crupper-dock-forming machine	L. Herman	706,855	Aug. 12	1289	290	100	1390
Crusher: *See* Ice-crusher. Ore-crusher.							
Crushing and pulverizing machine	J. F. Sanders	705,870	July 29	4912	1068	100	1054
Crushing and pulverizing mill	W. F. Drew	705,741	July 29	4698	1017	100	1010
Crutch. Adjustable	P. W. Pratt	710,074	Sept. 30	4028	908	100	2870
Crutch, cane, &c	F. J. Roberts	704,111	July 8	1397	300	100	294
Cuff-holder	C. E. Hultquist	704,644	July 15	2479	515	100	518
Cuff-holder	J. F. Smith and J. S. Hull	704,765	July 15	2598	562	100	557
Cuff-holder	W. C. Kewin	707,427	Aug. 19	2722	616	100	1711
Cuff-holder	S. McCay	707,615	Aug. 26	3089	696	100	1803
Cuff-holder	L. H. Griste	708,783	July 1	748	165	100	150
Culinary device	C. W. Sleeter	704,131	July 8	1441	308	100	308
Cultivator	J. D. Riddle	704,376	July 8	1889	410	100	399
Cultivator	A. Harmon	704,538	July 15	2213	479	100	479
Cultivator	S. C. Cobb	705,308	July 22	3566	772	100	772
Cultivator	W. F. Cahoon	706,393	Aug. 5	765	167	100	1269
Cultivator	A. J. Comstock	706,726	Aug. 12	1592	340	100	1417
Cultivator	F. G. Hoag	706,942	Aug. 12	1810	405	100	1503
Cultivator	J. A. McKinnon	708,064	Sept. 2	120	28	100	2006
Cultivator	A. H. Kopperud	708,150	Sept. 2	280	67	100	2039
Cultivator	J. Franklin	710,263	Sept. 30	4397	900	100	2949
Cultivator	W. S. Graham	708,509	Sept. 2	929	209	100	2108
Cultivator. Lister	M. Christianson	706,160	Aug. 5	312	66	100	1139
Cultivator plant-guard attachment	R. W. Haulbrook	703,656	July 1	514	115	100	101
Cultivator plow attachment	B. F. Clark and W. Smith	704,515	July 15	2164	488	100	469
Cultivator-seat	J. Clausen	710,183	Sept. 30	4252	959	100	2917
Cultivator. Two-row	J. Bräuninger	710,188	Sept. 30	4159	939	100	2900
Cup	D. Laird	704,198	July 8	1567	338	100	328
Cupellation-furnace	J. R. Jecklin	707,115	Aug. 19	2133	476	100	1557
Curb and gutter block. Combined	J. T. Harrop	706,410	Aug. 5	823	180	100	1290
Curb mold. Cement or concrete	W. White	704,999	July 15	3118	672	100	665
Curbing and paving	L. T. Hankins	709,819	Sept. 16	2526	569	100	2583
Curd-knife and whey-strainer. Combined	C. W. Spaulding	707,081	Aug. 12	1965	441	100	1534
Curette	A. G. B. Scuri	704,890	July 8	1911	414	100	408
Curler. Hair							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Current-meter	G. L. Gowland	706,406	Aug. 5	813	177	100	1278
					178		
Current-motor	L. Sprague	706,698	Aug. 12	1344	299	100	1407
Current-motor. Automatic	J. Rosh	705,967	July 29	5089	1109	100	1090
					1110		
Current motor. Synchronous alternating	A. Churchward	707,389	Aug. 19	2644	598	100	1695
Current motor. Synchronous alternating	A. Churchward	707,390	Aug. 19	2647	598	100	1695
Current protection. System of strong	F. B. Cook	707,051	Aug. 12	1999	448	100	1542
Current transformer. Constant	A. R. Everest	710,050	Sept. 30	5081	808	100	2950
Current-wheel	J. A. Wells and J. D. Sumrall	708,871	July 1	912	200	100	188
Currents. Means for changing the tension of	W. M. Fairfax	704,453	July 8	2027	440	100	427
Currycomb	A. Tepfer and O. M. Heltner	708,597	Sept. 9	1055	241	100	2208
Curtain and shade support. Window	J. Gale	704,532	July 15	2198	476	100	476
Curtain-bracket. Adjustable	L. A. Watts	708,280	Sept. 2	523	119	100	2068
Curtain-bracket. Adjustable	L. A. Watts	708,507	Sept. 2	917	208	100	2167
Curtain bracket. Window	A. C. Miller	708,881	Sept. 2	686	154	100	2120
Curtain-fixture	E. Flicek	708,955	July 1	1072	231	100	213
Curtain-fixture	S. T. Nakashjian	704,205	July 8	1577	340	100	330
Curtain-fixture and curtain-support. Combined	C. B. Jacoby	708,578	Sept. 23	3077	684	100	2660
Curtain fixture. Window	L. Strickler and C. H. Fisk	710,577	Sept. 30	4560	1035	100	2988
Curtain-pole	T. C. Richards	706,306	July 22	3755	815	100	810
Curtain pole and hanger	S. G. Greene	706,315	Aug. 5	627	137	100	1243
Curtain-pole and shade-fixture	E. H. Callen	710,352	Sept. 30	4548	1026	100	2980
Curtain-pole and shade-roller bracket	G. L. Lyons	704,351	July 8	1850	400	100	391
Curtain-pole. Ringless	H. H. Edgely	706,589	Aug. 12	1061	234	100	1345
Curtain. Storm	J. W. Simmons	708,461	Aug. 5	927	201	100	1308
					202		
Curtain-stretcher	W. A. Mayr	708,857	July 29	4864	1064	100	1051
Curtains. Device for holding spring-actuated	J. H. Milans	707,609	Aug. 26	3079	693	100	1801
Curtains or valances. Adjustable chain-heading for chain or rope	W. S. Hepburn and A. G. Morrison	704,709	July 15	2569	577	100	571
Cushion:							
See Pneumatic cushion. Spring-cushion.							
Cuspidor	R. A. Yochum	708,884	July 1	935	204	100	188
Cuspidor	J. Booth	708,375	July 22	3945	855	100	847
Cuspidor	S. H. Duncan	709,538	Aug. 12	1060	233	100	1345
Cuspidor	A. Lindsay	709,165	Sept. 16	2227	505	100	2468
Cuspidor	F. F. Ball	709,294	Sept. 2	552	125	100	2094
Cuspidor-rack	G. E. Andrews	707,894	Aug. 26	3700	831	100	1294
Cut-out. Automatic	F. O. Mechlin	706,078	Aug. 5	149	31	100	1147
Cutter:							
See Band-cutter. Boiler-tube cutter. Bolt and nut cutter. Bread-cutter. Butter-cutter. Buttonhole-cutter. Cheese-cutter. Cigar-cutter. Dado-cutter. Dough-cutter. Dredger-cutter. Gear-tooth cutter. Harvester-cutter. Kraut-cutter. Lawn-cutter. Leather-lace cutter. Milling-cutter. Rotary cutter. Stalk-cutter. Twine-cutter. Vegetable-cutter. Vegetable or meat cutter.							
Cutter-head	E. E. Slick	704,941	July 15	2997	641	100	642
					642		
Cutter mechanism. Traveling	W. and A. Robertson	710,010	Sept. 30	3911	835	100	2945
					884		
Cutting and collating machine. Combined	A. A. Low	710,109	Sept. 30	4104	886	100	2954
Cutting device	J. P. Brophy	706,980	July 8	1142	248	100	243
Cutting worm threads. Machine for	G. Erlwein and A. Frank	708,535	Sept. 2	619		100	2107
Cyanid compound and making same	C. L. Horack	706,058	Aug. 5	107	23, 24	100	1139
Cycle	W. Brankowitch	708,197	Sept. 2	382	80	100	2060
Cycle-brake	L. M. Meyrick-Jones	709,549	Sept. 23	3085	673	100	2649
Cycle motor attachment	L. M. Meyrick-Jones	709,550	Sept. 23	3086	673	100	2649
					674		
Cycle motor attachment	H. U. von Troschke	709,588	Sept. 23	3089	685	100	2663
Cycle-rest	J. B. Brooks and J. Holt	708,891	July 1	950	209	100	191
Cycle saddle attachment	A. Pellant	704,668	July 15	2409	521	100	580
Cycles. Two-speed driving-gear for	T. W. Wright	710,389	Sept. 30	4614	1041	100	2994
D-handle	C. H. Archer	708,751	Sept. 9	1892	410	100	2271
Dado-cutter	C. Loeffler	708,965	Sept. 9	1790	414	100	2261
Damper	J. R. Stover	707,366	Aug. 19	2602	588	100	1595
Damper attachment. Stove	G. W. Bowen	705,199	July 22	3532	766	100	766
Damper for stovepipes. Ventilating	G. E. Archer	706,378	Aug. 5	737	160	100	1265
Damper mechanism. Time	G. Grobet and C. Bernasconi	708,807	Sept. 9	1493	340	100	2297
Damper-operating apparatus	S. Coats	708,319	Sept. 2	598	135	100	2102
Damper-regulator	E. M. Gleason	704,319	July 8	1772	387	100	372
Damper. Stove	A. D. Foote	704,181	July 8	1539	330	100	323
					331		
Dams. Building	G. C. Bushnell	704,812	July 15	2704	585	100	578
Dashboard	H. Shoemaker	710,372	Sept. 30	4581	1034	100	2987
Decoherer	W. E. Gard	704,627	July 15	2851	511	100	505
Decorating apparatus. Surface	C. R. McCluer	708,440	Aug. 5	893	193	100	1296
Deflector and screen. Combined	W. Scott	708,836	Sept. 9	1551	354	100	2310
					355		
Delivery mechanism	W. Scott	709,180	Sept. 16	2254	513	100	2474
Delivery mechanism	J. G. Bahr	705,895	July 29	4959	1079	100	1068
Demijohn-covering	F. S. and L. Thomas	708,427	Sept. 2	767	172	100	2186
Demijohn-covering	L. Ellertsen	702,973	Sept. 30	3956	868	100	2884
Dental apparatus	M. W. Hollingsworth	708,811	Sept. 9	1492	342	100	2299
Dental bridges. Machine for forcibly casting	J. L. Kelly	709,410	Sept. 16	2717	600	100	2572
Dental bridgework	J. E. Van Nostran	704,601	July 15	2313	502	100	499
Dental cuspidor	A. W. Schramm	704,967	July 15	2986	640	100	640
Dental engine	F. A. Brewer, Jr., and G. W. Harvey	706,016	Aug. 5	91	5	100	1120
Dental flask	S. H. B. Cochrane	705,890	July 22	3811	826	100	880
Dental forceps	R. J. Wenker	707,810	Aug. 26	3530	797	100	1802
Dental form for holding teeth							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Dental gage	C. R. Vanderpool	709,884	Sept. 23	3543	798	100	2757
Dental-gold annealer	C. F. Lauderdale	708,772	Sept. 9	1403	322	100	2279
Dental mouth-mirror	J. Kupfer	708,729	July 1	957	145	100	131
Dental mouth-mirror	G. S. Bennett and J. W. Thatcher	709,812	Sept. 23	3512	792	100	2750
Denture. Artificial	J. E. Dunn	708,730	July 1	641	142	100	128
Dentures. Rotary scraper for finishing artificial	T. J. Boyce	708,018	Aug. 5	17	4	100	1120
Deodorizer. Milk or cream	H. R. Howe	709,098	Sept. 16	2087	478	100	2440
Deodorizing	F. M. Pratt	705,787	July 29	4770	1084	100	1065
Deodorizing	F. M. Pratt	707,354	Aug. 19	2588	593	100	1662
Deodorizing milk or cream	H. R. Howe	709,094	Sept. 16	2089	479	100	2441
Depilating compound	H. S. Blinn	707,953	Aug. 26	3797		100	1945
Depilating compound	H. S. Blinn	707,955	Aug. 26	3799		100	1945
Depilating process	H. S. Blinn	707,954	Aug. 26	3798		100	1945
Depositor. Double-stroke	D. M. Holmes	707,590	Aug. 26	3045	695	100	1794
Derailer	G. L. Mansfield	709,101	Sept. 16	2101	481	100	2443
Derrick	A. Hodgson	706,943	Aug. 12	1812	406	100	1504
Designs. Transferring	C. Kraut	706,590	July 29	4411	956	100	953
Desk	C. F. Deplanty	704,473	July 8	2050	448	100	435
Despatch apparatus. Tubular	W. A. H. Bogardus, L. Collis, and G. G. Powell.	709,434	Sept. 16	2754	619	100	2581
					620		
Detachable handle for caskets, boxes, &c	C. Young	707,669	Aug. 26	3210	720	100	1828
Detonating compound	U. Alvisi	707,498	Aug. 19	2933		100	1734
Detonating device	J. H. Bevington	709,197	Sept. 16	2298	519	100	2481
Diacetyl-diamin and making same	F. Ach	708,512	Sept. 9	927		100	2181
Diamond-cutting tool	E. Mahy	709,229	Sept. 16	2343	531	100	2498
Dice-cup	H. L. Haskell	709,632	Sept. 23	3165	706	100	2578
Die:							
See Building-block die. Screw-cutting die. Printing-die.							
Die or stamp holder	W. J. Buchanan	705,877	July 22	3947	855	100	847
Diffusion. Continuous	F. Kessler	706,669	Aug. 12	1296	285	100	1396
Digger:							
See Potato-digger.							
Digging device. Ditch	O. Peterson and J. H. Clark	708,395	Sept. 2	718	159	100	2136
					160		
Dilator	J. R. Hamilton	705,846	July 22	3907	849	100	837
Dilator	E. Beist	708,452	Sept. 2	811	185	100	2146
Dipper. Milk	F. J. Kels	708,050	Sept. 2	100	23	100	2002
Directory-board. Changeable	F. B. Mosher, M. J. Scheel, and E. H. H. Marting.	705,275	July 22	3718	806	100	801
Directory. Vestibule	F. De Silva	708,560	July 1	333	76	100	67
Dish-washer	J. Pettengill	708,460	July 1	159	37	100	84
Dish-washing apparatus	J. D. Morley	707,443	Aug. 19	2746	621	100	1715
Dish washing machine	C. W. Arnot	704,494	July 15	2114	457	100	457
					458		
Dish-washing machine	H. F. Low	706,473	Aug. 5	948	206	100	1307
					207		
Disinfecting apparatus	W. H. Francis	704,182	July 8	1541	331	100	323
					332		
Disinfecting device	E. L. Briggs	704,777	July 15	2616	560	100	561
Disintegrator	E. R. Sutcliffe	705,716	July 29	4785	1088	100	1029
					1089		
Disintegrator attachment	C. J. Samuelson and E. M. Johnson	708,972	Sept. 9	1820	419	100	2265
Dispensing-can	F. M. Furber	705,336	July 22	3874	838	100	853
Display-bench for dog-shows	R. B. Hansell	706,316	Aug. 5	629	137	100	1243
Display-box	B. Budweiser	709,668	Sept. 23	3614	717	100	2688
Display box or tray. Folding	C. S. Morris	708,490	Sept. 2	886	200	100	2161
Display-cabinet for packets	A. W. M. Martin	708,067	Sept. 2	110	26	100	2004
Display-case	F. B. Deiter	704,005	July 8	1175	256	100	249
Display device	S. L. Campbell	704,513	July 15	2159	468	100	468
Display holder. Necktie	H. Runtz	705,149	July 22	3484	746	100	745
Display-light	O. A. Mygatt	705,495	July 22	4033	874	100	866
Display-rack	W. White	704,157	July 8	1489	319	100	313
Display-rack	B. N. Grimshaw	706,989	Aug. 12	1788	400	100	1499
Display-rack	B. N. Grimshaw	706,990	Aug. 12	1790	401	100	1500
Display rack or stand. Collapsible	F. C. Johnston and G. N. Merrill	704,841	July 8	1821	395	100	384
Display-tray	W. Brand	710,708	Sept. 30	4072	916	100	2979
Distillation. Retort for wood	W. B. Chapman	705,906	July 29	4977	1083	100	1067
Distribution system	J. L. Creveling	704,694	July 15	2460	531	100	580
					532		
Distribution system	J. F. Kelly	707,334	Aug. 19	2552	575	100	1674
Ditching-jack	C. E. and J. E. Dixon	706,807	Aug. 12	1570	352	100	1455
Ditching-machine	T. Bearman	708,616	Sept. 9	1104	248	100	2216
Dock. Marine	D. F. Weindorf	710,170	Sept. 30	4239	964	100	2912
Domestic boiler	J. A. Bernardi	706,886	Aug. 12	1716	385	100	1485
Door	F. F. Low	704,887	July 15	2553	612	100	597
					613		
Door attachment. Grain	C. T. Docter	705,655	July 29	4522	982	100	975
Door-bolt	E. Fages	704,179	July 8	1536	329	100	322
					330		
Door bracket. Sliding	J. J. Hennessey	705,081	July 22	3880	711	100	718
Door-catch	C. R. Mervin	704,651	July 15	2582	517	100	516
Door-catch	G. G. Smith	709,057	Sept. 16	2006	457	100	2422
Door catch and buffer	F. E. Ransdell and H. C. Muddiman	708,401	Sept. 2	724	153	100	2128
Door-check	O. Tschieky. (Reissue)	12,014	July 15	3150	660	100	673
Door-check and burglar-alarm. Combined	W. F. Grimes	708,844	Sept. 9	1636	344	100	2310
Door check and closer	X. Reichlin	708,586	Sept. 9	1048	226	100	2204
Door check and spring	V. Beauregard	703,871	July 1	18	4	100	5
Door-check. Liquid	H. G. Voight	708,681	July 1	570	127	100	113
Door-check. Liquid	H. K. Jones	709,940	Aug. 5	459	98	100	1209
Door-closing apparatus	J. W. Tripp	704,984	July 15	2090	605	100	609
Door-fastener	G. W. Cramer	704,619	July 15	2887	508	100	503
Door-fastener	A. E. Mendenhall	707,858	Aug. 26	3629	819	100	1910
Door fastener. Sliding	J. T. Hicks	705,589	July 22	4071	984	100	913
Door, Flexible	J. S. Blake	705,553	July 29	4347	940	100	940
Door Grain	A. T. Stark	704,949	July 15	2009	646	100	645

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Door-hanger	J. J. Hennessey	706,090	July 22	3278	710	100	718
Door-hanger	J. F. Lydon	706,262	July 22	3698	711	100	797
Door-hanger	P. H. Luitink	707,181	Aug. 19	2153	808	100	1501
Door-hanger	W. Louden	707,353	Aug. 26	3622	491	100	1909
Door-hanger	G. G. Meyer	708,060	Sept. 2	115	817	100	2005
Door-hanger	J. F. Clift	708,305	Sept. 2	392	91	100	2083
Door-hanger	P. A. Myers	709,029	Sept. 16	1955	447	100	2410
Door-hanger track	H. L. Ferris	709,314	Sept. 16	2517	567	100	2531
Door-hanger track	W. J. Chaffer	708,580	Sept. 9	980	217	100	2188
Door holder or bolt	L. H. Lucabaugh	708,288	Sept. 2	449	103	100	2078
Door-holding device	A. T. Hatfill and G. B. Lee	705,236	July 22	3039	798	100	787
Door-lock attachment	G. Rischmuller	705,147	July 22	3431	745	100	744
Door-opener	J. S. Johnson	705,355	July 22	3915	848	100	841
Door opening or closing apparatus. Automatic	J. Johnson	703,372	July 1	15	4	100	5
Door-operating device	P. J. Beisel	703,433	July 1	119	27	100	96
Door-operating means	F. Macey	710,229	Sept. 30	4341	976	100	2937
Door-operating mechanism	E. Wigle	708,327	Sept. 2	609	138	100	2105
Door or window alarm	J. G. Eberstein	706,905	Aug. 12	1900	426	100	1521
Door or window fastening means	J. W. Nippert	706,157	Aug. 5	809	65	100	1180
Door or window frame	G. Carr	707,546	Aug. 26	2952	668	100	1776
Door-plate	C. D. Brooke				835	100	1929
Door. Right and left opening	F. Fischer and L. Kiefer	707,910	Aug. 26	3727	836		
Door-securer	G. F. Hamilton	704,634	July 15	2362	513	100	509
Door-securer	H. Prud'homme	710,118	Sept. 30	4122	930	100	2888
Door signal or alarm	H. C. Atkinson	706,878	Aug. 12	1760	380	100	1492
Door. Sliding	J. F. Lydon	704,846	July 15	2758	596	100	590
Door. Sliding	G. A. Proctor and E. F. Carpenter	707,637	Aug. 26	3183	705	100	1813
Door-stop	C. C. Burritt	704,855	July 15	2773	600	100	594
Door-stop	J. C. Winn	706,804	July 29	4799	1042	100	1081
Door stop and catch. Combined	J. Daniel	706,904	Aug. 12	1751	391	100	1492
Door. Swinging	H. Meyer	706,966	Sept. 9	1801	414	100	2392
Doors. Means for automatically closing swinging	E. F. Huard	706,945	Aug. 12	1815	406	100	1504
Doors. Means for preventing dust, draft, and rain from entering under	J. Crowther	704,441	July 8	1908	435	100	420
Dough-cutter	G. F. Zinn	709,290	Sept. 16	2471	557	100	2521
Dough mixing and kneading apparatus	F. Brackett	708,890	Aug. 12	1722	395	100	1485
Doweling-gage. Hand	J. Corliss	705,392	Aug. 5	788	171	100	1274
Doweling-machine	W. J. Edwards and W. M. Wauters	705,657	July 29	4524	983	100	976
Draft apparatus. Forced-	J. S. Chapman	705,539	July 1	291	66	100	50
Draft attachment	N. Merches	705,248	Aug. 5	470	100	100	1211
Draft attachment	C. H. Falk	707,092	Aug. 19	2087	466	100	1576
Draft attachment	L. V. Warner	704,604	July 15	2316	503	100	499
Draft attachment. Spring	G. B. Rait	704,922	July 15	2942	631	100	633
Draft device and spark-arrester	B. Creplin	704,001	July 8	1171	255	100	248
Draft-equalizer	C. N. Trooien	705,163	July 22	3454	752	100	749
Draft-equalizer	W. E. Rivers	706,202	Aug. 5	388	83	100	1196
Draft-equalizer	T. W. Banta	707,539	Aug. 26	2933	664	100	1771
Draft-equalizer	A. Anderson	707,898	Aug. 26	3698	801	100	1924
Draft-equalizer	J. B. Hayden	709,092	Sept. 16	2085	478	100	2440
Draft-equalizer	M. W. Sleight	705,458	July 22	4094	890	100	878
Draft-evener	C. Scott-Snell	710,370	Sept. 30	4578	1032	100	2986
Draft. Producing	J. A. McAtee	707,789	Aug. 26	3499	1033	100	1888
Draft-regulating device. Automatic	H. C. Priebe	703,607	July 1	409	786	100	51
Draft-rigging	J. E. Guinn	703,955	July 1	1073	95, 96	100	61
Draft-rigging	W. H. Emerick	705,580	July 22	4217	232	100	215
Draft-rigging	W. E. Coffin	707,501	Aug. 19	2843	916	100	901
Drafting device	W. F. Hochspeier	709,219	Sept. 16	2325	643	100	1736
Drafting garments. Dress-cutting instrument for	G. V. Valentine	708,506	Sept. 2	913	644	100	2490
Drafting-plotter	R. L. Botts	709,736	Sept. 23	3337	207	100	2167
Drain-tile protector	J. W. Cook, Sr.	709,395	Sept. 16	2088	752	100	2714
Draper, &c	W. T. Gordon	704,823	July 15	2721	603	100	2585
Draw-off or stretching rollers for textile machinery	A. Bietenholz	709,694	Sept. 23	3373	589	100	2701
Drawer for furniture, &c	C. Mayer	708,890	Sept. 9	1760	729	100	2804
Drawers-supporter	H. C. Smith	705,879	July 29	4983	848	100	2804
Drawing and spinning frames. Drag device for bobbins of	S. Smith	705,158	July 22	3438	1073	100	1056
Drawing board and appliances	P. Schlachter, Sr., and A. W. Allen	707,165	Aug. 19	2226	747	100	746
Drawing-machine stop-motion	J. T. Meats and C. B. McGowan	704,704	July 15	2478	500	100	1605
Dredge	G. McKay	706,195	Aug. 5	874	535	100	534
Dredge	R. R. Osgood	708,657	Sept. 9	1180	80	100	1199
Dredge	R. R. Osgood	708,658	Sept. 9	1188	276	100	2388
Dredge and well-borer	C. Ehrenfeld	706,896	Aug. 5	796	270	100	2389
Dredge-bucket	A. W. Robinson	708,587	Sept. 9	1050	178	100	1275
Dredge-clam	E. Chaquette	706,231	Aug. 5	431	288	100	2205
Dredge. Clam or oyster	W. A. Thompson	706,975	July 29	5103	90	100	1508
Dredge. Hydraulic	L. W. Bates	704,231	July 8	1616	1113	100	1068
Dredge. Hydraulic	L. W. Bates	707,298	Aug. 19	2473	250	100	336
Dredge. Mining	H. J. Barton and A. C. La Bud	709,783	Sept. 23	3389	555	100	1659
Dredge. Sewer	E. Chaquette	705,646	July 29	4507	751	100	2718
Dredges, excavators, &c. Boom for	A. W. Robinson	708,588	Sept. 9	1051	978	100	978
Dredges, steam-shovels, &c. Hoisting-gear for dipper-buckets for use upon	A. W. Robinson	708,589	Sept. 9	1053	239	100	2205
Dredger	R. A. Perry	708,817	July 1	821	161	100	164
Dredger and excavator	I. B. Hammond	710,054	Sept. 30	3986	899	100	2861
Dredger cutter-head. Hydraulic	L. W. Bates	709,861	Sept. 30	3589	809	100	2779

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Dredger cutter. Hydraulic	R. A. Perry	705,784	July 29	4764	1088	100	1084
Dredging apparatus	G. G. Powell	708,583	Sept. 9	1042	236	100	2203
Dredging-bucket	C. Pay	709,480	Sept. 16	2792	237	100	2576
Dredging-scoop	H. G. Butler	708 753	Sept. 9	1365	618	100	2279
Dredging-scows. Hydraulic device for emptying	O. Frühling	708,541	Sept. 9	976	311	100	2190
Dress-shield	E. M. Cowles	706,802	Aug. 12	1561	221	100	1458
Dress-shield	A. T. Stevenson	709,935	Sept. 30	3766	349	100	2914
Drier: *See* Clothes-drier. Rotary drier. Fruit-drier. Hominy, meal, and grits drier.					851	100	2914
Drier	D. W. Elliot	707,765	Aug. 26	3498	772	100	1872
Drier	A. T. Welch	708,602	Sept. 9	1074	243	100	2210
Drier	A. T. Welch	708,603	Sept. 9	1082	244	100	2211
Drier	A. T. Welch	708,604	Sept. 9	1087	244	100	2212
Drying apparatus	C. J. Seltzer	703,746	July 1	688	152	100	137
Drying apparatus	J. C. Fleming	705,914	July 29	4999	1088	100	1071
Drying apparatus	H. C. Baughman	708,516	Sept. 9	941	213	100	2184
Drying apparatus	J. Keith and W. W. Wardle	709,689	Sept. 23	3178	708	100	2680
Drying-chambers. Apparatus for carrying goods through	A. Carey	704,814	July 15	2709	585	100	580
Drying-kiln	T. H. Savery	705,905	July 22	3775	586	100	813
Drying or heating cylinders. Air-exhaust for revolving steam	A. T. Welch	706,946	Sept. 9	1750	404	100	2258
Drying or treating. Heating materials for the purpose of	C. D. Weaver	708,184	Sept. 2	346	82	100	2052
Drying-reel	A. Prawatke	708,781	Sept. 9	1417	326	100	2388
Drying vegetables, fruits, &c. Apparatus for					327		
Drill: *See* Earth or rock drill. Rock-drill. Grain-drill.							
Drill-bits. Means for shaping and sharpening	J. Wagner	706,135	Aug. 5	348	52	100	1166
Drill-press	A. Vik	709,568	Sept. 23	3056	680	100	2656
Drill-rod grab	J. H. Adams	706,872	Aug. 12	1691	681	100	1480
Drill-shaper	D. Greenwalt and J. B. Dawson	707,584	Aug. 26	3084	378	100	1790
Drills. Water attachment for power	F. L. Whitehead	704,158	July 8	1490	683	100	313
Drilling edges of boards. Machine for	W. J. Edwards and W. M. Wauters	705,638	July 29	4581	320	100	978
Drilling-jig. Magnetic	A. L. De Leeuw	710,257	Sept. 30	4368	984	100	2947
Drilling-machine	T. E. O'Brien	704,567	July 15	2280	987	100	498
Drilling-machine	F. N. Gardner	707,507	Aug. 19	2853	489	100	1738
Drilling-machine	W. E. Butler	708,993	Sept. 16	1870	645	100	2394
Drilling-machine. Portable	J. Rourke	705,791	July 29	4775	430	100	1036
Drilling rivet-holes in wheel-hubs. Machine for	G. H. Everson	706,811	Aug. 12	1576	431	100	1036
Driving, braking, and coasting mechanism	F. B. Case	708,201	Sept. 2	266	353	100	1456
Driving mechanism	A. F. Spaulding	704,220	July 8	1508	90	100	2060
Drop	G. Miles	708,726	Sept. 9	1317	846	100	334
Drum. Heating	C. W. Davidson	705,217	July 22	3596	300	100	2260
Drum. Heating	E. Graham	705,981	July 29	5009	775	100	776
Drum. Heating	W. Vogel	707,990	Aug. 26	3872	1090	100	1078
Drum-stand	A. B. Hellenkamp	706,987	Aug. 12	1801	870	100	1958
Drums and cymbals. Pedal device for bass	W. C. L. Evans	704,808	July 8	1752	408	100	1502
Dumb-bell, Indian club, and pulling or swinging bar. Combined	F. R. Buck	708,313	Sept. 2	585	388	100	308
Dumb-waiter grip and friction-roller. Self-adjusting	F. Ackerman	705,010	July 22	3153	152	100	2100
Dumping apparatus. Log or freight	T. Alexander	707,951	Aug. 26	3708	681	100	699
Duplex hook for hitching-straps, &c	E. H. Moorman	706,678	Aug. 12	1314	852	100	1944
Duplicator	A. H. Ferris and C. A. Kenworthy	707,571	Aug. 26	3012	291	100	1400
Dust-applicator	T. H. Hunt	705,089	July 22	3308	677	100	1787
Dust-collector	L. R. Whitney	704,724	July 15	2519	718	100	717
Dust-collector	J. E. Mitchell	704,900	July 15	2852	544	100	542
Dust-collector	J. E. Mitchell	705,944	July 29	5050	618	100	611
Dust-collector and sweeper. Pneumatic	J. T. Hope	705,585	July 29	4998	1100	100	1069
Dust-guard	J. S. Patten	705,635	July 22	4052	954	100	951
Dust-guard	J. S. Patten	708,491	Sept. 2	887	879	100	870
Dust-guard	J. S. Patten	708,492	Sept. 2	889	201	100	2161
Dust-pan	W. E. Correll	704,861	July 15	2788	201	100	2162
Dye and making same. Anthracene	O. Bally	707,373	Aug. 19	2616	608	100	598
Dye and making same. Anthracene	O. Bally	707,374	Aug. 19	2616	------	100	1669
Dye and making same. Black sulfur	L. Lovinstein and C. Mensching	706,969	Aug. 12	1857	------	100	1669
Dye and making same. Blue	C. De la Harpe	707,882	Aug. 26	3584	------	100	1512
Dye and making same. Blue	C. De la Harpe	707,883	Aug. 26	3584	------	100	1908
Dye and making same. Blue	A. Weinberg and F. Klingemann	709,186	Sept. 16	2270	------	100	1908
Dye and making same. Blue anthraquinone	C. Hartmann	704,798	July 15	2668	------	100	9477
Dye and making same. Blue sulfur	A. F. Poirrier	708,669	Sept. 9	1195	------	100	571
Dye and making same. Blue sulfur	R. Herz	709,151	Sept. 16	2182	------	100	2394
Dye and making same. Green	J. Koetschet	709,160	Sept. 16	2201	------	100	2661
Dye and making same. Triphenyl-methane	F. Ach	707,818	Aug. 26	3535	------	100	9467
Dye and making same. Yellow acridin	A. Weinberg	709,187	Sept. 16	2271	------	100	1598
Dye. Brown-violet azo	P. Julius	710,050	Sept. 30	3998	------	100	9477
Dye. Red azo	W. Herzberg and O. Siebert	704,825	July 15	2722	------	100	2954
Dye. Red azo	W. Herzberg and O. Siebert	704,826	July 15	2725	------	100	561
						100	569

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Dyes. Making extract	R. Lepetit and E. Tagliani	704,843	July 15	2758		100	589
Dyeing apparatus	R. Illingworth, J. T. Mazey, and G. Naylor.	704,191	July 8	1558	334	100	325
Dyeing apparatus	R. Weiss	704,255	July 8	1715	374	100	360
Dyeing apparatus	D. Mattei	705,856	July 29	4892	1003 1064	100	1050
Dyeing, &c., apparatus	E. Hindley, S. Walker, and M. Rose.	706,657	Aug. 12	1276	261	100	1391
Dyeing, &c. Apparatus for	C. Corron	706,671	Aug. 12	1559	349	100	1456
Dyeing, &c. Apparatus for	C. M. Hanson	708,608	Sept. 9	1486	340 341	100	2898
Dyeing apparatus. Sliver-	W. H. Fletcher	706,171	Aug. 5	331	70, 71	100	1185
Dyeing-machine	J. L. Creveling	709,848	Sept. 23	3567	804	100	2762
Dynamo and driving-gear. Combined	N. H. Edgerton	708,808	Sept. 9	1474	336 337	100	2895
Dynamo and magneto-electric machine	N. H. Edgerton	708,875	Sept. 9	1638	374	100	2898
Dynamo and magneto-electric machine	W. L. Bliss	707,754	Aug. 26	3410	769	100	1868
Dynamo brush mechanism	W. A. Turbayne	705,487	July 22	4147	902	100	898
Dynamo-regulator. Automatic	F. D. Macbeth	706,978	Aug. 12	1865	417	100	1514
Ear-drum. Device for protecting the	L. Wile	708,646	Sept. 2	798	182	100	2143
Ear-muff	F. H. Dannhardt	705,910	July 29	4988	1086	100	1069
Earth or rock drill	H. Pope	707,941	Aug. 26	3788	848	100	1942
Eaves-trough hanger	W. L. Meuser	706,333	Aug. 5	662	144	100	1219
Eaves-trough protector	H. Graff	708,528	Sept. 2	434	97	100	2006
Eccentric. Adjustable	J. Rostochil	707,641	Aug. 26	3142	707	100	1614
Edging device	W. L. Smith	706,463	Aug. 5	952	204	100	1304
Educational apparatus	W. G. Browne. (Reissue)	12,026	Aug. 26	3398	876	100	1965
Egg-beater	J. A. Bastle and H. H. Weber	708,011	Sept. 2	19	4	100	1966
Egg-case	P. B. Taylor	704,977	July 15	3072	660 661	100	656
Egg-desiccating apparatus	A. F. Gardanier	706,649	Aug. 12	1253	277	100	1397
Egg-opener	M. E. Abrahams	708,791	Sept. 9	1449	331	100	2891
Egg-separator	J. Salomon	710,078	Sept. 30	4085	909	100	2871
Egg-stand	W. Schöning	709,583	Sept. 23	3082		100	2662
Eggs. Preserving	C. Reinhardt	707,009	Aug. 12	1924	431	100	1526
Eggs. Testing	M. T. Davidson and W. A. Drewett.	708,757	Sept. 9	1376	314 315	100	2274
Ejector apparatus	V. E. Belledin	707,752	Aug. 26	3408		100	1867
Elastic material which cannot be readily punctured. Manufacture of sheets of flexible	J. G. Moomy	709,998	Sept. 30	3884	876	100	2839
Elastic portion and a securing portion. Article of manufacture having an	P. W. Pratt and R. E. Foster	710,073	Sept. 30	4086	909	100	2870
Elastic tip	H. K. Blyth	706,898	Aug. 12	1719	394	100	1485
Elbow and pipe	H. Heinicke	704,744	July 15	2566	553	100	551
Electric accumulator	A. Fischer	708,834	Sept. 2	620	139 140	100	2107
Electric accumulator-plate	R. M. Hunter	708,420	July 1	98	21	100	22
Electric accumulator-plates. Making	R. Alexander-Katz	708,630	July 29	4484	973	100	967
Electric accumulator-plates. Separator for	F. C. Pickett	708,089	Sept. 16	1909	450	100	2413
Electric and gas lighting system. Combined	H. Shoemaker	710,373	Sept. 30	4588	1084	100	2987
Electric apparatus interrupter	J. C. Meloon	708,155	Sept. 2	289	69	100	2041
Electric attachment	M. W. Robinson	705,148	July 22	3433	746	100	744
Electric battery	E. R. Gill	705,919	July 29	5006	1090	100	1073
Electric battery	E. A. G. Street	707,731	Aug. 26	3331	746	100	1863
Electric battery	T. H. Klinker, Jr., and R. Gabrielsky.	710,278	Sept. 30	4491	997	100	2955
Electric battery and mounting same	E. A. Sperry	705,673	July 1	550	125	100	109
Electric cable	T. Rosati	705,599	Aug. 12	1165	58	100	1367
Electric-circuit breaker	H. W. Leonard and H. P. Ball	705,102	July 22	3332	728 734	100	724
Electric circuit. Composite	M. H. Howell	706,818	Aug. 5	534	138	100	1944
Electric-circuit-controlling means	J. J. Wood	706,143	Aug. 5	275	58	100	1173
Electric-circuit lead fuse	F. H. Krebs	709,334	Sept. 16	2549	574	100	2538
Electric circuit. Loaded	J. C. Lee and E. H. Colpitts	705,986	July 29	5084	1097	100	1078
Electric-circuit thermal protector	F. B. Cook	704,439	July 8	1998	433	100	419
Electric-circuit wires so as to equalize induction. Apparatus for transposing	J. O'Brien and J. Mattimore	710,906	Sept. 30	4868	967	100	2980
Electric circuits. Apparatus for maintaining uniform resistance in.	F. A. Gilbert and E. O. Lundin	710,068	Sept. 30	3985	899	100	2861
Electric condenser and making same	H. P. Clausen	709,906	Sept. 16	2808	623 624	100	2485
Electric controller	A. E. Hogrebe	704,808	July 15	2681	579	100	573
Electric controller	J. C. Henry	705,941	July 29	3647	790	100	788
Electric controller	W. H. Clarke	708,026	Sept. 2	43	10	100	1990
Electric controller	J. B. Linn	708,055	Sept. 2	107	25	100	2008
Electric controller	W. A. Carrell	710,096	Sept. 30	4078	920	100	2880
Electric controller	H. A. Rowlands	704,930	July 15	2976	637	100	698
Electric currents upon telegraph or other circuits. Means for impressing periodically-varying	G. N. Oehmen	704,361	July 8	1870	405	100	395
Electric cut-out	M. Otto	707,797	Aug. 26	3510	792	100	1888
Electric discharges. Rotary apparatus for the production of diffused	C. J. A. Michalke	704,464	July 8	2092	453	100	439
Electric-distribution system	H. F. Parshall	705,591	Aug. 12	1151	255	100	1364
Electric-distribution system	A. Parker	706,099	Aug. 5	181	37, 38	100	1154
Electric furnace	E. R. Taylor	706,128	Aug. 5	223	49	100	1165
Electric furnace	P. L. T. Héroult	707,776	Aug. 26	3458	779	100	1878
Electric furnace. Oscillating	J. H. Bickford	708,195	Sept. 2	370	87, 88	100	2057
Electric generating systems. Controlling device for	W. H. Cotton	704,955	July 15	3080	650 651	100	649
Electric generator	W. S. Hadaway, Jr	705,668	July 29	4551	998	100	981
Electric heater	G. L. Martin	706,578	Aug. 12	1194	248	100	1355
Electric-light fixture. Marine	C. Schürmann	708,587	July 1	858	187	100	171
Electric lighting, &c. Manufacture of braided cords or cables for	J. L. Creveling	707,092	Aug. 12	2008	448 449	100	1543
Electric-lighting systems. Regulation of	J. Burke	706,017	Aug. 5	22	5	100	1121
Electric machine. Dynamo-	H. G. Reist	706,108	Aug. 5	196	41	100	1157

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Electric machines. Means for regulating the output of dynamo-	J. L. Creveling	704,696	July 15	2464	532	100	531
Electric machinery. Control of dynamo-	E. R. Carichoff	706,723	Aug. 12	1886	309	100	1416
Electric meter	C. D. Haskins	706,555	Aug. 12	1096	240	100	1350
Electric meter	E. Thomson	706,612	Aug. 12	1186	263 264	100	1372
Electric meter	G. Stern	710,088	Sept. 30	4049	912	100	2874
Electric meter. Prepayment	G. L. Gowlland	706,047	Aug. 5	87	19	100	1134
Electric motor	A. B. Holson	706,817	Aug. 5	630	138	100	1343
Electric-motor control	H. W. Leonard	709,915	Sept. 30	3726	840	100	2806
Electric-motor controller	W. H. Chapman	707,300	Aug. 19	2484	558	100	1661
Electric-motor controller	L. A. Tirrill	708,096	Sept. 2	175	41, 42	100	2017
Electric-motor controller	F. A. Merrick and E. W. Stull	708,157	Sept. 2	292	70	100	2042
Electric-motor controller	F. A. Merrick and E. W. Stull	708,158	Sept. 2	295	71	100	2043
Electric-motor controller	E. W. Stull	709,182	Sept. 16	2259	514	100	2475
Electric-motor controlling apparatus	W. J. Richards	704,665	July 15	2413	522	100	520
Electric-motor coupling	F. E. Case	708,024	Sept. 2	40	10	100	1989
Electric-motor power-transmitting device	H. S. Miller and G. C. Marx	703,942	July 1	1043	226 227	100	907
Electric-motor regulation	O. H. and A. F. Pieper	704,099	July 8	1375	297	100	280
Electric motors. Controlling	J. C. Henry	708,960	Sept. 9	1786	412	100	2359
Electric motors. Controlling	J. C. Henry	708,961	Sept. 9	1790	412 413	100	2359
Electric motors. Controlling	H. W. Leonard	709,916	Sept. 30	3730	840	100	2807
Electric motors. Protective operating device for	A. C. Eastwood	704,447	July 8	2010	437	100	423
Electric regulator	A. R. Everest	706,039	Aug. 5	73	16	100	1122
Electric roller for massage and therapeutical purposes	J. W. Gibbs	707,508	Aug. 19	2856	647	100	1739
Electric signal	A. J. Haycox	705,583	July 29	4895	958	100	950
Electric snap-switch	L. W. Downes	708,211	Sept. 2	401	98	100	2053
Electric switch	A. P. Anderson	703,515	July 1	254	59	100	51
Electric switch	W. B. Potter	705,187	July 22	3414	742	100	740
Electric switch	E. R. Carichoff	706,527	Aug. 12	1040	220	100	1340
Electric switch	F. A. Merrick	706,581	Aug. 12	1159	249	100	1360
Electric switch	H. P. Ball	708,005	Sept. 2	11	3	100	1983
Electric switch	B. J. Foley	710,188	Sept. 30	4260	960	100	2919
Electric switch	F. H. Headley	710,270	Sept. 30	4408	993	100	2951
Electric switch	J. A. Heany	707,843	Aug. 26	3603	813	100	1905
Electric switch or cut-out	P. E. Chapman	706,598	Aug. 12	1554	348	100	1451
Electric testing apparatus	H. K. Gardner	710,146	Sept. 30	4182	942	100	2902
Electric time-switch. Automatic	R. W. Lyle	706,974	Aug. 12	1962	417	100	1518
Electric-wire conduit	B. McFarren	709,554	Sept. 23	3033	676	100	2651
Electric-wire pole	J. W. Seaman	706,786	Aug. 12	1580	339 340 341	100	1445
Electric wires in buildings. Junction-box for	B. W. Allen	704,494	July 8	1963	427	100	413
Electric wires in buildings. Junction-box for	B. W. Allen	704,495	July 8	1964	427	100	413
Electric wires. Safety contact-interrupter for	G. Bellangé	705,029	July 22	3170	684	100	692
Electric wires. Wall-plate or shield for	B. W. Allen	704,493	July 8	1962	426	100	413
Electrical apparatus. Circuit-closer for portable	W. Roche	704,113	July 8	1399	301	100	294
Electrical apparatus. Therapeutic	I. E. Shaffer	706,602	Aug. 12	1172	250	100	1359
Electrical circuits. Terminal box for protected	F. B. Cook	707,049	Aug. 12	1992	447	100	1540
Electrical conductors. Manufacturing	L. W. Downes	709,001	Sept. 16	1881	432	100	2396
Electrical connector	A. J. Wayman	704,670	July 15	2423	524	100	522
Electrical distribution for car-lighting purposes. System of	J. L. Creveling	706,165	Aug. 5	320	68	100	1182
Electrical-distribution system	J. L. Creveling	704,863	July 15	2784	602	100	596
Electrical-distribution system	J. L. Creveling	704,864	July 15	2788	603	100	597
Electrical-distribution system	J. L. Creveling	704,865	July 15	2791	603	100	597
Electrical-distribution system	C. P. Steinmetz	706,123	Aug. 5	290	46	100	1162
Electrical-distribution system	R. Fleming	706,544	Aug. 12	1069	235	100	1347
Electrical-distribution system	C. P. Steinmetz	706,607	Aug. 12	1179	261	100	1370
Electrical-distribution system	C. P. Steinmetz	706,608	Aug. 12	1181	262	100	1370
Electrical-distribution system	C. P. Steinmetz	706,609	Aug. 12	1183	262	100	1371
Electrical-distribution system	W. S. Moody	707,150	Aug. 19	2230	493	100	1600
Electrical-distribution system	A. D. Lunt	710,067	Sept. 30	4009	905	100	2867
Electrical-distribution system	C. P. Steinmetz and W. L. R. Emmet	710,081	Sept. 30	4043	911	100	2873
Electrical-distribution system	C. P. Steinmetz and W. L. R. Emmet	710,082	Sept. 30	4047	911	100	2874
Electrical-distribution system	C. P. Steinmetz and W. L. R. Emmet	710,158	Sept. 30	4205	948	100	2907
Electrical-distribution system	B. G. Lamme	704,649	July 15	2385	517	100	514
Electrical furnace for treating highly-refractory substances	H. Maxim	709,806	Sept. 23	3494	788	100	2745
Electrical indicator	H. S. Tittle	706,085	Aug. 5	159	33	100	1149
Electrical lighting and power system	M. Moskowitz	705,238	July 22	3542	788 789	100	787
Electrical machine	T. B. Hatch	705,494	July 22	4031	874	100	866
Electrical-panel-board attachment	E. W. Müller	708,478	Sept. 2	856	195	100	2155
Electrical position-indicator	A. S. Hubbard	707,050	Aug. 12	1996	448	100	1542
Electrical protector set	F. B. Cook	708,759	July 1	708	157	100	142
Electrical sparking device	A. C. Brown	707,505	Aug. 19	2849	645	100	1788
Electrical switch	L. L. Elden	706,759	Aug. 12	1480	328	100	1435
Electrical switch or cut-off	P. Kennedy	708,011	Aug. 5	14	4	100	1119
Electrical switches operated by electromagnets. Controlling	A. T. M. Thomson	705,161	July 22	3453	752	100	748
Electrical switchboards. Connecting-plug for	H. W. Leonard	709,714	Sept. 23	3302	742	100	2707
Electrical translating devices. Controlling the energy delivered to	H. F. Freed	704,019	July 8	1194	260	100	258
Electrical transportation system	W. L. R. Emmet	706,540	Aug. 12	1062	234	100	1345
Electrically-controlled switch	H. M. Sutton, W. L. Steele, and M. Coerver.	708,093	Sept. 2	169	39	100	2016
Electrically-protected structure	I. W. Heysinger	708,639	Sept. 9	1153	260	100	2226
Electrician's tool	E. L. Anderson	706,631	Aug. 12	1219	270	100	1378
Electricity. Chemical generator of	R. O. Vandercook	705,490	July 22	4153	903 904	100	880
Electricity. Means for dissipating static	R. Pintsch	704,573	July 15	2367	491	100	489
Electricity on running cars. Device for generating	G. Wilkinson	705,802	July 29	4796	1041	100	1081
Electricity-supply purposes. Cable-terminal box for							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Electrochemical apparatus	C. C. Clark	705,529	Aug. 12	1045	220	100	1342
Electrochemical generator	H. S. Amwake. (Reissue)	12,019	Aug. 12	2043	456	100	1551
Electrochemical generator	H. S. Amwake	707,373	Aug. 19	2514	590	100	1689
Electrode. Battery-	T. A. Edison	704,305	July 8	1746	381	100	367
Electrode. Electric accumulator-	V. Cheval and J. Lindeman	704,859	July 15	2778	601	100	595
Electrode for storage batteries	C. W. Kennedy	705,569	Aug. 12	1104	245	100	1354
Electrode-separator. Battery-	A. W. Harrison	708,706	Sept. 9	1282	268	100	2252
Electrode. Storage-battery	H. Woodward	707,666	Aug. 26	3207	719	100	1858
Electrodes. Manufacture of carbon	C. M. Hall	705,076	July 22	3369	708	100	712
Electrolytic cell	A. Sommer	707,804	Aug. 26	3519	794	100	1890
Electrolytic cell and electrode therefor	A. A. Vogelsang	705,851	July 1	894	197	100	179
Electromagnetic switch	F. Bourne	706,012	Aug. 5	15	4	100	1119
Electromagnetic switch	J. L. Creveling	707,763	Aug. 26	3425	771	100	1871
Electromedical appliance	J. O. Fowler, Jr	708,216	Sept. 2	410	96	100	2005
Electromedical appliance	J. H. and A. T. Kliegl	708,365	Sept. 2	664	149 150	100	2115
Electromotive force. Means for generating counter	H. H. Dow	707,836	Aug. 26	3586	809	100	1902
Electroplating apparatus	T. F. Taylor	708,623	July 1	446	108	100	87
Electrotherapeutic battery	T. J. Dunn	707,502	Aug. 26	2982	673	100	1781
Electrotype-shaving machine	F. Wesel	709,435	Sept. 2	777	175	100	2138
Elevating and dumping apparatus	R. Hollopeter	708,144	Sept. 2	271	65	100	2027
Elevator: *See* Cotton-elevator. Grain-elevator. Hod-elevator. Inclined elevator. Pneumatic elevator. Safety-elevator. Tailings-elevator. Water-elevator.							
Elevator	S. B. Peck	705,290	July 22	3743	813	100	806
Elevator	E. R. Gill	705,338	July 22	3879	839 840	100	884
Elevator	E. R. Gill	707,820	Aug. 26	3598	812	100	1908
Elevator	L. W. Dexter	708,696	Sept. 9	1119	251 252	100	2219
Elevator	M. A. Clennam	708,735	Sept. 9	1367	313 314	100	2272
Elevator	F. Pulwitt	708,880	Sept. 9	1539	358	100	2308
Elevator	C. L. Baldwin and O. A. Green	709,732	Sept. 23	3229	749 750	100	2713
Elevator	C. E. Ennes	709,974	Sept. 30	3857	868	100	2834
Elevator	J. Rice	710,007	Sept. 30	3905	881	100	2844
Elevator	J. A. Jamieson	704,805	July 15	2688	579	100	573
Elevator-bin	C. Bradford	708,983	July 8	1184	245	100	240
Elevator boot or housing. Pneumatic	A. Sundh	706,199	Aug. 5	226	48	100	1163
Elevator controlling apparatus. Electric	J. D. Ihlder	704,887	July 8	1804	394	100	378
Elevator controlling system. Electric-	J. D. Ihlder	704,888	July 8	1813	394	100	381
Elevator controlling system. Electric-	P. H. Jackson	704,786	July 15	2567	553	100	551
Elevator doors. Automatic locking mechanism for sidewalk or other	W. W. Hubbard	706,826	Aug. 12	1602	360	100	1462
Elevator-operating mechanism	W. H. Wilsey	704,498	July 8	2057	446	100	432
Elevator safety device	S. D. Strohm	705,479	July 22	4123	897 898	100	984
Elevator safety device	S. D. Strohm	705,480	July 22	4125	898	100	985
Elevator safety device	J. W. Fleming	707,311	Aug. 19	2508	564	100	1665
Elevator safety device	A. W. Leach	709,494	Sept. 23	3913	850	100	2627
Elevator safety-stop	A. Cowperthwait	708,548	July 1	813	71	100	68
Elevator safety-stop	W. Fehler	707,407	Aug. 19	2693	605	100	1708
Elevator-signal. Electric	L. K. Curlett	707,305	Aug. 19	2495	560	100	1664
Elevator-stop	E. C. Edwards	706,644	Aug. 12	1346	275	100	1395
Elevators. Brake for motor-shafts of	E. W. Moon	707,442	Aug. 19	2744	621	100	1715
Elevators or the like. Safety suspending apparatus for	R. Hainsworth	707,410	Aug. 19	2688	607	100	1704
Ellipsograph	D. L. Gregory	707,580	Aug. 26	3096	681	100	1789
Embossing-machine	H. Rice	705,397	July 22	3756	815	100	810
Embossing-machine	F. K. Russell	709,422	Sept. 16	2736	614	100	2577
Embroidery frame and holder	J. H. Post	707,353	Aug. 19	2589	583	100	1681
Emergency-brake	C. Vogel	707,465	Aug. 19	2780	630	100	1733
Emergency-brake	W. W. Hopkins	708,477	Sept. 2	854	195	100	2154
Emergency-brake	W. W. Hopkins	708,695	Sept. 9	1649	379	100	2231
Emergency-brake	N. Cornfield	710,098	Sept. 30	4098	921	100	2881
Emery grinder	E. R. Hyde	707,430	Aug. 19	2709	614	100	1706
Emery-wheels. Apparatus for wetting	C. H. Zwermann	707,490	Aug. 19	2825	639	100	1732
Enamel-sifting apparatus	D. Wieser	709,540	Sept. 23	3997	908	100	2644
Enameled metal plates. Manufacture of	G. W. Ketcham	708,963	Sept. 2	661	.....	100	2115
Enameling metal ware	C. S. Morse	706,434	Aug. 5	885	191	100	1294
End-board for farm-wagons	W. L. Sterling	709,123	Sept. 16	2132	489	100	2450
End-board-securing attachment. Wagon	C. S. Crow	708,550	July 1	816	71	100	64
End-gate lock. Wagon	G. S. Coover	705,395	July 22	3959	858	100	850
End-gate. Wagon	J. M. Dunahoo	704,445	July 8	2007	435	100	422
Endless-chain reel							
Engine: *See* Beating-engine. Blowing-engine. Dental engine. Explosive-engine. Explosive-vapor engine. Gas-engine. Gas and steam engine. Gas and steam convertible engine. Gasolene-engine. Internal-combustion engine. Locomotive-engine. Motive-power engine. Multiple-piston engine. Oil-vapor engine. Pumping-engine. Refining-engine. Rock-drilling engine. Rotary engine. Rotary steam-engine. Steam-engine. Telescopic compound engine. Traction-engine.							
Engine	G. De Camp and C. A. Haas	708,557	July 1	886	74	100	68
Engine	C. H. Benton. (Reissue)	12,009	July 15	3196	678	100	669

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Engine	V. L. Rice	705,145	July 22	3428	744 745	100	744
Engine	S. H. Short	706,120	Aug. 5	216	45	100	1161
Engine	W. G. Cowan, A. Jewett, and J. G. Wardell.	707,828	Aug. 26	3567	806	100	1899
Engine	T. Conlin	707,904	Aug. 26	3718	834	100	1928
Engine	T. Deakin	708,697	Sept. 9	1256	267 268	100	2247
Engine	W. A. Bole	710,136	Sept. 30	4162	928	100	2898
Engine and car draft-rigging	E. C. Washburn	705,109	July 22	3468	754 755	100	751
Engine attachment	V. Z. Caracristi	708,028	Sept. 2	37	9	100	1988
Engine attachment. Traction-	D. W. Combs	704,736	July 15	2540	549	100	546
Engine hydrocarbon-feeder. Explosive-	F. B. Warring	709,428	Sept. 16	2745	617	100	2579
Engine igniter. Explosive-	H. E. Barlow	710,312	Sept. 30	4479	1011	100	2966
Engine ignition-regulator. Gas-	M. J. Sullivan	705,881	July 29	4086	1073 1074	100	1059
Engine-indicator	H. A. C. A. W. Maihak	708,484	July 1	121	27	100	27
Engine link-motion. Steam-	M. A. Wharfield	705,174	July 22	3481	757	100	754
Engine-lubricating apparatus	E. T. McKaig	707,794	Aug. 26	3507	791	100	1887
Engine lubricator. Explosive-	C. W. Weise	710,086	Sept. 30	3940	889	100	2851
Engine regulators. Controlling mechanism for steam-	E. Reynolds	704,270	July 8	1695	367	100	353
Engine reversing-gear	V. W. Clough	706,627	Aug. 12	1227	272	100	1380
Engine reversing-gear	V. W. Clough	706,628	Aug. 12	1228	272	100	1380
Engine safety appliance	J. Karlik and M. Witte	710,155	Sept. 30	4301	946 947	100	2906
Engine sparking igniter. Explosive-	J. B. Hicks	708,042	Sept. 2	88	20	100	1999
Engine starting device. Explosive-	C. F. Cope	704,618	July 15	2734	507 508	100	503
Engine starting means. Explosive-	S. E. Poole	708,463	July 1	163	37	100	85
Engine-stop	H. Jones	706,952	Aug. 12	1825	409	100	1506
Engine-stop. Automatic	N. C. Locke	708,372	Sept. 2	671	151	100	2118
Engine stop-motion. Steam-	O. Williams	707,998	Aug. 26	3685	829	100	1962
Engine-support	A. W. Menns and A. T. Van Horn	709,445	Sept. 16	2779	625 626	100	2586
Engine tender. Traction-	A. Hildebrand	706,560	Aug. 12	1093	242	100	1352
Engine tender. Traction-	F. J. Wood	710,028	Sept. 30	3943	889 890	100	2852
Engine vaporizing device. Explosive-	B. C. Vandusen	709,126	Sept. 16	2139	490 491	100	2451
Engines. Apparatus for distributing the primary current for electric ignition by coils and igniters in explosive-	A. C. Krebs	708,053	Sept. 2	105	24	100	2008
Engines. Electric igniter for explosive-	H. A. Gray	709,698	Sept. 23	3106	698	100	2667
Engines. Fuel or other reservoir for internal-combustion	C. O. Hedstrom	707,923	Aug. 26	3753	841	100	1926
Engines. Ignition-gear for internal-combustion	F. R. Simms and R. Bosch	706,121	Aug. 5	217	45	100	1161
Engines. Incandescent igniter for explosive-	C. W. Weise	708,284	Sept. 2	533	121	100	2090
Engines. Sparker for explosive-	G. A. Graves	705,996	July 29	5187	1120	100	1100
Engines. Sparker for explosive-	H. H. and C. B. Segner	706,859	Aug. 12	1664	372	100	1475
Engines. Sparking igniter for explosive-	J. Lizotte	706,492	Aug. 5	976	214	100	1314
Engines. Vaporizer for explosive-	J. Lizotte	708,987	July 1	1084	225	100	206
Engines. Water cooling and circulating apparatus for explosion-	E. Estcourt	707,570	Aug. 26	3010	677	100	1786
Engraving-machine	W. E. Crane	708,719	July 1	632	141 142	100	125
Engraving-machine	B. Jay	704,193	July 8	1555	335	100	326
Engraving-machine	C. B. Bishop	709,863	Sept. 30	3592	810 811 812 813	100	2780
Engraving-machine. Pantograph	M. Barr	706,007	Aug. 5	8	2	100	1118
Envelop	C. E. Cather and L. H. Buckley	705,086	July 22	3191	699	100	696
Envelop	J. B. Howe	706,417	Aug. 5	841	183	100	1288
Envelop	L. A. Bennett	707,074	Aug. 19	2057	450	100	1670
Envelop	C. A. Dunn	707,308	Aug. 19	2498	551	100	1664
Envelop	J. E. Fitzgerald	707,963	Aug. 26	3819	859	100	1948
Envelop	G. D. Van Arsdale	708,098	Sept. 2	181	43	100	2019
Envelop	F. R. Stearns and C. R. Weber	709,805	Sept. 23	3468	788	100	2745
Envelop	A. J. Arendell	709,959	Sept. 30	3795	856	100	2891
Envelop	G. E. Hurst	708,555	Sept. 9	996	226	100	2196
Envelop-filler. Safety	W. T. Lee	710,200	Sept. 30	4285	955	100	2938
Envelop. Mailing-	H. G. Starmer	705,470	July 22	4111	893	100	882
Envelops. Means for detecting tampering with sealed	O. and F. Zoeller	705,189	July 22	3515	792	100	702
Equalizer. Four-horse	F. C. Raber	709,722	Sept. 23	3316	745	100	2709
Eraser. Blackboard-	F. H. Thibodo and S. S. Peckinpaugh.	706,980	Aug. 5	563	.....	100	1229
Etching and in etching such surfaces. Preparing surfaces for	I. Kitsee	708,052	Sept. 2	104	24	100	2003
Etching designs	C. Ordway	709,173	Sept. 16	2285	509	100	2470
Evaporating apparatus. Vacuum	W. Bender	709,397	Sept. 16	2487	559	100	2584
Evaporator	J. W. Sayre	707,946	Aug. 26	3789	851	100	1943
Evener. Four-horse	E. H. Browning	706,317	July 22	3907	825	100	880
Excavating and hoisting apparatus	W. Foglesong	704,740	July 15	2554	550 551	100	548
Excavating and loading apparatus	H. J. Bentson. (Reissue)	12,010	July 15	3140	678 679	100	670
Excavating-machine	O. B. H. Hanneborg	706,175	Aug. 5	337	72, 73	100	1195
Excavator	E. Schofield	708,972	July 1	1110	240	100	120
Excavator for trenches, cuttings, &c.	W. M. Moseley	708,343	Sept. 2	455	103	100	2074
Exercising device	J. C. Korth and A. Gansenmüller	704,840	July 15	2749	595	100	586
Exercising-machine	J. Y. Smith	705,718	July 29	4645	1006	100	980
Exhaust apparatus	D. M. Winans	708,087	Sept. 9	1286	288	100	1943
Exhibiting and vending machine	A. C. Argles	708,853	Sept. 9	1586	361 362	100	2118
Exhibiting device							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Expansible bolt	W. R. Kinnear	704,547	July 15	2227	482	100	481
Expansible stopper	R. L. S. Doggett	707,764	Aug. 26	3427	772	100	1872
Expansion-bolt	W. U. Griffiths	708,652	July 1	507	114	100	99
Explosive-engine	G. Gibbs	703,726	July 1	645	143	100	129
Explosive-engine	M. J. Klein	704,718	July 15	2494	540	100	537
Explosive-engine	C. W. Weiss	704,965	July 15	3113	670	100	954
Explosive-engine	W. Bernhardt	705,022	July 22	3171	685	100	993
Explosive-engine	A. T. Bossett	708,518	Sept. 9	944	213 / 214	100	2184
Explosive-engine for motor-vehicles	R. C. Marks	710,320	Sept. 30	4508	1016	100	2972
Explosive-engine. Four-cycle	H. C. Strang	709,060	Sept. 16	2011	458 / 459	100	2423
Explosive-engine. Multiple-cylinder	G. S. Andres	706,711	Aug. 12	1363	304 / 305	100	1411
Explosive-vapor engine. Four-cycle	G. Erikson	706,733	Aug. 12	1404	313 / 314	100	1419
Extensible pan	J. T. Halls	709,150	Sept. 16	2181	499 / 500	100	2461
Extension-table	F. Lieske	704,532	July 15	2233	488 / 484	100	482
Extension-table	H. C. Schneider	705,711	July 29	4640	1006	100	998
Extension-table	C. N. Smith	710,376	Sept. 30	4588	1035	100	2988
Extractor: *See* Gun cartridge-extractor. Nail-extractor. Sinew-extractor.							
Eye-guard	H. W. Brown	708,531	July 1	280	64	100	57
Eyeglass-guard	J. F. Coombs	707,467	Aug. 26	3565	806	100	1899
Eyeglass-guard	A. S. Weaver	710,227	Sept. 30	4338	975	100	2937
Eyeglass-nosepiece	C. F. Wall	707,888	Aug. 26	3677	827	100	1921
Eyeglass. Watchmaker's	H. Tremblay	706,364	Aug. 5	712	155	100	1260
Eyeglasses	J. Carter	706,859	Aug. 12	1747	390	100	1491
Eyeglasses	A. K. Hawkes	708,141	Sept. 2	268	64	100	2037
Eyeglasses	R. B. Finch	709,574	Sept. 23	3066	692	100	2658
Eyeglasses	E. H. Schild	709,824	Sept. 23	3529	795	100	2753
Eyeglasses	W. W. Essick	709,892	Sept. 30	3588	831	100	2798
Eyeglasses or spectacles	C. O. Bailey	707,046	Aug. 12	1269	446	100	1540
Eyelet	J. C. Rhodes. (Reissue)	12,008	July 8	2108	456	100	442
Eyelet	G. E. McCormack	708,577	Sept. 9	1054	234	100	2202
Eyelet-setting machine	F. A. Rumney	707,643	Aug. 26	3146	708 / 709	100	1815
Eyelet-setting machine	F. A. Rumney	707,644	Aug. 26	3150	708 / 709	100	1816
Fabric: *See* Feather fabric. Wire fabric. Knitted fabric. Woven fabric. Metal-foil fabric. Stiff-finished woven fabric.							
Fabric having bias weave. Apparatus for producing	F. Newell	704,566	July 15	2258	489	100	487
Fabrics. Machine for producing water-marks on	E. Smith	709,368	Sept. 16	2540	592	100	2557
Fabrics. Means for decorating	A. Véricel	708,099	Sept. 2	181	43	100	2019
Face-protector	M. Galley	704,311	July 8	1757	384	100	369
Facing and binding. Skirt	W. J. Hay	704,033	July 8	1230	265	100	250
Fan	W. E. Coleman	708,623	Sept. 9	1114	250	100	2218
Fan	W. E. Coleman	708,624	Sept. 9	1115	251	100	2218
Fan	W. McNamara	710,295	Sept. 30	4448	1008	100	2959
Fan	J. D. Williams	708,443	Sept. 2	792	180	100	2141
Fan. Automatic	W. E. Coleman	708,622	Sept. 9	1113	250	100	2218
Fan. Automatic	J. T. Hope	704,038	July 8	1237	266	100	251
Fan-case for blast-fans	J. L. Perkins	710,298	Sept. 30	4452	1004 / 1005	100	2961
Fan. Dissectible	G. C. Hawkins and H. L. Flint	707,842	Aug. 26	3600	813	100	1904
Fan. Electric	H. R. Wellman	708,105	Sept. 2	190	45	100	2021
Fan-motor case	N. F. Warlick	707,040	Aug. 12	1279	444	100	1537
Fan-operating device	B. D. Straight	708,091	Sept. 2	165	39	100	2015
Fan. Rotary hand-	L. K. McClellan	708,244	Sept. 2	457	104	100	2074
Farm-gate	W. B. H. Dowse	707,054	Aug. 12	2010	450	100	1544
Fastener	J. E. Traver	707,269	Aug. 19	2605	589	100	1686
Fastener	W. B. H. Dowse	707,504	Aug. 19	2848	645	100	1738
Fastening device	R. W. Grove	705,896	July 29	4858	1054	100	1042
Fastening device	F. A. Fairbrother, Jr	707,682	Aug. 26	3229	725	100	1832
Fastening device	P. Kleber	707,785	Aug. 26	3474	788	100	1881
Fastening device. String-	E. Flowers	704,016	July 8	1191	259	100	252
Fat-washing apparatus	D. I. Davis	706,033	Aug. 5	58	13	100	1129
Faucet	R. W. Booth	709,289	Sept. 16	2681	601	100	2565
Faucet and automatic graduate. Measuring-	G. J. Adams	707,539	Aug. 26	2924	661 / 662	100	1789
Faucet. Oil or molasses	C. F. Smith	704,942	July 15	2998	642	100	648
Faucet or tap	L. Wolf	709,189	Sept. 16	2273	516	100	2477
Feather crushing and pulverizing machine	F. Franke	708,133	Sept. 2	249	59	100	2034
Feather fabric. Woven	E. K. Warren and J. H. Holden	709,620	Sept. 23	3142	709	100	2674
Feather fabric. Woven	E. K. Warren and J. H. Holden	709,621	Sept. 23	3143	709	100	2674
Feather fabric. Woven	E. K. Warren and J. H. Holden	709,622	Sept. 23	3144	709	100	2674
Feather-quiller	F. Franke	703,723	July 1	544	143	100	128
Feed-box for live stock	G. M. Fillmore	709,439	Sept. 16	2766	628	100	2562
Feed mechanism	H. Maries	705,940	July 29	5040	1098	100	1079
Feed-regulator for steam-boilers. Automatic	J. S. V. Bickford	703,757	July 1	705	156	100	141
Feed-table mechanism	T. Morrison	704,890	July 15	2836	614	100	607
Feed-trough	J. W. Barnes	705,806	July 29	4961	1079	100	1064
Feed-water, burner, or like regulator	J. Johnston	704,342	July 8	1924	395	100	384
Feed-water heater	R. H. Hornbrook	704,879	July 15	2818	609	100	603
Feed-water heater	F. W. Reich	705,293	July 22	3751	814	100	809
Feed-water heater	G. Florack	707,575	Aug. 26	3018	679	100	1788
Feed-water heater and condenser	H. A. Fergusson	704,454	July 8	2030	440	100	428
Feed-water heater and purifier	H. J. Reynolds	708,782	Aug. 12	1523	338	100	1444
Feed-water heater and purifier	J. E. Crawley	708,028	Sept. 2	55	13	100	1992
Feed-water heater. Fuel-economizer	W. Downs	708,699	Sept. 9	1351	289	100	2243

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Feed-water-purification system	A. Sorge, Jr	708,088	Sept. 2	160	38	100	2014
Feeder. Automatic boiler-	C. Cummings	710,317	Sept. 30	4464	1012	100	2967
Feeding devices. Quick return for	W. J. Bussinger	708,803	Sept. 9	1606	367	100	2223
Feeding, printing, and cutting strips of material. Machine for	S. Kops	709,271	Sept. 16	2436	551	100	2515
Feeding rack and shearing table. Combination sheep	V. Baughman	708,297	Sept. 2	538	126 / 127	100	2095
Fellies or the like. Attachment for cutting	W. E. Swindell	707,179	Aug. 19	2258	505	100	1613
Fence	W. Crabb	706,641	Aug. 12	1243	274	100	1385
Fence	G. Gentalinger	709,215	Sept. 16	2319	536	100	2489
Fence-builder and hay-derrick	W. W. C. Hill	708,551	Sept. 9	989	223 / 224	100	2196
Fence clip. Wire-	F. Canfield	706,395	Aug. 5	771	108	100	1270
Fence fabric. Woven-wire	E. L. Warner	709,005	Sept. 16	2020	461	100	2424
Fence fastening-clip. Wire-	F. Canfield	706,220	Aug. 5	420	90	100	1202
Fence-lock	W. B. MacLean	705,961	July 29	5092	1102	100	1084
Fence machine. Wire-	P. M. Mishler	703,804	July 1	702	174	100	150
Fence machine. Wire-	G. P. A. Weisenborn	705,500	July 22	4170	907 / 908	100	892
Fence-making machine	E. E. Stewart	704,396	July 8	1923	416	100	405
Fence. Portable	J. Steiner	704,277	July 8	1702	371	100	358
Fence-post	A. Henry	704,035	July 8	1232	266	100	260
Fence-post	C. O. Peak	704,915	July 15	2922	626	100	629
Fence-post	J. W. Todd	704,988	July 15	3089	665	100	659
Fence-post	W. B. Johnson	709,224	Sept. 16	2331	528	100	2495
Fence-post	J. Buchtel	709,300	Sept. 16	2489	560	100	2524
Fence-post	C. O. Blee and J. H. Redding	709,735	Sept. 23	3336	752	100	2711
Fence-post	I. M. Warner	709,835	Sept. 23	3544	799	100	2757
Fence-post	V. H. Abbott	710,031	Sept. 30	3948	890	100	2953
Fence-post and fence-stay	W. M. Smith	708,067	Sept. 2	159	38	100	2014
Fence-post. Braced	D. W. Larimer and D. C. Elliott	704,842	July 15	2752	595	100	589
Fence-post. Composition	C. C. Hagerman	707,586	Aug. 26	3040	683	100	1793
Fence-post. Metal	O. A. Harker, Jr	708,726	July 1	653	144	100	131
Fence-post. Metallic	J. A. Utter	709,617	Sept. 23	3138	699	100	2673
Fence-post. Metallic	I. M. Warner	705,498	July 22	4106	907	100	891
Fence stretcher. Wire-	C. Whipple	705,504	July 22	4177	909	100	893
Fence tool. Wire-	L. C. Hoover	706,562	Aug. 12	1095	243	100	1353
Fence. Wire	C. S. Beebe	706,883	Aug. 12	1708	382	100	1483
Fence. Wire	M. D. Shipman	707,457	Aug. 19	2765	627	100	1719
Fence. Wire	I. N. O'Neal	708,391	Sept. 2	703	158	100	2124
Fence. Wire	M. M. Benster	703,756	July 1	704	156	100	141
Fence-wire fastener	W. Groves and G. D. O'Day	709,540	Sept. 23	3009	670	100	2647
Fences. Machine for weaving cross-wires in	M. D. Shipman	707,455	Aug. 19	2764	626	100	1719
Fencing. Wire	A. W. Wellman	707,743	Aug. 26	3378	759	100	1861
Fencing. Woven-wire							
Fender: *See* Boat-fender. Car-fender							
Ferrous liquors. Treating	A. S. Ramage	708,585	Sept. 9	1046	238	100	2204
Ferrule	C. Perdelwitz	708,457	July 1	155	36	100	38
Ferrule for fork-handles	G. A. McKeel	709,108	Sept. 16	2110	484	100	2445
Fertilizer and making same	G. H. Smith	705,462	July 22	4100		100	880
Fertilizer-distributer	C. Johnson and O. C. Rawley	704,747	July 15	2569	554	100	551
Fertilizer-distributer	A. McWhorter	705,858	July 29	4896	1065	100	1051
Fertilizer-distributer	E. L. Braxton	708,118	Sept. 2	215	51	100	2026
Fertilizer-distributer and seed-planter. Combined	W. B. Rohmer	710,011	Sept. 30	3914	884	100	2946
Fertilizers. Making	B. Terne	709,185	Sept. 16	2269	516	100	2477
Fibers from reeds, rushes, &c. Producing long and short	L. v. Ordody	708,814	July 1	816		100	163
Fibers of annual growth for industrial purposes. Treating	S. O. Edison	704,698	July 15	2469	533	100	532
Fibrous materials. Machine for circulating and separating waste	J. Marshall	707,133	Aug. 19	2156	484	100	1592
Fibrous plants. Machine for disintegrating	M. Prieto	705,140	July 22	3420	742 / 743	100	742
Fibrous substances. Treating	E. T. Holmes	704,259	July 8	1670	363	100	350
Field-gate	C. P. Niles	706,688	Aug. 12	1322	292	100	1402
Fifth-wheel	J. Watts	707,189	Aug. 19	2281	511	100	1620
File	J. D. Allen	706,630	Aug. 12	1219	270	100	1378
File	L. C. McNeal	708,348	Sept. 2	096	157	100	2122
File	G. H. Kravik	709,640	Sept. 23	3174	708	100	2680
File	H. F. Engleking	709,899	Sept. 30	3582	820	100	2797
File for papers and documents	G. E. Schmidmer	709,559	Sept. 23	3041	677	100	2659
File-handle	P. Bender	706,378	Aug. 5	751	164	100	1267
File. Letter-	W. F. Maloney	710,364	Sept. 30	4568	1030	100	2985
File. Paper-	E. W. Sandstedt	704,985	July 15	2994	639	100	640
File. Paper-	G. A. Phillips	705,132	July 22	3368	738	100	737
File. Periodical-	C. L. Prindle	708,169	Sept. 2	322	77	100	2047
Files and binders. Transfer-frame for letter-	J. F. Cordes	708,767	July 1	721	160	100	145
Filling device. Receptacle-	N. D. Nelson	704,565	July 15	2256	488	100	487
Filling-indicator	L. F. Doellinger	704,442	July 8	1999	435	100	421
Filling-receptacles, &c. Locking device for	D. E. Wright	709,844	Sept. 23	3560	803	100	2760
Filing-receptacles, &c. Locking device for	D. E. Wright	709,845	Sept. 23	3562	803	100	2760
Filter	J. E. Charon	704,815	July 15	2711	586	100	580
Filter	W. R. Powell	704,921	July 15	2940	630 / 631	100	632
Filter	W. H. Sargent	705,447	July 22	4066	863	100	874
Filter	F. S. Young and W. W. Ueberroth	706,870	Aug. 5	729	158 / 159	100	1268
Filter	C. Hungerford	707,333	Aug. 19	2551	575	100	1674
Filter	F. Bommarius	707,899	Aug. 26	3709	832	100	1925
Filter	J. Kostálek	709,712	Sept. 23	3300	741	100	2705
Filter	T. Linke	710,285	Sept. 30	4433	999	100	2957
Filter and hydraulic press member	M. A. Smith	707,029	Aug. 12	1963	439 / 440	100	1534
Filter-bed	J. C. Wallace	705,726	July 29	4663	1011	100	1008
Filter-bed for chlorination-barrels	A. E. Johnson	706,472	Aug. 5	946	206	100	1307

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Filter for recovering the liquid from slimes, sands, pulp, or such like in connection with cyanid or other chemical applications. Revolving vacuum-	G., Jr., and S. E. Fraser	706,980	Aug. 12	1774	397	100	1497
Filter-press	F. M. Locke	707,945	Aug. 19	2371	531	100	1638
Filter. Water-	A. G. Noack	705,686	July 29	4607	999 / 1000	100	992
Filtering apparatus	E. De Meulemeester	703,559	July 1	331	75	100	67
Filtering apparatus	D. Rojat	703,833	July 1	844	186	100	169
Filtering apparatus	C. Baechler	707,587	Aug. 26	2990	663	100	1771
Filtering apparatus	N. Rosen	704,273	July 8	1693	369	100	355
Finger-ring	M. Gottschalk	705,920	July 29	5008	1090	100	1073
Finger-straightening case	C. R. Harris	704,681	July 15	8428	527	100	525
Fire-alarm	M. K. Fred	703,909	July 1	967	215	100	197
Fire-alarm. Automatic	R. G. Callum	706,384	Aug. 5	767	167 / 168	100	1269
Fire-alarm-telegraph system	C. Allenou	710,091	Sept. 30	4067	917 / 918	100	2878
Fire. Apparatus for discharging inflammable or other liquids from storage-tanks at the outbreak of	W. Hartley, E. D. Rivers, and E. Beach.	706,384	July 22	3635	787	100	786
Firearm	J. M. Browning	708,794	Sept. 9	1455	332 / 333	100	2292
Firearm. Automatic	J. Bincette	708,304	Sept. 2	569	129	100	2097
Firearm. Breech-loading	N. Pieper	706,199	Aug. 5	382	82	100	1195
Firearm lock and extractor mechanism	E. P. Bergman and A. E. Renard	703,390	July 1	260	60	100	59
Firearm. Magazine	C. A. Young	709,245	Sept. 16	2658	599	100	2568
Firearm. Magazine	L. F. Bruce	708,311	Sept. 2	582	132	100	2100
Firearm-magazine	H. Mosbaugher	703,964	July 1	1098	236	100	218
Firearm palm-rest	J. F. Herndon	707,925	Aug. 26	3757	843	100	1997
Firearm safety attachment	J. T. Brayton	708,119	Sept. 2	217	52	100	2095
Firearm-sight	E. D. Fulford	704,025	July 8	1215	263	100	257
Firearm single trigger	E. D. Fulford	704,024	July 8	1213	263	100	257
Firearm single-trigger mechanism	A. Leven	709,100	Sept. 16	2100	481	100	2443
Firearms and artillery. Protection against shot from hand	H. J. Podlesák	709,607	Sept. 23	3120	695	100	2669
Fire-doors, &c. Electrical releaser for	G. P. Nice and E. F. Laedlein	704,086	July 8	1383	990	100	279
Fire-escape	C. Seessle	704,126	July 8	1430	306	100	301
Fire-escape	G. W. and J. C. Jones	704,834	July 15	2737	592	100	586
Fire-escape	J. T. Cowles	705,042	July 22	3205	692	100	699
Fire-escape	R. Hammerly	705,580	July 29	4390	962	100	949
Fire-escape	M. Abrams	705,891	July 29	4953	1078	100	1062
Fire-escape	D. Neale	707,346	Aug. 19	2570	561	100	1679
Fire-escape	S. B. Parker	707,715	Aug. 26	3296	736	100	1846
Fire-escape	J. M. Brazill	708,120	Sept. 2	219	52, 53	100	2027
Fire-escape	C. J. Haggstrom	708,546	Sept. 9	982	222	100	2191
Fire-escape	A. McCutcheon	708,777	Sept. 9	1410	323 / 324	100	2281
Fire-escape	B. V. Murray	708,825	Sept. 9	1527	349 / 350	100	2305
Fire-escape	A. Sferlozza	708,838	Sept. 9	1557	356	100	2311
Fire-escape	H. Vieregg	708,846	Sept. 9	1572	359	100	2315
Fire-escape	M. Wachter	709,127	Sept. 16	2141	491	100	2452
Fire-escape	W. H. Taylor	709,374	Sept. 16	2651	594	100	2559
Fire-escape	J. W. Smith	709,519	Sept. 23	2977	663 / 664	100	2640
Fire-escape	C. Schwarz and W. C. Bryant	705,710	July 29	4635	1004 / 1005	100	997
Fire-escape and water-tower. Combined	M. J. Johnston	706,666	Aug. 12	1291	294	100	1304
Fire-escape. Portable	R. W. Newton	708,658	July 1	539	120	100	104
Fire-extinguisher. Automatic	O. Hoffmann	704,682	July 15	9439	527	100	525
Fire-extinguisher. Automatic	L. Werlin	705,508	July 22	4173	908	100	893
Fire-extinguisher. Automatic chemical	W. A. Nickerson	710,069	Sept. 30	4013	906	100	2867
Fire-extinguishing and life-saving apparatus	J. S. Letts	703,663	July 1	528	119 / 120	100	104
Fire-extinguishing apparatus	C. B. Shaw	705,544	July 22	4323	985	100	921
Fire-extinguishing apparatus. Automatic alarm-valve for	J. Buchtel	710,246	Sept. 30	4371	982	100	2943
Fire-hose. Telegraph	J. Hazledine	705,925	July 29	5013	1091 / 1092	100	1074
Fire in oil-tanks, &c. Apparatus for extinguishing	H. Braby	710,315	Sept. 30	4483	1012	100	2967
Fire-lighter	A. R. Seaman	703,841	July 1	959	188	100	172
Fire-lighter. Automatic	J. R. Thomas	708,094	Sept. 2	171	40	100	2016
Fire-lighter blocks. Machine for making	E. Pollard and J. R. Thomas	708,073	Sept. 2	134	32, 33	100	2005
Fire-lighter machine	I. Cairns	705,032	July 22	3185	688	100	695
Fireman's hat	C. Poyner	705,595	Aug. 12	1160	257	100	1266
Fire-screen	H. W. Lloyd	707,704	Aug. 26	3377	732 / 734	100	1842
Fire truck and ladder	G. Vitti	710,398	Sept. 30	4338	975	100	2937
Fireplace	R. N. Johnson	706,182	Aug. 5	362	76	100	1188
Fireplaces. Heat-regulator for	T. Ohno	705,699	July 29	4615	1000 / 1001	100	998
Fire-protecting shutter. Automatic	W. R. Kinnear	704,546	July 15	2235	488	100	481
Fireproof blinds. Spring-roller for	W. R. Kinnear	706,569	Aug. 12	1107	245	100	1255
Fireproof blinds, &c. Spring-roller for	T. Bailey	704,771	July 15	2697	564	100	539
Fireproof building	F. W. Cooley	707,066	Aug. 19	2079	464 / 465	100	1575
Fireproof building	F. W. Cooley	707,210	Aug. 19	2315	518 / 519	100	1626
Fireproof building	S. G. Brinkman	707,301	Aug. 19	2301	514	100	1624
Fireproof ceiling and floor	W. R. Knox	705,760	Aug. 12	1491	------	100	1426
Fireproof cement. Hydraulic	G. R. King	705,360	July 22	3021	649	100	842
Fireproof floor construction	J. T. Simpson and M. N. Shoemaker	706,347	Aug. 5	687	150	100	1255
Fireproof floor construction	M. Watson	710,308	Sept. 30	4470	1008	100	2964
Fireproof floor construction	C. F. Haglin	708,764	Sept. 9	1889	317 / 318	100	2277
Fireproof flooring							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Fireproof frame building	G. E. Voelkel	710,207	Sept. 30	4469	1008	100	2964
Fireproof partition structure	J. T. Simpson and M. N. Shoemaker	706,348	Aug. 5	690	150	100	1256
Fireproof wall-plaster	C. R. Harris and C. C. Barrick	708,354	Sept. 2	649	------	100	2113
Fireproof wall-plaster. Composition of	C. R. Harris and C. C. Barrick	708,353	Sept. 2	648	------	100	2113
Fish-flaking machine	E. M. Lawrence	706,764	Aug. 12	1487	329	100	1436
Fish, &c. Reducing or rendering	E. R. Edson	707,566	Aug. 26	2991	674	100	1788
Fish-trap	G. Merle	708,380	Sept. 2	685	154	100	2120
Fish-trap hook	M. Greer	705,750	July 29	4712	1019	100	1012
Fishing-reel	J. vom Hofe	703,585	July 1	371	86	100	73
Fishing-reel	A. B. Hendryx	705,758	July 29	4723	1022	100	1014
Fishing-reel	B. J. Warren	704,991	July 15	8105	669	100	662
Fishing-rod holder	E. C. and E. M. Cattley	703,909	July 8	1164	253	100	247
Fishing-rod line-guide	M. B. Eaton	704,525	July 15	2183	473	100	472
Flanger	J. H. Vanderslice	707,881	Aug. 26	3674	895 / 897	100	1920
Flanging-machine	W. J. Hagman	703,406	July 1	78	15	100	18
Flanging-press	C. H. Nichols	708,909	Sept. 9	1692	390	100	2341
Flash-light apparatus	A. Brebner	710,244	Sept. 30	4365	982	100	2942
Flashing apparatus. Revolving group-	F. Mackintosh	706,577	Aug. 12	1123	247	100	1358
Flashing lighthouse-lanterns. Electric switch for	A. Brebner	710,243	Sept. 30	4364	980 / 981	100	2942
Flashing lighthouse-lights, &c. Eclipsing-screen for revolving group-							
Flask: *See* Dental flask. Molding-flask.	E. Weidenbaker	709,509	Sept. 23	3059	681	100	2656
Flask	C. Phelps	709,925	Sept. 30	3746	844	100	2811
Flask support. Tilting-	W. Neuhs	706,283	July 22	3729	810 / 811	100	908
Flat-iron	H. Greenwood	703,609	July 1	604	134	100	119
Flat-iron handle attachment	J. D. Penn	706,776	Aug. 12	1510	335	100	1441
Flood-gate	A. Tretsven	710,769	Sept. 30	4227	953	100	2931
Floor clamp or jack	E. C. Goodrich	706,927	Aug. 12	1787	400	100	1499
Floor-key. Electrical	J. C. Daigneault	706,805	Aug. 12	1566	350 / 351	100	1454
Floor laying and nailing machine	G. W. and H. McNeely	705,601	July 29	4438	962	100	939
Floor-mat. Flexible metal	H. A. Fiske	708,335	Sept. 2	621	140	100	2108
Flow-arresting device	J. W. Nethery	707,712	Aug. 26	3269	736	100	1844
Flow-reducing device	B. D. Sanders	706,258	Aug. 5	493	105 / 106	100	1216
Flower support or holder	T. J. Hart	705,758	July 29	4715	1020	100	1013
Flue-cleaner	H. K. Swinscoe and E. J. McCarty	710,344	Sept. 30	4583	1023 / 1024	100	2978
Flue-scraper	J. Seither	707,022	Aug. 12	1950	437	100	1531
Flue-stop	E. Sette	706,861	Aug. 12	1667	374	100	1475
Fluid-compressor	W. H. Reynolds	710,212	Sept. 30	4310	969	100	2931
Fluid-meter	C. L. Bell and J. Halstead	710,397	Sept. 30	4629	1044	100	2997
Fluid-operated signal	H. H. Westinghouse	707,473	Aug. 19	2793	632	100	1725
Fluid-pressure brake	H. H. Westinghouse	707,474	Aug. 19	2795	632	100	1726
Fluid-pressure brake	H. J. Hedden	705,239	July 22	3643	799	100	788
Fluid-pressure brake system	R. W. Seyer and F. Pratt	707,651	Aug. 26	3172	714	100	1821
Fluid-pressure regulator	J. Hartness	708,410	July 1	88	16	100	19
Fluid-regulating device	W. J. Morton	706,891	July 29	4591	996	100	989
Fluids. Dispersing	E. Campbell	704,971	July 15	3064	658	100	654
Flume-gate	J. E. Keyt	705,933	July 29	5028	1096	100	1077
Flush. Trap-	J. M. Justen	708,890	Sept. 9	1662	381 / 382	100	2333
Flushing device. Closet-	A. M. Nelson	704,084	July 8	1329	249	100	278
Fly-screen attachment	E. Potter	705,959	July 29	5075	1106	100	1087
Fly-trap	J. T. Rice	704,875	July 8	1897	409	100	398
Flying-machine	C. L. Packer	709,506	Sept. 23	2947	657 / 658	100	2653
Fodder-loader	E. A. Gill	703,400	July 1	66	13	100	16
Fog-horn	B. B. McFadden	704,080	July 8	1324	288 / 289	100	277
Folding box	A. W. Beers	707,078	Aug. 19	2055	459 / 460	100	1570
Folding box	A. Vaught	708,943	Sept. 9	1744	403	100	2351
Folding box	F. Cunning	709,965	Sept. 30	3888	864	100	2830
Folding box or case	J. A. Hollem	706,057	Aug. 5	105	23	100	1139
Folding chair. Adjustable	F. Vogel	709,698	Sept. 23	3259	730	100	2697
Folding chair. Portable	B. J. Harrison	707,841	Aug. 26	3598	812	100	1904
Folding-machine	E. Collon	703,546	July 1	808	70	100	62
Folding rod	J. P. Johnson	708,976	Sept. 9	1826	420	100	2367
Folding table	E. P. Van Alstyne, Jr	706,868	Aug. 12	1583	377	100	1478
Folding table	G. E. Shorey	707,171	Aug. 19	2242	502	100	1610
Folding table	W. O. Nussbaumer	709,171	Sept. 16	2233	507	100	2460
Folio-holder	D. E. Hunter	709,221	Sept. 16	2328	527 / 528	100	2490
Food and making same. Stock-	S. L. Fraser	704,530	July 15	2191	475	100	475
Food. Cattle-	G. H. Hughes	707,113	Aug. 19	2132	------	100	1587
Food extracts. Obtaining	G. Eichelbaum	708,330	Sept. 2	615	------	100	2107
Food-guard	A. M. Stadelman	704,139	July 8	1464	313	100	307
Food products. Curing	C. B. Trescott	710,125	Sept. 30	4140	934	100	2893
Foot or head supporter	D. E. Morgan	707,860	Aug. 26	3631	818	100	1911
Foot-power device	G. P. Clark and G. H. Davis	709,435	Sept. 16	2760	621	100	2582
Foot-warmer. Vehicle	G. W. Dunham and J. W. Fox	707,908	Aug. 26	3725	835	100	1929
Forcing-frame or like sash or window	G. Knochenhauer	707,982	Aug. 26	3786	845	100	1939
Forging-press. Hydraulic	H. V. Loss	710,286	Sept. 30	4434	999 / 1000	100	2957
Fork: *See* Tobacco-fork.							
Forking, elevating, and conveying machine	A. P. Tatterson	709,248	Sept. 16	2388	540 / 541	100	2503
Formaldehyde. Solidifying	R. Groppler	705,637	July 29	4550	------	100	981
Formic aldehyde. Composition for the production of vapors of	J. J. A. Trillat	704,490	July 8	2104	------	100	442
Forming and pressing machine	W. H. Hayes	705,756	July 29	4718	1021	100	1013

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Foundations. Building subaqueous	J. T. Ford	707,098	Aug. 19	2086	466	100	1579
Foundry pattern-clamp	E. J. Kiss	707,596	Aug. 26	3054	667	100	1776
Fountain-comb	J. R. Harrison	710,269	Sept. 30	4406	905	100	2551
Fracture apparatus	J. P. Gordon	708,340	Sept. 2	630	142	100	2109
Frame: *See* Door or window frame. Truck-frame. Vehicle-frame. Embroidery-frame. Window-frame. Spinning and twisting frame.							
Freezing. Protecting exposed filters or other confined liquid bodies from	L. K. Davis	705,740	July 29	4697	1016	100	1010
Friction-brake	H. A. House, Jr	707,222	Aug. 19	2355	598	100	1635
Friction-power	A. R. Moore	708,655	Sept. 9	1176	256	100	2231
Fruit brushing and cleaning machine	M. G. Swan and E. H. Richardson	709,562	Sept. 23	3044	678	100	2653
Fruit-drier	C. J. Kurtz	705,767	July 29	4737	1025	100	1017
Fruit for packing. Machine for facing	L. F. Graham	705,071	July 22	3269	706	100	710
Fruit-grader	W. C. Anderson	708,887	July 1	941	205 / 206	100	180
Fruit-grader	F. Stebler	709,618	Sept. 23	3180	697	100	2671
Fruit-jar	F. Wiese	705,182	July 22	3502	759	100	760
Fruit-knife	C. W. Prentiss	706,107	Aug. 5	195	40	100	115
Fruit. Means applicable for use in transporting	R. R. Blandy	706,537	July 29	4493	975	100	969
Fruit-picker	W. H. Rauch	705,141	July 22	3423	743	100	742
Fruit-picking device	I. Dinger	708,770	July 1	727	161	100	146
Fruit-quartering device	J. Goossen	706,174	Aug. 5	336	72	100	1195
Fruit-stemmer	J. A. North	707,154	Aug. 19	2307	494 / 495	100	1601
Fuel and preparing same. Artificial	B. M. Thomas	704,717	July 15	2502	----	100	539
Fuel. Apparatus for combustion of	C. Olsted	707,627	Aug. 26	3111	700 / 701	100	1808
Fuel. Apparatus for the combustion of finely-divided solid	J. W. Bailey	710,083	Sept. 30	3950	991	100	2854
Fuel. Artificial	J. T. Davis	705,216	July 22	3584	----	100	776
Fuel. Artificial	G. M. Dallas	706,533	Aug. 12	1052	----	100	1343
Fuel. Artificial	C. B. Harris	709,851	Sept. 23	3573	----	100	2763
Fuel compound	J. H. Ricker	707,722	Aug. 26	3810	----	100	1849
Fuel-feeding apparatus	W. G. Stones. (Reissue)	12,023	Aug. 19	2916	659 / 660	100	1751
Fuel. Manufacturing artificial	E. J. Hoffman	707,231	Aug. 19	2353	----	100	1634
Fuel-saver and smoke-consumer	C. W. Francisco	706,229	Aug. 5	440	98	100	1206
Fume-arrester	A. W. Gilliland	709,896	Sept. 30	3698	833	100	2799
Funnel	J. de St. Legier	706,465	Aug. 5	996	204	100	1305
Furnace: *See* Adjustable furnace. Annealing-furnace. Blast-furnace. Blast or other furnace. Boiler-furnace. Combination draft-furnace. Cupellation-furnace. Electric furnace. Electrical furnace. Gas-furnace. Garbage-furnace. Glass-furnace. Heating-furnace. Hot-air furnace. Hot-blast furnace. Melting-furnace. Muffle-furnace. Ore-roasting furnace. Perfect-combustion furnace. Regenerative furnace. Retort-furnace. Smelting-furnace. Smoke-preventing furnace. Zinc-furnace.							
Furnace	W. L. Ross	708,474	July 1	178	41, 42	100	88
Furnace	P. Corrigan	708,766	July 1	722	160	100	145
Furnace	C. Phillips	704,097	July 8	1354	295	100	283
Furnace	T. Murphy	705,276	July 22	3719	806	100	801
Furnace	E. O. Rickard	705,968	July 29	5084	1109	100	1088
Furnace	E. O. Rickard	706,498	Aug. 5	984	216 / 217	100	1315
Furnace	R. Halley	707,108	Aug. 19	2113	471 / 472	100	1592
Furnace	J. Reagan	707,157	Aug. 19	2212	495 / 496	100	1603
Furnace	J. Reagan	707,158	Aug. 19	2214	496	100	1603
Furnace	C. F. Smith	707,870	Aug. 26	3646	821	100	1913
Furnace	G. Westinghouse	708,107	Sept. 2	192	46	100	2021
Furnace	D. S. McDonald	709,107	Sept. 16	2108	483 / 484	100	2445
Furnace	H. Abbott	708,851	Sept. 9	1583	360 / 361	100	2318
Furnace air-feeding apparatus	J. H. McConnell	707,249	Aug. 19	2383	534	100	1640
Furnaces. Apparatus for increasing combustion in	G. M. Warner	707,923	Aug. 26	3875	870 / 871	100	1959
Furnaces. Apparatus for supplying fuel to	J. A. Cowan	706,532	Aug. 12	1049	231	100	1343
Furnaces. Automatic feeder for straw-burning	J. W. Cabot and S. W. Vaughen	710,247	Sept. 30	4372	988	100	2943
Furnace blast-regulator	L. L. Knox	708,719	Sept. 9	1305	298	100	2256
Furnace-door	W. H. Howard	705,246	July 22	3654	791	100	790
Furnace-feeding apparatus	H. L. Gantt	708,705	Sept. 9	1575	992	100	2251
Furnace for heating and melting iron, &c	T. V. Allis	704,286	July 8	1719	375	100	361
Furnace for progressive metal-heating	A. M. G. Sébillot	710,217	Sept. 30	4320	971	100	2933
Furnace for separating zinc from ores	E. Pollacsek	709,368	Sept. 16	2589	----	100	2546
Furnace-gases. Desulfurizing	A. G. Andrew	705,191	July 22	3516	768	100	763
Furnace-grate	J. Armstrong	705,382	July 22	3797	823	100	818
Furnace or forge	W. McClave	705,590	July 29	4454	951	100	956
Furnace-stoking mechanism	P. Meehan	704,356	July 15	2240	485	100	484
Furnace-top down-comer and explosion-pipe	W. R. Lee	704,199	July 8	1568	338	100	328
Furnaces. Apparatus for recovering minerals carried off in the fumes from smelting-Furnaces or the like. Burner for the removal of hardened masses in	H. A. E. Menne	705,418	July 22	4021	871	100	864

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g	Official Gazette. Vol.	Official Gazette. Page.
Furnaces. Reversing-valve for regenerative or similar	A. Fischer	707,572	Aug. 26	3014	678	100	1787
Furnaces. Steam and air feeding apparatus for boiler-	J. Marshall	708,732	July 1	661	146	100	122
Furnaces. Utilizing waste heat in connection with smelting-	R. Brown	708,018	Sept. 2	30	7	100	1987
Furnaces. Valve for heating-	W. F. Shick, R. J. Lehman, and I. J. Walker.	705,618	July 29	4466	988	100	964
Furniture-clamp	W. L. Tuell	706,705	Aug. 12	1353	301	100	1408
Furniture. Construction of metal	J. F. L. Uhl	705,498	July 22	4150	903	100	886
Furniture. Folding	W. Wenneis	707,289	Aug. 19	2466	553	100	1656
Furniture, &c. Leg or standard for	W. G. Davis	705,653	July 29	4520	981 / 982	100	975
Furniture spring-support	F. E. Ewles	708,776	July 1	736	163	100	148
Furs or skins. Machine for removing hard and stiff hairs from	G. Lafrique	706,904	Aug. 12	1849	414	100	1511
Fuse-box. Magazine	H. L. Hunt and W. E. Moon	706,088	Aug. 5	120	25	100	1142
Fuse-igniting tape	J. H. Garson	709,979	Sept. 30	3963	870	100	2835
Fuse safety device. Shell-	W. Ruegg	708,883	Sept. 9	1542	353	100	2300
Gage: *See* Boiler water-gage. Cigar-gage. Dental gage. Doweling-gage. Micrometer-gage. Speed-gage. Water-gage.							
Gage	G. Washington	706,505	Aug. 5	998	220	100	1319
Galley-lock	U. S. G. Peoples and C. F. Walther	704,918	July 15	2281	529	100	531
Galvanic battery	C. B. Schoenmehl	705,616	July 29	4465	968	100	964
Galvanic battery	E. L. Slocum	707,363	Aug. 19	2597	587	100	1684
Galvanic battery. Reversible	T. A. Edison	704,303	July 8	1743	331	100	366
Galvanic battery. Reversible	T. A. Edison	704,304	July 8	1744	----	100	366
Galvanic battery. Reversible	T. A. Edison	704,305	July 8	1748	381	100	367
Galvanic battery. Reversible	T. A. Edison	707,382	Aug. 19	2598	589	100	1669
Galvanizing-machine	R. Heathfield	705,186	July 22	3509	761	100	761
Galvanometer	A. Zeleny	706,982	Aug. 12	1875	420	100	1516
Galvanometer	C. L. R. E. Menges	708,608	Sept. 9	1092	245	100	2218
Gambrel	W. A. H. Zander	707,469	Aug. 19	2788	631	100	1734
Game	W. M. Wayts	704,164	July 8	1500	321	100	315
Game apparatus	M. R. Wright	706,658	Aug. 12	1277	281	100	1391
Game apparatus	W. R. Hock	706,873	Aug. 12	1692	379	100	1480
Game apparatus	J. S. Akerman	707,291	Aug. 19	2470	554	100	1656
Game apparatus	S. A. Akins	708,839	Sept. 9	1558	356	100	2312
Game apparatus	D. Smith	709,007	Sept. 16	1897	434	100	2400
Game apparatus	W. Gibb	709,144	Sept. 16	2174	498	100	2459
Game apparatus	C. E. Edgerly	709,622	Sept. 23	3164	706	100	2677
Game apparatus	H. A. Hannum	708,971	July 1	1109	239 / 240	100	220
Game-board	S. Schmid	705,776	July 29	4758	1029	100	1021
Game-board	F. E. Morrill	705,873	July 29	4923	1071	100	1056
Game-board	M. Schinkel	709,155	Sept. 16	2191	501	100	2463
Game-board	J. E. Johnston	709,534	Sept. 23	3105	705	100	2678
Game-board	H. L. Haskell	709,535	Sept. 23	3106	707	100	2678
Game-board	H. L. Haskell	709,661	Sept. 23	3212	717	100	2688
Game-board	A. Assorati	704,149	July 8	1476	316	100	310
Game-counter	E. T. Van Gieson	708,569	Sept. 9	1017	230	100	2198
Game indicator. Ball-	E. Manley	709,616	Sept. 23	3134	698	100	2672
Garbage, &c. Apparatus for the treatment of	R. Thorne	704,339	July 8	1367	404	100	394
Garbage-burner. Domestic	F. E. McGurrin	709,886	Sept. 23	3545	799	100	2757
Garbage-cooking apparatus	C. S. Wheelwright	709,946	Sept. 30	3786	854	100	2818
Garbage-furnace	R. L. Walker	708,711	July 1	619	139	100	122
Garbage or refuse can	E. C. Seaman	708,745	July 1	686	152	100	137
Garbage or refuse can	E. C. Seaman	709,963	Sept. 30	3909	871	100	2826
Garbage-receptacle	F. E. Holzhauer	705,718	July 29	4652	1008	100	1001
Garbage-receptacle and means for handling same	J. Thiele	709,384	Sept. 16	2605	598 / 599	100	2563
Garbage. Treating	S. E. Wilson	709,450	Sept. 16	2791	638	100	2580
Garbage-treating apparatus	E. M. Hartell	705,233	July 22	3633	787	100	780
Garden implement	W. P. C. Adams	708,751	July 1	695	154	100	130
Garment	H. S. Brewington	708,596	July 1	275	62	100	50
Garment-clasp	M. B. Hammond	704,587	July 15	2212	479	100	478
Garment-clasp	S. Katz	704,978	July 15	3066	659	100	555
Garment-clasp	B. G. Clark	706,799	Aug. 12	1557	348	100	1451
Garment-clasp	M. E. Buckley	709,200	Sept. 16	2295	521	100	2488
Garment. Combination nether	C. E. Kasselman	706,956	Aug. 12	1838	411	100	1509
Garment-fastener	W. L. Dingmoor	706,909	Aug. 12	1757	393	100	1491
Garment fastener and supporter	J. Jenkins	709,909	Sept. 30	3774	836	100	2804
Garment fastener or supporter	C. E. De Lancey	708,584	Sept. 9	1453	318	100	2159
Garment-fastening	N. Douglas	709,970	Sept. 30	3950	905	100	2832
Garment-holder	F. F. Crawford	706,495	Aug. 5	46	9	100	1127
Garment-stretcher	W. S. Hunkins	708,986	July 1	1011	230	100	202
Garment-supporter	J. Wilkinson	705,506	July 22	4185	910	100	895
Garment-supporter	F. Spiering	707,088	Aug. 12	1967	441	100	1585
Garment-supporter	B. L. Bargar	707,070	Aug. 19	2049	457	100	1569
Garment-supporter	S. C. Pearson	707,717	Aug. 26	3300	730	100	1847
Garment-supporter	W. G. Walton and D. W. Harner	707,736	Aug. 26	3340	748	100	1855
Garment-supporter	J. Sulzbacher	707,876	Aug. 26	3655	822	100	1915
Garment-supporter	H. C. Hine	708,963	Sept. 9	1795	413	100	2320
Garment-supporter	C. A. Deardorff	709,879	Sept. 30	3632	821	100	2768
Garment-supporter	A. A. Mudd	710,292	Sept. 30	4445	1002	100	2959
Garment-supporter	A. L. Matlack	705,690	July 29	4590	996	100	998
Garment-supporter and waist-adjuster	H. F. Stowell	705,476	July 22	4119	895	100	883
Garment-supporting button attachment. Separable	L. Roser, Jr	708,497	Sept. 2	897	208	100	2166
Garment-supporting device	C. A. Spurgin	706,464	Aug. 5	985	204	100	1304
Garment-supporting webbing	W. A. Graham	705,070	July 22	3261	705	100	710
Garment. Union	G. O. Cook	705,659	July 29	4517	981	100	974
Garment. Union	R. W. Schmelz	706,855	Aug. 12	1659	371	100	1474
Garter							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Gas and air mixer	J. Seymour	704,762	July 15	2590	559	100	558
Gas and air mixer	S. Broichgans	708,208	Sept. 2	577	130	100	2098
Gas and air mixing machine	J. Seymour	704,763	July 15	2593	561	100	556
Gas and steam convertible engine	G. Dahlberg, J. Clicquennoi, and E. Uhlin. (Reissue.)	12,021	Aug. 19	2906	658	100	1749
Gas and steam convertible engine	G. Dahlberg, J. Clicquennoi, and E. Uhlin. (Reissue.)	12,024	Aug. 26	2894	875	100	1964
Gas and steam engine. Combined	W. Heckert	708,537	Sept 9	1147	259	100	2225
Gas. Apparatus for making carbonic-acid or other	V. W. Riesberg	704,272	July 8	1691	369	100	354
Gas. Apparatus for making oil	R. Dempster	708,901	July 1	975	212	100	195
Gas-burner	S. R. Treen	708,625	July 1	450	105	100	88
Gas-burner	J. Harris	704,835	July 15	2363	513	100	509
Gas-burner	A. M. Hewett	704,745	July 15	2566	553	100	551
Gas-burner	F. Harper	705,581	July 29	4301	959	100	949
Gas-burner	S. A. Politaky and J. Agust	705,862	July 29	4901	1066	100	1052
Gas-burner	A. Beler	706,633	Aug. 12	1221	271	100	1379
Gas-burner	J. G. Koegle	706,761	Aug. 12	1482	328	100	1436
Gas-burner	G. Lund	706,973	Aug. 12	1862	416	100	1513
Gas-burner	J. W. Piper	709,356	Sept. 16	2587	583	100	2546
Gas-burner	J. J. Graf	703,404	July 1	73	14	100	17
Gas burner. Acetylene	A. Murinick	705,950	July 29	5061	1102	100	1084
Gas-burner. Incandescent	E. W. Phelps	706,686	Aug. 12	1325	298	100	1408
Gas-burner. Incandescent	T. Gordon	708,222	Sept. 2	423	96	100	2067
Gas-burner. Incandescent	J. Buchanan	708,860	Sept. 9	1600	366	100	2222
Gas-burner. Incandescent	J. Buchanan	708,861	Sept. 9	1601	366	100	2222
Gas-burner. Incandescent	E. H. Kelly	706,831	Aug. 12	1613	362	100	1464
Gas-burner. Regenerative	S. H. Blodgett	705,315	July 22	3943	895	100	819
Gas-burner safety attachment	L. F. Ducker	705,329	July 22	3843	882	100	827
Gas-burners. Automatic cut-off for	E. B. and L. S. Cushman	703,695	July 1	509	133	100	119
Gas-engine	A. T. Brown	705,201	July 22	3534	766	100	767
Gas-engine	T. Doherty	706,167	Aug. 5	324	68, 69	100	1183
Gas-engine	W. A. Leonard	708,236	Sept. 2	442	101	100	2071
Gas-engine	G. Westinghouse	710,385	Sept. 30	4607	1039	100	2992
Gas-engine	B. W. Harris	707,774	Aug. 26	3455	778	100	1878
Gas-filter	M. J. Graham	706,928	Aug. 12	1787	400	100	1499
Gas-fixture valve	E. Luhmann	708,972	Aug. 12	1860	416	100	1513
Gas from carbonates in a continuous manner. Apparatus for the production of pure carbonic-acid	F. G. Hamer	705,077	July 22	3271	709	100	712
Gas-furnace	F. Bredel	706,504	July 15	2136	462	100	462
Gas-furnace. Retort	E. R. Cook	708,956	Sept. 9	1779	411	100	2357
Gas-generating apparatus. Acetylene	F. A. Feldkamp	705,570	July 29	4374	948 949	100	947
Gas-generating apparatus. Carbonic-acid	H. Strache	708,619	July 1	435	101	100	86
Gas-generating apparatus. Water	F. E. Caton and F. B. Warring	708,995	July 8	1161	258	100	246
Gas-generator	C. J. Luther	709,786	Sept. 23	3458	778	100	2738
Gas-generator	I. L. Harris	704,032	July 8	1227	264 265	100	259
Gas generator. Acetylene	A. Winch	704,226	July 8	1609	348	100	336
Gas generator. Acetylene	P. B. Perkins	704,664	July 15	2410	521	100	520
Gas generator. Acetylene	C. W. Söderberg	704,945	July 15	3002	643 644	100	644
Gas generator. Acetylene	F. L. Kincaid	704,967	July 15	3056	656 657	100	653
Gas generator. Acetylene	W. S. Hamm and J. A. Mosher	705,078	July 22	3278	709	100	712
Gas generator. Acetylene	J. A. Mosher	705,115	July 22	3358	728	100	729
Gas generator. Acetylene	D. J. Van Praag	705,166	July 22	3460	753	100	750
Gas generator. Acetylene	L. Montel	705,272	July 22	3711	804 805	100	799
Gas generator. Acetylene	A. and P. L. Davis	705,730	July 29	4698	1015 1016	100	1000
Gas generator. Acetylene	S. W. Ray	705,788	July 29	4771	1034	100	1025
Gas generator. Acetylene	H. L. Bugg	705,902	July 29	4970	1082	100	1056
Gas generator. Acetylene	A. Karg	706,057	Aug. 5	128	26	100	1143
Gas generator. Acetylene	A. C. Einstein	706,810	Aug. 12	1575	358	100	1455
Gas generator. Acetylene	D. W. Bishop	707,077	Aug. 19	2060	461	100	1571
Gas generator. Acetylene	D. W. Bishop	707,078	Aug. 19	2064	461	100	1572
Gas generator. Acetylene	D. W. Bishop	707,796	Aug. 26	3508	791	100	1868
Gas generator. Acetylene	S. L. Newlin and J. Mathisen	708,021	Sept. 2	33	8	100	1997
Gas generator. Acetylene	C. W. Caldwell	709,344	Sept. 16	2569	579	100	2542
Gas generator. Acetylene	C. W. Metcalf	709,470	Sept. 23	2851	640 641	100	2612
Gas generator. Acetylene	J. C. Charbeneau	12,041	Sept. 30	4645	1049 1050	100	3000
Gas generator. Acetylene	G. G. Smith. (Reissue)	710,159	Sept. 30	4208	948	100	2907
Gas generator. Acetylene	J. Ledru	709,004	Sept. 16	1887	433	100	2398
Gas generator. Chlorin	T. Edwards	708,883	Sept. 9	1645	378	100	2351
Gas-governor	D. E. Hodgens	710,248	Sept. 30	4574	993	100	2944
Gas-heater	J. W. Carter	709,495	Sept. 23	2912	649	100	2626
Gas-heating burner. Atmospheric	J. J. Lawler	705,111	July 22	3352	727	100	728
Gas-igniting device. Electric	J. A. Mosher	704,398	Sept. 2	718	161	100	2197
Gas-lighter. Electrical	J. G. Poppert	704,391	July 8	1913	415	100	403
Gas-lighting mechanism. Automatic	A. B. Shaw	708,076	Sept. 2	144	35	100	2011
Gas-main stopping or closing device	A. Postley	706,111	Aug. 5	201	42	100	1159
Gas. Making carbonic-acid	V. W. Riesberg	710,326	Sept. 30	4590	1018 1019	100	2975
Gas-manufacturing apparatus	H. M. Papst	707,788	Aug. 26	3472	789	100	1881
Gas. Manufacturing illuminating	C. W. Isbell	706,922	Aug. 12	1776	398	100	1497
Gas-meter. Prepayment	J. Geen	708,819	July 1	896	192	100	155
Gas, oil, and water separator	J. M. Powell	707,318	Aug. 19	2580	567	100	1668
Gas or other pipes. Pressure-reducer for	J. L. Geyer and R. A. Prime	703,758	July 1	698	154	100	139
Gas-pressure. Instrument for indicating	M. Arndt	704,527	July 15	2186	473 474	100	474
Gas-producer	W. J. Evans and F. Klepetko						

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Gas-producer	J. A. Herrick	705,840	July 29	4858	1055	100	1048
Gas-producer	J. A. Herrick	706,412	Aug. 5	827	180	100	1281
Gas-producer	J. A. Herrick	706,989	Aug. 12	1805	403	100	1508
Gas-producer	L. L. Merrifield	707,146	Aug. 19	2198	491 498	100	1599
Gas-producer and recuperative furnace. Combined	A. J. Maakrey	706,579	Aug. 12	1196	248 249	100	1359
Gas-producing apparatus	J. H. Miller, Jr	708,943	July 1	1046	227	100	908
Gas-purifying apparatus	H. A. Humphrey	709,773	Sept. 23	3431	772	100	2781
Gas-retort	C. W. Isbell	708,238	Aug. 5	455	97	100	1209
Gas-retorts. Means for charging	E. Drory	705,656	July 29	4328	982	100	975
Gas-service safety-valve	L. M. Osborne	705,125	July 22	3380	782	100	734
Gas-storage tank	J. A. Mosher	705,114	July 22	3357	727	100	739
Gas-tar residuum. Treating	J. T. Lowe	708,510	Sept. 2	921	209	100	2168
Gas traps. Apparatus for protecting seals of sewer-	J. P. Putnam	706,255	Aug. 5	488	104	100	1215
Gases. Apparatus for mixing	A. Molet	709,498	Sept. 23	2919	651	100	2698
Gases. Apparatus for washing	E. Theisen	704,593	July 15	2299	500	100	495
Gases to high-tension discharges. Apparatus for subjecting	C. S. Bradley and D. R. Lovejoy	709,808	Sept. 30	3614	817	100	2754
Gases. Treating	E. Theisen	709,527	Sept. 23	2998	667	100	2644
Gasolene-engine	E. T. McKaig	707,793	Aug. 26	3502	790	100	1886
Gasolene-regulator	C. J. Johnson	709,688	Sept. 23	3172	707	100	2679
Gate. *See* Automatic gate. Car guard-gate. Crossing-gate. End-gate. Farm-gate. Field-gate. Flood-gate. Flume-gate. Hinged gate. Lifting-gate. Race starting-gate. Railway-gate. Road-gate. Swinging gate. Water-gate.	W. A. Byerly	708,382	July 1	33	7	100	9
Gate	O. B. Jacobs	708,423	July 1	108	22	100	23
Gate	R. T. Van Valkenburg	704,602	July 15	2314	502	100	499
Gate	W. Fuller	705,395	July 22	3977	861	100	854
Gate	G. W. Simons	705,963	Aug. 5	510	109	100	1219
Gate	T. A. Hill	706,413	Aug. 5	828	180 181	100	1281
Gate	H. P. Egedal	707,218	Aug. 19	2231	521	100	1629
Gate	A. M. Lance	707,431	Aug. 19	2738	617	100	1712
Gate	W. H. Wright	707,956	Aug. 26	3200	720	100	1828
Gate	W. D. Ott and F. L. Preby l	708,915	Sept. 9	1702	392	100	2343
Gate	J. J. Hynding	709,153	Sept. 16	2188	501	100	2462
Gate	T. A. Hill	709,543	Sept. 23	3014	671	100	2647
Gate	J. Meyer	709,548	Sept. 23	3024	672	100	2649
Gate	I. L. Landis. (Reissue)	12,089	Sept. 30	4641	1048	100	2999
Gate	J. Clinton	710,250	Sept. 30	4377	984	100	2944
Gear. Driving	J. Nutry	708,579	Sept. 9	1086	234 235 1078	100	2302
Gear for traction-engines. Drive	D. B. Arnold	705,804	July 29	4957	1079	100	1063
Gear for varying speed and reversing. Driving	W. and G. F. Meischke-Smith	706,580	Aug. 12	1128	249	100	1359
Gear. Friction draft	G. P. Ritter	704,110	July 8	1894	300	100	293
Gear. Reversing	L. R. Jones	706,667	Aug. 12	1292	285	100	1395
Gear. Reversing	T. Holliday	706,752	Aug. 12	1465	323	100	1432
Gear-teeth. Machine for cutting helicoidal	L. F. A. Monneret	709,285	Sept. 16	2358	534 535 536	100	2497
Gear-tooth cutter	O. W. Plant	707,719	Aug. 26	3304	740	100	1847
Gear. Transmission	D. Fergusson	704,609	July 15	2471	533	100	532
Gear-tumbler	B. M. W. Hanson and F. W. Gordon	703,578	July 1	363	83	100	72
Gear. Variable-speed	H. F. Northrop	707,926	Aug. 26	3775	847	100	1940
Gear. Variable-speed and reversing	H. J. Westover	709,690	Sept. 23	3251	731	100	2698
Gear-wheel	G. S. Baker	707,672	Aug. 26	3214	721	100	1829
Gear-wheel. Two-speed	W. D. Wansbrough	709,381	Sept. 16	2660	596	100	2562
Gears. Quick-feed arrangement for	W. T. Emmes	707,589	Aug. 26	3006	676 677	100	1786
Gearing	L. Jones, Jr	703,593	July 1	381	88, 89	100	76
Gearing	C. H. Pelton	704,094	July 8	1347	293	100	281
Gearing	W. L. Voss	705,492	July 22	4157	904	100	869
Gearing	J. R. Carter and J. E. Hausfeld	708,315	Sept. 2	587	133	100	2101
Gearing	H. L. Wright	709,257	Sept. 16	2465	556	100	2519
Gearing. Compensating	E. Huber	705,568	July 29	4409	955 956	100	953
Gearing. Friction-wheel	G. Voigt	704,721	July 15	2508	549	100	540
Gearing. Frictional	W. D. Dalley	705,890	July 29	3987	869	100	858
Gearing. Frictional	G. W. Stinebring	705,714	July 29	4647	1006 1007	100	1000
Gearing. Multiplying	E. Benoit	706,794	Aug. 12	1548	347	100	1449
Gearing. Speed-changing friction	O. Marth	705,108	July 22	3347	726	100	727
Gearing. Variable-speed	L. T. Weiss	708,689	July 1	455	105	100	89
Gearing. Variable-speed	C. Stone	706,611	Aug. 12	1185	263	100	1371
Gem-cutting machine	G. Purper, J. Moser, and R. Boeklen	705,597	Aug. 12	1161	257 258	100	1366
Gem-setting	R. S. Bieber	708,579	Aug. 5	751	165	100	1267
Genealogical chain record	P. W. Gee	705,833	July 29	4848	1058	100	1041
Generator. *See* Ammonia-generator. Electric generator. Electrochemical generator. Gas-generator. Heat-generator. Oil-fuel generator. Pressure-generator. Steam-generator. Thermo-electric generator.							
Gib-and-key device	C. B. Post	709,510	Sept. 23	2954	659	100	2625

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Glass: See Opera-glass. Prism-glass.							
Glass-annealing apparatus. Plate	H. L. Dixon	707,884	Aug. 26	3585	809	100	1902
Glass articles. Apparatus for forming	J. A. Arnold	705,813	July 29	4818	1045 1046	100	1094
Glass articles. Apparatus for the manufacture of molded hollow	P. T. Sievert	704,488	July 8	2109	455	100	441
Glass articles. Making hollow	D. C. Ripley	709,796	Sept. 23	3477	783 91	100	2742
Glass-blowing machine	C. J. Koenig	708,599	July 1	392	92 93	100	78
Glass bodies. Producing hollow	P. T. Sievert	708,618	July 1	433	100 101	100	85
Glass-bottle-making machine	C. Leistner	704,055	July 8	1264	273 274	100	905
Glass by means of electricity. Manufacture of	J. Bronn	708,309	Sept. 2	580	131	100	2099
Glass. Composition for ruby	R. Zsigmondy	708,512	July 1	249	.....	100	50
Glass-finishing machine	L. T. Zimmerly	707,045	Aug. 12	1988	446	100	1539
Glass. Framing	J. Taluau and H. W. Scattergood	704,400	July 8	1928	417	100	406
Glass. Framing	J. Taluau	704,401	July 8	1931	418	100	407
Glass, &c. Framing	H. W. Scattergood	709,513	Sept. 23	2962	661	100	2657
Glass-furnace. Electric	A. Voelker	706,283	Aug. 5	567	122 123	100	1230
Glass grinding and polishing machine	W. Lahodny	709,020	Sept. 16	1930	443 444	100	2405
Glass-grinding machine	W. Lahodny	709,019	Sept. 16	1927	442 443	100	2405
Glass-ladle	E. N. Baldwin and I. M. Schellinger	708,113	Sept. 2	209	50	100	2025
Glass-making machine	H. Gollings	706,350	Aug. 12	1078	238	100	1349
Glass. Manufacture of window and plate	W. E. Heal	710,357	Sept. 30	4555	1028	100	2982
Glass-melting machine	J. C. Triance	709,727	Sept. 23	3324	748	100	2711
Glass panes. Strip for securing	J. Swannell	710,032	Sept. 30	3949	891	100	2853
Glass-plate-making machine	L. Appert	708,826	Sept. 2	606	187 188	100	2105
Glass-press	P. Ebeling	708,469	Sept. 2	843	192 193	100	2152
Glass-presses, &c. Stroke-regulating mechanism for	H. G. Sweeney	708,844	Sept. 9	1567	358	100	2314
Glass-rinsing device	D. C. Ripley	709,724	Sept. 23	3319	746	100	2710
Glass-shaping apparatus	C. Laval	709,386	Sept. 16	2557	575	100	2540
Glass-silvering trough	L. Houze	704,040	July 8	1240	267	100	961
Glass-tank	J. Q. Shaffer	706,863	Aug. 12	1675	375	100	1476
Glass tombstones, &c. Manufacturing	J. Taluau	704,399	July 8	1927	417	100	405
Glass window or similar object and making same. Stained-	H. Schaub	704,761	July 15	2588	559	100	555
Glassware. Apparatus for the manufacture of	D. C. Ripley	709,797	Sept. 23	3478	783 784	100	2742
Glassware. Apparatus for the manufacture of	F. R. Gillinder and K. Booth	704,790	July 15	2639	571	100	566
Glassware-finishing snap	H. Schaub	704,760	July 15	2587	559	100	555
Glassware. Manufacture of	R. M. Paxton	708,917	Sept. 9	1705	393 394	100	2343
Glassware. Plant for the manufacture of	J. H. Steffey	707,175	Aug. 19	2254	504	100	1613
Glazed structure	E. Leblanc	704,551	July 15	2232	488	100	482
Glove	M. E. Rollason	704,579	July 15	2277	494	100	491
Glove	S. M. Griffiths	704,961	July 15	3046	653 654	100	651
Glove	R. N. Carson	706,724	Aug. 12	1389	309 310	100	1416
Glove	J. Comrie	706,725	Aug. 12	1391	309 310	100	1417
Glove	J. C. Allen	707,069	Aug. 19	2048	457	100	1509
Glove	D. F. Morgan	708,160	Sept. 2	298	71	100	2043
Glove	R. N. Carson	709,595	Sept. 23	3102	691	100	2666
Glove	J. Gamble	705,915	July 29	5001	1088	100	1072
Glove. Boxing	W. F. Epperson	707,219	Aug. 19	2332	521	100	1520
Gluing-machine	H. B. Schmidt and O. T. Joslin	705,712	July 29	4642	1005	100	998
Glycerin-refining apparatus	F. Hofmann and J. Callsen	707,110	Aug. 19	2129	.....	100	1505
Glycolic menthyl ester	F. Blum	705,688	July 29	4494	.....	100	969
Glycosuria antidote and producing same	A. James	706,589	July 29	4410	956	100	953
Gold and silver from their solutions. Apparatus for precipitating	S. Trivick	708,965	Aug. 5	713	.....	100	1961
Gold and silver ores. Treatment of	D. C. Boley	709,598	Sept. 23	3097	690	100	2666
Gold or silver ores. Apparatus for treating pulverized	W. Pethybridge	709,038	Sept. 16	1968	.....	100	2413
Gold ores. Treating telluride	W. Pethybridge	709,037	Sept. 16	1967	.....	100	2413
Gold ores. Treatment of telluride	C. Ramos	704,372	July 8	1868	408	100	897
Gold-saving machine	B. H. Officer, J. W. Neill, J. H. Burfeind, and F. H. Officer.	705,698	July 29	4611	1000	100	993
Gold, silver, or other ores. Cyanid process of working	E. Kempshall	705,766	July 29	4735	1025	100	1017
Golf-ball	E. Kempshall	708,758	Aug. 12	1477	328	100	1455
Golf-ball	E. Kempshall	707,263	Aug. 19	2403	539	100	1544
Golf-ball	A. T. Saunders	708,896	July 1	970	.....	100	194
Golf-balls. Manufacture of	J. P. Cochrane	704,462	July 8	2047	444	100	431
Golf-balls. Manufacture of	E. Kempshall	708,575	Sept. 9	1082	233	100	2201
Golf-club	W. Mules	708,556	July 1	335	73	100	66
Gopher trap. Pocket-	J. J. Daniels	708,486	Sept. 2	872	198 199	100	2158
Governing and valve-operating mechanism for gas or vapor engines.	E. H. Korsmeyer	707,702	Aug. 26	3499	789	100	1886
Governor adjuster. Centrifugal	J. E. McIntosh and J. A. Seymour	709,059	Sept. 16	2008	457 458	100	2422
Governor. Engine	H. C. Strang	707,687	Aug. 26	3941	797	100	1934
Governor for fluid-compressors. Automatic	J. P. Fillingham	707,086	Aug. 12	1975	443 444	100	1536
Governor. Marine-engine	M. F. Volkmann	704,486	July 8	2098	455	100	441
Governor. Steam-engine	R. J. Patterson	709,795	Sept. 23	3473	782 783	100	2741
Governor. Steam-engine	R. J. Patterson	707,697	Aug. 26	3966	780	100	1940
Governor. Variable-speed	C. A. Huffmaster						

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Grab and scraper. Combined	W. A. H. Zander	708,009	Sept. 9	1068	246	100	2218
Grader. Road	J. H. Aldrich	708,977	July 8	1125	244	100	889
Grading and excavating machine	W. H. Morenus	709,921	Sept. 30	3738	842 843	100	2809
Grading machine. Electric road	J. W. Langfitt	706,671	Aug. 12	1302	287	100	1397
Grading machine. Road	R. E. Burke	706,382	Aug. 5	760	166 167	100	1266
Grain, &c. Apparatus for drying	M. König	705,849	July 29	4879	1060 1061	100	1048
Grain, &c. Apparatus for drying, cooling, or otherwise treating	G. H. Hess, Jr	707,328	Aug. 19	2529	569 570	100	1670
Grain. Apparatus for malting, drying, or otherwise treating	J. Sleeman	706,402	Aug. 5	929	202 203	100	1305
Grain-binder. Automatic	J. F. Appleby	708,002	Sept. 2	3	1, 2	100	1981
Grain-cleaner	H. Sommerfeld	705,154	July 22	3440	748	100	746
Grain-drill	O. A. Poirier	707,739	Aug. 26	3513	792 793	100	1889
Grain-drill	G. W. Compton	707,958	Aug. 26	3802	854	100	1946
Grain-drill	W. F. Hoyt	709,686	Sept. 23	3169	707	100	2679
Grain-drill	W. F. Hoyt and D. B. Saltsman	709,687	Sept. 23	3170	707	100	2679
Grain-drill	G. H. Burrill	709,741	Sept. 23	3370	756	100	2719
Grain-drill	G. G. Walton	705,497	July 22	4165	906	100	891
Grain-drill seeding attachment	W. F. Brown	705,030	July 22	3181	687	100	695
Grain-drill shoe	H. Funk	707,578	Aug. 26	3023	680	100	1789
Grain-drill shoe	L. J. Sanker and J. H. Sullivan	709,649	Sept. 23	3189	712	100	2668
Grain-drill tube	M. W. Heyenga	709,012	Sept. 16	1909	438 439	100	2402
Grain-elevating machine	W. M. McCammon and C. A. Lee	708,576	Sept. 9	1082	233	100	2201
Grain-elevator	H. C. Erbe	708,804	Sept. 9	1476	337 338	100	2296
Grain or hay deliverer	C. Otto	707,251	Aug. 19	2286	534	100	1541
Grain-separator	W. D. Dickson	708,208	Sept. 2	397	92	100	2092
Grain-spout	T. Birnbaum	705,686	July 29	4492	975	100	969
Gramophone turn or supporting plates. Driving mechanism for rotary	L. H. Chapman	703,764	July 1	717	159	100	144
Graphophone attachment	W. J. McDevitt	705,000	July 15	3135	677 678	100	668
Graphophones, graphophone-records, &c. Cabinet for	L. Lewin	709,415	Sept. 16	2725	611	100	2574
Graphoscope	A. Daily and R. Baker	709,750	Sept. 23	3386	759	100	2722
Grapple	G. F. Boltze	704,852	July 15	2767	597 598	100	598
Grappling device	J. Swanson	710,228	Sept. 30	4328	973	100	2984
Grass-cutting machine	J. B. Rhodes	708,737	Sept. 9	1393	304	100	2264
Grass-cutting shears	R. W. Hussey	708,556	Sept. 9	997	226	100	2195
Grass or grain cutting machine	T. J. Walton	705,865	July 1	898	198	100	180
Grate	G. Maag	707,855	Aug. 26	3625	817	100	1909
Grate	J. T. Vaughn	709,377	Sept. 16	2655	595	100	2560
Grate and grate-bar	W. McClave	707,790	Aug. 26	3490	786 787	100	1884
Grate-bar. Gas-burning	J. A. Abrams	709,951	Sept. 30	3793	856	100	2820
Grate-bar. Hollow	T. J. Pritchard	708,400	Sept. 2	723	162	100	2128
Grate. Roller	J. MacCormack	707,708	Aug. 26	3598	795	100	1844
Grate. Square shaking	F. W. Foster	706,546	Aug. 12	1072	236 237	100	1347
Grater	N. P. Lucas	706,837	Aug. 12	1623	365	100	1467
Grave-filler	U. H. Deering	707,508	Aug. 19	2845	604	100	1737
Grease. Extracting	D. Cameron	705,084	July 22	3188	688	100	696
Greenhouse construction	F. Van Assche	708,428	Sept. 2	768	172	100	2136
Greenhouse-window-operating mechanism	M. Prior	708,669	July 1	543	123	100	107
Grinding and polishing machine	C. Maldaner	705,593	July 29	4429	959	100	956
Grinding attachment for power-machines	E. W. Showalter	708,486	July 1	195	47	100	41
Grinding device	S. P. Hastings	704,324	July 8	1780	389 390	100	874
Grinding-machine	J. N. Lapointe	704,348	July 8	1839	399 400	100	906
Grinding-machine	J. Ettinger	705,226	July 22	3601	779 780	100	779
Grinding-machine	J. Bath	707,543	Aug. 26	2038	665 666	100	1772
Grinding-machine stop-motion. Cutlery	A. Gould	708,136	Sept. 2	255	61	100	2085
Grinding machine. Twist-drill	C. A. Chandler	707,549	Aug. 26	2268	660	100	1777
Grinding-mill	H. G. Johnson	704,195	July 8	1561	336 337	100	828
Grinding-mill. Centrifugal	J. H. Pendleton	706,102	Aug. 5	184	59	100	1154
Grinding or crushing head or roll	V. W. Mason, Jr.	709,642	Sept. 23	3177	709	100	2680
Grinding, polishing, or buffing machine	C. F. Church	708,127	Sept. 2	237	56	100	2083
Grindstone tool-guide	S. C. Schofield	709,177	Sept. 16	2245	510	100	2472
Grindstone tool holder and guide	S. C. Schofield	709,178	Sept. 16	2246	510 511	100	2472
Grip-actuating mechanism	S. S. Webber	706,369	Aug. 5	727	158	100	1263
Grit-mill	C. B. English and J. W. Thompson	708,645	Aug. 12	1947	476	100	1396
Grocer's bin	A. H. Miller and F. A. England	708,822	Sept. 9	1523	349	100	2304
Grooving assembled stock. Machine for	M. B. Tidey	705,483	July 22	4183	899 900	100	886
Grooving machine. Lumber	E. Pollard	708,074	Sept. 2	141	34, 35	100	2010
Grooving-tool. Rotary	A. R. Meister	705,868	July 22	3705	808	100	798
Guide. Adjustable	E. B. Stimpson	705,749	July 1	698	153	100	138
Gun. Automatic rapid-fire	V. P. De Knight	709,880	Sept. 30	3623	821 822 823	100	2788
Gun. Automatic rapid-fire	V. P. De Knight	709,881	Sept. 30	3646	824 825	100	2790
Gun. Automatic rapid-fire	V. P. De Knight	709,883	Sept. 30	3668	826 827 828	100	2794
Gun-barrel	C. J. Hamilton	704,962	July 15	3047	654	100	651
Gun. Cane	F. H. Jury	704,646	July 15	2382	516	100	513
Gun-carriage	K. Deinlein	708,900	July 1	978	212	100	195

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Gun-carriage	O. Behnke	707,376	Aug. 19	2621	590, 591	100	1689
Gun-carriage	A. T. Dawson and G. T. Buckham	707,398	Aug. 19	2569	602, 608	100	1699
Gun-carriage	A. T. Dawson and G. T. Buckham	707,399	Aug. 19	2671	603, 604	100	1700
Gun-carriage	O. Lauber	708,233	Sept. 2	441	100	100	3071
Gun-carriage	O. Lauber and F. Stock	707,423	Aug. 19	2730	617, 618	100	1712
Gun-carriages. Combined axle-seat and shield for	A. T. Dawson and G. T. Buckham	708,871	Sept. 9	1023	572	100	2327
Gun cartridge-extractor	G. H. Garrison	705,396	July 22	3979	882	100	854
Gun-cleaner	G. H. Garrison	707,913	Aug. 26	3734	837	100	1931
Gun-cleaner	E. A. Pugh	709,557	Sept. 23	3036	677	100	2552
Gun-cleaner	A. Vickers	708,850	July 1	892	196	100	179
Gun-feeding mechanism. Automatic	V. C. Tasker	710,194	Sept. 30	4137	983, 984	100	2892
Gun firing mechanism	E. M. Capps	709,301	Sept. 16	2490	560, 561, 562	100	2535
Gun. Machine	J. M. Browning	710,094	Sept. 30	4074	919	100	2879
Gun. Magazine	V. P. De Knight	709,882	Sept. 30	3659	825, 826, 827	100	2792
Gun. Rapid-fire	W. H. Pease	707,000	Aug. 12	1905	427	100	1522
Gun. Spring	J. P. Holland	708,532	Sept. 9	992	294	100	2198
Gun. Submarine or other	A. P. Collins	706,390	Aug. 5	785	170, 171	100	1273
Guns. Range-finder attachment for	C. P. E. Schneider and J. B. G. A. Canet.	706,345	Aug. 5	685	148, 149	100	1254
Guns with independent line of sight. Apparatus for sighting	A. Combanaire and J. De la Fresnaye.	704,677	July 15	9433	585	100	524
Gutta-percha. Purifying	D. G. Mattsson	706,206	July 22	3708	803	100	706
Gymnastic apparatus	P. Ponthus and L. Therrode	705,782	July 29	4023	1009	100	995
Gyroscope for obtaining artificial horizons. Collimator	J. A. Klarson	709,989	Sept. 30	3878	874	100	2888
Hair-crimper	W. P. Dun Lany	706,086	Aug. 5	66	14	100	1131
Hair-fastener	N. O. Hassum	703,412	July 1	98	18	100	90
Hair-pin	N. Harrison	708,959	Sept. 9	1795	412	100	2359
Hair-pin	L. D. Howard	709,355	Sept. 16	2402	544	100	2505
Hair-pin	W. S. Bechtold	709,950	Sept. 30	3792	856	100	2860
Hame and trace connector	G. B. Withers	706,912	Aug. 12	1763	394	100	1494
Hame-fastener	N. P. Erickson	707,497	Aug. 19	2888	641, 642	100	1735
Hame-fastener	E. G. Bennett	709,784	Sept. 23	3453	777	100	2737
Hame-hook	G. F. Lindsay	704,006	July 8	1176	256	100	349
Hammer	J. Dempsey	709,377	Sept. 23	3075	684	100	2660
Hammer. Drop	L. D. Howard	708,790	July 1	771	169	100	154
Hammer. Glazier's	D. M. Humiston	704,467	July 8	2055	445	100	432
Hammer. Magazine nailing	G. I. Smith	707,850	Aug. 19	2574	582	100	1690
Hammer. Pneumatic	C. K. Pickles	707,515	Aug. 19	2808	650, 651	100	1742
Hammer. Pneumatic	H. J. Kimman	707,920	Aug. 26	3744	840	100	1933
Hammer. Pneumatic	C. H. Haeseler	707,946	Aug. 19	2373	581, 582, 583	100	1638
Hammer. Pneumatic power	H. F. Massey	708,737	July 1	668	148	100	134
Hammer. Power	J. B. McLane	706,151	Aug. 5	289	60, 61	100	1176
Hammer. Power	W. Bauermeister	709,780	Sept. 23	3445	775	100	2735
Hammer. Power	C. H. Krehbiel	709,820	Sept. 23	3528	794	100	2752
Hammer. Power	J. H. Jackson	710,358	Sept. 30	4559	1028	100	2963
Hammer. Power	T. Holmstrom	709,067	Sept. 16	2022	461	100	2425
Hammer. Valveless	D. S. Waugh	705,045	July 22	3209	698	100	700
Hamper	G. M. Davidson	703,594	July 1	393	89	100	79
Hand-motor	P. J. Kamper	706,342	Aug. 5	678	147	100	1253
Hand-trap	J. C. Porterfield	705,196	July 22	3523	764	100	764
Handkerchief-holder	N. E. P. Bergmann						
Handle: *See* D-handle, Detachable handle, File-handle, Sad-iron handle, Tool-handle, Wrench-handle.	L. S. Kallajian	707,514	Aug. 19	2866	650	100	1741
Handle-bar support	W. A. Suttle	705,973	July 29	5100	1111	100	1092
Handles to tools. Coupling for connecting	F. C. Rockwell	709,114	Sept. 16	2121	486	100	2448
Handwriting-developer							
Hanger: *See* Adjustable hanger, Cable-hanger, Clothes-hanger, Crank-hanger, Door-hanger, Eaves-trough hanger, Insulating-hanger, Lamp-hanger, Paper-hanger, Pipe-hanger, Shade-hanger, Suit-hanger, Tobacco-hanger, Trousers-hanger, Window-screen hanger.	H. T. Hallowell	710,191	Sept. 30	4954	961, 962	100	2919
Hanger	J. J. Wood	708,870	Aug. 12	1695	378	100	1479
Hanger for transformers or the like	A. S. Alexander and A. Vischer	708,782	July 1	697	154	100	130
Harmonica attachment. Mouth	A. L. Hawkins	708,789	July 1	770	168	100	154
Harness	N. Herbrand	707,588	Aug. 26	3043	684	100	1794
Harness attachment	J. T. Surbaugh	708,676	Sept. 9	1218	277	100	2238
Harness attachment	H. D. McKinney	708,906	Sept. 9	1699	389	100	2340
Harness checking device	M. McNalley	708,808	July 1	798	175	100	160
Harness vehicle-fastening	K. Weigel	707,041	Aug. 12	1981	444, 445	100	1538
Harp	C. Shabley	704,587	July 15	2290	497	100	494
Harrow	E. F. May	704,897	July 15	2849	617	100	610
Harrow	M. E. Johnson	705,951	Aug. 12	1823	408, 409	100	1505
Harrow	E. R. Butts	709,256	Sept. 16	2408	544	100	2505

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Harrow draw-bar	A. O. Hoepner	709,769	Sept. 23	3424	769	100	2720
Harrow. Folding	A. T. Upton	709,589	Sept. 23	3060	688	100	2663
Harrow. Riding	L. P. Blood	704,500	July 15	2128	460, 461	100	461
Harrow. Rotary wheel	E. Brucker	705,557	July 29	4351	941	100	941
Harrow. Sulky	P. B. Christensen	707,903	Aug. 26	3715	833	100	1927
Harrow sulky attachment	H. T. Faure	706,040	Aug. 5	76	16	100	1132
Harvester	W. S. Washburn	706,997	Aug. 5	734	158	100	1263
Harvester	R. W. Hussey	708,557	Sept. 9	999	226	100	2195
Harvester and shocker. Combined cornstalk	H. Peckman	706,598	Aug. 12	1154	255, 256	100	1365
Harvester and shocker. Corn	G. G. Kimmell	704,839	July 15	2743	593, 594	100	587
Harvester. Beet	H. G. Hotchkiss	706,416	Aug. 5	838	183	100	1283
Harvester. Beet	W. Gary	707,097	Aug. 19	2100	469	100	1579
Harvester. Beet	J. J. Rookus	710,075	Sept. 30	4030	909	100	2970
Harvester-binder	J. A. Cowan	708,320	Sept. 2	595	135	100	2102
Harvester bundle-carrier. Automatic	W. Martens	708,776	Sept. 9	1408	323	100	2280
Harvester. Corn	F. R. Evers	703,396	July 1	60	11	100	14
Harvester. Corn	H. R., A. W., and G. S. Spaht	704,947	July 15	3005	644, 645	100	644
Harvester. Corn	J. E. Wood	706,142	Aug. 5	266	55, 56, 57	100	1179
Harvester. Corn	E. D. Wallis	706,614	Aug. 12	1192	264, 265	100	1372
Harvester. Corn	J. Strand	709,424	Sept. 16	2788	615, 616	100	2577
Harvester cutter. Corn	A. N. Hadley	705,928	July 29	5010	1091	100	1074
Harvester-divider	J. Macphail	704,063	July 8	1985	279	100	370
Harvester. Flax	D. L. Wellman	708,848	Sept. 9	1376	360	100	2316
Harvester-frame	C. S. Hodge	708,708	July 1	608	135	100	120
Harvester. Grain	H. P. Finley	707,896	Aug. 26	3587	810	100	1908
Harvester grain-divider	J. F. Steward	708,497	July 1	214	50	100	65
Harvester. Potato	D. T. Culbertson	704,519	July 15	2171	470	100	470
Harvester. Sugar-beet	R. M. Fraser	705,747	July 29	4707	1018, 1019	100	1011
Harvesting apparatus. Peat	A. Dobson	706,535	Aug. 12	1055	232	100	1344
Harvesting apparatus. Potato	E. Massey	706,961	Aug. 12	1873	419, 420	100	1516
Harvesting-binders. Grain-packer for	D. H. Thurston and J. F. Holden	706,362	Aug. 5	710	154	100	1260
Harvesting-machine	B. F. Rinker	705,298	July 22	3759	816	100	810
Harvesting-machine knotting device	A. Castelin	708,316	Sept. 2	598	133, 134	100	2101
Harvesting-machines. Finger-bar for	J. F. Steward	707,460	Aug. 19	2771	628	100	1720
Hasp-fastener	A. L. Weston	704,413	July 8	1949	422	100	410
Hat	A. L. Delion	708,872	Sept. 9	1624	373	100	2327
Hat attachment	A. Olson	708,913	Sept. 9	1690	392	100	2342
Hat-box	J. M. Bird	704,481	July 8	1976	430	100	415
Hat-brim stretcher	E. J. Mellen	709,643	Sept. 23	3179	709, 710	100	2681
Hat-brims. Machine for trimming curled	F. C. Craw	707,392	Aug. 19	2652	599	100	1696
Hat conformator, stretcher, &c. Combination	S. Mund	708,442	July 1	135	31	100	29
Hat-fastener	M. E. Waples	708,507	July 1	229	54	100	47
Hat-forming machine	J. Marshall	705,107	July 22	3346	726	100	727
Hat-hook	E. W. Higgins	704,827	July 15	2727	589	100	583
Hat-hook	J. Rodrigues	708,666	Sept. 9	1300	274	100	2226
Hat-pin	J. Wiesen	710,349	Sept. 30	4544	1025	100	2960
Hat-pin retainer	E. Krancher	708,795	July 1	778	171	100	156
Hat-stiffening machine	N. Leveque	708,054	Sept. 2	106	25	100	2023
Hat sweat-band	C. L. Johnson	707,784	Aug. 26	3473	782	100	1881
Hat. Ventilated	J. Wolbrecht	707,486	Aug. 19	2816	636	100	1730
Hats. Making	J. A. Byers	708,388	July 1	97	7	100	10
Hatter's hair-strainer	M. R. Foster, Jr	709,670	Sept. 23	3528	720	100	2691
Hatch-fastener	A. P. Rankin and A. C. Dierickx	709,928	Sept. 30	3752	847	100	2811
Hatchet shingle-gage	M. M. Kellogg	704,897	July 15	2740	593	100	567
Hay and stock rack	C. Scafe	705,448	July 22	4057	883	100	874
Hay derrick or stacker	W. G. Danielsen	708,685	Sept. 9	1116	251	100	2279
Hay-loading derrick. Portable	E. Brust	708,199	Sept. 2	384	89	100	2060
Hay-press door-closer	P. H. McVicar	710,166	Sept. 30	4295	952, 953	100	2910
Hay-rack	P. Plotnik	703,402	July 1	162	37	100	84
Hay-rack	J. Siemsen	708,928	Sept. 9	1781	397, 398	100	2347
Hay rake and loader	E. D. Doney	709,756	Sept. 23	3393	762	100	2723
Hay-rake. Sulky	J. J. Thompson	703,624	July 1	447	103	100	88
Head-covering	A. Boullly	707,956	Aug. 26	3709	853	100	1945
Head or search light	H. H. Taylor	707,982	Aug. 26	3853	865, 866	100	1955
Header-platforms. Mechanism for changing the elevation of	H. Green	704,632	July 15	2358	512, 513	100	508
Hearse	D. Johnston	704,340	July 8	1890	394	100	385
Heat bath. Radiant	G. Brueck	709,696	Sept. 23	3274	733	100	2701
Heat-distributing system	W. H. Pearce	705,287	July 22	3736	812	100	805
Heat-generator	G. S. Chase	708,540	July 1	398	87	100	59
Heater: *See* Electric heater, Feed-water heater, Gas-heater, Hot-air heater, Hot air and water or steam heater, Hydrocarbon-heater, Oil-heater, Sectional heater, Solar heater, Steam-heater, Tire-heater, Water-heater.	A. H. Humphrey	704,043	July 8	1944	398, 399	100	398
Heater	W. E. Vanstone	704,998	July 15	3097	667, 668	100	660

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Heater	W. L. Warner	709,947	Sept. 30	3787	855	100	2819
Heater mounting. Electric-	E. E. Gold	708,096	Sept. 2	78	18	100	1997
Heater or boiler	N. B. Wales	703,695	July 1	578	129	100	114
Heater, radiator, or stove	T. P. Keenan	707,970	Aug. 26	3833	861 / 862	100	1951
Heating and ventilating apparatus	J. Kallgren	706,984	Aug. 12	1882	410	100	1508
Heating and ventilating system	J. O. Randall	703,827	July 1	835	184	100	167
Heating apparatus	J. A. Kloeb	705,094	July 22	3313	730	100	720
Heating apparatus	F. Burger and H. M. Williams	706,796	Aug. 12	1551	347	100	1450
Heating apparatus	I. D. Smead	707,364	Aug. 19	2598	567	100	1684
Heating apparatus	E. Gerrard	707,691	Aug. 26	3258	729	100	1898
Heating apparatus	J. R. Quain	703,970	July 1	1107	239	100	219
Heating apparatus. Electrical	E. O. Haskins	707,229	Aug. 19	2350	527	100	1634
Heating-boiler. Sectional	F. H. Daniels	706,032	Aug. 5	56	12	100	1129
Heating-furnace	H. A. Fraser	708,217	Sept. 2	413	95	100	2066
Heating furnace. Water-	H. Vanderborght	704,090	July 15	2311	502	100	498
Heating liquids. Apparatus for rapidly	R. Commichau	709,875	Sept. 30	3626	819	100	2787
Heating or cooling pipe	J. Ebersole	704,009	July 8	1178	257	100	250
Heating system. Hot-water	H. A. R. Dietrich	704,623	July 15	2344	509	100	505
Heating system. Steam-	W. E. Roys	705,969	July 29	5093	1110	100	1091
Heating system. Steam-	J. R. Wade	708,101	Sept. 2	185	44	100	2020
Heating system. Vacuum steam-	T. J. Fuyat	704,455	July 8	2081	440	100	428
Heddle-frame	E. Stratton and F. A. Cole	710,343	Sept. 30	4532	1023	100	2978
Heel and edge trimming machine guard	W. S. Estey	708,033	Sept. 2	74	17	100	1997
Heel. Detachable cushion-	J. G. Buzzell	703,991	July 8	1155	251	100	245
Heel-front-abrading machine. Shoe-	H. Heilweg	703,581	July 1	366	84	100	72
Heel. Metallic shoe-	B. F. Mayo	707,144	Aug. 19	2187	490	100	1598
Heel-nailing machine	E. A. Lougee	707,143	Aug. 19	2185	490	100	1597
Heel-nailing machines. Means for detaining or releasing top lifts in	H. Y. B. Duff	707,559	Aug. 26	2978	672	100	1780
Hide-securing apparatus	F. J. Perkins and F. A. Parkhurst	704,095	July 8	1349	293 / 294	100	282
Hides or skins. Machine for treating	G. A. Learned	706,835	Aug. 12	1621	364	100	1466
High chair. Combination	C. H. McCauley	704,077	July 8	1319	288	100	276
Hinge	W. H. Thorp	704,982	July 15	3087	665	100	658
Hinge	C. H. Foster	708,214	Sept. 2	407	94	100	2065
Hinge	A. H. Hesterhagen	708,707	Sept. 9	1396	319	100	2278
Hinge	P. Fullam	710,051	Sept. 30	3983	891	100	2960
Hinge. Gate-	J. J. H. Sturmey	703,499	July 1	216	51	100	45
Hinge-joint	F. S. Brooke	707,547	Aug. 26	2952	668	100	1776
Hinge-joint for seating	H. J. Valentine	709,618	Sept. 23	3139	699	100	2573
Hinge-knob	D. S. Stimson and A. Stevenson	706,590	July 15	2293	498	100	494
Hinge. Pinless	L. D. Petre	708,163	Sept. 2	302	72	100	2044
Hinge. Seat-	E. Mathis	708,896	Sept. 9	1672	385	100	2336
Hinge. Spring	T. H. Penty and W. L. Bullard	704,487	July 8	2100	455	100	441
Hinge. Spring butt-	J. Holy	704,541	July 15	2216	480	100	479
Hinge. Window-sash	B. Wolverton	708,877	July 1	927	202	100	186
Hinged gate	P. K. Young	705,810	July 29	4810	1044	100	1033
Hitcher. Horse-	A. H. Debord	709,473	Sept. 23	2857	642	100	2613
Hitching device	L. H. Abbee	705,629	July 29	4493	972	100	967
Hitching device. Safety	A. Zierleyn	704,730	July 15	2528	546	100	544
Hitching-weight	J. Seng	710,218	Sept. 30	4321	971	100	2953
Hobby-horse	F. C. Dey	706,305	Aug. 5	609	132 / 133	100	1286
Hod elevator or hoist	S. Harper	709,903	Sept. 30	3706	835	100	2802
Hoe. Asphalt-	J. McClean and L. E. Phipps	709,997	Sept. 30	3890	877 / 878	100	2841
Hog-belly-rolling machine	E. B. Ridgway	707,015	Aug. 12	1934	433	100	1528
Hoist, &c. Fluid-pressure-actuated	A. E. Maccoun	704,264	July 8	1675	365	100	351
Hoists or elevators. Controlling system for electric	G. W. Menefee	709,547	Sept. 23	3022	672	100	2649
Hoister and conveyer	W. F. Pillmore and D. Anderegg	706,105	Aug. 5	189	40	100	1155
Hoisting and conveying apparatus. Driving mechanism for	W. H. Hatfield	709,905	Sept. 30	3708	836	100	2802
Hoisting and transporting device	E. H. Watlington	707,660	Aug. 26	3199	718	100	1826
Hoisting apparatus	C. W. Hunt	708,718	Sept. 9	1293	294	100	2255
Hoisting apparatus	A. Wirsing	705,806	July 29	4808	1042	100	1032
Hoisting-bucket carrier	A. Wirsing	707,484	Aug. 19	2813	636	100	1750
Hoisting-bucket mechanism	E. Stowell	704,222	July 8	1602	347	100	335
Hoisting device	P. Jablonowsky	709,222	Sept. 16	2220	528	100	2490
Hoisting device	A. Lambert	707,851	Aug. 26	3617	816	100	1908
Hoisting-engines. Derrick-swinging attachment for	S. Cowan	709,572	Sept. 23	3063	692	100	2657
Hoisting-hook	H. B. Gray	705,526	July 22	4293	922	100	911
Hoisting-hook for ore-buckets, &c. Safety	L. T. Pyott	705,256	Aug. 5	491	105	100	1216
Hoisting-machine	G. H. Reynolds	704,271	July 8	1687	367 / 368 / 369	100	354
Hoisting-machine control device	C. W. Carman	706,019	Aug. 5	95	6	100	1121
Hoisting mechanism	H. P. Jones	707,234	Aug. 19	2356	528	100	1635
Hoister	W. L. Burner	707,384	Aug. 19	2637	595	100	1698
Hominy, meal, and grits drier	T. Ryan	705,615	July 29	4462	967	100	964
Hoof-pad. Yielding	W. S. Casterlin	707,822	Aug. 26	3554	803	100	1897
Hoof-trimmer							
Hook: *See* Barrel-hook. Chatelaine-hook. Checkrein-hook. Clothes-hook. Duplex hook. Fish-trap hook. Hame-hook. Hat-hook. Hoisting-hook. Lacing-hook. Pail-hook. Releasing-hook. Springless hook. Suspension-hook. Type-writer-cover hook. Whiffletree-hook.							
Hook and eye	M. E. Campany	704,512	July 15	2158	467	100	468
Hook and eye	L. A. Sutherland	705,159	July 22	3481	751	100	748
Hook and eye	C. E. Devine	706,304	Aug. 5	608	129	100	1238
Hook and eye	W. Fleischer	708,084	Sept. 2	75	17	100	1997
Hook and eye	N. D. Garis	708,542	Sept. 9	977	221	100	2190
Hook and eye	J. R. Hard	709,902	Sept. 30	3705	835	100	2802

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Hoop: *See* Cheese-hoop. Rolling-hoop.							
Hoop-iron. Supporting device for lengths of	J. McQuiston	703,449	July 1	145	32	100	21
Hoop-lug	P. C. Jura, Jr.	708,283	Sept. 2	430	100	100	2071
Hoop lug. Tank-	A. J. Behrens	704,773	July 15	2610	565	100	560
Hoop-making machine	J. C. Perry	705,130	July 22	3388	784 / 785 / 786 / 787	100	735
Hoops. Clamp for tank or like	J. Weigel	706,137	Aug. 5	256	53	100	1171
Hopple. Horse-	W. L. Morrissey	708,053	Sept. 2	118	28	100	2006
Hopple or pastern-halter	H. A. Bostwick	705,556	July 29	4350	941	100	941
Horizontal positions. Means for keeping moving objects in	N. Ach	705,731	July 29	4674	1012	100	1004
Horn-stand	F. C. Hassett	706,176	Aug. 5	340	73	100	1186
Horse-detacher	E. D. Irwin	703,587	July 1	874	86	100	74
Horse-holding device	M. Lopisich	704,001	July 8	1283	277 / 278	100	270
Horse-overshoe	F. Schneider	708,668	Sept. 9	1302	274	100	2236
Horse-overshoe	J. Bartlett	708,963	Sept. 16	1845	425	100	2389
Horse-overshoe	R. M. Sebree	707,166	Aug. 19	2228	500	100	1605
Horse-protector	A. Graf	710,267	Sept. 30	4403	992	100	2951
Horses. Pad for treating shoe-boils on	R. B. Musgrave	708,902	Sept. 9	1684	387 / 388	100	2339
Horseshoe	F. N. Cline	704,175	July 8	1592	326 / 327	100	320
Horseshoe	J. Rice	705,144	July 22	3428	744	100	743
Horseshoe	J. W. Fisher	706,543	Aug. 12	1067	235	100	1546
Horseshoe	F. Sheesley	707,454	Aug. 19	2763	626	100	1719
Horseshoe	C. A. Judsen	707,594	Aug. 26	3050	687	100	1795
Horseshoe	E. D. Bangs	708,982	Sept. 16	1844	424	100	2389
Horseshoe	A. F. Schofield	706,205	Aug. 5	303	64	100	1197
Horseshoe. Calk-equipped	P. J. Coates	705,008	July 29	4382	1061	100	1068
Horseshoe. Cushioned	M. J. Kelly	704,049	July 8	1258	270 / 271	100	268
Horseshoe-machine	F. W. Wood and M. R. MacPherson	708,007	Sept. 9	1092	245	100	2218
Horseshoe-pad	B. P. Marcley	706,768	Aug. 12	1496	332	100	1438
Horseshoe. Soft-tread	I. G. Howell	707,417	Aug. 19	2704	612	100	1707
Horseshoes. Ice-sandal for flat	G. H. Frazier, J. W. Wagner, and H. G. Isenberg	706,815	Aug. 12	1581	355	100	1457
Hose-bridge	E. E. Gold	704,792	July 15	2642	571	100	567
Hose-coupling	M. C. Goodwin	709,216	Sept. 16	2320	526	100	2489
Hose-coupling. Electric	W. F. Bowers	708,117	Sept. 2	215	51	100	2026
Hose-coupling retainer	A. S. Cummins and A. J. Bland	705,210	July 22	3371	773	100	774
Hose-coupling. Train-pipe	B. L. Stowe	706,466	Aug. 5	938	205	100	1205
Hose. Hydraulic or fire	S. Hydén and K. A. Simonsson	704,045	July 8	1247	290	100	269
Hose or like pipes. Apparatus for cleaning the interior of	H. A. F. Petersen	706,847	Aug. 12	1646	368	100	1471
Hose or pipe coupling	G. E. Le Mond	706,966	Aug. 12	1856	415	100	1512
Hose-reel. Swiveled	M. H. Eiseman	705,519	July 22	4215	916	100	901
Hose-supporter	M. B. Hammond	708,087	Sept. 2	80	18	100	1998
Hose-supporter	M. B. Hammond	704,249	July 8	1642	356	100	343
Hose-supporter hook	M. B. Hammond	709,606	Sept. 23	3119	695	100	2669
Hose-supporter. Lady's	L. A. Negraval	708,378	Sept. 2	673	152	100	2118
Hot-air and water or steam heater. Combined	A. L. Logan	709,981	Sept. 30	3758	849	100	2812
Hot-air apparatus for the human body	G. W. Sawyer	704,309	July 8	1754	383	100	369
Hot-air furnace	G. H. Fouts	707,437	Aug. 19	2739	620	100	1713
Hot-air furnace	T. J. March	708,215	Sept. 2	409	94	100	2065
Hot-air furnace	C. H. Foster	708,563	Sept. 9	1006	228	100	2195
Hot-air furnace	J. F. Krauter	705,428	July 22	4027	873	100	865
Hot-air heater	M. B. Moore and G. W. Leddon	705,802	July 29	3538	767	100	767
Hot-air register	J. Buckman	705,609	July 29	4454	965	100	989
Hot-air wall-register	J. H. Pugh	705,640	July 29	4495	976	100	970
Hot-blast furnace	E. T. Bradford	706,503	Aug. 5	994	219	100	1318
Hot-plate	P. G. Van Wie	704,548	July 15	2238	482	100	481
Hotel-register	F. C. Klee						
House: *See* Lighthouse. Summer-house.							
Hub	J. W. Blodgett	710,941	Sept. 30	4360	980	100	2941
Hub and brake for motor-vehicles. Combined	F. Le Fiem	705,100	July 22	3389	723	100	723
Hub-attaching device	C. E. Davidson	703,643	July 1	499	110	100	96
Hub-attaching device	A. H. Worrest	705,185	July 22	3507	761	100	761
Hub-drilling machine. Metallic-	G. H. Everson	704,178	July 8	1534	329	100	322
Hub dust-cap	S. T. Copenhaver	706,530	Aug. 12	1047	230	100	1342
Hub-runner. Adjustable	F. O. Bailey	704,290	July 8	1725	376	100	362
Hub. Vehicle-	E. Keen	706,957	Aug. 12	1839	411	100	1509
Hub. Vehicle-	E. B. Stearns	708,421	Sept. 2	757	170	100	2154
Hub. Vehicle-	E. B. Phillips	709,941	Sept. 16	2873	634	100	2499
Hub. Wheel-	C. Anderegg	706,008	Aug. 5	8	1	100	1117
Hub. Wheel-	H. N. Thayer	709,875	Sept. 16	2652	595	100	2580
Hub. Wheel-	E. Nolan	710,009	Sept. 30	3899	879	100	2943
Hubs from tubular blanks. Machine for forming wheel-	E. Einfeldt	705,518	July 22	4213	915 / 916	100	900
Hydraulic jack	L. S. Pitcher	706,860	Aug. 12	1651	369	100	1475
Hydraulic motor	J. I. Newburg	703,451	July 1	148	33	100	32
Hydraulic motor	C. W. Schindler and J. Freeman	704,583	July 15	2282	496	100	492
Hydraulic press for thick fluid substances	G. von Bäsekind	708,180	Sept. 2	340	80, 81	100	2051
Hydraulic-press swinging table	M. Wilkes	709,285	Sept. 16	2460	555	100	2518
Hydrocarbon-burner	H. C. Martin	704,895	July 15	2846	616	100	610
Hydrocarbon-burner	J. F. Higgins	705,530	July 22	4272	924	100	918
Hydrocarbon-burner	M. W. Morgan	705,948	July 29	5059	1101	100	1094
Hydrocarbon-burner	W. R. Jeavons	706,064	Aug. 5	124	25	100	1142
Hydrocarbon-burner	A. A. Arnott	706,486	Aug. 5	988	212	100	1312
Hydrocarbon-burner	C. T. Pepper	707,001	Aug. 12	1908	427	100	1523
Hydrocarbon-burner	J. W. Neumann	708,389	Sept. 2	609	157	100	2123
Hydrocarbon-burner	W. N. Best	708,453	Sept. 2	813	185	100	2147
Hydrocarbon-burner	E. Betz	709,897	Sept. 16	2674	600	100	2564

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Hydrocarbon-burner	W. H. Stewart	709,448	Sept. 16	2775	625	100	2595
Hydrocarbon-burner	L. K. Leahy	708,942	Sept. 2	634	148	100	2110
Hydrocarbon-burner for stoves or furnaces	G. A. Greene	707,652	Aug. 26	3630	816	100	1908
Hydrocarbon-burner igniting device	G. Lane	707,689	Aug. 26	3647	728	100	1895
Hydrocarbon-burner vapor-generating apparatus	T. J. Forde	708,256	Sept. 2	487	111	100	2080
Hydrocarbon burning apparatus. Liquid	W. H. and G. E. Russell	710,106	Sept. 30	4108	926	100	2984
Hydrocarbon-heater	A. A. Low				204		
Hydrocarbon-motor	W. J. Still	708,503	Sept. 2	908	205	100	2165
					206		
Hydrocarbon-motor feed-controlling mechanism	W. W. Tuck and A. Wassmann	710,087	Sept. 30	4068	914	100	2976
					915		
Hydrocarbon-vapor burner	J. Johnston	708,591	July 1	879	87,88	100	75
Hydrocarbon-vapor burner	E. Le Pelletier	705,258	July 22	3698	800	100	796
Hydrocarbon-vapor-burning apparatus	A. B. Macklin	707,517	Aug. 19	2875	652	100	1743
Hydrostatic press	W. D. Butt	710,089	Sept. 30	3958	893	100	2856
Ice, &c. Apparatus for elevating or conveying and transferring	E. A. Wright	707,487	Aug. 19	2816	637	100	1731
Ice, &c. Apparatus for elevating or conveying and transferring	E. A. Wright	707,488	Aug. 19	2819	637	100	1731
					638		
Ice, &c. Apparatus for elevating or conveying and transferring	E. A. Wright	707,489	Aug. 19	2822	638	100	1732
					639		
Ice. Apparatus for manufacturing plate	E. Barrath	706,511	Aug. 12	1012	223	100	1336
					224		
Ice-breaker	C. Hilbert	704,801	July 15	2676	578	100	572
Ice-can	F. D. Swaney	705,893	July 29	4942	1074	100	1090
Ice-carrier	R. Bradley	707,818	Aug. 26	3544	799	100	1895
Ice-cream can	R. Bauers	705,551	July 29	4345	939	100	940
					425		
Ice-cream dipper	E. C. Baughman	708,967	Sept. 16	1851	426	100	2391
Ice-creeper. Adjustable	J. H. Downer	710,187	Sept. 30	4259	960	100	2918
Ice-crusher for refrigerators	F. H. Nichols	706,773	Aug. 12	1504	334	100	1440
Ice cutting or shaving machine	F. H. Lippincott	706,073	Aug. 5	142	30	100	1146
Ice-making machines. Congealing body or plate for	E. Barrath	705,015	July 22	3159	682	100	690
Ice. Manufacturing artificial	E. Barrath	704,772	July 15	2609	565	100	569
Ice. Manufacturing plate	E. Barrath	706,510	Aug. 12	1011	222	100	1335
Ice-run	H. D. Simpson	709,804	Sept. 23	3492	787	100	2744
Ice-runway	F. H. and C. H. Eichhorn and F. P. Dernell.	704,490	July 8	2020	439	100	425
Image-projecting apparatus	C. W. Carman	707,084	Aug. 19	2076	463	100	1574
Indicating device	C. A. Christian	706,388	Aug. 12	1044	229	100	1341
Igniter	C. A. Wilkinson	704,417	July 8	1952	424	100	411
Igniter. Revolving electric	A. H. Humphrey	705,673	July 29	4559	990	100	983
Igniter. Self	A. G. Ronan	708,040	Sept. 2	149	36	100	2011
	S. Waterman	708,279	Sept. 2	523	119	100	2088
Illusion apparatus	W. L. Hall	709,764	Sept. 23	3411	766	100	2727
					767		
Implement-seat	J. G. Wangerin	709,619	Sept. 23	3141	609	100	2673
Impressions. Device for making	D. L. Falardeau	705,831	July 29	4841	1051	100	1040
Incandescent-light burner. Petroleum	M. Bramson	709,198	Sept. 16	2289	519	100	2481
Incandescent-mantle support	M. Herskovitz	705,942	July 22	3649	790	100	789
Inclined elevator	J. W. Reno	708,663	Sept. 9	1196	278	100	2235
					486		
Incubator	A. J. Moore	704,500	July 15	2216	487	100	485
	F. Krupicka	704,841	July 15	2751	595	100	589
Incubator	O. P. Scott	709,650	Sept. 23	3191	712	100	2693
Incubator	R. W. Dickenson. (Reissue)	12,011	July 15	3145	679	100	671
Index-cabinet	G. G. Hakes	705,843	July 22	3683	842	100	895
Index. Card	R. L. Hunter	708,479	Sept. 2	858	196	100	2155
Index. Cross	D. E. Wright	709,843	Sept 23	3557	802	100	2759
Index systems, &c. Locking mechanism for card							
Indicator: *See* Car and railway indicator. Car street-indicator. Electrical position-indicator. Engine-indicator. Filling-indicator. Game-indicator. Mail-box indicator. Odds-indicator. Station-indicator. Track-indicator.							
Indicator	T. F. McCullough	710,294	Sept. 30	4447	1002	100	2960
					1003		
Indoxyl, &c. Making	B. Homolka and O. Liebknecht	704,804	July 15	3681	.....	100	573
Induction-coil	J. O. Heinze, Jr	709,485	Sept. 23	2901	648	100	2625
	A. Honrath	709,324	Sept. 16	2334	570	100	2534
					571		
Inflatable wheel. Puncture-proof	J. E. Sweet	707,279	Aug. 19	2450	550	100	1654
Ingot-mold	C. H. Myers	705,117	July 22	3361	738	100	780
Inhaler	J. F. Breen	705,015	Aug. 5	20	5	100	1120
Inhaler	J. H. McCulloch	707,445	Aug. 19	2749	622	100	1716
Inhaler	J. Desmond	708,328	Sept. 2	608	137	100	2104
Injector. Steam	J. Quartz, Jr	705,610	July 29	4455	956	100	962
Ink-pad box	G. H. True	705,485	July 22	4143	901	100	887
Ink-well	J. P. Mentzer	706,953	Aug. 5	656	142	100	1347
Ink-well	S. G. Baldwin	709,193	Sept. 16	2156	494	100	2455
Ink-well	J. D. Dickson	710,259	Sept. 30	4398	989	100	2948
Ink-well	L. B. Woodruff and F. E. Caton	708,184	July 22	3595	760	100	760
Inking apparatus	C. T. Parrish	707,629	Aug. 26	3115	701	100	1809
Insect-destroyer	J. H. Lester	709,788	Sept. 23	3452	.....	100	2737
Insect-destroying compound	C. V. Dyer and W. S. Willette	708,700	Sept. 9	1262	290	100	2248
Insect-destroying machine	J. C. Kessler	708,649	Sept. 9	1168	.....	100	2229
Insect-repellent	H. A. Bierley	704,293	July 8	1790	377	100	368
Insect-trap	J. A. Emig and J. G. Krout	704,013	July 8	1182	.....	100	252
Insecticide and fertilizer	A. C. Rounds	707,642	Aug. 26	3144	707	100	1815
Insole	G. L. Hall	708,349	Sept. 2	644	145	100	2112
					146		
Insulated rail-joint	G. L. Hall	708,350	Sept. 2	645	146	100	2113
Insulated rail-joint	J. M. Schmidt	710,216	Sept. 30	4318	971	100	2982
Insulating-hanger	F. E. Cleland and E. B. Murray	707,308	Aug. 19	2490	559	100	1663
Insulating-joint for pipes							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Insulating-support for metallic circuits	J. S. Allen	705,811	July 29	4812	1044	100	1033
Insulator	J. E. Calvin	704,172	July 8	1516	325	100	318
Insulator	L. McCarthy	706,194	Aug. 5	378	80	100	1128
Insulator	E. Lefever	710,292	Sept. 30	4429	998	100	2956
Insulator	R. S. Peirce	710,297	Sept. 30	4451	1004	100	2961
Insulator for electric wires	T. F. King	707,429	Aug. 19	2727	616	100	1711
Intermediate coupling	W. C. Wilson	705,989	July 29	5127	1118	100	1098
Internal-combustion engine	F. Lister	704,060	July 8	1980	276	100	269
					277		
Internal-combustion engine	R. Diesel	708,029	Sept. 2	56	18	100	1992
Internal-combustion engine	J. A. Prestwich	710,302	Sept. 30	4461	1006	100	2963
Internal-combustion motor	A. Vogt and M. von Recklinghausen	706,366	Aug. 5	715	155	100	1261
					156		
					157		
Invoice and balance sheet	B. A. Allison	708,291	Sept. 2	548	124	100	2008
Iron: *See* Branding-iron. Flat-iron. Sad-iron. Smoothing-iron. Soldering-iron.							
Iron and steel. Manufacture of	F. J. Tone	705,941	Sept. 9	1741	.....	100	2350
Iron-bending machine. Angle	W. Vollmer	709,282	Sept. 16	2453	554	100	2517
Iron-bending machine. Flat	W. Vollmer	709,283	Sept. 16	2456	554	100	2517
Iron-breaking machinery. Pig	H. Bentley	708,801	Sept. 2	563	128	100	2096
Iron, manganese, and alloys of these metals by aid of electricity. Manufacture of	A. Simon	704,393	July 8	1918	416	100	404
Iron. Producing	O. Thiel	709,563	Sept. 23	3047	679	100	2653
Ironing-board	G. Kahler	704,835	July 15	2737	592	100	586
		707,998	Aug. 26	3827	860	100	1950
Ironing-machine	I. Harris				861		
Irrigator. Portable	J. F. Chase	708,126	Sept. 2	236	56	100	2080
Jack: *See* Ditching-jack. Hydraulic jack. Lifting-jack. Screw-jack. Vehicle-jack. Wagon-jack.							
Jack	E. Woodings	708,948	Sept. 9	1750	405	100	2352
Jar: *See* Fruit-jar.							
Jar-closing means	G. H. Fox	704,873	July 15	2805	607	100	600
Jar-closure	W. B. McCrosky	706,771	Aug. 12	1501	333	100	1430
Jar-cover	R. W. Booth	709,390	Sept. 16	2682	601	100	2565
Jar-cover and fastening therefor	J. Karrmann	708,648	Sept. 9	1167	266	100	2229
Jar-cover-repairing tool	L. Sarr	704,217	July 8	1594	345	100	334
Jar-opener	W. S. Marsh	705,941	July 29	5043	1099	100	1090
Jar or bottle closure	F. Tyson	710,347	Sept. 30	4538	1024	100	2979
Joint: *See* Ball-and-socket joint. Box-joint. Hinge-joint. Insulated rail-joint. Insulating-joint. Knee-joint. Pipe-joint. Rail-joint. Railway-joint. Railway-rail joint. Railway-track joint. Universal joint.							
Joint for pilasters, pillars, posts, &c	W. Kopp	706,070	Aug. 5	183	27	100	1144
Joints for intersecting wires or rods. Forming	J. C. and W. J. Pope	707,352	Aug. 19	2581	583	100	1681
Journal-bearing	J. Swan	703,974	July 1	1114	241	100	221
Journal-bearing	H. H. Hewitt	705,760	July 29	4725	1022	100	1015
					1023		
Journal-bearing	G. N. Sceets	705,871	July 29	4916	1068	100	1055
Journal-bearing	I. Metzger	707,147	Aug. 19	2196	492	100	1599
Journal-bearing and air-compressor. Combined	C. F. Du Bois	704,475	July 8	2072	449	100	426
Journal-box	G. W. Lewis	706,243	Aug. 5	463	99	100	1210
Journal-box	A. G. Steinbrenner	707,088	Aug. 12	1968	441	100	1535
Journal-box. Ball-bearing	F. E. Manahan	703,435	July 1	122	27,28	100	27
Journal-box lid	H. C. McCarty	708,786	July 1	667	148	100	134
Journal-box lid	J. W. Stephenson	706,700	Aug. 12	1347	299	100	1407
					300		
Junction-box	W. F. Bossert	708,692	Sept. 9	1247	286	100	2245
Key: *See* Floor-key. Spring-key.							
Keyboard	G. G. Allen	706,002	Aug. 5	1	1	100	1117
Keyboard-machine	T. W. Otto	707,714	Aug. 26	3291	736	100	1845
					737		
					738		
					949		
Keyboard-perforator	D. Murray	710,163	Sept. 30	4213	950	100	2908
					951		
Key connection	J. T. Schlacks	705,792	July 29	4777	1037	100	1027
Key-fastener	B. B. Downard	706,587	Aug. 12	1059	233	100	1345
Key-guard	B. R. Bacon	706,006	Aug. 5	7	2	100	1118
Key head. Winding	T. W. R. McCabe	708,243	Sept. 2	456	103	100	2074
Keyhole-guard	F. H. Bos	707,381	Aug. 19	2630	593	100	1691
					594		
Keyless lock	A. W. Craig	708,387	July 1	44	9	100	11
Key or musical instruments. Mechanism for effecting varying touch of	L. Hupfeld	706,946	Aug. 12	1817	406	100	1504
					407		
Key-ring	J. R. Lomas	705,868	July 22	3695	853	100	845
Keyed instruments. Automatic player for	M. Clark	709,962	Sept. 30	3825	861	100	2928
					862		
					863		
Kiln: *See* Bone-black kiln. Brick-kiln. Continuous kiln. Drying-kiln. Malt-kiln. Malting-kiln.							
Kiln-burning apparatus	G. F. and H. N. Gray and R. South	708,707	Sept. 9	1281	232	100	2259
Kiln or furnace grate	J. W. Taylor	708,958	Sept. 9	1735	402	100	2349
Kinetographic apparatus	A. C. Roebuck and F. McMillan	706,113	Aug. 5	204	43, 43	100	1158

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Kinetoscope	T. A. Edison. (Reissue)	12,037	Sept. 30	4636	1047	100	2998
Kinetoscope. Projecting-	W. Latham	707,934	Aug. 26	3789	846 847	100	1989
Kinetoscopic film	T. A. Edison. (Reissue)	12,038	Sept. 30	4639	1048	100	2999
Knee-joint or hinge connection	G. W. Greenwood	704,321	July 8	1776	367	100	373
Knife: See Curd-knife. Fruit-knife. Loom-picker's knife. Microtome-knife.							
Knife	N. E. Putney	705,641	July 22	4061	890	100	872
Knife and fork	G. Garda	708,806	Sept. 9	1488	339	100	2297
Knife-cleaning machine	H. Michaux	706,577	Aug. 12	1318	290 291	100	1400
Knife, cutter, or dicing-out instrument	J. M., J., A. J., and S. A. Gimson	709,008	Sept. 16	1899	435	100	2400
Knitted fabric	D. C. Bellis	709,734	Sept. 23	3384	751 752	100	2714
Knitted fabric	R. W. Scott	709,625	Sept. 23	3531	795	100	2754
Knitted fabric	R. W. Scott	709,627	Sept. 23	3533	796	100	2754
Knitted fabric	L. N. D. Williams	709,639	Sept. 23	3552	800 801	100	2758
Knitted fabric	L. N. D. Williams	709,640	Sept. 23	3553	801	100	2759
Knitted fabric	R. W. Scott	709,626	Sept. 23	3532	796	100	2754
Knitted fabric. Ribbed	R. W. Scott	709,628	Sept. 23	3534	796	100	2754
Knitted fabric. Ribbed	D. F. Sullivan	703,973	July 1	1112	240 241	100	220
Knitting-machine	D. A. Buoker	705,203	July 22	3540	767	100	768
Knitting-machine	H. Stoll	709,786	Sept. 9	1427	328	100	2285
Knitting-machine	M. Saldin	709,047	Sept. 16	1987	453 454	100	2416
Knitting-machine	H. Janssen	709,154	Sept. 16	2189	501	100	2462
Knitting-machine	L. N. D. Williams	709,641	Sept. 23	3555	801	100	2759
Knitting-machine attachment. Automatic circular-	J. F. Bard	706,509	Aug. 12	1008	221 222	100	1335
Knitting-machine bur-wheel support	B. A. Stewart	709,831	Sept. 23	3589	797	100	2756
Knitting-machine. Circular spring-needle	F. Wilcomb	706,505	July 22	4178	909 910	100	808
Knitting-machine needle	R. W. Scott	707,980	Aug. 26	3851	865	100	1954
Knitting machine. Rib-	R. W. Scott	709,629	Sept. 23	3536	797	100	2755
Knitting-machine stop-motion. Automatic	G. W. Martin and J. Palmer	708,839	Aug. 12	1627	365	100	1467
Knitting-machine stop-motion. Automatic	G. W. Martin and J. Palmer	708,840	Aug. 12	1628	365	100	1468
Knob attachment	W. S. Bartholomew	707,375	Aug. 19	2619	590	100	1689
Knob. Door-	J. R. Fletcher	708,336	Sept. 2	624	140	100	2108
Knockdown box	J. E. Neihysel	705,958	July 29	5006	1104	100	1085
Knot-tying implement	H. D. Colman	707,898	Aug. 26	3560	804 805	100	1898
Knots. Device for untying hard	J. W. Mutton	708,357	July 8	1963	403	100	394
Kraut-cutter	G. H. Kinkade and L. Mager	710,326	Sept. 30	4503	1015	100	2971
Label	G. E. Howard	709,326	Sept. 16	2539	571	100	2335
Label-affixer	G. E. Howard	707,781	Aug. 26	3468	782	100	1890
Label-affixing device	G. E. Howard	707,780	Aug. 26	3467	781	100	1890
Label-affixing machine	W. F. Marresford	707,787	Aug. 26	3479	783 784 785	100	1892
Label for bottles, &c	O. C. Painter	708,916	Sept. 9	1704	398	100	2343
Label-holder	G. E. Howard	707,782	Aug. 26	3470	783	100	1890
Label-holder fastener	J. R. Thorne	704,404	July 8	1935	419	100	408
Label with metal fastening-clamp	W. Siegfried	706,696	Aug. 12	1341	298	100	1405
Labels to bottles. Machine for applying	C. J. Warren	707,788	Aug. 26	3484	754 755	100	1857
Labels with adhesives. Machine for coating	F. E. Jagenberg and R. Högfeldt	706,737	Aug. 12	1476	327 328	100	1434
Labeling-machine	J. J. Gaynor	705,892	July 29	4843	1051 1052	100	1040
Labeling machine. Bottle-	W. E. Pettee	707,681	Aug. 26	3118	708	100	1809
Labeling machine. Can-	F. C. Morrison	709,499	Sept. 23	2921	651 652 653 654	100	2698
Laboratories, &c. Fitting for	A. W. Cooksey	708,897	July 1	970	211	100	194
Lace. Electrodepositing metal on	J. A. Daly	707,306	Aug. 19	2496	560	100	1664
Lace-machine	C. Martin	707,436	Aug. 19	2735	619	100	1712
Lace-making machine	A. Matitsch	705,580	July 22	4306	929 930 931 932	100	918
Lacing device	E. Savoye	704,261	July 8	1900	411	100	401
Lacing-eye for shoes, &c	L. Ballbach	706,218	Aug. 5	402	86	100	1198
Lacing-hook	W. P. Bartel	704,609	July 15	2234	504	100	501
Lacing-hook	G. W. Chipley	705,569	July 29	4302	945	100	944
Lacing-hook	W. A. Dunham	707,090	Aug. 19	2065	466	100	1576
Lacing-hook	E. L. Pupke	710,310	Sept. 30	4308	958	100	2981
Lacing-hook for flat laces	W. A. Kelly. (Reissue)	12,013	July 15	3149	680	100	673
Lacing-hook for women's shoes, &c	N. H. Clark	705,554	Sept. 23	3008	669	100	2645
Lacing-stud	L. L. Russell	704,118	July 8	1413	308	100	297
Lacing-tip machine. Shoe-	C. D. Weaver	708,522	Sept. 2	586	120 121	100	2066
Ladder	R. L. Scott	704,122	July 8	1419	304	100	299
Ladder	C. E. See	705,670	Sept. 9	1905	375	100	2287
Ladder	C. B. Smith	709,118	Sept. 16	2126	457	100	2449
Ladder	J. T. Writt	708,200	Sept. 2	547	124	100	2032
Ladder and bench. Combination step-	F. D. Allison	708,688	July 1	465	106	100	91
Ladder and settee. Combined	E. A. Herndon	709,402	Sept. 16	2698	605	100	2566
Ladder and truck therefor. Extension-	C. H. Schambers	708,696	July 1	849	187	100	170
Ladder. Extension-	W. H. Sibley	708,413	Sept. 2	742	167	100	2131
Ladder. Extension-	S. R. Henry	708,040	Sept. 2	84	19	100	1998
Ladder. Fire-	V. B. St. John	705,475	July 22	4118	892	100	888
Ladder. Step-							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Ladder. Store-service	A. A. Coburn	706,162	Aug. 5	315	67	100	1181
Ladders or the like. Antislipping foot for	A. Kern	707,226	Aug. 19	2361	529	100	1626
Lamp	F. J. Cleare	704,290	July 8	1737	379	100	365
Lamp	C. E. Gervais	706,923	Aug. 12	1779	398	100	1498
Lamp	G. E. Gervais	706,924	Aug. 12	1782	399	100	1498
Lamp	F. A. Cortis	708,957	Sept. 9	1783	411	100	2358
Lamp	T. J. Litle, Jr	710,061	Sept. 30	4004	903 904	100	2965
Lamp. Acetylene-gas	A. K. Miller	710,203	Sept. 30	4295	956	100	2928
Lamp. Acetylene-gas	A. K. Miller	710,204	Sept. 30	4299	957	100	2929
Lamp and lantern. Combined	F. B. Waibel	709,654	Sept. 23	3196	713	100	2664
Lamp and socket. Incandescent electric	J. C. M. Brown	708,717	July 1	630	140	100	124
Lamp-burner	H. H. Zimmerman	704,462	July 8	1961	426	100	413
Lamp-burner	T. B. Abbott	707,811	Aug. 26	3531	798	100	1892
Lamp-burner	F. Lehmann	708,368	Sept. 2	668	150	100	2117
Lamp-burner	G. Wedderburn	707,190	Aug. 19	2289	511	100	1620
Lamp. Carbureting-	W. C. Burress	709,398	Sept. 16	2686	602	100	2560
Lamp-chimney protector	F. A. Gilbert	710,068	Sept. 30	4011	905	100	2967
Lamp circuits. Maintaining uniform resistance in arc-	H. Gilmore	706,314	Aug. 5	626	137	100	1242
Lamp. Compound incandescent electric	H. H. Beecher, Jr	704,851	July 15	2765	597	100	592
Lamp. Electric	A. M. Arter	704,495	July 15	2117	458	100	458
Lamp. Electric-arc	H. Etheridge	704,526	July 15	2184	473	100	473
Lamp. Electric-arc	J. S. Nowotny	705,122	July 22	3371	730 731	100	732
Lamp. Electric-arc	J. S. Nowotny	705,541	July 22	4313	933	100	930
Lamp. Electric-arc	R. Fleming	706,545	Aug. 12	1071	236	100	1347
Lamp. Electric-arc	F. A. Gilbert and E. O. Lundin	706,547	Aug. 12	1074	237	100	1348
Lamp. Electric-arc	C. L. Bundy	707,393	Aug. 19	2634	585	100	1642
Lamp. Electric-arc	E. A. Edwards	708,032	Sept. 2	70	16, 17	100	1995
Lamp. Electric-arc	R. Fleming	708,182	Sept. 2	248	55	100	2033
Lamp. Electric-arc	C. E. Harthan	710,055	Sept. 30	3991	900	100	2962
Lamp. Electric-arc	A. F. Shore	710,374	Sept. 30	4584	1034 1035	100	2987
Lamp-extinguisher	L. D. Lawrence	706,572	Aug. 12	1110	246	100	1356
Lamp glower and attaching terminal wires thereto. Electric-	E. R. Roberts	710,369	Sept. 30	4577	1032	100	2986
Lamp glowers. Circuit-breaker for electric-	F. M. Goddard	710,356	Sept. 30	4554	1027	100	2982
Lamp hanger. Adjustable electric-	H. G. Breitwieser	709,588	Sept. 23	3000	668	100	2645
Lamp-holders. Match-safe attachment for miners'	J. A. Brown	709,452	Sept. 16	2900	630	100	2501
Lamp. Hydrocarbon-	J. Bystrom	708,384	July 1	38	8	100	10
Lamp. Hydrocarbon-	W. Hawks	705,582	July 29	4394	953	100	950
Lamp. Hydrocarbon-	G. R. Stillman	707,177	Aug. 19	2256	501	100	1613
Lamp. Hydrocarbon incandescent	P. B. Curran	705,044	July 22	3207	693	100	699
Lamp. Hydrocarbon incandescent	G. Washington	706,504	Aug. 5	996	219	100	1318
Lamp. Incandescent	H. J. Jaeger	708,791	July 1	773	169	100	155
Lamp. Incandescent	H. E. Meyers	709,153	Sept. 2	297	71	100	2043
Lamp. Incandescent electric	H. Gilmore	706,313	Aug. 5	624	136	100	1242
Lamp. Incandescent electric	E. S. Gardner	707,099	Aug. 19	2102	469	100	1580
Lamp. Incandescent electric	G. C. Webster	708,432	Sept. 2	773	173	100	2137
Lamp. Incandescent electric	A. W. W. Miller	708,653	Sept. 9	1172	267	100	2230
Lamp. Incandescent electric	L. T. Alton	708,978	July 8	1127	244	100	239
Lamp. Incandescent gas	F. M. Brooks	705,818	July 29	4824	1047	100	1036
Lamp. Incandescent gas	G. Tresenreuter	707,185	Aug. 19	2273	509	100	1617
Lamp. Incandescent gas	H. N. Potter	707,975	Aug. 26	3841	863	100	1953
Lamp. Mercury-vapor	H. N. Potter	707,976	Aug. 26	3843	863	100	1953
Lamp. Mercury-vapor	H. E. Bottlewalla	706,717	Aug. 12	1375	306	100	1418
Lamp. Oil-	R. W. Schmeis	706,856	Aug. 12	1640	371	100	1474
Lamp shade-holder. Incandescent-electric-	R. W. Schmeis	708,739	Sept. 9	1326	305	100	2365
Lamp shade-holder. Incandescent-electric-	T. McWatters	705,280	July 22	3725	809	100	802
Lamp. Signal-	F. K. Wright	705,808	July 29	4806	1043	100	1032
Lamp. Signal-	G. H. Proctor	708,467	July 1	167	29	100	35
Lamp socket. Electric-incandescent-	C. A. Chase	707,290	Aug. 19	2482	557	100	1661
Lamp sockets. Machine for molding incandescent-	W. J. D. Mast	708,694	July 1	403	94	100	80
Lamp. Spirit-	C. M. Stead	707,533	Aug. 26	3191	716	100	1825
Lamp support. Electric-	W. F. Brewster	708,984	July 8	1136	246	100	241
Lamp-supporting device. Electric-	S. M. Meyer	705,773	July 29	4747	1028	100	1020
Lamps by electricity. Device for lighting	S. E. Doane	710,186	Sept. 30	4257	959	100	2918
Lamps. Exhausting incandescent electric	O. Kaufmann	708,812	Sept. 9	1495	342	100	2300
Lamps. Mantle for incandescent gas-	S. E. Doane	710,099	Sept. 30	4085	922	100	2981
Lamps of relatively low voltage. Exhausting in candescent electric	J. L. Mann	706,429	Aug. 5	861	189	100	1298
Lampblack apparatus	J. H. Mann	706,431	Aug. 5	873	190	100	1299
Lampblack-making apparatus	D. J. Ogilvy	706,001	July 29	5146	1122 1123	100	1102
Lampblack. Producing	A. Yoost	709,729	Sept. 23	3327	749	100	2712
Land-roller	A. T. Bishop	705,816	July 29	4821	1047	100	1036
Lantern	G. H. Bradet	707,545	Aug. 26	2950	667	100	1775
Lantern. Signal-	W. I. Lewis	710,107	Sept. 30	4099	925	100	2988
Lapping-machine	A. G. Fitz	705,574	July 29	4382	950	100	948
Last	F. J. Shainess	706,499	Aug. 5	989	218	100	1317
Last	J. D. Winchester	707,998	Aug. 26	3893	875	100	1964
Last	D. L. Purinton	708,077	Sept. 2	145	35	100	2011
Last	A. B. Taylor	709,425	Sept. 16	2742	616	100	2578
Last	M. G. Tilney	705,484	July 22	4142	900	100	897
Last. Darning-	N. F. Hagström	708,958	July 1	1077	232	100	214
Last. Sectional shoe-	M. F. Kelley. (Reissue)	12,012	July 15	3146	680	100	672
Lasting-machine	C. K. Pickles	704,098	July 8	1857	295 296	100	284
Lasting-machine. Pneumatic	J. W. Czernak and J. Tischler	708,642	July 1	487	110	100	96
Latch	E. J. Root	705,301	July 22	3764	817	100	811
Latch	D. W. Tower	708,097	Sept. 2	178	42	100	2018
Latch	O. H. Burden	708,982	Sept. 9	1604	366	100	2323
Latch	C. Garber	709,538	Sept. 23	3006	670	100	2646
Latch	D. W. Tower	708,975	July 1	1116	241	100	221
Latch and lock. Combined	G. G. Deffenbaugh	708,250	July 1	51	10	100	13
Latch. Sliding-door	F. Lorch	706,673	Aug. 12	1308	288	100	1309
Lathe							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Lathe	J. L. Osgood	707,155	Aug. 19	2209	495	100	1602
Lathe auxiliary appliance	S. H. Croker	704,440	July 8	1996	434	100	420
Lathe back gearing	J. Hartness	708,411	July 1	85	16 17	100	20
Lathe centering attachment	J. M. Fleming	707,573	Aug. 26	3016	678	100	1787
Lathe. Engine-	W. T. S. Johnson	706,665	Aug. 12	1289	284	100	1394
Lathe for turning irregular forms	F. J. Leland	708,798	July 1	788	178	100	157
Lathes, &c. Spindle attachment for	A. C. Witzel	704,726	July 15	2523	545	100	543
Lathing. Metallic	F. A. Mitchell	704,072	July 8	1314	286	100	275
Laundry purposes. Polishing-block for	M. Lehmann	706,967	Aug. 12	1855	415	100	1512
Lawn cutter and roller. Motor-propelled	W. P. Simpson	706,864	Aug. 12	1676	375 376	100	1477
Lawn-sprinkler	P. Moderson	706,986	Aug. 12	1883	421	100	1518
Lawn-trimming implement	C. Fernstrom	709,976	Sept. 30	3859	969	100	2934
Leaching ores, &c. Apparatus for	G. Moore	706,334	Aug. 5	663	144	100	1249
Lead. Apparatus for producing white	J. W. Bailey	709,954	Sept. 30	3797	957	100	2921
Lead. Apparatus for producing white	J. W. Bailey	709,956	Sept. 30	3810	857 858	100	2924
Lead carbonate. Producing	J. W. Bailey	709,955	Sept. 30	3803	857 858	100	2923
Lead. Producing white	J. W. Bailey	709,957	Sept. 30	3814	859	100	2925
Leaf-holder	C. P. Weaver	704,410	July 8	1944	421	100	409
Leather	M. Pianko	704,707	July 15	2484	536	100	535
Leather-lace cutter	G. O. Bjorkander	704,294	July 8	1732	377	100	364
Leather-setting-frame clamp	J. T. Lykens	705,105	July 22	3343	725	100	726
Leather-skiving machine	J. W. Poole	707,351	Aug. 19	2576	582 583	100	1681
Leather-stretching clamp	J. Schneider	707,869	Aug. 26	3845	821	100	1913
Leather-stretching device	J. Caldwell	704,510	July 15	2147	465	100	466
Leather-working machines. Operating-roll for	A. F. Jones	710,102	Sept. 30	4090	883	100	2882
Leathers. Varnish for making enamel or patent	H. C. McKay	704,088	July 8	1327	278	100	278
Ledger	J. B. Winn	704,430	July 8	1959	436	100	412
Leer	R. Naysmith and B. F. Reese	707,843	Aug. 19	2505	579 580	100	1676
Leers. Adjustable sheave-arm for	J. Goodman	708,543	Sept. 9	978	221	100	2191
Leg. Artificial	M. C. Baldwin	708,005	Sept. 2	10	2	100	1988
Leg-improver	H. A. Rhonemus	707,258	Aug. 19	2396	537	100	1642
Lemon-squeezer	A. Baumgarten	708,517	July 1	256	59	100	51
Lemon-squeezer	J. G. Bulloch	708,988	July 8	1151	250	100	244
Lens-grinding machine	J. F. Byington	710,180	Sept. 30	4048	957	100	2916
Letter-box	J. E. Coursen	707,554	Aug. 26	2966	670	100	1778
Letter-box. Street	F. D. Osborn	705,957	July 29	3072	1105	100	1096
Letter-sheet and envelop. Combined	H. V. Wagoner	704,153	July 8	1485	318	100	311
Leucogallocyanin and making same	C. De la Harpe	704,301	July 8	1741	407	100	366
Level and plumb. Combined	R. W. Pritt	704,389	July 8	1877	1041	100	396
Level and plumb. Spirit-	S. Winberg	710,386	Sept. 30	4613	346	100	2994
Level. Gravity-	G. Seyffarth	704,219	July 8	1596	874 875	100	334
Level, plumb, and inclinometer	G. W. Lingle	709,990	Sept. 30	3879	135	100	2888
Level. Spirit-	J. A. Traut	708,678	July 1	502	505	100	111
Leveling device	T. E. Brown	704,611	July 15	2295	609 610	100	501
Leveling-machine	J. J. Heys	707,414	Aug. 19	2597	524 525	100	1705
Leveling-rods. Extension-fitting for	G. S. Goodale	707,225	Aug. 19	2344	788	100	1688
Lever mechanism	M. J. Todd	709,807	Sept. 23	3497	661	100	2746
Lever. Shunting-	W. Taylor	704,978	July 15	3 75	1112	100	657
Lever. Shunting-	W. Taylor	705,974	July 29	5101	901	100	1022
Lid or cover actuating device	J. C. Lodor	705,251	July 22	3696	302	100	796
Life-buoy. Night	C. C. A. E. Wiese	706,707	Aug. 12	1355	254 255	100	1409
Life-preserver	G. B. Conley	704,000	July 8	1169	1	100	248
Life-preserver	C. Hunt	710,275	Sept. 30	4416	995	100	2953
Life-preserver blank	H. A. Ayvad	708,363	July 1	2	1	100	3
Lifter: *See* Pan-lifter. Wagon-body lifter.							
Lifting device	P. Beider	704,692	July 15	2456	530	100	529
Lifting device. Article-	F. G. Neumann	704,661	July 15	2408	521	100	519
Lifting-gate	A. Miller	706,984	Aug. 12	1880	421	100	1517
Lifting-jack	J. Hüppi	704,693	July 15	2440	527	100	526
Lifting-jack	O. E. Fields	706,043	Aug. 5	80	17	100	1133
Lifting-jack	J. C. Barley	706,880	Aug. 12	1702	381	100	1482
Lifting-jack and air-pump. Combined	J. G. Schmidt and W. P. Mueller	708,408	Sept. 2	736	165	100	2130
Light: *See* Compass-light. Skylight. Display-light. Vault-light.							
Lighthouse. Floating	J. C. Williams	708,287	Sept. 2	537	122	100	2090
Lighting implement	C. Molitor	704,559	July 15	2245	486	100	483
Lightning-arrester	G. E. Egan	708,329	Sept. 2	613	139	100	2106
Lightning-rod	J. O. Wilson	708,188	Sept. 2	354	84, 85	100	2054
Limb. Artificial	E. F. Leeffler	708,431	July 1	117	26	100	25
Limb. Artificial	C. P. White	708,695	Sept. 9	1241	282	100	2342
Limb-support	M. H. Bigsby	705,024	July 22	3174	686	100	998
Lime-burning apparatus	G. A. Mace	708,240	Sept. 2	451	103	100	2079
Link-motion block	O. D. Holt	708,924	July 1	1009	219 220	100	201
Linoleum. Machine for the manufacture of inlaid	D. N. Melvin	704,068	July 8	1288	281 282	100	272
Linoleum. Machine for the manufacture of inlaid	D. N. Melvin	704,069	July 8	1308	283 284	100	274
Linoleum. Machine for the manufacture of inlaid	D. N. Melvin	704,070	July 8	1309	284 285 286	100	275
Linotype-machine	O. Mergenthaler and W. T. Hoofnagle.	707,645	Aug. 26	3154	709	100	1616
Linotype-machine attachment	A. D. Smith	708,416	Sept. 2	749	169	100	2133
Linotype-machines. Alining mechanism for	A. G. Cotsworth	705,886	July 22	3069	958	100	859

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Linotype-machines. Trimming mechanism for	F. J. Wich	705,801	July 29	4758	1040 1041	100	1080
Linotypes. Device for forming accents on	J. Pinel	708,661	Sept. 9	1191	272	100	2334
Liquid cooling or heating apparatus	J. Neubecker	707,863	Aug. 26	3635	819	100	1911
Liquid-defecating apparatus	J. E. Hatton	705,994	July 29	5011	1091	100	1074
Liquid-delivery apparatus	P. Sheedy and A. Campbell	704,199	July 8	1435	307	100	308
Liquid-dispensing apparatus	S. W. Moran	710,291	Sept. 30	4440	1001 1002	100	2956
Liquid-dispersing or spray-making apparatus	C. H. Prött	709,556	Sept. 23	3085	676	100	2851
Liquid distributing or dosing tank and mechanism	S. W. Miller	709,233	Sept. 16	2350	532 533	100	2495
Liquid-fuel burner	R. Halley	707,510	Aug. 19	2459	649	100	1740
Liquid-fuel burner	C. G. Lundholm	708,898	Sept. 9	1555	368 369	100	2334
Liquid-fuel spraying and burning apparatus	A. Köhler	709,579	Sept. 23	3178	694	100	2660
Liquid-heating apparatus	J. Fliegel	705,745	July 29	4702	1018	100	1010
Liquid heating or cooling apparatus	H. Feldmeier	706,170	Aug. 5	227	69, 70	100	1184
Liquid-receptacle	W. Elkan	709,211	Sept. 16	2313	585	100	2467
Liquid-separator	S. C. Hauberg	705,669	July 29	4553	988	100	992
Liquid-separator. Centrifugal	W. W. Marsh	707,182	Aug. 19	2154	484	100	1501
Liquids by means of steam or compressed air. Apparatus for raising	A. Scholl	708,669	Sept. 9	1203	274 275	100	2336
Liquids. Clarifying	H. Lubberger	706,075	Aug. 5	145		100	1146
Liquids from solids. Apparatus for separating	D. Stewart	708,846	July 1	887	190 191	100	174
Liquids. Machine or apparatus for raising or lowering the temperature of	F. H. Floyd	708,703	Sept. 9	1271	291	100	2250
Liquids with gases or gases with liquids. Apparatus for treating	A. Vosmaer and A. Lebret	709,379	Sept. 16	2056	506	100	2561
Liquors from kegs. Treating air for forcing malt	C. A. Bartliff	708,984	Sept. 16	1846	435	100	2290
Lithographing or printing press roller	A. W. Kling	710,327	Sept. 30	4505	1015	100	2972
Load-binder	J. F. Neville	706,090	Aug. 5	168	34	100	1151
Load-retaining apparatus for vehicles	W. M. Cain	708,526	Sept. 9	964	216	100	2185
Load-retaining means for vehicles	W. M. Cain	706,797	Aug. 12	1502	348	100	1450
Loads. Means for moving heavy	A. Schuls	704,287	July 8	1908	413	100	403
Loader and digger. Portable mechanical	G. C. Brown	709,190	Sept. 16	2291	520 521	100	2482
Loading apparatus	J. Straub	704,142	July 8	1468	314	100	308
Loading device	W. F. Murphy	708,444	July 1	136	31	100	30
Loading or unloading device	M. F. Johnson	708,980	Sept. 2	657	148	100	2114
Loading or unloading device. Lumber	W. Saantry	707,162	Aug. 19	2328	498	100	1604
Location-tracer	H. S. Bacon	708,713	Aug. 12	1369	305	100	1412
Lock: *See* Alarm-lock. Loom-beam lock. Bicycle-lock. Loom shuttle-lock. Car-check lock. Nut-lock. Check-lock. Padlock. Combination-lock. Permutation-lock. End-gate lock. Safe-door lock. Fence-lock. Seal-lock. Firearm-lock. Switch-lock. Galley-lock. Table-lock. Keyless lock.							
Lock	C. Kunselmann	708,429	July 1	112	25, 26	100	25
Lock	A. F. Wahlberg	708,506	July 1	225	53	100	47
Lock	J. F. Allen	708,514	July 1	262	58	100	51
Lock	C. S. Huntington	708,987	July 1	1018	220	100	202
Lock	J. F. Lydon	708,992	July 1	1095	236	100	217
Lock	A. R. Fergusson	704,180	July 8	1537	330	100	328
Lock	J. L. Coulter	704,802	July 15	2783	602	100	596
Lock	A. B. Wallace	705,495	July 22	4151	906	100	890
Lock	A. R. Fergusson	705,660	July 29	4585	986	100	979
Lock	W. A. Markey	705,942	July 29	5044	1099	100	1030
Lock	H. W. Simpson	707,028	Aug. 12	1959	420	100	1532
Lock	H. Bryda	707,757	Aug. 26	3416	709	100	1859
Lock	C. Kunselmann	709,018	Sept. 16	1923	441 442	100	2405
Lock	G. G. Smith	709,056	Sept. 16	2004	457	100	2421
Lock	H. W. Eicher	709,309	Sept. 16	2508	555	100	2539
Lock	W. B. Paige and H. A. Hoods	710,071	Sept. 30	4020	907 908	100	2966
Lock and latch. Combined	J. B. Cox	706,887	July 22	3961	858	100	950
Locks. Gage for measuring keys for pin-tumbler	E. S. Phelps	709,940	Sept. 16	2870	537 538	100	2408
Locking device	J. W. Gonce	709,010	Sept. 16	1908	437	100	2400
Locking-hook. Safety	A. H. Noyes	708,910	Sept. 9	1694	350	100	2341
Locomotive	L. Atwood	708,992	Sept. 2	550	125	100	2098
Locomotive	J. H. Williams	709,429	Sept. 16	2747	617 618	100	2579
Locomotive-boiler	J. J. Gage	705,490	Aug. 5	974	214	100	1318
Locomotive-boiler	C. Vanderbilt	707,657	Aug. 26	3193	717	100	1925
Locomotive-boiler	J. H. Williams	709,430	Sept. 16	2750	618	100	2580
Locomotive-cylinder circulator	P. Sheedy and A. Campbell	704,180	July 8	1438	308	100	308
Locomotive driving-wheel	L. H. Kenyon	707,385	Aug. 19	2553	575 576	100	1675
Locomotive emergency-gear	W. W. Murch	706,988	Aug. 12	1895	428	100	1518
Locomotive-engine. Compound	C. M. Muchnic	705,599	July 29	4594	997	100	989
Locomotive forced-draft appliance	J. A. Eson	705,225	July 22	3599	779	100	779
Locomotive loading device	G. Hoffman	707,997	Aug. 26	3768	843	100	1987
Locomotive-pedestal	T. E. Collins	707,508	Aug. 19	2645	604	100	1737
Locomotive sand-delivering pipe	I. T. Lewis	709,414	Sept. 16	2793	611	100	2574
Locomotive sanding device	J. C. Hooper	704,087	July 8	1285	266	100	280
Log register. Electric	W. B. Armstrong	705,691	July 1	598	131 132	100	117
Log-releasing device for scows	E. W. Spencer	705,485	July 22	4108	898	100	880
Logs. Means for chaining	H. McFadden	704,908	July 15	2856	619	100	612

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Loom	D. F. Conklin and T. G. Singer	705,649	July 29	4510	979 980	100	978
Loom	F. Barlet	706,376	Aug. 5	746	163 164	100	1007
Loom	O. L. Owen	708,251	Sept. 2	469	107	100	2077
Loom	O. L. Owen	703,667	July 1	540	122	100	106
Loom-beam lock	H. H. McLean	708,246	Sept. 2	463	105	100	2076
Loom-beam lock	E. S. Stimpson	710,023	Sept. 30	3302	888	100	2849
Loom. Filling-replenishing	C. Foster	707,490	Aug. 26	3257	728	100	1838
Loom-fixer's knife	A. F. McCollum	709,447	Sept. 16	2782	626 627	100	2566
Loom for weaving pile fabrics	C. H. Landenberger	706,072	Aug. 5	135	28, 29	100	1145
Loom for weaving tufted pile fabrics Loom for weaving velvets	W. G. Hartley	703,580	July 1	365	84	100	72
Loom harness-controlling mechanism	T. H. McNerney	706,835	Aug. 5	665	144 145	100	1949
Loom. Kindergarten-	B. E. Lindberg	708,799	July 1	785	172	100	157
Loom. Kindergarten-	J. E. Painter	708,815	July 1	817	180	100	163
Loom. Kindergarten-	L. M. Comstock	709,585	Sept. 23	3008	669	100	2045
Loom. Leno-	E. H. Ballou	708,951	Sept. 9	1764	407 408	100	2355
Loom let-off-arresting mechanism	E. S. Stimpson	710,024	Sept. 30	3085	888	100	2850
Loom loose-reed motion	E. Herzig	710,192	Sept. 30	4265	962	100	2920
Loom. Narrow-ware	J. C. Brooks	704,295	July 8	1725	378	100	364
Loom picker-check	A. St. Andrews	706,270	Aug. 5	540	117	100	1225
Loom shaking-strap	O. Hoffmann	704,549	July 15	2378	515	100	512
Loom shedding mechanism	G. W. Stafford	709,453	Sept. 16	2901	630 631	100	2591
Loom shedding mechanism	G. W. Stafford	709,454	Sept. 16	2906	631	100	2592
Loom shedding mechanism	G. W. Stafford	709,455	Sept. 16	2909	632	100	2593
Loom shedding mechanism	L. W. Campbell	708,999	July 8	1157	251	100	245
Loom-shuttle	H. Bardsley	705,898	July 29	4965	1081	100	1065
Loom-shuttle	A. Schaub	708,592	Sept. 9	1058	240	100	2305
Loom-shuttle	E. S. Stimpson	703,498	July 1	215	51	100	45
Loom shuttle-binder	F. A. Guillette, W. J. Lynch, and H. A. Guillette.	709,317	Sept. 16	2522	568	100	2532
Loom shuttle-binder	C. H. Draper	705,911	July 29	4991	1096	100	1070
Loom-shuttle-checking mechanism	W. W. Tubby and W. H. Broomhead	705,940	July 29	5108	1114	100	1094
Loom-shuttle-checking mechanism	J. Houston	703,419	July 1	97	21	100	22
Loom shuttle-driving means	F. A. Mills	706,190	Aug. 5	367	79	100	1192
Loom shuttle-lock	A. Barbier	708,752	Sept. 9	1363	310 311	100	2273
Loom-shuttles. Apparatus for operating guided	W. T. Lucie	707,190	Aug. 19	2152	483	100	1591
Loom stopping device Loom stopping mechanism	H. Côté	706,164	Aug. 5	318	67, 68	100	1180
Loom-stopping mechanism. Automatic	A. D. Emery	705,913	July 29	4995	1087 1088	100	1071
Loom-swivel	J. Wadsworth	706,133	Aug. 5	245	51, 52	100	1168
Loom take-up	F. C. Gerfin	704,314	July 8	1765	385	100	371
Loom take-up mechanism	G. Schmidt, Sr	709,582	Sept. 23	3081	686	100	2061
Loom thread-parter	E. S. Stimpson	704,715	July 15	2497	540	100	538
Loom warp stop-motion	H. A. Owen	703,666	July 1	538	121 122	100	106
Loom warp stop-motion	C. H. Draper	708,536	Sept. 9	968	219	100	2189
Loom. Weft-replenishing	W. E. Moore and F. R. Clark	704,485	July 8	2004	454 455	100	440
Loom. Weft-replenishing	H. I. Harriman	709,440	Sept. 16	2769	624	100	2584
Loom weft-replenishing mechanism	R. Talbot and W. Rossetter	710,379	Sept. 30	4593	1036	100	2999
Looms at intervals. Means for stopping	G. A. Cluff	706,436	July 8	1996	432	100	418
Looms by the quantity of weft in the shuttles. Mechanism for controlling	J. H. Klerx	709,910	Sept. 30	3716	838	100	2804
Looms by the quantity of weft in the shuttles. Mechanism for controlling	J. H. Klerx	709,911	Sept. 30	3719	838 839	100	2805
Looms. Connector for sweep-sticks and picker-sticks of	H. E. Taplin	708,745	Sept. 9	1846	307	100	2267
Looms. Filling-carrier receptacle for weft-replenishing	J. L. Burton	708,524	Sept. 9	951	216	100	2186
Looms. Shuttle-guide for weft-replenishing	A. E. Stafford	708,672	Sept. 9	1207	275	100	2227
Low-water alarm. Electric	E. W. Rider	703,472	July 1	176	41	100	37
Lubricating device	B. H. Locke	704,555	July 15	2239	485	100	483
Lubricating device	H. G. Reist	708,170	Sept. 2	323	77	100	2047
Lubricating device	F. B. Duncan	708,324	Sept. 2	604	137	100	2104
Lubricating-pad grapple	J. Loesewitz	709,604	Sept. 23	3117	694	100	2059
Lubricating-pump-operating apparatus	B. Ivor	709,996	Sept. 30	3874	872 873	100	2837
Lubricator: *See* Automatic lubricator. Axle-lubricator. Engine-lubricator. Pneumatically-operated lubricator. Pulley-lubricator. Trolley-lubricator. Truck-lubricator. Valve-lubricator.							
Lubricator	J. Gottbreht	708,408	July 1	72	14	100	17
Lubricator	J. M. Pfaudler	705,608	July 29	4450	965	100	951
Lubricator	W. F. Richards	706,201	Aug. 5	335	82	100	1195
Lubricator	F. W. Edwards	706,234	Aug. 5	429	91	100	1204
Lubricator	O. G. Kipp	706,570	Aug. 12	1108	245	100	1355
Lubricator	F. Cartlidge	708,062	Sept. 2	36	8, 9	100	1988
Lubricator	C. F. Clements	710,184	Sept. 30	4254	959	100	2918
Lubricator and liquid-dispenser	M. H. Halloran	709,318	Sept. 16	2525	568	100	2533
Lubricator for elevator-ropes, &c	J. A. Britton	707,755	Aug. 26	3418	769	100	1926
Luggage-carrier	S. H. Smith	704,944	July 15	3001	643	100	643
Lumber. Compound	E. E. Thomas	707,806	Aug. 26	3523	795 796	100	1991
Lumber-conveyer	W. S. Huntington	709,686	Sept. 23	2905	649	100	2035
Lumber. Making artificial	J. W. Aldridge	705,939	Aug. 12	1217	270	100	1378
Machine-wrench	E. M. Cobb and E. A. Spaulding	709,573	Sept. 30	3694	819	100	2786
Machinist's V-block	F. Elias	709,096	Sept. 16	2063		100	2494
Magnesium. Making peroxid of							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Dr'g.	Official Gazette. Vol.	Page.
Magnet. Blow-out	W. B. Potter	705,188	July 22	3418	742	100	741
Magnetic and non-magnetic materials from one another. Apparatus for separating	J. W. R. T. Heberle	709,992	Sept. 30	3868	871	100	2836
Magnetic core for inductance-coils	J. C. Lee and E. H. Colpitts	705,935	July 29	5080	1096 1097	100	1078
Magnetic separator	A. Dings	707,088	Aug. 19	2082	465	100	1576
Magnetic separator	J. P. Wetherill	708,185	Sept. 2	348	83	100	2052
Magnetic separator	J. P. Wetherill	708,186	Sept. 2	350	83, 84	100	2053
Magnetic separator	J. P. Wetherill	708,187	Sept. 2	352	84	100	2054
Magnetic separator	J. P. Wetherill	709,484	Sept. 23	2898	647	100	2034
Magnetic wheel	J. O. Heinze, Jr	703,980	July 8	1158	250	100	244
Magneto-therapeutic apparatus	J. Burry	704,904	July 15	2857	620	100	512
Mail-bag catcher	C. C. McIlvar	706,323	Aug. 5	645	141	100	1245
Mail-bag catcher	G. B. and J. C. Klink	707,267	Aug. 19	2410	540	100	1545
Mail-bag catcher	G. W. Smith	708,980	Sept. 9	1783	398	100	2347
Mail-bag catcher	R. L. Slagle	707,017	Aug. 12	1939	433 434	100	1529
Mail-bag catching and delivering machine	W. B. Rohmer	706,271	Aug. 5	541	117	100	1225
Mail-bag fastener and lock	E. Stevenson	707,412	Aug. 19	2691	608	100	1704
Mail-bag receiving and delivering apparatus	A. P. Hauss	708,843	Aug. 12	1639	367	100	1470
Mail-box	W. N. Moore	703,920	July 1	1004	218	100	200
Mail-box indicator	C. E. Herd	703,441	July 1	133	30	100	29
Mail-carrier	A. L. Mumma	707,696	Aug. 26	3364	730	100	1859
Mail-catcher	C. E. P. Hobart	708,950	Sept. 9	1763	406	100	2355
Mail-chute	A. C. Badger	708,890	Sept. 2	700	157 158	100	2123
Mail delivering and catching device	W. J. Noble	705,982	July 29	5114	1114 1115	100	1095
Mail delivery and collection system	F. S. Vogue	705,440	July 22	4039	880	100	872
Mail-matter-carrying apparatus	G. S. Pothe	704,757	July 15	2582	558	100	554
Mail-pouches to railway-cars. Device for delivering	J. W. Reynolds	707,500	Aug. 19	2841	643	100	1736
Mail receiving and delivering mechanism for railways.	F. H. Burr	706,694	Aug. 12	1340	298	100	1406
Mail-wagon door	W. F. Shelly	707,059	Aug. 12	2080	.....	100	1546
Maize for the production of grits, flakes, &c. Treatment of	T. T. Gaff and J. F. Gent	707,058	Aug. 12	2018	451	100	1546
Maize or Indian corn. Degerming	T. T. Gaff and J. F. Gent	709,558	Sept. 23	3038	677	100	2032
Malt-houses. Apparatus for conveying grain in	W. P. Rice	704,597	July 15	2305	501	100	497
Malt-kiln	P. G. Toepfer	706,716	Aug. 12	1372	305	100	1412
Malting-kiln. Pneumatic	B. Berg	704,891	July 15	2828	614	100	508
Manifold device	E. Lesser	709,853	Sept. 23	3575	805	100	2764
Manifold duplicating device	H. H. Norrington	708,781	July 1	744	165	100	149
Manifolding sales device	C. E. Frisbie	708,393	Sept. 2	698	155	100	2121
Mantle-support	J. E. Murray and J. J. Hoover	709,044	Sept. 16	1950	432	100	2416
Mantle-trimming mechanism	J. T. Robin	705,929	July 29	5021	1094	100	1076
Manure-distributer	J. Howell	707,886	Aug. 26	3692	.....	100	1922
Manure from apatite or similar mineral phosphate. Manufacturing	J. G. Wiborgh and W. Palmaer	704,621	July 15	2341	.....	100	504
Marble. Manufacturing artificial	J. Czermak	708,487	July 1	190	47	100	41
Marine brake	H. Simpson	709,011	Sept. 16	1905	437 438	100	2401
Marking-machine	F. J. Hagen	709,108	Sept. 16	2103	492	100	2444
Massaging device	C. E. Mason	707,080	Aug. 19	2069	.....	100	1573
Mat: *See* Floor-mat.	C. M. Bowman	706,578	July 29	4398	952	100	949
Match	J. B. Frederick	707,277	Aug. 19	2447	549	100	1554
Match-box	C. St. Jacques	709,645	Sept. 23	3181	710 711	100	2051
Match-box. Combination	S. E. Pasfield	703,698	July 1	541	122	100	106
Match-boxes, &c. Apparatus for applying the preparation to striking-surfaces of	M. Paridon	705,087	July 22	3198	680	100	997
Match-boxing machine	C. F. Christ	707,568	Aug. 26	3000	674 675 676	100	1784
Match-boxing machine	A. E. Ellinwood	709,267	Sept. 16	2425	549 550	100	2511
Match-boxing machine	W. F. Hutchinson	709,268	Sept. 16	2122	549	100	2510
Match-machine	W. F. Hutchinson	709,190	Sept. 16	2274	517	100	2478
Match-machine dipping-roll	J. P. Wright	708,453	July 1	150	34	100	32
Matches. Making	W. H. Parker	704,091	July 8	1339	292	100	280
Matches. Making	W. H. Parker	710,300	Sept. 30	4456	1005	100	2962
Mattes. Treating	J. A. Potter and W. C. Harvie	707,745	Aug. 26	3376	780	100	1861
Mattress-filling machine	K. Wessel	707,746	Aug. 26	3381	761	100	1855
Mattress-filling machine	K. Wessel	710,076	Sept. 30	4082	909	100	2871
Mattress. Hospital-	D. T. Rosett	708,658	July 1	516	116	100	101
Mattress-stuffing machine	C. W. Johansen	703,959	July 1	1104	238 239	100	219
Mattress-stuffing machine	H. W. Pennypacker	706,970	Aug. 12	1498	416	100	1512
Mattress. Wire	C. S. Lloyd	709,856	Sept. 30	3540	808	100	2779
Measuring and emptying device for bottles	B. Arthurs	706,940	Aug. 12	1807	404 405	100	1508
Measuring coal to gas-retorts. Mechanism for	W. R. Herring	707,599	Aug. 26	3158	688	100	1796
Measuring depths. Lead for	E. Krumhoff	708,389	Aug. 5	788	170	100	1272
Measuring device	C. Christensen	709,600	Sept. 23	3111	698	100	2068
Measuring device	E. Hill	709,665	Sept. 23	3217	718	100	2089
Measuring device. Shoemaker's	T. Cort	706,361	Aug. 5	709	154	100	1259
Measuring electric currents. Instrument for	W. Thomson	707,802	Aug. 26	3683	819	100	1911
Measuring horses. Standard for	W. H. Netherland	704,363	July 8	1674	364	100	351
Measuring instrument	G. J. Luck	708,520	Sept. 9	947	214	100	2165
Measuring instrument	C. A. Brown and R. C. Kerr	704,543	July 15	2216	480	100	479
Measuring instrument. Electrical	E. B. Jacobson	708,725	July 1	649	144	100	130
Measuring instrument. Lens	F. Hardinge	709,231	Sept. 16	2345	531 532	100	2494
Measuring-machine for rolled goods	H. R. Meade	707,164	Aug. 19	2225	499	100	1505
Measuring the degree of exposure to light. Instrument for	F. Schoeler	706,800	Aug. 12	1538	348	100	1432
Meat-chopper	L. B. Cobb and C. M. Jenkins						

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Meat-curing apparatus	J. C. Lincoln	705,257	July 29	3085	858	100	545
Meat, &c. Machine for cutting	F. Graff	709,580	Sept. 23	3008	670	100	2545
Meat-reducing device	H. C. Chambers	709,497	Sept. 23	2976	738	100	2701
Mechanical motor	R. K. McLellan	709,044	Sept. 16	3179	710	100	2081
Mechanical motor	H. S. Durand	709,595	Sept. 23	3383	719	100	2691
Mechanical movement	H. H. Fefel	708,196	July 1	61	11, 12	100	15
Mechanical movement	J. and C. Quist	708,395	July 1	634	102	100	299
Mechanical movement	A. Wahle	705,499	July 22	4156	904	100	899
Mechanical movement	T. J. Lockwood	707,705	Aug. 26	3593	734	100	1843
Mechanical movement	O. C. Burdict and B. C. Candee	707,930	Aug. 19	3208	615	100	1584
Mechanical movement for nut-making or other machinery.	G. G. Marshall	707,696	Aug. 19	2730	680	100	1714
Medical electrode	E. M. Pond	706,778	Aug. 12	1515	336	100	1442
Medicated tampon	W. P. and E. H. King	705,251	July 22	3065	702	100	791
Medicine-administering apparatus	A. C. Bechtold	705,018	July 22	3167	684	100	699
Medicine-bottle dropping attachment	D. S. Kann	710,060	Sept. 30	3699	902	100	2954
Medicine-capsule	E. H. Schwartz	708,192	Sept. 9	1416	397	100	2268
Melting-furnace	M. Frings	704,531	July 15	2194	475 476	100	475
Mercerizing-machine	G. D. Bulmer	708,701	July 1	711	157 158	100	142
Merry-go-round	C. Looff, Jr.	708,801	July 1	788	173	100	158
Merry-go-round	G. W. Schofield	708,535	Sept. 9	1549	354	100	2210
Merry-go-round	E. Bollinger	709,462	Sept. 23	2883	636 637	100	2609
Merry-go-round. Land, marine, or submarine	A. Davidson	710,048	Sept. 30	3967	895	100	2857
Merry-go-round, seesaw, and jogger-board attachment.	W. W. Curtright	707,855	Aug. 26	2968	671	100	1779
Message-box	A. F. Shriver	708,594	Sept. 9	1080	246	100	2207
Metal-bending machine	F. Ditchfield	709,753	Sept. 23	3389	760 761	100	2733
Metal-bending machine	F. Ditchfield	709,754	Sept. 23	3390	761	100	2733
Metal-bending tool	J. J. Dolan and E. Estep	704,521	July 15	2175	471	100	479
Metal-boring machine	C. C. Roberts	707,016	Aug. 12	1096	433	100	1538
Metal can	F. P. McColl	708,445	July 1	138	31	100	30
Metal can	J. N. Bradley	706,298	Aug. 5	348	120	100	1295
Metal cleaning and preserving composition	W. C. Oberwalder	705,956	July 29	5071	------	100	1086
Metal-crimping machine	G. Cunin	706,190	Aug. 5	51	11, 12	100	1139
Metal-cutting tool	C. McRorie and D. J. Hunter	705,696	July 29	4606	999	100	992
Metal-cutting-tool holder	F. W. Taylor and S. Newbold	709,526	Sept. 23	2990	666	100	2643
Metal-dressing machine	F. P. Stiker and O. C. Burton	707,272	Aug. 19	2490	541 542 543 544 545	100	1648
Metal-dressing machines. Slide for	F. P. Stiker and O. C. Burton	707,273	Aug. 19	2485	546	100	1650
Metal-foil fabric	H. L. Parker	706,100	Aug. 5	182	98	100	1154
Metal for electrical or other purposes. Means and appliances for the manufacture of covered strips of soft	I. W. Heysinger	706,052	Aug. 5	99	21, 22	100	1137
Metal-piercing machinery for making hollow bodies	B. F. McTear	705,780	July 29	4757	1080 1081 1082	100	1022
Metal-plate-lifting device	E. B. Clark, 2nd	710,041	Sept. 30	3963	894	100	2857
Metal-sawing apparatus	C. O. Morgan	705,946	July 1	1050	228	100	159
Metal-shearing-machine frame	B. Wesselmann	710,310	Sept. 30	4473	1009 1010	100	2965
Metal sheets in packs. Compound for use in reducing	T. V. Allis	704,395	July 8	1718	------	100	361
Metal sheets. Producing	T. V. Allis	704,397	July 8	1722	375	100	362
Metal upon another. Impacting one	S. H. Thurston	705,701	Aug. 12	1348	300	100	1407
Metal wheel	E. Einfeldt	708,697	July 1	602	133	100	119
Metal-working tool	A. Tindel	707,085	Aug. 12	1070	442	100	1585
Metals and alloys. Treating metallic oxids in the production of	F. C. Weber	705,737	July 29	4664	1011	100	1008
Metals from mixtures of metals. Eliminating	G. H. Clamer	707,551	Aug. 26	2951	------	100	1777
Metals from ores. Apparatus for extracting	J. Randall	708,494	Sept. 2	802	202	100	2168
Metals from their ores. Apparatus for separating	W. A. R. Loose	708,567	Sept. 9	1012	229 230	100	2197
Metals from their ores, &c., in electrically-heated furnaces. Reduction of	R. C. Contardo	706,651	July 29	4515	980 981	100	974
Metals from their ores. Leaching and extraction of	C. Hoepfner	704,630	July 15	2379	------	100	511
Metals. Fusion of	H. A. E. Menne	708,940	July 1	1089	225	100	207
Metals in a finely-divided state. Producing	E. Pohl	708,475	Aug. 5	951	207	100	1308
Metals. Melting and treating	E. H. Schwartz	708,788	Sept. 9	1423	337	100	2284
Metallic strap	E. H. Vogel	706,026	July 29	4479	971	100	966
Metallic tie	W. W. Pike	709,850	Sept. 23	3572	805	100	2763
Metallic tie and rail-fastener	A. Scholer	706,617	July 29	4465	968	100	964
Metallic tie and rail-joint	J. F. Cleary	705,563	July 29	4364	945	100	945
Meter: *See* Current-meter. Electric meter. Fluid-meter. Gas-meter. Water-meter.							
Metering apparatus. Multirate	E. Oxley	710,070	Sept. 30	4016	907	100	2968
Metering system. Multirate	A. D. Lunt	705,575	Aug. 12	1119	447	100	1357
Micrometer	C. J. Banks	705,148	Aug. 5	295	60	100	1175
Micrometer-gage	R. J. Simpson	705,606	Aug. 12	1342	298	100	1406
Microtome-knife	E. Bausch	708,208	Sept. 2	556	127	100	2095
Milk-albumen. Producing oxidized	H. Oppermann	704,669	July 15	2409	------	100	530
Milk-albumen. Producing soluble	H. V. Dunham	709,008	Sept. 16	1886	------	100	2497
Milk and cream. Acid-mixer for facilitating the testing of	M. D. Beach	709,461	Sept. 23	2881	636	100	2608
Milk-can	C. M. Hopkins and E. H. Dorn	705,404	July 22	3091	864	100	857
Milk-can	H. S. Reynolds	707,011	Aug. 12	1038	431	100	1536
Milk pasteurizer and sterilizer	C. E. Hinman	705,945	July 22	3052	790	100	789

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Mfiker. Cow-	F. A. West	710,284	Sept. 30	4005	1089	100	2998
Milking-shield	H. H. Kagey	709,774	Sept. 23	3458	775	100	2783
Mill: *See* Bronze-mill. Chilian mill. Grinding-mill. Grit-mill. Pulverizing-mill. Roller-mill. Rolling-mill. Stamping-mill. Windmill.							
Mill	A. Thirion	707,805	Aug. 26	3592	794 795	100	1960
Mills. Bur for	J. Jorgensen	705,410	July 22	4008	867	100	861
Milling-cutter	B. M. W. Hanson	708,577	July 1	861	83	100	72
Milling-machine	G. W. Smith and E. J. Lees	704,194	July 8	1445	309 810 811 812	100	304
Milling-machine feed mechanism	W. R. Fox and M. Lund	707,095	Aug. 19	2092	467	100	1577
Millstones. Grooving	J. Schweitzer	706,259	Aug. 5	494	105	100	1216
Mine-exploder. Electric	W. Norres	707,696	Aug. 26	3110	700	100	1808
Mine-ventilator	P. T. Reynolds	708,831	July 1	841	185	100	169
Miner's tool. Combination	M. Hardaocg	705,997	July 29	5138	1130	100	1100
Mineral compound	M. Arnu	708,516	July 1	955	------	100	51
Minerals by the selective action of oils, &c. Apparatus for the separation of	A. S. Elmore	708,905	July 1	989	214	100	196
Mirror. Adjustable	M. H. Moss	707,151	Aug. 19	2208	498	100	1601
Mirror-adjuster	A. J. Banks	704,497	July 15	2121	459	100	459
Mirror-frames, &c. Adjustable standard for	J. Lowenthal	707,707	Aug. 26	3295	725	100	1844
Mirror-hanging	J. G. Allen	710,285	Sept. 30	4051	978	100	2989
Mirror-support. Folding	B. C. Lyon	709,259	Sept. 9	449	102	100	2073
Miter-box	F. E. Abbott and B. H. Randel	709,351	Sept. 16	2206	542	100	2505
Mitering and tool-guiding device	J. M. J. Phelan	704,919	July 15	2082	629 630	100	631
Mitering-machine	J. L. Tyler	707,734	Aug. 26	3336	747	100	1854
Mitten	A. J. Breda	704,508	July 15	2135	462	100	462
Mitten	R. B. McMasters	709,350	Sept. 16	2579	582	100	2544
Mixer: *See* Air and gas mixer. Gas and air mixer. Rotary mixer.							
Mixing-machine	E. Ruttkamp	707,261	Aug. 19	2400	539	100	1563
Mixing-machine	J. H. Elward	707,404	Aug. 19	2677	604	100	1701
Moistener	L. S. Duncan	708,771	July 1	1078	161	100	146
Moistener and sealer. Envelop	F. A. Jones	705,581	July 22	4274	984	100	913
Moistening-machine	P. C. Crawford	704,779	July 15	2617	587	100	561
Mold: *See* Brick-mold. Bullet-mold. Croquette-mold. Curb-mold. Ingot-mold. Tooth-mold.							
Mold for hollow concrete articles	W. W. Reeves	705,789	July 29	4772	1085 647	100	1026
Mold-forming apparatus. Sand-	S. J. Adams	704,951	July 15	2613	648 649	100	646
Mold opening or closing device	W. F. Koeppen	708,614	Sept. 9	1507	345	100	2201
Molds. Forming sand-	S. J. Adams	704,958	July 15	2622	646	100	648
Molders' chaplets. Apparatus for the manufacture of	R. B. Haskins	709,541	Sept. 23	3011	671	100	2647
Molding apparatus	J. C. Reed	708,740	July 1	672	149 150	100	135
Molding-flask	J. Mills	710,331	Sept. 30	4512	1016 1017	100	2973
Molding-machine	B. A. Franklin	708,647	July 1	496	112	100	97
Molding-machine	W. M. Duncan	704,712	July 15	2493	539 540	100	537
Molding-machine	J. R. Thomas	706,180	Aug. 5	2.38	49, 50	100	1167
Molding-machine	J. N. Battenfeld	706,487	Aug. 5	970	212	100	1312
Molding-machine	C. Herman	706,751	Aug. 12	1461	322	100	1481
Molding-machine	J. P. Appleby	707,585	Aug. 26	2927	562 563	100	1770
Molding machine. Sand-	J. J. McClelland	704,078	July 8	1320	288	100	277
Molding machine. Sand-	J. R. Davies	705,215	July 22	3582	774 775	100	775
Money-changer. Mechanical	G. W. Castlen	709,744	Sept. 23	3373	757	100	2687
Money holder or envelop. Folding	E. L. Miller	709,496	Sept. 23	2916	650	100	1030
Monkey-wrench	C. P. Whittemore	705,799	July 29	4790	1039	100	2509
Monorailway	E. A. Green	709,903	Sept. 16	2415	547	100	2306
Mooring block or clump	G. C. L. Lenox	709,914	Sept. 30	3725	839	100	2320
Mop and wringer. Combined	F. Bracey	708,857	Sept. 9	1502	385	100	2210
Mop-head	J. C. Look	705,244	Aug. 5	464	90	100	1210
Mop holder and wringer	A. W. Smith	704,182	July 8	1443	306	100	303
Mop holder and wringer	A. W. Smith	704,183	July 8	1444	308	100	304
Mop-wringer	J. von Kanel	707,585	Aug. 19	2358	539	100	1635
Mop-wringer	J. C. Thomson	709,586	Sept. 23	3084	687	100	2662
Mopping device	H. F. Ackerman	704,571	July 15	2424	534	100	522
Mortar composition	E. K. Welch	706,188	Aug. 5	257	------	100	1171
Mortising-machine	C. J. Seaquest	706,458	Aug. 5	922	200	100	1302
Mosaics. Means for setting	F. Akan	706,874	Aug. 12	1693	379	100	1480
Mosquito-canopy	M. E. Webber	709,528	Sept. 23	2995	667	100	2544
Motion-converting mechanism	J. Horrocks	707,112	Aug. 19	2181	475	100	1586
Motion. Means for transmitting rotary	P. W. Dunne	704,945	July 8	1698	354	100	342
Motion. Mechanical movement for converting	J. T. Watts	705,499	July 22	4168	907	100	891
Motion. Mechanism for converting rotary into reciprocatory	B. H. Locke	704,810	July 15	2701	984	100	577
Motion-transmitting device	C. F. Stokes and C. E. McGlinchey	705,634	July 29	4474	970 971	100	966

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Motive-power engine	M. T. Minogue	706,494	Aug. 5	979	215	100	1314
Motor: *See* Air-motor. Air and vapor motor. Car-motor. Current-motor. Electric motor. Hand-motor. Hydraulic motor. Hydrocarbon-motor. Internal-combustion motor. Mechanical motor. Pneumatic motor. Rotary motor. Spring-motor. Steam-motor. Switch-motor. Tidal-motor. Wave-motor. Weight-motor. Wind-motor.							
Motor	C. M. Kiler	708,496	July 1	109	24	100	34
Motor	R. Widner	705,001	July 15	3121	673	100	666
Motor	J. Ulrich	705,489	July 22	4151	963	100	889
Motor	R. L. Barnhart	705,897	July 29	4962	1080	100	1054
Motor	W. Evans	706,489	Aug. 5	973	214	100	1313
Motor	M. Villazon	707,869	Aug. 26	3529	797	100	1892
Motor	C. J. Cullen	709,877	Sept. 30	3628	820	100	2767
Motor	F. A. Merrick and J. D. Forrer	708,794	Sept. 9	1314	300	100	2260
Motor-controller-operating mechanism	J. H. Diggle	708,208	July 1	977	213	100	196
Motors. Protecting device for induction-	R. Field and A. Hanson	708,805	Sept. 9	1480	339	100	2296
Mouth-organ	H. D. Meier	710,202	Sept. 30	4289	966	100	2927
Movement-controlling mechanism. Variable-	W. A. Thiermann	706,281	Aug. 5	564	122	100	1229
Movements and indicating positions electrically. Means for transmitting	W. A. Thiermann	705,462	July 22	4131	898 899	100	865
Movements and indicating the position of indicators or the like. System of and apparatus for transmitting	J. Q. Adams and S. Hough	708,519	July 1	250	58	100	50
Mower	A. Mayer	710,230	Sept. 30	4428	1001	100	2958
Mower	W. J. Gleason	708,650	July 1	508	113 114	100	99
Mower attachment. Lawn-	W. H. H. Heydrick	707,334	Aug. 19	2536	570	100	1671
Mower. Lawn-	F. L. Adams	710,131	Sept. 30	4156	936	100	2927
Mower. Lawn-	T. and W. H. Coldwell	707,204	Aug. 19	2492	559 560	100	1663
Mower. Motor lawn-	E. A. Johnston	708,146	Sept. 2	274	66	100	2088
Mowers, reapers, &c. Cutting apparatus for	E. A. Johnston	708,147	Sept. 2	275	65	100	2088
Mowers, reapers, &c. Cutting apparatus for	P. L. Shepler	707,981	Aug. 26	3662	865	100	1954
Mowing-machine	B. C. White and T. J. Jones	710,228	Sept. 30	4329	976	100	2927
Mowing-machine	J. T. Myers	708,806	July 1	795	175	100	160
Mowing-machine cutter-bar	H. Henniger	704,894	July 15	2722	589	100	503
Muffle-furnace for irons	H. N. Motsinger	706,844	Aug. 12	1641	367	100	1471
Muffler	R. E. Bousfield	706,636	Aug. 12	1295	272	100	1380
Muffler. Exhaust-	H. A. W. Wood. (Reissue)	12,016	July 22	4333	986 987	100	903
Multipress. Double	C. M. Halvorsen	708,139	Sept. 2	268	63	100	2036
Music-chart. Mechanical	A. D. Crist	704,003	July 8	1172	255	100	249
Music-holder	G. E. Adams	707,671	Aug. 26	3611	720	100	1829
Music-leaf turner	J. Ahern	709,625	Sept. 23	3148	702	100	2674
Music-leaf turner	J. Rawlins	704,104	July 8	1382	298	100	291
Music retainer. Sheet-	C. H. Shaw	709,054	Sept. 16	2002	450	100	2480
Music-sheet for automatic musical instruments. Perforated	C. E. Bertogliatti	705,023	July 22	3173	686	100	908
Music-sheet turner	H. E. Beach	709,296	Sept. 16	2484	559	100	2524
Music-sheets. End-fastener for perforated	H. E. Beach	709,295	Sept. 16	2483	559	100	2523
Musical instrument. Electrical self-playing	J. McTammany	705,962	July 29	5063	1102 1103	100	1084
Musical instrument. Mechanical	R. Gabrielsky	708,337	Sept. 2	625	141	100	2108
Musical instrument. Mechanical stringed	K. Grienauer	708,572	July 1	346	79	100	70
Musical instrument. Stringed	P. Péchenart	705,298	July 22	3740	812	100	805
Musical-instrument strings. Tension apparatus for stringed	M. Clark	709,063	Sept. 30	3833	863	100	2899
Musical-instrument transposing device	E. S. Votey	707,268	Aug. 19	2469	551	100	1655
Musical instruments. Operating-sheet for automatic	H. M. Salyer	708,748	July 1	679	151	100	135
Musical instruments. Playing attachment for key-							
Nail: *See* Wall-nail.							
Nail-assorting apparatus	B. F. Mayo	707,137	Aug. 19	2163	485 486	100	1503
Nail-assorting apparatus	B. F. Mayo	707,139	Aug. 19	2175	488 489	100	1595
Nail-assorting apparatus	A. D. Elliott	707,140	Aug. 19	2178	490	100	1596
Nail-assorting machines. Raceway for	B. F. Mayo	707,142	Aug. 19	2184	493	100	1597
Nail-assorting mechanism	B. F. Mayo	707,136	Aug. 19	2160	495	100	1593
Nail-assorting mechanism	B. F. Mayo and A. D. Elliott	707,138	Aug. 19	2166	496 497 498	100	1595
Nail-assorting mechanism	C. C. Small	707,141	Aug. 19	2181	499	100	1596
Nail-extractor	E. N. Sperry	708,841	Sept. 9	1561	356	100	2312
Nail-machine	E. Schwarz	705,450	July 22	4082	887	100	876
Napkin-support	W. R. Walker	708,864	July 1	808	197	100	180
Nebulizer	C. Truax	707,292	Aug. 19	2457	551	100	1656
Necktie	D. Oppenheimer	704,509	July 15	2262	490	100	498
Necktie	H. G. Streat	704,501	July 15	2205	498	100	495
Necktie	F. A. Arbenz	708,192	Sept. 2	363	86	100	2055
Necktie	C. Reynolds	708,680	Sept. 23	2944	725	100	2695
Necktie	J. A. Clinton	708,892	July 29	3965	857	100	849
Necktie-fastener	J. Weil	708,501	July 29	4175	908	100	892
Necktie-fastener	O. Kraus	707,786	Aug. 26	3476	788	100	1851
Necktie-fastener	M. E. Whittemore	708,800	July 29	4791	1040	100	1060
Needle. Tape-	O. A. Aicardi	707,191	Aug. 19	2398	511	100	1660
Needle-threader							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Negative plates for bichromated-gelatin processes. Producing	A. Leuchter	710,106	Sept. 30	4096	935	100	2892
Negatives. Producing trichromatic half-tone-process	F. E. Ives	707,491	Aug. 19	2710	614	100	1708
Net. Landing-	T. S. Coffin	708,797	Sept. 9	1461	334	100	2302
Newspapers. Inserting-machine for	S. R. Hayden	707,587	Aug. 26	3041	691	100	1798
Nickel and copper-nickel ores. Treatment of	C. Perron	709,277	Sept. 16	2445		100	2515
Nickel. Melting	H. L. Haas	709,218	Sept. 16	2393		100	2489
Nipple	E. E. Menges	710,114	Sept. 30	4113	936	100	2886
Nipple. Bottle-	P. Gauss	705,916	July 29	5009	1069	100	1072
Nitro compounds. Separating solvents from	E. Gathmann	704,688	July 15	2353	511	100	507
Nitrogen compounds from atmospheric nitrogen. Manufacturing	C. S. Bradley and D. R. Lovejoy	709,867	Sept. 30	3811	816 817	100	2784
Nozzle	C. R. Harris	705,734	July 29	4716	1020	100	1018
Nozzle for urinals. Spray-	W. U. Griffiths	708,651	July 1	505	114	100	99
Nozzle-grip	W. G. Esch	708,537	Sept. 9	969	219	100	2139
Nozzle-grip	W. G. Esch	708,538	Sept. 9	970	219	100	2139
Nozzles. Safety attachment for hydraulic	P. Bouéry	708,603	Sept. 9	1349	295	100	2245
Numbering apparatus. Consecutive-	O. G. Bartusch	708,206	Sept. 2	554	126	100	2094
Numbering-machine	A. P. Waterman and G. H. E. Berthod.	709,128	Sept. 16	2143	491 492	100	2452
Numbering-machine	J. J. Chattaway	710,140	Sept. 30	4171	940	100	2900
Numbering-machine	F. M. Turck	710,380	Sept. 30	4594	1037	100	2989
Nut-cracker	K. Hordish	706,179	Aug. 5	347	74	100	1187
Nut-cracker	A. Wickstrom	707,997	Aug. 26	3692	874	100	1964
Nut-lock	M. Bartley. (Reissue)	12,006	July 1	1120	242	100	222
Nut-lock	J. Butler	708,380	July 1	31	7	100	9
Nut-lock	A. McKinley	708,448	July 1	148	32	100	31
Nut-lock	J. W. B. Turk	708,504	July 1	228	53	100	46
Nut-lock	J. F. Robinson	708,612	July 1	430	98	100	83
Nut-lock	G. H. Layng	704,053	July 8	1260	272	100	264
Nut-lock	F. K. Popplewell	704,101	July 8	1378	297	100	290
Nut-lock	R. D. Hughes	704,332	July 8	1704	362	100	377
Nut-lock	G. Coleman	704,617	July 15	2328	507	100	503
Nut-lock	A. Grumme	704,633	July 15	2361	513	100	509
Nut-lock	J. McVey	705,130	July 22	3367	730	100	731
Nut-lock	R. Mingres and J. Ewell, Jr.	705,430	July 22	4053	872	100	864
Nut-lock	C. L. Dunham	705,743	July 29	4700	1017	100	1010
Nut-lock	G. W. Vandevender	705,797	July 29	4787	1039	100	1029
Nut-lock	H. Anderson	705,812	July 29	4812	1044	100	1054
Nut-lock	O. Baillargeon	706,212	Aug. 5	401	86	100	1198
Nut-lock	H. W. Langham	706,325	Aug. 5	648	141	100	1246
Nut-lock	F. Hart	706,409	Aug. 5	882	179	100	1289
Nut-lock	R. Kantner	706,955	Aug. 12	1636	411	100	1508
Nut-lock	W. Graham	707,103	Aug. 19	2112	471	100	1582
Nut-lock	J. P. Birmingham	707,499	Aug. 19	2540	642	100	1736
Nut-lock	L. McConnell	708,398	Sept. 2	602	156	100	2121
Nut-lock	E. S. Grise	708,695	Sept. 9	1134	256	100	2223
Nut-lock	C. H. Chittum	708,865	Sept. 9	1609	398	100	2324
Nut-lock	G. H. Roberts, Sr	709,043	Sept. 16	1978	432	100	2416
Nut-lock	G. L. Pittman	709,357	Sept. 16	2599	584	100	2546
Nut-lock	S. C. Baughn, Jr	709,433	Sept. 16	2758	619	100	2581
Nut-lock	T. Lynch	709,717	Sept. 23	3309	743	100	2708
Nut. Lock-	P. J. Wilson	704,162	July 8	1496	321	100	314
Nut-lock for rail-joints	C. W. Robinson	705,612	July 29	4457	966	100	963
Nut. Vehicle-axle lock-	W. Belfield, R. Shearer, J. Findlay, and G. Belfield.	710,340	Sept. 30	4359	980	100	2941
Nut-wrench. Adjustable	J. T. Viles	710,382	Sept. 30	4401	1038	100	2990
Nut wrench. Axle-	R. A. Moody	707,348	Aug. 19	2382	533	100	1640
Oar attachment	M. A. Linder	708,158	Sept. 2	287	69	100	2041
Oar. Bow-facing	R. B. Hanson	706,491	Aug. 5	975	214	100	1313
Oar-lock guard	D. W. Marion	706,857	Sept. 23	3333	719	100	2650
Odds-indicator	H. Ditchburn	708,379	Sept. 2	688	154	100	2120
Oil and air mixing and gas-generating apparatus	J. Behm	704,732	July 15	2531	547	100	544
Oil and making same. Paint-	J. F. Krebs	705,961	Aug. 12	1846		100	1510
Oil. Apparatus for separating naphtha from	E. R. Edson	704,011	July 8	1184	258	100	251
Oil-burner	A. H. Fox	708,566	July 1	340	77	100	68
Oil-burner	E. B. Raymond	704,374	July 8	1395	309	100	308
Oil-burner	J. W. Lewellen	705,418	July 22	4013	868	100	862
Oil-burner	J. S. Chenhalls	705,820	July 29	4827	1048	100	1037
Oil-burner	L. A. Pfeiffer and L. D. Staples	706,341	Aug. 5	670	147	100	1202
Oil-burner	G. W. Arper	708,091	Sept. 9	1244	286	100	2245
Oil-burner	O. Tillman	708,978	Sept. 9	1829	421	100	2368
Oil-burner	E. Stewart	709,370	Sept. 16	2643	598	100	2629
Oil-burner	J. P. Simonsen	709,808	Sept. 23	3491	787	100	2744
Oil-burner	S. M. Trapp	709,941	Sept. 30	3775	832	100	2816
Oil burner. Crude-	J. A. Meyer	708,706	July 1	611	136	100	121
Oil burner. Crude-	H. G. Tucker	704,669	July 15	2492	532	100	532
Oil-cake-packing apparatus	A. W. French	708,218	Sept. 2	414	95	100	2066
Oil-can	T. Vojta	708,566	July 1	896	197	100	150
Oil-can	J. A. Baeuerle	705,013	July 22	3187	681	100	689
Oil-distributing apparatus for calming waves	N. Salvesen	710,013	Sept. 30	3980	895	100	2947
Oil. Extracting	L. D. Vorce	704,989	July 15	2099	666	100	661
Oil-feeder. Water-pressure safety	J. C. Quinn	708,484	July 1	883	188	100	166
Oil-fuel generator	W. H. Dye	705,565	July 29	4857	946	100	945
Oil heater, strainer, and separator	E. A. Burrow	707,780	Aug. 26	3421	770	100	1870
Oil-hole protector	F. L. Everhardt and H. F. Emme	706,809	Aug. 12	1573	338	100	1455
Oil. Paint-	W. E. Dempster	706,907	Aug. 12	1755		100	1498
Oil. Producing cotton-seed	C. O. Phillips	705,785	July 29	4795	1033	100	1034
Oil-refining apparatus	E. Douillet	707,980	Aug. 26	3811	856	100	1947
Oil-retaining box	G. W. Wilmot, N. Maley, and G. T. Brown.	707,043	Aug. 12	1964	445	100	1529
Oil-separator	R. Schulz	707,728	Aug. 26	3398	745	100	1858
Oil-spraying apparatus	W. S. Proskey	707,686	Aug. 26	3131	705	100	1813
Oil-vapor engine	G. Wood	708,511	July 1	243	53,57	100	80
Oil-yieldable or oil-containing material. Drying	E. R. Edson	708,585	July 1	57	11	100	14

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Oils. Apparatus for separating solvents from	L. D. Vorce	704,990	July 15	2102	668	100	661
Oils. Extracting	A. F. Lundeberg	707,856	Aug. 26	3024	817	100	1909
Oils. Producing varnish	W. A. Smith	708,178	Sept. 2	337	.....	100	2050
Oils. Purifying hydrocarbon	J. W. Warren	705,169	July 22	3467	.....	100	751
Oiling device	A. O. Wyman	708,448	Sept. 2	801	182	100	2143
Oiling fiber and making same. Composition for	C. Sella	704,989	July 15	2995	.....	100	642
Oleaginous compound	C. Adams	709,291	Sept. 16	9478	.....	100	2581
Opera-glass Folding	E. Batault	706,518	Aug. 12	1015	294	100	1336
Ophthalmometer. Refracto-	H. Van Patton	704,150	July 8	1478	517	100	310
Ophthalmoscope	E. B. Meyrowitz	709,790	Sept. 23	3462	780	100	2739
Optical appliance. Electrically-controlled	W. B. Wheeler	709,837	Sept. 23	3548	800	100	2755
Optical instrument	S. A. Rhodes	709,859	Sept. 16	2590	564 595	100	2546
Optical instrument. Educational	G. W. McFatrich	709,792	Sept. 23	3465	780 781	100	2740
Optical-instrument guard	P. S. Reid	708,881	Sept. 9	1541	352	100	2308
Optical wire	D. V. Brown	704,778	July 15	2617	566	100	561
Orange or lemon cleaner	J. T. Haley	708,916	July 1	996	217	100	199
Ordnance	J. Kurig	708,181	Sept. 2	282	67.68	100	2039
Ordnance. Breech block and chamber for	C. Holmström	705,841	July 29	4860	1055	100	1043
Ordnance. Breech-loading	J. W. Stockett	705,187	July 22	3445	749	100	747
Ordnance breech mechanism	H. Maxim	708,894	Sept. 9	1647	378 379	100	2331
Ordnance. Device for the prevention of erosion in	K. Deinlein	707,135	Aug. 19	2158	485	100	1592
Ordnance firing-gear	G. Ehrhardt	704,896	July 15	2703	603 604	100	598
Ordnance. Firing-pin arrangement for breech-loading	R. T. Brankston	709,701	Sept. 23	3282	735	100	2702
Ordnance-loading apparatus	A. T. Dawson and J. Horne	704,955	July 15	3029	650	100	649
Ordnance ramming apparatus	W. H. Bevans	708,870	Sept. 9	1618	370 371 372	100	2326
Ordnance. Semi-automatic breech-loading	G. H. Hulett	708,375	July 1	21	5	100	7
Ore-bin	A. C. Calkins	708,761	July 29	4727	1023	100	1015
Ore-breaker	H. S. Bailey and W. E. Wild	707,385	Aug. 19	2540	596	100	1694
Ore-concentrator	A. J. Petter	706,793	Aug. 12	1542	345 346	100	1447
Ore crusher and pulverizer	C. C. Lane	708,451	July 1	100	37	100	34
Ore-crushing machine	J. Brown	709,822	Sept. 23	3528	795	100	2753
Ore-leaching apparatus	W. H. Motter	709,135	Sept. 16	2160	495	100	2456
Ore-roasting and fume-saving apparatus. Combined	A. M. Beam	708,977	Sept. 9	1827	420 421	100	2367
Ore-roasting apparatus	D. C. Jackling	708,415	Sept. 9	1108	247 824 825 826 827	100	2215
Ore-roasting furnace	S. E. Bretherton	706,756	Aug. 12	1471	596 599	100	1433
Ore-sampler	B. C. Cook	704,858	July 15	2769	598	100	593
Ore-separating apparatus	H. L. Sulman and H. F. Kirkpatrick-Picard.	706,163	Aug. 5	316	67	100	1181
Ore slimes. Treatment of	H. E. Way	708,504	Sept. 2	910	206	100	2166
Ore-testing tablet	J. M. Longan	704,409	July 8	1942	420	100	409
Ore washer and separator	A. W. Chase	705,104	July 22	3340	725	100	726
Ores and by-products containing sulfur and iron. Treating	T. A. Edison	709,745	Sept. 23	3377	758	100	2720
Ores. Apparatus for concentrating magnetic iron	C. E. Dolbear	704,010	July 8	1180	237	100	250
Ores. Electrolytically treating	A. D. Elbers	709,817	Sept. 23	3519	.....	100	2751
Ores for blast-furnaces. Treating fine iron	F. T. Mumford	708,331	Sept. 2	616	.....	100	2107
Ores or slimes. Apparatus for the electrolytical treatment of	A. D. Carmichael	706,436	Aug. 5	887	191	100	1294
Ores preparatory to smelting. Desulfurizing of sulfid	J. Herman	705,904	July 29	4974	.....	100	1067
Ores. Treating	E. Ferraris	707,107	Aug. 19	2123	.....	100	1585
Ores. Treating mixed sulfid	W. E. and C. S. Haskell	707,506	Aug. 19	2859	.....	100	1788
Organ	J. A. and W. McIntosh	708,765	Sept. 9	1391	318	100	2277
Organ-pipe. Compensating	R. H. Page	709,349	Sept. 16	2577	581	100	2543
Organic peroxids. Making	J. P. Rudolph	710,005	Sept. 30	3902	881	100	2843
Ornamenting surfaces	J. Koetschet	708,498	Sept. 2	898	208	100	2164
Ortho-sulfonated toluylic aldehyde and making same.	W. H. Forker	709,159	Sept. 16	2220	.....	100	2467
Oval-cutting machine	S. A. Henry	705,576	July 29	4985	950 951	100	948
Oven	G. F. Smith	704,828	July 8	1798	391	100	375
Oven. Baker's	C. E. Glafke	706,851	Aug. 5	695	152	100	1256
Oven. Baker's	W. H. Dahman	708,975	Sept. 9	1824	410	100	2306
Oven. Knockdown	J. W. Lewellen	704,300	July 8	1738	379 380	100	365
Oven or furnace	J. Nestor	710,284	Sept. 30	4432	999	100	2967
Oven. Portable bake-	F. H. Van Houten	704,660	July 15	2406	520	100	519
Oven. Rotary bake-	G. W. Treichel	707,187	Aug. 19	2278	510	100	1619
Oven-swab	B. W. Tucker	708,979	July 29	5108	1114	100	1094
Overseaming-machine. Blind-stitch	H. A. Hamilton and F. H. Crawford.	708,486	July 22	4144	901 902	100	897
Overshoe	A. N. Dubois	708,547	Sept. 9	993	222	100	2192
Oxidizing apparatus	S. Blagden	708,874	Sept. 9	1620	374	100	2337
Oyster-opening tool	A. Vosmaer	708,014	Sept. 2	24	6	100	1986
Ozonizing apparatus	E. H. Davis	709,427	Sept. 16	2744	617	100	2578
Package	O. M. Pond	708,696	Sept. 9	1254	286	100	2246
Package-carrier	E. J. Stewart	704,368	July 8	1870	406	100	396
Package-carrier	S. de Pless Pol	709,986	Sept. 30	3767	851	100	2814
Package-carrying device	A. C. McLoon	705,439	July 22	4058	890	100	872
Package for lobsters, &c.	W. H. Doble	704,563	July 15	2258	488	100	495
Packaging-machine		708,627	Sept. 9	1122	252 253	100	2290

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr's.	Official Gazette. Vol.	Official Gazette. Page.
Packing case or box	C. Thiebaut	707,188	Aug. 19	2269	507	100	1616
Packing-holder for piston-rods	A. E. Macindoe	706,976	Aug. 12	1866	417	100	1514
Packing mechanism	O. Tyberg	708,688	Sept. 9	1288	281	100	2240
Packing mechanism	O. Tyberg	708,787	Sept. 9	1498	328 329	100	2286
Packing. Metallic	A. J. Zwart	706,290	Aug. 5	579	125 126	100	1223
Packing. Metallic	T. Smith	708,208	Sept. 2	501	115	100	2038
Packing powdery substances	A. Wultze	704,728	July 15	2527	546	100	543
Packing-ring	T. Officer	704,568	July 15	2261	489	100	488
Packing-ring	H. Kirschning	707,980	Aug. 26	3753	844	100	1988
Packing. Rod-	S. Udstad	704,598	July 15	2307	501	100	497
Packing. Rod-	A. B. Pratt	710,337	Sept. 30	4321	1019	100	2975
Packing sliding gate-valves. Device for	L. Hirt	708,588	July 1	509	85	100	73
Packing structure. Cellular	H. H. Higham	707,415	Aug. 19	2701	611	100	1705
Packing. Stuffing-box	W. Reinhold	708,469	July 1	149	39	100	86
Packing. Stuffing-box	P. Redford	709,511	Sept. 23	2955	660	100	2635
Pad: *See* Corn-pad. Hoof-pad. Horseshoe-pad. Saddle-pad. Stair-pad. Writing or copying pad.							
Paddle-wheel	F. Exline	704,477	July 8	2376	450	100	437
Paddle-wheel	F. Exline	704,478	July 8	2379	451	100	437
Paddle-wheel	J. J. Graham	705,397	July 22	3980	862	100	854
Padlock	F. W. Pinson	704,269	July 8	1683	367	100	353
Padlock. Permutation-	D. R. Coughlen	707,676	Aug. 26	3252	723	100	1681
Pail and heater. Dinner	J. H. Ablett	704,492	July 15	2111	457	100	457
Pail attachment. Milk-	M. F. Potter	708,582	Sept. 9	1041	235	100	2208
Pail bottom. Milk-	C. S. Crow	703,551	July 1	317	72	100	64
Pail-filling and indicating device	J. H. Wilson	710,230	Sept. 30	4342	976	100	2938
Pail-hook	C. W. Mitchell	709,019	Sept. 30	3735	841	100	2810
Pail. Milk-	S. Bruckmann	705,642	July 29	4498	976	100	970
Pail. Milk-	J. H. King	705,678	July 29	4574	993	100	986
Pail. Slop-	R. Logan	708,971	Aug. 12	1850	416	100	1512
Pail. Wash-	F. E. Libenow	704,481	July 8	2387	453	100	439
Paint	G. W. and A. J. Doore	704,959	July 15	3041	.....	100	650
Paint	W. Lennard-Foote	705,938	July 29	5088	.....	100	1079
Paint	J. C., W. J., and R. E. Shaw	706,119	Aug. 5	215	.....	100	1160
Paint	F. H. Crass	707,677	Aug. 26	3223	.....	100	1681
Paint or varnish. Composition for removing	F. Priestman	705,189	July 22	3420	.....	100	742
Painter's tool	G. Henderson	705,340	July 22	3902	844	100	808
Painting apparatus	C. L. Bauer	708,370	July 1	11	3	100	5
Painting apparatus	H. D. Carryl	708,385	July 1	40	8	100	10
Painting metal furniture. Drip-pan for	H. E. Crome	707,087	Aug. 19	2080	465	100	1575
Pan: *See* Ash-pan. Dust-pan. Extensible pan. Soot or ash pan.							
Pan-lifter	F. Lombard	708,432	July 1	118	26.27	100	95
Panel-board. Electrical	H. Krantz	705,850	July 29	4882	1061	100	1048
Panel, lining, ceiling, and floor for buildings, &c., and paving for streets. Wooden	W. T. Crosse	705,737	July 29	4690	1014 1015	100	1008
Paper bag	N. Laird	708,234	Sept. 2	440	100	100	2071
Paper-bag fastener	S. S. Smith	707,030	Aug. 12	1964	440	100	1584
Paper-bag machine	W. I. Baldwin and E. A. Kline	708,625	July 1	468	107	100	92
Paper-bag machine	H. E. Westervelt	709,120	Sept. 16	2146	492 493	100	2452
Paper-bag-making machine	C. F. Kellner	704,807	July 15	2980	580 581 582	100	575
Paper bags. Making	D. Appel	708,001	Sept. 2	1	1	100	1991
Paper-blank feeding and scoring machine	C. H. Palmer and J. W. Denmead	705,098	Aug. 5	179	37	100	1153
Paper-board burial-caskets. Mold for making	E. A. Post	708,075	Sept. 2	143	35	100	2010
Paper box	H. S. Miller	709,345	Sept. 16	2572	580	100	2542
Paper-box blanks. Furniture for forming	J. T. Craw and F. Schley	705,389	July 22	3985	859	100	851
Paper box. Folding blank	D. I. Winslow	708,298	Sept. 2	538	122	100	2091
Paper-clip	S. R. Strattan	709,583	Sept. 23	2985	665	100	2649
Paper clip or fastener	A. Shedlock	708,485	July 1	194	46	100	41
Paper-coating machine	J. Chevalier, N. and E. Lajoie	704,434	July 8	1992	431	100	417
Paper cutting and collating machine	W. Y. Dear	704,472	July 8	2065	447 448	100	434
Paper-cutting machine	C. D. Blackhall	707,294	Aug. 19	2474	555	100	1659
Paper-cutting machine	H. W. Mather	708,722	Sept. 9	1311	299	100	2259
Paper-drying machine	A. G. Paul and H. A. Joslin	705,606	July 29	4446	964	100	961
Paper feeder	E. Dummer	704,444	July 8	2002	436	100	421
Paper hanger. Wall-	J. P. Cannon	708,194	Sept. 2	282	54	100	2029
Paper-holder	E. Brugeolles	704,734	July 15	2537	548	100	546
Paper-machine couch-roll attachment	F. E. McEvoy	704,079	July 8	1322	288	100	277
Paper machine. Lace-	J. R. Thompson	709,615	Sept. 23	3133	698	100	2672
Paper machine. Wall-	C. B. Weston	707,299	Aug. 19	2468	553	100	1656
Paper-machines. Apparatus for removing rolls of material from	M. A. Craft	705,388	July 22	3963	858	100	851
Paper-machines. Wire-cloth for	R. Kron, Jr.	709,228	Sept. 16	2342	531	100	2498
Paper, &c. Machinery for cutting and folding	R. C. Seymour	710,080	Sept. 30	4088	910 911	100	2872
Paper, &c. Machinery for folding, packing, and stacking sheets of	R. C. Seymour	706,292	Aug. 5	508	107 108 109	100	1217
Paper-making	A. Outerson	704,572	July 15	2286	491	100	489
Paper-making machine	C. H. Warner	708,714	July 1	625	139 140	100	128
Paper-making machine	G. Ehrhart	708,775	July 1	735	153	100	148
Paper-making machine	G. S. Witham	704,607	July 15	2319	503 504	100	500
Paper-making machine	J. F. Richards	707,014	Aug. 12	1928	432 433	100	1567

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Paper-making machine suction-box cover	W. M. and T. M. Gilbert and W. C. Nash.	708,219	Sept. 2	417	96	100	2066
Paper-making machines. Suction-box for	J. B. Lynch	705,884	July 29	4581	995	100	987
Paper-making wire for paper-making machines	H. Parker	709,084	Sept. 16	1968	449	100	2412
Paper. Package for carbon or other thin	J. T. Miller	704,558	July 15	2944	486	100	485
Paper-perforating machine	S. Wheeler	707,895	Aug. 26	3680	488	100	1921
Paper-pulp strainer	N. L. Vrooman and R. R. Kirkland.	708,582	July 1	571	127 128	100	113
Paper-roll holder	W. H. Belknap	710,084	Sept. 30	3958	891	100	2854
Paper-roll mandrel	F. Schön	708,740	Sept. 9	1837	305	100	2365
Paper trimming and pasting machine. Wall-	J. P. Sproot	708,419	Sept. 2	753	169 170	100	2133
Paper-tube-making machine	J. H. and E. L. White	710,386	Sept. 30	4606	1040	100	2998
Paper-tube-refolding machine	H. S. Munson	709,501	Sept. 23	3584	654 655	100	2631
Paper-tube-refolding machine	H. S. Munson	709,502	Sept. 23	3588	655	100	2632
Paper-tube-refolding machine	H. S. Munson	709,503	Sept. 23	3641	656	100	2633
Paper. Waterproofing	C. S. Bird and J. B. Hanscom	708,454	Sept. 2	816	195	100	2147
Papers and letters. Receptacle for	D. F. Bennett	708,617	Sept. 9	1106	248	100	2216
Parcel receiving and delivering device	T. L. Brooks	708,859	Sept. 9	1595	365 366	100	2321
Parchment free from germs. Producing vegetable.	A. Mackensen	705,687	July 29	4597	.....	100	988
Parer and slicer	G. W. Paul	707,798	Aug. 26	3518	799	100	1899
Parer. Apple-	J. Jacobs	707,700	Aug. 26	3270	731	100	1841
Parer. Apple-	M. B. Brooks	710,351	Sept. 30	4546	1025 1026	100	2980
Parer feeding apparatus. Fruit-	L. I. Yeomans	710,390	Sept. 30	4616	1041	100	2994
Pasteurizing apparatus	B. F. Schirmer	708,739	Sept. 9	1354	304	100	2264
Pattern. Dress-skirt	H. Guidez	704,794	July 15	2646	572	100	567
Pattern-plate	C. R. Davis	707,397	Aug. 19	2668	601 602	100	1699
Paving. Manufacture of bituminous	W. S. Wilkinson	705,728	July 29	4657	.....	100	1004
Paving mixture or composition. Asphaltic	W. S. Wilkinson and C. H. Burchinal.	705,803	July 29	4797	.....	100	1051
Pea-sheller	L. A. Aspinwall	709,657	Sept. 23	3300	714 715	100	2665
Peat for fuel purposes. Preparing bog-	A. Charon	709,664	Sept. 23	3217	.....	100	2599
Peat-press	W. A. Milne	708,574	Sept. 9	1690	239	100	2201
Pedestal-clamp	J. A. Lindstrom	706,553	July 15	2235	484	100	483
Pegging-machine	J. E. Bickford	707,398	Aug. 19	2639	642	100	1736
Pegging-machine horns. Peg-cutter for	J. E. Bickford	708,961	July 1	1056	230	100	210
Pellet or tablet making apparatus	E. Petranyi	708,777	Aug. 12	1510	335 336	100	1441
Pen	S. H. Crocker	708,549	July 1	815	71	100	84
Pen. Fountain-	J. Holland	708,418	July 1	96	21	100	22
Pen. Fountain-	W. W. Sanford	708,479	July 1	185	44	100	39
Pen. Fountain-	W. E. Lindsay	704,222	July 8	1673	364	100	350
Pen. Fountain-	J. Bovill	705,316	July 22	3965	825	100	819
Pen. Fountain-	R. C. Paine	705,956	July 29	5074	1105	100	1098
Pen. Fountain-	P. E. Wirt	708,140	Aug. 5	259	54	100	1171
Pen. Fountain-	P. E. Wirt	708,141	Aug. 5	263	54, 55	100	1172
Pen. Fountain-	P. E. Wirt	708,221	Sept. 2	420	96	100	2097
Pen. Fountain-	R. T. Gillespie	708,572	Sept. 9	1098	232	100	2201
Pen. Fountain-	C. F. Miller	709,307	Sept. 16	2504	564	100	2598
Pen. Fountain-	R. B. Dickie	704,691	July 15	2455	530	100	598
Pen fountain-holder	A. L. Baer	708,641	July 1	497	110	100	96
Penholder	S. H. Crocker	709,180	Sept. 16	2152	494	100	2454
Penholder	F. M. Zeek	710,293	Sept. 30	4446	1002	100	2959
Pen or pencil holder	J. S. McClung	709,260	Sept. 16	2409	545	100	2507
Pen. Reservoir-	R. T. Gillespie	709,731	Sept. 23	3359	749	100	2718
Pens. Filling or refilling fountain-	R. H. Ashcroft	708,964	Sept. 9	1798	413	100	2351
Pencil and making same	L. Holzworth	710,255	Sept. 30	4385	986	100	2940
Pencil and sharpener therefor	R. Y. Cormack	709,337	Sept. 16	2358	575	100	2540
Pencil-case	W. A. Leary	705,900	July 29	4968	1081	100	1065
Pencil. Lead-	L. C. Benitz	708,907	July 1	1101	237	100	218
Pencil-sharpener	W. O'Byrne	705,323	July 22	3815	827	100	821
Pencil-sharpener	F. A. Cortis	708,721	July 1	643	142	100	128
Pencil-tip	L. W. Faber	705,647	July 29	4508	979	100	973
Pendulum. Conical	F. M. Clark	706,554	Aug. 12	1668	371	100	1474
Perambulator	C. W. R. Schulze	704,988	July 15	3048	654	100	651
Perch. Poultry-	O. L. Harrod	709,571	Sept. 23	3051	668	100	2657
Perfect-combustion furnace	W. N. Best	709,566	Sept. 23	3051	679 680	100	2654
Perforating-machine	E. A. Trussell	708,626	Sept. 9	1134	256 257 258	100	2226
Perforating, ring forming, and inserting machine. Combined	T. Hawthorne	706,152	Aug. 5	290	61 62 63	100	1176
Permutation-lock	W. Beebe	704,307	July 8	1751	389	100	366
Perspectograph	O. Eichenberger	705,385	July 22	3782	811	100	804
Pessary	B. F. Overton	705,393	July 22	3970	860	100	852
Pessary	D. B. De Waltoff	709,675	Sept. 23	3535	723	100	2693
Pessary	C. Hollweg	705,772	July 29	4744	1037	100	1019
Phonogram-reproducing apparatus	W. F. Messer	707,749	Aug. 26	3400	766 767	100	1866
Phonograph	H. Winkelmann	708,561	Sept. 9	1040	235	100	2206
Phonograph	W. Peisker	706,937	Aug. 12	1715	369	100	1479
Phonograph attachment	M. M. Worthington	708,980	July 1	1087	235	100	207
Phonograph-record-supporting device	G. Madison	708,774	July 1	783	162 163	100	147
Phonograph-reproducer	T. A. Edison	709,984	Sept. 30	4970	878	100	2986
Phonograph resonator or amplifier	W. S. How	707,904	Aug. 19	2305	516	100	1685
Phonographs, &c. Recorder for	H. V. Butterworth	708,989	July 1	1019	221	100	208
Photochromoscopic and trichromatic apparatus	F. E. Ives	710,227	Sept. 30	4354	978 979	100	2940
Photochromoscopic apparatus	T. K. Barnard	708,496	Sept. 2	779	178	100	2159
Photo-engravers' plates. Machine for beveling	F. Wesel						

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drf.	Official Gazette. Vol.	Official Gazette. Page.
Photograph-burnisher	C. J. Dorticus	709,757	Sept. 23	3395	753	100	2734
Photograph-holder	H. J. G. Lambrecht and C. Schielke.	707,850	Aug. 26	3516	815	100	1908
Photograph-mounting apparatus	I. G. Grant	708,349	Sept. 2	631	142 143	100	2109
Photograph-toning apparatus	A. Schwarz	708,671	July 1	646	124	100	108
Photographs in relief. Producing	W. Ohse	706,774	Aug. 12	1506	334	100	1440
Photographs, &c. Producing enameled polychrome.	H. Perrin	708,918	Sept. 9	1707	.....	100	2344
Photographic apparatus. Automatic	G. N. Pifer	708,166	Sept. 2	807	73 74 75	100	2045
Photographic apparatus. Coin-controlled	G. N. Pifer	708,167	Sept. 2	815	75	100	2045
Photographic apparatus. Means for loading automatic	G. N. Pifer	708,164	Sept. 2	804	73	100	2044
Photographic apparatus. Panoramic	A. and L. Lumière	708,775	Sept. 9	1406	323	100	2260
Photographic apparatus. Shutter for automatic	G. N. Pifer	708,168	Sept. 2	818	76	100	2046
Photographic attachment for optical instruments	F. E. Ives	707,422	Aug. 19	2712	614 615	100	1708
Photographic card-mounts. Device for manufacture of	P. J. Stuparich	708,675	Sept. 9	1212	276	100	2228
Photographic developer	A. Eichengrün	707,408	Aug. 19	2677	.....	100	1701
Photographic developing apparatus	E. Rimailho	707,450	Aug. 19	2756	625	100	1717
Photographic developing-case or dark cabinet. Portable and separable	T. T. Patchel	706,101	Aug. 5	183	38	100	1154
Photographic emulsion	Y. Schwartz	710,019	Sept. 30	3928	.....	100	2940
Photographic-exposure meter	R. W. Whitney	709,350	Sept. 16	2305	542	100	2405
Photographic film	C. H. Shaw	709,058	Sept. 16	2000	466	100	2420
Photographic film and making same. Casein	O. Buss	705,642	July 29	4499	.....	100	971
Photographic films. Apparatus for developing	A. W. McCurdy	707,791	Aug. 26	3498	787 788 789	100	1884
Photographic films. Apparatus for developing and fixing cartridge	M. Reichert	706,852	Aug. 12	1654	370	100	1473
Photographic or similar apparatus. Adjustable support for	P. Thill	704,403	July 8	1984	419	100	407
Photographic plate	G. N. Pifer	708,165	Sept. 2	806	73	100	2045
Photographic-plate holder	W. H. Lewis	708,870	Sept. 2	660	151	100	2117
Photographic prints. Revolving trimmer for	J. Mathein	704,352	July 8	1651	401	100	391
Photographic-printing frame	W. H. Lewis	708,869	Sept. 2	668	151	100	2117
Photographic-printing frame	S. S. Johnson	708,770	Sept. 9	1400	321	100	2279
Photographic recording apparatus. Automatic	A. de Khotinsky	708,813	Sept. 9	1496	343 344 345	100	2300
Photographic shutter	G. S. Dey	704,781	July 15	2619	567 568	100	562
Photographic shutter	W. F. Folmer	706,507	Aug. 5	1000	220	100	1319
Photographic shutter	E. Dönitz	709,079	Sept. 16	2053	468 469	100	2432
Photographic-shutter mechanism	C. A. Muller	709,500	Sept. 23	2980	654	100	2630
Photographic-shutter releasing or operating mechanism	A. H. Edwards	708,876	Sept. 9	1630	374 375	100	2298
Photographic view-finder	J. A. Robertson and C. E. Hutchings.	704,379	July 8	1896	410	100	400
Photographing and exhibiting kinematographic pictures. Apparatus for	L. U. Kamm	708,148	Sept. 2	276	66	100	2038
Photography. Apparatus for animated	H. M. Reichenbach	710,339	Sept. 30	4594	1080 1081	100	2976
Photosculpture apparatus	W. A. C. Selke	706,860	Aug. 12	1665	373 374	100	1475
Piano extension-pedal	R. F. Lotspeich	707,706	Aug. 26	3284	725	100	1843
Piano foot-rest and pedal extension	A. M. Bates	704,498	July 15	2123	459	100	459
Pianoforte-action	G. M. Guild	709,630	Sept. 23	3158	705	100	2676
Pianoforte wrist-supporting attachment	A. M. Jones	704,343	July 8	1825	396	100	385
Piano-player	A. E. Whitehead	705,000	July 15	3119	672	100	665
Piano-player. Pneumatic	S. B. Locklin	706,574	Aug. 12	1114	246 247	100	1356
Piano-player valve	J. H Chase	710,097	Sept. 30	4070	920 921	100	2980
Piano self-playing attachments. Pedal for	J. Wieser	705,002	July 15	3123	673	100	666
Piano-string bearing	H. McClellan	708,708	July 1	613	136	100	121
Pick. Coal-	F. Horn	704,039	July 8	1239	266	100	261
Picker: *See* Fruit-picker.							
Picker-stick strap	C. Faber	707,406	Aug. 19	2681	605	100	1702
Pickling and swilling apparatus	J. R. Phillips	708,860	Sept. 9	1190	271 272	100	2234
Picture-mat-cutting machine	C. I. Shawver	709,116	Sept. 16	2128	497	100	2448
Picture or design and making same	C. Naylor	704,564	July 15	2254	488	100	487
Pictures. Apparatus for animated	J. Bianchi	708,305	Sept. 2	566	129	100	2097
Pigeon timing device. Carrier-	E. Buysse	708,381	July 1	32	7	100	9
Pigment	A. S. Ramage	708,584	Sept. 9	1045	.....	100	2204
Pigments. Making	J. Lones	707,434	Aug. 19	2733	.....	100	1713
Pile-driver	J. H. Hopkins	705,596	July 29	4402	954	100	952
Pile fabric. Producing figured	O. Timme	705,977	July 29	5106	1113	100	1093
Piling. Sheet-	L. P. Friestedt	707,687	Aug. 26	3589	810 811	100	1908
Pill-making machine	J. N. Dews	704,867	July 15	2796	604	100	598
Pillow-brusher	F. Franke	708,722	July 1	643	142	100	128
Pin: *See* Bowling-alley pin. Rolling-pin. Hair-pin. Safety-pin. Hat-pin.							
Pin	G. W. Dover	706,168	Aug. 5	325	69	100	1183
Pin-fastening device	J. Zelly	708,610	Sept. 9	1094	246	100	2214
Pin-tongue safety device	O. Wentzel	708,715	July 1	627	140	100	124
Ping-pong-table net-support	A. Ek	709,669	Sept. 23	3227	730	100	2691

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Pipe: *See* Heating or cooling pipe. Organ-pipe. Railway stand-pipe. Sheet-metal pipe. Smoking-pipe. Stovepipe. Tobacco-pipe.							
Pipe-bending apparatus	W. W. Benson	706,010	Aug. 5	13	3,4	100	1119
Pipe-bracket. Removable	F. F. Parsons	708,454	July 1	151	35	100	32
Pipe-clamp	H. P. G. Reed	706,780	Aug. 12	1518	387	100	1443
Pipe-cleaning apparatus	E. D. Case	709,302	Sept. 16	2495	562	100	2535
Pipe-coupling	J. W. S. Nycum	704,909	July 15	2598	624	100	696
Pipe-coupling	A. M. Kidd and W. A. Gibbons	709,779	Sept. 23	3444	775	100	2785
Pipe-coupling	L. S. Osgood	710,076	Sept. 30	3001	690	100	2943
Pipe-coupling	W. G. Trethewey	707,988	Aug. 26	3958	889	100	1958
Pipe coupling. Automatic train-	H. H. Warner	708,103	Sept. 2	188	44, 45	100	2080
Pipe coupling mechanism. Railway steam or air	T. M. Henderson	709,401	Sept. 16	2696	605	100	2568
Pipe coupling. Train-	A. G. Scherer	704,926	July 15	2985	639	100	640
Pipe-elbow and fastening means therefor. Adjustable	E. H. Smith	709,119	Sept. 16	2127	488	100	2449
Pipe-elbow blank	J. H. Schlafly	707,648	Aug. 26	3163	711	100	1818
Pipe ends. Machine for tapering corrugated-	C. W. Smart	705,971	July 29	5098	1111	100	1092
Pipe-hanger	A. J. Beaton	705,292	Aug. 5	585	127	100	1295
Pipe-hanger	J. Crawford	706,963	Aug. 12	1751	391	100	1498
Pipe-hanger	H. S. Collins	709,815	Sept. 23	3518	798	100	2751
Pipe-hanger	D. P. Upson	705,724	July 29	4661	1010	100	1002
Pipe holder or clutch	W. Kenneally	708,586	July 1	385	89	100	76
Pipe-joint	H. H. Warner	708,104	Sept. 2	189	45	100	2080
Pipe-joint. Flexible	F Burgers	705,878	July 22	3948	855, 856	100	848
Pipe-molds. Profile-tool for making	E. R. Graham	708,763	Sept. 9	1387	317	100	2276
Pipe-perforating machine	A. W. Cooksey	704,288	July 8	1638	352	100	340
Pipe or conduit	W. H. Enderton	705,054	July 22	3329	699	100	704
Pipe-wrench	T. T. Ford	705,080	July 22	3341	701	100	705
Pipe-wrench	H. Pease	705,128	July 22	3385	753	100	784
Pipe-wrench	J. G. Morith	705,356	July 29	4420	980	100	957
Pipe-wrench	C. L. Dunham	705,742	July 29	4700	1017	100	1010
Pipe-wrench	W. Holmes	706,753	Aug. 12	1467	328	100	1432
Pipe-wrench	F. A. Palmer and F. Sharpe	708,253	Sept. 2	471	107	100	2077
Pipe-wrench	E. A. Ware	709,054	Sept. 16	2019	461	100	2434
Pipe-wrench	C. C. Rueger	710,077	Sept. 30	4053	909	100	2971
Pipe-wrench	I. N. and J. H. Glauber	704,821	July 15	2719	588	100	582
Pipes. Plug and coupling for water or steam	P. Winn	708,790	Sept. 9	1448	331	100	2290
Pipes, rods, &c. Apparatus for cutting	G. Troxler, Jr	707,696	Aug. 12	1971	442	100	1536
Pistol	O. Johnson	708,569	July 1	377	87	100	75
Piston-ring. Extensible	A. Jones	710,058	Sept. 30	3996	902	100	2963
Pitch-board. Adjustable	A. J. Adamson	707,831	Aug. 26	2921	661	100	1799
Pith or core from the rind portion of fibrous material. Apparatus for separating the	J. R. Carter	707,886	Aug. 19	2641	596, 597	100	1694
Pitman-coupling	F. A. Cammann	708,718	July 1	631	141	100	125
Placket-fastener	N. R. Taylor and W. C. Atwater	708,750	July 1	694	154	100	128
Placket-fastener	J. R. Smith	705,463	July 22	4101	891	100	890
Placket-fastener	T. M. Stearn	710,123	Sept. 30	4136	932	100	2992
Placket-fastener	M. F. Koch	707,963	Aug. 26	3767	845, 846	100	1989
Plaiting-machine	A. L. Lundgren	706,576	Aug. 12	1120	247	100	1357
Plane	J. A. Traut	706,704	Aug. 12	1351	301	100	1408
Plane	A. W. Stanley	707,265	Aug. 19	2600	588	100	1685
Plane	L. C. Clark	708,318	Sept. 2	598	134	100	2102
Plane	J. A. Traut	707,281	Aug. 19	9458	550	100	1655
Plane. Grooving-	J. A. Traut and H. S. Walter	707,368	Aug. 19	2604	589	100	1686
Plane-iron cap	C. E. Riecker and H. S. Walter	707,356	Aug. 19	2586	584	100	1682
Plane-lift	F. Clayton	707,085	Aug. 19	2078	464	100	1575
Plane. Recessing or grooving	G. S. Myrick	705,540	July 22	4311	933	100	919
Planer-bed. Adjustable	E. H. Slater	705,264	Aug. 5	511	109	100	1219
Planing-machine cutting-tool	J. Lehmann and H. Maurer	705,852	July 29	4885	1092	100	1049
Planing-machine. Double-working	H. Hart	705,921	Aug. 12	1592	358	100	1439
Plant pot or holde-	J. W. Ross	704,116	July 8	1405	304	100	295
Plant-protector	E. C. H. Behrens	705,019	July 22	3169	694	100	992
Plant-protector	L. J. Merriman	707,247	Aug. 19	2380	533	100	1539
Plant-protector	R. Murphy	707,152	Aug. 19	2308	498, 494	100	1601
Planter	A. G. W. Foster, Sr	708,404	Aug. 5	809	176, 177	100	1277
Planter and fertilizer-distributer. Combined seed-	E. G. Henry	708,575	Sept. 23	3068	683	100	2958
Planter and fertilizer-distributer. Combined seed-	J. W. Stevens	708,674	Sept. 9	1210	276	100	2238
Planter and fertilizer-distributer. Corn-	M. Johnson	707,929	Aug. 26	3759	844	100	1988
Planter attachment	L. P. Graham	707,918	Aug. 26	3740	809	100	1984
Planter. Check-row	W. R. Buchtela	708,532	July 1	280	64	100	57
Planter. Check-row corn-	J. Hillery	709,408	Sept. 16	2700	606	100	2559
Planter. Check-row corn-	R. E. Dial and M. E. Garwood	706,622	July 15	2341	508, 509	100	504
Planter. Corn-	D. Eley	705,051	July 22	3219	696, 697	100	702
Planter. Corn-	D. Eley	705,052	July 22	3234	697, 698	100	703
Planter. Corn-	D. Eley	705,053	July 22	3238	698, 699	100	703
Planter. Corn-	W. F. Talbert	707,736	Aug. 26	3332	746	100	1858
Planter. Corn-	L. P Graham	707,771	Aug. 26	3447	777	100	1876
Planter. Corn-	L. P. Graham	708,137	Sept. 2	267	62	100	2085
Planter. Corn-	E. M. Heylman	709,979	Sept. 9	1830	421	100	2498
Planter. Corn-	J. Barclay	709,294	Sept. 16	2478	558	100	2532
Planter. Corn-	H. Rentsch	710,305	Sept. 30	4468	1007	100	2993
Planter. Corn-	J. A. McCain	705,598	July 29	4638	960	100	936
Planter. Cotton-	W. Furlong	709,925	Sept. 30	3991	882	100	2798
Planter. Cotton-	H. Rentsch	710,211	Sept. 30	4309	969	100	2981
Planter disk cutter attachment. Corn-							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Planter. Hand corn-	F. A. Collver	704,518	July 15	2169	469	100	470
Planter marker-bar	W. H. Glosser	704,791	July 15	2640	571	100	586
Planter. Potato-	L. A. Aspinwall	709,660	Sept. 23	3210	716	100	2688
Planter. Seed-	J. M. Higbe	709,442	Sept. 16	2774	624	100	2545
Plaster composition	M. T. J. Ochs	705,542	July 22	4319	.....	100	921
Plaster. Wall-	N. J. Ruggles	708,591	Sept. 9	1057	.....	100	2206
Plastic articles. Production of	E. Lottier	710,287	Sept. 30	4436	1000	100	2988
Plastic material. Feeding mechanism for presses for	J. R. Masecar and T. Bevington	708,059	Sept. 2	113	27	100	2005
Plate-feeding apparatus. Magazine	G. N. Pifer	708,498	Sept. 2	800	201	100	2169
Plate-handling machine	R. R. Spears	707,172	Aug. 19	2243	503	100	1610
Plate-holder. Magazine	A. A. Brooks and G. A. Watson	705,784	July 29	4679	1018	100	1006
Plate-holder. Magazine	C. P. Goerz	706,651	Aug. 12	1255	277, 278	100	1368
Plate treating and tinning apparatus	J. R. Phillips	708,970	Sept. 9	1613	418	100	2264
Platen. Adjustable	D. M. Lester	709,859	Sept. 16	2561	576	100	2540
Platen-press guard	F. Crewe	708,867	Sept. 9	1612	369	100	2326
Plating metal	W. Griffiths	704,798	July 15	2645	572	100	587
Playing-ball	E. Kempshall	704,748	July 15	2571	554	100	582
Playing-ball	E. Kempshall	704,838	July 15	2741	593	100	587
Playing-ball	E. Kempshall	704,881	July 15	2838	610	100	604
Playing-ball	E. Kempshall	704,882	July 15	2824	610	100	604
Playing-ball	E. Kempshall	705,349	July 22	3950	791	100	790
Playing-ball	E. Kempshall	705,350	July 22	3919	849	100	842
Playing-ball	E. Kempshall	705,764	July 29	4732	1024	100	1016
Playing-ball	E. Kempshall	705,765	July 29	4733	1024	100	1017
Playing-ball	E. Kempshall	708,488	Sept. 2	869	198	100	2167
Playing-ball	E. Kempshall	708,484	Sept. 2	871	198	100	2168
Playing-ball	E. Kempshall	709,411	Sept. 16	2718	610	100	2578
Playing-ball	E. Kempshall	709,412	Sept. 16	2720	610	100	2578
Pliers	M. M. Howland	707,418	Aug. 19	2705	612	100	1707
Plinth-block. Metal	J. J. Houlihan	709,320	Sept. 16	2326	527	100	2490
Plow	A. K. Goodrich	705,571	July 1	345	78	100	69
Plow	J. Michalka	705,808	July 1	790	174	100	159
Plow	O. L. Carmical	706,386	Aug. 5	772	168, 169	100	1270
Plow	S. Fannin	706,915	Aug. 12	1766	394	100	1495
Plow	A. Schuls	707,726	Aug. 26	3322	745	100	1851
Plow	S. H. Tinsman	707,878	Aug. 26	3650	824, 825	100	1916
Plow	J. Buchanan	708,122	Sept. 2	222	53	100	2087
Plow	J. A. and C. L. Shuping	708,365	Sept. 2	494	118	100	2081
Plow	H. Bryan	708,812	Sept. 2	568	132	100	2100
Plow	J. P. Mulrony	709,028	Sept. 16	1951	447	100	2410
Plow	E. Hankins	709,901	Sept. 30	3702	835	100	2931
Plow and planter. Combined	J. E. Park and J. L. Pickens	706,446	Aug. 5	907	196	100	1299
Plow attachment	W. H. Holsclaw	706,895	Aug. 12	1598	359, 360	100	1461
Plow-brace	D. W. Harris	706,985	Aug. 12	1708	402	100	1501
Plow. Cultivating-	A. Horner	709,601	Sept. 23	3113	693	100	2668
Plow. Disk	L. E. Waterman	705,627	July 22	4490	971	100	997
Plow. Grading-	J. Sowords	705,155	July 22	3442	748	100	746
Plow. Motor-	R. J. Gatling	705,587	July 22	3876	838	100	833
Plow-point	S. C. Myers	708,807	July 1	796	175	100	160
Plow-point. Detachable	C. A. Weimer	704,996	July 15	2115	671	100	664
Plow. Potato-	D. Jackson	707,114	Aug. 19	2183	475, 476	100	1587
Plow. Reversible	J. W. Glendy	709,439	Sept. 16	2767	623	100	2568
Plow. Riding-	C. S. Ruef and C. L. Tomlinson	704,274	July 8	1094	369, 370	100	355
Plow. Sugar-beet	J. T. Leinberger and J. G. Schmidt	706,705	Aug. 12	1486	330	100	1437
Plow. Sulky-	S. H. Tinsman	707,879	Aug. 26	3666	825, 826	100	1918
Plow. Sulky-	W. W. Robinson	708,405	Sept. 2	730	164	100	2129
Plow weed-cutting attachment	J. M. Robinson	707,801	Aug. 26	3516	793	100	1890
Plow. Wheel-	B. Cross	704,240	July 8	1030	253	100	241
Plow. Wheeled	L. E. Waterman	705,626	July 29	4492	973	100	997
Plow wing attachment	G. H. McGuire	709,505	Sept. 23	3246	657	100	2638
Plows or the like. Attachment for	H. H. Allen	706,875	Aug. 12	1595	359, 360	100	1460
Plug. Emergency safety-	F. Kostlan	708,562	Sept. 9	1005	227	100	2196
Plug-receptacle	C. J. Klein	707,516	Aug. 19	2872	651	100	1743
Plumb-bob, level, &c. Combined	D. L. McDermott	707,518	Aug. 19	2880	658	100	1744
Plumber's testing-plug	J. Flynn	705,050	July 22	3240	701	100	706
Pneumatic apparatus. Joint for use in	C. L. Davis	705,515	July 22	4205	914	100	899
Pneumatic cushion	J. H. Finney	709,977	Sept. 30	3960	869	100	2935
Pneumatic-despatch apparatus	J. T. Cowley	708,630	Aug. 12	1230	273	100	1381
Pneumatic-despatch-tube inlet	F. B. Talsey	705,884	July 29	4944	1073	100	1060
Pneumatic-despatch tubes. System and apparatus for transmitting carriers in	B. C. Batcheller	706,291	Aug. 5	562	136, 137	100	1233
Pneumatic elevator and weigher	R. B. Hilleary and C. Bradford	706,054	Aug. 5	108	22	100	1138
Pneumatic impact-tool	S. Oldham	704,918	July 15	2913	625	100	627
Pneumatic motor	G. B. Anderson	706,004	Aug. 5	3	1, 2	100	1117
Pneumatic tool	J. Keller	710,196	Sept. 30	4270	963	100	2981
Pneumatic-tube systems. Pneumatic time-lock for	B. C. Batcheller	707,071	Aug. 19	2050	457, 458	100	1569
Pneumatically-operated lubricator	H. Schmidt	708,973	Sept. 9	1822	419	100	2266
Pocket	R. Bartell	709,460	Sept. 23	2838	635, 636	100	2608
Poke. Animal-	J. I. Barnes	703,867	July 1	7	2	100	4
Poke. Animal-	A. D. Hale	703,407	July 1	79	15	100	18
Poke. Animal-	G. A. Ritchie	704,994	July 15	2945	632	100	636
Poke. Animal-	C. N. Trooien	705,169	July 22	3453	758	100	748
Poke. Animal-	H. E. Irish	706,062	Aug. 5	122	25	100	1144
Poke. Animal-	S. F. Webb and W. S. Huff	706,617	Aug. 12	1198	266	100	1374

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Poke. Animal-	H. E. Downing	709,474	Sept. 23	2958	642	100	2613
Poker and tongs. Combined fire-	J. C. Moyer	708,947	July 1	1052	208	100	200
Pole attachment. Carriage-	P. Masterson	707,439	Aug. 19	2740	680	100	1714
Pole cap. Wagon-	P. Holmstrom	708,754	Aug. 12	1467	333	100	1432
Pole. Carriage-	J. Seng	708,784	Sept. 9	1494	327	100	2226
Pole. Jointed	M. Nelson	709,994	Sept. 30	3745	844	100	2810
Pole. Push-	H. Wheler	708,179	July 22	3489	758	100	755
Pole-reverser. Automatic	M. Moskowitz	708,088	Aug. 5	155	32	100	1148
Policeman's club-holder	F. H. Audley	710,226	Sept. 30	4351	978	100	2940
Polishing-machine	M. H. Ballard	705,350	July 29	4312	920	100	989
Polishing-machine	J. W. Brown, Jr., and H. W. Yeager	707,819	Aug. 26	3545	799 800	100	1595
Polishing-machine	J. W. Brown, Jr	708,858	Sept. 9	1508	365	100	2230
Polishing-strip	C. C. Allen	708,000	Sept. 2	1	1	100	1931
Polishing-wheel	F. G. Farnham	709,312	Sept. 16	2512	566	100	2530
Polishing-wheel and manufacturing same	B. F. Elson	704,789	July 15	2638	570	100	566
Polishing-wheel. Automatically-inflated	I. P. Cadman	704,509	July 15	2145	464	100	464
Pool or billard apparatus	T. R. Lowerre	704,898	July 15	2839	615	100	608
Post: See Anchoring-post. Fence-post. Railway bumping-post. Tool-post.							
Post for fencing, &c	R. H. Guthrie	709,317	Sept. 16	2292	527	100	2489
Post-office-box indicating mechanism	T. F. Kelly	707,296	Aug. 19	2359	529	100	1695
Postal box and signal	F. C. Bates	707,195	Aug. 19	2298	513	100	1692
Postal-car and station appliance	L. Schmiedeke	708,174	Sept. 2	328	78, 79	100	2048
Postman's rack	C. J. Weeks	708,282	Sept. 2	582	121	100	2089
Pot: See Coffee-pot. Tea or coffee pot.							
Pot for containing shellac, &c	W. L. Morris	704,204	July 8	1576	340	100	330
Potassium cyanate. Producing	S. Zuckschwerdt	709,570	Sept. 23	3060		100	2657
Potato-creamer	F. W. Ruckstuhl and A. Pohlmann	707,019	Aug. 19	1944	435	100	1530
Potato-digger	J. Moran	708,707	July 1	612	136	100	121
Potato-digger	P. Hesselius	708,727	July 1	653	144 145	100	131
Potato-digger	J. L. Ingersoll	704,046	July 8	1248	289	100	292
Potato-digger	L. A. Aspinwall	709,659	Sept. 23	2906	716	100	2657
Potato-digger	F. O. Andrews	704,169	July 8	1510	323 324	100	317
Potato-digging machine	L. A. Aspinwall	709,658	Sept. 23	2903	715 716	100	2656
Potato-sorter	J. A. Smithline and A. F. Zaiser	709,561	Sept. 23	2943	678	100	2653
Pouch	C. T. Dörr	707,401	Aug. 19	2675		100	1701
Powder-bag. Ordnance	M. L. Gumaer	705,887	July 29	4954	1054	100	1042
Powder-puff							
Power: See Churn-power. Friction-power.							
Power. Electric transmission of	E. M. Hewlett	706,559	Aug. 12	1091	242	100	1352
Power equalizing, controlling, and storing apparatus.	L. H. Osterud	705,700	July 29	4617	1001	100	998
Power. Generation of motive	S. A. Rosenthal	709,115	Sept. 16	2122	486	100	2448
Power in varying directions. Apparatus for the transmission of	A. H. Edwards	708,904	July 1	980	213 214	100	195
Power mechanism	F. Clemens, Jr	709,304	Sept. 16	2499	568	100	2537
Power-shovel	R. Thew	710,223	Sept. 30	4330	973 974	100	2935
Power-transmission regulator for electromagnetic couplings.	R. Pintsch	704,574	July 15	2268	491 492	100	490
Power-transmitting device for hand-driven mechanisms.	F. W. Wild, Jr	708,286	Sept. 2	535	122	100	2090
Power-transmitting machinery	E. Winans	709,856	Sept. 23	3579	806	100	2764
Power-transmitting mechanism. Differential-speed	S. Jackson	706,664	Aug. 12	1286	293 294	100	1398
Precious metals. Extracting	W. Hilt and C. E. Lane	707,296	Aug. 26	3757	843	100	1987
Precious metals from ores. Extracting	L. B. Darling	706,308	Aug. 5	906	192	100	1237
Precious metals from ores. Means for extracting	L. B. Darling	706,302	Aug. 5	903	191	100	1237
Precious metals. Treating rebellious ores of the	W. F. Downs	707,214	Aug. 19	2294		100	1626
Preserving and storing building	J. M. Stukes	706,125	Aug. 5	990	220	100	1219
Preserving apparatus. Food-	M. D. Ellis	709,431	Sept. 16	2750	619	100	2580
Preserving food products	W. D. Baker	709,432	Sept. 16	2752	619	100	2580
Preserving food products	W. D. Baker	709,751	Sept. 23	3587	760	100	2722
Preserving frozen food products							
Press: See Bale-press. Baling-press. Brick-press. Copying-press. Drill-press. Filter-press. Flanging-press. Forging-press. Glass-press. Hydraulic press. Hydrostatic press. Peat-press. Printing-press. Soap-press. Stamping-press. Tile-press. Wine-press.							
Press for packing barrels or other packages	S. McCown	706,681	Aug. 12	1319	292	100	1401
Pressure-exerting machine	J. A. Costello and W. S. Bidle	707,558	Aug. 26	3964	870	100	1777
Pressure-generator	G. E. Blake	706,154	Aug. 5	301	64	100	1178
Pressure-regulator	J. L. Schureman	706,980	Aug. 5	496	105	100	1217
Primer-tray. Cellular	H. S. Burns and T. G. Bennett	705,318	July 22	3809	826	100	880
Print-making machine	R. A. Bell	708,999	Sept. 16	1853	426	100	2291
Prints. Machine for making blue-	R. A. Bell	704,238	July 8	1617	350	100	358
Printed matter. Producing	A. Baruch	707,541	Aug. 26	3936	665	100	1772
Printer. Starch-	D. M. Holmes	707,589	Aug. 26	3944	685	100	1794
Printer's form lock-up	E. G. Torrey	707,967	Aug. 26	3965	868	100	1967
Printer's furniture	W. G. Slauson	708,096	Sept. 2	158	38	100	2014
Printing, &c., and preparing same. Stone or plate for photomechanical	G. F. Wetherman and G. Holshausen.	707,747	Aug. 26	3884		100	1964
Printing apparatus. Blue-	S. B. Whinery	704,415	July 8	1980	422 423	100	410

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Printing apparatus for use with machines for making paper bags.	H. Hölscher	706,237	Aug. 5	452	95 96 97	100	1209
Printing apparatus. Stencil-	D. Gestetner	707,579	Aug. 26	3094	680 681	100	1789
Printing. Blanket for use in	J. E. Rhodes	705,294	July 22	3752	814	100	809
Printing color for lithographic or metallographic printing.	J. Adelsberger and H. Friedmann	710,283	Sept. 30	4349		100	2969
Printing device	W. L. Morris	709,556	Sept. 23	3098	674 675	100	2650
Printing-die	W. A. Force	705,228	July 22	3819	784	100	785
Printing-frame	J. M. Smith	708,672	July 1	549	124	100	108
Printing-machine	J. White	705,180	July 22	3489	758	100	755
Printing-machine	F. J. Martin	708,570	Sept. 9	1018	221	100	2192
Printing-machine	W. Scott	709,515	Sept. 23	2967	661 662	100	2638
Printing-machine	F. J. Wende and B. B. Carter	709,510	Sept. 23	3500	789 790 791	100	2746
Printing-machine feeding mechanism	J. White	705,181	July 22	3495	758 759	100	757
Printing machine. Multicolor-	H. F. Bechman	708,013	Sept. 2	22	5	100	1985
Printing-machine. Roller	T. J. Smith	709,983	Sept. 30	3762	850	100	2813
Printing machine. Stencil-	G. H. Davis	708,388	July 1	46	9	100	12
Printing-machine. Stencil-	A. B. Dick	709,685	Sept. 30	3674	828 829	100	2705
Printing machine. Web-	G. F. Read	705,142	July 22	3124	743	100	743
Printing machinery	S. G. Goss	707,100	Aug. 19	2108	469 470	100	1580
Printing. Multicolor-	H. F. Bechman	708,012	Sept. 2	20	5	100	1985
Printing on sheets. Cylinder-machine for	W. Spalckhaver	708,491	July 1	208	48, 49	100	43
Printing-plate holder	E. B. Storm	708,676	July 1	556	125	100	110
Printing-press	R. Miehle	708,438	July 1	198	29	100	28
Printing-press	T. M. North	708,665	July 1	535	121	100	105
Printing-press	W. Scott	704,194	July 8	1421	304 305	100	290
Printing-press	J. L. Firm	704,624	July 15	2347	510	100	505
Printing-press	M. Anthony	705,631	July 29	4485	973 974	100	968
Printing-press	H. B. Allen	706,709	Aug. 12	1360	303 304	100	1410
Printing-press	S. G. Goss	707,101	Aug. 19	2107	470 471	100	1581
Printing-press	A. Baruch	707,540	Aug. 26	2934	664	100	1771
Printing-press	M. Gally	707,770	Aug. 26	3445	776 777	100	1875
Printing-press addressing attachment	J. P. Bryan	706,720	Aug. 12	1380	307 308	100	1414
Printing-press controlling mechanism	W. C. Williams	706,622	Aug. 12	1205	967 968	100	1875
Printing-press controlling mechanism	W. C. Williams	706,623	Aug. 12	1209	968	100	1877
Printing-press envelop-feeder	M. W. Lilly	704,058	July 8	1273	875	100	907
Printing-press feed-gage	E. L. Megill	703,734	July 1	665	147	100	178
Printing-press gripper mechanism	R. Miehle	708,605	July 1	406	95	100	80
Printing-press gripping mechanism	M. Schmidt and E. J. Gebler	708,409	Sept. 2	757	166	100	2131
Printing-press ink-fountain	N. Nilson	707,625	Aug. 26	3109	700	100	1807
Printing-press sheet-aliner	O. S. Bowman	705,198	July 22	3581	765	100	766
Printing-press sheet-delivery	G. P. Fenner	708,878	Sept. 9	1634	376	100	2328
Printing-press sheet-delivery apparatus	G. P. Fenner	704,868	July 15	2797	604 605	100	599
Printing-press tympan-surface	A. S. Allen	705,011	July 22	3154	681	100	699
Printing press. Web-	W. Spalckhaver	706,209	Aug. 5	536	116	100	1224
Printing-presses. Adjustable and throw-off roller-track for	A. W. Fritz	707,313	Aug. 19	2511	564	100	1666
Printing-presses, &c. Automatic protector for	T. C. Dexter	705,220	July 22	3589	776 777	100	777
Printing-presses. Gripper for plates	A. L. Anderson	706,876	Aug. 12	1696	380	100	1481
Printing with sulfur dyes	E. Voetter	708,429	Sept. 2	769		100	2137
Prism-glass for skylights	G. E. Androvette	705,372	July 22	3941	864	100	846
Projectile	J. B. Semple	707,084	Aug. 12	1953	438	100	1582
Projectile	J. B. Semple	708,411	Sept. 2	740	166	100	2121
Projectile or shell for ordnance. Explosive	C. Puff	709,854	Sept. 23	3576	806	100	2764
Projectiles. Hardening	R. A. Hadfield	709,631	Sept. 23	3161	705	100	2677
Projecting apparatus	R. H. Edwards	704,449	July 8	2015	454	100	424
Projecting apparatus	A. and L. Lumière	705,771	July 29	4749	1057	100	1019
Propeller	D. Selkirk	709,801	Sept. 23	3488	786	100	2744
Propeller	C. A. Manker	710,111	Sept. 30	4109	927	100	2885
Propeller. Adjustable screw-	E. E. Funnell	705,866	July 29	4907	1067	100	1058
Propeller. Endless	A. Kuents	707,600	Aug. 26	3059	688 689 698	100	1796
Propeller-fan and propeller for ships. Rotary	S. C. Davidson	705,046	July 22	3210	694 695	100	700
Propeller. Oscillating	C. Hayes	705,348	July 22	3900	844	100	888
Propeller-shaft governor	W. R. May	705,417	July 22	4019	870 871	100	953
Propeller. Vibrating	W. W. Phares	706,198	Aug. 5	881	81	100	1194
Propellers of ships. Means for housing	J. Hamilton	707,411	Aug. 19	2090	507 508	100	1704
Propelling device. Boat	F. J. Gleason	704,186	July 8	1546	333	100	394
Protractor	W. Quayle	708,608	July 1	411	96	100	81
Puller: See Spike-puller. Tack-puller. Weed-puller.							
Pulley	W. E. Penn	705,129	July 22	3886	753	100	785
Pulley. Adjustable or separable	R. C. Fay	707,095	Aug. 26	3928	786	100	1883

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Drg.	Official Gazette. Vol.	Page.
Pulley-and-band power-transmitting appliance	J. Moorhouse	704,908	July 8	1575	340	100	330
Pulley-block. Differential-gear	R. Lavery	708,158	Sept. 2	285	68, 69	100	2040
Pulley lubricator. Loose-	C. S. Scobee	708,898	July 1	853	188	100	171
Pulley mechanism. Reversing-	J. Darling and C. C. Ellenberger, Jr.	707,896	Aug. 19	2665	601	100	1690
Pulley. Sash-cord	P. Dosch	709,000	Sept. 16	1680	426	100	2296
Pulley. Sheet-metal	C. A. Brinley	708,804	Aug. 12	1737	857	100	1499
Pulley. Split	H. W. Finch	708,917	Aug. 12	1769	895	100	1496
Pulp digesters. Valve for wood-	J. Joule	705,091	July 22	6307	719	100	718
Pulp-separator	J. K. McLaughlin	706,441	Aug. 5	895	193 194	100	1296
Pulp-strainer screen-plate	N. L. Vrooman and R. R. Kirkland	708,663	July 1	574	128	100	114
Pulp vessels. Apparatus for manufacturing closed	F. B. Howard	708,643	Sept. 9	1160	268	100	2298
Pulp vessels. Apparatus for the manufacture of closed	F. B. Howard	710,101	Sept. 30	4069	923	100	2982
Pulsometer	P. Haussmann	703,788	July 1	769	168	100	154
Pulverized-fuel burner	F. M. Reed	706,495	Aug. 5	992	215 216	100	1315
Pulverizer	J. C. Clark	708,542	July 1	298	67, 68	100	60
Pulverizer	R. Creuzbauer	705,323	July 22	3815	837 838	100	821
Pulverizer	A. C. and A. W. Hilsinger	708,640	Sept. 9	1156	260 261 262	100	2227
Pulverizing-mill	G. S. Maxwell	704,650	July 15	2886	223 517	100	515
Pulverizing-shoe	H. F. Deterding	706,729	Aug. 12	1397	311 312	100	1418
Pump	W. F. Garrison	703,648	July 1	498	113	100	98
Pump	P. H. Deis	705,047	July 22	3213	695	100	701
Pump	W. J. Hughes	705,351	July 22	3904	845	100	859
Pump	H. T. Henson	705,670	July 29	4554	989	100	992
Pump	B. Ivor and J. S. Ward	706,564	Aug. 12	1097	248	100	1353
Pump	B. H. Yale	709,288	Sept. 16	2468	556	100	2520
Pump	C. C. Worthington	710,080	Sept. 30	3946	860	100	2953
Pump	B. Musser	705,425	July 22	4032	874 901	100	866
Pump-actuating mechanism	T. N. Case	707,821	Aug. 26	3550	802 803	100	1896
Pump. Air-	E. Walther	708,944	Sept. 9	1747	406 404	100	2351
Pump. Air-	C. M. Day	709,968	Sept. 30	3847	895 896	100	2932
Pump. Air-	E. A. August	708,792	Aug. 12	1540	345	100	1447
Pump attachment. Beer-	J. Horn	708,657	July 1	515	115 116	100	101
Pump attachment. Plumber's	A. Bruzek	709,662	Sept. 23	3213	717	100	2688
Pump. Automatic siphon-	H. Sulzer	704,144	July 8	1471	315	100	309
Pump. Centrifugal	E. G. Harris	705,347	July 22	3907	843	100	857
Pump. Centrifugal	P. F. Oddie	708,912	Sept. 9	1696	391	100	2342
Pump equalizing device. Steam-	E. M. Ivens	705,844	July 29	4405	1057	100	1045
Pump mechanism	W. Wagner	707,384	Aug. 19	2461	588	100	1656
Pump. Hydraulic	S. W. Meals	708,897	Sept. 9	1674	385	100	2336
Pump. Oil-well	R. W. Elliott	709,313	Sept. 16	2314	525	100	2467
Pump. Pneumatic	W. W. Wainwright	704,236	July 8	1606	348	100	326
Pump. Rotary	S. M. Frank	709,597	Sept. 23	3105	692	100	2667
Pump. Rotary force-	F. Ray	704,756	July 15	2581	557	100	554
Pump runner. Centrifugal-	J. O. Bane	706,149	Aug. 5	267	60	100	1175
Pump-spring connection	P. F. Oddie	708,968	July 1	1102	237	100	218
Pump. Steam-	J. Kurtz	705,364	July 22	3931	852	100	844
Pump strainer. Mine-	W. R. Emerson	704,012	July 8	1186	258	100	251
Pump suction-pipe strainer	D. C. Word	708,508	Sept. 2	919	208	100	2194
Pump-valve	M. Potvliet	705,704	July 29	4027	1008	100	996
Pump. Water-sealed air-	E. Chaquette	708,997	July 8	1165	253	100	247
Pump. Wave-motion	A. C. Griscom	707,987	Aug. 26	3834	850	100	1949
Pumps. Automatic switch for electric	T. G. E. Lindmark	706,187	Aug. 5	961	78	100	1190
Pumping apparatus	F. M. Leavitt	704,054	July 8	1260	272	100	265
Pumping-engine. Condensing	J. T. Lally and J. J. English	706,425	Aug. 5	952	187	100	1286
Pumping-engine. Hot-air	H. S. Temple	705,379	Aug. 5	560	121	100	1299
Punch	J. F. Kidder	704,344	July 8	1895	396	100	385
Punch and shears. Combined	H. Cottrell	708,495	Sept. 2	839	191	100	2151
Punch. Ticket-	S. Treinis	706,898	Aug. 12	1679	376	100	1477
Punching-bag platform	G. S. Maxwell	710,112	Sept. 30	4112	928	100	2986
Punching-bag support	G. S. Maxwell	710,119	Sept. 30	4111	927	100	2986
Punching-bag-supporting device	J. Heimsenberger	708,959	July 1	1078	233	100	215
Punching-machine	B. F. Hall	706,552	Aug. 12	1081	239	100	1349
Punching-machine	J. E. Scott	708,601	Aug. 12	1167	259	100	1367
Punching-machine	E. B. Stimpson	708,747	July 1	699	158	100	137
Punching-machines, &c. Locking device for use in	E. G. Harcourt and M. B. Lloyd	704,222	July 8	1779	388	100	378
Push and switch. Electrical	W. J. Newton	707,622	Aug. 26	3108	699	100	1805
Push-button switch. Snap	H. Green	709,964	Sept. 16	2417	547 548	100	2509
Push-rake	E. T. Henneberry and M. M. Gleeson.	708,709	Sept. 9	1283	293	100	2262
Puttying-tool	J. H. O'Bern	704,089	July 8	1386	291	100	279
Puzzle	W. H. Emery	709,886	Sept. 30	3881	880	100	2795
Puzzle	P. F. De Ford	708,558	July 1	339	75	100	66
Puzzle device	E. Meyer	705,389	July 22	3706	804	100	798
Puzzle or game apparatus	F. Herd	705,759	July 29	4733	1082	100	1014
Puzzle. Wire	A. Eichengrün	710,047	Sept. 30	3976	.....	100	2959
Pyrotechnic compound	T. Lloyd	708,537	Sept. 2	447	108	100	2072
Pyrotechnic device	C. T. Bradshaw	708,519	Sept. 9	946	214	100	2184
Quoit	D. C. Jackling	706,755	Aug. 12	1468	333 334	100	1403
Rabble-carriage	J. P. Cornuault	707,708	Aug. 26	3434	771	100	1870
Race starting-gate	C. W. Crowley	705,043	July 22	3806	836 837	100	1790
Race-starting machine							

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Drg.	Official Gazette. Vol.	Page.
Race structure. Sack-	J. J. Wegner	706,467	Aug. 5	998	205	100	1305
Rack: See Cuspidor-rack. Hay and stock rack. Display-rack. Postman's rack. Feeding-rack. Wagon-rack. Hay-rack.							
Racket	A. Becker	708,519	July 1	200	89	100	52
Racking apparatus	D. Beebe	704,398	July 8	1788	377	100	363
Racking off beer. Apparatus for	H. Torchiani	708,942	Sept. 9	1742	403	100	2350
Radiator	E. Morita, L. N. Frymire, and S. Koons.	705,110	July 22	3251	726	100	727
Radiator	C. W. Rogers	705,614	July 29	4480	997	100	963
Radiator	A. Eichhorn	709,758	Sept. 23	3400	763	100	2725
Radiator attachment	G. W. Chipley	706,159	Aug. 5	812	66	100	1180
Radiator for smoke-pipes. Heat-	J. P. Schneller	709,051	Sept. 16	1993	455	100	2419
Radiator. Warm-air	J. Clements	706,161	Aug. 5	814	66, 67	100	1181
Rail-bond	M. F. Whiton	707,662	Aug. 26	3208	718	100	1827
Rail-bonds. Manufacture of	F. H. Daniels and H. W. Wyman	709,878	Sept. 30	3680	821	100	2788
Rail-clamp	W. C. Lee and M. F. Moore	708,480	July 1	113	26	100	25
Rail-fastener	J. M. Spaulding	704,221	July 8	1599	347	100	335
Rail-fastener	C. M. Reed	707,357	Aug. 19	2394	537	100	1642
Rail-fastener. Metallic-tie	C. S. Shallenberger	710,371	Sept. 30	4580	1033	100	2995
Rail-fastening	W. P. Patrick	706,999	Aug. 12	1005	427	100	1522
Rail-joint	S. M. Wixcel	703,876	July 1	996	202	100	186
Rail-joint	T. Huberdeau	704,100	July 8	1551	334	100	325
Rail-joint	G. L. Hall	705,345	July 22	3895	843	100	857
Rail-joint	C. R. Edwards	705,566	July 29	4369	946	100	946
Rail-joint	W. Floss	705,575	July 29	4384	950	100	948
Rail-joint	J. W. Dixon and J. D. Devine	705,827	July 29	4836	1050	100	1039
Rail-joint	V. L. Truxall	705,895	July 29	4945	1075	100	1060
Rail-joint	K. Kohn	706,241	Aug. 5	460	98	100	1210
Rail-joint	H. O. Baldwin	706,374	Aug. 5	738	161	100	1266
Rail-joint	C. C. Osenbaugh and R. L. Gibson	706,445	Aug. 5	907	196	100	1290
Rail-joint	D. H. Noble	707,447	Aug. 19	2782	623	100	1737
Rail-joint	O. S. Weddell	707,471	Aug. 19	2789	632	100	1725
Rail-joint	W. E. Randle	707,790	Aug. 26	3505	740	100	1848
Rail-joint	G. Gordon	707,996	Aug. 26	3821	859 860	100	1949
Rail-joint	M. Barschall	708,009	Sept. 2	17	4	100	1984
Rail-joint	J. E. Hammond	708,351	Sept. 2	646	146	100	2112
Rail-joint	W. Colloton	708,531	Sept. 9	960	217	100	2188
Rail-joint	L. Roth	709,045	Sept. 16	1981	453	100	2416
Rail-joint	J. W. Elzea	709,475	Sept. 23	2960	642	100	2514
Rail-joint	J. J. McDermott	710,000	Sept. 30	3496	878	100	2942
Rail-joint	H. Minck and H. L. Droste	710,290	Sept. 30	4439	1001	100	2958
Rail-joint fastener	J. C. Wentzel	706,469	Aug. 5	943	205	100	1306
Rail. Mine-car	J. A. Craig	707,999	Aug. 26	3804	875	100	1964
Rail-support	C. E. Neubauer	705,955	July 29	4069	1104	100	1065
Rail-support	W. E. Jaques	710,152	Sept. 30	4197	945	100	2965
Rail-support	W. E. Jaques	710,153	Sept. 30	4198	945	100	2965
Rail-support	W. E. Jaques	710,154	Sept. 30	4200	946	100	2965
Rail systems. Guard for third-	S. Elliott	708,563	July 1	358	76	100	69
Rail. Tramway-	F. E. Musgrave	708,901	Sept. 9	1683	387 388	100	2339
Railway-bed	M. Haas	708,347	Sept. 2	640	145	100	2111
Railway bumping-post	P. Scanlin	704,275	July 8	1099	270 271	100	357
Railway-cabs. Electric signal for	J. W. Frost	705,669	July 29	4542	987	100	980
Railway-carriages, &c. Coupling for	J. Willison	708,110	Sept. 2	197	47	100	2022
Railway-carriages. Safety-outlet in longitudinal walls of	D. Erdelbrock	709,573	Sept. 23	3064	682	100	2657
Railway. Combined overhead and underground electric	D. S. Bergin	707,075	Aug. 19	2068	460	100	1571
Railway contact system. Electric-	T. B. Patch	704,092	July 8	1341	292	100	280
Railway contact system. Electric-	T. B. Patch	704,093	July 8	1344	293	100	281
Railway cross-tie and chair. Combined	S. Love	709,787	Sept. 23	3456	778	100	2739
Railway-crossing and switch for same	C. Leiendecker	707,604	Aug. 26	3065	690	100	1798
Railway danger-signal	W. Washa	710,383	Sept. 30	4408	1038 1089	100	2991
Railway danger-signal device	F. G. Chamberlin	709,469	Sept. 23	2949	640	100	2512
Railway. Electric	F. W. Hild and S. B. Stewart, Jr	705,083	July 22	3288	712	100	714
Railway. Electric	W. Behrens and J. P. Tibon	705,373	July 22	3942	854	100	846
Railway. Electric	C. J. Kintner	705,848	July 29	4872	1059 1060	100	1046
Railway. Electric	W. B. Potter	706,106	Aug. 5	192	40	100	1156
Railway. Electric	C. R. Campbell	706,156	Aug. 5	807	65	100	1179
Railway. Electric	T. E. Murray and J. Van Vleck	708,656	Sept. 9	1177	298 299	100	2231
Railway. Electric	T. E. Murray and J. Van Vleck	708,960	Sept. 9	1806	416 417	100	2303
Railway-gate	J. Bowman	706,516	Aug. 12	1021	225	100	1357
Railway goods-vans. Sliding door for	A. Fischer	708,908	July 1	996	215	100	197
Railway heater system	S. H. Harrington	704,797	July 15	2667	577	100	570
Railway-joint	S. H. Deihl	704,817	July 15	2718	587	100	581
Railway-joint	T. L. Watts	707,468	Aug. 19	2786	631	100	1734
Railway rail-bond. Electric-	E. P. Frederick	708,779	July 1	741	164	100	149
Railway-rail joint	W. J. Austin	708,979	July 8	1139	244	100	239
Railway-rail joint	G. A. Weber	705,170	July 22	3471	755	100	752
Railway-rail joint	J. C. Fair	705,526	July 29	4371	947	100	946
Railway-rail joint	C. Rhoades	705,993	July 29	4151	1108	100	1098
Railway-rail joint	E. R. Avery	707,494	Aug. 19	2953	640	100	1734
Railway-rail joint	W. C. Wessel and H. W. Jacob	708,605	Sept. 9	1090	245	100	2218
Railway-rail joint	E. Lees and H. H. Sponenburg	708,608	July 1	899	94	100	79
Railway-rail stay	W. H. Bell	710,134	Sept. 30	4159	987	100	2989
Railway sand-distributer	J. Quin	704,210	July 8	1592	342	100	332
Railway-sander							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Railway-semaphore, &c	W. D. Farren	704,015	July 8	1190	256	100	252
Railway-signal	W. C. Van Derlip, Sr	704,790	July 15	2506	541 542	100	540
Railway-signal	W. S. Bennett	705,313	July 22	2799	823 824	100	818
Railway-signal	J. D. Price	709,090	Sept. 16	1971	451	100	2414
Railway-signal	J. D. Price	709,243	Sept. 16	2376	539	100	2500
Railway-signal. Automatic	W. L. Harper	704,827	July 15	2812	606	100	602
Railway-signal. Automatic	A. Emerson and A. S. Hovander	707,405	Aug. 19	2680	605	100	1701
Railway-signal. Electric	C. D. Seaman	709,052	Sept. 16	1994	455	100	2419
Railway-signal. Pneumatic	C. S. Dean	709,258	Sept. 16	2405	545	100	2597
Railway signaling apparatus	J. D. Taylor	707,192	Aug. 19	2266	507	100	1616
Railway signaling apparatus	E. Rowe	709,798	Sept. 23	3481	784 785 786	100	2743
Railway signaling apparatus. Selector for	J. D. Taylor	707,180	Aug. 19	2260	505	100	1614
Railway signaling device	H. Pratt	708,899	Sept. 2	719	161 162	100	2127
Railway signaling. Electrical system of recording and checking as applied to	W. H. M. Weaver	710,848	Sept. 30	4529	1024 1025	100	2979
Railway signaling system	A. W. Knee	704,847	July 8	1823	398	100	396
Railway stand-pipe	J. W. Thomas, Jr	709,876	Sept. 16	2663	596	100	2560
Railway stock-guard	G. A. Williams and J. O. McCall	705,729	July 29	4670	1011	100	1094
Railway surface contact. Electric	E. M. Hewlett	705,682	July 22	3981	711	100	713
Railway. Suspension	A. H. Mayhew	709,343	Sept. 16	2568	578 579	100	2542
Railway-switch	S. A. Duvall	703,772	July 1	720	161	100	146
Railway-switch	W. Wharton, Jr	704,414	July 8	1950	422	100	410
Railway-switch	A. G. Turcotte	705,164	July 22	3456	753	100	749
Railway-switch	C. Johnston	706,950	Aug. 12	1822	408	100	1505
Railway-switch. Automatic	G. E. Janes	709,015	Sept. 16	1920	440 441	100	2404
Railway-switch danger-signal. Automatic	C. H. Remington	707,010	Aug. 12	1925	431	100	1526
Railway-switch detector-bar	L. Carrier	703,537	July 1	299	66	100	58
Railway-switch. Electric	J. A. Joyce	709,156	Sept. 16	2192	502	100	2468
Railway-switch. Electrically-operated	J. Loney	709,676	Sept. 23	3236	721	100	2698
Railway-switch-operating device	J. C. Booth	709,865	Sept. 30	3608	815	100	2783
Railway-switch-operating mechanism	E. Crapper, Jr	708,800	Sept. 9	1469	335 336	100	2294
Railway-switch-operating mechanism. Automatic	L. Pierce	709,111	Sept. 16	2116	485	100	2447
Railway switches and signals. Electrical apparatus for operating	T. Ducousso	704,177	July 8	1527	328 329	100	321
Railway switching and signal interlocking apparatus	J. D. Taylor	707,181	Aug. 19	2262	506 507	100	1614
Railway system. Electric	J. C. Henry	707,944	Aug. 26	3504	813	100	1905
Railway system. Electric	L. E. Walkins	709,063	Sept. 16	2017	460	100	2424
Railway system. Electric	W. B. Potter	710,072	Sept. 30	4025	908	100	2969
Railway systems. Electromagnetic switch for surface-contact electric	W. B. Potter	705,186	July 22	3410	741	100	789
Railway-tie	J. P. Lancaster	703,797	July 1	780	171	100	156
Railway-tie	B. H. Smith	704,894	July 8	1919	416	100	404
Railway-tie	J. Doyle and G. H. Kimball	706,808	Aug. 12	1572	352	100	1455
Railway-tie	W. C. Gregg, (Reissue)	12,025	Aug. 26	3697	876	100	1954
Railway-tie	E. M. Bunce	708,521	Sept. 9	948	215	100	2185
Railway-tie	E. M. Bunce	708,522	Sept. 9	949	215	100	2185
Railway-tie	J. L. Grieb	708,481	Sept. 23	2898	646	100	2623
Railway-tie	W. S. Dodd	704,788	July 15	2698	568	100	554
Railway-tie and fastener. Metallic	A. J. Reitz and J. H. Lange	704,989	July 15	2979	638	100	689
Railway-tie. Metal	S. A. Sharum	705,458	July 22	4084	988	100	877
Railway-tie. Metallic	J. F. Weisbrod	706,788	Aug. 12	1585	344	100	1446
Railway-tie. Metallic	H. W. Avery	710,172	Sept. 30	4284	955	100	3013
Railway-tie. Metallic	T. B. Modlin and W. H. Buhl	709,169	Sept. 16	2581	507	100	2469
Railway-tie plate	V. E. McBee	708,348	Sept. 16	2576	581	100	2543
Railway-tie plate	V. Berford	705,515	Aug. 19	1019	225	100	1397
Railway-track appliance. Sod-line-cutter mechanism for	H. L. Church	708,998	Sept. 16	1876	431	100	2395
Railway-track cattle-guard	L. B. West	706,619	Aug. 12	1302	287	100	1375
Railway-track foundations. Beam for	T. C. McLin	708,905	Sept. 9	1698	389	100	2341
Railway-track joint	H. Mann	708,641	Sept. 23	3178	709	100	2680
Railway-track-laying machine	G. M. Ervin	705,057	July 22	3234	700	100	704
Railway-track structure	J. H. Pflieger	705,131	July 22	3396	737	100	736
Railway-track structure	E. B. Entwisle	709,975	Sept. 30	3658	809	100	2684
Railway-track structure	W. Goldie	707,840	Aug. 26	3598	812	100	1904
Railway-tracks. Ballasting	J. T. Hambay	707,226	Aug. 19	2345	535 536	100	1638
Railway-trains. Electric block system for	W. Schmitz	703,175	Sept. 2	330	79	100	2048
Railway-vehicle. Suspended	A. Brooker	708,896	Aug. 12	1742	388 389	100	1490
Railway-wagons. Controlling device for couplings of	R. F. C. Rambeaud	703,670	July 1	545	123	100	107
Railway-wagons, &c. Coupling for	F. Barson	709,198	Sept. 16	2381	518	100	2479
Railway-wagons, &c. Door for	J. D. Miller and R. Yates	704,354	July 8	1656	401	100	392
Railway-wagons in loading or unloading. Apparatus for controlling	J. E. Spagnoletti	704,948	July 15	2007	645 646	100	645
Railways. Automatic electrical signaling apparatus for	T. T. Chaloner	704,174	July 8	1520	326	100	320
Railways. Automatic stop-signal for	J. L. Ricketts	707,639	Aug. 26	3195	705 706	100	1613
Railways. Electrical safety alarm and signal mechanism for	C. R. Campbell	705,219	Aug. 5	418	90	100	1201
Railways. Operating electric	W. and G. W. Drummond	704,786	July 15	2694	569 570	100	565
Railways. Tablet picking up and depositing apparatus for use on single lines of	G. Cawley	708,468	Sept. 2	896	190	100	2150
Railways. Vehicle to be used in electric traction on	H. A. L. Barry	707,542	Aug. 26	3987	866	100	1779
Raising or lowering materials. Means for							
Rake: *See* Hay-rake. Stalk-rake. Push-rake.							
Rake	C. H. Trumpler	704,719	July 15	2504	541	100	539

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Rake	A. S. Elliott	706,397	Aug. 5	798	174	100	1275
Rake	L. Terry	708,989	Sept. 9	1737	402	100	2350
Rake and fork. Combination	A. Zwicker	705,008	July 15	2133	577	100	668
Rake and stacker. Combined	J. H. Kindsvater	704,345	July 8	1899	306 307	100	285
Ram. Hydraulic	W. L. Deming	706,727	Aug. 12	1894	310 311	100	1418
Range-finder	I. N. Lewis	706,766	Aug. 12	1489	230	100	1437
Range-finder	A. H. Marindin	707,856	Aug. 26	3628	817	100	1909
Rat-killer	J. T. Prior	704,576	July 15	2373	492	100	490
Rat-trap	P. Olaffsen	704,910	July 15	2909	634	100	636
Rat-trap	B. F. Short	710,080	Sept. 30	3989	887	100	2949
Ratchet mechanism	C. Joss	705,981	July 29	5038	1095	100	1077
Ratchet-tool	E. E. Brown and T. B. McCall	705,089	July 22	3180	687	100	694
Ratchet-wrench	J. E. Dickie	710,185	Sept. 30	4258	959	100	3016
Rattle. Rythmical	L. S. Burbank	705,819	July 29	4895	1048	100	1086
Razor	C. Freitag	707,333	Aug. 19	2349	523	100	1628
Razor-cleaner	E. F. Ogborn	706,997	Aug. 12	1902	426	100	1521
Razor-cleaner	H. Schweitzer	708,262	Sept. 2	491	113	100	2089
Razor. Safety	M. H. Standish	708,845	July 1	965	190	100	178
Receptacle. Non-refillable	H. W. Avery	706,712	Aug. 12	1367	305	100	1411
Reclining-chair. Adjustable	J. E. Hanger	704,459	July 8	2044	442 443	100	430
Reclining-chair. Folding	P. B. Watson	707,884	Aug. 26	3678	827 828	100	1921
Recorder: *See* Time-recorder.							
Recorder	C. J. Roach	704,925	July 15	2946	632	100	634
Recorder	E. A. Neubauer	706,682	Aug. 12	1320	292	100	1402
Recording apparatus for reciprocating bodies. Distance	E. A. Whitehead	708,440	Sept. 2	787	178 179	100	2140
Recording-machine	E. Larsen	703,935	July 1	1029	223 224	100	205
Recording or registering the maximum movement of any mechanism. Mechanism for	L. B. Atkinson	706,146	Aug. 5	262	59	100	1175
Reel: *See* Chain-reel. Drying-reel. Fishing-reel. Hose-reel. Rod-reel. Wire-reel.							
Reel	J. Shaw	708,293	Sept. 2	492	113	100	2081
Refining-engine	E. Churchill, Jr., and H. A. Hall	704,698	July 15	2457	530 531	100	529
Reflector or lamp-shade and collar. Combined	J. A. Carlstedt	704,711	July 15	2491	539	100	537
Refrigerating apparatus	J. C. Fox	703,646	July 1	494	111 112	100	97
Refrigerating apparatus	C. J. Coleman	709,814	Sept. 23	3516	793	100	2750
Refrigerating apparatus. Absorption	N. W. Condict	706,902	Aug. 12	1750	391	100	1492
Refrigerating apparatus. Still for absorption	N. W. Condict	706,901	Aug. 12	1749	390 391	100	1492
Refrigerating, heating, drying, impregnating, or otherwise treating goods. Apparatus for	J. McRae	705,279	July 22	3723	807 808 809	100	802
Refrigerating-machine	W. J. Woodcock	706,695	Aug. 12	1212	259	100	1377
Refrigerating plants. Ammonia-purifier for	J. Scheideman	704,392	July 8	1901	411	100	401
Refrigerating plants. Purifying refrigerants in circulation in	J. Scheideman	704,393	July 8	1902	411	100	401
Refrigerator	F. R. Beal	705,510	July 22	4192	912	100	896
Refrigerator	N. Bosmann	708,992	Sept. 16	1851	428	100	2392
Refrigerator	H. Aylmer	710,173	Sept. 30	4255	955	100	2913
Refrigerator-car	W. J. Hughes	706,061	Aug. 12	1981	288	100	1392
Refrigerator-car ice-tank	T. B. Kirby	704,197	July 8	1365	337 338	100	338
Refrigerator, freezer, and churn	S. Sweeney	704,768	July 15	2803	568	100	556
Refrigerator-pan alarm	P. Yon and L. Laprise	705,990	July 29	5128	1118	100	1096
Regenerative furnace	F. H. Treat	705,978	July 29	5106	1113	100	1093
Regenerator-burner	C. W. Weiss	710,180	Sept. 30	4154	936	100	2990
Register: *See* Autographic register. Barrel-register. Cash-register. Hot-air register. Hot-air wall-register. Hotel-register.							
Register	J. Alexander	707,751	Aug. 26	3405	768	100	1867
Register and alarm	L. E. Fugate	708,688	Sept. 9	1139	254	100	2338
Register, ventilator, &c	H. S. Hart	708,409	July 1	82	16	100	19
Regulator: *See* Air-pressure regulator. Damper-regulator. Dynamo-regulator. Electric regulator. Engine ignition-regulator. Fluid-pressure regulator. Gasolene-regulator. Power-transmission regulator. Pressure-regulator. Speed-regulator. Temperature-regulator. Voltage-regulator. Windmill-regulator.							
Regulator	H. B. P. Wrenn	708,289	Sept. 2	540	122 123	100	2091
Rein-guard	J. T. West	705,986	July 29	5121	1117	100	1096
Rein-holder	T. L. Thompson	709,585	Sept. 23	3084	686	100	2662
Rein-holder	W. P. Sampson	709,855	Sept. 23	3578	806	100	2764
Relay. Supervisory	W. Kaisling	705,098	July 22	3308	719	100	719
Relay. Vibratory-current	J. M. Fell	708,589	Sept. 9	971	220	100	2190
Releasing-hook for handling logs, &c	E. F. Marr	706,946	Aug. 5	467	99	100	1211
Reminder system. Perpetual	B. Piroah	704,100	July 8	1277	257	100	220
Rendering apparatus	D. Cameron	705,033	July 22	3125	698	100	695
Rendering apparatus	E. R. Edson	707,565	Aug. 26	3595	874	100	1761
Rendering apparatus	E. R. Edson	707,567	Aug. 26	3595	874	100	1762

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Rendering apparatus	C. Turner	708,845	Sept. 9	1570	358	100	2315
Resistance-coil and support therefor	H. P. Davis	710,143	Sept. 30	4177	941	100	2901
Resistance of resilient devices. Means for automatically regulating	P. C. Ewart	708,306	Aug. 5	612	132	100	1239
Respirator	L. M. A. Munts	708,948	July 1	1058	229	100	289
Respirator	G. L. Fowler	704,017	July 8	1198	259	100	253
Respirator	W. B. Chapman	705,907	July 29	4979	1084	100	1023
Retort-furnace	J. C. Dods	706,642	Aug. 12	1543	275	100	1929
Retort-mouthpiece clamp	E. Depetro	707,907	Aug. 26	3794	.....	100	959
Retting ramie, &c	S. Nielsen	705,608	July 29	4440	962	100	959
Reversing mechanism	R. R. Reck	705,961	July 29	5078	1107	100	1097
Reversing mechanism	O. Crosby	706,027	Aug. 5	47	9,10	100	1157
Reversing mechanism	F. M. Broun	706,719	Aug. 12	1377	307	100	1414
Reversing mechanism	C. W. James	706,827	Aug. 12	1604	350	100	1462
Reversing mechanism	J. D. Robertson	708,078	Sept. 2	146	36	100	2011
Revolver	J. D. Robertson	710,008	Sept. 30	3907	868	100	2944
Revolver ejector mechanism	J. H. Wesson	708,437	Sept. 2	781	177	100	2130
Revolver-lock	P. J. O'Brien	706,094	Aug. 5	174	33,36	100	1159
Revolving bar or counter	A. C. Eastwood	704,448	July 8	2014	437	100	494
Rheostat	J. A. Mosher	705,112	July 22	3354	727	100	728
Rheostat	W. H. Chapman	705,561	July 29	4361	945	100	944
Rheostat	H. P. Ball	707,194	Aug. 19	2295	511	100	1621
Rheostat or heater. Electric	H. W. Leonard	707,344	Aug. 19	2366	521	100	1637
Rheostats, electric heaters, &c. Resistance for	J. H. Whittington	707,479	Aug. 19	2407	535	100	1738
Ribbon and stock supporter	J. B. Cornwall	707,311	Aug. 19	2318	519	100	1627
Rice-hulling machine	R. W. Welch	706,985	July 29	5119	1116	100	1096
Rice, &c. Machine for cleaning	E. Huber	706,061	Aug. 5	120	25	100	1142
Riddle	J. H. Carl	705,736	July 29	4688	1014	100	1008
Rifle							
Ring: *See* Finger-ring. Key-ring. Packing-ring. Piston-ring. Separable ring.							
Ring	F. R. Stafford	708,493	July 1	907	49	100	44
Rivet heating and distributing system	V. R. Browning	706,155	Aug. 5	308	64,65	100	1179
Rivet-setting-machine guide-pocket	E. Draper	709,008	Sept. 16	1983	453	100	2267
Rivet-setting machine. Tubular	T. S. Bennett	709,196	Sept. 16	2286	519	100	2461
Riveter. Pneumatic	J. Keller	710,197	Sept. 30	4276	968	100	2923
Riveting-machine	G. E. Martin	709,167	Sept. 16	2229	506	100	2466
Riveting-tool. Pneumatic	J. W. Birkenstock and R. W. Funk	708,758	July 1	706	156 / 157	100	141
Road-breaking machine	I. Wrobel	705,889	July 29	4950	1077	100	1051
Road-cleaner, elevator, and dirt-cart. Combined	M. Stobbs and J. S. Thompson	705,478	July 22	4122	896	100	884
Road-gate	A. French	709,214	Sept. 16	2317	526	100	2488
Road-roller	L. B. McAlpine	710,165	Sept. 30	4221	952	100	2910
Road-roller. Steam	T. Wright	708,882	July 1	982	203 / 204	100	187
Roaster: *See* Coffee-roaster.							
Roaster	J. A. Ogden	708,798	Sept. 9	1821	401	100	2261
Rock-boring machine	J. Brejcha and E. Schulte	708,890	July 1	949	207	100	191
Rock-cutting apparatus	F. Lobnitz	707,128	Aug. 19	2149	468	100	1560
Rock-drill	R. Avery	709,191	Sept. 16	2275	517	100	2478
Rock-drill drill-holding chuck-bolt	O. H. Bossert	704,508	July 15	2138	461	100	402
Rock-drill. Percussive	Z. W. Daw	705,394	Aug. 5	791	173	100	1274
Rock-drilling engine	J. G. Leyner	709,022	Sept. 16	1984	444 / 445	100	2406
Rocking-chair. Adjustable	C. A. Bergstrom	710,085	Sept. 30	3954	892	100	2955
Rod: *See* Folding rod.							
Rod-coupling	J. A. Fitzpatrick	709,400	Sept. 16	2295	505	100	2368
Rod coupling. Connecting	J. Horsley	708,985	July 1	1010	220	100	201
Rod-reel	B. H. Gedge	707,317	Aug. 19	2318	507	100	1667
Roll mechanism	C. H. Davis	708,999	Sept. 16	1978	432	100	2366
Roller: *See* Cigarette-roller. Land-roller. Road-roller. Shade-roller.							
Roller attachment. Elevating	A. H. Centner	705,905	July 29	4975	1092 / 1093	100	1057
Roller-brake	L. H. Bill	708,114	Sept. 2	211	50	100	2095
Roller-mill	W. A. Dunn	709,093	Sept. 16	2056	471	100	2453
Roller-mill and cutter	W. A. Dunn	709,094	Sept. 16	2062	473	100	2434
Rolling apparatus. Sheet-metal	F. O. Stromborg	708,690	July 1	627	101	100	86
Rolling car-wheels. Machine for	H. V. Loss	708,674	Aug. 12	1509	289	100	1599
Rolling flat sheet metal. Apparatus for	T. Whitehouse	705,667	July 29	4948	1076	100	1061
Rolling-hoop	E. P. Hinman	708,143	Sept. 2	270	64	100	2087
Rolling metal I-beams, channel-beams, &c. Machine for	W. A. Dunn	709,088	Sept. 16	2050	471 / 472	100	2434
Rolling metal I-beams, channel-beams, &c. Machine for	W. A. Dunn	709,095	Sept. 16	2068	473 / 474	100	2434
Rolling metal tubes or other hollow or solid bodies	A. E. Beck	709,956	Sept. 30	3818	859	100	2936
Rolling-mill	P. Girin	706,548	Aug. 12	1076	237 / 238	100	1548
Rolling-mill	V. E. Edwards	709,972	Sept. 30	3808	857 / 858	100	2933
Rolling mill. Rod	C. A. Nighman	705,998	Aug. 19	1894	434 / 435	100	1580
Rolling-pin	B. Djup	705,654	July 29	4581	982	100	975
Rolling rods	C. A. Nighman	706,904	Aug. 12	1808	435	100	1591
Rolling sheet-metal cylinders. Machine for	M. M. Parker	710,117	Sept. 30	4117	929 / 930	100	2939
Roof, ceiling, and floor construction	B. McDougall	707,980	Aug. 19	2384	534	100	1640
Roof or structure. Glazed	E. Van Noorden	705,491	July 22	4155	904	100	869
Roofing. Cement	H. Brock	708,807	Sept. 2	576	130	100	2098
Roofing compound	F. A. Mitchell	707,710	Aug. 26	3698	.....	100	1644

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Rope-grip for snatfing	J. H. Wallace	704,282	July 8	1718	373 / 374	100	260
Rotary and folding chair	J. A. Wilkinson	709,286	Sept. 16	2461	555	100	2518
Rotary apparatus or plow for treatment of ground	A. Castelin	704,857	July 15	2776	600 / 601	100	595
Rotary cutter	J. Ettinger	704,260	July 15	2042	658	100	650
Rotary cutters. Manufacturing	B. Jansen	705,280	July 1	1021	.....	100	208
Rotary drier	L. Grill	709,704	Sept. 23	3287	737	100	2718
Rotary engine	C. Tuckfield	708,508	July 1	221	52	100	46
Rotary engine	C. Tuckfield	708,679	July 1	566	126 / 127	100	112
Rotary engine	A. T. Stimson	704,260	July 8	1706	373 / 374	100	260
Rotary engine	H. E. Hodgson	704,627	July 15	2365	514	100	509
Rotary engine	H. E. Hodgson	704,628	July 15	2369	514	100	510
Rotary engine	F. A. Pallé	704,913	July 15	2917	625	100	598
Rotary engine	W. D. Williams	705,004	July 15	3126	674	100	666
Rotary engine	C. O. Morley	705,274	July 22	3716	805 / 806	100	800
Rotary engine	G. Cassady	705,390	July 22	3951	856	100	848
Rotary engine	J. E. Cary	705,544	July 29	4501	977	100	971
Rotary engine	F. G. Grove	705,835	July 29	4851	1052	100	1042
Rotary engine	W. J. Mason	706,077	Aug. 5	147	31	100	1147
Rotary engine	A. P. Charles	706,158	Aug. 5	310	65, 66	100	1180
Rotary engine	W. Alsop	706,372	Aug. 5	738	160	100	1264
Rotary engine	G. E. Woodard	706,485	Aug. 5	967	212	100	1312
Rotary engine	J. N. Edwards	706,731	Aug. 12	1401	303 / 313	100	1419
Rotary engine	J. P. Pollard	707,003	Aug. 12	1911	498	100	1523
Rotary engine	W. F. Stanley	707,174	Aug. 19	2253	503 / 504	100	1612
Rotary engine	A. Dahlén	708,129	Sept. 2	243	57, 58	100	2092
Rotary engine	A. C. Eek and A. F. Cederquist	708,328	Sept. 2	611	129 / 130	100	2106
Rotary engine	E. L. Sill	708,414	Sept. 2	744	167	100	2132
Rotary engine	E. L. Sill	708,415	Sept. 2	745	167 / 168	100	2132
Rotary engine	M. M. Lockerby	708,566	Sept. 9	1011	229	100	2197
Rotary engine	G. Speice	708,742	Sept. 9	1343	306	100	2257
Rotary engine	P. Studer and P. Rupp	708,987	Sept. 9	1732	401	100	2349
Rotary engine	T. D., J. C., and H. A. Prescott	709,242	Sept. 16	2275	538 / 539	100	2499
Rotary engine	S. J. Webb	709,628	Sept. 23	3145	700 / 701	100	2574
Rotary engine	B. W. Fellows	709,708	Sept. 23	3283	735 / 736	100	2702
Rotary engine	O. C. Jones	709,778	Sept. 23	3438	772 / 773	100	2732
Rotary engine	W. Jamieson	709,908	Sept. 30	3711	837	100	2903
Rotary engine	T. J. Bush	709,961	Sept. 30	3823	860	100	2927
Rotary engine	W. F. Evans	710,261	Sept. 30	4205	989	100	2949
Rotary engine or motor	N. J. Fortunesco and A. Georges	708,879	Sept. 9	1657	377 / 93	100	2329
Rotary mixer for concrete, &c	W. J. Judd	708,494	July 1	104	23 / 24	100	33
Rotary motor	T. U. Gray	704,456	July 8	2032	441	100	429
Rotary motor	D. F. Smith	704,943	July 15	2999	643 / 643	100	643
Rotary motor	C. J. Skowen	705,457	July 22	4091	889 / 890	100	878
Rotary motor	R. C. Sayer	706,116	Aug. 5	209	43, 44	100	1159
Rotary motor	C. A. and O. W. Hult	706,181	Aug. 5	351	75, 76	100	1188
Rotary motor	A. L. Becht	709,254	Sept. 16	2400	544	100	2506
Rotary motor	P. A. Dupont	706,780	Aug. 12	1399	312	100	1418
Rotary motor. Two-cycle	G. W. Mudd	709,106	Sept. 16	2107	483	100	2444
Rotary shears	J. T. Hays and J. W. Wilson	705,079	July 22	3276	710	100	718
Rotary steam-engine	I. W. Wepplo	708,694	Sept. 9	1330	281 / 282	100	2343
Rotary steam-engine	J. W. K. Hodge	709,288	Sept. 16	2529	569 / 570	100	2534
Roundabout	N. F. Felton	708,540	Sept. 9	975	220	100	2190
Roundabout	M. J. Doner	708,872	Sept. 9	1685	373	100	2337
Roving-guide	F. Stevens	707,874	Aug. 26	3659	823	100	1915
Rowing appliance	W. B. Goodwin	710,147	Sept. 30	4185	943	100	2908
Rubber-coated materials. Preparing and treating	J. Minder	708,883	Sept. 9	1594	.....	100	2365
Rubber-dam holder	G. W. Todd	710,306	Sept. 30	4408	1008	100	2954
Rubber. Producing a composition of matter to be used as a substitute for	O. A. Baller	708,003	Sept. 2	7	.....	100	1992
Rubber. Treatment of crude	J. Thame	707,654	Aug. 26	3192	.....	100	1825
Ruffling and sewing machine	R. G. Woodward	706,484	Aug. 5	965	211	100	1311
Rule	B. M. Gerardin	704,313	July 8	1758	385	100	371
Rule cutting and bending machine	J. Welty	707,744	Aug. 26	3374	759	100	1851
Rule. Drafting	M. C. Kelley	709,776	Sept. 23	3440	774	100	2734
Rule. Measuring	A. Latshaw	706,943	Aug. 5	498	98	100	1210
Rule, square, compasses, and comb. Combined pocket	C. P. Hartley	708,355	Sept. 2	650	147	100	2118
Ruler. Parallel	J. Sternfeld	705,473	July 22	4115	894	100	883
Ruling device	B. H. Joy	706,066	Aug. 5	126	26	100	1143
Ruling machine. Paper	W. H. Jordan	709,285	Sept. 16	2553	580 / 581	100	2491
Sad-iron	E. Blechmann	704,775	July 15	2612	595	100	570
Sad-iron	G. Finn	705,573	July 29	4380	930	100	948
Sad-iron handle	W. B. Fenn	708,812	Aug. 12	1577	353 / 354	100	1456
Sad-iron handle	W. B. Fenn	708,813	Aug. 12	1578	354	100	1456
Sad-iron. Self-heating	W. G. Burns	705,304	July 22	3553	768	100	768

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Saddle	J. R. and C. B. Hastings	709,904	Sept. 30	3707	825	100	2808
Saddle. Harness	J. Bromberek	704,205	July 15	2187	462 / 463	100	468
Saddle. Harness track	L. B. Allen	706,514	Sept. 9	981	211	100	2148
Saddle-pad. Pneumatic	H. R. Rensman	709,280	Sept. 30	3757	849	100	2812
Safe	W. E. Arnold	706,977	Aug. 12	1608	380	100	1481
Safe. Burglar-proof	D. Neale	707,344	Aug. 19	2568	580	100	1678
Safe-door lock	H. H. Tislow	707,655	Aug. 26	3193	716	100	1885
Safe or vault door	H. D. Hibbard	708,041	Sept. 2	86	20	100	1999
Safe. Screw-door	J. B. Boos	708,691	Sept. 16	1859	427	100	2398
Safety-box	M. Klein	704,549	July 15	2230	483	100	482
Safety device	A. Sundh	704,998	July 8	1925	417	100	405
Safety-elevator	P. H. Burgart	710,088	Sept. 30	3957	898	100	2855
Safety-pin	E. McConnell	708,965	July 1	1099	237	100	218
Safety-pin	W. F. Baldwin	709,860	Sept. 30	3588	808	100	2779
Salt-making apparatus	J. S. Clarke	705,881	July 22	2953	856 / 857	100	849
Sample-case. Folding	C. S. Morris	708,489	Sept. 2	885	200	100	2161
Sand and producing same. Artificial	J. A. Shinn	707,170	Aug. 19	2241	501	100	1610
Sand-blast apparatus	A. G. Warren	707,527	Aug. 19	2899	656	100	1747
Sand-blast apparatus	T. A. Sippel	709,181	Sept. 16	2258	512	100	2474
Sand-blast-controlling apparatus	J. Shaver	709,448	Sept. 16	2788	627	100	2538
Sand-blast machine	F. J. Heideger	708,880	Sept. 9	1638	377	100	2299
Sander	S. T. Simmons and W. T. Moore	708,929	Sept. 9	1723	398	100	2347
Sandpapering-machine	C. H. Driver	704,785	July 15	2031	460	100	564
Sandpapering-machine	J. A. Halidea	705,222	July 22	2627	736	100	794
Sash adjuster and lock	F. W. G. Boettcher	708,517	Sept. 9	943	218	100	2184
Sash-balance	J. Barrow	706,008	Aug. 5	10	3	100	1118
Sash-balance connection	A. Weingaertner	704,225	July 8	1607	348	100	335
Sash-fastener	A. Brauer	704,433	July 8	1980	431	100	417
Sash-fastener	W. Rundell	704,580	July 15	2278	494	100	492
Sash-fastener	J. C. Lodor	705,260	July 22	2604	801	100	796
Sash-fastener	W. H. Nelson	705,282	July 22	2728	810	100	808
Sash-fastener	J. E. Gibbs	709,148	Sept. 16	2179	499	100	2460
Sash-fastener	E. A. Sacket	706,456	Aug. 5	920	199	100	1202
Sash-fastener and shade-support. Combined	W. M. Reely	708,929	July 1	889	185	100	166
Sash-holder	B. D. Berry	708,889	July 1	946	207	100	190
Sash-holder	H. A. Baker	708,634	July 1	467	106	100	98
Sash-lock	A. M. Southard	708,976	July 1	1117	249	100	221
Sash-lock	J. A. Espitallier	704,014	July 8	1180	258	100	262
Sash-lock	C. Stimpson	704,279	July 8	1705	372	100	358
Sash-lock	V. R. McBride	706,945	Aug. 12	1643	367	100	1471
Sash-lock	N. M. Hutton	706,947	Aug. 12	1818	407	100	1505
Sash-lock	E. A. Patterson	707,940	Aug. 26	3781	848	100	1941
Sash-lock	E. P. Armstrong	708,911	Sept. 9	1097	246	100	2214
Sash lock	J. T. Pethick	708,919	Sept. 9	1708	394	100	2344
Sash-lock	W. Bennett	709,591	Sept. 23	3098	689	100	2664
Sash-lock	D. Forbes	710,189	Sept. 30	4261	960 / 961	100	2919
Sash lock and lift	R. H. Price	708,465	July 1	165	38	100	85
Sash lock and lift	C. W. Robison	708,406	Sept. 2	733	165	100	2130
Sash-weight	J. D. Ansley	705,992	July 29	5131	1119	100	1099
Sash-weight	G. A. Beckwith and C. L. Lamphere	707,197	Aug. 19	2295	513	100	1623
Sash-weights. Flask for making seamless	A. S. Hodges	709,768	Sept. 23	3481	769	100	2730
Sash. Window	E. Héroux	707,105	Aug. 19	2118	473	100	1584
Sashes. Automatic releasing device for window	C. Rupp	709,900	Sept. 23	3487	786	100	2743
Saw	R. E. Martin	704,898	July 15	2241	515	100	509
Saw	J. Tutterrow	708,278	Sept. 2	516	117	100	2088
Saw	W. G. Anderson	709,857	Sept. 30	3585	808	100	2779
Saw attachment. Gang	J. E. Duchanois	704,767	July 15	2085	570	100	565
Saw-clamp	A. J. Jaeger	705,920	July 29	5085	1098	100	1077
Saw. Double-acting	G. R. Peart	706,447	Aug. 5	908	196	100	1299
Saw-filing device	A. J. Beck	703,909	July 29	4967	1081	100	1065
Saw-frame. Butcher's	D. S. Cole	704,517	July 15	2167	469	100	470
Saw log-carriage offset	S. Erb	709,890	Sept. 30	3664	830 / 831	100	2797
Sawmill-carriage steam-feed	E. E. Thomas	706,508	Sept. 9	1066	242	100	2306
Sawmill-carriages. Offset mechanism for	J. J. Galway	706,311	Aug. 5	690	136	100	1241
Sawmill-dog	D. L. Cole	705,089	July 22	3196	690	100	697
Sawmill-feed	A. C. Osborn	706,339	Aug. 5	671	146	100	1251
Sawmill-knee indicator	J. D. Beatty	710,226	Sept. 30	4356	979	100	2941
Sawmill log-reflector	W. T. S. Diggins	709,687	Sept. 23	3159	708 / 709	100	2675
Sawmill set-works	J. Walton	707,370	Aug. 19	2800	589	100	1696
Sawmill steam set-works	D. C. Prescott	708,889	Sept. 9	1587	368	100	2326
Saw. Power-driven	W. D. Lloyd	709,785	Sept. 23	3455	777	100	2736
Saw-repairing machine	W. Travis	705,730	July 29	4955	1009	100	1001
Saw-set	C. Morrill	703,440	July 1	131	30	100	29
Saw-set	D. W. Solomon	708,895	Aug. 12	1478	370	100	1477
Saw-set	H. E. Vick	709,100	Sept. 2	194	44	100	2019
Saw-set	A. M. Giles	709,788	Sept. 9	1395	317	100	2270
Saw-setting machine	J. E. Hillstrom	709,013	Sept. 16	1916	440	100	2408
Saw slabbing-machine. Twin	E. E. Thomas	707,184	Aug. 19	2259	507 / 508 / 509	100	1616
Saw-spacing device	F. Yost	708,450	Sept. 2	809	185	100	2145
Saw-tooth tool	T. Olsen	709,355	Sept. 16	2587	588	100	2546
Saw-tooth wrench	G. H. Shellaberger	705,454	July 22	4085	888 / 889	100	877
Saw wheel. Band	T. S. Wilkin	708,850	Sept. 9	1542	360	100	2317
Sawing crooked timber. Timber-drag for	P. M. Qvarnström	705,443	July 22	4068	881	100	878
Sawing-machine	P. P. Batte	708,170	July 8	1519	334	100	318
Sawing machine. Circular	W. Miller	703,770	Aug. 19	1500	333 / 335	100	1439
Sawing machine. Circular	H. J. Colburn	707,675	Aug. 26	3219	728 / 729	100	1820

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Scaffold-splicer	J. Lally	704,884	July 15	2226	511	100	605
Scale	A. De Vilbiss, Jr. (Reissue)	12,009	Sept. 9	1788	488	100	2269
Scale. Color	C. J. Jorgensen	709,288	Sept. 16	2541	579	100	2535
Scale. Computing	C. T. Tipton	704,268	July 15	2080	523	100	522
Scale for railway mileage-books. Computing	J. G. Goldfoot	705,046	Aug. 5	85	18, 19	100	1134
Scale. Platform	A. Doering	708,288	July 1	55	10	100	14
Scale platform-support	F. C. Osborn	710,009	Sept. 30	3900	879 / 880	100	2843
Scale. Price	L. T. Johnson	706,229	Aug. 5	456	97	100	1200
Scale. Price	H. B. Sherwood	706,460	Aug. 5	994	201	100	1306
Scale. Slide	J. S. Merritt	708,437	July 1	195	28	100	87
Scale. Weighing and price spring-balance	O. O. Ozias	708,238	Sept. 2	707	159	100	2125
Scales. Spring-balance	O. O. Ozias	708,239	Sept. 2	704	158	100	2124
Scales. Stock-rack for platform	C. B. Hurst	708,595	July 1	372	86	100	74
Scarf. Waterproof	W. O. Chisholm	709,138	Sept. 16	2160	495	100	2457
Scenery-brace	F. T. Lippincott	704,708	July 15	2077	535	100	554
Scoop and scraper	W. R. Lee	708,529	Aug. 12	1529	364	100	1467
Scoop. Measuring	L. M. Reed	704,961	July 15	2078	537	100	539
Scoring-machines. Adjustable receiving-table for	C. W. Hobbs	705,988	July 29	5139	1121	100	1101
Scraper and scoop. Wheeled	T. D. Radcliffe	707,977	Aug. 26	3546	864	100	1953
Scraper. Wheeled	W. S. Livengood	708,800	July 1	786	173	100	157
Scraper. Wheeled	T. D. Radcliffe	706,342	Aug. 5	680	147 / 148	100	1253
Scrapers. Safety-catch for wheeled earth	C. J. Whiting	706,706	Aug. 12	1354	301	100	1409
Screen: *See* Fire-screen. Window-screen. Well-tube sand-screen.							
Screen	G. W. Cross	704,004	July 8	1173	256	100	249
Screens, blinds, &c. Brace for	M. H. Stevens	710,022	Sept. 30	3951	868	100	2849
Screw-cap closure	H. J. S. Hall	707,230	Aug. 19	2535	568	100	1669
Screw-cutting die	C. J. Jackson	707,288	Aug. 19	2356	528	100	1635
Screw-cutting machine	D. Lake and E. W. Crellin	705,526	July 22	4995	928 / 929	100	917
Screw-driver	J. D. Campbell and J. K. Gunn	708,636	July 1	473	108	100	98
Screw-driver	G. E. Gay	705,917	July 29	5008	1089	100	1072
Screw-driver	J. F. Larson	709,608	Sept. 23	3116	694	100	2659
Screw-jack	C. P. Storrs	707,790	Aug. 26	3329	745	100	1853
Screw protector. Set	T. F. Kelley	705,093	July 22	3311	719	100	790
Screw. Spur-shore	W. S. Rendle	708,880	July 1	940	195	100	168
Sculpturing-machine	A. Bontempi	709,388	Sept. 16	2076	600 / 601	100	2564
Scuttle, bucket, &c	E. M. Lockwood, Jr	706,074	Aug. 5	144	30	100	1146
Scuttle-covers. Means for operating and locking	E. F. Johnson	706,880	Aug. 12	1611	362	100	1464
Scythe-snath-bending machine	G. M. Fenn	707,221	Aug. 19	2295	582 / 583	100	1631
Scythe-snath-fastening device	P. Forbes	705,814	Aug. 12	1580	354	100	1450
Seal	E. J. Brooks	709,086	Sept. 23	3150	702	100	2675
Seal. Bottle	E. D. Schmitt. (Reissue)	12,088	Sept. 16	2819	633	100	2496
Seal. Bottle	E. D. Schmitt. (Reissue)	12,089	Sept. 16	2821	633	100	2500
Seal. Car	J. N. Brunner	707,088	Aug. 19	2074	463	100	1574
Seal. Cording	E. J. Brooks	704,672	July 15	2028	534	100	533
Seal. Dress-pattern	J. Broach and G. W. Goodrich	709,464	Sept. 23	3037	667	100	2609
Seal-lock	C. J. Reynolds	704,107	July 8	1257	269	100	292
Seal-lock	J. P. Kernbaum	709,777	Sept. 23	3440	774	100	2734
Sealing attachment	C. C. Armstrong	704,993	July 15	2112	457	100	457
Sealing-cap for bottles. Sheet-metal	N. B. Abbott	704,167	July 8	1305	288	100	316
Sealing device. Bottle	G. A. Brooks	708,580	July 1	278	63	100	56
Sealing device. Vacuum fruit-jar	S. Adlam	708,191	Sept. 2	362	86	100	2055
Sealing machine. Bottle	W. S. Dorman	705,564	July 29	4965	946	100	945
Sealing machine. Bottle	H. T. Gay	707,816	Aug. 19	2616	566	100	1667
Sealing machine. Envelop	H. E. Gavitt	709,761	Sept. 23	3404	764 / 765	100	2720
Sealing of tins, &c. Hermetic	J. R. Croft	708,868	Sept. 9	1614	380	100	2295
Sealing-wax can. Tin	W. E. Moyer	704,075	July 8	1317	297	100	270
Seam or joint. Sheet-metal	J. W. Mathis	708,722	Sept. 9	1313	290	100	2260
Seam. Stitched	G. H. Dimond	708,467	Sept. 2	841	193	100	2152
Seat: *See* Adjustable seat. Car-seat. Cultivator-seat. Implement-seat. Water-closet seat. Window-seat.							
Secondary battery	J. B. Entz	704,789	July 15	2253	550	100	548
Secondary battery	E. G. Steinmetz	704,797	July 15	2201	563	100	558
Secondary battery	W. L. Silvey	709,611	Sept. 23	3196	696 / 697	100	2670
Sectional heater	J. G. Langdon	705,029	July 22	3227	723	100	723
Seed-cake trimmer	S. J. Ellis and C. Neilsen	709,760	Sept. 23	3408	764	100	2721
Seed-cleaner and grain-separator	B. F. Hatfield	709,765	Sept. 23	3417	768	100	2725
Seed-drill furrow opening and covering attachment	L. C. Sweet	710,378	Sept. 30	4329	1086	100	2989
Seed-gatherer	J. Pence	709,086	Sept. 16	1966	450	100	2418
Seed. Treating beet	A. R. Black	704,610	July 15	2225	505	100	501
Seeding-machine	E. M. Heylman	707,846	Aug. 26	3507	814	100	1906
Seeding-machine	F. E. Davis	709,473	Sept. 23	3054	641 / 642	100	2618
Seeding-machine	R. L. Rhea	710,119	Sept. 30	4193	980	100	2888
Seeding-machine	F. G. Colley	710,251	Sept. 30	4379	995	100	2945
Seeding-machine	J. S. Heath and E. Baseman	710,273	Sept. 30	4411	994	100	2952
Seeding-machine	C. D. Ehret	707,056	Aug. 12	3012	450	100	1545
Selective system. Automatic	G. H. Chimnock	707,550	Aug. 26	2980	670	100	1777
Self-healing material	A. C. Johnson	708,982	July 1	1023	221	100	204
Semaphore	J. N. Harper	704,288	July 8	1778	388	100	374
Semaphore-signal. Automatic electric	J. J. McGill	706,586	Aug. 12	1157	251 / 252	100	1261
Semaphore-signal. Automatic electromechanical	C. A. Kellogg	706,328	Aug. 5	644	140	100	1245
Separable ring							

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Separator: *See* Ammonia-separator. Bean-separator. Centrifugal separator. Cream-separator. Egg-separator. Gas, oil, and water separator. Grain-separator. Liquid-separator. Magnetic separator. Oil-separator. Steam and oil separator.							
Separator	F. Cutler	704,241	July 8	1632	253	100	341
Separator	G. M. Jackson	707,701	Aug. 26	3273	731	100	1841
Sewed articles. Covered seam for	C. McNeil	703,966	July 1	1100	257	100	218
Sewer-pipe connection	F. W. Carlson	705,298	Aug. 5	596	130	100	1225
Sewer-trap	J. Pratt	710,209	Sept. 30	4306	998	100	2269
Sewing and welt-beveling machine. Shoe-	J. B. Hadaway	704,457	July 8	2093	441	100	429
Sewing and welt-beveling machine. Shoe-	J. B. Hadaway	704,458	July 8	2093	442	100	429
Sewing edgings. Guide for	J. Davis	705,166	Aug. 5	332	68	100	1183
Sewing-machine	J. T. Hogan	710,150	Sept. 30	4193	944 945	100	2904
Sewing-machine attachment for overedge or blind stitching.	E. Donaldson	709,308	Sept. 16	2506	564 565	100	2588
Sewing-machine attachment-holder	F. Jacob, Jr	705,354	July 22	3913	845	100	840
Sewing-machine attachment-holder	H. P. Steward	705,472	July 22	4114	894	100	882
Sewing-machine automatic thread-feeder	J. L. Saillet	704,690	July 15	2454	530	100	588
Sewing-machine. Blind-stitch	C. A. Dearborn	705,895	July 22	3925	829	100	888
Sewing-machine-bobbin holder-case	A. Döring	708,886	Sept. 30	3679	829	100	2796
Sewing machine. Book-	F. Kugler	706,363	July 22	3927	850 851	100	843
Sewing-machine braiding attachment	L. Smith	709,418	Sept. 2	758	169	100	2132
Sewing machine. Button-	B. T. String	709,194	Aug. 5	222	47	100	1162
Sewing machine. Buttonhole-	F. T. Leilich	705,257	July 22	3679	795 796 797 798 799 800	100	795
Sewing machine. Buttonhole-	J. T. Hogan	710,149	Sept. 30	4188	943 944	100	2903
Sewing-machine. Chain-stitch	H. J. Hancock	707,227	Aug. 19	2348	526 527	100	1662
Sewing-machine cutting attachment	G. S. Hill	703,960	July 1	1080	283 284	100	215
Sewing machine. Eyelet-	D. Noble	705,253	Aug. 5	479	102 103	100	1213
Sewing machine. Fabric-	J. W. Hyatt	708,480	Sept. 2	869	196 197	100	2155
Sewing-machine feed mechanism	J. A. Batchelor and F. E. Hall	705,633	July 29	4488	974	100	968
Sewing-machine feeder	C. Förster	708,681	Sept. 9	1126	254	100	2221
Sewing-machine feeding mechanism	L. Onderdonk	703,811	July 1	810	178	100	162
Sewing-machine feeding mechanism	D. M. Smyth	704,137	July 8	1459	312 318	100	207
Sewing-machine feeding mechanism	C. A. Dearborn	705,896	July 22	3930	830 831	100	894
Sewing-machine feeding mechanism	C. H. Foster	705,577	July 29	4586	961	100	949
Sewing-machine feeding mechanism	L. Onderdonk and A. A. Merritt	705,604	July 29	4442	962 963	100	959
Sewing-machine feeding mechanism	L. Onderdonk	705,605	July 29	4444	963 964	100	960
Sewing-machine feeding mechanism	J. V. Eves	709,311	Sept. 16	2511	566	100	2589
Sewing-machine feeding mechanism. Shoe-	Z. T. French and W. C. Meyer	705,068	July 22	3943	702	100	706
Sewing-machine folder	W. L. Swift and E. Burk	705,278	Aug. 5	559	121	100	1226
Sewing-machine guide	A. Lennox	704,200	July 8	1560	336	100	329
Sewing-machine guide	F. W. Gerlach and F. W. Moore	705,663	July 29	4544	967	100	980
Sewing-machine hemming attachment	T. F. Dennison	706,223	Aug. 5	626	91	100	1208
Sewing-machine. Lock-stitch	K. S. Klogel	708,771	Sept. 9	1401	331	100	2270
Sewing machine. Lock-stitch shoe-	A. B. Fowler	707,094	Aug. 19	2099	467	100	1577
Sewing-machine needle	F. W. Merrick	708,941	July 1	1041	226	100	207
Sewing-machine needle-controlling mechanism	J. V. Eves	709,310	Sept. 16	2509	565 566	100	2589
Sewing-machine overseaming and blindstitching attachment.	W. D. Beam	704,991	July 8	1795	376	100	253
Sewing-machine overseaming attachment	J. C. Moore	708,894	Sept. 9	1525	349	100	2305
Sewing-machine presser-foot and needle-bar lifting mechanism combined.	E. G. O'Donnell	709,354	Sept. 16	2584	582 583	100	2545
Sewing-machine presser-foot-lifting mechanism	C. Theobald	708,940	Sept. 9	1788	402	100	2350
Sewing-machine presser-foot-locking mechanism	H. A. Klemm	706,068	Aug. 5	129	26	100	1143
Sewing-machine pull-off mechanism	J. L. Kieffer	708,670	Aug. 12	1969	396	100	1396
Sewing-machine ring-shuttle	H. Regenstein	704,923	July 15	2944	631	100	633
Sewing-machine rotary take-up	M. Hemleb	705,240	July 22	3645	789	100	788
Sewing-machine rotary take-up	P. Diehl and M. Hemleb	705,887	July 22	3888	831	100	895
Sewing-machine rotary take-up device	P. Diehl and M. Hemleb	705,221	July 22	3639	777 778	100	777
Sewing-machine ruffler	P. Diehl	705,517	July 22	4211	915	100	900
Sewing machine. Shoe-	Z. T. French and W. C. Meyer	705,053	July 22	3945	702 708	100	706
Sewing-machine shuttle	H. R. Tracy	704,406	July 8	1988	419	100	408
Sewing-machine stitch-forming mechanism	L. Onderdonk	703,812	July 1	812	179	100	163
Sewing-machine stitch-forming mechanism	L. Onderdonk	703,813	July 1	815	180	100	163
Sewing-machine stitch-forming mechanism	H. H. Fefel	705,569	July 29	4372	948	100	946
Sewing-machine table or cabinet head	J. Cuber and A. Hackenbroch	710,042	Sept. 30	3905	824	100	2267
Sewing-machine take-up	J. J. M. Chauvet and J. W. Coulter	704,297	July 8	1785	378	100	264
Sewing-machine take-up	F. W. Merrick	707,145	Aug. 19	2189	490 491	100	1508
Sewing-machine take-up and tension	A. Godfrey	706,045	Aug. 5	82	18	100	1133
Sewing-machine take-up device	P. Diehl	705,398	July 22	3841	831 832	100	826
Sewing-machine thread-controlling device	E. B. Allen	709,456	Sept. 23	2823	634	100	2607

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Sewing-machine treadle-power stand	G. M. Eames	704,594	July 15	2161	472	100	473
Sewing-machine tuck-creaser	H. P. Steward	705,471	July 22	4113	894	100	882
Sewing-machines. Purling device for overedge	J. G. Greene	705,220	July 22	3824	785	100	788
Shade adjustment	F. H. Knapp	707,240	Aug. 19	2363	530	100	1636
Shade and curtain-pole bracket. Window-	J. P. and T. W. Sweeney	708,505	Sept. 2	912	207	100	2105
Shade and curtain-pole holder. Adjustable window-	G. T. Ashton and J. F. Bainter	705,548	July 29	4341	939	100	939
Shade and fixture. Window	J. Eckert	703,773	July 1	731	162	100	147
Shade-bracket	F. Yahn	706,287	Aug. 5	574	124	100	1228
Shade-bracket. Adjustable	A. Hanson	708,226	Sept. 2	427	97	100	2095
Shade-bracket. Adjustable	L. A. Watts	708,281	Sept. 2	594	130	100	2095
Shade-bracket. Adjustable	W. H. Sattelberg	710,215	Sept. 30	4317	970	100	2892
Shade-carrier. Adjustable window-	A. W. Ellis	708,629	Sept. 9	1126	253	100	2221
Shade-fixture	E. L. A. Cureau	704,816	July 15	2712	586	100	580
Shade fixture. Window-	C. I. Wimmer	709,842	Sept. 23	3556	809	100	2759
Shade-hanger	M. H. Boyce	707,900	Aug. 26	3713	839	100	1997
Shade hanger. Window-	S. Blaustein	708,378	July 1	27	6	100	8
Shade hanger. Window-	J. B. Merkel	708,156	Sept. 2	291	70	100	2041
Shade-holder	T. B. Nowlin	706,098	Aug. 5	174	35	100	1152
Shade holder. Adjustable window-	F. D. Hewes and F. J. Bittner	707,418	Aug. 19	2095	469	100	1705
Shade holder. Window-	J. H. Donaldson	708,468	Sept. 2	841	192	100	2158
Shade-roller	O. M. Edwards	704,736	July 15	2547	550	100	547
Shade-roller	O. M. Edwards	708,701	Sept. 9	1954	290	100	2248
Shade-roller and curtain-pole holder. Combined	H. S. De Sollar	706,738	Aug. 12	1305	311	100	1418
Shade roller and fixture	G. C. Mathers	706,594	July 29	4428	959	100	956
Shade-roller bracket	W. Clowse and O. M. Stevens	709,964	Sept. 30	3837	803	100	2820
Shade-roller-hanging apparatus	J. Stonebraker	708,090	Sept. 2	153	39	100	2115
Shade-roller roller-bearing support	J. Renner	708,736	Sept. 9	1332	304	100	2264
Shade-support	E. A. Livet	707,433	Aug. 19	2731	618	100	1718
Shade support. Window-	W. K. Martin	704,894	July 15	2843	615 616	100	609
Shade support. Window-	F. R. Mease	705,595	July 29	4430	960	100	957
Shades and curtains. Roller-bracket for window	F. A. Giorgio	705,339	July 22	3898	840	100	834
Shades. Device for spring-actuated	E. T. Burrowes	705,031	July 22	3182	688	100	695
Shades. Means for sustaining and adjusting window-	A. Serafinski	710,079	Sept. 30	4026	910	100	2872
Shadowgraph	J. G. Hirsch	708,416	July 1	93	20	100	21
Shaft-coupling	I. Lehman	705,366	July 22	3983	852	100	844
Shaft-coupling	R. W. Scott	707,453	Aug. 19	2762	586	100	1719
Shaft-coupling. Flexible	G. C. Hicks, Jr	708,582	July 1	357	85	100	72
Shaft-coupling. Power-	O. Rudd	707,357	Aug. 19	2587	551	100	1692
Shaft cross-bar. Vehicle-	S. H. Hayden and H. D. Hathaway	704,460	July 8	2045	443	100	430
Shaft-mounting	H. McCornack	706,098	Aug. 5	164	34	100	1150
Shaft-shackle. Vehicle	S. R. Bailey	703,864	July 1	3	2	100	3
Shaft-shackle. Vehicle	S. R. Bailey	703,865	July 1	4	2	100	3
Shaft support. Vehicle-	I. D. Cady	708,320	Sept. 2	21	7	100	1987
Shafts. Device for hitching horses to	C. B. Johnson	706,550	Sept. 9	1003	227	100	2196
Shafts. Electromagnetic device for controlling the rotation of	P. V. Avril	710,311	Sept. 30	4476	1010	100	2965
Sharpener	C. F. Brown	707,088	Aug. 19	2073	462	100	1574
Sharpener. Harrow-disk	A. E. Durner	708,932	Sept. 9	1472	336	100	2295
Sharpener. Knife and pencil	L. Johnson	707,118	Aug. 19	2137	478	100	1588
Sharpener. Mower or reaper knife	S. McCay	707,616	Aug. 26	3091	696	100	1804
Sharpener. Shears	K. Roesler	709,648	Sept. 23	3188	712	100	2663
Sharpening-machine	F. A. Reichardt and H. Wilcox	704,106	July 8	1284	298 299	100	291
Shearing tool or clipper	J. K. Stewart	709,522	Sept. 23	2983	665	100	2642
Shears: *See* Grass-cutting Rotary shears. shears.							
Shears	W. Richard	705,444	July 22	4063	881	100	873
Shears	A. E. Wales	708,683	Sept. 9	1229	291	100	2242
Shears	S. N. Fortney	709,478	Sept. 23	2998	644	100	2682
Sheep-trail	J. Cherpaw and F. McGuire	705,999	July 8	1168	254	100	948
Sheet-delivering apparatus	A. Cowan	708,958	Sept. 9	1784	411 412 413	100	2358
Sheet-delivery mechanism	W. Scott	708,741	Sept. 9	1337	305 306	100	2265
Sheet-metal bailed can or vessel	B. H. Larkin	704,961	July 8	1672	364	100	350
Sheet-metal can	F. Tyson	709,496	Sept. 16	2743	616	100	2578
Sheet-metal pipe	F. L. Filson	710,269	Sept. 30	4396	990	100	2949
Sheet-metal pipe-elbows. Manufacturing	E. H. Smith	708,932	Sept. 9	1726	390	100	2348
Sheet-metal siding	E. G. Charlebois	705,207	July 22	3565	771	100	772
Sheet-metal-vessel spout-brace	C. L. Wagandt	704,408	July 8	1941	420	100	409
Sheet-metal vessels. Machine for fastening the bottoms in angular	W. Carljude	704,785	July 15	2538	548 549	100	545
Sheet. Reversible suspended flexible	W. E. Elam	708,304	July 1	58	11	100	14
Sheet-transferring mechanism	G. F. Read	707,721	Aug. 26	3306	740 741	100	1848
Shelf. Bracket-	R. R. Walker	704,154	July 8	1486	318	100	312
Shelving-bracket. Subsidiary	W. G. Croom	704,957	July 15	2683	651	100	649
Shelving. Metallic	W. H. Taylor	707,968	Aug. 26	3856	896	100	1955
Sheller: *See* Pea-sheller.							
Shield. Adhesive	W. J. Müller	706,250	Aug. 5	474	101	100	1212
Shield for personal wear	L. H. Catzen	708,817	Sept. 2	591	134	100	2101
Shift-key-actuating device	R. S. Cope	709,748	Sept. 23	2284	750	100	2721
Shingling-bracket	M. Choquette	703,894	July 1	967	211	100	198
Shingling carriage and gage	F. C. Leek	710,281	Sept. 30	4437	998	100	2956
Ship construction	R. T. Green	705,342	July 22	3830	824	100	825
Ship construction	A. B. Wolvin	706,708	Aug. 12	1857	408	100	1409
Ships. Mooring	W. M. Walters	704,155	July 8	1487	319	100	312
Shipping-box	J. T. Hicks	710,100	Sept. 30	4087	922	100	2891
Shirt	M. P. Magly	708,781	July 1	689	146	100	192
Shirt-front and braces. Combined	M. E. Ppore	708,307	Sept. 2	717	160 161	100	2126

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Shirt-vest	G. W. Sheckells	704,368	July 8	1917	415	100	404
Shock-loader	A. C. Houdyshell	708,045	Sept. 2	98	31	100	2000
Shoe-fastener	A. T. Jordan	705,356	July 22	3016	848	100	841
Shoe-fastener	M. S. Brown	705,817	July 29	4883	1047	100	1106
Shoe-fastener	J. F. Hawkes	707,694	Aug. 26	2262	730	100	1339
Shoe-fastener	H. B. Walker	708,686	July 1	570	139	100	115
Shoe form or last	C. B. Corwin	707,906	Aug. 26	3722	884	100	1689
Shoe-lining trimmer	M. Levy	707,708	Aug. 26	3676	728	100	1142
Shoe-polishing machine	A. Eppler, Jr	706,088	Aug. 5	70	15,16	100	1132
Shoe-turning machine	W. E. Ellis	704,451	July 8	2021	429	100	426
Shoe-upper fastener	J. T. Thompson	704,960	July 15	3088	664	100	658
Shoestring							
Shovel: See Power-shovel. Steam-shovel.							
Shovel attachment	W. T. Spillane	707,948	Aug. 26	3790	851	100	1943
Shovel-support	J. Baker	709,192	Sept. 16	2279	518	100	2479
Show-case	J. S. Lewis and D. F. Grow	704,056	July 8	1970	275	100	957
Show-case	W. Kinsy	709,331	Sept. 16	2545	572	100	2536
Show-case	S. Himmel	709,709	Sept. 23	3295	739	100	2705
Show-case	J. L. Crane	710,141	Sept. 30	4174	940	100	2900
Show-case or show-front	C. H. Goldman	708,912	July 1	990	216	100	198
Show-top	H. Hunter	709,985	Sept. 30	3871	872	100	2887
Show-window construction	E. E. Jones	708,592	July 1	380	88	100	75
Shredder snapping-rolls	O. Näther	708,727	Sept. 9	1880	300 / 301	100	2261
Shutter. Curtain-	K. Unterlechner	704,599	July 15	2310	501	100	496
Shutter-fastener	W. R. Briggs	708,619	Sept. 9	1108	249	100	2217
Shutter-fastener	G. Orth	704,755	July 15	2580	557	100	558
Shutter-setting mechanism. Automatic	J. G. Busch	705,217	Aug. 5	409	87,88	100	1300
Shutter. Window-	T. Scheltenbach	708,923	Sept. 9	1713	395	100	2345
Shuttle-check	J. T. Hicks	708,043	Sept. 2	90	20	100	2000
Sideboard. Combination-	A. Teichmann	705,717	July 29	4651	1008	100	1001
Sieve	A. C. Brantingham	705,027	July 22	3178	697	100	694
Sieve. Self-cleaning	I. H. Taylor	706,129	Aug. 5	236	49	100	1166
Sifter. Ash-	A. L. Rundell	708,357	Sept. 2	496	111	100	2079
Sifter. Ash-	E. Willcox	709,393	Sept. 16	2564	598	100	2562
Sifter. Ash-	H. Maynard	709,852	Sept. 23	3574	805	100	2726
Sifter. Cinder-	J. Lorich, Jr.	709,094	Sept. 16	1943	445	100	2408
Sign	J. M. Niesen	705,781	July 29	4751	1032	100	1023
Sign-board	T. E. Murray	705,507	July 29	4492	960	100	957
Sign. Electric	M. Norden	705,429	July 22	4068	875	100	887
Sign. Electric-light	C. C. Scott	704,122	July 8	1418	304	100	298
Sign. Illuminated display	J. W. Lieb, Jr., and J. H. Tyler	709,063	Sept. 16	1942	445	100	2408
Sign-illuminating device. Street-							
Signal: Door-signal. Railway-signal. Electric signal. Railway danger-signal. Elevator-signal. Semaphore-signal. Fluid-operated signal.							
Signal	R. Herman	704,800	July 15	2670	577 / 578	100	571
Signal and engine-driver recorder	J. P. de Braam	706,993	Sept. 16	1854	398	100	2396
Signal device	H. S. Balliet	705,549	July 29	4341	929	100	939
Signal mechanism	R. Herman	705,594	July 29	4396	955 / 956 / 176 / 177 / 178	100	951
Signal system. Telegraphically-operated	J. N. Newsom	703,810	July 1	799	177	100	161
Signaling apparatus	J. R. Mead	708,487	Sept. 2	890	199	100	2159
Signaling apparatus	H. A. Fessenden	710,390	Sept. 30	4498	1013	100	2999
Signaling apparatus. Pneumatic	J. H. Brady	708,687	July 1	470	107	100	93
Signaling apparatus. Train	W. D. Clopton	709,746	Sept. 23	3396	756	100	2721
Signaling by electromagnetic waves	R. A. Fessenden	706,745	Aug. 12	1443	319	100	1426
Signaling by electromagnetic waves	R. A. Fessenden	706,746	Aug. 12	1448	319	100	1427
Signaling by electromagnetic waves. Apparatus for	R. A. Fessenden	706,747	Aug. 12	1450	319	100	1428
Signaling-machine	H. L. McGowan	708,904	Sept. 9	1686	386	100	2340
Signaling. Semaphore-indicator for electric	H. Gulliver	708,957	July 1	1076	232	100	214
Signaling system	J. J. Ruddick	704,117	July 8	1406	302	100	296
Signaling system and apparatus used therein. Electric	R. G. Callum	706,218	Aug. 5	412	88, 89	100	1200
Signaling. Wireless	R. A. Fessenden	706,740	Aug. 12	1428	316	100	1424
Signaling. Wireless	R. A. Fessenden	706,742	Aug. 12	1433	317 / 318	100	1425
Signaling. Wireless	R. A. Fessenden	706,743	Aug. 12	1440	318	100	1426
Silk fiber. Intensifying the luster of	C. Stuart	705,715	July 29	4649	1007	100	1000
Silk. Intensifying the luster of	C. Stuart	709,594	Sept. 23	3267	665	100	2643
Silk-lustering machine	C. Stuart	705,716	July 29	4650	1007 / 1008	100	1000
Silo	G. W. Manlove	708,189	Aug. 5	366	79	100	1191
Silo	E. B. Lacey and A. J. Fuller	707,123	Aug. 19	2742	480	100	1589
Sinew-extractor	J. C. Scannell	706,858	Aug. 12	1657	370	100	1473
Singletree attachment	J. W. Magarvy	707,935	Aug. 26	3774	847	100	1940
Singletree-clip	C. J. Burch	708,897	Aug. 12	1745	389	100	1491
Siphon for dispensing liquids	A. Kleinfeldt	706,423	Aug. 5	849	186	100	1285
Skate. Automatic cycle or bicycle	E. E. Ries	706,788	Aug. 12	1524	338	100	1444
Skein-holder	L. M. Tressel	710,196	Sept. 30	4143	935	100	2993
Skelp-bending machine	G. G. and R. O. Blakey	708,015	Sept. 2	25	6	100	1995
Skins. Splitting	F. W. Moore	708,388	Sept. 2	647		100	2208
Skirt-elevator	C. W. L. Barber	709,450	Sept. 23	2923	654	100	2780
Skirt-holder	C. W. Baughman	709,862	Sept. 30	3591	810	100	2758
Skirt-holder or skirt-suspender	W. Mehlfeld	709,823	Sept. 23	3529	795	100	2753
Skirt-protector	J. Cathrein	707,387	Aug. 19	2643	597	100	1694
Skirt-retainer	M. C. Huffman	704,042	Aug. 5	1243	268	100	991
Skirt-supporter	L. H. Flory	706,178	Aug. 5	333	71	100	1185
Skirt-supporter	L. E. Hachereile	706,592	July 8	444	93	100	1207
Skylight	E. J. Hulse	707,419	Aug. 19	2707	613	100	1707
Slab or tile for building purposes	N. Poulson	707,685	Aug. 26	3131	704	100	1812

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Slabs with plain or ornamental surfaces of plastic cement or composition. Machinery for making	G. B. Hall	707,921	Aug. 26	3750	840 / 841	100	1986
Slack-adjuster	W. H. Sauvage	704,970	July 15	3061	658	100	654
Slack-adjuster	W. J. Keville and J. P. Carey	710,361	Sept. 30	4563	1029	100	2983
Slag-heating apparatus	J. A. Potter	709,112	Sept. 16	2118	486	100	2447
Slat-forming machine	G. W. Packer	705,434	July 22	4049	877 / 878	100	870
Sled	C. Miller	705,943	July 29	5045	1099	100	1089
Sleeper or tie. Metallic	J. I. Newburg	706,587	Aug. 12	1141	253	100	1362
Sleeve-holder	A. J. Barber	708,866	July 1	6	2	100	4
Sleigh	P. R. Gwyn	708,914	July 1	994	216	100	198
Sleigh-runner	W. N. Williams	708,510	July 1	242	56	100	49
Sleigh-runner. Detachable	W. W. Topliff	708,856	July 1	888	195	100	178
Slicer and cutter. Potato	L. L. Stevens	710,065	Sept. 30	4052	912 / 913	100	2874
Sliding bolt	C. E. Long	708,892	Sept. 9	1664	362	100	2334
Slugging and nailing machine jack	L. A. Casgrain	705,512	July 22	4199	913	100	898
Smelting-furnace	C. Laughlin	707,601	Aug. 26	3061	689	100	1797
Smelting-furnace	C. Laughlin	707,602	Aug. 26	3062	689	100	1797
Smelting-furnace. Electric	F. C. Weber	704,908	July 15	3108	669 / 670	100	663
Smoke and spark-preventing device	W. S. Hughes	707,332	Aug. 19	2548	574	100	1674
Smoke-consumer	W. T. Keogh	706,420	Aug. 5	844	185	100	1284
Smoke-consumer	L. E. Morgal	707,341	Aug. 19	2564	578	100	1677
Smoke-consumer	J. P. Kelly	708,302	Sept. 2	660	148 / 149	100	2115
Smoke-consumer	J. W. Johnson	708,644	Sept. 9	1162	264	100	2228
Smoke-consuming apparatus for steam-boiler or like furnaces	B. D. Brett	707,957	Aug. 26	3800	853 / 854	100	1945
Smoke-consuming appliance for furnaces	J. Alves	707,534	Aug. 26	2926	662	100	1770
Smoke-conveyer	W. L. Gale	708,085	Sept. 2	75	17	100	1997
Smoke-preventing furnace	H. F. Hayden	704,325	July 8	1782	389	100	374
Smoke-preventing furnace	H. F. Hayden	704,326	July 8	1785	390	100	375
Smoking-pipe	A. S. Speirs	707,268	Aug. 19	2414	541	100	1646
Smoking-pipe	C. P. Remore	708,404	Sept. 2	728	164	100	2129
Smoothing-iron	J. Jones	705,248	July 22	3057	791	100	790
Snow guard or fender	F. A. Peter	706,684	Aug. 12	1324	292	100	1402
Snow-plow	P. W. Martin	706,980	Aug. 12	1872	419	100	1515
Snow-plow. Cylinder rotary	H. H. Kryger	707,121	Aug. 19	2140	478 / 479	100	1588
Soap	H. C. Peffer	704,864	July 8	1872		100	705
Soap cutting and spreading machine	T. Gaynor, Jr	705,067	July 22	3255	704 / 705	100	709
Soap-holder	J. P. Eustis	708,877	Sept. 9	1633	375	100	2328
Soap-holder	A. E. Dusek	709,143	Sept. 16	2173	498	100	2459
Soap-holder. Pendent	R. H. Neamann	706,992	Aug. 12	1803	424	100	1520
Soap-press	J. J. Forster and R. L. Murdock	706,919	Aug. 12	1771	396 / 397	100	1496
Soap. Reservoir for dispensing liquid	E. Lee	708,652	Sept. 9	1171	267	100	2230
Socket-cover and globe-holder	J. F. Wride	708,880	July 1	980	203	100	187
Socket. Regulating-	L. F. Bogia, Jr	708,016	Sept. 2	26	6	100	1986
Socket-wrench. Adjustable	J. L. Paxson	708,816	July 1	819	181	100	164
Soda-water-dispensing fountain	M. H. Petigor	708,659	Sept. 9	1187	271	100	2233
Sodium cyanid. Making	F. Roessler	708,079	Sept. 2	147		100	2011
Sodium peroxid. Compressing	G. F. Jaubert	709,490	Sept. 23	2908		100	2626
Solar heater	P. G. Hubert	705,850	July 22	3903	845	100	889
Solder for soldering aluminium	J. C. Webster	707,470	Aug. 19	2788		100	1725
Solder to metal blanks. Machine for applying	J. Lee	705,937	July 29	5035	1097 / 1098	100	1078
Soldering-iron	G. Guntz	705,752	July 29	4714	1020	100	1012
Soldering-iron	J. C. Covert	707,212	Aug. 19	2330	519	100	1627
Soldering machine. Can-	J. G. Hodgson and J. C. Taliaferro	704,257	July 8	1665	362 / 363	100	349
Soldering machine. Can-	B. Coll	708,798	Sept. 9	1402	334 / 335 / 360	100	2296
Soldering machine for sheet-metal cans. Automatic side-seam-	J. G. Hodgson and J. C. Taliaferro	704,256	July 8	1658	361 / 362	100	347
Soles. Machine for making pieced	G. E. Warren	706,615	Aug. 12	1194	265	100	1378
Soot or ash pan	T. K. Stanton	705,468	July 22	4107	893	100	881
Sorting and addressing machine	S. Elliott	707,961	Aug. 26	3812	856 / 857 / 858	100	1947
Sound-modifier	N. C. Durand	707,909	Aug. 26	3726	835	100	1929
Sound-record of celluloid	A. N. Petit	708,828	Sept. 9	1537	351	100	2308
Sound-record reproducer	T. A. Edison	705,889	July 29	4838	1051	100	1039
Sound-records in celluloid. Producing	A. N. Petit	710,299	Sept. 30	4435		100	2962
Sound recording and reproducing apparatus. Horn for	G. Osten and W. P. Spalding	705,196	July 22	3382	732	100	734
Sound recording and reproducing device	E. R. Johnson	704,047	July 8	1250	270	100	263
Sound-reproducer	H. G. A. I. Wieder	708,849	Sept. 9	1581	360	100	2317
Soup material and making same	W. T. Scheele	707,646	Aug. 26	3155		100	1817
Spark and cinder arrester for locomotive smoke-stacks	L. C. Laurent	707,068	Aug. 12	2027	453	100	1548
Spark arresting and discharging device	E. J. Smith	705,461	July 22	4099	891	100	879
Spark-preventer for locomotive or other engines	D. Drummond	704,008	July 8	1178	257	100	250
Sparking-coil casing	C. F. Splitdorf	704,589	July 15	2298	498	100	494
Spectacle attachment	A. A. Laforest	704,714	July 15	2496	540	100	537
Spectacle-frame	F. Schick	710,015	Sept. 30	3923	845	100	2947
Spectacle or eyeglass case	C. M. Wells	705,502	July 22	4174	908	100	892
Spectacles	M. H. Cohen	709,874	Sept. 30	3634	819	100	2795
Spectacles or eyeglasses	W. S. Essick	709,891	Sept. 30	3696	831	100	2797
Speed-changing device	C. C. Tyler	710,325	Sept. 30	4336	975	100	2986
Speed device. Variable-	W. E. Crane	705,809	July 22	3567	779	100	778
Speed device. Variable-	B. M. W. Hanson and F. W. Gordon	706,049	Aug. 5	92	19, 20	100	1135

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page
Speed driving mechanism. Two-	F. L. Sanders	707,944	Aug. 26	3785	840	100	1942
Speed-gage	H. S. Credlebaugh	705,514	July 22	4208	913	100	608
Speed-indicating system	J. L. Hall	706,554	Aug. 12	1085	914	100	1350
Speed mechanism	J. S. and L. Heath and E. Baseman	710,371	Sept. 30	4409	240	100	2052
Speed mechanism. Differential-	H. R. Isler	704,645	July 15	2980	994	100	513
Speed mechanism. Variable-	R. K. Le Blond	706,186	Aug. 5	358	515	100	1189
Speed regulating and reversing device for power-transmitting mechanism.	F. H. Bates	704,430	July 8	1974	516	100	415
Speed-regulator	J. E. Johnson	706,331	Aug. 5	641	77	100	1245
Speed-regulator	H. P. White	708,439	Sept. 2	786	140	100	2140
Speeds are exceeded by vehicles. Apparatus for indicating when certain predetermined	A. F. Poillevillain, (dit P. Villain)	707,254	Aug. 19	2300	178	100	1641
Spelling-manual	R. R. Riordon	707,800	Aug. 26	3514	535	100	1889
Spike-puller	N. F. Murphy	708,443	July 1	186	736	100	29
Spindle: *See* Spinning-spindle. Vehicle-wheel spindle.					31		
Spinning and doubling fibrous substances. Machinery for	G. H. Milward	705,774	July 29	4749	1028	100	1020
Spinning and doubling machine flier	T. Watson	708,945	Sept. 9	1748	1029	100	2351
Spinning and twisting frame. Ring	A. Hitchon	706,414	Aug. 5	882	404	100	1282
Spinning apparatus. Yarn-	J. Booth	705,733	July 29	4678	181	100	1005
Spinning apparatus. Yarn-	G. O. Draper	707,215	Aug. 19	2326	182	100	1629
Spinning-band	G. M. Beadle	708,988	Sept. 16	1853	1012	100	2301
Spinning-head	F. A. Breeze	706,893	Aug. 12	1733	520	100	1488
Spinning-head	F. A. Breeze	708,458	Sept. 2	824	387	100	2148
Spinning-machine cleaner	S. Mock and C. D. Robinson	708,051	Sept. 2	116	28	100	2095
Spinning-machine shell-rolls	A. G. Boozer	709,298	Sept. 16	2467	559	100	2524
Spinning machine. Twine-	R. A. Myers	706,989	Aug. 12	1888	423	100	1519
Spinning or roving machine	W. V. Threlfall	707,462	Aug. 19	2773	628	100	1721
Spinning-ring-truing mechanism	C. F. Roper	709,512	Sept. 23	2955	629	100	2535
Spinning-spindle	C. E. Lovejoy	708,874	Sept. 2	674	660	100	2118
Spittoon. Fountain-	C. M. Freeman	707,912	Aug. 26	3730	152	100	1939
Splint-boxing machinery	A. B. Calkins	704,511	July 15	2148	836	100	399
Spoke for vehicle-wheels. Elastic steel	H. G. M. Howard	706,650	Aug. 12	1278	465	100	465
Spoke-setting machine	G. P. Yeakel	708,893	July 1	934	466	100	1392
Spoke-tightener	V. J. La Bauve	706,071	Aug. 5	134	467	100	187
Spool for sand-reels, &c	K. Chickering	704,435	July 8	1964	204	100	1144
Spool-stand	E. Buffum	710,095	Sept. 30	4076	37	100	417
Spraying apparatus	M. J. Caswell	705,645	July 29	4504	481	100	2879
Spring: *See* Bed-spring. Vehicle-seat spring.					432		
Spring-cushion	E. Denegre	709,989	Sept. 30	3848	919	100	2879
Spring-cushion	A. C. McCord	709,998	Sept. 30	3892	920	100	2879
Spring-cushion	A. C. McCord	709,999	Sept. 30	3895	977	100	972
Spring-cushion	C. P. Byrnes	704,818	July 15	2705	866	100	2832
Spring-cushioning device	T. S. Brown	707,756	Aug. 26	3414	878	100	2841
Spring key or cotter	A. Bender	708,373	July 1	17	878	100	2842
Spring-motor	W. G. Engle	710,260	Sept. 30	4394	585	100	578
Spring-structure support	J. Dicalre	709,142	Sept. 16	2172	4	100	6
Spring-wheel	A. R. Cole and P. J. Donnelly	708,128	Sept. 2	240	989	100	2948
Springs or coils. Apparatus for the continuous manufacture of spiral					497	100	2459
Springless hook. Self-locking	D. E. Barton	708,368	July 1	8	57	100	2081
Sprinkler: *See* Lawn-sprinkler.					2,3	100	4
Sprinkler-head	P. Huebner	709,907	Sept. 30	3711	837	100	2803
Sprocket-wheel	D. C. Jackling	708,288	Sept. 2	438	100	100	2071
Sputum-rebeptacle and holder. Aseptic	C. M. Langhorne	709,164	Sept. 16	2296	506	100	2498
Square	A. L. Lundgren	708,876	Sept. 2	679	153	100	2119
Square and level. Combination	H. H. Richardson	705,867	July 29	4966	1067	100	1053
Square and protractor. Combinaton	E. Oehrle	706,095	Aug. 5	175	36	100	1152
Square. Carpenter's folding	E. J. Morrell	704,074	July 8	1316	287	100	276
Square. Engineer's	W. Chesterman	707,301	Aug. 19	2487	558	100	1602
Square. Separable	C. L. F. and M. C. Hooker	705,403	July 22	3990	864	100	857
Square. Try-	P. E. Eilenberger	709,759	Sept. 23	3402	703	100	2725
Squeezer	A. Baumgarten	708,518	July 1	258	59	100	52
Stack former and protector	E. M. Stipp	706,610	Aug. 12	1184	262	100	1371
Stacker. Hay-	T. Cascaden, Jr.	706,299	Aug. 5	597	263	100	1236
Stacker. Pneumatic	E. Huber and J. W. Miller	705,407	July 22	3995	130	100	858
Stacker. Pneumatic	J. H. Elward	706,087	Aug. 5	67	865	100	1131
Stacker. Pneumatic	J. H. Elward. (Reissue)	12,023	Aug. 19	2909	15	100	1749
Stacker. Straw-	C. B. Hazard	703,414	July 1	90	658	100	21
Stacker. Straw-	J. B. Bartholomew	706,314	Aug. 5	408	659	100	1199
Stacker. Wind-	W. H. McWilliams	704,905	July 15	2861	19	100	613
Stage or turn-table. Pivotal	A. Fryers	704,696	July 15	2851	690	100	505
Staging-clamp	J. Lally	706,185	Aug. 5	356	511	100	1189
Staircase. Winding	H. Snider	705,794	July 29	4782	77	100	1189
Stair-pad	M. H. Marcus	707,606	Aug. 26	3077	1087	100	1028
Stair-pad	H. H. Sanderson	708,960	Sept. 2	499	1088	100	1028
Stairway. Moving	J. M. Dodge. (Reissue)	12,026	Sept. 30	4632	698	100	1801
Staking-machine	F. J. Perkins	704,096	July 8	1859	112	100	2090
Stalk-chopper	W. L. Adamson	710,232	Sept. 30	4347	1044 1045 1046 1047	100	2906
					294	100	283
					977	100	2989

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page
Stalk-cutter	M. D. Williams	705,188	July 22	3503	760	100	760
Stalk-rake	J. L. Clark	704,516	July 15	2165	469	100	470
Stall. Animal-	R. Smith	707,947	Aug. 26	3789	851	100	1943
Stall. Cattle-	G. E. Horr	704,643	July 15	2878	515	100	512
Stall for cattle. Folding	R. A. McLery, J. W. Wilbur, and A. S. Wooster.	706,772	Aug. 12	1503	334	100	1439
Stamp-affixer	E. A. Bienenstok	707,198	Aug. 19	2290	513	100	1623
Stamp-affixer	H. D. Long and J. Jackson	709,272	Sept. 16	2440	552	100	2514
Stamp-affixing machine	R. H. Strong	708,424	Sept. 2	762	171	100	2135
Stamp detaching and affixing machine	J. A. Chambliss	706,387	Aug. 5	774	169 170	100	1271
Stamp. Hand-	L. J. Hendershott	704,189	July 8	1550	354	100	335
Stamp. Hand-	J. Durand	704,302	July 8	1742	280	100	366
Stamp-mill mortar	W. A. Merralls	709,104	Sept. 16	2104	482	100	2444
Stamp-mill tappet	J. C. H. Vaught	708,980	July 1	568	127	100	112
Stamp-tappet	C. C. Rueger	707,259	Aug. 19	2297	537	100	1648
Stamp. Time-	N. Collins	705,909	July 29	4983	1085	100	1068
Stamp. Time-	C. F. Johnson	706,889	Sept. 9	1657	380 381	100	2383
Stamps, drop-hammers, &c. Safety device for	C. A. Thornton and C. W Whittemore.	708,005	Sept. 2	178	40, 41	100	2017
Stamps. Operating device for dating or other	H. De Wallace	710,144	Sept. 30	4178	941	100	2001
Stamps or labels upon envelops, cards, &c. Machine for affixing postage-	R. H. Strong	708,423	Sept. 2	760	171	100	2135
Stamping mill or machine. Metalliferous	J. G. Daw	707,678	Aug. 26	3224	723 724	100	1831
Stamping press. Relief-color-	R. F. Sproule	708,420	Sept. 2	756	170	100	2134
Stamping-presses, &c. Automatic feeding mechanism for	G. P. Schmidt	705,308	July 22	3783	820 821	100	815
Stand: *See* Adjustable stand. Egg-stand. Bicycle-stand. Horn-stand. Camera-stand. Spool-stand. Drum-stand. Switch-stand.							
Staple forming and driving machine	G. W. Packer	705,433	July 22	4047	877	100	869
Starch. Making laundry	C. H. Tolhurst and A. G. Goldthwait.	707,985	Aug. 26	3861	867 868	100	1956
Starch material. Treating	A. P. Anderson	707,892	Aug. 26	3695	880	100	1924
Starch or other amylaceous substances. Manufacturing rice-	E. Leconte and J. Loiselet	704,340	July 8	1847	400	100	390
Starch-treating apparatus	C. H. Tolhurst and A. G. Goldthwait.	707,986	Aug. 26	3863	868	100	1957
Station-indicator	H. T. Smith and A. J. Tarrant	704,135	July 8	1456	312	100	306
Station-indicator	J. S. Anderson	709,293	Sept. 16	2475	557 558	100	2522
Station-indicator	A. Kuentz	709,912	Sept. 30	3722	839	100	2806
Stationery packing and display box	W. A. Pike	704,708	July 15	2485	536	100	535
Statuary or other ornamental structures. Forming	F. Peano	706,775	Aug. 12	1508	334	100	1440
Steam and oil separator	E. Friesdorf	704,022	July 8	1902	902	100	255
Steam-boiler	C. P. Altmann	703,862	July 1	1	1	100	3
Steam-boiler	J. P. Simmons	704,588	July 15	2291	497 498	100	494
Steam-boiler	G. D. Miller	704,753	July 15	2577	556 557	100	553
Steam-boiler	E. W. McCanna	705,779	July 29	4756	1080	100	1022
Steam-boiler	J. J. Hoppes	706,563	Aug. 12	1096	243	100	1353
Steam-boiler	J. Piatko	707,002	Aug. 12	1909	438	100	1523
Steam-boiler	H. A. Duc, Jr.	707,216	Aug. 19	2287	530	100	1629
Steam-boiler	J. A. Schlehr	708,407	Sept. 2	785	165	100	2130
Steam-boiler	C. Olson	709,082	Sept. 16	1959	448	100	2411
Steam-boiler. Vertical	W. Penman	708,720	Sept. 9	1322	301	100	2262
Steam-boiler. Water-tube	A. Mehlhorn	707,440	Aug. 19	2742	620 621	100	1714
Steam connection. Revolving	F. Murgatroyd	708,900	Sept. 9	1681	387	100	2339
Steam-engine	J. A. Jenney	706,320	Aug. 5	689	139	100	1244
Steam-engine	M. J. Verret and H. N. Samstag	709,062	Sept. 16	2014	480	100	2423
Steam-engine	A. P. Moresi and H. J. Bergeron	709,719	Sept. 23	3312	743 744	100	2708
Steam engine. Aero-	S. J. Corrigan	708,027	Sept. 2	46	11 12 13	100	1990
Steam-engine. Compound	J. Patten	707,716	Aug. 26	3297	738 739	100	1846
Steam-generating and water-heating boiler	F. Logan	705,682	July 29	4577	994	100	986
Steam-generator	W. Roussanoff	708,884	July 1	845	186 187	100	109
Steam-generator	O. D. Orvis	704,571	July 15	2264	490 491	100	488
Steam-generator	C. and A. Musker and W. G. Hay	704,680	July 15	2452	529	100	528
Steam-generator	J. C. Walker	704,722	July 15	2508	542 543	100	540
Steam-generator	J. L. Giroux	704,743	July 15	2564	553	100	550
Steam-generator	C. A. Kitts	705,533	July 22	4277	925	100	914
Steam-generator	W. A., Sr., and W. A. Kitts, Jr.	707,931	Aug. 26	3764	844	100	1936
Steam-generator	P. H. White	707,996	Aug. 26	3901	874	100	1963
Steam-generator	W. Norris and H. Spurrier	708,056	Sept. 2	124	29	100	2007
Steam-generator	P. Stoltz	709,371	Sept. 16	2644	598	100	2558
Steam-generator	E. de Porto-Riche	709,926	Sept. 30	3748	844 845 846	100	2811
Steam-generator	R. J. Barton	710,818	Sept. 30	4480	1011	100	2986
Steam-generator header. Sectional	J. H. Rosenthal	704,968	July 15	2068	657	100	658
Steam-generator of the locomotive type	H. Plowman	709,421	Sept. 16	2784	614	100	2577
Steam-generator or hot-water heater	W. H. Page	706,846	Aug. 12	1644	368	100	1471

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Steam-generator or water-heater	B. A. Geurink	709,006	Sept. 16	1895	434	100	2399
Steam-generator or water-heater	C. M. Raymond	709,042	Sept. 16	1976	451	100	2415
Steam-generators. Superheater for	H. Webster	708,433	Sept. 2	774	174	100	2139
Steam-heater. Low-pressure	F. Tudor	705,981	July 29	5111	1114	100	1095
Steam-motor	I. S. Davis	708,758	Sept. 9	1378	315 / 316	100	2275
Steam or vapor. Generating	E. C. Newcomb	704,908	July 15	2890	622 / 623	100	622
Steam or vapor generating apparatus	E. C. Newcomb	704,907	July 15	2862	621 / 622	100	613
Steam-plant purge-feeding apparatus	J. Angell	704,469	July 8	2059	446	100	432
Steam-shovel, &c	A. W. Robinson	708,590	Sept. 9	1051	239 / 240	100	2205
Steam. Superheating	H. Webster	709,655	Sept. 23	3197	714	100	2684
Steam-trap	W. H. Reynolds	706,781	Aug. 12	1590	338	100	1443
Steam-trap	J. Bonar	707,295	Aug. 19	2476	555 / 556	100	1659
Steam-trap	J. Campbell	708,996	Sept. 16	1873	431	100	2395
Steam-trap	J. Morehead	709,347	Sept. 16	2574	580 / 581	100	2543
Steel from oxid-of-iron ore. Producing	D. Reynolds	707,698	Aug. 26	3184	705	100	1818
Steel ingots for forging. Treatment of	C. T. Dudley	705,330	July 22	3845	.....	100	827
Steel. Manufacture of crucible	E. B. Clarke	708,543	July 1	298	.....	100	60
Steel. Manufacturing basic Bessemer	S. McDonald	706,069	Aug. 5	167	.....	100	1151
Steering and braking device	C. F. Weeber, Jr	704,158	July 8	1488	319	100	312
Steering apparatus. Ship's	M. E. Lowell	707,607	Aug. 26	3076	602	100	1801
Steering apparatus. Vessel	P. L. Ennor	708,332	Sept. 2	618	139	100	2107
Steering-gear	W. A. Crowdus	708,558	July 1	317	72	100	64
Steering-gear. Electrical	M. W. Day	710,045	Sept. 30	3970	895 / 896	100	2858
Steering machinery	A. B. Brown	707,382	Aug. 19	2692	594	100	1692
Steering mechanism	F. E. Allen and R. H. Danforth	705,862	July 29	4953	1078	100	1062
Stencil-frame	S. Elliott	708,626	Sept. 9	1125	253	100	2221
Stencils from which music-sheets are printed. Machine for forming	G. H. Davis	708,382	July 1	48	10	100	12
Stereoscope	H. E. Richmond	705,706	July 29	4629	1008	100	996
Stereotype. Asbestos	L. Elias	709,398	Sept. 16	2692	.....	100	2567
Stereotyping-matrix	J. E. Weigl	709,284	Sept. 16	2458	.....	100	2518
Sterilizing water, &c. Apparatus for	D. Grove	705,751	July 29	4713	1020	100	1012
Stethoscopic instrument	A. A. Knudson and F. H. Clark	705,934	July 29	5029	1096	100	1077
Stiff-finished woven fabric	A. McLean	708,907	Sept. 9	1690	389	100	2340
Stiffening-band	H. H. Taylor	708,623	July 1	445	102	100	87
Still. Ammonia	G. Stroh	710,221	Sept. 30	4325	972 / 973	100	2984
Still. Turpentine	J. T. Gilmer	709,315	Sept. 16	2518	567 / 568	100	2531
Stilt	D. McDonough	704,658	July 15	2404	520	100	518
Stirrup	C. W. Gillespie	704,184	July 8	1544	332	100	324
Stirrup-strap	L. P. Wellman	706,468	Aug. 5	941	205	100	1306
Stitch-ripper	F. L. Marshall	709,917	Sept. 30	3733	840	100	2808
Stitch-separating machine	J. B. Hadaway	708,573	July 1	347	79, 80	100	70
Stitch-separating machine	J. B. Hadaway	708,574	July 1	351	80, 81	100	70
Stitch-separating machine	J. B. Hadaway	708,575	July 1	356	81, 82	100	71
Stitching machine. Bar	F. T. Leilich	705,256	July 22	3671	793 / 794 / 795	100	798
Stitching machine. Wire	F. P. Rosback	706,660	Aug. 12	1333	296	100	1404
Stock and die	H. L. Manson and J. Kamphues	706,977	Aug. 12	1867	417	100	1514
Stock-tank	W. C. Wright	707,530	Aug. 19	2904	657	100	1748
Stocking. Elastic	W. F. Ware and W. R. Cartledge	707,659	Aug. 26	3198	717	100	1826
Stocking-supporter	E. H. Waterman	709,066	Sept. 16	2021	461	100	2424
Stoker. Mechanical	A. F. Nagle	708,450	July 1	147	33	100	32
Stoker. Mechanical	G. Howard and G. Gibbs	704,880	July 15	2820	610	100	608
Stoker. Mechanical	N. S. Arthur and J. S. Binnie	710,171	Sept. 30	4231	954 / 955	100	2912
Stone and forming articles therefrom. Making artificial	G. P. Chappell	708,640	July 1	485	.....	100	96
Stone. Artificial	V. Conti, G. de Geofroy, and G. le Gall du Tertre.	705,850	July 29	4514	.....	100	974
Stone. Artificial	F. Boas	707,898	Aug. 26	3708	.....	100	1926
Stone board. Artificial	A. McDougall	709,791	Sept. 23	3468	780	100	2739
Stone facing. Artificial	C. W. Stevens	705,156	July 22	3444	749	100	747
Stone facing for buildings. Artificial	T. Kelly and F. C. Sarazin	705,846	July 29	4869	1058	100	1046
Stone-handling apparatus	C. N. Owen	706,197	Aug. 5	378	81	100	1194
Stone. Mold for making cement	R. B. Coltrin	708,582	Sept. 9	561	218	100	2198
Stone. Molding artificial	F. Orlikowski	708,248	Sept. 2	465	106	100	2076
Stone-molding machine. Artificial	N. F. Palmer	708,452	July 1	149	34	100	32
Stone or ore crusher	D. C. Robinson	708,495	Sept. 2	894	202	100	2163
Stones, &c. Apparatus for separating	J. C. W. Stanley	707,173	Aug. 19	2351	503	100	1612
Stones. Molding-box for the manufacture of building-	E. Levi	709,495	Sept. 23	3914	650	100	2927
Stones or mortar. Composition for making	J. Loewenthal	707,129	Aug. 19	2151	.....	100	1591
Stool. Foldable	P. R. Anton	705,858	July 29	4955	1078	100	1063
Stop-box	R. McBee	704,656	July 15	2400	519	100	517
Stopper-fastener	J. A. Jones	705,675	July 29	4551	991	100	983
Storage battery	M. O. Smith	708,490	July 1	201	48	100	42
Storage system	J. R. Rector	706,451	Aug. 5	914	198	100	1300
Stove	E. J. Lahan	704,061	July 8	1256	271	100	264
Stove	W. Heuermann	705,928	July 29	5021	1094	100	1076
Stove	W. H. Null	708,589	Aug. 12	1147	254	100	1263
Stove	H. Hoefli	710,198	Sept. 30	4266	982	100	2920

Stopper:
See Bottle-stopper. Expansible stopper.

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Pages.
Stove. Cooking	R. Galbraith	706,750	Aug. 12	1460	321	100	1431
Stove. Cooking	W. N. Moore	708,062	Sept. 2	117	28	100	2066
Stove. Cooking or heating oil	M. L. Stone	708,508	Sept. 2	900	206	100	2166
Stove-door hinge	F. L. Sheppard	707,025	Aug. 12	1955	436	100	1532
Stove. Gas	H. Bonsor	708,982	July 8	1134	245	100	940
Stove. Gas	J. C. Forster	706,309	Aug. 5	616	134	100	1240
Stove. Gas	M. Griswold, Jr	710,053	Sept. 30	3987	899	100	2951
Stove. Gas-heating	G. R. Moon	710,162	Sept. 30	4212	949	100	2908
Stove-grate	T. Partridge, Jr	708,455	July 1	152	35	100	32
Stove. Heating	L. Howard	704,331	July 8	1798	392	100	376
Stove. Heating	J. L. Bangley	704,470	July 8	2061	447	100	433
Stove. Heating	C. Matthews	704,889	July 15	2835	618	100	607
Stove. Heating	W. Drengwitz	705,928	July 29	4837	1050	100	1089
Stove. Heating	H. R. Oney	706,097	Aug. 5	178	36	100	1153
Stove. Heating	L. W. Hemp	709,673	Sept. 23	3233	723	100	2692
Stove. Heating	L. W. Hemp	709,674	Sept. 23	3234	723	100	2693
Stove-leg. Extension	J. Barbee	706,377	Aug. 5	750	164	100	1257
Stove or range	G. A. Tuckfield	707,969	Aug. 26	3871	870	100	1958
Stovepipe	C. C. Halstead	708,702	July 1	608	135	100	120
Stovepipe	B. A. Williamson	706,507	July 22	4187	910	100	895
Stovepipe attachment	W. H. Etcheson and L. R. Witherell	706,734	Aug. 12	1405	314	100	1420
Stovepipe attachment	J. C. Hoyt	709,545	Sept. 23	3019	672	100	2648
Stovepipe-cleaner	B. C. Oblinger and A. H. C. Beatty	707,713	Aug. 26	3290	736	100	1845
Stovepipe-holder	J. S. Rhodes	705,964	July 29	5083	1109	100	1088
Stovepipe holder or collar	J. E. Faulkner	709,067	Sept. 16	2066	474	100	2435
Stovepipe-thimble	A. Staub	710,168	Sept. 30	4227	953	100	2911
Stovepipe-ventilator	F. E. Taft	709,525	Sept. 23	2980	666	100	2643
Stove. Portable	E. C. Leonard	707,243	Aug. 19	2367	531	100	1637
Stove. Summer cook	C. E. Cooke	709,876	Sept. 30	3627	820	100	2787
Stoves. Force-draft attachment for	S. J. Walker	707,188	Aug. 19	2280	510	100	1619
Stoves. Heat-reflector for	B. C. Oblinger and A. H. C. Beatty	706,996	Aug. 12	1901	426	100	1521
Strabismus. Device for the cure of	J. E. Stierle	709,058	Sept. 16	2007	457	100	2422
Strainer and ventilator. Combined milk	P. Weise	708,285	Sept. 2	584	121	100	2099
Strainer. Coffee-pot	E. J. Guenzel	708,544	Sept. 9	979	221	100	2191
Strainer. Sink	S. F. Williams	706,621	Aug. 12	1204	267	100	1375
Strap: *See* Metallic strap. Stirrup-strap. Picker-stick strap.							
Straw-carrier raddle	M. Heineke	705,528	July 22	4270	923	100	913
Street-cleaning machine	J. Théry	707,367	Aug. 19	2602	588	100	1695
Street-receiver	T. J. O'Brien	705,697	July 29	4610	1000	100	992
Street-sprinkling device. Automatic	T. D. Young	706,289	Aug. 5	576	125	100	1232
Stretcher	F. X. Aigner	706,371	Aug. 5	782	159	100	1264
Stretcher or cot. Folding	J. H. Koons	709,332	Sept. 16	2546	573	100	2537
Strong light body and producing same	J. E. Seeley	706,498	Aug. 5	988	218	100	1316
Stuffing-box for piston-rods	D. W. Dougan and F. C. Watson	706,536	Aug. 12	1057	232 / 233	100	1344
Submarine transportation system	A. Davidson	710,044	Sept. 30	3989	895	100	2857
Sucker-rod stub	I. Ralliston	705,443	July 22	4063	881	100	873
Suckers or drinking-tubes. Machine for making	L. H. Britton and H. W. Morrow	706,895	Aug. 12	1739	388	100	1499
Sugar. Apparatus for the manufacture of	J. A. Morrell	708,489	July 1	129	29, 30	100	28
Sugar-boiling	C. Steffen	708,496	July 1	212	50	100	45
Sugar. Converting wood into	A. Classen	707,903	Aug. 26	3717	.....	100	1928
Sugar from its solutions. Extracting	A. Wohl	707,889	Aug. 26	3666	.....	100	1922
Sugar-juices. Purifying	H. Gouthiere	704,087	July 8	1221	.....	100	258
Sugar-refining apparatus	J. Robin-Langlois	705,869	July 29	4911	1067	100	1054
Suit-hanger	D. B. Salmon and D. C. Mitchell	706,497	Aug. 5	987	217	100	1316
Sulfocyanids from coal-gas. Making	H. W. Smith, W. T. Gidden, and A. G. Salamon.	705,152	July 22	3437	747	100	745
Sulfur from sulfid ores. Eliminating the	A. Gutensohn	709,482	Sept. 23	2894	646	100	2623
Sulky	J. B. Tait	708,436	Sept. 2	766	172	100	2136
Summer-house	G. R. Lockwood	708,705	July 1	610	135	100	121
Superheater and steam-generator. Combined	R. Schulz	707,021	Aug. 12	1946	436 / 437	100	1530
Support. Adjustable	A. Fleming	706,228	Aug. 5	430	92	100	1206
Surgical appliance	P. H. T. Paulinetti	708,068	Sept. 2	126	30	100	2007
Surgical instrument	R. H. Simpson	709,367	Sept. 16	2638	592	100	2557
Surgical-instrument hinge	C. J. Filling and G. T. Barber	704,807	July 8	1579	341	100	331
Surveying and reconnaissance instrument	J. C. Sale	707,161	Aug. 19	2219	498	100	1604
Surveying instrument	T. T. H. Ferguson	709,313	Sept. 16	2514	567	100	2530
Suspended carrier	R. A. Bruce	706,521	Aug. 12	1682	227	100	1389
Suspender attachment	C. R. Harris	706,983	Aug. 12	1796	402	100	1501
Suspender-end loop	H. E. Barnett	710,092	Sept. 30	4072	918	100	2878
Suspenders	C. Bloomberg	708,981	July 8	1132	245	100	240
Suspenders	J. W. Burgett	705,805	July 22	3546	768	100	769
Suspenders	J. M. Sundean	706,387	Aug. 5	704	153	100	1258
Suspenders	C. O. Luce	708,154	Sept. 2	288	69	100	2041
Suspenders and trousers connection	R. T. Clarke	708,886	July 1	43	9	100	11
Suspenders and trousers connection	R. T. Clarke	705,648	July 29	4509	979	100	978
Suspenders. Cast-off connection for	E. T. Specht	705,691	July 29	4471	969	100	965
Suspenders or other garment-supporter	H. C. Hine	708,882	Sept. 9	1641	378	100	2330
Suspension-clamp	J. R. Fletcher	706,227	Aug. 5	437	92	100	1205
Suspension-hook	J. F. Kerr and A. Lauster	710,061	Sept. 30	3999	902	100	2864
Suture-clamp	H. Brown	709,302	Sept. 16	2684	602	100	2566
Sweetmeat-machine	W. L. White	709,382	Sept. 16	2662	597 / 598	100	2562
Swing	A. C. Jacobs	704,192	July 8	1553	335	100	326
Swing	J. Bany, Sr	705,014	July 22	3158	682	100	690
Swing	E. Lurch. (Reissue)	12,018	July 29	5149	1123	100	1102
Swing	W. C. Tuttle	709,981	Sept. 16	2451	554	100	2516
Swing. Lawn or house	O. R. Olson	709,110	Sept. 16	2114	484 / 485	100	2446
Swing. Portable chair	A. T. Dowden	704,523	July 15	2179	472	100	472

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Swinging gate	S. Hamilton	705,401	July 22	3987	863	100	856
Swinging gate	J. W. Reames and C. F. Heffington	707,256	Aug. 19	2898	535	100	1642
Switch: *See* Automatic switch. Charging-switch. Electric switch. Electric snap-switch. Electrical switch. Electrically-controlled switch. Electromagnetic switch. Push-button switch. Railway-switch. Telephone-switch. Telephone hook-switch. Tongue-switch. Tramway-switch. Trolley-track switch.							
Switch	S. J. Harris	708,917	July 1	999	217	100	199
Switch	G. H. Smith	708,266	Aug. 5	512	110	100	1219
Switch and lightning-arrester. Combined	W. J. Bell	708,980	July 8	1131	245	100	240
Switch-controlling apparatus. Fluid-pressure electric-	A. Sundh	708,478	Aug. 5	954	208	100	1308
Switch-lock. Automatic	J. E. Gillmor	709,629	Sept. 23	3155	708 / 704	100	3676
Switch motor. Reversing-	J. D. Ihlder	708,386	July 8	1801	398	100	378
Switch-operating device	F. S. Jones	707,929	Aug. 26	3761	844	100	1926
Switch-operating device	F. E. Quest	708,971	Sept. 9	1815	418 / 419	100	2364
Switch-operating device	J. and F. Stupar	709,168	Sept. 16	2364	514 / 515	100	2476
Switch-operating mechanism	G. L. Cooper	708,034	Aug. 5	36	8	100	1123
Switch safety appliance	S. J. Harris	708,918	July 1	1000	218	100	199
Switch-stand	J. J. Schrag	707,560	Aug. 19	2598	596	100	1683
Switch-stand	A. A. Strom	709,614	Sept. 23	3131	697 / 698	100	2671
Switch-stand attachment	H. F. Ong	704,368	July 8	1871	405	100	395
Switch-stand. Upright automatic	D. H. Foreman	707,066	Aug. 12	2085	454 / 455	100	1550
Switch-throwing device	T. J. Kent	706,668	Aug. 12	1294	285	100	1395
Switch-throwing device	U. F. Beeghly	709,134	Sept. 16	2157	496	100	2455
Switching apparatus	C. Michalke	704,302	July 8	1578	339	100	329
Synchronous motion. Means for producing and maintaining	H. A. Rowland	704,929	July 15	2970	637	100	637
Syringe	F. C. Gundlach and W. R. Ludewig	708,224	Sept. 2	425	97	100	2068
Syringe. Vaginal	N. C. E. Schwartz	708,615	July 1	424	99	100	84
Syringe. Vaginal	N. C. E. Schwartz	708,616	July 1	426	99	100	84
Tab-cutting machine	E. B. Stimpson	708,748	July 1	691	153	100	138
Table: *See* Extension-table. Folding table.							
Table	G. H. Bullock	705,903	July 29	4972	1068	100	1066
Table and ironing-board. Combination	P. Rothenbusch	709,176	Sept. 16	2242	510	100	2471
Table-fastener	J. Neumueller	709,561	Sept. 23	3090	685	100	2661
Table lock. Pedestal-extension-	E. Tyden	707,186	Aug. 19	2274	509	100	1618
Table-server	A. T. Hatch	705,227	July 22	3540	788	100	787
Table-spread and napkin-holder. Combined	C. M. Wales	705,496	July 22	4164	906	100	891
Table-spread support	D. C. Jordan	708,049	Sept. 2	99	23	100	2002
Tables, chairs, &c. Collapsible support or frame for	F. Mack	706,675	Aug. 12	1311	289 / 290	100	1400
Tablet. Manifolding-	B. F. Hoard	707,511	Aug. 19	2960	649	100	1740
Tack-machine form	F. A. Snell	706,268	Aug. 5	535	116	100	1224
Tack-puller	T. G. Bladen	705,554	July 29	4348	940	100	941
Tag	C. B. Fairchild	708,698	July 1	608	134	100	119
Tag-holder	W. S. Jacobs	705,762	July 29	4729	1023	100	1015
Tallings-elevator. Centrifugal	W. Peck	709,721	Sept. 23	3315	745	100	2709
Tailor's pressing-machine	J. Dziech	705,896	July 29	4955	1050	100	1089
Talking-machine. Coin-operated	B. G. Royal	708,268	Aug. 5	389	83	100	1197
Talking-machine horn	E. A. Heyl	708,810	Sept. 9	1491	341	100	2299
Talking-machines. Horn-supporting arm for	L. P. Valiquet	705,165	July 22	3458	753	100	749
Talley-sheet attachment for billing-platens	R. J. Fisher	705,522	July 22	4223	918	100	903
Tank: *See* Battery-tank. Gas-storage tank. Glass-tank. Stock-tank.							
Tank	E. N. Harmon	704,539	July 15	2214	479	100	479
Tank construction	E. D. Chester	709,303	Sept. 16	2496	562 / 563	100	2586
Tank or ice-chest	T. B. Rogers	706,455	Aug. 5	919	199	100	1301
Tanning	W. H. Philippi	708,396	Sept. 2	716		100	2126
Tap-holder. Reversing	H. Wharton	708,748	Sept. 9	1356	309	100	2270
Tape inserting and stitching mechanism	M. H. Powell	707,004	Aug. 12	1913	429	100	1523
Tape into edging. Machine for inserting	M. H. Powell	707,005	Aug. 12	1914	429	100	1524
Tape into edging. Machine for inserting	E. P. Hatch	707,061	Aug. 12	2083	452	100	1547
Tape into edgings. Machine for threading	D. Grotta	707,585	Aug. 26	3095	668	100	1791
Tape into edgings. Machine for threading	J. Davis	708,120	Sept. 2	245	58	100	2082
Taper-grinding device	W. Y. Allen	704,428	July 8	1969	428	100	414
Tapping and stud-setting device	C. G. Osteman and C. W. H. Blood	710,116	Sept. 30	4114	928 / 929	100	2897
Target	G. S. Goodale	704,631	July 15	2357	512	100	506
Target	J. L. McCullough	707,617	Aug. 26	3098	697	100	1804
Target apparatus	J. L. McCullough	708,345	Sept. 2	459	104 / 105	100	2075
Target. Signaling-	G. A. Wirt	708,189	Sept. 2	355	83	100	2054
Tea or coffee pot	F. A. Harrison	708,919	July 1	1002	218	100	200
Teaching apparatus. Music-	H. Woodson	708,688	Sept. 9	1239	284 / 285 / 662	100	2243
Teaching device. Arithmetic-	J. J. Terrazas	704,979	July 15	3077	563 / 664	100	657
Teaching gun practice. Apparatus for	C. A. Sporrong	707,729	Aug. 26	3327	745	100	1852
Teaching primary arithmetic. Apparatus for	A. F. Lorensen	708,588	Sept. 9	1014	230	100	2198
Telegraph	C. E. Fritts	704,023	July 8	1305	262	100	255
Telegraph and telephone signal. Combined district	C. Selden	704,127	July 8	1432	305	100	311

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Telegraph. Facsimile-	E. E. Kleinschmidt	709,158	Sept. 16	2195	502 / 503 / 504 / 505	100	2468
Telegraph-keys. Automatic circuit-closer for	J. E. Folsom	707,312	Aug. 19	2510	564	100	1666
Telegraph or telephone lines. Selective call for	W. Palmer, Jr	710,326	Sept. 30	4518	1018	100	2974
Telegraph. Page-printing	G. Musso	707,612	Aug. 26	3083	694	100	1802
Telegraph. Printing	T. M. Foote	705,227	July 22	3606	781 / 782 / 783 / 784	100	780
Telegraph system. Wireless-	G. W. Pickard	708,071	Sept. 2	130	31	100	2008
Telegraph system. Wireless-	H. Shoemaker	710,121	Sept. 30	4127	981	100	2890
Telegraph system. Wireless-	H. Shoemaker	710,122	Sept. 30	4130	981 / 982	100	2890
Telegraph system. Wireless-	C. D. Ehret	710,354	Sept. 30	4549	1027	100	2981
Telegraph system. Wireless-	C. D. Ehret	710,355	Sept. 30	4552	1027	100	2981
Telegraph-transmitter. Mechanical	J. W. McDonald	706,251	Aug. 5	475	101	100	1212
Telegraphs. Transmitting apparatus for electric-	T. D. Penniman and H. H. Wiegand	704,917	July 15	2929	629	100	630
Telegraphic apparatus	C. M. Davis	707,557	Aug. 26	2972	671	100	1779
Telegraphic code	J. E. Dempsey	708,891	July 1	52	10	100	13
Telegraphic distribution	H. A. Rowland	704,928	July 15	2964	634 / 635 / 636	100	636
Telegraphic receiving-tapes for translation. Means for handling	P. B. Delany	709,752	Sept. 23	3388	760	100	2722
Telegraphic safety device	S. R. Wright	704,165	July 8	1501	322	100	315
Telegraphy	A. C. Crehore	707,829	Aug. 26	3568	806 / 807	100	1900
Telegraphy	A. C. Crehore	707,830	Aug. 26	3576	806	100	1901
Telegraphy	A. C. Crehore	707,959	Aug. 26	3808	854 / 855	100	1946
Telegraphy and telephony. Apparatus for composite systems of simultaneous	J. M. Fell	709,427	Sept. 16	2763	622	100	2582
Telegraphy. Apparatus for wireless	R. A. Fessenden	706,736	Aug. 12	1410	315	100	1421
Telegraphy. Apparatus for wireless	R. A. Fessenden	706,741	Aug. 12	1430	317	100	1424
Telegraphy. Conductor for wireless	R. A. Fessenden	706,789	Aug. 12	1424	316	100	1423
Telegraphy. Electric	S. G. Brown	708,892	July 1	951	208 / 209 / 210	100	191
Telegraphy keyboard	H. A. Rowland	704,927	July 15	2950	633 / 634	100	635
Telegraphy. Multiple	M. I. Pupin	707,007	Aug. 12	1918	430	100	1525
Telegraphy. Multiple	M. I. Pupin	707,008	Aug. 12	1921	430	100	1525
Telegraphy. Wireless	H. Shoemaker	708,712	July 1	621	138	100	122
Telegraphy. Wireless	H. Shoemaker	708,849	July 1	880	199	100	172
Telegraphy. Wireless	H. Shoemaker	706,500	Aug. 5	990	218	100	1317
Telegraphy. Wireless	R. A. Fessenden	706,735	Aug. 12	1406	314 / 315	100	1420
Telegraphy. Wireless	R. A. Fessenden	706,737	Aug. 12	1415	316	100	1422
Telegraphy. Wireless	R. A. Fessenden	706,738	Aug. 12	1421	316	100	1423
Telegraphy. Wireless	H. Shoemaker	707,064	Aug. 12	2029	453	100	1548
Telegraphy. Wireless	G. W. Pickard	708,072	Sept. 2	132	31, 32	100	2008
Telephone-booth	F. L. Tufts	704,986	July 15	3095	667	100	660
Telephone-booth	F. L. Tufts	704,987	July 15	3096	667	100	660
Telephone-cable connection	T. P. Jones	706,567	Aug. 12	1103	244	100	1354
Telephone-call annunciator	Z. E. Jackson	709,327	Sept. 16	2540	571	100	2585
Telephone-circuit	I. H. Farnham	706,308	Aug. 5	614	134	100	1239
Telephone-circuit	M. H. Howell	706,319	Aug. 5	636	139	100	1244
Telephone-circuit	S. P. Grey	708,188	Sept. 2	260	62	100	2085
Telephone-exchange. Automatic	A. M. Bullard	709,739	Sept. 23	3341	753 / 754	100	2715
Telephone-exchange system and apparatus. Automatic	A. M. Bullard and M. C. Rorty	709,740	Sept. 23	3351	754 / 755	100	2716
Telephone-exchange toll apparatus	W. W. Dean	710,318	Sept. 30	4488	1019	100	2968
Telephone hook-switch	W. W. Dean	704,697	July 15	2466	532 / 533	100	531
Telephone-lines. Selective calling appliance for	F. R. McBerty	710,333	Sept. 30	4514	1017	100	2974
Telephone-mouthpiece. Antiseptic	W. M. English and G. A. Burns	706,169	Aug. 5	326	69	100	1183
Telephone-mouthpiece antiseptic attachment	H. C. Smith and M. H. Woolsey	708,671	Sept. 9	1206	275	100	2237
Telephone or telegraph pole	I. M. Warner	708,277	Sept. 2	521	119	100	2087
Telephone-receiver	L. Mellett	707,441	Aug. 19	2743	621	100	1715
Telephone. Self-restoring	L. J. Loeffler	710,065	Sept. 30	4006	904	100	2966
Telephone-switch	C. B. McPherson	709,351	Sept. 16	2540	582	100	2584
Telephone-switchboard signal-lamp	F. R. McBerty and F. H. Loveridge	709,998	Sept. 30	3888	877	100	2840
Telephone-switchboard supervisory signal	C. E. Scribner. (Reissue)	12,007	July 1	1121	243	100	222
Telephone system	F. W. Dunbar. (Reissue)	12,031	Sept. 16	2611	632	100	2598
Telephone systems. Toll-collecting and call-recording device for	J. B. Gill. (Reissue)	12,015	July 22	4328	985 / 986	100	922
Telephone toll-line coin-collector	J. J. O'Connell	704,268	July 8	1681	366	100	352
Telephone-transmitter	M. Weisser	710,309	Sept. 30	4472	1008	100	2965
Telephone-wires. Device for preventing humming of	M. Grover	705,073	July 22	3265	707	100	711
Telephony	J. Lyons	705,685	July 29	4582	995	100	987
Telephony	J. Lyons	705,686	July 29	4585	995	100	987
Telescope. Binocular prism-	C. P. Goerz	709,808	Sept. 30	3878	833	100	2800
Telescope. Prismatic sighting-	A. König	708,720	Sept. 9	1346	298	100	2258
Telescopic compound engine	W. Schneider	707,647	Aug. 26	3156	710	100	1817
Telesig. Multiplex	W. S. Burnett and W. H. Goodall	705,511	July 22	4194	913 / 914	100	898
Tellurian	J. A. B. Lovett	704,350	July 8	1848	400	100	391
Temperature-exchanging apparatus	J. Desmaroux	704,818	July 15	2714	587 / 588	100	581
Temperature. Means for automatically indicating changes in	R. Keyte	704,966	July 15	3055	656	100	652
Temperature of heating systems. Means for regulating	W. P. Powers	710,801	Sept. 30	4458	1005 / 1006	100	2966

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Temperature-regulator	A. Roesch	705,613	July 29	4458	966	100	963
Tempering-bath	J. E. Lawrence	706,966	Aug. 12	1854	967	100	1511
Tempering-vat, churn, and butter-worker. Combined	P. M. Sharples	706,118	Aug. 5	213	44	100	1160
Temple-attaching device	F. G. Hirst	707,109	Aug. 19	2127	474	100	1566
Tenoning-machine. Hand	R. A. Mills	707,859	Aug. 26	3080	818	100	191
Tension device	H. A. Webster	704,411	July 8	1045	421	100	409
Tent	J. P. Nelson	707,847	Aug. 19	2571	581	100	1679
Theater. Portable revolving	C. F. Bramhall	706,891	Aug. 12	1729	396	100	1497
Theatrical scenery	L. J. Carter	708,763	July 1	714	158	100	143
Thermo-electric element	C. B. Thwing	704,595	July 15	2302	159	100	496
Thermo-electric generator	C. B. Thwing	704,596	July 15	2303	500	100	496
Thermocauter	L. Wirsching	706,482	Aug. 5	962	210	100	1310
Thermometer. Multiplex electric	A. Zeleny	705,187	July 22	3511	761	100	762
Thermophore	F. Heiliger	708,549	Sept. 9	995	223	100	2192
Thermostat	A. Roesch	704,115	July 8	1408	302	100	295
Thermostats. Means for testing	T. M. Heaphy	706,177	Aug. 5	341	73, 74	100	1186
Thill-coupling	L. G. Sprague	708,675	July 1	554	125	100	110
Thill-coupling	C. A. Smith	705,151	July 22	3436	747	100	745
Thill-coupling	G. H. Spitzli and G. E. Lord	705,795	July 29	4784	1038	100	1028
Thill-coupling	T. F. Ware	707,741	Aug. 26	3399	758	100	1860
Thill-coupling	A. H. Worrest	708,690	Sept. 9	1243	295	100	2244
Thill-coupling	C. C. Bradley. (Reissue)	12,084	Sept. 23	3581	807	100	2765
Thill-coupling	C. C. Bradley. (Reissue)	12,085	Sept. 23	3582	807	100	2767
Thill-coupling	J. M. Bryant	710,316	Sept. 30	4493	1012	100	2967
Thill-coupling	A. Mendenhall	710,365	Sept. 30	4570	1030	100	2985
Thill-coupling	J. E. Whitney	704,160	July 8	1494	320	100	314
Thill-coupling antirattler	F. Ach	708,513	Sept. 9	929		100	2181
Thioxanthin and making same	H. B. Yates	705,809	July 29	4809	1044	100	1033
Thread-cutting tool. Adjustable	J. A. Paris, E. B. Steelman, and J. L. Haverfield.	710,366	Sept. 30	4570	1031	100	2985
Thresher. Pea-	J. H. Jensen	707,067	Aug. 12	2040	455	100	1551
Thresher-screen	J. G. Walker	707,287	Aug. 19	2465	552	100	1657
Threshing-machine attachment	F. A. Ferguson	704,528	July 15	2188	553	100	474
Threshing-machines and grain-separators. Self-propelling truck and motor for	G. E. Wilson	705,997	July 29	5123	474	100	1097
Threshing or separating machine	C. R. Sowden	704,395	July 8	1921	1117	100	404
Threshold. Automatic	S. Dancyger	708,756	Sept. 9	1375	416	100	2274
Ticket fastener. String-	J. P. Kuhns	709,492	Sept. 23	2911	814	100	2626
Ticket. Pin-	E. B. Cade	708,461	Sept. 2	834	649	100	2150
Tidal motor					190	100	2150
Tie: *See* Bale-tie, Cross-tie, Metallic tie, Necktie, Rail-tie, Railway-tie, Wire-tie.	C. S. Shallenberger	707,902	Aug. 19	2596	586	100	1684
Tie-plate	G. L. Bender	708,755	July 1	701	155	100	140
Tie-plating machine	W. M. Fridericia	708,780	July 1	742	156	100	149
Tie plug or dowel	C. Worth	704,727	July 15	2525	165	100	543
Tile	W. C. State	704,766	July 15	2600	545	100	558
Tile	F. R. Lawrence	707,125	Aug. 19	2145	481	100	1590
Tile	A. L. Flood	708,470	Sept. 2	846	193	100	2153
Tile	A. L. Flood	708,471	Sept. 2	847	193	100	2153
Tile	A. L. Flood	708,472	Sept. 2	848	193	100	2153
Tile-machine and pug-mill. Combined	W. R. Cunningham	707,831	Aug. 26	3581	808	100	1901
Tile-press	X. P. Gillardoni	706,936	Aug. 12	1785	399	100	1499
Tile-press	W. P. Meeker	708,241	Sept. 2	453	103	100	2074
Tile setting or removing apparatus	H. Schmidt, Jr	707,264	Aug. 19	2406	539	100	1644
Tiles. Laying	E. S. Hutchinson	703,928	July 1	1018	221	100	203
Tiles. Making decorative	E. E. Tabouret	708,680	Sept. 9	1230	280	100	2240
Tiles. Setting	J. H. Munro	706,474	Aug. 5	950	207	100	1308
Tiling	G. H. Bennett	708,194	Sept. 2	808	87	100	2056
Till	C. S. Clark and J. T. Jones	709,870	Sept. 30	3616	817	100	2785
Time-recorder	T. D. Greene	707,583	Aug. 26	3080	692	100	1790
Time-recorder for workmen or servants or like apparatus.	F. Brook	704,854	July 15	2770	599	100	598
Time-recorder. Workman's	A. L. Jaynes	704,194	July 8	1556	600	100	326
Time-recorder. Workman's	G. M. Jaynes and J. W. Deübner	704,544	July 15	2219	335	100	480
Time-switch mechanism	G. Zaepfel	705,991	July 29	5129	481	100	1098
Tin-plate-cleaning machine	J. C. Taliaferro and C. M. Reynard	709,184	Sept. 16	2266	515	100	2476
Tin. Recovering metallic	D. H. Browne and J. M. Neil	704,673	July 15	2431	516	100	524
Tire and fastener for vehicle-wheels	J. C. Haines	709,468	Sept. 23	2966	525	100	2825
Tire and manufacturing same	J. W. Blodgett	708,954	Sept. 9	1772	647	100	2356
Tire and manufacturing same. Elastic	F. E. Hall	708,225	Sept. 2	426	409	100	2068
Tire and manufacturing same. Pneumatic	J. W. Blodgett	708,952	Sept. 9	1767	97	100	2355
Tire and manufacturing same. Pneumatic	J. W. Blodgett	708,953	Sept. 9	1770	409	100	2356
Tire armor. Vehicle-	C. H. Paschke	707,989	Aug. 26	3779	848	100	1941
Tire. Bicycle-	H. D. Lefferts	709,021	Sept. 16	1982	444	100	2406
Tire for vehicle-wheels. Resilient	W. E. Carmont	708,864	Sept. 9	1608	367	100	2324
Tire for vehicle-wheels. Spring-	H. C. Shearman	707,169	Aug. 19	2220	801	100	1606
Tire-heater	J. Gogel	705,840	July 22	3884	840	100	835
Tire-inflating device. Pneumatic-	F. W. Claesgens and J. G. Magin	708,021	Aug. 5	33	7	100	1123
Tire. Pneumatic	M. Weiss	707,651	Aug. 26	3200	718	100	1827
Tire. Pneumatic	T. B. Jeffery	708,482	Sept. 2	867	197	100	2157

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drg.	Official Gazette. Vol.	Official Gazette. Page.
Tire. Pneumatic	I. Tennant	709,280	Sept. 16	2449	551	100	2516
Tire rim and felly. Rubber vehicle	J. Baker	707,538	Aug. 26	2981	663	100	1771
Tire. Rubber	W. R. Harris	708,408	July 1	80	16	100	19
Tire. Rubber	A. W. Grant	705,072	July 22	3264	707	100	711
Tire-setter	F. W. Mitchell	706,583	Aug. 12	1132	250	100	1360
Tire setter. Rubber	H. R. Auld	704,953	July 15	3025	649	100	548
Tire-setting machine. Rubber	J. C. Blake	710,185	Sept. 30	4161	937	100	2908
Tire. Solid-rubber	C. H. Wheeler and F. W. Kremer	705,178	July 22	3487	758	100	755
Tire-tightener	H. P. Dickinson	708,535	Sept. 9	966	219	100	2189
Tire tubes. Tip for the ends of pneumatic	J. G. Moomy	709,994	Sept. 30	4085	876	100	2840
Tire valve. Pneumatic	H. W. Hodgetts	706,944	Aug. 12	1813	406	100	1504
Tire. Vehicle	J. Christy, Jr	705,088	July 22	3195	690	100	697
Tire. Vehicle	C. H. Wheeler and F. W. Kremer	705,175	July 22	3482	757	100	754
Tire. Vehicle	F. E. Osgood and F. F. Bradley	706,509	Aug. 12	1149	254	100	1364
Tire. Vehicle	W. I. Gregory	707,562	Aug. 26	3029	682	100	1790
Tire. Vehicle	F. P. Brining	709,959	Sept. 30	3819	859	100	2895
Tire. Vehicle-wheel	E. Belledin-Gras and F. S. de Mondran.	707,378	Aug. 19	2626	592	100	1690
Tire. Vehicle-wheel	M. C. Carter	708,997	Sept. 16	1875	431	100	2295
Tire. Wheel	H. Lieberthal	705,768	July 29	4788	1025	100	1018
Tire. Wheel	E. Horton	710,274	Sept. 30	4414	995	100	2958
Tires before fitting them into their rims. Means for longitudinally compressing wired-on cushion-	G. Robson	704,214	July 8	1540	344	100	333
Tires. Machine for smoothing rubber vehicle	S. S. Miller and L. E. Clough	708,967	Sept. 9	1803	414	100	2262
Tobacco box and cutter. Combined	F. Laporte and L. Baptiste	704,052	July 8	1258	272	100	264
Tobacco-cutting machine	M. Himoff	707,778	Aug. 26	3405	781	100	1879
Tobacco-fork	W. L. Moore	705,775	July 29	4751	1029	100	1020
Tobacco-hanger	W. M. Ketchin	704,196	July 8	1564	337	100	328
Tobacco-holster	W. P. Henry	706,052	Aug. 5	98	21	100	1137
Tobacco-leaf-sorting machine	E. A. Rollman	705,800	July 22	3762	816	100	811
Tobacco-leaf-stringing machine	S. D. Wheeler	710,027	Sept. 30	3942	889	100	2932
Tobacco-ordering chamber	J. M. Taliaferro	709,938	Sept. 30	3709	851	100	2815
Tobacco-pipe	H. L. Austwick	706,193	July 22	3519	762	100	763
Tobacco-pipe	H. M. Willis	705,998	July 29	5126	1117	100	1098
Tobacco-pipe	M. B. Hern	708,142	Sept. 2	260	64	100	2037
Tobacco-pipe	N. Allison	708,852	Sept. 9	1584	361	100	2318
Tobacco-pouch	G. Frank	706,648	Aug. 12	1252	277	100	1387
Tobacco spinning-machine. Chewing	W. Schertiger	708,172	Sept. 2	325	77, 78	100	2047
Tobacco-stringing machine	C. G. Wells	708,434	Sept. 2	775	174	100	2138
Tobacco-truck	W. G. Little	709,785	Sept. 23	3454	777	100	2787
Toe. Box-	H. H. Beckwith	710,289	Sept. 30	4357	979	100	2941
Tongs for handling ingots, &c	J. M. Lafferty	706,324	Aug. 5	646	141	100	1246
Tongue-switch	G. M. Ervin	705,056	July 22	3232	690	100	704
Tool	J. W. East	704,819	July 15	2716	598	100	581
Tool	J. H. Koch	706,184	Aug. 5	355	76	100	1188
Tool. Combination-	F. A. Robbins	707,723	Aug. 26	3310	741	100	1849
Tool. Combination-	J. L. Wood and W. G. Lawrence	708,447	Sept. 2	790	182	100	2143
Tool. Compound	J. F. Koelmel	708,598	July 1	391	91	100	78
Tool. Compound	W. Offutt	706,196	Aug. 5	377	81	100	1194
Tool construction. Machine	W. H. Baush	709,258	Sept. 16	2398	542	100	2505
Tool. Fluid-pressure-operated	J. V. W. Reynders and W. T. Sears	706,688	Aug. 12	1330	294	100	1404
Tool. Fluid-pressure-operated	H. H. Vaughan	707,735	Aug. 26	3337	747	100	1855
Tool handle. Adjustable garden-	W. V. Magee	705,689	July 29	4580	996	100	986
Tool-holder	S. Welter and J. Armstrong	707,472	Aug. 19	2791	639	100	1725
Tool-holder	C. T. Shafer	708,176	Sept. 2	331	79	100	2049
Tool-holder	J. F. Bachmann	709,953	Sept. 30	3796	856	100	2921
Tool-holder	A. H. and J. A. Bedworth	710,174	Sept. 30	4257	956	100	2913
Tool-holder for planers, &c. Duplex	J. H. Wicksteed	708,947	Sept. 9	1757	405	100	2353
Tool-post	J. R. Back	709,603	Sept. 23	3271	782	100	2700
Tool-shanks. Machine for making tubular	F. P. Bates	706,513	Aug. 12	1016	224	100	1336
Tool-stock	O. L. Cheney	707,901	Aug. 26	3714	833	100	1927
Tooth. Artificial	J. J. Reynolds	705,143	July 22	3426	744	100	743
Tooth. Artificial	T. Steele	705,546	July 22	4326	935	100	922
Tooth mold. Artificial	T. Steele	705,972	July 29	5099	1111	100	1092
Tooth mount. Artificial	H. D. Justi	705,532	July 22	4277	924	100	914
Toothpick-drying machine	C. F. Scamman	709,050	Sept. 16	1992	455	100	2419
Toothpick forming and drying machine	C. F. Scamman	709,049	Sept. 16	1991	454	100	2418
Tooth-powder or other material. Receptacle for	J. C. Allen	706,710	Aug. 12	1262	304	100	1410
Top. Spinning-	E. Hazlehurst	708,766	Sept. 9	1393	319	100	2278
Top-spinning device	F. W. Kranz	705,252	July 22	3665	792	100	792
Torch	E. H. Wagner	706,134	Aug. 5	947	52	100	1168
Torch. Vapor-burning	W. Mitchell	706,842	Aug. 12	1685	366	100	1469
Torpedo and means for propelling same	A. Klinger	704,050	July 8	1255	271	100	264
Torpedo-firing apparatus. Pneumatic	S. Lake	709,335	Sept. 16	2551	574	100	2538
Torpedo-launching apparatus	S. J. J. Drzewiecki	708,081	Sept. 2	65	15, 16	100	1995
Torpedo. Railway-	E. S. Lafferty	710,302	Sept. 30	4563	1090	100	2984
Torpedo-setting device	P. Beattie	704,499	July 15	2124	459	100	459
Torpedo-shell protector	J. M. Hatfield	710,323	Sept. 30	4500	1014	100	2971
Towing mechanism. Canal	S. W. Wood	707,320	Aug. 19	2901	656	100	1748
Toy	J. Jackson	708,422	July 1	102	22	100	33
Toy	H. Jenson	708,931	July 1	1023	221	100	204
Toy	F. D. Rettich	706,110	Aug. 5	199	41	100	1157
Toy	H. T. Kingsbury	708,421	Aug. 5	845	185	100	1284
Toy	F. A. Richter	706,699	Aug. 12	1333	295	100	1404
Toy	J. J. Fitzpatrick	706,918	Aug. 12	1770	395	100	1496
Toy	C. H. Fox and W. H. Randolph, Jr.	707,577	Aug. 26	3023	680	100	1788
Toy	J. B. Sloane	709,117	Sept. 16	2123	487	100	2448

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Toy	J. M. K. Waldbjorn	709,738	Sept. 23	3825	748	100	2712
Toy	D. J. Wilson	710,090	Sept. 30	4066	917	100	2976
Toy. Aerial	F. M. Osgood	704,090	July 8	1337	291 / 298	100	279
Toy air-gun	P. D. Horton	710,359	Sept. 30	4560	1028	100	2983
Toy bank	O. G. Crannell	704,239	July 8	1029	252	100	340
Toy bank	H. T. Kingsbury	706,422	Aug. 5	846	185 / 186	100	1284
Toy banks. Slot-guard for	J. W. Eshleman	706,913	Aug. 12	1764	394	100	1495
Toy biograph	W. Maxwell	709,543	Sept. 16	2567	577 / 578	100	2542
Toy blocks	E. A. Cannon	709,467	Sept. 23	2842	638 / 639	100	2610
Toy boat	E. E. Mitchell	707,148	Aug. 19	2198	492	100	1600
Toy bowling-alley	F. W. Gibson	706,926	Aug. 12	1784	399	100	1498
Toy bubble-blower	L. H. Rockwell	705,966	July 29	5088	1109	100	1090
Toy building-blocks, &c. Composition suitable for use in making	J. Stephan	708,422	Sept. 2	758	.....	100	2134
Toy cannon	A. G. Fifer	706,899	Aug. 5	802	175	100	1276
Toy cart	F. H. Harris	706,936	Aug. 12	1797	402	100	1501
Toy-cartridge exploder	R. L. Short	708,088	Sept. 2	155	37	100	2013
Toy fence. Portable	C. J., Jr., J. E., and L. A. Youse	708,248	Aug. 5	575	134	100	1232
Toy game	R. Astarita	705,532	July 29	4487	974	100	968
Toy gun. Magazine	I. T. Smith	708,417	Sept. 2	750	169	100	2133
Toy horn	F. J. Gustine	705,308	July 22	3981	862	100	855
Toy. Mechanical	A. Honrath	708,158	Sept. 2	655	147	100	2114
Toy milk-wagon	H. T. Kingsbury	704,346	July 8	1833	397	100	336
Toy. Musical	H. P. Brown	704,228	July 8	1619	350	100	328
Toy or advertising device	J. A. Mangold	705,835	July 29	4900	1063	100	1050
Toy pistol	C. F. Paulus	707,232	Aug. 19	2357	525	100	1641
Toy railway	A. Schütze	709,635	Sept. 23	3254	729	100	2696
Toy railway-track joint	H. C. Ives	708,698	Sept. 9	1655	380	100	2232
Toy. Sounding	L. Long	705,589	July 29	5039	1098	100	1079
Toy. Top-spinning	G. R. Mann	706,676	Aug. 12	1312	290	100	1400
Toy. Walking	E. A. Jeffreys	709,987	Sept. 30	3875	874	100	2837
Trace-chain slip-link	W. J. Case	705,085	July 22	3190	689	100	696
Trace-fastener	S. E. Foreman	704,741	July 15	2557	551	100	549
Trace-fastener	W. H. Thompson	705,719	July 29	4653	1009	100	1001
Track-brake	T. S. Butler	709,743	Sept. 23	3372	756	100	2719
Track-indicator	S. A. Staege	705,467	July 22	4105	892	100	881
Track-sander	W. C. Gardner	708,473	Sept. 2	849	194	100	2153
Track-sander. Pneumatic	E. M. Hedley	705,757	July 29	4719	1021	100	1014
Track-sanding apparatus	J. J. Dolan, Jr	704,784	July 15	2620	568	100	564
Traction-engine	J. O. Wells	708,872	July 1	918	200 / 201	100	183
Traction-engine	G. D. Miller	704,632	July 15	2592	517 / 518	100	516
Traction-engine	S. S., W. S., and R. L. Morton, W. and W. H. Evans.	706,191	Aug. 5	368	79	100	1192
Traction-engine	J. S. Pfremmer	705,685	Aug. 12	1325	298	100	1402
Traction-engine	D. Best	709,592	Sept. 23	3096	689	100	2664
Train-connector. Electric	C. E. Felt and D. A. Kimbark	705,256	Aug. 5	433	92	100	1205
Train-control system	C. E. Barry	705,016	July 22	3161	682	100	990
Train-control system	F. E. Case	706,030	Aug. 5	30	6	100	1122
Train-controlling apparatus	J. D. Price and A. C. Miller	705,201	July 22	3747	814	100	908
Train-lines. Cut-off device for	G. C. Moore	706,483	Aug. 5	885	191	100	1294
Train manipulation. System of	L. A. and C. I. Freedman	704,030	July 8	1199	261 / 262	100	254
Train message-delivering device	P. P. Shives	709,518	Sept. 23	2974	663	100	2639
Train-order holder	L. C. Gibbs	710,265	Sept. 30	4401	991	100	2950
Train-starting mechanism	J. B. Blood	705,295	Aug. 5	590	128 / 129	100	1234
Training apparatus	J. McMaster	704,915	July 8	1677	365	100	351
Tram protecting-rollers. Safety-ball for	E. Raus	707,255	Aug. 19	2302	506	100	1642
Tramway. Overhead	A. M. Acklin	709,692	Sept. 23	3268	732	100	2710
Tramway-switch	A. B. Robinson	707,640	Aug. 26	3141	707	100	1814
Transfer system	E. W. McKenna	705,119	July 22	3364	729 / 730	100	731
Transformer. Rotary	A. Churchward	708,025	Sept. 2	42	10	100	1989
Transforming apparatus. Rotary	E. W. Rice, Jr	706,508	Aug. 12	1163	258	100	1367
Transit instruments. Solar attachment for	O. F. Shattuck	705,970	July 29	5095	1110 / 1111	100	1091
Transits. Meridian attachment for solar	J. H. Young	709,249	Sept. 16	2470	557	100	2520
Transmitting mechanism	C. W. Hunt	709,265	Sept. 16	2420	548	100	2510
Trap: *See* Amalgam-trap. Animal-trap. Fish-trap. Fly-trap. Gopher-trap. Hand-trap. Insect-trap. Rat-trap. Sewer-trap. Steam-trap. Turtle-trap. Waste-trap. Waste-pipe trap. Water-trap.							
Trap	J. W. Zehringer	708,831	July 1	461	105	100	91
Trap	J. A. Clukies	709,871	Sept. 30	3622	818	100	2786
Trap or separator	G. I. Roberts	708,810	July 1	414	97	100	92
Traveling-bag. Telescopic	E. U. Phillips and F. J. McHenry	705,438	July 22	4057	890	100	872
Tread or tire. Pneumatic	F. L. Beamond	706,293	Aug. 5	567	127	100	1234
Tree-limb support	S. T. Hall	704,951	July 8	1226	264	100	259
Trestle	W. A. Kibbe	704,687	July 15	2449	529	100	528
Triangle	C. W. Fuller	706,230	Aug. 5	442	93	100	1205
Trimmer: *See* Hoof-trimmer. Seed-cake trimmer. Shoe-lining trimmer.							
Tripod. Portable	C. Whetham	708,873	July 1	917	201	100	184
Trolley	W. L. von Hardenberg	705,798	July 29	4788	1030	100	1029

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Trolley	T. W. Sutton	705,882	July 29	4940	1074	100	1059
Trolley	P. E. Loree	707,388	Aug. 19	2559	577	100	1676
Trolley	J. W. Brooks	708,198	Sept. 2	368	89	100	2050
Trolley	F. A. Merrick	709,168	Sept. 16	2220	507	100	2409
Trolley. Electric-car	C. J. Johnson and C. W. Benedict	708,589	July 1	876	66	100	74
Trolley for use in electric traction	J. G. Lister	707,606	Aug. 26	3074	690 / 691 / 692	100	1800
Trolley-fork	E. L. Gentis	708,782	July 1	746	165	100	150
Trolley-guard	E. Gagné	709,060	Sept. 16	2080	477	100	2438
Trolley harp or fork	O. P. Johnson and F. P. Crockett	708,048	Sept. 2	98	23	100	2001
Trolley head and wheel	W. A. E. Davis	705,825	July 29	4834	1050	100	1038
Trolley-lubricator	P. E. Loree	707,339	Aug. 19	2561	578	100	1676
Trolley. Overhead	G. H. Russell	708,476	July 1	181	43	100	88
Trolley-pole	J. D. Hickman	708,921	July 1	1004	218	100	200
Trolley-pole	C. D. Jenney	708,559	Sept. 9	1002	227	100	2196
Trolley-pole	W. Pullman and C. C. Field	709,113	Sept. 16	2119	486	100	2447
Trolley-pole	C. P. Lapham	704,749	July 15	2573	554	100	255
Trolley-pole attachment	J. A. Norton	706,092	Aug. 5	172	35	100	1152
Trolley-pole catch	F. A. Howarth	707,591	Aug. 26	3047	685 / 686 / 688 / 689	100	1794
Trolley system. Underground	P. F. Werner	709,590	Sept. 23	3091	689	100	2664
Trolley-track switch	P. F. Werner	706,139	Aug. 5	256	54	100	1171
Trolley-track switch. Overhead tubular	W. F. Hall	708,700	July 1	605	134	100	120
Trolley-wheel	W. F. Hall	708,701	July 1	607	134	100	120
Trolley-wheel	R. H. Apelt	706,211	Aug. 5	400	85	100	1198
Trolley-wheel	W. W. Annable	708,451	Sept. 2	810	185	100	2146
Trolley-wheel	G. W. Hammond	708,786	July 1	761	167	100	152
Trolley-wheels from leaving the feed-wire. Apparatus for preventing	L. C. Nolan	706,938	Aug. 5	670	146	100	1250
Trolley-wire finder	G. R. Floyd	707,222	Aug. 19	2341	523	100	1632
Trolley-wires. Automatic line-catch for	A. Springer	706,699	Aug. 12	1346	299	100	1407
Trolley-wires. Treating							
Trough: *See* Watering-trough.							
Trousers	G. M. Dane	707,556	Aug. 26	2960	671	100	1779
Trousers clamp and hanger	G. W. Shelton	704,940	July 15	2996	641	100	642
Trousers-former	L. F. Anderson	704,811	July 15	2703	584 / 585	100	578
Trousers-guard	J. H. Hardy	708,579	July 1	804	84	100	72
Trousers-hanger	J. H. Howe	706,080	Aug. 5	119	24	100	1141
Trousers-supporter	L. O. Miller	706,498	Aug. 5	978	215	100	1314
Trousers-supporter	J. D. Aiken	707,192	Aug. 19	2285	511	100	1621
Trowel	E. A. Benninghofen	706,514	Aug. 12	1018	225	100	1537
Truck	G. H. Steer	707,950	Aug. 26	3792	852	100	1944
Truck	G. H. Grondin, S. Brillard, and J. L. Labranche.	708,846	Sept. 2	630	144	100	2111
Truck. Baggage	G. W. Burton	708,990	July 8	1154	250	100	244
Truck-bearing. Adjustable	W. S. Adams	708,980	Sept. 16	1841	434	100	2389
Truck-bolster	H. R. Keithley	705,858	July 22	3918	849	100	842
Truck-bolster	C. Vanderbilt	707,656	Aug. 26	3195	717	100	1695
Truck. Car	B. Haskell	704,188	July 8	1549	333 / 334	100	325
Truck. Car	H. A. Dorner	705,049	July 22	3217	695 / 696	100	701
Truck. Car	G. C. Murray	706,584	Aug. 12	1138	250	100	1360
Truck. Car	G. C. Murray	706,585	Aug. 12	1135	251	100	1361
Truck. Car	J. C. Barber	708,855	Sept. 9	1588	363 / 364	100	2319
Truck. Car	J. A. Brill	708,994	Sept. 16	1867	429	100	2398
Truck. Car	W. S. Adams	709,071	Sept. 16	2081	463 / 464	100	2427
Truck construction. Car	W. S. Adams	709,072	Sept. 16	2083	464	100	2428
Truck. Elevating	A. A. Scott	708,744	July 1	695	151	100	136
Truck. Elevating	A. A. Scott	709,945	Sept. 16	2383	539	100	2502
Truck-frame for railway-cars	J. M. Hansen	706,283	Aug. 5	445	94	100	1207
Truck-frame for railway-cars	J. M. Hansen	706,284	Aug. 5	447	94	100	1207
Truck. Locomotive	E. Shay	706,604	Aug. 12	1175	260	100	1389
Truck lubricator. Car	J. A. Bradford	708,806	Sept. 2	575	130	100	2168
Truck. Railway-car	H. R. Keithley	705,763	July 29	4730	1034	100	1016
Truck side and center bearing. Car	E. Cliff	707,208	Aug. 19	2312	517	100	1626
Truck. Stove	J. H. Smith	710,804	Sept. 30	4624	1043	100	2996
Truck. Street-car	R. H. Hornbrook and W. H. Woodcock.	709,406	Sept. 16	2710	607	100	2571
Truck. Vehicle swivel	F. Burger	708,523	Sept. 9	950	215	100	2185
Trumpet. Ear	E. De Meulemeester	705,218	July 22	3586	775	100	776
Trunk. Wardrobe	J. J. Cannan	705,560	July 29	4358	944 / 945	100	943
Truss. Hernial	L. A. Stewart	708,847	July 1	868	191	100	174
Truss. Hernial	J. H. Sherman	705,453	July 22	4044	888	100	877
Truss. Hernial	J. H. and D. L. Chesterman	705,821	July 29	4828	1048	100	1037
Truss. Hernial	J. H. McKague	707,619	Aug. 26	3008	698	100	1805
Truss-rod beam	A. W. Henry	706,654	Aug. 12	1267	280	100	1389
Tub: *See* Bath-tub.							
Tube clamping, cutting, and expanding machine	H. Del Mar	704,520	July 15	2173	470 / 471	100	471
Tube-cleaning device	S. S. Bushnell	708,300	Sept. 2	386	89	100	2060
Tube-drawing machine	J. Gieshoidt	704,316	July 8	1767	386	100	371
Tube-expander	H. M. Barr	707,292	Aug. 19	2472	554	100	1659
Tube-machine	F. Deming	710,046	Sept. 30	3974	896 / 897	100	2958
Tube-treating machine	J. H. Russell	704,581	July 15	2270	494 / 495	100	492
Tubes, &c. Making collapsible	L. Feval	706,541	Aug. 12	1064	234	100	1345

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Tubes with wooden cores. Filling metal	O. Steiner	708,501	Sept. 2	902	204	100	2164
Tubing. Machine for making spiral	G. E. Grimm	706,618	Aug. 12	1587	356 357	100	1456
Tug and trace coupling	A. M. Craig	709,471	Sept. 23	2853	641	100	2612
Tug-fastener	H. J. Ormsby	704,570	July 15	2263	490	100	488
Tunnel construction. Subaqueous	J. F. O'Rourke	708,249	Sept. 2	466	106 107	100	2076
Tunnel-ventilating system	J. Kress	704,808	July 15	2696	583	100	576
Tunnels. Constructing	J. Breuchaud	706,390	Aug. 5	732	165 166	100	1267
Turbine flue-cleaner	J. P. Prentice and R. G. Gregory	708,254	Sept. 2	480	110	100	2078
Turbine-gate-balancing device	W. W. Tyler	710,381	Sept. 30	4599	1038	100	2990
Turbine. Steam-	R. Schulz	707,737	Aug. 26	3324	743 744	100	1852
Turbine. Steam-	R. B. Hewson	708,227	Sept. 2	428	98	100	2069
Turbine. Steam-	C. A. Parsons	708,780	Sept. 9	1415	325 326	100	2282
Turbine. Steam-	A. Krank	708,815	Sept. 9	1509	345 346	100	2302
Turbine. Steam or gas	H. Zoelly	705,890	July 29	4051	1077	100	1092
Turbine-wheel support. Steam-	J. A. Bomgren	705,025	July 22	3176	686	100	693
Turbines. Apparatus for controlling the speed of steam-	G. O. M. Olsson	705,194	July 22	3378	731 732	100	733
Turtle-trap	E. J. Rusk	708,475	July 1	181	43	100	38
Twine-cutter	I. Shafer	708,484	July 1	192	46	100	40
Twyer. Furnace-	E. H. Messiter	706,282	Aug. 5	659	143	100	1348
Tying device. Parcel-	J. S. Dean and W. H. Thomas	706,054	Aug. 5	90	19	100	1130
Tympan-surface bed	A. S. Allen	705,012	July 22	3156	681	100	699
Type-bar for matrix-plates. Master	J. R. Reynolds	707,323	Aug. 19	2980	654	100	1746
Type-carrier action and means for mounting same	F. X. Wagner	704,152	July 8	1482	317 318	100	311
Type-casting	H. Barth	708,010	Sept. 2	18	4	100	1985
Type casting and setting machine	G. A. Goodson	705,841	July 22	3895	840 841	100	835
Type casting and setting machine	J. C. and J. C. Fowler, Jr	705,925	July 22	4349	921 922	100	908
Type-casting. Metal-pump for	F. Wicks. (Reissue)	12,017	July 22	4337	938	100	924
Type-chase for making matrix-plates	J. R. Reynolds	707,322	Aug. 19	2987	654	100	1745
Type-containing channel	L. K. Johnson and A. A. Low	708,645	Sept. 9	1164	264 265	100	2228
Type-distributing apparatus	A. A. Low	710,066	Sept. 30	4007	904 905	100	2866
Type-line-detaching mechanism	L. K. Johnson and A. A. Low	710,057	Sept. 30	3995	901	100	2863
Type-stick. Compositor's	L. K. Johnson	708,646	Sept. 9	1165	265	100	2229
Type-writer	W. H. Young	703,489	July 1	586	130 131	100	116
Type-writer	J. D. Griffen	704,535	July 15	2205	477 478	100	477
Type-writer	C. Sears	706,858	Aug. 12	1661	372	100	1474
Type-writer	W. H. Campbell	707,548	Aug. 26	2956	668 669	100	1776
Type-writer	W. Hunt	709,152	Sept. 16	2183	500	100	2461
Type-writer	J. E. Neahr	709,678	Sept. 23	3240	724	100	2694
Type-writer cabinet	J. E. Anderson	705,509	July 22	4190	911	100	895
Type-writer card-holder	L. S. Burridge and S. T. Smith	706,534	Aug. 12	1637	228	100	1340
Type-writer carriage mechanism	C. Sears	710,393	Sept. 30	4621	1042	100	2995
Type-writer copy-holder	E. A. Holrits	708,554	Sept. 9	995	225	100	2194
Type-writer cover	H. P. Childress	704,237	July 8	1625	351 352	100	339
Type-writer-cover hook	E. A. Smith	706,350	Aug. 5	604	151	100	1256
Type-writer. Electrical	C. Gibbs	710,964	Sept. 30	4899	989 990	100	2949
Type-writer hammer mechanism	S. J. Seifried	704,218	July 8	1595	345 346	100	334
Type-writer line-spacing mechanism	F. X. Wagner	708,600	Sept. 9	1070	242	100	2209
Type-writer or analogous key cap	W. B. Savell	705,709	July 29	4533	1004	100	997
Type-writer type-bar and support	C. Spiro	708,270	Sept. 2	513	116	100	2085
Type-writer type-holder	I. H. Mallin	709,341	Sept. 16	2565	577	100	2541
Type-writer's copy-holder	A. Ryden	704,119	July 8	1415	303	100	298
Type-writers. Paper-feeding machine for	H. C. Tobey	705,282	Aug. 5	566	122	100	1230
Type-writing machine	M. W. Weir	708,509	July 1	257	56, 56	100	49
Type-writing machine	G. B. Webb	708,966	July 1	900	198	100	180
Type-writing machine	R. M. Bullard	708,997	July 8	1145	249	100	248
Type-writing machine	T. D. Robinson	704,112	July 8	1398	301	100	294
Type-writing machine	N. C. Darrow	704,242	July 8	1632	353 354	100	341
Type-writing machine	J. E. Neahr	705,281	July 22	3726	809 810	100	802
Type-writing machine	W. W. Morrison	705,423	July 22	4028	873	100	955
Type-writing machine	C. F. Laganke	705,585	July 22	4280	925 926	100	914
Type-writing machine	T. Cahill	705,559	July 29	4355	943 944	100	942
Type-writing machine	C. W. Howell, Jr	705,587	July 29	4403	955	100	952
Type-writing machine	E. B. Cram	706,025	Aug. 5	87	8, 9	100	1124
Type-writing machine	M. W. Weir	706,136	Aug. 5	249	53	100	1169
Type-writing machine	E. B. Cram	706,640	Aug. 12	1234	274	100	1382
Type-writing machine	W. R. Fox and G. J. Barrett	706,749	Aug. 12	1454	320 321	100	1429
Type-writing machine	E. M. Bennett	707,817	Aug. 26	3541	799	100	1894
Type-writing machine	J. H. Vink	707,893	Aug. 26	3676	827	100	1920
Type-writing machine	R. J. Fisher	708,218	Sept. 2	403	93, 94	100	2064
Type-writing machine	W. J. Barron	708,702	Sept. 9	1450	331 332	100	2291
Type-writing machine	S. L. W. Merlin	708,821	Sept. 9	1521	348	100	2304

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Type-writing machine	J. Felbel	709,088	Sept 16	2067	474 475 476	100	2435
Type-writing machine	M. S. Eylar	709,898	Sept. 30	3689	831	100	2798
Type-writing machine	C. F. Hopkins	709,906	Sept. 30	3709	836 837	100	2802
Type-writing machine	G. H. Williams	710,089	Sept. 30	4002	915 916	100	2877
Type-writing-machine accounting attachment	O. L. Ingram	705,409	July 22	4004	867	100	860
Type-writing-machine card or sheet platen	R. J. Fisher	709,005	Sept. 16	1889	433 434	100	2398
Type-writing-machine feeding attachment	M. S. Eylar	707,220	Aug. 19	2333	521 522	100	1630
Type-writing-machine line-spacing-lock mechanism	R. J. Fisher	708,954	July 1	1065	231	100	212
Type-writing-machine line-spacing mechanism	C. F. Laganke	708,961	July 1	1086	235	100	216
Type-writing-machine platen	R. J. Fisher	705,521	July 22	4220	917	100	902
Type-writing-machine platens. Follower-plate for	C. F. Laganke	704,479	July 8	2081	451 452	100	407
Type-writing-machine ribbon-fastener	F. O. Garrison	707,098	Aug. 19	2101	469	100	1580
Type-writing-machine work-gage	C. F. Laganke	705,537	July 22	4290	927 928	100	916
Type-writing-machine work gage and clamp	C. F. Laganke	705,536	July 22	4284	926	100	915
Type-writing-machine work-gage attachment	H. J. Halle	705,527	July 22	4265	922 923	100	911
Type-writing machines. Carbon-roll billing-platen for	R. J. Fisher and R. D. Stackpole	705,524	July 22	4240	919 920	100	906
Type-writing machines. Ribbon-feeding mechanism for	R. J. Fisher	705,523	July 22	4234	919	100	905
Types or matrices. Mechanism for justifying lines composed of	E. Müllendorff	705,693	July 29	4597	997 998 999	100	990
Umbrella	E. M. Zeek	709,624	Sept. 23	3147	701	100	2674
Umbrella drip-cup	P. W. Pray	708,823	July 1	832	183	100	166
Umbrella. Folding	A. and F. Schaefer	707,451	Aug. 19	2757	625	100	1718
Umbrella-frame	S. S. Fretz	703,910	July 1	988	215	100	197
Umbrella rib and stretcher-joint	C. MacMillan	710,328	Sept. 30	4506	1015	100	2972
Umbrella-runner	W. W. Kenney and J. W. Fogler	707,237	Aug. 19	2360	527	100	1636
Umbrella-runner	W. H. Gaskill	707,858	Aug. 26	3591	811	100	1903
Umbrella-runner retainer	W. S. Seymour	704,128	July 8	1434	307	100	302
Umbrella-stick	T. H. Smith	706,352	Aug. 5	696	152	100	1257
Uncoupling device	H. Bruns	705,735	July 29	4686	1014	100	1007
Underskirt. Lady's	C. L. Hermann	706,235	Aug. 5	449	95	100	1208
Undervest and corset-cover. Combined	C. Dufour	707,558	Aug. 26	2977	672	100	1780
Universal coupling	A. G. Mather	709,902	Sept. 30	3863	875 876	100	2839
Universal joint for shafting	J. L. Follett	706,403	Aug. 5	808	176	100	1277
Unloading apparatus	F. H. Treat	710,224	Sept. 30	4334	974 975	100	2936
Upholstering-clip	H. J. Jacobs	704,542	July 15	2217	480	100	479
Upholstering-machine button-holder	P. Boller	704,501	July 15	2131	461	100	461
Urinal	H. D. Janes	706,566	Aug. 12	1702	344	100	1354
Vaccine-container	H. M. Alexander	710,334	Sept. 30	4350	977	100	2939
Vaginal injector	A. Anderson and M. B. S. B. Packness	706,371	July 22	3939	853	100	846
Valise. Telescoping	C. A. Bodwell, Jr	710,037	Sept. 30	3956	892	100	2855
Valve	C. P. Lynch	708,963	July 1	1097	236	100	218
Valve	N. Z. Norrington	704,087	July 8	1334	291	100	279
Valve	S. B. Moffitt and C. O. Weisenburger	704,654	July 15	2398	518	100	517
Valve	J. H. Koch	707,337	Aug. 19	2557	577	100	1676
Valve	B. Ivor and J. S. Ward	708,145	Sept. 2	272	65	100	2037
Valve	J. H. Bickford	708,990	Sept. 16	1855	426 427	100	2391
Valve	E. G. Watrous	710,129	Sept. 30	4150	935	100	2895
Valve. Air and vacuum	E. P. Allen	703,886	July 1	937	205	100	188
Valve. Air-brake	F. Strattner	708,062	Sept. 2	160	39	100	2015
Valve attachment for traps. Air-	C. A. Tilly	703,855	July 1	895	195	100	177
Valve. Automatic	C. W. Hall, Jr., and B. J. Berwald	705,344	July 22	3898	842	100	836
Valve. Automatic	N. Curtis	707,395	Aug. 19	2661	600	100	1598
Valve. Automatic	H. E. Stager	708,179	Sept. 2	338	80	100	2050
Valve. Balanced slide-	J. T. Wilson	705,780	July 29	4671	1011	100	1004
Valve. Brake-	G. Gregory	707,581	Aug. 26	3067	681	100	1789
Valve. Check-	W. R. Michener	704,557	July 15	2343	496	100	484
Valve. Check or clack	F. W. Leidecker	705,255	July 22	3670	798	100	798
Valve cushioning device	E. Rost	707,160	Aug. 19	2218	497	100	1608
Valve. Engine-	E. U. Down	705,224	July 22	3597	779	100	778
Valve. Engineer's brake-	P. Synnestvedt	708,677	July 1	550	126	100	111
Valve. Engineer's brake-	H. R. Mason	709,027	Sept. 16	1949	447	100	2409
Valve. Equalizing-	P. Whiting	707,476	Aug. 19	2799	633 634	100	1727
Valve. Fluid-pressure engine	P. T. Stillman	709,946	Sept. 16	2385	540	100	2503
Valve. Fluid-pressure-regulated gas-	A. Beier	706,158	Aug. 5	298	63, 64	100	1177
Valve. Flushing-	J. O. Rathbun	704,211	July 8	1584	342	100	332
Valve for gas-engines. Fuel-	J. B. Fenner	706,916	Aug. 12	1767	395	100	1495
Valve for gas or gasolene engines. Mixing-	R. E. Hardy	706,050	Aug. 5	94	20	100	1136
Valve for pumps, &c.	T. A. MacDonald	709,273	Sept. 16	2441	552	100	2514
Valve for pumps, compressors, or motors. Rotary slide-	L. Roedel	709,682	Sept. 23	3246	725 726 727	100	2695
Valve for pumps, compressors, or motors. Rotary slide-	L. Roedel	709,683	Sept. 23	3252	728	100	2696
Valve for reservoirs containing fluid under pressure. Relief-	H. E. Warren	708,697	July 1	581	129	100	115
Valve for steam-chests. Vertical-lift lubricating-	G. Wiesseckel	708,106	Sept. 2	195	46	100	2032
Valve for steam-engines. Distributing-	C. Tuckfield	706,181	Aug. 5	343	51	100	1167
Valve-gate. Electrically-operated	A. Orr	707,988	Aug. 26	3777	848	100	1941
Valve-gear	K. C. Geele	708,569	July 1	843	78	100	69
Valve-gear	R. T. Love	705,414	July 22	4014	869	100	863

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfg.	Official Gazette. Vol.	Official Gazette. Page.
Valve-gear	H. White and W. G. Taylor	707,995	Aug. 26	3888	873 / 874	100	1902
Valve-gear	P. H. White	709,949	Sept. 30	3791	855	100	2820
Valve-gear. Engine	O. Hove	705,088	July 22	3300	717 / 718	100	717
Valve-gear. Governor-controlled	J. A. Groshon	704,536	July 15	2210	478	100	478
Valve-gear. Reversing	A. B. Leftwich	708,993	July 1	1033	294	100	205
Valve gear. Slide	S. S. Younghusband	708,995	July 1	996	205	100	188
Valve. Governor	L. J. Watson	706,616	Aug. 12	1197	266	100	1374
Valve-lever spool	P. Thomas	709,940	Sept. 30	3774	852	100	2815
Valve-lubricator	P. F. Laban	708,968	Aug. 12	1848	413	100	1510
Valve mechanism	R. Berg	708,895	Aug. 12	1714	393	100	1484
Valve mechanism. Explosive-engine	R. P. Hansen	708,932	Aug. 12	1794	401	100	1500
Valve mechanism for fluid-supply pipes	A. S. Kiefer	709,096	Sept. 16	2091	479	100	2441
Valve mechanism for steam-carriage burners	R. H. White	707,478	Aug. 19	2805	634	100	1728
Valve mechanism. Water-heater	A. Buerkle	707,758	Aug. 26	3418	770	100	1869
Valve-motion	G. M. Schwend	707,452	Aug. 19	2759	625	100	1718
Valve. One-way	E. H. Gold	709,262	Sept. 16	2413	547	100	2508
Valve-operating means	C. G. Y. King	705,250	July 22	3659	792	100	791
Valve. Pop safety	B. Hellwig	709,089	Sept. 2	88	19	100	1998
Valve. Pressure-reducing	C. H. Buckelew	706,721	Aug. 12	1382	308	100	1415
Valve. Quadruple	P. Whiting	707,477	Aug. 19	2802	634	100	1727
Valve. Retaining	W. V. Turner and F. C. Farquharson	706,867	Aug. 12	1680	377	100	1478
Valve. Safety	W. C. Field	708,572	July 29	4379	949	100	947
Valve. Safety	W. Wishart and B. Seidel	707,485	Aug. 19	2814	636	100	1730
Valve. Self-closing	F. H. Mason	706,482	Aug. 5	878	190	100	1292
Valve. Steam	H. W. Waite	706,613	Aug. 12	1190	264	100	1372
Valve. Steam-engine	W. Wright	708,750	Sept. 9	1360	310	100	2271
Valve. Stop	J. A. Ellison	708,564	July 1	339	77	100	68
Valve. Straightway	E. M. Erdman	709,146	Sept. 16	2177	498	100	2469
Valve. Straightway	D. Kennedy	709,491	Sept. 23	2900	649	100	2626
Valve. Street-sprinkler	M. G. Bunnell	709,960	Sept. 30	3820	860	100	2826
Valve. Tank	S. J. Asbell	704,230	July 8	1615	349	100	337
Valve. Throttle	J. S. Chambers	706,900	Aug. 5	599	131	100	1296
Valve. Water-cooled reversing	L. L. Knox	708,718	Sept. 9	1308	297	100	2257
Valves, &c. Operating mechanism for gas-engine	J. B. Fenner	705,058	July 22	3236	700 / 701	100	705
Vamp-snipper	J. G. Grall	705,069	July 22	3250	705	100	719
Vanner	C. C. Pratt	706,687	Aug. 12	1328	293 / 294	100	1403
Vapor-burner	A. Lecomte	708,661	July 1	527	119	100	103
Vapor-burner	W. J. Smart	705,459	July 22	4005	890	100	878
Vapor-burner	C. S. and C. E. Shattuc	708,926	Sept. 9	1718	397	100	2346
Vapor generation	A. Scharffe	705,906	July 22	3779	820	100	814
Vaporizer for cold vapors, &c	E. Josse	708,647	Sept. 9	1166	265	100	2229
Varnishes. Manufacture of	E. H. Strange and E. Graham	708,985	Sept. 9	1729	400	100	2348
Varnishing	G. Tüschel	705,723	July 29	4661	.....	100	1002
Vat: *See* Bleaching-vat. Tempering-vat.							
Vault and constructing same. Burial	L. Miller	704,899	July 15	2851	618	100	611
Vault. Burial	J. T. McKim and L. Miller	704,850	July 15	2764	597	100	592
Vault-cover	P. S. Knapp and J. Steinberg	705,679	July 29	4575	994	100	991
Vault-light	A. De Man	709,849	Sept. 23	3560	805	100	2702
Vegetable albumen. Extracting	F. W. Gaertner	710,190	Sept. 30	4292	961	100	2919
Vegetable-cutter	J. C. Ivey, Sr	708,598	July 1	375	86	100	74
Vegetable or meat cutter	F. Barr	706,881	Aug. 12	1705	381	100	1483
Vegetable-roots. Machine for cutting	H. Webb	706,368	Aug. 5	736	158	100	1263
Vehicle	J. Krauss	708,601	July 1	398	98	100	79
Vehicle	L. B. Truslow	705,732	July 29	4659	1010	100	1002
Vehicle	A. A. Kellogg	706,958	Aug. 12	1841	412	100	1509
Vehicle	N. P. Mader	708,056	Sept. 2	109	26	100	2004
Vehicle	C. W. Hunt	708,231	Sept. 2	437	99	100	2070
Vehicle	L. H. Sohn	704,946	July 15	3004	644	100	644
Vehicle and stationary scale. Combination	C. F. Putnam	704,309	July 8	1581	341	100	331
Vehicle-body	F. Charron and L. Girardot	707,806	Aug. 19	2810	515 / 517	100	1625
Vehicle body. Motor	J. E. Cryderman	708,207	Sept. 2	396	91, 92	100	2062
Vehicle-body raiser	F. Corssen	709,396	Sept. 16	2680	608	100	2567
Vehicle-body spring suspension	C. B. Fairchild	704,452	July 8	2022	439 / 440	100	426
Vehicle-brake	J. Ortelg	705,491	July 22	4040	876	100	868
Vehicle-brake	W. F. Hitchcock	706,824	Aug. 12	1596	359	100	1460
Vehicle-brake	G. W. Burton	706,898	Aug. 12	1746	390	100	1491
Vehicle-brake	J. A. Tautphaeus	708,272	Sept. 2	515	117	100	2095
Vehicle-brake. Automatic	E. G. Stone	704,281	July 8	1710	373	100	360
Vehicle brake mechanism. Motor	J. Unser	709,124	Sept. 16	2133	489	100	2450
Vehicle brake mechanism. Motor	J. Unser	709,125	Sept. 16	2137	489 / 490	100	2451
Vehicle-drag	S. S. Stanley	704,976	July 15	3071	660	100	656
Vehicle driving-gear and brake combined. Motor	H. H. Hennegin	708,356	Sept. 2	651	147	100	2113
Vehicle driving-gear. Motor	E. E. Wright	708,881	July 1	981	208	100	187
Vehicle driving mechanism. Road	W. S. Taylor, Jr	707,994	Aug. 26	3857	866 / 867	100	1956
Vehicle. Electric	J. C. Henry	708,962	Sept. 9	1792	413	100	2360
Vehicle-frame	J. Dawson	706,584	Aug. 12	1053	231	100	1343
Vehicle-gear	F. E. Wilcox	709,069	Sept. 16	2027	462	100	2425
Vehicle-gear	F. E. Wilcox	709,069	Sept. 16	2028	462	100	2426
Vehicle-gear	F. E. Wilcox	709,070	Sept. 16	2029	463	100	2426
Vehicle-jack	A. Zwicker	709,730	Sept. 23	3327	749	100	2712
Vehicle lighting and heating device	P. F. Schwemle and J. W. Case	708,598	Sept. 9	1059	240	100	2306
Vehicle. Motor	W. Maybach	708,426	July 1	124	28	100	27
Vehicle. Motor	G. E. De Long	708,789	July 1	725	160	100	145
Vehicle. Motor	C. T. B. Sangster	705,804	July 22	3769	818 / 819	100	812
Vehicle. Motor	H. M. McCall	706,489	Aug. 5	892	198	100	1295
Vehicle. Motor	H. J. Marks	706,978	Aug. 12	1868	418	100	1514

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drfg.	Official Gazette. Vol.	Official Gazette. Page.
Vehicle. Motor	J. H. Hoadley	707,695	Aug. 26	3363	730	100	1889
Vehicle. Motor	H. F. Borbein	708,758	Sept. 9	1454	339	100	2291
Vehicle. Motor	E. A. Wright	708,949	Sept. 9	1759	405 / 406	100	2353
Vehicle. Motor	W. C. Baker	709,859	Sept. 30	3586	808	100	2779
Vehicle. Motor	F. C. Goddard	709,897	Sept. 30	3895	883	100	2799
Vehicle motor mechanism. Road	E. Perks and F. Birch	708,827	Sept. 9	1533	350 / 351	100	2307
Vehicle propelling means	A. Rieber	704,877	July 8	1808	410	100	400
Vehicle. Road	P. Christiansson	710,249	Sept. 30	4376	983 / 984	100	2944
Vehicle running-gear	H. A. Wise	706,483	Aug. 5	903	210	100	1310
Vehicle running-gear	W. N. Mecklan	708,488	Sept. 2	883	200	100	2160
Vehicle running-gear. Motor	F. J. Stallings	708,844	July 1	863	189 / 190	100	173
Vehicle safety device. Motor	H. Charles	704,616	July 15	2232	507	100	502
Vehicle safety device. Motor	A. L. Riker	709,681	Sept. 23	3245	725	100	2695
Vehicle-seat brace	G. W. Vinson	709,878	Sept. 16	2656	596	100	2761
Vehicle seat-spring	E. G. Blaine	708,115	Sept. 2	212	50	100	2025
Vehicle. Self-propelled	E. R. Gill	705,649	July 1	500	113	100	98
Vehicle single-perch gear	F. E. Wilcox	709,449	Sept. 16	2790	628	100	2588
Vehicle. Steam-propelled	H. K. Hess	704,253	July 8	1647	358	100	345
Vehicle. Steam-propelled	H. K. Hess	704,254	July 8	1650	359	100	345
Vehicle steering and controlling device. Road	M. D. Porter	704,102	July 8	1370	297	100	290
Vehicle steering mechanism. Locking device for	C. S. Van Wagoner	707,464	Aug. 19	2778	629 / 630	100	1722
Vehicle-top	L. Gillaspy	706,816	Aug. 12	1582	355	100	1457
Vehicle-wheel	N. A. Newton	705,121	July 22	3369	730	100	731
Vehicle-wheel	C. H. Wheeler and F. W. Kremer	705,176	July 22	3483	757	100	754
Vehicle-wheel	C. H. Wheeler and F. W. Kremer	705,177	July 22	3485	757	100	755
Vehicle-wheel	G. S. Lee	709,546	Sept. 23	3021	672	100	2648
Vehicle wheel. Motor	G. O. Venner	704,151	July 8	1481	317	100	311
Vehicle-wheel spindle	E. E. Root	705,968	July 29	5091	1110	100	1091
Vehicles. Brake for pivotal running-gear of	W. Wiedinmyer	707,481	Aug. 19	2809	635	100	1729
Vehicles. Chain-adjusting device for motor	C. O. Hedstrom	707,923	Aug. 26	3754	841 / 842	100	1936
Vehicles. Combined muffle and mud-guard for motor	R. M. Keating	705,357	July 22	3917	848	100	841
Vehicles. Differential gear for self-propelling	A. Herschmann	705,671	July 29	4556	989	100	982
Vehicles. Expansible pulley for motor	P. I. Viel	708,860	July 1	893	196 / 197	100	179
Vehicles from slipping sidewise. Means for preventing road	E. T. L. Williams	709,858	Sept. 23	3551	800	100	2758
Vehicles. Machine for handling	G. E. and J. S. Myers	706,437	Aug. 5	869	192	100	1296
Vehicles. Mechanism for electric propulsion of road	D. S. Bergin	708,374	July 1	19	4, 5	100	7
Vehicles. Metallic chest for motor	F. Charron and L. Girardot	704,676	July 15	2432	525	100	524
Vehicles. Tubular pole or shaft for	H. McLoughlin	705,427	July 22	4034	874	100	866
Vehicles. Two-speed and differential gear for motor	J. C. Robbins	705,790	July 29	4773	1035	100	1026
Velocipede and wagon. Combined	E. L. Hoy	704,041	July 8	1242	267	100	261
Velocipede driving-gear	F. A. Rich	707,012	Aug. 12	1929	432	100	1527
Velocipede. Folding railway	H. Barry	704,672	July 15	2429	524	100	523
Velocipede or the like	W. H. Hayes	708,809	Sept. 9	1485	341	100	2298
Vending apparatus. Coin-controlled	O. Ashton	708,198	Sept. 2	363	86, 87	100	2056
Vending apparatus. Newspaper	L. C. Overpeck	704,466	July 8	2052	445	100	432
Vending-machine	E. A. Wilcox	705,005	July 15	3127	675 / 676	100	667
Vending-machine. Automatic	S. Mayer	704,752	July 15	2576	555	100	553
Vending-machine. Coin-actuated	F. M. Sears	707,584	Aug. 19	2898	654 / 655	100	1746
Vending-machine. Coin-controlled	D. K. Stone and W. W. Healy	705,477	July 22	4120	896	100	864
Vending-machine. Coin-operated	P. G. MacLean	704,801	July 8	1571	339	100	329
Vending-machines. Valve mechanism for coin-controlled	W. J. Strong	704,950	July 15	3011	646 / 647	100	646
Veneer-bending machine	E. Aber	710,231	Sept. 30	4344	976 / 977	100	2933
Veneer-box-making machine	W. H. Stout	706,274	Aug. 5	846	118 / 119 / 120	100	1286
Veneer-cutting machine	L. G. Merritt	706,331	Aug. 5	857	143	100	1345
Veneer-drying machine	M. Rossow	705,708	July 29	4631	1003 / 1004	100	906
Veneer-slicer	J. N. Roberts	704,213	July 8	1586	343	100	332
Veneers. Apparatus for edge-uniting	W. M. Boenning	709,864	Sept. 30	3602	813 / 814 / 815	100	2782
Ventilating-T	E. F. Wixted	708,606	Sept. 9	1091	245	100	2213
Ventilator: *See* Mine-ventilator. Window-ventilator. Stovepipe-ventilator.							
Ventilator	T. M. Carpenter and F. L. Baker	708,782	July 1	712	158	100	142
Ventilator	J. W. Maus	709,220	Sept. 16	2344	531	100	2494
Ventilator	W. T. Cottier	709,656	Sept. 23	3279	734	100	2709
Ventilator	J. R. Wild	710,350	Sept. 30	4545	1025	100	2980
Ventilator and mirror-protector	W. C. McBride	704,076	July 8	1318	287	100	276
Vessel. Bulk-cargo	J. R. Oldham	704,992	July 8	1870	405	100	395
Vessel. Tilting	A. J. Betteridge	706,795	Aug. 12	1550	347	100	1450
Vessels at sea. Apparatus for repairing	N. J. McLaughlin	704,905	July 15	2950	650	100	618
Vessels. Construction of composite	E. Hayes	708,418	July 1	89	18	100	20
Vessels. Device for retarding the speed of	A. Zerbe	704,739	July 15	2527	546	100	544
Veterinary appliance	N. Stalker	708,271	Sept. 2	514	117	100	2085
Veterinary obstetric instrument	C. Gilts	704,689	July 15	2355	512	100	507
Veterinary surgeon's float	P. J. Weder	708,857	July 1	938	198	100	181
Veterinary surgeon's float	P. J. Weder	708,868	July 1	936	198	100	181
Veterinary surgeon's float	P. J. Weder	708,869	July 1	937	199	100	182

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Victual-protector	W. M. and J. M. Sausser	709,048	Sept. 16	1990	454	100	2418
Viscose. Manufacture of	A. Fielding	708,760	Sept. 9	1384	------	100	2276
Viscose on textiles, &c. Fixing	A. Fielding	708,761	Sept. 9	1385	------	100	2276
Vise	C. D. Bingham	703,878	July 1	24	5	100	8
Vise	W. E. Snediker	709,120	Sept. 16	2128	488	100	2449
Vise	J. F. Emmert	709,399	Sept. 16	2693	604	100	2567
Vise and bracket	C. B. Harper	708,089	Sept. 2	81	19	100	1998
Vise, drill, and bolt-holder. Combined	E. L. Kennedy	705,938	July 29	5027	{1095 / 1096	100	1077
Vise. Pipe-	J. B. Vogelbach and T. Gray	709,944	Sept. 30	3783	854	100	2818
Vise. Rapid-acting	H. D. Chipman	703,705	July 1	718	159	100	144
Voltage-regulator	T. M. Pusey	704,871	July 8	1879	{407 / 408	100	897
Voting-machine	C. F. Harrington	708,787	July 1	762	168	100	152
Voting-machine	W. Langrill	706,326	Aug. 5	649	141	100	1246
Voucher	H. Wise	706,807	July 29	4804	1043	100	1692
Wagon-body lifter	G. H. Wade	707,466	Aug. 19	2783	630	100	1723
Wagon-body lifter	H. Soetebier	709,588	Sept. 23	3092	686	100	2662
Wagon-body top-box fastener	C. A. Roberts	704,925	July 15	2948	692	100	634
Wagon-box. Metallic	W. Grosvenor and W. Milner	709,705	Sept. 23	3288	{737 / 738	100	2704
Wagon-boxes. Bump-board for	L. L. Haworth	706,832	Aug. 12	1504	358	100	1460
Wagon-brake	C. A. Francis	705,061	July 22	3242	{701 / 702	100	706
Wagon-brake	P. Lewis	708,564	Sept. 9	1008	{228 / 229	100	2197
Wagon-brake	T. J. Swisher, V. A. A. and E. Burger	710,345	Sept. 30	4535	1024	100	2979
Wagon. Chute-	A. Ray	709,783	Sept. 23	3316	745	100	2710
Wagon-coupling	W. S. Chapman	704,858	July 15	2727	601	100	595
Wagon. Dump-	B. H. Gleason	704,318	July 8	1769	396	100	372
Wagon. Dumping-	W. McIntosh	707,618	Aug. 26	3095	{697 / 698	100	1805
Wagon. Dumping-	R. J. Glenn	708,134	Sept. 2	251	60	100	2034
Wagon. Dumping-	J. J. Eagen	709,210	Sept. 16	2312	525	100	2487
Wagon. Dumping-	W. Leonhardt	709,715	Sept. 23	3307	742	100	2707
Wagon. Dumping-	E. M. Sandy	710,214	Sept. 30	4313	970	100	2931
Wagon. Dumping-	J. D. Mack	705,853	July 29	4887	1062	100	1049
Wagon-jack	H. Harris and S. M. Reese	705,735	July 29	4718	1021	100	1013
Wagon-rack	A. Z. Thomas	704,594	July 15	2300	500	100	496
Wagon-rack for hay-loaders	F. H. Pickard	707,520	Aug. 19	2868	658	100	1745
Wagon running-gear	J. E. Bennett	707,806	Aug. 26	3704	831	100	1925
Wagon running-gear	M. Stangel	703,494	July 1	209	49	100	44
Wagon-seat support	G. Mock	708,908	Sept. 9	1805	415	100	2263
Wagon-standard	G. B. Marx	708,819	Sept. 9	1518	348	100	2208
Wagons, &c. Lifting device for coal-	E. G. D. Wade	703,684	July 1	576	128	100	114
Waistcoat	J. C. Kimsey	707,399	Aug. 19	2362	530	100	1636
Waist former. Long-	A. H. Moses	707,444	Aug. 19	2747	622	100	1716
Wall and bricks for same. Masonry	A. De Man	705,048	July 22	3216	695	100	701
Wall. Building-	R. Völker	703,863	July 1	897	------	100	180
Wall-covering. Embossed	G. W. Wodicka	709,188	Sept. 16	2272	------	100	2477
Wall-finish and making same	A. Hofmann	703,704	July 1	609	135	100	120
Wall-nail	F. A. Bone	705,732	July 29	4675	1012	100	1006
Wall. Retaining-	L. Robertson	710,009	Sept. 30	3908	{882 / 883	100	2844
Wardrobe	P. D. Graaff	708,341	Sept. 2	631	142	100	2109
Wardrobe. Portable	F. J. Meier	705,967	July 22	3703	803	100	798
Warmer	A. E. Rhoades	703,471	July 1	175	40	100	37
Warper stop-motion mechanism	L. A. Robbins	706,795	Aug. 12	1529	339	100	1445
Washbench	W. B. Murphy	705,116	July 22	3360	728	100	730
Washboard	G. W. Newsom	705,284	July 22	3730	811	100	808
Washboard	S. McCay	706,192	Aug. 5	370	79	100	1192
Washboard	W. R. McPherson and H. E. Eurich	707,861	Aug. 26	3632	819	100	1911
Washboard	G. Leeson	707,126	Aug. 19	2146	481	100	1590
Washboiler	J. L. Powers	709,555	Sept. 23	3084	676	100	2651
Washboiler attachment	S. B. Woodford	707,667	Aug. 26	3908	719	100	1828
Washer: *See* Axle-washer. Dish-washer. Can-washer. Ore-washer.							
Washing and wringing machine. Combined	J. W. Rogers	704,484	July 15	2966	639	100	639
Washing device. Diaper-	J. W. Reed	708,920	Sept. 9	1710	394	100	2344
Washing-machine	J. Knoche	708,428	July 1	111	25	100	95
Washing-machine	J. P. Gordon	708,913	July 1	991	216	100	198
Washing-machine	E. F. Miller	704,071	July 8	1313	286	100	275
Washing-machine	J. B. Rentzel	705,962	July 29	5080	{1107 / 1108	100	1088
Washing-machine	G. Thomas	705,976	July 29	5104	1113	100	1098
Washing-machine	W. Sparkman	706,353	Aug. 5	700	152	100	1258
Washing-machine	A. C. Israel	706,418	Aug. 5	841	184	100	1283
Washing-machine	L. B. Parker	706,592	Aug. 12	1153	255	100	1364
Washing-machine	T. H. C. Beall	707,072	Aug. 19	2053	{458 / 459	100	1570
Washing-machine	J. M. Lawrence	707,242	Aug. 19	2365	530	100	1637
Washing-machine	O. Guitar	707,409	Aug. 19	2687	606	100	1704
Washing-machine	J. G. Gibbs	707,608	Aug. 26	3261	729	100	1835
Washing-machine	C. F. Schmidt	707,867	Aug. 26	3642	821	100	1913
Washing-machine	P. H. Gendron	708,338	Sept. 2	627	141	100	2109
Washing-machine	F. G. Hyatt	708,568	Sept. 9	1000	227	100	2195
Washing-machine	M. E. Kelly	709,016	Sept. 16	1921	441	100	2404
Washing-machine	A. G. Brandt and D. L. Griffiths	709,813	Sept. 23	3514	792	100	2750
Washing-machine gearing	J. H. Stanfield	707,949	Aug. 26	3791	852	100	1944
Washing-machine reversing mechanism	D. B. Willock	708,444	Sept. 2	794	{180 / 181	100	2142
Washstands, bath-tubs, &c. Fixture for	A. P. Windolph	704,419	July 8	1956	435	100	412
Washstands. Means for attaching bowls to the slabs of	J. A. Clukies	709,872	Sept. 30	3693	818	100	2786
Waste-pipe trap	V. E. Lombard and C. E. Cole	705,769	July 29	4740	1026	100	1018

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Drgs.	Official Gazette. Vol.	Official Gazette. Page.
Waste-trap	J. W. McAuliffe	705,777	July 29	4788	1030	100	1021
Watchcase	E. Kuhn	707,430	Aug. 19	2727	617	100	1711
Watch-dial illuminator	F. M. Durkee	704,446	July 8	2009	437	100	423
Watch-movement fastener	L. G. Solenberger	709,121	Sept. 16	2129	488	100	2449
Watch-protector	F. A. Chervenka	704,226	July 8	1634	351	100	339
Watch. Stem-winding	W. E. Porter	705,708	July 29	4627	1002	100	995
Watch. Stem-winding	C. T. Higginbotham	706,656	Aug. 12	1279	281	100	1390
Watch. Stem-winding	M. Bassoff	708,985	Sept. 16	1847	452	100	2390
Watch. Stem-winding	M. Bassoff	708,986	Sept. 16	1849	425	100	2390
Watch. Stop-	G. M. Sawyer	706,204	Aug. 5	392	83	100	1197
Watch-winding device	L. J. Williams	707,887	Aug. 26	3683	829	100	1922
Watchmaker's staking-tool	E. E. Menges	706,330	Aug. 5	656	143	100	1247
Water-bottles, water-bags, &c. Package for	F. A. Wells	708,106	Sept. 2	191	45	100	2021
Water-closet	D. S. Schureman	710,342	Sept. 30	4530	{1022 / 1023	100	2978
Water-closet bowl	H. T. Bush	705,819	July 22	3810	826	100	820
Water-closet bowl	P. J. McGuire	706,090	Aug. 12	1890	423	100	1519
Water-closet bowls or washbasins. Mechanism for temporarily locking	E. Woodruff	706,869	Aug. 12	1684	377	100	1479
Water-closet seat	W. C. Anderson	706,791	Aug. 12	1539	345	100	1447
Water-closet seat. Detachable	H. M. Solveson	710,021	Sept. 30	3930	888	100	2849
Water-closet valve	E. G. Watrous	710,128	Sept. 30	4147	935	100	2894
Water-closet ventilator attachment	S. C. Brown	704,471	July 8	2064	447	100	434
Water-cooler	G. W. Born	705,876	July 22	3946	855	100	847
Water-cooling apparatus	W. J. Dossey	709,887	Sept. 30	3680	830	100	2706
Water-cooling tower	C. H. Wheeler and L. L. Pratt	707,042	Aug. 12	1981	445	100	1538
Water distribution	W. O'Neill and W. H. Gordon	707,448	Aug. 19	2733	{623 / 624	100	1717
Water-elevator	L. Wells	709,849	Sept. 23	3499	789	100	2746
Water-gage	F. M. Ashley	705,192	July 22	3518	768	100	765
Water-gage attachment	F. J. Knox	706,959	Aug. 12	1843	412	100	1560
Water-gage connection	J. B. L. McKenzie	709,289	Sept. 16	2399	537	100	2498
Water-gage safety device	J. A. Mosher	705,118	July 22	3353	727	100	728
Water-gate	D. N. B. Coffin	707,825	Aug. 26	3558	804	100	1898
Water-gate	J. H. Martin and D. Ormand	709,102	Sept. 16	2102	481	100	2443
Water-heater	H. W. O'Dowd	703,788	July 1	669	148	100	134
Water-heater	J. Foster	705,385	July 22	3872	837	100	882
Water-heater	T. L. Phillips	707,849	Aug. 19	2578	582	100	1679
Water-heater	R. J. Gibbons	709,091	Sept. 16	2095	478	100	2439
Water-heater. Combined solar and artificial heat	F. Walker	705,167	July 22	3462	754	100	750
Water-heater. Wall	J. H. Mackley	709,340	Sept. 16	2563	{576 / 577	100	2541
Water-heating apparatus	E. W. Higbee	704,880	July 8	1791	391	100	376
Water-meter	H. F. Brown	703,716	July 1	628	140	100	124
Water-meter	G. B. Bassett	708,206	Sept. 2	555	126	100	2004
Water-motor	N. Schmidt	709,279	Sept. 16	2448	558	100	2516
Water-purifier	C. C. Clark	703,541	July 1	294	67	100	50
Water-purifying apparatus	C. L. Kennicott	708,596	July 1	887	{89 / 90 / 91	100	77
Water-purifying apparatus	J. Davis	704,244	July 8	1685	354	100	342
Water-purifying apparatus	C. L. Kennicott	708,717	Sept. 9	1302	297	100	2257
Water-raising apparatus	G. R. Young and C. Shaw	704,608	July 15	2221	504	100	500
Water. Removing oil from	A. E. Krause	705,253	July 22	3666		100	792
Water-tower. Portable	H. H. Gorter	708,185	Sept. 2	252	60, 61	100	2034
Water-trap	F. Camentz, Jr	708,529	Sept. 9	959	217	100	2187
Water-tube boiler	N. Vicente	706,787	Aug. 12	1533	{341 / 342 / 343 / 344	100	1446
Water-tube boiler	E. G. Rust	710,840	Sept. 30	4598	{1021 / 1022	100	2977
Water-wheel	S. M. Thurman	704,405	July 8	1937	419	100	408
Water-wheel	J. W. Houtz	705,087	July 22	3299	717	100	717
Water-wheel	T. S. Barwis	706,150	Aug. 5	298	60	100	1176
Water-wheel	G. W. Johnston	708,715	Sept. 9	1297	295	100	2255
Water-wheel	R. E. Woolman	710,029	Sept. 30	3945	890	100	2858
Water-wheel. Submerged	G. Marburg	707,857	Aug. 26	3628	818	100	1910
Water-wheel system. Horizontal	A. Giesler	705,993	July 29	5133	1119	100	1099
Water-wheel system. Turbine-	A. Giesler	705,994	July 29	5134	1119	100	1099
Waterer. Stock-	J. W. Kelley and C. W. Adkins	708,361	Sept. 2	659	148	100	2114
Watering trough, bowl, or basin	N. W. Griswold	708,345	Sept. 2	637	144	100	2111
Wave-detecting device	H. Shoemaker and G. W. Pickard	707,266	Aug. 19	2408	540	100	1645
Wave-motor	E. Chaquette	703,998	July 8	1166	254	100	247
Wave-motor	H. Williams	706,620	Aug. 12	1208	267	100	1375
Wave-power. Device for utilizing	J. C. Hergenhan and C. C. Von der Ahe	706,558	Aug. 12	1090	241	100	1351
Wave-responsive device. Current-actuated	R. A. Fessenden	706,744	Aug. 12	1441	318	100	1436
Wax. Prepared sealing-	T. Ardizone	709,182	Sept. 16	2155	494	100	2454
Weaner. Calf-	G. W. Moody	705,945	July 1	1048	228	100	209
Weaner. Calf-	L. H. Saunders	707,020	Aug. 12	1945	435	100	1530
Weaner. Calf-	D. Daggett	709,140	Sept. 16	2168	497	100	2458
Weaving-diagrams. Producing	J. Szczepanik	703,849	July 1	872	{192 / 193	100	174
Weaving-diagrams. Producing	J. Szczepanik	703,850	July 1	875	198	100	175
Weaving-diagrams. Producing	J. Szczepanik	703,851	July 1	879	194	100	176
Web-folding machine	R. C. Seymour	706,962	Aug. 12	1668	{374 / 375	100	1476
Weed-puller	J. A. Whelan	707,475	Aug. 19	2798	633	100	1726
Weeder	B. F. Clark and W. Smith	704,514	July 15	2162	468	100	469
Weeder tooth-fastener	G. A. Niles	707,624	Aug. 26	3108	700	100	1867
Weeding implement	B. Sandle	704,190	July 8	1416	303	100	298
Weigher. Automatic grain-	A. and J. H. McLeod	708,442	Aug. 5	906	{194 / 195	100	1297
Weighing apparatus	J. Manes	704,065	July 8	1289	279	100	271
Weighing-machine	D. S. Cook	703,547	July 1	311	70	100	63

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Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Weighing-machine	E. H. Cook	706,799	Sept. 9	1466	335	100	2294
Weighing-machine. Automatic	F. Barto	704,429	July 8	1970	429	100	415
					430		
Weighing-machine. Automatic	U. S. James	706,505	Aug. 12	1099	243	100	1353
					244		
Weighing-machine feeding apparatus	W. E. Nickerson	705,586	Aug. 12	1144	253	100	1353
					254		
Weighing-machine. Rotary	P. B. Clarke	708,544	July 1	300	68, 69	100	61
Weighing or packaging machine feed apparatus	W. H. Doble	705,222	July 22	3594	778	100	778
Weight-motor and governor mechanism	W. D. Bell	707,377	Aug. 19	2622	591	100	1660
Weir. Self-adjusting	C. C. Carlisle	706,586	Aug. 12	1040	229	100	1340
Welding and tapering sockets	P. Boyd	706,519	Aug. 12	1027	226	100	1338
					227		
Welding and tapering sockets. Apparatus for	P. Boyd	706,517	Aug. 12	1022	225	100	1337
					226		
Welding and tapering sockets. Apparatus for	P. Boyd	706,518	Aug. 12	1025	226	100	1338
Welding and tapering sockets. Apparatus for	P. Boyd	706,520	Aug. 12	1030	227	100	1338
Well-casing perforators. Automatic stop and lock for oil-	T. E. Clark	707,552	Aug. 26	2992	670	100	1777
Well-drilling machine	M. Williams	704,770	July 15	2205	564	100	559
Well-drilling tools. Fluid-pressure apparatus for	G. B. Gallagher and C. J. Macomber	705,173	Aug. 5	334	71	100	1185
Well-inlet	D. H. Maury	704,896	July 15	2847	616	100	610
Well-measuring device. Artesian	S. McCaughtry	706,488	Aug. 5	890	192	100	1295
Well-rig	E. A. Hardison	704,250	July 8	1642	356	100	343
					357		
Well-tube sand-screen	C. Monjeau	707,611	Aug. 26	3092	694	100	306
Wells. Expanding reamer for oil or Artesian	J. P. Smith	704,136	July 8	1457	312	100	2661
Wells, &c. Sucker-rod grab for oil-	W. La Barte	709,580	Sept. 23	3079	695	100	2105
Wells, &c. Tool for oil-	W. J. Dunlap	708,325	Sept. 2	605	137		
Wheel:							
See Car-wheel. Paddle-wheel.							
Current-wheel. Polishing-wheel.							
Fifth-wheel. Saw-wheel.							
Gear-wheel. Spring-wheel.							
Inflatable wheel. Sprocket-wheel.							
Locomotive driving-wheel. Trolley-wheel.							
Magnetic wheel. Vehicle-wheel.							
Metal wheel. Water-wheel.							
Wind-wheel.							
Wheel	W. T. M. Brunnemer	704,234	July 8	1620	351	100	339
Wheel	E. J. Edwards	705,567	July 29	4370	947	100	1308
Wheel	J. J. Howe	706,477	Aug. 5	954	206	100	1308
Wheel	A. A. Vérel	706,480	Aug. 5	959	209	100	1310
Wheel	M. S. Shotwell	710,375	Sept. 30	4587	1085	100	2988
Wheel	E. J. Napier	707,711	Aug. 26	3288	736	100	1844
Wheel-clamp	V. P. Keller	705,677	July 29	4573	993	100	985
Wheel-making machine	W. C. Oastler	705,128	July 22	3376	731	100	733
Wheel scraper or cleaner							
Wheel-treating flask	J. P. S. Lawrance	708,817	Sept. 9	1513	346	100	2303
					347		
Wheels and disks. Machinery for the manufacture of rimmed	E. Williams	705,008	July 15	3134	673	100	.666
					674		
Wheels and the product thereof. Molding spoke-	G. H. Dickerson and J. M. Gordon	707,213	Aug. 19	2321	520	100	1628
Wheels on shafts. Means for securing	C. C. Smalley	706,265	Aug. 5	511	110	100	1219
Wheelbarrow	W. A. House and W. F. Hosken	705,406	July 22	3994	865	100	858
Whiffletree	R. W. McKinley	707,795	Aug. 26	3507	791	100	1888
Whiffletree attachment	N. Reisner	706,109	Aug. 5	198	41	100	1157
Whiffletree-clip	W. R. Ayer	706,879	Aug. 12	1701	391	100	1482
Whiffletree-hook	C. V. Hoover	707,779	Aug. 26	3466	781	100	1879
Whiffletree-mounting	E. W. M. Bailey	706,004	Sept. 2	8	2	100	1982
Whip	M. O. Felker	708,397	July 1	63	12	100	15
Whips. Butt-loading for	H. W. Larsson	707,124	Aug. 19	2143	480	100	1589
Whist tray. Duplicate-	R. B. Starkweather	705,469	July 22	4109	893	100	892
Wind-motor	J. M. Cochran	708,766	July 1	720	159	100	144
					160		
Wind-motor	C. F. Bamford	705,195	July 22	3521	764	100	764
Wind-motor	A. Gran	705,922	July 29	5009	1090	100	1073
Wind-turbine	J. Kaiser	710,277	Sept. 30	4418	996	100	2954
Wind-wheel	A. J. Bolton	705,639	July 29	4495	975	100	970
Windmill	L. A. Haight	704,080	July 8	1225	264	100	258
Windmill	R. Bruneau	704,507	July 15	2141	463	100	463
Windmill	T. W. Lowe	708,375	Sept. 2	675	152	100	2118
					153		
Windmill and pump coupling mechanism	W. F. Pflueger	707,718	Aug. 26	3302	739	100	1847
					740		
Windmill-controller	W. J. Banish	706,714	Aug. 12	1370	305	100	1412
Windmill. Governor for	C. F. Ohler	705,782	July 29	4761	1082	100	1023
					1083		
Windmill-regulator. Automatic	E. A. Bromley	708,620	Sept. 9	1109	249	100	2217
Winding-machine	R. C. and F. L. Fay	707,684	Aug. 26	3233	725	100	1882
					726		
Winding machine. Cross-	R. Voigt	709,653	Sept. 23	3194	713	100	2054
Windlass	F. S. Manton	708,818	Sept. 9	1514	847	100	2303
					848		
Windlass. Ship's	C. W. Blake	708,455	Sept. 2	818	186	100	2147
					187		
Windlass. Sweep-operated hoisting-	E. R. Storrs	705,880	July 29	4984	1073	100	1058
Window	E. Kraft	708,600	July 1	896	98	100	79
Window	P. Lalor	705,098	July 22	3325	721	100	722
Window	J. Horsfield	705,999	July 29	5141	1121	100	1101
					796		
Window	H. Vettel	707,808	Aug. 26	3527	797	100	1892
					798		
Window and window-frame. Metal	W. R. Mudd	709,257	Sept. 16	2366	537	100	2498
Window appliance	C. E. Bradshaw	709,582	Sept. 23	2998	668	100	2045
Window brace and fastener	O. J. Jenks	706,065	Aug. 5	125	26	100	1143
Window-cleaner	E. B. Beeler	708,299	Sept. 2	560	127	100	2095

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Window-cleaning apparatus	S. C. Lawlor	706,834	Aug. 12	1619	363	100	1465
					364		
Window-cleaning apparatus	H. Baird	708,854	Sept. 9	1587	393	100	2219
Window-cleaning chair	S. Rabinowitz	705,262	July 22	3749	814	100	809
Window-fastener	W. W. Potter	706,595	Aug. 12	1158	257	100	1363
Window-fastener	L. D. Parks	708,067	Sept. 2	125	30	100	2007
Window-fastening device	D. Snell	709,736	Sept. 23	3822	747	100	2711
Window frame and sash	C. L. Wall	708,480	Sept. 2	770	173	100	2187
Window frame and sash	E. Davey	709,666	Sept. 23	3219	718	100	2090
					719		
Window frame and sash. Sheet-metal	C. B. Schilling	709,514	Sept. 23	2965	661	100	2037
Window-guard	H. P. Culver and M. Leichtentritt	706,029	Aug. 5	50	10	100	1138
Window-guard. Bowed nursery	G. C. and E. A. Williams	708,442	Sept. 2	791	179	100	2141
Window-guard. Nursery	G. C. and E. A. Williams	708,441	Sept. 2	790	179	100	2141
Window-locking device	J. Wanless	707,089	Aug. 12	1978	444	100	1537
Window-opener	J. Horsfield	705,405	July 22	3993	865	100	857
Window-screen	C. B. Warner	704,992	July 15	3107	669	100	662
Window-screen	J. P. McKeever	705,278	July 22	3722	807	100	801
Window-screen	M. Kolf	706,762	Aug. 12	1484	329	100	1426
Window-screen	O. Ouellette	707,449	Aug. 19	2754	594	100	1717
Window-screen	E. G. Holden	708,357	Sept. 2	553	147	100	2113
Window-screen	H. D. Mills	709,346	Sept. 16	2573	580	100	2543
Window-screen	E. Hipolito	709,405	Sept. 16	2709	607	100	2570
Window-screen	A. L. Taber	704,667	July 15	2419	523	100	521
Window-screen hanger	L. Wagener	710,127	Sept. 30	4144	935	100	2954
Window-seat	W. E. Hardeman	710,322	Sept. 30	4497	1014	100	2970
Window. Sliding	A. Gnezda and F. Hücker	708,401	July 1	68	13	100	16
Window support. Casement-	J. A. Russell	705,303	July 22	3767	817	100	812
Window-ventilator	D. O. Davis	706,905	Aug. 12	1753	392	100	1468
Window-ventilator	J. E. Meyer	705,270	July 22	3707	804	100	799
Wine-cooler	L. Perotti	705,437	July 22	4055	879	100	871
Wine-press	P. Garrett	704,533	July 15	2200	476	100	476
Wines. Preparing sparkling	W. H. Farrell	704,872	July 15	2803	606	100	600
Wire-bending machine	G. F. Pross and A. P. Tucker	707,006	Aug. 12	1916	429	100	1524
					430		
Wire. Combination-tool for manipulating	E. C. Cullen	709,749	Sept. 23	3385	739	100	2722
Wire-covering machine	A. Kreidler	704,550	July 15	2231	483	100	482
Wire-fabric machine	T. Sutherland	708,679	Sept. 9	1213	277	100	2238
					278		
					279		
					280		
Wire-grip	J. D. Campbell and R. C. Kyle	708,314	Sept. 2	586	132	100	2101
Wire machine. Barb-	H. Gauerman and D. Pryde	707,315	Aug. 19	2514	566	100	1666
					567		
Wire machine. Barbed-	E. F. Shellaberger	704,710	July 15	2489	538	100	536
					539		
Wire machine. Barbed-	W. Emery	705,304	July 22	3972	860	100	852
					861		
Wire-machine tension device. Barbed-	F. W. Macke and M. Miller	705,688	July 29	4588	996	100	988
Wire reel. Barbed-	Z. D. Smith	708,596	Sept. 9	1063	241	100	2207
Wire-reel truck	F. W. Schooley	709,982	Sept. 30	3760	849	100	2813
					850		
Wire-rope machine	E. P. Frederick	708,778	July 1	739	164	100	148
Wire-straightener	J. G. Iverson	710,151	Sept. 30	4195	945	100	2904
Wire-stretcher	W. M. Halpain	704,875	July 15	2807	607	100	601
Wire-stretcher	C. Lienhardt	705,259	July 22	3693	801	100	796
Wire-stretcher	J. Stevenson	705,547	July 22	4327	935	100	929
Wire-stretcher	R. F. Boatright	705,555	July 29	4349	941	100	941
Wire-stretcher	S. Bates	705,684	July 29	4490	974	100	969
Wire-stretcher	M. E. Shinn and F. J. Herbert	707,526	Aug. 19	2898	655	100	1747
Wire-stretcher	E. E. Swarm	707,782	Aug. 26	3531	746	100	1853
Wire-stretcher	F. C. Garton	708,474	Sept. 2	850	194	100	2154
Wire-stretcher	A. J. Goldsby	708,706	Sept. 9	1278	292	100	2251
Wire-stretcher	H. Hyde	705,843	July 29	4864	1057	100	1044
Wire-stretching machine	D. W. Aylworth	708,612	Sept. 9	1098	247	100	2214
Wire-tie	J. Imbler	706,948	Aug. 12	1820	407	100	1505
Wire tie. Stay-	T. Spriggs	706,606	Aug. 12	1178	261	100	1370
Wire-tightener	S. W. Bradbury	708,196	Sept. 2	881	88	100	2059
Wire twisting and reeling machine	W. Emery	705,331	July 22	3846	833	100	827
Wire. Weaving	C. W. James	704,339	July 8	1819	394	100	393
Wires, conductors, &c. Coupling for	J. Fischer and H. Schneider	704,869	July 15	2798	605	100	599
Wires. Metal fastening for cross-	B. S. Blake	709,695	Sept. 23	3278	733	100	2701
Wireworking-tool	D. M. Bailey	708,613	Sept. 9	1099	247	100	2215
Wiring wood slats. Machine for	C. M. Alger	708,111	Sept. 2	199	47, 48	100	2023
Wood-bending	S. Clark	709,304	Sept. 16	2302	523	100	2485
Wood-cutting machine	J. A. Crismore	705,324	July 22	3823	828	100	823
					829		
Wood fiber. Machine for producing	H. M. Hoover	709,576	Sept. 23	3070	683	100	2059
Wood-fluting machine	E. Rawson	704,373	July 8	1885	408	100	398
					409		
Wood. Impregnating	M. Rüping	709,799	Sept. 23	3486	.....	100	2743
Wood-impregnating apparatus	J. Borner	703,522	July 1	268	61	100	54
Wood-plate-cutting machine	A. Smith	706,340	Aug. 5	692	151	100	1256
Wood. Preserving	T. Giussani	707,224	Aug. 19	2343	524	100	1622
Wood, sawdust, peat, &c., and for treating other substances. Apparatus for drying and distilling	E. Larsen	704,886	July 15	2480	612	100	605
Wood-shapers. Antifriction-collar for	T. S. Crapp	706,488	Aug. 5	972	218	100	1313
Wood-splitting machine	O. E. Ellison	705,659	July 29	4582	984	100	978
					985		
Woods. Staining	J. Pfister	708,069	Sept. 2	128	31	100	2006
Woodwork. Decoration of	H. Smith	708,266	Sept. 2	497	114	100	2082
Woodworking-machine	F. Dudek and R. Dembowski	704,476	July 8	2074	449	100	436
					450		
Woodworking-machine pressure device	J. R. Thomas	704,147	July 8	1473	316	100	309
Wool-washing machine	J. Keefe	709,227	Sept. 16	2340	530	100	2496

Alphabetical list of inventions, July to September, inclusive—Continued.

Invention.	Name.	No.	Date.	Monthly volume. Spec.	Monthly volume. Dr'g.	Official Gazette. Vol.	Official Gazette. Page.
Work-carrier locking device	J. Hornby	707,885	Aug. 19	2541	571	100	1672
Work-holder	E. G. Couch and N. D. Wells	706,581	Aug. 12	1048	230	100	1342
Woven fabric	W. T. Smith	705,464	July 22	4102	892	100	880
Woven fabric	W. T. Smith	707,871	Aug. 26	3548	892	100	1914
Woven fabric	T. Fanta	708,630	Sept. 9	1127	253	100	2221
Wrapper. Package	L. S. Miller	710,382	Sept. 30	4513	1017	100	2973
Wrench:							
See Can-wrench. Combination-wrench. Machine-wrench. Monkey-wrench. Nut-wrench. Pipe-wrench. Ratchet-wrench. Saw-tooth wrench. Socket-wrench.							
Wrench	A. Bivins	708,377	July 1	25	6	100	8
Wrench	G. W. Boozer	703,626	July 1	469	107	100	92
Wrench	J. C. Davison	703,898	July 1	971	212	100	194
Wrench	E. L. Utley	704,407	July 8	1939	420	100	408
Wrench	G. Schaub	704,582	July 15	2281	495	100	492
Wrench	W. Neilson	704,659	July 15	2405	520	100	519
Wrench	J. O'Brien	705,860	July 29	4899	1065	100	1052
Wrench	C. C. Fields	706,062	Aug. 5	79	17	100	1133
Wrench	P. Taroli	706,127	Aug. 5	231	48	100	1164
Wrench	A. L. Slater	706,208	Aug. 5	396	85	100	1197
Wrench	R. J. Cosseboom	707,391	Aug. 19	2650	599	100	1695
Wrench	C. J. Barnes	707,895	Aug. 26	3701	831	100	1925
Wrench	M. Walsh and J. N. Angers	708,183	Sept. 2	345	82	100	2062
Wrench	A. Dahl	708,310	Sept. 2	400	92	100	2063
Wrench	R. Johns	709,711	Sept. 23	3299	741	100	2706
Wrench	C. Busby	709,742	Sept. 23	3371	756	100	2719
Wrench	T. H. Cahill	710,040	Sept. 30	3962	893	100	2856
Wrench	M. M. Murray	710,164	Sept. 30	4220	951	100	2910
Wrench	J. T. Burr	710,179	Sept. 30	4245	957	100	2916
Wrench	M. Whiteside	704,725	July 15	2522	545	100	543
Wrench and tire-setter. Combined	E. H. Sears	705,451	July 22	4083	888	100	876
Wrench-handle	H. Searle	705,874	July 29	4924	1071	100	1056
Wrenches. Construction of	H. Searle	705,875	July 29	4925	1071	100	1057
Wrenches. Construction of							
Wringer:							
See Clothes-wringer. Mop-wringer.							
Writing or copying pad	F. G. J. Post	707,942	Aug. 26	3784	849	100	1942
X-rays. Means for preventing injury in using	L. T. Lowder	710,201	Sept. 30	4287	965	100	2926
Yarn-drying apparatus	G. Stone	705,158	July 22	3448	749, 750, 751	100	747
Yoke attachment. Neck-	D. N. Luse	708,238	July 1	1036	226	100	206
Yoke. Neck-	E. D. Jury	705,411	July 22	4008	898	100	861
Yoke. Neck-	F. A. Nason and B. Smith	705,428	July 22	4086	875	100	867
Yoke. Neck-	A. Burk	708,019	Sept. 2	31	7	100	1987
Zinc-furnace	W. C. Wetherill	708,438	Sept. 2	782	177, 178	100	2139
Zinc. Obtaining	E. H. Hopkins	708,044	Sept. 2	99	21	100	2000
Zinc or other metals from their ores. Extracting	C. Hoepfner	704,811	July 15	2376	------	100	512
Zinc ores and especially blende. Electrometallurgical treatment of	C. J. Tossizza	703,857	July 1	889	------	100	178

ALPHABETICAL LIST OF DESIGNS.

Design.	Name.	No.	Date.	Official Gazette. Volume.	Official Gazette. Page.
Album stand. Photograph	R. Aisenman	36,038	Aug. 26	100	1966
Andiron	T. M. Dudgeon	36,046	Sept. 9	100	2371
Andiron	T. M. Dudgeon	36,047	Sept. 9	100	2371
Andiron	T. M. Dudgeon	36,048	Sept. 9	100	2372
Andiron	T. M. Dudgeon	36,049	Sept. 9	100	2372
Autocarette-body	W. E. Schneider	35,984	July 29	100	1108
Automobile-body	C. M. Taylor	36,008	Aug. 12	100	1555
Automobile-body	J. C. Reuter	36,040	Sept. 2	100	2170
Badge	A. E. Lyon	35,973	July 8	100	443
Badge	M. J. Kane	35,986	Aug. 5	100	1320
Badge	J. T. Bailey	36,042	Sept. 9	100	2371
Badge	E. R. Sargent	35,980	July 22	100	925
Badge. Metal	J. L. Ewin	35,979	July 22	100	925
Badge or similar article	S. A. Keller	36,038	Sept. 2	100	2170
Bag-frame	C. L. Garner	36,019	Aug. 19	100	1754
Bed case. Folding	M. G. Merritt	36,091	Sept. 30	100	3003
Bicycle-rack	S. A. Keller	36,027	Aug. 26	100	1966
Blotting-pads, &c. Corner for	W. M. McCormick	35,976	July 8	100	443
Bottle	H. Forest	36,001	Aug. 12	100	1554
Bottle. Prescription-	F. Goetz	36,016	Aug. 19	100	1753
Box or carton	P. B. Myers	35,977	July 8	100	443
Box. Paper	M. Mittendorff	36,070	Sept. 16	100	2597
Braid	S. A. Keller	36,023	Aug. 26	100	1965
Brushes, &c. Back for	S. A. Keller	36,026	Aug. 26	100	1966
Brushes, &c. Back for	S. A. Keller	36,024	Aug. 26	100	1966
Button-hooks, &c. Handle for	S. A. Keller	36,043	Sept. 9	100	2371
Button-hooks, &c. Handle for	T. W. Foster	36,010	Aug. 19	100	1752
Button-hooks, paper-cutters, or similar articles. Handle for	M. A. Hill	36,074	Sept. 16	100	2597
Buttoner-handle	L. C. Hiller	36,035	Sept. 2	100	2169
Candlestick	L. C. Hiller	36,036	Sept. 2	100	2170
Candlestick	L. C. Hiller	36,037	Sept. 2	100	2170
Candlestick	L. Wolf	36,075	Sept. 16	100	2597
Chatelaine-bag side frame	L. V. Aronson	36,084	Sept. 30	100	3002
Clock-case	H. Nutrizio	36,014	Aug. 19	100	1753
Coffee or tea pot	M. Benedict	36,087	Sept. 30	100	3002
Coin-controlled mechanism. Case for	A. Burgess	36,020	Aug. 19	100	1754
Curtain. Lace	A. Burgess	36,021	Aug. 19	100	1754
Curtain. Lace	M. A. Donohue, Jr	36,005	Aug. 12	100	1555
Desk casting. School	C. J. Clarke	35,978	July 15	100	678
Dresser	W. F. Stifel	36,041	Sept. 2	100	2170
Fabric	A. Pfaendler	36,080	Sept. 16	100	2597
Fabric	M. L. Powers	36,083	Sept. 30	100	3002
Finger-ring	T. M. Dudgeon	36,058	Sept. 9	100	2373
Fireplace-front	T. M. Dudgeon	36,059	Sept. 9	100	2373
Fireplace-front	T. M. Dudgeon	36,060	Sept. 9	100	2374
Fireplace-front	T. M. Dudgeon	36,061	Sept. 9	100	2374
Fireplace-front	T. M. Dudgeon	36,062	Sept. 9	100	2374
Fireplace-front	T. M. Dudgeon	36,063	Sept. 9	100	2374
Fireplace-front	T. M. Dudgeon	36,064	Sept. 9	100	2374
Fireplace-front	T. M. Dudgeon	36,065	Sept. 9	100	2374
Fireplace-front	T. M. Dudgeon	36,066	Sept. 9	100	2375
Fireplace-front	T. M. Dudgeon	36,067	Sept. 9	100	2375
Fireplace-front	T. M. Dudgeon	36,068	Sept. 9	100	2375
Fireplace-front	T. M. Dudgeon	36,069	Sept. 9	100	2375
Fireplace-front	T. M. Dudgeon	36,070	Sept. 9	100	2375
Fireplace-front	T. M. Dudgeon	36,071	Sept. 9	100	2375
Fireplace-front	T. M. Dudgeon	36,072	Sept. 9	100	2376
Fireplace-front	T. M. Dudgeon	36,073	Sept. 9	100	2376
Fireplace-lining	T. M. Dudgeon	36,055	Sept. 9	100	2373
Fireplace-lining	T. M. Dudgeon	36,056	Sept. 9	100	2373
Fireplace-lining	T. M. Dudgeon	36,057	Sept. 9	100	2373
Flag	A. R. Conner	35,965	Aug. 5	100	1320
Grate. Basket-	T. M. Dudgeon	36,051	Sept. 9	100	2372
Grate. Basket-	T. M. Dudgeon	36,052	Sept. 9	100	2372
Grate. Basket-	T. M. Dudgeon	36,053	Sept. 9	100	2372
Grate. Basket-	T. M. Dudgeon	36,054	Sept. 9	100	2373
Grate. Basket-	T. M. Dudgeon	36,050	Sept. 9	100	2372
Grate. Portable basket-	F. W. Olsen	36,088	Sept. 30	100	3002
Jardinière-stand	C. A. Haas	36,039	Aug. 26	100	1966
Lamp-body	A. L. Baron	36,085	Sept. 30	100	3002
Lamp-body	A. P. Storrs	36,076	Sept. 16	100	2597
Lamp-chimney canopy	B. Strasburger	36,002	Aug. 12	100	1554
Lamp or candle shade	S. A. Keller	36,025	Aug. 26	100	1966
Lid for puff-boxes, &c	W. H. and J. F. Walker	35,983	July 29	100	1108
Mantel	W. Turton	35,998	Aug. 12	100	1552
Mirrors, brushes, or similar articles. Back for	L. C. Porter	36,012	Aug. 19	100	1752
Mirrors, brushes, or similar articles. Back for hand-	W. and J. Boekel	36,000	Aug. 12	100	1554
Nebulizer-support	A. Levaur	36,089	Sept. 2	100	2170
Paper or draping weight	L. M. Gould	35,990	Aug. 12	100	1552
Picture-frame	E. Field	35,972	July 1	100	283
Pillow. Sofa-	L. A. Bartholomew	35,981	July 22	100	925
Pincushion. Pedestal-	G. C. Van Roden	35,991	Aug. 12	100	1552
Pin. Pendent					

Alphabetical list of designs, July to September, inclusive—Continued.

Design.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Plate	G. R. West	36,030	Aug. 26	100	1967
Plate. Souvenir	L. Wohltman	36,013	Aug. 19	100	1753
Range	R. H. Westerfield	35,997	Aug. 5	100	1321
Range	R. H. Westerfield	35,998	Aug. 5	100	1321
Range	R. H. Westerfield	35,999	Aug. 5	100	1321
Range	R. H. Westerfield	36,000	Aug. 5	100	1321
Range	R. H. Westerfield	36,006	Aug. 12	100	1555
Range	R. H. Westerfield	36,009	Aug. 19	100	1752
Ring	A. Becker	36,023	Aug. 26	100	1967
Rug	A. Petzold	35,970	July 1	100	223
Scale-base and supporting-column	W. H. Sargent	35,969	July 1	100	223
Scale-beam support	W. H. Sargent	36,008	Aug. 12	100	1554
Sewing-machine table	H. J. Abramson	36,004	Aug. 12	100	1555
Sewing-machine table	F. G. Hogland	36,022	Aug. 26	100	1967
Sewing-machine table	F. G. Hogland	36,038	Sept. 30	100	3008
Shade-cloth	J. H. Wright	36,044	Sept. 9	100	2371
Shield	S. A. Keller	36,045	Sept. 9	100	2371
Shield	S. A. Keller	35,998	Aug. 12	100	1553
Silver or plated ware. Metal ornament for	S. W. Babbitt	35,999	Aug. 12	100	1554
Skirt-holder plate	L. Wertheimer	36,076	Sept. 16	100	2597
Soap	C. A. Crary	35,974	July 8	100	443
Spoons, forks, &c. Handle for	H. Hillbom	35,975	July 8	100	443
Spoons, forks, &c. Handle for	H. Hillbom	36,034	Sept. 2	100	2169
Spoons, forks, &c. Handle for	J. Clulee	35,982	July 29	100	1108
Spoons, forks, or similar articles. Handle for	T. Bender	35,994	Aug. 12	100	1552
Spoons or similar articles. Handle for	E. Crees and C. S. Court	35,995	Aug. 12	100	1553
Spoons or similar articles. Handle for	E. Crees and C. S. Court	35,996	Aug. 12	100	1553
Spoons or similar articles. Handle for	E. Crees and C. S. Court	35,997	Aug. 12	100	1553
Spoons or similar articles. Handle for	W. F. Marshall	36,007	Aug. 12	100	1555
Stove	H. D. Perky	36,052	Sept. 23	100	2766
Stove	M. Magen	36,060	Sept. 30	100	3029
Stove	C. Puddefoot	36,077	Sept. 16	100	2597
Stove front. Gas	E. B. Adler	36,069	Sept. 30	100	3003
Tile	A. Plant	36,022	Aug. 26	100	1965
Toilet articles. Handle for	R. R. Debacher	36,011	Aug. 19	100	1752
Toilet boxes, mirrors, or similar articles. Back for	T. W. Foster	36,061	Sept. 23	100	2765
Toy stove	C. A. Bailey	35,971	July 1	100	223
Type. Font of border	J. W. Phinney	36,017	Aug. 19	100	1754
Type. Font of lower-case printing	B. Nadall and G. A. Barnes	36,018	Aug. 19	100	1754
Type. Font of upper-case printing	B. Nadall	36,062	Sept. 30	100	3003
Umbrella-cover	E. L. Smith	36,021	Aug. 26	100	1967
Vending-machine casing	G. W. Gates	36,015	Aug. 19	100	1753
Zither-body	C. E. Brown				

ALPHABETICAL LIST OF TRADE-MARKS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
Acid and preparations containing same. Carbolic	F. C. Calvert & Co	38,688	July 29	100	1106
Ale. Ginger	Standard Bottling & Extract Co	38,810	Aug. 19	100	1758
Ales	Bartels Brewing Company	38,678	July 29	100	1105
Almonds	Bevan & Co	38,849	Aug. 26	100	1970
Ammunition. Certain named	Peters Cartridge Co	38,561	July 1	100	228
Ammunition. Certain named	Peters Cartridge Co	38,562	July 1	100	228
Ammunition. Certain named	Peters Cartridge Co	38,801	Aug. 19	100	1757
Antiseptic for toilet and medicinal purposes	R. Paxton Company	38,545	July 1	100	226
Apples, apple-trees, scions, cuttings, grafts, roots, and stocks.	Stark Bro's Nurseries & Orchards Co.	38,556	July 1	100	227
Apples, apple-trees, scions, cuttings, grafts, roots, and stocks.	Stark Bro's Nurseries & Orchards Co.	38,635	July 15	100	678
Arsenic compounds	Vereinigte Chemische Werke Aktiengesellschaft.	38,879	Sept. 9	100	2374
Asphalt and certain named products	West Indies Company	38,940	Sept. 23	100	2770
Balms for nasal and catarrhal affections	Brown Manufacturing Co	38,611	July 15	100	675
Barley grits	Schumacher Cereal Co	38,963	Sept. 30	100	3006
Batteries. Dry	Nungesser Electric Battery Co	38,699	July 29	100	1107
Beer	Ashland Brewing Co	38,651	July 22	100	927
Beer	Independent Brewing Association	38,809	Aug. 19	100	1756
Beer and malt extract	Birk Bros. Brewing Co	38,968	Sept. 30	100	3007
Beer. Lager	Consumers Park Brewing Company.	38,622	July 22	100	927
Beer. Lager	Jos. Schlitz Brewing Company	38,773	Aug. 12	100	1550
Beer. Lager	Independent Brewing Association	38,808	Aug. 19	100	1757
Beer. Lager	Dick and Brothers Quincy Brewery Co.	38,846	Aug. 26	100	1970
Belting. Cotton	Whitehurst Belting Co	38,914	Sept. 23	100	2768
Belts	Samstag & Hilder Bros	38,527	July 1	100	224
Beverages. Certain named carbonated	Static Carbonating Company	38,969	Sept. 30	100	3007
Beverages. Syrups, flavorings, tonics, or extracts for non-intoxicating aerated	E. H. Cross	38,534	July 1	100	225
Billiard-cloth	B. A. Stevens	38,943	Sept. 30	100	3004
Bituminous composition or cement	Warren Brothers Company	38,698	July 29	100	1107
Boiler fluids for prevention of scale	Valvoline Oil Co	38,650	July 22	100	928
Books. Scrap	Perfect Scrap Book Co	38,667	July 29	100	1104
Boot and shoe linings and trimmings. Fabrics for	Farnsworth, Hoyt & Co	38,598	July 15	100	674
Boots and shoes	Perkins, Hardy & Co	38,566	July 8	100	444
Boots and shoes	United Workingmen's Boot and Shoe Company.	38,567	July 8	100	444
Boots and shoes	F. M. Fargo	38,798	Aug. 19	100	1756
Boots and shoes	J. W. Carroll	38,907	Sept. 23	100	2767
Boots and shoes	J. W. Carroll	38,908	Sept. 23	100	2767
Boots and shoes	Ranger Bros	38,909	Sept. 23	100	2767
Boots and shoes. Certain named	Dorothy Dodd Shoe Co	38,838	Aug. 26	100	1969
Boots and shoes. Certain named	Dorothy Dodd Shoe Co	38,911	Sept. 23	100	2768
Boots and shoes. Leather	Guthmann Carpenter & Telling	38,876	Sept. 9	100	2377
Boots and shoes. Men's	Lamkin & Foster	38,837	Aug. 26	100	1969
Boots and shoes. Misses' and children's	Dorothy Dodd Shoe Co	38,910	Sept. 23	100	2767
Bottles. Prescription	Obear Nester Glass Company	38,789	Aug. 5	100	1335
Bran, middlings, brown and white, mixed feed, and red dog	Listman Mill Company	38,723	Aug. 5	100	1334
Bread	Heusner Baking Company	38,540	July 1	100	1759
Bread	C. F. Schupp & Son	38,816	Aug. 19	100	444
Brushes. Hair, nail, tooth, and flesh	Florence Manufacturing Company	38,570	July 8	100	444
Brushes. Hair, nail, tooth, and flesh	Florence Manufacturing Company	38,571	July 8	100	2171
Butter	E. O. Whitford & Co	38,895	Sept. 2	100	1332
Buttons. Collar	W. J. Smith	38,703	Aug. 5	100	1105
Caddy-bags	M. Hartley Company	38,671	July 29	100	677
Calcium carbid	Electro Lamp Co	38,699	July 15	100	1559
Candies, chocolate, and preparations of chocolate and cocoas.	Russ, Suchard and Company	38,770	Aug. 12	100	676
Candy. Chocolate	F. H. Roberts	38,630	July 15	100	1332
Candy. Chocolate	F. H. Dow & Company	38,719	Aug. 5	100	677
Canned fancy sugar-corn	Warfield Pratt Howell Co	38,695	July 15	100	2770
Canned salmon	Alaska Packers Association	38,984	Sept. 23	100	3006
Canned vegetables and fruits	H. C. Baxter & Bro	38,808	Sept. 16	100	2004
Cap-visors	E. Mattes & Son	38,945	Sept. 30	100	1335
Carbon-black	Castle Brook Carbon Black Co	38,792	Aug. 5	100	3007
Carbonating apparatus and appliances	Static Carbonating Company	38,970	Sept. 30	100	1107
Cement. Certain named	Clark Cast Steel Cement Co	38,694	July 29	100	678
Cement. Portland	Texas Portland Cement & Lime Co	38,634	July 15	100	988
Cement. Portland	Dexter Portland Cement Co	38,692	July 22	100	927
Chemical compound. Certain named	Rosenzweig & Baumann	38,552	July 1	100	445
Chocolate-covered molasses chips	W. S. Trowbridge	38,579	July 8	100	988
Cigars	San Miguel Bros	38,656	July 22	100	928
Cigars	M. J. Long	38,717	Aug. 5	100	1332
Cigars	J. S. Edwards	38,985	Sept. 23	100	2769
Cigars and cigarettes. Little	C. Upmann	38,674	July 29	100	1105
Cigars and cigarettes. Little	C. Upmann	38,675	July 29	100	1105
Cigars, cheroots, and cigarettes	M. Blaskower	38,776	Aug. 12	100	1559

Alphabetical list of trade-marks, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Cleaning and polishing compound	American Pottery Supply Company of Baltimore City.	38,735	Aug. 5	100	1325
Cleaning and polishing compounds. Certain named	Brunswick-Balke-Collender Company.	38,887	Sept. 9	100	2579
Cleaning and polishing preparation. Certain named	E. T. Hanks	38,843	Aug. 26	100	1969
Cleaning compounds, wood-stain, ship-cement, and anti-fouling-bottom compound. Certain named	National Architectural Improvement and Supply Company.	38,842	Aug. 26	100	1969
Cleansing preparations in tablet form	G. W. King	38,886	Sept. 2	100	2171
Clocks. Certain named	M. W. Cole	38,608	July 15	100	675
Clothing. Certain named	Reid Brothers	38,822	Aug. 26	100	1968
Cloths and stuffs of wool, worsted, or hair	Wm. Fulton & Sons	38,564	July 8	100	444
Coating wood and metal. Compositions for	American Standard Composition Co.	38,867	Sept. 2	100	2172
Cocoa and chocolate. Sweetened and unsweetened	J. J. O'Donohue's Sons	38,864	Sept. 2	100	2171
Cocoa and cocoa preparations	Kakao-Compagnie Theodor Reichardt, Gesellschaft mit Beschränkter Haftung.	38,815	Aug. 19	100	1758
Coffee	Woolson Spice Company	38,814	Aug. 19	100	1758
Coffee. Green	B. E. Tomblin	38,655	July 22	100	927
Coffee. Java and Mocha	Nash-Smith Tea & Coffee Co	38,670	July 29	100	1105
Coffee. Roasted	O. H. Griswold	38,680	July 29	100	1106
Coffees	Southern Coffee Company	38,966	Sept. 30	100	3007
Coffees and teas	Woolson Spice Company	38,595	July 1	100	225
Collars and cuffs	Cluett, Peabody & Co	38,711	Aug. 5	100	1323
Complexion compounds in tablet, soap, and powder form	R. H. Smith	38,581	July 8	100	445
Compounds and preparations. Certain named medical	F. E. Turn Bull	38,610	July 15	100	675
Confectionery. Certain named	J. H. Faulhaber	38,719	Aug. 5	100	1323
Conserving compound	E. Utescher	38,682	July 29	100	1106
Coolers. Liquid-	O. Roderwald	38,935	Sept. 23	100	2770
Corsets	F. E. Mistrot	38,643	July 22	100	926
Corsets, corselets, gorgets, belts, bust-holders, busks, whalebones or steels, and hose-supporters.	J. Lindauer	38,603	July 15	100	674
Cotton cloth	Compañia General de Tabacos de Filipinas.	38,530	July 1	100	224
Cotton piece goods	J. & J. M. Worrall	38,641	July 22	100	926
Cotton thread	New England Cotton Yarn Company.	38,789	Aug. 19	100	1755
Cotton thread	New England Cotton Yarn Company.	38,790	Aug. 19	100	1755
Cotton threads	New England Cotton Yarn Company.	38,886	Aug. 26	100	1968
Cotton threads	New England Cotton Yarn Company.	33,944	Sept. 30	100	3004
Cotton yarn. Mercerized	Dexter Yarn Co	38,531	July 1	100	224
Cough-drops	J. A. Arment	38,542	July 1	100	225
Covering and protective materials. Certain named	Standard Paint Company	38,947	Sept. 30	100	3004
Crackers, bread, cakes, and puddings and pies	Epicure Baking Co	38,768	Aug. 12	100	1558
Crayons. Blackboard-	American School Furniture Company.	38,868	Sept. 2	100	2172
Cycles, motor-vehicles, and their parts	Fabrique de Moteurs & de Machines, (ancienne maison Zürcher, Lüthi & Cie.)	38,973	Sept. 30	100	3008
Dampers, draft-regulators, and smoke-preventing apparatus. Ventilating-	Aeolipyle Company	38,895	Sept. 9	100	2580
Dandruff cure	R. Platt	38,757	Aug. 12	100	1557
Desks, school-seats, and opera-chairs. School-	Superior Manufacturing Company	38,777	Aug. 12	100	1559
Detergent compounds used as auxiliaries to soap	E. Wright	38,628	July 15	100	677
Disinfectant. Antiseptic detergent	Puroline Chemical Company	38,761	Aug. 12	100	1556
Diuretics	H. K. Mulford Co	38,615	July 15	100	676
Dolls	E. U. Steiner	38,704	Aug. 5	100	1322
Dolls	E. U. Steiner	38,705	Aug. 5	100	1322
Dress-shields	Canfield Rubber Co	38,569	July 15	100	674
Dress-shields having stockinet covering. Rubber	Canfield Rubber Co	38,706	Aug. 5	100	1322
Dyeing and tanning assistant	W. Beckers	38,764	Aug. 12	100	1558
Dyestuffs. Coal-tar	Actien-Gesellschaft für Anilin-Fabrikation.	38,951	Sept. 30	100	3006
Eggs	Swift and Company	38,576	July 8	100	445
Electric cells. Primary	Portable Electric Power & Light Company.	38,695	July 29	100	1107
Electric switches	Hart Mfg. Co	38,740	Aug. 5	100	1326
Engines. Gas-	United States Gasoline Engine Co	38,637	July 15	100	678
Explosives	E. Steele	38,563	July 1	100	226
Felt and certain named felt goods	Binghamton Felting Co	38,913	Sept. 23	100	2768
Films, plates, and photographic papers	Actien-Gesellschaft für Anilin-Fabrikation.	38,950	Sept. 30	100	3005
Fire-extinguisher in powder form	W. H. Scott	38,766	Aug. 12	100	1558
Fire-extinguishers. Chemical	Little Giant Fire Extinguisher Co	38,653	July 22	100	928
Fire-extinguishers. Chemical	Tea Tray Company of Newark, N. J	38,972	Sept. 30	100	3008
Fire-kindler. Composition	E. C. Sachse	38,898	Sept. 9	100	2579
Fireproof paint or coating	Chicago Fire Proof Covering Co	38,765	Aug. 12	100	1558
Flavoring extract. Concentrated	Corrizo Extract Company	38,621	July 15	100	676
Flour	G. T. Evans	38,847	Aug. 26	100	1970
Flour	Ditty & Ordner	38,926	Sept. 23	100	2769
Flour	N. Story & Co	38,960	Sept. 30	100	3006
Flour	N. Story & Co	38,961	Sept. 30	100	3006
Flour. Wheat-	H. R. Kearny	38,624	July 15	100	677
Flour. Wheat-	H. H. King & Co	38,962	Sept. 30	100	3006
Flour, wheat-food preparations, and wheat breakfast-foods. Wheat-	J. A. Neal	38,722	Aug. 5	100	1324
Flours, bread, crackers, and biscuits. Prepared	Ward-Mackey Co	38,897	Sept. 16	100	2598
Food-choppers. Cylindrical	Landers, Frary and Clark	38,971	Sept. 30	100	3007
Food derived from albuminoids. Artificial	Actien-Gesellschaft für Anilin Fabrikation.	38,848	Aug. 26	100	1970
Food. Prepared cereal	American Cereal Co	38,721	Aug. 5	100	1324
Food product. Cereal	Fair Haven Food Company	38,927	Sept. 23	100	2769
Food product. Cereal	Fair Haven Food Company	38,928	Sept. 23	100	2769

Alphabetical list of trade-marks, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Food products made from vegetables and cereals	D. T. Wilson	38,656	July 22	100	928
Food. Stock-	American Cereal Co	38,794	Aug. 5	100	1324
Foot-powder	J. W. Manning	38,730	Aug. 5	100	1325
Fruit-icing chocolate, candies and ice-cream, and egg color	Glen-Armstrong Co	38,769	Aug. 12	100	1559
Fruit-juices	W. H. Earle	38,596	July 1	100	225
Fruits and vegetables. Dried and evaporated	Bown Bros	38,771	Aug. 12	100	1559
Fruits. Dried	Aspegren & Co	38,959	Sept. 30	100	3006
Furniture. Office and library	Fred Macey Co	38,858	Aug. 26	100	1972
Furniture-polish. Liquid	P. Levi	38,726	Aug. 5	100	1325
Gage-glasses	J. E. Lonergan	38,873	Sept. 9	100	2577
Games. Checker-board	Salta Versand von August Wasmuth.	38,669	July 29	100	1104
Gas-burners	G. Bray & Co	38,636	July 15	100	678
Gas-burners	G. Bray & Co	38,826	Aug. 19	100	1760
Gas-burners	G. Bray & Co	38,827	Aug. 19	100	1760
Gas-burners	D. M. Steward	38,828	Aug. 19	100	1760
Gas-fixtures	American Tank & Fixture Company.	38,741	Aug. 5	100	1326
Gas generators. Portable acetylene-	J. J. Hendler	38,998	Sept. 23	100	2770
Gin	J. H. Henkes	38,775	Aug. 12	100	1559
Ginger-snaps	F. Goetz	38,577	July 8	100	445
Glass lamp-chimneys, lantern-globes, and reflectors	Gill Brothers Company	38,573	July 8	100	445
Glass lamp-chimneys, lantern-globes, and reflectors	Gill Brothers Company	38,574	July 8	100	445
Gloves	J. Adler & Co	38,528	July 1	100	224
Gloves	James McCreery & Co	38,742	Aug. 12	100	1556
Gloves. Men's	Schwartz, Schiffer & Company	38,860	Sept. 2	100	2171
Gloves or mittens	Saranac Glove Co	38,712	Aug. 5	100	1323
Golf-balls	M. Hartley Co	38,670	July 29	100	1105
Grease. Compound for extracting	T. H. Price	38,684	July 29	100	1106
Groceries. Certain named	Sprague, Warner & Company	38,580	July 1	100	225
Gum. Pepsin chewing-	Freeport Novelty Company	38,578	July 8	100	445
Hair. Chemical preparation for removing superfluous	O. Rudert	38,613	July 15	100	675
Hair remedy	A. P. Simar	38,954	Sept. 30	100	3006
Hair-tonics and dandruff cures	M. A. Pearce	38,548	July 1	100	224
Hardware. Certain named	Acme M'f'g Co	38,607	July 15	100	675
Harmonicas. Mouth-	A. Vischer & Co	38,640	July 22	100	926
Hat-cleansing compounds	Riverside Chemical Company	38,796	Aug. 19	100	1756
Hats	Sanger Bros	38,644	July 22	100	926
Hats	H. G. Bartlett	38,707	Aug. 5	100	1322
Hats	Sanger Bros	38,708	Aug. 5	100	1322
Hats	Sanger Bros	38,709	Aug. 5	100	1322
Hats	J. T. Asch & Sons	38,875	Sept. 9	100	2577
Hats	Sanger Bros	38,710	Aug. 5	100	1322
Hats. Felt	Pierce, Butler and Pierce Mfg. Co	38,701	July 29	100	1108
Heating apparatus. Certain named	F. W. Whitcher & Co	38,791	Aug. 19	100	1755
Heels and soles for boots and shoes. Elastic or cushion	Victor O. Mills Co	38,605	July 15	100	675
Hooks and eyes	I. B. Kleinert Rubber Co	38,604	July 15	100	675
Hose-supporters	Pilling & Madeley	38,602	July 15	100	674
Hosiery	Meinecke & Co	38,878	Sept. 9	100	2577
Hospital and sick-room appliances. Certain named	Dana & Co	38,783	Aug. 12	100	1560
Ice-cream freezers	Dana & Co	38,869	Sept. 2	100	2172
Ice-cream freezers	S. A. White Co	38,690	July 29	100	1106
Ink for finishing edges and heels of boots and shoes	S. Ullman Co	38,689	July 29	100	1106
Inks. Printing-	Carter's Ink Co	38,797	Aug. 19	100	1756
Inks. Writing-	W. F. Steinmetz	38,781	Aug. 5	100	1325
Insect-powders	J. Aspinwall	38,889	Aug. 26	100	1969
Insoles	D. M. Steward	38,554	July 1	100	227
Insulating material	American Hard Rubber Co	38,633	July 15	100	678
Insulating material	H. K. Mulford Co	38,616	July 15	100	676
Intestinal astringents	Robert Reis & Co	38,665	July 29	100	1104
Knit underwear and hosiery	Electro Lamp Co	38,927	Sept. 23	100	2770
Lamp for burning acetylene gas	20th Century M'f'g Co	38,696	July 29	100	1107
Lamps and lanterns. Portable electric and oil	Sun Vapor Street Light Co	38,857	Aug. 26	100	1971
Lamps. Hydrocarbon-vapor	Bryan Marsh Company	38,697	July 29	100	1107
Lamps. Incandescent electric	Bryan Marsh Company	38,698	July 29	100	1107
Lamps. Incandescent electric	Buckeye Electric Co	38,779	Aug. 12	100	1560
Lamps. Incandescent electric	Columbia Incandescent Lamp Co	38,780	Aug. 12	100	1560
Lamps. Incandescent electric	Fostoria Inc. Lamp Co	38,781	Aug. 12	100	1560
Lamps. Incandescent electric	Sunbeam Inc. Lamp Co	38,782	Aug. 12	100	1560
Lamps. Incandescent electric	National Electric Lamp Co	38,825	Aug. 19	100	1760
Lampblack. Dry	L. Martin Company	38,899	Sept. 9	100	2579
Lard	T. L. Boyd	38,953	Sept. 23	100	2770
Laundry cream	L. Lochman, Jr	38,886	Sept. 9	100	2579
Leather	Beggs & Cobb	38,795	Aug. 19	100	1756
Leather footwear. Certain named	R. L. Fyfe & Co	38,713	Aug. 5	100	1323
Leather for making boots and shoes	Wilder & Company	38,840	Aug. 26	100	1969
Leather goods, trimmings, and hardware. Certain named	G. Suares & Co	38,877	Sept. 9	100	2577
Lenses. Optical	T. Mundorff	38,874	Sept. 9	100	2577
Liniments	R. E. Shafto	38,923	Sept. 23	100	2769
Linings	Burton Bros. & Co	38,834	Aug. 26	100	1968
Linings	Burton Bros. & Co	38,835	Aug. 26	100	1968
Lubricant	W. F. Downs	38,588	July 8	100	446
Malt. Peptonized extract of	Siegel-Cooper Co	38,845	Aug. 26	100	1970
Marmalade	Coronation Marmalade Company	38,681	July 29	100	1106
Medical compounds. Certain named	A. V. M. Sprague	38,585	July 8	100	446
Medical compounds. Certain named	E. T. Richards	38,749	Aug. 12	100	1556
Medical compounds. Certain named	G. R. White	38,799	Aug. 19	100	1756
Medical compounds. Certain named	Farbwerke, vorm. Meister, Lucius & Brüning.	38,800	Aug. 19	100	1757
Medical compounds used for skin diseases	J. D. McCann Company	38,776	Aug. 12	100	1557
Medical tonic	A. J. Hill	38,882	Sept. 9	100	2578
Medicaments to wounds or orifices. Devices for applying	G. Schirmer	38,853	Aug. 26	100	1971
Medicinal compound. Certain named	J. Hofmeier	38,544	July 1	100	226
Medicinal compound for restoring hair	National Hairoome Co	38,549	July 1	100	226
Medicinal compound. Tonic	W. R. Krembs	38,916	Sept. 23	100	2768
Medicinal plasters	Raymond & Co	38,727	Aug. 5	100	1324

Alphabetical list of trade-marks, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Medicinal preparations having digestive and nutritive properties.	Reed & Carnrick	38,922	Sept. 23	100	2769
Medicinal preparations in liquid and tablet form for cure of certain named diseases.	S. H. Winstead Medicine Co	38,609	July 15	100	675
Medicinal substances. Certain named	J. W. Gedney	38,958	Sept. 30	100	3005
Medicine for blood diseases. Liquid	J. Leroux	38,750	Aug. 12	100	1556
Medicine for certain named ailments	A. Fennings	38,920	Sept. 23	100	2708
Medicine for certain named diseases	C. W. Bunce	38,735	Aug. 5	100	1334
Medicine for the blood, kidneys, and liver	C. W. Johnson	38,648	July 22	100	927
Medicine. Tonic	McKinley Tonic Medicine Company	38,752	Aug. 12	100	1557
Medicines and medicinal plasters. Certain named	A. Seidler	38,592	July 8	100	445
Medicines for cure of pulmonary troubles and diseases of the blood.	Halls Chronic Cough Cure Co	38,921	Sept. 23	100	2769
Medicines for treatment of the blood	W. M. Hoshaw	38,543	July 1	100	226
Medicines. Laxative	Prunetta Pharmacal Co	38,802	Aug. 19	100	1757
Metal. Antifriction	Magnus Metal Company	38,651	July 22	100	928
Metal-polish	C. M. Kimball	38,767	Aug. 12	100	1558
Milk and milk products	Bernese Alps Milk Co	38,985	Sept. 30	100	3004
Milk in powdered form. Condensed	Casein Company of America	38,632	July 15	100	676
Milk. Modified	C. H. Pattison	38,730	Aug. 5	100	1334
Mohair, alpaca, and luster-wool linings	E. G. Williams & Co	38,788	Aug. 19	100	1755
Mowers, reapers, binders, and parts thereof	Johnston Harvester Co	38,638	July 15	100	678
Oil. Rosin	S. P. Shotter Company	38,733	Aug. 5	100	1335
Oils. Illuminating	Galena-Signal Oil Company	38,630	July 15	100	677
Oils. Illuminating	Philadelphia Chemical Co	38,962	Sept. 30	100	3005
Oils. Lubricating	Galena-Signal Oil Company	38,589	July 8	100	446
Oils. Lubricating	Galena-Signal Oil Company	38,590	July 8	100	446
Oils. Lubricating	Galena-Signal Oil Company	38,631	July 15	100	677
Oils. Lubricating	Galena-Signal Oil Company	38,632	July 15	100	677
Ointment	C. Meichel	38,673	July 29	100	1105
Ointment for aches and pains	H. M. McCurren	38,618	July 15	100	676
Ointment for the skin	Laxakola Company	38,646	July 22	100	926
Ore-crushing mills	G. B. Ashworth	38,755	Aug. 12	100	1557
Overalls and shirts and jumpers to be worn in connection with overalls.	S. V. Trent	38,559	July 1	100	227
Overalls, coats, and pants	J. E. Adams	38,905	Sept. 23	100	2767
Packing-house products. Certain named	J. H. Wedemeyer	38,838	Aug. 26	100	1928
Packing-house products. Certain named	Libby, McNeill & Libby	38,537	July 1	100	225
Packing-house products. Certain named	Swift and Company	38,538	July 1	100	225
Packing-house products. Certain named	Schwarzschild & Sulzberger Company.	38,929	Sept. 23	100	2769
Packing-house products. Certain named	Schwarzschild & Sulzberger Company.	38,930	Sept. 23	100	2770
Packing-house products. Certain named	Schwarzschild & Sulzberger Company.	38,931	Sept. 23	100	2770
Packing-house products. Certain named	Schwarzschild & Sulzberger Company.	38,932	Sept. 23	100	2770
Packings. Plastic metallic	Hileman-James Co	38,948	Sept. 30	100	3005
Packings. Plastic metallic	Hileman-James Co	38,949	Sept. 30	100	3005
Paint. Cement	G. & T. Earle	38,890	Sept. 9	100	2370
Paint in liquid form. Roof	A. F. Hawthorn	38,555	July 1	100	227
Paint, paint-oil, and varnish	C. P. Goodyear, Sr	38,891	Sept. 9	100	2370
Paints	Naamlooze Vennootschap Nederlandsche Verffabriek "Eclatin."	38,691	July 29	100	1106
Paints and certain named painters' supplies	Standard Varnish Works	38,734	Aug. 5	100	1335
Paints and painters' supplies. Certain named	Colonial Works	38,841	Aug. 26	100	1969
Paints and roofing-paints	L. A. Tenny	38,692	July 29	100	1107
Paints. Certain named	J. G. Conner & Co	38,553	July 1	100	227
Paints. Mineral	Mohawk Paint and Chemical Co	38,598	July 8	100	446
Paints. Mixed	Hollywood Paint Company	38,890	Sept. 9	100	2370
Painters' supplies. Certain named	Universal Paint-Solvent Company	38,936	Sept. 23	100	2770
Paper and envelops. Writing	H. V. Wagoner	38,608	July 15	100	675
Paper bags and wrapping-paper	Eagle Paper Co	38,818	Aug. 19	100	1759
Paper. Carboned	General Manifold Company	38,598	July 8	100	446
Paper. Certain named	G. A. Jaeger	38,831	Aug. 26	100	1968
Paper. Wrapping, waxed, and toilet	Albany Perforated Wrapping Paper Co.	38,666	July 29	100	1104
Pastils. Throat	W. A. Jones	38,747	Aug. 12	100	1556
Peanuts	Gwaltney-Bunkley Peanut Co	38,657	July 22	100	928
Peanuts	A. Obici	38,888	Sept. 9	100	2378
Pencil-sharpeners	Eagle Pencil Co	38,902	Sept. 23	100	2767
Pens	C. Howard Hunt Pen Co	38,901	Sept. 23	100	2767
Pens. Stylographic and fountain	J. Ullrich & Co	38,872	Sept. 9	100	2372
Pepsin compound	B. L. Maltbie	38,736	Aug. 5	100	1334
Periodicals	Phelps Publishing Company	38,817	Aug. 19	100	1759
Photographic goods. Certain named	Century Camera Company	38,819	Aug. 19	100	1759
Pills for blood tonic	A. J. Piamondon	38,649	July 22	100	927
Pneumatic tools	E. E. Hanna	38,859	Aug. 26	100	1973
Poison for the extermination of insects and animals	R. C. Tarr	38,854	Aug. 26	100	1971
Polishing, cleaning, and preserving certain named surfaces. Manufactured powder for	Silver Salt Company	38,903	Sept. 30	100	3005
Poultry	Clarinda Poultry, Butter & Egg Co	38,575	July 8	100	445
Powders for the relief of the feet	M. Strasburger	38,896	Sept. 16	100	2598
Pumps. Hydraulic air	Cleveland Faucet Co	38,829	Aug. 19	100	1760
Range-boilers and hot-water generators	Thompson Iron Works	38,795	Aug. 12	100	1560
Rawhide goods. Certain named	A. & C. W. Holbrook	38,744	Aug. 12	100	1556
Razor-strops	A. J. Jordan Cutlery Co	38,884	Aug. 19	100	1759
Razors, knives, scissors, and shears	A. L. Silberstein	38,883	Aug. 19	100	1759
Remedial agent. Certain named	Malbrunn & Knappe	38,918	Sept. 23	100	2769
Remedial paste for burns, scalds, wounds, and running sores.	Sandner & Rinn Sisters	38,760	Aug. 12	100	1558
Remedies for certain named diseases. Internal	J. B. Plent	38,594	July 8	100	446
Remedies for headache, nervous complaints, and general debility.	Jack Drug Co	38,647	July 22	100	927
Remedies for nervous diseases and diseases of the stomach, liver, and bowels.	Murna Medical Company	38,598	July 8	100	446
Remedies for rheumatism and other similar inflammatory diseases.	K. A. Marschat	38,733	Aug. 12	100	1557

Alphabetical list of trade-marks, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Remedies for spavin, ringbones, splints, and curbs	C. A. Silver	38,769	Aug. 12	100	1558
Remedies for treatment of the hair and scalp	Altenheim Medical Dispensary	38,798	Aug. 5	100	1335
Remedies. Horse	S. O. Parker	38,619	July 15	100	676
Remedies in capsule, tablet, or salve form for the cure of certain named diseases.	E. E. Duerr	38,881	Sept. 9	100	2378
Remedies in tablet form for certain named diseases	B. N. Robinson	38,919	Sept. 23	100	2768
Remedy for certain named disease of cattle	T. D. Young	38,855	Aug. 26	100	1971
Remedy for certain named diseases	H. A. Spilker	38,880	Sept. 9	100	2378
Remedy for dandruff	J. F. Hamilton & Co	38,547	July 1	100	226
Remedy for dandruff and a hair and scalp tonic	S. T. Dustin	38,676	July 29	100	1106
Remedy for la grippe, catarrh, colds, and headaches	F. W. Diemer	38,955	Sept. 30	100	3005
Remedy for piles and other rectal diseases	V. C. Stoddard	38,754	Aug. 12	100	1557
Remedy for rheumatism	A. N. Wiszowaty	38,863	Sept. 2	100	2171
Remedy for the blood	A. B. Scutt	38,956	Sept. 30	100	3005
Remedy for the hair and scalp	Altenheim Medical Dispensary	38,759	Aug. 12	100	1558
Remedy for the treatment of the hair and scalp	Altenheim Medical Dispensary	38,758	Aug. 12	100	1557
Remedy for tuberculosis	D. A. Harrison	38,748	Aug. 12	100	1556
Rheumatic cure. Liquid	F. J. A. Wall	38,805	Aug. 19	100	1757
Ribbons, silks, satins, and velvets	J. Kridel Sons & Co	38,714	Aug. 5	100	1823
Rivets. Tubular and pronged	Tubular Rivet & Stud Co	38,557	July 1	100	227
Roofing. Fabric	Kansas City Roofing & Corrugating Co.	38,737	Aug. 5	100	1825
Rubber belting, rubber hose, and rubber packing	Consumer's Rubber Co	38,745	Aug. 12	100	1556
Rubber heels for boots and shoes	Plymouth Rubber Co	38,568	July 8	100	444
Safes and vaults. Fire, burglar, and water proof	H. D. Carey	38,560	July 1	100	228
Salt	Diamond Crystal Salt Company	38,626	July 15	100	677
Salt	G. N. Skinner	38,659	July 22	100	928
Salt	Diamond Crystal Salt Company	38,884	Sept. 9	100	2378
Salves	H. Welch	38,798	Aug. 19	100	1756
Saws and handsaws. Crosscut	E. C. Atkins & Company	38,871	Sept. 2	100	2172
Saws. Crosscut	E. C. Atkins & Company	38,870	Sept. 2	100	2172
Scales. Weighing	H. N. Strait Mfg. Co	38,702	July 29	100	1108
Seals. Certain named	E. J. Brooks & Company	38,738	Aug. 5	100	1826
Sewing-machines	Illinois Sewing Machine Company	38,899	Sept. 16	100	2598
Sewing-machines	Illinois Sewing Machine Company	38,900	Sept. 16	100	2598
Sheetings	Belton Mills	38,565	July 8	100	444
Sheetings	Belton Mills	38,942	Sept. 30	100	3004
Shirt-waists and skirts	Gottlieb & Beck	38,904	Sept. 23	100	2767
Shirts, collars, and cuffs	H. Dobson	38,903	Sept. 23	100	2767
Shoe and leather dressing	Raven Gloss Manufacturing Company.	38,885	Sept. 9	100	2378
Shoes	T. D. Barry & Co	38,529	July 1	100	224
Shoes. Children's	Watson Plummer Shoe Co	38,792	Aug. 19	100	1755
Shoes. Leather	Anglo-Saxon Shoe Co	38,794	Aug. 19	100	1756
Shoes. Men's, boys', and youths'	B. A. Corbin & Son Co	38,912	Sept. 23	100	2768
Silk piece goods and silk ribbons	Duncan & Stenz	38,594	July 15	100	674
Silks	Consumers Silk Mills and Coupons Exchange Co.	38,862	Sept. 2	100	2171
Silks	Consumers Silk Mills and Coupons Exchange Co.	38,906	Sept. 23	100	2767
Silks. Dress	Liberty Silk Co	38,787	Aug. 19	100	1755
Skirts	Michigan Clothing Co	38,642	July 22	100	926
Skylights	A. E. Rendle	38,941	Sept. 23	100	2770
Smalt	W. C. Estes	38,591	July 8	100	446
Smalt	W. C. Estes	38,592	July 29	100	1106
Soap	F. M. Coulter	38,687	July 29	100	1106
Soap	Goodhair Remedy Company	38,915	Sept. 23	100	2768
Soap. Cake toilet	F. M. Coulter	38,746	Aug. 12	100	1556
Soap. Laundry	N. K. Fairbank Company	38,851	Aug. 26	100	1971
Soap. Toilet	Enterprise Soap Works	38,550	July 1	100	227
Soda and baking-powder. Baking	Church & Dwight Co	38,623	July 15	100	677
Soda-water and compounds and extracts for flavoring same	Hance Bros. & White	38,653	July 22	100	927
Soda-water and compounds and extracts for flavoring same	Hance Bros. & White	38,654	July 22	100	927
Soda-water and compounds and extracts for flavoring same	Hance Bros. & White	38,772	Aug. 12	100	1559
Spectacle and eyeglass frames and mountings. Certain named	Dupaul, Young Optical Co	38,821	Aug. 19	100	1759
Spectacle and eyeglass frames and mountings. Certain named	Dupaul, Young Optical Co	38,822	Aug. 19	100	1759
Sporting goods. Certain named	P. Goldsmith's Sons	38,587	July 8	100	446
Stationery. Certain named	J. S. Staedtler	38,525	July 1	100	224
Steam, water, and gas fittings. Certain named	Walworth Manufacturing Company.	38,894	Sept. 9	100	2380
Stoves and ranges. Cooking	American Stove Company	38,784	Aug. 12	100	1560
Stoves and ranges. Cooking	American Stove Company	38,785	Aug. 12	100	1560
Stoves, furnaces, and attachments therefor	A. G. Ingalls	38,558	July 1	100	227
Sugar. Refined	Federal Refining Company	38,964	Sept. 30	100	3006
Suppositories for local treatment of internal organs	H. R. Cousins	38,617	July 15	100	676
Suspender-belts	A. J. Koch	38,743	Aug. 12	100	1556
Swimming-sleeves. Safety	F. B. Wesson	38,945	Sept. 30	100	3004
Syrup and molasses. Table	Towle Syrup Company	38,652	July 29	100	1106
Syrup. Soothing	L. E. Masson	38,612	July 15	100	675
Table-sauce	J. C. Warvel	38,850	Aug. 26	100	1971
Tablets for blood and nervous disorders	Pearson Drug Co	38,804	Aug. 19	100	1757
Talcum powder	H. N. Siegenthaler	38,720	Aug. 5	100	1335
Talking-machine records. Disk	W. V. P. Bradley	38,699	July 29	100	1104
Talking-machines. Disk	W. V. P. Bradley	38,698	July 29	100	1104
Textile fabrics. Cotton and silk woven	Davies Textile Co	38,715	Aug. 5	100	1823
Thermometers. Clinical	H. Hirschberg Optical Company	38,856	Aug. 26	100	1971
Tickings	Amoskeag Manufacturing Company.	38,716	Aug. 5	100	1823
Tires for bicycles, carriages, and automobiles. Pneumatic	Fisk Rubber Company	38,700	July 29	100	1107
Tires. Rubber	Goodyear Tire and Rubber Company.	38,578	July 8	100	444
Tobacco, cigars, cheroots, cigarettes, and snuff. Smoking and chewing	F. E. Van Raalte	38,580	July 8	100	445
Tobacco. Leaf	W. T. Grant & Co	38,532	July 1	100	225

Alphabetical list of trade-marks, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
Tobacco. Leaf	W. T. Grant & Co	38,638	July 1	100	225
Toilet articles. Certain named	D. P. Watson	38,658	Aug. 26	100	1971
Tonic	A. H. Hopkins	38,650	July 22	100	927
Tonic	F. L. Beggs	38,806	Aug. 19	100	1757
Tonic	Independent Brewing Association	38,807	Aug. 19	100	1757
Tonic	M. D. Perkins	38,805	Aug. 19	100	1757
Tonic. Blood	W. Deerfoot	38,751	Aug. 12	100	1557
Tonic. Blood and liver	T. S. Roberts	38,957	Sept. 30	100	3006
Tonic. Chill and fever	A. Spiegel Co	38,917	Sept. 23	100	2768
Tonic for the bladder and kidneys	E. N. Baker	38,677	July 29	100	1105
Tonic. Nerve	H. K. Mulford Co	38,614	July 15	100	676
Tonics	J. H. Coyle	38,645	July 22	100	926
Tooth-powder and tooth-paste	Rosenthal and Goldberg	38,600	July 15	100	674
Trousers	Miller, Bryant, Pierce Co	38,880	Aug. 19	100	1759
Type-writer ribbons	Athens Knitting Co	38,601	July 15	100	674
Undershirts	United States Plantose Company	38,551	July 1	100	227
Vegetable albumens in dry or liquid form	United Shirt Vest Co	38,861	Sept. 2	100	2171
Vests. Shirt	Bowell & Birchim Manufacturing Company.	38,763	Aug. 12	100	1558
Veterinary remedies for cholera	E. M. Krueger	38,672	July 29	100	1105
Veterinary remedy	H. J. Heinz Co	38,813	Aug. 19	100	1758
Vinegar	C. E. Meyer & Co	38,967	Sept. 30	100	3007
Vinegar. Spirit	Muralo Company	38,939	Sept. 23	100	2770
Wall finishing and decorating material	Fredk. Walton & Co	38,509	July 8	100	444
Wall hangings and coverings. Certain named	National Supply Co	38,627	July 15	100	677
Washing compounds. Certain named	C. C. Gerhart	38,685	July 29	100	1106
Washing compounds. Certain named	Keystone Watch Case Company	38,526	July 1	100	224
Watches, watchcases, and watch-movements	Wm. B. Scaife & Sons Co	38,778	Aug. 12	100	1559
Water purifying and softening machinery	J. Buchanan	38,774	Aug. 12	100	1559
Whisky	J. G. Litz	38,811	Aug. 19	100	1758
Whisky	Rothenberg Co	38,844	Aug. 26	100	1970
Whisky and whisky preparations	Siegel-Cooper Co	38,812	Aug. 19	100	1758
Wines and brandies	G. G. Sandeman Sons & Co	38,924	Sept. 23	100	2769
Wines. Port and sherry	E. E. Dickinson & Co	38,546	July 1	100	226
Witch-hazel. Certain distilled product of	David B. Crockett Company	38,892	Sept. 9	100	2379
Wood-fillers and primers	Wisconsin Land & Lumber Co	38,880	Aug. 19	100	1760
Wood flooring and hard-wood and basswood ceilings, and shingles. Hard-					
Yarns and thread. Certain named	Calhoun, Robbins & Company	38,664	July 29	100	1104

ALPHABETICAL LIST OF LABELS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
"A Pocket Hat Luer." (For Hat-Luers)	C. E. Sackett	9,393	Aug. 19	100	1761
"A Pocket Hat Luer." (For Hat-Luers)	C. E. Sackett	9,394	Aug. 19	100	1761
"A Pocket Hat Luer." (For Hat-Luers)	C. E. Sackett	9,410	Sept. 2	100	2173
"Acme Mineral Water." (For Mineral Water)	Acme Mineral Water Company	9,280	July 8	100	447
"Adrian." (For Flour)	Detroit Milling Co	9,361	Aug. 5	100	1827
"Airinit." (For Footwear)	F. W. Slater	9,451	Sept. 30	100	3009
"Alderney Baking Powder." (For Baking-Powder)	National Label Co	9,331	July 29	100	1109
"Alt Nürnberger Bräu." (For Beer)	Grand Rapids Brewing Company	9,351	Aug. 5	100	1827
"Ambition Pills." (For Medicine)	S. B. Larned and L. J. Barker	9,310	July 15	100	679
"American Wire Weavers Protective Association." (For Fourdrinier Wire-Cloth.)	New Jersey Division of the American Wire Weavers Protective Association.	9,296	July 15	100	679
"Ammonia Celery." (For Medicine)	Thos. Kelly & Son	9,327	July 29	100	1109
"Anglo-Egyptian." (For Cigarettes)	D. J. Vlasto	9,386	Aug. 19	100	1761
"Arctic Maid." (For Cigars)	Schmidt & Co	9,375	Aug. 12	100	1561
"Aristypho." (For Cigarettes)	Aristypho Company	9,348	Aug. 5	100	1827
"Athenian." (For Evaporated Fruits)	W. A. Higgins & Co	9,255	July 1	100	229
"Baby Ease." (For Medicine)	T. P. Marshall	9,390	Aug. 19	100	1761
"Baby Ribbon." (For Cigars)	Schmidt & Co	9,374	Aug. 12	100	1561
"Banner Band." (For Condensed Milk)	Northern Condensed Milk Co	9,405	Aug. 26	100	1973
"Bass Brook." (For Whisky)	S. Bass	9,402	Aug. 26	100	1973
"Baume de Princesse." (For Facial Massage Preparation)	Alleshouse Pharmacal Co	9,452	Sept. 30	100	3009
"Belle Peep." (For Cigars)	American Lithographic Company	9,287	July 8	100	447
"Bell's Barbwire Liniment." (For Liniment)	G. W. Bell & Son	9,343	Aug. 5	100	1827
"Ben King." (For Cigars)	Ben King Cigar Co	9,430	Sept. 9	100	2381
"Blue Bell." (For Evaporated Fruits)	W. A. Higgins & Co	9,254	July 1	100	229
"Blue Bell." (For Flour)	Detroit Milling Co	9,360	Aug. 5	100	1827
"Bob White." (For Whisky)	W. J. Vonderheide	9,318	July 22	100	929
"Boro Salicine." (For a Medicine)	Boro-Salicine Co	9,307	July 15	100	679
"Boston Light Gelatine." (For Gelatin)	A. L. Stark	9,411	Sept. 2	100	2173
"Bräu." (For Beer)	A. von Cotzhausen	9,263	July 1	100	229
"Bromint." (For Headache Cure)	Koehler & Hinrichs	9,314	July 22	100	929
"Brooks Co. Makers." (For Hats)	C. E. Sackett	9,397	Aug. 26	100	1973
"C. Bohley's Cough Medicine." (For Cough Medicine)	C. Bohley	9,453	Sept. 30	100	3009
"Cameo Hair Food." (For Hair-Food)	Cameo Chemical Co	9,448	Sept. 23	100	2771
"Campagne-Tablets." (For a Medicine)	F. J. Rief	9,424	Sept. 2	100	2173
"Camthol." (For Medicine)	T. L. Anderson	9,292	July 8	100	447
"Canastota's Best 5c. Cigar." (For Cigars)	Detor Bros	9,442	Sept. 23	100	2771
"Capilaux." (For Hair-Tonic)	Apotheker Bros	9,294	July 8	100	447
"Capitol Maryland Rye." (For Whisky)	J. A. Bokel	9,460	Sept. 30	100	3009
"Cast Steel Cement." (For Cement)	Clark Cast Steel Cement Co	9,321	July 29	100	1109
"Chariot." (For Evaporated Fruits)	W. A. Higgins & Co	9,258	July 1	100	229
"Chase & Sanborn Seal Brand Coffee." (For Coffee)	Chase & Sanborn	9,356	Aug. 5	100	1827
"Chase & Sanborn Seal Brand Coffee." (For Coffee)	Chase & Sanborn	9,357	Aug. 5	100	1827
"Cheekawgo." (For Cigars)	American Lithographic Company	9,465	Sept. 30	100	3009
"Chesterfield Splits." (For Aperient Water)	Swineford's Arsenic-Lithia Water Co.	9,445	Sept. 23	100	2771
"Colorado Rocky Mountain Cough and Catarrh Root." (For a Medicine.)	J. Blanchard and C. H. McIntyre	9,342	Aug. 5	100	1827
"Compliments of the Season." (For Cigars)	American Lithographic Company	9,334	July 29	100	1109
"Cook's Budweiser." (For Bottled Beer)	F. W. Cook Brewing Co	9,350	Aug. 5	100	1827
"Corn Husker." (For Cigars)	Schmidt & Co	9,471	Sept. 30	100	3009
"Cortes Portuondo." (For Cigars)	I. Block	9,300	July 15	100	679
"Council Brand." (For Cigars)	E. Travis	9,366	Aug. 12	100	1561
"Country Club Stogies." (For Stogies)	C. F. Frazee Stogie Co	9,441	Sept. 16	100	2599
"Cow Hide." (For Paper Bags)	Old Dominion Paper Co	9,250	July 1	100	229
"Cybeline." (For Dandruff Cure)	G. L. Tyler	9,329	July 29	100	1109
"Directions for Applying Barrett's Weatherproof Roofing." (For Roofing Material.)	Barrett Manufacturing Company	9,383	Aug. 12	100	1561
"Diver Brand Sponges." (For Sponges)	A. Isaacs & Co	9,450	Sept. 30	100	3009
"Dome Fire Clay." (For Fire-Clay)	Hillsdale Fire Brick and Clay Company.	9,279	July 8	100	447
"Don Carlito." (For Cigars)	Hoffheimer Cigar Co	9,470	Sept. 30	100	3009
"Dr. A. L. Schmidt's 'U-Go' Blood Purifier Rheumatic Cure." (For a Medicine.)	F. T. Schmidt & Sons	9,449	Sept. 23	100	2771
"Dr. Basemore's Syrup Castor Oil." (For Castor-Oil)	W. J. Basemore & Son	9,456	Sept. 30	100	3009
"Dr. Franz Heidenberg Purifier." (For Medicines)	W. H. Grabe	9,315	July 22	100	929
"Dr. Going's Creosote Compound." (For Medicine)	Going Chemical Company	9,308	July 15	100	679
"Dr. Murri's Iron-Nerve Pills." (For Medicine)	Altine Chemical Co	9,389	Aug. 19	100	1761
"Dr. Spinner's Stomach Aid." (For a Medicine)	Spinner Medicinal Tablet Co	9,274	July 1	100	229
"Dunton's Dental Chewing Gum." (For Dental Chewing-Gum.)	W. L. Dunton	9,365	Aug. 12	100	1561
"E. Poncelet Frères." (For Crème de Menthe)	J. Clavel Wine & Cordial Co	9,444	Sept. 23	100	2771
"Eat-a-Biscuit." (For Cereal Food)	Grocers' Specialty Co	9,387	Aug. 19	100	1761
"Eggine Baking Powder." (For Baking-Powder)	H. J. Brennecke	9,297	July 15	100	679
"El Dumo." (For Cigars)	A. Gutierrez Co	9,384	Aug. 19	100	1761
"El Intecto." (For Cigars)	C. Stutz, a Firm	9,337	July 29	100	1109
"El Lupus." (For Cigars)	Schmidt & Co	9,376	Aug. 12	100	1561
"Elfin Brand." (For Sugar-Corn)	S. S. Pierce Company	9,473	Sept. 30	100	3009
"Elixir Ovarsas." (For a Medicine)	W. H. Nelson	9,344	Aug. 5	100	1827
"Elkhorn." (For Cigars)	Schmidt & Co	9,305	July 15	100	679
"Emeralds." (For Cigars)	R. H. Buettner	9,295	July 8	100	447

Alphabetical list of labels, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
"Empress Imperial Toilet Powder." (For Toilet Powder)	E. Sharp	9,439	Sept. 9	100	2381
"Engel's Silver Dust." (For a Cleaning-Powder)	A. W. Engel	9,495	Sept. 2	100	2173
"Eruption of Mt. Pelee." (For Fireworks)	T. Lloyd	9,251	July 1	100	229
"Eureka." (For Evaporated Fruits)	W. A. Higgins & Co	9,253	July 1	100	229
"Farmer Boy." (For Cigars)	N. F. Young	9,250	July 1	100	229
"Filipin-O-Ketchup." (For Catsup)	M. Wolff & Sons	9,435	Sept. 9	100	2381
"First Page." (For Cigars)	American Lithographic Company	9,270	July 1	100	229
"Fit for a King." (For Baking-Powder)	Wabash Baking Powder Company	9,288	July 8	100	447
"Flor de Utuado." (For Cigars)	Schmidt & Co	9,420	Sept. 2	100	2173
"Foxy Grandpa's Tonic." (For a Tonic)	H. E. Ehrman	9,306	July 15	100	679
"Franklin Union Number Four Cigars." (For Cigars)	M. A. Pacella	9,401	Aug. 26	100	1973
"Frederic." (For Hats)	C. E. Sackett	9,275	July 8	100	447
"From Mill to Consumers." (For Taffeta Silk)	Consumers Silk Mills and Coupons Exchange Co.	9,362	Aug. 12	100	1561
"Frutonic." (For a Tonic Beverage)	Southern California Chemical Co	9,349	Aug. 5	100	1327
"Full Leaf." (For Cigars)	Schmidt & Co	9,370	Aug. 12	100	1561
"Gloria." (For Flour)	Detroit Milling Co	9,359	Aug. 5	100	1327
"Glycotone Comp. D & D." (For Medicine)	Dinet & Delfosse	9,291	July 8	100	447
"Gold Bore." (For Cigars)	Schmidt & Co	9,432	Sept. 9	100	2381
"Golden Leaf." (For Cigars)	American Lithographic Company	9,418	Sept. 2	100	2173
"Golden Lustre Metal Polish." (For Metal-Polish)	C. R. Hulley & Co	9,440	Sept. 9	100	2381
"Golden Pheasant." (For Tea)	Milliken, Tomlinson Co	9,472	Sept. 30	100	3009
"Good Fellow Cigars." (For Cigars)	A. Jacobsen	9,400	Aug. 26	100	1973
"Grain-Fruit. The Hygienic Breakfast Cereal." (For Breakfast-Food.)	Grain-Fruit Cereal Co	9,407	Aug. 26	100	1973
"Hatch's Biscuit." (For Biscuits)	Bangor Biscuit Company	9,388	Aug. 19	100	1761
"Hercules Rip Proof Gloves." (For Gloves)	Schwartz, Schiffer & Company	9,341	Aug. 5	100	1327
"Holly." (For Evaporated Fruits)	W. A. Higgins & Co	9,256	July 1	100	229
"Hop Tea." (For a Non-Intoxicating Beverage)	N. Thomas Brewing Co	9,413	Sept. 2	100	2173
"Hy-Step." (For Medicine)	J. Flook	9,437	Sept. 9	100	2381
"Ideala." (For Toilet Cream)	Ideala Co	9,272	July 1	100	229
"Inda Plants." (For Cigars)	American Lithographic Company	9,467	Sept. 30	100	3009
"Indian Head Powder." (For a Medicine)	J. H. Grass	9,309	July 15	100	679
"Ivory." (For Paint)	Conger, Kahn & Gibbs Co	9,382	Aug. 12	100	1561
"J. Williams & Bros. Hand Made Original Meyersdale Seed Stogies." (For Cigars.)	J. Williams & Bros	9,286	July 8	100	447
"Jean Bart." (For Cigars)	American Lithographic Company	9,468	Sept. 30	100	3009
"Joe Turner." (For Cigars)	A. C. Henschel & Co	9,399	Aug. 26	100	1973
"John Gibson's Son & Co.'s Rye Whiskey." (For Whisky)	Moore & Sinnott	9,261	July 1	100	229
"John Latour. Cognac 1858." (For Brandy)	S. Kraus & Bro	9,354	Aug. 5	100	1327
"Josephine." (For Cigars)	C. Stutz, a Firm	9,338	July 29	100	1109
"Kempshall Flyer." (For Golf-Balls)	Kempshall Manufacturing Company.	9,323	July 29	100	1109
"Kempshall League." (For Golf-Balls)	Kempshall Manufacturing Company.	9,324	July 29	100	1109
"Knickerbocker Chop." (For Tea)	Firm of W. J. Buttfield	0,412	Sept. 2	100	2173
"La Carolita." (For Cigars)	C. Stutz, a Firm	9,346	Aug. 5	100	1327
"La Cintillo." (For Cigars)	A. C. Henschel & Co	9,385	Aug. 19	100	1761
"La Gradosa." (For Cigars)	American Lithographic Company	9,415	Sept. 2	100	2173
"La Magnita." (For Cigars)	C. Stutz, a Firm	9,339	July 29	100	1109
"La Oriental." (For Cigars)	Sanchez & Haya Co	9,268	July 1	100	229
"La Preciada." (For Cigars)	Schmidt & Co	9,360	Aug. 12	100	1561
"La Romana." (For Cigars)	Sanchez & Haya Co	9,267	July 1	100	229
"La Rosa Puerta." (For Cigars)	American Lithographic Company	9,416	Sept. 2	100	2173
"La Rosa Puerta." (For Cigars)	American Lithographic Company	9,417	Sept. 2	100	2173
"La Rosencia." (For Cigars)	American Lithographic Company	9,414	Sept. 2	100	2173
"Las Americas." (For Cotton Cloth)	D. A. de Lima & Co	9,322	July 29	100	1109
"Liquid Glass." (For Cement)	J. E. Ulrich & Co	9,319	July 22	100	929
"Listerets." (For a Lotion)	J. M. Fisher	9,271	July 1	100	229
"Lockyer's Chill-Peka Seasoning." (For Seasoning)	F. H. Lockyer	9,380	Aug. 12	100	1561
"Luds." (For Hats)	C. E. Sackett	9,276	July 8	100	447
"Magnolia." (For Chewing-Gum)	Lidwell Gum Co	9,464	Sept. 30	100	3009
"Maize Loaf." (For Cereal Food)	Gordon and Richardson	9,332	July 29	100	1109
"Manor House." (For Coffee)	W. F. McLaughlin & Co	9,435	Sept. 9	100	2381
"Marvelous Waterproof Shoe Polish." (For Waterproof Oil Polish.)	J. F. Smith	9,457	Sept. 30	100	3009
"Maryland Leader." (For Canned Peaches)	Phillips Packing Co	9,447	Sept. 23	100	2771
"Maryland Leader." (For Canned Tomatoes)	Phillips Packing Co	9,381	Aug. 12	100	1561
"Masurite Safe Explosive." (For an Explosive)	Masurite Explosive Company	9,252	July 1	100	229
"Mayflower." (For Beer)	Imperial Brewing Co	9,438	Sept. 9	100	2381
"Mayflower." (For Beer)	Imperial Brewing Co	9,439	Sept. 9	100	2381
"Meat-ol." (For a Liquid Food or Tonic)	A. Spiegel Co	9,289	July 8	100	447
"Mexoja Coffee." (For Coffee)	Arbuckle Bros	9,446	Sept. 23	100	2771
"Mi Elektra." (For Cigars)	C. Stutz, a Firm	9,340	July 29	100	1109
"Mi Todo." (For Cigars)	M. Fernandez	9,443	Sept. 23	100	2771
"Miebis." (For Cigarettes)	Miebis Tobacco Company	9,264	July 1	100	229
"Miss Butte." (For Cigars)	American Lithographic Company	9,466	Sept. 30	100	3009
"Mission Brand." (For Apricots)	Santa Paula Commercial Co	9,436	Sept. 9	100	2381
"Mistletoe." (For Evaporated Fruits)	W. A. Higgins & Co	9,257	July 1	100	229
"Monarch Record." (For Sound-Records)	Victor Talking Machine Co	9,326	July 29	100	1109
"Mother's Own Ointment." (For Ointment)	Mothers Own Company	9,454	Sept. 30	100	3009
"My Biscuit." (For Biscuit)	Sanitary My-Food Co	9,434	Sept. 9	100	2381
"N. K. Brown's Dyspepsia and Indigestion Tablets." (For Tablets.)	N. K. Brown	9,422	Sept. 2	100	2173
"Na-Bocklish." (For Cigars)	Central Cigar Manufacturing Co	9,431	Sept. 9	100	2381
"Nail Powder." (For Nail-Powder)	E. Forquignon	9,312	July 15	100	679
"Nichol's Hat Co. Hat Makers." (For Hats)	C. E. Sackett	9,396	Aug. 26	100	1973
"A Labor Saving." (For Soldering Fluid)	A. Levytansky	9,458	Sept. 30	100	3009
"'Nouveau' Furniture Polish." (For Furniture-Polish)	Nouveau Manufacturing Company	9,408	Aug. 26	100	1973
"Old Fireside." (For Cigars)	Schmidt & Co	9,266	July 1	100	229
"Olympia Shoe Co." (For Shoes)	W. Edelstein	9,392	Aug. 19	100	1761
"One-Eighty." (For Lager-Beer)	G. Heileman Brewing Company	9,282	July 8	100	447
"100% Pure-Wool." (For Cloth)	J. Capps & Sons	9,240	July 1	100	229
"Orchard Brand." (For Apricots)	Santa Paula Commercial Co	9,427	Sept. 9	100	2381
"Ottoman." (For Cigars)	Lincoln, Seyms & Co	9,336	July 29	100	1109
"Our Congressman." (For Cigars)	F. Hartmann & Son	9,301	July 15	100	679

Alphabetical list of labels, July to September, inclusive—Continued.

Title.	Name.	No.	Date.	Official Gazette. Vol.	Page.
"Paramount Pure Old Rye Whiskey." (For Whisky)	H. C. Bohack	9,285	July 8	100	447
"P-A-Y-M-E Concentrated Extract of Vanilla." (For Extract of Vanilla.)	L. E. Roy	9,462	Sept. 30	100	3009
"Peradena." (For Cigars)	C. Stutz, a Firm	9,367	Aug. 12	100	1561
"Perfect Water Ice or Sherbet Powder." (For a Powder)	O. J. Weeks & Co	9,379	Aug. 12	100	1561
"Pine Tree State Taffy." (For Taffy)	G. E. Lufkin	9,404	Aug. 26	100	1973
"Pink Rose Wine." (For Wine)	Popel & Giller	9,353	Aug. 5	100	1327
"Piso's Tablets for the Cure of Diseases of Women." (For Medicines.)	Piso Company	9,316	July 22	100	929
"Pre-Vent-O." (For Medicine)	Elite Medicine Co	9,363	Aug. 12	100	1561
"Primus." (For Bottled Beer)	Barker & Wheeler Co	9,335	July 29	100	1109
"Provider Brooms Brushes." (For Brooms and Brushes)	A. B. Lehman	9,320	July 22	100	929
"Puritan Boy." (For Cigars)	Lincoln, Seyms & Co	9,304	July 15	100	679
"Purity Baking Powder." (For Baking-Powder)	D. J. Hille	9,378	Aug. 12	100	1561
"Queen Quality." (For Burgundy Wine)	Siegel-Cooper Co	9,352	Aug. 5	100	1327
"Randolf Maker." (For Hats)	C. E. Sackett	9,313	July 22	100	929
"Red Star Cigars." (For Cigars)	W. H. Klenke	9,302	July 15	100	679
"Renton's Fuga Rheum." (For a Medicinal Oil)	H. T. Renton	9,311	July 15	100	679
"Rex Pork and Beans." (For Pork and Beans)	Cudahy Packing Co	9,333	July 29	100	1109
"Rose of Kansas City." (For Cigars)	Schmidt & Co	9,371	Aug. 12	100	1561
"Roycroft Liniment." (For Liniment)	M. R. Stuart	9,391	Aug. 19	100	1761
"Salvator." (For Beer)	Terre Haute Brewing Co	9,377	Aug. 12	100	1561
"Sea Wall." (For Coffee)	Southern Coffee Company	9,355	Aug. 5	100	1327
"Select Combination." (For Cigars)	American Lithographic Company	9,469	Sept. 30	100	3009
"Sprayine." (For Medicine)	F. W. Robinson	9,328	July 29	100	1109
"Spring Bank High Ball Splits." (For High-Ball Splits)	Whallen Bros	9,284	July 8	100	447
"Spring Bank Lithia Cherry Phosphate." (For Cherry Phosphate.)	Whallen Bros	9,459	Sept. 30	100	3009
"Spring Bank Lithia High Ball Splits." (For High-Ball Splits.)	Whallen Bros	9,283	July 8	100	447
"St. Anthony's Oil." (For Medicinal Oil)	Pasadena Medical Company	9,455	Sept. 30	100	3009
"Standard." (For Cigars)	E. K. Blewett	9,419	Sept. 2	100	2173
"Star of Egypt." (For Cigarettes)	Miebis Tobacco Co	9,299	July 15	100	679
"Static." (For Packages Containing Carbonated Beverages.)	Static Carbonating Company	9,408	Aug. 26	100	1973
"Stewart's Odorless and Tasteless Castor Oil." (For Castor-Oil.)	Stewart Manufacturing Co	9,298	July 8	100	447
"Story's Foot Relief." (For Foot-Powder)	Fabrikoid Company	9,330	July 29	100	1109
"Sunchita." (For Cigars)	Schmidt & Co	9,421	Sept. 2	100	2173
"Superior Dental Finishing Strips." (For Dental Finishing-Strips.)	Drs. F. Messerschmitt & C.C. Bachman	9,364	Aug. 12	100	1561
"Sure-Pop Baking Powder." (For Baking-Powder)	E. C. Newman	9,406	Aug. 26	100	1973
"Tarquinius." (For Cigars)	C. Stutz, a Firm	9,347	Aug. 5	100	1327
"Tetlows Violet Boquet Talcum Powder." (For Talcum Powder.)	Tetlow Mfg. Co	9,278	July 8	100	447
"The Dixie Candy Bin." (For Candy)	G. Blome & Son Co	9,398	July 15	100	679
"The Eagle Plaster." (For Plasters)	Allcock Manufacturing Co	9,317	July 22	100	929
"The Electric Dyspeptic Pad." (For Therapeutic Apparatus.)	Electric Dyspeptic Pad Co	9,395	Aug. 19	100	1761
"The Elk Cigar." (For Cigars)	W. H. Klenke	9,303	July 15	100	679
"The Famous Ripper." (For Cigars)	J. H. Bloch	9,345	Aug. 5	100	1327
"The Fast Cigar." (For Cigars)	Schmidt & Co	9,265	July 1	100	229
"The Lindsey." (For Crackers)	N. B. Lindsey	9,358	Aug. 5	100	1327
"The New 20th Century Remedy, Thymoil." (For a Medicine.)	W. R. Collins	9,423	Sept. 2	100	2173
"The Pepper Co. Pure Confectionery, Peabody, Mass." (For Confectionery.)	Pepper Company	9,463	Sept. 30	100	3009
"The Queen's Cream of Roses." (For a Toilet Preparation)	W. E. Terrill	9,273	July 1	100	229
"The Win." (For Cigars)	J. Weiss, Jr	9,433	Sept. 9	100	2381
"Tufted Silk." (For Neckwear)	A. J. Bendix and A. L. Eisenstaedt	9,277	July 8	100	447
"Turkish Nerve Builder." (For a Medicine)	E. A. Showalter	9,290	July 8	100	447
"U. S. Baby." (For Cigars)	Schmidt & Co	9,373	Aug. 12	100	1561
"United Powder and High Explosive Workers of America." (For Explosives.)	W. Feenie	9,409	Aug. 26	100	1973
"Upper Ten Cocktails." (For Cocktails)	W. R. Lundy & Co	9,461	Sept. 30	100	3009
"Van Winkle's Medicated Soap." (For Medicated Soap)	E. Van Winkle & Co	9,438	Sept. 9	100	2381
"Victor Record." (For Sound-Records)	Victor Talking Machine Co	9,325	July 29	100	1109
"Western Jewel." (For Cigars)	Schmidt & Co	9,368	Aug. 12	100	1561
"Western Monarch." (For Cigars)	Schmidt & Co	9,372	Aug. 12	100	1561
"Whiskey Without a Headache." (For Whisky)	Greenwald & Co	9,260	July 1	100	229
"Winette." (For a Beverage)	G. E. Fuller	9,281	July 8	100	447
"Winner Whiskey." (For Whisky)	W. Mulherin & Sons	9,262	July 1	100	229
"World's Hair Restorer." (For Hair-Restorer)	S. F. Leah	9,398	Aug. 26	100	1973
"Yankee Cream Corn." (For Canned Corn)	N. C. Cummings & Bro	9,259	July 1	100	229

PRINTS.

Title.	Name.	No.	Date.	Official Gazette. Volume.	Page.
"A Combination Game." (For Game Apparatus)	McLoughlin Brothers	536	July 29	100	1109
"A Cool Bearing." (For Frictionless Bearing Metal)	Frictionless Metal Co	551	Aug. 19	100	1761
"At the Top—Mathushek Pianos." (For Pianos)	Mathushek Piano Mfg. Co	553	Sept. 2	100	2173
"Best on Earth." (For Frictionless Metal)	Frictionless Metal Co	552	Aug. 19	100	1761
"Boiled Ham." (For Boiled Ham)	Armour Packing Company	535	July 15	100	679
"Clark's Instant Foot Comfort." (For Foot Remedy)	Globe Chemical Works	558	Sept. 30	100	3009
"Dewar's Scotch Whisky." (For Whisky)	John Dewar & Sons	546	Aug. 12	100	1561
"Dr. Pierce's Favorite Prescription." (For Medicine and Soda.)	World's Dispensary Medical Association.	536	July 22	100	929
"H. W. Barker's Cough Catarrh Consumption Remedy." (For Medicine.)	H. W. Barker	547	Aug. 12	100	1561
"Hygienic Suspensory." (For Suspensory Bandages)	J. C. Schnoter Co	528	July 1	100	229
"Men's and Boys' Apparel." (For Men's and Boys' Apparel)	W. C. Both	555	Sept. 9	100	2381
"Men's Apparel." (For Men's Apparel)	W. C. Both	527	July 1	100	229
"Men's Apparel." (For Men's Apparel)	W. C. Both	532	July 15	100	679
"Nailitza." (For a Cleaning Preparation)	Nailitza Company	529	July 1	100	229
"Paride's Miraculous." (For a Medical Compound)	P. Grasso	556	Sept. 16	100	2599
"Priest's Napa Soda." (For Soda-Water)	W. P. Courtney	554	Sept. 2	100	2173
"'Relda' Secret Process." (For Taffeta Silk)	Consumers Silk Mills and Coupons Exchange Co.	541	Aug. 12	100	1561
"Sozodont." (For Dentifrice)	Hall & Ruckel	548	Aug. 12	100	1561
"Temptation." (For Cigars)	American Cigar Co	534	July 15	100	679
"The Beaucaire." (For Overcoats)	Kuh, Nathan & Fischer Company	543	Aug. 12	100	1561
"The Dipp Sack." (For Sack Suits)	Kuh, Nathan & Fischer Company	545	Aug. 12	100	1561
"The Modern Laundress." (For Soap)	Kaufmann & Strauss Co	549	Aug. 12	100	1561
"The Prince Henry." (For Overcoats)	Kuh, Nathan & Fischer Company	544	Aug. 12	100	1561
"The Special." (For Overcoats)	Kuh, Nathan & Fischer Company	542	Aug. 12	100	1561
"The Uncle Sam Shoe." (For Shoes)	Uncle Sam Shoemakers	530	July 8	100	447
"The Vicereine $2.50 Shoe." (For Shoes)	Shaw-Goding Shoe Co	533	July 15	100	679
"Trowbridge's Chocolate Chips." (For Chocolate Chips)	Trowbridge Chocolate Chip Co	531	July 8	100	447
"Vienna Sausage." (For Vienna Sausage)	Armour Packing Company	540	Aug. 5	100	1327
"We Sell Masurite Safe Explosive." (For an Explosive)	Masurite Explosive Company	539	Aug. 5	100	1327
"Wine that Maketh Glad the Heart of Man." (For Champagne.)	G. Rutledge	550	Aug. 19	100	1761
"Wright's Health Underwear." (For Underwear)	Seiter & Kappes	557	Sept. 30	100	3009
"Zapha." (For Shoe-Polish)	K. J. Quinn & Co	538	Aug. 5	100	1327

DISCLAIMERS.

Invention.	Patentee.	No. of patent.	Date of patent.	Disclaimer filed.	Official Gazette. Volume.	Page.
Harvesters or the like. Seat for	H. W. Avery	683,675	Oct. 1, 1901	June 30, 1902	100	238
Tin-plate. Manufacturing	W. Rogers	604,195	May 17, 1898	June 23, 1902	100	1

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